

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)

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Docket No. 50-537

NRC STAFF TESTIMONY OF ROBERT J. DUBE
ON BOARD QUESTION 10, CONCERNING
MATERIAL CONTROL AND ACCOUNTABILITY

Q1. Please state your name and present occupation.

A1. My name is Robert J. Dube. I am Section Leader of the Regulatory Activities and Analysis Section, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards.

Q2. Have you prepared a statement of your professional qualifications?

A2. Yes. A copy of my statement of professional qualifications is attached to this testimony.

Q3. Please describe the extent of your participation in the Staff's review of safeguards for the Clinch River Breeder Reactor ("CRBR") and its supporting fuel cycle.

A3. I had the principal responsibility for updating the safeguards portions of the CRBR Environmental Impact Statement and for

responding to CRBR discovery items in connection with the environmental review; the environmental review addressed both the CRBR and its supporting fuel cycle, notwithstanding the fact that the Department of Energy (DOE) fuel cycle facilities are not subject to NRC licensing. I also testified at the LWA-1 hearings for CRBR during November 1982 on the subject of safeguards for CRBR and its supporting fuel cycle.

Q4. What is the purpose of your testimony?

A4. My testimony addresses the concerns raised by the Atomic Safety and Licensing Board ("Board") in Board Question 10 regarding material control and accountability. Board Question 10 states:

The Staff's testimony at Tr. 3694 anticipates the need for further research and development on measurement capabilities to achieve DOE's goals for material control and accountability at the DRP. The Staff is requested to explain whether this additional effort is currently underway or definitively planned for the future, and the extent to which it is critical to the effectiveness of CRBR fuel safeguards measures.

Q5. Is research and development in the area of measurement capabilities for rapid material accounting at the Developmental Reprocessing Plant (DRP) currently underway or definitively scheduled for the future?

A5. Yes. Research and development of measurement capabilities for rapid material accounting is currently underway at Los Alamos National Laboratory, Lawrence Livermore Laboratory, Ames Laboratory, and Mound Laboratory. These activities include efforts in the area of passive and active neutron assay, absorption-edge

densitometry, x-ray fluorescence, gamma-ray analysis, and optical techniques for isotopic analysis.

Q6. Are rapid material accounting systems intended to be used at the CRBR?

A6. No. Rapid material accounting systems are intended for use in facilities which chemically or physically process fuel materials. The fuel at CRBR will be contained in large finished fuel assemblies, and no processing of that fuel would be performed at CRBR. Material control and accounting at CRBR will consist of standard item control techniques such as visual inspection and counting. These techniques, together with physical security measures, provide a high level of safeguards for the CRBR.

Q7. Is the utilization of a rapid material accounting system a current NRC requirement for the DRP or similar facilities?

A7. No. Current NRC material control and accounting regulations and Staff guidance require only semiannual inventories in the shielded portions of a reprocessing plant. A rapid material accounting system, such as the one proposed for the DRP, is not required by the Staff for facilities similar to the DRP.

Q8. Are research and development activities on measurement capabilities for rapid material accounting, or development of a rapid material accounting system, critical to the effectiveness of CRBR fuel safeguards measures?

A8. No. As discussed in Answer 6 above, research and development activities on measurement capabilities for material control and accounting are not necessary the effectiveness of fuel safeguards at the CRBR site. However, these research and development efforts are desirable for the DRP but are not critical to the effectiveness of CRBR fuel safeguards measures at the DRP and similar facilities. Primary reliance for protection against theft of nuclear material at the DRP is placed on physical protection systems (see Tr. 3725). The primary role of material control and accounting is to provide assurance that the protective systems are working effectively. Physical security and material control and accounting do not have to be considered independently. The Staff concludes that while rapid material accounting may augment safeguards measures to prevent unauthorized diversion of fuel at the DRP, the DOE commitments for DRP safeguards meet current NRC regulations without need for a rapid material accounting system.

EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS

Robert J. Dube
Division of Safeguards
U. S. Nuclear Regulatory Commission

My name is Robert J. Dube. I am the Section Chief, Regulatory Activities and Analysis Section, Fuel Facilities Safeguards Licensing Branch, Division of Safeguards. I have had 20 years experience in nuclear regulation and policy with the Atomic Energy Commission, the Federal Energy Administration, and the Nuclear Regulatory Commission. This has included 14 years of experience in safety, environmental, and safeguards aspects of fuel cycle facilities. I am currently responsible for the development of regulations, guidance, and acceptance criteria for nuclear fuel facilities, spent fuel storage installations, and non-power reactors. My responsibilities also include monitoring and analyzing data submitted by licensees for safeguards implications.

Since joining the Division of Safeguards in 1976, I have been involved in the resolution of technical safeguards issues, and in the development of regulations related to material control and accounting and physical security for nuclear materials, physical security for power and non-power reactors, physical security for storage and transportation of spent fuel, and safeguards for reprocessing facilities.