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RELATED CORRESPONDENCE
 UNITED STATES OF AMERICA
 USNRC
 NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Glenn O. Bright
 Dr. James H. Carpenter
 James L. Kelley, Chairman

In the Matter of

CAROLINA POWER AND LIGHT CO. et al.
 (Shearon Harris Nuclear Power Plant,
 Units 1 and 2)

Dockets 50-400 OL

ASLBP No. 82-168-01
 OL

^{Joint Interviewers}
 Wells Eddleman's Interrogatories to NRC Staff
 (3d Set)

Wells Eddleman hereby requests the NRC Staff to answer the following interrogatories before April 14, 1984 or such other date as counsel for the Staff and I agree on. These interrogatories are submitted under 10 CFR 2.720(h)(11) and inquire into the studies, information, and knowledge of NRC staff with respect to my contentions on which discovery is now open. Since I cannot read the minds of the staff, and this information is not contained in documents which the staff has provided to me, I am unable to obtain this information by other means. Where the information is contained in a document I can obtain from NRC (Public Document Room, etc), I still need the identification of the document in order to obtain the information. The staff has resources and information which exceed what I have, and as a party, their position and information are necessary to making my case in this proceeding. These interrogatories are continuing in nature and should be supplemented when answers change.

GENERAL INTERROGATORIES (FIRST SET)

For each of contentions JOINT I, VII and Eddleman contentions 41, 45, 67,
9, 11, 116, 132(c)(2), 85
 please provide the following information by answering each of these questions.

1. What is NRC Staff's ^{reviewer's or Affiant's} understanding of the subject matter of this contention?
2. Has NRC Staff made any ^{analysis, inquiry, study or} investigation into, (a) this contention (b) the subject matter of this contention (c) the allegation(s) in this contention (d) the basis of this contention (e) the information relied upon by intervenor(s) in support of this contention?

3. For all parts of your response to Interrogatory 2 above for which your answer is affirmative, please provide the following information: who made the analysis, inquiry, study or investigation; what was being considered in such analysis, inquiry, study or investigation ("AISI"); the content of the AISI, the results of the AISI, whether the AISI has been completed, whether a date for completing the AISI has been established if it is not complete, what that date is, all documents used in the AISI, all persons consulted

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in the course of the AISI, all documents containing information discovered or analysis or study or information developed during or as a result of the AISI (identify each such document and state what information or results it contains), whether staff believes additional analysis is warranted, or further AISI needs or may need to be undertaken on this contention, and whether any persons participating in the AISI are to be called as witnesses for the Staff in this case, and what questions the staff AISI is intended to answer and what information it seeks to develop if it is not complete.

4. For all responses to parts of (2) above for which NRC staff's answer is other than affirmative, please state (a) whether NRC staff plans to perform any AISI on this contention, (b) whether anyone on NRC Staff has stated that AISI of any kind is warranted for this contention (even though it has not been made) (c) whether NRC Staff plans for AISI on this contention include a date for beginning or for ending such AISI, (d) those dates, for all affirmative answers to (c) above, (e) what AISI NRC staff will undertake on this contention (f) what AISI NRC staff desires to undertake on this contention (g) all reasons why no AISI is planned on this contention if none is planned (h) all reasons why no AISI has been done yet on this contention if none has been done (i) what the responsibilities of NRC staff with respect to this contention are.

5. Identify all documents the Staff relied on in opposing the admission of this contention, and any specific facts not stated in the Staff's opposition to admission of such contention (already filed in this case) upon which Staff relied in making such opposition.

6. Identify all documents not identified in Staff's interrogatories to Wells Eddleman or to Joint Intervenors (to present -- a continuing interrogatory) upon which the Staff relied in making each such interrogatory.

7. Identify by name, personal or business address, NRC staff position or title (if any), and telephone number (if known) each person on NRC staff or consultant to NRC staff or known to NRC Staff or consulted by NRC staff in the staff's analysis of the subject matter of this contention prior to (a) its filing (b) its admission; state for each such person what analysis was performed by that person.

8. State all professional qualifications of each person identified in response to interrogatories 7., 3,4,_____.

9. Provide any statements of the analysis made by persons identified in response to interrogatories 3,4, or 7x above, and identify all documents containing such information or statements not previously identified.

10. Give the identifier number, date, source, and title of all documents identified in response to interrogatories above, which are available through NRC PDR (Public Document Room).

11. Will NRC Staff make available copies of documents identified in response to the above interrogatories to Wells Eddleman for inspection and copying, for documents not available through NRC's PDR?

12. Identify by name, NRC staff position if any, address and telephone number each person whom NRC staff intends to ~~xxx~~ use or call as a witness in this proceeding.

13. State fully the professional qualifications of each person identified in response to interrogatory 12 above.

14. Summarize the position (or planned testimony) with respect to each contention on which such person is expected to testify, for each person identified in response to interrogatory 12 above.

15. Has NRC Staff, any witness identified in response to interrogatory 12, or anyone acting in behalf of the Staff or such a witness or at their direction, made any calculation or analysis (not identified in response to interrogatories 1 through 4 above) with respect to this contention?

