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

July 25, 2003

Clay C. Warren, Vice President of
Nuclear Energy
Nebraska Public Power District
P.O. Box 98
Brownville, Nebraska 68321

SUBJECT: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000298/2003005

Dear Mr. Warren:

On June 28, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings which were discussed on July 10, 2003, with Mr. Tom Palmisano, Site Vice President, and other members of your staff.

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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC identified seven findings that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC also determined that there were violations associated with each of these findings. These violations are being treated as noncited violations (NCVs), consistent with Section VI.A of the Enforcement Policy. These NCVs are described in the subject inspection report. Additionally, licensee-identified violations which were determined to be of very low safety significance are listed in this report. If you contest the violation or significance of these NCVs, 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 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Cooper Nuclear Station facility.

Since the terrorist attacks on September 11, 2001, NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect licensee implementation of the interim compensatory measures required by

order. Phase 1 of TI 2515/148 was completed at all commercial power nuclear power plants during Calender Year 2002 and the remaining inspection activities for Cooper Nuclear Station have been completed. The NRC will continue to monitor overall safeguards and security controls at Cooper Nuclear Station.

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/

Kriss M. Kennedy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

Enclosure:
Inspection Report 05000298/2003005
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-298
License:	DPR 46
Report:	05000298/2003005
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownville, Nebraska
Dates:	March 30 through June 28, 2003
Inspectors:	S. Schwind, Senior Resident Inspector S. Cochrum, Resident Inspector P. Elkmann, Emergency Preparedness Inspector G. Pick, Senior Physical Security Inspector
Approved By:	K. Kennedy, Chief, Project Branch C, Division of Reactor Projects

Enclosure

CONTENTS

SUMMARY OF FINDINGS

IR 05000298/2003005; 03/30/03 - 06/28/03; Cooper Nuclear Station: Adverse Weather, Maintenance Rule implementation, Refueling and Outage Activities, Surveillance Testing, Identification and Resolution of Problems.

The report covered a 3-month period of inspection by resident inspectors and announced inspections by a regional emergency preparedness inspector and a physical security inspector. Three Green noncited violations, with multiple examples, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process." 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. Two examples of a noncited violation of Technical Specification 5.4.1 were identified associated with the failure to establish an adequate procedure. The two examples included the following:

  -- The failure to establish an adequate procedure for operation of the service water system with the discharge strainers bypassed was a noncited violation of Technical Specification 5.4.1. The operating procedure did not address the modes of operation for service water during strainer bypass which contributed to degraded gland water flow to Service Water Pump B in January 2003.

  This finding was more than minor since it affected the cornerstone attribute of equipment performance and reliability and was of very low safety significance because there was no loss of safety function of the service water system (Section 1R01).

  -- The failure to establish an adequate procedure for service water pump maintenance was a noncited violation of Technical Specification 5.4.1. The existing maintenance procedure did not have an adequate acceptance criterion for the replacement of corroded enveloping tube sections, which led to the failure of a tube section in Service Water Pump D in December 2002.

  This finding was more than minor since, if left uncorrected, it could have led to premature bearing degradation and affected long-term reliability of the pump. The finding was of very low safety significance since it did not represent an actual loss of the safety function (Section 1R12.2).

Cornerstone: Mitigating Systems/Barrier Integrity

- Green. Three examples of a noncited violation of Technical Specification 5.4.1 were identified associated with the failure to implement station procedures. The three examples included the following:

  -- The failure to implement the procedure for core alterations was a noncited violation of Technical Specification 5.4.1. While performing core alterations, refueling personnel incorrectly marked a procedure step as complete. This was revealed during the next step when they discovered a fuel assembly in the core location which should have been removed by the previous step.

     This finding was more than minor since it affected the cornerstone attribute of design control (Core Reload Analysis) and was of very low safety significance since it did not represent an actual degradation of any fission product barriers. This finding also had crosscutting aspects associated with human performance since inadequate use of self-checking and place-keeping techniques were contributing causes (Section 1R20.3).

  -- The failure to implement the procedure to maintain foreign material exclusion inside the torus was a noncited violation of Technical Specification 5.4.1. During a walkdown of the torus, the inspectors discovered foreign material in the suppression pool for which there was no accounting by the licensee's foreign material control log. The licensee concluded there was a loss of foreign material control in the suppression pool based on the inspectors' observations and inadequate documentation in the foreign material exclusion control point log.

     This finding was considered more than minor since it affected the cornerstone attribute of equipment performance and reliability and was of very low safety significance since it did not represent an actual loss of the safety function of the suppression pool. This finding also had crosscutting aspects associated with problem identification and resolution (Section 1R20.4).

  -- The failure to implement a surveillance test procedure was a noncited violation of Technical Specification 5.4.1. During the performance of a core spray logic relay test, personnel manually actuated the incorrect relays, which caused an inadvertent start of both core spray pumps and Emergency Diesel Generator 2.

     This finding was more than minor since it affected a shutdown equipment lineup, which is a cornerstone attribute, and was of very low safety significance since the plant was in cold shutdown so it did not significantly degrade the licensee's ability to recover shutdown cooling if it were lost. This finding had crosscutting aspects associated with human performance since the failure to use human error prevention tools such as self-checking and peer-checking was a contributing cause to the event (Section 1R22).

- Green. Two examples of a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, were identified associated with the failure to correct a significant condition adverse to quality. The two examples included the following:

  -- The failure to implement corrective actions to prevent dropping items in the spent fuel storage pool was a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI. During preparations for the refueling outage, the licensee dropped a control rod blade in the pool. This was similar to an event in 1999 when a shroud head bolt was dropped in the pool. The root causes of these two events were similar; however, the corrective actions for the 1999 event failed to preclude the most recent event.

     This finding was more than minor since dropping a control rod blade in the spent fuel pool could be viewed as a precursor to a significant event and was of very low safety significance since it did not represent an actual degradation of any fission product barriers. This finding also had crosscutting aspects associated with problem identification and resolution (Section 1R20.2).

  -- The failure to correct a significant condition adverse to quality on the service water system was a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI. The Loop B service water pump discharge strainer was bypassed in January 2003, which introduced debris into the gland water lines for Pumps B and D. The lines were flushed; however, not all the debris was removed. Service Water Pump B was declared inoperable in March 2003 due to degraded gland water flow caused by an additional piece of debris which was most likely introduced into the system in January.

