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UNITED STATES NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of )  
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Public Service Company of )  
New Hampshire, et al. )  
 )  
(Seabrook Station, Units 1 & 2) )  
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OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

Docket Nos. 50-443 OL  
50-444 OL  
OFFSITE EMERGENCY  
PLANNING

NEW ENGLAND COALITION ON NUCLEAR POLLUTION'S  
PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW  
REGARDING PERSONNEL ADEQUACY AND TRANSPORTATION  
AVAILABILITY IN THE NEW HAMPSHIRE RERP, REV. 2

The New England Coalition on Nuclear Pollution ("NECNP") submits the following proposed findings of fact and conclusions of law regarding the issues of personnel adequacy and transportation availability in the New Hampshire Radiological Emergency Response Plan, Rev. 2 (hereafter "RERP"). NECNP also adopts and incorporates by reference the proposed findings submitted by the Seacoast Anti-Pollution League, the Town of Hampton, and the Commonwealth of Massachusetts.

1. BACKGROUND

1.1. With the exception of Proposed Finding ("PF") 1.10, NECNP does not dispute the findings in Applicants' Background and Introduction Section.

3. RESPONSE PERSONNEL ADEQUACY

3.1. Findings of Fact

3.1.1. NECNP does not dispute Applicants' findings of fact in PFs 3.1.1 - 3.1.3.

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3.1.2. In support of their testimony regarding the adequacy of personnel to respond to an accident at Seabrook, Applicants offered a document entitled "Summary of Personnel Resource Assessment for the New Hampshire Radiological Emergency Response Plan," dated August, 1987 (hereafter "Summary"). The Summary described a personnel survey conducted by Applicants. Applicants' Exhibit 1, as corrected by Applicants' Exhibit 1A, appearing Post Tr. 4685.

3.1.3. The Summary purported to establish a) that the local governments in the Seabrook Emergency Planning Zone ("EPZ ") have sufficient personnel to adequately respond to an emergency at Seabrook; and b) that the State of New Hampshire has adequate personnel to provide assistance to local governments, as discussed in Volume 2, Appendix G of the New Hampshire Radiological Emergency Response Plan ("RERP"), Revision 2.

3.1.4. Intervenors offered the testimony of Clifford J. Earl regarding the Summary. Earl Dir. Test, Post. Tr. 3776; Earl Rebuttal Test., Post Tr. 8915. Mr. Earl is an experienced, qualified expert in the field of personnel resource planning. Neither Applicants nor the NRC Staff challenged Mr. Earl's qualifications or cross-examined him regarding his testimony. While Mr. Earl is not an emergency planner, his expertise in the field of personnel resource management makes him highly qualified to evaluate and testify on the adequacy of Applicants' Summary. It should be noted that Applicants had no special expertise in

personnel resource planning; in fact, the testimony showed that the survey was conducted in part by trainees. Tr. 3257.

3.1.5. Mr. Earl testified that he found four serious weaknesses in the Summary: (1) failure to provide definition of the key term "availability;" (2) failure to quantify the workload for each position to be filled; (3) the ambiguity of the "walk-through" procedures performed by Applicants for the purpose of assessing staffing requirements; and (4) the apparent lack of consideration of potentially critical variables, such as the amount of time required to implement protective actions. Earl Rbt1. Test. at 2, Post Tr. 8915.

3.1.6. Mr. Earl's evaluation and conclusions were confirmed by Applicants' testimony, which also revealed the lack of consistent data sources, and a weak managerial and supervisory structure for conduct of the survey, which further undermined the reliability of the Summary. Id. at 3.

3.1.7. In preparation of the survey, the techniques used did not meet even the minimum standards employed by resource planners to predict personnel resource needs or availability. These minimum standards include (1) use of consistent data sources, (2) the definition of key terms, (3) the definition of key assumptions, (4) clear and consistent definition of the methodology to be used, and (5) the use of controls to assure the consistency and accuracy of data collection and analysis. Id. at 4-5.

3.1.8. Mr. Earl also stated that he does not believe that the methodology used to gather the data is defined well enough that it can produce reliable results in the future, when Applicants have testified that it will be used to update the personnel data and possibly form the basis for decisions during a radiological emergency at Seabrook. Id. at 3.

3.1.9. Based on these observed weaknesses, Mr. Earl found unreliable the Summary's principal conclusions that a) the local governments in the Seabrook Emergency Planning Zone ("EPZ") have sufficient personnel to adequately respond to an emergency at Seabrook, and b) the State of New Hampshire has adequate personnel to provide assistance to local governments, as discussed in Volume 2, Appendix G of the New Hampshire Radiological Emergency Response Plan, Revision 2. Id. at 2.

3.1.10. Mr. Earl noted that his criteria do not include complete accuracy of data obtained. As Mr. Strome noted during the proceedings, the numbers are unlikely to ever be "totally accurate." Tr. at 3336. The key considerations are whether the numbers are sufficiently reliable to (1) predict personnel resource needs and availability in the event of a radiological emergency, and (2) permit decision-makers to make an informed judgment. Earl Rbtl. Test. at 7.

3.1.11. When asked during the hearing to define the term "available," Applicants' witnesses gave definitions that were ambiguous and subject to varying interpretations -- or

misinterpretations. Mr. Renz, the person responsible for assembling the Summary and partially responsible for the conclusions, stated the definition from an emergency planning perspective: "...the term denotes persons that are candidates for fulfilling, or are on hand for fulfilling emergency response positions." Tr. 3254. On the other hand, Mr. Callendrello, who had general supervisory responsibility for the survey and Summary, testified that "[t]he definition that we used is those personnel that are at hand; those personnel that are within the organizations that we identified as potential personnel resource pools." Tr. 3314.

3.1.12. Mr. Earl testified that there is significant room for variation in the interpretation of the terms used by Mr. Renz and Mr. Calendrello. Earl Rbtl. Test. at 9-10. "On hand" or "at hand" could mean any number of things, including people who are physically present at the site of the emergency, people who are capable of eventually being present, or simply the total number of people in a given employee population, regardless of location. Similarly, the term "candidate" could mean someone who meets the qualifications for a task, or simply someone who might conceivably meet them. It is notable in this context that another witness, Mr. Bonds, expressed uncertainty regarding the qualifications of laboratory workers to fulfill their responsibilities under the New Hampshire RERP. Tr. 3438.

3.1.13. In their proposed findings, Applicants now claim that in preparing the Summary, they identified the person-

nel resources that are "available" to fill the emergency response positions in the New Hampshire RERP. No. 3.1.48. However, Applicants also state that "the survey does not attempt to deal with availability in the temporal sense; it is implementation of the plan that is designed to ensure that people are at hand to perform their functions when they need to be performed; the survey assumes people will be available; the survey deals with how many people it takes to perform each of the various plan functions and also who can be made available to do them..." PF 3.1.34. (emphasis added) Thus, rather than establish actual availability of personnel, the survey addresses potential availability.

3.1.14. Applicants also claim in their proposed findings that "the survey viewed as 'available' any person who was a full or part time employee or volunteer serving the town in certain positions as defined for each town in the survey," and that a similar approach was taken for state personnel. PF 3.1.56. There is no evidence in the record that Applicants took into consideration any other factors affecting the availability of emergency response personnel, including such issues as whether people are aware of, qualified, or trained to fulfill their responsibilities; whether they are available only during their work shift or whether they can be relied on during off-shift hours; whether they can be reached during off-shift hours; and whether, if reachable, they are capable of performing their



assigned tasks (i.e. whether they have transportation, whether they have responsibilities at home that might prevent them from responding).

3.1.15. Applicants incorrectly claim that "the issue of whether people will be there [at their emergency response posts during an emergency] is an issue of planning and implementation, not personnel resources." PF No. 2.1.34. The number of people required to perform a task efficiently and effectively is necessarily influenced by the factor of when each individual can begin working on the task.

3.1.16. No written definition of the term "available" or "availability" was provided to the parties gathering or compiling data for the Summary. Tr. 3253. No definition of the term is given in the survey materials that Applicants apparently used to interview state and local officials regarding the availability of their employees to perform emergency response functions. Earl Rbtl. Test. at 8.

3.1.17. Many different people were responsible for gathering and evaluating the data assembled in the survey. Tr. 3201. These responsibilities included a) gathering staff availability data, b) providing staff availability data to reviewers, c) compiling staff availability data, and d) assessing staff availability data. At each of these stages, and by each individual participating in the survey and Summary preparation, a different concept of the term "availability" might be applied.

Earl Rbt1. Test. at 8-9. The lack of a common understanding of the term would apply equally to situations where every person participating in the assessment process had extensive staff assessment or emergency planning experience. Id. at 9.

3.1.18. Mr. Earl also testified that personnel rosters were used for some towns but not others, and off-shift availability was not considered. Earl Rbt1. Test. at 10. The assessment personnel relied heavily on verification meeting discussions for confirmation of assessment findings. For example, Mr. Callendrello was asked if full-time employment was the uniform criterion in defining the term availability. He stated "No, that was not." Tr. 3315. Subsequently, he stated that "[i]t varied from organization to organization. In some cases, the entire pool of personnel were utilized if the emergency response individuals indicated that they would normally use them. For example, volunteer fire fighters...if consistent with that community's wishes, those were listed as available resource pool for the purposes of emergency response." Tr. 3315-16. While the witnesses stated that an effort had been made to identify persons with potentially conflicting commitments, there was only a limited effort to determine leave or disability status. Tr. 3318.

3.1.19. Twenty-four temporary employees, most of whom are high school students employed to pick up trash, are considered "available" to perform emergency response functions of the



Hampton Public Works Department. Tr. 3341. Mr. Strome testified that he considered reliance on the students acceptable if it was consistent with the wishes of the Hampton Director of Public Works. Tr. 3341-42.

3.1.20. Mr. Earl testified that in placing substantial reliance on a community's "wishes", or on the opinions of "knowledgeable persons," without applying any independent criteria, Applicants demonstrated a failure to apply a consistent definition of terms. In effect, they allowed local officials to determine the meaning of "available" on a case-by-case basis. Such an ad hoc and inconsistent approach cannot be expected to yield reliable information. Earl Rbtl. Test. at 11.

3.1.21. Mr. Earl testified that the Summary fails to quantify the work load involved for each position to be filled. Earl Dir. Test. at 4, Post Tr. 3776; Earl Rbtl. Test. at 14, Post Tr. 8915. The Summary's description of the assessment methodology used for all local municipalities states that the determination of specific numbers of personnel required to implement each local plan was made via a review of each plan and its associated procedures, and that "building upon the review and revision of each plan, a walk-through of each implementing procedure was then conducted to identify, by position and functional responsibility, all of the tasks required to be performed in fulfilling the contemplated emergency response functions." Summary at 2-1. App.'s Exh. 1 at 2-1, Post Tr. 4685.

3.1.22. The Summary asserts the completion of a "..., a walk-through of each implementing procedure...to identify, by position and functional responsibility, all of the tasks required to be performed in fulfilling the contemplated emergency response functions." Summary at 2-1. However, the authors of the Summary have not defined the term "walk-through" clearly enough to determine if they actually calculated the amount of work involved in each task and position, or merely matched up tasks to responsibilities and responsibilities to positions. In this particular case, at a minimum, a walk-through should include calculation of work load for each position. Earl Dir. Test. at 4-5.

3.1.23. Contrary to Applicants' assertions in PF 3.1.57, the record does not show that workloads were fully taken into account in the walk-throughs. First, in some instances, for example telephone calling, the amount of time taken by a given task was assumed rather than calculated. Tr. 3271-75. Second, arrival times were not taken into consideration. Tr. 3271, 3282-86. The survey assumed that people were already at their emergency response posts because they had been called in at an earlier emergency classification. Tr. 3286.

3.1.24. Mr. Earl testified that the Summary does not contain sufficient information to either support the basis for this assumption, or to demonstrate that either local or state compensatory staff could, in fact, arrive at their assigned posts

in time to fulfill their responsibilities. Earl Rbtl. Test. at 17.

3.1.25. The survey's failure to adequately consider arrival times was highlighted by Mr. Strome's response to a question posed by Mr. Brock during the proceedings concerning the availability of State Police personnel. While Mr. Strome alleged that some personnel that are within a "reasonable distance," he conceded that "I'm not sure that I have a clearly defined empirical standard for reasonable distance." Tr. 3372.

3.1.26. Even where they had been estimated during the underlying survey, the Summary also failed to show consideration of mobilization times. For instance, while the Summary states that 185 State Police will be available during a Seabrook emergency, the survey documents provided to NECNP during discovery in December show that on an average day, only 100 will be available within the first three to four hours. Earl Rbtl. Test. at 17.

3.1.27. In Mr. Earl's opinion, notification and mobilization times are critical factors which would affect the quantification of workload and therefore personnel needs in an emergency response. Earl Rbtl. Test. at 15. The Summary gives no explanation of why these factors were not considered. Moreover, there is no means of determining in what instances mobilization and travel times actually were considered. Id. Although the survey materials show that for some functions, Applicants attempted to determine mobilization and travel times,

they did not do so for all functions. See, for example, Tr. 3282. In addition, it is impossible to determine whether and to what extent mobilization and travel times were considered in performing walk-throughs and other personnel needs calculations.

3.1.28. Mr. Earl testified that a sound staff resource methodology would involve prediction of the number of staff needed for each position based on a calculation of the amount of work required to fulfill the responsibilities associated with each position. Otherwise, it cannot be reliably concluded that persons filling specified positions can perform all of their required tasks effectively. Earl Dir. Test. at 5.

3.1.29. Mr. Earl also stated that unless work load is incorporated into the staff needs calculation, the Summary does not support the assertion in Section 4 that "the Summary identified the specific needs for...personnel." Earl Dir. Test. at 5.

3.1.30. Applicants relied substantially on so-called "walk-throughs" to quantify personnel needs for an emergency response at Seabrook. Mr. Earl found, however, that Applicants' testimony demonstrated no basis for concluding that (a) there was a common understanding of the term "walk-through," (b) that the walk-throughs were consistently executed, or (c) that the procedures would in fact produce the intended results, i.e. reliable quantification of the number of personnel needed to fulfill emergency response tasks. Earl Rbt1. Test. at 12.

3.1.31. The lack of a common understanding of the term walk-through was made clear in the testimony. The term was not defined in writing, and there were no written procedures for completing the walk-throughs for the staff persons conducting the assessment. Id.

3.1.32. According to Mr. Renz, "not having written instructions on how to perform a walk-through is not out of the ordinary." Tr. 3252. However, there seems to be some significant variance in the term as used by these emergency planners. Earl Rbtl. Test. at 12. According to Mr. Callendrello, an emergency planner, the basis for assuring a common understanding, and presumably execution, of the walk-through procedure was that "...each of the persons who were working through these procedures are emergency planners, and they are used to dealing with a procedure in this manner. That is, to look at the step, perform an evaluation of either somebody is needed to perform this step or not. And if there is a function that needs to be performed, assessing whether more than one individual is needed to perform that function.... all somebody needs to do is read the step and evaluate whether the person whose procedure it is can perform that step alone." Tr. 3277.

3.1.33. Mr. Renz, an experienced emergency planner, defined "[a] walk-through in the procedure, one goes through the procedure to see if it works...." Tr. 3252.

3.1.34. This testimony showed two fundamental problems with the Applicants' concept of a "walk-through." Earl

Rbtl. Test. at 13. First, Mr. Callendrello and Mr. Renz apparently differed in their understanding of what constitutes a "walk-through." Reading a procedure is not the same as going through a procedure to see if it works. One might analogize the difference to the distinction between reading a recipe to see if it will yield a satisfying cake within a certain amount of time, and going through the steps of making the cake. Obviously, the second approach yields a far more reliable result. In this case, the testimony showed that the emergency planners responsible for the personnel survey did not necessarily share the same conception of the term "walk-through." Id.

3.1.34. Mr. Earl observed that the second major problem is that a "read-through" is an inadequate means for determining staffing needs for an activity as complex as an emergency response to a nuclear accident. It cannot reveal such factors as the time necessary to prepare to implement a procedure, to make communications links, to marshal resources necessary to carry out a procedure, or to effectively carry out a procedure. Earl Rbtl. Test. at 13-14. Moreover, while a "read-through" may be an appropriate way to discover whether procedures appear to follow each other logically, it cannot be used effectively to determine whether procedures actually work. Id. See also FEMA testimony, Tr. 4607-10.

3.1.35. Mr. Strome's testimony demonstrated the potential for variability and unreliability of results that are



inherent in Applicants' failure to apply a consistent definition of the term "walk-through." Earl Rbtl. Test. at 14. For example, with respect to the one person in the Town of Hampton RERP who was assigned multiple positions, Mr. Strome testified that "I would prefer that separate individuals assume those responsibilities." Tr. 3347. Although Mr. Strome was not performing a walk-through (i.e., read through) at the time, it appears that there is some room for variations in interpretation of the number of personnel required to perform emergency response functions even among experienced emergency planners. Earl Rbtl. Test. at 14.

