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WASTE TANK SUMMARY REPORT FOR MONTH ENDING DECEMBER 31, 2004

BM HANLON
CH2M HILL HANFORD GROUP, INC.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-99RL14047

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Waste Tank Summary Report for Month Ending DECEMBER 31, 2004

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.
Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC27-99RL14047

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Waste Tank Summary Report for Month Ending DECEMBER 31, 2004

B. M. Hanlon
CH2M HILL Hanford Group, Inc.

Date Published
February 2005

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

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Hanford Group, Inc.
Richland, Washington

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Office of River Protection under Contract DE-AC27-99RL14047

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ACRONYMS

BBI	Best Basis Inventory
CH2M HILL	CH2M HILL Hanford Group, Inc.
DCRT	Double-Contained Receiver Tank
DIL	Drainable Interstitial Liquid
DLR	Drainable Liquid Remaining
DST	Double-Shell Tank
FSAR	Final Safety Analysis Report effective October 18, 1999
Gal	Gallon
GPM	Gallons Per Minute
ILL	Interstitial Liquid
Kgal	Kilogallons
IS	Interim Stabilized
MT/FIC/ ENRAF	Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)
OSD	Operating Specifications Document
PFP	Plutonium Finishing Plant
SHMS	Standard Hydrogen Monitoring System
SST	Single-Shell Tank
SWL	Salt Well Liquid
TMACS	Tank Monitor and Control System
TPA	Hanford Federal Facility Consent and Compliance Order, "Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy," as amended (Tri-Party Agreement)
TSR	Technical Safety Requirement
TWINS	Tank Waste Information Network System
USQ	Unreviewed Safety Question

GLOSSARY

General

Characterization - Characterization is understanding the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to ensure safe storage and interim operation, and ultimate disposition of the waste.

Drainable Interstitial Liquid (DIL) -Drainable Interstitial Liquid is calculated based on saltcake and sludge volumes, calculated porosity values. Interstitial liquid is the liquid that fills the interstitial spaces of the solids waste. The sum of the interstitial liquid contained in saltcake and sludge minus an adjustment for capillary height is the initial volume of DIL. Interstitial liquid that is not held in place by capillary forces will, therefore, migrate or move with gravity.

Drainable Liquid Remaining (DLR) - The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernatant.

Supernatant Liquid - The liquid above the solids or in large liquid pools covered by floating solids in waste storage tanks.

Total Waste - For purposes of this document, solids volume (sludge and saltcake including liquids) plus supernatant liquid.

Waste Tank Safety Issue - A potentially unsafe condition in the handling of waste material in underground storage tanks that requires corrective action to reduce or eliminate the unsafe condition. There are currently no waste tank safety issues.

Interim Stabilization (Single-Shell Tanks only)

Interim Stabilized (IS) - A tank which contains less than 50 Kgallons of drainable interstitial liquid and less than 5 Kgallons of supernatant. If the tank was jet pumped to achieve interim stabilization, then the jet pump flow or saltwell screen inflow must also have been at or below 0.05 gpm before interim stabilization criteria are met.

Jet Pump - The centrifugal pump and jet assembly are needed to pump the interstitial liquid from the saltwell screen into the pump pit, nominally a 40-foot elevation rise. Pumping rates vary from 0.05 to about 4 gpm.

Saltwell Screen - The saltwell system is a 10-inch diameter saltwell casing consisting of a stainless steel saltwell screen welded to a Schedule 40 carbon steel pipe. The casing and screen are to be inserted into the 12-inch tank riser located in the pump pit. The stainless steel screen portion of the system will extend through the tank waste to near the bottom of the tank.

Retrieval/Closure-(Single-Shell Tanks only)

Closure (C) - Final closure of the operable units (tank farms) shall be defined as regulatory approval of completion of closure actions and commencement of post-closure actions. For the purposes of this agreement (Hanford Federal Facility Agreement and Consent Order Change Control Form, Change Number M-45-02-03), all units located within the boundary of each tank farm will be closed in accordance with Washington Administrative Code 173-303-610.

Retrieval (R) - The process of removing, to the maximum extent practical, all the waste from a given underground storage tank. The retrieval process is selected specific to each tank and accounts for the waste type stored and the access and support systems available. Generally, retrieval is focused on removal of solids from the tank.

Tank Integrity

Assumed Leaker - The integrity classification of a waste storage tank for which surveillance data indicate a loss of liquid attributed to a breach of integrity.

Sound - The integrity classification of a waste storage tank for which surveillance data indicate no loss of liquid attributed to a breach of integrity.

Surveillance Instrumentation

Annulus - The annulus is the space between the inner and outer shells on DSTs only. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.

Automatic FIC - An automatic waste surface level measurement device is manufactured by the Food Instrument Corporation (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. All FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

Drywells - Historically, the drywells were monitored with gross logging tools as part of a secondary leak monitoring system. In some cases, neutron-moisture sensors were used to monitor moisture in the soil as a function of well depth, which could be indicative of tank leakage. The routine gross gamma logging data were stored electronically from 1974 through 1994; a program was initiated in 1995 to log each of the available drywells in each tank farm with a spectral gamma logging system. The spectral gamma logging system provides quantitative values for gamma-emitting radionuclides. The baseline spectral gamma logging database is available electronically.

Spectral drywell scans can be run by special request. A select subset of drywells is routinely monitored by the Vadose Zone Characterization Project to assess movement of gamma-emitting radionuclides in the subsurface.

ENRAF 854 ATG Level Detector - FICs and some manual tapes are in the process of being replaced by the ENRAF ATG 854 level detector. The ENRAF gauge, fabricated by ENRAF Incorporated, determines waste level by detecting variations in the weight of a displacer suspended in the tank waste. ENRAFs and future installations will transmit digital level data to TMACS via an ENRAF Computer Interface Unit (CIU). The CIU allows fully remote communication with the gauge, minimizing tank farm entry.

Laterals - Laterals are horizontal drywells positioned 8 to 10 feet under single-shell waste storage tanks, 3 per tank, to detect radionuclides in the soil which could be indicative of tank leakage. These drywells can be monitored by radiation detection probes. Laterals are located only in A and SX farms. There are currently no functioning laterals and no plan to prepare them for use.

Liquid Observation Well (LOW) - In-tank liquid observation wells are used for monitoring the ILL in single-shell tanks. The wells are usually constructed of fiberglass or TEFZEL-reinforced epoxy-polyester resin (TEFZEL is a trademark of E. I. du Pont de Nemours & Company). A few LOWs constructed of steel. Gamma and neutron probes are used to monitor changes in the ILL, and can indicate intrusions or leakage by increases or decreases in the ILL. There are 70 LOWs installed in SSTs that contain or are capable of containing greater than 50 Kgallons of drainable interstitial liquid. All of the LOWs are monitored weekly with the exception of TX-108 which is monitored by request only. Two LOWs installed in DSTs SY-102 and AW-103 are used for special, rather than routine, surveillance purposes only.

Surface Levels - The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or entered into the Surveillance Analysis Computer System.

Thermocouple (TC) - A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple element on a device (probe) is called a thermocouple tree.

METRIC CONVERSION CHART

METRIC CONVERSION CHART		
1 inch	=	2.54 centimeters
1 foot	=	30.48 centimeters
1 gallon	=	3.79 liters
1 ton	=	0.91 metric tons

$$°F = \left(\frac{9}{5}°C\right) + 32$$

1 Btu/h = 0.2931 watts
(International Table)

1.0 PURPOSE AND SCOPE

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 60 smaller miscellaneous underground storage tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U.S. Department of Energy Order 435.1 (DOE-HQ, August 28, 2001, Radioactive Waste Management, U.S. Department of Energy-Washington, D.C.) requiring the reporting of waste inventories and space utilization for the Hanford Site Tank Farm tanks.

2.0 WASTE TANK STATUS

Note: Changes from the previous month are in **bold print.**

Double-Shell Tanks (DST)	28 double-shell	10/86 - date last DST tank was completed
Single-Shell Tanks (SST)	149 single-shell	1966 - date last SST tank was completed
Assumed Leaker Tanks	67 single-shell	07/93 - date last Assumed Leaker was identified
Sound Tanks	28 double-shell 82 single-shell	1986 - date DSTs determined sound 07/93 - date last SST determined sound
Interim Stabilized Tanks[a] (IS)	149 single-shell	03/04 - date last IS occurred[a]
Retrieval[b]	13 single-shell	12/03 - date last Retrieval completed
Misc. Underground Storage Tanks (MUST) and Special Surveillance Facilities (Active)	10 Tanks East Area 7 Tanks West Area	03/01 - last date a tank was added or removed from MUST list
Misc. Underground Storage Tanks (IMUST) and Special Surveillance Facilities (Inactive)[c]	18 Tanks East Area 25 Tanks West Area	11/01 - last date a tank was added or removed from IMUST list

Footnotes:

[a] Tanks are declared Interim Stabilized when pumping stops; the tank may be placed in evaluation at this time. Tank U-108 was placed in evaluation on March 18, 2004, due to major equipment failure; documentation was completed August 16 and the declaration letter sent to DOE-RL on September 8, 2004.

Saltwell pumping for the tanks covered by the Consent Decree was completed in March 2004. (Tank C-106 is not included in the Consent Decree and is not Interim Stabilized; Retrieval was completed December 31, 2003). Interim Stabilization documentation has not yet been completed on two tanks: BY-106 and S-111.

[b] Tank status for C-104, C-201, C-202, C-203, C-204, S-102, S-103, S-105 and S-106 was changed to "Retrieval," effective October 2002. Tank status for C-103, C-105, C-106, and S-112 was changed to "Retrieval" in October 2003. Retrieval was completed for tank C-106 on December 31, 2003. Hanford Federal Facility Agreement and Consent Order (signed August 2004) modified Milestone M-45-00C (Change Order M-45-04-01) changing the regulatory requirements for retrieval of waste in tanks S-103, S-105, and S-106. "Retrieval" status in these tanks is thereby rescinded to allow focusing on the retrieval of wastes and the interim closure of all Waste Management Area C-Farm Single-Shell Tanks.

[c] Tables 5-2. and 5-3., the Inactive Miscellaneous Underground Storage Tanks (IMUST) now reflect only those tanks managed by CH2M HILL Hanford Group, Inc. (CH2M HILL).

2.1 WASTE TANK STATUS HIGHLIGHTS

Table 2-1. Single-Shell Tanks in Retrieval Status

Tank Number	Comments
241-C-103	
241-C-104	
241-C-105	
241-C-106	Declared "Retrieval Completed," December 31, 2003
241-C-200 series	C-203 – Retrieval in progress – July 2004
241-S-102	**Retrieval initiated on December 17, 2004**
241-S-103	Status rescinded by HFFACO, August 2004
241-S-105	Status rescinded by HFFACO, August 2004
241-S-106	Status rescinded by HFFACO, August 2004
241-S-112	Retrieval in progress

Table 2-2. Single-Shell Tanks Declared Interim Stabilized (confirmation letter to DOE not yet sent)

241-BY-106	December 31, 2003 (in evaluation)
241-S-111	December 15, 2003 (in evaluation-major equipment failure)

<u>Tank AX-103</u>

The interstitial liquid level (ILL) readings are taken quarterly via neutron probe in a liquid observation well (LOW) in this tank. On December 12, 2004, the LOW reading indicated a 2.7-inch decrease from the previous reading (July 5); a repeated reading on December 16 confirmed the decrease. Problem evaluation report (PER)/Occurrence Report RP 2004-0070 "Tank 241-AX-103 Liquid Waste Level Below Established Baseline" was issued.

The LOW reading frequency was increased to weekly. An Assessment team was formed and the assessment process initiated per TFC-ENG-CHEM-D-42, "Tank Leak Assessment Process." The LOW level has increased from the December 12 reading.

The surface level (ENRAF) and leak detection pit levels have shown no change.

3.0 DOUBLE-SHELL TANKS MONTHLY SUMMARY TABLES

Table 3-1. Inventory and Status by Tanks - Double-Shell Tanks.

All volume data obtained from Tank Waste Information Network System (TWINS)

Tank	Tank Integrity	Tank Level (inches)	Total Waste (Kgal)	Available Space (Kgal)	Waste Volumes: Supernatant Liquid (Kgal)	Sludge (Kgal)	Saltcake (Kgal)	Solids Volume Update
241-AN TANK FARM STATUS								
AN-101	SOUND	349	959	185	928	0	31	12/31/03
AN-102	SOUND	389	1070	74	936	0	134	12/31/02
AN-103	SOUND	349	960	184	501	0	459	06/30/99
AN-104	SOUND	384	1055	89	610	0	445	06/30/99
AN-105	SOUND	409	1126	18	588	0	538	01/31/03
AN-106	SOUND	324	891	253	845	29	17	03/31/04
AN-107	SOUND	400	1101	43	871	0	230	12/31/03
7 TANKS - TOTAL			7162	846	5279	29	1854	
241-AP TANK FARM STATUS								
AP-101	SOUND	405	1115	29	1115	0	0	05/01/89
AP-102	SOUND	399	1097	47	1074	23	0	05/31/02
AP-103	SOUND	325	893	251	893	0	0	05/31/96
AP-104	SOUND	400	1099	45	1099	0	0	10/13/88
AP-105	SOUND	414	1139	5	1050	0	89	06/30/99
AP-106	SOUND	413	1135	9	1135	0	0	10/13/88
AP-107	SOUND	76	208	936	208	0	0	10/13/88
AP-108	SOUND	296	815	329	815	0	0	10/13/88
8 TANKS - TOTAL			7501	1651	7389	23	89	
241-AW TANK FARM STATUS								
AW-101	SOUND	410	1128	16	732	0	396	01/31/03
AW-102	SOUND	378	1039	86	1032	7	0	03/31/04
AW-103	SOUND	400	1099	45	786	273	40	06/30/99
AW-104	SOUND	391	1074	70	851	66	157	06/30/99
AW-105	SOUND	153	420	724	157	263	0	06/30/99
AW-106	SOUND	328	901	243	618	0	283	04/12/04
6 TANKS - TOTAL			5661	1184	4176	609	876	
241-AY TANK FARM STATUS								
AY-101	SOUND	65	180	821	84	96	0	06/30/99
AY-102	SOUND	324	892	109	741	151	0	04/12/04
2 TANKS - TOTAL			1072	930	825	247	0	
241-AZ TANK FARM STATUS								
AZ-101	SOUND	328	901	100	849	52	0	06/30/98
AZ-102	SOUND	357	983	18	878	105	0	06/30/99
2 TANKS - TOTAL			1884	118	1727	157		
241-SY TANK FARM STATUS								
SY-101	SOUND	139	381	763	106	0	275	06/30/99
SY-102	SOUND	280	769	375	624	145	0	09/30/03
SY-103	SOUND	269	740	404	398	0	342	06/30/99
3 TANKS - TOTAL			1890	1542	1128	145	617	

Notes:
1 Kgal differences are the result of computer rounding
Supernatant + Sludge (includes liquid) + Saltcake (includes liquid) = Total Waste
Available Space Volumes include restricted space
Tanks AN-103, AN-104, AN-105, SY-101 and SY-103 contain retrained gas in the saltcake

Table 3-2. Double-Shell Tank Space Allocation, Inventory and Waste Receipts (all volumes in kgallons)

TOTAL DST CAPACITY	
TOTAL=	31,441

TOTAL DST WASTE INVENTORY	
INVENTORY ON 12/31/04	25,169
INVENTORY ON 11/30/04	25,078
CHANGE =	91

ALLOCATION OF REMAINING DST SPACE	
TOTAL DST CAPACITY =	31,441
WASTE INVENTORY =	-25,169
(*) DEDICATED OPERATIONAL SPACE =	-2,000
(**) RESTRICTED USAGE SPACE =	-1,735
(***)EMERGENCY SPACE ALLOCATION =	-1,200
REMAINING AVAILABLE SPACE =	1,337

(*) Dedicated Operational Space is assumed to equal 2 Mgal for SST retrieval, cross-site transfer receiver, and evaporator feed and slurry.
(**) Restricted space associated with flammable gas Waste Group A and tanks controlled for waste feed delivery per Feed Control List, HNF-SD-WM-OCD-015, Tank Farms Waste Transfer Compatibility report. These tanks are: AN-102, -103, -104, -105, -107; AP-101; AW-101, -103, -105; AY-102, and SY-103 (AY-102 is allowed to receive condensate only). Restricted Space does not include Feed Control List tanks AY-101, AZ-102, and SY-102, which are allowed to receive limited types of waste.
(***) Emergency Space Allocation adjusted in July 2003 per HNF-3484 Rev. 4, includes space for WTP returns.

DECEMBER DST WASTE RECEIPTS

FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
222-S	1	SLURRY	6	SLURRY	4
TANK FARMS	5	CONDENSATE	7	CONDENSATE	8
C-203	0	INSTRUMENTATION	2	INSTRUMENTATION	0
S-102	9	MISCELLANEOUS GAINS	4	MISCELLANEOUS LOSSES	4
S-112	73				
TOTAL =	88	TOTAL=	19	TOTAL=	16

WASTE RECEIPT AND EVAPORATOR METRIC

DATE	DST WASTE RECEIPTS	MISC. DST CHANGES (+/-)	WVR (1)	NET DST CHANGE	TOTAL DST VOLUME
12/04	88	3	0	91	25,169

(1) WVR is total (before flush) waste volume reduction for 242-A Evaporator

IMPLEMENTATION OF DST SPACE OPTIONS METRIC
(TPA MILESTONE M-46-21)

DATE	INITIATIVES	GAINS TO DATE (1)	GAINS DURING MONTH
12/04	INCREASE DST FILL HEIGHT	0	0
	NET EVAPORATOR WVR (2)	1704	
	RESERVE EMERGENCY SPACE COMPLIANT WITH DOE O435.1	1100	0
	USE RESTRICTED HEADSPACE	0	0
	TOTAL	2804	0

(1) DST tank space gains since 10/1/02.
(2) WVR is net (after flush) waste volume reduction for 242-A Evaporator

4.0 SINGLE-SHELL TANKS MONTHLY SUMMARY TABLES

Table 4-1. Inventory and Status by Tanks - Single-Shell Tanks (sheet 1 of 4).
All volume data obtained from Tank Waste Information Network System (TWINS)

				Waste Volumes							
Tank Number	Tank Integrity	Tank Status	Total Waste (Kgal)	Super-natant Liquid (Kgal)	Drainable Interstitial Liquid (Kgal)	Pumped this Month (Kgal)	Total Pumped (Kgal)	Drinable Liquid Remaining (Kgal)	Sludge (Kgal)	Salt-cake (Kgal)	Solds Volume Update
				241-A TANK FARM STATUS							
A-101	SOUND	IS(4)	320	0	37	0	542	37	3	317	06/30/04
A-102	SOUND	IS	40	3	9	0	40	12	0	37	01/31/03
A-103	ASMD LKR	IS	370	4	87	0	111	92	2	364	01/01/02
A-104	ASMD LKR	IS	28	0	0	0	0	0	28	0	01/27/78
A-105	ASMD LKR	IS	37	0	0	0	0	0	37	0	10/31/00
A-106	SOUND	IS	79	0	9	0	0	9	50	29	01/01/02
6 TANKS - TOTAL			874						120	747	
				241-AX TANK FARM STATUS							
AX-101	SOUND	IS	358	0	44	0	369	44	3	355	12/31/03
AX-102	ASMD LKR	IS	30	0	0	0	13	0	6	24	01/01/02
AX-103	SOUND	IS	107	0	22	0	0	22	8	99	09/30/03
AX-104	ASMD LKR	IS	7	0	0	0	0	0	7	0	01/01/02
4 TANKS - TOTAL			502						24	478	
				241-B TANK FARM STATUS							
B-101	ASMD LKR	IS	109	0	20	0	0	20	28	81	01/01/02
B-102	SOUND	IS	32	4	7	0	0	11	0	28	06/30/99
B-103	ASMD LKR	IS	56	0	10	0	0	10	1	55	01/01/02
B-104	SOUND	IS	374	0	45	0	0	45	309	65	01/01/02
B-105	ASMD LKR	IS	290	0	20	0	0	20	28	262	01/01/02
B-106	SOUND	IS	123	1	8	0	0	9	122	0	12/31/03
B-107	ASMD LKR	IS	161	0	23	0	0	23	86	75	01/01/02
B-108	SOUND	IS	92	0	19	0	0	19	27	65	06/30/04
B-109	SOUND	IS	125	0	23	0	0	23	50	75	01/01/02
B-110	ASMD LKR	IS	245	1	27	0	0	28	244	0	01/01/02
B-111	ASMD LKR	IS	242	1	23	0	0	24	241	0	01/01/02
B-112	ASMD LKR	IS	35	3	2	0	0	5	15	17	01/01/02
B-201	ASMD LKR	IS	29	0	5	0	0	5	29	0	07/01/04
B-202	SOUND	IS	28	0	4	0	0	4	28	0	07/01/04
B-203	ASMD LKR	IS	50	1	5	0	0	6	49	0	07/01/04
B-204	ASMD LKR	IS	49	1	5	0	0	6	48	0	07/01/04
16 TANKS - TOTAL			2040						1305	723	
				241-BX TANK FARM STATUS							
BX-101	ASMD LKR	IS	48	0	4	0	0	4	48	0	01/01/02
BX-102	ASMD LKR	IS	79	0	0	0	0	0	79	0	06/30/04
BX-103	SOUND	IS	74	12	4	0	0	15	62	0	11/29/83
BX-104	SOUND	IS	100	3	4	0	17	7	97	0	01/01/02
BX-105	SOUND	IS	72	5	4	0	15	9	67	0	01/01/02
BX-106	SOUND	IS	38	0	4	0	14	4	38	0	01/01/95
BX-107	SOUND	IS	347	0	37	0	23	37	347	0	09/18/90
BX-108	ASMD LKR	IS	31	0	4	0	0	4	31	0	01/31/01
BX-109	SOUND	IS	193	0	25	0	8	25	193	0	09/17/90
BX-110	ASMD LKR	IS	205	1	35	0	2	36	65	139	01/01/01
BX-111	ASMD LKR	IS	189	0	6	0	117	6	32	157	01/01/02
BX-112	SOUND	IS	164	1	9	0	4	10	163	0	01/01/02
12 TANKS - TOTAL			1540						1222	296	

Table 4-1. Inventory and Status by Tank - Single-Shell Tanks (sheet 2 of 4).

All volume data obtained from Tank Waste Information Network System (TWINS)

				Waste Volumes							
Tank Number	Tank Integrity	Tank Status	Total Waste (Kgal)	Super-natant Liquid (Kgal)	Drainable Interstitial Liquid (Kgal)	Pumped this Month (Kgal)	Total Pumped (Kgal)	Drainable Liquid Remaining (Kgal)	Sludge (Kgal)	Salt-cake (Kgal)	Solids Volume Update
				241-BY TANK FARM STATUS							
BY-101	SOUND	IS	370	0	24	0	36	24	37	333	01/01/02
BY-102	SOUND	IS	279	0	40	0	159	40	0	279	06/30/04
BY-103	ASMD LKR	IS	417	0	58	0	96	58	9	408	01/31/03
BY-104	SOUND	IS	358	0	51	0	330	51	45	313	01/01/02
BY-105	ASMD LKR	IS	481	0	47	0	45	47	48	433	03/31/03
BY-106	ASMD LKR	IS	462	-	-	0	99	-	32	430	12/31/03
BY-107	ASMD LKR	IS	272	0	42	0	56	42	16	256	06/30/04
BY-108	ASMD LKR	IS	222	0	33	0	28	33	40	182	01/01/02
BY-109	SOUND	IS	287	0	37	0	157	37	24	263	06/30/04
BY-110	SOUND	IS	366	0	20	0	213	20	43	323	01/01/02
BY-111	SOUND	IS	301	0	14	0	313	14	0	301	06/30/04
BY-112	SOUND	IS	286	0	24	0	116	24	2	284	03/31/02
12 TANKS - TOTAL			4101						296	3805	
				241-C TANK FARM STATUS							
C-101	ASMD LKR	IS	88	0	4	0	0	4	88	0	11/29/83
C-102	SOUND	IS	316	0	62	0	47	62	316	0	09/30/95
C-103	SOUND	IS/R	72	1	10	0	114	11	71	0	12/31/03
C-104	SOUND	IS/R	259	0	29	0	0	29	259	0	01/01/02
C-105	SOUND	IS/R	132	0	10	0	0	10	132	0	02/29/00
C-106	SOUND	/R	3	Retrieval Completed, 12/31/03		0	523	-	3	0	12/31/03
				See Footnote (1), page 17							
C-107	SOUND	IS	247	0	30	0	41	30	247	0	06/30/04
C-108	SOUND	IS	66	0	4	0	0	4	66	0	02/24/84
C-109	SOUND	IS	63	0	4	0	0	4	63	0	06/30/04
C-110	ASMD LKR	IS	178	1	37	0	16	38	177	0	06/14/95
C-111	ASMD LKR	IS	57	0	4	0	0	4	57	0	06/30/04
C-112	SOUND	IS	104	0	6	0	0	6	104	0	09/18/90
C-201	ASMD LKR	IS/R	1	0	0	0	0	0	1	0	01/01/02
C-202	ASMD LKR	IS/R	0	See Footnote (2), page 17		0	0	0	0	0	06/30/04
C-203	ASMD LKR	IS/R	1	Retrieval in progress		0	22	-	1	0	07/31/04
C-204	ASMD LKR	IS/R	2	0	0	0	0	0	2	0	01/31/03
16 TANKS - TOTAL			1589						1587	0	
				241-S TANK FARM STATUS							
S-101	SOUND	IS	352	0	45	0	68	45	235	117	04/31/04
S-102	SOUND	/R	541	13	-	9	71	-	22	416	06/30/03
S-103	SOUND	IS (3)	237	1	45	0	24	46	9	227	06/30/04
S-104	ASMD LKR	IS (4)	288	0	49	0	0	49	132	156	12/20/84
S-105	SOUND	IS (3)	406	0	42	0	114	42	2	404	01/01/02
S-106	SOUND	IS (3)	455	0	26	0	204	26	0	455	02/28/01
S-107	SOUND	IS	358	0	42	0	82	42	320	38	02/04/04
S-108	SOUND	IS	550	0	4	0	200	4	5	545	01/01/02
S-109	SOUND	IS	533	0	16	0	34	16	13	520	06/30/01
S-110	SOUND	IS	389	0	30	0	203	30	96	293	01/01/02
S-111	SOUND	IS (4)	411	-	-	0	100	-	76	335	06/30/04
S-112	SOUND	/R	48	0	-	73	1573	-	6	78	10/31/04
12 TANKS - TOTAL			4568						916	3584	

Table 4-1. Inventory and Status by Tank - Single-Shell Tanks (sheet 3 of 4).

All volume data obtained from Tank Waste Information Network System (TWINS)

				Waste Volumes							
Tank Number	Tank Integrity	Tank Status	Total Waste (Kgal)	Super-natant Liquid (Kgal)	Drainable Interstitial Liquid (Kgal)	Pumped this Month (Kgal)	Total Pumped (Kgal)	Drainable Liquid Remaining (Kgal)	Sludge (Kgal)	Salt-cake (Kgal)	Solids Volume Update
					241-SX TANK FARM STATUS						
SX-101	SOUND	IS	419	0	43	0	33	44	144	275	06/30/04
SX-102	SOUND	IS	341	0	36	0	98	36	55	286	08/31/04
SX-103	SOUND	IS	509	0	40	0	134	40	78	431	09/30/03
SX-104	ASMD LKR	IS	446	0	48	0	231	48	136	310	04/30/00
SX-105	SOUND	IS	375	0	39	0	153	39	63	312	12/31/02
SX-106	SOUND	IS	396	0	37	0	148	37	0	396	01/31/03
SX-107	ASMD LKR	IS	94	0	7	0	0	7	94	0	07/01/04
SX-108	ASMD LKR	IS	74	0	0	0	0	0	74	0	06/30/04
SX-109	ASMD LKR	IS	241	0	0	0	0	0	66	175	07/01/04
SX-110	ASMD LKR	IS	56	0	0	0	0	0	49	7	07/01/04
SX-111	ASMD LKR	IS	115	0	11	0	0	11	98	17	07/01/04
SX-112	ASMD LKR	IS	75	0	6	0	0	6	75	0	07/01/04
SX-113	ASMD LKR	IS	19	0	0	0	0	0	19	0	01/01/02
SX-114	ASMD LKR	IS	155	0	30	0	0	30	126	29	07/01/04
SX-115	ASMD LKR	IS	4	0	0	0	0	0	4	0	01/01/02
15 TANKS - TOTAL			3319						1081	2238	
					241-T TANK FARM STATUS						
T-101	ASMD LKR	IS	99	0	16	0	25	16	37	62	06/30/04
T-102	SOUND	IS	32	13	3	0	0	16	19	0	08/31/84
T-103	ASMD LKR	IS	27	4	3	0	0	7	23	0	11/29/83
T-104	SOUND	IS	317	0	31	0	150	31	317	0	11/30/99
T-105	SOUND	IS	98	0	5	0	0	5	98	0	05/29/87
T-106	ASMD LKR	IS	22	0	0	0	0	0	22	0	01/01/01
T-107	ASMD LKR	IS	173	0	34	0	11	34	173	0	05/31/96
T-108	ASMD LKR	IS	16	0	4	0	0	4	5	11	01/01/01
T-109	ASMD LKR	IS	62	0	11	0	0	11	0	62	01/01/02
T-110	SOUND	IS	370	1	48	0	50	49	369	0	03/31/02
T-111	ASMD LKR	IS	447	0	38	0	10	38	447	0	01/01/02
T-112	SOUND	IS	67	7	4	0	0	11	60	0	04/28/82
T-201	SOUND	IS	30	2	4	0	0	6	28	0	07/01/04
T-202	SOUND	IS	20	0	3	0	0	3	20	0	07/01/04
T-203	SOUND	IS	36	0	5	0	0	5	36	0	07/01/04
T-204	SOUND	IS	36	0	5	0	0	5	36	0	07/01/04
16 TANKS - TOTAL			1852						1690	135	
					241-TX TANK FARM STATUS						
TX-101	SOUND	IS	91	0	7	0	0	7	74	17	01/01/02
TX-102	SOUND	IS	217	0	27	0	94	27	2	215	03/31/03
TX-103	SOUND	IS	145	0	18	0	68	18	0	145	01/01/02
TX-104	SOUND	IS	69	2	9	0	4	11	34	33	06/30/04
TX-105	ASMD LKR	IS	576	0	25	0	122	25	8	568	01/01/02
TX-106	SOUND	IS	348	0	37	0	135	37	5	343	03/31/02
TX-107	ASMD LKR	IS	29	0	7	0	0	7	0	29	01/31/03
TX-108	SOUND	IS	127	0	8	0	14	8	6	121	06/30/04
TX-109	SOUND	IS	363	0	6	0	72	6	363	0	01/01/02
TX-110	ASMD LKR	IS	467	0	14	0	115	14	37	430	01/01/02
TX-111	SOUND	IS	364	0	10	0	98	10	43	321	06/30/04
TX-112	SOUND	IS	634	0	26	0	94	26	0	634	01/01/02
TX-113	ASMD LKR	IS	638	0	18	0	19	18	93	545	06/30/04
TX-114	ASMD LKR	IS	532	0	17	0	104	17	4	528	01/01/02
TX-115	ASMD LKR	IS	553	0	25	0	99	25	8	545	06/30/04
TX-116	ASMD LKR	IS	599	0	21	0	24	21	66	533	04/30/03
TX-117	ASMD LKR	IS	480	0	10	0	54	10	29	451	06/30/04
TX-118	SOUND	IS	247	0	31	0	89	31	0	247	06/30/04
18 TANKS - TOTAL			6479						772	5705	

