

January 27, 2014

MEMORANDUM TO: Bill Von Till, Chief  
Uranium Recovery Licensing Branch  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Management Programs

FROM: Douglas Mandeville, Project Manager **/RA/**  
Uranium Recovery Licensing Branch  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Management Programs

SUBJECT: PUBLIC MEETING SUMMARY

On December 19, 2013, a Public Meeting was held with Mineral Ablation, at U.S. Nuclear Regulatory Commission Headquarters. The purpose of the meeting was to discuss Mineral Ablation's pilot project in Wyoming and discuss legal and regulatory aspects related to commercial use of the ablation technology on uranium ore. A summary of the meeting is enclosed.

Enclosure: Meeting Summary

cc: Meeting Attendees (via email)

CONTACT: Douglas Mandeville, FSME/DWMEP  
(301) 415-0724

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DISTRIBUTION: DPersinko                      BSpitzberg/RIV                      LGersey/RIV    Meeting Attendees

**ML14017A102**

OFFICE	DWMEP	DWMEP	DWMEP
NAME	DMandeville	Sachten	DMandeville
DATE	1/24/14	1/24/14	1/27/14

OFFICIAL RECORD COPY

## MEETING REPORT

DATE: December 19, 2013

TIME: 2:00 p.m. to 3:55 p.m.

PLACE: U.S. Nuclear Regulatory Commission  
Two White Flint North, Rockville, Maryland  
Room T7C2

PURPOSE: The purpose of the meeting was to discuss Mineral Ablation's pilot project in Wyoming and discuss legal and regulatory aspects related to commercial use of the ablation technology on uranium ore.

### ATTENDEES:

See Attendees List (Attachment 1).

### BACKGROUND:

Mineral Ablation (MA), a joint venture between Black Minerals and Ablation Technologies, LLC, is in the process of developing a new technology to, using MA's terminology, increase uranium values in ore. The U.S. Nuclear Regulatory Commission (NRC) staff is aware of MA's work in developing this technology and has reviewed publicly available information on Black Range Minerals and Ablation Technologies websites. Additionally, the NRC staff has received several inquiries from members of the public about MA's technology and how it would be viewed from an NRC licensing perspective. The NRC staff does not currently have any pending licensing actions related to the ablation technology. This meeting is the NRC staff's first opportunity to hear from MA about their technology.

### DISCUSSION:

NRC staff read the opening statement for the meeting. Attendees of the meeting were asked to provide brief introductions. NRC staff provided an overview of the discussion topics planned for the meeting, which is can be found in Attachment 2. MA proceeded with its presentation, which is included as Attachment 3. At the beginning of the presentation, MA made a commitment to present NRC with a white paper on their views of the potential regulatory process for the ablation technology. During the presentation, NRC staff asked several questions to aid in its understanding of the ablation technology and its potential use. The NRC staff also provided several comments for MA to consider. A summary of NRC staff's major questions and comments as well as responses from MA are contained below.

Q: How is the ablation technology not considered concentration of uranium if 90 percent of the mass of the ore is removed?

A: MA stated that ablation is physical separation that creates a higher grade ore. MA compared ablation to the practice of high grading ore in a mine, a practice by which the portion

of the ore containing the highest grade of uranium is removed. MA stated that ablation is not concentration of uranium, as viewed by UMTRCA.

Q: How is MA measuring radionuclides during its evaluation of the ablation technology?

A: MA stated that they use X-ray fluorescence (XRF) to measure radionuclides.

Q: What is the disposition method of the post ablation sand grains if ablation is implemented at a commercial scale?

A: MA stated that the post ablation sand grains could be used as backfill at a project site or within a mine.

Q: Where would water used during ablation come from, if ablation is implemented at a commercial scale?

A: MA stated that water would likely come from the project. MA also stated that water does recirculate through the system.

Q: Are any state permits necessary for the current research and development phase of ablation?

A: MA stated that they have talked with the Wyoming Department of Environmental Quality as well as local governments and that no State or county permits are necessary for the current operation.

Q: Where would the post-ablation uranium enter the processing circuit at a conventional uranium mill?

A: MA stated that the end product is a paste that has been mostly dewatered. The paste would typically contain between 60 and 70 percent solids. It is anticipated that this material would enter a conventional uranium mill after the grinding circuit, but before leaching or solvent extraction.

Q: How is MA disposing of brine generated from reverse osmosis during this research and development phase?

A: MA stated that during this research and development phase, they have not needed to use the reverse osmosis system for extended periods of time. As a result, they have not needed to dispose of any brine resulting from the reverse osmosis system.

Q: NRC staff observes that ablation is performed in the presence of oxygen. Does the uranium dissolve during ablation of the ore?

A: MA stated that no chemicals are added during ablation and that ablation of the ore results in physical separation. MA stated that its tests to date have been performed with de-ionized water. MA stated it has verified that uranium does not dissolve with testing of pre-ablation and post-ablation fluids.

Q: What is MA's projected timeline for development of the technology?

A: MA stated that the technology remains in a research and development phase at this point. MA would like to be in a production phase as soon as possible and anticipates being ready for production scale activities in the early to middle portion of 2014.

Comment: NRC staff briefly discussed its late 1970's guidance document on uranium ore buying stations (note this guidance is available in ADAMS under accession number ML13358A075). NRC staff stated that this guidance should be considered in development of the white paper.

