UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

June 26, 2000

S. K. Gambhir, Division Manager
Nuclear Operations
Omaha Public Power District
Fort Calhoun Station FC-2-4 Adm.
P.O. Box 399
Hwy. 75 - North of Fort Calhoun
Fort Calhoun, Nebraska 68023-0399

SUBJECT: FORT CALHOUN STATION - NRC INSPECTION REPORT NO. 50-285/2000-05

Dear Mr. Gambhir:

This refers to the supplemental inspection conducted on May 30 through June 1, 2000, at the Fort Calhoun Station facility. The results of the inspection were discussed with Mr. Clemens and other members of your staff at the completion of the inspection. The enclosed report presents the results of this inspection. This supplemental inspection was performed to assess your station's evaluation of the root causes, contributing causes, and corrective actions associated with the "white" occupational exposure control effectiveness performance indicator.

This inspection was an examination of activities conducted under your license as they relate to radiation safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC determined that the identification of the root causes, contributing causes, and completed corrective actions associated with the above performance indicator were comprehensive. However, a violation of NRC requirements was identified associated with one of the three performance issues reported as part of the occupational exposure control performance indicator. This violation is being treated as a noncited violation (NCV), consistent with Section VI.A of the Enforcement Policy. This NCV is described in the subject inspection report. If you contest this violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with a copy to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Fort Calhoun Station facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system

(ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

Gail M. Good, Chief
Plant Support Branch
Division of Reactor Safety

Docket No.: 50-285
License No.: DPR-40

Enclosure:
NRC Inspection Report No.
50-285/2000-05

cc w/enclosure:
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-285
License No.:	DPR-40
Report No.:	50-285/2000-05
Licensee:	Omaha Public Power District
Facility:	Fort Calhoun Station
Location:	Fort Calhoun Station FC-2-4 Adm., P.O. Box 399, Hwy. 75 - North of Fort Calhoun, Nebraska
Dates:	May 30 through June 1, 2000
Inspector:	Michael P. Shannon, Senior Health Physicist
Approved By:	Gail M. Good, Chief, Plant Support Branch

ATTACHMENTS:

Attachment 1: Supplemental Information

Attachment 2: NRC's Revised Reactor Oversight Process

SUMMARY OF FINDINGS

Fort Calhoun Station
NRC Inspection Report No. 50-285/2000-05

The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

Cornerstone: Occupational Radiation Safety

- This supplemental inspection was performed to assess the licensee's evaluation associated with the "white" occupational exposure control effectiveness performance indicator. This performance issue was characterized as having low to moderate risk significance ("white") during the quarterly reporting process. The licensee conducted a comprehensive evaluation of the above performance indicator and associated events. The licensee identified the following generic causes: (1) lack of station ownership of the radiation protection program; (2) lack of preplanning for restricted high radiation area access control; (3) inconsistent management expectations, interpretation, and implementation of procedural requirements for restricted high radiation area access control; and (4) human performance issues pertaining to restricted high radiation area entry control and lock verification. Corrective actions associated with the above performance indicator were extensive and thorough.

- Green. On November 4, 1999, an engineer escorted by a radiation protection technician entered "A" steam generator bay, a posted restricted high radiation area, and failed to properly secure the restricted high radiation area door behind them to prevent unauthorized entry. General radiation levels in "A" steam generator bay were as high as 2000 mrems per hour. Technical Specification 5.11.2 requires, in part, each area with general radiation levels greater than 1000 mrems per hour to be locked to prevent unauthorized entry into such areas. The failure to lock the "A" steam generator bay restricted high radiation area door to prevent unauthorized entry is a violation of Technical Specification 5.11.2. The licensee documented this issue in its corrective action process as Condition Report 1999-2452.

  This noncited violation was characterized as a "green" finding using the occupational radiation safety significance determination process. The violation had very low safety significance, because there were no instances of an overexposure event (Section 02.01a).

Report Details

01 Inspection Scope

This supplemental inspection was performed to assess the licensee's evaluation of the root causes, contributing causes, and corrective actions associated with the "white" occupational exposure control effectiveness performance indicator. This performance indicator was reported as "white" during the quarterly reporting process and is related to the occupation radiation safety cornerstone in the radiation safety strategic performance area. The above performance indicator became "white," because there were more than two restricted high radiation area event occurrences within 12 months.

The inspector interviewed radiation workers and reviewed the following documents:

- Condition Reports 1999-0771, 1999-2076, and 1999-2452, and associated root cause reports which documented restricted high radiation area control problems written since April 1, 1999,
- Condition Report 2000-0742, which documented that the occupational exposure control effectiveness performance indicator became white,
- Nuclear Safety Review Group Report SRG-00-009, which reviewed the assessment and corrective actions associated with condition reports pertaining to the above performance indicator, and
- Effectiveness Review FC-RP-052-00, which assessed the corrective actions associated with Condition Reports 1999-2076 and 1999-2452.

02 Evaluation of Inspection Requirements

02.01 Problem Identification

a. Determine that the evaluation identifies who (i.e. licensee, self revealing, or NRC), and under what conditions the issue was identified.

First Event

The licensee identified this event and documented it in Condition Report 1999-0771. On April 29, 1999, a radiation protection supervisor approved propping a restricted high radiation area door open to support work in the area. (The licensee's procedures defined a high radiation area where general radiation levels were greater than 1000 mrems per hour as a restricted high radiation area). The restricted high radiation area entrance was properly posted in accordance with station procedures. Additionally, a radiation protection technician was assigned job coverage and restricted high radiation area access control duties. While the radiation protection technician was monitoring the job using a camera system, an engineer passed the restricted high radiation area boundary and entered the area using a radiation work permit which did not authorize entries into restricted high radiation areas. The engineer was in the area for less than

two minutes before being removed from the area. This issue was identified and treated as a noncited violation of Technical Specification 5.8.1 (see NCV 50-285/9904-01).

The evaluation noted that the radiation protection technician providing job coverage and access control of the restricted high radiation area door identified the event and took immediate action to stop the individual.

Second Event

The licensee identified this event and documented it in Condition Report 1999-2076. On October 11, 1999, at approximately 1:30 a.m., while checking restricted high radiation area boundaries, a radiation protection technician discovered that the containment sump restricted high radiation area hatch was closed but not locked. From a review of records, the licensee determined that the last known entry into the containment sump area was made on October 10, 1999, at approximately 3:40 a.m. This issue was identified and treated as a noncited violation of Technical Specification 5.11.2 (see NCV 50-285/9912-03).

The evaluation noted that the restricted high radiation area hatch was found unlocked during a routine check of restricted high radiation area locks by radiation protection personnel.

Third Event

The licensee identified this event and documented it in Condition Report 1999-2452. On November 4, 1999, at approximately 2:50 p.m., an engineer escorted by a radiation protection technician entered “A” steam generator bay, a posted restricted high radiation area, and failed to properly secure the restricted high radiation area door behind them to prevent unauthorized entry. General radiation levels in “A” steam generator bay were as high as 2000 mrems per hour. At 3:00 p.m. the same day, the opened restricted high radiation area door was found by a radiation worker and reported to radiation protection personnel. The evaluation noted that no other radiation workers entered this area while the door was opened. The NRC had not previously reviewed this event.

Technical Specification 5.11.2 requires, in part, each area with general radiation levels greater than 1000 mrems per hour be locked to prevent unauthorized entry into such areas. The failure to lock the “A” steam generator bay restricted high radiation area door to prevent unauthorized entry is a violation of Technical Specification 5.11.2. The failure to lock the above door could cause a worker to receive an unplanned radiation exposure. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined that the violation had very low safety significance, because there were no instances of an overexposure event. This violation is being treated as a noncited violation, consistent with the NRC Enforcement Policy. The licensee documented this issue in its corrective action process as Condition Report 1999-2452 (50-285/0005-01).

The evaluation noted that a radiation worker, working outside the area, found the door opened and reported it to radiation protection personnel.

The inspector did not identify any discrepancies in the licensee's statement of the performance issues.

b. Determine that the evaluation documents how long the issue existed, and prior opportunities for identification.

First Event

Although the evaluation did not document the actual amount of time the engineer was in the restricted high radiation area, it evaluated the engineer's electronic dosimeter radiation parameters. This evaluation concluded that the engineer entered a maximum radiation level of 58 mrems per hour and the accrued dose was 2 mrems. Therefore, the inspector determined that the engineer was in the restricted high radiation area for approximately two minutes. No prior opportunities for identification were noted.

Second Event

The licensee determined that the last known entry into the containment sump area was approximately 22 hours earlier. Therefore, the containment sump could have been open for as long as 22 hours. No prior opportunities for identification were identified.

Third Event

From the licensee's investigation of the event it was noted that the door was opened for approximately 10 minutes before being found opened. No prior opportunities for identification were identified.

c. Determine that the evaluation documents the plant specific risk consequences (as applicable) and compliance concerns associated with the issue.

First Event

There were no plant specific risk consequences or compliance concerns identified with this event. However, the evaluation did note that the potential existed for an overexposure when an individual entered a restricted high radiation area without proper radiological controls in place.

Second Event

No plant specific risk consequences or compliance concerns identified with this event.

Third Event

No plant specific risk consequences or compliance concerns identified with this event.

02.02 Root Cause and Extent of Condition Evaluations

a. Determine that the problems were evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).

The root cause analyses for the above three events were performed by using event and causal factors charting and barrier analysis. The inspector determined that the above root cause analysis reports were performed in accordance with Nuclear Operations Division's Procedure NOD-QP-19, "Cause Analysis Program," Revision 20.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

The inspector determined that each root cause evaluation focused on the particular event and was conducted to the appropriate level of detail commensurate with the significance of the problem. When combined, the evaluations were thorough and conducted to a sufficient level of detail to enhance the program for the control of restricted high radiation areas.

c. Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.

