

WM2017 Conference Panel Report

PANEL SESSION 99: Challenges in DOE HLW Tank Management: Making Progress Under Differing Stakeholder and Regulatory Environments

Co-Chairs: **Kenneth Picha**, *U.S. DOE*
Karthik Subramanian, *Washington River Protection Solutions*

Panel Reporter: **Tom Brouns**, *Pacific Northwest National Laboratory*

Panelists:

1. **Daniel Sullivan**, *Federal Project Director, West Valley Demonstration Project, US DOE*
2. **Jean Ridley**, *Director, Waste Disposition Programs Division, Savannah River Site, US DOE*
3. **Graham Jonsson**, *Head of Independent Performance Assurance Group, Sellafield Ltd (United Kingdom)*
4. **John (Jack) Zimmerman**, *Deputy Manager for Idaho Cleanup Project, US DOE*

Approximately 60 people attended this panel session which focused on the successes and challenges of the DOE high level radioactive tank waste management with special emphasis on the differing regulatory and stakeholder environments at DOE and UK sites. Panelists provided perspectives and lessons learned from past and current programs at West Valley, Savannah River, Idaho, and the UK Sellafield sites.

Summary of Presentations

Ken Picha kicked off the panel with a brief introduction to the history of this annual WM panel session on challenges in US DOE HLW Tank Management. At WM'14, the DOE field sites had a general discussion of successes and challenges, covering technical, regulatory, human capital, and budget areas. The WM'15 session focused on startup and commissioning of new nuclear facilities, and the challenges associated with bringing these highly complex facilities online. WM'16 focused on funding challenges and how to "do more with less." The focus for the WM'17 panel session is on mechanisms for effectively and consistently communicating results, under differing regulatory and stakeholder environments and considerations at each tank site.

Daniel Sullivan described two successful projects associated with decommissioning-related activities at the West Valley Demonstration Project in New York. The first was the onsite High-Level Waste canister relocation and storage project, and the second was the offsite shipment of several HLW vitrification system components. Both projects were designed to remove tank waste related components to enable facility decommissioning and demolition to proceed, and required development of customized equipment to construct casks, pick up and transport canisters. The HLW canister relocation and storage effort involved only onsite activities, and therefore was simpler to permit and address from a stakeholder perspective. The effort successfully fabricated vertical storage casks, transported casks for loading at the WVDP main plant process building, and then relocated 275 casks to the HLW cask storage pad. The project was completed ahead of schedule, safely and compliantly.

WM2017 Conference Panel Report

The offsite shipment project involved removal of the HLW vitrification melter and two melter feed tanks from the WVDP site and transport from NY to the Waste Control Specialists (WCS) disposal facility in Andrews, Texas. The melter package and two feed tanks had been previously removed from the plant process building and were awaiting offsite disposition. The three containers exceeded 500 tons total weight, and each package was approximately 13-foot wide. WVDP had worked with NRC for a waste incidental to reprocessing (WIR) determination that allowed the waste to be disposed as LLW. The DOT requested a special NRC package authorization for shipment, which necessitated an impact limiter addition to the melter package. Shipment was a coordinated effort between MHF Logistics, WCS, and CH2M HILL BWXT West Valley, LLC (CHBWV), with a general timeline involving site walkdowns in September, 2016, initial mobilization in October, 2016 with road transport by heavy haul trailers to Blasdell, NY (35 miles north of WVDP), and then mid-November 2016 loading on special railcars for transport to WCS. The heavy haul truck/trailer used in road transport was approximately 229-ft long, and travelled an average of 7 mph from the site to the rail yard in Blasdell, NY. The 6-hour trip was slowed mostly by the necessary lifting of utility lines along the route. Each component was ultimately transferred to an 8-axle rail car separated by idlers and locomotives, approximately 650-ft long. Once received at WCS, the three packages were grouted in place into a monolith.

Several key success factors for the offsite transport were noted: The timely, open and frequent communication with a variety of stakeholders helped assure that there were no public concerns or media attention. All of the regulators were supportive. The contractor was very experienced, and effectively coordinated all 17 permits, 12 subcontractors involved in the transportation. **Daniel** summarized that one team, good logistics and planning, experienced contractors, and effective communications drove the success.

