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Tank Farms Work Scope: Major Areas

- ❑ Tank Farm Infrastructure Upgrades
- ❑ Waste Feed Infrastructure
- ❑ Other Infrastructure
- ❑ Facility Upgrades





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Tank Farm Infrastructure Upgrades

Ventilation at AP and SY Farms

What: Design new ventilation systems for both tank farms; fabricate, install, and test ventilation system for SY Farm

Why: Ventilation prevents buildup of flammable and corrosive gases in the tanks. Existing ventilation systems are unreliable and costly to maintain. New systems will simplify operations and prepare for waste transfer to the Waste Treatment Plant.



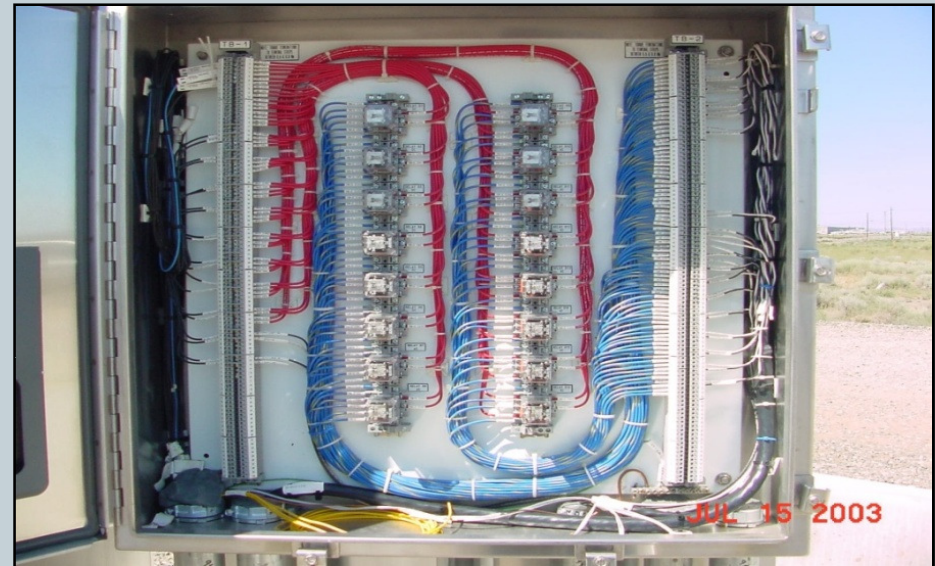


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Tank Farm Infrastructure Upgrades Electrical System at SY Farm

What: Fabricate, install, and
test new electrical supply and
distribution system



Why: The existing electrical system is 30 years old, undersized, does not meet current code requirements, and does not meet the supply requirements for the transfer systems that will feed the Waste Treatment Plant.



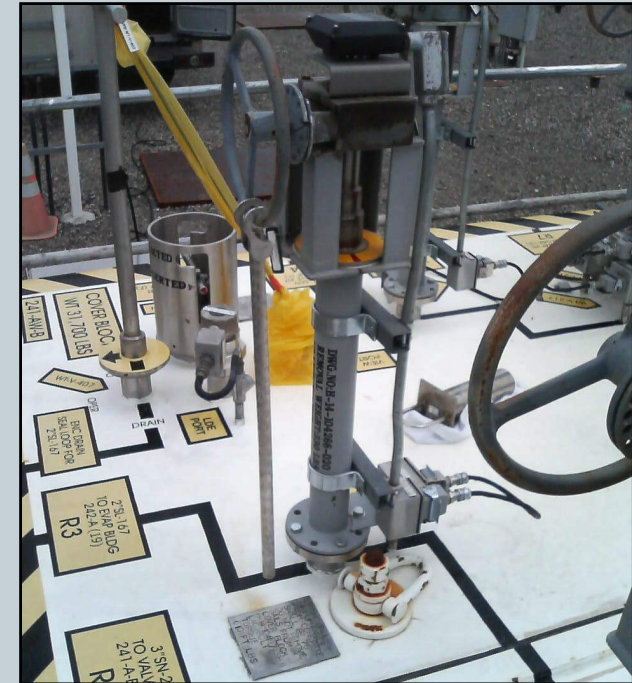
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Tank Farm Infrastructure Upgrades Valve and Jumper Replacement

What: Design, fabricate, install, and test replacement

- ❑ jumpers in 2 pits in AN tank farm
- ❑ 34 valve funnels in 5 pits in AP, AW, and AZ tank farms
- ❑ 16 jumpers and 48 valves in one valve pit in the AP tank farm



Why: Jumpers allow flow to be redirected without extensive piping replacement. Funnels guide long-handled tools to the underground valves that stop and start flow. New, redesigned jumpers, funnels, and valves will improve efficiency, lower cost, reduce time required to set up for retrieval and transfer operations, and increase workplace safety.



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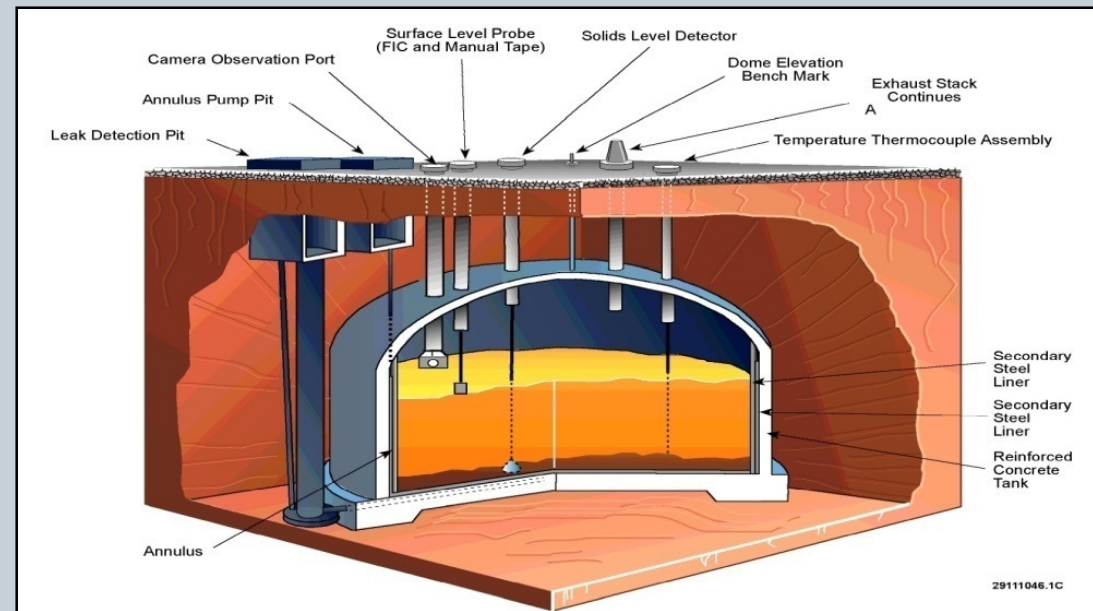


Tank Farm Infrastructure Upgrades

Double Shell Tank Capacity Increase

What: Perform equipment modifications to allow the safe operating levels to be increased in six tanks of AP Farm.

Why: The project will increase the total storage capacity by approximately 700,000 gallons. The additional waste storage capacity in the double shell tanks will allow more waste to be retrieved from single shell tanks.





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Tank Farm Infrastructure Upgrades Ventilation Control System

What: Install a new Master Control System for the 241-702-AZ Ventilation System.

Why: Ventilation is needed to control flammable and corrosive gases generated in the tanks. The existing Master Control System is 20 years old with no vendor support and minimal spare parts. Accelerating its replacement will reduce maintenance costs and minimize the risk of system failure.





