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

January 24, 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 INSPECTION REPORT 50-298/02-04

Dear Mr. Warren:

On December 28, 2002, the NRC completed an inspection at your Cooper Nuclear Station. The enclosed integrated report documents the inspection findings which were discussed on January 2, 2003, with Mr. M Coyle 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. 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 identified three 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 two 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. 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; 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.

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 F
Division of Reactor Projects

Docket: 50-298
License: DPR-46

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NRC Inspection Report
50-298/02-04

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-298
License:	DPR 46
Report No.:	50-298/02-04
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownville, Nebraska
Dates:	October 6 through December 28, 2002
Inspectors:	S. Schwind, Senior Resident Inspector S. Cochrum, Resident Inspector N. O'Keefe, Senior Resident Inspector, South Texas Project P. Elkmann, Emergency Preparedness Specialist
Approved By:	K. Kennedy, Chief, Project Branch F, Division of Reactor Projects

ATTACHMENT: Supplemental Information

SUMMARY OF FINDINGS
Cooper Nuclear Station
NRC Inspection Report 50-298/02-04

IR 05000298/02-04; Nebraska Public Power District; 10/06/02-12/28/02; Cooper Nuclear Station. Integrated Resident/Regional Report; Operability Evaluations, Identification and Resolution of Problems, Emergency Response Organization Performance.

The inspection was conducted by resident inspectors and regional specialists. The inspection identified three findings, two of which were noncited violations. 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.

Cornerstone: Initiating Events

- Green. The failure to take corrective or compensatory actions for a steam leak on Steam Jet Air Ejector A Steam Supply Valve MS-AOV-BAVA was determined to be a self-revealing, Green, finding. The steam leak was identified on September 14; however, no actions were taken to address it until October 13 when the steam leak caused a ground on a power supply which caused Valve MS-AOV-BAVA to fail closed, resulting in a plant transient.

  This finding was considered more than minor since it affected the availability and reliability of the power conversion system (main condenser and bypass valves), which initiated a plant transient. This finding was characterized under the significance determination process as having very low safety significance because there was no loss of safety function in either the main condenser or bypass valves (Section 4OA2).

Cornerstone: Mitigating Systems

- Green. Five degraded cells in the two 250 Vdc safety-related batteries were identified by the licensee but not assessed for operability for more than 3 months when inspectors questioned why they were operable. The majority of the cells in these two batteries were identified in 1999 to be nonconforming due to improper alloying of the positive plates, which caused swelling and eventual loss of capacity. The licensee failed to promptly replace the affected cells and failed to justify not taking prompt corrective action during the two intervening refueling outages. Therefore, this was considered to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This finding also had crosscutting aspects associated with problem identification and resolution.

  This finding was characterized under the significance determination process as having very low safety significance because there was no loss of function in either 250 Vdc battery. This finding was more than minor because the problem would become more significant if left uncorrected due to the time-dependent degradation mechanism. Because of the very low safety significance and because the licensee included the item in their corrective action program as Notification 10180712, this violation is being treated as a noncited violation (50-298/0204-01) consistent with Section VI.A of the NRC Enforcement Policy (Section 1R15).

Cornerstone: Emergency Preparedness

- Green. A noncited violation of 10 CFR 50.54(q) was identified by the inspector because the licensee did not conduct emergency response organization training in accordance with emergency plan requirements. Specifically, lesson plans were not developed or used to conduct emergency response organization training as required by the emergency plan for training required by 10 CFR Part 50, Appendix E.IV.F. Because lesson plans were not developed, they also were not identified, revised, and maintained as required by the emergency plan.

  This finding was determined to be a performance deficiency associated with the attributes of the emergency response organization readiness (training). This finding was evaluated to be more than minor using the Emergency Preparedness Significance Determination Process because it affects the emergency preparedness cornerstone objective in that a licensee may not be capable of implementing adequate measures to protect the health and safety of the public if emergency response organization training is incomplete or inadequate. This finding was evaluated as having very low safety significance (Green) since it was a failure of a regulatory requirement, but not a failure to meet an emergency planning standard as defined by 10 CFR 50.47(b). This finding is being treated as a noncited violation (50-298/0204-02) in accordance with Section VI.A of the NRC Enforcement Policy (Section 4OA5.2).

Report Details

The plant operated at 100 percent power at the beginning of the inspection period. On October 13, 2002, reactor power was reduced to approximately 75 percent in response to lowering main condenser vacuum due to a steam jet air ejector steam supply valve failing closed. The reactor was returned to full power operation on October 15. On November 9, reactor power was reduced to approximately 12 percent and the main generator was taken offline for planned maintenance on a 345 kV switchyard component. The reactor was returned to full power operation on November 12. On December 14, reactor power was reduced to approximately 65 percent for planned maintenance. The reactor returned to full power operation on December 15.

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

1R01 Adverse Weather Protection (71111.04)

.1 Ultimate Heat Sink Debris Loading

a. Inspection Scope

The inspectors reviewed the licensee's response to high amounts of sediment and debris in the Missouri River in June and July of 2002, which resulted in numerous service water strainer differential pressure alarms and necessitated emergent maintenance on both divisions of service water strainers. The inspectors observed the maintenance on the service water strainers to ascertain the size and composition of the debris that may have been introduced into the system. The inspectors also observed maintenance on the service water booster pump strainers and the residual heat removal system heat exchangers to verify that these portions of the service water system were unaffected by the debris.

b. Findings

No findings of significance were identified.

.2 Freeze Protection Preparations

a. Inspection Scope

The inspectors selected four samples representing the review of preparations/protection for cold weather conditions of four risk significant systems. The four samples included:

- A review of maintenance work orders completed in order to prepare the systems for possible freezing temperatures
- A review of deficiency tags and condition reports associated with heat tracing and other cold weather protection measures to determine their impact on the systems

- A review of operator log sheets to ensure that the licensee periodically verified that cold weather measures remained in place and were effective

- A walkdown of those portions of the system that could be exposed to extreme low temperatures to verify that the licensee had completed the required actions identified in the work orders

The four systems chosen for this inspection included:

- Portions of the offgas system, including the offgas house, Z Sump, and instrumentation and control lines associated with Z Sump and the elevated release point

- The intake structure, including the sluice gates on the ice control tunnel, the ice deflector, and environmental controls in the service water pump room

- The high pressure fire loop, including environmental controls in the fire pump house and heat tracing on exposed piping associated with the fire water storage tanks

- The Emergency Operations Facility backup diesel generator, including the engine block heaters and fuel supply

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

a. Inspection Scope

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

- Reactor Equipment Cooling Loop A while Loop B was inoperable for planned maintenance on October 29. The walkdown included portions of the system in the control room and on Elevations 931 and 859 of the reactor building.

- Residual Heat Removal System Division II while Division I was inoperable for planned maintenance on December 2. The walkdown included portions of the system in the control room and on Elevations 931, 903, and 859 in the reactor building.

- Standby Gas Treatment System Train B while Standby Gas Treatment System Train A was out of service for planned maintenance on December 3. The inspection included portions of the system in the control room and Elevation 976 in the reactor building.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors performed one fire zone walkdown to determine if the licensee was maintaining the area in accordance with the Cooper Nuclear Station (CNS) "Fire Hazards Analysis Report." The fire zone was chosen based on its risk significance as described in the "Individual Plant Examination of External Events." The walkdown 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 zone was inspected:

- Fire Zone 11E - Reactor Feed Pump Room

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors performed a semiannual inspection of internal flood protection features. The emergency diesel generator rooms were chosen for this inspection based upon the location in the plant and the risk significance. The inspection included a review of the Updated Final Safety Analysis Report, selected design criteria documents and design calculations, and a walkdown of the diesel generator rooms to verify that flood protection features described in these documents were in place and were operable. Specific documentation reviewed included:

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

- Cooper Nuclear Station Design Criteria Document 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 (71111.11)

a. Inspection Scope

The inspectors observed two sessions of licensed operator requalification exams in the simulator on November 6 and December 4. The requalification exam on November 6 evaluated the operators' ability to recognize, diagnose, and respond to degraded grid conditions which led to a station blackout. The exam on December 4 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 use and 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 actions, such as reporting and emergency plan actions and notifications
- Group dynamics involved in crew performance

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12Q)

a. Inspection Scope

The inspectors reviewed one equipment performance issue to assess the licensee's implementation of their maintenance rule program. The inspectors verified that the component that experienced performance problems was 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 CNS Administrative Procedure 0.27, "Maintenance Rule Program," Revision 11. The inspectors reviewed the following equipment performance problem:

- High vibrations on Reactor Building Exhaust Fan B on November 11, due to a failed support

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed four 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 from these activities. Evaluations for the following maintenance activities were included in the scope of this inspection:

- Back-flushing Reactor Equipment Cooling Heat Exchanger A on October 8, due to unsatisfactory heat exchanger performance data
- Time delay relay testing on the Division II service water pumps on November 1
- High pressure core injection system outage for planned maintenance on November 13
- Diesel Generator 2 outage for planned maintenance on November 25

b. Findings

No findings of significance were identified.

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

.1 Operator Response to Indicated High Vibrations on both Reactor Feed Pump Turbines

a. Inspection Scope

On Saturday, May 27, 2002, inspectors responded to the control room after a report of high vibrations on both reactor feed pump turbines. Operators appropriately reduced reactor power to approximately 65 percent in preparation for removing a feed pump from service when it was determined that a failed power supply in the vibration monitoring system had caused the erroneously high vibration readings. The inspectors verified that

the plant responded normally, that the appropriate operating procedures were being implemented, and that the licensee was operating the plant within the limits specified in the Technical Specifications.

b. Findings

No findings of significance were identified.

.2 Operator Response to Abnormally High Service Water Strainer Differential Pressure

a. Inspection Scope

The Inspectors observed operator response to repeated high differential pressure alarms on the Trains A and B service water discharge strainers between July 8 and 19, 2003. The inspectors also responded to the plant on July 18 to observe operators bypass Service Water Strainer B for emergent work to clean the strainer. The inspectors verified that the plant responded normally, that the appropriate operating procedures were being implemented, and that the licensee was operating the plant within the limits specified in the Technical Specifications.

b. Findings

No findings of significance were identified.

.3 Operator Response to Lowering Condenser Vacuum

a. Inspection Scope

On October 13, inspectors responded to the control room after a report of lowering main condenser vacuum. The immediate cause was determined to be a blown fuse in 120 Vac distribution Panel CCPB1, Circuit 6, which caused the steam supply valve to the steam jet air ejectors to fail closed. Operators responded to the lowering condenser vacuum by lowering reactor power to approximately 75 percent and opening the alternate steam supply valve to the steam jet air ejectors. The inspectors verified that the licensee was operating the plant within the limits specified in the Technical Specifications, that the appropriate abnormal operating procedures were being implemented, and that the actions taken to stabilize the plant were prompt and appropriate.

b. Findings

No findings of significance were identified.

.4 Operator Response to a Power Supply Failure in the Digital Electrohydraulic System

a. Inspection Scope

On October 24, the inspectors responded to the control room after a report of a failed power supply in the digital electrohydraulic control system. The failed power supply disabled the digital portion of the system which is used to control turbine speed during turbine startup and the 106 percent overspeed trip signal. In addition, the failure caused a minor, 1 psig perturbation in reactor pressure. The inspectors verified that plant conditions were stable, that the appropriate abnormal operating procedures were being implemented, and that the licensee was operating the plant within the limits specified in the Technical Specifications. Bypass valve operability was unaffected by this failure.

b. Findings

No findings of significance were identified.

