

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
before the
ATOMIC SAFETY AND LICENSING BOARD

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

APPLICANTS' PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW

Procedural History

1. This proceeding was initiated following the submission to the NRC of an application for Operating Licenses for Seabrook Station, a two-unit nuclear power facility utilizing pressurized water reactors (the "Application"). The Application was submitted on behalf of the following electric utilities:

Public Service Company of New Hampshire
Bangor Hydro-Electric Company
Central Maine Power Company
Central Vermont Public Service Corporation
Commonwealth Energy Systems

Connecticut Light & Power Company
Montaup Electric Company
Fitchburg Gas & Electric Light Company
Hudson Light & Power Department
Maine Public Service Company
Massachusetts Municipal Wholesale Electric Company
New England Power Company
Taunton Municipal Light Plant
United Illuminating Company
and
Vermont Electric Cooperative, Inc.

These companies are hereinafter referred to as the
"Applicants."

2. An application for construction permits was
filed by the Applicants on July 9, 1973. The
construction permits were issued on July 7, 1976. The
Final Safety and Analysis Report was filed with the
Regulatory Staff of the United States Nuclear
Regulatory Commission (the "Staff") on June 29, 1981,
and the Application was docketed on October 5, 1981.
See Staff Ex. 1 (SER), at p. 1-1. Notice of the
opportunity for requesting a public hearing was
published in the Federal Register on October 19, 1981.
46 Fed. Reg. 51331.

3. This Board was convened by order of the
Chairman of the Atomic Safety and Licensing Board Panel
on November 30, 1981, and it was reconstituted in its

present form by order of the same authority on August 25, 1982.

4. Petitions for leave to intervene were received from the following persons and organizations:

| <u>Name</u> | <u>Abbreviation</u> |
|---|---------------------|
| New England Coalition on Nuclear Pollution | NECNP |
| Seacoast Anti-Pollution League | SAPL |
| The Attorney General of the State of New Hampshire | NHAG |
| The Attorney General of the Commonwealth of Massachusetts | MassAG |
| Robert F. Preston | Preston |
| Sun Valley Association | SUN |
| Arnie Wight | Wight |
| Society for the Protection of the Environment of Southesatern New Hampshire | Society |
| Patty Jacobson et al. | Jacobson |
| Coastal Chamber of Commerce of New Hampshire | CCCNH |
| Public Advocate of the State of Maine | Advocate |
| Nicholas J. Costello | Costello |
| Town of South Hampton, New Hampshire | SHNH |
| Donald L. Herzberg, M.D., et al. | Herzberg |

A petition for leave to participate as an "interested state" was also received from the Attorney General of the State of Maine ("MeAG") prior to May 6, 1982.

5. Pre-hearing conferences were held at Portsmouth, New Hampshire, on May 6 and 7, 1982 and July 15 and 16, 1982. Following these conferences, the Board issued its Memorandum and Order on September 13, 1982, admitting NHAG, NECNP, SAPL and CCCNH as parties and granting interested state status to MassAG, SHNH, and MeAG, and admitting the following contentions:

NH-9: "The Seabrook design does not provide an adequate program for monitoring the release of radioactivity to the plant and its environs either under normal operating conditions or in pre- and post-accident circumstances. Thus, the application is not in compliance with general design criteria 63, 64 of Appendix A, 10 C.F.R. Part 50, and the requirements of NUREG-0737 and NUREG-0800."

NH-10: "The Seabrook Station control room design does not comply with general design criteria 19 through 22 and 10 C.F.R. Part 50, Appendix A, and NUREG-0737, item I.D.1 and I.D.2."

NH-13: "The Applicant[s have] not demonstrated that the following [] personnel, are qualified and properly trained in accordance with NUREG-0737, items I.A.1.1 or I.A.2.1, I.A.2.3, II.B.4, I.C.1, and Appendix C: (a) station manager; (b) assistant station manager; (c) senior reactor operators; (d) reactor operators; and (e) shift technical advisors." [As modified by the Board.]

NH-20: "The accident at TMI demonstrated the inability of all parties involved to comprehend the nature of the accident as it unfolded; communicate the necessary information to one another, to the Federal, state and local governments and to the public in an accurate and timely fashion; and to decide in a timely manner what course to take to protect the health and safety of the public. The Applicant[s] in these proceedings [have] not adequately demonstrated that [they have] developed and will be able to implement procedures necessary to assess the impact of an accident, classify it properly, and notify adequately [their] own personnel, the affected government bodies, and the public, all of which is required under 10 C.F.R. 50.47 and Appendix E and NUREG-0654."

NH-21: "The State contends that the Applicant[s'] emergency plan does not demonstrate how, in case of an accident resulting in a site area or general emergency, the large numbers of people in the zone of danger may be protected or evacuated. Until there is reasonable assurance that adequate on-

site and off-site protective measures can and will be taken, the Board should not issue an operating license [sic]."
[Limited to "on-site" matters only.]

NECNP I.A.2: "The Applicants have not complied with GDC 4 standards regarding qualification tests of electric valve operators installed inside the containment."

NECNP I.B.1: "The Applicant[s have] not satisfied the requirements of GDC 4 and GDC 34 in that all systems required for residual heat removal, such as steam dump valves, turbine valves and the entire steam dumping system are not safety grade and environmentally qualified."

NECNP I.B.2: "The Applicant[s have] not satisfied the requirements of GDC 4 that all equipment important to safety be environmentally qualified because it has not specified time duration over which the equipment is qualified."

NECNP I.C: "According to Table 1.3-2, sheet 14 of the FSAR, the applicant[s have] added a new heating ventilating and air conditioning (HVAC) system for the emergency feedwater pumphouse. Only parts of the HVAC system are considered safety-related and environmentally qualified. NECNP contends that the entire system and its function must be environmentally qualified, and that the environmental qualifications must take into account the likely duration of an accident during which the HVAC system would be relied upon."

- NECNP I.D.1: "The Applicants have not complied with GDC 1 with respect to ultrasonic testing of reactor vessel welds during preservice and inservice examination."
- NECNP I.D.2: "The Applicant[s'] proposed testing of protection systems and actuation devices fails to meet the requirements of GDC 21 and NUREG-0737, Task II.D.1. In particular, the Applicants do not provide for the testing at full power of twelve safety functions (see FSAR at 1.8-9), justify that omission, or provide for other reliable means of testing them."
- NECNP I.D.3: "The applicant[s have] not provided a reasonable assurance that the leakage detection system for the Seabrook reactor will operate when needed because not all of the system is to be tested during plant operation as required by GDC 21. Only the airborne radioactivity detector has the capacity to be tested during power operation, FSAR at 1.8-17. The applicant[s] thereby also fail[] to satisfy GDC 30, which requires a development of adequate leakage detecting system."
- NECNP I.D.4: "The Applicants have not complied with GDC 21 in that the Applicants indicate compliance with an outdated standard, IEEE 338-1974, which has been superseded by IEEE 338-1977. Furthermore, the Applicants improperly assert tht they do not comply with IEEE 338-1975 whenever the standard states that an action should be taken or a requirement should be met. All the provisions of the IEEE standard should be treated as mandatory unless the

Applicants can show an alternative means of achieving the same level of safety."

NECNP I.F: "The applicants have not met the requirements of GDC 17 or Criteria III, Appendix B in that it has not indicated compliance with IEEE 323-1974."

NECNP I.G: "NECNP contends that there is not reasonable assurance that the public health and safety will be protected in light of the RCS wide-range pressure instruments being utilized at Seabrook which cannot be relied upon to provide accurate information. Reliance upon the instruments could result in inappropriate operator actions or premature or late tripping of RCS pumps during the course of a small break loss-of-coolant accident."

NECNP I.I: "NECNP contends that the Applicants must identify and environmentally qualify one path to cold shutdown as per IE Bulletin 79-01B, Supplement 3."

NECNP I.L: "Applicants have not provided for a direct indication of Power Operated Relief Valve positions and, therefore, have not complied with NUREG-0737, Item II.D.3. A safety grade environmentally qualified system in compliance with GDC 4 should be installed."

NECNP I.M: "The Applicants' fire protection system does not meet the requirements of GDC 3 as implemented by the Commission in CLI-80-21 with respect to the following items:

A. General Guidelines for Plant Protection

1. Building design

- a. cable spreading rooms
- b. floor drains
- c. floors, walls and ceilings

2. Control of Combustibles

- a. reactor coolant pump lube oil system

3. Electric Cable Construction, Cable Trays and Cable Penetrations

- a. cable spreading rooms
- b. cable trays outside cable spreading rooms
- c. control room cabling

4. Ventilation

- a. discharge of products of combustion
- b. power supply and controls
- c. protection of charcoal filters
- d. stairwells
- e. smoke and heat vents

5. Lighting

- a. fixed emergency lighting

B. Fire Detection and Suppression

1. Detection -- alarm and annunciation
2. Water Sprinkler and Hose Standpipe Systems
 - a. sprinkler and standpipe layout
 - b. supervision of valves
- C. Guidelines for Specific Plant Areas
 1. Primary and secondary containment -- normal operation
 2. Control room
 3. Cable spreading room
 4. Switchgear rooms
 5. Remote safety related panels
 6. Diesel generator areas
 7. Diesel fuel oil storage areas
 8. Safety related pumps
 9. New fuel area
 10. Spent fuel pool area
 11. Radwaste building
 12. Decontamination areas
- D. Special Protection Guidelines
 1. Welding and cutting, acetylene-oxygen fuel gas systems
 2. Storage areas for dry ion exchange resins"

(Tr. at 369-373) (As reworded in July 26, 1982 filing.)

- NECNP I.N: "The Applicant has not provided a means to handle radioactive solid waste [produced] during normal reactor operations including anticipated operational occurrences as required by GDC 60."
- NECNP I.U: "The Applicants have not demonstrated that they meet GDC 4 of Appendix A to 10 C.F.R. Part 50 in that they have not provided that structures, systems, and components important to safety be protected against the effects of turbine missiles whose launching might occur as a result of equipment failure."
- NECNP II.B.1: "FSAR addresses Quality Assurance for plant operations at Section 17.2. Section 17.2 fails to address each of the criteria in Appendix B in sufficient detail to enable an independent reviewer to determine whether or how all of the requirements of Appendix B and the guidance in all applicable regulatory guides will be satisfied."
- NECNP II.B.3: "The Quality Assurance Organization does not have the independence required by Appendix B, Criterion 1."
- NECNP II.B.4: "The Quality Assurance Program for operations as described in the FSAR does not demonstrate how the Applicant will assure that replacement materials and replacement parts incorporated into structures, systems, or components

important to safety will be equivalent to the original equipment, installed in accordance with proper procedures and requirements, and otherwise adequate to protect the public health and safety. Similarly, the Quality Assurance program does not assure or demonstrate how repaired or reworked structures, systems, or components will be adequately inspected and tested during and after the repair or rework and documented in 'as-built' drawings."

- NECNP II.B.5: "The quality Assurance program for operations as described in the FSAR fails to assure the presence on the operating staff of an adequate number of qualified QA/QC personnel, particularly during off-shifts."
- SAPL Supp. 3: "The applicable requirements of the Commission's Interim Policy Statement issued June 13, 1980, 45 Fed. Reg. 40101 on Nuclear Power Plant Accident Consideration Under the National Environmental Policy Act of 1969 have not been met."
- CCCNH-4: "The Applicant has not adequately demonstrated that it has developed and will be able to implement procedures necessary to assess the impact of an accident, classify it properly, and notify adequately its own personnel, the affected governmental bodies, and the public, all of which is required by 10 CFR 50.47 and Appendix E, and NUREG-0654."
- CCCNH-5: "The Applicant has failed to demonstrate adequate on-site protective measures in

the event of an emergency in accordance with 10 CFR 50.47(a)(b), 10 CFR 50 App. E, and NUREG-0654."

CCCNH-7: "The Seabrook design does not provide an adequate program for monitoring the release of radioactivity to the plant and its environs wither under normal operating conditions or in pre- and post-accident circumstances. Thus the application is not in compliance with general design criteria 63, 64 of Appendix A 10 CFR Part 50, and the requirements of NUREG-0737 and Nureg-0800."

See LBP-82-76, 16 NRC 1029 (September 13, 1982). All other petitions were denied for the reasons set forth in the Order of September 13, 1982, and all other proffered contentions were excluded for the reasons set forth in that Order.

6. Subsequently, the Board received motions for reconsideration (or documents that were treated as motions, for reconsideration) with respect to certain of the excluded contentions. On November 17, 1982, the Board issued its Order on Reconsideration, pursuant to which the following additional contentions were admitted:

NECNP III.1 "The emergency plan does not contain an adequate emergency classification and action level scheme, as required by 10

C.F.R. 50.47(b)(4) and NUREG-0654, in that

- "(a) No justification is given for the classification of various system failures as unusual events, alerts, site area emergencies, or general emergencies.
- "(b) The classification scheme minimizes the potential significance of transients.
- "(c) The Applicants' classification scheme fails to include consideration of specific plant circumstances, such as the anticipated time lag for evacuation due to local problems.
- "(d) The classification scheme fails to provide a reasonable assurance that Seabrook onsite and offsite emergency response apparatus and personnel can be brought to an adequate state of readiness quickly enough to respond to an accident.
- "(e) The emergency action level scheme fails to identify emergency action levels or classify them according to the required responses.
- "(f) The scheme is incapable of being implemented effectively to protect the public health and safety because it provides no systematic means of identifying, monitoring, analyzing, and responding to the symptoms of transients and other indicators that transients may occur."

NECNP III.2

"The emergency plan does not demonstrate the Applicants' ability to respond to failures at both units of the Seabrook reactor, or a failure at one unit which affects the other's capacity to operate safely. Events that could cause a simultaneous emergency at both units include earthquakes, severe storms, loss of offsite power, or degraded grid voltage. This constitutes a violation of 10 CFR 50.47(b)(1), (2), (3), (4), (6), (7), (8), (9), (10), (11), (13) and (15), each of which would involve different actions for a simultaneous event than for an event at a single reactor."

NECNP III.3

"The emergency plan fails to conform to Part IV(F) of Appendix E to Part 50 in that it does not provide for the training of unit shift supervisors to enable them to deal with special problems involved in emergencies, including making choices among alternative responses under stress."

NECNP III.12

"The evacuation time estimates provided by the Applicants in Appendix C of the Radiological Emergency Plan are inaccurate in that they provide unreasonably optimistic estimates of the time required for evacuation. In addition, the estimates provided in the radiological emergency plan are useless to emergency planning because they fail to include bounds of error, to indicate the basis for codes or assumptions used for the time estimates, to indicate whether the model used is static or dynamic, to provide a sensitivity analysis of the estimates or to reveal the underlying assumptions."

NECNP III.13

"The preliminary evacuation time estimates submitted by the Applicants assume favorable weather conditions and thus fail to account for the worst case situation of adverse weather conditions developing on a busy summer weekend afternoon. Nor do they take into account evacuee directional bias, evacuation shadow, or reasonably expected vehicle mix. As a result, the estimates are unduly optimistic and useless to future planning."

See LBP-82-106, 16 NRC 1649 (November 17, 1982). Other proffered contentions were excluded for the reasons set forth in that Order.

7. Between September 13, 1982 and August 16, 1983, the Board received and allowed petitions for leave to participate as "interested states" from the following local governments:

Brentwood, N.H.

Hampton Falls, N.H.

Rye, N.H.

Kensington, N.H.

Portsmouth, N.H.

Newbury, Massachusetts

Newburyport, Massachusetts

Amesbury, Massachusetts

Exeter, N.H.

Seabrook, N.H.

Salisbury, Massachusetts

North Hampton, N.H.

8. Prior to the deadline established by the Board in its Memorandum and Order of September 13, 1982, the Board received motions for summary disposition pursuant to 10 CFR § 2.749 as follows:

Motions by the Applicants:

| <u>Contention</u> | <u>Date</u> |
|-------------------|-------------|
| NECNP I.A.2 | 2/11/83 |
| NECNP I.B.1 | 2/9/83 |
| NECNP I.C | 3/9/83 |
| NECNP I.D.1 | 2/11/83 |
| NECNP I.D.2 | 2/11/83 |
| NECNP I.D.3 | 2/11/83 |
| NECNP I.D.4 | 2/7/83 |
| NECNP I.F | 3/7/83 |
| NECNP I.G | 2/11/83 |
| NECNP I.I | 2/7/83 |
| NECNP I.L | 2/7/83 |
| NECNP I.M | 2/9/83 |
| NECNP I.N | 2/7/83 |
| NECNP I.U | 2/14/83 |

| | |
|--------------|---------|
| NECNP II.B.1 | 2/14/83 |
| NECNP II.B.3 | 2/14/83 |
| NECNP II.B.4 | 2/14/83 |
| NECNP II.B.5 | 2/14/83 |
| NECNP III.2 | 2/14/83 |
| NECNP III.12 | 2/14/83 |
| NECNP III.13 | 2/14/83 |
| NH-9 | 2/11/83 |
| NH-13 | 2/11/83 |
| NH-21 | 2/14/83 |
| SAPL Supp. 3 | 2/11/83 |
| CCCNH-5 | 2/14/83 |
| CCCNH-7 | 2/11/83 |

Motions by the Staff:

| <u>Contention</u> | <u>Date</u> |
|-------------------|-------------|
| NECNP I.B.1 | 2/28/83 |
| NECNP II.B.3 | 2/28/83 |
| NECNP II.B.4 | 2/28/83 |
| NECNP II.B.5 | 2/28/83 |
| NH-13 | 2/14/83 |

Motions by SAPL:

| <u>Contention</u> | <u>Date</u> |
|-------------------|-------------|
| SAPL Supp. 3 | 2/11/83 |

In addition, the Staff supported the motions for summary disposition filed by the Applicants as to the following contentions: NECNP I.A.2, NECNP I.D.1, NECNP I.D.3, NECNP I.G, NECNP I.I, NH-9 (as noted), NH-13, and SAPL Supp. 3. The Board did not receive motions for summary disposition with respect to the contentions admitted by the orders of September 13, 1982, and November 17, 1982, from any other party.

9. On March 11, 1983, the Applicants filed a motion to dismiss the contentions of CCCNH, and to dismiss CCCNH as a party, on the ground of CCCNH's failure to comply with the Board's Order of February 16, 1983, compelling CCCNH to answer certain interrogatories propounded to it by the Applicants and the Staff. On March 15, 1983, the Staff also filed a motion for relief grounded on CCCNH's failure to comply with the Board's Order of February 16, 1983. On April 18, 1983, the Board issued its Memorandum and Order dismissing the contentions of CCCNH and dismissing CCCNH as a party for the reasons set forth therein.

10. Between September 13, 1982 and April 7, 1983, the following contentions were withdrawn by NECNP:

NECNP I.C
NECNP I.D.1
NECNP I.D.3
NECNP I.D.4
NECNP I.F
NECNP I.G
NECNP I.I
NECNP I.L
NECNP I.M
NECNP I.N
NECNP I.U
NECNP II.B.1
NECNP II.B.5
NECNP III.2

11. A further prehearing conference was held on April 7 and 8, 1983, to consider, inter alia, the pending motions for summary disposition and the motions to dismiss the CCCNH contentions. On May 11, 1983, the Board issued its Memorandum and Order taking the following action on the pending motions for summary disposition as to the remaining contentions:

| <u>Contention</u> | <u>Action</u> |
|-------------------|---|
| NECNP I.A.2 | Motion ALLOWED; Contention DISMISSED |
| NECNP I.B.1 | Motion ALLOWED; Contention DISMISSED |
| NECNP I.D.2 | DEFERRED, pending Staff review of Salem event |
| NECNP II.B.3 | Motion ALLOWED; Contention DISMISSED |
| NECNP II.B.4 | Motion ALLOWED; Contention DISMISSED |
| NECNP III.12 | DEFERRED, pending Staff issuance of SER Supp. on on-site emergency planning |
| NECNP III.13 | DEFERRED, pending Staff issuance of SER Supp. on on-site emergency planning |
| NH-9 | Motion ALLOWED; Contention DISMISSED |
| NH-13 | Motion ALLOWED; Contention DISMISSED |
| NH-21 | DEFERRED, pending Staff issuance of SER Supp. on on-site emergency planning |
| SAPL Supp. 3 | Motion ALLOWED; Contention DISMISSED |

12. On April 21, 1983, NECNP filed a motion to amend its petition to intervene, for the purpose of propounding an additional contention relating to 10 CFR § 50.49. The motion was opposed by the Applicants in a filing submitted April 29, 1983, and by the Staff in a filing submitted on May 9, 1983. On May 13, 1983, the

Board issued its Memorandum and Order denying NECNP's motion, for the reasons set forth therein.

13. On May 16, 1983, SAPL filed a motion to amend its petition to intervene, for the purpose of propounding an additional contention relating to inadequate core cooling detection instrumentation. The motion was opposed by the Applicants in a filing submitted May 24, 1983, and by the Staff in a filing submitted on June 6, 1983. On June 20, 1983, the Board issued its Memorandum and Order denying SAPL's motion, for the reasons set forth therein.

14. On April 19, 1983, the Advisory Committee on Reactor Safeguards issued its "Report on Low Power Operation of the Seabrook Station, Units 1 and 2," which was received into evidence as Staff Exhibit 1B (Safety Evaluation Report, Supplement 2, Appendix I). The Committee's report concludes that, "if due regard is given to [certain items mentioned in the letter as to which the Committee wished to be kept informed], and subject to satisfactory completion of construction, staffing, and preoperational testing, there is reasonable assurance that the Seabrook Station, Units 1 and 2, can be operated at core power levels up to 5

percent of full power without undue risk to the health and safety of the public."

15. On May 11, 1983, 1983, the Staff published its SER Supplement No. 1, dealing with, inter alia, evacuation time estimates. Pursuant to the direction contained in the Board's Memorandum and Order of May 11, 1983, at 7, responses were filed by the Staff (June 6, 1983), in support of the pending motion for summary disposition of contentions NECNP III.12 & 13, and by NECNP (June 1, 1983), in opposition to that motion. Responses were not filed by any other party. On June 30, 1983, the Board issued its Memorandum and Order allowing the motion in all respects save as to two issues. The Board rephrased the contention thus:

"NECNP III.12/III.13 Evacuation Time Estimates

"The evacuation time estimates provided by Applicants in Appendix C of the Radiological Emergency Plan are deficient in failing to include an estimate of:

- "1. the times for evacuation during adverse weather conditions deveoping on a busy summer weekend; and
- "2. the times for simultaneous evacuation of beach areas lying NE to SSE of the Seabrook site."

16. On June 13, 1983 and June 20, 1983, the Applicants wrote to the Board and parties advising that certain of the contentions admitted for the first phase of these proceedings would not be ready for litigation at the times set forth by the Board in its Order regarding scheduling, and requesting that those contentions be deferred (either to the second phase of evidentiary hearings or, perhaps, for subsequent motions for summary disposition). The contentions to be thus deferred were:

| | |
|-------------|--|
| NH-21 | Protective Action On-Site (partially) |
| NECNP III.3 | Shift Supervisor Training |
| NECNP NH-10 | Control Room Design |
| NECNP I.D.2 | Manual Reactor Trip |

No party objected to the suggestion of the Applicants.

17. On July 15, 1983, MassAG filed a proposed "contention" relating to evacuation time estimates. This pleading was in effect a motion for leave to assert a late-filed contention. The contention proposed to be advanced was within the scope of Contention NECNP III.12 and .13, previously admitted (November 17, 1982) and previously partially disposed

of summarily (June 30, 1983), and the effect of the proposed "contention," if admitted, would have been to contradict the Board's order granting partial summary disposition of those contentions. The "contention" was opposed by the Applicants on July 26, 1983 and by the Staff on August 1, 1983. On August 5, 1983, the Board denied admission of the proposed "contention."

18. Accordingly, hearings on the first evidentiary phase began in the Strafford County Court House, Dover, New Hampshire, on August 16, 1983, on the following contentions:

| | |
|--------------------|--|
| NECNP I.B.2 | Equipment Environmental Qualification Time Durations |
| III.1 & NH-20 | Classification Scheme |
| NECNP III.12 & .13 | Evacuation Time Estimates (as revised by the Board on 6/30/83) |

A total of 8 days of hearings (including limited appearance sessions) were held.

19. In addition, the Board received limited appearance statements on August 20, August 22, August 26 and August 31.

20. These are the Board's findings of fact and rulings of law upon the contentions litigated in this phase of the hearings.

Contention NECNP III.1 and NH-20

Classification and Emergency Action Levels

(a) Introduction

21. These contentions provide as follows:

"The accident at TMI demonstrated the inability of all parties involved to comprehend the nature of the accident as it unfolded; communicate the necessary information to one another, to the Federal, state and local governments and to the public in an accurate and timely fashion; and to decide in a timely manner what course to take to protect the health and safety of the public. The Applicant[s] in these proceedings [have] not adequately demonstrated that [they have] developed and will be able to implement procedures necessary to assess the impact of an accident, classify it properly, and notify adequately [their] own personnel, the affected government bodies, and the public, all of which is required under 10 C.F.R. 50.47 and Appendix E and NUREG-0654."

(NH-20) and as follows:

"The emergency plan does not contain an adequate emergency classification and action level scheme, as required by 10 C.F.R. 50.47(b)(4) and NUREG-0654, in that

"(a) No justification is given for the classification of various system failures as unusual events, alerts, site area emergencies, or general emergencies.

- "(b) The classification scheme minimizes the potential significance of transients.
- "(c) The Applicants' classification scheme fails to include consideration of specific plant circumstances, such as the anticipated time lag for evacuation due to local problems.
- "(d) The classification scheme fails to provide a reasonable assurance that Seabrook onsite and offsite emergency response apparatus and personnel can be brought to an adequate state of readiness quickly enough to respond to an accident.
- "(e) The emergency action level scheme fails to identify emergency action levels or classify them according to the required responses.
- "(f) The scheme is incapable of being implemented effectively to protect the public health and safety because it provides no systematic means of identifying, monitoring, analyzing, and responding to the symptoms of transients and other indicators that transients may occur."

(NECNP III.1)

22. The witnesses offered on this contention were the Applicants' Panel (Messrs. Anderson, Thomas and MacDonald) and the Staff Witness (Mr. Sears). Mr. MacDonald wrote the classification scheme and emergency action levels and Messrs. Thomas and Anderson reviewed them. Mr. Sears is the Staff reviewer in this area; he has reviewed the written procedures and has personally

interviewed the persons who will be responsible for their implementation when the Seabrook units go into operation. All four witnesses are qualified to express the opinions set forth in their testimony. Documentary evidence received consisted of the classification scheme and emergency action levels themselves. App. Dir. Exh. 1. No other witnesses or evidence were offered by any party.

(b) Findings of Fact

23. The emergency classification scheme and emergency action levels are set forth in Section 5 of the "Seabrook Station Radiological Emergency Plan" (hereinafter "SS-REP"), and the appendices thereto. Section 5 was amended by the Applicants subsequent to the admission of these contentions. Letter of Mr. John DeVincentis, Project Manager, Public Service Company of New Hampshire to United States Nuclear Regulatory Commission dated June 27, 1983 ("Letter SBN-525"). A copy of the letter and enclosure went to all parties to this action; subsequently the enclosure was formally adopted as an amendment to the FSAR. See FSAR Amendment 49 (May, 1983). App. Dir., Post Tr. 1483 at 14 & Ex. 1 thereto. Section 5, as amended, provides a

detailed emergency classification and emergency action level scheme.

24. Potential emergencies at Seabrook are classified for purposes both of the Applicants' own on-site reactions and for the purpose of triggering notification to and any activation of the emergency response organizations of the federal, state and local governmental authorities. Id. at 13. Conditions potentially leading to emergencies are classified into one of four classes:

1. Unusual Event
2. Alert
3. Site Area Emergency
4. General Emergency

Id.; SS-REP § 5.1.

25. The Applicants' classification scheme and emergency action levels are based upon a "symptomatic approach" to accident recognition. The emergency (or potential emergency) classes are defined in terms of the observable, objective symptoms of non-normal conditions that an operator will see (rather than, for instance, upon some in-plant condition that might or might not be recognized to exist given whatever symptoms occurred). App. Dir., Post Tr. 1483 at 14-15;

Ex. 1 at p. 5-1. Moreover, for those symptoms indicative of some challenge to one of the five critical safety functions of the reactor systems (i.e., subcriticality, core cooling, heat sink, reactor coolant system integrity and containment integrity), the symptoms are related to logic trees, the conclusions of which are displayed in color-coded "status" indicators on the control board. Id. These Critical Safety Function ("CSF") status trees are used to (1) monitor station safety status, (2) alert operators to potential emergency conditions, and (3) direct operators to appropriate CSF restoration procedures. Id. at 16.

26. The CSF status indications, and the conditions that will produce them, are set forth for each of the four emergency classifications in the Applicants' direct testimony. App. Dir. Post Tr. 1483, Ex. 1, Tables A.1 through A.5.

27. In addition, the Applicants' classification scheme and emergency action levels contain certain events that, though they do not represent (at least initially) challenges to a critical safety function, are categorized into to the classification scheme. Id.

at 16-17. These are also set forth in detail in Tables A.1 through A.5.

28. This symptomatic approach to accident classification and emergency action levels has been reviewed by and approved by the NRC Staff. Tr. 1699. The system serves the purpose that emergency actions levels are supposed to serve "very well," and is, in fact, the "best approach" that the Staff reviewer and witness has seen so far. Tr. at 1721.

29. There is no event that ought to be included in the classification scheme that is not. Tr. 1722. (During the hearings, there were only two items on which witnesses were questioned in this regard. One involved the evacuation of the control room without control of the remote shutdown panel (in fact, there are two redundant remote shutdown locations at Seabrook, FSAR § 7.4.2, as amended by Amendment 49). Tr. 1726. The Staff witness did not believe that this was a credible scenario, id.; it is, in any event, classified in the Applicants' classification scheme. App. Dir., Post Tr. 1483, Ex. 1, Table A.1 (Item 12a), Table A.3 (Item 12b), Table A.5. The second was phrased in terms of "a fire affecting one train of

safety related equipment, with a potential for affecting the other train" Tr. 1727. However, this question did not distinguish between controlled and uncontrolled fires. (Under the Applicants' classification scheme and emergency action levels, a "controlled fire which affects only one train of safety-related equipment with the potential for affecting the other train" is an Alert (Table A.2, Item 11a), while an "uncontrolled fire which affects safety-related equipment" is a Site Area Emergency (Table A.3, Item 11b). The former is consistent with NUREG-0654, Rev. 1, App. 1, p. 1-9 (item 13), and the second is consistent with id., p. 1-13 (item 11).) The Applicants witnesses were not questioned on this score.)

