



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

WIPP Facility Uniqueness

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018 Panel: US DOE WIPP Lessons Learned and
Return to Operations Following 2014 Operational
Incidents

Waste Management Symposium
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An AECOM-led partnership with BWXT and AREVA



Agenda

- National Solution
- WIPP Description
- Salt Formation
- Ground Control
- Radiological Contamination
- Ventilation
- Nuclear vs. Mining Culture
- Regulatory Framework
- Balancing Competing Priorities



WIPP is a National Solution



Quick Facts (as of Feb. 23):

- **Opened: March 26, 1999**
- **11,894 shipments received**
- **91,053 cubic meters of waste disposed**
- **171,176 containers disposed in the underground**
- **Over 7.5 miles of accessible areas of the underground**

WIPP is America's only deep geologic repository for the permanent disposal of defense-generated transuranic (TRU) radioactive waste left from research and production of nuclear weapons.

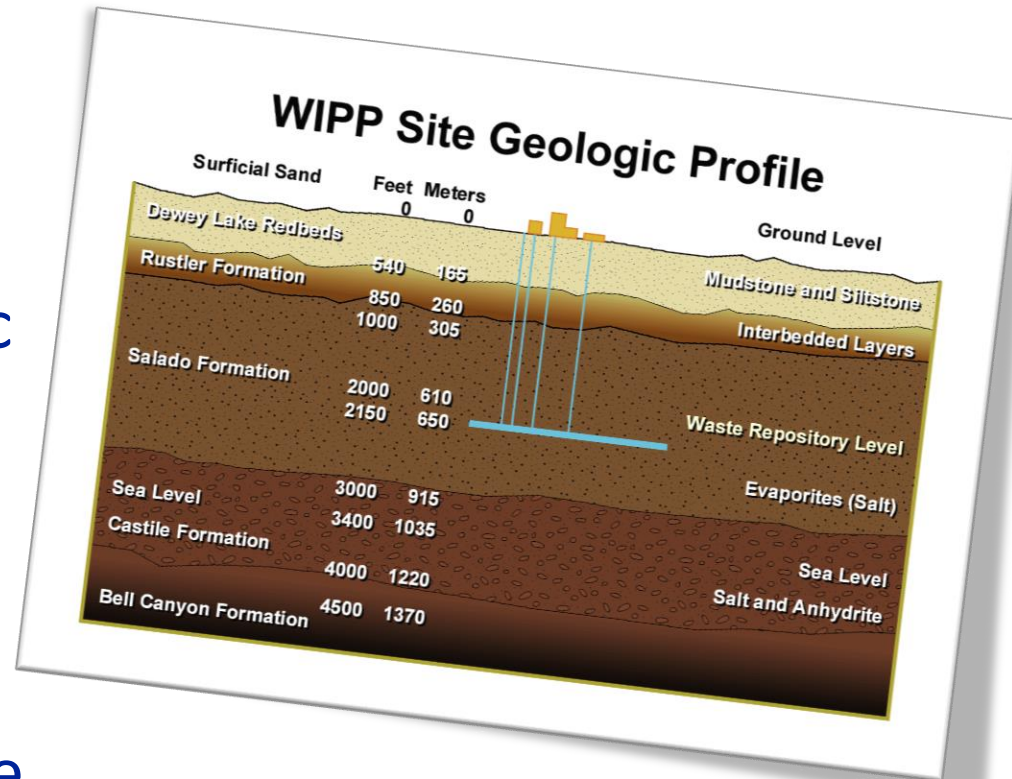
Description

- 10,240 acre facility located in Eddy County (SE New Mexico)
- Deep geological repository
- Mined within a 2,000 foot thick salt formation which begins approximately 850 feet beneath the surface
- Formed 250 million years ago (Permian Era)
- 2,150 feet beneath the ground surface
- RCRA permitted facility
- Land Withdrawal Act
- Stable geological area with no flowing water



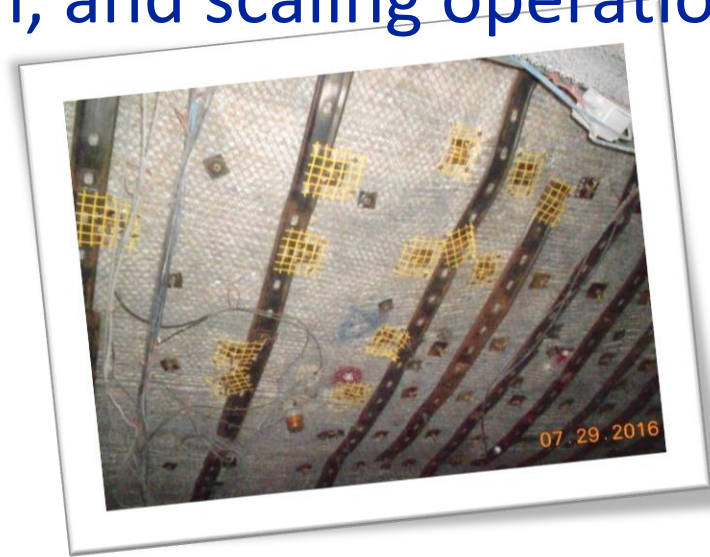
Salt Formation

- Stable geological area
- Salt is relatively easy to mine
- Rock salt heals its own fractures due to its plastic qualities
- Encapsulates waste
- All salt surfaces under 2000 psi
- Floor, walls and ceiling are continually moving to close open areas



Ground Control is Unique to WIPP

- Rock falls are potentially the single highest hazard to workers and the WIPP mission
- Ground is constantly moving
- Requires daily inspections
- Re-milling of floors, bolting and bolt replacement, installation of chain mesh, and scaling operations



Dealing With Radiological Contamination

- Moving salt rock vs. facilities with walls
- Salt matrix
 - Challenges survey techniques
 - Decontamination techniques challenged
- Only effective decontamination technique is physical removal of contaminated salt surfaces
- Water spray takes advantage of hygroscopic properties of salt to encapsulate contamination in the salt matrix
- Resuspension risk remains
- Mine is self-healing over time (scaling, hygroscopic effects)



Ventilation



- Unfiltered capacity of original system – 520,000 cfm
- Filtered capacity
 - Underground ventilation system – 60,000 cfm
 - Interim ventilation system – 54,000 cfm
- Required for air quality
 - Removes VOCs off-gassing from waste containers
 - Removes carbon monoxide and provides fresh air
- Provides confinement for radiological contaminants
- Limiting resource for occupancy, maintenance, ground control and operations
- Unlike fixed nuclear facilities, air volumes and location are routinely changed to support different activities

Nuclear vs. Mining Culture



- WIPP is like no other nuclear facility in the DOE complex
- No where else do nuclear workers have to be concerned about rock falls
- Ground control continues as one of our biggest challenges
- Over past three years we have worked to instill the rigor of nuclear conduct of operations
- Work is more challenging since workers are now working in contaminated environment



Snapshot of Regulatory Framework

DOE	Documented Safety Analysis; Protection of Workers and Public; National Environmental Policy Act
EPA	Compliance Certification (40 CFR 194); PCB Permit
NMED	Hazardous Waste Facility Permit; Discharge Permit
NRC/DOT	Certificate of Compliance for Shipping Containers; Disposal Container Standards
MSHA/OSHA/DNFSB	Mine Safety; Occupational Safety
C & C Agreement	Transportation Coordination; Route Designation
Corporate	Customer support; governs Limited Liability Company

Balancing Competing Priorities

- Ground control and continuous maintenance of underground systems
- Down posting of contaminated areas
- Preparation for resumption of mining operations
- Ventilation continues to be a limiting factor
- Waste emplacement
- Working to “New Normal”



Questions & Answers

