Tank Farm Surveillance and Waste Status Summary Report for November 1992

B. M. Hanlon

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TANK FARM SURVEILLANCE AND WASTE STATUS
SUMMARY REPORT FOR NOVEMBER 1992

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 49 smaller catch 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 5820.2A, Chapter I, Section 3.e. (3) (DOE-RL, 1990, Radioactive Waste Management, U. S. Department of Energy-Richland Operation Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm Tanks.

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CONTENTS

SUMMARY	1
TANK STATUS	1
TANK INVESTIGATIONS	1
HIGHLIGHTS	3
Appendixes:	
A. TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS	A-1
Tank and Equipment Code/Status Definitions	A-3
B. TANK FARM CONFIGURATION, STATUS AND FACILITY CHARTS	B-1
1 High-Level Waste Tank Configuration	B-3
2 Double-Shell Tank Instrumentation Configuration	B-4
3 Single-Shell Tank Instrumentation Configuration	B-5
4 Double-Shell Tank Status	B-6
5 200 E Single-Shell Tank Status	B-7
6 200 W Single-Shell Tank Status	B-9
7 Tank Farm Facilities Quick Reference	B-11
8 Hanford Tank Farms Facilities Chart	B-12
C. MONTHLY SUMMARY	C-1
1 Monthly Summary	C-3
2 Tank Use Summary	C-4
3 Inventory Summary by Tank Farm	C-5
4 Inventory and Status by Tank - Double-Shell Tanks	C-6
5 Inventory and Status by Tank - Single-Shell Tanks	C-9
D. PERFORMANCE SUMMARY	D-1
1 Performance Summary	D-3
E. LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANKS	E-1
1 Liquid Status and Pumpable Liquid Remaining in Tanks	E-3
F. PUMPING RECORD	F-1
1 Pumping Record	F-3
G. CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES	G-1
1 East and West Area Catch Tanks and Special Surveillance Facilities (Active)	G-3
2 East Area Catch Tanks and Special Surveillance Facilities (Inactive)	G-4
3 West Area Catch Tanks and Special Surveillance Facilities (Inactive)	G-5
H. LEAK VOLUME ESTIMATES	H-1
1 Single-Shell Tank Leak Volume Estimates	H-3

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LIST OF FIGURES

1	FY 92 Integrated Core Sample Schedule	25
2	Current Status and Contingency Space for the 242-A Evaporator Restart	26

LIST OF TABLES

1	Watch List Tanks	7
2	Tanks Containing >1,000 gram mole of Ferrocyanide (Watch List Tanks)	8
3	Tanks with Potential for Hydrogen or Flammable Gas Accumulation Above the Flammability Limit (Watch List Tanks)	13
4	Tanks Containing Concentrations of Organic Salts >3% Weight TOC (Watch List Tanks)	14
5	Single-Shell Tanks with High Heat Loads (>40,000 Btu/hr)	15
6	Double-Shell Tank Waste Type and Space Allocation	18
7	Automatic Food Instrument Company (FIC) Gauges Out of Service	19
8	Single-Shell Tanks Monitoring Compliance Status	20
9	Double-Shell Tanks Monitoring Compliance Status	24

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)		

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**TANK FARM SURVEILLANCE AND WASTE STATUS SUMMARY
REPORT FOR NOVEMBER 1992
SUMMARY**

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

TANK STATUS

Category	Quantity	Date of Last Change
In-Service Tanks ^c	28 double-shell	10/86
Out-of-Service Tanks ^a	149 single-shell	07/88
Assumed-Leaker Tanks	67 single-shell	10/92
Interim-Stabilized Tanks ^{b,d}	105 single-shell	09/90
Interim-Isolated Tanks ^e	98 single-shell	09/91

^a All 149 single-shell tanks were removed from service (i.e., no longer authorized to receive waste) as of November 21, 1980.

^b Of the 105 tanks classified as interim stabilized, 58 are listed as assumed leakers.

^c Six double-shell tanks listed as "in service" are currently not receiving waste because of inclusion 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.

^d Of the 48 single-shell tanks on Watch Lists, 21 have been Interim Stabilized.

^e Of the 48 single-shell tanks on Watch Lists, 20 have been Interim Isolated.

TANK INVESTIGATIONS

Tank 241-SY-101. The surface level within this tank continues to fluctuate. The surface level increase/decrease phenomena has been observed since 1981, and is attributed to the slow buildup and relatively fast release of gas within the waste. An investigation into solutions to this slurry growth problem is ongoing. Multiple Event Fact Sheets, a Critique Report, Occurrence Reports, Discrepancy Reports, and Unusual Occurrence Reports have been issued. The Food Instrument Company (FIC) surface level monitor showed an increase from 405.10 in. on November 1 to 406.20 in. by November 30, 1992. The manual tape increased from 406.00 to 410.00 in. by November 30, 1992, (a new manual tape was installed on October 5, 1992, which is 10-7/8 in. longer than previous manual tape). The radar gauge reading was 409.25 in. November 1 and 409.23 in. on November 30, 1992. The readings fluctuated between 408.75 and 409.90 in. during November. The surface level measurements for the radar gauge, FIC, and manual tape are different due to the location of the measurement devices, irregular surface, and the different method by which the level is obtained.

Tank 241-SX-103. The level showed erratic increases/decreases from 1981 to March 1983. The level showed a decreasing trend from 247.90 in. in March 1983 to 242.10 in. on February 3, 1992. The FIC was out of service from February 10 to September 21, 1992. Following FIC repair on September 21, the level was reading 240.00 in., increased to 241.00 in. on November 28, and was out of service November 29 and 30, 1992. An evaporation study will be performed by Waste Characterization Analysis to determine if the decrease can be attributed to evaporation. Liquid observation well (LOW) monitoring has been increased from quarterly to every two weeks. The ILL has remained stable at 20.5 ft (-0.1 ft) from the established baseline since March 1, 1991, and was last scanned November 27, 1992. In-tank photographs taken December 17, 1987, show appears to be floating solids with some surface liquid. The FIC plummet is in a depression. Drywells are stable.

Tank 241-SX-105. The liquid observation well interstitial liquid level (ILL) showed a 0.1-ft decrease below baseline when scanned August 6, 1991. The current scan of November 28, 1992, shows a 0.3-ft decrease below baseline which is at the decrease criteria. An evaporation study was to have been performed by Waste Characterization Analysis to determine if the decrease could be attributed to evaporation. An evaporation study cannot be performed for tank 105-SX because of the complete solid surface of the tank. At the present time, there is no computer model available for determining evaporation rates for tanks with a 100% solid surface. LOW monitoring has been increased from quarterly to every two weeks. In-tank photographs taken June 15, 1988, show a dry cracked, uneven surface. The FIC is in the intrusion mode of operation, and the FIC plummet is suspended over solids. Work is in progress to repair the radiation detection laterals underneath this tank to provide improved leak detection.

Potential or Assumed Leaks:

Tank 241-T-101. A surface level decrease of 2.60 in. from the previously established liquid level of 44.20 in. was noted on September 18, 1992, following maintenance on the 101-T Level Indicator (FIC). Because the FIC had been operating only sporadically since December 1991, and no reliable surface level data was obtained between December 1991 and July 1992, the decrease was assumed to be due to the faulty FIC, and no occurrence reporting action was taken during that time. Drywell scan data was reviewed and is stable. Drywell monitoring frequencies have been increased to weekly. The surface level measurement was 41.50 in. on October 31, 1992, and increased to 43.80 in. after a reference elevation check was performed by instrument technicians on November 14, 1992. The level is reading 43.60 in. on November 30. Occurrence Report RL-WHC-TANKFARM-1992-0073 was issued October 1, 1992, and Tank 101-T was declared an assumed leaker on October 4, 1992. Drywell scan data was reviewed and is stable. Drywell monitoring frequencies have been increased to weekly. Plans are underway to pump this tank.

Potential or Assumed Intrusions:

The following tanks have been reported for potential in-leakage (intrusions) from known/unknown sources.

Tank 241-B-202. A steady increase in the surface level measurement has been observed since December 1984. The manual tape pencil plummet is contacting liquid. When the quarterly reading was obtained on October 6, 1992, the level

was recorded as 144.75 in., thus exceeding the 2.00-in. increase criteria from the established baseline of 142.50 in. The surface level measurement was rechecked on October 9, 1992, (145.50 in.) and October 13 (145.00 in.), verifying the increase and that the criteria had been exceeded. The monitoring frequency has been increased from quarterly to monthly. The reading for November 23, 1992, was 145.00 in. Tank 202-B has been added to the Alert List and will be reported in accordance with applicable reporting requirements.

Tank 241-S-107. A slow increase in the surface level has been observed since May 1987. The surface level measurement increased 1.10 in. in September 1991, when water was added to the tank in order to install a saltwell screen. The reference baseline was adjusted to reflect this water addition. On August 3, 1992, the surface level measurement was 144.50 in., thus exceeding the 2.00-in. increase criteria from the established baseline of 142.40 in. The FIC was reported out of service on August 17, 1992. After the FIC was repaired on September 21, the surface level measurement was 144.20 in., which is within criteria limits. The reading remained at the 144.20-in. level to November 30, 1992. This tank will remain under close surveillance for additional unexplained surface level increases.

Tank 241-TX-115. The LOW scans revealed an ILL increase over baseline in excess of the established 0.4-ft increase criteria in May 1987. Comparison of past and present in-tank photographs show no significant change in surface conditions or obvious evidence of intrusion. Environmental Protection Deviation Report #88-08 was issued on May 18, 1988. Event Fact Sheet #TF-EFS-80-140 was issued January 9, 1990. The ILL showed an additional increase of 0.4 ft on March 1, 1991. The increase was verified on March 11, 1991. These LOWs are monitored quarterly, alternating every six weeks with the neutron and gamma probes. No further increase of the ILL has been observed since March 1, 1991. The LOW was last scanned with the neutron probe on October 23, 1992.

Tank 241-TY-102. On November 8, 1992, the automatic FIC surface level measurement of 32.10 in. exceeded the 0.50-in. increase criteria from the reference baseline of 31.40 in. Discrepancy Report S&DA-92-489 was issued November 9, 1992. The tank has a history of icicle buildup on the FIC plummet and intrusions. A request was made on November 16 for Tank Farm Operations to flush the FIC plummet. Work Order 2W-92-01155 was written to perform the flush, scheduled for December 3, 1992.

HIGHLIGHTS

1. Tank 241-AW-101

On October 21, 1992, the surface level decreased and the pressure rose in Tank 241-AW-101. A review of several tanks in the AN, AP, AW and U Tank Farms for potential for generation, retention and release of flammable gases was conducted in 1990. As a result of the new level decrease and pressure increase data, Tank 241-AW-101 was reevaluated and placed on the Hydrogen Watch List (potential for flammable gases) on November 5, 1992. (See Item 4, Occurrence Report WHC-TANKFARM-1992-0083 for details).

2. Criticality Safety Issues

On April 30, 1992, an Unreviewed Safety Question concerning criticality safety issues in the Tank Farms was declared to be a reportable event. Unusual Occurrence report RL-WHC-TANKFARM-1992-0037 was issued. A prohibition was placed on all waste transfers into and between the tank farm facilities which is negatively affecting various Hanford programs. On September 1, 1992, the approved Justification For Continued Operations (JCO) was received. This JCO establishes the limitations for all tanks receiving transfers and also excludes any stabilization of single-shell tanks until further evaluations are completed and approved by DOE-HQ. The resolution of the USQ is scheduled for summer 1993.

3. Saltwell Pumping

Interim stabilization has been delayed because of the criticality safety issues which suspended waste transfers into and between tank farm facilities. The approved Justification For Continued Operations (JCO) excludes any stabilization of single-shell tanks until further evaluations are completed and approved by DOE-HQ. The resolution of the USQ is scheduled for summer 1993.

4. Occurrence Reports

RL-WHC-TANKFARM-1992-0082 (UNUSUAL OCCURRENCE) - LOSS OF LEAK DETECTION CAPABILITY FOR TANK 241-SY-102; A NON-CONFORMANCE TO A SAFETY DOCUMENT LIMITING CONDITION OF OPERATION (LCO) RESULTS. (10-Day Report)

A loss of both leak detection systems for double-shell tank 241-SY-102 initiated this event report. On November 1, it was discovered the annulus continuous air monitor (CAM) was not functional because of a previously failed vacuum pump. The annulus leak detection probe was verified as operable. On November 2, a priority 1 work package was initiated to replace the vacuum pump. The first repair attempt was not successful. The repair attempts continued until the second leak detection method failed.

On November 4, it was determined the annulus flake box leak detector probe was not operable. This condition resulted in a non-conformance to a Limiting Condition of Operation (LCO) for OSR-T-152-00001 (Section 11.4), which requires at least one operable leak detection system. A priority 1 work package was initiated. On November 4, the annulus leak detection probe was reset and verified operable, and the vacuum pump in the annulus CAM cabinet was repaired.

Annulus leak detection capability was lost for less than one eight hour shift, and alternative monitoring was performed until leak detection was restored. Both systems were expeditiously restored on a priority basis. There was not significant impact on the plant or program as a result of this incident.

RL-WHC-TANKFARM-1992-0083 (OFF NORMAL) - TANK 241-AW-101 EXPERIENCES
SURFACE LEVEL DROP AND VENT SYSTEM PRESSURE INCREASE; THE TANK HAS BEEN
ADDED TO THE HYDROGEN WATCH LIST. (Latest 10 Day Report)

On October 21, 1992, the surface level decreased 1.5 in. and the tank pressure rose approximately 0.9 inches of water, from -1.8 to -0.9 in. water gauge. The other tanks in the AW Tank Farm showed smaller pressure increases of about 0.3 in. The pressure gradually returned to normal in about five minutes. The apparent venting was noted because of a larger than normal level drop accompanied by a brief fluctuation in tank pressure. A review of the 241-AW-101 tank data was initiated to determine if it should be added to the flammable gas watch list. On November 5, it was decided to place this tank on the Flammable (Hydrogen) Gas Watch List.

In 1990, a review of 102-AN, 107-AN, 105-AP, 101-AW, and 111-U tanks that may have a potential for the generation, retention and release of flammable gases was conducted. Only Tank 101-AW was added to the Watch List; the other tanks did not exhibit the requisite characteristics. Tank 101-AW was added because of the new pressure data. As new data become available in the future, it is possible that additional tanks may be placed on the Watch List.

The addition of this tank to the Hydrogen Watch List may require additional program funds for resolution of the safety issue, and will require additional funds for performing maintenance on the tank and related ventilation equipment. This tank had previously been identified to be the second tank processed through the Grout Facility. Identification of this tank as a Watch List Tank could impact the schedule for the grout campaigns.

RL-WHC-TANKFARM-1992-0086 (OFF NORMAL) - INTERSTITIAL LIQUID LEVEL
MEASUREMENTS DECREASE TO ESTABLISHED BASELINE (.3 FT) IN SINGLE-SHELL
TANK 241-SX-105). (10-Day Report)

On October 9, 1992, as a result of Liquid Observation Well (Low) monitoring the interstitial liquid level (ILL) for 241-SX-105 was determined to have reached the .3-ft decrease limit over a five year period.

A preliminary statistical analysis of the variability and significance of deviations of the ILL was completed on November 16, 1992. The analysis concluded that the measured drop in liquid level was statistically significant. Further analysis of the stability of the ILL data over time is continuing.

This tank is an actively ventilated single-shell tank that has not been stabilized. It contains approximately 261,000 gal of drainable liquid in about 683,000 gal of total waste. Photographs taken in 1988 show that the surface of the waste is a dry crust. This crust prevents the effective use of a conductivity-based liquid level device. Therefore, the LOW is considered to be the primary means of monitoring ILL level in the tank.

Tank 241-SX-105 is a Hydrogen Watch List tank because it has the potential to generate hydrogen gas. As a result of this designation, additional precautions are required when performing work on the tank and associated ventilation system. This has the potential to delay stabilization activities, and even routine maintenance.

Quarterly readings with neutrons and gamma probes are required, with the neutron probe being the primary instrument for measuring ILL. The neutron probe LOW readings were taken on a quarterly basis until November 6, 1991. Because of work restrictions as a result of vapor issues and neutron probe failures, neutron probe LOW readings were not taken again until October 9, 1992. Neutron probe LOW readings are now being taken on a bi-weekly basis. Gamma probe LOW readings continue on a quarterly basis.

The preliminary engineering analysis has not conclusively determined the cause of the decrease. Drywell readings associated with 105-SX have not indicated any evidence of a leak. Temperature readings are normal for this tank. It is possible that the decreasing trend in liquid level is at least partially due to evaporation. Work continues to determine if an appropriate model is available for evaporation analysis. The evaporation analysis is complicated by the fact that the waste is covered by a hard surface crust which acts as a barrier. Current modeling methods are not designed to account for a solid surface.

Changes to the Report:

1. SUMMARY

Table 9 (Double-Shell Tanks Monitoring Compliance Status) has been added to the report. This table indicates whether double-shell tank monitoring is in compliance with the specified requirements.

TABLE 1. WATCH LIST TANKS

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). These have been identified as the Priority 1 Hanford Site Tank Farm Safety Issues: "Issues/situations that contain most necessary conditions that could lead to worker (onsite) or offsite radiation exposure through an uncontrolled release of fission products, e. g., Tank 101-SY." Tank 241-AW-101 was added to this list in accordance with Occurrence Report RL-WHC-TANKFARM-1992-0083.

November 1992

Single-Shell Tanks			Single-Shell Tanks			Single-Shell Tanks		
Tank No.	Category		Tank No.	Category		Tank No.	Category	
101-A	Hydrogen		108-C	Ferrocyanide		105-TX	Organic Salts	
101-AX	Hydrogen		109-C	Ferrocyanide		118-TX	Ferrocyanide,	
103-AX	Hydrogen		111-C	Ferrocyanide			Organic Salts	
103-B	Organic Salts		112-C	Ferrocyanide		101-TY	Ferrocyanide	
102-BX	Ferrocyanide		102-S	Hydrogen,		103-TY	Ferrocyanide	
106-BX	Ferrocyanide			Organic Salts		104-TY	Ferrocyanide	
110-BX	Ferrocyanide		111-S	Hydrogen		103-U	Hydrogen	
111-BX	Ferrocyanide		112-S	Hydrogen		105-U	Hydrogen	
101-BY	Ferrocyanide		101-SX	Hydrogen		106-U	Organic Salts	
103-BY	Ferrocyanide		102-SX	Hydrogen		107-U	Organic Salts	
104-BY	Ferrocyanide		103-SX	Hydrogen		108-U	Hydrogen	
105-BY	Ferrocyanide		104-SX	Hydrogen		109-U	Hydrogen	
106-BY	Ferrocyanide		105-SX	Hydrogen		48 Tanks		
107-BY	Ferrocyanide		106-SX	Hydrogen,				
108-BY	Ferrocyanide			Organic Salts				
110-BY	Ferrocyanide		109-SX	Hydrogen potential,		Double-Shell Tanks		
111-BY	Ferrocyanide			other tanks vent		Tank No.	Category	
112-BY	Ferrocyanide			thru it		103-AN	Hydrogen	
103-C	Organic Salts		101-T	Ferrocyanide		104-AN	Hydrogen	
106-C	High Heat Load		107-T	Ferrocyanide		105-AN	Hydrogen	
			110-T	Hydrogen		101-AW	Hydrogen	
						101-SY	Hydrogen	
						103-SY	Hydrogen	
						6 Tanks		

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYNANIDE (Watch List Tanks) (Sheet 1 of 4)

These tanks have been declared an Unreviewed Safety Question (USQ) because their explosion potential exceeds previously reported safety analysis consequences (1). Ferrocyanide tanks are monitored weekly.

Temperatures in these tanks did not exceed the maximum temperature criteria or surveillance frequency limits for November 1992. All Watch List tanks are reviewed for increasing temperature trends.

Tanks connected to the Tank Monitoring & Control System (TMACS) are indicated by footnote (6). Automatic temperature readings are being taken unless indicated otherwise in footnote (6). Manual field readings are taken in tanks not connected to TMACS.

Highest Temp.			Total		Interim			
Tank No.	Reading (9) This Month (F.)	Date	Probe (7) Position	Waste (inches) (8)	FeCN (x1000 g mol)(2)	Estimated Heat Load (3) (Btu/h)	Assumed Leak Date	Stabilized Date
102-BX	70	11/28/92	TC#1	42	<1	<10000	1971	11/78
106-BX	70	11/28/92	TC#1	24	<1	<10000	Sound	N/A
110-BX	69	11/21/92	TC#4	80	<1	<10000	1976	8/85
111-BX	71	11/28/92	TC#1	91	<1	<10000	1984	N/A
101-BY (5)	76	11/29/92	TC#3	148	<1	8200	Sound	5/84
103-BY (5)	82	11/29/92	TC#3	153	66	8600	1973	N/A
104-BY (5)	130	11/29/92	TC#2	155	83	5500	Sound	1/85
104-BY (5,6)	115	11/29/92	TC#1	190	36	3400	1984	N/A
105-BY (5)	114	11/29/92	TC#1	241	70	3300	1984	N/A
105-BY (5)	120	11/29/92	TC#1	104	42	14500	1984	7/79
106-BY (5)	131	11/29/92	TC#1	90	58	23000	1972	2/85
107-BY (5)	96	11/29/92	TC#1	152	71	25200	Sound	1/85
108-BY (5)	110	11/29/92	TC#1	174	6	34200	Sound	1/85
110-BY (5)	121	11/22/92	TC#1	113	2	<10000	Sound	5/85
110-BY (5,6)	111	11/22/92	TC#1	31	25	10000	Sound	3/84
111-BY (5)	86	11/29/92	LOW	31	30	3800	Sound	11/83
112-BY (5)	83	11/29/92	LOW	28	33	<10000	1968	3/84
108-C	80	11/28/92	TC#2	45	31	<10000	Sound	9/90
109-C	82	11/28/92	TC#1	56	<1	<10000	1992	N/A
109-C (6)	81	11/28/92	TC#1	73	5	<10000	1984	N/A
111-C	79	11/28/92	TC#2	134	<1	4900	Sound	4/83
112-C	84	11/20/92	TC#1	50	23	<10000	1973	8/83
112-C (6)	86	11/28/92	TC#1	66	28	<10000	1973	2/83
101-T	76	11/19/92	TC#1	24	12	<10000	1981	1/83
107-T	70	11/28/92	TC#2	N/A=Not Applicable (not yet interim stabilized)				
118-TX (4,5)	78	11/28/92	TC#1	Legend: TC = Thermocouple				
101-TY (5)	67	11/28/92	TC#1	LOW = Liquid Observation Well. A single thermocouple is positioned in the well.				
103-TY (5)	71	11/28/92	TC#2					
104-TY (5)	68	11/28/92	TC#1					
24 Tanks								

FOOTNOTES: See next page

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYANIDE (Watch List Tanks) (Sheet 2 of 5)

FOOTNOTES:

- (1) This Priority 1 Waste Tank Safety Issue is stated as follows: "Could the concentrations and distribution of ferrocyanide and nitrate/nitrite in the tanks lead to an explosion if allowed to heat up or if an uncontrolled exothermic reaction could occur (24 SSTs)?"
- (2) The estimates of the amount of FeCN in the tanks are based on WHC-SD-WM-ER-133-REV 0, "An Assessment of the Inventories of the FeCN Watch List Tanks," (Table 3-7), October 1991.
- (3) The estimated heat generation rates were from WHC-EP-0474-4, "Quarterly Report on Defense Nuclear Facilities Safety Board Recommendation 90-7 for the Period Ending March 31, 1992," Table 1-A, dated January 1992. Tank 104-BY only estimated per WHC-EP-0521, "SST 104-BY Thermal Hydraulic Analysis," October 1991 (kW = 3412 Btu/h). A new thermal hydraulic analysis of several tanks has just been completed; this information will be incorporated in the monthly report as soon as the document is cleared for public release.
- (4) This tank also contains a high concentration (>3% wt TOC) of organic salts.
- (5) These tanks are connected to TMACS and readings are being taken continuously, with the exception of 110-BY which has been out of service since November 23, 1992. 110-BY readings shown on November 22 are from TMACS; readings are now being taken manually.
- (6) New thermocouples were installed in these tanks during September 1992. See footnote (7) for spacing of the thermocouples.
- (7) Temperature probe positions - in most tanks, TC#1 is located approximately 4 in. above the bottom of the tank, TC#2 is located 24 in. above TC#1 and the remaining TCs are 24 in. above each previous TC.

TC Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Inches from bottom of tank	4	28	52	76	100	124	148	172	196	220	244	268	392	316

Footnotes continued next page

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYANIDE (Watch List Tanks) (Sheet 3 of 5)

(7) Continued

Following is the thermocouple spacing for the 4 new tanks installed in the FeCN tanks in September 1992:

Tank C-109			Tank C-112			Tank BY-104			Tank BY-110		
Inches from			Inches from			Inches from			Inches from		
TC#	Tank Bottom		TC#	Tank Bottom		TC#	Tank Bottom		TC#	Tank Bottom	
1	6		1	6		1	4		1	4	
2	12		2	16		2	28		2	28	
3	18		3	26		3	52		3	52	
4	24		4	36		4	88		4	88	
5	30		5	46		5	124		5	124	
6	74		6	77		6	288		6	288	
7	100		7	102							
8	125		8	128							
9	150		9	153							
10	175		10	178							

Temperature probes inserted in LOWs are approximately 12 in. from the bottom of the tank, and have one reading only. Less than 60 of the 149 SSTs have LOWs installed.

- (8) Calculations for Total Waste Inches: $\frac{\text{Kgal waste} - 12.5 \text{ Kgal waste}^*}{2.75 \text{ Kgal/inch}} + 12 \text{ inches}^*$

* The bottom 12 inches in these curved bottom tanks contains 12.5 Kgal.

Inches are from centerline tank bottom.

Waste Kgal are taken from Monthly Summary Report, SST Inventory and Status by Tank.

- (9) The revised engineering evaluation, WHC-SD-WM-ER-134 REV 0-A, "Engineering Evaluation of Thermocouples in FeCN Watch Tanks," dated January 24, 1992, specifies the classification of the thermocouple conditions as follows:

Good - indicated temperature compares favorably to the temperature measured by another thermocouple in an LOW

Acceptable - thermocouples with measured resistance values within normal limits and an indicated temperature within an expected range

Marginal - thermocouples with higher than normal (0.5 ohms to 20 ohms depending on length) loop resistance, higher than normal resistance in one lead to ground, or having some other abnormality, e.g. inconsistent resistance measurements

Failed - those thermocouples with either open circuits or loop resistance greater than 100 ohms

Footnotes continued next page

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYANIDE (Watch List Tanks) (Sheet 4 of 5)

Footnote (9) continued

The highest temperature reading, if Good, Acceptable, or Marginal, is used in sheet 1 of Table 2. Failed thermocouples are not used. Some FeCN tanks are connected to the Tank Monitoring & Control System (TMACSs) and readings are being received. TMACS readings on these tanks will begin in the November report because final test procedures and documentation were not completed until October 23, 1992. Tanks connected to TMACS are identified in this footnote. Most other comments refer to manual field reading conditions.

Tank No.	Thermocouple Condition for Manual Readings	Comments
102-BX	#1 thru 11 - Acceptable	11 TCs connected to switch
106-BX	#1, 3 thru 13 - Marginal #2 - Failed #14 - Acceptable	12 TCs connected to switch
110-BX	#1 thru 14 Acceptable	Not connected to switch
111-BX	#1 - Acceptable #2 thru 14 - Good	12 TCs connected to switch
101-BY	#1, 2, 3, 5 thru 14 Good #4 - Acceptable	TMACS readings taken from 14 TCs in riser 1.
103-BY	#1 thru 14 Good	TMACS readings taken from 14 TCs in riser 1.
104-BY	#1 thru 6 - Acceptable	TMACS readings taken from 6 TCs each in risers 1 and 10A. New tree installed in riser 1 in 1983. Additional tree installed in riser 10A in 9/92. Manual readings in riser 10A are taken by Instrument Technician.
105-BY	#1 thru 6 - Good (Riser 10C) #1 thru 9, 12 thru 14 Good #10, 11 - Failed/Not repairable (Riser 1)	TMACS readings taken from 6 TCs in riser 10C and from 10 TCs in riser 1 (TC#10 & 11 out of service). New tree installed in Riser 10C in 1983. Switch positions and TC numbers are not in agreement when taken manually. TC#1 thru 6 on data sheet are taken in switch positions 1 thru 6 in riser 10C. TC#7 thru 16 on data sheet are taken in switch positions 1 thru 10 in riser 1. TC#11 thru 14 in riser 1 are not connected to switch.
106-BY	#1 thru 6 - Acceptable	TMACS readings taken from 6 TCs in riser 1.
107-BY	#1 thru 14 - Marginal	New tree installed in riser 1 in 1983. TMACS readings taken from 14 TCs in riser 1.

Footnotes continued next page

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYANIDE (Watch List Tanks) (Sheet 5 of 5)

Tank No.	Thermocouple Condition for Manual Readings	Comments
108-BY	#1, 2, 3, 6, 9 - Marginal #4, 5, 7, 8, 10 - Acceptable	TMACS readings taken from 10 TCs in riser 8.
110-BY	#1 thru 6 - Good	TMACS readings taken from 6 TCs each in risers 1 and 10A. New tree installed in riser 1 in 1983. Additional tree installed in riser 10A 9/92. Manual readings in riser 10A are taken by Instrument Technician
111-BY		TMACS readings taken in LOW in riser 1 (1 reading).
112-BY		TMACS readings taken in LOW in riser 1 (1 reading).
108-C	#1, 7, 8 - Marginal #2, 3, 5, 9, 10, 11 - Acceptable #4, 6 - Failed	11 TCs connected to switch
109-C	#1, 3 - Acceptable #2, 4 thru 11 Marginal	11 TCs connected to switch Additional tree installed 9/92 with 10 thermocouples. Readings are being taken by Instrument Technician
111-C	#1, 3, 9, 10, 11 - Failed #2, 4 thru 8 - Acceptable	11 TCs connected to switch
112-C	#1, 3 thru 11 Acceptable #2 - Failed	11 TCs connected to switch Additional tree installed 9/92 with 10 thermocouples. Readings are being taken by Instrument Technician.
101-T	#1, 3 - Failed #2, 4 thru 11 Acceptable	11 TCs connected to switch Readings taken by Instrument Technician using iron lead pipe (no LOW)
107-T	#1 thru 4 - Failed #5 thru 10 - Acceptable #11 - Marginal	11 TCs connected to switch Readings taken by Instrument Technician using iron lead pipe (no LOW)
118-TX	#1 thru 5, 7 thru 14 - Good #6 - Marginal	TMACS reading taken from 14 TCs in riser 3.
101-TY	#1 thru 10, 12 thru 14 - Acceptable #11 - Marginal	TMACS readings taken from 14 TCs in riser 4.
103-TY	#2, 3, 5 thru 14 - Marginal #1, 4 - Failed/Not repairable	TMACS readings taken from 12 TCs in riser 4 (TCS#1 and 4 out of service). When taken manually, readings are taken in LOW.
104-TY	#1 thru 14 - Marginal	TMACS readings taken from 14 TCs in riser 4.

**TABLE 3. TANKS WITH POTENTIAL FOR HYDROGEN OR FLAMMABLE GAS ACCUMULATION
ABOVE THE FLAMMABILITY LIMIT (Watch List Tanks)**

These tanks have been declared an Unreviewed Safety Question (USQ) because of the potential consequences of a radiological release resulting from a flammable gas burn, an event not analyzed in previous safety analyses.

Temperatures in these tanks did not exceed the applicable maximum temperature criteria or surveillance frequency limits for the month of November 1992. All Watch List tanks are reviewed for increasing temperature trends.

Tank No.	Highest Temp. Reading		Date	Probe (4) Position	Total Waste (5) (inches)	Monitoring Frequency	Assumed Leaked		Interim Stabilized	
	This Month (F.)						Date	Date	Date	Date
101-A		155	11/26/92	TC#9	354	Weekly	SOUND	SOUND	N/A	N/A
101-AX		140	11/26/92	TC#1	279	Weekly	SOUND	SOUND	N/A	N/A
103-AX		118	11/26/92	TC#1	48	Weekly	SOUND	SOUND	8/87	8/87
102-S (3)		108	11/25/92	TC#3	207	Weekly	SOUND	SOUND	N/A	N/A
111-S		93	11/25/92	TC#1	224	Weekly	SOUND	SOUND	N/A	N/A
112-S		9	11/12/92	TC#3	239	Weekly	SOUND	SOUND	N/A	N/A
101-SX		141	11/25/92	TC#1	173	Weekly	SOUND	SOUND	N/A	N/A
102-SX		155	11/25/92	TC#1	205	Weekly	SOUND	SOUND	N/A	N/A
103-SX		180	11/25/92	TC#1	245	Weekly	SOUND	SOUND	N/A	N/A
104-SX		174	11/25/92	TC#1	231	Weekly	1988	1988	N/A	N/A
105-SX		185	11/19/92	TC#1	256	Weekly	SOUND	SOUND	N/A	N/A
106-SX (3)		112	11/13/92	TC#1	203	Weekly	SOUND	SOUND	N/A	N/A
109-SX (2)		148	11/24/92	Tree 8/TC#1	98	Weekly	1965	1965	5/81	5/81
110-T		62	11/19/92	TC#1	145	Weekly	SOUND	SOUND	N/A	N/A
103-U		88	11/21/92	TC#3	178	Weekly	SOUND	SOUND	N/A	N/A
105-U		94	11/05/92	TC#3	159	Weekly	SOUND	SOUND	N/A	N/A
108-U		88	11/28/92	TC#2	178	Weekly	SOUND	SOUND	N/A	N/A
109-U		86	11/21/92	TC#2	176	Weekly	SOUND	SOUND	N/A	N/A
103-AN (1)		115	11/30/92			Weekly	SOUND	SOUND	N/A	N/A
104-AN (1)		121	11/30/92			Weekly	SOUND	SOUND	N/A	N/A
105-AN (1)		110	11/30/92			Weekly	SOUND	SOUND	N/A	N/A
101-AW (1) (6)		105	11/30/92			Weekly	SOUND	SOUND	N/A	N/A
101-SY (1)		125	11/17/92			Daily	SOUND	SOUND	N/A	N/A
103-SY (1)		109	11/09/92			Weekly	SOUND	SOUND	N/A	N/A
24 Tanks										
Legend: Tree = Thermocouple Tree TC = Thermocouple										

(1) Double-shell tanks

(2) This tank has the potential for flammable gas accumulation only because other SX tanks vent through it

(3) These tanks also contain potentially high concentrations of organic salts

(4) In most SSTs, TC#1 is located approximately 4" above the bottom of the tank, with each succeeding TC located 24" above the previous TC.

See footnote (7) in Table 5 (High Heat Tanks) for further information.

(5) See footnote (8) in Table 5 (High Heat Tanks) for Total Waste Inches calculations.

(6) Tank 241-AW-101 was added to this list in accordance with Occurrence Report RL-WHC-TANKFARM-1992-0083.

**TABLE 4. SINGLE-SHELL TANKS CONTAINING CONCENTRATIONS OF ORGANIC SALTS
>3% WEIGHT TOC (Watch List Tanks)**

These tanks have organic chemicals which are potentially flammable and mixtures of organic materials mixed with nitrate and nitrate salts can deflagrate. They are listed here because of their "potential for release of high level waste because of uncontrolled increases in the temperature or pressure." Double-Shell tanks having >3% TOC are not on the Watch List because they contain mostly liquid and there is no credible organic safety concern for tanks which contain mostly liquid. The safety concern is with tanks that primarily contain solids because they could dry out and heat up, and "high organic concentrations in the tanks could support an exothermic reaction at elevated temperatures (350 degrees F/180 degrees C)."

Temperatures in these tanks did not exceed the applicable maximum temperature criteria or surveillance frequency limits for the month of November 1992. These tanks are monitored weekly.
All Watch List tanks are reviewed for increasing temperature trends.

Tank No.	Highest Temp. Reading		Date	Probe (4) Position	Total		Assumed Leaked	Date	Interim Stabilized
	This Month (F.)	Waste (5) Inches							
103-B	66		11/28/92	TC#1	29		1978		2/85
103-C (3)	128		11/28/92	TC#2	78		SOUND		N/A
102-S (1)	108		11/25/92	TC#3	207		SOUND		N/A
106-SX (1)	112		11/13/92	TC#1	203		SOUND		N/A
105-TX	100		11/24/92	TC#4	228		1977		9/83
118-TX (2)	78		11/29/92	TC#1	134		SOUND		4/83
106-U	82		11/28/92	TC#2	90		SOUND		N/A
107-U	79		11/28/92	TC#3	155		SOUND		N/A
8 Tanks									

Legend: TC = Thermocouple

Legend: TC = Thermocouple

- (1) These tanks also have the potential for hydrogen or flammable gas accumulation
 (2) This tank also contains ferrocyanide
 (3) This tank was added due to the presence of a separable organic layer found on the surface
 (4) In most SSTs, TC#1 is located approximately 4" above the bottom of the tank, with each succeeding TC located 24" above the previous TC.
 See footnote (7) in Table 5 (High Heat Tanks) for further information.
 (5) See footnote (8) in Table 5 (High Heat Tanks) for Total Waste Inches calculations.

TABLE 5. SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>40,000 Btu/h)(Sheet 1 of 2)

High heat load tanks have temperature surveillance requirements established by SD-WM-SAR-006 REV 1, "SST Isolation Safety Analysis Report," dated January 1986, and OSD-T-151-00013 REV D-O, "Operating Specifications for Single-Shell Waste Storage Tanks," dated August 1990. These requirements do not apply to the temperature laterals beneath 105-A.

Temperatures in these tanks did not exceed SAR or OSD requirement limits for the month of November 1992.

All high heat load tanks are on active ventilation. These high heat tanks are reviewed for increasing temperature trends.

Tank No.	Highest		Total			Monitoring Frequency	Estimated Heat Load (1) (Btu/h)	Assumed Leaked Date	Interim Stabilized Date
	Temp. Reading this Month (F.)	Date	Probe Position (7)	Waste Inches (8)	Waste Inches (8)				
104-A (4)	199	11/30/92	R-18	18	18	Weekly	50000	14.65	1975
105-A (4)	143	11/19/92	R-16	14	14	Weekly	50000	14.65	1963
105-C (2)(6)	100	10/28/92	TC#1	62	62	Monthly	42000	11.72	SOUND
106-C (2)(3)(6)	163	11/22/92	Riser 8/TC#1	91	91	Weekly	150000	43.96	SOUND
107-SX	122	11/17/92	Riser 14/TC#1			Weekly			N/A
108-SX	163	11/05/92	Tree 2&8/TC#1	45	45	Monthly	42000	11.72	1964
109-SX (3)	193	11/05/92	Tree 8/TC#1	49	49	Monthly	45000	13.19	1962
110-SX	148	11/24/92	Tree 2/TC#1	98	98	Weekly	50000	14.65	1965
111-SX	169	11/05/92	Tree 2/TC#1	30	30	Monthly	42000	11.72	1976
112-SX	185	11/05/92	Tree 2/TC#1	53	53	Monthly	44000	12.90	1974
114-SX	156	11/05/92	Tree 8/TC#1	41	41	Monthly	43000	12.60	1969
11 Tanks	183	11/05/92	Tree 2/TC#1	73	73	Monthly	58000	17.00	1972
Legend: Probe Position Tree=Thermocouple Tree TC=Thermocouple on Tree R=Riser									
105-A Laterals (5)	245	11/30/92				Weekly			
Temperatures are taken in 34 thermocouples located beneath 105-A; although not regulated by SAR-006, the same criteria limits are applied.									

Footnotes - see next page

TABLE 5. SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>40,000 Btu/h)(Sheet 2 of 3)

Footnotes

- (1) High heat loads as of 1988, evaluation completed April 20, 1989 (1kW = Btu/h). The predominant heat load for these tanks is from CS 137 (half life of 30 yr) and SR 90 (half life of 28.1 yr).
- (2) Periodic water additions are required in these tanks to maintain evaporative cooling and thus prevent overheating. Both tanks are scheduled for interim stabilization in 1996, at which time cooling water additions will be discontinued.
- (3) Watch List Tanks: 106-C is on the Watch List because "without water additions (in the event of a leak) the tank could exceed structural temperature limits resulting in unacceptable structural damage." 109-SX is on the hydrogen Watch List because it has the potential for flammable gas accumulation due to other SX tanks venting through it.
- (4) 104/105-A exhauster was out of service from October 1, 1991, until August 20, 1992, when it was briefly restarted. Problems exist which must be resolved before the exhauster is operational. These temperatures are closely monitored.
- (5) Maximum lateral temperatures under 105-A increased 20 degrees F. by January 1992, but then dropped a few degrees and have remained fairly stable at current temperature. These temperatures are being closely monitored.
- (6) 105/106-C exhauster was out of service from January 25 to June 7, 1992, when the exhauster was restarted. Temperatures in both tanks have returned to baseline. Although 105-C is required to be monitored monthly, it is actually monitored weekly.

Footnotes continued

TABLE 5. SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>40,000 Btu/h)(Sheet 3 of 3)

Footnotes continued

- (7) Tanks 104-A and 105-A
Two temperature probes are installed in risers in 104-A, and six are installed in risers in 105-A. These are individual probes. In 104-A, the probes are in contact with the sludge; in 105-A, they are in contact with the bottom of the tank (105-A has a bulged bottom).

Tanks 105-C and 106-C
Tank 105-C has four functioning thermocouples (#1 through 4). 106-C has six functioning thermocouples (#1 through 6).

TC Number	1	2	3	4	5	6
Inches from bottom of tank	4	28	52	76	100	288

Tanks 107, 108, 109, 110, 111, 112, and 114-SX
Each of these tanks has eight thermocouple trees, with eight thermocouples on each tree. Tree #2 and Tree #8 are monitored in each tank.

TC Number	1	2	3	4	5	6	7	8
Inches from bottom of tank	4	12	21	29	38	46	54	62

- (8) Calculations for Total Waste Inches:
$$\frac{\text{Kgal waste} - 12.5 \text{ Kgal waste}^*}{2.75 \text{ Kgal/inch}} + 12 \text{ inches}^*$$
- * The bottom 12 inches in these curved bottom tanks contains 12.5 Kgal. Inches are from centerline tank bottom.
Waste Kgal are taken from Monthly Summary Report, SST Inventory and Status by Tank section

TABLE 6. DOUBLE-SHELL TANK WASTE TYPE AND SPACE ALLOCATION

November 1992

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE		SPACE DESIGNATED FOR SPECIFIC USE	
Complexant Concentrate (102-AN, 107-AN, 101-AY, 101-SY, 103-SY)	4.97 Mgal	Spare Tanks (3) (1 Aging & 1 Non-Aging Waste Tank)	2.28 Mgal
Concentrate Phosphate (106-AN)	1.13 Mgal	Segregated Tank Space (102-AN, 107-AN, 103-AW, 101-AY)	0.66 Mgal
Double-Shell Slurry and Slurry Feed (103-AN, 104-AN, 105-AN, 105-AP, 101-AW)	5.1 Mgal	Watch List Tank Space (103-AN, 104-AN, 105-AN, 101-SY, 103-SY)	0.69 Mgal
Neutralized Current Acid Waste (101-AZ, 102-AZ)	1.20 Mgal	Priority Tank Space (2) (101-AN, 102-AW, 106-AW, 102-SY)	1.57 Mgal
Dilute Waste (1) (101-AN, 101-AP, 103-AP, 106-AP, 107-AP, 108-AP, 102-AW, 103-AW, 104-AW, 105-AW, 106-AW, 101-AY, 102-AY, 102-AZ, 102-SY)	11.38 Mgal	Miscellaneous Head Space	0.19 Mgal
TOTAL DOUBLE-SHELL TANK SPACE			5.39 Mgal
NCRW and PFP Settled Solids (103-AW, 105-AW, 102-SY)	1.01 Mgal	24 Tanks at 1140 Kgal 4 Tanks at 980 Kgal	27.36 Mgal 3.92 Mgal
Total Inventory:			31.28 Mgal
		Total Available Space	31.28 Mgal
		Double-Shell Tank Inventory	- 24.79 Mgal
		Space Designated for Specific Use	- 5.39 Mgal
		Remaining Unallocated Space	1.10 Mgal

(1) Easily reduced in volume by Evaporator/LERF

(2) Reduced by Saltwell Liquid pumping

(3) 241-101-AY and 102-AY: a minimum liquid level is set to provide extra protection against any bottom uplifting of the tank's steel liner. WHC-SD-WM-TI-357 "Waste Storage Tank Status and Leak Detection Criteria," specifies 64 in. as the minimum surface level measurement when the annulus system is in operation, and 18 in. if the annulus ventilation system is shut down. See also OSD-T-151-0007, "Unclassified Operating Specifications for the 241AN, 241AP, 241AW, 241AY and 241SY Tank Farms." Because of space availability, waste is stored in 102-AY, the aging waste spare tank. In case of a leak, the contents of 102-AY will be distributed to any other DST(s) having available space.

Note: Net change since last month: inventory increased 25 Kgal

TABLE 7. AUTOMATIC FOOD INSTRUMENT COMPANY (FIC) GAUGES OUT OF SERVICE

November 1992

Date of Last
Automatic

Tank No.	Category	FIC Reading	Reading Status	Comments	Monitoring Frequency
104-BX	IS	11/16/92	No reading taken since 11/16/92	Out of compliance as of 11/23/92	Weekly
109-BY	-	10/20/92	No reading taken since 11/20/92	Out of compliance as of 11/27/92	Weekly
103-SX	-	11/07/92	No reading taken since 11/28/92	Out of compliance as of 11/29/92	Daily
107-U	-	11/23/92	No reading taken since 11/26/92	In compliance as of 11/30/92	Weekly
102-B	IS	07/20/92	Taking manual FIC readings	In compliance	Quarterly
106-B	IS	07/20/92	Taking manual FIC readings	In compliance	Quarterly
112-B	IS	04/11/92	Taking manual FIC readings	In compliance	Quarterly
S-Farm	-	09/26/92	Taking manual FIC readings	In compliance	Weekly
105-SX	-	09/26/92	Taking manual FIC readings	In compliance	Weekly
101-T	-	12/02/91	Taking manual FIC readings	In compliance	Daily
102-T	IS	05/26/91	Taking manual FIC readings	In compliance	Quarterly
103-T	IS	10/28/91	Taking manual FIC readings	In compliance	Quarterly
107-T	-	06/22/92	Taking manual FIC readings	In compliance	Weekly
112-T	IS	03/16/90	Taking manual FIC readings	In compliance	Quarterly
109-T	IS	04/20/92	Taking manual FIC readings	In compliance	Weekly
104-TX	IS	07/27/92	Taking manual FIC readings	In compliance	Monthly
118-TX	IS	12/31/91	Taking manual FIC readings	In compliance	Quarterly
103-U	-	11/09/92	Taking manual FIC readings	In compliance	Quarterly
105-U	-	11/17/92	Taking manual FIC readings	In compliance	Weekly
102-AN	DST	10/28/92	Taking manual FIC readings	In compliance	Weekly
102-AP	DST	10/21/92	Taking manual FIC readings	In compliance	Daily
108-AP	DST	07/24/92	Taking manual FIC readings	In compliance	Daily
101-SY	DST	08/23/91	Taking manual FIC readings	In compliance	Daily
103-SY	DST	09/26/92	Taking manual FIC readings	In compliance	Daily
101-AW	DST	10/23/92	Taking manual tape readings	In compliance	Daily
103-AW	DST	03/21/92	Taking manual tape readings	In compliance	Daily
105-AW	DST	01/30/92	Taking manual tape readings	In compliance	Daily
101-AY	DST	08/31/90	Taking manual tape readings	In compliance	Daily
101-AZ	DST	02/02/90	Taking manual tape readings	In compliance	Daily
102-AZ	DST	02/15/90	Taking manual tape readings	In compliance	Daily
102-SY	DST	01/06/92	Taking manual tape readings	In compliance	Daily
Catch Tanks					
A-302-A		04/16/91	Taking manual FIC reading	In compliance	Daily
S-302		07/02/90	Taking manual FIC reading	In compliance	Daily
S-302-A		12/04/91	No reading taken since 12/04/91	Out of compliance as of 12/05/91	Daily
Legend:	IS = Interim Stabilized DST = Double-Shell Tank				

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 1 of 4)

The following table indicates whether Single-Shell tank monitoring is in compliance with the requirements as specified in the applicable documents:

NOTE:

All Watch List and High Heat tank temperature monitoring is in compliance.

All Dome Elevation Survey monitoring is in compliance.

All Drywell monitoring is in compliance.

Psychrometrics (2)

In-tank Photographs (3)

LEGEND:

(Shaded)	= In compliance with all applicable documentation
O/C	= Out of compliance with documentation
-357	= WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria"
POP	= Plant Operating Procedure TO-040-650, "Obtain/Record SST Temperatures"
M.T.	= Manual Tape
FIC	= Food Instrument Company
OSR/SAR	= Operations Safety Requirements/Safety Analysis Report Requirements
OSD	= Operating Specifications Document
N/A	= Not Applicable (i.e., no LOW, M.T, FIC installed)
O/S	= Out of Service
Gamma	= LOW readings taken by Gamma probe
Neutron	= LOW readings taken by Neutron probe

Information as of 11/30/92

Tank Number	Category		Temperature Readings (5)	Surface Level Readings (1) (-357)		LOW Readings (-357)		Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List	High Heat		M.T.	FIC	Gamma	Neutron	Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
101-A	X				N/A			O/C		
102-A				N/A		N/A	N/A	O/C		
103-A				N/A				O/C		
104-A		X			N/A	N/A	N/A	O/C		
105-A		X			N/A	N/A	N/A	O/C		
106-A				N/A		N/A	N/A	O/C		
101-AX	X			N/A						
102-AX					N/A	N/A	N/A			
103-AX	X			N/A		N/A	N/A			
104-AX					N/A	N/A	N/A			
101-B				N/A		N/A	N/A			
102-B				N/A		N/A	N/A			
103-B	X			N/A		N/A	N/A			
104-B					N/A					
105-B					N/A					
106-B				N/A		N/A	N/A			
107-B					N/A	N/A	N/A			
108-B				N/A		N/A	N/A			
109-B					N/A	N/A	N/A			
110-B					N/A	N/A	N/A			
111-B				N/A		N/A	N/A			
112-B				N/A		N/A	N/A			
201-B					N/A	N/A	N/A			
202-B					N/A	N/A	N/A			
203-B					N/A	N/A	N/A			
204-B					N/A	N/A	N/A			
101-BX					N/A	N/A	N/A			
102-BX	X				N/A	N/A	N/A			
103-BX			O/C	N/A		N/A	N/A			
104-BX			O/S-O/C	N/A	O/C	N/A	N/A			
105-BX				N/A		N/A	N/A			
106-BX	X			N/A		N/A	N/A			
107-BX			O/C	N/A		N/A	N/A			

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 2 of 4)

Information as of 11/30/92

Tank Number	Category		Temperature Readings (5)	Surface Level Readings (1) (-357)		LOW Readings (-357)		Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List	High Heat		M.T.	FIC	Gamma	Neutron	Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
108-BX			O/C		N/A	N/A	N/A	N/A		
109-BX			O/C	N/A		N/A	N/A	N/A		
110-BX	X				N/A	N/A	N/A	N/A		
111-BX	X				N/A			N/A		
112-BX			O/C	N/A		N/A	N/A	N/A		
101-BY	X				N/A			N/A		
102-BY			O/S-O/C		N/A			N/A		
103-BY	X				N/A			N/A		
104-BY	X				N/A			N/A		
105-BY	X				N/A			N/A		
106-BY	X				N/A			N/A		
107-BY	X				N/A			N/A		
108-BY	X				N/A	N/A	N/A	N/A		
109-BY			O/S-O/C	N/A	O/C			N/A		
110-BY	X				N/A			N/A		
111-BY	X				N/A			N/A		
112-BY	X				N/A	O/C		N/A		
101-C					N/A	N/A	N/A	N/A		
102-C				N/A		N/A	N/A	N/A	N/A	
103-C	X			N/A		N/A	N/A	N/A		
104-C				N/A		N/A	N/A	N/A		
105-C		X		N/A		N/A	N/A	N/A		
106-C (4)	X	X		N/A		N/A	N/A	N/A		
107-C				N/A		N/A	N/A	N/A		
108-C	X				N/A	N/A	N/A	N/A		
109-C	X				N/A	N/A	N/A	N/A		
110-C					N/A	N/A	N/A	N/A		
111-C	X				N/A	N/A	N/A	N/A		
112-C	X				N/A	N/A	N/A	N/A		
201-C					N/A	N/A	N/A	N/A		
202-C					N/A	N/A	N/A	N/A		
203-C					N/A	N/A	N/A	N/A		
204-C			O/C		N/A	N/A	N/A	N/A		
101-S				N/A				N/A		
102-S	X			N/A				N/A		
103-S				N/A				N/A		
104-S					N/A	N/A	N/A	N/A		
105-S				N/A				N/A		
106-S				N/A				N/A		
107-S				N/A		N/A	N/A	N/A		
108-S								N/A		
109-S				N/A				N/A		
110-S				N/A				N/A		
111-S	X			N/A				N/A		
112-S	X			N/A				N/A		
101-SX	X			N/A				N/A		
102-SX	X			N/A				N/A		
103-SX	X			N/A	O/C			N/A		
104-SX	X			N/A		O/S-O/C	O/S-O/C	N/A		
105-SX	X			N/A				O/C		
106-SX	X			N/A				N/A		
107-SX		X			N/A	N/A	N/A	O/C		
108-SX		X			N/A	N/A	N/A	O/C		

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
 149 TANKS (Sheet 3 of 4)

Information as of 11/30/92

Tank Number	Category		Temperature Readings (5)	Surface Level Readings (1)		LOW Readings (-357)		Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List	High Heat		M.T.	FIC	Gamma	Neutron	Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
109-SX (4)	X	X			N/A	N/A	N/A	O/C		
110-SX		X			N/A	N/A	N/A	O/C		
111-SX		X			N/A	N/A	N/A	O/C		
112-SX		X			N/A	N/A	N/A	O/C		
113-SX					N/A	N/A	N/A	N/A		
114-SX		X			N/A	N/A	N/A	O/C		
115-SX			O/S - O/C		N/A	N/A	N/A	O/C		
101-T	X			N/A		N/A	N/A	N/A		
102-T			O/S - O/C	N/A		N/A	N/A	N/A		
103-T				N/A		N/A	N/A	N/A		
104-T					N/A			N/A		
105-T			O/S - O/C	N/A		N/A	N/A	N/A		
106-T				N/A		N/A	N/A	N/A		
107-T	X			N/A		N/A	N/A	N/A		
108-T			O/C		N/A	N/A	N/A	N/A		
109-T			O/C	N/A		N/A	N/A	N/A		
110-T	X			N/A				N/A		
111-T				N/A				N/A		
112-T				N/A		N/A	N/A	N/A		
201-T					N/A	N/A	N/A	N/A		
202-T					N/A	N/A	N/A	N/A		
203-T					N/A	N/A	N/A	N/A		
204-T					N/A	N/A	N/A	N/A		
101-TX			O/S - O/C	N/A		N/A	N/A	N/A		
102-TX			O/C		N/A			N/A		
103-TX			O/C	N/A		N/A	N/A	N/A		
104-TX			O/C	N/A		N/A	N/A	N/A		
105-TX	X				N/A	O/S-O/C	O/S-O/C	N/A		
106-TX			O/C		N/A			N/A		
107-TX			O/C	N/A		N/A	N/A	N/A		
108-TX			O/C	N/A				N/A		
109-TX			O/C	N/A				N/A		
110-TX			O/C		N/A			N/A		
111-TX			O/C		N/A			N/A		
112-TX			O/C		N/A			N/A		
113-TX			O/C		N/A			N/A		
114-TX			O/C		N/A			N/A		
115-TX			O/C		N/A			N/A		
116-TX			O/S - O/C		N/A	N/A	N/A	N/A		
117-TX			O/C		N/A	O/C		N/A		
118-TX	X			N/A		O/C		N/A		
101-TY	X			N/A		N/A	N/A	N/A		
102-TY				N/A		O/C	N/A	N/A		
103-TY	X			N/A		O/C		N/A		
104-TY	X			N/A		N/A	N/A	N/A		
105-TY					N/A	N/A	N/A	N/A		
106-TY					N/A	N/A	N/A	N/A		
101-U					N/A	N/A	N/A	N/A		
102-U				N/A				N/A		
103-U	X			N/A				N/A		
104-U			O/S - O/C		N/A	N/A	N/A	N/A		
105-U	X			N/A				N/A		
106-U	X			N/A				N/A		

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 4 of 4)

Information as of 11/30/92

Tank Number	Category		Temperature Readings (5)	Surface Level Readings (1) (-357)		LOW Readings (-357)		Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List	High Heat		M.T.	FIC	Gamma	Neutron	Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
107-U	X			N/A	O/S			N/A		
108-U	X			N/A				N/A		
109-U	X			N/A				N/A		
110-U				N/A		N/A	N/A	N/A		
111-U				N/A				N/A		
112-U					N/A	N/A	N/A	N/A		
201-U					N/A	N/A	N/A	N/A		
202-U					N/A	N/A	N/A	N/A		
203-U			O/C		N/A	N/A	N/A	N/A		
204-U			O/C		N/A	N/A	N/A	N/A		
Catch Tanks										
A-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
A-302-B	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
311-ER	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
Vent Sta.	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A	N/A
151-AZ	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
154-AZ	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
S-302	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
S-302-A	N/A	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A
TX-302-B	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A	N/A
TX-302-C	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
U-301-B	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
UX-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
141-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
142-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
Totals: 149 tanks	48 Watch List Tanks (4)	11 High Heat Tanks (4)	O/C: 33 tanks - (semiannual monitoring frequency) (5)	O/C: 2 tanks	O/C: 4 tanks	O/C: 6 tanks	O/C: 2 tanks	O/C: 15 tanks	0	0
						58 tanks have LOWs (2 are O/S)				

- (1) All SSTs have either manual tape or FIC, with the exception of 108-S which has both. All SST FICs are connected to CASS, (with the exception of 106-BX); however, the connection for many tanks is broken. For such cases, manual field readings are taken. Manual surface level readings include readings taken by manual tape, manual FIC (not connected to Computer Automated Surveillance System, 106-BX), manual readings of automatic FIC (if CASS is printing "0"), or automatic FIC. In some cases, the surface level readings are taken using a zip cord. While less accurate, such readings are acceptable for meeting the surface level reading requirements.
- (2) Psychrometric readings are taken on tanks with active exhausters (High heat tanks 104/105-A, 105/106-C, 107, 108, 109, 110, 111, 112, and 114-SX). Psychrometrics were not taken from 9/91 to 9/92. Exhauster down on 104/105-A since 10/1/91. 105/106-C and SX tanks have resumed psychrometric readings on a monthly frequency. Psychrometric frequency not specified in -357 or operating procedures.
- (3) In-tank Photographs are not required by -357. Last in-tank photographs in SSTs were taken September 1990.
- (4) Two tanks are on both category lists (106-C, 109-SX).
- (5) Temperature readings may be regulated by OSD, -357, or POP. Additionally, high heat load tanks are regulated by OSR/SAR. Thermocouples in the 9 tanks designated O/S-O/C are out of service; there are either no thermocouple probes in these tanks, or probes have been cut off, covered over, or are otherwise not functioning. The OSD does not require readings or repair of out-of-service thermocouples in non-heat load (>40,000 Btu/hr) tanks.

BM Hanlon, 12/23/92

**TABLE 9. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS
28 TANKS**

The following table indicates whether Double-Shell tank monitoring is in compliance with the requirements as specified in the applicable documents:

NOTE:

All DST tank temperature tree monitoring is in compliance.

Dome Elevation Surveys are not required for DSTs.

Psychrometrics (2)

In-tank Photographs (3)

LEGEND:

(Shaded)	= In compliance with all applicable documentation
O/C	= Out of compliance with documentation
-357	= WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria"
M.T.	= Manual Tape
FIC	= Food Instrument Company
OSR/SAR	= Operations Safety Requirements/Safety Analysis Report Requirements
N/A	= Not Applicable (i.e., no M.T., FIC installed)
O/S	= Out of Service
W.F.	= Weight Factor
Rad.	= Radiation

Information as of 11/30/92

Tank Number	Watch List	Temperature Readings (4) (OSR/SAR)	Surface Level Readings (1) (-357, OSR/SAR)		Radiation Readings		
			M.T.	FIC	Leak Detection Pits (5) (-357, OSR/SAR)		Annulus (-357)
					W.F.	Rad.	
101-AN			N/A				
102-AN			N/A				
103-AN	X		N/A				
104-AN	X		N/A			O/C	
105-AN	X		N/A				
106-AN			N/A				
107-AN			N/A				
101-AP							
102-AP							
103-AP							
104-AP							
105-AP							
106-AP							
107-AP							
108-AP							
101-AW	X			O/S		O/C	
102-AW							
103-AW				O/S			
104-AW							
105-AW				O/S			
106-AW							
101-AY				O/S			O/C
102-AY							O/C
101-AZ				O/S			O/C
102-AZ				O/S			O/C
101-SY	X					O/C	
102-SY				O/S		O/C	
103-SY	X					O/C	
Totals: 28 tanks	6 Watch List Tanks	O/C: 0 (4)	O/C: 0	O/C: 0	O/C: 0	O/C: 5 tanks	O/C: 4 tanks

- (1) All DSTs have both manual tape and FIC, with the exception of the AN Tank Farm which only has FICs. The manual tape is used when the FIC is out of service. O/C will be shown when no readings are obtained.
- (2) Psychrometric readings are taken on DSTs. All DSTs are equipped with active exhausters. Psychrometrics were not taken from 9/91 to 9/92; readings on some tanks were resumed beginning October 1992. Frequency of psychrometric monitoring is not specified in -357 or operating procedures.
- (3) In-tank photographs are not required by -357. Last in-tank photographs in DSTs were taken April 1989.
- (4) DST temperature tree readings are taken weekly, with the exception of 101-SY which are obtained shiftwise with increased readings taken prior to and following gas venting.
- (5) Failure of both leak detection systems requires repair of at least one system within 5 working days. Failure of one system only, repair must be within 10 working days. Per -357. If repair of out-of-service systems exceeds these timeframes, systems are O/C. Out-of-service systems which have not exceeded these timeframes will be shown as O/S.

Figure 1. FY 93 Integrated Core Sample Schedule

CURRENT STATUS AND CONTINGENCY SPACE FOR THE 242-A EVAPORATOR RESTART

Figure 2. Current Status and Contingency Space for the 242-A Evaporator Restart

APPENDIX A

**TANK AND EQUIPMENT CODE
AND STATUS DEFINITIONS**

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TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

November 1992

1. TANK STATUS CODES

WASTE TYPE

AGING	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/PN	Plutonium-Uranium Extraction (PUREX) Neutralized Cladding Removal Waste (NCRW), transuranic waste (TRU)
PT	Plutonium Finishing Plant (PFP) TRU Solids

TANK USE (DOUBLE-SHELL TANKS ONLY)

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

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

F	Food Instrument Company (FIC) Automatic Surface Level Gauge
M	Manual Tape Surface Level Gauge
P	Photo Evaluation
S	Sludge Level Measurement Device

3. DEFINITIONS

WASTE TYPES

Aging Waste (AGING)	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 100 N Area reactor. Concentration of this waste produces concentrated phosphate waste.
Dilute Complexed Waste (DC)	<p>Characterized by a high content of organic carbon including organic complexants:</p> <p>ethylenediaminetetra-acetic acid (EDTA), citric acid, hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), and iminodiacetate (IDA) being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory.</p>

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 liquors not identified as complexed.
PUREX Decladding (PD/PN)	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.
PFP TRU Solids (PT)	TRU solids fraction from PFP Plant operations.
Drainable Interstitial Liquid (DIL)	Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity.
Supernate	The liquid above the solids in waste storage tanks.
Ferrocyanide	A compound of iron and cyanide commonly expressed as FeCN. The actual formula for the ferrocyanide anion is $[\text{Fe}(\text{CN})_6]^{-4}$.

WASTE STATUS

In-Service Tank	The waste classification of a tank being used, or planned for use, for the storage of liquid (in excess of a minimum supernatant liquid heel) in conjunction with production and/or waste processing.
Out-of-Service Tank	A tank which does not meet the definition of an in-service tank. Before September 1988, these tanks were defined as inactive in this report. [Note: All single-shell tanks (SST) are out of service.]

STABILIZATION (Single-Shell Tanks only)

Interim Stabilized (IS)	A tank which contains less than 50,000 gal of drainable interstitial liquid and less than 5,000 gal of supernatant liquid. If the tank was
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jet pumped to achieve interim stabilization, then the jet pump flow must also have been at or below 0.05 gpm before interim stabilization criteria is met.

ISOLATION (Single-Shell Tanks only)

Partially 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.

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.

TANK INVESTIGATION

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

Drywells	Drywells are vertical boreholes with 6-in. (internal diameter) carbon steel casings positioned radially around SSTs. Periodic monitoring is done by gamma radiation or neutron sensors to obtain scan profiles of radiation or moisture in the soil as a function of well depth, which could be indicative of tank leakage. These wells range between 50 and 250 ft in depth, and are monitored between the range of 50 to 150 ft. The wells are sealed when not in use. They are called drywells because they do <u>not</u> penetrate to the water table and are therefore usually "dry." The drywell frequency monitoring schedule calls for 105 drywells weekly, 91 biweekly, 41 monthly, 151 quarterly, and 371 annually.
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 are monitored by radiation detection probes. Laterals are 4-in.

WHC-EP-0182-56

inside diameter steel pipes located 8 to 10 ft below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms.

Surface Levels

The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or inputted to the Computer Automated Surveillance System (CASS).

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 also transmit the reading to the CASS. Some tanks have gauges connected to CASS and others are read manually.

Annulus

The annulus is the space between the inner and outer shells on DSTs. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. Alarms from the annunciators are received by CASS. Continuous Air Monitoring (CAM) alarms are also located in the annulus. 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 constructed of fiberglass, tefzel-reinforced epoxy-polyester resin, sized to extend to within 1 in. of the bottom of the tank steel liner. They are sealed at their bottom ends and have a nominal outside diameter of 3.5 in. Three probes are used to monitor changes in the ILL: acoustic; gamma; and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 58 LOWs (57 are in operation) installed in SSTs that contain or are capable of containing greater than 50,000 gal of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs (102-SY and 103-AW Tanks only) are used for special 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, there may be one or more thermocouple trees installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple 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 Photography	In-tank photographs may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs help determine sludge and liquid levels by visual examination.
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4. INVENTORY AND STATUS BY TANK - COLUMN CALCULATIONS (SINGLE-SHELL TANKS)

COLUMN HEADING

Total Waste	Solids Volume plus Supernatant liquid.
Supernatant Liquid	Drainable Liquid Remaining minus Drainable Interstitial. Supernate is usually derived by subtracting the solids level measurement from the liquid level measurement.
Drainable Interstitial	Drainable Liquid Remaining minus Supernate. Drainable Interstitial Liquid is calculated based on the saltcake and sludge volumes, using average porosity values or actual data for each tank, when available.
Total Jet Pumped	Cumulative total pumped 1979 to date.
Drainable Liquid Remaining	Supernate plus Drainable Interstitial.
Pumpable Liquid Remaining	Drainable Liquid Remaining less undrainable heel volume.
Sludge	Solids formed during sodium hydroxide additions to waste. 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 may be used to estimate the volume.

WHC-EP-0182-56

Saltcake	Results from crystalization and precipitation after concentration of liquid waste, usually in an evaporator. If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs may be used to estimate the saltcake volume.
Solids Volume Update	Indicates the latest update of any change in the solids volume.
Solids Update Source - See Footnote	Indicates the source or basis of the latest solids volume update.
Last Photo Date	Date of latest in-tank photographs taken.
Change Since Last Monthly Report	Indicates any change made since the previous month. Explanation for the change follows the Inventory and Status by Tank section.

