

May 20, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In the Matter of
UNITED STATES DEPARTMENT OF ENERGY
PROJECT MANAGEMENT CORPORATION
TENNESSEE VALLEY AUTHORITY
(Clinch River Breeder Reactor Plant)

Docket No. 50-537

APPLICANTS' SECOND RESPONSE TO
NATURAL RESOURCES DEFENSE COUNCIL, INC.
AND SIERRA CLUB
EIGHTEENTH SET OF INTERROGATORIES

Pursuant to 10 C.F.R. Section 2.740b. and in accordance with the Board's Prehearing Conference Order of February 11, 1982, the United States Department of Energy and Project Management Corporation, for themselves and on behalf of the Tennessee Valley Authority (the Applicants), hereby file their Second Response to the Natural Resources Defense Council, Inc. and the Sierra Club Eighteenth Set of Interrogatories dated April 15, 1982 1

Applicants previously responded to the Eighteenth Set of Interrogatories on May 4, 1982. Applicants hereby respond to the following outstanding interrogatories in the Eighteenth Set: I, 11; VII, 1, 3, 4-5 (2 withdrawn); V 8a.; and VIII. Applicants have proceeded to provide these responses in an effort to expedite these proceedings. In providing these responses, Applicants do not concede that the information is admissible in or necessary to a decision in the LWA proceedings. Intervenor should contact Warren Bergholz (202/252-6975) to make arrangements for inspection and copying of documents.

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Answers to General Questions (a) - (f) are as follows:

Unless not applicable, the answers to general questions (a) - (f) are as follows:

(a) Provide the direct answer to the question.

ANSWER: See the direct answers below under heading "ANSWER".

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

ANSWER: See the direct answers below under heading "DOCUMENTS."

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

ANSWER: Unless otherwise indicated below in regard to the answer under the heading "DOCUMENTS"; none.

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

ANSWER: See the attached affidavit

(e) Explain whether Applicants are presently engaged in or intend to engage in any further, ongoing research program which may affect Applicants' answer. This answer need be provided only in

cases where Applicants intend 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 Applicants do not intend to rely upon the existence of any such research at the LWA or construction permit hearing on the CRBR.

ANSWER: If not in Section 1.5 of the PSAR and the direct answer below; none.

(f) Identify the expert(s), if any, which Applicants intend 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 Applicants have in fact identified the expert(s) in question or determined that no expert will testify, as long as such answer provides reasonable notice to Intervenor.

ANSWER: Applicants have not yet identified the expert(s) in question.

I. CONTENTIONS 1, 2, AND 3

INTERROGATORY 11

The November 9, 1978 letter from William P. Gammill of the NRC Staff to Lochlin W. Caffey summarizes the Staff's position regarding the major unresolved CRBR safety issues at the time the CRBR licensing proceeding was suspended. Briefly describe Applicants' position in regard to Items I A, B, C, E, J; II A, B, C, D; III A, B; IV C, H, I; VA, B; VI A; VII A, B, C, D; VIII A, B, C; IX A, B, C, D, F, G, H.

RESPONSE 11

I. GENERAL

A. Control Room Design Conformance with CRBRP Criterion 17

1. The radiological analysis assuming the Staff's specified site suitability source term has been completed and the results included in PSAR Section 6.3 in Amendment 49. Radiological analyses for the hypothetical core melt are included in a topical report CRBRP-3, Vol. 2, "Hypothetical Core Disruptive Accident Considerations in CRBRP; Assessment of Thermal Margins Beyond the Design Base" incorporated by reference in PSAR Section 1.6 in Amendment 54.
2. PSAR Section 3.1.3.1 and Section 7.4.3 provided, (Amendment No. 32 and 57) functional requirements for remote control (Remote Shutdown System) which are believed to satisfy the remote reactor control requirements of NRC and CRBRP Design Criteria 17. These Sections will be expanded further in the response to NRC Question CS 421.17.

