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

August 15, 2001

J. H. Swailes, Vice President of
Nuclear Energy
Nebraska Public Power District
P.O. Box 98
Brownville, Nebraska 68321

SUBJECT: COOPER NUCLEAR STATION - NRC INSPECTION REPORT 50-298/01-02

Dear Mr. Swailes:

On July 7, 2001, the NRC completed an inspection at your Cooper Nuclear Station. The enclosed report documents the inspection findings which were discussed on July 10, 2001, with Mr. William Macecevic 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 covered selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified four findings of very low safety significance (Green) and one finding of no color. All of these findings were determined to involve a violation of NRC requirements. Because the violations were of very low safety significance, and because they were entered into your corrective action program, the NRC is treating the findings as noncited violations, in accordance with Section VI.A of the NRC's Enforcement Policy. If you contest these violations, you should provide a response with the basis for your denial within 30 days of the date of this inspection report, 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 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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

David P. Loveless, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

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NRC Inspection Report
50-298/01-02

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RIV:SRI:DRP/C	RI:DRP/C	PE:DRP/C	C:DRS/PSB	C:DRP/C
JAClark*	MCHay	WCSifre	GMGood	DPLoveless
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*Inspector is on leave and did not have substantial input to this report

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-298
License:	DPR 46
Report:	50-298/01-02
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownville, Nebraska
Dates:	April 2 through July 7, 2001
Inspectors:	J. Clark, Senior Resident Inspector M. Hay, Resident Inspector D. Carter, Health Physicist
Approved By:	D. Loveless, Chief, Project Branch C Division of Reactor Projects
ATTACHMENT:	Supplemental Information

SUMMARY OF FINDINGS

Cooper Nuclear Station
NRC Inspection Report 50-298/01-02

IR 05000298-01-02; on 04/02-07/07/2001; Nebraska Public Power District; Cooper Nuclear Station. Resident Insp Integrated Rpt; Equip Align, Maint Rule Implementation, Operability Eval, Surveillance Testing, ALARA Planning & Controls.

The inspection was conducted by the resident inspectors and a health physics inspector. The inspection identified four noncited violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609 "Significance Determination Process." Findings for which the significance determination process does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

Cornerstone: Mitigating Systems

- Green. The licensee failed to have adequate surveillance procedures in accordance with Technical Specification 5.4.1(a) to satisfy Technical Specification Surveillance Requirement 3.5.1.1, which verifies that all emergency core cooling systems (ECCS) are full of water.

  This noncited violation was evaluated under the risk significance determination process as being Green. The issue was determined to have a credible impact on safety because the potential existed for a system void not being properly evaluated. Also, extenuating circumstances were involved related to the degraded condition of the pressure maintenance system used to keep the residual heat removal (RHR) Loop A system filled with water. This issue was characterized as having very low safety significance because no systems were identified as being degraded by voiding (Section 1R22.1).

Cornerstone: Barrier Integrity

- Green. The licensee failed to declare equipment inoperable following multiple failures of primary containment isolation Valves RW-AOV-AO82, -83, -94, and -95 to pass surveillance testing requirements. This was a violation of Technical Specification 5.4.1(a).

  This issue was determined to have a credible impact on safety because the failure of these valves affected the ability to isolate primary containment. This noncited violation was characterized under the risk significance determination process as having very low safety significance because both the inboard and outboard primary containment isolation valves had never failed at the same time. Therefore, no actual open pathway affecting the physical integrity of the primary containment was present (Section 1R04.1).

- Green. The licensee failed to provide administrative controls, as required by Technical Specification 3.6.1.3, from May 8-10, 2001, to ensure that primary containment Isolation Valves RW-AOV-AO-82, 83, 94, and 95 could be isolated.

This issue was determined to have a credible impact on safety because administrative controls were insufficient to ensure that primary containment could be isolated rapidly. This noncited violation was characterized under the risk significance determination process as having very low safety significance because the valves never failed to close when they were administratively opened and this condition lasted for less than 3 days (Section 1RO4.2).

Cornerstone: Occupational Radiation Safety

- Green. On May 23, 2001, the inspector determined that the door used to control access to the steam jet air ejector room, a locked high radiation area, would not prevent unauthorized entry. The failure to prevent unauthorized entry to a locked high radiation area is a violation of Technical Specification 5.7.2. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Notification 100866582.

  The safety significance of this violation was determined to be very low by the Occupational Radiation Safety Significance Determination Process because there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. This violation was more than minor because the failure to prevent unauthorized entry to a locked high radiation area has a credible impact on safety and the potential for unplanned or unintended dose (Section 2OS2).

- No color. On May 22, 2001, the inspector identified that the as low as reasonably achievable (ALARA) committee had not reviewed job Package RE19AL-23, "Resolution of EQ Splice Issues," before the job exceeded 5 person-rem. The failure to review a job package before job dose exceeds 5 person-rem is a violation of Technical Specification 5.4.1. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Notification 10086481.

  The significance of this violation was determined to be more than minor because the failure to perform an appropriate ALARA Committee review could have a credible impact on safety. This violation did not affect the Occupational Radiation Safety cornerstone, since there were no unplanned or unintended doses that resulted from actions contrary to Technical Specifications. However, the issue was determined to be greater than minor (Section 2OS2).

Report Details

The plant operated at 100 percent power from April 2 through May 31, 2001. On June 1, operators reduced power to approximately 75 percent for planned maintenance activities that included main condenser waterbox cleaning. Power was restored to 100 percent on June 4. On June 25, a fire affecting the station startup transformer resulted in loss of power to Reactor Recirculation Pump B. Power was reduced to approximately 72 percent until repairs were made. On June 28, the plant was restored to 100 percent power.

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

1R04 Equipment Alignment

.1 Equipment Alignment of Radwaste Primary Containment Isolation Valves

a. Inspection Scope

The inspectors performed a partial equipment alignment inspection of radwaste Valves RW-AOV-AO82, -83, -94, and -95. These air-operated radwaste valves performed a primary containment isolation function. The ability of these valves to perform the safety function of primary containment isolation was assessed by reviewing the design requirements contained in the Updated Safety Analysis Report, design drawings, surveillance tests, and corrective action documentation.

b. Findings

The licensee failed to perform an operability determination in accordance with Administration Procedure 0.5.OPS for degraded radwaste primary containment isolation valves. The licensee also failed to implement administrative controls to ensure rapid closure ability when opening inoperable radwaste primary containment isolation valves.

.1 Failure to Perform Operability Determination

The inspectors reviewed Surveillance Procedure 6.PC.201, “Primary Containment Isolation Power-Operated Valve Operability and Closure Timing Test,” Revision 10C3. This surveillance test is performed to demonstrate operability of Valves RW-AOV-AO82, -83, -94, and -95 in accordance with Technical Specification Surveillance Requirement 3.6.1.3.5.

Corrective action documents pertaining to the failure of these valves to meet the acceptance criteria of Surveillance Procedure 6.PC.201 were reviewed. The inspectors noted that, since 1999, five problem identification reports were written addressing failures of these valves to pass the surveillance test. These conditions were described in Problem Identification Reports 4-11514, 4-03815, 4-10252, 4-14120, and 4-11515. However, no operability determinations had been performed following the failed surveillance tests. The licensee stated that no operability determinations were performed because every time an air-operated valve failed, maintenance crews were replacing its associated solenoid-operated control valve with the same type of valve.

In 1998 the licensee determined that this type of solenoid-operated control valve degraded rapidly over time when it was used as a normally energized valve. The solenoid-operated valves for the radwaste primary containment air-operated isolation valves were normally energized to maintain the valves in the open position. A lubricant used in the solenoid valve would heat up and lose its lubrication properties, resulting in the valve failing to operate properly. This was determined by both laboratory testing and industry operating experience information. In 1998 the licensee replaced this type of solenoid-operated valve with a different type for secondary containment air-operated isolation Valves HV-AOV-261AV and HV-AOV-259AV. The radwaste solenoid-operated valves were not replaced with a different type.

Based on the high failure rate and known failure mechanism of the radwaste primary containment isolation valves, the inspectors questioned the continued operability of these valves. The control room operators determined that no reasonable assurance for operability existed and declared the valves inoperable.

Technical Specification 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for authorities and responsibilities for safe operation. Administrative Procedure 0.5.OPS, “Operations Review of Problem Identification Reports/Operability Determinations/Evaluations,” Revision 3C3, implements this requirement. Section 3.1.10 of Procedure 0.5.OPS states that, to continue the desired operation while operability is being evaluated, there shall be a reasonable expectation that the system is operable and that the evaluation will support that expectation. Section 2.9 of Procedure 0.5.OPS also states that when a reasonable expectation of operability does not exist or mounting evidence suggests that the final analysis will conclude that the equipment cannot perform its specified safety function(s), the equipment will be immediately declared inoperable. The failure to declare radwaste Valves RW-AOV-AO82, -83, -94, and -95 inoperable when a reasonable expectation of operability did not exist is a violation of Technical Specification 5.4.1(a). This violation is being treated as a noncited violation (50-298/0102-01) consistent with Section VI.A of the NRC Enforcement Policy. The licensee has previously documented the failure to properly perform operability determinations in their corrective action process as SCR 2000-0937.

This issue was determined to have a credible impact on safety because the failure of these valves affected the ability to isolate primary containment. This noncited violation was characterized under the risk significance determination process as having very low safety significance because both the inboard and outboard primary containment isolation valves never failed at the same time. Therefore, no actual open pathway affecting the physical integrity of the primary containment was present.

The inspectors also considered this noncited violation to be an example of a crosscutting human performance issue.

.2 Failure to Implement Administrative Controls

After the control room operators declared radwaste Valves RW-AOV-AO82, -83, -94, and -95 inoperable, the valves were closed and deactivated in accordance with the actions contained in Technical Specifications Section 3.6.1.3, "Primary Containment Isolation Valves." In order to pump down the drywell equipment and floor drain sumps, the radwaste primary containment isolation valves needed to be opened. Technical Specification 3.6.1.3 allows intermittent opening of these valves provided that administrative controls are in place to ensure the penetration could be rapidly isolated.

On May 10, 2001, the inspectors observed the controls used by the control room operators when they were opening the radwaste valves to pump down the sumps. The inspectors determined that the administrative controls in place were insufficient to ensure rapid isolation of the radwaste air-operated primary containment isolation valves. The operators were not physically located near the air-operated radwaste valves, and they did not have the necessary tools available to shut the valves manually.

Technical Specification 3.6.1.3, "Primary Containment Isolation Valves," states that penetration flow paths may be unisolated intermittently under administrative controls. The failure to provide administrative controls from May 8-10, 2001, to ensure that radwaste Valves RW-AOV-AO-82, -83, -94, and -95 could be isolated is a violation of Technical Specification 3.6.1.3. This violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy (50-298/0102-02). This violation has been entered into the licensee's corrective action program as Notification 10083989.

This issue was determined to have a credible impact on safety because administrative controls were insufficient to ensure that primary containment could be isolated rapidly. This noncited violation was characterized under the risk significance determination process as having very low safety significance because the valves never failed to close when they were administratively opened and this condition lasted for less than 3 days.

.3 Diesel Generator Support System Alignment Verification

a. Inspection Scope

The inspectors performed partial equipment alignment inspections on the 125 Vdc Division 2 distribution system and the diesel generator fuel oil transfer system. The inspectors verified that the systems were installed and capable of performing their design functions as described in the Updated Final Safety Analysis Report. They reviewed system operating procedures, surveillance procedures, and design documents to assess that these systems were properly operated and maintained.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed the following areas throughout the inspection period to determine if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capabilities, and maintained passive fire protection features in good material condition.

The following areas were inspected:

- Reactor building Northwest quadrant
- Reactor building Northeast quadrant
- High pressure coolant injection room
- Cable spreading room
- Auxiliary relay room
- Main Control room

The inspectors verified that these areas were being controlled in accordance with Administrative Procedure 0.23, "CNS Fire Protection Plan," Revision 29 and 0.39, "Fire Watches," Revision 23.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors performed a periodic flood protection walkdown of the reactor building. The inspectors evaluated flood protection features (e.g., holes or unsealed penetrations in floors and walls, adequacy of watertight doors, common drain systems and pumps) for the protection of risk-significant structures, systems, and components from flooding due to internal causes. The inspectors assessed the reactor building and verified that flooding controls were being implemented in accordance with Maintenance Procedure 7.0.11, "Flood Control Barriers," Revision 0 and Administrative Procedure 0.16, "Control of Doors," Revision 25C1.

