UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

July 23, 2002

Otto L. Maynard, President and
Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, Kansas 66839

SUBJECT: NRC INTEGRATED INSPECTION REPORT 50-482/02-02

Dear Mr. Maynard:

On June 29, 2002, the NRC completed an inspection at your Wolf Creek Generating Station. The enclosed report documents the inspection findings which were discussed with Ms. D. Jacobs and other members of your staff on July 10, 2002.

This inspection 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. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date 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, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; 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 facility.

The NRC has increased security requirements at Wolf Creek Generating Station in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to monitor overall security controls and will issue temporary instructions in the near future to verify by inspection the licensee's compliance with the Order and current security regulations.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) 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/

David N. Graves, Chief
Project Branch B
Division of Reactor Projects

Docket: 50-482
License: NPF-42

Enclosure:
NRC Inspection Report
50-482/02-02

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-482
License:	NPF-42
Report:	50-482/2002-02
Licensee:	Wolf Creek Nuclear Operating Corporation
Facility:	Wolf Creek Generating Station
Location:	1550 Oxen Lane, NE Burlington, Kansas
Dates:	March 24 through June 29, 2002
Inspectors:	F. L. Brush, Senior Resident Inspector J. Cruz, Resident Inspector R. A. Kopriva, Senior Project Engineer J. E. Whittemore, Senior Reactor Inspector L. T. Ricketson, Senior Health Physicist
Approved By:	David N. Graves, Chief, Project Branch B
ATTACHMENT:	Supplemental Information

SUMMARY OF FINDINGS

Wolf Creek Generating Station
NRC Inspection Report 50-482/02-02

IR 50-482/02-02; on 03/24/2002 - 06/29/2002; Wolf Creek Nuclear Operating Corporation; Wolf Creek Generating Station. Integrated Resident/Regional Report. Refueling and Outage

The report covers a 14-week period of resident inspection and an announced inspection by Region IV inspectors. The significance of issues is indicated by their color (Green, White, Yellow, Red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609. Findings for which the significance determination process does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Cornerstone: Mitigating Systems

- Green. The inspectors documented a failure to follow procedure while drawing a vacuum on the reactor coolant system. Although Item 4.6 of Operations Procedure SYS BB-112, "Vacuum Fill of the RCS," Revision 17, stated that residual heat removal pump flow rate during vacuum venting shall be less than 2000 gallons per minute to prevent pump cavitation, operators allowed the flow rate to exceed 2000 gallons per minute. The failure to follow procedure while drawing a vacuum on the reactor coolant system was identified as a violation of Technical Specification 5.4.1, for a Regulatory Guide 1.33 referenced procedure. This violation is being treated as a noncited violation and is in the licensee's corrective action program as Performance Improvement Request 2002-1247.

  A risk analyst in the Office of Nuclear Reactor Regulation determined that this issue was of very low safety significance because all other emergency core cooling components were available and inventory remained in the secondary side of the steam generators which would provide for reflux cooling of the reactor (Section 1R20).

Report Details

Summary of Plant Status

At the start of the report period, the plant had begun Refueling Outage XII. The licensee closed the main generator output breakers at 8:22 p.m. on April 27, 2002, to end the refueling outage. The licensee again opened the breakers at 12:06 a.m. on April 28 to conduct planned turbine testing and closed the breakers at 7:02 a.m. the same day. The plant achieved 100 percent power on April 30. On May 8, the plant tripped from 100 percent power when a feedwater regulating valve closed due to a circuit card failure. Following the replacement of the failed card, the licensee started the plant on May 9 and synchronized the generator to the grid on May 10. The plant reached 100 percent power on May 10. On May 13, the licensee shut down the plant due to a Steam Generator B loose parts monitor alarm. After retrieval of the loose part and evaluation of the condition of the associated equipment, the licensee again started the plant on May 19 and reached 100 percent power on May 20.

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

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors performed two separate walkdowns of various plant areas. These areas included power block buildings, the essential service water pump house, and the vital bus power supply transformer area. The inspectors reviewed Administrative Instruction AI 14-006, “Severe Weather,” Revision 4, to verify that adverse weather would not affect mitigating systems. The inspectors also used the following documents to conduct the walkdowns and review:

- OFN SG-003, Natural Events, Revision 8
- Radiological Emergency Response Plan, Revision 4, EAL-11, natural phenomena
- Updated Safety Analysis Report

Additionally, the inspectors discussed adverse weather preparations with various licensee personnel.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

Partial walkdowns

The inspectors performed the following partial walkdowns:

- Class 1E electrical equipment Train A air conditioning unit during a Train B outage
- Emergency Diesel Generators A and B during a turbine-driven auxiliary feedwater pump outage
- Essential service water Train B during an essential service water Train A outage

The inspectors performed the walkdowns to verify equipment alignment and identify discrepancies that could impact redundant system operability. The inspectors used the Updated Safety Analysis Report, system drawings, system lineup checklists, and other documents to perform the walkdowns. The inspectors also discussed the walkdowns with various licensee personnel.

