August 23, 1982

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

INTERVENORS' MOTION TO STRIKE PORTIONS OF
THE TESTIMONY AND EXHIBITS OF APPLICANTS

Background

On April 22, 1982, the Licensing Board in the above-captioned proceeding issued an Order ruling on the scope of the LWA hearings. In that Order and at the April 20, 1982 Prehearing Conference which it memorializes, the Board ruled that "[a] full-scale inquiry into the specific design of the

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CRBR is inappropriate at the LWA-1 stage. April 22 Order at 3. Accordingly, the Board limited consideration of Intervenors' Contentions 1a, 2a, 2b, 2c, 2d, 3b, 3c, and 3d, dealing with core disruptive accidents, to the following questions at the LWA stage:

1. The major classes of accident initiators potentially leading to HCDAs;
2. The relevant criteria to be imposed for CRBRP;
3. The state of technology as it relates to applicable design characteristics or criteria; and
4. The general characteristics of the CRBRP design (e.g., redundant, diverse shutdown systems).

In addition, the Board deferred consideration of Contentions 1b and 3a until after the LWA stage is completed. The Board ruled that Contentions 2f, 2g, and 2h would be the basis for discovery at the LWA-1 stage, but has not ruled on their admissibility at the LWA proceeding.

On August 16, 1982, Intervenors received Applicants' prefiled testimony, containing ubiquitous references to very specific, CRBR design details and analysis thereof contained in the PSAR, the document entitled "Hypothetical Core Disruptive Accident Considerations in CRBRP", (known as "CRBRP-3"), and a document from Westinghouse entitled "Primary Piping Integrity Report", WARD-D-0185. On August 19, 1982, Intervenors received Applicants' list of exhibits which comprises the same CRBR design-specific materials. It is clear from the use of these detailed, design-specific materials in Applicants' testimony that they are not simply listed as background or reference materials. Rather, they are repeatedly used as the basis for Applicants' conclusions that specific CRBR safety features are adequately designed and will perform as intended to either make CDAs sufficiently improbable or mitigate their consequences if they occur, infra.

Argument

It could not be more clear that these CRBR detailed, design-specific passages in Applicants' testimony and exhibits are beyond the scope of this LWA proceeding as defined in the Board's April 22 Order. By no stretch of the imagination could these design details be deemed "general characteristics of the CRBRP design" or the "state of technology". They clearly refer to the specific detailed design and technology of the CRBR as proposed by Applicants.

Moreover, Applicants cannot bootstrap these detailed, design-specific materials into the scope of the LWA proceeding merely because they deal with the same subjects as are treated in the Site Suitability Report. The SSR -- as well as the Staff's testimony on this subject -- treat only general design characteristics and confidence that the state of technology will be capable of handling the CDA problem. Applicants' attempt to offer detailed, design-specific data and analyses in support of their conclusions concerning CDAs cannot be admitted by this Board under its previous rulings on the scope of this proceeding.

At the time of the Board's rulings on the scope of our contentions at the LWA stage, Intervenors stated our desire to attack Applicants' and Staff's conclusions concerning CDAs by questioning the reliabilities and failure rates of the safety systems on which Applicants and Staff relied. See, e.g., Transcript, April 20 Conference at 533-34, 543, 551-52, 553-55. The Board ruled, however, that those matters were design specific, and so beyond the scope of the LWA proceeding. Now that Applicants have succeeded in excluding all design-specific information which might be harmful to their case, such as reliability and failure rates, they are trying to offer in evidence all the detailed design-specific information which supports their case. Intervenors clearly warned the Board that this would probably occur, id.

The instant situation is directly analogous to that in Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341 (1978). In Hartsville, the Appeal Board held it was error for the Licensing Board to have relied on Applicants' conclusions concerning CS-137 doses without allowing Intervenors to inspect and question the method of calculation, thereby unduly limiting the scope of their cross-examination. 7 NRC at 356.

The Board in the instant case ruled that matters of detailed design review and safety analysis would be more appropriately considered at the CP stage, Order at 5, and that "inquiry at this stage is limited to consideration of whether it is feasible to design CRBRs to make HCDAs sufficiently improbable that they can be excluded from the envelope of design basis accidents for a reactor of the general size and type proposed," id. at 2. Consequently, on the basis of the Board's scope rulings, NRDC has proceeded to prepare its case for this LWA proceeding on the assumption that all detailed, design-specific information was beyond the scope of the proceeding.