     This finding was more than minor since it affected the availability and reliability of the service water system and was of very low safety significance since it did not result in the loss of a safety function of a single train of equipment for greater than the Technical Specification allowed outage time and did not screen as risk significant due to an external event. This finding also had crosscutting aspects associated with problem identification and resolution since corrective actions taken in January 2003 for blocked gland water lines were not thorough, as evidenced by the condition repeating itself in March 2003 (Section 4OA2).

B. Licensee-Identified Violation

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

REPORT DETAILS

The plant began the inspection period shut down for a scheduled refueling outage. On April 15, 2003, the reactor was restarted and, on April 25, 100 percent reactor power was achieved. On April 26, reactor power was reduced to approximately 63 percent reactor power due to lowering main condenser vacuum, resulting from the loss of a loop seal in the radioactive waste system. Full power operation was resumed on April 28. On May 4, the reactor was reduced to approximately 74 percent reactor power due to lowering main condenser vacuum resulting from the loss of a loop seal in the radioactive waste system. Full power operation was resumed on May 5. On May 26 the reactor was manually scrammed due to high main turbine vibration and remained shut down through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed the licensee's response to high amounts of sediment and debris in the Missouri River during low river levels in January 2003, which resulted in numerous service water (SW) strainer differential pressure alarms and necessitated emergent maintenance on both divisions of SW strainers, emergent cleaning of the circulating water intake bays, and closure of the weir wall gate. The inspectors observed the maintenance on the SW strainers to ascertain the size and composition of the debris that may have been introduced into the system. The inspectors also observed emergent maintenance on the SW pump gland water supply to determine if the SW system was affected by the debris accumulation. The inspectors reviewed the design basis of the SW system, abnormal and emergency response procedures, and operations standing orders issued to determine if the licensee's procedures were adequate to prevent debris intrusion.

b. Findings

Introduction. The failure to develop and implement procedures to prevent debris clogging of the SW pump gland water supply system was considered to a self-revealing, Green, noncited violation.

Description. On January 4, the plant experienced a failure of the Loop B SW discharge strainer during a period of low water and high debris conditions in the Missouri River. The strainer was subsequently bypassed to conduct emergent repairs, which was allowed by System Operating Procedure 2.2.71, "Service Water System Operating Procedure," Revision 63, for up to 10 days. After approximately 90 minutes with the Loop B SW pump discharge strainer bypassed, the control room received an SW Pump B gland seal low flow alarm, which resulted in the licensee declaring SW Pump B inoperable. Gland water supply valves were throttled open to restore SW Pump B to operable status. Over the next 28 hours, the control room operators received numerous

gland seal low flow alarms, causing the operators to adjust flow several times during this period of time. On January 5, while continuing strainer bypass, the operators received an SW Pump B gland seal low flow alarm and were unable to restore gland water flow to SW Pump B, which resulted in SW Pump B being declared inoperable for a second time. Based on river conditions and gland flow alarms, operators secured all flow in the Loop B SW pump to prevent possible blockage of the SW heat exchangers. A flush of the Loops B and D gland water piping was performed, revealing a buildup of silt, sand, and a piece of wood lodged in the gland water supply line to SW Pump D. The piece of wood found in the line was larger than the minimum particle size that the SW pump discharge strainer is designed to filter out and the gland water system design maximum particle size of 1/8 inch.

Based on the numerous gland water low flow alarms during strainer bypass operation and analysis of the piece of wood found in the gland water supply line, the inspectors questioned the operability of SW subsystems during bypass operations and whether the actions taken by the control room were appropriate to prevent debris from entering the SW pump gland water supply. In response to these questions, the licensee reviewed previous evaluations and determined that they were not operating the system in accordance with a 1994 Engineering recommendation to maintain SW flow in the loop when the strainer is bypassed. SW System Operating Procedure 2.2.71 did not address maintaining loop flow during operation with the strainer bypassed and, therefore, did not prohibit operators from securing all flow in the bypassed loop. After additional analysis, the licensee determined that the potential existed for a particle up to 3/8-inch in size to become lodged in the gland water supply line to the SW pump with a strainer in bypass during SW header no flow conditions following a loss of offsite power or loss of coolant accident.

As a result of this finding, the licensee established an operations standing order which described the required pump operating modes for strainer bypass operation. In addition, SW System Operating Procedure 2.2.71 was revised to address the pump operating modes during strainer bypass and require operators to declare the SW subsystem inoperable when the strainer is bypassed. The licensee also increased the frequency of strainer cleaning to reduce emergent cleaning during high river debris conditions.

Analysis. This finding affected the Mitigating Systems Cornerstone and was considered more than minor since it affected the cornerstone attribute of equipment performance and reliability and involved the quality of an operating procedure. Based on the results of a Significance Determination Process (SDP) Phase 1 evaluation, this finding was characterized as having very low safety significance because there was no loss of safety function of the SW system.

Enforcement. Technical Specification (TS) 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends

procedures for modes of operation for safety-related equipment. SW System Operating Procedure 2.2.71, Revision 63, did not meet this requirement in that it did not adequately address the pump modes of operation for SW during strainer bypass. The failure to establish an adequate procedure for this condition is a violation of TS 5.4.1(a). This violation is being treated as a noncited violation (50-298/0305-001) consistent with Section VI.A of the NRC Enforcement Policy. The licensee entered this issue into their corrective action program as Significant Condition Report (SCR) 2003-0010.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed three partial equipment alignment inspections. The inspections verified that the critical portions of the selected systems were correctly aligned per the system operating procedures. The following systems were included in the scope of this inspection:

- Station startup transformer while the emergency station service transformer was out of service for planned maintenance on April 28. The walkdown included portions of the system in the control room and the transformer yard.

- Emergency Diesel Generator (EDG) 1 while EDG 2 was out of service for planned maintenance on May 12. The walkdown included portions of the system in the control room and emergency diesel building.

- Residual Heat Removal (RHR) SW system Loop B while A was out of service for planned maintenance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors performed five fire zone walkdowns to verify that the licensee was maintaining those areas in accordance with its Fire Hazards Analysis Report. The fire zones were chosen based on their risk significance as described in the Individual Plant Examination of External Events. The walkdowns focused on control of combustible material and ignition sources, operability and material condition of fire detection and suppression systems, and the material condition of passive fire protection features. The following fire zones were inspected:

- Fire Zone 2C - Reactor Building Elevation 903
- Fire Zone 3C - Reactor equipment cooling heat exchanger and pump area
- Fire Zone 3D - Reactor Building Elevation 931
- Fire Zone 4D - Recirculation pump motor generator set oil pump area
- Fire Zone 20A - Service water pump room

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

External Flood Protection Features. The inspectors performed a walkdown of external flood protection features for the intake structure. This area was chosen based on its location in the plant and its risk significance. The walkdown was conducted to verify that flood protection features in this area were installed and maintained.

Internal Flood Protection. The inspectors also performed an internal flood protection inspection of the reactor water cleanup heat exchanger room due to a leak in an equipment drain line from the steam dryer pit which communicates with the refueling water cavity above the reactor vessel. The inspectors reviewed Notification 10238357 and the licensee's corrective actions regarding this leak.

Both inspections included a review of the Updated Final Safety Analysis Report, selected design criteria documents (DCDs), and design calculations including:

- Cooper Nuclear Station DCD 36, "High Energy Line Break (HELB)/Moderate Energy Line Break (MELB)," Revision 2

- Cooper Nuclear Station DCD 38, "Internal Flooding System," Revision 2

- Calculation NEDC 91-37, "High Energy Line Break Flooding Evaluation"

- Calculation NEDC 91-069, "Moderate Energy Line Break Flooding Calcs"

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed two sessions of licensed operator requalification training in the plant simulator on April 29 and May 2. The training on April 29 evaluated the operators' ability to recognize, diagnose, and respond to a loss of all condensate booster pumps and failure of high pressure make-up systems. The May 2 training evaluated the operators' ability to recognize, diagnose, and respond to a loss-of-coolant accident and a failure in the reactor protection system. Observations were focused on the following key attributes of operator performance:

- Crew performance in terms of clarity and formality of communication
- Ability to take timely, appropriate actions
- Prioritizing, interpreting, and verifying alarms
- Correct implementation of procedures, including the alarm response procedures
- Timely control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by the shift supervisor, including ability to identify and implement appropriate Technical Specifications requirements, reporting, emergency plan actions, and notifications
- Group dynamics involved in crew performance

The inspectors also verified that the simulator response to the training scenario closely modeled expected plant response during an actual event.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed two equipment performance issues to assess the licensee's implementation of their maintenance rule program. The inspectors verified that components that experienced performance problems were properly included in the scope of the licensee's maintenance rule program, and the appropriate performance

criteria were established. Maintenance rule implementation was determined to be adequate if it met the requirements outlined in 10 CFR 50.65 and Administrative Procedure 0.27, "Maintenance Rule Program," Revision 15. The inspectors reviewed the following equipment performance problems:

- Damage to the Reactor Building Door X100 threshold on January 8, 2003 (Notification 10218678)

- Steam tunnel fan cooler unit failures on December 31, 2002, and January 18, 2003 (Notifications 10217152 and 10220868)

b. Findings

No findings of significance were identified.

.2 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the effectiveness of maintenance on the SW pumps following a failure of the enveloping tube on SW Pump D on December 28, 2002. The review included the licensee's root cause analysis, the work history and maintenance procedures for rebuilding service water pumps, and the licensee's Maintenance Rule Evaluation for this failure.

b. Findings

Introduction. The failure to establish an adequate procedure for rebuilding SW pumps was a second example of a Green noncited violation.

Description. On December 28, 2002, a station operator noticed excessive packing leakage from SW Pump D. Maintenance was notified and additional packing was added to the stuffing box in order to correct the excessive leakage. Once the maintenance was completed and the pump returned to service, operations and maintenance personnel noted that the stuffing box had traveled up the pump shaft. The pump was secured and declared inoperable, and troubleshooting commenced to determine the cause of this condition.

The SW pumps at Cooper Nuclear Station are deep draft pumps with a pump shaft approximately 40-feet long. The shaft is enclosed in an enveloping tube which houses the shaft bearings and directs gland water flow down and around the shaft to cool and lubricate the bearings. The enveloping tube consists of eight sections of 4-inch carbon steel pipe, which are joined by threaded connections at the bearing locations to form one long tube. This entire assembly is enclosed in the pump column, which directs the pump flow to the discharge piping. Upon disassembly of SW Pump D,

the licensee discovered that a section of the enveloping tubing had failed at the threaded connection to one of the bearings. A metallurgical analysis of the failed section indicated that the failure was due to general corrosion and crevice corrosion of the carbon steel which eventually rendered the tube too weak to withstand the sheer stresses placed on it. This corrosion likely occurred over an extended period of time.

A review of the maintenance history for SW Pump D indicated that it had been rebuilt in December 2001, due to a sheared pump shaft. None of the enveloping tubes were replaced at that time. This pump had also been rebuilt in 1995, 1997, 1999, and 2000; however, maintenance records were unclear as to how many, if any, of the enveloping tube sections were replaced. Therefore, the service life of the failed tube section was indeterminate. Maintenance Procedure 7.2.1, "Service Water Pump Column Maintenance and Bowl Assembly Replacement," Revision 20, required an inspection of the enveloping tube sections prior to re-installation; however, the acceptance criterion for this inspection was subjective. There was also no preventive maintenance activity to replace the enveloping tubes on a routine frequency. This led to tube sections being in service for extended periods of time which contributed to the failure of the tube section on December 28. Following this failure, the licensee rebuilt all four SW pumps and replaced the enveloping tubes. The inspectors observed the condition of these tubes and noted varying degrees of corrosion but no failed tubes.

Analysis. This finding affected the Mitigation Systems Cornerstone. The licensee was able to conclude, with input from the pump vendor, that short-term operability of the pump was unaffected by this failure and the pump could have satisfied its safety function. However, if left uncorrected, this condition could have led to premature bearing degradation and affected long-term reliability of the pump; therefore this finding was considered more than minor. Based on the results of a Significance Determination Process (SDP) Phase 1 evaluation, this finding was determined to have very low safety significance since it did not involve an actual loss of safety function.

Enforcement. TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for performing maintenance. Maintenance Procedure 7.2.1, "Service Water Pump Column Maintenance and Bowl Assembly Replacement," Revision 20, did not meet this requirement in that it did not specify adequate replacement criterion for SW pump enveloping tube sections. The failure to establish a procedure for this activity is a second example of the TS 5.4.1(a) violation (50-298/0305-001) described in Section 1R01 of this report. The licensee entered this issue into their corrective action program as SCR 2002-2655.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed five risk assessments for planned or emergent maintenance activities to determine if the licensee met the requirements of 10 CFR 50.65(a)(4) for assessing and managing any increase in risk resulting from these activities. Evaluations for the following maintenance activities were included in the scope of this inspection:

- EDG 2 outage for planned maintenance on February 24
- Emergency station service transformer outage for planned maintenance on April 28
- EDG 1 outage for planned maintenance on May 19
- SW Pump C outage for emergent maintenance during week of May 19
- Online risk assessment for the week of May 26

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Evolutions

.1 Lowering Main Condenser Vacuum

a. Inspection Scope

The inspectors responded to the control room on April 26 after a report of lowering main condenser vacuum. The immediate cause was determined to be the loss of a loop seal in the radioactive waste system. Operators responded to the transient by lowering reactor power to approximately 63 percent and isolating the loop seal from the main condenser. The inspectors verified that the licensee was operating the plant within the limits specified in the TS, the appropriate abnormal operating procedures were being implemented, and the actions taken to stabilize the plant were prompt and appropriate.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed four operability determinations regarding mitigating system capabilities to ensure that the licensee properly justified operability and that the components or systems remained available so that no unrecognized increase in risk occurred. These reviews considered the technical adequacy of the licensee's evaluation

and verified that the licensee considered other degraded conditions and their impact on compensatory measures for the condition being evaluated. The inspectors referenced the Updated Final Safety Analysis Report, TS, and the associated system design criteria documents to determine if operability was justified. The inspectors reviewed the following equipment conditions and associated operability evaluations:

- Degraded gland water flow to SW Pump B on March 13 (Notification 10232607)
- EDG 1 governor repair on April 1 (Work Order 4270108)
- Safety relief valve leakage on April 19 (Notification 10242618)
- Reactor core isolation cooling system high steam flow isolation switch calibration on April 27 (Notification 10243908)

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

Cumulative Affects. The inspectors reviewed six operator workaround items to evaluate their individual and cumulative affects on mitigating systems and the operator's ability to implement abnormal or emergency procedures. In addition, open operability determinations and selected condition reports were reviewed and operators were interviewed to determine if there were additional degraded or nonconforming conditions that could complicate the operation of plant equipment.

Individual Affects. The inspectors reviewed an equipment performance deficiency associated with the Battery Room A heating, ventilation, and air conditioning system to determine if it would pose a challenge to operators while implementing abnormal or emergency procedures. During periods of cold weather with the auxiliary steam system secured, the licensee is required to stage portable heaters adjacent to the battery room to meet the minimum temperature requirements for operability of the battery. The inspectors considered it appropriate to exclude this item from the operator workaround list if the battery would still perform as designed and existing procedures and operator training were adequate for operators to cope with this equipment deficiency while implementing abnormal or emergency procedures.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing

a. Inspection Scope

The inspectors reviewed or observed four selected postmaintenance tests to verify that the procedures adequately tested the safety function(s) that were affected by maintenance activities on the associated systems. The inspectors also verified that the acceptance criteria were consistent with information in the applicable licensing basis and design basis documents and that the procedures were properly reviewed and approved. Postmaintenance tests for the following four maintenance activities were included in the scope of this inspection:

- EDG 2 governor repair on April 3 (Work Order 4270027)
- EDG 1 maintenance on May 20 (Work Order 4294936)
- Service Air Compressor C maintenance on May 22 (Work Order 4265571)
- Sump Z gasket replacement on March 6 (Work Order 4268427)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

.1 Refueling Outage 21

a. Inspection Scope

The inspectors evaluated the licensee's outage activities associated with Refueling Outage 21 to ensure that: risk was considered in developing the outage schedule; administrative risk reduction methodologies were implemented to control plant configuration; mitigation strategies were developed for losses of key safety functions; and the operating license and Technical Specification requirements were satisfied to ensure defense-in-depth. Specifically, the following activities were included in the scope of this inspection:

- Daily review of critical parameters associated with reactor vessel level, shutdown cooling operations, and offsite power availability

- Daily review of scheduled work and the outage risk assessment for that work

- Control room observations of the reactor startup and heat up.

b. Findings

No findings of significance were identified.

.2 Control of Activities in the Spent Fuel Storage Pool

a. Inspection Scope

The inspectors reviewed the circumstances associated with a control rod blade which was dropped into the spent fuel storage pool (SFSP). The items reviewed included the procedural requirement for handling items in the SFSP, interviews with selected plant personnel, and the licensee's root cause investigation into this event.

b. Findings

Introduction. The failure to implement corrective actions to prevent dropping items in the SFSP was considered to be a self-revealing, Green, noncited violation.

Description. On February 12, during preparation for the refueling outage, personnel attempted to move an old control rod blade from its storage location on the northwest corner of the SFSP to a hanger in the northeast corner of the pool. During this operation, the control rod blade was dropped and impacted the bottom liner of the SFSP. The licensee had utilized a pneumatic jet pump grapple hook to capture the bail handle of the control rod blade in order to move it to the hanger. Licensee and contractor personnel conducting this operation observed that there was no load on the hoist used for the move and believed that the bail handle was properly seated in the hanger along the wall. Visual verification of this was performed by two personnel on the refueling floor who had not previously witnessed this type of evolution. An underwater camera was available but was not used to verify the position of the bail handle nor was the grapple tool rotated prior to releasing the control rod blade to physically verify that it was captured by the hanger. The grapple was released and the individuals moved on to the next scheduled activity. A short while later, they noticed that the control rod blade was resting on the bottom of the SFSP. It was suspected that the bail handle was actually resting on the edge of the hanger and slipped once the grapple tool was removed. At this point, the licensee stopped work in the SFSP, verified there was no damage to the control rod blade, SFSP liner, or spent fuel, and developed a recovery plan.

