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October 20, 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

AFFIDAVIT OF THOMAS B. COCHRAN

- I, Thomas B. Cochran, being duly sworn, do hereby affirm and say:
- My name is Thomas B. Cochran. I reside at 4836 North
 Street, Arlington, Virginia 22207.
- 2. I testified as an expert witness on behalf of
 Intervenors Natural Resources Defense Council, Inc. and the
 Sierra Club at the Clinch River Breeder Reactor site suitability

hearings before the Atomic Safety and Licensing Board on August 26-27, 1982 in Oak Ridge, Tennessee.

- This affidavit is prepared for use in the abovecaptioned proceeding.
- 4. My testimony at Tr. 2777, 2779, 2785 and 2789 contains an error which I wish to correct.
- 5. In response to a series of questions by Judge
 Linenberger I incorrectly characterized a nuclear explosion as
 requiring a sufficient rate of energy deposition to result in the
 generation of a shock wave. Although it was not my intent, I may
 have left the impression that this was an important damage
 mechanism in an LMFBR energetic CDA.
- 6. While shock wave propagation may (or may not) be an important determinant in the energetics of a CDA (i.e., in whether a large energetic vapor explosion could ever occur) [see generally Alan E. Walter and Albert B. Reynolds, Fast Breeder Reactors, Pergamon Press, 1981, pp. 654-660] shock wave production is not required for an explosion to occur.
- 7. Furthermore, in a CDA, or nuclear explosion in an LMFBR, the expansion of a high temperature pressure bubble of reaction products, or vaporized material (e.g. fuel) is thought to be the predominant damage mode (rather than shock wave propagation) for the slower time-scale pressure buildup of an LMFBR excursion as compared to a chemical high-explosive detonation. [Walter and Reynolds, op. cit., p. 664.]

8. In response to Interrogatory 23 of Applicants' Sixth Set of Interrogatories to Intervenors, I have set forth a more complete (and accurate) definition of a nuclear explosion in an LMFBR.

20 Block

Thomas B. Cochran

Date: October 20, 1982

Sworn and subscribed to before me this 20 th day of October, 1982.

Notary Public

My Commission Expires: 7/3//82.