

August 4, 2006

Mr. Rick A. Muench
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - RELIEF REQUEST 3PR-04 FOR THE
THIRD 10-YEAR INSERVICE TESTING PROGRAM (TAC NO. MD0533)

Dear Mr. Muench:

By letter dated March 15, 2006, Wolf Creek Nuclear Operating Corporation, the licensee, submitted Relief Request 3PR-04 for its third 10-year inservice testing program interval at Wolf Creek Generating Station. The relief requested is a one-time relief for the containment spray pumps from the comprehensive pump test frequency requirement contained in ISTB-3400, "Frequency of Inservice Tests."

The Nuclear Regulatory Commission staff's evaluation of the relief request is in the enclosed Safety Evaluation (SE). Based on the determination in the enclosed SE that compliance with the specified code requirements results in hardship or unusual difficulty without a compensating increase in the level of quality and safety, Relief Request 3PR-04 is authorized pursuant to Title 10 of the *Code of Federal Regulations* Paragraph 50.55a(a)(3)(ii). This relief request is authorized until the containment spray pump biennial comprehensive tests can be performed during Refueling Outage 16, which is scheduled for the spring of 2008.

Sincerely,

/RA/

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUEST 3PR-04

FOR THE INSERVICE TESTING PROGRAM, THIRD 10-YEAR INTERVAL

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By letter dated March 15, 2006 (Agencywide Documents Access and Management System Accession No. ML060830409), Wolf Creek Nuclear Operating Corporation (the licensee) submitted Relief Request 3PR-04 for the third 10-year inservice testing (IST) program interval at Wolf Creek Generating Station (WCGS). The licensee requested a one-time relief for the containment spray pumps from the comprehensive pump test frequency requirement contained in the 1998 Edition through 2000 Addenda of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance (OM Code) of Nuclear Power Plants.

2.0 REGULATORY EVALUATION

Section 55a of Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR), requires that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month (10-year) IST program intervals in accordance with the specified ASME Code incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Nuclear Regulatory Commission (NRC or the Commission) pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Section 50.55a of 10 CFR authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making necessary findings.

The licensee stated that the WCGS third 10-year IST interval commenced September 4, 2005. The program was developed in accordance with the 1998 Edition through 2000 Addenda of the ASME OM Code. By letter dated March 15, 2006, the licensee requested one-time relief from the comprehensive pump test frequency requirement contained in the ASME OM Code for the WCGS third 10-year IST interval.

3.0 TECHNICAL EVALUATION

3.1 Pump Relief Request 3PR-04

3.1.1 Code Requirements

The licensee requested one-time relief from ASME OM Code ISTB-3400, "Frequency of Inservice Tests," which requires that an inservice test be run on each pump as specified in Table ISTB-3400-1. This table requires the comprehensive test to be run biennially. One-time relief was requested for the following pumps:

PEN01A, Containment Spray Pump "A"
PEN01B, Containment Spray Pump "B"

ASME OM Code ISTB-3400 sets the frequency for the testing the pumps, but ISTB-3300(e)(1) specifies the method and standards for testing. While the licensee requested relief from ISTB-3400, the hardship faced by the licensee derives from the requirements in ISTB-3300(e)(1). These pumps are also covered by the IST requirements in 10 CFR 50.55a(f)(4) for Class 1, 2, or 3 pumps.

3.1.2 Licensee's Basis for Requesting Relief

In its application, the licensee stated that ASME OM Code ISTB-3300(e)(1) requires that reference values be established within ± 20 percent of pump design flow rate for comprehensive tests. The licensee stated that this condition cannot be achieved for the subject pumps due to the design of the system. The piping design of the containment spray system is such that the test loop for each pump consists of a 10-inch discharge line which separates into a 4-inch test recirculation line returning to the refueling water storage tank. The test recirculation line is sized to accommodate approximately 10 percent of the pump design flow rate. The 10-inch discharge line terminates at the spray nozzle headers in the top of containment. Testing of the pump near design flow conditions would require flow through the 10-inch discharge line instead of the 4-inch test recirculation line since the smaller line will not allow this substantial flow rate; however, flow through the 10-inch discharge line would result in the wetting of containment with boric water.

