

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-298  
License No.: DRP-46  
Report No.: 50-298/96-23  
Licensee: Nebraska Public Power District  
Facility: Cooper Nuclear Station  
Location: Nebraska Public Power District  
1414 15th Street  
Columbus, Nebraska  
Dates: September 8 through October 19, 1996  
Inspectors: M. Miller, Senior Resident Inspector  
C. Skinner, Resident Inspector  
Approved By: E. Collins, Chief, Project Branch C, DRP  
ATTACHMENT: Partial List of Persons Contacted  
List of Inspection Procedures Used  
List of Items Opened and Closed

## EXECUTIVE SUMMARY

### Cooper Nuclear Station NRC Inspection Report 50-298/96-23

This routine, announced inspection included aspects of licensee operations, engineering, maintenance, plant support, followup of violations, unresolved items, and followup of licensee event reports. The report covers a 6-week period of resident inspection.

#### Operations

- Inspectors identified that, when operators vented the containment according to procedures, the standby gas treatment system heater was de-energized for about 5 minutes. Operations did not consider the standby gas treatment system unavailable for the period the heaters were deenergized. Operators did not recognize the need to track the Technical Specification Action Statement and did not log the Standby Gas Treatment Train B out-of-service time and return-to-service time.

#### Maintenance

- Inspectors identified that the Automatic Depressurization System Division I surveillance procedure rendered both trains of the system unavailable. Operators correctly logged Train A out-of-service time and return-to-service time, but failed to log Train B times. This resulted in failure to record Train B unavailability for the Maintenance Rule. This is a violation.
- The inspector identified that maintenance work instructions for service water system valve repair were not clear. The work instructions used copies of vendor manual pages and the maintenance technicians did not take air valve disk centering measurements until questioned by the inspector. Questions by crew and supervisors on shaft key configuration were not pursued until questioned by the NRC.
- Licensee personnel showed a good questioning attitude by identifying that the reactor vessel overfill protection channels and the control room ventilation system radiation monitor were not being properly tested.
- A third-party assessment of the licensee's training program did not identify any immediate safety issues. The findings were generally consistent with NRC assessments of performance.

#### Plant Support

- Radiation Protection management addressed lack of specific guidance for maintenance and surveillance activities after inspectors observed that anticontamination precautions were weak for overhead collection of potentially contaminated liquid.

- Planned painting activities were altered due to an ALARA review. New plans resulted in an estimated radiation exposure reduction from 32 rem to 5.5 rem.

## Report Details

### Summary of Plant Status

The plant was maintained at 100 percent power, except for quarterly turbine valve testing and a control rod sequence exchange, during which power was reduced to 70 percent.

## I. Operations

### **O1    Conduct of Operations**

#### **O1.1   General Comments**

During this inspection period, which included only routine operations, Inspectors observed that the control room staff was alert and adequately controlled access to the control room. Shift turnover briefings were well controlled and relevant information on current plant issues was discussed.

#### **O1.2   Verification of the Control Room Board Valve Line-Up**

##### **a.    Inspection Scope (71707)**

The inspectors selectively verified emergency core cooling systems and engineered safety features were correctly aligned by the indication in the control room and selected in-plant configurations and indications.

##### **b.    Observations and Findings**

The inspectors verified by the indication in the control room that the following systems were in the standby line-up or the normal operating line-up in accordance with the licensee's procedures:

<u>System</u>	<u>Procedure</u>
Automatic Depressurization System	2.2.1, Revision 26
Core Spray Systems A and B	2.2.9, Revision 41.1
High Pressure Coolant Injection	2.2.33, Revision 43
Control Building Ventilation	2.2.38, Revision 19.1
Standby Gas Treatment System	2.2.73, Revision 28
Standby Liquid Control System	2.2.74, Revision 25

### **O2    Operational Status of Facilities and Equipment**

#### **O2.1   Standby Gas Treatment System Inoperable During Restoration From Containment Venting**

##### **a.    Inspection Scope (71707)**

The inspector observed a routine containment venting operation.

