

December 7, 1998

Mr. Otto L. Maynard  
President and Chief Executive Officer  
Wolf Creek Nuclear Operating Corporation  
Post Office Box 411  
Burlington, Kansas 66839

SUBJECT: ENVIRONMENTAL ASSESSMENT - WOLF CREEK NUCLEAR GENERATING STATION (TAC NO. MA1294)

Dear Mr. Maynard:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendment dated March 20, 1998, as supplemented by letters dated May 28, 1998, June 30, 1998, August 28, 1998, and September 4, 1998. The proposed amendment would support a modification to the Wolf Creek Generating Station to increase the storage capacity of the spent fuel pool and increase the maximum nominal fuel enrichment to 5.0 nominal weight percent U-235.

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

Sincerely,

Original Signed By  
Kristine M. Thomas, Project Manager  
Project Directorate IV-2  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure: Environmental Assessment

cc w/encl: See next page

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DATE	11/18/98	11/18/98	11/19/98	11/30/98

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Mr. Otto L. Maynard

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December 7, 1998

cc w/encl:

Jay Silberg, Esq.  
Shaw, Pittman, Potts & Trowbridge  
2300 N Street, NW  
Washington, D.C. 20037

Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011

Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
P. O. Box 311  
Burlington, Kansas 66839

Chief Engineer  
Utilities Division  
Kansas Corporation Commission  
1500 SW Arrowhead Road  
Topeka, Kansas 66604-4027

Office of the Governor  
State of Kansas  
Topeka, Kansas 66612

Attorney General  
Judicial Center  
301 S.W. 10th  
2nd Floor  
Topeka, Kansas 66612

County Clerk  
Coffey County Courthouse  
Burlington, Kansas 66839

Vick L. Cooper, Chief  
Radiation Control Program  
Kansas Department of Health  
and Environment  
Bureau of Air and Radiation  
Forbes Field Building 283  
Topeka, Kansas 66620

Chief Operating Officer  
Wolf Creek Nuclear Operating Corporation  
P. O. Box 411  
Burlington, Kansas 66839

Supervisor Licensing  
Wolf Creek Nuclear Operating Corporation  
P.O. Box 411  
Burlington, Kansas 66839

U.S. Nuclear Regulatory Commission  
Resident Inspectors Office  
8201 NRC Road  
Steedman, Missouri 65077-1032

Mr. Gene Gunn (5)  
Environmental Review Coordinator  
726 Minnesota Avenue  
Kansas City, Kansas 66101

**UNITED STATES NUCLEAR REGULATORY COMMISSION****WOLF CREEK NUCLEAR OPERATING CORPORATION****DOCKET NO. 50-482****WOLF CREEK NUCLEAR GENERATING STATION****ENVIRONMENTAL ASSESSMENT AND FINDING OF****NO SIGNIFICANT IMPACT**

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-42, issued to Wolf Creek Nuclear Operating Corporation (the licensee), for operation of the Wolf Creek Nuclear Generating Station located in Coffey County, Kansas.

**ENVIRONMENTAL ASSESSMENT****Identification of the Proposed Action:**

The proposed action would revise the Wolf Creek Generating Station (WCGS) technical specifications to allow an increase in the WCGS spent fuel pool (SFP) storage capacity and to allow an increase in the maximum nominal fuel enrichment to 5.0 nominal weight percent U-235.

The proposed action is in accordance with the licensee's application for amendment dated March 20, 1998, as supplemented by letters dated May 28, 1998, June 30, 1998, August 28, 1998, and September 4, 1998.

**The Need for the Proposed Action:**

WCGS received its low power operating license on March 11, 1985. At that time, the SFP was authorized to store no more than 1340 fuel assemblies. Current projection, based on

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expected future spent fuel discharges, indicate that loss of full-core discharge capability will occur at the end of Cycle 14 in 2005. Operation of WCGS beyond loss of full-core discharge capability is possible for Cycles 15 and 16 to provide an additional three to four years of operation until 2008. Wolf Creek has evaluated spent fuel storage alternatives that have been licensed by the NRC and which are currently feasible for use at the WCGS site. The evaluation concludes that re-racking is currently the most cost-effective alternative. Re-racking would provide an increase in storage capacity to 2642 fuel assemblies, which would maintain the plant's capability to accommodate a full-core discharge, through the end of the current plant license in 2025.