16. If the answer to interrogatory 15 above is yes in any case, provide the name, business or personal address, telephone number and professional qualifications of each person who has made such calculation or analysis, stating for each what contention it relates to, what person (or Staff) it was made for or at the direction of, and identifying all documents containing such calculation or analysis and all documents used in making such calculation or analysis or relied upon in it or supplying information used in it.

17. Provide a summary of each AISI, calculation or analysis ~~made~~ for which the answer to interrogatory 15, or interrogatory 2 above, is yes.

18. Please give the accession number, date and originator of each document identified in response to interrogatory 16, which is available at the NRC PDR.

19. Will NRC Staff make available to Wells Eddleman for inspection and copying all documents identified in response to interrogatory 16 above which are not available through the PDR?

20. Identify each person, including telephone number, address, and field of expertise and qualifications (complete) (if any) ~~for~~ who answered interrogatories with respect to this contention; if more than one person contributed to an answer, identify each such person, providing the information requested above in this interrogatory for each such person, and state what each such person's contribution to the answer was, for each answer.

21. Identify all documents which the Staff proposes or intends to use as exhibits with respect to this contention during this proceeding, including exhibits of Staff witnesses (identifying the witness for each, if such a witness has been designated), and exhibits to be used during cross-examination of witnesses of any party (stating for each which witness it is to be used in cross-examination of), and identifying for each the particular pages or chapters to be used as exhibits.

22. Identify all documents which NRC staff relied upon in answering interrogatories with respect to this contention, which have not been identified in response to interrogatories 1 through 21 above, stating for each which answer(s) re which contention(s) it was used for, and each specific fact and page number therein on which NRC staff relied or which NRC staff used in answering such interrogatory.

23. Please give the accession number, date, and originator of each document identified in response to interrogatories 21 or 22 above which is available through the NRC PDR.

24. Will NRC Staff provide Wells Eddleman with copies of the documents identified in response to interrogatory 21 or 22 above which are not available at the PDR, for inspection and copying?

25. Identify any other information or source of information not identified in response to the the above interrogatories 1 thru 24 upon which any member of NRC staff relied, or which any such member of staff used, in answering each interrogatory with respect to this contention, naming the contention and response in which each such source was used, and the location of the information used or relied on in such source (e.g. page number, section, chapter, etc).

26 (a) Does the Staff now agree with the contention? (b) Does the Staff now agree with any part of the contention?

27. If answer to (b) above is affirmative, which part(s) and why?

INTERROGATORIES ON JOINT SEVEN (Steam Generators)

128. Identify each tube failure analysis which (a) the Staff relies on

(b) you rely on (c) the Staff allows CP&L/NEEMPA to rely on, for the Shearon Harris Nuclear Power Plant steam generators. Identify all documents (d) containing (e) concerning each such analysis, and (f) concerning Applicants' reliance on each analysis.

129. Identify each tube failure analysis you believe Applicants (a) rely on (b) have used, re Harris steam generators. Please identify all documents containing each, and all documents re Staff AISI re each.

130. Identify all constituents of the Harris loose parts monitoring system(s) for each Harris steam generator. Indicate which are safety grade. Provide a copy of each diagram, blueprint, safety analysis, analysis, or other AISI concerning each constituent or component of each such system.

131. Please identify all studies you possess, or which have been done by or for the NRC or its staff, concerning (a) corrosion in steam generators with AVT water chemistry (b) corrosion in steam generators with carbon steel support plates, where (i) the steam generator uses Inconel-600 tubes with the same heat treatment used on the steam generator tubes at Harris (ii) the steam generator uses Inconel-600 tubes (iii) the steam generator is a Westinghouse D-4 (iv) the steam generator uses Inconel-600 tubes and the condenser uses aluminum bronze components (v) the steam generator uses Inconel-600 tubes and the plant is not cooled by salt or brackish water, or (vi) the steam generator is a Westinghouse D-4 and the plant is not cooled by brackish water. Please separately identify each document which applies to each of (i) thru (vi) above.

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132. The VC Summer plant is similar to Harris in design and steam generators. (a) Do you agree with this statement? (b) What is VC Summer's present lifetime capacity factor in commercial operation? (c) How long did VC summer spend in testing between receiving a fuel load license or low power license, and beginning commercial operation? (d) How much of the time of testing was attributable to tests ordered on the steam generators at Summer? (e) What are the model numbers of each steam generator at VC Summer (i.e. are they D-4s, D-3s, D-5s, or what?)

133 (a) What do you consider the maximum credible accident involving steam generators at Harris? (b) What do you consider the maximum credible accident involving steam generator tube (i) leaks (ii) failures at Harris (Shearon Harris Nuclear Power Plant)? Please state all reasons

for your answer and identify all documents concerning each such accident and/or any Staff AISI or such an accident either at Harris or at any other plant with similar steam generators. Please also identify any generic analysis in your possession or of which you know, concerning each such accident.

134. Please identify all documents in your possession concerning steam generator tube cracking (i) at any plant with Westinghouse D-4 steam generators (ii) at any plant with Westinghouse steam generators and AVT water chemistry (at any time) (iii) at any plant using AVT water chemistry which has carbon steel tube support plates and Inconel-600 tubes (iv) at any plant with Westinghouse D-4 steam generators, AVT water chemistry, and Inconel-600 tubes subjected to the same heat treatment the Inconel-600 in the Harris steam generators was subjected to.

