UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al. (Seabrook Station, Units 1 and 2),	Docket Nos. 50-443 OL and 50-444 OL

SUPPLEMENT TO THE PETITION
TO INTERVENE OF THE
COMMONWEALTH OF MASSACHUSETTS

Pursuant to 10 C.F.R. §2.714(b), The Commonwealth of Massachusetts hereby submits a supplement to its Petition to Intervene, listing to the extent possible at this time the contentions which it seeks to have litigated in this matter and the bases therefor. The Commonwealth has limited its intervention to the issue of emergency planning. Much of the data relevant to that issue is not yet available, including state and local emergency plans and the FEMA review thereof and the results of the emergency planning exercise required by 10 C.F.R. Part 50, Appendix E, Item III. F.1.b. The within list of contentions is, therefor, necessarily incomplete and general. Once all relevant data is available and discovery has been allowed, the Commonwealth will be in a position to submit a fuller, more detailed list of its contentions.

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Contention I

Contention: Applicants have failed to submit, as required by 10 C.F.R. §50.33(g), radiological emergency response plans of state and local governmental entities within the plume exposure pathway or ingestion pathway Emergency Planning Zones, including plans of the Commonwealth of Massachusetts and its municipalities.

Bases: 10 C.F.R. §50.33(g) requires applicants for operating licenses for nuclear power reactors to submit to the NRC radiological emergency response plans of state and local governmental entities that are wholly or partially within the plume exposure Emergency Planning Zone ("EPZ") and/or the ingestion pathway EPZ. 10 C.F.R. §50.47 then provides that no operating license will be issued "unless a finding is made by NRC that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." Section 50.47(b) sets forth certain standards which must be met by the onsite and offsite emergency plans, which standards are addressed by specific criteria in NUREG-0654/FEMA-REP-Rev. 1, "Criteria

for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (November, 1980) [NUREG-0654]. Given that state and local emergency response plans have not yet been prepared or submitted, the Commonwealth is unable at this time to prepare contentions which relate in any way to those plans or to the relationship between onsite and offsite plans. The Commonwealth reserves the right to revise its contentions to address such particulars when state and local plans have been submitted.

Contention II

Contention: The Applicants have failed to account for local emergency response needs and capabilities in establishing boundaries for the plume exposure pathway and ingestion pathway EPZ's for Seabrook Station, as required by 10 C.F.R.§50.33(g) and §50.47(c)(2).

Bases: The Commission's regulations require pre-planning for emergencies within two areas, known as the plume exposure pathway EPZ and the ingestion pathway EPZ. See 10 C.F.R. §50.33(g), §50.47(b)(10). See also 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-0396"]; NUREG-0654, pp. 10-13. Commission regulations further provide that, while "generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius," the "exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries." 10 C.F.R. §§50.33(g); 50.47(c)(2). See also NUREG-0654, p. 17, Table 1 ["Judgement should be used in adopting [the plume exposure pathway] distance based upon considerations of local conditions such as demography, topography, land characteristics, access routes, and local jurisdictional boundaries."] Applicants have failed to give any consideration to local

conditions in establishing EPZ boundaries, but have simply drawn circular zones having 10 and 50 mile radii, respectively. See Seabrook Station Radiological Emergency Plan, Final Safety Analysis Report, Section 4.3 and Figures 4.7 and 4.8 ["Applicants' Emergency Plan"]. All factors having possible influence on local emergency response needs and capabilities must be taken into account, including the following:

a. jurisdictional boundaries and the problems associated with planning to evacuate only portions of certain municipalites;

b. the difficulties associated with evacuating large, densely populated communities (such as the City of Haverhill) which lie outside the 10-mile boundary[1/] without pre-planning;

c. the difficulties associated with sheltering or evacuating persons at coastal beaches outside the 10-mile boundary without pre-planning, given dense summer populations, inadequate sheltering facilities, and limited access routes;

d. the heightened sensitivity to radiation (over that of the healthy adult male) of the large

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1/ In fact, a small portion of the City of Haverhill is within the 10-mile boundary.

numbers of children and pregnant women who frequent the coastal beaches outside the 10-mile boundary in the summer months;

e. the proximity of the Seabrook site to the Atlantic Ocean and the groundwater and soil conditions on the site, with their resulting implications for travel of radionuclides through a liquid pathway in the event of a reactor meltdown accident;[2/]

f. local meteorological conditions; and

g. radionuclides which will be significant contributors to dominant exposure modes for prompt and latent effects in the event of a PWR-1 to PWR-7 accidental release as described in the NRC's Reactor Safety Study (WASH -1400), or its equivalent, at the Seabrook Station.

