



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

August 10, 2015

Mr. Adam C. Heflin
President, Chief Executive Officer,
and Chief Nuclear Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION – REQUEST FOR RELIEF NOS. 4VR-01
AND 4GR-01 FOR THE FOURTH 10-YEAR INSERVICE TESTING PROGRAM
INTERVAL (TAC NO. MF4991 AND MF5005)

Dear Mr. Heflin:

By letter dated October 8, 2014, Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) proposed alternatives 4GR-01, 4PR-01, 4PR-02, 4VR-01, and 4VR-02 to the inservice testing (IST) interval requirements of the American Society of Mechanical Engineers (ASME) *Code for Operations and Maintenance of Nuclear Power Plants* (OM Code), Section IST, for the Wolf Creek Generating Station (WCGS) for the fourth 10-year interval of the IST Program. This letter addresses proposed alternatives 4VR-01 and 4GR-01. The other proposed alternatives were addressed by separate correspondence.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(a)(3)(i), in 4VR-01, the licensee requested an alternative to the requirements of American Society of Mechanical Engineers (ASME) *Code for Operations and Maintenance of Nuclear Power Plants* (OM Code) Appendix I, I-1410(b) pertaining to the Set Pressure Measurement Accuracy for two relief valves. The licensee requested to use 4VR-01 on the basis that it provides an acceptable level of quality and safety. Pursuant to 10 CFR 50.55a(a)(3)(ii), in 4GR-01, the licensee requested an alternative to the frequency specifications of the OM Code Section IST. The licensee requested to use 4GR-01 on the basis that the OM Code requirement causes hardship or unusual difficulty without a compensating increase in level of quality or safety.

The paragraph headings in 10 CFR 50.55a were changed by *Federal Register* notice dated November 5, 2014 (79 FR 65776), which became effective on December 5, 2014 (e.g., 10 CFR 50.55a(a)(3)(i) is now 50.55a(z)(1), and 50.55a(a)(3)(ii) is now 50.55a(z)(2)).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject requests and concludes, as set forth in the enclosed safety evaluation, that (1) 4VR-01 provides an acceptable level of quality and safety, and that (2) 4GR-01 provides an acceptable level of quality and safety for IST test frequency specification tolerances and provides reasonable assurance of the operational readiness of the various components tested in the IST program. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) for request 4VR-01 and in 10 CFR 50.55a(z)(2) for request 4GR-01. Therefore, the NRC staff authorizes the alternatives proposed in 4VR-01 and 4GR-01 for WCGS for the fourth 10-year IST program interval, which

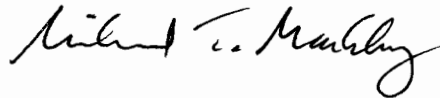
A. Heflin

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begins on September 4, 2015, and is scheduled to end on September 3, 2025. All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests remain applicable.

The detailed results of the NRC staff review are provided in the enclosed safety evaluation. If you have any questions concerning this matter, please call Mr. F. Lyon of my staff at (301) 415-2296 or by electronic mail at fred.lyon@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Markley". The signature is fluid and cursive, with the first name "Michael" and last name "Markley" clearly distinguishable.

Michael T. Markley, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure
Safety Evaluation

cc w/encl: Distribution via Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INSERVICE TESTING PROGRAM INTERVAL

REQUEST FOR RELIEF NOS. 4VR-01 AND 4GR-01

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By letter dated October 8, 2014 (Agencywide Documents Access and Management System (ADAMS) at Accession No. ML14288A316), the Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) submitted Relief Requests (RRs) 4GR-01 and 4VR-01 for the fourth 10-year inservice testing (IST) program interval at Wolf Creek Generating Station (WCGS). The licensee requested relief from certain IST requirements of the 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). The fourth 10-year IST interval for WCGS begins on September 4, 2015, and is scheduled to end on September 3, 2025.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f), "Inservice Testing Requirements," require, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the applicable ASME OM Code and addenda, except where alternatives have been authorized pursuant to paragraphs (z)(1) or (z)(2).

The paragraph headings in 10 CFR 50.55a were changed by *Federal Register* notice dated November 5, 2014 (79 FR 65776), which became effective on December 5, 2014 (e.g., 10 CFR 50.55a(a)(3)(i) is now 50.55a(z)(1), and 50.55a(a)(3)(ii) is now 50.55a(z)(2)). See the cross-reference tables, which are cited in the notice, in ADAMS at Accession No. ML14015A191 and ADAMS package Accession No. ML14211A050. The remainder of this evaluation references the new regulations.

In proposing alternatives, a licensee must demonstrate that the proposed alternatives provide an acceptable level of quality and safety as outlined in 10 CFR 50.55a(z)(1), or compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety as outlined in 10 CFR 50.55a(z)(2).

Enclosure

Based on the above, the U.S. Nuclear Regulatory Commission (NRC) staff finds regulatory authority exists for the licensee to request, and the NRC to authorize, the proposed alternatives to the ASME OM Code subject to the evaluation given below.

3.0 TECHNICAL EVALUATION

3.1 Request 4GR-01, Request for Alternative to Frequency Specifications of ASME OM Code Section IST

Code Requirements (as stated by the licensee)

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

ISTA-3120(a)	"The frequency for inservice testing shall be in accordance with the requirements of Section IST."
ISTB-3400	Frequency of Inservice Tests; "An inservice test shall be run on each pump as specified in Table ISTB-3400-1." Table ISTB-3400-1 lists two frequencies - quarterly and biennially.
ISTC-3510	Exercising Test Frequency; "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months . . ."
ISTC-3540	Manual Valves; "Manual Valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness."
ISTC-3630(a)	Frequency; "Tests shall be conducted at least once every 2 years."
ISTC-3700	Position Verification Testing; "Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated."
ISTC-5221(c)(3)	"At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years."
Appendix I, I-1320	Test Frequencies, Class 1 Pressure Relief Valves; "Class 1 pressure relief valves shall be tested at least once every 5 years . . ."
Appendix I, I-1330	Test Frequency, Class 1 Nonreclosing Pressure Relief Devices; "Class 1 nonreclosing pressure relief devices shall be replaced every 5 years . . ."

Appendix I, I-1340	Test Frequency, Class 1 Pressure Relief Valves That Are Used for Thermal Relief Application; Refers to 1-1320 for test frequency.
Appendix I, I-1350	Test Frequency, Classes 2 and 3 Pressure Relief Valves; "Classes 2 and 3 pressure relief valves, with the exception of PWR [pressurized-water reactor] main steam safety valves, shall be tested every 10 years . . ."
Appendix I, I-1360	Test Frequency, Classes 2 and 3 Nonreclosing Pressure Relief Devices; "Classes 2 and 3 nonreclosing pressure relief devices shall be replaced every 5 years . . ."
Appendix I, I-1370	Test Frequency, Classes 2 and 3 Primary Containment Vacuum Relief Valves; "Tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at each refueling outage or every 2 years, whichever is sooner . . ."
Appendix I, I-1380	Test Frequency, Classes 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves; "All Classes 2 and 3 vacuum relief valves shall be tested every 2 years . . ."
Appendix I, I-1390	Test Frequency, Classes 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application; "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years . . ."
Appendix II, II-4000(a)(1)(e)	Performance Improvement Activities: Subparagraph (1)(e) requires the identification of the interval for each activity.
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities: Subparagraph (1)(e) requires the identification of the interval for each activity.

Reason for Request (as stated by the licensee)

Pursuant to 10 CFR 50.55a(z)(2), an alternative is requested to the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality of safety.

ASME OM Code Section IST establishes the inservice test frequencies for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in Table 3.2 of NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants" [October 2013; ADAMS Accession No. ML13295A020]) and the surveillance extension time period has been routinely applied as contained in the plant Technical Specification (TS) Surveillance Requirements (SRs). The TS typically allow for a less than or equal to 25 percent extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (SR 3.0.2). In Regulatory [Issue]

Summary (RIS) 2012-10, "NRC Staff Position on Applying Surveillance Requirement 3.0.2 and 3.0.3 to Administrative Controls Program Tests" [dated August 23, 2012 (ADAMS Accession No. ML12079A393),] and Enforcement Guidance Memorandum (EGM) 2012-001, "Dispositioning Noncompliance with Administrative Controls Technical Specifications Programmatic Requirements that extend Test Frequencies and Allow Performance of Missed Tests," [dated February 24, 2012 (ADAMS Accession No. ML11258A243),] the NRC stated that items b, c, and d of the TS IST Program were inappropriately added to the TS and may not be applied (although the EGM allows licensees to continue to apply those paragraphs pending a generic resolution of the issue).