30. As set forth in the Classification Scheme in its present form, certain of the "setpoint" values remain to be calculated. In every case, however, the basis for the setpoint has been set forth. For the Critical Safety Functions, each of the setpoint values is described in qualitative terms in the footnotes following Table A.5. The only other value to be supplied later (Item 17f) is the value in terms of wind

speed and duration of the Seabrook design-basis hurricane. Tr. 1521. See NUREG-0654, App. 1, p. 1-10, item 17(d). Each of these setpoints is, in fact, the generic setpoint recommended by the Westinghouse Owners Group for emergency operating procedures, and the only task remaining is to calculate the Seabrook-specific instrumentation values that equate to these conditions or events. Tr. 1491, 1492-93. The qualitative setpoints are not, however, tentative, and the process of calculating the Seabrook-specific values is presently underway. Id. at 1545. The setpoints are presently final, however, in terms of the judgments they involve.

31. The classification scheme and emergency action levels also serve the function of providing a basis, together with other information, including information about in-plant conditions, of making protective action recommendations to the state and local officials, which are made in connection with the initial notification. Tr. 1502.

32. The Applicants have committed to notification within 15 minutes of the New Hampshire and Massachusetts State Police in the event of an

emergency. Tr. 1715-16. The persons who will be responsible for accident classification and for the notification have already been hired and are presently in training. They are thoroughly familiar with the classification scheme and the emergency action levels, and they understand their obligation to make the notification. Tr. 1715-16, 1730-32. Their training cannot be regarded as incomplete even though the preparation of emergency implementation procedures is not yet complete. Id.

33. The means for the making of prompt notification to the New Hampshire and Massachusetts State Police organizations will be in place. In addition to regular telephone lines (which exist now), the Nuclear Alert System, consisting of microwave and leased-line communications networks, will permit direct communication to each organization by the operating personnel. Tr. 1708 ff.

(c) Rulings of Law

34. The Commission's Regulations require the Applicants' on-site emergency plan to contain, inter alia:

"A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters,"

See also 10 CFR Part 50, App. E, § IV.B.

35. Guidance as to the objectives for emergency plans is contained in a publication entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654, FEMA-REP-1. This document is not a regulation and does not impose regulatory requirements on the Applicants; it functions, rather, like a Regulatory Guide in that it describes one satisfactory method by which the Commission's regulations may be satisfied. See Louisiana Power & Light Company (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC ____, CCH Nuc. Reg. Rptr. ¶ 30,796, at p. 30,878 (June 29, 1983) ("In addition, NUREG-0654 . . . provides guidance for developing and reviewing emergency plans") (emphasis added).

36. The Applicants' classification scheme and emergency actions levels fully satisfy the requirements of 10 CFR § 50.47 and Appendix E. The accident

classification scheme follows the standard format of NUREG-0654. The emergency actions levels provide a basis for the prompt classification of events by the facility operators based on observable events. In addition to notification, the emergency action levels provide a basis for the selection of mitigation strategies and, together with information about in-plant conditions, the making of protective action recommendations to State and local governmental officials.

37. There is no requirement that emergency action levels also correlate specific in-plant conditions to specific recommendations for protective actions (i.e., that there be similar tables dictating a specific recommendation for each given condition). As NUREG-0654 makes clear, the protective actions are to be made on an ad hoc basis given all the conditions at the time, including but not limited to accident classification. See, e.g., id., App. 1, p. 1-12: In a site area emergency, after giving notice to state and local officials, the operators are to:

"Provide meteorological and dose estimates to offsite authorities for actual releases . . ."

and to:

"Provide release and dose projections based on available plant condition information and foreseeable contingencies."

The offsite authorities, on the other hand, are expected to:

"If sheltering near the site is desirable, activate public notification system within at least 2 mile of site . . ."

and to:

"Continuously assess information from licensee and offsite monitoring with regard to changes to protective actions already initiated for public and mobilizing evacuation resources."

For the corresponding activities in the case of a general emergency, see id. at p. 1-16.

38. Nothing in either the deferral of certain numerical values in the emergency action levels or the fact that the Westinghouse Owners' Group emergency operating procedures are subject to continuing scrutiny or review precludes a favorable judgment on these contentions. For the former, the qualitative judgments constituting each of the so-called "setpoints" have already been made, are fully disclosed in the document (more so than they will be once the numerical values

have been established, Tr. 1494-95), and require only relatively ministerial calculational work to convert them into precise Seabrook-specific values. For the latter, the evidence does not lead to a conclusion that either the emergency action levels or the Westinghouse Owners' Group emergency operating procedures are any more "tentative" than any other document subject to continuing scrutiny. No significant changes are expected and absolutely "final" documentation (in the sense of no possibility of future change) is neither required nor particularly desireable. Louisiana Power & Light Company (Waterford Station, Unit 3), ALAB-732, 17 NRC ___, CCH Nuc. Reg. Rptr. ¶ 30,796, at p. 30,884 (June 19, 1983).

39. Procedures for the implementation of emergency plans, though required to be submitted to the appropriate NRC Regional Administrator at least 180 prior to the issuance of an operating license, are not a part or prerequisite to the "reasonable assurance" finding to be made pursuant to 10 CFR § 50.47(a)(1) and there is, therefore, no occasion for litigation regarding them in an operating license proceeding. Louisiana Power & Light Company (Waterford Station,

Unit 3), ALAB-732, 17 NRC ____, CCH Nuc. Reg. Rptr.

¶ 30,796, at p. 30,886 (June 29, 1983).

Contention NECNP I.B.2

Electrical Equipment Environmental Qualification
Time Duration

(a) Introduction

40. This contention reads as follows:

"The Applicant[s have] not satisfied the requirements of GDC 4 that all equipment important to safety be environmentally qualified because it has not specified time duration over which the equipment is qualified."

41. The witnesses offered on this contention were the Applicants' Panel (Messrs. Maidrand and Anderson) and the Staff Panel (Messrs. Lagrange and Walker). No other witnesses were offered by any party and no documentary evidence was received.

(b) Findings of Fact

42. Contrary to the assertion of the contention, the Applicants have specified the time durations for which electrical equipment required to be environmentally qualified for a harsh environment will remain qualified.

43. The question of a time duration for environmental qualification breaks down into two

constituent questions. The first relates to the period of time for which the equipment will be qualified to perform in a normal environment without losing its ability to survive an accident. The second is the period of time (following the hypothetical accident) that the equipment will remain qualified to perform its function. These are referred to by the Applicants as the "pre-accident qualification duration" and the "post-accident qualification duration" respectively. See App. Dir., Post Tr. 970 at 7-8.

44. The pre-accident qualification duration for Seabrook electrical equipment qualified for the harsh environment (other than electrical equipment supplied by the Nuclear Steam Supply System vendor ("NSSS Electrical Equipment")) is the life of the plant. If equipment cannot be qualified for the life of the plant, then a shorter period is specified for that equipment and the equipment must be replaced or requalified before the period elapses. Id. at 8. This standard is generic for all equipment required to be environmentally qualified for a harsh environment.

45. The post-accident qualification duration for equipment required to be environmentally qualified for

the harsh environment (other than NSSS Electrical Equipment) is one year. In the event that any equipment cannot be qualified to remain functional in the harsh environment for one year, then a specific duration will be established for that equipment, based on the duration tht the equipment is required to remain operational in the case of an accident in order to perform its safety function, plus a margin. This duration standard is generic to all equipment required to be environmentally qualified for a harsh environment. Id. at 8-9.

46. These standards apply to all equipment that is considered by the Applicants to be "safety related," which, as they use the term, includes all equipment required to function in order to perform a safety function and all equipment required not to fail in order not to interfere with the performance of any safety function. Tr. 981, 985. This includes all equipment that falls within the definition of "important to safety" in 10 CFR § 50.49. Tr. 981.

47. The environmental qualification time durations for this equipment meet or exceed the requirements of GDC 4.

48. The NSSS Electrical Equipment is qualified using specific qualification times based on the accident scenarios for each specific equipment application. These are set forth in Table 3.11(N)-3 in FSAR § 3.11. Applicability to the Seabrook conditions will be verified by comparing the qualification profile to ensure that the test profiles envelope the Seabrook profile. This qualification meets or exceeds GDC 4, Reg. Guide 1.89, and IEEE 323-1974. App. Dir., Post Tr. 970 at 12.

(b) Rulings of Law

49. The Applicants have not failed to satisfy the requirements of General Design Criterion 4 with respect to the time duration of the environmental qualification of electrical equipment required to be environmentally qualified.

Contention NECNP III.12 and .13

Applicants' Evacuation Time Estimates

(a) Introduction

50. Contention NECNP III.12/III.13 (as rephrased by the Board) is

"The evacuation time estimates provided by Applicants in Appendix C of the Radiological

Emergency Plan are deficient in failing to an include an estimate of:

"1. the times for evacuation during adverse weather conditions developing on a busy summer weekend; and

"2. the times for simultaneous evacuation of beach areas lying NE to SSE of the Seabrook site." ASLB Mem. & Ord. (June 30, 1983).

51. The basic purposes for which evacuation time estimates are made are (1) to provide decisionmakers, at the time of an accident, information upon which they can base a decision as to the feasibility of evacuation as a protective measure given the situation at hand and (2) to provide emergency planners information as to potential bottlenecks which would be mitigated by traffic management. Tr. 1078-79; Urbanik Rebuttal, Post Tr. 1304 at 2; Tr. 1118-19.

(b) Findings of Fact

52. The various time estimates set out by the Applicants in Appendix C of the Radiological Emergency Response Plan (RERP) were derived through utilization of a computer model; Applicants' response to the contention at bar required that in addition to those

originally reported in Appendix C to the RERP, two additional model runs (with appropriate assumptions) be utilized to address the subject scenarios. App. Dir., Post Tr. 1016 at 19-20; Urbanik Direct, Post Tr. 1304 at 2-3.

53. The Applicants' model is a numerical transportation network simulation model developed specifically to provide evacuation clear time estimates and related information for use in emergency planning. App. Dir., Post Tr. 1016, Exh. 2, at A-1.

54. As an initial step, the transportation network is defined as a series of links and nodes, with entry nodes used to introduce vehicles onto the network and exit nodes serving as points of egress from the area being evacuated. Id.

55. The necessary inputs to the model include link length; lane width and number of lanes; roadway type; location within metropolitan area; free flow speed; intersection approach width; special turning lanes; traffic control; intersection approach green times; and numbers of vehicles to be evacuated. Id.

56. To provide the necessary data on number of vehicles, the Applicants performed analyses of summer

and off season vehicle demand for various types of populations. App. Dir., Post Tr. 1016, Exh. 2 at 7-10. It was assumed that one vehicle would be needed for every three permanent residents; id. at 8; and that each unit occupied by seasonal residents would give rise to a demand of two vehicles, id. (an assumption which also reasonably accounts for those daily tourists who park their cars in privately-owned driveways, Tr. 1077). The demand resulting from the daily transient population was estimated by assuming one vehicle per hotel or motel unit or campsite plus full capacity use of beach, amusement, Seabrook Station and shopping facility parking lots. App. Dir., Post Tr. 1016, Exh. 2 at 9. The Board finds that all of these assumptions are well founded and reasonable.

57. An extensive inventory also was done of the street and road network in the area for purposes of defining the transportation network. Id. at 5-6.

58. Entry nodes were selected in light of, and as surrogates for, the actual location of parking lots and driveways, etc. from which cars will enter the network. Id. at 6; Tr. 1046.

