

# Tank Farm Closure Overview

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**Project Manager**  
**Tank Farm Closure**

**EM-21 Technical Exchange**

**May 21 2009**



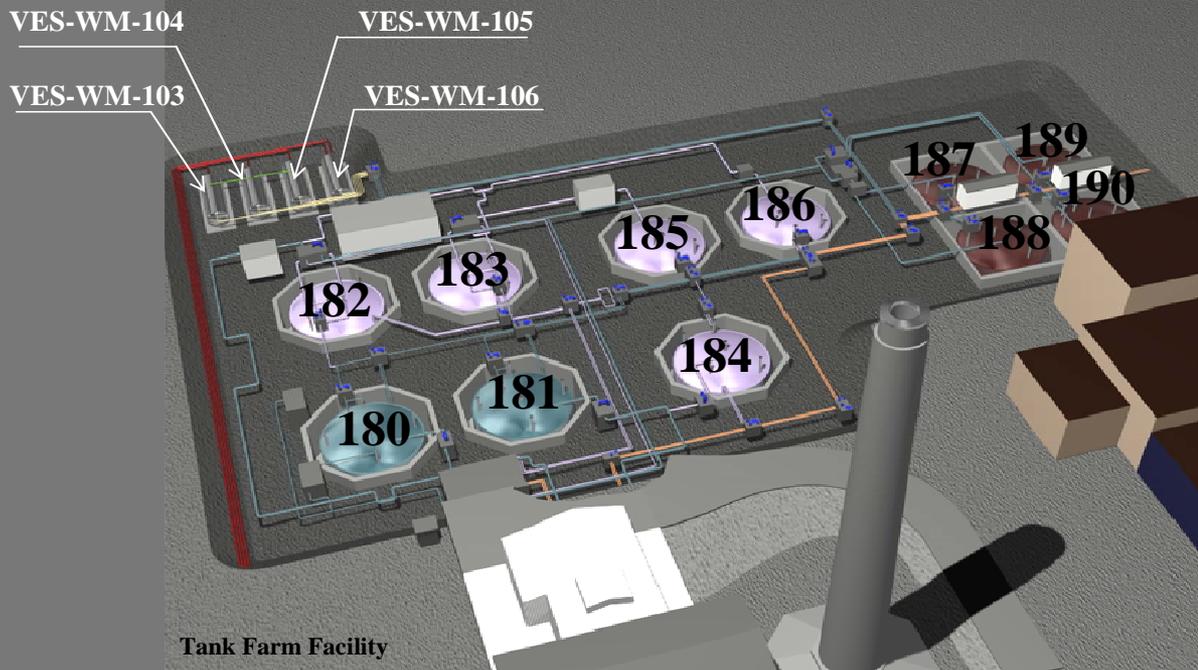
## ***Topics/Agenda***

- ◆ **Closure Progress Summary**
- ◆ **Tank Farm Overview**
- ◆ **Summary of Cleaning Experience**
- ◆ **Summary of Grouting Experience**

## ***Closure Progress - Summary***

- ◆ Seven large (300,000-gal) tanks and four small (30,000-gal) tanks cleaned/sampled 2002- 2005
- ◆ RCRA Closure Plans issued for all tanks at the INL
- ◆ “Authorization Basis” documents (3116, ROD, DOE Closure Plans) approved November 2006
- ◆ Grouting has been completed in the four small tanks and in seven large tanks and vaults
- ◆ Over seven miles of process and cooling coil piping was grouted in 2008 along with numerous valve boxes, tank risers and vault risers

# INTEC TANK FARM CLOSURE



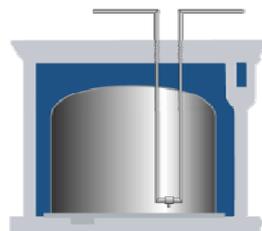
Tank Farm Facility

- Octagon Vaults: WM-180, WM-181
- Pillar and Panel Vaults: WM-182, WM-183, WM-184, WM-185, WM-186
- Square Vaults: WM-187, WM-188, WM-189, WM-190

