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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSIONBEFORE THE ATOMIC SAFETY AND LICENSING BOARDOFFICE OF SECRETARY  
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In the Matter of	)	
	)	
DUKE POWER COMPANY, <u>et al.</u>	)	Docket Nos. 50-413
	)	50-414
(Catawba Nuclear Station,	)	
Units 1 and 2)	)	

APPLICANTS' INTERROGATORIES AND REQUESTS  
TO PRODUCE DOCUMENTS TO CAROLINA ENVIRONMENTAL  
STUDY GROUP AND PALMETTO ALLIANCE ON BOARD CONTENTION  
CONCERNING CERTAIN DIESEL GENERATOR PROBLEMS

Pursuant to 10 C.F.R. §§ 2.740b and 2.741 and in accordance with the Licensing Board's Order dated February 27, 1984, and the expedited hearing schedule established by the Board contained therein, Duke Power Company, et al. ("Applicants") hereby serve Applicants' Interrogatories and Requests to Produce on the Board Contention Concerning Certain Diesel Generator Problems upon Intervenors, Carolina Environmental Study Group (CESG) and Palmetto Alliance (PA). These interrogatories involve the Board contention on reliability of the Catawba diesel generators in light of problems which Applicants have reported to the Board.

Each interrogatory shall be answered in writing, under oath or affirmation, and include all pertinent information known to CESG or PA, their officers, directors or members as well as any pertinent information known to their employees, advisors or counsel. Each request to produce applies to pertinent documents

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which are in the possession, custody or control of CESC or PA, their officers, directors or members as well as their employees, advisors or counsel. In answering each interrogatory and responding to each request, please recite the interrogatory or request preceding each answer or response. Also, please identify the person providing each answer or response.

These interrogatories and requests shall be continuing in nature. Thus, any time CESC or PA obtains information which renders any previous response incorrect or indicates that a response was incorrect when made, CESC or PA should supplement its previous response to the appropriate interrogatory or request to produce. CESC or PA should also supplement its responses as necessary with respect to identification of each person expected to be called at the hearing as an expert witness, the subject matter of his or her testimony, and the substance of that testimony. Applicants are particularly interested in the names and areas of expertise of CESC's or PA's witnesses, if any. Each identification of such witnesses is necessary if Applicants are to be afforded adequate time to depose them.

The term "document" shall include any writings, drawings, graphs, charts, photographs, and other data compilations from which information can be obtained. We request that at a date or dates to be agreed upon, CESC or PA make available for inspection and copying, all documents subject to the requests set forth below.

REQUESTS FOR DOCUMENTS

Pursuant to 10 C.F.R. § 2.741, Applicants request CESC and PA by and through their attorneys to make available for inspection and copying at a time and location to be designated, any and all documents, of whatsoever description, identified in the responses to the Applicants' interrogatories below, including but not limited to:

- (1) any written record of any oral communication between or among Intervenors, their advisors, consultants, agents, attorneys and/or any other persons, including but not limited to the NRC Staff, the Applicants and their advisors, consultants, agents, attorneys and/or any other persons; and
- (2) any documents, correspondence, letter, memorandum, notes, diagrams, reports, charts, photographs, or any other writing of whatsoever description, including but not limited to work papers, prior drafts, and notes of meetings.

If CESC or PA maintains some documents should not be made available for inspection, it should specify the documents and explain why such are not being made available. This request extends to any such document, described above, in the possession of CESC or PA, its advisors, consultants, agents or attorneys.

INTERROGATORIES

Pursuant to 10 C.F.R. § 2.740b, the Applicants request CESC or PA, by and through its attorneys, to answer separately and fully in writing under oath or affirmation, by persons having knowledge of the information requested, the following general and specific interrogatories.

A. General Interrogatories

The following interrogatories apply to the diesel generator contention admitted as an issue in controversy in this proceeding

1. Please state the full name, address, occupation and employer of each person answering the interrogatories and designate the interrogatory or the part thereof he or she answered.
2. Please identify each and every person whom you are considering to call as a witness at the hearing in this matter on this contention, and with respect to each such person, please:
  - a. State the substance of the facts and opinions to which the witness is expected to testify;
  - b. Give a summary of the grounds for each opinion; and

- c. Describe the witness' educational and professional background.
3. Is your position on the contention based on one or more calculations? If so:
- a. Describe each calculation and identify any document setting forth such calculation.
  - b. Who performed each calculation?
  - c. When was each calculation performed?
  - d. Describe each parameter used in such calculation and each value assigned to the parameter, and describe the source of your data.
  - e. What are the results of each calculation?
  - f. Explain in detail how each calculation provides a basis for the contention.
4. Is your position on the contention based on one or more experiments or tests? If so:
- a. Describe each experiment or test and identify any document setting forth such experiment or test.
  - b. Who performed each experiment or test?
  - c. When was such experiment or test performed?
  - d. Describe each parameter or variable measured in such experiment or test.

- e. What are the results of each experiment or test?
  - f. Explain in detail how each experiment or test provides a basis for the contention.
5. Is your position on the contention based upon conversations, consultations, correspondence or any other type of communication with one or more individuals? If so,
- a. Identify by name and address each such individual.
  - b. State the educational and professional background of each such individual, including occupation and institutional affiliations.
  - c. Describe the nature of each , communication with such individual, when it occurred, and identify all other individuals involved.
  - d. Describe the information received from such individuals and explain how it provides a basis for the issue.



- e. Identify each letter, memorandum, tape, note or other record related to each conversation, consultation, correspondence, or other communication with such individual.
6. Is your position on the contention based upon one or more NRC Staff documents? If so, please identify such documents and make them available for inspection and copying.

B. Specific Interrogatories

Questions 1 to 58 are directed to the Transamerica Delaval, Inc. ("TDI") DSRV-16-4 model diesel generators installed at Catawba.

1. What is the lube oil prelube line?
2. What is the function of the lube oil prelube line?
3. When is the lube oil prelube line in operation?
4. What caused the lube oil prelube line to fail?
5. What fixes or modifications do you believe should be undertaken for the lube oil prelube line and why?  
Describe each such fix or modification in detail and provide the basis for your conclusion.
6. What is the effect of the rupture of the lube oil prelube line on the operation of the Catawba diesel generator?

7. What is the effect of the rupture of the lube oil prelube line on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
8. What failures, if any, of lube oil prelube lines on other TDI diesel generators are applicable to the Catawba diesel generators? State the basis for your belief as to such applicability.
9. Does a trial run of a specified number of hours at 100% load without a failure of the lube oil prelube line demonstrate that this problem has been solved? If your answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe is necessary to demonstrate the reliability of the lube oil prelube line and explain the bases of such time limit.
10. What is the turbocharger lube oil drain line?
11. What is the function of the turbocharger lube oil drain line?



12. When is the turbocharger lube oil drain line in operation?
13. What caused the turbocharger lube oil drain line to leak?
14. What fixes or modifications do you believe should be undertaken for the turbocharger lube oil drain line and why? Describe each such fix or modification in detail and provide the basis for your conclusion.
15. What is the effect of the leakage from the turbocharger lube oil drain line on the operation of the Catawba diesel generator?
16. What is the effect of the leakage from the turbocharger lube oil drain line on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
17. What failures, if any, of the turbocharger lube oil drain lines on other TDI diesel generators are applicable to the Catawba diesel generators? State the basis for your belief as to such applicability.

18. Does a trial run of a specified number of hours at 100% load without a failure of the turbocharger lube oil drain line demonstrate that this problem has been solved? If your answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe is necessary to demonstrate the reliability of the turbocharger lube oil drain line and explain the bases of such time limit.
19. What is the design relationship of the cylinder head and water jacket on the Catawba diesel generator?
20. What do you believe to be the cause of the cylinder head crack in the Catawba diesel generator?
21. What fixes or modifications do you believe should be undertaken for the Catawba diesel generator cylinder head? Describe each such fix or modification in detail and provide the basis for your conclusion.
22. Given a jacket water leakage rate of approximately 5 gallons/day, what is the effect of the cylinder head crack on the operation of the Catawba diesel generator?
23. Given a jacket water leakage rate of approximately 5 gallons/day, what is the effect of the cylinder head crack on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its

requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.

24. What cracking, if any, of cylinder heads at other TDI diesel generators is applicable to the Catawba diesel generator? State the basis for your belief as to such applicability.
25. Does a trial run of a specified number of hours at 100% load without a failure of the cylinder head demonstrate that this problem has been solved? If your answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe is necessary to demonstrate the reliability of the cylinder head and explain the bases of such time limit.
26. What is the fuel oil injection pump nozzle?
27. What is the function of the fuel oil injection pump nozzle?
28. When is the fuel oil injection pump in operation?
29. What caused the fuel oil injection pump nozzle to rupture?

30. What fixes or modifications do you believe should be undertaken for the fuel oil injection pump nozzle and why? Describe each such fix or modification in detail and provide the basis for your conclusion.
31. What is the effect of the rupture of the fuel oil injection pump nozzle on the operation of the Catawba diesel generator?
32. What is the effect of the rupture of the fuel oil injection pump nozzle on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
33. What failures, if any, of fuel oil injection pump nozzles on other TDI diesel generators are applicable to the Catawba diesel generator? State the basis for your belief in such applicability.
34. Does a trial run of a specified number of hours at 100% load without a failure of any fuel oil injection pump nozzle demonstrate that this problem has been solved? If your answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe

is necessary to demonstrate the reliability of the fuel oil injection pump nozzle and explain the bases of such time limit.

35. During an emergency situation, is it possible for the diesel generator to continue to operate with the linkage to the ruptured injection pump disconnected and without detrimental effects to the diesel generator's operation? If your answer is in the negative, state the basis for your conclusion. Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
36. What are the pushrods?
37. What is the function of the pushrods?
38. When are the pushrods in operation?
39. What caused the pushrods to have cracks in the vicinity of the ball to tube welded joint?
40. What fixes or modifications do you believe should be undertaken for the pushrod and why? Describe each such fix or modification in detail and provide the basis for your conclusion.
41. What is the effect of the crack in the pushrod on the operation of the Catawba diesel generator?

42. What is the effect of the crack in the pushrod on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
43. What failures, if any, of pushrods in other TDI diesel generators are applicable to the Catawba diesel generators? State the basis for your belief as to such applicability.
44. Do you agree that the pushrod cracks are due to welding incompatibility between the pushrod ball and the pushrod tube?
- a. If your answer is in the affirmative, do you contend that either welding standards or design standards were violated? If so, identify any such standards which you believe are applicable and were violated. Identify and specify with particularity the bases for your response, and explain in detail the bases for your response.



- b. If your answer is in the negative, explain in detail the bases for your conclusion, citing any applicable design or welding standards and explaining why you believe any such standard should apply.
45. Given that the connector pushrods for which weld cracks developed consist of a tubular steel body fillet welded to carbon steel ball bearings, given that for pushrods of this design weld defects have resulted from lack of penetration of the fillet weld with the tubing, given that destructive examination of the ball and weld of such defective pushrod revealed additional cracks in the heat-affected-zone of the ball bearing, and given that the welds exhibited a lack of penetration and slag inclusions in the crevice area behind the weld, do you agree with the metallurgical conclusion that the ball material in such pushrods is difficult to weld? If your answer is in the negative, state and explain the bases for your conclusion.
46. Given the design characteristics of the pushrods as described in question 45, do you agree that there is a design deficiency and that the design deficiency which has resulted in the cracked welds has been identified? If your answer is in the negative, state the basis for

your conclusion and explain with particularity what you believe to be the design deficiency, if any, in the pushrods of such design.

47. Given a connector pushrod design ("new design") consisting of a tubular steel shaft which is friction welded to cylinders of alloy steel on each end, following which such ends are machine finished and hardened, do you agree that pushrods of such design and fabrication will not be susceptible to the weld cracking which has been experienced by pushrods of the design described in question 45? If your answer is in the negative, state the basis for your conclusion, explaining why pushrods of such new design and fabrication are susceptible to such weld cracking.
48. Does a trial run of a specified number of hours at 100% load without a failure of the pushrods demonstrate that the problem has been solved? If your answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe is necessary to demonstrate the reliability of the pushrods and explain the bases of such time limit.

49. Do you agree that a decrease in turbocharger lube oil pressure when the diesel generator is operated under load is an indication of excessive bearing wear? If your answer is in the negative, state the basis for your conclusion.
50. What is the cause of excessive turbocharger bearing wear?
51. How is the turbocharger lubricated?
52. What would the effect of turbocharger bearing failure be on the operation of the Catawba diesel generator?
53. What would the effect of turbocharger bearing failure be on the operation of the Catawba diesel generator during an emergency? Do you believe such a failure would prevent the diesel generator from performing its requisite task during an emergency? If so, explain how such a failure would prevent the diesel generator from performing its task during an emergency and provide bases for your conclusion.
54. What failures, if any, of the turbocharger bearings in other TDI diesel generators are applicable to the Catawba diesel generators? State the basis for your belief as to such applicability.
55. Does a trial run of a specified number of hours at 100% load without a failure of the turbocharger bearing demonstrate that the problem has been solved? If your

answer is in the negative, state and explain the basis for your conclusion. If your answer is in the affirmative, state the time limit, if any, you believe is necessary to demonstrate the reliability of the turbocharger bearings and explain the bases of such time limit.

56. What fixes or modifications do you believe should be undertaken for the turbocharger bearing lubrication system and why? Describe each such fix or modification in detail and provide the basis for your conclusion.
57. Do you agree that the diesel generator operability and reliability would not have been compromised by a turbocharger bearing failure? If your answer is in the negative, state the basis for your conclusion.
58. Given that the Catawba diesel generator dedicated loads during an emergency situation are approximately 75% of the diesel's load capability and given further that a normally aspirated diesel (without turbocharger) can handle that 75% load, do you agree that the Catawba diesel generator dedicated loads during an emergency situation could be handled with either one or no

turbocharger functioning? If your answer is in the negative, state the basis for your conclusion.

Respectfully submitted,

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF GENERAL  
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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

the Matter of )  
 )  
DUKE POWER COMPANY, et al. ) Docket Nos. 50-413  
 ) 50-414  
Savannah Nuclear Station, )  
Units 1 and 2) )

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Interrogatories  
Requests to Produce Documents to Carolina Environmental Study  
Group and Palmetto Alliance on Board Contention Concerning  
Certain Diesel Generator Problems" in the above captioned matter  
has been served upon the following by deposit in the United  
States mail this 19th day of March, 1984.

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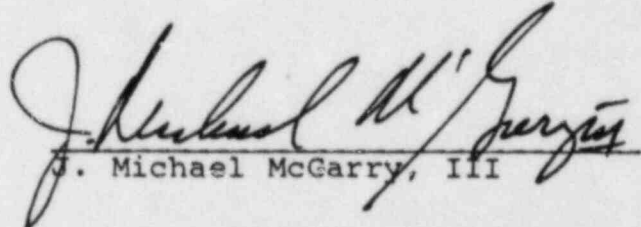
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