

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-298/85-14

License: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District (NPPD)
P. O. Box 499
Columbus, Nebraska 68601

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: CNS, Brownville, Nebraska

Inspection Conducted: April 1-5, 1985

Inspector: *B. Joine Murray*
for R. E. Baer, Radiation Specialist, Facilities
Radiological Protection Section

5/17/85
Date

Approved: *Blaine Murray*
Blaine Murray, Chief, Facilities Radiological
Protection Section

5/13/85
Date

J. P. Jaudon
J. P. Jaudon, Chief, Reactor Project Section A

5/22/85
Date

Inspection Summary

Inspection Conducted April 1-5, 1985 (Report 50-298/85-14)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection program including: internal exposure control; external exposure control; facilities and equipment; control of radioactive materials and contamination; and surveys and monitoring. An allegation regarding personal dosimetry records was also reviewed. The inspection involved 42 inspector-hours onsite by one NRC inspector.

Results: Within the five areas inspected, one violation was identified (failure to follow procedure, paragraph 7.a). The allegation was partially substantiated (paragraph 6). Two open items are discussed in paragraph 3.

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DETAILS

1. Persons Contacted

NPPD

P. V. Thomason, Nuclear Operations Division Manager
*D. A. Whitman, Technical Staff Manager
*R. L. Beilke, Chemistry and Health Physics Supervisor
L. E. Bray, Administrative Secretary
*C. R. Going, Regulatory Compliance Specialist
*H. A. Jantzen, Instrument and Control Supervisor
J. Kuttler, Health Physicist
R. J. McDonald, Assistant to Chemistry and Health Physics Supervisor
*J. M. Meacham, Technical Manager
P. Morris, ALARA Coordinator
C. R. Root, Dosimetry Clerk
*J. Sayer, Senior Technical Radiological Advisor
M. Unruh, Maintenance Planner

Others

*D. L. DuBois, NRC Senior Resident Inspector

*Denotes those present during the exit interview on April 4, 1985.

The NRC inspector also interviewed several other licensee and contractor employees including health physics, maintenance, warehouse, and construction personnel.

2. Licensee Action on Previous Inspection Findings

(Closed) Violation (298/8325-05): Surveys - This item was identified in NRC Inspection Report 50-298/83-25 and involved the failure to initiate preliminary monitoring to accurately evaluate the radiation hazards for several Special Work Permits (SWPs). The licensee had revised Procedure 9.1.1.4, "Special Work Permit" Revision 11, January 26, 1984, Section VI.B.5. to make allowance for areas where radiation levels are rapidly increasing due to reactor power being resumed. This item is considered closed.

(Closed) Unresolved Item (298/8325-08): Radiation Protection Activities Audit - This item involved the lack of documentation for review of a corporate audit stated to have been conducted in June 1983. The NPPD Safety Review and Audit Board (SRAB) approved health physics activities audit 83-23 which had been conducted during the period September 26 through October 7, 1983, during SRAB meeting number 80, held on January 31, 1984. This item is considered closed.

(Closed) Unresolved Item (298/8421-11): Qualifications of Health Physics Technicians on Backshift - This item involved the lack of ANSI N18.1-1971 qualified personnel in responsible positions on the backshift and in positions which approved SWPs. This item had been previously discussed in NRC Inspection Report 50-298/82-32. The licensee has health physics technicians assigned to on-call duty onsite to cover backshifts should the need arise. The licensee also has supervisory personnel assigned to on-call duty offsite. The supervisory personnel are available to approve SWPs or provide other guidance for technicians during the backshift. All SWPs written and approved by technicians are also reviewed and initialed by ANSI N18.1-1971 qualified persons. This item is considered closed.

(Closed) Unresolved Item (298/8421-13): Monitoring of Potentially Contaminated Trash - This item involved the use of an E-140 radiation detection device to monitor potentially contaminated trash being removed from the radiologically controlled area. The E-140 had been calibrated with a pancake type beta-gamma GM tube contained in an HP-210 probe. The lowest scale read from 0 to 0.5 mR/hr in increments of 0.02 mR/hr. The background in this area where the trash was monitored varied from 0.02 to 0.04 mR/hr. This item is considered closed.

(Closed) Unresolved Item (298/8421-15) - Calibration of Portable Radiation Monitoring Equipment - This item involved the calibration performed on extender probe-extender Model 1000W survey meters not being performed in accordance with approved station procedure. The NRC inspector determined that the instruments were not calibrated at three points on each scale as required by procedures. This is considered a violation of Technical Specifications. This item is considered closed as an unresolved item and designated as a Violation (298/8514-01). See paragraph 7.a.

(Closed) Open Item (298/8232-05): High Range Containment Monitor - This item involved the lack of an approved electronic calibration procedure for the containment high range radiation monitors. The licensee had developed and implemented Surveillance Procedure 6.4.9.2, "Containment High Range Area Monitor Calibration and Functional Test," Revision 0, March 22, 1985. This procedure provides for electronic calibration on the 10 R/hr through 10⁷ R/hr ranges at one point on each decade. This item is considered closed.

