APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-298/88-12 Operating License: DPR-46

Docket: 50-298

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

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: CNS Site, Brownville, Nebraska

Inspection Conducted: April 25-29, 1988

Inspector: J. Blair Nicholas 5/27/88
J. B. Nicholas, Senior Radiation Specialist Date
Facilities Radiation Protection Section

Approved: R. E. Baer 5/27/88
R. E. Baer, Acting Chief, Facilities Date
Radiological Protection Section

Inspection Summary

Inspection Conducted April 25-29, 1988 (Report 50-298/88-12)

Areas Inspected: Routine, unannounced inspection of the licensee's liquid and gaseous radioactive waste management programs.

Results: Within the areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

NPPD

*G. R. Horn, Division Manager, Nuclear Operations
*L. E. Bray, Regulatory Compliance Specialist
*R. Brungardt, Operations Manager
*K. L. Fike, Chemist
R. L. Gibson, Quality Assurance (QA) Engineer
L. T. Guenther, Mechanical Engineer
*H. A. Jantzen, Instrumentation and Calibration (I&C) Supervisor
J. S. Larson, QA Supervisor
*R. J. McDonald, Chemistry Supervisor
D. R. Robinson, Operations QA Supervisor
*J. V. Sayer, Radiological Manager
D. C. Shrader, Assistant to Operations Supervisor
G. E. Smith, QA Manager
*G. R. Smith, Licensing Supervisor
J. R. Warren, Senior Chemistry and Health Physics Specialist
*V. L. Wolstenholm, Division Manager, QA

Others

*E. A. Plettner, NRC Resident Inspector

*Denotes those present during the exit interview on April 29, 1988.

2. NRC Inspector Observations

The following are observations the NRC inspector discussed with the licensee during the exit interview on April 29, 1988. These observations are not violations, deviations, unresolved items, or open items. These observations were identified for licensee consideration for program improvement, but the observations have no specific regulatory requirement. The licensee stated that the observations would be reviewed.

a. QA Audit Program - The licensee does not perform a separate audit of the radioactive waste effluent program (RWEP) or the offsite dose assessment manual (ODAM). (See paragraph 5.)

b. Technical Specification (TS) Surveillance Tests - The licensee had not established specific individual surveillance test procedures to perform and track completion of all Radiological Effluent Technical Specifications (RETS) requirements. (See paragraph 7.)

c. Semiannual Effluent Release Reports - The licensee had not addressed in every semiannual effluent release report the topics of unplanned releases, changes to the process control program, and changes to the ODAM. (See paragraph 7.)

3. Organization and Management Controls (83522/83722)

The NRC inspector reviewed the licensee's organization, staffing, identification and correction of program weaknesses, audits and appraisals, communication to employees, and documentation and implementation of the RWEP to determine adherence to commitments in Section XIII-2 in the Updated Safety Analysis Report (USAR) and the requirements in Section 6.1 in the TS.

The NRC inspector verified that the organizational structures of the CNS radwaste operations section and chemistry/radiochemistry section (C/RS) were as defined in the USAR and TS. The CNS management control procedures and position descriptions were reviewed for the assignment of responsibilities for the management and implementation of the CNS RWEP. The NRC inspector verified that the administrative control responsibilities specified in CNS procedures were being implemented. Selected procedures and records listed in Attachment 1 to this report were reviewed.

The NRC inspector reviewed the staffing of the radwaste operations section and the C/RS and determined that both sections were fully staffed. Since the previous NRC radwaste inspection in December 1986, the licensee's radwaste operations section and the C/RS had experienced no personnel turnover. A review of the operations shift crew assignments indicated that four new station operators had been added to the shift crews since December 1986.

No violations or deviations were identified.

4. Training and Qualifications (83523/83723)

The NRC inspector reviewed the licensee's training and qualification program for C/RS personnel and nonlicensed radwaste station operators responsible for the RWEP including: education and experience, adequacy and quality of training, employee knowledge, qualification requirements, new employees, Institute of Nuclear Power Operations accreditation, and audits and appraisals to determine adherence to commitments in Section XIII-3 in the USAR and the requirements in Section 6.1.4 in the TS.

The NRC inspector reviewed the qualifications of present C/RS staff and selected nonlicensed station operators responsible for the implementation of the RWEP and verified that they met the required qualifications specified in the USAR and TS. It was determined that the licensee had an adequately qualified staff.

The NRC inspector reviewed the licensee's training program for C/RS personnel and nonlicensed radwaste operators, including a review of course descriptions, personnel training records, and qualification cards. The NRC inspector found that the licensee's training program was being implemented in accordance with CNS procedures.

The NRC inspector reviewed individual staff training records and qualification cards for selected C/RS personnel and nonlicensed radwaste operators responsible for performing RWEP activities. The NRC inspector verified that all C/RS technicians and nonlicensed station operators responsible for performing RWEP activities and completed the required training on the RETS and radwaste systems to perform liquid and gaseous effluent releases.

No violations or deviations were identified.

5. Liquids and Liquid Wastes (84523/84723)

The NRC inspector reviewed the licensee's liquid radioactive waste effluent program including: liquid waste system construction and installation; liquid leakage, overflow, and spillage; liquid waste sampling; liquid process and effluent monitors; procedures for liquid waste and effluent systems; reactor coolant and secondary water quality; and audits and appraisals to determine adherence to commitments in Sections VII-12, IX-2, IX-6, XIII-6, and XIII-9 in the USAR and the requirements in Sections 3/4.2, 3/4.21, 6.2, 6.3, 6.7, and 6.8 in the TS and the ODAM.

The NRC inspector reviewed the licensee's implementation of the RETS and ODAM to ensure agreement with analysis sensitivities, reporting limits, analytical results, sampling requirements, surveillance tests, RWEP operating procedures, offsite dose results from liquid effluents, and functional checks and calibrations of equipment associated with the radioactive liquid waste processing system. Selected documents and records listed in Attachment 1 to this report were reviewed.

The NRC inspector reviewed current approved revisions of CNS procedures governing the release of liquid radioactive waste. These liquid effluent release procedures provide for the following: sampling of radioactive waste; chemical and radionuclide analyses prior to release; calculation of effluent release rates, effluent radiation monitor setpoints, projected offsite radionuclide concentrations, and offsite doses prior to release; recording effluent dilution parameters during releases; and verifying discharge flow rates and effluent volume discharged.

The NRC inspector reviewed a representative number of liquid release permits for the period January 1987 through March 1988. It was determined that processing, sampling and analysis, and approval and performance of the releases were conducted in accordance with CNS procedures. Quantities

of radioactive nuclides released in the liquid effluents were within the limits specified in the RETS. Offsite doses had been calculated according to the ODAM and were within the TS limits.

Liquid effluent radiation monitor setpoints were being calculated in accordance with the ODAM. The NRC inspector determined that no design changes had been made to the liquid waste systems since the previous NRC inspection conducted in December 1986.

The NRC inspector reviewed procedures and selected reactor water chemistry records for the period January 1987 through March 1988. The records reviewed indicated that all required sampling and analyses were performed at the frequencies required by the TS.

The NRC inspector reviewed source checks, channel function tests, calibrations, and setpoint procedures and records for radioactive waste liquid effluent monitors which showed that the frequency of channel functional checks and calibrations met TS requirements. The NRC inspector verified that the monitor calibrations were being performed using radioactive standards traceable to the National Bureau of Standards and were of various activity levels to cover the entire range of each monitor. The calibrations and monitor setpoint determinations were verified to have been performed according to approved procedures. The NRC inspector visually inspected the location and operation of the effluent radiation monitors and determined that the radwaste effluent radwaste monitors were operable at the time of the inspection and met TS requirements. The service water effluent monitor and the radwaste ventilation monitor were temporarily out-of-service while maintenance was being performed.

The NRC inspector reviewed surveillance test procedures and records to determine compliance with the channel check and calibration requirements for the liquid radwaste effluent line flow rate monitors. It was noted that the liquid radwaste effluent flow rate monitors, RW-FIT-485 and RW-FIT-442, were last calibrated on July 14, 1986, in accordance with Surveillance Procedure 6.3.7.3, "Liquid Radwaste Effluent Flow Monitor Calibration," Revision 0, June 26, 1986. The calibration frequency requirement for these flow monitors is once per cycle or by TS definition at least once per 18 months. This item was discussed with the licensee during the inspection and at the exit interview on April 29, 1988. The flow monitors were calibrated satisfactorily by the licensee on April 29, 1988, within the ±25 percent time allowance defined for surveillance tests in the TS.

The NRC inspector reviewed the CNS QA organization, selected QA audit and surveillance procedures, audit and surveillance schedules for 1987 and 1988, and the qualifications of auditors. Selected QA surveillance and audit reports concerning QA activities performed during 1987 in the areas of chemistry and liquid radwaste processing were reviewed for scope to

ensure thoroughness of program evaluation and timely followup of identified findings. The NRC inspector found the audit plans, checklists, and surveillances to be comprehensive. The NRC inspector made the following observations which would provide program improvements in the radwaste effluent program audit process:

a. the radwaste effluent program is included as part of the chemistry/radiochemistry audit and could be better performed as a separate audit,

b. the licensee's audit team for conducting radwaste effluent program audits does not have an auditor who has received specific training in the station radwaste management systems or release procedures, and

c. the licensee has not developed a specific audit of the ODAM.

These observations were discussed with the licensee at the exit interview on April 29, 1988, and the licensee agreed to evaluate the observations for program improvement.

The NRC inspector determined that the licensee was using a contractor laboratory to perform the ^{55}Fe analysis on radioactive liquid waste effluent required by TS. The licensee was also using a contractor to perform in-place filter testing and laboratory charcoal adsorber analyses on the station ventilation systems as required by TS. The licensee had performed QA audits on both of these contractors and had placed them on the CNS approved supplier list. The NRC inspector reviewed the audits performed by the licensee on the two contractors and found the audits to be adequate.

No violations or deviations were identified.

6. Gaseous Waste System (84524/84724)

The NRC inspector reviewed the licensee's gaseous radioactive waste effluent program including: gaseous waste system construction and installation, gaseous waste sampling, gaseous process and effluent monitors, procedures for gaseous waste and effluent systems, air cleaning systems, and audits and appraisals to determine adherence to commitments in Sections VII-12, IX-4, IX-5, XIII-6, and XIII-9 in the USAR and the requirements in Sections 3/4.2, 3/4.7, 3/4.12, 3/4.21, 6.2, 6.3, 6.7, and 6.8 in the TS and ODAM.

The NRC inspector reviewed the licensee's implementation of the RETS and ODAM to ensure agreement with analysis sensitivities, reporting limits, analytical results, sampling requirements, surveillance tests, RWEP operating procedures, offsite dose results from gaseous effluents, and functional checks and calibrations of equipment associated with the radioactive gaseous waste processing system. Selected documents and records listed in Attachment 1 to this report were reviewed.

The NRC inspector reviewed current approved revisions of CNS procedures governing the release of gaseous radioactive waste. These gaseous effluent release procedures provide for: the sampling of gaseous radioactive waste, calculation of projected offsite radionuclide concentrations and doses, calculations and verification of gaseous effluent radiation monitor setpoints, and verification of discharge flow rates and effluent volume discharged. Selected documents and records listed in Attachment 1 to this report were reviewed.

The NRC inspector reviewed selected analyses of samples taken from the elevated release point, reactor building ventilation, augmented radwaste building ventilation, and turbine building ventilation continuous release paths for the period January 1987 through March 1988. It was determined that the continuous gaseous waste releases were being performed according to procedure and the quantities of gaseous radioactive nuclides released were within the limits specified in the RETS. Offsite doses had been calculated according to the ODAM, updated biweekly, and were within the TS limits. The NRC inspector reviewed daily readings taken from the noble gas monitor and recorded on the appropriate data form and determined that the TS requirement was being met. The NRC inspector reviewed selected operations daily surveillance log sheets for the period January 1987 through March 1988 and verified continuous monitoring of the hydrogen concentration in the augmented offgas treatment system downstream of the recombiners. The NRC inspector determined that no design changes had been made to the gaseous radwaste management system since the previous NRC inspection in December 1986.

The NRC inspector reviewed source checks, channel functional tests, calibrations, and setpoint procedures and records for gaseous radioactive waste effluent monitors and verified that the frequency of the various checks and calibrations met TS requirements. The monitor calibrations and setpoint determinations were verified to have been performed according to approved procedures.

The NRC inspector reviewed the licensee's procedures and surveillance tests for maintenance and testing of air cleaning systems which contain high efficiency particulate air (HEPA) filters and activated charcoal adsorbers. The NRC inspector verified that the licensee's procedures and surveillance tests provided for the required periodic functional checking of ventilation system components, evaluation of HEPA and activated charcoal adsorbers, tracking of system operating hours, and replacement and in-place testing of filter systems. The licensee's surveillance test results for the period January 1987 through March 1988 were reviewed and verified to be within TS limits. Selected documents and surveillance tests listed in Attachment 1 to this report were reviewed.

No violations or deviations were identified.

7. Reports of Radioactive Effluents

The NRC inspector reviewed the licensee's records and reports concerning radwaste systems and effluent releases for compliance with the requirements of 10 CFR Part 50.36(a)(2) and Section 6.5.1.F in the TS.