During the week of May 5, 2001, the inspectors performed a seasonal review to determine the licensee's susceptibility and capability to cope with external flooding hazards when the Missouri River was at flood stage levels. The inspectors assessed compensatory measures the licensee had in place. These included alternate routes to the site should the primary route be flooded and security personnel performing additional rounds to ensure the abnormally high water levels did not affect perimeter detection equipment. The following documents were reveiwed:

- Updated Final Safety Analysis Report
- Emergency Procedure 5.1Flood, "Flood," Revision 0
- Maintenance Procedure 7.0.11, "Flood Control Barriers," Revision 0
- Cooper Nuclear Station Emergency Plan

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalifications

a. Inspection Scope

On the week of May 28, 2001, the inspectors observed a licensed operator simulator exercise. The simulator exercise evaluated operator's ability to recognize, diagnose, and respond to a loss of offsite power event. In addition, the inspectors reviewed evaluators' critiques of the training exercise. The inspectors evaluated operator performance using the following: Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification," Revision 27; Emergency Plan Implementing Procedure 5.7.2, "Shift Supervisor EPIP," Revision 13; Emergency Plan Implementing Procedure 5.7.6, "Notification," Revision 31C1; Emergency Procedure 5.3, "Emergency Power," Revision 0; General Operating Procedure 2.1.5, "Reactor Scram," Revision 33; and Technical Specifications.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

.1 Failure to Monitor the Performance of Maintenance Rule Components

a. Inspection Scope

The inspectors reviewed licensee implementation of the maintenance rule following performance problems associated with the control room annunciators and radwaste primary containment isolation valves.

b. Findings

The licensee failed to properly evaluate failures of control room annunciators and radwaste primary containment isolation valves to determine if actions were necessary in accordance with 10 CFR 50.65(a)(1). This issue is unresolved.

On April 23, 2001, the control room experienced a complete loss of annunciators and declared a Notification of Unusual Event. The licensee determined a power supply failure of ANN-MUX-11 resulted in the loss of annunciators. The licensee entered this failure into their corrective action process as Notification 10080562. Administrative

Procedure 0.27, “Maintenance Rule Program,” Revision 11, Figure 1, requires that equipment failures be assigned to a system engineer to evaluate the condition for entry into the maintenance rule database. The inspectors identified that Notification 10080562 was never evaluated by a system engineer for entry into the maintenance rule database.

As previously described in Section 1R04.1, “Equipment Alignment of Selected Primary Containment Isolation Air Operated Valves,” the licensee experienced multiple failures of radwaste primary containment isolation Valves RW-AOV-AO-82, -83, -94, and -95 to properly close during testing. These valves are characterized by the licensee as essential because they provide a primary containment function. These primary containment isolation valves were assigned the maintenance rule function of RW-FO2, “Maintain primary containment,” and were assigned to Category M1. Administrative Procedure 0.27, “Maintenance Rule Program,” Revision 11, Figure 3, required that Category M1 components that fail to meet the function that made them essential be classified as functional failures. The inspectors noted that none of the failures associated with the radwaste valves were classified by the licensee as maintenance rule functional failures. The inspectors reviewed the basis for not considering the failures to be maintenance rule functional failures. The licensee agreed that these failures were not properly assessed by their maintenance rule program and entered the condition into the corrective action process as Notification 10095968.

10 CFR 50.65(a)(1) states that licensees shall monitor the performance or condition of structures, systems, or components, against licensee established goals, in a manner sufficient to provide reasonable assurance that such systems, structures, and components, as defined in paragraph (b), are capable of fulfilling their intended functions.

The failure to adequately monitor the performance or condition of the control room annunciators and the radwaste primary containment isolation valves would be in violation of 10 CFR 50.65(a)(2) if components should have been monitored in accordance with 10 CFR 50.65(a)(1). Therefore, this issue is considered unresolved until the licensee completes their expert panel review of these failures (50-298/0102-03). This issue has been entered into the licensee’s corrective action program as Notification 10095968.

