UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

April 29, 2005

Randall K. Edington, Vice
President-Nuclear and CNO
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000298/2005002

Dear Mr. Edington:

On March 24, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings which were discussed on April 14, 2005, with Mr. S. Minahan, General Manager of Plant Operations, and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC identified seven findings which were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC also determined that there were six violations associated with these findings. However, because these violations were of very low safety significance and the issues were entered into the licensee's corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC's Enforcement Policy. These noncited violations are described in the subject inspection report. If you contest the violations or significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Cooper Nuclear Station facility.

In accordance with 10 CFR 2.390 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 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/***

Michael C. Hay, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

Enclosure:
NRC Inspection Report 05000298/2005002
w/attachment: Supplemental Information

cc w/enclosure:
Michael T. Boyce, Nuclear Asset Manager
Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

John C. McClure, Vice President
and General Counsel
Nebraska Public Power District
P.O. Box 499
Columbus, NE 68602-0499

P. V. Fleming, Licensing Manager
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

Michael J. Linder, Director
Nebraska Department of
Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Chairman
Nemaha County Board of Commissioners
Nemaha County Courthouse
1824 N Street
Auburn, NE 68305

Sue Semerena, Section Administrator

Nebraska Health and Human Services System
Division of Public Health Assurance
Consumer Services Section
301 Centennial Mall, South
P.O. Box 95007
Lincoln, NE 68509-5007

Ronald A. Kucera, Deputy Director
for Public Policy
Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65101

Director
State Emergency Management Agency
P.O. Box 116
Jefferson City, MO 65102-0116

Chief, Radiation and Asbestos
Control Section
Kansas Department of Health
and Environment
Bureau of Air and Radiation
1000 SW Jackson, Suite 310
Topeka, KS 66612-1366

Daniel K. McGhee
Bureau of Radiological Health
Iowa Department of Public Health
401 SW 7th Street, Suite D
Des Moines, IA 50309

William J. Fehrman, President
and Chief Executive Officer
Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

Jerry C. Roberts, Director of
Nuclear Safety Assurance
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

Chief Technological Services Branch
National Preparedness Division
Department of Homeland Security
Emergency Preparedness & Response Directorate
FEMA Region VII
2323 Grand Boulevard, Suite 900
Kansas City, MO  64108-2670

Electronic distribution by RIV:
Regional Administrator **(BSM1)**
DRP Director **(ATH)**
DRS Director **(DDC)**
DRS Deputy Director **(KSW)**
Senior Resident Inspector **(SCS)**
Branch Chief, DRP/C **(MCH2)**
Senior Project Engineer, DRP/C **(WCW)**
Team Leader, DRP/TSS **(RLN1)**
RITS Coordinator **(KEG)**
**RidsNrrDipmIipb**
DRS STA **(DAP)**
J. Dixon-Herrity, OEDO RIV Coordinator **(JLD)**
**RidsNrrDipmIipb**
CNS Site Secretary **(SLN)**
W. A. Maier, RSLO **(WAM)**

SISP Review Completed: __mch__ ADAMS: **:** Yes **G** No Initials: __mch____
**:** Publicly Available **G** Non-Publicly Available **G** Sensitive **:** Non-Sensitive

R:_CNS\2005\CN2005-02RP-SCS.wpd

| RIV:RI:DRP/C | SRI:DRP/C | C:DRS/EB | C:DRS/OB | C:DRS/PEB | C:DRS/PSB | C:DRP/C |
|---|---|---|---|---|---|---|
| SDCochrum | SCSchwind | JAClark | ATGody | LJSmith | MPShannon | MCHay |
| T - WCWalker | T - WCW | /RA/ | /RA/ | /RA/ | DAHolman | /RA/ |
| 4/29/05 | 4/29/05 | 4/28/05 | 4/28/05 | 4/28/05 | 4/28/05 | 4/28/05 |

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

| | |
|---|---|
| Docket.: | 50-298 |
| License: | DPR-46 |
| Report: | 05000298/2005002 |
| Licensee: | Nebraska Public Power District |
| Facility: | Cooper Nuclear Station |
| Location: | P.O. Box 98<br>Brownville, Nebraska |
| Dates: | January 1 through March 24, 2005 |
| Inspectors: | S. Schwind, Senior Resident Inspector<br>S. Cochrum, Resident Inspector<br>L. Carson II, Senior Health Physicist<br>W. Sifre, Reactor Inspector |
| Approved By: | M. Hay, Chief, Branch C, Division of Reactor Projects |

Enclosure

## Contents

## SUMMARY OF FINDINGS

IR05000298/2005002; 01/01/05 - 03/24/05; Cooper Nuclear Station, Maintenance Rule Implementation, Personnel Performance During Nonroutine Evolutions, Operability Evaluations, Access Control to Radiological Significant Areas, Event Followup, and Other Activities.

The report covered a 3-month period of inspection by resident inspectors and region-based inspectors. Six Green noncited violations, one Green finding, and three unresolved items were identified. The significance of the issues is indicated by their color (Green, White, Yellow, or Red) and was determined by the significance determination process in Inspection Manual Chapter 0609. Findings for which the significance determination process does not apply are indicated by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing finding was identified regarding the failure to perform adequate maintenance on the reactor protection system motor generator. Inadequate maintenance on reactor protection system Motor Generator B resulted in a winding failure and internal fault on the motor. The licensee failed to incorporate vendor recommendations to periodically disassemble, clean, and inspect the motor into maintenance activities.

  This finding was considered more than minor since it affected the initiating events cornerstone attribute of availability, reliability, and maintenance of equipment. This finding was determined to have very low safety significance since it did not contribute to the likelihood of a primary or secondary system loss of coolant accident, did not contribute to a loss of mitigation equipment, and did not increase the likelihood of a fire or internal/external flood (Section 1R12).

Cornerstone: Mitigating Systems

- Green. A noncited violation of Technical Specification 5.4.1 was identified regarding the failure to implement the operability determination procedure. The licensee failed to meet timeliness goals and documentation requirements for evaluating the operability of the service water discharge strainers following high differential pressure conditions.

  This finding was more than minor since it was associated with the operability of mitigating equipment and could become a more significant safety concern if left uncorrected. This finding was determined to have very low safety significance since the licensee was ultimately able to demonstrate operability of the affected equipment. This finding had cross-cutting aspects associated with human performance (Section1R15).

- Green. A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, was identified for the failure to provide adequate instructions for restoring the service water system to an operable configuration following the completion of maintenance activities. This condition existed from January 21 through February 11, 2004, and resulted in Division 2 of the service water system as well as Emergency Diesel Generator 2 being inoperable for 21 days.

  The finding was greater than minor because it affected the reliability of the service water system, which is relied upon to mitigate the effects of an accident. The finding was determined to have a very low safety significance based on the results of a Phase 3 Significance Determination Process evaluation (Section 4OA5).

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a noncited violation of 10 CFR 50.54(q) for the failure to implement the emergency plan during an actual plant event. On March 14, 2005, at approximately 2:51 a.m., station operators reported to the control room that there was a fire in a trash bin in the multipurpose facility inside the protected area. At approximately 3:08 a.m., heavy smoke and flames were seen inside a container near the trash bin and the fire brigade leader reported to the control room that the fire was not out. The fire was declared out at 3:13 a.m. Emergency classification requirements state that a fire within the protected area which takes longer than 10 minutes to extinguish meets the criteria for a Notification of Unusual Event. No such declaration was made by the control room.

  This finding affected the Emergency Preparedness cornerstone and was more than minor because it affected the cornerstone attribute of emergency response organization performance during an actual event response. This finding was determined to be of very low safety significance since it only involved the failure to declare a Notification of Unusual Event during an actual plant event. This finding also had crosscutting aspects associated with human performance (1R14).

Cornerstone: Occupational Radiation Safety

- Green. Two examples of a self-revealing noncited violation of Technical Specification 5.7.2 were reviewed in which individuals entered locations in the drywell that were not barricaded and posted as locked high radiation areas. On January 18, 2005, at approximately 2:25 a.m., a worker who entered the drywell unexpectedly received an electronic dosimeter dose rate alarm. Additionally, at approximately 4:23 a.m., a second worker also received a dose rate alarm. Radiation protection technicians measured 1,500 millirem per hour at 30 centimeters on the 943-foot elevation and 1,200 millirem per hour at 30 centimeters on the 901-foot elevation. This occurrence was entered into the licensee's corrective action program. However, immediate corrective actions taken from the first event were not adequate to prevent the second event.