3.1.36. Mr. Earl also testified that Applicants' testimony showed that they made unreasonable assumptions in conducting walk-throughs of the emergency plan. Earl Rbtl. Test. at 14-15. In his opinion, the methodologies, and the resultant data, were influenced and rendered unreliable by these planning assumptions.

3.1.37. The unreasonableness of Applicants' assumption that emergency response workers would be at their posts when an emergency begins is discussed above.

3.1.38. Applicants also assumed that everything would go according to plan if the procedures were implemented in full. Tr. 3288. Mr. Earl stated that such an assumption is unreasonable, and certainly it is not a rational basis for determining resource requirements. It does not encourage the

kind of detailed analysis which is necessary to produce reliable data. Earl Rbtl. Test. at 15-16.

3.1.39. The irrationality of these assumptions was borne out in Mr. Earl's review of the Final Exercise Assessment, Joint New Hampshire State and Local Radiological Emergency Response Exercise for the Seabrook Station Nuclear Power Plant", dated February 26, 1986. Earl Rbtl. Test. at 16. The result of the exercise -- that many of the required functions were not successfully fulfilled -- would reasonably lead a resource planner to assume that in any given accident scenario, not all emergency personnel would be where they were needed when they were needed, and the emergency response would not go according to plan. This is the opposite of what Applicants assumed.

3.1.40. Mr. Earl testified that Applicants' testimony demonstrated a failure to manage the conduct of the survey in such a way as to achieve reliable results. The techniques used by Applicants to determine staff requirements are rudimentary and subjective when compared to the techniques which could have been used. In order to assure the reliability of data, Applicants should have taken steps to (1) assure a common understanding of key terms used in the survey, (2) assure the appropriateness and consistency of data sources used for all organizations, (3) assure that personnel are sufficiently experienced in staff assessments, (4) assure that staff conducting the study are effectively supervised, (5) assure that the analysis

and interpretation of the data is consistent, and that the results are objectively verifiable (i.e., different persons utilizing the methodology would produce the same results). Earl Rbtl. Test. at 18.

3.1.41. Applicants' testimony showed that none of these important steps were taken to assure the reliability of the personnel data collected. As a result, there is no assurance that staff availability data produced by the survey are reliable. Id.

3.1.42. The testimony showed a lack of coordination in the managerial and supervisory structure for the conduct of the survey. Id. Mr. Callendrello directed and supervised the resource assessment program. Tr. 3198. He supervised the gathering of the information presented in the Summary by directing the activities of the lead individuals who were responsible for assembling the material in the Summary. Tr. 3198. These lead individuals (planners), in turn, provided subsequent supervision of staff level people. Tr. 3198.

3.1.43. For example, for the people who did the local interviews, Mr. Callendrello stated that "[t]heir activities were directed by their normal supervisor." Tr. 3203. According to Mr. Callendrello, their normal supervisor "...would have been the supervisor within the New Hampshire Yankee Emergency Preparedness Department." Tr. 3203. That is Mr. Frechette "[r]eporting directly to me." Id.

3.1.44. Mr. Frechette said that he was the supervisor of the people who went and gathered the information. Tr. 3204. Mr. Frechette said "I supervise those individuals who work either directly or are consultants for New Hampshire Yankee. There were individuals who worked for the State of New Hampshire involved in this program as well. And I do not have supervisory capabilities for those individuals." Id. This was confirmed by Mr. Strome. Id. According to Mr. Strome, state survey personnel were supervised by Mike Nawoj, Chief of the Technological Hazards Division. Tr. 3205. It is thus clear that direct supervisory responsibility for the entire group of personnel conducting the assessment surveys was divided between two supervisors, Mr. Frechette for New Hampshire Yankee and consulting personnel; Mr. Nawoj for the State personnel.

3.1.45. Mr. Nawoj was not consulted by Mr. Frechette about (1) the methodology to be used, (2) any common assumptions, or (3) procedures to be used in the interviews with local officials. Tr. 3206. Mr. Callendrello indicated that he did not consult with either of the direct supervisors to determine whether those individuals who were responsible for conducting the interviews were using the same procedures and the same understandings of terms. This was also true for the walk-through approach used for determining staff requirements. Tr. 3207.

3.1.46. According to Mr. Callendrello, Mr. Enoch, a private consultant, was responsible for "...assuring that those

people collect the data that is needed to provide the input into the program. The data being the personnel resources which is gathered by a survey...." Tr. 3246 (also for the walk-throughs). It is not clear from the testimony how Mr. Enoch (1) provided instructions to the persons gathering information or (2) how they were supposed to accomplish the task. According to Mr. Callendrello, "I think that it was a cooperative effort between Mr. Enoch and the planners in determining the types of information that was needed to be gathered....he has no direct supervisory responsibility over those people. That responsibility rests with Mr. Frechette." Tr. 3246, 3247. When asked how Mr. Enoch actually (1) supervised a process, involving approximately 25 staff persons from different organizations, and (2) assured that every one of those 25 people had a consistent understanding of what it was that they were supposed to do, Mr. Callendrello stated that he did not know. Tr. 3247.

