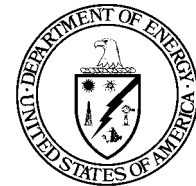


# Enhanced Design Alternatives Repository Access Design

Presented to:  
Nuclear Waste Technical Review Board  
Panel For the Repository

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Office of Civilian Radioactive  
Waste Management

# Enhanced Access Repository Goals

- **Provide human access for off-normal events**
  - Design provides means to empty drift w/o human access
  - Major events will be handled by remote equipment
  - Human access is for unanticipated events
    - » Blast Cooling for Temperature Control
    - » Shielding allows limited stay times

# Concept Summary -- EDAs for Access

- **Waste package provides access**
- **Waste package and emplacement mode provide access**
- **Emplacement mode provides access**

# Waste Package Provides Access

- **Overall repository layout: VA layout, point load**
- **WP concept: Alloy 22, Stainless Steel (316 NG) outer layer w/ ceramic coating to minimize pitting of the stainless steel**
- **Concept of operations: portable neutron shield to reduce neutron dose for off - normal events, backfill and breadbox dripshield at closure**

# Waste Package Provides Access

(Continued)

- **Integral Features**

- **Stainless Steel (316 NG) provides gamma shielding**
- **Portable neutron shield for neutron dose**

- **Other Features**

- **Alloy-22 Inner Barrier**
- **Outer ceramic coating**
- **Backfill and breadbox dripshield at closure**

# **WP & Emplacement Mode Provide Access**

- Overall repository layout: short cross drift (near VA footprint), line load, steel set liner**
- WP concept: VA capacities, single layer 30 cm A516 w/integral filler, canister bad actors**
- Concept of operations: use mailbox temporary neutron shield for access if necessary, emplacement timing close to VA, sand backfill and breadbox dripshield at closure**

# WP & Emplacement Mode Provide Access

(Continued)

- **Integral Features**

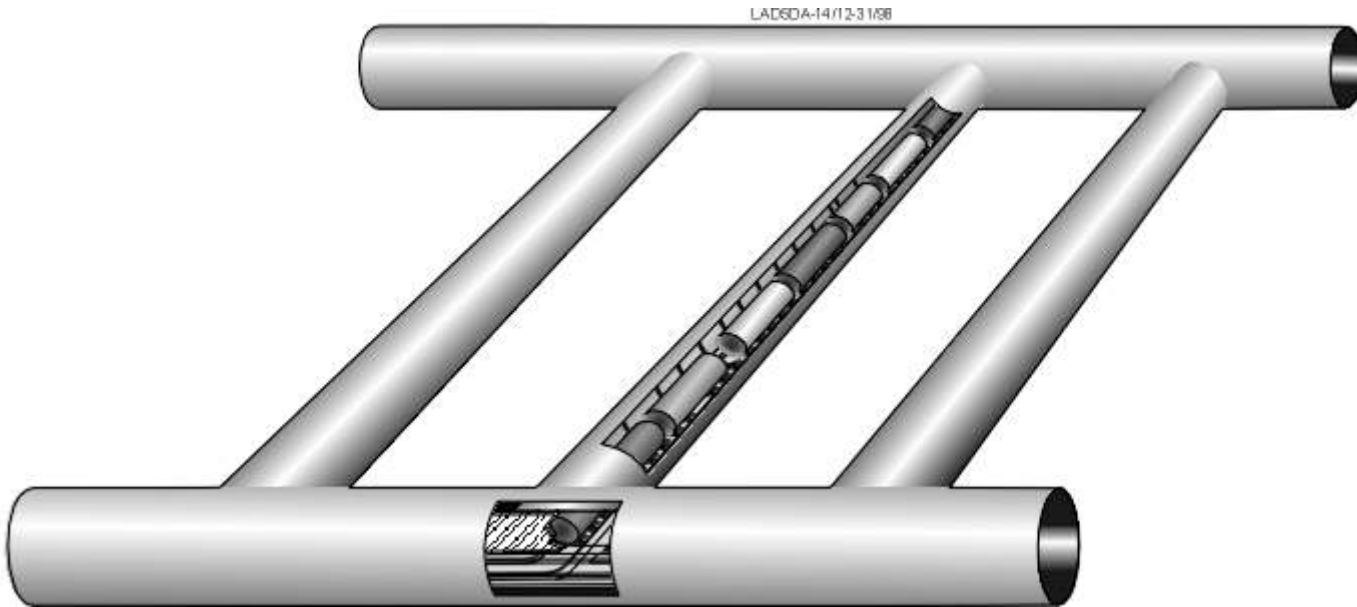
- Short cross drift
- Line load
- Single layer 30 cm A516
- Temporary neutron shield
- Sand backfill

- **Other Features**

- Steel set liner
- Integral filler
- Breadbox dripshield at closure

# WP & Emplacement Mode Provide Access

(Continued)





# Emplacement Mode Provides Access

- **Overall repository layout: VA footprint w/ trench emplacement, marble trench liner w/top, roadheader type drifts, limit PC drifting**
- **WP concept: dual CRM for license, R&D to optimize WP materials**
- **Concept of operations: Emplace only low temp output WP (4-5 kw max); age to achieve 4-5 kw limit; just in time buy/construct on WPs/drifts; temporary concrete shielding on trench if needed; monitor early emplacement for PC; backfill at closure**

# Emplacement Mode Provides Access

(Continued)

- **Integral Features**

- Marble trench liner w/top provides chemistry control and dripshield
- Temporary concrete shielding on trench for access

- **Other Features**

- Emplace only low temp output WP (4-5 kw max)
- Dual CRM WP
- Aging to achieve WP output (50-100 years)
- Monitor early emplacement for performance confirmation
- Backfill at closure
- Roadheader type drifts
- R&D while aging to optimize WP/drift costs
- Just in time purchase/excavate/emplace

# Emplacement Mode Provides Access

(Continued)