Full Walkdown

The inspectors performed a full walkdown of the auxiliary feedwater system.

The inspectors performed the walkdown to verify equipment alignment and identify discrepancies that could impact redundant system operability. The inspectors used the Updated Safety Analysis Report, system drawings, and system lineup checklists to perform the walkdowns. The inspectors also reviewed the outstanding work order list, corrective action program documents, operator workarounds, and plant temporary modifications. The inspectors also discussed the walkdowns with various licensee personnel.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

1. Quarterly Fire Area Walkdowns

a. Inspection Scope

The inspectors toured the following areas to assess the licensee's control of transient combustible materials, the material condition and lineup of fire detection and suppression systems, and the material condition of manual fire equipment and passive fire barriers. The licensee's fire preplans and fire hazards analysis report were used to

identify important plant equipment, fire loading, detection and suppression equipment locations, and planned actions to respond to a fire in each of the plant areas selected. Compensatory measures for degraded equipment were evaluated for effectiveness.

- Control building 2047-foot level, control room
- Control Building 2000-foot level, NB01 vital switchgear room
- Control Building 2000-foot level, NB02 vital switchgear room
- Diesel generator building 2000-foot level, Diesel Generator A
- Diesel generator building 2000-foot level, Diesel Generator B
- Main steam enclosure
- Reactor building

b. Findings

No findings of significance were identified.

2. Annual Fire Drill Observation

a. Inspection Scope

The inspectors observed a fire drill that included licensee and local fire department participation to evaluate the readiness of licensee personnel to prevent and fight fires in accordance with Administrative Procedure AP 10-105, “Fire Protection Program Training,” Revision 5. The inspectors reviewed Fire Preplan FPP S-1, “Circulating Water Screenhouse,” Revision 3, the fire drill scenario and critique. The licensee held the drill at the circulating water screen house, which contains, in addition to the plant circulating and service water pumps, the electric and diesel-driven fire pumps.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors verified that the licensee’s flooding mitigation plans and equipment were consistent with the licensee’s design requirements and the risk assumptions in the Updated Safety Analysis Report for the containment building. The inspectors reviewed the following information:

- Calculation FL-18, loss of coolant accident and main steam line break containment flood levels, Revision 2

- Calculation FL-18, Revision 2, Attachment A

- Calculation FL-18, Revision 2, Attachment B

- Design verification report for Calculation FL-18, loss of coolant accident and main steam line break containment flood levels, Revision 2
- Calculation Package AN-96-126, Revision 0, Wolf Creek Generating Station plant specific analysis internal flooding notebook
- Updated Safety Analysis Report, Section 3.6, protection against the dynamic effects associated with the postulated rupture to piping

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A)

a. Inspection Scope

The inspectors reviewed a selected sample of testing, inspection, cleaning, and maintenance records for the component cooling water heat Exchanger B. This review was performed to verify that the licensee maintained the heat exchanger in a condition as described in the original plant design in order to perform safety-related functions. The inspectors also verified that the licensee had identified: (1) Potential heat exchanger deficiencies, which could mask degraded performance; and (2) Potential common cause heat sink performance problems, which had the potential to increase risk. In addition, the inspectors reviewed heat exchanger design calculations and vender information for the subject heat exchanger to ensure the heat exchanger performed within its design basis. The inspectors also reviewed the surveillance Procedure STN PE-033, “CCW Heat Exchanger Performance Test,” Revision 7, test data.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08)

The Wolf Creek Nuclear Generating Station licensee's Inservice Inspection (ISI) program plan was currently in the second 40-month period of the second 10-year interval. The current outage was the last outage for the second 40-month period. The licensee had requested and received an NRC exemption to implement a risk-informed ISI program. The program had been developed with four other Westinghouse vended plant sites in Region IV, under the sponsorship of an industry group. The Station ISI program was committed to the 1989 edition of the Section XI code, with no addenda. However, the licensee had committed to the 1995 code, 1996 addenda for the performance demonstration initiative required by 10 CFR 50.55a. The licensee had committed to the latest versions of the appropriate Electric Power Research Institute guidelines, for the examinations conducted under their steam generator management program.

1. Performance of Nondestructive Examination (NDE) Activities

a. Inspection Scope

The inspectors observed the licensee's NDE qualified personnel during the performance of examinations for the current outage. The following NDE examinations were observed:

System	Component/Weld Identification	Examination Method
Residual Heat Removal	Weld EJ-04-FO34	Ultrasonic
Chemical/Volume Control System	Weld BG-09-W724	Ultrasonic
Chemical/Volume Control System	Weld BG-09-W888	Ultrasonic
Chemical/Volume Control System	Weld BG-09-W691	Dye Penetrant
Chemical/Volume Control System	Weld BG-09-W790-OA	Dye Penetrant
Chemical/Volume Control System	Weld BG-09-PW3306A	Dye Penetrant
Chemical/Volume Control System	Weld BG-09-PW3305B	Dye Penetrant

During observation of the examinations, the inspectors determined if the examinations were conducted in accordance with approved procedures, properly calibrated equipment was used, expended consumables met shelf-life requirements, and the results were correctly documented in the draft examination report. Following the conduct of the examinations, the inspectors reviewed a sample of "Certificates of Qualification" to verify that the examiners conducting the examinations were certified in the appropriate technique to the appropriate level. Finally, the inspectors reviewed the final (record) examination reports to determine if any examinations indications were dispositioned in accordance with ASME code requirements and properly documented.

The inspectors then reviewed a sample of the licensee's NDE records that identified recordable indications for NDE examinations performed during the previous outage (RF-11). The following NDE records were reviewed:

System	Component/Weld Identification	Examination Method
Main Steam	Weld AB-01-S009-C	Ultrasonic
Feedwater	Weld AE-05-FW-316	Ultrasonic
SG Blowdown	Weld BM-01-FW314-R1	Ultrasonic
Main Steam	Weld AB-01 FW-346	Dye Penetrant

The inspectors compared the indications contained in the reports against the ASME Section XI Code requirements to ascertain that the licensee's program had properly characterized and documented the examination indications.

There were no observable ASME Section XI code related repair or replacement activities scheduled at the time of the inspection. Therefore, the inspectors reviewed the following work orders that implemented ASME code repair and replacement activities on Code Class 1 and 2 systems and components during previous outages.

Work Order No.	Repair or Replacement Description
94-101459-012	Replace Pipe and Valve on Steam Generator D Primary Head Bowl Drain Line--Code Class 1
98-202867-001	Replace 4-inch Pipe Spool Piece Downstream of Flow Orifice FO-4 in Steam Line to Turbine-Driven Auxiliary Feedwater Pump
99-208924-000	Repair Identified Linear Defect on Steam Line Supply to Turbine-Driven Auxiliary Feedwater Pump--Code Class 2

During the review of these records, the inspectors verified that the licensee had performed the work in accordance with the appropriate code and version. Further review was conducted to verify that the correct preservice, inservice, and any required baseline examination was completed to Section XI code specifications and other applicable codes.

b. Findings

No findings of significance were identified.

2. Steam Generator Condition Management Activities

a. Inspection Scope

The inspectors reviewed all and observed some of the elements of the licensee's processes for determining and maintaining the condition of the steam generators. These processes included:

- Eddy current inspection of steam generator tubes
- Removing steam generator tubes from service
- Secondary side inspection
- Cleaning of the secondary side
- Recovery and/or disposition of any loose parts on the secondary side
- Primary to secondary leak identification and analysis
- Control of condensate, feedwater, and steam generator chemistry

The review was conducted by the examination of the licensee's programmatic procedures, assessment of the licencee's evaluation for deviating from the Electric Power Research Institute guidance documents, review and comparison of previous outage summary reports to the analysis of data during the current outage, and validation of various data for the current steam generator degradation assessment.

The inspectors verified that the licensee had performed at least the minimum allowable eddy current tube inspection required by the Technical Specifications. Followup review was performed to validate that tubes meeting the limiting and administrative criteria were plugged using the specified methodology. The inspectors also followed up on the licensee's efforts to address preliminary examination indication that appeared to be a potential new tube degradation mechanism, but was subsequently determined to be a minor fabrication anomaly.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors performed a detailed review of a sample of Performance Improvement Requests (PIRs) initiated within the past 2 years in the area of ISI activities.

The inspectors reviewed corrective actions associated with deficiencies identified in procedures for and performance of ISI activities. Since the licensee reviewed and implemented generic communications, industry guidance, and regulatory guidance through the corrective action program, the inspectors also performed an effectiveness review of a sample of program enhancements implemented through corrective action program PIRs, in response to communications and guidance. The inspectors also reviewed corrective action associated with findings that resulted from in-house and outside organization programmatic audits.

These reviews were conducted to ascertain that the licensee's corrective action program was identifying performance issues within the ISI and the steam generator condition management programs. Further, the reviews assessed the adequacy of cause determination, corrective action, and the licensee's effort to identify and correct transportability and generic issues.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors observed licensed operator requalification training on May 30, 2002. The training covered the use of Off-Normal Procedures OFN AB-041, “Steamline or Feedline Leak,” Revision 0; and OFN EG-004, “CCW System Malfunctions,” Revision 6. The inspectors observed crew performance during simulator sessions for clarity and formality of communications, correct use of procedures, high risk operator actions, and the oversight and direction provided by the shift supervisor. The inspectors also reviewed the scenario sequences and objectives, observed the licensee’s critique, and discussed crew performance with licensee monitors for the training.

a. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors independently verified that the licensee properly implemented 10 CFR 50.65, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” for the following equipment performance issues.

