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HNF-EP-0182-152

# Waste Tank Summary Report for Month Ending November 30, 2000

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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-AC06-99RL14047

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

Date Published  
January 2001

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Assistant Secretary for Environmental Management

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WASTE TANK SUMMARY REPORT

B. M. Hanlon

ABSTRACT

*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 63 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-Richland Operations Office Order 435.1 (DOE-RL, July 1999, Radioactive Waste Management, U. S. Department of Energy-Richland Operations Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.*

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METRIC CONVERSION CHART		
1 inch	=	2.54 centimeters
1 foot	=	30.48 centimeters
1 gallon	=	3.80 liters
1 ton	=	0.90 metric tons
$^{\circ}\text{F} = \left(\frac{9}{5}^{\circ}\text{C}\right) + 32$		
1 Btu/h = 2.930711 E-01 watts (International Table)		

**WASTE TANK SUMMARY REPORT  
FOR MONTH ENDING NOVEMBER 30, 2000**

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

**I. WASTE TANK STATUS**

Category	Quantity	Date of Last Change
Double-Shell Tanks <sup>b</sup>	28 double-shell	10/86
Single-Shell Tanks	149 single-shell	1966
Assumed Leaker Tanks	67 single-shell	07/93
Sound Tanks	28 double-shell	1986
	82 single-shell	07/93
Interim Stabilized Tanks <sup>a</sup>	125 single-shell	09/00
Not Interim Stabilized <sup>c</sup>	24 single-shell	09/00
Intrusion Prevention Completed	108 single-shell	09/96
Controlled, Clean, and Stable <sup>f</sup>	36 single-shell	09/96
Watch List Tanks <sup>d</sup>	19 single-shell	09/00 <sup>e</sup>
	6 double-shell	06/93
Total	25 tanks	

<sup>a</sup> Of the 125 tanks classified as Interim Stabilized, 65 are listed as Assumed Leakers. (See Table G-1)

<sup>b</sup> Six double-shell tanks are currently included on the Hydrogen Watch List and are thus prohibited from receiving waste in accordance with "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510.

<sup>c</sup> Two of these tanks are Assumed Leakers (BY-105, BY-106). (See Table F-1)

<sup>d</sup> See Appendix D for more information on Watch List Tanks.

<sup>e</sup> Dates for the Watch List tanks are "officially added to or removed from the Watch List" dates. Eighteen tanks were removed from the Organic Watch List in December 1998; the last two tanks (C-102 and C-103) were removed from the Organic Watch List in August 2000. In December 1999, tank C-106 was removed from the High Heat Load Watch List. Only the Hydrogen Watch List remains.

<sup>f</sup> The TY tank farm was officially declared Controlled, Clean, and Stable (CCS) in March 1996. The TX tank farm and BX tank farms were declared CCS in September 1996.

**II. WASTE TANK INVESTIGATIONS**

This section includes all single- or double-shell tanks or catch tanks which are showing surface level or interstitial liquid level (ILL) decreases, or drywell radiation level increases in excess of established criteria.

**A. Assumed Leakers or Assumed Re-leakers: (See Appendix H for definition of "Re-leaker")**

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued, or for which a waste tank investigation is in progress, for assumed leaks or re-leaks.

Tanks/catch tanks will remain on this list until either a) completion of Interim Stabilization, b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker, or c) the investigation is completed.

There are no formal leak investigations in progress. There are no tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell tanks and related receiver tanks for which the surveillance data show that the surface level or ILL has met or exceeded the increase criteria, or are still being investigated.

Candidate Intrusion List: Increase criteria in the following tanks indicate possible intrusions.

- Tank 241-B-202
- Tank 241-BX-101
- Tank 241-BX-103
- Tank 241-BY-103

The surveillance data was last reviewed on the tanks listed as having probable liquid intrusions: Memo 74B20-99-045, dated November 22, 1999.

Catch Tank 241-AX-152: The liquid level in this catch tank was steady around 66.75 inches from the startup of Project W-030, "Tank Farm Ventilation System," in March 1998 until late August 1998. The level then began to decrease. The October 1998 reading of 65 inches is 1.75 inches below the summer average. This is an active catch tank, routinely pumped, and deviations from baseline are not applicable per OSD-00031. The decrease represents a significant change in trend and it is apparent that tank conditions changed around the end of August 1998.

Resolution Status: Discrepancy Report #98-353 was issued on November 4, 1998. One possible cause under investigation is a change in flow path, causing an increase in evaporation. The tank was pumped down to 2.25 inches on November 13, 1998. Since that time the level has decreased to 0.00 inches. The Discrepancy Report will remain open until an engineering investigation is complete.

The discrepancy remained unresolved, and there was a renewed interest in this tank because of its importance for deactivation of the 702A ventilation system to prepare it for Decommissioning and Deactivation and for collection of drainage from AX-155. In the absence of an agreement on a leak test, management requested a leak assessment. The leak assessment team met April 20, 2000, to review the data. Observations inconsistent with a conclusion that the catch tank was leaking and scanty data prompted the leak assessment team to defer a decision pending availability of additional data - primarily tank temperature and a more sensitive level measuring device to shorten the necessary leak test time. A Leak Test Recommendation was issued May 8, 2000. The leak test involves adding water to the tank and measuring the level drop, to support tank integrity assessment. The addition of AX-152 integrity pressure test water to AY-101 is being re-evaluated because the actual volume of water added to the DST system (approximately 50,000 gallons) is considerably more than the volume originally evaluated. The increased volume is necessary because of the siphon type pump in the catch tank.

Leak assessment is currently being performed per Work Package 2E-00-193. Water was added in August 2000 which raised the level to 10-3/4 inches. The level was 9.75 inches on November 30, 2000.

Work Package 2E-00-194 is on the schedule to fill the catch tank to 80% capacity (approximately 108 inches) and perform a 40-hour leak test.

Because the ENRAF will not be installed, Work Package ES-99-00133 has been revised to allow flammable gas sampling through the existing manual tape; sampling is expected to take place in November 2000.

### III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

#### 1. Single-Shell Tanks Saltwell Jet Pumping (See Table A-6 footnotes for further information)

Tank 241-A-101 - Pumping began May 6, 2000. No pumping in November 2000; a total of 14.1 Kgallons has been pumped from this tank since start of pumping in May 2000.

Tank 241-AX-101 - Pumping began July 29, 2000. No pumping in November 2000; a total of 8.3 Kgallons has been pumped from this tank since start of pumping in July 2000.

Tank 241-S-102 - Pumping problems forced many shutdowns. The pump was replaced and pumping resumed on February 19, 2000. Problems with the new pump forced a shutdown on March 23, 2000. Pumping was interrupted in early June 2000; due to the flushing involved in trying to return to pumping, June pumping resulted in a net addition to the tank. No pumping in November 2000; a total of 56.8 Kgallons has been pumped from this tank since start of pumping in March 1999.

Tank 241-S-106 - Pumping was discontinued on January 3, 2000, to allow the waste levels to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization criteria. As of November 30, 2000, waste levels had not yet stabilized.

Tank 241-S-109 - Pumping began September 23, 2000. In November 2000, a total of 9.5 Kgallons was pumped; a total of 141.7 Kgallons has been pumped from this tank (111.0 Kgallons was pumped in 1979 [primary stabilization], and partial isolation in 1982).

Tank 241-SX-101 - Pumping began November 22, 2000. In November 2000, a total of 12.3 Kgallons was pumped from this tank.

Tank 241-SX-103 - Pumping began October 26, 2000. In November 2000, a total of 52.9 Kgallons was pumped; a total of 64.5 Kgallons has been pumped from this tank since start of pumping in October 2000.

Tank 241-SX-105 - Pumping began August 8, 2000. In November 2000, a total 12.6 Kgallons was pumped; a total of 136.4 Kgallons has been pumped since start of pumping in August 2000.

Tank 241-U-102 - Pumping began January 20, 2000. In November 2000, a total of 4.8 Kgallons was pumped; a total of 66.3 Kgallons has been pumped from this tank since start of pumping in January 2000.

Tank 241-U-105 - Pumping began December 10, 1999, and was discontinued July 13, 2000, because of a pump failure. Waste levels are being allowed to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization criteria. As of November 30, 2000, waste levels had not yet stabilized.

Tank 241-U-106 - Pumping began August 24, 2000. In November 2000, a total of 2.0 Kgallons was pumped; a total of 38.4 Kgallons has been pumped from this tank since start of pumping in August 2000.

Tank 241-U-109 - Pumping began March 11, 2000. In November 2000, a total of 3.2 Kgallons was pumped; a total of 65.3 Kgallons has been pumped from this tank since start of pumping in March 2000.

#### 2. Double-Shell Tank 241-SY-101 Waste Level Increase

Tank 241-SY-101 exhibited gas release events due to generation and retention of flammable gas. A mixer pump was installed in the tank in July 1993, which circulated liquid wastes. This prevents gas bubbles from building up at the bottom, and results in venting of small steady gas releases. Since early 1997, the surface level has been rising in spite of regular mixer pump operations.

**Resolution Status:** On February 11, 1998, the PRC recommended that the DOE-RL declare an Unreviewed Safety Question (USQ) over the continued level growth observed in this tank. The contractor has established a multi-disciplinary team to solve the level growth issues in SY-101.

Final calculated transfer and dilution volumes for level growth remediation can be found in Memo 74B50-00-030, dated March 23, 2000.

**The mixer pump is currently in "Standby Mode." The DOE-RL approved the closing of the USQ on November 30, 2000. It is expected that the approvals to implement the AB change to discontinue use of the mixer pump will be completed by February 15, 2001.**

**3. RL-PMHC-TANKFARM-1999-0023, Occurrence Report, "Additional Information Regarding Crust Growth in 241-SY-101," Off-Normal Occurrence, Latest Update: October 2, 2000. (also see #2 above)**

On December 18, 1999, approximately 90,000 gallons of nuclear waste was transferred from tank SY-101 to SY-102 in the first of three planned transfers.

In conjunction with the transfers, water is added to the waste to reduce the concentration of gas generation and gas-retaining chemicals to reduce gas buildup in SY-101 and associated receiving tanks.

The second of the three waste transfers was completed on January 27, 2000.

The third and final phase of transfers was initiated on February 29, and completed March 2, 2000.

On April 3, 2000, a Mixer Pump Observation Period (MPOP) began, which was completed; data is being evaluated.

The mixer pump has been placed in "standby mode."

This report is being extended pending completion and evaluation of tank activities during the MPOP and resolution of the USQ issues. (USQ closed November 30, 2000)

It is anticipated than an Update or Final report will be submitted no later than December 31, 2000.

APPENDIX A  
MONTHLY SUMMARY

TABLE A-1. MONTHLY SUMMARY

TANK STATUS

November 30, 2000

	200 EAST AREA	200 WEST AREA	TOTAL
IN SERVICE	25	03	28 (1)
OUT OF SERVICE	66	83	149
SOUND	59	51	110
ASSUMED LEAKER	32	35	67
INTERIM STABILIZED	60	65	125
ISOLATED			
PARTIAL INTERIM	11	30	41
INTRUSION PREVENTION COMPLETE	55	53	108
CONTROLLED, CLEAN, AND STABLE	12	24	36

		WASTE VOLUMES (Kgallons)			SST	DST	
		200	200	TOTAL	TANKS	TANKS	TOTAL
		EAST AREA	WEST AREA				
<b>SUPERNATANT</b>							
AW	Aging waste	1750	0	1750	0	1750	1750
CC	Complexant concentrate waste	3172	1263	4435	0	4435	4435
CP	Concentrated phosphate waste	1089	0	1089	0	1089	1089
DC	Dilute complexed waste	1640	0	1640	1	1639	1640
DN	Dilute non-complexed waste	1576	639	2215	0	2215	2215
PD	PUREX/TRU solids	318	0	318	0	318	318
NCPLX	Non-complexed waste	164	149	313	313	0	313
DSSF	Double-shell slurry feed	6036	168	6204	1049	5155	6204
<b>TOTAL SUPERNATANT</b>		<b>15745</b>	<b>2219</b>	<b>17964</b>	<b>1363</b>	<b>16601</b>	<b>17964</b>
<b>SOLIDS</b>							
	Sludge (includes liquids)	6502	5648	12150	11059	1091	12150
	Saltcake (includes liquids)	8106	15864	23970	20762	3208	23970
<b>TOTAL SOLIDS</b>		<b>14608</b>	<b>21512</b>	<b>36120</b>	<b>31821</b>	<b>4299</b>	<b>36120</b>
<b>TOTAL WASTE</b>		<b>30353</b>	<b>23731</b>	<b>54084</b>	<b>33184</b>	<b>20900</b>	<b>54084</b>
AVAILABLE SPACE IN TANKS		9400	998	10398	0	10398	10398
DRAINABLE INTERSTITIAL LIQUID (2)		1425	2094	3519	3519	(2)	3519
DRAINABLE LIQUID REMAINING (2)		2472	2407	4879	4879	(2)	4879

(1) Includes six double-shell tanks on Hydrogen Watch List not currently allowed to receive waste, AN-103, AN-104, AN-105, AW-101, SY-101, and SY-103.

(2) Drainable Interstitial Liquid and Drainable Liquid Remaining for single-shell tanks only; not applicable for double-shell tanks

A-2

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TABLE A-2. TANK USE SUMMARY

November 30, 2000

TANK FARMS	TANKS AVAILABLE TO RECEIVE WASTE TRANSFERS	SOUND	ASSUMED LEAKER	ISOLATED TANKS			
				PARTIAL INTERIM ISOLATED	INTRUSION PREVENTION COMPLETED	CONTROLLED CLEAN, AND STABLE	INTERIM STABILIZED TANKS
<b>EAST</b>							
A	0	3	3	2	4	0	5
AN	7 (1)	7	0	0	0	0	0
AP	8	8	0	0	0	0	0
AW	6 (1)	6	0	0	0	0	0
AX	0	2	2	1	3	0	3
AY	2	2	0	0	0	0	0
AZ	2	2	0	0	0	0	0
B	0	6	10	0	16	0	16
BX	0	7	5	0	12	12	12
BY	0	7	5	5	7	0	10
C	0	9	7	3	13	0	14
<b>Total</b>	<b>25</b>	<b>59</b>	<b>32</b>	<b>11</b>	<b>55</b>	<b>12</b>	<b>60</b>
<b>WEST</b>							
S	0	11	1	10	2	0	5
SX	0	5	10	6	9	0	11
SY	3 (1)	3	0	0	0	0	0
T	0	9	7	5	11	0	16
TX	0	10	8	0	18	18	18
TY	0	1	5	0	6	6	6
U	0	12	4	9	7	0	9
<b>Total</b>	<b>3</b>	<b>51</b>	<b>35</b>	<b>30</b>	<b>53</b>	<b>24</b>	<b>65</b>
<b>TOTAL</b>	<b>28</b>	<b>110</b>	<b>67</b>	<b>41</b>	<b>108</b>	<b>36</b>	<b>125</b>

(1) Six Double-Shell Tanks on the Hydrogen Watch List are not currently receiving waste transfers (AN-103, 104, 105, AW-101, SY-101 and 103).

TABLE A-3. PUMPING RECORD, LIQUID STATUS AND PUMPABLE  
LIQUID REMAINING IN TANK FARMS

November 30, 2000

TANK FARMS	Waste Volumes (K gallons)						
	PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL REMAINING	DRAINABLE LIQUID REMAINING	PUMPABLE SST LIQUID REMAINING
<b>EAST</b>							
A	0.0	0.0	164.6	503	161	665	622
AN	N/A	N/A	N/A	3746	N/A	N/A	N/A
AP	N/A	N/A	N/A	6285	N/A	N/A	N/A
AW	N/A	N/A	N/A	2491	N/A	N/A	N/A
AX	0.0	0.0	21.3	378	105	483	447
AY	N/A	N/A	N/A	427	N/A	N/A	N/A
AZ	N/A	N/A	N/A	1750	N/A	N/A	N/A
B	0.0	0.0	0.0	15	262	277	203
BX	N/A	0.0	200.2	24	127	N/A	N/A
BY	0.0	0.0	1567.8	0	581	581	498
C	0.0	0.0	103.0	126	189	315	207
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>2056.9</b>	<b>15745</b>	<b>1425</b>	<b>2321</b>	<b>1977</b>
<b>WEST</b>							
S	9.5	18.2	1071.6	76	624	700	581
SX	77.8	134.4	592.0	134	394	528	457
SY	N/A	N/A	N/A	1902	N/A	N/A	N/A
T	0.0	0.0	245.7	29	218	246	168
TX	N/A	0.0	1205.7	9	297	N/A	N/A
TY	N/A	0.0	29.9	0	53	N/A	N/A
U	10.0	22.3	356.4	69	508	574	493
<b>Total</b>	<b>97.3</b>	<b>174.9</b>	<b>3501.3</b>	<b>2219</b>	<b>2094</b>	<b>2048</b>	<b>1699</b>
<b>TOTAL</b>	<b>97.3</b>	<b>174.9</b>	<b>5558.2</b>	<b>17964</b>	<b>3519</b>	<b>4369</b>	<b>3676</b>

N/A = Not applicable for Double-Shell Tank Farms, and Single-Shell Tank Farms which have been declared Controlled, Clean and Stable (BX, TX, TY).

A-4

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TABLE A-4. INVENTORY SUMMARY BY TANK FARM

November 30, 2000

TANK FARM	TOTAL WASTE	AVAIL SPACE	SUPERNATANT LIQUID VOLUMES (Kgallo)									SOLIDS VOLUME		
			AW	CC	CP	DC	DN PD	NCPLX	DSSE	TOTAL	SLUDGE	SALT CAKE	TOTAL	
<b>EAST</b>														
A	1479	0	0	0	0	0	0	0	0	503	503	574	402	976
AN	5494	2486	0	1780	0	0	224	0	0	1742	3746	0	1748	1748
AP	6374	2746	0	1392	1089	1611	33	0	0	2160	6285	0	89	89
AW	3984	2856	0	0	0	0	920	318	0	1253	2491	571	922	1493
AX	826	0	0	0	0	0	0	0	0	378	378	26	422	448
AY	719	1241	0	0	0	28	399	0	0	0	427	292	0	292
AZ	1907	71	1750	0	0	0	0	0	0	0	1750	157	0	157
B	1909	0	0	0	0	0	0	0	15	0	15	1211	683	1894
BX	1490	0	0	0	0	0	0	0	24	0	24	1259	207	1466
BY	4387	0	0	0	0	0	0	0	0	0	0	754	3633	4387
C	1784	0	0	0	0	1	0	0	125	0	126	1658	0	1658
<b>Total</b>	<b>30353</b>	<b>9400</b>	<b>1750</b>	<b>3172</b>	<b>1089</b>	<b>1640</b>	<b>1576</b>	<b>318</b>	<b>164</b>	<b>6036</b>	<b>15745</b>	<b>6502</b>	<b>8106</b>	<b>14608</b>
<b>WEST</b>														
S	4932	0	0	0	0	0	0	0	75	1	76	1184	3672	4856
SX	3802	0	0	0	0	0	0	0	0	134	134	927	2741	3668
SY	2422	998	0	1263	0	0	639	0	0	0	1902	71	449	520
T	1877	0	0	0	0	0	0	0	29	0	29	1703	145	1848
TX	6810	0	0	0	0	0	0	0	9	0	9	697	6104	6801
TY	639	0	0	0	0	0	0	0	0	0	0	529	110	639
U	3249	0	0	0	0	0	0	0	36	33	69	537	2643	3180
<b>Total</b>	<b>23731</b>	<b>998</b>	<b>0</b>	<b>1263</b>	<b>0</b>	<b>0</b>	<b>639</b>	<b>0</b>	<b>149</b>	<b>168</b>	<b>2219</b>	<b>5648</b>	<b>15864</b>	<b>21512</b>
<b>TOTAL</b>	<b>54084</b>	<b>10398</b>	<b>1750</b>	<b>4435</b>	<b>1089</b>	<b>1640</b>	<b>2215</b>	<b>318</b>	<b>313</b>	<b>6204</b>	<b>17964</b>	<b>12150</b>	<b>23970</b>	<b>36120</b>