The issues are greater than minor because they were associated with a cornerstone attribute (exposure control) and affected the associated cornerstone objective because failure to control locked high radiation areas has the potential to cause unplanned and unintended personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, this finding had crosscutting aspects associated with human performance and problem, identification, and resolution (Section 2OS1.1).

- Green. A self-revealing noncited violation of 10 CFR 20.1501(a) was reviewed when the radiation protection staff failed to perform an adequate survey of the radiological hazards associated with the movement of the reactor transfer canal. On January 19, 2005, electronic dosimeters of two workers unexpectedly alarmed after they entered the dryer/separator pool and began moving the reactor fuel transfer canal. The licensee's investigation revealed that radiation protection staff allowed the lifting and movement of the transfer canal before surveys were performed on the bottom of the transfer canal. Radiation levels were as high as 700 millirem per hour at 30 centimeters and 1,200 millirem per hour on contact with the bottom of the transfer canal. This occurrence was entered into the licensee's corrective action program.

  The issue is greater than minor because it was associated with a cornerstone attribute of program and process and affected the associated cornerstone objective because inadequate radiation surveys have the potential to cause unplanned and unintended personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding also had crosscutting aspects associated with human performance (Section 2OS1.2).

- Green. A self-revealing noncited violation of Technical Specification 5.7.1 was reviewed. Specifically, on January 5, 2005, an individual entered a properly posted and controlled high radiation area in the condenser bay without authorization and without observing the access controls that were in place. Licensee staff determined that the individual entered the high radiation area without being logged on the proper special work permit and without being made knowledgeable of the radiological conditions in the area as required by the Technical Specifications. The general radiation levels were found to be as high as of 300 millirem per hour. This occurrence was entered into the licensee's corrective action program.

  The failure to notify radiation protection staff and to be briefed on the radiological conditions before entering a high radiation area is greater than minor because it was associated with a cornerstone attribute of program and process and affected the cornerstone objective to ensure the adequate protection of the worker's health and safety from exposure to radiation because unauthorized entry into a high radiation area could increase personnel dose. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. This finding also had crosscutting aspects associated with human performance (Section 2OS1.3).

B. <u>Licensee-Identified Violations</u>

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

# REPORT DETAILS

The plant was operating at full power at the beginning of this inspection period. On January 15, 2005, the reactor was shut down for Refueling Outage 22. A normal reactor startup was performed on February 17, the main turbine was synchronized to the grid on February 18, and full power was achieved on February 20. Reactor power was reduced to approximately 70 percent on February 25 for a control rod pattern adjustment. Full power operation was resumed on February 27.

## 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

Partial Equipment Alignment Inspections

a. Inspection Scope

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

- Primary containment following extensive work during Refueling Outage 22. The walkdown included accessible portions of the drywell on February 9, 2005, and the suppression chamber on February 16. The walkdowns concentrated on environmental qualification of equipment, seismic qualification of equipment, and cleanliness.

- Service Water (SW) System Loop B while Loop A was out of service for planned maintenance on January 12, 2005. The walkdown included portions of the system in the SW pump room and the control room.

- Emergency Diesel Generator (EDG) 1 while EDG 2 was out of service for planned maintenance on January 20, 2005. The walkdown included portions of the system in the diesel generator room and control room.

- EDG 2 while EDG 1 was out of service for planned maintenance on February 8, 2005. The walkdown included portions of the system in the diesel generator room and control room.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Walkdowns

a. Inspection Scope

The inspectors performed six fire zone walkdowns to determine if the licensee was maintaining those areas in accordance with its fire hazards analysis report (six inspection samples). The walkdowns verified that fire suppression and detection equipment were operable, that transient combustibles and ignition sources were appropriately controlled, and that passive fire protection features were in place and operable as required by the fire hazards analysis report. The following areas were included in the scope of this inspection:

- Fire Zone 2E, Steam Tunnel
- Fire Zone 13A, Turbine Operating Floor
- Fire Zone 2D, Residual Heat Removal Pump1B and 1D room
- Fire Zone 1E, High Pressure Coolant Injection (HPCI) room
- Fire Zone 3C, Reactor Building 932 elevation
- Fire Zone 2A, Reactor Building 903 elevation

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill

a. Inspection Scope

The inspectors observed the plant fire brigade during an unannounced fire drill on January 26 (one inspection sample) to assess the licensee's ability to fight fires. Observations focused on the following aspects of the drill:

- Protective clothing/turnout gear was properly donned.

- Self-contained breathing apparatus equipment was properly worn and used.

- Fire hose lines were capable of reaching all necessary fire hazard locations, the lines were laid out without flow constrictions, and the hose was simulated as being charged with water.

- The fire area of concern was entered in a controlled manner (e.g., fire brigade members stayed low to the floor and felt the door for heat prior to entry into the fire area of concern).

- Sufficient firefighting equipment was brought to the scene by the fire brigade to properly perform their firefighting duties.

- The fire brigade leader's firefighting directions were thorough, clear, and effective.

- Radio communications with the plant operators and between fire brigade members were efficient and effective.

- Members of the fire brigade checked for fire victims and propagation into other plant areas.

- Effective smoke removal operations were simulated.

- The firefighting preplan strategies were utilized.

- The licensee planned drill scenario was followed and the drill objectives acceptance criteria were met.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors performed an inspection of the internal flood protection features for the SW pump room (one sample). The inspection included a walkdown of flood protection features, a review of procedures, the Updated Final Safety Analysis Report, selected design criteria documents, and design calculations, including:

- Cooper Nuclear Station Design Criteria Document 38, "Internal Flooding System," Revision 2

- Calculation NEDC 91-069, “Moderate Energy Line Break Flooding”, dated June 12, 1991

The walkdown verified that flood protection features were in place and operable as required by the flooding analysis for the service water pump room.

b. Findings

No findings of significance were identified.

## 1R07 Heat Sink Performance

### a. Inspection Scope

The inspectors performed one heat sink performance review (one inspection sample) by observing the inspection activities on Reactor Equipment Cooling Heat Exchanger A performed on January 10, 2005, and reviewed the last set of test data for the heat exchanger taken on November 15, 2004. A review of the heat exchanger performance evaluation was conducted to identify potential deficiencies that could mask degraded performance. The inspectors reviewed the type, location, and calibration of instrumentation used to acquire the data to verify its acceptability for the evaluation. The evaluation review was conducted and documented in accordance with Performance Evaluation Procedure 13.15.1, “Reactor Equipment Cooling Heat Exchanger Performance Analysis,” Revision 22.

### b. Findings

No findings of significance were identified.

## 1R08 Inservice Inspection Activities

### .1 Performance of Nondestructive Examination (NDE) Activities

### a. Inspection Scope

Procedure 71111.08 requires the review of a minimum sample of five NDE activities of at least two or three different types. The inspector witnessed the performance of five volumetric and two surface examinations. This sample of NDE activities is listed in the attachment.

For each of the NDE activities reviewed, the inspector verified that the examinations were performed in accordance with American Society of Mechanical Engineers (ASME) Code requirements.

During the review of each examination, the inspector verified that appropriate nondestructive examination procedures were used, that examinations and conditions were as specified in the procedure, and that test instrumentation or equipment was properly calibrated and within the allowable calibration period. The inspector also reviewed documentation to verify that indications revealed by the examinations were dispositioned in accordance with the ASME Code specified acceptance standards.

The inspector verified the certifications of four Level II NDE personnel observed performing examinations or identified during review of completed examination packages.

The inspection procedure requires review of one or two examinations from the previous outage with recordable indications that were accepted for continued service to ensure that the disposition was done in accordance with the ASME Code. There were no recordable indications that required evaluation during the last outage.

If the licensee completes welding on the pressure boundary for Class 1 or 2 systems since the beginning of the previous outage, the procedure requires verification that acceptance and preservice examinations were done in accordance with the ASME Code for one to three welds. There were no welds available for review; however, the inspector did review the licensee's procedures governing weld repairs and found that they were in accordance with ASME Code requirements.

