328

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)	)	

APPLICANTS' REPLY TO THE PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW ON SAFETY MATTERS FILED BY OTHER PARTIES

Thomas A. Baxter, P.C.
John H. O'Neill, Jr., P.C.
Pamela H. Anderson
Michael A. Swiger
SHAW, PITTMAN, POTTS & TROWBRIDGE

Richard E. Jones
CAROLINA POWER & LIGHT COMPANY

Edgar M. Roach, Jr.
HUNTON & WILLIAMS

Counsel for Applicants

January 29, 1985

DS03

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)	)	

APPLICANTS' REPLY TO THE PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW ON SAFETY MATTERS FILED BY OTHER PARTIES

Thomas A. Baxter, P.C.
John H. O'Neill, Jr., P.C.
Pamela H. Anderson
Michael A. Swiger
SHAW, PITTMAN, POTTS & TROWBRIDGE

Richard E. Jones
CAROLINA POWER & LIGHT COMPANY

Edgar M. Roach, Jr.
HUNTON & WILLIAMS

Counsel for Applicants

January 29, 1985

D

TABLE OF CONTENTS

January 29, 1985

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)	)	

APPLICANTS' REPLY TO THE
PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW
ON SAFETY MATTERS
FILED BY OTHER PARTIES

I. INTRODUCTION

1. Applicants herein submit their reply to: "Wells Eddleman's Proposed Findings on Contentions 41 (Pipe Hangers QA/QC), 116 (Fire Protection) and 9 (Environmental Qualification of Electrical Equipment) (With Conclusions and Orders Included)," dated January 8, 1985; "Joint Intervenors' Proposed Findings re Joint Contention 7 (Steam Generators Multiple Tube Ruptures)," dated January 8, 1985; "Joint Intervenors' Proposed Findings on Joint Contention I (Management Capability)," dated January 9, 1985; "Joint Intervenors' Proposed Findings on Joint Contention IV (Thermoluminescent Dosimeters)," dated January 9, 1985; and "NRC Staff Proposed Findings of Fact and Conclusions

of Law on Joint Intervenors' Contentions I, IV and VII(4) and Eddleman Contentions 9, 41 and 116," dated January 22, 1985.

2. Applicants have not attempted to respond to each proposed finding with which Applicants disagree. Nor is the Board required to address expressly each and every individual finding proposed by every party. See Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 and 2), ALAB-422, 6 N.R.C. 33, 41 (1977), aff'd, CLI-78-1, 7 N.R.C. 1 (1978), aff'd sub nom. New England Coalition on Nuclear Pollution v. NRC, 582 F.2d 87 (1st Cir. 1978). As to matters not raised in this reply, Applicants rely upon but do not repeat "Applicants' Proposed Findings of Fact and Conclusions of Law on Safety Matters," dated December 21, 1984 (as amended on January 10, 1985) (hereinafter cited as "App. PF [paragraph number(s)]").

3. Citations to the proposed findings of the other parties below are in the format "Eddleman PF __," "J.I. IV PF __," or "Staff PF __," with the appropriate paragraph number(s) supplied. In citations to pre-filed direct testimony, Applicants employ the abbreviations established in their December 21, 1984 proposed findings (Appendix A of which identifies the location in the transcript of each witness' direct testimony).

II. JOINT CONTENTION I: Management Capability

4. Applicants, in their testimony on Joint Contention I, set forth the development of CP&L's management organization at the corporate level as well as at each of CP&L's nuclear projects. The reliable, probative and substantial evidence of record in this proceeding demonstrates that Applicants have the management capability and technical competence to operate the Harris plant safely. Applicants have in place a management structure, at both the corporate and plant levels, that is properly structured to conduct the activities necessary to operate their nuclear facilities safely. The management organization, at both the corporate and plant levels, is staffed with well-qualified individuals with extensive experience in the nuclear industry. See App. PF 11, 18-24, 39-42, 59-60, 67-76, 87, 124, 133, 155-165.

5. Joint Intervenors in their proposed findings have offered no material evidence to support their contention that Applicants have not demonstrated their ability safely to operate, maintain and manage the Shearon Harris Nuclear Power Plant ("SHNPP" or "Harris Plant"). The Joint Intervenors have offered no material evidence that the management organization and personnel for CP&L, as presently constituted, are not adequate to manage the Harris Plant. Nor has there been any showing that the various programs in place at the Harris Plant

are not adequate. Rather, Joint Intervenors have focused primarily on events and alleged events at the Brunswick Plant in 1982 and before. This focus by the Joint Intervenors ignores two important facts. First, while CP&L has encountered some difficulties in the past in the operation of the Brunswick Plant, operations there have never posed a threat to the public health and safety. Second, improvement efforts have been implemented at the Brunswick Plant in staffing, health physics, maintenance, operations and training. Management of the plant was restructured in 1982, with Patrick W. Howe, a CP&L vice-president, placed on site at Brunswick to improve the management of the project. As reflected in the most recent Systematic Assessment of Licensee Performance ("SALP") report, these efforts have been successful, and the Brunswick Plant is much improved. See SALP report for the period February 1, 1983 through April 30, 1984 ("SALP IV"), ff. Tr. 3660; App. PF 63, 77, 78, 82, 91, 92, 94-116.

6. A number of the Joint Intervenors' proposed findings are not linked to any conclusions offered by the Joint Intervenors, are irrelevant, and bear no relationship to this Contention or to Applicants' ability to operate the Harris Plant safely. These include:

(a) Proposed finding 12 (salary levels of specific CP&L personnel);

(b) Proposed finding 14 (fossil plants operated by CP&L);

(c) Proposed finding 22 (CP&L senior management receive oral, not written, evaluations);

(d) Proposed finding 41 (more LERs are likely when a plant is going on-line or off-line rather than when plant is in full operation or completely down);

(e) Proposed findings 44 and 45 (capacity factors for Brunswick and Robinson Plants);

(f) Proposed finding 70 (number of workers monitored for radiation exposure at Brunswick has increased);

(g) Proposed finding 75 (steam generator tube degradation at Robinson); and

(h) Proposed finding 80 (schedule for completion of Harris).

7. Joint Intervenors offer no citations to the record in support of their proposed finding 9. That proposed finding is not supported by the record.

8. Joint Intervenors in proposed finding 10 state in part: "Reliance on one person for the three top positions has the potential to preclude effective change in response to problems in nuclear operation." No citation is given in support of this proposition. This statement is not supported by the evidence in the record. Rather, as CP&L witness Sherwood H. Smith, Jr. testified, the joint position of Chairman and

President as held by Mr. Smith is not unique in the industry. For example, the largest nuclear utility in the country, Commonwealth Edison, is structured in a similar manner, as are other utility companies. Tr. 3914 (Smith).

9. Joint Intervenors in proposed finding 11 state that decisions by CP&L's Chairman Sherwood H. Smith, Jr. "are made under his three, at times conflicting, responsibilities." The evidence of record does not support Joint Intervenors' statement that Mr. Smith's responsibilities conflict. Mr. Smith and Mr. Utley, in response to questioning by counsel for the Joint Intervenors, stated that their primary responsibility, and that of the individuals under them, is the safe operation of Applicants' nuclear power plants. Applicants' witnesses demonstrated a commitment to fulfilling that responsibility. Tr. 2532 (Utley); Tr. 3917, 3920 (Smith).

10. Joint Intervenors in proposed finding 12 note that certain of Applicants' witnesses are executive officers of CP&L and/or earn more than $50,000 annually. The Joint Intervenors do not explain what relevance, if any, they believe this may have. If it is offered to imply bias by the witnesses, this is not supported by the record. Applicants' presentation on an issue of management competence must be based on testimony of members of management. Applicants' witnesses have testified under oath in a truthful and open manner, and their testimony was credible.

11. Joint Intervenors in proposed finding 21 imply that CP&L misinformed the North Carolina Utilities Commission regarding the status of CP&L's response to a recommendation of Cresap, McCormick and Paget, Inc. This proposed finding is erroneous, and ignores the testimony of record. Joint Intervenors refer to information contained in a semi-annual report to the North Carolina Utilities Commission (Joint Intervenors' Exhibit 14). Joint Intervenors in proposed finding 21 fail to cite the complete explanation provided to the North Carolina Utilities Commission in a detailed report on the same matter (Applicants' Exhibit 3). CP&L, in Applicants' Exhibit 3, clearly stated the actions CP&L would undertake in response to the recommendation by Cresap, McCormick and Paget, Inc. CP&L's report to the North Carolina Utilities Commission, as set forth in Applicants' Exhibit 3, was full, complete and not misleading. Tr. 3105-07 (Utley).

12. Joint Intervenors in proposed finding 26 state that Mr. Utley was incorrect in his testimony that in 1979 "there was a separation of the nuclear operations from fossil operations, and the placement of nuclear operations under the direction of a corporation officer." There is no evidence at the page of the record cited by Joint Intervenors that Mr. Utley's statement is incorrect. The statement by Mr. Utley is correct. Tr. 2550 (Utley).

13. Joint Intervenors in proposed finding 28 state that the NRC Staff Standard Review Plan (SRP) 13.1.1 provides: "(a) corporate officer should clearly be responsible for nuclear activities, without having ancillary responsibilities that might detract from his attention to nuclear safety matters." Joint Intervenors state that the current CP&L structure does not meet the SRP acceptance criteria, but ignore testimony that: (a) this is not a violation of the regulations; (b) the NRC Staff "finds that the present organization within CP&L is acceptable for the operation of the Brunswick and Robinson sites, although further nuclear consolidation is desirable"; and (c) CP&L is planning further steps toward consolidation. Bemis at 36; Tr. 2546-47 (Utley).

14. Mr. Utley, who is responsible for all CP&L nuclear activities, devotes approximately 85 to 90 percent of his time to nuclear matters. The nuclear portion of Mr. Utley's responsibilities are the dominant responsibilities that he has. Tr. 2533 (Utley); Tr 3916 (Smith).

15. CP&L is planning further steps toward consolidation of the responsibilities for its nuclear activities. CP&L's program anticipates that at an appropriate time, to be decided by the management of CP&L, responsibilities for all nuclear matters will be consolidated under one Senior Vice President. That change will occur at such time as, in the judgment of CP&L's management, the consolidation would result in improved operations. Tr. 2537, 2546-47 (Utley).

16. Joint Intervenors in proposed finding 33 discuss Joint Intervenors' Exhibit 39, which they offer to compare functional areas in different SALP reports. The Joint Intervenors ignore Mr. Bemis' testimony that the functional areas are at no point in time of equal weight. Tr. 3654-55 (Bemis).

17. Joint Intervenors in proposed finding 35 compare violations at Applicants' plants during the periods covered by SALP III and SALP IV to show more violations in certain areas in the SALP IV report period. The apparent theme of the proposed finding is that the incurrence of more violations is inconsistent with the SALP IV assessment of improved performance by CP&L. This reasoning by Joint Intervenors ignores the fact that enforcement history is but one of several criteria used for assessment of a licensee's performance in a SALP report. In fact, Mr. Bemis testified that "the number of violations in and of itself does not have a direct correlation to the rating given." The SALP IV report states in pertinent part:

> One or more of the folowing evaluation criteria were used to assess each functional area:
>
> - Management involvement in assuring quality
> - Approach to the resolution of technical issues from a safety standpoint
> - Responsiveness to NRC initiatives
> - Enforcement history
> - Reporting and analysis of reportable events

- Staffing (including management)
- Training effectiveness and qualification

In each of the areas identified by the Joint Intervenors, the SALP Report sets forth clear findings in support of its evaluations and observed trends. SALP IV at 1, 16-18, 22-23, 40-42, 55-59, 60-62, 65-67; Tr. 3853-55, 3873-74 (Bemis).

18. Joint Intervenors in proposed finding 38 offer a simple arithmetic average of the numerical ratings for CP&L's Brunswick Plant in the SALP II report (July 1, 1980 through December 31, 1981). Joint Intervenors attempt then to utilize this rating to compare CP&L's performance with other nuclear plants in the nation. There is no basis in the record to support such an averaging or such a comparison. First, the SALP program is intended to identify areas for improvements at nuclear facilities. The program is not meant to be, and is not, a rating system to judge whether one plant is being operated more safely or more efficiently than another. Second, there is no evidence that a simple arithmetic approach to evaluating SALP ratings is valid. A SALP review involves findings in a number of areas and any meaningful evaluation of those findings would require a detailed analysis of the basis for the rating in each area and the corrective actions taken by the utility. In fact, Mr. Bemis testified that the functional areas are at no point in time of equal weight. The weight of each area varies with time, from application for the construction permit

to decommissioning of the facility. Similarly, the various areas will differ in weight at any given time. Therefore, the SALP ratings cannot be algebraically manipulated to result in an arithmetic mean. Tr. 3655-56 (Bemis). Further, the SALP II report for July 1, 1980 through December 31, 1981 is not indicative of the current management of the Brunswick Plant. As the record reflects, CP&L experienced problems at the Brunswick Plant in a number of areas in 1982 and before. Improvement efforts were implemented. These efforts have been successful, and the Brunwsick Plant is much improved. The most recent SALP IV review of CP&L's nuclear plants, covering the period February 1, 1983, through April 30, 1984, reflects the significant improvements at Brunswick. SALP IV at 1; see ¶ 5, supra.

19. Joint Intervenors in proposed finding 39 discuss the number of Licensee Event Reports (LERs) at the Brunswick Plant in 1979 and 1982. Joint Intervenors ignore the performance of Brunswick in LERs in 1983. In 1983, Brunswick achieved a 45 percent reduction in the number of LERs, as compared to 1982, as well as a 38 percent reduction in the number of NRC notices of violation issued. This is a direct result of several factors, including better accountability within the Brunswick organization, the Brunswick Improvement Program, improved procedures resulting from Brunswick's procedure upgrade program, increased emphasis on strict adherence to procedures, improvements in Brunswick's maintenance program, and better tracking

of test requirements. Howe/Dietz at 28. Further, the first two sentences of Joint Intervenors' proposed finding 39 lack citation to the record.

20. Joint Intervenors in proposed finding 39 include a "ranking" of the number of LERs for the Brunswick units in 1982 with those of other nuclear plants in the country. There is no evidence that such a comparison has any validity. Rather, the evidence is that LER reporting requirements differ from plant to plant; therefore, the number of LERs a plant may incur is a function of the reporting requirements for that plant. For example, the number of LERs will vary depending on whether the plant has standard technical specifications or not. The Brunswick units have standard technical specifications with very detailed requirements for instrument calibrations and performance standards, and thus are likely to incur more LERs. Further, there is no evidence that simply counting LERs will provide a valid index of safety. LERs are not reports of nuclear accidents or mishaps. Under the system in effect prior to January 1, 1984, LERs did not necessarily reflect an event of safety significance or potential safety significance. LERs were issued for a variety of non-safety related reasons, e.g., instrumentation not in calibration. It is a misuse of data to simply total the LERs for a plant and from that attempt to draw conclusions about the operation of the plant.1/ Tr. 3102-03

1/ See Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 N.R.C. 381, 532-33 (1981) (no

(Continued Next Page)

(Elleman); Tr. 3371 (Howe).

21. Joint Intervenors in proposed finding 43 discuss the number of incidents at the Brunswick Plant in 1982 with an NRC rating of 2. There is no evidence of what the incidents were, nor of what safety significance the incidents may have had. There is no showing that any of the events had any effect on the health and safety of the public.

22. Joint Intervenors in proposed findings 44 and 45 discuss the capacity factors for the Brunswick and Robinson units. There is no evidence that capacity factors by themselves provide a measure of the safety of a plant. The Brunswick units in the period since 1979 have been removed from service for extended periods to permit a number of major plant modifications to be made. Many of these modifications were carried out to improve plant safety. Rather than being a negative indicator of safety, these outages are indicative of positive measures taken to improve plant safety. Tr. 2559-68 (Utley, McDuffie); Tr. 3217-18 (Howe, Dietz); Tr. 3248-49 (Howe).

23. Joint Intervenors in proposed finding 47 discuss the need in 1979 and in 1982 to increase staffing levels at the Brunswick Plant. The Joint Intervenors ignore current staffing

---

(Continued)

reliable conclusions can be drawn from a purely statistical comparison of a given plant's LERs with industry-wide LERs), remanded on other grounds, ALAB-772, 19 N.R.C. 1193 (1984).

levels at the Brunswick Plant. Approximately 95 percent of the authorized positions for the Brunswick Plant are now filled, and the Brunswick Plant is operating with essentially a full staff. Tr. 2816-18 (Utley); Howe/Dietz at 15; Tr. 3291-92 (Howe). Further, the first sentence of Joint Intervenors' proposed finding 47 lacks citation to the record.

24. Joint Intervenors in proposed finding 53 state that CP&L instituted its improvement programs at Brunswick "as a result of the issues raised at the remand hearing." The quoted portion of that proposed finding is not supported by the Joint Intervenors' citation to the record.

25. Joint Intervenors in proposed finding 65 quote a portion of the SALP IV report on maintenance at the Brunswick Plant. The quoted portion discusses the necessity for improvement of maintenance instructions. Joint Intervenors omitted the sentences from the SALP IV report which follow the quoted portion:

> This area was being aggressively addressed with the addition of contract support to rewrite maintenance procedures. Supervisory presence in field maintenance activities showed significant improvement over the period.

SALP IV at 37.

26. Joint Intervenors in proposed finding 66 discuss a problem at Brunswick and other nuclear plants involving the blocking of coolant flow to safety systems and components by the buildup of biological organisms. This problem, which has

been experienced at a number of nuclear plants, was discovered at Brunswick in 1981. The problem was remedied shortly after it was discovered, and there is no evidence that it has reoccurred. This event, which occurred some four years ago, is irrelevant to Applicants' ability to operate the Harris Plant safely. Tr. 2639-41 (Elleman).

27. Joint Intervenors in proposed findings 68 and 69 discuss the number of workers at the Brunswick Plant exposed to measurable doses of radiation and the total man-rems incurred. There is no evidence that these statistics are indicative of a significant safety problem. The Brunswick units in 1982 and 1983 underwent extensive modifications, thereby requiring the presence of a large number of workers on site. It is not unusual, therefore, that a large number of workers were exposed to measurable doses of radiation. Although a number of workers were exposed, these exposures were kept at a low level. Joint Intervenors ignore the fact that the annual exposure per individual at Brunswick decreased 38 percent from 1980 to 1983. Howe/Dietz at 29; Tr. 3217-18 (Howe, Dietz); Tr. 3248-49, 3374-78 (Howe).

28. Joint Intervenors in proposed finding 81 cite to the portion of the SALP IV report relating to Harris electrical power supply and distribution. Joint Intervenors, in their proposed finding, failed to note that the SALP IV report stated as to this functional area:

(a) While licensee nonconformances and NRC violations were identified in these areas, a marked improvement was demonstrated.

(b) Although a significant number of violations were identified, there was no indication of a programmatic breakdown.

SALP IV at 61, 62.

29. Joint Intervenors in proposed finding 84 reference Mr. Maxwell's testimony as to five incidents relating to CP&L's response to violations. Mr. Maxwell testified that when he brought these violations to the attention of CP&L, they were resolved by CP&L to his satisfaction. Tr. 3860-61 (Maxwell).

30. Joint Intervenors in proposed finding 90 state that "Very few of the [Harris Plant] management have a background in personnel management, recruiting, or administration." Joint Intervenors ignore Mr. McDuffie's testimony that "personnel matters and recruiting and some administration of the personnel policy will be handled by the employee relations department, which will have an office and a staff at the Harris site." Mr. McDuffie also stated that he thought all of the personnel who have served as supervisors or managers have had some personnel training. Tr. 3026-27 (McDuffie).

31. Joint Intervenors in proposed finding 91 state that there is not enough evidence in the record to determine whetner CP&L's General Employee Training ("GET") Levels I and II satisfy the regulatory requirements for training employees working

in radiation levels. The testimony of Applicants' witnesses Davis and Powell was that Levels I and II satisfy the regulatory requirements for training of employees working in radiation areas. Joint Intervenors have not offered testimony to the contrary, nor have they identified any specific aspects of GET Levels I and II that they believe do not meet regulatory requirements. Davis/Powell at 9; Tr. 3423-35 (Davis, Powell); Tr. 3453-55 (Davis, Powell, Willis).

32. Joint Intervenors in proposed finding 92 cite an IE Information Notice regarding the circumventing of station health physics procedures at Brunswick and two other nuclear plants. Joint Intervenors allege this incident is evidence that "the GET Level I and II training received by contractor personnel is not adequate that the purpose for health physics procedures is for their own health." [Note: Some words apparently omitted]. This allegation is not supported by the record. An investigation of the incident at Brunswick, which involved two contract personnel allegedly swapping dosimeters, revealed no evidence that there was a widespread practice of any duration. There is no evidence that this incident at Brunswick was the result of inadequate training. The evidence of record is that the GET Level I and II training meets regulatory requirements. All personnel who enter the protected area, including CP&L employees, contract employees and vendors, are given basic training in radiation protection and health

physics. Personnel must successfully complete this program before they are allowed to enter the protected area. Davis/Powell at 9; Tr. 3318-25 (Howe).

33. Joint Intervenors in proposed finding 96 discuss Mr. Bemis' testimony regarding CP&L's management at some point in the past having a "fossil mentality." Joint Intervenors ignore Mr. Bemis' testimony that:

(a) His comment regarding the "fossil mentality" "does not mean that nuclear plants were being operated unsafely."

(b) The NRC Staff found CP&L "not only responsive to NRC initiatives," but found CP&L "to be extremely open with all their findings."

(c) The NRC Staff has always found CP&L to be attentive to nuclear safety, and CP&L has now "gotten very good" in implementing nuclear safety programs.

(d) In 1982, CP&L's genesis of a "nuclear mentality" took place. Mr. Bemis stated:

> From the summer of 1982 to present I found strong dedication from all CP&L management not only to meet the NRC regulations, but to exceed our requirements when possible.

Bemis at 19-20; Tr. 3675-82, 3858-59 (Bemis).

34. Joint Intervenors in proposed finding 100 allege that the improved ratings received by Applicants in the SALP IV report may be due in part to Mr. Bemis seeking to promote his own self interest. This is a baseless and unsubstantiated

allegation. There is no evidence that Mr. Bemis has in any way biased his evaluations of CP&L's activities. Furthur, this allegation by the Joint Intervenors ignores the nature of the SALP process. Mr. Bemis coordinated the initial development of the SALP report for CP&L through discussions with inspectors in each of the functional areas and their supervisors, as well as the licensing project managers and representatives of the Office of Nuclear Reactor Regulation. These individuals prepared write-ups and initially suggested category ratings. The final SALP report was the product of a two-day meeting attended by the SALP Board Members and others. At the end of the meeting, the Board Members voted by secret ballot. There is no basis for the Joint Intervenors' allegation that this process has produced a biased result. Tr. 3654-55 (Bemis); SALP IV at 8.

