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April 19, 1984

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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)	Docket 50-400 OL ASLBP No. 82-468-01 OL

Joint Intervenors and Wells Eddleman's Response to Staff's 3-15-84 Interrogatories.

JOINT INTERVENORS RESPONSE

38. See SECY-82-72 & 82-72A. We have not been able to search for more specific references successfully. More files will be reviewed. We are also asking our experts about tube failure analyses.

WELLS EDDLEMAN's RESPONSES

1. The burden of proof is not on an intervenor. I have consulted with a nonwitness expert on Eddleman 11, but withhold that identity and OBJECT to revealing it because Staff has made no showing for need of the identity of this person, nor that Staff cannot obtain information or opinions on this subject by other means. I do rely on some documents concerning Eddleman 11 and 116, principally studies by Gillen, Clough, et al, and the FSAR. See responses to Applicants' interrogatories.

2. See the papers of Gillen, Clough, et al. I'm not sure who wrote the FSAR re 116 (fire protection). The nonwitness expert is in a field x related to Eddleman 11, but Staff shows no need to know this (and probably can't) so my OBJECTION is the same as in 1 above.

DS03

3. See items referenced in 1 and 2 above re 11; for 116, I do not rely on the FSAR analysis but on its failmings, omission,s shortcomings, etc. See the contention itselmf and responses to Applicants re 116.

4. Other than as identified in the papers and documents referenced above or in responses to Applicants, I'm not sure. I also object that it is burdensome to dig out this inmformation. It's as easy for your staff to read the documents as it is for me, and you have more people.

5. N/A now, but when more documents are identified, I will. You have the FSAR and the other papers I believe, since most are NUREGs.

6. None identified yet.

7,8: Will supplement when identified, or in testimony prefiled.

9. Yes.

10. Objection as to work of nonwitness expert, to the extent it may be covered by this interrogatory. Wells Eddleman.

11. See responses to Applicants; objection as to providing all such since they are not filed in such a way as to be readily findable.

12. Yes. You have a copy of response to Applicants, and if you want more information I'll work with you to supply it informally, without the burden and time wasting of formal interrogatories.

13. Wells Eddleman. 718-A Iredell St. Durham NC 27705, 919-286-3076.

RESPONSES ON EDDLEMAN 11

50. Insulation used on large diameter conductors, e.g. wire gauges (or equivalent diameters) 6 or below.

51. Discovery required to answer. Applicants m claim there is none but I'm not sure they're right in saying this.

52. Longer periods of time than used in the material tests, particularly times extending over years, weeks, or many hours, and also times which extend over (or are comparable to) the estimated 25 to 40 year operating life of a nuclear plant, which I think may be an overestimate of n-plant operating life.

53. See the work of Gillen, Clough et al as referred to above. See also Bonzon et al as referenced in Union of Concerned Scientists petition for emergency and remedial action (supplemental petition) filed 2-7-84 with NRC, re environmental qualification.

54. Not sure pending discovery. Not sure it's relevant as long as the dose rate is less than in the tests. See Gillen, Clough et al's conclusions.

55. Assuming you have some competent scientists, I will attempt to dig this information out of the info provided by Applicants. Note in my responses to them that I think any cables or wiring exposed to radiation at Harris can be subject to this dose-rate effect of increased degradation (of various kinds) when exposed to radiation and other environmental factors such as air, oxygen, nitrogen, heat, steam etc.

56. Gamma radiation in the plant will be released (above background) from the nuclei of radioactive atoms in the plant, including those in the core, the primary coolant system, the secondary coolant, the containment atmosphere, plateout in the containment at any point, including on cables or wiring or the conduits or trays or supports holding or near or touching them, and from filters, decay tanks, and from radioactive material circulated to or released into other places at Harris, e.g. the auxiliary building. See responses to Applicants for more details.

57. Analysis not performed yet. More information coming on discovery will aid in this analysis. Attenuation by shielding could also result in greater proportional degradation by reducing radiation dose rate, so that the degradation per rad of radiation received is more. Also, radiation not fully absorbed in the insulation could have damaging effects, and I believe it does.

58. The degradation is a continuous process but I have not been able to yet quantify the time of breakdown. Its risk is there, especially

under accident or other stressful conditions which could lead to breakdown of insulation, and also it is there with time as degradation increases.

59. See response to 53, and info referred to therein.

There is no interrogatory 60.

61. Anything above zero would begin the effect. Radiation levels, not reactor power levels, are most relevant.

62. Impaired signal transmission, erroneous signal forms or extraneous signals, short circuits, failure to transmit required power or information, circuit failure.[63] Safety functions related to each such cable, wire or part. Impairment could range from modest to total. This is not easy to quantify for each cable, and I suspect that the degradation of the total system's reliability and performance will be the greatest problem, not just the failure of one or more parts (though that could have serious consequences depending on the parts: e.g. if it's wiring to the SCRAM systems or power supplies thereto, you could have ATWS and lose eastern North Carolina and then some

64. See responses to Applicants.

65. Try the NRC PDR or any good technical library. I believe some copies of technical articles of theirs are in the Duke and NC STate U. engineering and/or chemistry libraries.

66. Discovery request pending. Applicants seem to say no. I don't know.

67. Response is not Yes at this time.

RESPONSES ON 45

68. OBJECTION-- question is vague and does not identify the requirements. Do they mean rules, regulations, practices? What? ANSWER: See responses to Applicants.

69,70: See answer to 68.

71. No citations are given in Eddleman 45. See responses to Applicants re relevant NUREGs. Analysis not fully complete.

RESPONSES ON 67

72. I have seen the bill enacted by North Carolina. I don't know about SC but I believe SC has enacted a similar bill.

73. I don't know. Harris LLRW shipments could be foreclosed by violation of SC regulations, NRC regulations, or by executive order. See Applicants' discovery documents re their LLRW shipment violations in SC.

RESPONSES ON 116.

74. Analysis incomplete. Waiting on discovery documents and time to finish it. FSAR has been revised.

75. As far as the FSAR when I reviewed it last re this, all of them, except as identified otherwise in past discovery responses.

76. The contention does not require me to prove that things will be impaired, but the function of almost any item of electrical equipment can be impaired by fire e.g. from thermal effects on resistances, degradation or burning of insulation, from shorts or changes in resistivity due to smoke or smoke particles in or on it (See e.g. Bonzon et al as cited by UCS in 2-7-84 supplemental petition for emergency and remedial action on enviro. qualification), from spurious signals induced by heat or smoke or warpage of or thexrmal gradients across or in or of components, from distortion of signals due to any of the above or combinations of thxesex and other factors, from quantum effects in semiconductors and other microelectronic equipment induced by heat or caused or contributed to by short circuits, power surges, power shutoff, waveform distortion, spurious or distorted signals, etc.; failure to transmit needed power or signals to either operate safety-related equipment, or to monitor the condition of systems, equipment and radioactive releases in or from Harris; degradation of mechanical equipment or things including combustion, melting, loss of strength or other vital mechanical properties

e.g. sealing, insulation, isolation of components.

77. Contention 116 was premised on the documents identified 5-14-82 and the 6-28-82 amendments. Its basis is those documents. I'm not sure what you mean by "premised". I am going to review some additional documents; see also responses to Applicants.

78. For example, Harris uses ionization smoke detectors, whereas photoelectric detectors would be better at detecting smoldering fires, e.g. in wiring, cables, debris or otherwise. The simple meeting of a standard does not guarantee actual performance. Flame spread tests are notorious for their inaccuracy in this regard. Fire barrier tests and etc will be investigated when discovery info and documents both available. Analysis is incomplete now.

79. See responses to Applicants. Analysis incomplete.

78 (second) (there is no interrogatory 80, but 78(second) appears after 79) This may not be clear, but it's CP&L's way of doing things.

81. Review not anywhere near incomplete. This is 4 extensive volumes and I haven't had time to go through it comprehensively.

82. Define requirements, how about it? Analysis incomplete, see 81.

PRODUCTION OF DOCUMENTS. Staff asks only for documents re 11 and 116 for some reason, but documents re the above will be provided for inspection and copying where identified and not in the possession of NRC Staff or NRC.

ATTEST

The above are true to the best of my present knowledge and belief, 4-19-84.

Wells Eddleman

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Shearon Harris Nuclear Power Plant, Unit 1) O.L.

CERTIFICATEOF SERVICE

I hereby certify that copies of Joint Intervenors and Wells Eddleman's Responses to NRC STaff Interrogatories

HAVE been served this 19 day of April 1984, by deposit in the US Mail, first-class postage prepaid, upon all parties whose names are listed below, except those whose names are marked with an asterisk, for whom service was accomplished by including a copy of 4-17-84 Joint Intervenors postcard to Board re Joint 7 ngegotiations re protective order (Board, Applicants and NRC D&S already served).

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