Tank Farm Surveillance and Waste Status Summary Report for December 1992

B. M. Hanlon

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**TANK FARM SURVEILLANCE AND WASTE STATUS
SUMMARY REPORT FOR DECEMBER 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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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 DECEMBER 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 ^f	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. The total of 105 interim stabilized tanks includes eight tanks that do not meet current established supernatant and interstitial liquid stabilization criteria: 104-B, 107-B, 110-B, 111-B, 110-BX, 102-T, 112-T, and 110-U.

^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.

^f Of the 67 assumed leaker tanks, nine have not yet been interim stabilized. See Appendix H for more details.

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 406.20 inches on December 1 to 408.70 inches by December 31, 1992. The manual tape increased from 410.25 to 414.75 inches by December 26, and decreased to 409.00 inches by December 31, 1992 (a new manual tape was installed on October 5, 1992, which is 10-7/8 inches longer than the previous manual tape). The radar gauge reading was 409.23 inches December 1 and 410.93 inches on December 31, 1992. 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 inches in March 1983 to 242.10 inches 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 inches, increased to 241.00 inches on November 28, and was out of service November 29 and 30, 1992. The surface level reading was 241.60 inches after FIC repair on December 1, 1992, and 241.50 inches on December 31, 1992. The Interstitial Liquid Level (ILL) has remained stable at 20.5 feet (-0.1 feet from the established baseline since March 1, 1991), and was last scanned November 27, 1992. An evaporation study was completed by Waste Characterization Analysis, and concluded that the observed rate of liquid level decrease is within the range expected from evaporation. A small leak could easily be masked by modeling uncertainties. It has been determined by Surveillance and Data Acquisition that the observed decrease in the surface level measurement is attributed to the FIC plummet contacting a dry irregular surface in a depression (based on in-tank photographs taken December 17, 1987). The FIC will be placed from the automatic to the intrusion mode of operation. Liquid observation well (LOW) scan data will be the primary means of leak detection. The LOW monitoring frequency has been increased from quarterly to monthly. Drywell scan data remain stable. This tank will not appear on future reports unless new anomalies are found in the surveillance data.

Tank 241-SX-105. An Interstitial Liquid Level (ILL) baseline of 21.2 feet was established for Tank 105-SX Liquid Observation Well on August 27, 1986. The current scan of December 30, 1992, shows a 0.3-foot 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. Drywell scan data remain stable. Work is in progress to repair the radiation detection laterals underneath this tank to provide improved leak detection. A tank leak assessment team is being formed to review this tank in January 1993.

Tank 241-SX-106. The surface level measurement baseline was adjusted on April 3, 1991, for an increase attributed to a steam coil leak that occurred March 13, 1991 (reference Occurrence Report WHC-91-0206-TFARM). The level increased an additional 1.20 inches by May 17, 1991, after baseline change. There has been a decreasing trend in the surface level measurement from 209.90 inches on May 17, 1991, to 206.00 inches by December 31, 1992. The decrease criteria is 5.00 inches from reference baseline of 208.70 inches. The FIC plummet is contacting solids. In-tank photographs taken June 1, 1989, show what appears to be a floating solid (foam-like) surface. The LOW ILL increased from 16.3 feet (from reference baseline) to 16.6 feet by March 19, 1991, and remained at 16.6 feet to October 24, 1991. The ILL decreased to 16.3 feet (-0.3 feet) by October 8, 1992, and has remained at 16.3 feet during December 1992. An evaporation study has been completed by Waste

Characterization Analysis. The analysis indicated that observed liquid level decreases could be attributed to evaporation and are within the range expected from evaporation. A small leak could easily be masked by modeling uncertainties. LOW monitoring has been increased to very two weeks. Drywells associated with 106-SX are stable. This tank continues to be under investigation.

Potential or Assumed Leaks:

Tank 241-T-101. A surface level decrease of 2.60 inches from the previously established liquid level of 44.20 inches 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. 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. The FIC surface level measurement was 41.50 inches on October 31, 1992, and increased to 43.80 inches after a reference elevation check was performed by instrument technicians on November 14, 1992. The FIC surface level measurement is reading 43.55 inches on December 31, 1992. A manual tape surface level measurement device was installed on December 18, 1992. The measurement from this device has been steady at 40.5 inches. Drywell scan data was reviewed and is stable. Drywell monitoring (gross gamma) frequencies have been increased to weekly. Plans are underway to begin pumping this tank by March 15, 1993.

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 inches, thus exceeding the 2.00-inch increase criteria from the established baseline of 142.50 inches. The surface level measurement was rechecked on October 9, 1992, (145.50 inches) and October 13 (145.00 inches), verifying the increase and that the criteria had been exceeded. The monitoring frequency has been increased from quarterly to monthly. The reading for December 29, 1992, was 144.75 inches. 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 inches 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 inches, thus exceeding the 2.00-inch increase criteria from the established baseline of 142.40 inches. 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 inches, which is within criteria limits. The reading remained at the 144.30-inch level to December 28, 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-foot 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 feet 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 inches exceeded the 0.50-inch increase criteria from the reference baseline of 31.40 inches. 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. The reference elevation of the FIC was verified on December 17, 1992. The FIC plummet was clean.

HIGHLIGHTS

1. Criticality Safety Issues

On April 30, 1992, an Unreviewed Safety Question (USQ) 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 establishes the limitations for all tanks receiving transfers and also excludes any interim stabilization of single-shell tanks until further evaluations are completed and approved by DOE-HQ. On December 15, 1992, the approved JCO was issued as WHC-SD-WM-JCO-001, "Justification for Continued Operations of Hanford High Level Waste Tanks Resulting From the Criticality USQ, 492-CRITSAS." An amendment request to this JCO to pump and stabilize Tank 241-T-101 has been sent to DOE-HQ for approval. The resolution of the USQ is scheduled for summer 1993.

2. 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.

3. Occurrence Reports

RL-WHC-TANKFARM-1992-0090 (OFF-NORMAL) - 241-AN-107 LEAK DETECTION ANOMALY -- NONE OF THE OTHER LEAK DETECTION METHODS GIVE ANY INDICATION OF A LEAK (10 Day Report)

The annulus continuous air monitor (CAM) for the 107-AN has given periodic higher than normal readings since 1985. The most recent notable radiation spike occurred on July 21, 1992, when the level was recorded at 120,000 disintegrations per minute (dpm). The laboratory analysis of the filter paper determined that the radionuclides were from the Radon daughter product chain.

The possibility of a primary tank leak has been historically evaluated and ruled out due to the lack of long-lived radionuclides on the CAM filters. Additionally, none of the other leak detection methods give any indication of a leak. There are other tanks that demonstrate similar trends to a lesser magnitude/frequency. An investigation is continuing.

RL-WHC-TANKFARM-1992-0091 (OFF-NORMAL) - MERCURY SPILL (UP TO APPROXIMATELY 3 FLUID OUNCES) DISCOVERED IN THE CONDENSER ROOM OF THE 242-A EVAPORATOR; DATE AND SOURCE OF SPILL UNDETERMINED (10 Day Report)

On December 11, 1992, while performing housekeeping activities in the 242-A Condenser Room, a small amount of mercury was discovered on the second, third, and fourth floor gratings. The liquid was visually identified as liquid metallic mercury. The spill may have been from a manometer previously used for instrument calibrations although the exact source of the mercury is unknown. The manometer was removed from the condenser room by operations personnel qualified to work in a hazardous waste site prior to the discovery of the spill. The condenser room is a five-story surface contamination area with a steel grating floor on the top four levels.

The spill apparently occurred on the fourth level. The mercury then cascaded through four levels of grating which resulted in the liquid breaking up into tiny droplets and bouncing throughout the room. Although the total amount was small, the mercury was dispersed over a very wide area. The amount contained in the manometer tube, identified as the most likely source, is three fluid ounces. The mercury escaped early detection because it was widely dispersed in small droplets. In many cases, the droplets were covered with dust and did not exhibit the characteristic silver color. Other droplets were difficult to detect because the floor grating was either galvanized or painted silver.

The data and source of the spill have not been determined but the spill is likely to be the result of human error. The failure to report the spill violated the requirements of the spill response procedure contained in the building emergency plan, resulting in unnecessary personnel exposures.

There was no measurable release to the environment. The room is a surface contamination area, and the potential for hazardous waste spills was previously recognized. All liquid waste spilled to the floor drains

to a double-shell underground storage tank (241-AW-102). Personnel who were potentially exposed to the mercury are currently being evaluated to determine if mercury was absorbed in hazardous amount.

The spill will impact on the 242-A evaporator start-up schedule. The training run, which was in progress when the spill was discovered, has been interrupted and will be delayed until the clean-up is completed.

Corrective actions include completion and issuance of safety plans and emergency response plans pertaining to spills, as well as additional training drills and the review of spill response equipment.

Changes to the Report:

1. Summary section

The Integrated Core Sample Schedule, formerly Figure 1, will no longer appear in this report until the new schedule has been revised and approved.

Figure 2, Master Core Sampling Schedule, is included only in this issue to show individual tank core sampling and scheduling information for FY 1992 through 1998.

2. Section A, Tank Equipment Code and Status Definitions

A subsection category, Waste Tanks - General, has been added to item number 3, Definitions.

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.

December 1992

<u>Single-Shell Tanks</u>			<u>Single-Shell Tanks</u>			<u>Single-Shell Tanks</u>		
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		<u>Double-Shell Tanks</u>		
110-BY	Ferrocyanide		109-SX	Hydrogen potential,		Tank No.	Category	
111-BY	Ferrocyanide			other tanks vent		103-AN	Hydrogen	
112-BY	Ferrocyanide			thru it		104-AN	Hydrogen	
103-C	Organic Salts		101-T	Ferrocyanide		105-AN	Hydrogen	
106-C	High Heat Load		107-T	Ferrocyanide		101-AW	Hydrogen	
			110-T	Hydrogen		101-SY	Hydrogen	
						103-SY	Hydrogen	
						6 Tanks		

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYANIDE (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 December 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.

Tank No.	Highest Temp.		Date	Probe (7) Position	Total Waste (inches) (8)	FeCN (x1000 g mol)(2)	Estimated Heat Load (3)		Assumed Leak Date	Interim Stabilized Date
	Reading (9) This Month (F.)						(Btu/h)	(kW)		
102-BX	68		12/25/92	TC#1	42	<1	<10000	<2.93	1971	11/78
106-BX	68		12/25/92	TC#1	24	<1	<10000	<2.93	Sound	N/A
110-BX	68		12/25/92	TC#2	80	<1	<10000	<2.93	1976	8/85
111-BX	71		12/25/92	TC#1	91	<1	<10000	<2.93	1984	N/A
101-BY (5)	76		12/27/92	TC#1	148	<1	8200	2.40	Sound	5/84
103-BY (5)	83		12/27/92	TC#3	153	66	8600	2.52	1973	N/A
104-BY (5)	130		12/27/92	TC#2	155	83	5500	1.61	Sound	1/85
104-BY (5,6)	116		12/27/92	TC#1						
105-BY (5)	114		12/27/92	TC#1	190	36	3400	0.97	1984	N/A
105-BY (5)	121		12/27/92	TC#1						
106-BY (5)	131		12/20/92	TC#1	241	70	3300	0.97	1984	N/A
107-BY (5)	95		12/27/92	TC#1	104	42	14500	4.25	1984	7/79
108-BY (5)	111		12/27/92	TC#1	90	58	23000	6.74	1972	2/85
110-BY (5)	120		12/14/92	TC#1	152	71	25200	7.39	Sound	1/85
110-BY (5,6)	108		12/09/92	TC#1						
111-BY (5)	86		12/27/92	LOW	174	6	34200	10.02	Sound	1/85
112-BY (5)	83		12/27/92	LOW	113	2	<10000	<2.93	Sound	5/85
108-C	78		12/11/92	TC#2	31	25	10000	<2.93	Sound	3/84
109-C	80		12/11/92	TC#1	31	30	3800	1.11	Sound	11/83
109-C (6)	80		12/14/92	TC#1						
111-C	77		12/11/92	TC#2	28	33	<10000	<2.93	1968	3/84
112-C	83		12/11/92	TC#1	45	31	<10000	<2.93	Sound	9/90
112-C (6)	83		12/05/92	TC#1						
101-T	73		12/10/92	TC#1	56	<1	<10000	<2.93	1992	N/A
107-T	71		12/30/92	TC#2	73	5	<10000	<2.93	1984	N/A
118-TX (4,5)	78		12/27/92	TC#1	134	<1	4900	1.44	Sound	4/83
101-TY (5)	68		12/30/92	TC#1	50	23	<10000	<2.93	1973	8/83
103-TY (5)	71		12/20/92	TC#2	66	28	<10000	<2.93	1973	2/83
104-TY (5)	67		12/30/92	TC#1	24	12	<10000	<2.93	1981	1/83
24 Tanks										

Legend: TC = Thermocouple
LOW = Liquid Observation Well. A single thermocouple is positioned in the well.

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 = 34.12 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 trees 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 (TMACS) 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.

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	12 TCs connected to switch
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 14 TCs in riser 1. 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. New tree installed in riser 1 in 1983.
107-BY	#1 thru 14 – Marginal	TMACS readings taken from 14 TCs in riser 1.

Footnotes continued next page

TABLE 2. TANKS CONTAINING >1000 GRAM MOLE OF FERROCYNIDE (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 December 1992. All Watch List tanks are reviewed for increasing temperature trends.

