



DOE Office of Waste Processing
Technical Exchange

F - Tank Farm Closure Annulus Cleaning



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Introduction

- **Tank Closure Driver**
- **Tank Closure Process**
- **Annulus Cleaning Process**
- **Annulus Cleaning Equipment**
- **Results**

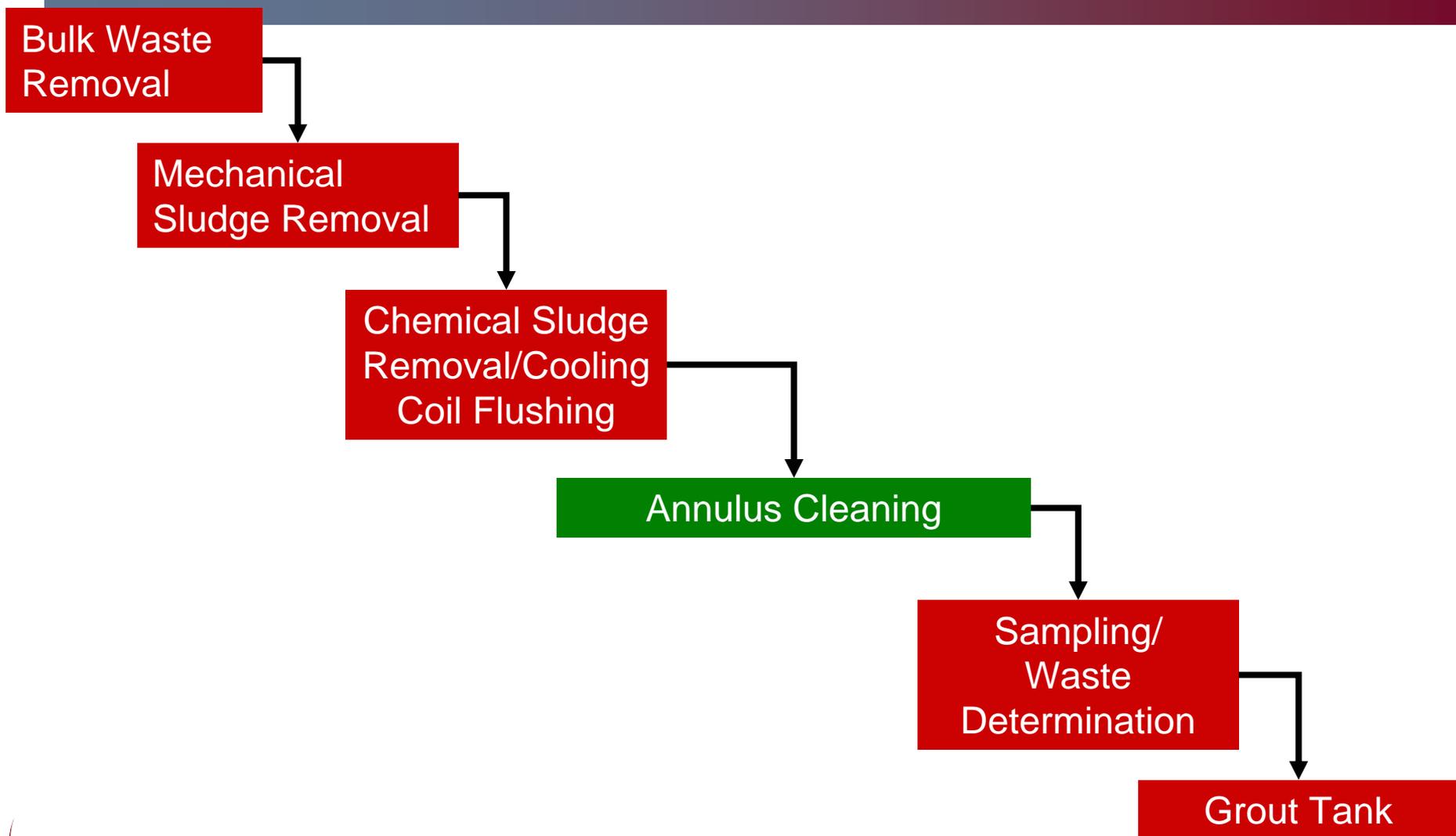


Tank Closure Driver

- **In the Federal Facilities Agreement with the State of South Carolina and the Environmental Protection Agency, SRS has agreed to close non compliant waste tanks by specific dates.**
- **Two of the first tanks selected for closure are Tanks 5 and 6 in F-Tank Farm.**