Table 4-1. Inventory and Status by Tank - Single-Shell Tanks (sheet 4 of 4).

All volume data obtained from Tank Waste Information Network System (TWINS)

				Waste Volumes							
Tank Number	Tank Integrity	Tank Status	Total Waste (Kgal)	Super-natant Liquid (Kgal)	Drainable Interstitial Liquid (Kgal)	Pumped this Month (Kgal)	Total Pumped (Kgal)	Drainable Liquid Remaining (Kgal)	Sludge (Kgal)	Salt-cake (Kgal)	Solids Volume Update
				241-TY TANK FARM STATUS							
TY-101	ASMD LKR	IS	119	0	2	0	8	2	72	47	01/31/03
TY-102	SOUND	IS	69	0	13	0	7	13	0	69	01/01/02
TY-103	ASMD LKR	IS	154	0	23	0	12	23	103	51	06/30/04
TY-104	ASMD LKR	IS	44	1	4	0	0	5	43	0	03/31/02
TY-105	ASMD LKR	IS	231	0	12	0	4	12	231	0	04/28/82
TY-106	ASMD LKR	IS	16	0	1	0	0	1	16	0	01/01/02
6 TANKS - TOTALS			633						465	167	
				241-U TANK FARM STATUS							
U-101	ASMD LKR	IS	23	0	4	0	0	4	23	0	06/30/04
U-102	SOUND	IS	327	1	37	0	87	38	43	283	12/31/02
U-103	SOUND	IS(4)	417	1	33	0	99	34	12	404	06/30/04
U-104	ASMD LKR	IS	122	0	0	0	0	0	122	0	01/01/02
U-105	SOUND	IS	353	0	44	0	88	44	32	321	03/30/01
U-106	SOUND	IS	170	2	36	0	39	39	0	168	06/30/04
U-107	SOUND	IS	294	0	32	0	135	0	15	279	12/31/03
U-108	SOUND	IS	434	0	46	0	115	46	29	405	09/30/04
U-109	SOUND	IS(4)	401	0	47	0	78	47	35	366	04/30/02
U-110	ASMD LKR	IS	176	0	16	0	0	16	176	0	01/01/02
U-111	SOUND	IS	222	0	31	0	85	31	26	196	08/31/03
U-112	ASMD LKR	IS	45	0	4	0	0	4	45	0	02/10/84
U-201	SOUND	IS	4	1	1	0	0	2	3	0	06/30/03
U-202	SOUND	IS	4	1	0	0	0	1	3	0	06/30/03
U-203	SOUND	IS	3	1	0	0	0	1	2	0	06/30/03
U-204	SOUND	IS	3	1	0	0	0	1	2	0	06/30/03
16 TANKS - TOTALS			2998						568	2422	

Note: +/- 1 Kgal difference in volumes is due to rounding.

Footnote:

(1) C-106: Volumes: Total waste 2771 gallons, liquids 85 gallons, per RPP-19866, Rev. 1, "Calculation for the Post-Retrieval Waste Volume Determination for Tank 241-C-106," dated February 26, 2004.

(2) C-202: Volumes: Total waste 490 gallons, and sludge 490 gallons

(3) Hanford Federal Facility Agreement and Consent Order (signed August 2004) modified Milestone M-45-00C (Change Order M-45-04-01) changed the regulatory requirements for retrieval of waste in tanks S-103, S-105, and S-106. "Retrieval" status in these tanks is thereby rescinded.

(4) Tank A-101 contains retained gas in saltcake; tanks S-102, S-111, U-103, and U-109 contain retained gas in saltcake and sludge.

Table 4-2. Single-Shell Tanks Interim Stabilization Status (Sheet 1 of 2).

Tank Number	Tank Integrity	Interim Stabilization Date (1)	Interim Stabilization Method	Tank Number	Tank Integrity	Interim Stabilization Date (1)	Interim Stabilization Method
A-101	SOUND	11/03	JET (16)	BY-107	ASMD LKR	07/79	JET
A-102	SOUND	08/89	SN	BY-108	ASMD LKR	02/85	JET
A-103	ASMD LKR	06/88	AR	BY-109	SOUND	07/97	JET
A-104	ASMD LKR	09/78	AR (3)	BY-110	SOUND	01/85	JET
A-105	ASMD LKR	07/79	AR	BY-111	SOUND	01/85	JET
A-106	SOUND	08/82	AR	BY-112	SOUND	06/84	JET
AX-101	SOUND	06/03	JET (9)	C-101	ASMD LKR	11/83	AR
AX-102	ASMD LKR	09/88	SN	C-102	SOUND	09/95	JET (2)
AX-103	SOUND	08/87	AR	C-103	SOUND	07/03	JET (11)
AX-104	ASMD LKR	08/81	AR	C-104	SOUND	09/89	SN
B-101	ASMD LKR	03/81	SN	C-105	SOUND	10/95	AR
B-102	SOUND	08/85	SN	C-106	SOUND	Retrieval Completed 12/31/03	
B-103	ASMD LKR	02/85	SN	C-107	SOUND	09/95	JET
B-104	SOUND	06/85	SN	C-108	SOUND	03/84	AR
B-105	ASMD LKR	12/84	AR	C-109	SOUND	11/83	AR
B-106	SOUND	03/85	SN	C-110	ASMD LKR	05/95	JET
B-107	ASMD LKR	03/85	SN	C-111	ASMD LKR	03/84	SN
B-108	SOUND	05/85	SN	C-112	SOUND	09/90	AR
B-109	SOUND	04/85	SN	C-201	ASMD LKR	03/82	AR
B-110	ASMD LKR	12/84	AR	C-202	ASMD LKR	08/81	AR
B-111	ASMD LKR	06/85	SN	C-203	ASMD LKR	03/82	AR
B-112	ASMD LKR	05/85	SN	C-204	ASMD LKR	09/82	AR
B-201	ASMD LKR	08/81	AR (3)	S-101	SOUND	12/03	JET (18)
B-202	SOUND	05/85	AR (2)	S-102	SOUND	In Retrieval process	
B-203	ASMD LKR	06/84	AR	S-103	SOUND	04/00	JET
B-204	ASMD LKR	06/84	AR	S-104	ASMD LKR	12/84	AR
BX-101	ASMD LKR	09/78	AR (3)	S-105	SOUND	09/88	JET
BX-102	ASMD LKR	11/78	AR	S-106	SOUND	02/01	JET
BX-103	SOUND	11/83	AR (2) (3)	S-107	SOUND	08/03	JET (13)
BX-104	SOUND	09/89	SN	S-108	SOUND	12/96	JET
BX-105	SOUND	03/81	SN	S-109	SOUND	06/01	JET
BX-106	SOUND	07/95	SN	S-110	SOUND	01/97	JET
BX-107	SOUND	09/90	JET	S-111	SOUND	12/03	Jet (17)
BX-108	ASMD LKR	07/79	SN	S-112	SOUND	Retrieval in progress	
BX-109	SOUND	08/90	JET	SX-101	SOUND	08/03	JET (12)
BX-110	ASMD LKR	08/85	SN	SX-102	SOUND	08/03	JET (14)
BX-111	ASMD LKR	03/95	JET	SX-103	SOUND	05/03	JET (8)
BX-112	SOUND	09/90	JET	SX-104	ASMD LKR	04/00	JET
BY-101	SOUND	05/84	JET	SX-105	SOUND	08/02	JET (6)
BY-102	SOUND	04/95	JET	SX-106	SOUND	05/00	JET
BY-103	ASMD LKR	11/97	JET (2)	SX-107	ASMD LKR	10/79	AR
BY-104	SOUND	01/85	JET	SX-108	ASMD LKR	08/79	AR
BY-105	ASMD LKR	03/03	JET	SX-109	ASMD LKR	05/81	AR
BY-106	ASMD LKR	12/03	JET (19)	SX-110	ASMD LKR	08/79	AR

Table 4-2. Single-Shell Tanks Interim Stabilization Status (Sheet 2 of 2).

Tank Number	Tank Integrity	Interim Stabilization Date (1)	Interim Stabilization Method	Tank Number	Tank Integrity	Interim Stabilization Date (1)	Interim Stabilization Method
SX-111	ASMD LKR	07/79	SN	TX-111	SOUND	04/83	JET
SX-112	ASMD LKR	07/79	AR	TX-112	SOUND	04/83	JET
SX-113	ASMD LKR	11/78	AR	TX-113	ASMD LKR	04/83	JET
SX-114	ASMD LKR	07/79	AR	TX-114	ASMD LKR	04/83	JET
SX-115	ASMD LKR	09/78	AR (3)	TX-115	ASMD LKR	09/83	JET
T-101	ASMD LKR	04/93	SN	TX-116	ASMD LKR	04/83	JET
T-102	SOUND	03/81	AR (2)(3)	TX-117	ASMD LKR	03/83	JET
T-103	ASMD LKR	11/83	AR	TX-118	SOUND	04/83	JET
T-104	SOUND	11/99	JET	TY-101	ASMD LKR	04/83	JET
T-105	SOUND	06/87	AR	TY-102	SOUND	09/79	AR
T-106	ASMD LKR	08/81	AR	TY-103	ASMD LKR	02/83	JET
T-107	ASMD LKR	05/96	AR	TY-104	ASND KJR	11/83	AR
T-108	ASMD LKR	11/78	AR	TY-105	ASMD LKR	02/83	JET
T-109	ASMD LKR	12/84	AR	TY-106	ASMD LKR	11/78	AR
T-110	SOUND	01/00	JET	U-101	ASMD LKR	09/79	AR
T-111	ASMD LKR	02/95	JET	U-102	SOUND	06/02	JET (5)
T-112	SOUND	03/81	AR (2)(3)	U-103	SOUND	09/00	JET
T-201	SOUND	04/81	AR (3)	U-104	ASMD LKR	10/78	AR
T-202	SOUND	08/81	AR	U-105	SOUND	03/01	JET
T-203	SOUND	04/81	AR	U-106	SOUND	03/01	JET
T-204	SOUND	08/81	AR	U-107	SOUND	10/03	JET (15)
TX-101	SOUND	02/84	AR	U-108	SOUND	03/04	(20)
TX-102	SOUND	04/83	JET	U-109	SOUND	04/02	JET (4)
TX-103	SOUND	08/83	JET	U-110	ASMD LKR	12/84	AR
TX-104	SOUND	09/79	SN	U-111	SOUND	06/03	JET (10)
TX-105	ASMD LKR	04/83	JET	U-112	ASMD LKR	09/79	AR
TX-106	SOUND	06/83	JET	U-201	SOUND	08/79	AR
TX-107	ASMD LKR	10/79	AR	U-202	SOUND	08/79	SN
TX-108	SOUND	03/83	JET	U-203	SOUND	08/79	AR
TX-109	SOUND	04/83	JET	U-204	SOUND	08/79	SN
TX-110	ASMD LKR	04/83	JET				

LEGEND:			
AR	Administratively Interim Stabilized	Interim Stabilized Tanks	149
JET	Saltwell Jet Pumped to Remove Drainable Interstitial Liquid	Total Single-Shell Tanks	149
SN	Supernatant Pumped (Non-Jet Pumped)		
ASMD LKR	Assumed Leaker		
N/A	Not yet Interim Stabilized		

Table 4-2. - Footnotes: (in chronological order)

(1) These dates indicate when the tanks were actually interim stabilized. In some cases, the official interim stabilization documents were issued at a later date.

(2) Although tanks 241-BX-103, T-102, and T-112 met the interim stabilization administrative procedure at the time they were stabilized, they no longer meet the updated administrative procedure. The tanks were re-evaluated in 1996 and a letter was issued to DOE-RL recommending that no further pumping be performed on these tanks, based on an economic evaluation. In February 2000, it was determined that five tanks no longer met the stabilization criteria (241-

Table 4-2. – Footnotes continued

BX-103, T-102, and T-112 exceed the supernatant criteria, and BY-103 and C-102 exceed the Drainable Interstitial Liquid [DIL]criteria).

An intrusion investigation was completed on tank 241-B-202 in 1996 and it was determined that this tank no longer meets the recently updated administrative procedure for 200 series tanks.

(3) Original interim stabilization data are missing on four tanks: 241-B-201, T-102, T-112, and T-201. In February 2001, three additional tanks were added to those missing stabilization data: 241-A-104, BX-101, and SX-115.

(4) Tank 241-U-109 was declared Interim Stabilized on April 5, 2002. The declaration letter to DOE was issued on June 20, 2002. The surface is primarily a brown colored waste with irregular patches of white salt crystal. Approximately 70% of the waste surface is covered by the salt formations. The waste surface appears dry and shows signs of cracking due to saltwell pumping. There is no visible liquid within the tank.

