

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-482/89-24

Operating License: NPF-42

Docket: 50-482

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)  
P.O. Box 411  
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)


Inspection At: WCGS, Coffey County, Burlington, Kansas

Inspection Conducted: September 1-30, 1989

Inspectors: B. L. Bartlett, Senior Resident Inspector  
Project Section D, Division of Reactor Projects

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Approved:



E. J. Holler, Chief, Project Section D  
Division of Reactor Projects

10/11/89  
Date

Inspection Summary

Inspection Conducted September 1-30, 1989 (Report 50-482/89-24)

Areas Inspected: Routine, unannounced inspection including plant status, operational safety verification, monthly surveillance observation, monthly maintenance observation, onsite followup of events at operating power reactors, cold weather preparations, followup of previously identified NRC items, and review of licensee event reports.

Results: No violations or deviations were identified. On September 19, 1989, the licensee entered Technical Specification (TS) 3.0.3 because of problems with a centrifugal charging pump miniflow valve. The licensee's response to the TS 3.0.3 entry appeared correct but the identification of the recirculation valve operability issue was not timely. An unresolved item was identified regarding this matter pending resolution of the effects of the centrifugal charging pump recirculation line flow degradation on system operability (paragraph 6). An open item was identified regarding the licensee's intentions to determine how leaving Dampers GL D36 and GL D37 open affects auxiliary building emergency exhaust operability (paragraph 3.a). Licensee actions

regarding maintenance difficulties encountered during repair of a main feedwater isolation valve that required entry into a 6-hour limiting condition for operation appeared appropriate to the circumstances (paragraph 4).

DETAILS1. Persons ContactedPrincipal Licensee Personnel

- \*B. Withers, President and CEO
- \*J. A. Bailey, Vice President, Operations
- \*R. M. Grant, Vice President, Quality Assurance (QA)
- F. T. Rhodes, Vice President, Engineering and Technical Services
- \*G. D. Boyer, Plant Manager
- \*R. S. Benedict, Manager, Quality Control
- \*H. K. Chernoff, Supervisor, Licensing
- \*S. Conner, Supervisor Management Systems, Wichita
- \*D. Erbe, Security Operations Supervisor
- \*R. B. Flannigan, Manager, Nuclear Safety Engineering (NSE)
- \*C. W. Fowler, Manager, Instrumentation and Control (I&C)
- \*B. Goshorn, Planning Engineer, Kansas Electric Power Cooperatives
- \*R. C. Hagan, Manager, Nuclear Services
- \*R. W. Holloway, Manager, Maintenance and Modifications
- \*W. M. Lindsay, Manager, QA
- \*M. C. Lutze, Security Administration Coordinator
- \*O. L. Maynard, Manager, Regulatory Services
- B. McKinney, Manager, Operations
- \*D. G. Moseby, Supervisor, Operations
- \*W. B. Norton, Manager, Technical Support
- \*C. E. Parry, Manager, QA, WCGS
- \*D. Peavler, QA Specialist III
- \*J. M. Pippin, Manager, Nuclear Plant Engineering (NPE)
- \*G. Rathbun, Manager, NPE Wichita
- \*C. Sprout, Section Manager, NPE, WCGS
- \*K. Steinbrook, NPE
- \*S. Wideman, Licensing Specialist III
- \*M. G. Williams, Manager, Plant Support

The inspectors also contacted other members of the licensee's staff during the inspection period to discuss identified issues.

\*Denotes those personnel in attendance at the exit meeting held on September 29, 1989.

2. Plant Status

The plant operated in Mode 1 (100 percent reactor thermal power) during the inspection period. There were no reactor or turbine trips.

3. Operational Safety Verification (71707)

The purpose of this inspection was to ensure that the facility was being operated safely and in conformance with license and regulatory

requirements. It also was to ensure that the licensee's management control system was effectively discharging its responsibilities for continued safe operation. The methods used to perform this inspection area included direct observation of activities and equipment, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions for operation, corrective actions, and review of facility records.

