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HNF-EP-0182-141

# Waste Tank Summary Report for Month Ending December 31, 1999

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

CH2MHILL
*Hanford Group, Inc.*

Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

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B. M. Hanlon
CH2M HILL

Date Published
February 2000

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**Document Title:** WASTE TANK SUMMARY REPORT FOR MONTH ENDING DECEMBER 31, 1999

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# WASTE TANK SUMMARY REPORT

B. M. Hanlon

## ABSTRACT

*This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 63 smaller miscellaneous underground storage tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U. S. Department of Energy-Richland Operations Office Order 435.1 (DOE-RL, July 1999, Radioactive Waste Management, U. S. Department of Energy-Richland Operations Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.*

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

# WASTE TANK SUMMARY REPORT
# FOR MONTH ENDING DECEMBER 31, 1999

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

## I. WASTE TANK STATUS

| Category | Quantity | Date of Last Change |
|---|---|---|
| Double-Shell Tanks[b] | 28 double-shell | 10/86 |
| Single-Shell Tanks | 149 single-shell | 1966 |
| Assumed Leaker Tanks | 67 single-shell | 07/93 |
| Sound Tanks | 28 double-shell<br>82 single-shell | 1986<br>07/93 |
| Interim Stabilized Tanks[a] | 120 single-shell | 11/99 |
| Not Interim Stabilized[c] | 29 single-shell | 11/99 |
| Intrusion Prevention Completed | 108 single-shell | 09/96 |
| Controlled, Clean, and Stable[f] | 36 single-shell | 09/96 |
| Watch List Tanks[d]<br><br>Total | 22 single-shell<br>6 double-shell<br>28 tanks | 12/98[e]<br>06/93 |

[a] Of the 120 tanks classified as Interim Stabilized, 64 are listed as Assumed Leakers. (See Table I-1)

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

[c] Three of these tanks are Assumed Leakers (BY-105, BY-106, SX-104). (See Table H-1)

[d] See Section A tables for more information on Watch List Tanks.

[e] Dates for the Watch List tanks are "officially added to or removed from the Watch List" dates. Eighteen tanks were removed from the Organics Watch List in December 1998; two tanks still remain on this watch list.

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

## II. WASTE TANK INVESTIGATIONS

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

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

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

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

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

B. Tanks with increases indicating possible intrusions:

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

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

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

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

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

> Resolution Status: Discrepancy Report #98-853 was issued on November 4, 1998. One possible cause under investigation is a change in flow path, causing an increase in evaporation. The tank was pumped down to 2.25 inches on November 13, 1998. Since that time the level has decreased to 0.00 inches. The Discrepancy Report will remain open and catch tank AX-152 will remain on the alert list until an engineering investigation is complete. Preparation of Work Package ES-99-00133 to perform an airflow rate assessment in the tank is continuing. There are still issues to be resolved before the preparation of this Work Package can be completed.

## III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

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

Tank 241-S-102 - **Pumping continued until November 17, 1999, when pump problems forced a shutdown. No pumping during December; pump repair/replacement is scheduled for January 2000. A total of 42.8 Kgallons has been pumped from this tank since pumping started in March 1999.**

Tank 241-S-103 - Saltwell pumping commenced on June 4, 1999. **In December 1999, 1.0 Kgallons were pumped; a total of 23.8 Kgallons has been pumped from this tank since pumping started in June 1999.**

Tank 241-S-106 - Pumping restarted on April 15, 1999, after an earlier pumping campaign in the 1980s. **In December 1999, 1.7 Kgallons were pumped; a total of 203.3 Kgallons has been pumped from this tank since pumping began in the 1980s.**

Tank 241-SX-104 - Pumping was interrupted on July 27, 1999, by a leaking saltwell pump. **This tank is being evaluated for stabilization based on equipment failure.** A total of 231.3 Kgallons has been pumped from this tank since pumping started in the late 1980s.

Tank 241-SX-106 - **In December 1999, 200 gallons were pumped; a total of 147.5 Kgallons has been pumped from this tank since start of pumping in October 1998.**

Tank 241-T-110 - **This tank is currently undergoing stabilization evaluations.** An in-tank video was taken October 7, 1999. A total of 50.3 Kgallons has been pumped from this tank since start of pumping in May 1997.

Tank 241-U-103 - Pumping commenced September 26, 1999. **In December 1999, 11.1 Kgallons were pumped; a total of 63.4 Kgallons has been pumped from this tank since start of pumping in September 1999.**

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

Tank 241-SY-101 exhibited gas release events due to generation and retention of flammable gas. Waste level was used as an indirect measure of retained gas inventory. A mixer pump was installed in the tank in July 1993, which circulates liquid wastes. This prevents gas bubbles from building up at the bottom, and results in venting of small steady gas releases. Since early 1997, the surface level has been rising in spite of regular mixer pump operations. Since April 1999, the surface level has remained relatively constant, indicating that gas release rates have equaled the estimated gas generation rate.

Resolution Status: On February 11, 1998, the PRC recommended that the DOE-RL declare an Unreviewed Safety Question (USQ) over the continued level growth observed in this tank. DOE has modified the 406-inch and 422-inch mixer pump operational controls to allow additional mixer pump and characterization operations. The contractor has established a multi-disciplinary team to solve the level growth issues in SY-101. The prime near-term focus is to transfer approximately 100,000 gallons out of SY-101.

Equipment and instrumentation were installed in September 1999 to transfer approximately 100 Kgallons of waste from SY-101 to SY-102.

**Approximately 90,000 gallons of waste were transferred from SY-101 to SY-102 on December 18 and 19, 1999. This waste was diluted with an equal amount of water during the transfer. Subsequent to the transfer, approximately 60,000 gallons of water was back diluted into SY-101.**

**The next SY-101 to SY-102 transfer with back dilution is planned for late January 2000.**

**3. Tank 241-C-106 Removed from High Heat Load Watch List**

**On December 16, 1999, DOE-HQ gave approval to close the high heat safety issue on C-106 and remove it from the High Heat Load Watch List created by Congress in 1990. Tank C-106 was placed on the Watch List because it was the only high heat load single-shell tank that required the addition of water to control the temperature of the waste.**

**A total of 188,000 gallons of radioactive sludge has been emptied from this tank, using sluice retrieval technology, making it the first completed retrieval of radioactive waste from a single-shell tank in Hanford.**

4. RL-PHMC-TANKFARM-1999-0063, Occurrence Report, "An Unreviewed Safety Question Was Discovered," Unusual Occurrence, Latest update November 4, 1999.

The completion times identified in LCO 3.1.3, Transfer Leak Detection Systems, action statement A.2.2.1, "Verify there is no detectable leakage at the leak detection location using an alternate monitoring device," could allow operation outside the analyzed Authorization Basis. This action statement allows the use of alternate leak detection devices with a surveillance frequency not supported by the Authorization Basis.

Standing Order #TWO-99-34 was issued to prohibit implementation of this action statement until this issue is resolved.

The Plant Review Committee directed performance of an Unreviewed Safety Question Determination.

On October 11, 1999, this event was upgraded to "Unusual Occurrence."

November 4, 1999: The following information was transferred from UOR -1999-0055 to this report:

On August 3, 1999, the Plant Review Committee (PRC) concluded that a Potential Inadequacy in Authorization Basis (PIAB) exists with respect to the inadequacy of the applicability statement of Limiting Conditions to Operation (LC0s) 3.3.3 and 3.3.3. Process area applicability of transfer system covers that are "PHYSICALLY CONNECTED to an ACTIVE WASTE transfer pump not under administrative lock" may be inadequate for 242-A Evaporator emergency dump configurations.

A final report will be submitted on or before April 1, 2000.

5. RP-LMHC-TANKFARM-1999-0010, Occurrence Report,"311-ER Vapor Sample Indicated High Lower Flammability Limit Reading," Off-Normal, Notification November 2, 1999.

On November 1, 1999, 241-ER-311 Catch Tank was vapor sampled during planned Characterization Operations sampling. The results of the sampling with a Combustible Gas Meter (CGM) revealed a reading of >25% Lower Flammability Limit (LFL) reading. A second reading was obtained using a different instrument; again the reading was >25% LFL. Both readings were off scale (HIGH). Samples wee captured and sent to the lab for analysis.

All work was terminated on or near tank ER-311. Restricted access to the fenced area that surrounds this tank was initiated by controlling the entrance key and posting the gate, pending further investigation and subsequent resolution.

The Plant Review Committee met on November 9, 1999, to review sample data and status of field activities. A portable exhauster has been installed to remove the argon used to dilute/displace flammable concentrations of hydrogen.

Discrepancy Report 99-863 was issued for exceeding frequency of reading. A zipcord reading was obtained on November 11, 1999. **An ENRAF surface level measurement gauge was installed on December 16, 1999, and is being monitored daily. Discrepancy Report 99-863 has been closed.**

Operational restrictions remain on ER-311 and adjacent facilities (ER-311 pump pit, ER-151 and ER-152 diversion boxes).

**6. RL-LMHC-TANKFARM-1999-0023, Occurrence Report, "Additional Information Regarding Crust Growth in 241-SY-101," Off-Normal, Notification April 9, 1999, Latest Update December 12, 1999.**

**This update report is being submitted to include new information regarding this event.**

**On December 18, 1999, approximately 90,000 gallons of nuclear waste was transferred from tank SY-101 to SY-102 in the first of three planned transfers. The next stage of this transfer is scheduled to occur early in the year 2000.**

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

**This report is being extended pending completion and evaluation of the next two planned transfer stages. An Update or Final report will be submitted no later than April 27, 2000,**

**7. RP-LMHC-TANKFARM-1999-0019, "Leak Detector in the 241-SY-02 Pit Activated During Saltwell Transfer," Off Normal, Notification December 2, 1999.**

**On December 1, 1999, while saltwell transfers from S-103, S-106 and SX-106 were in progress, a leak detector in the SY-02A pit was activated. All saltwell transfers were automatically shut down upon leak detection**

**activation. A subsequent flush from S-103 reactivated the leak detector, confirming a potential leak in the pit.**

**The leak detection alarm at SY-102 pump was classified as an off-normal occurrence.**

**All active transfers to the SY-02A pit were immediately stopped. Administrative locks were applied to the transfer pumps per LCO. Leak in pit was confirmed.**

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# APPENDIX A

# WASTE TANK SURVEILLANCE MONITORING TABLES

# TABLE A-1. TEMPERATURE MONITORING IN WATCH LIST TANKS (Sheet 1 of 2)

December 31, 1999

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

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

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

Temperatures in Degrees F.

| SINGLE-SHELL TANKS | | | | | |
|---|---|---|---|---|---|
| Hydrogen (Flammable Gas) | | | Organics | | |
| Tank No. | Temp. | Officially Added to Watch List | Tank No. | Temp. | Officially Added to Watch List |
| A-101 | 147 | 1/91 | C-102 | 83 | 5/94 |
| AX-101 | 128 | 1/91 | C-103 | 115 | 1/91 |
| AX-103 | 109 | 1/91 | 2 Tanks | | |
| SY-102 | 102 | 1/91 | | | |
| SY-111 | 89 | 1/91 | | | |
| SY-112 | 84 | 1/91 | | | |
| SYX-101 | 132 | 1/91 | | | |
| SYX-102 | 141 | 1/91 | | | |
| SYX-103 | 159 | 1/91 | | | |
| SYX-104 | 141 | 1/91 | | | |
| SYX-105 | 165 | 1/91 | | | |
| SYX-106 | 101 | 1/91 | | | |
| SYX-109 (1) | 137 | 1/91 | | | |
| TY-110 (*) | 67 | 1/91 | | | |
| U-103 | 87 | 1/91 | | | |
| U-105 | 89 | 1/91 | | | |
| U-107 | 78 | 12/93 | | | |
| U-108 | 87 | 1/92 | | | |
| U-109 | 83 | 1/91 | | | |
| 19 SSTs | | | | | |
| DOUBLE-SHELL TANKS | | | | | |
| AN-103 | 107 | 1/91 | | | |
| AN-104 | 107 | 1/91 | 21 Single-Shell tanks | | |
| AN-105 | 101 | 1/91 | 6 Double-Shell tanks | | |
| AW-101 | 100 | 6/93 | 27 Tanks on Watch Lists | | |
| SY-101 | 126 | 1/91 | | | |
| SY-103 | 95 | 1/91 | | | |
| 6 DSTs | | | | | |

All tanks were removed from the Ferrocyanide Watch List and 18 tanks from the Organics Watch List.
Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999. See Table A-3.

(*) TMACS is O/S due to power outage which caused damage to acromags in T, TX and TY farms since August 1999. Readings taken manually.

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

## Notes:

Unreviewed Safety Question(USQ):
When a USQ is declared, special controls are required, and work in the tanks is limited. There are currently no USQs on single-shell tanks. There is a USQ on double-shell tank SY-101 for liquid level increase.

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

Organic Salts:
These tanks contain concentrations of organic salts ≥3 weight% of total organic carbon (TOC)(equivalent to 10 wt% sodium acetate). The USQ associated with these tanks was closed in October 1998, and 18 organic complexant tanks were removed from the Organic Watch List in December 1998. Two organic solvent tanks (C-102 and C-103) remain on the Organic Watch List.

High Heat:
These tanks contain heat generating strontium-rich sludge and require drainable liquid to be maintained in the tank to promote cooling.