b. Observations and Finding

On October 1, 1996, while venting containment, the inspector noted that the operator de-energized the Standby Gas Train B heater for five 5 minutes in accordance with Procedure 2.2.60, "Primary Containment Cooling and Nitrogen Inerting System," Revision 54.1. The procedure required that heaters be de-energized for 5 minutes and then returned to standby (operable) status. The inspector questioned if the limiting condition for operation for an inoperable standby gas treatment train should be entered, since heaters are required for operability. The licensee agreed, wrote a problem identification report, and changed the venting procedure to require a Technical Specification limiting condition for operation entry while the heaters were de-energized.

Inspectors considered that, since the amount of time the train was actually out of service was relatively small compared to the Technical Specification action statement duration of 7 days, the actual safety impact was small. The licensee planned to review records to determine if containment venting had occurred with one train of standby gas inoperable.

Licensee administrative procedures for conduct of operations, other than testing and maintenance, did not contain a requirement that the Technical Specification limiting condition for operation be entered when equipment is inoperable. The licensee planned to review their procedure requirements in this area.

For maintenance rule unavailability computations, the licensee concluded that the heater switch being in the off position did not render the standby gas treatment system unavailable.

c. Conclusion

The inspectors identified that, during routine containment venting, the operators placed the standby gas treatment system heater switch in the off position. This action was directed and controlled by procedure. The operators, however, did not recognize the need to enter a Technical Specification action statement. The amounts of time the switch was in the off position was small relative to the action statement time frames.

**04 Operator Knowledge and Performance**

- 04.1 (Closed) Unresolved Item (URI) 50-298/95018-01: reactivity mismanagement event. This item discussed an occurrence of reactivity mismanagement during which licensed operators manipulated control rods inconsistent with procedural requirements and did not promptly inform supervisors. A predecisional enforcement conference was held and escalated enforcement, dated September 30, 1996, was issued to address these issues (EA 96-202). This URI is closed based on the action

dated September 30, 1996. The three violations issued on September 30, 1996, will be tracked by Violations 298/96023-06, 298/92023-07, and 298/96023-08.

## II. Maintenance

### M1 Conduct of Maintenance

#### M1.1 General Comments

##### a. Inspection Scope (62703 and 61726)

The inspectors observed all or portions of the following work activities:

<u>Procedure</u>	<u>Title</u>
MWR 96-1391	Diesel Generator Service Water Valve Replacement
6.SW.403	SW-AOV-854AV and -855AV Inservice Testing Position Indication Test
6.1ADS.303	Automatic Depressurization System Logic Functional Test
6.SLC.101	Standby Liquid Control Pump Operability Test
6.1RHR.101	Residual Heat Removal Test Mode Surveillance Operation

##### b. Observations and Findings

Inspectors observed that procedures were generally followed and activities were properly controlled. Staff knowledge and performance were good, except as noted in other sections of this report. Maintenance activities were performed in a generally acceptable manner.

#### M1.2 Maintenance on Diesel Generator Service Water Inlet Valve

##### a. Inspection Scope (61726)

On September 11, 1996, the inspector observed performance of Maintenance Work Request 96-1391 to replace a failed butterfly valve in the diesel generator service water inlet line.

b. Observations and Findings

The inspector observed portions of the reassembly and installation of the valve. Mechanics attempted to assemble the actuator using two keys on the valve shaft. When the two-key configuration would not fit, one key was removed and the actuator successfully assembled. Although both the lead mechanic and another mechanic independently questioned if two keys were required, work continued without resolution of the question, past the actuator installation step. The inspector questioned if assembly with one key was consistent with the design configuration. The mechanics then stopped to determine if the as-assembled configuration was correct. After researching the vendor manual, the mechanics determined that one key was proper based on the vendor manual expanded parts drawing.

