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Presenter:
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Tanks 18 and 19 Mechanical Cleaning
• Construction of Type 4 Tanks
• History of Tank 18 and Tank 19
• Evolution of cleaning
• Characterization of the waste
• Sampling
Type 4 Tanks

- Operating volume: 1.3 Million Gallons
- Single-Shell Carbon steel Lined Tanks
- Dimensions:
  - Diameter: 85 ft
  - Height: 45 ft
- No secondary Containment
- Domed roof with 32 inches of soil
1958-1961 received Low Heat Waste (LHW)

4 Types of Waste Received

1. 1960-1977: F-Canyon PUREX Process (33,600 kgals)
2. 1960-1985: 242-F Evaporator Recycle (24,000 kgals)
3. Sludge Removal from Tank 17, Tank 18, and Tank 19 (560 kgals)
4. Tank 19 Heel Removal with Zeolie (2.5 kgals)
• 1961: Placed in service and received Low Heat Waste from Tank 17
• 3 Types of Waste Received
  - 1. 1961-1972: F-Canyon PUREX Process (2,400 kgals)
  - 3. 1964-1984: Zeolite Resin from Ion-Exchange Column (13 kgals)
• Bulk waste July 1980- August 1981
  - 2 agitation pumps and transfer jet 1 million to 33,000 gals.

• Heel removal September 2000- August 2001
  - 3 submersible centrifugal transfer pump to Tk 18
  - Decanted liquid from Tk 18 to Tk 19
  - Spray washing tool in center riser

• After waste removal approximately 15,100 gallons of wet solids are left in the tank.

• Mechanical Waste Removal System (Sand Mantis) started residual heel removal
Tank 18 Cleaning History

- 2001: 47,000 gallons of sludge
- Jan.- July 2003: heel volume reduced to approximately 4,300 gallons
- January 2009: Mechanical Waste Removal System (Sand Mantis) started residual heel removal
• Tank 19 is comprised of, by weight:
  - ~66% zeolite
  - ~26% aluminum hydroxides,
    • ~ 8% iron oxides
    • ~ 96,000 curies radioactive material

• Tank 18 is comprised of, by weight:
  - ~46% zeolite
  - ~43% iron oxides
  - ~11% aluminum hydroxides,
    • ~ 27,600 curies radioactive material
Tank 18 Residual Heel
Mechanical Waste Removal System (Sand Mantis)

- Remote controlled in-tank Sand Mantis
  - High Pressure Hydro Lance (4,500 psi)
  - Eductor (17,500 psi)
- Umbilical hose
  - Hydraulic supply lies
  - High-pressure water hoses
  - In-tank waste retrieval hose
- Diesel Generator
- Above ground hose-in-hose transfer lines to Tank 7
- Waste Mixing Chamber
- Operating controls
Hose-in-hose System Overview

Flush Valve Box

Leak Detectors
Hose-in-Hose Transfer Line
Shielding

50 mr/hr

5 mr/hr
Shielding
Closure

- Mapping
  - Provides final estimates of waste thicknesses

- Sampling

- Characterization of Waste

- Removal of Above Grade line