135. Have you made any analysis of (a) the amount of radiation exposure (b) the total person*rem, (i) actually (ii) projected, which would be incurred or is incurred in (c) inspecting (d) cleaning (e) maintaining (f) flushing (g) repairing (h) plugging tubes in (j) replacing, steam generators made by Westinghouse, e.g. D-4s, at (k) Harris (l) any other nuclear plant. Please identify each such analysis and each plant it applies to. If you have made any generic studies of radiation exposure associated with steam generators re any of the items (c) thru (j) above, please identify each such study. If you possess any generic studies of the matters inquired about above, please identify each such study.

136. What projection, if any, was made re radiation exposure to personnel working with steam generators for (a) Krsko (b) Ringhals 3 (c) McGuire 1 (d) McGuire 2 (e) Catawba 1 (f) Catawba 2 (g) VC Summer (h) Byron 1 (i) Byron 2 (j) Harris 1, prior to each such unit's actual or planned commercial operation? Please state which of the above projections you consider accurate, and why each is accurate or inaccurate in your opinion. For those where the estimates are considered inaccurate, please provide any estimate you believe is more accurate.

137. Please identify each report or document by Science Applications INC (SAI) concerning steam generators or problems with them, which you possess. Please state which, if any, of the recommendations in each such report the Staff will require Harris to implement prior to commercial operation. Please state, for each such recommendation, all reasons why you (i) will, or (ii) will not, or (iii) are not sure if you will, require such recommendation to be implemented at Harris.

138. Please identify all documents concerning the kinds of foreign objects (i) that have been found in steam generators or associated piping at nuclear power plants in the US (ii) that can be detected by the loose parts monitoring devices to be installed at Harris (iii) that have been found in steam generators where monitoring devices of the same types or models to be used at Harris are in place, particularly those found without being detected by the loose parts monitor (iv) which cannot or probably would not be detected by the loose parts monitoring devices or systems now planned to be installed at Harris.

139. Please state what the effect of SG ~~xxxx~~ tube expansion per NUREG-1014 will be on tube (a) wall thickness (b) residual stress (c) integrity

(d) resistance to corrosion (e) resistance to cracking, in your opinion. Please give all reasons for each such answer.
(f) Please state all modifications Applicants have stated they (i) have performed (ii) will perform on Harris steam generators, the date for each, and which dates are prior to expected commercial operation.

140. Please identify all analyses of tube vibration in Westinghouse D-4 steam generators with which you are familiar or which you know of. Please state which are based on actual observations, and which are theoretical. Please state which of these analyses, if any, would be applicable to Harris. Please identify any analysis of tube vibration in the Harris steam generators which has been made by anyone. Please state your opinion as to the (i) validity (ii) reliability, of each such analysis.

Interrogatories on Joint I

141. Please identify all documents in which NRC has inquired of its inspectors concerning the capability of CP&L management to safely or properly manage (a) Harris (b) Brunswick (c) Robinson 2. Please produce a copy of each answer to each such inquiry, giving the date of each and the name of each inspector responding, if known. (Joint Intervenor will consider measures to protect the privacy or identity of such persons if Staff so desires).

142. Please state each fine (a) proposed (b) levied against CP&L for nuclear operations. Please identify all documents concerning each such fine, including the reasons for it, CP&L's response to the notice of violation involved, CP&L's response to the proposed fine, any appeals of the fine by CP&L, and/or any changes in the fine. (c) Please state your opinion of the quality of management that each such fine indicates. (d) Do you have any opinion as to whether (i) the number (ii) the severity (iii) the number and severity (iv) all aspects of, these fines casts any doubt upon the capability of CP&L management to assure that its nuclear plants are operated safely at all times? If so, please state your opinion and give all reasons for it.
(e) Do you have any opinion concerning whether any or all aspects of these fines cast any doubt upon the capability of CP&L management to operate Harris safely at all times if Harris 1 is licensed to run? If so, please state your opinion and give all reasons for it.

143. Please list all the things that are necessary in your view to safely ~~xxi~~ manage the operation of a nuclear plant. Please list for each any doubts any member of the Staff has concerning CP&L's capabilities re that thing for operating Harris. (See J.I. interrogatories to Applicants, 2/23/84, at I-48, for examples of what we're asking about.)

144. Has CP&L ever had a problem at a nuclear plant in operation that relates to or was partly or entirely caused by inadequate (a) QA/QC (b) design (c) maintenance (d) management? Please identify each problem and the plant it occurred at and the date(s) it occurred.

145. Has anyone on the Staff done any followup on the problems identified by F.S. Cantrell in his testimony in the Harris CP remand of 1979? If so, identify each such person and state all results of each such

followup. Please identify all documents concerning each.

146. Please identify all documents, including SALPs, in which the Staff identifies a need for improvement in management of any CP&L nuclear facilities or facility.

147. Please state how many times NRC Staff has met with CP&L (a) plant management (b) senior management (VPs or higher-ranking officers), concerning problems at CP&L nuclear plants. Please give the date of each such meeting, who met with whom, which were the CP&L people, whether a transcript or notes of the meeting exist, the identification of all documents concerning what went on at the meeting, including transcript(s) or notes or recordings, and please also state whether management or improvements needed in management and/or management attention were discussed. Please identify all documents giving the agenda of each such meeting, and state what problem(s) were discussed in each such meeting.

148. Please identify all documents in your possession concerning (a) Staff turnover at Brunswick (b) Staff turnover at Robinson 2 (c) Staff turnover at Harris (d) turnover in CP&L nuclear management at corporate headquarters. (e) Please state when, if ever, NRC staff or any member of it has ~~con~~sidered turnover in staff at (i) Brunswick (ii) Robinson 2 (iii) Harris (iv) CP&L corporate nuclear management, to be (aa) a problem (bb) a serious problem (cc) a ~~xxxx~~ cause of problems (dd) a factor compounding other problems.

149. Please state if there is any nuclear management in the US involved with commercial nuclear power plants, concerning which (i) the Staff (ii) anyone on the Staff, holds the opinion that that management is (aa) unqualified to operate nuclear power plants safely (bb) doubtfully qualified to operate nuclear power plants safely.

150. Does the NRC Staff or anyone on it have any documents concerning management weaknesses at nuclear power plants or management weaknesses of nuclear power utilities (or any nuclear utility)? If so, please identify all documents containing such information, most specifically any such information concerning CP&L not identified in response to the above interrogatories, any information comparing management of nuclear utilities and/or nuclear power plants, or assessing the management competence of any nuclear utility (e.g. Metropolitan Edison, GPU Nuclear, CP&L).

151. Please state all reviews NRC Staff has undertaken of the (a) qualifications (b) actual competence, of (i) engineering (ii) operating (iii) maintenance (iv) management personnel at any CP&L nuclear plant. For each plant please identify all documents concerning each such review. Please state the results of each such review.

152. Has NRC Staff ever done the analysis of the limited appearance statement of Wells Eddleman in the Harris CP remand hearing of 1979 which ASLB Chair~~m~~ Ivan Smith stated to Staff attorney Reis would be sought by the Board? If so, please identify all documents concerning such analysis.

153. Is there any member of NRC Staff who believes that CP&L (a) is incapable (b) may not be capable, of safely managing, building, engineering, operating, and maintaining the Harris 1 plant over its entire expected operating life? If so, please identify each such person (person) and produce that person as a witness in the management hearing scheduled for September 1984 (or any other hearing on management capability or rescheduling of that hearing).

154. Has anyone studied the number of severity of core-damage accident precursors which have occurred at CP&L's nuclear plants? If so, state who, when the study was done, and what precursors were identified and what hazard(s) each posed. Please state your opinion of the adequacy of CP&L management, design, and operation and maintenance related to each such precursor. Please state your opinion of the adequacy of CP&L senior management's response to each such precursor. Please identify all documents containing or concerning each of the things inquired about above, in this interrogatory.

155. Do you know of any nuclear-related management in this country which is sufficiently incompetent that NRC (i) would not support (ii) might not support, issuing a nuclear operating license to such management, or issuing an order allowing such management to operate a nuclear power plant? If so, identify each such management and compare it with CP&L as to its adequacy and characteristics.

156. Has NRC Staff undertaken any review of the statements made by CP&L witnesses in the 1979 Harris CP remand hearings on management capability? If so, please identify each such review, when it was made, and identify all documents concerning it, who wrote it, and what use, if any, NRC Staff has yet made of it. Indicate if it has been shown to anyone working to CP&L and, if so, whether that person or persons were or included senior management (ie those with rank of Vice President or higher), and when it was shown to each. Please identify each person at CP&L you have sent a copy of each such review to.

157. Have you ever caught a nuclear utility other than CP&L improperly disposing of low-level radioactive wastes offsite in (a) landfills (b) scrap yard (c) scrap recycling operations? If so, please identify each such utility. If not, please indicate what your opinion is as to CP&L management's capability in light of the improper disposal of LLRW at Brunswick.

Interrogatories on Eddleman 9

158. (a) Does NRC Staff state on pp 3-49 thru 3-51 of the Harris SER, certain information it will require CP&L to submit re environmental qualification of electrical equipment? (b) For each item of information listed on pp 3-49, 3-50 or 3-51 of the Harris SER, have you stated all the reasons for requiring that item to be submitted? If not, please state all additional reasons, including any rule or policy or regulation which requires the submission of the information, why you require each such item(s) of information to be submitted.

159. Has CP&L submitted any lists of equipment identified under item (1) on p.3-50 (top item (1)) of the Harris SER? Please provide a copy of each such list.

160. When does the Staff estimate its review of the environmental qualification of electrical equipment at Harris will be completed?

161. Does the resolution of the case UCS V. NRC, DC Circuit Court of Appeals 6-30-83 (this is the correct date, not fall 1983 as stated in past interrogatories to Applicants) have any effect on your review of the environmental qualification of electrical equipment at Harris? If so, please state what effect, reasons for it, and please identify all documents concerning each such effect.

162. Is there any item of electrical equipment at Harris which, in your opinion, has not yet been demonstrated to be environmentally qualified as required by NUREG-0558 (b) 10 CFR 50.49 (c) 10 CFR 50 Appendix A, General Design Criterion 1 (d) 10 CFR 50 Appendix A, GDC § 4 (e) any other NRC rule or regulation (specify)? If answer to any part above is affirmative, please state whether you can identify (i) all such parts (ii) any such part or item (iii) all such items, and identify those you can readily identify.

163. Has NRC Staff itself tested or had tested any of the equipment used as electrical equipment at the Harris plant? If so, please identify what equipment, who tested it, when, with what results, according to what procedure, who approved the procedure for the test(s), who ordered the tests, who evaluated the test results, what the evaluation of the test results was, whether anyone else has evaluated the test result(s), and identify all documents concerning the tests, test procedure(s), test result(s), analysis of the result(s), and adequacy of the test(s) or results.

164. Has anyone other than CP&L and NRC Staff tested or had tested any of the electrical equipment to be used at Harris 1? If so, please answer all parts of the second sentence of interrogatory 163 above concerning each such test.

165. Please identify all deficiencies you are aware of in CP&L's (a) submissions (b) data (c) testing (d) testing reported in submissions, concerning environmental qualification of electrical equipment at Harris. Please identify which equipment each such deficiency applies to. Please identify all documents concerning each such deficiency.

166. Has anyone expressed any concerns re the adequacy of NRC's (a) review (b) analysis (c) programs, re environmental qualification of electrical equipment for (i) nuclear power plants (ii) Harris? (e.g. Sandia National Labs personnel). Please identify each such person and all documents expressing such concern(s). Please identify all documents written by the Staff responding to any such concern(s).

167. Is there unqualified electrical equipment ^(according to NUREG-0558 or 10CFR 50.49) in (a) the Brunswick plant, Unit 1 (b) the Brunswick plant, unit 2 (c) the Brunswick plant common facilities (d) HB Robinson unit 2 (e) other facilities at Robinson, at present, in your opinion? If so, what assurances can be given that ~~existing~~ all ~~new~~ electrical equipment at Harris will be qualified prior to (and/or during) operation? Please give all reasons for each of your answers.

168. Has CP&L stated any length of time it will take to submit the information requested in the SER pp. 3-49 thru 3-51? If so, what date is the last for submission of such information? Has CP&L resisted providing any information requested in the Harris SER pp 3-49 thru 3-51? If so, what information and why? Is the Staff still seeking any of this

information? If so, what, and why?

169. Is there any other information not identified in the SER for Harris which CP&L must submit to NRC to demonstrate environmental qualification of electrical equipment at Harris prior to commercial operation? If so, what is that information, and has it all been submitted? If not, why not? Is the Staff expecting to receive any of this information? If so, which information do you expect, and when? Is there any required information which you do not expect to receive from CP&L? If so, what information. If you know why CP&L ~~hasn't~~ is not providing it or hasn't provided it, please state why and identify all documents concerning such non-provision of info.

170. Has the Staff applied any of the questions or concerns in Union of Concerned Scientists (UCS) February 7, 1984 supplemental petition concerning environmental qualification of electrical equipment to its review of environmental qualification of electrical equipment for Harris 1? If so, which, and how and why? If not, for each which you have not applied, why not?

171. Please identify all documents in which you review the environmental qualification of electrical equipment for Harris 1, including work papers, summaries and other reviews.

172. Please state whether you consider the FSAR for Harris to have completely documented adequate environmental qualification of electrical equipment for Harris 1 at present. Please give all reasons for your answer.

172-A. Is there any *Anacosta* flexible conduit in use at Harris? If so, does it have a polyethylene copolymer jacket?

INTERROGATORIES ON EDDLEMAN 11.

172-X Please identify all studies of accelerated degradation of insulating materials including (i) polyethylene (ii) neoprene, when exposed to radiation at lower dose rates instead of high dose rates, with which you are familiar, particularly any conducted by any group including Ken Gillen or R. Clough or anyone else working for Sandia National Laboratories.

173. Please state what concerns, if any, anyone working with (a) NRC (b) Sandia National Laboratories (c) anyone else, has expressed re the effect of more rapid deterioration of insulating materials exposed to the same total dose at low dose rates, compared to the deterioration resulting from the same total dose at high dose rates, as it applies to insulation used in safety-related equipment and equipment that can affect safety-related equipment in nuclear power plants. Please identify all documents in which such concerns are expressed and any documents in which NRC staff analyzes or responds to such concern(s).

174. Do you know where at Harris polyethylene insulation is used on (a) cable (b) wiring (c) electrical equipment, as insulation, at Harris? If so, please state where, including which elevations, which buildings, which radiation zones, etc., to the extent you know.

175. Has (a) the Staff (b) anyone, conducted any study or analysis of the effect of more rapid deterioration (e.g. as explained in #173 above or in Eddleman 11) on safety at (c) Harris (d) any nuclear plant (e) nuclear plants in general. Please identify all documents concerning or containing each such study and/or any Staff AISI or responses re each.

