

March 29, 2001

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

SUBJECT: RELIEF REQUEST FROM THE REQUIREMENTS OF ASME CODE, SECTION XI,
RELATED TO CODE CASE OMN-1 FOR WOLF CREEK GENERATING STATION
(TAC NO. MB0982)

Dear Mr. Maynard:

By letter dated December 15, 2000 (ET 00-0046), you stated that the previously approved Relief Request 2VR-7 to use the American Society of Mechanical Engineers (ASME) Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants," with certain limitations, would be revised to use the new rule 10 CFR 50.55a(b)(3)(iii). Relief Request 2VR-7 was previously approved by the staff's letter dated November 26, 1997.

You stated that you intend to implement ASME Code Case OMN-1 in lieu of ASME OMa-1988 Part 10, with the exception of ASME OMa-1988, Part 10, Section 4.2.2, "Valve Seat Leakage Rate Test." You are revising Relief Request 2VR-7 to follow the limitations and conditions set forth in 10 CFR 50.55a instead of the conditions accepted in the letter of November 26, 1997.

The staff has reviewed your request and the staff's evaluation and conclusions are in the enclosed safety evaluation. Based on the evaluation, the use of revised Relief Request 2VR-7 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) in that the proposed alternative provides an acceptable level of quality and safety. The staff may conduct inspections at the Wolf Creek Generating Station to verify that the implementation of OMN-1 is in accordance with the commitments discussed in the enclosed safety evaluation.

Sincerely,

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure: Safety Evaluation

cc w/encl: See next page

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cc w/encl: See next page

*For previous concurrences
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Wolf Creek Generating Station

cc:

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, TX 76011

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

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

Office of the Governor
State of Kansas
Topeka, KS 66612

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

County Clerk
Coffey County Courthouse
Burlington, KS 66839

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

Vice President & Chief Operating Officer
Wolf Creek Nuclear Operating Corporation
P. O. Box 411
Burlington, KS 66839

Superintendent Licensing
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO INSERVICE TESTING PROGRAM

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

The *Code of Federal Regulations*, 10 CFR 50.55a, requires that inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (BPV Code), or the ASME *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code), except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the licensee must demonstrate that: (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section 50.55a(f)(4)(iv) provides that inservice tests of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed, and subject to Commission approval.

Pursuant to 10 CFR 50.55a, the Commission may grant relief from or authorize proposed alternatives to ASME Code requirements upon making the necessary findings. By letter dated January 28, 1997, the Wolf Creek Nuclear Operating Corporation (licensee) submitted Relief Request 2VR-7 from ASME BPV Code requirements for the IST Program at the Wolf Creek Generating Station. The NRC staff approved the licensee's request as described in a safety evaluation (SE) forwarded by a letter dated November 26, 1997, to the licensee. In a letter dated December 15, 2000, the licensee notified the NRC that it was modifying its actions described in Relief Request 2VR-7. The NRC staff's findings with respect to revised Relief Request 2VR-7 are contained in this SE. This SE supercedes the staff's SE dated November 26, 1997, regarding Relief Request 2VR-7.

2.0 EVALUATION

The IST provisions of the ASME Code currently specify the measurement of the stroke time of motor-operated valves (MOVs) within the scope of the Code on a quarterly frequency. In its submittal dated January 28, 1997, the licensee requested use of the alternative to MOV quarterly stroke-time testing described in ASME Code Case OMN-1, "Alternative Rules for

Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants, OM Code-1995, Subsection ISTC." Specifically, the licensee proposed the following alternative testing:

MOV testing will comply with the requirements of ASME OM Code Case OMN-1, ... , with the following limitations:

- a. The potential benefits (such as identification of decreased thrust output and increased thrust requirements) and potential adverse effects (such as accelerated aging or valve damage) will be considered when determining the appropriate testing for each MOV.
- b. Where the selected test interval extends beyond 5 years, performance and test experience from previous tests shall be evaluated to justify the periodic verification interval.
- c. The risk insights determined during Wolf Creek's participation in the Electric Power Research Institute (EPRI) Risk-Based Inservice Testing Pilot Project (ref. EPRI TR-105869) and on-going development of an updated risk-based categorization process based upon ASME Research guidance and Codes as applicable will be used in accordance with the requirements of the ASME OM Code Case OMN-1.

In Code Case OMN-1, ASME established guidance for a program of exercising and diagnostic testing on a frequency that provides continuing assurance of the capability of MOVs to perform their safety functions. OMN-1 specifies exercising of MOVs at least once every refueling cycle to verify electrical continuity and to provide internal lubrication. Further, OMN-1 specifies periodic MOV diagnostic testing (including a mix of static and dynamic tests) to obtain sufficient information to determine the rate of degradation of MOV performance in terms of the potential increase in required thrust and torque, and the potential decrease in actuator output. OMN-1 allows licensees to establish periodic test intervals that may extend up to 10 years if there is assurance that the MOV will remain capable of performing its safety function throughout the interval. In Generic Letter (GL) 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," the NRC staff stated that, with certain limitations, the method described in OMN-1 meets the intent of GL 96-05 to verify the design-basis capability of safety-related MOVs on a periodic basis. The limitations in GL 96-05 on the use of OMN-1 were (1) a precaution regarding consideration of benefits and potential adverse effects when determining appropriate MOV testing; (2) a provision for the evaluation of applicable MOV test information before extending test intervals beyond five years or three refueling outages; and (3) a provision for licensees participating in the industry pilot effort for IST programs that would consider risk insights to address the relationship of OMN-1 to their pilot initiative.

