Drip Shield Configuration and Emplacement

Presented to:
Nuclear Waste Technical Review Board

Presented by:
M. J. Anderson
Bechtel SAIC, LLC/Thermal-Structural Analysis

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Drip Shield
Functional and Operational Requirements

- **Preclosure** – not Important to Safety but must:
  - Be installed just prior to repository closure
  - Facilitate installation
  - Not preclude waste package retrieval

- **Postclosure** – Important to Waste Isolation and must:
  - Prevent seepage entering the drift from dripping onto the waste packages after repository closure
  - Protect the waste package from direct impact from rockfall
**Drip Shield Illustration**

**Drip Shield Materials**
- Plates - Ti-7
- Connector, Bulkheads, Beams & Stiffeners - Ti-24
- Bases & Stabilization Pins - Alloy 22

**Drip Shield Dimensions**
- Maximum Height $\approx 114''$ (9.5’)
- Maximum Length $\approx 228''$ (19’)
- Weight $\approx 11,000$ lb
Drip Shields with Emplaced Waste Packages

Dimensions are in inches (mm in brackets)
Drip Shield Interface

Dimensions are in inches and are approximate
Overall Picture Showing All the Equipment and the Interfaces

- Transport Locomotive
- Drip Shield Transporter
- Drip Shield Emplacement Gantry
- Emplaced Drip Shield
- Emplaced Waste Package
Drip Shield Emplacement Gantry

- Based upon a gantry type crane
- Rail based
- Self propelled
- Remotely operated
- Lifting mechanism
- Lifting feature
Drip Shield Gantry Transporter

- Based upon a commercial railroad flat bed car
- Two location features
Drip Shield Transporter

- Based upon a commercial railroad flat bed car
- One location feature
Transport Locomotive

- Based upon a commercial railroad locomotive
- Electrically operated
- Provides power and control
Steps to Emplace a Drip Shield

- Transport drip shield to the transfer dock
- Move gantry to straddle the drip shield
- Raise the gantry lifting features, locate, and lift the drip shield
- Move the drip shield down the emplacement drift
Steps to Emplace a Drip Shield

- Position the drip shield in relation to the previously positioned drip shield
- Lower the gantry lifting feature to locate the two drip shields
- Verify the proper installation
- Raise the gantry lifting features and return the gantry to the drift entrance
Simulation 1 – Delivery of Drip Shield
Simulation 2 – Gantry Picks up Drip Shield
Simulation 3 – Gantry Emplaces Drip Shield
Response to Board Questions

• Question
  – What data and/or prototypes for the drip shields and their emplacement devices are planned to be available in 2006? 2007? 2008?

• Response
  – For the drip shields, configuration and assembly drawings and calculations supporting the demonstration of safety functions are available. Under the current schedule, support for prototype procurement will begin in 2008.
  
  – For the drip shield gantry there is a conceptual design, but under the current schedule, there are no plans before 2008 to advance the design or produce a prototype.