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

April 18, 2000

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

SUBJECT: NRC INSPECTION REPORT NO. 50-298/00-03

Dear Mr. Swailes:

This refers to the inspection conducted on March 6-10 and March 20-24, 2000, at the Cooper Nuclear Station facility. The results of the inspection were discussed with Mr. J. A. McDonald and other members of your staff at the completion of the inspection. The enclosed report presents the results of this inspection.

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. Specifically, this inspection focused on the implementation of your programs for access control to radiological significant areas, ensuring that occupational radiation doses are as low as is reasonably achievable (ALARA), and a review of your occupational exposure control and radiological effluent performance indicators.

Based on the results of this inspection, the NRC determined that a violation of NRC requirements occurred. This violation is being treated as a noncited violation (NCV), consistent with the Interim Enforcement Policy for pilot plants. 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 Cooper Nuclear 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 placed in the NRC Public Document Room (PDR).

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.: 50-298
License No.: DPR-46

Enclosure:
NRC Inspection Report No.
50-298/00-03

cc w/enclosure:
G. R. Horn, Senior Vice President
of Energy Supply
Nebraska Public Power District
1414 15th Street
Columbus, Nebraska 68601

John R. McPhail, General Counsel
Nebraska Public Power District
P.O. Box 499
Columbus, Nebraska 68602-0499

S. R. Mahler, Assistant Nuclear
Licensing and Safety Manager
Nebraska Public Power District
P.O. Box 98
Brownville, Nebraska 68321

Dr. William D. Leech
Manager - Nuclear
MidAmerican Energy
907 Walnut Street
P.O. Box 657
Des Moines, Iowa 50303-0657

Ron Stoddard
Lincoln Electric System
1040 O Street
P.O. Box 80869
Lincoln, Nebraska 68501-0869

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

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

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

Ronald A. Kucera, Director
of Intergovernmental Cooperation
Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Jerry Uhlmann, Director
State Emergency Management Agency
P.O. Box 116
Jefferson City, Missouri 65101

Vick L. Cooper, Chief
Radiation Control Program, RCP
Kansas Department of Health
and Environment
Bureau of Air and Radiation
Forbes Field Building 283
Topeka, Kansas 66620

bcc to DCD (IE06) - Radiological Protection Reports

bcc electronic distribution from ADAMS by RIV:
Regional Administrator **(EWM)**
DRP Director **(KEB)**
DRS Director **(ATH)**
Senior Resident Inspector **(JAC)**
Branch Chief, DRP/C **(CSM)**
Senior Project Engineer, DRP/C **(DPL)**
Branch Chief, DRP/TSS **(LAY)**
RITS Coordinator **(NBH)**
Jim Isom, Pilot Plant Program **(JAI)**
Sampath Malur, Pilot Plant Program **(SKM)**

Only inspection reports to the following:
D. Lange **(DJL)**
NRR Event Tracking System **(IPAS)**
Document Control Desk **(DOCDESK)**
CNS Site Secretary **(SLN)**

bcc hard copy:
RIV File Room

DOCUMENT NAME: R:_CN\CN2000-03RP-JBN.WPD
To receive copy of document, indicate in box: "C" = Copy without enclosures **"E"** = Copy with enclosures **"N"** = No copy

Peer Review		RIV:PSB\SHP		RIV:PSB\RS		C:DRS\PSB		C:DRP\C	
		JBNicholas		DRCarter		GMGood		CSMarschall	
04/11/00 /RA/		04/11/00 /RA/		04/11/00 /RA/		04/17/00 /RA/		04/17/00 /RA/	

OFFICIAL RECORD COPY

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-298
License No.:	DPR 46
Report No.:	50-298/00-03
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownville, Nebraska
Dates:	March 6-10 and March 20-24, 2000
Inspectors:	J. Blair Nicholas, Ph.D., Senior Health Physicist Plant Support Branch Daniel R. Carter, Radiation Specialist Plant Support Branch
Approved By:	Gail M. Good, Chief, Plant Support Branch Division of Reactor Safety
Attachment 1:	Supplemental Information
Attachment 2:	NRC's Revised Reactor Oversight Process

SUMMARY OF FINDINGS

Cooper Nuclear Station
NRC Inspection Report No. 50-298/00-03

This announced inspection focused on the implementation of the licensee's programs to maintain the occupational radiation doses as low as is reasonably achievable (ALARA), maintain access control to radiological significant areas, and the review and verification of the occupational exposure control and radiological effluent performance indicators. The significance of issues was indicated by the color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a noncited violation of 10 CFR 20.1501(a) because the licensee failed to evaluate the dose gradient between the chest and head to determine if dosimetry was located correctly to measure the dose to the part of the body receiving the highest exposure. The failure to perform this survey could have resulted in an unplanned and unmonitored radiation dose. However, because the incident did not result in an overexposure or have a significant potential to cause an overexposure, the Occupational Radiation Safety Significance Determination Process indicated that the violation had a low risk significance. This violation is in the licensee's corrective action program as Problem Identification Report 4-07142 (Section 2OS1).

