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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY  
DOCKETING & RECORDS

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

Docket No. 50-400 OL

APPLICANTS' MOTION FOR SUMMARY DISPOSITION  
OF CCNC CONTENTION 2

I. INTRODUCTION

Pursuant to 10 C.F.R. §2.749 of the Nuclear Regulatory Commission's Rules of Practice, Applicants Carolina Power & Light Company and North Carolina Eastern Municipal Power Agency hereby move the Atomic Safety and Licensing Board for summary disposition in Applicants' favor of Conservation Council of North Carolina ("CCNC") Contention 2. For the reasons explained herein, Applicants respectfully submit that there is no genuine issue as to any fact material to this Contention and that Applicants are entitled to a decision in their favor as a matter of law.

In support of this motion, Applicants rely upon the attached Affidavit of Robert G. Black, Jr. in Support of Applicants' Motions for Summary Disposition of CCNC Contention 2 and Eddleman Contention 57-C-10 ("Black Affidavit"), Affidavit of Jesse T. Pugh, III in Support of Applicants' Motions for Summary Disposition of CCNC Contention 2 and Eddleman Contention 57-C-10 ("Pugh Affidavit"), Applicants' Statement of Material Facts as to Which There is No Genuine Issue to be Heard on CCNC Contention 2, Applicants' Memorandum of Law in Support of Motions for Summary Disposition on

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Emergency Planning Contentions, and the pleadings and discovery filed in this proceeding regarding CCNC Contention 2.

## II. BACKGROUND

On February 28, 1984, Applicants served a copy of the North Carolina Emergency Response Plan in Support of the Shearon Harris Nuclear Power Plant (February 1984) (the "ERP" or "off-site emergency plan") on the parties to this proceeding.<sup>1</sup> In response to the ERP, intervenor CCNC proffered a number of proposed contentions including CCNC Contention 2. As originally proposed, CCNC Contention 2 addressed both the adequacy of sheltering as a protective response and the so-called "evacuation shadow phenomenon." "Contentions Arising from Review of Emergency Response Plan" (April 3, 1984) at 2-3. The Licensing Board, in ruling upon the proposed contention, rejected all parts with the exception of the first two sentences dealing with sheltering. During the May 2, 1984 prehearing conference, Chairman Kelley stated the Board's ruling as follows:

No. 2, we are going to admit the first two sentences of that contention. It is a sheltering contention and the thrust of it as we read it is that there are a lot of people living in particular rural housing in the area which is drafty to the point of not being effective sheltering. We think that is a site-specific point that is litigible [sic].

Tr. 995-96. The admitted CCNC Contention 2 states:

Sheltering as the recommended response to the release of radiation is not adequate to protect the public health. The typical rural house found around the plant site is not well-insulated and air in it is exchanged several times each hour.

Pursuant to the schedule agreed upon at the prehearing conference, discovery requests on CCNC Contention 2 were due by August 9, 1984, and responses were due on August 30, 1984. Applicants filed one set of interrogatories regarding this Contention on intervenor CCNC on August 9, 1984. See "Applicants' Emergency Planning Interrogatories and Request for Production of Documents to Intervenor CCNC (First

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<sup>1</sup>Revision 1 of the ERP was issued in September 1984. A copy was served on the Board and on the parties on October 3, 1984.

Set)" (August 9, 1984) at 6-9. CCNC responded on August 31, 1984. "Conservation Council's Responses to Discovery on Emergency Planning Contentions (First Set)" (August 31, 1981) at 3-4. CCNC and the NRC Staff did not make any discovery requests on this Contention. Thus, discovery on the Contention is now completed.

CCNC Contention 2 is classified as an emergency planning contention to be addressed in the hearings scheduled to commence June 18, 1985. Written direct testimony on the contention is scheduled to be filed June 3, 1985. Further, the Board and the parties have established January 14, 1985 as the last day for filing summary disposition motions on this Contention. Thus, the instant Motion is timely, and CCNC Contention 2 is ripe for summary disposition.

### III. APPLICABLE LAW

The well-defined standards applicable to motions for summary disposition under 10 C.F.R. §2.749 are discussed in detail in Applicants' Memorandum of Law in Support of Motions for Summary Disposition on Emergency Planning Contentions, filed in this proceeding on October 8, 1984. Applicants rely upon the discussion therein which is incorporated by reference, and upon the discussion herein regarding the application of those standards to CCNC Contention 2.

