

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-482/87-22

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: Wolf Creek Site, Coffey County, Burlington, Kansas

Inspection Conducted: September 1-30, 1987

Inspectors: James E. Cummins 10/5/87  
J. E. Cummins, Senior Resident Inspector, Date  
Operations

Bruce L. Bartlett 10-5-87  
B. L. Bartlett, Resident Reactor Inspector, Date  
Operations

R. P. Mullikin 10/29/87  
R. P. Mullikin, Project Inspector, Reactor Date  
Projects Section B, Reactor Projects Branch

Approved: D. R. Hunter 10/29/87  
D. R. Hunter, Chief, Reactor Project Section B Date  
Reactor Projects Branch

Inspection SummaryInspection Conducted September 1-30, 1987 (Report 50-482/87-22)

Areas Inspected: Routine, unannounced inspection including plant status, followup of previously NRC identified items, operational safety verification, monthly surveillance observation, monthly maintenance observation, fire protection/prevention program, onsite event followup, emergency preparedness exercise, physical security verification, radiological protection, and review of licensee event reports.

Results: Within the 11 areas inspected, one violation was identified, (failure to perform surveillance in accordance with procedures, paragraph 7).

DETAILS1. Persons ContactedPrincipal Licensee Personnel

- +F. T. Rhodes, Vice President, Operations
- \*R. M. Grant, Vice President, Quality
- +\*G. D. Boyer, Plant Manager
- O. L. Maynard, Manager, Licensing
- \*C. M. Estes, Superintendent of Operations
- +M. D. Rich, Superintendent of Maintenance
- \*M. G. Williams, Superintendent of Regulatory, Quality, and Administrative Services
- +\*W. J. Rudolph, QA Manager, WCGS
- \*A. A. Freitag, Manager, Nuclear Plant Engineering (NPE), WCGS
- +M. Nichols, Plant Support Superintendent
- +\*K. Peterson, Licensing
- +\*G. Pendergrass, Licensing
- +\*W. M. Lindsay, Supervisor, Quality Systems
- +\*C. J. Hoch, QA Technologist
- +J. L. Blackwell, Training Manager
- +E. Lehmann, NSE Engineer
- J. Goode, Licensing Engineer
- +A. S. Mah, Superintendent of General Training
- \*C. E. Parry, Superintendent of Quality Engineering
- \*V. J. MacTaggart, Results Engineering Supervisor
- +C. G. Patrick, Superintendent of Quality Evaluations

The NRC 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 October 2, 1987.

+Denotes those personnel in attendance at the exit meeting held on September 25, 1987.

2. Plant Status

The plant operated in Mode 1 during the inspection period except during the time periods described below:

On September 10, 1987, the reactor tripped from 100 percent power when the "B" phase transmission line separated and fell to the ground causing the main generator to trip. The plant was returned to power operation in Mode 1 on September 12, 1987.

On September 27, 1987, the reactor tripped from 85 percent power when a rod control system failure caused one or more control rods to drop into the core.

The annual refueling outage was scheduled to start on October 1, 1987, and rather than restart, the outage was started 3 days early.

### 3. Followup of Previously NRC Identified Items

(Closed) Unresolved Item (482/8706-02): As-Found Leak Rate Tests - This unresolved item was written when the NRC inspector determined that the licensee was not performing "as-found" local leak rate testing (LLRT) as required by Appendix J to 10 CFR Part 50. The licensee informed the NRC inspector that "as-found" LLRTs would be performed prior to any maintenance that could affect valve leakage characteristics and showed the NRC inspector a copy of an internal letter stating this. The NRC inspector also reviewed STS PE-017, Revision 6, "Local Leak Rate Testing," to verify that it had been revised to include this requirement and reviewed selected work requests to verify "as-found" LLRTs were specified where required.

(Closed) Unresolved Item (482/8713-01): MSIV Air Supply Check Valves - This unresolved item concerned the question of the need to test periodically the main steam isolation valve (MSIV) air supply check valves. The licensee stated that although they had an identical valve to the one identified in IE Information Notice No. 85-35, "Failure of Air Check Valves to Seat," the failure described in Information Notice 85-35 was beyond a design basis accident and that, therefore, the air check valves would not be periodically tested.

