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Tank Farm Surveillance and Waste Status Summary Report for March 1993

B. M. Hanlon

Date Published
May 1993

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

**Westinghouse
Hanford Company**

P.O. Box 1970
Richland, Washington 99352

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**TANK FARM SURVEILLANCE AND WASTE STATUS
SUMMARY REPORT FOR MARCH 1993**

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 MARCH 1993
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
Sound Tanks	28 double-shell 82 single-shell	1986 10/92
Interim Stabilized Tanks ^{b,d}	105 single-shell	09/90
Not Interim Stabilized ^f	44 single-shell	09/90
Interim Isolated Tanks ^e	98 single-shell	09/91
Watch List Tanks	48 single-shell 6 double-shell	1991 11/92

^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. (These tanks did meet the criteria in existence when they were declared interim stabilized.)

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

^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 Nine of the tanks are both assumed leakers and not interim stabilized. See Appendix H for more details.

I. TANK INVESTIGATIONS

This section includes all single-shell tanks or catch tanks on the Alert List for surface level or interstitial liquid level (ILL) decreases, or for drywell/lateral radiation level increases.

Tank 241-BX-101. The surface level measurement was 10.00 inches as of March 31, 1993, a 1.00-inch decrease from the baseline of 11.00 inches. The surface level measurement has shown an erratic decrease since February 15, 1981. In-tank photographs taken November 24, 1988, show the manual tape donut plummet contacting liquid in a shallow pool. Surface level monitoring has been increased from a quarterly to a weekly frequency. Drywells associated with this tank are stable. The technical evaluation of the alert condition in this tank was completed February 26, 1993, with a recommendation to remove the tank from the Alert List, based on parameters studied during evaluation. This tank will not appear on future reports unless unexplained increases/decreases are observed.

Tank 241-BX-111. The surface level has shown an erratic increase since 1986. The readings showed a decreasing trend during February 1993, fluctuating between 78.50 and 79.00 inches, and is currently 0.50 inches below the baseline. This tank has a 1.00-inch decrease criteria. The liquid observation well (LOW) interstitial liquid level (ILL) is stable as of March 26, 1993. The technical evaluation of the alert condition of this tank is in progress. See Occurrence Report RL-WHC-TFARM-1993-0035, on page 7. Data is being collected but an estimated completion date has not been established for a final report with conclusive results.

Tank 241-SX-105. An ILL baseline of 21.2 feet was established for Tank 105-SX LOW on August 27, 1986. The LOW ILL showed a 0.1-foot decrease when scanned August 6, 1991, and a 0.3-foot decrease on October 16, 1992 (at decrease criteria). The ILL was 0.3 foot below the baseline when scanned March 18, 1993. LOW monitoring was increased from quarterly to every two weeks. In-tank photographs taken June 15, 1988, show a dry cracked, uneven surface. The Food Instrument Corporation (FIC) liquid level gauge is in the intrusion mode of operation, and the FIC plummet is suspended over solids. Drywell scan data remain stable. The laterals were scanned March 26, 1993. Because of data transmitting problems to the drywell van microcomputer, only the field instantaneous readout graph charts were obtained. The data was reviewed and the radiation profiles were determined to be consistent with the reference baselines. An evaporation analysis study draft copy incorporating comments is being reviewed, and preliminary indications are that the decrease in the ILL is attributed to evaporation. The baseline for the ILL has been revised; the new baseline value was justified by the study. Issue date for the completed report is estimated for May 15, 1993. This tank will not appear on future reports unless unexplained increases/decreases are observed.

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 through March 1993. An evaporation study was 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. LOW monitoring has been increased to very two weeks. Drywells associated with 106-SX are stable. The technical evaluation of the alert condition in this tank was completed February 26, 1993, with the recommendation to remove the tank from the Alert List based on the above evaporation analysis. This tank has been rebaselined. This tank will not appear on future reports unless unexplained increases/decreases are observed.

A. Assumed Leakers or Assumed Re-leakers: (see Appendix A, page A-5) for definition of "Re-leaker")

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks. Tanks/catch tanks will remain on this list until either

a) completion of Interim Stabilization, or b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker.

Tank 241-T-101. The FIC was frequently out of service from January 1991 to April 1992. The surface level reading was constant at 44.30 inches, which is 0.3 to 0.4 inches above the baseline of 43.90 inches. After the FIC was repaired in September 1992, the level decreased to 41.60 inches. The FIC reading was 43.80 inches after a reference elevation check was performed by instrument technicians on November 14, 1992, and is currently out of service as of March 31, 1993. A manual tape surface level measurement device was installed December 21, 1992, which read 40.50 inches and reads 36.50 inches as of March 31, 1993. Occurrence Report RL-WHC-TANKFARM-1992-0073 was issued October 1, 1992, and Tank 101-T was declared an assumed leaker on October 4, 1992. Drywell scan data was reviewed and is stable. Drywell monitoring (gross gamma) frequencies have been increased to weekly. In-tank photographs were taken March 4, 1993, and show a decreased liquid level from photos taken in 1984. The FIC has not yet been repaired. Pumping started on March 12, 1993. This tank will not appear on future reports unless unexplained increases/decreases are observed.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell tanks for which the surveillance data shows that the surface level or ILL has met or exceeded the increase criteria (this section does not include all tanks on the Alert List because the criteria for the Alert List is 50% of the increase criteria).

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. Occurrence Report RL-WHC-TANKFARM-1993-0024 was issued February 13, 1993. An engineering evaluation of this tank will begin as soon as all evaluations for tank level decreases are complete.

Tank 241-BX-103. On January 18, 1993, the surface level measurement in 103-BX exceeded the 0.50-inch increase criteria from the reference baseline of 19.50 inches, and was verified on January 20, 1993. This tank has shown an erratic increase in surface level measurements since January 6, 1986. Discrepancy Report S&DA 93-522 was issued January 21, 1993. Occurrence Report RL-WHC-TANKFARM-1993-0036 was issued March 25, 1993. The FIC plummet is contacting liquid as indicated by in-tank photographs taken October 31, 1986. Tank 241-BX-103 is Sound, and Interim Stabilized/Interim Isolated. An engineering evaluation of this tank will begin as soon as all evaluations for tank level decreases are complete.

Tank 241-TX-113. The LOW ILL has shown a slow increase since March 12, 1986, with both the neutron and gamma probes. This tank appeared on the Alert List in 1989, when the ILL reached 50% of the 0.4-foot increase criteria, but was removed in 1990 when the ILL appeared stable for longer than a 12-month period. The scan data on February 5, 1993, shows the ILL to be 5.5 foot and at the 0.4-foot increase criteria from the reference baseline. S&DA

Discrepancy Report 93-534 was issued March 10, 1993. The technical evaluation of the alert condition in this tank is in progress.

Tank 241-TX-114. The LOW ILL is at the 0.4-foot increase criteria from the reference baseline. The increase has been evident with both the neutron and gamma scan data. The tank appeared on the Executive Summary and Alert List until December 31, 1991, when this report was discontinued. TFSA&S Discrepancy Report #88-30 was issued November 28, 1988. The ILL has remained stable since April 1988. This tank will be rebaselined to the stabilized reading of 5.7 feet. This tank will not appear on future reports unless unexplained increases/decreases are observed.

Tank 241-TX-115. The LOW ILL is exceeding the 0.4-foot increase criteria from the reference baseline. This tank has been on report since 1988, when the increase criteria was first exceeded. Comparison of past and present in-tank photographs show no significant change in surface conditions or obvious evidence of intrusion. Surveillance Deviation Report #88-08 was issued on May 18, 1988, and Event Fact Sheet #TF-EFS-88-140 was issued October 27, 1988. This tank appeared on the Executive Summary Report and Alert List until December 31, 1991, when this report was discontinued. The scan data for February 5, 1993, showed an additional increase of 0.1 feet in the ILL since the previous scan data from October 23, 1992. The ILL continues to show an increase with both the neutron and gamma probes. The technical evaluation of the alert condition in this tank is in progress.

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, 1992, for Tank Farm Operations to flush the FIC plummet. Work Order 2W-92-01155 was written to perform the flush. The reference elevation was checked on December 17, 1992. The FIC plummet was clean. The current surface level is 31.80 inches as of March 31, 1993, 0.10 inch from increase criteria. An engineering evaluation of this tank will begin as soon as all evaluations for tank level decreases are complete.

Vent Station Catch Tank. The zip cord surface level reading exceeds the maximum operating limit of 36.00 inches. The manual tape has been out of service since July 7, 1992. A temporary zip cord was installed December 16, 1992. The level was 45.50 inches which exceeded the active tank limit of 50% volume of 40 inches (400 gallons). Transfers are not permitted until the tank is pumped and the level is within limits. Discrepancy Report S&DA-92-511 was issued December 24, 1992.

C. The following tanks have been reported as assumed leakers, and although shown as Interim Stabilized, they do not meet current Interim Stabilization criteria. Surveillance data do not show an indication of a continuing leak.

104-B	110-BX
107-B	102-T
110-B	112-T
111-B	110-U

II. 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 approved by DOE-HQ. Pumping of 101-T began March 12, 1993. See item #3 below and Table C.5 (Inventory and Status by Tank) for further information. Resolution of the USQ is scheduled for summer 1993.

