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Perspectives on Plugging and Sealing a Salt Repository

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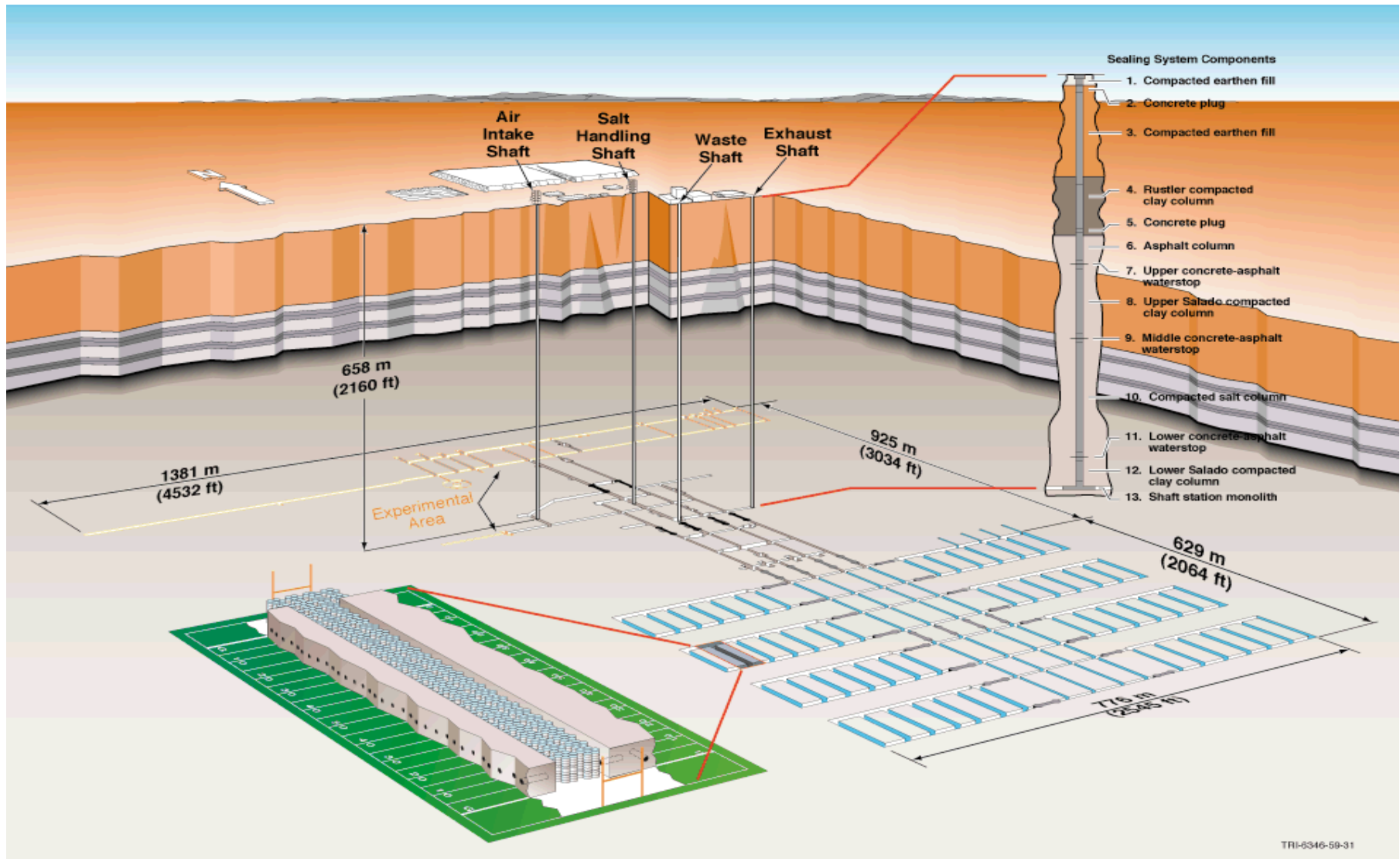
4th US/German Workshop on
Salt Repository Research, Design and Operations

Berlin, Germany

September 17-18, 2013

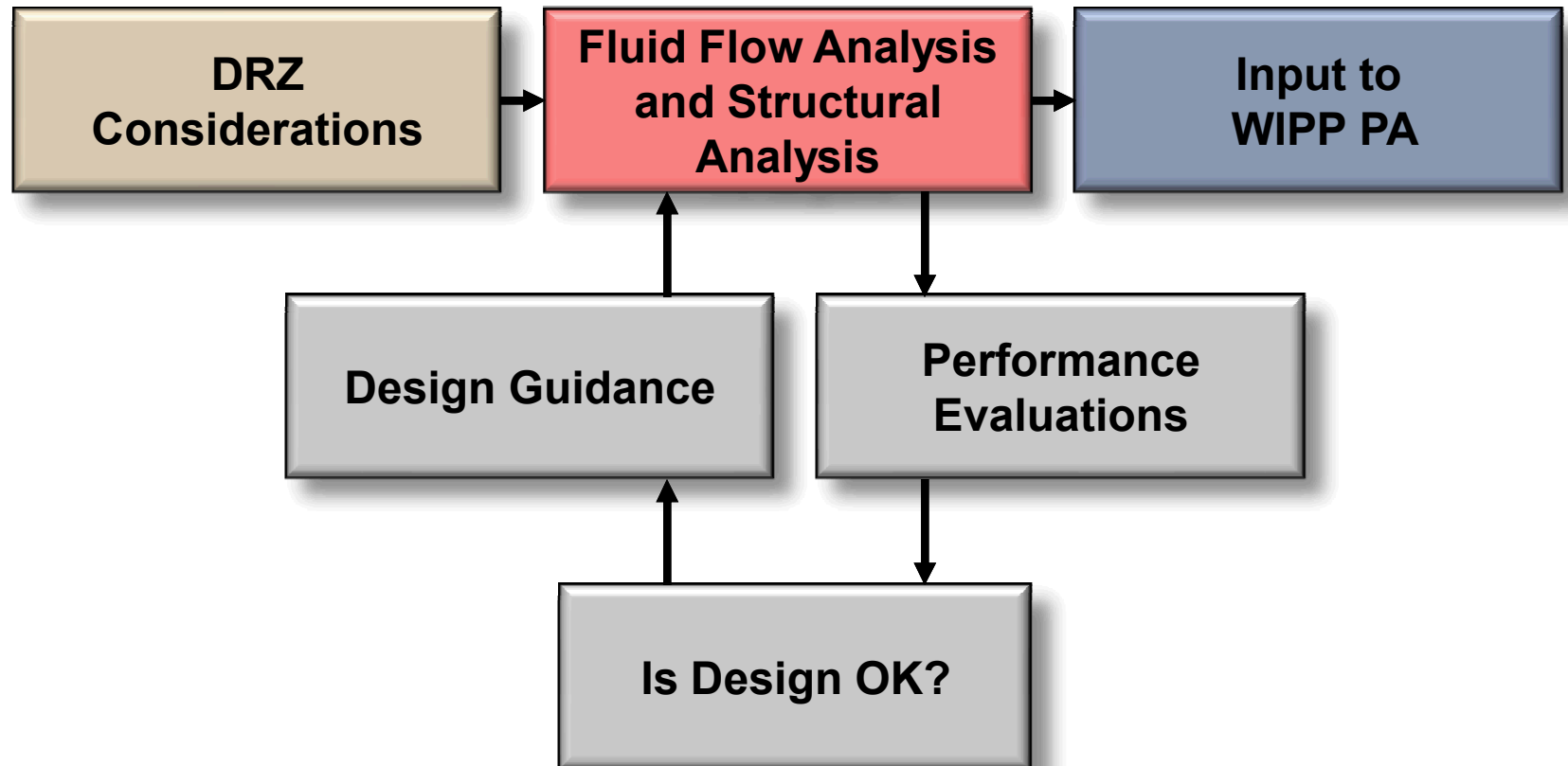
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WIPP Facility Layout



TRI-6346-59-31

Shaft Seal Systems Analysis Process



Seal Material Specification

- Functions
- Material Characteristics
- Construction
- Performance Requirements
- Verification methods
- *Summary given in Peine 2011--Salt Repository Seal Design and Materials*
- *Waste Isolation Pilot Plant Shaft Sealing System--Compliance Submittal Design Report. SAND96-1326/Two Volumes. Sandia Laboratories, Albuquerque, New Mexico USA.*

Modeling the Shaft Seal System

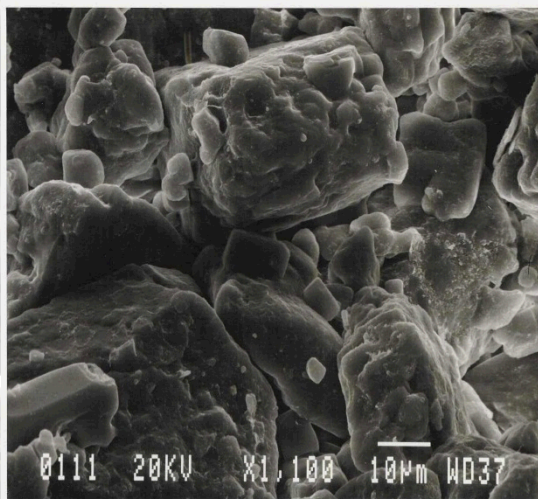
1 – Brine Flow Down

- Predict cumulative brine flow through the seal system down to the salt column and the repository
- Demonstrate the effectiveness seal elements

