

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/85-25

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: Brownville, Nebraska

Inspection Conducted: August 26-30, 1985

Inspector: Blaine Murray 10/16/85  
J. Blair Nicholas, Senior Radiation Specialist, Date  
for Facilities Radiation Protection Section

Approved: Blaine Murray 10/16/85  
Blaine Murray, Chief, Facilities Radiation Date  
Protection Section

Inspection Summary

Inspection Conducted August 26-30, 1985 (Report 50-298/85-25)

Areas Inspected: Routine, unannounced inspection of the licensee's transportation and solid radioactive waste (radwaste) activities including: management controls, training, audit program, quality assurance (QA), procurement and selection of packages, preparation of packages for shipment, delivery of completed packages to carrier, receipt of packages, records and reports, radioactive waste classification and characterization, low-level waste storage facility, and spent fuel shipments. The inspection involved 35 inspector-hours onsite and 8 inspector-hours offsite by one NRC inspector.

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

## DETAILS

### 1. Persons Contacted

#### NPPD

- \*P. V. Thomason, Division Manager Nuclear Operations
- \*R. L. Beilke, Chemistry and Health Physics Supervisor
- \*G. D. Bray, Auxiliary Equipment Supervisor
- \*R. Brungardt, Acting Operations Manager
- C. Goings, Regulatory Compliance Specialist
- J. H. Kuttler, Health Physicist
- R. J. McDonald, Assistant Chemistry and Health Physics Supervisor
- J. M. Meacham, Technical Manager
- J. A. Mehser, Radwaste Operator
- \*E. M. Mace, Acting Technical Manager
- \*D. L. Reeves, Training Manager
- \*J. V. Sayer, Acting Division Manager Nuclear Services
- \*V. L. Wolstenholm, QA Manager

#### Other Personnel

- \*D. L. DuBois, Senior Resident Inspector, USNRC

\*Denotes those present at the exit briefing on August 30, 1985.

### 2. Management Controls

The NRC inspector reviewed the licensee's staff functional assignments regarding transportation and solid radwaste responsibilities and management controls for compliance with IE Bulletin 79-19.

The NRC inspector determined that the licensee's transportation and solid radwaste management controls were described in Administrative Procedure 0.2, "Station Organization and Responsibility," Revision 0, September 28, 1984. Section 14 designates the chemistry and health physics supervisor as responsible for ensuring proper shipment and receipt of all radioactive material to and from the plant. The organizational structure and staffing appeared to be sufficient to meet the requirements for the routine performance of the transportation and solid radwaste activities. The licensee had written detailed job/position descriptions for responsible radwaste positions.

The NRC inspector reviewed management approved procedures to conduct radioactive material packaging, transportation, and receipt operations.

During the review of the licensee's radioactive materials transportation records, the NRC inspector noted that the required supervisor and QA reviews were made according to the licensee's established procedures. Also, the NRC inspector noted that a QA representative performed a QA surveillance on each radwaste shipment and reviewed the transportation records to ensure the records complied with elements of 10 CFR Part 71, Subpart H.

No violations or deviations were identified.

### 3. Training

The NRC inspector reviewed the licensee's training program for personnel involved in transportation of radioactive material and solid radwaste activities to determine compliance with the requirements of IE Bulletin 79-19.

The NRC inspector reviewed the training records of personnel in operations, maintenance, and health physics who are assigned to radwaste processing and transportation activities. The NRC inspector found that the training records indicated that those staff members assigned to radwaste processing and transportation activities had received training in radwaste packaging and handling in late 1983 or early 1984. Seven maintenance utility men had received quality control inspector training for radwaste packaging in October 1984. Seven health physics technicians had received training in transportation regulations as part of the health physics technology course developed by General Electric and taught in September and October 1983. In addition, the chemistry and health physics supervisor along with two health physics technicians had attended a course on radioactive waste shipment and burial presented by U. S. Ecology in August 1984.

The NRC inspector discussed the radwaste/transportation training with the chemistry and health physics supervisor, health physicist, radwaste operators, and several health physics technicians. These discussions indicated that the personnel involved in the processing and transporting of radioactive waste materials possessed a working knowledge of the licensee's specific procedural requirements and applicable NRC and DOT regulatory requirements.

The NRC inspector discussed the formalization of the radwaste operator qualification/training program as discussed as Open Item 8319-01 in NRC Inspection Reports 50-298/83-19 and 50-298/84-06. This training program for radwaste operators and all CNS personnel performing radwaste/transportation activities is to be designed to include theory, CNS radwaste systems, transportation regulations, and on the job training in an organized and documented program taught to all CNS personnel associated with radwaste and transportation activities by the CNS training department staff. The

NRC inspector determined that a formal training program for transportation regulations had been developed as part of the health physics technology course developed by General Electric and had been taught to only health physics technicians. The segment of the training program on CNS radwaste systems, theory, and packing and handling of radwaste materials was still under development by the CNS training department. Therefore, Open Item 298/8319-01 is still considered open pending completion of a formal, documented radwaste/transportation qualification/training program for radwaste operators, health physics technicians, and maintenance personnel responsible for radwaste/transportation activities.

No violations or deviations were identified.

#### 4. Audit Program

The NRC inspector reviewed the licensee's audit program for transportation of radioactive material and solid radwaste packaging and handling to determine compliance with 10 CFR Part 71.137 and the licensee's approved procedures.

The NRC inspector reviewed the two QA audits which had been conducted for radioactive waste treatment and disposal since the last NRC inspection in April 1984. Audit 84-05 was conducted March 26-April 26, 1984, and Audit 85-10 was conducted April 15-May 10, 1985. The two audits were performed by CNS QA department personnel. The audits appeared to be well planned and performed in accordance with the licensee's approved quality assurance plan (QAP) - 1200. The audit team used a checklist which appeared to adequately cover all areas of radwaste treatment and transportation activities required by station procedures and verifying compliance with NRC and DOT regulations. The NRC inspector noted in Audit Report 84-05 finding 84-05-01 was issued concerning the inability of the licensee's quality control program to ensure compliance with the radwaste solidification stability requirements of 10 CFR Part 61.56(b). This finding was subsequently made a deficiency and a part of an NRC unresolved item in the NRC Performance Appraisal Team Report 50-298/84-21. The recommended modifications to the radwaste solidification process were made and verified during a follow-up audit conducted on August 24, 1984. As required by 10 CFR Part 61.55, the 10 CFR Part 61.56(b) stability requirements must be demonstrated for Class B waste. The NRC inspector reviewed compression study results performed on test cylinders of various mixtures of waste material and solidification agent submitted to a contractor for testing on March 25, 1985. All test cylinders using Portland cement as the solidification agent passed the stability test. In addition, 10 CFR Part 20.311 requires that a quality control program be conducted to ensure that the physical properties of solidified radwaste conform to the requirements of 10 CFR Part 61.56.

The licensee's quality control program to meet these requirements was considered inadequate with regard to the solidification of radwaste. The

quality control check consisted solely of a visual observation with no routine physical check for penetration. The NRC inspector discussed this deficiency with the licensee and a resolution was agreed upon to fabricate a tool to attach to one arm of the slave manipulators to perform routine periodic physical penetration checks on solid radwaste drums for proof of solidification. This periodic physical penetration check would be incorporated into the licensee's procedures and performed on approximately 10 percent of the solid radwaste drums. The implementation of this procedure will be reviewed during future NRC inspections.

The NRC inspector noted that the audit teams used for conducting the two audits had a member trained and knowledgeable in radwaste handling and solidification and transportation of radioactive materials activities.

The licensee's QA department performs QA surveillances on every radwaste shipment from the station. The NRC inspector reviewed the results of selected surveillance reports issued in 1984 and 1985 and found no concerns.

No violations or deviations were identified.

#### 5. QA Program

The NRC inspector reviewed the licensee's QA program regarding solid radwaste and transportation activities to determine compliance with 10 CFR Part 50, Appendix B and 10 CFR Part 71, Subpart H as recommended in IE Information Notice No. 84-50.

The NRC inspector reviewed the licensee's QAP-1200, "Radioactive Waste Treatment and Disposal," Revision 7, March 6, 1985, and associated checklist and found the QA program addresses all the pertinent aspects of 10 CFR Part 71, Subpart H, QA program areas as they apply to transportation activities. The NRC inspector also reviewed inspection records used for receipt of NRC certified packages, QA surveillance checklists, and procedures used by radwaste and health physics personnel during preparation, loading, and shipping of radioactive waste material packages.

The NRC inspector determined that the licensee had an audit program established for the vendor contracted to perform radiochemical analyses on samples of radwaste streams for the requirements in 10 CFR Part 61.55. These analyses are for comparison and correlation factors used for radwaste characterization and the determination of isotopic composition and specific activity. It was noted by the NRC inspector that the vendor previously used for these analyses had been removed from the approved vendor list and an audit must be performed prior to the use of the vendor for analyses of the next batch of radwaste samples.

The licensee does not perform maintenance on leased radwaste packaging nor construct their own radwaste packages. Whenever repairs are required as a result of a QA inspection, the vendor of the radwaste container is notified and repairs are performed by owner/vendor personnel.

No violations or deviations were identified.

6. Procurement and Selection of Packages

The NRC inspector reviewed the licensee's program for procurement and selection of packages used for transport of radioactive materials to determine compliance with 10 CFR Part 71.12 and 49 CFR Part 173.415.

The NRC inspector reviewed the licensee's procurement of DOT and NRC certified packages. The NRC inspector noted that the licensee normally ships low specific activity (LSA) waste in steel boxes as strong tight containers or in steel drums manufactured in accordance with DOT Specification 17H for shipments of LSA radioactive waste. The NRC inspector determined that the licensee maintains current documents on manufacturer's design, use, maintenance, testing, an NRC Certificate of Compliance for all casks used by the licensee. A review of the licensee's shipping records and discussions with licensee representatives indicated that the manufacturer's handling and loading procedures were readily available for use and normally used in preparing casks for shipment. Prior to initial use, the licensee had registered his name, license number, and package identification with the NRC as a certified package user.

In NRC Performance Appraisal Team Report 50-298/84-21, unresolved Item (298/84-21-14) identified that no procedures that had been reviewed, controlled, or approved by the licensee for the use of radwaste shipping casks, which was considered contrary to the requirements of 10 CFR Part 71.113. The NRC inspector reviewed the licensee's response to this deficiency within the unresolved item. The licensee is presently using vendor supplied procedures for handling registered casks. These procedures are maintained current and readily available for use. However, these procedures have not been through the normal station review and approval process and as such they are not considered station approved procedures. The NRC inspector discussed this deficiency with the licensee and a resolution was agreed upon to incorporate a reference to these vendor procedures into the licensee's procedures for radioactive material shipments. The implementation of this commitment will be reviewed during future NRC inspections.

No violations or deviations were identified.

7. Preparation of Packages for Shipment

The NRC inspector reviewed the licensee's program for preparation of radioactive material packages for shipment to determine compliance with the requirements of 10 CFR Parts 71.85 and 71.87, 49 CFR Parts 172.300-.310, and 49 CFR Parts 173.412, 173.474, and 173.475.



The NRC inspector verified that the licensee had established procedures and checklists for the preparation of radwaste for shipment. These procedures include requiring a visual inspection of the package prior to loading the package, instructions for closing and sealing the package, marking requirements of the package's weight and Curie content, labeling requirements for the appropriate type of package, and determining the radiation and contamination limits for packages. Discussions with licensee personnel indicated that individuals involved in transportation of radioactive material activities possessed a working knowledge of the related procedures sufficient to ensure that the aspects of DOT and NRC regulations pertaining to the preparation of packages for shipment were being met.

No violations or deviations were identified.

8. Delivery of Completed Packages to Carrier

The NRC inspector reviewed the licensee's program for delivery of completed packages to the carrier for shipment to determine compliance with the requirements of 10 CFR Parts 71.89 and 71.97; and 49 CFR Parts 172.101, 172.203, 172.204, 172.205, 172.506, 173.435, and 177.842.

The NRC inspectors compared the licensee's procedures with the NRC and DOT requirements to determine if they covered the requirements. The review of licensee records and shipping paper documentation indicated that the licensee had prepared appropriate shipping papers in accordance with approved procedures and that the shipping papers included the necessary information to comply with regulatory requirements. Discussions with the licensee representatives indicated that the licensee used only exclusive use carriers and assured the following items were in accordance with regulations and station procedures: radiation levels are within required limits, transport vehicle is properly placarded, removable surface contamination on packages does not exceed requirement levels, and blocks and/or braces are within/on the transport vehicle in such a manner to prevent damage or shift of load under conditions normally encountered in transit.

During the review of the licensee's procedures and comparing these procedures against the NRC and DOT requirements, the NRC inspector noted the following observations which were discussed with the licensee during the exit briefing on August 30, 1985.

- The licensee did not have a procedure for determining  $A_1$  and  $A_2$  values for radionuclides not listed in 49 CFR Part 173.435 as per 49 CFR Part 173.433. (See also 10 CFR Part 71, Appendix A.)
- The licensee had not included in a procedure the requirement for proper advance notification to the governor of a state of the shipment to, through, or across the boundary of the state for Type B packages as per 10 CFR Part 71.97.

- The licensee did not have a procedure to define and perform the required immediate notifications following certain hazardous materials incidents as per 49 CFR Parts 171.15 and 171.16.
- The licensee did not have in a procedure detailed steps to investigate missing or not received shipments as per 10 CFR Part 20.311(h).

The licensee agreed to evaluate the observations and take corrective action where required.

The NRC inspector observed the licensee loading a trailer shipment consisting of nine steel boxes containing LSA radwaste; placarding of the vehicle; performing radiation surveys; and completing shipping documentation. The shipment was classified as LSA Type A and shipped in a transport vehicle consigned as an exclusive use vehicle.

No violations or deviations were identified.

9. Receipt of Packages

The NRC inspector reviewed the licensee's program for receiving packages of radioactive material to determine compliance with licensee's procedural requirements and 10 CFR Part 20.205.

The NRC inspector determined that the receipt of radioactive material was the responsibility of the health physics department and controlled by the Health Physics Procedure 9.5.1, "Receival of Radioactive Materials", Rev. 3, March 25, 1980. The NRC inspector reviewed this procedure and selected records of radioactive shipments received for consistency with regulatory requirements.

No violations or deviations were identified.

10. Records and Reports

The NRC inspector reviewed the licensee's program of records and reports to determine compliance with the requirements of 10 CFR Parts 71.85, 71.87, 71.91, 71.95 and 71.135, and 49 CFR Parts 171.15, 171.16, and 173.415.

The NRC inspector reviewed the records of 20 selected radioactive material shipments made by the licensee since the last radwaste/transportation inspection, NRC Inspection Report 50-298/84-07, conducted April 16-20, 1984. These shipments were adequately documented to meet the NRC and DOT requirements. The licensee's shipments consisted mainly of radioactive waste to Beatty, Nevada, low-level waste burial site. The licensee maintains a current copy of the burial site contract and also the burial



site's license with the State of Nevada. One transportation violation was reported by the licensee and discussed in NRC Inspection Report No. 50-298/84-12 concerning the fact that a shipment of radwaste material received at the Beatty, Nevada, low-level waste site was found to have a radiation dose rate at 2 meters from both sides of the trailer in excess of 10 millirem per hour. The NRC inspector determined the licensee had not experienced any incidents during this inspection period in the course of transporting radioactive materials that were reportable under the provisions of 49 CFR Parts 171.15 and 171.16.

The licensee maintains the records of all radioactive material shipments for a period in excess of the 2 year requirement.

No violations or deviations were identified.

11. Radioactive Waste Classification, Waste Characterization and Shipping Manifest

The NRC inspector reviewed the licensee's radioactive waste management program for waste classification, characterization, and tracing of waste shipments to comply with the requirements of 10 CFR Parts 20.311, 61.55, and 61.56.

The NRC inspector reviewed the licensee's radioactive waste shipment manifest form that accompanies each shipment of radioactive waste to the waste burial site. The NRC inspector noted that the manifest form contained provisions to comply with the requirements of 10 CFR Part 20.311(b). The NRC inspector reviewed the licensee's process control program which had been submitted to the Office of Nuclear Reactor Regulation (NRR) in April 1984, along with the licensee's proposed change No. 7 to the Technical Specifications dealing with the Radiological Effluent Technical Specifications (RETS). The NRC inspector determined that with the issuance of Amendment 89 to the licensee's Technical Specifications that the licensee's RETS and radwaste process control program were approved for implementation by NRR.

The NRC inspector reviewed the licensee's Procedures H.P. 9.5.3.3, "Condensate Cleanup Waste Resins and Certain Other Wastes Classification and Listing," Rev. 1, June 1, 1984; H.P. 9.5.3.4, "Reactor Water Cleanup Waste Resins Classification and Listing," Rev. 0, July 11, 1984; and H.P. 9.5.3.5, "Dry Radioactive Waste Classification and Listing," Rev. 1, September 25, 1984; and found that the licensee's methods for classification and characterization of radioactive waste appeared to meet the requirements of 10 CFR Part 61. The licensee performs isotopic analysis for isotopic characterization on each batch of waste solidified and employs correlation factors for characterization of isotopes not directly identified as determined by contractor analysis results of

samples representing the various radwaste streams. The NRC inspector determined that the licensee's radioactive management program was being conducted in such a manner that the requirements of 10 CFR Parts 20.311 and 61 appear to have been satisfied.

No violations or deviations were identified.

12. Low-Level Radioactive Waste Storage Facility

The NRC inspector discussed with the licensee plans to use a portion of a new building recently constructed onsite as a low-level radioactive waste storage facility. The licensee informed the NRC inspector that the use of this building for a low-level waste storage facility would happen only if the waste burial sites would not allow further shipments therefore requiring low-level waste to be stored onsite.

The NRC inspector stated in the exit meeting that if the licensee decides to establish a low-level waste storage facility, close attention must be given to the requirements and guidance in 10 CFR Part 50.59, 10 CFR Part 50 Appendix A - Criterion 60-64, IE Circular 80-18, Regulatory Guide 1.143, and NUREG-0800 - Appendix 11.4-A.

No violations or deviations were identified.

13. Spent Fuel Shipments

The NRC inspector reviewed the licensee's Procedure H.P. 9.5.3.7, "Spent Fuel Shipment," Rev. 1, August 20, 1984. The licensee had performed one spent fuel shipment to Morris, Illinois, in August 1984, consisting of three casks mounted on three railroad flatcars containing 18 fuel elements per cask. The casks were enclosed at the boundaries of the rail car with a wire cage. The shipment was completed without incident.

No violations or deviations were identified.

14. Exit Briefing

The NRC inspector met with the NRC senior resident inspector and licensee representatives denoted in paragraph 1 of this report at the conclusion of the inspection on August 30, 1985. The NRC inspector summarized the scope of the inspection and discussed the inspection findings as presented in this report. The licensee committed to review and take appropriate action on the following:

- a. Review the resolution to Open Item 298/8319-01 concerning the development and implementation of a formalized radwaste operator qualification/training program.

- b. Review the need to reference vendor supplied procedures in plant approved procedures concerning shipping casks, demonstrated stability in solidification of Class B wastes, and a quality control program to ensure physical properties of solidified radwaste to conform to 10 CFR Part 61.56 requirements.
- c. Review the need for a procedure for determining  $A_1$  and  $A_2$  values for isotopes not listed in 49 CFR Part 173.435 as per 49 CFR Part 173.433.
- d. Review the need to include in a procedure the requirement to provide proper advance notification to states for Type B packages as per 10 CFR 71.97.
- e. Review the need for a procedure to define and perform the required notifications following hazardous materials incidents as per 49 CFR Parts 171.15 and 171.16.
- f. Review the need for a procedure detailing the steps to follow in investigating a missing shipment of radioactive material as per 10 CFR Part 20.311(h).