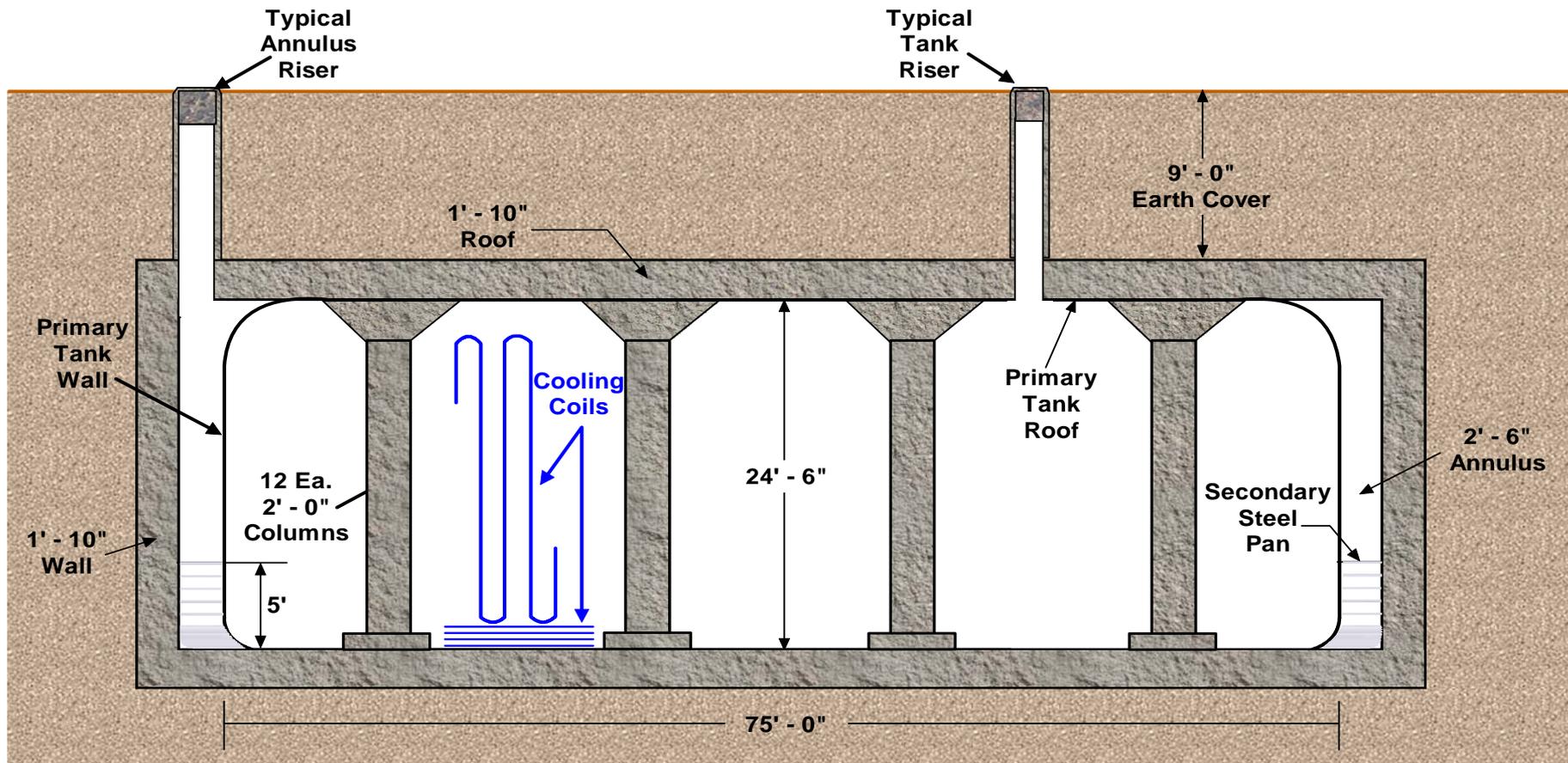


Tank 5 and 6 Closure Process





SRS Type I Tank





Annulus Cleaning Process

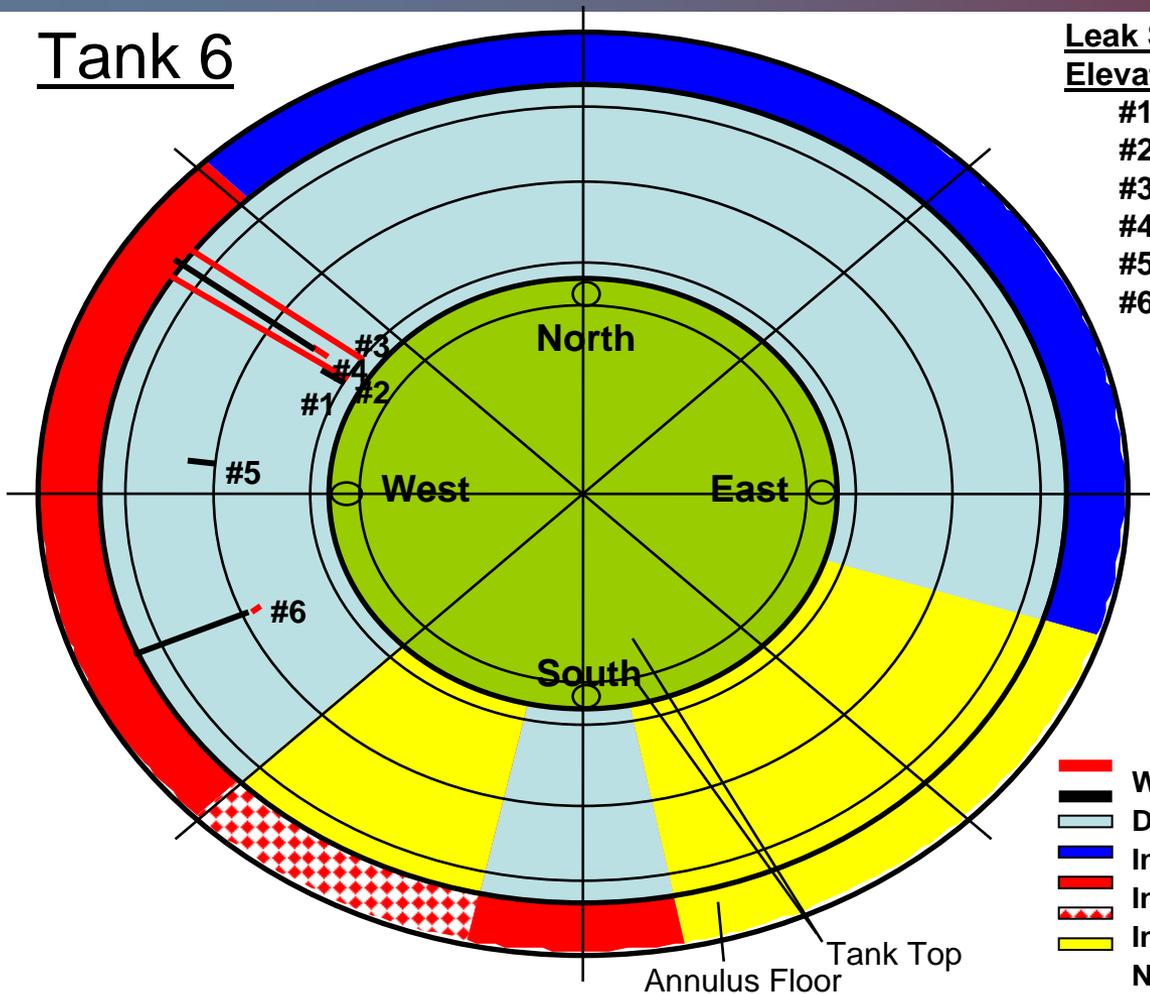
1. Clean and Inspect Tank Annulus Leak Sites with Annulus Wall Crawler
2. Add ~ 1000 Gallons of water to Annulus Floor to dissolve remaining salt
3. Install and operate new Annulus Transfer Pump to transfer salt solution to primary tank