As a matter of fundamental fairness, it would be unconscionable for the Board to allow Applicants to buttress their case with this plethora of design details after so pointedly refusing to allow Intervenors to question those details in preparation of our case. Intervenors and the NRC staff have generally complied with the Board's rulings on the scope of this proceeding. Applicants cannot be allowed to flagrantly disregard those rulings by presenting a case based on the very design specificity which has been explicitly proscribed by the Board.

A Motion to Strike follows which details the portions of Applicants' testimony and exhibits which violate the rulings on the scope of this proceeding. Appendix A lists examples of the detailed design specificity of those materials.

Motion to Strike

For the reasons stated above, and in light of the detailed design specificity described in Appendix A below, Intervenors hereby move the Licensing Board to strike from Applicants' testimony and exhibits, as beyond the scope of this LWA proceeding, the following items and references:

I. Applicants' Exhibits

1. PSAR

Section:

2.3	Meteorology--	No objection.
4.2.3	Reactivity Control Systems	Object, design specific
5.0	Heat Transport and Connected Systems	Object, design specific
6.2	Containment Systems	Object, design specific
7.1.2	Identification of Safety Criteria	No objection to use of criteria, but the reference to this section was to equipment, to which Intervenors object.
7.5.4	Fuel Failure Monitoring System	Object, design specific.

15.1.1	Design Approach to Safety	No objection.
15.1.4	Effect of Design Changes on Analyses of Accident Events	Object, design specific.
15.2	Design Events	Object, design specific.
15.3	Undercooling Design Events	Object, design specific.
15.4	Local Failure Events	Object, design specific.
15.6	Sodium Spills	Object design specific.
15A	Radiological Source Term	No objection.

2. WARD-D-0185 — Object, design specific

3. CRBRP-3

Vol. 1, Sections 4.0, 5.0, 5.2, and 5.4	Object, design specific
Vol. 2, Sections 2.0, 2.1, 2.2, 3.0	Object, design specific.

II. Applicants' Testimony Concerning NRDC Contentions 1, 2, and 3

p. 13, 2d full ¶, line 3 -- Strike "and a review and search of specific initiators in CRBRP." (Design specific.)

p. 17, last 3 lines - Strike last 3 lines. (Refers to PSAR §15.3, which is design specific.)

p. 18, lines 5-9 -- Strike "A prototype of the pump ... flow.)" (Design specific.)

p. 18, 2d ¶, line 4 -- Strike "Section 15.3 of the PSAR..." to end of ¶. (PSAR §15.3 is design specific.)

p. 19, 2d ¶, line 6 -- Strike "As discussed in PSAR §15.3..." to end of ¶.

p. 20, line 2 -- Strike "Section 15.3 ..." to end of ¶.

p. 23, line 15 -- Strike "PSAR Section 15.2 ..." to end of ¶. (PSAR §15.2 is CRBR design specific.)

p. 25, 3d full ¶, line 4 -- Strike "PSAR Sections 15.4.4 and 15.2 ..." to end of ¶. (Those sections are design specific.)

p. 28, lines 4 and 5 -- Strike lines 4 and 5. (PSAR Sections 4.2.3 and 7.1.2 are design specific.)

p. 35, line 7 -- Strike line 7 (Refers to PSAR Sections 15.2 and 15.3, which are design specific.)

p. 39, last two lines of text -- Strike last two lines of text (Chapter 5 of PSAR is design specific.)

p. 42, 1st full unnumbered ¶ -- Strike the entire ¶. (WARD-D-0185 is design specific.)

p. 45 -- Strike the 3 full paragraphs. (The whole page refers to design specific analyses and depends on design specific sections of the PSAR (15.4 and 7.5.4).

p. 49, 3d full ¶, line 3 -- Strike "see Section 15.6 of the PSAR." (Design specific)

p. 50, 2d full ¶, 1st line -- Strike 1st sentence of §4.3. (PSAR §6.2 is design specific.)

p. 55, 1st ¶ -- Strike 1st ¶. (CRBRP-3, vol. 1, §5.2 is design specific.)

p. 55, 2d ¶ -- Strike 2d ¶. (CRBRP-r, vol. 2, §2.1 is design specific.)

p. 55, 3d ¶ -- Strike 3d ¶. (CRBRP-3, vol. 1, §5.4 and vol. 2, §2.2 are design specific, and the entire paragraph describes specific design details of CRBR.)

p. 58, last 2 full ¶s -- Strike last 2 full ¶s. (Discuss "TOP HCDA for CRBRP" and "CRBRP capability", which are clearly design specific.)

p. 59, last full ¶ -- Strike last full ¶. (Discusses "LOF HCDA in the CRBRP".

p. 60, 1st 2 ¶s -- Strike 1st and 2d ¶s. (Continues description of LOF HCDA in CRBRP.)

