

Mr. G. R. Horn  
 Sr. Vice President of Energy Supply  
 Nebraska Public Power District  
 1414 15th Street  
 Columbus, NE 68601

May 14, 1998

SUBJECT: ENVIRONMENTAL ASSESSMENT OF REQUEST FOR EXEMPTION FROM 10  
 CFR 70.24 CRITICALITY ACCIDENT REQUIREMENTS - COOPER NUCLEAR  
 STATION (TAC NO. MA1164)

Dear Mr. Horn:

Enclosed for your information is a copy of an "Environmental Assessment and Finding of No Significant Impact." This assessment relates to your application dated February 23, 1998, 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:  
 James R. Hall, Senior Project Manager  
 Project Directorate IV-1  
 Division of Reactor Projects III/IV  
 Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

May 14, 1998

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A handwritten signature in cursive script that reads "James R. Hall".

James R. Hall, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

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Mr. G. R. Horn  
Nebraska Public Power District

Cooper Nuclear Station

cc:

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of Intergovernmental Cooperation  
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Jefferson City, MO 65102

UNITED STATES NUCLEAR REGULATORY COMMISSIONNEBRASKA PUBLIC POWER DISTRICTDOCKET NO. 50-298COOPER NUCLEAR STATIONENVIRONMENTAL 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. DRP-46 issued to Nebraska Public Power District (the licensee), for operation of Cooper Nuclear Station located in Nemaha County, Nebraska.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would exempt Nebraska Public Power District from the requirements of 10 CFR 70.24, which require 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 February 23, 1998.

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**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 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 design features that 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 Cooper Nuclear Station Technical Specifications (TSs), 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. TSs 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 shall be prevented by physical systems or processes, preferably by use of geometrically-safe configurations. This is met at Cooper Nuclear Station, as identified in the TSs and the Updated Safety Analysis Report (USAR). Cooper Nuclear Station TSs Section 5.5, Fuel Storage, states that, "The new fuel storage vault shall be such that  $K_{eff}$  dry is less than 0.90 and flooded is less than 0.95. These  $K_{eff}$  limits are satisfied by maintaining the maximum, exposure-dependent  $K_{eff}$  of the individual fuel bundles  $\leq 1.29$ ." USAR Section X-2.0, New Fuel Storage, states that, "The new fuel racks shall be designed with sufficient spacing between the new fuel assemblies to assure that under normal conditions (dry) the fully loaded array will have a  $K_{eff} < 0.90$ . Under abnormal conditions, in the event of complete flooding, the fully loaded array will have a  $K_{eff} < 0.95$ . ... The analysis, which shows that the new fuel storage vault will have a  $K_{eff} \leq 0.90$  dry and a  $K_{eff} < 0.95$  flooded, provided the maximum exposure-dependent  $K_{eff} \leq 1.31$ , has been approved by the Nuclear Regulatory Commission as a part of GESTAR II." Note: to provide further assurance, the Technical Specifications have a more conservative limit than the USAR.

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 Technical Specifications, 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 Operation of Cooper Nuclear Station" dated February 1973.

Agencies and Persons Consulted:

In accordance with its stated policy, on May 7, 1998, the staff consulted with Mr. John Fassell, Health Physicist, of the Nebraska Department of Health, regarding the environmental impact of the proposed action. The State official had no comments.

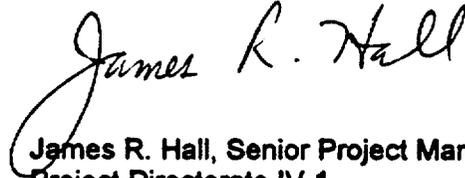
FINDING OF NO SIGNIFICANT IMPACT

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 February 23, 1998, 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 Auburn Memorial Library, 1810 Courthouse Avenue, Auburn, NE 68305.

Dated at Rockville, Maryland, this 14th day of May 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script that reads "James R. Hall". The signature is written in black ink and is positioned above the typed name and title.

James R. Hall, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation