

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-482/92-25

Operating Licenses: NPF-42

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)
P.O. Box 411
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS Site, Burlington, Coffey County, Kansas

Inspection Conducted: August 24-28, 1992

Inspector: L. T. Ricketson, P.E., Senior Radiation Specialist
Facilities Inspection Programs Section

Approved: Blaene Murray
B. Murray, Chief, Facilities Inspection
Programs Section

9/16/92
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the radiation protection program, including audits and appraisals, training and qualifications, solid waste management and transportation, and maintaining radiation exposures as low as reasonably achievable (ALARA).

Results:

- Audits were comprehensive and were conducted by qualified individuals (paragraph 2.1).
- A good radiological occurrence reporting system was implemented (paragraph 2.1).
- The radiation protection group was sufficiently staffed and experienced a low turnover rate (paragraph 2.2).
- Good training was provided by qualified instructors (paragraph 2.3).
- Radiation worker/respiratory protection training staffing was marginal (paragraph 2.3).

- Procedural guidance for evaluating radiation protection technician experience and screening examinations for contract radiation protection technicians were used to select qualified personnel (paragraph 2.3).
- Excellent training opportunities were provided to the radiation protection group supervisory staff (paragraph 2.3).
- Waste streams were identified and sampled as required (paragraph 3.4).
- State of the art computer software was used in the implementation of the solid waste management program (paragraph 3.4).
- A superior transportation program had been implemented (paragraph 3.5).
- The ALARA program had increased management support, but most of the ALARA suggestions which were in the form of plant design changes had not been implemented (paragraphs 4.2 and 4.3)
- The quality of the ALARA packages was good (paragraph 4.5).

Summary of Inspection Findings:

Violation 482/91202-02 was closed.

Attachments

- Attachment 1 - Persons Contacted and Exit Meeting

1 PLANT STATUS

During this inspection, the plant was operating normally, at 100 percent power.

2 OCCUPATIONAL RADIATION EXPOSURE (83750)

The licensee's program was inspected to determine compliance with Technical Specifications 6.3, 6.4, 6.5 and 6.11, and 10 CFR Part 20, and agreement with the commitments in Chapter 12 of the Updated Safety Analysis Report

2.1 Audits and Appraisals

The inspector reviewed quality assurance audit TE: 50140-K358, "Radiation Protection," which was performed in May 1992.

The inspector noted that the audit team audit included a technical specialist from another facility and a former member of the radiation protection program.

The audits were thorough in their coverage of the programs they reviewed. Audits of the radiation protection program and radioactive waste management identified program deficiencies and areas of possible improvement. The radiation protection organization responded promptly to the deviations with proper corrective actions.

During a previous inspection of this area, the inspectors noted that some individuals were confused as to the method of documenting radiological problems. They had to choose between writing a radiological occurrence report or a plant improvement request. The manager of radiation protection stated that this had not proved to be a problem because, regardless of the mechanism, the reports identified the problems, the radiation protection organization reviewed the situations, and corrective actions were implemented. The inspector reviewed the log of radiological occurrences and selected examples of the reports and determined that the reporting system functioned well to identify occurrences, trend causes, and track corrective actions.

The radiological occurrence reports were distributed to the technical training group for discussion with the radiation protection technicians during scheduled training sessions; however, they were not distributed to the corporate training group for their review and possible discussion during radiation worker training classes.

2.2 Changes

The radiation protection group experienced a low personnel turnover rate during 1992 losing 3 people out of the 52 total staff positions.

2.3 Training and Qualifications

The inspector interviewed selected training department instructors in the radiation protection technician training and general employee/radiation worker training groups and determined that they were qualified. The radiation protection technician training group had previously been evaluated as being marginally staffed. However, staffing had been increased from 2 1/2 to 3 instructors. This staffing level was determined to be appropriate. There were only two instructors to provide general employee/radiation worker training, and only one of those was qualified to present respiratory protection training. Instructors in this area were required to work many hours of overtime to meet the demands placed on them during the most recent refueling outage.

