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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD '85 AUG -5 P12:03

In the Matter of

CAROLINA POWER & LIGHT COMPANY
and NORTH CAROLINA EASTERN
MUNICIPAL POWER AGENCY

(Shearon Harris Nuclear Power
Plant)

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Docket No. 50-400 OL

OFFICE OF SECRETARY
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BRANCH

APPLICANTS' PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW ON EMERGENCY PLANNING MATTERS

Thomas A. Baxter, P.C.
Delissa A. Ridgway
SHAW, PITTMAN, POTTS & TROWBRIDGE

Richard E. Jones
Dale E. Hollar
CAROLINA POWER & LIGHT COMPANY

Counsel for Applicants

August 1, 1985

8508060268 850801
PDR ADOCK 05000400
G PDR

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND BACKGROUND.....	1
II. FINDINGS OF FACT.....	5
A. EPJ Contention 1: Snow and Ice Removal.....	5
B. EPJ Contention 2: Persons Without Private Transportation.....	5
C. EPJ Contention 3: Emergency Worker Response.....	6
D. EPJ Contention 4: Evacuation of Schools.....	6
1. EPJ-4(a): Student-age School Bus Drivers.....	6
2. EPJ-4(b): Role Strain in Adult School Bus Drivers.....	7
3. EPJ-4(c): Resources for School Evacuation....	21
4. EPJ-4(d): Parents Picking Up Children at Schools.....	21
E. EPJ Contention 5: Transportation for the Non-ambulatory.....	22
F. Eddleman 30: Quantities of Potassium Iodide.....	22
G. Eddleman 57-C-3: Public Notification at Night.....	22
H. Eddleman 57-C-7: List of Hospitals.....	23
I. Eddleman 57-C-10: Protection Factors of Institutional, Commercial and Industrial Structures.....	23
J. Eddleman 57-C-13: Protection Factors in Hospitals and Nursing Homes.....	32
K. Eddleman 144: Onsite Staff Augmentation.....	33
L. Eddleman 154: Dose Assessment.....	33

	<u>Page</u>
M. Eddleman 213: Boater Notification.....	34
N. Eddleman 213-a: Implementing Procedures.....	34
O. Eddleman 215: Conservatism in Evacuation Time Estimates.....	35
1. Eddleman 215(1): Assumption of Evacuation From Home.....	35
2. Eddleman 215(3): Assumption That Households Without Cars Will Evacuate at Rate of One Car Per Household.....	35
P. Eddleman 224: Weather Conditions Assumed in Evacuation Time Estimates.....	36
Q. Eddleman 240: Decontamination of Evacuees.....	36
R. CCNC 2: Adequacy of Sheltering.....	36
S. CCNC 8: Staffing of State Radiation Protection Service.....	37
T. CHANGE 17: Notification of Hearing-Impaired.....	37
U. Wilson 12(b)(2): Use of One Car Per Family For Evacuation.....	37
V. Wilson 12(b)(3): Persons Without Private Transportation.....	38
III. CONCLUSIONS OF LAW.....	38
IV. ORDER.....	39
Appendix A: Written Testimony Received Into Evidence	
Appendix B: Exhibits	

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CONCLUSIONS OF LAW ON EMERGENCY PLANNING MATTERS

I. INTRODUCTION AND BACKGROUND

1. The Licensing Board will be issuing its third Partial Initial Decision in this contested proceeding on the application of Carolina Power & Light Company ("CP&L") and North Carolina Eastern Municipal Power Agency (collectively "Applicants") for a license to operate the Shearon Harris Nuclear Power Plant ("Harris Plant" or "SHNPP"). The general history of the case is summarized in the Board's Partial Initial Decision on Environmental Matters, LBP-85-5, 21 N.R.C. 410 (1985).

2. This partial initial decision will resolve all emergency planning matters raised as contested issues by the

parties.^{1/}

3. The following emergency planning contentions were admitted by the Board:

- EPJ Contentions 1, 2, 3, 4, and 5
- Eddleman 30, 57-C-3, 57-C-7, 57-C-10, 57-C-13, 144, 154, 213, 213-a, 215(1), 215(3), 224, 227-S, and 240
- CCNC 2 and 8
- CHANGE 17, 25, 30, and 31
- Wilson 11, 12(b)(2), and 12(b)(3)

See Memorandum and Order (Ruling on Wells Eddleman's Proposed On-Site Emergency Planning Contentions) at 5, 11-12 (November 1, 1983) [admitting Eddleman 144 and 154]; Order (Ruling on Various Procedural Questions and Eddleman Contention 15AA) at attached Transcript of May 2, 1984 Prehearing Conference, Tr. 971-75, 975-77, 989, 993-94, 995-99 (May 10, 1984) [admitting EPJ 1 and 2, CHANGE 17, 25, 30, and 31, Wilson 11, CCNC 2 and 8]; Further Rulings on Admissibility of Offsite Emergency Planning Contentions Submitted by Wells Eddleman at 14-15, 16-18, 19-22, 26 (June 14, 1984) [admitting Eddleman 30, 57-C-3, 57-C-10, 57-C-13, 213, and 224]; Final Set of Rulings on Admissibility of Offsite Emergency Planning Contentions, Ruling on Petition For Waiver of Need for Power Rule, and

^{1/} Applicants have assumed here that this decision will include the Board's decision on Eddleman 57-C-3, now scheduled for hearing on September 24, 1985. If the Board is prepared to issue this decision prior to its ruling on Eddleman 57-C-3 -- a course to which Applicants would not object -- this proposed finding should be modified accordingly.

Notice of Upcoming Telephone Conference Call at 7-10, 15-21, 29-32, 50-53, and 56 (August 3, 1984)^{2/} [admitting Eddleman 57-C-7, 213-a, and 240, Wilson 12(b)(2) and 12(b)(3), and EPJ 3, 4, and 5]; and Rulings on Specification of Eddleman Offsite Emergency Planning Contention 215 and on the Admissibility of Eddleman Contentions on the Public Information Brochure at 1-4, 7 (October 4, 1984) [admitting Eddleman 215(1), 215(3), and 227-S].

4. CHANGE 25, 30, and 31 were subsequently withdrawn by CHANGE in its Withdrawal of Contentions (September 18, 1984). Eddleman 227-S was settled by agreement of the parties. See Order Approving Settlement of Eddleman 227-S (January 7, 1985). Further, Wilson 11 was withdrawn. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 1 n.1 (April 24, 1985).

