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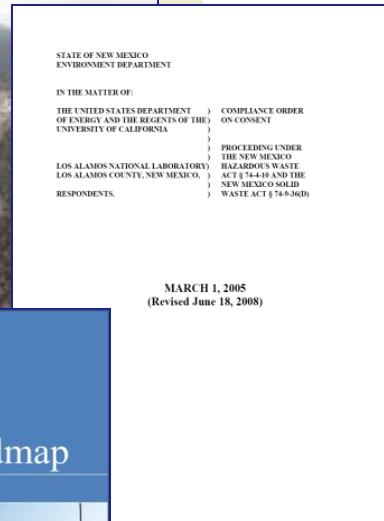
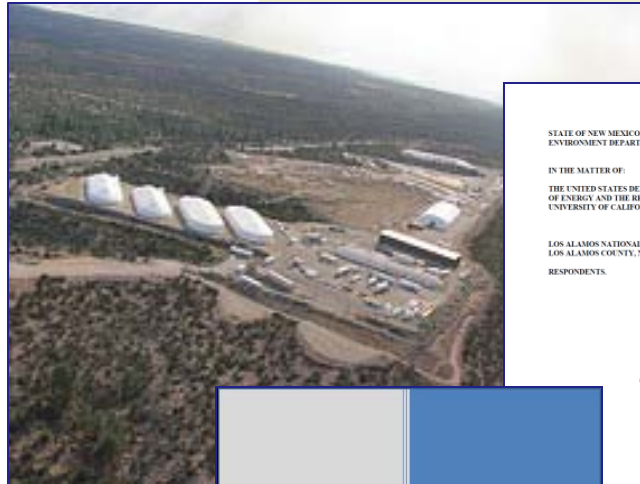
TRU Solid Waste Operations Area G Closure Planning Los Alamos National Laboratory



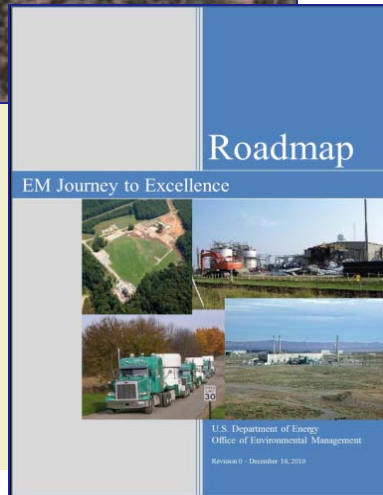
Dan Cox
August 2011

Legacy Waste Disposition Campaign Overview

Risk
Reduction



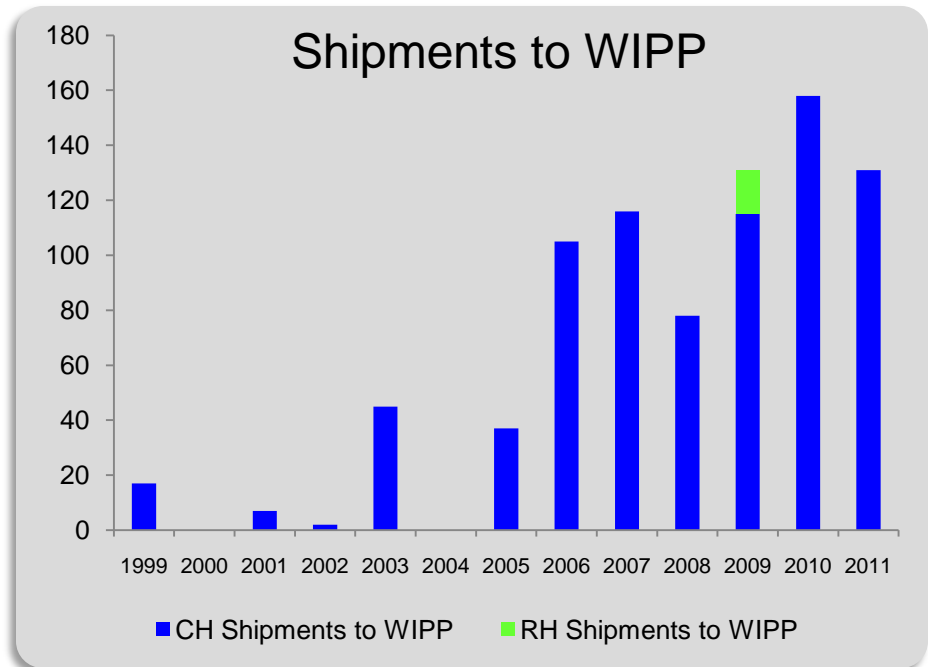
“EM Journey to
Excellence”



