July 11, 1997

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

SUBJECT: WOLF CREEK GENERATING STATION - AMENDMENT NO. 107 TO FACILITY OPERATING LICENSE NO. NPF-42 (TAC NO. M98508)

Dear Mr. Maynard:

The Commission has issued the enclosed Amendment No. 107 to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated April 23, 1997.

The amendment will allow the service air and breathing air containment penetrations to remain open under administrative control during periods of core alterations or movement of irradiated fuel inside containment.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original Signed By

James C. Stone, Senior Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures: 1. Amendment No. 107 to NPF-42
2. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

Docket File	OGC, 015B18
PUBLIC	WBateman
PDIV-2 Reading	GHill (2)
EGAI	CGrimes, 013H14
WJohnson, RIV	JRoe
JStone	ACRS
EPeyton	TLH3 (SE)
LHurley, RIV	JKilcrease, RIV
CBerlinger	CMiller
PGwynn, RIV	

DFO1/1

DOCUMENT NAME: 98508AMD.WC

OFC	PDIV-2/PM	PDIV-2/LA	NRR/SCSB	NRR/PERB	OGC
NAME	JStone:ye	EPeyton	CBerlinger	CMiller	EHolleran
DATE	5/19/97	5/16/97	6/02/97	5/21/97	6/10/97

OFFICIAL RECORD COPY

CP-1

cc w/encls:
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

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

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 107
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Wolf Creek Generating Station (the facility) Facility Operating License No. NPF-42 filed by the Wolf Creek Nuclear Operating Corporation (the Corporation), dated April 23, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-42 is hereby amended to read as follows:

   2. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 107, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. The Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

James C. Stone

James C. Stone, Senior Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: July 11, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 107

FACILITY OPERATING LICENSE NO. NPF-42

DOCKET NO. 50-482

Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
3/4 9-4	3/4 9-4
B 3/4 9-2	B 3/4 9-2

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment door closed and held in place by a minimum of four bolts,

b. A minimum of one door in the emergency airlock is closed* and one door in the personnel airlock is capable of being closed, and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed by an isolation valve, blind flange, manual valve, or approved functional equivalent, or

2) Be capable of being closed by an OPERABLE automatic containment purge isolation valve.

d. Penetration P-63 (Service Air valves KA V-039 and KA V-118) and Penetration P-98 (Breathing Air valves KB V-001 and KB V-002) may be opened under administrative controls.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic containment purge isolation valve within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their required condition, or

b. Testing the containment purge isolation valves per the applicable portions of Specification 4.6.3.2.

---

*An emergency escape hatch temporary closure device is an acceptable replacement for that airlock door.

3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The limitation on Keff of no greater than 0.95 is sufficient to prevent reactor criticality during refueling operations. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portions of the Reactor Coolant System. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

When determining compliance with action statement requirements, addition to the RCS of borated water with a concentration greater than or equal to the minimum required RWST concentration shall not be considered to be a positive reactivity change.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material from containment will be minimized. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

The OPERABILITY of this system ensures the containment purge penetrations will be automatically isolated upon detection of high radiation levels within containment. The OPERABILITY of this system is required to restrict the release of radioactive materials from the containment atmosphere to the environment.

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS (Continued)

Both containment personnel airlock doors may be open during movement of irradiated fuel or CORE ALTERATIONS, provided one airlock door is capable of being closed and the water level in the refueling pool is maintained as required. Service Air valves KA V-039 and KA V-118 (Containment penetration P-63) and Breathing Air valves KB V-001 and KB V-002 (Containment penetration P-98) may be opened under administrative controls during movement of irradiated fuel or CORE ALTERATIONS to provide air services to the reactor building to support outage activities. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the containment during movement of irradiated fuel or CORE ALTERATIONS, 2) specified individuals are designated and readily available to close the airlock or the service air and breathing air valves following an evacuation that would occur in the event of a fuel handling accident, and 3) any obstructions (e.g., cables and hoses) that could prevent rapid closure of an open airlock can be quickly removed.

