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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY  
FOR ENERGY

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	Docket Nos. 50-400 OL
and NORTH CAROLINA EASTERN	)	50-401 OL
MUNICIPAL POWER AGENCY	)	
	)	
(Shearon Harris Nuclear Power	)	
Plant, Units 1 and 2)	)	

APPLICANTS' MOTION FOR A DETERMINATION  
THAT JOINT INTERVENORS' PROPOSED TESTIMONY  
OF DR. CARL J. JOHNSON IS INADMISSIBLE

I. INTRODUCTION

An evidentiary hearing is scheduled to begin on June 14, 1984, on the environmental matters which remain in controversy -- i.e., Eddleman Contention 8F(1), and Joint Contentions II(c) and II(e). Pursuant to the schedule established by the Board during a telephone conference held on May 22, 1984, proposed testimony and exhibits were filed by the parties on May 31, 1984.<sup>1/</sup> Joint Intervenors, through intervenor Wells Eddleman, filed direct testimony by Dr. Carl J. Johnson in the form of a

<sup>1/</sup> The previous schedule, calling for testimony to be filed on May 24, 1984, was extended to accommodate the intervenors, who were unable to obtain Dr. Johnson's testimony on the previously stipulated schedule.

letter (with attachments), dated May 30, 1984, from Dr. Johnson to Mr. Eddleman.<sup>2/</sup>

Applicants Carolina Power & Light Company and North Carolina Eastern Municipal Power Agency hereby move the Board to issue an order determining that the proposed testimony of Dr. Johnson is not admissible as evidence of record at the upcoming environmental hearing.<sup>3/</sup> As grounds for their motion, Applicants assert that the proposed Johnson testimony is irrelevant to the issues specified by the Board for hearing. In addition, Applicants submit that the proposed testimony lacks probative value because of the credibility of the witness and the incompleteness of the written testimony itself.

## II. BOARD AUTHORITY TO GRANT THE RELIEF SOUGHT

Licensing boards clearly are vested with the authority and responsibility to specify the contested issues to be tried at an evidentiary hearing. Boards may specify the issues through prehearing conference orders and/or through rulings on motions for summary disposition which narrow and further define the issues. See 10 C.F.R. §§ 2.749, 2.751a, 2.752.

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<sup>2/</sup> As discussed below, Dr. Johnson's proposed testimony does not address the issues set for hearing. While the testimony does not even refer to any of the contentions at issue, based on previous statements by Mr. Eddleman that Dr. Johnson would not be addressing Eddleman 8F(1), Applicants here treat the testimony as advanced by the Joint Intervenors in support of one or both of their environmental contentions.

<sup>3/</sup> This motion is accompanied by "Applicants' Motion for Expedited Ruling on Applicants' Motion for a Determination that Joint Intervenors' Proposed Testimony of Dr. Carl J. Johnson is Inadmissible."

Only relevant, material and reliable evidence which is not unduly repetitious will be admitted at NRC hearings. 10 C.F.R. § 2.743(c). Licensing boards are empowered to rule on offers of proof and receive evidence, and to strike irrelevant evidence. 10 C.F.R. §§ 2.718(c), 2.757(b).

. . . In passing on objections, the board, while not bound to view proffered evidence according to its admissibility under strict application of the rules of evidence in judicial proceedings, should exclude evidence that is irrelevant to issues in the case as defined in the notice of hearing or the prehearing conference order, or that pertains to matters outside the jurisdiction of the board or the Nuclear Regulatory Commission. Irrelevant material in prepared testimony submitted in advance under § 2.743(b) may be subject to a motion to strike under the procedures provided in § 2.730.

Section V(d)(7), Appendix A to 10 C.F.R. Part 2.

Licensing boards not only are authorized but are expected to keep out unrelated evidence. Commonwealth Edison Company (Zion Station, Units 1 and 2), ALAB-616, 12 N.R.C. 419, 427 (1980). In addition, it is not improper for a licensing board to exclude testimony on the ground that it lacks any probative value. Southern California Edison Company (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-82-11, 15 N.R.C. 1383, 1384 (1982).

### III. IRRELEVANCE OF THE JOHNSON TESTIMONY

#### A. Issues Specified by the Board

The matters which remain in controversy for the environmental hearing are specific and well defined. The relatively

exact delineation of the issues is the product of the two-year effort by the Board and parties to provide a sharp focus, prior to hearing, of the matters which are truly in contest and deserving of resolution on the basis of evidentiary presentations in hearing sessions. As contemplated by the Commission's Rules of Practice, this focusing process has included the pleadings and rulings on admission of the proposed contentions, discovery among the parties, various prehearing conference and other Board orders (e.g., on discovery disputes), and Board determinations on motions for summary disposition. No party's witness should be allowed, at hearing, to reverse this process and expand the issues set for trial.