With the valve disc closed, the lead mechanic measured the downstream disc edge distance from each side of the valve. The disc centering was concluded and reassembly proceeded. The inspector questioned if the distances were equal, and the mechanics responded that the measurement differed by 1/8 inch. The inspector also asked if the valve was measured at the upper face rather than only at the lower face. The lead mechanic then measured the upper face distance from each side of the valve and determined that the measurements differed by 1/8 inch. The inspector inquired as to the basis for acceptable valve centering since it appeared to be misaligned by 1/8 inch. Engineers and mechanics both responded that the valve position appeared adequate. The inspector found that the vendor manual section provided with the Maintenance Work Request 96-1391 package directed that both upper and lower measurements be taken and compared and that upper and lower measurements from each side of the valve should be equal. The engineer stated 1/8 inch was adequate centering and later documented this conclusion in the work package. The licensee stated that the instructions were difficult to follow and were not consistent with licensee expectations for clarity.

The inspector noted that instructions for centering the valve and for the number of keys to be installed were contained in a vendor manual but not in licensee instructions. The following day, the licensee identified that vendor manual drawings were uncontrolled and could not be used for design purposes without a design engineering review. The inspector observed that the vendor manual valve drawing had been used to determine if one or two keys should be used during valve assembly. Engineering determined that the drawing was accurate and the use of one key was appropriate.

The inspector noted that the valve assembly procedure stated that the piping flange should be cleaned with approved lubricant. Upon questioning, the mechanics responded that approved lubricants involved any lubricant with a green seal (indicating low chlorides appropriate for reactor coolant system use). The inspector asked if lubricants had been evaluated for potential effect on the Nitrile valve liner since the liner would contact the flange. The engineer determined that no specific solvent had been identified for this purpose and that no evaluation had been

performed. Later discussion identified that the valve vendor allowed two solvents for use, one of these had been used. A problem identification report was written documenting weak control of solvents for some applications.

c. Conclusions

Weaknesses were identified regarding the clarity of work instructions for a valve reassembly and how well the procedures were followed. Additionally, weaknesses were identified in a lack of questioning attitude associated with the reassembled configuration of the valve actuator, the use of an uncontrolled vendor manual valve assembly drawing, and potentially weak controls of solvents. Followup indicated that the valve appeared to have been assembled correctly, the vendor manual valve assembly drawing was confirmed to be accurate, and the solvent used apparently had no adverse effects.

M1.3 Automatic Depressurization System Logic Functional Test

a. Inspection Scope (61726)

The inspectors observed the performance of Surveillance Procedure 6.1ADS.303, "ADS Logic Functional Test (Div I)," Revision 1, on October 2, 1996. Discussions were held with maintenance workers, control room operators, and supervisors.

b. Observations and Findings

The inspectors observed that maintenance workers performed the procedure in a professional manner and without incident. The inspectors reviewed the completed surveillance procedure and noted that the procedure required that the operators place both Trains A and B in inhibit at the same time, which rendered both automatic depressurization subsystems inoperable and unavailable. Step 8.4 of Procedure 6.1ADS.303 required that the allowed outage time start time be logged. The operators completed an allowed outage time tracking log for Train A only. Step 8.4 did not state what specific equipment should be logged, only to log the start time. The operators did not recognize that Train B also should be logged in order to track the train unavailability during the surveillance; therefore, the operators did not complete an allowed outage time tracking log for Train B.