The licensee performed a root cause analysis of this event and concluded that this was an infrequently performed task, some of the personnel involved were unfamiliar with the task, and there was no procedure for this activity. This was despite the fact that Administrative Procedure 0.24, "Working Over or in Reactor Vessel or Fuel Pool Requirements," Revision 18, required that "a SORC [Station Operations Review Committee]/IQA [Independent Qualified Approver] approved document is required for all loads moved over or near irradiated fuel." Furthermore, on November 1, 1999, the licensee dropped a shroud head bolt while moving it in the SFSP. The lack of a procedure for that activity was cited as a root cause for that event in 1999. Corrective

actions to clarify work document requirements and management approval for this type of activity were developed to prevent recurrence of this root cause, but those corrective actions were never fully implemented.

Analysis. Since there was no damage to the control rod blade, spent fuel, or SFSP liner, there were no adverse consequences resulting from this event. However, the lack of specific procedural guidance for the handling of equipment and components over spent fuel had the potential to adversely affect the cladding of spent fuel stored in the SFSP. Therefore, this finding affected the Barrier Integrity Cornerstone and was considered more than minor since dropping a control rod blade in the SFSP could be viewed as a precursor to a significant event. Based on the results of a SDP Phase 1 evaluation, this finding was determined to have very low safety significance since it did not represent an actual degradation of any fission product barriers.

Enforcement. Appendix B, Criterion XVI, of 10 CFR Part 50, states that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Dropping items in the SFSP with the potential for damaging spent fuel is considered a significant condition adverse to quality; therefore, the failure to implement corrective actions to preclude recurrence of this event was a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy (05000298/2003005-002). The licensee entered this issue into their corrective action program as SCR 2003-297.

.3 Core Reload Error

a. Inspection Scope

The inspectors reviewed the circumstances involving an error made while reloading fuel into the core. The items reviewed included the procedural requirement for core alterations, interviews with selected operations personnel, and the licensee's root cause investigation into this event.

b. Findings

Introduction. The failure to follow the procedure for core alterations was considered to be a self-revealing, Green, noncited violation.

Description. On March 24, personnel performing core reload activities discovered that a step had been missed in the reload sequence. Step 506 in the fuel shuffle sequence had just been completed and had been marked as complete when personnel experienced minor difficulties with the load indication on the refueling mast and grapple. Refueling activities were momentarily suspended until the condition of the refueling mast

was understood and corrected. When refueling activities were resumed, the refueling floor supervisor notified the control room that step 507 had been completed when it had not. Refueling personnel proceeded to step 508, which was to move a fuel bundle from the SFSP to the core location which should have been vacated by step 507. When they moved the fuel bundle over that core location, refueling personnel realized the error, suspended the operation, and a recovery plan was developed.

Analysis. This finding had crosscutting aspects associated with human performance. This assessment was based on the licensee's root cause investigation which determined that a number of factors contributed to this error, including inadequate use of self-checking and place-keeping techniques.

This finding affected the Barrier Integrity Cornerstone and was considered more than minor since it affected the cornerstone attribute of design control (Core Reload Analysis). Based on the results of an SDP Phase 1 evaluation, this finding was determined to have very low safety significance since it did not represent an actual degradation of any fission product barriers.

Enforcement. TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for refueling and core alterations. Nuclear Performance Procedure 10.25, "Refueling - Core Unload, Reload, and Shuffle," Revision 35, requires that all steps on the special nuclear material transfer form be completed and logged as such prior to proceeding to the next step. This requirement was not satisfied for step 507. The failure to implement the procedure for this activity is a violation of TS 5.4.1(a). This violation is being treated as a noncited violation (50-298/0305-003) consistent with Section VI.A of the NRC Enforcement Policy. The licensee entered this issue into their corrective action program as SCR Report 2003-0713.

.4 Suppression Pool Foreign Material Exclusion (FME) Control

a. Inspection Scope

The inspectors performed a walkdown of the suppression pool, prior to plant startup following the refueling outage, which revealed foreign material which had not been accounted for by the licensee. The inspectors also reviewed procedural requirements for FME control, interviewed selected licensee personnel, and reviewed the licensee's root cause investigation for this condition.

b. Findings

Introduction. The failure to implement the procedure for FME control in the suppression pool was a second example of a Green, noncited violation.

Description. During a walkdown of the suppression pool on April 4, the inspectors identified foreign material floating on the surface of the pool. The licensee had already performed a walkdown of this area and were preparing for final close-out of the torus. This was brought to the attention of the licensee who was unable to account for the material in the FME control point log for the torus. The inspectors reviewed this log and also noted that several items logged as being in the torus were not identified during the walkdown. In addition, the log indicated that several items had been removed from the torus that had not been logged into the area. Based on these observations, the licensee determined that they could not ensure that their process for the control of FME in the torus and suppression pool had been effective. The licensee subsequently performed a complete inspection of the suppression pool using divers, which resulted in the discovery of additional minor amounts foreign material. The control point logs were reconciled to confirm the remaining items logged into the torus had been removed.

Analysis. This finding had crosscutting aspects associated with problem identification and resolution. This assessment was based on the licensee's root cause investigation which determined that a number of similar issues were identified in the past three outages and entered into the corrective action program, indicating that past attempts to resolve these deficiencies were ineffective.

This finding affected the Mitigating Systems Cornerstone and was considered more than minor since it affected the cornerstone attribute of equipment performance and reliability. Based on the results of an SDP Phase 1 evaluation, this finding was determined to have very low safety significance since it did not represent an actual loss of the safety function of the suppression pool.