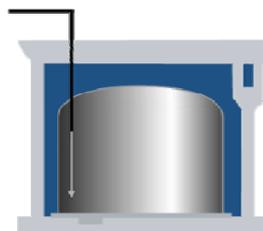
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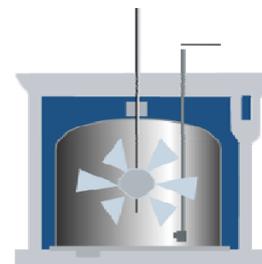
# Tank Closure Sequence



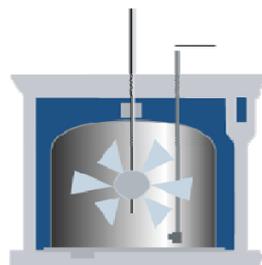
**Empty to heel with existing jets**



**Flush piping into tanks**



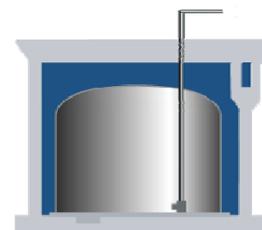
**Install new steam jet and wash equipment**



**Wash tank and empty with new jet**



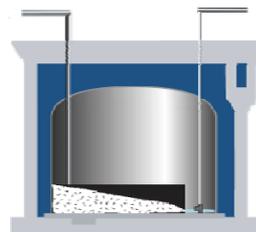
**Video and sample tank residuals**



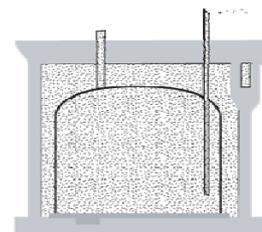
**Tank evaluation**



**Obtain authorization to grout**

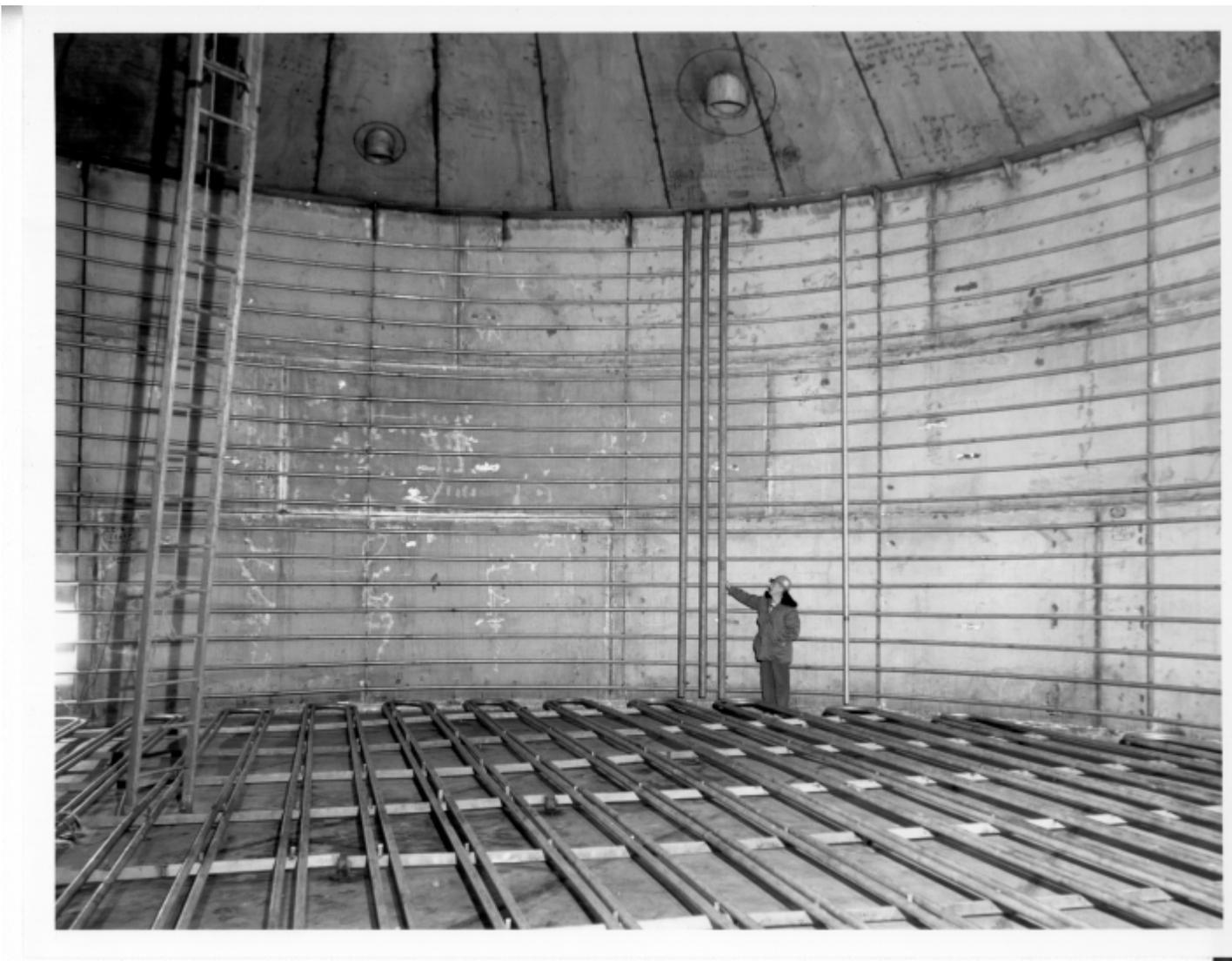


