

August 26, 1997

Mr. Gary J. Taylor
Vice President, Nuclear Operations
South Carolina Electric and Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88
Jenkinsville, South Carolina 29065

SUBJECT: ENVIRONMENTAL ASSESSMENT OF REQUEST FOR EXEMPTION FROM
10 CFR 70.24 CRITICALITY ACCIDENT REQUIREMENTS -
VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 (TAC NO. M99278)

Dear Mr. Taylor:

Enclosed for your information is a copy of the "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your application dated July 17, 1997, as supplemented August 6, 1997, which requested an exemption from certain requirements of 10 CFR 70.24, "Criticality Accident Requirements."

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

Sincerely,
Original signed by:
Allen R. Johnson, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure: Environmental Assessment

cc w/enclosure: See next page

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Mr. Gary J. Taylor
South Carolina Electric & Gas Company

VIRGIL C. SUMMER NUCLEAR STATION

cc:

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UNITED STATES NUCLEAR REGULATORY COMMISSIONSOUTH CAROLINA ELECTRIC AND GAS COMPANYDOCKET NO. 50-395VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1ENVIRONMENTAL 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. NPF-12, issued to South Carolina Electric and Gas Company (the licensee), for operation of the Virgil C. Summer Nuclear Station, Unit No. 1, located in Fairfield County, South Carolina.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would exempt the licensee from the requirements of 10 CFR 70.24, which requires a monitoring system that will energize clear audible alarms if accidental criticality occurs in each area in which special nuclear material (SNM) 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 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 July 17, 1997, as supplemented August 6, 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 in any given location 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 extremely 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 likely be precluded through compliance with the Virgil C. Summer Nuclear Station, Unit 1, 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 Virgil C. Summer Nuclear Station, Unit 1, as identified in the TS. The Virgil C. Summer Nuclear Station, Unit 1, TS Section 5.6.1.2 states that the new fuel storage racks are designed for dry storage of 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 0.95 if flooded with unborated water and less than or equal to 0.98 for low density optimum moderation conditions. FSAR Section 9.1.1.1, New Fuel Storage, specifies that the fuel racks are designed to provide sufficient spacing between fuel assemblies to maintain a subcritical array assuming the most reactive condition, and under all design loadings including the safe shutdown earthquake. FSAR Section 9.1.1.3 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 designed to 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 non-radiological 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 Virgil C. Summer Nuclear Station, Unit No. 1," dated January 1973, and "Final Environmental Statement Related to the Operation of the Virgil C. Summer Nuclear Station, Unit 1," dated May 1981.

Agencies and Persons Consulted:

In accordance with its stated policy, on August 26, 1997, the staff consulted with the South Carolina State official, Mr. Virgil Autry of the Bureau of Solid and Hazardous Waste Management, Department of Health and Environmental Control, 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 July 17, 1997, and supplemental letter dated August 6, 1997, which are available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Fairfield County Library, 300 Washington Street, Winnsboro, SC.

Dated at Rockville, Maryland, this 26th day of August 1997 .

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "V. L. Rooney". The signature is fluid and cursive, with the first name "Vernon" and last name "Rooney" clearly distinguishable.

Vernon L. Rooney, Acting Director
Project Directorate II-1
Division of Reactor Projects -I/II
Office of Nuclear Reactor Regulation