Areas reviewed during this inspection included, but were not limited to, control room activities, routine surveillances, engineered safety feature operability, radiation protection controls, fire protection, security, plant cleanliness, instrumentation and alarms, deficiency reports, and corrective actions.

Routine surveillance and operating activities witnessed and/or reviewed by the inspectors are listed below:

- a. On September 11, 1989, the licensee reported that on August 28, 1989, Dampers GL D36 and GL D37 had been removed from service and tagged in the open position for annual prevention maintenance. The dampers should have been removed from service in the closed position. The licensee discovered the error during restoration of the equipment after completion of the maintenance. These dampers are in a line that draws air from the tunnel between the radwaste building and the auxiliary building. They close on a safety injection signal (SIS). If an SIS had occurred while the dampers were out of service in the open position, the auxiliary building emergency exhaust system may not have been able to maintain a negative 1/4-inch water gauge relative pressure in the auxiliary building. If the emergency exhaust system was unable to attain the required negative pressure, then the system would have been inoperable and in violation of TS 3.7.7.

The TS action statement provides for restoration within 7 days when one emergency exhaust system is inoperable. In this case, both systems may have been out of service and, if so, would have required entry into TS 3.0.3. TS 3.0.3 requires that the plant be shut down within 7 hours. Based on discussions with personnel involved in tagging the dampers, the dampers were apparently tagged open for less than 6 hours.

The licensee does not know if the emergency exhaust would have been inoperable. That is, whether the exhaust system could maintain the auxiliary building at a negative pressure of greater than 1/4-inch water gauge relative pressure with Dampers GL D36 and GL D37 open. The licensee has decided to test the emergency exhaust system to determine if the open dampers would prevent the system from attaining the required negative pressure. The licensee committed that the test will be performed during the next refueling outage. To prevent recurrence of similar events, the licensee developed specific

training regarding the tagging of ventilation dampers for inclusion in licensed operator onshift and requalification training. This is an open item for tracking purposes (482/8924-01).

- b. During the last refueling outage, the licensee replaced the reactor control cluster assemblies (RCCAs). This was discussed in NRC Inspection Report 50-482/88-37. Since startup from that outage in January 1989, the licensee has operated with the RCCAs at a fully withdrawn position of 230 steps. The licensee has determined that changing the fully withdrawn position is necessary to permit uniform wear on the RCCA cladding. On September 15, 1989, the licensee moved the RCCAs to a new fully withdrawn position of 229 steps. The licensee stated that, approximately monthly, the RCCAs' fully withdrawn position will be changed.

No violations or deviations were identified.

#### 4. Monthly Surveillance Observation (61726)

The purpose of this inspection was to ascertain whether surveillance of safety-significant systems and components was being conducted in accordance with TS. Methods used to perform this inspection included direct observation of licensee activities and review of records.

Items inspected in this area included, but were not limited to, verification that:

- Testing was accomplished by qualified personnel in accordance with an approved test procedure.
- The surveillance procedure was in conformance with TS requirements.
- The operating system and test instrumentation was within its current calibration cycle.
- Required administrative approvals and clearances were obtained prior to initiating the test.
- Limiting conditions for operation were met and the system was properly returned to service.
- The test data were accurate and complete and the test results met TS requirements.

Surveillances witnessed and/or reviewed by the inspectors are listed below:

- STS AC-001, Revision 5, "Main Turbine Valve Cycling Test," performed September 6, 1989
- STS KJ-005A, Revision 13, "Manual/Auto Start, Synchronization and Loading of Emergency Diesel Generator NE01," performed September 6, 1989

- ° STS IC-211A, Revision 9, "Actuation Logic Test Train 'A' Solid State Protection System," performed September 15, 1989

Selected inspector observations are discussed below:

- a. While performing STS IC-617A, "Slave Relay Test K617 Train 'A' Safety Injection," the licensee questioned ramifications of lifting leads on the K617 SIS contact. This contact is part of the circuitry that trips the safety-related Class 1E 4160 volt bus supply breaker on degraded voltage or loss of power to the bus. If the circuitry senses degraded voltage, the contacts on K617 would close on an SIS and trip the bus supply breaker. With the leads lifted, there is a 3-second delay before the supply breaker is tripped. The emergency diesel generator would then start and close on the isolated bus. If an SIS occurred during the period that a degraded voltage condition existed during the 3-second delay, emergency core cooling system pumps could try to start on degraded voltage. When the timer completed its delay, the bus supply breaker would trip and the loss of coolant accident (LOCA) sequencer would restart the pumps on the diesel generator powered bus. That, however, is dependent on the motors not being damaged by trying to start on low voltage and not tripping their overcurrent protection devices.

Licensee analysis found that pump motors would not be damaged but that the essential service water (ESW) pump motor may trip on overcurrent while starting on a low voltage bus. The lockout would have to be reset locally before the motor could be restarted. This could take several minutes since the pumps are located at the lake, outside of the power block. The licensee revised Procedure STS IC-617A to not lift the leads on the K617 relay. The licensee also reviewed all previous performances of STS IC-617A and -B to April 4, 1985, and found that the lifted leads and potential inoperability of the ESW pump did not exceed 72 hours, the period allowed by TS 3.7.4.

- b. On September 22, 1989, the licensee was performing stroke tests on the main feedwater isolation valves (MFIV). Valve AE-FV40, the Loop "B" MFIV, failed to operate. A 4-way slide valve in the actuating mechanism was found to have failed. AE-FV40 has two trains of actuation; one train remained operable. The licensee entered TS 4.0.5, which required the plant to repair the valve within 24 hours or shut down. While the licensee was replacing the 4-way slide valve, air pressure from the other train air reservoir bled off rendering both actuation trains inoperable. The MFIV fails shut on loss of electric power but fails "as is" on loss of air. The licensee entered TS 3.3.2.5 Action Statement 27 which required the plant to be in hot standby within 6 hours. The licensee completed replacing the 4-way slide valve, stroke tested AE-FV40, and exited TS 3.3.2.5 within 2 hours. During replacement of the 4-way slide valve, a nonenvironmentally qualified O-ring was used. Subsequent licensee safety analysis could not find sufficient documentation to

support use of the O-ring and the licensee replaced it with a qualified O-ring.

No violations or deviations were identified.

5. Monthly Maintenance Observation (62703)

The purpose of inspections in this area was to ascertain that maintenance activities on safety-related systems and components were conducted in accordance with approved procedures and TS. Methods used in this inspection included direct observation, personnel interview, and records review.

Items verified in this inspection included:

- ° Activities did not violate limiting conditions for operation and redundant components were operable.
- ° Required administrative approvals and clearances were obtained before initiating work.
- ° Radiological controls were properly implemented.
- ° Fire prevention controls were implemented.
- ° Required alignments and surveillances to verify postmaintenance operability were performed.
- ° Replacement parts and materials used were properly certified.
- ° Craftsmen were qualified to accomplish the designated task and additional technical expertise was made available when needed.
- ° Quality control (QC) hold points and/or checklists were used and QC personnel observed designated work activities.
- ° Procedures used were adequate, approved, and up to date.

Portions of selected maintenance activities regarding the work requests (WRs) listed below were observed. The WRs and related documents were reviewed by the inspectors:

<u>No.</u>	<u>Activity</u>
WR 02867-89	Fuel oil lines rubbing against injection pumps on KJ01
WR 02348-89	Inspect Jacket Water Expansion Tank TKJ01B
WR 02868-89	KJ01B fuel oil leak on return header blind flange

WR 03875-89	Install drainlines on KJ air compressor relief valves
WR 51666-89	1-year maintenance on Fuel Oil Supply Filter FKJ07B

Selected inspector observations are discussed below:

The maintenance activities that were observed, appeared to be performed satisfactorily and in accordance with procedure. In one case, maintenance personnel found a procedure error and resolved it before continuing with the procedure. In another case, a torque wrench appeared to fail. The inspector followed up and found that the torque wrench was returned to the metrology lab for evaluation. Another torque wrench was checked out and used for the job. The inspector found that the licensee could readily determine where and when the torque wrench had previously been used. In this case, the torque wrench had not been used since it was last calibrated.

