

Used Fuel Disposition Campaign

DBFT Waste Package Handling Conceptual Design Process

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UFD Annual Working Group Meeting

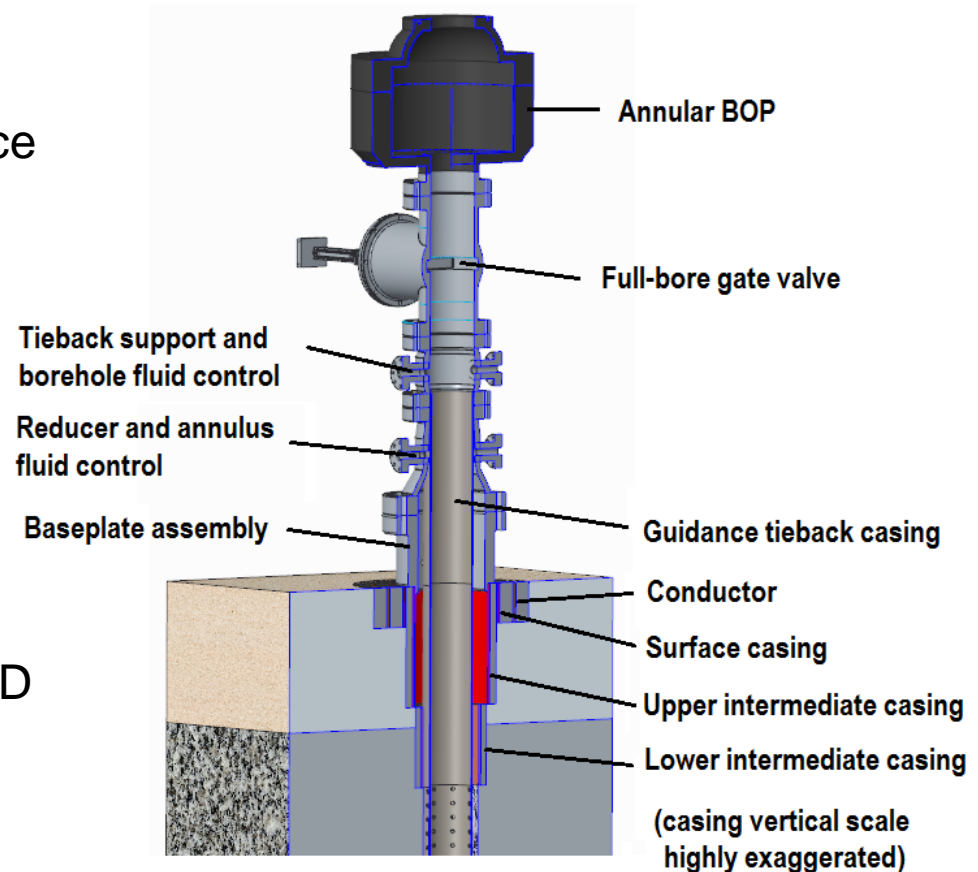
June 8, 2016

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

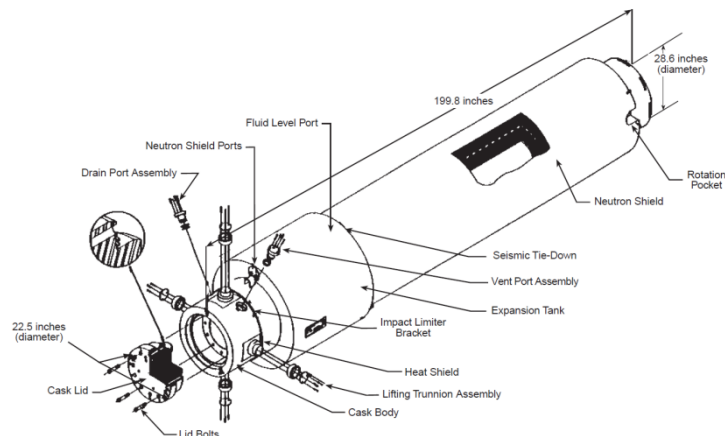
- **Casing cemented at pit floor**
 - Upper intermediate and surface
- **Baseplate mounted on intermediate casing**
- **Reducer and fluid annulus control spool**
- **Tieback welded to borehole fluid control spool**
 - 13-3/8 casing sets package OD
- **Full-bore gate valve**
- **Annular BOP**
 - Cameron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