Equivalent isolation methods for the emergency personnel escape lock and containment wall penetrations ensure releases from containment are prevented for credible accident scenarios. The isolation techniques must be approved by an engineering evaluation and may include use of a material that can provide a temporary, pressure tight seal capable of maintaining the integrity of the penetrations and airlock to restrict the release of radioactive material from a fuel element rupture.

3/4.9.5 DELETED

3/4.9.6 DELETED

3/4.9.7 DELETED

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification. The minimum of 1000 gpm allows flow rates which provide additional margin against vortexing at the RHR pump suction while in a reduced RCS inventory condition.

Addition of borated water with a concentration greater than or equal to the minimum required RWST concentration but less than the actual RCS boron concentration shall not be considered a reduction in boron concentration.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of RHR capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 107 TO FACILITY OPERATING LICENSE NO. NPF-42

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By letter dated April 23, 1997, Wolf Creek Nuclear Operating Corporation (the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-42) for the Wolf Creek Generating Station. The proposed changes would revise Technical Specification 3/4.9.4 to add a new limiting condition of operation to state that Penetration P-63 (service air valves KA V-039 and KA V-118) and Penetration P-98 (breathing air valves KB V-001 and KB V-002) may be opened under administrative controls during core alterations and movement of irradiated fuel assemblies within the containment. The associated Bases will also be revised.

Specifically, a new LCO 3.9.4.d. would be added as follows:

"d. Penetration P-63 (Service Air valves KA V-039 and KA V-118) and Penetration P-98 (Breathing Air valves KB V-001 and KB V-002) may be opened under administrative controls."

Bases 3/4.9.4 would be changed to read as follows:

"Both containment personnel airlock doors may be open during movement of irradiated fuel or CORE ALTERATIONS, provided on airlock door is capable of being closed and the water level in the refueling pool is maintained as required. *Service Air valves KA V-039 and KA V-118 (Containment penetration P-63) and Breathing Air valves KB V-001 and KB V-002 (Containment penetration P-98) may be opened under administrative controls during movement of irradiated fuel or CORE ALTERATIONS to provide air services to the reactor building to support outage activities.* Administrative controls ensure that 1) appropriate personnel are aware of the open status of the containment during movement of irradiated fuel or CORE ALTERATIONS, 2) specified individuals are designated and readily available to close the airlock *or the service air and breathing air valves* following an evacuation that would occur in the event of a fuel handling accident, and 3) any obstructions (e.g., cables and hoses) that could prevent rapid closure of an open airlock can be quickly removed."

NOTE: Italics indicates the changes.

2.0 BACKGROUND

During plant outages, service air and breathing air must be provided to the containment building to support various outage activities. The requirements for containment penetration closure ensures that a release of fission products within the containment will be restricted from escaping to the environment. Allowing penetration flow paths that provide direct access from the containment atmosphere to the outside atmosphere to be opened under administrative control raises the concern that radioactivity could be released through the unisolated flow paths in the event of an accident during core alterations or movement of radioactive fuel that leads to a release of radioactivity. Normally, Penetration P-63 (a nominal 4-inch line) and P-98 (a nominal 2-inch line) would not provide direct access from the containment atmosphere to the outside atmosphere because of the pressurization of the service air and breathing air lines from their respective air compressors when the systems are in service. However, the possibility exists that direct access could be established through these penetrations if the associated air compressor was turned off or failed with its respective containment isolation valves open. The licensee has proposed to use administrative controls, currently in place for the open containment air lock, to ensure the manual valves are closed whenever their associated air compressors are not running. In the event of a fuel handling accident or loss of cooling, the manual isolation valves would be closed.

3.0 EVALUATION

The licensee has identified two accidents that could result in a release of radioactive material through the two potential leak paths: a fuel handling accident that results in breaching of the fuel rod cladding, and a loss of residual heat removal (RHR) cooling event that could lead to core boiling and uncovery.

