

70 YEARS OF CREATING TOMORROW



Los Alamos
NATIONAL LABORATORY

Transition of the LANL Mixed Waste Management Process LA-UR-14-21172

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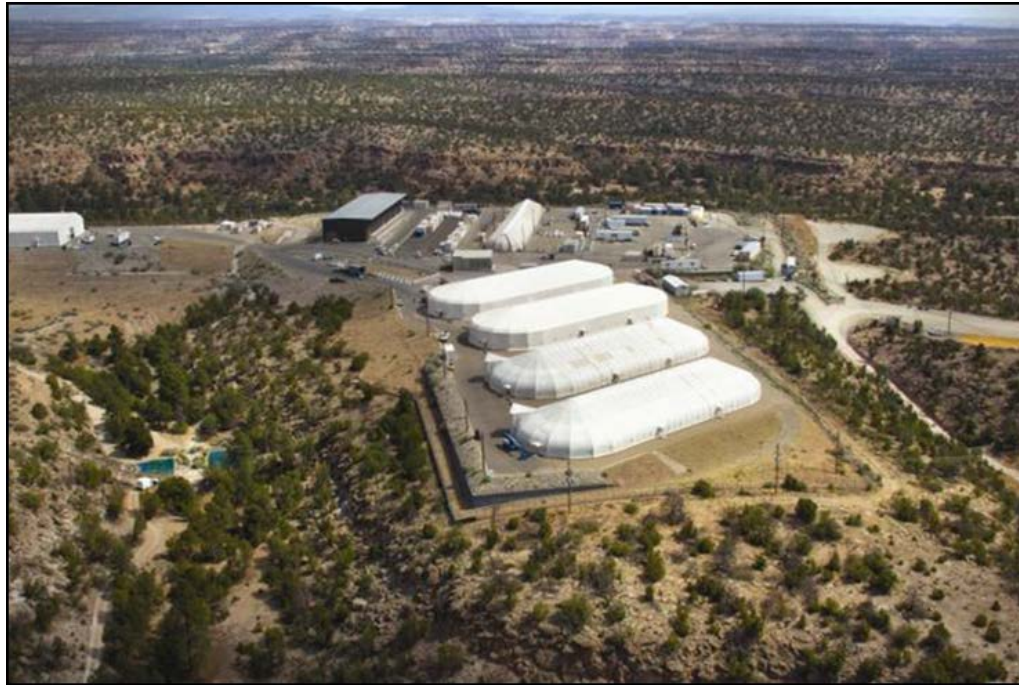
3/05/2014

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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

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LANL Enduring Waste Management Program Prior to FY2010

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



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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.

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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.



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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)

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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.

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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.

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LANL Enduring Waste Management Program Transformation FY2010-FY2013

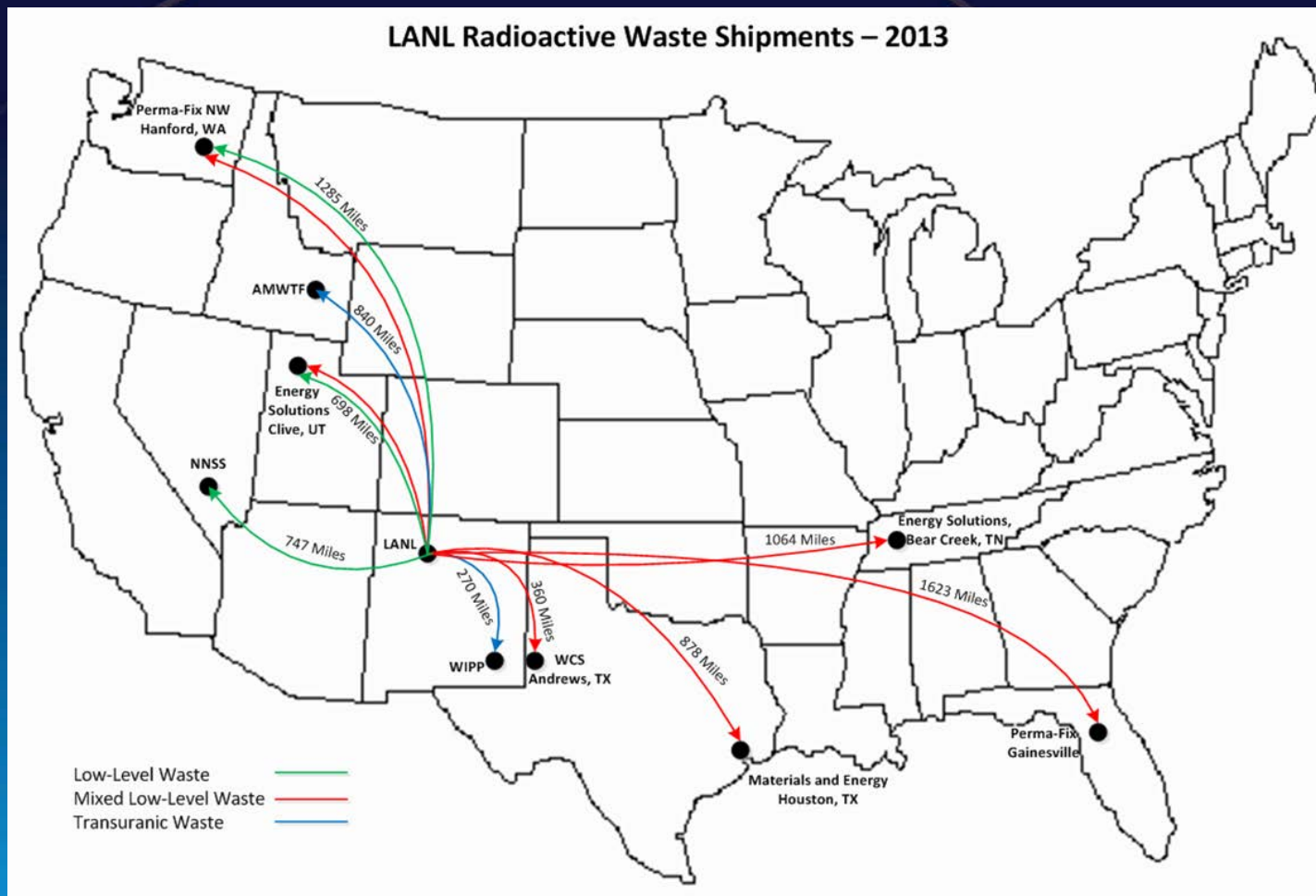
- To shift to an off-site focused disposal strategy, the LANL Enduring Mission Waste Management Program had to:
 - Improve waste planning at the front end of the waste generation process;
 - Improve waste characterization data quality;
 - Plan and implement efficiently waste container selection, purchasing, 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.

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Radioactive Waste Disposition



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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.

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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.



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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.

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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)

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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%).

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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

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Problematic Waste Disposition

- Waste Stream #1 second possible disposal path
 - Of-site TSD/S 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

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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

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LANL Enduring Mission Waste Management Program Challenges

- Waste Stream #2 second possible disposal path
 - Of-site sorting and segregation
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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.

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Questions or Comments?



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