Used Fuel Disposition

Transportation Cask

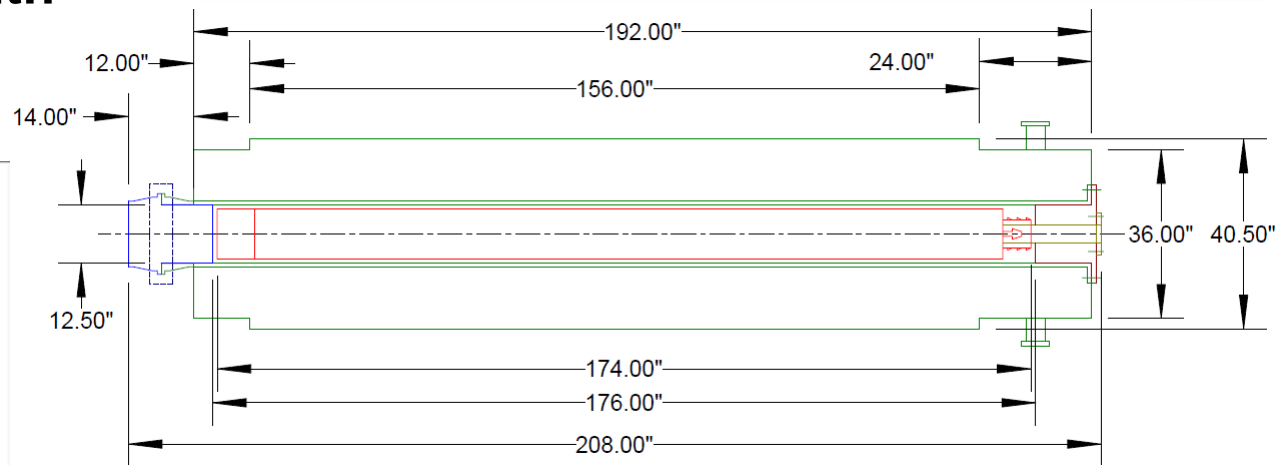
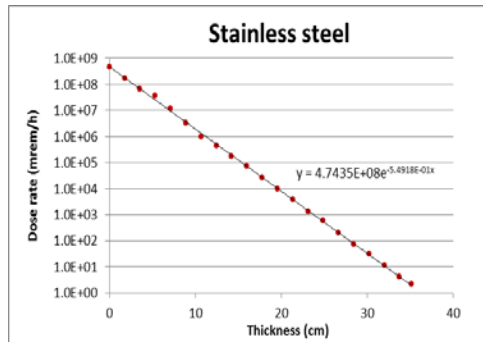
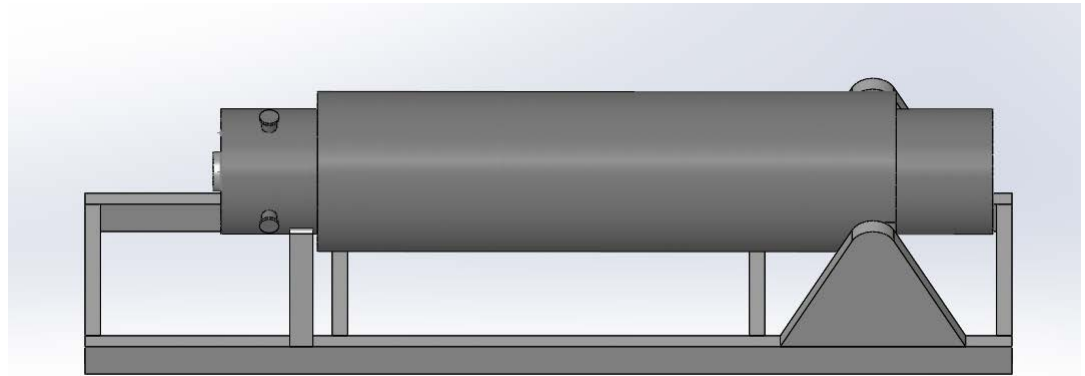
- Existing Type B cask
- Legal-weight truck cask
- NAC-LWT as example
 - 178 inch cavity length
 - Sets waste package length
 - 13.4 inch cavity ID