3.1.47. The Panel was asked if anyone else knew how Mr. Enoch managed the process. According to Mr. Renz, an independent contractor for Aidikoff Associates and the person responsible for compiling the Summary [Tr. 3246], "my understanding from working with Mr. Enoch is that early on in the process, he sat down with several different emergency planners and developed a methodology...on the local and on the state level for going out and compiling and gathering information...." (this also applies to needs assessment) Tr. 3247. According to Mr. Cal-

lendrello "...at least in the case of the survey form, that methodology is written down and is documented by the survey form itself. So that is the end result of the determination of the methodology. It culminates in a development of a survey form." Tr. 3249. Furthermore, Mr. Callendrello indicated that he felt that the various steps were adequately described in the personnel survey to support a conclusion that accurate data were generated. Tr. 3251.

3.1.48. Mr. Earl testified that the survey forms used by Applicants do not adequately document the existence of an adequate or consistent methodology for conduct of the survey. Earl Rbt1. Test. at 21-22. The key term "availability" is nowhere defined, although it is used throughout the materials. There is thus no indication that the interviewers who used the forms, or the people that they interviewed, shared a common, clear, and consistent understanding of the term; or that the planners who analyzed the data obtained by the interviewers had the same understanding as the interviewers and the interviewees. Moreover, there is no reference whatsoever to "walk-throughs," which allegedly constituted the principal means of determining staffing resource needs. Id.

3.1.49. In addition, Mr. Earl observed that the survey forms provided no comprehensive methodology for the gathering of information; in fact, most of the personnel resource questions asked by the survey forms were quite selective, and appeared



designed only to confirm information already gathered by some other, unspecified, means. No criteria are provided for comparing the previously gathered information to the information provided in the local interviews. Thus, there is no means for evaluating the reasons why some of the data provided in the Summary differs from the data provided on the survey forms.

3.1.50. Finally, the survey forms fail to provide interviewers or evaluators with meaningful criteria for defining the type of information they are to obtain. Id. at 22-23. For example, Question # 2 on the survey form entitled "Resource Analysis, Requests/Questions for EPZ and Host Towns," instructs interviewers to

Ensure there are primaries and alternates for each EOC position designated in the plan as 24 hour staffing. Attach a list/roster identifying positions which require primary and alternate staffing. (Interviewer to obtain 24 hour staffing information. Refer to Section III, Selectman's Emergency Preparedness Responsibilities and Appendix A.)

There is no instruction to the interviewer as to how to obtain 24 hour staffing information, how to determine staffing needs for each position, or what it means to "ensure" the existence of primaries and alternates for each position. Absent any instruction, there is great room for variability in the conduct of these tasks. Moreover, there is no means for assessing whether the steps chosen by the interviewers were adequate to provide reliable information. Id.

3.1.51. It also appears from the testimony that a significant portion of the staff responsible for conducting the

survey may have been inexperienced in the field of personnel resource planning. While Applicants' witnesses are emergency planners, none of them have any special expertise in personnel resource planning. Moreover, according to Mr. Strome, some state trainees were used to perform the survey. Tr. 3257. Although Mr. Strome's answer is not clear as to how many, if any, of the State personnel were very experienced, somewhat experienced, or entry level trainees, it is possible that some of the persons participating in the surveys were at or near entry level. Earl Rbtl. Test. at 23.

3.1.52. It is clear that (1) the individual who was responsible for the overall assessment program did not personally take steps to assure a common understanding of either the terms applied or the methodology used among the direct supervisors of the staff conducting the survey, and (2) the direct supervisors did not consult to assure a common understanding of either the key terms or the methodology. Earl Rbtl. Test. at 24. Further, the consensus of the Panel was that the terms were not reduced to writing. Given the large number of people performing the survey, and the inexperience of some of them, there was an especially high potential for variability of survey methods and results. The lack of managerial and supervisory control over the many individuals participating in the study, as well as the many levels at which data were accumulated and assessed, renders unreliable the meaning and accuracy of the numbers obtained in

the survey. Id.

3.1.53. The RERP gives teachers the responsibility of accounting for their students, remaining indoors with them during a sheltering protective action, or supervising them until buses arrive if an evacuation is ordered. During an evacuation, teachers are directed to accompany students on buses to reception centers and to remain with them until they are picked up by their parents. Applicants' Exhibit 5, Local Community Plans, App. F, School Plans.

3.1.54. Teachers' responsibilities under the plan are purely voluntary. Tr. 3348, 3387. Mr. Strome testified that in reaching the determination that there were adequate personnel, he did not consider whether teachers were available. Tr. 3365.

3.1.55. The Summary does not address the numbers of teachers required or available to implement the RERP. Tr. 4105.

3.1.56. A number of teachers testified that they would not carry out their responsibilities under the RERP, and would instead attend to their families or other personal commitments. Pennington, et al, Dir., Post. Tr. 3945 at 5-9 and Tr. 3947-50. EPZ teachers signed a petition that stated that they would not accept the responsibilities assigned to them under the plans. Pennington, et al, Dir., Post. Tr. 3945 at 6 and Tr. 3936-38 and Hampton Exh. 10. Further, surveys of their respective schools (a total of 15 schools) by certain of the teachers on the panel resulted in a very low percentages of teachers will-

ing to remain and implement the plans. Pennington, et al, Dir., Post. Tr. 3945 at 6-8 and Tr. 3973-3985.

3.1.57. FEMA testified that the unavailability of teachers to participate in an emergency response is an inadequacy in the RERP. Tr. 4076. Moreover, compensatory measures to deal with the unavailability of teachers do not currently exist. Tr. 4075-76, 3387.

3.1.58. Based on its review of the New Hampshire RERP, FEMA has concluded that the State of New Hampshire has not demonstrated that it has sufficient personnel resources to compensate for the non-participation of local governments in emergency planning for Seabrook. FEMA Direct Test., Post. Tr. 4051, at 3.