5. In addition, in a series of several memoranda and orders, the Board announced its decisions to grant Applicants' motions for summary disposition of EPJ 1, 2, 3, 4(a), 4(c), 4(d), and 5, Eddleman 30, 57-C-7, 57-C-13, 144, 154, 213, 213-a, 215(1), 215(3), 224, and 240, CCNC 2 and 8, CHANGE 17, and Wilson 12(b)(2) and 12(b)(3). These summary rulings were provided to meet the needs of the parties, in view of the hearing schedule, in planning the preparation of their direct

^{2/} LBP-84-29B, 20 N.R.C. 389 (1984).

cases. It was anticipated that the Board would memorialize the reasons for its decisions on these motions in the Partial Initial Decision on Emergency Planning Matters. See, e.g., Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 2 (February 27, 1985); Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 1-2 (April 24, 1985).

6. EPJ Contention 4(b) and Eddleman 57-C-10 were the subject of evidentiary hearings convened in Apex, North Carolina on June 24 and 25, 1985. A hearing on the remaining emergency planning contention -- Eddleman 57-C-3 -- is scheduled for September 24, 1985. An evening session, on June 24, 1985, was devoted to limited appearance statements, under 10 C.F.R. § 2.715(a).

7. The evidentiary record includes the written and oral testimony of the witnesses presented by Applicants and the witnesses presented by the NRC Staff/FEMA.^{3/} Intervenors offered no witnesses. Appendix A identifies, by witness, the location of the written testimony in the transcript.

8. The record also includes the exhibits received into evidence. Appendix B lists the exhibits identified, and indicates the Board's ruling on any offers of exhibits into evidence.

^{3/} Applicants presented a total of three witnesses on EPJ 4(b) and Eddleman 57-C-10. The NRC Staff/FEMA presented two witnesses on those contentions.

II. FINDINGS OF FACT

A. EPJ Contention 1: Snow and Ice Removal

9. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of EPJ-1 (December 10, 1984); NRC Staff Response in Support of Applicants' Motion for Summary Disposition of EPJ-1 (January 16, 1985); and CHANGE Response to Motions for Summary Disposition EPJ-1 and EPJ-44/ (March 11, 1985).]

B. EPJ Contention 2: Persons Without Private Transportation

10. [Board to insert decision granting summary disposition. See Tr. 7602-03; Order (Confirming Decisions From Telephone Conference Call) at 1 (May 21, 1985); Applicants' Motion for Summary Disposition of Wilson 12(b)(3) and EPJ-2 (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motions for Summary Disposition of Eddleman Contention 215(3), Wilson Contentions 12(b)(2), and 12(b)(3) and EPJ Contention 2 (February 27, 1985); Applicants' Letter to the ASLB regarding the State of North Carolina's change of policy,

4/ Note that CHANGE's Response was filed well after the Board had ruled on Applicants' Motion.

addressing EPJ-2 and Wilson 12(b)(3) (April 18, 1985); Supplemental Affidavit of Joseph F. Myers on EPJ-2 (April 25, 1985); and Applicants' Letter to ASLB advising that CHANGE does not intend to file a response to the Supplemental Affidavit of Myers on EPJ-2 and that NRC Staff/FEMA position on motion is not affected by Supplemental Affidavit (May 9, 1985).]

C. EPJ Contention 3: Emergency Worker Response

11. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of EPJ-3 (January 11, 1985); and NRC Staff/FEMA Response to Applicants' Motions for Summary Disposition of Contentions EPJ-3, EPJ-4(a), and EPJ-4(b) (February 27, 1985).]

D. EPJ Contention 4: Evacuation of Schools

1. EPJ-4(a): Student-age School Bus Drivers

12. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of EPJ-4(a) (January 11, 1985); Supplemental Affidavit of Edwin H. Harris, Jr. on EPJ-4(a), 4(b) and 4(c) (March 22, 1985); NRC Staff/FEMA Response to Applicants' Motions for Summary Disposition of Contentions

EPJ-3, EPJ-4(a), and EPJ-4(b) (February 27, 1985); NRC Staff's Letter to ASLB, advising that NRC Staff/FEMA Response to Motion is not affected by Supplemental Affidavit of Harris (March 28, 1985); CHANGE Response to Motions for Summary Disposition of EPJ-1 and EPJ-4 (March 11, 1985); and CCNC's Letter advising that it does not intend to file a response to Supplemental Affidavit of Harris (April 1985).]

2. EPJ-4(b): Role Strain in Adult School Bus Drivers

13. As originally admitted, Contention EPJ-4(b) asserted:

Adult [school] bus drivers
have minimal education and
are paid very low wages.
They cannot be trusted to
put their jobs above family
obligations or to perform
adequately in emergency situations.

The sole issue actually litigated under EPJ-4(b) was more limited. In ruling on Applicants' motion for summary disposition, the Board expressly "rule[d] out litigation on whether the wages the adult drivers are paid and the education they've received are so low that they 'cannot be trusted' to perform their public duties competently in an emergency." The Board focused on adult school bus drivers (as opposed to student-age drivers) based on its reasoning that adult school bus drivers "would very likely not already be at the schools when they were called upon to evacuate the schools, and are more likely than the student drivers are to have family obligations." The Board

therefore concluded that, in the event of an evacuation, "adult drivers would very likely have the opportunity student drivers would not have -- to weigh conflicting obligations." In short, the only issue remaining for litigation was "role conflict" or "role strain" (between family obligations and emergency response roles) in adult school bus drivers in the event of an evacuation due to a radiological emergency at the Harris plant. Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 8-9 (April 24, 1985).

14. Applicants' testimony on EPJ-4(b) was presented by a panel of two experts, Dr. Dennis S. Mileti and Mr. Joseph F. Myers. Dr. Mileti is a Professor in the Department of Sociology and Director of the Hazards Assessment Laboratory at Colorado State University, specializing in those areas of study dealing with organizations, hazards, policy and methods (with a particular emphasis on public response to emergencies). Mr. Myers is the Director of the Division of Emergency Management ("DEM") of the North Carolina Department of Crime Control and Public Safety. The basic responsibilities of DEM include fulfilling the State's role in emergency planning for natural and manmade disasters, in responding to and recovering from disasters, and in mitigating their effects. Mr. Myers has been employed by DEM for more than nine years, and has responded to hundreds of emergencies during that period. Indeed, he coordinated the State's response to more than 100 emergencies in his

first five months as Director of DEM (from February 1985 to the time of the hearings in late June 1985). Testimony of Joseph F. Myers and Dennis S. Mileti on EPJ Contention 4(b) (Role Strain in Adult School Bus Drivers), ff. Tr. 7782 (hereinafter "Myers/Mileti"), at 2-5.