2. Tank 241-SY-101 Gas Venting

The predicted gas release from 101-SY began on February 2, 1993. The total level decrease was 8.3 inches which was sufficient to allow the scheduled in-tank activities to proceed. Although the goal was to install a mixer pump which may bring an end to the periodic venting, it was decided to postpone the installation because of safety concerns. Other work was accomplished during window "H," including repairing and reinstalling the in-tank television camera, making improvements to the tank's ventilation system and exterior structure, and making modifications to the cradle which will hold the pump when the installation occurs. Window "H" officially closed at midnight on March 5, 1993.

3. Tank 241-T-101

Tank 101-T was declared an assumed leaker on October 4, 1992. Total leakage is assumed to be approximately 7500 gallons. Approval from DOE-HQ to pump the tank was received on February 25, 1993. On March 8, a saltwell screen and saltwell pump were installed and pumping began on March 12, 1993. The commencement date deadline of March 15 as required by the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) milestone M-05-16 for pumping 101-T was therefore met. Shutdown of pumping activities occurred on March 13, after the double-container receiving tank (DCRT 244-TX) had reached maximum liquid level for this transfer. 18,203 gallons were transferred from 101-T to 244-TX. Sampling of the contents of 244-TX was completed, and then transferred to double-shell tank 102-SY. Pumping from 101-T to 244-TX was resumed on March 26, 1993. Transfer was stopped because of low suction from no liquids being drawn through the pump. The system is being flushed out and pumping is expected to resume on April 5, 1993. Total pumped was 24.6 Kgal by March 31, 1993.

4. Occurrence Reports

RL-WHC-TFARM-1993-0024 (OFF-NORMAL) - POTENTIAL MISSED TRI-PARTY AGREEMENT MILESTONE M-05-16, "PUMPING OF TANK 241-T-101" (Notification - February 22; 10-Day Report - March 8, 1993)

The Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) milestone M-05-16, "PUMPING OF TANK 241-T-101," is in jeopardy of failing to meet the milestone commencement date of March 15, 1993. The WHC Single-Shell Tanks Program Manager received authorization from the Assistant Secretary for Environmental Restoration and Waste Management (EM-01) on February 24, 1993, to install the pump. The WHC schedule required an approval date of February 19 (critical path) to meet the commencement date deadline. The base schedule was reviewed and showed that the start of pumping would be delayed until March 26, 1993. WHC prepared a recovery schedule in an attempt to meet the March 15 date, but completion of milestone M-05-16 by the established completion date is questionable. (Pumping began March 12, 1993; the milestone was met - see Highlights, item #3, for further information)

RL-WHC-TFARM-1993-0028 (UNUSUAL) - WASTE TRANSFER TO 102-SY SECURED DUE TO FAULTY AIR VALVE - SUBSEQUENT LEAK-BY ON A BALL VALVE RESULTED IN APPROXIMATELY 700-GALLON TRANSFER TO 102-SY (Notification Report - March 6; 10-Day Report - March 19, 1993)

On March 5, 1993, a transfer began of liquid waste from double-contained receiver tank (DCRT) 244-TX to double-shell tank (DST) 102-SY. The transfer was necessary to vacate 244-TX prior to pumping single-shell tank 241-101-T, which is considered an assumed leaker, to 244-TX, then to 102-SY. Approximately 30 minutes into the transfer, a lack of flow indications prompted the shift supervisor to secure the transfer. It was determined that an air-operated valve (DOV) controller (current to air type) had malfunctioned. The instrument air lines and pressure were verified as appropriate, but the controller was not repositioning to allow air to open the valve when the valve positioning switch was set to full open. The controller was manually positioned which effectively allowed air to the valve, opening it. The valve would not immediately close; the controller was later determined to be gummed up because of poor quality instrument air and lack of calibration. The valve is estimated to have been open for approximately 30 minutes while the instrument air bled off allowing the valve to close. Approximately 700 gallons was transferred. The unexpected transfer of waste resulted in initiation of an Off-Normal occurrence report, Potential Concern.

A critique of the event was held on March 5, with WHC Tank Farm Operations Management, and DOE-RL Field Office representatives. It was determined that a Limiting Condition for Operations (LCO) was violated as a result of the transfer during troubleshooting activities. The event was upgraded to an Unusual Occurrence, Violation of LCO, on March 6, 1993.

The DOV valve was repaired on March 6, and the transfer was completed. Approximately 16,000 gallons were successfully transferred to 102-SY.

RL-WHC-TFARM-1993-0035 (OFF-NORMAL) - TANK 241-BX-111 SURFACE LEVEL DECREASE AND CHANGE FROM STEADY STATE CONDITION (Notification Report, March 24, 1993)

Tank 241-BX-111 is exhibiting a fluctuating surface level. Manual tape (MT) liquid level measurements taken during 1993 indicate a liquid level decrease which is a change from the previous trend. The tank has historically shown a slowly increasing level trend (.5 inches over the previous seven years). However, the trend has clearly reversed according to the recently obtained MT surface level data. The reading frequency has been increased to daily. The latest in-tank photos (taken in 1985) show floating solids on the surface. Those photos also show the MT plummet with a coating of crystallized waste. Either condition could interfere with the ability to obtain accurate MT surface level readings. Each inch of liquid level represents 2750 gallons. Other surveillance data taken for this tank have been reviewed and no other changes have been noted. Leak detection drywells are stable.

The tank was declared an "assumed leaker" in 1984 and pumped in 1985. The tank is estimated to still contain approximately 50,000 gallons of drainable interstitial liquid. Approximately 46,000 gallons of liquid could be removed using a saltwell (jet) pump, so the tank is not considered to be interim stabilized, and is partially interim isolated. This tank was scheduled to be saltwell pumped in 1990. However, the saltwell pumping plans were canceled on August 31, 1990, when the tank was added to the ferrocyanide (FeCN) Watch List. The presence of FeCN in the waste has been declared an Unreviewed Safety Question (USQ).

RL-WHC-TFARM-1993-0036 (OFF-NORMAL) - TANK 241-BX-103 EXCEEDED THE SURFACE LEVEL INCREASE CRITERIA DURING QUARTERLY SURVEILLANCE; TANK IS SOUND; CAUSE IS UNDER INVESTIGATION (Notification Report - March 25; 10-Day Report - March 29, 1993)

On January 18, 1993, the quarterly level indicating transmitter (LIT or FIC) for the Sound, Interim Stabilized, Interim Isolated tank 241-BX-103 was recorded as 20.25 inches. This reading exceeded the 0.50-inch increase criteria from the established baseline of 19.50 inches. Each one inch increase translates to 2750 gallons of volume. Surface level readings were rechecked on January 20 and 25. Visual observations in the farm found no apparent path or cause for leakage into 103-BX. The surface level reading has continued to increase. Current reading as of March 22 is 20.40 inches. This tank has been placed on the Surveillance Alert List which identifies any tank requiring engineering investigation because of a departure from steady state conditions which exceeds 50% of the permissible increase or decrease criteria. The monitoring frequency was increased from a quarterly requirement to monthly. This is not Operations Specifications Document (OSD) or Safety Analysis Report (SAR) related.

Preliminary investigation indicates that the apparent increase can be reasonably attributed to seepage from precipitation and instrument error. A more thorough investigation by engineering is anticipated and the results will be included in the Final Report. However, because of competing priorities (tanks with surface level decreases, i.e., potential leakers, have priority), a firm completion date cannot be established.

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.

March 1993

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

* These eight single-shell tanks and the six double-shell tanks on the Watch List are actively ventilated.

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

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

Temperatures in these tanks did not exceed the maximum temperature criteria or surveillance frequency limits for March 1993.

All Watch List tanks are reviewed for increasing temperature trends.

Thermocouples evaluated as "failed" (8) are not used in this report. Tanks not connected to TMACS are monitored manually.

Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading in Waste (F.)	Date of Reading	Monitored by TMACS (5)	Total Waste (inches) (7)	FeCN (2) (x1000 g mol)	Estimated Heat Load (3) (Btu/h)	(kW)	Assumed Leak Date	Interim Stabilized Date
102-BX	63	03/27/93	No	42	<1	<10000	<2.93	1971	11/78
106-BX	62	03/27/93	No	24	<1	<10000	<2.93	Sound	N/A
110-BX	64	03/27/93	No	80	<1	<10000	<2.93	1976	8/85
111-BX	68	03/27/93	No	91	<1	<10000	<2.93	1984	N/A
101-BY	76	03/29/93	Yes	148	<1	8200	2.40	Sound	5/84
103-BY	82	03/29/93	Yes	153	66	8600	2.52	1973	N/A
104-BY	129	03/15/93	Yes	155	83	5500	1.61	Sound	1/85
104-BY (6) Riser 10B	115	03/31/93	Yes	155	83	5500	1.61	Sound	1/85
105-BY	115	03/22/93	Yes	190	36	3400	0.97	1984	N/A
105-BY	122	03/22/93	Yes	190	36	3400	0.97	1984	N/A
106-BY	130	03/29/93	Yes	241	70	3300	0.97	1984	N/A
107-BY	95	03/22/93	Yes	104	42	14500	4.25	1984	7/79
108-BY	110	03/29/93	Yes	90	58	23000	6.74	1972	2/85
110-BY	120	03/29/93	Yes	152	71	25200	7.39	Sound	1/85
110-BY (6) Riser 10A	109	03/31/93	Yes	152	71	25200	7.39	Sound	1/85
111-BY	86	03/29/93	Yes	174	6	34200	10.02	Sound	1/85
112-BY	82	03/29/93	Yes	113	2	<10000	<2.93	Sound	5/85
108-C	72	03/04/93	No	31	25	10000	<2.93	Sound	3/84
109-C	74	03/25/93	No	31	30	3800	1.11	Sound	11/83
109-C (6) Riser 3	78	03/11/93	No	31	30	3800	1.11	Sound	11/83
111-C	71	03/04/93	No	28	33	<10000	<2.93	1968	3/84
112-C	84	03/20/93	No	45	31	<10000	<2.93	Sound	9/90
112-C (6) Riser 8	85	03/04/93	No	45	31	<10000	<2.93	Sound	9/90
101-T	69	03/25/93	No	56	<1	<10000	<2.93	1992	N/A
107-T	66	03/11/93	No	73	5	<10000	<2.93	1984	N/A
118-TX (4)	78	03/01/93	Yes	134	<1	4900	1.44	Sound	4/83
101-TY	65	03/22/93	Yes	50	23	<10000	<2.93	1973	8/83
103-TY	66	03/22/93	Yes	66	28	<10000	<2.93	1973	2/83
104-TY	63	03/15/93	Yes	24	12	<10000	<2.93	1981	1/83
24 Tanks	Legend: TMACS = Tank Monitoring & Control System N/A = Not Applicable								

FOOTNOTES: See next page

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

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 are from WHC-EP-0474-4, "Quarterly Report on Defense Nuclear Facilities Safety Board Recommendation 90-7 for the Period Ending March 31, 1992," Table 1-A, dated January 1992. Tank 104-BY only estimated per WHC-EP-0521, "SST 104-BY Thermal Hydraulic Analysis," October 1991 (kW = 3412 Btu/h). A new thermal hydraulic analysis of several tanks has 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) This column indicates which tanks are connected to the Tank Monitoring & Control System (TMACS); automatic temperature readings are taken continuously.
- (6) New thermocouples trees were installed in these tanks during September 1992.
- (7) Calculations used to compute Total Waste Inches for temperature tables in this report:

$$\frac{\text{Kgal waste} - 12.5 \text{ Kgal waste}^*}{2.75 \text{ Kgal/inch}} + 12 \text{ inches}^*$$

* The bottom 12 inches in dish 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.
- (8) 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.

Failed thermocouples are not used in this report.

**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 March 1993. All Watch List tanks are reviewed for increasing temperature trends.

All temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in Waste	Date of Reading	Total Waste (4) (inches)	Monitoring Frequency	Assumed Leaked Date	Interim Stabilized Date
101-A	153	03/11/93	354	Weekly	SOUND	N/A
101-AX	138	03/04/93	278	Weekly	SOUND	N/A
103-AX	114	03/25/93	48	Weekly	SOUND	8/87
102-S (3)	108	03/11/93	207	Weekly	SOUND	N/A
111-S	93	03/19/93	224	Weekly	SOUND	N/A
112-S	86	03/25/93	239	Weekly	SOUND	N/A
101-SX	138	03/11/93	173	Weekly	SOUND	N/A
102-SX	153	03/11/93	205	Weekly	SOUND	N/A
103-SX	178	03/19/93	245	Weekly	SOUND	N/A
104-SX	169	03/11/93	231	Weekly	1988	N/A
105-SX	183	03/27/93	256	Weekly	SOUND	N/A
106-SX (3)	114	03/04/93	203	Weekly	SOUND	N/A
109-SX (2)	150	03/04/93	98	Weekly	1965	5/81
109-SX	155	03/04/93	98	Weekly	1965	5/81
110-T	63	03/13/92	145	Weekly	SOUND	N/A
103-U	88	03/18/93	178	Weekly	SOUND	N/A
105-U	91	03/18/93	159	Weekly	SOUND	N/A
108-U	89	03/04/93	178	Weekly	SOUND	N/A
109-U	87	03/04/93	176	Weekly	SOUND	N/A
103-AN (1)	121	03/04/93		Weekly	SOUND	N/A
104-AN (1)	124	03/11/93		Weekly	SOUND	N/A
105-AN (1)	120	03/14/93		Weekly	SOUND	N/A
101-AW (1) (5)	107	03/01/93		Weekly	SOUND	N/A
101-SY (1)	126	03/31/93		Daily	SOUND	N/A
103-SY (1)	105	03/01/93		Weekly	SOUND	N/A
24 Tanks						

Legend: N/A = Not Applicable

(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) See footnote (7) in Table 2 (Ferrocyanide Tanks) for Total Waste Inches calculations.

(5) 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 March 1993. These tanks are monitored weekly. All Watch List tanks are reviewed for increasing temperature trends.

All temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in Waste	Date of Reading	Total Waste Inches (4)	Assumed Leaked Date	Interim Stabilized Date
103-B	58	03/28/93	29	1978	2/85
103-C (3)	121	03/04/93	76	SOUND	N/A
102-S (1)	108	03/11/93	207	SOUND	N/A
106-SX (1)	114	03/04/93	203	SOUND	N/A
105-TX	100	03/04/93	228	1977	9/83
118-TX (2)	78	03/01/93	134	SOUND	4/83
106-U	82	03/04/93	90	SOUND	N/A
107-U	80	03/04/93	155	SOUND	N/A
8 Tanks					

(1) These tanks also have the potential for hydrogen or flammable gas accumulation

(2) This tank also contains ferrocyanide

(3) This tank was added to the Watch List due to the presence of a separable organic layer found on the surface

(4) See footnote (7) in Table 2 (Ferrocyanide 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 temperatures taken in the laterals beneath 105-A, however, Westinghouse Hanford has voluntarily chosen in document WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria," to use the waste temperature limits to the soil for surveillance reporting.

Temperatures in these tanks did not exceed SAR or OSD requirement limits for the month of March 1993. All high heat load tanks are on active ventilation. These high heat tanks are reviewed for increasing temperature trends.

Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in Waste	Date of Reading	Location	Total Waste Inches (8)	Monitoring Frequency	Estimated Heat Load (1) (Btu/h)	Assumed Leaked Date	Interim Stabilized Date
104-A (4)	190	03/01/93	R-18	18	Weekly	50000	14.65	1975 9/78
105-A (4)	138	03/22/93	R-16	14	Weekly	50000	14.65	1963 7/79
105-C (2)(6)	86	03/31/93	Riser 1	62	Monthly	42000	11.72	SOUND N/A
106-C (2)(3)	152	03/31/93	Riser 8	91	Weekly	150000	43.96	SOUND N/A
107-SX	133	03/11/93	Riser 14	91	Weekly	150000	43.96	SOUND N/A
	168	03/03/93	Tree 2	45	Monthly	42000	11.72	1984 10/79
	164	03/03/93	Tree 8	45	Monthly	42000	11.72	1964 10/79
108-SX	191	03/03/93	Tree 2	49	Monthly	45000	13.19	1962 8/79
	196	03/03/93	Tree 8	49	Monthly	45000	13.19	1962 8/79
109-SX (3)	150	03/04/93	Tree 2	98	Weekly	50000	14.65	1985 5/81
	155	03/04/93	Tree 8	98	Weekly	50000	14.65	1965 5/81
	172	03/03/93	Tree 2	30	Monthly	42000	11.72	1976 8/79
110-SX	166	03/03/93	Tree 8	30	Monthly	42000	11.72	1976 8/79
111-SX	186	03/03/93	Tree 2	53	Monthly	44000	12.90	1974 7/79
	156	03/03/93	Tree 8	53	Monthly	44000	12.90	1974 7/79
112-SX	152	03/03/93	Tree 2	41	Monthly	43000	12.60	1969 7/79
	157	03/03/93	Tree 8	41	Monthly	43000	12.60	1969 7/79
114-SX	187	03/03/93	Tree 2	73	Monthly	58000	17.00	1972 7/79
	184	03/03/93	Tree 8	73	Monthly	58000	17.00	1972 7/79
11 Tanks								Legend: Tree = Thermocouple Tree
105-A Laterals (5)	241	03/29/93			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 2)

Footnotes:

- (1) High heat loads as of 1988, evaluation completed April 20, 1989 (kW = 3412 Btu/h). The predominant heat load for these tanks is from CS 137 (half life of 30 years) and SR 90 (half life of 28.1 years).
- (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) 104/105/106-A exhausters has been 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. Temperatures in 104-A and 105-A 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) Although 105-C is required to be monitored monthly, it is actually monitored weekly.
- (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).
Tanks 107, 108, 109, 110, 111, 112, and 114-SX
Each of these tanks has eight thermocouple trees, with eight thermocouples on each tree, with the exception of 108-SX, which has four operational thermocouples on each tree. Tree #2 and Tree#8 are monitored in each tank.
- (8) Calculations for Total Waste Inches: see footnote (7), Table 2 (Ferrocyanide Tanks)
- (9) There are 19 single-shell tanks with active ventilation (ten are on the Watch List as indicated by an asterisk):

104-A *	101-SX *	107-SX
105-A *	102-SX *	108-SX
106-A	103-SX *	109-SX *
104-C	104-SX *	110-SX
105-C	105-SX *	111-SX
106-C *	106-SX *	112-SX
		114-SX

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

March 1993

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE		SPACE DESIGNATED FOR SPECIFIC USE	
Complexant Concentrate (102-AN, 107-AN, 101-AY, 101-SY, 103-SY)	4.96 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)	5.11 Mgal	Watch List Tank Space (103-AN, 104-AN, 105-AN, 101-SY, 103-SY, 101-AW)	0.68 Mgal
Neutralized Current Acid Waste (101-AZ, 102-AZ)	1.20 Mgal	Priority Tank Space (2) (101-AN, 102-AW, 106-AW, 102-SY)	1.36 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)	11.78 Mgal	Miscellaneous Head Space	0.21 Mgal 5.19 Mgal
TOTAL DOUBLE-SHELL TANK SPACE			
NCRW and PFP Settled Solids (103-AW, 105-AW, 102-SY)	1.01 Mgal	24 Tanks at 1140 Kgal 4 Tanks at 980 Kgal	27.36 Mgal 3.92 Mgal 31.28 Mgal
Total Inventory:	25.19 Mgal		
		Total Available Space	31.28 Mgal
		Double-Shell Tank Inventory	25.19 Mgal
		Space Designated for Specific Use	5.19 Mgal
		Remaining Unallocated Space	90 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 131 Kgal

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

March 1993

Date of Last Automatic		Reading Status		Comments		Monitoring Frequency
Tank No.	Category	FIC Reading				
109-BY	-	10/20/92	No reading taken since 03/01/93	Out of compliance as of 03/08/93	Weekly	Weekly
103-S	-	12/15/92	No reading taken since 03/15/93	Out of compliance as of 03/22/93	Weekly	Weekly
103-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Quarterly	Quarterly
104-BX	IS	11/16/91	Taking manual FIC readings	In compliance	Weekly	Weekly
107-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Monthly	Monthly
109-BX	IS	12/30/92	Taking manual FIC readings	In compliance	Weekly	Weekly
109-BY	-	10/20/92	Taking manual FIC readings	In compliance	W/M/Q	W/M/Q
B-Substation		01/27/93	Taking manual FIC readings	In compliance	Weekly	Weekly
103-S	-	12/15/92	Taking manual FIC readings	In compliance	Quarterly	Quarterly
102-T	IS	05/26/91	Taking manual FIC readings	In compliance	Quarterly	Quarterly
103-T	IS	11/15/91	Taking manual FIC readings	In compliance	Quarterly	Quarterly
111-T	-	01/12/93	Taking manual FIC readings	In compliance	Quarterly	Quarterly
112-T	IS	03/31/93	Taking manual FIC readings	In compliance	Quarterly	Quarterly
104-TX	IS	07/27/92	Taking manual FIC readings	In compliance	Quarterly	Quarterly
104-TY	IS	03/23/93	Taking manual FIC readings	In compliance	Weekly	Weekly
103-U	-	02/18/93	Taking manual FIC readings	In compliance	Weekly	Weekly
105-U	-	11/17/92	Taking manual FIC readings	In compliance	Weekly	Weekly
101-SY	DST	08/23/91	Taking manual FIC readings	In compliance	Daily	Daily
102-AP	DST	01/27/93	Taking manual tape readings	In compliance	Daily	Daily
103-AP	DST	12/16/92	Taking manual tape readings	In compliance	Daily	Daily
101-AW	DST	10/23/92	Taking manual tape readings	In compliance	Daily	Daily
103-AW	DST	03/21/92	Taking manual tape readings	In compliance	Daily	Daily
101-AY	DST	08/31/90	Taking manual tape readings	In compliance	Daily	Daily
101-AZ	DST	02/02/90	Taking manual tape readings	In compliance	Daily	Daily
102-AZ	DST	02/15/90	Taking manual tape readings	In compliance	Weekly	Weekly
108-S	-	02/21/93	Taking manual tape readings	In compliance	Daily	Daily
102-SY	DST	01/06/92	Taking manual tape readings	In compliance	Daily	Daily
101-T	-	12/02/91	Taking manual tape readings	In compliance	Daily	Daily
Catch Tanks						
A-302-A		04/16/91	Taking manual FIC reading	In compliance	Daily	Daily
S-302		07/02/90	Taking manual FIC reading	In compliance	Daily	Daily
S-302-A		12/04/91	No reading taken since 12/04/91	Out of compliance as of 12/05/91	Daily	Daily
Frequency reading requirements:						
Daily - Must be taken by 2 pm each day						
Weekly - Must be taken by 2 pm each Monday						
Quarterly - Must be taken by 2 pm on the seventh day of each quarter						
				LEGEND: IS = Interim Stabilized DST = Double-Shell Tank		

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 1 of 5)

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-040-850, "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 3/31/93

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	N/A		O/C		
102-A					N/A		N/A	N/A	O/C	
103-A					N/A				O/C	
104-A		X		O/C	N/A	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			O/C		N/A	N/A	N/A	N/A		
103-AX	X				N/A	N/A	N/A	N/A		
104-AX					N/A	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	N/A		
107-B						N/A	N/A	N/A		
108-B					N/A	N/A	N/A	N/A		
109-B						N/A	N/A	N/A		
110-B			O/C	O/C	N/A	N/A	N/A	N/A		
111-B			O/C		N/A	N/A	N/A	N/A		
112-B					N/A	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			O/C			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 5)

Information as of 3/31/93

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	N/A		
110-BX	X				N/A	N/A	N/A	N/A		
111-BX	X				N/A			N/A		
112-BX			O/C	N/A		N/A	N/A	N/A		
101-BY	X				N/A			N/A		
102-BY			O/S-O/C		N/A			N/A		
103-BY	X				N/A			N/A		
104-BY	X				N/A			N/A		
105-BY	X				N/A			N/A		
106-BY	X				N/A			N/A		
107-BY	X				N/A			N/A		
108-BY	X				N/A	N/A	N/A	N/A		
109-BY			O/S-O/C	N/A	O/C			N/A		
110-BY	X				N/A			N/A		
111-BY	X				N/A			N/A		
112-BY	X				N/A	O/C	O/C	N/A		
101-C				O/C	N/A	N/A	N/A	N/A		
102-C			O/C	N/A		N/A	N/A	N/A	N/A	
103-C	X			N/A		N/A	N/A	N/A		
104-C				N/A		N/A	N/A	N/A		
105-C		X		N/A		N/A	N/A	N/A		
106-C (4)	X	X		N/A		N/A	N/A	N/A		
107-C				N/A		N/A	N/A	N/A		
108-C	X				N/A	N/A	N/A	N/A		
109-C	X				N/A	N/A	N/A	N/A		
110-C					N/A	N/A	N/A	N/A		
111-C	X				N/A	N/A	N/A	N/A		
112-C	X				N/A	N/A	N/A	N/A		
201-C					N/A	N/A	N/A	N/A		
202-C					N/A	N/A	N/A	N/A		
203-C					N/A	N/A	N/A	N/A		
204-C			O/C		N/A	N/A	N/A	N/A		
101-S			O/C	N/A				N/A		
102-S	X			N/A				N/A		
103-S				N/A	O/C			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					O/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		O/C	N/A	N/A	N/A	O/C		

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 3 of 5)

Information as of 3/31/93

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				O/S	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	O/S			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					N/A			N/A		
103-TX				N/A		N/A	N/A	N/A		
104-TX				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					N/A			N/A		
107-TX				N/A		N/A	N/A	N/A		
108-TX				N/A				N/A		
109-TX				N/A				N/A		
110-TX					N/A			N/A		
111-TX					N/A			N/A		
112-TX					N/A			N/A		
113-TX					N/A			N/A		
114-TX					N/A			N/A		
115-TX					N/A			N/A		
116-TX			O/S O/C		N/A	N/A	N/A	N/A		
117-TX			O/C		N/A			N/A		
118-TX	X			N/A				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				N/A		
104-TY	X			N/A	O/S	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			O/C		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 5)

Information as of 3/31/93

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			O/C		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 and Special Surveillance Facilities										
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
152-AX	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
BX-TK/SMP	N/A	N/A	N/A		N/A					
A-TK/SMP	N/A	N/A	N/A		N/A					
204-AR	N/A	N/A	N/A							
417-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
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
S-304	N/A	N/A	N/A		N/A	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
TX-302-C	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
U-301-B	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
UX-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
141-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
142-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
Totals: 149 tanks	48 Watch List Tanks (4)	11 High Heat Tanks (4)	O/C: 29 tanks - (semiannual monitoring frequency) (5)	O/C: 5 tanks 1 catch tank	O/C: 2 tanks 1 catch tank	O/C: 3 tanks	O/C: 3 tanks	O/C: 15 tanks	0	0
						58 tanks have LOWs (2 are O/S)				

Footnotes:

- (1) All SSTs have either manual tape or FIC, with the exception of 108-S and 101-T, which have both. Tank 101-T also has a zip cord. 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 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 to be 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; no readings being taken. 105/106-C psychrometric readings are required to be taken on a monthly frequency. Readings were taken in high heat SX tanks in March 1993. Psychrometric frequency not specified in -357 or operating procedures.
- (3) In-tank Photographs are not required by -357. In-tank photographs were not taken between 1991 and 1993.
- (4) Two tanks are on both category lists (106-C, 109-SX).

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 5 of 5)

Footnotes continued:

- (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 unable to function. The OSD does not require readings or repair of out-of-service thermocouples for the 92 non-heat load (>40,000 Btu/hr) tanks. However, operating procedure (POP) requires that attempts are to be made semiannually in January and July to obtain readings from these tanks. In March 1993, seven additional TX tank temperature readings were obtained by measuring resistance using the wall of the pipe as ground. Temperatures were comparable to last temperatures taken in 1983. 29 tanks are O/C because either no attempts were made to read them January - March or readings could not be obtained.

