



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

October 20, 2011

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

SUBJECT: NRC INSPECTION REPORT 070-00925/11-001

Dear Mr. Halliburton:

This refers to the inspection conducted on September 26-27, 2011, at the Cimarron facility in Crescent, Oklahoma. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection results were presented to you at the conclusion of the onsite inspection. 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'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 Mr. Robert Evans, Senior Health Physicist, at 817-860-8234 or the undersigned at 817-860-8191.

Sincerely,

*/RA/*

D. Blair Spitzberg, PhD, Chief  
Repository and Spent Fuel Safety Branch

Docket: 070-00925  
License: SNM-928

Enclosure:  
NRC Inspection Report 070-00925/11-001

cc w/enclosure:

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

bcc w/enclosure:

Ken Kalman, FSME/DWMEP/DURLD  
 Roy Caniano, D:DNMS  
 Vivian Campbell, DD:DNMS  
 Chuck Cain, SMA:DNMS  
 Blair Spitzberg, C:RSFS  
 Robert Evans, RSFS  
 Gerald Schlapper, RSFS  
 Linda Gersey, RSFS  
 M. Herrera, Fee Coordinator, DRMA

DRAFT: S:\DNMS\NMSB-B\RJE\Cimarron Report 2011-001.docx  
 FINAL: R:\ DNMS\2011\Cimarron Report 2011-001.docx

ML

ADAMS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> SUNSI Rev Complete	Reviewer Initials:	RJE
Publicly Avail.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sensitive Value:		
RIV:DNMS:RSFS	C:RSFS			
RJEvans	DBSpitzberg			
/RA/	/RA/			
10/14/11	10/20/11			

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 070-00925  
License: SNM-928  
Report: 070-00925/11-001  
Licensee: Cimarron Environmental Response Trust  
Location: Crescent, Oklahoma  
Dates: September 26-27, 2011  
Inspector: Robert Evans, PE, CHP, Senior 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

## EXECUTIVE SUMMARY

Cimarron Environmental Response Trust  
NRC Inspection Report 070-00925/11-001

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. The licensee conducted routine audits and reviews in accordance with license requirements and regulations (Section 1).

### Radiation Protection/Maintenance and Surveillance Testing

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

### Environmental Protection

- The licensee continued to implement its groundwater sampling program in accordance with license requirements (Section 3).

### Emergency Preparedness

- The licensee maintained emergency response capabilities in accordance with its corporate health and safety plan (Section 4).

### Transportation Activities/Radioactive Waste Management/Waste Generator Requirements

- The licensee implemented the license and regulatory requirements related to the management of radioactive wastes. Ambient gamma radiation levels at the site were found to be essentially at background levels (Section 5).

## Report Details

### **Site Status**

The Cimarron facility permanently ceased operations during 1975. 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. Final status survey reports have been submitted to the NRC for all portions of the site.

Twelve of the 15 subareas have been released by the NRC for unrestricted use. The remaining areas have not been released because the groundwater contains uranium concentrations in three areas of the site that exceed the site-specific release criteria. The three areas with groundwater contamination include 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.

On January 12, 2009, the former licensee (Tronox Incorporated) filed petitions for bankruptcy under Chapter 11 of the Bankruptcy Code. Tronox was the parent company of Cimarron Corporation. The licensee formally notified the NRC about the bankruptcy filing, and the NRC acknowledged the notification by letter dated February 11, 2009.

The NRC subsequently signed a license transfer order on February 14, 2011, transferring the license for the Cimarron facility from Tronox to Cimarron Environmental Response Trust. The trust was established to provide oversight of the site. The trust will be administered by Environmental Properties Management, LLC. On February 16, 2011, the NRC revised the license via Amendment 21 to change the name and address of the licensee from Cimarron Corporation to the Cimarron Environmental Response Trust.

By letter dated June 2, 2008, the former licensee submitted a license amendment request to the NRC to change the groundwater remediation methodology from monitored natural attenuation to bioremediation. The NRC requested additional information about the proposed license amendment by letter dated November 12, 2009. However, the NRC voiced concerns with the proposal, and the new licensee subsequently submitted an evaluation of potential alternative groundwater remediation technologies to the NRC by letter dated June 30, 2011. The NRC subsequently provided a request for additional information to the licensee, and the licensee responded by letter dated September 16, 2011.

The NRC staff met with the new licensee on September 27, 2011, to discuss the various groundwater remediation technologies. At the end of the inspection period, the NRC had not approved an alternate remediation methodology, and the licensee continues to implement the natural attenuation methodology as currently authorized by License Condition 27.

### **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 is presented in Figure 3-1 of the Cimarron radiation protection plan. Because the licensee will have no employees, all staff consisted of contract 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. Health physics technicians were available as necessary to support work activities. The decommissioning supervisor position was not staffed at the time of the inspection because there were no decommissioning activities in progress at the site. In recent years, the primary work activities were annual groundwater sampling and site maintenance. The inspector determined that the licensee had sufficient staff for the work in progress.