Tank No.	Highest Temp.		Date	Probe (4) Position	Total Waste (5) (inches)	Monitoring Frequency	Assumed Leaked Date	Interim Stabilized Date
	Reading This Month (F.)							
101-A	155		12/10/92	TC#9	354	Weekly	SOUND	N/A
101-AX	140		12/10/92	TC#1	279	Weekly	SOUND	N/A
103-AX	119		12/10/92	TC#1	48	Weekly	SOUND	8/87
102-S (3)	110		12/27/92	TC#3	207	Weekly	SOUND	N/A
111-S	96		12/28/92	TC#1	224	Weekly	SOUND	N/A
112-S	90		12/30/92	TC#3	239	Weekly	SOUND	N/A
101-SX	143		12/27/92	TC#1	173	Weekly	SOUND	N/A
102-SX	158		12/27/92	TC#1	205	Weekly	SOUND	N/A
103-SX	180		12/31/92	TC#2	245	Weekly	SOUND	N/A
104-SX	176		12/27/92	TC#1	231	Weekly	1988	N/A
105-SX	188		12/27/92	TC#1	256	Weekly	SOUND	N/A
106-SX (3)	112		12/31/92	TC#1	203	Weekly	SOUND	N/A
109-SX (2)	153		12/30/92	Tree 2/TC#1	98	Weekly	1965	5/81
110-T	67		12/10/92	TC#6	145	Weekly	SOUND	N/A
103-U	91		12/26/92	TC#3	178	Weekly	SOUND	N/A
105-U	95		12/20/92	TC#3	159	Weekly	SOUND	N/A
108-U	91		12/26/92	TC#2	178	Weekly	SOUND	N/A
109-U	90		12/20/92	TC#3	176	Weekly	SOUND	N/A
103-AN (1)	116		12/28/92			Weekly	SOUND	N/A
104-AN (1)	121		12/28/92			Weekly	SOUND	N/A
105-AN (1)	111		12/28/92			Weekly	SOUND	N/A
101-AW (1) (6)	105		12/28/92			Weekly	SOUND	N/A
101-SY (1)	126		12/24/92			Daily	SOUND	N/A
103-SY (1)	106		12/07/92			Weekly	SOUND	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 December 1992. These tanks are monitored weekly.
All Watch List tanks are reviewed for increasing temperature trends.

Tank No.	Highest Temp.		Date	Probe (4)		Total		Assumed Leaked		Interim	
	Reading	This Month (F.)		Position	Waste (5)	Inches	Date	Date	Date	Stabilized	Date
103-B	65		12/25/92	TC#1	29		1978			2/85	
103-C (3)	125		12/11/92	TC#2	78		SOUND			N/A	
102-S (1)	110		12/27/92	TC#3	207		SOUND			N/A	
106-SX (1)	112		12/31/92	TC#1	203		SOUND			N/A	
105-TX	101		12/22/92	TC#4	228		1977			9/83	
118-TX (2)	78		12/27/92	TC#1	134		SOUND			4/83	
106-U	86		12/20/92	TC#1	90		SOUND			N/A	
107-U	83		12/20/92	TC#3	155		SOUND			N/A	
8 Tanks											

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 December 1992.

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

Tank No.	Highest Temp. Reading this Month (F.)	Date	Probe Position (7)	Total		Monitoring Frequency (8)	Estimated Heat Load (1) (Btu/h)	Assumed		Interim Stabilized Date
				Waste Inches (8)	Waste Inches (8)			Leaked Date	Leaked Date	
104-A (4)	198	12/3/92	R-12	18	18	Weekly	50000	14.65	1975	9/78
105-A (4)	140	12/24/92	R-16	14	14	Weekly	50000	14.65	1963	7/79
105-C (2)(6)	95	12/17/92	TC#1	62	62	Monthly	42000	11.72	SOUND	N/A
106-C (2)(3)(6)	159	12/07/92	Riser 8/TC#1	91	91	Weekly	150000	43.96	SOUND	N/A
	126	12/25/92	Riser 14/TC#1			Weekly				
107-SX	165	12/04/92	Tree 2/TC#1	45	45	Monthly	42000	11.72	1964	10/79
108-SX	196	12/04/92	Tree 8/TC#1	49	49	Monthly	45000	13.19	1962	8/79
109-SX (3)	153	12/04/92	Tree 2/TC#1	98	98	Weekly	50000	14.65	1965	5/81
110-SX	169	12/04/92	Tree 2/TC#1	30	30	Monthly	42000	11.72	1976	8/79
111-SX	185	12/04/92	Tree 2/TC#1	53	53	Monthly	44000	12.90	1974	7/79
112-SX	156	12/04/92	Tree 8/TC#1	41	41	Monthly	43000	12.60	1969	7/79
114-SX	184	12/04/92	Tree 2/TC#1	73	73	Monthly	58000	17.00	1972	7/79
<div>11 Tanks</div> <div>Legend: Probe Position Tree=Thermocouple Tree TC=Thermocouple on Tree R=Riser</div>										
105-A Laterals (5) 245 12/28/92 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

December 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)	5.10 Mgal	Watch List Tank Space (103-AN, 104-AN, 105-AN, 101-SY, 103-SY, 101-AW)	0.70 Mgal
Neutralized Current Acid Waste (101-AZ, 102-AZ)	1.20 Mgal	Priority Tank Space (2) (101-AN, 102-AW, 106-AW, 102-SY)	1.54 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)	11.40 Mgal	Miscellaneous Head Space	0.21 Mgal
NCRW and PFP Settled Solids (103-AW, 105-AW, 102-SY)		TOTAL DOUBLE-SHELL TANK SPACE	
Total Inventory:		24 Tanks at 1140 Kgal 4 Tanks at 980 Kgal	27.36 Mgal 3.92 Mgal 31.28 Mgal
		Total Available Space	31.28 Mgal
		Double-Shell Tank Inventory	- 24.81 Mgal
		Space Designated for Specific Use	- 5.39 Mgal
		Remaining Unallocated Space	1.08 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 18 Kgal

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

December 1992

Date of Last

Automatic

Tank No.	Category	FIC Reading	Reading Status	Comments	Monitoring Frequency
107-C	-	12/11/92	No reading taken since 12/21/92	Out of compliance as of 12/28/92	Weekly
103-T	IS	11/15/91	No reading taken since 12/07/92	In compliance as of 12/31/92	Quarterly
101-TY	IS	12/17/92	No reading taken since 12/17/92	In compliance as of 12/31/92	Quarterly
103-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Quarterly
104-BX	IS	11/16/91	Taking manual FIC readings	In compliance	Weekly
107-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Weekly
109-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Monthly
109-BY	-	10/20/92	Taking manual FIC readings	In compliance	Weekly
103-S	-	12/15/92	Taking manual FIC readings	In compliance	Weekly
106-S	-	12/29/92	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
109-T	IS	04/20/92	Taking manual FIC readings	In compliance	Monthly
104-TX	IS	07/27/92	Taking manual FIC readings	In compliance	Quarterly
103-U	-	11/09/92	Taking manual FIC readings	In compliance	Weekly
105-U	-	11/17/92	Taking manual FIC readings	In compliance	Weekly
107-U	-	12/28/92	Taking manual FIC readings	In compliance	Weekly
102-AN	DST	10/28/92	Taking manual FIC readings	In compliance	Daily
102-AP	DST	10/21/92	Taking manual FIC readings	In compliance	Daily
103-AP	DST	12/16/92	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
102-AW	DST	12/06/92	Taking manual tape readings	In compliance	Daily
103-AW	DST	03/21/92	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				In compliance	Daily
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
U-301-B		12/09/92	No reading taken since 12/09/92	Out of compliance as of 12/10/92	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 12/31/92

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		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 12/31/92

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				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	O/C	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				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 12/31/92

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)	
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		N/A	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 12/31/92

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				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		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	O/C	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: 1 tank	O/C: 3 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 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 for non-heat load (>40,000 Btu/hr) tanks. However, the operating procedure requires that attempts are to be made semiannually in January and July to obtain readings from these tanks. The remaining 24 tanks are O/C because they had readings at the semiannual date of January 1992 but no readings since that time.

**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 12/31/92

Information as of 12/31/92

Tank Number	Watch List	Temperature Readings (4) (OSR/SAR)	Surface Level Readings (1) (-357, OSR/SAR)		Radiation Readings		
					Leak Detection Pits (5) (-357, OSR/SAR)		Annulus (-357)
			M.T.	FIC	W.F.	Rad.	
101-AN			N/A				
102-AN			N/A			O/C	
103-AN	X		N/A				
104-AN	X		N/A				
105-AN	X		N/A				
106-AN			N/A				
107-AN			N/A				
101-AP						O/S	
102-AP						O/S	
103-AP						O/S	
104-AP						O/S	
105-AP						O/S	
106-AP						O/S	
107-AP						O/S	
108-AP						O/S	
101-AW	X						
102-AW				O/S			
103-AW				O/S			
104-AW							
105-AW							
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			
103-SY	X					O/C	
Totals: 28 tanks	8 Watch List Tanks	O/C: 0 (4)	O/C: 0	O/C: 0	O/C: 0	O/C: 3 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.

TSM8

Figure 1. Current Status and Contingency Space for the 242-A Evaporator Restart

Issue Date: 9/25/92
DRAFT

MASTER CORE SAMPLING SCHEDULE

Waste Tank Characterization

Figure 2. Master Core Sampling Schedule (Page 1 of 5)

MASTER CORE SAMPLING SCHEDULE
Waste Tank Characterization
Issue Date: 9/25/92
DRAFT

FY 1995

Sampling mode
Number of cores
double shell tank
single shell tank

Legend:
H₂ = Hydrogen
FeCN = Ferrocyanide
Org = Organics
ΔI = High Heat
DS = Double shell slurry feed
AW = Aged waste
D NCX = Dilute non-complex waste
D CX = Dilute complex
CW = Concentrate waste
Na = Salt cake
DW = Dilute waste
CPW = Concentrated phosphate waste

Figure 2. Master Core Sampling Schedule (Page 2 of 5)

MASTER CORE SAMPLING SCHEDULE
Waste Tank Characterization
Issue Date: 9/25/92
DRAFT

FY 1996

single-shell tank
double-shell tank
Sampling mode
Segments per core
Number of cores

 H₂ = Hydrogen
 FeCN = Ferrocyanide
 Org = Organics
 Δt = High Heat

 AW = Aged waste
 D, NCX = Dilute non-complex waste
 D, CX = Dilute complex
 DS = Dilute slurry feed

 CW = Concentrate waste
 Na = Salt cake
 CPW = Concentrated phosphate waste

Figure 2. Master Core Sampling Schedule (Page 3 of 5)

MASTER CORE SAMPLING SCHEDULE
Waste Tank Characterization

Issue Date: 9/25/92

DRAFT

FY 1997

TX-117 Na P 1 1 1 1 1	Oct	TX-113 Na P 1 1 1 1 1	Oct	TX-114 Na P 1 1 1 1 1	Oct	B-105 Na P 1 1 1 1 1	Oct	C-104 sludge P 1 1 1 1 1	Oct
C-106 Δt P 1 1 1 1 1	Nov	TX-105 sludge P 1 1 1 1 1	Nov	BX-109 sludge P 1 1 1 1 1	Nov	SY-102 D NCX P 1 1 1 1 1	Nov	AN-107 CW P 1 1 1 1 1	Nov
TX-103 sludge P 1 1 1 1 1	Dec	TX-108 Na P 1 1 1 1 1	Dec	A-106 sludge P 1 1 1 1 1	Dec	U-104 sludge P 1 1 1 1 1	Dec	AY-101 D CX P 1 1 1 1 1	Jan
AY-102 D NCX P 1 1 1 1 1	Jan	B-109 sludge P 1 1 1 1 1	Jan	AN-102 Slurry P 1 1 1 1 1	Jan	B-106 sludge P 1 1 1 1 1	Jan	SX-108 Δt P 1 1 1 1 1	Jan
TX-102 Na P 1 1 1 1 1	Feb	SX-107 Δt P 1 1 1 1 1	Feb	BX-104 sludge P 1 1 1 1 1	Feb	B-108 sludge P 1 1 1 1 1	Feb	SX-112 Δt P 1 1 1 1 1	Feb
C-101 sludge P 1 1 1 1 1	Mar	TX-101 sludge P 1 1 1 1 1	Mar	T-112 sludge P 1 1 1 1 1	Mar	BX-103 sludge P 1 1 1 1 1	Mar	TX-104 Na P 1 1 1 1 1	Mar
TX-102 sludge P 1 1 1 1 1	Apr	SX-110 Δt P 1 1 1 1 1	Apr	T-109 sludge P 1 1 1 1 1	Apr	BX-105 Na P 1 1 1 1 1	Apr	B-203 sludge P 1 1 1 1 1	Apr
B-204 sludge P 1 1 1 1 1	May	U-112 sludge P 1 1 1 1 1	May	T-108 sludge P 1 1 1 1 1	May	BX-101 sludge P 1 1 1 1 1	May	A-102 Na P 1 1 1 1 1	May
TX-110 Na P 1 1 1 1 1	Jun	T-204 sludge P 1 1 1 1 1	Jun	TX-107 Na P 1 1 1 1 1	Jun	T-203 sludge P 1 1 1 1 1	Jun	B-112 sludge P 1 1 1 1 1	Jun
B-102 Na P 1 1 1 1 1	Jul	T-201 sludge P 1 1 1 1 1	Jul	A-104 Δt P 1 1 1 1 1	Jul	TX-106 Na P 1 1 1 1 1	Jul	TX-109 Na P 1 1 1 1 1	Aug
S-105 Na P 1 1 1 1 1	Aug	C-105 Δt P 1 1 1 1 1	Aug	SY-101 H ₂ P 1 1 1 1 1	Aug	A-103 sludge P 1 1 1 1 1	Sep	B-104 Na P 1 1 1 1 1	Sep
TX-111 sludge P 1 1 1 1 1	Sep

H₂ = Hydrogen
FeCN = Ferrocyanide
Org = Organics
Δt = High Heat

AW = Aged waste
D, NCX = Dilute non-complex waste
D, CX = Dilute complex

CW = Concentrate waste
Na = Salt cake
CPW = Concentrated phosphate waste

Figure 2. Master Core Sampling Schedule (Page 4 of 5)

MASTER CORE SAMPLING SCHEDULE

Waste Tank Characterization

Issue Date: 9/25/92
DRAFT

WHC-EP-0182-57

FY 1998

AW = Aged waste
D. NCX = Dilute non-complex waste
D. CX = Dilute complex
H₂ = Hydrogen
FeCN = Ferrocyanide
Org = Organics
Δt = High Heat
CW = Concentrate waste
Na = Salt cake
CPW = Concentrated phosphate waste

Figure 2. Master Core Sampling Schedule (Page 5 of 5)

APPENDIX A

**TANK AND EQUIPMENT CODE
AND STATUS DEFINITIONS**

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TANK AND EQUIPMENT CODE/STATUS DEFINITIONS
December 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 TANKS - GENERAL

Waste Tank Safety Issue	A potentially unsafe condition in the handling of waste material in underground storage tanks that requires corrective action to reduce or eliminate the unsafe condition
Watch List Tank	An underground storage tank containing waste that requires special safety precautions because it may have a serious potential for release of high level radioactive was because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation, Section 3137 of the <i>National Defense Authorization Act for Fiscal Year 1991</i> , November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

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)	Characterized by a high content of organic carbon including organic complexants: 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.
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 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.

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. 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.

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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.

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	Drainable Liquid Remaining minus Supernate.

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Interstitial	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.
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

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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

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

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

500,000 gal. tanks Constructed 1946-47

750,000 gal. tanks Constructed 1948-49

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

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

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750,000 gal. tanks Constructed 1950-51

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

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

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

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

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Figure B-7. Tank Farm Facilities - Quick Reference

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
December 1992

	200		TOTAL
	EAST AREA	WEST AREA	
IN SERVICE	25	3	28 (2)
OUT OF SERVICE	66	83	149
SOUND	59	51	110
ASSUMED LEAKER	32	35	67
INTERIM STABILIZED (1)	51	54	105
ISOLATED			
PARTIAL INTERIM	21	30	51
INTERIM	45	53	98

WASTE VOLUMES (Kgalions)				
	200		TOTAL	
	EAST AREA	WEST AREA		
SUPERNATANT				
AGING	1754	0	1754	0
CC	1954	204	2158	3
CP	6	0	6	0
DC	837	1	838	1
DN	9960	0	9960	0
DN/PD	944	0	944	0
DN/PT	0	601	601	0
DSSF	3812	48	3860	56
NCPLX	234	310	544	544
TOTAL SUPERNATANT	19501	1164	20665	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	35221	25834	61055	36239
AVAILABLE SPACE IN TANKS	5587	877	6464	0
DRAINABLE INTERSTITIAL	2253	4505	6758	6319
DRAINABLE LIQUID REMAINING	21749	5669	27418	6918
TOTAL				
			20061	20665

(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

December 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 (K gallons)

December 1992

SUPERNATANT LIQUID VOLUMES													SOLIDS VOLUME					
TANK FARM	TOTAL WASTE	AVAIL SPACE	AGING	CC	CP	DC	DN	DN/PT	DN/DP	DNIPT	DSSF	NCPLX	TOTAL	DSS	SLUDGE	CAKE	TOTAL	
EAST																		
A	1536	0	0	0	0	0	0	0	0	0	8	0	8	0	556	972	1528	
AN	5979	2001	0	1951	6	0	638	0	0	0	1943	0	4538	937	504	0	1441	
AP	7290	1830	0	0	0	0	6467	0	0	0	823	0	7290	0	0	0	0	
AW	5556	1284	0	0	0	0	2243	944	0	0	1038	0	4225	0	1135	196	1331	
AX	906	0	0	3	0	0	0	0	0	0	0	0	3	0	19	884	903	
AY	1564	396	0	0	0	837	612	0	0	0	0	0	1449	0	115	0	115	
AZ	1884	76	1754	0	0	0	0	0	0	0	0	0	1754	0	130	0	130	
B	2057	0	0	0	0	0	0	0	0	0	0	15	15	0	1697	345	2042	
BX	1559	0	0	0	0	0	0	0	0	0	0	50	50	0	1354	155	1509	
BY	4744	0	0	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	0	169	169	0	1977	0	1977	
Total			35221	5587	1754	1954	6	837	9960	944	0	3812	234	19501	937	8206	8577	15720
WEST																		
S	5680	0	0	0	0	0	0	0	0	0	17	29	46	0	1171	4463	5634	
SX	4453	0	0	0	0	1	0	0	0	0	0	62	63	0	1532	2858	4390	
SY	2543	877	0	204	0	0	0	0	0	601	0	0	805	1103	71	564	1738	
T	2065	0	0	0	0	0	0	0	0	0	0	74	74	0	1991	0	1991	
TX	6905	0	0	0	0	0	0	0	0	0	0	5	5	0	241	6659	6900	
TY	638	0	0	0	0	0	0	0	0	0	0	3	3	0	571	64	635	
U	3550	0	0	0	0	0	0	0	0	0	31	137	168	0	638	2744	3382	
Total			25834	877	0	204	0	1	0	0	601	48	310	1164	1103	6215	17352	24670
TOTAL			61055	6464	1754	2158	6	838	9960	944	601	3860	544	20665	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
December 1992

TANK STATUS			LIQUID VOLUME										SOLIDS VOLUME										VOLUME DETERMINATION				CHANGE SINCE LAST MONTHLY REPORT	
TANK	WASTE MATL	TANK	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	TOTAL PUMPED	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SALT LIQ VOL	CAKE VOL	DSS (Kgal tons)	SLDG VOL	SOLIDS VOLUME	MTHD	UPDATE	DATE	PHOTO	LAST	MONTHLY REPORT					
***** AN FARM STATUS *****																												
101AN	DN	SOUND	DRCVR	231.8	638	502	638	0	0.0	0.0	638	638	0	0	0	0	0	0	FM	S	08/22/89	0/ 0/ 0	0/ 0/ 0					
102AN	CC	SOUND	CWHT	397.1	1105	35	1016	3	0.0	0.0	1019	1016	0	89	0	0	0	0	FM	S	08/22/89	0/ 0/ 0	0/ 0/ 0					
103AN	DSS	SOUND	CWHT	346.2	952	188	15	0	0.0	0.0	15	15	0	937	0	0	0	0	FM	S	08/22/89	10/29/87	10/29/87					
104AN	DSSF	SOUND	CWHT	386.6	1060	80	796	25	0.0	0.0	821	799	0	264	0	0	0	0	FM	S	08/22/89	08/19/88	08/19/88					
105AN	DSSF	SOUND	CWHT	410.9	1132	8	1132	0	0.0	0.0	1132	1132	0	0	0	0	0	0	FM	S	10/22/84	01/26/88	01/26/88					
106AN	CP	SOUND	CWHT	368.4	23	1117	6	0	0.0	0.0	6	6	0	17	0	0	0	0	FM	S	08/22/89	0/ 0/ 0	0/ 0/ 0					
107AN	CC	SOUND	CWHT	389.7	1069	71	935	9	0.0	0.0	944	935	0	134	0	0	0	0	FM	S	08/22/89	09/01/88	09/01/88					
TOTALS:				5979	2001	4538	37	0.0	0.0	0.0	4575	4541	937	504	0													
***** AP FARM STATUS *****																												
101AP	DN	SOUND	DRCVR	386.1	1061	79	1061	0	0.0	0.0	1061	1061	0	0	0	0	0	0	FM	S	05/01/89	0/ 0/ 0	0/ 0/ 0					
102AP	DN	SOUND	GRTFD	49.5	1105	35	1105	0	0.0	0.0	1105	1105	0	0	0	0	0	0	FM	S	07/11/89	0/ 0/ 0	0/ 0/ 0					
103AP	DN	SOUND	DRCVR	412.5	1133	7	1133	0	0.0	0.0	1133	1133	0	0	0	0	0	0	FM	S	10/13/88	0/ 0/ 0	0/ 0/ 0					
104AP	DN	SOUND	GRTFD	7.2	20	1120	20	0	0.0	0.0	20	20	0	0	0	0	0	0	FM	S	10/13/88	0/ 0/ 0	0/ 0/ 0					
105AP	DSSF	SOUND	CWHT	299.6	823	317	823	0	0.0	0.0	823	823	0	0	0	0	0	0	FM	S	02/02/89	0/ 0/ 0	0/ 0/ 0					
106AP	DN	SOUND	DRCVR	411.5	1130	10	1130	0	0.0	0.0	1130	1130	0	0	0	0	0	0	FM	S	10/13/88	0/ 0/ 0	0/ 0/ 0					
107AP	DN	SOUND	DRCVR	408.2	1118	22	1118	0	0.0	0.0	1118	1118	0	0	0	0	0	0	FM	S	10/13/88	0/ 0/ 0	0/ 0/ 0					
108AP	DN	SOUND	DRCVR	328.9	900	240	900	0	0.0	0.0	900	900	0	0	0	0	0	0	FM	S	10/13/88	0/ 0/ 0	0/ 0/ 0					
TOTALS:				7290	1830	7290	0	0.0	0.0	0.0	7290	7290	0	0	0													
DOUBLE-SHELL TANKS																												

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

TANK STATUS				LIQUID VOLUME										SOLIDS VOLUME										VOLUME DETERMINATION										CHANGE SINCE LAST MONTHLY REPORT	
TANK	WASTE TANK	TANK INTEGRITY USE	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (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)	DSS SLDG (Kgal)	CAKE VOL	SALT LIQ VOL	SOLIDS VOL	SOLIDS MTHD	UPDATE DATE	LAST PHOTO DATE	PHOTO DATE	REPORT															
***** AW FARM STATUS *****																																			
101AW	DSSF	SOUND	CWHT	414.8	1122	18	1038	2	0.0	0.0	1040	1038	0	84	0	FM	S	10/22/84	03/17/88																
102AW	DN	SOUND	EVFD	234.9	749	391	748	0	0.0	0.0	748	748	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	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	883	861	0	179	111	FM	S	03/05/87	02/02/83																
105AW	DN/PD	SOUND	DRCVR	327.3	958	182	661	29	0.0	0.0	690	668	0	297	0	FM	S	03/05/87	0/ 0/ 0																
106AW	DN	SOUND	SRCVR	341.5	957	183	661	42	0.0	0.0	703	681	0	211	85	FM	S	01/31/92	02/02/83																
6 DOUBLE-SHELL TANKS				TOTALS:	5556	1284	4225	159	0.0	0.0	4384	4294	0	1135	196																				
***** AY FARM STATUS *****																																			
101AY	DC	SOUND	DRCVR	339.8	920	60	837	2	0.0	0.0	839	837	0	83	0	FM	S	02/02/87	12/28/82																
102AY	DN	SOUND	DRCVR	186.7	644	336	612	0	0.0	0.0	612	612	0	32	0	FM	S	02/10/88	04/28/81																
2 DOUBLE-SHELL TANKS				TOTALS:	1564	396	1449	2	0.0	0.0	1451	1449	0	115	0																				
***** AZ FARM STATUS *****																																			
101AZ	AGING	SOUND	CWHT	334.3	957	23	922	0	0.0	0.0	922	922	0	35	0	FM	S	09/30/90	08/18/83																
102AZ	AGING	SOUND	DRCVR	348.3	927	53	832	4	0.0	0.0	836	832	0	95	0	FM	S	06/04/92	12/24/84																
2 DOUBLE-SHELL TANKS				TOTALS:	1884	76	1754	4	0.0	0.0	1758	1754	0	130	0																				

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

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION			
TANK	MATERIAL	TANK INTEGRITY USE	EQUIVALENT		SUPER-ABOVE		DRAIN-ABLE		PUMP-ABLE		SALT LIQ SOL		CHANGE SINCE LAST MONTHLY REPORT
			WASTE INCHES	WASTE (Kgal)	TOTAL WASTE (Kgal)	SPACE LIQUID (Kgal)	INTER-STIT. (Kgal)	THIS MONTH PUMPED (Kgal)	LIQUID REMAIN (Kgal)	LIQUID REMAIN (Kgal)	DSS SLDG CAKE VOL (Kgal)	MTHD UPDATE	
101SY	CC	SOUND	408.0	1124	16	34	237	0.0	0.0	271	265	530 0 560 FM S	01/31/92 04/12/89
102SY	DN/PT	SOUND	245.8	672	468	601	0	0.0	0.0	601	601	0 71 0 FM S	05/12/87 04/29/81
103SY	CC	SOUND	271.4	747	393	170	0	0.0	0.0	170	170	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			24816	6464	20061	439			20500	20364	2040	1955 760	

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

Tank Farms	Available Space Calculations Used In This Document		Document SD-WM-TI-357*		Document OSD-T-151-00007**	
	(Most Conservative)		Operating Limit		Tank Capacity	
AN, AP, AW, SY	1,140,000 gal (414.5 in.)	1,144,000 gal (416 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.)	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-AN, AP, AW, AY, AZ, & SY Tank Farms."

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

TANK STATUS		LIQUID VOLUME					SOLIDS VOLUME					VOLUME DETERMINATION						
		STABIL/ ISOLATION STATUS	WASTE MATERIAL INTEGRITY	TANK	SUPER- NATANT LIQUID (Kgal)	TOTAL WASTE (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 UPDATE SOURCE SEE FOOTNOTE	CHG SINCE LAST MONTHLY REPORT	
***** A FARM STATUS *****																		
101A	DSSF	/PI		SOUND		953	0	413	0.0	0.0	413	390	3	950	P	F	11/21/80	08/21/85
102A	DSSF	IS/PI		SOUND		41	4	2	0.0	39.5	6	0	15	22	P	FP	07/27/89	07/20/89
103A	DSSF	IS/II		ASMD LKR		370	4	13	0.0	111.0	12	0	366	0	-	FP	06/03/88	12/28/88
104A	NCPLX	IS/II		ASMD LKR		28	0	0	0.0	0.0	0	0	28	0	M	PS	01/27/78	06/25/86
105A	NCPLX	IS/II		ASMD LKR		19	0	4	0.0	0.0	4	0	19	0	P	MP	08/13/79	08/20/86
106A	CP	IS/II		SOUND		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	/PI		SOUND		748	0	320	0.0	0.0	320	298	3	745	P	F	05/06/82	08/18/87
102AX	CC	IS/II		ASMD LKR		39	3	14	0.0	13.0	17	3	7	29	F	S	09/06/88	06/05/89
103AX	CC	IS/II		SOUND		112	0	36	0.0	0.0	36	3	2	110	F	S	08/19/87	08/13/87
104AX	NCPLX	IS/II		ASMD LKR		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
December 1992

TANK STATUS			LIQUID VOLUME					SOLIDS VOLUME					VOLUME DETERMINATION							
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- MANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE		PUMP- ABLE		SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS		SOLIDS		SOLIDS UPDATE	CHG SINCE LAST MONTHLY REPORT
									WASTE (Kgal)	LIQUID REMAIN (Kgal)	LIQUID REMAIN (Kgal)	LIQUID REMAIN (Kgal)			VOLUME METHOD	VOLUME METHOD	VOLUME UPDATE	SEE FOOTNOTE		
+++++ B FARM STATUS +++++																				
101B	NCPLX	ASMD LKR	IS/II	113	0	6	0.0	0.0	6	0	113	0	P	F	04/28/82				05/19/83	
102B	NCPLX	SOUND	IS/II	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/II	59	0	0	0.0	0.0	0	0	59	0	F	F	02/28/85	(1)			10/13/88	
104B	NCPLX	SOUND	IS/II	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/II	306	0	23	0.0	0.0	23	0	40	266	P	MP	12/27/84	(1)			05/19/88	
106B	NCPLX	SOUND	IS/II	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/II	165	1	12	0.0	0.0	13	7	164	0	M	M	03/31/85	(1)			02/28/85	
108B	NCPLX	SOUND	IS/II	94	0	4	0.0	0.0	4	0	94	0	F	F	05/31/85	(1)			05/10/85	
109B	NCPLX	SOUND	IS/II	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/II	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/II	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/II	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/II	29	1	3	0.0	0.0	4	0	28	0	M	M	04/28/82				11/12/86	
202B	NCPLX	SOUND	IS/II	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/II	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/II	50	1	5	0.0	0.0	6	0	49	0	P	M	05/31/84	(1)			10/21/87	
16 SINGLE-SHELL TANKS				2057	15	164	0.0	0.0	179	80	1697	345								
TOTALS																				

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 UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT	
***** BX FARM STATUS *****																		
101BX	NCPLX	ASMD LKR	IS/II	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82		11/24/88	
102BX	NCPLX	ASMD LKR	IS/II	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82		09/18/85	
103BX	NCPLX	SOUND	IS/II	66	4	0	0.0	0.0	4	0	62	0	P	F	11/29/83		10/31/86	
104BX	NCPLX	SOUND	IS/II	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	(1)	09/21/89	
105BX	NCPLX	SOUND	IS/II	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	(1)	10/23/86	
105BX	NCPLX	SOUND	/PI	46	15	0	0.0	0.0	15	15	31	0	MP	PS	04/28/82		05/19/88	
107BX	NCPLX	SOUND	IS/PI	345	1	29	0.0	23.1	30	23	344	0	MP	P	09/18/90	(2)	09/11/90	
108BX	NCPLX	ASMD LKR	IS/II	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	(1)	10/23/86	
109BX	NCPLX	SOUND	IS/PI	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	(2)	09/11/90	
110BX	NCPLX	ASMD LKR	IS/PI	199	1	15	0.0	0.0	16	10	189	9	MP	M	08/22/85	(1)	07/31/85	
111BX	NCPLX	ASMD LKR	/PI	230	19	50	0.0	0.0	69	46	68	143	M	M	07/26/77		09/18/85	
112BX	NCPLX	SOUND	IS/PI	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	(2)	09/11/90	
TOTALS:				1559	50	155	0.0	67.8	205	135	1354	155						
12 SINGLE-SHELL TANKS																		
***** BY FARM STATUS *****																		
101BY	NCPLX	SOUND	IS/II	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84		09/19/89	
102BY	NCPLX	SOUND	/PI	341	0	41	0.0	123.3	41	22	0	341	MP	M	08/30/91	(2)	09/11/87	
103BY	NCPLX	ASMD LKR	/PI	400	0	160	0.0	78.5	160	137	5	395	MP	M	04/03/90	(2)	09/07/89	
104BY	NCPLX	SOUND	IS/II	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82		04/27/83	
105BY	NCPLX	ASMD LKR	/PI	503	0	192	0.0	0.0	192	169	44	459	P	MP	04/28/82		07/11/86	
106BY	NCPLX	ASMD LKR	/PI	642	0	235	0.0	0.0	235	213	95	547	P	MP	04/28/82		11/04/82	
107BY	NCPLX	ASMD LKR	IS/II	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
December 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 (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS UPDATE SOURCE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT		
108BY	NCPLX	ASMD LKR	IS/II	228	0	9	0.0	27.5	9	0	154	74	MP	M	04/28/82		10/15/86		
109BY	NCPLX	SOUND	/PI	423	0	78	0.0	93.5	78	57	83	340	F	PS	08/30/91	(2)	10/15/86		
110BY	NCPLX	SOUND	IS/II	398	0	9	0.0	213.3	9	0	103	295	M	S	09/10/79		07/26/84		
111BY	NCPLX	SOUND	IS/II	459	0	0	0.0	313.2	0	0	21	438	P	M	04/28/82		10/31/86		
112BY	NCPLX	SOUND	IS/II	291	0	8	0.0	116.4	8	0	5	286	P	M	04/28/82		04/14/88		
12 SINGLE-SHELL TANKS			TOTALS:	4744	0	780	0.0	1387.4	780	598	719	4025							
+++++ 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
December 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 (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 UPDATE SOURCE	CHG SINCE LAST MONTHLY REPORT								
201C	NCPLX	ASMD LKR	IS/11	2	0	0	0.0	0.0	0	0	2	0	P	MP	03/31/82		12/02/86								
202C	EMPTY	ASMD LKR	IS/11	1	0	0	0.0	0.0	0	0	1	0	P	M	01/19/79		12/09/86								
203C	NCPLX	ASMD LKR	IS/11	5	0	0	0.0	0.0	0	0	5	0	P	MP	04/28/82		12/09/86								
204C	NCPLX	ASMD LKR	IS/11	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/11	294	1	28	0.0	0.0	29	23	293	0	M	M	12/20/84	(1)	12/12/84								
105S	NCPLX	SOUND	IS/11	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
December 1992

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION						
TANK	WASTE MATERIAL INTEGRITY	TANK ISOLATION STATUS	STABIL/	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	
+++++ 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	ASMD 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	ASMD LKR	IS/II	104	0	5	0.0	0.0	5	0	104	0	P	M	04/28/82	03/06/87	
108SX	NCPLX	ASMD LKR	IS/II	115	0	6	0.0	0.0	6	0	115	0	P	M	04/28/82	03/06/87	
109SX	NCPLX	ASMD LKR	IS/II	250	0	10	0.0	0.0	10	0	250	0	P	M	04/28/82	05/21/86	
110SX	NCPLX	ASMD LKR	IS/II	62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76	02/20/87	
111SX	NCPLX	ASMD LKR	IS/II	125	0	7	0.0	0.0	7	0	125	0	M	PS	05/31/74	03/10/87	
112SX	NCPLX	ASMD LKR	IS/II	92	0	3	0.0	0.0	3	0	92	0	P	M	04/28/82	03/10/87	
113SX	NCPLX	ASMD LKR	IS/II	26	0	0	0.0	0.0	0	0	26	0	P	M	04/28/82	03/18/88	
114SX	NCPLX	ASMD LKR	IS/II	181	0	14	0.0	0.0	14	0	181	0	P	M	04/28/82	02/26/87	
115SX	NCPLX	ASMD LKR	IS/II	12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82	03/31/88	
TOTALS:				4453	63	1261	0.0	113.2	1324	1178	1532	2858					
15 SINGLE-SHELL TANKS																	

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

TANK STATUS		LIQUID VOLUME										SOLIDS VOLUME				VOLUME DETERMINATION										CHG SINCE LAST MONTHLY REPORT
TANK	WASTE	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 VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE								
+++++ T FARM STATUS +++++																										
101T	NCLPX	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								
6. SINGLE-SHELL TANKS				TOTALS:	2065	74	189	0.0	0.0	263	208	1991	0													