Used Fuel Disposition

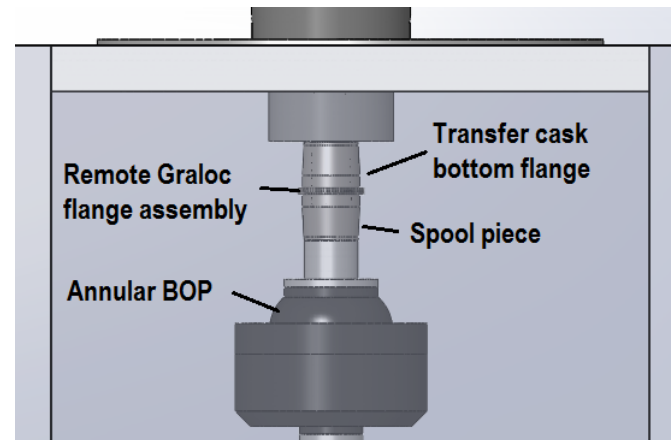
Transfer Cask

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



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**



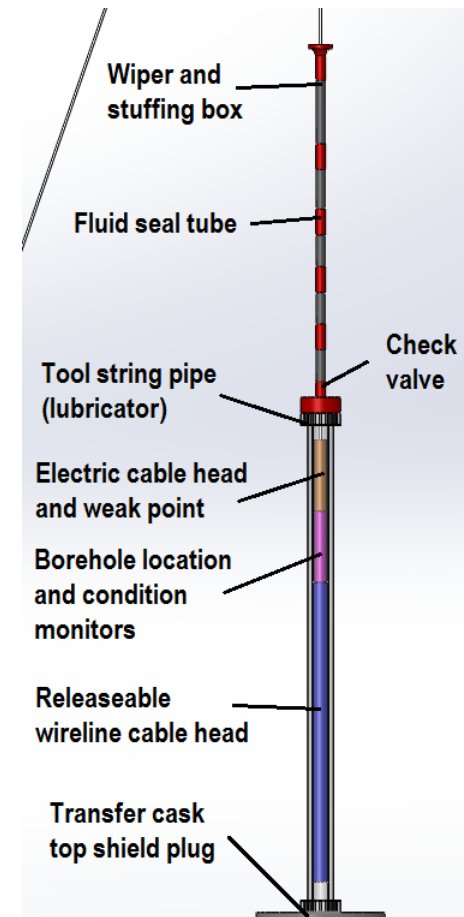
Wireline and Fluid Seal Components

■ Wireline components

- Schlumberger TuffLINE 30000
- Schlumberger or Halliburton releasable wireline cable head
- Electric cable head/weakpoint
- Locator tools