1. Joint Contention II(c)

As originally admitted by the Board, this contention states that:

The long term somatic and genetic health effects of radiation releases from the facility during normal operations, even where such releases are within existing guidelines, have been seriously underestimated for the following reasons:

(c) The work of Gofman and Caldicott shows that the NRC has erroneously estimated the health effects of low-level radiation by examining effects over an arbitrarily short period of time compared to the length of time the radionuclides actually will be causing health and genetic damage.

Memorandum and Order (Reflecting Decisions Made Following Prehearing Conference), LBP-82-119A, 16 N.R.C. 2069, 2076 (1982); Memorandum and Order (Addressing Applicants' Motion for Codification), January 17, 1983; Applicants' Motion for



Codification of Admitted Contentions at A-1, A-2 (Dec. 17, 1982).<sup>4/</sup>

In its Memorandum and Order (Ruling on Motions for Summary Disposition of Health Effects Contentions: Joint Contention II and Eddleman Contentions 37B, 8F(1) and 8F(2)), January 27, 1984 (hereafter "Summary Disposition M & O"), the Board substantially modified the issue as pleaded originally by Joint Intervenors:

The contention argues that the Staff's estimates should extend over the time the radionuclides actually will be causing health and genetic damage. In their papers, the Intervenors contend that it should extend to the entire life of all nuclides, or at least to some eleven million years.

. . . [W]e do not believe that the Intervenors' eleven million years proposal has any merit. After all, the facility will be decommissioned after forty years or less and its emissions will virtually cease. Furthermore, the very long-lived radionuclides are, generally speaking, less hazardous. Beyond that, projections of health effects into the millions of years are purely speculative; they have been rejected largely on that basis. See Philadelphia Electric Company (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-701, 16 NRC 1517, 1526 (1982).

Summary Disposition M & O at 40, 41. The Board therefore indicated it would "bar wholly speculative efforts to predict the

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<sup>4/</sup> The reference, in the contention, to the work of Gofman and Caldicott is at this point excess baggage since Applicants have shown that those authors do not address the II(c) thesis. See Mauro Affidavit ¶ 22, attached to Applicants' Motion for Summary Disposition of Joint Intervenors' Contention II and Wells Eddleman's Contention 37B (Health Effects), October 3, 1983. Joint Intervenors did not dispute this conclusion.

effects of routine releases millions of years into the future." Id. at 41. In response to a request by Mr. Eddleman for clarification of the ruling on his Contention 8F(2), the Board subsequently expanded upon its reasons for rejecting efforts to consider doses over millions of years. Memorandum and Order (Ruling on Responses to the Memorandum and Order of January 27, 1984 Concerning Health Effects and Other Matters), at 6-7 (March 15, 1984).

On the other hand, the Board denied summary disposition of Joint II(c) because the Board questioned "whether the Staff should confine itself, as it has done in this case, to computations of annual doses and effects" and whether the Staff should "take into account the incremental impact on people who live near the facility for many years." Summary Disposition M & O at 40-41. These latter two issues thus constitute the only identified aspects of Joint Contention II(c) which remain in controversy.

2. Joint Contention II(e)

The portion of this contention which survived summary disposition states as follows:

The long term somatic and genetic health effects of radiation releases from the facility during normal operations, even where such releases are within existing guidelines, have been seriously underestimated for the following reasons:

. . .  
(e) The radionuclide concentration models used by Applicants and the Staff are inadequate because they underestimate or exclude the following means of concentrating radionuclides in the environment . . . radionuclides absorbed in or attached to

fly ash from coal plants which are in the  
air around the SHNPP site . . . .

LBP-82-119A, supra, 16 N.R.C. at 2076 (1982); Memorandum and Order (Addressing Applicants' Motion for Codification), January 17, 1983; Applicants' Motion for Codification of Admitted Contentions at A-1, A-3 (Dec. 17, 1982); Summary Disposition M & O at 25-24, 29-31.

B. Matters Encompassed by Johnson Testimony

That it is exceedingly difficult to describe the subject matter of the proposed Johnson testimony is in itself a tribute to its lack of quality and probative value, a matter which we address later. The testimony nowhere refers to the contentions at issue (or to the Board's rulings which further define the issues). A compelling interpretation is that Dr. Johnson is totally unaware of what the issues are in this case. Beyond his failure to relate his testimony to Joint Intervenors' Contentions II(c) and II(e), Dr. Johnson addresses matters already decided by the Board on summary disposition of other contentions, and other matters which never have been in controversy in this proceeding.

While a myriad of subjects is touched upon by Dr. Johnson, Applicants consider the essence of his proposed testimony to challenge the source term used by Applicants and the Staff to account for radiological releases from normal operation of the Harris plant. Dr. Johnson questions: whether all of the relevant radionuclides have been taken into account (Johnson at 1-2); whether the filters at Harris will perform with the



expected degree of efficiency (Johnson at 3); whether effluent monitoring at the plant will be adequate (Johnson at 4); and whether actual releases from operating plants have been considered (Johnson at 5).