(Closed) Open Item (298/8504-05): ALARA Checklist for QA Audits - This item involved the lack of the quality assurance (QA) audit checklist used to support audits performed in accordance with Procedure QAP-900 to include ALARA program areas. The licensee had revised QAP-900 checklist, Revision 2, February 8, 1985, and included Section C which addresses the ALARA program. These checklist questions are based on compliance with Station Procedure 9.1.1.2, "ALARA Program." This item is considered closed.

3. Open Items Identified During This Inspection

Open items are matters that require further review and evaluation by the inspector or licensee. Open items are used to document, track, and ensure adequate followup on matters of concern to the inspector.

<u>Open Item</u>	<u>Description</u>	<u>Paragraph</u>
298/8514-02	Portable survey meter pre-use operational check	7.a.
298/8514-03	Frisker Operational Check	7.b.

4. Internal Exposure Control and Assessment

The NRC inspector reviewed the licensee's internal exposure control and assessment program to determine compliance with 10 CFR Part 20.103 and the recommendations of ANSI Standards N13.1-1969 and N343-1978 and NUREG-0041.

The NRC inspector reviewed procedures, representative records for the airborne radioactivity sampling program, whole body counting, respiratory protection program, and interviewed personnel to determine the effectiveness of the program. The NRC inspector evaluated the respiratory equipment used for both normal and emergency conditions, the equipment accessibility, inventory of emergency equipment lockers, and maintenance of spare breathing air bottles.

No violations or deviations were identified.

5. External Occupational Exposure Control and Personal Dosimetry

The NRC inspector reviewed the licensee's external occupational exposure control and personal dosimetry program for compliance with the requirements of 10 CFR Parts 19.13, 20.101(a), 20.101(b), 20.102, 20.202(a), 20.104(a) and 20.401(a) and the recommendations of Regulatory Guides (RGs) 8.2, 8.3, 8.4, 8.7, 8.14 and 8.28 and ANSI Standards N13.11-1983 and N13.15-1981.

The NRC inspector reviewed selected licensee training and exposure history records for 32 current and past CNS employees and contractor personnel.

The licensee utilizes a vendor supplied thermoluminescence dosimeter (TLD) which contains two lithium fluoride (LIF) chips (TLD 100) for beta and gamma radiation exposure determinations. These LIF chips are behind 10 mg/cm² and 285 mg/cm² filters. A third LIF chip (TLD 100) is used in approximately 45 badges worn by select plant staff personnel for neutron exposure determination. The neutron TLD is designed to measure incident neutrons. The vendor has been awarded a Certificate of Accreditation under the National Voluntary Laboratory Accreditation Program for providing specific personnel radiation dosimetry processing services for exposure categories I through VIII.

The licensee exchanges TLDs on a monthly basis during normal operations. A supplemental dosimetry service, operated by a vendor supplied technician, was established at CNS to provide additional TLD capacity during the recirculation pipe replacement program outage. Pocket chamber dosimeters direct reading (DRD) assigned to individuals are read and exposures recorded each time the individual exits the radiologically controlled area and daily when leaving at the security guard house. These data are entered into the exposure control computer system and used to track the individuals exposure until the TLDs are processed, at which time the TLD data becomes the official exposure record.

The licensee routinely compares the TLD and DRD exposure results and when the ratio exceeds 1.2 or is less than 0.5 an evaluation is performed in accordance with Section VI.B.1.c or VI.E.1.c of Station Procedure 9.1.1.3.

No violations or deviations were identified.

6. NRC Findings and Conclusions Related to Allegation

a. Allegation

Health physics department personnel altered individual radiation exposure history records by reducing the radiation exposure results or assigned the wrong exposure to individuals.

b. NRC Findings

The NRC inspector observed the onsite TLD processing and quality control (QC) applied to ensure accurate reading and recording of TLD results. The vendor had QC checks at the start of operations and after every tenth badge was processed to ensure the TLD reader was operating correctly and within tolerances. Procedures require that the technician remove the identification label from the TLD and place it on a sheet to verify that TLDs were read in the correct sequence.

The NRC inspector reviewed the TLD versus DRD discrepancy reports for the period January 1984 through February 1985. The NRC inspector noted that in February 1985 discrepancy ratios as low as 0.239 had been reported. The licensee had leak tested and checked the accuracy of the DRDs assigned to the individuals, verified input data into the dose tracking computer was correct, interviewed the individuals involved, compared daily DRD results with other workers in similar job functions, and had the vendor recheck the TLD records. The licensee could not disprove either the TLD or DRD exposure results and would routinely assign the TLD results regardless if the results were high or low. The licensee interviewed one of five individuals, (the other four had terminated employment), who's TLD results were low. After reviewing the information regarding the personnel dosimetry results, the licensee elected to assign the more conservative DRD exposure as the permanent record.

c. NRC Conclusions

The NRC inspector determined that: (1) The allegation was substantiated in part in that the licensee had initially assigned radiation exposure results from the TLD in accordance with station procedures which were lower than the DRD results; (2) While differences between TLD's and DRD's routinely occur and the differences in this incident were greater than the expected variance the licensee had followed their written procedure and initially assigned the TLD exposure results; (3) The licensee did not intentionally attempt to circumvent any NRC requirements by initially assigning the TLD results; (4) No NRC requirement relating to the permissible exposures in a calendar quarter would have been exceeded had the licensee initially assigned this DRD results; and (5) The licensee assigned the more conservative DRD results after re-evaluation of the incident.