■ Fluid seal components

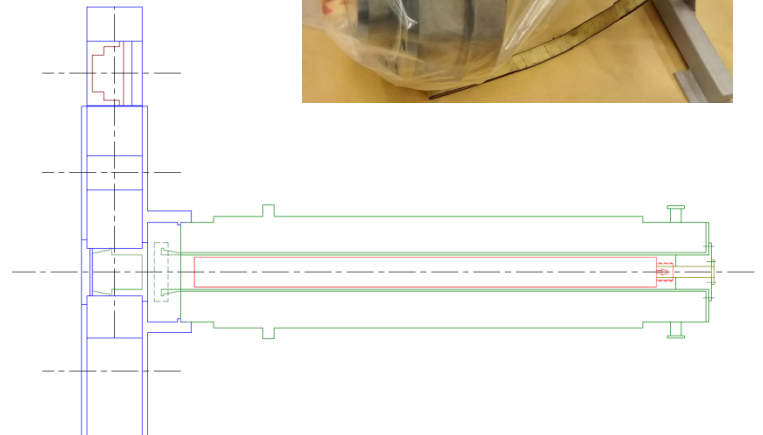
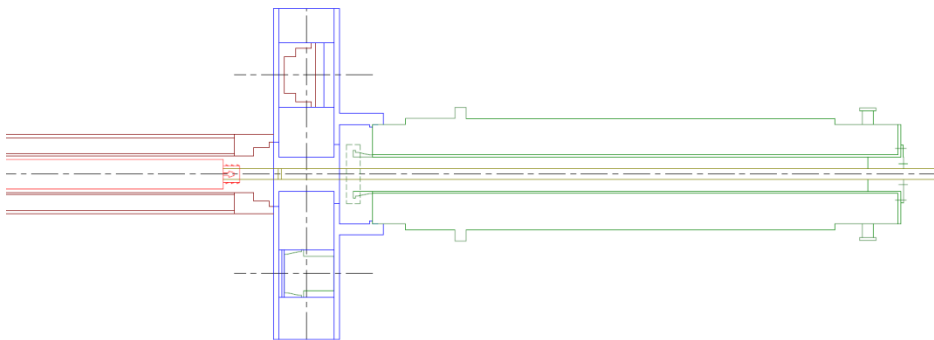
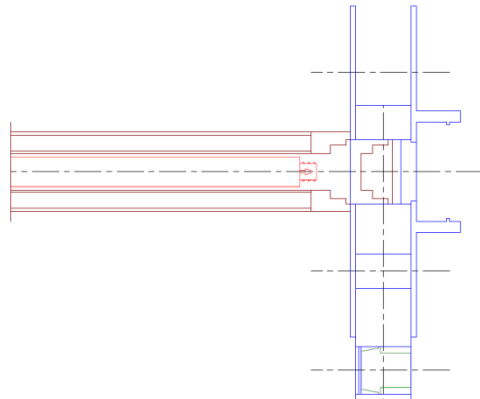
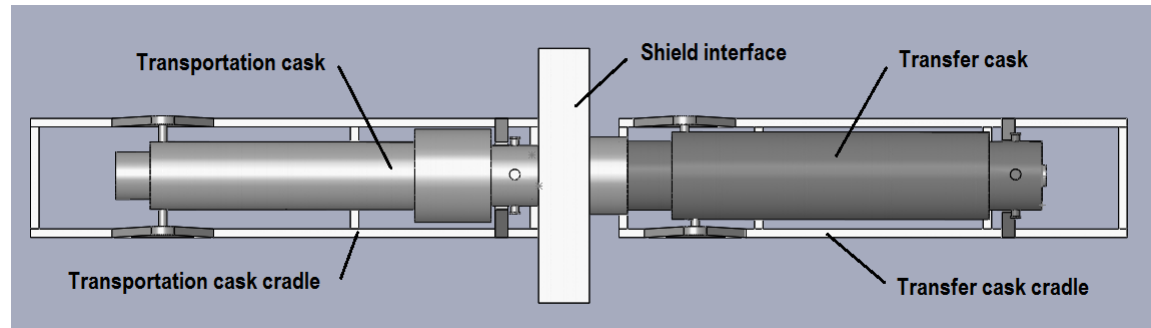
- Grease tube, with supply
- Wiper and stuffing box (static)
- Ball check (if wireline lost)
- Better alternatives?



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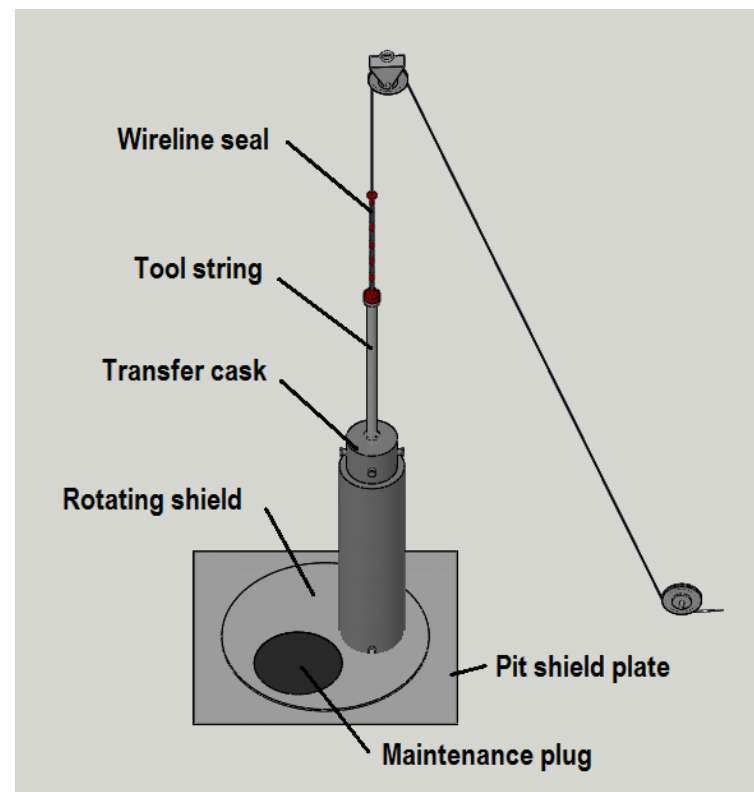
Cask End Shield Details

- Shield interface
- Upper shield



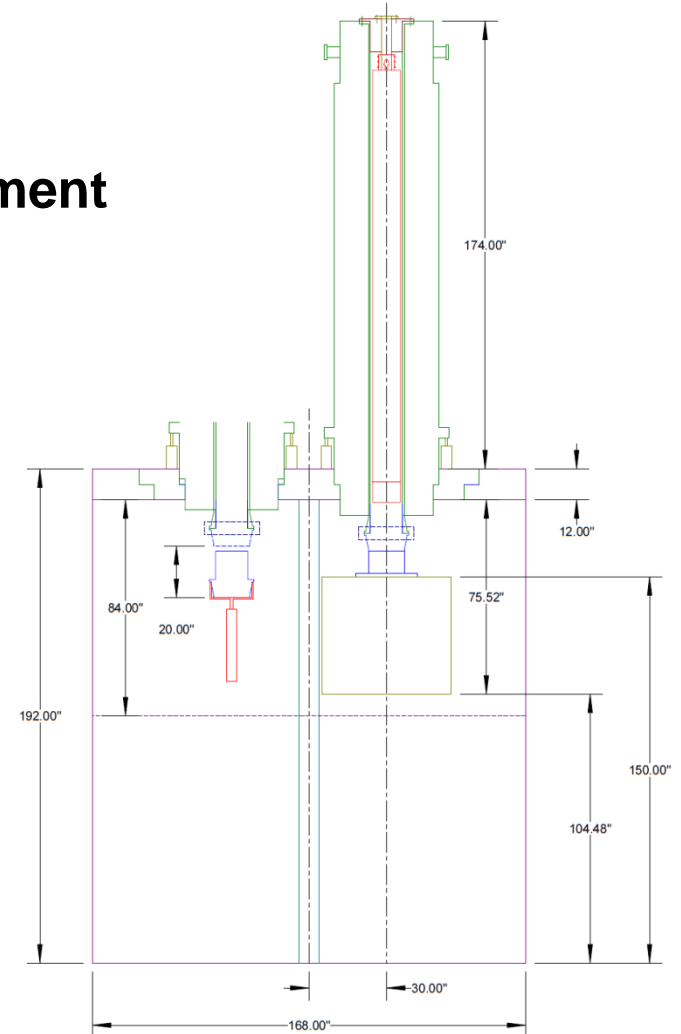
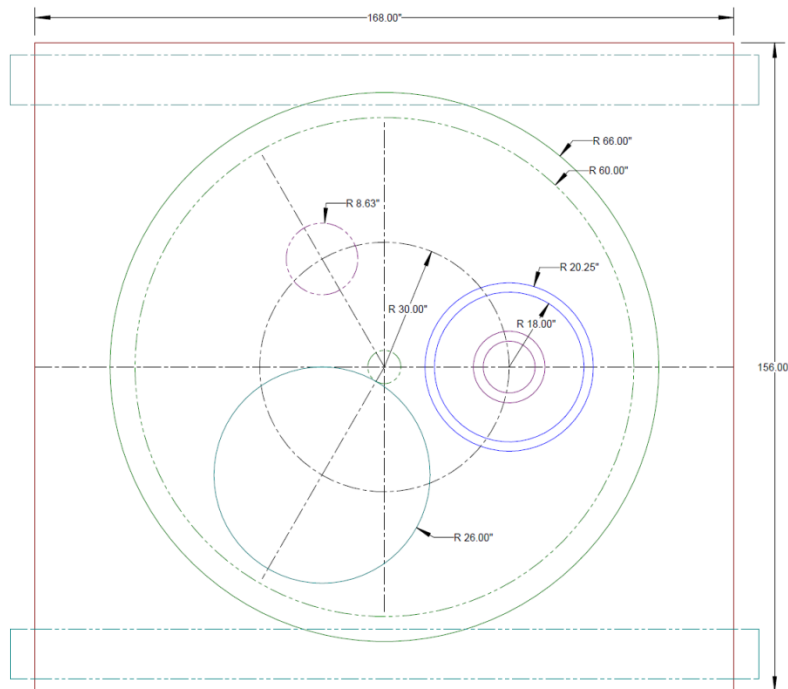
Borehole Pit Shield