The proposed action to increase the maximum nominal fuel enrichment to 5.0 nominal weight percent U-235 is needed so that the licensee can use higher fuel enrichment to provide additional flexibility in the licensee's reload design efforts and to increase the efficiency of fuel storage cell use in the spent fuel pool.

Environmental Impacts of the Proposed Action:

**Radiological Impacts**

The Wolf Creek Nuclear Generating Station uses waste treatment systems designed to collect and process gaseous, liquid, and solid waste that might contain radioactive material. These radioactive waste treatment systems were evaluated in the Final Environmental Statement (FES) dated June 1982. The proposed spent fuel pool (SFP) expansion will not involve any change in the waste treatment systems described in the FES.

**Radiological Material Released to the Atmosphere**

The storage of additional spent fuel assemblies in the SFP is not expected to affect the releases of radioactive gases from the SFP. Gaseous fission products such as Krypton-85 and

Iodine-131 are produced by the fuel in the core during reactor operation. A small percentage of these fission gases is released to the reactor coolant from the small number of fuel assemblies which are expected to develop leaks during reactor operation. During refueling operations, some of these fission products enter the SFP and are subsequently released into the air. Since the frequency of refuelings (and therefore the number of freshly offloaded spent fuel assemblies stored in the SFP at any one time) will not increase, there will be no increase in the amounts of these types of fission products released to the atmosphere as a result of the increased SFP fuel storage capacity.

The increased heat load on the SFP from the storage of additional spent fuel assemblies could potentially result in an increase in the SFP evaporation rate, which may result in a slight increase in the amount of gaseous tritium released from the pool. However, the overall release of radioactive gases from Wolf Creek will remain a small fraction of the limits of 10 CFR 20.1301.

#### Solid Radioactive Wastes

Spent resins, which are generated by the processing of SFP water through the SFP purification system, are changed about once a year at Wolf Creek. These spent resins are disposed of as solid radioactive waste. The water turbulence caused by the SFP reracking may result in some resuspension of particulate matter in the SFP. This could result in a temporary increase in the resin changeout frequency of the SFP purification system during the SFP reracking operation. The licensee will use a Tri-Nuke underwater filtration unit to clean the floor of the SFP following removal of the old SFP rack modules. Vacuuming of the SFP floor will remove any extraneous debris and crud and ensure visual clarity in the SFP (to facilitate diving operations). Debris and crud will be filtered and stored underwater in special handling baskets

purchased for this operation. Additional solid radwaste will consist of the old SFP rack modules themselves as well as any interferences or SFP hardware that may have to be removed from the SFP to permit installation of the new SFP rack modules. Other than the radwaste generated during the actual racking operation, the staff does not expect that the additional fuel storage made possible by the increased SFP storage capacity will result in a significant change in the generation of solid radwaste at Wolf Creek.

#### Liquid Radioactive Waste

The release of radioactive liquids will not be affected directly as a result of the SFP modifications. The SFP ion exchanger resins remove soluble radioactive materials from the SFP water. When the resins are changed out, the small amount of resin sludge water that is released is processed by the radwaste system. As stated above, the frequency of resin changeout may increase slightly during the installation of the new racks. However, the amount of liquid radioactivity released to the environment as a result of the proposed SFP expansion is expected to be negligible.

#### Occupational Doses

Radiation protection personnel will constantly monitor the doses to the workers during the SFP expansion operation. If it becomes necessary to utilize divers for the SFP racking operation, the licensee will equip each diver with electronic dosimeters with remote, above surface, readouts, which will be continuously monitored by Health Physics personnel. The total occupational dose to plant workers as a result of the SFP expansion operation is estimated to be between 6 and 12 person-rem. This dose estimate is comparable to doses for similar SFP modifications performed at other plants. The upcoming SFP rack installation will follow detailed

procedures prepared with full consideration of as low as is reasonably achievable (ALARA) principles.

On the basis of the review of the Wolf Creek proposal, the staff concludes that the Wolf Creek SFP rack installation can be performed in a manner that will ensure that doses to workers will be maintained ALARA. The estimated dose of 6 to 12 person-rem to perform the proposed SFP rack installation is a small fraction of the annual collective dose accrued at Wolf Creek.

#### Accident Considerations

In its application, the licensee evaluated the possible consequences of a fuel handling accident to determine the thyroid and whole-body doses at the exclusion area boundary (EAB), low population zone (LPZ), and control room. The proposed SFP rack installation at the Wolf Creek Nuclear Generating Station will not affect any of the assumptions or inputs used in evaluating the dose consequences of a fuel handling accident and therefore will not result in an increase in the doses from a postulated fuel handling accident.

