

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

(Shearon Harris Nuclear Power Plant,
Units 1 & 2)

Docket Nos. 50-400 OL
50-401 OL

APPLICANTS' ANSWERS TO WELLS EDDLEMAN'S GENERAL INTERROGATORIES
AND INTERROGATORIES ON CONTENTIONS 22A, 22B, 75, 80,
83-84 AND 132 TO APPLICANTS
CAROLINA POWER & LIGHT COMPANY et al.
(First Set)

ANSWERS TO GENERAL INTERROGATORIES

INTERROGATORY NO. G1(a). Which contentions of Wells Eddleman do Applicants agree are now admitted in this proceeding, NRC Dockets 50-400/401 O.L.?

(b). For each such contention, provide for any answers to interrogatories by Wells Eddleman which Applicants have previously or presently received (except those suspended by Board order, if any), the following information:

(c). Please state the name, present or last known address, and present or last known employer of each person whom Applicants believe or know (1) has first-hand knowledge of the facts alleged in each such answer; or (2) upon whom Applicants relied (other than their attorneys) in making such answer.

(d). please identify all facts concerning which each such person identified in response to G1(c)(1) above has first-hand knowledge.

(e). please identify all facts and/or documents upon which each person identified in response to G1(c)(2) above relied in providing information to respond to the interrogatory, including the parts of such documents relied upon.

(f). Please identify any other document(s) used or relied upon by Applicants in responding to the interrogatory.

(g). Please state which specific fact each document, identified in response to G1(e) and G1(f) above, supports, in the opinion or belief of Applicants, or which Applicants allege such document supports.

(h). Please state specifically what information each person identified in response to G1(c)(1) or G1(c)(2) above provided to or for Applicants' affiant in answering the interrogatory. If any of this information is not documented, please identify it as "undocumented" in responding to this section of General Interrogatory G1.

ANSWER G1(a). The contentions of Intervenor Eddleman which are admitted in this proceeding are set forth in Applicants' "Admitted Contentions" dated January 21, 1983. Note that Contention 15 is pending reconsideration by the Board.

(b). The answers to General Interrogatories herein are restricted to the interrogatories set forth in Wells Eddleman's "First Set" of interrogatories on Contentions 22A, 22B, 75, 80, 83-84 and 132. Answers to General Interrogatories relating to Contentions 41, 45 and 65 will be provided in a separate response to interrogatories related to those contentions.

(c). The answer to this interrogatory is contained in Attachment A attached hereto.

(d). The answer to this interrogatory is contained in Attachment A attached hereto.

(e). All such facts or documents relied upon by those individuals identified in Attachment A are indicated within each response to the specific interrogatories on the contentions.

(f). See Answer G1(e).

(g). Applicants have indicated which specific facts are supported by the documents identified, within each response to the specific interrogatories on the contentions.

(h). The answer to this interrogatory is contained in Attachment A attached hereto.

INTERROGATORY NO. G2(a). Please state the name, present or last known address, title (if any), and present or last known employer, and economic interest (shareholder, bondholder, contractor, employee, etc.) if any (beyond expert or other witness fees) such person holds in Applicants or any of them, for each person you intend or expect to call as an expert witness or a witness in this proceeding, if such information has not previously been supplied, or has changed since such information was last supplied to Wells Eddleman. This applies to Eddleman and Joint Contentions as admitted or stipulated by Applicants.

(b). Please identify each contention regarding which each such person is expected to testify.

(c). Please state when you first contacted each such person with regard to the possibility of such person's testifying for Applicants, if you have contacted such person.

(d). Please state the subject matter, separately for each contention as to which each such person is expected to testify, which each such person is expected to testify to.

(e). Please identify all documents or parts thereof upon which each such witness is expected to, plans to, or will rely, in testifying or in preparing testimony.

ANSWER G2(a). The Applicants do not know at this time which, if any, expert or other witnesses they expect to call in this proceeding. When and if Applicants identify such witnesses, Applicants will supplement this response in a timely manner.

(b). See answer G2(a).

(c). See answer G2(a).

(d). See answer G2(a).

(e). See answer G2(a).

INTERROGATORY NO. G3(a). Please identify any other source(s) of information which Applicants have used to respond to any interrogatory identified under G1 above, stating for each such source the interrogatory to which it relates, and what information it provides, and identifying where in such source that information is to be found.

(b). Please identify any other source(s) of information not previously identified upon which any witness identified under G2 above, or other witness, has used in preparing testimony or exhibits, or expects to use in testimony or exhibits, identifying for each such source the witness who is expected to use it, and the part or part(s) of such source (if applicable) which are expected to be used, and, if not previously stated, the fact(s) or subject matter (or both) to which such source relates.

ANSWER G3(a). Applicants have identified all such other sources of information, if any, within each response to the specific interrogatories set forth herein.

(b). See Answer G2(a).

INTERROGATORY NO. G4(a). Please identify all documents, and which pages or sections thereof Applicants intend or expect to use in cross-examination of any witness I call in this hearing. For each such witness, please provide on a timely basis (ASAP near or during hearings) a list of all such documents, the subject matter Applicants believe they relate to and make the document(s) available for inspection and copying as soon as possible after Applicants decide or form intent to use such document in cross-examination.

(b). Please identify any undocumented information Applicants intend to use in cross-examination of each such witness for me.

ANSWER G4(a). Applicants have not at this time identified which documents, if any, they intend to use in cross-examination of Mr. Eddleman's witnesses. Mr. Eddleman has yet to identify any witnesses which he intends to call to testify. Thus, it would be impossible for Applicants to answer this interrogatory at this time. However, at such time as Mr. Eddleman provides Applicants with the names of his proposed witnesses and when and if Applicants identify documents to be used in cross examination of such witnesses, Applicants will supplement this response in a timely manner.

(b). See Answer G4(a) above. The same would apply as to undocumented information, if any.

INTERROGATORY NO. G5(a). For each contention Applicants state or admit is an admitted Eddleman contention under G1(a) above, or an admitted joint intervenor contention please state whether Applicants have available to them experts, and information, on the subject matter of the contention.

(b). If the answer to (a) above is other than affirmative, state whether Applicants expect to be able to obtain expertise in the subject matter, and information on it, and if not, why not.

ANSWER G5(a). Applicants have available to them experts and information on the subject matter of each contention referred to herein.

(b). Not applicable.

[NOTE: There was no Interrogatory G6]

INTERROGATORY NO. G-7. Please identify all documents which Applicants plan, expect or intend to offer as exhibits (other than for cross-examination) with respect to each Eddleman contention admitted which is included in your current response to G1(a) in this proceeding.

For each such document, specify the contention and the subject matter to which it relates.

ANSWER G-7. The Applicants have not at this time identified which documents, if any, they intend to offer as exhibits as to any admitted Eddleman contentions in this proceeding. When and if Applicants identify such exhibits, Applicants will supplement this response in a timely manner.

INTERROGATORY NO. G-8. Please identify all other information, not identified in response to the above general interrogatories, that Applicants rely on or use or plan or expect to use in preparing testimony, or in conducting cross-examination, or in preparing

exhibits, for this proceeding, with respect to each Eddleman contention and joint contention which is admitted in this proceeding and on which discovery is currently open or on which discovery has been open under the schedule laid out by the Board 3-10-83.

Please state for each such item of information the contention and subject matter to which it relates.

ANSWER G-8. The Applicants have not at this time identified any "other information" that they plan to use in preparing testimony, or in conducting cross-examination, or in preparing exhibits for this proceeding with regard to any admitted Eddleman contentions. To the extent this interrogatory seeks information beyond the scope of the answer provided, it is objected to as being overly broad, irrelevant, burdensome, and seeking protected or privileged information.

ANSWERS TO INTERROGATORIES ON CONTENTION 22A

INTERROGATORY NO. 22A-1(a). Have Applicants made any study or calculation of nuclear fuel transport costs, uranium yellowcake transport costs, UF_6 transport costs, or other transport costs in connection with the delivery of nuclear fuel to (1) their existing nuclear plants; or (2) the Shearon Harris nuclear plant?

(b). Have Applicants any information as to the cost of transporting spent fuel (1) from Brunswick to Harris; (2) from Robinson to Harris; (3) from Robinson to Brunswick?

(c). If the answers to any parts of (a) and (b) above is yes or affirmative, please state for each such part, the cost and the basis on which it is estimated or known (e.g. accounting records) and list all cost components included in that cost and the source(s) of information for each such component.

(d). How do Applicants calculate the average fuel cost for Harris in Table 8.1.1-2 of ER Amendment 5? Please state the discount rate used, the nominal dollar amounts for fuel in each of the ten years 1986-95, and all sources and calculations used to derive the annual nominal dollar amounts. How were these used. Please identify all pages of such data sources used, and what is in them.

(e). Was an escalation rate used in the calculation requested in (d) above? If so, what was that rate? Please also state all assumptions, calculations and data sources used in deriving that rate. Please identify pages of all such data sources which were relied upon and what information comes from them.

(f). Has CP&L estimated cost of transporting any spent fuel from Harris to any other reactor site, or to an AFR?

(g). If the answer to (f) above is affirmative, state what cost was estimated, how the estimate was made (including all data sources used), and state the cost per assembly transported, or per reactor-year of operation.

(h). How does CP&L compute the cost of nuclear fuel (or its component costs) to which carrying charges are applied? Please show the calculation used for ER Amendment 5 and identify all data sources used in making it.

(i). If any assumption, calculation or data source in (h) above differs from the computation of nuclear fuel costs to which carrying charges apply that is used in rate cases before (a) FERC; (b) the NC Utilities Commission (NCUC); or (c) the South Carolina Public Service Commission, or any of these, please state for each such difference (1) what the difference is; (2) how it is computed; (3) the dollar amount of such difference if not given earlier; (4) the amount of this difference for 1 year's operation of Harris 1.

(j). What carrying charge rate did CP&L use in computing nuclear fuel carrying charges in the Environmental Report? If this charge rate differs from the fixed charge rates used by CP&L (a) in its latest rate increase applications to FERC, the NCUC, and the SCPSC; or (b) in the rates approved for CP&L by FERC, the NCUC or the SCPSC in CP&L's last rate case before each such body, please state those rates also.

(k). What number of kilowatt-hours (per year, or plant lifetime) is used by CP&L to convert costs of nuclear fuel into costs per kWh in the ER, particularly Tables 8.1.1-2 and 8.2.1-2? If the conversion is made in any other way, state how the costs are converted into mills per kWh and all basis and calculations from which such costs were derived.

(l). Are there any expenses or costs associated with nuclear fuel that are not included in ER Amendment 5 (e.g. in the Tables in part k above) which are charged to ratepayers under CP&L's current rates as set by the NCUC? by FERC? by SCPSC? If so, for each Commission, state what those costs are, and give equivalence in mills/kwh for each such cost.

(m). How does CP&L charge co-Applicant NCEMPA for nuclear fuel?

(n). How does CP&L charge co-Applicant NCEMPA for carrying charges on nuclear fuel?

(o). How does CP&L plan to charge NCEMPA for nuclear waste disposal?

(p). For each response to m, n, and o above, please state how the method differs (if at all) from the method used to compute the costs in the ER of these items. Please state further the derivation of all differences in the method, if any, for each item.

(q). Have Applicants included any costs of low-level waste disposal in the computations of ER Table 8.2.1-2? If so, what costs?

(r). Have Applicants included any costs of low-level waste disposal in the computations underlying ER Table 8.1.1-2? If so, what costs, and how are they included, please state this including all basis and calculations.

(s). Are there other costs of low-level waste disposal not included in the ER for either Table referred to in q and r above? If so, please state what costs, from sources derived, and why they were not included.

(t). Are there any low-level waste disposal costs not included in the tables referred to in q and r above, which are being charged by CP&L or NCEMPA or both to their ratepayers in any jurisdictions? If so, please state which costs, which Table they are not included in (or Tables), the amount of the costs, and their equivalent in mills/kWh. This applies to costs from existing CP&L nuclear plants, and all cost components of nuclear waste disposal for low-level waste, which are not included in the above Tables.

(u). Has the method of nuclear waste disposal contemplated under the NUCLEAR WASTE POLICY ACT of 1982, which CP&L references in the ER, been utilized on an industrial scale (e.g. for as much as one reactor-year's worth of waste at a burnup equal or greater than that expected by Applicants for Harris fuel, MW-days per metric ton heavy metal or metric ton uranium (MTU) anywhere in the United States so far? If so, what was the cost of such disposal per metric ton of heavy metal?

(v). please state or identify the MTHM of high-level waste Harris units are expected to produce at (1) 80% capacity factor DER (2) 70% capacity factor DER (3) 60% capacity factor DER (4) 50% capacity factor DER (5) 40% capacity factor DER (6) 30% CF DER (7) 20% CF DER (8) 10% CF DER. If this amount varies between Harris 1 and Harris 2, please give it for each unit at each capacity factor stated immediately above.

(w). Are Applicants familiar with the costs of compliance with 40 CFR 191 Environmental Standards for Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Radioactive Wastes, as contained in EPA's DEIS on such, dated December 1982?

(x). If not, do Applicants plan to comply with such regulations?

(y). If answer to (w) above is affirmative, do Applicants know the cost of compliance with such regulations for each Harris unit for each year of operation? What is that cost?

ANSWER 22A-1(a). No.

(b). Objection. The costs of transporting spent fuel from other nuclear plants to SHNPP are not included in operating costs for SHNPP nor are such costs in any way related to SHNPP nuclear-fuel costs. Thus the information requested is not relevant to the issue admitted in this proceeding as Contention 22A, nor is it reasonably calculated to lead to the discovery of admissible evidence.

(c). Not applicable.

(d). The answer to this interrogatory is contained in Attachment B attached hereto.

(e). Escalation rates were used in developing SHNPP nuclear fuel costs by applying forecasted values supplied by Data Resources, Incorporated (DRI) to existing contract formulas of the individual cost elements of the nuclear fuel cycle — U_3O_8 , conversion, enrichment, and fabrication. Tables of the forecasted escalation rates are provided at Attachment C hereto, along with the specific source and page number from which the information was obtained.

(f). No.

(g). Not applicable.

(h). Nuclear fuel costs are calculated by utilizing a nuclear fuel operating plan, a fuel design for each reactor, and a set of prices for component costs (along with lead times for each component and an AFUDC rate) and an industry-standard fuel cost computer code written by NUS Corporation, called Fuel Costs - IV. The calculation of nuclear fuel costs provided in ER Amendment 5 is set forth on Fuel Costs - IV printout. (From Harris Environmental Report Study, Fall 1982; see code description and user manual - NUS-798.)

(i). No SHNPP nuclear fuel costs have been presented in these rate cases.

(j). Applicants did not compute or provide carrying charges for nuclear fuel in the ER. The "carrying charges" listed on Table 8.2.1-2 are inaccurately labeled. These costs are AFUDC costs.

(k). For the number of kWh used to calculate the average fuel cost in Table 8.1.1-2, see Applicants' Answer 22A-1(d). A lifetime levelized generation of 9,855,000,000 kWh for the 28-year plant life was used in deriving the levelized costs shown on Table 8.2.1-2.

(l). A portion of the net nuclear fuel investment included in the rate base is associated with the SHNPP requirements. The carrying cost on the nuclear fuel is approximately 14 percent of the nuclear fuel accounts used in the rate base, or \$10,080,000, as of 12-31-82. Due to the fact that this is not a direct fuel cost, it does not lend itself to a mills/kWh calculation.

(m). NCEMPA owns a share of the nuclear fuel inventory and pays its share of costs when they occur.

(n). NCEMPA owns a share of the nuclear fuel inventory and pays its share of costs when they occur.

(o). NCEMPA owns a share of the nuclear fuel inventory and pays its share of costs when they occur.

(p). NCEMPA owns a share of the nuclear fuel inventory and pays its share of costs when they occur.

(q). Low-level waste disposal is not included in nuclear fuel costs.

(r). See Answer 22A-1(q).

(s) and (t). Objection. The costs of low-level waste disposal are not included in nuclear fuel costs. Thus the information requested is not relevant to the issue admitted in this proceeding as Contention 22A nor is it reasonably calculated to lead to the discovery of admissible evidence.

(u). The method of nuclear waste disposal contemplated under the Nuclear Waste Policy Act of 1982, to Applicants' knowledge, has not been used on an industrial scale.

(v). Objection. The spent fuel/nuclear waste disposal fee is one-mil-per-kilowatt hour as established by Section 302 of the Nuclear Waste Policy Act of 1982 and it is not based on a unit mass such as MTHM. Thus the information requested is not relevant nor is it likely to lead to the discovery of relevant evidence.

(w). No. The Department of Energy has responsibility for disposal of spent nuclear fuel and high level waste. It is Applicants' view that compliance with this regulation is not applicable to Applicants, and therefore, Applicants have no estimate of the cost of compliance.

(x). See Answer 22A-1(w).

(y). See Answer 22A-1(w).

INTERROGATORY NO. 22A-2(a). Please state exactly what estimates and values of what variables were used in the study of system operating costs referred to in ER section 8.1. For each such variable, state all assumptions and calculations used in producing the values of that variable for each year 1986-1995.

(b). Was a PROMOD computer program used in making the study referred to in (a) above? If so, please provide a copy of each run used in the study.

(c). Please state concisely exactly how the computer runs used in that study computers system operating costs from the inputs.

(d). Are the assumptions about variables other than Harris capacity factor and

system load identical in each such run? If not, state exactly which variables values differ in each run.

(e). Are the variables and assumptions identified in parts a, b, c, and d above different from those CP&L used in Docket E-100 sub 41 testimony filed in November 1982 before the NC Utilities Commission (or underlying such testimony)? If so, state all differences and give any reasons known to CP&L for each such difference.

(f). Was a computer program other than PROMOD used in making the study referred to in ER Amendment 5 section 8.1 and part (a) above? If so, please identify the program or programs and provide listings of them and copies of actual runs used for the ER amendment.

(g). Were any computer runs made by Applicants with respect to sensitivity studies for ER Amendment 5 which were not used in preparing that amendment? If so, please identify all such runs, provide copies, and state why they were not used.

(h). If any part(s) of the results of any computer runs identified above (parts b, c, f, and g) were not used in ER Amendment 5, please identify those parts. The reason for g and h herein is that Duke Power Co. did reject those and omit parts of runs in computations of avoided energy costs (system operating costs) in Docket E-100 sub 41 and I want to be sure CP&L did not do likewise in preparing ER Amendment 5.

(i). What reason, if any, did CP&L have for omitting any parts of computer results identified in h above from ER Amendment 5's analysis and summary? or from either?

(j). Has CP&L analyzed negative growth in sales on its system? Negative growth in peak demands?

(k). Do Applicants agree that system fuel savings cannot be computed without (1) a system load forecast giving hourly loads or total loads; (2) fuel cost estimates for units on CP&L's system; (3) O&M costs, both fixed and variable for such units; (4) other costs as identified in PROMOD; by the method they used in ER Amendment 5 section 8.1?

(l). If answer to k above is other than affirmative, please state exactly how such calculation can be made without each such data item (input to PROMOD or not).

(m). Do Applicants agree that carrying charges on fuel inventories for both coal and nuclear fuel should be included in comparing system operating costs with and without the Harris units?

(n). If answer to m above is other than affirmative, state why.

(o). Are any escalation rates used in estimating costs of coal or of nuclear fuel as inputs to any calculations or computer programs identified above on Interrogatory 22A-2? If so, what are those rates, state the basis for each such rate, state where it is used and how, and state any data or sources or calculations relied upon in setting that escalation rate, for each such rate.

(p). Was the Discount rate used in ER Table 8.1.1-2 about 10.88%? What was the rate? Was the discount rate used in Table 8.2.1-2 different? If so, what was it?

ANSWER 22A-2(a) through (p). Objection. These interrogatories address the

system operating cost analysis set forth in the ER and not nuclear fuel costs which are the only issue addressed in Contention 22A. Interrogatories 22A-2(a) through (p) do not pose questions that are relevant to the issue admitted in this proceeding or that are reasonably calculated to lead to the discovery of admissible evidence.

INTERROGATORY NO. 22A-3(a) Identify any index or indices used by Applicants in computing fuel costs for the Harris plant used in the ER either in (1) section 8.1; or (2) section 8.2; or (3) elsewhere in the ER.

(b) For each index identified in a above, please state the compiler or source of such index, the data sources used in compiling such index, and the actual value of the index for each year 1965 through 1982, and each year thereafter which has transpired.(c) State, for each index identified in a above, whether the index includes predictions of future prices or costs of any items, and if so, which items.(d) State all predictions made in each such index after 1974 for uranium costs, yellowcake costs, enrichment costs, tailings disposal cost at uranium mines or mills or both, radioactive waste disposal costs for uranium mining, milling enrichment, UF₆ production, and fuel fabrication, giving for each prediction the year in which it was made and the predicted values of each such cost for all future years predicted. (e) if any index identified under a above does not include predictions, please so state. (f) identify precisely what portions of what indexes have been used by Applicants in preparing the estimates in each portion of the ER identified in response to (a)(1) through (a)(3) above. explaining exactly how each such index or portion thereof was used in preparing estimates or figures which either support figures in the ER, or figures which appear in the ER, stating which figure(s) each such index or portion thereof was used to compute, verify, or support.

ANSWER 22A-3(a). The following table lists the indices used in escalating nuclear fuel costs for the Harris Plant:

WHOLESALE PRICE INDEX - INDUSTRIAL COMMODITIES (WPIIND)

WHOLESALE PRICE INDEX - ELECTRIC POWER (WPIO54)

WHOLESALE PRICE INDEX - INDUSTRIAL CHEMICALS (WPIO6INS)

WHOLESALE PRICE INDEX - MINING MACHINERY AND EQUIPMENT (WPI1192NS)

AVERAGE HOURLY EARNINGS, MINING (AHEMINS)

AVERAGE HOURLY EARNINGS, CHEMICALS AND PRODUCTS (AHE28NS)

AVERAGE HOURLY EARNINGS, PRIMARY METALS (AHE33NS)

AVERAGE HOURLY EARNINGS, ELECTRICAL MACHINERY (AHE36NS)

GROSS NATIONAL PRODUCT, IMPLICIT PRICE DEFLATOR,

(b). & (c). Historical data is compiled by the U. S. Bureau of Labor Statistics. Since the Bureau does not produce forecasted values, the SHNPP nuclear fuel

costs are based on forecasted indices provided by Data Resources, Incorporated (DRI).

(d). (e). & (f). The Data Resources, Incorporated, forecasts are applied to existing contract escalation formulas of the individual cost elements of the nuclear fuel cycle -- U_3O_8 , conversion, enrichment, and fabrication. These forecasted costs are input in a computer model which calculates nuclear fuel costs. See Answer 22A-1(e). Applicants do not calculate a base fuel cost from which further escalations are applied. See Attachment C hereto for the escalation values used to calculate the nuclear fuel costs set forth in the ER.

INTERROGATORY NO. 22A-4(a) Do Applicants rely on anything beyond the basis of NUREG/CR 0672 or NUREG/CR 0672 itself (which is for a BWR) in preparing their decommissioning cost estimates for Harris in the ER? (b) If answer to (a) above is affirmative, state all such basis and how it is included in each such estimate for which any other basis is included. (c) If answer to (a) above is other than affirmative, do Applicants possess any information indicating higher decommissioning costs for a PWR than for BWRs? (d) If answer to c above is affirmative, what is the information, identify all documents containing it, and please state whether or not such information is applicable to Harris. (e) If answer to (c) above is other than affirmative state whether Applicants believe any information such as is requested in c above exists.

ANSWER 22A-4 (a)- through (e). Objection. These interrogatories address decommissioning costs and not nuclear fuel costs which are the only issue addressed in Contention 22A. Interrogatories 22A-4(a) through (e) do not pose questions that are relevant to the issue admitted in this proceeding or that are reasonably calculated to lead to the discovery of admissible evidence.

INTERROGATORY NO. 22A-5 (a) Have Applicants established any reserve fund to pay the \$5 million retrospective premiums for any existing CP&L or CP&L co-owned reactor in the event of a nuclear accident elsewhere in the US? (b) If answer to a above is affirmative, please state each reactor's reserve fund, and the amount in it at the end of each year from 1971 through present (c) If answer to a above is other than affirmative, how does CP&L and its co-Applicants plan to make such payment if it is required under the NRC's implementation of the Price Anderson Act, and a nuclear accident occurs at any other US power reactor which makes such payment necessary? (d) Have Applicants paid premiums for replacement power insurance for any existing reactors owned or co-owned by CP&L? (e) If answer to (d) above is other than affirmative, state whether any such insurance payments have been approved by the NC Utilities Commission in CP&L's NC retail rates and charges. (f) If answer to d above is affirmative, state the amount of each such premium in each year any premium for such insurance was paid, listing premium by reactor or unit and by year. (g) Do Applicants agree that nuclear plant replacement power insurance is a cost of operating a nuclear unit? (h) If answer to g above is other than affirmative, explain consistency of this answer with answer to (i) below: what charges for nuclear plant replacement power insurance are now included in

CP&L's expenses allowed to be recovered in rates by (1) FERC (2) NCUC (3) SCPSC?

ANSWER 22A-5(a) through (i). Objection. These interrogatories address insurance costs and not nuclear fuel costs which are the only issue addressed in Contention 22A. Interrogatories 22A-5(a) through (i) do not pose questions that are relevant to the issue admitted in this proceeding or that are reasonably calculated to lead to the discovery of admissible evidence.

INTERROGATORY NO. 22A-6(a) ER section 5.8 states that site specific decommissioning estimates suggest CP&L reactors may have decommissioning costs higher than those shown in that section of the ER. Do Applicants still agree this may be true? (b) Do Applicants agree with the ER statement that these costs for Harris are "certainly within an order of magnitude" of those shown? (c) Do Applicants understand "an order of magnitude" as used in the ER and in b above, to mean "a factor of 10"? (d) If not, what do Applicants say it means (that phrase quoted first in c above). (e) Identify all site-specific studies of decommissioning CP&L's (1) Robinson 2 unit (2) Brunswick 1 unit (3) Brunswick 2 unit (4) Harris 1 unit (5) Harris 2 units (6) Harris 3 or 4 unit or both, of which applicants are aware. (f) State which of the studies identified under e above, Applicants possess a copy of (g) State the total cost of decommissioning (1) Harris 1 (2) Harris 2 (3) Harris 3 or 4 or both, as shown in each such study for which a cost for decommissioning any of these units is given. (h) State the total cost of decommissioning (1) Robinson 2, (2) Brunswick 1, (3) Brunswick 2 given in each site specific study identified in response to the above interrogatories. (i) If not stated above, give all years of constant dollars, inflation rates, discount rates, and cost escalation rates used in preparing each reactor decommissioning estimate given in response to the above interrogatories, particularly g and h above, stating also any contingency amounts or percentage included in each such estimate.

ANSWER 22A-6 (a) through (i). Objection. These interrogatories address decommissioning costs and not nuclear fuel costs which are the only issue addressed in Contention 22A. Interrogatories 22A-6(a) through (i) do not pose questions that are relevant to the issue admitted in this proceeding or that are reasonably calculated to lead to the discovery of admissible evidence.

INTERROGATORY NO. 22A-7(a) Do Applicants believe that if radiation exposure limits for internal or external radiation exposure were lowered from their presently allowed values, that O&M costs for the Harris plant would increase as a consequence? (b) If answer to a above is other than affirmative, state in detail the basis for your answer. (c) If answer to a above is affirmative, has CP&L done any study of such cost increases for (1) a 50% reduction in external exposure limits (2) a 90% reduction in external exposure limits, (3) a 50% reduction in internal exposure limits (4) a 90% reduction in internal exposure limits or (5) any other specific or unspecified reduction in either or both such limits? (d) If answer to c above is affirmative, please identify each such study, its basis including all documents it is based upon (or which were used in preparing it), name the preparer(s) of the study, state their qualifications to make such study, and state what increase (percentage, dollar, mills/kwh, or other) in O&M costs for

Harris or other nuclear plant (specify which). (e) Are Applicants in possession of any study or studies or documents on the matters inquired into under (c) above, which was not a study performed by CP&L? (f) If answer to e above is affirmative, please state the information requested in both c and d above, inclusive, for each such study or document.

ANSWER 22A-7(a) through (f). Objection. These interrogatories address O&M costs and not nuclear fuel costs which are the only issue addressed in Contention 22A. Interrogatories 22A-7(a) through (f) do not pose questions that are relevant to the issue admitted in this proceeding or that are reasonably calculated to lead to the discovery of admissible evidence.

INTERROGATORY NO. 22A-8(a) Identify all indices by Data Resources International which Applicants use to estimate nuclear fuel carrying charges in the ER. (b) give the value of each such index for each year 1965-82 and to present; (c) give all predictions of future values of such index made after 1-1-70, for each such index. (d) If not already given above, give the values (list them) of each index for which a prediction was identified in response to c above, for each year 1971-82 and to present. (e) Explain in detail how each such index identified above in response to a, b, c, or d was or is used by Applicants to compute the carrying charge listed in the ER for nuclear fuel, including all other assumptions, levelization, discount, escalation, and other rates used in making such computation, and identify all work papers on which such computations were performed by Applicants for ER Amendment 5.

ANSWER 22A-8(a) through (e). See Answer to 22A-1(j).

ANSWERS TO INTERROGATORIES ON CONTENTION 22B

INTERROGATORY NO. 22B-1(a). Who prepared ER Amendment 2's section dealing with Harris costs and benefits for only 2 units as opposed to 2 [sic] units? Please list all such preparers and which sections they prepared, most particularly the preparer of the estimate of Harris operating payroll (or preparers).

(b). Is there any other amendment or update to the Harris ER in which CP&L has estimated that the operating payroll for 2 Harris units would be different than the payroll estimated for 4 units in the original ER? If so, please identify each such update or amendment, and where such different estimate appears, and state who prepared each such estimate.

(c). Describe in detail any calculations or computations done for 2 units as opposed to 4 units in computing operating payroll for Harris in each amendment identified in response to a and/or b above.

(d). Explain why the same number was used for Harris operating payroll for 2 units as was used for 4 units in the earlier ER, in ER Amendment 2. State every basis for such explanation.

(e). Identify the numbers of personnel to be employed at the Harris site to operate 2 units, and how this number differs from the number needed to operate 4 units in the original ER.

(f). identify the number of personnel at CP&L headquarters required to cover 2 units at Harris, and explain why this number is the same or different (if it is) from the number of CP&L general office personnel required for 4 units.

(g). identify the numbers of contract laborers needed to maintain and take care of outages on 2 Harris units, and the number required for 4 units.

(h). state whether the salaries of any personnel enumerated under e, f, or g above will be different because there are 2 units at Harris, and not 4.

(i). State exactly how many additional personnel are required to operate 2 Harris units under new regulatory requirements enacted by the NRC since the Harris CP was issued. For each such regulation which Applicants believe adds required personnel, state which regulation, and how many personnel per unit are added under it, and why such number of personnel is required, and why a larger number is not required, and why no smaller number is adequate to comply with each such NRC regulation. If the number of personnel needed to comply with each or any such regulation is not specified in that regulation, please state all bases not previously identified upon which CP&L bases the number of persons required at each Harris unit to comply with that regulation.

(j). For each NRC regulation identified under i above, state exactly how many additional personnel at CP&L's general offices or other sites not including the Harris plant, will be required to comply with that regulation. State all bases for such number, including reasons why any less personnel would not be enough, and why any larger number is not required, with respect to each such regulation.

(k). how many additional contract laborers are required at Harris for each regulation identified under i above? How did CP&L compute this number for each regulation, to achieve compliance with it? For each reg, why is any lesser number not enough?

(l). Are there any other NRC regulations not identified above which add to the number of personnel required for Harris operation in any way? If so, state which regulation (for each such) and exactly how many personnel each requires, and why any lesser number is insufficient and why any more are not required.

ANSWER 22B-1(a). Applicants understand that the first question should read: "Who prepared ER Amendment 2's section dealing with Harris costs and benefits for only 2 units as opposed to 4 units?" Applicants' response to this question and all other interrogatories relating to Contention 22B is restricted to operating payroll costs, which is the subject of Contention 22B. The answer to the first question is "no one", because the original projected lifetime operating payroll of \$653 million (32-year life for 4 units as established in the original ER) was not updated in Amendment 2 to the ER (Section 8.1.2) to reflect two units. Applicants understand why there may be some confusion regarding the scope of information reflected in the ER subsequent to Amendment 2.

Certain, but not all information in ER Section 8 was amended to take into account the cancellation of Units 3 and 4. For example, a table was added in Amendment 2 which showed construction and operating payroll through Unit 2 start-up (1989) only. This table did reflect two units only, and was provided in response to a request from NRC Staff. However, the projected operating payroll expense for two units (28 years) was not provided in Section 8.2.1 until Amendment 5 to the ER. The projections set forth in Amendment 5 were based on 1982 estimates.

(b). Only ER Amendment 5. See Answer 22B-1(a).

(c). The operating payroll estimate included in the O&M cost estimates as set forth in ER Amendment 5 included estimates of all Company and contract payroll costs. These costs were projected for each year of the life of the SHNPP and then discounted at 10.883 percent to 1986 dollars. The result of this calculation is approximately \$615 million. These calculations and the inputs used therein are found in work papers maintained by CP&L's Planning and Coordination Department.

(d). See Answer 22B-1(a).

(e). Applicants' current estimate of the total number of personnel needed to operate 2 units at the SHNPP is between 1100 and 1200 (including Operations and Maintenance, Quality Assurance, Engineering, Training, On-Site Nuclear Safety, Contract Security, and Janitorial personnel). Applicants do not have a comparable comprehensive estimate for 4 units. However, the estimate for operations and maintenance is approximately 630 personnel for 2 units, which may be compared to Applicants' last estimate of 900 personnel for 4 units.

(f). Applicants did not make a separate detailed estimate of the number of CP&L headquarters personnel required to support 2 units at the SHNPP. Applicants' estimate of operating payroll, which includes headquarters personnel, was based on Applicants' experience at CP&L's other Westinghouse PWR (Robinson Unit No. 2).

(g). Applicants have not estimated separately the contract labor

requirements for outage support for 2 units. Applicants' current estimate of the additional personnel required on site for a significant outage is approximately 500 personnel. This would be a combination of contract and CP&L personnel and reflects the support requirements for an outage at one unit only. Applicants would not expect the personnel requirements for a 4 unit plant to be significantly different per unit per outage. Applicants have no such estimate for 4 units.

(h). Applicants believe that the fact that SHNPP will operate as a 2-unit plant versus a 4-unit plant will not affect individual salaries, but will affect only the number of personnel required.

(i). Applicants' estimate of operating payroll was not derived in a manner that isolated such detail. Based on CP&L's experience in operating Robinson Unit No. 2, Applicants' estimate did take into account general NRC regulations and those regulations applicable to similar PWR units.

(j). See Answer 22B-1(i).

(k). See Answer 22B-1(i).

(l). See Answer 22B-1(i).

INTERROGATORY NO. 22 B-2. Please state all estimates of Harris operating payroll Applicants have prepared since January 1, 1977, stating for each the date thereof, the numbers of Harris site, central office, other non-Harris site (CP&L) and (non CP&L) contract laborers required, and how the total payroll estimate is computed from these numbers, including any cost escalation rates, salary escalation rates, wage escalation rates, or discount rates used therein, and whether the estimate was incorporated into the FSAR or the PSAR or filed with the NRC or any other regulatory body (identify any such body for each estimate). Please state for each such estimate whether 2 or 4 units or some other number of units were used in preparing the estimate, and how the number of units affects the number of personnel required.

ANSWER 22B-2. There have been no other estimates of operating payroll other than those used in the Environmental Report filings.

INTERROGATORY NO. 22B-3. Please state any estimates of Harris operating payroll filed in NC Utilities Commission docket E 2 sub 203, which requires annual reports on the Harris plant, and when such estimates were filed therein.

ANSWER 22B-3. No SHNPP operating payroll estimates have been filed in North Carolina Utilities Commission Docket E-2, Sub 203.

INTERROGATORY NO. 22 B-4. If the same indices used by Applicants to estimate future payroll costs for Harris in the current ER had been used to estimate those costs based only on data pre-1977, how accurately would each such index have predicted CP&L's actual labor costs or unit labor costs for contract laborers, for salaried Harris site personnel, for Brunswick plant operating personnel, and for non-nuclear plant support personnel (central office and non-central office) for the Company's Brunswick and Robinson plants as of (a) 1980 (b) 1981 and (c) 1982 (using data on annual unit labor or salary costs, as appropriate for each such category of personnel during each year indicated).

ANSWER 22B-4. Objection. This information is not readily available. Providing such information would require research and calculations which are not permissible discovery requests.

INTERROGATORY NO. 22 B-5. Supply the actual values of all indices used by Applicants in estimating future Harris payroll for each year 1960 through 1982, for all years for which each such index is available.

ANSWER 22B-5. Applicants operating payroll estimate is not based on indices but rather on the actual experiences at CP&L's Robinson Unit No 2.

INTERROGATORY NO. 22 B-6. Has any requirement of NRC resulted in a need for higher salaries, for more higher-salaried personnel, or for better trained personnel who can be expected to require higher salaries, at the Harris plants since the construction permit was issued for Harris on 1-27-78?

ANSWER 22B-6. Applicants have no specific data to support such a statement but believe that generally increased nuclear regulation has resulted in higher salaries.

INTERROGATORY NO. 22 B-7. If answer to 22 B-6 is affirmative, state for each such requirement the additional personnel, higher salaries, number of higher salaried personnel, number of better qualified personnel, and total impact on operating payroll (as estimated or actual) for (a) 4 Harris units; and (b) 2 Harris units, for each such requirement identified under B-6 above.

ANSWER 22B-7. See Answer 22B-6.

ANSWERS TO INTERROGATORIES ON CONTENTIONS 75

INTERROGATORY NO. 75-1(a) Please list every instance of Asiatic clams (*corbicula* sp or others) living in condensers or cooling water systems at nuclear power plants, of which Applicants are aware, giving for each the date of discovery of such clams, the extent of fouling by such clams if any for (1) condenser (2) RHR heat exchanger (3) other systems needed to shut down a reactor safely, by dissipating heat therefrom. (b) Identify each such instance in the response to a above in which clams were found in (1) intake water boxes (2) traveling screens (3) cooling towers (4) condensers (5) other heat exchangers, specifying the type of other heat exchanger involved, and identifying each such instance with the nuclear plant at which it occurred. (c) Are any of the instances listed in response to a above outside the United States. (d) If answer to c

is other than affirmative, have Applicants any information on such instances of Corbicula or other asiatic clams living in nuclear plants outside the USA? (e) Please list every instance in which dead asiatic clams were found in condensers or cooling water systems at nuclear power plants, of which Applicants are aware, and give for each such instance all information requested in a, b, c, and d above.

ANSWERS 75-1(a)(1), (2), and (3). Applicants are aware of instances of Corbicula fluminea (Asiatic clam) at three nuclear power plants: Arkansas Nuclear One (ANO) Unit 2, September 1980; TVA Browns Ferry Unit 1, October 1974; and TVA Nuclear Unit, Muscle Shoals, Alabama 1971. Details of these instances are provided in the following documents which Applicants will make available at the corporate offices of CP&L for viewing and copying by Wells Eddleman at his request:

ANO Unit 2

NRC IE Bulletin 81-03. "Flow Blockage of Cooling Water to Safety System Components by Asiatic Clams and Mussels."