**Displace heel with grout**



**Fill tank, piping and vault with grout**

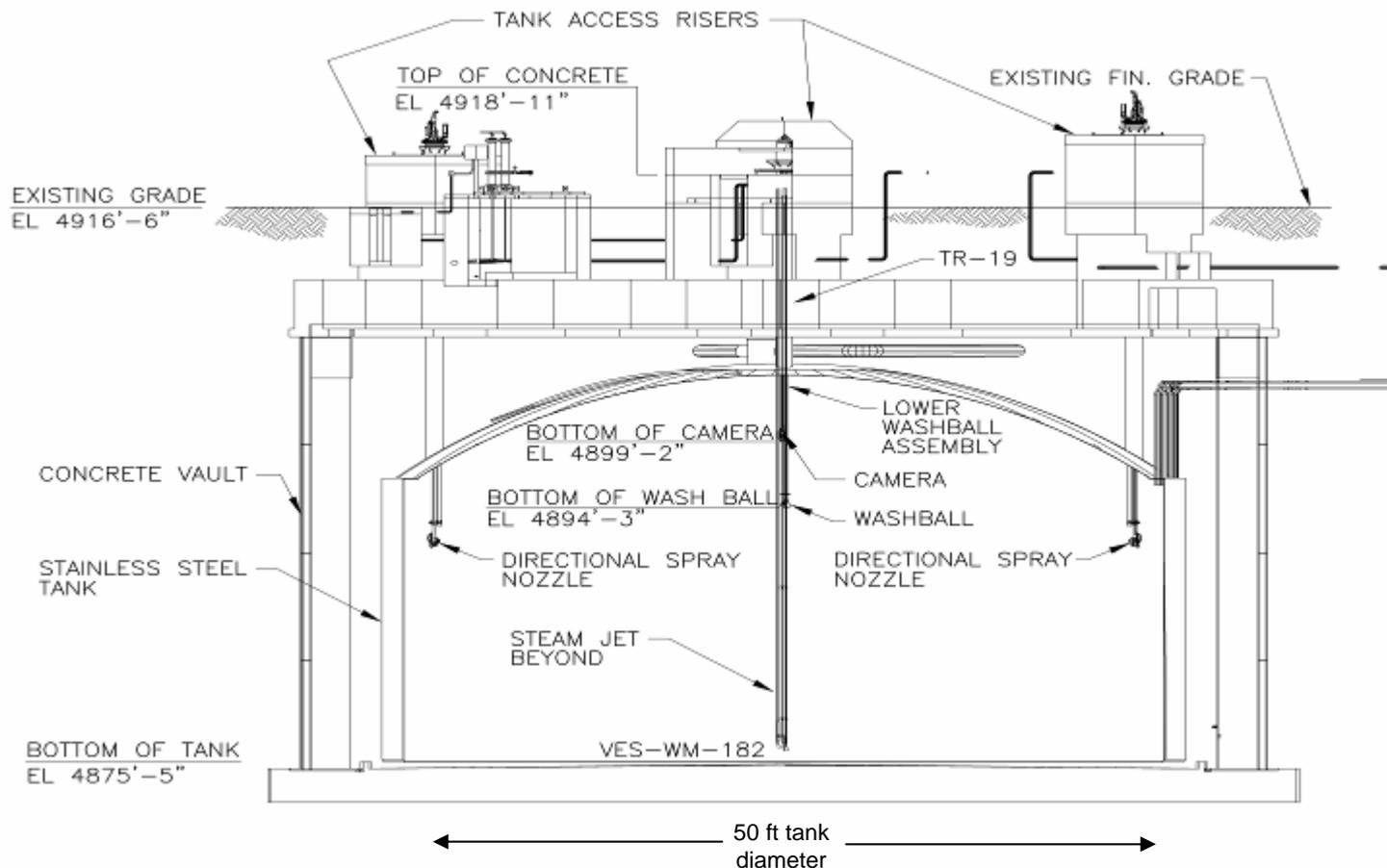
# Construction Photo - Interior of Tank



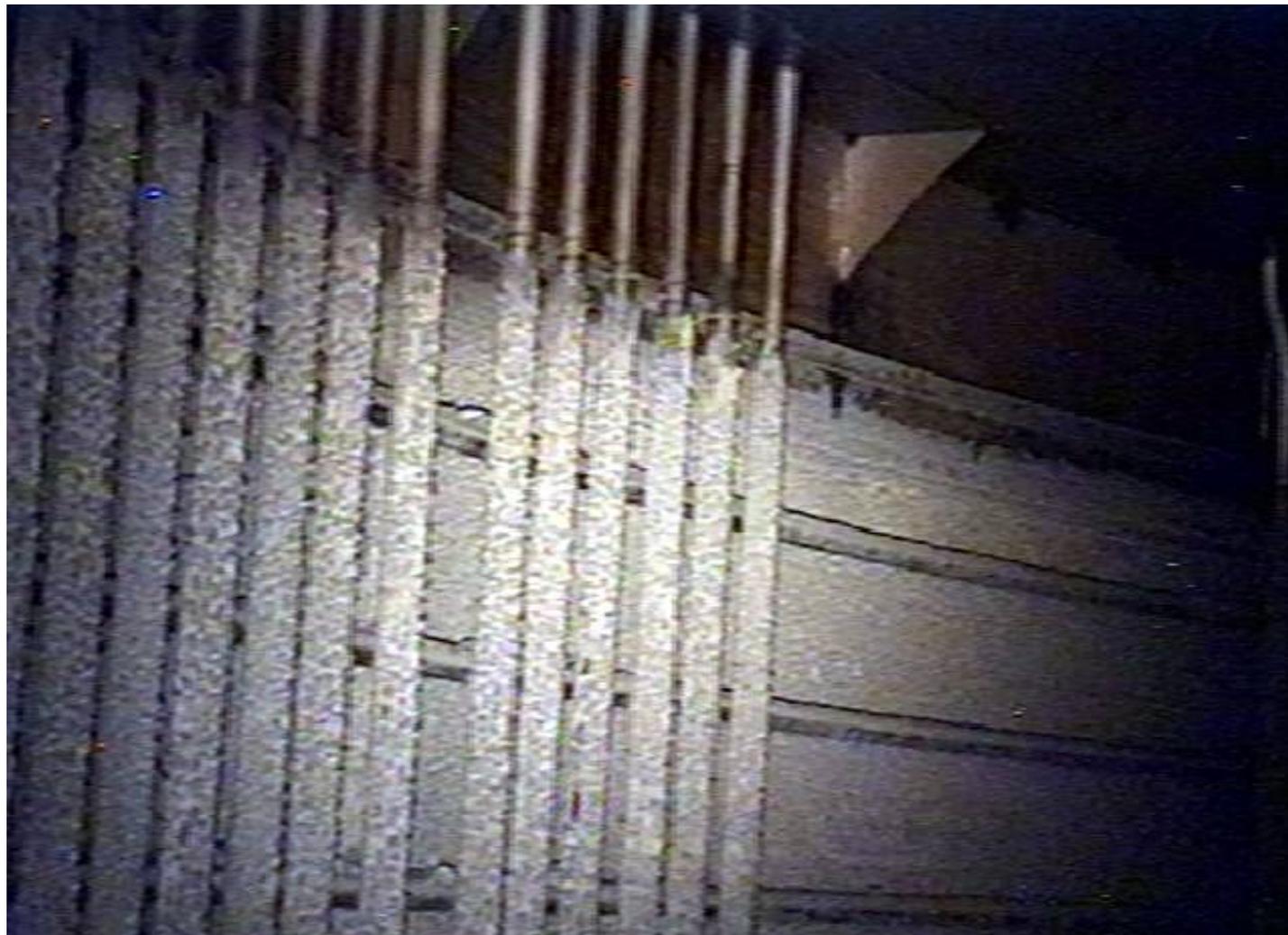
# ***Summary of Cleaning Experiences***

- ◆ Mockups used to develop cleaning methods
- ◆ Simulated solids utilized in mockups
- ◆ Directional nozzles were developed from the mockups
- ◆ Washing and sampling performed remotely
- ◆ Existing Rad-monitors located in Valve Boxes on transfer piping tracked cleaning performance.
- ◆ Reduced water volume for tank cleaning from high of over 100,000 gal to 30,000 gal per tank
- ◆ Duration of sampling reduced from two months to two days