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

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

Footnotes:

(1) Tank SX-109 has the potential for flammable gas accumulation only because other SX tanks vent through it.

(2) **Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.**

# TABLE A-2 TEMPERATURE MONITORING IN NON-WATCH LIST TANKS

December 31, 1999

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

Nine tanks have high heat loads for which temperature surveillance requirements are established by HNF-SD-WM-TSR-006, Rev 1, *Tank Waste Remediation System Technical Safety Requirements,* December 1999. In an analysis, WHC-SD-WM-SARR-010, Rev 1, *Heat Removal Characteristics of Waste Storage Tanks,* Kummerer, 1995, it was estimated that nine tanks have heat sources >26,000 Btu/hr, which is the new parameter for determining high heat load tanks. See also document HNF-SD-WM-BIO-001, Rev 1, *Tank Waste Remediation* Systetem *Basis for Interim Operation,* Noorani, 1998.

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

| Tank No. | Temperature (F.) | |
|---|---|---|
| C-106 (1) | 63 | (Riser 8) |
| SX-103 | 159 | |
| SX-107 | 166 | |
| SX-108 | 183 | |
| SX-109 | 137 | |
| SX-110 | 163 | |
| SX-111 | 184 | |
| SX-112 | 148 | |
| SX-114 | 177 | |
| 9 Tanks | | |

Notes: **(1) C-106 was removed from the High Heat Load Watch List on December 16, 1999.**

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

There are 119 low heat load non-watch list tanks. Temperatures in tanks connected to TMACS are monitored by TMACS; temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. Temperatures obtained were within historical ranges for the applicable tank.

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

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

# TABLE A-3. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR

December 31, 1999

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

| | Ferrocyanide | Hydrogen | Organics | High Heat | Total Tanks (1) SST | DST | Total |
|---|---|---|---|---|---|---|---|
| 1/91 Original List -Response to Public Law 101-5 | 23 | 23 | 8 | 1 | 47 | 5 | 52 |
| Added 2/91 (revision to Original List) | 1 T-107 | | | | 1 | | 1 |
| Total - December 31, 1991 | 24 | 23 | 8 | 1 | 48 | 5 | 53 |
| Added 8/92 | | 1 AW-101 | | | | 1 | 1 |
| Total - December 31, 1992 | 24 | 24 | 8 | 1 | 48 | 6 | 54 |
| Added 3/93 | | | 1 U-111 | | 1 | | |
| Deleted 7/93 | -4 (BX-110)<br>(BX-111)<br>(BY-101)<br>(T-101) | | | | -4 | | |
| Added 12/93 | | 1 (U-107) | | | 0 | | |
| Total - December 31, 1993 | 20 | 25 | 9 | 1 | 45 | 6 | 51 |
| Added 2/94 | | | 1 T-111 | | 1 | | |
| Added 5/94 | | | 10 A-101<br>AX-102<br>C-102<br>S-111<br>SX-103<br>TY-104<br>U-103<br>U-105<br>U-203<br>U-204 | | 4 | | |
| Deleted 11/94 | -2 (BX-102)<br>(BX-106) | | | | -2 | | |
| Total - December 31, 1995 | 18 | 25 | 20 | 1 | 48 | 6 | 54 |
| Deleted 6/96 | -4 (C-108)<br>(C-109)<br>(C-111)<br>(C-112) | | | | -4 | | |
| Deleted 9/96 | -14 (BY-103)<br>(BY-104)<br>(BY-105)<br>(BY-106)<br>(BY-107)<br>(BY-108)<br>(BY-110)<br>(BY-111)<br>(BY-112)<br>(T-107)<br>(TX-118)<br>(TY-101)<br>(TY-103)<br>(TY-104) | | | | -12 | | |
| Deleted 12/98 | | | -18 (A-101)<br>(AX-102)<br>(B-103)<br>(S-102)<br>(S-111)<br>(SX-103)<br>(SX-106)<br>(T-111)<br>(TX-105)<br>(TX-118)<br>(TY-104)<br>(U-103)<br>(U-105)<br>(U-106)<br>(U-107)<br>(U-111)<br>(U-203)<br>(U-204) | | -10 | | |
| Total - January 1997 thru December 1998 | 0 | 25 | 2 | 1 | 22 | 6 | 28 |
| Deleted 12/99 | | | | -1 (C-106) | -1 | | |
| Total - January 1999 thru December 1999 | | | | 0 | 21 | 6 | 27 |

(1) Eighteen of the 20 tanks were removed from the Organics Watch List in December 1998: eight of the tanks removed from the Organics List are also on the Hydrogen Watch List; therefore, the total tanks added/deleted depends upon whether a tank is also on another list.

# TABLE A-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 6)

December 31, 1999

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

NOTE:
All Watch List and High Heat tank temperature monitoring is in compliance. (4)
All Dome Elevation Survey monitoring is in compliance, with exception (see footnote 11).
All Psychrometrics monitoring is in compliance (2).
Drywell monitoring no longer required (5).
In-tank photos/videos are taken "as needed"

LEGEND:

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

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

# TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 2 of 6)

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

# TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 3 of 6)

| Tank Number | Tank Category | | Temperature Readings (4) | Primary Leak Detection Source (5) | Surface Level Readings (1) (OSD) | | | LOW Readings (OSD)(5,7) |
|---|---|---|---|---|---|---|---|---|
| | Watch List | High Heat | | | MT | FIC | ENRAF | Neutron |
| SX-109 | X | X | | None | None | None | | None |
| SX-110 | | X | | None | None | None | | None |
| SX-111 | | X | | None | None | None | | None |
| SX-112 | | X | | None | None | None | | None |
| SX-113 | | | | None | None | None | | None |
| SX-114 | | X | | None | None | None | | None |
| SX-115 | | | None | None | None | None | | None |
| T-101 | | | | None | None | None | | None |
| T-102 | | | None | ENRAF | None | None | | None |
| T-103 | | | | None | None | None | | None |
| T-104 | | | | LOW | None | None | | |
| T-105 | | | None | None | None | None | | None |
| T-106 | | | | None | None | None | | None |
| T-107 | | | | ENRAF | None | None | | None |
| T-108 | | | | ENRAF | None | None | | None |
| T-109 | | | | None | None | None | | None |
| T-110 | X | | | LOW | None | None | | |
| T-111 | | | | LOW | None | None | | |
| T-112 | | | | ENRAF | None | None | | None |
| T-201 | | | | MT | | None | None | None |
| T-202 | | | | MT | | None | None | None |
| T-203 | | | | None | | None | None | None |
| T-204 | | | | MT | | None | None | None |
| TX-101 | | | None | ENRAF | None | None | | None |
| TX-102 | | | | LOW | None | None | | |
| TX-103 | | | | None | None | None | | None |
| TX-104 | | | | None | None | None | | None |
| TX-105 | | | | None | None | None | | None (8) |
| TX-106 | | | | LOW | None | None | | |
| TX-107 | | | | None | None | None | | None |
| TX-108 | | | | None | None | None | | None |
| TX-109 | | | | LOW | None | None | | |
| TX-110 | | | None | LOW | None | None | | |
| TX-111 | | | | LOW | None | None | | |
| TX-112 | | | | LOW | None | None | | |
| TX-113 | | | | LOW | None | None | | |
| TX-114 | | | None | LOW | None | None | | |
| TX-115 | | | | LOW | None | None | | |
| TX-116 | | | None | None | None | None | | None |
| TX-117 | | | None | LOW | None | None | | |
| TX-118 | | | | LOW | None | None | | |
| TY-101 | | | | None | None | None | | None |
| TY-102 | | | | ENRAF | None | None | | None |
| TY-103 | | | | LOW | None | None | | |
| TY-104 | | | | ENRAF | None | None | | None |
| TY-105 | | | | None | None | None | | None |
| TY-106 | | | | None | None | None | | None |
| U-101 | | | | MT | | None | None | None |
| U-102 | | | | LOW | None | None | | |
| U-103 | X | | | ENRAF | None | None | | |
| U-104 | | | None | None | | None | None | None |
| U-105 | X | | | ENRAF | None | None | | |
| U-106 | | | | ENRAF | None | None | | |

# TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 4 of 6)

| Tank Number | Tank Category | | Temperature Readings (4) | Primary Leak Detection Source (5) | Surface Level Readings (1) (OSD) | | | LOW Readings (OSD)(5,7) |
|---|---|---|---|---|---|---|---|---|
| | Watch List | High Heat | | | MT | FIC | ENRAF | Neutron |
| U-107 | X | | | ENRAF | None | None | | |
| U-108 | X | | | LOW | None | None | | |
| U-109 | X | | | ENRAF | None | None | | |
| U-110 | | | | None | None | None | | None |
| U-111 | | | | LOW | None | None | | |
| U-112 | | | | None | | None | None | None |
| U-201 | | | | MT | | None | None | None |
| U-202 | | | | MT | | None | None | None |
| U-203 | | | | None | None | None | | None |
| U-204 | | | | ENRAF | None | None | | None |
| **Catch Tanks and Special Surveillance Facilities** | | | | | | | | |
| A-302-A | N/A | N/A | N/A | (6) | None | None | | None |
| A-302-B | N/A | N/A | N/A | (6) | | None | None | None |
| ER-311 | N/A | N/A | N/A | (6) | None | None | (10) | None |
| AX-152 | N/A | N/A | N/A | (6) | | None | None | None |
| AZ-151 | N/A | N/A | N/A | (6) | None | | None | None |
| AZ-154 | N/A | N/A | N/A | (6) | | None | None | None |
| BX-TK/SMP | N/A | N/A | N/A | (6) | | None | None | None |
| A-244 TK/SMP | N/A | N/A | N/A | (6) | None | None | None | None |
| AR-204 | N/A | N/A | N/A | (6) | | | None | None |
| A-417 | N/A | N/A | N/A | (6) | None | None | None | None |
| A-350 | N/A | N/A | N/A | (6) | None | None | None | None |
| CR-003 | N/A | N/A | N/A | (6) | None | None | None | None |
| Vent Sta. | N/A | N/A | N/A | (6) | | None | None | None |
| 244-S TK/SMP | N/A | N/A | N/A | (6) | None | None | None | None |
| S-302 | N/A | N/A | N/A | (6) | None | None | | None |
| S-304 | N/A | N/A | N/A | (6) | None | None | | None |
| TX-244 TK/SMP | N/A | N/A | N/A | (6) | | None | None | None |
| TX-302-B | N/A | N/A | N/A | (6) | | None | None | None |
| TX-302-C | N/A | N/A | N/A | (6) | None | None | | None |
| U-301-B | N/A | N/A | N/A | (6) | None | None | | None |
| UX-302-A | N/A | N/A | N/A | (6) | None | None | | None |
| S-141 | N/A | N/A | N/A | (6) | O/S | None | None | None |
| S-142 | N/A | N/A | N/A | (6) | O/S | None | None | None |
| Totals: 149 tanks | 21 Watch List Tanks (4) | 9 High Heat Tanks (4) | N/C: 0 | | N/C: 0 | N/C: 0 | N/C: 0 | N/C: 0 |

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

Footnotes:

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

   ENRAF gauges are being installed to replace FICs (or sometimes manual tapes). The ENRAF gauges are being connected to TMACS, but many are currently being read manually from the field. See Table A-7 for list of ENRAF installations.

2. High heat tanks have active exhausters; psychrometrics can be taken in the high heat tanks. Psychrometric readings are taken on an "as needed" basis with the exception of tanks C-105 and C-106. Hanford Federal Facility Agreement and Consent Order," Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment 1994 (Tri-Party Agreement) requires psychrometric readings to be taken in C-105 and C-106 on a monthly frequency. Also, SX-farm now has psychrometrics taken monthly.

3. **Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.**

4. Temperature readings may be regulated by OSD, POP, or FSAR (FSAR only regulates high heat load tanks). Temperatures cannot be obtained in 13 low heat load tanks (see Table A-4). The OSD does not require readings or repair of out-of-service thermocouples for the low heat load (≤40,000 Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks.

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

   Temperatures for many tanks are monitored continuously by TMACS; see Table A-8, TMACS Monitoring Status.

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

   This OSD revision does not require drywell surveys to be taken. (Drywell scans are being taken around C-106, as required by the Waste Retrieval Sluicing System, Spectral Gamma Waste Management). The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service.

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

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

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

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

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

   Tanks which will not receive LOWs:

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

   Total - 34 Tanks

8. TX-105 - the LOW was in riser 8; the riser has been removed and the LOW has not been monitored since January 1987. Liquid levels are being taken in riser 9 by ENRAF and recorded in TMACS.

9. AX-101 - LOW readings are taken by gamma sensors.

10. Catch Tank ER-311 - the FIC was out of service with no secondary containment monitoring. The primary device requires repairing or a valid reading obtained from an alternate device within 14 days (daily). The FIC was O/S on October 21, 1999; and due for repair on November 4. Discrepancy Report 99-863 was issued on November 4 for missed frequency; Occurrence Report RP-LHMC-TANKFARM-1999-0010 was issued November 2, for high flammability limit. A zip cord reading was taken November 11, 1999.

    **An ENRAF surface level measuring device was installed December 16, 1999; readings are being taken daily. Discrepancy Report 99-863 has been closed.**

11. Tank TX-113 - Dome elevation surveys are required to be performed as specified in OSD-T-151-00013. TX-113 has suspended airlift circulators and is required to have dome elevation surveys obtained from a minimum of two benchmarks every 12 months +/- 1 month. The last valid dome elevation survey was taken on July 16, 1998. This exceeds the dome elevation survey frequency specified in the OSD. Discrepancy Report 99-865 was issued on December 1, 1999.