**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:

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
OSD	= Operating Specifications Document
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 3/31/93

Tank Number	Watch List	Temperature Readings (4) (OSD)	Surface Level Readings (1) (-357, OSR/SAR)		Radiation Readings		Annulus (-357)
					Leak Detection Pits (5) (-357, OSR/SAR)		
			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/C	
102-AP				O/S		O/C	
103-AP				O/S		O/C	
104-AP			O/S			O/C	
105-AP		O/C				O/C	
106-AP		O/C				O/C	
107-AP		O/C				O/C	
108-AP		O/C				O/C	
101-AW	X			O/S			
102-AW							
103-AW				O/S			
104-AW							
105-AW							
106-AW							
101-AY				O/S			O/C
102-AY						O/C	O/C
101-AZ				O/S		O/C	
102-AZ				O/S			
101-SY	X						
102-SY				O/S			
103-SY	X						
Totals: 28 tanks	6 Watch List Tanks	O/C: 4 (4)	O/C: 0	O/C: 0	O/C: 0	O/C: 11 tanks	O/C: 2 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) OSD requires DST temperatures to be taken weekly. Tank 101-SY temperatures are obtained shiftwise with increased readings taken prior to and following gas venting. Four AP tanks are O/C because the transmitting equipment is O/S.
- (5) Failure of both leak detection systems requires repair of at least one system within 5 working days. Failure of one system only, repair must be within 10 working days. Per -357. If repair of out-of-service systems exceeds these timeframes, systems are O/C. Out-of-service systems which have not exceeded these timeframes will be shown as O/S.

Figure 1. FY 93 Integrated Core Sample Schedule

APPENDIX A

**TANK AND EQUIPMENT CODE
AND STATUS DEFINITIONS**

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TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

March 1993

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 waste because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation, Section 3137 of the <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.

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

TANK INVESTIGATION

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

SURVEILLANCE INSTRUMENTATION

Drywells 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 not 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

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received by CASS. Continuous Air Monitoring (CAM) alarms are also located in the annulus. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.

Liquid Observation Well (LOW)

In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are constructed of fiberglass or 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 (56 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), are constructed of steel and 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.

* TEFZEL, a trademark of E. I. du Pont de Nemours & Company

4. INVENTORY AND STATUS BY TANK - COLUMN CALCULATIONS (SINGLE-SHELL TANKS)COLUMN HEADING

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

Figure B-1. High-Level Waste Tank Configuration

Tank Farms: B, C, T, U

20 ft Diameter Single-Shell Tank

29103062.1a

Figure B-2. Double-Shell Tank Instrumentation Configuration

Figure B-3. Single-Shell Tank Instrumentation Configuration

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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

Sludge

Solids

XXX = Total Waste Volume (Solids+Supernatant)(in K gal.)

XXX = Total Liquids (in K gal.)

(Drainable Interstitial + Supernatant)

XXX = Sludge (in K gal.)

(Solids+Tanks Not Shown)

AL = Assumed Leaker

HH = High Heat Tanks

F = Ferrocyanide

(WHC-EP-0004)

O = Organic

H = Potential Flammable Gases

(Hydrogen)(WHC-EP-0018)

II = Interim Isolated

IS = Interim Stabilized

PI = Partially Interim Isolated

Updated Quarterly 03/31/93

SST-ALL/S.G. SPENCER/05-93

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

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

Figure B-7. Tank Farm Facilities - Quick Reference

200 EAST

200 WEST

APPENDIX C

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

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TABLE C-1. MONTHLY SUMMARY

TANK STATUS

March 1993

	200		200	
	EAST AREA	WEST AREA	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	51	54	105	(1)
ISOLATED				
PARTIAL INTERIM	21	30	51	
INTERIM	45	53	98	

WASTE VOLUMES (K gallons)

	200		200		200	
	EAST AREA	WEST AREA	EAST AREA	WEST AREA	TOTAL	TOTAL
SUPERNATANT						
AGING	1758	0	1758	0	1758	1758
CC	1950	199	2149	3	2146	2149
CP	7	0	7	0	7	7
DC	838	1	839	1	838	839
DN	10225	0	10225	0	10225	10225
DN/PD	976	0	976	0	976	976
DN/PT	0	656	656	0	656	656
DSSF	3834	48	3882	56	3826	3882
NCPLX	234	285	519	519	0	519
TOTAL SUPERNATANT	19822	1189	21011	579	20432	21011
SOLIDS						
Double-shell slurry	937	1103	2040	0	2040	2040
Sludge	8206	6215	14421	12466	1955	14421
Saltcake	6577	17352	23929	23169	760	23929
TOTAL SOLIDS	15720	24670	40390	35635	4755	40390
TOTAL WASTE	35542	25859	61401	36239	25187	61401
AVAILABLE SPACE IN TANKS	5274	827	6101	0	6101 (2)	6101
DRAINABLE INTERSTITIAL	2253	4505	6758	6319	436	6758
DRAINABLE LIQUID REMAINING	21410	4743	26153	5418	20735	26153

(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) Includes six double-shell tanks on Hydrogen Watch List not currently allowed to receive waste, 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

March 1993

TANK FARMS	IN SERVICE	OUT OF SERVICE	SOUND	ASSUMED LEAKER	ISOLATED TANKS		INTERIM STABILIZED TANKS		
					PARTIAL	INTERIM			
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			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			83	35	30	53	54		
TOTAL			28	149	110	67	51	98	105

(1) Includes tanks that do not meet current established supernatant and interstitial liquid stabilization criteria (B-104,

B-107, B-110, B-111, BX-110, T-102, T-112, and U-110).

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

TABLE C-3. INVENTORY SUMMARY BY TANK FARM

WASTE VOLUMES (Kgallons)

March 1993

SUPERNATANT LIQUID VOLUMES														SOLIDS VOLUME			
TANK FARM	TOTAL WASTE	AVAIL SPACE	AGING	CC	CP	DC	DN	DN/PT	DSSF	NCPLX	TOTAL	DSS	SLUDGE	CAKE	TOTAL		
EAST																	
A	1536	0	0	0	0	0	0	0	0	8	0	8	556	972	1528		
AN	5975	2005	0	1947	7	0	639	0	0	1941	0	4534	937	504	1441		
AP	7284	1836	0	0	0	0	6463	0	0	821	0	7284	0	0	0		
AW	5747	1101	0	0	0	0	2376	976	0	1064	0	4416	0	1135	1331		
AX	906	0	0	3	0	0	0	0	0	0	3	0	19	884	903		
AY	1700	260	0	0	0	838	747	0	0	0	0	1585	0	115	115		
AZ	1888	72	1758	0	0	0	0	0	0	0	0	1758	0	130	130		
B	2057	0	0	0	0	0	0	0	0	0	15	15	0	1697	2042		
BX	1559	0	0	0	0	0	0	0	0	0	50	50	0	1354	1509		
BY	4744	0	0	0	0	0	0	0	0	0	0	0	0	719	4744		
C	2146	0	0	0	0	0	0	0	0	0	169	169	0	1977	1977		
Total			1758	1950	7	838	10225	976	0	3834	234	19822	937	8206	6577	15720	
WEST																	
S	5680	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	62	63	0	1532	2858	4390	
SY	2593	827	0	199	0	0	0	656	0	0	0	855	1103	71	564	1738	
T	2040	0	0	0	0	0	0	0	0	0	49	49	0	1991	0	1991	
TX	6905	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	3	3	0	571	64	635	
U	3550	0	0	0	0	0	0	0	0	31	137	168	0	638	2744	3382	
Total			0	199	0	1	0	0	656	48	285	1180	1103	6215	17352	24670	
TOTAL			61401	6101	7	839	10225	976	656	3882	519	21011	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
March 1993

TANK STATUS			LIQUID VOLUME										SOLIDS VOLUME										VOLUME DETERMINATION				CHANGE SINCE LAST MONTHLY REPORT
WASTE TANK MATL	TANK INTEGRITY	USE	EQUIVA- LENT	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPER- NATANT LIQUID	DRAIN- ABLE INTER- STIT.	PUMPED THIS MONTH	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SALT CAKE VOL (Kgallons)	LIQ VOL	SOL VOL	SOLIDS VOLUME UPDATE	LAST PHOTO DATE											
++++++ AN FARM STATUS ++++++																											
101AN	DN	SOUND	DRCVR	232.4	639	501	639	0	0.0	0.0	639	639	0	0	0	08/22/89	0/ 0/ 0										
102AN	CC	SOUND	CUHT	400.7	1102	38	1013	3	0.0	0.0	1016	1013	0	89	0	08/22/89	0/ 0/ 0										
103AN	DSS	SOUND	CUHT	346.5	953	187	16	0	0.0	0.0	16	16	937	0	0	08/22/89	10/29/87										
104AN	DSSF	SOUND	CUHT	385.8	1061	79	797	25	0.0	0.0	822	800	0	264	0	08/22/89	08/19/88										
105AN	DSSF	SOUND	CUHT	410.2	1128	12	1128	0	0.0	0.0	1128	1128	0	0	0	10/22/84	01/26/88										
106AN	CP	SOUND	CUHT	8.7	24	1116	7	0	0.0	0.0	7	7	0	17	0	08/22/89	0/ 0/ 0										
107AN	CC	SOUND	CUHT	388.4	1068	72	934	9	0.0	0.0	943	934	0	134	0	08/22/89	09/01/88										
7 DOUBLE-SHELL TANKS				TOTALS:	5975	2005	4534	37	0.0	0.0	4571	4537	937	504	0												
++++++ AP FARM STATUS ++++++																											
101AP	DN	SOUND	DRCVR	385.8	1061	79	1061	0	0.0	0.0	1061	1061	0	0	0	05/01/89	0/ 0/ 0										
102AP	DN	SOUND	GRTFD	402.5	1107	33	1107	0	0.0	0.0	1107	1107	0	0	0	07/11/89	0/ 0/ 0										
103AP	DN	SOUND	DRCVR	411.6	1132	8	1132	0	0.0	0.0	1132	1132	0	0	0	10/13/88	0/ 0/ 0										
104AP	DN	SOUND	GRTFD	6.9	19	1121	19	0	0.0	0.0	19	19	0	0	0	10/13/88	0/ 0/ 0										
105AP	DSSF	SOUND	CUHT	298.5	821	319	821	0	0.0	0.0	821	821	0	0	0	02/02/89	0/ 0/ 0										
106AP	DN	SOUND	DRCVR	410.5	1129	11	1129	0	0.0	0.0	1129	1129	0	0	0	10/13/88	0/ 0/ 0										
107AP	DN	SOUND	DRCVR	405.5	1115	25	1115	0	0.0	0.0	1115	1115	0	0	0	10/13/88	0/ 0/ 0										
108AP	DN	SOUND	DRCVR	327.3	900	240	900	0	0.0	0.0	900	900	0	0	0	10/13/88	0/ 0/ 0										
8 DOUBLE-SHELL TANKS				TOTALS:	7284	1836	7284	0	0.0	0.0	7284	7284	0	0	0												

