



Department of Energy

Richland Field Office

P.O. Box 550

Richland, Washington 99352

0028628  
9304701

MAY 28 1993

93-TWS-088

Mr. Roger. F. Stanley  
Hanford Project Manager  
State of Washington  
Department of Ecology  
P. O. Box 47600  
Olympia, Washington 98504-7600

Mr. George C. Hofer  
Hanford Project Manager  
U. S. Environmental Protection Agency  
Region 10  
1200 Sixth Avenue  
Seattle, Washington 98101



Dear Messrs. Stanley and Hofer:

STATUS REPORT ON CORRECTIVE ACTIONS FOR SINGLE-SHELL TANK (SST) 241-T-101

Reference: Letter, S. H. Wisness, DOE-RL to P. T. Day, EPA and D. B. Jansen, Ecology, "Status Report on Corrective Actions for Single-Shell Tank 241-T-101," dated March 24, 1993. 27275

In the referenced letter, the Department of Energy, Richland Operations Office (DOE-RL) stated it would inform you when SST 241-T-101 was interim stabilized as a result of emergency pumping this tank. Tank T-101 was declared to be stabilized on May 11, 1993. Enclosed is the final engineering evaluation of the liquid remaining in the tank. A total volume of 25,3000 GAL was pumped from the tank; 16,500 GAL of drainable liquid remains in the tank; 101,900 GAL of solid sludge remains in the tank.

If you have any questions, please contact me on (509) 376-6798 or G. E. Bishop on (509) 372-1856.

Sincerely,

*SHW*  
Steven H. Wisness  
Hanford Project Manager

TWS:GEB

Enclosure

cc: Stated on Page 2



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MAY 28 1993

Messrs. Stanley and Hofer

-2-

cc w/encl:  
T. Tebb, Ecology  
S. McKinney, Ecology  
D. Sherwood, EPA  
~~B. A. Austin, WHC~~

cc w/o encl:  
R. E. Raymond, WHC

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Westinghouse  
Hanford Company

→ COB  
5/12

P.O. Box 1970 Richland, WA 99352

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May 11, 1993

9302432B R2

Mr. R. E. Gerton, Director  
Tank Waste Storage Division  
U.S. Department of Energy  
Richland Operations Office  
Richland, Washington 99352

Dear Mr. Gerton:

COMPLETION OF INTERIM STABILIZATION OF SINGLE-SHELL TANK 241-T-101

Reference: Letter, M. A. Payne, WHC, to R. E. Gerton, RL, same subject,  
9302432B R1, dated March 16, 1993.

Westinghouse Hanford Company (WHC) initiated the full-scale removal of liquids from Tank 241-T-101 on Friday, March 12, 1993. This satisfied the requirements of Hanford Federal Facility Agreement and Consent Order interim Milestone M-05-16, due on March 15, 1993 (Reference). Pumping was completed on April 6, 1993.

The interim stabilization evaluation for single-shell Tank 241-T-101 has been completed by WHC, based on analysis of in-tank photographs and tank level data. This was completed according to WHC Waste Tank Project Administration Manual WHC-IP-0842, Section 7.2, Rev.0, Tank Farm Facility Interim Stabilization Evaluation.

WHC has concluded that Tank 241-T-101 is interim stabilized. Attached is the engineering documentation.

If you should have any questions, please contact Mr. V. C. Boyles of my staff at 373-1321.

Very truly yours,

*M. A. Payne*  
M. A. Payne, Director -  
Waste Tanks

Attachment

1mt

RL - G. E. Bishop  
G. J. Bracken  
R. O. Puthoff (w/o attachment)  
S. H. Wisness  
J. K. Yerxa

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Figure 4. Interim Stabilization Evaluation of 100- & 200-Series  
Non-Jet-Pumped Tanks. (sheet 1 of 3)

TANK: 241-T-101

EVALUATION (see continuation page for calculations and additional comments):

- Photograph review completed - Date of most recent photographs: 04/07/93
- Tank history review completed
- Tank temperature profile review completed

Surface Condition & Comments: Mottled brown to black in color. A pockmarked, moist sludge surface remains; surface-cracked near the outer perimeter of the tank. Approximately 3 feet of saltwell screen is not visible below the waste remaining in the center of Tank T-101. The FIC Plummet is visible contacting solids. A liquid pool is visible surrounding the Saltwell Screen. See page 2 for additional Comments.

|  |                                |      |                |        |                                    |
|--|--------------------------------|------|----------------|--------|------------------------------------|
| Solids Level   | <u>24.5"</u>                   | Date | <u>4/12/93</u> | Method | <u>Saltwell Screen Zip-Cord</u>    |
|  | <u>36.25"</u>                  | Date | <u>4/07/93</u> | Method | <u>Manual Tape (flake housing)</u> |
| Liquid Level   | <u>24.5"</u>                   | Date | <u>4/12/93</u> | Method | <u>Saltwell Screen Zip-cord</u>    |
| Solids Volume  | <u>101,900 Gallons</u>         |      |                |        |                                    |
| Estimated Drainable Liquid Remaining (DLR) :   | <u>Volume = 16,500 Gallons</u> |      |                |        |                                    |
| Estimated Supernatant Volume Remaining   | <u>700 Gallons</u>             |      |                |        |                                    |
| Tank was pumped with a submersible pump <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No; if yes, <u>25,300</u> gallons pumped. |                                |      |                |        |                                    |

- Cost/Benefit Analysis attached

DISPOSITION OF TANK:

- Tank Interim Stabilized at 700 gallons of supernatant and 15,800 gallons of drainable interstitial liquid
- Tank not Interim Stabilized; continue stabilization activities

Evaluation Performed by D. D. Wiggins Date 4/12/93 Checked by Randy L. Powers Date 4/14/93

APPROVED BY:

Manager, Single Shell Tanks VC Bouler Date 4/14/93  
 Manager, Single Shell Tanks Technology DE Damm Date 4-14-93  
 Manager, WT Facility Operations [Signature] Date 4/14/93

DISTRIBUTION: Surveillance and Data Acquisition, SE Tank History File, Nuclear Facility Safety, TPA Integration Control, Managers Approval, Evaluation Performer, and Checker signatures

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Figure 2. Interm Stabilization Evaluation for Non Jet-Pumped Tanks.

page 2 of 3

EVALUATION CALCULATION AND COMMENTS:

TANK: 241-T-101

Tank 241-T-101 was declared an assumed leaker on October 4, 1992. Tank 241-T-101 was submersible pumped starting on March 12, 1993, from a measured height of 40.5 inches to a measured height of 36.25 inches (manual tape resting on solids). The "0" datum for this tank is at the bottom of the sidewall. Multiple pumping campaigns resulted in the removal of 25,300 gallons of waste. A total of four transfer line flushes, and two saltwell screen flushes resulted in the use of an additional 1670 gallons of flush water.

During the final pump campaign, completed on April 6, 1993, prior to the final transfer line flush, approximately 1.5 Rad/hr was detected near the flushing valves in the Tank 241-T-101 pump pit. This indicated the probable transfer of limited quantities of sludge into the pump pit valves. Due to ALARA concerns, and the fact that transfer line flushes were approximately equal to waste transfers, the decision was made to shut down any additional transfers.

In-Tank photographs (April 7, 1993) were used to estimate the quantity of remaining supernatant in Tank 241-T-101. Engineering estimates that 700 gallons of supernatant remains near the middle of this tank, in a roughly circular shaped pool offset from the center, seven and one half inches deep at the deepest point, and occupying no more than 10 percent of the tank waste surface area. These estimates are the result of comparing the visible size of the liquid pool to the overall size of the tank, and to objects within the tank of known dimension. The pool depth is estimated considering the gently sloping nature of the solids within this tank.

The final zip-cord measurement within the central saltwell screen indicated a liquid surface at 24.5 inches in the middle of the tank, using the same baseline as the manual tape. Tank 241-T-101 has a dish-bottomed configuration. The manual tape is located at a distance of 150 inches in from the side of the tank, and rests on a gently sloping solid waste surface. For the purposes of determining waste volumes, an average slope of the waste surface indicated by the manual tape and the zip-cord was determined to be no greater than three degrees from the horizontal. The average sloping waste height as determined by the manual tape is eight inches higher than the solid waste height based on the zip-cord reading. These factors were used to determine supernatant volumes, and to estimate the total waste volumes.

See calculations on the following page for a summary of waste volumes remaining in 241-T-101.

Calculations made by D.D. Williams Date 04/13/93  
Checked by Roy J. Brown 10 Date 04/14/93

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Figure 2. Interm Stabilization Evaluation for Non Jet-Pumped Tanks.

page 3 of 3

EVALUATION CALCULATION AND COMMENTS:

TANK: 241-T-101

1. Volume Calculations

- A. Supernatant Volume\* = Pool Volume =  
 $1/3[(\text{Pool Depth})\pi(\text{Pool Radius})^2]$   
Pool Radius=12 ft =144 in.  
Pool Depth= 144 in. (Tan 3 degrees)  
7.48 Gal/cubic ft, 1728 cubic in./cubic ft.  
 $1/3[144^2(\text{Tan } 3^\circ)(144")^2(\pi)] = 163,870 \text{ in.}^3 = 94.8 \text{ ft}^3 = 700 \text{ Gal.}$
- B. 1. Total Waste Volume= Upper Waste Volume (manual tape) +  
Lower Waste Volume (zip-cord) + 12,500 (Dish Volume)=  
 $*(8\text{in.})(2,750 \text{ Gal./in.}) + *(24.5 \text{ in.})(2,750 \text{ Gal./in.}) +$   
 $12,500 \text{ Gal.} = \underline{101,900 \text{ Gal.}}$
2. Solids Volume= Total Waste Vol. - Supernatant=  
 $101,900 \text{ Gal.} - 700 \text{ Gal.} = 101,200 \text{ Gal.}$
- C. Interstitial Liquids  
Porosity= 45%, Capillary Height (Sludge)= 24in.
1. Drainable Interstitial Liquid (DIL)=  
 $[101,200 \text{ Gal.} - 24(2,750 \text{ Gal./in.})] 0.45 = 15,800 \text{ Gal.}$
2. Drainable liquid remaining (DLR)= DIL + Supernatant  
 $15,800 \text{ Gal.} + 700 \text{ Gal.} = 16,500 \text{ Gal.}$
3. Pumpable liquid remaining (PLR)=  
 $\text{DLR} - 0.45[18\text{in.}(2,750 \text{ Gal./in.})] =$   
 $16,500 \text{ Gal.} - 22,300 \text{ Gal.} = 0$

\* See page 2 of 3 for description of this evaluation.

Calculations made by D. E. Wiggins Date 04/13/93  
Checked by Roy L. [Signature] Date 04/14/93

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# CORRESPONDENCE DISTRIBUTION COVERSHEET

Author  
S. H. Wisness, RL

Addressee  
R. F. Stanley, Ecology  
G. C. Hofer, EPA

Correspondence No.  
Incoming: 9304701

Subject: STATUS REPORT ON CORRECTIVE ACTIONS FOR SINGLE-SHELL TANK (SST)  
241-T-101

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