The inspector noted that each root cause evaluation considered prior similar occurrences and reviewed industry experience information. In addition to the above events, the licensee identified an earlier restricted high radiation area event which was documented in Condition Report 1998-0720. This event occurred on April 7, 1998, and involved an plant operator who entered a restricted high radiation area without continuous radiation protection coverage.

d. Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.

The licensee's evaluation considered the potential common causes and the extent of the conditions associated with the control of restricted high radiation area doors. The primary common causes were identified to be inadequate communication of work practice standards and/or inconsistent work practice standards. The licensee determined that the root cause of the first event was the failure to adequately assign or communicate the responsibilities for controlling/guarding entries into a restricted high radiation area. The root cause of the second event was determined to be management's failure to institute consistent work practice standards. The root and contributing causes of the third event were determined to be inconsistent/habitual work practices of radiation protection personnel and radiation workers, in that, the restricted high radiation area door was neither verified, nor peer checked locked, upon entry.

02.03 Corrective Actions

a. Determine that appropriate corrective action(s) are specified for each root/contributing cause or that there is an evaluation that no actions are necessary.

Corrective actions included the development of a formalized method of assigning dedicated individuals to maintain positive access control of restricted high radiation areas which can not be secured and the communication of this requirement to radiation

workers. Corrective actions from the first event were focused on the control of restricted high radiation areas that could not be locked.

Corrective actions included the revision of station procedures and general employee training which clarified the proper method to verify restricted and very high radiation area barricades are secured. Corrective actions from the second event were focused on control of restricted high radiation areas which were locked with a padlock and hasp. Corrective actions included the revision of Radiation Protection Department Guideline RPG-029 to include the requirement and methods of assigning responsibilities for, and verifying that, restricted and very high radiation area access points are secured after the access points have been breached by radiation protection individuals and radiation workers. Corrective actions from the third event pertained to verifying that restricted high radiation area doors were locked and secured upon entry into, and exit out of, a self-locking restricted high radiation area door.

The inspector determined that in each case the corrective actions appeared to be appropriate to prevent similar occurrences.

b. Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance.

In all three events, immediate corrective actions were taken to put the licensee in compliance with the regulatory requirement to control or lock restricted high radiation areas. From a review of the root cause analysis reports, the inspector determined that corrective actions were properly prioritized to help ensure regulatory compliance.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

With the exception of performing an effectiveness review of actions taken to improve station ownership of the radiation protection program and the control of restricted high radiation areas, the inspector verified that all other corrective actions were completed. The above effectiveness review was scheduled to be completed by September 1, 2000.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.

On May 25, 2000, an effectiveness review (FC-RP-052-00) was completed to review the corrective actions taken in response to Condition Reports 1999-02452 and 1999-02076. The review concluded that the corrective actions were effective and that the Occupational Radiation Cornerstone performance indicator should show improvement. The inspector concurred with the licensee's conclusion. Additionally, the licensee has scheduled an effectiveness review of actions taken to improve station ownership of the radiation protection program, including the control of restricted high radiation area controls to be completed no later than September 1, 2000.

4. OTHER ACTIVITIES

4OA6 Management Meetings

Exit Meeting Summary

The inspector presented the inspection results to Mr. Clemens, Plant Manager, and other members of licensee management at the conclusion of the inspection on June 1, 2000. The licensee acknowledged the findings presented. This meeting constituted the regulatory performance meeting specified in the Inspection Manual Chapter 0305 action matrix.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Chase, Division Manager, Nuclear Assessments
R. Clemens, Plant Manager
S. Gebers, Corporate Health Physicist
B. Glover, Technician, Radiation Protection
B. Hansher, Supervisor, Nuclear Licensing
B. Juza, Technician, Radiation Protection
A. Lollis, Health Physicist, Radiation Protection
J. Mattice, Supervisor, Radioactive Waste
E. Matzke, Engineer, Station Licensing
B. Plath, Acting Maintenance Manager
K. Steele, Supervisor, Radiation Protection Operations
R. Reno, Supervisor, Radiation Protection ALARA
L. Schneider, Senior Auditor, Quality Assurance

NRC

G. Good, Chief, Plant Support Branch
W. Walker, Senior Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed During this Inspection

50-285/0005-01	NCV	Failure to lock a restricted high radiation area to prevent unauthorized entry (Section 02.01a)

LIST OF DOCUMENTS REVIEWED

Documents Reviewed

Quality Assurance Surveillance H-00-1

Standing Order SO-G-4, Revision 3

Standing Order SO-G-101, Revision 15

Initial Training Lesson Plan, Section “H”

Requalification Training Lesson Plan IHB 10-27-47, Revision 10

Radiation Protection Procedure RP-204, Revision 30

ATTACHMENT 2

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW, or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and

increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.