4. Obtain sample for characterization of the residual material in the annulus.
5. If objective is not met, perform steps 2-4 again.



Typical Leak Site Locations

Tank 6

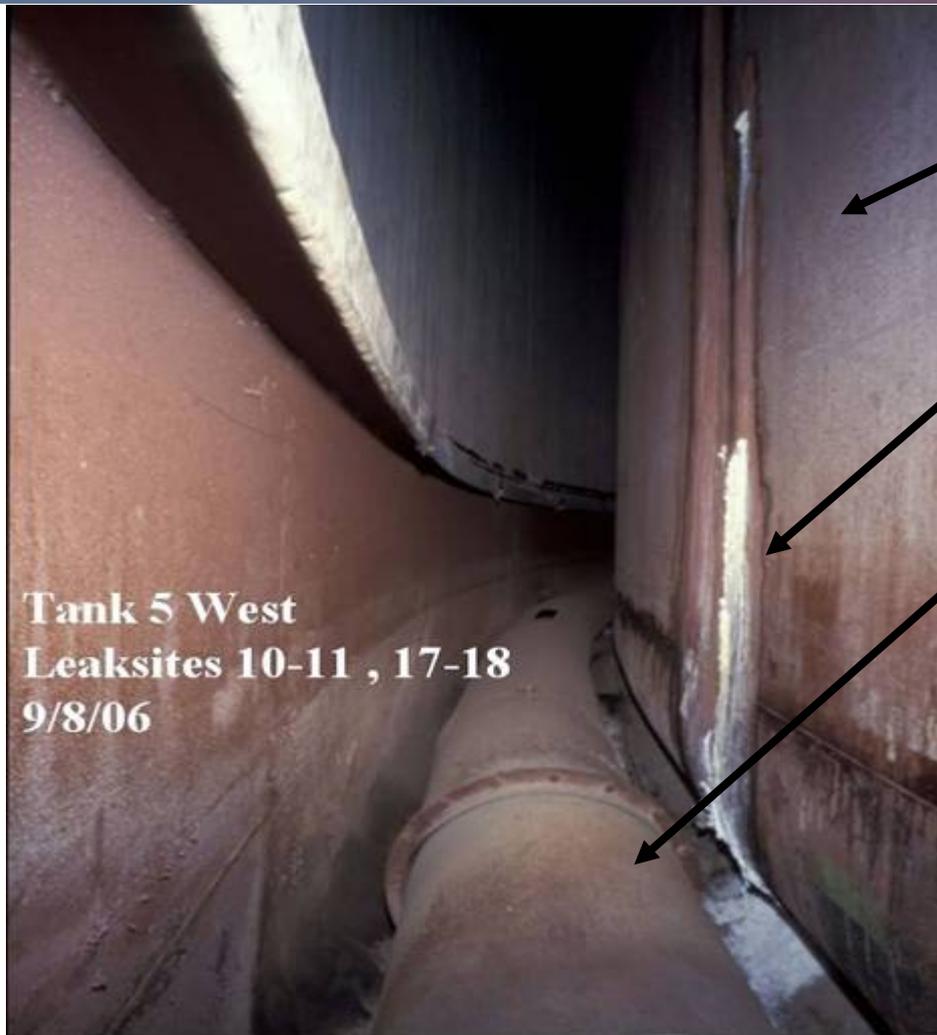
Leak Site	Location	Elevation
#1	W-24-N	233
#2	W-24.3-N	233
#3	W-26.5-N	233
#4	W-25-N	165
#5	W-7-N	129
#6	W-18.5-S	145



