ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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| Docket No.: | 50-482 |
| License No.: | NPF-42 |
| Report No.: | 50-482/98-19 |
| Licensee: | Wolf Creek Nuclear Operating Corporation |
| Facility: | Wolf Creek Generating Station |
| Location: | 1550 Oxen Lane, NE<br>Burlington, Kansas |
| Dates: | October 2 through November 14, 1998 |
| Inspectors: | B. A. Smalldridge, Acting Senior Inspector<br>F. L. Brush, Resident Inspector, Callaway<br>D. G. Passehl, Senior Resident Inspector, Callaway |
| Approved By: | David N. Graves, Acting Chief |
| ATTACHMENT: | Supplemental Information |

# EXECUTIVE SUMMARY

Wolf Creek Generating Station
NRC Inspection Report 50-482/98-19

## Operations

- The clearance order established for the inspection and lubrication of the fuel building emergency exhaust absorber unit tornado damper was inadequate and was a violation of Technical Specification 6.8.1. The clearance order did not provide isolation from all sources of high volumetric air flow and did not include special conditions or precautions on the clearance order summary sheet, as was required if positive boundaries were not established. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (Section O4.1).

## Maintenance

- In violation of 10 CFR Part 50, Appendix B, Criterion XI, the procedure for testing the spent fuel bridge crane was inadequate from September 1986 until October 1997 in that it failed to account for the weight of the scale during checks of the overload cutout setpoint as required. As a result, the licensee failed to demonstrate operability of the spent fuel bridge crane. The licensee revised and successfully performed the procedure. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (Section M8.1).

## Engineering

- Substantial effort by the engineering organization resulted in sustained improved performance of the turbine-driven auxiliary feedwater pump. At the end of September 1998, the accumulated rolling 18-month unavailability for the turbine-driven auxiliary feedwater pump was approximately 100 hours, substantially less than the goal of 200 hours (Section E2.1).

- The licensee's corrective actions were appropriate to assure that the diesel-driven fire pump starting circuit relays were placed in the preventive maintenance program for the diesel-driven fire pump (Section E8.1).

## Plant Support

- Overall, the licensee's response to road closures due to flooding was excellent. The licensee maintained contact with offsite agencies and provided timely updates to necessary personnel. The licensee ensured that all emergency response organization requirements would be met if needed and provided updated road closure information to emergency response managers. The road closure information was also posted in the technical information center and the emergency offsite facility (Section P4.1).

## Report Details

### Summary of Plant Status

The plant operated at essentially 100 percent power throughout the inspection period.

## I. Operations

### O4 Operator Knowledge and Performance

#### O4.1 Inadequate Clearance Order

a. Inspection Scope (71707)

The inspector reviewed the clearance order used to provide isolation for the inspection and lubrication of the fuel building emergency exhaust absorber unit tornado damper.

b. Observations and Findings

On October 15, 1998, the inspector observed maintenance technicians attempt to inspect Tornado Damper GGD-0035, using Work Order 97-126469-001. Clearance Order 98-0994-GG established the isolation for the work. The ventilation duct and damper were located in the overhead on the 2047 foot level of the auxiliary building inside the radiological controlled area.

The maintenance technicians encountered a very high air flow when they initially opened the access cover in the ventilation duct in order to inspect the damper. The technicians, who were briefed to expect essentially zero flow, immediately closed the access. After checking a second time to ensure that the isolation indicated on the clearance order was in place, the maintenance technicians held discussions with the job coverage health physics technician and with their supervisor. The decision was made to open the access cover a second time to see if the high air flow would decrease.

The technicians opened the access cover again and waited momentarily. The high air flow did not decrease and the technicians closed the access cover because the air flow was transporting lint and dust particulates out of the ventilation duct at such a high rate that it was hazardous to be on the scaffolding. Additionally, the health physics technician noted that the high air flow had blown a considerable amount of dust onto the floor and onto the personnel in the area. Since this area had previously been a contaminated area, there was a concern that the air flow could have redistributed unidentified surface contamination from the overhead to the floor area. The inspector noted that no surface contamination was detected and all persons in the area successfully passed through a portal monitor. Due to the hazard presented to personnel and the increased risk of spreading contamination, maintenance and health physics supervision placed the job on hold until the flow of air could be stopped.

The inspector returned to the work control center with the maintenance technicians to determine why a high flow rate was encountered when almost zero flow was expected

by the technicians. The inspector noted that work control center personnel had no immediate explanation for the unexpected flow in the work area. Additionally, the inspector observed that personnel in the work control center did not appear to recognize or express concern that the isolation established by the clearance order for the work was inadequate. The inspector discussed this with the shift supervisor. This issue was documented in Performance Improvement Request 98-3106.