2005
Consent Order

Legacy Waste Disposition Campaign Overview

- History (1999-present)
- Over 121,000 PE Ci
 - 53,000 legacy
 - 68,000 new gen & OSRP
- Over 17,000 containers
 - 12,000 legacy
 - 5,000 new gen & OSRP

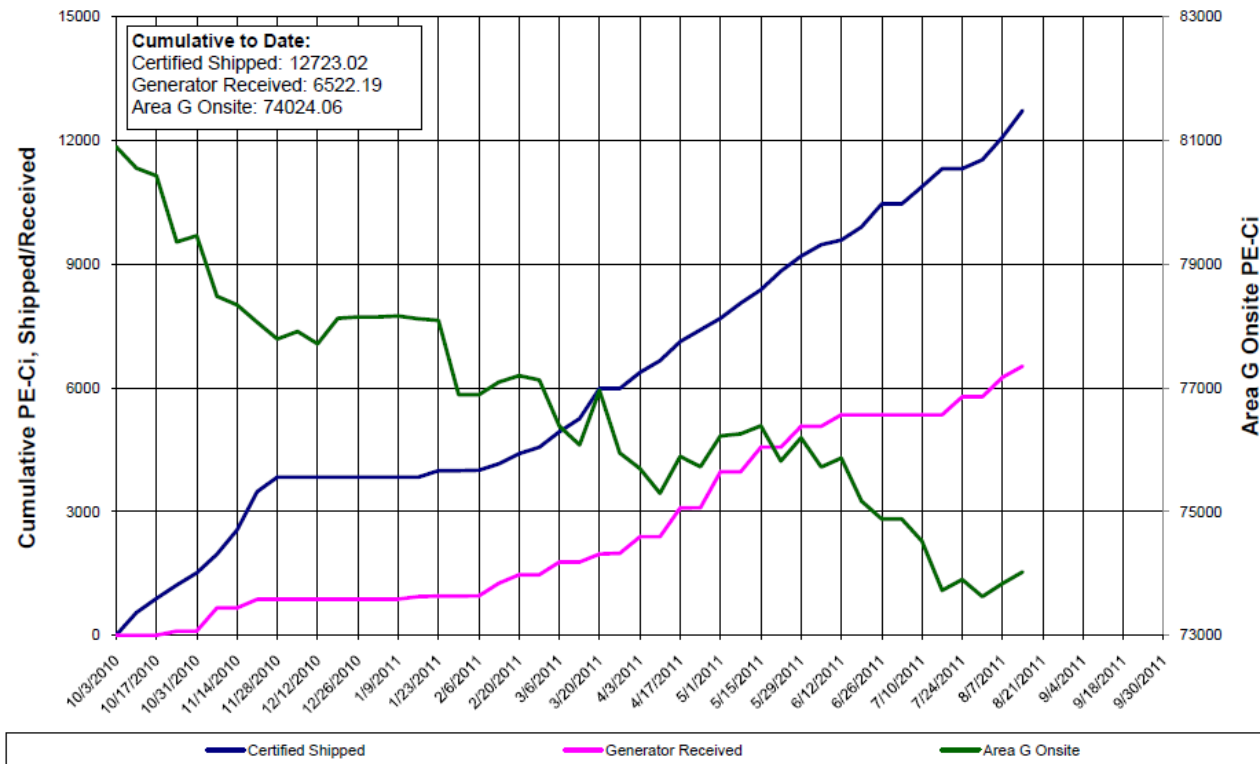


Record shipments in past 2 years and on track for a new record in 2011

Legacy Waste Disposition Campaign Overview

FY11 Risk Reduction

MAR Shipped/Received



Legacy Waste Disposition Campaign Overview

Repackaging (WCRRF)



Large Box Line (Dome 375)