.2 Periodic Evaluation of Maintenance Rule Implementation

a. Inspection Scope

During the inspection period, the inspectors reviewed licensee implementation of the maintenance rule. The inspectors verified structure, system, and component scoping, characterization, safety significance, performance criteria, and the appropriateness of goals and corrective actions. The inspectors assessed the licensee’s implementation of the maintenance rule to the requirements outlined in 10 CFR 50.65, Administrative Procedure 0.27, “Maintenance Rule Program,” Revision 11, and Regulatory

Guide 1.160, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Revision 2. The inspectors reviewed the following components that displayed performance problems:

- Service water pumps
- Secondary containment ventilation system

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee’s risk assessment for equipment outages as a result of planned and emergent maintenance to evaluate the licensee’s effectiveness in assessing risk for planned and emergent activities. The inspectors compared the licensee’s risk assessment and risk management activities to the requirements of 10 CFR 50.65 (a)(4) and the recommendations of NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” Revision 2. The inspectors also discussed the planned and emergent work activities with planning and maintenance personnel. The inspectors reviewed the following risk evaluations:

- June 25, 2001, Startup transformer emergent repairs following fire of potential transformer
- April 23, 2001, Loss of control room annunciators
- Lift adjustments performed on all service water pumps
- Division 2 diesel generator maintenance
- Maintenance activities performed during single loop operations from June 25-28, 2001

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Evolutions

.1 Performance During Alert

a. Inspection Scope

On June 25, 2001, the inspectors responded to a declared Alert following a fire that affected the station startup transformer.

b. Findings

This inspection will be documented in NRC Inspection Report 50-298/01-09.

.2 Performance During Notification of Unusual Event

a. Inspection Scope

On April 23, 2001, the inspectors responded to a declared Notification of Unusual Event following loss of all control room annunciators. The inspectors assessed control room operator performance in coping with this event using plant operating procedures, control room logs, and strip charts.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

.1 Failure to Perform an Operability Evaluation

a. Inspection Scope

Following multiple failures of radwaste Valves RW-AOV-AO82, -83, -94, and -95 to properly close in accordance with testing requirements, the inspectors attempted to review the licensee's operability determination for this degraded condition. The inspectors noted that no operability determination was performed for these failures. See Section 1R04.1, "Equipment Alignment of Selected Primary Containment Isolation Air Operated Valves," for details.

b. Findings

The inspectors identified a failure of the licensee to perform an operability determination following multiple failures of radwaste Valves RW-AOV-AO82, -83, -94, and -95. See Section 1R04.1, "Equipment Alignment of Selected Primary Containment Isolation Air Operated Valves," for details.

.2 Technical Adequacy of Operability Evaluations

a. Inspection Scope

The inspectors reviewed the technical adequacy of several operability evaluations to verify that they were sufficient to justify continued operation of a system or component. The inspectors verified that, although equipment was degraded, the operability evaluation provided adequate justification that the equipment could still meet its Technical Specification, Updated Final Safety Analysis Report, and design bases requirements and that any potential risk increase contributed to the degraded equipment was thoroughly evaluated. The following evaluations were evaluated:

- Operability Evaluation for HPCI-SOV-SPV565 and -566 not physically supported per the vendor recommendations (Problem Identification Report 4-14244)

- Operability Evaluation for torus shell thickness (Problem Identification Report 4-13806)

- Evaluation for the failure of Service Water Pumps A, B, and C to meet inservice test acceptance criteria (Notification 10086714)

- Operability Evaluation for potential overload condition of Transformer T2 (Notification 10086496)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the modification package associated with the replacement of a potential transformer performed the week of June 25, 2001. Since a like-for-like replacement could not be performed, the inspectors reviewed the licensee's evaluation to verify that the design requirements of the system were not impacted. The following documents were reviewed to perform this assessment:

- Engineering Procedure 3.4, "Configuration Change Control," Revision 31
- Change Evaluation Document 4181838
- Updated Final Safety Analysis Report

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing

a. Inspection Scope

The inspectors verified that postmaintenance tests were adequate to verify system operability and functional capabilities. The inspectors verified that testing met design and licensing bases requirements, Technical Specifications, the Updated Final Safety Analysis Report, the inservice test program, and licensee administrative procedures. The inspectors verified testing results for the following components:

- Service Water Booster Pump B, Work Order 4160369

- High Pressure Coolant Injection Pressure Instrument HPCI-PI-2782, Work Order 4160272

- Residual Heat Removal Service Water Booster Pump D, Work Order 4159778
- Core Spray Motor CS-MOT-MO7A, Work Order 4160240
- Service Water Valve SW-MO-MO89A, Work Order 4165005
- Core Spray Motor CS-MOT-MO5A, Work Order 4159679

