



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION IV
1600 E. LAMAR BLVD
ARLINGTON, TX 76011-4511

March 1, 2018

MEMORANDUM TO: Docket File 070-00925

THROUGH: Ray L. Kellar, P.E., Chief/RA/
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

FROM: Martha R. Poston, Health Physicist/RA/
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

SUBJECT: CIMARRON SITE VISIT, CRESENT, OKLAHOMA

On November 20-21, 2017, staff from the U.S. Nuclear Regulatory Commission (NRC) Region IV office conducted a visit at the Cimarron site to observe the pilot test for Burial Area #1 and to assess the current status of the site, including compliance with license conditions. Enclosed to this memorandum is the NRC's trip report for this site visit.

In summary, site representatives continued to maintain the site in accordance with license requirements. No significant regulatory issues or safety concerns were identified during the site visit.

Docket: 070-00925
License: SNM-928

Enclosure: NRC Trip Report

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket: 070-00925

License: SNM-925

Licensee: Cimarron Environmental Response Trust

Facility: Cimarron/Kerr-McGee Uranium Plant
Logan County
Crescent, Oklahoma

Dates: November 20-21, 2017

Inspector: Martha R. Poston, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Approved by: Ray L. Kellar, P.E. Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Attachment: Photographs taken at Cimarron site

Enclosure

NRC Trip Report

1 Background

The Cimarron site was used to fabricate enriched uranium and mixed oxide fuels for nuclear reactors from 1965-1975. On site, there were several buildings, collection ponds, sanitary lagoons, storage area and burial areas. Originally, the site was owned and operated by Kerr-McGee Corporation. The site was later operated by Cimarron Corporation, a fully owned subsidiary of Kerr McGee. In 2005, ownership of Cimarron Corporation was fully transferred to Tronox Incorporated, who subsequently filed for bankruptcy in 2009. In 2011, Cimarron Environmental Response Trust assumed responsibility for the Cimarron site, including completion of decommissioning activities.

The Cimarron site is approximately 340 hectares (840 acres) along the southern bank of the Cimarron River about 1 kilometer (0.5 miles) north of the intersection of Oklahoma State Highways 33 and 74, and approximately 40 kilometers (25 miles) north of Oklahoma City.

Decommissioning efforts were initiated in 1976. Characterization activities and decommissioning were first conducted at the mixed oxide fuel fabrication (MOFF) building and associated areas, which included evaporation ponds, emergency ponds, sanitary lagoons, underground tanks, a septic tank, and a fenced area around the MOFF building. In 1990, Cimarron Corporation submitted a final survey report of the MOFF building and associated areas to the NRC and requested termination of the MOFF license. The NRC completed a confirmatory survey and terminated the MOFF license consistent with the regulations in place in 1993. However, the lands and the MOFF building were not released for unrestricted use because they were located within the bounds of the uranium fuel fabrication license.

Characterization activities and decommissioning plans were developed and approved by the NRC for facilities associated with the uranium fuel fabrication license. The site was divided into three areas that included affected areas and unaffected areas. Less than 20 percent of the site was impacted by nuclear operations. These areas were further divided into subareas. Cimarron Corporation submitted a final status survey report for each subarea when decommissioning activities were complete for that area. Following NRC review and acceptance, subareas were released for unrestricted use and removed from the uranium fuel fabrication license. By early 2000's, the majority of the site had been released for unrestricted use.

Uranium concentrations in the groundwater were in excess of release criteria for some subareas – Burial Area #1, Western Alluvial Area, and Western Upland Area. Plans were developed to lower the uranium concentrations through groundwater remediation. Progress in this area was delayed when Tronox filed for bankruptcy in 2009. Cimarron Environmental Response Trust took responsibility for the site in 2011. A preliminary remediation plan was submitted to the NRC in 2015. Since 2015, the licensee has proposed additional changes to this remediation plan.

2 Site Status

On November 20-21, 2017, NRC staff met with Burns & McDonnell staff managing the Cimarron Environmental Response Trust at the Cimarron site in Logan County, Oklahoma. The visit was intended to serve several purposes:

- Observe recent activities on site as the trust prepares for remediation
- Observe the pilot test for Burial Area #1 (BA1)

Attendees at the meeting and site visit included:

- Lifeng Guo, Hydrogeologist, NRC Office of Nuclear Material Safety and Safeguards
- Marti Poston, Health Physicist, NRC Region IV
- Jeff Lux, Project Manager, Burns & McDonnell

On November 20, 2017, the NRC team arrived onsite and was informed by the licensee that the pilot test had been rescheduled and would not occur. The NRC toured the site with the licensee's representative to verify the current status of construction. The site tour included the Uranium Pond 1 (UP1) pilot test site, the Uranium Pond 2 (UP2) pilot test site, and the BA1 pilot testing area. The BA1 pilot testing area construction was complete, and the licensee had conducted some testing associated with this area.

The BA1 pilot testing area consists of four trenches – two injection and two extraction trenches. The previous trenches were backfilled and the equipment was staged. The licensee determined that the decontamination area as originally planned was not needed. This was based on the collection and analysis of over 200 soil samples. No sample results exceeded 30 pCi/gm (or 5 percent above background). The licensee intends to inject potable water mixed with dye into the injection wells to determine if the previous trenches created a preferential flow path.

The tour also included a check of the status of construction at the UP1 and UP2 pilot test locations. The wells have been installed at the UP1 area, and the licensee was in the process of digging the trenches. The trenches were taking longer than anticipated due to the amount of sandstone present at the location. Wells were being drilled in the UP2 area.

On November 21, 2017, the NRC hydrogeologist returned to NRC Headquarters and the Region IV Health Physicist returned to Cimarron to conduct a review of the radiation protection program at the site. The inspector reviewed the radiation source storage (calibration and reference sources), the instrument calibration process and associated records, the air sampling program including the calculational model used to estimate dose to staff, and the sampling and analysis procedures. No items of concern were identified.

3 Conclusions

The licensee appeared to be maintaining the site in accordance with license requirements. The NRC staff did not identify any significant safety issues during the site tour.



Figure 1: UP1 construction area – broad view (with the contaminated soil pile behind the trench area)



Figure 2: UP1 clean soils pile



Figure 3: UP1 trench length standing at midpoint (trench intersection – marked by the white post in the middle of the trench)



Figure 4: UP1 trench standing back from midpoint to show intersection



Figure 5: UP1 trench side view



Figure 6: Drilling wells for UP2 area trenches



Figure 7: UP2 area additional well (midpoint well in foreground)



Figure 8: UP2 area midpoint well (drill rig in background)



Figure 9: BA1 area at entry



Figure 10: BA1 area decontamination and staging area (midpoint well looking southwest)



Figure 11: BA1 area midpoint well looking northwest



Figure 12: BA1 area midpoint well looking southeast

070-00925 CIMARRON SITE VISIT, CRESENT, OKLAHOMA – DATED MARCH 1, 2018

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