The NRC's emergency planning rule, 10 C.F.R. §50.47 and App. E, and the joint NRC-FEMA criteria document on emergency planning, NUREG-0654,<sup>2</sup> both specify that emergency plans include a range of protective actions in the event of an accident at a commercial nuclear reactor. Sheltering the population in-place is one protective action anticipated by the emergency planning rule and NUREG-0654. 10 C.F.R. §50.47(b)(7) identifies "remaining indoors" as one initial protective action, and 10 C.F.R. §50.47(b)(10)

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<sup>2</sup>"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654, FEMA-REP-1, Rev. 1 (November 1980).

requires emergency planners to develop "a range of protective actions . . . for the plume exposure pathway EPZ for emergency workers and the public." The Supplementary Information to the final rule on emergency planning states that protective actions "could include staying indoors in the case of a release that has already occurred or a precautionary evacuation in the case of a potential release thought to be a few hours away." 45 Fed.Reg. 55502, 55407 (1980). NUREG-0654 sets forth detailed evaluation criteria for emergency plans. With respect to potential protective responses, Criterion J.10.m. states that plans shall include:

The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates. (footnote omitted.)

NUREG-0654 at 64.

#### IV. ARGUMENT

CCNC Contention 2 generally alleges that sheltering should never be the "recommended response" in the event of a release of radiation from the Shearon Harris Plant and that sheltering is "not adequate to protect the public health." In support of this proposition, CCNC alleges that "the typical rural house found around the plant site is not well insulated and air in it is exchanged several times each hour." These allegations do not raise any material issue as to the appropriateness of the sheltering option in some circumstances for some types of radiation releases. Neither the contention itself nor any information provided by CCNC on discovery provides any basis for discounting entirely the sheltering option. Indeed, NRC regulations and criteria establish that sheltering should be one option considered by emergency planners and available to decision-makers during an emergency. CCNC has made no showing of any special circumstances that justify a departure from the regulatory standard.

A. The Appeal Board and Licensing Boards Have Recognized That Sheltering Is An Appropriate Protective Response in Some Circumstances.

As discussed supra, the NRC emergency planning rule and NUREG-0654 authorize sheltering the public in their residences as one option for protective response during an emergency. In accordance with this authority, the Appeal Board has recognized that an emergency plan "must provide for a variety of protective measures including sheltering, . . . the overall objective being the avoidance of as much radiation exposure as possible." Cincinnati Gas & Electric Co. (William H. Zimmer Nuclear Power Station, Unit No. 1), ALAB-727, 17 NRC 760, 765 (1983). See also Union Electric Company (Callaway Plant, Unit 1), LBP-83-71, 18 NRC 1105, 1112 (1983), aff'd ALAB-754, 18 NRC 1333 (1983) (upholding adequacy of protective actions that included sheltering options).

Emergency plans that include a sheltering option have been approved by the Commission's licensing boards. Indeed, the boards have gone beyond finding that sheltering is a permissible component of emergency planning. They have concluded, on the basis of the rule, that plans ought to include a sheltering component. The general principle that in-place sheltering should be a part of all emergency plans, given that evacuation may be inappropriate or unavailable in some circumstances, has recently been well stated by licensing boards in the Limerick and Big Rock Point proceedings. In Limerick, the board stated:

No NRC or FEMA regulation requires that dose-saving evacuation be possible in any set of circumstances whatsoever. No realism worthy of the name could so require. Thus, every emergency plan makes sheltering an option.

Philadelphia Electric Company (Limerick Generating Station, Units 1 and 2), Docket Nos. 50-352-OL, 50-353-OL, "Memorandum and Order Rejecting AWPP's New Contention on Evacuation" (September 14, 1984) at 4. In its Initial Decision, the Big Rock Point board stated:

The goal of emergency planning and the implementation of public protective measures is to minimize the public's radiation exposure during a radiological emergency. There are two primary public protective measures, evacuation and sheltering. (Finding I-11.) Timely evacuation, if feasible, is the preferred protective action since it removes the public from the source of exposure. Sheltering is the appropriate protective measure when evacuation is either impractical or cannot be timely implemented such as during adverse weather conditions which may create undue risk. (Finding I-12.) Both sheltering and evacuation are considered acceptable protective actions by the Staff under varying factual scenarios.

"Initial Decision (On All Remaining Issues)," Consumers Power Company (Big Rock Point Nuclear Power Plant), LBP 84-32, 20 NRC 601, 691 (1984). See also Consolidated Edison Company of New York (Indian Point, Unit No. 2) and Power Authority of the State of New York (Indian Point, Unit No. 3), LBP-83-68, 18 NRC 811, 986 (1983) (recognizing that evacuation may not be possible during some weather conditions and that sheltering may be the only option available).

B. The Relevant Characteristics of "Typical" Housing Within the Harris Plume EPZ Are Known.

To address CCNC Contention 2's factual allegations, Applicants commissioned a survey of the housing stock in the Harris plume EPZ in order to identify the characteristics of a "typical" residence.<sup>3</sup> The survey was conducted under the direction of a fallout shelter analyst certified by the Federal Emergency Management Agency. It concentrated on identifying those housing characteristics that are most relevant to the sheltering capability of a structure, that is the number of stories, presence or absence of a basement and type of exterior finish. Black Affidavit, ¶4.

These factors are most important because the sheltering effectiveness of a structure depends upon the mass of material between the source of radiation and the

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<sup>3</sup>On the basis of the housing survey results, estimates of the level of protection afforded by a typical residence for direct and inhalation radiation exposure were also developed. Black Affidavit, ¶¶ 11-17. This information addresses the concerns raised in Eddleman Contention 57-C-10, as articulated by the Board in admitting that Contention. See Applicants' Motion for Summary Disposition of Eddleman Contention 57-C-10, filed herewith.

person inside the structure. Sheltering effectiveness will generally be greater for a building that is constructed of dense materials and in which there are a number of floors between the radiation source and the occupied area. Consequently a home of brick or similar construction generally provides more protection than one of wood frame construction. A two-story home generally provides more protection than a one-story home. If a basement is available, it will provide even better protection. Contrary to what CCNC Contention 2 implies, the amount of insulation in a house will have a negligible effect on the level of protection from external radiation. This is so because materials used for thermal insulation (fiberglass, foams, rock wool and the like) are of low density and, thus, do little to block radiation. Black Affidavit, ¶ 4. Based upon standard guidance issued by the United States Environmental Protection Agency and approved by the NRC in NUREG-0654, the approximate air exchange rate for residences like those in the Harris EPZ is also known. Black Affidavit, ¶ 16.<sup>4</sup>

Housing data were collected from three separate sources: (1) the property card file in the office of the Tax Supervisor of Chatham County; (2) computerized information on taxable property in the Wake County Computer Center; and (3) a field survey of buildings within the Harris EPZ. Black Affidavit, ¶ 5. The methodologies used to collect the housing data are detailed in paragraphs 5 through 8 of the Black Affidavit. The collected data reveal that more than 80% of the homes in the EPZ are single story, more than 80% have no basement, over half are of frame or similar construction, and approximately one-third are of brick or similar masonry construction. See Black Affidavit ¶ 9 and

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<sup>4</sup>EPA guidance indicates that residences that have rooms with windows or exterior doors on one or more sides have a ventilation rate of approximately one or two air exchanges per hour. "Protective Action Evaluation, Part 1, Evacuation and Shelter as Protective Actions Against Nuclear Accidents Involving Gaseous Releases" (EPA - 520/1-78-001A) at 8. CCNC Contention 2 claims that the air in a "typical rural house" around the Harris site is "exchanged several times each hour." However, CCNC has provided no basis for claiming that the air exchange rate in houses surrounding the Harris Plant is greater than EPA's standard estimate or, even if such basis were established, that sheltering should be entirely discounted under all circumstances. See discussion at Section C, infra.

Attachments 2-5. Thus, a typical residential structure in the EPZ is a single story, single family dwelling of either wood or brick exterior and no basement. Black Affidavit, ¶ 11.

C. CCNC Has Shown No Special Circumstances that Would Justify Discounting Sheltering as a Protective Action.

In asserting that sheltering should never be utilized as a protective action in the event of an accident at the Harris Plant, CCNC is in effect challenging that portion of the emergency planning rule which recognizes that plans should include sheltering among the "range of protective actions," 10 C.F.R. § 50.47(b)(7) and (10), as well as the guidance of NUREG-0654, and the consistent holdings of NRC adjudicatory boards which endorse sheltering as one of the range of protective actions which should be included in emergency response plans. In order to show that the sheltering option is inappropriate for emergency planning in support of the Harris Plant, CCNC would have to show that the housing stock in the Harris EPZ creates special circumstances that justify an exception to these precedents. CCNC has utterly failed to do so. There is no basis for suggesting that the housing in the vicinity of the Harris Plant is so substandard that the sheltering option should not even be considered.

There are numerous nuclear facilities sited in rural areas throughout the Southeast and other parts of the United States. Such facilities include the two operating nuclear plants in North Carolina, Applicants' Brunswick Steam Electric Plant located near Southport, North Carolina, and Duke Power Company's McGuire plant located outside Charlotte. In addition, the plume EPZ for Duke Power Company's Catawba plant, located in York County, near Rock Hill, South Carolina, includes a rural area of North Carolina. During discovery, CCNC admitted that it has no basis for distinguishing between the housing stock in the vicinity of the Harris Plant and that at other similarly-situated plants. Applicants' interrogatories to CCNC included the following: "State whether you contend that the 'typical rural house' in the Harris plume EPZ is different from the typical rural residences found in the plume EPZs of other commercial nuclear

plants in the southeast United States." "Applicants' Emergency Planning Interrogatories and Requests for Production of Documents to Intervenor CCNC (First Set)" (August 9, 1984), at 7. In response, CCNC stated: "Not at this time. We have not studied this although there is likely to be a difference in houses found in the northeastern part of the country." "Conservation Council's Responses to Discovery on Emergency Planning Contentions (First Set)" (August 31, 1984) at 3. When asked on discovery to identify the characteristics of a "typical" house in the Harris EPZ, CCNC could provide no such information. Instead CCNC responded: "We are negotiating with university researchers to conduct a study of the housing stock within the 10-mile EPZ. These researchers were unavailable until late last week when the university went into session." August 31, 1984 Responses, supra, at 3. CCNC's interrogatory responses have not been amended to reflect that such a study was ever undertaken or what the results might be. Consequently, the results of Applicants' own housing study are unrefuted.