The [NRC] recognized this potential issue in the TS by allowing a frequency tolerance as described in TS SR 3.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

As with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified. The test period extension and the statements regarding the appropriate use of the period extension are equivalent to the existing TS SR 3.0.2 allowance and the statements regarding its use in the SR 3.0.2 Bases. Use of the SR 3.0.2 period extension has been a practice in the nuclear industry for many decades and there is no evidence that the period extensions affect component reliability.

Proposed Alternative and Basis for Use (as stated by the licensee)

The ASME OM Code establishes component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

- a. Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in OM Code Section IST with a specified time period between tests as shown in Table 1.

Table 1 Specified Test Frequencies

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
x years	x calendar years where x is a whole number of years ≥ 2

The specified time period between tests may be reduced or extended as follows:

- 1) For periods specified as less than 2 years, the period may be extended by up to 25% for any given test.
- 2) For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
- 3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) and other fewer than two year test frequencies not specified in Table 1.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants, as Subsection ISTD contains its own rules for period extensions.

- b. Components whose test frequencies are based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.) may not have their period between tests extended excepts as allowed by ASME OM Code—2004 Edition through OMB-2006 Addenda and earlier editions and addenda of the ASME OM Code.

This proposed alternative is consistent with ASME approved Code Case OMN-20, "Inservice Test Frequency". Using the provisions of this request as an alternative to the specific frequency requirements of the OM Code identified above will provide operational flexibility and still continue to provide an acceptable level of quality and safety. Therefore, pursuant to [10 CFR 50.55a(z)(2)], [WCNOC] requests approval of the alternative to the specific ASME OM Code frequency requirements identified in this request[.]

This proposed alternative will be utilized for the entire fourth 120-month interval which will begin September 4, 2015 and conclude on September 3, 2025.

NRC Staff Evaluation

Historically, licensees have applied and the NRC staff has accepted the standard TS definitions for IST intervals (including allowable interval extensions) to ASME OM Code required testing. (Reference NUREG-1482, Revision 2, Section 3.1.3). Recently, the NRC staff reconsidered the allowance of using TS testing intervals and interval extensions for IST not associated with TS SRs. As noted in RIS 2012-10, the NRC determined that programmatic test frequencies cannot be extended in accordance with the TS SR 3.0.2. This includes all IST described in the ASME OM Code not specifically required by the TS SRs.

Following this development, the NRC staff sponsored and co-authored an ASME OM Code inquiry and Code Case to modify the ASME OM Code to include TS-like test interval definitions and interval extension criteria. The resultant ASME Code Case OMN-20 was approved by the ASME Operation and Maintenance Standards Committee on February 15, 2012, with the NRC representative voting in the affirmative. ASME Code Case OMN-20 was subsequently published in conjunction with the ASME OM Code, 2012 Edition. The licensee proposed to adopt an alternative which is consistent with Code Case OMN-20.

Requiring the licensee to meet the ASME OM Code requirements, without an allowance for defined frequency and frequency extensions for IST of pumps and valves, results in a hardship without a compensating increase in the level of quality and safety. Based on the prior acceptance by the NRC staff of the similar TS test interval definitions and interval extension criteria, the staff concludes that implementation of the test interval definitions and interval extension criteria contained in ASME OM Code Case OMN-20 is acceptable. Allowing usage of ASME Code Case OMN-20 provides reasonable assurance of operational readiness of pumps and valves subject to the ASME OM Code IST.

Conclusion

Based on the above, the NRC staff concludes that the licensee's proposed alternative in RR 4GR-01 is authorized pursuant to 10 CFR 50.55a(z)(2) on the basis that compliance with the specified test frequency requirements of the ASME OM Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The proposed alternative provides an acceptable level of quality and safety for IST test frequency specification tolerances. The licensee's proposed alternative provides reasonable assurance of the operational readiness of the various components tested in the IST Program. Therefore, the

NRC staff authorizes the proposed alternative for WCGS for the fourth 10-year IST program interval, which begins on September 4, 2015, and is scheduled to end on September 3, 2025.