(5) Tank 241-U-102 was declared Interim Stabilized on June 19, 2002. The declaration letter to DOE was issued June 28, 2002. The surface is primarily a gray-brown colored cracked waste with irregular patches of white salt crystal. Approximately 50% of the waste surface is covered by the salt formations. The waste surface appears dry and shows signs of cracking due to saltwell pumping. There is approximately a 5-foot wide pool of visible liquid within the saltwell screen depression.

(6) Tank 241-SX-105 was declared Interim Stabilized on August 1, 2002; the declaration letter to DOE was issued August 20, 2002. The surface is a rough, yellowish-gray saltcake waste with an irregular surface of visible cracks and shelves due to saltwell pumping. The waste surface appears to be dry and shows no standing water within the tank.

(7) Tank 241-BY-105 was declared Interim Stabilized on March 7, 2003; the declaration letter to DOE was issued March 25, 2003. An in-tank video was taken January 5, 2003. The surface is a rough, yellowish brown saltcake waste with an irregular surface of visible lumps and shelves that were created as the surface was dried out by saltwell pumping. The waste surface appears to be dry and shows no standing water within the tank. A large hole around the saltwell screen shows no evidence of supernatant liquid.

(8) Tank 241-SX-103 was declared Interim Stabilized on May 31, 2003; the declaration letter to DOE was issued June 13, 2003. An in-tank video was taken December 31, 2001. The upper waste surface is uneven and rough, with many cracks and shelves due to surface drying caused by saltwell pumping. All estimations regarding waste dimensions were obtained by comparison with known dimensions of installed in-tank equipment.

(9) Tank 241-AX-101 was declared Interim Stabilized on June 2, 2003. The declaration letter to DOE was issued January 19, 2004. An in-tank video was taken November 5, 2003. The surface is a dry flaky, crystalline, yellowish-white saltcake waste in a fairly uniform surface of large cracks that were created as the surface dried out by saltwell pumping. The surface is dry and shows no standing water in the tank.

(10) Tank 241-U-111 was declared Interim Stabilized on June 25, 2003, due to major equipment failure; the declaration letter to DOE was issued July 14, 2003. An in-tank video was taken March 25, 2003. The surface is a dry, crusty, flat surface saltcake waste with a fairly uniform surface of large cracks and pocked holes that were created as the surface was dried out by saltwell pumping. The waste surface is dry and shows no standing water.

(11) Tank 241-C-103 was declared Interim Stabilized on July 11, 2003, due to major equipment failure; the declaration letter to DOE was issued August 13, 2003. An in-tank video was taken March 3, 2003. The surface is a dry-cracked brown sludge type waste, which appears to be relatively level and to have more cracking near the tank walls. There is a roughly 3-foot diameter supernatant pool around the saltwell screen. There are also small supernatant pools around two risers and many liquid pockets across the center waste surface. The ENRAF is out of service and there is no liquid observation well (LOW) installed in the tank.

(12) Tank 241-SX-101 was declared Interim Stabilized on August 14, 2003; the declaration letter to DOE was issued August 22, 2003. An in-tank video was taken August 6, 2003. The surface is a rough, yellowish gray saltcake waste with an irregular surface of visible cracks and shelves that were created as the waste was dried out by saltwell pumping. The waste surface appears to be dry and shows no standing water. A cylindrical pool (approximately 5 foot diameter) around the saltwell screen shows evidence of apparent supernatant liquid, but upon closer examination, was determined to be interstitial liquid.

Table 4-2. – Footnotes continued

(13) Tank 241-S-107 was declared Interim Stabilized on August 28, 2003, due to major equipment failure. Interim Stabilization documentation was issued February 4, 2004; the declaration letter to DOE was issued February 26, 2004. An in-tank video was taken December 12, 2003. The waste appears as a flat, dark, sludge-type waste with an irregular surface of visible cracks created as the waste dried out from saltwell pumping. The waste surface appears to be dry except for a small pool surrounding the saltwell screen.

(14) Tank 241-SX-102 was declared Interim Stabilized on August 28, 2003, due to major equipment failure. The declaration letter to DOE was issued August 4, 2004. An in-tank video was taken December 10, 2003. The waste is a rough, yellowish-tray saltcake with an irregular surface of visible cracks and shelves that were created as the waste was dried out by saltwell pumping. The waste surface appears to be dry and shows no standing water on the surface.

(15) Tank 241-U-107 was declared Interim Stabilized on October 7, 2003. The declaration letter to DOE was issued January 19, 2004. An in-tank video was taken February 4, 2003. The surface is a smooth, brownish saltcake with irregular patches of white salt crystals created as the waste was dried out from saltwell pumping. The waste surface appears to be dry and shows no standing water on the surface.

(16) Tank 241-A-101 was declared Interim Stabilized on November 10, 2003. The declaration letter to DOE was issued June 30, 2004. An in-tank video was taken September 5, 2003. The waste appears as a flat, dark, sludge-type waste with an irregular surface with white clumps of a saltcake-type material. Cracks in the waste surface were created as the waste was dried out by saltwell pumping. The waste surface is dry except for a small pool around the saltwell screen.

(17) Tank 241-S-111 was declared Interim Stabilized on December 15, 2003, due to major equipment failure. This tank is in evaluation to confirm interim stabilization criteria have been met.

(18) Tank 241-S-101 was declared Interim Stabilized on December 29, 2003. The declaration letter to DOE was issued April 30, 2004. An in-tank video was taken March 2, 2004. The waste appears to be a flat, dark, sludge-type waste with an irregular surface with white clumps of saltcake. Also visible are cracks in the waste surface that were created as the waste was dried out by saltwell pumping. The waste surface is dry except for this small pool.

(19) Tank BY-106 was declared Interim Stabilized on December 31, 2003. This tank is in evaluation to confirm interim stabilization criteria have been met.

(20) Tank U-108 was declared Interim Stabilized on March 18, 2004, due to major equipment failure. The declaration letter to DOE was issued September 8, 2004. An in-tank video was taken March 8, 2004. The waste is a smooth, brownish saltcake waste with irregular patches of white salt crystals that were created as the waste was dried out by saltwell pumping. The surface appears to be dry with evidence of cracking and no standing water.

Table 4-3. Single-Shell Tank Interim Stabilization Milestones - Consent Decree.

New single-shell interim stabilization milestones were negotiated in 1999 and are identified in the "Consent Decree." The Consent Decree was approved on August 16, 1999.

The following is the schedule for pumping liquid waste from the remaining 29 single-shell tanks; this schedule is enforceable pursuant to the Decree except for the "Projected Pumping Completion Dates," which are estimates only. This schedule does not include tank 241-C-106.

Tank Designation	Projected Pumping Start Date	Actual Pumping Start Date	Projected Pumping Completion Date	Interim Stabilization Date
1. 241-T-104	Already initiated	March 24, 1996	May 30, 1999	November 19, 1999
2. 241-T-110	Already initiated	May 12, 1997	May 30, 1999	January 5, 2000
3. 241-SX-104	Already initiated	September 26, 1997	December 30, 2000	April 26, 2000
4. 241-SX-106	Already initiated	October 6, 1998	December 30, 2000	May 5, 2000
5. 241-S-102	Already initiated	March 18, 1999	March 30, 2001	(Retrieval)
6. 241-S-106	Already initiated	April 16, 1999	March 30, 2001	February 1, 2001
7. 241-S-103	Already initiated	June 4, 1999	March 30, 2001	April 18, 2000
8. 241-U-103 *	June 15, 2000	September 26, 1999	April 15, 2002	September 11, 2000
9. 241-U-105 *	June 15, 2000	December 10, 1999	April 15, 2002	March 29, 2001
10. 241-U-102 *	June 15, 2000	January 20, 2000	April 15, 2002	June 19, 2002
11. 241-U-109 *	June 15, 2000	March 11, 2000	April 15, 2002	April 5, 2002
12. 241-A-101	October 30, 2000	May 6, 2000	September 30, 2003	November 10, 2003
13. 241-AX-101	October 30, 2000	July 29, 2000	September 30, 2003	June 2, 2003
14. 241-SX-105	March 15, 2001	August 8, 2000	February 28, 2003	August 1, 2002
15. 241-SX-103	March 15, 2001	October 26, 2000	February 28, 2003	May 31, 2003
16. 241-SX-101	March 15, 2001	November 22, 2000	February 28, 2003	August 14, 2003
17. 241-U-106 *	March 15, 2001	August 24, 2000	February 28, 2003	March 9, 2001
18. 241-BY-106	July 15, 2001	July 11, 2001	June 30, 2003	December 31, 2003
19. 241-BY-105	July 15, 2001	July 11, 2001	June 30, 2003	March 7, 2003
20. 241-U-108	December 30, 2001	December 2, 2001	August 30, 2003	March 18, 2004
21. 241-U-107	December 30, 2001	September 29, 2001	August 30, 2003	October 7, 2003
22. 241-S-111	December 30, 2001	December 18, 2001	August 30, 2003	December 15, 2003
23. 241-SX-102	December 30, 2001	December 15, 2001	August 30, 2003	August 28, 2003
24. 241-U-111	November 30, 2002	June 14, 2002	September 30, 2003	June 25, 2003
25. 241-S-109	November 30, 2002	September 23, 2000	September 30, 2003	June 11, 2001
26. 241-S-112	November 30, 2002	September 21, 2002	September 30, 2003	(Retrieval)
27. 241-S-101	November 30, 2002	July 27, 2002	September 30, 2003	December 29, 2003
28. 241-S-107	November 30, 2002	September 4, 2002	September 30, 2003	August 28, 2003
29. 241-C-103	Pumping operations began in this tank on November 29, 2002, approximately five months ahead of the scheduled start date of April 2003. It is the final tank to begin pumping operations specified in this Decree. Pumping was completed in this tank on March 3, 2003, and a declaration memo that the tank has met interim stabilization criteria was issued on March 7, 2003. This tank was declared Interim Stabilized on July 11, 2003.			

* Tanks containing organic complexants.

Completion of Interim Stabilization. DOE will complete interim stabilization of all 29 single-shell tanks listed above by September 30, 2004.

Percentage of Pumpable Liquid Remaining to be Removed:

93% of Total Liquid	9/30/1999 (1)
38% of Organic Complexed Pumpable Liquids	9/30/2000 (2)
5% of Organic Complexed Pumpable Liquids	9/30/2001 (3)
18% of Total Liquid	9/30/2002 (4)
2% of Total Liquid	9/30/2003 (5)

The "percentage of pumpable liquid remaining to be removed" is calculated by dividing the volume of pumpable liquid remaining to be removed from tanks not yet interim stabilized by the sum of the total amount of liquid that has been pumped and the pumpable liquid that remains to be pumped from all tanks.

Footnotes:

(1) The Pumpable Liquid Remaining was reduced to 88% by September 30, 1999. Reference LMHC-9957926 R1, D. I. Allen, LHMC, to D. C. Bryson, DOE-ORP, dated October 26, 1999.

(2) The Complexed Pumpable Liquid Remaining was reduced to 38% by September 15, 2000. Reference CHG-0004752, R. F. Wood, CHG, to J. J. Short, DOE-ORP, dated September 13, 2000.

(3) Reference CHG-0104859, R. F. Wood, CHG, to J. S. O'Connor, DOE-ORP, dated September 20, 2001: this reference states that tanks U-102 and U-109 appear to have met the interim stabilization criteria, thereby reducing the Complexed Pumpable Liquid Remaining to zero. Reference CHG-0202630, dated June 20, 2002, declared tank U-109 Interim Stabilized and confirmed the completion of Consent Decree milestone, Attachment A, Item 11, as well as the partial completion of milestone D-001-004-T01. Reference CHG-0202901, dated June 28, declared tank U-102 Interim Stabilized and confirmed the completion of Consent Decree milestone, Attachment A, Item 10, as well as the partial completion of milestone D-001-004-T01.

(4) The Pumpable Liquid Remaining was reduced to less than 18% of the total liquid by September 30, 2003. Reference CHG-204636, R. F. Wood, CHG, to J. S. O'Connor, DOE-ORP, dated September 30, 2002. The percentage of pumpable liquid remaining was 17.94% or less than 550 Kgallons.

(5) The Pumpable Liquid Remaining was reduced to 2% of the total liquid by August 31, 2003, approximately 30 days ahead of the required completion date of September 30, 2003. The confirmation letter to DOE-ORP will be issued in September 2003. The volume of pumpable liquid remaining in the non-stabilized tanks is slightly less than 2% of the original total pumpable volume.

Table 4-4. Single-Shell Tank Leak Volume Estimates (Sheet 1 of 2)

Tank Number	Confirmed or Assumed Leaker (3)	Estimated Leak Volume Gallons (2)	Interim Stabilized (11)	Leak Estimate	
				Updated	Reference
241-A-103	1987	5500 (8)	06/88	1987	(j)
241-A-104	1975	500 to 2500	09/78	1983	(a)(p)
241-A-105 (1)	1963	10000 to 270000	07/79	1991	(b)(c)
241-AX-102	1988	3000 (8)	09/88	1989	(h)
241-AX-104	1977	-- (6)	08/81	1989	(g)
241-B-101	1974	-- (6)	03/81	1989	(g)
241-B-103	1978	-- (6)	02/85	1989	(g)
241-B-105	1978	-- (6)	12/84	1989	(g)
241-B-107	1980	8000 (8)	03/85	1986	(d)(f)
241-B-110	1981	10000 (8)	03/85	1986	(d)
241-B-111	1978	-- (6)	06/85	1989	(g)
241-B-112	1978	2000	05/85	1989	(g)
241-B-201	1980	1200 (8)	08/81	1984	(e)(f)
241-B-203	1983	300 (8)	06/84	1986	(d)
241-B-204	1984	400 (8)	06/84	1989	(g)
241-BX-101	1972	-- (6)	09/78	1989	(g)
241-BX-102	1971	70000	11/78	1986	(d)
241-BX-108	1974	2500	07/79	1986	(d)
241-BX-110	1976	-- (6)	08/85	1989	(g)
241-BX-111	1984 (13)	-- (6)	03/95	1993	(g)
241-BY-103	1973	<5000	11/97	1983	(a)
241-BY-105	1984	-- (6)	03/03	1989	(g)
241-BY-106	1984	-- (6)	N/A	1989	(g)
241-BY-107	1984	15100 (8)	07/79	1989	(g)
241-BY-108	1972	<5000	02/85	1983	(a)
241-C-101	1980	20000 (8)(10)	11/83	1986	(d)
241-C-110	1984	2000	05/95	1989	(g)
241-C-111	1968	5500 (8)	03/84	1989	(g)
241-C-201 (4)	1988	550	03/82	1987	(i)
241-C-202 (4)	1988	450	08/81	1987	(i)
241-C-203	1984	400 (8)	03/82	1986	(d)
241-C-204 (4)	1988	350	09/82	1987	(i)
241-S-104	1968	24000 (8)	12/84	1989	(g)
241-SX-104	1988	6000 (8)	04/00	1988	(k)
241-SX-107	1964	<5000	10/79	1983	(a)
241-SX-108 (5)(14)	1962	2400 to 35000	08/79	1991	(l)(p)(s)
241-SX-109 (5)(14)	1965	<10000	05/81	1992	(m)(s)
241-SX-110	1976	5500 (8)	08/79	1989	(g)
241-SX-111 (14)	1974	500 to 2000	07/79	1986	(d)(s)
241-SX-112 (14)	1969	30000	07/79	1986	(d)(s)
241-SX-113	1962	15000	11/78	1986	(d)
241-SX-114	1972	-- (6)	07/79	1989	(g)
241-SX-115	1965	50000	09/78	1992	(n)
241-T-101	1992	7500 (8)	04/93	1992	(o)
241-T-103	1974	<1000 (8)	11/83	1989	(g)
241-T-106	1973	115000 (8)	08/81	1986	(d)