Report Details

Summary of Plant Status: The plant was shutdown and in refueling outage RF019 throughout the inspection period.

2. RADIATION SAFETY

2OS1 Access Control to Radiological Significant Areas

a. Inspection Scope

Radiation workers and radiation protection personnel were interviewed concerning their radiation protection work requirements. A number of tours of the radiologically controlled area, including the refueling floor, secondary containment, and the reactor drywell, were performed. The following items were reviewed:

- Access controls and surveys of three significant high dose work areas in the radiologically controlled area
- Radiation work permits and specified electronic pocket dosimeter set points
- Radiological controls for the removal and movement of the steam dryer and moisture separator
- Placement of personnel dosimetry to effectively monitor exposure to personnel working near the reactor vessel flange
- Radiation postings and barricades used at entrances to high dose rate areas, high radiation areas, and very high radiation areas
- Job coverage by radiation protection personnel
- ALARA pre-job briefings for the "Target Rock" steam line relief valve maintenance, removal and movement of the steam dryer, and the scraping of the fuel rods and inspection of the control rod blades

b. Observations and Findings

10 CFR 20.1501(a) states, in part, each licensee shall make or cause to be made, surveys that may be necessary for compliance with the regulations in this part and that are reasonable under the circumstances to evaluate the potential radiological hazards. 10 CFR 20.1201(c) states, in part, that the assigned deep-dose equivalent and shallow-dose equivalent must be for the part of the body receiving the highest exposure.

Radiation Protection Procedure 9.ALARA.1, "Personnel Dosimetry and Occupational Radiation Exposure Program," Revision 5, Section 4.4.4.1 states, in part, "to meet the intent of 10 CFR 20.1201(c) and when it is known that the work area dose-rate gradients shall cause a portion of the whole-body to have an external dose >1.5 times the expected dose to the chest, and the general area dose-rates are >100 millirem (mrem) per hour, the routine whole body dosimeter shall be moved to that location or multi-badge dosimetry used to monitor dose at that location."

On March 9, 2000, while work was being performed in the reactor cavity, the inspectors observed four workers performing work on the reactor vessel flange protectors and one worker measuring the four steam line openings. The inspectors reviewed the pre-job radiation survey of the reactor vessel flange area to determine what the dose rate gradient was between the chest and head and to determine if dosimetry placement was appropriate. The radiation survey at the reactor vessel flange documented the dose rate to the workers at the knee, waist, and head in accordance with Radiation Protection Shop Guide #11. However, the radiation survey did not document the dose rate at the chest level, which was the location of the dosimetry. The radiation survey indicated a dose rate of 60 mrem per hour at the knee, 100 mrem per hour at the waist, and 180 mrem per hour at the head.

The Radiation Protection Shop Guide #11 required waist location survey measurement was inconsistent with the chest location measurement required in Procedure 9.ALARA.1. Therefore, the chest location survey information was not available to properly evaluate the relocation of dosimetry to the part of the body receiving the highest exposure, as required by Procedure 9.ALARA.1. Subsequently, the licensee performed additional radiation surveys and determined that there was no dose rate gradient between the chest and head. Therefore, the unmonitored dose to the head did not result in an overexposure and had no significant potential to cause an overexposure. The ability to assess dose was not compromised in this case. Even though it was determined that the radiation workers received no significant increase in exposure as a result of this incident, the failure to evaluate the radiological conditions and the part of the body that would receive the highest exposure (relative to the chest, where the dosimetry was typically worn), could have resulted in an unmonitored personnel radiation dose.

The failure to perform a proper radiation survey to determine the appropriate part of the body to monitor was a violation of 20 CFR 20.1501(a). Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined that the violation had a low safety significance. This violation is being treated as a noncited violation, consistent with the Interim Enforcement Policy for pilot plants. On March 10, 2000, the licensee documented this violation in Problem Identification Report 4-07142 (NCV 298/0003-01).