The radiation protection technician training group performed several cycles of continuing training and met regularly with the radiation protection organization in order to identify training needs.

The licensee had procedural guidance to set criteria for evaluating the experience of contract radiation protection technicians who were employed during major outages and also used screening examinations to aid in the selection of prospective contractors.

Twelve members of the radiation protection organization were registered by the National Registry of Radiation Protection Technologists. Licensee representatives stated that they expect approximately nine people to seek registration this year. In order to promote the professional development of the technicians, the licensee plans to conduct a short course to prepare the individuals for the examination and will pay the fees charged for the testing.

The inspector reviewed training received by the supervisors and professionals in the radiation protection organization and noted that all but one had attended offsite training or had attended professionals meetings as a means of maintaining their technical expertise.

Mockup training or rehearsals were conducted for several jobs performed during the most recent refueling outage. These jobs included temporary shielding and demolition work involved with the resistance temperature detector bypass piping removal and permanent cavity seal ring installation.

2.4 Conclusions

The quality assurance audit of radiation protection was comprehensive and was conducted by qualified individuals. The licensee strengthened this area by including a technical specialist from another facility on the most recent audit. A good radiological occurrence reporting system was implemented.

The radiation protection group was sufficiently staffed and experienced a low turnover rate.

Good training was provided by qualified instructors. Staffing of the technician training group had increased. Staffing of the corporate training group performing radiation worker training was adequate during routine operations but was severely challenged during the 1991 refueling outage by the large influx of contract workers. A good system of evaluating and screening contract radiation protection technicians was implemented. The training opportunities provided to the supervisors and professional members of the radiation protection organization indicated strong management support for the program.

3 SOLID RADIOACTIVE WASTE MANAGEMENT AND TRANSPORTATION OF RADIOACTIVE MATERIALS (86750)

The licensee's program was inspected to determine compliance with Technical Specifications 6.11; 10 CFR 20.311, 61.55, 61.56, and 71; Department of Transportation Regulations 49 CFR Parts 171 through 178; commitments in response to NRC Bulletins 79-19 and 79-20; and commitments in Chapter 11.4 of the Updated Safety Analysis Report.

3.1 Audits and Appraisals

The inspector reviewed the following quality assurance audits related to this inspection area:

- TE: 50140-K351, "Process Control Program (Transportation Only)"
(performed March 2-April 7, 1992)
- TE: 50140-K330, "Radioactive Waste Management" (performed July 1991)

The audit teams did not include offsite technical specialist; however the teams did include experienced licensee personnel.

The audits incorporated quality assurance surveillances of radioactive shipments to verify that procedures were followed in the preparation of those shipments. Quality assurance personnel stated that, typically, one or two surveillances a year were performed on radioactive shipments.

In addition to the quality assurance audit of this area, the licensee recently hired a vendor to perform an independent assessment of the waste management and transportation program. The inspector reviewed the results of the assessment and noted that the vendor found the licensee to have a very good program and offered additional recommendations for improvement which the licensee was evaluating.

3.2 Changes

There had been no change in the staffing of the radioactive waste group. It consisted of a supervisor, two senior radiation protection technicians, and twelve decontamination technicians. Added support was supplied by the radiation protection operations group, if needed.

The licensee did not use solidification for its waste nor did it compact dry activated waste. Dry activated waste was sent to a processor for preparation for ultimate burial. Used protective clothing was sent to a vendor for laundering.

3.3 Training and Qualifications

The inspector also verified through review training records that individuals involved with the preparation of radioactive materials for transportation had received the proper training in accordance with the licensee's commitments in response to NRC Bulletins 79-19 and 79-20.

3.4 Implementation of the Solid Radioactive Waste Program

The licensee identified eight waste streams and sampled the streams at least annually. Dry activated waste streams were sampled quarterly. The inspector reviewed selected analysis results and verified that a vendor performed analysis of the waste stream sampling and calculated scaling factors as required.

The licensee used the RADMAN computer code for classifying and characterizing waste. The computer code vendor supplied updates to the code as needed to remain current with regulatory changes. The licensee changed the database routinely to reflect the most current waste stream sampling analysis results. The licensee performed hand calculations, as necessary, to verify and validate changes made in the computer code.

The inspector noted two sea vans were used for temporary storage for dry activated waste. The containers were inside the protected area, and they were properly posted and secured with padlocks.

The licensee was removing solidification equipment to make room for additional waste storage within the radwaste building. This space would be used for interim storage in the event that access to the waste burial sites is restricted. Licensee representatives stated that there would be adequate storage for waste for at least 3 years.

The licensee also had approximately 28 drums of mixed waste in storage. The waste consisted of contaminated freon, solvents, and lead.

3.5 Shipping of Low-Level Wastes for Disposal, and Transportation

The licensee had made approximately 9 shipments of radioactive waste and 27 radioactive materials shipments since January 1, 1992. No violations had resulted from the shipments.

The inspector observed the transfer of a high integrity container of radioactive resins to a shipping cask and the preparation of the cask for shipment. No violations were identified and good health physics practices were used. The inspector noted that a quality control specialist verified that certain procedural requirements were completed.

The inspector reviewed selected shipping records and verified that copies of proper manifests, shipping papers, notifications, and emergency instructions were included. The inspector noted the licensee also included photographs in the files to verify the proper package marking and labeling and vehicle placarding.

The inspector verified that the licensee maintained current copies of certificates of compliance for NRC-certified shipping packages, burial site permits, and applicable regulations. Updates for the regulations were supplied monthly by a vendor. Good procedures for preparation and shipping of radioactive materials and waste were provided.

3.6 Conclusions

The radioactive waste group was small but the individuals were qualified, and the group achieved good results. It was aided by a state of the art computer code for characterizing and classifying radioactive waste shipments. Waste stream sampling was performed as required. A superior transportation program was in place.

4 MAINTAINING OCCUPATIONAL EXPOSURES AS LOW AS REASONABLY ACHIEVABLE (83728)

The licensee's ALARA program was reviewed to determine compliance with the requirements of 10 CFR 20.1(c); agreement with the commitments in Chapters 12.1 and 12.5 of the Updated Safety Analysis Report; and agreement with the recommendations of Regulatory Guides 8.8 and 8.10.

4.1 Audits and Appraisals

The quality assurance audit of the radiation protection program, discussed in paragraph 2.1, included a review of the site ALARA program. The audit team noted that there was no long term plan outlining what the licensee wished to accomplish in this area and pointed out that issues such as cobalt reduction, increased filtration (reduced filter pore size), and hot spot tracking had not been addressed. No deficiencies were identified in this area, but program improvements were suggested.

4.2 Changes

The ALARA coordinator was still the only individual assigned to the program, and he was leaving his position on August 28 for another position within the licensee's organization. Radiation protection representatives stated that staffing of the ALARA organization would be increased and would include two parts. One part would concentrate on long-term plans and goals, and the other would handle the day to day work, including the job planning, preparation of radiation work permits, temporary shielding, and the observation and tracking of certain jobs.

The licensee had approved a budget specifically for implementation of plant modifications which were justified by a dose-saving-versus-cost analysis.

4.3 Worker Awareness and Involvement

The inspector noted that 11 ALARA suggestions had been made since the first of the year. Of these, 7 had been accepted and were awaiting implementation and 4 were awaiting cost analysis or further evaluation. There were 4 items from 1991 which were still open. Licensee representatives stated that most suggestions still came from the radiation protection group, but they hoped that a new incentive program, about to be implemented, would bring about increased support from other groups.

