WOLF CREEK
NUCLEAR OPERATING CORPORATION

Robert C. Hagan
Vice President Nuclear Assurance

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NA 94-0029

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Washington, D. C. 20555

Subject: Docket No. 50-482: Request for Exemption From 10 CFR 70.24 Criticality Monitoring Requirements

Gentlemen:

This letter submits an exemption request, pursuant to the provisions of 10 CFR 50.12, that applies in whole to the requirements of 10 CFR 70.24. 10 CFR 70.24 requires, in part, a criticality alarm system in each area in which special nuclear material is handled, used or stored, and the performance of drills to familiarize personnel with the evacuation plan. The attachment to this letter contains the exemption request with an evaluation that justifies that Wolf Creek Generating Station's fuel handling system, operating procedures, and storage racks are designed such that sub-criticality will be maintained under normal and accident conditions while moving or storing new or spent fuel.

If you have any questions concerning this matter, please contact me at (316) 364-8831, extension 4553, or Mr. Kevin J. Moles at extension 4565.

Very truly yours,

Robert C. Hagan

Robert C. Hagan

RCH/jra

Attachment

cc: L. J. Callan (NRC), w/a
G. A. Pick (NRC), w/a
W. D. Reckley (NRC), w/a
L. A. Yandell (NRC), w/a

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EXEMPTION REQUEST

Proposed Exemption

This proposed exemption request applies in whole to 10 CFR 70.24 which requires a monitoring system that will energize clearly audible alarms if accidental criticality occurs in each area in which special nuclear material is handled, used or stored. Also, 10 CFR 70.24 requires that emergency procedures be maintained for each area in which 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. These procedures must include the conduct of drills to familiarize personnel with the evacuation plan, designation of responsible individuals for determining the cause of the alarm, and placement of radiation survey instruments in accessible locations for use in such an emergency.

Special Justifying Circumstances

NRC Regulations provide for specific exemptions in 10 CFR 50.12(a), 10 CFR 70.14(a), and 10 CFR 70.24(d) as follows:

10 CFR 50.12(a)(2)(ii)	Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.
10 CFR 50.12(a)(1) 10 CFR 70.14(a)	The requirements of the regulations are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, and are otherwise in the public interest.
10 CFR 70.24(d)	Any licensee who believes that good cause exists why he should be granted an exemption in whole or in part from the requirements of this section may apply to the Commission for such exemption.

Special circumstances are present in that maintaining the criticality alarm monitors and conducting drills is not necessary to achieve the underlying purpose of the rule. Also, the exemption is authorized by law, will not present an undue risk to the public health and safety and is consistent with the common defense and security. The purpose of annunciating an accidental criticality and conducting drills is to protect personnel from accidental exposure to radiation in the event of inadvertent criticality. Since the geometric spacing of the new and spent fuel will maintain sub-criticality under normal and accident conditions, inadvertent criticality is prevented and such accidental personnel exposures are also prevented. In addition, since a potential for criticality does not exist, a request for exemption is appropriate in accordance with Regulatory Position C.1 of Regulatory Guide 8.12, "Criticality Accident Alarm Systems."

Evaluation

The Wolf Creek Generating Station spent fuel storage facility is located within the fuel building and has a total capacity of 1340 fuel assemblies with a minimum center to center spacing of 12.92 inches. The storage facility, which contains spent fuel storage racks, is constructed of reinforced concrete with a stainless steel lining and is an integral part of the fuel building. The facility provides a cooling and shielding medium for the spent fuel (borated water) and an efficient method for safe and reliable fuel handling operations within the spent fuel pool. It also provides protection for spent fuel assemblies under conditions such as tornadoes, hurricanes, earthquakes, and flooding.

Updated Safety Analysis Report (USAR) Section 9.1.2 states that, with the spent fuel assemblies placed at their prescribed locations in the storage racks, and with unborated water as a moderator in the spent fuel storage facility, the separation of 12.92 inches is sufficient to maintain a subcritical array with an effective multiplication factor of less than 0.95. Also, the spent fuel storage racks are constructed so as to preclude insertion of spent fuel assemblies into other than prescribed storage locations. If a fuel assembly is accidentally lowered or dropped onto the top of the racks or into the annular space between the spent fuel racks and the storage facility wall, subcriticality is maintained in all cases with an effective multiplication factor of less than 0.95. Therefore, the design of the spent fuel storage racks, handling equipment, and administrative controls are such that subcriticality will be maintained under normal and accident conditions.

The new fuel storage facility, which contains new fuel storage racks, is located in the fuel building and is a separate and protected area. The facility provides the option for onsite dry storage of 66 new fuel assemblies in the racks in a lattice array with a minimum center to center distance of 21 inches in both horizontal directions. The facility is enclosed by a reinforced concrete structure with an associated steel plate top containing hinged openings covering each fuel assembly. It is protected from the effects of natural phenomena, including earthquakes, tornadoes, hurricanes, floods, and external missiles. Drainage is also provided to prevent accumulation of water within the facility.

The criticality analysis described in Section 9.1.1 of the USAR states that spacing between new fuel assemblies in the storage racks is sufficient to maintain the array in a subcritical condition, even when fully loaded. Also, assuming that the pit was flooded by unborated water, the array would have an effective multiplication factor of less than 0.95 (0.98 assuming possible sources of moderation, such as aqueous foam or mist). Also, the probability of a dropped mass accident occurring is remote since the storage racks are protected from dropped objects by a steel protective cover and safe handling features are incorporated into the new fuel assembly handling tools. Therefore, the design of the new fuel storage rack, the fuel handling equipment, and the administrative controls is such that subcriticality will be maintained under normal and accident conditions.