The NRC inspector reviewed the semiannual effluent release reports for the periods July 1 through December 31, 1986, January 1 through June 30, 1987, and July 1 through December 31, 1987. These reports were written in the format described in NRC Regulatory Guide 1.21 and contained the information required by TS. However, the NRC inspector observed that in two of the semiannual effluent release reports reviewed the topics of unplanned releases and changes to the process control program and ODAM were not addressed since no unplanned releases occurred and no changes had been made to the referenced documents. This observation was discussed with the licensee at the exit interview on April 29, 1988, and the licensee agreed to reference each of these specific TS requirements in future semiannual effluent release reports.

The NRC inspector reviewed the implementation of RETS for the period January through December 1987. It was determined that all required data were available; however, it was observed that not all RETS requirements were being addressed in specific individual surveillance procedures which would perform and track completion of TS requirements at specified frequencies and provide a concise method for reporting TS surveillance data. This observation was discussed with the licensee during the inspection and at the exit interview on April 29, 1988, and the licensee stated that they would evaluate the NRC inspector's observation for program improvement.

No violations or deviations were identified.

8. Exit Interview

The NRC inspector met with the NRC resident inspector and the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on April 29, 1988. The NRC inspector summarized the scope and findings of the inspection and discussed the NRC inspector's observations. The licensee representatives stated at the exit interview that they would evaluate the NRC inspector's observations and concerns and take necessary corrective action to implement program improvements.

ATTACHMENT 1

Cooper Nuclear Station

NRC Inspection Report 50-298/88-12

Documents Reviewed

	Title	Revision	Date
1.	Administrative Procedures		
	0.2, Station Organization and Responsibility	6	04/14/88
	0.17, Selection and Training of Station Personnel	8	04/07/88
	0.26, Surveillance Program	2	10/15/87
2.	System Operating Procedures		
	2.2.62, Radioactive Waste System - Gaseous	15	02/26/87
	2.2.73, Standby Gas Treatment System	17	02/25/83
3.	Radwaste Procedure		
	2.5.2.3, Radwaste High Conductivity Liquid Waste Floor Drain Sample Task Fluid Transfer	29	03/19/87
4.	Surveillance Procedures		
	6.2.4.1, Daily Surveillance Log (Technical Specifications)	61	04/14/88
	6.2.6.1, Off Gas System Auto Isolation Functional Test	13	12/03/87
	6.2.6.2, Augmented Off Gas Hydrogen Monitors Calibration	2	01/21/88
	6.2.6.4, Off Gas Flow Monitor Calibration	8	12/23/87
	6.2.6.7, Steam Jet Air Ejector Flow Monitor Calibration	3	10/08/87
	6.2.6.8, Augmented Off Gas Hydrogen Monitors Functional Test	3	12/23/87
	6.3.7.2, Off Gas Radiation Monitor Calibration and Functional/Functional Test	21	04/07/88

6.3.7.3, Liquid Radwaste Effluent Flow Monitor Calibration	0	06/26/86
6.3.7.4, SW and REC Radiation Monitor Calibration Check and Instrument Channel/Instrument Channel Test	15	01/21/88
6.3.7.5, Reactor Building Ventilation Radiation Monitor Calibration and Functional/ Functional Test	11	03/12/87
6.3.7.6, Liquid Radwaste Effluent Flow Monitor Functional Test	0	06/26/86
6.3.7.7, Liquid Radwaste Effluent System Calibration and Functional/Functional and Logic Tests	15	12/17/87
6.3.7.8, ERP Radiation Monitor (Kaman) Known Source Calibration Check/Functional Test	24	03/12/87
6.3.17.4, Control Room Emergency Fan HEPA Filter Leak Test	8	02/26/87
6.3.17.5, Control Room Emergency Fan Charcoal Leak, Charcoal Sampling, and Fan Capacity Testing	9	02/15/84
6.3.17.6, HVAC Radwaste Building HEPA Filters Leak Test	3	02/10/86
6.3.17.7, HVAC Reactor Building HEPA Filters Leak Test	3	06/26/86
6.3.17.8, HVAC Augmented Radwaste Building HEPA Filters Leak Test	3	06/26/86
6.3.17.10, EOF/TSC Emergency Air Filter In-Place HEPA Leak Test	1	12/26/85
6.3.17.11, EOF/TSC Emergency Air Filter In-Place Charcoal Leak Test and Laboratory Analysis	1	09/05/85
6.3.19.1, SGT Operability Test/Off-Gas Flow Monitor Functional Test	19	03/03/88
6.3.19.2, SGT Filter Differential Pressure, Heater Output, and Fan Motor Running Current Test	11	09/17/87

6.3.19.3.1, SGT Train A HEPA Filter Leak and Housing Door Seal Leak Test	0	03/03/88
6.3.19.3.2, SGT Train B HEPA Filter Leak and Housing Door Seal Leak Test	0	03/03/88
6.3.19.4, SGT Charcoal Filter Leak and Fan Capacity Test	14	09/17/87
6.3.19.5, SGT Charcoal Filter Carbon Analysis - Menthyl Iodide	9	05/01/86
6.4.6.1, Reactor Building Air Sampling System (Kaman) Functional Test and Known Source Calibration Check	27	03/12/87
6.4.6.3, Control Room Vent Monitors Calibration and Functional/Functional Logic Tests	26	05/21/87
6.4.6.4, Turbine Building Air Sampling System (Kaman) Functional Test and Known Source Calibration Check	28	03/12/87
6.4.6.5, Radwaste Building Air Sampling System (Kaman) Functional Test and Known Source Calibration Check	19	03/12/87
6.4.6.9, Turbine Building Air Sampling System (Kaman) Electronic Calibration Test	4	04/07/88
6.4.6.10, EPR Radiation Monitor System (Kaman) Electronic Calibration Test	4	03/10/88
6.4.6.11, Radwaste Building Air Sampling System (Kaman) Electronic Calibration Test	3	03/10/88
6.4.6.12, Reactor Building Air Sampling System (Kaman) Electronic Calibration Test	4	03/10/88
6.4.6.13, Turbine Building Ventilation Flow Monitor Calibration Test	1	05/15/86
6.4.6.14, Reactor Building Ventilation Flow Monitor Calibration Test	1	10/09/86
6.4.6.15, Radwaste Building Ventilation Flow Monitor Calibration Test	1	02/20/87
6.4.6.16, Steam Jet Air Ejector Flow Monitor Functional Test	1	09/04/86

6.4.6.17, Reactor Building Ventilation Flow Monitor Functional Test	2	02/01/88
6.4.6.18, Radwaste Building Ventilation Flow Monitor Functional Test	3	02/01/88
6.4.6.19, Turbine Building Ventilation Flow Monitor Functional Test	3	02/01/88

5. Chemistry Procedures

8.2.1, Chemistry Analysis and Instrument Calibration Schedule	14	07/02/86
8.4, Routine Sampling Procedure and Liquid/Gas Sample Points	4	10/01/87
8.6.1, Air Ejector Off Gas Radiation Monitor Calibration	8	07/10/86
8.6.2, ERP and Vent Monitor Calibrations	14	02/08/88
8.6.3, Liquid Process Radiation Monitors SW and REC	9	06/30/86
8.6.4, Radwaste Liquid Process Radiation Monitor	11	07/17/87
8.8.1.14, Radiochemical Analysis Iodines	9	11/13/86
8.8.1.17, Radiochemical Noble Gas Sampling	1	08/27/87
8.8.1.25, Radiochemical Strontium and Yttrium Analysis	7	10/02/86
8.8.1.31, Radiochemical Analysis of Tritium	1	06/26/86
8.8.4, Off Gas Grab Samples Isotopic Analysis	9	01/29/87
8.8.5, Determination of Off-Gas Flow Rate	3	01/15/87
8.8.7, Liquid Waste Discharge Preparation and Analysis	10	03/12/87
8.8.8, Particulate, Iodine, and Noble Gas Sample Collection for Effluent Monitors	10	04/15/87
8.8.11, Liquid Radioactive Waste Discharge Authorization	11	01/08/87
8.11.1, Effects Program	1	09/08/86

6. Chemistry Data Forms

8.2.12.C.1, 8.4.1.1.1, 8.4.5.1.6-C, 8.4.5.3.4-A, 8.4.5.3.4-B, 8.4.5.3.5-B, 8.4.7.2.2, 8.4.8.2.2, 8.4.11.1.2-A, 8.4.11.2.2-A, 8.4.11.9.2, 8.4.12.2.5-A, 8.4.12.2.5-B, 8.4.12.3.2-A, 8.5.5.3.5, 8.5.8.2.5, 8.5.11.10-A, 8.5.12.1.5

7. Quality Assurance (QA) Audits

QA Audit Report 87-12, QAP-900-Chemistry, dated January 6, 1988

QA Audit Report 87-16, QAP-900-Environmental, dated December 11, 1987

QA Vendor Audit Report V85-38-01, EAL Corporation, dated November 20, 1985

QA Vendor CASE Audit Report, Nuclear Containment Systems, dated December 5, 1986

8. Cooper Nuclear Station Semiannual Effluent Release Reports

July 1 through December 31, 1986
January 1 through June 30, 1987
July 1 through December 31, 1987