Transition of the LANL Mixed Waste Management Process
LA-UR-14-21172
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3/05/2014
LANL Enduring Waste Management Program Prior to FY2010

- What is the LANL Enduring Mission Waste Management Program?
LANL Enduring Waste Management Program Prior to FY2010

- The LANL Enduring Mission Program is the responsible organization that manages all newly generated waste types.
  - LLRW
  - MLRW
  - Other Mixed Waste
  - Problematic waste streams
  - Newly Generated (NewGen) TRU
  - Hazardous/Chemical (Haz/chem)
  - Industrial waste
LANL Enduring Waste Management Program Prior to FY2010

- What did the LANL Enduring Mission Waste Management Program look like before FY2010?
LANL Enduring Waste Management Program Prior to FY2010

- The LANL Waste Management Program was controlled by three separate Associate Directorates.
- Each of the nine Facility Operations Directorates (FODs) owned its own waste management program.
- 95% of all LLRW was disposed of on-site at the Technical Area 54 disposal cell.
LANL Enduring Waste Management Program Prior to FY2010

- LANL had three waste tracking and data management software programs that did not interface with each other.
- In short, the LANL Enduring Waste Management Program was inwardly focused, decentralized, and running below its maximum operational efficiency.
LANL Enduring Waste Management Program Prior to FY2010

- Up to FY2010, this allowed LANL to generate waste that we were able to either dispose or handle on-site.
- Without this on-site handling capability, LANL would have generated waste streams that would be problematic to ship off-site to a TSDF.
- Three things changed that forced LANL to redirect the majority of all waste type to off-site TSDFs for treatment and disposal:
  - Closure of TA-54, Area G disposal cell for on site waste disposal
  - Implementation of the LANL RCRA Permit
  - Implementation of the Site Treatment Plan with New Mexico Environmental Division (NMED)
LANL Enduring Waste Management Program Transformation FY2010-FY2013

- In FY 2010, LANL began site wide, Waste Management Program cultural and operational shift.
- The LANL Enduring Waste Management Program is now managed by one Associate Directorate, the Associate Directorate of Environmental Safety and Health (ADESH).
- ADESH certifies, manages, and supports single, site wide Enduring Mission Waste Management Program.
LANL Enduring Waste Management Program Transformation FY2010-FY2013

- LANL has significantly reduced the generation of all routine waste types by implementing innovative waste reduction, reuses, reclassification, and other waste minimization strategies.
- LANL now has one master waste tracking and data management software program call WCATS.
- 99% of all waste is disposed of off-site at TSDFs.
- At the end of FY2013, the LANL Enduring Waste Management Program has now become outwardly focused and centralized, and has vastly improved its operational efficiency.
LANL Enduring Waste Management Program Transformation FY2010-FY2013

- To shift to an off-site focused disposal strategy, the LANL Enduring Mission Waste Management Program had to:
  - Improve waste planning at the front end of the waste generation process;
  - Improve waste characterization data quality;
  - Plan and implement efficiently waste container selection, purchasing, and delivery program;
  - Train Generators and Waste Management personnel on new off-site TSDF WAC requirements; and
  - Maximize the use of off-site TSDFs for LANL waste streams.
Radioactive Waste Disposition

LANL Radioactive Waste Shipments – 2013

Low-Level Waste
Mixed Low-Level Waste
Transuranic Waste
LANL Enduring Mission Waste Program and the TRU 3706 Project

- The LANL TRU 3706 Project contains waste processing facilities that sort, segregate, size reduce, repackage, and reclassify legacy transuranic waste.
- Reclassification of TRU waste as LLRW or MLRW is supported but the LANL Enduring Mission SCO and NDA programs.
LANL Enduring Mission Waste Program and the TRU 3706 Project

- The LANL Enduring Mission Program also supports TRU reclassification by shipping the MLLW off site for final disposition.
LANL Enduring Mission Waste Management Program Challenges

- Working off Legacy (Past) Waste;
  - Poorly characterized
  - May be improperly packed against current disposal site WAC and DOT regulations
  - Not certified against disposal site WAC
  - Waste data incomplete

- Results:
  - Required sorting, segregation, repackaging, treatment,
  - Compliance issues, no-path wastes, high costs.
Problematic Waste Disposition

- The former waste management process has left LANL with two problematic waste streams;
  - Waste Stream #1 contains tritium and tritium contaminated lead components (~100,000 Ci) that have >5% flammable gas, >10% void space, free standing liquids (~10%), in a non-DOT certified, pressurized container (>1.5 ATM)
Problematic Waste Disposition

- Waste Stream #2 contains tritium and tritium contaminated elemental mercury (~80,000 Ci), contaminated lead components, >10% void space, and free standing liquids (~10%).
Problematic Waste Disposition

- Waste Stream #1 has two likely disposal paths
  - LANL on-site sorting and segregation
    - Find a facility willing to take in the waste for treatment
    - Apply for LANL RCRA permit modification
    - Transfer the material to the facility
    - Open the container to:
      - Vent the built up hydrogen
      - Remove the lead components
      - Fill the void space
      - Solidify the liquids
      - Repack into DOT certified container for final disposal
  - Estimated timeframe for completion: 4+ years
Problematic Waste Disposition

- Waste Stream #1 second possible disposal path
  - Of-site TSDF sorting and segregation
    - Eliminate flammable gas classification
    - Find suitable cask (such as the 10-160B)
    - Transfer the material to the facility
    - Open the container to:
      - Remove the lead components
      - Fill the void space
      - Solidify the liquids
      - Repack into DOT certified container for final disposal
  - Estimated timeframe for completion: 2+ years
Problematic Waste Disposition

- Waste Stream #2 also has two likely disposal paths
  - On-site sorting and segregation
    - Find a facility willing to take in the waste for treatment
    - Apply for LANL RCRA permit modification
    - Transfer the material to the facility
    - Open the container to:
      - Remove elemental mercury
      - Remove the lead components
      - Fill the void space
      - Solidify the liquids
      - Repack into DOT certified container for final disposal
  - Estimated timeframe for completion: 4+ years
LANL Enduring Mission Waste Management Program Challenges

- Waste Stream #2 second possible disposal path
  - Of-site sorting and segregation
    - Transfer the material to the facility
    - Open the container to:
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Lessons Learned and the Future of LANL Waste Management

- LANL now works closely with Generators before the waste is created to define costs and disposal paths.
- Waste at LANL is now generated, characterized, and packaged in accordance with disposal site WAC and DOT Regulations.
- LANL has reduced overall waste residence time to prevent legacy issues.
- LANL has decreased treatment costs by proper sorting and segregating potential mixed waste components.
Questions or Comments?

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