Savannah River Site
Citizens Advisory Board

Recommendation 209
SRS TRU Waste Issues

Background
During a review of the transuranic (TRU) waste retrieval operations at Savannah River Site (SRS) conducted on November 9, 2004, the Defense Nuclear Facilities Safety Board (DNFSB) informed representatives of the Department of Energy Savannah River Operations Office (DOE-SR) and Westinghouse Savannah River Company (WSRC) about safety issues regarding unvented TRU waste drums. DOE'S complex-wide experience has shown that unvented TRU waste drums can and do contain flammable and explosive mixtures of hydrogen and oxygen gases, and that controls are needed to protect workers from this hazard (Ref. 1).

On November 11, 2004, a DOE Facility Representative observed a TRU waste drum venting operation and discovered that the drum contained 16.4 percent hydrogen and 13.8 percent oxygen, a mixture of gases capable of creating an explosion that could rupture a drum. This situation led to the declaration of a Potential Inadequacy in the Safety Analysis and the issuance of an occurrence report (SR--WSRC-S W&I-2004-00 15). In a subsequent review of records for previously vented drums, WSRC personnel identified more than 100 drums that had contained flammable mixtures of hydrogen and oxygen prior to venting, of which 29 had contained at least 15 percent hydrogen.

On December 6, 2004, WSRC suspended the transuranic (TRU) waste processing at the Solid Waste Management Facility (SWMF). WSRC decided that the safety posture of continued operations may be inadequate and placed TRU processing at SWMF in a standby mode. TRU waste shipments to SWMF were still being received but no further drum movements were allowed, unless the drum had already completed full characterization for shipment to the Waste Isolation Pilot Plant (WIPP) (Ref. 2).

At the February 15, 2005, SRS Citizens Advisory Board (CAB) Waste Management Committee meeting, DOE-SR stated that a phased resumption of activities had begun (Ref. 3). Recommendations of the WSRC TRU Waste Drum Issues Assessment Team (Ref. 4) have been addressed leading to a Corrective Action Plan, and the processing of unvented drums has resumed as part of phase 1 of the resumption of activities. Phase 1 also allowed SRS to resume shipments of drums that are fully characterized on a reduced schedule with full operations expected by May 2005.

Comment
The Solid Waste Management Facility (SWMF) contains approximately 3,200 unvented transuranic (TRU) waste drums. With 295 unvented drums on the open storage pads plus the number stored in the concrete culverts, the issue of the safety of the workers at SRS is a primary concern. With the unvented drum safety issue being addressed, the SRS CAB believes that SRS should strive to meet the projected FY05 gold metric baseline of 168 shipments to WIPP and at any case ensure the necessary shipments to have all of the low activity legacy drummed TRU waste shipped by November 2006.

The SRS CAB strongly endorses the DNFSB independent scientific peer review and advocacy role for SRS worker protection. As reported in the TRU waste drum safety issue letter (Ref. 1), accurate and complete information from DOE is critical for DNFSB to meet its oversight responsibilities. The SRS CAB strongly endorses this concept whether it applies to an independent scientific peer review organization or a group of stakeholders. The SRS CAB greatly appreciates the role DNFSB provides and looks forward to hearing from them on this

and other waste issues.

A number of issues still need to be resolved to meet these dates and to have all non-drummed and high activity drummed waste shipped by 2009/2010. Regulatory relief is needed related to the waste confirmation system at WIPP. Per the passage of H. R. 2754 (lead by Senator Domenici of New Mexico) into Public Law 108-137, WIPP has submitted a permit modification request to the New Mexico Environment Department (NMED) to change TRU waste confirmation requirements and to demonstrate compliance with the disposal room performance standards. If approved by NMED, these changes could reportedly save the taxpayer close to a billion dollars without compromising the safety of WIPP operations, human health, or the environment (Ref. 5).

In order to meet the site milestone of 2009/2010, NRC certification is required on the TRUPACT-III shipping container to handle the non-drummed TRU wastes and a transportation packaging method such as Arrowpak is needed to handle high-activity drums. In response to SRS CAB Recommendation #187 (Ref. 6), DOE-SR stated that the first TRUPACT III should be at SRS in October 2007; however, based upon new information (Ref. 6), the application to NRC has been withdrawn and the TRUPACT III is being redesigned. The SRS CAB is concerned that the completion date could slip to FY09 or FY10 because the redesign unit still needs to go through testing before NRC licensing can be completed. Also in response to Recommendation #187, the SRS CAB was told that DOE has abandoned the idea of using the Arrowpak due to the length of time required to get permit modifications. However, based upon the presentation by Phil Gregory (Ref. 5), the SRS CAB learned that as a result of its recommendation the request to NRC to use the Arrowpak was submitted to NRC on January 31, 2005. Both the TRUPACT III for non-drummed TRU wastes and the Arrowpak for high activity TRU wastes need to become operational to demonstrate to citizens around SRS and to SRS regulators the commitment by SRS to cleaning up the legacy TRU waste at SRS.

Recommendation
The SRS CAB makes the following recommendations:

1. Now that the flammability issues have been addressed and phased shipments have begun, with more stringent safeguards to protect workers, the public and the environment, while maintaining these stringent safeguards, DOE accelerate the TRU waste drum shipments to WIPP to meet the FY05 gold metric baseline goal of 168 shipments if possible and in any case ensure that all legacy low activity drummed waste is shipped by November 2006.
2. DOE present a status report on the TRU waste drum shipments to WIPP and the next phase of safeguards and corrective actions to be implemented to protect workers, the public and the environment by May 24, 2005.
3. DOE accelerate the licensing and operational deployment of the TRUPACT III to meet the original delivery date at SRS of October 2007 or earlier.
4. DOE accelerate the licensing and operational deployment of the ARROWPAK to ensure shipment of all high activity drummed TRU waste by FY 08.
5. DOE-SR notify DOE-Carlsbad of the SRS CAB support for Public Law 108-137 and ask that NMED use operational experience to revise the WIPP-WAC to discard those criteria that do not reduce risks to workers, the public and the environment.

References

1. TRU Waste Drum Safety Issue letter from John T. Conway, Chairman, DNFSB to Paul M. Golan, Acting Assistant Secretary for Environmental Management, December 14, 2004.
2. DNFSB SRS Site Report from J. S. Contardi, SRS Site Representative, December 10, 2004.
3. TRU Waste Disposition, presentation to the WM Committee by Bert Crapse (DOE-SR), February 15, 2005.
4. WSRC TRU Waste Drum Issues Assessment Team Report, January 14, 2005.

5. Transportation of TRU Waste – Packaging, Characterization, and Shipping Limitations, presentation to the WM Committee by Phil Gregory, Packaging Manager, Washington TRU Solutions, February 15, 2005.
6. Waste Management Committee Meeting Summaries, August 31, 2004
7. Improving the Characterization Program for Contact-Handed Transuranic Waste Bound for the Waste Isolation Pilot Plant, National Research Council of the National Academies (2004)

Agency Responses

Department of Energy-SR