.5 Operator Performance During a Planned Power Reduction

a. Inspection Scope

On December 14, the inspectors observed the control room operators perform a downpower from 100 percent to 65 percent for planned maintenance. The inspectors verified that the plant responded normally, that the appropriate operating procedures were being implemented, and that the licensee was operating the plant within the limits specified in the Technical Specifications.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Determination Reviews

a. Inspection Scope

The inspectors reviewed three operability determinations regarding mitigating system capabilities to ensure that the licensee properly justified operability and that the component or system 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, Technical Specifications, and the associated system design criteria documents to determine if operability was justified. The inspectors reviewed the following equipment conditions and associated operability evaluations:

- Abnormal indications while racking in the Service Water Pump B breaker on October 16 and subsequent damage to the breaker cubicle during troubleshooting activities on October 17 (Notification 10201547)

- 10 CFR Part 21 notification of a potential failure of General Electric CR105X auxiliary contacts used in the reactor protection system (Notification 10206164)

- Diesel Generator 1 governor oil sight glass level low on December 7 (Notification 10212855)

- High pressure core injection system surveillance test failures on December 10 (Notification 10213862)

b. Findings

No findings of significance were identified.

.2 Plate Swelling on Safety-Related 250-Volt Battery Cells

a. Inspection Scope

During a supplemental inspection conducted from May 28 to August 22, 2002 (NRC Inspection Report 50-298/02-07), inspectors reviewed the licensee's root cause evaluation and corrective actions for battery plate swelling. The history of the issue was discussed with the system engineer, and a walkdown of the 250 Vdc batteries was conducted. The inspectors reviewed vendor surveillance reports from January through February 1999 and a 10 CFR Part 21 notification dated August 25, 1999, that addressed the issue. The inspectors also reviewed the operability evaluation written as a result of inspector concerns to assess the basis for operability and the adequacy of compensatory actions. The following specific documents were reviewed:

- Notifications 10151441, 10151442, 10180700, and 10180712
- Operability Determination 10180700
- Significant Condition Report (SCR) 99-0465

b. Observations and Findings

A Green noncited violation for inadequate corrective actions was identified in connection with degraded and nonconforming positive plates in the 250 Vdc safety-related batteries.

The inspectors reviewed corrective actions taken by the licensee for positive plate swelling in safety-related batteries, as documented in SCR 99-0465. In the process, the inspectors noted that the majority of the cells in both 250 Vdc batteries had not been replaced as planned and, in April 2002, the licensee noted that five cells in these batteries were exhibiting plate swelling. The inspectors were concerned that the

licensee had not evaluated the impact of this degraded condition on the operability of the batteries. Further, the acceptability of continuing to rely on these batteries with a nonconforming condition had not been evaluated.

In July 1999, approximately 5 months after the 125 Vdc and 250 Vdc safety-related batteries were replaced, the licensee identified that 22 cells exhibited swelling of the positive plates. This was determined to be a degraded condition because some of the cells had individual cell voltages that were trending downward, indicating a loss of capacity. The batteries were determined to be operable but degraded, a condition requiring increased monitoring of the cells with plate swelling to ensure cell voltage was not degrading below the minimum allowable by Technical Specifications. Within several weeks, the degraded cells were replaced and the increased monitoring was stopped.

The licensee worked with the battery cell vendor to identify that the cause of the degradation was excessive calcium content on positive plates causing accelerated plate swelling, similar to the effect of aging, which would lead to loss of capacity. The licensee determined through capacity testing that cells could lose as much as 50 percent of their capacity by the time they failed to pass surveillance acceptance criteria. Since the remainder of the battery cells that were not replaced were manufactured by the same vendor at the same time as the ones that were replaced, they were also determined to be nonconforming to the vendor's specifications.

The licensee's root cause evaluation recommended creating a long-term strategy for replacing all the cells in the 125 Vdc and 250 Vdc batteries. The system engineer stated that CNS intended to replace both 125 Vdc batteries and both 250 Vdc batteries, although this plan was never formally documented in the corrective action program. While the cells in the 125 Vdc batteries were replaced, only selected cells in the 250 Vdc batteries were replaced because the vendor was unable to supply a sufficient number of cells in time for the outage.

The inspectors noted that the licensee had not replaced the nonconforming cells in the 250 Vdc batteries at the time of this inspection. The licensee had also failed to justify not replacing the affected cells despite the fact that two refueling outages had passed since the problem was identified. Further, in April 2002, the licensee identified that four cells in one bank and one cell in the other bank were exhibiting plate swelling, which constituted the same degraded condition which had required increased monitoring and an evaluation to determine whether the batteries were operable when the problem was initially identified in 1999. However, the licensee did not perform an operability evaluation and, as a consequence, had not identified the need for increased monitoring to confirm that the batteries were able to perform their safety function. Notifications 10151441 and 10151442 specifically stated that no operability concern existed, even though no operability determination was performed. This was important because the earlier experience demonstrated to the licensee that a cell voltage could degrade from normal to the minimum allowable in a shorter time than the surveillance interval (90 days).

The inspectors identified that the swelled plate constituted an operability concern, based on the licensee's previous experience with battery cell degradation. In response, the

licensee wrote Notifications 10180700 and 10180712 to evaluate operability, identify the need to perform increased monitoring, and evaluate why these problems were not previously addressed. The licensee determined that the 250 Vdc batteries remained operable and implemented compensatory actions, in accordance with Generic Letter 91-18, to monitor the nonconforming cells more frequently in order to detect any degraded conditions prior to cell replacement.

The inspectors concluded that the licensee had not implemented prompt corrective actions for the nonconforming condition and, further, had not taken compensatory or corrective actions when degradation was identified in five battery cells. The root cause analysis identified the need to replace the affected 250 Vdc battery cells, and the licensee tentatively approved replacing the remaining batteries in 2004 and 2006. However, the schedule for replacing the battery cells was arrived at informally, without management involvement and without an evaluation of the impact of delaying this action.

The finding was considered more than minor because the problem would have become more significant if left uncorrected. This finding was characterized under the significance determination process as having very low safety significance because there was no loss of function in either of the 250 Vdc batteries. This finding also had crosscutting aspects associated with problem identification and resolution. This assessment was based on the fact that the licensee had previously identified the need for a long-term strategy for replacing all of the nonconforming battery cells, but this was never formally documented and tracked in the corrective action program. Therefore, resolving this long-standing equipment deficiency was not made a priority and the nonconforming cells began exhibiting degraded conditions again in April of 2002. This crosscutting issue is an additional example of a substantive crosscutting issue most recently described in Cooper Nuclear Station's Midcycle Performance Review letter dated August 26, 2002.

Appendix B to 10 CFR Part 50 requires prompt corrective actions to correct or resolve degraded or nonconforming conditions. Generic Letter 91-18 specifies that the NRC will consider whether corrective action was taken at the first opportunity and that time frames longer than the next refueling outage are expected to be explicitly justified by the licensee. Further, if the licensee does not resolve the degraded or nonconforming condition at the first opportunity or does not appropriately justify a longer completion schedule, the staff would consider taking enforcement action. Failure to promptly correct a nonconforming condition, failure to justify continued operation past the next refueling outage, failure to assess five degraded cells for operability, and failure to perform increased monitoring of the degraded cells constituted a violation of 10 CFR Part 50, Appendix B, Criterion XVI (NCV 50-298/0204-01). This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. The licensee entered this condition into their corrective action program as Notification 10180712.

1R16 Operator Workarounds (71111.16)

.1 Cumulative Affects

a. Inspection Scope

The inspectors reviewed the licensee's list of operator workaround items and control room deficiencies 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.

b. Findings

No findings of significance were identified.

.2 Individual Affects

a. Inspection Scope

The inspectors reviewed the following two equipment performance deficiencies to determine if they would pose a challenge to operators while implementing abnormal or emergency procedures. The inspectors considered it appropriate to exclude these items from the operator workaround list if the system in question would still perform as designed and existing procedures and operator training were adequate for operators to cope with the equipment deficiency. The following equipment deficiencies were reviewed:

- Reactor Recirculation Pump Motor Generator A speed changes (Notification 10202404)

- Reactor Recirculation Pump Motor Generator A scoop tube lockout reset push button failure (Notification 10206618)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17A)

a. Inspection Scope

The inspectors reviewed the plant modification described in Change Evaluation Document (CED) 6008707, which removed the wear ring flushing lines from all four service water booster pumps. The review included the safety screen to determine if the

modification represented a potential unreviewed safety question as well as new design information which demonstrated that the wear rings in the booster pumps should not require flushing water.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed or observed 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 five maintenance activities were included in the scope of this inspection:

- Control Rod Drive Pump A seal replacement on October 8 (Work Order 4207402)
- Standby Liquid Control Pump B suction header drain valve (SLC-V-50) replacement on October 21 (Work Order 4227273)
- Replacement of a power supply in the digital electrohydraulic control system on October 23 (Work Order 4275358)
- Diesel Generator 2 leak repair on the fuel oil duplex strainer on November 25 (Work Order 4250967)
- Diesel Generator 2 output breaker mode selector switch replacement on November 25 (Work Order 4173827)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed or reviewed the following four 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:

- 6.2SWBP101, “RHR Service Water Booster Pump Flow Test and Valve Operability Test (Div 2),” Revision 9, performed on October 30
- 6.1DG101, “Diesel Generator 31 Day Operability Test (IST) (DIV I),” Revision 26, performed on November 4
- 6LOG601, “Daily Surveillance Log - Modes 1, 2, and 3,” Revision 43, performed on November 9
- 6LOG601, “Daily Surveillance Log - Modes 1, 2, and 3,” Revision 43, performed on November 11

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed Temporary Configuration Change 4275358, which was implemented on October 25 to install a jumper in the digital electrohydraulic control system while troubleshooting and replacing a failed power supply. The jumper removed the 106 percent electrical overspeed trip protection provided by the system in order to prevent a spurious turbine trip when the new power supply was energized. The inspectors verified that the change did not represent an unreviewed safety question, that there were adequate controls on the installation and removal of the jumper, and that redundant turbine overspeed protection was still available (103 percent electrical trip and 108 percent mechanical trip). The inspectors also verified removal of the jumper on October 29, following completion of postmaintenance testing of the new power supply.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspector performed an on-site review of Revision 40 to the Cooper Nuclear Station Emergency Plan against Revision 39 of the Emergency Plan and 10 CFR 50.54(q) to determine if the revision decreased the effectiveness of the emergency plan.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the licensee perform an emergency preparedness drill on October 31. Observations were conducted in the Technical Support Center and Emergency Operations Facility. During the drill, the inspectors assessed the licensee's performance related to classification, notification, and protective action recommendations. Following the drill, the inspectors reviewed the licensee's critique to determine if issues were appropriately identified and documented. The following documents were reviewed during this inspection:

- Emergency Plan for Cooper Nuclear Station
- Emergency Plan Implementing Procedures for Cooper Nuclear Station
- Cooper Nuclear Station Emergency Preparedness Drill Scenario for October 31

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors verified the accuracy of data for the safety system unavailability performance indicator. This review included the last 12 months of data reported to the U.S. Nuclear Regulatory Commission.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

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, to determine if 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, to determine if

the licensee's root cause determination and extent of condition evaluation was accurate and of sufficient depth to prevent recurrence of the condition. The following three condition reports were reviewed during this period:

- Notification 10206680 regarding high conductivity and detectable lithium and boron in the reactor coolant

- Notification 10205207 which evaluated Cooper Nuclear Station's susceptibility to radiolytic gas detonation as described in General Electric's Safety Information Letter GE-NE-0000-007-4008-01

- SCR 2002-2162 which documented the root causes for the unplanned power reduction greater than 20 percent on October 13

b. Findings

The failure to take corrective or compensatory actions for a steam leak on Steam Jet Air Ejector A Steam Supply Valve MS-AOV-BAVA was considered to be a self-revealing, Green, finding. The steam leak was identified on September 14; however, no actions were taken to address it until October 13 when the steam leak caused a ground on a power supply which caused Valve MS-AOV-BAVA to fail closed, resulting in a plant transient.