It is clear that the source term is not at issue in Joint Contentions II(c) and II(e). It is equally clear that the Board has already visited and decided challenges to the adequacy of the source term. The source term was at issue in Eddleman Contention 29/30, which was decided in Applicants' favor through summary disposition. See Memorandum and Order (Ruling on Motions for Summary Disposition of Eddleman Contentions 29/30, 64(f), 75, 80 and 83/84) at 3-5 (November 30, 1983). More recently, the source term was addressed in the Board's ruling on summary disposition of various parts of Joint Contention II.

In its rulings on portions of Joint II(b) and II(f), the Board considered Joint Intervenors' arguments that certain radionuclides are ignored in the source term, and that the effects of alpha, beta and neutron radiation have been underestimated. Acknowledging that some radionuclides have been left out of the source term, Applicants demonstrated that the omitted radionuclides would contribute less than one percent to the source term and consequently would not contribute significantly to the dose. The Staff showed that its source term, developed in accordance with NUREG-0017, includes all significant dose-contributing radionuclides. Further, the pleadings demonstrated that "there are no alpha or neutron



emitters in the normal operation liquid or gaseous source terms themselves." See Summary Disposition M & O at 21. The Board concluded:

The only alpha-emitting radionuclide that can be expected from the effluents from the Harris plant (Table D-4 in the DES) is from the decay of Np-239 (half-life 2.35 days). The product of the decay is Pu-239 (half-life 24,400 years), which is an alpha emitter. However, the conversion of the expected Np-239 release of  $2 \times 10^{-5}$  curies per year into Pu-239 would result in the formation of  $5 \times 10^{-12}$  curies per year of Pu-239, five trillionths of a curie, which would contribute insignificantly to the dose estimate.

In summary, the submissions of the Applicants and NRC Staff demonstrate that all significant radionuclides have been included in the source term for normal operation of the Harris facility and that the only alpha radiation from the source term would arise from Pu-239 at insignificant levels. The intervenors' opposition papers do not controvert those showings and, therefore, summary disposition as to those portions of the contention pertaining to the source term (subparagraphs (b) and (f)) is granted.

Id. at 22.

Further, the Board granted summary disposition on the assertion in Joint II(f) that "less reactive rather than more reactive forms of radionuclides are used in the computation of the radionuclides" in the environment. Noting intervenors' identification of isotopes of plutonium, the Board found that insignificant amounts of plutonium will be released during normal operation of the Harris plant. Id. at 22-23; see also id. at 26 ("... the Board accepts the source terms developed by the NRC Staff as appropriate. Insignificant quantities of

radionuclides that emit alpha or neutron radiation are expected to be released from the Harris plant during normal operation." ). Notwithstanding this ruling, the Johnson testimony focuses on plutonium and its "threat to populations living within 50 to 100 miles of the plant for a period of time quite a bit longer than mankind can hope to exist." Johnson at 2.

Beyond the fact that the ultimate issue of source term validity has already been decided, many of the individual points raised by Dr. Johnson were considered by the Board in resolving the challenges to the source term used by Applicants and the Staff. In particular, as discussed above, the release of plutonium and other transuranic isotopes was evaluated by the Board. But see Johnson at 2, 3 and 4.

Similarly, the challenge to the health effects of radiation was resolved by summary disposition. See Summary Disposition M & O at 26-29, 33-39, 41-43; Memorandum and Order (Ruling on Responses to the Memorandum and Order of January 27, 1984 Concerning Health Effects and Certain Other Matters) at 1-4 (March 15, 1984). But see Johnson at 2, 5.

Other points raised are plainly irrelevant. Dr. Johnson's tendency to draw conclusions about Harris plant releases from data on releases from fuel cycle facilities and other kinds of nuclear installations (e.g., Rocky Flats) bears upon the probative value of the proposed testimony.<sup>5/</sup> There can be no

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<sup>5/</sup> Table 4, for example, addresses curies reprocessed from a nuclear power plant's spent fuel, and not releases from nuclear power plant operations .

question, however, that these other facilities and their releases are not relevant here.

While it at least represents a power plant, Oyster Creek experience is not relevant either since Oyster Creek is a boiling water reactor. The Board previously warned Joint Intervenors on the inclusion of some of these topics in Dr. Johnson's testimony:

. . . [T]he Intervenors expect Dr. Johnson to testify on a number of diverse subjects. Some of these subjects appear to be irrelevant to the admitted contention -- e.g. radioactive releases from the Oyster Creek facility in New Jersey, the efficiency of the exhaust filters at the Harris facility.