The inspector then reviewed licensee Procedure AP 21E-001, "Clearance Orders," Revision 7, to determine if the clearance order established for the damper inspection met the clearance order program requirements. The inspector noted that paragraph 4.6.1 of Procedure AP 21E-001, requires that "Danger-Do Not Operate (DNO) tags should be installed on the control points and all boundary points to isolate equipment from all sources of energy for the protection of personnel and equipment." Additionally, paragraph 6.1.2.1 states that a "qualified preparer will identify energy sources and determine isolation points. When positive boundaries are not practical, the clearance order shall not be issued without adding special conditions/precautions on the attached clearance order summary sheet." Paragraph 6.1.2.3 adds additional guidance by stating that "when it is necessary to communicate information of a technical nature or safety concern to ensure safe and proper implementation of the clearance order, then the clearance order summary sheet, Form AP 21E-001-11, shall be utilized and attached."

The inspector observed that Clearance Order 98-0994-GG did not provide isolation from all sources of high volumetric air flow to the ventilation duct at the fuel building emergency exhaust absorber unit tornado Damper GGD-0035. Further, the clearance order did not include special conditions or precautions in the summary sheet section as was required by paragraph 6.1.2.3.

Technical Specification 6.8.1 required, in part, that procedures shall be implemented covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2. Regulatory Guide 1.33, Appendix A, 1.c, references procedures for equipment control (e.g., locking and tagging). Failure to properly implement Procedure AP 21E-001 was a violation.

A previous occurrence of clearance orders that did not provide adequate isolation was identified in NRC Inspection Report 50-482/98-10, and resulted in a notice of violation (50-482/9813-01) for clearance orders that did not provide complete isolation of the component from all energy sources. In the previous instance, a clearance order for electrical work was incomplete, which resulted in an arc flash and minor injury to a maintenance technician. The licensee's response to the notice of violation, in a letter dated July 7, 1998, identified corrective actions to prevent recurrence. Those corrective actions included a revision to Procedure AP 21E-001 to require that:

- A qualified preparer prepare the clearance order.

- A qualified preparer identify energy sources and determine isolation points.

- When positive boundaries are not practical, the clearance not be issued without adding special conditions/precautions to the attached clearance order summary sheet.

In addition, the licensee held a meeting on May 22, 1998, with the clearance order group to discuss the changes to Procedure AP 21E-001 and communicated the expectation that clearance order preparers were to provide special conditions or precautions on the clearance order summary sheet when complete isolation by the clearance order was not practical. The inspector determined that these corrective actions were reasonable and complete. If the preparer of Clearance Order 98-0994-GG had complied with the requirements in the clearance order procedure, the clearance order would have been properly prepared and provided maintenance technicians with the information necessary to ensure safe and proper implementation of the work order.

The licensee commenced a thorough evaluation of the failure to comply with the clearance order procedure. The individual responsible for the generation of the clearance order was counseled, and improvements in communication between the clearance order group and the planning group were evaluated. The results of this evaluation were subject to the review by the licensee's corrective action review board. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent Section VII.B.1 of the NRC Enforcement Policy (50-482/9819-01).

c. Conclusions

The clearance order established for the inspection and lubrication of the fuel building emergency exhaust absorber unit tornado damper was inadequate and was a violation of Technical Specification 6.8.1. The clearance order did not provide isolation from all sources of high volumetric air flow and did not include special conditions or precautions on the clearance order summary sheet, as was required if positive boundaries were not established. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

## O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Violation 50-482/9813-01: Inadequate clearance orders. This violation and licensee corrective actions were reviewed, and found to be acceptable, in conjunction with the review of the event discussed in Section O4.1.b of this report.

## II. Maintenance

### M1 Conduct of Maintenance

M1.1 General Comments on Maintenance Activities

a. Inspection Scope (62707)

The inspectors observed all or portions of the following work activities.

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|---|---|
| WO 98-200200-000 | Replace SGK05 B relief valve |
| WO 98-129416-001 | SGK05 B heat exchanger 18-month inspection and eddy current examination as required by Guideline 89-13 |
| WO 98-204521-002 | Inspect, adjust, repair valve seat on Valve EF HV-049 |
| WO 97-126469-001 | Inspection and lubrication of fuel building emergency exhaust absorber unit tornado Damper GGD-0035 |

b. Observation and Findings

The inspectors found no concerns with the maintenance observed.

c. Conclusions

The inspectors concluded that the maintenance activities were being performed as required.

M1.2 General Comments on Surveillance Activities

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance activities.