Routine audits of the radiation protection program are required by 10 CFR 20.1101(c) and the radiation protection plan. The licensee implemented these requirements through annual audits, periodic quality assurance audits, and quarterly As Low As Reasonably Achievable (ALARA) committee meetings. The inspector confirmed that the licensee had conducted these audits and that the ALARA committee had met quarterly. The inspector interviewed the ALARA committee members and reviewed recent meeting minutes. The inspector concluded that the committee discussed relevant issues including ongoing work activities.

The licensee established ALARA goals for occupational exposures to licensed radioactive material. The current goal was 100 millirems per year per worker, the same limit as the public dose limit as specified in 10 CFR 20.1301(a)(1). At some point in the future, the licensee expects to change groundwater remediation strategies from natural attenuation to some form of mechanical treatment. At that time, the licensee will establish a new ALARA dose goal.

At the time of the inspection, the licensee had two open corrective action program reports. Both reports were opened by the previous licensee but were not closed by the time of the license transfer. The licensee also has an internal action to review the groundwater sample results that were reported to the NRC since 2008 to ensure that the information was accurate. The inspector discussed with the licensee how it planned to track open items and issues, and licensee representatives stated that it would develop a single action item list to ensure that all open issues (such as surveillance findings and corrective action program reports) are tracked to closure.

The inspector reviewed the licensee's program for reviewing site procedures. The licensee normally reviewed the procedures when they were revised, and the radiation protection plan does not require the licensee to conduct annual reviews.

In accordance with section 5.3 of the radiation protection plan, the licensee occasionally conducted surveillances as part of its quality assurance program to observe site activities in progress. The licensee conducted two surveillances during May 2011 including a review of site programs and a site visit by the radiation safety officer.

Finally, the licensee is allowed to make changes to the radiation protection plan per License Condition 27(e). The inspector reviewed the recent revisions to the radiation protection plan. The revisions included the changes in the licensed names and

organization, changes associated with the NRC-approved license transfer. The inspector concluded that none of the changes required prior NRC approval.

### 1.3 Conclusions

The licensee maintained site staffing in accordance with license requirements. The licensee had sufficient staff for the work in progress. The licensee conducted routine audits and reviews in accordance with license requirements and regulations.

## **2 Radiation Protection/Maintenance and Surveillance Testing (83822, 88025)**

### 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. Due to the licensee's determination that, pursuant to 10 CFR 20.1502(a)(1), no adult was likely to receive a dose in one year in excess of 10-percent of the limit, the licensee discontinued use of personnel dosimetry in 2008. For similar reasons, the licensee also suspended all occupational air sampling and bioassays. In addition, the licensee no longer conducted routine radiation, equipment release and surface contamination surveys because it had demonstrated the absence of any contamination except for groundwater. The last special work permit was issued during 2006.

Based on current site conditions, there were no posted radiologically restricted areas at the site. The RSO stated that if conditions at the site changed, the licensee would re-establish portions of the radiation protection program as necessary. A contractor provides the survey meters on an as-needed basis.

During April 2011, the licensee installed seven new groundwater monitoring wells. The installation of these wells was conducted under an activity planning form that included specific training, health and safety, and environmental requirements. During August 2011, the licensee conducted routine groundwater sampling. The licensee provided radiation protection support for these specific activities. The support included smears and frisks for contamination and measurement of direct radiation levels. The survey results were essentially at background levels.

The training requirements are provided in Section 2 of the radiation protection plan. Currently, there are no radiologically restricted areas at the facility. The licensee provided site orientations for visitors and task qualifications for site workers. For example, workers are trained for each individual task such as groundwater sampling. Annual training is currently not provided because there are no permanent site workers. Job-specific training requirements are addressed in each individual activity plan or work plan. For example, the work plan for the installation of seven monitoring wells during April 2011 included job-specific training instructions. The licensee plans to upgrade the training program when the groundwater corrective action program is revised and upgraded.

### 2.3 Conclusions

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

## **3 Environmental Protection (88045)**

### 3.1 Inspection Scope

The inspector reviewed the environmental protection program to evaluate the impact, if any, of site activities on the public and the local environment.

### 3.2 Observations and Findings

Section 15 of the radiation protection plan provides the environmental monitoring requirements. The current program consists of surface and groundwater monitoring. The current sampling program includes collection of groundwater samples from 29 wells and surface water samples from two river locations. The licensee collects the samples annually and analyzes the samples for fluoride, nitrates/nitrites, gross alpha activity, gross beta activity, and uranium isotopes.

The licensee conducted a special sampling event during April 2011 when it sampled 52 wells. The licensee sampled the groundwater areas previously identified with uranium contamination in addition to the former uranium ponds 1 and pond 2 areas and the Well 1319 area. (The Well 1319 area is the former uranium plant storage yard.) Although the licensee has remediated the former Well 1319 and former uranium pond 1 and pond 2 areas, the licensee sampled the groundwater in these three areas to verify compliance with State of Oklahoma requirements for fluorides and nitrates/nitrites. The sample results from this special sampling event were submitted to the NRC by letter dated June 30, 2011.