Enforcement. TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for the control of maintenance work. Administrative Procedure 0.45.1, "Working Over or In the Torus," Revision 7, requires that all items and material entering the torus be logged and controlled. Administrative Procedure 0.45.1, also requires control point logs to be complete and reconciled. The failure to implement the procedure for torus FME control is the second example of the TS 5.4.1(a) violation (50-298/0305-003) described in Section 1R20.3 of this report. The licensee entered this issue into their corrective action program as SCR 2003-0833.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed or reviewed the following six surveillance tests to ensure that the systems were capable of performing their safety function and to assess their operational readiness. Specifically, the inspectors verified that the following surveillance tests met Technical Specifications, the Updated Final Safety Analysis Report, and licensee procedural requirements:

- 6.1DG.302, “Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test,” Revision 19, performed on April 1
- 6.SW.102, “SW System Post-LOCA Verification,” Revision 13, performed on April 4
- 6.MISC.502, “ASME Class 1 System Leakage Test,” Revision 15, performed on April 6
- 6.REACT.603, “Shutdown Margin Evaluation,” Revision 6, performed on April 14
- 6.CSCS.301, “CSCS [Core Standby Cooling Systems] Initiation Logic Relay Contact Testing,” Revision 4, performed on March 29
- 6.LOG.601, “Daily Surveillance Log - Modes 1,2, and 3," Revision 50, performed on May 6

The inspectors reviewed the results of Surveillance Procedure 6.CSCS.301, “CSCS Initiation Logic Relay Contact Testing,” Revision 4, performed on March 29, and the licensee’s response and root cause investigation into an inadvertent engineered safety features (ESF) actuation during the test.

b. Findings

Introduction. The failure to implement a surveillance test procedure was a third example of a Green, noncited violation.

Description. On March 29, the licensee was performing Surveillance Procedure 6.CSCS.301, “CSCS Initiation Logic Relay Contact Testing,” Revision 4, when a personnel error resulted in an inadvertent initiation of both core spray pumps as well as EDG 2. The plant was in cold shutdown at the time with the refueling cavity flooded. Control room operators were able to secure both core spray pumps before the refueling cavity overflowed into the reactor building.

Surveillance Procedure 6.CSCS.301 requires the manual actuation of individual relays to verify that the ESF logic is operating correctly. Relay contact boots are installed on selected contacts to prevent the actuation of any ESF equipment. This test was being conducted by three individuals: a licensed operator who was reading the procedure and directing the test and two nonlicensed personnel who were performing the steps and verifying the test results. During step 4.38 of the procedure, the licensed operator directed the manual actuation of Relays 10A-K5A and 10A-K6A; however, the performer manually depressed Relays 14A-K5A and 14A-K6A. The contacts on Relays 10A-K5A and 10A-K6A had been “booted”; the contacts on Relays 14A-K5A and 14A-K6A, which actuate core spray and EDG 2 had not been “booted.” Therefore, depressing the incorrect relays caused the inadvertent ESF actuation.

Analysis. This finding had crosscutting aspects associated with human performance. Although the licensee identified a procedure enhancement which could have precluded this event, the primary root cause was that the individuals performing the test were not properly using error prevention tools such as self-checking and peer-checking.

This finding affected the Mitigating Systems Cornerstone and was considered more than minor since it affected a shutdown equipment lineup which is a cornerstone attribute. Based on the results of an SDP evaluation performed using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," this finding was determined to have very low safety significance since the plant was in cold shutdown, time to boil was greater than 2 hours, the refueling cavity was flooded, and this finding did not significantly degrade the licensee's ability to recover shutdown cooling if it were lost.

Enforcement. TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for surveillance tests. The failure to perform Surveillance Procedure 6.CSCS.301, "CSCS Initiation Logic Relay Contact Testing," Revision 4, as written is a third example of the TS 5.4.1(a) violation (50-298/0305-003) described in Section 1R20.3 of this report. The licensee entered this issue into their corrective action program as SCR 2003-0770.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Temporary Configuration Change 4287004 which was implemented on April 3 to repair an equipment drain line in the ceiling of the reactor water cleanup heat exchanger room. The drain line was required for draining of the reactor cavity. The inspectors verified that the change did not require NRC approval prior to implementation and that adequate controls on the installation existed to prevent possible flooding of the reactor water cleanup room.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspector performed an in-office review of Revisions 42 and 43 to the Emergency Plan for Cooper Nuclear Station, submitted February 4 and 18, 2003, respectively. Revision 42 removed references to some meteorological data collection means. Revision 43 updated management titles, further described the on-shift emergency

organization, and reorganized the description of the emergency response organization. The inspector compared the revisions with previous revisions and the requirements of 10 CFR 50.54(q) to determine if the revisions decreased the effectiveness of the emergency plan.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection (PP)

3PP4 Security Plan Changes

a. Inspection Scope

The inspector conducted an in-office review of the Physical Security Plan, Revision 42, to determine if the change decreased the effectiveness of the Physical Security Plan and to determine if requirements of 10 CFR 50.54 (p) were met. This change revised the reporting chain for the security organization.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors verified the accuracy of data reported for the second, third, and fourth quarter of 2002 and the first quarter of 2003 for the following three NRC performance indicators:

- Emergency ac power unavailability
- HPCI unavailability
- Heat removal system unavailability

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed a selection of condition reports written during this period to determine if: the licensee was entering conditions adverse to quality into the corrective action program at an appropriate threshold; the condition reports were appropriately categorized and dispositioned in accordance with the licensee's procedures, and, in the case of conditions significantly adverse to quality, the licensee's root cause determination and extent of condition evaluation were accurate and of sufficient depth to prevent recurrence of the condition. The following condition report was reviewed during this period:

- Notification 10232607 regarding degraded gland water flow to SW Pump D on March 13

b. Findings

Introduction. The failure to correct a condition adverse to quality on the SW system was a second example of a Green, noncited violation.

Description. On March 13, operators noted that gland water flow to SW Pump B was low, at approximately 2.6 gpm. Normal gland water flow is 3 to 15 gpm. Efforts to increase flow were unsuccessful as the gland water throttle valve was already full open. The pump was declared inoperable pending further troubleshooting activities. On March 14, portions of the gland water system were disassembled and inspected, which revealed a small piece of wood in the flexible gland water line for SW Pump B. This debris was blocking approximately 75 percent of the gland water line and appeared to have been too large to have passed through the SW strainer. The debris was removed and the gland water line was flushed with no additional debris discovered. When the system was restored to service, gland flow to SW Pump B returned to normal.