STS EM-100B, Revision 14, Safety Injection Pump B Inservice Pump Test

STS AB-201A, Revision 3, Main Steam Isolation and Bypass Valve Test

STS IC-260, Revision 13, Analog Channel Operational Test Auxiliary Feedwater Pump Suction Pressure Low Transfer to Essential Service Water

STS KJ-005B, Revision 31, Manual/auto Start, Synchronization and Loading of Emergency Diesel Generator NE02

b. Observations and Findings

The inspectors found no concerns with the surveillances observed.

c. Conclusions

The inspectors concluded that the surveillance activities were being performed as required.

## M2 Maintenance and Material Condition of Facilities and Equipment

### M2.1 Review of Material Condition During Plant Tours

a. Inspection Scope (61726)

During this inspection period, routine plant tours were conducted to evaluate plant material condition.

b. Observations and Findings

In general, where equipment deficiencies existed, the deficiencies had been identified by the licensee for corrective action. The inspector noted several material condition issues during this inspection period.

On October 22, 1998, during surveillance testing, Train A containment cooler outlet containment isolation Valve EF HV-049 failed to fully close. Valve EF HV-049, a 10-inch butterfly valve with a Teflon seat ring, is physically located outside of containment. The licensee declared the valve inoperable and closed the manual isolation valve inside containment, which resulted in entry into a limiting conditions for operation action statement which required that the Train A containment cooler be restored to operable status within 7 days. The licensee then developed a plan to remove, repair, and reinstall the valve within the required time constraints. The plan included contingencies for unexpected valve component conditions. Once the valve was removed, the licensee discovered that the Teflon seat ring was damaged and required replacement. Additionally, the base metal at one location in the vicinity of the seat ring was damaged and required weld buildup, which was one of the preplanned contingencies. The licensee completed the repair and reinstallation of the valve and the postmaintenance test was successful. Valve EF HV-049 was restored to operable status on October 23, 1998. Subsequently, the licensee successfully completed testing of Train B containment cooler outlet containment isolation Valve EF HV-050.

On September 29, 1998, during monthly surveillance testing of Emergency Diesel Generator B (NEO2), a fuel oil leak was identified which originated from Cylinder 13. The leak rate was determined to be approximately 2 drops per second while the diesel was in operation and decreased to approximately 1 drop every 5 seconds when the diesel was secured. Drip pans with oil absorbing pads were provided to catch the leaking fuel oil and residual fuel oil was routinely wiped up. The licensee's fire protection engineer evaluated the fire hazard associated with the leak and determined that the fire hazard associated with the leak was within the limits of the design basis fire load evaluation for the emergency diesel generator room. The inspector agreed with the fire protection engineer's assessment. During a meeting to plan the repairs, the

licensee decided to repair the leak during the Emergency Diesel Generator B outage scheduled for the fourth week of October 1998. However, the licensee determined that one of the parts needed to complete the repairs was not in stock onsite. When the licensee approached the vendor to obtain the part, the vendor responded that the part would not be available until early in 1999. The Emergency Diesel Generator B outage scheduled for February 1999 includes the repair of the fuel oil leak.

During this inspection period, the inspector walked down portions of the plant, specifically checking temporary equipment for compliance with Procedure AP 21J-001, "Control of Temporary Equipment," Revision 2. The inspector identified several examples of minor deficiencies with the labeling expectations for temporary equipment. The licensee responded quickly to evaluate and correct the labeling deficiencies where warranted. Licensee Performance Improvement Requests 98-2959, -3067, and -3120 addressed the identified deficiencies.

On October 12, 1998, during a plant tour, the inspector found the cover plate for Pressure Switch AB PSL-0017E, "Main Steam Isolation Valve Low Pressure Air Supply Pressure Low," not installed. This was documented in Performance Improvement Request 98-3058. The cover plate was immediately reinstalled and an environmental qualification evaluation was performed that concluded no environmental qualification hazard existed. The licensee determined that the cover plate had been inadvertently left uninstalled during a calibration procedure performed earlier the same day. Installation of the cover plate was considered a skill-of-the-craft task and was not included as a specific procedure step.

c. Conclusions

The material condition of those plant systems and components evaluated during this inspection period were good with few equipment deficiencies, including those discussed in this section.

## M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Licensee Event Report (LER) 50-482/97017-00: Spent fuel storage facility crane surveillance not met. On September 30, 1997, the licensee identified that, from 1986 to 1995, surveillance test Procedure STS KE-003, "Spent Fuel Bridge Crane Surveillance Test," was inadequate to satisfy Technical Specification Surveillance Requirement 4.9.7. The procedure did not account for the weight of the scale in steps to check the overload cutout setpoint. The scale weighed approximately 49 pounds.