# Typical tank cleaning system



## *Interior of Tank Prior to Cleaning*



# *Spray Cleaning Tank Walls*



## ***Tank WM-184 After Cleaning (Tank bottom)***



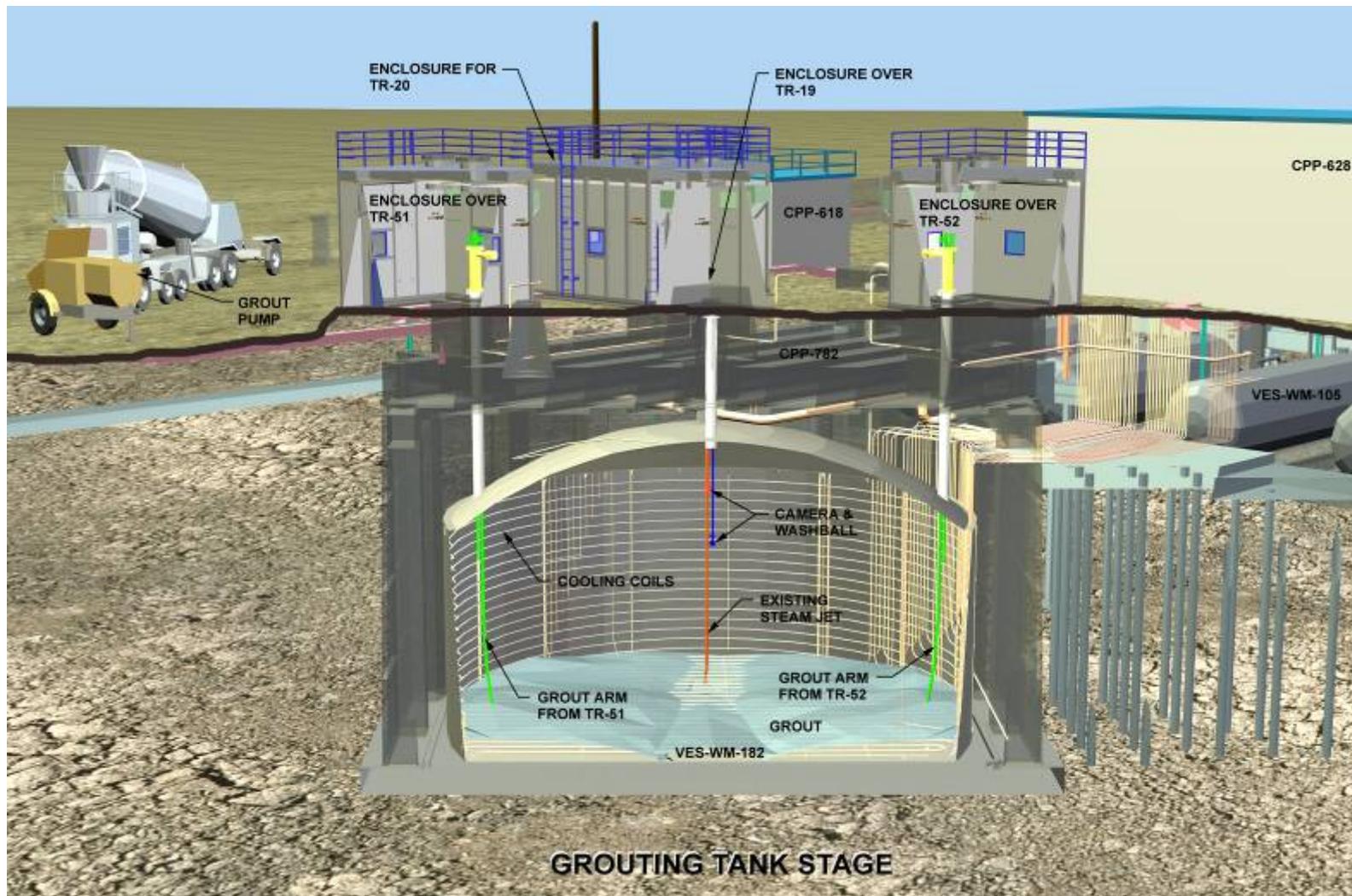
## ***Summary of Grouting***

- ◆ **Engineered Placements** – first 3-4 feet in bottom of tank, using a slag containing grout sequenced in a manner that pushes residual solids toward steam jet, provides for some uplift and mixing, and encapsulates remaining residuals
- ◆ **CLSM Pours**
  - remaining volume filled with a controlled low strength grout (CLSM) in alternating lifts between vault and tank
  - Top of Dome Pours – required modifications to off-gas piping to allow filling the very top of the domes in each tank, then completion of the top layer in the vault (over the tank domes)
- ◆ **Ancillary Equipment** – transfer piping, tank/vault risers, cooling coils, valve boxes filled to ~ ground level

# Grouting of WM-184 – August 2007



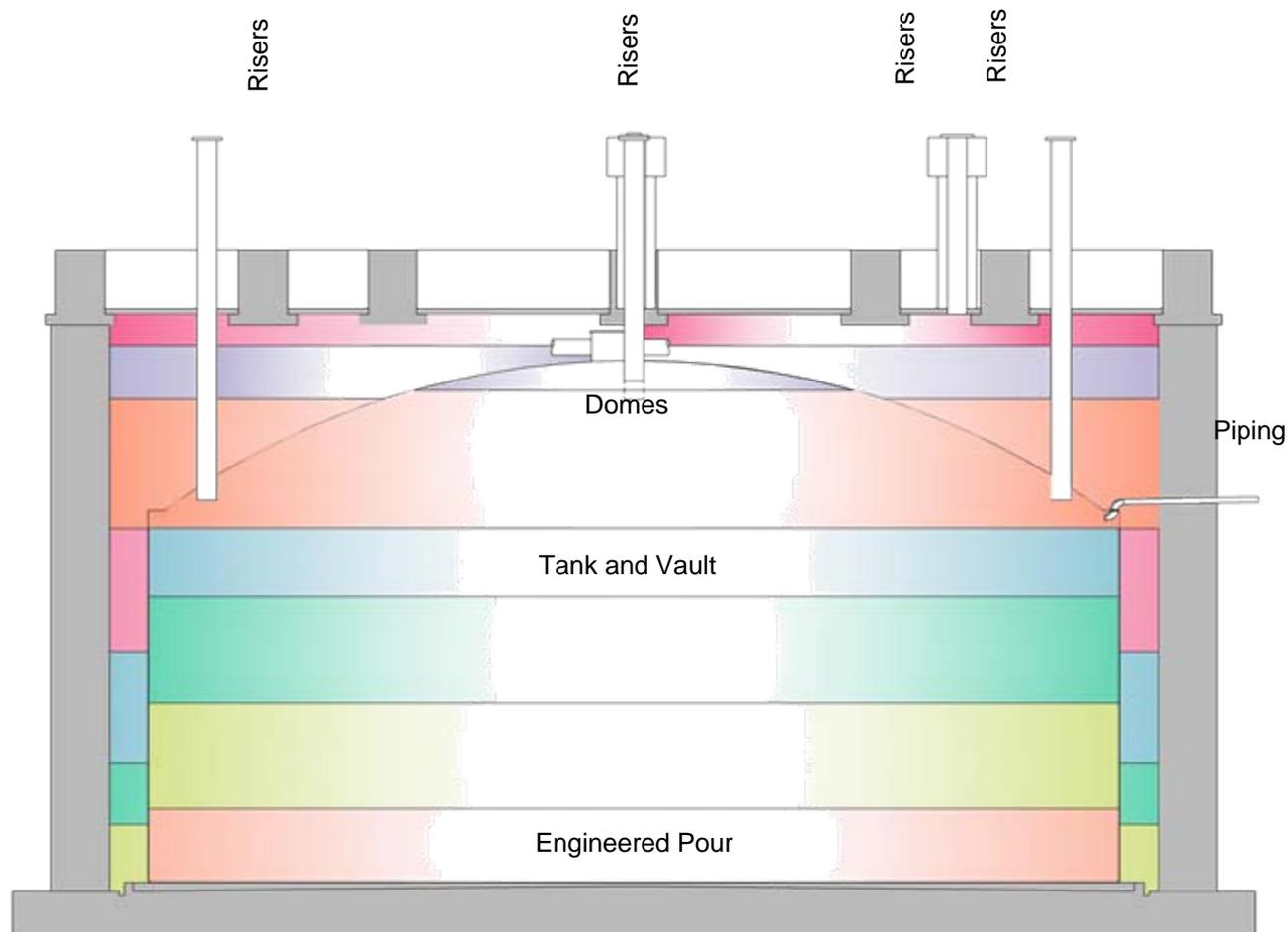
# Tank Grouting Concept



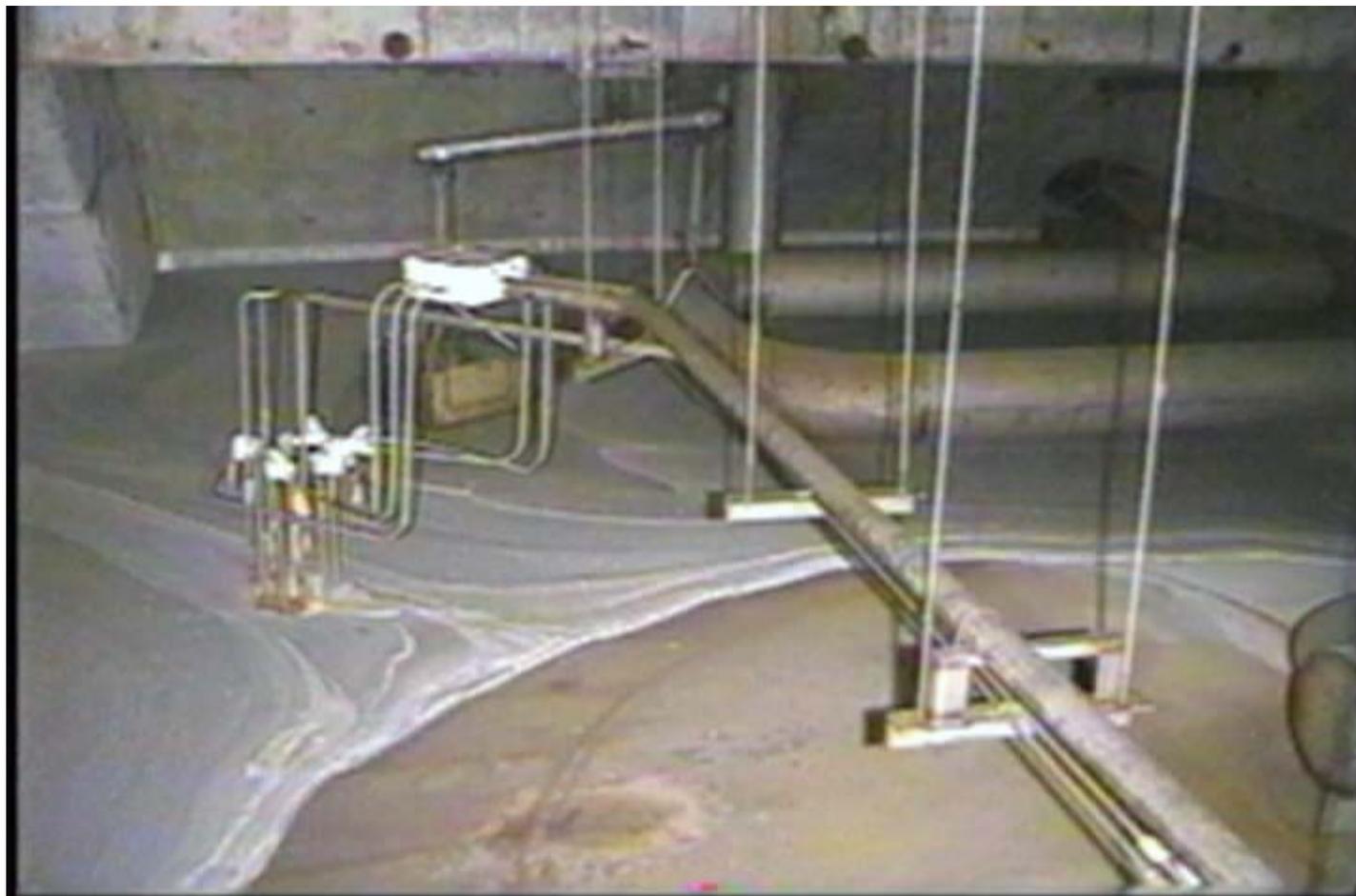
## *Grout Mast from Riser TR-52*



# Tank and vault layers



## *Grouting of Vault up to VES-WM-180 Dome*



## ***Pipe Fill Grout Flowing Out of VOG Piping***





# Typical Cooling Coil Grout Preparation



Cooling Coils before Demolition



Cooling Coils following Demolition

# Grouted Cooling Coils and Pumps used for Grouting



# Typical Tank and Vault Riser Grout Setup



# Typical Grout Vent Collection System



**Winter  
Conditions  
Require Special  
Safety  
Considerations**



**Questions?**

