

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
DUKE POWER COMPANY, et al.)
(Catawba Nuclear Station,)
Units 1 and 2))

Docket Nos. 50-413
50-414

'82 MAY 10 P1
emp

CESG'S RESPONSE TO APPLICANT'S FIRST SET OF INTERROGATORIES

CESG herewith responds to Applicant's first set of interrogatories and requests to produce, dated April 9, 1982, and concerned with CESG contentions 13 and 17.

Specific Interrogatories

CESG - Contention 13



1. What do you mean by the term "irregularities"?

Depositing metal in a weld before the specified preheat temperature had been reached, or the specified interpass temperature.

2. Identify each and every "irregularity" which is the subject of this question.

This is the only irregularity.

3. For each "irregularity" identified in your response to Interrogatory 2, please specify the location, time of occurrence and person or persons who were involved.

I do not have specific dates, times, nor identities of persons.

4. When do you contend such "irregularities" occurred?

During the period in which safety related welds were being made on unit 1.

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5. What do you contend was the cause of such "irregularities"?

The supervisor's insistence that the welder not wait until the specified preheat temperature was reached.

6. What are your bases for your responses to Interrogatories 1-5? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

A conversation with a colleague who is an engineer. The conversation took place, approximately, in November, 1981.

7. What "welding practices" are the subject of this Contention and what person or persons do you contend engaged in such "welding practices"?

See answers to 1 and 5 foregoing. The welder and his supervisor were involved in the practices.

8. Specify when such "welding practices" occurred.

Over an appreciable period of time during the construction of unit 1.

9. Where are the proper "welding practices" established?

The proper practices are established in the NRC mandated ASME Boiler and Pressure Vessel Code, Section IX, titled Welding Qualifications; and ANSI B31.7, "Nuclear Power Piping".

10. Are the welding practices which are the subject of this Contention set forth in particular procedures?

Those having to do with preheat temperature and minimum interpass temperature.

11. If your response to Interrogatory 10 is in the affirmative, please specify the particular procedures which govern the "welding practices" which are the subject of this Contention.

I am not as yet in possession of sufficient facts to reply.

12. For each of the procedures identified in your response to Interrogatory 11, set forth the specific problems which you contend occurred.

I contend that the welding practices referred to fail to meet the relevant standards, that being the judgment of the welder involved.

13. Do you contend that the "welding practices" which are the subject of this Contention fail to comply with certain standards?

Yes

14. If your response to Interrogatory 13 is in the affirmative, please identify the particular standards which are the subject of this Contention.

The standard is a temperature. I do not presently know the specified temperature.

15. For each of the standards identified in your response to Interrogatory 14, please specify the particular concern which you have concerning "welding practices".

If the standards are not met the weld will presumably be deficient in some functional characteristic or characteristics. This would include, but not be limited to, tensile minimum properties as listed in the ASME B&PV Code, Section IX, Table Q-11.1.

16. What are your bases for your responses to Interrogatories 7 through 15? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

The bases for response are identified in responses 7 through 15 foregoing.

17. Identify each specific "safety related system" which is the subject of this Contention.

I am not able at present to identify the specific safety related systems.

18. Specify the particular "welding practices" which you contend were performed on each of the "safety related systems" identified in your response to Interrogatory 17.

The answer is apparent from foregoing responses.

19. Specify for each of the "welding practices" associated with the "safety related systems" identified in your response to Interrogatory 18 the particular concerns which you have regarding the adequacy of such practices.

See response to 15.

20. For each of the concerns identified in your response to Interrogatory 19, specify the time at which such concerns (i.e., problem) occurred.

See response to 8.

21. For each concern identified in your response to Interrogatory 19, identify the person or persons who were involved and the situation giving rise to your concern.

See response to 7.

22. For each concern identified in your response to Interrogatory 19, specify the cause which you attribute to such concerns.

The "cause to [sic] which" I attribute my concerns is the failure to carry out the relevant specified procedure.

23. What are your bases for your responses to Interrogatories 15 through 22? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

See response to 16.

24. Do you contend that the Applicants have not identified all "irregularities" in "welding practices" pursuant to their own inspection procedures?

Yes.

25. If your response to Interrogatory 24 is in the affirmative, please specify the "irregularities" which you contend Applicants have not identified.

Supervisory direction of the welder to ignore preheat and interpass temperature requirements.

26. For each of the "irregularities" identified in your response to Interrogatory 25, answer each of the Interrogatories 1-5 above if you have not already done so.

No further reponse is required.

27. If your response to Interrogatory 24 is in the negative, please specify precisely what your concern is with respect to "welding practices".

Repetitive. See response to 15.

28. Do you contend that the NRC Staff has not identified the particular "welding practices" with which this Contention is concerned?

To the best of my knowledge the NRC is unaware of this pattern of practices.

29. If your response to Interrogatory 28 is in the affirmative, please identify those instances of "welding practices" which you contend the NRC Staff does not identify.

Those instances in which a supervisor instructed a welder to begin the weld before the specified preheat or minimum interpass temperature was reached.