The licensee stated that a modification to the existing containment spray system is required to achieve the comprehensive test minimum flow specified by the ASME OM Code. Time is needed to properly perform the design analyses, obtain materials and plan field work associated with implementation of the modification. The licensee requests that the due date of September 4, 2007, for the performance of the containment spray pump comprehensive test be extended to the end of WCGS Refueling Outage 16 in the spring of 2008, which is approximately 6 months, to allow time to implement the required modification. The basis of the request is that compliance with the biennial test frequency specified in ISTB-3400 would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The licensee concluded that using the provisions of this relief request as an alternative to the specific requirements of ISTB-3400 will provide adequate indication of pump performance and will continue to provide an acceptable level of quality and safety.

3.1.3 Licensee's Proposed Alternative Testing

The licensee requests that the due date of September 4, 2007, for the performance of the comprehensive test for containment spray pumps "A" and "B" be extended to the end of WCGS

Refueling Outage 16, which is currently scheduled to start on March 22, 2008, and end on April 23, 2008.

In the enclosure to its application, the licensee stated that it performs quarterly pump tests at a flow rate of approximately 300 gpm using the installed recirculation line. Full frequency vibration analysis is performed each quarter, which goes beyond the vibration analysis required by the ASME Code, and is superior to detecting precursors to pump failures when compared to the simple vibration amplitude technique. Additionally, the licensee's preventive maintenance program also requires periodic oil analysis of the containment spray pump motors, which will reveal mechanical degradation on the pump's driver.

The licensee also stated:

Based on the preventive maintenance results, quarterly full frequency spectrum vibration analysis, and quarterly hydraulic testing at approximately 300 gpm, an accurate assessment of pump health and operational readiness is determined. This testing and analysis will continue to be implemented on a quarterly basis. This provides reasonable assurance that the pumps are capable of performing their intended design function.

3.1.4 Evaluation

The licensee requested a one-time relief from the ASME OM Code IST frequency requirement of ISTB-3400 for containment spray pump comprehensive tests. Table ISTB-3400-1 requires that the comprehensive tests be conducted biennially. The licensee proposes a one-time extension of the due date for the performance of the containment spray pumps comprehensive test to the end of WCGS Refueling Outage 16, currently scheduled to start on March 22, 2008, and end on April 23, 2008.

The installed system piping configuration does not permit testing of the containment spray pumps at or near design flow conditions. Testing at or near the design flow rate of 3615 gpm would require flow through the 10-inch discharge line leading to the spray nozzle headers, resulting in the undesirable wetting of equipment in the containment. The installed 4-inch test line, which returns to the refueling water storage tank, is equipped with a flow-limiting orifice and is used for quarterly hydraulic testing. Flow through this line with the orifice installed is on the order of 300 gpm. The licensee stated that a test was conducted with the orifice removed to determine the maximum flow rate that could be achieved through the 4-inch test line and found that the line was capable of passing a flow of 1387 gpm, still well below the pump design flow rate.

Hardship and unusual difficulty would be incurred by testing at or near design flow rates prior to WCGS Refueling Outage 16. Substantial flow can only be achieved through the 10-inch discharge line without system modification, which ultimately requires flow through the containment spray nozzles. Temporary modifications to install a test return line capable of passing pump design flow could be installed during Refueling Outage 15; however, installation of temporary modifications would be labor intensive, involve personnel safety and configuration management challenges, and would likely interfere with refueling activities and impact outage duration. These hardships and unusual difficulties are not compensated for by an increase in the level of quality and safety since the licensee will take measures to ensure operational readiness of the pumps through continuation of the current testing regimen.

Extension of the due date for containment spray pump comprehensive tests until the end of Refueling Outage 16 will allow time to plan and execute permanent system modifications to support testing at the flow rate required by the ASME OM Code. Based on its review of the relief request, the NRC staff concludes that the quarterly pump testing using the installed test recirculation line, quarterly full-frequency spectrum vibration analysis, and continued preventive maintenance provide an acceptable level of quality and safety for containment spray pump testing activities until a comprehensive test meeting Code requirements can be completed prior to the end of Refueling Outage 16.

4.0 CONCLUSION

Based on the above evaluation, the NRC staff concludes that the licensee's one-time alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with the specified requirement results in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee's proposed alternative provides reasonable assurance of the operational readiness of the containment spray pumps. This alternative is authorized until the containment spray pump biennial comprehensive tests can be performed during Refueling Outage 16, which is scheduled to start on March 22, 2008, and end on April 23, 2008.

Principal Contributor: John McHale

Date: August 4, 2006

Wolf Creek Generating Station

cc:

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February 2006