p. 61, last 2 ¶s -- Strike last 2 ¶s. (Discusses fuel movement and reactivity behavior for the specific CRBR design.)

p. 62, line 4 -- Strike "This phase would ..." to end of ¶. (Predicts HCDA behavior for CRBRP design.)

p. 62, last ¶ (Cont. top p. 63) -- Strike entire ¶. (Discusses CRBRP design capability.)

p. 63, 1st full ¶ -- Strike all of pages 63 and 64 and the first 2 ¶s of p. 65. (The whole passage discusses CRBR design specifics and relies on design-specific sections of CRBRP-3 (vol. 1, §§ 4 and 5.).)

p. 65, last 5 lines -- Strike "Thermal analysis..." to end of ¶. (Discusses and references design details in CRBRP-3, vol. 2, §§ 2 and 3.)

p. 72, Table 5-2 -- Strike Table 5-2. (Relies on

WASH-1400, which was ruled outside the scope of the LWA. <u>See</u> Tr., April 20 Conference, at 626.)

p. 73 -- Strike entire page. (Recites conclusion reached from inadmissible Table 5-2 on preceding page.)

Respectfully submitted,

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COUNCIL INC. AND THE
SIERRA CLUB

Dated August 23, 1982

APPENDIX A -- EXAMPLES OF THE DETAILED DESIGN SPECIFICITY IN THE DOCUMENTS CITED AND RELIED UPON BY APPLICANTS AND TO BE OFFERED AS EXHIBITS BY THEM

Following is a partial listing of examples of the detailed design specifics of the CRBR which are the subject matter of the PSAR, CRBRP-3, and WARD-D-0185 sections which Applicants cite and rely on to support the conclusions in their testimony.

1. PSAR

(It should be noted in particular that the PSAR sections relied upon by Applicants in their testimony reference at least eleven computer codes which were not mentioned by Applicants in the listing they offered as final at the August 2, 1982 Conference.)

Section:

7.5.4 Describes specifics of CRBRP Fuel Failure Monitoring System. "Signals from three BF_3 detectors are routed to individual inputs of a preamplifier" (7.5-16). "Plant Data Handling and Display System" (7.5-17). The reactor is designed to .... (7.5-18).

15.1.4 Effect of Design Changes on Analysis of Accident Events
Various pieces of design data have changed (15.1-105). Smallest doppler coefficient at beginning of equilibirium cycle (15.1-106). FORE 2M code (15.1-106). Maximum hot rod temperatures for F/A #52 and 101 in the heterogeneous core (15.1-107). Differences in IHTS piping configuration (15.1-108). Increase in length of

steam generator modules (15.1-109). DEMO-4 code (15.1-110). The fission gas plenum pressor, both an initiator for stochastic faults and a driving force for other types of local faults is about 24% lower (15.1-114). Tables/Figures (15.1-118 to 15.1-123).

15.2 "0.1 second unlatch time delay..." (15.2-2). Three sigma hot channel factors were used for all the analyses... (15.2-2). Refers to subsection 4.2.1.3.1.3 (15.2-2a). Thermal-Hydraulic initial conditions (15.2-2b). Reactivity insertion design events Table 15.2-1 (15.2-3). Maximum design rod withdrawl speed 9 in/min. (15.2-5). Used FORE-II code (15.2-6) (Coupled thermal hydraulics point-kinetics code design to calculate significant reactor code parameters under steady state or transient conditions (PSAR A-37)). Figures at 15.2-8 to 15.2-42 (*15.2-11).

15.3 Thermal Hydraulic Conditions (15.3-1). 200 msec delay between trip signal (15.3-2). Table 15.3-1 (15.3-4,5). FURFAN CDF code (15.3-7). (FURFAN computes fuel-pin failure time based on steady state operating history combined with a varied number of transient events; detailed design specific analysis of cladding integrity.) Figure at 15.3-8-10a. DEMO Code (15.3-11; 15.3-14; 15.3-42). (Analyzes thermal-hydraulic transients for CRBR steam supply system; models precise design specific geometry of CRBR.) "Maximum hot spot midwall clad temperature with a primary trip for the more severe event is 1390° (15.3-11). Figures at 15.3-13; -15; -21; -29; -31; -44; -44a. WEST correlation for CRBRP fuel assembly analysis P/D = pitch to diameter (15.3-29).

15.4 ANSYS code (15.4-11). (Structural response code for static & dynamic, elastic & plastic fluid flow and transient heat transfer analysis (PSAR A-5)). Fabrication details (15.4-76c).