The procedure also requires verification that one or two ASME Code Section XI repairs or replacements meet Code requirements. There were no code repairs or replacements available at the time of this inspection.

Findings

No findings of significance were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed selected inservice inspection related condition reports issued during the current and past refueling outages. The review served to verify that the licensee's corrective action process was being correctly utilized to identify conditions adverse to quality and that those conditions were being adequately evaluated, corrected, and trended.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On January 13, 2005, the inspectors observed one session of licensed operator requalification training (one inspection sample) in the plant simulator. The training evaluated operator ability to perform the major plant evolutions for a normal reactor shutdown in preparation for the upcoming refueling outage. Observations were focused on the following key attributes of operator performance:

- Crew performance in terms of clarity and formality of communications

- Ability to take timely and appropriate actions

- Prioritizing, interpreting, and verifying alarms

- Correct implementation of procedures, including the alarm response procedures

- Timely control board operation and manipulation, including high-risk operator actions

- Oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate Technical Specification requirements, reporting, emergency plan actions, and notifications

- Group dynamics involved in crew performance

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed two equipment performance issues (two inspection samples) to assess the licensee's implementation of their maintenance rule program. The inspectors verified that components which experienced performance problems were properly included in the scope of the licensee's maintenance rule program and that the appropriate performance criteria were established. Maintenance rule implementation was determined to be adequate if it met the requirements outlined in 10 CFR 50.65 and Administrative Procedure 0.27, "Maintenance Rule Program," Revision 15. The inspectors reviewed the following equipment performance problems:

- Failure of Drywell Fain Coil Unit A on December 19, 2004 (CR-CNS-2004-07748)

- Failure of reactor protection system Motor Generator (MG) B on January 30 (CR - CNS-2005-00980)

b. Findings

Introduction. A self-revealing, Green finding was identified regarding the failure to perform adequate maintenance on the RPS motor generator system.

Details. On January 30, the RPS MG B failed due to an internal fault on the motor for the MG. The apparent cause, which was later confirmed by vendor analysis, was the fact that the motor had aged to the point where a turn-to-turn short circuit within the stator winding had occurred due to insulation breakdown. Both RPS MG's were original plant equipment and had been in operation for over 30 years on nearly a continuous basis. Because the RPS MG A had a similar history to the failed MG, both motor's were removed and sent to an offsite facility for inspection and repair. Although the MG motor failed during Refueling Outage 22 while the RPS bus was being powered from an alternate source, the age-related failure mechanism was present during normal operation. A loss of both RPS MG's would have resulted in a reactor scram and a loss of one MG would have affected reactor equipment cooling, reactor recirculation MG ventilation, and standby gas treatment systems.

The licensee conducted an apparent cause determination which discovered that a preventive maintenance program did not exist for the MG's and recommended a preventive maintenance program be established for RPS MG's. This was based on vendor guidance that recommended periodic disassembly, cleaning, and inspection. The apparent cause determination also noted that the licensee's preventive maintenance optimization project had considered the vendor's recommendations but rejected them based on performance history of the equipment and predictive maintenance activities. Predictive maintenance work orders to detect failures similar to the one experienced were generated to conduct off-line testing during Refueling Outage 22 but were rejected from the outage schedule due to timing of the request and the perceived low risk of failure. Immediate corrective actions for this condition included issuing a preventive maintenance request implementing the maintenance recommendation contained in the vendor manual.

Analysis. The lack of an adequate preventive maintenance program for RPS MG's was considered a performance deficiency which affected the Initiating Events cornerstone. This finding was considered more than minor since it affected the cornerstone attribute of equipment availability, reliability, and maintenance. Based on the results of a Significance Determination Process, Phase 1 evaluation, the finding was determined to have very low safety significance (Green) since it did not contribute to the likelihood of a primary or secondary system loss of coolant accident, did not contribute to a loss of mitigation equipment, and did not increase the likelihood of a fire or internal/external flood.

Enforcement. The components affected by this finding were not considered safety-related; therefore, no violation of NRC requirements was identified. The licensee entered this finding into their corrective action program as CR-CNS-2005-00980. This finding is identified as FIN 05000298/2005002-01, Inadequate Maintenance Resulted in Failure of Reactor Protection System Power Supply.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed five risk assessments (five inspection samples) 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:

- Refueling Outage 22 overall risk assessment dated January 15, 2005
- Risk associated with repairs to EDG 1 on February 11, 2005
- Risk associated with controlled burns in the vicinity of offsite power lines on March 15, 2005
- Risk associated with main turbine trip block testing on March 17, 2005
- Risk associated with repairs to EDG 1 on March 23, 2005

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Evolutions

a. Inspection Scope

For the five nonroutine events described below (five inspection samples), the inspectors reviewed operator logs, plant computer data, and strip charts to determine what occurred, how the operators responded, and whether the response was in accordance with plant procedures.

- On November 20, 2004, the inspectors responded to the control room following an unexpected SW system pressure drop after starting an idle SW pump. The inspectors verified that systems responded as designed and that operators took appropriate actions to stabilize plant conditions. The inspectors also observed the licensee's troubleshooting activities, which determined that the SW discharge strainer in each loop had clogged with silt during the pump start which caused the low pressure condition in the SW system.
- On February 2, the inspectors responded to the control room to assess operators' response to a possible reactor draindown event after receiving reactor building high sump level alarms. Followup investigation determined that no drain path from

the reactor vessel existed. The cause of the sump level alarm was a valve misalignment in the control rod drive hydraulic system which allowed water from the condensate storage tank to drain into the sump.

- On February 7, the inspectors responded to the control room following a complete loss of shutdown cooling. Shutdown cooling was lost following a failure of EDG 1 during a sequential load test which resulted in a loss of an operating fuel pool cooling pump and both operating residual heat removal (RHR) pumps and partial draindown of both RHR loops. The inspectors observed recovery actions and reviewed the licensee's implementation of Technical Specifications (TS) and their emergency plan.

- On February 12, 2005. the inspectors responded to the control room during the reactor pressure vessel hydrostatic test to evaluate compliance with TS 3.4.9. During hydrostatic testing, using Surveillance Procedure 6.MISC.504, "ASME Class 1 Hydrostatic Test," Revision 2, the control room operators suspended the test until it could be determined if reactor coolant system pressure and temperature were being controlled in accordance with TS 3.4.9. The licensee determined the requirements of TS 3.4.9 were satisfied and continued the test. The inspectors observed the plant pressurization and verified that the licensee satisfied TS 3.4.9 during the test.

- On March 14, 2005, inspectors responded to the site following a fire in the multipurpose facility (MPF). The fire had been extinguished before the inspectors arrived. The inspectors verified that there was no impact to safety-related equipment and that no radioactive material was involved. The inspectors also reviewed the licensee implementation of their emergency plan during the event.

b. Findings

Introduction. A Green, noncited violation (NCV) of 10 CFR 50.54(q) was identified for the failure to implement the emergency plan during an actual plant event.

Description. On March 14, at approximately 2:47 a.m., control room operators received a smoke alarm from the MPF and both fire pumps started. An auxiliary operator was dispatched to the MPF to investigate the alarm and, at 2:51 a.m., reported to the control room that there was a fire in a trash bin. The control room entered Emergency Procedure 5.4FIRE and dispatched the fire brigade. The operator immediately extinguished the fire in the trash bin using a fire hose from a hose station in the vicinity. The operator and a radiation protection technician, who had also responded to the scene, began to overhaul the trash bin. During overhaul activities, the auxiliary operator noted that a shipping container adjacent to the burning trash bin had been scorched by the flames and the container felt hotter than he expected. The operator also stated that, at the time, he was unsure if the fire had originated inside the container. The operator reported to the control room that the fire in the trash bin had been extinguished and the control room sounded the “all-clear” alarm. The fire brigade arrived at the scene a 2:58 a.m. The operator reported his concerns regarding the shipping container to the fire brigade leader before leaving the area.

The fire brigade made the decision to open the shipping container which required cutting a lock on the door. The container was opened at approximately 3:08 a.m., at which time heavy smoke and flames were seen inside the container and the fire brigade leader reported to the control room that the fire was not out. The fire brigade extinguished the flames with a fire hose and the fire was declared out at 3:13 a.m.

The cause of the fire was determined to be a failed high pressure mercury vapor lamp located directly above the trash bin. The lamp burst and the hot filament fell into the trash bin, igniting the contents. It was noted that this lamp was flickering several days before the fire, indicative of immanent failure. The vendor for this particular style of lamp recommended routine replacement of these lamps prior to failure since failure can result in the lamp bursting which has been known to start fires. The licensee had no program to routinely replace these lamps prior to failure.

The MPF is located inside the protected area, adjacent to the power block. Emergency Plan Implementing Procedure (EPIP) 5.7.1, “Emergency Classification,” Revision 31, states that a fire within the protected area which takes longer than 10 minutes to extinguish meets the criteria for a Notification of Unusual Event. No such declaration was made by the control room despite a report that the fire was not out 17 minutes after the initial report of the fire. The licensee stated that they believed the fire in the trash bin and the fire in the shipping container were two separate events and each fire was extinguished within 10 minutes.

Analysis. Failure to implement the emergency plan during an actual event was considered to be a performance deficiency. This finding affected the Emergency Preparedness cornerstone and was more than minor because it affected the cornerstone attribute of emergency response organization performance during actual event response. Using MC 0609, “Significance Determination Process,” Appendix B, this finding was determined to be of very low safety significance since it only involved the failure to declare a Notification of Unusual Event during an actual plant event.

This finding also had crosscutting aspects associated with human performance. This assessment was based on the fact that sufficient information was available during the event for the control room crew to have made the decision to enter the emergency plan.

Enforcement. 10 CFR 50.54(q) requires that the licensee shall maintain and follow an emergency plan. Cooper Nuclear Station’s emergency plan, as implemented by EPIP 5.7.1, required the declaration of a Notification of Unusual Event based on a fire that took longer the 10 minutes to extinguish. The licensee did not make this declaration even though the fire in the MPF on March 14, 2005, took a total of 22 minutes to extinguish. Because this violation is of very low safety significance and because the licensee entered it into their corrective action program as Condition Report CR-2005-

02295, this violation is being treated as noncited in accordance with Section VI.A of the Enforcement Policy: NCV 05000298/2005002-02, Failure to Implement Emergency Plan During a Fire.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed five operability determinations (five inspection samples) associated with 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 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:

- Nonconforming conditions (excessive calcium) in the Division 1, 250 Vdc batteries cells (CR-CNS-2003-00720)

- Secondary containment isolation equipment not environmentally qualified for postaccident radiological conditions (CR-CNS-2004-04153)

- Through-wall leaks on ASME Code Class III piping associated with the SW A and B discharge strainer blow down valves (CR-CNS-2005-02115 and CR-CNS-2005-02293)

- Source Range Monitor A erratic behavior (spiking) (CR-CNS- 2005-00638)

- SW discharge strainers clogged with silt during the SW pump start (CR-CNS-2004-07409)

b. Findings

Introduction. A Green NCV of TS 5.4.1 was identified regarding the failure to follow Procedure 0.5 OPS, "Operations Review of Notification/Operability Determinations," Revision 23.

Description. On November 20, 2004, at approximately 8:25 a.m., with two SW pumps in service, operators started an additional pump for planned maintenance. Control room operators immediately observed an unexpected pressure drop in both loops of SW, high differential pressure alarms on both SW discharge strainers, and isolation of the nonessential SW loads. Operators subsequently started the fourth SW pump to attempt to restore system pressure. This resulted in both SW discharge strainers becoming clogged with silt and automatically starting their backwash cycle. Operators in the SW pump room noted at 8:26 a.m. that both SW discharge strainer differential pressure instruments indicated greater than the operability limit. System pressure stabilized in SW Loop A after the strainer had backwashed for approximately 3 minutes; however, pressure was not restored in SW Loop B until operators bypassed the strainer approximately 16 minutes later. The licensee concluded that the strainers became clogged with silt during the start of idle SW pumps. Both strainers were cleaned and returned to service approximately 10 hours later

System Operating Procedure 2.2.71, " Service Water System," Revision 74, states that SW zurn [discharge] strainers have an operability limit of 15 psid based on structural integrity of the strainer basket. Operators declared SW Loop B inoperable when the discharge strainer was bypassed, but failed to declare either SW loop inoperable based on exceeding this differential pressure limit. In addition, the licensee did not document a reasonable assurance of operability for the SW system until 6:23 p.m. on November 20, 2004, 10 hours after discovery of the condition. TS 3.7.2 (B) requires the plant to be placed in Mode 3 within 12 hours and Mode 4 within 36 hours if both SW loops are inoperable. Administrative Procedure 0.5OPS required that a reasonable assurance of operability be documented as soon as practical and commensurate with the safety importance of the components affected; otherwise declare equipment inoperable if a reasonable assurance of operability did not exist. No such assurance was documented, nor was SW Loop A immediately declared inoperable. During subsequent interviews, the licensee stated that, despite the lack of documentation, and despite the indicated differential pressure across SW Discharge Strainer A, operators believed that a reasonable assurance of operability existed at the time of discovery since the differential pressure returned to normal approximately 3 minutes after the start of the event. Based on the guidance in Generic Letter 91-18, the inspectors concluded that the 10 hours used document a reasonable assurance of operability not commensurate with safety given that no actions were taken to shut down the reactor and the TS-required action was to be in Mode 3 in 12 hours.

Immediate corrective actions for this event included cleaning and inspection of both SW discharge strainers. The strainers were found to be 80 to 90 percent clogged with sand. No mechanical damage was found during the inspections.

<u>Analysis</u>. The failure to follow station procedures was considered a performance deficiency which affected the Mitigating Systems Cornerstone since it was associated with the operability of mitigating equipment. This finding was considered more than minor since failure to follow station procedures, specifically those which would require short-term TS actions to be implemented, could become a more significant safety concern if left uncorrected. Based on the results of a significance determination process, Phase 1 evaluation, this finding was determined to have very low safety significance (Green) since it did not represent an actual loss of the safety function of the system and the licensee was ultimately able to demonstrate operability of the affected equipment.

This finding had crosscutting aspects associated with human performance. This assessment was based on the fact that Procedure 0.5OPS reflected current guidance regarding operability determinations and that a significant amount of training had been conducted, yet personnel still failed to follow the procedure. Furthermore, operators failed to declare the affected components inoperable, despite the fact that an indeterminate state of operability existed on the SW system for approximately 10 hours.

Enforcement. TS 5.4.1 (a) requires written procedures to be implemented as recommended by Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A recommends procedures for equipment control. Administrative Procedure 0.5OPS, "Operations Review of Notification/Operability Determinations," Revision 23, required operators to document a basis for reasonable assurance of operability commensurate with safety importance of the system affected or to declare the equipment inoperable. Contrary to this requirement, the operators failed to document a reasonable assurance of operability in a time frame commensurate with safety and failed to declare affected equipment inoperable in the absence of a reasonable assurance of operability. Because this violation was of very low safety significance and was entered in the corrective action program as CR-CNS-2004-07409, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000298/2005002-03, Failure to Follow Operability Determination Procedure.

## 1R16 Operator Workarounds

### a. Inspection Scope

The inspectors reviewed one potential operator work around item (one inspection sample) to evaluate its affect on mitigating systems and the operators' 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. The following potential operator workaround was reviewed:

- Operation of Temperature Control Valve SW-TCV-451A in manual versus automatic.

### b. Findings

No findings of significance were identified.