15. The NRC Staff/Federal Emergency Management Agency ("FEMA") filed the written testimony of Messrs. John C. Heard and Thomas I. Hawkins.^{5/} Messrs. Heard and Hawkins are employed by FEMA in the Natural and Technological Hazards Division, Technological Hazards Branch, Region IV, Atlanta, Georgia. As Branch Chief and Emergency Management Program Specialist, respectively, Messrs. Heard and Hawkins are responsible for providing assistance to State and local governments in the preparation of radiological emergency response plans, reviewing the plans, and evaluating exercises of the plans to assure compliance with NUREG-0654/FEMA-REP-1, Rev. 1 ^{6/} ("NUREG-0654") and applicable regulations. Testimony of John C. Heard and Thomas I. Hawkins, Federal Emergency Management Agency, Regarding Emergency Planning Contentions Eddleman 57-C-10 and EPJ-4-b, ff. Tr. 8130 (hereinafter "Heard/Hawkins"), at 1-2.

^{5/} The FEMA testimony on EPJ-4(b) was admitted to the record by stipulation, without cross-examination. Tr. 7891-92.

^{6/} The full title of this joint NRC/FEMA guidance document is "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

16. "Role conflict" -- or, more accurately, "role strain" -- is a social science concept which denotes the difficulty felt by an individual in fulfilling different role obligations at the same time. Myers/Mileti at 6. Contention EPJ-4(b) manifests Joint Intervenors' concern that, in an emergency, adult school bus drivers will experience feelings of "strain" between their roles as family members and their roles as emergency workers.

17. Initially, the Board is constrained to note the relatively small size of the population of adult bus drivers, with which EPJ-4(b) is concerned. Of a total of approximately 96 bus drivers to be used in school evacuation, only approximately 38 would be adults. Approximately 15 of these 38 live in the Harris plume exposure pathway emergency planning zone; and, of those 15, only 3 have pre-school children, or disabled or aged relatives at home during school hours. Two of these three typically have other competent adult family members at home during school hours. While these numbers obviously will fluctuate somewhat over time, it is reasonable to expect that those serving as drivers during the 1984-85 school year would be typical of coming school years. Consequently, it can be expected that only a very few of the adult bus drivers are likely to have dependents at home during school hours for whom arrangements would need to be made. Myers/Mileti at 10. These figures illustrate the diversity of modern living situations, and

dispel any stereotype-based assumptions that all adult bus drivers would be subject to feelings of "strain" between family obligations and their roles as emergency workers in the event of an emergency at the Harris plant. Tr. 7793-94 (Mileti).

18. Moreover, Joint Intervenors fail to distinguish between "role strain," which is a mental state (a feeling of concern and unease), and "role abandonment," which is a type of behavior. Myers/Mileti at 11; Tr. 7783 (Mileti). The Board here is concerned with the behavior of emergency workers -- in particular, whether adult school bus drivers will assist with school evacuation in an emergency. Thus, the Board is concerned with the occurrence of "role strain" only to the extent that such feelings can be expected to affect emergency worker behavior by resulting in "role abandonment." All the evidence of record points to a contrary conclusion. See, e.g., Tr. 7793-94 (Mileti, Myers); Tr. 7813-14, 7850 (Mileti).

19. Dr. Mileti surveyed the more than three decades of disaster research literature for studies of "role strain" and "role abandonment" in emergency workers. Myers/Mileti at 7-8, 11-15; Tr. 7787-88, 7802 (Mileti). The present controversy over role strain in workers in radiological emergencies can be traced to the widely-quoted article by Lewis Killian, "The Significance of Multi-Group Membership in Disaster," American Journal of Sociology, January 1952, pp. 309-314. Myers/Mileti at 7. See also Long Island Lighting Co. (Shoreham Nuclear

Power Station, Unit 1), LBP-85-12, 21 N.R.C. 644, 672 (1985). Killian's article has been used repeatedly to explain the "role conflict" concept in introductory textbooks and has recently been used to support a hypothesized "problem" for emergency planning, that is, that the willingness of emergency workers to do their emergency jobs during a radiological emergency at a nuclear power plant might initially be constrained by family obligations. What was intended by Killian as a mere illustration of a concept has been distorted over the years by some (primarily by those who have not read Killian's article carefully) into the status of a universal truth about behavior in emergencies. Myers/Mileti at 7.

20. A careful reading of Killian's 1952 article reveals that he suggested simply that if people have no definite "role" in an emergency, it will be unclear to them what they should do. Significantly, in the illustrations Killian used (which were case studies), those who did have occupational roles relevant to the emergency performed them and even expressed concern that they could not do more. In addition, Killian, while seeming to present cases of potential conflict, pointed out that such perceptions of conflict had no real effect on the operation of the emergency social system. Thus, an accurate reading of Killian's original article is that although people with emergency roles will express anxiety about potential conflicting obligations in emergencies, they still will perform

those roles that are more immediately relevant to the emergency social system. Myers/Mileti at 8.

21. Extensive further research on emergency worker behavior has been conducted since Killian's initial work. Myers/Mileti at 11-15. These later studies have confirmed that emergency workers who know that they have emergency roles perform their emergency functions in emergencies.^{7/} Myers/Mileti at 15. The experts who have devoted their professional lives to the study of emergency worker behavior are in complete accord on this issue. Tr. 7876 (Mileti). These well-established principles of emergency worker response would be applicable in the event of an emergency at a nuclear facility such as the Harris plant, and would be as applicable to adult bus drivers as to any other group of emergency workers. Myers/Mileti at 11; Tr. 7847-49 (Myers, Mileti).

22. The absence (for all practical purposes) of evidence of persons abandoning known emergency roles over a wide range of emergency events in the past illustrates that there are

^{7/} Some of the research appears at first blush to suggest a contrary conclusion, i.e., to indicate that some emergency workers on occasion have "abandoned" their emergency roles. However, closer examination of such research reveals that the workers are being faulted for failure to do work which they were never asked to perform. This can hardly be characterized as true "role abandonment," since the fundamental tenet of assuring emergency worker response is ensuring that emergency workers know that they have emergency response roles. Tr. 7803, 7816, 7832-33, 7857-58, 7884 (Mileti).

certain structural changes in the community during emergencies that reduce role strain. In an emergency, some values become clearly more important than others, and people experiencing the emergency generally agree on the few that take precedence over all others. Through the development of this "emergency consensus," people become altruistic, and protection of the community becomes the highest priority. People are "released" to concentrate on the critical tasks of the emergency, greatly reducing the potential for "role strain." Those with identified emergency roles are therefore able to fulfill them, rather than ignore the emergency in order to tend to the obligations of other roles. Myers/Mileti at 15-16. See also Shoreham, supra, 21 N.R.C. at 674 (discussing phenomenon of "emergency consensus").

