

# Best Practice #167

**Best Practice Title:** Lessons Learned in the Management of DOE Waste Incidental to Reprocessing (WIR) Program – Critical to Tank Closures with tanks containing liquid radioactive waste that may be classified as High Level Waste (HLW) resulting in risk reduction at those sites.

**Facility:** All EM Sites with Tank Waste containing liquid radioactive waste that may be classified as High Level Waste (HLW) (for example: Hanford, Savannah River Site (SRS), Idaho, and West Valley) materials in the Tanks as Liquid Radioactive Waste.

**Point of Contact:** W. T. (Sonny) Goldston, EnergySolutions, 803-292-1079, [wtgoldston@energysolutions.com](mailto:wgoldston@energysolutions.com)

Subject Matter Expert: Scott Saunders, Washington River Protection Solutions, 509-619-3432, [Scott\\_A\\_Saunders@RL.gov](mailto:Scott_A_Saunders@RL.gov)

Subject Matter Expert: Jim McNeil, Consultant to Hanford and West Valley, (843) 740-1947, [jimmcneil@aol.com](mailto:jimmcneil@aol.com)

**Brief Description of Best Practice:** Referenced is the Energy Facility Contractors Group (EFCOG) Waste Management Working Group's team report that presents the lessons learned in the management of the U.S. Department of Energy (DOE's) Waste Incidental to Reprocessing program as discussed in a workshop and embedded track panel sessions and presentations held from February 25-28, 2013 at the WM2013 Symposium in Phoenix, Arizona. Use of the best practices documented in the report has demonstrated reduction in risk and cost of stabilization of HLW at DOE sites around the complex.

**Why the best practice was used:** Radioactive waste tank storage at the four DOE sites that performed reprocessing in years past during the Cold War represents the highest risk to human health and the environment at those sites. Stabilizing this radioactive tank wastes including emptying and closing these tanks is critical to the risk reduction programs at these sites. This best practice documents the many lessons learned from working for many years with the requirements from DOE Order 435.1 concerning Waste Incidental to Reprocessing and Section 3116 of the National Defense Authorization Act for Fiscal Year 2005, as DOE sites (in particular Savannah River Site, West Valley, Idaho National Laboratory, and the Hanford Site) have moved to safely treat and dispose of waste from these tank waste systems and worked to close tanks that have stored highly radioactive waste.

**What are the benefits of the best practice:** The risk reduction and cost savings due to implementation of the lessons learned in interaction between NRC, DOE and the States are difficult to quantify as the end product of this work is methods, guides, and lessons learned. The goal is to reduce the time of each organization and rework of regulatory documents resulting in radioactive waste Tank closures in considerably less time. However, a conservative estimate of the accomplishments and activities exceeds \$5-10 million across the complex.

**What problems/issues were associated with the best practice:** The DOE and Nuclear Regulatory Commission (NRC) consultation cycle was longer than necessary to prepare the WIR decision documentation that allowed DOE to proceed to process highly radioactive waste

## Best Practice #167

from its low activity fraction, and close radioactive waste tanks. As a result of the evaluations conducted during this lesson learned process and the discussions held during this lessons learned workshop, several recommendations were developed to improve future interactions and deliberations among DOE, its contractors, the NRC, State regulators, and other stakeholders. DOE and NRC explored methods to shorten the NRC consultation cycle without compromising safety or agency independence, in addition to holding scoping meetings which have been used effectively to this end.

**How the success of the Best Practice was measured:** The success of this Practice is demonstrated by the reduction in the time needed to provide DOE and NRC consultation along with regulator and other stakeholder input into the process. Now this process is being applied at Hanford and Savannah River Site (SRS). Thus far the time to provide NRC's consultation at SRS has improved using these methods and is expected to have the same positive impact at Hanford.

**Description of process experience using the Best Practice:** WM2013 provided an opportunity for policy-makers, regulators, practitioners, and other stakeholders to celebrate successes and discuss opportunities for improvement for DOE's WIR processes. Using the Section 3116 process, DOE closed 11 underground waste tanks at the Idaho National Laboratory in 2006 and in 2012 closed two underground waste tanks at the Savannah River Site. Using the DOE Manual 435.1-1 evaluation process, DOE determined that the vitrification melter and two other vessels from the West Valley Demonstration Project are not high-level waste (HLW) and may be disposed of as low-level waste (LLW). Using the citation process, DOE has also disposed of hundreds of decontaminated tools and other low-risk materials in DOE-owned LLW disposal facilities.

**Conclusion/Summary:** This report documents the many lessons learned from working for many years with the requirements from DOE Order 435.1 concerning Waste Incidental to Reprocessing and Section 3116 of the National Defense Authorization Act for Fiscal Year 2005, as DOE sites (in particular Savannah River Site, West Valley, Idaho National Laboratory, and the Hanford Site) have moved to safely treat and dispose of waste from these tank waste systems and worked to close tanks that have stored highly radioactive waste. The EFCOG Waste Management Working Group recommends that DOE move to take steps to understand and implement the lessons learned documented in the referenced report. Also, even though each item listed in this report contains useful information, the following specific overarching comments based on the workshop and other sessions are listed here:

- (1) The upcoming revision to DOE Order 435.1 include citation process requirements that are equivalent to the current requirements, which have served to minimize the costs for disposal of very low risk waste streams. This best practice recommends that guidance for citation process implementation under DOE Order 435.1A address how to technically support using the citation process for wastes that may be incidental to reprocessing.
- (2) The DOE should consider development of a strategy for vitrification melter shutdown near the end of melter life that balances production goals, costs, and disposal options.
- (3) DOE should work with its contractors to develop and define the scope of consultation with the NRC for Section 3116-required consultation activities, with a guidance document based

## Best Practice #167

on a rigorous project management approach being prepared for this purpose and used as a basis for a memorandum of agreement with the NRC for these activities.

(4) DOE and NRC should explore methods to shorten the NRC consultation cycle without compromising safety or agency independence, in addition to holding scoping meetings which have been used effectively to this end.

(5) DOE should work with its contractors to develop and define the scope of Section 3116-required monitoring activities, with a guidance document based on a rigorous project management approach being prepared for this purpose and used as a basis for a memorandum of agreement with the NRC for these activities. This best practice further recommends that NRC and DOE jointly develop the monitoring process, including formally agreeing on the precise meaning of terms such as *noncompliance with performance objectives* and the different types of noncompliance to be used by NRC in its monitoring program.

As a result of the evaluations conducted and the discussions held during the lessons learned workshop, several recommendations were developed to improve future interactions and deliberations among DOE, its contractors, the NRC, State regulators, and other stakeholders. These suggestions are included in the referenced report for review and consideration by DOE.

### Reference:

EFCOG WMWG Report to EM-30 dated April 30, 2013, entitled "Lessons Learned in Management of DOE Waste Incidental to Reprocessing"