

2 17,
March 1, 1998

Mr. O. J. Zeringue
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: ENVIRONMENTAL ASSESSMENT OF REQUEST FOR EXEMPTION FROM
10 CFR 70.24 CRITICALITY MONITORING REQUIREMENTS - SEQUOYAH
NUCLEAR PLANT, UNIT NOS. 1 AND 2 (TAC NOS. MA0685 AND MA0686)

Dear Mr. Zeringue:

Enclosed for your information is a copy of an "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your application dated December 5, 1997, which requested an exemption from certain requirements of 10 CFR 70.24, "Criticality Accident Requirements." This section requires a criticality monitoring system for the receipt, possession, inspection, and storage of special nuclear materials in the form of unirradiated fuel assemblies that are not handled or stored beneath water shielding, and requires maintaining emergency procedures for responding to the criticality monitoring system alarm, conducting drills to meet the emergency procedures, and designating responsible individuals to determine the cause of the alarm.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/
Ronald W. Hernan, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327
and 50-328

Enclosure: Environmental Assessment

cc w/encl: See next page

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**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

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A handwritten signature in cursive script that reads "Ronald W. Hernan".

Ronald W. Hernan, Senior Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-327
and 50-328

Enclosure: Environmental Assessment

cc w/encl: See next page

Mr. O. J. Zeringue
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

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UNITED STATES NUCLEAR REGULATORY COMMISSIONTENNESSEE VALLEY AUTHORITYDOCKET NOS. 50-327 AND 50-328SEQUOYAH NUCLEAR PLANT, UNIT NOS. 1 AND 2ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an exemption from certain requirements of its regulations for Facility Operating License Nos. DPR-77 and DPR-79, issued to The Tennessee Valley Authority (the licensee), for operation of the Sequoyah Nuclear Plant, Unit Nos. 1 and 2, located in Hamilton County, Tennessee.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would exempt the licensee from the requirements of 10 CFR 70.24, which requires in each area in which special nuclear material (SNM) is handled, used, or stored, a monitoring system that will energize clear audible alarms if accidental criticality occurs. The proposed action would also exempt the licensee from the requirements to maintain emergency procedures for each area in which this licensed SNM is handled, used, or stored to ensure that all personnel withdraw to an area of safety upon the sounding of the alarm, to familiarize personnel with the evacuation plan, and to designate responsible individuals for determining the cause of the alarm, and to place radiation survey instruments in accessible locations for use in such an emergency.

The proposed action is in accordance with the licensee's application for exemption dated December 5, 1997.

The Need for the Proposed Action:

The purpose of 10 CFR 70.24 is to ensure that if a criticality were to occur during the

handling of SNM, personnel would be alerted to that fact and would take appropriate action. At a commercial nuclear power plant, the inadvertent criticality with which 10 CFR 70.24 is concerned could occur during fuel handling operations. The SNM that could be assembled into a critical mass at a commercial nuclear power plant is in the form of nuclear fuel; the quantity of other forms of SNM that is stored on site is small enough to preclude achieving a critical mass. Because the fuel is not enriched beyond 5.0 weight percent Uranium-235 and because commercial nuclear plant licensees have procedures and features designed to prevent inadvertent criticality, the staff has determined that it is unlikely that an inadvertent criticality could occur due to the handling of SNM at a commercial power reactor. The requirements of 10 CFR 70.24, therefore, are not necessary to ensure the safety of personnel during the handling of SNM at commercial power reactors.

Environmental Impacts of the Proposed Action:

The Commission has completed its evaluation of the proposed action and concludes that there is no significant environmental impact if the exemption is granted. Inadvertent or accidental criticality will be precluded through compliance with the Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications (TS), the design of the fuel storage racks providing geometric spacing of fuel assemblies in their storage locations, and administrative controls imposed on fuel handling procedures. TS requirements specify reactivity limits for the fuel storage racks and minimum spacing between the fuel assemblies in the storage racks.

Appendix A of 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," Criterion 62, requires that criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically-safe configurations. This is met at Sequoyah Nuclear Plant, Units 1 and 2, as identified in the TS and the Updated Final Safety Analysis Report (UFSAR). Sequoyah TS Section 5.6.1.2 states that the new fuel

storage racks are designed for dry storage of unirradiated fuel assemblies having a U-235 enrichment less than or equal to 5.0 weight percent, while maintaining a k-effective of less than or equal to 0.98 under the most reactive condition. UFSAR Section 9.1.1, New Fuel Storage, for both Units 1 and 2 specify that the fuel racks are designed to provide sufficient spacing between fuel assemblies to maintain a subcritical (k-effective less than or equal to 0.98) array assuming the most reactive condition, and under all design loadings including the safe shutdown earthquake. The UFSAR also specifies that the new fuel racks are designed to preclude the insertion of a new fuel assembly between cavities.

The proposed exemption would not result in any significant radiological impacts. The proposed exemption would not affect radiological plant effluent nor cause any significant occupational exposures since the TS design controls (including geometric spacing of fuel assembly storage spaces) and administrative controls preclude inadvertent criticality. The amount of radioactive waste would not be changed by the proposed exemption.

The proposed exemption does not result in any significant nonradiological environmental impacts. The proposed exemption involves features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect non-radiological plant effluents and has no other environmental impact. Accordingly, the Commission concludes that there are no significant non-radiological environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

Since the Commission has concluded that there is no measurable environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. As an alternative to the proposed exemption, the staff considered denial of the requested exemption. Denial of the request would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the "Final Environmental Statement Related to the Sequoyah Nuclear Plant, Unit Nos. 1 and 2," dated February 13, 1974.

Agencies and Persons Consulted:

In accordance with its stated policy, on January 30, 1998, the Commission staff consulted with the State of Tennessee Official (Joelle Key) regarding the environmental impact of the proposed action. The State official had no comments.

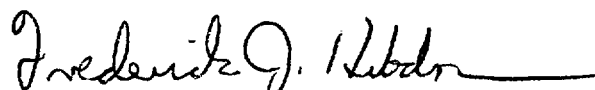
FINDING OF NO SIGNIFICANT IMPACT

Based upon the environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated December 5, 1997, which is available for public inspection at the Commission's Public Document Room, which is located at The Gelman Building, 2120 L Street, NW., Washington, D. C., and at the local public document room located at the Chattanooga-Hamilton County Library, 1001 Broad Street, Chattanooga, Tennessee.

Dated at Rockville, Maryland, this 17th day of March 1997.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation