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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 Nos. 50-400 OL
MUNICIPAL POWER AGENCY	)	50-401 OL
	)	
(Shearon Harris Nuclear Power	)	
Plant, Units 1 and 2)	)	

APPLICANTS' INTERROGATORIES AND  
REQUEST FOR PRODUCTION OF DOCUMENTS  
TO JOINT INTERVENORS (FOURTH SET)

Pursuant to 10 C.F.R. §§ 2.740b and 2.741 and to the Atomic Safety and Licensing Board's "Memorandum and Order (Reflecting Decisions Made Following Prehearing Conference)" of September 22, 1982, Carolina Power & Light Company and North Carolina Eastern Municipal Power Agency hereby request that Joint Intervenor (Kudzu Alliance, CCNC, CHANGE/ELP & Wells Eddleman) answer separately and fully in writing, and under oath or affirmation, each of the following interrogatories, and produce and permit inspection and copying of the original or

best copy of all documents identified in the responses to the interrogatories below. Under the Commission's Rules of Practice, answers or objections to these interrogatories must be served within 14 days after service of the interrogatories; responses or objections to the request for production of documents must be served within 30 days after service of the request.

These interrogatories are intended to be continuing in nature, and the answers should promptly be supplemented or amended as appropriate, pursuant to 10 C.F.R. § 2.740(e), should Joint Intervenors or any individual acting on their behalf obtain any new or differing information responsive to these interrogatories. The request for production of documents is also continuing in nature and Joint Intervenors must produce immediately any additional documents they, or any individual acting on their behalf, obtain which are responsive to the request, in accordance with the provisions of 10 C.F.R. § 2.740(e).

Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, transcript, report, handwritten notes, test data) and provide the following information as applicable: document name, title, number, author, date of publication and publisher, addressee, date written or approved, and the name and address of the person or persons having possession of the document. Also state the portion or portions of the document (whether

section(s), chapter(s), or page(s)) upon which Joint Intervenor(s) rely.

Definitions: As used hereinafter, the following definitions shall apply:

The "ER" is the Environmental Report - Operating License Stage for the Shearon Harris Nuclear Power Plant, as amended.

"Applicants" is intended to encompass Carolina Power & Light Company, North Carolina Eastern Municipal Power Agency and their contractors for the Harris Plant.

"Joint Intervenor(s)" is intended to encompass the following organizations and individuals, jointly and severally: Chapel Hill Anti-Nuclear Group Effort, the Environmental Law Project, the Conservation Council of North Carolina and the Kudzu Alliance, as organizations, their members, and their representatives, and Mr. Wells Eddleman.

"Document(s)" means all writings and records of every type in the possession, control or custody of Joint Intervenor(s) or any individual acting on their behalf, including, but not limited to, memoranda, correspondence, reports, surveys, tabulations, charts, books, pamphlets, photographs, maps, bulletins, minutes, notes, speeches, articles, transcripts, voice recordings and all other writings or recordings of any kind; "document(s)" shall also mean copies of documents even though the originals thereof are not in the possession, custody, or control of Joint Intervenor(s); a document shall be deemed to be within the "control" of Joint Intervenor(s) or any individual

acting on their behalf if Joint Intervenors or the individual acting on their behalf have ownership, possession or custody of the document or copy thereof, or have the right to secure the document or copy thereof, from any person or public or private entity having physical possession thereof.

#### General Interrogatories

1(a). State the name, present or last known address, and present or last known employer of each person known to Joint Intervenors to have first-hand knowledge of the facts alleged, and upon which Joint Intervenors relied in formulating allegations in the contentions which are the subject of this set of interrogatories.

(b). Identify those facts concerning which each such person has first-hand knowledge.

(c). State the specific allegation in each contention which Joint Intervenors contend such facts support.

2(a). State the name, present or last known address, and present or last employer of each person, other than affiant, who provided information upon which Joint Intervenors relied in answering each interrogatory herein.