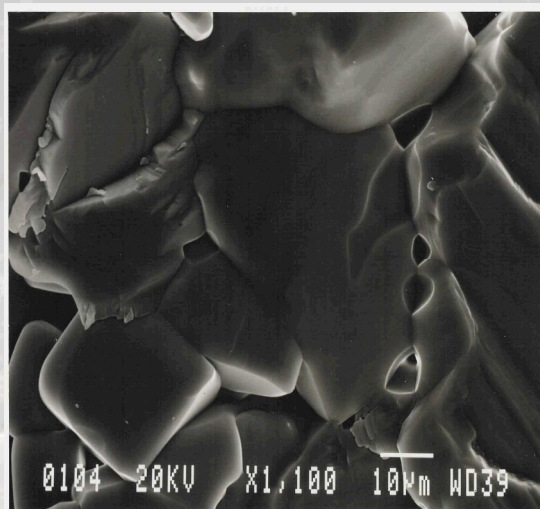
2 – Salt Column Performance

- Predict the intrinsic permeability of the salt column
- Demonstrate effectiveness of the salt column
- Estimate gas migration from the repository horizon

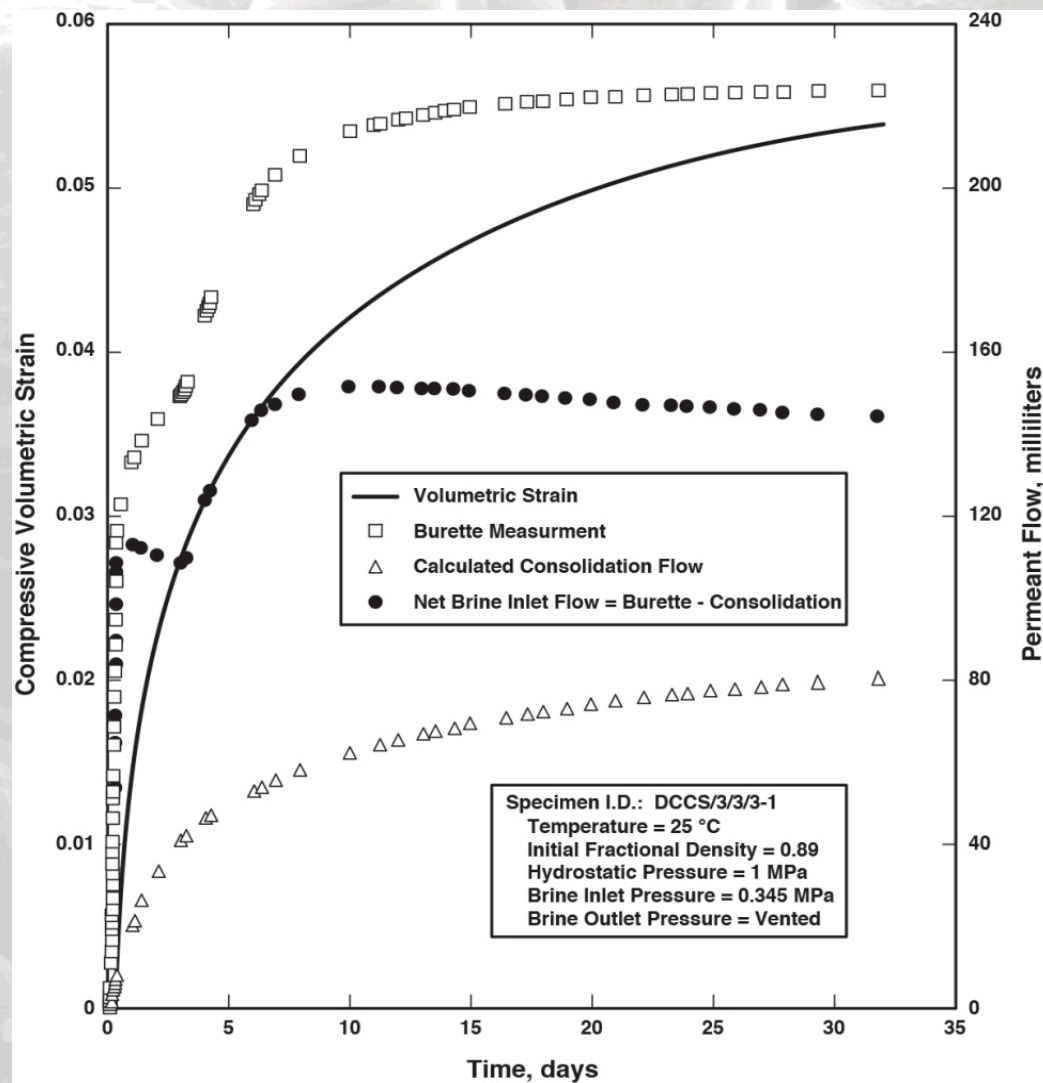
Laboratory Results



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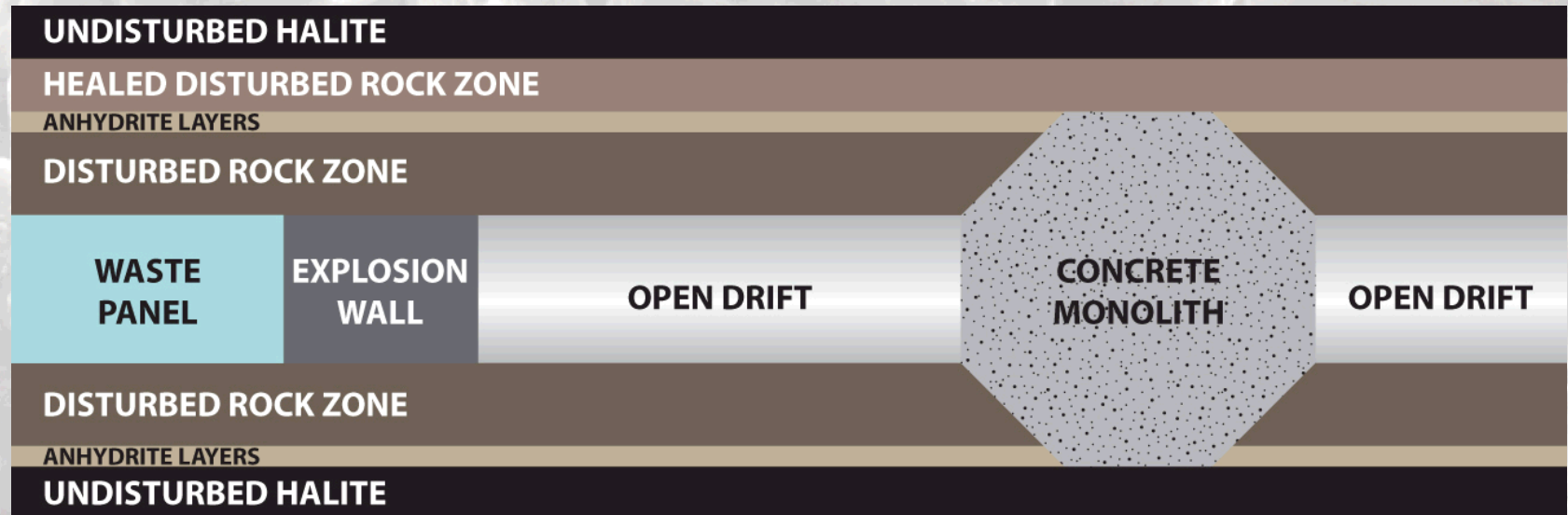


Reconsolidated



Reduction of brine permeability

Option D Panel Closure System