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TABLE A-5. INVENTORY AND STATUS BY TANK - DOUBLE-SHELL TANKS

November 30, 2000

TANK STATUS							SOLIDS VOLUME					PHOTOS/VIDEOS		SEE FOOTNOTE FOR THESE CHANGES	
TANK	WASTE MATL	TANK STATUS	TANK USE	EQUIVA-	TOTAL WASTE (Kgal)	AVAIL.	SUPER-NATANT LIQUID (Kgal)	SLUDGE (includes liquid) (Kgal)	LIQUID (15% porosity) (Kgal)	SALTCAKE (includes liquid) (Kgal)	SALTCAKE LIQUID (25% porosity) (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO		LAST IN-TANK VIDEO
				LENT WASTE INCHES		SPACE (1) (Kgal)		SLUDGE	LIQUID	SALTCAKE	LIQUID		LAST IN-TANK PHOTO		LAST IN-TANK VIDEO
<b>AN TANK FARM STATUS</b>															
AN-101	DN	SOUND	DRCVR	81.5	224	918	224	0	0	0	0	06/30/99			
AN-102	CC	SOUND	CWHT	383.3	1054	86	965	0	0	89	22	06/30/99			
AN-103	DSS	SOUND	CWHT	348.0	957	183	500	0	0	457	114	06/30/99	10/29/87		
AN-104	DSSF	SOUND	CWHT	382.5	1052	88	603	0	0	449	112	06/30/99	08/19/88		
AN-105	DSSF	SOUND	CWHT	410.2	1128	12	639	0	0	489	122	06/30/99	01/26/88		
AN-106	CC	SOUND	CWHT	13.8	38	1102	21	0	0	17	4	06/30/99			
AN-107	CC	SOUND	CWHT	378.5	1041	99	794	0	0	247	62	06/30/99	09/01/88		
<b>7 DOUBLE-SHELL TANKS</b>				<b>TOTALS</b>	<b>5494</b>	<b>2486</b>	<b>3746</b>	<b>0</b>	<b>0</b>	<b>1748</b>	<b>436</b>				
<b>AP TANK FARM STATUS</b>															
AP-101	DSSF	SOUND	DRCVR	405.1	1114	26	1114	0	0	0	0	05/01/89			
AP-102	CP	SOUND	DRCVR	396.0	1089	51	1089	0	0	0	0	07/11/89			
AP-103	CC	SOUND	DRCVR	102.5	282	858	282	0	0	0	0	05/31/96			
AP-104	CC	SOUND	DRCVR	403.8	1110	30	1110	0	0	0	0	10/13/88			
AP-105	DSSF	SOUND	CWHT	412.7	1135	5	1046	0	0	89	22	06/30/99		09/27/95	
AP-106	DC	SOUND	DRCVR	226.5	623	517	623	0	0	0	0	10/13/88			
AP-107	DC	SOUND	DRCVR	359.3	988	152	988	0	0	0	0	10/13/88			
AP-108	DN	SOUND	DRCVR	12.0	33	1107	33	0	0	0	0	10/13/88			
<b>8 DOUBLE-SHELL TANKS</b>				<b>TOTALS</b>	<b>6374</b>	<b>2746</b>	<b>6285</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>22</b>				
<b>AW TANK FARM STATUS</b>															
AW-101	DSSF	SOUND	CWHT	409.8	1127	13	752	0	0	375	94	10/31/00	03/17/88		
AW-102	DN	SOUND	EVFD	23.3	64	1076	34	0	0	30	8	06/30/99	02/02/83		
AW-103	PD	SOUND	DRCVR	185.1	509	631	146	316	79	47	12	06/30/99			
AW-104	DN	SOUND	DRCVR	406.2	1117	23	886	0	0	231	58	06/30/99	02/02/83		
AW-105	PD	SOUND	DRCVR	155.3	427	713	172	255	38	0	0	06/30/99			
AW-106	DSSF	SOUND	SRVCR	269.1	740	400	501	0	0	239	60	06/30/99	02/02/83		
<b>6 DOUBLE-SHELL TANKS</b>				<b>TOTALS</b>	<b>3984</b>	<b>2856</b>	<b>2491</b>	<b>571</b>	<b>117</b>	<b>922</b>	<b>232</b>				

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TABLE A-5. INVENTORY AND STATUS BY TANK - DOUBLE-SHELL TANKS

November 30, 2000

TANK STATUS													PHOTOS/VIDEOS		SEE FOOTNOTE FOR THESE CHANGES
TANK	WASTE MATL	TANK STATUS	TANK USE	EQUIVA-	AVAIL.	SUPER-	SLUDGE		SALTCAKE		SOLIDS	LAST	LAST		
				LENT			LIQUID	LIQUID	LIQUID	LIQUID				LIQUID	
				TOTAL	SPACE	NATANT	(includes	(15%	(includes	(25%	VOLUME	IN-TANK	IN-TANK		
				WASTE	(1)	LIQUID	liquid)	porosity)	liquid)	porosity)	UPDATE	PHOTO	VIDEO		
				(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)					
<b>AY TANK FARM STATUS</b>															
AY-101	DC	SOUND	DRCVR	49.5	136	844	28	108	14	0	0	06/30/99	12/28/82		
AY-102	DN	SOUND	DRCVR	212.0	583	397	399	184	28	0	0	10/31/00	04/28/81		
2 DOUBLE-SHELL TANKS				TOTALS	719	1241	427	292	42	0	0				
<b>AZ TANK FARM STATUS</b>															
AZ-101	AW	SOUND	CWHT	330.5	909	71	857	52	8	0	0	06/30/98	08/18/83		
AZ-102	AW	SOUND	DRCVR	362.9	998	0	893	105	16	0	0	06/30/99	10/24/84		
2 DOUBLE-SHELL TANKS				TOTALS	1907	71	1750	157	24	0	0				
<b>SY TANK FARM STATUS</b>															
SY-101	CC	SOUND	CWHT	353.1	971	169	888	0	0	83	21	06/30/99	04/12/89		
SY-102	DC	SOUND	DRCVR	258.2	710	430	639	71	11	0	0	06/30/99	04/29/81		
SY-103	CC	SOUND	CWHT	269.5	741	399	375	0	0	366	92	06/30/99	10/01/85		
3 DOUBLE-SHELL TANKS				TOTALS	2422	998	1902	71	11	449	113				
GRAND TOTAL					20900	10398	16601	1091	194	3208	803				

Note: +/- 1 Kgal differences are the result of computer rounding

Available Space Calculations Used in this Document	
Tank Farms	(Most Conservative)
AN, AP, AW, SY	1,140,000 gal (414.5 1,140 Kgal)
AY, AZ (Aging Wast	980,000 gal (356.4 980 Kgal)

NOTE: Supernate + Sludge (includes liquid) + Saltcake (includes liquid) = Total Waste

(1) Available Space volumes include restricted space, - see Appendix C tables for allocation of these restrictions.

(a) SY-103 - from March 2000 thru August 2000, the total saltcake was mistakenly shown as total sludge, due to re-calculations and a new format used during that time. There is no sludge in this tank.

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS				LIQUID VOLUME						SOLIDS VOLUME		PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES	
TANK	WASTE MAT'L	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO		LAST IN-TANK VIDEO
<b>A TANK FARM STATUS</b>															
A-101	DSSF	SOUND	/PI	877	494	95	0.0	14.1	590	574	3	380	09/30/99	08/21/85	(g)
A-102	DSSF	SOUND	IS/PI	41	4	8	0.0	39.5	12	4	15	22	07/27/89	07/20/89	
A-103	DSSF	ASMD LKR	IS/IP	371	5	45	0.0	111.0	50	43	366	0	06/03/88	12/28/88	
A-104	NCPLX	ASMD LKR	IS/IP	28	0	4	0.0	0.0	4	0	28	0	01/27/78	06/25/86	
A-105	NCPLX	ASMD LKR	IS/IP	37	0	0	0.0	0.0	0	0	37	0	10/31/00	08/20/86	
A-106	CP	SOUND	IS/IP	125	0	9	0.0	0.0	9	1	125	0	09/07/82	08/19/86	
<b>6 SINGLE-SHELL TANKS TOTALS</b>				<b>1479</b>	<b>503</b>	<b>161</b>	<b>0.0</b>	<b>164.6</b>	<b>665</b>	<b>622</b>	<b>574</b>	<b>402</b>			
<b>AX TANK FARM STATUS</b>															
AX-101	DSSF	SOUND	/PI	676	378	74	0.0	8.3	452	436	3	295	09/30/99	08/18/87	(h)
AX-102	CC	ASMD LKR	IS/IP	30	0	7	0.0	13.0	7	0	7	23	06/30/99	06/05/89	
AX-103	CC	SOUND	IS/IP	112	0	23	0.0	0.0	23	11	8	104	06/30/99	08/13/87	
AX-104	NCPLX	ASMD LKR	IS/IP	8	0	1	0.0	0.0	1	0	8	0	06/30/99	08/18/87	
<b>4 SINGLE-SHELL TANKS TOTALS:</b>				<b>826</b>	<b>378</b>	<b>105</b>	<b>0.0</b>	<b>21.3</b>	<b>483</b>	<b>447</b>	<b>26</b>	<b>422</b>			
<b>B TANK FARM STATUS</b>															
B-101	NCPLX	ASMD LKR	IS/IP	113	0	24	0.0	0.0	24	17	0	113	06/30/99	05/19/83	
B-102	NCPLX	SOUND	IS/IP	32	4	7	0.0	0.0	11	4	0	28	06/30/99	08/22/85	
B-103	NCPLX	ASMD LKR	IS/IP	59	0	11	0.0	0.0	11	3	0	59	06/30/99	10/13/88	
B-104	NCPLX	SOUND	IS/IP	371	1	45	0.0	0.0	46	42	309	61	06/30/99	10/13/88	
B-105	NCPLX	ASMD LKR	IS/IP	158	0	20	0.0	0.0	20	16	28	130	06/30/99	05/19/88	
B-106	NCPLX	SOUND	IS/IP	117	1	25	0.0	0.0	26	19	0	116	02/29/00	02/28/85	
B-107	NCPLX	ASMD LKR	IS/IP	165	1	22	0.0	0.0	23	19	93	71	06/30/99	02/28/85	
B-108	NCPLX	SOUND	IS/IP	94	0	15	0.0	0.0	15	11	53	41	06/30/99	05/10/85	
B-109	NCPLX	SOUND	IS/IP	127	0	21	0.0	0.0	21	17	63	64	06/30/99	04/02/85	
B-110	NCPLX	ASMD LKR	IS/IP	246	1	27	0.0	0.0	28	20	245	0	02/28/85	03/17/88	
B-111	NCPLX	ASMD LKR	IS/IP	237	1	23	0.0	0.0	24	29	236	0	06/28/85	06/26/85	
B-112	NCPLX	ASMD LKR	IS/IP	33	3	4	0.0	0.0	7	3	30	0	05/31/85	05/29/85	
B-201	NCPLX	ASMD LKR	IS/IP	29	1	4	0.0	0.0	5	1	28	0	04/28/82	11/12/86	06/23/95
B-202	NCPLX	SOUND	IS/IP	27	0	4	0.0	0.0	4	0	27	0	05/31/85	05/29/85	06/15/95
B-203	NCPLX	ASMD LKR	IS/IP	51	1	5	0.0	0.0	6	1	50	0	05/31/84	11/13/86	
B-204	NCPLX	ASMD LKR	IS/IP	50	1	5	0.0	0.0	6	1	49	0	05/31/84	10/22/87	
<b>16 SINGLE-SHELL TANKS TOTALS</b>				<b>1909</b>	<b>15</b>	<b>262</b>	<b>0.0</b>	<b>0.0</b>	<b>277</b>	<b>203</b>	<b>1211</b>	<b>683</b>			

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS				LIQUID VOLUME						SOLIDS VOLUME		PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES	
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE		LAST IN-TANK PHOTO
<b>BX TANK FARM STATUS</b>															
BX-101	NCPLX	ASMD LKR	IS/IP/CCS	43	1	4	0.0	0.0	5	1	42	0	04/28/82	11/24/88	11/10/94
BX-102	NCPLX	ASMD LKR	IS/IP/CCS	96	0	0	0.0	0.0	0	0	96	0	04/28/82	09/18/85	
BX-103	NCPLX	SOUND	IS/IP/CCS	71	9	4	0.0	0.0	13	9	62	0	11/29/83	10/31/86	10/27/94
BX-104	NCPLX	SOUND	IS/IP/CCS	93	3	4	0.0	17.4	7	3	90	0	02/29/00	09/21/89	
BX-105	NCPLX	SOUND	IS/IP/CCS	61	5	4	0.0	15.0	9	5	46	0	06/30/99	10/23/86	
BX-106	NCPLX	SOUND	IS/IP/CCS	38	0	4	0.0	14.0	4	0	38	0	08/01/95	05/19/88	07/17/95
BX-107	NCPLX	SOUND	IS/IP/CCS	345	1	36	0.0	23.1	37	33	344	0	09/18/90	09/11/90	
BX-108	NCPLX	ASMD LKR	IS/IP/CCS	28	0	4	0.0	0.0	4	0	26	0	07/31/79	05/05/94	
BX-109	NCPLX	SOUND	IS/IP/CCS	193	0	25	0.0	8.2	25	20	193	0	09/17/90	09/11/90	
BX-110	NCPLX	ASMD LKR	IS/IP/CCS	207	3	28	0.0	1.5	31	26	133	71	06/30/99	07/15/94	10/13/94
BX-111	NCPLX	ASMD LKR	IS/IP/CCS	162	1	5	0.0	116.9	6	2	25	136	06/30/99	05/19/94	02/28/95
BX-112	NCPLX	SOUND	IS/IP/CCS	165	1	9	0.0	4.1	10	7	164	0	09/17/90	09/11/90	
<b>12 SINGLE-SHELL TANKS TOTALS:</b>				<b>1490</b>	<b>24</b>	<b>127</b>	<b>0.0</b>	<b>200.2</b>	<b>151</b>	<b>106</b>	<b>1259</b>	<b>207</b>			
<b>BY TANK FARM STATUS</b>															
BY-101	NCPLX	SOUND	IS/IP	387	0	28	0.0	35.8	28	24	109	278	05/30/84	09/19/89	
BY-102	NCPLX	SOUND	IS/PI	277	0	40	0.0	159.0	40	33	0	277	05/01/95	09/11/87	04/11/95
BY-103	NCPLX	ASMD LKR	IS/PI	400	0	58	0.0	95.9	58	53	9	391	06/30/99	09/07/89	02/24/97
BY-104	NCPLX	SOUND	IS/IP	326	0	40	0.0	329.5	40	36	150	176	06/30/99	04/27/83	
BY-105	NCPLX	ASMD LKR	/PI	503	0	121	0.0	0.0	121	111	48	455	08/31/99	07/01/86	
BY-106	NCPLX	ASMD LKR	/PI	562	0	132	0.0	63.7	132	119	84	478	12/31/98	11/04/82	
BY-107	NCPLX	ASMD LKR	IS/IP	266	0	39	0.0	56.4	39	35	40	226	06/30/99	10/15/86	
BY-108	NCPLX	ASMD LKR	IS/IP	228	0	33	0.0	27.5	33	26	154	74	04/28/82	10/15/86	
BY-109	NCPLX	SOUND	IS/PI	290	0	31	0.0	157.1	31	26	57	233	07/08/87	06/18/97	
BY-110	NCPLX	SOUND	IS/IP	398	0	21	0.0	213.3	21	17	103	295	09/10/79	07/26/84	
BY-111	NCPLX	SOUND	IS/IP	459	0	14	0.0	313.2	14	6	0	459	06/30/99	10/31/86	
BY-112	NCPLX	SOUND	IS/IP	291	0	24	0.0	116.4	24	12	0	291	06/30/99	04/14/88	
<b>12 SINGLE-SHELL TANKS TOTALS:</b>				<b>4387</b>	<b>0</b>	<b>581</b>	<b>0.0</b>	<b>1567.8</b>	<b>581</b>	<b>498</b>	<b>754</b>	<b>3633</b>			

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

October 31,

November 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS				LIQUID VOLUME						SOLIDS VOLUME		SEE FOOTNOTES				
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SALT SLUDGE (Kgal)	CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	FOR THESE CHANGES
<b>C TANK FARM STATUS</b>																
C-101	NCPLX	ASMD LKR	IS/IP	88	0	4	0.0	0.0	4	0	88	0	11/29/83	11/17/87		
C-102	DC	SOUND	IS/IP	316	0	62	0.0	46.7	62	55	316	0	09/30/95	05/18/76	08/24/95	
C-103	NCPLX	SOUND	/PI	198	79	18	0.0	0.0	97	83	119	0	12/31/98	07/28/87		
C-104	CC	SOUND	IS/IP	263	0	0	0.0	0.0	0	0	263	0	02/01/00	07/25/80		
C-105	NCPLX	SOUND	IS/PI	132	0	20	0.0	0.0	20	0	132	0	02/29/00	08/05/94	08/30/95	
C-106	NCPLX	SOUND	/PI	48	42	0	0.0	0.0	42	9	6	0	10/31/99	08/05/94	08/08/94	
C-107	DC	SOUND	IS/IP	257	0	30	0.0	40.8	30	25	257	0	06/30/99	00/00/00		
C-108	NCPLX	SOUND	IS/IP	66	0	4	0.0	0.0	4	0	66	0	02/24/84	12/05/74	11/17/94	
C-109	NCPLX	SOUND	IS/IP	66	4	4	0.0	0.0	8	4	62	0	11/29/83	01/30/76		
C-110	DC	ASMD LKR	IS/IP	178	1	37	0.0	15.5	38	30	177	0	06/14/95	08/12/86	05/23/95	
C-111	NCPLX	ASMD LKR	IS/IP	57	0	4	0.0	0.0	4	0	57	0	04/28/82	02/25/70	02/02/95	
C-112	NCPLX	SOUND	IS/IP	104	0	6	0.0	0.0	6	1	104	0	09/18/90	09/18/90		
C-201	NCPLX	ASMD LKR	IS/IP	2	0	0	0.0	0.0	0	0	2	0	03/31/82	12/02/86		
C-202	EMPTY	ASMD LKR	IS/IP	1	0	0	0.0	0.0	0	0	1	0	01/19/79	12/09/86		
C-203	NCPLX	ASMD LKR	IS/IP	5	0	0	0.0	0.0	0	0	5	0	04/28/82	12/09/86		
C-204	NCPLX	ASMD LKR	IS/IP	3	0	0	0.0	0.0	0	0	3	0	04/28/82	12/09/86		
<b>16 SINGLE-SHELL TANKS TOTALS:</b>				<b>1784</b>	<b>126</b>	<b>189</b>	<b>0.0</b>	<b>103.0</b>	<b>315</b>	<b>207</b>	<b>1658</b>	<b>0</b>				
<b>S TANK FARM STATUS</b>																
S-101	NCPLX	SOUND	/PI	427	12	83	0.0	0.0	95	80	211	204	12/31/98	03/18/88		
S-102	DSSF	SOUND	/PI	492	0	93	0.0	56.8	93	89	105	387	05/31/00	03/18/88		(c)
S-103	DSSF	SOUND	IS/PI	237	1	45	0.0	23.9	46	39	9	227	04/30/00	06/01/89	01/28/00	
S-104	NCPLX	ASMD LKR	IS/IP	294	1	34	0.0	0.0	35	31	293	0	12/20/84	12/12/84		
S-105	NCPLX	SOUND	IS/IP	456	0	42	0.0	114.3	42	33	2	454	09/26/88	04/12/89		
S-106	NCPLX	SOUND	/PI	328	0	10	0.0	203.6	10	2	0	328	09/30/00	03/17/89	01/28/00	(a)
S-107	NCPLX	SOUND	/PI	376	14	61	0.0	0.0	75	61	293	69	06/30/99	03/12/87		
S-108	NCPLX	SOUND	IS/PI	432	0	0	0.0	199.8	0	0	5	427	10/01/99	03/12/87	12/03/96	
S-109	NCPLX	SOUND	/PI	476	0	63	9.5	141.7	63	52	13	463	11/30/00	12/31/98		(j)
S-110	NCPLX	SOUND	IS/PI	390	0	30	0.0	203.1	30	27	131	259	05/14/92	03/12/87	12/11/96	
S-111	NCPLX	SOUND	/PI	501	48	82	0.0	3.3	130	97	116	337	09/30/99	08/10/89		
S-112	NCPLX	SOUND	/PI	523	0	81	0.0	125.1	81	70	6	517	12/31/98	03/24/87		
<b>12 SINGLE-SHELL TANKS TOTALS:</b>				<b>4932</b>	<b>76</b>	<b>624</b>	<b>9.5</b>	<b>1071.6</b>	<b>700</b>	<b>581</b>	<b>1184</b>	<b>3672</b>				

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME				SEE FOOTNOTES FOR THESE CHANGES	
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO		LAST IN-TANK VIDEO
<b>SX TANK FARM STATUS</b>																
SX-101	DC	SOUND	/PI	436	0	100	12.3	12.3	100	87	0	436	11/30/00	03/10/89		(j)
SX-102	DSSF	SOUND	/PI	514	134	95	0.0	0.0	229	216	0	380	04/30/00	01/07/88		
SX-103	NCPLX	SOUND	/PI	570	0	83	52.9	64.5	83	68	115	455	11/30/00	12/17/87		(k)
SX-104	DSSF	ASMD LKR	IS/PI	446	0	48	0.0	231.3	48	44	136	310	04/30/00	09/08/88	02/04/98	
SX-105	DSSF	SOUND	/PI	501	0	17	12.6	136.4	17	7	65	436	11/30/00	08/15/88		(f)
SX-106	NCPLX	SOUND	IS/PI	397	0	37	0.0	147.5	37	31	0	397	05/31/99	06/01/89		
SX-107	NCPLX	ASMD LKR	IS/IP	102	0	0	0.0	0.0	0	0	85	17	10/31/00	03/06/87		
SX-108	NCPLX	ASMD LKR	IS/IP	87	0	0	0.0	0.0	0	0	87	0	12/31/93	03/06/87		
SX-109	NCPLX	ASMD LKR	IS/IP	249	0	0	0.0	0.0	0	0	60	189	10/31/00	05/21/86		
SX-110	NCPLX	ASMD LKR	IS/IP	62	0	0	0.0	0.0	0	0	62	0	10/06/76	02/20/87		
SX-111	NCPLX	ASMD LKR	IS/IP	122	0	8	0.0	0.0	8	3	122	0	06/30/99	06/09/94		
SX-112	NCPLX	ASMD LKR	IS/IP	108	0	6	0.0	0.0	6	1	108	0	06/30/99	03/10/87		
SX-113	NCPLX	ASMD LKR	IS/IP	31	0	0	0.0	0.0	0	0	31	0	06/30/99	03/18/88		
SX-114	NCPLX	ASMD LKR	IS/IP	165	0	0	0.0	0.0	0	0	44	121	10/31/00	02/26/87		
SX-115	NCPLX	ASMD LKR	IS/IP	12	0	0	0.0	0.0	0	0	12	0	04/28/82	03/31/88		
<b>15 SINGLE-SHELL TANKS</b>				<b>TOTALS:</b>	<b>3802</b>	<b>134</b>	<b>394</b>	<b>77.8</b>	<b>592.0</b>	<b>528</b>	<b>457</b>	<b>927</b>	<b>2741</b>			

**T TANK FARM STATUS**

T-101	NCPLX	ASMD LKR	IS/PI	102	1	20	0.0	25.3	21	16	37	64	06/30/99	04/07/93		
T-102	NCPLX	SOUND	IS/IP	32	13	3	0.0	0.0	16	11	19	0	08/31/84	06/28/89		
T-103	NCPLX	ASMD LKR	IS/IP	27	4	3	0.0	0.0	7	3	23	0	11/29/83	07/03/84		
T-104	NCPLX	SOUND	IS/PI	317	0	31	0.0	149.5	31	27	317	0	12/31/99	06/29/89	10/07/99	
T-105	NCPLX	SOUND	IS/IP	98	0	5	0.0	0.0	5	0	98	0	05/29/87	05/14/87		
T-106	NCPLX	ASMD LKR	IS/IP	21	2	0	0.0	0.0	2	2	19	0	04/28/82	06/29/89		
T-107	NCPLX	ASMD LKR	IS/PI	173	0	34	0.0	11.0	34	20	173	0	05/31/96	07/12/84	05/09/96	
T-108	NCPLX	ASMD LKR	IS/IP	44	0	5	0.0	0.0	5	0	21	23	06/30/99	07/17/84		

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

Novembr 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS				LIQUID VOLUME								SOLIDS VOLUME				SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	CAKE (Kgal)	SALT SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
T-109	NCPLX	ASMD LKR	IS/IP	58	0	10	0.0	0.0	10	3	0	58	06/30/99	02/25/93		
T-110	NCPLX	SOUND	IS/PI	369	1	48	0.0	50.3	48	43	368	0	01/31/00	07/12/84	10/07/99	
T-111	NCPLX	ASMD LKR	IS/PI	446	0	38	0.0	9.6	38	35	446	0	04/18/94	04/13/94	02/13/95	
T-112	NCPLX	SOUND	IS/IP	67	7	4	0.0	0.0	11	7	60	0	04/28/82	08/01/84		
T-201	NCPLX	SOUND	IS/IP	29	1	4	0.0	0.0	5	1	28	0	05/31/78	04/15/86		
T-202	NCPLX	SOUND	IS/IP	21	0	3	0.0	0.0	3	0	21	0	07/12/81	07/06/89		
T-203	NCPLX	SOUND	IS/IP	35	0	5	0.0	0.0	5	0	35	0	01/31/78	08/03/89		
T-204	NCPLX	SOUND	IS/IP	38	0	5	0.0	0.0	5	0	38	0	07/22/81	08/03/89		
16 SINGLE-SHELL TANKS TOTALS:				1877	29	218	0.0	245.7	246	168	1703	145				
<b>TX TANK FARM STATUS</b>																
TX-101	NCPLX	SOUND	IS/IP/CCS	87	3	8	0.0	0.0	11	7	74	10	06/30/99	10/24/85		
TX-102	NCPLX	SOUND	IS/IP/CCS	217	0	27	0.0	94.4	27	16	0	217	08/31/84	10/31/85		
TX-103	NCPLX	SOUND	IS/IP/CCS	157	0	18	0.0	68.3	18	11	0	157	06/30/99	10/31/85		
TX-104	NCPLX	SOUND	IS/IP/CCS	65	5	9	0.0	3.6	14	9	23	37	06/30/99	10/16/84		
TX-105	NCPLX	ASMD LKR	IS/IP/CCS	609	0	25	0.0	121.5	25	14	0	609	08/22/77	10/24/89		
TX-106	NCPLX	SOUND	IS/IP/CCS	341	0	37	0.0	134.6	37	30	0	341	06/30/99	10/31/85		
TX-107	NCPLX	ASMD LKR	IS/IP/CCS	36	1	6	0.0	0.0	7	1	8	27	06/30/99	10/31/85		
TX-108	NCPLX	SOUND	IS/IP/CCS	134	0	8	0.0	13.7	8	1	6	128	06/30/99	09/12/89		
TX-109	NCPLX	SOUND	IS/IP/CCS	384	0	6	0.0	72.3	6	2	384	0	06/30/99	10/24/89		
TX-110	NCPLX	ASMD LKR	IS/IP/CCS	462	0	14	0.0	115.1	14	10	37	425	06/30/99	10/24/89		
TX-111	NCPLX	SOUND	IS/IP/CCS	370	0	10	0.0	98.4	10	6	43	327	06/30/99	09/12/89		
TX-112	NCPLX	SOUND	IS/IP/CCS	649	0	26	0.0	94.0	26	21	0	649	05/30/83	11/19/87		
TX-113	NCPLX	ASMD LKR	IS/IP/CCS	653	0	30	0.0	19.2	30	0	0	653	10/31/00	04/11/83	09/23/94	
TX-114	NCPLX	ASMD LKR	IS/IP/CCS	535	0	17	0.0	104.3	17	11	4	531	06/30/99	04/11/83	02/17/95	
TX-115	NCPLX	ASMD LKR	IS/IP/CCS	568	0	25	0.0	99.1	25	15	0	568	06/30/99	06/15/88		
TX-116	NCPLX	ASMD LKR	IS/IP/CCS	631	0	21	0.0	23.8	21	17	68	563	06/30/99	10/17/89		
TX-117	NCPLX	ASMD LKR	IS/IP/CCS	626	0	10	0.0	54.3	10	5	29	597	06/30/99	04/11/83		
TX-118	NCPLX	SOUND	IS/IP/CCS	286	0	0	0.0	89.1	0	0	21	265	02/01/00	12/19/79		
18 SINGLE-SHELL TANKS TOTALS:				6810	9	297	0.0	1205.7	306	176	697	6104				

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TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES	
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO		LAST IN-TANK VIDEO
<b>TY TANK FARM STATUS</b>																
TY-101	NCPLX	ASMD LKR	IS/IP/CCS	118	0	2	0.0	8.2	2	0	72	46	06/30/99	08/22/89		
TY-102	NCPLX	SOUND	IS/IP/CCS	64	0	12	0.0	6.6	12	5	0	64	06/28/82	07/07/87		
TY-103	NCPLX	ASMD LKR	IS/IP/CCS	162	0	20	0.0	11.5	20	16	162	0	07/09/82	08/22/89		
TY-104	NCPLX	ASMD LKR	IS/IP/CCS	43	0	4	0.0	0.0	4	0	43	0	06/27/90	11/03/87		
TY-105	NCPLX	ASMD LKR	IS/IP/CCS	231	0	12	0.0	3.6	12	10	231	0	04/28/82	09/07/89		
TY-106	NCPLX	ASMD LKR	IS/IP/CCS	21	0	3	0.0	0.0	3	0	21	0	06/30/99	08/22/89		
6 SINGLE-SHELL TANKS TOTALS:				639	0	53	0.0	29.9	53	31	529	110				
<b>U TANK FARM STATUS</b>																
U-101	NCPLX	ASMD LKR	IS/IP	25	3	3	0.0	0.0	6	2	22	0	04/28/82	06/19/79		
U-102	NCPLX	SOUND	/PI	309	0	40	4.8	66.3	37	27	43	266	11/30/00	06/08/89	(e)	
U-103	NCPLX	SOUND	IS/PI	418	1	33	0.0	98.9	34	28	13	404	05/31/00	09/13/88		
U-104	NCPLX	ASMD LKR	IS/IP	122	0	0	0.0	0.0	0	0	79	43	06/30/99	08/10/89		
U-105	NCPLX	SOUND	/PI	331	0	37	0.0	87.5	37	33	32	299	07/31/00	07/07/88	(b)	
U-106	NCPLX	SOUND	/PI	188	0	29	2.0	38.4	29	18	0	188	11/30/00	07/07/88	(f)	
U-107	DSSF	SOUND	/PI	408	33	92	0.0	0.0	125	115	15	360	12/31/98	10/27/88		
U-108	NCPLX	SOUND	/PI	468	24	108	0.0	0.0	132	124	29	415	12/31/98	09/12/84		
U-109	NCPLX	SOUND	/PI	400	0	62	3.2	65.3	62	53	35	365	11/30/00	07/07/88	(d)	
U-110	NCPLX	ASMD LKR	IS/PI	186	0	18	0.0	0.0	18	14	186	0	12/30/84	12/11/84		
U-111	DSSF	SOUND	/PI	329	0	80	0.0	0.0	80	71	26	303	12/31/98	06/23/88		
U-112	NCPLX	ASMD LKR	IS/IP	49	4	4	0.0	0.0	8	4	45	0	02/10/84	08/03/89		
U-201	NCPLX	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	08/15/79	08/08/89		
U-202	NCPLX	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	08/15/79	08/08/89		
U-203	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	08/15/79	06/13/89		
U-204	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	08/15/79	06/13/89		
16 SINGLE-SHELL TANKS TOTALS:				3249	69	508	10.0	356.4	574	493	537	2643				
GRAND TOTAL				33184	1363	3519	97.3	5558.2	4879	3989	11059	20762				

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## TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

**THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS**  
**FOOTNOTES :**

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate. The category "Interim Isolated (II) was changed to Intrusion Prevention (IP) in June 1993. Stabilization information from WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision, or SST Stabilization or Cognizant Engineer

Porosity values are 25% for saltcake and 15% for sludge, per HNF-2978, Rev. 1, "Updated Pumpable Liquid Volume Estimates and Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks," September 1999, with the exception of those tanks which have been interim stabilized and the porosities recalculated.

Tanks A-105, C-105, C-106, S-111, SX-107, SX-109, SX-114, and TX-113 were updated in October 2000 issue per BBI dated October 2000.

(a) S-106 Pumping was discontinued on January 3, 2000, to allow the waste levels to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization criteria. Waste levels have not been stabilized, as of November 30, 2000.

Note: In April 2000 issue, volumes were changed to reflect HNF-2978; however, because S-106 had been pumped and was "holding" to allow waste to stabilize, the volumes should not have been changed. In September 2000 issue, volumes were changed back to reflect actual pumping.

(b) U-105 Pumping was discontinued July 13, 2000, due to pump failure. Waste levels are being allowed to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization. As of November 30, 2000, waste levels had not yet stabilized.

(c) S-102 Following Information from Cognizant Engineer

Pumping commenced March 18, 1999. Many pumping problems occurred over the following months, and the pump has been replaced several times. Pumping was interrupted again in June 2000.

Remaining volumes are based on the original estimate volumes in HNF-2978, Rev. 1.

Total Waste: 492.2 Kgal  
Supernate: 0.0 Kgal  
Drainable Interstitial: 93.3 Kgal  
Pumped this month: 0.0 Kgal  
Total Pumped: 56.8 Kgal  
Drainable Liquid Remaining: 93.3 Kgal  
Pumpable Liquid Remaining: 88.9 Kgal  
Sludge: 105.0 Kgal  
Saltcake: 387.2 Kgal

During June 2000, a total of 1,857 gal of fluid was removed with 1,989 gal of water added by flushes/priming for a net addition of 132 gal of tank waste. In addition, 2,129 gal of dilution water and 245 gal of water were added for transfer line flushes. (No pumping since June 2000).

## TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

### FOOTNOTES:

(d) U-109 Following information from Cognizant Engineer

Pumping began March 11, 2000. Saltcake volume is adjusted to correspond to current waste removal.  
Remaining volumes are based on HNF-2978, Rev. 2.

Tank Waste: 399.7 Kgal  
Supernate: 0.0 Kgal  
Drainable Interstitial: 61.7 Kgal  
Pumped this month: 3.2 Kgal  
Total Pumped: 65.3 Kgal  
Drainable Liquid Remaining: 61.7 Kgal  
Pumpable Liquid Remaining: 52.7 Kgal  
Sludge: 35.0 Kgal  
Saltcake: 364.7 Kgal

During November 2000, a total of 3,932 gal of fluid was removed with 752 gal of water added by pump priming/equipment flushes, for a net removal of 3,207 gal of tank waste.  
In addition, 8,310 gal of dilution water and 2,395 gal of water were used for transfer line flushes.

(e) U-102 Following information from Cognizant Engineer

Pumping began in this tank on January 20, 2000. Saltcake volume is adjusted to correspond to current waste removal.  
Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 308.6 Kgal  
Supernate: 0.0 Kgal  
Drainable Interstitial Liquid: 39.6 Kgal  
Pumped this Month: 4.8 Kgal  
Total Pumped: 66.3 Kgal  
Drainable Liquid Remaining: 36.6 Kgal  
Pumpable Liquid Remaining: 26.7 Kgal  
Sludge: 43.0 Kgal  
Saltcake: 265.6 Kgal

During November 2000, a total of 5,670 gal of fluid was removed with 904 gal of water added by pump priming/equipment flushes, for a net removal of 4,766 gal of waste.  
In addition, 16,267 gal of water were used as dilution and 3,088 gal of water were used for transfer line flushes.

## TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENT

### FOOTNOTES:

(f) SX-105 Following information from Cognizant Engineer:

Saltwell pumping began August 8, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Tank Waste: 500.6 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 18.6 Kgal

Pumped this month: 12.6 Kgal

Total Pumped: 136.4 Kgal

Drainable Liquid Remaining: 16.6 Kgal

Pumpable Liquid Remaining: 4.6 Kgal

Sludge: 65.0 Kgal

Saltcake: 435.6 Kgal

In November 2000, a total of 13,033 gal of fluid was removed with 442 gal of water added by pump priming and system flushes, for a net removal of 12,591 gal of waste. In addition, 18,780 gal of dilution water and 956 gal of water for transfer lines flushes were used.

(g) A-101 Following information from Cognizant Engineer

Pumping began on May 6, 2000.

Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 1.

Total Waste: 876.8 Kgal

Supernate: 493.8 Kgal

Drainable Interstitial Liquid: 95.0 Kgal

Pumped this Month: 0.0 Kgal

Total Pumped: 14.1 Kgal

Drainable Liquid Remaining: 590.0 Kgal

Pumpable Liquid Remaining: 573.6 Kgal

Sludge: 3.0 Kgal

Saltcake: 380.0 Kgal

During August 2000, a total of 0 gal of fluid was removed from the tank with 273 of water added by pump priming/equipment flushes for a net removal of -273 gal of waste. This number will be subtracted against the next waste removed.

## TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

### FOOTNOTES:

(h) AX-101 Following information from Cognizant Engineer

Pumping began July 29, 2000.

Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 1.

Total Waste: 675.6 Kgal

Supernate: 377.6 Kgal

Drainable Interstitial Liquid: 73.7 Kgal

Pumped this month: 0.0 Kgal

Total pumped: 8.366 Kgal

Drainable Liquid Remaining: 451.8 Kgal

Pumpable Liquid Remaining: 434.6 Kgal

Sludge: 3.0 Kgal

Saltcake: 295.0 Kgal

In August 2000, a total of 7,292 gal of fluid was removed from the tank with 241 gal of water added by pump priming/equipment, for a net removal of 7,051 gal of waste. In addition, 18,332 gal of water were used as dilution and 930 gal of water were used for transfer line flushes. (No pumping since August 2000).

(i) U-106 Following information from Cognizant Engineer:

Pumping began August 24, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 187.5 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 29.3 Kgal

Pumped this month: 2.0 Kgal

Total Pumped: 38.4 Kgal

Drainable Liquid Remaining: 29.3 Kgal

Pumpable Liquid Remaining: 17.6 Kgal

Sludge: 0.0 Kgal

Saltcake: 187.5 Kgal

In November 2000, a total of 2,726 gal of fluid was removed with a total of 684 gal of water added by pump priming/equipment flushes, for a net removal of 2,042 gal of waste. In addition, 12,590 gal of water were used as dilution and 400 gal of water were used for transfer line flushes.

## TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

### FOOTNOTES:

(j) S-109 Following information from Cognizant Engineer:

Pumping began September 23, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 476.3 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 62.7 Kgal

Pumped this Month: 9.5 Kgal

Total Pumped: 141.7 Kgal (includes 111.0 Kgal pumped in 1979)

Drainable Liquid Remaining: 62.7 Kgal

Pumpable Liquid Remaining: 52.3 Kgal

Sludge: 13.0 Kgal

Saltcake: 463.3 Kgal

In November 2000, a total of 10,531 gal of fluid was removed with 1,017 gal of water added by pump priming/system flushes, for a net removal of 9,514 gal of waste.

In addition, 0 gal of water were used for dilution, and 1,342 gal of water were used for transfer line flushes.

(k) SX-103 Following information from Cognizant Engineer:

Pumping began October 26, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 569.5 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 82.5 Kgal

Pumped this month: 52.9 Kgal

Total Pumped: 64.5 Kgal

Drainable Liquid Remaining: 82.5 Kgal

Pumpable Liquid Remaining: 67.5 Kgal

Sludge: 115.0 Kgal

Saltcake: 454.5 Kgal

In November 2000, a total of 53,210 gal of fluid was removed with a total of 320 gal of water added by pump priming/equipment flushes, for a net removal of 52,850 gal of waste.

In addition, 10,040 gal of water were used as dilution and 170 gal of water were used for transfer line flushes.

During the month of November, tank level indicated by neutron ILL decreased at a faster rate than tank level as indicated by ENRAF. On November 25, the ILL level was 172.1 inches and the ENRAF level was 206.7 inches. This is an indication that the supernate in the tank is exhausted. It is estimated that there is approximately 39 gal of supernate in the tank.

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

November 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(I) SX-101 Following information from Cognizant Engineer:

Pumping began November 22, 2000

Remaining volumes are based on HNF-2978, Rev 2. Saltcake volume is adjusted to correspond to current waste removal.

Total Waste: 435.7 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial: 99.7 Kgal

Pumped this Month: 12.3 Kgal

Total Pumped: 12.3 Kgal

Drainable Liquid Remaining: 99.7 Kgal

Pumpable Liquid Remaining: 86.7 Kgal

Sludge: 0.0 Kgal

Saltcake: 435.7 Kgal

During November, 2000, a total of 13,145 gal of fluid was removed with a total of 821 gal of water added by pump priming/equipment flushes, for a net removal of 2,324 gal of waste. In addition, 14,205 gal of water were used as dilution and 0 gal were used for transfer line flushes.

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**APPENDIX B**  
**PERFORMANCE SUMMARY**

**TABLE B-1. SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANK (DST) SYSTEM**

November 30, 2000

All volumes in Kgallons

- The DST system received waste additions from SST Stabilization, 151-AZ, & A-350 waste in November.
- There was a net change of +247,000 gallons in the DST system for November 2000.
- The total DST inventory as of November 30, 2000 was 20.900 million gallons.
- There were 0 Kgals of Saltwell Liquid (SWL) pumped to the East Area DSTs (101-AN) in November.
- There were ~231 Kgals of Saltwell Liquid (SWL) pumped to the West Area DSTs (102-SY) in November.
- The SWL numbers are preliminary and are subject to change once cognizant engineers do a validation, the volumes reported contain actual waste volume plus any water added for dilution and transfer line flushes.
- There was a cross-site transfer of ~516,000 gallons from Tank 102-SY in the West Area to Tank 107-AP in the East Area in November. Tank 107-AP also received ~30,000 gallons of water in conjunction with flushing of the cross-site transfer line.

