PANEL SESSION 52: US DOE Mixed Waste Disposition: Dealing with the Flip Side of Reduced ARRA Funding and Commercial Mixed Waste Issues

Co-Chairs: **Christine Gelles,** *US DOE*
Renee Echols, *Perma-Fix*

Panel Reporter: Christine Gelles, *US DOE*

Panelists:

1. **Bruno Zovi,** *LLW/MLLW Program Manager, Idaho Treatment Group, (AMWTP-Idaho)*
2. **Andrew Baumer,** *Deputy Facility Operations Director, Los Alamos National Laboratory*
3. **Renee Echols,** *Senior Vice President, Perma-Fix Environmental Services*
4. **Paul Larsen,** *Senior Vice President, EnergySolutions*
5. **Ken Grumski,** *Vice President, Federal Services , Waste Control Specialists*
6. **Jhon Carilli,** *Low Level Waste Activity Lead, US DOE, Nevada National Security Site*

Approximately 50 people attended this panel session which focused on a range of issues dealing with the identification, treatment and disposal of DOE mixed waste. Historically, the panel focused on those challenging mixed waste streams that had once been classified as having "no path to disposal", which had meant that there was no treatment and/or disposal outlet available for these wastes. However, in recent years, increased treatment methods have been developed, and a disposal outlet became available with the mixed waste disposal facility at Nevada that could accept higher activity wastes from around the DOE complex. . This year's panel discussion provided a status of the mixed waste challenges, successes and capabilities, with an eye toward transitioning future panel discussions to matters that are more policy and programmatic in nature. Further, the panel proposes to expand its scope to talk about broader set of problematic waste streams – not limited to the higher activity MLLW category.

Summary of Presentations

Bruno Zovi provided a detailed presentation on the challenges and process improvements at the Idaho Advanced Mixed Waste Treatment Project, which is managed by ITG. He described the LLW/MLLW treatment processes within the project, and explained recent experience and accomplishments despite reduced funding for MLLW treatment and disposition. It is estimated that as much as 50 percent of remaining inventory at AMWTP, which has historically been managed as transuranic waste, is actually MLLW. ITG, since contract award, has processed and safely shipped over 2,750 cubic meters of LLW/MLLW, and is on track to process and ship approximately 2,150 in FY 2013. Regarding challenges, over 28,000 containers of LLW/MLLW remain to be dispositioned, many of which are difficult to process, contain prohibited items and require commercial treatment prior to disposal. ITG has provided numerous process improvements to improve throughput and increase processing rates. A new macro-encapsulation process, utilizing an HPDE liner, is providing significant cost savings. He emphasized that ITG pursue continuous process improvements in its LLW/MLLW programs.

Andy Baumer summarized mixed waste disposition progress at the Los Alamos National Laboratory. Recent successes included resolution and shipment of some long standing legacy mixed wastes on the site treatment plan (STP). Also, during the past six years, the site has not generated a waste that could not be treated and disposed within one year, due to the turnkey service focus of the LANL mixed waste program. Only two wastes remain on the STP.

Although the current focus at LANL is on removal of above-ground Transuranic (TRU) waste inventories, consistent with the LANL Framework Agreement, in the future much of the TRU waste stored below-ground may ultimately require management and disposition as MLLW. Andy noted that, in the past, the unit costs for waste treatment and transportation costs were minimized through consolidation and use of "milk-runs". However, now, as volumes dwindle, unit costs are increasing. Therefore, other efforts are being employed to minimize costs, such as: LANL has obtained a permit for on-site macro-encapsulation, although they continue to utilize offsite commercial services; the site is successfully utilizing the nation-wide treatment Indefinite Delivery/Indefinite Quantity (ID/IQ) contract as a prime contracting vehicle, reducing overhead costs; and, re-characterization is conducted to remove unneeded, overly conservative RCRA codes. LANL's current problematic wastes primarily comprise high activity tritium wastes.

Renee Echols provided an overview of Perma-Fix's capabilities and facilities, highlighting their international presence and broad range of nuclear services, noting their growth beyond being primarily a mixed waste treatment vendor. She also highlighted recent waste challenges and accomplishments in the area of handling very large and very high dose waste items, including TRU gloveboxes and Remote Thermal Generators (RTGs). Other recent challenges included handling classified components, including non-radioactive components, mercury treatment, and near term efforts to domestically demonstrate organic destruction capabilities. Renee indicated that Perma-fix's future focus involves international markets, given the current funding constraints that impeded significant volumes of mixed waste treatment in the US. She noted that many US technologies and successes can be exported to help address international challenges, including those in the mixed waste realm. In closing, she acknowledged that new mixed waste challenges will likely arise through continued cleanup of the DOE complex, but that mixed waste treatment is relatively low among the DOE risk-based priorities.

Paul Larsen presented "Perspectives on Mixed Waste Treatment", which provided an overview of the mixed waste treatment capabilities of Energy*Solutions*. He noted that about a decade ago, there was a surplus of mixed wastes requiring treatment, but no significant backlog exists today. There is, in fact, a surplus of treatment capacity and a shortage of funding to support treatment of those wastes that are in inventory. He provided a graph presenting a four year trend in utilization of the Energy*Solutions* treatment systems, which illustrated the three major treatment systems (VTD, macroencapsulation, and stabilization) have been consistently under subscribed. He described in detail the PCB and mercury treatment capabilities at the Clive, UT facility, noting that mercury treatment is a primary focus for Energy*Solutions* in the near term ("mercury is the future"). Paul also noted that Energy*Solutions* is continuing to grow its Barnwell capabilities, including resin processing.

Ken Grumski provided a detailed overview and status of the Waste Control Specialists disposal facilities. He summarized the respective capabilities of the compact facility and federal waste facility. Regarding the compact facility, he reported the first waste was emplaced in April 2012, and there are 38 nuclear power stations and 2 decommissioning plants under contract to ship waste to the facility for disposal. He highlighted that through January 2013, over 11,500 cubic feet had been disposed, and more than 90 Type B shipments had been received. He also noted that WCS has the ability to receive and safely handle components with very high doses, citing receipt of irradiated hardware with greater than 12,000 R/hr. Regarding the federal waste disposal facility, he explained it has been fully operational and ready to receive wastes since

September 2012, but no federal wastes have yet been received and disposed. The facility can now receive wastes by rail. He described the potential advantages for in-cell macro-encapsulation and disposal for certain DOE mixed waste streams. Ken also explained various approved and pending license amendments. Of note, WCS expects approval in the near future for federal facility operations: for receipt of bulk waste, limited volumes of depleted uranium disposal, increased technicium-99 content, and ability to receive additional Special Nuclear Material quantities. Ken closed with a comparison of specific features of the WCS federal facility cell with the DOE disposal facility at Area 5 of the Nevada National Security Site (NNSS).

Jhon Carilli summarized the NNSS disposal site and waste acceptance program and emphasized specific policy and programmatic matters related to its operation. He highlighted recent successes in obtaining waste profile approvals for challenging streams. He emphasized that the program is positioned to assist in the resolution of issues associated with DOE wastes planned for disposal at NNSS. He also emphasized the importance that approved generators maintain a high quality and compliant program so that the State of Nevada regulators can have continued confidence in NNSS disposal operations. He noted that often the impediments to disposal are more policy in nature than technical. He recommended DOE generators ensure adequate coordination with the Nevada Site Office regarding press releases and public announcements related to NNSS-bound wastes. As in years past, he offered the field support services available through his office to facilitate resolution of issues impeding waste disposal at the NNSS facilities.

Questions and Answers

Questions were entertained after each speaker.

There was considerable interest in matters related to whether site treatment plans are "closed" when all legacy inventories are resolved. Discussion among participants and attendees concluded the general practice is to maintain the STP process, even if new streams are not added each year.

There was interest and discussion in the LANL practice of using the ID/IQ contract as a prime vehicle to reduce overhead adders.

There was also interest in sharing information related to the new macro-encapsulation technique developed by ITG.

An area of particular interest was the pending license amendments related to the WCS Federal Waste Facility, especially the one enabling unlimited SNM gram receipts provided transfers from the transport conveyance go directly to disposal, and thus the material is not considered in inventory per the site's license restrictions.

Following the presentations, there was a brief discussion of the future focus of the panel, which included projections that 2014 topics would include discussion of the revision of the DOE Order 435, *Radioactive Waste Management Order*, potential consolidation of waste streams, renewed emphasis on policy approvals prior to generation of no-path wastes, new contract vehicles,

policy considerations in selecting offsite disposal facilities, and discussion of waste stream challenges for all radioactive waste types (i.e., LLW, MLLW, TRU).