Summary Disposition M & O at 9-10. But see Johnson at 3 (filters) and 5 (Oyster Creek). See also Memorandum and Order (Ruling on Motions for Summary Disposition of Eddleman Contentions 29/30, 64(f), 75, 80 and 83/84) at 4 (November 30, 1983) (comparison of predicted and measured releases at operating plants).

The adequacy of Applicants' systems for monitoring radiological effluents at the Harris plant was raised in Joint Contention VI, which has been dismissed with prejudice. Order (Ruling on Various Procedural Questions and Eddleman Contention 15AA) at 6-7 (May 10, 1984). But see Johnson at 4. Certainly the monitoring system is not at issue in Joint II(c) and II(e).

Other topics mentioned by Dr. Johnson -- fallout from nuclear weapons testing; secure storage of radioactive wastes; damage to plutonium workers; liquid pathway considerations; and the monitoring of eggs, milk, meat and produce in the plant

area -- plainly are not relevant to the issues set by the Board for hearing.

In sum, the proposed testimony of Dr. Johnson is irrelevant and should not be admitted.

#### IV. OTHER GROUNDS FOR EXCLUDING THE JOHNSON TESTIMONY

Applicants urge the Board to grant this motion on the basis that the proposed testimony is irrelevant -- a ground which is sufficient on its own to support the relief sought. Nevertheless, there are other bases which justify excluding the Johnson testimony.

##### A. Absence of Probative Value

Evidence must be reliable to be admitted. 10 C.F.R. § 2.743(c). At the very least, to be admissible otherwise competent testimony must be capable of assisting the trier of fact. See Louisiana Power and Light Company (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 N.R.C. 1076, 1091 (1983). The proposed Johnson testimony does not meet these standards.

First, one cannot fairly term Dr. Johnson's letter to Mr. Eddleman as testimony in any sense. There is no beginning, middle, or end to it -- that is, it sets no goals for itself and reaches no evident conclusions. Rather, it appears to represent Dr. Johnson's commentary on portions of the Final Environmental Statement dealing with radiological release assessment. For example, Dr. Johnson poses questions in the letter to which he does not have the answer. These casual and even



rhetorical observations do not constitute expert testimony which could assist a trier of fact in resolving complex technical issues.

Second, the testimony is not sufficiently detailed to permit the correctness of Dr. Johnson's few arguable conclusions to be evaluated.<sup>6/</sup> For example, Tables 1 and 2 simply list radionuclides which are in the fuel in its various stages of the fuel cycle. Dr. Johnson does not explain any basis for his implication, however, that they will be released during normal power plant operation.

B. Credibility of the Witness

The Board is aware of the findings, made in other NRC proceedings, on the value of Dr. Johnson's testimony. See Summary Disposition M & O at 10-11. Added to the list of previous errors found in his presentations (such as faulty comparisons of facilities) are, in this instance, unprofessional statements which reflect either ignorance or an attempt to incite fear. For example, Dr. Johnson actually suggests comparing the weight of the Hiroshima bomb to the weight of the reactor core at Harris "in order to consider the potential effects of the radioactive fission and activation products produced by the fissioning of uranium in the reactor core." Johnson at 1. Dr. Johnson also mingles fuel cycle facilities, weapons facilities, weapons tests, and power plants as if the radioactive releases from and potential risks of each are comparable.

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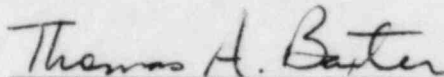
<sup>6/</sup> Further, Applicants' copies of App. b. to the testimony are incomplete in that pages are missing.

Finally, the text of the letter itself reveals faulty and illogical thought development and/or expression. Sentences in a paragraph bear no apparent relationship to one another. See, e.g., the second paragraph on page 1 (discussing bomb tests, waste storage, fuel degradation, and food chain concentrations); the paragraph at the bottom of page 5 and the top of page 6 (begins with a discussion of plume inhalation and proceeds "further" with a discussion of targeting nuclear reactors in a future war).

V. CONCLUSION

For all of the above reasons, the Joint Intervenors' proposed testimony of Dr. Carl J. Johnson should be ruled to be not admissible as evidence in the upcoming hearing on environmental matters.

Respectfully submitted.



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Dated: June 5, 1984

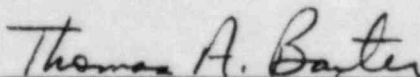
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CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Motion for Expedited Ruling on Applicants' Motion for a Determination that Joint Intervenors' Proposed Testimony of Dr. Carl J. Johnson is Inadmissible" and "Applicants' Motion for a Determination That Joint Intervenors' Proposed Testimony of Dr. Carl J. Johnson is Inadmissible" were served this 5th day of June, 1984, by hand delivery to the parties identified with one asterisk, Federal Express to the parties identified with two asterisks and deposit in the U.S. mail, first class, postage prepaid, to the other parties on the attached Service List.

  
\_\_\_\_\_  
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