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

.1 Core Spray System Testing

a. Inspection Scope

The inspectors reviewed the performance package for Surveillance Procedure 6.2CS.101, "Core Spray Test Mode Surveillance Operation (IST)(Div 2), Revision 12C1 conducted on April 30, 2001. They also reviewed the test criteria utilized by the surveillance procedure to demonstrate that the core spray system was capable of performing its safety function.

b. Findings

Surveillance Procedure 6.2CS.101 contained instructions for venting the core spray system prior to starting the core spray pump. This should ensure that the system was full of water preventing damage to system components caused by potential system voiding. Performance of this test was used to satisfy Technical Specification Surveillance Requirement 3.5.1.1 that states, "Verify, for each ECCS (emergency core cooling system) injection/spray subsystem, the piping is full with water from the pump discharge valve to the injection valve." The procedural steps contained in Section 4.8 that performed this test stated "Open CS-138, core spray system B vent shutoff, until air free water flows then close it." The acceptance criteria for this test contained in Section 6.1 was a yes/no question that stated "Water flow was observed from high point vent valves." Operators stated that a solid stream of water coming out of the vents met the acceptance criteria for filling the system. The inspectors determined that the acceptance criteria was not adequate because the surveillance requirement was to ensure the system was full of water, not to fill the system with water by a venting evolution.

The inspectors noted that the same test acceptance criteria was used to satisfy Surveillance Requirement 3.5.1.1 for all ECCS injection/spray subsystems. On the week of June 22, 2001, an NRC team inspection identified a degraded condition associated with the residual heat removal system pressure maintenance system (see NRC Inspection Report 50-298/01-05, Section 1R21.5.b.2, for details). The team

determined that an error in Calculation NEDC 92-050AT, Revision 0, for Switch CM-PS-270, RHR Pump Discharge Line Low Pressure (Loop A), could have permitted voiding in RHR Loop A without generating an alarm in the control room. Voiding could result in damage to RHR pipes and components upon the start of an RHR motor. Following the identification of this degraded condition, the inspectors again expressed their concern that the procedures used to ensure the ECCS systems were full of water were inadequate.

Technical Specification 5.4.1(a) requires that licensees establish, implement, and maintain written procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Section B, states "Where conformance to the recommendations of this regulatory guide is indicated in an application without further qualification, this indicates, the applicant will comply with the requirements of ANSI N18.7-1976/ANS-3.2." ANSI N18.7, Section 6.2.5, "Content of Test Procedures," states in part that test procedures shall contain a description of test objectives and acceptance criteria that will be used to evaluate the test results. The failure of all surveillance procedures used to satisfy Technical Specification Surveillance Requirement 3.5.1.1 to contain acceptance criteria for evaluating that the systems were full of water is a violation of Technical Specification 5.4.1(a). This violation is being treated as a noncited violation (50-298/0102-04) consistent with Section VI.A of the Enforcement Policy. This violation has been entered into the licensee's corrective action program in Notification 10082704.

This noncited violation was evaluated under the risk significance determination process as being Green. The issue was determined to have a credible impact on safety because of the potential for a system void not being properly evaluated. Also, extenuating circumstances were involved related to the degraded condition of the pressure maintenance system used to keep the RHR Loop A system filled with water. This issue was characterized as having very low safety significance because no systems were identified as being degraded by voiding.

.2 Evaluation of Various Tests

a. Inspection Scope

The inspectors observed or reviewed the following surveillance tests to ensure the systems tested 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:

- Surveillance Procedure 6.2DG.401, "Diesel Generator Fuel Oil Transfer Pump IST Flow Test (Div 2)," Revision 8C1

- Surveillance Procedure 6.EE.6.2, "125V/250V Station and Diesel Fire Pump Battery 92 Day Check," Revision 9

- Surveillance Procedure 6.EE.603, "125V Battery Service Test," Revision 7C1

- Surveillance Procedure 6.2DG.101, "Diesel Generator 31 Day Operability Test (Div 2)," Revision 20

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation

a. Inspection Scope

On June 5, 2001, the inspectors observed the licensee perform an annual emergency preparedness exercise. During the exercise the inspectors assessed the licensee's performance related to classification, notification, and protective action recommendations. Following the exercise, the inspectors reviewed the licensee's critique to determine if issues were appropriately identified and documented. The following documents were reviewed in performing this inspection:

- Emergency Plan for Cooper Nuclear Station
- Emergency Plan Implementing Procedures for Cooper Nuclear Station
- Cooper Nuclear Station annual exercise scenario for June 5, 2001

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY
Cornerstone: Occupational Radiation Safety

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector interviewed radiation workers and radiation protection personnel throughout the radiologically controlled area and conducted independent radiation surveys of selected work areas. The following items were reviewed and compared with regulatory requirements to determine whether the licensee had an adequate program to maintain occupational exposures ALARA:

- ALARA program procedures

- Quality Assurance Audit Report 01-03, "Radiological Controls and Chemistry"

- Processes used to estimate and track exposures

- Plant collective exposure history for the past 3 years, current exposure trends, and 3-year rolling average dose information
- Five radiation work permit packages for Refueling Outage19 and the midcycle outage work activities which resulted in the highest personnel collective exposures
- Use of engineering controls to achieve dose reductions, including temporary shielding
- Individual exposures of selected work groups (electrical maintenance and instrumentation and control)
- Temporary shielding and hot spot tracking and reduction programs
- Radiological work planning
- A summary of ALARA and radiological worker performance related corrective action reports written since April 1, 2000 (nine of which were reviewed in detail)
- Declared pregnant worker dose monitoring controls
- Job site inspections and ALARA controls

b. Findings

(1) Uncontrolled Locked High Radiation Area Door

A noncited violation with very low safety significance (Green) was identified for failure to properly control a locked high radiation area door. On May 23, 2001, during a tour of the radiologically controlled area, the inspector noticed that the locked high radiation area door to the steam jet air ejector room was properly posted and locked. However, upon closer observation, the inspector determined that an individual could reach through the cross frames of the expandable barrier attached to the door frame and easily open the locked door and gain unauthorized entry. The actual dose rates in the room were between 90 - 6000 millirem per hour.

The safety significance of this violation was determined to be very low by the Occupational Radiation Safety Significance Determination Process because there was no overexposure or substantial potential for overexposure, and the ability to assess dose was not compromised. This violation was more than minor because the failure to prevent unauthorized entry into a locked high radiation area has a credible impact on safety and the potential for unplanned or unintended dose.

Technical Specification 5.7.2, states, in part, that areas accessible to personnel with dose rates in excess of 1000 millirem per hour shall be provided with locked

doors to prevent unauthorized entry. The failure to provide a locked door that would prevent unauthorized entry is a violation of Technical Specification 5.7.2. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Notification 10086582 (NCV 50-298/0102-05).

(2) Failure to Perform ALARA Review

A noncited violation that was determined to be more than minor (No Color) was identified for failure to perform an ALARA committee review of a job package that exceeded 5 person-rem. On May 22, 2001, during the review of ALARA job planning for job Package RE19AL-23, "Resolution of EQ Splice Issue," the inspector identified that the job had not been reviewed in accordance with station ALARA program procedures. Job Package RE19AL-23 was originally budgeted for 2.678 person-rem; however, due to increased job scope, the job dose estimates had been revised several times. The final job estimate was 15.605 Rem. During the work evolution, the job estimate exceeded 5 person-rem (5.454 person-rem) on April 25, 2000. On April 26, 2000, the ALARA supervisor electronically mailed the ALARA committee chairman to inform him that this job would exceed 5 person-rem and asked for recommendations. From discussions with the ALARA staff, the inspector determined that the ALARA committee did not review, approve, or provide comments on the job.

The significance of this violation was determined to be more than minor because the failure to perform an appropriate ALARA committee review could cause unnecessary additional worker dose, resulting in a credible impact on safety. This violation did not affect the Occupational Radiation Safety cornerstone since there were no unplanned or unintended doses that resulted from actions contrary to Technical Specifications. However, the issue was determined to be a violation of Technical Specification 5.4.1 that was more than minor.

Technical Specification 5.4.1(a) requires that procedures be established as recommended in Regulatory Guide 1.33, Appendix A. Regulatory Guide 1.33, Appendix A, Section 7(e), requires procedures for the implementation of an ALARA program. Station Procedure 0.ALARA.2, Section 4.5.1, states, in part, that the ALARA committee shall review and approve all jobs estimated to be greater than 5 person-rem. The failure of the ALARA Committee to review a job that exceeded 5 person-rem is a violation of Technical Specification 5.4.1. This violation is being treated as a noncited violation consistent with Section VI. A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Notification 10086481 (NCV 50-298/0102-06).