I. B. Large Sodium Releases in Steam Generator Building (SGB)

1. PSAR Section 15.6 was revised in Amendment 64 to address this.
2. The sodium fire protection system relies on an Engineered Safety Feature catch pan with fire suppression deck augmented by support equipment. Information concerning the sodium fire protection systems is described in PSAR Sections 6.5 and 9.13.2, provided in Amendment 64 and 54, respectively.

I. C. Implementation of Design Criteria

These have been adopted by the Project and were provided in PSAR Sections 3.1 and 3.2 in Amendment Nos. 32 and 26, respectively.

I. E. Safeguards

The new requirements promulgated in 10 CFR 73.55, February 1977 and subsequent new requirements on safeguards, have been incorporated in Sections 9.11 and 13.7 of the PSAR by Amendment Nos. 47, 61, and 68.

I. J. Meteorology

Additional wind data has been taken at the 33 foot level for the required period of one year. This additional information was provided in PSAR Section 2.3 in Amendment 65.

II. CONTAINMENT SYSTEM DESIGN

A. Large Sodium Releases and Design Basis Accidents

The Project has specified a DBA for the containment (PSAR Section 6.2) which it believes to be conservative in that it includes assumptions that the largest hypothetically available sodium volume spills into an air-filled cell and that 100% of the oxygen in containment is consumed by combustion with the spilled sodium. The Project has included features to ensure protection for this event and spills of potentially radioactive sodium in other cells of the Reactor Containment and Service Buildings. These features include an Engineered Safety Feature Cell Liner System, which is discussed in PSAR Section 6.4. In addition, the Project has committed to prudently mitigate the results of hypothetical accidents beyond the design basis. Required equipment for this event will be qualified to the hostile environments as is discussed in a report CRBRP-3, Volume 2, "Hypothetical Core Disruptive Accident Consideration in CRBRP; Assessment of Thermal Margins Beyond the Design Base."

II. Accommodation of Energetics

The Project believes that further technical interactions are necessary with the NRC Staff to resolve the energetics issues. The Project has submitted on April 20, 1982, the updated report CRBRP-3, Vol. 1, "Hypothetical Core Disruptive Accident Considerations in CRBRP; Energetics and Structural Margin Beyond the Design Base," which provides the current information related to the analytical and experimental bases for specification of

energetics, the analyses supporting the design capability to withstand these, and the results of the supporting SRI scale model tests.

II. C. Accommodation of Melt-Down

The issues identified by NRC are addressed in a report CRBRP-3 Volume 2, "Hypothetical Core Considerations in CRBRP; Assessment of Thermal Margins Beyond the Design Base."

II. D. Accommodation of Site Suitability Source Term

The Project believes that further NRC Staff review will support its initial conclusion that the Project position and documentation (revised PSAR Chapter 15A submitted by Amendment No. 40 and 57) are acceptable. The Project provided the description of the filtration of the ASB in PSAR Section 6.2.6 in Amendment No. 36.

III. THERMAL-HYDRAULIC DESIGN

A. Natural Circulation and Low Sodium Flows

The Project, in response to NRC Question 001.580 in Amendment No. 32, committed to analyses and testing which will confirm the natural circulation capabilities of CRBRP. Additionally, the Project has supplied pre-test predictions of natural circulation tests at FFTF in February 1981, using CRBRP methodologies and computer codes. A report will be prepared consolidating these pre-test predictions and post-test analyses for submittal to NRC by October, 1982.

III. B. Hot Channel Factors

WARD-D-0050 was revised and submitted for NRC review along with revised PSAR Section 4.4 in Amendment 51.

IV. MECHANICAL/STRUCTURAL DESIGN

C. Control Rod Systems

The PSAR, amended in Amendment 59, reflects the current design of the SCRDMs.

IV. H. Active Pump and Valve Operability

The Project has provided details of the Active Pump and Valve Operability Program in Sections 3.9 and report WARD-D-0174, incorporated by reference into Section 1.6 of the PSAR in Amendment No. 44.

IV. I. Structural Design

The Project provided the requested information in PSAR Section 3A.8 in Amendment No. 45.

V. PIPING INTEGRITY
(A&B)

The Project has addressed the questions raised related to the size of leak in the response to NRC Question 001.581; leak detection and the hot leg piping integrity in WARD-D-0185, "Integrity of Primary and Intermediate Heat Transport System Piping in Containment"; and material surveillance in PSAR Amendment Nos. 32, 40, and 42. As stated in PSAR Section 15.6.1.4 the Project is using the leakage rate for piping with low internal pressure specified by the NRC (BTP MEB 3-1) for cell and cell liner

design. The Project believes this information will provide the basis for resolution of these items.

A revised Appendix G to the PSAR, "CRBRP Plan for In-service Inspection was submitted to the NRC in Amendment 65. The material presented in the revised Appendix G represents the Project implementation of a practical inservice inspection program.

VI. ELECTRICAL

A. Reactor Shutdown System (RSS)

The original information addressing the integrated design capability to satisfy the redundancy, diversity, and reliability requirements and the design criteria have been augmented in the following PSAR Sections and Tables:

Sections	4.2, 7.1, 7.2, 7.5, 7.7, 15.1, 15.2
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Tables	15.2-1, 15.3-1, 15.1.3-3
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Q/R's	222.13, 222.67, 001.313, CS421.01, CS421.02, CS421.03, CS421.09, CS421.10, CS421.19
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VII. FUEL DESIGN

(A, B, C, D)

PSAR Section 15.1.2, "Requirements and Criteria for Assessment of Fuel and Blanket Rod Transient Performance," as revised in Amendment 61, provides the fuel design limits which assure cladding integrity is maintained through normal operation and all off normal events.

The Project has supplied topical reports listed below which, together with the information presented in PSAR Section 4.2.1.3 and Table 4.3-5A, provide the information defining the current status and planning for these areas.

The submittal status of the eleven listed items is summarized below.

- | | |
|---|---|
| 1. Fuel densification | PSAR Amendment 40, WARD-D-0168 |
| 2. Fuel Rod Bowing | PSAR Amendment 30, WARD-D-0150 |
| 3. Fuel Rod Vibration | PSAR Amendment 35, WARD-D-0166 |
| 4. Fuel Rod Wire Wrap Interaction | PSAR Amendment 43, WARD-D-0149 |
| 5. Fuel Assembly Structural Evaluation | PSAR Amendment 57, CRBRP-ARD-0204 |
| 6. Fuel Thermal Performance Code | PSAR Amendment 41, WARD-D-0054 & PSAR Section 4.4 |
| 7. Fuel Rod Seismic Analysis | PSAR Amendment 37, WARD-D-0158 |
| 8. Internal/External Cladding Degradation | PSAR Amendment 41, WARD-D-0147 |
| 9. Fuel Restructuring | Submittal to be made after completion of LIFE code verification |
| 10. Fuel Rod Failure Criteria | PSAR Amendment 27, no separate report |
| 11. Exposure Dependent Deformation | PSAR Amendment 27, WARD-D-0146 |

The Project has designed provisions to detect failed fuel including fission gas monitors, sodium sampling and analysis, and delayed neutron detectors in addition to the plant instrumentation. Based on current experimental and analytical data, fuel failures can be detected and appropriately characterized using these design provisions. Additionally, accident analyses are discussed in detail in PSAR Section 15.4 and the Project's response to fuel failure propagation concerns in a September 20, 1976, transmittal to the NRC.

The response to these detector signals and operating limitations will be established during the NRC Staff review of the final technical specifications.

VIII. SYSTEMS

A. Fire Protection System

Since the initial release of Appendix A, the NRC has issued Regulatory Guide 1.120, Rev. 1 (issued in November 1977), BTP ASB 9.5-1, Rev. 1 (issued in March 1978) and Appendix R to 10 CFR 50. The Project design was evaluated using these documents and is being revised to conform with the intent of the NRC guidelines. The NRC issues will be resolved as individually addressed below:

1. A complete response to NRC Question 20.47 concerning the latest NRC fire protection requirements was provided in Amendment No. 48 in February, 1979.
2. The Project has made a preliminary determination of fire hazards which was submitted in Amendment No. 48. The Project is preparing a detailed fire hazards analysis which will be in final form by July 30, 1982 and included in the FSAR.