(Closed) Violation (482/8624-01): Failure to Control Combustible Materials in Accordance with Procedures - The licensee took immediate action to remove the combustible material and to lock the flammable liquid storage cabinet to restore these areas to the required level of combustible material control. The NRC inspectors continued to monitor combustible material controls and housekeeping and have not observed any additional violations of the licensee administrative controls which appear to be adequate. This item is closed.

(Closed) Violation (482/8624-02): Failure to Lock Valves in Accordance with Procedure - The licensee changed Administrative Procedure ADM 02-102, Revision 12, "Control of Locked Component Status," to clarify the requirements for independent verification that locking devices are correctly installed on locked valves and other components. This item is closed.

### 4. Operational Safety Verification

The NRC inspectors verified that the facility is being operated safely and in conformance with regulatory requirements by direct observation of licensee facilities, tours of the facility, interviews and discussions

with licensee personnel, independent verification of safety system status and limiting conditions for operations, and reviewing facility records. The NRC inspectors, by observation of randomly selected activities and by interview of personnel, verified that physical security, radiation protection, and fire protection activities were controlled.

By observing accessible components for correct valve position and electrical breaker position, and by observing control room indication, the NRC inspectors confirmed the operability of selected portions of safety-related systems. The NRC inspectors also visually inspected safety components for leakage, physical damage, and other impairments that could prevent them from performing their designed functions.

Selected NRC inspector observations are discussed below:

On September 26, 1987, during a routine tour of the auxiliary building, the NRC inspector observed that a drain valve in the air supply line to EG RV-10 "CCW Surge Tank "B" Vent" was open instead of closed. The drain cap was installed so that no air was being lost. The supervising operator (SO) was informed and had the valve closed.

During a routine review of the control room log on September 30, 1987, the NRC inspector learned that on September 29, 1987, at 2:58 p.m. CDT with the unit in Mode 3, the containment purge isolation valves GT HZ-6, 7, 8, and 9 were opened for approximately 3 1/2 hours without Action A to TS 3.6.1.7 being entered. The NRC inspector verified that the action statement was complied with, albeit inadvertently. Through interviews with operations personnel, the NRC inspector determined that the licensee had failed to understand that TS 3.6.1.7 applied to the 36-inch valves as well as to the blank flanges. NRC Inspection Report 50-482/86-24, paragraph 7 discusses a previous occurrence of the licensee failing to understand this TS. The licensee has informed the NRC inspector that they now understand this TS.

#### 5. Monthly Surveillance Observation

The NRC inspectors observed selected portions of the performance of surveillance testing and/or reviewed completed surveillance test procedures to verify that surveillance activities were performed in accordance with TS requirements and administrative procedures. The NRC inspectors considered the following elements while inspecting surveillance activities:

- o Testing was being accomplished by qualified personnel in accordance with an approved procedure.
- o The surveillance procedure conformed to TS requirements.
- o Required test instrumentation was calibrated.
- o TS limiting conditions for operation (LCO) were satisfied.

- o Test data was accurate and complete. Where appropriate, the NRC inspectors performed independent calculations of selected test data to verify their accuracy.
- o The performance of the surveillance procedure conformed to applicable administrative procedures.
- o The surveillance was performed within the required frequency and the test results met the required limits.

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

STS AC-001, Revision 5, "Main Turbine Valve Cycling Test," performed on September 17, 1987

STS EN-001, Revision 3, "Containment Spray System Valve Verification," performed on July 2, 1987

STS EN-003, Revision 2, "Spray Additive System Flow Test," performed April 18, 1986

STS EN-100A, Revision 1, "Containment Spray Pump "A" Inservice Pump Test," performed on July 1 and September 29, 1987

STS EN-100B, Revision 1, "Containment Spray Pump "B" Inservice Pump Test," performed on May 16, 1987

STS KJ-001A, Revision 2, "Integrated D/G and Safeguards Actuation Test - Train A," performed on April 18, 1986

STS ML-001, Revision 7, "Monthly Surveillance Log," performed on July 9, 1987

STS MT-008, V076, Revision 1, "Mainsteam Safety Valve Settings," performed on September 29, 1987

No violations or deviations were identified.

#### 6. Monthly Maintenance Observation

The NRC inspector observed maintenance activities performed on safety-related systems and components to verify that these activities were conducted in accordance with approved procedures, TS, and applicable industry codes and standards. The following elements were considered by the NRC inspector during the observation and/or review of the maintenance activities:

- o LCOs were met and, where applicable, redundant components were operable.

- o Activities complied with adequate administrative controls.
- o Where required, adequate, approved, and up-to-date procedures were used.
- o Craftsmen were qualified to accomplish the designated task and technical expertise (i.e., engineering, health physics, operations) was made available when appropriate.
- o Replacement parts and materials being used were properly certified.
- o Required radiological controls were implemented.
- o Fire prevention controls were implemented where appropriate.
- o Required alignments and surveillances to verify post maintenance operability were performed.
- o Quality control hold points and/or checklists were used when appropriate and quality control personnel observed designated work activities.

Selected portions of the maintenance activities accomplished on the work requests (WR) listed below were observed and related documentation reviewed by the NRC inspector:

<u>No.</u>	<u>Activity</u>
WR 51381-87	CCW Pump DP EG01D Ckt. Brk/NB 0207 - Annual Maintenance
WR 02250-87	GK D084/Actuator GK HZ40A/Damper would not full open when GK 04B started
WR 0191987	Limitorque Operator AL HV-031-MOVATS Testing

No violations or deviations were identified.

#### 7. Fire Protection/Prevention Program

This inspection was conducted to determine whether the licensee has implemented a program for fire protection and prevention in conformance with regulatory requirements and industry guides and standards.

The NRC inspector reviewed the documentation constituting the licensee's fire protection program. The licensee's program provides for administrative controls of combustible materials and housekeeping for the reduction of fire hazards, handles disarmed or inoperable fire detection or suppression systems, provides for maintenance and surveillances on fire suppression and detection equipment, establishes personnel fire fighting qualification, training, and fire protection staff responsibilities,

provides fire emergency personnel designations as well as plans and actions, and establishes controls for welding, cutting, grinding, and other ignition sources.

During the previous NRC fire protection/prevention inspection, the NRC inspector noted that Administrative Procedures ADM 13-101, ADM 13-102, and ADM 13-103 required all plant employees to report unsafe fire conditions, poor housekeeping practices, and fire protection impairments. The only way all employees would be aware of these requirements would be through the General Employee Training (GET) course, which was deficient in these areas. The NRC inspector mentioned this to the licensee during that inspection. During this inspection, it was noted that the GET course material was expanded to include the pertinent general requirements of these administrative procedures.

A tour of accessible areas of the plant was conducted to verify that housekeeping was being maintained, standpipe and hose stations were operable, adequate portable fire extinguishers were provided at designated places, and access to fire suppression equipment was not being restricted by any materials or equipment. Inspections and maintenance on all inspected fire suppression equipment were verified as being satisfactorily performed, and the general condition was satisfactory. During the NRC's previous fire protection/prevention program inspection, the NRC inspector discovered three hose stations with trash stuffed inside of the hose covers. This was noted to the licensee who agreed to take corrective action as needed. During this inspection, the NRC inspector found no trash in any of the hose covers inspected. However, the NRC inspector discovered some trash accumulated inside vertical tube steel supports for fire extinguishers, transmitters, indicators, and other equipment located throughout the plant. This was discussed with the licensee at the exit meeting so that corrective action could be taken.

The NRC inspector also observed the general condition of fire doors during the plant tour. The fire doors were found closed, as required, and the closing and locking mechanisms were functional. The licensee also gave a status of the ongoing program to inspect and repair, if needed, all fire barrier penetration seals. The projected completion date is presently scheduled for February 1988, and the overall program will be inspected by the NRC after that time.

A review of the licensee's annual QA audit (TE: 50140-K142, dated December 15, 1986) and surveillances (TE: 533359 S-1459 and S-1460, dated August 21 and November 13, 1986, respectively) of their fire protection program was performed. The audit and surveillances were found to be thorough in both scope and depth.

