

May 7, 2004

CBU-SPT-2004-00099

Retention: Until dismantlement
or disposal of facility, equip.,
system or process

Disposal Auth: DOE 14-1.c(1)

Tracking #: PEC 10001

To: George Matis 766-H Rm1066F

From: Dennis Conrad 766-H Rm 2007

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PATH FORWARD FOR RESUMPTION OF TANK 3 INTERSTITIAL LIQUID REMOVAL

BACKGROUND

Tank 3 has been equipped with the necessary equipment to allow interstitial liquid removal (ILR), under J-DCP-F-03006.^{1,2} ILR commenced October 31, 2003, with the transfer of Tank 3 interstitial liquid (IL) to Tank 7. The Tank 3 to Tank 7 transfer was stopped on November 5, 2003, when an unexpected pool of liquid in Tank 3 was encountered. The pool was a region of high porosity, approximately 54%. The pool implications were assessed and it was determined that a greater volume of liquid would be removed from Tank 3 than originally anticipated.³ The Tank 3 to Tank 7 ILR transfer was restarted on November 10, 2003.⁴ On November 12, 2003, chromate cooling water leaks occurred in many Tank 3 cooling coils and the Tank 3 to Tank 7 transfer was stopped due to tank top loading concerns. A video inspection of the Tank 3 interior was performed. The Tank 3 situation was assessed by Structural Mechanics and found to be in a safe state. Tank 3 controls were developed to allow resumption of ILR.^{5,6} To date, the removal of Tank 3 interstitial liquid has not resumed.

Current Tank 3 Conditions

- Portions of the salt cake above the high porosity pool region have subsided from a few inches to approximately two feet.
- All cooling coils, except for one, have developed leaks.
- 58,671 gallons of Tank 3 interstitial liquid have been transferred to Tank 7.
- Approximately 9,000 gallons of flush water have been added to Tank 3 since October 31, 2003, to support dip tube, transfer pump and transfer line flushing.
- It is estimated that there are approximately 40,500 gallons of removable liquid in Tank 3.
- The Tank 3 liquid level is 149 inches, assuming a liquid specific gravity of 1.5.

Desired Endpoint

- Tank 3 in a safe state following implementation of the Tank 3 Lay-Up Plan.

DISCUSSION

Three options exist on how to proceed with Tank 3 in its current state.

1. Continue to drain Tank 3 IL to Tank 7 as described in the Tank 3 Salt Preparation and Dissolution Technical Plan, CBU-SPT-2003-00064 Revision 3. Suspend Tank 3 salt preparations when the 90,000 gallon target for ILR has been reached.
2. Do no further ILR from Tank 3 and proceed with a modified salt dissolution evolution using the salt dissolution equipment described in CBU-SPT-2003-00064 Revision 3, though on a more limited basis. This will allow effective water addition and salt dissolution methods to be proven.
3. Suspend Tank 3 salt preparation and removal activities indefinitely and implement the Tank 3 Lay Up Plan.

OPTION 1

Discussions between SRTC and Salt Program Engineering have concluded that little information is gained from continued ILR from Tank 3. Based on numeric modeling, the intrinsic permeability of Tank 3 salt cake is estimated to lie in the range of 25 to 50 Darcy. A best estimate is 37 Darcy. This is consistent with Tank 41 salt cake permeability. Drainage data from the Tank 3 salt cake below 160 inches suggest the salt cake in Tanks 41 and 3 share similar porous medium properties.⁷ Sludge removal activities from Tanks 4, 5 and 6 would be adversely impacted by the resumption of ILR from Tank 3. Tank 3 ILR would also aggravate Tank Farm space limitations by adding waste volume to the existing Tank Farm inventory. This interstitial liquid would be highly saturated and not suitable evaporator feed.

OPTION 2

While water addition and salt dissolution information would be gained with Option 2, there is no financial incentive to the Company, Westinghouse Savannah River Company (WSRC), to pursue this option. The usefulness of this information can not be quantified. The current financial situation at WSRC limits the resources that could be committed to Option 2.

OPTION 3

The current Letter of Direction from the Department of Energy to WSRC gives little incentive to continue with Tank 3 activities at this time. Keeping Tank 3 equipment in a ready to use state adds water to the System due to dip tube, transfer pump and transfer line flushing. Implementation of the Tank 3 Lay Up Plan⁸ will allow the SC and SS equipment installed on Tank 3 under J-DCP-F-03006 to be maintained in an operative state. In-tank PS equipment, installed under J-DCP-F-03006, will be abandoned in place and tank top utilities to that equipment suitably terminated. Tank top PS equipment installed under J-DCP-F-03006 will be maintained by F Tank Farm (FTF) as required by FTF priorities and operational needs.

PATH FORWARD

Salt Program Engineering recommends proceeding with Option 3.

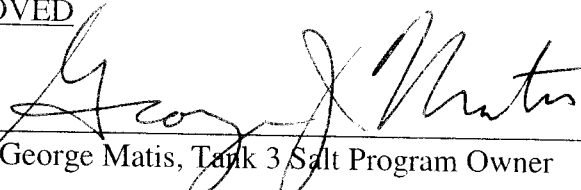
The Tank 3 Lay Up Plan has been approved. Proceed with implementing the Tank 3 Lay Up Plan.

1. Develop and approve a SCIF allowing lay up of Tank 3 salt preparation and removal equipment. George Matis, Salt Program Tank 3 Owner.
2. Develop DCF's to achieve the requirements of the Tank 3 Lay Plan. Salt Program Engineering.
3. Develop work packages to implement DCF's. FTF Operations, FTF Engineering, Salt program Engineering.
4. Implement work packages. FTF Operations.
5. Monitor Tank 3 status. FTF Engineering and Salt Program Engineering.

REFERENCES


1. Tank 3 Salt Preparation and Dissolution Technical Plan, CBU-SPT-2003-00064 Rev 3.
2. Tank 3 Gas Release Modifications, J-DCP-F-03006.
3. Definition of Success for Tank 3 ILR, CBU-SPT-2003-00174 Rev 1.
4. Recommendation to Resume Tank 3 Interstitial Draining, CBU-SPT-2003-00203.
5. Tank 3 Video Inspection Plan, Resumption of Transfer of IL, CBU-SPT-2003-00218.
6. Current Salt Loading on HLW Tank 3, PDCS-SEG-2003-00045.
7. Porous Medium Analysis of ILR from Tank 41 and Tank 3, WSRC-TR-2003-00533.
8. Tank 3 Salt Removal Equipment Lay Up Plan, U-LUP-F-00003.

APPROVED




 George Matis, Tank 3 Salt Program Owner

5-10-04
 Date



 Renee Spires, Salt Program Engineering Manager

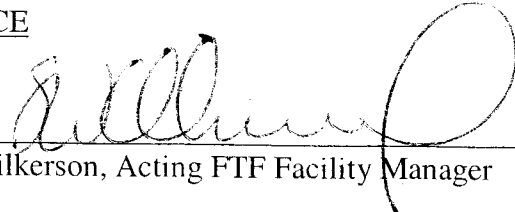
5-7-04
 Date



 Dennis Conrad, Salt Waste Characterization Manager

5/07/04
 Date

CONCURRENCE



 Steve Wilkerson, Acting FTF Facility Manager

5/10/04
 Date

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