(b). Identify all such information which was provided by each such person and the specific interrogatory response in which such information is contained.

3(a). State the name, address, title, employer and education and professional qualifications of each person Joint Intervenors intend to call as an expert witness or a witness relating to the contentions which are the subject of this set of interrogatories.

(b). State the subject matter to which each such person is expected to testify.

4(a). Identify all documents in Joint Intervenors' possession, custody or control, including all relevant page citations, pertaining to the subject matter of, and upon which Joint Intervenors relied in formulating allegations in the contentions which are the subject of this set of interrogatories.

(b). Identify the contentions to which each such document relates.

(c). State the specific allegation in each contention which Joint Intervenors contend each document supports.

5(a). Identify all documents in Joint Intervenors' possession, custody or control, including all relevant page citations, upon which Joint Intervenors relied in answering each interrogatory herein.

(b). Identify the specific interrogatory response(s) to which each such document relates.

6(a). Identify any other source of information, not previously identified in response to Interrogatory 2 or 5, which was used in answering the interrogatories set forth herein.

(b). Identify the specific interrogatory response(s) to which each such source of information relates.

7(a). Identify all documents which Joint Intervenors intend to offer as exhibits during this proceeding to support the contentions which are the subject of this set of interrogatories or which Joint Intervenors intend to use during cross-examination of witnesses presented by Applicants and/or the NRC Staff on the contentions which are the subject of this set of interrogatories.

(b). Identify the particular page citations of each document applicable to each contention.

INTERROGATORIES ON JOINT CONTENTION IV (TLD'S)

IV-3(a). Which of the following radiation types and energy ranges do Joint Intervenors believe to pose significant external exposure hazards to the safety and health of workers at Shearon Harris Nuclear Power Plant ("SHNPP")?

- (i) Gamma below 1 mev;
- (ii) Gamma 1-10 mev;
- (iii) Gamma above 10 mev;
- (iv) Beta below 100 kev;
- (v) Beta 100-1000 kev;
- (vi) Beta 1000-10,000 kev;
- (vii) Beta 10,000-100,000 kev;
- (viii) Beta 1,000,000-1,000,000,000 kev;

- (ix) Beta above 1,000,000,000 kev;
- (x) Alpha, specifying the energy range believed to pose significant external exposure hazards to the safety and health of workers at SHNPP;
- (xi) Neutrons, specifying the energy range believed to pose significant external exposure hazards to the safety and health of workers at SHNPP;
- (xii) Protons, specifying the energy range believed to pose significant external exposure hazards to the safety and health of workers at SHNPP;
- (xiii) Any other radiation, specifying the energy range believed to pose significant external exposure hazards to the safety and health of workers at SHNPP.

(b). For each radiation type and energy range identified in response to IV-8(a), describe in detail all facts which support Joint Intervenors' belief that such radiation poses a significant external exposure hazard to the safety and health of workers at SHNPP.

(c). For each radiation type and energy range listed in Interrogatory IV-8(a) but not included in Joint Intervenors' response thereto, explain how monitoring such radiation is relevant to Joint Contention IV.

(d). For each radiation type and energy range identified in response to IV-8(a), identify the major radionuclide sources within SHNPP from which such radiation is believed to be



emitted and state the relative amount of radiation which Joint Intervenors expect to result from each source. Describe in detail all facts which support this conclusion.

(e). For each radiation type and energy range identified in response to IV-8(a), state the relative amount of exposure to workers that is expected to occur from such radiation compared to other radiation types and energy ranges and describe in detail all facts which support this conclusion.

(f). For each radiation type and energy range identified in response to IV-8(a), state the level of accuracy which Joint Intervenors believe is necessary to assure worker health and safety.

(g). With regard to each level of accuracy stated in response to IV-8(e), list all regulatory guides, NRC regulations and recommendations of nationally or internationally recognized associations which support your response.

(h). With regard to each level of accuracy stated in response to IV-8(e), describe in detail all facts other than those listed in response to IV-8(f) which support Joint Intervenors' conclusion that such accuracy level is necessary to assure worker health and safety.

IV-9(a). Do Joint Intervenors believe that TLD's are inadequate to measure any of the radiation types and energy ranges identified in response to IV-8(a)?



(b). If the answer to IV-9(a) is affirmative, for each radiation type and energy range for which Joint Intervenors believe TLD's are inadequate, describe in detail all facts which support this conclusion.

(c). If the answer to IV-9(a) is other than affirmative, explain in detail how this response is consistent with the allegation set forth in Joint Contention IV.

IV-10(a). Define the term "portable pressurized ionization chambers."

(b). Do Joint Intervenors contend that portable pressurized ionization chambers can be used to monitor the exposure of workers with greater accuracy than TLD's?

(c). If the answer to IV-10(b) is affirmative, explain in detail how the results from an off-the-body instrument (portable pressurized ionization chamber) can corroborate exposures measured by an on-the-body dosimeter (TLD). Explain specifically how the following variables in off-the-body measurement can be accounted for in determining the cumulative radiation exposure of a worker:

- (i) Spatial variations in the exposure rate within the work area;
- (ii) Variations over time in the exposure rate at any specific location within the work area;
- (iii) The movement of workers within non-uniform radiation fields;

- (iv) Gradients in the exposure rate over the worker's body at any given location within the work area;
- (v) The variable amount of time spent by the worker in the radiation field.

(d). If the answer to IV-10(b) is other than affirmative, explain in detail how this response is consistent with the allegations set forth in Joint Contention IV.

IV-11(a). Do Joint Intervenors contend that a portable pressurized ionization chamber is capable of measuring each radiation type and energy range listed in response to IV-8(a)?

(b). If the answer to IV-11(a) is affirmative, provide the model, manufacturer and specifications, including sensitivity, range, accuracy and reproducibility of results for each radiation type and energy range listed in response to IV-8(a).

(c). If the answer to IV-11(b) is other than affirmative, describe in detail how this response is consistent with the response to IV-8(a) and the allegations set forth in Joint Contention IV.

IV-12(a). Are Joint Intervenors aware of any commercially available portable pressurized ionization chamber that is suitable for corroborating TLD measurements of radiation dose to workers?

(b). If the answer to IV-12(a) is affirmative, provide the model, manufacturer and specifications, including sensitivity, range, accuracy and reproducibility of results for each

radiation type and energy range listed in response to IV-8(a) above.

(c). If the answer to IV-12(a) is other than affirmative, describe in detail how this response is consistent with the allegations set forth in Joint Contention IV.

IV-13(a). Do Joint Intervenors have knowledge of any nuclear power plant that routinely uses portable pressurized ionization chambers to corroborate radiation doses to workers measured by TLD's?

(b). If the answer to IV-13(a) is affirmative, for each such power plant state:

- (i) the facility name;
- (ii) the address;
- (iii) the name of the person responsible for occupational radiation exposure control;
- (iv) the model, manufacturer and specifications, including sensitivity, range, accuracy and reproducibility of results of the portable pressurized ionization chamber used by each facility.

IV-14(a). Define "real time monitoring" and cite to any sources upon which you rely in support of this definition.

(b). Do Joint Intervenors contend that TLD's lack "real time monitoring" capability?

(c). If the answer to IV-14(b) is affirmative, describe in detail all facts upon which Joint Intervenors rely in support of this allegation.

(d). If the answer to IV-14(b) is other than affirmative, explain in detail how this response is consistent with the allegations set forth in Joint Contention IV.

(e). If the answer to IV-14(b) is affirmative, do Joint Intervenors contend that the lack of real time monitoring capability poses a significant health hazard to workers at SHNPP?

(f). If the answer to IV-14(e) is affirmative, describe in detail all facts upon which Joint Intervenors rely in support of this allegation.

