



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 E LAMAR BLVD  
ARLINGTON, TX 76011-4511

December 11, 2014

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

SUBJECT: NRC INSPECTION REPORT 070-00925/14-001

Dear Mr. Halliburton:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted on November 17-18, 2014, at the Cimarron facility 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. An exit briefing was held with your staff at the conclusion of the site visit on November 18, 2014. The enclosed report presents the results of this inspection.

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 Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary 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/*

Ray L. Kellar, P.E., Chief  
Repository and Spent Fuel Safety Branch  
Division of Nuclear Materials Safety

Docket: 070-00925

License: SNM-928

Enclosure:

NRC Inspection Report 070-00925/14-001

cc w/enclosure:

Mike Broderick, Oklahoma Department of Environmental Quality

Jeff Lux, P.E., Environmental Properties Management, LLC

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Mike Broderick, Oklahoma Department of Environmental Quality  
Jeff Lux, P.E., Environmental Properties Management, LLC

**Distribution:**

Ken Kalman, NMSS/DURWP/MDB  
Cayento Santos, RIV ETA  
Mark Shafer, D:DNMS  
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Robert Evans, RSFS  
Gerald Schlapper, RSFS  
Linda Gersey, RSFS  
M. Herrera, Fee Coordinator

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DATE	12/11/14	12/11/14	12/11/14	

**OFFICIAL RECORD COPY**

**Service List**

Mike Broderick  
Environmental Program Manager  
Oklahoma Department of Environmental Quality  
Radiation Management Section  
Land Protection Division  
P.O. Box 1677  
Oklahoma City, OK 73101-1677

Jeff Lux, PE  
Project Manager  
Environmental Properties Management, LLC  
1908 Willow Way Circle  
Edmond, OK 73013

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 070-00925

License: SNM-928

Report: 070-00925/14-001

Licensee: Cimarron Environmental Response Trust

Location: Crescent, Oklahoma

Date: November 17-18, 2014

Inspectors: Gerald Schlapper, Ph.D., P.E., C.H.P., Health Physicist  
Repository and Spent Fuel Safety Branch

Robert Evans, Ph.D., P.E., C.H.P., Senior Health Physicist  
Repository and Spent Fuel Safety Branch

Approved by: Ray Kellar, P.E., Chief  
Repository and Spent Fuel Safety Branch

Attachment: Supplemental Inspection Information

Enclosure

## EXECUTIVE SUMMARY

### Cimarron Environmental Response Trust NRC Inspection Report 070-00925/14-001

This U.S. Nuclear Regulatory Commission (NRC) 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. Land areas, site fences, gates, and the remaining site structures were being maintained in acceptable condition. (Section 1)

#### Radiation Protection

- The licensee implemented its radiation protection program in compliance with license and regulatory requirements. Ambient gamma radiation levels at the site were found to be at background levels. (Section 2)

#### Effluent Control and Environmental Protection

- The licensee had effectively implemented license and regulatory requirements related to the collection of groundwater samples. Selected samples continue to exceed the NRC's total uranium limit. Ambient gamma radiation levels at the site were found to be at background levels. (Section 3)

## Report Details

### **Site Status**

Kerr-McGee operated the Cimarron nuclear fuel production facility from 1967 until 1975 when operations ceased. The site is approximately ½ mile north of the intersection of Oklahoma State Routes 74 and 33. Since closure, Kerr-McGee, and later Tronox, has 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 from Tronox 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 remediated and released for unrestricted use. The site was subdivided into 15 areas. Twelve of the 15 areas 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.

License Condition 23 authorized the licensee to bury up to 500,000 cubic feet of soil contaminated with low-enriched uranium. This condition further states that the licensee shall periodically monitor the disposal area for subsidence, erosion, and status of the vegetative cover for at least 5 years. The five year monitoring period expired in September 2007.

License Condition 23 also requires the licensee to declare the volume, average uranium concentration, and exact location of the buried contaminated soil on the land title. The licensee completed construction of the onsite disposal cell and filed an addendum to the warranty deed (land title) in September 2002. This addendum provided a legal notice of the buried contaminated soil as required by License Condition 23b. Licensee records indicate that 452,186 cubic feet of uranium contaminated soil containing 0.98 Curies of uranium was placed in the 2.62-acre containment cell.

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

#### **1.1 Inspection Scope**

The inspectors reviewed management organization and controls to ensure that the licensee was conducting decommissioning activities in accordance with license requirements. The inspectors also conducted a site tour to observe the condition of the facility and land areas.

#### **1.2 Observations and Findings**

The organizational structure for site staffing during decommissioning is presented in Figure 3-1 of the Cimarron radiation protection plan (RPP-001, Rev. 1, effective date of

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. The radiation protection plan names the radiation safety officer as required by the license. To support the groundwater sampling effort, a field geologist and groundwater sampling technicians were added to the staff. The inspectors determined that the licensee had sufficient staff for the work in progress.

The NRC inspectors conducted a tour of the site with licensee staff. During the site tour, the inspectors observed the condition of site fences, gates, and remaining structures. Overall, the licensee continued to maintain these site structures, fences and gates. The inspectors also toured the contaminated soil burial area. No subsidence or erosion was observed and the vegetative cover was being maintained.

