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UNITED STATES NUCLEAR REGULATORY COMMISSION

DUKE POWER COMPANY

DOCKET NOS. 50-369 AND 50-370

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

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 Nos. NPF-9 and NPF-17 issued to the Duke Power Company (the licensee), for operation of the McGuire Nuclear Station, Units 1 and 2, located in Mecklenburg County, North Carolina.

ENVIRONMENTAL ASSESSMENT

Identification 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 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.

The proposed action is in response to the licensee's application dated February 4, 1997, as supplemented on March 19, 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 4.75 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 special nuclear material 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 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 McGuire Nuclear Station Technical Specifications, 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. Technical Specifications 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 the criticality in the fuel storage and handling system to be prevented by physical systems or processes, preferably by use of geometrically safe configurations. This is met at McGuire, as identified in the Technical Specification Sections 3/4.9 and 5.6 and in the Updated Final Safety Analysis Report (UFSAR) Section 9.1, by detailed procedures that must be available for use by refueling personnel. Therefore, as stated in the Technical Specifications, these procedures, the Technical Specifications requirements, and the design of the fuel handling equipment with built-in interlocks and safety features, provide assurance that it is unlikely that an inadvertent criticality could occur during refueling. In addition, the design of the facility does not include provisions for storage of fuel in a dry location.

UFSAR Section 9.1.1, New Fuel Storage, states that new fuel is stored in the New Fuel Storage Racks located within a New Fuel Storage Vault at each McGuire unit. The new fuel storage racks are arranged to provide dry storage. The racks consist of vertical cells grouped in parallel rows, six rows wide and 16 cells long, which provide support for the new fuel assemblies and maintain a minimum center-to-center distance of 21 inches between assemblies. (Note that in none of these locations would criticality be possible.)

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 Technical Specifications, design controls (including geometric spacing and design 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 Related to the Operation of McGuire Nuclear Station Units 1, 2, and 3" dated March 1972.

Agencies and Persons Consulted:

In accordance with its stated policy, on July 12, 1997, the staff consulted with the North Carolina State official, Richard Fry of the Division of Radiation Protection, North Carolina Department of Environment, Health, and Natural Resources, regarding the environmental impact of the proposed exemption. The Stat 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 February 4, 1997, and supplement dated March 19, 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 local public document room located at the J. Murrey Atkins Library, University of North Carolina at Charlotte, 9201 University City Boulevard, North Carolina.

Dated at Rockville, Maryland, this 24th day of July 1997.

FOR THE NUCLEAR REGULATORY COMMISSION

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