APPENDIX B
TANK FARM CONFIGURATION, STATUS, AND
FACILITY CHARTS

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Figure B-1. High-Level Waste Tank Configuration

Figure B-2. Double-Shell Tank Instrumentation Configuration

Figure B-3. Single-Shell Tank Instrumentation Configuration

Figure B-4. Double-Shell Tank Status

1,000,000 gal. tanks Constructed 1954-55

A		10 ¹ H 102	103 ^{AL}	104 ^{AL}	105 ^{AL}	106
		PI	IS/II	IS/II	IS/II	IS/II

1,000,000 gal. tanks Constructed 1963-64

AX		10 ¹ H 102 ^{AL}	103 ^H	104 ^{AL}
		PI	IS/II	IS/II

500,000 gal. tanks Constructed 1943-44

B		10 ¹ AL	102	103 ^{AL}	104	105 ^{AL}	106	107 ^{AL}	108	109	110 ^{AL}	111 ^{AL}	112 ^{AL}
		IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II	IS/II

55,000 gal. tanks

		20 ¹ AL	202	203 ^{AL}	204 ^{AL}
		IS/II	IS/II	IS/II	IS/II

500,000 gal. tanks Constructed 1946-47

BX		10 ¹ AL	102 ^F	103	104	105	106 ^F
		IS/II	IS/II	IS/II	IS/II	IS/II	PI

--	--

107 108^{AL} 109 110^{AL} 111^{AL} 112

IS/PI IS/II IS/PI IS/II PI IS/PI

750,000 gal. tanks Constructed 1948-49

BY 101^F 102 103^{AL} 104^F 105^{AL} 106^{AL}

IS/II PI IS/II PI IS/II PI

107^{AL} 108^{AL} 109 110^F 111^F 112^F

IS/II IS/II PI IS/II IS/II IS/II

500,000 gal. tanks Constructed 1943-44

C 101^{AL} 102 103^o 104 105^{HH} 106^{HH} 107 108^F 109^F 110^{AL} 111^{AL} 112^F

IS/II PI PI IS/II PI IS/II PI IS/II IS/II PI IS/II IS/PI

55,000 gal. tanks

201^{AL} 202^{AL} 203^{AL} 204^{AL}

IS/II IS/II IS/II IS/II

XXX - Total Waste Volume [Solids+Supernatant] (in K gal.)
 XXX - Total liquids (in K gal.)
 XXX [Drainable Interstitial + Supernatant]
 XXX - Sludge (in K gal.)
 (Saltcake Totals Not Shown)

Updated Quarterly 09/30/92

SST-ALL/S.G. SPENCER/12-92

Figure B-5. 200E Single-Shell Tank Status

750,000 gal. tanks Constructed 1950-51

S		101	102 ^H	103	104 ^{AL}	105	106
	PI	PI	PI	IS//	IS//	PI	PI
		107	108	109	110	111 ^H	112 ^H
	PI	PI	PI	PI	PI	PI	PI

1,000,000 gal. tanks Constructed 1953-54

SX		101 ^H	102 ^H	103 ^H	104 ^{AL}	105 ^H	106 ^H	107 ^{AL}	
	PI	PI	PI	PI	PI	PI	PI	IS//	
		108 ^{AL}	109 ^{AL}	110 ^{AL}	111 ^{AL}	112 ^{AL}	113 ^{AL}	114 ^{AL}	115 ^{AL}
	IS//	IS//	IS//	IS//	IS//	IS//	IS//	IS//	

500,000 gal. tanks Constructed 1943-44

T		101 ^F	102	103	104	105	106	107 ^F	108	109	110 ^H	111	112
	PI	IS//	IS//	PI	IS//	IS//	IS//	PI	IS//	IS//	PI	PI	IS//

55,000 gal. tanks

	201	202	203	204
IS//	IS//	IS//	IS//	IS//

750,000 gal. tanks Constructed 1947-48

750,000 gal. tanks Constructed 1951-52

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

Sludge
Saltcake

XXX = Total Waste Volume [Solids+Supernatant](In K gal.)
 XXX = Total liquids (In K gal.)
 XXX = Sludge (In K gal.)
 (Saltcake Totals Not Shown)

AL = Assumed Leaker
 HH = High Heat Tanks
 F = Ferrocyanide (WHC-EP-0399)
 O = Organics
 H = Potential Flammable Gases (Hydrogen)(WHC-EP-0416)

II = Interim Isolated
 IS = Interim Stabilized
 PI = Partially Interim Isolated

Updated Quarterly 09/30/92
 SST-ALL/S.G. SPENCER/12-92

Fig. B-6. 200W Single-Shell Tank Status

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Figure B-7. Tank Farm Facilities - Quick Reference

200 EAST

200 WEST

APPENDIX C

**MONTHLY SUMMARY
TANK USE SUMMARY
INVENTORY SUMMARY BY TANK FARM
INVENTORY AND STATUS BY TANK**

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TABLE C-1. MONTHLY SUMMARY

TANK STATUS

November 1992

	200	
	EAST AREA	WEST AREA
	TOTAL	
IN SERVICE	25	3
OUT OF SERVICE	66	83
SOUND	59	51
ASSUMED LEAKER	32	35
INTERIM STABILIZED (1)	51	54
ISOLATED		
PARTIAL INTERIM	21	30
INTERIM	45	53
		51
		98

WASTE VOLUMES (Kgal/tons)

	200			200	
	EAST AREA	WEST AREA		EAST AREA	WEST AREA
	TOTAL			TOTAL	
SUPERNATANT					
AGING					
CC	1769	0		1769	0
CP	1956	202		2158	3
DC	613	0		613	0
DN	839	1		840	1
DN/PT	9312	0		9312	0
DN/PT	931	0		931	0
DSSF	0	603		603	0
NCPLX	3829	48		3877	56
	234	310		544	544
TOTAL SUPERNATANT	19483	1164		20647	604
SOLIDS					
Double-shell slurry	937	1103		2040	0
Sludge	8206	6215		14421	12466
Saltcake	6577	17352		23929	23169
TOTAL SOLIDS	15720	24670		40390	35635
TOTAL WASTE	35203	25834		61037	36239
AVAILABLE SPACE IN TANKS	5608	877		6485	0
DRAINABLE INTERSTITIAL	2253	4505		6758	6319
DRAINABLE LIQUID REMAINING	21731	5669		27400	6918
				20482	27400

(1) Includes tanks that do not meet current established supernatant and interstitial liquid stabilization criteria, B-104, B-107, B110, B-111, BX-110, T-102, T-112, and U-110.

(2) Includes six double-shell tanks on Hydrogen Watch List not currently in service, 103-AN, 104-AN, 105-AN, 101-AW, 101-SY, and 103-SY.

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

TABLE C-2. TANK USE SUMMARY

November 1992

TANK FARMS	IN SERVICE	OUT OF SERVICE	SOUND	ASSUMED LEAKER	ISOLATED TANKS PARTIAL	INTERIM TANKS	INTERIM STABILIZED TANKS
EAST							
A	0	6	3	3	2	4	5
AN	7 (2)	0	7	0	0	0	0
AP	8	0	8	0	0	0	0
AW	6 (2)	0	6	0	0	0	0
AX	0	4	2	2	1	3	3
AY	2	0	2	0	0	0	0
AZ	2	0	2	0	0	0	0
B	0	16	6	10	0	16	16 (1)
BX	0	12	7	5	6	6	10 (1)
BY	0	12	7	5	5	7	7
C	0	16	9	7	7	9	10
Total	25	66	59	32	21	45	51
WEST							
S	0	12	11	1	10	2	2
SX	0	15	5	10	6	9	9
SY	3 (2)	0	3	0	0	0	0
T	0	16	9	7	5	11	11 (1)
TX	0	18	10	8	0	18	18
TY	0	6	1	5	0	6	6
U	0	16	12	4	9	7	8 (1)
Total	3	83	51	35	30	53	54
TOTAL	28	149	110	67	51	98	105

(1) Includes tanks that do not meet current established supernatant and interstitial liquid stabilization criteria (B-104, B-107, B-110, B-111, BX-110, T-102, T-112, and U-110).

(2) Six Double-Shell Tanks on the Hydrogen Tank Watch List are not currently in service (103, 104, 105-AN, 101-AW, 101 and 103-SY).

TABLE C-3. INVENTORY SUMMARY BY TANK FARM

WASTE VOLUMES (Kgallons)

November 1992

SUPERNATANT LIQUID VOLUMES														SOLIDS VOLUME			
TANK FARM	TOTAL WASTE	AVAIL SPACE	AGING	CC	CP	DC	DN	DN/PT	DN/PD	DSSF	NCPLX	TOTAL	DSS	SLUDGE	CAKE	TOTAL	
EAST	A	1536	0	0	0	0	0	0	0	0	8	0	0	556	972	1528	
	AN	6584	1396	0	1953	613	0	638	0	1939	0	5143	937	504	0	1441	
	AP	6695	2425	0	0	0	0	5872	0	823	0	6695	0	0	0	0	
	AW	5536	1307	0	0	0	0	2215	931	1059	0	4205	0	1135	196	1331	
	AX	906	0	0	3	0	0	0	0	0	0	3	0	19	884	903	
	AY	1541	419	0	0	0	839	587	0	0	0	1426	0	115	0	115	
	AZ	1899	61	1769	0	0	0	0	0	0	0	1769	0	130	0	130	
	B	2057	0	0	0	0	0	0	0	0	0	15	0	1697	345	2042	
	BX	1559	0	0	0	0	0	0	0	0	0	50	0	1354	155	1509	
	BY	4744	0	0	0	0	0	0	0	0	0	0	0	719	4025	4744	
	C	2146	0	0	0	0	0	0	0	0	0	169	0	1977	0	1977	
	Total	35203	5608	1769	1956	613	839	9312	931	0	3829	234	19483	937	8206	6577	15720
WEST	S	5680	0	0	0	0	0	0	0	17	29	46	0	1171	4463	5634	
	SX	4453	0	0	0	1	0	0	0	0	62	63	0	1532	2858	4390	
	SY	2543	877	0	202	0	0	0	603	0	0	805	1103	71	564	1738	
	T	2065	0	0	0	0	0	0	0	0	74	74	0	1991	0	1991	
	TX	6905	0	0	0	0	0	0	0	0	5	5	0	241	6659	6900	
	TY	638	0	0	0	0	0	0	0	0	3	3	0	571	64	635	
	U	3550	0	0	0	0	0	0	0	31	137	168	0	638	2744	3382	
	Total	25834	877	0	202	0	1	0	0	603	48	310	1164	1103	6215	17352	24670
	TOTAL	61037	6485	1769	2158	613	840	9312	931	603	3877	544	20647	2040	14421	23929	40390

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

TABLE C-4. INVENTORY AND STATUS BY TANK
DOUBLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME										SOLIDS VOLUME										VOLUME DETERMINATION				CHANGE SINCE LAST MONTHLY REPORT	
TANK	WASTE TANK	TANK INTEGRITY USE	EQUIVA-LENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPER-NATANT LIQUID		DRAIN-ABLE INTER-STIT.		PUMPED THIS MONTH	TOTAL PUMPED	DRAIN-ABLE LIQUID REMAIN		PUMP-ABLE LIQUID REMAIN	DSS SLDG (Kgallons)	SALT LIQ VOL	SOL VOL	SOLIDS VOLUME	LAST PHOTO	DATE	LAST	MONTHLY REPORT						
						ATANT LIQUID (Kgal)	SPACE LIQUID (Kgal)	ABLE	INTER-STIT. (Kgal)			LIQUID REMAIN (Kgal)	LIQUID REMAIN (Kgal)															
***** AN FARM STATUS *****																												
1101AN	DN	SOUND	DRCVR	231.8	638	502	638	0	0.0	0.0	0.0	638	638	0	0	0	FM	S	08/22/89	0/ 0/ 0								
1102AN	CC	SOUND	CWHT	397.1	1106	34	1017	3	0.0	0.0	0.0	1020	1017	0	89	0	FM	S	08/22/89	0/ 0/ 0								
1103AN	DSS	SOUND	CWHT	346.2	951	189	14	0	0.0	0.0	0.0	14	14	937	0	0	FM	S	08/22/89	10/29/87								
1104AN	DSSF	SOUND	CWHT	386.6	1060	80	796	25	0.0	0.0	0.0	821	799	0	264	0	FM	S	08/22/89	08/19/88								
1105AN	DSSF	SOUND	CWHT	410.9	1129	11	1129	0	0.0	0.0	0.0	1129	1129	0	0	0	FM	S	10/22/84	01/26/88								
1106AN	CP	SOUND	CWHT	368.4	630	510	613	0	0.0	0.0	0.0	613	613	0	17	0	FM	S	08/22/89	0/ 0/ 0								
1107AN	CC	SOUND	CWHT	389.7	1070	70	936	9	0.0	0.0	0.0	945	936	0	134	0	FM	S	08/22/89	09/01/88								
TOTALS:				6584	1396	5143	37	0.0	0.0	0.0	0.0	5180	5146	937	504	0												
***** AP FARM STATUS *****																												
1101AP	DN	SOUND	DRCVR	386.1	1062	78	1062	0	0.0	0.0	0.0	1062	1062	0	0	0	FM	S	05/01/89	0/ 0/ 0								
1102AP	DN	SOUND	GRTFD	49.5	501	639	501	0	0.0	0.0	0.0	501	501	0	0	0	FM	S	07/11/89	0/ 0/ 0								
1103AP	DN	SOUND	DRCVR	412.5	1134	6	1134	0	0.0	0.0	0.0	1134	1134	0	0	0	FM	S	10/13/88	0/ 0/ 0								
1104AP	DN	SOUND	GRTFD	7.2	20	1120	20	0	0.0	0.0	0.0	20	20	0	0	0	FM	S	10/13/88	0/ 0/ 0								
1105AP	DSSF	SOUND	CWHT	299.6	823	317	823	0	0.0	0.0	0.0	823	823	0	0	0	FM	S	02/02/89	0/ 0/ 0								
1106AP	DN	SOUND	DRCVR	411.5	1131	9	1131	0	0.0	0.0	0.0	1131	1131	0	0	0	FM	S	10/13/88	0/ 0/ 0								
1107AP	DN	SOUND	DRCVR	408.2	1120	20	1120	0	0.0	0.0	0.0	1120	1120	0	0	0	FM	S	10/13/88	0/ 0/ 0								
1108AP	DN	SOUND	DRCVR	328.9	904	236	904	0	0.0	0.0	0.0	904	904	0	0	0	FM	S	10/13/88	0/ 0/ 0								
TOTALS:				6695	2425	6695	0	0.0	0.0	0.0	0.0	6695	6695	0	0	0												
7 DOUBLE-SHELL TANKS																												
***** AP FARM STATUS *****																												
8 DOUBLE-SHELL TANKS																												

TABLE C-4. INVENTORY AND STATUS BY TANK
DOUBLE-SHELL TANKS
November 1992

TANK STATUS		LIQUID VOLUME										SOLIDS VOLUME										VOLUME DETERMINATION										CHANGE SINCE LAST MONTHLY REPORT				
		EQUIVA- LENT		TOTAL		WASTE		SPACE		AVAIL		SUPER- ABLE		DRAIN- ABLE		PUMP- ABLE		LIQUID		REMAIN		DSS		SLDG		CAKE		VOL		MTHD				UPDATE		DATE
TANK	MATL	WASTE	TANK	INTEGRITY	USE	WASTE	INCHES	(Kgal)	(Kgal)	INTER- STIT.	(Kgal)	THIS	TOTAL	PUMPED	(Kgal)	REMAIN	(Kgal)	LIQUID	REMAIN	(Kgal)	SALT	LIQ	SOL	SOLIDS	LAST	PHOTO	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
++++++ AW FARM STATUS ++++++																																				
101AW	DSSF	SOUND	CWHT			414.8	1143	0	1059	2	0.0	0.0	0.0	1061	1059	0	84	0	FM	S	10/22/84	03/17/88	(1)													
102AW	DN	SOUND	EVFD			377.2	739	401	738	0	0.0	0.0	0.0	738	738	0	1	0	FM	S	02/29/84	02/02/83														
103AW	DN/PD	SOUND	DRCVR			234.8	646	494	283	37	0.0	0.0	0.0	320	298	0	363	0	FM	S	02/01/89	0/ 0/ 0														
104AW	DN	SOUND	DRCVR			408.9	1124	16	834	49	0.0	0.0	0.0	883	861	0	179	111	FM	S	03/05/87	02/02/83														
105AW	DN/PD	SOUND	DRCVR			327.3	945	195	648	29	0.0	0.0	0.0	677	655	0	297	0	FM	S	03/05/87	0/ 0/ 0														
106AW	DN	SOUND	SRCVR			190.8	939	201	643	42	0.0	0.0	0.0	685	663	0	211	85	FM	S	01/31/92	02/02/83														
TOTALS: 5536 1307 4205 159 0.0 0.0 4364 4274 0 1135 196																																				
6 DOUBLE-SHELL TANKS																																				
++++++ AY FARM STATUS ++++++																																				
101AY	DC	SOUND	DRCVR			339.8	922	58	839	2	0.0	0.0	0.0	841	839	0	83	0	FM	S	02/02/87	12/28/82														
102AY	DN	SOUND	DRCVR			186.7	619	361	587	0	0.0	0.0	0.0	587	587	0	32	0	FM	S	02/10/88	04/28/81														
TOTALS: 1541 419 1426 2 0.0 0.0 1428 1426 0 115 0																																				
2 DOUBLE-SHELL TANKS																																				
++++++ AZ FARM STATUS ++++++																																				
101AZ	AGING	SOUND	CWHT			334.3	967	13	932	0	0.0	0.0	0.0	932	932	0	35	0	FM	S	09/30/90	08/18/83														
102AZ	AGING	SOUND	DRCVR			348.3	932	48	837	4	0.0	0.0	0.0	841	837	0	95	0	FM	S	06/04/92	12/24/84														
TOTALS: 1899 61 1769 4 0.0 0.0 1773 1769 0 130 0																																				
2 DOUBLE-SHELL TANKS																																				

TABLE C-4. INVENTORY AND STATUS BY TANK
DOUBLE-SHELL TANKS
November 1992

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION				CHANGE SINCE LAST MONTHLY REPORT					
TANK	WASTE TANK	MATL	TANK INTEGRITY USE	EQUIVA-LENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SALT LIQ VOL	DSS SLDG VOL (Kgal)	SOLIDS VOLUME MTHD	SOLIDS VOLUME MTHD	LAST PHOTO DATE	LAST MONTHLY REPORT	
+++++ SY FARM STATUS +++++																			
101SY	CC	SOUND	CWHT	408.0	1117	23	27	237	0.0	0.0	264	258	530	0	560 FM	S	01/31/92	04/12/89	
102SY	DN/PT	SOUND	DRCVR	245.8	674	466	603	0	0.0	0.0	603	603	0	71	0 FM	S	05/12/87	04/29/81	
103SY	CC	SOUND	CWHT	271.4	752	388	175	0	0.0	0.0	175	175	573	0	4 FM	S	10/22/84	10/01/85	
3 DOUBLE-SHELL TANKS				TOTALS:	2543	877	805	237	0.0	0.0	1042	1036	1103	71	564				
GRAND TOTAL					24798	6485	20043	439		20482	20346	2040	1955	760					

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

Tank Farms	Available Space Calculations Used In This Document (Most Conservative)		Document SD-WM-TI-357* Operating Limit		Document OSD-T-151-00007** Specification Limit	
			Tank Capacity			
AN, AP, AW, SY	1,140,000 gal (414.5 in.)	1,144,000 gal (416 in.)	1,160,000 gal (421.8 in.)	1,160,500 gal (422 in.)		
AY, AZ (Aging Waste)	980,000 gal (356.4 in.)	990,000 gal (360 in.)	1,000,000 gal (363.6 in.)	1,001,000 gal (364 in.)		

* WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria."

**WHC-OSD-T-151-00007, "Operating Specifications for 241-AW, AP, AW, AY, AZ, & SY Tank Farms."

- (1) Tank 101-AW: Although the waste total of 415.6 in. (1143 Kgal) exceeds the 1140 Kgal specified for waste volume projections of available space, it does not exceed the operating limit criteria of 416 in. (1144 Kgal).

WHC-EP-0182-56

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION							
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT	
+++++ A FARM STATUS +++++																		
101A	DSSF	SOUND	/PI	953	0	413	0.0	0.0	413	390	3	950	P	F	11/21/80		08/21/85	
102A	DSSF	SOUND	IS/PI	41	4	2	0.0	39.5	6	0	15	22	P	FP	07/27/89	(1)	07/20/89	
103A	DSSF	ASMD LKR	IS/II	370	4	13	0.0	111.0	12	0	366	0	-	FP	06/03/88	(1)	12/28/88	
104A	NCPLX	ASMD LKR	IS/II	28	0	0	0.0	0.0	0	0	28	0	M	PS	01/27/78		06/25/86	
105A	NCPLX	ASMD LKR	IS/II	19	0	4	0.0	0.0	4	0	19	0	P	MP	08/23/79	(1)	08/20/86	
106A	CP	SOUND	IS/II	125	0	7	0.0	0.0	7	0	125	0	P	M	09/07/82		08/17/86	
6 SINGLE-SHELL TANKS TOTALS				1536	8	439	0.0	150.5	442	390	556	972						
+++++ AX FARM STATUS +++++																		
101AX	DSSF	SOUND	/PI	748	0	320	0.0	0.0	320	298	3	745	P	F	05/06/82		08/18/87	
102AX	CC	ASMD LKR	IS/II	39	3	14	0.0	13.0	17	3	7	29	F	S	09/06/88		06/05/89	
103AX	CC	SOUND	IS/II	112	0	36	0.0	0.0	36	3	2	110	F	S	08/19/87		08/13/87	
104AX	NCPLX	ASMD LKR	IS/II	7	0	0	0.0	0.0	0	0	7	0	P	M	04/28/82		08/18/87	
4 SINGLE-SHELL TANKS TOTALS:				906	3	370	0.0	13.0	373	304	19	884						

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION								CHG	
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	SINCE LAST MONTHLY REPORT		
***** B FARM STATUS *****																				
101B	NCPLX	ASMD LKR	IS/11	113	0	6	0.0	0.0	6	0	113	0	P	F	04/28/82			05/19/83		
102B	NCPLX	SOUND	IS/11	32	4	0	0.0	0.0	4	0	18	10	P	F	08/22/85	(1)		08/22/85		
103B	NCPLX	ASMD LKR	IS/11	59	0	0	0.0	0.0	0	0	59	0	F	F	02/28/85	(1)		02/05/85		
104B	NCPLX	SOUND	IS/11	371	1	46	0.0	0.0	47	40	301	69	M	M	06/30/85	(1)		10/13/88		
105B	NCPLX	ASMD LKR	IS/11	306	0	23	0.0	0.0	23	0	40	266	P	MP	12/27/84	(1)		05/19/88		
106B	NCPLX	SOUND	IS/11	117	1	6	0.0	0.0	7	0	116	0	F	F	03/31/85	(1)		02/28/85		
107B	NCPLX	ASMD LKR	IS/11	165	1	12	0.0	0.0	13	7	164	0	M	M	03/31/85	(1)		02/28/85		
108B	NCPLX	SOUND	IS/11	94	0	4	0.0	0.0	4	0	94	0	F	F	05/31/85	(1)		05/10/85		
109B	NCPLX	SOUND	IS/11	127	0	8	0.0	0.0	8	0	127	0	M	M	04/08/85	(1)		04/02/85		
110B	NCPLX	ASMD LKR	IS/11	246	1	22	0.0	0.0	23	17	245	0	MP	MP	02/28/85	(1)		03/17/88		
111B	NCPLX	ASMD LKR	IS/11	237	1	21	0.0	0.0	22	16	236	0	F	F	06/28/85	(1)		06/26/85		
112B	NCPLX	ASMD LKR	IS/11	33	3	0	0.0	0.0	3	0	30	0	F	F	05/31/85	(1)		05/29/85		
201B	NCPLX	ASMD LKR	IS/11	29	1	3	0.0	0.0	4	0	28	0	M	M	04/28/82			11/12/86		
202B	NCPLX	SOUND	IS/11	27	0	3	0.0	0.0	3	0	27	0	P	M	05/31/85	(1)		05/29/85		
203B	NCPLX	ASMD LKR	IS/11	51	1	5	0.0	0.0	6	0	50	0	PM	PM	05/31/84	(1)		11/13/86		
204B	NCPLX	ASMD LKR	IS/11	50	1	5	0.0	0.0	6	0	49	0	P	M	05/31/84	(1)		10/21/87		
16 SINGLE-SHELL TANKS			TOTALS	2057	15	164	0.0	0.0	179	80	1697	345								

WHC-EP-0182-56

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION								CHG	
WASTE	TANK	STABIL/	SUPER- NATANT	DRAIN- ABLE	PUMPED	THIS MONTH	TOTAL PUMPED	LIQUID REMAIN	PUMP- ABLE	SLUDGE	SALTCAKE	LIQUIDS VOLUME	SOLIDS VOLUME	SOLIDS VOLUME	UPDATE	SOURCE	LAST PHOTO	MONTHLY	REPORT
MATERIAL	INTEGRITY	STATUS	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	METHOD	UPDATE	FOOTNOTE	DATE				
+++++ BX FARM STATUS +++++																			
1018X	NCPLX	ASMD LKR	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82			11/24/88		
1028X	NCPLX	ASMD LKR	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82			09/18/85		
1038X	NCPLX	SOUND	66	4	0	0.0	0.0	4	0	62	0	P	F	11/29/83			10/31/86		
1048X	NCPLX	SOUND	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	(1)		09/21/89		
1058X	NCPLX	SOUND	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	(1)		10/23/86		
1068X	NCPLX	SOUND	46	15	0	0.0	0.0	15	15	31	0	MP	PS	04/28/82			05/19/88		
1078X	NCPLX	SOUND	345	1	29	0.0	23.1	30	23	344	0	MP	P	09/18/90	(2)		09/11/90		
1088X	NCPLX	ASMD LKR	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	(1)		10/23/86		
1098X	NCPLX	SOUND	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	(2)		09/11/90		
1108X	NCPLX	ASMD LKR	199	1	15	0.0	0.0	16	10	189	9	MP	M	08/22/85	(1)		07/31/85		
1118X	NCPLX	ASMD LKR	230	19	50	0.0	0.0	69	46	68	143	M	M	07/26/77			09/18/85		
1128X	NCPLX	SOUND	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	(2)		09/11/90		
12 SINGLE-SHELL TANKS		TOTALS:	1559	50	155	0.0	67.8	205	135	1354	155								
+++++ BY FARM STATUS +++++																			
1018Y	NCPLX	SOUND	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84			09/19/89		
1028Y	NCPLX	SOUND	341	0	41	0.0	123.3	41	22	0	341	MP	M	08/30/91	(2)		09/11/87		
1038Y	NCPLX	ASMD LKR	400	0	160	0.0	78.5	160	137	5	395	MP	M	04/07/90	(2)		09/07/89		
1048Y	NCPLX	SOUND	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82			04/27/83		
1058Y	NCPLX	ASMD LKR	503	0	192	0.0	0.0	192	169	44	459	P	MP	04/28/82			07/11/86		
1068Y	NCPLX	ASMD LKR	642	0	235	0.0	0.0	235	213	95	547	P	MP	04/28/82			11/04/82		
1078Y	NCPLX	ASMD LKR	266	0	25	0.0	56.4	25	0	60	206	P	MP	04/28/82			10/15/86		

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME					SOLIDS VOLUME					VOLUME DETERMINATION										CHG	
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT 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)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE	SOLIDS UPDATE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT					
1088Y	NCPLX	ASMD LKR	IS/II	228	0	9	0.0	27.5	9	0	154	74	MP	M	04/28/82			10/15/86						
1098Y	NCPLX	SOUND	/PI	423	0	78	0.0	93.5	78	57	83	340	F	PS	08/30/91	(2)		10/15/86						
1108Y	NCPLX	SOUND	IS/II	398	0	9	0.0	213.3	9	0	103	295	M	S	09/10/79			07/26/84						
1118Y	NCPLX	SOUND	IS/II	459	0	0	0.0	313.2	0	0	21	438	P	M	04/28/82			10/31/86						
1128Y	NCPLX	SOUND	IS/II	291	0	2	0.0	116.4	8	0	5	286		M	04/28/82			04/14/88						
TOTALS:				4744	0	780	0.0	1387.4	780	598	719	4025												
12 SINGLE-SHELL TANKS																								
***** C FARM STATUS *****																								
101C	NCPLX	ASMD LKR	IS/II	88	0	3	0.0	0.0	3	0	88	0	M	M	11/29/83			11/17/87						
102C	DC	SOUND	/PI	423	0	37	0.0	10.5	37	19	423	0	F	FP	04/28/82			05/18/76						
103C	NCPLX	SOUND	/PI	195	133	0	0.0	0.0	133	133	62	0	F	S	10/22/90	(2)		07/28/87						
104C	CC	SOUND	IS/II	295	0	11	0.0	0.0	11	5	295	0	FP	P	09/22/89	(1)		07/25/90						
105C	NCPLX	SOUND	/PI	150	0	11	0.0	0.0	11	4	150	0	F	S	05/31/85			04/01/88						
106C	NCPLX	SOUND	/PI	229	32	16	0.0	0.0	48	42	197	0	F	PS	04/28/82			04/05/79						
107C	DC	SOUND	/PI	275	0	26	0.0	17.7	26	20	275	0	F	S	01/30/92	(2)		00/00/00						
108C	NCPLX	SOUND	IS/II	66	0	0	0.0	0.0	0	0	66	0	M	S	02/24/84	(1)		12/05/74						
109C	NCPLX	SOUND	IS/II	66	4	0	0.0	0.0	4	0	62	0	M	PS	11/29/83			01/30/76						
110C	DC	ASMD LKR	/PI	187	0	7	0.0	8.6	7	5	187	0	F	FMP	03/01/92	(2)		08/12/86						
111C	NCPLX	ASMD LKR	IS/II	57	0	0	0.0	0.0	0	0	57	0	M	S	04/28/82			02/25/70						
112C	NCPLX	SOUND	IS/PI	104	0	32	0.0	0.0	32	26	104	0	M	PS	09/18/90	(2)		09/18/90						

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME					SOLIDS VOLUME				VOLUME DETERMINATION							
TANK	WASTE TANK	MATERIAL INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS		SOLIDS		SOLIDS UPDATE	CHG SINCE LAST MONTHLY REPORT	
													VOLUME METHOD	VOLUME METHOD	VOLUME METHOD	VOLUME METHOD			UPDATE
201C	NCPLX	ASMD LKR	IS/II	2	0	0	0.0	0.0	0	0	2	0		P	MP	03/31/82			12/02/86
202C	EMPTY	ASMD LKR	IS/II	1	0	0	0.0	0.0	0	0	1	0		P	M	01/19/79			12/09/86
203C	NCPLX	ASMD LKR	IS/II	5	0	0	0.0	0.0	0	0	5	0		P	MP	04/28/82			12/09/86
204C	NCPLX	ASMD LKR	IS/II	3	0	0	0.0	0.0	0	0	3	0		P	MP	04/28/82			12/09/86
16 SINGLE-SHELL TANKS				TOTALS:	2146	169	143	0.0	36.8	312	254	1977	0						
***** S FARM STATUS *****																			
101S	NCPLX	SOUND	/PI	427	12	84	0.0	0.0	96	90	244	171		F	PS	09/16/80			03/18/88
102S	DSSF	SOUND	/PI	549	0	230	0.0	0.0	230	208	4	545		P	FP	04/28/82			03/18/88
103S	DSSF	SOUND	/PI	248	17	85	0.0	0.0	102	79	10	221		M	S	11/20/80			06/01/89
104S	NCPLX	ASMD LKR	IS/II	294	1	28	0.0	0.0	29	23	293	0		M	M	12/20/84	(1)		12/12/84
105S	NCPLX	SOUND	IS/II	456	0	35	0.0	114.3	35	13	2	454		MP	S	09/26/88			04/12/89
106S	NCPLX	SOUND	/PI	543	0	185	0.0	99.8	185	162	32	511		P	FP	06/28/82			03/17/89
107S	NCPLX	SOUND	/PI	368	6	45	0.0	0.0	51	44	293	69		F	PS	09/25/80			03/12/87
108S	NCPLX	SOUND	/PI	604	0	127	0.0	151.6	127	105	4	600		P	MP	04/28/82			03/12/87
109S	NCPLX	SOUND	/PI	568	0	141	0.0	111.0	141	119	13	555		F	PS	09/30/75			08/24/84
110S	NCPLX	SOUND	/PI	390	0	110	0.0	185.9	110	103	131	259		F	PS	05/14/92			03/12/87
111S	NCPLX	SOUND	/PI	596	10	195	0.0	3.3	205	134	139	447		P	FP	04/28/82			08/10/89
112S	NCPLX	SOUND	/PI	637	0	134	0.0	125.1	134	112	6	631		P	FP	06/28/82			03/24/87
12 SINGLE-SHELL TANKS				TOTALS:	5680	46	1399	0.0	791.0	1445	1192	1171	4463						

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS				LIQUID VOLUME										SOLIDS VOLUME				VOLUME DETERMINATION																							
TANK	WASTE MATERIAL	TANK INTEGRITY	STATUS	STABIL/ISOLATION	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE	UPDATE	SOLIDS	CHG SINCE LAST MONTHLY REPORT																					
																					TANK	WASTE MATERIAL	TANK INTEGRITY	STATUS	STABIL/ISOLATION	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE	UPDATE	SOLIDS	CHG SINCE LAST MONTHLY REPORT
+++++ SX FARM STATUS +++++																																									
101SX	DC	SOUND	/PI		456	1	145	0.0	0.0	146	124	112	343	P	FP	04/28/82				03/10/89																					
102SX	DSSF	SOUND	/PI		543	0	183	0.0	0.0	183	177	117	426	P	M	04/28/82				01/07/88																					
103SX	NCPLX	SOUND	/PI		652	1	232	0.0	0.0	233	211	115	536	F	S	07/15/91				12/17/87																					
104SX	DSSF	ASHD LKR	/PI		614	0	201	0.0	113.2	201	195	136	478	F	S	07/07/89				09/08/88																					
105SX	DSSF	SOUND	/PI		683	0	261	0.0	0.0	261	238	73	610	P	F	04/28/82				06/15/88																					
106SX	NCPLX	SOUND	/PI		538	61	194	0.0	0.0	255	233	12	465	F	PS	10/28/80				06/01/89																					
107SX	NCPLX	ASHD LKR	IS/II		104	0	5	0.0	0.0	5	0	104	0	P	M	04/28/82				03/06/87																					
108SX	NCPLX	ASHD LKR	IS/II		115	0	6	0.0	0.0	6	0	115	0	P	M	04/28/82				03/06/87																					
109SX	NCPLX	ASHD LKR	IS/II		250	0	10	0.0	0.0	10	0	250	0	P	M	04/28/82				05/21/86																					
110SX	NCPLX	ASHD LKR	IS/II		62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76				02/20/87																					
111SX	NCPLX	ASHD LKR	IS/II		125	0	7	0.0	0.0	7	0	125	0	M	PS	05/31/74				03/10/87																					
112SX	NCPLX	ASHD LKR	IS/II		92	0	3	0.0	0.0	3	0	92	0	P	M	04/28/82				03/10/87																					
113SX	NCPLX	ASHD LKR	IS/II		26	0	0	0.0	0.0	0	0	26	0	P	M	04/28/82				03/18/88																					
114SX	NCPLX	ASHD LKR	IS/II		181	0	14	0.0	0.0	14	0	181	0	P	M	04/28/82				02/26/87																					
115SX	NCPLX	ASHD LKR	IS/II		12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82				03/31/88																					
15 SINGLE-SHELL TANKS				TOTALS:	4453	63	1261	0.0	113.2	1324	1178	1532	2858																												

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME					SOLIDS VOLUME					VOLUME DETERMINATION										CHG	
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE	SOURCE SEE	FOOTNOTE	LAST DATE	PHOTO DATE	LAST MONTHLY REPORT			
+++++ T FARM STATUS +++++																								
101T	NCPLX	ASMD LKR	/PI	133	30	5	0.0	0.0	35	30	103	0	F	S	08/31/84					07/03/84				
102T	NCPLX	SOUND	IS/II	32	13	0	0.0	0.0	13	13	19	0	P	FP	08/31/84					06/28/89				
103T	NCPLX	ASMD LKR	IS/II	27	4	0	0.0	0.0	4	0	23	0	F	FP	11/29/83	(1)				07/02/84				
104T	NCPLX	SOUND	/PI	445	3	47	0.0	0.0	50	44	442	0	P	MP	04/28/82					06/29/89				
105T	NCPLX	SOUND	IS/II	98	0	23	0.0	0.0	23	17	98	0	P	F	05/29/87					05/14/87				
106T	NCPLX	ASMD LKR	IS/II	21	2	0	0.0	0.0	2	0	19	0	P	FP	04/28/82					06/29/89				
107T	NCPLX	ASMD LKR	/PI	180	9	13	0.0	0.0	22	16	171	0	P	FP	08/31/84					07/12/84				
108T	NCPLX	ASMD LKR	IS/II	44	0	0	0.0	0.0	0	0	44	0	P	M	04/28/82					07/17/84				
109T	NCPLX	ASMD LKR	IS/II	58	0	0	0.0	0.0	0	0	58	0	M	M	12/30/84	(1)				07/03/84				
110T	NCPLX	SOUND	/PI	379	3	39	0.0	0.0	42	36	376	0	P	FP	04/28/82					07/12/84				
111T	NCPLX	ASMD LKR	/PI	458	2	49	0.0	0.0	51	45	456	0	P	FP	04/28/82					08/02/84				
112T	NCPLX	SOUND	IS/II	67	7	0	0.0	0.0	7	7	60	0	P	FP	04/28/82					08/01/84				
201T	NCPLX	SOUND	IS/II	29	1	3	0.0	0.0	4	0	28	0	M	PS	05/31/78					04/15/86				
202T	NCPLX	SOUND	IS/II	21	0	2	0.0	0.0	2	0	21	0	FP	P	07/12/81					07/06/89				
203T	NCPLX	SOUND	IS/II	35	0	4	0.0	0.0	4	0	35	0	M	PS	01/31/78					08/03/89				
204T	NCPLX	SOUND	IS/II	38	0	4	0.0	0.0	4	0	38	0	FP	P	07/22/81					08/03/89				
TOTALS:				2065	74	189	0.0	0.0	263	208	1991	0												
16 SINGLE-SHELL TANKS																								

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME						SOLIDS VOLUME			VOLUME DETERMINATION						CHG SINCE LAST MONTHLY REPORT		
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS		SOLIDS		SOLIDS UPDATE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT	
													VOLUME METHOD	VOLUME METHOD	VOLUME METHOD	VOLUME METHOD				
+++++ TX FARM STATUS +++++																				
101TX	NCLPX	SOUND	IS/II	87	3	2	0.0	0.0	5	0	84	0	F	P	02/02/84	(1)	10/24/85			
102TX	NCPLX	SOUND	IS/II	113	0	22	0.0	94.4	22	0	0	113	M	S	08/31/84		10/31/85			
103TX	NCPLX	SOUND	IS/II	157	0	15	0.0	68.3	15	0	157	0	F	S	08/14/80		10/31/85			
104TX	NCPLX	SOUND	IS/II	65	1	14	0.0	3.6	15	0	0	64	F	FP	04/06/84		10/16/84			
105TX	NCPLX	ASMD LKR	IS/II	609	0	20	0.0	121.5	20	0	0	609	M	PS	08/22/77		10/24/89			
106TX	NCPLX	SOUND	IS/II	453	0	10	0.0	134.6	10	0	0	453	M	S	08/29/77		10/31/85			
107TX	NCPLX	ASMD LKR	IS/II	36	1	1	0.0	0.0	2	0	0	35	FP	FP	01/20/84	(1)	10/31/85			
108TX	NCPLX	SOUND	IS/II	134	0	0	0.0	13.7	0	0	0	134	P	FP	05/30/83		09/12/89			
109TX	NCPLX	SOUND	IS/II	384	0	10	0.0	72.3	10	0	0	384	F	PS	05/30/83		10/24/89			
110TX	NCPLX	ASMD LKR	IS/II	462	0	15	0.0	115.1	15	0	0	462	M	PS	05/30/83		10/24/89			
111TX	NCPLX	SOUND	IS/II	370	0	9	0.0	98.4	9	0	0	370	M	PS	07/26/77		09/12/89			
112TX	NCPLX	SOUND	IS/II	649	0	24	0.0	94.0	24	0	0	649	P	PS	05/30/83		11/19/87			
113TX	NCPLX	ASMD LKR	IS/II	607	0	16	0.0	19.2	16	0	0	607	M	PS	05/30/83		04/11/83			
114TX	NCPLX	ASMD LKR	IS/II	535	0	15	0.0	104.3	15	0	0	535	M	PS	05/30/83		04/11/83			
115TX	NCPLX	ASMD LKR	IS/II	640	0	19	0.0	99.1	19	0	0	640	M	S	03/25/83		06/15/88			
116TX	NCPLX	ASMD LKR	IS/II	631	0	23	0.0	23.8	23	0	0	631	M	PS	03/31/72		10/17/89			
117TX	NCPLX	ASMD LKR	IS/II	626	0	8	0.0	54.3	8	0	0	626	M	PS	12/31/71		04/11/83			
118TX	NCPLX	SOUND	IS/II	347	0	27	0.0	89.1	27	0	0	347	F	S	11/17/80		12/19/79			
18 SINGLE-SHELL TANKS			TOTALS:	6905	5	250	0.0	1205.7	255	0	241	6659								

10

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
TANK	WASTE MATERIAL	TANK INTEGRITY STATUS	STABIL/ ISOLATION	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS UPDATE SOURCE	CHG SINCE LAST MONTHLY REPORT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 1992

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION							
TANK	WASTE TANK MATERIAL INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS UPDATE	SOLIDS SOURCE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT
201U	NCPLX	SOUND	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/03/89	
202U	NCPLX	SOUND	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/08/89	
203U	NCPLX	SOUND	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
204U	NCPLX	SOUND	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
16 SINGLE-SHELL TANKS		TOTALS:	3550	168	1138	0.0	0.0	1306	1104	638	2744						
GRAND TOTAL			36239	604	6319			6918	5443	12466	23169						

NOTE: +/- 1K gal differences are the result of rounding

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate.

- (1) WHC-SD-RE-11-178 SST STABILIZATION RECORD
(2) TANK FARMS COGNIZANT ENGINEER MONTHLY INPUT (Retained 10 yr in Surveillance & Data Acquisition office)

If an asterisk (*) appears in "Chg since last monthly report" column, see Changes section following this Inventory section for explanation.

APPENDIX D
PERFORMANCE SUMMARY

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TABLE D-1. PERFORMANCE SUMMARY (Sheet 1 of 3)

WASTE VOLUMES (Kgallons)

November 1992

INCREASES/DECREASES IN WASTE VOLUMES
STORED IN DOUBLE-SHELL TANKS

SOURCE	THIS MONTH	FY1993 TO DATE
B PLANT	10	20
PUREX TOTAL (1)	5	10
PFP (1)	0	0
T PLANT (1)	0	10
S PLANT (1)	0	0
300/400 AREAS (1)	0	6
SULFATE WASTE -100 N (2)	0	0
MINI-RUN (14)	9	15
TANK FARMS & SWL (6)	8	8
Tank Farms	8	
Saltwell Liquid	0	
OTHER GAINS	17	60
Slurry increase (3)	5	
Condensate	12	
Instrument change (7)	0	
Unknown (5)	0	
OTHER LOSSES	-24	-37
Slurry decrease (3)	-3	
Evaporation (4)	-2	
Instrument change (7)	-15	
Unknown (5)	-4	
EVAPORATED	0	0
GROUTED	0	0
Total	25	92

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

INCREASES/DECREASES IN WASTE VOLUMES
STORED IN SINGLE-SHELL TANKS

SOURCE	THIS MONTH	FY1993 TO DATE
105-C (8)	Gains 0	2
	Losses -1	-2
106-C (8)	Gains 0	10
	Losses -7	-15
Total	-8	-5

CUMULATIVE EVAPORATION - 1950 TO PRESENT

WASTE VOLUME REDUCTION

FACILITY	
242-B EVAPORATOR (9)	7172
242-T EVAPORATOR (1950's) (9)	9181
IN-TANK SOLIDIFICATION UNIT 1 (10)	11876
IN-TANK SOLIDIFICATION UNIT 2 (10)	15295
IN-TANK SOLID. UNIT 1 & 2 (10)	7965
(after conversion of Unit 1 to a cooler for Unit 2)	
242-T (Modified) (9)	24471
242-S EVAPORATOR (11)	41983
242-A EVAPORATOR (12)	65227
B PLANT (Cell 23) (13)	1185
REDOX (12)	12393
Total	196748

TOTAL THROUGHPUT

FACILITY	
242-A EVAPORATOR (12)	182437
242-S EVAPORATOR (11)	134587
Total	317024

Footnotes: See Next Page

TABLE D-1. Performance Summary (Sheet 2 of 3)

Footnotes:

INCREASES/DECREASES IN WASTE VOLUMES

- (1) Including Flush
- (2) Sulfate waste is generated from ion exchange backflushing and sand filter clean out, resulting in sulfate waste (Na_2SO_4).
- (3) Slurry increase/growth is caused by gas generation within the waste. The gas which is trapped in the waste expands in the tank causing the surface level and volume to increase. Slurry decrease results from the periodic release of gas in the waste.
- (4) Aging waste tanks
- (5) Unknown waste gains or losses may be the result of rounding calculations, clean water slowly leaking through a valve, changes in levels (expansion/constriction) because of to ambient temperature changes, different measuring devices being used by Tank Farm operators, transfers taking place during the end of the month, Tank Farm activities such as miscellaneous water additions not associated with facility waste generation, or the addition of water which is added to aging waste tanks and then evaporated off.
- (6) Includes Tank Farms miscellaneous flushes (flushes are used to "clean out" pipelines and reduce personnel exposure, reduce potential for waste incompatibility, prevent line plugging, and reduce waste content of potential spills or leaks), and saltwell liquid, which results from pumping of single-shell tanks to double-shell tanks.
- (7) Liquid level measurement instrument changes from the automatic FIC to manual tape (and vice versa) result in unusual gains or losses because the manual tape may rest on an uneven crust surface giving a different reading from that of the automatic FIC. These instrument changes are made when the automatic FIC is out of service and the reading from the manual tape is used for reporting purposes. The reported reading reverts back to the automatic FIC when it is repaired.
- (8) Water is periodically added to 105-C and 106-C to provide evaporative cooling. Losses due to evaporation are calculated assuming all losses are evaporative losses. Drywell monitoring for leak detection is done monthly on tank 105-C. Some drywells are monitored weekly and some are monitored every two weeks on tank 106-C. If there are any indications of a leak from these tanks, the assumption that all losses are due to evaporation will be reevaluated.

TABLE D-1. Performance Summary (Sheet 3 of 3)

WASTE VOLUME REDUCTION

- (9) Currently inoperative. These evaporator systems (242-B and 242-T) were installed in 1952 in each of the two operating areas to remove water from the waste, and ran for approximately 4 yr after which both units were shut down. The 242-T Evaporator was reactivated in December 1965, and shut down again in April 1976.
- (10) Currently inoperative. These two in-tank solidification (ITS) units provided in-tank heating to promote in-tank boiling or evaporation. The ITS Unit 1 started up March 1965, and ITS Unit 2 started up February 1968. In August 1971, ITS Unit 1 was converted from an evaporator to a cooler for ITS Unit 2. Both units were shut down June 1974.
- (11) Currently inoperative. The 242-S Evaporator-Crystallizer was started up November 1973, and shut down March 1980, when its processing campaign was completed. It is in standby mode with no future mission. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals.
- (12) Currently inoperative. The 242-A Evaporator-Crystallizer was started up March 1977, and shut down April 1989 because of regulatory issues, and has remained shut down for subsequent upgrading. The restart schedule specifies January 4, 1993, as the projected start-up date. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals (forming saltcake).
- (13) Currently inoperative. Additional concentration of wastes was completed by using the concentrators at REDOX and B Plant. The REDOX concentrator was used from July 1967 to June 1972, while the B Plant concentrator was used from July 1967 to February 1968.
- (14) Waste generated for training and testing purposes prior to Evaporator restart.

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APPENDIX E

**LIQUID STATUS AND PUMPABLE LIQUID
REMAINING IN TANKS**

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**TABLE E-1. LIQUID STATUS AND PUMPABLE LIQUID
REMAINING IN TANKS**

WASTE VOLUMES (Kgallons)
November 1992

TANK FARMS	SUPERNATANT		DRAINABLE INTERSTITIAL		DRAINABLE LIQUID		PUMPABLE LIQUID	
	LIQUID		LIQUID		REMAINING		REMAINING	
EAST								
A	8		439		442		390	
AN	5143		37		5180		N/A	
AP	6695		0		6695		N/A	
AW	4205		159		4364		N/A	
AX	3		370		373		304	
AY	1426		2		1428		N/A	
AZ	1769		4		1773		N/A	
B	15		164		179		80	
BX	50		155		205		135	
BY	0		780		780		598	
C	169		143		312		254	
Total	19483		2253		21731		1761	
WEST								
S	46		1399		1445		1192	
SX	63		1261		1324		1178	
SY	805		237		1042		N/A	
T	74		189		263		208	
TX	5		250		255		0	
TY	3		31		34		0	
U	168		1138		1306		1104	
Total	1164		4505		5669		3682	
TOTAL	20647		6758		27400		5443 (1)	

(1) Volume based on 12.5% (sludge waste) and 45% (saltcake waste) liquid in solid (porosity) value. This is a conservative (high) estimate.

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

N/A = Not applicable

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APPENDIX F
PUMPING RECORD

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TABLE F-1. PUMPING RECORD

(Kgallons)

November 1992

TANK FARMS	PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE
EAST			
A	0.0	0.0	150.5
AN	N/A	N/A	N/A
AP	N/A	N/A	N/A
AW	N/A	N/A	N/A
AX	0.0	0.0	13.0
AY	N/A	N/A	N/A
AZ	N/A	N/A	N/A
B	0.0	0.0	0.0
BX	0.0	0.0	68.9
BY	0.0	0.0	1387.4 *
C	0.0	0.0	36.8 **
Total	0.0	0.0	1656.6
WEST			
S	0.0	0.0	791.0
SX	0.0	0.0	113.2
SY	N/A	N/A	N/A
T	0.0	0.0	0.0
TX	0.0	0.0	1205.7
TY	0.0	0.0	29.9
U	0.0	0.0	0.0
Total	0.0	0.0	2139.8
TOTAL	0.0	0.0	3796.4

NA = Not Applicable

The total volume pumped was adjusted by the Single-Shell Tanks Engineer to account for the 14% miscalibration of the constant velocity transmitter and the amount of flush water used. DIL, DLR and PLR volumes were recalculated, based on the observed porosity in 102-BY and 109-BY.

The total volume pumped was recalculated by the Single-Shell Tanks Engineer based on the surface level readings taken after shutdown of the saltwell pumps on January 28, 1992, in 102-C, 107-C and 110-C.

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APPENDIX G
CATCH TANKS AND SPECIAL
SURVEILLANCE FACILITIES

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TABLE G-1. EAST AND WEST AREA CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements

November 1992

VOLUME
OF

FACILITY	LOCATION	PURPOSE (receives waste from:)	CONTENTS MONITORED		REMARKS
			(Gallons)	BY	
EAST AREA					
A-302-A	A FARM	151-A DB	325	CASS/FIC	PUMPED 08/11/92
311-ER	B PLANT	151-ER, 152-ER DB	3752	CASS/FIC	PUMPED 05/29/91
152-AX	AX FARM	152-AX DB	1248	MANUALLY	DIAL O/S, USING ZIP CORD, PUMPED 08/29/92
151-AZ	AZ FARM	152-AZ DB, AZ LOOP SEAL	3050	CASS/FIC	VOLUME CHANGES DAILY
154-AZ	AZ FARM	102-AZ HTG COIL STEAM CONDENSATE	0	CASS/MT	AUTOMATIC PUMP
244-BX-TK/SMP	BX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	6789	MANUALLY	USING MANUAL TAPE FOR TANK
244-A-TK/SMP	AR VAULT	DCRT - RECEIVES FROM SEVERAL FARMS	3047	MCS	DIRECT GAL READING
204-AR	AY FARM	RR CARS DURING TRANSFER TO REC. TKS	565	DIP TUBE	ALARMS ON CASS
417-A	A FARM	702-A PROCESS CONDENSATE	15930	DIP TUBE	
Vent Station		CROSS COUNTRY TRANSFER LINE	O/S	MT	
WEST AREA					
TX-302-C	TX FARM	154-TX DB	3082	CASS/FIC	FIC REPAIRED
U-301-B	U FARM	151-U, 152-U, 153-U, 252-U DB	5998	CASS/FIC	
UX-302-A	U PLANT	154-UX DB	9428	CASS/MFIC	
241-S-304	S FARM	151-S DB	804	FIC	OPERATIONAL 10/91, REPLACED S-302-A
244-S-TK/SMP	S FARM	DCRT - RECEIVES FROM SEVERAL FARMS	8244	MANUALLY	CWF
244-TX-TK/SMP	TX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	19881	MANUALLY	CWF

Total active facilities

16

LEGEND: DB - Diversion Box

DCRT - Double-Contained Receiver Tank

FIC - Food Instrument Corporation

MFIC - Manual FIC

MT - Manual Tape

O/S - Out of Service

CWF - Weight Factor/SpG = Corrected Weight Factor

CASS - Computer Automated Surveillance System

MCS - Monitor and Control System

TABLE G-2. EAST AREA CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

INACTIVE - no longer receiving waste transfers
November 1992

VOLUME
OF

FACILITY	LOCATION	RECEIVED WASTE FROM:	CONTENTS MONITORED		REMARKS
			(Gallons)	BY	
A-302-B	A FARM	152-A DB	3140	CASS/MT	ISOLATED 1985, PROJECT B-138 INTERIM STABILIZED 1990
B-301-B	B FARM	151-B, 152-B, 153-B, 252-B DB	UNKNOWN	NM	ISOLATED 1985(1)
B-302-B	B FARM	154-B DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-A	BX FARM	152-BR, 153-BX, 152-BXR, 152-BYR DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-B	BX FARM	154-DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-C	BX FARM	155-B DB	UNKNOWN	NM	ISOLATED 1985(1)
C-301-C	C FARM	151-C, 152-C, 153-C, 252-C DB	UNKNOWN	NM	ISOLATED 1985(1)
241-CX-70	HOT SEMI-	TRANSFER LINES	UNKNOWN	NM	ISOLATED, DECOMMISSION PROJ.
241-CX-72	WORKS	TRANSFER LINES	UNKNOWN	NM	SEE DWG H-2-95-501, 2/5/87
244-AR	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	BEING UPGRADED
001-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
002-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
003-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
011-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
361-B-TANK	B PLANT	DRAINAGE FROM B-PLANT	UNKNOWN	NM	INTERIM STABILIZED 1985(1)

Total East Area inactive facilities 15

LEGEND: DB - Diversion Box
DCRT - Double-Contained Receiver Tank
MT - Manual Tape
CASS - Computer Automated Surveillance System
NM - Not Monitored

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

TABLE G-3. WEST AREA CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

INACTIVE - no longer receiving waste transfers
November 1992

VOLUME
OF

CONTENTS

FACILITY	LOCATION	RECEIVED WASTE FROM:	CONTENTS (Gallons)	BY	REMARKS
S-302	S FARM	240-S-151 DB	2332	CASS/FIC	ASSUMED LEAKER EPDA 85-04
S-302-A	S FARM	241-S-151 DB	O/S	CASS/FIC	ASSUMED LEAKER TF-EFS-90-042 PARTIALLY FILLED WITH GROUT 2/91 DETERMINED STILL ASSUMED LEAKER AFTER LEAK TEST
S-302-B	S FARM	S ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
SX-304(302)	SX FARM	152-SX TRANSFER BOX, 151-SX DB	UNKNOWN	NM	ISOLATED 1985(1)
TX-302	TX FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
TX-302-X-B	TX FARM	TX ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
TX-302-B	TX FARM	155-TX DB	O/S	CASS/MT	WORK REQ. ISSUED TO REPLACE O/S MT
TY-302-A	TY FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
TY-302-B	TY FARM	TY ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
001-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
002-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
003-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
001-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
00-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
003-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
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 1985(1)
244-U-TK/SMP	U FARM	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	NOT YET IN USE

Total West Area inactive facilities 19

LEGEND: DB - Diversion Box
DCRT - Double-Contained Receiver Tank
FIC - Food Instrument Corporation
MT - Manual Tape
O/S - Out of Service
CASS - Computer Automated Surveillance System
NM - Not Monitored

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

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APPENDIX H
LEAK VOLUME ESTIMATES

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TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (4) (Sheet 1 of 5)

Tank No.	Date Declared Confirmed or Assumed Leaker (3)	Volume (2) (Gallons)	Associated Curies 137 cs	Interim Stabilized Date	Leak Estimate	
					Updated	Reference
241-A-103	1987	5500 (10)		8/88	1987	(j)
241-A-104	1975	2500		9/78	1983	(a)
241-A-105 (1)	1963	10000 to 277000	85000 to 760000 (b)	7/79	1991	(b),(c)
241-AX-102	1988	3000 (10)		9/88	1989	(h)
241-AX-104	1977	-- (8)		8/81	1989	(g)
241-B-101	1974	-- (8)		3/81	1989	(g)
241-B-103	1978	-- (8)		2/85	1989	(g)
241-B-105	1978	-- (8)		12/84	1989	(g)
241-B-107	1980	8000 (10)		3/85	1986	(d),(f)
241-B-110	1981	10000 (10)		12/84	1986	(d)
241-B-111	1978	-- (8)		6/85	1989	(g)
241-B-112	1978	2000		5/85	1989	(g)
241-B-201	1980	1200 (10)		8/81	1984	(e),(f)
241-B-203	1983	300 (10)		6/84	1986	(d)
241-B-204	1984	400 (10)		6/84	1989	(g)
241-BX-101	1972	-- (8)		9/78	1989	(g)
241-BX-102	1971	70000	50000 (l)	11/78	1986	(d)
241-BX-108	1974	2500	500 (l)	7/79	1986	(d)
241-BX-110	1976	-- (8)		8/85	1989	(g)
241-BX-111 (7)	1984	-- (8)		N/A	1989	(g)
241-BY-103	1973	<5000		N/A	1983	(a)
241-BY-105	1984	-- (8)		N/A	1989	(g)
241-BY-106	1984	-- (8)		N/A	1989	(g)
241-BY-107	1984	15100 (10)		7/79	1989	(g)
241-BY-108	1972	<5000		2/85	1983	(a)
241-C-101	1980	20000 (10)		11/83	1986	(d)
241-C-110	1984	2000		N/A	1989	(g)
241-C-111	1968	5500 (10)		3/84	1989	(g)
241-C-201 (5)	1988	550		3/82	1987	(i)
241-C-202 (5)	1988	450		8/81	1987	(i)
241-C-203	1984	400 (10)		3/82	1986	(d)
241-C-204 (5)	1988	350		9/82	1987	(i)
241-S-104	1968	24000 (10)		12/84	1989	(g)
241-SX-104	1988	6000 (10)		N/A	1988	(k)
241-SX-107	1964	<5000		10/79	1983	(a)
241-SX-108 (6)	1962	2400 to 35000	<140000 (m)	8/79	1991	(m)
241-SX-109 (6)	1965	<10000	<40000 (n)	5/81	1992	(n)
241-SX-110	1976	5500 (10)		8/79	1989	(g)
241-SX-111	1974	2000	2000 (l)	7/79	1986	(d)
241-SX-112	1969	30000	40000 (l)	7/79	1986	(d)
241-SX-113	1962	15000	8000 (l)	11/78	1986	(d)
241-SX-114	1972	-- (8)		7/79	1989	(g)
241-SX-115	1965	50000	21000 (o)	9/78	1992	(o)
241-T-101	1992	7500 (10)		N/A	1992	(p)
241-T-103	1974	<1000 (10)		11/83	1989	(g)
241-T-106	1973	115000 (10)	40000 (l)	8/81	1986	(d)
241-T-107	1984	-- (8)		N/A	1989	(g)
241-T-108	1974	<1000 (10)		11/78	1980	(f)
241-T-109	1974	<1000 (10)		12/84	1989	(g)
241-T-111 (5)	1984	<1000 (10)		N/A	1980	(f)
241-TX-105 (7)	1977	-- (8)		9/83	1989	(g)
241-TX-107 (6)	1984	2500		10/79	1986	(d)
241-TX-110	1977	-- (8)		4/83	1989	(g)
241-TX-113	1974	-- (8)		4/83	1989	(g)
241-TX-114	1974	-- (8)		4/83	1989	(g)
241-TX-115	1977	-- (8)		9/83	1989	(g)
241-TX-116	1977	-- (8)		4/83	1989	(g)
241-TX-117	1977	-- (8)		3/83	1989	(g)
241-TY-101	1973	<1000 (10)		8/83	1980	(f)
241-TY-103	1973	3000	700 (l)	2/83	1986	(d)
241-TY-104	1981	1400 (10)		1/83	1986	(d)
241-TY-105	1960	35000	4000 (l)	2/83	1986	(d)
241-TY-106	1959	20000	2000 (l)	11/78	1986	(d)
241-U-101	1959	30000	20000 (l)	9/79	1986	(d)
241-U-104 (7)	1961	55000	90 (l)	10/78	1986	(d)
241-U-110	1975	8100 (10)		12/84	1986	(d)
241-U-112 (7)	1980	8500 (10)		9/78	1986	(d)
67 Tanks		<600,000 - 900,000 (9)				

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

FOOTNOTES: SEE NEXT PAGE

TABLE H-1. Single-Shell Tank Leak Volume Estimates
(Sheet 2 of 5)

Footnotes:

- (1) Current estimates (see reference b) are that 610 Kgal 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 and moved into compliance 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 Kgal to 277 Kgal) is based on the following (see References).
1. Reference (b) contains an estimate of 5 Kgal to 15 Kgal for the initial leak prior to August 1968.
 2. Reference (b) contains an estimate of 5 Kgal to 30 Kgal for the leak while the tank was being sluiced from August 1968 to November 1970.
 3. Reference (b) contains an estimate of 610 Kgal 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 that 378 to 410 Kgal 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 Kgal 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.

TABLE H-1. Single-Shell Tank Leak Volume Estimates
(Sheet 3 of 5)

- (3) In many cases, a leak was suspected long before it was identified or confirmed. 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.
- (4) There is an effort currently in progress to reevaluate these leak volume estimates.
- (5) 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.
- (6) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicative of a continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.
- (7) These four tanks also show slight indications of continuing leaks or movement of radionuclides in the soil.
- (8) 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 (10). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgal (rounded to the nearest 10 Kgal).
- (9) The total has been rounded to the nearest 50 Kgal. Upperbound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.
- (10) 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.

TABLE H-1. Single-Shell Tank Leak Volume Estimates.
(Sheet 4 of 5)

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- (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*, Westinghouse Hanford Company, Richland, Washington.
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- (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) Campbell, G. D., 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.

TABLE H-1. Single-Shell Tank Leak Volume Estimates.
(Sheet 5 of 5)

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

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H. R. Brager	L5-65
D. R. Bratzel	L5-31
R. K. Brown	H5-68
J. G. Burk, Jr.	B3-25

Distribution - continued

J. H. Bussell	L7-06
J. A. Caggiano Jr	H5-29
K. G. Carothers	R1-51
J. W. Carey	S0-01
R. J. Cash	R2-32
G. Christensen	H4-21
J. C. Conner	H5-31
F. M. Coony	H6-07
W. L. Cowley	H5-31
N. R. Croskrey	R1-51
G. M. Crummel	R1-51
J. M. Cruse	L5-63
D. S. Cunningham	S0-02
L. T. Cunningham	R1-51
J. I. Dearing	H5-72
C. DeFigh-Price	R2-31
T. A. Demitruk	H5-36
D. R. Dickinson	L5-31
E. C. Ladd	R1-19
R. A. Dodd	R1-51
M. R. Duncan	L6-10
G. L. Dunford	R1-51
W. S. Dunnivant	R2-88
J. A. Eacker	R1-51
D. R. Ellingson	B5-35
M. F. Erhart	R2-11
S. D. Estey	R2-11
W. G. Farley	H5-32
K. O. Fein	H5-34
R. A. Flores	S0-12
L. A. Fort	B2-20
K. D. Fowler	R2-11
G. L. Fox, Jr.	L5-01
G. T. Frater	R1-51
J. R. Freeman-Pollard	H6-03
J. C. Fulton	R2-31
K. A. Gasper	R2-08
G. J. Gauck	R2-07
R. L. Gilchrist	L5-63
D. A. Gilles	S2-70
S. D. Godfrey	R1-51
D. J. Green	H5-53
J. M. Grigsby	H4-62
V. W. Hall	B1-59
C. S. Haller	R2-18
D. G. Hamrick	R1-51
K. L. Hampsten	L4-71
B. M. Hanlon (30)	R1-80
J. M. Hanson	R2-40
H. D. Harmon	R2-52
J. P. Harris III	S4-55
J. M. Henderson	S4-55
D. W. Hendrickson	R4-03
N. A. Hertelendy	H5-09

Distribution - continued

E. G. Hess	R3-09
M. C. Higginson	A4-25
J. G. Hill	R2-12
B. M. Hisaw	R1-62
J. D. Hopkins	R2-11
B. K. Horsager	S4-57
R. D. House	R2-83
J. H. Huber	R1-49
J. L. Huckaby	R2-11
L. L. Humphreys	R2-50
J. E. Hysjulien	S0-09
J. E. Irwin	B1-59
M. N. Islam	R3-08
G. D. Johnson	R2-78
J. L. Juette	G6-56
L. J. Julyk	H5-56
R. A. Kirkbride	S4-58
N. W. Kirch	R2-11
W. L. Knecht	H0-34
E. M. Koellermeier	R4-40
G. M. Koreski	R1-51
A. G. Krasopoulos	A5-55
M. Kummerer	H5-32
M. J. Kupfer	H5-49
J. E. Langdon	S2-96
D. L. Lenseigne	R2-75
D. C. Lini	H5-49
P. J. Mackey	B3-15
G. T. MacLean	S4-58
M. K. Mahaffey	L4-73
R. M. Marusich	H5-32
V. D. Maupin	R1-51
T. B. McCall	H0-33
J. D. McCormack	L5-31
K. S. McCullough	H5-34
M. E. McDonald	R1-62
T. E. Mensinger	T3-10
N. J. Milliken	H5-34
W. J. Millsap	H5-68
G. J. Miskho	R2-50
J. R. Mobley	R2-18
K. L. Morris	H5-09
J. P. Mullally	S4-57
L. D. Muhlestein	N1-28
A. F. Noonan	R2-12
T. W. Oden	D2-29
P. C. Ohl	R1-30
D. B. Pabst	B2-35
R. B. Pan	H5-53
I. G. Papp	R3-45
G. L. Parsons	S4-57
M. A. Payne	R2-50
T. B. Powers	H0-31
R. K. P'Pool	T1-30

Distribution - continued

J. G. Propson	R2-18
T. E. Rainey	R1-49
R. E. Raymond (2)	R1-80
R. W. Reed	R1-51
I. E. Reep	R2-08
M. A. Rezvani	H5-55
D. Richardson	R2-31
J. H. Roecker	G6-02
L. Ruffin	R2-95
J. A. Ryan	H5-55
C. C. Scaief	L7-06
F. A. Schmorde	R2-88
J. S. Schofield	R1-51
C. P. Schroeder	L7-06
D. D. Scott	L6-10
K. V. Scott	H5-52
R. A. Shea	S0-02
J. E. Shapley	N1-83
E. M. Sheen	L7-05
E. J. Shen	S4-58
P. K. Shen	H0-39
A. T. Shook	S2-01
A. B. Sidpara	A2-91
S. G. Spencer	R1-30
S. M. Stahl	H5-31
E. G. Stephan	A3-74
R. R. Stickney	R1-49
T. L. Strathman	S0-14
J. N. Strobe	R1-51
K. C. Strong	R2-12
M. J. Sutey	R1-49
D. G. Sutherland	L4-72
J. P. Summerhays	R2-88
L. M. Swanson	H5-34
J. F. Thompson	H5-71
J. D. Thomson	R1-30
S. R. Tifft	H6-26
J. A. Tilden (2)	L6-10
H. Toffer	H0-38
T. T. Tran	L7-05
J. B. Truitt	H5-56
R. E. Vandercook	S6-07
R. J. Van Vleet	H5-32
J. A. Voogd	R4-03
J. R. Weber	G6-46
D. L. Wegener	R1-62
R. K. Welty	R1-80
G. T. Wells	H6-26
K. A. White	R1-51
D. D. Wodrich	B1-59

Distribution - continued

Docket File (2)	H5-36
272-AW Shift Office	S5-04
Central Files (2)	L8-04
Tank Farms Info Center	R1-28
Information Release	
Administration (3)	R1-08
Env Data Mgmt Center	H4-22

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