



# Panel Closure Redesign:

Update

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# Introduction

This presentation will cover operational and long-term design aspects:

- Major Design Criteria
- Research Activities
- Interim Closure
- Gas Monitoring
- Current Research Activities
- Planned Change Request
- Regulatory Schedule

# Major Design Criteria

## **EPA Certification** (long-term)

- Option D design represented in Performance Assessment
- Salado Mass Concrete

## **NMED Hazardous Waste Facility Permit** (operational period)

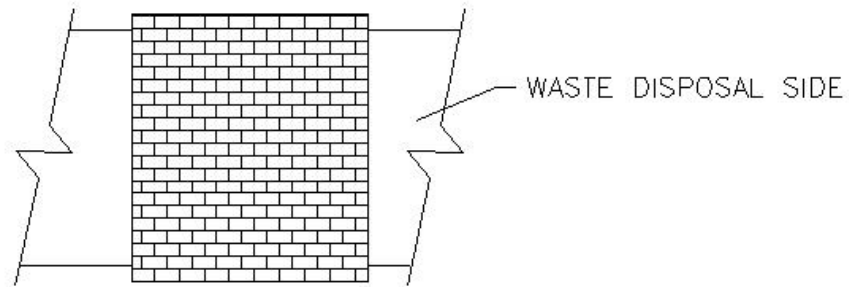
- Limit migration of volatile organics at the point of compliance for 35 years.
- Maintain functionality under loads generated by salt creep.
- Maintain functionality under loads generated by internal pressures.
- Maintain functionality under loads generated by a postulated methane-based explosion.
- Limit migration of Volatile Organic Compounds (VOCs).

# Research Activities

- 2001- DOE identified several changes needed to the panel closure design after initial investigations. These changes were:
  1. Replace Salado Mass Concrete with generic salt-based concrete. (EPA/NMED)
  2. Replace isolation wall with construction wall. (NMED)
  3. Replace freshwater grouting with salt-based grouting. (EPA/NMED)
  4. Allow option of implementation of panel closure completion within a year instead of 180 days. (NMED)

