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LOST CREEK ISR, LLC

July 28, 2015

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

**Re: Reply to NRC's May 21, 2015 Letter Regarding License Condition 12.10
Lost Creek ISR Project License SUA-1598, Docket 040-09068, TAC J00717**

Dear Mr. Saxton,

On May 21, 2015 the NRC provided a response to a submittal provided by Lost Creek ISR, LLC ("LCI") on January 16, 2015. The NRC's response seeks additional information pertaining to how LCI will comply with license condition 12.10 A through B. Toward that end, please find below LCI's response to the NRC's questions.

Question 1: Explain how LCI proposes to estimate the flow rate or total volume of air discharged from the plant wall vent (air effluent site # E1) to calculate effluent quantities of uranium, radon and radon progeny

Response 2: Plant ventilation flow rates will be measured on a quarterly basis using a Davis Instruments A/2 4 Vane Anemometer, or similar device. The vane anemometer measures the air velocity over large openings such as the plant overhead doors and louvers. With the measured velocity and surface area of these openings, a quantity of flow in cubic feet/minute can be calculated.

Question 2: Explain how LCI proposes to estimate the quantity of radionuclides released from other plant vents and rollup doors, including periods when rollup doors are open or closed.

Response 2: The fresh air supply into the plant is generated by two make-up air units that produce roughly 50,000 CFM total. During normal operations, the fresh airflow entering the plant is equal to the exhaust flow out of the plant. The average activity leaving the plant will remain unchanged with the doors open or closed; only the volume of air will change. Determining the airborne concentration while the doors are closed will result in a slightly conservative calculation of total radionuclides released. During normal plant operations, all external doors (man doors and bay doors) are closed. The exhaust louver, Site E1, Plant Wall Vent, on the east wall of the plant will always remain open to allow exhaust airflow from the building. The sampling related to License Condition 12.10 will be performed with all external doors closed. The airflow will be measured at "Plant Ventilation Exhaust

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Flow Location" (Figure 3) in the bay doorway, using the Davis Instruments A/2 4 Vane Anemometer, or similar device.

The tank exhaust fans only run during their specific operation. For instance, during precipitation operation, the precipitation tank exhaust fan EF-12 is turned on and then turned off when precipitation operation is complete. We will supply data loggers at each of the 6 Sites listed below. These data logger current transformers will be tied into each breaker box, measuring continuous and instantaneous amperage for each fan, and this will allow for us to verify when each fan is running and for how long. Refer below to list of the nine tank exhaust fans for the 6 Sites.

Plant Operations Tank Exhaust Fans:

- 1) Site #E1 - Sidewall Plant Exhaust Fan (EF-1) and (EF-2)
- 2) Site #E2 - Precipitation Tank (EF-12)
- 3) Site #E3 - Elution Circuit (EF-9A and EF-9B)
- 4) Site #E4 - Waste Water Tanks (EF-8)
- 5) Site #E5 - Resin Water Transfer Tanks (EF-11)
- 6) Site #E6 - Shaker Screens (EF-10A and EF-10B)

The concentration of radionuclides exhausting from the plant will be sampled and measured using the standard operating procedures already in place at Lost Creek, following the monitoring schedule outlined in Table 1. Using the sample concentration results and the exhaust flow rate measurement the total effluent activity can be calculated.

Question 3: Clarify the sample frequency for radon progeny from the plant wall vent. Table 1 states under "Radon Daughters – Method" that no sampling will occur, but the frequency is stated as 3 times per quarter.

Response 3: The Table 1 Monitoring Plan has been updated, to reflect the fact that no sampling will occur for radon daughters at those sampling locations.

Question 4: Explain the significance of five boxed notes on Figure 1 which describe: (1) outside plant west wall at two location "Make Up Air Dimensions Locations Are Approximate," and (2) outside plant east wall at three locations. "Roof Top Unit Dimensions Locations Are Approximate."

Response 4: The 2 boxes labeled "Make Up Air Dimensions Locations Are Approximate" are the approximate locations of the fans supplying fresh air to the plant. The 3 boxes labeled "Roof Top Unit Dimensions Locations Are Approximate" represent the ventilation units for the offices.

Question 5: Explain how LCI proposes to estimate the flow rate or total volume of air discharged from the precipitation vent (Site #E2); elution vent (Site #E3); waste water vent (Site #E4); resin transfer vent (Site #E5); and shaker deck vent (Site #E6).

Response 5: Plant ventilation will be measured on a quarterly basis. The digital manometer, or similar device, will measure the air velocity pressure for the small plant tank exhaust fans that exhaust through PVC vents to the roof. The velocity pressure measured will be converted to the air velocity in feet/minute. With the cross sectional area of the known measurement, a quantity of flow in cubic feet/minute can be calculated.

Question 6: Explain how LCI proposes to estimate the flow rate or total volume of air discharged from wellhead covers.

Response 6: The well head airflow discharge was measured with a digital manometer measuring velocity pressure off the wellhead barrel. Flow is 0 CFM from active wellheads during normal operations when the barrel lids are on. When the lid is pulled off for periodic well field maintenance, there is a discernable small airflow measurement averaging in the range of 3.73 CFM from the IC wellheads and 3.02 CFM from the PC wellheads. Well head airflow measurements will be made once per quarter. The lids on the wellheads are kept on during normal operations, but the worst case scenario would be to assume the flow rate with the wellhead barrel lid removed. Radon Track Etch detectors will be deployed to 3 production wells and 3 injection wells.

Question 7: Explain whether the additional radon sample locations described in LCI's February 24, 2015, Semi-Annual Effluent and Environmental Monitoring Report (ADAMS Accession No. ML15069A256) will be included in LCI's plan to comply with license conditions 12.10 A through D. These additional radon sample locations are described in the Semi-Annual report in Section 7.0, "Passive Radon," sub-section, "Supplemental Passive Radon." If so, explain how flow rates or total volume of air discharged are determined for the North Vent and South Vent.

Response 7: The sampling positions in the letter dated January 16, 2015 to the NRC in response to the RAI are the only sampling positions proposed to satisfy License Condition 12.10. The North Vent and South Vent locations corresponded to Site E1, Plant Wall Vent, in the January 16, 2015 letter to the NRC in response to an RAI regarding License Condition 12.10. The ventilation in the plant was changed per Safety and Environmental Review Panel (SERP LC15-01), dated January 22, 2015, to improve the ventilation through the whole plant. The North Vent and South Vent (EF-1 and EF-2 on Figure 3) locations are no longer being used as primary exhaust for the facility's main ventilation system, and remain off during normal operations. The fans EF-1 and EF-2 will only be used in the event of upset conditions. The Louvers in the plant Shop Area is the new locations for Site E1, Plant Wall Vent, because of the new flow path through the plant (see Figure 3).

Question 8: Clarify how LCI proposes to reevaluate the warehouse measurement frequencies for each measurement type. On p. 5 of its January 16, 2015 letter, LCI commits to estimating dose to the UPS driver using results from quarterly measurements of: (1) gamma exposure; (2) radon


concentration; (3) radon progeny concentration; and (4) uranium particulate concentration. LCI stated that "If, after a year, the data shows the potential exposure from any of these measurements cannot be discerned from background ... the rate of sampling will be reduced to once per year for each parameter at baseline levels to ensure there is no change." As written, this commitment appears to state that LCI will reduce sampling frequencies for all types of measurements if any one type of measurement is not discernable from background.

Response 8: If the background for a specific sampling type is not discernable from background then the frequency for that specific sampling type will be adjusted. For example, if the airborne uranium sample is not discernable from background, but the radon sample is, then the radon sample will continue at the rate specified in Table 2 and the airborne uranium sampling frequency may be reduced.

Question 9: Explain how LCI intends to evaluate and document changes in future land use. LCI stated on p. 7 that "The presence of other members of the public such as ranchers, campers, and hunters in the vicinity of the plant has been virtually nonexistent since 2006 when LCI began routine work at the site. There are no stock watering wells, campgrounds, or other infrastructure routinely maintained by the public in the vicinity of licensed activity."

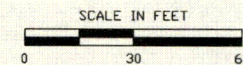
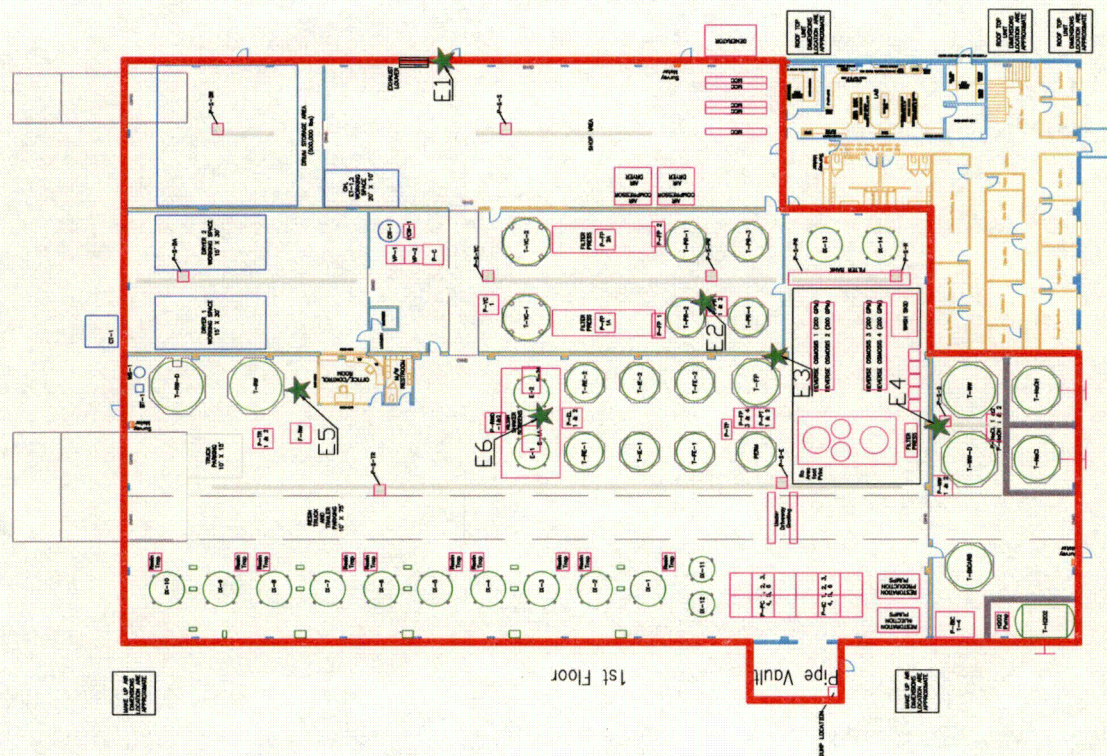
Response 9: As part of the daily Radiation Safety Inspection, any people in the Lost Creek area not doing business with Lost Creek will be noted on the daily inspection form. Once a year the Radiation Safety inspections are reviewed by the ALARA Audit committee. Also, the ALARA Audit committee will inspect the area surrounding Lost Creek to look for any changes in land use. If there are any noted changes, the method for determining public dose will be reassessed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chris Pedersen", is written over a horizontal line.

Chris Pedersen
Radiation Safety Officer

Cc: NRC Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate
Theresa Horne, Ur-Energy, Littleton
Mr. John Saxton, NRC (via email)



LEGEND

- Restricted Area
- Wall/Door
- ★ Approximate Sampling Point



Lost Creek ISR, LLC
Casper, Wyoming

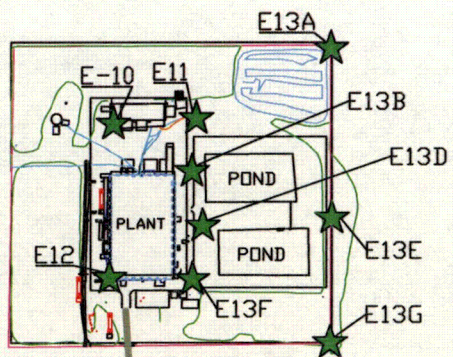
Figure 1
Lost Creek Plant Monitoring
for Compliance with 10CFR 40.65

Scale: 1:30 Drawn By: MD

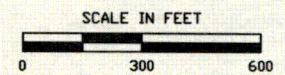
Issued / Revised: 07.23.2015

Drawing Name: Lost Creek Plant Sampling Points.DWG



File Path: S:\GIS\Lost Creek\Plant\



E13C



LEGEND

-  ACCESS ROAD
-  Approximate Sampling Point



Lost Creek ISR, LLC
Littleton, Colorado USA

Figure 2
Monitoring Plan to Demonstrate
Compliance with LC 12.10B

Scale: 1:300 Drawn By: JHC
Issued / Revised: 01.16.2015
Drawing Name: External Monitoring Sites.dwg
File Path: S:\GIS\LostCreek\Monitoring Sites

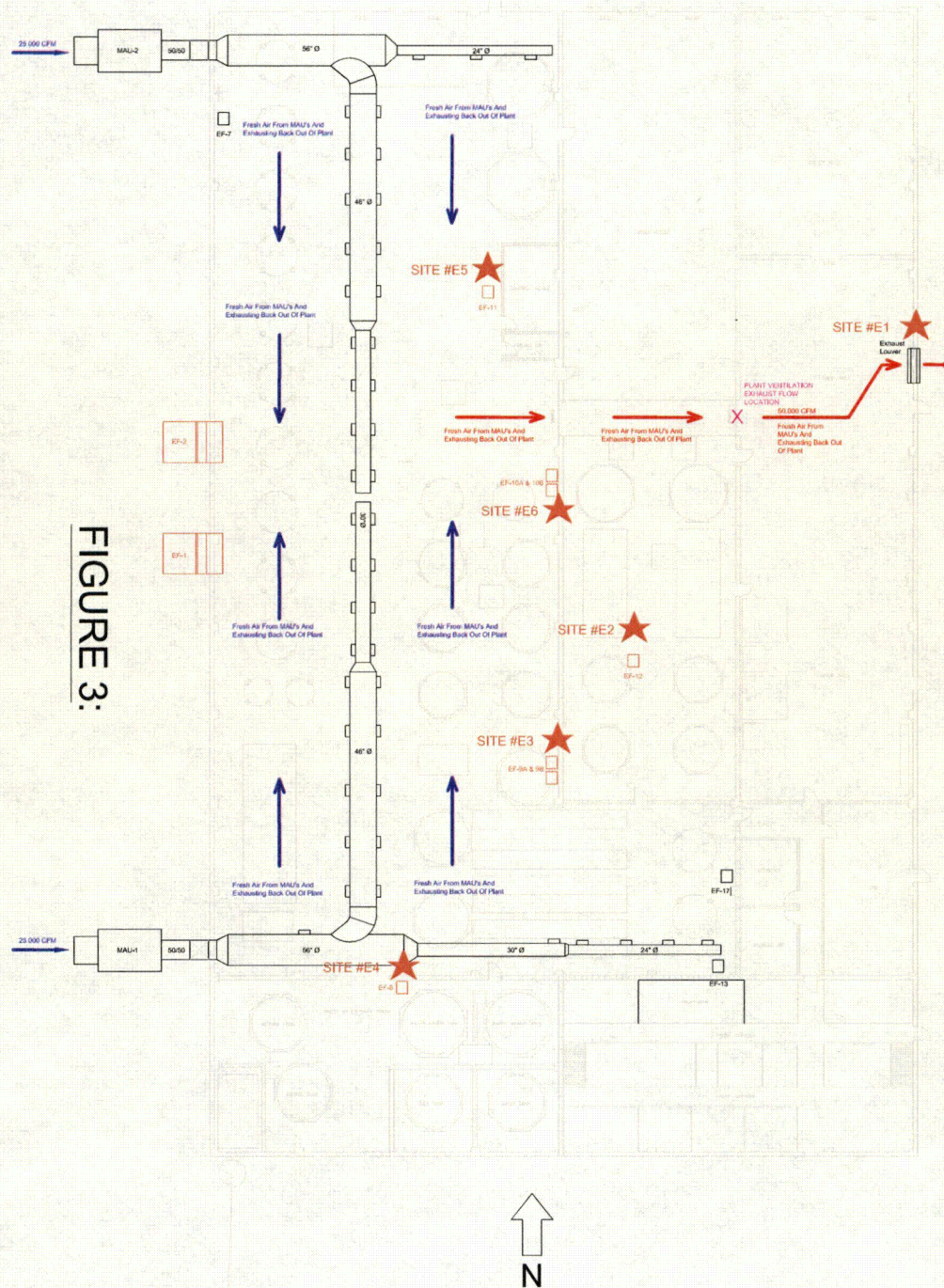


FIGURE 3:

Table 1: Monitoring Plan to Demonstrate Compliance with LC 12.10A

Air Effluent								
Sample Point	Site #	Radon		Radon Daughters		Uranium		Comment
		Method	Frequency	Method	Frequency	Method	Frequency	
Plant Wall Vent	E1	Radon Track Etch	Quarterly	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	Air Filter	Semi-annually	
Precipitation Vent	E2	Pylon or Rad7 instrument or equivalent	3/Quarter	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	No Sampling/See Comment		This is a wet process with no opportunity for dry airborne uranium particulate. Therefore, no sampling for uranium will occur.
Elution Vent	E3	Pylon or Rad7 instrument or equivalent	3/Quarter	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	No Sampling/See Comment		This is a wet process with no opportunity for dry airborne uranium particulate. Therefore, no sampling for uranium will occur.
Waste Water Vent	E4	Pylon or Rad7 instrument or equivalent	3/Quarter	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	No Sampling/See Comment		This is a wet process with no opportunity for dry airborne uranium particulate. Therefore, no sampling for uranium will occur.
Resin Transfer Vent	E5	Pylon or Rad7 instrument or equivalent	3/Quarter	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	No Sampling/See Comment		This is a wet process with no opportunity for dry airborne uranium particulate. Therefore, no sampling for uranium will occur.
IX Column Vents	N/A	No Sampling/See Comment		No Sampling/See Comment		No Sampling/See Comment		The IX column vents are only used in rare emergencies. Otherwise, the production fluid is isolated from the environment by a valve. Therefore, sampling will not occur.
Shaker Deck Vent	E6	Pylon or Rad7 instrument or equivalent	1/Quarter	No sampling. Radon assumed to be in equilibrium with its daughters	N/A	No Sampling/See Comment		This is a wet process with no opportunity for dry airborne uranium particulate. Therefore, no sampling for uranium will occur.
Dryer Vent	N/A	No Sampling/See Comment		No sampling/See Comment		No Sampling/See Comment		Dryer discharge runs through a HEPA filter before entering the main plant area. Once discharged gas is in the plant it will enter the outdoor environment through the plant's general ventilation. The samples collected at the general ventilation will measure the discharge from the dryer that is being released to the environment.
Header House Fan	E7	Radon Track Etch	20% of houses once/qtr	Air Filter w/ Modified Kusnetz	20% of houses once/qtr	Air Filter	20% of houses semi-annually	Samples collected at discharge of operating header houses. Results from measured header houses will be applied to all header houses to determine total effluent
Injection Wellhead	E8	Radon Track Etch	1/Quarter	Air Filter w/ Modified Kusnetz	3/Quarter	No Sampling/See Comment		Modified Kusnetz samples collected at the wellhead cover on 3 operating wells/Qtr. Uranium in the wellhead is contained in solution and therefore there is no opportunity for release of uranium particulate. Therefore, no uranium analysis will occur. Average results will be applied to all injection wells.
Production Wellhead	E9	Radon Track Etch	1/Quarter	Air Filter w/ Modified Kusnetz	3/Quarter	No Sampling/See Comment		Modified Kusnetz samples collected at the wellhead cover on 3 operating wells/Qtr. Uranium in the wellhead is contained in solution and therefore there is no opportunity for release of uranium particulate. Therefore, no uranium analysis will occur. Average results will be applied to all injection wells.
Liquid Effluent								
Spilled Mining Solution	N/A	The uranium and radium-226 concentration of fluids released to the environment will determined based on recent measurements of similar fluid. For example, if a spill from a production well occurs, the uranium concentration will be assumed to be equivalent to the most recent assay.						

The frequencies presented are minimums. Additional sampling/monitoring may occur as deemed necessary by the RSO