

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 70-925/96-01

License: SNM-928

Licensee: Cimarron Corporation


Inspection At: Cimarron Uranium Plant, Crescent, Oklahoma

Inspection Conducted: March 6-7, 1996

Inspector: Louis C. Carson II, Health Physicist
Nuclear Materials Licensing Branch

Accompanied By: Kenneth L. Kalman, Project Manager
Low Level Waste and Decommissioning Projects Branch
Office of Nuclear Material Safety and Safeguards

Approved:


Dr. D. Blair Spitzberg, Chief
Nuclear Materials Licensing Branch

3-29-96
Date

Inspection Summary

Areas Inspected: This was a routine, announced inspection of the final survey program and related activities.

Results:

- The final survey program was performed in a manner that was consistent with commitments made in the licensee's Decommissioning Plan and Final Survey Plans (Section 1.1).
- An inspection followup item was identified concerning the licensee's followup to bioassay results that exceeded action levels (Section 2.2).
- The inspector concluded that the licensee's Quality Assurance Program in the areas of audits and assessments was an area for potential improvement. However, the inspector noted that the licensee was providing extensive Nuclear Quality Assurance (NQA-1) training to appropriate personnel in order to enhance the Quality Assurance Program (Section 2.4).
- The licensee's radwaste management and environmental monitoring programs met requirements (Section 3.0).

Summary of Inspection Findings:

- Inspection Followup Item 70-925/9601-01 was opened (Section 2.2).

Attachment:

- Persons Contacted and Exit Meeting

DETAILS

1 CLOSEOUT INSPECTION AND SURVEY (83890)

Portions of the final survey program were inspected to determine if the licensee had implemented the program in accordance with requirements established in the Decommissioning Plan and Final Survey Plan. The licensee's Decommissioning Plan was submitted to the NRC in April 1995, and at the time of this inspection, was still under NRC review.

1.1 Final Survey Program Implementation

The licensee was performing the final survey program in three phases. The phases were classified based on whether the sections within each phase were either "affected" (areas having potential or known radioactive materials or contamination) or "unaffected" (areas not expected to contain radioactive materials or contamination). Most of the unaffected areas of the site were comprised of 695 acres of the 840-acre site and were included in Phase I. Phase I was subdivided into five subsections designated as Sub-areas A, B, C, D, and E. The licensee's goal is to release the Phase I property and to remove it from areas designated in the license upon the NRC's approval of the Phase I final survey report. The licensee submitted a final survey report to the NRC in July 1995 for review and approval. A decision on the Phase I final survey report will be forthcoming from the NRC.

The licensee's Final Survey Plan for Phase II was submitted to the NRC in July 1995. The Phase II final survey plan has not been approved by the NRC. Following the licensee's resolution of all NRC comments on the Phase II Final Survey Plan, a decision on approval will be made. NRC project management stated that after completion of final surveys of the Phase II areas, the Oak Ridge Institute for Science & Education (ORISE) would perform random confirmatory surveys of the Phase II areas. The ORISE surveys will include surface scans, exposure rate measurements, and soil sampling. The objective of these surveys is to obtain independent radiological data for use by the NRC in evaluating the adequacy and accuracy of the licensee's final survey results.

The inspector noted that the licensee had started implementing the Phase II final survey plan prior to approval by the NRC. The licensee plans to submit the Phase II final survey report in June 1996. So far, remediation in the Phase II area is 90 percent complete, and Phase III remediation has not begun.

The inspector concluded that final survey program was being performed in a manner that was consistent with the licensee's Decommissioning Plan and Final Survey Plans.

2 RADIATION PROTECTION (83822)

The inspector examined the licensee's radiation protection program for compliance with the license, the Decommissioning Plan, and 10 CFR Part 20.

The inspector performed tours, reviewed records and made observations regarding the quality assurance program.

2.1 Fenceline Postings and Inspections

License Condition 21 requires the licensee to periodically inspect the area for inadvertent intrusion to assure that fences and temporary barriers are in place. Periodic inspections were conducted by the licensee security guards on a routine basis. The inspector reviewed some of the security guard's daily check sheets that were completed in 1996. The inspector determined that the licensee had complied with License Condition 21.

During the site tour, the inspector observed that radioactive material signs were conspicuously posted around the site as required by 10 CFR Part 20. Additionally, the inspector observed that the licensee's property fenceline and restricted area fenceline were in adequate condition.

2.2 Internal and External Occupational Exposure

The inspector reviewed the personnel occupational radiation exposures for 1994 and 1995. In 1994 the licensee monitored 27 workers for occupational radiation exposures, and the site total effective dose equivalent (TEDE) was 365 millirem. In 1995 the licensee monitored 36 workers for occupational radiation exposures, and the site TEDE was 330 millirem. Twelve workers had measurable exposures during the exposure years of 1994 and 1995. One worker received exposures of 112 and 87 millirem in 1994 and 1995 that was attributed to radioactive airborne exposures during remediation work.