176. Please describe all forms of degradation of properties or of the substance of polyethylene which occur when it is exposed to nuclear radiation. Please identify all documents you know of concerning such forms of degradation (a) at low dose rates (b) at high dose rates (d) at any dose rates.

177. Please describe all forms of degradation of properties or of the substance of neoprene which occur when it is exposed to nuclear radiation. Please identify all documents you know of concerning such forms of degradation (a) at low dose rates (b) at high dose rates (c) at any dose rates (d) at the dose rates described in NUREG/CR 2156, 2157, 2763 or 2877.

178. Has the Staff made any AISI of the effect of the degradation effects described in (a) NUREG/CR 2156 (b) NUREG/CR 2157 (c) NUREG/CR 2763 (d) NUREG/CR 2877 on (i) insulation at Harris (ii) safety of the Harris plant (iii) safety of any nuclear plant (iv) safety of nuclear power or nuclear power plants? If so, please identify each such AISI, who did it, who ordered it done, when it was done, and all documents containing any of the AISI.

179. Has the Staff retained competent scientists to analyze the cable insulation at Harris? If so, have they analyzed any cable insulation yet? Have they reviewed the radiation sources inside the Harris plant? If so, what reviews have they done so far, and what have been the results. Please identify the documents concerning (i) the qualifications of each such scientist (ii) the analysis or review(s) done by each. (CF your interrogatory 55).

180. Is polyethylene copolymer used in any insulation at Harris on electrical wiring or cable (e.g. in Anaconda flexible conduit)? If so, what do you know about the degradation of polyethylene copolymer under conditions of long-term radiation exposure at various dose rates including those described in NUREG/CR 2156, 2157, 2763, or 2877? Please identify all documents you know of concerning the degradation by radiation and/or other factors of polyethylene copolymer.

181. Do you know what actions, if any, CP&L has taken in response to NRC IN 83-72 of 10-18-83, re Anaconda flexible conduit? If so, please state all such actions at Brunswick, Robinson 2, (c) Harris, and identify all documents concerning each such action.

182. Has (a) NRC Staff (b) CP&L (c) anyone else, to your knowledge, made any study of radiation dose rates expected during (i) normal operation (ii) accidents, at any locations inside the Harris plant where insulated cable or ~~wire~~ wiring is used, or where polyethylene or neoprene insulation is used? If so, which of these studies (please identify them all) takes any shielding effects into account, and how? Which give actual measured dose rates to cable or wiring insulation in similar situations in other nuclear plants? Which deal with radiation doses (iii) at various reactor power levels (iv) during shutdowns once the system is past initial criticality (v) during refueling or other outages.

183. Has (a) NRC Staff (b) anyone else, ever examined samples of cable or wiring insulation from actual operating nuclear power plants for degradation? If so, please identify all documents concerning such examination (or testing) of insulation including polyethylene or neoprene.

Interrogatories on Eddleman 41 (not relating to welder info just received)

184. Has CP&L completed its 100% reinspection of pipe hangers at Harris? If not, when does CP&L tell you they expect to complete it?

185. Have you inspected any more pipe hangers at Harris since you last answered interrogatories? If so, which ones, with what results?

186. Please identify all documents pertaining to the matters and inspections inquired about in interrogatories 184 and 185 above.

187. Has any (i) welder (ii) welding inspector, ever been fired or discharged or asked to resign from Harris because of (aa) making (bb) approving, defective welds or defective pipe hangers? If so, please identify each such person.

188. Has any (i) welder (ii) welding inspector (iii) other person, ever been (aa) disciplined (bb) laid off (cc) sent for retraining (dd) required to be retrained or to take further training, because of (A) making (B) approving, defective (iv) welds (v) pipe hangers, at Harris? If so, please identify each such person.

189. Have you identified any defective pipe hangers at Harris which have not yet been repaired? If so, which ones?

190. Have you written any evaluation or recommendations for improvement (or has anyone working for NRC Staff or CP&L done so) for CP&L Harris QA or QC concerning their inspection of pipe hangers (a) ever (b) since 9/1/1980? If so, please identify each document containing each such evaluation and/or recommendation.

191. Have you contacted any of the welders identified to Wells Eddleman by CP&L in response to his interrogatories served in 1983? If so, please describe the nature of each such contact and the information (a) you gave to (b) you received from, each such welder. Please identify or state any statements, questions, or other things you have communicated orally or in writing to each such welder, and all response(s) you have received to each.

192. Please identify all documents concerning reinspection of pipe hangers at Harris which have occurred since June 1, 1983.

193. Please identify all documents concerning defects in pipe hangers at Harris found since 1 June, 1983, which (a) you possess (b) you know someone else possesses (please identify who possesses it, if you know).

194. Has (a) CP&L (b) Daniel International (c) anyone else including employees of CP&L or Daniel, who worked at the Harris site, ever (i) made any false statement to NRC concerning pipe hangers at Harris (ii) made any statement to NRC concerning pipe hangers at Harris, which was later shown to be false (iii) made any statement to NRC concerning the ~~the~~ pipe hangers or any pipe hanger at Harris, which was later shown to be inaccurate, misleading or incorrect? Please give all details and identify all documents concerning each such statement.

