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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY
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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))

APPLICANTS' PROPOSED FINDINGS OF FACT IN
REPLY TO THE PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW SUBMITTED BY WELLS EDDLEMAN
ON CONTENTION 8F(1) AND BY THE JOINT INTERVENORS
ON JOINT CONTENTIONS II(E) AND (C)

1. Intervenor Wells Eddleman submitted proposed findings of fact on his Contention 8F(1). See Wells Eddleman's Proposed Findings and Conclusions Concerning Contention 8F(1) (Coal Particulates), July 20, 1984 ("Eddleman Findings"). The Joint Intervenor filed proposed findings on their Joint Contentions II(e) and (c). See Joint Intervenor's Findings of Fact on Joint Contentions II(e) and II(c), July 24, 1984 ("JI Findings"). Applicants' Proposed Findings of Fact and Conclusions of Law on Environmental Matters, dated July 20, 1984, ("Applicants' Findings") address the three environmental contentions that were the subject of the evidentiary proceeding in great detail. Accordingly, this Reply addresses only significant errors in the intervenors' proposed findings on environmental

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contentions that were not discussed or were only touched upon in Applicants' Findings.

Contention 8F(1)

2. Mr. Eddleman maintains in his findings that the cross-sectional data developed by the Harvard group headed by Dr. Ozkaynak, and relied upon in the testimony of Dr. Hamilton and the NRC Staff panel of experts to generate a risk coefficient for air pollution, fail to account for the effects on the individuals studied of exposure to air pollution prior to the time period studied. See Eddleman Findings, ¶¶ 10-11. As evident from one of the quotations referred to by Mr. Eddleman, Dr. Hamilton specifically testified that the cross-sectional data he and the Harvard group relied upon to generate a risk coefficient for mortality due to air pollution do fully account for the effects of past exposure. See Tr. 1,334-35 (Hamilton) ("what you are seeing is the effect [of] . . . very long term exposure to these particles"); Tr. 1,421-22 (Ozkaynak); See also Tr. 1,331-32 (Hamilton: this is the best state of the art, and is a very conservative assessment); Tr. 1,329 (Hamilton: basis for confidence in cross-sectional analyses is confirmatory experimental evidence); Tr. 1,421-22 (Ozkaynak: analysis assumes people exposed to typical level of particle concentrations in previous years of their life); Tr. 1,548 (Ozkaynak: cross-sectional data consistent with time series mortality data).

3. The testimony of Dr. Hamilton and the NRC staff panel of experts on Contention 8F(1) is devoted exclusively to providing a conservative upper bound estimate of health effects attributable to the coal emission rate specified in Table S-3. Thus, for example, an air pollution risk coefficient is used as a conservative surrogate measure of risk for coal particles. See Tr. 1,224-25 (Hamilton); see generally Applicants' Findings at ¶¶ 37-43. Mr. Eddleman ignores these estimates in his proposed findings, instead taking the fraction of total emissions from the annual fuel cycle, rather than coal particulate emissions, and multiplying this number by the risk coefficient for air pollution particles of all sizes. Eddleman Findings at ¶ 12. This arithmetic simply ignores the fact, apparent from the methods used by the expert witnesses and explained in great detail in their testimony, that none of the experts believe the incremental risk of Table S-3 coal particles reasonably can be estimated in this fashion. As Dr. Hamilton and the Staff experts stated, their calculations constitute reasonable upper bound calculations of risk attributable to 1154 MT/yr of coal particles. See Tr. 1,238 (Hamilton); Tr. 1,506-13 (Habegger). Moreover, Mr. Eddleman's estimate ignores biological reality. See Tr. 1,273-75 (Hamilton). As Dr. Hamilton explained, if the risk were greater than he and the Harvard group estimates, "it wouldn't be so difficult to identify deaths from air pollution." Tr. 1,277-78 (Hamilton).

Joint Contention II(e)

4. Joint Intervenor suggest that in order to provide a reasonable calculation of the health risk attributable to the phenomenon of radionuclides from the Harris Plant becoming attached to fly ash in the atmosphere, it was necessary to do a site specific study of the area for this purpose. JI Findings, ¶ 8. In support of this claim, Joint Intervenor refer to the existence of the Cape Fear coal plant, and the experts' alleged "uncertainty as to the assumed deposition and clearance patterns." d. Joint Intervenor misunderstand the expert witnesses' testimony and ignore their analysis, which conclude that such site specific information was unnecessary.