The annual environmental monitoring sampling was conducted during August 2011. The licensee was reviewing this data during the inspection. The licensee plans to submit these results to the NRC within 30 days of the completion of the data review in accordance with License Condition 26. The August 2011 sample results will be reviewed during a future inspection. Based on previous sample results, the three areas previously identified with contaminated groundwater (Burial Area #1, Western Upland Area, and Western Alluvial Area) continue to contain groundwater that exceeds the licensed limit of 180 picocuries of uranium per liter of water.

The NRC-approved groundwater remediation strategy is currently natural attenuation, a strategy that does not appear to be effective in cleaning up the uranium in the groundwater in a timely manner. The licensee is considering its options for a new strategy that may include extraction of the groundwater for filtering, and then releasing the groundwater to the Cimarron River if the uranium concentrations are less than the licensed limit. Depending on the option chosen, the licensee may elect to construct and operate a water filtration system that will be used to remove the uranium from the groundwater.

Portions of site groundwater continue to have elevated nitrate and fluoride concentrations that exceed the state limits. In addition, portions of the site groundwater

continue to have technicium-99 contamination that is below the NRC criteria but above the U.S. Environmental Protection Agency's drinking water limits. The licensee recently installed seven additional wells in the Western Alluvial Area to further delineate the nitrate and fluoride levels in the groundwater. At the end of the inspection period, the licensee continued to consider its options for cleaning up the groundwater.

### 3.3 Conclusions

The licensee continued to implement its groundwater sampling program in accordance with license requirements.

## **4 Emergency Preparedness (88050)**

### 4.1 Inspection Scope

The inspector reviewed the licensee's emergency plan and fire protection program.

### 4.2 Observations and Findings

The NRC suspended the requirement for an emergency plan since an emergency with significant offsite radiological consequences was no longer considered to be a credible event. However, the licensee implemented its corporate-wide health and safety policy for industrial safety commensurate with the current site hazards. A site-specific health and safety plan will be created when the hazard becomes a possibility. During site tours, the inspectors noted that fire extinguishers were available as needed for an emergency situation.

### 4.3 Conclusions

The licensee maintained emergency response capabilities in accordance with its corporate health and safety plan.

## **5 Transportation Activities, Radioactive Waste Management and Waste Generator Requirements (86740, 84850, 84900)**

### 5.1 Inspection Scope

The inspector reviewed the radioactive waste management and transportation programs for compliance with license and regulatory requirements.

### 5.2 Observations and Findings

License Condition 27(d) provides the access control requirements. The licensee continued to maintain site fences and gates, and the licensee continued to conduct routine site tours when individuals were onsite. The licensee no longer possessed radioactive material on site, so the licensee did not have to maintain security and control of radioactive material per 10 CFR 20.1801 or 20.1802.

The inspector conducted site tours to observe the condition of the facility. During site tours, the inspector observed the condition of buildings, site fences and gates. Overall, the licensee continued to maintain site structures, fences and gates.

License Condition 23 allowed the licensee to bury up to 500,000 cubic feet of soil contaminated with low-enriched uranium below certain concentrations. The inspector toured the burial area. No subsidence or erosion was observed, and the vegetative cover was being maintained over the burial area.

During site tours, the inspector conducted radiation surveys with a Ludlum Model 19 micro-Roentgen survey meter (serial number 33541, calibration due date 27 April 2012). The inspector measured the ambient gamma radiation exposure rates at various locations around the facility. Background measured 5-6 microRoentgens per hour. All site measurements ranged from 6-10 microRoentgens per hour. In summary, the ambient gamma exposure rates were essentially at background levels.

The licensee had neither shipped nor received any radioactive material since the last inspection; therefore, this program area was not inspected.

### 5.3 Conclusions

The licensee had effectively implemented the license and regulatory requirements related to the management of radioactive wastes. Ambient gamma radiation levels at the site were found to be essentially at background levels.

## 6 **Exit Meeting**

The inspector reviewed the scope and findings of the inspection during the exit meeting conducted at the conclusion of the onsite inspection on September 27, 2011. 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

K. Colborn, Quality Assurance Coordinator, Enercon  
B. Halliburton, Administrator  
M. Logan, Project Manager, Environmental Properties Management  
J. Lux, Project Manager, Environmental Properties Management  
J. Maisler, Radiation Safety Officer, Enercon  
G. Williams, Manager, Technical Services, Enercon

Oklahoma Department of Environmental Quality

M. Broderick, Environmental Program Manager, Land Protection Division  
D. Cates, Professional Engineer, Land Protection Division  
K. Deaton, Environmental Program Specialist, Land Protection Division  
P. Dizikes, Attorney, Legal Division  
I. Esrar, Professional Engineer, Water Quality Division

**INSPECTION PROCEDURES USED**

87104 Decommissioning Inspection Procedure for Materials Facilities  
88005 Management Organization and Controls  
83822 Radiation Protection  
88025 Maintenance and Surveillance Testing  
88045 Environmental Protection  
88050 Emergency Preparedness  
86740 Inspection of Transportation Activities  
84850 Radioactive Waste Management  
84900 Radioactive Waste Generator Requirements

**ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened

None

Closed

None

Discussed

None

**LIST OF ACRONYMS**

ALARA As Low As Reasonably Achievable