- SGK05A, Class 1E electrical equipment air conditioning unit
- Containment hydrogen control system

The inspectors reviewed whether the structures, systems, or components (SSCs) were properly characterized in the scope of the maintenance rule program and whether the SSCs failure or performance problem was properly characterized. The inspectors also assessed the appropriateness of the performance criteria established for the SSCs (if applicable). The inspectors reviewed the licensee information listed in the attachment to this report and discussed the maintenance rule program with various licensee personnel.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's risk assessment for equipment outages as a result of planned and emergent maintenance in accordance with the requirements of 10 CFR 50.65(a)(4) and licensee Procedure AP 22C-003, "Operational Risk Assessment Program," Revision 7. The inspectors evaluated the licensee's effectiveness in assessing risk for planned and emergent maintenance. The inspectors also discussed the planned and emergent work activities with planning and maintenance personnel. The inspectors reviewed the following:

- Operational risk assessments for planned maintenance for the weeks of March 25, April 8, May 6, May 13, and June 3
- Actual, planned, and emergent work schedules and any revised risk assessments for the same weeks

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors selected operability evaluations conducted by the licensee during the report period involving risk-significant systems or components to review. The inspectors evaluated the technical adequacy of the licensee's operability determinations, verified that appropriate compensatory measures were implemented, and verified that the licensee considered all other pre-existing conditions, as applicable. Additionally, the inspectors evaluated the adequacy of the licensee's problem identification and resolution program as it applied to operability evaluations. Specific operability evaluations reviewed are listed below.

- Electrical cable separation issue involving the possible opening of valves in the refueling water storage tank and residual heat removal (RHR) systems
- Emergency Diesel Generators A and B
- Reduced voltage on vital electrical Busses A and B

The inspectors also reviewed applicable portions of the Updated Safety Analysis Report, Technical Specifications, system drawings, and discussed the operability evaluations with licensee personnel.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed or observed the postmaintenance testing on the following equipment to verify that procedures and test activities were adequate to verify system operability:

- Component cooling water service loop isolation valves
- Emergency Diesel Generator A - two maintenance outages
- Emergency Diesel Generator B
- Essential service water Pump A
- Main steam isolation valves

In each case, the associated work orders and test procedures were reviewed to determine the scope of the maintenance activity and determine if the test adequately tested components affected by the maintenance. The Updated Final Safety Analysis Report, design basis documents, and selected calculations were also reviewed to determine the adequacy of the acceptance criteria listed in the test procedures.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

A. Refueling Outage XII

1. Control of Outage Activities

a. Inspection Scope

The inspectors reviewed plant conditions and observed selected refueling outage activities to verify that the licensee maintained the plant in a configuration consistent with the requirements of Technical Specifications and with the assumptions of the outage risk assessment. The inspectors verified that emergent issues were properly assessed for their impact on plant risk.

Electrical power availability was periodically verified to meet Technical Specification requirements and outage risk assessment recommendations. Control room operators were observed and interviewed on the status of plant conditions. The inspectors also reviewed equipment clearance (tag-out) activities, reactor coolant system (RCS) instrumentation, decay heat removal parameters, spent fuel pool cooling system

operation, RCS inventory control, reactivity management, and containment closure requirements.

b. Findings

No findings of significance were identified.

2. Reduced Inventory and Midloop Conditions (02.04)

a. Inspection Scope

The inspectors observed licensee performance during midloop activities. The inspectors verified that multiple sources of electrical power, multiple reactor vessel level indications, and multiple RCS temperature indications were available. Premidloop shutdown risk assessment group meetings were observed to assess the adequacy of the licensee's control of work activities to avoid negative impact on the safe conduct of midloop activities. The inspectors observed licensee compliance with the following procedures:

- GEN 00-008, "Reduced Inventory Operations," Revision 11
- SYS BB-112, "Vacuum Fill of the RCS," Revision 17

b. Findings

No findings of significance were identified.

3. Refueling Activities (02.05)

a. Inspection Scope

The inspectors observed portions of core offload and core reload activities to determine if these activities were conducted in accordance with the Technical Specifications and administrative procedures.

b. Findings

No findings of significance were identified.

4. Monitoring of Heatup and Startup Activities (02.06)

a. Inspection Scope

The inspectors observed control room operations and reviewed control room logs to verify that operational mode changes, heatup, and startup were conducted in compliance with Technical Specifications and administrative procedures and requirements. The inspectors also performed a detailed containment walkdown to assess containment cleanliness and material condition of components at the end of the outage. The following procedures were reviewed:

- GEN 00-002, “Cold Shutdown to Hot Standby,” Revision 50
- GEN 00-003, “Hot Standby to Minimum Load,” Revision 54

b. Findings

No findings of significance were identified.

5. Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors screened all PIRs that documented problems identified during the outage to assess the threshold for problem reporting, and the effectiveness of significance screening, mode restraint screening, operability assessment, and impact to shutdown risk.

b. Findings

No findings of significance were identified.