The inspector reviewed the "ALARA Committee Charter", Procedure KP-CC210, and noted that the membership consisted of the managers of: radiological services, radiation protection, technical support, nuclear plant engineering systems, nuclear plant engineering - Wichita, and technical services. Also, on the committee were the supervisor of mechanical maintenance (or the supervisor of electrical maintenance) and the ALARA coordinator. The inspector reviewed selected minutes of ALARA meetings and noted that attendance by the committee members was generally good, except for the maintenance department. The inspector also noted that the president and chief executive officer of WCNOG had attended several recent meetings.

4.4 ALARA Goals and Objectives

The licensee's ALARA goal for 1991 was 370 person rem. The initial goal for 1992 was 16 person-rem.

4.5 ALARA Results

An unplanned outage during the first part of 1992 resulted in the accumulation of 54 person-rem and the extension of the 1991 refueling outage into 1992 resulted in an additional 4 person-rem. Correcting for these unanticipated events, the licensee was below its projected cumulative radiation dose for this point in the year. The person-rem for 1987-1991 are shown below.

5-YEAR EXPOSURE HISTORY (in Person Rem)

<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>
134	297	14	182	308

The licensee's major accomplishment in dose savings was the removal of the resistance temperature detector bypass piping during the 1991 refueling outage. Licensee representatives stated that they calculated that this would result in a dose saving of approximately 2000 person rem during the life of the plant.

The inspector reviewed selected ALARA packages and noted that they were contained estimates of man-hours dose rates, lessons learned from similar work, pre-job briefing guidance, and post job reviews. The packages were good quality.

The inspector noted that, since there was only one ALARA staff member, the pre-job briefings were generally presented by the supervisor of the affected work group, in the work area. There was no centralized ALARA briefing area. Written guidance and information were used during ALARA briefings in an effort to ensure that the content of the briefings was consistent.

Conclusions

Increased management support for the ALARA program was noted. Although the ALARA program is average, the cumulative radiation doses continued to be relatively low. Some of the recent ALARA program improvement items have not had time to take effect.

5 FOLLOWUP ON CORRECTIVE ACTIONS FOR VIOLATIONS (92702)

(Closed) Violation 482/91202-02: Failure to Follow a Radiological Procedure

This item involved the failure of a radiation protection technician to perform a whole-body frisk upon exiting the radiological controlled area at the access point.

Radiological Occurrence Report 91-016 was initiated to evaluate the event. The individual was reprimanded and on August 2, 1991, the manager of the radiation protection organization met with the staff members to discuss management's expectations concerning the adherence to procedures. On September 16, 1991, the quality assurance organization performed a surveillance to review workers' adherence to frisking procedures and determined that proper practices were followed. The inspector reviewed workers' procedure compliance during the course of this inspection and during NRC Inspection 50-482/92-17 and did not identify problems.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

- *S. C. Burkdoll, Supervising Instructor, Health Physics
- *T. A. Conley, Health Physics Support Supervisor
- *R. D. Flannigan, Manager, Nuclear Safety Engineering
- *R. Hagan, Vice President, Nuclear Assurance
- *R. A. Hammond, Health Physicist
- *R. W. Holloway, Maintenance and Modification Manager
- *E. C. Holman, Health Physics Operations Supervisor
- *J. D. Lutz, Licensing Engineer
- *O. L. Maynard, Director, Plant Operations
- *C. M. Medency, Radwaste Supervisor
- *T. G. Moreau, Supervising Instructor, General Employee Training
- *T. S. Morrill, Manager, Radiation Protection
- *D. K. Parks, Supervisor, Corporate Training
- *M. A. Reed, Health Physicist
- *C. L. Taylor, ALARA Coordinator
- *S. Wideman, Supervisor, Licensing
- *M. G. Williams, Manager, Plant Support

1.2 NRC Personnel

- *G. A. Pick, Senior Resident Inspector

*Denotes personnel that attended the exit meeting. In addition to the personnel listed, the inspector contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on August 28, 1992. During this meeting, the inspector reviewed the inspection scope and findings of the report. The licensee did not identify as proprietary, any information provided to, or reviewed by the inspector.