The NRC staff reviewed the proposed application of OMN-1 at Wolf Creek as described in the licensee's submittal dated January 28, 1997, in comparison to the guidance in GL 96-05. In a letter dated September 2, 1997, the licensee provided supplemental information on its proposed OMN-1 program. In particular, the licensee stated that, rather than implementing OMN-1 for all MOVs in its IST program, its engineering staff would evaluate each MOV group on the basis of safety importance and cost to determine the priority and scope for inclusion in the OMN-1

program. The licensee had not identified any incompatibilities between OMN-1 and the Joint Owners Group Program on MOV Periodic Verification in response to GL 96-05. The licensee planned to include the OMN-1 provisions in the IST program at Wolf Creek using a controlled process in accordance with OMN-1 and evaluated under 10 CFR 50.59.

In the SE dated November 26, 1997, the NRC staff provided the following comments on the licensee's MOV program, as compared to the provisions of OMN-1:

- a. Section 3.3.1 of OMN-1 includes a 10-year maximum test interval.
- b. If the licensee planned to prepare risk-informed implementation criteria as allowed by Section 3.7 of OMN-1, the staff might review those criteria to ensure their consistency with guidance that was being developed by the NRC and nuclear industry on the application of risk insights in IST programs.
- c. OMN-1 includes provisions for developing procedures to calculate MOV functional margin and to determine an allowable test interval.
- d. The staff might review plant-specific procedures for the implementation of OMN-1 at the Wolf Creek Generating Station during a future inspection.

In the SE dated November 26, 1997, the NRC staff determined that the licensee's proposed use of ASME Code Case OMN-1, together with the specified conditions, provided an acceptable level of quality and safety in assuring the operational readiness of MOVs. Therefore, the staff authorized the licensee's proposed alternative to use OMN-1 at the Wolf Creek Generating Station with the specified conditions in lieu of quarterly MOV stroke-time testing pursuant to 10 CFR 50.55a(a)(3)(i). The staff requested that the licensee notify the NRC (1) upon the development of procedures to calculate MOV functional margin and to determine an allowable test interval, and other procedures for implementing OMN-1, and (2) prior to the use of any risk-informed criteria that the licensee might develop as described in Section 3.7 of OMN-1. The staff also stated that, following issuance of the NRC's generic position on OMN-1 through rulemaking or some other means, the licensee was to follow any limitations or conditions specified in the NRC endorsement if it intended to implement OMN-1.

In rulemaking issued on September 22, 1999, the NRC incorporated by reference the 1995 Edition with the 1996 Addenda of the ASME OM Code into 10 CFR 50.55a. In the regulations, the NRC stated that Code Case OMN-1 is acceptable as an alternative to the stroke-time testing requirements of OM Code ISTC 4.2, 1995 Edition with the 1996 Addenda, with two conditions.

First condition, the adequacy of the diagnostic test interval for each valve must be evaluated and adjusted as necessary, but not later than five years or three refueling outages (whichever is longer) from the initial implementation of OMN-1.

Second condition, when extending exercise test intervals for high risk MOVs beyond a quarterly frequency, licensees shall ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

The staff is considering actions to provide generic endorsement of the use of OMN-1 in lieu of the stroke-time test provisions of ASME Code editions and addenda published earlier than 1995.

In its letter dated December 15, 2000, the licensee stated that it was continuing its effort to implement Code Case OMN-1 at Wolf Creek in lieu of ASME OMa-1988 Part 10, with the exception of ASME OMa-1988, Part 10, Section 4.2.2, "Valve Seat Leakage Rate Test." The licensee stated that it would follow the OMN-1 limitations and conditions set forth in the rulemaking applicable to the 1995 OM Code Edition rather than its previous commitments. In a telephone conversation on March 1, 2001, with the NRC staff, the licensee clarified its revision of Relief Request 2VR-7 to replace the commitments in the original request with those specified in its letter dated December 15, 2000. Based on its review of the December 15, 2000, letter, the staff concluded that the licensee had provided sufficient information in the letter for the staff to reach its findings in this SE.

The NRC discusses the acceptance of the use of OMN-1 as an alternative to quarterly MOV stroke-time testing in the Statement of Considerations (64 *Federal Register* 51370, 51386-51387) for the rulemaking dated September 22, 1999. In particular, the NRC states that it has been recognized since 1989 that the quarterly MOV stroke-time testing provisions in the ASME Code are not sufficient to provide assurance of MOV operability under design-basis conditions. The development of OMN-1 is the beginning of an effort to correct this weakness in the ASME Code. In the Statement of Considerations, the NRC cautions licensees regarding the benefits and potential adverse effects of performing particular tests. The staff does not consider it necessary to continue the previous requests in the SE dated November 26, 1997, for the licensee to notify the NRC upon the availability of OMN-1 risk-informed criteria and implementing procedures for NRC review prior to their use because (1) the NRC and nuclear industry have developed significant information for the application of risk insights in plant programs, and (2) the NRC will schedule inspection activities for the Wolf Creek Generating Station as appropriate under the new reactor oversight program.

3.0 CONCLUSION

The NRC staff has determined that the licensee's proposed use of ASME Code Case OMN-1, together with the conditions in the rulemaking dated September 22, 1999, provides an acceptable level of quality and safety in assuring the operational readiness of MOVs. Therefore, the NRC staff concludes that the licensee's proposed alternative to use OMN-1 at the Wolf Creek Generating Station with the specified conditions as described in its revised Relief Request 2VR-7 in lieu of quarterly MOV stroke-time testing is authorized pursuant to 10 CFR 50.55a(a)(3)(i). The staff may conduct inspections at the Wolf Creek Generating Station to verify the implementation of OMN-1 is in accordance with the licensee's commitments discussed in this SE.

Principal Contributor: T. Scarbrough

Date: March 29, 2001