    **A dome elevation survey was taken in one benchmark in July 1999; one more reading is required. Paperwork is currently in process due to the change in contract.**

12. **Tank B-110 - The LOW has failed as a result of an integrity test. Discrepancy Report 99-864 was issued November 30, 1999, to repair the LOW. This tank also has a Manual Tape backup device which is scheduled to take readings on a quarterly frequency. The last M.T. reading was on December 2, 1999, and was within normal range.**

# TABLE A-5. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS

28 TANKS (Sheet 1 of 2)

December 31, 1999

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

NOTE:

Dome Elevation Surveys are not required for DSTs.

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

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

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

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

Footnotes:

1. Some double-shell tanks have both FIC and manual tape which is used when the FIC is out of service. Noncompliance (N/C) will be shown when no readings are obtained. ENRAF gauges are being installed to replace FICs. The ENRAF gauges are being connected to TMACS, but some are currently being read manually.

2. Psychrometric readings are taken on an "as needed" basis. No psychrometric readings are currently being taken in the double-shell tanks.

3. OSD specifies double-shell tank temperature limits, gradients, etc.

4. Applicable OSD and HNF-IP-0842, latest revisions, are used as guidelines for monitoring Leak Detection Pits. See also (6) and (7) below.

5. AW-102 has ENRAF, FIC and M.T. At some point the FIC will be removed.

6. USQ TF-97-0038, dated April 28, 1997, specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double-shell tank farms where the leak detection pits are used as tertiary leak detection. This applies to all double-shell tank farms.

7. Leak Detection Pit weekly readings are being obtained by Instrument Technicians in these tanks:
   AP-103C (for tanks AP-101 - 104)
   AP-105C (for tanks AP-105 - 108)

8. **SY-103 - Manual Tape has sporadic readings. ENRAF is primary device.**

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

December 31, 1999

LEGEND

SACS = Surveillance Analysis Computer System
TMACS = Tank Monitor and Control System
Auto = Automatically entered into TMACS and electronically transmitted to SACS
Manual = Manually entered directly into SACS by surveillance personnel, from Field Data sheets

| EAST AREA | | | | | | WEST AREA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tank No. | Installed Date | Input Method | Tank No. | Installed Date | Input Method | Tank No. | Installed Date | Input Method | Tank No. | Installed Date | Input Method |
| A-101 | 09/95 | Auto | B-201 | | | S-101 | 02/95 | Auto | TX-101 | 11/95 | Auto |
| A-102 | | | B-202 | | | S-102 | 05/95 | Auto | TX-102 | 05/96 | Auto |
| A-103 | 07/96 | Auto | B-203 | | | S-103 | 05/94 | Auto | TX-103 | 12/95 | Auto |
| A-104 | 05/96 | Manual | B-204 | | | S-104 | 05/99 | Auto | TX-104 | 03/96 | Auto |
| A-105 | | | BX-101 | 04/96 | Auto | S-105 | 07/95 | Auto | TX-105 | 04/96 | Auto |
| A-106 | 01/96 | Auto | BX-102 | 06/96 | Auto | S-106 | 06/94 | Auto | TX-106 | 04/96 | Auto |
| AN-101 | 08/96 | Auto | BX-103 | 04/96 | Auto | S-107 | 06/94 | Auto | TX-107 | 04/96 | Auto |
| AN-102 | | | BX-104 | 05/96 | Auto | S-108 | 07/95 | Auto | TX-108 | 04/96 | Auto |
| AN-103 | 08/95 | Auto | BX-105 | 03/96 | Auto | S-109 | 08/95 | Auto | TX-109 | 11/95 | Auto |
| AN-104 | 08/95 | Auto | BX-106 | 07/94 | Auto | S-110 | 08/95 | Auto | TX-110 | 05/96 | Auto |
| AN-105 | 08/95 | Auto | BX-107 | 06/96 | Auto | S-111 | 08/94 | Auto | TX-111 | 05/96 | Auto |
| AN-106 | | | BX-108 | 05/96 | Auto | S-112 | 05/95 | Auto | TX-112 | 05/96 | Auto |
| AN-107 | | | BX-109 | 08/95 | Auto | SX-101 | 04/95 | Auto | TX-113 | 05/96 | Auto |
| AP-101 | 06/99 | Auto | BX-110 | 06/96 | Auto | SX-102 | 04/95 | Auto | TX-114 | 05/96 | Auto |
| AP-102 | 08/99 | Auto | BX-111 | 05/96 | Auto | SX-103 | 04/95 | Auto | TX-115 | 05/96 | Auto |
| AP-103 | 08/99 | Auto | BX-112 | 03/96 | Auto | SX-104 | 05/95 | Auto | TX-116 | 05/96 | Auto |
| AP-104 | 07/99 | Auto | BY-101 | | | SX-105 | 05/95 | Auto | TX-117 | 06/96 | Auto |
| AP-105 | 08/99 | Auto | BY-102 | 09/99 | Manual | SX-106 | 08/94 | Auto | TX-118 | 03/96 | Auto |
| AP-106 | 08/99 | Auto | BY-103 | 12/96 | Manual | SX-107 | 09/99 | Auto | TY-101 | 07/95 | Auto |
| AP-107 | 08/99 | Auto | BY-104 | | | SX-108 | 09/99 | Auto | TY-102 | 09/95 | Auto |
| AP-108 | 08/99 | Auto | BY-105 | | | SX-109 | 09/98 | Auto | TY-103 | 09/95 | Auto |
| AW-101 | 08/95 | Auto | BY-106 | | | SX-110 | 09/99 | Auto | TY-104 | 06/95 | Auto |
| AW-102 | 05/96 | Auto | BY-107 | | | SX-111 | 09/99 | Auto | TY-105 | 12/95 | Auto |
| AW-103 | 05/96 | Auto | BY-108 | | | SX-112 | 09/99 | Auto | TY-106 | 12/95 | Auto |
| AW-104 | 01/96 | Auto | BY-109 | | | SX-113 | 09/99 | Auto | U-101 | | |
| AW-105 | 06/96 | Auto | BY-110 | 02/97 | Manual | SX-114 | 09/99 | Auto | U-102 | 01/96 | Manual |
| AW-106 | 06/96 | Auto | BY-111 | 02/99 | Manual | SX-115 | 09/99 | Manual | U-103 | 07/94 | Auto |
| AX-101 | 09/95 | Auto | BY-112 | | | SY-101 | 07/94 | Auto | U-104 | | |
| AX-102 | 09/98 | Auto | C-101 | | | SY-102 | 06/94 | Manual | U-105 | 07/94 | Auto |
| AX-103 | 09/95 | Auto | C-102 | | | SY-103 | 07/94 | Auto | U-106 | 08/94 | Auto |
| AX-104 | 10/96 | Auto | C-103 | 08/94 | Auto | T-101 | 05/95 | Manual | U-107 | 08/94 | Auto |
| AY-101 | 03/96 | Auto | C-104 | 04/99 | Manual | T-102 | 06/94 | Auto | U-108 | 05/95 | Auto |
| AY-102 | 01/98 | Auto | C-105 | 05/96 | Manual | T-103 | 07/95 | Manual | U-109 | 07/94 | Auto |
| AZ-101 | 08/96 | Manual | C-106 | 02/96 | Auto | T-104 | 12/95 | Manual | U-110 | 01/96 | Manual |
| AZ-102 | | | C-107 | 04/95 | Auto | T-105 | 07/95 | Manual | U-111 | 01/96 | Manual |
| B-101 | | | C-108 | | | T-106 | 07/95 | Manual | U-112 | | |
| B-102 | 02/95 | Manual | C-109 | | | T-107 | 06/94 | Auto | U-201 | | |
| B-103 | | | C-110 | | | T-108 | 10/95 | Manual | U-202 | | |
| B-104 | | | C-111 | | | T-109 | 09/94 | Manual | U-203 | 09/98 | Manual |
| B-105 | | | C-112 | 03/96 | Manual | T-110 | 05/95 | Auto | U-204 | 06/98 | Manual |
| B-106 | | | C-201 | | | T-111 | 07/95 | Manual | | | |
| B-107 | | | C-202 | | | T-112 | 09/95 | Manual | | | |
| B-108 | | | C-203 | | | T-201 | | | | | |
| B-109 | | | C-204 | | | T-202 | | | | | |
| B-110 | | | | | | T-203 | | | | | |
| B-111 | | | | | | T-204 | | | | | |
| B-112 | 03/95 | Manual | | | | | | | | | |
| Total East Area: 53 | | | | | | Total West Area: 77 | | | | | |

130 ENRAFs installed: 103 automatically entered into TMACS, 27 manually entered into SACS

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

December 31, 1999

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

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

Acceptance Testing Completed: Sensors Automatically Monitored by TMACS

| EAST AREA<br>Tank Farm | Temperatures<br>Thermocouple Tree (TC) | Temperatures<br>Resistance Thermal Device (RTD) | ENRAF Level Gauge | Pressure (b) | Hydrogen (c) | Gas Sample Flow |
|---|---|---|---|---|---|---|
| A-Farm (6 Tanks) | 1 | | 3 | | 1 | 1 |
| AN-Farm (7 Tanks) | 7 | | 4 | 7 | 3 | 3 |
| AP-Farm (8 Tanks) | | | 8 | | | |
| AW-Farm (6 Tanks) | 6 | | 6 | | 1 | 1 |
| AX-Farm (4 Tanks) | 3 | | 4 | | 1 | |
| AY-Farm (2 Tanks) | | | 2 | | | |
| AZ-Farm (2 Tanks) | | | | | | |
| B-Farm (16 Tanks) | 1 | | | | | |
| BX-Farm (12 Tanks) | 11 | | 12 | | | |
| BY-Farm (12 Tanks) | 10 | 3 | | | | |
| C-Farm (16 Tanks) | 15 | 1 | 3 | 1 | | |
| TOTAL EAST AREA (91 Tanks) | 54 | 4 | 42 | 8 | 6 | 5 |
| WEST AREA | | | | | | |
| S-Farm (12 Tanks) | 12 | | 12 | 1 | 3 | 3 |
| SX-Farm (15 Tanks) | 14 | | 14 | 1 | 7 | 7 |
| SY-Farm (3 Tanks) (a) | 3 | | 2 | 1 | 2 | 2 |
| T-Farm (16 Tanks)(*) | 14 | 1 | 3 | | 1 | 1 |
| TX-Farm (18 Tanks)(*) | 13 | | 18 | | | |
| TY-Farm (6 Tanks)(*) | 6 | 3 | 6 | | | |
| U-Farm (16 Tanks) | 15 | | 6 | 4 | 6 | 6 |
| TOTAL WEST AREA (86 Tanks) | 77 | 4 | 61 | 7 | 19 | 19 |
| TOTALS (177 Tanks) | 131 | 8 | 103 | 15 | 25 | 24 |

(a) Tank SY-101 has 2 gas sample flow sensors plus 2 vent flow sensors, and 2 ENRAFs.
(b) Each tank two sensors (high and low range).
(c) Each tank has two sensors (high and low range).
**(*) TMACS has been out of service since August 1999 due to power outage which caused damage to acromags in T, TX and TY farms. Readings taken manually.**

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# APPENDIX B

# DOUBLE SHELL TANK WASTE TYPE AND SPACE ALLOCATION

## Table B-1. Double Shell Tank Waste Inventory - December 31, 1999 (Sheet 1 of 2)

| TANKS | TOTAL INVENTORY | SALTCAKE | SLUDGE | WASTE TYPE | VOLUME LEFT |
|---|---|---|---|---|---|
| AN-101= | 160 | 33 | 0 | DN | 980 |
| AN-102= | 1057 | 89 | 0 | CC | 83 |
| AN-103= | 957 | 0 | 457 | DSS | 183 |
| AN-104= | 1053 | 449 | 0 | DSSF | 87 |
| AN-105= | 1126 | 489 | 0 | DSSF | 14 |
| AN-106= | 38 | 17 | 0 | CC | 1102 |
| AN-107= | 1043 | 247 | 0 | CC | 97 |
| AP-101= | 1114 | 0 | 0 | DSSF | 26 |
| AP-102= | 1091 | 0 | 0 | CP | 49 |
| AP-103= | 284 | 0 | 0 | CC | 856 |
| AP-104= | 24 | 0 | 0 | DN | 1116 |
| AP-105= | 764 | 89 | 0 | DSSF | 376 |
| AP-106= | 93 | 0 | 0 | DN | 1047 |
| AP-107= | 39 | 0 | 0 | DN | 1101 |
| AP-108= | 383 | 0 | 0 | DN | 757 |
| AW-101= | 1126 | 306 | 0 | DSSF | 14 |
| AW-102= | 1016 | 36 | 0 | DN | 124 |
| AW-103= | 512 | 47 | 316 | NCRW | 628 |
| AW-104= | 1119 | 231 | 0 | DN | 21 |
| AW-105= | 428 | 0 | 255 | NCRW | 712 |
| AW-106= | 472 | 225 | 0 | DSSF | 668 |
| AY-101= | 150 | 0 | 94 | DC | 830 |
| AY-102= | 613 | 0 | 219 | DN | 367 |
| AZ-101= | 849 | 0 | 46 | NCAW | 131 |
| AZ-102= | 940 | 0 | 88 | NCAW | 40 |
| SY-101= | 1147 | 585 | 0 | CC | -7 |
| SY-102= | 1021 | 0 | 71 | DN/PT | 119 |
| SY-103= | 744 | 366 | 0 | CC | 396 |
| TOTAL= | 15363 | 3209 | 1546 | | 11917 |

NOTE: Solids Adjusted to Most Current Available Data
NOTE: All Volumes in Kilo-Gallons (Kgals)

| TOTAL DST SPACE AVAILABLE | |
|---|---|
| NON-AGING = | 27360 |
| AGING = | 3920 |
| TOTAL= | 31280 |

| DST INVENTORY CHANGE | |
|---|---|
| 11/99 TOTAL | 19132 |
| 12/99 TOTAL | 19363 |
| INCREASE | 231 |

| WATCH LIST SPACE | |
|---|---|
| AN-103= | 183 |
| AN-104= | 87 |
| AN-105= | 14 |
| AW-101= | 14 |
| SY-101= | -7 |
| SY-103= | 396 |
| TOTAL= | 687 |

| RESTRICTED SPACE | |
|---|---|
| AN-102= | 83 |
| AN-107= | 97 |
| AP-102= | 49 |
| AZ-101= | 131 |
| AZ-102= | 40 |
| TOTAL= | 400 |

| WASTE RECEIVER SPACE | |
|---|---|
| AP-106 (200E/DN)= | 1047 |
| AP-108 (200E/DN)= | 757 |
| SY-102 (200W/DN)= | 119 |
| TOTAL= | 1923 |

| USABLE SPACE | |
|---|---|
| AN-101= | 980 |
| AN-106= | 1102 |
| AP-101= | 26 |
| AP-103= | 856 |
| AP-104= | 1116 |
| AP-105= | 376 |
| AP-107= | 1101 |
| AW-102= | 124 |
| AW-103= | 628 |
| AW-104= | 21 |
| AW-105= | 712 |
| AW-106= | 668 |
| AY-101= | 830 |
| AY-102= | 367 |
| TOTAL= | 8907 |
| EVAP. OPERATIONS | -1140 |
| SPARE SPACE | -2280 |
| USABLE LEFT= | 5487 |

| USABLE SPACE CHANGE | |
|---|---|
| 11/99 TOTAL SPACE | 5488 |
| 12/99 TOTAL SPACE | 5487 |
| CHANGE= | -1 |

| WASTE RECEIVER SPACE CHANGE | |
|---|---|
| 11/99 TOTAL SPACE | 2188 |
| 12/99 TOTAL SPACE | 1923 |
| CHANGE= | -265 |

## Inventory Calculation by Waste Type:

| COMPLEXED WASTE | |
|---|---|
| AN-102= | 968 (CC) |
| AN-106= | 21 (CC) |
| AN-107= | 796 (CC) |
| AP-103= | 284 (CC) |
| AY-101= | 56 (DC) |
| SY-101= | 562 (CC) |
| SY-103= | 378 (CC) |
| TOTAL DC/CC= | 3065 |
| TOTAL SOLIDS= | 1398 |

| NCRW SOLIDS (PD) | |
|---|---|
| AW-103= | 363 |
| AW-105= | 255 |
| TOTAL= | 618 |

| PFP SOLIDS (PT) | |
|---|---|
| SY-102= | 71 |
| TOTAL= | 71 |

| CONCENTRATED PHOSPHATE (CP) | |
|---|---|
| 102-AP= | 1091 |
| TOTAL= | 1091 |

| DILUTE WASTE (DN) | |
|---|---|
| AN-101= | 127 |
| AP-104= | 24 |
| AP-106= | 93 |
| AP-107= | 39 |
| AP-108= | 383 |
| AW-102= | 980 |
| AW-103= | 149 |
| AW-104= | 888 |
| AW-105= | 173 |
| AY-102= | 394 |
| SY-102= | 950 |
| TOTAL DN= | 4200 |
| TOTAL SOLIDS= | 519 |

| NCAW (AGING WASTE) | |
|---|---|
| AZ-101= | 791 |
| AZ-102= | 434 |
| TOTAL= | 1225 |
| TOTAL DN= | 430 |
| TOTAL SOLIDS= | 134 |

| DSS/DSSF | |
|---|---|
| AN-103= | 500 |
| AN-104= | 604 |
| AN-105= | 637 |
| AP-101= | 1114 |
| AP-105= | 675 |
| AW-101= | 820 |
| AW-106= | 247 |
| TOTAL DSS/DSSF= | 4597 |
| TOTAL SOLIDS= | 2015 |

| GRAND TOTALS | |
|---|---|
| NCRW SOLIDS= | 618 |
| DST SOLIDS= | 3932 |
| PFP SOLIDS= | 71 |
| AGING SOLIDS= | 134 |
| CC= | 3009 |
| DC= | 56 |
| CP= | 1091 |
| NCAW= | 1655 |
| DSS/DSSF= | 4597 |
| DILUTE= | 4200 |
| TOTAL= | 19363 |

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## Table B-1. Double Shell Tank Waste Inventory - December 31, 1999 (Sheet 2 of 2)

| | | | | |
|---|---|---|---|---|
| TOTAL AVAILABLE SPACE AS OF DECEMBER 31, 1999: | | | 11917 | KGALS |
| **WATCH LIST TANK SPACE:** | **TANK** | **WASTE TYPE** | **AVAILABLE** | **SPACE** |
| ***Unusable DST Headspace - Due to Special Restrictions*** | AN-103 | DSS | 183 | KGALS |
| ***Placed on the Tanks, as Stated in the "Wyden Bill"*** | AN-104 | DSSF | 87 | KGALS |
| | AN-105 | DSSF | 14 | KGALS |
| | AW-101 | DSSF | 14 | KGALS |
| | SY-101 | CC | -7 | KGALS |
| | SY-103 | CC | 396 | KGALS |
| | | TOTAL= | 687 | KGALS |
| | | AVAILABLE TANK SPACE | 11917 | KGALS |
| | | MINUS WATCH LIST SPACE= | -687 | KGALS |
| TOTAL AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS= | | | 11230 | KGALS |
| **RESTRICTED TANK SPACE:** | **TANK** | **WASTE TYPE** | **AVAILABLE** | **SPACE** |
| ***DST Headspace Available to Store Only Specific Waste Types*** | | | | |
| | AN-102 | CC | 83 | KGALS |
| | AN-107 | CC | 97 | KGALS |
| | AP-102 | CP | 49 | KGALS |
| | AZ-101 | AW | 131 | KGALS |
| | AZ-102 | AW | 40 | KGALS |
| | | TOTAL= | 400 | KGALS |
| | | AVAILABLE SPACE AFTER WATCH LIST DEDUCTIONS | 11230 | KGALS |
| | | MINUS RESTRICED SPACE= | -400 | KGALS |
| TOTAL AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS= | | | 10830 | KGALS |
| **USABLE/WASTE RECEIVER TANK SPACE:** | **TANK** | **WASTE TYPE** | **AVAILABLE** | **SPACE** |
| ***DST Headspace Available to Store Facility Generated*** | AN-101 | DN | 980 | KGALS |
| ***and Evaporator Product Waste*** | AN-106 | CC | 1102 | KGALS |
| | AP-101 | DSSF | 26 | KGALS |
| | AP-103 | CC | 856 | KGALS |
| | AP-104 | DN | 1116 | KGALS |
| | AP-105 | DSSF | 376 | KGALS |
| FACILITY WASTE RECEIVER TANK | AP-106 | DN | 1047 | KGALS |
| | AP-107 | DN | 1101 | KGALS |
| FACILITY WASTE RECEIVER TANK | AP-108 | DN | 757 | KGALS |
| EVAPORATOR FEED TANK | AW-102 | DN | 124 | KGALS |
| | AW-103 | NCRW | 628 | KGALS |
| | AW-104 | DN | 21 | KGALS |
| | AW-105 | NCRW | 712 | KGALS |
| EVAPORATOR RECEIVER TANK | AW-106 | DSSF | 668 | KGALS |
| | AY-101 | DC | 830 | KGALS |
| | AY-102 | DN | 367 | KGALS |
| FACILITY WASTE RECEIVER TANK | SY-102 | DN | 119 | KGALS |
| TOTAL AVAILABLE USABLE TANK SPACE | | | 10830 | KGALS |
| **EVAPORATOR OPERATIONAL TANK SPACE:** | | | -1140 | KGALS |
| **SPARE TANK SPACE:** | ***(DOE Order 5820.2A)*** | | -2280 | KGALS |
| TOTAL TANK SPACE AVAILABLE AFTER ALL DEDUCTIONS= | | | 7410 | KGALS |

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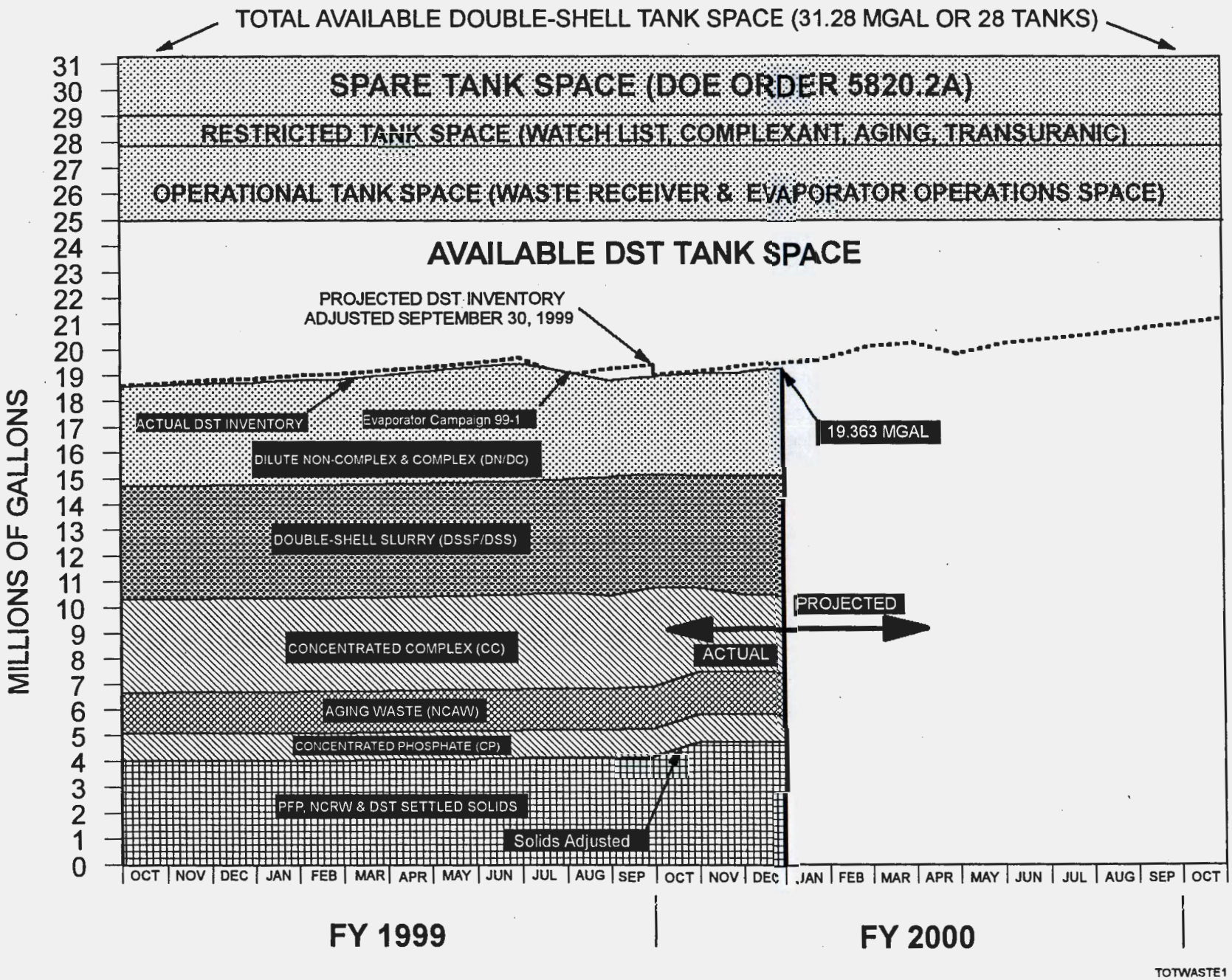



FIGURE F-1. COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES
(All volumes in Kgals)

# APPENDIX C

# TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS

# C. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

December 31, 1999

## 1. TANK STATUS CODES

WASTE TYPE (also see definitions, section 3)

| | |
|---|---|
| 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 |
| SRCVR | Slurry Receiver Tank |

## 2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

| | |
|---|---|
| F | Food Instrument Company (FIC) Automatic Surface Level Gauge |
| E | ENRAF Surface Level Gauge (being installed to replace FICs) |
| 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 *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

Characterization

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

## WASTE TYPES

**Aging Waste (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 the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.

**Dilute Complexed Waste (DC)**

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

**Dilute Non-Complexed Waste (DN)**

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

**Double-Shell Slurry (DSS)**

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

**Double-Shell Slurry Feed (DSSF)**

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

**Non-complexed (NCPLX)**

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

**PUREX Decladding (PD)**

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

**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. (See also Section 4)

**Supernate**

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

**Ferrocyanide**

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

INTERIM STABILIZATION (Single-Shell Tanks only)

Interim Stabilized (IS)

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

Jet Pump

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

The centrifugal pump and jet assembly are needed to pump the interstitial liquid from the saltwell screen into the pump pit, nominally a 40-foot elevation rise. The power fluid passes through a nozzle in the jet assembly and acts to convert fluid pressure head to velocity head, thereby reducing the pressure in the jet assembly chamber. The reduction in pressure allows the interstitial liquid to enter the jet assembly chamber and mix with the power fluid. Velocity head is converted to pressure head above the nozzle, lifting power fluid, and interstitial liquid to the pump pit. Pumping rates vary from 0.05 gallons to about 4 gpm.

Saltwell Screen

The saltwell system is a 10-inch diameter saltwell casing consisting of a stainless steel saltwell screen welded to a Schedule 40 carbon steel pipe. The casing and screen are to be inserted into the 12-inch tank riser located in the pump pit. The stainless steel screen portion of the system will extend through the tank waste to near the bottom of the tank. The saltwell screen portion of the casing is an approximately 10-foot length of 300 Series, 10-inch diameter, stainless steel pipe with screen openings (slots) of 0.05 inches.

Emergency Pumping Trailer

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

INTRUSION PREVENTION (ISOLATION) Single-Shell Tanks 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. In June 1993, Interim Isolation was replaced by Intrusion Prevention.

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank,

or diversion box. Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump).

Controlled, Clean, and Stable (CCS)

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

TANK INTEGRITY

Sound

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

Assumed Leaker

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

Assumed Re-Leaker

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

TANK INVESTIGATION

Intrusion

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

SURVEILLANCE INSTRUMENTATION

Drywells

Drywells are vertical boreholes with 6-inch (internal diameter) carbon steel casings positioned radially around SSTs. These wells range between 50 and 250 feet in depth, and are monitored between the range of 50 to 150 feet. 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." There are 759 drywells.

Monitoring is done by gamma radiation or neutron-moisture 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.

Two single-shell tanks (C-105 and C-106) are currently monitored monthly by gamma radiation sensors. The remaining drywells are monitored on request by gamma radiation sensors. Monitoring by neutron-moisture sensors is done only on request.

Laterals

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

Surface Levels

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

Automatic FIC

An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and until February 1999, the majority of the FICs transmitted readings to the CASS. Since CASS retirement, all FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

ENRAF 854 ATG Level Detector

FICs and some manual tapes are in the process of being replaced by the ENRAF ATG 854 level detector. The ENRAF gauge, fabricated by ENRAF Incorporated, determines waste level by detecting variations in the weight of a displacer suspended in the tank waste. The displacer is connected to a wire wound onto a precision measuring drum. A level causes a change in the weight of the displacer which will be detected by the force transducer. Electronics within the gauge causes the servo motor to adjust the position of the displacer and compute the tank level based on the new position of the displacer drum. The gauge displays the level in decimal inches. The first few ENRAFs that received remote reading capability transmit liquid level data via analog output to the Tank Monitor and Control System (TMACS). The remaining ENRAFs and future installations will transmit digital level data to TMACS via an ENRAF Computer Interface Unit (CIU). The CIU allows fully remote communication with the gauge, minimizing tank farm entry.

Annulus

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

Liquid Observation Well (LOW)

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

Thermocouple (TC)

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

These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple (probe) may be installed in a riser, or lowered down an existing

riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

In-tank Photographs and Videos

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

TERMS/ACRONYMS

CCS — Controlled, Clean and Stable (tank farms)

FSAR — Final Safety Analysis Report (replaces BIOS, effective October 18, 1999)

II — Interim Isolated

IP — Intrusion Prevention Completed

IS — Interim Stabilized

MT/FIC/ENRAF — Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)

OSD — Operating Specifications Document

PI — Partial Interim Isolated

SAR — Safety Analysis Reports

SHMS — Standard Hydrogen Monitoring System

TMACS — Tank Monitor and Control System

TPA — Hanford Federal Facility Consent and Compliance Order, "Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment, 1994 (Tri-Party Agreement)

USQ — Unreviewed Safety Question

Wyden Amendment — "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5, 1990, Public Law 101-510.

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

| COLUMN HEADING | COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS |
|---|---|
| Total Waste | Solids volume plus Supernatant liquid. Solids include sludge and saltcake (see definitions below). |

| COLUMN HEADING | COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS |
|---|---|
| Supernate (1) | May be either measured or estimated. Supernate is either the estimated or measured liquid floating on the surface of the waste or under a floating solids crust. In-tank photographs or videos are useful in estimating the liquid volumes; liquid floating on solids and core sample data are useful in estimating large liquid pools under a floating crust. |
| Drainable Interstitial Liquid (DIL) (1) | This is initially calculated. Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank. Interstitial liquid is liquid that fills the interstitial spaces of the solids waste. The sum of the interstitial liquid contained in saltcake and sludge minus an adjustment for capillary height is the initial volume of drainable interstitial liquid. |
| Pumped This Month | Net total gallons of liquid pumped from the tank during the month. If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume. |
| Total Pumped (1) | Cumulative net total gallons of liquid pumped from 1979 to date. |
| Drainable Liquid Remaining (DLR) (1) | Supernate plus Drainable Interstitial Liquid. The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate. |
| Pumpable Liquid Remaining (PLR) (1) | Drainable Liquid Remaining minus unpumpable volume. Not all drainable interstitial liquid is pumpable. |
| 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 or videos may be used to estimate the volume. |
| Saltcake | Results from crystallization 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 or videos 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 In-tank Photo | Date of last in-tank photographs taken. |
| Last In-tank Video | Date of last in-tank video taken. |
| See Footnotes for These Changes | Indicates any change made the previous month. A footnote explanation for the change follows the Inventory and Status by Tank Appendix (Table E-6). |