30. For each of those instances "welding practices" identified in your response to Interrogatory 29, please answer Interrogatories 7 through 15 if you have not already done so for those particular practices.

No further response required.

31. If your response to Interrogatory 28 is in the negative, please explain exactly what your concern is with respect to "welding practices".

See response to 15.

32. Do you contend that Applicants have not corrected all "irregularities" in welding practices"? If so, please explain, identifying the areas of the plant here such welds remain uncorrected.

Applicant's have not corrected these irregularities. Applicant's supervisory employee was the immediate cause. The defect is not likely to be revealed by nondestructive tests, but rather by tensile tests which cannot be performed without destruction of the work product.

33. What are your bases for your responses to Interrogatories 24 through 32? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

See response to 6. The last sentence in the response to 32 is based on the writer's experience with testing.

34. What do you mean by the term "endanger"?

A weld which fails at a stress less than design basis or which corrodes increases the probability of a LOCA. The TMI experience involved a sequence of unanticipated events which led to serious consequences including appreciable releases of I-131 and Kryptons. Such radioactive releases as a consequence of equipment failure endanger the health and safety of the public.

35. Specify the consequences which you allege will follow from each "irregularity" in "welding practices" which are the subject of this Contention.

See response to 34. It is not possible to be rigidly specific absent a knowledge of the particular welds involved and absent a prescience which would indicate the combination of conditions and concatenation of events in which failure of the particular welds would play a determinative role. What can be said with certainty is that if the temperature specifications are relevant and significant, reflecting cumulative engineering judgment and experience, and have been made an NRC requirement, departure from them increases the likelihood of an accidental failure. The potential seriousness of the consequences does not require argument in this forum.

36. For each of the consequences identified in your response to Interrogatory 35, specify the particular "safety related system" involved in such a scenario.

See response to 35.

37. Do you contend that the procedures applicable to welding at the Catawba facility are not in compliance with applicable NRC regulations?

Yes

38. If your response to any of the Interrogatory 37 is in the affirmative, please specify for your particular concern and specify the particular NRC requirements which you contend have not been satisfied.

See responses to 9, 15, 34 and 35.

39. What are your bases for your responses to Interrogatories 34 through 38? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

See response to 39. The list of documents, testimonies, and oral statements on which these judgments are based is extensive and acquired over a decade. It is beyond my capacity to recall all such. As to legal requirements, see response to 9.

CESG - Contention 17

1. What is the basis for this Contention?

Corbicula are known to be present in the waters of Lake Wylie, to proliferate in moving streams, and to clog water passageways. There is, to my knowledge, no discussion of the effects of Corbicula on the performance of the Catawba water cooling system, secondary consequences of an infestation, nor means of preventing such infestation.

2. Please identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your response to Interrogatory 1.

The EIS in the discussion of aquatic ecology, refers to Corbicula, citing Applicant's list of benthic species (ER, Tables 4.1-12 and 4.1-13). The effects of condenser tube clogging at a manufacturing plant downstream from Catawba are known to me through discussions with persons having first hand involvement. Shutdowns to deal with Corbicula infestations will adversely affect the cost/benefit balance of the plant, vis-a-vis NEPA considerations. An increased rate in thermal cycling of the plant, and possible forced shutdowns have safety significance.

3. What are the "effects" of Corbicula which you contend will occur?

The primary effect is discussed in the EIS: ". . .the Asiatic clam (Corbicula manilensis) is the largest component of the biomass both in the lake [Wylie] as a whole and at the site. Corbicula is a filter feeder, removing plankton and detritus from the water mass. It is a major fouling organism throughout the world, settling in and clogging water intake pipes, especially during its larval stage."

4. What do you contend are the consequences of the "effects"?

Unless growth of the organism is inhibited I would expect these primary consequences among others: clogging of cooled water pipes, clogging of condenser tubes, interference with action of pumps, clogging of cooling tower spray nozzles, clogging of tower drains. In turn slowed flow rates and reduced heat transfer in the condenser will reduce the cooling capacity of the condenser. This will reduce the design capacity of accepting 40% of full core heat on turbine bypass and can lead to overpressurization of both the secondary and primary systems with an increased potential for system failure and coolant loss. This increases the likelihood of TMI type and related failures.

5. How do you contend such "effects" will affect "performance of the cooling tower system"?

As in 4, foregoing, clogging will reduce flow rate, decrease heat exchange rate in the condenser, and may interfere with pump performance.

6. What do you contend are the components of the "cooling tower system" which will be affected by Corbicula?

See responses to 4 and 5.

7. For each of the components identified in your response to Interrogatory 6, specify the particular "effect" which you contend Corbicula will have.

See response to 4.

8. What are your bases for your responses to Interrogatories 3 through 7? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

The EIS, response 3, provides the basis for the fouling, clogging effects. The description of the cooling system, FSAR 10.4.5, provides a description of the tower cooling water system. The FSAR 10.4.1.1 indicates that the main condensers are designed to condense up to 40 % of the full load main steam flow bypassed directly to the condenser by the turbine bypass system. The dumping capacity of the turbine bypass system is described in 10.4.4.1.