Despite CCNC's speculative suggestion regarding differences in housing in the northeastern and southeastern parts of the United States, CCNC has no factual basis for suggesting that housing in the Harris plume EPZ differs from that in the areas surrounding numerous other plants. Indeed, Mr. Pugh confirms that the typical housing in the Harris EPZ is similar to that in the plume EPZs of the Brunswick, McGuire and Catawba plants, for which DEM has planning responsibilities. The off-site emergency plans for those plants include sheltering as one option for protective action. Pugh Affidavit, ¶ 5. With respect to the characteristics identified (that is, number of stories, presence of basement and type of exterior construction), housing in the EPZ is also comparable to housing in the State of North Carolina as a whole and in the southeast United States, as reflected in published data. Black Affidavit, ¶ 10.

D. Sheltering Will Only Be Used If It Will Result In The Lessening Of Radiation Dose Exposure To The Public In Comparison With Other Available Options.

Under the Commission's emergency planning rule, sheltering the populace in-place is intended to be only one of a "range of protective actions" available to emergency

planners in the event of an accident at a nuclear power plant. 10 C.F.R. § 50.47(b)(10). The sheltering option will be used only if decision makers are thoroughly convinced that it would result in a lessening of radiation dose exposure to the public compared to other available options for protective action. The Division of Emergency Management does not intend to use in-place sheltering for the general population on a long-term basis, that is, more than a period of several hours. Unless evacuation is infeasible due to conditions such as the impassability of highways, evacuation of the affected population is the preferable long-term protective action. Pugh Affidavit, ¶ 4.

Based upon the known characteristics of housing in the EPZ and the level of protection afforded by that housing, sheltering can be an appropriate protective action on a short-term basis. Pugh Affidavit, ¶ 5. Even if sheltering is initially recommended and circumstances subsequently change, additional protective actions (including evacuation) could be ordered as the situation develops. The availability of a sheltering option does not detract from the ability of emergency planners to protect the public. As Mr. Pugh indicates, sheltering should be available as an option to permit planners to respond appropriately to different situations. Pugh Affidavit, ¶ 4.

E. There Is No Issue Of Material Fact And Applicants Are Entitled To A Decision In Their Favor As A Matter Of Law On CCNC Contention 2.

CCNC has no factual basis to support the premise of CCNC Contention 2 that the quality of the housing surrounding the Harris Plant makes sheltering in-place an inappropriate protective action under all conditions. As a result of Applicants' survey of the housing, the characteristics of a "typical" residence relevant to sheltering are now known. Based on all available information, the housing is similar in these respects to that surrounding other nuclear plants and in other parts of North Carolina and the southeast United States. CCNC has provided no information to the contrary that shows special circumstances justifying a departure from well-established NRC precedents which endorse sheltering as an appropriate protective action in some circumstances. For these reasons, there is no issue of material fact that requires a hearing on CCNC

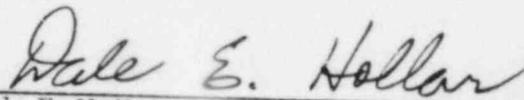
Contention 2. Applicants are entitled to a favorable decision on this Motion as a matter of law. No useful purpose would be served by conducting an evidentiary hearing on this Contention.

V. CONCLUSION

Based on the foregoing, Applicants respectfully request that their Motion for Summary Disposition of CCNC Contention 2 be granted.

This 14th day of January, 1985.

Respectfully submitted,



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Dale E. Hollar, Esq.  
Associate General Counsel  
Carolina Power & Light Company  
Post Office Box 1551  
Raleigh, North Carolina 27602  
(919) 836-8161

Attorneys for Applicants:

Thomas A. Baxter, P.C.  
Delissa A. Ridgway, Esq.  
Shaw, Pittman, Potts & Trowbridge  
1800 M Street, N.W.  
Washington, D.C. 20036  
(202) 822-1000

Richard E. Jones, Esq.  
Samantha Francis Flynn, Esq.  
Carolina Power & Light Company  
Post Office Box 1551  
Raleigh, North Carolina 27602  
(919) 836-6517