Contention III

Contention: There is no basis for the NRC to find, as required by 10 C.F.R. §50.47(a)(1), that the state of onsite and offsite emergency preparedness for the Seabrook Station provides reasonable assurance that adequate protective

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2/ See NUREG/CR-1596, "The Consequences from Liquid Pathways of a Reactor Meltdown Accident" (June, 1981).

measures can and will be taken in the event of a radiological emergency.

Bases: 10 C.F.R. §50.47(a)(1) provides that no operating license for a nuclear power reactor may be issued unless a finding is made by the NRC that "the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." The Applicants' FSAR contains insufficient evidence to support such a finding in this case because no offsite emergency plans have yet been submitted. Furthermore, the FSAR contains insufficient evidence of the feasibility of protective action in the event of a Site Area or General Emergency at the Seabrook Station. This is true for the following reasons:

A. The FSAR contains insufficient evidence of site-specific consequences in the event of a Site Area or General Emergency, including evidence as to the health effects which will result from a PWR-1 to PWR-7 accidental release, or its equivalent.

B. In assessing the site-specific consequences of a PWR-1 to PWR-7 release at Seabrook Station,

Applicants rely in part on WASH-1400. That reliance is misplaced because:

1. WASH-1400 provides insufficient evidence of the consequences resulting from releases through liquid pathways in the event of a reactor meltdown accident;

2. The FSAR contains no evidence that WASH-1400's assumptions regarding medical treatment are applicable to Seabrook Station;

3. The assumptions upon which WASH-1400's estimates of accident consequences are based are not conservative for Seabrook Station and are inconsistent with such factors as the Seabrook Station fission product inventory and fuel burn-up and the heightened sensitivity to radiation (over that of the average healthy adult male) of the large number of children and pregnant women who frequent the beaches in the vicinity of the Seabrook site during summer months. The FSAR contains insufficient information to assure that the assumptions upon which WASH-1400's estimates of accident consequences are based are consistent with the degree of protection afforded by the

protective action of sheltering in the event of an accident at Seabrook Station.

C. The evacuation times contained in the FSAR have been limited to a geographical area determined without reference to local emergency response needs and capabilities. (See Contention II, supra)

D. The evacuation time estimates contained in the FSAR have not been properly calculated so as to estimate accurately the time required to evacuate the population within the plume exposure pathway EPZ proposed by Applicants. Specifically, those evacuation time estimates fail to:

1. Account for the time required for protective action decision-making, notification of off-site agencies and the public, preparation and mobilization, and confirmation of evacuation;

2. Account for simultaneous evacuation of the peak summer population on the beach areas lying from NE to SSE of the site.[3/]

3/ The Applicants' estimates fail to account even for simultaneous evacuation of Hampton Beach and either of Seabrook Beach or Salisbury State Beach.

3. Provide an estimate for evacuation of the entire plume exposure pathway EPZ, as required by NUREG-0654, App. 4, at 4-4.

4. Employ a reasonable estimate of the number of automobiles being evacuated;[4/]

5. Account for evacuation of schools, hospitals and other institutions located within the EPZ;

6. Account for the public transportation-dependent population;

7. Include major employers in the estimates of summer transient automobile demand;

8. Account for voluntary evacuation beyond the EPZ;

9. Account properly for the population in the vicinity of the Seabrook site or for population growth over the life of the plant;

10. Account properly for the effect on

4/ Applicants assumed that approximately one vehicle per household would be used in the evacuation. This assumption results in a low estimate of the number of evacuating automobiles. See NUREG/CR-1745: "Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones," at 10 (November, 1980).

evacuation times of adverse weather conditions;

11. Account for other than home-based evacuation traffic;

12. Use realistic assumptions with respect to the information available to evacuees when choosing evacuation routes;

13. Use evacuation routes consistent with those actually planned by state and local officials; or

14. Account for any of the following possibilities:

a. Vehicles breaking down or running out of fuel;

b. traffic accidents;

c. abandoned vehicles;

d. disregard of traffic control devices; and

e. evacuees using inbound traffic lanes for outbound travel.

E. The FSAR contains insufficient evidence of the feasibility of evacuation as a protective action because no information is provided as to the health effects associated with various accident sequences and evacuation times.

F. The FSAR contains insufficient evidence of the feasibility of sheltering as a protective action because no information is provided as to the availability and adequacy of local sheltering facilities or the health effects associated with various accident sequences and shielding factors.

G. The FSAR contains no assurance of prompt (15 minutes) protective action decision-making.

H. There are no established quantitative or qualitative standards by which one can assess the feasibility of protective action in the event of a Site Area or General Emergency at Seabrook Station.