Browns Ferry Unit 1

Goss L. B., J. M. Jackson, H. B. Flora, B. G. Isom, C. Gooch, S. A. Murray, C. G. Burton, and W. S. Bain. 1979. Control Studies on Corbicula for Steam-Electric Generating Plants. In Proceedings of the First International Corbicula Symposium, J. Britton, ed. October 13-15, 1977. Fort Worth Texas. Pp. 139-151.

TVA Muscle Shoals Unit

Isom, Billy G. 1971. Evaluation and Control of Macro-invertebrate Nuisance Organisms in Freshwater Industrial Supply Systems. Midwest Benthological Society. 19th Annual Meeting. University of Notre Dame, Indiana. March 24-26, 1971. Unpublished manuscript. 13 pp.

(b)(1) through (5). All details, if any, of these instances of which Applicants are aware are contained in the documents listed in Answer 75-1(a).

(c). No.

(d). No.

(e). All details, if any, of these instances of which Applicants are aware are contained in the documents listed in Answer 75-1(a).

INTERROGATORY NO. 75-2(a). Do Applicants have any means to detect corbucula [sic] sp or other clams or mollusks in the Harris cooling lake and auxiliary cooling lake? (b) If your answer to a above is affirmative, list and fully describe each such means including where and with what frequency it will be used, who will do it, what the means is, how it works, and the minimum size of clam it (1) can detect and (2) will be 99% or more assured of detecting. (c) Is any means identified above able to identify corbicula larvae? (d): If answer to c above is affirmative, state how each such means does so and the sampling frequency and sample size used to do so.

ANSWER 75-2(a). Yes. However it should be noted that Corbicula fluminea is the only known freshwater mollusk present in U.S. drainage systems capable of biofouling, if at all; condensers or cooling water systems at nuclear power plants. All other mollusks commonly associated with biofouling are limited to marine or brackish water environments. Marine mollusks cannot survive a freshwater environment and do not present any biofouling potential at SHNPP.

(b)(1) and (2). The CP&L routine biological monitoring program will detect Corbicula fluminea. This program includes the quarterly collection of triplicate samples from a deep and a shallow area at five locations in the main and auxiliary reservoirs including one location near each of the two intake structures. Samples of Corbicula fluminea will be collected by staff biologists from CP&L's Environmental Technology Section. Sample collection is performed by using a limnological grab or dredge sampling device designed for the collection of bottom or sediment-dwelling organisms. The minimum size of clams these methods can detect is approximately 1 mm. If 1 mm or larger clams are present in samples, Applicants are assured of detecting them by laboratory quality control programs.

(c). Yes.

(d). Clams in the approximate 1 mm size class are considered to be larvae; therefore, methods set forth in Answer 75-2(b) will detect larvae.

INTERROGATORY NO. 75-3(a) Describe completely any systems and measures

Applicants use to protect the main condenser at Harris from corrosion by (1) chemical means and/or (2) chemical and biochemical means in connection with organisms living in the condenser, including but not limited to *Corbicula* sp (species). (b) identify exactly the aluminum bronze alloy used in the Harris main condenser. If more than one such alloy is used, specify each; and give the manufacturer of all materials made from each aluminum bronze alloy in the Harris condensers. (c) identify all points at which each aluminum bronze alloy identified in (b) above touches any other metal, and state precisely what grounding arrangements, and where located, are made for the aluminum bronze alloy, and the other metal it touches, for each such location where aluminum bronze in the Harris condenser touches any other metal. (d) If not stated in response to c above, describe particularly the ground contact of each grounding arrangement or system or device identified in c above. (e) Has CP&L or any of its subcontractors for Harris analyzed deterioration of ground contact for any ground contact identified in response to (d) above? (f) If answer to (e) is affirmative, describe each such analysis and identify all documents used in preparing such analysis, identify any document containing the analysis, the preparer(s) and their qualification(s) for making such analysis, the date such analysis was made, and why the results of such analysis were not included in the FSAR or ER.

ANSWERS 75-3(a) through (f). During a meeting held among Wells Eddleman, Intervenor, John O'Neill and Hill Carrow, attorneys for Applicants, on Friday, April 8, 1983, Mr. Eddleman indicated that the corrosion he was asking about in Interrogatory 75-3 was that specifically caused by attachment of Corbicula fluminea (or other mollusks if any) to condenser walls or surfaces. As such, as stated in Answer 75-2(a), Corbicula fluminea is the only mollusk capable of biofouling, if at all, the Shearon Harris Nuclear Power Plant condensers and Corbicula fluminea does not attach to any surfaces. Therefore, no corrosion of the condenser surfaces will occur due to attachment of Corbicula fluminea and Interrogatory subparts as to condenser alloys and grounding are not relevant.

INTERROGATORY NO. 75-4 (a) Do Applicants believe that corbicula sp living in the Harris condenser would cause noticeable pressure changes on the water side of that condenser? (b) -If answer to a above is affirmative, describe any such changes and the minimum number of corbicula required to make such a change at the minimum detectable level, and how such minimum detectable pressure change is noted, and how if at all Harris procedures will alert personnel seeing such a pressure change to the possible presence of corbicula. (c) If there are any other things that can cause pressure [sic] changes of the same magnitude identified in part a or b above, other than corbicula in the condenser, list all such things or conditions and explain how each is distinguished from corbicula and how this will be done at Harris. (d) What measures precisely have Applicants taken with respect to pressure changes, air leaks, or other events that could damage the Harris condenser? (e) For each such measure, identified in d above, state how the presence of corbicula in the condenser could affect it, particularly if the condenser were fouled with very large number of living or dead corbicula. For purposes of this question, a very large number of corbicula is a number that could affect the (1)

efficiency of the condenser in condensing steam at full load, or (2) the integrity of the condenser, or (3) a partial blockage or total blockage of the condenser or a part of it, or (4) any of the measures identified in (d) above.

ANSWER 75-4(a). No. Applicants do not believe Corbicula would be able to live in the "water" side of the condenser.

(b). Not applicable.

(c). Not applicable. No pressure changes are identified.

(d). No specific measures have been taken other than design and construction of the condenser for high reliability and operability. The design is for a 40 year life span and takes into account all credible plant transients.

(e). See Answer 75-4(a). Dead Corbicula passing into the Circulating Water System would be of such small size that they will pass through the condenser due to water flow and will have no effect on it.

ANSWERS TO INTERROGATORIES ON CONTENTION 80

INTERROGATORY NO. 80-1-(a). Are Applicants aware of any studies of mixing of air or water in the lee of nuclear plant structures or other power plant structures? (b) If answer to (a) above is affirmative, identify each such study, stating when it was done, by whom, what their qualifications were, and whether Applicants possess a copy of such study. (c) Are Applicants aware of any other studies of mixing and dispersion of radionuclides in the environment besides those identified in (b) above and those used in preparing the Harris ER? (d) If answer to (c) above is affirmative, identify each such study and provide for each such study all the information requested in (b) above. (e) Was rainout treated in any study identified in response to the above interrogatories (a), (b), (c) or (d)? (f) If answer to (e) is affirmative, state how it was treated in each study in which it was treated, identifying the study for which each answer applies. (g) Have Applicants conducted any studies of dispersion of radionuclides in the environment not identified above, or are any reports or documents not identified above, which treat dispersion of radionuclides from nuclear power plants in air or water, in Applicants' possession? (h) If answer to (g) above is affirmative, identify each such study, report or document and give for each the information requested under (b) above, and state when Applicants acquired the document or report (if known) if they didn't do the study, stating not known or "prior to (date)" in response if the date is not known, giving accurately each date requested to the best of Applicants' knowledge.

ANSWER 80-1 (a). Yes.

(b). Title: "Atmospheric Diffusion: A Study of the Dispersion of Windborne Material from Industrial and Other Sources."

When: 1974.

By Whom: Frank Pasquill, D. Sc., Meteorological Office, Bracknell, Berkshire, England

Qualifications: Dr. Pasquill has worked in the research part of the Meteorological Office since 1937 and has become recognized internationally as a leading authority in the field of atmospheric dispersion. He obtained a First Class Honours degree in Physics at Durham University and was later awarded an M. Sc. (1949) and a D. Sc. (1950).

Possess a copy: Yes.

Title: NOAA Technical Memorandum ERL ARL-69, "Rancho Seco Building Wake Effects on Atmospheric Diffusion."

When: November 1977.

By Whom: G. E. Start (et al.), National Oceanic and Atmospheric Administration, Environmental Research Laboratory, Air Resources Laboratory, Idaho Falls, Idaho.

Qualifications: (unknown).

Possess a copy: Yes.

Title: "Dispersion in the Wake of a Model Industrial Complex" NUREG-0373.

When: February 1978.

By Whom: R. V. Hatcher (et al.), prepared for NRC, Division of Reactor Safety Research, by Colorado State University, Department of Civil Engineering, Fort Collins, Colorado, 80523.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: NOAA Technical Memorandum ERL ARL-91, "EOCR Building Wake Effects on Atmospheric Diffusion."

When: November 1980.

By Whom: G. E. Start (et al.), National Oceanic and Atmospheric Administration, Environmental Research Laboratory, Air Resources Laboratory, Idaho Falls, Idaho.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: "Wind Tunnel Study of Gas Dispersion near a Cubicle Model Building,"
NUREG/CR-2395 RB.

When: March 1982.

By Whom: Wen-Whai Li, R.N. Meroney, J.A. Peterka, Prepared for NRC, Division of Health, Siting and Waste Management, Office of Nuclear Regulatory Research, by Colorado State University, Department of Civil Engineering, Fort Collins, Colorado, 80523.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: "Building Effects on Effluent Dispersion from Roof Vents at Nuclear Power Plants."

When: 1980.

By Whom: R. H. Thuillier, R. L. Mancuso, prepared for the Electric Power Research Institute, 3412 Hillview Avenue, Palo Alto, California, 94304, by SRI International, 233 Ravenswood Avenue, Menlo Park, California, 94025.

Qualifications: (unknown).

Possess a copy: Yes.

Title: "Dispersion in the Vicinity of Buildings."

When: 1981.

By Whom: R. P. Hosker, Jr., Air Resources, Atmospheric Turbulence and Diffusion Laboratory, National Oceanic and Atmospheric Administration, Oak Ridge, Tennessee, 37830.

Qualifications: (unknown).

Possess a copy: Yes.

Title: "Meteorology and Atomic Energy."

When: July 1968.

By Whom: D. H. Slade, Air Resources Laboratory, Environmental Services

Administration, United States Department of Commerce, Washington, D. C.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: NOAA Technical Memorandum ERL ARL-84, RB, R6, "Diffusion Near Buildings as Determined from Atmospheric Tracer Experiments," NUREG/CR-1394.

When: September 1980.

By Whom: J. F. Sagendorf, N.R. Ricks, G. E. Start, C. R. Dickson, prepared for NRC, Division of Reactor Safety Research, Office of Nuclear Regulatory Research, by the National Oceanic and Atmospheric Administration, Air Resources Laboratory, Field Research Office, Idaho Falls, Idaho, 83401.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: "Nuclear Power Plant Building Wake Effects on Atmospheric Diffusion: Simulation in Wind Tunnel."

When: June 1981.

By Whom: K. M. Kothari, R. N. Meroney, J. A. Peterka, prepared for the Electric Power Research Institute, 3412 Hillview Avenue, Palo Alto, California, 94304, by Colorado State University, Fluid Dynamics and Diffusion Laboratory, Department of Civil Engineering, Fort Collins, Colorado, 80523.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: "Radionuclide Accumulation in a Reactor Cooling Lake."

When: July 1976.

By Whom: R. L. Shearin, R. J. Lyon, U. S. Environmental Protection Agency, Office of Radiation Programs, Eastern Environmental Radiation Facility, P. O. Box 3009, Montgomery, Alabama, 36109.

Qualifications: R. L. Shearin: B. S. Physics, M.S.P.H. Radiological Health, 1 year

professional training in meteorology, 2 years post-graduate study in Environmental Engineering Science, 15 years professional experience.

R. J. Lyon: B. S. Chemistry, M. S. Radiochemistry, 18 years professional experience.

Possess a copy: Yes.

(c). Yes.

(d). Title: "Meteorology and Atomic Energy."

When: July 1968.

By Whom: David H. Slade, Air Resources Laboratory, Environmental Services Administration, United States Department of Commerce, Washington, D. C.

Possess a copy: Yes.

Title: "Radiological Surveillance Studies at a Pressurized Water Nuclear Power Reactor."

When: August 1971.

By Whom: B. Kahn, R. L. Blanchard, H. E. Kolde, H. L. Krieger, S. Gold, W. L. Brinck, W. J. Averett, D. B. Smith, A. Martin, U. S. Environmental Protection Agency, Radiochemistry and Nuclear Engineering Branch, National Environmental Research Center, Cincinnati, Ohio, 45268.

Qualifications: (Unknown).

Possess a copy: Yes.

Title: "A Radiological Environs Study at a Fuel Fabrication Facility," EPA-520/5-77-004.

When: October 1978.

By Whom: R. L. Lyon, R. L. Shearin, J. A. Broadway, U. S. Environmental Protection Agency, Office of Radiation Programs, Eastern Environmental Radiation Facility, P. O. Box 3009, Montgomery, Alabama, 36109.

Qualifications: R. L. Shearin: B. S. Physics, M.S.P.H. Radiological Health, 1 year professional training in meteorology, 2 years post-graduate study in Environmental Engineering Science, 15 years professional experience.

R. J. Lyon: B. S. Chemistry, M.S. Radiochemistry, 18 years professional experience.

J. A. Broadway: Ph.D. Nuclear Engineering.

Possess a copy: Yes.

The following papers were presented at the Third Symposium on Atmospheric Turbulence Diffusion and Air Quality held October 19-22, 1976 in Raleigh, North Carolina by the American Meteorological Society.

1. "Turbulence and Diffusion Modeling in Buoyancy Driven Mixed Layers," Otto Zeman and John L. Lumley, Pennsylvania State University, University Park, Pennsylvania.
2. "Modeling the Nocturnal Boundary Layer," Alfred K. Blackadar, Pennsylvania State University, University Park, Pennsylvania.
3. "Wind Flow within Forest and Crop Stands," Rodger H. Shaw, Purdue University, W. Lafayette, Indiana.
4. "A Comparative Study of Experimentally Measured Atmospheric Stability and 'STAR Program' Predictions," R. V. Portelli, Environment Canada, Downsview, Ontario, Canada.
5. "Threshold Values in Wind Speed Measurements," George W. Reynolds, Tennessee Valley Authority, Muscle Shoals, Alabama.
6. "The Atmospheric Dispersion Model as used in the Reactor Safety Study, WASH-1400," Hugh W. Church, Sandia Laboratories, Albuquerque, New Mexico.
7. "Building Wake Effects on Short Stack Effluents," Alan H. Huber, Office of Air Quality Planning and Standards, and William H. Syder, Environmental Sciences Research Laboratory, EPA, Research Triangle Park, North Carolina.
8. "Dispersion of Vapor from LNG Spills - Simulation in a Meteorological Wind Tunnel," R. N. Meroney, J. E. Cermak, and D. E. Neff, Colorado State University, Fort Collins, Colorado.
9. "Characterization of Wakes Downwind of Nuclear Reactors," Robert F. Abbey, Jr., United States Nuclear Regulatory Commission, Washington, D. C.
10. "Neglect of Downstream Diffusion - How Good an Assumption," G. E. Willis,

National Center for Atmospheric Research, Boulder, Colorado.

11. "Diffusion Under Low Windspeed Conditions near Oak Ridge, Tennessee," R. B. Wilson, G. E. Start, C. E. Dickson, and N. R. Ricks, National Oceanic and Atmospheric Administration, Idaho Falls, Idaho.
12. "Diffusion under Low Windspeed, Inversion Conditions," J. F. Sagendorf and C. R. Dickson, National Oceanic and Atmospheric Administration, Idaho Falls, Idaho.
13. "Measured Differences in Real and Apparent Plume Parameters," P. W. Nickola, Pacific Northwest Laboratories, Battelle Memorial Institute, Richland, Washington.
14. "Natural Removal of Gaseous Pollutants," R. L. Kabel, Pennsylvania State University, University Park, Pennsylvania.
15. "A Model for Absorption and Release of Gaseous Material by Forest Canopies," C. E. Murphy, Jr., Savannah River Laboratory, E. I. du Pont de Nemours & Co., Aiken, South Carolina.

Posses a copy: Yes.

The following papers were presented at the Fourth Symposium on Turbulence, Diffusion and Air Pollution held January 15-18, 1979 in Reno, Nevada by the American Meteorological Society.

1. "On Characteristics of Wind Direction Fluctuations in the Surface Layer," H. A. Panofsky and R. Lipschutz, Pennsylvania State University, University Park, Pennsylvania.
2. "Some Observations of the Along-Wind Dispersion Parameter," R. Draxler, Air Resources Laboratory, National Oceanic and Atmospheric Administration, Silver Springs, Maryland.
3. "A Statistical Diffusion Model for use with Variable Wind Fields," S. R. Hanna, Atmospheric Turbulence and Diffusion Laboratory, National Oceanic and Atmospheric Administration, Silver Springs, Maryland.
4. "The Effects of Cross-Wind Shear on Plumes from Elevated Sources," G. C. Howroyd,

Dames & Moore, Atlanta, Georgia.

5. "The Effect of Revised Dispersion Parameters on Concentration Estimates," John S. Irwin, U. S. Environmental Protection Agency, Research Triangle Park, North Carolina.
6. "Field Measurements of the Benefits of Increased Stack Height," Paul W. Nickola, Pacific Northwest Laboratories, Battelle Memorial Institute, Richland, Washington.
7. "Modeling Pollutant Transfer During Daytime Convection," Alfred K. Blackadar, Pennsylvania State University, University Park, Pennsylvania.
8. "Atmospheric Turbulence and Diffusion Boundary Layer Transport Model," H. N. Lee, Brookhaven National Laboratory, Upton, New York.
9. "Investigation of Turbulent Diffusion in the Extreme Lower Atmosphere," Chester A. Koper and Willy Z. Sadeh, Colorado State University, Fort Collins, Colorado.
10. "Atmospheric Dispersion Research Supported by NRC," Robert F. Abbey, Jr., U. S. Nuclear Regulatory Commission, Washington, D. C.
11. "Some Parameterizations of the Nocturnal Boundary Layer," K. S. Rao and H. F. Snodgrass, Atmospheric Turbulence and Diffusion Laboratory, National Oceanic and Atmospheric Administration, Oak Ridge, Tennessee.

- Possess a copy: Yes.

The following papers were presented at the Fifth Symposium on Turbulence, Diffusion and Air Pollution held March 9-13, 1981 in Atlanta, Georgia by the American Meteorological Society.

1. "Stability Effects on Turbulence Structure in the Atmospheric Surface Layer," James M. Wilczak, University of Washington, Seattle, Washington.
2. "Effect of Four Stability Classification Methods on Dispersion from an Elevated Source," A. E. Mitchell, Jr. and W. G. Snell, NUS Corporation, Rockville, Maryland.
3. "A Systematic Parameterization of the Short-Term Dispersion from Ground Level Sources," W. D. Ohmstede and E. B. Stenmark, U. S. Army Atmospheric Sciences

Laboratory, White Sands Missile Range, New Mexico.

4. "Planetary Boundary Layer Flow Over a Building," U. K. Kaul, Systems Applications, Inc., San Rafael, California.
5. "Diffusion and Deposition of 100 Micron Particles from a Point Source at a Height of 92 Meters," O. Johnson, Defense Research Establishment, Suffield, Ralston, Alberta, Canada.
6. "Wind Monitoring for Applied Dispersion Modeling," C. R. Hodgins, Midwest Research Institute, Kansas City, Missouri.
7. "Experimental Observations of the Dependence of Hourly Standard Deviation of the Wind Direction on Wind Meander," M. V. Carney, Burns & McDonnell Engineering Co., Kansas City, Missouri.
8. "Laboratory Modeling of Dispersion in the Convectively Mixed Layer," G. E. Willis, Oregon State University, Corvallis, Oregon.

Possess a copy: Yes.

The following papers were presented at the Sixth Symposium on Turbulence and Diffusion held March 22-25, 1983 in Boston, Massachusetts by the American Meteorological Society.

1. "Comparison of Observed and Predicted Air Concentrations Downwind of the EOCR Reactor Complex," Charles W. Miller, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
2. "On the Variation of Turbulence within the TIBL," S. SethuRaman and D. Brinkman, Brookhaven National Laboratories, Upton, New York.
3. "Meteorological and Pollutant Profiles under very Stable Conditions," M. L. Wesely and R. L. Coulter, Argonne National Laboratories, Illinois.
4. "Dispersion of Elevated Releases in the Stable Boundary Layer," A. Venkatram and D. G. Strimaitis, Environmental Research and Technology, Concord, Massachusetts.

5. "Atmospheric Diffusion in the Mesoscale Range: The Evidence of Recent Plume Width Observations," F. A. Gifford, Los Alamos National Laboratory, New Mexico.
6. "Dispersion of a Buoyant Plume in a Modelled Convective Planetary Boundary Layer," G. E. Willis, Oregon State University, Corvallis, Oregon.

Possess a copy: Yes.

(e). Yes.

(f). "Meteorology and Atomic Energy." This text provides a description of precipitation scavenging and a computational methodology for its determination.

"A Radiological Environs Study at a Fuel Fabrication Facility." This document provides test results of actual field measured data at a fuel fabrication facility.

"Radiological Surveillance Studies at a Pressurized Water Nuclear-Power Reactor." In this document results of field samples are presented where actual snow samples were analyzed and evaluated.

(g). Yes.

(h). Applicants have not conducted any studies of radionuclide atmospheric dispersion not identified above at the Harris facility. Applicants conducted many studies to ensure compliance with 10 C.F.R. Part 50 Appendix I at the Brunswick and Robinson plants. These documents will be made available for inspection for a reasonable period of time. (See Applicants' Response to Request for Production of Documents filed contemporaneously).

There are hundreds of papers, reports and articles in Applicants' possession which may deal in part with dispersion of radionuclides in the environment. These documents will be made available for inspection for a reasonable period of time. (See Applicants' Response to Request for Production of Documents filed contemporaneously.)

INTERROGATORY NO. 80-2(a) Do Applicants believe their models used in the ER can model rainout? (b) If answer to (a) above is affirmative, explain how in detail.

(c) If answer to (a) above is affirmative, state whether the model has been applied to each situation described in page 42 of Eddleman response to Applicants' First Set of Interrogatories. (d) If answer to (c) is affirmative for any such situation or scenario, describe whether that scenario used the most limited assumptions possible for the area around the Harris plant. If so, state what those assumptions were, what the radiological health and environmental effects were, and what radiation doses would be delivered, stating also what release (source term at release point for each radionuclide released into the air) and of what duration was assumed in making the application of the model to each such scenario or situation identified in (c) above.

ANSWER 80-2(a). No.

(b). Not applicable.

(c). Not applicable.

(d). Not applicable.

INTERROGATORY NO. 80-3(a) What is the regulatory Guide 1.XXX referred to in the ER section 6.1? (b) Is this the same as either Regulatory Guide 1.109 or Regulatory Guide 1.113? (c) How, if at all, were any of the above-identified regulatory guides used in preparing the ER, by whom, and when, for Applicants. (d) What studies, including computer runs, were done in preparing the ER (5.2 and etc.) using dispersion models described in ER 6.1, by whom, when, and what were their individual qualifications to do such study, computer runs, or modeling? (e) Do Applicants possess copies of each study, computer run, or model identified in (d) above? (f) If answer to (e) above is affirmative, identify each such study, run or model of which a copy is retained, stating who did it and when if not stated above. (g) If answer to (e) above is negative for any such study or run or model, so state.

ANSWER 80-3(a). This has now been renamed by the Nuclear Regulatory Commission Staff as Regulatory Guide 1.145.

(b). No.

(c). Regulatory Guides 1.109, 1.113 and 1.145 were utilized to make an evaluation of compliance with 10 C.F.R. Part 50 Appendix I.

Specifically, Regulatory Guide 1.109 was utilized to make the long-term average dispersion computation that is part of the accident evaluation.

Regulatory Guide 1.145 was utilized to compute the accident number used in preparing a worst case condition analysis.

(d). A series of computer runs was made to generate the atmospheric dispersion analysis described in ER 6.1. These are referred to collectively as the "SHNPP short and long term dispersion analysis, using the data base, 1976-1979." They were

conducted by B. D. McFeaters, CP&L Project Scientist (Meteorologist) during the Spring of 1980. Mr. McFeaters has a B.S. degree in Meteorology from Pennsylvania State University and has been actively conducting meteorological dispersion analyses for the past 11 years, 7 of which have been at CP&L.

(e). Yes.

(f). The "SHNPP short and long term accident analysis using the data base 1976-1979." Study conducted by B. D. McFeaters during the Spring of 1980.

(g). Not Applicable.

ANSWERS TO INTERROGATORIES ON CONTENTION 83/84

INTERROGATORY NO. 83-84 (1) (a). Has CP&L or Applicants ever made or had made any study of (or studies of) or given any consideration to, the formation of carcinogenic chemicals as the result of discharges of chemicals from the Shearon Harris Nuclear Power Plant?

(b). If your answer to (a) above is yes, please identify those studies (all of them), the date of each, title, author(s), qualifications of the author(s), employer of the author(s) if other than CP&L, and, if the studies do not fully describe their methodology, concisely describe the methodology used in each.

(c). If there are no studies, state consisely what consideration CP&L has given to this issue, and on what date each such consideration was made. If dates are not known, please specify what is known, if anything, about when each such consideration was made.

(d). If your answer to (a) above is no, will CP&L admit that the SHNPP will discharge chemicals into its lake, where boating, swimming and fishing are planned to be allowed or encouraged, which chemicals can by themselves or through reactions, become carcinogenic or be carcinogenic?

(e). For each chemical CP&L plans to discharge from SHNPP into water, please state whether CP&L believes the chemical is a carcinogen.

(f). For each chemical CP&L plans to discharge from SHNPP into water, please state whether CP&L believes that chemical can react with other chemicals CP&L plans to discharge, to form carcinogens or a carcinogen.

(g). For each chemical CP&L plans to discharge from SHNPP into water, please state whether that chemical can react with other chemicals found in the Cape Fear River, or discharged from industrial or other sources into the Cape Fear River, to form any carcinogen or carcinogens.

(h). If your answer, for any of the chemicals involved above, to any or all of the interrogatories (e), (f) and (g) above is No, please state for each such answer: (i) any specific studies of the chemical or reaction product which CP&L relies upon in stating the chemical is not a carcinogen; (ii) (where applicable) all reaction products CP&L believes can be formed or will be formed by each such chemical once discharged; (iii) for

each such reaction product, any specific study or studies of that chemical which CP&L relies on for the statement that each such chemical is not a carcinogen; (iv) why CP&L believes that the reaction products of (h) (ii) above are the only ones that can or will be formed.

(j). Is CP&L aware of any studies or organic chemicals found in the waters (i) of the Haw River, (ii) of the Jordan Lake, (iii) of the Cape Fear River above the Harris plant intake, or any other tributaries thereof, (iv) of Buckhorn Creek, (v) of White Oak Creek? (vi) please state for each such study identified in response to (j) (i), (ii), (iii), (iv), or (v) above the date, author(s), method(s), chemicals searched or tested for, title, source, and whether the study is in CP&L's possession or Applicants' possession.

(k). Is CP&L aware of any studies of metals and their salts found in the waters of (i) the Haw River, (ii) the Jordan Lake, (iii) the Cape Fear River above the Harris plant intake, or any other tributary thereof other than the Haw, (iv) Buckhorn Creek, (v) White Oak Creek? (vi) please state for each such study identified in response to (k) (i) or (ii) or (iii) or (iv) or (v) above the date, author(s), method(s), chemicals searched or tested for, title, source, and whether the study is in Applicants' possession.

(l). For each and every carcinogen identified above by CP&L, please state (i) the maximum concentration factor thereof in algae, in bacteria, in benthic organisms, in each predator feeding on any of the preceding, in fish, crabs, shrimp, oysters, and other commercial species; and in any species of fish caught for sport or food in either the Cape Fear River, the Harris Lake (when it is opened for fishing, assuming it is), or fishing/shellfishing areas near the mouth of the Cape Fear, i. e. within 50 to 75 miles thereof.

(ii). What dose(s) in which organisms have been found to increase rates of cancer, specifying the cancer(s) the rate of which is increased, if known.

(iii). Whether CP&L believes there is any level or concentration of such carcinogen below which it cannot induce cancer.

(iv). if any answer to (l) (iii) above is Yes, please state in full the basis for such belief, identifying any study (chapter and pages), expert(s), publication(s) (chapter and pages) or other persons or anything else relied upon to support that belief by Applicants.

(m). Do Applicants agree that chemicals discharged from the SHNPP, either individually, in interaction with each other forming reaction products, or in reaction with other chemicals in the Cape Fear River, can cause cancer?

(n). If your answer to (m) above is No, (or other than affirmative), please state fully any basis for your answer not already stated in response to the above interrogatories, and identify which of the above responses, if any, are part of the basis of such answer.

(o). If your answer to (m) above is Yes, or some affirmation that the answer may be Yes, has CP&L studied the magnitude of such carcinogenic effects over the expected lifetime of SHNPP?

(p). Please state the date, type of study, author(s) or persons who made the study, method(s) of the study, all facts and authorities which the study or those who made it relied upon (citing specific facts, pages of books, etc.), and whether the study is in

CP&L's possession.

(q). If your answer to (o) above is other than affirmative, please state whether CP&L or Applicants presently plan to make any study whatsoever of this matter, and state when such study is expected to be made.

(r). Are Applicants aware of any NRC staff studies of the carcinogenicity of discharges of chemicals from nuclear plants or any nuclear plant? Please list all such studies of which Applicants are aware.

(s). Are Applicants aware of any contention(s) concerning concinogenic effects of non-radioactive chemicals emitted from any nuclear plant into water, in any other proceeding(s) before the NRC at present? If so, please identify such proceeding and state whether Applicants possess the wording of the contention, or any document stating the contention(s).

(t). Other than the chemicals listed in the ER for discharge from the Harris plant into the water, are all other chemicals to be used at the Harris site identified in the ER? Where?

(u). If any chemical to be used at the Harris site is not identified in the ER, please identify each such chemical and state the maximum quantity thereof which (i) is expected to be at the site at any time, and (ii) will be allowed on the site at any time, if there is a limit, for each.

(v). Do Applicants believe that other chemicals, listed in the ER or identified in response to (u) above, can be spilled or leak into or be washed into Harris lake?

(w). If your answer to (v) above is other than affirmative, please state in full the basis for your answer.

ANSWER 83-84 (1) (a). No.

(b). Not applicable.

(c). Discharges from the Shearon Harris Plant will meet the permitted discharge restrictions imposed by federal and state law.

(d). All discharges of chemicals from SHNPP will meet the applicable federal and state limits as to species, quantity and concentration imposed by law or regulation. No discharged chemical, by itself, is known to be carcinogenic in the concentration which is allowed to be discharged. As is true with virtually all chemicals when exposed to the properly selected specific reactant(s), under the precise physical and chemical conditions (temperature, pressure, sunlight, pH, Eh, agitation, etc.) necessary for a reaction or a specific succession of separate reactions, it is theoretically possible

to produce virtually any other chemical.

(e). In as much as current federal and state laws and regulations prohibit the discharge of substances in concentrations which are known to be carcinogenic, no carcinogen will be discharged from SHNPP.

(f). Applicants are not aware of any combination of the chemicals discharged from SHNPP into water that can react to form carcinogens or a carcinogen.

(g). Applicants have not conducted, or caused to be conducted, any studies concerning the synergistic effects of chemicals discharged from SHNPP with chemicals found or suspected to be in the Cape Fear River.

(h). Applicants' belief that no chemical is discharged from SHNPP in carcinogenic concentrations rests upon the expert opinion(s) that are the basis for federal and state discharge standards.

(j)(i) through (v). CP&L has conducted water chemistry studies of the Cape Fear River and White Oak Creek.

(vi). CP&L conducts such studies annually and will make copies thereof available for review by Mr. Eddleman at his request.

(k)(i) through (v). CP&L has conducted water chemistry studies of the Cape Fear River and White Oak Creek.

(vi). CP&L conducts such studies annually and will make copies thereof available for review by Mr. Eddleman at his request.

(l)(i) through (iv). Not applicable.

(m). No. See Answer 83-84(1)(e).

(n). See Answer 83-84(1)(h).

(o). Not applicable.

(p). Not applicable.

(q). Although the answer to (o) above is other than affirmative, the Applicants' response to (o) does not recognize a carcinogenesis problem as implied in

question (q) and therefore no plan to study "this matter" has been made or is expected to be made.

(r). Applicants are not aware of any such studies.

(s). Applicants are not aware of any such contention(s).

(t). All chemicals, other than those which are regulated by federal and/or state discharge limitations, are not listed in the ER, nor are they required to be so listed.

(u)(i) and (ii). It is impossible to predict and quantify the presence on site of all chemicals to be used at the Harris site. This would include such ordinary substances as cleaning fluids, vehicle fuel, and paint. The ER addresses only chemicals which are of environmental concern due to their expected discharge and are therefore controlled by applicable regulations and permits.

(v). Obviously, scenarios can be postulated that would result in the introduction of chemicals into the Harris reservoir system; however, substances that are controlled by regulations are the subject, where necessary, of Spill Prevention, Control and Countermeasures Plans (SPCC) which are adequate to reduce risks to levels acceptable to the appropriate regulatory agencies.

(w). See Answer 83-84(1)(v).

INTERROGATORY NO. X83/84 1-(a) Please list every chemical to be discharged from the Harris plant into the cooling tower CWS; give for each the amount in pounds per year, gram moles per year, and the maximum concentration of each which will be found (1) at injection (2) at any other time or place in the CWS. (b) Please list every chemical to be discharged from the CWS into the Harris cooling lake at any time, to Applicants' knowledge, giving for each the maximum amount to be discharged in pounds per year and gram moles per year. (c) Please state the maximum concentration at which chlorine is injected or will be injected into the CWS at Harris. (d) Please state any restrictions on time of day applied to such chlorine injections. (e) Please identify the exact point at which chlorine will be injected into the Harris CWS. (f) If there is more than one such point, identify each and state the maximum concentration at which chlorine will be injected at each. (g) If not already given above, state the maximum concentration of the chlorine before injection at each such point identified in response to (e) or (f) above. (h) Please state the maximum concentration of hydrazine kept in storage for Harris, as now planned. (i) Please state the maximum and average concentration of hydrazine before injection into the CWS, RCS, and secondary water at Harris; please state the form in which ammonia is held for use in the Harris water systems, for each such system. (j) Please state the maximum concentration of ammonia before injection and at injection into each such system at Harris, as now planned; please identify all points at which

ammonia will be injected into water at Harris, or otherwise introduced into water at Harris, as now planned. (k) If not already stated above, will any chemical identified above be introduced into water at Harris other than by injection, and, if so, please list for each such chemical the concentration before, and immediately after, such introduction, stating which water system, cooling lake, etc., it is planned to be introduced into or will be introduced into.

ANSWER NO. X83/84-1(a).

The chemicals used in treating the Circulating Water System are:

Chlorine (Cl_2) - 515,103 lb/yr (6.6×10^6 gram-moles/year)

Sodium Hydroxide (NaOH) - The Circulating Water System will be maintained acidic; therefore, there will be no residual sodium hydroxide in the system.

Sulfuric Acid (H_2SO_4) - (924,685 lb/yr (4.3×10^6 gram-moles/year)

1. At Injection

2. Throughout the

Circulating Water System

Cl_2	Not calculated	0.2 - 6.9ppm (max)
NaOH	50%	Not calculated
H_2SO_4	66° Be	22.8 ppm

(b). Chlorine is the only chemical to be discharged from the Circulating Water System into the Reservoir System. The maximum amount discharged is 7722 lb/yr

(99,011 gram-moles).

(c). The maximum possible concentration of chlorine that can be injected into the Circulating Water System is 6.9ppm. However, the system is designed such that the chlorine residual in the blowdown will be 0.2 ppm based on an estimated 3 ppm injection.

(d). There are no time of day restrictions planned on chlorine injections.

(e). Chlorine will be injected into the Circulating Water System at the Cooling Tower Intake Structure located at the base of each Cooling Tower.

(f). Not applicable.

(g). See Answer X83/84-1(c).

(h). The maximum concentration of hydrazine stored at the Harris site is a 35% solution.

(i). Hydrazine will not be injected into the Harris Plant Circulating Water System. Hydrazine will be injected into the Reactor Coolant System at the Harris Plant at a maximum and average concentration of 35%. The maximum and average concentration in the secondary side water system (Main Steam System) is 35% (Wet Lay-up) and 10% (Normal Operation), respectively. Ammonia will not be injected into the Circulating Water System or the Reactor Coolant System; however, ammonia is used in the secondary side water system (Main Steam System). Ammonia is held ready for injection as a 10-15% aqueous solution and as a 30% aqueous solution in bulk storage.

(j). The maximum concentration of ammonia for use in the secondary side water system (Main Steam System) is 15% aqueous solution before injection and 0.15 ppm at injection.

Ammonia will be injected into water at the Harris Plant only at the following locations:

1. Condensate booster pumps
2. Feedwater lines to Steam Generator A, B and C
3. Auxiliary Feedwater lines to Steam Generator A, B and C
4. Auxiliary Steam Boiler

(k). No.

INTERROGATORY NO. X83/84-2(a) Have Applicants made any studies of the formation of nonradioactive carcinogenic compounds in the chemical or water systems at Harris? (b) If answer to (a) above is affirmative, please list each such study, identify all documents used in preparing it, the date of preparation, the name(s) of the preparer(s), the qualifications of each preparer to do such study, and state whether Applicants possess a copy of the study. (c) Are Applicants aware of any other studies of formation of carcinogenic chemicals in the water systems of nuclear power plants? (d) If answer to (c) above is affirmative, please supply for each such study the information requested in (b) above, inclusive. (e) Have Applicants undertaken any study of carcinogenic chemicals being formed or made more carcinogenic as a result of interaction with chemicals discharged or to be discharged from Harris? (f) If answer to (e) above is other than affirmative, do Applicants agree such chemicals scheduled to be discharged from Harris, including chemicals identified in response to 83/84 1-(a), (b), (c) above or any other part of 83/84 1 above, can cause cancer themselves, or can interact to form carcinogenic chemicals, or can form compounds which are more carcinogenic than the precursors to such compounds, e.g. by chlorination of organic or phenyl or dioxin or dye chemicals?

ANSWER X83/84-2(a). No.

(b). Not applicable.

(c). No.

(d). Not applicable.

(e). No.

(f). -See Answer 83-84(1)(d).

INTERROGATORY NO. X83/84-3(a) Have Applicants any information as to the concentration in Cape Fear River water of (1) dioxins (2) biphenyls (3) PCBs (4) PBBs (5) other EPA priority pollutants (6) other known carcinogens (7) textile dyes or other dyes (8) phenolic compounds other than those inquired about above? (b) If answer to (a) above is affirmative, state for each the maximum known concentration in such water. (c) Answer each part of question (a) above with respect to Harris cooling lake water instead of Cape Fear River water. (d) Answer (b) above with respect to any affirmative answer to (c) above, giving for each the information requested in (b) above. (e) identify all documents giving information requested in a, b, c or d above.

ANSWER-X83/84-3(a) (1). No.

(2). No.

(3). No.

(4). No.

(5). No.

(6). No.

(7). No.

(8). No.

(b). Not applicable.

(c). (1). No.

(2). No.

(3). No.

(4). No.

(5). No.

(6). No.

(7). No.

(8). No.

(d). Not applicable.

(e). Not applicable.

INTERROGATORY NO. X83/84-4(a) What metals are present in the Jordan Lake water? In the sediment: (b) What is the maximum concentration of each such metal so far observed? (c) What is the amount or concentration of organic matter in Jordan Lake water on average? at maximum? For observations made so far (d) Have Applicants any information on the matters asked about in a, b or c above other than that already stated in response to those interrogatories? (e) If answer to d is affirmative, state in detail all such information and identify all documents which contain such information. (f) Identify all documents containing information requested in a b or c above, telling for each what information it contains.

ANSWER X83/84-4(a). Applicants have not studied the chemistry of the Jordan Lake.

(b). Not applicable.

(c). Not applicable.

(d). No.

(e). Not applicable.

(f). Not applicable.

INTERROGATORY NO. 83/84(5)-(a) Do Applicants believe that (1) NCl_3 (2) NHCl_2 (3) NH_2Cl is a carcinogen? (b) If answer to any part of a above is other than affirmative, state whether Applicants believe each such compound may be a carcinogen.

ANSWER 83/84-5(a). Applicants do not believe so.

(b). Applicants do not believe so.

INTERROGATORY NO. 83/84-6(a) If not stated in answer to any other interrogatory in 83/84 in this set (3/21/83), please state whether Applicants have determined or can determine how much urea will be released into the Harris Lake from the Harris plant? (b) If answer to a above is affirmative, or Applicants have determined such amount of urea, what is it in pounds per year? (c) Do Applicants believe urea can get into the circulating water system (1) directly (2) from makeup from the lake (3) from any other source? (d) For each affirmative answer to a part (1, 2 or 3) of c above, please state how much urea can get into the CWS from such source, at maximum, in pounds per year, for each such source. (e) Have Applicants analyzed the potential for forming carcinogens from urea in (1) the Harris lake, or (2) the Harris CWS? (f) If answer to e above is affirmative, please identify each such analysis, any documents used in making such analysis, the makers of the analysis, their qualifications to make it, the date it was made, and identify any documents in which such analysis is set forth and state whether each such document is in Applicants' possession.

ANSWER X83/84-6(a). No.

(b). Not applicable.

(c)(1) through (3). No.

(d). Not applicable.

(e)(1) and (2). No.

(f). Not applicable.

INTERROGATORY NO. X83/84-7(a) Had Applicants made any analysis of the effects of toxic metals or metals as carcinogens; in Cape Fear River water, as impacted by operation of the Shearon Harris plant, (1) prior to 5-14-82, (2) prior to 7-15-82, (3) to the present time, if after 7-15-82? (b) If answer to any part(s) of a above is affirmative, please state for each such analysis the maker(s) of such analysis, the nature and method of such analysis, the qualifications of the makers to prepare such analysis (for each maker), all documents relied upon in preparing each such analysis, and identify all documents containing such analysis or parts of it, stating also whether Applicants possess a copy of each document identified in response to each part of this interrogatory, for each such document.

(c). For each analysis identified in response to (b) above, please state exactly what analysis was made for each metal analyzed therein, as to the effects on people through (1) drinking water (2) washing water (3) bathing water (4) food, and/or (5) any other means.

(d). If not already stated in response to (c) above, state whether each such analysis included the effects of open cuts, bio-concentration in food webs or chains, or unusually sensitive individuals, or further mobilization of metals in food or water due to other chemicals in such (which other chemicals do not derive from the Shearon Harris plant).

(e). Give the information requested in (d) above for each metal in each analysis identified in (b) above if this information has not already been given.

ANSWER X83/84-7 (a)(1) through (3). No.

(b). Not applicable.

(c)(1) through (5). Not applicable.

(d). Not applicable.

(e). Not applicable.

Please note there are two sets of 83/84 interrogatories, regular and X Where the two overlap, reference to the other will suffice if it is clear and specific as to which part of which response (or which specific response to which part of another interrogatory) answers the question asked in another interrogatory.

ANSWERS TO INTERROGATORIES ON CONTENTION 132

INTERROGATORY NO. 132-1(a) What points in the reactor vessel does the RVLIS purport to measure pressure at in order to compute its pressure differential? Show these in plan and side view if possible. (b) How many such points are directly measured by RVLIS? (c) How does RVLIS compute the differential pressure between each pair of points identified in response to (a) above? (d) What is the minimum, maximum, and average error of this computation if known. (e) What are the effects, if any, of transients on the pressures measured by the RVLIS which Westinghouse or Applicants have so far analyzed? (f) What does the RVLIS use to measure pressure directly at each point identified in response to (a) above? Describe such pressure-measuring device in detail.

ANSWER 132-1(a). See pages 14 to 21 of NUREG/CR-2628, "Inadequate Core Cooling Instrumentation Using Differential Pressure for Reactor Vessel Level Measurement," Oak Ridge National Laboratory (March 1982). Applicants will produce NUREG/CR-2628 for inspection and copying in accordance with the accompanying Response to Request for Production of Documents.

(b). See Answer 132-1(a).

(c). See pages 21 to 37 of NUREG/CR-2628.

(d). See pages vii to ix and 37 to 40 of NUREG/CR-2628.

(e). See pages 1 to 8, 73 to 81 and 91 to 98 of NUREG/CR-2628.

(f). See Answer 132-1(c).

INTERROGATORY NO. 132-2(a) What is the average error of the RVLIS under (1) normal operating conditions, (2) Class 8 accident conditions (most limiting Class 8

accident), (3) Class 9 accident conditions, for any reactor in which RVLIS is now installed? How was each such error measured? Please give each such error in per cent, and in feet of water. (b) If RVLIS is not installed in any reactor now, state when it will be first installed in an operating power reactor, or when it has been installed in one if it already has. (c) Specify all transients which have occurred in any reactor (power reactor) for which a RVLIS has been installed, since the installation of the RVLIS, and what effect each transient had on the RVLIS readings.

ANSWER 132-2(a). Applicants are unaware of any information available regarding the error range of the RVLIS under normal or accident conditions at any operating reactor. Applicants understand that an uncertainty level of 6% was established as a target value during the design of the RVLIS (this corresponds to a deviation of plus or minus one foot for the upper range instrument and plus or minus 2.5 feet for the narrow range instrument). Westinghouse has evaluated the uncertainties for each component in the narrow range instrument system at 1200 psia and has determined that the overall uncertainty for the narrow range indication is plus or minus 3.9% of the level span (i.e., plus or minus 1.5 feet). (As system pressure increases, the uncertainty range also increases (to plus or minus 4.6% at 2250 psia).) See NUREG/CR-2628 at 36-39.

In addition to the above uncertainty evaluations performed by Westinghouse, a RVLIS instrumentation system was installed at the SEMISCALE facility at the Idaho National Engineering Laboratory in order to compare the RVLIS indications with the SEMISCALE differential pressure level sensors and gamma densitometers. The SEMISCALE tests simulated various loss of coolant and loss of forced flow conditions, and, in general, showed that the RVLIS provided a conservative estimate of vessel coolant inventory under two-phase conditions. See NUREG/CR-2628 at 49-51 and Figures 12-15.

(b). Applicants do not know.

(c). Applicants do not know.

INTERROGATORY NO. 132-3(a) What does a RVLIS for Harris cost, installed? (b) Are there any means of directly measuring water levels in the core of a reactor such as Harris which would cost more than RVLIS? (c) If answer to b above is affirmative, state the cost and nature of each such means, and give for each the accuracy of measuring achieved or expected to be achieved by such system, the number of points or

lines vertically through the core or around it on which such measuring is done by the system, or describe any way not previously identified in which such system measures directly the water level in a reactor (PWR).

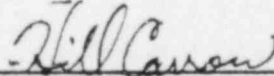
ANSWER 132-3(a). Approximately \$1.6 million (estimated).

(b). Applicants do not know.

(c). Not applicable.

This is the 28th day of April 1983.

Objections submitted by:



Hill Carrow
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602
(919) 836-6839

Attorneys for Applicants:

Thomas A. Baxter, Esquire
John H. O'Neill, Jr., Esquire
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Richard E. Jones, Esquire
Samantha Francis Flynn, Esquire
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(919) 836-6517

ATTACHMENT A

Mr. William M. Stocks —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-1 (e), (h), (i), (j), (l), (m), (n),
(o) and (p); 22A-2 (m), (n) and (o); 22A-3 (a),
(b), (c), (d), (e) and (f)

Mr. Louis H. Martin —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-1 (e), (h), (i), (j), (l), (m), (n),
(o) and (p); 22A-2 (m), (n) and (o); 22A-3 (a),
(b), (c), (d), (e) and (f)

Shirley R. Williams —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-1 (e), (h), (i), (j), (l), (m), (n),
(o), and (p); 22A-2 (m), (n) and (o); 22A-3
(a), (b), (c), (d), (e) and (f)

Mr. Robert K. Kunita —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-1 (b), (c), (f), (g), (u), (v), (w),
(x) and (y)

Mr. Richard G. Matthews —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-2 (a) and (c)

Michael Ermoilowich —

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

Answers 22A-1 (e), (h), (i), (j), (l), (m), (n),
(o) and (p); 22A-2 (m), (n) and (o); 22A-3 (a),
(b), (c), (d), (e) and (f)

Dr. William T. Hogarth —

Answers 75-1 75-2, 75-3, 75-4, 83/84(1),
X83/84-1, X83/84-2, X83/84-3, X83/84-4,
83/84-5, X83/84-6 and X83/84-7

Shearon Harris Energy & Environmental Center
Route 1, Box 327
New Hill, North Carolina 27562
employed by CP&L

Dr. B. J. Ward —

Answers 75-1, 75-2, 75-3, X83/84-2,
X83/84-3, X83/84-4, 83/84-5 and X83/84-7

Shearon Harris Energy & Environmental Center

Route 1, Box 327

New Hill, North Carolina 27562

employed by CP&L

Richard C. Yates —

Answers 75-1, 75-2, 75-3, X83/84-2,
X83/84-3, X83/84-4, 83/84-5 and X83/84-7

Shearon Harris Energy & Environmental Center

Route 1, Box 327

New Hill, North Carolina 27562

employed by CP&L

Ronald S. Hobbs —

Answers 75-1, 75-2 and 75-3

Shearon Harris Energy & Environmental Center

Route 1, Box 327

New Hill, North Carolina 27562

employed by CP&L

Leonard S. Loflin —

Answers 75-4, X83/84-2, X83/84-3, X83/84-4,
83/84-5, X83/84-6 and X83/84-7; 132-1,
132-2 and 132-3

Shearon Harris Nuclear Power Plant

Route 1, Box 101

New Hill, North Carolina 27562

employed by CP&L

Mr. Phillip B. Summers, Jr. —

Answers 83/84(1), X83/84-2, X83/84-3,
X83/84-4, 83/84-5, X83/84-6 and X83/84-7

Shearon Harris Energy & Environmental Center

Route 1, Box 327

New Hill, North Carolina 27562

employed by CP&L

David S. McCarthy —

Answers 75-4, X83/84-6, 132-1, 132-2 and
132-3

Shearon Harris Nuclear Power Plant

Route 1, Box 101

New Hill, North Carolina 27562

employed by CP&L

B. L. Montague —

Answers 22A-1 (d) and (k); 22B-1 (b), (c),
(d), (e), (f), (g), (h), (i), (j), (k) and (l); 22B-2,
22B-3, 22B-4, 22B-5, 22B-6 and 22B-7

411 Fayetteville Street

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employed by CP&L

B. M. Williams -

411 Fayetteville Street
Raleigh, North Carolina, 27602
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R. S. Stancil -

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Raleigh, North Carolina 27602
employed by CP&L

Mr. J. B. Alspaugh

411 Fayetteville Street
Raleigh, North Carolina 27602
employed by CP&L

William Yulinski -
2 World Trade Center
New York, New York 10048
employed by Ebasco

Michael Farr -
145 Technology Park
Norcross, Georgia 30092
employed by Envirosphere Co.