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TABLE C-4. INVENTORY AND STATUS BY TANK
DOUBLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION				CHANGE SINCE LAST MONTHLY REPORT					
TANK	WASTE TANK	TANK INTEGRITY USE	EQUIVA- LENT	WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SALT LIQ VOL	DSS SLDG CAKE VOL	SOLIDS VOL	LAST UPDATE	PHOTO DATE	MONTHLY REPORT	
+++++ SY FARM STATUS +++++																			
101SY	CC	SOUND	CWHT	407.3	1120	20	30	237	0.0	0.0	267	261	530	0	560	FM	S	01/31/92	04/12/89
102SY	DN/PT	SOUND	DRCVR	264.4	727	413	656	0	0.0	0.0	656	656	0	71	0	FM	S	05/12/87	04/29/81
103SY	CC	SOUND	CWHT	271.3	746	394	169	0	0.0	0.0	169	169	573	0	4	FM	S	10/22/84	10/01/85
3 DOUBLE-SHELL TANKS				TOTALS:	2593	827	855	237	0.0	0.0	1092	1086	1103	71	564				
GRAND TOTAL					25187	6101	20432	439			20871	20735	2040	1955	760				

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

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

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

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

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

**TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993**

WHC-EP-0182-60

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

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION								CHG	
		DRAIN-ABLE		PUMPED		DRAIN-ABLE		PUMP-ABLE		LIQUIDS		SOLIDS		SOLIDS		SOLIDS		LAST PHOTO DATE	SINCE LAST MONTHLY REPORT
TANK	WASTE MATERIAL	INTEGRITY	STATUS	STABIL/ISOLATION	TANK	ASMD LKR	1S/11	113	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
101B	NCPLX	ASMD LKR	1S/11	113	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102B	NCPLX	SOUND	1S/11	32	4	0	0.0	0.0	0.0	4	0	0	0	0	0	0	0	0	0
103B	NCPLX	ASMD LKR	1S/11	59	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
104B	NCPLX	SOUND	1S/11	371	1	46	0.0	0.0	0.0	47	0	40	0	69	0	69	0	0	0
105B	NCPLX	ASMD LKR	1S/11	306	0	23	0.0	0.0	0.0	23	0	0	0	266	0	266	0	0	0
106B	NCPLX	SOUND	1S/11	117	1	6	0.0	0.0	0.0	7	0	0	0	116	0	116	0	0	0
107B	NCPLX	ASMD LKR	1S/11	165	1	12	0.0	0.0	0.0	13	7	7	0	164	0	164	0	0	0
108B	NCPLX	SOUND	1S/11	94	0	4	0.0	0.0	0.0	4	0	0	0	94	0	94	0	0	0
109B	NCPLX	SOUND	1S/11	127	0	8	0.0	0.0	0.0	8	0	0	0	127	0	127	0	0	0
110B	NCPLX	ASMD LKR	1S/11	246	1	22	0.0	0.0	0.0	23	17	17	0	245	0	245	0	0	0
111B	NCPLX	ASMD LKR	1S/11	237	1	21	0.0	0.0	0.0	22	16	16	0	236	0	236	0	0	0
112B	NCPLX	ASMD LKR	1S/11	33	3	0	0.0	0.0	0.0	3	0	0	0	30	0	30	0	0	0
201B	NCPLX	ASMD LKR	1S/11	29	1	3	0.0	0.0	0.0	4	0	0	0	28	0	28	0	0	0
202B	NCPLX	SOUND	1S/11	27	0	3	0.0	0.0	0.0	3	0	0	0	27	0	27	0	0	0
203B	NCPLX	ASMD LKR	1S/11	51	1	5	0.0	0.0	0.0	6	0	0	0	50	0	50	0	0	0
204B	NCPLX	ASMD LKR	1S/11	50	1	5	0.0	0.0	0.0	6	0	0	0	49	0	49	0	0	0
16 SINGLE-SHELL TANKS		TOTALS		2057	15	164	0.0	0.0	0.0	179	80	1697	345						

+++++ B FARM STATUS +++++

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION						CHG	
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	SINCE LAST MONTHLY REPORT	
+++++ BX FARM STATUS +++++																		
101BX	NCPLX	ASHD LKR	IS/II	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82	11/24/88		
102BX	NCPLX	ASHD 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	09/21/89	(1)	
105BX	NCPLX	SOUND	IS/II	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	10/23/86	(1)	
106BX	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	09/11/90		
108BX	NCPLX	ASHD LKR	IS/II	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	10/23/86	(1)	
109BX	NCPLX	SOUND	IS/PI	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	09/11/90	(2)	
110BX	NCPLX	ASHD LKR	IS/PI	199	1	15	0.0	0.0	16	10	189	9	MP	M	08/22/85	07/31/85	(1)	
111BX	NCPLX	ASHD 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	09/11/90	(2)	
TOTALS:				1559	50	155	0.0	67.8	205	135	1354	155						
+++++ 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	09/11/87	(2)	
103BY	NCPLX	ASHD LKR	/PI	400	0	160	0.0	78.5	160	137	5	395	MP	M	04/03/90	09/07/89	(2)	
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	ASHD LKR	/PI	503	0	192	0.0	0.0	192	169	44	459	P	MP	04/28/82	07/11/86		
106BY	NCPLX	ASHD LKR	/PI	642	0	235	0.0	0.0	235	213	95	547	P	MP	04/28/82	11/04/82		
107BY	NCPLX	ASHD 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
March 1993

TANK STATUS			LIQUID VOLUME										SOLIDS VOLUME				VOLUME DETERMINATION									
TANK	WASTE MATERIAL	TANK INTEGRITY	STATUS	STABIL/ ISOLATION	TOTAL WASTE (Kgal)	TOTAL LIQUID (Kgal)	SUPER- NATANT	DRAIN- ABLE	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN- ABLE	PUMP- ABLE	LIQUID REMAIN	LIQUID REMAIN	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME	SOLIDS VOLUME	SOLIDS UPDATE	SOLIDS SOURCE	UPDATE	CHG SINCE LAST MONTHLY REPORT				
																							WASTE STATUS	LIQUID STIT.	INTER- STIT.	WASTE STATUS
108BY	NCPLX	ASMD LKR	IS/11		228	0	9	0.0	27.5	9	0	0	154	74	MP	M	04/28/82		10/15/86							
109BY	NCPLX	SOUND	/PI		423	0	78	0.0	93.5	78	57	0	83	340	F	PS	08/30/91	(2)	10/15/86							
110BY	NCPLX	SOUND	IS/11		398	0	9	0.0	213.3	9	0	0	103	295	M	S	09/10/79		07/26/84							
111BY	NCPLX	SOUND	IS/11		459	0	0	0.0	313.2	0	0	0	21	438	P	M	04/28/82		10/31/86							
112BY	NCPLX	SOUND	IS/11		291	0	8	0.0	116.4	8	0	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/11		88	0	3	0.0	0.0	3	0	0	88	0	M	M	11/29/83		11/17/87							
102C	DC	SOUND	/PI		423	0	37	0.0	11.6	37	19	0	423	0	F	FP	04/28/82		05/18/76							
103C	NCPLX	SOUND	/PI		195	133	0	0.0	0.0	133	133	0	62	0	F	S	10/22/90	(2)	07/28/87							
104C	CC	SOUND	IS/11		295	0	11	0.0	0.0	11	5	0	295	0	FP	P	09/22/89	(1)	07/25/90							
105C	NCPLX	SOUND	/PI		150	0	11	0.0	0.0	11	4	0	150	0	F	S	05/31/85		04/01/88							
106C	NCPLX	SOUND	/PI		229	32	16	0.0	0.0	48	42	0	197	0	F	PS	04/28/82		04/05/79							
107C	DC	SOUND	/PI		275	0	26	0.0	16.3	26	20	0	275	0	F	S	01/30/92	(2)	00/00/00							
108C	NCPLX	SOUND	IS/11		66	0	0	0.0	0.0	0	0	0	66	0	M	S	02/24/84	(1)	12/05/74							
109C	NCPLX	SOUND	IS/11		66	4	0	0.0	0.0	4	0	0	62	0	M	PS	11/29/83		01/30/76							
110C	DC	ASMD LKR	/PI		187	0	7	0.0	8.9	7	5	0	187	0	F	FHP	03/01/92	(2)	08/12/86							
111C	NCPLX	ASMD LKR	IS/11		57	0	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	0	104	0	M	PS	09/18/90	(2)	09/18/90							

+++++ C FARM STATUS +++++

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

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

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

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

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION					
		STABIL/ ISOLATION	TANK INTEGRITY	STATUS	(Kgal)	SUPER- NATANT	DRAIN- ABLE	PUMPED THIS MONTH	TOTAL PUMPED	DRAIN- ABLE	PUMP- ABLE	LIQUID REMAIN	SALTCAKE (Kgal)	SLUDGE (Kgal)	CHG SINCE LAST MONTHLY REPORT
WASTE	ASWD LKR	/PI	108	5	24.6	24.6	10	5	103	0	0	0	0	0	03/04/93
NCPLX	SOUND	IS/11	32	13	0.0	0.0	13	13	19	0	0	0	0	0	06/28/89
NCPLX	ASWD LKR	IS/11	27	4	0.0	0.0	4	0	23	0	0	0	0	0	07/02/84
NCPLX	SOUND	/PI	445	3	0.0	0.0	50	44	442	0	0	0	0	0	06/29/89
NCPLX	SOUND	IS/11	98	0	0.0	0.0	23	17	98	0	0	0	0	0	05/14/87
NCPLX	ASWD LKR	IS/11	21	2	0.0	0.0	2	0	19	0	0	0	0	0	06/29/89
NCPLX	ASWD LKR	/PI	180	9	0.0	0.0	22	16	171	0	0	0	0	0	07/12/84
NCPLX	ASWD LKR	IS/11	44	0	0.0	0.0	0	0	44	0	0	0	0	0	07/17/84
NCPLX	ASWD LKR	IS/11	58	0	0.0	0.0	0	0	58	0	0	0	0	0	02/25/93
NCPLX	SOUND	/PI	379	3	0.0	0.0	42	36	376	0	0	0	0	0	07/12/84
NCPLX	ASWD LKR	/PI	458	2	0.0	0.0	51	45	456	0	0	0	0	0	08/02/84
NCPLX	SOUND	IS/11	67	7	0.0	0.0	7	7	60	0	0	0	0	0	08/01/84
NCPLX	SOUND	IS/11	29	1	0.0	0.0	4	0	28	0	0	0	0	0	04/15/86
NCPLX	SOUND	IS/11	21	0	0.0	0.0	2	0	21	0	0	0	0	0	07/06/89
NCPLX	SOUND	IS/11	35	0	0.0	0.0	4	0	35	0	0	0	0	0	08/03/89
NCPLX	SOUND	IS/11	38	0	0.0	0.0	4	0	38	0	0	0	0	0	08/03/89
16 SINGLE-SHELL TANKS	TOTALS:		2040	49	189	24.6	238	183	1991	0	0	0	0	0	

+++++ T FARM STATUS ++++++

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TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME										SOLIDS VOLUME				VOLUME DETERMINATION					CHG SINCE LAST MONTHLY REPORT	
TANK	WASTE MATERIAL	TANK INTEGRITY	STATUS	STABIL/ISOLATION	TOTAL WASTE (Kgal)	SUPER-ABLE INTER-STILL (Kgal)	DRAIN-ABLE (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 UPDATE	SOLIDS VOLUME SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MONTHLY REPORT				
+++++ TX FARM STATUS +++++																						
101TX	NCPLX	SOUND	IS/11	87	3	2	0.0	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	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	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	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	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	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	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	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	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	0.0	115.1	15	0	0	462	M	PS	05/30/83		10/24/89				
111TX	NCPLX	SOUND	IS/11	370	0	9	0.0	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	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	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	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	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	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	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	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	0.0	1205.7	255	0	241	6659									

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS			LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	TOTAL LIQUID (Kgal)	SUPER- NATANT LIQUID STIT. (Kgal)	DRAIN- ABLE INTER- (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 UPDATE	SOLIDS UPDATE SOURCE	CHG SINCE LAST MONTHLY REPORT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION					
TANK	WASTE TANK MATERIAL INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	TOTAL 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 UPDATE SOURCE	CHG SINCE LAST MONTHLY REPORT
201U	NCPLX	SOUND	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/03/89
202U	NCPLX	SOUND	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/08/89
203U	NCPLX	SOUND	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89
204U	NCPLX	SOUND	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89
16 SINGLE-SHELL TANKS		TOTALS:	3550	168	1138	0.0	0.0	1306	1104	638	2744				
GRAND TOTAL			36214	579	6319	24.60	24.60	6893	5418	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 SST ENGINEER MONTHLY INPUT (Retained 10 yr in Monthly Summary Report author's office)

Footnotes on next page

WHC-EP-0182-60

TABLE C-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
March 1993

TANK STATUS		LIQUID VOLUME				SOLIDS VOLUME				VOLUME DETERMINATION			
TANK	WASTE MATERIAL	TANK INTEGRITY	STATUS	STABIL/ ISOLATION	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT.		TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN		PUMP- ABLE LIQUID REMAIN	SOLIDS UPDATE
							STAB.	ISOL.		SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME UPDATE

* The following information provided by Single-Shell Tanks Engineer:

Tank 241-T-101, pumping began March 12, 1993
Total waste (Supernatant + Solids) 108.4 Kgal
Supernatant 5.4 Kgal
Drainable Interstitial 5.0 Kgal
Pumped this Month 24.6 Kgal
Total Pumped 24.6 Kgal
Drainable Liquid Remaining 10.4 Kgal
Pumpable Liquid Remaining 5.4 Kgal
Sludge 103 Kgal
Saltcake 0 Kgal
Last in-tank photo date: March 4, 1993

APPENDIX D
PERFORMANCE SUMMARY

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

WASTE VOLUMES (Kgallons)

March 1993

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

SOURCE	THIS MONTH	FY1993 TO DATE
B PLANT	21	99
PUREX TOTAL (1)	9	55
PFP (1)	5	5
T PLANT (1)	0	17
S PLANT (1)	0	0
300/400 AREAS (1)	5	16
SULFATE WASTE - 100 N (2)	0	0
MINI-RUN (14)	6	176
TANK FARMS & SALTWELL LIQUID (6)	37 **	63
OTHER GAINS	64	214
Slurry Increase (3)	3	
Condensate	11	
Instrument change (7)	0	
Unknown (5)	3	
OTHER LOSSES	-16	-164
Slurry decrease (3)	-28	
Evaporation (4)	-5	
Instrument change (7)	0	
Unknown (5)	-10	
EVAPORATED	0	0
GROUTED	0	0
Total	131	481

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

* No water was added to 105-C and 106-C during March 1993

** Nearly all of this liquid results from pumping 101-T

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

SOURCE	THIS MONTH	FY1993 TO DATE
105-C (8)	0	4
Gains		
Losses	0	-3
106-C (8)	0	33
Gains		
Losses	-6	-36
Total	-6 *	-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/contraction) because of 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)

March 1993

TANK FARMS	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL LIQUID	DRAINABLE LIQUID REMAINING	PUMPABLE LIQUID REMAINING
EAST				
A	8	439	442	390
AN	4534	37	4571	N/A
AP	7284	0	7284	N/A
AW	4416	159	4575	N/A
AX	3	370	373	304
AY	1585	2	1587	N/A
AZ	1758	4	1762	N/A
B	15	164	179	80
BX	50	155	205	135
BY	0	780	780	598
C	169	143	312	254
Total	19822	2253	22070	1761
WEST				
S	46	1399	1445	1192
SX	63	1261	1324	1178
SY	855	237	1092	N/A
T	49	189	238	183
TX	5	250	255	0
TY	3	31	34	0
U	168	1138	1306	1104
Total	1189	4505	5894	3657
TOTAL	21011	6758	27764	5418 (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)

March 1993

TANK FARMS		PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE
EAST				
A		0.0	0.0	150.5
AN		N/A	N/A	N/A
AP		N/A	N/A	N/A
AW		N/A	N/A	N/A
AX		0.0	0.0	13.0
AY		N/A	N/A	N/A
AZ		N/A	N/A	N/A
B		0.0	0.0	0.0
BX		0.0	0.0	68.9
BY		0.0	0.0	1387.4 *
C		0.0	0.0	36.8 **
Total		0.0	0.0	1656.6
WEST				
S		0.0	0.0	791.0
SX		0.0	0.0	113.2
SY		N/A	N/A	N/A
T		24.6	24.6	24.6
TX		0.0	0.0	1205.7
TY		0.0	0.0	29.9
U		0.0	0.0	0.0
Total		24.6	24.6	2164.4
TOTAL		24.6	24.6	3821.0

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 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, and revised again based on recalculation of flush water additions on January 26, 1993. (The total for the tank farm remains the same, the amount pumped varied among the three tanks).