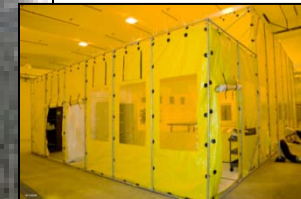
Small Box Line (Bldg 412)



Sort, Segregate, and Size Reduce (Bldg 412)



Storage (Area G)



Shipping (RANT)



Characterization
(CCP-Pad 10)
UNCLASSIFIED



Sludge and Cemented Containers (Dome 231)

Legacy Waste Disposition Campaign Overview

Repackaging and Sort, Segregate and Size Reduction Capabilities

Capability	Pre-2006	Current	Final	
WCRRF	< 56 PE Ci	300 PE Ci ECW	800 PE Ci ECW Implement in FY 11	IVR
Dome 231	< 0.52 PE Ci	2.5 PE Ci ECW	No Change	
Bldg 412 Drums	< 0.52 PE Ci	2.5 PE Ci ECW	No Change	
Bldg 412 Boxes	< 0.52 PE Ci	2.5 PE Ci ECW Approved	2.5 PE Ci ECW Readiness in FY 11	FRA
Dome 375 Boxes	TRU Storage	Empty Drum Storage	2.5 PE Ci ECW Readiness in FY 12	FRA
Drum Venting	Minimal controls	Not Authorized	BMD and >30' Standoff Readiness in FY 12	FRA

Equivalent Combustible Waste (ECW)

Blast Mitigating Device (BMD)

Implementation Verification Review (IVR)

Contractor Readiness Assessment (CRA)

Federal Readiness Assessment (FRA)

Legacy Waste Disposition Campaign Overview

Characterization Capabilities

Capability	Pre-2006	Current	Final
RTR-1	Operational	Refurbish Complete	Readiness in FY12 CRA
RTR-2	Operational	Operational	No Change
High Energy RTR	N/A	Pre-MSA <small>RED Team Review</small>	90 PE Ci ECW <small>Readiness in FY 11</small> CRA
HENC-1	Operational	Operational <small>Improved Uncertainty</small>	No Change
HENC-2	Operational	Operational <small>Improved Uncertainty</small>	No Change
Super HENC	N/A	Operational	No Change
Temperature Equilibrium Units	Dome 33	Dome 33 and Pad 10	No Change

Legacy Waste Disposition Campaign Overview

Shipping Capabilities

Capability	Pre-2006	Current	Final	
RANT	233 PE Ci	1840 PE Ci	No Change	
RANT MLU	25 PE Ci Waste Stream Limited	1840 PE Ci Approved	1840 PE Ci Implement in FY 12	IVR
Area G MLU	N/A	1100 PE Ci Pending Approval	1100 PE Ci Implement in FY 12	IVR

Mobile Loading Unit (MLU)

RANT crane availability > 90% in FY11 due to enhanced PM program

Legacy Waste Disposition Campaign Overview

Above Grade Inventory (as of 6/19/11)

Description	Volume (m ³)	MAR (PE-Ci)	Total Containers	Legacy Containers	New Gen Containers	Require Venting
Sludge Drums	122	168	468	436	32	152
Debris Drums	611	26,326	2,668	2,047	621	165
Cemented Monoliths	207	14,509	877	538	339	14
Cemented Cans	488	25,627	1,927	1,927	0	52
Salt Drums	14	741	66	15	51	0
10-100 MLLW	970	147	2,840	2,434	406	1
SWBs	516	4,886	272	163	109	0
FRPs/Crates/Metal Boxes	2,198	3,000	260	234	26	0
Bolas Grande	29	62	31	31	0	0
OSRP	46	4,393	221	0	221	0
Other Containers	10	30	36	2	34	23
TOTAL	5,211	79,889	9,666	7,827	1,839	407

Legacy Waste Disposition Campaign Overview

Below Grade Inventory (as of 6/19/11)