3. Information clarifying intermediate coolant system flammability and combustibility is currently included in PSAR Section 9.7 supplied in Amendment No. 44.
4. The listing of fire barriers in Table 9.13-1 has been updated and was supplied with Amendment No. 48. The ratings will be supplied as the design develops and the fire hazards analyses are conducted in each individual area.
5. The nitrogen flooding and carbon dioxide systems have been deleted from the design. The P&ID for the Halon System is included in Section 9.13 by Amendment 54.
6. Information concerning the assessment of sodium carbonate fire extinguisher suitability in liquid metal areas is included in Section 9.13.2 by Amendment 54.

VIII. B. Shutdown Heat Removal System

The Project has requested that a meeting be scheduled to discuss the NRC issues in detail and determine the basis for resolution.

VIII. C. Reliability

The Project recommends that this potential use of reliability as well as other questions raised be discussed in the meeting requested in Item VIII.B. above to discuss the NRC decay heat removal issues.

IX. ACCIDENT ANALYSIS (RADIOLOGICAL)

A. Continuous Containment Purge

The Project has provided the definition of design basis events (PSAR Section 6.2.4.1) and the supporting analyses to the NRC in Amendment Nos. 30, 36, 45, and 64 to the PSAR.

IX. B. Open Hatch Refueling

The Project has included a confinement capability in the RSB. The confinement capability (discussed in PSAR Sections 9.6.3 and 6.2.6 in Amendment No. 36 and 64) further reduces potential offsite consequences of postulated accidents during refueling.

IX. C. Steam Generator Tube Failures

The design does not depend solely on the integrity of the IHX to prevent release of primary sodium to the environment. The plant design precludes the direct driving of primary sodium to the steam generator and atmosphere through this postulated scenario of IHX tube leak coupled with steam generator tube rupture. PSAR Section 15.7.3.5 discusses an IHX tube leak event. PSAR Section 15.7.1.3.5 outlines the CRBRP intermediate system design to preclude the event of primary sodium leakage to the steam generator system.

IX. D. Sodium Fires

Plant Engineered Safety Features to mitigate the effects of sodium fires in the SGB are discussed in PSAR Section 6.2.7. A thermal and aerosol consequence assessment of such a sodium fire in the SGB is discussed in PSAR Section 15.6.1.5.3.

IX. F. Cold Trap Fires

Additional information in the form of analysis was requested in NRC Question 310.49. The Project has provided such analysis in the response to NRC Question 310.49 in Amendment No. 45.

IX. G. Instrumentation to Follow the Course of an Accident

1. The Project has recently completed a detailed review and evaluation of Regulatory Guide 1.97, Rev. 2. This will be further documented in the PSAR in the near future.
2. The Project intends to provide instrumentation such that the plant operators will have sufficient information to make the appropriate decisions with respect to initiation of TMBDB features. The instrumentation is discussed in CRBRP-3, Vol. 2, "Hypothetical Core Disruptive Accident Considerations in CRBRP: Assessment of Thermal Margins Beyond the Design Base."

IX. H. Risk Associated with Nearby Industrial Activities

The proposed Exxon facility was removed from the NRC docket in 1980 and is no longer considered as having a potential impact on the CRBRP. An updated discussion of nearby Industrial Facilities will be provided in Section 2.2 of the PSAR.

Supplemental Answer to Interrogatory No. III, 1b) and 2

The following additional classified document was located in the process of preparing unclassified summaries of the two documents previously listed:

Shortest Sabotage Paths for the CRBRP, SAND 77-1710, Daniel and Darby (CNSI).
An unclassified summary of this document will be prepared and made available for inspection and copying.

V. Contention 6

Question 8

If plutonium for the CRBR may be obtained from the United Kingdom,

a. What regulations would govern the transportation of such materials?

Response 8

In the hypothesized situation, International Atomic Energy Agency (IAEA) regulations would apply. The Department of Transportation is the U.S. national competent authority with respect to the administration of these IAEA regulations for the safe transportation of radioactive materials. (49 C.F.R. Part 173).

Documents

None.

VII. GENERAL QUESTIONS

INTERROGATORY 1

Provide copies of [redacted] and all documents in the possession of Applicants not previously provided to Interverors, relating to communications between Staff and Applicants since April 23, 1977 regarding the licensing of the CRBRP.

RESPONSE 1

See Applicants' Updated Response to Natural Resources Defense Council, Inc. and the Sierra Club First Set of Interrogatories to Applicants dated April 30, 1982. The following supplementary list of documents cover items since April 7, 1982.

Set 18 VII No. 1
Supplementary List

<u>From/To</u>	<u>Date</u>	<u>Subject</u>
Longenecker to Check	4/07/82	WARD D 0165 Rev. 6 CRBRP Request for Environmental Qualification of Class 1E Equipment
Longenecker to Check	4/29/82	Amendment No. XII to ER
Longenecker to Check	5/03/82	CRBRP Fuel Cycle
Longenecker to Check	4/20/82	Revised CRBRP-3, Vol. 3, HCDA Considerations; Energetics and SMBDB

Longenecker to Denton	4/06/82	Affidavit on Dist. of Amendment No. 67 to CRBRP Safety Analysis Report
Longenecker to Check	4/14/82	Response to Request for Additional Information-Clinch River Security System
Longenecker to Check	4/21/82	Response to Request for Information-Chemical Engineering
Longenecker to Check	4/19/82	Response to Request for Information-Inservice Inspection
Longenecker to Check	4/26/82	Response to Request for Additional Information-Inservice Inspection
Longenecker to Check	4/29/82	Response to Request for Additional Information-Effluent Treatment
Longenecker to Check	5/07/82	Response to Request for Additional Information Effluent Treatment
Longenecker to Check	5/07/82	Response to Request for Additional Information-Equipment Qualification

INTERROGATORY 3

Provide copies of any and all documents in the possession of Applicants not previously provided to Intervenors, relating to communications between Applicants and ACRS since April 23, 1977 regarding the licensing of the CRBRP.

RESPONSE 3

Letter from Donald G. Robinson to Public Safety Division Files, Review of Transcript of December 7, 1979, ACRS Committee Meeting, dated January 9, 1980

Letter from Longenecker to Boehnert, "Proposed Agenda for May 4 and 5 Meeting on Initiation Phase of HDCAs," dated April 19, 1982

Letter from Longenecker to Boehnert, "Proposed CRBRP Agendas for the May 24 and 25 Meeting on Containment Design and Evaluation, and the June 1, 1982 Meeting on Seismic Design," dated May 18, 1982.

INTERROGATORY 4

Provide all documents, memoranda or communications in any form between or among Project Management Corporation, TVA and DOE related to the issues raised by NRDC's contentions.

RESPONSE 4

Refer to Applicants' Response of Set 18, VII, No. 5.

INTERROGATORY 5

Project Management Corporation, TVA and DOE are each asked to provide all internal memoranda, minutes of meeting (including but not limited to Board meetings) or documents of any kind related to the issues raised by NRDC's contentions.

RESPONSE 5

Document Search List

Report The Clinch River Breeder Reactor Plant Project: Chief Executive Briefing, Proceeding's of the Breeder Reactor Corporation May 1977 Information Session, CRBRP-PMC 77-04

Memo PS:81:005, K. Yates to R. Copeland, "Summary of Hearing Documents," dated 1/5/81

Letter PS:82:055, R. L. Copeland to Multiple Addressees, "Summary of Exemption and Environmental Hearing Documents," dated 2/18/82

Letter PS:82:189, R. L. Copeland to Multiple Addressees, "Summary of Exemption and Environmental Hearing Documents," dated 5/11/82

Letter, R. Woolley to T. Dobry et al, "Intervenor Contentions in CRBRP Licensing Proceeding," dated May 13, 1982

"Update Summary of Intervenor Contentions in CRBRP Licensing Proceeding," dated April 16, 1982

Memo, H. Piper to R. Woolley, "Listing of NRC Correspondence (NRDC Restated Contention)," dated April 9, 1982

Notes, "Basis for Revisions to Existing NRDC Contentions and for New Contentions," dated March 1, 1982

Paper, "New Information Relevant to Intervenor's Contentions"

Transcript, "Appendix to Transcript of CRBRP Prehearing Conference Admitted Contentions of Intervenor NRDC, Inc. and the Sierra Club as of April 7, 1982, dated April 9, 1982

VIII. The Following Interrogatories Relate to the Contentions(s) Indicated in Parenthesis Following Each Document, Event, or Program:

With regard to each of the following documents, events, or programs, indicate, by answering the following questions, the extent to which applicants have considered or intend to consider such document, event, or program in determining whether one or more Amendments to Applicants' Environmental Report (ER) have been or must be prepared after April 25, 1977:

- a. Have Applicants considered the impact of this document, event, or program on their environmental analysis?
- b. If the answer to a. is yes, briefly describe the extent to which Applicants have considered this document.

INTERROGATORY 8

NRC proposed rule requiring improvements in reactor design to reduce the risks from anticipated transients without scram ("ATWS") events (46 Fed. Reg. 57521, November 24, 1981) (Contention 1):

RESPONSE 8

- a. No.
- b. Not applicable.

INTERROGATORY 9

Risk Assessment Review Group report to the U.S. Nuclear Regulatory Commission (NUREG/CR-0400) (Contention 1);

RESPONSE 9

- a. No.
- b. Not applicable.

INTERROGATORY 10

Nuclear Regulatory Commission Statement of Risk Assessment in Light of the Risk Assessment Review Group Report, January 18, 1979 (Contention 1);

REPONSE 10

- a. No.
- b. Not applicable.

INTERROGATORY 11

U.S. Nuclear Regulatory Commission, NRC Action Plan Developed as a Result of the TMI-2 Accidents (NUREG-0660) (August 1980) (Contentions 1 and 3);

RESPONSE 11

- a. No.
- b. Not applicable.

INTERROGATORY 16

Significant changes in reactor vessel and core design that must be reflected in Applicants' accident modeling (See, e.g., PSAR Sections 4.1 and 4.2) (Contention 2).

RESPONSE 16

Reactor Vessel - a. No.

b. Not applicable.

Core Design - a. Yes.

b. As a result of the change to a heterogeneous core design, the appropriate changes were made to the various physical quantities and radiological source terms used as inputs to Applicants' accident modeling, e.g., in Section 7.1, "Plant Accidents."

INTERROGATORY 17

New results on ongoing safety testing (see, e.g., pp. 118-135 of DOE Draft EIS Supplement (DOE/EIS-0085-D) and footnotes 4, 7, 8 < 9, 10 |, 13, 14, 15, 16 on pp. 141-144); see also General Electric, An Assessment of HCDA Energetics in the CRBRP Heterogeneous Reactor Core (CRBRP-GEFR-00523) (December 1981) (Contention 2):

RESPONSE 17

a. Yes.

b. The results of the referenced safety testing as a whole

have been considered in the Project's continuing environment analysis activities. The overall result of the safety testing is to reduce uncertainties in (if not to actually reduce) calculated environmental impacts.

INTERROGATORY 22

National Academy of Science, The Effects on Populations of Exposure to Low Levels of Ionizing Radiation (National Academy Press 1980) (BEIR III Report) (Contention 11);

RESPONSE 22

- a. Yes.
- b. Data in BEIR III Report is used in Section 2.8 of the CRBRP ER to assess both the radiological annual dose rates and the 50 year dose commitments resulting from nuclear weapons test.

INTERROGATORY 24

Revisions to ORIGEN Code since April 25, 1977 (Contention 11);

RESPONSE 24

- a. No.
- b. Not applicable.