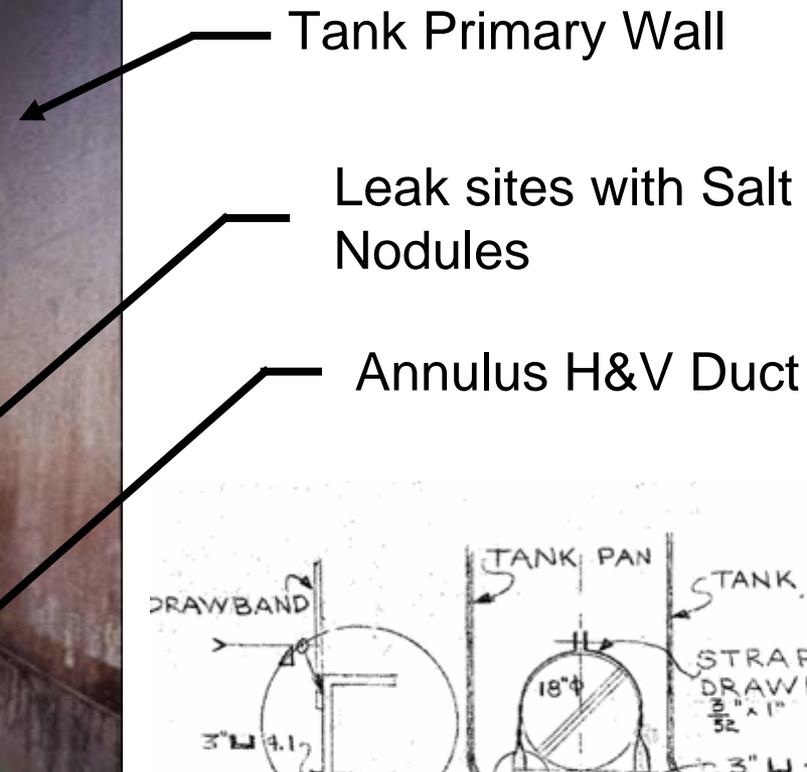
- █ Wet
- █ Dry
- █ Inspected Tank Wall
- █ Inspected Annulus & Confirmed Dry
- █ Inspected Annulus & Confirmed Wet
- █ Not Inspected but Believed Wet
- █ Can't Inspect