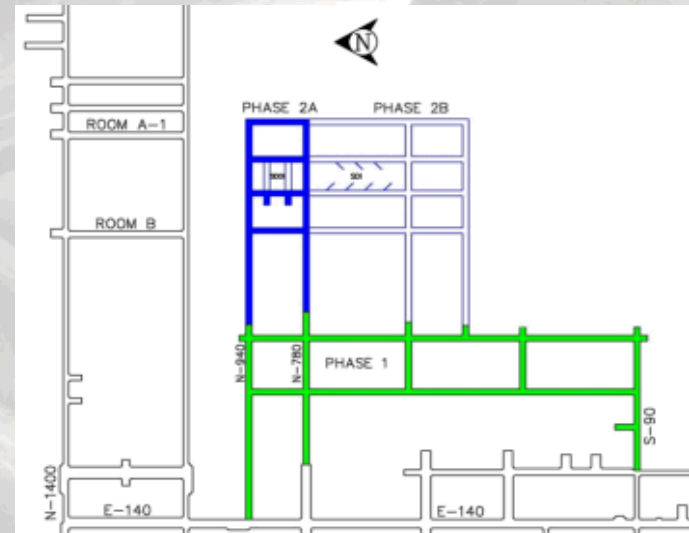


Compacted Salt Test Area Plan and Cross Section



Use of WIPP URL for Plugging and Sealing

- Salt Defense Disposal Investigations (SDDI)
- Salt Disposal Investigations (SDI)
- **Large-Scale Seal Demonstration**
- Mining Research
- Wedge Pillar Test
- Mine-By DRZ Measurement
- Single Heater Test
- **In Situ Consolidation**
- International Test Bed



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