## 1R17 Permanent Plant Modifications

### a. Inspection Scope

The inspectors reviewed a modification to replace all four reactor feed check valves during Refueling Outage 22 (one inspection sample). The inspection included a review of the modification package and observations of field work to install the new check valves. The inspectors also observed and reviewed the results from the postmaintenance testing.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing

a. Inspection Scope

The inspectors reviewed or observed six selected postmaintenance tests (six inspection samples) 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 maintenance activities were included in the scope of this inspection:

- Corrective maintenance to clean the valve plug and valve seat on Main Steam Isolation Valve MS-AOV-AO80B (Work Order 4403744)

- Preventive maintenance on SW-MO-2128 to clean and inspect the valve operator (Work Order 4345839)

- Corrective Maintenance on EDG 1 to replace a failed diode and Relay 4EMX1 (Work Order 4426786)

- Installation of Containment Isolation Logic Change modification to implement GE Service Information Letter 131 (Change Evaluation Document 6014280)

- Corrective maintenance on the reactor building crane to upgrade equalizer plates and welds in response to a 10 CFR Part 21 notification (CR-CNS-2005-00094)

- Corrective maintenance to replace a leaking fuel injector on EDG 1 (CR-CNS-2005-02449)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated the licensee's outage activities associated with Refueling Outage 22 to ensure that: risk was considered in developing the outage schedule; administrative risk reduction methodologies were implemented to control plant configuration; mitigation strategies were developed for losses of key safety functions; and the operating license and Technical Specification requirements were satisfied to ensure defense-in-depth. Specifically, the following activities were included in the scope of this inspection:

- A review of the Refueling Outage 22 schedule, Revision 1, including the outage risk assessment
- Control room observations of the reactor shutdown and initial cooldown, including primary containment walkdown immediately after shutdown.
- Daily review of critical parameter associated with reactor vessel level, shutdown cooling operations, and offsite power availability.
- Daily review of scheduled work, prioritization, control, and the outage risk assessment for that work
- Control room observations of the reactor startup and heatup.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed or reviewed the following six surveillance tests (six inspection samples) 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 TS requirements, the Updated Safety Analysis Report, and licensee procedural requirements:

- 6.PC.503, "Drywell-to-Suppression Chamber Leakage Test," Revision 14, performed on January 18, 2005
- 6.2SGT.501, "SGT [Standby Gas Treatment] B Carbon Sample, Carbon Absorber and HEPA [High Efficiency Particulate Air] Filter In-Place Leak Test, and Component Leak Test (Div 2)," Revision 9, performed on January 19
- 6.PC.513, "Main Steam Local Leak Rate Tests," Revision 11, performed on January 20, 2005

- 6.PC.511, “High Pressure Coolant Injection (HPCI) Local Leak Rate Tests,” Revision 7, performed on January 21, 2005

- 6.PC.519, “Reactor Core Isolation Coolant (RCIC) Local Leak Rate Tests,” Revision 10, performed on February 8, 2005

- 6.1DG.302, “Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test (Div I),” Revision 29, performed on February 14, 2005

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed one temporary plant modification (one inspection sample), Work Order 4420251, implemented on January 13, which raised the condensate storage tank heater setpoint from 40 degrees to 70 degrees. This was in support of Refueling Outage 22 vessel floodup due to the reactor vessel minimum temperature of 68 degrees. The inspectors verified that the change did not require NRC approval prior to implementation and adequate controls on the installation existed.

b. Findings

No findings of significance were identified

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed the licensee perform one emergency preparedness drill on March 9 (one inspection sample). Observations were conducted in the control room, 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 March 9, 2005

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiological Significant Areas

a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, the Technical Specifications, and the licensee's procedures required by Technical Specifications as criteria for determining compliance. During the inspection, the inspector interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspector performed independent radiation dose rate measurements. and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone

- Controls (surveys, posting, and barricades) of the Reactor Building, Drywell, Refueling Floor, Turbine Building, and Radwaste Building radiation, high radiation areas, and airborne radioactivity areas

- Radiation work permits, procedures, engineering controls, and air sampler locations

- Conformity of electronic personal dosimeter alarm setpoints with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms

- Barrier integrity and performance of engineering controls in two potential airborne radioactivity work areas

- Physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within the spent fuel storage pool

- Self-assessments related to the access control program since the last inspection

- Corrective action documents related to access controls

- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Special work permit briefings and worker instructions
- Adequacy of radiological controls such as required surveys, radiation protection job coverage, and contamination controls during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements

Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following items:

- Licensee event reports (LERs), audits, and special reports related to the access control program since the last inspection
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem CEDE (committed effective dose equivalent)

The inspector completed 21 of the required 21 samples.

b. Findings

.1 Introduction. The inspector reviewed a Green, self-revealing NCV of TS 5.7.2, resulting from the licensee's failure to barricade and post two areas as locked high radiation areas.

Description. On January 18, 2005, two workers who entered the drywell unexpectedly received electronic dosimeter alarms because they entered individual areas with radiation levels in excess of 1,000 millirem per hour. Radiation protection staff members measured 1,500 millirem per hour at 30 centimeters on the 943-foot elevation near Fan

Cooler C and a 24-inch RHR B pipe and 1,200 millirem per hour at 30 centimeters on the 901-foot elevation near an 18-inch core spray pipe.

A review of the circumstances revealed the following:

- radiation protection personnel were unaware of the change to radiological conditions;
- the two areas were not barricaded or conspicuously posted;
- the licensee did not install area radiation monitors set to alarm if radiation levels increased in order to provide a visual and an audible signal to alert personnel in the area of the increase.

Analysis. The failure to control a locked high radiation area in accordance with TS 5.7.2 is a performance deficiency. This finding is greater than minor because it is associated with the Occupational Radiation Safety Program and Process Attribute and affected the cornerstone objective, which is to ensure adequate protection of worker health and safety from exposure to radiation. This occurrence involved workers' unplanned, unintended dose or potential for such a dose that could have been significantly greater as a result of a single, minor, reasonable alteration of circumstances. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

This finding had associated aspects in human performance and problem identification and resolution. The licensee's immediate corrective actions from the first event (2:25 a.m.) were not effective in precluding the second event (4:23 a.m.). Additionally, the licensee did not control the drywell as a locked high radiation area, pursuant to TS 5.7.2, until 6 a.m.

Enforcement. TS 5.7.2, requires, in part, that areas accessible to personnel with dose rates such that a major portion of the body could receive in one hour a deep dose equivalent in excess of 1000 millirem per hour at 30 centimeters from the source of radiation be provided with locked doors to prevent unauthorized entry. For individual high radiations areas accessible to personnel that are located within large areas, such as containment, or areas where no enclosure exists for purposes of locking and no enclosure can be reasonably constructed around the individual area, that area shall be barricaded and conspicuously posted. Additionally, area radiation monitors that have been set to alarm if radiation levels increase need to be in place to provide a visual and an audible signal to alert personnel in the area of the increase.

The failure to barricade, post, and control these locked high radiation areas in the drywell were two examples of a violation of TS 5.7.2. Since these failures to control locked high radiation areas resulted in an occurrence of very low safety significance were entered into the licensee's corrective action program Condition Report CR-CNS-2005-00380, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 5000298/2005002-04, Failure to Control a Locked High Radiation Area in Accordance with TS 5.7.2.

.2 Introduction. The inspector reviewed a Green, self-revealing NCV involving the radiation protection staff's failure to perform an adequate survey in the dryer/separator pool before moving the reactor fuel transfer canal pursuant to 10 CFR 20.1501(a).

Description. On January 19, 2005, the radiation protection staff allowed the lifting and movement of the transfer canal before surveys were completed on the bottom of the transfer canal. Electronic dosimeters of two workers unexpectedly alarmed after they entered the dryer/separator pool and began moving the reactor fuel transfer canal. After the workers' electronic dosimeter alarmed, a radiation protection technician surveyed the bottom of the transfer canal, and the radiation levels detected were 1,200 millirem per hour on contact and 700 millirem per hour at 30 centimeters. Consequently, the workers had the potential to receive unintended and unexpected radiation exposure because the magnitude and extent of radiation levels and potential radiological hazards were not fully evaluated.

Analysis. The failure to conduct adequate radiation surveys is a performance deficiency. This finding is greater than minor because it is associated with the Occupational Radiation Safety Program and Process attribute and affected the cornerstone objective, which is to ensure adequate protection of worker health and safety from exposure to radiation. This occurrence involved workers' unplanned, unintended dose or potential for such a dose that could have been significantly greater as a result of a single, minor, reasonable alteration of circumstances. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

Enforcement. Pursuant to 10 CFR 20.1003, "survey" means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. 10 CFR 20.1501(a) requires, in part, that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels and the potential radiological hazards that could be present. 10 CFR 20.1201 requires, in part, that the licensee control the occupational dose to individual adults to the dose limits in 10 CFR Part 20. The inspector determined that the licensee's failure to survey the bottom of the transfer canal prevented them from controlling individuals' occupational dose.