195. How serious do you believe "OK" tagging of defective pipe hangers is (a) as a breach of faith with NRC (b) as a violation of NRC regulations (c) as a threat to safety of the Harris plant? Please give all reasons for each of your answers.

Interrogatories on Eddleman 45

196. Please identify all water hammer incidents in PWRs since 1-1-83 that (a) caused damage (b) caused a safety problem (c) were reported by NRC to Congress as significant events (d) were required to be reported to Congress by the NRC. Please state the relevance of each

such incident to Harris and all information supporting your answer.

197. Have you evaluated the complete start-up test program for Harris 1 as it involves water hammer in the systems mentioned in Eddleman 45? If not, why not? If so, please identify all documents which (a) are drafts of your evaluation (b) contain your evaluation (c) contain information which would contradict or cast doubt on your evaluation. If CP&L has not submitted a complete start-up test program for Harris concerning water hammer in the systems mentioned in Eddleman 45, when will they do so?

198. Identify all open items re Harris that relate to (a) water hammer (b) effects of water hammers (c) detection of water hammers (d) detection of situations in which water hammers could occur or are likely to occur (e.g. formation of voids, leaking pipes, etc). Please identify all documents relating to each such open item.

199. If there are any (a) confirmatory items (b) concerns expressed or held by any member of NRC Staff, re water hammer or its effects (e.g. as inquired about in items (a) thru (d) in 198 above) at Harris, please state each and identify all documents concerning each. Please state if the person(s) who hold the concerns stated will appear as witnesses if Eddleman 45 goes to hearing.

Interrogatories on Eddleman 67

200. Has the Congress ratified the Southeast Interstate Low-Level Radioactive Waste Compact? (hereinafter, "the Compact")

201. Has South Carolina or any other state attempted to withdraw from the Compact ?

202. Has any state attempted to withdraw from any other LLRW compact?

203. Identify all states for which the answer to 202 or 203 above is affirmative and identify all documents concerning each such withdrawal attempt.

204. Has the Staff or anyone on it conducted any review of violations of LLRW shipping regulations by CP&L? If so, who did, when, and with what results? Identify all documents used in this review or containing statements of this review.

205. Are you aware of any legislation proposed or passed ~~in~~ in South Carolina concerning prohibition of disposal of wastes in S.C. from states which have no disposal ~~site~~ site for hazardous wastes?

205-B. Do you know that NC has no operating landfills for hazardous waste disposal?

206. Does NRC possess copies of any CP&L contingency plans for (a) storage (b) alternate disposal (c) alternate treatment of LLRW in the event that the SE compact is not ratified, or NC or SC withdraws from it, or offsite disposal of Harris LLRW is otherwise not allowed?

Interrogatories on Eddleman 116.

207. Has the Staff conducted any reviews of CP&L's Harris fire protection program other than those whose results are stated in the Harris SER pp 9-45 through 9-55? If so, please identify each such review.

208. For each area (i.e. each item underlined) in the SER pp 9-45 through 9-55, please provide a copy or identify all documents containing the actual work papers or review (including drafts or notes) made by the staff to reach the conclusions stated.

209. Please state which of the open items identified on SER page 9-55 have been resolved, and for each state how and identify all documents concerning the resolution of the item.

210. Isn't it true that photoelectric smoke detectors are able to detect combustion products from cable fires earlier than ionization smoke detectors such as are to be used at Harris? Please state all bases for your answer and identify all documents containing information you used (a) in your answer (b) as any basis for your answer.

211. For each exception summarized on page 9-55 of the ~~RRR~~ SER for Harris, please identify all documents (including workpapers and notes and drafts) concerning Staff's approval of an exception for each such deviation (seven deviations are listed).

212. Has the Staff or anyone else ever actually tested the fire resistance of fire barriers inside an operating nuclear power plant? If so, please give all details of each such test. Identify all documents concerning each such test and its results.

213. Have any of the (a) fire barrier materials (b) fire barriers, of the type(s) CP&L proposes to use at Harris, ever failed at any nuclear plant? If you don't know, please state whether you have ever tried to find out. If you do know, please identify all documents concerning such failure(s) or the lack of them, identifying each plant at which such a failure has occurred.

214. Isn't safe shutdown in the event of a fire required to be a capability of the Harris plant? Please list all NRC rules, regulations or requirements which require such a capability. Please state how much redundancy in the safe shutdown equipment to be kept operable in the event of fire is required. Please identify all equipment which is required for safe shutdown in the event of fire, which might be or is allowed to be inoperable during plant operation (a) by any NRC rule, regulation, or policy or staff position (identify each such rule, reg, policy or position) (b) by any CP&L procedure, or technical specification presently proposed for Harris.

215. When does the Staff plan to complete its review of each open item re fire protection at Harris which it does not have resolved? What does CP&L have to do to allow you to complete your review of each such item? What action(s) would CP&L have to do to close each such open item? Please identify all documents concerning your review of each such open item, the schedule for completing it, and what CP&L may need to do to close the item or allow you to complete your review of it.