10 CFR 50.65(a)(2) states, in part, that monitoring under (a)(1) is not required where it has been demonstrated that the performance or condition of a structure, system, or component has been effectively controlled through the performance of appropriate preventive maintenance of the structure, system, or component, and that the structure, system, or component remains capable of performing its intended function. NUMARC 93-01, Section 9.3.2, states, in part, that performance criteria for risk significant structures, systems, and components should be established to assure reliability and availability assumptions used in the plant-specific probabilistic risk assessment, individual plant examination, or other risk determining analysis are

maintained or adjusted when necessary. The licensee uses actual plant-specific values for unavailability to comply with NUMARC 93-01. Procedure 0.27, "Maintenance Rule Program," Revision 1, implemented the maintenance rule program for the licensee. Step 4.11 of Procedure 0.27 states, in part, that the Operations Department is responsible for recognizing the impact on the Maintenance Rule Program with regard to risk significance and unavailability when taking equipment out of service and recording out-of-service and return-to-service times. The operator's failure to log Train B out-of-service and return-to-service times is an example of a violation of 10 CFR 50.65 (298/96023-01).

This problem was determined to be valid for both Procedures 6.1ADS.303 and 6.2ADS.303, "ADS Logic Functional Test (Div 2)," Revision 1, which test Train B. The licensee recalculated the unavailability times for both Trains A and B by using the unavailability time for the train that was logged during the performance of the procedure. Using the unavailability time that was logged for only Train A would be more conservative, because the opposite train was in an unavailability state for less time than the tested train was unavailable. The recalculation showed that the unavailability times for both Trains A and B were still well below the licensee performance criteria of 2.5 percent unavailability.

c. Conclusions

The inspectors identified that operators logged only one train of the automatic depressurization system as unavailable on the allowed outage time tracking log when two trains were unavailable during a portion of the surveillance. This is a violation.

**M2 Maintenance and Material Condition of Facilities and Equipment**

**M2.1 High Pressure Coolant Injection System Walkdown**

a. Inspection Scope (71707)

The inspectors walked down the high pressure coolant injection and residual heat removal systems.

b. Observations and Findings

The inspector noted that a fastener on a 3-inch section of flexible electrical line was not secure. This provided power to the High Pressure Coolant Injection Valve HPCI-MOV-10 limit switch/position indicator. The licensee stated its function would not have been degraded, based on the small clearances between the threads which were engaged and the fact that it was almost completely engaged.

Three 1.5-inch conduits about 2 feet from a structural wall, with flexible conduits extending to residual heat removal valves and parallel to a 4-inch rigid conduit, were

secured by a support to each other, but not to the 4-inch conduit. The support extended to beneath the 1/4-inch conduit, but no strap was attached. The licensee determined the support should be attached, wrote a problem identification report to attach the 4-inch conduit to the support, and concluded that seismic and structural margins were not exceeded.

#### **M4 Maintenance Staff Knowledge and Performance**

- M4.1 (Closed) URI 50-298/95018-03(EA 96-275): maintenance performed on wrong valve. This item addresses a situation where maintenance was performed on an incorrect valve. The maintenance was completed without proper documentation of maintenance activities which took place and without an adequate scope of postmaintenance testing. The licensee later performed postmaintenance testing appropriate to the work which was actually performed.

Licensee corrective actions included a comprehensive investigation, multiple plant staff meetings during which management stressed the need to promptly and fully identify incorrect work activities by plant staff, and personnel action against involved individuals. These actions appeared to have been appropriate. 10 CFR Part 50, Appendix B, Criterion V, requires that procedures appropriate to the circumstances be implemented. Contrary to this, work was performed on Core Spray Valve CS-MOV-26A vice Residual Heat Removal Valve RHR-MOV-26A. This licensee-identified and corrected violation is being treated as a noncited violation consistent with Section VII.B.1 of the NRC Enforcement Policy (298-96023-02).

#### **M4.2 Licensee Identified and Corrected Surveillance Testing Program Concerns**

##### **a. Inspection Scope (62703)**

The inspectors reviewed the documentation associated with the reactor vessel over-fill protection channels and the control room emergency filter radiation monitor.

##### **b. Observations and Findings**

On September 17, 1996, the licensee identified that 18 contacts associated with the reactor vessel over-fill protection channels had not been tested. This function to trip the feed pumps and main turbines is required by Technical Specifications, and surveillance testing requires that the circuits be tested every 18 months. The licensee also identified that the control room ventilation system filter emergency bypass radiation monitor had not been properly calibrated during each quarterly calibration period.