4. OTHER ACTIVITIES

4OA3 EVENT FOLLOWUP

.1 (Closed) Licensee Event Report (LER) 05000298/2001-S01-00

On March 30, 2001, at 6:35 p.m. the licensee identified that both the Central Alarm Station and the Secondary Alarm Station consoles were disabled, resulting in the inability to monitor the alarm systems from either station. Required compensatory actions were completed by 6:45 p.m. This event did not constitute a violation of NRC requirements.

.2 (Closed) LER 05000298/2001-002-00

During a planned shutdown on March 3, 2001, following a manual reactor scram, a reactor protection system scram signal was actuated on low reactor vessel water level. The cause of the event was determined to be ineffective operating crew performance, exacerbated by equipment performance problems and weaknesses in procedures and training. The plant was always maintained within the bounds of the transient analysis. Corrective actions included high intensity training for operating crews, crew performance self-assessments, equipment repairs, and procedural enhancements. This event did not constitute a violation of NRC requirements.

.3 (Closed) LER 05000298/2001-001-00

On January 17, 2001, the licensee identified that an excess check valve located on the reactor vessel head seal leak detection line had not been tested in the last 18 months as required by Technical Specification Surveillance Requirement 3.6.1.3.8. This issue is being characterized as a minor violation based on the issue having no actual or credible impact on safety. Prior to the licensee implementing Improved Technical Specifications in 1998, this requirement did not pertain to the plant. Also, should the excess check valve fail open, there would be negligible consequences because the lines contained one-quarter inch orifices to ensure that any leakage would not challenge the integrity or functional performance of secondary containment.

.4 (Closed) LER 05000298/2000-011-00

On October 14, 2000, at 3:24 a.m. the reactor scrammed following a main generator trip. The plant responded as expected and no major equipment malfunctions occurred. This event did not constitute a violation of NRC requirements.

.5 (Closed) LER 05000298/2000-010-01

On September 15, 2000, at 4:46 a.m. the control room emergency filtration system automatically actuated. The licensee stated that the cause for the actuation of this emergency safeguard feature was indeterminate. This event did not constitute a violation of NRC requirements.

4OA6 Meetings, Including Exit

On July 10, 2001, the results of the inspection were discussed with Mr. William Macecevic, Manager of Operations, and other staff personnel.

The health physics inspector presented the inspection results to Mr. R. Gardner, Senior Manager, Quality Assurance, and other members of licensee management at the conclusion of the inspection on May 24, 2001.

During both meetings, licensee management acknowledged the inspectors' findings. Additionally, the inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Gardner, Senior Quality Assurance Manager
B. Houston, Acting Emergency Preparedness Manager
K. Kirkland, NIS Manager
N. Weatherell, Assistant Senior Engineering Manager
K. Jones, Design Engineering Manager
D. Reeves, Acting Plant Engineering Department Manager
J. Montgomery, SRAB Chairman
J. Ranalli, Senior Manager Engineering
D. Meyers, Senior Manager Site Support
D. Kunsemiller, Risk and Regulatory Affairs Manager
J. Humphrey, Acting Maintenance Manager
W. Macecevic, Operations Manager
M. Boyce, Senior Manager Technical Services
C. Markert, Engineering Support Manager
M. Gillan, Work Control Manager
K. Kimball, Assistant Radiation Manager
J. Peters, Licensing
K. Dorwick, Manager, Performance Analysis

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened during this Inspection

50-298/0102-03	URI	Failure to monitor the performance or condition of maintenance rule components

Opened and Closed During this Inspection

50-298/0102-01	NCV	Failure to perform operability determination and/or declare equipment inoperable
50-298/0102-02	NCV	Failure to provide administrative controls for opening primary containment isolation valves
50-298/0102-04	NCV	Inadequate procedures to ensure emergency core cooling systems filled with water
50-298/0102-05	NCV	Failure to prevent unauthorized entry to a locked high radiation area (Section 2OS2)
50-298/0102-06	NCV	Failure to perform an ALARA review (Section 2OS2)