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

# APPENDIX D

# TANK FARM CONFIGURATION, STATUS, AND FACILITIES CHARTS

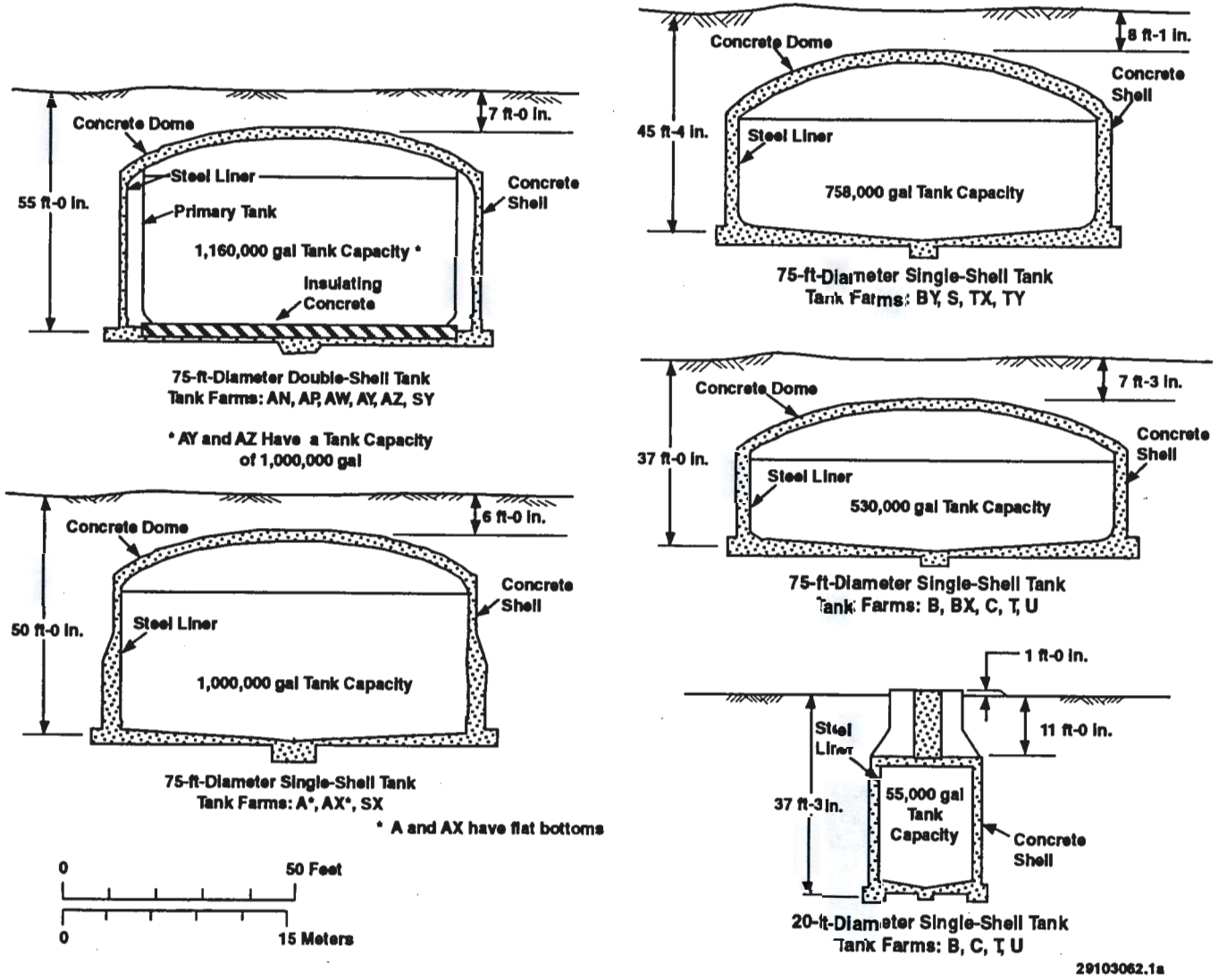



FIGURE D-1. HIGH-LEVEL WASTE TANK CONFIGURATION

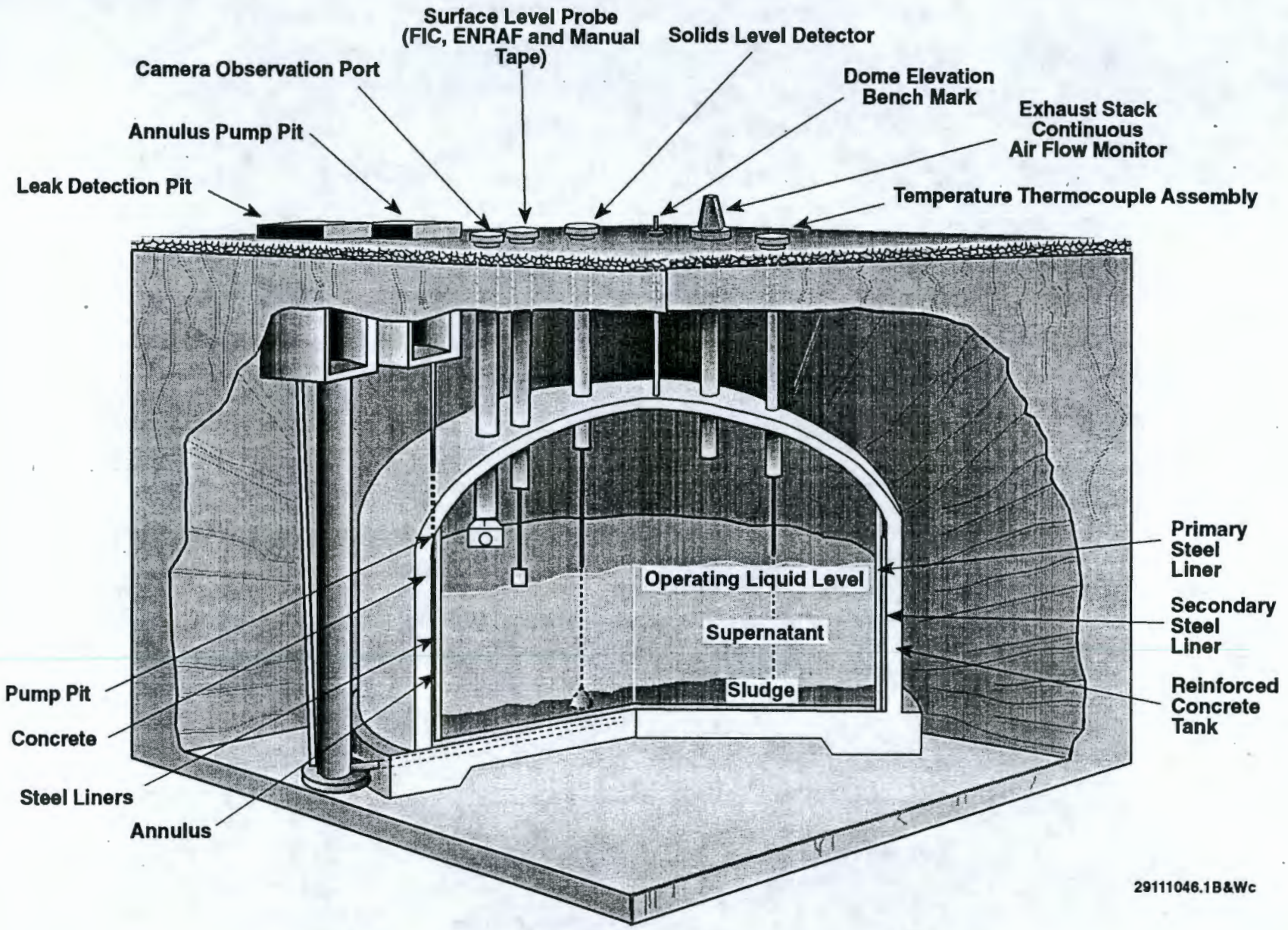



FIGURE D-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION

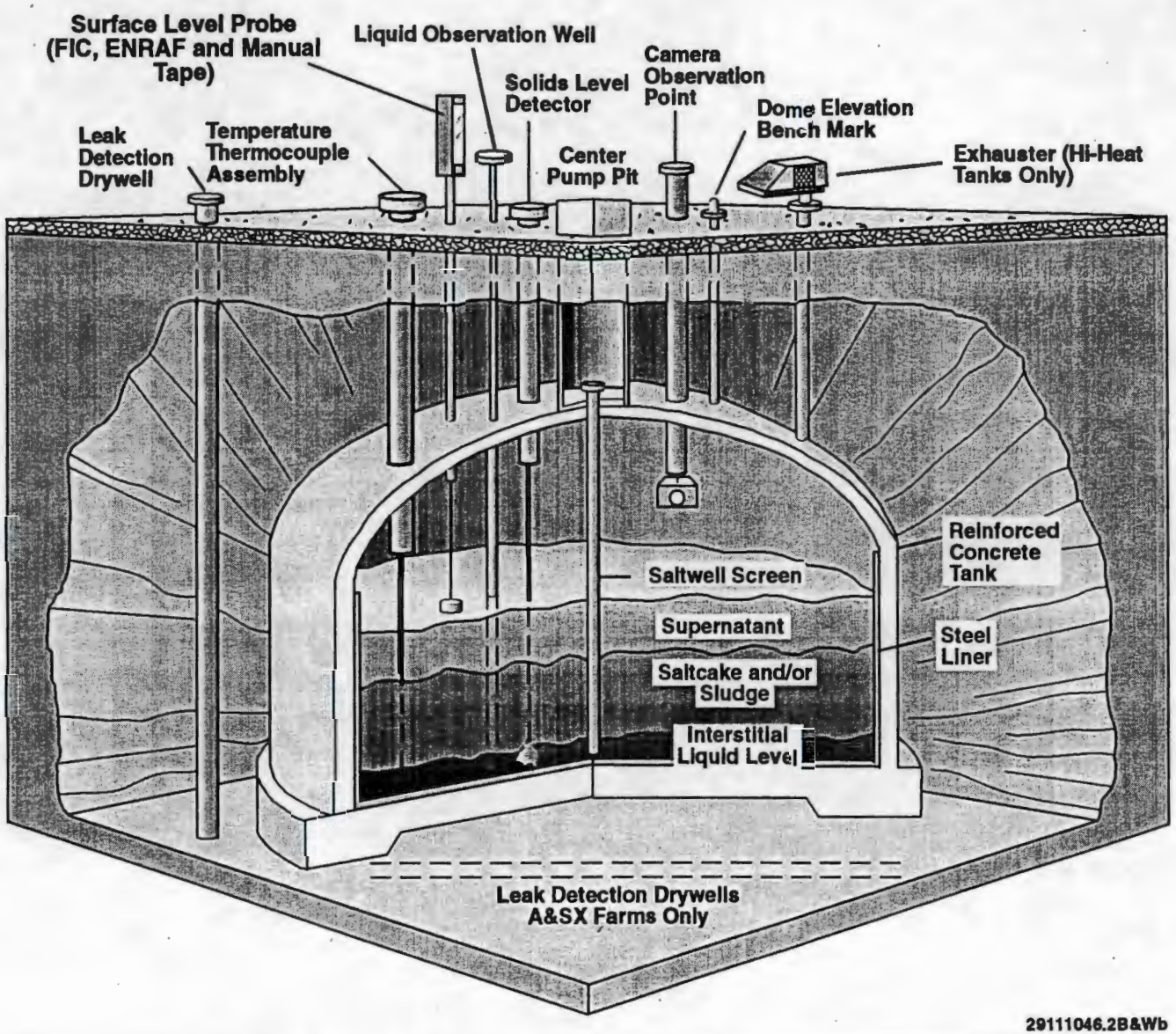



FIGURE D-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

# Hanford Tank Farm Facilities 200 East

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

Active Lines Only

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

Controlled, Clean and Stable

Single-Shell

Double-Shell

Sound Tanks

Intrusion Prevention Completed

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

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

High Heat Load Tanks = East Area - A-104/105, C-106

Tank Number

Radiation Monitoring Dry Well – Approx Location
● = Active
○ = Inactive

Radiation Monitoring Laterals Under Tank (X = not used)

Total Solids (1,000 gal) Salt Cake/ Sludge/DSS (Inactive Tanks)

Drainable Liquid Remaining (1000 gal) (Inactive Tanks)

Exhauster (A-104/105/106 inoperative)

Liquid-Level Gauges
▼ = FIC read manually
Y = Tape read manually
▽ = Auto FIC on CASS
▽ = Intrusion Mode FIC

Watch List Tanks

Interim Stabilized (Yellow Tank)

■ =ENRAF Read Manually
▨ =Auto ENRAF on TMACS

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

Temperature Reading:
● Automatic (TMACS)
○ Manual

Liquid Observation Well (LOW)

Screen – Jet Pump –

Assumed Leaker

Assumed Leaked Date

**Watch List Tanks**

- H2/Flammable gases
- Organics

**Status as of December 31, 1999**
**Updated Quarterly**
**Issued by River Protection Project**

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

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

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

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

244-BX DCRT
ER-152
ER-151
ER-153
Cross-Site
CR Vault
244-A DCRT
WESF
B-Plant
AX-155
Valve Pits
AR-151
204 AR
AR Vault

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

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

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

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

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

AX-152
Valve Pits
Valve Pits
242-A Evaporator
AP Valve Pit
Grout Equip
Valve Pits
PUREX
A-151
Vault Field

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

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

**Figure D-4**
**(Schematic)**

29502008.2C
12/31/99

# Hanford Tank Farm Facilities 200 West

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

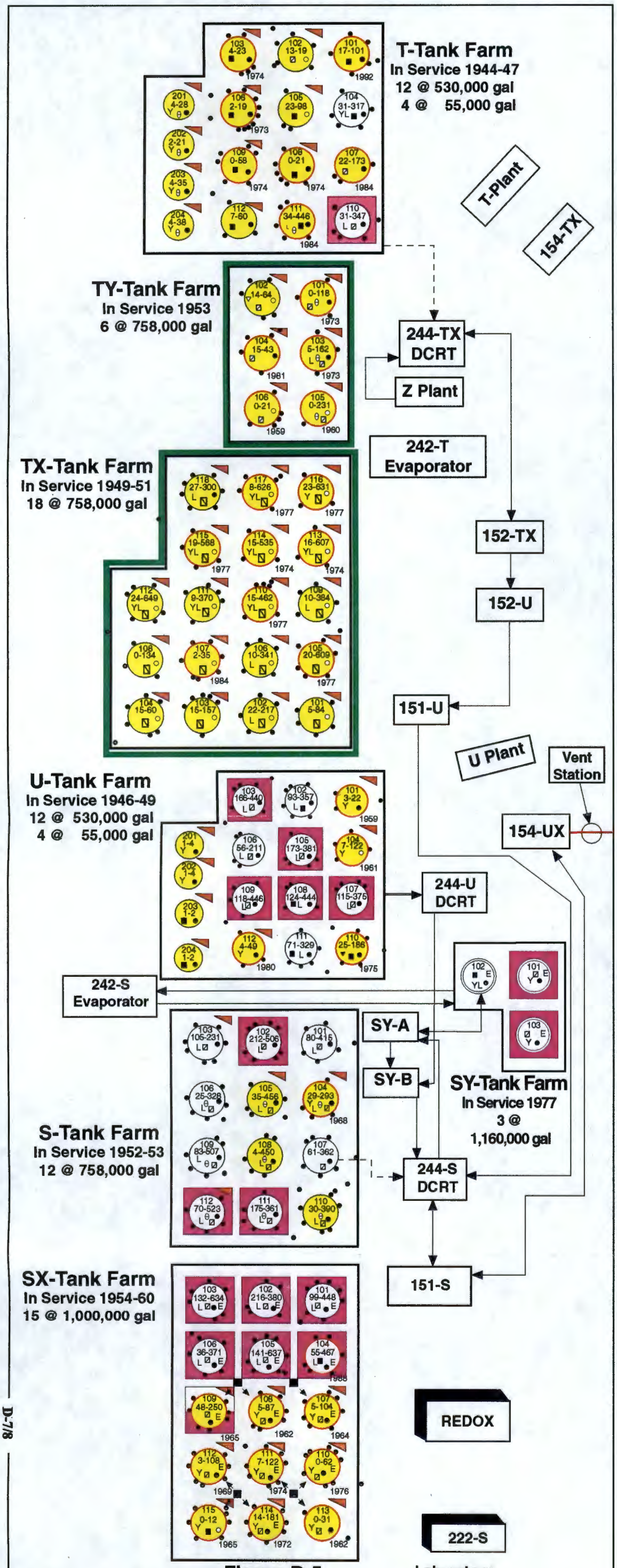
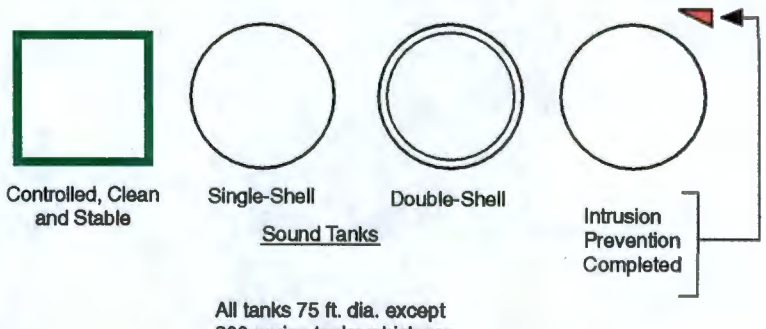



Figure D-5
(Schematic)

Active Lines Only

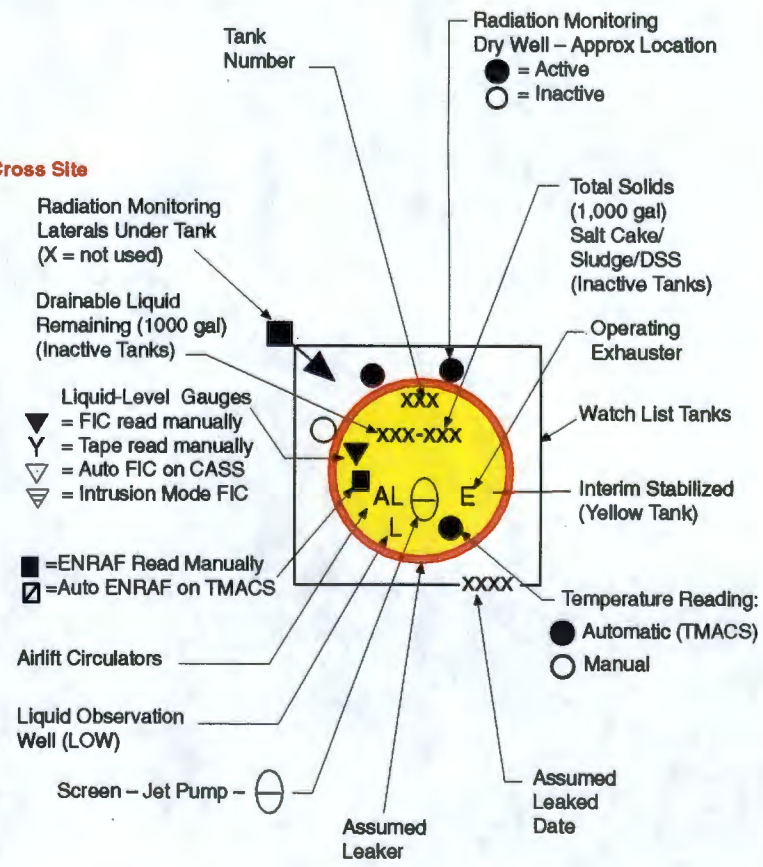
- Concrete encased or pipe-in-pipe
- Direct Buried Pipe
- Cross-Site Transfer Lines (concrete encased or pipe-in-pipe)




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

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

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




| Watch List Tanks |
|---|
| H2/Flammable gases (109-SX has potential only-other tanks vent through it) |

**Status as of December 31,1999**
**Updated Quarterly**
**Issued by River Protection Project**

29502008.1C
12/31/99

# APPENDIX E

## MONTHLY SUMMARY
## TANK USE SUMMARY
## PUMPING RECORD, LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANK FARMS
## INVENTORY SUMMARY BY TANK FARM
## INVENTORY AND STATUS BY TANK

# TABLE E-1. MONTHLY SUMMARY
## TANK STATUS
December 31, 1999

| | 200 EAST AREA | 200 WEST AREA | TOTAL |
|---|---|---|---|
| IN SERVICE | 25 | 03 | 28 (1) |
| OUT OF SERVICE | 66 | 83 | 149 |
| SOUND | 59 | 51 | 110 |
| ASSUMED LEAKER | 32 | 35 | 67 |
| INTERIM STABILIZED | 60 | 60 | 120 |
| ISOLATED | | | |
| PARTIAL INTERIM | 11 | 30 | 41 |
| INTRUSION PREVENTION COMPLETE | 55 | 53 | 108 |
| CONTROLLED, CLEAN, AND STABLE | 12 | 24 | 36 |