License Condition 11 requires the licensee to continuously monitor airborne concentration of radioactivity in worker's breathing zone during operations. License Condition 12 requires the licensee to comply with 10 CFR Part 20, Subpart H, "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas." The inspector observed that workers in the field were wearing lapel air samplers in accordance with procedures. The inspector observed that bioassay samples were collected routinely for the detection of uranium and thorium by in-vitro analysis. The inspector reviewed worker's exposures from lapel air sampling and bioassay results for 1995. Licensee records for lapel air sampling and bioassays were generally adequate.

Cimarron's in-vitro uranium bioassay action level was 3.0 pCi/l. The inspector noted that one worker's bioassay results measured 3.05 ± 0.13 picoCuries/liter (pCi/l) in April 1995. Several other workers' bioassay results were slightly in excess of 3.0 pCi/l when the statistical error was added into the measurement. According to the radiation safety officer (RSO), a nonconformance report (NCR) was written against their contract laboratory concerning analytical problems in June 1995. However, the RSO had not completed any bioassay action level investigations concerning the 3.05 pCi/l measurement or similar elevated bioassay results in 1995. The RSO stated that they would provide the results of their investigation when it was complete.

The results of this investigation and the licensee's followup to bioassay samples exceeding the action levels is considered a followup item to be reviewed during a future inspection (70-925/9601-01).

2.3 Routine Radiation and Contamination Surveys

The inspector reviewed the licensee's routine radiation and contamination survey program. The inspector observed that the licensee routinely posted radiation and radioactive contamination conditions on a common bulletin board where it was conspicuous to all workers. The inspector reviewed the radiation and contamination survey records for 1995 and 1996 and found that the licensee's survey records and filing system were thorough. The licensee's survey program included daily, weekly, monthly, quarterly, semi-annual, annual, and miscellaneous surveys. Routine surveys were performed in and on the following areas: laundry rooms, source storage closets, employee locker rooms, vehicles, production areas, and nonproduction areas. Respirator equipment and vehicles were also surveyed.

The inspector concluded that the licensee's radiation and contamination survey program met license requirements.

2.4 Quality Assurance Audits and Self-Assessments

The Decommissioning Plan states that quality assurance is an integral part of the radiation protection program, and the quality assurance program satisfies the applicable requirements of 10 CFR Part 50, Appendix B, and Nuclear Quality Assurance (NQA-1). Quality assurance requirements were listed in Section 3.2, "Quality Assurance Plan and Procedures," of the Decommissioning Plan. These requirements included periodic audits, split sampling, and assurance of proper equipment operation. The quality assurance manager, located on site, explained that he performed periodic documentation reviews to ensure that all aspects of the final survey program were being implemented as required. Based on discussions and observations, the inspector determined that the quality assurance manager mostly reviewed records and did not conduct performance based observations of final survey activities.

The inspector found that the licensee implemented the NQA-1 program in 1995. The inspector reviewed the licensee's implementation of their Quality Assurance Program to determine the extent of its adherence to the applicable 18 quality assurance criteria specified in NQA-1. Based on a quality assurance matrix, the licensee determined that 15 out of the 18 NQA-1 criteria applied to Cimarron. The only criteria not applicable to the licensee, based on their evaluation, were design control, control of processes, and test control.

2.4.1 Quarterly Audits

According to the Radiation Protection Procedure KM-CI-RP-4, "Radiological Control and Safety Audits," Section 5, audits were to be performed at least quarterly by a corporate auditor. Each audit was to include an examination of

selected aspects of license conditions, operational activities, and applicable regulatory requirements. Procedure KM-CI-RP-4 required the licensee's corporate auditor to perform a radiological safety audit and non-radiological safety audit during each quarterly audit. The licensee performed four corporate audits between December 14, 1994, and December 12, 1995. The inspector reviewed 1995 quarterly audits and found the following:

- The audits did not address the final survey program.
- The audits did not address many of the 15 applicable NQA-1 criteria.
- The audit team was not made up of NQA-1 or NRC radiation protection trained auditors.

While the above observations were not specifically identified as requirements in NQA-1, licensee management acknowledged the findings and stated that a series of detailed NQA-1 program implementation training sessions were being conducted for the purpose of improving quality assurance at Cimarron. The December 12, 1995, quarterly audit stated, in part, that:

"Discussions with management revealed differences of interpretation of this Quality Assurance Program, and what is required. The management team should evaluate and interpret the Quality Assurance Program requirements to determine the frequency of required inspections and surveillances. This program should be implemented."

2.4.2 Self-Assessments

The inspector reviewed the following assessments that the licensee conducted as part of their Quality Assurance Program in 1995:

- NQA-1 Training Session at the Cimarron Site; September 15, 1995
- Assessment of the Cimarron Corporation Decommissioning Operations by Yankee Atomic Corporation; March 17, 1995
- Quality Assurance Assessment for 1995

Licensee management hired an environmental remediation and consulting firm to assess the licensee's program and provide NQA-1 training session at the Cimarron site. The inspector observed some of the NQA-1 training that was in session during this inspection and reviewed the content of the NQA-1 training. Licensee trainees included Kerr-McGee corporate auditors, Cimarron managers and staff. The inspector found the NQA-1 training to be appropriate for instilling nuclear quality principles to licensee personnel.