On September 14, the system engineer performed a walkdown of the steam jet air ejectors and identified a packing leak on Steam Jet Air Ejector A Steam Supply Valve MS-AOV-BAVA. At the time, the leak appeared to be minor and the steam plume was not impinging any other equipment. This condition was documented in Notification 1019394; however, this notification was screened as a "work item only" and was not entered into the corrective action program. This work item was scheduled to be completed in December 2002 according to the routine work planning process. No consideration was given to the potential for this leak to worsen or the consequences if it further degraded, and no compensatory actions were established to periodically monitor or inspect the leak for signs of further degradation prior to its scheduled repair.

Between September 14 and October 13, the packing leak further degraded and changed direction so that the steam plume was directly impinging on the lower limit switch for Valve MS-AOV-BAVA. This eventually caused a ground to develop on the limit switch, resulting in a blown fuse in Circuit 6 of Power Panel CCP1B. This power circuit supplies power to the valve position indication as well as the solenoid operated air supply valve for Valve MS-AOV-BAVA. Failure of the power supply caused Valve MS-AOV-BAVA to fail closed, which led to lowering main condenser vacuum. As discussed in Section 1R14.1 of this report, control room operators appropriately responded by lowering reactor power to approximately 75 percent. Once operators had diagnosed the cause of the lowering vacuum, the alternate steam supply to the steam jet air ejector was placed in service and plant conditions stabilized.

This finding was considered more than minor since it affected the availability and reliability of the power conversion system (main condenser and bypass valves), which

initiated a plant transient. This finding was characterized under the significance determination process as having very low safety significance because there was no loss of safety function in either the main condenser or bypass valves.

4OA5 Other Activities

Emergency Response Organization Performance (95003.01)

a. Inspection Scope

During a supplemental inspection conducted from May 28 to August 22, 2002 (NRC Inspection Report 50-298/02-07), inspectors reviewed the content of the emergency response organization training program to determine whether the information necessary to provide the emergency response organization with an adequate knowledge base to implement the emergency plan was present. The inspector evaluated the following documents against the requirements of 10 CFR 50(b)(15) and 10 CFR Part 50, Appendix E, Section IV.F:

- Cooper Nuclear Station Emergency Plan, Revision 39, Section 8.1.1, “Training for CNS Emergency Response Organization”
- Training Program Guide 101, Revision 4
- Self Study Module EP01, “EP Fundamentals: Emergency Planning”
- Self Study Module EP02, “EP Fundamentals: Emergency Response”
- Self Study Module EP03, “Emergency Classification”
- Self Study Module EP04, “Protective Action Recommendations”
- Self Study Module EP05, “Dose Assessment”
- Self Study Module EP06, “Core Damage Assessment”

The inspector also interviewed emergency preparedness management and qualified instructors regarding the conduct of emergency response organization training.

b. Findings

A noncited violation of very low safety significance (Green) was identified for failure to conduct emergency response organization training in accordance with emergency plan requirements.

Requirements for the licensee’s initial emergency response organization training program were listed in Training Program Guide 101, Revision 4, Attachment 1, “ERO Initial Qualification Requirements Matrix.” Initial qualification consisted of completing

one or more self-study modules; instructor-led training on emergency response facilities, emergency plan implementing procedure(s), and position instruction manuals; followed by a proficiency demonstration during a walkthrough or drill.