Tank 5 Leaksites 10-11, 17-18



Tank 5 West
Leaksites 10-11, 17-18
9/8/06



Tank Annulus Schematic



Tank 5 and Tank 6 Annulus Cleaning

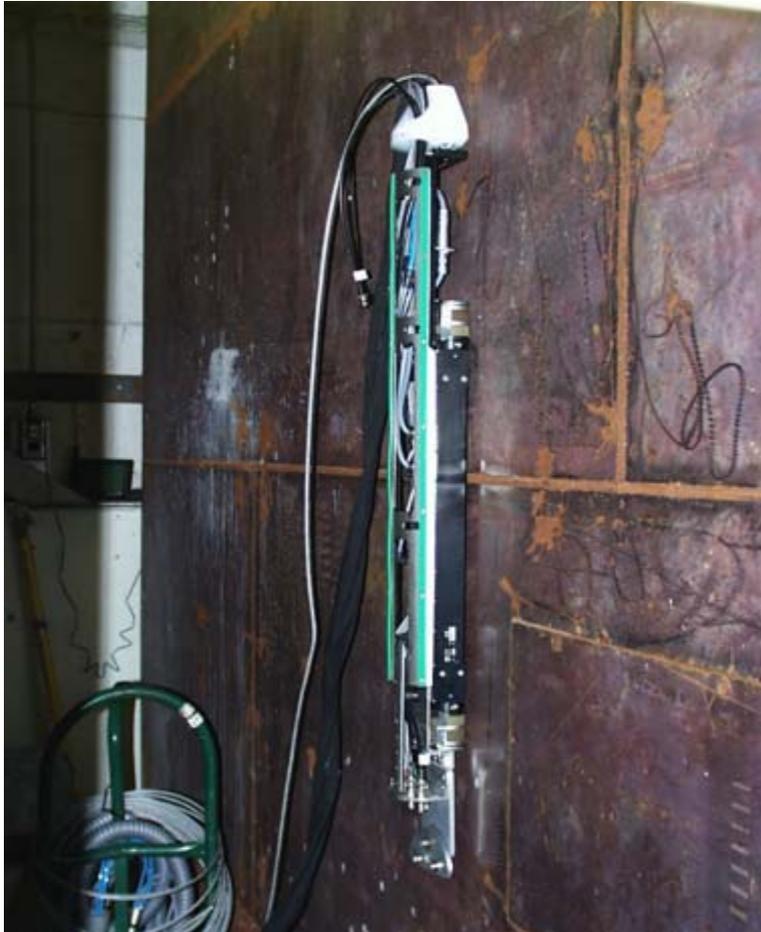
- Tank 5 Started April 2009
 - ~ 15 Gallons of Salt located within the Annulus
 - 2 of 4 quadrants completed
 - 25 Gallons of water utilized
 - 18 leak sites planned for cleaning - 5 additional leak sites found

- Tank 6 Started April 2009
 - ~ 90 Gallons of salt located within the Annulus
 - 3 of 4 quadrants completed
 - 15 Gallons of water utilized to dissolve salt
 - 6 leak sites planned for cleaning - 5 additional leak sites found

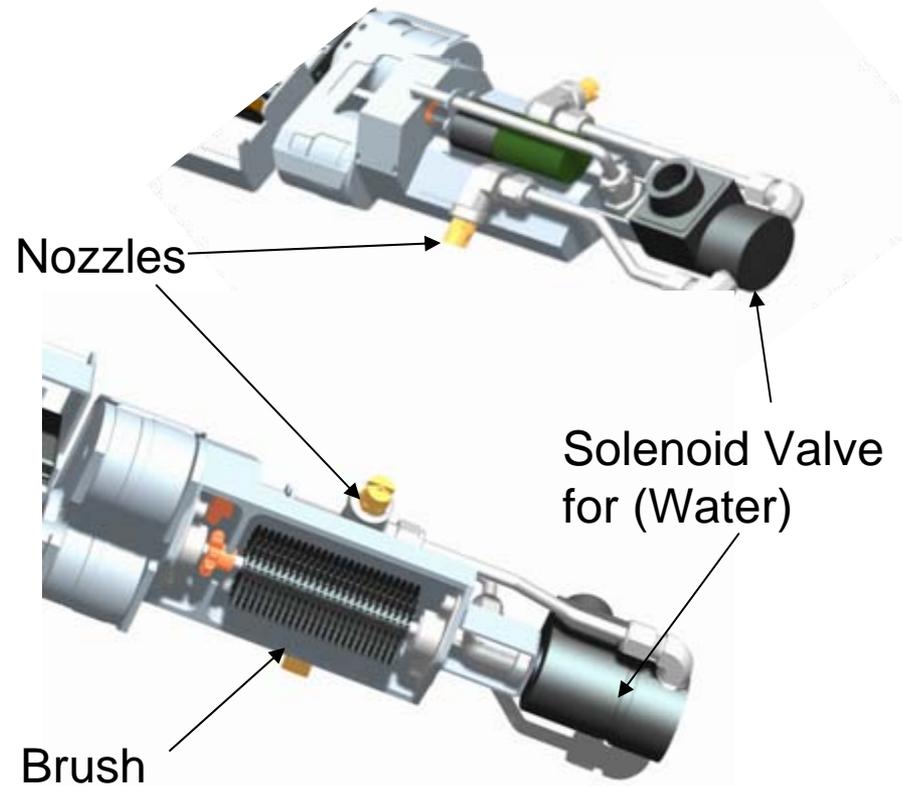


Annulus Crawler

Force Institute Wall Crawler

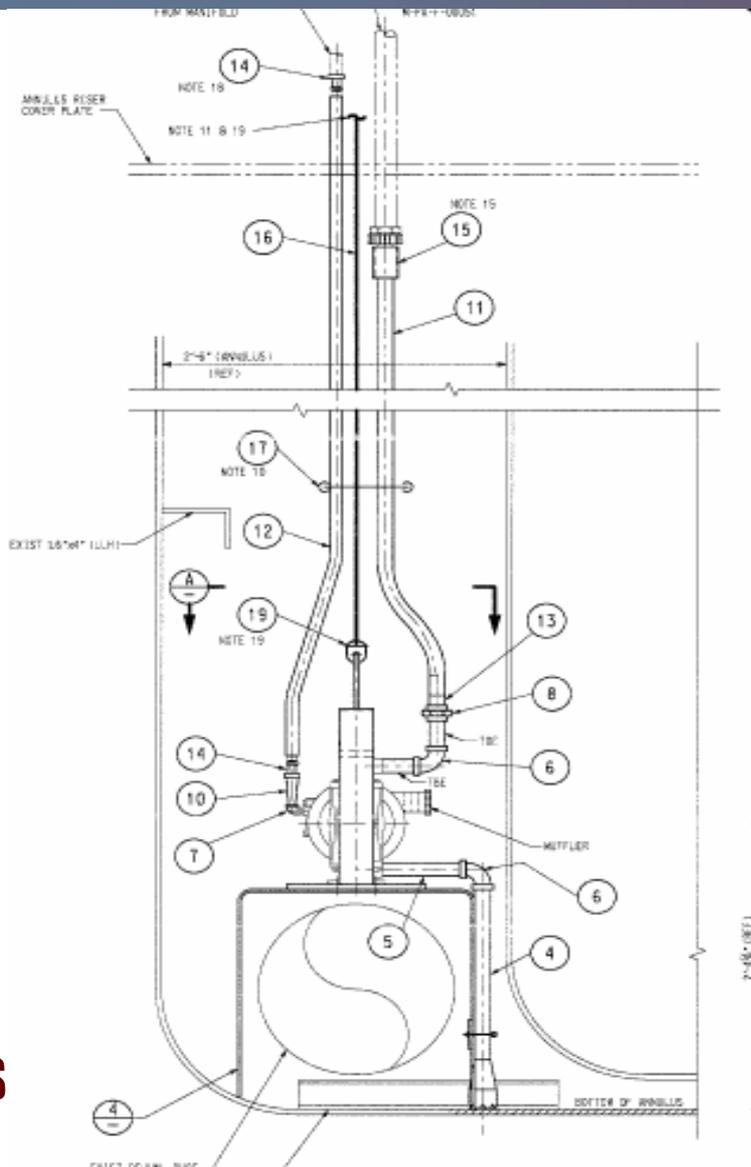


Brush and Nozzle Assembly





Tank Annulus Transfer Pump Design



- ALL-FLO Air Diaphragm Pump
 - 35 gpm @ 100 psi
- Utilizing Modified/Existing Transfer Line
- Speed Air Air Compressor (Air Supply)
 - 5.0 Hp
 - 16.5 cfm

F-Tank Farm Closure Annulus Cleaning





Tank Annulus Access Riser



Access Riser for Annulus Crawler – Typical of 4

F-Tank Farm Closure Annulus Cleaning





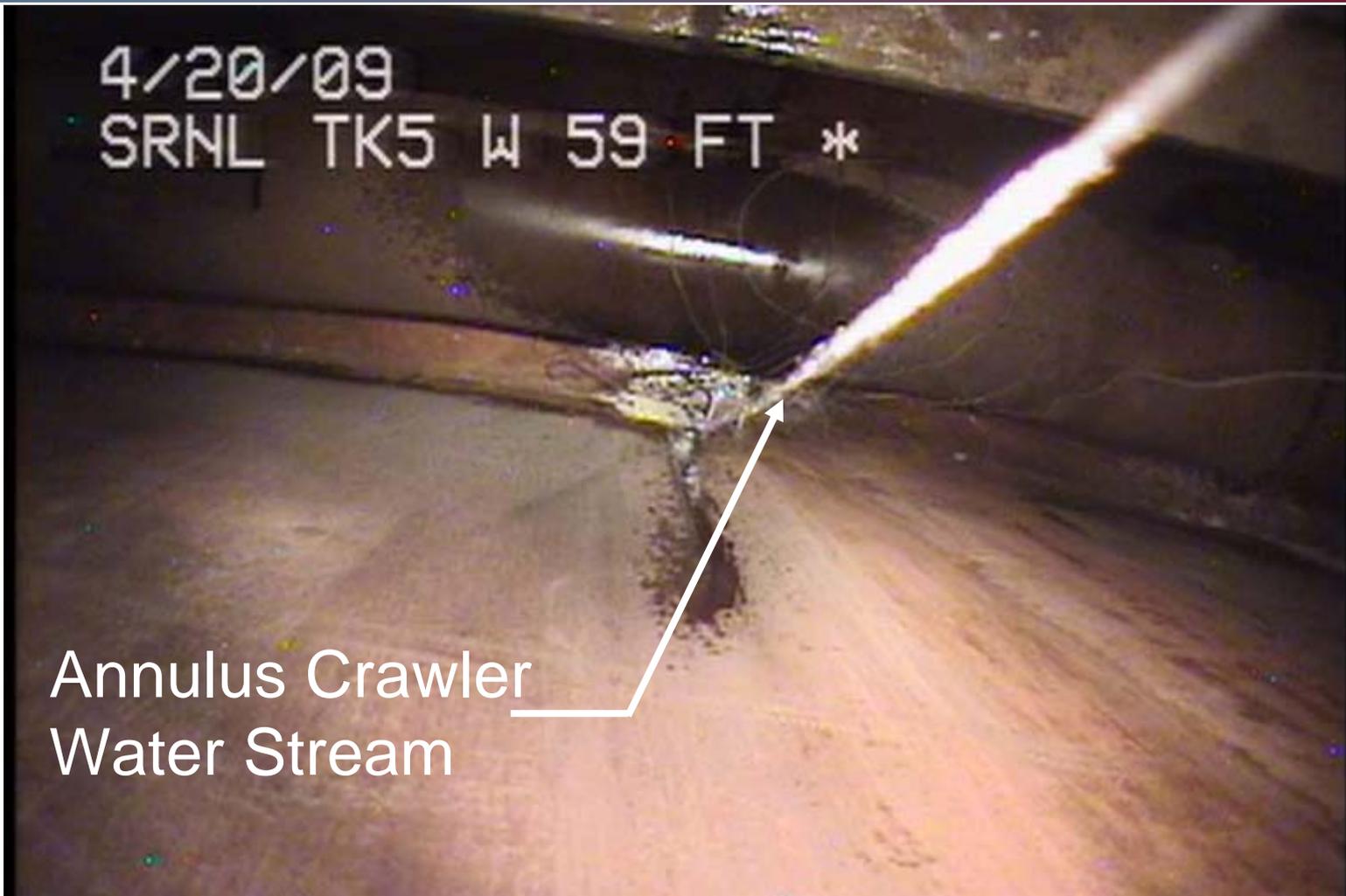
Tk 5 West Riser Leaksite (Before)



Salt Nodule



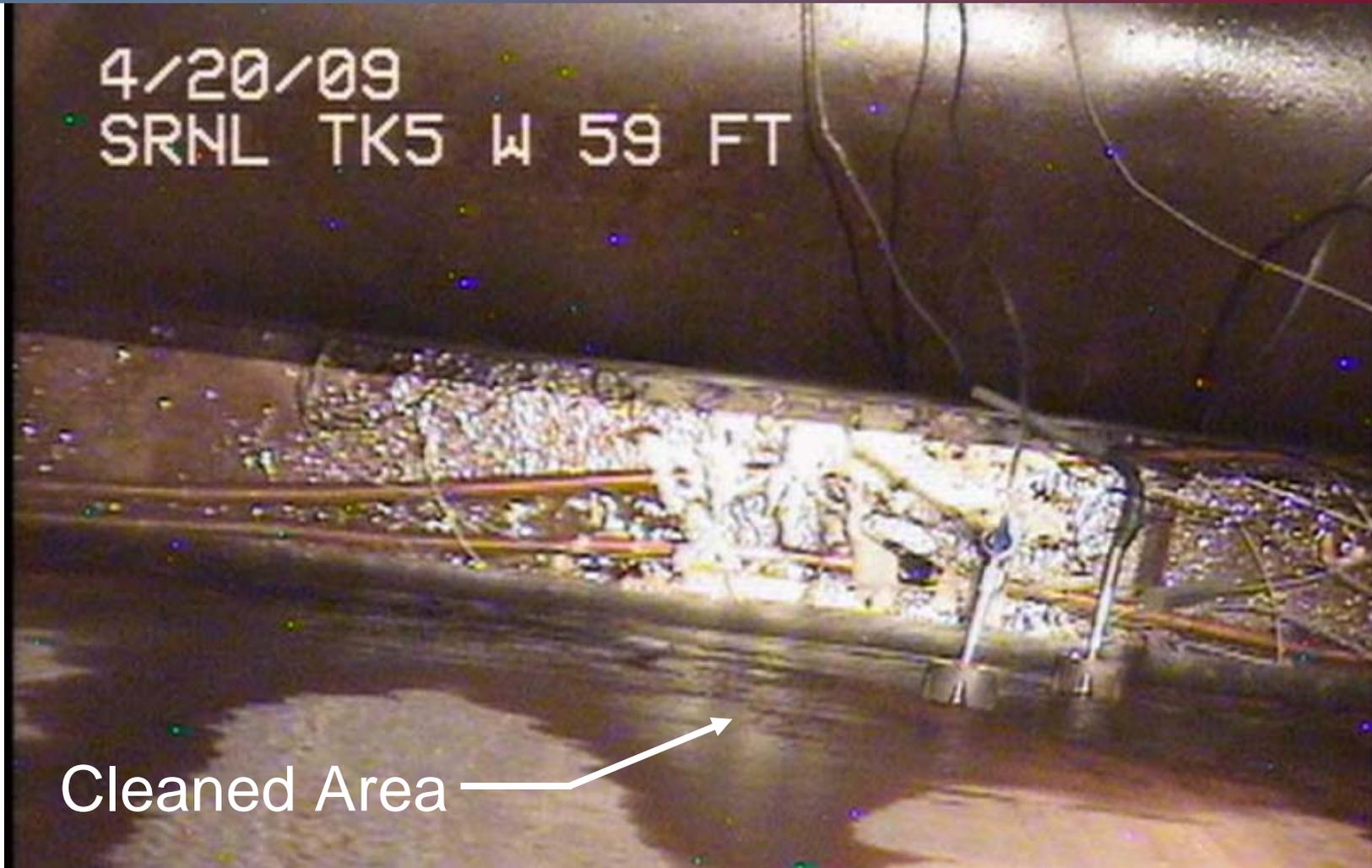
Tank 5 West Riser Leaksite (Cleaning)



Annulus Crawler
Water Stream



Tank 5 West Riser Leak site (Cleaned)



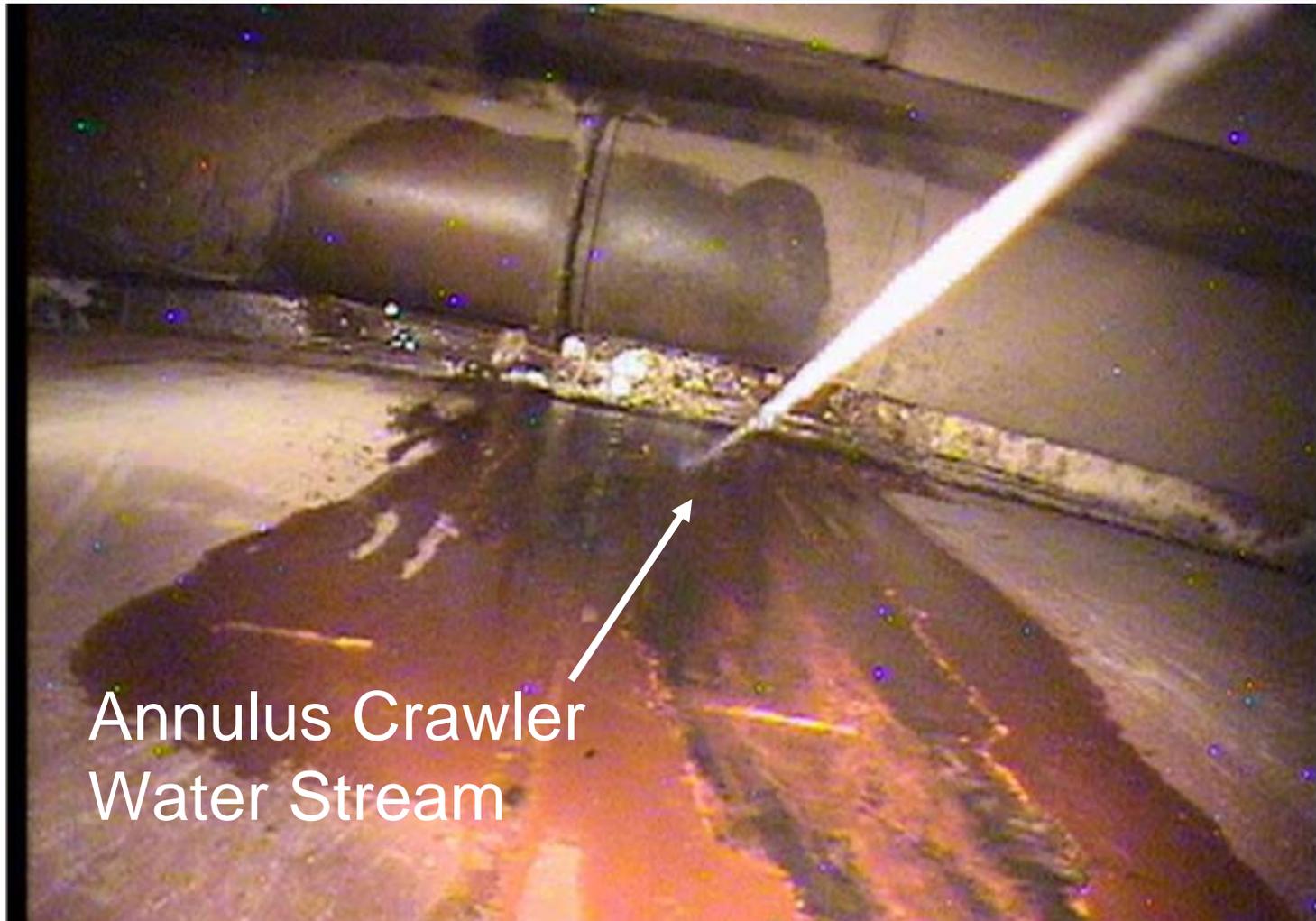


Tank 5 West Riser Leak Site (Before)





Tank 5 West Riser Leak Site (Cleaning)



Annulus Crawler
Water Stream



Tank 5 West Riser Leak Site (Cleaned)



Cleaned Area



Conclusions

- **Accomplished 100% cleaning of every leak site encountered to-date**
- **Utilized less water than planned**
- **Crawler performed as tested**
- **Next step is to flood annulus floor to up to 3” (~1000 gallons) to dissolve remaining salt**
- **Pump dissolved material to back to primary tank**
- **Caution with access risers varying in size/diameter which caused minor difficulty with crawler installation and removal.**



Questions and Answers

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