Licensee management hired Yankee Atomic Corporation to perform an assessment of the Cimarron decommissioning operations. The inspector found that the assessment covered decommissioning business operational issues (i.e. budget,

scheduling, and personnel) and provided little substance relating to the decommissioning licensed activities. Discussions with licensee management revealed that they thought the Yankee Atomic assessment would completely assess decommissioning activities, but it did not. The inspector determined that the Yankee Atomic assessment was not a useful management tool for evaluating the quality of the decommissioning program.

Cimarron Quality Assurance Procedure KM-CI-QA-2.1, Revision 1, "QA Program Assessment," required each site project manager to prepare a summary assessment on the adequacy and effectiveness of the Quality Assurance Program as it applied to each department. Procedure KM-CI-QA-2.1 stated that the quality assurance manager was to develop a Management Assessment Report for each project manager. The inspector reviewed the assessments that were conducted for 1995 and found the following:

- The radiation safety department had not completed its assessment for 1995.
- The assessments as submitted were not detailed or thorough in that none of the project managers described whether or not the Quality Assurance Program was working for their decommissioning activities.
- Procedure KM-CI-QA-2.1 did not provide detailed instructions on what the project manager was to include in the assessments.

Discussions with the quality assurance manager revealed that neither he nor the Cimarron site management provided clear expectations regarding the implementation of the Quality Assessment Program assessment. The inspector determined that the assessments for 1995 were not useful management tools for identifying quality assurance concerns.

2.4.3 Conclusions

The inspector concluded that the licensee's Quality Assurance Program in the areas of audits and assessments was an area for potential improvement. However, the inspector noted that the licensee was providing extensive NQA-1 training to appropriate personnel in order to enhance the Quality Assurance Program.

3 RADIOACTIVE WASTE MANAGEMENT AND ENVIRONMENTAL MONITORING (88035 AND 88045)

3.1 Site Tour

The inspector conducted a site tour of Phase I, II, and III areas. Licensee personnel identified areas that were undergoing remediation activities. Some of the activities being conducted included building surveys, dismantling the uranium building, general site cleanup, and remediation of burial ground No. 2. During the tour inside the licensee's Restricted Area, the radiation safety officer (RSO) identified several piles of trash and rubble that had

been "Free Release" surveyed. The inspector asked why the rubble was still inside the Restricted Area if it was Free Released. The RSO stated that they would determine whether trash should be removed from the Restricted Area soon after a Free Release survey has been conducted. During the site tour, the inspector observed that one of the environmental station's high volume air samplers was in-service.

License Condition 15 requires the licensee to release potentially radioactive materials, facilities, and equipment from the site in accordance with the NRC "Guideline for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," August 1987. License Condition 18 requires the licensee to dispose of radioactive contaminated solid waste generated by licensed activities at a licensed low-level waste disposal site. According to the RSO, the licensee neither Free Released potentially radioactive materials facilities or equipment offsite in 1995 nor shipped any low-level waste offsite for disposal in 1995.

Licensee management explained why it was important to place earth barrier caps on waste ponds Nos. 1 and 2, and proceed with backfilling burial ground No. 2. Licensee's staff stated that groundwater monitoring data suggested that radioactivity was slightly elevated because of surface and groundwater runoff from the two waste ponds and burial ground No. 2. Licensee management explained that once the waste ponds and Burial Ground No. 2 were covered, they expected a significant decrease in the level of radioactivity that reaches the groundwater.

The inspector reviewed the licensee's environmental thermoluminescent (TLD) program. The environmental TLD program included 14 monitoring areas around the site and five TLDs that were placed in the vicinity of contaminated rubble piles. During the site tour, the inspector observed some of the environmental TLDs in the field. The inspector's review of the environmental TLD report for 1995 revealed no significant or unusual results.

The inspector concluded that the licensee's waste management and environmental monitoring programs met license requirements.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Cimarron Corporation

M. Hodo, Quality Assurance Manager
J. Kegin, Site Manager
J. Larsen, Vice President (via telephone)
K. Morgan, Radiation Safety Officer

1.2 Contractor Personnel

S. Marshall, Principal, Chase Environmental Group, Inc.
R. Sauer, President, Chase Environmental Group, Inc.

1.3 NRC Personnel

L. Carson II, Health Physicist, Region IV
K. Kalman, Project Manager, Low Level Waste and Decommissioning Projects Branch

The personnel listed above attended the exit meeting, with the exception of the NRC Project Manager. In addition to the personnel listed above, the inspector contacted other personnel during the inspection.

2 EXIT MEETING

An exit meeting was conducted on March 7, 1996, at the Cimarron facility in Crescent, Oklahoma. During this meeting, the inspectors reviewed the scope and findings of the inspection. The participants did not identify as proprietary any information provided to, or reviewed by, the inspector.