Because this failure to perform complete radiation surveys resulted in an occurrence of very low safety significance, and it has been entered into the licensee's corrective action program (Condition Report CR-CNS-2005-00427), this violation is being treated as an NCV consistent with Section VIA of the NRC Enforcement Policy: NCV 5000298/2005002-05, Failure to Perform an Adequate Survey to Evaluate Radiological Hazards per 10 CFR 20.1501.

.3 Introduction. The inspector reviewed a Green, self-revealing NCV of TS 5.7.1, resulting from an individual entering a high radiation area without authorization and without noting the access controls that were in place.

Description. On January 5, 2005, a worker entered a high radiation area in the condenser bay without being logged on the proper special work permit and without having the radiation protection staff brief him on the radiological conditions. Consequently, the individual was exposed to unplanned and unintended radiation exposure. During the investigation of the occurrence, the licensee staff determined that an individual entered the condenser bay high radiation area and his electronic dosimeter alarmed because the alarm dose rate setpoint was exceeded. Radiation protection staff further determined that the individual entered a TS high radiation area without: (1) being logged on the proper special work permit and (2) being briefed on the radiological conditions in the area. The radiation levels in the general area where found to be in excess of 300 millirem per hour.

Analysis. The failure to notify radiation protection and get briefed on the radiological conditions before entering a high radiation area is a performance deficiency. This finding is greater than minor because it was associated with the Occupational Radiation Safety Program and Process attribute and affected the cornerstone objective to ensure the adequate protection of worker health and safety. This occurrence involved a worker's unplanned, unintended dose, or potential for such a dose, that could have been significantly greater as a result of a single, minor, reasonable alteration of circumstances. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

Enforcement. TS 5.7.1 requires, in part, that entry into high radiation areas shall be controlled by the issuance of a special work permit that requires a radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when preset integrated dose is received. Entry into such areas with this monitoring device may be made only after dose rate levels have been established and personnel have been made aware of them.

Because this failure to control access to a high radiation area resulted in an occurrence of very low safety significance, and it has been entered into the licensee's corrective action program (Condition Report CR-CNS-2005-00062), this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 5000298/200502-06, Failure to Gain Authorized Access to a High Radiation Area in Accordance with TS 5.7.1.

## 4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspector sampled licensee submittals for the performance indicators listed below from June 2004 to January 2005. To verify the accuracy of the performance indicator data reported during that period, performance indicator definitions and guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Indicator Guideline," Revision 2, were used to verify the basis in reporting for each data element.

Occupational Radiation Safety Cornerstone

- Occupational Exposure Control Effectiveness Performance Indicator

Licensee records reviewed included corrective action documentation that identified occurrences of locked high radiation areas (as defined in the licensee's TS), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in Nuclear Energy Institute 99-02). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. No significant regulatory problems or concerns were identified during this procedure.

Public Radiation Safety Cornerstone

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

The inspector reviewed radiological effluent release program corrective action records and annual effluent release reports documented from June 2004 to January 2005 to determine if any liquid or gaseous effluent releases resulted in events that exceeded the performance indicator thresholds. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed a selection of condition reports written during the inspection period to verify the licensee was entering conditions adverse to quality into the corrective action program at an appropriate threshold. Additionally, the inspectors verified that condition reports were appropriately categorized and dispositioned in accordance with the licensee's procedures, and in the case of significant conditions adverse to quality, to review the adequacy of licensee root cause determinations, extent of condition reviews, and implemented corrective actions. The following condition report was reviewed in depth during this period (one sample):

- CR-CNS-2005-01332, apparent cause regarding high vibrations on SW Pump C on February 7

b. Findings

No findings of significance were identified.

.2 Occupational Radiation Safety Sample Review

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's problem identification and resolution processes regarding exposure tracking, higher than planned exposure levels, and radiation worker practices. The inspector reviewed the corrective action documents listed in the attachment against the licensee's problem identification and resolution program requirements.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems Crosscutting Aspects of Findings

Section 2OS1.1 describes a finding with crosscutting aspects associated with problem identification and resolution.

4OA3 Event Followup

.1 (Closed) LER 05000298/2004004-00. Loss of Safety Function Due to Past Inoperabilities of HPCI System

This LER reported that, on two occasions the licensee failed to report the loss of a safety function caused by operators disabling the HPCI system during scram recovery actions. HPCI started automatically on a low reactor vessel level signal following reactor scrams on May 26 and November 28, 2003. On both occasions, operators placed the HPCI auxiliary oil pump in pull-to-lock to disable the system since HPCI injection was not required or desired. This action was not covered by procedure and would have prevented HPCI from automatically initiating if needed later in the scram recovery. These two instances were not reported to the NRC in accordance with 10 CFR 50.72; however, the inspectors reviewed each occurrence and concluded that violations had occurred associated with inadequate procedures or failure to follow procedures. These noncited violations were documented in NRC Integrated Inspection Reports 05000298/2003006 and 05000298/2004002. The licensee discovered their oversight in reporting these occurrences while evaluating a third instance where operators disabled HPCI due to a degraded condition in June 2004. The licensee reported the third instance in LER 05000298/2004003-00. Although the failure to report the loss of a safety function was a violation of 10 CFR 50.72, it constitutes a violation of minor significance since the NRC would not have taken different action had the reports been submitted. This minor violation is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This LER is closed.

.2 Failure of a 4160 V General Electric Magne Blast Breaker

a. Inspection Scope

The inspectors conducted a followup inspection for the failure of a 4160 V General Electric Magne Blast breaker to close on demand. The failure occurred on December 29, 2004, when operators attempted to start SW Pump A remotely from the control room. The followup inspection included a review of the licensee's root cause analysis and corrective actions as well as their extent of condition review.

b. Findings

Introduction. A self-revealing finding was identified regarding a safety-related 4160 V breaker associated with SW Pump A that failed to close and latch on demand. This finding is unresolved pending receipt of information necessary to assess the safety significance of this issue.

Description. On December 29, 2004, control room operators attempted to start SW Pump A from the control room. During the attempt, the circuit breaker closed and then immediately tripped open. As a result, SW Pump A was declared inoperable in accordance with TS 3.7.2.

The circuit breaker for SW Pump A is a 4160 V General Electric Magne Blast breaker. Troubleshooting on the breaker by the licensee indicated that a critical clearance between the prop pin and the breaker frame was inadequate. There was also evidence that the prop pin had come in contact with the frame, which would have prevented the breaker from latching in the closed position during operation. The breaker had been overhauled in January 2000 and, during receipt inspection by the licensee, the prop pin clearance was verified to be adequate. The licensee determined that, although the clearance was adequate in 2000, insufficient spacers between the prop pin and frame allowed the prop pin to travel along its shaft during breaker operation until it contacted the frame.

In December 2000, Resolve Condition Report 2000-1165 documented a similar failure of the breaker for SW Booster Pump B due to inadequate clearances between the prop pin and frame. This breaker had recently been overhauled and the licensee was able to verify that the prop pin clearance was adequate following overhaul, but the pin had traveled along the shaft and become misaligned during successive breaker operations. As a result, the licensee's breaker engineer recommended the addition of washers between the pin and frame to ensure that this critical clearance was maintained. In addition, the population of safety-related breakers were inspected, including the breaker for SW Pump A, to ensure that adequate clearance existed between the pin and frame; however, the work request to perform this inspection did not require the verification or addition of the spacers recommended by the breaker engineer. The breaker for SW Pump A was verified to have adequate clearances during this inspection, but no spacers were added to ensure the clearance was maintained.

Analysis. The inspectors concluded that this finding was more than minor because it affected the Mitigating Systems cornerstone attribute of equipment reliability and availability. Further inspection is required to determine the actual impact on the SW system's capability to perform its safety function.

Enforcement. The finding remains unresolved pending receipt of additional information needed to determine the actual impact on the SW system's capability to perform its safety function: Unresolved Item (URI) 05000298/2005002-07, SW Pump A 4160 V Breaker Failure.