B. Unplanned Outage

a. Inspection Scope

The inspectors observed control room operations during shutdown, startup, and drain down to midloop during the May 13 through May 19, 2002, unplanned outage. The licensee shutdown the plant due to a loose parts monitor alarm for Steam Generator D. The inspectors reviewed the licensee’s risk assessment and foreign material exclusion controls. The inspectors walked down the reactor coolant vessel temporary level instrumentation. The inspectors also performed a containment closeout inspection prior to plant startup.

b. Findings

The inspectors noted that control room personnel failed to follow procedure while drawing a vacuum on the RCS. Although Item 4.6 of Operations Procedure SYS BB-112, “Vacuum Fill of the RCS,” Revision 17, stated that RHR pump flow rate during vacuum venting shall be less than 2000 gallons per minute to prevent RHR pump cavitation, operators allowed RHR flow rate to exceed 2000 gallons per minute. A noncited violation was identified for failure to follow procedure.

On May 16, 2002, while using Procedure SYS BB-112 to establish conditions for the vacuum fill and vent of the RCS, the control room staff observed flow perturbations in the RHR system. With the RHR Train A in service at approximately 2200 gallons per minute flow, RCS temperature at 135^{o}F, vacuum at 23.5 inches absolute, and RCS loop level at approximately 17 inches, RHR Pump A began to experience flow perturbations. The operator reduced RHR flow rate to attempt to restore normal flow. The lower flow rate resulted in an increase in RCS temperature and the operators responded by

decreasing the RHR heat exchanger bypass flow in order to provide more flow through the RHR heat exchanger and limit the RCS temperature increase. The RHR flow perturbations initially decreased but RCS temperature began to increase. As RCS temp approached 140°F, RHR flow perturbations resumed. The RCS temperature reached 140°F before beginning to decrease. The temperature increase was likely due to the delay in transit times from RHR flow adjustment until the effect was seen in the RCS. In accordance with Procedure SYS-BB112, the control room staff aligned the suction of centrifugal charging Pump A to the reactor water storage tank and began increasing RCS loop level. As loop level increased, the RHR system flow perturbations stopped.

This issue was considered to be more than minor because it affected the operability, availability, reliability, and function of a train of accident mitigation equipment and represented a potential loss of shutdown cooling. The assessment of the significance of the finding by use of Inspection Manual Chapter 609, Appendix G, "Shutdown Operations Significance Determination Process," could not be completed since plant conditions at the time of the RHR flow perturbations did not correspond to any of the plant operational state checklists provided within Appendix G. The finding was forwarded to an Office of Nuclear Reactor Regulation Risk Analyst for assessment. The risk analyst determined that the finding was of very low safety significance (Green) because all other emergency core cooling components were available and reflux cooling of the RCS was also available as inventory remained in the secondary side of the steam generators.

Failure to follow Procedure SYS BB-112 was identified as a violation of Technical Specification 5.4.1, for a Regulatory Guide 1.33 referenced procedure. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy and is in the licensee's corrective action program as Performance Improvement Request 2002-1247 (50-482/02-01).

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed or observed all or part of the following surveillance activities to verify that risk significant structures, systems, and components are capable of performing their intended safety functions and assessing their operational readiness:

- STS AL-101, "MDAFW Pump A Inservice Pump Test," Revision 29
- STS AL-102, "MDAFW Pump B Inservice Pump Test," Revision 27
- STS AL-210B, "MDAFW Pump B Inservice Check Valve Test," Revision 2
- STS BG-005B, "Boric Acid Transfer System Inservice Pump B Test," Revision 15
- STS EJ-100A, "RHR System Inservice Pump A Test," Revision 23

- STS IC-500E, “Channel Calibration DT/TAVG Instrumentation Loop 2,” Revision 14
- STS KJ-001A, “Integrated D/G and Safeguards Actuation Test - Train A,” Revision 26
- STS KJ-005B, “Manual/Auto Start, Synchronization & Loading Of Emergency D/G NE02,” Revision 39

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following temporary modifications to ensure they did not affect the safety function of the startup transformer or the essential service water pumps:

- Startup transformer fire suppression system temporary modification restoration
- Essential service water pump house temporary scaffolding resolution

The startup transformer was the normal power supply to vital electrical Bus B. The inspectors reviewed the 10 CFR 50.59 screening, the Updated Safety Analysis Report, and discussed the temporary modification with licensee personnel

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed and reviewed emergency drill activities in the simulator control room, the technical support center, and the emergency offsite facility in accordance with inspection Attachment 71114.06. The inspectors also attended a drill critique in the technical support center. The inspectors reviewed associated documents and information and discussed the drill activities with various licensee personnel.

b. Findings

No findings of significance were identified.