### 1.3 Conclusions

The licensee maintained site staffing in accordance with license requirements. The licensee had sufficient staff for the work in progress. Land areas, site fences, gates, and the remaining site structures were being maintained in acceptable condition.

## **2 Radiation Protection (83822)**

### 2.1 Inspection Scope

The inspectors examined the radiation protection program for compliance with license and regulatory requirements.

### 2.2 Observations and Findings

License Condition 26 refers to the radiation protection plan, the document 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.

License Condition 27.e and Section 4 of the radiation protection plan outline the As Low As Reasonably Achievable (ALARA) program requirements. Section 4.3 of the radiation protection plan specifies the ALARA committee responsibilities including 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 inspectors confirmed that the ALARA Committee was structured in compliance with license requirements. The inspectors 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.

Regulation 10 CFR 20.1101(c) and Section 5.2 of the radiation protection plan require an annual audit of the radiation protection program. The inspectors reviewed the audit documented during December 2013 and found that the structure of the audit was based on guidance found in NUREG-1556, Volume 7, Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope Including Gas Chromatographs and X-Ray



Fluorescence Analyzers, Appendix L, "Sample Audit Program." The audit was conducted by the project quality assurance coordinator with support from the radiation safety technician and the project manager. The audit did not identify any deficiencies in the radiation protection program.

The licensee stated that the overall health and safety program for the site is outlined in the health and safety 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. 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.

During the site tour, the inspectors conducted radiation surveys using a Ludlum Model 19 micro-Roentgen survey meter (NRC No. 15540, calibration due date of July 22, 2015). The inspectors measured the ambient gamma radiation exposure rates at various locations around the site, including the areas where the groundwater samples were being collected. Background measured 5-6 microRoentgens per hour ( $\mu\text{R/hr}$ ). All general area site measurements ranged from 6-10  $\mu\text{R/hr}$ . The ambient gamma radiation levels were observed to be at background levels.

### 2.3 Conclusions

The licensee implemented its radiation protection program in compliance with license and regulatory requirements. Ambient gamma radiation levels at the site were found to be at background levels.

## **3 Effluent Control and Environmental Protection (88045)**

### 3.1 Inspection Scope

The inspectors reviewed the licensee's implementation of its environmental protection program for compliance with license and regulatory requirements.

### 3.2 Observations and Findings

License Condition 26 states that the licensee shall conduct the radiation protection program in accordance with the radiation protection plan. Section 15 of the plan provides the environmental monitoring program requirements. The program currently consists of surface water and groundwater monitoring. The plan requires the licensee to collect groundwater samples from 31 wells and surface water samples from two river locations. The samples are required to be collected annually and analyzed for fluoride, nitrates/nitrites, gross alpha activity, gross beta activity, and uranium isotopes. The plan also stipulates that the licensee shall submit the sample results to the NRC. The licensee previously analyzed the water samples for technetium-99. However, by letter dated April 22, 2013 (ML14339A542), the NRC allowed the licensee to suspend this activity until shortly before license termination.

The latest sampling event occurred in May 2014. The licensee collected samples from 85 of 88 wells, including 30 of 31 sample locations required by the Radiation Protection Plan. Three wells were found to be dry during the 2014 sampling effort. The licensee submitted the sample results to the NRC by email dated July 15, 2014 (ML14339A524). Based on these sample results, the three areas previously identified with contaminated groundwater—Burial Area 1, Western Upland Area, and Western Alluvial Area—continue to contain uranium contaminated groundwater that exceeds the licensed limit of 180 pCi/g. The highest sample result, 1967 pCi/g, was collected from Monitor Well TMW-09 which is located within Burial Area 1.

The NRC-approved groundwater remediation strategy, natural attenuation, does not appear to be effective in cleaning up the uranium in the groundwater. The licensee is currently considering its options for a new strategy for removing uranium from the groundwater. Depending on the option chosen by the licensee and approved by the NRC, the licensee may construct and operate an ion exchange system that will be used to remove the uranium from the groundwater.

The licensee recently drilled and sampled several geoprobe borings, in part to delineate the extent of migration of chemicals of concern as well as uranium levels in the groundwater. Certain areas of the site contain groundwater with elevated nitrate and fluoride concentrations that exceed the drinking water standards established by the U. S. Environmental Protection Agency. The licensee plans to install 35 new wells and one replacement well to help further define the extent of groundwater contamination.

### 3.3 Conclusions

The licensee had effectively implemented license and regulatory requirements related to the collection of groundwater samples. Selected samples continue to exceed the NRC's total uranium limit.

## 4 **Exit Meeting**

The inspectors reviewed the scope and preliminary results of the inspection at the conclusion of the onsite inspection on November 18, 2015. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

SUPPLEMENTAL INFORMATION

**PARTIAL LIST OF PERSONS CONTACTED**

Cimarron Environmental Response Trust

B. Britton, Field Geologist, Enercon  
B. Halliburton, Administrator, Environmental Properties Management  
A. Gaur, Quality Assurance Support, Enercon  
J. Lux, Project Manager, Environmental Properties Management  
J. Maisler, Radiation Safety Officer, Enercon

Oklahoma Department of Environmental Quality

K. Deaton, Environmental Program Specialist

**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
CFR	Code of Federal Regulations
µR/hr	microRoentgens per hour
NRC	U.S. Nuclear Regulatory Commission
pCi/L	picocuries per liter