

January 27, 2003

Mr. Dhiaa Jamil
Vice President, McGuire Site
Duke Energy Corporation
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION RE: ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT RELATED TO RE-ISSUANCE OF
EXEMPTION TO 10 CFR 70.24 (TAC NOS. MB5014 AND MB5015)

Dear Mr. Jamil:

Enclosed for your information is a copy of an "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your request dated February 4, 1997, as supplemented by letter dated March 19, 1997, which requested an exemption from certain requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 70.24, "Criticality Accident Requirements." That exemption, as issued on July 31, 1997, was based in part on the finding that with no boron in the spent fuel pool water a criticality parameter of k-effective less than a value of 0.95 would to be maintained. By letter dated April 18, 2002, as supplemented by letters dated August 7 and October 9, 2002, and January 15, 2003, the licensee submitted an application for revisions to the McGuire Technical Specifications to address the spent fuel pool Boraflex degradation issues. The analysis supporting this application proposed to take partial credit for boron in the spent fuel pool water. Therefore, a part of the technical basis for the granting of the exemption from 10 CFR 70.24 on July 31, 1997, is revised. Accordingly, the exemption and the associated environmental assessment are being reissued to reflect the revision in the design basis assumptions for the spent fuel pool in the calculation of the limiting value of the criticality parameter, k-effective.

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

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: Environmental Assessment

cc w/encl: See next page

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McGuire Nuclear Station

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UNITED STATES NUCLEAR REGULATORY COMMISSION

DUKE ENERGY CORPORATION

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 (NRC) is considering the re-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 (McGuire), Units 1 and 2, located in Mecklenberg County, North Carolina.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The proposed action would continue to authorize an exemption that was granted to the licensee on July 31, 1997, 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 continue to 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 for an exemption from 10 CFR 70.24 dated February 4, 1997, as supplemented by letter dated March 19, 1997, and reflects the licensee's letters dated April 18, August 7 and October 9, 2002, and January 15, 2003, wherein the licensee revised a portion of the technical basis supporting its request for the exemption.

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 provisions of 10 CFR 70.24 relate to an inadvertent criticality event that 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.

By letter dated April 18, 2002, as supplemented by letters dated August 7 and October 9, 2002, and January 15, 2003, the licensee submitted an application for revisions to the McGuire Technical Specifications (TSs) to address the spent fuel pool Boraflex degradation issues. The analysis supporting this application proposed to take partial credit for boron in the spent fuel pool water. Therefore, a part of the technical basis for the granting of the exemption from 10 CFR 70.24 on July 31, 1997, is revised. Accordingly, the exemption and the associated environmental assessment are being reissued to reflect the revision in the design basis assumptions for the spent fuel pool in the calculation of the limiting value of the criticality parameter, k -effective. 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 NRC 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 TSs, the design of the fuel storage racks that provide geometric spacing of fuel assemblies in their storage locations, and administrative controls imposed on fuel handling procedures. The 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 be prevented by physical systems or processes, preferably by use of geometrically safe configurations. This is met at McGuire, as identified in the TS Section 4.3 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 TSs, these procedures, the TS 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 spent fuel in a dry location within the fuel storage building.

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, 6 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 effluents nor cause any significant occupational exposures since the TSs, 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 action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application 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 NUREG-0063, "Final Environmental Statement Related to the Operation of William B. McGuire Nuclear Station, Units 1 and 2," April 1976, and the Addendum to NUREG-0063 issued in January 1981.

Agencies and Persons Contacted:

In accordance with its stated policy, on January 27, 2003, the staff consulted with the North Carolina State official, Mr. Johnny James of the Division of Environmental Health, Radiation Protection Section, North Carolina Department of Environment and Natural Resources, regarding the environmental impact of the proposed amendments. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC 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 requesting an exemption that was dated February 4, 1997, and supplemented by letter dated March 19, 1997, and the licensee's letters dated April 18, August 7, October 9, 2002, and January 15 2003, proposing a revision in certain design basis assumptions related to the issuance of the exemption from 10 CFR 70.24. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should

contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 27th day of January 2003.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Allen G. Howe, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation