



NTS Disposal of SRS Mixed Low Level Waste

Waste Management 2007



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Background

- FY 06 Regulatory commitment to disposition 1000 cubic meters of TRU waste or reclassified TRU waste (4400 drum equivalents)
- 500 -1000 drums reclassified from Mixed TRU to Mixed LLW
- Drums rejected as TRU as part of the WIPP certification process (<100nCi/g)
 - SRS had formerly managed waste 10 -100nCi/g as TRU
- Drums generated from following facilities at SRS
 - HB-Line processed Pu-238 to produce Heat Source Oxides
 - FB-Line processed Pu-239
 - Primarily job control waste meeting RCRA debris definition
 - 10 – 100 nCi/g exceeding NRC Class A limits

Path Forward/Barriers

- Need: Treatment and Disposal capacity for 10-100 nCi/g alpha contaminated mixed waste
 - WIPP prohibited due to elimination of 'load management' practice
 - > Class A prohibited at Energy Solutions (Clive) disposal
- NTS permit for Mixed Waste approved in December '05
- Decision made to treat at SRS and dispose at NTS
- Several barriers to overcome:
 - Identify and procure treatment container to meet LDR, DOT, and NTS WAC
 - Identify and RCRA permit a treatment location
 - Characterization approach
 - 90% Fill requirement

Container/Treatment

- Identification and procurement of treatment container
- Waste met RCRA definition of debris
- Therefore treatment standard could be met via macroencapsulation
- Evaluated available macro technologies
 - HDPE container
 - Stainless Steel box
- Selected Stainless Steel (304L) over HDPE due to low risk in implementation
 - 92 cubic feet (72" X 46" X 53")
 - Tare Weight: 695 lbs
 - Payload capacity: 6000 lbs
 - IP-2 qualified via drop test
 - Welded closure system (lid to box)
- SS box reviewed and approved by NTS as meeting 40 CFR



92 ft³ stainless steel boxes

Stainless Steel Macro Boxes



Treatment Location

- Selected location required:
 - Active ventilation and confinement
 - RCRA Treatment Permit
- Selected facility previously used for LLW compaction
- Sought temporary treatment permit from State regulator
- Regulator agreed to transfer existing treatment capacity from TRU permitted facilities
- Transfer was temporary for up to one year

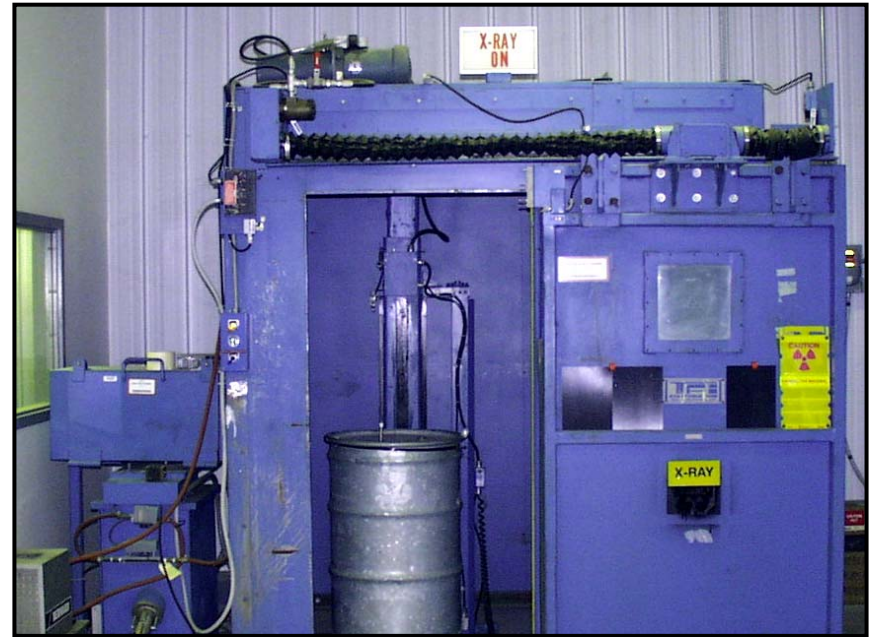


Characterization

- NTS Mixed Waste Acceptance Criteria new to complex
- RCRA
 - WIPP Acceptable Knowledge Report used as the basis for RCRA Characterization
 - CCP-AK-SRS-4 for SVRS-HBLMW0601
 - RCRA constituents
 - D Characteristic
 - F Listed
 - Meets definition of debris
- Radiological
 - All drums assayed via IQ3 NDA
 - WIPP certified 30 minute count
 - 6 minute 'fast scan'
 - 6 minute fast scan required adding uncertainty (1.6 sigma)
 - Additional Radioisotopes scaled from Pu results

Prohibited Items

- All drums Scanned using Real Time Radiography (RTR)
 - Primary means of prohibited item identification
- RTR sheets for all drums reviewed by NTS WCO/CTF
- Visual Inspection during repackaging
- Rejected bags/drums segregated



Treatment and Closure

- All waste cuts unloaded from drums into SS box
- Contents inspected “through” the bag
- Stainless Steel boxes welded shut using site construction certified welders (Procedurally controlled by site procedures tied to ANSI standards)
- Certified Weld Inspection
- Issue: 90% Full Requirement
 - NTS WAC and permit require MW containers to be filled to 90%
 - Settling after packaging resulted in less than 90% full
 - NTS and Nevada developed position which allowed for <90% full at time of receipt if initially filled to 100% and verified by procedure and photographs, and container meets NTS package strength requirements
- Issue: Radioactive Lead Solids
 - Bags of lead lined gloves prohibited; required rad Pb treatment
 - Incidental lead lined gloves included in NTS debris shipments

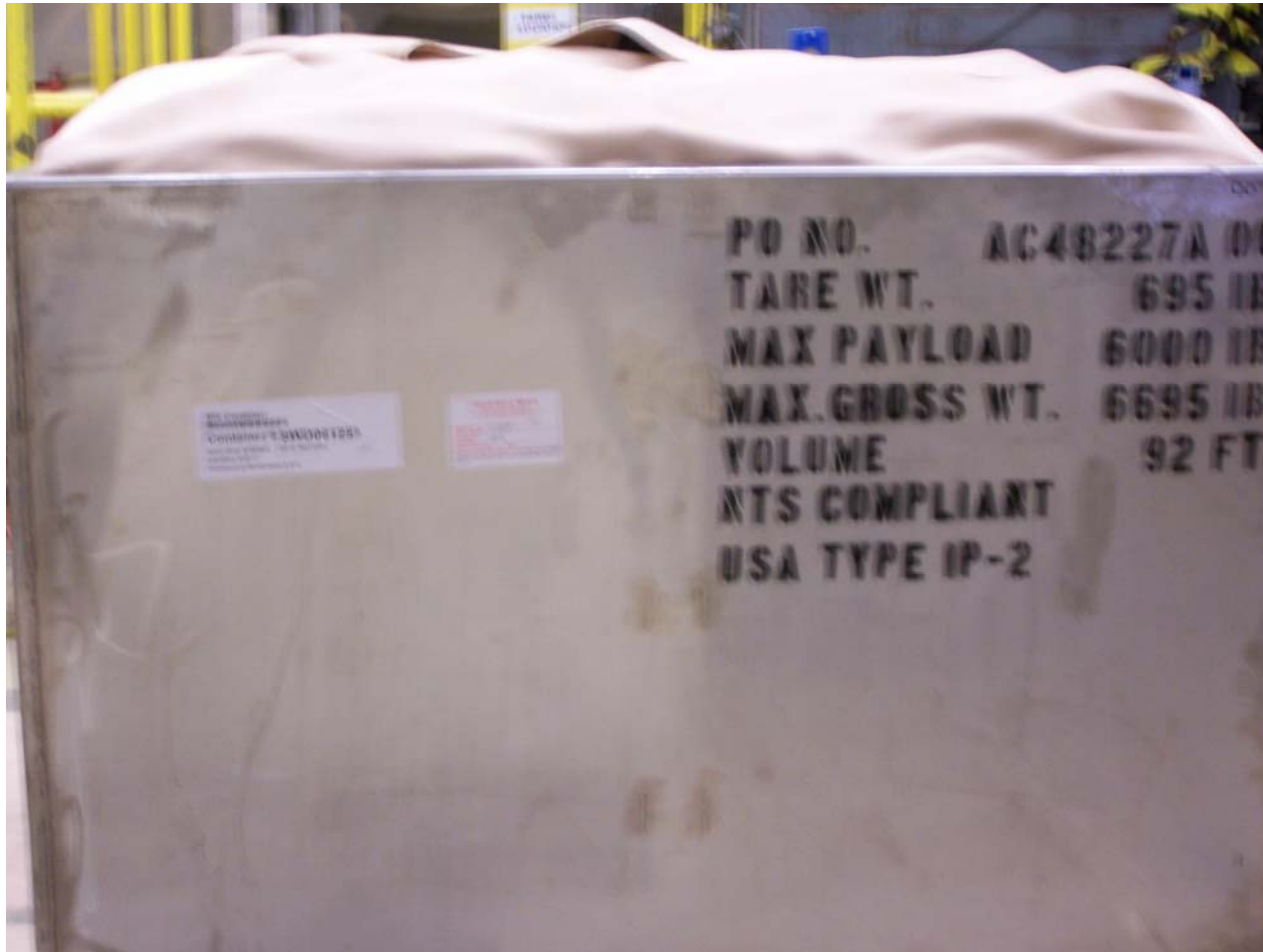
Treatment



Filled Macro Box Prior to Closure



Macro Box Filled and Ready for Lid Welding



Box Welded and Loaded on the Truck

- Approximately 500 drums treated
- 25 boxes shipped
- 4 Shipments made



- Overcame several barriers/issues while on a fast track
- Worked cooperatively with several parties including:
 - State regulators from SC and NV
 - Vendors
 - NTS
- Treated and shipped over 500 drum equivalents for disposal