The NRC inspector conducted a walkdown to verify TS required operability for the fire suppression water system in the following areas:

- o Control building, vertical electrical chase, Elevation 1978'-2073'

- o Control building, pipe space and tank room, Elevation 1974'
- o Control building, chase area above access control, Elevation 1992'
- o ESF Transformer XNB01 deluge sprays
- o ESF Transformer XNB02 deluge sprays

A tour of the fire brigade training facility was made by the NRC inspector. This facility provides classroom training as well as hands-on fire fighting training. The NRC inspector observed a portion of a fire watch class, reviewed course material for fire brigade and fire watch training, and reviewed selected training records. The fire protection/prevention training program appeared to meet the specified training requirements.

The NRC inspector reviewed the following surveillance tests for completeness and commitments to TS requirements:

STS FP-001, "Water Supplied Fire Protection Valve Position Verification" (January 1987 - July 1987)

STS FP-002, "Yard Loop and Hydrant Flush and Hydrant Inspection" (November 1986 and April 1987)

STS FP-003, "Cycle Procedure for Non-Testable Valves" (October 1986)

STS FP-004, "Fire System, Flow Test, Pump Sequential Start, and Annual Fire Pump Test" (November 1986)

STS FP-005, "Monthly Sprays/Sprinkler Valve Position Verification" (January 1987 - July 1987)

STS FP-006, "Sprays and Sprinklers - 18 Month Operational Test" (May 1986)

STS FP-008, "Monthly Hose Rack Inspection" (June 1987 - August 1987)

STS FP-013, "Cycle Procedure for Testable Valves" (September 1986)

STS FP-601, "Diesel Fire Pump 1FP01PB - Monthly Operational and Fuel Level Check" (April 1987 - July 1987)

STS FP-602, "Electric Motor Driven Fire Pump 1FP01PA - Monthly Operation" (December 1986 - August 1987)

STS MT-012, "Fire Pump 1FP01PB Diesel Engine Inspection" (July 1987)

STS MT-013, "Fire Pump (Diesel) Battery Electrolyte and Voltage Inspection" (July 1987)

STS MT-014, "Fire Pump (Diesel) Battery Specific Gravity"  
(November 1986 - May 1987)

STS MT-015, "Fire Pump (Diesel) Battery and Rack Integrity" (June 1986)

STS MT-029, "Visual Inspection of Pipe Headers and Nozzle/Sprinkler Spray Areas" (November 1986 and July 1987)

STS MT-030, "Water Spray System Air Flow Test" (February 1986)

The inspection of the above surveillance tests resulted in the following observation:

Surveillance Procedure STS FP-602, Revision 5, "Electric Motor Driven Fire Pump 1FP01PA - Monthly Operation," requires in Sections 5.2 and 5.3 that Pump 1FP01PA be tested monthly by starting it from the local panel during January, March, May, July, September, and November and from the control room panel during the alternate months. The NRC inspector discovered that during the April 1987 surveillance test the pump was started from the control room, as required, but it was not started from the control room until the August 1987 surveillance test.

This failure to follow procedure is an apparent violation (482/8722-01). This apparent violation is a repeat of Violation 8541-02.

#### 8. Onsite Event Followup

The NRC inspectors performed onsite followup of nonemergency events that occurred during this report period. The NRC inspectors reviewed control room logs and discussed these events with cognizant personnel. The NRC inspectors verified the licensee had responded to the events in accordance with procedures and had notified the NRC and other agencies as required in a timely fashion. The events that occurred during this report period are listed in the table below. The NRC inspectors will review the LERs for these events and will report any findings in a subsequent NRC inspection report.

<u>Date</u>	<u>Event</u>	<u>Plant Status</u>	<u>Cause</u>
9/3/87	CRVIS*	Mode 1 (100% Power)	Spike
9/10/87	Reactor Trip	Mode 1 (100% Power)	Faulted Transmission Line
9/10/87	CPIS#/CRVIS*	Mode 3	Radiation Monitor Failed
9/11/87	Turbine Trip	Mode 2 (4% Power)	Steam Generator HI Level

9/12/87	Turbine Trip	Mode 1 (7% Power)	Steam Generator HI Level
9/20/87	CRVIS*	Mode 1 (98% Power)	Broken Tape
9/27/87	Reactor Trip	Mode 1 (85% Power)	Rod Control Error

\*CRVIS - Control Room Ventilation Isolation System

#CPIS - Containment Purge Isolation

The reactor trip which occurred on September 10, 1987, was a result of "B" phase main transmission line separating and falling to the ground causing the main generator to trip. All ESF equipment actuated properly. At the time of the trip, all four reactor coolant pumps tripped as designed. The pumps were manually restarted approximately 4 minutes later. For more information on this trip see paragraph 10.