On September 16, 1996, the licensee declared the control room emergency filter system inoperable because the associated radiation monitor was not tested properly. The activities performed for quarterly surveillances had not been an instrument calibration required by Technical Specification, but had only been a

verification that the trip function occurred. The licensee performed the calibration and investigated if additional similar situations had occurred with other monitors.

c. Conclusions

Licensee personnel showed a good questioning attitude regarding the testing of the reactor vessel overfill protection channels and the control room ventilation system radiation monitor.

**M7 Quality Assurance in Maintenance Activities**

**M7.1 1996 Review of Technical Support Training Programs Accreditation**

a. Inspection Scope (71707)

A third-party evaluation of licensee training programs was performed.

b. Observations and Findings

The inspector reviewed the accreditation report for the 1996 technical support training programs. The licensee self-assessment and third-party evaluation identified several issues concerning the effectiveness of these training programs. The inspector reviewed the findings of this report to determine if new safety issues existed.

The evaluation identified that Core Spray Valve CS-MOV-26A had been improperly assembled as a result of an individual's lack of familiarity with training he attended. The inspector verified that a problem identification report had been initiated and that corrective action had taken place. The safety significance of this core spray valve being improperly assembled was minimal since postmaintenance testing revealed the improper assembly. The valve had not been declared operable in its degraded state. No further issues were identified.

c. Conclusions

An independent assessment of the licensee's technical support training programs did not identify issues which were inconsistent with the NRC understanding of licensee performance.

**M8 Miscellaneous Maintenance Issues (92902)**

**M8.1 (Closed) Violation 50-298/94018-02:** instrument containment valves installed backwards. During the installation of Design Change 94-222, the calibration valves (NBI-V-595 and NBI-V-596) for Differential Pressure Transmitter DPT-20 were installed with the primary containment pressure boundary against the stem and not the seat. The design package did not specify the valve orientation: therefore, it

was left up to the skill of the maintenance craft. The valves were installed backwards, although an arrow was imprinted on the valve. The inspector verified that the licensee had implemented the following corrective actions:

- (1) verified that valves were properly installed by reviewing Maintenance Work Request 94-3601;
- (2) the licensee performed a visual inspection of other instrument valves and found four additional valves incorrectly installed. The four valves were reinstalled correctly;
- (3) Instrument & Control shop meetings were conducted between October 1 and November 3, 1994, to communicate requirements (Condition Report 94-0437 contained an attendance list and subject matter that the tailgate covered);
- (4) instructions regarding valve installation were incorporated into training lesson plan titled, "Instrument Valves, Manifolds and Sensing Lines/EQP014-02-02," Revision 4 (both the lesson plan for trainers and the student text were modified); and
- (5) incorporated instructions to design engineers to identify the proper valve orientation in Procedure 3.4.6, "Design Review Checklists," Revision 13.

These actions appeared to have been appropriate. This issue is closed.

M8.2 (Closed) Licensee Event Report (LER) 50-298/95008: missing particulate filter in the elevated release point normal range Kaman. This event was discussed in NRC Inspection Report 50-298/95-06. No new issues were revealed by the LER.

### **III. Engineering**

#### **E2 Engineering Support of Facilities and Equipment**

##### **E2.1 Review of USAR Commitments**

A recent discovery of a licensee operating their facility in a manner contrary to the USAR description highlighted the need for a special focused review that compares plant practices, procedures, and/or parameters to the USAR description. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the USAR that related to the areas inspected. No items were noted between the wording of the USAR and the plant practices, procedures, and/or parameters observed by the inspectors.