59. The model assumes that the road network is operating in its normal manner, with no special traffic controls in place; it was assumed that existing traffic patterns (i.e., one-way, two-way operation) prevail; emergency planning personnel/traffic controllers are not available; and no specified evacuation routings are enforced. App. Dir., Post Tr. 1016, Exh. 2 at 12; Tr. 1076.

60. The model also assigns various priorities to routes at intersections where drivers have a choice and attempts to account for rational driving behavior by causing the selection of a different route if, for example, the next link in a straight ahead direction is clogged. App. Dir., Post Tr. 1016, Exh. 2 at A-2; Tr. 1039-41.

61. For the adverse weather scenario, a 30% roadway capacity reduction was assumed which is conservative in light of the available literature, App. Dir. Post Tr. 1016, Exh. 2 at 11; Tr. 1070. See also Herr Dir., Post Tr. 1196 at 3.

62. The model, and the estimates themselves derived from it, do not account for so-called notification time as such; App. Dir. Post Tr. 1016,

Exh. 2 at 11; Tr. 1035, but notification time can be taken into account, if deemed necessary for the purpose of which the estimates are being put at any given time, by simply adding 15 minutes to the time estimate being considered, Tr. 1074-75; Tr. 1339-40.

63. While the model is generically capable of accounting separately for "preparation time," Tr. 1038-39, 1044, 1047, in the case of Seabrook, there is no need to do so given the density of the beach area population, because the preparation time of specific individuals or groups becomes irrelevant due to the inability of the network to accept everyone at once; i e., the slower preparers will simply be on the end of the queues. Tr. 1049-52; Tr. 1313-14. The Applicants' have done sensitivity studies which demonstrate that varying the loading rates to account for preparation times has essentially no effect upon the resulting clear time estimate. Tr. 1054-55, 1057-58.

64. The Massachusetts Civil Defense Agency has stated that its prior experience with the Applicants' model and their consultant in connection with the Pilgrim Station in Plymouth, Mass. has resulted in that agency having a high degree of confidence in the model

and the consultant. App. Dir., Post Tr. 1016, Exh. 2, App. C, p. 1. The Staff deems the model to be an acceptable methodology under the guidance of NUREG-0654/FEMA-REP-1, REV. 1, Appendix 4. Urbanik Dir., Post Tr. 1304 at 4.

65. No attempt has been made to run the model assuming specific types of accidents in specific places because such exercises would involve sheer speculation as to events. Tr. 1114. However the fact that conservative capacity utilization assumptions have been used does account, to some extent in an indirect way, for such things as accidents or cars running out of gas. Tr. 1343-46.

66. It has been suggested that the model does not account for such phenomena as vehicles going into, or back and forth within, the area (as opposed to leaving at once) in order to go from work to home to pick up family or to perform emergency services. See, e.g., Mark Dir., Post Tr. 1190 at 7-8. However, larger employers will not be operating at the peak population time assumed (Sunday afternoon), Tr. 1102; and the model assumes two-way traffic on all roads normally two-way, Tr. 1103. Thus it is doubtful that

consideration of such phenomena would result in any meaningful alteration of the clear time estimate. See Tr. 1436, 1439.

67. It has been suggested that driver discipline might break down due to panic, but EPA's study of evacuation risks show that in fact panic does not prevail during emergency evacuations. Tr. 1098-99. Nor are there any abnormal population behavioral characteristics to be accounted for in the Seabrook area. Tr. 1350-52.

68. It has been suggested that the Applicants' estimates should not be deemed of value because a number of other evacuation time estimates have been done and times vary greatly. See, e.g., Herr Dir., Post Tr. 1196 at 12. However, the various estimates incorporate varying assumptions. Urbanik Rebuttal Post Tr. 1304 at 4. Furthermore, while the Staff's expert derived a much higher time using a different model which was simplistic, Tr. 1378, and which used some admittedly, unrealistic assumptions, Tr. 1326-27, his view was that the Applicants' times were easily achievable with a minimum of traffic control. Tr. 1316-17, 1330, 1371-73. In addition, New Hampshire's

own estimates are comparable with those of the Applicants. Tr. 1329.

69. Based upon all of the foregoing, the Board finds that the model used by the Applicants was appropriate for the subject scenarios.

70. The Applicants' clear time estimates for the summer weekend, adverse-weather scenario is 9 hours and 15 minutes; estimates for fair weather weekend days and weekdays are 6 hours 5 minutes and 4 hours 10 minutes respectively. All of these scenarios included simultaneous evacuation of all the beach areas. App. Dir., Post Tr. 1016 at 19-20.

71. These compare well with what little empirical evidence as exists on this topic. Professor Herr was able to drive into the area on a foggy day during which he claims the Seabrook area was full to capacity or close to it, drive the entire New Hampshire coastline making frequent stops and double back and leave the area all within six hours. Tr. 1277-78. And Chief Mark testified that at 10:00-11:00 p.m. one night 7,000 people were evacuated from the beach area in about three and one-half hours in anticipation of a hurricane. Mark Dir., Post Tr. 1190 at 7.

72. The Applicants' estimates are consistent with the Massachusetts Civil Defense Agency's estimates which were based upon experience, and upon some basic analyses using techniques developed in the context of the FEMA Crisis Relocation Planning Program. App. Dir., Post Tr. 1016, Exh. 2, App. C at p. 1.

73. Based upon all of the foregoing the Board finds that the Applicants' estimates of evacuation times for the subject scenarios are well founded, reasonable and adequate for the purposes intended and required.

(c) Rulings of Law

74. Insofar as 10 CFR § 50.47 and 10 CFR 50, App. E require the preparation and submission of evacuation time estimates, these regulations have been complied with by these Applicants.

Respectfully submitted,



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Dated: October 5, 1983

CERTIFICATE OF SERVICE

I, Robert K. Gad III, one of the attorneys for the Applicants herein, hereby certify that on October 5, 1983, I made service of the within Applicants' Proposed Findings of Fact and Conclusions of Law by mailing copies thereof, postage prepaid, to:

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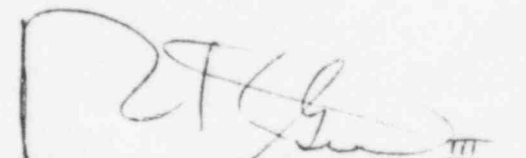
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