35. Joint Intervenors in proposed finding 102 state that "Mr. Bemis testified to several instances where Applicants did not react 'with vigor' to concerns raised by the NRC." Joint Intervenors ignore the primary thrust of Mr. Bemis' testimony that Mr. Smith, Mr. Utley and other corporate officers of CP&L have listened to NRC concerns and in many instances have acted with vigor in responding to those concerns. Mr. Bemis testified that in those instances in which the NRC staff had a real concern, CP&L followed up on it. Proposed finding 102 also ignores Mr. Bemis' testimony that: (a) CP&L stated that hiring the personnel necessary for a restructuring takes some

time; and (b) the NRC did not believe the managers in place prior to the restructuring were unsafe or poor managers. Bemis at 7; Tr. 3699-3702 (Bemis).

36. Joint Intervenors in proposed finding 103 quote a portion of a sentence by Mr. Bemis regarding CP&L's implementation of enhancements. Mr. Bemis' statement was:

> I feel that I have seen -- and I use the term in a general way -- the fossil mentality turn into the genesis of a nuclear mentality. I'm seeing that now overall CP&L is starting to develop programs on their own to improve, and particularly in the nuclear area; whereas before they may have to have been coerced a little to do that when it was an enhancement rather than something that was a requirement to meet the regulations.

Mr. Bemis also testified that since 1982 he has found "a strong dedication from all CP&L management not only to meet the NRC regulations, but to exceed our requirements when possible." Bemis at 20; Tr. 3858-59 (Bemis).

37. Joint Intervenors offer no citation or support for proposed finding 105.

38. The reliable, probative and substantial evidence of record in this proceeding demonstrates that Applicants have the management capability and technical competence to operate the Harris Plant safely.

III. JOINT CONTENTION IV: Thermoluminescent Dosimeters (TLDs)

39. Most of the proposed findings submitted by the Joint Intervenors on Joint Contention IV restate or adopt by reference findings proposed by Applicants. See J.I. IV PF 2-5, 9-10. Most significantly, Joint Intervenors' proposed findings do not question the accuracy of Applicants' TLDs and processing equipment or the efficacy of Applicants' dosimetry program -- i.e., the remaining TLD issue that was litigated. However, in certain instances the Joint Intervenors' proposed findings include superfluous or unsubstantiated material and do not accurately reflect the evidence presented at the hearing. Joint Intervenors conclude that the Board should, in effect, impose a license condition establishing lower radiation exposure limits for Applicants than are presently required for all other licensees. Neither the record of this proceeding nor Joint Intervenors' proposed findings support such extraordinary action by the Board. Thus Applicants briefly reply to Joint Intervenors' proposed findings.

40. Paragraphs 1-5 of Joint Intervenors' proposed findings merely set forth Joint Contention IV and adopt by reference portions of Applicants' proposed findings, including the statement of the procedural history of Joint Contention IV. J.I. IV PF 1-5. Paragraph 6 of Joint Intervenors' proposed findings essentially reiterates Mr. Browne's testimony

concerning how TLDs will be used as the dosimeter of record at the Harris Plant. See Browne at 4. The Joint Intervenors characterize Applicants' use of TLDs as having dual objectives: 1) assessing doses so as to conform to regulatory limits and 2) compiling official records. J.I. IV PF 6. It is important to note, however, that, as the Board has found, TLDs are but one part of Applicants' radiation protection program. Area radiation monitors and portable survey instruments are used to anticipate radiation dose and self-reading dosimeters are used to provide estimates of worker exposure on a real time basis. Memorandum and Order (Ruling on Motions for Summary Disposition), at 3, 4 (April 13, 1984); Tr. 6632 (Albright). Therefore, TLDs are but one of several means of ensuring that the Commission's regulatory limits for radiation exposure are not exceeded.

41. Joint Intervenors' proposed findings 7 and 8 set forth certain provisions of 10 C.F.R. Part 20 that are generally relevant to radiation protection. Proposed findings 9 and 10 incorporate by reference certain of Applicants' proposed findings and proposed finding 11 restates other findings proposed by Applicants. See App. PF 24.

42. Joint Intervenors' proposed finding 12 sets forth a list of possible sources of TLD inaccuracy which were acknowledged by the work study group at the University of Michigan which formulated the American National Standards Institute

("ANSI") standard on TLD accuracy. See Board Exhibit 2 (pp. A.46-A.47 of Performance Testing of Personnel Dosimetry Services, NUREG/CR-2891 (February 1983)). Applicants submit that this list has no direct relevancy to Joint Contention IV because no evidence was introduced through direct testimony or through cross-examination concerning which, if any, of these factors are sources of TLD inaccuracy in Applicants' program. Indeed, Applicants have demonstrated that TLDs are used at the Harris Plant in a manner that minimizes all of the major sources of TLD error. App. PF 27-30; Staff PF 208; Browne at 20-24.

43. Joint Intervenors also urge the Board to require Applicants to have written procedures for all phases of their dosimetry program, formal training and qualification of all operating personnel and supervisory review of all quality control records. J.I. IV PF 12. In fact, however, Applicants' program already includes each of these features. App. PF 31; Staff PF 235; Browne at 24-25. In sum, Applicants have demonstrated their ability and commitment to satisfy any reasonable standard for TLD accuracy that is adopted by the Commission. App. PF 34; Staff PF 242; see also Cusimano and Block at 8. Applicants' evidence on these issues has not been contraverted.

44. Nonetheless, Joint Intervenors assert that Applicants should be required to compensate for any possible inaccuracy in TLD measurements by limiting worker exposure to two-thirds of

the regulatory limit. J.I. IV PF 13-14. This approach simply is not in accord with the regulatory requirements. The regulations are phrased in terms of measured dose; a licensee is not allowed to exceed five rems per year or one and one half rems per quarter measured dose. Tr. 6534 (Browne); Tr. 6622, 6627 (Albright). This regulation is consistent with other standards in 10 C.F.R. Parts 20 and 50 which set forth regulatory requirements in terms of measured values. Tr. 6633 (Albright); see also Staff PF 236-37. There is no support in the record for the relief requested by Joint Intervenors. Indeed, Joint Intervenors do not indicate that they question Applicants' capability or commitment in carrying out a state-of-the-art dosimetry program at the Harris Plant. Therefore it would be unwarranted for this Board to rewrite the existing regulations, as suggested by the Joint Intervenors, to require Applicants to commit to a standard not required of other licensees. As suggested by the Staff, if Joint Intervenors believe existing regulations for worker exposure limits should be changed for Applicants, their remedy would have been to make the showing of special circumstances required by 10 C.F.R. § 2.758. Staff PF 237. This was not done and Joint Intervenors' proposed findings 13 and 14 should be specifically rejected.

IV. JOINT CONTENTION VII(4): Steam Generator Tube Rupture Analysis

45. The Joint Intervenors' proposed findings on Joint Contention VII essentially ignore the sole issue before the Board -- whether Applicants must include an analysis of multiple tube ruptures in their Final Safety Analysis Report ("FSAR"). The proposed findings primarily are addressed to the credibility of Applicants' testimony regarding the predicted frequency of single, not multiple, tube ruptures. In essence, the Joint Intervenors seek, at this late stage of the proceeding, to derive their own analysis of the frequency of single tube ruptures and to demonstrate that the results of that analysis are inconsistent with the conclusions reached by Applicants' expert witness. Even if this attempt to construct an analysis after the record has been closed were permissible, however, and Applicants submit that it is not, Joint Intervenors' proposed findings in no way undermine the conclusion of Applicants and the NRC Staff that an analysis of multiple tube rupture events is not required.

46. The Joint Intervenors' proposed findings are somewhat difficult to follow. The thrust of those findings seems to be that Applicants' testimony is not credible because: 1) it is possible to derive a different historical frequency for steam generator tube rupture events by using a different data base, and 2) Mr. Hitchler's conclusion that the predicted frequency

of such events at the Harris Plant is less than the historical record is not justified. Neither of these points is relevant to the sole litigated part of Joint Contention VII, which deals with multiple tube ruptures. Joint Intervenors simply ignore the evidence in the record and the proposed findings submitted by Applicants regarding the extremely small probability of a multiple tube rupture event, the conservatisms in Applicants' FSAR tube rupture analysis, the insignificant contribution to overall risk from multiple tube ruptures, and Applicants' procedures to deal with and control such events should they ever occur. See, e.g., Hitchler at 12-13; Marsh and Conrad at 3 and 6; Tr. 4230-31 (Marsh); App. PF 48-50; Staff PF 254, 282-83. Nevertheless, Applicants briefly reply to Joint Intervenors' proposed findings in order to clarify certain misstatements and misinterpretations contained therein.

47. The Joint Intervenors make two points with respect to Mr. Hitchler's analysis of historical data for Westinghouse steam generators. First, Joint Intervenors would have the Board consider only data from United States nuclear power plants of Westinghouse design. J.I. VII PF 1. Then Joint Intervenors would have the Board consider only the data from the operating period between September 30, 1979 and July 31, 1983. J.I. VII PF 2. Based on these selective data bases, Joint Intervenors apparently contend that: 1) the experience at United States Westinghouse plants is not as good as that at all plants

world-wide, and 2) steam generator tube rupture events have occurred with greater frequency since 1979.

48. Each of these decisions to include or discount a portion of the total data base involves judgment, as the Joint Intervenors concede. J.I. VII PF 1; Tr. 4025 (Hitchler). However, the Joint Intervenors have produced no evidence that would support their decision to exclude a portion of the data base set forth in Mr. Hitchler's testimony. Clearly the Joint Intervenors' representatives did not seek to qualify themselves as experts at the time of the hearing. This fact in and of itself requires that the Joint Intervenors' attempted analysis be disregarded.

49. The parties to a proceeding must be given a reasonable opportunity to probe or rebut all evidence, including the qualifications of potential witnesses. Philadelphia Electric Company, et al. (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-83-14, 17 N.R.C. 745, 747 n. 3 (1983). A licensing board may not base a decision on material that has not been introduced into evidence. Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B), ALAB-463, 7 N.R.C. 341, 352 (1978). Thus, if the Joint Intervenors intended to testify or perform an analysis, they were required to seek qualification and submit testimony at the time of the hearing. Instead the Joint Intervenors seek to deprive Applicants of any opportunity for voir dire or cross-examination by submitting

their analysis for the first time as a proposed finding of fact. This simply is not permissible. Id.

50. Moreover, the data base utilized by Joint Intervenors is not appropriate for analysis of the historical record of steam generator tube failures. No justification exists for excluding foreign nuclear plants of Westinghouse design. Mr. Hitchler testified that the foreign plants included in his data base used Inconel steam generator tubes, similar to those which will be used at the Harris Plant. Tr. 4026-28 (Hitchler). Therefore, Mr. Hitchler exercised his professional judgment in deciding to include all plants in the data base. His decision was to include, rather than exclude plants. Tr. 4073-74 (Kitchler). This decision was made in order to achieve the broadest possible data base. The Joint Intervenors have not introduced any evidence to rebut the reasonableness of that decision.