.3 Failure of EDG 1 due to Lube Oil Leak

a. Inspection Scope

The inspectors observed the licensee's response to a lube oil instrument line failure on EDG 1 during a monthly surveillance test which may have rendered the EDG inoperable. In addition, the inspectors reviewed the licensee's root cause and corrective actions for this failure.

b. Findings

Introduction. A self-revealing finding was identified regarding a lube oil leak on EDG 1 which had the potential to render the EDG inoperable. This finding remains unresolved pending further review to determine if the EDG would have been capable of performing its safety function.

Description. On December 30, 2004, approximately 2 hours after starting EDG 1 for a routine monthly surveillance test, control room operators received a diesel lube oil low level alarm. An operator was dispatched to the diesel room where it was discovered that a 1/4-inch instrument line for the engine-driven lube oil pump discharge pressure switch had broken, resulting in an estimated 7 gallon-per-minute oil leak. It was also estimated that 100 to 150 gallons of oil leaked from the lube oil system into the room. Operators immediately secured EDG 1 and declared it inoperable. The instrument line was repaired and the diesel was declared operable the following day.

The licensee determined that the instrument line failure was caused by high cycle fatigue of the instrument line and its fittings. This line had been modified in 1989 to replace the copper line with stainless steel. Vendor drawings for the EDG lube oil system specified a 90° elbow at the engine-driven lube oil pump discharge pressure tap leading to the pressure switch. The modification installed a straight fitting with an instrument root valve which extended perpendicular to the discharge pipe for approximately 6 inches. This configuration was susceptible to vibration induced, high-cycle fatigue. In their root cause analysis, the licensee noted that this instrument line developed leaks on three other occasions since the modification in 1989, but, during repairs, the system was never returned to the vendor's original design. The modified configuration eventually led to the catastrophic failure of the instrument line fittings. The lube oil system for EDG 2 was configured in accordance with the vendor drawings and was not susceptible to this failure mechanism.

Analysis. The inspectors concluded that this finding was more than minor because it affected the Mitigating Systems cornerstone attribute of equipment reliability and availability. Further review of the EDG design and capabilities is required to determine the actual impact on the EDG's capability to perform its safety function.

Enforcement. The finding remains unresolved pending receipt of additional information needed to determine the actual impact on the EDG's capability to perform its safety function: URI 05000298/2005002-08, EDG 1 Oil Leak.

.4 SW Discharge Strainer Clogging

a. Inspection Scope

The inspectors conducted a followup inspection for the SW discharge strainer clogging event that occurred on November 20, 2004. This followup inspection included a review of the licensee's root cause analysis and corrective actions as well as their extent of condition review.

b. Findings

Introduction. An unresolved item was identified regarding conditions adverse to quality in the SW system intake, which resulted in both SW discharge strainers clogging.

Description. As discussed in Section 1R14, both SW discharge strainers became clogged with silt after starting additional SW pumps on November 20, 2004. Both strainers were cleaned and returned to service approximately 10 hours later.

Since initial plant operation in 1974, the licensee has experienced silt intrusion in the intake structure. Based on a 1973 hydrology study of the Missouri River and the intake structure, a guide wall was constructed in front of the intake structure in 1974 to reduce sediment intrusion. The guide wall was designed to provide sediment reduction at a nominal river level of 885 feet. However, river flows and levels over the past several years have been significantly below normal, with the average river level having decreased approximately 5 feet over the past 4 years. The hydrology study also demonstrated that a relatively large increase in the suspended sediment entering the SW bay occurs when river level decreases below 877 feet. River level averaged between 875 and 876 feet during the 2 weeks prior to the event.
The licensee also noted that the SW strainers were the subject of numerous condition reports over the past 3 years; however most were classified as "trend only" even though they documented increased debris loading due lower than normal river levels. Immediately prior to the strainer clogging event, a trend of several SW strainer high differential pressure alarms was noted in the corrective action program and operators logs, including a condition report identifying sand carrying over the SW bay traveling screens. The licensee's root cause team concluded that these were precursor events that were not sufficiently addressed to prevent the SW strainer clogging event.

Immediate corrective actions for this condition included the installation of a differential pressure monitoring system on the SW discharge strainers, increased frequency of strainer cleaning from 3 months to 6 weeks, increased sparger rotation, and increased SW pump rotation from weekly to daily. The licensee also accelerated their plans to modify the guide wall and repair the SW sparging system to reduce the buildup of silt in the SW intake bay.

Corrective actions for this condition were previously implemented or scheduled for implementation with varying degrees of success. In 1988, the frequency of starting idle SW pumps was increased due to silt buildup in the SW intake. In 2003, the river bottom adjacent to the intake structure was dredged; however, this dredging removed the rip-rap lining the river bottom, which resulted in an increased silting problem by allowing river bottom silt to flow into the intake. The rip-rap was replaced in April 2004. Long-term corrective actions included modification of the guide wall to restore its function at lower river, an upgrade of the traveling screens with an improved design, and installation of turning vanes along the river bed to divert the flow of silt away from the intake structure. The remainder of these corrective actions were scheduled for completion in October 2006.

<u>Analysis</u>: The inspectors concluded that the silt intrusion into the intake structure, which resulted in both SW discharge strainers becoming clogged, was a significant condition adverse to quality and was more than minor since it affected the Mitigating Systems cornerstone attribute of equipment reliability and availability. Corrective actions were implemented with varying degrees of success and longer-term corrective actions were scheduled to be implemented, which would have reduced the likelihood of this event. This item remains unresolved pending further review of the scope of the remaining corrective actions to determine if the implementation schedule was reasonable and to

further evaluate the corrective action already implemented to determine if the licensee took reasonable actions to prevent this event.

Enforcement: This finding is unresolved pending further review of the licensee's corrective actions: URI 05000298/2005002-09, Both SW Discharge Strainers Clogged Due to Silt Intrusion.

4OA4 Crosscutting Aspects of Findings

Sections 1R14 and 1R15 describe findings with human performance aspects.

4OA5 Other Activities

(Closed) AV 05000298/2004014-01: Inadequate Instructions for Restoration of the SW System Following Maintenance

NRC Inspection Report 05000298/2004014 documented an apparent violation associated with inadequate instructions for restoration of the gland water supply to SW Pumps B and D following maintenance. This finding had the potential to render the pumps incapable of performing their safety function during a postulated accident and was determined to have a preliminary safety significance of greater than very low safety significance. In a letter to Nebraska Public Power District dated March 31, 2005, the NRC transmitted its final conclusion regarding the safety significance of this event. The letter stated that the finding is of very low safety significance (Green) and that this apparent violation is being treated as a noncited violation, consistent with Section VI.A of the Enforcement Policy (NCV 05000298/2005002-07: Inadequate Instructions for Restoration of the Service Water System Following Maintenance). This apparent violation is closed.

4OA6 Meetings, Including Exit

On January 28, 2005, the inspectors presented the inspection results regarding access to radiologic significant areas and inservice inspection to R. Edington, Vice President, and other members of his staff who acknowledged the findings.

On April 14, 2005, the inspectors presented the results of the resident inspector activities to Mr. S. Minahan and other members of his staff who acknowledged the findings.

The inspectors confirmed that proprietary information was not provided or examined during the inspection.

40A7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Engineering personnel identified that multiple secondary containment isolation valves in the heating and ventilation system did not have position limit switches and associated equipment that could support environmental qualification under 10 CFR 50.49 requirements. Based upon a new radiation analysis, it was determined that these limit switches could be exposed to a more harsh environment than previously considered. The licensee determined the switches would need to be replaced to comply with 10 CFR 50.49 requirements. This NCV was considered to have very low safety significance because the position limit switches do not adversely affect the safety function of the valves.