Comment: NRC staff recognizes that ablation of uranium ore wasn't considered during development of the 1980 Final Generic Environmental Impact Statement on uranium milling (NUREG-0706). NRC staff stated it may need more detailed technical information on the ablation technology to be able to make an informed decision. This should be considered in development of the white paper.

Two members of the public provided comments and questions.

Q: One member of the public asked about the NRC's December 12, 2013, letter to MA and how the questions NRC staff raised in the letter were addressed by MA.

A: The staff's December 12 letter to MA is available in ADAMS under Accession Number ML13345A266. The letter contained several questions that staff planned to ask at this meeting. The staff's questions and MA's answers were discussed during the meeting and are provided below.

- Is MA determining compliance with the general license limits in 10 CFR 40.22 through direct measurement, calculation, or some other method?
  - MA stated that it is determining the quantity of post ablation uranium in its possession through measurement. Additionally, MA stated that mass balance calculations can be used to confirm the measurements.
- What documentation is available to confirm compliance with the general license limits?
  - MA stated that it maintains testing records and laboratory results that are available for review.
- What is the form of the material after it has been ablated?
  - MA stated that the end product is a paste that has been mostly dewatered. The paste would typically contain between 60 and 70 percent solids.
- Has any source material been sent off-site? If so, where?
  - MA stated that it has run ablation tests on several sources of ore and that post ablation uranium has been sent back to originator (i.e., the entity that sent MA the ore samples).
- Have any waste materials been sent off-site? If so, where?
  - MA stated that the materials used during ablation are uranium ore and water. The waste materials remaining after ablation are ore with uranium removed and water. MA indicated that these materials remain on-site.

Comment: One member of the public commented that it does not agree with MA's position that no NRC license would be required for the ablation technology. The member of the public also asked about public involvement in NRC's decision making process on the white paper.

NRC staff stated that once it receives and has a chance to perform an initial review of the forthcoming white paper, it will determine the appropriate path forward. This will likely include an opportunity for public involvement in the NRC's process.

### ACTION ITEMS

During the meeting, MA committed to submitting a white paper presenting its views on the ablation technology and NRC's regulations by February 1, 2014. One action item was identified for the NRC staff. The NRC staff will identify the appropriate process to address MA's white paper.

NRC staff observes that the contents of the white paper and any requests by MA contained in the white paper will determine the staff's subsequent actions. Therefore, NRC staff will determine an appropriate path forward once it has had a chance to perform an initial review of MA's white paper.

The meeting concluded at approximately 3:55 p.m. Eastern time.

#### Attachments:

1. List of Attendees
2. Meeting Agenda
3. Mineral Ablation Presentation

Meeting Attendees  
Date: Tuesday December 19, 2013  
Room T7C2  
2:00 pm to 3:55 pm

Topic: Mineral Ablation's Pilot Project in Wyoming and Discuss Legal and Regulatory Aspects  
Related to Using the Ablation Technology on Uranium Ore

<b>NAME</b>	<b>AFFILIATION</b>
Doug Mandeville	U.S. NRC
Elise Striz	U.S. NRC
Bill VonTill	U.S. NRC
Dave Scriven	Mineral Ablation
Rod Grebb	Mineral Ablation
Jose Valdes	U.S. NRC
James Park	U.S. NRC
Eric Coates	Mineral Ablation
Pat Siglin	Mineral Ablation
Jim Woodward	Powertech Exposed
Lee Alter	Tallahasee Area Community
Sarah Fields	Uranium Watch
Shannon Anderson	Power River Basin Resource Council
Catherine Meyrick	Tallahasee Area Community
Ray Moores	WWC Engineering
Steve Cohen	Senes Consultants
Jennifer Thurston	INFORM Colorado
Oscar Paulson	Kennecott Uranium
Drew Persinko	U.S. NRC

John Saxton	U.S. NRC
Nick Orlando	U.S. NRC
David Cylowski	U.S. NRC
Tracey Stokes	U.S. NRC
Maureen Conley	U.S. NRC
Dennis Sollenberger	U.S. NRC
Steve Poy	U.S. NRC
Ron Linton	U.S. NRC
Duncan White	U.S. NRC
Linda Gersey	U.S. NRC
Blair Spitzberg	U.S. NRC
Jennifer Opila	State of Colorado Department of Public Health
Shiya Wang	State of Colorado Department of Public Health
Edgar Ethington	State of Colorado Department of Public Health
Jim Grice	State of Colorado Department of Public Health
Rusty Lundberg	State of Utah Division of Radiation Control
John Hultquist	State of Utah Division of Radiation Control
Phil Goble	State of Utah Division of Radiation Control
Ryan Johnson	State of Utah Division of Radiation Control
Chris Pugsley	Thompson and Pugsley
Tony Thompson	Thompson and Pugsley



MEETING AGENDA  
Mineral Ablation, LLC Project in Wyoming

MEETING PURPOSE: Meeting to Discuss Mineral Ablation's Pilot Project in Wyoming and Discuss Legal and Regulatory Aspects Related to Using the Ablation Process to Recover Uranium From Ore.

MEETING PROCESS:

<u>Time</u>	<u>Topic</u>	<u>Lead</u>
2:00 p.m.	Introductions	All
	Pilot Project Activities	Mineral Ablation
	Legal and Regulatory Aspects of Ablation Process	Mineral Ablation
	Summary of Action Items	Moderator
	Public Comment/Questions	Moderator
4:00 p.m.	Adjourn	

Attachment

Attachment 2