23. People who know in advance of an emergency that they have emergency roles to play are able to make informal family contingency plans in advance of the emergency. For example, families can make plans in advance of an emergency to ensure that -- in an emergency -- the non-emergency-worker spouse (or other appropriate person) will take the appropriate measures to protect the family unit in the absence of the emergency worker. Indeed, in past emergencies, even in the absence of such contingency plans, the role obligations of emergency workers toward intimates (including family) have generally been shifted and assumed by other non-emergency-worker members of the intimate group, thereby freeing the emergency worker to fulfill

assigned emergency roles. Myers/Mileti at 16-17, 20; Tr. 7783-84, 7864 (Mileti). See also Shoreham, supra, 21 N.R.C. at 675 (discussing development of informal "family contingency plans"); Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 N.R.C. 1211, 1488-89 (1981) (noting testimony of emergency planning coordinator that emergency workers do make prior arrangements to ensure protection of their families), aff'd, ALAB-697, 16 N.R.C. 1265 (1982), ALAB-698, 16 N.R.C. 1290 (1982), and CLI-83-22, 18 N.R.C. 299 (1983).

24. Because emergency workers' jobs provide them with information about the emergency, they have access to accurate and more informed knowledge of the scope of the risk, and are therefore better able to assess the "danger" to family members. In addition, emergency workers fulfill their role obligations in emergencies because of the cohesiveness of the work group. People with knowledge of their emergency roles do not wish to let their co-workers down. Myers/Mileti at 17, 19-20. See also Shoreham, supra, 21 N.R.C. at 675 (discussing work group cohesion in an emergency).

25. In ruling on Applicants' motion for summary disposition, the Board indicated its expectation that adult school bus drivers "would very likely not already be at the schools when they were called upon to evacuate the schools." Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 8-9

(April 24, 1984). However, the historical record indicates that the location of an emergency worker at the time of an emergency (at home vs. away from home) is not a determining factor as to whether that worker will respond to his emergency position. Myers/Mileti at 18. In any event, of the approximately 38 designated adult bus drivers who would be available to assist with school evacuation, approximately 21 are employed in some other capacity on the staff of the schools (12 inside the EPZ). Thus, a significant proportion of adult drivers would already be at their emergency stations (just as the student-age drivers would be) if an evacuation were ordered while school was in session. Of the remainder of the adult drivers, only approximately 14 are typically at their homes on school days. In short, while these numbers will fluctuate to some degree over time, it can be expected that the majority of the adult bus drivers already would be away from home, at work (many at schools), if needed to evacuate school children. Myers/Mileti at 19.

26. In sum, decades of research and investigation of the actual behavior of emergency workers have established that those who know they have emergency roles perform their emergency jobs. Thus, any potential of role abandonment for reducing the effectiveness of emergency response is minimized by the clear assignment of emergency responsibility in advance of an emergency. This is achieved through training, which ensures

emergency worker response. Myers/Mileti at 11, 15, 21; Tr. 7816, 7881-82 (Mileti). In particular:

- (1) Training gives the emergency worker a clear understanding of what is expected of him or her -- of what his or her emergency role is;
- (2) Training makes the worker aware of the advantages of informal family contingency planning in advance of an emergency;
- (3) Training makes the worker aware that the community and the worker's coworkers depend on him or her; and
- (4) Training informs the worker about the nature of the risk.

Myers/Mileti at 21. This function of training in assuring emergency worker response is generally acknowledged in Commission case law on emergency planning. See, e.g., Pacific Gas & Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-82-70, 16 N.R.C. 756, 805 (1982) (training in emergency response and nature of risk increases reliability of emergency workers; training of emergency workers should address "role strain"), aff'd, ALAB-781, 20 N.R.C. 819 (1984).

27. Like all emergency workers, all bus drivers who would assist with school evacuation are being trained. In fact, back up bus drivers are being trained, to ensure a ready supply of substitute drivers should a designated driver be unavailable

for any reason at the time of an emergency. The training provided to each emergency worker includes, at a minimum, (a) training on basic radiation concepts, (b) an overview of the offsite emergency plan, and (c) training on the individual worker's specific role in the plan. The training program also emphasizes to workers the importance of pre-planning and discussing with their families their emergency roles and the actions to be taken by the family in an emergency. The training for bus drivers will be completed by the time of fuel load at the Harris plant. Refresher training is offered on an annual basis. Myers/Mileti at 21-22; Tr. 7821-23 (Myers); Tr. 7879-80, 7890 (Mileti).

28. In conclusion, a large body of historical evidence shows that the functioning of emergency organizations is not hampered by failure of emergency workers to perform their jobs. In spite of role strain, such workers perform effectively. Moreover, training for emergency work can reduce role strain and enhance the effective performance of emergency workers. While role abandonment may be theoretically possible, it is certainly extremely rare, and consequently it does not reduce organizational effectiveness.^{8/} Indeed, the typical problem in

^{8/} This is consistent with Commission case law on the subject. See, e.g., Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2), LBP 85-_____, 21 N.R.C. _____, slip op. at 114 (May 2, 1985) ("The history

(Continued next page)

emergencies is not that too few workers report for duty, but rather that too many persons volunteer. Myers/Mileti at 15, 22; Tr. 7827, 7847-48, 7850, 7876-77 (Mileti).

29. FEMA's experience supports the historical record. FEMA Region IV has observed or participated in numerous disaster operations and has found that emergency workers report for duty when asked to serve during emergencies, and faithfully perform their designated duties. Heard/Hawkins at 4.

30. The experience of the State of North Carolina is consistent with these observations about the behavior of emergency workers across the country. North Carolina emergency workers

(Continued)

of emergency response shows a willingness by individuals to perform their duties. Individuals who have a clear understanding of their roles in an emergency plan do not abandon their roles in an emergency"); Diablo Canyon, supra, 16 N.R.C. at 805 (licensing board acknowledges phenomenon of role strain, but notes that any such problem would not be "of such dimension as to render the emergency plan unimplementable"); Three Mile Island, supra, 14 N.R.C. at 1487 (noting testimony of expert witness Dr. Dynes that he is "unaware of a single failure in emergency response due to a failure of emergency workers to stay and fulfill their responsibilities, including during the TMI-2 accident"). See also, e.g., Consolidated Edison Co. of New York (Indian Point, Unit No. 2), LBP-83-68, 18 N.R.C. 811, 957-59 (1983) (relying on FEMA testimony that -- with respect to emergency workers, both lay and professional -- past experience demonstrates that these workers will fulfill their duties); Three Mile Island, supra, 14 N.R.C. at 1487 (noting FEMA testimony that, based on previous disaster experience, emergency workers "perform their emergency functions regardless of conflicting demands"); Shoreham, supra, 21 N.R.C. at 679 (concluding that, although some emergency workers may experience role conflict, role abandonment will not be a problem).

are on record as performing their assigned functions in the face of imminent life-threatening situations, such as the tornadoes in March 1984, Hurricane Diana in September 1984, and the forest fires which occurred across the State in the Spring of 1984. A specific illustration of the responsiveness of school bus drivers is the April 10, 1984 evacuation of the Town of Marshville, North Carolina, necessitated by the derailment of several railcars carrying methanol. Adult bus drivers, from the school staff, were utilized to evacuate all of the students from two nearby schools. The evacuation was completed within a matter of minutes. A number of the school staff had family living within the evacuated area. Nevertheless, none of the bus drivers refused to undertake the assigned duties in this emergency. Myers/Mileti at 22-23; Tr. 7784, 7856 (Myers).

