

Tank 18/19 Grout
Addition

RadCon Plan

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Revision 1

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General Description

Tank 18 and Tank 19 Grout Placement Operations

High level waste tanks undergoing closure are required to be filled with grout for the purpose of chemically stabilizing residual material, filling the tank void space, and discouraging future intrusion. For Tanks 18 and 19, the bulk fill grout will be placed through the center riser as was previously done for the bulk fill grout in Tanks 17 and 20. Successful placement of the bulk fill grout using a single pour point is anticipated due to the properties being similar to the bulk fill grout that was used in Tanks 17 and 20. The project team has evaluated the lessons learned from the closure of Tanks 17 and 20 and have incorporated the pertinent information into the grout strategy. Grout formula testing has been performed to test grout flow properties.

Reducing grout will be used to fill the entire volume of Tanks 18 and 19. Inspections performed during sampling activities and grout testing indicate that the reducing grout is expected to flow and encapsulate the remaining material. This will stabilize and immobilize the material at the bottom of the tanks.

The operational closure isolation process for Tanks 18 and 19 has isolated each waste tank from the FTF Waste Transfer System (WTS) and the FTF support systems. Implementation of the process consists of identification and isolation of transfer lines, drain lines, water, air, and steam supply lines, ventilation lines, power and instrumentation lines and all other penetrations into or out of the waste tank. Isolation of these systems have been performed at the electrical control rooms for electrical services and instrumentation and at the system supply headers located off the waste tank top for mechanical systems. Where practical, accessible piping and conduit has been removed creating a physical break from the waste tank. Other pipes have been plugged or capped to isolate them from the FTF transfer line system. Isolating all systems from the waste tank renders the waste tank closed to waste processing activities.

For both Tanks 18 and 19, tank top modifications will be made to accommodate waste tank grouting and riser capping activities. Riser capping will be performed to isolate structures protruding from a riser. After external motors, piping, electrical, and instrumentation commodities have been removed from the riser, a grout form will be built around and over the riser and remaining structures will be encapsulated with grout. Post-grout modifications will remove the remaining structural steel trusses, mechanical and electrical piping/conduit, instrumentation and power cables/wiring, raceways, motors, and any other remaining equipment from the waste tank top footprint. The waste tank top will be free of all mechanical, structural, and electrical commodities. Only the grouted riser caps will remain within the footprint of the waste tank's tank top.

Each waste tank riser will be filled with grout through the lower sections of each riser. Several large pieces of equipment used in supporting waste removal and heel removal from the tank will be entombed with grout as part of the closure process for both Tanks 18 and 19. Equipment will be filled with grout to the extent practical, as the waste tank is backfilled. During grouting activities, the waste tank ventilation system (or a supplemental system) will remain operational until after grouting is complete.

The waste has been characterized for radiological and non-radiological residual contamination in the individual tanks and used the FTF Performance Assessment to assess the long-term impact of the residual contamination. The evaluation concluded that the stabilized Tanks 18 and 19 would be protective of human health and the environment.

Dose Control

Radiation dose to personnel will be maintained As Low As Reasonably Achievable (ALARA).

A remote/electronic monitoring instrument (Viewpoint System) will be used to monitor the dose rates around the riser (center) being used to add grout to the tank. Periodic surveys will be performed at the EPD locations by Radiological Control Inspectors using portable dose rate instruments. While grout is being added to equipment, RadCon will perform periodic radiation surveys.

Radiation levels on the Tank HEPA filters will be monitored by the Viewpoint system while grout is being added to the tanks.

RWPs will be established to track dose received by workers associated during grout addition.

Contamination Control

The spread of contamination will be controlled using engineering controls; such as tank ventilation, portable ventilation, containment devices, etc. and PPE.

Grout will be added to the tank via the center riser. A HUT has been constructed around the center riser and will remain in place while grout is being added. Each riser that has a component that will be grouted has a HUT constructed around it and will remain until grout addition has been completed in that riser.

The primary objective of the tank ventilation is to prevent release of material from the tanks to the workplace environment. Tank ventilation will remain running while grout is being added and will remain running until the grout level reaches the tank spring line.

At this point, on Tank 19 a portable HEPA unit will be attached to an open riser to provide tank ventilation and on Tank 18 a portable HEPA unit will be connected to tank ventilation. The purpose of both is to maintain a negative pressure on the tank while grout addition is being completed.

Each component that needs to be filled with grout will have a fill line and a vent line.

As each component that is being filled with grout, a portable ventilation unit with HEPA filter will be used to maintain a negative pressure around the vent line of the component until it has been filled with grout.

Surveys

The radiation rates around the main tank pour point and on the HEPA filters will be monitored by EPDs that will be positioned close to the filter housing. Rad Con Inspectors will also periodically monitor the rates using portable instruments.

Contamination surveys will be performed periodically around the riser/component being filled with grout.

Air Sampling

Air samplers will be placed at all ventilation exhaust.

Additional air samplers have been placed around the tanks to supplement the FARMS samplers that are presently in place. The picture below shows FARMS samplers at locations north of Tank 17 (29) and north of Tank 18 (12). The air sampler at location 25 has been moved to the top of the rock bank east of Tank 20. For the duration of grout addition to the tanks, additional samplers have been added west of Tank 19 and south of Tank 19.