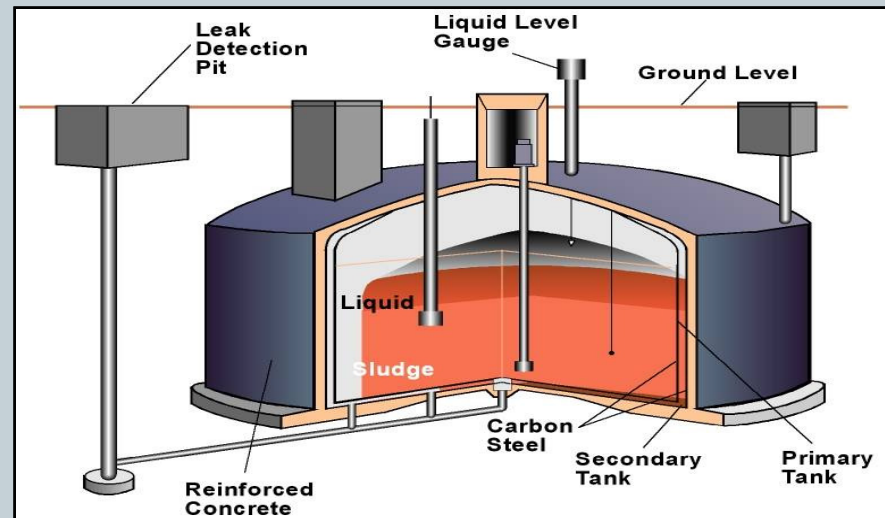
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Tank Farm Infrastructure Upgrades Double Shell Tanks

What: Fabricate and install corrosion probe in tank AN-107. Procure three spare transfer pumps. Build and test upgrades to the cathodic protection system.

Why: Minimize corrosion and ensure capacity of double shell tanks to contain waste safely until closure. Improve efficiency of waste transfers by maintaining adequate stock of critical spares.





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Tank Farm Infrastructure Upgrades Single Shell Tanks

What: Replace old filters, remove obsolete equipment, upgrade electrical system.



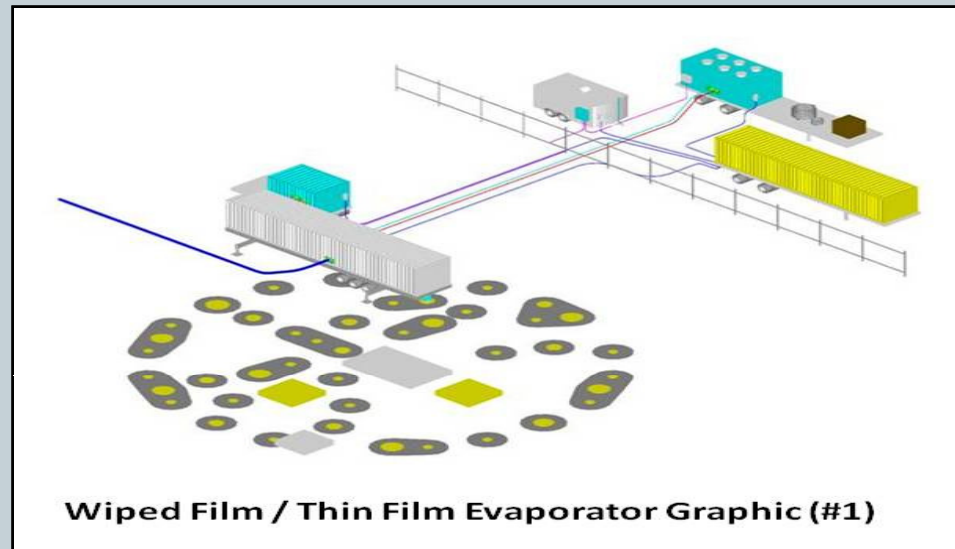
Why: Support safe, efficient, and cost-effective management of the single shell tanks until they can be retrieved and closed.



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Other Infrastructure Upgrades Wiped Film Evaporator Development



What: Pilot scale testing of a transportable Wiped-Film Evaporator (WFE) system to augment the existing 242-A Evaporator.

Why: Additional evaporator capacity is critical to maintaining the planned schedule of waste transfers from single shell to double shell tanks, for removing excess water that is added to loosen solidified waste from the tanks, and for preparing to feed waste from the tanks to the Waste Treatment Plant.



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Other Infrastructure Upgrades

Mobile Core Sampling System

What: Design and build a
Mobile Core Sampling
System to replace 30-
year-old sampling trucks.

Existing
sampling
truck



Why: The existing sampling trucks are over thirty years old, maintenance intensive, and unreliable. Reliable waste sampling is necessary to monitor the condition of waste in the tanks, prevent corrosion, retrieve and transfer waste to double shell tanks, prepare for volume reductions using the 242-A Evaporator, and prepare for waste feed to the Waste Treatment Plant for vitrification.



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Facility Upgrades

242-A Evaporator Upgrades and Life Extension

What: Procure critical and backlogged spare parts including three 242-A pumps. Design, fabricate, install and test replacement exhaust system. Procure and install approximately 88 measuring and monitoring instruments.

Why: The 242-A Evaporator reduces waste volume by removing water from the waste while letting dangerous constituents remain. The evaporator is essential for optimizing use of available tank space. The system is a single point failure; unplanned downtime will be a serious setback to future retrievals and transfers, and to feed availability for the Waste Treatment Plant.





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Facilities Upgrades

222-S Laboratory Instrument Upgrades

What: Procure and install equipment required for analysis of tank waste such as Alpha and Gamma Energy Analyzers, Mass Spectrometer, Ion Chromatograph, Viscometer, Particle Size Distribution Analyzer, and other instruments.

Why: Existing instruments are over 15 years old, obsolete, no longer supported by manufacturers, and/or do not adequately support planned activities such as waste retrieval, transfer, reduction through evaporation, vapor analysis, and vitrification in the Waste Treatment Plant.





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Facilities Upgrades

222-S Laboratory Life Extension

What: Replace roof membrane, update support facilities, install electrical heating system, relocate standards lab, update electrical drawings and emergency notification system.



Why: Some Lab facilities are nearly 60 years old and are inadequate for the increase in activity as the Waste Treatment Plant begins operation. The existing fuel oil-based (steam) heating system is inefficient and costly to operate and maintain. Planned work will reduce the Lab's carbon footprint, streamline operations, reduce unplanned downtime, and ensure that the Lab can safely handle up to double the current number of samples each year.



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Facility Upgrades Effluent Treatment Facility

What: Start procurement of long lead-time items required to upgrade the Effluent Treatment Facility. Perform demonstration testing of the waste form produced.



Why: The Effluent Treatment Facility will receive secondary waste that is a bi-product of vitrification. Starting procurement and testing early will allow more options to be considered and ensure that the ETF output can be accepted by the Integrated Disposal Facility.



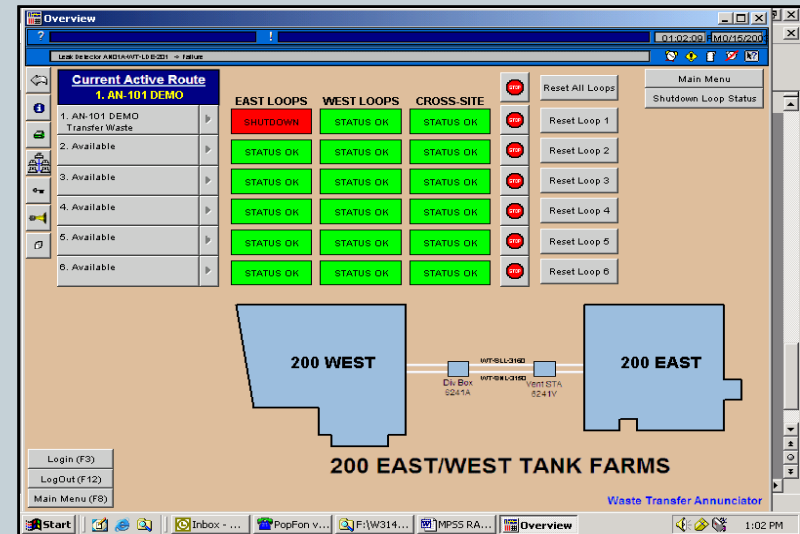
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Waste Feed Infrastructure Upgrades Automated Leak Response in the Tank Farm Control System

What: Implement the automatic shutdown capability for the Double Shell Tank Farm control system.

Why: The existing system relies on operators to monitor leak detection alarms within the pipes, valves, and pumping systems, and to respond to a detected leak by selecting the appropriate pumps and shutting them down manually. An automated system will improve the speed and accuracy of leak response, reducing the risk of spills. The improvements will affect AN, AP, AW, AY/AZ, and SY tanks farms, and the cross-site waste transfer systems.

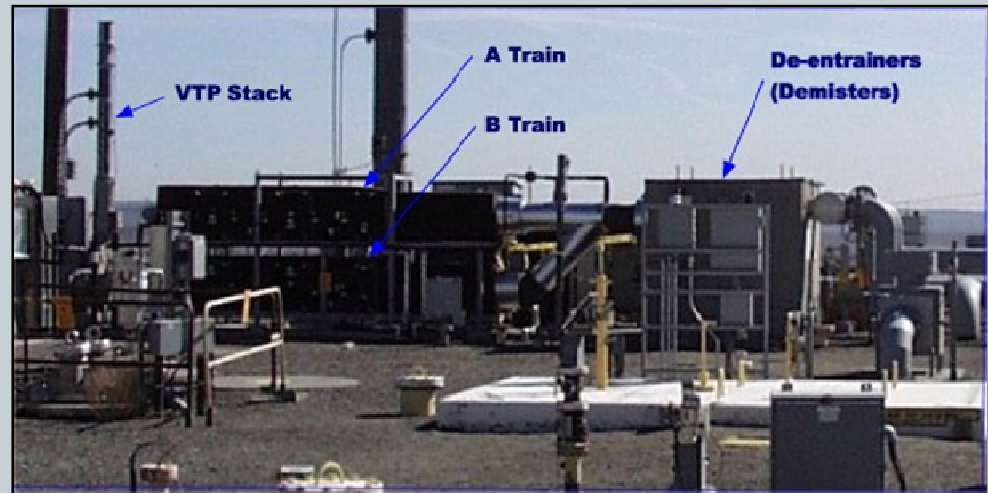




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Waste Feed Infrastructure Upgrades Exhauster Demolition and Disposal



What: Remove obsolete and abandoned ventilation equipment in the AW and AN Tank Farms including 2 exhausters, 2 HEPA filter trains, ventilation system ducting, and stacks.

Why: Eliminate potential sources of contamination; remove obsolete alarms; reduce workplace hazards; streamline waste monitoring, retrieval, and transfer operations.