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspectors interviewed radiation workers and radiation protection technicians and observed their performance during high dose rate and high exposure jobs throughout the radiologically controlled area during the first week of the RF019 refueling outage. Independent radiation surveys of selected work areas within the radiologically controlled area were performed. The inspectors reviewed the following items:

- ALARA procedures used to estimate and track exposures
- Plant collective exposure history for the past five years, current exposure trends, 3-year rolling average dose data, and assumptions and basis for the current annual and RF019 refueling outage exposure estimates
- Scheduled refueling outage maintenance work and the associated exposure estimates
- ALARA job packages for reactor disassembly/reassembly, main steam isolation valve work, control rod drive repair, under reactor vessel activity, and motor operated valve maintenance and repair
- 1999 personnel exposure records
- Hot spot tracking and reduction program
- Source term data from the drywell
- Temporary shielding program
- Declared pregnant worker dose monitoring controls

b. Observations and Findings

There were no findings identified during this inspection.

4 OTHER ACTIVITIES

4OA1 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed self assessments and 14 problem identification reports of the ALARA and radiological access controls programs written since June 1, 1998. The assessments and problem identification reports were reviewed for repetitive and significant individual deficiencies to determine if identified problems were properly characterized, entered into the corrective action program, and resolved in an timely manner.

b. Observations and Findings

There were no findings identified during this inspection.

4OA2 Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed corrective action program records for restricted high radiation areas, very high radiation areas, and unplanned exposure occurrences for the past 12 months to confirm that these occurrences were properly recorded as performance indicators. Radiologically controlled area exit transactions with exposures greater than 100 millirem for the past 12 months were reviewed, and selected examples were investigated to determine whether they were within the dose projections of the governing radiation work permits. Additionally, radiological effluent release program corrective action records, licensee event reports, and annual effluent release reports documented during the past 4 quarters were reviewed to determine if any events exceeded the performance indicator thresholds.

b. Observations and Findings

There were no findings identified during this inspection.

4OA5 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. J. A. McDonald, Plant Manager, and other members of licensee management at an exit meeting on March 24, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Argo, Technician, Radiological Operations
T. Chard, Manager, Radiation Protection
L. Corey, ALARA Technician, Radiation Protection
J. Dixon, ALARA Supervisor, Radiation Protection
J. Geyer, Senior Health Physicist, Radiation Protection
M. Gillan, Outage Manager
D. Jones, Crew Leader, Radiological Support
D. Kimball, Assistant Manager, Radiation Protection
S. Mahler, Assistant Manager, Licensing
J. McDonald, Plant Manager
R. McDonald, Staff Health Physicist, Radiation Protection
B. Rash, Manager, Engineering
R. Sessons, Manager, Quality Assurance
S. Sherrow, ALARA Engineer, Radiation Protection
S. Stults, Technician, Radiological Operations
C. Sunderman, Supervisor, Radiological Operations
K. Tanner, Crew Leader, Radiological Operations

NRC

J. Clark, Senior Resident Inspector
M. Hay, Resident Inspector

INSPECTION PROCEDURES USED

71121.01	Access Control to Radiological Significant Areas
71121.02	ALARA Planning and Controls
71151	Performance Indicator Verification

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-298/0003-01	NCV	Failure to perform an adequate radiological survey to evaluate dosimetry placement (Section 2OS1)

LIST OF DOCUMENTS REVIEWED

RADIATION PROTECTION ASSESSMENTS

Cooper Nuclear Station 1998 Radiation Protection Self Assessment, conducted October 5-23, 1998

Cooper Nuclear Station 1999 Dosimetry Program Self Assessment, conducted June 1-3, 1999

Performance Indicators Radiological Self Assessment, conducted January 24-26, 2000

ALARA Planning and Controls Self Assessment, conducted February 7-18, 2000

RADIATION PROTECTION PROCEDURES

9.ALARA.1	"Personnel Dosimetry and Occupational Radiation Exposure Program," Revision 5
9.ALARA.3	"In-Vitro and In-Vivo Bioassays," Revision 1
9.ALARA.4	"Radiation Work Permits," Revision 1
9.ALARA.5	"ALARA Work Review," Revision 4
9.ALARA.6	"ALARA Reports," Revision 1
9.ALARA.7	"ALARA Job Files," Revision 1
9.ALARA.8	"ALARA Document Control," Revision 1
9.RADOP.3	"Area Posting and Access Control," Revision 5
9.RADOP.4	"Radiation and Contamination Surveys," Revision 4

Selected Radiological Protection Shop Guides

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

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

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.