UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

December 5, 2012

Bill Halliburton, Administrator
Cimarron Environmental Response Trust
c/o Environmental Properties
Management, LLC
9400 Ward Parkway
Kansas City, MO 64114

SUBJECT: NRC INSPECTION REPORT 070-00925/12-002

Dear Mr. Halliburton:

This letter refers to the inspection conducted on July 29-31, 2012, at the Cimarron facility located in Crescent, Oklahoma. During this inspection, the NRC staff examined activities conducted under the license as they relate to public health and safety to confirm compliance with the Commission's rules and regulations and with the conditions of the license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection.

The inspector collected environmental samples for analysis by the NRC's contractor, Oak Ridge Associated Universities. The analytical results are presented in the enclosed inspection report. The preliminary inspection results were presented to you at the conclusion of the onsite inspection. A final exit briefing was held with your staff by telephone and by email on November 30, 2012, following receipt of the analytical sample results by the Region IV office. No violations were identified, and no response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC's Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at 817-200-1273 or the undersigned at 817-200-1191.

Sincerely,

/RA/

D. Blair Spitzberg, PhD, Chief

Repository and Spent Fuel Safety Branch

Docket: 070-00925
License: SNM-928

Enclosure:
NRC Inspection Report 070-00925/12-002

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	070-00925
License:	SNM-928
Report:	070-00925/12-002
Licensee:	Cimarron Environmental Response Trust
Location:	Crescent, Oklahoma
Date:	July 29-31, 2012
Inspector:	Gerald Schlapper, PhD, CHP Health Physicist Repository and Spent Fuel Safety Branch
Approved by:	D. Blair Spitzberg, PhD, Chief Repository and Spent Fuel Safety Branch
Attachment:	Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Cimarron Environmental Response Trust
NRC Inspection Report 070-00925/12-002

This inspection was a routine, announced inspection of decommissioning activities being conducted at the Cimarron site. Overall, the licensee was conducting decommissioning activities in accordance with regulatory and license requirements.

Decommissioning Inspection for Materials Facilities/Management Organization and Controls

- The licensee maintained site staffing in accordance with license requirements. The licensee had sufficient staff for the work in progress (Section 1).

Radiation Protection

- The licensee implemented its radiation protection program in compliance with license and regulatory requirements (Section 2).

Effluent Control and Environmental Protection (88045)

- The licensee had effectively implemented the license and regulatory requirements related to the collection of groundwater samples. Selected samples continue to exceed the NRC's total uranium limit. The licensee's results for radioisotope concentration in the samples were in general agreement with those of the NRC's independent contractor laboratory. Ambient gamma radiation levels at the site were found to be essentially at background levels (Section 3).

Report Details

Site Status

The Cimarron nuclear fuel production facility was operated by Kerr-McGee from 1967 until 1975 when operations ceased. Since closure, Kerr-McGee, and later Tronox, have been decommissioning the site in accordance with NRC Special Nuclear Material License SNM-928. Tronox filed for bankruptcy protection in January 2009, and upon emerging from bankruptcy in February 2011, the license was transferred to the Cimarron Environmental Response Trust. The trust is administered by Environmental Properties Management, LLC, a subsidiary of Burns & McDonnell. The goal of the Trust is to clean up the property with the trust funds available to the point that it can be released for unrestricted use.

The site consists of approximately 830 acres of land, with several buildings remaining from licensed operations. All buildings have been decommissioned and released for unrestricted use. The site has been divided into 15 subareas. Twelve of the 15 subareas have been released by the NRC for unrestricted use. The remaining three areas have not been released because the groundwater contains uranium concentrations that exceed the site-specific release criteria of 180 picocuries per liter (pCi/L) total uranium. The three areas with groundwater contamination that have been shown in annual sampling to exceed the release criterion are Burial Area 1, Western Alluvial Area, and Western Upland Area. The licensee continues to monitor the groundwater in these three areas in accordance with license requirements.

The site must also comply with a limit set by NRC for technetium-99 (Tc-99) of 3,790 pCi/L in groundwater. The 2011 groundwater assessment showed that all sampled locations complied with the NRC limits for Tc-99 concentration. However, there is also an Environmental Protection Agency (EPA) dose-based limit of 900 pCi/L for Tc-99 if the site is to qualify for unrestricted use. In the 2011 assessment, one well (Well 1346) exceeded this limit. Results of the 2012 groundwater sampling as forwarded by the licensee to NRC and the Oklahoma Department of Environmental Quality on October 2, 2012, with an additional summary issued on November 28, 2012, indicate that this well continues to exceed the Tc-99 limit. The most recent sample result was 1,190 ± 48.4 pCi/L. In addition, the Tc-99 concentration values for Well 1336A (1,050 ± 43.8 pCi/L) and Seep 1208 (1,850 ± 57.7 pCi/L) imply that these locations also exceed the EPA guidelines for release for unrestricted use. The NRC staff continues to monitor the sampling results for both total uranium and Tc-99 concentrations.