(g). If the answer to IV-14(e) is other than affirmative, explain in detail the significance of the alleged lack of real time monitoring capability.

IV-15(a). In response to Interrogatory IV-2(b) on Joint Contention IV, Joint Intervenors stated that TLD's are inadequate to measure cumulative radiation doses as required by 10 C.F.R. Part 20 and ALARA because "plus or minus 30% is too inaccurate." State where Joint Intervenors obtained the "plus or minus 30%" figure and describe in detail all facts that support the assertion of this figure.

(b). Explain in detail why Joint Intervenors believe that plus or minus 30% is too inaccurate to ensure compliance with 10 C.F.R. Part 20 and ALARA.

IV-16(a). Applicants' use of TLD's complies with the standards of ANSI N13.11, as documented in NUREG/CR-2891 and NUREG/CR-2892. Do Joint Intervenors contend that the ANSI performance criteria are not sufficient to ensure TLD accuracy?

(b). If the answer to IV-16(b) is affirmative, explain in detail all facts upon which Joint Intervenors rely in support of this response.

(c). If the answer to IV-16(a) is other than affirmative, explain in detail how this response is consistent with the allegations set forth in Joint Contention IV.

INTERROGATORIES ON JOINT CONTENTION V  
(PORTABLE AIR SAMPLERS AND CONTINUOUS AIR MONITORS)

V-5(a). Define the term "continuous air monitor" and indicate how it is distinct from the term "portable air sampler." Describe in detail all facts upon which Joint Intervenors rely in support of this response.

(b). Describe in detail the purpose for which Joint Intervenors believe continuous air monitors are used at SHNPP.

(c). Describe in detail the purpose for which Joint Intervenors believe portable air samplers are used at SHNPP.

V-6(a). Explain in detail the bases for Joint Intervenors' assertion that ALARA requires "minimization" of radiation exposure (quoting Joint Intervenors' response to Interrogatory V-1(b)).

(b). Explain in detail the bases for Joint Intervenors' assertion that ALARA requires portable air samplers and continuous air monitors to be "as accurate as possible" (quoting Joint Intervenors' response to Interrogatory V-3(b)).

V-7(a). Explain in detail the bases for Joint Intervenors' assertion that portable air samplers and continuous air monitors must be accurate within plus or minus 5%.

(b). Do Joint Intervenors know of any commercially available continuous air monitors or portable air samplers that can be calibrated and maintained within plus or minus 5%?

(c). If the answer to V-7(b) is affirmative, state the model, manufacturer and specifications, including sensitivity range, accuracy and reproducibility of results for each radiation type listed in response to IV-8(a) above.

(d). If the answer to V-7(b) is other than affirmative, explain in detail the bases for Joint Intervenors' belief that plus or minus 5% accuracy is reasonably achievable.

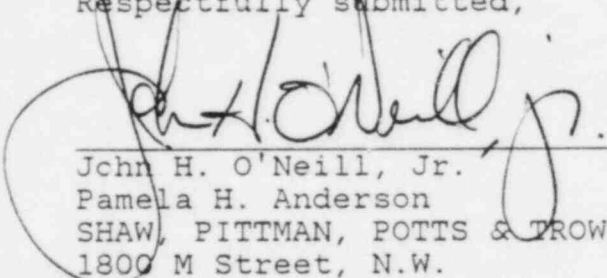
V-8(a). Explain in detail the basis of Joint Intervenors' belief that calibration of continuous air monitors and portable air samplers once every six months is inadequate to provide assurance of compliance with ALARA.

(b). Explain in detail the facts upon which Joint Intervenors rely in support of their assertion that calibration of continuous air monitors and portable air samplers must be performed once a month.

Request for Production of Documents

Applicants request that Joint Intervenors respond in writing to this request for production of documents and produce the original or best copy of each of the documents identified or described in the answers to each of the above interrogatories at a place mutually convenient to the parties.

Respectfully submitted,



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