2 RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection personnel involved in high dose rate and high exposure jobs during Refueling Outage 12 operations to collect information about the licensee's exposure controls. The inspectors also conducted plant walkdowns within the radiological controlled area and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements:

- Radiation protection program procedures
- Area posting and other controls for airborne radioactivity areas, radiation areas, high radiation areas, and very high radiation areas
- Radiation work permits (RWPs) and radiological surveys involving airborne radioactivity areas, high radiation areas, and electronic dosimeter alarm setpoints
- Access controls, surveys, and RWPs for high dose work areas from Refueling Outage 12 (RWP 02-1102, "Access to Incore Instrument Tunnel," RWP 02-02201, "Incore Tunnel VHRA for Inspection," RWP 02-3220, "Eddy Current Testing of the Steam Generators," RWP 02-4200, "Secondary Side Steam Generator Activities," RWP 02-6020, "Reactor Vessel Head Lift Preparation," and RWP 02-6031, "Reactor Head Lift and Initial Cavity Wash Down")
- Dosimetry placement when work involved a significant dose gradient
- Locked high radiation area key control program
- Summary of problem identification reports written since October 1, 2000, related to access controls and high radiation area incidents (PIR 2002-0691 and -0693)
- RWP briefing for secondary side steam generator work (RWP 02-4200)
- Conduct of work with the potential for high radiation dose (reactor vessel head movement)
- Controls involved with the storage of highly radioactive items in the spent fuel pool

- Audits and surveillances (QE Audit K-547, QE Audit K-559, and Plant Evaluation Report OB 02-1046, “Pre-Outage Radiological Field Controls”)

b. Findings

No findings of significance were identified.

4OA1 Performance Indicator Verification (71151)

1. Resident Inspection

a. Inspection Scope

The inspectors performed a review of the following performance indicator data. The inspectors reviewed the licensee’s data submittal using NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” Revision 2. The inspectors reviewed various licensee performance indicator input information and observed data collection in one instance to determine the accuracy and completeness of the performance indicator:

- Safety system unavailability - auxiliary feedwater system, April 2000 through March 2002

- Safety system unavailability - RHR system, April 2000 through March 2002

The inspectors also discussed performance indicator information with various licensee personnel.

b. Findings

No findings of significance were identified.

2. Access Control to Radiologically Significant Areas Inspection

a. Inspection Scope

.1 The inspectors reviewed corrective action program records involving locked high radiation areas (as defined in Technical Specification 5.7.2), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned exposure occurrences (as defined in NEI 99-02) for the past 12 months to confirm that these occurrences were properly recorded as performance indicators. Radiological controlled area entries with exposures greater than 100 millirems within the past 12 months were reviewed, and selected examples were examined to determine whether they were within the dose projections of the governing RWPs. Whole body counts or dose estimates were reviewed if the radiation worker received a committed effective dose equivalent of more than 100 millirems.

b. Findings

No findings of significance were identified.

.2 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed radiological effluent release program corrective action records, licensee event reports, and annual effluent release reports documented during the past 4 quarters to determine if any doses resulting from effluent releases exceeded the performance indicator thresholds (as defined in NEI 99-02).

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

1. Reactor Trip

a. Inspection Scope

The inspectors reviewed the licensee's response to the May 8, 2002, reactor trip on low steam generator level when a feedwater regulating valve closed due to a failed circuit card. The inspectors examined the post-trip review package, discussed the trip with control room personnel, and attended outage meetings.

b. Findings

No findings of significance were identified.

2. (Closed) Licensee Event Report 50-482/2002-002-00: Mode change with RCS unidentified leakage greater than Technical Specification 3.4.13. On April 24, 2002, while in Mode 4, a calculation (rounding) error resulted in the licensee determining that RCS unidentified leakage was within the Technical Specification limit of 1.0 gallon per minute. The unidentified leakage was actually 1.091 gallons per minute. Prior to identifying the error and with unidentified leakage greater than 1.0 gallon per minute, the licensee entered Mode 3 from Mode 4 contrary to the Technical Specification Limiting Conditions of Operation 3.0.4 which specifies that the plant cannot change modes when a Limiting Conditions of Operation is not met. On April 24, when the error was recognized, the licensee entered the appropriate conditions and required actions of Technical Specification 3.4.13, and the source of the leakage was identified and corrected. On April 26, the unidentified leakage rate was 0.31 gallons per minute. An in-office review determined that the issue was not safety significant. The licensee documented this issue in PIR 2001-1086.

4OA5 Other

1. Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles (Temporary Instruction 2515/145)

a. Inspection Scope

The inspectors observed and reviewed the licensee's inspection of the reactor vessel head in response to NRC Bulletins 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles" and 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity." The inspectors efforts included the following:

- Verifying that the visual examinations were performed by certified personnel
- Verifying that the examinations were performed in accordance with approved and adequate procedures
- Verifying the examinations were able to identify, disposition, and resolve any deficiencies
- Verifying the examinations were capable of identifying the corrosion phenomena described in Bulletin 2001-01
- Observing the condition of the reactor vessel head
- Verifying that small boron deposits could be identified and characterized
- Verifying whether any material deficiences were identifed that required repair
- Observing whether any significant items impeded the examinations and/or if as low as reasonably achievable issues were encountered

The inspectors reviewed the following documentation:

- Certifications for the quality department personnel performing the visual examination of the reactor vessel head
- NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles"
- NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"
- QCP-30-103, "Qualification and Certification of Examination Personnel," Revision 4

- WCNOC Letter ET 02-0018, “Response to NRC Bulletin 2002-01, “Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity”

- Work Order 02-234623-000, “Reactor Vessel Head Visual Examination”

The inspectors also observed portions of the examination and reviewed portions of the videotape generated during the examination.