1 Decommissioning Inspection for Materials Facilities/Management Organization and Controls (87104, 88005)

1.1 Inspection Scope

The inspector reviewed management organization and controls to ensure that the licensee was conducting decommissioning activities in accordance with license requirements.

1.2 Observations and Findings

The organizational structure for the site staff during decommissioning is presented in Figure 3-1 of the Cimarron radiation protection plan (RPP-001, Rev. 1, effective February 3, 2012). Because the licensee has no full time employees, all staff consisted of part-time workers. The highest ranking official was the administrator followed by the

project manager. Reporting to the project manager were the radiation safety officer and quality assurance coordinator. To support the groundwater sampling effort, a field geologist and groundwater sampling technicians were added to the staff. The inspector determined that the licensee had sufficient staff for the work in progress.

1.3 Conclusions

The licensee maintained site staffing in accordance with license requirements. The licensee had sufficient staff for the work in progress.

2 Radiation Protection (83822)

2.1 Inspection Scope

The inspector examined the radiation protection program for consistency with license and regulatory requirements.

2.2 Observations and Findings

License Condition 26 refers to the radiation protection plan that provides the program requirements. Based on current site conditions, there were no posted radiologically restricted areas at the site. If conditions at the site change, the licensee's representatives stated that they would re-establish portions of the radiation protection program as necessary.

Training requirements are provided in Section 2 of the radiation protection plan (RPP-001, Rev. 1, effective February 3, 2012). The licensee provided site orientations for visitors. Job-specific training requirements are addressed in each individual activity plan or work plan. Section 2.3.3 of the radiation protection plan outlines the training required for radiation workers. To qualify as a radiation worker, an examination must be taken and a minimum score of 80 percent obtained. The inspector reviewed training conducted for personnel associated with the annual environmental sampling program. The self-study module for radiological worker training follows a systematic approach to training with three terminal objectives and 32 enabling objectives specified. The inspector reviewed the material and noted that all enabling objectives are specifically addressed in the student module. In the sample of workers examined by the inspector, six individuals reviewed the appropriate training material and took the 25-question examination. One individual did not obtain the 80 percent required score and was restricted from work until he could review and retake the exam. Field workers also completed job performance measures on radiation measuring instrument use.

Section 4 of the radiation protection plan outlines the As Low As Reasonably Achievable (ALARA) program for the site. Section 4.3 specifies ALARA committee responsibilities to include the need for quarterly meetings and requirements for review of plans for new activities. Section 4.4 specifies the membership of the ALARA committee and sets minimum participation for a quorum. The inspector verified that meetings were held as required during the four quarters prior to the inspection date. Minutes of the meetings contained assessments of the status of the radiation protection program.

The overall health and safety program for the site is outlined in the plan of the parent company of the licensee/contractor Environmental Property Management, Burns &

McDonnell. The Burns & McDonnell over-arching plan contains 24 chapters that address specific hazards and controls that exist throughout the company. Chapter A of the plan outlines the corporate commitment to safety, while Chapter B outlines general roles and responsibilities. Chapter C addresses general safety requirements, with the following chapters D through Y outlining the specific types of hazards that may exist at some locations but that may not be present at all of the company's operating sites. Chapter Z details the hazard communication program of the licensee. The Safety and Health Form in Appendix C of this publication has a checklist for specific projects which the worker reviews for specific location conditions and checks as completed for those hazards present at the location or not applicable for those hazards that are not present where work will be conducted. All employees are required to complete a one-hour general safety and health orientation class. Individuals performing field work must also complete 10 hours of occupational safety and health training prior to beginning work activities at Burns & McDonnell sites.

2.3 Conclusions

The licensee implemented its radiation protection program in compliance with license and regulatory requirements.

3 Effluent Control and Environmental Protection (88045)

3.1 Inspection Scope

The inspector reviewed the effluent control and environmental protection programs for compliance with license and regulatory requirements. During the inspection, the inspector observed the collection of water samples and collected split samples for independent analysis.

3.2 Observations and Findings

Environmental monitoring performed in the 1980s identified elevated gross beta activity in the groundwater. The gross beta activity at some locations was too high relative to gross alpha activity to be attributed solely to uranium known to be present in the groundwater. In 1996, it was determined that Tc-99 was the source of the elevated beta activity in some samples, and that the Tc-99 was introduced into the uranium fuel production process at the Department of Energy's Paducah site. By letter dated March 13, 1996, NRC re-stated that, for Tc-99, the maximum contamination level that should be used for comparison and compliance is 3,790 pCi/L.