Jean Ridley described the liquid waste program at the Savannah River Site which is focused on safe storage, treatment, and disposition, and highlighted that it requires synchronization of several highly interdependent nuclear facilities and chemical operations, including waste removal, evaporation, salt separation, vitrification, saltstone processing and disposal, and glass waste (canister) storage. **Jean** highlighted the F and H Area tanks, Defense Waste Processing Facility (DWPF), Salt Waste Processing Facility (SWPF), and Saltstone facilities, and noted the necessity of turning many “dials” when anything is done to one area of the overall liquid waste integrated system.

Positive steps to effective communications with stakeholders and regulators were identified. At SRS, the primary stakeholders include the Citizens Advisory Board (CAB), DNFSB, NRC, and general public and special interest groups. The Regulators are South Carolina Department of Health and Environmental Control (SCDHEC) and EPA. For each group, understanding what their respective areas of focus and regulatory oversight is important, as well as what they know and more importantly don’t know. It is important to recognize and identify the key challenges (e.g., funding, aging facilities, etc.) and to share all background information with stakeholders and regulators. An example was provided of making sure regulators understood the whole system, such as how penalties/fines for missing permit requirements in one area can impact funding availability in make important upgrades elsewhere. To establish good rapport at SRS, **Jean** noted that they have established common goals and understanding of key outcomes, such as “remove actinides and Cs to the extent possible.”

WM2017 Conference Panel Report

They frequently communicate changing status of facilities, hold regulator tours, training, and walk downs of facilities, and have a regular schedule of periodic status updates with each group.

Formal communication plans were also highlighted as key success element. For any major events or issues, such as the demise and shut down of the HLW melter, it is important that there is a hierarchy of notifications and all stakeholders and regulators are given the same information. Also, when things aren't going according to plan, there must be an agreed to process for dispute resolution. **Jean** described the process established as part of the SRS Federal Facilities Agreement (FFA), which has both informal and formal elements. The informal process is to resolve technical (not legal) issues, and involves the FFA manager, supervisors, and subject matter experts. A formal dispute resolution committee also exists for elevating items, and with clear timelines for action. The third level involves a Senior Executive Committee which involves all three parties. It was noted that for disputes efforts should be made to resolve at the lowest level, and try to resolve the technical issues first. The key is to "lead" the resolution by spending as much time as necessary to understand the issues and basis for missed commitments.

Jean summarized the key lessons learned in terms of give and take communications and negotiations. Focusing on key outcomes and accomplishments assures there is mutual clarity and focus on getting to the same end state. Successful resolutions have been driven by early and frequent communication (no surprises), transparency, and agreement on outcomes.

Graham Jonsson provided a HLW site perspective complementary to the US panelists by focusing on progress in high-hazard risk reduction at the UK Sellafield site in west Cumbria. Legacy wastes and ageing facilities at the Sellafield make it a national priority, and all stakeholders accepted that the pace of progress was inadequate. **Graham** highlighted that while there was funding, regulatory attention, competent workforce, and government interest, something was still preventing progress on risk reduction. He attributes this to six key stakeholders (aka G6) with individual strategies being applied individually, that conflicted rather than complementing each other. Therefore, a way of working was developed with common goals, independent legal duties, common language and eight strategic themes that he showed as key elements of the "engine room", and included prioritization, effective use of resources, removal of blockers (aka flexible permissioning), removal of distractions and diversions, incentivisation, fit for purpose solutions, balance of risk, and communications. **Graham** highlighted a couple of these eight themes, including the development of a risk management framework that they used to map existing programme areas, and identify where programmes were not adequately reducing risk. Two silo programmes were shown to have unacceptable time at risk (i.e. program was not reducing risk fast enough). Ongoing work is focused on tracking the movement of programmes within the risk management framework toward further risk reduction. Another example was identifying what the "blockers" are that are preventing progress on individual projects. Several examples of progress were highlighted, including a new intermediate level waste (ILW) approach that was identified that aligned all six organizations with a common strategy. Fuel removal from the Pile Fuel Storage Pond focused on a fit for purpose solution, balancing risks, and effective use of resources.

In conclusion, **Graham** noted that G6 as an "ethos" rather than "process" was key to improving progress at Sellafield. A focus on "G1" (thinking as one) vs. "G6" and a spirit of "because of what I do" has helped move the legacy cleanup forward. They have started small – focused on

WM2017 Conference Panel Report

what can be done within their own organization first. This requires compromise across the organizations, and leadership.

Jack Zimmerman described Idaho's experience with tank waste management, highlighting the primary challenge of ~4,400 m³ of solidified HLW calcine from reprocessing, and ~900,000 gallons of liquid sodium-bearing waste (SBW) principally from D&D solutions. The regulatory framework at Idaho is driven by the 1995 Idaho Settlement Agreement, which outlines a requirement for HLW to be treated and road ready by 2035. This agreement hasn't changed in 20 years, but the lack of a nuclear waste repository means that the agreement will require revisions. A site treatment plan establishes milestones and interim steps for treating mixed waste. In addition, the site is under a noncompliance/consent order for the SBW for having missed startup milestone for the integrated waste treatment unit (IWTU).

Jack summarized the history of the IWTU development, and challenges faced with startup and commissioning of this denitration reformer system that has been driven by wall scale buildup that destabilizes the fluidized bed reactor, and fouling/binding in the auger/grinder. The original contract for the IWTU was a design-build-operate. A new cleanup contract with Fluor at Idaho will now extend the startup/commissioning into four phases and re-establish a pilot-plant needed to obtain data to support refined operations. The results of phase 1 indicate that the reaction rate is slower than needed, and they are working on temperature increase, allowing particles to grow longer in the reactor, and lower the feed rate to compensate. Causes and solutions for challenges in several areas of the reactor operation have been outlined and are being evaluated in subsequent phases of the ITWU startup efforts.

The status of tank closures and the calcine waste disposition were also summarized. Eleven of fifteen storage tanks have been closed and grouted. The remaining four tanks will be closed once the remaining waste is treated in IWTU. Calcine waste is stored in calcine bin sets, and is subject to the Idaho settlement agreement and site treatment plan milestones, including commencing operations of a calcine treatment system by March 31, 2024. While the current NEPA Record of Decision selected hot isostatic press as the treatment option in 2009, an analysis of alternatives performed by DOE recently concluded that calcine waste processing is highly dependent upon the ultimate calcine waste disposition path (i.e., repository), and recommended deferring the waste processing decisions until the disposition path is known. Progress can be made on calcine retrieval, as that is a common element for all processing options. Finally, **Jack** highlighted that the key stakeholders and regulators for Idaho include the ID Governor and Attorney General, both signatories to the settlement agreement, the Idaho Department of Environmental Quality for RCRA-regulated waste, the Shoshone-Bannock Tribe, INL Citizens Advisory Board, local communities, and special interest groups.

Questions and Answer

An audience member asked about the design life of the Idaho calcine bins and tanks, and whether that would technically constrain the cleanup schedules. **Jack Zimmerman** noted that the approximate effective life of the calcine bins are a couple hundred years, and the tanks approximately 50 years.

WM2017 Conference Panel Report

Jean Ridley was asked to describe in more detail how an agreement was reached with regulators at SRS. She described the approach using the informal dispute resolution process to address a milestone schedule delay. In this case DOE provided specific technical detail that helped SCDHEC representatives understand the reason for the schedule delay, and provided possible alternatives to meeting the subject milestone if the regulators decided not to grant an extension.

Graham Jonsson was asked about engagement with UK “public” stakeholders versus the G6 government stakeholders that he discussed, and how they may differ from US public stakeholder engagement. **Graham** replied that the public stakeholder engagement for Sellafield has been principally through community meetings, where the focus is updates on cleanup plans and progress. There is less focus on community critique of technical solutions in comparison to the engagement with US DOE site community advisory boards.