- Steel shield plate with penetrations; rotates and translates



DBFT Equipment Dimensions

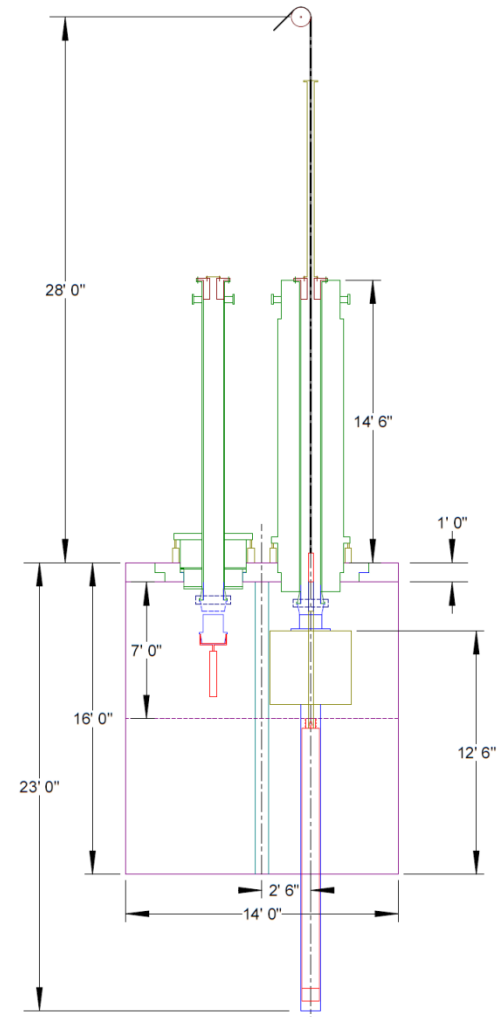
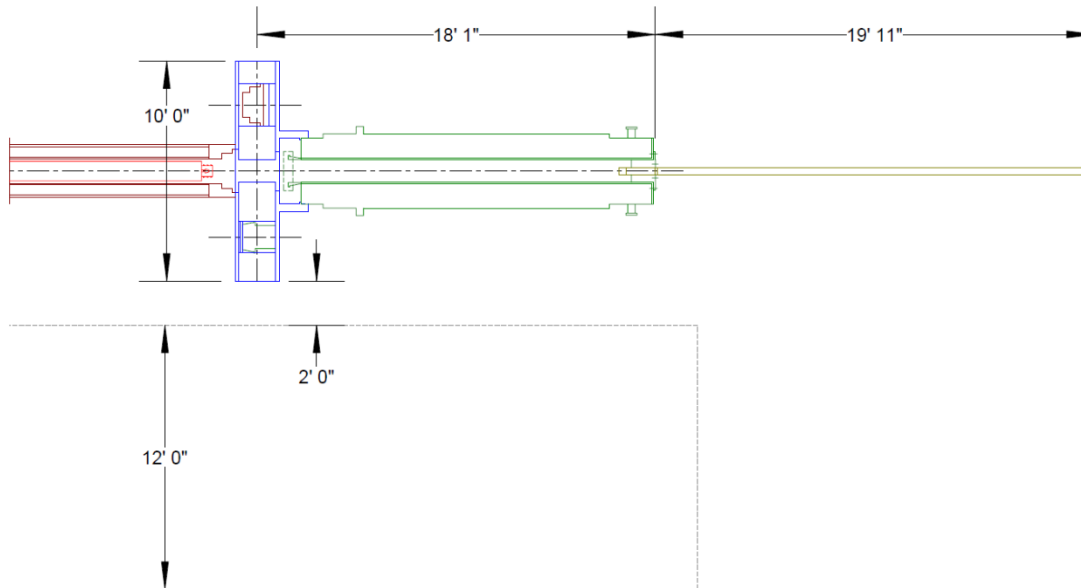
- Shield plate at grade level
- Pit large enough for borehole equipment



Used Fuel Disposition

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

