Used Fuel Disposition Campaign

DBFT Waste Package Handling
Conceptual Design Process

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Used Fuel Disposition

Conceptual Design Process

- Presume borehole completion parameters
- Select representative transportation system
- Identify waste package and overall transfer cask parameters
- Define interface between transfer cask and borehole
- Select representative wireline and fluid control components
- Resolve conceptual transfer cask shield details
- Resolve conceptual borehole pit shield details
- Describe overall equipment arrangements
- Define work space requirements
Borehole Completion

- Casing cemented at pit floor
  - Upper intermediate and surface
- Baseplate mounted on intermediate casing
- Reducer and fluid annulus control spool
- Tieback welded to borehole fluid control spool
  - 13-3/8 casing sets package OD
- Full-bore gate valve
- Annular BOP
  - Cameron T-90, 13-5/8 x 5000 psi
Transportation Cask

- **Existing Type B cask**
- **Legal-weight truck cask**
- **NAC-LWT as example**
  - 178 inch cavity length
  - Sets waste package length
  - 13.4 inch cavity ID
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Transfer Cask

- Cavity sized for waste package
- 14 inch steel shield
  - Shield analysis
  - Cs capsule basis
- Handling as with NAC-LWT

Stainless steel

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Borehole Interface

- Grayloc side-clamp flange
- Remotely-operated mechanism
  - Mounted on transfer cask
- Spool piece and flange hub
  - Mounted on BOP
- Also used to remove or replace lower shield plug
**Wireline components**
- Schlumberger TuffLINE 30000
- Schlumberger or Halliburton releasable wireline cable head
- Electric cable head/weakpoint
- Locator tools

**Fluid seal components**
- Grease tube, with supply
- Wiper and stuffing box (static)
- Ball check (if wireline lost)
- Better alternatives?
Cask End Shield Details

- Shield interface
- Upper shield
Steel shield plate with penetrations; rotates and translates
DBFT Equipment Dimensions

- Shield plate at grade level
- Pit large enough for borehole equipment
Integrated Test Facility

- Space for simulated borehole setup
- Space for horizontal package transfer
- Mockups of transfer casks, shields
- Rental of transport cask, facility, crane
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DBFT Site Facilities

- Borehole, pit, shield
- Transfer shield
- Casks and cradles
- Crane or headframe
- Truck pads
- Power, water
- Hydraulic fluid
- Data collection, interlocks
- Personnel support