



**Environmental Management
Committee Meeting Minutes
Wednesday, March 20, 5:30 p.m.
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Committee Members Present

Jimmy Bell
Alfreda Cook, Vice-chair
Dave Hemelright
Bruce Hicks
Charles Jensen
Jennifer Kasten
Steve Kenworthy
David Martin
Donald Mei
Gloria Mei
Norman Mulvenon
Bob Olson
Robert Stansfield

Others Present

Dave Adler, Department of Energy (DOE)
Spencer Gross, ORSSAB support staff
John Kubarewicz, RSI
Roger Petrie, Tennessee Department of Environment
and Conservation (TDEC)
Joy Sager, DOE

Absent

Susan Gawarecki
Bob Hatcher, Chair
Dick Ketelle
Lance Mezga
Tim Myrick
Curt Walker
Kevin Westervelt

Report on remediation strategy plan for the Molten Salt Reactor Experiment – Joy Sager

Ms. Sager provided a briefing on the remediation strategy plan for the Molten Salt Reactor Experiment (MSRE).

According to the Executive Summary of the plan (DOE/OR/01-2560&D2), which was sent to committee members prior to the meeting for review, defueled salt from MSRE appears to be eligible for disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico. The strategy plan is based on the assumption that the salt will be accepted by WIPP.

The plan calls for continued safe storage at MSRE until 12 years prior to the scheduled completion of disposition at WIPP. The initiation of activities will be determined from the final closure date of WIPP.

Ms. Sager began her briefing by reviewing the operational history of MSRE (Attachment 1, page 2). MSRE began operations in 1965 with uranium-235 as the original fuel. In 1968 the U-235 was replaced with U-233. All operations were stopped in 1969 and the fuel salts were drained into two of three below-grade tanks. A flush salt to clear the reactor vessel was drained into a third tank.

In 1998 a record of decision (ROD) was signed to remove the salt from the tanks, extract the uranium, convert it to an oxide form, and place the oxide in storage. The defueled salts were to be containerized and stored until final disposition was determined.

An explanation of significant differences to the ROD was implemented in December 2006 that replaced the oxide conversion of the uranium with extraction of the uranium using sodium fluoride traps (NaF traps) and sending the traps to Building 3019 at Oak Ridge National Lab to become part of the U-233 Disposition Project.

Removal of the U-233 was completed in 2008, but the defueled salts remain in the storage tanks. Ms. Sager said the two fuel salt tanks are 30-40 percent full and the flush salt tank is about 80 percent full. She said the tanks are about 4 feet in diameter and about 7 feet tall.

Since MSRE was defueled several reports have been issued related to the path forward (Attachment 1, page 6). The 2010 engineering evaluation recommended removal and disposal of the salt, but the problem at the time was lack of a good disposal option.

The August 2011 nondestructive assay measurements verified that the salt was adequately defueled and not a criticality concern. Ms. Sager said measurements were calculated three different ways to make sure. WIPP cannot accept spent fuel, so this information was provided to WIPP. WIPP responded in February 2013 indicating that the salt was eligible for disposal. Ms. Sager said it also appears the salt can be transported in existing shipping containers.

The remediation strategy plan actions are listed on page 9 of Attachment 1. The strategy planning schedule is based on the assumption that WIPP will close in 2032. Ms. Sager said the target date to finish the project is 2027, with a five-year contingency window prior to WIPP closure. To meet the 2027 deadline activities would begin in the 2020 timeframe.

Mr. Olson said ORSSAB had made a recommendation to determine what caused the lines to be plugged when draining the tanks was attempted earlier. The recommendation also suggested working with former MSRE operators. He asked if that had been done. Ms. Sager said some of the operators DOE is working with have been around for a long time and their knowledge is useful. She said she had looked at the recommendation and as far as she could tell it had not been determined what caused the plugging in the drain pipes, but she said that would be part of the planning process when dealing with the salt.

Mr. Olson asked if budget is available to do an investigation. Mr. Adler said the cost estimate for the planning includes an assumption the drain pipes would be replaced so that the problem of plugged drain lines wouldn't happen again.

Mr. Hemelright asked what the tanks are made of. Ms. Sager said they are Hastelloy-N, a type of stainless steel that is tolerant to fluorine at high temperatures. Mr. Jensen said the metal is very hard and difficult to work with.

Mr. Bell asked what was done to keep uranium hexafluoride from migrating through the MSRE off-gas system as was detected in 1994. Mr. Adler said almost all of the uranium has been removed.

Mr. Bell asked how the uranium was removed. Mr. Adler said the salt was heated and fluorine was introduced through a probe, reacting with the uranium, which was then captured on the NaF traps.