A safety evaluation is given in 10.4.4.3. However the draft SER notes that Applicant has not provided the capability to operate the power-operated atmospheric relief valves remotely from the control room on a loss of offsite power condition (3rd unnumbered page under 10.3). Staff concludes in the draft SER "that the requirements of General Design Criterion 34 and the guidelines of Branch Technical Position RSB 5-1 are [not] met until satisfactory resolution of our concern for loss of control room operability of the power operated atmospheric relief valves during a loss of offsite power and SSE. . ." (id. 4th unnumbered page).

9. Do you contend there are any "effects" which have an adverse impact on the environment?

The failure to be able to vent sufficient steam, 8 foregoing, will lead to temperature and pressure rises in both the primary and the secondary systems. Such an event will increase the likelihood of a LOCA or, because the pressure differential is increased, a steam generator tube rupture.

10. If your response to Interrogatory 9 is in the affirmative, please specify all such "effects."

It is not possible to specify the precise effect of a LOCA but rather to note that there is possible, depending on interacting circumstances such as a loss of offsite power, a spectrum of possible effects ranging from a release which is completely contained to a core exposure with the possible consequences of hydrogen release, combustion, containment rupture, meltdown. On the secondary side steam generator tube failure combined with atmospheric venting would see the release of coolant system radioactive volatiles including iodine, noble gases, and tritium. The magnitude of this release is not predictable. The effect would, of course, be, in part, determined by the amount of radioactive material released.

11. Do you contend that any "effects" identified in your response to Interrogatory 10 tip the cost-benefit balance against licensing?

Unless the Commission's SECY-82-8A is reversed by a higher jurisdiction it appears that NEPA balance considerations would not be at issue in this proceeding. This would appear to be the case because cost-benefit is considered in the context of alternatives, Board's Memorandum and Order of March 5, 1982, re rejection of CESG 1, 5, 6, and 12.

12. If your response to Interrogatory 11 is in the affirmative, please specify precisely what the "costs" which you contend tip the environmental cost-benefit balance against operation.

See reponse to 11.

13. What are your bases for your responses to Interrogatories 8 through 12? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

See responses 8, 9 and 10.

14. What is the extent of such infestation which you contend exists?

No infestation exists in the Catawba cooling system as it is not operative. However a dense infestation exists at the site, EIS 2-36 and, based on the rapidity of proliferation of Corbicula and its worldwide distribution, id., it would be reasonable to expect it to proliferate in the system unless effective measures were taken to prevent it.

15. Do you contend such infestation is likely to extend to the Catawba site?

See response to 14.

16. Do you contend that such "effects" will be detectable?

Yes.

17. Do you contend that the "effects" of Corbicula are irreversible once they are detected?

No. But a qualification must be added. Cleanup is not without cost or the expenditure of time.

18. If your response to Interrogatory 17 is in the affirmative, how do you explain that other facilities have adequately dealt with Corbicula?

We do not contend that the effects of Corbicula are irreversible, response 17. We do not know or concede that other plants have dealt with Corbicula without significant cost.

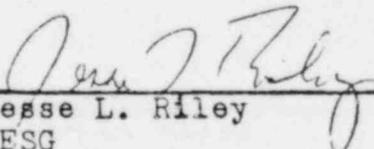
19. If your response to Interrogatory 17 is in the negative, what concerns can you have for "the performance of the cooling tower system."

There is no assurance afforded by the ER or the FSAR that Applicant is aware of the problem or has made appropriate provisions for dealing with it, Board's M&O, p.27. We have been told that the calcareous shells of Corbicula adhere strongly to condenser tubes. We have seen no evidence as to the effect on heat flux through tubes once infested and then cleaned. The description of the vertical disposition of the condenser tubes in a shell in which vapor flow is horizontal raises questions about accessibility to mechanical cleanout and vulnerability to a chemical procedure if, indeed, there is a satisfactory chemical procedure. The question of the possibility of cleanout does not address the question of the downtime it requires.

20. What are your bases for your responses to Interrogatories 13 through 18? Identify all documents, testimony or oral statements by any person and legal requirements on which you rely in support of your position.

We have seen no testimony. The bases for responses have been provided in earlier responses, viz. 2, and drawing conclusions from straightforward premises as in 3, 4, 8, and 19.

Respectfully provided,



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May 6, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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Units 1 and 2))

AFFIRMATION OF SERVICE

I hereby affirm that copies of "CESG'S RESPONSE TO APPLICANT'S FIRST SET OF INTERROGATORIES" in the above captioned matter have been served on the following by deposit in the United States mail this sixth day of May, 1982:

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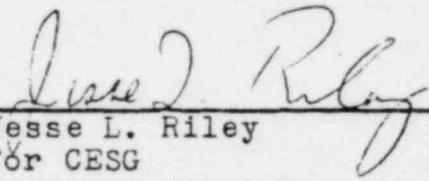
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