No violations or deviations were identified.

#### 6. Onsite Followup of Events at Operating Power Reactors (93702)

The purpose of this inspection activity was to provide onsite inspection of events at operating power reactors. Specific inspection activities included:

- ° Observing plant status
- ° Evaluating the significance of the events, performance of safety systems, and actions taken by the licensee
- ° Confirming that the licensee had made proper notification of the events and of any new developments or significant changes in plant conditions
- ° Evaluating the need for further or continued NRC response to the events

The following items were considered during the followup:

- ° Details regarding the cause of the event
- ° Event chronology
- ° Functioning of safety systems as required by plant conditions
- ° Radiological consequences and personnel exposure
- ° Proposed licensee actions to correct the cause of the event



- ° Corrective actions taken or planned prior to resumption of facility operations

A selected event requiring a licensee event report (LER) that occurred during this report period is listed in the table below:

<u>Date</u>	<u>Event</u>	<u>Plant Status</u>	<u>Cause</u>
9/19/89	Entry into TS 3.0.3	Mode 1 (100% Power)	Equipment Failure

The inspector will review this LER for the event and will report any findings in a subsequent inspection report.

Selected inspector observations regarding the above event are discussed below:

At 5:55 p.m., on September 19, 1989, the licensee entered TS 3.0.3. The reason for the entry was that the "B" diesel generator was out of service for routine maintenance when the "A" centrifugal charging pump was declared inoperable. On September 15, 1989, the licensee performed Procedure STS IC-603A which tested the minimum flow line for the "A" centrifugal charging pump. A valve in that line was required to shut when charging flow had sufficiently increased to permit maximum flow during a small break LOCA. However, after the valve shut, it reopened. The test personnel originally considered the problem to be a procedural problem because this was the first performance of the procedure following a major revision. After the licensee determined that an actual equipment failure had been found and that it affected the ability of the centrifugal charging pump to perform its safety function, the pump was declared inoperable. After entry into TS 3.0.3, the licensee identified and replaced a failed relay, completed STS IC-603A satisfactorily, and exited TS 3.0.3 at 7:40 p.m. that same evening.

The licensee expected to have the relay repaired promptly and did not start an actual power reduction during the TS 3.0.3 entry. Licensee experience has shown that a controlled shutdown can be performed in approximately 3 1/2 hours. Because the shutdown was not actually initiated, a Notice of Unusual Event was not declared. Licensee actions to initiate the TS 3.0.3 required shutdown within 1 hour, included notification of system operations, and the readying of procedures for the controlled shutdown of the plant. The NRC was also notified.

The licensee is currently performing an evaluation of the safety significance of the loss of injection flow with the miniflow open, including a determination of the operability of the system with miniflow valve malfunctioning. Pending the results of this evaluation, this will remain an unresolved item (482/8924-02). The licensee's response to the TS 3.0.3 entry appeared correct. However, the untimely identification of the recirculation valve operability issue was unacceptable although it was an isolated occurrence. Licensee management recognized the importance of

timely identification and stated intentions to improve the operator and technicians sensitivity to this issue.

No violations or deviations were identified.

7. Cold Weather Preparations (71714)

The objective of this inspection was to determine whether the licensee has maintained effective implementation of the program of protective measures for extreme cold weather.

- ° Procedure STN GP-001, Revision 2, "Plant Winterization," was partially performed on September 13, 1989. The procedure placed heating in service for the demineralized water storage tank, condensate storage tank, reactor makeup water storage tank, and the refueling water storage tank. In addition, heat tracing of outside piping running to those tanks was also placed in service.

The licensee performed the portions of STN GP-001 described above even though freezing weather was not immediately expected. The procedure also establishes space heating to several rooms and stand alone structures and verifies proper operation of the heating. However, temperatures in most of the rooms remained sufficiently warm such that thermostats could not be adjusted high enough to cause the space heating to actuate.