INTERROGATORY 36

New NRC regulations on physical security (10CFR Subsection

73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage) (Contention 4);

RESPONSE

- a. Yes.
- b. The CRBRP must meet the NRC requirements specified in 10CFR Part 73. This requirement will be reflected in Amendment XIV to the Environmental Report.

INTERROGATORY 37

Department of Energy, Nuclear Proliferation and Civilian Nuclear Power: Report of the Nonproliferation Alternative Systems Assessment Programs (DOE/NE-0001/7) (June 1980) (Contention 4);

RESPONSE 37

- a. No.
- b. Not applicable.

INTERROGATORY 39

Recent GAO reports concerning safeguards and physical security (Contention 4);

- a. "Security at Nuclear Powerplants -- At Best, Inadequate" (4/7/77);
- b. Unclassified summary of a classified report entitled,

"Commercial Nuclear Fuel Facilities Need Better Security" (5/2/77);

RESPONSE 39

- a. Yes.
- b. Reviewed to ensure all appropriate issues are addressed.

INTERROGATORY NEW #42

ICRP 26 and 30:

RESPONSE 42

Recommendations of ICRP 26 and 30 were used in ER Section 5.2 in calculating dose commitments to human beings due to release in liquid effluents. The tables generated by Dunning et al of ORNL were applied to CRBR's conservative release estimates. Dunning's tables employs all the parameters of ICRP 26 including contributions from specified source organs plus the systemic activity residing in the rest of the body; cross irradiation due to penetrating radiation is incorporated into the tables.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

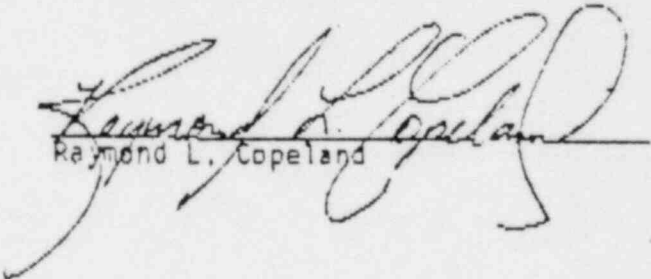
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DOCKET NO. 50-537

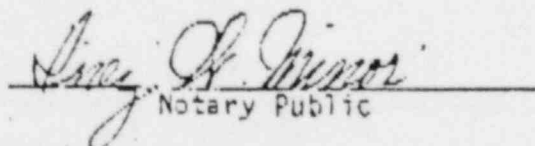
AFFIDAVIT OF RAYMOND L. COPELAND

Raymond L. Copeland, being duly sworn, deposes and says as follows:

1. That he is employed as Acting Assistant Director, Public Safety Division, CRBRP Project, and that he is duly authorized to answer Interrogatory VII-4 in the Eighteenth Set of Interrogatories.
2. That the above-mentioned and attached answers are true and correct to the best of his knowledge and belief..


Raymond L. Copeland

SUBSCRIBED and SWORN to before me
this 19th day of May, 1982.


Notary Public

My Commission Expires April 28, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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U. S. DEPARTMENT OF ENERGY,
PROJECT MANAGEMENT CORPORATION,
and
TENNESSEE VALLEY AUTHORITY

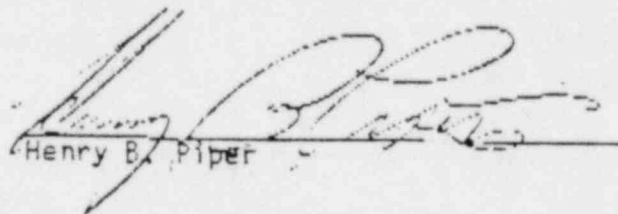
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AFFIDAVIT OF HENRY B. PIPER

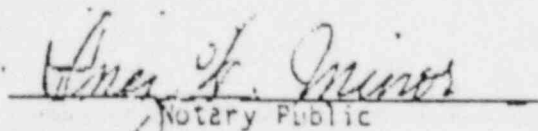
Henry B. Piper, being duly sworn, deposes and says as follows:

1. That he is employed as Chief, Licensing Brance, Public Safety Division, CRERP Project, and that he is duly authorized to answer Interrogatories 1-11, VII-1, VII-3, VII-5, VIII-9 and VIII-10 in the Eighteenth Set of Interrogatories.