A December 2003 Report, "Technetium-99 Groundwater Assessment," stated that the two locations yielding the highest concentrations were Well 1336A and Seep 1208. Seep 1208 is a surface water source. Well 1336A had never yielded Tc-99 above 3,790 pCi/L and Seep 1208 had sometimes exceeded the limit. The report noted that seep 1208 is a location for collection of surface water that yielded highly variable results, and that wells up-gradient from Seep 1208 routinely yielded Tc-99 concentrations far below the limit.

Cimarron site sampling and analysis procedures for groundwater are documented in Procedure EPM-SAP-104, Rev. 1, dated May 1, 2012, titled "Groundwater Sampling," while Procedure EPM-SAP-103, "Surface Water Sampling," dated March 30, 2012,

outlines procedures for surface water sampling. Chain of custody instructions for the well and surface water samples were outlined in Procedure EPM-SAP-111, "Sampling Identification and Control," effective April 7, 2011. Finally, Procedure EPM-SAP-107 outlines sampling equipment decontamination and establishes requirements to prevent cross-contamination of samples. The licensee was observed by the inspector to be following these procedures during sampling efforts.

As part of sampling activities, nine water samples were collected and split between the licensee's representatives and the NRC. These samples were obtained during the routine sampling program for comparison of sample results with the NRC's independent contractor laboratory, Oak Ridge Associated Universities (ORAU). The following tables present the comparison of licensee and NRC results for total uranium and Tc-99 concentrations. Licensee results were presented to the Oklahoma Department of Environmental Quality and NRC by emails dated October 2, 2012, and November 28, 2012. The inspector concluded that there was reasonable agreement between the two sets of sample results, especially for locations where the limit for total uranium was exceeded. Uncertainties are quoted at the 95% confidence level.

Concentration of Total Uranium (pCi/L)

Sample ID	Licensee result	ORAU result
TMW-13	1,150 ± 26.1	1,100 ± 110
1312	32.3 ± 1.86	32.7 ± 3.6
1346	1.83 ± 0.485	2.16 ± 0.45
1352	98.7 ± 3.19	88.7 ± 8.4
T-77	250 ± 4.9	244.0 ± 27.0
1201	1.58 ± 0.32	1.06 ± 0.33

Concentration of Technetium-99 (pCi/L)

Sample ID	Licensee result	ORAU result
1346	1,190 ± 48.4	1,148 ± 58
1313	875 ± 40.1	864 ± 45
1336A	1,050 ± 43.8	1,102 ± 56
Seep 1208	1,850 ± 57.7	862 ± 45

Of the split samples, samples TMW-13 and T-77 exceed the total uranium limit of 180 pCi/L. None of the Tc-99 samples exceeded the NRC limit of 3,790 pCi/L, but samples 1346 and 1336A continue to exceed the dose-based EPA limit of 900 pCi/L for unrestricted use. The sample from Seep 1208 was a muddy surface water sample that had variable results, and the licensee's representatives had difficulty obtaining this sample. Regardless, this sample may not be representative of the Tc-99 concentrations in groundwater.

During sampling activities, the inspector conducted radiation surveys using a Ludlum Model 19 micro-Roentgen survey meter (Serial Number 84259, calibration due date January 10, 2013). The inspector measured the ambient gamma radiation exposure rates at various locations around the site, including the areas where the samples were collected. Background measured 5-6 microRoentgens per hour. All general area site measurements during well sampling activities ranged from 6-10 microRoentgens per hour. In summary, the gamma exposure rates observed at the site were essentially at background levels.

3.3 Conclusions

The licensee had effectively implemented the license and regulatory requirements related to the collection of groundwater samples. Selected samples continue to exceed the NRC's total uranium limit. The licensee's results for radioisotope concentration in the samples were in general agreement with those of the NRC's independent contractor laboratory. Ambient gamma radiation levels at the site were found to be essentially at background levels.

4 Exit Meeting

The inspector reviewed the scope of the inspection at the conclusion of the onsite inspection on July 31, 2012. The inspector further communicated the results of groundwater sampling to licensee's representatives on November 30, 2012, following review of the ORAU data and licensee results. During the inspection, the licensee did not identify any information reviewed by the inspector as proprietary.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Cimarron Environmental Response Trust

B. Britton, Field Geologist, Enercon
B. Halliburton, Administrator, Environmental Properties Management
J. Lux, Project Manager, Environmental Properties Management
A. J. Nardi, Quality Assurance Coordinator, Enercon

Oklahoma Department of Environmental Quality

M. Broderick, Environmental Program Manager, Land Protection Division
D. Cates, Professional Engineer, Land Protection Division

INSPECTION PROCEDURES USED

87104 Decommissioning Inspection Procedure for Materials Facilities
88005 Management Organization and Controls
83822 Radiation Protection
88045 Effluent Control and Environmental Protection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
EPA	U.S. Environmental Protection Agency
ORAU	Oak Ridge Associated Universities
pCi/L	picocuries per liter