April 7, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:
Marshall E. Miller, Chairman
Gustave A. Linenberger, Jr.
Dr. Cadet H. Hand, Jr.

In the Matter of UNITED STATES DEPARTMENT OF ENERGY PROJECT MANAGEMENT CORPORATION TENNESSEE VALLEY AUTHORITY (Clinch River Breeder Reactor Plant)	Docket No. 50-537

NATURAL RESOURCES DEFENSE COUNCIL, INC.
AND THE SIERRA CLUB
FIRST SET OF CONSTRUCTION PERMIT INTERROGATORIES
AND REQUEST TO PRODUCE TO STAFF

Pursuant to 10 CFR § 2.740b, and in accordance with the Board's Construction Permit Scheduling Order of March 29, 1983, Intervenors, Natural Resources Defense Council, Inc. and the Sierra Club, submit the following interrogatories, to be answered fully, in writing and under oath, by one or more officers or employees of the Staff who has personal knowledge thereof or is the closest to having personal knowledge thereof. If the interrogatories are answered by more than one person, whether or

not he or she verified the answers, and whether or not he or she is an officer or employee of the Staff, such person's name and title should be set forth together with an identification of which interrogatories he or she is responsible for.

Each answer to an interrogatory shall be preceded by a copy of the particular question to which the answer is responding. Each question is instructed to be answered in six parts, as follows.

Answer to Question _____:

(a) Provide the direct answer to the question.

(b) Identify all documents and studies, and the particular parts thereof, relied upon by the Staff, now or in the past, which serve as the basis for the answer. In lieu thereof, at the Staff's option, a copy of such document and study may be attached to the answer.

(c) Identify principal documents and studies, and the particular parts thereof, specifically examined by not cited in (b). In lieu thereof, at the Staff's option, a copy of each such document and study may be attached to the answer.

(d) Identify by name, title and affiliation the primary Staff employee(s) or consultant(s) who provided the answer to the question.

(e) Explain whether the Staff is presently engaged in or intends to engage in any further, ongoing research program which may affect the Staff's answer. Failure to

provide such an answer means that the Staff does not intend to rely upon the existence of any such research at the construction permit hearings on the CRBR.

(f) Identify the expert(s), if any, which the Staff intends to have testify on the subject matter questioned, and state the qualifications of each such expert. This answer may be provided for each separate question or for a group of related questions. This answer need not be provided until the Staff has in fact identified the expert(s) in question or determined that no expert will testify, as long as such answer provides reasonable notice to Intervenors.

As used herein, "documents" include, but are not limited to papers, photographs, criteria, standards of review, recordings, memoranda, books, records, writings, letters, telegrams, mailgrams, correspondence, notes and minutes of meetings or of conversations or of phone calls, interoffice, intra-agency or interagency memoranda or written communications of any nature, recordings of conversations either in writing or upon any mechanical or electronic or electrical recording devices, notes, exhibits, appraisals, work papers, reports, studies, opinions, surveys, evaluations, projections, hypotheses, formulas, designs, drawings, manuals, notebooks, worksheets, contracts, agreements, letter agreements, diaries, desk calendars, charts, schedules, appointment books, punchcards and computer printout sheets,

computer data, telecopier transmissions, directives, proposals, and all drafts, revisions, and differing versions (whether formal or informal) of any of the foregoing, and also all copies of any of the foregoing which differ in any way (including handwritten notations or other written or printed matter of any nature) from the original.

INTERROGATORIES

1. Does the Staff believe a CDA, or core meltdown, at CRBR is more likely, less likely or of comparable probability to a CDA, or core meltdown in an LWR? Please explain fully the basis for the Staff's answer.

2. Does the Staff believe the consequences of a core meltdown in CRBR are less, greater, or comparable to the consequences of a core meltdown in an LWR? Please explain fully the basis for the Staff's answer.

3. Does the Staff define "CDA" anywhere in its CP review or in the SER in a manner different from the definition in the footnote on p. A.1-1 of the SER? If so, please explain.

4. Identify precisely where in Appendix C of the SER the Staff describes the reliability objective of each of the two RSSs (see last carryover sentence on p. A.1-1).

5. Is there any precedent in the LWR program for the intentional venting of the containment atmosphere to accomodate CDAs or core melt, i.e. as a means of preventing containment failure caused by overpressurization? If so, describe the procedure fully.

6. What triggered the Staff's reconsideration of the criterion that venting may not occur prior to 24 hours after accident initiation?

a. What effect, if any, did recent (since 1977) knowledge regarding the possibility that the CRBR design might not meet the 24-hour criterion have on reconsideration and relaxation of the criterion?

b. Provide a chronology of the significant events related to the Staff's reevaluation of the 24-hour criterion and the Staff's analysis of the capability of the CRBR design to meet the criterion.

7. What constitutes "adequate and reliable information" for making a decision on whether to vent (SER, p. A.1-4)?

a. Identify the specific criteria used by the Staff to judge the adequacy of such a plan.

8. What constitutes an "adequate protection plan" (SER, p. A.1-4)?

a. Identify the specific criteria used by the Staff to judge the adequacy of such a plan.

b. What is the objective of the protection plan, in terms of limiting radiological exposure? Be as quantitative as possible.

9. In assessing whether doses exceed 10 CFR 100, what precedent exists in the LWR program:

a. for using conservative assumptions in the evaluation?

b. for using realistic assumptions in the evaluation (SER, p. A.1-5, ¶3)?

10. Quantify what the Staff mean by "significantly" in ¶4, p. A.1-5 of the SER.

a. Is 10% or 100% or some higher value above the dose guidelines "significant" in the Staff's view?

11. Interpret quantitatively what is meant by a reasonably high level of assurance "...in consideration of uncertainties" (SER, p. A.1-5, ¶4).

12. Does the Staff believe that dose conversion factors in NUREG/CR-0150 should be used in best estimate evaluations of bone surface dose for purposes of assessing whether 10 CFR 100 guidelines are met? If not, why not?

13. Describe in detail what the Staff means by the phrase "most realistic limiting environment" (SER, p. A.4-2,(6)).

14. Why does the Staff believe TMBDB systems should not be required to meet the single failure criterion (SER, p. A.4-2,(6))?

15. What is the Staff's best estimate of the probability of CRBR reactor vessel melt-through?

a. What is the Staff's best estimate of the upper bound on the probability of CRBR reactor vessel melt-through?

b. What is the confidence interval on the Staff's best estimate of the probability of CRBR reactor vessel melt-through?

c. What is the basis of the Staff's estimates?

16. On page A.4-14 of the SER, the Staff states, "The Staff believes it is feasible to develop criteria of this type that will ensure protection of the containment building from excessive hydrogen burns, within the guidelines discussed in Section A.1.3."

a. Identify each such criteria known to the Staff.

b. Indicate the status (preliminary, draft, final, etc.) of each such criteria.

c. Is it the Staff's view that such criteria need not be developed prior to the CP? If so, what is the basis for the Staff's position?

d. Why does the Staff believe it is feasible to develop such criteria?

17. Does the Staff believe the current containment design is adequate to meet the criteria which the Staff believes are feasible to develop?

a. If not, why not?

b. If so, where has this belief been demonstrated?

18. What is the Staff's position regarding whether there should be a "guaranteed" minimum vent time criterion (SER, p. A1-1)?

a. What is the basis for the Staff's position?

19. Does the Staff believe evacuation should be completed prior to venting? If not, why not?

20. If reactor vessel melt-through occurs, does the Staff believe evacuation should be initiated, if it has not already been initiated? If not, why not?

21. To what distance does the Staff believe evacuation should take place, if reactor vessel melt-through occurs? Explain how the Staff treats this issue.

22. Given that venting may not occur for several hours after melt-through, is there any basis for not evacuating over 360°? Please explain.

23. Compare quantitatively the probability of reactor vessel melt-through with the probability of the limiting DBAs considered by the Staff for CRBR.

24. What are the sodium-concrete penetration rates selected by the Applicants which the Staff believes are adequately conservative (SER, p. A. 4-5)?

a. What is the Staff's basis for believing these rates are adequately conservative in light of the differences in predictions of various models?

25. What sodium-concrete penetration rate(s) does the Staff believe should be assumed for purposes of estimating whether modified 10 CFR 100 dose guidelines are met?

a. What is the basis for the Staff's choice?

26. What is the maximum containment atmosphere temperature that the Staff will permit prior to venting (SER, p. A.4.23)?

27. What temperature criteria will the Staff impose on the vital equipment in the containment (SER, p. A.4.23)?

28. What is the Staff's best estimate of the containment failure pressure?

a. What is the Staff's estimate of the uncertainty in this estimate (e.g., one standard deviation)?

29. Provide all calculations of radiological consequences of CRBR CDAs performed by the Staff including the scoping analysis referred to at SER, p. A.5-16.

a. Provide all output data, input assumptions, and code user manuals, relating to the radiological consequences of CRBR CDAs, and a description of the material provided such that someone unfamiliar with the format of the computer printout can reasonably understand the salient features of the calculations and the results.

30. Describe in detail the methodology, if any, which the Staff believes should be used in developing a bone dose value for evacuation Protective Action Guides (PAG).

a. Describe in detail any analyses, calculations or studies performed by the Staff in developing a bone dose PAG.

b. Identify and provide all documents used by the Staff in responding to this interrogatory.

PRODUCTION OF DOCUMENTS

Pursuant to 10 CFR § 2.741, Intervenors hereby request that the Staff provide them with copies of the following documents:

1. NUREG/CR-3224, An Assessment of CRBR Core Disruptive Accident Energetics, T.G. Theofanous and C. R. Bell, Mar. 11, 1983.

2. Technical Evaluation Report, LANL 1982.

3. Letter: HQ:S:83:234, Longenecker to Grace, Fission-Gas-Driver Compaction, March 8, 1983.

4. All correspondence between Staff consultants and the Staff or Applicants regarding evaluation of CDAs, other than documents explicitly cited as References in Appendix A of the SER.

5. NUREG-0850, "Preliminary Assessment of Core Melt Accidents at Zion and Indian Point Nuclear Power Plants and Strategies for Mitigating Their Effects."

6. T.W. Ball, et al., "TMBDB Sodium-Concrete Penetration Margin Assessment for CRBRP," August 1982, ACC. # 8302010437.

7. Aerosol Release from Sodium-Concrete Reactions, L.D. Mohlestein and R.P. Coburn, Oct. 1982.

8. Letter from Dana Powers, SNL, to T.J. Walker, USNRC, Jan. 24, 1983.

Respectfully submitted,

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