2. That the above-mentioned and attached answers are true and correct to the best of his knowledge and belief.


Henry B. Piper

SUBSCRIBED and SWORN to before me
this 19th day of May, 1982.


Notary Public

My Commission Expires April 28, 1984

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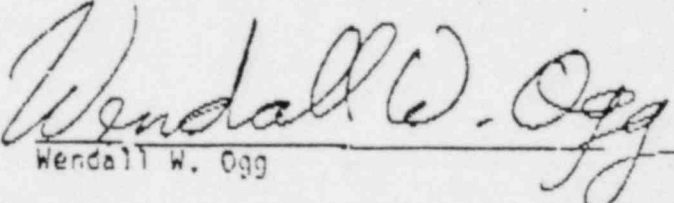
DOCKET NO. 50-537

AFFIDAVIT OF WENDALL W. OGG


Wendall W. Ogg being duly sworn, deposes and says as follows:

1. That he is employed as Nuclear Engineer, Public Safety Division, LRBKP Project, and that he is duly authorized to answer Interrogatories VIII-22, and VIII-42 of the Eighteenth set of Interrogatories.

2. That the above mentioned and attached answers are true and correct to the best of his knowledge and belief.


Wendall W. Ogg

SUBSCRIBED and SWORN to before me
this 19th day of May, 1982


Notary Public

My Commission Expires April 25, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of)
UNITED STATES DEPARTMENT OF ENERGY)
PROJECT MANAGEMENT CORPORATION)
TENNESSEE VALLEY AUTHORITY)

DOCKET NO. 50-537

AFFIDAVIT OF PAUL W. DICKSON, JR.

Paul W. Dickson, Jr. being duly sworn, deposes and says as follows:

1. That he is employed by Westinghouse Electric Corporation as Technical Director, Clinch River Breeder Reactor Project, P. O. Box W, Oak Ridge, Tennessee.
2. That he is duly authorized to answer the Interrogatories numbered VIII-8, 11, 16, and 17 in NRC's 18th set of Interrogatories.
3. That the above-mentioned and attached answers are true and correct to the best of his knowledge and belief.

Paul W. Dickson, Jr.
(Signature)

Subscribed and sworn to before me this 19th day of May, 1982.

Greg W. [Signature]
Notary Public

My Commission expires _____.

My Commission Expires April 28, 1984

In the matter of ,)
Department of Energy ,)
PROJECT MANAGEMENT CORPORATION and ,)
TENNESSEE VALLEY AUTHORITY ,)

AFFIDAVIT OF John R. Longenecker, being duly sworn, deposes and says
as follows:

- John R. Longenecker
Signature

James P. Fitch
Notary Public

My Commission expires 1-1-1, 1942

In the matter of _____,)
Department of Energy _____,)
PROJECT MANAGEMENT CORPORATION and,)
TENNESSEE VALLEY AUTHORITY _____,)

PATRICIA G. CLARKE
NOTARY PUBLIC STATE OF ILLINOIS
PATRICIA G. CLARKE
NOTARY PUBLIC STATE OF ILLINOIS
My Commission Expires July 1, 1962

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
UNITED STATES DEPARTMENT OF ENERGY)
)
PROJECT MANAGEMENT CORPORATION)
)
TENNESEE VALLEY AUTHORITY)
)
(Clinch River Breeder Reactor Plant))

Docket No. 50-537

CERTIFICATE OF SERVICE

Service has been effected on this date by personal delivery
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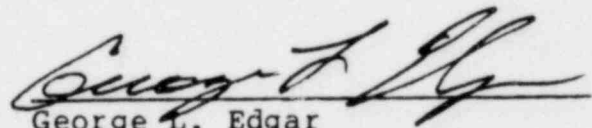
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May 20, 1982