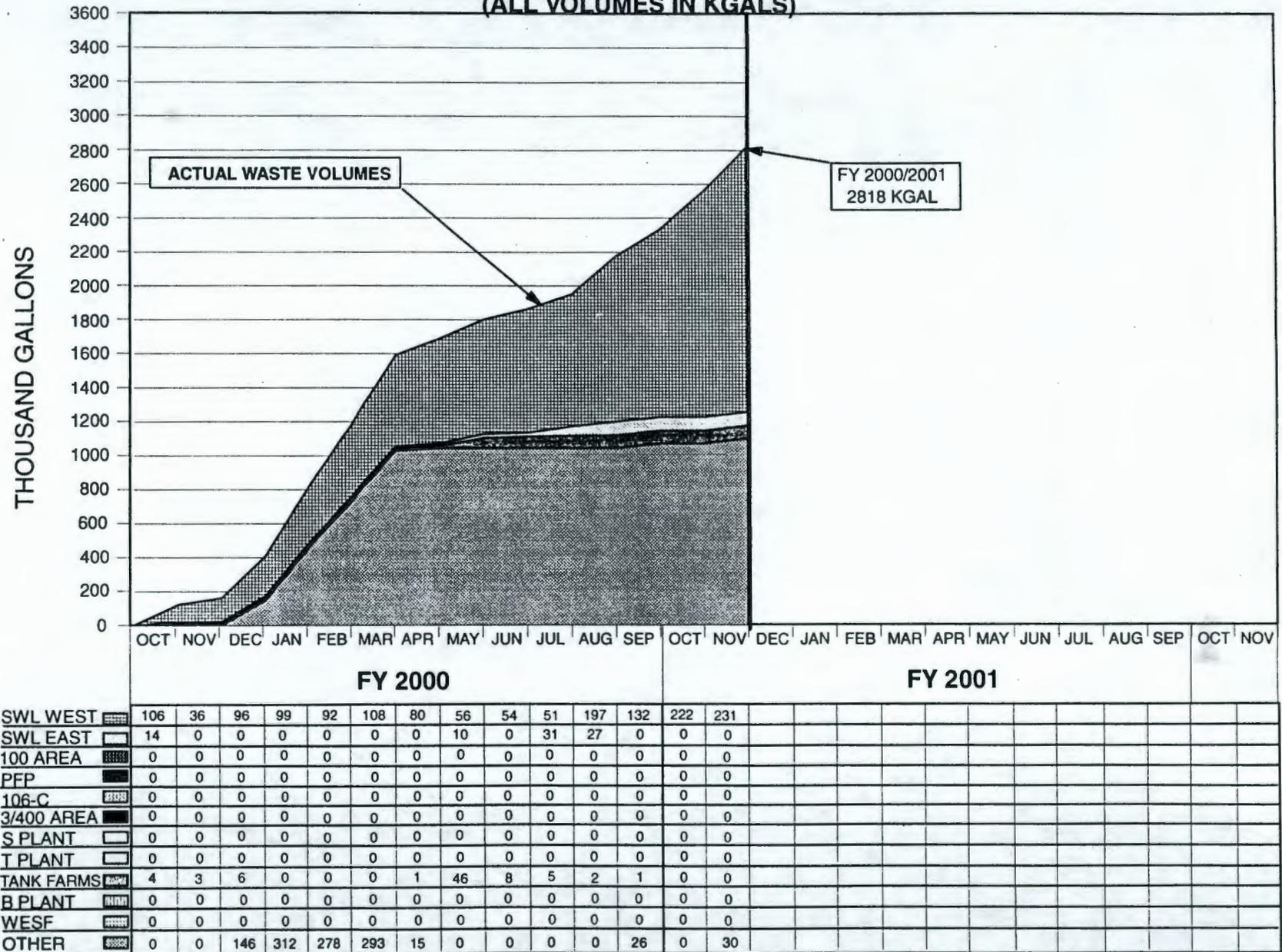
NOVEMBER 2000 DST WASTE RECEIPTS					
FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
SWL (West)	+231 Kgal (2SY)	SLURRY	+0 Kgal	SLURRY	-6 Kgal
Cross-Site Flush	+30 Kgal (2SY to 7AP)	CONDENSATE	+4 Kgal	CONDENSATE	-8 Kgal
<b>TOTAL</b>	<b>+261 Kgal</b>	INSTRUMENTATION	+0 Kgal	INSTRUMENTATION	-0 Kgal
		UNKNOWN	+1 Kgal	UNKNOWN	-5 Kgal
		<b>TOTAL=</b>	<b>+5 Kgal</b>	<b>TOTAL=</b>	<b>-19 Kgal</b>

PROJECTED VERSUS ACTUAL WASTE VOLUMES						
	ACTUAL DST WASTE RECEIPTS	PROJECTED DST WASTE RECEIPTS (1)	MISC. DST CHANGES (+/-)	PROJECTED WVR (1)	NET DST CHANGE	TOTAL DST VOLUME
OCT00	222	155	-24	0	198	20653
NOV00	261	262	-14	0	247	20900
DEC00		300		0		
JAN01		397		0		
FEB01		303		0		
MAR01		-283		-684		
APR01		321		0		
MAY01		302		0		
JUN01		334		0		
JUL01		296		0		
AUG01		289		0		
SEP01		282		0		

(1): The "PROJECTED DST WASTE RECEIPTS" and "WVR" numbers were updated in November 2000, the projected volumes will be updated as new and/or more accurate information is obtained. The projected volumes reported are the most current available, as supplied by cognizant engineers.

242-A Evaporator Waste Volume Reduction:	
Campaign 94-1 (04/15/94 - 06/13/94)	-2417
Campaign 94-2 (09/22/94 - 11/18/94)	-2787
Campaign 95-1 (06/09/95 - 07/26/95)	-2161
Campaign 96-1 (05/07/96 - 05/25/96)	-1117
Campaign 97-1 (03/24/97 - 04/02/97)	-351
Campaign 97-2 (09/16/97 - 09/30/97)	-653
Campaign 99-1 (07/24/99 - 08/15/99)	-818
Campaign 00-1 (04/20/00 - 05/05/00)	-682
<b>Total waste reduction (WVR) since restart on 4/15/94</b>	<b>-10986</b>

**COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES  
(ALL VOLUMES IN KGALS)**



NOTE: The Other Category is for Waste Generations from, Evaporator Training, Pressure Tests, Cross-Site Transfers and Tank 101-SY remediation work

FACILPAC

**FIGURE B-1. COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES  
(All volumes in Kgals)**

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**APPENDIX C**  
**DOUBLE-SHELL TANK WASTE TYPE**  
**AND SPACE ALLOCATION**

Table C-1. Double-Shell Tank Waste Inventory - November 30, 2000

TOTAL AVAILABLE DST SPACE	
NON-AGING =	27300
AGING =	3920
<b>TOTAL =</b>	<b>31220</b>

MONTHLY INVENTORY CHANGE	
10/00 TOTAL	20653
11/00 TOTAL	20900
<b>CHANGE =</b>	<b>247</b>

TANK NAME	WASTE TYPE	TOTAL INVENTORY (1)	TOTAL SUPERNATE	TOTAL SOLIDS (3)	SALTCAKE (2)	SALTCAKE LIQUID	SLUDGE (2)	SLUDGE LIQUID	REMAINING UNBURNED TANK SPACE
241-AN-101	DN	224	224	0	0	0	0	0	918
241-AN-102	CC	1054	985	89	89	22	0	0	86
241-AN-103	DSS	957	900	457	457	114	0	0	183
241-AN-104	DSSF	1052	803	449	449	112	0	0	86
241-AN-105	DSSF	1128	839	489	489	122	0	0	12
241-AN-106	CC	38	21	17	17	4	0	0	1102
241-AN-107	CC	1041	794	247	247	62	0	0	99
241-AP-101	DSSF	1114	1114	0	0	0	0	0	26
241-AP-102	CP	1089	1089	0	0	0	0	0	51
241-AP-103	CC	282	282	0	0	0	0	0	858
241-AP-104	CC	1110	1110	0	0	0	0	0	30
241-AP-105	DSSF	1135	1046	89	89	22	0	0	5
241-AP-106	DC	623	623	0	0	0	0	0	517
241-AP-107	DC	988	988	0	0	0	0	0	152
241-AP-108	DN	33	33	0	0	0	0	0	1107
241-AW-101	DSSF	1127	752	375	375	84	0	0	13
241-AW-102	DN	84	34	30	30	8	0	0	1076
241-AW-103	NCRW	506	148	363	47	12	318	79	831
241-AW-104	DN	1117	888	231	231	58	0	0	23
241-AW-105	NCRW	427	172	255	0	0	255	38	713
241-AW-106	DSSF	740	501	239	239	80	0	0	400
241-AY-101	DC	136	28	108	0	0	108	16	844
241-AY-102	DN	583	399	184	0	0	184	28	397
241-AZ-101	NCAW	908	857	52	0	0	52	8	71
241-AZ-102	NCAW	988	863	105	0	0	105	18	0
241-SY-101	CC	971	886	83	83	21	0	0	169
241-SY-102	DC	710	639	71	0	0	71	11	430
241-SY-103	CC	741	375	366	366	92	0	0	399
<b>TOTAL</b>		<b>29900</b>	<b>18881</b>	<b>4288</b>	<b>3288</b>	<b>892</b>	<b>1081</b>	<b>185</b>	<b>10388</b>

NOTE: All Volumes in Kilo-Gallons (Kgals)

- (1) Total inventory = (Total Supernate + Total Solids)
- (2) Saltcake includes Saltcake Liquids; Sludge includes Sludge Liquid
- (3) Total Solids = (Saltcake + Sludge)
- (4) The relatively Large "Tank Space Change" Number, is primarily due to Tanks 107 & 108-AP being moved from "Operational Space" to "Non-Allocated Space", and the Cross-Site Waste Transfer in November.

**Tank Space Usage**

TANK SPACE CHANGE (4)	
10/00 TANK SPACE	10635
11/00 TANK SPACE	10389
<b>CHANGE =</b>	<b>-437</b>

OPERATIONAL SPACE	
AP-106=	1107
AW-102=	1076
AW-105=	713
AW-106=	400
SY-102=	430
<b>TOTAL =</b>	<b>3726</b>

RESTRICTED SPACE	
AN-102=	86
AN-107=	99
AP-102=	51
AZ-101=	71
AZ-102=	0
<b>TOTAL =</b>	<b>307</b>

WATCH LIST SPACE	
AN-103=	183
AN-104=	86
AN-105=	12
AW-101=	13
SY-101=	189
SY-103=	399
<b>TOTAL =</b>	<b>864</b>

NON-ALLOCATED SPACE	
AN-101=	918
AN-106=	1102
AP-101=	26
AP-103=	858
AP-104=	30
AP-105=	5
AP-106=	517
AP-107=	152
AW-103=	831
AW-104=	23
AY-101=	844
AY-102=	397
<b>TOTAL =</b>	<b>5501</b>
EMERGENCY SPACE	-1140
LAW or HLW RETURN	-1140
<b>REMAINING SPACE</b>	<b>3221</b>

**Inventory Calculation by Waste Type:**

DILUTE SUPERNATE (DN)	
AN-101=	224
AP-106=	33
AW-102=	34
AW-103=	148
AW-104=	888
AW-105=	172
AY-102=	399
<b>TOTAL DN=</b>	<b>1894</b>
<b>TOTAL SOLIDS=</b>	<b>1063</b>

SLURRY SUPERNATE (DSS/DSSF)	
AN-103=	500
AN-104=	803
AN-105=	639
AP-101=	1114
AP-105=	1046
AW-101=	752
AW-106=	501
<b>TOTAL DSS/DSSF=</b>	<b>5155</b>
<b>TOTAL SOLIDS=</b>	<b>2098</b>

DST SLUDGE / SALTCAKE LIQUID			
AN-102=	22	AW-104=	58
AN-103=	114	AW-105=	38
AN-104=	112	AW-106=	60
AN-105=	122	AY-101=	18
AN-106=	4	AY-102=	28
AN-107=	62	AZ-101=	8
AP-105=	22	AZ-102=	18
AW-101=	84	SY-101=	21
AW-102=	8	SY-102=	11
AW-103=	91	SY-103=	92
<b>TOTAL SLUDGE / SALTCAKE LIQUID=</b>			<b>997</b>

COMPLEXED SUPERNATE (DC/CC)	
AN-102=	985
AN-106=	21
AN-107=	794
AP-103=	282
AP-104=	1110
AP-106=	623
AP-107=	988
AY-101=	28
SY-101=	886
SY-102=	639
SY-103=	375
<b>TOTAL DC/CC=</b>	<b>8713</b>
<b>TOTAL SOLIDS=</b>	<b>981</b>

AGING SUPERNATE (AW)	
AZ-101=	857
AZ-102=	893
<b>TOTAL AW=</b>	<b>1750</b>
<b>TOTAL SOLIDS=</b>	<b>157</b>

PHOSPHATE SUPERNATE (CP)	
<b>TOTAL CP=</b>	<b>1089</b>

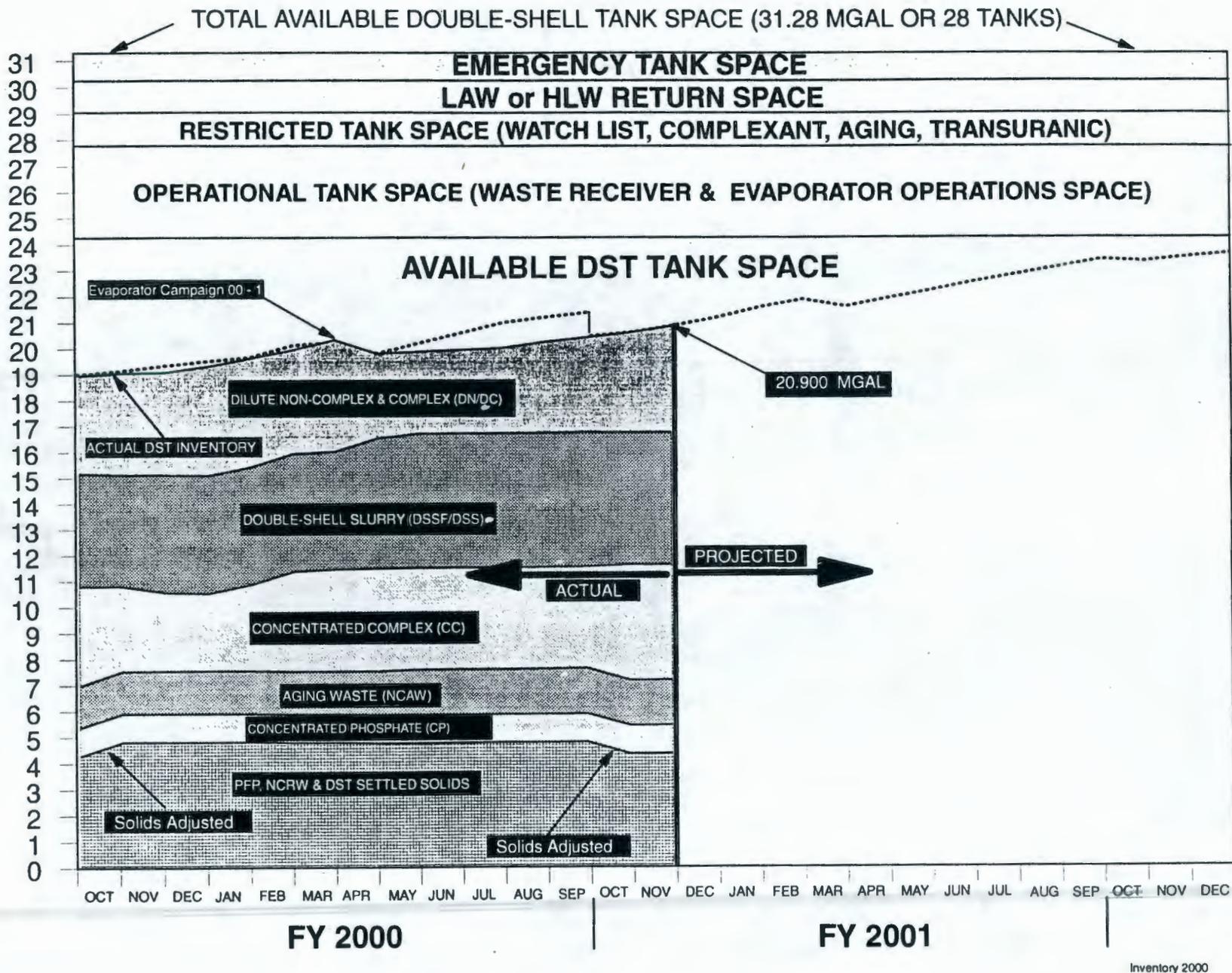
GRAND TOTALS	
<b>DILUTE SUPERNATE (DN/DC) =</b>	<b>4144</b>
<b>SLURRY (DSS/DSSF)=</b>	<b>5155</b>
<b>CONCENTRATED COMPLEXED (CC)=</b>	<b>4463</b>
<b>CONCENTRATED PHOSPHATE (CP)=</b>	<b>1089</b>
<b>AGING SUPERNATE (AW)=</b>	<b>1750</b>
<b>DST SOLIDS (NO LIQUID)=</b>	<b>3302</b>
<b>DST SLUDGE / SALTCAKE LIQUID=</b>	<b>997</b>
<b>TOTAL =</b>	<b>20900</b>

Table C-2. Double-Shell Tank Waste Inventory - November 30, 2000

TOTAL AVAILABLE USABLE AS OF NOVEMBER 30, 2000=			10642 KGALS
<b>WATCH LIST TANK SPACE:</b>	<b>TANK</b>	<b>WASTE TYPE</b>	<b>AVAILABLE SPACE</b>
<i>Unusable DST Headspace - Due to Special Restrictions Placed on the Tanks, as Stated in the "Wyden Bill"</i>	AN-103	DSS	183 KGALS
	AN-104	DSSF	88 KGALS
	AN-105	DSSF	12 KGALS
	AW-101	DSSF	13 KGALS
	SY-101	CC	170 KGALS
	SY-103	CC	399 KGALS
	<b>TOTAL=</b>		<b>865 KGALS</b>
		AVAILABLE TANK SPACE=	10642 KGALS
		MINUS WATCH LIST SPACE=	-865 KGALS
		<b>TOTAL AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=</b>	<b>9777 KGALS</b>
<b>RESTRICTED TANK SPACE:</b>	<b>TANK</b>	<b>WASTE TYPE</b>	<b>AVAILABLE SPACE</b>
<i>DST Headspace Available to Store Only Specific Waste Types</i>	AN-102	CC	85 KGALS
	AN-107	CC	98 KGALS
	AP-102	CP	50 KGALS
	AZ-101	AW	70 KGALS
	AZ-102	AW	0 KGALS
	<b>TOTAL=</b>		<b>303 KGALS</b>
		AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=	9777 KGALS
		MINUS RESTRICTED SPACE=	-303 KGALS
		<b>TOTAL AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=</b>	<b>9474 KGALS</b>
<b>OPERATIONAL TANK SPACE</b>	<b>TANK</b>	<b>WASTE TYPE</b>	<b>AVAILABLE SPACE</b>
<i>DST Headspace Available For Facility Generated Waste and 242-A Evaporator Operations</i>	AP-108	DN	1107 KGALS
	AW-102	DN	1076 KGALS
	AW-105	NCRW	713 KGALS
	AW-106	DSSF	399 KGALS
	SY-102	DC	143 KGALS
	<b>TOTAL=</b>		<b>3438 KGALS</b>
		AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=	9474 KGALS
		MINUS OPERATIONAL SPACE=	-3438 KGALS
		<b>TOTAL AVAILABLE SPACE AFTER OPERATIONAL SPACE DEDUCTIONS=</b>	<b>6036 KGALS</b>
<b>NON-ALLOCATED TANK SPACE</b>	<b>TANK</b>	<b>WASTE TYPE</b>	<b>AVAILABLE SPACE</b>
<i>Non-Allocated DST Headspace</i>	AN-101	DN	915 KGALS
	AN-106	CC	1102 KGALS
	AP-101	DSSF	26 KGALS
	AP-103	CC	857 KGALS
	AP-104	CC	30 KGALS
	AP-105	DSSF	4 KGALS
	AP-106	DC	517 KGALS
	AP-107	DC	697 KGALS
	AW-103	NCRW	631 KGALS
	AW-104	DN	22 KGALS
	AY-101	DC	843 KGALS
	AY-102	DN	392 KGALS
	<b>TOTAL NON-ALLOCATED TANK SPACE=</b>		<b>6036 KGALS</b>
		<b>EMERGENCY TANK SPACE</b>	<b>-1140 KGALS</b>
		<b>LAW or HLW RETURN SPACE:</b>	<b>-1140 KGALS</b>
		<b>TOTAL TANK SPACE AVAILABLE AFTER ALL DEDUCTIONS</b>	<b>3756 KGALS</b>

C-4

MILLIONS OF GALLONS



HNF-EP-0182-152

FIGURE C-1. TOTAL DOUBLE-SHELL TANK INVENTORY

**APPENDIX D**  
**WASTE TANK SURVEILLANCE MONITORING TABLES**

TABLE D-1. TEMPERATURE MONITORING IN WATCH LIST TANKS (Sheet 1 of 2)  
November 30, 2000

These tanks have been identified as Watch List Tanks in accordance with Public Law 101-510, Section 3137, "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," (1990), because they "... may have a serious potential for release of high-level waste due to uncontrolled increases in temperature or pressure."