Table 4-4. Single-Shell Tank Leak Volume Estimates (Sheet 2 of 2)

Tank Number	Confirmed or Assumed Leaker (3)	Estimated Leak Volume Gallons (2)	Interim Stabilized (11)	Leak Estimate	
				Updated	Reference
241-T-107	1984	-- (6)	05/96	1989	(g)
241-T-108	1974	<1000 (8)	11/78	1980	(f)
241-T-109	1974	<1000 (8)	12/84	1989	(g)
241-T-111	1979, 1994 (12)	<1000 (8)	02/95	1994	(f)(r)
241-TX-105	1977	-- (6)	04/83	1989	(g)
241-TX-107 (5)	1984	2500	10/79	1986	(d)
241-TX-110	1977	-- (6)	04/83	1989	(g)
241-TX-113	1974	-- (6)	04/83	1989	(g)
241-TX-114	1974	-- (6)	04/83	1989	(g)
241-TX-115	1977	-- (6)	09/83	1989	(g)
241-TX-116	1977	-- (6)	04/83	1989	(g)
241-TX-117	1977	-- (6)	03/83	1989	(g)
241-TY-101	1973	<1000 (8)	04/83	1980	(f)
241-TY-103	1973	3000	02/83	1986	(d)
241-TY-104	1981	1400 (8)	11/83	1986	(d)
241-TY-105	1960	35000	02/83	1986	(d)
241-TY-106	1959	20000	11/78	1986	(d)
241-U-101	1959	30000	09/79	1986	(d)
241-U-104	1961	55000	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (8)	12/84	1986	(d)(p)
241-U-112	1980	8500 (8)	09/79	1986	(d)
67 Tanks					

Table 4-4. - Footnotes:

(1) Current estimates [see Reference (b)] are that 610 Kgallons of cooling water was added to tank A-105 from November 1970 to December 1978 to aid in evaporative cooling. In accordance with Dangerous Waste Regulations [Washington Administrative Code 173-303-070 (2)(a)(ii), as amended, Washington State Department of Ecology, 1990, Olympia, Washington], any of this cooling water that has been added and subsequently leaked from the tank must be classified as a waste and should be included in the total leak volume. In August 1991, the leak volume estimate for this tank was updated in accordance with the WAC regulations. Previous estimates excluded the cooling water leaks from the total leak volume estimates because the waste content (concentration) in the cooling water which leaked should be much less than the original liquid waste in the tank (the sludge is relatively insoluble). The total leak volume estimate in this report (10 to 277 Kgallons) is based on the following (see References):

a. Reference (b) contains an estimate of 5 to 15 Kgallons for the initial leak prior to August 1968.

Reference (b) contains an estimate of 5 to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970.

Reference (b) contains an estimate of 610 Kgallons of cooling water added to the tank from November 1970 to December 1978, but it was estimated that the leakage was small during this period. This reference contains the statement "Sufficient heat was generated in the tank to evaporate most, and perhaps nearly all, of this water." This results in a low estimate of zero gallons leakage from November 1970 to December 1978.

b. Reference (c) contains an estimate that 378 to 410 Kgallons evaporated out of the tank from November 1970 to December 1978. Subtracting the minimum evaporation estimate from the cooling water added estimate provides a range from 0 to 232 Kgallons of cooling water leakage from November 1970 to December 1978.

Table 4-4. - Footnotes continued

	Low Estimate	High Estimate
Prior to August 1968	5,000	15,000
August 1968 to November 1970	5,000	30,000
November 1970 to December 1978	0	232,000
Totals	10,000	277,000

(2) Tank leak volume estimates presented here are being updated as a result of additional vadose zone data, tank leak volume assessments and review of tanks for retrieval/closure consideration. Future revisions of the tank summary report will include updated leak volume and radionuclide inventory estimates by farm and will include near surface and vadose contamination from sources in addition to tank leaks that will be used for tank closure planning and performance assessments. Tank leak volume estimates presented here do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.

(3) In many cases, a leak was suspected long before it was identified or confirmed. For example, Reference (d) shows that tank U-104 was suspected of leaking in 1956. The leak was confirmed in 1961. This report lists the "assumed leaker" date of 1961. Using present standards, tank U-104 would have been declared an assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," and "borderline and dormant" were merged into one category now reported as "assumed leaker." See Reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.

(4) The leak volume estimate date for these tanks is before the declared leaker date because the tank was in a suspected leaker or questionable integrity status; however, a leak volume had been estimated prior to the tank being reclassified.

(5) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations. (Repeat spectral drywell scans are not part of the current Tank Farm leak detection program but can be run on request a special needs arise. A select subset of drywells is routinely monitored by the Vadose Zone Characterization Project to assess movement of gamma-emitting radionuclides in the subsurface. There are currently no functioning laterals and no plan to prepare them for use).

(6) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (9). For more details see Reference (g). The total leak volume estimate for these tanks is 150 Kgallons (rounded to the nearest Kgallon), for an average of approximately 8 Kgallons for each of 19 tanks.

(7) The total has been rounded to the nearest 50 Kgallons. Upper bound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.

(8) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.

(9) The curie content shown is as listed in the reference document and is not decayed to a consistent date: therefore, a cumulative total is inappropriate.

(10) Tank C-101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a minimum heel in December 1969. In 1970, the tank was classified as a "questionable integrity" tank. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a "confirmed leaker" in January 1980. See References (p) and (q); refer to Reference (q) for information on the potential for there to have been leaks from other C-farm tanks (specifically, C-102, C-103, and C-109).

(11) These dates indicate when the tanks were declared to be interim stabilized. In some cases, the official interim stabilization documents were issued at a later date. Also, in some cases, the field work associated with interim stabilization was completed at an earlier date.

Table 4-4. Footnotes continued

(12) Tank T-111 was declared an "assumed re-leaker" on February 28, 1994, due to a decreasing trend in surface level measurement. This tank was pumped, and interim stabilization completed on February 22, 1995.

(13) Tank BX-111 was declared an "assumed re-leaker" in April 1993. Preparations for pumping were delayed, following an administrative hold placed on all tank farm operations in August 1993. Pumping resumed and the tank was declared interim stabilized on March 15, 1995.

(14) The leak volume and curie release estimates on tanks SX-108, SX-109, SX-111, and SX-112 have been re-evaluated using a Historical Leak Model [see Reference (s)]. In general, the model estimates are much higher than the values listed in the table, both for volume and curies released. The values listed in the table do not reflect this revised estimate because, "In particular, it is worth emphasizing that this report was never meant to be a definitive update for the leak baseline at the Hanford Site. It was rather meant to be an attempt to view the issue of leak inventories with a new and different methodology." (This quote is from the first page of the referenced report).

(15) Tri-Party Agreement milestones (M-45 series) were developed that establish a formalized approach for evaluating impacts on groundwater quality of loss of tank wastes to the vadose zone underlying these tank farms.

SST Vadose Zone Project drilling and testing activities near tank BX-102 were completed in March 2001. A borehole (299-E33-45) was drilled through the postulated uranium plume resulting from the 1951 tank BX-102 overfill event to confirm the presence of uranium, define its present depth, and survey other contaminants of interest such as Tc-99. Samples were collected for laboratory analyses.

Borehole W33-46, adjacent to tank B-110, was drilled to a depth of approximately 190 feet in July 2001. Soil samples were collected for analysis as part of the tank farm vadose zone characterization activities.

On July 31, 2002, the Washington State Department of Ecology issued a letter-directive which suggested a path forward in dealing with the high ^{99}Tc activity in groundwater at well 299-W23-19 near tank SX-115. No formal remediation is required, however, extensive purging of the well is to be done concurrent with quarterly sampling. In addition, an array of specific conductivity probes is to be placed in the well to monitor the electrical properties of the water (^{99}Tc activity is directly proportional to electrical conductivity). A data logger with remote reading capability together with the specific conductivity probes was installed and fully operational on March 11, 2003.

Table 4-4. - References:

(a) Murthy, K. S., et al., June 1983, *Assessment of Single-Shell Tank Residual Liquid Issues at Hanford Site, Washington*, PNL-4688, Pacific Northwest Laboratory, Richland, Washington.

(b) WHC, 1991a, *Tank 241-A-105 Leak Assessment*, WHC-MR-0264, Westinghouse Hanford Company, Richland, Washington.

(c) WHC, 1991b, *Tank 241-A-105 Evaporation Estimate 1970 Through 1978*, WHC-EP-0410, Westinghouse Hanford Company, Richland, Washington.

(d) Smith, D. A., January 1986, *Single-Shell Tank Isolation Safety Analysis Report*, SD-WM-SAR-006, Rev. 1, Rockwell Hanford Operations, Richland, Washington.

(e) McCann, D. C., and T. S. Vail, September 1984, *Waste Status Summary*, RHO-RE-SR-14, Rockwell Hanford Operations, Richland, Washington.

(f) Catlin, R. J., March 1980, *Assessment of the Surveillance Program of the High-Level Waste Storage Tanks at Hanford*, Office of Environmental Compliance and Review, for the U.S. Department of Energy, Washington D.C.

(g) Baumhardt, R. J., May 15, 1989, Letter to R. E. Gerton, U.S. Department of Energy-Richland Operations Office, *Single-Shell Tank Leak Volumes*, 8901832B R1, Westinghouse Hanford Company, Richland, Washington.

(h) WHC, 1990a, Occurrence Report, *Surface Level Measurement Decrease in Single-Shell Tank 241-AX-102*, WHC-UO-89-023-TF-05, Westinghouse Hanford Company, Richland, Washington.

(i) Groth, D. R., July 1, 1987, Internal Memorandum to R. J. Baumhardt, *Liquid Level Losses in Tanks 241-C-201, -202 and -204*, 65950-87-517, Westinghouse Hanford Company, Richland, Washington.

(j) Groth, D. R., and G. C. Owens, May 15, 1987, Internal Memorandum to J. H. Roecker, *Tank 103-A Integrity Evaluation*, Rockwell Hanford Operations, Richland, Washington.

(k) Dunford, G. L., July 8, 1988, Internal Memorandum to R. K. Welty, *Engineering Investigation: Interstitial Liquid Level Decrease in Tank 241-SX-104*, 13331-88-416, Westinghouse Hanford Company, Richland, Washington.

(l) WHC, 1992a, *Tank 241-SX-108 Leak Assessment*, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.

(m) WHC, 1992b, *Tank 241-SX-109 Leak Assessment*, WHC-MR-0301, Westinghouse Hanford Company, Richland, Washington.

(n) WHC, 1992c, *Tank 241-SX-115 Leak Assessment*, WHC-MR-0302, Westinghouse Hanford Company, Richland, Washington.

(o) WHC, 1992d, Occurrence Report, *Apparent Decrease in Liquid Level in Single Shell Underground Storage Tank 241-T-101, Leak Suspected; Investigation Continuing*, RL-WHC-TANKFARM-1992-0073, Westinghouse Hanford Company, Richland, Washington.

(p) WHC,1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.

(q) WHC, 1993, *Assessment of Unsaturated Zone Radionuclide Contamination Around Single-Shell Tanks 241-C-105 and 241-C-106, WHC-SD-EN-TI-185*, REV OA, Westinghouse Hanford Company, Richland, Washington.

(r) WHC, 1994, Occurrence Report, *Apparent Liquid Level Decrease in Single Shell Underground Storage Tank 241-T-111; Declared an Assumed Re-Leaker*, RL-WHC-TANKFARM-1994-0009, Westinghouse Hanford Company, Richland, Washington.

(s) HNF, 1998, Agnew, S. F., and R. A. Corbin, August 1998, *Analysis of SX Farm Leak Histories - Historical Leak Model* (HLM), HNF-3233, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico.

5.0 MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

Table 5-1. East and West Area Miscellaneous Underground Storage Tanks and Special Surveillance Facilities.

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements					
Facility	**Location**	**Receives Waste From:**	**Waste (Gallons)**	**Monitored By:**	**Remarks**
EAST AREA					
241-A-302-A	A Farm	A-151 DB	670	SACS/ENRAF/TMACS	
241-ER-311	B Plant	ER-151, ER-152 DB	3761	SACS/ENRAF/Manual	
241-AZ-151	AZ Farm	AZ-702 Condensate	6770	SACS/ENRAF/TMACS	Volume changes daily - pumped to AZ-101 or AY-102 as needed
241-AZ-154	AZ Farm		25	SACS/MT	
244-BX-TK-SMP	BX Complex	DCRT - Receives from several farms	18185	SACS/MT	Receives transfers and is pumped as needed
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	6005	MCS/SACS/WTF	WTF - Receives transfers and is pumped as needed
A-350	A Farm	Collects drainage	556	MCS/SACS/WTF	WTF (uncorrected), pumped as needed
AR-204	AY Farm	Tanker trucks from various facilities	900	DIP TUBE	
A-417	A Farm		1176	SACS/WTF	WTF
CR-003-TK-SMP	C Farm	DCRT	2146	ZIP CORD	Zip cord installed; MT removed; more accurate conversion table used
WEST AREA					
241-TX-302-C	T Plant	TX-154 DB	178	SACS/ENRAF/TMACS	
241-U-301-B	U Farm	U-151, 152, 153, 252 DB	1456	SACS/ENRAF/Manual	Pumped to SY-101, 12/03
241-UX-302-A	U Plant	UX-154	1776	SACS/ENRAF/Manual	Rain intrusion 2/03; recalibration caused decrease 6/03
241-S-304	S Farm	S-151 DB	135	SACS/ENRAF/Manual	Sump not alarming
244-S-TK/SMP	S Farm	From SSTs for transfer to SY-102	8910	SACS/Manual	WTF (uncorrected)
244-TX-TK/SMP	TX Farm	From SSTs and PFP for transfer to SY-102	14602	SACS/Manual	Received from 241-Z, tank D-5, 11/04
Vent Station Catch Tank		Cross Site Transfer Line	500	SACS/Manual	MT. Rain intrusion, 1/03
Total Active Facilities - 17					

LEGEND:	
DB	Diversion Box
DCRT	Double-Contained Receiver Tank
ENRAF, MT, Zip Cord	Surface Level Measurement Devices
MCS	Monitor and Control System
Manual	Not connected to any automated system
O/S	Out of Service
PFP	Plutonium Finishing Plant
SACS	Surveillance Automated Control System
SST	Single-Shell Tank
TMACS	Tank Monitor and Control System
WTF	Weight Factor (can be recorded as WTF, WTF [uncorrected] or CWF [uncorrected])

Table 5-2. East Area Inactive Miscellaneous Underground Storage Tanks and Special Surveillance Facilities.

