EFCOG Best Practice #241

Best Practice No.: AMWTP-01

Facility: Advanced Mixed Waste Treatment Plant (AMWTP)

Best Practice Title: Use of Real Time Radiography for Verification of LLW/MLLW

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Brief Description of Best Practice:

Fluor Idaho routinely applies real-time radiography (RTR) to the waste characterization process for low-level waste (LLW) and mixed low-level waste (MLLW) streams to visually verify waste container contents and provide a greater level of assurance of compliant waste packages. In addition to RTR, non-destructive assay (NDA), flammable gas analysis (FGA), and visual examination (VE) waste characterization processes are performed effectively at multiple well-equipped Idaho Cleanup Project facilities by highly trained and qualified personnel, using well-established and vetted procedures. Rigorous transuranic waste (TRU) characterization processes, such as RTR, NDA, and VE, are commonly also applied to LLW and MLLW streams, which go above and beyond practices typically implemented at other sites. RTR processes procedurally require replicate scans and subsequent independent observation for verification.

Why the Best Practice was used?

Performing RTR using Waste Isolation Pilot Plant (WIPP) certified systems allows the AMWTP to apply the most rigorous characterization methods available to ensure compliance for waste packages. This practice provides supplemental characterization information to newly generated waste packages that have been packaged in accordance with established waste packaging procedures by trained and qualified waste packagers. The supplemental information allows Fluor Idaho to verify the accuracy of waste package inventory sheets completed during waste packaging and confirms the absence of prohibited or restricted items.

What are the benefits of the Best Practice?

The performance of supplemental RTR provides an additional verification step thus ensuring that waste packages meet the waste acceptance criteria for the intended destination Treatment, Storage, or Disposal Facility (TSDF)**.**

What problems/issues were associated with the Best Practice?

As the AMWTP characterizes and certifies TRU waste packages to WIPP, the deployment of this best practice to LLW/MLLW was aided by the availability of the needed RTR equipment and highly trained staff. The only real issue associated with applying this process to LLW/MLLW is scheduling RTR time so as not to conflict with the TRU Waste Certification process.

How the success of the Best Practice was measured:

Since implementing supplemental RTR analysis for LLW and MLLW, Fluor Idaho has had the opportunity to identify potential characterization issues prior to waste certification and resolve them. They have also had the opportunity to identify weak points in the work process and work with waste management to address issues in future evolutions and enhance the clarity of waste packaging paperwork for a better product.

Description of process experience using the Best Practice:

Comparing RTR data for LLW/MLLW containers with the inventory sheets being completed during waste packaging has allowed Fluor Idaho to identify any suspect conditions and resolve them with the RTR operators and Waste Packagers prior to package certification and, if needed, to remediate the potential issue or change the destination to a TSDF more suited to receive the waste in its current configuration. The use of this best practice has helped refine the final waste product and to enhance safety and compliance by proactively identifying and resolving waste characterization and packaging issues.