Technical Specification 3.9.7 stated that loads in excess of 2250 pounds shall be prohibited from traveling over fuel assemblies in the spent fuel pool storage facility. Technical Specification 4.9.7 required that the crane interlocks and physical stops which prevent loads in excess of 2250 pounds from traveling over fuel assemblies be demonstrated operable within 7 days prior to crane use and at least once per 7 days

thereafter during crane operation. In late 1995, Amendment 89 transferred Technical Specification 3.9.7 and the associated surveillance requirements to Updated Safety Analysis Report Section 16.9.3.

The licensee determined the cause to be an inadequate procedure revision. In September 1986, the licensee revised Procedure STS KE-003 to incorporate the use of the scale. The procedure revision did not take the weight of the scale into consideration.

The licensee declared the spent fuel bridge crane inoperable until Procedure STS KE-003 was revised and successfully performed. On October 1, 1997, the licensee satisfactorily revised the procedure to include weight of the scale. On October 2, 1997, the procedure was successfully performed. The licensee reviewed past calibrations of the load cell, which initiates the overload cutout. The licensee determined that no loads in excess of 2250 pounds were moved over fuel assemblies.

The inspectors determined that, although there were no past operability concerns, the licensee had an inadequate surveillance test procedure for testing the crane from September 1986 until October 1997.

The inspectors concluded that, in violation of 10 CFR Part 50, Appendix B, Criterion XI, the procedure for testing the spent fuel bridge crane was inadequate from September 1986 until October 1997 in that it failed to account for the weight of the scale during checks of the overload cutout setpoint as required. As a result, the licensee failed to demonstrate operability of the spent fuel bridge crane. The licensee revised and successfully performed the procedure. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-482/98019-02).

## III. Engineering

### E2 Engineering Support of Facilities and Equipment

E2.1 Turbine-Driven Auxiliary Feedwater Pump Peformance Improvement

a. Inspection Scope (37551)

The inspector reviewed the licensee's basis for moving the turbine-driven auxiliary feedwater pump from maintenance rule Category (a)(1) to (a)(2).

b. Observation and Findings

On September 30, 1998, a licensee expert panel decided to move the turbine-driven auxiliary feedwater pump from maintenance rule Category (a)(1) to Category (a)(2). The system had demonstrated that it met the established goals for a period of several months before the licensee made the change. The maintenance rule performance

goals for the turbine-driven auxiliary feedwater pump were unavailability of less than or equal to 200 hours per rolling 18-month period and a functional failure rate of less than or equal to one per rolling 18-month period. The unavailability goal was originally exceeded, resulting in the turbine-driven auxiliary feedwater pump initially being placed in the (a)(1) category.

The unavailability goal for the turbine-driven auxiliary feedwater pump was exceeded as a result of the following:

- Failures of the limit switch on the turbine-trip throttle valve.
- Failures of the Resistor R1 in the power circuit for the turbine control circuitry.
- Water intrusion into the lube oil from steam leaks and gland seal alignment problems.
- Inattention to maintenance rule performance goal requirements.

Since 1996, the performance of the turbine-driven auxiliary feedwater pump had improved. This was a result of increased licensee focus on improving the system. The system engineer involvement in the planning and scheduling of maintenance was increased and the system out-of-service time was optimized to streamline maintenance activities. Maintenance procedures were revised to improve guidance on setting limit switches; the frequency of some preventive maintenance was adjusted to better meet the needs of the components; and major system repairs and modifications were accomplished. As a result of these efforts, the performance of the turbine-driven auxiliary feedwater pump improved such that the system unavailability was well within the established performance goals.

At the end of September 1998, the accumulated rolling 18-month unavailability for the turbine-driven auxiliary feedwater pump was approximately 100 hours, substantially less than the goal of 200 hours. Sustained improved performance over several months led the expert panel to move the turbine-driven auxiliary feedwater pump from maintenance rule Category (a)(1) to Category (a)(2). The licensee performance criteria for the system shall remain the same as the goals used in Category (a)(1).

c. Conclusions

Substantial effort by the engineering organization resulted in sustained improved performance of the turbine-driven auxiliary feedwater pump. At the end of September 1998, the accumulated rolling 18-month unavailability for the turbine-driven auxiliary feedwater pump was approximately 100 hours, substantially less than the goal of 200 hours.

## E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Inspection Followup Item 50-482/9812-10: Review the corrective actions to assure that the diesel-driven fire pump starting circuit relays are placed in the preventive maintenance program. The licensee identified in Performance Improvement Request 98-0964 that the diesel-driven fire pump engine failed to start on demand during postmaintenance testing on April 2, 1998. The licensee determined that the cause of the failure was a failed relay in the engine start circuitry and that the preventive maintenance program did not include the inspection or replacement of these relays. This weakness was documented in NRC Inspection Report 50-482/98-12.

The inspector reviewed the licensee's evaluation and the corrective actions specified in Performance Improvement Request 98-0964. The inspector also reviewed Performance Improvement Requests 98-0943, -2482, -2569, and -2571. The inspector verified that the inspection of the start circuit relays was added to the licensee's preventive maintenance program for the diesel-driven fire pump. Additionally, the inspector determined that the licensee performed a complete review of the maintenance history, preventive maintenance program, and manufacturer's recommended maintenance program for the diesel-driven fire pump. As a result of this review, the licensee incorporated additional improvements into the preventive maintenance program for the diesel-driven fire pump.

The inspector concluded that the licensee's corrective actions were appropriate to assure that the diesel-driven fire pump starting circuit relays were placed in the preventive maintenance program for the diesel-driven fire pump.

E8.2 (Closed) LER 50-482/98002-00: Inadequate evaluation of a reactor coolant pump lube oil leak collection system nonconforming condition. This LER and the licensee's corrective actions were reviewed during an inspection documented in NRC Inspection Report 50-482/98-12 in support of the closure of LER 50-482/97016-00. LER 50-482/98002-00 is being closed administratively in this inspection report.

# IV. Plant Support

## P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Road Closings Due to Flooding Within the 10-Mile Emergency Zone

a. Inspection Scope (71750)

The inspectors reviewed the licensee's response to road closings due to flooding within the 10-mile emergency planning zone. The inspectors attended licensee meetings and discussed contingency planning with various licensee personnel. The inspectors also toured various areas within the emergency planning zone.

b. Observations and Findings

The licensee maintained contact with federal, state, and local agencies during the flooding. The licensee also attended the Coffey County emergency planning daily briefings as conditions warranted. The licensee provided timely updates of offsite conditions and licensee contingency plans to the inspectors, Region IV, and headquarters personnel.

When the county closed roads due to flooding, the licensee ensured that alternate evacuation routes were delineated. Since the flooding could also affect offsite monitoring team routes, the licensee provided road closure information to the emergency managers and posted the information in the technical information center and the emergency offsite facility. The licensee provided the emergency response team members with road closure information and ensured that all emergency plan staffing requirements would be met if required.

c. Conclusions

Overall, the licensee's response to road closures due to flooding was excellent. The licensee maintained contact with offsite agencies and provided timely updates to necessary personnel. The licensee ensured that all emergency response organization requirements would be met if needed and provided updated road closure information to emergency response managers. The road closure information was also posted in the technical information center and the emergency offsite facility.

## V. Management Meetings

### X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on November 13, 1998. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## SUPPLEMENTAL INFORMATION

## PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. J. Angus, Manager, Licensing and Corrective Action
G. D. Boyer, Chief Administrative Officer
J. W. Johnson, Manager, Resource Protection
O. L. Maynard, President and Chief Executive Officer
B. T. McKinney, Plant Manager
R. Muench, Vice President Engineering
W. B. Norton, Manager, Performance Improvement and Assessment
C. C. Warren, Chief Operating Officer

## INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 37551 | Onsite Engineering |
| IP 61726 | Surveillance Observations |
| IP 62707 | Maintenance Observations |
| IP 71707 | Plant Operations |
| IP 71750 | Plant Support Activities |
| IP 92902 | Follow up - Maintenance |
| IP 92903 | Follow up - Engineering |

## ITEMS OPENED AND CLOSED

Opened

| | | |
|---|---|---|
| 50-482/9819-01 | NCV | Inadequate clearance order (Section O4.1) |
| 50-482/9819-02 | NCV | Spent fuel storage facility crane surveillance not met (Section M8.1) |

Closed

| | | |
|---|---|---|
| 50-482/9813-01 | VIO | Inadequate clearance orders (Section O8.1) |
| 50-482/97017-00 | LER | Spent fuel storage facility crane surveillance not met (Section M8.1) |
| 50-482/9819-01 | NCV | Inadequate clearance order (Section O4.1) |
| 50-482/9819-02 | NCV | Spent fuel storage facility crane surveillance not met (Section M8.1) |
| 50-482/9812-10 | IFI | Review the corrective actions to assure that the diesel-driven fire pump starting circuit relays are placed in the preventive maintenance program (Section E8.1) |
| 50-482/98002-00 | LER | Inadequate evaluation of a reactor coolant pump lube oil leak collection system nonconforming condition (Section E8.2) |