3.1.59. FEMA also concluded that there is no assurance that there exists the capability to staff local emergency response positions for an initial response, and to augment that response on a continuing basis, since there are numerous positions in the local emergency response organizations which do not have alternates. FEMA Direct Test., Post. Tr. 4051, at 13.

3.1.60. In preparing its prefiled testimony on the adequacy of emergency response personnel, FEMA did not have the opportunity to review the Personnel Resources Assessment Summary prepared by Applicants. Tr. 4053. FEMA further testified that "until New Hampshire develops this information as a part of its planning base, FEMA has no basis to change its determination that

the State has not demonstrated that it has adequate personnel resources to compensate for the non-participation or supplemental needs of the EPZ communities." FEMA Direct Test., Post Tr. 4051, at 17.

3.1.61. At the time of the hearings, FEMA had conducted a preliminary review of the Summary. Tr. 4081. FEMA stated that it considered the Summary to be just a step on the way to meeting the inadequacies that are cited by FEMA in the area of personnel resource adequacy. Id. Although FEMA considered the Summary to constitute significant progress toward meeting FEMA's concerns, substantial additional steps are required before FEMA can fully evaluate the adequacy of personnel resources for the New Hampshire RERP. Tr. 4083.

3.1.62. FEMA testified that personnel rosters for a number of state agencies, submitted as part of Rev. 2, were incomplete. Tr. 4058. For example, personnel rosters were inadequate for the Rockingham Sherriff's Department, and for local liasons. Tr. 4055-56, 4059. Staffing rosters would have a list of names for at least two shifts, or three shifts depending upon the particular local or state government that is involved. Tr. 4056. The missing information was considered significant. Tr. 4058.

3.1.63. FEMA stated that New Hampshire must submit and and FEMA must evaluate personnel rosters and alerting plans in order to to remedy the personnel resource inadequacies and

deficiencies identified by FEMA and the RAC (Regional Assistance Committee). Tr. 4050. These rosters and lists are not contained in the Summary. Id.

3.1.64. The 1986 graded exercise showed an inadequate number of local liasons to carry out the RERP: in Rev. 2, the number of liasons was increased. Tr. 4054-55. FEMA stated that an exercise and personnel rosters are necessary before it can conclude that there are adequate liasons to staff the compensatory plan. Tr. 4056.

3.1.65. The normal process by which FEMA finds out that people understand their duties and are willing to carry them out is through the process of identifying staff, training them, and observing their participation in drills. Tr. 4088.

3.1.66. While FEMA considered the submission of the Summary to constitute substantial progress toward remedying the RERP's deficiencies with respect to personnel resources, FEMA cannot complete its evaluation of the adequacy of personnel resources until rosters and equipment lists are completed and plans and procedures are revised and updated. Finally, an exercise of the plan must be conducted. Tr. 4109-10, 4174-77, 4196.

3.1.67. In the 1986 exercise of the New Hampshire RERP, FEMA found 55 deficiencies, or demonstrated and observed inadequacies that would cause a finding that off-site emergency preparedness was not adequate to provide reasonable assurance



taht appropriate protective measures can be taken to protect the health and safety of the public living in the vicinity of a nuclear power facility, in the event of a radiological emergency Tr. 4182. These deficiencies precluded a reasonable assurance finding with respect to the Seabrook emergency plans. Id. FEMA considered this high a number of observed deficiencies to be "unique." Tr. 4183.

3.1.68. FEMA concluded that the State of New Hampshire has not shown the capability to staff a 24-hour response over a protracted period. Tr. 4072. In order to evaluate the adequacy of emergency response staffing, FEMA and RAC would need to conclude the ongoing technical assistance review of the resource assessment, and provide comments to the state. The state would then make whatever changes are necessary and provide rosters of personnel. Following that, the state would make whatever changes are necessary in the parts of the plan that deal with mobilizing emergency workers, and they would conduct table top exercises and drills on that. Finally, the State would conduct a full-scale exercise, which would be evaluated by FEMA. Tr. 4073.

3.1.69. In order to reach a reasonable assurance finding on the adequacy of personnel resources, FEMA requires that the state demonstrate that emergency response personnel understand their responsibilities under the plan and are willing to carry them out. Tr. 4073.

3.1.70. The evaluation of understanding and willingness to perform emergency response functions is based on a number of factors. First, in the state's annual certification, it provides information on training that emergency workers have undergone. Willingness to respond is evaluated by looking at who comes to training sessions, who comes to drills, and who turns out for exercises. FEMA also looks at whether there is a sufficient pool of people at various locations who are ready, willing and able, to respond to an accident. Tr. 4073-74.

3.1.71. FEMA testified that the primary way the state can demonstrate that people are trained to perform their emergency response functions is during the course of a full-scale exercises. No full-scale exercise of Rev. 2 has been made. Tr. 4074-75.

### 3.2. RULINGS OF LAW

3.2.1. The NRC may not issue an operating license for a nuclear power plant unless it finds that "there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 CFR § 50.47(a)(1). This regulation embodies the concept that state and local governments must show preparedness to respond to a radiological emergency. The NRC's emergency planning requirements also specifically require Applicants to demonstrate that "each principal response organization has staff to respond and to augment its initial response on a continuous basis" 10 CFR §

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50.47(b)(1). The regulations also require drills and exercises to evaluate and maintain skills [§ 50.47(b)(14)] and radiological emergency response training [§ 50.47(b)(15)]. See also Appendix E to Part 50, § F.

3.2.2. NRC regulations require that a full-scale emergency planning exercise must be conducted within two years before issuance of an operating license. Appendix E to Part 50, § F.

3.2.3. With regard to the adequacy of offsite emergency planning measures, the NRC must "base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented." 10 CFR § 50.47(b)(2). These findings are entitled to a rebuttable presumption. Id.

3.2.4. While the NRC need not wait for FEMA's final findings on the adequacy of emergency plans, it must postpone hearings until FEMA has had the opportunity to review and testify on a plan that is "sufficiently developed to support a conclusion that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken..." Cincinnati Gas & Electric Co. (William H. Zimmer Nuclear Power Station, Unit 1), ALAB-727, 17 NRC 760, 775 (1983).

### 3.3. CONCLUSIONS

3.3.1. Applicants have not submitted an emergency plan that is sufficiently complete to provide the basis for a

finding that personnel resources are reasonably adequate to protect the public during a radiological emergency at Seabrook. FEMA has yet to conduct a review of major elements of Applicants' emergency plan with respect to personnel resources, including Applicants' personnel resources summary, staff rosters and alerting lists, and the results of training sessions and drills. In addition, FEMA has not been able to use its primary tool for evaluating the adequacy of personnel resources, observation of a full-scale exercise of Rev. 2, because no exercise has been conducted. The Board and the parties must have the benefit of FEMA's evaluation of these substantial additional emergency planning steps before it can rule on the adequacy of personnel resources for implementation of the New Hampshire RERP.

3.3.2. The Board finds NECNP's witness Clifford Earl to be credible. Moreover, the Board finds that Applicants have failed to overcome Mr. Earl's demonstration that the Personnel Resource Assessment Summary does not demonstrate that there are adequate personnel to respond to a radiological emergency at Seabrook. The Board adopts Mr. Earl's assessment of the Summary. We conclude that given the lack of a sound and systematic methodology or consistent data sources, Applicants have not produced data sufficiently reliable to support a conclusion that adequate emergency response personnel are available to respond to a nuclear accident at the Seabrook nuclear power plant. For the same reasons, we do not believe that Applicants have demonstrated

the capability to obtain reasonably accurate data if and when they update the assessment in the future.

3.3.3. Even if the data presented in the Summary could be considered accurate, it is not complete for purposes of supporting Applicants' claim that sufficient numbers of personnel are available to respond to a Seabrook emergency. In addition to a "body count," the concept of availability also entails willingness to serve and an understanding of one's responsibilities. This information is completely absent from the Summary.

3.3.4. It is clear from the Summary, Applicants' testimony, and Applicants' proposed findings, that Applicants consider notification and mobilization times to be irrelevant to any determination of how many people are required to respond to an accident at Seabrook, and that these variables were not factored into Applicants' personnel needs calculations. For purposes of calculating personnel needs, Applicants simply assumed that emergency responders would be at their posts. This assumption is unfounded in fact and runs contrary to NRC regulatory requirements. The Applicants must show the capacity to respond to a range of accidents, including fast-breaking ones. NUREG-0654 at 6, 17. Applicants are simply not entitled to assume that there will be plenty of time for emergency responders to reach their posts before the response must be implemented.

3.3.5. A full-scale exercise is an essential tool for evaluating the preparedness of offsite agencies to respond to



a radiological emergency. It must be conducted within two years before issuance of an operating license. 10 CFR Part 50, Appendix E, § F. The last full-scale exercise of the New Hampshire RERP was conducted in February of 1986; moreover, the RERP has undergone substantial revision since then. The Board cannot conclude that personnel resources are adequate to respond to a Seabrook emergency unless and until another exercise is conducted.

3.3.6. A significant number of teachers in the EPZ have declared that they are unwilling or unable to participate in an emergency response during an accident at Seabrook. The RERP makes no provision to compensate for them if they are unavailable. Absent the provision of adequate personnel to care for school children during a radiological emergency, the New Hampshire RERP cannot be found adequate to protect the public.

3.3.7. Applicants have not submitted sufficient evidence to rebut FEMA's finding that the State of New Hampshire lacks adequate personnel resources to respond to a radiological emergency at Seabrook.

#### 4. TRANSPORTATION AVAILABILITY AND SUPPORT SERVICES

##### 4.1. Findings of Fact

4.1.1. FEMA testified that "there is some discrepancy in the plan and procedures as to where the buses that evacuate schools report to. For example, the Hampton local plan (Volume 18, page II-29) states that, 'the State Resources Coord-

dinator will direct the dispatch of buses from the State Staging Area to the Local Staging Area (EOC) where they will be provided maps and directions to the schools.' A similar description is provided in the Exeter plan (Volume 26, page II-31). Conversely, the State plan procedures for the Director of Pupil Transportation Safety (Volume 4B, p. 2) states 'have the available drivers and buses report to their appropriate schools.' The EOC Resource Coordinatory procedures in Volume 4 of the State plan also state, 'have the Director of Pupil Transportation Safety instruct available drivers and buses to report to their appropriate schools' (page 7-3). FEMA Direct Test., Post. Tr. 4583, at (67).

4.1.2. FEMA concluded that the logistics for mobilizing evacuation buses to the schools need to be clarified and made consistent in the State and local plans and procedures. Id. at (67), (68); Tr. 4601.

4.1.3. FEMA's testimony as to the confusing nature of the procedures for deployment of buses was borne out in cross-examination of Applicants' witnesses. In a number of respects, the procedures for deploying buses for the transportation of school children are vague or difficult to understand. For instance, the procedures for the state EOC resource coordinator (Vol. 4 page 7-1) provide that when vehicles are inadequate the resource coordinator should "make arrangements" to have additional vehicles "sent to the appropriate schools." Tr. 4256. Although Applicants' witness stated that the "intent" of the pro-

cedures was to deploy buses from the state transportation staging area to the towns, that information was not conveyed by the term "make arrangements." Tr. 4257.