31. Accordingly, while it is to be expected that some emergency workers would experience role strain during an emergency at Harris, this does not mean that they would abandon their emergency roles because of it. Myers/Mileti at 11. Historical experience in past emergencies, reinforced by the training being provided to all bus drivers assisting with school evacuation, provide reasonable assurance that the adult school bus drivers will respond in the event of a radiological emergency, and will perform their assigned function -- evacuating the students from the schools within the EPZ. Myers/Mileti at 11, 15, 23; Tr. 7783-84 (Mileti, Myers).

3. EPJ-4(c): Resources for School Evacuation

32. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of EPJ-4(c) (January 14, 1985); Supplemental Affidavit of Edwin H. Harris, Jr. on EPJ-4(a), 4(b) and 4(c) (March 22, 1985); NRC Staff/FEMA Response in Support of Applicants' Motion for Summary Disposition of Contention EPJ-4(c) (February 26, 1985); NRC Staff's Letter to ASLB, advising that NRC Staff/FEMA Response to Motion is not affected by Supplemental Affidavit of Harris (March 28, 1985); CHANGE Response to Motions for Summary Disposition of EPJ-1 and EPJ-4 (March 11, 1985); and CCNC's Letter advising that it does not intend to file a response to Supplemental Affidavit of Harris (April 1985).]

4. EPJ-4(d): Parents Picking Up Children at Schools

33. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of EPJ-4(d) (January 14, 1985); NRC Staff/FEMA Response to Applicants' Motion for Summary Disposition on Contention EPJ-4(d) (February 27, 1985); and CHANGE Response to Motions for Summary Disposition EPJ-1 and EPJ-4 (March 11, 1985).]

E. EPJ Contention 5: Transportation for the Non-ambulatory

34. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of EPJ-5 (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motion for Summary Disposition of Emergency Planning Joint Contention 5 (February 27, 1985).]

F. Eddleman 30: Quantities of Potassium Iodide

35. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2 (April 24, 1985); Applicants' Motion for Summary Disposition of Eddleman 30 (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contention 30 (February 27, 1985); Wells Eddleman's Response to Summary Disposition on Contentions 57-C-10, 30, 213-a and 215 (March 11, 1985).]

G. Eddleman 57-C-3: Public Notification at Night

36. [Board to insert decision. An evidentiary hearing on this contention is scheduled for September 24, 1985.]

H. Eddleman 57-C-7: List of Hospitals

37. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman 57-C-7 (January 2, 1985); FEMA Staff Response to Applicants' Motion for Summary Disposition of Eddleman 57-C-7 (January 29, 1985).]

I. Eddleman 57-C-10: Protection Factors of Institutional, Commercial and Industrial Structures

38. The sole issue litigated in Eddleman Contention 57-C-10 was the "adequacy of the Applicants' review of sheltering other than single-family residential" in Applicants' survey of potential shelters in the plume exposure pathway emergency planning zone (EPZ) of the Harris plant. This issue concerns whether the North Carolina Emergency Response Plan in Support of the Shearon Harris Nuclear Power Plant (the "offsite emergency plan" or "ERP") should include information on the sheltering effectiveness of "typical institutional structures (schools, churches, etc.), commercial structures and industrial facilities in the plume EPZ" in order to comply with Evaluation Criterion J.10.m. of NUREG-0654. Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 6-7 (April 24, 1985).

39. As originally admitted by the Licensing Board, Eddleman Contention 57-C-10 stated:

The State Plan (PT I pp. 45-56 and 50-53) provides no useful analysis or information on sheltering effectiveness; but without knowledge of sheltering effectiveness, a decision of that option versus evacuation will be ill-informed and quite possibly wrong. The plan's discussion of protective actions is mostly a list of them and a little hand waving -- it's hopelessly inadequate. The plan, for potential shelters typical of those in the SHNPP plume EPZ does not comply with Evaluation Criterion J.10.m. of NUREG-0654, which calls for inclusion in the plan of "expected local protection afforded in residential units or other shelter for direct and inhalation exposure"

In admitting the contention, the Licensing Board stated that: "What would appear to be needed are sound estimates of the protection afforded by potential shelters typical of the SHNPP plume EPZ." Further Rulings on Admissibility of Offsite Emergency Planning Contentions Submitted by Intervenor Wells Eddleman at 18 (June 14, 1984). Applicants commissioned a study of residential structures within the plume EPZ and, on the basis of the information obtained, moved for summary disposition of Eddleman 57-C-10. Applicants' Motion for Summary

Disposition of Eddleman Contention 57-C-10 (January 14, 1985). The NRC Staff and FEMA filed a response in support of this motion. NRC Staff/FEMA Response to Applicants' Motions for Summary Disposition of CCNC Contention 2 and Eddleman Contention 57-C-10 (February 27, 1985).

40. On April 24, 1985, the Licensing Board denied Applicants' Motion for Summary Disposition of Eddleman Contention 57-C-10, but ruled out litigation on certain issues otherwise raised by the contention. The Board specifically ruled out "the issue of the protective factors afforded by the types of hoses prevalent in the Harris plume EPZ and commented that "Applicants undertook a well-designed, well-executed, and thoroughly documented review of these protection factors." Memorandum and Order (Ruling on Remaining Summary Disposition Motions at 3 (April 24, 1985). Under the Board's ruling, "[t]he one issue which remains concerning the Applicants' review of typical sheltering in the Harris plume EPZ is the adequacy of the Applicants' review of sheltering other than single-family residential." Id. at 6.

41. Messrs. Guy Martin, Jr. and Joseph F. Myers testified on behalf of Applicants at the hearing on the remaining issue of Eddleman 57-C-10. Mr. Martin is Manager of the Radiological Assessment Department of Ebasco Services, Inc. He has a master's degree in nuclear engineering and is a FEMA-certified fallout shelter analyst. He has experience in performing

analyses to determine the sheltering effectiveness of buildings. Direct Testimony of Guy Martin, Jr. on Eddleman Contention 57-C-10 (Protection Factors of Institutional, Commercial and Industrial Structures), ff. Tr. 7895 (hereinafter "Martin"), at 1-2. The qualifications of Mr. Myers are discussed supra at ¶ 14. See also Direct Testimony of Joseph F. Myers on Eddleman Contention 57-C-10 (Protection Factors of Institutional, Commercial and Industrial Structures), ff. Tr. 7897 (hereinafter "Myers"), at 1.

42. Messrs. John C. Heard, Jr. and Thomas I. Hawkins testified on behalf of the NRC Staff and FEMA. The qualifications of Messrs. Heard and Hawkins are discussed supra at ¶ 15. See also Heard/Hawkins at 1-2.

43. The sheltering effectiveness of a structure is measured in terms of its Protection Factor (PF). The PF is the ratio of the radiation dose outside the structure to the dose inside. It indicates the degree to which a structure would afford protection from a radiation release in comparison with no shelter at all. Martin at 4.

44. Evaluation Criterion J.10.m. of NUREG-0654 calls for a determination of protection for both direct and inhalation exposures. Direct exposure is that which results from radiation impinging directly on the human body and organs either from airborne or deposited nuclides. Airborne nuclides are the source of radiation in the air; direct exposure results when

radiation (mainly in the form of gamma rays) is absorbed by the body. Deposited nuclides may be on the outside of the structure, such as on the roof or in the ground surrounding a building; radiation from these sources may penetrate a structure and the occupants inside. In contrast to direct radiation exposure, which results from radiation impinging directly upon the body and its organs, inhalation exposure results from breathing radioactive material in the air. In the event of an airborne release of radioactive material, the inhalation exposure to a person inside a structure increases over time because air carrying radionuclides penetrates the building so that the concentration of radionuclides inside eventually approaches the outside concentration. How quickly this will occur depends upon the air exchange between the structure and the outside atmosphere. Martin at 4-5.

45. The sheltering effectiveness of a structure is a function of the mass of material between the source of radiation and the person inside. The PF of the building will be greater for a building that is constructed of dense materials in which there are a number of floors between the radiation source and the occupied area. Thus, the most important structural characteristics are the type of construction and exterior finish, number of stories, and presence or absence of a basement. A building of brick or concrete or similar construction generally has a higher PF than one of wood frame construction.

A multi-story structure generally provides more protection than a one-story structure. If a basement is available, it will provide even better protection. Since the inhalation exposure PF is a function of the air exchange rate between the structure and the outside, data concerning the windows and other exterior openings are also relevant. Martin at 5.

46. The ERP has already been amended to reflect the results of Applicants' survey of residential units in the Harris plume EPZ. Information on the PFs of typical residential structures is included in the ERP. Martin at 8; Myers at 2; Applicants' Ex. 29.

47. DEM staff members, Mr. Martin and other Ebasco personnel worked together to gather the necessary information to determine the PFs of institutional, commercial and industrial structures in the Harris plume EPZ. Information was gathered from a variety of sources including the property tax records of the counties in the EPZ, information maintained by Carolina Power & Light Company district managers, discussions with various persons knowledgeable about the Harris EPZ (including members of local chambers of commerce, municipal clerks and postal employees), State listings of manufacturing facilities, State tax records, and State aerial photographic maps of the EPZ area. A road survey was also conducted to confirm the information obtained. Martin at 6-7; Myers at 2.

48. As a result of the survey, it has been determined that the predominant type of commercial/industrial structure in the EPZ is small retail establishments, such as service stations, fast food restaurants and convenience markets. However, a smaller number of major establishments has a greater capacity for sheltering the population. Fifty-one large commercial and industrial facilities were identified in the Harris EPZ, and they can be divided into six categories: (1) shopping centers; (2) butler-type buildings; (3) steel frame, brick/concrete buildings; (4) multi-story homogeneous structures; (5) complex sites; and (6) downtown shopping districts. Martin at 7-8.

49. Institutional buildings in the Harris EPZ can be divided into three major categories: (1) schools; (2) churches; and (3) hospitals and nursing homes. There are also a number of other types of institutional structures in the EPZ. However, these structures were not separately analyzed because they either are of residential-type construction or are an integral part of another institutional structure. Information on the PFs of residential structures is already in the ERP. Martin at 8; Myers at 2.

50. Representative structures within each of the six categories of large commercial/industrial structures were selected for detailed analysis. They were selected so as to represent the range of construction type within each category. In addition, two schools were selected as representative of the

type of design and construction used by all school facilities. Each of these facilities was visited to obtain more detailed information regarding the construction material, wall, floor and roof thickness, among other characteristics. The information derived was transmitted to FEMA for input into FEMA's Shelter Analysis for Nuclear Defense (SAND) computer code which was used to calculate PFs for direct exposure to deposited nuclides. The identification of PF values for churches and small commercial structures was made by comparing their construction characteristics to those of typical residences for which protection factors were previously determined. Similarly, based upon an earlier survey of the hospitals, nursing homes, family care facilities and Homes for the Elderly (a senior citizen community), construction characteristics were identified and compared to those for other structures for which protection factors are known. Martin at 8-11.

51. On the basis of the information obtained, a range of protection factors for representative structures in each of the six categories of major commercial/industrial structures and for the two representative schools was derived. Martin at 11-12 and Attachments 6-8. Using a series of standard calculations, a range of protection factors for inhalation exposure was also derived for commercial and industrial structures and schools. Martin at 12 and Attachment 5.

52. For the typical smaller commercial establishments and churches in the EPZ, the range of PFs was determined by comparing their construction characteristics to those of typical residences in the EPZ. The range of PFs for direct exposure is comparable to that for residences in the EPZ. For inhalation exposure, the range of PFs for typical smaller commercial establishments is derived in the same manner as for other commercial and industrial structures. For a typical church, the range for PFs for inhalation exposure would be comparable to that for residences. Family care facilities in the EPZ are of residential construction and their range of PFs is the same as for typical residences. The relevant structural characteristics of the nursing homes are similar to those for the smaller commercial establishments. Thus, the nursing home PFs have a range comparable to that for typical small commercial structures. The hospitals have structural characteristics comparable to certain wings of schools that were visited and analyzed. Thus, the hospital PFs fall within the range of school PFs. Martin at 12-13 and Attachments 5, 8.

53. The Division of Emergency Management has accepted the results of the survey and the protection factor estimates for typical institutional, commercial and industrial structures in the Harris EPZ. The ERP will be amended to reflect the results of the survey and to include an analysis of the level of protection from radiation releases afforded by representative

commercial, institutional and industrial structures in the Harris EPZ that could be used as shelter in the event of an accident at the Harris Plant. The information will be available to officials who will decide what protective action (that is, evacuation or sheltering of the population) to take in the event of an accident at the Harris Plant. Myers at 3; Tr. 7904, 8058 (Myers).

54. With the inclusion of information on the protection factors of representative institutional, commercial and industrial structures in the EPZ in the ERP, the ERP will comport fully with the literal wording of Evaluation Criterion J.10.m. of NUREG-0654, which calls for inclusion of information on the "expected local protection afforded in residential units or other shelter for direct and inhalation exposure." Martin at 13; Myers at 3.