Mr. Stansfield asked what will happen to the remaining facility after the salt has been disposed. Mr. Adler said a ROD has not been developed to address the remaining building, piping, and so on. He said the assumption is to decontaminate and entomb below-ground structures in place and remove and dispose of above-ground structures.

Mr. Adler said currently the curie count is high with the salt in place, but that will go down when the salt is removed. Attachment 1, page 7 is a chart of radiological constituents in the salt and the total curie count for each tank.

Ms. Mei asked what will happen if the WIPP decides not to take the salt. Ms. Sager said if that happened another disposition path would have to be found, and currently there is none except WIPP.

Mr. Hicks asked in the planning for the salt removal how much is backed up by experience. Mr. Adler said most of the information used was taken from operational experience and the defueling process. He said there will be a number of studies done (readiness reviews, etc). Prior to the defueling a scale mockup was built to simulate the defueling process. He said something similar will be done for the salt removal process.

Mr. Bell asked if WIPP considered U-233 as transuranic. Mr. Adler said not U-233 itself, but the salt was a vehicle that carried the uranium. The constituents that remain in the salt are considered transuranic.

Mr. Kenworthy said the plan is to delay removing the salt for as long as possible. He asked if another disposal path for the salt opened would the disposition be delayed even longer. Mr. Adler said there are other problems on the reservation that have a higher priority, but DOE doesn't want to lose the opportunity to dispose at WIPP.

Discussion of possible recommendation on presentation

The committee determined no recommendation was needed at this time on the MSRE strategy planning document.

Reconsider Recommendation on Legacy Materials on the Oak Ridge Reservation

At the March ORSSAB meeting the Recommendation on Legacy Material was referred back to the committee since a number of revisions were suggested at the board meeting. The committee reviewed the recommendation with suggested changes (Attachment 2).

Mr. Olson moved to approve the recommendation with the changes. Mr. Hemelright seconded. The motion passed with 12 committee members voting 'yea' and one abstention (Mr. Stansfield).

The recommendation will be forwarded to the Executive Committee for placement on the April ORSSAB agenda.

Discussion of Franklin Hill, EPA, letter to Mark Whitney on proposed changes to operating practices for solid waste landfill leachate – Dave Adler

Mr. Adler provided information regarding the letter from Franklin Hill, EPA, to Mark Whitney, DOE Oak Ridge Manager for Environmental Management (Attachment 3).

It has been the practice to collect leachate from the Environmental Management Waste Management Facility (EMWMF) and transport it by tanker truck for treatment at Oak Ridge National Lab. Mr. Adler said 10 years of data indicate that the leachate is actually clean enough to discharge directly into Bear Creek.

He said a process is being developed, including toxicity studies, so the leachate can be directly discharged to the creek. He said the change would save about \$500,000 a year.

Because the proposal is a change in practice, an explanation of significant difference would be issued for the EMWMF ROD. Mr. Hill's letter explains the process to make the change. Mr. Adler emphasized that the change must be a safe remedy for discharging the leachate.

Status update on Groundwater Strategy Workshops – Dave Adler

Mr. Adler said the strategy teams have been working through the watersheds on the Oak Ridge Reservation. The objective is to develop recommendations on dealing with groundwater on the reservation.

Dan Goode, U.S. Geological Survey, is acting as a liaison to the board on the strategy team. Mr. Adler said Mr. Goode should be able to provide a report to the committee soon, perhaps at the April 17 meeting.

Committee input on next month's topic - Uranium-233 Disposition Project, Gloria Mei, issue manager

The primary topic for the April 17 meeting is an update on the uranium-233 disposition project.

Ms. Mei said she had a number of items she would like to hear covered in the presentation:

- Status on the Type B container for shipping the Consolidated Edison Uranium Solidification Project materials
- Phase II process/timeline
- Design/modification of Building 2026

Other suggestions from committee members at this meeting included:

- Changes since last year
- Status of type of container for shipping the material.
- Timeline
- The type of U-233 to be dissolved
- Confirmation that dissolving U-233 will be done in a geometrically safe condition
- Status of disposing U-233 under the National Environmental Policy Act

Action Items

Closed

1. Staff will find any previous recommendations on nickel and provide to the committee. Staff will also research any recommendations on nickel made by the Paducah Citizens' Advisory Board and the Portsmouth SSAB. **Complete.** Staff provided information on nickel to the committee via email on February 28, March 4, and March 5.

The meeting adjourned at 6:55 p.m.

Attachments (3) are available on request from the ORSSAB support office.

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