5. The primary purpose of Dr. Mauro and Dr. Schaffer's testimony was to consider whether the generic models used by Applicants and the NRC Staff to calculate radionuclide exposure from normal operation of the Harris Plant adequately account for the specific phenomenon that was the subject of Joint Contention II(e).^{1/} Mauro & Schaffer, ff. Tr. 1,605, at 12, 15; see generally Applicants' Findings at ¶¶ 57-59. Of course, by

^{1/} As Applicants' counsel noted during the proceeding, had Joint Contention II(e) been directed at the impact of the existence of the Cape Fear Plant in the region, Applicants' testimony might have been more focused on that subject. See Tr. 1,813-16 (discussion among parties). However, the plain fact is that Joint Intervenor's contention was not directed at coal from any specific emission source but, rather, was coal generally in the atmosphere from any source, e.g., Soviet Union, China, Japan. See Joint Intervenor's Response to Applicants' Interrogatories on Joint Contention II (First Set), dated May 16, 1983, response to interrogatory II-39.

definition, such an approach ignores some site-specific information. Specifically, while it accounts for the release rates from the Harris Plant, in particular, and local meteorological conditions, the calculation is not adjusted because of the existence of the Cape Fear Plant 12 miles away. See id. at ¶¶ 67, 74-76. However, as Dr. Mauro explained, it should not be so adjusted. This is because the presence of the Cape Fear Plant does not increase the size of particles in the atmosphere on which radionuclides could attach. Rather, the large particles from the coal plant would quickly deposit on the ground and therefore not be available for attachment by radionuclides. Tr. 1,816-17 (Mauro). Dr. Mauro and Dr. Schaffer did consider whether the size range of particles in the atmosphere is conservatively accounted for in Applicants' models, and determined that the models do account for the effects of such particles. See Mauro & Schaffer, ff. Tr. 1,605, at 7-9. It is true, as Mr. Eddleman states, that Applicants' witnesses were unfamiliar with the efficiencies of precipitators at the Cape Fear Plant. However, as Dr. Mauro explained, such facts are irrelevant to Dr. Mauro and Dr. Schaffer's calculation, which relied upon data showing the actual observed effluent levels in the atmosphere. Tr. 1,807 (Mauro).

6. Joint Intervenors incorrectly suggest that the witnesses erred by not assuming adsorption or absorption of noble gases onto coal particles. JI Findings, ¶ 9. Attachment 2 to Dr. Mauro and Dr. Schaffer's testimony explains in considerable

detail why it is reasonable for the inhalation dosimetry model to make this assumption. Attachment 2 shows that an insignificant fraction of radioactive noble gases released from the Harris Plant would become associated with airborne fly ash particles. See Mauro & Schaffer, ff. Tr. 1,605, Attachment 2 at 2-1 through 2-3; see generally Applicants' Findings at ¶ 72.

7. While Joint Intervenors correctly point out that the inhalation dosimetry model used by Applicants and the NRC Staff for the calculations contained in the ER and the FES do not address the dose to the lymph nodes, they fail to mention Dr. Mauro's response to Dr. Foreman's inquiry on this subject, namely, that he believes consideration of this question by use of a later model would introduce a conservatism not accounted for in the model Applicants and the NRC Staff used. Tr. 1,723-25 (Mauro). See J.I. Findings at § 11.

8. Joint Intervenors misunderstand Dr. Schaffer's statement about monodisperse aerosols and their applicability here. The studies relied upon by Dr. Schaffer and Dr. Mauro on particle behavior in the lung traced single or monodisperse particles. Insofar as these particles agglomerated in the lung, the studies would have reflected that fact. Tr. 1,625-27 (Schaffer). These studies are fully applicable here in understanding how particles behave upon inhalation. See Mauro & Schaffer, ff. Tr. 1,605, at 9.

Joint Contention II(c)

9. Joint Intervenors incorrectly state that Table 1 of Applicants' testimony on Joint Contention II(c) by Dr. Mauro and Dr. Marschke "shows that approximately 94% of the total annual whole body person-remS for the US consists of gaseous emissions from the plant." JI Findings, ¶ 16. Table 1 shows that about 93% of the annual whole body dose to the U.S. population from the plant comes from gaseous emissions.

Conclusion

10. Mr. Eddleman's proposed findings on Contention 8F(1) and the Joint Intervenors' proposed findings on Joint Contentions II(e) and (c) provide no support for the positions advocated by the intervenors in these environmental contentions. Accordingly, and in view of the testimony by the expert witnesses proffered by Applicants and the NRC Staff, Eddleman Contention 8F(1) and Joint Intervenor Contentions II(e) and (c) should be rejected.

Respectfully submitted,

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Dated: August 6, 1984

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CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Proposed Findings of Fact in Reply to the Proposed Findings of Fact and Conclusions of Law Submitted by Wells Eddleman on Contention 8F(1) and by the Joint Intervenors on Joint Contentions II(E) and (C)" were served this 6th day of August, 1984, by deposit in the U.S. mail, first class, postage prepaid, to the parties on the attached Service List.

Deborah B. Bauser
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(Shearon Harris Nuclear Power)	
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