## WASTE VOLUMES (Kgallons)

| | | 200 EAST AREA | 200 WEST AREA | TOTAL | SST TANKS | DST TANKS | TOTAL |
|---|---|---|---|---|---|---|---|
| SUPERNATANT | | | | | | | |
| AGING | Aging waste | 1655 | 0 | 1655 | 0 | 1655 | 1655 |
| CC | Complexant concentrate waste | 2032 | 940 | 2972 | 0 | 2972 | 2972 |
| CP | Concentrated phosphate waste | 1091 | 0 | 1091 | 0 | 1091 | 1091 |
| DC | Dilute complexed waste | 1420 | 0 | 1420 | 1 | 1419 | 1420 |
| DN | Dilute non-complexed waste | 1852 | 0 | 1852 | 0 | 1852 | 1852 |
| DN/PD | Dilute non-complex/PUREX TRU solid | 322 | 0 | 322 | 0 | 322 | 322 |
| DN/PT | Dilute non-complex/PFP TRU solids | 0 | 950 | 950 | 0 | 950 | 950 |
| NCPLX | Non-complexed waste | 216 | 276 | 492 | 492 | 0 | 492 |
| DSSF | Double-shell slurry feed | 5253 | 167 | 5420 | 1070 | 4350 | 5420 |
| TOTAL SUPERNATANT | | 13841 | 2333 | 16174 | 1563 | 14611 | 16174 |
| SOLIDS | | | | | | | |
| Double-shell slurry | | 457 | 0 | 457 | 0 | 457 | 457 |
| Sludge | | 6622 | 5960 | 12582 | 11496 | 1086 | 12582 |
| Saltcake | | 7489 | 16383 | 23872 | 20663 | 3209 | 23872 |
| TOTAL SOLIDS | | 14568 | 22343 | 36911 | 32159 | 4752 | 36911 |
| TOTAL WASTE | | 28409 | 24676 | 53085 | 33722 | 19363 | 53085 |
| AVAILABLE SPACE IN TANKS | | 11409 | 515 | 11924 | 0 | 11924 | 11924 |
| DRAINABLE INTERSTITIAL | | 1990 | 3086 | 5076 | 3753 | 1323 | 5076 |
| DRAINABLE LIQUID REMAINING (2) | | 2145 | 3127 | 5272 | 5272 | (2) | 5272 |

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

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

# TABLE E-2. TANK USE SUMMARY

December 31, 1999

| TANK FARMS | TANKS AVAILABLE TO RECEIVE WASTE TRANSERS | SOUND | ASSUMED LEAKER | ISOLATED TANKS: PARTIAL INTERIM | ISOLATED TANKS: INTRUSION PREVENTION COMPLETED | ISOLATED TANKS: CONTROLLED CLEAN, AND STABLE | INTERIM TABILIZED TANKS |
|---|---|---|---|---|---|---|---|
| EAST | | | | | | | |
| A | 0 | 3 | 3 | 2 | 4 | 0 | 5 |
| AN | 7 (1) | 7 | 0 | 0 | 0 | | 0 |
| AP | 8 | 8 | 0 | 0 | 0 | | 0 |
| AW | 6 (1) | 6 | 0 | 0 | 0 | | 0 |
| AX | 0 | 2 | 2 | 1 | 3 | | 3 |
| AY | 2 | 2 | 0 | 0 | 0 | | 0 |
| AZ | 2 | 2 | 0 | 0 | 0 | | 0 |
| B | 0 | 6 | 10 | 0 | 16 | | 16 |
| BX | 0 | 7 | 5 | 0 | 12 | 12 | 12 |
| BY | 0 | 7 | 5 | 5 | 7 | | 10 |
| C | 0 | 9 | 7 | 3 | 13 | | 14 |
| Total | 25 | 59 | 32 | 11 | 55 | 12 | 60 |
| WEST | | | | | | | |
| S | 0 | 11 | 1 | 10 | 2 | | 4 |
| SX | 0 | 5 | 10 | 6 | 9 | | 9 |
| SY | 3 (1) | 3 | 0 | 0 | 0 | | 0 |
| T | 0 | 9 | 7 | 5 | 11 | | 15 |
| TX | 0 | 10 | 8 | 0 | 18 | 18 | 18 |
| TY | 0 | 1 | 5 | 0 | 6 | 6 | 6 |
| U | 0 | 12 | 4 | 9 | 7 | | 8 |
| Total | 3 | 51 | 35 | 30 | 53 | 24 | 60 |
| TOTAL | 28 | 110 | 67 | 41 | 108 | 36 | 120 |

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

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

December 31, 1999

| | Waste Volumes (Kgallons) | | | | | | |
|---|---|---|---|---|---|---|---|
| TANK FARMS | PUMPED THIS MONTH | PUMPED FY TO DATE | CUMULATIVE TOTAL PUMPED 1979 TO DATE | SUPERNATANT LIQUID | DRAINABLE INTERSTITIAL REMAINING | DRAINABLE LIQUID REMAINING | PUMPABLE SST LIQUID REMAINING |
| EAST | | | | | | | |
| A | 0.0 | 0.0 | 150.5 | 517 | 107 | 624 | 587 |
| AN | N/A | N/A | N/A | 3653 | 513 | N/A | N/A |
| AP | N/A | N/A | N/A | 3703 | 25 | N/A | N/A |
| AW | N/A | N/A | N/A | 3257 | 361 | N/A | N/A |
| AX | 0.0 | 0.0 | 13.0 | 386 | 108 | 497 | 450 |
| AY | N/A | N/A | N/A | 453 | 23 | N/A | N/A |
| AZ | N/A | N/A | N/A | 1655 | 3 | N/A | N/A |
| B | 0.0 | 0.0 | 0.0 | 15 | 191 | 206 | 107 |
| BX | N/A | 0.0 | 200.2 | 24 | 107 | N/A | N/A |
| BY | 0.0 | 0.0 | 1567.8 | 0 | 390 | 390 | 282 |
| C | 0.0 | 0.0 | 103.0 | 178 | 162 | 296 | 212 |
| Total | 0.0 | 0.0 | 2034.5 | 13841 | 1990 | 2013 | 1638 |
| WEST | | | | | | | |
| S | 2.7 | 18.8 | 1026.5 | 138 | 771 | 909 | 830 |
| SX | 0.2 | 14.5 | 378.8 | 134 | 627 | 761 | 684 |
| SY | N/A | N/A | N/A | 1890 | 398 | N/A | N/A |
| T | 0.0 | 0.0 | 245.7 | 28 | 170 | 198 | 130 |
| TX | N/A | 0.0 | 1205.7 | 9 | 250 | N/A | N/A |
| TY | N/A | 0.0 | 29.9 | 3 | 31 | N/A | N/A |
| U | 37.6 | 77.9 | 89.9 | 131 | 839 | 970 | 929 |
| Total | 40.5 | 111.2 | 2976.5 | 2333 | 3086 | 2838 | 2573 |
| TOTAL | 40.5 | 111.2 | 5011.0 | 16174 | 5076 | 4851 | 4211 |

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

# TABLE E-4. INVENTORY SUMMARY BY TANK FARM

December 31, 1999

| TANK FARM | TOTAL WASTE | AVAIL SPACE | SUPERNATANT LIQUID VOLUMES (Kgallons) AGING | CC | CP | DC | DN | DN/PD | DN/PT | NCPLX | DSSF | TOTAL | SOLIDS VOLUME DSS | SLUDGE | SALT CAKE | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EAST | | | | | | | | | | | | | | | | |
| A | 1507 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 517 | 517 | 0 | 588 | 402 | 990 |
| AN | 5434 | 2546 | 0 | 1785 | 0 | 0 | 127 | 0 | 0 | 0 | 1741 | 3653 | 457 | 0 | 1324 | 1781 |
| AP | 3792 | 5328 | 0 | 0 | 1091 | 383 | 440 | 0 | 0 | 0 | 1789 | 3703 | 0 | 0 | 89 | 89 |
| AW | 4673 | 2167 | 0 | 247 | 0 | 980 | 888 | 322 | 0 | 0 | 820 | 3257 | 0 | 571 | 845 | 1416 |
| AX | 834 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 386 | 386 | 0 | 26 | 422 | 448 |
| AY | 763 | 1197 | 0 | 0 | 0 | 56 | 397 | 0 | 0 | 0 | 0 | 453 | 0 | 310 | 0 | 310 |
| AZ | 1789 | 171 | 1655 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1655 | 0 | 134 | 0 | 134 |
| B | 1909 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 15 | 0 | 1327 | 567 | 1894 |
| BX | 1496 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 24 | 0 | 1265 | 207 | 1472 |
| BY | 4387 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 754 | 3633 | 4387 |
| C | 1825 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 177 | 0 | 178 | 0 | 1647 | 0 | 1647 |
| Total | 28409 | 11409 | 1655 | 2032 | 1091 | 1420 | 1852 | 322 | 0 | 216 | 5253 | 13841 | 457 | 6622 | 7489 | 14568 |
| WEST | | | | | | | | | | | | | | | | |
| S | 4960 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 138 | 0 | 138 | 0 | 1185 | 3637 | 4822 |
| SX | 4028 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 | 134 | 0 | 1064 | 2830 | 3894 |
| SY | 2912 | 515 | 0 | 940 | 0 | 0 | 0 | 0 | 950 | 0 | 0 | 1890 | 0 | 71 | 951 | 1022 |
| T | 1855 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 | 0 | 28 | 0 | 1682 | 145 | 1827 |
| TX | 6778 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 0 | 893 | 5876 | 6769 |
| TY | 642 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 529 | 110 | 639 |
| U | 3501 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 | 33 | 131 | 0 | 536 | 2834 | 3370 |
| Total | 24676 | 515 | 0 | 940 | 0 | 0 | 0 | 0 | 950 | 276 | 167 | 2333 | 0 | 5960 | 16383 | 22343 |
| TOTAL | 53085 | 11924 | 1655 | 2972 | 1091 | 1420 | 1852 | 322 | 950 | 492 | 5420 | 16174 | 457 | 12582 | 23872 | 36911 |

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

December 31, 1999

| TANK STATUS | | | | | | | LIQUID VOLUME | | SOLIDS VOLUME | | | VOLUME DETERMINATION | | | PHOTOS/VIDEOS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WAST MATL | TANK INTEGRITY | TANK USE | EQUIVA-LENT WASTE INCHES | TOTAL WASTE (Kgal) | AVAIL. SPACE (Kgal) | SUPER-NATANT LIQUID (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | DSS (Kgal) | SLUDGE | SALT CAKE | LIQUID VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTE FOR THESE CHANGES |
| **AN TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| AN-101 | DN | SOUND | DRCVR | 58.2 | 160 | 980 | 127 | 0 | 0 | 0 | 33 | FM | S | 06/30/99 | 0/ 0/ 0 | | |
| AN-102 | CC | SOUND | CWHT | 384.4 | 1057 | 83 | 968 | 25 | 0 | 0 | 89 | FM | S | 06/30/99 | 0/ 0/ 0 | | |
| AN-103 | DSS | SOUND | CWHT | 348.0 | 957 | 183 | 500 | 0 | 457 | 0 | 0 | FM | S | 06/30/99 | 10/29/87 | | |
| AN-104 | DSSF | SOUND | CWHT | 382.9 | 1053 | 87 | 604 | 187 | 0 | 0 | 449 | FM | S | 06/30/99 | 08/19/88 | | |
| AN-105 | DSSF | SOUND | CWHT | 409.5 | 1126 | 14 | 637 | 205 | 0 | 0 | 489 | FM | S | 06/30/99 | 01/26/88 | | |
| AN-106 | CC | SOUND | CWHT | 13.8 | 38 | 1102 | 21 | 0 | 0 | 0 | 17 | FM | S | 06/30/99 | 0/ 0/ 0 | | |
| AN-107 | CC | SOUND | CWHT | 379.3 | 1043 | 97 | 796 | 96 | 0 | 0 | 247 | FM | S | 06/30/99 | 09/01/88 | | |
| 7 DOUBLE-SHELL TANKS | | | | TOTALS | 5434 | 2546 | 3653 | 513 | 457 | 0 | 1324 | | | | | | |
| **AP TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| AP-101 | DSSF | SOUND | DRCVR | 405.1 | 1114 | 26 | 1114 | 0 | 0 | 0 | 0 | FM | S | 05/01/89 | 0/ 0/ 0 | | |
| AP-102 | CP | SOUND | GRTFD | 396.7 | 1091 | 49 | 1091 | 0 | 0 | 0 | 0 | FM | S | 07/11/89 | 0/ 0/ 0 | | |
| AP-103 | DN | SOUND | DRCVR | 103.3 | 284 | 856 | 284 | 0 | 0 | 0 | 0 | FM | S | 05/31/96 | 0/ 0/ 0 | | |
| AP-104 | DN | SOUND | GRTFD | 8.7 | 24 | 1116 | 24 | 0 | 0 | 0 | 0 | FM | S | 10/13/88 | 0/ 0/ 0 | | |
| AP-105 | DSSF | SOUND | CWHT | 277.8 | 764 | 376 | 675 | 25 | 0 | 0 | 89 | FM | S | 06/30/99 | 0/ 0/ 0 | 09/27/95 | |
| AP-106 | DN | SOUND | DRCVR | 33.8 | 93 | 1047 | 93 | 0 | 0 | 0 | 0 | FM | S | 10/13/88 | 0/ 0/ 0 | | |
| AP-107 | DN | SOUND | DRCVR | 14.2 | 39 | 1101 | 39 | 0 | 0 | 0 | 0 | FM | S | 10/13/88 | 0/ 0/ 0 | | |
| AP-108 | DC | SOUND | DRCVR | 139.3 | 383 | 757 | 383 | 0 | 0 | 0 | 0 | FM | S | 10/13/88 | 0/ 0/ 0 | | |
| 8 DOUBLE-SHELL TANKS | | | | TOTALS | 3792 | 5328 | 3703 | 25 | 0 | 0 | 89 | | | | | | |
| **AW TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| AW-101 | DSSF | SOUND | CWHT | 409.5 | 1126 | 14 | 820 | 123 | 0 | 0 | 306 | FM | S | 06/30/99 | 03/17/88 | | |
| AW-102 | DC | SOUND | EVFD | 369.5 | 1016 | 124 | 980 | 1 | 0 | 0 | 36 | FM | S | 06/30/99 | 02/02/83 | | |
| AW-103 | DN/PD | SOUND | DRCVR | 186.2 | 512 | 628 | 149 | 38 | 0 | 316 | 47 | FM | S | 06/30/99 | 0/ 0/ 0 | | |
| AW-104 | DN | SOUND | DRCVR | 406.9 | 1119 | 21 | 888 | 89 | 0 | 0 | 231 | FM | S | 06/30/99 | 02/02/83 | | |
| AW-105 | DN/PD | SOUND | DRCVR | 155.6 | 428 | 712 | 173 | 24 | 0 | 255 | 0 | FM | S | 06/30/99 | 0/ 0/ 0 | | |
| AW-106 | CC | SOUND | SRCVR | 171.6 | 472 | 668 | 247 | 86 | 0 | 0 | 225 | FM | S | 06/30/99 | 02/02/83 | | |
| 6 DOUBLE-SHELL TANKS | | | | TOTALS | 4673 | 2167 | 3257 | 361 | 0 | 571 | 845 | | | | | | |