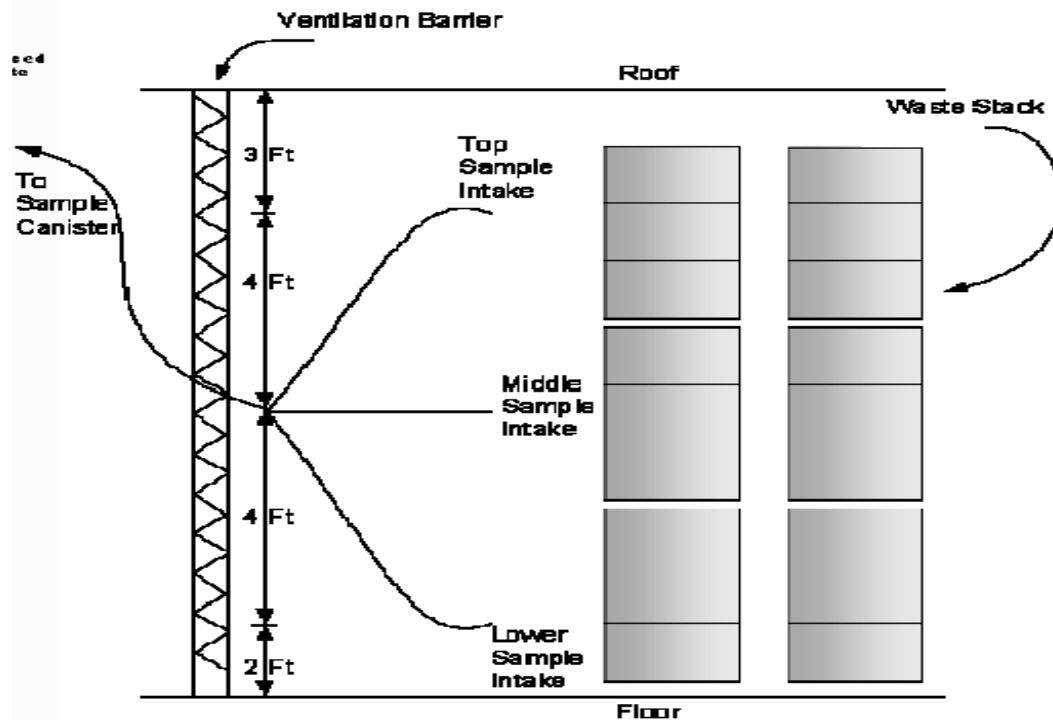
# Interim Closure

- 2003- To comply with the requirements of the Hazardous Waste Facility Permit, the DOE constructed the block wall portion of the Panel Closure Option D design for Panels 1 and 2. This allowed DOE to study the effects of salt creep on the block wall and verify previously identified changes.



# Gas Monitoring

- 2007- DOE -Hydrogen and Methane monitoring is being performed in waste filled panels and the results have shown that methane and hydrogen levels are below regulatory limits (NMED).



EM Environmental Management

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# Combining Research Activities and the Planned Change Request

- Continue to collect Hydrogen, Methane and VOC data. (NMED)
- Review and evaluate Hydrogen, Methane and VOC data. (NMED)
- Run Performance Assessment with the new panel closure design represented in the models. (EPA)
- Integrate with new Hazardous Waste Facility Permit requirements. (NMED)

# Planned Change Request

- Evaluates monitoring data from panels with emplaced waste and evaluates potential for explosive gas (NMED).
- Performance assessment that incorporates updated design (PC3R) (EPA).
- Ensure long-term porosities and permeability of the new design are comparable to the Option D design (EPA).

# Planned Change Request Cont.

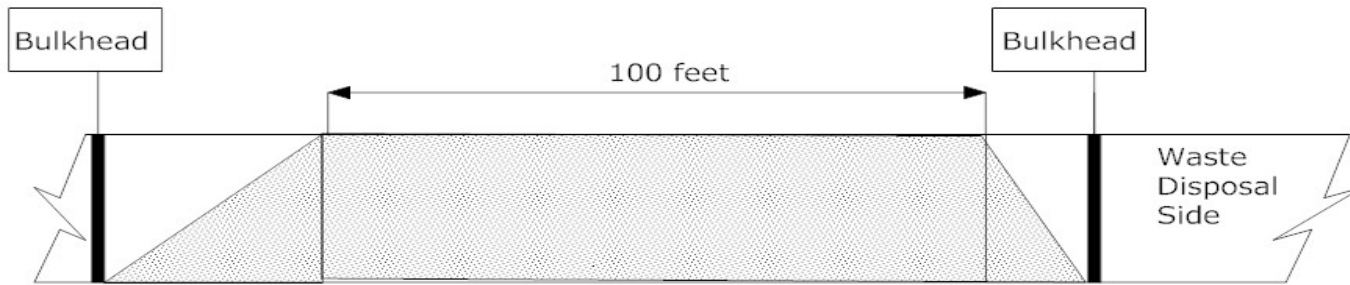


Figure 2: Proposed Run of Mine Panel Closure

# Regulatory Schedule

EPA-Planned submittal September 2011.

- 18 to 24 month review (Rulemaking)

- Projected approval 2013

NMED-Planned submittal January 2012.

- 12 to 18 month review and comment period.

- Projected approval 2013.

# Conclusion

- As a result of increased understanding of the repository and the stored waste obtained over 12 years of operation, the DOE has determined that a revision of the approved Option D panel closure design should be made.
- The revised design described in this PCR will reduce the risk of injury to construction workers, enhance constructability, reduce construction cost, and reduce the impacts on on-going repository operations.
- A change to the design specified in Condition 1 of the Certification Decision is required because of the problems in manufacturing SMC to the specifications in the CCA.
- \* An analysis of the results of earlier PAs suggests that this revised design will have a long-term performance essentially the same as with Option D.