



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-4005**

February 2, 2006

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

**SUBJECT: WOLF CREEK GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000482/2005005**

Dear Mr. Muench:

On December 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Wolf Creek Generating Station. The enclosed integrated report documents the inspection findings which were discussed on January 4, 2006, with you and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding of very low safety significance (Green). Additionally, two licensee-identified violations which were determined to be of very low safety significance are listed in Section 4OA7 of this report. The NRC is treating these violations as noncited violations consistent with Section VI.A.1 of the NRC Enforcement Policy because of the very low safety significance and because the findings were entered into your corrective action program. If you contest these noncited violations, you should provide a response within 30 days of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Wolf Creek Generating Station.

In accordance with 10 CFR 2.390 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 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).

Wolf Creek Nuclear Operating Corporation - 2 -

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

William B. Jones, Chief
Project Branch B
Division of Reactor Projects

Docket: 50-482
License: NPF-42

Enclosure:
NRC Inspection Report 05000482/2005005
w/attachment: Supplemental Information

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RIV:SRI:DRP/B	RI:DRP/B	C:DRS/OB		
SDCochrum:sa	TBRhoades	ATGody		
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1/26/06	1/30/06	1/20/06		
C:DRS/PSB	C:DRS/EB1	C:DRS/EB2	C:DRP/B	
MPShannon	JAClark	LJSmith	WBJones	
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 50-482

License: NPF-42

Report: 05000482/2005005

Licensee: Wolf Creek Nuclear Operating Corporation
Wolf Creek Generating Station

Location: 1550 Oxen Lane NE
Burlington, Kansas

Dates: September 27 through December 31, 2005

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SUMMARY OF FINDINGS

IR 05000482/2005005; 09/27/05 - 12/31/05; Wolf Creek Generating Station; Adverse Weather Protection.

This report covered a 3-month period of inspection by resident and regional inspectors. The inspection identified a Green finding. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance for the licensee's failure to adequately prepare for cold weather prior to the onset of frazil ice conditions on December 8, 2005. Specifically, the licensee failed to ensure essential service water air compressors were ready for use prior to lake temperature reaching 35EF in accordance with established procedures. The inspectors determined that the failure to have the air compressors ready at the time the procedure provided for their being placed into service was a performance deficiency.

The finding was more than minor because, if left uncorrected, it would become a more significant safety concern. The finding also affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Utilizing the Phase 1 Screening Worksheet in Inspection Manual Chapter 0609, "Significance Determination Process," his finding was determined to have very low safety significance because it did not represent a loss of a safety function and is not potentially risk significant for the plant conditions that would be impacted by external events with warming flow established. A contributing cause of this finding is related to the crosscutting element of human performance for the failure to ensure the compressors were available at the time conditions existed when they should be placed into service (Section 1R01).

B. Licensee-Identified Violations

- Violations of very low safety significance which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and their corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant started the inspection period at 100 percent rated thermal power and remained at or near this power level for the entire report period.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Seasonal Susceptibilities

a. Inspection Scope

The inspectors completed a review of the licensee's readiness of seasonal susceptibilities involving winter weather. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report (UFSAR), and Technical Specifications (TS) to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the two systems listed below to ensure that adverse weather protection features were sufficient to support operability, including the ability to perform safe shutdown functions; (3) evaluated operator staffing levels to ensure the licensee would maintain the readiness of essential systems required by plant procedures; and (4) reviewed the corrective action program to determine if the licensee identified and corrected problems related to adverse weather conditions.

- C November 29, 2005, Wolf Creek preparations for low temperatures, which included heat tracing for outdoor tanks, ventilation lineups for power block buildings, and essential service water (ESW) system lineup.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Readiness For Impending Adverse Weather Conditions

a. Inspection Scope

On December 8, 2005, the inspectors completed a review of the licensee's readiness for impending adverse cold weather involving severe cold and snow. The inspectors: (1) reviewed plant procedures, the UFSAR, and TSs to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems; (2) walked down portions of the below listed two systems to ensure that adverse weather protection features (heat tracing, space heaters, weatherized enclosures,

temporary chillers) were sufficient to support operability, including the ability to perform safe shutdown functions; (3) reviewed maintenance records to determine that applicable surveillance requirements were current before the anticipated cold weather developed; and (4) reviewed plant modifications, procedure revisions, and operator workarounds to determine if recent facility changes challenged plant operation.

C December 8, 2005, ESW and circulating water systems

The inspectors completed one sample.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance for the licensee's failure to adequately prepare for cold weather prior to the onset of frazil ice conditions on December 8, 2005. Specifically, the licensee failed to ensure ESW air compressors were ready for use prior to lake temperature reaching 35EF in accordance with established procedures.

Description: Wolf Creek Procedure SYS EF-205, "ESW/CIRC Water Cold Weather Operations," described the conditions when frazil ice formation is most likely to exist. Specifically, these conditions were:

- Air temperature less than or equal to 22EF
- Lake temperature less than 33EF
- Ice has not yet formed over the ESW ultimate heat sink or only a partial ice cover exists
- Night or heavily overcast

The procedure stated that, when lake temperature reached 40EF, arrangements should be made with the Administrative Services Department to ensure temporary air compressors are positioned and ready for use. At a lake temperature of 35EF, the air compressors are started and the bubbler system placed in service. The purpose of the air compressors was to provide air to a bubbler system in the ESW intake bays to create water turbulence to keep frazil ice from forming on the trash racks. The procedure also stated that warming water flow will cause indicated lake temperature to be higher than actual lake temperature by up to 4EF but may be highly variable based on warming flow.

On December 8, 2005, the measured lake temperature in the control room was 37EF. With a variance of 4EF, the actual lake temperature could be 33EF, which would support frazil ice conditions. Based upon air temperature of 11EF and observing water and ice mixture similar to frazil ice formations around the ESW intake structure, the resident inspectors questioned the station operators as to whether they were accurately monitoring lake temperature and if they recognized that conditions existed that were conducive to the formation of frazil ice. The inspectors also noted that the air compressors did not appear to have recently started or to be in a condition ready for

use. As a result of the inspectors' questions, the licensee reviewed the procedure and determined that the conditions for frazil ice formation should not exist due to indicated lake temperature above 35EF (37EF). The inspectors noted that, although the lake temperature was below 40 degrees and a water and ice mixture was observed around the ESW intake structure, preparations had not occurred to verify the compressors were ready for use. Subsequently, on December 8, 2005, the licensee attempted to place the air compressors and bubblers (air sparger) in service. The indicated lake temperature was 36EF with ESW warming flow in service. At this time attempts to start the air compressors failed and corrective maintenance on the diesel engines was required, which delayed placing the system into service for approximately 3 hours.

Analysis: The inspectors determined that the failure to have the air compressors ready at the time the procedure provided for their being placed into service was a performance deficiency. The finding was more than minor because, if left uncorrected, it would become a more significant safety concern. The finding also affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Utilizing the Phase 1 Screening Worksheet in Inspection Manual Chapter 0609, "Significance Determination Process," this finding was determined to have very low safety significance because it did not represent a loss of a safety function and is not potentially risk significant because of the plant conditions that would be impacted by external events with warming flow established. The cause of this finding is related to the crosscutting element of human performance for the failure to ensure the air compressors were in place and available at the time conditions existed when they should be placed into service.

Enforcement: The inspectors determined that no violation of regulatory requirements had occurred. The ESW bubbler air system is not safety related and the lack of preparation for cold weather did not adversely affect the safety system. The issues related to this finding were documented into the corrective action program as Performance Improvement Request (PIR) 2006-0006 (FIN 05000482/2005005-01, Failure to Adequately Implement Station Procedures for Cold Weather Operations).

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors: (1) walked down portions of the two risk important systems listed below and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walkdown to the licensee's UFSAR and corrective action program to ensure problems were being identified and corrected.

C September 29, 2005, safety injection system Trains A and B

C October 27, 2005, centrifugal charging pump Train A during planned maintenance on Train B

The inspectors completed two samples.

.2 Complete Walkdown

a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, TS, and vendor manuals to determine the correct alignment of the systems listed below; (2) reviewed outstanding design issues, operator workarounds, and corrective action program documents to determine if open issues affected the functionality of the system; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

C October 14, 2005, containment spray system

C December 22, 2005, diesel-driven fire pump

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (711111.05)

.1 Fire Protection Tours

a. Inspection Scope

The inspectors walked down the six plant areas listed below to assess the material condition of active and passive fire protection features, their operational lineup, and their operational effectiveness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features; and (7) reviewed the corrective action program to determine if the licensee identified and corrected fire protection problems.

C September 29, 2005, piping penetration Room B

C October 06, 2005, safeguards battery rooms

C October 17, 2005, lower cable spreading room

- C October 19, 2005, essential service water pump house
- C October 26, 2005, upper cable spreading room
- C November 8, 2005, rod-drive motor generator room

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Observation

a. Inspection Scope

On November 7, 2005, the inspectors observed a fire brigade drill to evaluate the readiness of licensee personnel to prevent and fight fires, including the following aspects: (1) the number of personnel assigned to the fire brigade; (2) use of protective clothing; (3) use of breathing apparatuses; (4) use of fire procedures and declarations of emergency action levels; (5) command of the fire brigade; (6) implementation of prefire strategies and briefs; (7) access routes to the fire and the timeliness of the fire brigade response; (8) establishment of communications, (9) effectiveness of radio communications; (10) placement and use of fire hoses; (11) entry into the fire area; (12) use of firefighting equipment; (13) searches for fire victims and fire propagation; (14) smoke removal; (15) use of prefire plans; (16) adherence to the drill scenario; (17) performance of the postdrill critique; and (18) restoration from the fire drill. The licensee simulated a fire in the control building elevation 1974 feet.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (711111.06)

Semiannual Internal Flooding

a. Inspection Scope

For the area listed below, the inspectors: (1) reviewed the UFSAR, the flooding analysis, and plant procedures to assess seasonal susceptibilities involving internal flooding; (2) reviewed the corrective action program to determine if the licensee identified and corrected flooding problems; (3) inspected underground bunkers/manholes to verify the adequacy of (a) sump pumps, (b) level alarm circuits, (c) cable splices subject to submergence, and (d) drainage for bunkers/manholes; (4) verified that operator actions for coping with flooding can reasonably achieve the desired outcomes; and (5) walked down the areas listed below to verify the adequacy of (a) equipment seals located below the flood line, (b) floor and wall penetration seals,

(c) watertight door seals, (d) common drain lines and sumps, (e) sump pumps, level alarms, and control circuits, and (f) temporary or removable flood barriers.

C October 14, 2005, auxiliary building 1974' elevation

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R07 Biennial Heat Sink Performance (71111.07B)

a. Inspection Scope

The inspectors reviewed design documents (e.g., calculations and performance specifications), program documents, implementing documents (e.g., test and maintenance procedures), and corrective action documents. The inspectors interviewed chemistry personnel, maintenance personnel, engineers, and program managers.

For heat exchangers directly connected to the safety-related service water system, the inspectors verified whether testing, inspection and maintenance, or the biotic fouling monitoring program provided sufficient controls to ensure proper heat transfer. Specifically, the inspectors reviewed: (1) heat exchanger test methods and test results from performance testing, (2) if necessary, heat exchanger inspection and cleaning methods and results, and (3) chemical treatments for microfouling and controls for macrofouling.

For heat exchangers directly or indirectly connected to the safety-related service water system, the inspectors verified: (1) the condition and operation were consistent with design assumptions in the heat transfer calculations, (2) the potential for water hammer, as applicable, (3) vibration monitoring controls for the heat exchangers, (4) chemistry controls for heat exchangers indirectly connected to the safety-related service water system, and (5) that redundant and infrequently used heat exchangers are flow tested periodically at maximum design flow.

For the ultimate heat sink and its subcomponents, the inspectors evaluated the following requirements: (1) capacity of the reservoir, (2) macrofouling controls, (3) biotic fouling controls, and (4) performance tests for pumps.

If available, the inspectors reviewed additional nondestructive examination results for the selected heat exchangers that demonstrated structural integrity.

The inspectors selected heat exchangers that ranked high in the plant-specific risk assessment and were directly or indirectly connected to the safety-related service water system. The inspectors selected the following specific heat exchangers:

- Component cooling water heat Exchanger A
- Containment Coolers B and D
- Electrical penetration room Cooler B

The inspectors completed three of the two to three required samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Training Quarterly Review

a. Inspection Scope

The inspectors observed simulator testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The training scenario on December 15, 2005, involved a small break loss of coolant accident and anticipated transient without scram.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.2 Annual Operating Examination Review

a. Inspection Scope

Following the completion of the annual operating examination testing cycle, which ended the week of October 19, 2005, the inspector reviewed the overall pass/fail results of the annual individual job performance measure operating tests and simulator operating tests administered by the licensee during the operator licensing requalification cycle. Nine separate crews participated in simulator operating tests and job performance measure operating tests, totaling 50 licensed operators. One of the nine crews failed the simulator portion of the examination, with three of the members of that failing crew also failing on individual competencies on the simulator examination. The licensed operators on the one failing crew were successfully remediated prior to returning to shift duties. All of the licensed operators passed the job performance measure portion of the examination. These results were compared to the thresholds established in Manual Chapter 609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors reviewed the three maintenance activities listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the Maintenance Rule, 10 CFR Part 50, Appendix B, and TS.

- November 3, 2005, reactor protection system card replacement due to failures
- November 23, 2005, diesel-driven fire pump maintenance due to failures
- November 30, 2005, component cooling water room cooler insulation replacement

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

.2 Biennial Review

a. Inspection Scope

Periodic Evaluation Reviews

The inspectors reviewed the licensee's overall implementation of the Maintenance Rule, 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The inspectors reviewed scope and depth of the licensee's Maintenance Rule periodic assessments for 2004 and 2005. The inspectors then assessed the effectiveness of corrective actions and program adjustments as a result of the assessment findings.

The inspectors also selected samples of SSCs within the scope of the licensee's Maintenance Rule program that had degraded performance at some point during the review period. These samples were used to assess the licensee's response to the degraded performance within the scope of the Maintenance Rule program. Inspection

Procedure 71111.12B requires that the inspectors review four to six SSC samples. The inspectors selected the following five samples for a detailed review:

- Auxiliary feedwater system (AL)
- Main steam and feedwater isolation functions (AB and AE)
- Emergency service water and ultimate heat sink (EF and UH)
- Offsite power/switchyard function (OF and SY)
- Plant process computer (RJ)

For these SSCs, the inspectors reviewed the use of performance history and operating experience, both internal and industry wide, in adjusting preventive maintenance, (a)(1) goals, and (a)(2) performance criteria. For structures being monitored through condition monitoring, the inspectors reviewed the licensee's performance criteria and condition monitoring procedures to determine whether there was consistency and monitoring of proper attributes which would be predictive of degradation. The inspectors also reviewed adjustments to the scope of the Maintenance Rule program and changes made during the assessment period. Finally, the inspectors reviewed the role of the Maintenance Rule Expert Panel in implementing the program.

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors evaluated the use of the corrective action program within the Maintenance Rule program. The review was accomplished by the examination of a sample of corrective action documents and work orders. The purpose of the review was to determine that the identification of problems and implementation of corrective actions were acceptable.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

Risk Assessment and Management of Risk

The inspectors reviewed the one assessment activity listed below to verify:
(1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities

and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognizes, and/or enters as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) that the licensee identified and corrected problems related to maintenance risk assessments.

- November 14-18, 2005

Emergent Work Control

The inspectors: (1) verified that the licensee performed actions to minimize the probability of initiating events and maintained the functional capability of mitigating systems and barrier integrity systems; (2) verified that emergent work-related activities such as troubleshooting, work planning/scheduling, establishing plant conditions, aligning equipment, tagging, temporary modifications, and equipment restoration did not place the plant in an unacceptable configuration; and (3) reviewed the UFSAR and corrective action program to determine if the licensee identified and corrected risk assessment and emergent work control problems.

- November 4, 2005, emergent work to replace the emergency diesel Generator B lube oil keep warm pump
- November 18, 2005, emergent work to repair the control room annunciator system

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Nonroutine Plant Evolutions and Events (71111.14)

a. Inspection Scope

For the nonroutine event listed below, the inspectors: (1) reviewed operator logs, plant computer data, and/or strip charts for the below evolutions to evaluate operator performance in coping with nonroutine events and transients; (2) verified that the operator response was in accordance with the response required by plant procedures and training; and (3) verified that the licensee has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolutions:

- On November 18, 2005, the inspectors observed the response of the control room operators to a failure of approximately 25 percent of the control room annunciators. This was caused by the simultaneous failure of two main control board annunciator power supplies.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed plants status documents such as operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any Technical Specifications; (5) used the significance determination process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

- Work Order 04-S-001, steam generator atmospheric relief valve local controllers
- PIR 2005-2679, residual heat removal system recirculation sump suction valves differential pressure evaluation
- PIR 2005-3350, emergency diesel Generator A lube oil keep warm pump failure
- PIR 2005-3392, emergency diesel Generator A intercooler heat exchanger oversized tube plug evaluation

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed the one operator workaround listed below to: (1) determine if the functional capability of the system or human reliability in responding to an initiating event is affected; (2) evaluate the effect of the operator workaround on the operator's ability to implement abnormal or emergency operating procedures; and (3) verify that the licensee has identified and implemented appropriate corrective actions associated with operator workarounds.

- November 8, 2005, alternate boration flow path during planned maintenance to boric acid Pump A discharge isolation valve rendering normal boric acid flow path inoperable

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the six below listed postmaintenance test activities of risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design-basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly realigned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR and corrective action program to determine if the licensee identified and corrected problems related to postmaintenance testing.

- October 14, 2005, residual heat removal Pump A
- October 28, 2005, spent fuel pool cooling Pump A
- November 4, 2005, emergency diesel Generator B
- November 11, 2005, control room A/C Unit A
- December 15, 2005, emergency diesel Generator A
- December 28, 2005, safety injection Pump B

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TS to ensure that the five surveillance activities demonstrated that the SSC's tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed

test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated Technical Specification operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of ASME Code requirements; (12) updating of performance indicator data; (13) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing:

- October 12, 2005, containment hydrogen purge isolation Valve GSHV0021
- October 21, 2005, refueling water storage tank to residual heat removal Pump A suction Valve BNHV-8812A inservice test
- November 4, 2005, containment spray Train A
- November 10, 2005, channel operational test of Tave, dT, and pressurizer pressure protection set one
- November 17, 2005, 4 kV loss of voltage and degraded voltage TADOT NB02 bus, separation Group 4

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the UFSAR, plant drawings, procedure requirements, and TS to ensure that the two temporary modifications were properly implemented. The inspectors: (1) verified that the modification did not have an affect on system operability/availability; (2) verified that the installation was consistent with the modification documents; (3) ensured that the postinstallation test results were satisfactory and that the impact of the temporary modification on permanently installed SSC's were supported by the test; (4) verified that the modifications were identified on control room drawings and that appropriate identification tags were placed on the affected drawings; and (5) verified that appropriate safety evaluations were completed. The inspectors verified that the licensee identified and implemented any needed corrective actions associated with temporary modifications:

- 05018SB, Loop 1 T-hot lead configuration change to improve the accuracy of Loop 1 T-hot indication
- 05024KJ, emergency diesel Generator A auxiliary lube oil pump temporary vibration monitoring

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2005 biennial emergency preparedness exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario included an inadvertent safety injection actuation and failure of the automatic reactor trip system to shutdown the reactor. After a successful manual reactor trip, the exercise continued with a steam-line rupture in containment, a large break loss of reactor coolant, subsequent loss of adequate reactor core cooling, and significant fuel damage. A significant release of radioactive steam to the environment occurred when a steam generator atmospheric relief valve on the ruptured steam line failed open. The licensee activated all of their emergency facilities to demonstrate their capability to implement the emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of classification, notification, protective action recommendations, and assessment of offsite dose consequences in the simulator control room and the following emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors also assessed personnel recognition of abnormal plant conditions, the transfer of emergency responsibilities between facilities, communications, protection of emergency workers, emergency repair capabilities, and the overall implementation of the emergency plan to verify compliance with the requirements of 10 CFR 50.47(b), 10 CFR 50.54(q), and Appendix E to 10 CFR Part 50. The inspectors also reviewed emergency facility logs, emergency notification forms, dose assessment records, and emergency news center press releases to independently assess license performance during the exercise.

The inspectors attended the postexercise critiques in each of the above emergency response facilities and in the simulator control room to evaluate the initial licensee self-assessment of exercise performance. The inspectors attended the formal presentation of critique items to plant senior management.

The inspectors completed one sample during the inspection.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector performed an in-office review of Revision 7 to the Wolf Creek Generating Station Radiological Emergency Plan, submitted October 28, 2005. This revision replaced several references to the plant Nuclear Safety Review Committee with references to the station Quality Assurance organization. The revision was compared to its previous revision, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the requirements of 10 CFR 50.47(b) and 50.54(q) to determine if the licensee adequately implemented 10 CFR 50.54(q). The inspector completed one sample during this inspection.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

For the below listed drill and simulator-based training evolution contributing to drill/exercise performance and emergency response organization performance indicators, the inspectors: (1) observed the training evolution to identify any weaknesses and deficiencies in classification, notification, and protective action requirements development activities; (2) compared the identified weaknesses and deficiencies against licensee identified findings to determine whether the licensee is properly identifying failures; and (3) determined whether licensee performance is in accordance with the guidance of the Nuclear Energy Institute 99-02 document's acceptance criteria.

- October 13, 2005, emergency operations facility and control room simulator - resin spill resulting in unplanned monitored radioactive release, loss of offsite

power and subsequent failure of one emergency diesel generator, and failed fuel subsequent with failure of the fuel transfer tube

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

Cornerstone: Emergency Preparedness

The inspectors sampled submittals for the performance indicators listed below for the period April 1, 2004, through September 30, 2005. The definitions and guidance of Nuclear Engineering Institute 99-02, "Regulatory Assessment Indicator Guideline," Revisions 2 and 3, were used to verify the licensee's basis for reporting each data element in order to verify the accuracy of performance indicator data reported during the assessment period.

- Drill and exercise performance
- Emergency response organization participation
- Alert and notification system reliability

The inspectors reviewed a 100 percent sample of drill and exercise scenarios, licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspectors reviewed the qualification, training, and drill participation records for a sample of 10 emergency responders. The inspectors reviewed alert and notification system maintenance records and procedures and a 100 percent sample of siren test results. The inspectors also interviewed licensee personnel that were responsible for collecting and evaluating the performance indicator data.

The inspectors completed three samples during the inspection.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolutions of Problems

a. Inspection Scope

The inspectors performed a daily screening of items entered into the licensee's corrective action program. This assessment was accomplished by reviewing work requests, work orders, PIR and attending corrective action review and work control meetings. The inspectors: (1) verified that equipment, human performance, and program issues were being identified by the licensee at an appropriate threshold and that the issues were entered into the corrective action program; (2) verified that corrective actions were commensurate with the significance of the issue; and (3) identified conditions that might warrant additional follow-up through other baseline inspection procedures.

b. Findings

No findings of significance were identified.

.2 Selected Issue Follow-up

a. Inspection Scope

In addition to the routine review, the inspectors selected the below listed issue for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

PIR 2005-2679 (Residual Heat Removal System Recirculation Sump Suction Valves Differential Pressure)

The inspectors reviewed licensee actions to resolve residual heat removal system recirculation sump suction valves differential pressure issues that were discussed in a Catawba nuclear plant operating experience report in June 2005. These valves are needed to provide a suction path for residual heat removal injection when refueling water storage tank decreases below minimum level. The Catawba operating experience report described a condition that, if concurrent with a design basis accident, could lead to a greater maximum expected differential pressure (MEDP) than that calculated for the system. The report concluded that an MEDP of 189 psid could be experienced across the valves. The licensee had used an MEDP of 46 psid in the calculations of required opening torque for the valves and had tested the valves successfully with a differential pressure of 207 psid. However, during the licensee's apparent cause evaluation, it was

discovered that Westinghouse Calculation WCAP 13097, dated December 1991, recommended that 464 psid be used for the MEDP. The Westinghouse MEDP was not included nor referenced in the licensee's MEDP calculation for required opening torque of the valves. The licensee has subsequently incorporated the Westinghouse MEDP into new methodologies in calculating valve opening torques and requalified the valves to open at the Westinghouse MEDP. Additional aspects of this issue are discussed in Section 4OA7.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

.3 Semiannual Trend Review

a. Inspection Scope

The inspectors completed a semiannual trend review of repetitive or closely-related issues that were documented in trend reports, problem lists, performance indicators, health reports, quality assurance audits, corrective action documents, corrective maintenance documents, and departmental self-assessments and interviewed selected licensee staff to determine if any adverse trends existed. Additionally, the inspectors reviewed the licensee's trending efforts to identify trends that might indicate the existence of more safety significant issues. The inspectors review consisted of the 6-month period of June to December 2005. When warranted, some of the samples expanded beyond those dates to fully assess the issue. The inspectors also reviewed corrective action program items associated with the below listed issues. The inspectors compared and contrasted their results with the results contained in the licensee's quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. These areas were chosen based on information gathered by the inspectors during daily plant status reviews over the previous 6 months.

- Change package errors
- Clearance order errors
- Power supply failures

b. Findings and Observations

No findings of significance were identified. However, the inspectors made the following observations:

Slow to adequately correct clearance order problems

In 2002, PIR 2002-1472 was initiated in response to a clearance order that failed to provide adequate worker protection necessary to perform the associated work. The subsequent root cause evaluation identified "habit intrusion" by the clearance order

preparer as the root cause and “unawareness” by the tagging authority and the job lead as contributing causes. In this case, “habit intrusion” means that the clearance order preparer relied on previous experience without ensuring the specific conditions for this job were satisfied. “Unawareness” means not paying attention to the task and available information. The corrective action was remediation of the individuals involved with this clearance order.

In 2003, based on additional clearance order errors similar to that discussed in PIR 2002-1472, a licensee evaluation determined that the corrective actions prescribed by PIR 2002-1472 were not effective. This evaluation, contained in PIR 2003-2502, identified weaknesses in the root cause evaluation and the resulting corrective actions. Specifically, it noted that the root cause evaluation considered only the actions of the individuals involved with the error and did not identify any programmatic causes or corrective actions. The root cause evaluation generated as a result of PIR 2003-2502 more carefully evaluated the clearance order program. The corrective actions that resulted from PIR 2003-2502 consisted of actions designed to improve error tracking and characterization, improve the review of clearance order PIR’s, and improve training for those involved with the clearance order process.

In 2005, based on a continuing problem with clearance order errors, PIRs 2005-1963 and -2418 were written. PIR 2005-2418 stated that the actions of PIR 2003-2502 were not effective at reducing the number of clearance order errors. PIR 2005-1963 determined that most of the errors resulted from worker failure to meet the expectations for the use of human performance tools and that the errors are personnel performance issues instead of clearance order process problems. The resulting corrective actions include additional error tracking and trending improvements, enhanced training with an emphasis on desired behaviors and expectations, and increased supervisory field observations.

The evaluation contained in PIR 2005-1963 and the associated action plan represents a more comprehensive analysis and correction of the licensee’s clearance order problems. Although the latest attempt to address the issue appears to be an improvement over those of year 2002 and 2003, the licensee has been slow to adequately assess and correct the problems.

Infrequent corrective action program trending for cross-departmental issues

Licensee Administrative Instruction AI 28E-007, “PIR Trending and Analysis,” lists identification of performance trends as one of its purposes. One of the stated reasons is to identify emerging, repetitive, generic, global, and cross-departmental issues or vulnerabilities. The instruction calls for this analysis to occur on a quarterly basis. The last report documenting the results of trend analysis of corrective action program information from across all departments was for data from the first quarter of 2005. While departmental trending occurs monthly or quarterly, these reviews do not look for low level trends that may be occurring across departmental boundaries.

4OA3 Event Follow-up (71153)

(Closed) Licensee Event Report (LER) 05000482/2005-003-00. Failure to Maintain Closure of Containment Penetrations During Fuel Movement

On April 30, 2005, licensee personnel discovered two instances where containment closure required per TS 3.9.4, "Containment Penetrations," with the plant in Mode 6 were not met. The first instance involved an air-to-air pathway through the exterior equalizing valve of the containment auxiliary access hatch. A temporary closure device was installed on the auxiliary access hatch. The evaluation conducted for the temporary closure device was not sufficient to ensure complete closure of the air-to-air pathway through the equalizing valve. Fuel movement was stopped and the equalizing valve was placed under administrative controls. The second instance involved an air-to-air pathway through the open manway on Steam Generator B through the containment wall via the main steam lines to steam line drain isolation Valves ABV0070 and ABV0071. The valves were uncapped and opened under a clearance order. Upon discovery of the open air-to-air pathway, these valves were placed under administrative control. Corrective actions included adding steps to station procedures informing operators of the requirement to install a temporary closure device and a blind flange to meet TS 3.9.4 and included the auxiliary access hatch in the tracking document for containment closure. The licensee also performed a training needs analysis which incorporated lessons learned from these two instances into training. This finding is more than minor because of the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations." The finding was determined to be of very low safety significance (Green) because only the mitigating capability of containment control guidelines was affected, which required no further analysis. This licensee-identified finding involved a violation of Technical Specification 3.9.4, "Containment Penetrations." The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

4OA5 Other Activities

(Closed) Noncited Violation (NCV) 05000482/200500404. Manipulation of plant component without proper authorization results in inoperable fire protection pumps.

NRC Inspection Report 05000482/2005004 documented an apparent violation pending a Phase 3 significance determination process evaluation, which involved a Technical Specification 5.4.1a violation when station personnel failed to follow Station Procedure AP 21E-001, "Clearance Orders." A regional senior reactor analyst performed a Phase 3 SDP evaluation and determined the performance deficiency was of very low safety significance (Green). The analyst made the following assumptions in the evaluation:

- Fire ignition frequencies documented in the licensee's individual plant examination of external events were sufficient to conduct this review.

- Areas screened by the licensee during the “FIVE” progressive screening method, through Phase 2, step 2, of the process documented in the Independent Plant Evaluation External Events (IPEEE) were screened because they did not contain safe shutdown equipment, they had very low probability of fire ignition, and/or there was sufficient safe shutdown equipment not affected by a postulated fire in the area such that the significance was determined to be negligible.
- Based on Assumption 2, the analyst assumed that all areas screened through Phase 2, step 2, were not important to the subject finding because the areas were screened without consideration of suppression capabilities.
- The licensee performance deficiency only impacted plant risk during the 4-hour period when there was not a functioning fire pump available to respond to an internal fire.
- Fire areas that do not have installed automatic suppression systems were only affected by the unavailability of fire water to fire hose stations used for manual suppression.
- The analyst assumed that the possibility of a fire igniting and burning with an intensity and for a duration that it would burn through a 3-hour fire barrier into another fire area was very low because of the availability of alternate fire suppression capabilities, some fire suppression potential from the temporary fire pump, and the short duration of the suppression system outage (4 hours) compared with the 3-hour rating of the areas with no fixed suppression system.
- Based on Assumptions 2, 3, 5, and 6, the analyst screened all fire areas that the licensee screened in their IPEEE through Phase 2, step 2, as well as all areas that did not contain fixed, automatic fire suppression systems.
- The worst case fire-induced conditional core damage probability would be from those fires that result in an evacuation of the main control room. The screening value used was 0.1 as documented in early drafts of the fire protection significance determination process. Therefore, using 0.1 as the conditional core damage probability will produce a bounding result when used to screen out other fire areas.
- As stated in Appendix F, the likelihood of halon system failure is 5 percent.

The analyst determined that the bounding core damage frequency (CDF) was best represented by the sum of the changes of each group as follows:

Cable Chases

Total fire ignition frequency	5.99E-03per year
Exposure period	4.57E-04years
Prob. without suppression	2.74E-06
Screening CCDP	1.00E-01
Bounding delta CDF	2.74E-07

Halon Protected Areas

Halon area fire ignition freq.	1.09E-02per year
Halon failure	0.05per demand
Exposure period	4.57E-04years
Prob. without hoses	2.50E-07
Screening CCDP	1.00E-01
Bounding delta CDF	2.50E-08

Special Cases**Room A-16**

Ignition frequency	7.93E-03per year
Exposure period	4.57E-04years
Prob. without suppression	3.62E-06
SPAR baseline CDP	1.52E-07 Plant Transient - No loss of Equipment
SPAR case CDP	9.24E-03 Loss of Service Water Initiator
SPAR delta CDP	0.009239
Bounding delta CDF	3.35E-08

Room C-1A

Ignition frequency	1.76E-03per year
Exposure period	4.57E-04years
Prob. without suppression	8.04E-07
SPAR baseline CDP	1.52E-07 Plant Transient - No loss of Equipment
SPAR case CDP	9.24E-03 Loss of Service Water Initiator
SPAR delta CDP	0.009239
Estimated delta CDF	7.42E-09

Room T-2A

Ignition frequency	4.75E-02per year
Exposure period	4.57E-04years
Prob. without suppression	2.17E-05
SPAR baseline CDP	1.52E-07 Plant Transient - No loss of Equipment
SPAR case CDP	4.00E-06 Loss of Instrument Air, Loss of PCS
SPAR delta CDP	3.85E-06
Estimated delta CDF	8.35E-11

Room C-27 (main control room)

IPEEE delta CDF	1.43E-06per year
Nonsuppression probability 1	1.30E-02
Delta CDF without suppression	1.10E-04per year
Fires not requiring water	7.69E-02
Fires requiring water	9.23E-01
Nonsuppression without water	8.89E-02
Case CDF	9.78E-06
Change in CDF	8.35E-06
Exposure period	4.57E-04years
Estimated delta CDF	3.81E-09

The result was 3.4E-07, representing a finding of very low safety significance (Green) Because this violation was of very low safety significance and was entered into the licensee's corrective action program as PIR 2005-2142, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy:
NCV 05000482/2005004-04, Manipulation of plant component without proper authorization results in inoperable fire protection pumps. This apparent violation is closed.

40A6 Meetings, Including Exit

On November 10, 2005, the inspectors presented the biennial Maintenance Rule inspection results to Mr. T. J. Garrett, Vice President Engineering, and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was neither provided nor examined during the inspection.

On November 18, 2005, immediately following presentation of the facility's exercise critique to senior management by Mr. T. East, Superintendent Emergency Planning, the senior emergency preparedness inspector discussed inspection observations and open issues in a debrief with Mr. R. Muench, President and Chief Executive Officer, and other members of the licensee's staff. The inspector conducted a telephonic exit meeting on November 22, 2005, with Mr. T. East and Ms. D. Hooper, Licensing Supervisor, to discuss the inspection results. The inspector verified that no proprietary information was provided during the inspection.

On December 8, 2005, the inspectors presented heat sink performance biennial inspection results to Mr. T. Garrett, Vice President Engineering, and other members of licensee management. At the conclusion of the inspection, all proprietary information reviewed was returned to the licensee.

On January 4, 2006, the resident inspectors presented the inspection results of the resident inspections to Mr. R. Muench, President and Chief Executive Officer, and other members of the licensee's management staff. The licensee acknowledged the findings presented. The inspectors verified that no proprietary information was provided during the inspection.

On January 5, 2006, the inspector conducted a telephonic exit meeting to present the Emergency Preparedness inspection results to Mr. T. East, Superintendent, Emergency Planning, who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On January 23, 2006, the inspector discussed the results of the inspection with Mr. Bob Evenson, License Supervising Instructor Requal. The licensee acknowledged the findings presented.

40A7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- TS 3.9.4 requires that each penetration providing direct access from the containment atmosphere to the outside atmosphere either be closed by a manual or automatic isolation valve, blind flange or equivalent, or the penetration must be under administrative controls. Contrary to this, on April 30, 2005, the licensee discovered two air-to-air pathways which were not isolated or under administrative controls during fuel movement inside the containment building. This was identified in the licensee's corrective action program as PIR 2005-1357. This finding is of very low safety significance because the issue did not increase the likelihood of a loss of reactor coolant system inventory, affect the licensee's ability to isolate a reactor coolant system leak path or add inventory to the reactor coolant system, or degrade the licensee's ability to recover decay heat removal once lost.
- 10 CFR Part 50, Appendix B, Criterion III, requires, in part, that "Measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions." Contrary to the above, on September 20, 2005, the licensee determined that they had failed to properly establish the applicable design basis for the maximum differential pressure against which the residual heat removal containment sump suction valves would be required to open under all postulated accident conditions and correctly translate these pressures into specifications and procedures, such as the station's Generic Letter 89-10 motor-operated valve testing program. The licensee entered the issue into its corrective action program as PIR 2005-2679. This finding was of very low safety significance because it did not involve an actual loss of safety function and did not screen risk significant.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. J. Garrett, Vice President Engineering
S. E. Hedges, Vice President Operations and Plant Manager
R. A. Muench, President and Chief Executive Officer
K. Scherich, Director Engineering
M. Sunseri, Vice President Oversight

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000482/2005005-01	FIN	Failure to adequately implement station procedures for cold weather operations (Section 1R01)
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Closed

05000482/2005003-00	LER	Failure to Maintain Closure of Containment Penetrations During Fuel Movement (Section 4OA3)
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05000482/2005004-04	NCV	Manipulation of plant component without proper authorization results in inoperable fire protection pumps (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

In addition to the documents referred to in the inspection report, the following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

Section 1R01: Adverse Weather Protection

Procedures and Instructions

SYS EF-205, "ESW/Circ Water Cold Weather Operations"

Section 1R04: Equipment Alignment

Calculations

AN 95-074, "RWST Water Level Necessary to Supply Adequate NPSH for the ECCS Pumps"
Revision 0

BN-M-013, "RWST Volume Requirements for Injections, ECCS, and Containment Spray Pumps Transfer and Time Available for Operator Actions" Revision 1

Plant Drawings

M-12BN01 Revision 8

M-12EJ01 Revision 15

M-12EN01 (Q) Revision 3

M-13BN01 (Q) Revision 1

M-13BN02 (Q) Revision 1

Section 1R05: Fire Protection

AP 10-106, "Fire Preplans," Revision 3

Fire Drill Scenario and Critique Report, Drill No. 051107/0900/U/B, November 7, 2005

Section 1R06: Flood Protection Measures

Calculations

FL-01, "Flooding of the Auxiliary Building" Revision 1

FL-02, "Flooding of Auxiliary Building Rooms 1107 - 1114," Revision 0

Section 1R07: Heat Sink Performance

Procedures and Instructions

AI 07A-008, "Lake Water Chemical Treatment Program," Revision 13

AI 29B-001, "Control of WCOP-19 MOV Risk Ranking Document," Revision 1

AP 02-002, "Chemistry Surveillance Program," Revision 24

AP 02B-002, "Closed Cooling Water Chemistry Control," Revision 2

AP 02-003, "Chemistry Specification Manual," Revision 28

AP 23L-001, "Lake Water Systems Corrosion and Fouling Mitigation Program," Revision 2

AP 23L-002, "Heat Exchanger Program," Revision 1

STN OQT-001A, "Operations 'A' Train Quarterly Tasks," Revision 19

STN OQT-001B, "Operations 'B' Train Quarterly Tasks," Revision 23

STN PE-036, "Safety-Related Room Cooler Heat Transfer Verification and Performance Trending," Revisions 10 and 11

STN PE-037A, "ESW Train A Heat Exchanger Flow and DP Trending," Revision 10

STN PE-037B, "ESW Train B Heat Exchanger Flow and DP Trending," Revision 10

STN PE-038, "Containment Cooler Performance Test," Revisions 6 and 7

STN PE-056, "ESW Emergency Make-up Piping Flow Test," Revision 5

STS MT-023, "Ultimate Heat Sink Dam Surveillance Vertical Movement and Sedimentation," Revision 4

STS VT-001, "Verification of OMN-1, MOV Exercise Requirements," Revision 3

SYS EF-300, "ESW/Service Water Macrofoul Treatment," Revision 13

SYS KT-120, "ESW Chemical Injection System Operations," Revision 14

Performance Improvement Requests

2000-2281, 2004-1770, 2005-1365, and 2005-2785

Calculations

AN-97-004

EG-M-032, "Component Cooling Water Heat Exchanger Performance During Normal Operations, Shutdown - Four Hours (and 12 hours), and Post-LOCA Recirculation," Revision 0

XX-M-068, "Tube Plugging Criteria for Safety-Related Room Cooler Cooling Coils," Revision 1

00-MH-001, "Tube Plugging Carrier Cu-Ni SR RM CLRS," Revision 2

Maintenance Work Orders

02-233644-000, 02-244659-000, 02-244660-000, 02-244660-001, 02-244660-002, 02-244660-003, 02-245707-001, 04-258491-001, 04-259388-001, 04-261661-007, 04-261689-000, and 04-261689-001

Heat Exchanger Tests

STN PE-036 dated March 31, 2004, and October 26, 2005

STN PE-038 dated April 19, 2004, and October 19, 2005

Miscellaneous

ASME Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light Water Reactor Power Plants, OM Code-1995, Subsection ISTC"

Drawing SK-M-13EF12, "Piping Isometric Essential Service Water Fuel Building," Revision 5

Several cathodic protection plan drawings of the remote cathodic

EPRI NP-5106, "Plant Layout and Equipment Preservation Sourcebook"

EPRI NP-7552, "Heat Exchanger Performance Monitoring Guidelines," December 1991

Updated Final Safety Analysis Report, Sections 9.2.1, "Station Service Water System"; 9.2.2, "Essential Service Water System"; and 9.2.5, "Ultimate Heat Sink"

Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," July 18, 1989

Generic Letter 89-13, Supplement 1, "Service Water System Problems Affecting Safety-Related Equipment," April 4, 1990

Inservice test program trend data for Calendar Years 2003, 2004, and 2005 for essential service water system pumps

Historical test results for STN PE-036, -037A, and -037B

Lake water piping health report, June 13, 2005

Letter RA 03-0083, "Wolf Creek Generating Station May 2003 National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report, Permit I-NE07-PO02 and WET Testing Results of Outfalls 003 and 006," June 26, 2003

Letter ET 90-0023, Response to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," January 30, 1990

Letter ET 94-0012, "Updated Response to Generic Letter 89-13," February 18, 1994

Letter ET 94-0075, "Final Response to Generic Letter 89-13," November 28, 1994

Letter ET 97-0035, "Updated Response to Generic Letter 89-13," April 23, 1997

Letter ET 99-0042, "Updated Response to Generic Letter 89-13," November 17, 1999

Post-Dredge Volumes and Bathymetric Mapping for Wolf Creek Nuclear Operating Corporation, December 8, 2004

NUREG/CR-5685, "Generic Service Water System Risk-Based Inspection Guide"

Specification C-404(Q), "Periodic Surveillance of Safety Related Water Control Structures and Reservoir," Revision 5

Specifications for the residual heat removal and electrical penetration room coolers, component cooling water heat exchangers, and the containment coolers

Essential service water system description, Revision 16

Valve performance data for valves: EVHV0026, -0033, -0038, -0052, -0059, and -0098

Vibration Analysis Report 0104, "PEF01B/ESW Pump and Motor," September 19, 2005

WCNOC-22, "Periodic Surveillance Report for the Ultimate Heat Sink and Associated Safety-Related Structures," Revision 12

WCOP-02, "Inservice Testing Program Third Ten-Year Interval," Revision 14

WCRE-013, "Lake Water Piping Structural Integrity Program," Revision 2

Miscellaneous

Wolf Creek functional failure evaluation database

System health report for reactor protection system

Maintenance Rule Expert Panel meeting minutes for fire protection function FP

Maintenance Rule performance evaluations for fire protection function FP

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PIRs

2004-3212

2005-2142, 2147, 2151, 2157, 2243, 2480, 3288, 3290, and 3335

Work Requests

4045038 and 5051018

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

AP 22C-003, "Operational Risk Assessment Program," Revision 3

APF 22C-005-02, "Daily Operational Focus," Revision 3

Safety monitor risk profile

Weekly major activity summary

Risk informed inspection notebook for Wolf Creek Generating Station, Revision 1

Section 1R15: Operability Evaluations

PIR's

2002-2478 and -2748

2005-2247 and -3191

Calculation

AB-S-008-000-CN003, "Instrument tubing analysis Main Steam atmospheric Vent System-Auxiliary Building"

EJ-M-013, "Thrust/Torque Calculation for EJHV8811A and EJHV8811B," Revision 5

EJ-M-040, "Containment sump RHR suction valves EJHV8811A/B MOV Terminal Voltage and Motor Output Torque", Revision 0

KCI calculation No. 560-001-DC1, Revision 0

EJ-M-009, "EJHV8811 A/B MOV Bounding Pressure Conditions Determination," Revision 3,

Engineering Disposition

"Relocate I/P from the ARV's, ABPV0001 thru 0004," Change Package 011337, Revision 0
"EJHV8811a and EJHV8811B MOV Margin," Change Package 11924, Revision 0

Miscellaneous

M-097-00012 W03, "Parts List and Maintenance Manual 1549 Series Pump"

Section 1R16: Operator Workarounds

Plant Databases

Control Room Work
Operator Burdens

Plant Drawings

M-12BG05(Q), Revision 7

Procedures

EMG E-0, "Reactor Trip or Safety Injection," Revision 17A
EMG FR-S1, "Response to Nuclear Power Generation/ATWS," Revision 13
OFN BG-009, "Emergency Boration," Revision 14

Section 1R19: Postmaintenance Testing

STN EC-100A, "Spent Fuel Pool Cooling Pump A Reference Pump Curve Determination,"
Revision 5

STS EJ-100A, "RHR System Inservice Pump A Test," Revision 29

TMP 04-012, "Vortex Potential Testing Of The Spent Fuel Pool At Various Levels," Revision 1

Section 1R22: Surveillance Testing

Interoffice Correspondence ES05-0009, "Post Outage Local Leak Rate Testing (LLRT) Report -
Fourteenth Refueling Outage"

STS IC-201A, "Channel Operational Test of Tave, dT, and Pressurizer Pressure Protection Set
One," Revision 15

STS IC-208B, "4KV Loss of Voltage and Degraded Voltage TADOT NB02 Bus, Separation
Group 4," Revision 1

STS PE-165, "LLRT Valve Lineup for Penetration 65 (GS HV-20)," Revision 4

STS PE-165, "LLRT Valve Lineup for Penetration 65 (GS HV-21)," Revision 4

WO 05-271944-000, 05-271944-001, 05-271944-002, 05-271944-004, and 05-271944-005

WR 05-048998

Section 1EP1: Exercise Evaluation

AP 06-002, "Radiological Emergency Response Plan (RERP)," Revision 7
APF 06-002-01, "Emergency Action Levels," Revision 4
RETD, "Radiological Emergency Telephone Directory," Revision 105
EPF 06-007-01, "Wolf Creek Generating Station Emergency Notification," Revision 9

Emergency Planning Procedures

06-001, "Control Room Operations," Revision 7
06-002, "Technical Support Center Operations," Revision 14
06-003, "Emergency Operations Facility Operations," Revision 11
06-005, "Emergency Classification," Revision 2
06-006, "Protective Action Recommendations," Revision 4
06-007, "Emergency Notifications," Revision 8
06-009, "Drill and Exercise Requirements," Revision 4
06-010, "Personnel Accountability and Evacuation," Revision 5
06-011, "Emergency Team Formation and Control," Revision 4
06-012, "Dose Assessment," Revision 7A
06-013, "Exposure Control and Personnel Protection," Revision 3
06-016, "Accident Assessment and Mitigation," Revision 3
06-017, "Core Damage Assessment Methodology," Revision 3
06-019, "Alert and Notification System Sirens," Revision 3
06-021, "Training Programs," Revision 4
06-022, "Tone Alert Radio Maintenance/Compensatory Measures," Revision 3

Emergency Operating Procedures

E-0 "Reactor Trip Response" Revision 17A
E-1 "Loss of Reactor or Secondary Coolant" Revision 16
E-2 "Faulted Steam Generator," Revision 11
ES-0.3 "Safety Injection Termination," Revision 15
ES-11 "Post LOCA Cooldown and Depressurization," Revision 16
FR S-1 "Response to Nuclear Power Generation/ ATWS," Revision 13
FR C-1 "Inadequate Core Cooling," Revision 14
FR P-1 "Integrity Functional Recovery," Revision 12
Critical Safety Function Status Tree F-0.4, Revision 1

Section 4OA2: Identification and Resolution of Problems

PIRs

1999-1998, 2002-1472, 2003-2502, 2004-1671, 2005-0455, -0974, -1019, -1232, -1357, -1622, -2418, -2560, -2561, -3134, -3171, -3169, -3291, -3348, -3378, -3392, -3397, and -3404,

Change Package Engineering Dispositions

10396, 11193, 07484, 03846, 11821, 10080, and 11960

Work Orders

03-248909-000, 03-254866-001, and 03-257025-000
04-259507-001 and 04-266143-001
05-271288-001, 05-271896-001, 05-273687-000, and 05-278871-000

Miscellaneous

AI 28E-007, "PIR Trending and Analysis," Revision 2

Operations Initiative Status Report

Operations Health Reports for October and November 2005

QH 05-139, "1st Quarter 2005 Clock Reset Trend Analysis"

QH 05-088, "4th Quarter 2004 Low-Level Trend Analysis"

QH 05-0327, "Evaluation of Performance Information for the ESP TRG and Engineering Management"

QH 05-391, "Trend Report of Performance Information for the 3rd Quarter 2005"

Section 4OA3: Event Follow-up

PIRs

99-1285, 2005-1357, -1360, and -2536

Procedures

AP 21D-004, "Control of Containment Penetrations During Shutdown Operations," Revision 5A
STS GP-006, "CTMT Closure Verification," Revision 13
Station Logs April 28 - 30, 2005

Periodic Maintenance Rule Assessments

Self Assessment Report SEL 05-007, "Maintenance Rule Paragraph (a)(3) Periodic Assessment," August 2005

Self Assessment Report SEL 04-001, "Maintenance Rule Paragraph (a)(3) Periodic Assessment," Revision 4

PIRs

2000-3531; 2002-2377; 2003-0717, -2711, 3752, and -3755; 2004-1604, -2182, -2200, and -2685; and 2005-1365

Work Order

02-235313

Procedure

Off-normal Procedure RJ-023, "Loss of NPIS Computer," Revision 12

Specification C-404, "Periodic Surveillance of Safety Related Water Control Structures and Reservoir," Revision 5

AI 23M-007, "Engineering Structural Walkdowns," Revision 2

AI 28A-013, "PIR Evaluation and Action Plans," Revision 12

AP 23M-001, "WCGS Maintenance Rule Program," Revision 5

Functional Failure Evaluations

WR2030547, Motor-Driven AFWP Discharge Hdr to SG B Isolation Valve, September 7, 2004

WR2030480, Motor-Driven AFWP Discharge Hdr to SG C Isolation Valve, September 7, 2004

PIR 2004-2685, Turbine-Driven AFWP Trip and Throttle Valve, November 11, 2004

PIR 2004-0586, Loss of West Switchyard Bus, April 9, 2004

(a)(1) Evaluations

PIR 2004-2182, ALHV0009 and ALHV0011

PIR 2005-2507, Safety-related room coolers

PIR 2005-1604, Excess letdown valves

PIR 2003-2711, Main steam isolation valves and main feedwater isolation valve process cards

Miscellaneous

Maintenance Rule expert panel position papers, Revision 3

2001 Periodic surveillance report for ultimate heat sink and associated safety-related structures, September 17, 2002

Surveillance report for ultimate heat sink and associated safety-related structures, March 30, 1988

LIST OF ACRONYMS

EF	degrees Fahrenheit
ADAMS	Agencywide Documents Access and Management System
CCDP	conditional core damage probability
CDF	core damage frequency
CFR	<i>Code of Federal Regulations</i>
ESW	essential service water
FIN	finding
IPEEE	Independent Plant Evaluation External Events
kV	kilovolt
LER	licensee event report
MEDP	maximum expected differential pressure
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PIR	performance improvement request
psid	pounds per square inch differential
SPAR	simplified plant analysis report
SSC	structures, systems, and components
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report