216. Please identify all items (by number and paragraph) in NUR EG-0800, ofr in 10 CFR 50 Appendix R, which CP&L has not yet fully complied with. If CP&L has been granted any exception from any such item or requirement not identified or discussed in your responses above, please identify the item or requirement, and identify all documents discussing the exception, the reasons for it, and reasons not to allow an exception re that item. If CP&L has been excused from compliance in any way you do not call an exception, please identify all documents concerning such excuse from compliance, the reasons for it, and/or any reasons against it.

217. Please identify all documents listed in your interrogatories dated 15 March, 1983, pp 5 and 6, numbers 74 through 82, which (a) the Staff has completed its review of entirely (b) the Staff has not yet completed its review of. For each document which the Staff has not completely reviewed, state what else you have to do to complete your review, what problems you have identified in your review so far concerning CP&L's fire protection for Harris, and when you anticipate finishing your review and what you need to finish it.

218. If a fire occurred during an accident while the containment was isolated (a) Is there any rule or regulation of the NRC requiring Cp&L to be able to (i) fight the fire (ii) prevent the fire from interfering ~~x~~ with the safety function of equipment required for (aa) shutting down Harris 1 (bb) maintaining Harris 1 in safe shutdown? Please identify each such rule or regulation. (b) Does the Staff or anyone on it believe that CP&L should be able to fight the fire? Please state who believes so and upon what basis, identifying all documents supporting~~x~~ that belief and indicating which person(s) holding that belief~~x~~ will be available as witnesses should Eddleman 116 go to trial (hearing).

219. Has (a) NRC Staff (b) anyone else, evaluated the actual performance of (i) fire barriers (ii) "fire resistive" materials (iii) fire resistant materials, in actual fires, for those barriers and materials to be used at Harris? If so, what were the results and~~x~~ please identify all documents concerning the evaluation of the performance of each such barrier or material in any actual fire, describing the actual fire and the conditions under which it occurred, and/or containing any analysis of the fire and/or the performance of the particular barrier(s) or material(s) that were exposed to it.

220. Has NR&C Staff or anyone else analyzed failures or failure modes of the automatic firefighting equipment at Harris? If so, please identify all documents containing such analysis.

221. Has NRC Staff or anyone else analyzed the location of fire detection instruments, the response times of such instruments and/or systems containing them, and/or the failure probabilities and/or failure modes of fire detection instruments and/or systems to be used at Harris, for the effects of these matters on (a) fire detection times (b) fire detection probability (c) fire brigade response times (d) spread of fires (e) severity of fires (f) causing nuclear accidents or making nuclear accidents more severe, at Harris? If so, please identify all documents containing such analysis, all reasons for the conclusions of such analysis, and any information used in making or supporting each ~~s~~uch analysis.

222. Has NRC Staff or anyone else done an analysis of what could happen if fires initiated at Harris actually spread? If so, please identify all documents concerning such analysis, and/or the influence control of combustible materials could have on fire spreading at Harris. Please also identify all documents concerning control of combustible materials at Harris, and all information concerning improper control of combustible materials at CP&L's Robinson 2 and/or Brunswick plants (or any other nuclear power plant) in your possession and/or of which you know.

222-A. Identify all documents concerning Harris' ability to fight
[Interrogatories on 132(c)(2)] simultaneous fires, that you know of.

223. Do you possess readable documents or drawings which show what instrumentation is on the front of control room panels 1,2,3,4,5,6,7, 8,9,10,11,12,13,14, and/or 15 at Harris? If so, will you provide copies of same?

224. Has the Staff completed its DCRDR for Harris 1? If not, when do you expect to complete it? Please identify all documents and work papers you have so far generated in this review.

225. Has the Staff analyzed the uses that must be made during any (or all) credible Harris accidents, of the information appearing on any panel listed in Eddleman contention 132(c)(2)? If so, which accidents, and which information on which panels? Please identify all documents concerning each such analysis.

226. Has the Staff any opinion concerning the qualifications of the people who did the DCRDR for CP&L (the "human factors experts")? Does your opinion of the adequacy of these persons' qualifications incorporate the views of the Licensing Board in Byron (1984)? Please state your view of the adequacy of these persons' qualifications if you have one.

227. What HEDs and HERSs for Harris has the Staff reviewed? Please identify all documents giving the results of your review of each.

228. What information needed by operators in accidents at Harris, which appears on any of the panels contention 132(c)(2) says cannot be seen from each other (or by persons standing near each, whose view may be blocked by other panels), can be seen from a distance of (a) 5 feet (b) 10 feet (c) more than 10 feet (d) more than 2 feet, with sufficient reliability for accurate interpretation and reading under high stress conditions such as would prevail in an accident, in your opinion?

229. Has the Staff made any review of the visual blockages possible in the Harris control room layout? If so, what documents contain the results or your review? Please identify all work papers used in your review.

230. Does the Staff believe CP&L was (a) right (b) responsible, when it set into concrete in the Harris 1 control room floor the positions of the cabinets recommended by its DCRDR consultants, prior to Staff completing its control room design review for Harris 1? Please give all reasons for your answer and identify all documents information from which was used to make or support your answer.

PRODUCTION OF DOCUMENTS

Wells Eddleman and Joint Intervenor hereby request NRC staff to make available for inspection and copying all documents identified in response to any of the above interrogatories. *WE PRASE & for Joint Intervenor*