E2.2 Standby Liquid Control System Walkdown

a. Inspection Scope (37751 and 37828)

The inspector performed routine walkdowns of the standby liquid control system.

b. Observations and Findings

The inspector identified that the standby liquid control pump discharge relief valves were not heat-traced, nor was approximately 4 feet of relief valve discharge valve piping. The inspector questioned if the relief valve flow would be expected to remain liquid, given expected temperatures in the room and boric acid concentration in the piping.

c. Conclusion

The heat trace issue on standby liquid control relief valve discharge lines will be followed by the safety system functional inspection team in NRC Inspection Report 50-298/96-24.

**E8 Miscellaneous Engineering Issues**

E8.1 (Closed) URI 50-298/95014-02: steam tunnel safety analysis. This item was addressed in NRC Inspection Report 50-298/96-04, (EA 96-062). This URI is closed and corrective action for the enforcement action will be followed by Violation 298/96004-01.

E8.2 (Closed) URI 50-298/95017-03: valve configuration control. The licensee identified that the configuration of motor-operated valves had not been documented consistently between the valve vendor, Anchor Darling, and the plant. The licensee found that several fasteners and other valve components had been evaluated by the vendor using component drawings which did not reflect the as-installed configuration and, in some instances, were slightly nonconservative. The licensee reevaluated valve performance parameters and determined that the valves affected were operable.

The licensee determined that the inconsistency in documentation between the valve vendor and the as-installed plant configuration was the result of the lack of attention to detail by the valve vendor in some cases and poor communication by the licensee in other cases. This lack of attention to detail involved documentation of fastener and component types and dimensions which were close to the actual configuration but not reflective of the precise dimensions of installed parts. For those cases where the dimensions were not accurate, the documented values were very close (3/4 versus 7/8 inch) to the actual dimension. Licensee analysis determined that in some cases design margins may have been reduced, but no

instance was found where rated values or design values were outside allowable design requirements.

The licensee's corrective actions appeared to have been appropriate.

The licensee's failure to properly translate design specification into plant configuration is considered a violation of 10 CFR Part 50, Appendix B, Criterion III, which requires that the design basis for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions, that appropriate quality standards are specified and included in design documents, and that deviations from such standards are controlled. This licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (298-96023-03).

- E8.3 (Closed) LER 50-298/93021: secondary containment integrity requirements not met due to personnel error. This LER was a minor issue and is closed.
- E8.4 (Closed) LER 50-298/94020: installation of nonessential elapsed time meters in essential systems due to inadequate procedures. During the design criteria document development, the licensee discovered nonessential elapsed time meters were installed in 1976 in the control room ventilation system and the standby gas treatment system.

The licensee reviewed the equipment data file and determined that all the remaining nonessential equipment were isolated from the essential portions of the circuit when installed in essential systems. Therefore, the licensee identified the root cause to be inadequate procedures that existed at the time of installation of the elapsed time meters. The inspector reviewed the following procedures:

- 3.4, "Station Modification," Revision 19
- 3.4.3, "Modification Package," Revision 11 C1
- 3.4.4, "Temporary Design Change," Revision 6.3
- 3.4.6, "Design Review Checklist," Revision 13
- 3.4.8, "Design Verification," Revision 5
- 3.4.10, "Station Modification Changes," Revision 5
- 3.13, "Equipment Safety Classification," Revision 14

The inspectors concluded that the present procedures addressed the above concerns. The installation of nonessential equipment in essential systems is a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." This licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Manual (298-96023-04).

#### IV. Plant Support

##### R1 Radiological Protection and Chemistry Controls

##### R1.1 Residual Heat Removal System Surveillance Test

###### a. Inspection Scope (71750)

The inspector observed portions of the performance of Surveillance Procedure 6.1RHR.101, "Residual Heat Removal Test Mode Surveillance Operation," Revision 2.

###### b. Observations and Findings

On September 18, 1996, the inspector observed operators perform Steps 8.2.1 through 8.2.14 of Procedure 6.1RHR.101. The operators had a copy of the procedure in hand and checked off steps as they were completed. The inspectors determined that the operators were familiar with the purpose of the test steps.

Health physics coverage was provided. The operators timed the collection of leakage past two check valves in order to determine check valve back-leakage. Operators removed a pipe cap as required. The inspector observed that the back-leakage of potentially contaminated residual heat removal system liquid flowed from a 3/8-inch goose-neck tubing about 7 feet above the floor. Operators collected the water in an open cylindrical container held overhead just below the goose neck. The inspector noted that operators were not using personnel contamination control items other than gloves. Health Physics coverage was provided and although radiation levels and surface contamination surveys were accomplished, the need to take precautions against personnel contamination due to overhead liquid flow by use of controls other than gloves was not noted.

Discussions with Radiological Protection management indicated that, for this activity, additional contamination controls would be expected. A problem identification report was issued to address the broader implications of contamination controls for both Operations and Maintenance staff performing routine work.

###### c. Conclusions

Operators performed surveillance steps in a meticulous, step-by-step fashion. Health Physics support took contamination and radiation surveys, however, the need to protect against personnel contamination during collection of potentially contaminated residual heat removal system fluid overhead was not recognized. Corrective action was implemented. No contamination occurred.

**R4 Staff Knowledge and Performance in Radiological Protection and Chemistry**

**R1. ALARA Review Reduces Exposure Associated With Plant Activity**

**a. Inspection Scope (37550)**

The inspector reviewed an evaluation and subsequent licensee action to alter a job scope to reduce radiation exposure.

**b. Observations and Findings**

The inspector reviewed the September 1996 evaluation of radiation exposure associated with proposed painting of the radiological control areas. The licensee identified that the desired scope for painting would result in 32.6 rem based on job time estimates. The review by Health Physics questioned the need for the full scope of painting and for shielding to determine if exposure could be reduced. The concern was elevated to plant management, resulting in reduction and alteration of scope of work and identification of opportunities for shielding. The current estimate of expected radiation exposure after ALARA review was 5.5 rem. These reductions and alterations in scope involved significant reduction in detailed painting of complex components and assemblies, use of temporary shielding on piping, and decisions to obtain better lighting and visibility by concentrating on the flat, easily accessed areas such as walls and floors.

The inspector reviewed plant procedures, which required engineering review of plant shielding and temporary shielding to ensure seismic and equipment operability was properly documented and evaluated as well as requirements for evaluation and accordance with 10 CFR 50.59. The inspector also observed procedures and management attention to proper evaluation of standby gas treatment operability associated with vapors produced by painting. The licensee limited the amount of paint application to 400 square feet per application and required engineering reviews to address the effect of specific painting jobs on the standby gas treatment operability if additional painting areas were identified.

**c. Conclusion**

The ALARA review was effective in altering plant activities to achieve required goals by reducing estimated exposure from 32 rem to an estimated 5.5 rem. Engineering controls to insure proper evaluation of shielding and control of the effect of paint vapor on standby gas treatment system operability appeared to be in place.

#### **S4 Security and Safeguards Staff Knowledge and Performance**

##### **a. Inspection Scope (71750)**

The inspectors observed security officer response to the loss of effectiveness of security cameras due to dense fog. The inspectors reviewed the licensee's security procedures and held discussions with security officers and security supervisors.

##### **b. Observations and Findings**

On October 8, 1996, the inspectors observed dense fog preventing the security cameras from appropriately functioning. The inspectors performed a tour of the protected area boundary and observed security officers stationed at posts required by security procedures. The inspectors questioned security officers concerning their duties and confirmed that the officers had appropriately reviewed the security procedures.

##### **c. Conclusions**

The inspectors concluded that the security officers took appropriate actions when compensating for the reduced effectiveness of security cameras due to dense fog.

#### **F8 Miscellaneous Fire Protection Issues**

##### **F8.1 (Closed) LER 50-298/94034-00 and -01: emergency lighting system cannot be assured of meeting 8 hour operation requirement due to design and maintenance deficiencies.**

NRC Inspection Report 50-298/94-31 documented that the licensee's interim actions that were implemented would adequately ensure that emergency lighting was available to support a plant shutdown outside of the control room.

The licensee performed Special Test Procedure 94-075 and discovered that emergency lights were not installed in all locations where manual actions and access/egress routes were needed in an Appendix R fire scenario. Design Change DC 94-075B installed 15 additional emergency lighting units. Also, the test determined that 21 emergency lights classified as "life safety" were required to be reclassified as Appendix R lights. The inspector verified that the 15 additional light units were installed and that 21 light units were reclassified by reviewing the design change and the Fire Hazard Analysis.

The inspectors reviewed Procedures 15.EE.301, "Safe Shutdown Emergency Lighting Battery Performance Test," Revision 1, and 15.EE.302, "90 Second Emergency Lighting Functional Test," Revision 0.1C1, to verify that both the lights that were added and the lights which were reclassified were incorporated into the surveillance procedures.

The inspectors verified that preventive maintenance tasks were created to replace parts prior to exceeding design life and to implement good industry practices.

The inspectors concluded that the licensee addressed the above concerns. The failure to maintain emergency lights operable for 8 hours and to install 8-hour emergency lights in all areas needed for operation of safe shutdown equipment and in access and egress routes is a violation of 10 CFR Part 50, Appendix R, Criterion III.J. This licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Manual (298-96023-05).

#### V. Management Meetings

##### **X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the exit meeting on October 17, 1996. The licensee acknowledged the findings presented.

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

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

Laurence M. Bergen, Senior Safety Assessment Manager  
Michael T. Boyce, Senior Engineering Manager  
Jack Dillich, Maintenance Manager  
Rick Gardner, Operations Manager  
Robert Godley, Plant Engineering Manager  
Brad Houston, Nuclear Licensing and Safety Manager  
Richard A. Sessoms, Senior Quality Assurance Manager  
David Kuser, Acting Work Control Manager  
Mike Peckham, Plant Manager

## INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering  
IP 37828: Installation and Testing of Modifications  
IP 61726: Surveillance Observation  
IP 62703: Maintenance Observation  
IP 71707: Plant Operations  
IP 71750: Plant Support Activities  
IP 92901: Followup - Plant Operations  
IP 92902: Followup - Maintenance  
IP 92903: Followup - Engineering  
IP 92700: Onsite Followup of Written Reports of Non-Routine Events at Power Reactor Facilities

## ITEMS OPENED, OPENED AND CLOSED, AND CLOSED

### Opened

298/96023-01	VIO	failure to log unavailability time for maintenance rule
298/96023-06	VIO	failure to notify the control room supervisor or shift supervisor of a mispositioned control rod
298/96023-07	VIO	failure to follow the approved control rod insertion sequence
298/96023-08	VIO	failure to implement a recovery plan with concurrence of the shift supervisor and reactor engineer

### Opened and Closed

298/96023-02	NCV	maintenance performed on wrong valve
298/96023-03	NCV	valve configuration control
298/96023-04	NCV	installation of nonessential elapsed time meters in essential systems
298/96023-05	NCV	emergency lighting system not assured to meet 8-hour operation requirement

Closed

298/93021-00	LER	secondary containment integrity requirements not met
298/94020-00	LER	installation of non-essential elapsed time meters in essential systems
298/94034-00	LER	emergency lighting system cannot be assured of meeting 8-hour operation requirement
298/94034-01	LER	emergency lighting system cannot be assured of meeting 8-hour operation requirement
298/95008-00	LER	missing particulate filter in the elevated release point normal range Kaman
298/94018-02	VIO	instrument containment valve installed backward
298/95014-02	URI	steam tunnel safety analysis
298/95017-03	URI	valve configuration control
298/95018-01	URI	inadequate management response to mismanaged event
298/95018-03	URI	maintenance performed on wrong valve