3.2 Request 4VR-01, Set Pressure Measurement Accuracy

Code Requirements

The licensee requested relief from Appendix I, I-1410, Set-Pressure Measurement Accuracy. Test equipment (e.g., gages, transducers, load cells, calibration standards) used to determine valve set-pressure, shall have an overall combined accuracy not to exceed +/-1 percent of the indicated (measured) set-pressure. Relief was requested for the test equipment associated with the following vacuum relief valves:

ENV0058
ENV0106

Reason for Request (as stated by the licensee)

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph [(z)(1)], relief is requested from the requirement of ASME OM Code Appendix I, I-1410. The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

ENV0058 and ENV0106 - These vacuum relief valves must open to provide vacuum protection of the spray additive tank. This function prevents the tank from collapsing in the event of a failure of the discharge isolation valves to close while the tank is empty and the pumps are operating. This condition could cause a vacuum to be created within the tank. The valve is set to relieve vacuum at 0.98 psig vacuum.

Typically, vacuum breakers are designed to relieve at significantly low differential pressures. For the subject valves, the set pressures are as follows:

Spray Additive Vacuum Breaker 2" Hg (0.98 psig)

Instrument accuracies to meet the Code requirements would therefore be 0.0098 [pounds per square inch gauge (psig)]. Pressure instrumentation that provides this level of accuracy for this application is not commercially available and not typically maintained by a power plant facility. As a result, the instrument accuracy range will exceed the requirement of Appendix I, I-1410.

Proposed Alternative and Basis for Use (as stated by the licensee)

The functional requirement of a vacuum relief valve is only relevant in the opening direction. The closure function is generally irrelevant or passive - the valve remains closed to maintain the system boundary (e.g. loss of system inventory). For these subject valves, there is not a concern for premature

opening since during normal operations the valves are closed with system pressure tending to maintain the valve closed.

Therefore, [WCNOC] will establish a set point range such that the lower limits for opening of the valves will allow considerable margin without affecting the valve's performance with respect to the system requirements. The instrument accuracy and target setpoint for these valves will be established such that the overall combined accuracy specified in the test procedures will limit the actual set pressure to 1% above the stamped set pressure.

Using the provisions of this relief request as an alternative to the specific requirements of Appendix I, I-1410 identified above will provide adequate assurance of valve set pressure performance with respect to system functional requirements. Therefore, pursuant to [10 CFR 50.55a(z)(1)] relief is requested from the specific Appendix I requirements identified in this request.

This proposed alternative will be utilized for the entire fourth 120-month interval which will begin September 4, 2015 and conclude on September 3, 2025.

NRC Staff Evaluation

The licensee requested relief in RR 4VR-01 from the requirements of Appendix I, I-1410, which requires that test equipment used to determine valve set-pressure shall have an overall combined accuracy not to exceed plus or minus 1 percent of the indicated set pressure. The function of these valves is to open and relieve vacuum to prevent the spray additive tank from collapsing in the event of a failure of the discharge isolation valves to close while the tank is empty and the pumps are operating and this function will be met even if the valves lift slightly earlier than the ASME OM Code requirement. The proposed alternative will limit the actual set pressure to 1 percent above the stamped set pressure and establish the set point range such that the lower limits for opening of the valves will establish a considerable margin with respect to the system operating requirements. The licensee's proposed alternative in RR 4VR-01 provides reasonable assurance of the operational readiness of the identified vacuum relief valves and, therefore, provides an acceptable level of quality and safety.

Conclusion

Based on the above, the NRC staff concludes that the licensee's alternative in RR 4VR-01 is authorized pursuant to 10 CFR 50.55a(z)(1) on the basis that the proposed alternative provides an acceptable level of quality and safety. The licensee's proposed alternative provides reasonable assurance of the operational readiness of the identified vacuum relief valves. Therefore, the NRC staff authorizes the proposed alternative for WCGS for the fourth 10-year IST program interval, which begins on September 4, 2015, and is scheduled to end on September 3, 2025.

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests remain applicable.

Principal Contributor: J. Billerbeck, NRR/DE/EPNB

Date: August 10, 2015

A. Heflin

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begins on September 4, 2015, and is scheduled to end on September 3, 2025. All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests remain applicable.

The detailed results of the NRC staff review are provided in the enclosed safety evaluation. If you have any questions concerning this matter, please call Mr. F. Lyon of my staff at (301) 415-2296 or by electronic mail at fred.lyon@nrc.gov.

Sincerely,

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure
Safety Evaluation

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