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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

March 1993

VOLUME OF		CONTENTS MONITORED		REMARKS	
FACILITY	LOCATION	PURPOSE (receives waste from:)	(Gallons)		BY
EAST AREA					
A-302-A	A FARM	151-A DB	628	CASS/FIC	PUMPED 08/11/92
311-ER	B PLANT	151-ER, 152-ER DB	4426	CASS/FIC	PUMPED 05/29/91
152-AX	AX FARM	152-AX DB	2435	MANUALLY	DIAL O/S, USING ZIP CORD, PUMPED 08/29/92
151-AZ	AZ FARM	152-AZ DB, AZ LOOP SEAL	1450	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	8419	MANUALLY	USING MANUAL TAPE FOR TANK
244-A-TK/SMP	AR VAULT	DCRT - RECEIVES FROM SEVERAL FARMS	4819	MCS	DIRECT GAL READING
204-AR	AY FARM	RR CARS DURING TRANSFER TO REC. TKS	400	DIP TUBE	ALARMS ON CASS
417-A	A FARM	702-A PROCESS CONDENSATE	23010	DIP TUBE	
Vent Station		CROSS COUNTRY TRANSFER LINE	584	MT	
WEST AREA					
TX-302-C	TX FARM	154-TX DB	3733	CASS/FIC	FIC REPAIRED
U-301-B	U FARM	151-U, 152-U, 153-U, 252-U DB	6488	CASS/FIC	
UX-302-A	U PLANT	154-UX DB	10520	CASS/MFIC	
241-S-304	S FARM	151-S DB	1600	FIC	OPERATIONAL 10/91, REPLACED S-302-A
244-S-TK/SMP	S FARM	DCRT - RECEIVES FROM SEVERAL FARMS	9312	MANUALLY	CWF
244-TX-TK/SMP	TX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	15499	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
March 1993

VOLUME
OF

FACILITY	LOCATION	RECEIVED WASTE FROM:	CONTENTS MONITORED		REMARKS
			(Gallons)	BY	
A-302-B	A FARM	152-A DB	3300	CASS/MT	ISOLATED 1985, PROJECT B-138 INTERIM STABILIZED 1990
B-301-B	B FARM	151-B, 152-B, 153-B, 252-B DB	UNKNOWN	NM	ISOLATED 1985(1)
B-302-B	B FARM	154-B DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-A	BX FARM	152-BR, 153-BX, 152-BXR, 152-BYR DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-B	BX FARM	154-DB	UNKNOWN	NM	ISOLATED 1985(1)
BX-302-C	BX FARM	155-B DB	UNKNOWN	NM	ISOLATED 1985(1)
C-301-C	C FARM	151-C, 152-C, 153-C, 252-C DB	UNKNOWN	NM	ISOLATED 1985(1)
241-CX-70	HOT SEMI-	TRANSFER LINES	UNKNOWN	NM	ISOLATED, DECOMMISSION PROJ.
241-CX-72	WORKS	TRANSFER LINES	UNKNOWN	NM	SEE DWG H-2-95-501, 2/5/87
244-AR	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	BEING UPGRADED
001-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
002-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
003-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
011-BXR-TK/SMP	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
361-B-TANK	B PLANT	DRAINAGE FROM B-PLANT	UNKNOWN	NM	INTERIM STABILIZED 1985(1)

Total East Area inactive facilities 15

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

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

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

INACTIVE - no longer receiving waste transfers
March 1993

VOLUME
OF

FACILITY	LOCATION	RECEIVED WASTE FROM:	CONTENTS (Gallons)	BY	REMARKS
S-302	S FARM	240-S-151 DB	2284	CASS/FIC	ASSUMED LEAKER EPDA 85-04
S-302-A	S FARM	241-S-151 DB	O/S	CASS/FIC	ASSUMED LEAKER TF-EFS-90-042 PARTIALLY FILLED WITH GROUT 2/91 DETERMINED STILL ASSUMED LEAKER AFTER LEAK TEST
S-302-B	S FARM	S ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
SX-304(302)	SX FARM	152-SX TRANSFER BOX, 151-SX DB	UNKNOWN	NM	ISOLATED 1985(1)
TX-302	TX FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
TX-302-X-B	TX FARM	TX ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
TX-302-B	TX FARM	155-TX DB	O/S	CASS/MT	WORK REQ. ISSUED TO REPLACE O/S MT
TY-302-A	TY FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
TY-302-B	TY FARM	TY ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
001-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
002-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
003-UR-TK/SMP	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
001-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
002-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
003-TXR-TK/SMP	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
361-T-TANK	T PLANT	DRAINAGE FROM T-PLANT	UNKNOWN	NM	ISOLATED 1985(1)
361-U-TANK	U PLANT	DRAINAGE FROM U-PLANT	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-U-TK/SMP	U FARM	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	NOT YET IN USE

Total West Area inactive facilities 19

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

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

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APPENDIX H
LEAK VOLUME ESTIMATES

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

Tank No.	Date Declared Confirmed or Assumed Leaker (3)	Volume (2)(4) (Gallons)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date	Leak Estimate	
					Updated	Reference
241-A-103	1987	5500 (9)		8/88	1987	(l)
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 (9)		9/88	1989	(h)
241-AX-104	1977	-- (7)		8/81	1989	(g)
241-B-101	1974	-- (7)		3/81	1989	(g)
241-B-103	1978	-- (7)		2/85	1989	(g)
241-B-105	1978	-- (7)		12/84	1989	(g)
241-B-107	1980	8000 (9)		3/85	1986	(d), (f)
241-B-110	1981	10000 (9)		12/84	1986	(d)
241-B-111	1978	-- (7)		6/85	1989	(g)
241-B-112	1978	2000		5/85	1989	(g)
241-B-201	1980	1200 (9)		8/81	1984	(e), (f)
241-B-203	1983	300 (9)		6/84	1986	(d)
241-B-204	1984	400 (9)		6/84	1989	(g)
241-BX-101	1972	-- (7)		9/78	1989	(g)
241-BX-102	1971	70000	50 (l)	11/78	1986	(g)
241-BX-108	1974	2500	0.5 (l)	7/79	1986	(g)
241-BX-110	1976	-- (7)		8/85	1989	(g)
241-BX-111	1984	-- (7)		N/A	1989	(g)
241-BY-103	1973	<5000		N/A	1983	(a)
241-BY-105	1984	-- (7)		N/A	1989	(g)
241-BY-106	1984	-- (7)		N/A	1989	(g)
241-BY-107	1984	15100 (9)		7/79	1989	(g)
241-BY-108	1972	<5000		2/85	1983	(a)
241-C-101	1980	20000 (9)		11/83	1986	(d)
241-C-110	1984	2000		N/A	1989	(g)
241-C-111	1968	5500 (9)		3/84	1989	(g)
241-C-201 (5)	1988	550		3/82	1987	(g)
241-C-202 (5)	1988	450		8/81	1987	(g)
241-C-203	1984	400 (9)		3/82	1986	(d)
241-C-204 (5)	1988	350		9/82	1987	(i)
241-S-104	1968	24000 (9)		12/84	1989	(g)
241-SX-104	1988	6000 (9)		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 (9)		8/79	1989	(g)
241-SX-111	1974	500 to 2000	0.6 to 2.4 (l) (q)	7/79	1986	(d) (q)
241-SX-112	1969	30000	40 (l)	7/79	1986	(d)
241-SX-113	1962	15000	8 (l)	11/78	1986	(d)
241-SX-114	1972	-- (7)		7/79	1989	(g)
241-SX-115	1965	50000	21 (o)	9/78	1992	(o)
241-T-101	1992	7500 (9)		N/A	1992	(p)
241-T-103	1974	<1000 (9)		11/83	1989	(g)
241-T-106	1973	115000 (9)	40 (l)	8/81	1986	(g)
241-T-107	1984	-- (7)		N/A	1989	(g)
241-T-108	1974	<1000 (9)		11/78	1980	(f)
241-T-109	1974	<1000 (9)		12/84	1989	(g)
241-T-111 (5)	1984	<1000 (9)		N/A	1980	(f)
241-TX-105	1977	-- (7)		9/83	1989	(g)
241-TX-107	1984	2500		10/79	1986	(d)
241-TX-110	1977	-- (7)		4/83	1989	(g)
241-TX-113	1974	-- (7)		4/83	1989	(g)
241-TX-114	1974	-- (7)		4/83	1989	(g)
241-TX-115	1977	-- (7)		9/83	1989	(g)
241-TX-116	1977	-- (7)		4/83	1989	(g)
241-TX-117	1977	-- (7)		3/83	1989	(g)
241-TY-101	1973	<1000 (9)		8/83	1980	(f)
241-TY-103	1973	3000	0.7 (l)	2/83	1986	(d)
241-TY-104	1981	1400 (9)		1/83	1986	(d)
241-TY-105	1960	35000	4 (l)	2/83	1986	(d)
241-TY-106	1959	20000	2 (l)	11/78	1986	(d)
241-U-101	1959	30000	20 (l)	9/79	1986	(d)
241-U-104	1961	55000	0.09 (l)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (9)	0.05 (q)	12/84	1986	(d) (q)
241-U-112	1980	8500 (9)		9/78	1986	(d)
67 Tanks		<600,000 - 900,000 (8)				

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.

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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. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date as 1961. Using present standards, Tank 241-U-104 would have been declared as assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline," and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.
- (4) There has been an effort in the past two years 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 as part of the prior to FY 1994 budget planning.
- (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) 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.
- (8) 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.
- (9) 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.
- (10) 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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- (d) Smith, D. A., January 1986, *Single-Shell Tank Isolation Safety Analysis Report*, SD-WM-SAR-006, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
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- (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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- (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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