

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES  
DEFENSE COUNCIL, INC., AND THE SIERRA CLUB SIXTEENTH SET OF  
INTERROGATORIES TO NUCLEAR REGULATORY STAFF DATED DECEMBER 17, 1976

Pursuant to the Licensing Board's Prehearing Conference Order of February 11, 1982, the Nuclear Regulatory Commission Staff (Staff) hereby updates its March 16, 1977 response to Intervenors' Natural Resources Defense Council, Inc. and the Sierra Club Sixteenth Set of Interrogatories to the Nuclear Regulatory Commission Staff filed on December 17, 1976. Attached hereto are NRC Staff's answers to NRDC's and the Sierra Club's interrogatories together with the affidavit of Mr. Howard Holz who prepared the answers.<sup>1/</sup>

On March 4, 1982, the parties in this proceeding developed a Protocol for Discovery. NRDC has requested that answers to interrogatory questions be provided in six parts. The following six parts are:

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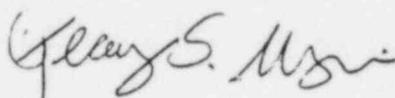
<sup>1/</sup> The affidavit of Mr. Holz is unsigned. However, a copy of his signed and notarized affidavit will be filed shortly.

- 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 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 but not cited in (b). In lieu thereof, at 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, on-going research program which may affect the Staff's answer. This answer need be provided only in cases where the Staff intends to rely upon ongoing research not included in Section 1.5 of the PSAR at the LWA or construction permit hearing on the CRBR. Failure to provide such an answer means that the Staff does not intend to rely upon the existence of any such research at the LWA or construction permit hearing 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.

For all the responses to interrogatories in this set the following are the answers to the requested parts in the Protocol for Discovery.

- B) 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 are mentioned in the direct answer to the question unless otherwise noted.
- C) There were no principal documents and studies specifically examined but not cited in (b) unless otherwise noted.
- D) The name, title and affiliation of the Staff employee(s) or consultant(s) who provided the answer to the question are available in the affidavits.
- E) The Staff is not presently engaged in nor intends to engage in any further, on-going research program which may affect the Staff's answer unless otherwise noted.
- F) At this time, the Staff has not determined who will testify on the subject matter questioned. Reasonable notice will be given to all parties after the Staff has made this determination. At that time, a statement of professional qualifications will be provided for each witness.

Respectfully submitted,



Geary S. Mizuno  
Counsel for NRC Staff

Dated at Bethesda, Maryland  
this 30th day of April, 1982

NRC STAFF'S ANSWERS TO NRDC'S AND  
THE SIERRA CLUB'S INTERROGATORIES

Interrogatory 1

On page 5 of the December 6, 1976, letter from Roger Boyd, to ERDA (Subject: Implementation of CRBRP 1200 MJ "Appeal" Decision), the Staff states:

"The staff is not yet satisfied that the proposed design is adequate for an assumed energetics level of 661 MJ."

- a) Identify precisely the basis for this staff conclusion.
- b) Identify the maximum level of energetics for which the Staff can presently conclude that the proposed design is adequate.
- c) Identify all design changes that the Staff presently believes may be required to make the design adequate for an assumed energetics level of 661 MJ. Precisely how does this "adequate" design differ from the Applicants' proposed design.

Response

The staff's previous answer is still valid, except that the dollar value of the applicant's estimated costs specified in the answers must be escalated to account for inflation. Also, the staff is currently reviewing the experimental effort and will report its findings in the SER.

Interrogatory 2

- a) Identify as precisely as possible, a CRBR design that is adequate for an assumed energetics level of 1200 MJ.
- b) Precisely how does this design differ from the Applicants' proposed design.

c) Identify all design changes, analyses and R&D that the Staff believes would be necessary to reasonably assure the Staff that a design different from the proposed design could be implemented and would be adequate for an assumed energetics level of 1200 MJ. Demonstrate why and by when the Staff believes these design changes, analyses and R&D can be accomplished.

Interrogatory 3

a) Identify as precisely as possible, a CRBR design that is adequate for an assumed energetics level of 2400 MF.

b) Precisely how does this design differ from the Applicants' proposed design.

c) Identify all design changes, analyses and R & D that the Staff believes would be necessary to reasonably assure the Staff that a design different from the proposed design could be implemented and would be adequate for an assumed energetics level of 2400 MF. Demonstrate why and by when the Staff believes these design changes, analyses and R & D can be accomplished.

Response

For the CRBRP the staff has concluded that the design should assure the capability to minimize the risks associated with core meltdown events. To ensure that the probability of core melt and disruptive accidents is low, emphasis is being placed on the prevention of conditions which could lead to such accidents. In addition the staff has concluded that provisions should be made in the CRBRP design such that there is an extremely low likelihood that potential core melt and disruptive accidents could result in early containment system failure.

Based on evaluations of the CRBRP under such accident conditions, which are considered to be beyond the design basis, the staff concluded

that the containment system should be protected from a core energetic accident of 1200 MW-sec (1200 megajoules) due to fuel vapor expansion to one atmosphere.

The applicant has changed the core from a homogenous core to a heterogeneous core which has been analyzed in CRBR-GEFR 00523 dated December 1981. The applicants' present position is given in the abstract of that document and is, in part, quoted as follows:

"The energetic consequences are evaluated based upon both fuel expansion thermodynamic work potential and a relative probability assignment. It is concluded that the structural loads which result from 101 megajoules of available expansion work at sodium slug impact on the reactor closure head, (equivalent to 661 megajoules of fuel expansion work to one atmosphere), are an adequate energetic consequence envelope for use in specifying the Structural Margin Beyond the Design Base."

The staff is in the process of reviewing the heterogeneous core including the energy partitioning of heat, mechanical energy and the time domain in which various events may occur. We are also reviewing the results of the SRI scale model tests performed to support the applicants position for 661 MJ. We will report on the result of our review in the SER.

Interrogatory 5

Identify every safety component, feature and system for which the Staff has not approved the design because, at this time, the Staff has not determined that the component, feature or system is adequate to achieve its safety objective.

a) With respect to each item please state the safety objective and indicate whether or not you propose to recommend issuance of an LWA prior to a final determination that the item is acceptable.

Response

The Staff has determined that the previous response is still applicable except that NUREG-75/087, (Standard Review Plan), which is referenced on page 12 of the response, has been replaced by NUREG-0800, issued July, 1981.

Interrogatory 6

With respect to each of the items in 5 above that you do not intend to have the final design approved prior to the recommendation that the LWA be issued, provide the following information:

a) For each item, identify those designs that the Staff considers would meet the safety objective.

b) For each item, identify the design difference(s) between the presently proposed design and the design indicated in (a) above.

c) Indicate, for each item, the possible and upper limit cost on the design if it were incorporated at the present time.

d) Indicate, for each item, the possible and upper limit cost of the design if it were necessary to introduce the design changes at the:

- i) construction permit stage,
- ii) operating license stage,
- iii) between the two stages.

iv) In assessing the costs indicate to the extent possible those items that would have been ordered and/or fabricated prior to the necessary design changes and the impact of this on the costs.

e) For each item, what would be the impact on the Staff's decision with respect to issuance of the C.P. or O.L. of a failure of the

Applicant to satisfy the Staff that the item does meet its safety objection?

f) With respect to all of the above questions provide in detail the assumptions, bases and data relied upon by the Staff in reaching its conclusions.

g) For each item and/or combinations indicate the effect on the schedule (achieving operating status) if the Staff determines that item is unacceptable at the:

- i) C.P. stage,
- ii) O.I. stage,
- iii) some stage in between.

Response

The Staff has determined that the previous response is still applicable except that NUREG-75/087, (Standard Review Plan), which is referenced on page 12 of the response, has been replaced by NUREG-0800, issued July, 1981.



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

UNITED STATES DEPARTMENT OF ENERGY  
PROJECT MANAGEMENT CORPORATION  
TENNESSEE VALLEY AUTHORITY

(Clinch River Breeder Reactor  
Plant)

Docket No. 50-537

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL FIRST SET OF INTERROGATORIES TO THE STAFF DATED NOVEMBER 18, 1975", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC., AND THE SIERRA CLUB FOURTH SET OF INTERROGATORIES TO THE NUCLEAR REGULATORY COMMISSION STAFF", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB SEVENTH SET OF INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION STAFF DATED FEBRUARY 12, 1976," "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB TWELFTH SET OF INTERROGATORIES TO THE NUCLEAR REGULATORY COMMISSION STAFF", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC., AND THE SIERRA CLUB FOURTEENTH SET OF INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB SEVENTEENTH SET OF INTERROGATORIES AND NUCLEAR REGULATORY COMMISSION STAFF DATED DECEMBER 21, 1976", "NRC STAFF'S ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB NINETEENTH SET OF INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION STAFF", "NRC STAFF'S ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB TWENTIETH SET OF INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION STAFF", "NRC STAFF'S ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB TWENTY-SECOND SET OF INTERROGATORIES TO STAFF", "NRC STAFF'S ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB NINTH REQUEST TO STAFF FOR ADMISSIONS", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB REQUEST TO APPLICANTS AND STAFF FOR ADMISSIONS DATED JULY 28, 1976," "NRC STAFF'S UPDATED ANSWER TO NATURAL RESOURCES DEFENSE COUNCIL, INC. AND THE SIERRA CLUB NINTH SET OF INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION STAFF", "NRC STAFF'S UPDATED ANSWERS TO NATURAL RESOURCES DEFENSE COUNCIL, INC., AND THE SIERRA CLUB SIXTEENTH SET OF INTERROGATORIES TO NUCLEAR REGULATORY STAFF DATED DECEMBER 17, 1976" in the above-captioned proceeding and have been served on the following by deposit in the United States mail, first class, or, as indicated by a double asterisk, by express mail, by an asterisk, either through deposit in the Nuclear Regulatory Commission's internal mail system or hand delivered, this 30th day of April, 1982.

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5/11

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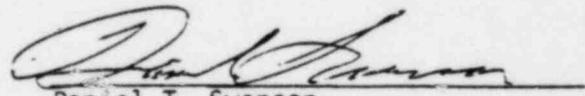
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