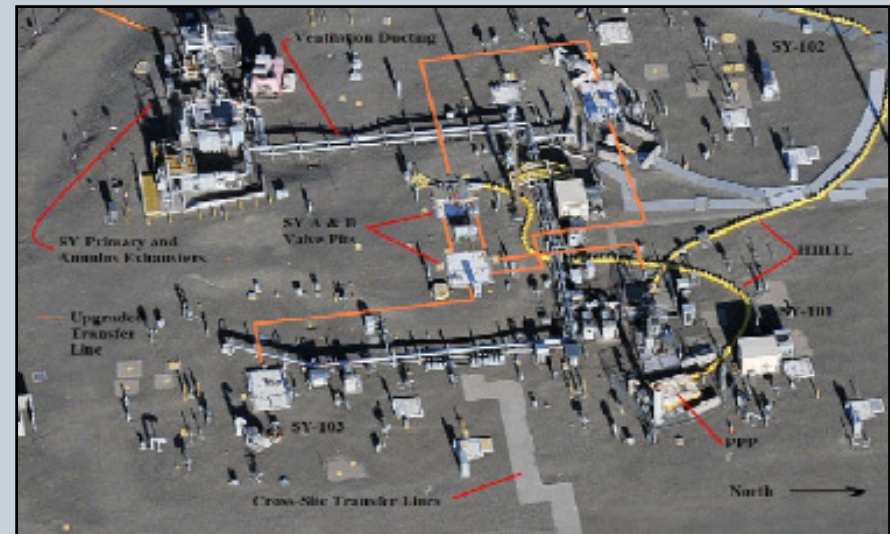
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Waste Feed Infrastructure Upgrades Transfer Lines

What: Design, procure, and install approximately 675 feet of piping to provide valve pit transfer lines in SY tank farm and condensate lines in AZ tank farm.

Why: Existing valve pit piping is not compliant with current hazardous waste rules. The valve pit transfer lines are needed to safely transfer waste during retrieval operations and to deliver waste to the Waste Treatment Plant. Condensate line upgrades will allow distribution of the condensed liquid to more than one tank, lengthening the interval between tank mixing sessions.





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Waste Feed Infrastructure Upgrades

Clean-out Box Removal

What: Deactivate, isolate, and remove three clean-out boxes from AW Tank Farm.

Why: Removes an environmental safety risk from AW Farm and provides redundancy to the operation of 242-A evaporator, reducing the risk of a single point failure within the system.

Mixer Pump Fabrication

What: Complete designs for in-tank mixing pumps, fabricate up to 6 pumps.

Why: Mixing pumps are used to mobilize, retrieve and prepare double shell tank waste for transfer to the Waste Treatment Plant.



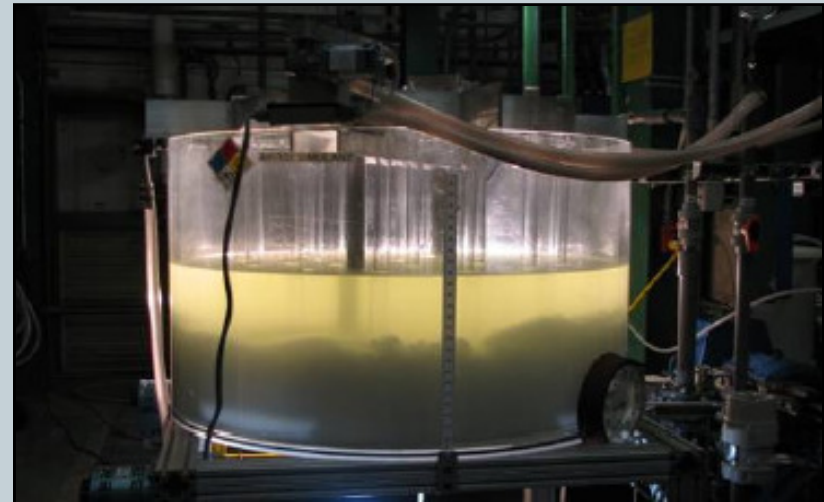


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Waste Feed Infrastructure Upgrades Mixing Demonstration

What: Scale demonstrations of tank waste mixing and sampling systems. Four mixing and two sampling configurations will be demonstrated using tank waste simulants.



Why: Reduce risk of unexpected technical problems in supplying waste to the Waste Treatment Plant by testing systems that collect waste samples during feed and that mix different types of waste together to optimize chemical properties for incorporation into glass.