J. Eddleman 57-C-13: Protection Factors in Hospitals and Nursing Homes

55. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman 57-C-13 (December 12, 1984); FEMA Staff Response to Applicants' Motion for Summary Disposition of Eddleman Contention 57-C-13 (January 16, 1985); Applicants' Letter to ASLB advising that Eddleman does not

intend to respond to Motion on Eddleman 57-C-13 (February 8, 1985); Eddleman Letter to ASLB in response to Applicants' Letter of February 8, 1985 (February 15, 1985).]

K. Eddleman 144: Onsite Staff Augmentation

56. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman 144 (October 8, 1984); NRC Staff Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contentions 144 and 154 (November 8, 1984); Wells Eddleman's Response to Summary Disposition on Contentions 144 and 154 (Site Emergency Planning Contentions) (November 19, 1984).]

L. Eddleman 154: Dose Assessment

57. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman 154 (October 8, 1984); NRC Staff Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contentions 144 and 154 (November 8, 1984); Wells Eddleman's Response to Summary Disposition on Contentions 144 and 154 (Site Emergency Planning Contentions) (November 19, 1984).]

M. Eddleman 213: Boater Notification

58. [Board to insert decision granting summary disposition. See Tr. 7602-03; Order (Confirming Decisions from Telephone Conference Call) at 1 (May 21, 1985); Applicants' Motion for Summary Disposition of Eddleman 213 and Motion to Toll Parties' Response Times (January 14, 1985); Applicants' Supplement to Motion for Summary Disposition of Eddleman 213 (April 5, 1985); FEMA Staff Response to Applicants' Motion for Summary Disposition of Eddleman Contention 213 (May 2, 1985); Applicants' Letter to ASLB advising that Mr. Eddleman does not intend to file a response to Motion on Eddleman 213 (May 13, 1985).]

N. Eddleman 213-a: Implementing Procedures

59. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2 (April 24, 1985); Applicants' Motion for Summary Disposition of Eddleman 213-a (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contention 213-a (February 27, 1985); Wells Eddleman's Response to Summary Disposition on Contentions 57-C-10, 30, 213-a and 215 (March 11, 1985).]

O. Eddleman 215: Conservatisms in Evacuation Time Estimates

1. Eddleman 215(1): Assumption of Evacuation From Home

60. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman 215(1) (January 7, 1985); NRC Staff Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contention 215(1) (February 6, 1985); Wells Eddleman's Response to Summary Disposition Motions [sic; Motion] on Contention 215(1) (Evacuation Time Inaccuracy) (February 15, 1985).]

2. Eddleman 215(3): Assumption That Households Without Cars Will Evacuate at Rate of One Car Per Household

61. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2 (April 24, 1985); Applicants' Motion for Summary Disposition of Eddleman 215(3) (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motions for Summary Disposition of Eddleman Contention 215(3), Wilson Contentions 12(b)(2), and 12(b)(3) and EPJ Contention 2 (February 27, 1985); Wells Eddleman's Response to Summary Disposition on Contentions 57-C-10, 30, 213-a and 215 (March 11, 1985).]

P. Eddleman 224: Weather Conditions Assumed in Evacuation Time Estimates

62. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman Contention 224 (December 31, 1984); NRC Staff Response in Support of Applicants' Motion for Summary Disposition of Eddleman Contention 224 (January 30, 1985).]

Q. Eddleman 240: Decontamination of Evacuees

63. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of Eddleman Contention 240 (January 2, 1985); FEMA Staff Response to Applicants' Motion for Summary Disposition of Eddleman Contention 240 (February 1, 1985).]

R. CCNC 2: Adequacy of Sheltering

64. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2 (April 24, 1985); Applicants' Motion for Summary Disposition of CCNC Contention 2 (January 14, 1985); NRC Staff/FEMA Response to Applicants' Motions for

Summary Disposition of CCNC Contention 2 and Eddleman Contention 57-C-10 (February 27, 1985).]

S. CCNC 8: Staffing of State Radiation Protection Service

65. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of CCNC Contention 8 (December 10, 1984); FEMA Staff Response to Applicants' Motion for Summary Disposition of CCNC Contention 8 (January 16, 1985).]

T. CHANGE 17: Notification of Hearing-Impaired

66. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Eleven Summary Disposition Motions) at 1-2 (February 27, 1985); Applicants' Motion for Summary Disposition of CHANGE 17 (December 21, 1984); FEMA Staff Response to Applicants' Motion for Summary Disposition of CHANGE 17 (January 22, 1985).]

U. Wilson 12(b)(2): Use of One Car Per Family For Evacuation

67. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of Wilson 12(b)(2) (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motion

for Summary Disposition of Eddleman Contention 215(3), Wilson Contentions 12(b)(2), and 12(b)(3) and EPJ Contention 2 (February 27, 1985).]

V. Wilson 12(b)(3): Persons Without Private Transportation

68. [Board to insert decision granting summary disposition. See Memorandum and Order (Ruling on Remaining Summary Disposition Motions) at 2-3 (April 24, 1985); Applicants' Motion for Summary Disposition of Wilson 12(b)(3) and EPJ-2 (January 14, 1985); NRC Staff/FEMA Response in Support of Applicants' Motions for Summary Disposition of Eddleman Contention 215(3), Wilson Contentions 12(b)(2), and 12(b)(3) and EPJ Contention 2 (February 27, 1985).]

III. CONCLUSIONS OF LAW

69. This is a contested proceeding on an application for an operating license for a utilization facility. The Board has not determined that a serious safety, environmental, or common defense and security matter exists. See 10 C.F.R. § 2.760a. Other findings required to be made prior to the issuance of an operating license, except for any remaining matters in controversy, are to be made by the Director of Nuclear Reactor Regulation. See id. and 10 C.F.R. § 50.57.

70. In reaching this decision, the Board should have considered all the evidence submitted by the parties and the

entire record of this proceeding, consisting of the Commission's Notice of Hearing, the pleadings filed by the parties, the transcripts of the hearing and the exhibits received into evidence. All issues and proposed findings presented by the parties, and not addressed in the Board's decision, are deemed to be without merit or unnecessary to the decision. The Board's findings of fact are supported by reliable, probative and substantial evidence in the record.

71. If the Board, in its partial initial decisions, decides all matters in controversy in favor of authorizing operation of the facility, it should conclude that, as to the matters resolved in those decisions, the Director of Nuclear Reactor Regulation would be authorized, upon making the requisite findings with respect to matters not resolved in those decisions, to issue to CP&L a license to operate the Shearon Harris Nuclear Power Plant. Such authorization by the Board would not be deemed granted, however, until the Board resolves any outstanding matters in controversy or issues a further order to the contrary.