51. Even adopting the Joint Intervenors' assumptions, however, it is clear that their figure of 1.8×10^{-6} rupture/tube year as the predicted frequency of steam generator tube rupture events does not differ significantly from the 1.6×10^{-6} rupture/tube year presented in Applicants' testimony. In fact, it is well within the confidence level set forth in Mr. Hitchler's testimony.2/ Furthermore, neither

---

2/ Mr. Hitchler testified that the calculated failure rate could be as low as 0.73×10^{-6} or as high as 2.9×10^{-6} per tube year. Hitchler at 6.

Applicants' data nor the Joint Intervenors' data includes operating experience since July 1983. No tube ruptures have occurred since that time. If the additional data for the period since that time were included, the calculated predicted frequency of a single tube rupture based on historical data would be even smaller.

52. Secondly, Joint Intervenors attempt to establish that the historical data indicate that the frequency of tube rupture events is increasing over time. Again, Joint Intervenors presented no evidence whatsoever in support of that proposition at the hearing. It is inappropriate to derive a rate from a selective portion of the entire data base, as the Joint Intervenors do when they focus attention on the time period between October 1, 1979 and July 31, 1983. J.I. VII PF 2.3/ If it were appropriate to do an analysis on such a limited selected sample of the available data to establish a trend, it would be equally appropriate to focus on the most recent time period from January 1982, the date of the last tube rupture event, until the present. Since no tube ruptures have occurred in

---

3/ In their third proposed finding, Joint Intervenors seek to demonstrate that if their suggested data base is used, single tube ruptures will occur at a predicted frequency of 4.2 - 4.6 ruptures/million tube years. This result can only be derived from adopting a 95% confidence limit, which is inconsistent from the confidence limit chosen by Joint Intervenors in J.I. VII(4) PF 1, 2 and inconsistent with that chosen by Mr. Hitchler based on his expert judgment. Thus, the predicted frequency calculated by Joint Intevenors is misleading.

that time period, such an analysis would show that the rate of single tube rupture events dropped to zero. Any such selective use of data would be inappropriate.

53. Furthermore, although the Joint Intervenors attack the analysis of historical data of single tube ruptures presented by Mr. Hitchler, their proposed findings do not contradict the alternative pressure pulse model analysis developed by Westinghouse to predict the frequency of multiple tube ruptures. Mr. Hitchler's testimony demonstrated that multiple tube ruptures would be predicted to occur only once in 14,000 plant years. Hitchler at 12. The Joint Intervenors do not contest this conclusion.

54. For their second major point, Joint Intervenors attempt to discredit Mr. Hitchler's conclusion that the Harris Plant can be predicted to perform much better than the historical record with respect to tube rupture events. See J.I. VII PF 3-9. These proposed findings contain many misinterpretations of Applicants' testimony and inappropriate attempts to use irrelevant material to support Joint Intervenors' contention. For instance, the Joint Intervenors assert that because Mr. Hitchler personally has not inspected the Harris Plant Quality Assurance procedures, his analysis of the effect of improvements at the Harris Plant is not credible. J.I. VII PF 5. The fact is, however, that Mr. Hitchler's analysis focused primarily on the actual plant and system designs and procedural

modifications that have been implemented at the Harris Plant. Hitchler at 7-9. These improvements include the use of All Volatile Treatment water chemistry, the reduction of copper in the secondary side system, design modifications to minimize crevices, and the installation of a loose parts monitoring system. Mr. Alan B. Cutter submitted an uncontraverted affidavit in which he described CP&L's implementation of the design modifications recommended by Westinghouse. Affidavit of Alan B. Cutter in support of Applicants' Motion for Partial Summary Disposition of Joint Contention VII (Steam Generators), May 16, 1984, at 5-16. Mr. Cutter also attested to the fact that CP&L had implemented quality assurance programs to minimize the possibility of tube degradation. The Joint Intervenors did not challenge the statements of fact set forth in Mr. Cutter's affidavit. While the Joint Intervenors' attempt to raise the issue in their proposed findings, CP&L's quality assurance procedures are not part of Contention VII(4).

55. In another example, the Joint Intervenors assert that the "relatively high tech spec leak limit" at the Harris Plant makes leak-before-rupture less likely for the Harris Plant. J.I. VII PF 7. No insight is provided as to why the Harris Plant leak limit of 500 gallons/steam generator/day is deemed "relatively high." The leakage limits at the Harris Plant are designed to ensure that the steam generator tubes will retain adequate integrity against rupture. Staff PF 289. The

extensive use of in-service inspections provides further assurance that any tube degradation will be identified prior to a tube rupture. App. PF 45; Staff PF 287-290. The Joint Intervenors simply have misconstrued the testimony on this issue presented by Applicants and the Staff.

56. In sum, Joint Intervenors' proposed findings do not deal directly with the sole issue litigated on Joint Contention VII -- multiple tube ruptures. Applicants' and the NRC Staff's testimony and findings on that issue are uncontraverted. Moreover, Joint Intervenors' analysis of single tube ruptures is not entitled to any evidentiary weight. Therefore, Joint Intervenors' proposed findings on Joint Contention VII should be rejected as unsupported.

V. EDDLEMAN CONTENTION 9: Environmental Qualification of Electrical Equipment

57. Intervenor Eddleman's proposed findings on his Contention 9 are deficient in two fundamental respects. First, many of his proposed findings are devoted to attempting improperly to expand the scope of the contention beyond the specific issues which were admitted to the proceeding. Second, with respect to his other proposed findings, Mr. Eddleman either fails to address relevant portions of the record evidence or misstates the record. Thus, his arguments are unpersuasive.4/

4/ In addition, Mr. Eddleman submitted no proposed findings on Eddleman Contention 9A, concerning ITT-Barton transmitters,

(Continued Next Page)

58. Mr. Eddleman begins with the assertion that "[t]he Harris plant program for environmental qualification of electrical equipment is inadequately documented." Eddleman PF 30. As the basis for this proposed finding, Mr. Eddleman cites a letter from the NRC Staff to Applicants5/ enclosing several Staff questions concerning Applicants' environmental qualification program.6/ The letter states that the questions are based on a review of Shearon Harris FSAR § 3.11,7/ and that they must be resolved before the Staff conducts its onsite audit of Applicants' environmental qualification program.

59. This challenge by Mr. Eddleman to the adequacy of Applicants' environmental qualification program as a whole has been expressly precluded by prior order of the Licensing Board. In its Memorandum and Order (Revision of and Schedule for Filing Written Testimony on Eddleman Contention 9; Rulings on

---

(Continued)

although the filing of proposed findings was made mandatory by the Licensing Board. Tr. 7366.

5/ Letter from George W. Knighton, Chief, Licensing Branch No. 3, Division of Licensing, NRC, to E. E. Utley, Executive Vice President, CP&L (December 5, 1984). The letter, including the Staff questions, is attached to Mr. Eddleman's proposed findings.

6/ Some of the Staff questions (e.g., Question 270.6) concern, in whole or in part, Applicants' program for environmental qualification of mechanical equipment. Eddleman Contention 9 involves only environmental qualification of electrical equipment.

7/ FSAR § 3.11 and Appendix 3.11A are Applicants' Ex. 8.

Eddleman Contentions 45 and 67) (July 24, 1984) ("July 24, 1984 Memorandum and Order") at 1-2, the Licensing Board rejected an open-ended "preamble" for Contention 9, proposed by Mr. Eddleman, which would have called into question Applicants' entire program for environmental qualification at the SHNPP. The Licensing Board made clear that Contention 9 was limited to the seven specific allegations, A through G, on which Applicants and the Staff had agreed to go to hearing following extensive negotiations with Mr. Eddleman.8/ Id.; see Tr. 5000, 5594. The Licensing Board left open the possibility that Mr. Eddleman, subject to the regulatory restrictions on late-filed contentions, could file additional contentions related to environmental qualification, including contentions based on amendments to FSAR § 3.11. July 24, 1984 Memorandum and Order at 2-3. However, Mr. Eddleman has never chosen to do so.

60. Although Applicants did submit testimony describing generally their program for environmental qualification of electrical equipment, the purpose of that testimony was to provide background information for their testimony on the specific subcontentions. See Applicants' Introductory Testimony at 7-11. Applicants did not put into issue the adequacy of their entire program, nor did the Licensing Board interpret the testimony to do so. See Tr. 4968-69.

8/ For a discussion of the history of Eddleman Contention 9, see App. PF 51.

61. At any rate, Mr. Eddleman's proposed finding 30 is without factual basis. First, Mr. Eddleman's characterization of the Staff questions as "basic questions" asking for "basic information" is simply inaccurate. For example, Question 270.5 asks Applicants to "[p]rovide detailed descriptions of the methods and assumptions used to take credit for radiation dose reduction at specific equipment locations and methods used to calculate the surface temperature of equipment for which credit is taken for thermal lag." Question 270.8 requests Applicants to "provide details of the assumptions made and an example of the calculations used to determine the environmental conditions due to a high energy line break in areas outside containment." This level of detail is beyond that which Applicants considered appropriate or necessary to document in their FSAR. Neither does the Staff's letter state that detailed information such as calculations ought to be in the FSAR.

62. Second, the fact that the requested information is not in the FSAR does not mean that it is not documented as part of Applicants' environmental qualification program. Most of the detailed qualification information is contained in environmental qualification packages for particular pieces of electrical equipment. These packages are not included in the FSAR but are available for Staff review during the audit. See Masciantonio at 6; Applicants' Introductory Testimony at 11; Tr. 5592-93 (Masciantonio). Mr. Eddleman was provided with

several of these packages in the course of discovery and negotiations on Contention 9. Nevertheless, he does not allege that the packages are inadequate, nor does he point to any evidence which would support such a finding. In sum, even if the adequacy of Applicants' environmental qualification program as a whole were germane to Eddleman Contention 9, which it is not, Mr. Eddleman presents no evidence to show that the program is inadequate.

63. Eddleman proposed finding 32 essentially restates Eddleman Contention 9G, which concerns an attempt by Rockbestos in its QR 2806 to qualify certain cables which failed a Rockbestos qualification test by similarity to a cable which passed the test. See App. PF 109-110. Mr. Eddleman in this proposed finding does not question the adequacy of Applicants' analysis which, consistent with the Staff's recommendations in IE Information Notice No. 84-44 (June 8, 1984), demonstrates the environmental qualification of the Rockbestos cables to be used at the SHNPP using qualification test data independent of Rockbestos. See App. PF 111-116; Staff PF 447-48, 453-54. Rather, he insists that Applicants "cannot rely on qualification by similarity for its Rockbestos cable unless they track down all EQ tests of (1) the "Qualified" cable to be sure it has not failed in any EQ tests; and (2) the "similar" cables of each type, to be sure none of them have failed." Eddleman PF 32. Since Mr. Eddleman never attempted to pursue with any of

the witnesses the possibility that one or more of the cables to be used at the SHNPP has ever failed a qualification test, there is no record support for his speculation that there may have been such failures.

64. Mr. Eddleman then argues, citing the Staff's written testimony (Masciantonio at 22), that the Staff does not consider Contention 9G "fully resolved." Eddleman PF 32. This is a mischaracterization of the record because it ignores the Staff's later, oral testimony. In response to questioning by the Licensing Board, the Staff witness stated that each of the specific items in Eddleman Contention 9, including Contention 9G, had been resolved to the Staff's satisfaction, and that the only action left for the Staff was to verify some of the information which had been provided. Tr. 5624-27 (Masciantonio).9/ It is evident from the Staff's oral testimony that the Staff was able to resolve its outstanding concerns, including those relating to Contention 9G, at least partly as a result of the additional information provided in Applicants' pre-filed written testimony. See Tr. 5585, 5703 (Masciantonio); Staff PF 448, 453-54. As stated above, Mr. Eddleman did not question the

---

9/ Mr. Eddleman's citation of Tr. 5691 is inappropriate. The transcript does not indicate any response on the part of the Staff witness to Mr. Eddleman's question whether the pre-filed written testimony represents the current Staff position on the Rockbestos issue. At any rate, this "non-response" can only be interpreted in light of the Staff witness' answers to questions by the Licensing Board.

adequacy of that testimony; thus, he provides no evidence to contradict a finding of reasonable assurance that the Rockbestos cables for the SHNPP are environmentally qualified.