The licensee performed an operability determination associated with Notification 10232607 which documented this concern. That operability determination concluded that the debris blocking the gland water line must have been introduced into the system while the SW strainers were bypassed for maintenance in January 2003. As discussed in Section 1R01, while performing maintenance on SW Strainer B, both SW Pumps B and D experienced gland water flow anomalies due to debris in their gland water lines. This was documented in the corrective action program as Notification 10218608, which stated that the corrective action for this condition was to flush the gland water lines. While this action did improve gland water flow, it did not succeed in removing all the debris from the gland water lines that could impact pump operability. Additional corrective actions were required in March 2003, including a visual inspection of the gland water lines using a boroscope to ensure they were completely free of debris and to ensure pump operability.

Analysis. This finding had crosscutting aspects associated with problem identification and resolution. This assessment was based on the fact that the licensee's corrective actions taken in January 2003 for blocked gland water lines were not thorough as evidenced by the condition repeating itself in March 2003.

This finding affected the Mitigating Systems Cornerstone and was considered more than minor since it affected the availability and reliability of the SW system. Based on the results of an SDP Phase 1 evaluation, this finding was determined to have very low safety significance since it did not result in the loss of a safety function of a single train of equipment for greater than the TS allowed outage time and did not screen as risk significant due to an external event.

Enforcement. Appendix B, Criterion XVI, of 10 CFR Part 50, states that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The failure to implement corrective actions to preclude recurrence of SW pump inoperability is a second example of the 10 CFR Part 50, Appendix B, Criterion XVI violation (05000298/2003005-002) described in Section 1R20.2 of this report. The licensee entered this issue into their corrective action program as Notification 10232607.

4OA3 Event Follow-up

.1 (Closed) LER 50-298/02-001-00; LER 50-298/02-001-01 Loss of High Pressure Coolant Injection Safety Function Due to Gland Seal Condenser High Level Annunciation

On September 18, 2002, the control room operators received an alarm indicating high level in the gland seal condenser for the high pressure coolant injection (HPCI) system. In accordance with the alarm response procedure, operators placed the auxiliary oil pump switch in pull-to-lock, thereby disabling the HPCI system. The system remained in the configuration for 33 hours while repairs were made to a level switch that had failed on the gland seal condenser. During the root cause investigation, the licensee determined that the HPCI system was capable of performing its safety function with the gland seal condenser flooded and that the alarm response procedure unnecessarily rendered the system inoperable. This finding affected the Mitigation Systems Cornerstone and was considered more than minor since there was an actual loss of safety function. Since there was an actual loss of safety function, a Phase 2 SDP evaluation was performed. Assuming the condition existed for 33 hours and allowing no credit for operator recovery of HPCI, the Phase 2 evaluation resulted in a low to moderate safety significance. Further analysis was performed by a Senior Reactor Analyst which determined the finding to be of very low significance (Green). The results obtained using the SAPHIRE software and the licensee's probabilistic risk assessment model were consistent and indicated an increase in core damage frequency of

approximately 3E-8 Delta-CDF. This licensee-identified finding involved a violation of Technical Specifications 5.4.1. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

.2 (Closed) LER 50-298/03-003-00 Failure to Evaluate Heat up Rate Leads to Technical Specifications Prohibited Operation

On April 10, 2000, while attempting to start Recirculation Pump B in preparation for a surveillance test, operators failed to perform TS Surveillance Requirement 3.4.9.1, which required verification that the reactor coolant system (RCS) heatup rate was less than or equal to 100°F when averaged over a one hour period. Due to a temperature difference between the reactor vessel and the recirculation loop, coolant temperature in the loop rose approximately 113°F in 9 minutes when the loop was placed into service. Operators failed to recognize this and therefore failed to determine if the RCS was acceptable for operation per TS Action Statement 3.4.9.C.2 prior to entering Mode 2 or 3. The licensee discovered this condition on April 4, 2003, while reviewing previously performed surveillance tests in support of a plant modification. Upon discovery, the licensee performed an evaluation of the RCS and determined that the excessive heatup rate had no adverse impact. This finding affected the Barrier Integrity Cornerstone and was considered more than minor since failure to implement TS could become a more significant safety concern if left uncorrected. Based on the results of an SDP Phase 1 evaluation, this finding was determined to have very low safety significance since it did not represent an actual degradation of any fission product barrier. This licensee-identified finding involved a violation of TS 3.4.9. The enforcement aspects of the violation are discussed in Section 4OA7. This LER is closed.

4OA6 Meetings, including Exit

Results from the inspection of security plan changes were presented to Mr. Pat Carlock, Security Operations Supervisor, during a telephonic exit on April 4, 2003.

Results from the inspection of emergency action level and emergency plan changes were presented to Mr. J. Bednar, Emergency Preparedness Manager, and other members of licensee management during a telephonic exit interview conducted on April 30, 2003.

The results of the resident inspector activities were discussed with Mr. Tom Palmisano, Site Vice President, and other staff personnel on July 10, 2003.

During all meetings, licensee management acknowledged the inspection findings and stated that none of the material examined during the inspection was considered proprietary.

4OA7 Licensee Identified Violations

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

- TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for alarm conditions. Alarm Procedure 2.3_9-3-2, "Panel 9-3 Annunciator 9-3-2," Revision 6, did not meet this requirement in that it unnecessarily instructed operators to defeat the HPCI system if the gland seal condenser high level alarm was received. The failure to establish an adequate procedure for this alarm condition is a violation of TS 5.4.1(a). Based on the results of an SDP Phase 3 evaluation, this finding was determined to have very low safety significance and is further described in Section 4OA3.1 of this report. This was entered into the licensee's corrective action program as SCR 2002-2000.

- TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for performing surveillance tests. On March 15, the licensee failed to implement Surveillance Procedure 6.CSCS.402, "ECCS Injection Check Valve Operating IST Torque Test," Revision 13, in that personnel attempted to perform this test on the wrong division of the RHR system. Personnel attempted to operate the Loop B injection testable check valve rather than the Loop A check valve. Loop B was in service providing shutdown cooling at the time. This failure to implement the surveillance procedure was is a violation of TS 5.4.1(a). Based on the results of an SDP evaluation performed using Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," this finding was determined to have very low safety significance since the plant was in cold shutdown, time to boil was greater than 2 hours, the refueling cavity was flooded, and this finding did not significantly degrade the licensee's ability to recover shutdown cooling if it were lost. This was entered into the licensee's corrective action program as Resolve Condition Report 2003-0650.