#### Uranium Fuel Cycle and Transportation

The environmental impacts of transportation resulting from the use of higher enrichment fuel and extended irradiation were published and discussed in the staff assessment entitled, "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation," dated July 7, 1988, and published in the Federal Register (53 FR 30355) on August 11, 1988, as corrected on August 24, 1988 (53 FR 32322), in connection with Shearon Harris Nuclear Power Plant, Unit 1: Environmental Assessment and Finding of No Significant Impact. As indicated therein, the environmental cost contribution of the proposed increase in the fuel enrichment and irradiation limits are either unchanged or may, in fact, be

reduced from those summarized in Table S-4 as set forth in 10 CFR 51.52(c). Accordingly, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed amendment.

Details of the radiological consequences of the proposed action will be discussed in the staff's safety evaluation for the proposed changes.

The Commission has completed its evaluation of the proposed action and concludes that the proposed action will not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not involve any historical sites. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

Accordingly, the Commission concludes that there are no significant environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

Shipment of Fuel to a Permanent Federal Fuel Storage/Disposal Facility

Shipment of spent fuel to a high-level radioactive storage facility is an alternative to increasing the onsite spent fuel storage capacity. However, the U.S. Department of Energy's (DOE's) high-level radioactive waste repository is not expected to begin receiving spent fuel until approximately 2010, at the earliest. In October 1996, the Administration did commit DOE to begin storing wastes at a centralized location by January 31, 1998. However, no location

has been identified and an interim federal storage facility has yet to be identified in advance of a decision on a permanent repository. Therefore, shipping spent fuel to the DOE repository is not considered an alternative to increased onsite spent fuel storage capacity at this time.

#### Shipment of Fuel to a Reprocessing Facility

Reprocessing of spent fuel from the Wolf Creek Nuclear Generating Station is not a viable alternative since there are no operating commercial reprocessing facilities in the United States. Therefore, spent fuel would have to be shipped to an overseas facility for reprocessing. However, this approach has never been used and it would require approval by the Department of State as well as other entities. Additionally, the cost of spent fuel reprocessing is not offset by the salvage value of the residual uranium; reprocessing represents an added cost.

#### Shipment of Fuel to Another Utility or Site for Storage

The shipment of fuel to another utility for storage would provide short-term relief from the storage problem at the Wolf Creek Nuclear Generating Station. The Nuclear Waste Policy Act and 10 CFR Part 53, however, clearly place the responsibility for the interim storage of spent fuel with each owner or operator of a nuclear plant. The shipment of fuel to another source is not an acceptable alternative because of increased fuel handling risks and additional occupational radiation exposure, as well as the fact that no additional storage capacity would be created.

#### Reduction of Spent Fuel Generation

Improved usage of fuel and/or operation at a reduced power level would decrease the amount of fuel being stored in the pool and thus increase the amount of time before full core off-load capacity is lost. With extended burnup of fuel assemblies, the fuel cycle would be

extended and fewer offloads would be necessary. The licensee is planning on operation of an 18-month refueling cycle, and, as part of this proposed amendment, the licensee plans to increase the enrichment to 5 percent. Operating the plant at a reduced power level would not make effective use of available resources, and would cause unnecessary economic hardship on Wolf Creek Nuclear Operating Corporation and its customers. Therefore, reducing the amount of spent fuel generated by increasing burnup further or reducing power is not considered a practical alternative.

The staff also considered denial of the proposed action (no-action alternative). Denial of the application would result in no change in current environmental impacts.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for the Wolf Creek Nuclear Generating Station dated June 1982.

Agencies and Persons Consulted:

In accordance with its stated policy, on December 4, 1998, the staff consulted with the Kansas State official, Mr. Vick Cooper of the Kansas Department of Health and Environment, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of 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 March 20, 1998, as supplemented by letters dated May 28, 1998, June 30, 1998, August 28, 1998, and September 4, 1998, 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 rooms located at the Emporia State University, William Allen White Library, 1200 Commercial Street, Emporia, Kansas 66801 and Washburn University School of Law Library, Topeka, Kansas 66621.

Dated at Rockville, Maryland, this 7th day of December 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

*Kristine M Thomas*

Kristine M. Thomas, Project Manager  
Project Directorate IV-2  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation