UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

November 9, 2005

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

SUBJECT: WOLF CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000482/2005004

Dear Mr. Muench:

On September 26, 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 September 28, 2005, with Mr. Steve Hedges 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 and two self-revealing findings of very low safety significance (Green). The findings were determined to involve violations of NRC requirements; however, because of the very low safety significance and because the findings were entered into your corrective action program, the NRC is treating these violations as noncited violations consistent with Section VI.A of the NRC Enforcement Policy. In addition, an apparent violation was identified involving fire protection suppression water system degradation. The NRC is performing a significance determination process Phase 3 analysis to determine the safety significance. If you contest these 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).

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 05000482/2005004
w/attachment: Supplemental Information

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SISP Review Completed: __WBJ__ ADAMS: / Yes ☐ No Initials: __WBJ____
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R:REACTORS_WC\2005\WC2005-04RP-ELC.wpd

RIV:SRI:DRP/B	RI:DRP/B	ASRI:DRP/B	C:DRS/EB
FLBrush	TBRhoades	ELCrowe	CJPaulk
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11/7/05	11/7/05	11/8/05	11/7/05

C:DRP/OB	C:DRS/PS	C:DRS/PEB	C:DRP/PBB
ATGody	MPShannon	LJSmith	WBJones
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11/8/05	11/8/05	11/4/05	11/9/05

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	50-482
License:	NPF-42
Report:	5000482/2005004
Licensee:	Wolf Creek Nuclear Operating Corporation
	Wolf Creek Generating Station
Location:	1550 Oxen Lane NE Burlington, Kansas
Dates:	June 27 through September 26, 2005
Inspectors:	F. L. Brush, Senior Resident Inspector E. L. Crowe, Acting Senior Resident Inspector T. B. Rhoades, Resident Inspector L. C. Carson II, Senior Health Physicist J. L. Dixon, Resident Inspector, Arkansas Nuclear One R. A. Kopriva, Senior Project Engineer M. S. Peck, Senior Resident Inspector, Callaway B. K. Tharakan, Health Physicist
Approved By:	W. B. Jones, Chief, Project Branch B

Enclosure

SUMMARY OF FINDINGS

IR 500482/2005004; 6/27/05 - 9/26/05; Wolf Creek Generating Station; Operator Performance During Nonroutine Evolutions and Events, Operability Evaluations, Access Control to Radiologically Significant Areas, and Identification and Resolution of Problems

The report covers a 3-month period of inspection by resident inspectors and regional specialist inspectors. The inspection identified three Green noncited violations and an apparent violation. 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. A self-revealing noncited violation of Technical Specification 5.4.1a, occurred when station personnel failed to adequately evaluate a maintenance activity on safety-related equipment for potential energy/fluid transfer paths as required by Station Procedure AP 21D-002, "Evaluation For Potential Energy/Fluid Transfer Paths." On June 28, 2005, planned motor-operated valve actuator work on an isolation valve in the safety injection system lead to the unplanned transfer of water from the volume control tank to the refueling water storage tank. This issue involved human performance crosscutting aspects associated with station personnel not following a station procedure.

  The failure to correctly perform a required step of a station procedure for evalauting emergency core cooling system interfaces is a performance deficiency. This finding was determined to be more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to have very low safety significance because the finding did not represent a loss of a safety function or a train of safety function and is not potentially risk significant due to external events. Wolf Creek Nuclear Operating Corporation entered this finding into their corrective action program as Performance Improvement Request 2005-2004 (Section R14).

- Green. The inspectors documented a self-revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, because Wolf Creek Nuclear Operating Corporation failed to assure corrective actions taken in response to a significant condition adverse to quality preclude repetition of the condition. On May 5, 2005, auxiliary feedwater flow Transmitter ALFT-0011 indicated flow without existing flow in the auxiliary feedwater system due to the buildup of debris from a previous steam generator chemical cleaning. Following the May 5, 2005, event, Wolf Creek Nuclear Operating Corporation flushed all auxiliary feedwater flow transmitters and the level transmitters for the steam generators. On July 11, 2005, another auxiliary feedwater flow Transmitter ALFT-0003 indicated flow

without existing flow in the auxiliary feedwater system. This transmitter was flushed and the conditions found on May 5, 2005, existed in this transmitter. This issue involved problem identification and resolution crosscutting aspects, in that, station personnel did not properly evaluate a condition adverse to quality that resulted in an auxiliary feedwater flow transmitter becoming inoperable.

The failure to take appropriate corrective measures to address a significant condition adverse to quality is a performance deficiency. This finding was determined to be more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of the auxiliary feedwater system that responds to initiating events to prevent undesirable consequences (i.e., core damage). Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to have very low safety significance because the finding did not represent a loss of a safety function and is not potentially risk significant due to external events. Wolf Creek Nuclear Operating Corporation entered this finding into their corrective action program as PIR 2005-2149 (Section R15).

- TBD. A self-revealing noncited violation of a Technical Specification 5.4.1a occurred when station personnel failed to follow Procedure AP 21E-001, "Clearance Orders," and operated a temporary component that had been established within a fire protection suppression water system clearance boundary without instructions and authorization. Specifically, personnel started a temporary fire pump which had been connected to the station's fire protection suppression water system causing water to spray from an open vent valve. The water spray wetted the control panel for the diesel driven fire pump which resulted in the pump becoming inoperable for approximately 4 hours. This issue involved human performance crosscutting aspects associated with personnel not following a station procedure.

  The failure to follow station procedures is a performance deficiency. The finding was determined to be more than minor because if affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to degrade the fire protection system suppression and was evaluated using Appendix F, Fire Protection Significance Determination Process. This finding requires a Phase 3 analysis and is currently under evaluation. Wolf Creek Nuclear Operating Corporation entered this finding into their corrective action program as PIR 2005-2142 (Section 4OA2).

Cornerstone: Occupational Radiation Safety

- Green. The inspector identified a noncited violation of a Technical Specification 5.4.1a which requires procedures for radiation protection and personnel monitoring. Specifically, on September 22, 2003, Wolf Creek Nuclear Operating Corporation failed to perform an exit whole body count for a radiation worker that had entered the radiologically controlled area and terminated their employment with Wolf Creek Nuclear Operating Corporation.

The failure to perform an exit whole body count was a performance deficiency. The finding was determined to be more than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of Programs and Process and affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation and radioactive materials. Because the occurrence involved conditions that were contrary to licensee procedures related to measuring worker dose, this finding was processed through the Occupational Radiation Safety Significance Determination Process. The finding was determined to be of very low safety significance (Green) because it did not involve: (1) as low as is reasonably achievable planning and work controls, (2) an overexposure, (3) a substantial potential for an overexposure, or (4) an impaired ability to assess dose. The finding was entered into Wolf Creek Nuclear Operating Corporation's corrective action program as PIR 2005-1653 (Section 2OS1).

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by Wolf Creek Nuclear Operating Corporation, has been reviewed by the inspectors. Corrective actions taken or planned by Wolf Creek Nuclear Operating Corporation have been entered into Wolf Creek Nuclear Operating Corporation's corrective action program. This violation and 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 (71111.01)

a. Inspection Scope

The inspectors completed a review of Wolf Creek Nuclear Operating Corporation's (WCNOC) readiness of seasonal susceptibilities involving extreme high temperatures. The inspectors: (1) reviewed plant procedures, the Updated Final Safety Analysis Report, and Technical Specifications to ensure that operator actions defined in adverse weather procedures maintained the readiness of essential systems, (2) walked down portions of the 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 WCNOC would maintain the readiness of essential systems required by plant procedures, and (4) reviewed the corrective action program to determine if WCNOC identified and corrected problems related to adverse weather conditions.

- July 15, 2005, WCNOC preparations for summer weather which included: Steam heating for outdoor tanks, ventilation lineups for power block buildings, and discussion of aspects of hot weather operations with licensee personnel.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors: (1) walked down portions of the three 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 walk down to WCNOC's corrective action program to ensure problems were being identified and corrected.

C July 15, 2005, Train B motor-driven auxiliary feedwater system
C August 4, 2005, Train B safety injection system

- September 15, 2005, component cooling water system

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Area Walkdowns

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 WCNOC identified and corrected fire protection problems.

- July 5, 2005, circulating water screen house
- July 19, 2005, main steam enclosure
- August 4, 2005, residual heat removal Pump B room
- August 4, 2005, room containing safety injection Pump B, centrifugal charging Pump B, and containment spray Pump B
- August 26, 2005, motor-driven auxiliary feedwater Pumps A and B rooms
- August 26, 2005, turbine-driven auxiliary feedwater pump room

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

Resident Inspector Review

a. Inspection Scope

The inspectors observed 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 of the scenario listed below:

- August 3, 2005, training scenario, LR5001005, “Large Break LOCA,” Revision 10, which involved a large break loss of coolant accident including recovery and shifting to cold leg recirculation.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the two 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 Technical Specifications.

- August 12, 2005, residual heat removal system
- Septernber 16, 2005, essential service water system

The inspectors reviewed two samples.

b. Findings

No findings of significance were identified.

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

Risk Assessment and Management of Risk

a. Inspection Scope

The inspectors reviewed the assessment activities 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 WCNOC recognizes, and/or enters as applicable, the appropriate licensee established risk category according to the risk assessment results and licensee procedures; and (4) that WCNOC identified and corrected problems related to maintenance risk assessments.

The inspectors reviewed operational risk assessments for planned maintenance and actual, planned, and emergent work schedules for the following weeks:

- July 11, 2005
- August 29, 2005
- September 12, 2005
- September 19, 2005

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

For the plant evolution and 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's response was in accordance with the response required by plant procedures and training, and (3) verified that WCNOC has identified and implemented appropriate corrective actions associated with personnel performance problems that occurred during the nonroutine evolutions sampled.

- June 28, 2005, inadvertent transfer of water from volume control tank (VCT) to refueling water storage tank (RWST).

- September 20, 2005, unplanned entry into Technical Specification 3.0.3 due to declaration of both trains of residual heat removal system containment sump suction isolation Valves EJHV8811A and -8811B inoperable.

The inspectors completed two samples.

b. Findings

Introduction. The inspectors documented a self-revealing noncited violation of Technical Specification 5.4.1a, which occurred when station personnel failed to adequately evaluate a maintenance activity on safety-related equipment for a potential energy/fluid transfer path as required by Station Procedure AP 21D-002, "Evaluation For Potential Energy/Fluid Transfer Paths." Subsequently, maintenance on a motor-operated isolation valve in the safety injection system lead to the unplanned transfer of water from the VCT to the RWST.

Description. On June 28, 2005, WCNOC performed maintenance on the motor-operated valve actuator for residual heat removal heat exchanger/chemical volume control system to safety injection Pump A downstream isolation Valve EMHV8807B. This maintenance involved the removal of the actuator from the valve which resulted in partial opening of Valve EMHV8807B. This created an open pathway for the transfer of water from the VCT to the RWST. Wolf Creek Nuclear Operating Corporation evaluated the potential for water in the RWST to transfer to the VCT if VCT pressure was less than 25 psig. However, WCNOC failed to assess flow in the opposite direction. The pressure in the VCT was sufficiently high to cause lowering of the VCT level due to transfer of water to the RWST. Wolf Creek Nuclear Operating Corporation entered Procedure OFN BB-007, "RCS Leakage High," to determine the location of the leak and Technical Specification 3.4.13, "RCS Leakage," due to the appearance of a greater than 1 gallon per minute unidentified leak. The leak was isolated when the valve actuator was re-installed and the valve closed. The leak existed for approximately 24 minutes.

Analysis

The failure to properly follow station procedures is a performance deficiency. This finding was determined to be more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to have very low safety significance because the finding did not represent a loss of a safety function and is not potentially risk significant due to external events. This issue involved human performance crosscutting aspects associated with station personnel failing to adequately implement procedural requirements to evaluate potential fluid transfer paths.

Enforcement

Technical Specification 5.4.1a requires procedures be implemented in accordance with Regulatory Guide 1.33, Revision 2, Appendix A. Section 9 to Regulatory Guide 1.33 requires maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures,

documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on June 28, 2005, WCNOC personnel performed an inadequate evaluation of potential energy/fluid transfer paths for planned maintenance on Valve EMHV8807B which resulted in an inadvertent transfer of water from the VCT to the RWST. A similar event occurred in 1995. Because the failure to prevent transfer of water was of very low safety significance and was entered into the corrective action program as PIR 2005-2004, this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000482/0500401, failure to adequately implement station procedures results in transfer of water from VCT to RWST.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

For the three operability evaluations listed below, the inspectors: (1) reviewed plant 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 Updated Safety Analysis Report 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 WCNOC has identified and implemented appropriate corrective actions associated with degraded components.

- PIR 2005-1477 — July 20, 2005, residual heat removal Pumps A and B containment recirculation valves

  PIR 2005-2149 — July 13, 2005, auxiliary feedwater flow Transmitters ALFT0003, -0004, -0009, and -0011

- PIR 2005-2478 — August 29, 2005, grid disturbances resulting in low voltage alarms

The inspectors completed three samples.

b. Findings

Introduction. The inspectors documented a Green self-revealing, noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, because WCNOC failed to prevent the recurrence of a plant event which resulted in the additional failures of auxiliary feedwater flow transmitters following steam generator chemical cleaning.

Description. On April 10, 2005, WCNOC injected advanced scale conditioning agent (ASCA) into steam Generator B. Steam Generator C was injected with ASCA on

April 11, 2005. ASCA is a chemical formulation that aids to soften, dislodge, and partially dissolved sludge and scale deposits. Immediately following the April 11, 2005, injection, WCNOC found steam Generator C auxiliary feedwater flow Transmitter ALFT0011 indicating 22,000 lbm/hr without any flow in the auxiliary feedwater system. Approximately during the same period, a second auxiliary feedwater flow transmitter on steam Generator C (ALFT0004) indicated approximately 40,000 lbm/hr without auxiliary feedwater flow. Wolf Creek Nuclear Operating Corporation flushed both transmitters and a dark black liquid with suspended solids issued from the flush lines. No other auxiliary feedwater flow transmitters were flushed at this time. These transmitters are utilized in the Wolf Creek emergency operating procedures to verify proper auxiliary feedwater flow during accident conditions. On May 5, 2005, WCNOC discovered auxiliary feedwater flow Transmitter ALFT0011 indicating 22,000 lbm/hr without corresponding auxiliary feedwater flow. This transmitter was flushed on May 6, 2005, and the dark black liquid with suspended solids issued from the flush lines. On May 8, 2005, WCNOC flushed auxiliary feedwater flow Transmitters ALFT0003 and -0009 which provide auxiliary feedwater flow indication for steam Generator B and discovered the dark black liquid with suspended solids in these transmitters. Wolf Creek Nuclear Operating Corporation also flushed low point drains in the auxiliary feedwater system and took samples of the dark black liquid which were sent to an offsite vendor for analysis.

On July 11, 2005, control room operators identified that an auxiliary feedwater flow Transmitter ALFT0003 was indicating a flow rate of approximately 15,000 lbm/hr flow with no auxiliary feedwater flow. Wolf Creek Nuclear Operating Corporation removed and cleaned the flow transmitter on July 13, 2005, and discovered a black substance plugging the sensing line and at several instrument line fittings. Wolf Creek Nuclear Operating Corporation stated this substance was similar to that identified during the previous erroneous auxiliary feedwater flow transmitter indications. Wolf Creek Nuclear Operating Corporation again flushed the other auxiliary feedwater flow transmitters for steam Generators B and C and did not observe any foreign substance. Wolf Creek Nuclear Operating Corporation also implemented a monthly flushing of all the auxiliary feedwater flow transmitters. Wolf Creek Nuclear Operating Corporation received the results of the vendor's chemical analysis the second week of September 2005 which indicated the presence of the chemical ASCA.

Analysis

The failure to take appropriate corrective measures to address a significant condition adverse to quality is a performance deficiency. This finding was determined to be more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of the auxiliary feedwater system that is used to respond to initiating events to prevent undesirable consequences (i.e., core damage). Using the Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," the finding was determined to have very low safety significance because the finding did not represent a loss of a safety function and is not potentially risk significant due to external events. This issue involved problem identification and resolution crosscutting aspects in that station personnel did not properly evaluate and implement

adequate corrective actions to prevent the accumulation of sludge in the auxiliary feedwater flow transmitters.

Enforcement

In part, 10 CFR 50, Appendix B, Criterion XVI, states that for significant conditions adverse to quality, measures shall be established to assure that corrective actions taken preclude repetition. Contrary to the above, WCNOC personnel failed to adequately evaluate and implement corrective actions to prevent the accumulation of sludge in the auxiliary feedwater flow transmitters following the initial identification of the concern in May 2005. Because the failure to adequately prevent the buildup of sludge in the flow transmitters was determined to be of very low safety significance and was entered into the corrective action program (PIR 2005-2149), this violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000482/200500402, inadequate corrective actions fail to prevent subsequent failure of auxiliary feedwater flow transmitters.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

Cumulative Review of the Effects of Operator Workarounds

On September 8, 2005, the inspectors reviewed the cumulative effects of operator workarounds to determine: (1) the reliability, availability, and potential for misoperation of a system; (2) if multiple mitigating systems could be affected; (3) the ability of operators to respond in a correct and timely manner to plant transients and accidents; and (4) if WCNOC has identified and implemented appropriate corrective actions associated with operator workarounds.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected three post maintenance 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 corrective action program to determine if WCNOC identified and corrected problems related to post maintenance testing.

- June 28, 2005, safety injection system Valve EMHV-8807B
- August 5, 2005, auxiliary feedwater Pump A room cooler replacement
- September 19, 2005, turbine-driven auxiliary feedwater pump

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

For the four surveillances listed below, the inspectors reviewed the Updated Final Safety Analysis Report, procedure requirements, and Technical Specifications to ensure that the four 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 SSC's not meeting the test acceptance criteria were correct; (14) reference setting data; and (15) annunciators and alarms setpoints. The inspectors also verified that WCNOC identified and implemented any needed corrective actions associated with the surveillance testing.

- July 7, 2005, STS EJ-100A, "RHR System Inservice Pump A Test," Revision 29
- July 20, 2005, STS KJ-013B, "Hot Restart of Emergency D/G NE02," Revision 4
- August 12, 2005, STS BB-005, "RCS Water Inventory Balance Using Excel," Revision 5
- September 8, 2005, STS KJ-015A, "Manual/Auto Fast Start, Sync and Loading of EDG NE10," Revision 19

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The drill listed below contributed 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 WCNOC identified findings to determine whether WCNOC 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.

- June 29, 2005, the inspectors observed and reviewed emergency drill activities in the simulator control room and the emergency offsite facility. The drill scenario involved a loss of control room annunciators with a concurrent loss of the plant computer, a generator trip with a failure of the control rods to automatically trip, an offsite release due to a gas decay tank relief valve failure, and a loss of normal power to the vital alternating current busses. The inspectors attended the control room critique, reviewed drill related documents, and discussed the drill activities with various licensee personnel.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess WCNOC's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, Technical Specifications, and WCNOC's procedures required by Technical Specifications as criteria for determining compliance. The

inspector interviewed the station's ombudsman, licensing and radiation protection personnel, and reviewed the following items:

- Corrective action documents related to the access control program
- Special report related to the access control program

The inspector completed 2 of the required 21 samples.

b. Findings

1. Introduction: The inspector identified a Green noncited violation of Technical Specification 5.4.1a procedure. Specifically, on September 22, 2003, WCNOC failed to perform an exit whole body count on a radiation worker who had terminated their employment with WCNOC.

Description: On May 3, 2005, the NRC requested that WCNOC respond to a concern about whether an exit whole body count was performed as required by procedure. Wolf Creek Nuclear Operating Corporation conducted an investigation and concluded that on September 22, 2003, WCNOC failed to perform an exit whole body count on a radiation worker during their last day at work, and that no subsequent whole body count had been performed. An entry was made into the radiologically controlled area since the last whole body count for the individual. The investigation also concluded that WCNOC did not generate a required form when an exit whole body count was not performed.

Analysis: The failure to perform an exit whole body count is a performance deficiency. This finding is determined to be more than minor because it is associated with the Occupational Radiation Safety Cornerstone Attribute of Programs and Process, and it affected the cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation and radioactive materials. This finding was processed through the occupational radiation safety significant determination process because the occurrence involved conditions that were contrary to licensee procedures related to measuring worker dose. The finding was determined to be of very low safety significance (Green) because it did not involve: (1) as low as is reasonably achievable (ALARA) planning and work controls, (2) an overexposure, (3) a substantial potential for an overexposure, or (4) an impaired ability to assess dose.

Enforcement: Technical Specification 5.4.1a requires procedures be implemented in accordance with Regulatory Guide 1.33, Revision 2, Appendix A. Section 7e, to Regulatory Guide 1.33 requires radiation protection procedures for personnel monitoring. Station Procedure RPP 03-405, step 9.5.2, requires that a whole body count be performed. In addition, step 9.5.4 of the procedure states, in part, that if a whole body count is not performed, and an entry was made into the radiologically controlled area since the last whole body count, generate a request for exit whole body count. It was determined that this request for exit whole body count could not be located and that an exit whole body count was not performed. Because this violation was of very low safety significance and was entered into WCNOC's corrective action

program as PIR 2005-1653, it is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 005000482/200500403, failure to perform an exit whole body count.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee performance with respect to maintaining individual and collective radiation exposures ALARA. The inspectors used the requirements in 10 CFR Part 20 and WCNOC's procedures required by Technical Specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed:

- Five outage and online maintenance work activities scheduled during the inspection period and associated work activity exposure estimates which were likely to result in the highest personnel collective exposures
- Use of engineering controls to achieve dose reductions and dose reduction benefits afforded by shielding
- Exposure tracking system
- Workers use of the low dose waiting areas
- Exposures of individuals from selected work groups
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Specific sources identified by WCNOC for exposure reduction actions and priorities established for these actions and results achieved against since the last refueling cycle
- Declared pregnant workers during the current assessment period, monitoring controls, and exposure results
- Resolution through the corrective action process of problems identified through postjob reviews and postoutage ALARA report critiques
- Corrective action documents related to the ALARA program and followup activities such as initial problem identification, characterization, and tracking

- Self-assessments, audits, and special reports related to the ALARA program since the last inspection

- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

The inspector completed 6 of the required 15 samples and 7 of the optional samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

Resident Inspector Annual Sample Review

a. Inspection Scope

The inspectors evaluated the effectiveness of WCNOC's corrective action program as applied to corrective action document PIR 2005-2142. This document was initiated to address the conditions and events that led to the inoperability of both site fire protection pumps. Attributes considered during this review included the following:

- Completeness, accuracy, and timeliness of problem identification
- Operability and reportability evaluation
- Extent of condition evaluation
- Apparent cause evaluation
- Prioritization
- Corrective action effectiveness

The inspectors completed one sample.

b. Findings

Failure to Follow the Clearance Order Procedure

Introduction: An apparent violation (AV) of Technical Specification 5.4.1a occurred when station personnel failed to follow Procedure AP 21E-001, "Clearance Orders," and manipulated a component inside a fire protection piping clearance boundary without instructions and authorization. The starting of a temporary fire pump resulted in water spraying on the controller of the operable diesel-driven fire pump through an open vent valve, which rendered the pump inoperable.

Description: On June 30, 2005, the motor of the electric fire pump experienced a short in its winding which led to a fire at the motor. The plant took the appropriate compensatory measures and started parallel paths to restore the fire suppression water system within the allotted 14 days. One path involved a temporary modification to the fire protection system that installed a temporary motor-driven fire pump, which was accomplished on July 11, 2005. The temporary fire pump was tested on July 12, 2005, to verify it would provide the required flow of water suppression; however, the pump failed this test.

Station fire protection personnel requested a clearance order to isolate the temporary fire pump from the fire protection piping but failed to make station operations personnel aware of the desire to run the temporary fire pump following repairs. Once repairs to the pump were completed, the vendor under the direction of station fire protection personnel started the pump believing they had authorization to operate the temporary fire pump. This resulted in water issuing from an open vent valve which sprayed the controller of the diesel-driven fire pump. Station fire protection personnel discovered the wet controller and notified the control room. Control room personnel declared the diesel-driven fire pump inoperable. The diesel-driven fire pump was returned to service in approximately 4 hours.

The inspectors reviewed Procedure AP-10-103, Fire Protection Impairment Control, Revision 19, which identified the compensatory measures for the loss of fire suppression water systems. With the motor driven and the diesel driven fire pump inoperable (approximately 4 hours) the impairment control procedure required that a backup fire pump be provided within 24 hours. In this case, both the motor driven and the diesel driven fire pumps were restored within approximately 18 hours. This issue involved human performance crosscutting aspects associated with station personnel not following a station procedure.

Analysis: The failure to follow station procedures is a performance deficiency. The finding was determined to be more than minor because it affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Phase 1 worksheets in Manual Chapter 0609, “Significance Determination Process,” the finding was determined to degrade the fire protection system suppression and was evaluated using Appendix F, Fire Protection Significance Determination Process. This finding requires a Phase 3 analysis and is currently under evaluation. Wolf Creek Nuclear Operating Corporation entered this finding into their corrective action program as PIR 2005-2142

Enforcement: Technical Specification 5.4.1a requires procedures be implemented in accordance with Regulatory Guide 1.33, Revision 2, Appendix A. Regulatory Guide 1.33, Appendix A, Section 9, requires procedures for the performance of station maintenance. Contrary to the above, on July 13, 2005, station personnel operated components inside an established fire protection piping clearance boundary without work instructions or control room authorization as required by Station Procedure AP 21E-001, “Clearance Orders,” Section 6.6.8. This resulted in an

adjacent diesel-driven fire pump becoming inoperable. Pending determination of the final safety significance of this issue, this violation is being treated as an AV consistent with Section VI.A of the NRC Enforcement Policy: AV 05000482/0500404, manipulation of plant component without proper authorization results in inoperable fire protection pumps.

Corrective Action Effectiveness

There were no findings identified that were associated with the corrective actions for this event. However, the inspectors made the following observations from their review of the apparent cause evaluation and the associated corrective actions: The apparent cause evaluation states that some fire protection personnel are unfamiliar with the clearance order program because, for them, clearance orders are infrequently performed evolutions. Additionally, the evaluation states that some “groups” mistakenly believed it was acceptable to work on vendor equipment inside clearance order boundaries without proper authorization or an approved procedure. These evaluation results suggest a clearance order program knowledge deficiency within the fire protection group. Yet, the corrective action for these contributing causes was counseling only the one individual involved with this event.

.2 Cross-References to Problem Identification & Resolution Findings Documented Elsewhere

Section 1R15 documents a condition where station personnel did not properly evaluate a condition adverse to quality regarding debris in the auxiliary feedwater flow transmitters.

.3 Access Control to Radiologically Significant Areas and ALARA Inspections

Section 2OS1 evaluated the effectiveness of WCNOC's problem identification and resolution processes regarding access controls to radiologically significant areas and radiation worker practices. The inspectors reviewed corrective action documents for root cause/apparent cause analysis against WCNOC’s PI&R process. No findings of significance were identified.

Section 2OS2 evaluated the effectiveness of WCNOC's PI&R processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. The inspector reviewed the corrective action documents listed in the attachment against WCNOC’s PI&R program requirements. No findings of significance were identified.

4OA4 Crosscutting Aspects of Findings

Cross-Reference to Human Performance Findings Documented Elsewhere

Section 1R14 describes a condition associated with station personnel failing to follow procedure requirements to adequately complete an evaluation of energy/fluid transfer paths.

Section 2OS1 describes a condition associated with station personnel not following a procedure for the performance of an exit whole body count.

Section 4OA2 describes a condition associated with station personnel not following a clearance order procedure that rendered the remaining fire pump inoperable.

4OA5 Other

1. Temporary Instruction (TI) 2515/161 - Transportation of Reactor Control Rod Drives in Type A Packages

a. Inspection Scope

This area was inspected to verify that WCNOC's radioactive material transportation program complies with specific requirements of 10 CFR Parts 20 and 71, and Department of Transportation regulations contained in 49 CFR Part 173. The inspector interviewed licensee personnel and determined that WCNOC had undergone refueling/defueling activities between January 1, 2002, and present, but it had not shipped irradiated control rod drives in Department of Transportation Specification 7A, Type A packages.

b. Findings and Observations

No findings of significance were identified.

4OA6 Meetings, including Exit

On May 12, 2005, the inspector discussed the TI 2515/161 inspection findings with Ms. P. Bedgood, Superintendent, Chemistry/Radiation Protection. The inspectors asked WCNOC whether any materials examined during the inspections should be considered proprietary. No proprietary information was identified.

On July 1, 2005, the inspector discussed the access control to radiologically significant areas inspection findings with Ms. P. Bedgood, Superintendent, Chemistry/Radiation Protection, and other members of your staff who acknowledged the findings. The inspector verified that no proprietary information was provided during the inspection.

On July 1, 2005, the inspector presented the ALARA planning and controls inspection results to Mr. M. Sunseri, Vice President Oversight, and other members of his staff who

acknowledged the findings. The inspector confirmed that proprietary information was not reviewed during the inspection.

On July 14, 2005, the inspector discussed the inspection findings with Ms. P. Bedgood, Superintendent, Chemistry/Radiation Protection, and Mr. B. Muilenburg, Licensing Engineer, Licensing, who acknowledged the findings. The inspector verified that no proprietary information was provided during the inspection.

On August 17, 2005, the inspector presented the results of TI 2515/163, Operational Readiness of Offsite Power, Follow-up, with Mr. K. J. Moles, Manager, Regulatory Affairs, and other members of the staff, who acknowledged the findings. The inspector verified that no proprietary information was provided during the inspection.

On September 28, 2005, the inspectors presented the resident inspection results to Mr. S. E. Hedges and other members of licensee management after the conclusion of the inspection. The inspector verified that no proprietary information was provided during the inspection.

4OA7 Licensee-Identified Violations

The following finding is of very low significance, was identified by WCNOC and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a noncited violation.

In part, 10 CFR 50.9(a) requires that information provided to the Commission by a licensee shall be complete and accurate in all material respects. A Severity Level IV violation of 10 CFR 50.9(a) was identified because from January 1, 1994, through December 31, 2003, more than 850 radiation dose reports were submitted to the Commission with inaccurate radiation dose information. The finding is greater than minor because of the number of records involved and the duration of the noncompliance. The finding is not suitable for significant determination process evaluation, but has been reviewed by NRC management and is determined to be a Green finding of very low safety significance. This finding is documented in WCNOC's corrective action program as PIR 2004-2700.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. A. Muench, President and Chief Executive Officer
M. Sunseri, Vice President Oversight
K. A. Harris, Director, Performance Improvement and Learning
S. E. Hedges, Vice President Operations and Plant Manager
K. Scherich, Director Engineering
T. East, Manager, Emergency Planning
P. Bedgood, Superintendent, Chemistry/Radiation Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

050000482/200500404	AV	Manipulation of plant component without proper authorization results in inoperable fire protection pumps (Section 4OA2)

Opened and Closed

050000482/200500401	NCV	Failure to follow station procedures results in transfer of water from VCT to RWST (Section 1R14)
050000482/200500402	NCV	Inadequate corrective actions fail to prevent subsequent failure of auxiliary feedwater flow transmitters (Section 1R15)
050000482/200500403	NCV	Failure to perform an exit whole body count (Section 2OS1)

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

STN GP-001, "Plant Winterization, Revision 34

Section 1R04: Equipment Alignment

CKL AL-120, "Auxiliary Feedwater Normal Lineup," Revision 33A

CKL EG-120, "Component Cooling Water System Valve, Switch and Breaker Lineup," Revision 36

CKL EM-120, "Safety Injection System Lineup Checklists," Revision 22A

Station Drawings:

M-12AL01, Revision 6
M-12EG01, Revision 9
M-12EG02, Revision 4
M-12EG03, Revision 3
M-12EM01, Revision 16
M-12EP01, Revision 5

Section 1R12: Maintenance Effectiveness

Residual heat removal system health report
Maintenance rule performance evaluations
Functional failure evaluations - residual heat removal and essential service water systems
Final scope evaluations for the residual heat removal system
Maintenance rule expert panel meeting minutes for residual heat removal system
PIRs 2005-1175, -1336, and -1477

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

Procedure AP 22C-003, "Operational Risk Assessment Program," Revision 9.

Section 1R14: Operator Performance During Nonroutine Evolutions and Events

AP 21D-002, "Evaluation for Potential Energy/Fluid Transfer Paths," Revision 8
OFN BB-007, "RCS Leakage High," Revision 12
PIR 19952808

Section 1R15: Operability Evaluations

OE AL-05-001
PIRs 2005-1514 and -2247

Section 1R19: Postmaintenance Testing

Proto HX model verification for room Cooler SGF02A
STN PE-036, “Safety-Related Room Cooler Heat Transfer Verification and Performance Trending,” Revision 10

STN PE-037A, “ESW Train A Heat Exchanger Flow and DP Trending,” Revision 8

STS AL -103, “TDAFW Pump Inservice Pump Test,” Revision 38

STS PE-007, “Periodic Verification of Motor-Operated Valves,” Revision 2

Work Orders: 04-259616-009, 04-260057-000, -001, 05-273227-000, 05-273363-001, and 05-273773-002

Section 1R22: Surveillance Testing

STS-IC-615A, “Slave Relay Test K615 Train a Safety Injection,” Revision 18

Section 1EP6: Drill Evaluation

Emergency notification forms
Emergency response log
Sequence of events logs

Section 2OS1: Access to Radiologically Significant Areas

PIRs 2005-1652, -1653, and -1662

Special Report

Licensee response to Allegation No. RIV-2005-A-0046, dated June 2, 2005

Section 2OS2: ALARA Planning and Controls

Procedures

AP 25A-001, “Radiation Protection Manual,” Revision 11
AP 25B-100, “Radiation Worker Guidelines,” Revision 23
RPP 02-215, “Posting of Radiological Controlled Areas,” Revision 21
RPP 02-210, “Radiation Survey Methods,” Revision 25
RPP 02-105, “Radiation Work Permit,” Revision 22
RPP-03-405, “Exposure History Files,” Revision 13

ALARA Work Packages and Radiation Work Permits

050070, 051000, 051102, 053220, 053230, 054006, 054007, 054420, 055000, and 055031

PIRs 2004-0734, -1044, -1120, -1254, -1341, -1420, -1597, -2700, 2005-0013, -0129, -0863, -0943, -1171, -1324, and -1992

Self-Assessments/Audits

K-615, radiation protection
K-621, radiation protection program
OB-05-1062, RWP and ALARA review for steam generator bowl repair

Miscellaneous Documents

Wolf Creek ALARA long-range exposure/source-term reduction Plan 2002-2006
“Strategic Primary Water Chemistry Plan,” Revision 2
Personnel contamination event records
Dosimetry records