Another portion of the procedure not performed was the isolation and draining of chilled water coils from power block supply air units. At the time the procedure was performed, warm weather was forecast to return before cold winter weather sets in, and the need for continued room cooling was still anticipated.

STN GP-001 did not include the temporary fire main piping which is located outside of the circulating water screenhouse. The licensee stated that the replacement of the fire main piping was expected to be complete by mid-October 1989. This is prior to the normal onset of freezing weather. The licensee recognized the need to provide freeze protection to the temporary fire main piping should it become necessary.

No violations or deviations were identified.

8. Followup on Previously Identified NRC Items (92701)

- a. (Closed) Unresolved Item (482/8807-22): PMR 1722 Motor-Operator Testing - This item concerned Engineering Evaluation Request (EER) 86-EM-03 that described a problem of multiple drawings and inadequate cross referencing between plant and vendor drawings. At the time the item was opened, the EER had not been evaluated or dispositioned. The EER has since been evaluated and dispositioned. The licensee had expanded the use of an interim series of drawings to

consolidate the multiple drawings. These drawings provide a unique internal wiring diagram for the safety-related Westinghouse valves during the modification process. The interim drawings will become the basis for the permanent drawings after modifications are complete. This item is closed.

- b. (Closed) Unresolved Item (482/8807-35)(par. 3.2.2.3): PMR 2084 CCW Pipe Wall Thinning - This plant modification request involved application of a weld overlay on a component cooling water line. On February 1, 1989, NRC issued WCGS a Notice of Violation and Proposed Imposition of Civil Penalty (EA 88-282). The violation addressed the major safety issue raised by Unresolved Item 482/8807-33. NRC Inspection Report 50-482/88-200 addressed the remaining issues in this unresolved item. As identified in the above reports, the licensee did fail to follow procedures during the performance of PMR 2084; however, this failure has already been cited, followed up on, and closed as part of the enforcement action EA 88-282. This unresolved item is closed.
- c. In NRC Inspection Report 50-482/89-23, two items were inadvertently given the same item number. To clarify and correct the numbering error, the unresolved item in paragraph 8.a of the referenced report should be 482/8923-02.

9. Review of Licensee Event Reports (LER) (92700)

During this inspection period, the inspectors performed followup on two Wolf Creek LERs. The LERs were reviewed to ensure:

- ° Corrective action stated in the report has been properly completed or work is in progress.
- ° Response to the event was adequate.
- ° Response to the event met license conditions, commitments, or other applicable regulatory requirements.
- ° The information contained in the report satisfied applicable reporting requirements.
- ° Generic issues were identified.

The LERs discussed below were reviewed and closed:

- ° 89-016, "Inattention to Detail Leads to Error in Schedule Causing Failure to Meet Technical Specification Surveillance Requirement." The licensee attributed the event to the personnel error of failing to ensure the surveillance test was properly scheduled. The report also listed as a contributing factor, a computer program limitation that made scheduling this particular surveillance test more difficult. The licensee revised the computer program to hard date

the 62-day surveillance tests. The licensee demonstrated the scheduling program for the NRC inspector. This item was discussed in NRC Inspection Report 50-482/89-23 and identified as a noncited violation (482/8923-01). This LER is closed.

- ° 89-018, "Failure to Recognize the Need to Take Action to Place Dampers in Safeguards Position May Have Resulted in Inoperability of Both Emergency Exhaust Systems." This item was discussed in paragraph 3.a. The licensee's commitment to test the emergency exhaust system with the dampers open during the next refueling outage is in addition to the corrective action discussed in the LER. This LER is closed.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, items of noncompliance, or deviations. One unresolved item disclosed during the inspection is discussed in paragraph 6.

11. Exit Meeting (30703)

The inspectors met with licensee personnel (denoted in paragraph 1) on September 29, 1989. The inspectors summarized the scope and findings of the inspection. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the inspectors.