Amendment 95 approved leaving the containment air lock open during fuel movement and core alterations. In that application, the licensee recalculated the doses and revised the design basis for the fuel handling accident analysis to be consistent with Regulatory Guide (RG) 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors." In that reanalysis, credit was not taken for the containment building barriers. The licensee's analysis calculated the doses for the 0-2 hour period at the exclusion area boundary to be 0.2 rem to the whole body and 55 rem to the thyroid. These calculated doses are within the standard review plan (SRP) criteria of 6 rem to the whole body and 75 rem to the thyroid. The thyroid dose to the control room operators was calculated to be 9.7 rem and is within the exposure guidelines of General Design Criterion (GDC) 19.

The NRC staff did an independent analysis of the fuel handling accident in its evaluation of Amendment 95 to determine conformance with the requirements of 10 CFR Part 100 and GDC 19. The staff analysis utilized the accident source term given in RG 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water

Reactors," the assumptions contained in RG 1.25, and the review procedures specified in SRP Sections 15.7.4 and 6.4. The staff assumed an instantaneous puff release of nobel gases and radioiodine from the gap and plenum of the broken fuel rods. These gas bubbles will pass through at least 23 feet of water covering the fuel prior to reaching the containment atmosphere. All airborne activity reaching the containment atmosphere is assumed to exhaust to the environment within 2 hours. The gap activity is assumed to have decayed for a period of 100 hours. The staff's analysis calculated the doses for the 0-2 hour period at the exclusion area boundary to be 0.14 rem to the whole body and 39.7 rem to the thyroid. The dose to the operators was calculated to be 0.07 rem to the whole body and 14.5 rem to the thyroid. These doses are within the SRP guidelines and the GDC 19 guidelines.

The potential dose consequences from a simultaneous release of the gaseous effluents through the unisolated penetration flow paths and the open personnel airlock doors is the same. That is because the analysis assumes all radioactive material from the fuel handling accident is released to the environment. Therefore, allowing penetration flow paths to be unisolated during core alterations or movement of irradiated fuel will not invalidate the conclusion that the potential dose consequences from a fuel handling accident will be well within the 10 CFR Part 100 limits. The staff agrees with this conclusion.

The licensee has reported for the case where RHR cooling is lost, the release of radioactive material would be insignificant as a result of boil-off, provided the event does not continue for an extended period of time, which could result in core uncovery and core damage. This is because the amount of radioactivity is limited to the total coolant activity. Maximum coolant activity is limited to that activity that corresponds to 1 percent fuel defect. This activity is less than the total gap activity assumed to be released from a fuel handling accident. The time to boil in the core, 100 hours after shutdown, is greater than 5 hours if a loss of RHR cooling should occur. Technical Specification 3/4.9.8 requires that corrective actions be taken immediately to restore RHR cooling and that all containment penetrations that are open to the outside atmosphere be closed within 4 hours. The licensee concludes that if cooling is restored within the 5 hours, the release of radioactivity from the reactor core through an unisolated penetration would not be a concern. The staff agrees with this conclusion.

The staff has historically required plant technical specifications to maintain containment closure during core alterations and fuel handling as a defense-in-depth measure to further limit releases. This has been relaxed by allowing both doors to the containment air lock to be open during core alterations and fuel handling with provisions in place to quickly close one door (Amendment 95, dated February 28, 1996). The licensee has proposed to extend the same provisions to the two open containment penetrations which are: written procedures that require designated personnel to be informed of the open status of the valves in question and specified persons to be designated and readily

available to isolate the open penetration in the event of a fuel handling accident. These conditions are described in the revised Bases Section 3/4.9.4.

The staff has reviewed the licensee's analysis and its own analysis performed in conjunction with Amendment 95. The staff concludes that the radiological consequences associated with the fuel handling accident with both containment air lock doors open bounds the case where the two containment penetrations are open. Therefore, the proposed change to allow containment Penetration P-63 and Penetration P-98 to remain open during core alterations or irradiated fuel movement within the containment, with administrative controls in place to quickly close them, is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Kansas State Official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 30648). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Stone

Date: July 11, 1997