The examinations were performed by qualified personnel in accordance with an approved and adequate procedure. The examination did not identify any primary leakage through the vessel head penetrations or indications of head degradation. The robot and video probe cameras used for the examinations were capable of identifying the phenomena described in NRC Bulletin 2001-01.

The vessel head did not have an appreciable accumulation of born residue. There were small loose “snowballs” of boric acid crystals and small areas of boric acid glaze in various locations. This was the result of a small leak on the reactor vessel head vent and canopy seals. These leaks were repaired during the refueling outage. The licensee did not identify any materiel deficiences that required repair. There were no items that impeded the examination. The licensee stated that 100 percent of the vessel head was inspected.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting Summary

The inspectors presented the resident inspector inspection results to Ms. D. Jacobs, Plant Manager, and other members of licensee management after the conclusion of the inspection on July 10, 2002.

The resident inspectors were given proprietary information during the report period. All proprietary information was returned to the licensee prior to the inspection report exit meeting. No proprietary information is included in this report.

The inspectors presented the ISI activities inspection results to Mr. O. L. Maynard, President and Chief Executive Officer, and other members of licensee management at the conclusion of the inspection on April 18, 2002.

The inspectors informed licensee management that proprietary information (RF12 Steam Generator Degradation Assessment) had been reviewed during the course of the inspection, and this information was still in the inspectors’ possession. The inspectors committed to shred this documentation following a discussion of its contents with personnel in the Office of Nuclear Reactor Regulation. The inspectors

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

The inspectors presented the access control to radiologically significant areas inspection results to Mr. B. McKinney, Vice President, Operations, and other members of licensee management at the conclusion of the inspection on March 29, 2002. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

K. A. Harris, Manager, Regulatory Affairs
M. W. Hicks, Manager, Operations
D. Jacobs, Plant Manager
J. W. Johnson, Manager, Resource Protection
O. L. Maynard, President and Chief Executive Officer
B. T. McKinney, Vice President Operations
R. Muench, Vice President Technical Services

ITEMS OPENED AND CLOSED

Opened

050-482/2002-01	NCV	Failed to follow procedure while drawing a vacuum on the RCS (Section 1R20)

Closed

50-482/2002-002-00	LER	Mode change with RCS unidentified leakage greater than Technical Specification 3.4.13 (Section 4OA3)
050-482/2002-01	NCV	Failed to follow procedure while drawing a vacuum on the RCS (Section 1R20)

LIST OF DOCUMENTS REVIEWED

Equipment Alignment

CKL AL-120, “Auxiliary Feedwater Normal Lineup,” Revision 30

- CKL GK-121, “Control Building HVAC Valve Checklist,” Revision 14
- CKL GK-131, “Control Building HVAC Electrical Checklist,” Revision 18
- CKL KJ-121, “Diesel Generator NE01 and NE02 Valve Checklist,” Revision 22
- M-12AL01, “Piping and Instrumentation Diagram, Auxiliary Feedwater System,” Revision 9

- Open auxiliary feedwater work orders as of May 1, 2002

- Performance Improvement Requests 2001-2384, 2001-2388, and 2002-0325

Fire Protection

- FPP C-9, “Control Building 2000 Foot NB01 Switchgear Room,” Revision 6
- FPP C-10, “Control Building 2000 Foot NB02 Switchgear Room,” Revision 7
- FPP C-27, “Control Building 2047 Foot Control Room Area,” Revision 4
- Updated Safety Analysis Report fire hazards analysis

Inservice Testing Inspection

Nondestructive Examination Reports

RF11-PT-005	RF11-UT-012	RF12-UT-001	RF12-UT-017
RF11-UT-001	RF11-UT-015	RF12-PT-002	RF12-UT-018
RF11-UT-002	RF11-UT-022	RF12-PT-003	RF12-UT-021
RF11-UT-004	RF11-UT-040	RF12-UT-008	RF12-UT-022
RF11-UT-006	RF11-UT-046	RF12-UT-015	
RF11-UT-007	RF11-UT-047		

Performance Improvement Requests

1999-1110	2000-2183	2001-0158	2001-3050
2000-1681	2000-2899	2001-1858	2002-0208
2000-2180	2000-3001	2001-3018	
2000-2181	2000-3609		

Engineering Reports

- ET 00-0006, Refueling Outage 10 steam generator tube inspection report, dated February 15, 2000

- ET 01-0029, Refueling Outage 11 steam generator tube inspection report, dated October 10, 2001

Procedures:

- AP 02B–001, “Secondary Chemistry Control,” Revision 6

- AP 29A-003, “Steam Generator Management,” Revision 6

- I-ENG–023, “Steam Generator Data Analysis Guidelines,” Revision 3

- ISI-PDI-UT-2, “Ultrasonic examination of austinetic piping welds with PDI-UT-4,” Revision 4

