



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

July 13, 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 NO. I3R-12  
FOR THE THIRD 10-YEAR INSERVICE INSPECTION PROGRAM INTERVAL  
FOR THE REACTOR VESSEL STUD HOLE LIGAMENT EXAMINATIONS (TAC  
NO. MF6093)

Dear Mr. Heflin:

By letter dated April 9, 2015, Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) proposed alternative I3R-12 to the inservice inspection (ISI) interval requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, for the Wolf Creek Generating Station (WCGS) for the third 10-year interval of the ISI Program.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(z)(2), in I3R-12, the licensee requested an alternative end date for the current 10-year ISI interval at WCGS. ASME Code, Section XI, paragraph IWA-2430(c)(2) allows the inspection interval to be reduced or extended by 1 year to coincide with a plant outage. Relief Request I3R-12 proposed to add 3 months to the allowed 1-year extension to allow a required inspection to be performed within the third 10-year inspection interval. The licensee requested to use the proposed alternative on the basis that complying with the specified requirement would result in hardship or unusual difficulty.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the proposed alternative to extend the third 10-year inspection interval to the end of Refueling Outage 21 provides reasonable assurance of leak tightness and structural integrity. An unplanned shutdown of the reactor and increased dose to the inspector would pose a hardship to the licensee. Thus, complying with ASME Code, Section XI, IWA-2430 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes relief request I3R-12 at WCGS for the remainder of the third 10-year ISI interval. With this extension, the third 10-year ISI interval would be scheduled to end at the conclusion of Refueling Outage 21 in the fall of 2016.

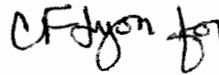
All other requirements of the ASME Code for which relief has not been specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

A. Heflin

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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](mailto:fred.lyon@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "M. Markley" with a stylized flourish at the end.

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

THIRD 10-YEAR INSERVICE INSPECTION PROGRAM INTERVAL

REQUEST FOR RELIEF NO. I3R-12

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By letter dated April 9, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15104A353), Wolf Creek Nuclear Operating Corporation (the licensee, WCNOC) submitted relief request I3R-12, which proposes an alternative end date for the current 10-year inservice inspection (ISI) interval at Wolf Creek Generating Station (WCGS). The American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, IWA-2430(c)(2) allows the inspection interval to be reduced or extended by 1 year to coincide with a plant outage. Relief Request I3R-12 proposes to add 3 months to the allowed 1-year extension to allow a required inspection to be performed within the third 10-year inspection interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(z)(2), the licensee requested to use an alternative on the basis that complying with the specified requirement would result in hardship or unusual difficulty.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(z)(2), the licensee is requesting to use an alternative to the requirements of Article IWA-2430 of the ASME Code, Section XI.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that repair and replacement activities comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month inspection interval, subject to the conditions listed therein.

Enclosure

Paragraph 55a(z) of 10 CFR 50 states, in part, that alternatives to the requirements of 10 CFR 50.55a(g) may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if (1) the proposed alternatives would provide an acceptable level of quality and safety or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the Commission to authorize the alternative requested by the licensee.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Requested Relief

##### ASME Code of Reference

The Code of record for the third 10-year inspection interval is the ASME Code, Section XI, 1998 Edition through 2000 Addenda. The 10-year inspection interval began on September 3, 2005.

Additionally, the licensee is applying ASME Code Case N-652, "Alternative Requirements to Categorize B-G-1, B-G-2, and C-D Bolting Examination Methods and Selection Criteria, Section XI, Division 1."

While ASME Code Case N-652 was superseded by ASME Code Case N-652-1 in the ASME Code and in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," the licensee is allowed to use the superseded version of the code case until the end of the current 10-year inspection interval.

##### Requested Relief

The licensee's third 10-year inspection interval is currently scheduled to end on September 2, 2015. ASME Code, Section XI, paragraph IWA-2430(d)(1) allows the inspection intervals to be reduced or extended by up to 1 year. This relief request proposes to add 3 months to the allowed 1-year extension to allow for planning and preparations for inspections of 54 reactor vessel (RV) stud holes. This request would only be applicable to the third ISI interval.

##### Reason for the Request

The licensee has been performing the RV stud hole ligament ultrasonic examinations under water while the refueling cavity is flooded using specifically procured tooling and equipment. Approximately one-third of the 54 stud holes were examined in each of the three periods in the 10-year ISI Interval.

During the most recent ISI, the NRC inspector questioned the use of this tooling and the resulting examination volume achieved when using the tooling versus the Code-required examination volume (refer to ASME Code, Section XI, Figure IWB-2500-12). This tooling positions the ultrasonic test transducer relative to the stud hole using the installed stud hole plug or RV head alignment pin and an associated long-handled tool for placement of the tooling and

moving the transducer for scanning of the volume. The NRC inspector's position was that the use of the tooling would not result in the sufficient examination volume.

Relief is requested to ensure that re-examination of the RV stud hole ligaments could be performed in the next scheduled refueling outage. The extension will give the licensee sufficient time to properly plan and implement these re-examinations for the third ISI interval.

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

The end of the third period of the Third Inspection Interval is September 2, 2015 based on initial commercial operation on September 3, 1985. In the event that the NRC concludes that the examinations of the RV stud hole ligaments are not in compliance with ASME Section XI requirements and that re-performance of the examinations is required, the proposed alternative will allow time to re-perform the ultrasonic examinations for all 54 RV stud hole ligaments in Refueling Outage 21 (RF 21), which is scheduled to begin on September 24, 2016. Per ASME Section XI, IWA-2430(d)(1), the Third ISI Interval can be extended by up to 1 year. The performance of these examinations during RF 21 will occur outside the 1-year extension window by approximately 3 months. In accordance with 10 CFR 50.55a(z)(2), this interval extension is requested on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. This request is similar to the NRC recently authorized use of WCNOG Request 13R-08, which similarly requested extension of the Third Interval for performance of ASME Section XI Category B-N-2 and B-N-3 examinations in RF21.

WCNOG is currently in Refueling Outage 20 (RF 20), which is the last refueling outage of its Third ISI Interval. To attempt to perform the examinations on all of the RV stud hole ligaments in a different and unplanned manner at the current stage of RF 20 would create a hardship without a compensating increase in the level of quality and safety. In addition, the dose absorbed by workers to perform these exams in RF20 is estimated to be approximately 750 mrem [millirem], which would be unnecessary if the NRC concludes that the previously performed examinations are acceptable.

It is WCNOG's position that the ultrasonic examinations of the RV stud hole ligaments, which have been performed during its Third ISI Interval meet the ASME Code requirements. This request for extension allows time for further consideration and resolution of the Code requirements. However, if it is determined that the examinations which have been performed do not meet ASME Code requirements and are required to be re-performed, this request for extension will give WCNOG the time to perform proper planning to ensure that the examinations are done with the appropriate level of quality and safety, to minimize radiation exposure, and to ensure that the examinations are in complete compliance with the ASME Code.

### Duration of Proposed Relief

The third 10-year inspection interval is currently scheduled to end on September 2, 2015. The alternative is requested to extend the third 10-year inspection interval by approximately 3 months past the ASME Code, Section XI, Section IWA-2430(d)(1) allowed extension of 1 year. This request is applicable to the third ISI interval only. If this relief request is approved, the third ISI interval for these examinations will end at the conclusion of Refueling Outage 21, which is currently scheduled to occur in the autumn of 2016.

### 3.2 NRC Staff Evaluation

Pursuant to 10 CFR 50.55a(z)(2), the licensee is proposing to extend its 10-year inspection interval by 15 months to accommodate an inspection of 54 RV stud hole ligaments as it claims that performing the inspections under the current schedule would create a hardship without a compensating increase in the level of quality and safety. Inspecting the RV stud holes using the 10-year inspection interval current schedule would require an unscheduled shutdown of the reactor, which mechanically and thermally stresses the reactor components, and an increased dose to the inspectors performing the examination. These factors would be a hardship for the licensee.

This 15-month extension would be 3 months longer than the 12-month extension allowed by ASME. The extended interval will allow the license to conduct detailed preparations for the inspections of the RV stud holes. The licensee has stated that the extended interval dates will not affect the overall schedule of inservice inspections and will have little impact on safety.

The largest impact of granting this relief to the level of quality and safety is the delay in the performance of the RV stud hole inspections until Refueling Outage 21. As stated in the licensee's letter dated April 9, 2015, the RV stud holes have been inspected using the tooling that prevents the licensee from getting 100 percent coverage. While the inspections did not meet the letter of ASME Code Section XI, significant coverage was obtained for the RV stud hole inspections. Additionally, the operating experience for RV stud holes across the United States nuclear power plants has not shown any active degradation mechanisms in the RV stud holes or any history of significant cracking. Based on the operational experience and the inspections performed to date, there is reasonable assurance of leak tightness and structural integrity to allow the RV stud hole inspections to be delayed until Refueling Outage 21.

It is the NRC staff's determination that complying with the ASME Code requirements described in ASME Code, Section XI, IWA-2430 would result in hardship or unusual difficulty without increase in the level of quality and safety.

### 4.0 CONCLUSION

As set forth above, the NRC staff concludes that the licensee's proposed alternative to extend the third 10-year inspection interval to the end of Refueling Outage 21 provides reasonable assurance of leak tightness and structural integrity. An unplanned shutdown of the reactor and increased dose to the inspector would pose a hardship to the licensee. Thus, complying with ASME Code, Section XI, IWA-2430 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes

that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes relief request I3R-12 at the WCGS for the remainder of the third 10-year ISI interval. With this extension, the third 10-year inspection interval would be scheduled to end at the conclusion of Refueling Outage 21 in the fall of 2016.

All other requirements of the ASME Code for which relief has not been specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: S. Cumblidge, NRR/DE/EPNB

Date: July 13, 2015

A. Heflin

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](mailto:fred.lyon@nrc.gov).

Sincerely,

**/RA Fred Lyon for/**

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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