

August 15, 1997

Mr. J.P. O'Hanlon  
Senior Vice President Nuclear  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Blvd.  
Glen Allen, Virginia 23060

SUBJECT: ENVIRONMENTAL ASSESSMENT OF REQUEST FOR EXEMPTION FROM  
10 CFR 70.24(a) CRITICALITY ACCIDENT REQUIREMENTS -  
SURRY POWER STATION, UNITS 1 & 2 (TAC NOS. M97904 AND M97905)

Dear Mr. O'Hanlon:

Enclosed for your information is a copy of the "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your application dated January 28, 1997, as supplemented March 24, 1997, which requested an exemption from certain requirements of 10 CFR 70.24(a), "Criticality Accident Requirements."

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

Sincerely,

Original signed by:

Gordon Edison, Senior Project Manager  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-280  
and 50-281

Enclosure: Environmental Assessment

cc w/encl: See next page

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Mr. J. P. O'Hanlon  
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Surry Power Station

cc:

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UNITED STATES NUCLEAR REGULATORY COMMISSION  
VIRGINIA ELECTRIC AND POWER COMPANY  
DOCKET NO. 50-280 AND 50-281  
SURRY POWER STATION  
ENVIRONMENTAL 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 No. DPR-32 and Facility Operating License No. DPR-37, issued to Virginia Electric and Power Company (the licensee), for operation of the Surry Power Station located in Surry County, Virginia.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The proposed action would exempt Virginia Electric and Power Company from the requirements of 10 CFR 70.24(a), which requires a monitoring system that will energize clear audible alarms if accidental criticality occurs in each area in which special nuclear material is handled, used, or stored. The proposed action would also exempt the licensee from the requirements to maintain emergency procedures for each area in which this licensed special nuclear material 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 January 28, 1997, as supplemented March 24, 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 special nuclear material, 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 special nuclear material 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 special nuclear material that is stored on site is small enough to preclude achieving a critical mass. Because the fuel is not enriched beyond 4.1 weight percent Uranium-235 and because commercial nuclear plant licensees have procedures and features designed to prevent inadvertent criticality, the staff has determined that inadvertent criticality is not likely to occur due to the handling of special nuclear material at a commercial power reactor. The requirements of 10 CFR 70.24(a), therefore, are not necessary to ensure the safety of personnel during the handling of special nuclear materials 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 Surry Power Station 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 Surry Units 1 and 2, as identified in the TS.

Surry TS Section 5.4, Fuel Storage, states that the new fuel assemblies are stored vertically in an array with a distance of 21 inches between assemblies to assure that the effective neutron multiplication factor,  $K_{eff}$ , will remain  $\leq 0.95$  if fully flooded with unborated water, and to assure  $K_{eff} \leq 0.98$  under conditions of low-density optimum moderation. The spent fuel assemblies are stored vertically in an array with a distance of 14 inches between assemblies to assure  $K_{eff} \leq 0.95$  if fully flooded with unborated water.

The proposed exemption would not result in any significant radiological impacts. The proposed exemption would not affect radiological plant effluents 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 nonradiological plant effluents and has no other environmental impact. Accordingly, the Commission concludes that there are no significant nonradiological 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 for the Surry Power Station."

Agencies and Persons Consulted:

In accordance with its stated policy the NRC staff consulted with Mr. Foldesi of the Virginia Department of Health on August 15, 1997, regarding the environmental impact of the proposed action. The State official had no comments.

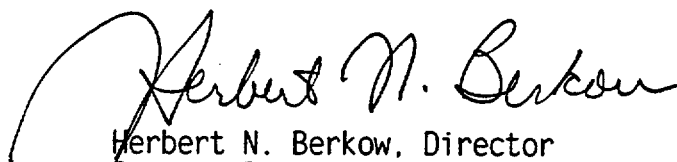
FINDING OF NO SIGNIFICANT IMPACT

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 January 28, 1997, as supplemented March 24, 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, DC, and at the local public document room located at the Swem Library, College of William and Mary, Williamsburg, Virginia.

Dated at Rockville, Maryland, this 15th day of August 1997.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script that reads "Herbert N. Berkow". The signature is written in black ink and is positioned above the typed name and title.

Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects I/II  
Office of Nuclear Reactor Regulation