65 Eddleman proposed finding 35 contains a number of separate "findings" related to various issues.10/ Proposed finding 35(A) questions the adequacy of Applicants' QA program with respect to (1) detection of instrument cable deterioration (Contention 9D), and (2) maintenance (including periodic recalibration) of RTDs (Contention 9C). The sole basis for this proposed finding is an allusion to the Eddleman proposed findings on Eddleman Contention 41, concerning pipe hanger welds. Applicants' reply refuting each of Mr. Eddleman's proposed findings on pipe hanger welds is found in Section VI, infra. Also, it should be pointed out that in admitting Contention 41, the Licensing Board rejected the view that the scope of the contention included Applicants' entire QA program, and limited the contention to inspection and approval of pipe hanger welds. Memorandum and Order (Reflecting Decisions Made Following Prehearing Conference), LBP-82-119A, 16 N.R.C. 2069, 2097 (1982). There is no relationship between Contention 41 and the concerns raised in Eddleman proposed finding 35(A), and Mr. Eddleman cites no record evidence which would support such a relationship.

10/ There is no Eddleman proposed finding 33 or 34.

66. Indeed, the uncontradicted record evidence is that Applicants' QA program (specifically, Applicants' maintenance and surveillance program) as applied both to instrument cables and to RTDs is adequate. Applicants have committed to follow Regulatory Guide 1.33, Rev. 2, "Quality Assurance Program Requirements (Operation)" (1978), in developing their maintenance and surveillance procedures for the SHNPP. Masciantonio at 12-13. Procedures based on Regulatory Guide 1.33, Rev. 2, will be able to detect significant unanticipated degradation in RTDs at the SHNPP due to uncertainties that may exist in the Arrhenius methodology. Masciantonio at 14.11/ Such procedures also will be able to detect any significant unanticipated degradation in instrument cables due to dose-rate effects.12/ Id. at 17.

67. Eddleman proposed finding 35(B) also relates to Contention 9C, on the RTDs. Here, Mr. Eddleman questions the adequacy of the Arrhenius method of thermal aging as applied to the SHNPP RTDs because that methodology does not take into account the effects of humidity, creep, or mechanical stress. However, the cited testimony of the Staff witness at Tr.

11/ Those procedures for the RTDs will include periodic calibration checks and performance tests. Tr. 4962-63 (Miller, Dakin); 5707 (Masciantonio).

12/ According to the testimony of Applicants' expert witnesses on Contention 9D, there are no known significant dose-rate effects on the electrical properties (which are the properties of concern) of instrument cables. Tr. 5216 (Bucci).

5647-48 is part of a general discussion of the limitations of the Arrhenius method. Mr. Eddleman ignores entirely the record evidence addressed specifically to the SHNPP RTDs. The record shows that humidity effects are not applicable to the RTDs. See App. PF 83. Further, mechanical stress is accounted for both in the overall preconditioning program for the RTDs by vibration testing, and in seismic testing. Applicants' 9C Testimony at 10; Tr. 5646 (Masciantonio). Finally, as discussed supra, any uncertainties that may exist in the Arrhenius methodology as applied to the RTDs will be accounted for by Applicants' maintenance and surveillance program.

68. Eddleman proposed finding 35(C) merely points out that, at the time of the hearing, Applicants had not yet completed their review of the vendor environmental qualification test reports for the Limitorque valve operators. Tr. 4995-96 (Yandow). Applicants agree that these components must be environmentally qualified before a license can be issued for the SHNPP. However, this proposed finding, which goes to the entire qualification of the Limitorque valve operators, is beyond the scope of Eddleman Contention 9B. Contention 9B only includes certain specified concerns related to Limitorque valve operators contained in IE Information Notice No. 83-72 (October 28, 1983). July 24, 1984 Memorandum and Order at 1-2. See App. PF 66. Mr. Eddleman raised no questions with respect to the extensive and detailed testimony presented by Applicants and the Staff addressing these concerns. See App. PF 66-72.

69. Eddleman proposed finding 35(D) is another attempt to expand the scope of an admitted contention. Mr. Eddleman here asserts that "Contention 9G is broader than just Rockbestos cable problems . . . ." In support of this claim, which is a legal, not a factual, argument, Mr. Eddleman cites testimony by the Staff's witness in response to a line of cross-examination by Mr. Eddleman to which both counsel for Applicants and counsel for the Staff objected as beyond the scope of the contention. Tr. 5656-73. The Licensing Board agreed that Contention 9G was limited to the particular item in the Sandia report (which was based on the concern about Rockbestos cable) referenced in Contention 9G, and ultimately sustained the Staff's objection. Tr. 5664, 5671.

70. Eddleman proposed finding 35(D) also contains the cryptic and apparently unrelated remark that "[t]he Staff has not done any tests of Harris electronic equipment." Mr. Eddleman does not state what he believes to be the significance of this assertion. Neither does he identify any regulatory requirement that the Staff perform such testing. In fact, the cited testimony does not even provide a factual basis for the statement. The testimony, which was in response to cross-examination by Mr. Eddleman concerning a Staff interrogatory answer dated April 18, 1984, simply reflected the fact that the Staff was unable to answer the interrogatory at that time because Applicants' environmental qualification program had not yet been submitted. Tr. 5654-55 (Masciantonio).

71. Eddleman proposed finding 35(E) contains two points related to Contention 9E, concerning physical orientation of electrical equipment. The first point involves the fact that nonwelding inspections for installed electrical equipment at the SHNPP, including inspections for physical orientation of the equipment, are generally performed by CP&L's Construction Inspection ("CI") organization.13/ Tr. 5379-80, 5414-15 (McLean). Mr. Eddleman cites his proposed Exhibit 49, which was submitted in support of Eddleman Contention 41, for the proposition that "CI did not have sufficient independence to perform their duties in accordance with an adequate 10 CFR 50 Appendix B QA program." Eddleman PF 35(E). Eddleman proposed Exhibit 49 is NRC Inspection Report 83-25 (October 19, 1983).

72. As discussed infra at ¶ 85, the status of Eddleman proposed Exhibit 49 has not yet been resolved. In light of its uncertain status, it should not be relied upon to support a general finding that electrical equipment is incorrectly installed with respect to physical orientation. This is especially true because the inspection process is only one aspect of Applicants' detailed program for control of equipment orientation. See App. PF 95-100.

13/ Welding inspections and some other inspections are performed by the Quality Control organization. Tr. 5379, 5414-15 (McLean).

73. Beyond that, Mr. Eddleman misstates the finding of Inspection Report 83-25 regarding the independence of CI. Item 5.b.(1) of Inspection Report 83-25 noted a "potential for loss of organizational freedom to perform the required quality control type inspections . . ." due to the fact that both CI and site engineering were arranged in the site organization under the senior resident engineer. This observation concerning CI's potential lack of organizational freedom was identified as a follow-up item for future inspection. The item was recently closed out in Inspection Report 84-45 (January 11, 1985).14/ Item 5.c of Inspection Report 84-45 concerned the independence of CI. The Inspection Report's discussion of the CI issue emphasized that Inspection Report 83-25 had only identified a "potential . . . loss of organizational freedom . . . [and] did not conclude that this freedom was lost." Inspection Report 84-45 went on to observe that "[s]ubsequently, around October 1983, CP&L further enhanced the QA program by placing CI under the direct control of the Project General Manager taking one step further to alleviate any possible further concerns in this matter." Thus, Mr. Eddleman presents no basis for his allegation that proper physical orientation of electrical equipment is not assured by Applicants' inspection program.

14/ Inspection Report 84-45 was served by the Staff on the Licensing Board and the other parties by letter of January 16, 1985.

74. The second point in Eddleman proposed finding 35(E) specifically concerns orientation of the Limitorque valve operators. Mr. Eddleman claims that orientation interface requirements for the Limitorques have not been properly addressed. Once again, Mr. Eddleman relies on information contained in the Staff's pre-filed written testimony while ignoring the subsequent oral testimony. At Tr. 5688, w' is cited by Mr. Eddleman, Mr. Eddleman had simply asked the Staff witness to repeat his pre-filed written testimony (Masciantonio at 18) concerning an apparent failure by Applicants to address equipment interfaces. However, the Staff witness went on to say under further cross-examination that he had received additional information from Applicants indicating that the tested configuration was representative of the installed configuration for the equipment in question (including the Limitorques), and that the Staff's concerns regarding interface requirements had, in fact, been alleviated. Tr. 5689 (Masciantonio). See Staff PF 417, 458. In addition, as discussed supra, the Staff witness stated in response to questioning by the Licensing Board that each of the concerns raised in Eddleman Contention 9 (including Contention 9E) had been resolved.

75. Eddleman proposed finding 35(F) concerns Contention 9F, radiation effects on lubricants and seals. Mr. Eddleman first alleges that "the whole device is not qualified (by test) if the drive or connected component is not electrical," citing

Tr. 5454-55 (Yandow). This is not a correct statement of the testimony, which was that electrical components and mechanical components for a piece of equipment are sometimes tested separately. Tr. 5451 (Bucci). In such a case, the electrical component has a testing performance requirement that reflects the performance characteristics of the mechanical component, and vice-versa. Tr. 5476 (Yandow). If the mechanical component were to fail inservice as a result of degradation of a lubricant or seal, the whole device would fail; it makes no difference what the electrical component does. Tr. 5476-77 (Yandow). Thus, Mr. Eddleman failed to show that testing the components together is more conservative than testing them separately.

76. The second allegation in Eddleman proposed finding 35(F) is that Contention 9F cannot be resolved until the Staff reviews Applicants' Mobil study and related analyses concerning lubricants which were tested independently of the electrical equipment in which they will be used. See App. PF 106. Mr. Eddleman does not identify any inadequacies in the Mobil study based on Applicants' description of it. Neither does he provide any reasons why it is necessary for the Staff to perform a detailed review of the study in order to resolve Eddleman Contention 9F.15/ See Staff PF 459. Thus, this proposed finding

---

15/ Here, and in a number of other proposed findings, Mr. Eddleman would have the Board find inadequacies in Applicants'

(Continued Next Page)

is not supported by the record evidence.

77. Finally, Eddleman proposed finding 35(G) states that "the qualification (of electrical equipment) is demonstrated when the documentation package is completely assembled and the equipment (test) and the method is sent to the NRC as part of the master list and they have an opportunity to review the package." It is not clear to which, if any, of the Contention 9 admitted issues this proposed finding relates. If Mr. Eddleman is implying that the NRC must conduct its comprehensive site audit of Applicants' entire environmental

---

(Continued)

program or specific actions simply because the Staff has not verified independently the final implementation of the program or specific action. While in general issues should not be delegated to the staff for resolution, inspections and verifications by the Staff need not be reviewed by the Board prior to the Board's resolution of a contested issue. See Consolidated Edison Co. of New York (Indian Point Station, Unit No. 2), CLI-74-23, 7 A.E.C. 947, 951 (1974). In this case future Staff activities will merely verify that the commitments which the Staff has already found acceptable have been properly implemented -- on par with assuring the correction of minor deficiencies, which the Commission has deemed to be an appropriate function of the Staff. Id. at n.8; see also Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 N.R.C. 1076, 1103-04 (1983) (delegation to Staff the resolution of several emergency planning issues); Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-83-57, 18 N.R.C. 445, 543-44 (1983) (minor deficiencies in equipment qualification program could be resolved by the Staff); Union of Concerned Scientists v. U.S. Nuclear Regulatory Commission, 735 F.2d 1437, 1449-51 (D.C. Cir. 1984) (results of inspections excluded from adjudication). Here resolution of issues in controversy need not be resolved by the Staff, rather the Staff merely will verify the implementation of a program found to be acceptable. This is clearly a Staff function.

qualification program before Contention 9 can be fully resolved, he clearly is attempting improperly to broaden the scope of the contention beyond the seven specific allegations 9A through 9G. Mr. Eddleman may also be suggesting that the qualification packages for each type of component addressed in Contentions 9A through 9G must be completed; however, none of these specific contentions addresses all aspects of environmental qualification for the type of component involved. Thus, there is no basis for requiring that the packages be completed.

78. Further, the Staff was provided with information with respect to the specific concerns identified in Contention 9; and the Staff conducted a site visit to verify that information in the course of preparing testimony on those issues. Masciantonio at 7-8; Tr. 5569, 5621 (Masciantonio). During the site visit, the Staff examined a number of environmental qualification packages. Masciantonio at 16, 18-19. As stated supra, the Staff has testified that it considers each of the issues resolved for the purposes of this proceeding. Based on this testimony, as well as the other record evidence, there is reasonable assurance that each of the subcontentions 9A through 9G has been resolved.

79. Applicants wish to clarify two of the Staff proposed findings on Eddleman Contention 9. In Staff proposed finding 358 reference is made to Applicants' commitment to perform a 100% inspection of all Limitorque Valve Operators in a harsh

environment. As noted in Applicant's proposed finding 69, CP&L's three-part field verification program encompasses all active, safety-related valves with Limitorque operators located in a harsh environment. Staff proposed finding 408 indicates that installation drawings are sent to vendors for review and correction before they are issued to the field. This is true in some, but not all cases. Applicants' 9E Testimony at 7.

VI. EDDLEMAN CONTENTION 41: Pipe Hanger Welding

80. The proposed findings filed by Intervenor Eddleman on his Contention 41 constitute, in the main, simply a re-identification of problems encountered in the past with the welding of pipe hangers -- problems which Applicants readily concede have occurred. See App. PF 142. Nowhere in his findings, however, does Mr. Eddleman mount a serious challenge to the efficacy of Applicants' enhanced program,16/ nor does he present any evidence which would support a finding that defective hanger welds will not be identified and properly repaired or dispositioned.17/ Rather, Mr. Eddleman assumes that the

---

16/ As discussed in ¶ 81 below, Mr. Eddleman's allegation that, at the time of the hearing, "CP&L was still clearing up (or trying to clear up) weld inspection criteria" is unsupported by the record.

17/ We would note here that, despite the painfully detailed cross-examination conducted by Mr. Eddleman regarding documentation of QC welding inspections of many individual hangers

(Continued Next Page)

identification of quality problems is, in and of itself, sufficient to warrant a finding that Applicants' QA program has failed, and thus that the operating license application should be denied. See Eddleman PF 10. This view, of course, totally disregards one of the main purposes of the QA/QC program: to identify deficiencies and verify their proper resolution. See Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-756, 18 N.R.C. 1340, 1345 (1983), aff'd, Deukmejian, et al. v. NRC, et al., Nos. 81-2034 et al., slip op. at 56-63 (D.C. Cir., Dec. 31, 1984). Mr. Eddleman also appears to believe that no construction or quality problems can be tolerated in the construction of a nuclear power plant, a position which has been explicitly rejected as "totally unreasonable" by the Appeal Board. Union Electric Company (Callaway Plant, Unit 1), ALAB-740, 18 N.R.C. 343, 346 (1983) petition for reconsideration denied, ALAB-750, 18 N.R.C. 1205 (1983), as modified, ALAB-750A, 18 N.R.C. 1218 (1983); see also Tr. 7043 (Kelley: perfection would not be believable); Diablo Canyon, supra, 18 N.R.C. at 1345.

81. Turning now to a discussion of the points raised by Mr. Eddleman, we first review Mr. Eddleman's somewhat related

---

(Continued)

(see, e.g., Tr. 6777-82, 6821-25, 6865-70, 6894-97, 7109-20, etc.), Mr. Eddleman has not offered any argument that this documentation evidences either inadequate inspections or uncorrected defects.

allegations regarding the weld acceptance criteria. Mr. Eddleman first claims that the criteria were a continuing source of problems, at least up until the time of the hearing, and were subject to then ongoing revisions.18/ See Eddleman PF 2, 4, 5, 10. As the Staff's testimony made clear, an unresolved item relating to the applicability of the visual inspection criteria to certain types of welds was identified during the Staff's review, but was fully resolved by Applicants.19/ Bemis, Hallstrom and Blake at 15-16. Thus, contrary to Mr. Eddleman's assertions, the acceptance criteria were found to be an acceptable program basis for QA/QC inspections of pipe hanger welds, and no unresolved questions remain regarding the acceptability of the criteria which had been implemented well in advance of the hearing. Id.

82. Mr. Eddleman devotes a great deal of attention to what he regards as the inconsistent opinions of the Staff witnesses as to what they believed was the "root cause" of the deficiencies identified in the pipe hanger program. Eddleman PF 4, 5. While each of the Staff witnesses used slightly

---

18/ The acceptance criteria are set out in CAR-2165-A-003, Exhibit 1 to the Staff's prefiled testimony on Contention 41 (Bemis, Hallstrom and Blake), and were initially issued in October 1983.

19/ The Staff's concerns were resolved by limiting the applicability of CAR-2165-A-003 to fillet and partial penetration welds, which are the primary types used on pipe hangers. Bemis, Hallstrom and Blake at 16.

different words, it is clear that the consensus Staff view is that the root cause of the deficiencies can be traced to problems with the weld acceptance criteria. See Tr. 7321-22 (Hallstrom: believes root cause was "the differences between NF [utilized by Bergen-Paterson] and [AWS] D-1.1, as far as inspection criteria goes"), 7324 (Maxwell: basic root cause was "acceptance criteria being identified in more than one document, and ... that is why the utility probably came out with [CAR-2165-A-003]"), 7326 (Bemis: "one of the lead root cause[s] appeared to be that inspection criteria was somewhat too broadly interpreted") (emphasis added). Beyond this, however, the testimony of the witnesses remains uncontradicted: the enhanced program as a whole has been effective in correcting problems and reasonable assurance exists that the pipe hangers will be capable of performing their intended functions. Tr. 7356-59 (Bemis, Blake, Hallstrom), 7189-90 (Douglas), 7038-43 (Hate).

83. Next we turn to Mr. Eddleman's recurrent theme that Applicants dragged their feet for over five years, in effect refusing to acknowledge and act on deficiencies in the pipe hanger program, and allowed a "programmatic QA breakdown" to continue over that period. See Eddleman PF 2, 3, 5 and 7-10. This, of course, is incorrect. Each time that deficiencies were identified, whether by Applicants or by others, the deficiencies were thoroughly investigated and corrective

actions were implemented by Applicants.20/ Nevill et al. at 16-20; Bemis, Hallstrom and Blake at 10. Further, these investigations were not strictly confined to a narrow review of the specific deficiency identified. For example, the 1982 reinspection consisted of inspecting all welds on the entire hanger. Tr. 7126 (Pere). Mr. Eddleman also misstates the record in asserting that Applicants failed to discover any pipe hanger inspection deficiencies prior to September 1980 for, in response to his cross-examination, Applicants' witnesses provided a description of deficiencies and nonconformances identified prior to that time.21/ See Tr. 6674-76 (Hate, Fuller), 6697-6702 (Fuller), 6724-25 (Hate). Thus, while it is true

---

20/ Contrary to Mr. Eddleman's allegations, many of the deficiencies were initially identified by Applicants or were identified based on investigations undertaken by Applicants due to information received from others (i.e., rejectable weld defects were not identified by Mr. Maxwell in 1980, but were discovered by Applicants during their expanded investigation). See App. PF 125 n.37, 126, 129-133 and n.48.

21/ Mr. Eddleman also takes issue with Applicants' testimony regarding the "early" efforts undertaken to learn from pipe hanger erection problems being encountered at other sites. Eddleman PF 9. While Applicants' testimony on this point is somewhat confusing, the decision to institute an early ("Phase I") inspection program was based on the desire to obtain an early indication of any potential problems. Nevill et al. at 7. It is true that the visits to other sites did not occur until 1982. While Mr. Eddleman may not consider this action to have occurred sufficiently early in the program, it should be noted that only a small number of pipe hangers had been installed at that point. See Eddleman Ex. 22, attached Interim Report dated September 8, 1982 at 1 (as of August 1982, approximately 4,000 hangers installed). Approximately 19,000 seismic pipe hangers will have been installed when construction is complete. Tr. 7039-40 (Hate).

that not all of the various deficiencies ultimately identified were discovered by Applicants immediately after QC inspections of pipe hanger welding were begun, the record shows that Applicants continued to pursue remedies and that the enhanced program now in place is effective.

84. Having addressed what we believe are the major points raised by Mr. Eddleman, we now address certain of the supporting statements made by Mr. Eddleman in order to place them in the proper context. In paragraph 3(2) of his findings, Mr. Eddleman asserts that "extensive failures" by vendors to properly inspect shop welds and inadequate training regarding skewed tee fillet welds "persisted well into 1982, months after inspections began to show the problems" (emphasis added), citing Nevill et al. at 17-19. The cited testimony provides no basis for Mr. Eddleman's assertion that these deficiencies continued for months unabated after their identification.22/ Rather, as documented in Eddleman Ex. 22, both Bergen-Paterson and CP&L QC inspectors were instructed on the proper method of measuring skewed tee fillet welds within one month of the discovery of this problem. Eddleman Ex. 22, March 24, 1982 letter at 1.

22/ The cited testimony does note that the problem with measurements of skewed tee fillet welds was identified in the first quarter of 1982 and that, due to this problem and other deficiencies identified in 1982, all hangers installed prior to June 26, 1982 were reinspected. Nevill et al. at 17.

85. Eddleman proposed finding 3(6) refers in a general way to NRC Inspection Report 83-25 in support of a broad proposed finding that "noncompliance with applicable requirements continued well into 1983." This report (also referenced at page 10 of the Staff's testimony) was identified during the hearing as Eddleman Exhibit 49 and was the subject of extended argument by the parties regarding its applicability to pipe hanger welding inspections.23/ See Tr. 7016-21, 7073-85, 7207-15. In light of the unresolved status of this proposed exhibit, it should not be relied upon to support a general finding regarding pipe hanger weld inspection deficiencies.

86. Mr. Eddleman next claims that since all weld acceptance criteria can be measured, it is illogical to assert -- as Mr. Bemis did -- that subjective interpretation and unclear criteria were causes of the past problems experienced by CP&L. Eddleman PF 5. Although witness Tingen agreed with Mr. Eddleman's question that virtually all the weld acceptance criteria could be measured, he went on to explain that various factors, such as location and construction interferences, can impact the accuracy of such measurements -- testimony which Mr. Eddleman ignores. Tr. 7166-67 (Tingen). Further, as Mr. Douglas testified, the revised criteria set out in

---

23/ A ruling on the admissibility of Eddleman Exhibit 49 remained pending when the evidentiary hearing record on safety matters was closed. See Tr. 7363 (Kelley).

CAR-2165-A-003 provide a more specific definition of what is an acceptable weld and were meant to narrow the scope of inspectors' judgment as to acceptability/rejectability. Tr. 7159-60 (Douglas).

87. In his proposed finding 7, Mr. Eddleman claims that a "gap of a month or perhaps several months" occurred between the time deficiencies with shop welds were first identified (early 1982, according to Mr. Eddleman) and the time that CP&L began a statistical sampling of the quality attributes of shop welds. The cited testimony (Nevill et al. at 13) does not support this thesis, nor is there other record support for this finding. The testimony does show, however, that only one month passed from the time that the statistical sampling was begun until CP&L initiated a 100% QA receipt inspection of shop welds. Id.; see also ¶ 84, supra. Mr. Eddleman then seemingly goes on to confuse the QA surveillance of completed hangers (which is done on a sampling basis) with the QC welding inspections. As Applicants have testified, QC welding inspections are performed on 100% of the seismic pipe hangers. See App. PF 141. There is thus no basis for claiming that only a sample of pipe hanger welding is inspected.24/

24/ Mr. Eddleman also seems to claim that an acceptance rate of 98.78% for QC-inspected weld attributes (based on QA surveillance results) is somehow insufficient. As discussed in ¶ 80, supra, however, it is totally unreasonable to expect absolute perfection in a project of this magnitude and complexity.

88. Eddleman proposed finding 8 incorrectly attributes to the Staff testimony a finding that CP&L failed to have an adequate trending program with respect to pipe hangers. Rather, Mr. Hallstrom here is merely agreeing to Mr. Eddleman's postulate that one of the portions of an effective QA program would be to have a trending program. Tr. 7328 (Hallstrom). However, Mr. Eddleman never followed up on this subject to determine the Staff's view of whether CP&L did or did not have such a program.

89. As his final point, Mr. Eddleman criticizes CP&L for keeping on the job, and presenting as witnesses, "the supervisors heavily involved in the failures documented in this record." Eddleman PF 10. Applicants contest the use of the word "failure" to describe the evolution of the pipe hanger inspection program, and offer no defense to the assertion that we presented as witnesses the CP&L personnel most knowledgeable about the program past and present. As to the lack of any pipe hanger management "shake up" alluded to by Mr. Eddleman, we would note that Mr. Eddleman never attempted to pursue this issue with any of the witnesses and thus there is no record support for his theory that personnel changes were appropriate.

90. Applicants generally are in agreement with the proposed findings filed by the Staff on Eddleman Contention 41. However, it appears that certain of the Staff findings rely upon Applicants' testimony as filed on August 9, 1984, and

neglect the changes subsequently made to that testimony. These changes should be reflected as follows. The last sentence of Staff proposed finding 489, regarding field surveys of hanger design, should be deleted as it was stricken in Applicants' revised testimony filed on November 5, 1984. See Nevill, et al. at 9, 11. Secondly, Staff proposed finding 511 refers to "hangers currently on design hold." As Mr. Fuller testified, there are no longer any hangers on design hold. Tr. 6660, 7000 (Fuller).

91. It also appears that the Staff may have misinterpreted some of Applicants' testimony and that clarification of certain statements would be beneficial. The Staff states that nonconformances identified during the 1981 [sic -- should be 1980] and 1982 reinspections were remedied by rework rather than analysis. Staff PF 514. In actuality, the majority (but not all) of these nonconformances were reworked. Nevill et al. at 23; Tr. 6669 (Nevill). Similarly, in Staff proposed finding 516(2), the statement is made that "generic engineering documents are no longer used," while Applicants testified that, for the most part, such documents are no longer used. Nevill et al. at 24; Tr. 6792 (Fuller).

VII. EDDLEMAN CONTENTION 116: Fire Protection

92. Mr. Eddleman's proposed findings relating to Contention 116 consist of a series of disjointed statements which

argue that more tests, more analyses, more training and more inspections are required before the fire protection program for the Harris Plant can be found acceptable. Eddleman PF 11-29. Mr. Eddleman's proposed findings are supported only by the most selective use or misuse of evidence in the record and must be rejected for the reasons specifically indicated in the reply findings that follow. More importantly, however, Mr. Eddleman utterly has failed to come to grips with the "defense-in-depth" concept of the fire protection program as described by both Applicants' and the Staff's expert witnesses. See App. PF 168; Staff PF 638. While each aspect of the fire protection program must meet certain minimum requirements, no one echelon can or need be perfect or complete by itself; strengths of one part of the program can compensate for weaknesses, known or unknown, in the others. Eberly and Ferguson at 17. Mr. Eddleman's proposed findings fail to articulate an overall thesis of inadequacy in the Harris fire protection program. Rather, Mr. Eddleman would seek perfection or certainty in each echelon of the fire protection program -- ignoring the other echelons that compensate for any imperfections or uncertainties. For example, he would have this Board find that certain special doors must be tested (Eddleman PF 15), notwithstanding evidence regarding the thickness and design of the doors, lack of combustibles in the vicinity of such doors, availability of near-by detection and suppression systems, lack of

safety-related equipment in the vicinity of such doors and the availability of a trained fire brigade to fight a fire if it did breakout (see ¶¶ 96, 104, infra; App. PF 153; Staff PF 565-569). Furthermore, with respect to each of the issues that Mr. Eddleman addresses, he has simply ignored Applicants' proposed findings.

93. Mr. Eddleman first turns to the twenty special doors at the Harris Plant that will not be fire-tested.25/ Eddleman PF 11-15. Mr. Eddleman would have the Board order the testing of these special doors in a standard test furnace. Eddleman PF 15. Because of the size and weight of the special doors, they cannot be tested in standard test facilities. Tr. 4811-16 (Eberly); Staff PF 620.

94. Mr. Eddleman believes there is a need for such testing of special doors because his analysis of the yield point of steel and the intensity of a fire based on the standard time/temperature fire exposure curve used in ASTM E-119 "indicate there is no reliable assurance one of these doors will not fail if a fire occurs." Eddleman PF 14. What Mr. Eddleman ignores is the evidence in the record that demonstrates the combustible loadings in the vicinity of any of the special doors could not sustain a fire even approaching the

---

25/ Applicants and the Staff maintain that the qualification of fire doors is outside the scope of Contention 116. App. PF 153, n.57; Staff PF 564.

conservative ASTM E-119 test time/temperature fire exposure curve. Staff Ex. 8 at 2-4; Eddleman Ex. 61; Staff PF 618. In addition, as noted in ¶ 92, supra, Mr. Eddleman ignores other echelons of the fire protection program -- early-warning fire detection, automatic fire suppression systems and fire brigade backup.26/ He fails to come to grips with the fact that the majority of the special doors open to the exterior, where a fire barrier is less important, and that relatively few pieces of safety-related equipment are located in the vicinity of these doors. See Eddleman Ex. 61. Therefore, testing of special doors -- even if feasible -- is not indicated.

95. Eddleman proposed findings 16 through 21 concern Mr. Eddleman's complaint that changes made in Applicants' supplemental testimony and Exhibit 6 filed on October 10, 1984 were known or should have been known prior to the initial testimony filing date of August 9, 1984. Whether or not Applicants' witnesses knew certain information prior to the filing of the supplemental testimony and exhibits is, at best, a non-issue, absent some showing that Mr. Eddleman was prejudiced in some

---

26/ Mr. Eddleman dismisses the fire brigade because "no specific analysis of fire brigade response time for these doors was made by the Staff." Eddleman PF 11(D). As we discuss at ¶ 104, infra, Applicants estimate a fire brigade response time of 5 to 15 minutes for most fire events within the power block. Waters at 5. The Staff assumes a conservative 30 minute response time. Tr. 4685 (Eberly). Ignoring the fire brigade because a door-by-door analysis of fire brigade response times has not been performed is clearly not justified by the record in this proceeding.

way by the provision of up-dated information.27/ See Tr. 4266-69 (Kelley, Eddleman, O'Neill).

96. Eddleman proposed finding 22 would have the Board find that fire brigade training is inadequate because "the fire brigade has not yet been trained in a facility that has the type of things that are typical of a power plant there." The testimony of Mr. Waters indicates that each fire brigade member will participate annually in a practice session covering fire fighting on typical power plant fires. These sessions will involve actual interior structural fire fighting requiring the use of breathing apparatus and full protective clothing. Waters at 6-7. Mr. Waters, in response to cross-examination by Mr. Eddleman, elaborated that such training would include fighting a cable fire -- complete with flames and large quantities of dense smoke. Tr. 4330 (Waters). Applicants are in the process of establishing a facility close to the Harris site which will have an actual simulation of a typical power plant area. Tr. 4331 (Waters). There is no support for Mr. Eddleman's assertion that such training is inadequate.28/

27/ For example, Mr. Eddleman raises the point that NFPA 37 was not listed as an applicable code in the version of Exhibit 6 filed on August 9, 1984, but was included in the October revision. While not indicated in the FSAR, Applicants had committed to apply the provisions of NFPA 37 to the diesel generator day tank areas as early as August 12, 1983. See CP&L letter LAP-83-333 dated August 12, 1983 to H.R. Denton (NRC), attached response to Staff Acceptance Review Question 280.1 at 60 (copies of this licensing submittal were served on Mr. Eddleman and the Board).

28/ Mr. Eddleman gratuitously comments that Mr. Waters "learned fire protection on-the-job". Mr. Waters' qualifications

(Continued Next Page)

97. Eddleman proposed finding 23 asserts that the seals between fire areas have not yet been installed and thus have not been subject to the required "careful verification" by the Staff. Although not all such seals are presently in place, Applicants have committed to provide penetration seals having the same fire rating as that required of the barrier which it penetrates. Waters at 4; Tr. 4314 (Waters); see also Staff Ex. 4 at 9-47 (§ 9.5.1.4). All such fire protection commitments by Applicants will be referenced in the Staff's license conditions and thus would be enforceable by the Staff. Tr. 4649-50 (Ferguson), 4743-44 (Eberly). Further, as Mr. Eddleman is well aware, the installation of fire protection features will be subject to both Regional I&E inspections and, when construction is nearly complete, to a detailed walk-down and review of the installed fire protection systems by Staff fire protection personnel from the Office of Nuclear Reactor Regulation (NRR). Eberly and Ferguson at 19-20; Tr. 4752-53, 4757-58 (Eberly). Therefore, while Mr. Eddleman is correct that the penetration

---

(Continued)

were not challenged at the hearing nor is there reason to believe that experience is not the best teacher. While Mr. Waters does not personally perform fire brigade training, he supervises the staff who conducts training. Tr. 4312 (Waters). The fire protection staff has 30 years' cumulative experience in fire fighting. Waters at 5; Tr. 4311 (Waters). While an unannounced drill will be critiqued once every three years by qualified individuals independent of Applicants' staff, fire drills will be conducted at least quarterly for each shift brigade. Waters at 6.

seals have not yet been completely installed and thus not yet verified by the Staff, it is clear that such verification is simply a ministerial function which need not be passed on by the Board in light of the commitments made by Applicants.29/

98. In paragraphs 24 and 25 of his proposed findings, Mr. Eddleman appears to allege that the Staff's analysis of fire protection for the diesel generator day tank rooms is inadequate because Staff witness Eberly did not know where the manual release for the sprinkler system for those areas is located.30/ Eddleman PF 24. Mr. Eddleman also asserts that the doors to these areas must be alarmed if opened. Eddleman PF 25. As to the first point, while the Staff witness may not have been able to recall the location of the manual release while testifying, its location is specifically noted in the Harris FSAR. See Applicants' Ex. 6 at 9.5A-180, 181. It is also clear that the provision of this manual sprinkler capability is only one factor of many which formed the basis for the Staff's finding that an adequate level of fire protection has been provided for these areas.31/ See Eberly and Ferguson at

---

29/ See note 15 supra.