Waste Category	Description	Legacy Containers	Volume (m ³)	MAR (PE-Ci)
Trenches A-D	720 Drums at 30 Gallons Each	720	335	93,870
Pit 9	3,881 Drums and 197 Boxes	4078	1,560	6,019
Corrugated Metal Pipes (CMPs)	158 CMPs at 30" in Diameter by 20' Long	158	442	10,755
33 Lined Shafts	32 Shafts w/ RH hot cell debris; 1 shaft contains reactor vessel	33	3.4	97
Hot Cell Liners	5 shafts with RH hot cell lines	5	51	0.5
TRU with Tritium Packages	4 Tritium Torpedoes and 1 Tritium Tank	5	6.7	8
RH Canisters	1 Canister	1	1.0	1.5
TOTAL		5000	2,400	110,751

Legacy Waste Disposition Campaign Overview

Solution Package Approach

- 15 waste categories
- Approximately 60 waste solution packages
- Focus on container type
- Aligns processing and characterization

AG Cement - Cans	Container Issues Multiple Issues NDA-Uncertainty No Issues Overweight Unvented
AG Cement - Mono	CIN 01 Lead-Lined Monoliths CIN 02 CIN Monoliths Container Issues Overweight Unvented
AG Debris Boxes	Corrugated Metal Boxes Haz Cat 3 Boxes 412 > 3.4 to < 8.2 m3 Haz Cat 3 Boxes 412 < 3.4 m3 Haz Cat 3 Boxes 412 > 8.2 m3 Large HC3 Boxes - Remed in Place Metal Boxes > 4x4x6 MLLW Boxes < 8.2 m3 No Issues Rad Boxes 412 > 3.4 to < 8.2 m3 Rad Boxes 412 < 3.4 m3 Rad Boxes 412 > 8.2 m3
AG Debris Drums	>200 mR/Hr Container Issues Misc Issues Multiple Issues NDA-Rad NDA-Uncertainty No Issues Overweight PID in Matrix Tritium Unvented WIPP WAC Issues

AG Solids	>200 mR/Hr Container Issues H-Gas Issues Misc Issues Multiple Issues NDA-Rad No Issues PID in Matrix Unvented
BG Cement - Cans	Process Below Grade Containers
BG Cement - Mono	Process Below Grade Containers
BG CMPs	Process Below Grade Containers
BG Debris Boxes	BG Haz Cat 3 Boxes 412 < 8.2 m3 BG MLLW/LLW Boxes BG TRU Boxes
BG Debris Drums	BG MLLW/LLW Drums BG TRU Drums
BG HC3 Canisters	Process Below Grade Containers
BG Hot Cell Liners	Process Below Grade Containers
BG RH 17	Process Below Grade Containers
BG Solids	Process Below Grade Containers
BG Trenches	Process Below Grade Containers

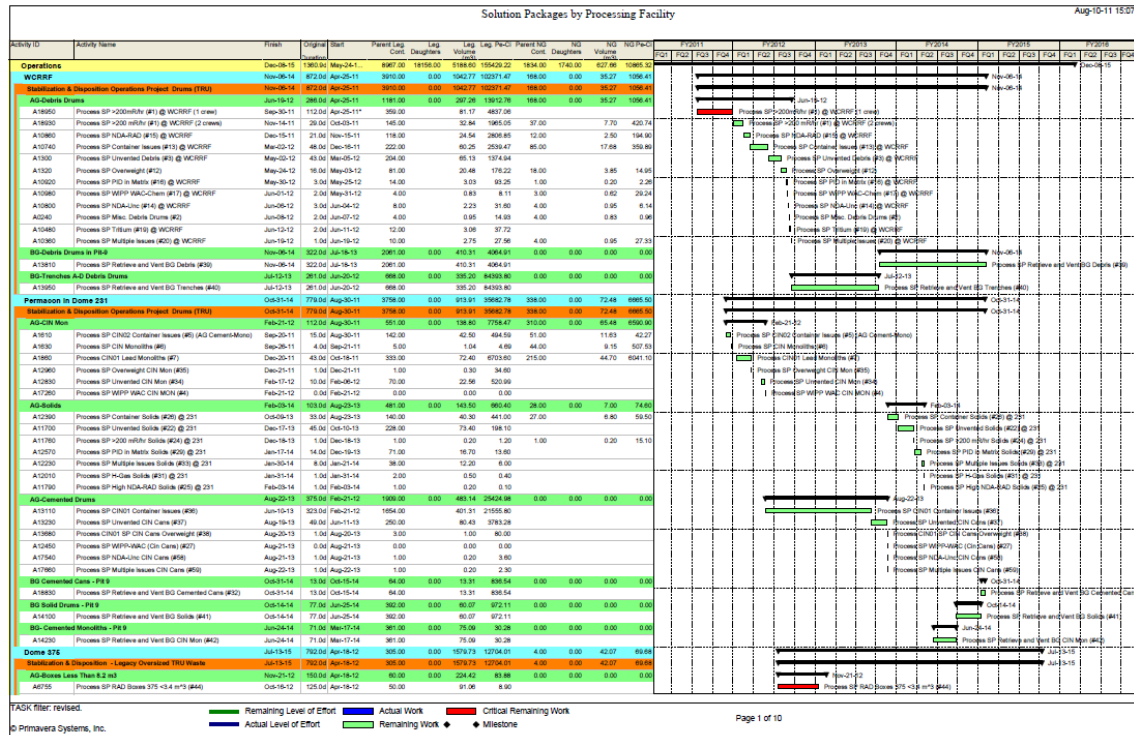
Legacy Waste Disposition Campaign Overview

Solution Package Approach

- Priorities established between CBFO, LASO, CCP, and LANL as

1. Keep remediation lines processing
2. Feed highest MAR first

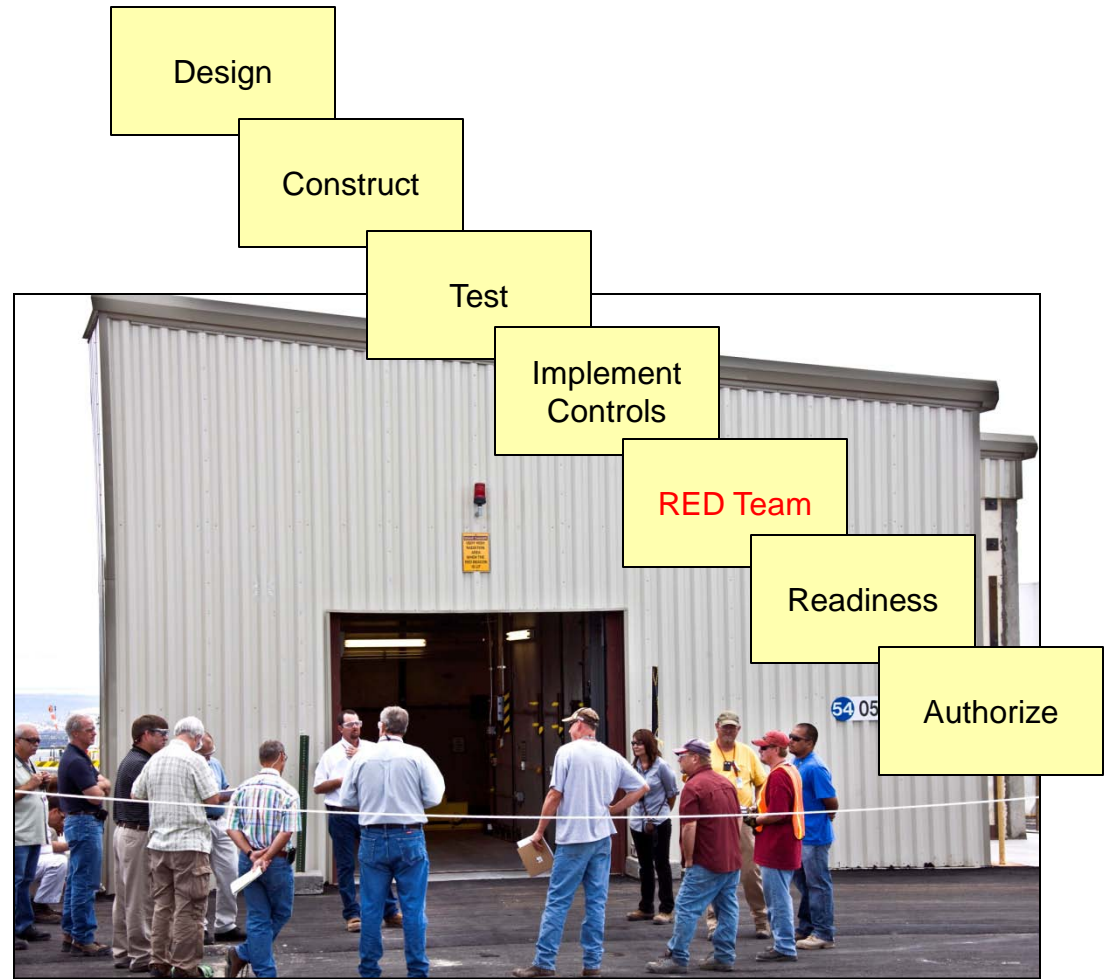
- Integrated LANL and CCP schedule
- Key metrics shifting from number of shipments to cubic meters and PE curies shipped



Legacy Waste Disposition Campaign Overview

Readiness Improvements

- RED team process
 - Team of industry experts (multiple sites and corporations)
 - Includes site visits to operating units
 - Deployed prior to MSA
 - Not only identify, but help fix
 - Pilot on High Efficiency RTR
 - Excellent results



Worker Safety Controls

Waste Characterization, Reduction and Repackaging Facility (WCRRF)

- Drum remediation operations authorized at <300 PE Ci ECW
- Glove box fire suppression system installed in 1st Qtr FY11
- Implementation verification review (IVR) to authorize <800 PE Ci planned in FY11
- Control set largely unchanged from 2007 ORR



Worker Safety Controls

RANT (TRU shipping facility)

- Enduring facility
- 12' lifting restriction
- Current annual update being implemented



Planned improvements

- Electric trailer jockey (ordered)
- MAR separation (reduced aircraft crash to < 25 rem)
- Pre-assembled payloads
- Enhanced crane PM program

Worker Safety Controls

Dome 231 Permacon

- Sort , segregate and size reduction (SSSR) operations authorized at <2.5 PE Ci ECW
- Prohibition on opening sealed inner glass or metal containers
- Combustible controls (fuel packages and liquid impediments)



Worker Safety Controls

Building 412

- Sort, segregate and size reduction (SSSR) operations authorized at <2.5 PE Ci ECW
- Prohibition on opening sealed inner glass or metal containers
- Combustible controls
- Box remediation operations authorized at <0.52 PE Ci
- Federal readiness assessment in FY11 to upgrade box remediation operations to <2.5 PE Ci ECW



Worker Safety Controls



Worker Safety Controls

High Energy Real Time Radiography (HE RTR)

- <90 PE Ci ECW
- Vehicle barriers
- Standard industrial hazards



Worker Safety Controls

Dome 33 - Drum Venting

- >30' personnel standoff distance
- Non-sparking equipment
- Blast mitigation controls
 - “Doublepack”
 - Lid restraint device



Worker Safety Controls – Trenches A-D

Trenches A-D

- Dirt removal – standard controls
- Drum removal – critical lift
- Unvented drums – vented 55 gal. over-pack
- Process in WCRRF – existing controls
- MAR control – 1,500 PE Ci at retrieval process area
- Limit above grade MAR



Worker Safety Controls – Trenches A-D

Trenches A-D



Worker Safety Controls – Trenches A-D

Trenches A-D



Worker Safety Controls – Pit 9

Pit 9

- Remove dirt cover in sections – standard controls
- Adjust MAR inventory as uncovered
- Assay to ensure TRU
- MAR control – 1,500 PE Ci at retrieval process area
- Unvented drums – 55 gal. vented over-pack
- Process in WCRRF, Dome 231, Bldg 412, or Dome 375
- Placement occurred when TRU was >10 nCi/gm (Expect large % to be LLW or MLLW)



Worker Safety Controls – Pit 9



Worker Safety Controls – Corrugated Metal Pipes (CMP)

Corrugated Metal Pipes (CMP)

- Remove dirt cover in sections – standard controls
- Non-combustible and non-dispersible
- Adjust MAR inventory as uncovered
- Divide each 20' long CMP into 5 sections
- Pack into standard waste boxes
- Process in confinement



Storage Strategy for Newly Generated TRU Waste

- New approach and system plan includes shipping SNG
- Investment in generator's process resulting zero rejects
- Plan is to utilize Area G until new TRUWF is ready



LANL TRU Program - Reducing Risk