- 10 CFR 20.1902(a) requires, in part, posting of radiation areas with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIATION AREA." However, on December 11, 2004, a radiation protection technician found an unposted area outside the RHR B heat exchanger room with general area dose rates of 7 millirem per hour. This same dose rate had been previously identified on November 29, 2004, but the radiation protection staff did not post the area as required. Consequently, the “radiation area” outside the RHR B heat exchanger room remained unposted for 11 days. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the finding was of very low safety significance because it was not an ALARA finding, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. The licensee documented this event in Condition Report CR-CNS-2004-7624.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee Personnel

J. Bednar, Emergency Preparedness Manager
C. Blair, Engineer, Licensing
D. Cook, Technical Assistant to General Manager
S. Minahan, General Manager of Plant Operations
T. Chard, Radiological Manager
K. Chambliss, Operations Manager
J. Christensen, General Manager of Support
J. Edom, Risk Management
R. Estrada, Corrective Actions Manager
J. Flaherty, Site Regulatory Liaison
P. Fleming, Licensing Manager
D. Knox, Maintenance Manager
W. Macecevic, Work Control Manager
J. Roberts, Director, Nuclear Safety Assurance
R. Shaw, Shift Manager
J. Sumpter, Senior Staff Engineer, Licensing
K. Tanner, Shift Supervisor, Radiation Protection
R. Hayden, Emergency Preparedness Staff
T. Chard, Manager, Radiation Protection
R. Edington, Vice President
S. Blake, Manager, Quality Assurance
K. Fili, Manager, Nuclear Projects
D. Kimbell, Outage Manager
G. Kline, Director, Engineering

NRC Personnel
L. Ricketson, Senior Health Physicist
S. Cochrum, Senior Resident Inspector

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---|---|---|
| 05000298/2005002-07 | URI | SW Pump A 4160 V Breaker Failure (4OA3..2) |
| 05000298/2005002-08 | URI | EDG 1 Oil Leak (4OA3.3) |
| 05000298/2005002-09 | URI | Both SW Discharge Strainers Clogged Due to Silt Intrusion (4OA3.4) |

Opened and Closed

| | | |
|---|---|---|
| 05000298/2005002-01 | FIN | Inadequate Maintenance Resulted in Failure of Reactor Protection System Power Supply (1R12) |
| 05000298/2005002-02 | NCV | Failure to Implement Emergency Plan During a Fire (1R14) |
| 05000298/2005002-03 | NCV | Failure to Follow Operability Determination Procedure (1R15) |
| 05000298/2005002-04 | NCV | Failure to Conspicuously Post and Barricade Two Areas in the Drywell as Locked High Radiation Area in Accordance with TS 5.7.2 (2OS1.1) |
| 05000298/2005002-05 | NCV | Failure to Perform an Adequate Survey to Evaluate Radiological Hazards per 10 CFR 20.1501 (2OS1.2) |
| 05000298/2005002-06 | NCV | Failure to Gain Authorized Access to a High Radiation Area in Accordance with TS 5.7.1 (2OS1.3) |
| 05000298/2005002-07 | NCV | Inadequate Instructions for Restoration of the SW System Following Maintenance (4OA5) |

Closed

| | | |
|---|---|---|
| 05000298/2004004-00 | LER | Loss of Safety Function Due to Past Inoperabilities of HPCI system (4OA3.1) |
| 05000298/2004014-01 | AV | Inadequate Instructions for Restoration of the SW System Following Maintenance (4OA5) |

## LIST OF DOCUMENTS REVIEWED

**Section 1R08: Inservice Inspection Activities**

Procedures

3.28, “Inservice Inspection and Testing Programs,” Revision 20

3.28.1, “Inservice Inspection Program Implementation,” Revision 9

54-ISI-124-02, “Ultrasonic Examination of Ferritic Piping Welds and Vessel Welds Two Inches or Less in Thickness,” Revision 2

54-ISI-130-41, “Procedure for the Remote Ultrasonic Examination of BWR Core Shroud Assembly Seam Welds,” Revision 37

54-ISI-135-05, “Linearity and Beam Spread Measurements,” Revision 5

54-ISI-173-03, “ASME Section XI Examination Coverage,” Revision 3

54-ISI-240-41, “Visible, Solvent Removable Liquid Penetrant Examination,” Revision 41

54-ISI-270-42, “Wet or Dry Magnetic Particle Examination Procedure,” Revision 42

54-ISI-805-06, “Ultrasonic Examination of Reactor Vessel Welds,” Revision 6

54-ISI-806-02, “Manual Ultrasonic Through Wall and Length Sizing of Ultrasonic Indications in Reactor Pressure Vessel Welds,” Revision 2

54-ISI-829-02, “Manual Ultrasonic Examination of Dissimilar Metal Piping Welds,” Revision 2

54-ISI-833-02, “Ultrasonic Examination of Reactor Equipment Cooling System Piping Welds at Cooper Nuclear Station,” Revision 2

54-ISI-835-08, “Ultrasonic Examination of Ferritic Piping Welds,” Revision 8

54-ISI-836-08, “Ultrasonic Examination of Austenitic Piping Welds,” Revision 8

54-ISI-837-06, “Ultrasonic Through Wall Sizing of Piping Welds,” Revision 6

54-ISI-850-04, “Manual Ultrasonic Examination of BWR Reactor Vessel Nozzle Inner Radius Regions and Nozzle to Shell Welds (Inner 15%),” Revision 4

54-ISI-858-00, “Automated Ultrasonic Examination of Core Shroud Assembly Welds,” Revision 0

QAP 9.1, “Welding Procedure and Performance Qualification,” Revision 10

QAP 9.2, “Post Weld Heat Treat Procedure (Electric Resistance Heaters Only),” Revision 2

QAP 9.3, “Workmanship and Visual Inspection Criteria for ASME Welding,” Revision 16

QAP 9.4, “Pre-Heat Procedure (Electric Resistance Heaters Only),” Revision 3

QAP 9.6, “Liquid Penetrant Inspection Procedure,” Revision 10

QAP 9.7, “Magnetic Particle Inspection Procedure,” Revision 7

20.A.100-1986, “Radiographic Examination of Welds, General Requirements”

20.A.131-1986, “Radiographic Examination of Welds”

Ultrasonic Examinations

| | | |
|---|---|---|
| CNSDP073-RF022 | CNSDP065-RF022 | CNSDP104-RF022 |
| CNSDP061-RF022 | CNSDP106-RF022 | CNSDP097-RF022 |

Condition Reports

| | | |
|---|---|---|
| CR-CNS-2004-00099 | CR-CNS-2004-04375 | CR-CNS-2004-06481 |
| CR-CNS-2004-00276 | CR-CNS-2004-05024 | CR-CNS-2004-06529 |
| CR-CNS-2004-01360 | CR-CNS-2004-05116 | CR-CNS-2004-06628 |
| CR-CNS-2004-01457 | CR-CNS-2004-06304 | CR-CNS-2004-07100 |
| CR-CNS-2004-03441 | CR-CNS-2004-06431 | CR-CNS-2005-01191 |
| CR-CNS-2004-03643 | CR-CNS-2004-06432 | |

**Section 2OS1: Access Control To Radiologically Significant Areas (IP71121.01)**

Procedures

9.ALARA.4 Radiation Work Permits, Revision5
9.RADOP.1 Radiation Protection at CNS, Revision 4
9.RADOP.2 Radiation Safety Standards and Limits, Revision 6
9.RADOP.3 Area Posting and Access Control, Revision 15

Radiation and Special Work Permits

2005-0001
2005-0008
2005-0009
2005-1039
2005-1056
2005-1099

Condition Reports

| | | | | | | |
|---|---|---|---|---|---|---|
| 2004-06792 | 2004-07416 | 2004-07624 | 2004-07783 | 2005-00042 | 2005-00062 | 2005-00077 |
| 2005-00194 | 2005-00380 | 2005-00398 | 2005-00418 | 2005-00427 | 2005-00600 | 2005-00624 |
| 2005-00786 | | | | | | |

Self-Assessments/Audits

Radiological Protection Depart On-Going Self-Assessment Report 3Q2004

Miscellaneous

2003 Annual Radioactive Effluent Report

## LIST OF ACRONYMS

| | |
|---|---|
| ALARA | as low as is reasonably achievable |
| ASME | American Society of Mechanical Engineers |
| CFR | *Code of Federal Regulations* |
| EDG | emergency diesel generator |
| FIN | finding |
| HPCI | high pressure coolant injection |
| LER | licensee event report |
| MG | motor generator |
| MPF | multipurpose facility |
| NCV | noncited violation |
| NDE | nondestructive examination |
| NRC | U.S. Nuclear Regulatory Commission |
| RCIC | reactor core isolation cooling |
| RHR | residual heat removal |
| RPS | reactor protection system |
| SW | service water |
| TB | to be determined |
| TS | Technical Specification |
| URI | unresolved item |