Thus, the Applicants' FSAR contains insufficient evidence of the feasibility of protective action in the event of a radiological emergency at the Seabrook Station. Such evidence as exists suggests that it may not be feasible to evacuate all persons in the zone of danger in the event of certain accident sequences.[5/]

It has long been recognized that the beaches in

5/ The Commonwealth anticipates that it will obtain further data relevant to this issue through discovery in this proceeding.

the vicinity of the Seabrook site present unusual evacuation constraints. 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 evacuatiing persons beyond the Seabrook LPZ because of the proximity of the Station to coastal beaches, the inadequacy of sheltering facilities along the coast, and the limited road networks serving the beaches. See Public Service Company of New Hampshire, ALAB-390, 5 NRC 733, at 735-36 (1977). This position has been supported by the Advisory Committee on Reactor Safeguards. See 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]. According to the Applicants, there is an estimated summer peak population of 84,366 within a five-mile radius of the site. See Applicants' Emergency Plan, Table 4.4. And the Licensing Appeal Board has determined that the beach area located just over one and one-half miles from the Seabrook Station is the nearest population center to the site, since it will "at times be the most

densely populated area in the state." See Public Service Company of New Hampshire, ALAB-422, 6 NRC 33, at 51 (1977).

While grossly inadequate for all the reasons outlined above, the Applicants' own evacuation time estimates leave substantial doubt as to the feasibility of evacuation. Applicants estimate that, on a summer weekend, it will take 4 hours and 20 minutes to evacuate a 180-degree sector to the north of the plant having only a two-mile radius. See Applicants' Emergency Plan, Appendix C., Table 4. 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. Id., Table 2. The Applicants provide a similar estimate -- 4 hours and 30 minutes -- for evacuation of the ten-mile 90-degree northeast sector containing Hampton Beach. Id., Table 4.

Even without accounting for such factors as simultaneous evacuation of more than one beach, notification/preparation time, and population growth, then, the Applicants' estimates exceed

the time period during which early fatalities and injuries will result from exposure to radionuclides in the event of an "atmospheric" Class 9 accident, according to NUREG-0396. See NUREG-0396, Figures I - 17 and I - 18.[6/] That document reveals that, assuming a uniform population density of 100 persons per square mile and evacuation speed of 10 m.p.h., an evacuation time of 4 hours will result in approximately three deaths and twelve early injuries in the 0-5 mile range of the plant and approximately five early injuries in the 5-10 mile range. 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.[7/] Of course, NUREG-0396 makes no

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6/ The Commonwealth intends to conduct discovery regarding the site-specific consequences associated with postulated releases at Seabrook Station.

7/ 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.

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 currently estimated by the Applicants, there will be a significant number of early injuries and deaths in the event of an atmospheric Class 9 accident at Seabrook. And, given the deficiencies in the Applicants' current evacuation time estimates, there is reason to suspect that actual evacuation times would be much longer. It is interesting to note that the evacuation time estimates provided by the licensee in its PSAR are significantly 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 . See Seabrook PSAR, Amendment 23, July, 1974, at S13-7 - S13-16.[8/] 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

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8/ The earlier figures do purport to include notification time.

other three sectors will require five and one-half to six hours. See Seabrook PSAR, at S13-16.

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. See "The Dynamic Evacuation Analyses: Independent Assessment of Evacuation Times from the Plume Exposure Pathway Emergency Planning Zones of Twelve Nuclear Power Stations," FEMA-REP-3, at 46. 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.

Id. FEMA estimates, then, are also considerably higher than the Applicants' current estimates. The early deaths and injuries resulting from a Class 9 accident would, of course, be significantly higher that the figures recited above if the longer times estimated by FEMA or by the Applicants in the 1974 amendment to their

PSAR are actually required for evacuation.

In sum, the FSAR contains no off-site emergency plans and insufficient evidence of the feasibility of protective action in the event of a radiological emergency. Present evidence suggests that evacuation may not be feasible in the event of certain accidental releases. Thus, no basis exists for the requisite finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Seabrook Station.

Contention IV

Contention: The Applicants' Emergency Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b) or provide the information required by 10 C.F.R., Appendix E.

Bases: The Commission's emergency planning regulations specify particular items of information which applicants must include in their onsite emergency plan. See 10 C.F.R. Part 50, Appendix E, Sections III and IV. Those regulations further specify certain standards which must be met by onsite plans, see 10 C.F.R. §50.47(b), and make

reference to specific criteria in NUREG-0654 addressing these standards, see 10 C.F.R. §50.47(b), n.1. The Applicants' Emergency Plan does not safisfy these Commission regulations. Specifically, it fails to satisfy the following requirements:

A. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(1) because no written agreements referring to the concept of operations developed between Federal, State and local emergency response agencies and other support organizations have been provided, as required by NUREG-0654, Criterion A. 3.

B. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(1) and (b)(2) because it does not demonstrate that principal emergency response organizations, including the Seabrook Station, will have sufficient staff to respond to an emergency on a continuous basis. Specifically, the Plan does not demonstrate full compliance with NUREG-0654, Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies."

C. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(2) because on-shift facility

licensee responsibilities have not been unambiguously defined. For example, it is not clear who has the overall responsibility, at any point during the emergency, to direct the emergency response efforts at the facility.

D. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(2) because there is no evidence that the persons who would be allowed to direct accident response at the facility have the necessary talents and experience to do so effectively. For example, the Plan would allow the Assistant Technical Services Manager to serve as Emergency Director, see Applicants' Emergency Plan, Table 3.1, and provides no assurance that the person holding that position is competent to direct emergency efforts. Nor does the Plan identify, as required by NUREG-0654, criterion B.3, the specific conditions under which higher level utility officials will assume the Emergency Director position.

E. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(2) because it does not provide, as required by NUREG-0654, Criterion B.2, that the Emergency Director shall have the authority and responsibility to immediately and

unilaterally provide protective action recommendations to offsite authorities. Nor does the Plan provide, as required by NUREG-0654, Cirterion B.4, that this responsibility cannot be delegated.

F. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(2) because the letters of agreement with local support agencies required by NUREG-0654, Criterion B.9 have not been provided.

G. The Plan does not satisfy the standards set forth in 10 C.F.R. §50.47(b)(3) because it does not include the information regarding federal assistance required by NUREG-0654, Criteria C.1.a, b. and c.

H. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(4) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV, B and C, because it does not specify emergency action levels.

I. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(5) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV. D because neither the means to provide early notification and clear instruction to the populace within the

plume exposure pathway EPZ nor the contents of initial and followup messages to response organizations and the public have been established. Similarly, the Plan does not satisfy 10 C.F.R. Part 50, Appendix E, Item II.D because it does not describe the provisions for prompt (15 minutes) notification of the offsite authorities responsible for protective action decision-making.

J. The Plan does not satisfy the standards of 10 C.F.R. §50.47 (b)(6) because it does not provide for primary and backup means of communication to all offsite authorities responsible for protective action decision-making and implementation on a 24-hour basis.

K. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(7) because it does not provide the information required by NUREG-0654, Criteria G.1 and 2 and 10 C.F.R. Part 50, Appendix E, Item D. 2, regarding public education.

L. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(8) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV. E., because it does not demonstrate that the Station's permanent Emergency Response Facilities will meet

the criteria of NUREG-0696, "Functional Criteria for Emergency Response Facilities" (February, 1981) or provide the descriptions of emergency equipment and supplies required by NUREG-0654, Criteria H.5, H.6, H.7, H.9, H.11, and Appendix 2.

M. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(9) because it does not provide a sufficient description of the proposed methods, systems and equipment for assessing and monitoring accidents to assure compliance with NUREG-0654, Criterion I. and Appendix 2 and other Commission regulatory requirements.

N. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(10) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV, because it does not provide guidelines for the choice of protective actions during an emergency or evacuation time estimates which accurately estimate the time which will be required to evacuate persons in the vicinity of the Seabrook site. The Plan further fails to meet these standards because it does not provide the information required by NUREG-0654, Criterion J.10.

O. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(13) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV. H, because no plans for recovery and reentry have been developed.

P. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(14) because it does not demonstrate compliance with NUREG-0654, Criterion I regarding emergency exercises.

Q. The Plan does not satisfy the standards of 10 C.F.R. §50.47(b)(15) and (16) or the requirements of 10 C.F.R. Part 50, Appendix E, Item IV. F, because it does not assure that all necessary emergency response training will be provided in advance of the onset of an emergency and because it does not provide for training of offsite officials responsible for protective action decisionmaking on protective actions to be recommended or for independent audits of the Applicants' emergency preparedness program.

R. The Plan does not demonstrate, as required by 10 C.F.R. Part 50, Appendix E, Item IV. E.3., that state and local officials have the capability to make prompt (15 minutes) protective action decisions.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Jo Ann Shotwell, Esquire, hereby certify that a copy of e foregoing Supplement has been mailed this 20th day of April, 1982, first class mail, postage prepaid, to:

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** By Hand, April 21, 1982