Answers 22A-1 (d) and (k); 22B-1 (b), (c),
(d), (e), (f), (g), (h), (i), (j), (k) and (l); 22B-2,
22B-3, 22B-4, 22B-5, 22B-6 and 22B-7

Answers 22A-1 (d) and (k); 22B-1 (b), (c),
(d), (e), (f), (g), (h), (i), (j), (k) and (l); 22B-2,
22B-3, 22B-4, 22B-5, 22B-6 and 22B-7

Answers 22A-1 (d) and (k); 22B-1 (b), (c),
(d), (e), (f), (g), (h), (i), (j), (k) and (l); 22B-2,
22B-3, 22B-4, 22B-5, 22B-6 and 22B-7

Answers X83/84-1, X83/84-2, and X83/84-7

Answer 83/84(1)

ATTACHMENT B

ANSWER 22-1(d). Following is the calculation for average fuel cost for the Harris Plant:

Year	Generation (MWH)	Fuel Cost	
		Nominal \$	1986 \$*
1986	5,368,059	40,973,340	40,973,340
1987	5,492,677	41,270,720	37,220,061
1988	7,080,335	60,478,040	49,188,975
1989	10,783,353	103,633,060	76,015,721
1990	10,934,696	110,577,160	73,148,523
1991	10,952,678	121,042,290	72,212,486
1992	11,017,277	136,951,990	73,684,907
1993	10,972,469	149,745,120	72,660,420
1994	11,024,204	162,591,110	71,150,353
1995	11,022,085	174,128,990	68,720,510
TOTAL	94,647,833		\$634,975,296

$$\begin{aligned}\text{AVERAGE FUEL COST} &= \$634,975,296 / 94,647,833 \text{ MWH} \\ &= \$6.7/\text{MWH} = 6.7 \text{ Mills/KWH}\end{aligned}$$

Total Annual Harris Plant Generation and Fuel Cost were obtained from PROMOD computer runs made for the Harris Environmental Report Study, Fall, 1982.

*DISCOUNT RATE = 10.883 PERCENT

ATTACHMENT C

22A-1(e)

Source: DRI, Cost Forecasting Review, Second Quarter, 1982
Forecasted Percentage Growth in Wholesale Price Index

Year	Page F24 Industrial Commodities (WPIIND)	Page F24 Electric Power (WPIO54)	Page F31 Industrial Chemicals (PIO6INS)	Page F34 Mining Machinery and Equipment (WPI1192NS)
1983	8.7	10.2	8.5	11.8
1984	8.8	9.2	9.1	12.1
1985	8.2	9.3	8.3	9.4
1986	9.1	9.6	8.7	8.2
1987	8.2	8.9	7.7	8.9
1988	7.4	8.7	8.3	8.7
1989	7.1	8.7	8.0	8.1
1990	7.0	8.6	7.0	9.1
1991	6.8	8.6	6.5	8.7
1992	6.6	8.6	6.1	7.4
1993	6.1	7.8	5.0	6.2
1994	5.7	7.4	4.5	5.1
1995	5.6	7.4	5.2	4.7
1996	5.7	6.9	5.6	5.6
1997	5.8	6.6	5.8	6.1
1998	5.7	6.6	5.5	5.3
1999	5.7	6.6	5.3	5.9
2000	5.6	6.6	5.3	7.0
2001	5.6	6.6	5.4	5.8
2002	5.6	6.6	5.3	5.4
2003	5.7	6.6	5.2	5.5
2004	5.7	6.6	5.4	4.9
2005	5.8	6.6	5.5	3.7
2006	5.8	6.6	5.4	4.5
2007	5.9	6.6	5.4	1.3

22A-1(e)

Source: DRI, Cost Forecast Review, Second Quarter, 1982
Forecasted Percentage Growth in Average Hourly Earnings

<u>Year</u>	<u>Page F25 Mining (AHEMINS)</u>	<u>Page F25 Chemicals (AHE28NS)</u>	<u>Page F26 Primary Metals (AHE33NS)</u>	<u>Page 26 Electrical Machin (AHE36NS)</u>
1983	7.7	8.6	7.6	7.1
1984	11.5	8.8	7.8	7.6
1985	8.1	9.0	8.8	7.6
1986	8.1	9.3	8.9	7.8
1987	9.3	9.7	8.9	7.8
1988	7.6	9.4	8.4	7.7
1989	7.5	9.5	8.2	7.6
1990	9.4	9.3	8.1	7.5
1991	7.9	9.0	8.4	7.4
1992	7.9	8.8	8.2	7.3
1993	7.3	8.7	9.0	7.1
1994	7.2	8.9	7.3	7.0
1995	7.5	8.9	7.2	6.9
1996	8.8	9.0	6.8	6.9
1997	7.2	9.1	6.7	7.0
1998	7.1	8.8	6.8	7.0
1999	9.0	9.2	7.3	6.9
2000	9.1	9.4	7.2	6.9
2001	8.0	9.7	6.8	6.9
2002	6.9	9.7	6.7	6.9
2003	6.2	9.6	7.1	7.0
2004	7.4	8.2	7.1	7.0
2005	7.7	7.6	7.5	7.0
2006	7.7	8.0	6.6	7.0
2007	7.8	8.1	6.7	7.0

Source: DRI, U.S. Long-Term Review, Spring 1982
Forecasted Percentage Growth

Pages 1.23 and 1.24
Gross National Product
Implicit Price Deflator

Year

1983	7.3
1984	6.6
1985	6.9
1986	7.0
1987	6.8
1988	6.6
1989	6.4
1990	6.5
1991	6.3
1992	6.1
1993	5.9
1994	5.7
1995	5.6
1996	5.6
1997	5.7
1998	5.7
1999	5.7
2000	5.7
2001	5.7
2002	5.7
2003	5.7
2004	5.7
2005	5.7
2006	5.7
2007	5.8

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Applicants' Answers to Wells Eddleman's General Interrogatories and Interrogatories on Contentions 22A, 22B, 75, 80, 83/84, and 132 to Applicants Carolina Power & Light Company (First Set) has been served by deposit in the United States Mail, first class prepaid, addressed to the parties listed below this the 28th day of April, 1983.

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
Myron Karman, Esquire
Office of Executive Legal Director
U. S. 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
Chapel Hill Anti-Nuclear Group Effort
Post Office Box 524
Chapel Hill, North Carolina 27514

Deborah Greenblatt, Esquire
1634 Crest Road
Raleigh, North Carolina 27606

Ruthanne G. Miller, Esquire
Atomic Safety and Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

John D. Runkle, Esquire
Conservation Council of North Carolina
307 Granville Road
Chapel Hill, North Carolina 27514

M. Travis Payne, Esquire
Edelstein and Payne
Post Office Box 12643
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

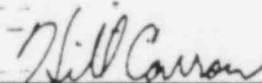
Ms. Patricia T. Newman
Mr. Slater E. Newman
Citizens Against Nuclear Power
2309 Weymouth Court
Raleigh, North Carolina 27612

Thomas A. Baxter, Esquire
John H. O'Neill, Jr., Esquire
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N. W.
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Dr. Phyllis Lotchin
108 Bridle Run
Chapel Hill, North Carolina 27514

Bradley W. Jones, Esquire
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street
Atlanta, Georgia 30303

Karen E. Long, Esquire
Staff Attorney
Public Staff
North Carolina Utilities Commission
Post Office Box 991
Raleigh, North Carolina 27602



Hill Carrow
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602
(919) 836-6839

April 26, 1983

• 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) Docket Nos. 50-400 OL
POWER AGENCY) 50-401 OL

(Shearon Harris Nuclear Power
Plant, Units 1 and 2)

CERTIFICATION BY COUNSEL

I, John H. O'Neill, Jr., Counsel for Applicants in the above referenced proceeding, certify that I have made the following efforts to resolve Applicants' objections to certain of "Wells Eddleman's General Interrogatories and Interrogatories on Contentions 22A, 22B, 75, 80, 83/84 and 132 to Applicants Carolina Power & Light et al (First Set)" dated March 21, 1983.

1. On March 31, 1983, I spoke by telephone to Mr. Eddleman. We agreed to meet in person at a mutually convenient date, preferably during the week of April 4, 1982.

2. H. Hill Carrow, attorney for Carolina Power & Light Company, and I met with Mr. Eddleman on April 8, 1983, in CP&L's offices in Raleigh, North Carolina. We agreed that Applicants' answers to Mr. Eddleman's First Set of interrogatories would be provided in two responses. The first response would address interrogatories on Contentions 22A, 22B, 75, 80, 83-84 and 132. We

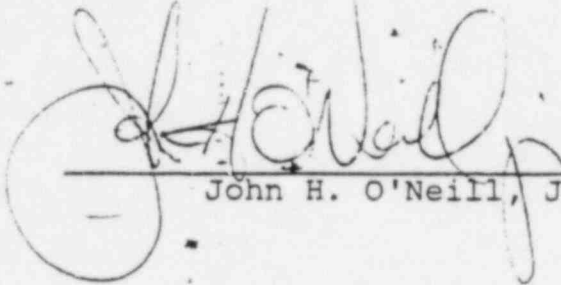
discussed Applicants' objections to certain of the interrogatories relating to the aforementioned contentions. I stated that Applicants would contact Mr. Eddleman at a later date regarding objections to interrogatories relating to Contentions 41, 45 and 65.

3. Applicants view a significant number of Mr. Eddleman's interrogatories relating to Contentions 22A and 22B as outside the scope of those contentions. After discussing why Applicants viewed these interrogatories as irrelevant to the contentions as admitted, we agreed that certain of the interrogatories might be relevant to issues which Mr. Eddleman is seeking to raise in the context of Contention 15, as supplemented. Applicants agreed to review each such interrogatory with Mr. Eddleman, along with interrogatories previously submitted by Mr. Eddleman on Contention 15 after and in the event the Board admits any part of Contention 15. In the meantime, Applicants have noted an objection where the interrogatories seek information outside the scope of the admitted contentions.

4. In certain instances Applicants viewed the wording of the interrogatory as overly broad but agreed to answer a more carefully restricted question and to provide the appropriate qualifications with the answer.

5. Applicants expressed their view that General Interrogatory G-8 is overly broad. Mr. Eddleman suggested that he might attempt to redraft General Interrogatory G-8 more narrowly. Mr. Eddleman did not provide an alternative General Interrogatory prior to the date of this affidavit. Applicants have answered General Inter-

rogatory G-8 to the extent possible and objected where the scope of the answer may be objectionable.




John H. O'Neill, Jr.

DISTRICT OF COLUMBIA:

Dated: April 26, 1983

Subscribed and sworn to before me
this 26th day of April, 1983.


Notary Public

My Commission Expires: June 30, 1987

A circular notary seal for Debra L. Tharp, Notary Public, Wake County - N.C. The seal features the name "DEBRA L. THARP" at the top, "NOTARY" in the center, three stars below it, and "PUBLIC" below the stars. The outer ring of the seal contains the text "WAKE COUNTY - N.C." at the bottom.

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Docket Nos. 50-400 OL
50-401 OL

My commission expires 4/1/88

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 Nos. 50-400 OL
50-401 OL

(Shearon Harris Nuclear Power)
Plant, Units 1 and 2))

AFFIDAVIT OF B. H. WEBSTER

County of Wake)

State of North Carolina)

B. H. Webster, being duly sworn, according to law, deposes and says that he is Manager - Radiological & Chemical Support Section of Carolina Power & Light Company; that the answers to Interrogatories on Contention 80 contained in "Applicants' Answers to Wells Eddleman's General Interrogatories and Interrogatories on Contentions 22A, 22B, 75, 80, 83/84 and 132 to Applicants Carolina Power & Light Company, et al. (First Set)" are true and correct to the best of his information, knowledge and belief; and that the sources of his information are officers, employees, agents and contractors of Carolina Power & Light Company.

B. H. Webster
B. H. Webster

Sworn to and subscribed before
me this 27th day of April, 1983.

Notary Public

My Commission Expires: 26 Aug 83

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
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))

AFFIDAVIT OF WILLIAM T. HOGARTH

County of Wake)
)
State of North Carolina)

William T. Hogarth, being duly sworn according to law, deposes and says that he is Manager - Environmental Technology Section of Carolina Power & Light Company; that the answers to Interrogatories on Contentions 75 and 83/84 contained in "Applicants' Answers to Wells Eddleman's General Interrogatories and Interrogatories on Contentions 22A, 22B, 75, 80, 83/84 and 132 to Applicants Carolina Power & Light Company, et al. (First Set)" are true and correct to the best of his information, knowledge and belief; and that the sources of his information are officers, employees, agents and contractors of Carolina Power & Light Company.

William T. Hogarth
William T. Hogarth

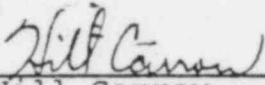
Sworn to and subscribed before
me this ____ day of April, 1983.

Notary Public

My commission expires _____.

Applicants were not able to attach hereto the Affidavit of Leonard I. Loflin, Manager-Engineering, Harris Plant, as to the answers to Interrogatories on Contention 132, in that Mr. Loflin was out of the office and unavailable due to other conflicts. As soon as this Affidavit is secured, it will be forwarded in a timely manner to the parties for attachment to Applicants' answers.

This the 28th day of April, 1983.


Hill Carrow
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602
Telephone: (919) 836-6839

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

(Shearon Harris Nuclear Power
Plant, Units 1 and 2)

)
)
) Docket Nos. 50-400 OL
) 50-401 OL
)
)
)

AFFIDAVIT OF BOBBY L. MONTAGUE

County of Wake

State of North Carolina

)
)
)

Bobby L. Montague, being duly sworn according to law, deposes and says that he is Vice President - Planning and Coordination Department of Carolina Power & Light Company; that Applicants' Response to Wells Eddleman's First Request for Admission to Applicants concerning Eddleman Contention 22-B is true and correct to the best of his information, knowledge and belief; and that the sources of his information are officers, employees, agents and contractors of Carolina Power & Light Company.

Bobby L. Montague
BOBBY L. MONTAGUE

Sworn to and subscribed before
me this 28th day of April, 1983.

Michelle D. Howell
Notary Public

My commission expires 4/6/88.