- SAP-ISI-11, “Liquid penetrant examination utilizing the solvent removable technique,” Revision 0
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- STN CH-020, “Primary to secondary leak detection,” Revision 10
- STS PE-022, “Steam generator tub inspection,” Revision 14
- WCRE-10, “Wolf Creek Generating Station ISI program plan, Interval 2,” Revision 3

Drawings

- M-189-50-BG-04-09, “Chemical and volume control RCP seal water injection piping,” Revision 0
- M-189-50-EJ-01-04, “A Train RHR pump section,” Revision 0

Miscellaneous

DOCUMENT	DESCRIPTION	REVISION
ET 02-0003	Inservice inspection program relief request	02/12/02
ET 02-0004	Inservice inspection program relief request	02/12/02
ET 95-0057	Licensee response to Generic Letter 95-03	06/23/95
WM 96-0001	Licensee response to RAI for Generic Letter 95-03	01/9/96
ET 98-0019	Licensee response to Generic Letter 97-05	03/16/98
ET 98-0022	Licensee response to Generic Letter 97-06	03/27/98
SG-01-10-002	SG degradation assessment for Wolf Creek, RF12 refueling outage, March 2002	03/15/02
Exceptions 1-8	Steam generator management program industry guideline exception technical justification detail sheets	
	Three contractor personnel NDE certification documentation packages	

<u>Maintenance Rule Documents</u>

- Functional failure evaluations for GK-01, control building heating, ventilation, and air conditioning system
- Functional failure evaluations for GS-02, containment hydrogen control system
- Maintenance rule bases information for GK-01, control building heating, ventilation, and air conditioning system

- Maintenance rule bases information for GS-02, containment hydrogen control system
- Maintenance rule (A1) disposition checklist and document summary for GS-02, containment hydrogen control system
- Maintenance rule expert panel meeting minutes for GK-01, control building heating, ventilation, and air conditioning system
- Maintenance rule expert panel meeting minutes for GS-02, containment hydrogen control system
- Maintenance rule performance evaluation for GK-01, control building heating, ventilation, and air conditioning system
- Maintenance rule performance evaluation for GS-02, containment hydrogen control system
- Performance Improvement Requests 2001-1271 and -2790, 2002-0027 and -0073
- Work Orders 02-234658-000 and 02-235176-000

Operability Evaluations

- Loss of coolant accident load analysis, L-4, calculation sheets 44 through 52
- Performance Improvement Requests 2000-0832 and 2002-1339
- Safety Classification Analysis SCA-92-0711, Revision 00

Performance Indicator Verification

- Licensee performance indicator worksheets
- Performance indicator summary reports
- Selected NRC inspection reports
- Selected control room operator logs

Postmaintenance Testing

- SYS KJ-123, “Post Maintenance Run of Emergency Diesel Generator A,” Revision 16
- SYS KJ-124, “Post Maintenance Run of Emergency Diesel Generator B,” Revision 13
- STS KJ-015B, “Manual/Auto Fast Start, Sync & Loading of EDG NE02,” Revision 14
- TMP 02-001, “PMT to Verify Integrity of Base (Manual) & Electronic (Auto) Adjuster Card & Relay Replacement Following Mod Per CCP 09263 for “B” D/G,” Revision 0
- Work Order 00-222645-007, -009, “CCW Return From Nuclear Auxiliary Components to Train B CCW - Valve EGHV0016"

- Work Order 00-222646-007, -009, -010, “A Train CCW Supply to Nuclear Auxiliary Components - Valve EGHV0053"

- Work Order 00-222647-007, -008, -009, “CCW Return From Nuclear Auxilairy Components to Train A CCW - Valve EGHV0015"

- Work Order 00-222648-007, -009, -010, “B Train CCW Supply to Nuclear Auxilairy Components - Valve EGHV0054"

Refueling Outage

- GEN 00-002, “Cold Shutdown to Hot Standby,” Revision 50
- GEN 00-003, “Hot Standby to Minimum Load,” Revision 54
- GEN 00-004, “Power Operation,” Revision 43
- GEN 00-005, “Minimum Load to Hot Standby,” Revision 45
- GEN 00-006, “Hot Standby to Cold Shutdown,” Revision 50
- GEN 00-008, “Reduced Inventory Operations,” Revision 11
- GEN 00-009, “Refueling,” Revision 6

Temporary Modification

- AP 14A-003, “Scaffolding Construction and Use,” Revision 10

- Temporary Modification Order 01-004-KC for startup transformer fire protection

- Temporary Modification Order 01-010-ZE for essential service water pump house scaffolding

- Work Order 99-212085-000 and Surveillance Procedure STN IC-307, “Heat Trip Device Operational Test for Bechtel Zone 012/Simplex Zone 1-2Z10,” Revision 7

- Work Order 01-227637-001, Troubleshoot Zone 12 detector string at start-up transformer to isolate detector loop ground and restore to normal operation