7. Control of Radioactive Materials and Contamination, Surveys, and Monitoring

The NRC inspector reviewed the implementation of the licensee's program for control of radioactive materials and contamination, surveys, and monitoring for compliance with 10 CFR 19.11 and 20.203, and station procedures.

a. Portable Instrumentation

The NRC inspector reviewed the licensee's procedures, calibration, and operation of radiation protection instrumentation use for both routine and emergency operations against the requirements of the CNS Technical Specifications and recommendations of RGs 8.4 and 8.25 and ANSI Standard N323-1978.

The NRC inspector reviewed the calibration records for the extender probe extender Model 1000W portable GM survey meter Serial Number 15684, 15702, 15705, 15706, 15709, 15918 and 15920 which had been performed during the period of February 1984 through March 1985. This survey meter has seven ranges for radiation detection and utilizes two GM tube detectors located at the end of a telescopic probe. The NRC inspector determined that Procedure 9.3.1.2.2, "Extender Probe - Extender Model 1000W," Revision 0, March 17, 1982, Section VI.B.10, 11 and 14, requires the instrument to be calibrated at 20 percent, 50 percent and 80 percent of full scale for each scale. The licensee had performed a calibration check between 40 and 55 percent of full scale for each scale and selectively performed a linearity check on two or three points on one or more ranges. The high range, 0-1000 R/hr, was only checked at 10 percent and 40 percent of full scale. The failure to perform full range calibration is considered a violation of Technical Specification Section 6.3.4. which states that procedures will be maintained consistent with the requirements of 10 CFR Part 20 (298/8514-01). The

NRC inspector expressed concern that portable radiation survey meters are only pre-use operational checked up to approximately 10 mR/hr and are not always operationally checked on the range of intended use. The licensee stated they would review the inspector's concern regarding the pre-use operational check and make any needed procedure changes by December 1985. This is considered an open item (298/8514-02) pending the licensee's review of the inspector's concerns.

b. Radioactive Materials and Contamination Control

The NRC inspector reviewed the licensee's radioactive material and contamination control program to determine compliance with station procedures.

The licensee had recorded approximately 75 personal contamination incidents during the period January 1 through March 29, 1985. The licensee records did not differentiate between skin and clothing contamination for personal contamination incidents. Contractor personnel accounted for a majority of these incidents of contamination and were decontaminated by soap and water washing. The NRC inspector discussed with licensee representatives the response testing of friskers used to monitor personnel for radioactive contamination. The NRC inspector expressed concern that the licensee does not response test these instruments daily when in use. The licensee stated they would review the inspector's concerns regarding the response testing of friskers and make any needed procedure changes by December 1985. This is considered an open item (298/8514-03).

The licensee has maintained an ongoing effort to reduce the size and number of contaminated areas in the plant. There are presently approximately 40 separate areas, half of these in the reactor building, where contamination exists and most of these have been reduced to less than 2200 disintegrations per minute per 100 square centimeters.

No violations or deviations were identified.

c. Surveys

The NRC inspector reviewed selective radiation, contamination, and airborne surveys for the period November 1984 through March 1985 conducted by the licensee for compliance with Station Procedure 9.2.1, "Radiation and Contamination Survey Frequency," Revision 11, January 27, 1984, and other surveys to support work being performed on SWPs.

No violations or deviations were identified.

8. Facilities and Equipment

The NRC inspector reviewed the licensee's facilities and equipment provided to implement the radiation protection program. There were no changes to existing facilities or additional facilities added to support the radiation protection program since the last inspection. The licensee had procured a digital alarming dosimeter and teledose telemetry system for use during the current outage. The NRC inspector reviewed Procedures 9.3.4.5, "Xetex 415B Digital Alarming Dosimeter," Revision 0, October 2, 1984 and 9.3.4.6, "Teledose Model 503A Telemetry System," Revision 0, November 7, 1984. These procedures describe the operation and calibration criteria.

The NRC inspector discussed with licensee representatives the status of Open Item (287/8202-04), "Calibration of Off-Gas and Stack Effluent Monitors," which involves the lack of full scale calibration, of the monitors. During the exit interview on April 4, 1985, the licensee stated that he revised procedures to address full scale calibration of the off-gas monitor. The licensee committed to perform full scale calibration on the off-gas monitor prior to reactor startup.

No violations or deviations were identified.

9. Exit Interview

The NRC inspector met with licensee representatives and the NRC resident inspector denoted in paragraph 1 on April 4, 1985. The NRC inspector summarized the scope and findings of the inspection. The NRC inspector discussed concerns identified as open items in paragraph 3 of this report with a licensee's representative by telephone on May 9, 1985. A licensee's representative acknowledged the inspectors concern and stated that these items would be reviewed by December 1985.