Emergency Plan, Section 8.1.1, "Training for CNS Emergency Response Organization," required in part, that lesson plans be developed and utilized for training in areas as required per 10 CFR Part 50, Appendix E.IV.F, "Training." Section 8.1.1 also stated that Emergency Preparedness lesson plans are identified in the Emergency Preparedness Training Program Description, and that lesson plans will be revised to correspond with changes made to the emergency plan, emergency plan implementing procedures, or other supporting documents. The inspectors determined from program documentation and from interviews conducted in June and July 2002, that instructor-led portions of initial emergency response organization training were not conducted from established or maintained lesson plans as required by the Emergency Plan, Section 8.1.1.

10 CFR 50.54(q) states in part, "A licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect, emergency plans." 10 CFR Part 50, Appendix E.IV.F(1)(a), requires that the licensee provide for the training of employees to ensure that they are familiar with their specific emergency response duties. 10 CFR Part 50, Appendix E.IV.F(1)(b), requires that this shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel: "(i) directors and/or coordinators of the plant emergency organization, (ii) personnel responsible for accident assessment, including control room shift personnel, (iii) radiological monitoring teams . . . (v) repair and damage control teams . . . (vii) licensee's headquarters support personnel . . . ."

Contrary to the above, prior to July 2002: (1) the licensee instructor lesson plans were not developed or utilized for conducting emergency response organization training required by 10 CFR Part 50, Appendix E.IV.F; (2) the Emergency Preparedness Training Program Description did not identify lesson plans used for emergency preparedness training; and (3) the licensee had not revised lesson plans to correspond with changes made to the emergency plan, emergency plan implementing procedures, or other supporting documents and did not have a process for lesson plan revision.

The finding was determined to be a performance deficiency associated with the attributes of the emergency response organization readiness (training). The finding was evaluated to be more than minor using the Emergency Preparedness Significance Determination Process because it affects the emergency preparedness cornerstone objective in that a licensee may not be capable of implementing adequate measures to protect the health and safety of the public if emergency response organization training is incomplete or inadequate. Furthermore, the licensee had determined that inadequate training was a root or contributing cause to previous performance deficiencies identified in the preceding 24 months in drills, exercises, and an emergency declaration. The finding was evaluated as having very low safety significance (Green), since it was a failure to comply with a regulatory requirement but not a failure to meet an emergency planning standard as defined by 10 CFR 50.47(b). This finding is in the licensee 's

corrective action process as Notification 10192317 and is being treated as a noncited violation (50-298/0204-02) in accordance with Section VI.A of the NRC Enforcement Policy.

4OA6 Meetings, Including Exit

The results of the emergency action level and emergency plan change inspections were presented to Mr. D. Cook, Senior Manager of Emergency Preparedness, and other members of licensee management during an exit interview conducted on November 22. The licensee acknowledged the findings presented.

The results of the resident inspector activities were discussed with Mr. M. Coyle, Site Vice President, and other staff personnel on January 2, 2003.

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

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Boyce, Corrective Action Program Senior Manager
G. Casto, Emergency Preparedness Manager
D. Cook, Senior Manager of Emergency Preparedness
M. Coyle, Site Vice President
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
M. Gillan, Assistant to Plant Manager
J. Hutton, Plant Manager
D. Kimball, Assistant Radiological Manager
C. Kirkland, Nuclear Information Technology Manager
D. Kunsemiller, Quality Assurance
W. Macecevic, Work Control Manager
D. Pease, Assistant Operations Manager
V. Roppel, Acting Senior Manager, Engineering
L. Schilling, Administrative Services Department Manager
R. Shaw, Senior Reactor Operator
N. Wetherell, Maintenance Manager
B. Wulf, Plant Engineering Department Manager

ITEMS OPENED AND CLOSED

Opened and Closed

50-298/0204-01	NCV	Failure to assess operability of five degraded cells in two 250 Vdc safety-related batteries (Section 1R15)
50-298/0204-02	NCV	Failure to conduct emergency response organization training in accordance with emergency plan requirements (Section 4OA5)

LIST OF ACRONYMS

CFR	Code of Federal Regulations
CNS	Cooper Nuclear Station
NCV	noncited violation
NRC	U.S. Nuclear Regulatory Commission
SCR	significant condition report