IV. ORDER

72. WHEREFORE, THE BOARD SHOULD ORDER, in accordance with 10 C.F.R. §§ 2.760(a) and 2.762, that its Partial Initial Decision on Emergency Planning Matters shall constitute the final action of the Commission thirty (30) days after the date of its

issuance, unless an appeal is taken in accordance with section 2.762 or the Commission directs that the record be certified to it for final decision. Any Notice of Appeal from the decision must be filed within ten (10) days after service of the decision. A brief in support of the appeal must be filed within thirty (30) days (forty (40) days in the case of the NRC Staff) after filing the Notice of Appeal. Any party which is not an appellant may file a brief in support of or in opposition to the appeal within thirty (30) days (forty (40) days in the case of the NRC Staff) after the period has expired for the filing and service of the briefs of all appellants.

Respectfully submitted,

Thomas A. Baxter

Thomas A. Baxter, P.C.
Delissa A. Ridgway
SHAW, PITTMAN, POTTS & TROWBRIDGE
1800 M Street, N.W.
Washington, D.C. 20036
(202) 822-1000

Richard E. Jones
Dale E. Hollar
CAROLINA POWER & LIGHT COMPANY
P.O. Box 1551
Raleigh, North Carolina 27602
(919) 836-7707

Counsel for Applicants

Dated: August 1, 1985

APPENDIX A

WRITTEN TESTIMONY RECEIVED INTO EVIDENCE

<u>Witness</u>	<u>Following Transcript Page</u>
<u>Hawkins, Thomas I.</u> "Testimony of John C. Heard and Thomas I. Hawkins, Federal Emergency Management Agency, Regarding Emergency Planning Contentions Eddleman 57-C-10 and EPJ-4-b"	8130
<u>Heard, John C.</u> "Testimony of John C. Heard and Thomas I. Hawkins, Federal Emergency Management Agency, Regarding Emergency Planning Contentions Eddleman 57-C-10 and EPJ-4-b"	8130
<u>Martin, Guy, Jr.</u> "Direct Testimony of Guy Martin, Jr. on Eddleman Contention 57-C-10 (Protection Factors of Institutional, Commercial and Industrial Structures)"	7895
<u>Mileti, Dennis S.</u> "Testimony of Joseph F. Myers and Dennis S. Mileti on EPJ Contention 4(b) (Role Strain in Adult School Bus Drivers)"	7782
<u>Myers, Joseph F.</u> "Testimony of Joseph F. Myers and Dennis S. Mileti on EPJ Contention 4(b) (Role Strain in Adult School Bus Drivers)"	7782
"Direct Testimony of Joseph F. Myers on Eddleman Contention 57-C-10 (Protection Factors of Institutional, Commercial and Industrial Structures)"	7897

APPENDIX B

EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>	<u>Identified At Transcript Page</u>	<u>Admitted At Transcript Page</u>
App. Ex. 29	North Carolina Emergency Response Plan for SHNPP, Part 1, Section IV.E.8, pp. 49-51	7898	7901
WE Ex. 62	"Shelter Survey Technician Course- Student Manual," FEMA, January 1984, Title Page	Not Identifi- fied, See Tr. 7919, 8011-12	REJECTED, 7934
WE Ex. 63	"Mass Thickness Manual for Walls, Floors, and Roofs," TR-68/ Jan. 1984 -- Supersedes TR-68 dated Sept. 1980 which may be used, FEMA, Title Page	Not Identifi- fied, See Tr. 7919, 8011-12	REJECTED, 7934
WE Ex. 64	"Shelter Analysis for Nuclear Defense (SAND)," FEMA No. TR-55, March 1983, Title Page and pp. vii-ix	8012	8012
WE Ex. 65	"Building Design for Radiation Shielding and Thermal Efficiency," No. TR-85, December 1977, Title Page and p. 2	8017	8022
WE Ex. 66	"National Shelter Survey Instructions," FEMA No. TR-84, May 1982, Title Page and p. 3-13	8024	REJECTED, 8162

<u>Exhibit Number</u>	<u>Description</u>	<u>Identified At Transcript Page</u>	<u>Admitted At Transcript Page</u>
WE Ex. 67	"Effects of Man's Residence Inside Building Structures on Radiation Doses from Routine Re- leases of Radio- nuclides to the Atmosphere," Oak Ridge National Lab- oratory No. TM-6526, December 1978	8087	REJECTED, 8162

August 1, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED
USNRC

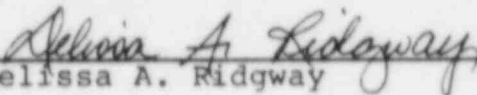
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In the Matter of)
)
CAROLINA POWER & LIGHT COMPANY)
and NORTH CAROLINA EASTERN)
MUNICIPAL POWER AGENCY)
)
(Shearon Harris Nuclear Power)
Plant))

OFFICE OF SECRETARY
DOCKETING & SERVICE
Docket No. 50-400 OL BRANCH

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Proposed Findings of Fact and Conclusions of Law on Emergency Planning Matters" were served this 1st day of August, 1985, by deposit in the U.S. mail, first class, postage prepaid, upon the parties listed on the attached Service List.


Delissa A. Ridgway

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
CAROLINA POWER & LIGHT COMPANY)	
and NORTH CAROLINA EASTERN)	Docket No. 50-400 OL
MUNICIPAL POWER AGENCY)	
)	
(Shearon Harris Nuclear Power)	
Plant))	

SERVICE LIST

James L. Kelley, Esquire
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Glenn O. Bright
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. James H. Carpenter
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Charles A. Barth, Esquire
Janice E. Moore, Esquire
Elaine Chan, Esquire
Office of Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

Mr. Daniel F. Read, President
CHANGE
Post Office Box 2151
Raleigh, North Carolina 27602

John D. Runkle, Esquire
Conservation Council of
North Carolina
307 Granville Road
Chapel Hill, North Carolina 27514

M. Travis Payne, Esquire
Edelstein and Payne
Post Office Box 12607
Raleigh, North Carolina 27605

Dr. Richard D. Wilson
729 Hunter Street
Apex, North Carolina 27502

Mr. Wells Eddleman
718-A Iredell Street
Durham, North Carolina 27705

Richard E. Jones, Esquire
Vice President and Senior Counsel
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dr. Linda W. Little
Governor's Waste Management Board
513 Albemarle Building
325 North Salisbury Street
Raleigh, North Carolina 27611

Bradley W. Jones, Esquire
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street
Atlanta, Georgia 30303

Mr. Robert P. Gruber
Executive Director
Public Staff - NCUC
Post Office Box 991
Raleigh, North Carolina 27602

Administrative Judge Harry Foreman
Box 395 Mayo
University of Minnesota
Minneapolis, Minnesota 55455

Joe Flynn
Associate General Counsel
FEMA
500 C Street, S.W., Suite 480
Washington, D.C. 20740

Steven Rochlis, Esq.
Regional Counsel
FEMA
1371 Peachtree Street, N.E.
Atlanta, Georgia 30309