- TS Surveillance Requirement 3.4.9.1 requires the licensee to verify that RCS heatup rates are less than or equal to 100°F when averaged over a one-hour period. Contrary to this, the licensee failed to monitor the heatup rate in Recirculation Loop B while placing this loop in service on April 10, 2000, and therefore failed to recognize that the allowable heatup rate had been exceeded. Furthermore, TS 3.4.9.C.2 required the licensee to determine if the RCS was acceptable for operation after exceeding the heatup rate, prior to entering Mode 2 or 3. This determination was not performed. This finding affected the Barrier Integrity Cornerstone and was of very low safety significance since it did not represent an actual degradation of a fission product barrier. This was identified in the licensee's corrective action program as SCR 2003-0691.

- TS 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in RG 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for performing surveillance tests on the reactor core isolation cooling (RCIC) system. On May 5, the licensee failed to implement Surveillance Procedure 6.RCIC.102, "RCIC IST and 92 Day Test," Revision 13C1, in that control room operators incorrectly deleted the step to return the RCIC flow controller to automatic during the conduct of the surveillance procedure. This finding affected the Mitigating Systems Cornerstone and was of very low safety significance since it did not represent an actual loss of safety function. Additionally, this finding had crosscutting aspects associated with human performance. Although the licensee did identify procedure changes that may have precluded this event, the primary root cause was the fact that the individuals performing the test were not properly using error prevention tools such as procedure use and compliance, self-checking, and peer-checking. This finding was entered into the licensee's corrective action program as Resolve Condition Report 2003-01030.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Bednar, Emergency Preparedness Manager
C. Blair, Engineer, Licensing
M. Boyce, Corrective Action Program Senior Manager
T. Chard, Radiological Manager
K. Chambliss, Operations Manager
J. Christensen, Plant Manager
D. Cook, Senior Manager of Emergency Preparedness
J. Edom, Risk Management
R. Estrada, Performance Analysis Department Manager
M. Faulkner, Security Manager
J. Flaherty, Site Regulatory Liaison
P. Fleming, Risk & Regulatory Affairs Manager
D. Kimball, Assistant Radiological Manager
C. Kirkland, Nuclear Information Technology Manager
D. Knox, Maintenance Manager
V. Krueger, Engineer, Engineering Support Division/In-Service Inspection
D. Kunsemiller, Quality Assurance Manager
W. Macecevic, Work Control Manager
T. Palmisano, Site Vice President
D. Pease, Assistant Operations Manager
R. Remmers, Supervisor, Radiation Protection
V. Roppel, Assistant Senior Manager, Engineering
L. Schilling, Administrative Services Department Manager
R. Shaw, Senior Reactor Operator
J. Sumpter, Senior Staff Engineer, Licensing
K. Tanner, Shift Supervisor, Radiation Protection
A. Williams, Manager, Engineering Support Division
B. Wulf, Plant Engineering Department Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000298/2003005-001	NCV	Failure to Establish Adequate Operating and Maintenance Procedures for the Service Water System (Section 1R01; 1R12.2)
05000298/2003005-002	NCV	Inadequate Corrective Actions for Spent Fuel Pool Activities and SW Pump Degradation (Section 1R20.2; 4OA2)

05000298/2003005-003	NCV	Failure to Follow Procedures for Core Alterations, FME Control, and Surveillance Testing (Section 1R20.3, 1R20.4, 1R22)

Closed

50-298/02-001-00;01	LER	Loss of High Pressure Coolant Injection System Function Due to Gland Seal Condenser High Level Annunciation (Section 4OA3.1)
50-298/03-003-00	LER	Failure to Evaluate Heat up Rate Leads to Technical Specification Prohibited Operation (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

Notification Reports

Notification 10218678
Notification 10217152
Notification 10220868
Notification 10217627
Notification 10232607
Notification 10243908

Procedures

RHR Service Water Booster Pump System 2.2.70

RHR Service Water Booster Pump System Component Checklist 2.2.70A

SW System Operating Procedure 2.2.71, Revision 63

MP 7.3.26.10 EGS Grayboot Installation

CNS Administrative Procedure 0.27, “Maintenance Rule Program,” Revision 11

Maintenance Procedure 7.2.1, “Service Water Pump Column Maintenance and Bowl Assembly Replacement,” Revision 20

Nuclear Performance Procedure 10.25, “Refueling - Core Unload, Reload, and Shuffle,” Revision 35

CNS Administrative Procedure 0.45.1, “Working Over or In the Torus,” Revision 7

6.HPCI.103, “HPCI IST and 92 Day Test Mode Surveillance Operation,” Revision 19

6.REACT.603, “Shutdown Margin Evaluation,” Revision 6

Work Orders

4294936 Diesel Generator 1 maintenance
4309765 Service Water Pump "B" Excessive Gland Leakage
4265571 Overhaul "C" Service Air Compressor
4270108 Diesel Generator 1 Governor repair
4163186 DC Battery Room HVAC
4258705 Reactor Water Clean Up flow controller
4256493 Service Water Pump D overhaul
4270027 Diesel Generator 2 Governor repair
4294936 Diesel Generator 1 maintenance
4265571 Service Air Compressor C maintenance

Corrective Action Documents

Significant Condition Report 2003-0010
Significant Condition Report 2002-2655
Significant Condition Report 2003-0713
Significant Condition Report 2003-0713
Significant Condition Report 2003-0833

LIST OF ACRONYMS

CFR	*Code of Federal Regulations*
DCD	design criteria document
EDG	emergency diesel generator
ESF	engineered safety feature
FME	foreign material exclusion
HPCI	high pressure coolant injection
LOCA	loss of coolant accident
NCV	noncited violation
RCIC	reactor core isolation cooling
RHR	residual heat removal
RCS	reactor coolant system
RG	regulatory guide
SCR	significant condition report
SDP	significance determination process
SFSP	spent fuel storage pool
SW	service water
TS	Technical Specification