UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

March 18, 2002

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

SUBJECT: WOLF CREEK NUCLEAR STATION - NRC INSPECTION REPORT 50-482/01-07

Dear Mr. Maynard:

Recently, Ms. J. Yunk, of your staff, contacted me regarding some information in the subject report that she believed was inaccurate. She provided us with some additional information that warrants a minor change to the report. The new information did not change the conclusions reached by the inspection team.

Please replace page 2 (Summary of Findings), page 4, and page 5 of the issued report with the attached pages. We regret any inconvenience caused by the inaccuracy.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/**RA**/

Charles S. Marschall, Chief
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Division of Reactor Safety

Docket: 50-482
License: NPF-42

Enclosures:
1. Page 2, Summary of Findings
2. Pages 4 and 5

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DOCUMENT: R:_WC\WC107RP-CJP-ADDENDUM.WPD

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03/15/2002	03/15/2002			

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SUMMARY OF FINDINGS

IR 05000482/01-07, on 10/15 - 11/02/2001, Wolf Creek Nuclear Operating Corporation, safety system design and performance capability, heat sink performance, and evaluation of changes, tests, or experiments.

The inspection was conducted by five regional inspectors and one contractor. The inspection identified two green findings. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Cornerstone: Mitigating Systems

- Green. The team identified that the licensee's controls to minimize macro-biological growth and accumulation of foreign material in the essential service water system were not effective.

  This finding was of very low safety significance because the essential service water system and containment isolation functions remained operable. The licensee's biological control and system flushing programs were not adequate to prevent the growth and accumulation of clams and their debris (i.e., shells and shell pieces) at the essential service water containment isolation valves for the containment coolers. The clams and their debris were contributing causes of these valves' failure to fully close. There are no regulatory requirements for a biological control program, therefore, there was no violation of regulatory requirements. The licensee entered this issue into the corrective action program as Performance Improvement Request 20012802 to reassess the effectiveness of the biological control and system flushing programs (Section 1R21.2b.).

- Green. The team identified that licensee's lack of monitoring a small radius elbow, in Train A of the essential service water system in the Train B switchgear room, with a tee-connection approximately two pipe lengths downstream, did not allow the licensee to demonstrate that the piping stresses remained within design allowable to exclude the possibility of a pipe rupture that could defeat safety-function redundancy.

  This finding was of very low safety significance because there was no actual leakage in the area of concern and the system remained operable. There is no regulatory requirement for monitoring for erosion/corrosion, therefore, there was no violation of regulatory requirements. The licensee initiated Performance Improvement Request 20012794 to evaluate the condition of the piping in the Train B switchgear room. In addition, the licensee was considering to risk-inform the erosion/corrosion program (Section 1R21.2b.).

.2 System Condition and Capability

a. Inspection Scope

The team reviewed periodic testing procedures (listed in the attachment) and results to verify that the design requirements were demonstrated by the performance of tests. The team also verified the environmental qualification of a sample of system components for operation under design environmental conditions and assumed operating parameters (e.g., voltage, speed, and power).

The team reviewed the systems' operations by conducting system walkdowns; reviewing normal, abnormal, and emergency operating procedures; and reviewing the Updated Safety Analysis Report, the technical specifications, design calculations, drawings, and procedures. In addition, the team reviewed the operations department list of active and closed standing orders and operator work-arounds to ensure no design assumptions were invalidated by past or current operator daily practices.

Additionally, the team checked the licensee's operating experience review program to ensure applicable lessons learned dealing with similar events, systems, and components were incorporated into the applicable essential service water and 4160 Vac system documentation and procedures.

b. Findings

The team identified two findings of very low safety significance (Green). The first was associated with controls established to minimize macro-biological growth and the accumulation of foreign material in the essential service water system. The second was associated with a lack of monitoring a small radius elbow in the essential service water supply to the Train A emergency diesel generator, with a tee-connection approximately two pipe lengths downstream.

The team observed the presence of clams in floor drains in Rooms 1206 and 1207 of the auxiliary building that were from flushing of the essential service water system. The team also noted a failure of Valve EF-49, a containment air cooler containment isolation valve, because of a clam shell on the valve seat. These events indicated that the macro-biological and flushing controls, utilized by the licensee to control clams and their waste products (i.e., shells and sludge), were not effective.

The team determined that the presence of the clams and their waste products had a credible impact on safety (Group 1 questions). This determination was based on the facts that a containment isolation valve tripped on excessive torque because of a clam shell wedged between the valve disk and the seat, as well as the accumulation of shells in the piping at the service water to auxiliary feedwater cross-tie.

The team then determined that the presence of the clams and their waste products could credibly affect the operability, availability, reliability, or function of the essential service water system and auxiliary feedwater system (Group 2 questions). Therefore, the team entered the significance determination process.

The team determined that the essential service water system was degraded as a result of the presence of clams and their waste deposits. As such, the team evaluated the degradation of a mitigating system cornerstone. The team answered each of the questions of the Phase 1 screening worksheet for containment barriers as "NO" because there were no actual failures of the essential service water system.

There are no regulatory requirements to for a biological control program, therefore, this issue screened out as a GREEN issue and was categorized as a finding since there was not a violation of regulatory requirements. The licensee entered this issue into the corrective action program as Performance Improvement Request 20012802.

The team also observed that an approximate 30-foot segment of the 8-inch diameter carbon steel essential service water supply line (EF074HBC-8) to the Train A emergency diesel generator was located in Essential Safety Features Switchgear Room 2, which contained the Train B Class 1E switchgear. The supply line also contained a tee-connection, located approximately 18 inches downstream from one of the 90-degree elbows, to a 4-inch line supplying cooling water to the Class 1E Switchgear Air-Conditioning Unit SGK05A.

The team reviewed the hydrodynamic conditions existing in the subject piping to determine whether it may be vulnerable to erosion because of the piping configuration and flow velocity. One of two flow conditions may exist at any given time. For approximately 500 hours per year, the essential service water pump is run, delivering a flow velocity of approximately 9.5 fps. During the remaining 8260 hours per year, the service water pump is run, delivering a flow velocity of approximately 8.0 fps. To prevent microbiological-induced corrosion, stagnant flow is not allowed. Document 16577-M-000(Q), "Design Criteria for the Wolf Creek Generating Station," Revision 9, specifies a limit of 8 fps flow velocities in general service water discharge applications for erosion control. The team noted that the flow velocity in this piping is normally equal to the specified limit and that it is somewhat greater than this limit for approximately 6 percent of the time (when the essential service water pump is running). Therefore, erosion of the piping could result in wall thinning and concomitant stresses that could, over time, exceed the Updated Safety Analysis Report stress limits for break exclusion.

The licensee's erosion/corrosion program did not include periodic monitoring of essential service water pipe wall thickness in the Train B switchgear room, but monitoring by ultrasonic testing was being conducted in the Train A diesel generator room on the essential service water discharge line just downstream of a throttle valve. This location was selected because of the known turbulent effects of throttle valves. This testing had not detected any discernible wall thinning.

However, the team questioned whether testing at this location bounded the erosion potentially occurring in the essential service water lines located in the Train B switchgear room. Because of the additional flow that is delivered to the Class 1E switchgear air-conditioning unit through the 4-inch tee, the flow velocity at this point was approximately 5 to 10 percent greater than the flow velocity at the monitored point downstream of the throttle valve.