15.6 Computer Codes used in analysis of sodium spills and fires: SPRAY-3B, GESOFIRE, SOFIRE-II, SPCA, HAA-3B, (15.6-1). (Analyses are design specific -- depending on cell size, sodium discharge, makeup of concrete liner thickness, activity in specific storage tanks. Volume of cell is 55,700 ft^3

(15.6-8). 45,000 gal at 450° F (15.6-8). For each cell the following peak transient values are itemized in Table 15.6.1.4-3: gas pressure, gas temperature, floor structural concrete temperature, wetted wall structural concrete temperature (15.6-12). Pipe leak evaluated (15.6-15). See remainder of figures through (15.6-45).

2. WARD-D-0185

Volume 1

Section:

1.1 A detailed structural design analysis has shown... (1.1-1).

1.2 Pump shutoff head at pony motor speed 5 ft. Coastdown achieved in 50 sec. (1.2-1)

2.1 PHTS features (2.1-8).

3.3 Welds in the elevated portion of the primary 24-inch hot leg will be examined volumetrically by use of ultrasonic techniques that are being developed for this program. (3.3-2). Inservice primary loop inspection in 36 inch hot let at weld location Elbow 1E (3.3-8). Volumetric inspection of 24 inch hot leg Elbow 4E (3.3-9). See particularly 3.3-8 through 3.3-18.

4.1 Two computer programs WECAN and WESTDYN are used to perform piping system flexibility analysis for structural analysis, e.g., flexibility of elbows (4.1-4). Computer programs TFEATS (4.1-5). ELTEMP (4.1-6). CRBR pipe design (4.1-7). CRBR Hot leg steady-state conditions, e.g. temperature pressure and flaw in hot legs at 80% power (4.1-20). Figures and Tables at 4.1-20 to 4.1-44. See particularly 4.1-8, -9.

4.2 The six cross sections analyzed for 24 inch hot leg (4.2-55). Duty cycle events (4.2-56).

Volume 2 Ultrasonic Examination of Primary Piping.

A Development of equipment and transfer of this technology to CRBRP through equipment specifications and operating procedures (A-4).

C Type 316 and 304 stainless steels in CRBR (C-3). Properties of (C-19).

D Cell concentration filters. Two filters (pore size 0.8 microns) will be used in lines sampling gas from a point midway between floor and ceiling. Filter holders consist of 55304 casing (D.8-3). Figure D.8-2.

F Pipe Hanger Clamp Assembly (F.2-18). Other figures through F.2-21.

3. CRBRP-3

The introduction to this document states:

> This report summarizes and links together analyses which have been detailed in other documents. The documents which form the foundation of the conclusions drawn are the CRBRP Preliminary Safety Analysis Report, CRBRP-GEFR-00523, "An Assessment of HCDA Energetics in the CRBRP Heterogeneous Reactor Core", GEFR-00103, "An Analysis of Hypothetical Core Disruptive Events in CRBR", and ANL/RAS 77-15, "An Analysis of the Unprotected Loss-of-Flow Accident in CRBR with an End-of Equilibrium-Cycle Core".

CRBRP-3 at 1-1 - 1-2. The detailed CRBR design-specificity of the PSAR has been noted above. The other three documents are, if anything, even more specific and detailed with regard to the CRBR design. It is clear that these documents concern nothing except the CRBR design and its accident prevention and handling details. We will offer just one example from each document.

GEFR-00523 -- Appendix D represents the SAS3D computer code input data for the CRBR EOC-4 TOP Case 1 accident. It is eighteen pages of specific numbers relating to the CRBR design.

GEFR-00103 -- Table 4-1, at page 4-20, represents the SAS3A input data for BOEC LOF base case for the CRBR design. It has nine pages of specific input numbers for the specific design of CRBR.

ANL/RAS 77-15 -- Appendix D consists of SAS3D input data for 33-Channel Case I. It has 35 pages of unadorned specific numbers which apply only to the CRBR design.

There can be no question that these documents deal only with "general design characteristics" or the "state of technology." They deal in the most minute possible detail with the specific technology in the proposed CRBR design. The CRBRP-3 document is itself of the same specificity and detail with regard to the CRBR design. For example, section 5.1.2.2 of vol. 1 is based on yet another computer code which was not listed by Applicants as one they were using at the LWA stage, the "TRANSWRAP" code. Table 5-6 at p. 5-51 gives experimentally determined plug shear-rating parameters for the CRBR design. The figures at pages 5-56 to 5-63 describe the previously-mentioned TRANSWRAP code analysis, and are so design detailed as to specify the elevation above Sea Level for particular CRBR components to the nearest quarter-inch (Figure 5-6). Figure 2-32 of vol. 2, at p. 2-74, shows guard vessel skirt support details.