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

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

18 SINGLE-SHELL TANKS

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

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION						CHG SINCE LAST MONTHLY REPORT	
		STABIL/ ISOLATION STATUS	WASTE MATERIAL INTEGRITY	TANK SOUND	IS/II	SUPER- NATANT LIQUID STIT.	DRAIN- ABLE INTER- PUMPED	TOTAL PUMPED	DRAIN- ABLE LIQUID REMAIN	PUMP- ABLE LIQUID REMAIN	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE		
201U	NCPLX	SOUND	IS/II	5	1	0	0.0	0.0	1	0	0	4	0	M	S	08/15/79	08/03/89
202U	NCPLX	SOUND	IS/II	5	1	0	0.0	0.0	1	0	0	4	0	M	S	08/15/79	08/08/89
203U	NCPLX	SOUND	IS/II	3	1	0	0.0	0.0	1	0	0	2	0	M	S	08/15/79	06/13/89
204U	NCPLX	SOUND	IS/II	3	1	0	0.0	0.0	1	0	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-TI-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)

December 1992

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

SOURCE	THIS MONTH	FY1993 TO DATE
B PLANT	25	45
PUREX TOTAL (1)	13	23
PEP (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)	28	43
TANK FARMS & SWL (6)	0	8
Tank Farms	0	
Saltwell Liquid	0	
OTHER GAINS	11	71
Slurry increase (3)	11	
Condensate	0	
Instrument change (7)	0	
Unknown (5)	0	
OTHER LOSSES	-59	-96
Slurry decrease (3)	-2	
Evaporation (4)	-17	
Instrument change (7)	-30	
Unknown (5)	-10	
EVAPORATED	0	0
GROUTED	0	0
Total	18	110

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

* Water added:

105-C 2000 gal added on 12/7/92

106-C 12000 gal added on 12/6/92

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

SOURCE	THIS MONTH	FY1993 TO DATE
105-C (8)	0	2
Losses	0	-2
106-C (8)	12	22
Losses	7	-24
Total	5	-2

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)

December 1992

TANK FARMS	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL LIQUID	DRAINABLE LIQUID REMAINING	PUMPABLE LIQUID REMAINING
EAST				
A	8	439	442	390
AN	4538	37	4575	N/A
AP	7290	0	7290	N/A
AW	4225	159	4384	N/A
AX	3	370	373	304
AY	1449	2	1451	N/A
AZ	1754	4	1758	N/A
B	15	164	179	80
BX	50	155	205	135
BY	0	780	780	598
C	169	143	312	254
Total	19501	2253	21749	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	20665	6758	27418	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)

December 1992

TANK	PUMPED	PUMPED FY	CUMULATIVE
FARMS	THIS MONTH	TO DATE	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

December 1992

VOLUME
OF

FACILITY	LOCATION	PURPOSE (receives waste from:)	CONTENTS MONITORED		REMARKS
			(Gallons)	BY	

EAST AREA

A-302-A	A FARM	151-A DB	354	CASS/FIC	PUMPED 08/11/92
311-ER	B PLANT	151-ER, 152-ER DB	3916	CASS/FIC	PUMPED 05/29/91
152-AX	AX FARM	152-AX DB	3260	MANUALLY	DIAL O/S, USING ZIP CORD, PUMPED 08/29/92
151-AZ	AZ FARM	152-AZ DB, AZ LOOP SEAL	4200	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	7220	MANUALLY	USING MANUAL TAPE FOR TANK
244-A-TK/SMP	AR VAULT	DCRT - RECEIVES FROM SEVERAL FARMS	3142	MCS	DIRECT GAL READING
204-AR	AY FARM	RR CARS DURING TRANSFER TO REC. TKS	690	DIP TUBE	ALARMS ON CASS
417-A	A FARM	702-A PROCESS CONDENSATE	36580	DIP TUBE	
Vent Station		CROSS COUNTRY TRANSFER LINE	455	MT	

WEST AREA

TX-302-C	TX FARM	154-TX DB	3168	CASS/FIC	FIC REPAIRED
U-301-B	U FARM	151-U, 152-U, 153-U, 252-U DB	6017	CASS/FIC	
UX-302-A	U PLANT	154-UX DB	9680	CASS/MFIC	
241-S-304	S FARM	151-S DB	928	FIC	OPERATIONAL 10/91, REPLACED S-302-A
244-S-TK/SMP	S FARM	DCRT - RECEIVES FROM SEVERAL FARMS	8655	MANUALLY	CWF
244-TX-TK/SMP	TX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	19949	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
December 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-2. EAST AREA CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

INACTIVE - no longer receiving waste transfers
December 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

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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 KiloCuries 137 cs (11)	Interim Stabilized Date	Leak Estimate	
					Updated	Reference
241-A-103	1987	5500 (10)		8/88	1987	(i)
241-A-104	1975	500 to 2500	0.8 to 1.8 (q)	9/78	1983	(a) (q)
241-A-105 (1)	1963	10000 to 277000	85 to 760 (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	50 (i)	11/78	1986	(d)
241-BX-108	1974	2500	0.5 (i)	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	17 to 140 (m) (q)	8/79	1991	(m) (q)
241-SX-109 (6)	1965	<10000	<40 (n)	5/81	1992	(n)
241-SX-110	1976	5500 (10)		8/79	1989	(g)
241-SX-111	1974	500 to 2000	0.6 to 2.4 (i) (q)	7/79	1986	(d) (q)
241-SX-112	1969	30000	40 (i)	7/79	1986	(d)
241-SX-113	1962	15000	8 (i)	11/78	1986	(d)
241-SX-114	1972	-- (8)		7/79	1989	(g)
241-SX-115	1965	50000	21 (c)	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)	40 (i)	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	0.7 (i)	2/83	1986	(d)
241-TY-104	1981	1400 (10)		1/83	1986	(d)
241-TY-105	1960	35000	4 (i)	2/83	1986	(d)
241-TY-106	1959	20000	2 (i)	11/78	1986	(d)
241-U-101	1959	30000	20 (i)	9/79	1986	(d)
241-U-104 (7)	1961	55000	0.09 (i)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (10)	0.05 (q)	12/84	1986	(d) (q)
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. During the FY 1993 funding reviews, this reevaluation of leak volumes was given a priority which resulted in this activity no longer being funded. The priority versus funding will be reevaluated prior to FY 1994.
- (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), for an average of approximately 8 Kgal for each of the 19 tanks.
- (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.
- (11) The curie content listed is as listed in the reference document and is not decayed to a consistent date; therefore, a cumulative total is inappropriate.

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.
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- (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.
- (h) WHC, 1990a, *Occurrence Report "Surface Level Measurement Decrease in Single-Shell Tank 241-AX-102,"* WHC-UO-89-023-TF-05, Westinghouse Hanford Company, Richland, Washington.
- (i) Groth, D. R., July 1, 1987, Internal Memorandum to R. J. Baumhardt, *Liquid Level Losses in Tanks 241-C-201, -202 and -204*, 65950-87-517, Westinghouse Hanford Company, Richland, Washington.
- (j) Groth, D. R. and G. C. Owens, May 15, 1987, Internal Memorandum to J. H. Roecker, *Tank 103-A Integrity Evaluation*, Westinghouse Hanford Company, Richland, Washington.
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- (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.
- (q) WHC-1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.

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