All Watch List tanks are reviewed for increasing temperature trends. Temperatures in these tanks are monitored by the Tank Monitor And Control System (TMACS), unless indicated otherwise.

Temperatures are taken in the waste unless in-waste thermocouples are out of service. Temperatures below are the highest temperatures recorded in these tanks during this month.

Temperatures in Degrees F.

HYDROGEN (FLAMMABLE GAS)					
Single-Shell Tanks			Double-Shell Tanks		
Tank No.	Temp.	Officially Added to Watch List	Tank No.	Temp.	Officially Added to Watch List
A-101	143	1/91	AN-103	105	1/91
AX-101	128	1/91	AN-104	105	1/91
AX-103	109	1/91	AN-105	101	1/91
S-102	99	1/91	AW-101	100	6/93
S-111	89	1/91	SY-101	96	1/91
S-112	85	1/91	SY-103	95	1/91
SX-101	130	1/91	6 DSTs		
SX-102	140	1/91			
SX-103	158	1/91			
SX-104	139	1/91			
SX-105	163	1/91			
SX-106	99	1/91			
SX-109 (1)	135	1/91			
T-110	65	1/91			
U-103	88	1/91			
U-105	89	1/91			
U-107	78	12/93			
U-108	86	1/92			
U-109	85	1/91			
19 SSTs					
					19 Single-Shell Tanks
					6 Double-Shell Tanks
					25 Tanks on Watch List

All tanks were removed from the Ferrocyanide Watch List and 18 tanks from the Organics Watch List. Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999. The remaining two tanks (C-102 and C-103) were removed from the Organics Watch List in August 2000.

TABLE D-1. TEMPERATURE MONITORING IN WATCH LIST TANKS  
(sheet 2 of 2)

Notes:

Unreviewed Safety Question (USQ):

When a USQ is declared, special controls are required, and work in the tanks is limited. There are currently no USQs on single-shell tanks. **The USQ on double-shell tank SY-101 for liquid level increases was closed on November 30, 2000.**

Hydrogen/Flammable Gas:

These tanks are suspected of having a significant potential for hydrogen/flammable gas generation, entrapment, and episodic release. The USQ associated with these tanks was closed in September 1998. Twenty-five tanks (19 SST and 6 DST) remain on the Hydrogen Watch List.

Organic Salts:

These tanks contain concentrations of organic salts  $\geq 3$  weight% of total organic carbon (TOC)(equivalent to 10 wt% sodium acetate). The USQ associated with these tanks was closed in October 1998, and 18 organic complexant tanks were removed from the Organic Watch List in December 1998. The remaining two organic salts tank (C-102 and C-103) were removed from the Organic Watch List in August 2000.

High Heat:

These tanks contain heat generating strontium-rich sludge and require drainable liquid to be maintained in the tank to promote cooling. There are currently nine tanks on the High Heat Load List but no tanks on the High Heat Load Watch List.

Active ventilation:

There are 15 single-shell tanks on active ventilation (seven are on the Watch List as indicated by an asterisk):

C-105	SX-107
C-106 (2)	SX-108
SX-101 *	SX-109 * (1)
SX-102 *	SX-110
SX-103 *	SX-111
SX-104 *	SX-112
SX-105 *	SX-114
SX-106 *	

Footnotes:

- (1) Tank SX-109 is on the Hydrogen Watch List as it has the potential for flammable gas accumulation only because other SX tanks vent through it.
- (2) Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.
- (3) Tanks C-102 and C-103 were removed from the Organics Salts Watch List on August 23, 2000.

TABLE D-2. TEMPERATURE MONITORING IN NON-WATCH LIST TANKS

November 30, 2000

SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>26,000 Btu/hr)

Nine tanks have high heat loads for which temperature surveillance requirements are established by HNF-SD-WM-TSR-006, Rev 1, *Tank Waste Remediation System Technical Safety Requirements*, December 1999.

In an analysis, WHC-SD-WM-SARR-010, Rev 1, *Heat Removal Characteristics of Waste Storage Tanks*, Kummerer, 1995, it was estimated that nine tanks have heat sources >26,000 Btu/hr, which is the new parameter for determining high heat load tanks. See also document HNF-SD-WM-BIO-001, Rev 1, *Tank Waste Remediation System Basis for Interim Operation*, Noorani, 1998.

Temperatures in these tanks did not exceed TSR requirements for this month, and are monitored by the Tank Monitor and Control System (TMACS), unless indicated otherwise. All high heat load tanks are on active ventilation.

<u>Tank No.</u>	<u>Temperature (F.)</u>
C-106 (1)	69 (Riser #8)
SX-103	158
SX-107	166
SX-108	184
SX-109 (2)	135
SX-110	165
SX-111	185
SX-112	150
SX-114	176

9 Tanks

Notes:

- (1) C-106 was removed from the High Heat Load Watch List on December 16, 1999. The final thermal analysis report, RPP-6463, Rev. 0, "Thermal Analysis for Tanks 241-AY-102 and C-106," was issued August 9, 2000. The report concluded that the best estimate heat load for C-106 is between 7,000 and 11,000 Btu/hr. Although it no longer meets the criteria for a high heat load tank, it will take an AB change to revise the temperature control limits and monitoring frequency. The AB Amendment request is pending review by ORP.
- (2) SX-109 is on the Hydrogen Watch List as it has the potential for flammable gas accumulation only because the other SX tanks vent through it.

SINGLE-SHELL TANKS WITH LOW HEAT LOADS (<26,000 Btu/hr)

There are 114 low heat load non-watch list tanks. Temperatures in tanks connected to TMACS are monitored by TMACS; temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. Temperatures obtained semiannually have been within historical ranges for the applicable tank.

No temperatures have been obtained for several years in the tanks listed below. Most of these tanks have no thermocouple tree.

<u>Tank No.</u>	<u>Tank No.</u>
BX-104	TX-101
BY-102	TX-110
BY-109	TX-114
C-204	TX-116
SX-115	TX-117
T-102	U-104
T-105	

TABLE D-3. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR  
November 30, 2000

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists. (See Table A-1).

	Ferrocyanide	Hydrogen	Organics	High Heat	Total Tanks		
					SST	DST	Total
1/91 Original List - Response to Public Law 101-5	23	23	8	1	47	5	52
Added 2/91 (revision to Original List)	1 T-107				1		1
Total - December 31, 1991	24	23	8	1	48	5	53
Added 8/92		1 AW-101				1	1
Total - December 31, 1992	24	24	8	1	48	6	54
Added 3/93 Deleted 7/93	-4 (BX-110) (BX-111) (BY-101) (T-101)		1 U-111		1 -4		
Added 12/93		1 (U-107)			0		
Total - December 31, 1993	20	25	9	1	45	6	51
Added 2/94 Added 5/94			1 T-111 10 A-101 AX-102 C-102 S-111 SX-103 TY-104 U-103 U-105 U-203 U-204		1 4		
Deleted 11/94	-2 (BX-102) (BX-106)				-2		
Total - December 31, 1995	18	25	20	1	48	6	54
Deleted 6/96	-4 (C-108) (C-109) (C-111) (C-112)				-4		
Deleted 9/96	-14 (BY-103) (BY-104) (BY-105) (BY-106) (BY-107) (BY-108) (BY-110) (BY-111) (BY-112) (T-107) (TX-118) (TY-101) (TY-103) (TY-104)				-12		
Deleted 12/98			-18 (A-101) (AX-102) (B-103) (S-102) (S-111) (SX-103) (SX-106) (T-111) (TX-105) (TX-118) (TY-104) (U-103) (U-105) (U-106) (U-107) (U-111) (U-203) (U-204)		-10		
Total - December 31, 1998	0	25	2	1	22	6	28
Deleted 12/99				-1 (C-106)	-1		
Deleted 08/00			-1 (C-102)		-1		
			-1 (C-103)		-1		
Total - November 30, 2000	0	25	0	0	19	6	25

Eighteen of the 20 tanks were removed from the Organics Watch List in December 1998; the last two were removed August 2000; eight of the eighteen tanks are still on the Hydrogen Watch List, which is the only remaining Watch List.

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 6)

November 30, 2000

The following table indicates whether Single-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month:

NOTE:

- All Watch List and High Heat tank temperature monitoring is in compliance. (4)
- All Dome Elevation Survey monitoring is in compliance
- All Psychrometrics monitoring is in compliance (2).
- Drywell monitoring no longer required (5).
- In-tank photos/videos are taken "as needed"

LEGEND:	
(Shaded)	= in compliance with all applicable documentation
N/C	= noncompliance with applicable documentation
O/S	= Out of Service
Neutron	= LOW readings taken by Neutron probe
POP	= Plant Operating Procedure, TO-040-650
MT/FIC/ ENRAF	= Surface level measurement devices
OSD	= Operating Spec. Doc., OST-T-151-00013, 00030, 00031
N/A	= Not applicable (not monitored, or no monitoring schedule)
None	= Applicable equipment not installed
FSAR/TSR	= Final Safety Analysis Report/Technical Safety Requirements

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
A-101	X			LOW	None	None		
A-102				None	None		None	None
A-103				LOW	None	None		
A-104				None	None	None		None
A-105				None		None	None	None
A-106				None	None	None		None
AX-101	X			LOW	None	None		(9)
AX-102				None	None	None		None
AX-103	X			None	None	None		None
AX-104				None	None	None		None
B-101				None	None	None		None
B-102				ENRAF	None	None		None
B-103				None	None	None		O/S
B-104				LOW	None	None		
B-105				LOW	None	None		
B-106				ENRAF	None	None		None
B-107				None	None	None		None
B-108				None	None	None		None
B-109				None	None	None		None
B-110				LOW	None	None		O/S (12)
B-111				LOW	None	None		
B-112				ENRAF	None	None		None
B-201				ENRAF	None	None		None
B-202				ENRAF	None	None		None
B-203				ENRAF	None	None		None
B-204				ENRAF	None	None		None
BX-101				ENRAF	None	None		None
BX-102				None	None	None		None
BX-103				ENRAF	None	None		None
BX-104			None	ENRAF	None	None		None
BX-105				None	None	None		None
BX-106				ENRAF	None	None		None
BX-107				ENRAF	None	None		None

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS  
149 TANKS (Sheet 2 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
BX-108				None	None	None		None
BX-109				None	None	None		None
BX-110				None	None	None		None
BX-111				LOW	None	None		
BX-112				ENRAF	None	None		None
BY-101				LOW		None	None	
BY-102			None	LOW	None	None		
BY-103				LOW	None	None		
BY-104				LOW		None	None	
BY-105				LOW		None	None	
BY-106				LOW		None	None	
BY-107				LOW		None	None	
BY-108				None		None	None	None
BY-109			None	LOW	None	O/S	None	
BY-110				LOW	None	None		
BY-111				LOW	None	None		
BY-112				LOW		None	None	
C-101				None		None	None	None
C-102 (10)				None	None		None	None
C-103 (10)				ENRAF	None	None		None
C-104				None	None	None		None
C-105				None	None	None		None
C-106 (3)		X		ENRAF	None	None		None
C-107				ENRAF	None	None		None
C-108				None		None	None	None
C-109				None		None	None	None
C-110				MT		None	None	None
C-111				None		None	None	None
C-112				None	None	None		None
C-201				None		None	None	None
C-202				None		None	None	None
C-203				None		None	None	None
C-204			None	None		None	None	None
S-101				ENRAF	None	None		
S-102	X			ENRAF	None	None		
S-103				ENRAF	None	None		
S-104				LOW	None	None		
S-105				LOW	None	None		
S-106				ENRAF	None	None		
S-107				ENRAF	None	None		None
S-108				LOW	None	None		
S-109				LOW	None	None		
S-110				LOW	None	None		
S-111	X			ENRAF	None	None		
S-112	X			LOW	None	None		
SX-101	X			LOW	None	None		
SX-102	X			LOW	None	None		
SX-103	X	X		LOW	None	None		
SX-104	X			LOW	None	None		(13)
SX-105	X			LOW	None	None		O/S (11)
SX-106	X			LOW	None	None		
SX-107		X		None	None	None		None
SX-108		X		None	None	None		None

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS  
149 TANKS (Sheet 3 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
SX-109	X	X		None	None	None		None
SX-110		X		None	None	None		None
SX-111		X		None	None	None		None
SX-112		X		None	None	None		None
SX-113				None	None	None		None
SX-114		X		None	None	None		None
SX-115			None	None	None	None		None
T-101				None	None	None		None
T-102			None	ENRAF	None	None		None
T-103				None	None	None		None
T-104				LOW	None	None		
T-105			None	None	None	None		None
T-106				None	None	None		None
T-107				ENRAF	None	None		None
T-108				ENRAF	None	None		None
T-109				None	None	None		None
T-110	X			LOW	None	None		
T-111				LOW	None	None		
T-112				ENRAF	None	None		None
T-201				MT		None	None	None
T-202				MT		None	None	None
T-203				None		None	None	None
T-204				MT		None	None	None
TX-101			None	ENRAF	None	None		None
TX-102				LOW	None	None		
TX-103				None	None	None		None
TX-104				None	None	None		None
TX-105				None	None	None		None (B)
TX-106				LOW	None	None		
TX-107				None	None	None		None
TX-108				None	None	None		None
TX-109				LOW	None	None		
TX-110			None	LOW	None	None		
TX-111				LOW	None	None		
TX-112				LOW	None	None		
TX-113				LOW	None	None		
TX-114			None	LOW	None	None		
TX-115				LOW	None	None		
TX-116			None	None	None	None		None
TX-117			None	LOW	None	None		
TX-118				LOW	None	None		
TY-101				None	None	None		None
TY-102				ENRAF	None	None		None
TY-103				LOW	None	None		
TY-104				ENRAF	None	None		None
TY-105				None	None	None		None
TY-106				None	None	None		None
U-101				MT		None	None	None
U-102				LOW	None	None		
U-103	X			ENRAF	None	None		
U-104			None	None		None	None	None
U-105	X			ENRAF	None	None		
U-106				ENRAF	None	None		

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS  
149 TANKS (Sheet 4 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
U-107	X			ENRAF	None	None		
U-108	X			LOW	None	None		
U-109	X			ENRAF	None	None		
U-110				None	None	None		None
U-111				LOW	None	None		
U-112				None		None	None	None
U-201				MT		None	None	None
U-202				MT		None	None	None
U-203				None	None	None		None
U-204				ENRAF	None	None		None
<b>Catch Tanks and Special Surveillance Facilities</b>								
A-302-A	N/A	N/A	N/A	(5)	None	None		None
A-302-B	N/A	N/A	N/A	(6)		None	None	None
ER-311	N/A	N/A	N/A	(6)	None	None		None
AX-152	N/A	N/A	N/A	(5)	None	None		None
AZ-151	N/A	N/A	N/A	(5)	None	O/S (10)	None	None
AZ-154	N/A	N/A	N/A	(6)		None	None	None
BX-TK/SMP	N/A	N/A	N/A	(6)		None	None	None
A-244 TK/SMP	N/A	N/A	N/A	(5)	None	None	None	None
AR-204	N/A	N/A	N/A	(5)			None	None
A-417	N/A	N/A	N/A	(6)	None	None	None	None
A-350	N/A	N/A	N/A	(6)	None	None	None	None
CR-003	N/A	N/A	N/A	(5)	None	None	None	None
Vent Sta.	N/A	N/A	N/A	(5)		None	None	None
244-S TK/SMP	N/A	N/A	N/A	(6)	None	None	None	None
S-302	N/A	N/A	N/A	(6)	None	None		None
S-304	N/A	N/A	N/A	(5)	None	None		None
TX-244 TK/SMP	N/A	N/A	N/A	(5)		None	None	None
TX-302-B	N/A	N/A	N/A	(6)		None	None	None
TX-302-C	N/A	N/A	N/A	(6)	None	None		None
U-301-B	N/A	N/A	N/A	(5)	None	None		None
UX-302-A	N/A	N/A	N/A	(5)	None	None		None
S-141	N/A	N/A	N/A	(6)	O/S	None	None	None
S-142	N/A	N/A	N/A	(5)	O/S	None	None	None
Totals:	19	9	N/C: 0		N/C: 0	N/C: 0	N/C: 0	N/C: 0
149 tanks	Hydrogen Watch List Tanks	High Heat Tanks (non-Watch List)						

**TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS -149 TANKS**  
(Sheet 5 of 6)

## Footnotes:

1. All SSTs have either manual tape, FIC, or ENRAF surface level measuring devices. Some also have zip cords.

ENRAF gauges are being installed to replace FICs (or sometimes manual tapes). The ENRAF gauges are being connected to TMACS, but many are currently being read manually from the field. See Table D-6 for list of ENRAF installations.

2. High heat tanks have active exhausters; psychrometrics can be taken in the high heat tanks. Psychrometric readings are taken on an "as needed" basis with the exception of tanks C-105 and C-106. Document OSD-T-151-00013 requires psychrometric readings to be taken in C-105 and C-106 on a monthly frequency when the ventilation system is running. Psychrometric readings were not taken in C-105/106 in May 2000. Discrepancy Report 00-880 was issued August 3, 2000, stating a work package was not prepared due to an oversight during personnel transition. Notification to DOE-RL to discontinue psychrometric data collection in C-105/C-106 was submitted in July 1998; this was not responded to by DOE; therefore the discontinuance of psychrometrics was not incorporated into OSD-T-151-00013. Since the issuance of the Discrepancy Report, an additional request has been made to DOE; as soon as a response is received, the requirement to take psychrometrics will be deleted from the OSD. The Environmental Protection Agency does not require that psychrometrics be taken.

Psychrometric readings previously taken monthly in SX-farm will now be taken annually.

3. Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.
4. Temperature readings may be regulated by OSD, POP, or FSAR (FSAR only regulates high heat load tanks). Temperatures cannot be obtained in 13 low heat load tanks (see Table D-2). The OSD does not require readings or repair of out-of-service thermocouples for the low heat load ( $\leq 26,000$  Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks.

Temperatures in some tanks cannot be taken in the waste because the waste level is lower than the lowest thermocouple in these tanks.

Temperatures for many tanks are monitored continuously by TMACS; see Table D-7, TMACS Monitoring Status.

5. Document OSD-T-151-00031, "Operating Specifications for Tank Farm Leak Detection," REV C-0, January 13, 1999, requires that single-shell tanks with the surface level measurement device contacting liquid, partial liquid, or floating crust surface, will be monitored for leak detection on a daily basis. Tanks with a solid surface will be monitored for leak detection on a weekly basis by taking neutron scan data from a Liquid Observation Well (LOW), if an LOW is present. Tanks with a solid surface but without LOWs will not be monitored for leak detection if the tank has been interim stabilized, until an LOW is installed. The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service.

This OSD revision does not require drywell surveys to be taken: drywell scans will only be taken under extreme conditions; any scans would have to be subcontracted, as the contractor no longer has vans.

6. Leak detection for the catch tanks is performed by monitoring for the buildup of liquid in the secondary containment (for most tanks with secondary containment) or for decrease in the liquid level for those tanks without secondary containment or secondary containment monitoring.

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 149 TANKS  
(Sheet 6 of 6)

Catch tank 240-S-302 is monitored for intrusions only, and is not subject to leak detection monitoring requirements until liquid is present above the intrusion level.

Weight Factor is the surface level measuring device currently used in A-417, A-350, 244-A Tank/Sump, and 244-S Tank/Sump. DCRT CR-003 is inactive and measured in gallons.

7. Document SD-WM-TI-605, REV. 0, dated January 1994, describes the rationale for Liquid Observation Well (LOW) installation priority. This priority is based on tank leak status, tank surface condition, and tank stabilization status. Also included is a listing of tanks with the waste level being below two feet, which have no priority assigned because no effort will be made to install LOWs in the near future. LOW probes are unable to accurately monitor interstitial liquid levels less than two feet high.

Tanks which will not receive LOWs:

A-102	BX-101	C-201	T-106
A-104	BX-103	C-202	T-108
A-105	BX-105	C-203	T-109
AX-102	BX-106	C-204	TX-107
AX-104	BX-108	SX-110	TY-102
B-102	C-108	SX-113	TY-104
B-103	C-109	SX-115	TY-106
B-112	C-111	T-102	U-101
		T-103	U-112

Total - 34 Tanks

8. Tank TX-105 - the LOW was in riser 8; the riser has been removed and the LOW has not been monitored since January 1987. Liquid levels are being taken in riser 9 by ENRAF and recorded in TMACS.
9. Tank AX-101 - LOW readings are taken by gamma sensors.
10. Tanks C-102 and C-103 were removed from the Organics Salts Watch List on August 23, 2000
11. Tank SX-105 - LOW scan not taken for week ending August 28, 2000. LOW is primary leak detection device; ENRAF is backup and monitored daily in TMACS. LOW has failed structurally, and will be replaced. Work Package W2-00-01151/W. **Fabrication shop is working on making new well; approximate deadline date for replacement is December 26, 2000.**
12. Tank B-110 - LOW scan not taken for week ending October 9, 2000. LOW is primary leak detection device; no stated backup, so device must be repaired in 14 days or an alternative device used to obtain a valid reading before an OSD violation occurs. Discrepancy Report 00-884 (Rev 1) issued October 11, 2000. The LOW is being grouted per 2W-00-01303 so that readings can be obtained. Work Package W2-00-01331/W will replace LOW well at a later date. **The grouting and decon done November 30, 2000, were unsuccessful. LOW well will be replaced.**

TABLE D-5. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS

28 TANKS (Sheet 1 of 2)

November 30, 2000

The following table indicates whether Double-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month.

NOTE:

Dome Elevation Surveys are not required for DSTs.

Psychrometrics and in-tank photos/videos are taken "as needed" (2)

<b>LEGEND:</b>	
(Shaded)	= In compliance with all applicable documentation
N/C	= Noncompliance with applicable documentation
FIC/ENRAF	= Surface level measurement devices
M.T.	
OSD	= OSD-T-151-0007, OSD-T-151-00031
None	= no M.T., FIC or ENRAF installed
O/S	= Out of Service
W.F.	= Weight Factor
N/A	= Not Applicable (not monitored or no monitoring schedule)
Rad.	= Radiation

Tank Number	Watch List	Temperature Readings (3) (OSD)	Surface Level Readings (1) (OSD)			Radiation Readings		Annulus (OSD)
			M.T.	FIC	ENRAF	Leak Detection Pits (4) (OSD)		
						W.F.	Rad. (6)	
AN-101				None			N/A	
AN-102				None			N/A	
AN-103	X			None			N/A	
AN-104	X		O/S	None			N/A	
AN-105	X		O/S	None			N/A	
AN-106				None			N/A	
AN-107				None		O/S	N/A	
AP-101			O/S	None		O/S (7)	N/A	
AP-102				None		O/S (7)	N/A	
AP-103				None		O/S (7)	N/A	
AP-104			O/S	None		O/S (7)	N/A	
AP-105				None		O/S (7)	N/A	
AP-106				None		O/S (7)	N/A	
AP-107				None		O/S (7)	N/A	
AP-108				None		O/S (7)	N/A	
AW-101	X		O/S	None			N/A	
AW-102					(5)		N/A	
AW-103				None			N/A	
AW-104				None			N/A	
AW-105				None			N/A	
AW-106				None			N/A	
AY-101				None		O/S	N/A	O/S
AY-102				None			N/A	
AZ-101				None			N/A	O/S
AZ-102					None		N/A	O/S
SY-101	X		None	None		O/S (9)	N/A	
SY-102			O/S (8)	None			N/A	
SY-103	X		O/S (8)	None		O/S (9)	N/A	
<b>Totals:</b> 28 tanks	6 Watch List Tanks	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0

**TABLE D-5. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 28 TANKS**  
(Sheet 2 of 2)

## Footnotes:

1. Some double-shell tanks have both FIC and manual tape which is used when the FIC is out of service. Noncompliance (N/C) will be shown when no readings are obtained. ENRAF gauges are being installed to replace FICs. The ENRAF gauges are being connected to TMACS, but some are currently being read manually.
2. Psychrometric readings are taken on an "as needed" basis. No psychrometric readings are currently being taken in the double-shell tanks.
3. OSD specifies double-shell tank temperature limits, gradients, etc.
4. Applicable OSD and HNF-IP-0842, latest revisions, are used as guidelines for monitoring Leak Detection Pits. See also (6) and (7) below.
5. AW-102 has ENRAF, FIC and M.T. At some point the FIC will be removed.
6. USQ TF-97-0038, dated April 28, 1997, specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double-shell tank farms where the leak detection pits are used as tertiary leak detection. This applies to all double-shell tank farms.
7. Leak Detection Pit weekly readings are being obtained by Instrument Technicians in these tanks:  
     AP-103C (for tanks AP-101 - 104)  
     AP-105C (for tanks AP-105 - 108)
8. SY-103 - Manual Tape has sporadic readings. ENRAF is primary device.  
     SY-102 - Manual Tape has sporadic readings. The plummet fell off the M.T. - a work request was written July 31, 2000. ENRAF is primary device.
9. SY-101 - LDP readings are above normal range. EDL #241-SY-99-2 to repair it.  
     SY-103 - LDP readings are above normal range. EDL #241-SY-95-5 to repair it.

TABLE D-6. ENRAF SURFACE LEVEL GAUGE INSTALLATION AND DATA INPUT METHODS

November 30, 2000

LEGEND												
SACS			= Surveillance Analysis Computer System									
TMACS			= Tank Monitor and Control System									
Auto			= Automatically entered into TMACS and electronically transmitted to SACS									
Manual			= Manually entered directly into SACS by surveillance personnel, from Field Data sheets									
EAST AREA						WEST AREA						
Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	
A-101	09/95	Auto	B-201	07/00	Auto	S-101	02/95	Auto	TX-101	11/95	Auto	
A-102			B-202	07/00	Auto	S-102	05/95	Auto	TX-102	05/96	Auto	
A-103	07/96	Auto	B-203	06/00	Auto	S-103	05/94	Auto	TX-103	12/95	Auto	
A-104	05/96	Manual	B-204	06/00	Auto	S-104	05/99	Auto	TX-104	03/96	Auto	
A-105			BX-101	04/96	Auto	S-105	07/95	Auto	TX-105	04/96	Auto	
A-106	01/96	Auto	BX-102	06/96	Auto	S-106	06/94	Auto	TX-106	04/96	Auto	
AN-101	08/96	Auto	BX-103	04/96	Auto	S-107	06/94	Auto	TX-107	04/96	Auto	
AN-102	05/00	Auto	BX-104	05/96	Auto	S-108	07/95	Auto	TX-108	04/96	Auto	
AN-103	08/95	Auto	BX-105	03/96	Auto	S-109	08/95	Auto	TX-109	11/95	Auto	
AN-104	08/95	Auto	BX-106	07/94	Auto	S-110	08/95	Auto	TX-110	05/96	Auto	
AN-105	08/95	Auto	BX-107	06/96	Auto	S-111	08/94	Auto	TX-111	05/96	Auto	
AN-106	05/00	Auto	BX-108	05/96	Auto	S-112	05/95	Auto	TX-112	05/96	Auto	
AN-107	04/00	Auto	BX-109	08/95	Auto	SX-101	04/95	Auto	TX-113	05/96	Auto	
AP-101	06/99	Auto	BX-110	06/96	Auto	SX-102	04/95	Auto	TX-114	05/96	Auto	
AP-102	08/99	Auto	BX-111	05/96	Auto	SX-103	04/95	Auto	TX-115	05/96	Auto	
AP-103	08/99	Auto	BX-112	03/96	Auto	SX-104	05/95	Auto	TX-116	05/96	Auto	
AP-104	07/99	Auto	BY-101			SX-105	05/95	Auto	TX-117	06/96	Auto	
AP-105	08/99	Auto	BY-102	09/99	Auto	SX-106	08/94	Auto	TX-118	03/96	Auto	
AP-106	08/99	Auto	BY-103	12/96	Auto	SX-107	09/99	Auto	TY-101	07/95	Auto	
AP-107	08/99	Auto	BY-104			SX-108	09/99	Auto	TY-102	09/95	Auto	
AP-108	08/99	Auto	BY-105			SX-109	09/98	Auto	TY-103	09/95	Auto	
AW-101	08/95	Auto	BY-106			SX-110	09/99	Auto	TY-104	06/95	Auto	
AW-102	05/96	Auto	BY-107			SX-111	09/99	Auto	TY-105	12/95	Auto	
AW-103	05/96	Auto	BY-108			SX-112	09/99	Auto	TY-106	12/95	Auto	
AW-104	01/96	Auto	BY-109			SX-113	09/99	Auto	U-101			
AW-105	06/96	Auto	BY-110	02/97	Manual	SX-114	09/99	Auto	U-102	01/96	Manual	
AW-106	06/96	Auto	BY-111	02/98	Manual	SX-115	09/99	Manual	U-103	07/94	Auto	
AX-101	09/95	Auto	BY-112			SY-101	07/94	Auto	U-104			
AX-102	09/98	Auto	C-101			SY-102	06/94	Auto	U-105	07/94	Auto	
AX-103	09/95	Auto	C-102			SY-103	07/94	Auto	U-106	08/94	Auto	
AX-104	10/96	Auto	C-103	08/94	Auto	T-101	05/95	Manual	U-107	08/94	Auto	
AY-101	03/96	Auto	C-104	04/99	Manual	T-102	06/94	Auto	U-108	05/95	Auto	
AY-102	01/98	Auto	C-105	05/96	Manual	T-103	07/95	Manual	U-109	07/94	Auto	
AZ-101	08/96	Manual	C-106	02/96	Auto	T-104	12/95	Manual	U-110	01/96	Manual	
AZ-102			C-107	04/95	Auto	T-105	07/95	Manual	U-111	01/96	Manual	
B-101	07/00	Auto	C-108			T-106	07/95	Manual	U-112			
B-102	02/95	Auto	C-109			T-107	06/94	Auto	U-201			
B-103	07/00	Auto	C-110			T-108	10/95	Manual	U-202			
B-104	06/00	Auto	C-111			T-109	09/94	Manual	U-203	09/98	Manual	
B-105	08/00	Auto	C-112	03/96	Manual	T-110	05/95	Auto	U-204	06/98	Manual	
B-106	07/00	Auto	C-201			T-111	07/95	Manual				
B-107	06/00	Auto	C-202			T-112	09/95	Manual				
B-108	07/00	Auto	C-203			T-201						
B-109	08/00	Auto	C-204			T-202						
B-110	07/00	Auto				T-203						
B-111	07/00	Auto				T-204						
B-112	03/95	Auto										
Total East Area: 70						Total West Area: 77						

147 ENRAFs installed: 125 automatically entered into TMACS, 22 manually entered into SACS

TABLE D-7. TANK MONITOR AND CONTROL SYSTEM (TMACS)

November 30, 2000

Note: Indicated below are the number of tanks having at least one operating sensor monitored by TMACS.

Some tanks have more than one sensor: multiple sensors of the same type in a tank are not shown in the table (for example: 10 tanks in BY-Farm have at least one operating TC sensor and 3 tanks in BY-Farm have at least one operating RTD sensor).

## Acceptance Testing Completed: Sensors Automatically Monitored by TMACS

EAST AREA	Temperatures		ENRAF Level Gauge	Pressure (b)	Hydrogen (c)	Gas Sample Flow
	Thermocouple Tree (TC)	Resistance Thermal Device (RTD)				
Tank Farm						
A-Farm (6 Tanks)	1		3		1	1
AN-Farm (7 Tanks)	7		7	7	3	3
AP-Farm (8 Tanks)			8			
AW-Farm (6 Tanks)	6		6		1	1
AX-Farm (4 Tanks)	3		4		1	
AY-Farm (2 Tanks)			2			
AZ-Farm (2 Tanks)						
B-Farm (16 Tanks)	1		16			
BX-Farm (12 Tanks)	11		12			
BY-Farm (12 Tanks)	10	3	2			
C-Farm (16 Tanks)	15 (f)	1	3	1		
<b>TOTAL EAST AREA</b> (91 Tanks)	<b>54</b>	<b>4</b>	<b>63</b>	<b>8</b>	<b>6</b>	<b>5</b>
<b>WEST AREA</b>						
S-Farm (12 Tanks)	12		12	1	3	1 (e)
SX-Farm (15 Tanks)	14		14	1	7	5 (e)
SY-Farm (3 Tanks) (a)	3		3	1	2	2
T-Farm (16 Tanks)	14	1	3 (d)		1	(e)
TX-Farm (18 Tanks)	13		18			
TY-Farm (6 Tanks)	6	3	6			
U-Farm (16 Tanks)	15		6	4	6	6
<b>TOTAL WEST AREA</b> (86 Tanks)	<b>77</b>	<b>4</b>	<b>62</b>	<b>7</b>	<b>19</b>	<b>19</b>
<b>TOTALS (177 Tanks)</b>	<b>131</b>	<b>8</b>	<b>125</b>	<b>15</b>	<b>25</b>	<b>24</b>

- (a) Tank SY-101 has 2 gas sample flow sensors plus 2 vent flow sensors, and 2 ENRAFs.  
 (b) Each tank has two sensors (high and low range).  
 (c) Each tank has two sensors (high and low range).  
 (d) T-107 - Auto ENRAF O/S, manual readings taken daily  
 (e) S, SX, and T-Farms - five gas sample flow sensors have been unhooked or removed. Will eventually use SHMS equipment on other tanks but none scheduled yet.  
 (f) C-105 acromag needs replacing. Manual readings are taken weekly.

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APPENDIX E

MISCELLANEOUS UNDERGROUND STORAGE TANKS  
AND SPECIAL SURVEILLANCE FACILITIES

**TABLE E-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

November 30, 2000

<u>FACILITY</u>	<u>LOCATION</u>	<u>PURPOSE (receives waste from:) (Gallons)</u>	<u>MONITORED BY</u>	<u>REMARKS</u>
<b>EAST AREA</b>				
241-A-302-A	A Farm	A-151 DB	679	SACS/ENRAF/Manually Pumped to AW-105 7/00
241-ER-311	B Plant	ER-151, ER-152 DB	8406	SACS/ENRAF/Manually
241-AX-152	AX Farm	AX-152 DB	666	SACS/MT August 2000 water added to perform integrity test
241-AZ-151	AZ Farm	AZ-702 condensate	4771	SACS/ENRAF/TMACS Volume changes daily - pumped to AZ-102 as needed
241-AZ-154	AZ Farm		25	SACS/MT
244-BX-TK/SMP	BX Complex	DCRT - Receives from several farms	18116	SACS/MT Using Manual Tape for tank/sump, pumped 10/16/99 to 66.0 in.
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	6033	MCS/SACS/WTF WTF - pumped 3/99 to AP-108
A-350	A Farm	Collects drainage	341	MCS/SACS/WTF WTF (uncorrected) pumped as needed
AR-204	AY Farm	Tanker trucks from various facilities	540 (a)	DIP TUBE Alarms on SACS-pumped to AP-108, 7/00
A-417	A Farm		12344	SACS/WTF WTF (uncorrected) pumped 4/98
CR-003-TK/SUMP	C Farm	DCRT	3055	MT/ZIP CORD Zip cord in sump O/S 3/11/96, water intrusion, 1/98
<b>WEST AREA</b>				
241-TX-302-C	TX Farm	TX-154 DB	156	SACS/ENRAF/Manually
241-U-301-B	U Farm	U-151, U-152, U-153, U-252 DB	8054	SACS/ENRAF/Manually Returned to service 12/30/93
241-UX-302-A	U Plant	UX-154 DB	2924	SACS/ENRAF/Manually
241-S-304	S Farm	S-151 DB	130	SACS/ENRAF/Manually Replaced S-302-A, 10/91; ENRAF installed 7/98
244-S-TK/SMP	S Farm	From original tanks to SY-102	13256	SACS/Manually Sump not alarming. WTF (uncorrected)
244-TX-TK/SMP	TX Farm	From original tanks to SY-102	11252	SACS/Manually MT - pumped PFP 241-Z tank D-5 to 244-TX DCRT on 11/22/00, level now 56.50"
Vent Station Catch Tank		Cross Country Transfer Line	361	SACS/Manually MT

<b>Total Active Facilities</b>	<b>18</b>
--------------------------------	-----------

(a) AR-204 was pumped down to 150 gal then valve was left on and 350 gal of water went back into tank.

**LEGEND:** DB - Diversion Box  
 DCRT - Double-Contained Receiver Tank  
 TK - Tank  
 SMP - Sump  
 FIC - Food Instrument Corporation measurement device  
 MT - Manual Tape  
 Zip Cord - surface level measurement device  
 WTF - Weight Time Factor - can be recorded as WTF, CWF (corrected), and Uncorrected WTF  
 SACS - Surveillance Automated Control System  
 MCS - Monitor and Control System  
 Manually - Not connected to any automated system  
 O/S - Out of Service  
 ENRAF - Surface Level Measuring Device

E-2

HNF-EP-0182-152

TABLE E-2. EAST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

November 30, 2000

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	MONITORED	
				BY	REMARKS
216-BY-201	BY Farm	TBP Waste Line	Unknown	NM	(216-BY)
241-A-302-B	A Farm	A-152 DB	5759	SACS/MT	Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion
241-AX-151	N of PUREX	PUREX	Unknown	NM	Isolated 1985
241-B-301-B	B Farm	B-151, B-152, B-153, B-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-C-301-C	C Farm	C-151, C-152, C-153, C-252 DB	10470	NM	Isolated 1985 (1)
241-CX-70	Hot Semi-	Transfer lines	Unknown	NM	Isolated, Decommission Project,
241-CX-72	Works	Transfer lines	850	NM	See Dwg H-2-95-501, 2/5/87
241-ER-311A	SW B Plant	ER-151 DB	Unknown	NM	Isolated
244-AR VAULT	A Complex	Between farms & B-Plant	Unknown	NM	Not actively being used. Systems activated for final clean-out.
244-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-002	BX Farm	Transfer lines	2180	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-003	BX Farm	Transfer lines	1810	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-011	BX Farm	Transfer lines	7100	NM	Interim Stabilization 1985 (1)
361-B-TANK	B Plant	Drainage from B-Plant	Unknown	NM	Interim Stabilization 1985 (1)

**Total East Area inactive facilities 18**

**LEGEND:** DB - Diversion Box  
 DCRT - Double-Contained Receiver Tank  
 MT - Manual Tape  
 SACS - Surveillance Automated Control System  
 TK - Tank  
 SMP - Sump  
 R - Usually denotes replacement  
 NM - Not Monitored

E-3

HNF-EP-0182-152

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

TABLE E-3. WEST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers  
November 30, 2000

<u>FACILITY</u>	<u>LOCATION</u>	<u>RECEIVED WASTE FROM:</u>	<u>(Gallons)</u>	<u>MONITORED</u> <u>BY</u>	<u>REMARKS</u>
216-TY-201	E. of TY Farm	Supernate from T-112	Unknown	NM	Isolated
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 Farm	240-S-151 DB	8414	SACS/ENRAF	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 still assumed leaker after leak test. Manual FIC readings are unobtainable due to dry grouted surface.					
CASS monitoring system retired 2/23/99; intrusion readings discontinued. S-304 replaced S-302-A					
241-S-302-B	S Farm	S Encasements	Unknown	NM	Isolated 1985 (1)
241-SX-302	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-SX-304	SX Farm	SX-152 Transfer Box, SX-151 DB	Unknown	NM	Isolated 1985 (1)
241-T-301	T Farm	DB T-151, -151, -153, -252	Unknown	NM	Isolated 1985 (241-T-301B)
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	TX Farm	TX-155 DB	1600	SACS/MT	New MT installed 7/16/93
241-TX-302-B(R)	E. of TX Farm	TX-155 DB	Unknown	NM	Isolated
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Unknown	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	N. of S Farm	Pers. Decon. Facility	Unknown	NM	Isolated
244-U-TK/SMP	U Farm	DCRT - Receives from several farms	Unknown	NM	Not yet in use
244-TXR VAULT	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
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)
270-W	SE of U Plant	Condensate from U-221	Unknown	NM	Isolated 1970
361-T-TANK	T Plant	Drainage from T-Plant	Unknown	NM	Isolated 1985 (1)
361-U-TANK	U Plant	Drainage from U-Plant	Unknown	NM	Interim Stabilized, MT removed 1984 (1)

Total West Area inactive facilities 27

LEGEND: DB - Diversion Box, TB - Transfer Box  
DCRT - Double-Contained Receiver Tank  
TK - Tank  
SMP - Sump  
R - Usually denotes replacement  
FIC - Surface Level Monitoring Device  
MT - Manual Tape  
O/S - Out of Service  
SACS - Surveillance Automated Control System  
NM - Not Monitored  
ENRAF - Surface Level Monitoring Device

APPENDIX F  
LEAK VOLUME ESTIMATES

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (Sheet 1 of 5)

November 30, 2000

Tank Number	Date Declared Confirmed or Assumed Leaker (3)	Volume Gallons (2)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date (11)	Leak Estimate	
					Updated	Reference
241-A-103	1987	5500 (8)		06/88	1987	(j)
241-A-104	1975	500 to 2500	0.8 to 1.8 (q)	09/78	1983	(a)(q)
241-A-105 (1)	1963	10000 to 277000	85 to 760 (b)	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	50 (l)	11/78	1986	(d)
241-BX-108	1974	2500	0.5 (l)	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)		N/A	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	17 to 140 (m)(q)(t)	08/79	1991	(m)(q)(t)
241-SX-109 (5)(14)	1965	<10000	<40 (n)(t)	05/81	1992	(n)(t)
241-SX-110	1976	5500 (8)		08/79	1989	(g)
241-SX-111 (14)	1974	500 to 2000	0.6 to 2.4 (l)(q)(t)	07/79	1986	(d)(q)(t)
241-SX-112 (14)	1969	30000	40 (l)(t)	07/79	1986	(d)(t)
241-SX-113	1962	15000	8 (l)	11/78	1986	(d)
241-SX-114	1972	-- (6)		07/79	1989	(g)
241-SX-115	1965	50000	21 (o)	09/78	1992	(o)
241-T-101	1992	7500 (8)		04/93	1992	(p)
241-T-103	1974	<1000 (8)		11/83	1989	(g)
241-T-106	1973	115000 (8)	40 (l)	08/81	1986	(d)
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	0.7 (l)	02/83	1986	(d)
241-TY-104	1981	1400 (8)		11/83	1986	(d)
241-TY-105	1960	35000	4 (l)	02/83	1986	(d)
241-TY-106	1959	20000	2 (l)	11/78	1986	(d)
241-U-101	1959	30000	20 (l)	09/79	1986	(d)
241-U-104	1961	55000	0.09 (l)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (8)	0.05 (q)	12/84	1986	(d)(q)
241-U-112	1980	8500 (8)		09/79	1986	(d)
67 Tanks		<750,000 - 1,050,000 (7)				

N/A = not applicable (not yet interim stabilized)

TABLE F-1. SINGLE-SHELL LEAK VOLUME ESTIMATES  
(Sheet 2 of 6)

Footnotes:

(1) Current estimates [see reference(b)] are that 610 Kgallons of cooling water was added to Tank 241-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 Kgallons to 277 Kgallons) is based on the following (see References):

1. Reference (b) contains an estimate of 5 Kgallons to 15 Kgallons for the initial leak prior to August 1968.
2. Reference (b) contains an estimate of 5 Kgallons to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970.
3. 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.
4. Reference (c) contains an estimate the 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.

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

- (2) These leak volume estimates 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 241-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 241-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," "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.

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES  
(Sheet 3 of 6)

- (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.
- (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 Kgallons), 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 241-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 (q) and (r); refer to reference (s) 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.
- (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 SX-108, SX-109, SX-111, and SX-112 have been re-evaluated using a Historical Leak Model [see reference (t)]. 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) In July 1998, the Washington State Department of Ecology (Ecology) directed the U. S. Department of Energy (DOE) to develop corrective action plans for eight single-shell tank farms (B/BX/BY/S/SX/T/TX/TY) where groundwater contamination likely originated from tank farm operations. A Tri-Party Agreement milestone (M-45 series) was developed that established a formalized approach for evaluating impacts on groundwater quality of losses of tank wastes to the vadose zone underlying these tank farms. Planning documents have been

**TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES**  
(Sheet 4 of 6)

completed for the S, SX, B, BX, and BY tank farms and will be completed shortly for the T, TX, and TY farms. The phase I field investigation is near completion in the S and SX tank farms and has begun in the B, BX, and BY farms. Field work is anticipated in FY-02 for the T, TX, and TY tank farms. The remaining four single-shell tank farms are expected to be included in corrective action plans in the near future.

All of the information included in this appendix is currently under review and significant revisions are anticipated. Recently, major tank farm vadose zone investigation efforts (such as the baseline spectral gamma-ray logging of all drywells in all single-shell tank farms, as well as drilling and sampling in the SX tank farm) were completed. This appendix will be revised as a better understanding of past tank leak events is developed.

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES  
(Sheet 5 of 6)

## 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, Westinghouse Hanford Company, 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*, Hanford Engineering Development Laboratory, Richland, Washington.
- (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*, Westinghouse Hanford Company, 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) ERDA, 1975, *Final Environmental Statement Waste Management Operations, Hanford Reservation, Richland, Washington*, ERDA-1538, 2 vols., U.S. Energy Research and Development Administration, Washington, D.C.
- (m) WHC, 1992a, *Tank 241-SX-108 Leak Assessment*, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.
- (n) WHC, 1992b, *Tank 241-SX-109 Leak Assessment*, WHC-MR-0301, Westinghouse Hanford Company, Richland, Washington.
- (o) WHC, 1992c, *Tank 241-SX-115 Leak Assessment*, WHC-MR-0302, Westinghouse Hanford Company, Richland, Washington.

## TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES

(Sheet 6 of 6)

- (p) 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.
- (q) WHC, 1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.
- (r) WHC, 1993a, *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.
- (s) 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.
- (t) 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

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**APPENDIX G**

**SINGLE-SHELL TANKS INTERIM STABILIZATION, AND  
CONTROLLED, CLEAN AND STABLE (CCS) STATUS**

TABLE G -1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (Sheet 1 of 3)

November 30, 2000

Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/89	SN	C-102	SOUND	09/95	JET	T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	06/88	AR	C-103	SOUND	N/A		T-110	SOUND	01/00 (5)	JET
A-104	ASMD LKR	09/78	AR	C-104	SOUND	09/89	SN	T-111	ASMD LKR	02/95	JET
A-105	ASMD LKR	07/79	AR	C-105	SOUND	10/95	AR	T-112	SOUND	03/81	AR(2)(3)
A-106	SOUND	08/82	AR	C-106	SOUND	N/A		T-201	SOUND	04/81	AR (3)
AX-101	SOUND	N/A		C-107	SOUND	09/85	JET	T-202	SOUND	08/81	AR
AX-102	ASMD LKR	09/88	SN	C-108	SOUND	03/84	AR	T-203	SOUND	04/81	AR
AX-103	SOUND	08/87	AR	C-109	SOUND	11/83	AR	T-204	SOUND	08/81	AR
AX-104	ASMD LKR	08/81	AR	C-110	ASMD LKR	05/95	JET	TX-101	SOUND	02/84	AR
B-101	ASMD IKR	03/81	SN	C-111	ASMD LKR	03/84	SN	TX-102	SOUND	04/83	JET
B-102	SOUND	08/85	SN	C-112	SOUND	09/90	AR	TX-103	SOUND	08/83	JET
B-103	ASMD IKR	02/85	SN	C-201	ASMD LKR	03/82	AR	TX-104	SOUND	09/79	SN
B-104	SOUND	06/85	SN	C-202	ASMD LKR	08/81	AR	TX-105	ASMD LKR	04/83	JET
B-105	ASMD IKR	12/84	AR	C-203	ASMD LKR	03/82	AR	TX-106	SOUND	06/83	JET
B-106	SOUND	03/85	SN	C-204	ASMD LKR	09/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/85	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	06/85	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/85	SN	S-103	SOUND	04/00	JET (6)	TX-110	ASMD LKR	04/83	JET
B-110	ASMD LKR	12/84	AR	S-104	ASMD LKR	12/84	AR	TX-111	SOUND	04/83	JET
B-111	ASMD LKR	06/85	SN	S-105	SOUND	09/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	05/85	SN	S-106	SOUND	N/A		TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR (3)	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	05/85	AR(2)	S-108	SOUND	12/96	JET	TX-115	ASMD LKR	09/83	JET
B-203	ASMD LKR	06/84	AR	S-109	SOUND	N/A		TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	06/84	AR	S-110	SOUND	01/97	JET	TX-117	ASMD LKR	03/83	JET
BX-101	ASMD LKR	09/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/78	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR(2)	SX-101	SOUND	N/A		TY-102	SOUND	09/79	AR
BX-104	SOUND	09/89	SN	SX-102	SOUND	N/A		TY-103	ASMD LKR	02/83	JET
BX-105	SOUND	03/81	SN	SX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-106	SOUND	07/95	SN	SX-104	ASMD LKR	04/00	JET (7)	TY-105	ASMD LKR	02/83	JET
BX-107	SOUND	09/90	JET	SX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/79	SN	SX-106	SOUND	05/00	JET (8)	U-101	ASMD LKR	09/79	AR
BX-109	SOUND	09/90	JET	SX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/85	SN	SX-108	ASMD LKR	08/79	AR	U-103	SOUND	09/00	JET (9)
BX-111	ASMD LKR	03/95	JET	SX-109	ASMD LKR	05/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	09/90	JET	SX-110	ASMD LKR	08/79	AR	U-105	SOUND	N/A	
BY-101	SOUND	05/84	JET	SX-111	ASMD LKR	07/79	SN	U-106	SOUND	N/A	
BY-102	SOUND	04/95	JET	SX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	11/97	JET	SX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/85	JET	SX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-105	ASMD LKR	N/A		SX-115	ASMD LKR	09/78	AR	U-110	ASMD LKR	12/84	AR
BY-106	ASMD LKR	N/A		T-101	ASMD LKR	04/93	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	03/81	AR(2)(3)	U-112	ASMD LKR	09/79	AR
BY-108	ASMD LKR	02/85	JET	T-103	ASMD LKR	11/83	AR	U-201	SOUND	08/79	AR
BY-109	SOUND	07/97	JET	T-104	SOUND	11/99 (4)	JET	U-202	SOUND	08/79	SN
BY-110	SOUND	01/85	JET	T-105	SOUND	06/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	08/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	06/84	JET	T-107	ASMD LKR	05/96	JET				

## LEGEND:

AR = Administratively interim stabilized  
JET = Saltwell jet pumped to remove drainable interstitial liquid  
SN = Supernate pumped (Non-Jet pumped)  
N/A = Not yet interim stabilized  
ASMD LKR = Assumed Leaker

Interim Stabilized Tanks 125  
Not Yet Interim Stabilized 24

Total Single-Shell Tanks 149

TABLE G-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS  
(sheet 2 of 2)

## Footnotes:

- (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, BX-103, T-102 and T-112 met the interim stabilization administrative procedure at the time they were stabilized, they no longer meet the recently updated administrative procedure. The tanks were re-evaluated in 1996 and memo 9654456, J. H. Wicks to Dr. J. K. McClusky, DOE-RL, dated September 1996, was issued which recommended that no further pumping be performed on these tanks, based on an economic evaluation.  
  
Document RPP-5556, Rev. 0, "Updated Drainable Interstitial Liquid Volume Estimates for 119 Single-Shell Tanks Declared Stabilized," J. G. Field, February 7, 2000, states that five tanks no longer meet the stabilization criteria (BX-103, T-102, and T-112 exceed the supernate criteria, and BY-103 and C-102 exceed the DIL criteria).  
  
An intrusion investigation was completed on tank B-202 in 1996 because of a detected increase in surface level. As a result of this investigation, 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: B-201, T-102, T-112, and T-201.
- (4) Tank 241-T-104 was Interim Stabilized on November 19, 1999. In-tank video taken October 7, 1999, shows the surface is clearly sludge-type waste with no saltcake present. No visible water on surface. Waste surface appears level across tank with numerous cracks. There is a minimal collapsed area around the saltwell screen, with no visible bottom.
- (5) Tank 241-T-110 was Interim Stabilized on January 5, 2000, due to major equipment failure. An in-tank video taken October 7, 1999 (pumping was discontinued on August 12, 1999), showed the surface of this tank as smooth, brown-tinted sludge with visible cracks.
- (6) Tank 241-S-103 was declared Interim Stabilized April 18, 2000. The surface is a rough, black and brown-colored waste with yellow patches of saltcake visible throughout. The surface appears to be damp but not saturated, and shows irregular cracking typically seen with surfaces beginning to dry out. A pool of supernatant liquid (10 feet in diameter, 5 feet deep, 1.0 Kgallons) is visible from video observations.
- (7) Tank 241-SX-104 was declared Interim Stabilized April 26, 2000, due to major equipment failure. The surface is a rough, yellowish gray saltcake waste with an irregular surface of visible cracks and shelves that were created as the surface dried out. The waste surface appears to be dry and shows no standing water within the tank.
- (8) Tank 241-SX-106 was declared Interim Stabilized May 5, 2000. The surface is a smooth, white-colored saltcake waste. The surface level slopes slightly from the tank sidewall down to a large depression in the center of the tank. A second depression surrounds both saltwell screens and an abandoned LOW. The waste surfaces appear dry and show no standing water within the tank.
- (9) Tank 241-U-103 was declared Interim Stabilized September 11, 2000. The surface is a brown colored waste with irregular patches of white salt crystal. Approximately 30% of the waste surface is covered by the salt formations. The surface level slopes slightly from the tank sidewall down to the first of two depressions in the center of the tank. The waste surface appears dry and shows signs of drying and cracking due to saltwell pumping. LOW readings indicate an average adjusted ILL of 60.2 inches. There is a small pool of supernatant liquid estimated to be 500 gallons.

TABLE G-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES

November 30, 2000

(sheet 1 of 2)

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

CONSENT DECREE  
Attachments A-1 and A-2

Following is the schedule for pumping liquid waste from the remaining twenty-nine (29) single-shell tanks. This schedule is enforceable pursuant to the terms of the Decree except for the "Project Pumping Completion Dates," which are estimates only and not enforceable. (Note: Schedule does not include C-106)

Tank Designation	Projected Pumping Start Date	Actual Pumping Start Date	Projected Pumping Completion Date	Interim Stabilization Date
1. T-104	Already initiated	March 24, 1996	May 30, 1999	November 19, 1999
2. T-110	Already initiated	May 12, 1997	May 30, 1999	January 5, 2000
3. SX-104	Already initiated	September 26, 1997	December 30, 2000	April 26, 2000
4. SX-106	Already initiated	October 6, 1998	December 30, 2000	May 5, 2000
5. S-102	July 31, 1999	March 18, 1999	March 30, 2001	
6. S-106	July 31, 1999	April 16, 1999	March 30, 2001	
7. S-103	July 31, 1999	June 4, 1999	March 30, 2001	April 18, 2000
8. U-103*	June 15, 2000	September 26, 1999	April 15, 2002	September 11, 2000
9. U-105*	June 15, 2000	December 10, 1999	April 15, 2002	
10. U-102*	June 15, 2000	January 20, 2000	April 15, 2002	
11. U-109*	June 15, 2000	March 11, 2000	April 15, 2002	
12. A-101	October 30, 2000	May 6, 2000	September 30, 2003	
13. AX-101	October 30, 2000	July 29, 2000	September 30, 2003	
14. SX-105	March 15, 2001	August 8, 2000	February 28, 2003	
15. SX-103	March 15, 2001	October 26, 2000	February 28, 2003	
16. SX-101	March 15, 2001	November 22, 2000	February 28, 2003	
17. U-106*	March 15, 2001	August 24, 2000	February 28, 2003	
18. BY-106	July 15, 2001		June 30, 2003	
19. BY-105	July 15, 2001		June 30, 2003	
20. U-108	December 30, 2001		August 30, 2003	
21. U-107	December 30, 2001		August 30, 2003	
22. S-111	December 30, 2001		August 30, 2003	
23. SX-102	December 30, 2001		August 30, 2003	
24. U-111	November 30, 2002		September 30, 2003	
25. S-109	November 30, 2002	September 23, 2000	September 30, 2003	
26. S-112	November 30, 2002		September 30, 2003	
27. S-101	November 30, 2002		September 30, 2003	
28. S-107	November 30, 2002		September 30, 2003	
29. C-103	No later than December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from this tank together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree. CHG issued a contract to a subcontractor for scope and cost estimate. RPP-6310, "Removal of Separable Organic from C-103 Scoping Study," was issued in May 2000. Additionally, other alternatives are being studied.			

\* Tanks containing organic complexants.

**TABLE G-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES**  
(sheet 2 of 2)

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
18% of Total Liquid	9/30/2002
2% of Total Liquid	9/30/2003

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.

- (1) The Pumpable Liquid Remaining was reduced to 88%, by 9/30/99, exceeding this milestone. Reference LMHC-9957926 R1, D. I. Allen, LPMC RPP to D. C. Bryson, DOE-OPP, dated October 26, 1999
- (2) The Complexed Pumpable Liquid Remaining was reduced to 38%, by 9/15/00. Reference CHG-0004752, R. F. Wood, CHG, to J. J. Short, DOE-RPP, dated September 13, 2000.

TABLE G-3. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

November 30, 2000

Partial Interim Isolated (PI)	Intrusion Prevention Completed (IP)		Interim Stabilized (IS)	
<b>EAST AREA</b>	<b>EAST AREA</b>	<b>WEST AREA</b>	<b>EAST AREA</b>	<b>WEST AREA</b>
A-101	A-103	S-104	A-102	S-103
A-102	A-104	S-105	A-103	S-104
	A-105		A-104	S-105
AX-101	A-106	SX-107	A-105	S-108
		SX-108	A-106	S-110
BY-102	AX-102	SX-109		
BY-103	AX-103	SX-110	AX-102	SX-104
BY-105	AX-104	SX-111	AX-103	SX-106
BY-106		SX-112	AX-104	SX-107
BY-109	B-FARM - 16 tanks	SX-113		SX-108
	BX-FARM - 12 tanks	SX-114	B-FARM - 16 tanks	SX-109
C-103		SX-115	BX-FARM - 12 tanks	SX-110
C-105	BY-101			SX-111
C-106	BY-104	T-102	BY-101	SX-112
<b>East Area</b>	BY-107	T-103	BY-102	SX-113
	BY-108	T-105	BY-103	SX-114
<b>WEST AREA</b>	BY-110	T-106	BY-104	SX-115
S-101	BY-111	T-108	BY-107	
S-102	BY-112	T-109	BY-108	T-Farm - 16 tanks
S-103		T-112	BY-109	TX-FARM - 18 tanks
S-106	C-101	T-201	BY-110	TY-FARM - 6 tanks
S-107	C-102	T-202	BY-111	
S-108	C-104	T-203	BY-112	U-101
S-109	C-107	T-204		U-103
S-110	C-108		C-101	U-104
S-111	C-109	TX-FARM - 18 tanks	C-102	U-110
S-112	C-110	TY-FARM - 6 tanks	C-104	U-112
	C-111		C-105	U-201
SX-101	C-112	U-101	C-107	U-202
SX-102	C-201	U-104	C-108	U-203
SX-103	C-202	U-112	C-109	U-204
SX-104	C-203	U-102	C-110	<b>West Area</b> 65
SX-105	C-204	U-202	C-111	<b>Total</b> 125
SX-106	<b>East Area</b> 55	U-203	C-112	
		U-204	C-201	
T-101		<b>West Area</b> 53	C-202	
T-104		<b>Total</b> 108	C-203	
T-107			C-204	
T-110			<b>East Area</b> 60	
T-111				
U-102	<b>Controlled, Clean, and Stable (CCS)</b>			
U-103				
U-105	<b>EAST AREA</b>	<b>WEST AREA</b>		
U-106	BX-FARM - 12 Tanks	TX-FARM - 18 tanks		
U-107		TY FARM - 6 tanks		
U-108	<b>East Area</b> 12	<b>West Area</b> 24		
U-109		<b>Total</b> 36		
U-110				
U-111				
<b>West Area</b>	29			
<b>Total</b>	40			

Note: CCS activities have been deferred until funding is available.

APPENDIX H  
TANKS AND EQUIPMENT CODE AND  
STATUS DEFINITIONS

**TABLE H - 1. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS**  
November 30, 2000

**1. TANK STATUS CODES**

**WASTE TYPE** (also see definitions, section 2 below)

AW	Aging Waste (Neutralized Current Acid Waste [NCAW])
CC	Complexant Concentrate Waste
CP	Concentrated Phosphate Waste
DC	Dilute Complexed Waste
DN	Dilute Non-Complexed Waste
DSS	Double-Shell Slurry
DSSF	Double-Shell Slurry Feed
NCPLX	Non-Complexed Waste
PD	Plutonium-Uranium Extraction (PUREX) Neutralized Cladding Removal Waste (NCRW), transuranic waste (TRU)

**TANK USE (DOUBLE-SHELL TANKS ONLY)**

CWHT	Concentrated Waste Holding Tank
DRCVR	Dilute Receiver Tank
EVFD	Evaporate Feed Tank
SRCVR	Slurry Receiver Tank

**2. DEFINITIONS**

**WASTE TANKS - GENERAL**

**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.

**Watch List Tank**

An underground storage tank containing waste that requires special safety precautions because it may have a serious potential for release of high level radioactive waste because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

**Characterization**

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

**WASTE TYPES**

**Aging Waste (AW)**

High level, first cycle solvent extraction waste from the PUREX plant (NCAW)

**Concentrated Complexant (CC)**

Concentrated product from the evaporation of dilute complexed waste.

Concentrated Phosphate Waste (CP)

Waste originating from the decontamination of the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.

Dilute Complexed Waste (DC)

Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetraacetic acid (EDTA), citric acid, and hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory (from SSTs).

Dilute Non-Complexed Waste (DN)

Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).

Double-Shell Slurry (DSS)

Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.

Double-Shell Slurry Feed (DSSF)

Waste concentrated just before reaching the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.

Non-complexed (NCPLX)

General waste term applied to all Hanford Site (NCPLX) liquors not identified as complexed.

PUREX Decladding (PD)

PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.

Drainable Interstitial Liquid (DIL)

Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity. (See also Section 4 below)

Supernate

The liquid above the solids or in large liquid pools covered by floating solids in waste storage tanks. (See also Section 4 below)

Ferrocyanide

A compound of iron and cyanide commonly expressed as FeCN. The actual formula for the ferrocyanide anion is  $[\text{Fe}(\text{CN})_6]^{-4}$ .

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 liquid. 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 is met.

Jet Pump

The jet pump system includes 1) a jet assembly with foot valve mounted to the base of two pipes that extend from the top of the well to near the bottom of the well casing inside the saltwell screen, 2) a centrifugal pump to supply power fluid to the down-hole jet assembly, 3) flexible or rigid transfer jumpers, 4) a flush line, and 5) a flowmeter. The jumpers contain piping, valves, and pressure and limit switches.

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. The power fluid passes through a nozzle in the jet assembly and acts to convert fluid pressure head to velocity head, thereby reducing the pressure in the jet assembly chamber. The reduction in pressure allows the interstitial liquid to enter the jet assembly chamber and mix with the power fluid. Velocity head is converted to pressure head above the nozzle, lifting power fluid, and interstitial liquid to the pump pit. Pumping rates vary from 0.05 gallons 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. The saltwell screen portion of the casing is an approximately 10-foot length of 300 Series, 10-inch diameter, stainless steel pipe with screen openings (slots) of 0.05 inches.

Emergency Pumping Trailer

A 45-foot tractor-type trailer is equipped to provide storage space and service facilities for emergency pumping equipment: this consists of two dedicated jet pump jumpers and two jet pumps, piping and dip tubes for each, two submersible pumps and attached piping, and a skid-mounted Weight Factor Instrument Enclosure (WFIE) with an air compressor and electronic recording instruments. The skid also contains a power control station for the pumps, pump pit leak detection, and instrumentation. A rack for over 100 feet of overground double-contained piping is also in the trailer.

INTRUSION PREVENTION (ISOLATION) Single-Shell Tanks onlyPartially Interim Isolated (PI)

The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.

Interim Isolated (II)

The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. In June 1993, Interim Isolation was replaced by Intrusion Prevention.

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump).

Controlled, Clean, and Stable (CCS)

Controlled, Clean, and Stable reflects the completion of several objectives: "Controlled" - provide remote monitoring for required instrumentation and implement controls required in the TWRS Authorization Basis; "Clean" - remove surface soil contamination and downpost the Tank Farms to RBA/URMA/RA radiological control status, remove abandoned equipment, and place reusable equipment in compliant storage; and "Stable" - remove pumpable liquids from the SSTs and IMUSTs and isolate the tanks.

## TANK 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.

### 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.

### Assumed Re-Leaker

A condition that exists after a tank has been declared as an "assumed leaker" and then the surveillance data indicates a new loss of liquid attributed to a breach of integrity.

## TANK INVESTIGATION

### Intrusion

A term used to describe the infiltration of liquid into a waste tank.

## SURVEILLANCE INSTRUMENTATION

### 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. The routine gross gamma logging program ended in 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.**

**Repeat spectral drywell scans are not part of the established Tank Farm leak detection program, but can be run on request if 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.**

### Laterals

Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells can be monitored by radiation detection probes. Laterals are 4-inch inside diameter steel pipes located 8 to 10 feet below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms. There are currently no functioning laterals and no plan to prepare them for use.

### 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 (SACS).

### Automatic FIC

An automatic waste surface level measurement device is manufactured by the Food Instrument Company (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. The controller can provide a digital display of the data and until February

1999, the majority of the FICs transmitted readings to the CASS. Since CASS retirement, all FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

#### 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. The displacer is connected to a wire wound onto a precision measuring drum. A level causes a change in the weight of the displacer which will be detected by the force transducer. Electronics within the gauge causes the servo motor to adjust the position of the displacer and compute the tank level based on the new position of the displacer drum. The gauge displays the level in decimal inches. The first few ENRAFs that received remote reading capability transmit liquid level data via analog output to the Tank Monitor and Control System (TMACS). The remaining 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.

#### 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.

#### Liquid Observation Well (LOW)

In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are usually constructed of fiberglass or TEFZEL-reinforced epoxy-polyester resin (TEFZEL, a trademark of E. I. du Pont de Nemours & Company). There are a few LOWs constructed of steel. LOWs are sized to extend to within 1 inch of the bottom of the waste tank, are sealed at their bottom ends and have a nominal outside diameter of 3.5 inches. Two probes are used to monitor changes in the ILL; gamma and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 65 LOWs (64 are in operation) installed in SSTs that contain or are capable of containing greater than 50 Kgallons of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (SY-102 and AW-103 tanks), are used for special, rather than routine, surveillance purposes only.

#### Thermocouple (TC)

A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete.

These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple (probe) may be installed in a riser, or lowered down an existing riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

#### In-tank Photographs and Videos

In-tank photographs and videos may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs and videos help determine sludge and liquid levels by visual examination.

TERMS/ACRONYMS

- CCS            Controlled, Clean and Stable (tank farms)
- FSAR           Final Safety Analysis Report (replaces BIOS, effective October 18, 1999)
- II                Interim Isolated
- IP                Intrusion Prevention Completed
- IS                Interim Stabilized
- MT/FIC/ENRAF    Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)
- OSD            Operating Specifications Document
- PI                Partial Interim Isolated
- SAR            Safety Analysis Reports
- SHMS           Standard Hydrogen Monitoring System
- 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," Fourth Amendment, 1994 (Tri-Party Agreement)
- USQ            Unreviewed Safety Question
- Wyden Amendment    "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5, 1990, Public Law 101-510.

3. INVENTORY AND STATUS BY TANK – COLUMN VOLUME CALCULATIONS AND DEFINITIONS FOR TABLE A-6 (SINGLE-SHELL TANKS)

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Total Waste	<u>Solids volume plus Supernatant liquid.</u> Solids include sludge and saltcake (see definitions below).
Supernate (1)	<u>May be either measured or estimated.</u> Supernate is either the estimated or measured liquid floating on the surface of the waste or under a floating solids crust. In-tank photographs or videos are useful in estimating the liquid volumes; liquid floating on solids and core sample data are useful in estimating large liquid pools under a floating crust.

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Drainable Interstitial Liquid (DIL) (1)	<u>This is initially calculated.</u> Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank. Interstitial liquid is 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 drainable interstitial liquid.
Pumped This Month	<u>Net total gallons of liquid pumped from the tank during the month.</u> If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume.
Total Pumped (1)	<u>Cumulative net total gallons of liquid pumped from 1979 to date.</u>
Drainable Liquid Remaining (DLR) (1)	<u>Supernate plus Drainable Interstitial Liquid.</u> The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate.
Pumpable Liquid Remaining (PLR) (1)	<u>Drainable Liquid Remaining minus unpumpable volume.</u> Not all drainable interstitial liquid is pumpable.
Sludge	<u>Solids formed during sodium hydroxide additions to waste.</u> Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs or videos may be used to estimate the volume.
Saltcake	<u>Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator.</u> If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs or videos may be used to estimate the saltcake volume.
Solids Volume Update	<u>Indicates the latest update of any change in the solids volume.</u>
Solids Update Source - See Footnote	<u>Indicates the source or basis of the latest solids volume update.</u>
Last In-tank Photo	<u>Date of last in-tank photographs taken.</u>
Last In-tank Video	<u>Date of last in-tank video taken.</u>
See Footnotes for These Changes	<u>Indicates any change made the previous month.</u> A footnote explanation for the change follows the Inventory and Status by Tank Appendix (Table E-6).

- (1) As pumping continues, supernate, DIL, DLR, PLR, and total gallons pumped are adjusted accordingly based on actual pump volumes.

APPENDIX I  
TANK FARM CONFIGURATION, STATUS  
AND FACILITY CHARTS

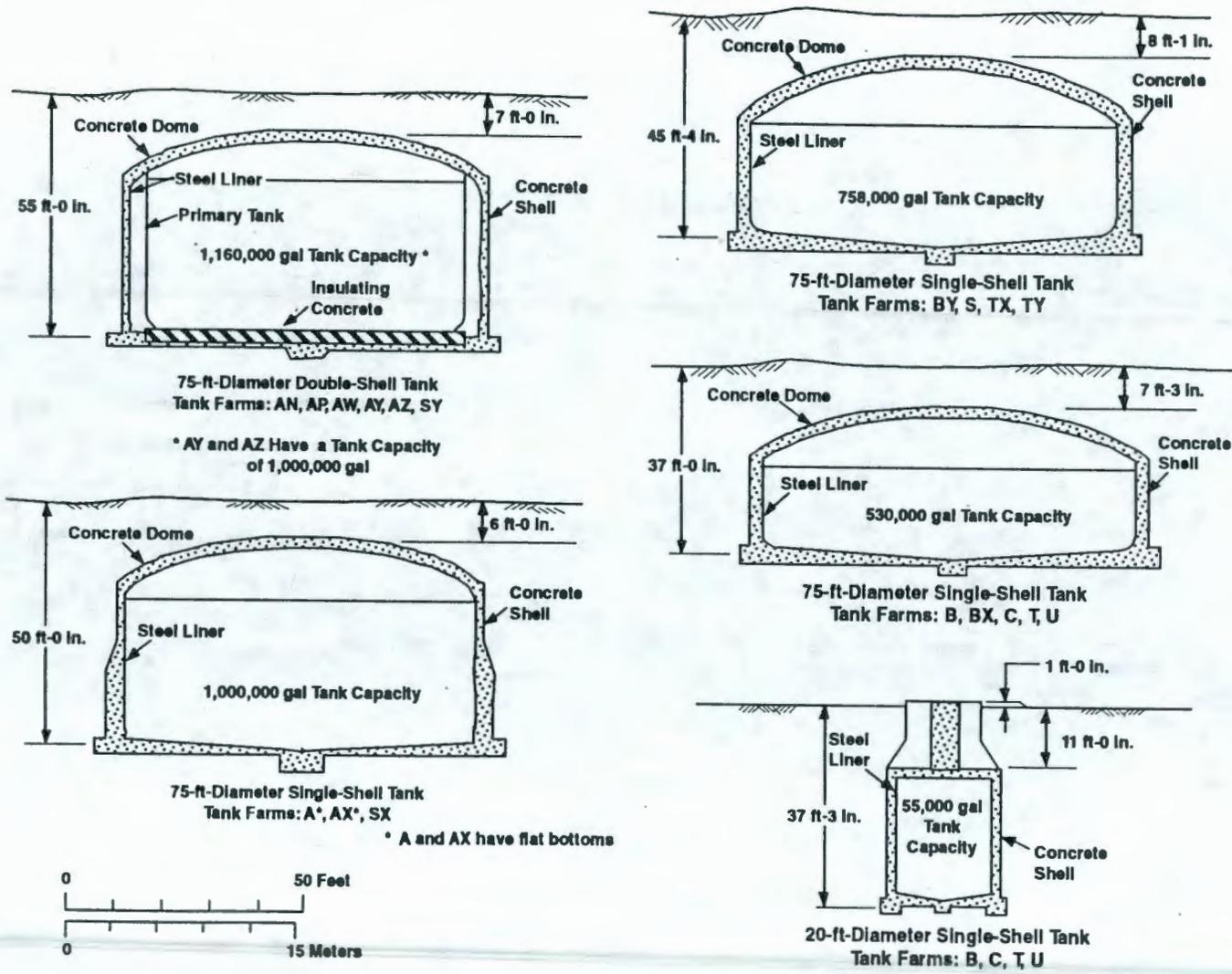


FIGURE I-1. HIGH-LEVEL WASTE TANK CONFIGURATION

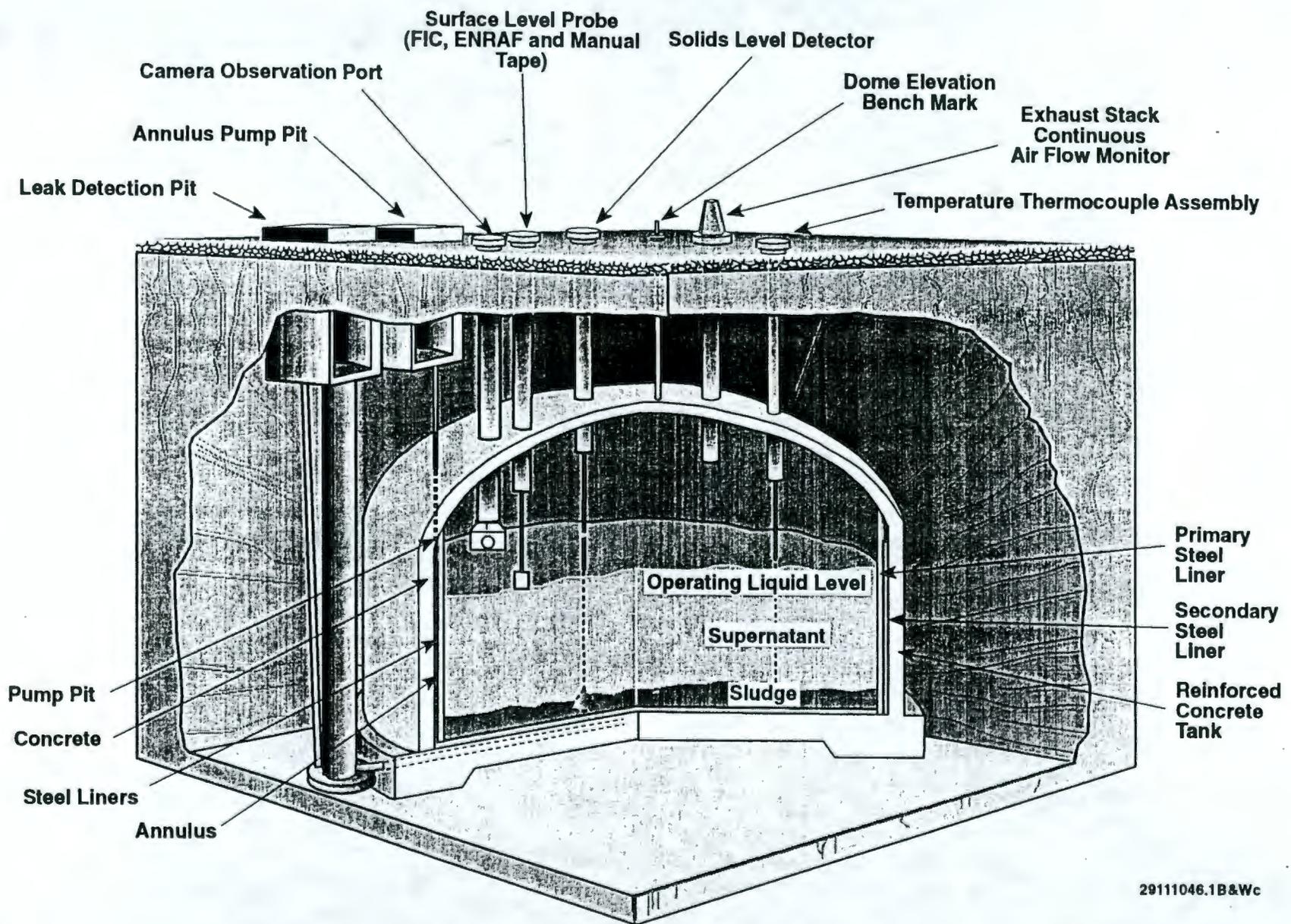


FIGURE I-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION

HNF-EP-0182

29111046.1B&Wc

I-3

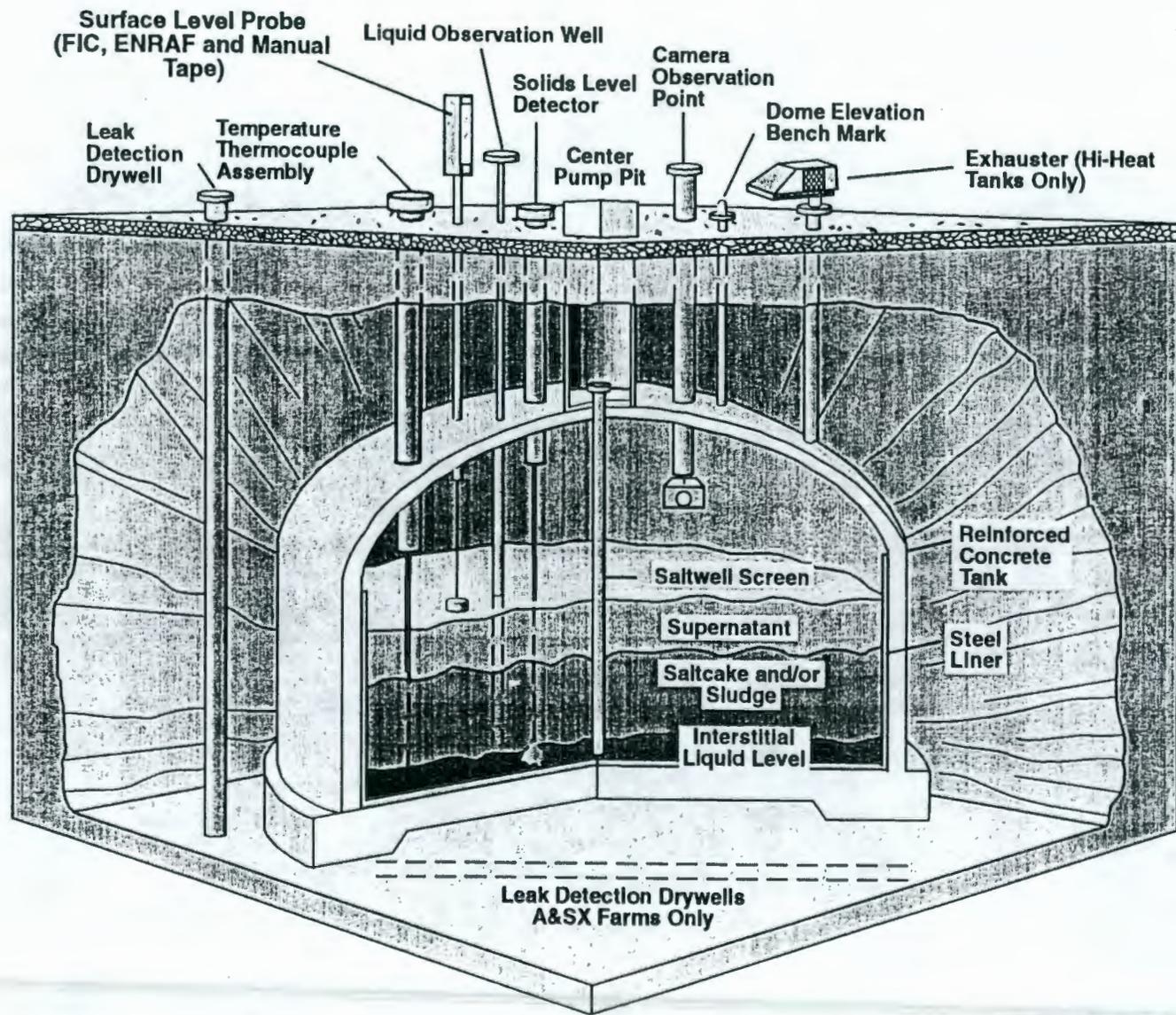


FIGURE I-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

THE TANK FARM FACILITIES CHARTS (colored foldouts)  
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200 East Shift Office	S5-04
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