30/ Documentation of the Staff's review of the diesel generator day tank areas is set out in Staff Exhibit 4 at 9-54, 55 and in the Staff's testimony (Eberly and Ferguson at 20-21).

31/ Contrary to Mr. Eddleman's proposed finding, the provision of a fuel oil tank greater than 1100 gallons inside a building is not "forbidden" by NFPA 37. As the Staff explained, devia-

(Continued Next Page)

21; Staff Ex. 4 at 9-54, 55. As to Mr. Eddleman's second point, provisions for and methods of supervising the open/closed position of fire doors are described in FSAR § 9.5.1.2. See Applicants' Ex. 6 at 9.5.1-8a. Mr. Eddleman did not pursue the adequacy of these provisions either generally or with respect to the watertight fire doors to the diesel generator day tank areas. In sum, then, Mr. Eddleman has not provided evidence sufficient to refute the analyses performed by Applicants and the Staff of the diesel generator day tank areas or to require additional position monitoring of the doors to the day tank areas.

99. Eddleman proposed findings 26, 27 and 28 all repeat Mr. Eddleman's recurrent theme that additional audits or inspections by the Staff are required. Again, however, all of the matters raised here by Mr. Eddleman will be the subject of further, pre-operational reviews to be conducted by the Staff. Paragraph 26 asserts that, since Applicants' QA program is suspect,32/ the Staff must verify the installation of seals and

---

(Continued)

tions from the guidance of the Standard Review Plan (it is the Branch Technical Position, not NFPA 37, which limits interior tanks to an 1100 gallon limit) are permitted when needed to meet other safety requirements and if an appropriate level of fire protection is provided. Tr. 4692-95 (Eberly); see also Staff Ex. 4 at 9-54, 55. Furthermore, there is no evidence in the record (because it is not true) that "spatter fuel [could] create an explosive mixture which could blow out a door," as asserted in Eddleman proposed finding 24.

32/ This assertion is based upon Mr. Eddleman's findings regarding the QA/QC programs relating to pipe hanger welding

(Continued Next Page)

suppression and detection systems. Applicants' QA program for fire protection systems is not within the scope of Contention 116. In any event, the Staff testified that these items will be reviewed during both Regional inspections and the NRR walk-down and are also the subject of license conditions.33/ Tr. 4743-44, 4752-53 (Eberly, Ferguson).

100. Mr. Eddleman next claims that the "Staff does not know if suppression and detection systems ... are designed in conformance with [the required] guidance." Eddleman PF 27. The Staff actually testified that Applicants have committed to design these systems in conformance with the guidance provided by the NFPA codes and that, while the Staff has not reviewed the design, it will be covered during the NRR walk-down. Tr. 4752-53 (Eberly); Eberly and Ferguson at 16-17.

101. Finally, Mr. Eddleman asserts that additional information regarding the Harris Fire Protection programs, beyond

---

(Continued)

inspections, which findings are responded to in Section VI, supra. The Fire Protection QA program, the adequacy of which was not addressed by Mr. Eddleman during the hearing, is described in FSAR § 9.5.1.5. Applicants' Ex. 6 at 9.5.1-48, 49. The Fire Protection QA program has been reviewed by the Staff. The most recent Systematic Assessment of Licensee Performance found: "Overall, management involvement and control of the fire protection features were being accomplished under a well defined and administered quality assurance program which should assure that these features will be properly installed." SALP IV, ff. Tr. 3660, at 59.

33/ See note 15 supra.

that contained in Applicants' Exhibits 6 and 7, must be provided to34/ and reviewed by the Staff. Eddleman PF 28. As witness Eberly explained, NRR personnel will review the proposed Technical Specifications and personnel from Region II will review the procedures, pre-fire plans and the QA program. Tr. 4707-08, 4757 (Eberly). Thus, again, Mr. Eddleman's findings appear to be moot as the requested relief will indeed be performed.

102. Eddleman proposed finding 29 (covering three full pages) appears to be Mr. Eddleman's attempt to catalogue once again the specific fire protection issues raised by his Contention 116. In the main, Applicants rely on their proposed findings as their response to each of the enumerated sub-issues.

103. Sub-paragraph 29(A) asserts that the FSAR does not analyze the location of fire detectors and that location of the detectors cannot be reviewed by the Staff until construction is complete. However, as is indicated in the FSAR and as the Staff testified, applicable NFPA codes were followed in establishing the installation and spacing criteria for the detection systems. Applicants' Ex. 6 at 9.5.1-25; Eberly and Ferguson at 16-17; Tr. 4683 (Eberly). The spacing of the detectors will be reviewed during the NRR walk-down. Tr. 4683-84 (Eberly).

34/ While certain of these documents, such as the fire fighting procedures and pre-fire plans, cannot be finalized until construction is complete, the Fire Protection QA program has been in existence since 1977. Applicants' Ex. 6 at 9.5.1-48, 49.

104. Intervenor Eddleman next attacks the Staff estimates of fire brigade response time, without providing any evidence to support his charge that additional analysis of response time is required. Eddleman PF 29(B). The Staff testified that they do not perform plant-specific analyses of brigade response times. Rather, the Staff's policy is to assume that the brigade will not respond for at least 30 minutes and, therefore, they require the provision of fixed fire protection methods sufficient to allow the brigade to respond. Tr. 4685 (Eberly). Further, contrary to Mr. Eddleman's assertion, the Applicants' estimate of a 5 to 15 minute response time to fires in the power block is not based solely on the personal opinion of Mr. Waters. This estimate is based upon the experience of the entire Harris fire protection staff, who have over 30 years of fire fighting experience. Waters at 5; Tr. 4306 (Waters).

105. Eddleman proposed findings 29(C) and (D) take issue with both the general methods used by Applicants in determining the combustible loadings for fire areas and with the specific analyses of areas having a combustible loading in excess of 240,000 BTU per square foot. In both cases, Mr. Eddleman calls for the Staff to perform a Harris plant specific analysis of combustible loadings.35/ The Staff has not performed an

---

35/ Mr. Eddleman disagrees with the validity of Applicants' evaluation of combustible loadings; however, he fails to present any evidence which disputes the conservatisms inherent in Applicants' evaluation. See App. PF 157 (and testimony cited therein), 163-66.

independent analysis of the combustible loadings nor is such an analysis required. Instead, the Staff review is based upon ASTM E-119 time/temperature fire exposure which has been proven, through tests, to be a conservative representation of fires which might occur in a nuclear power plant. Tr. 4656-57 (Ferguson), 4686-87 (Eberly). Mr. Eddleman has presented no evidence to show that this reliance is misplaced.

106. In proposed finding 29(E), Mr. Eddleman again disputes the Staff's reliance on the ASTM E-119 standard, this time in speculating (without support) that the cable tray fire barriers to be installed at Harris are not representative of those used in tests conducted to that standard. However, as the evidence of record demonstrates, Applicants have committed to provide fire barriers having fire resistance ratings established by standard qualification tests; the Staff will verify that this commitment is met during inspections. See App. PF 148-149; Eberly and Ferguson at 9-11; Tr. 4662 (Eberly).36/ Further, as discussed in ¶ 105, supra, the validity of the ASTM E-119 standard as representing a common "worst case" exposure

---

36/ Mr. Eddleman also contends that the Staff has no control over and does not review the specifics of the fire barriers chosen by Applicants. Eddleman PF 29(E). The Staff testified, however, that while they cannot dictate Applicants' schedule for choosing and installing the fire barriers and while they would normally not check the specific brand of barrier selected, the Staff will verify that Applicants have met their commitment to install qualified barriers. See Tr. 4662-64 (Eberly, Ferguson); see also Staff PF 556-557.

fire has been shown by numerous tests and studies. App. PF 149; Staff PF 553.

107. Mr. Eddleman next repeats his complaint in Contention 116 that the FSAR does not define "practical" in determining whether to use fire barriers. Eddleman PF 29(F). This is at best a non-issue: the location of the fire barriers (based upon NRC guidance or an acceptable alternative) is described in the Safe Shutdown Analysis and was reviewed by the Staff. Tr. 4669-4674 (Eberly). It makes no difference whether or not practical is defined when the relevant information is available. Tr. 4670 (Kelley).

108. Eddleman proposed finding 29(G) claims that Applicants concur in the statement that the FSAR assumes that fire detection devices and automatic suppression systems will work. As Applicants testified, the Harris fire protection program is based on a defense-in-depth concept and total reliance is not placed on any one single facet. See App. PF 168. The testimony cited by Mr. Eddleman to support this proposition similarly does not lend itself to such broad interpretation. Rather, the testimony here concerns power supplies to the detection and suppression systems and the assumption that power will be supplied to these systems. See Tr. 4520-21 (Waters). It is not unreasonable to make such an assumption in that these systems are supplied by an uninterruptible (although not redundant) power source. Applicants' Ex. 6 at 9.5.1-25.

109. Mr. Eddleman's last point with respect to the fire protection program is his asssertion that, in light of the recent change in smoke removal philosophy, Applicants have failed to properly analyze the need for smoke removal.37/ Eddleman PF 29(H). This matter is fully addressed in Applicants' proposed finding 161 and n.61; Mr. Eddleman has not proffered any

---

37/ As the Staff correctly points out, this issue was not initially raised in Contention 116 nor was it challenged by Mr. Eddleman during the hearing. Staff PF 635.

evidence which questions the appropriateness of the Applicants' program and, absent such, no further discussion of this issue is warranted.

Respectfully submitted,

Thomas A. Baxter

Thomas A. Baxter, P.C.
John H. O'Neill, Jr., P.C.
Pamela H. Anderson
Michael A. Swiger
SHAW, PITTMAN, POTTS & TROWBRIDGE
1800 M Street, N.W.
Washington, D.C. 20036
(202) 822-1000

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

Edgar M. Roach, Jr.
HUNTON & WILLIAMS
P.O. Box 109
Raleigh, North Carolina 27602
(919) 828-9371

Counsel for Applicants

Dated: January 29, 1985

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 MUNICIPAL POWER AGENCY	)	Docket No. 50-400 OL
	)	
(Shearon Harris Nuclear Power Plant)	)	

CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing "Applicants' Reply to the Proposed Findings of Fact and Conclusions of Law on Safety Matters Filed by Other Parties" were served by deposit in the United States mail, postage prepaid, this 29th day of January, 1985, to all those on the attached Service List.

John H. O'Neill, Jr., P.C.

Dated: January 29, 1985

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 MUNICIPAL POWER AGENCY	)	Docket No. 50-400 OL
	)	
(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
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
P.O. 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
P.O. 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
P.O. 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 Marrietta Street
Atlanta, Georgia 30303

Steven F. Crockett, Esquire
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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

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