The reactor trip which occurred on September 27, 1987, was caused by a high negative flux rate resulting from Bank D Group 1 rods falling into the core when the reactor operator attempted to move them out one step. The licensee determined that the reason the Bank D Group 1 rods dropped when the operator attempted to move them out was because the fusible switch which feeds power to the moveable coil bus for these rods was open. The switch is located at the top of the cabinet and the licensee speculated that the switch was accidentally bumped and opened by workmen working on staging in the area around the cabinet. All ESF equipment worked as designed.

The NRC inspector will followup and review the LERs for these events.

#### 9. Emergency Preparedness Exercise

On September 2, 1987, the WCGS NRC resident inspectors and the NRC resident inspector from Callaway participated in the licensee's annual emergency preparedness exercise. The WCLJ and the Callaway NRC resident inspectors back each other up in the event of an emergency.

The county and state also participated in the exercise and the NRC Headquarters Operations Center was activated. Players performed the activities during the exercise scenario that they would perform during an actual emergency at WCGS.

The purpose of this exercise was to perform the annual NRC and Federal Emergency Management Agency (FEMA) evaluation of the capability of the licensee, the county, and the state to respond during a radiological emergency at WCGS. Onsite activities were evaluated by the NRC and offsite (county and state) activities were evaluated by FEMA.

NRC Region IV inspectors evaluated licensee activities during the exercise and their observations and findings will be reported in NRC Inspection Report 50-482/87-21.

10. Physical Security Verification

The NRC inspectors verified that the WCNOG Physical Security Plan (PSP) is being complied with by direct observation of licensee facilities and activities of security personnel.

The NRC inspectors, by observation of randomly selected activities, verified that search equipment was operable, that the protected area barriers and vital area barriers were well maintained, that access control procedures were followed, and that appropriate compensatory measures were followed when equipment was inoperable.

After the reactor trip which occurred on September 10, 1987, the NRC inspector verified that the licensee had followed their PSP when the fallen transmission line damaged the security fence and plant lighting was lost. A regional security specialist who was on site for a routine inspection responded to the plant after the trip and also checked that the licensee's actions were appropriate and timely. For more information see NRC Inspection Report 50-482/87-23.

No violations or deviations were identified.

11. Radiological Protection

By performing the following activities, the NRC inspectors verified that radiologically related activities were controlled in accordance with the licensee's procedures and regulatory requirements:

- o Reviewed documents such as active radiation work permits and the health physics shift turnover log
- o Observed personnel activities in the radiologically controlled area (RCA) such as:
  - . Use of the required dosimetry equipment
  - . "Frisking out" of the RCA
  - . Wearing of appropriate anti-contamination clothing where required
- o Inspected postings of radiation and contaminated areas
- o Discussed activities with radiation workers and health physics supervisors

No violations or deviations were identified.

## 12. Review of Licensee Event Reports (LER)

During this inspection period, the NRC inspector performed followup on a Wolf Creek LER. The LER was reviewed to ensure:

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

The LER discussed below was reviewed and closed:

### LER 86-044: Partial Loss of Offsite Power Caused by Error During Switchyard Maintenance Activity

Offsite power to 4160 V ESF Bus NB01 was lost when a technician in the switchyard jarred a relay causing it to trip. The licensee determined that opening and closing the cabinet door on which the relay was mounted caused enough vibration to trip the relay.

By design, emergency diesel generator "A" then started and supplied power to the NB01 bus. All ESF components functioned in accordance with design except that the "B" train essential service water return to the ultimate heat sink valve, EF HV-38. The relay that initially caused the trip was removed and the control circuits for performing its functions were transferred to a relay which has a more stable mounting on a permanent panel. Valve EF HV-38 was reworked and tested on WR 07058-85 and WR 00393-87. No root cause for the failure of Valve EF HV-38 could be determined.

## 13. Exit Meeting

The NRC inspectors met with licensee personnel to discuss the scope and findings of this inspection on October 2, 1987. The NRC inspectors also attended entrance/exit meetings of the NRC region-based inspectors.