INACTIVE - No longer receiving waste transfers - currently managed by Tank Farm Contractor					
Facility	**Location**	**Received Waste From:**	**Waste (Gallons)**	**Monitored By:**	**Remarks**
209-E-TK-111	209 E Bldg.	Decon Catch Tank	Unknown	NM	Removed from service 1988
241-A-302-B	A Farm	A-152 DB	6110	SACS/MT	Isolated 1985, Project B-138, Interim Stabilized 1990, rain intrusion
241-AX-151	N. of PUREX	PUREX	Unknown	NM	Isolated 1985
241-AX-152	AX Farm	AX-152 DB	0	SACS/MT	Declared Assumed Leaker, pumped to AY-102, 3/01, no longer being used
241-B-301-B	B Farm	B-151, 152, 153, 252 DB	22250	NM	Isolated 1985 (1)
241-B-302-B	B Farm	B-154 DB	4930	NM	Isolated 1985 (1)
241-BX-302-A	BX Farm	BR-152, BX-153, BXR-152, BYR-152 DB	840	NM	Isolated 1985 (1)
241-BX-302-B	BX Farm	BX-154 DB	1040	NM	Isolated 1985 (1)
241-BX-302-C	BX Farm	BX-155 DB	870	NM	Isolated 1985 (1)
241-BY-ITS2-TK 1	BY Farm	Vapor condenser	Unknown	NM	Isolated
241-BY-ITS2-TK 2	BY Farm	Heater Flush Tank	Unknown	NM	Stabilized 1977
241-C-301-C	C Farm	C-151, 152, 153, 252 DB	10470	NM	Isolated 1985 (1)
241-ER-311A	SW of B Plant	ER-151 DB	Empty	NM	Abandoned in place 1954
241-AR Vault	A Complex	Between farms and B Plant	Unknown	NM	Stabilized 8/03, RPP-12051
241-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
241-BXR-TK/SMP-002	BX Farm	Transfer Lines	2180	NM	Interim Stabilization 1985 (1)
241-BXR-TK/SMP-003	BX Farm	Transfer Lines	1810	NM	Interim Stabilization 1985 (1)
241-BXR-TK/SMP-004	BX Farm	Transfer Lines	7100	NM	Interim Stabilization 1985 (1)
Total East Area Inactive Facilities - 18					

LEGEND:	
DB	Diversion Box
MT	Surface Level measurement Device
NM	Not Monitored
SACS	Surveillance Automated Control System
TK, SMP	Tank, Sump

(1) WHC-SD-WM-TI-356, *Waste Storage Tank Status and Leak Detection Criteria,* Rev. 0, September 30, 1988

Table 5-3. West Area Inactive Miscellaneous Underground Storage Tanks and Special Surveillance Facilities.

INACTIVE - No longer receiving waste transfers - currently managed by Tank Farm Contractor					
Facility	**Location**	**Received Waste From:**	**Waste (Gallons)**	**Monitored By:**	**Remarks**
213-W-TK-1	E. of 213-W Compactor Facility	Water Retention Tank	Unknown	NM	Contains only water
231-W-151-001	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
231-W-151-002	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
240-S-302	S Plant	240-S-151-DB	8145		Assumed Leaker, EPDA 85-04
241-S-302-A	S Farm	241-S-151-DB	0		Assumed Leaker TF-EFS-90-042
	Partially filled with grout 2/91, determined to be an Assumed Leaker after leak test. No surface level or intrusion readings obtainable. S-304 (active) replaced S-302				
241-S-302-B	SX Farm	S Encasements	Empty	NM	Isolated 1985 (1)
241-SX-302 (SX-304)	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-T-301	T Farm	DB T-151, 151, 153, 252	Unknown	NM	Isolated 1985 (T-301-B)
241-TX-302	TX Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TX-302-X-B	TX Farm	TX Encasements	Unknown	NM	Isolated 1985 (1)
241-TX-302-B	E. of TX Farm	TX-155 DB	3253	SACS/ ENRAF	New ENRAF installed 9/02
241-TX-302-B(R)	E. of TX Farm	TX-155 DB	Unknown	NM	Isolated, replaced TX-302-B
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Empty	NM	Isolated 1985 (1)
241-Z-8	E. of Z Plant	Recuplex waste	Unknown	NM	Isolated, 1974, 1975
242-T-135	T Evaporator	T Evaporator	Unknown	NM	Isolated
242-TA-R1	T Evaporator	Z Plant waste	Unknown	NM	Isolated
243-S-TK-1	NW of S Farm	Personnel Decon. Facility	Empty	NM	Isolated
244-TXR-TK/SMP-001	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-002	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-003	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-UR-001 Vault TK	U Farm	Tank, Sump and Cell	4220	NM	Stabilized 1985
244-UR-002 Vault TK	U Farm	Tank, Sump and Cell	1400	NM	Stabilized 1985
244-UR-003 Vault TK	U Farm	Tank, Sump and Cell	5996	NM	Stabilized 1985
244-UR-004 Vault TK	U Farm	Tank, Sump and Cell	Empty	NM	Stabilized 1985
Total East Area Inactive Facilities - 25					

LEGEND:	
DB, TD	Diversion Box, Transfer Box
FIC, ENRAF	Surface Level Measurement Devices
MT	Manual Tape - Surface Level measurement Device
NM	Not Monitored
SACS	Surveillance Automated Control System
TK, SMP	Tank, Sump
SACS	Surveillance Automated Control System
TK, SMP	Tank, Sump

(1) WHC-SD-WM-TI-356, *Waste Storage Tank Status and Leak Detection Criteria,* Rev. 0, September 30, 1988

APPENDIX A - TANK CONFIGURATION AND FACILITIES CHARTS

Figure A-1. High Level Waste Tank Configurations

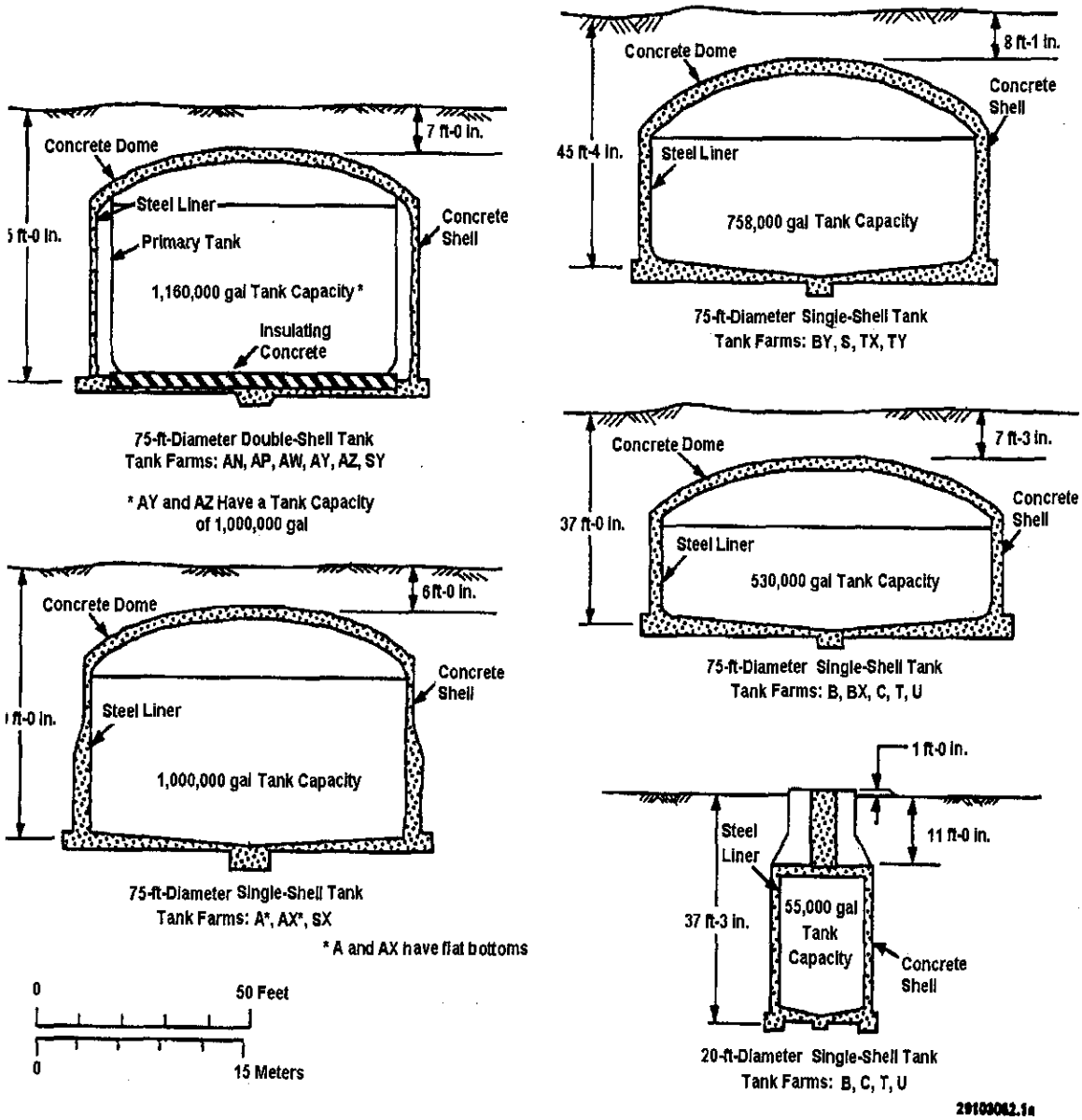


Figure A-2. Double-Shell Tank Instrumentation Configuration

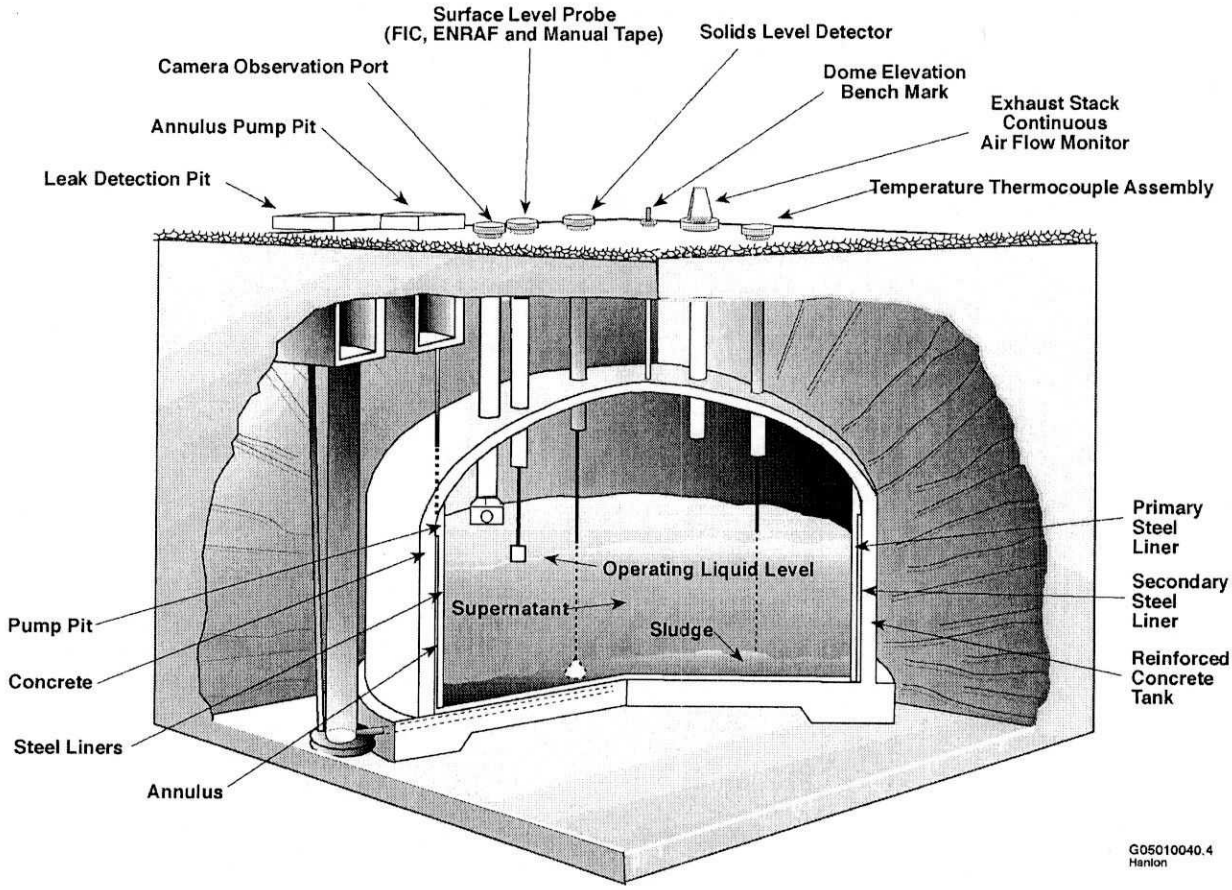
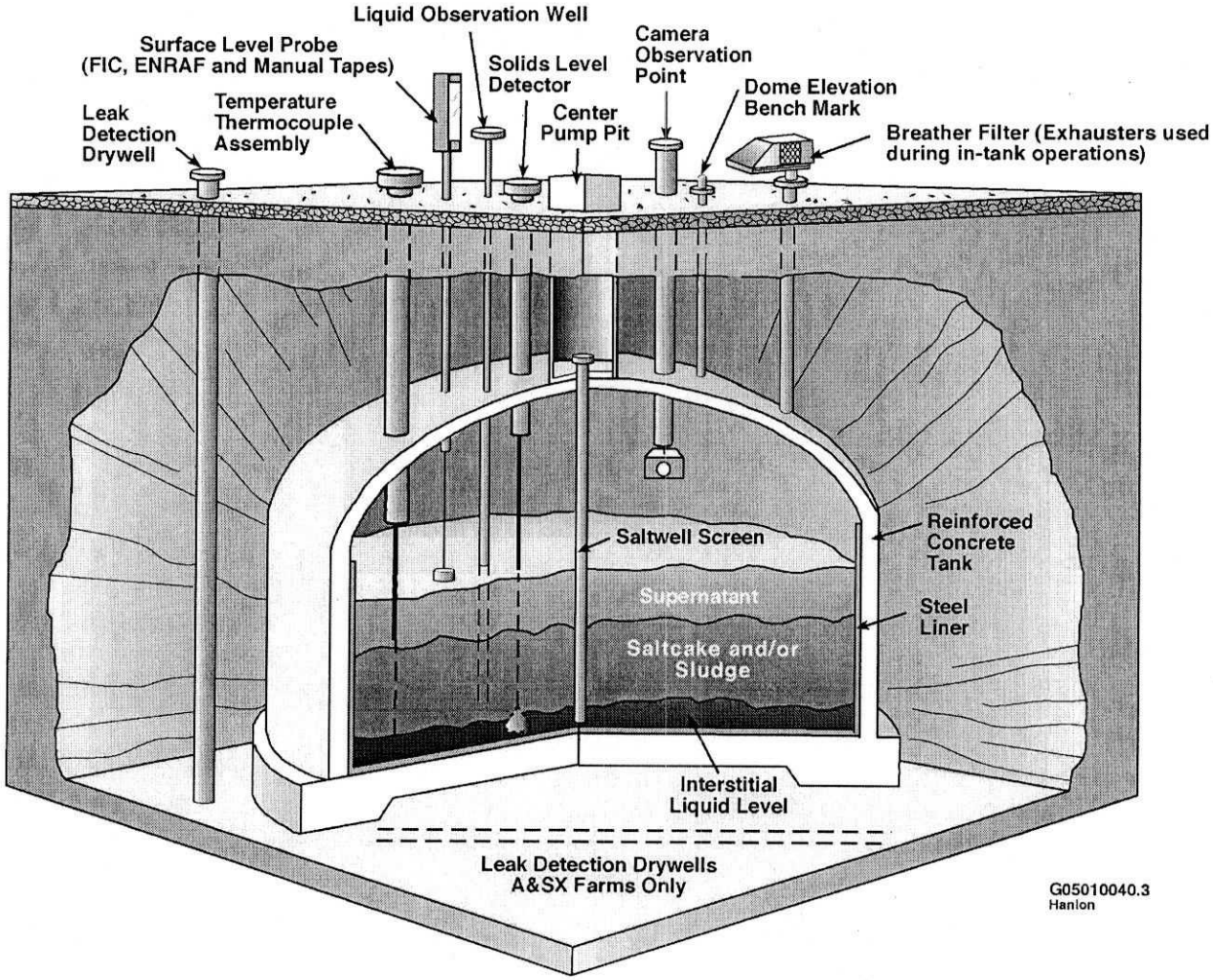


Figure A-3. Single-Shell Tank Instrumentation Configuration

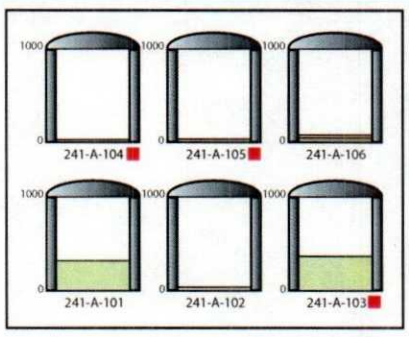


200 East Tank Waste Contents

A-Tank Farm- 1954-55

6 @ 1,000 Kgal Tank Capacity, Single-Shell

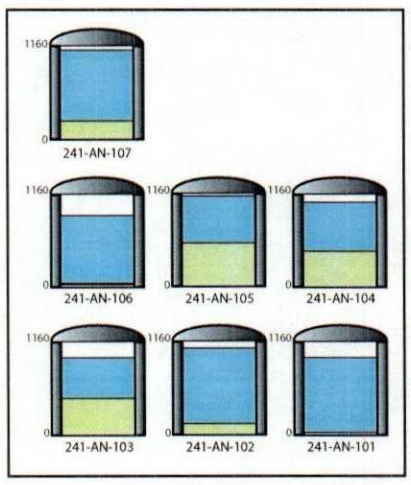
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-A-101	3	317	0
241-A-102	0	37	3
241-A-103 ■	2	364	4
241-A-104 ■	28	0	0
241-A-105 ■	37	0	0
241-A-106	50	29	0



AN-Tank Farm- 1981

7 @ 1,160 Kgal Tank Capacity, Double-Shell

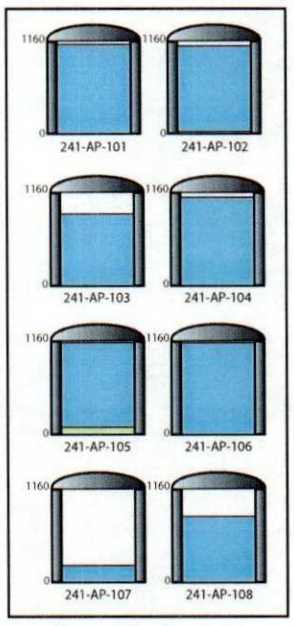
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AN-101	0	31	928
241-AN-102	0	134	936
241-AN-103	0	459	501
241-AN-104	0	445	610
241-AN-105	0	538	588
241-AN-106	29	17	845
241-AN-107	0	230	871



AP-Tank Farm-1986

8 @ 1,160 Kgal Tank Capacity, Double-Shell

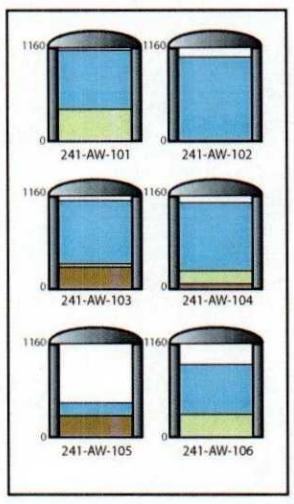
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AP-101	0	0	1115
241-AP-102	23	0	1073
241-AP-103	0	0	893
241-AP-104	0	0	1099
241-AP-105	0	89	1050
241-AP-106	0	0	1135
241-AP-107	0	0	208
241-AP-108	0	0	815



AW-Tank Farm-1980

6 @ 1,160 Kgal Tank Capacity, Double-Shell

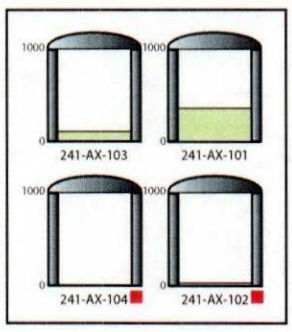
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AW-101	0	396	732
241-AW-102	7	0	1032
241-AW-103	273	40	786
241-AW-104	66	157	851
241-AW-105	263	0	157
241-AW-106	0	283	618



AX-Tank Farm- 1965-66

4 @ 1,000 Kgal Tank Capacity, Single-Shell

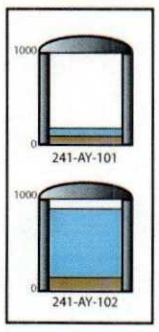
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AX-101	3	355	0
241-AX-102 ■	6	24	0
241-AX-103	8	99	0
241-AX-104 ■	7	0	0



AY-Tank Farm- 1971-76

2 @ 1,000 Kgal Tank Capacity, Double-Shell

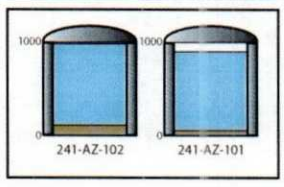
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AY-101	96	0	84
241-AY-102	151	0	741



AZ-Tank Farm- 1975-76

2 @ 1,000 Kgal Tank Capacity, Double-Shell

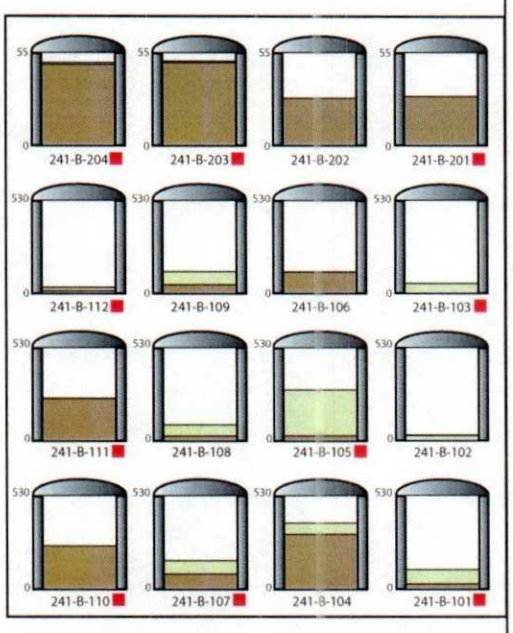
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-AZ-101	52	0	849
241-AZ-102	105	0	878



B-Tank Farm- 1945-47

12 @ 530 Kgal Tank Capacity, Single-Shell
4 @ 55 Kgal Tank Capacity, Single-Shell

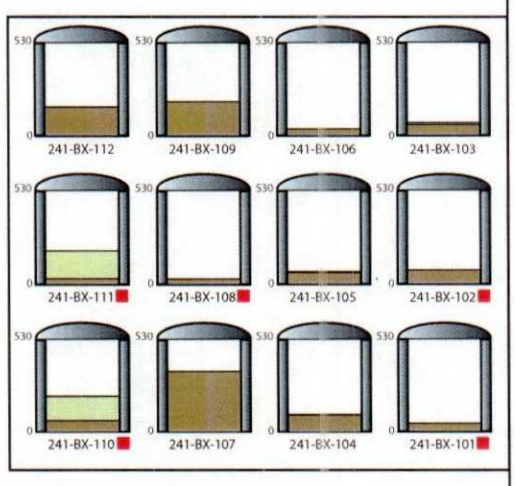
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-B-101 ■	28	81	0
241-B-102	0	28	4
241-B-103 ■	1	55	0
241-B-104	309	65	0
241-B-105 ■	28	262	0
241-B-106	122	0	1
241-B-107 ■	86	75	0
241-B-108	27	65	0
241-B-109	50	75	0
241-B-110 ■	244	0	1
241-B-111 ■	241	0	1
241-B-112 ■	15	17	3
241-B-201 ■	29	0	0
241-B-202	28	0	0
241-B-203 ■	49	0	1
241-B-204 ■	48	0	1



BX- Tank Farm- 1948-50

12 @ 530 Kgal Tank Capacity, Single-Shell

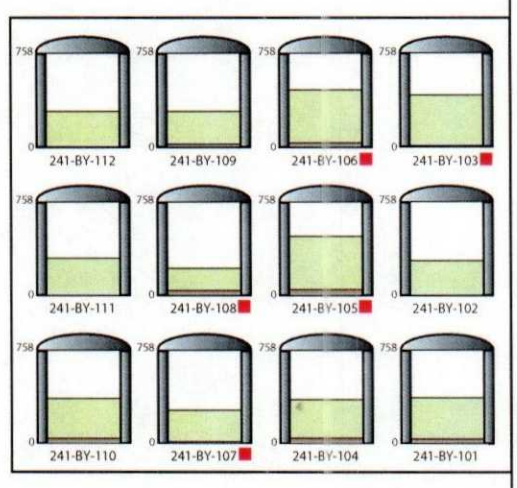
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-BX-101 ■	48	0	0
241-BX-102 ■	79	0	0
241-BX-103	62	0	12
241-BX-104	97	0	3
241-BX-105	67	0	5
241-BX-106	38	0	0
241-BX-107	347	0	0
241-BX-108 ■	31	0	0
241-BX-109	193	0	0
241-BX-110 ■	65	139	1
241-BX-111 ■	32	157	0
241-BX-112	163	0	1



BY-Tank Farm- 1950-51

12 @ 758 Kgal Tank Capacity, Single-Shell

Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-BY-101	37	333	0
241-BY-102	0	279	0
241-BY-103 ■	9	408	0
241-BY-104	45	313	0
241-BY-105 ■	48	433	0
241-BY-106 ■	32	430	0
241-BY-107 ■	16	256	0
241-BY-108 ■	40	182	0
241-BY-109	24	263	0
241-BY-110	43	323	0
241-BY-111	0	301	0
241-BY-112	2	284	0



C-Tank Farm- 1946-53

12 @ 530 Kgal Tank Capacity, Single-Shell
4 @ 55 Kgal Tank Capacity, Single-Shell

Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-C-101 ■	88	0	0
241-C-102	316	0	0
241-C-103	71	0	1
241-C-104	259	0	0
241-C-105	132	0	0
241-C-106	3	0	0
241-C-107	247	0	0
241-C-108	66	0	0
241-C-109	63	0	0
241-C-110 ■	177	0	1
241-C-111 ■	57	0	0
241-C-112	104	0	0
241-C-201 ■	1	0	0
241-C-202 ■	0*	0	0
241-C-203 ■	1	0	0
241-C-204 ■	2	0	0

* (Less than 500 gallons)

LEGEND: Sludge | Saltcake | Supernatant | Available Space | Assumed/Confirmed Leaker ■

Data Derived From Waste Tank Summary Report Dated 12/31/04

CH2MHILL Hanford Group, Inc.

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Figure A-4

200 West Tank Waste Contents

S-Tank Farm- 1950-51

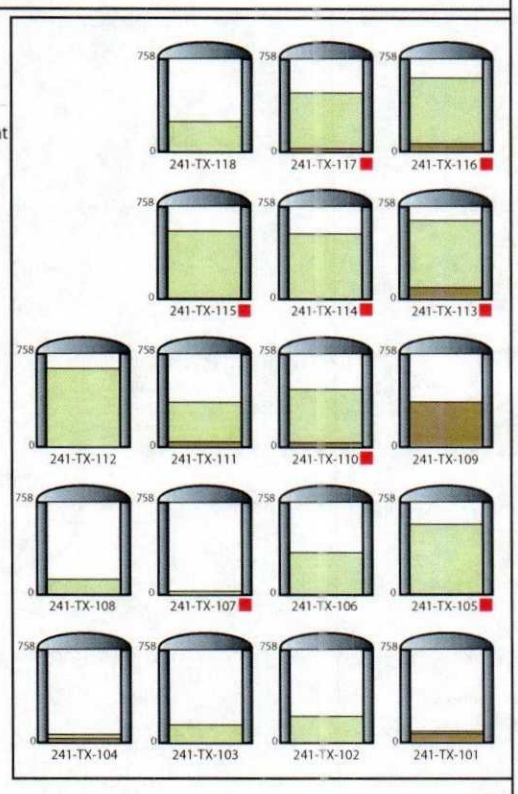
12 @ 758 Kgal Tank Capacity, Single-Shell

Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-S-101	235	117	0
241-S-102	22	416	13
241-S-103	9	227	1
241-S-104 ■	132	156	0
241-S-105	2	404	0
241-S-106	0	455	0
241-S-107	320	38	0
241-S-108	5	545	0
241-S-109	13	520	0
241-S-110	96	293	0
241-S-111	76	335	0
241-S-112	6	42	0

TX-Tank Farm- 1947-48

18 @ 758 Kgal Tank Capacity, Single-Shell

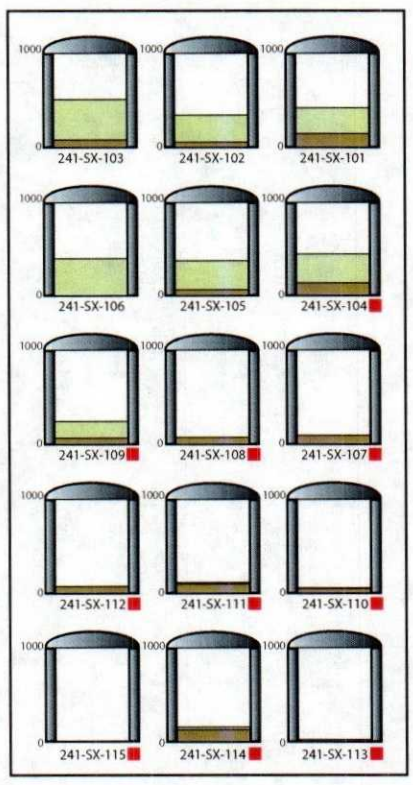
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-TX-101	74	17	0
241-TX-102	2	215	0
241-TX-103	0	145	0
241-TX-104	34	33	2
241-TX-105 ■	8	568	0
241-TX-106	5	343	0
241-TX-107 ■	0	29	0
241-TX-108	6	121	0
241-TX-109	363	0	0
241-TX-110 ■	37	430	0
241-TX-111	43	321	0
241-TX-112	0	634	0
241-TX-113 ■	93	545	0
241-TX-114 ■	4	528	0
241-TX-115 ■	8	545	0
241-TX-116 ■	66	533	0
241-TX-117 ■	29	451	0
241-TX-118	0	247	0



SX-Tank Farm- 1953-54

15 @ 1,000 Kgal Tank Capacity, Single-Shell

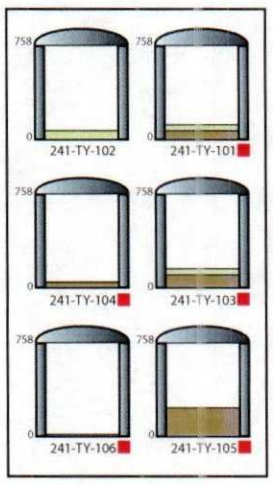
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-SX-101	144	275	0
241-SX-102	55	286	0
241-SX-103	78	431	0
241-SX-104 ■	136	310	0
241-SX-105	63	312	0
241-SX-106	0	396	0
241-SX-107 ■	94	0	0
241-SX-108 ■	74	0	0
241-SX-109 ■	66	175	0
241-SX-110 ■	49	7	0
241-SX-111 ■	98	17	0
241-SX-112 ■	75	0	0
241-SX-113 ■	19	0	0
241-SX-114 ■	126	29	0
241-SX-115 ■	4	0	0



TY-Tank Farm- 1951-52

6 @ 758 Kgal Tank Capacity, Single-Shell

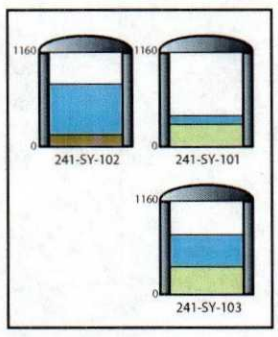
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-TY-101 ■	72	47	0
241-TY-102	0	69	0
241-TY-103 ■	103	51	0
241-TY-104 ■	43	0	1
241-TY-105 ■	231	0	0
241-TY-106 ■	16	0	0



SY-Tank Farm- 1977

3 @ 1,160 Kgal Tank Capacity, Double-Shell

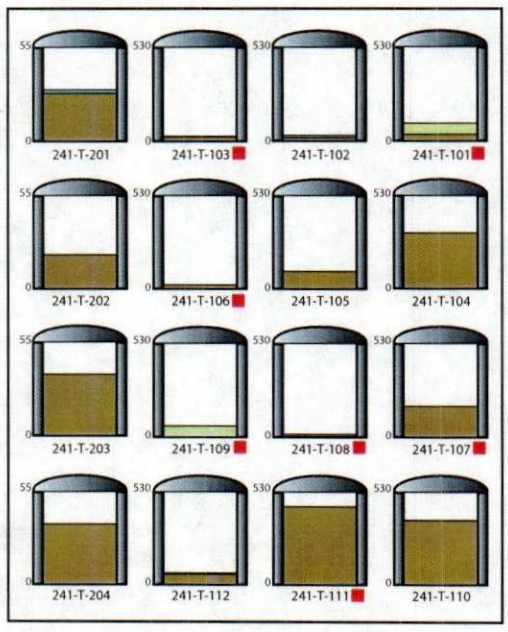
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-SY-101	0	275	106
241-SY-102	145	0	624
241-SY-103	0	342	398



T-Tank Farm- 1943-44

12 @ 530 Kgal Tank Capacity, Single-Shell
4 @ 55 Kgal Tank Capacity, Single-Shell

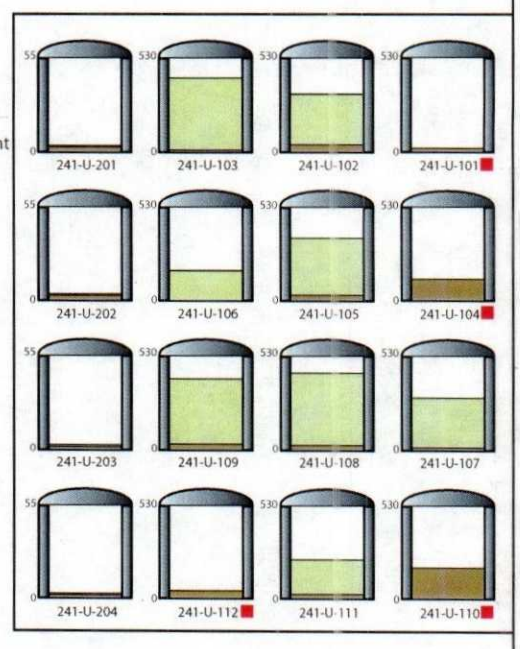
Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-T-101 ■	37	62	0
241-T-102	19	0	13
241-T-103 ■	23	0	4
241-T-104	317	0	0
241-T-105	98	0	0
241-T-106 ■	22	0	0
241-T-107 ■	173	0	0
241-T-108 ■	5	11	0
241-T-109 ■	0	62	0
241-T-110	369	0	1
241-T-111 ■	447	0	0
241-T-112	60	0	7
241-T-201	28	0	2
241-T-202	20	0	0
241-T-203	36	0	0
241-T-204	36	0	0



U-Tank Farm- 1946-49

12 @ 530 Kgal Tank Capacity, Single-Shell
4 @ 55 Kgal Tank Capacity, Single-Shell

Tank	Sludge (Kgal)	Saltcake (Kgal)	Supernatant (Kgal)
241-U-101 ■	23	0	0
241-U-102	43	283	1
241-U-103	12	404	1
241-U-104 ■	122	0	0
241-U-105	32	321	0
241-U-106	0	168	2
241-U-107	15	279	0
241-U-108	29	405	0
241-U-109	35	366	0
241-U-110 ■	176	0	0
241-U-111	26	196	0
241-U-112 ■	45	0	0
241-U-201	3	0	1
241-U-202	3	0	1
241-U-203	2	0	1
241-U-204	2	0	1



LEGEND: Sludge, Saltcake, Supernatant, Available Space, Assumed/Confirmed Leaker ■

Data Derived From Waste Tank Summary Report Dated 12/31/04

CH2MHILL Hanford Group, Inc.

\\AP012\CHARDOCS\All By Staff Member\Naiknimbalkar\Tank Figures\200 West Tank Profile 123104.pdf

Figure A-5

Hanford Tank Farm Facilities 200 East

Note:
All single-shell tanks were removed from service (not allowed to receive waste) on or before November 21, 1980

Active Lines Only

- Concrete encased or pipe-in-pipe
- Direct Buried Pipe
- Cross-Site Transfer Lines (concrete encased or pipe-in-pipe)

Retrieval

Controlled, Clean and Stable | Single-Shell | Double-Shell | Intrusion Prevention Completed

All tanks 75 ft. dia. except 200 series tanks which are 20 ft. dia. @ 55,000 gal

DST = Double-Shell Tank
SST = Single-Shell Tank
DCRT = Double Contained Receiver Tank
ENRAF/FIC/MT = Liquid Level Monitoring Devices
TMACS = Tank Monitor and Control System

Inactive Cross -Site Transfer Lines

Replacement Cross - Site Transfer System (RCSTS) (From 6241-V)

Tank Number

Radiation Monitoring Laterals Under Tank (None Currently Used)

Radiation Monitoring Dry Well – Approx Location
● = Active
○ = Inactive
Dry Well Monitoring No Longer Being Routinely Done; By Special Request/Project Only.

Liquid-Level Gauges
▼ = FIC read manually
Y = Tape read manually

■ =ENRAF Read Manually
⊘ =Auto ENRAF on TMACS

Airlift Circulators (AN-107 and AW-102 are inoperative)

Liquid Observation Well (LOW)

Screen – Jet Pump –

Assumed Leaker

Assumed Leaked Date

Exhauster (A-104/105/106 inoperative)

Interim Stabilized (Yellow Tank)

Temperature Reading:
● Automatic (TMACS)
○ Manual

BY-Tank Farm
In Service 1950-51
12 @ 758,000 gal

B-Tank Farm
In Service 1945-47
12 @ 530,000 gal
4 @ 55,000 gal

BX-Tank Farm
In Service 1948-50
12 @ 530,000 gal

C-Tank Farm
In Service 1946-53
12 @ 530,000 gal
4 @ 55,000 gal

AN-Tank Farm
In Service 1981
7 @ 1,160,000 gal

AZ-Tank Farm
In Service 1975-76
(Aging Waste Tanks)
2 @ 1,000,000 gal

AY-Tank Farm
In Service 1971-76
(Aging Waste Tanks) 2 @ 1,000,000 gal

AX-Tank Farm
In Service 1965-66
4 @ 1,000,000 gal

A-Tank Farm
In Service 1956-57
6 @ 1,000,000 gal

AW-Tank Farm
In Service 1980
6 @ 1,160,000 gal

AP-Tank Farm
In Service 1986
8 @ 1,160,000 gal

244-BX DCRT
ER-152
ER-151
ER-153
CR Vault
244-A DCRT
WESF
B-Plant
AX-155
Valve Pits
AR-151
204 AR
AR Vault
AX-152
Valve Pits
Valve Pits
242-A Evaporator
AP Valve Pit
Valve Pits
PUREX
A-151
Grout Equip
Vault Field

Status as of December 31, 2004
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Figure A-6
(Schematic)

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Hanford
Tank Farm Facilities
200 West

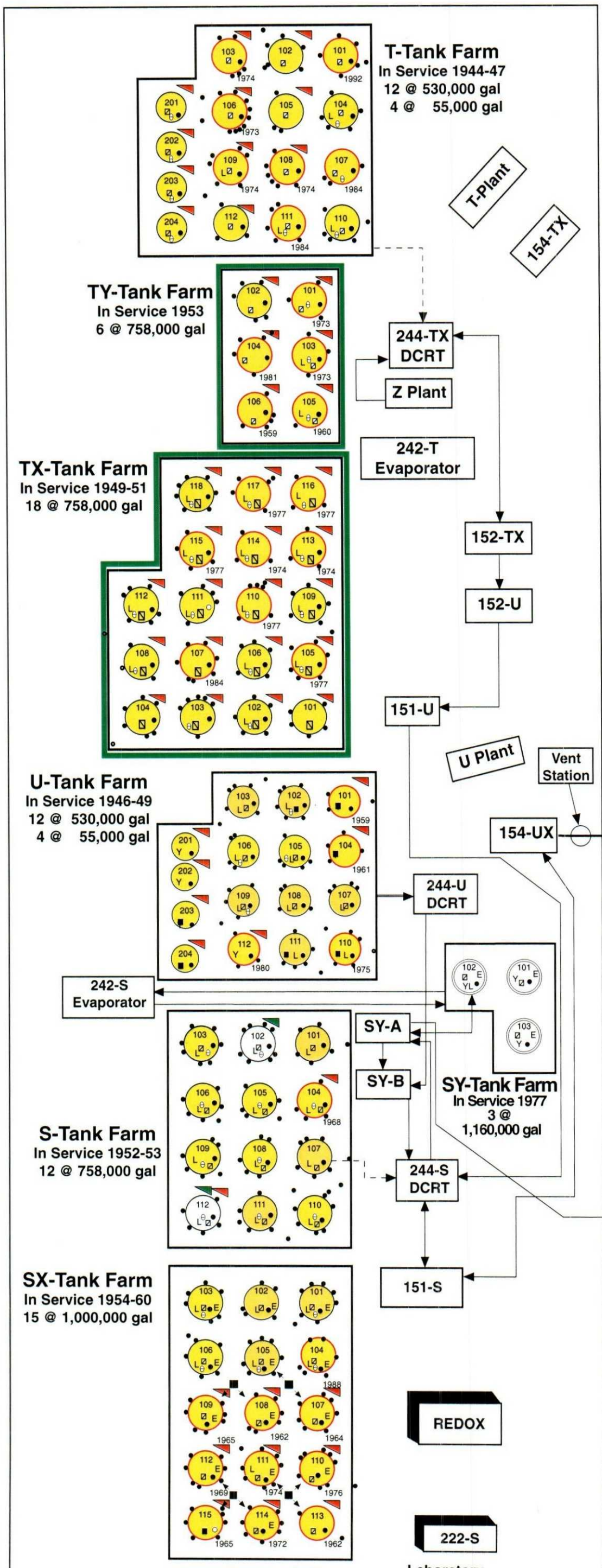

Figure A-7
(Schematic)

Note:
All single-shell tanks were removed from service (not allowed to receive waste) on or before November 21, 1980

Active Lines Only

- Concrete encased or pipe-in-pipe
- Direct Buried Pipe
- Cross-Site Transfer Lines (concrete encased or pipe-in-pipe)

Retrieval

Controlled, Clean and Stable | Single-Shell | Double-Shell | Intrusion Prevention Completed

All tanks 75 ft. dia. except 200 series tanks which are 20 ft. dia. @ 55,000 gal

DST = Double-Shell Tank
SST = Single-Shell Tank
DCRT = Double Contained Receiver Tank
ENRAF/FIC/MT = Liquid Level Monitoring Devices
TMACS = Tank Monitor and Control System

High Heat Load Tanks = West Area - SX-107/108/109/110/111/112/114

Tank Number

Radiation Monitoring Dry Well – Approx Location
● = Active
○ = Inactive
Dry Well Monitoring No Longer Being Routinely Done; By Special Request/Project Only.

Radiation Monitoring Laterals Under Tank (None Currently Used)

Liquid-Level Gauges
▼ = FIC read manually
Y = Tape read manually

Operating Exhauster

Interim Stabilized (Yellow Tank)

■ =ENRAF Read Manually
▨ =Auto ENRAF on TMACS

Temperature Reading:
● Automatic (TMACS)
○ Manual

Airlift Circulators

Liquid Observation Well (LOW)

Screen – Jet Pump –

Assumed Leaker

Assumed Leaked Date

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