4.1.4. In a number of other instances, the written procedures for the RERP were found to be misleading or unclear. The intent of the procedures differed from or was not clearly stated in the written procedures. See, e.g., Tr. 4262-64 (not clear to what destination buses are to be dispatched); 4265 (confusing reference to plan appendix); Tr. 4269-70 (unclear communication procedures).

4.1.5. FEMA testified that if there is some doubt or dispute about the adequacy of the procedures for mobilization of buses, they should be tested during the course of a drill or exercise. Tr. 4601. Moreover, even if revisions to the paper plans appear to address the problems and resolve them, it would nevertheless be necessary to conduct walk-throughs, drills, training sessions, table-top exercises, and finally a full-scale exercise in order to fully evaluate whether that had been accomplished. Tr. 4601.

4.1.6. The RERP procedures employ a cumbersome number of communication steps in order to determine the need for and to deploy buses. Tr. 4269-79. There are at least seven different levels of communications that must take place. Id. Although delays may be mitigated by the fact that some of these communications will be made at the same time, there is nevertheless great potential for confusion.

4.1.7. If a response must proceed rapidly, Applicants will apply default values in assessing the number of school buses needed, and some of the communications will thereby be eliminated. Tr. 4278.

4.1.8. FEMA testified that the purpose of the default values is that if, for some reason, time does not permit emergency responders to determine specific needs for buses, as listed at the alert stage, the next best thing is for the default values to be selected. Tr. 4604.

4.1.9. The RERP does not establish bus routes for transients without transportation. Tr. 4588.

4.1.10. Transients without transportation apparently will be directed to central locations; however, the means by which this will be accomplished are not entirely clear. Tr. 4589.

4.1.11. FEMA has not received from Applicants fundamental data regarding the number of transients in the EPZ who may require transportation during a radiological emergency. Tr. 4587, 4591. FEMA's evaluation would depend to a great extent on the size of the transient population requiring special transportation assistance. Without this information, FEMA cannot evaluate the adequacy of Applicants' provision for protecting transients without transportation, or what measures would be appropriate. Tr. 4591-92. Id.

4.1.12. The exercise of Rev. 0 showed a number of defects in the RERP that were not, and could not have been, discovered through simply reviewing the plan on paper. Tr. 4607-10.

4.1.13. FEMA stated that without an exercise, it is unable to conduct a full and adequate review of New Hampshire's planning or preparedness for protecting the transient-dependent population in the EPZ. Tr. 4610.

#### 4.2. Rulings of Law

4.2.1. The NRC may not issue an operating license for a nuclear power plant unless it finds that "there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 CFR § 50.47(a)(1).

4.2.2. The NRC may not issue an operating license for a nuclear power plant unless it finds that "there is reasonable assurance that adequate protective measures can and will be taken." 10 CFR § 50.47(a)(1). This regulation embodies the concept that state and local governments must show preparedness to respond to a radiological emergency.

4.2.3. The regulations also require the establishment of a range of protective actions for emergency workers and the public. 10 CFR § 50.47(b)(10). This includes protection of school children and transients without private transportation.

4.2.4. The regulations also require drills and exercises to evaluate and maintain skills [§ 50.47(b)(14)] and

radiological emergency response training [§ 50.47(b)(15)]. See also Appendix E to Part 50, § F. A full-scale emergency planning exercise must be conducted within two years before issuance of an operating license. Appendix E to Part 50, § F.

4.2.5. With regard to the adequacy of offsite emergency planning measures, the NRC must "base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented." 10 CFR § 50.47(b)(2). These findings are entitled to a rebuttable presumption. Id.

4.2.6. While the NRC need not wait for FEMA's final findings on the adequacy of emergency plans, it must postpone hearings until FEMA has had the opportunity to review and testify on a plan that is "sufficiently developed to support a conclusion that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken..." Cincinnati Gas & Electric Co. (William H. Zimmer Nuclear Power Station, Unit 1), ALAB-727, 17 NRC 760, 775 (1983).

#### 4.3. Conclusions

4.3.1. The Board cannot reach a finding that there is reasonable assurance that the Seabrook EPZ's transient population without independent means of transportation can be protected in the event of an accident at Seabrook, because Applicants have not provided FEMA with the critical population data it requires in order to evaluate this issue.

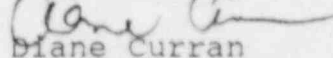


4.3.2. The RERP's procedures for mobilization of buses to transport school children are confusing. Thus, the Board cannot find that these procedures could be carried out efficiently or accurately during an emergency. The existence of default values for the number of buses to go to each school does not cure this problem, since a determination of the needs of each school is a more efficient, effective, and preferable means of assigning buses to each school.

4.3.3. The fact that default values are available does not cure the problem posed by the inaccurate and confusing procedures. It is essential that the implementation of an emergency response proceed efficiently and effectively, regardless of how much time is available to complete the response. The potential confusion and mismanagement of the emergency response posed by these procedures is not acceptable under any circumstances. Where the public is at any level of risk, accuracy and efficiency in carrying out an emergency response are of paramount importance.

4.3.4. Even were the Board to have concluded that the procedures appear to be adequate as they are written, the mere appearance of clarity is not sufficient to warrant a reasonable assurance finding. The clarity of the procedures must be evaluated through drills, training sessions, and an exercise of the RERP. The Board must await FEMA's testimony regarding these further evaluations before it can reach any conclusion as to the adequacy of the procedures.

Respectfully submitted,



Diane Curran

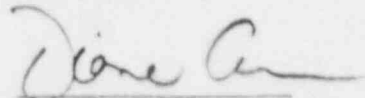
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CERTIFICATE OF SERVICE

I certify that on May 6, 1988, copies of the foregoing pleading were served by first-class mail or as otherwise indicated on the parties to the attached service list.



Diane Curran

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