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

December 31, 1999

| TANK STATUS | | | | | | | LIQUID VOLUME | | SOLIDS VOLUME | | | VOLUME DETERMINATION | | | PHOTOS/VIDEOS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WAST MATL | TANK INTEGRITY | TANK USE | EQUIVA-LENT WASTE INCHES | TOTAL WASTE (Kgal) | AVAIL. SPACE (Kgal) | SUPER-NATANT LIQUID (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | DSS (Kgal) | SLUDGE | SALT CAKE | LIQUID VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTE FOR THESE CHANGES |
| **AY TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| AY-101 | DC | SOUND | DRCVR | 54.5 | 150 | 830 | 56 | 4 | 0 | 94 | 0 | FM | S | 06/30/99 | 12/28/82 | | |
| AY-102 | DN | SOUND | DRCVR | 222.9 | 613 | 367 | 397 | 19 | 0 | 216 | 0 | FM | S | 11/30/99 | 04/28/81 | | (b) |
| 2 DOUBLE-SHELL TANKS | | | | TOTALS | 763 | 1197 | 453 | 23 | 0 | 310 | 0 | | | | | | |
| **AZ TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| AZ-101 | AGING | SOUND | CWHT | 308.7 | 849 | 131 | 803 | 0 | 0 | 46 | 0 | FM | S | 06/30/98 | 08/18/83 | | |
| AZ-102 | AGING | SOUND | DRCVR | 341.8 | 940 | 40 | 852 | 3 | 0 | 88 | 0 | FM | S | 06/30/99 | 10/24/84 | | |
| 2 DOUBLE-SHELL TANKS | | | | TOTALS | 1789 | 171 | 1655 | 3 | 0 | 134 | 0 | | | | | | |
| **SY TANK FARM STATUS** | | | | | | | | | | | | | | | | | |
| SY-101 | CC | SOUND | CWHT | 417.1 | 1147 | 0 | 562 | 248 | 0 | 0 | 585 | FM | S | 06/30/99 | 04/12/89 | | (a)(c) |
| SY-102 | DN/PT | SOUND | DRCVR | 371.3 | 1021 | 119 | 950 | 0 | 0 | 71 | 0 | FM | S | 06/30/99 | 04/29/81 | | (c) |
| SY-103 | CC | SOUND | CWHT | 270.5 | 744 | 396 | 378 | 150 | 0 | 0 | 366 | FM | S | 06/30/99 | 10/01/85 | | |
| 3 DOUBLE-SHELL TANKS | | | | TOTALS | 2912 | 515 | 1890 | 398 | 0 | 71 | 951 | | | | | | |
| GRAND TOTAL | | | | | 19363 | 11924 | 14611 | 1323 | 457 | 1086 | 3209 | | | | | | |

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

| Available Space Calculations Used in this Document | |
|---|---|
| Tank Farms | |
| AN, AP, AW, SY | 1,140 Kgal |
| AY, AZ (Aging Waste) | 980 Kgal |

NOTE: Tanks AN-102, AN-107, AY-101 and AP-104 are still outside the corrosion control specifications limits for hydroxide. Note that the supernate in AY-102 is within the corrosion specifications, however, the pre-sluicing C-106 solids in AY-102 may still be outside the corrosion control compliance range for hydroxide. An alternate strategy of corrosion control (i.e., monitor tank waste using corrosion probes) is being proposed but has not been fully evaluated. Waste mitigation may be performed either by chemical adjustment or waste transfer/co-mingling of waste with high hydroxide.

(a) Tank SY-101 - Total Waste exceeds the "most conservative" Available Space calculations used for these tanks in this document.

(b) Tank AY-102 - Sludge volume changed in this tank due to sluicing from tank C-106, per HNF-5267, "Waste Retrieval SluicingCampaign Number 3 Solids Volume Transferred Calculation," Rev 2, dated November 17, 1999.

(c) The first transfer of waste (89,500 gallons) from SY-101 to SY-102 was completed December 19, 1999.

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUME | | VOLUME DETERMINATION | | | PHOTOS/VIDEOS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE LIQUID (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| | | | | | | | | A TANK FARM STATUS | | | | | | | | | | |
| A-101 | DSSF | SOUND | /PI | 891 | 508 | 79 | 0.0 | 0.0 | 587 | 587 | 3 | 380 | P | F | 09/30/99 | 08/21/85 | | (j) |
| A-102 | DSSF | SOUND | IS/PI | 41 | 4 | 2 | 0.0 | 39.5 | 6 | 0 | 15 | 22 | P | FP | 07/27/89 | 07/20/89 | | |
| A-103 | DSSF | ASMD LKR | IS/IP | 371 | 5 | 15 | 0.0 | 111.0 | 20 | 0 | 366 | 0 | - | FP | 06/03/88 | 12/28/88 | | |
| A-104 | NCPLX | ASMD LKR | IS/IP | 28 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 28 | 0 | M | PS | 01/27/78 | 06/25/86 | | |
| A-105 | NCPLX | ASMD LKR | IS/IP | 51 | 0 | 4 | 0.0 | 0.0 | 4 | 0 | 51 | 0 | P | MP | 06/30/99 | 08/20/86 | | |
| A-106 | CP | SOUND | IS/IP | 125 | 0 | 7 | 0.0 | 0.0 | 7 | 0 | 125 | 0 | P | M | 09/07/82 | 08/19/86 | | |
| 6 SINGLE-SHELL TANKS | | | TOTALS | 1507 | 517 | 107 | 0.0 | 150.5 | 624 | 587 | 588 | 402 | | | | | | |
| | | | | | | | | AX TANK FARM STATUS | | | | | | | | | | |
| AX-101 | DSSF | SOUND | /PI | 684 | 386 | 58 | 0.0 | 0.0 | 444 | 444 | 3 | 295 | P | F | 09/30/99 | 08/18/87 | | (j) |
| AX-102 | CC | ASMD LKR | IS/IP | 30 | 0 | 14 | 0.0 | 13.0 | 17 | 3 | 7 | 23 | F | S | 06/30/99 | 06/05/89 | | |
| AX-103 | CC | SOUND | IS/IP | 112 | 0 | 36 | 0.0 | 0.0 | 36 | 3 | 8 | 104 | F | S | 06/30/99 | 08/13/87 | | |
| AX-104 | NCPLX | ASMD LKR | IS/IP | 8 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 8 | 0 | P | M | 06/30/99 | 08/18/87 | | |
| 4 SINGLE-SHELL TANKS | | | TOTALS: | 834 | 386 | 108 | 0.0 | 13.0 | 497 | 450 | 26 | 422 | | | | | | |
| | | | | | | | | B TANK FARM STATUS | | | | | | | | | | |
| B-101 | NCPLX | ASMD LKR | IS/IP | 113 | 0 | 6 | 0.0 | 0.0 | 6 | 0 | 0 | 113 | P | F | 06/30/99 | 05/19/83 | | |
| B-102 | NCPLX | SOUND | IS/IP | 32 | 4 | 0 | 0.0 | 0.0 | 4 | 0 | 0 | 28 | P | F | 06/30/99 | 08/22/85 | | |
| B-103 | NCPLX | ASMD LKR | IS/IP | 59 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 59 | F | F | 06/30/99 | 10/13/88 | | |
| B-104 | NCPLX | SOUND | IS/IP | 371 | 1 | 44 | 0.0 | 0.0 | 45 | 38 | 309 | 61 | M | M | 06/30/99 | 10/13/88 | | |
| B-105 | NCPLX | ASMD LKR | IS/IP | 158 | 0 | 23 | 0.0 | 0.0 | 23 | 0 | 28 | 130 | P | MP | 06/30/99 | 05/19/88 | | |
| B-106 | NCPLX | SOUND | IS/IP | 117 | 1 | 6 | 0.0 | 0.0 | 7 | 0 | 116 | 0 | F | F | 03/31/85 | 02/28/85 | | |
| B-107 | NCPLX | ASMD LKR | IS/IP | 165 | 1 | 12 | 0.0 | 0.0 | 13 | 7 | 93 | 71 | M | M | 06/30/99 | 02/28/85 | | |
| B-108 | NCPLX | SOUND | IS/IP | 94 | 0 | 4 | 0.0 | 0.0 | 4 | 0 | 53 | 41 | F | F | 06/30/99 | 05/10/85 | | |
| B-109 | NCPLX | SOUND | IS/IP | 127 | 0 | 8 | 0.0 | 0.0 | 8 | 0 | 63 | 64 | M | M | 06/30/99 | 04/02/85 | | |
| B-110 | NCPLX | ASMD LKR | IS/IP | 246 | 1 | 37 | 0.0 | 0.0 | 38 | 32 | 245 | 0 | MP | MP | 02/28/85 | 03/17/88 | | |
| B-111 | NCPLX | ASMD LKR | IS/IP | 237 | 1 | 35 | 0.0 | 0.0 | 36 | 30 | 236 | 0 | F | F | 06/28/85 | 06/26/85 | | |
| B-112 | NCPLX | ASMD LKR | IS/IP | 33 | 3 | 0 | 0.0 | 0.0 | 3 | 0 | 30 | 0 | F | F | 05/31/85 | 05/29/85 | | |
| B-201 | NCPLX | ASMD LKR | IS/IP | 29 | 1 | 3 | 0.0 | 0.0 | 4 | 0 | 28 | 0 | M | M | 04/28/82 | 11/12/86 | 06/23/95 | |
| B-202 | NCPLX | SOUND | IS/IP | 27 | 0 | 3 | 0.0 | 0.0 | 3 | 0 | 27 | 0 | P | M | 05/31/85 | 05/29/85 | 06/15/95 | |
| B-203 | NCPLX | ASMD LKR | IS/IP | 51 | 1 | 5 | 0.0 | 0.0 | 6 | 0 | 50 | 0 | PM | PM | 05/31/84 | 11/13/86 | | |
| B-204 | NCPLX | ASMD LKR | IS/IP | 50 | 1 | 5 | 0.0 | 0.0 | 6 | 0 | 49 | 0 | P | M | 05/31/84 | 10/22/87 | | |
| 16 SINGLE-SHELL TANKS | | | TOTALS | 1909 | 15 | 191 | 0.0 | 0.0 | 206 | 107 | 1327 | 567 | | | | | | |

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUME | | VOLUME DETERMINATION | | | PHOTOS/VIDEOS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| | | | | | | | | BX TANK FARM STATUS | | | | | | | | | | |
| BX-101 | NCPLX | ASMD LKR | IS/IP/CCS | 43 | 1 | 0 | 0.0 | 0.0 | 1 | 0 | 42 | 0 | P | M | 04/28/82 | 11/24/88 | 11/10/94 | |
| BX-102 | NCPLX | ASMD LKR | IS/IP/CCS | 96 | 0 | 4 | 0.0 | 0.0 | 4 | 0 | 96 | 0 | P | M | 04/28/82 | 09/18/85 | | |
| BX-103 | NCPLX | SOUND | IS/IP/CCS | 71 | 9 | 0 | 0.0 | 0.0 | 9 | 0 | 62 | 0 | P | F | 11/29/83 | 10/31/86 | 10/27/94 | |
| BX-104 | NCPLX | SOUND | IS/IP/CCS | 99 | 3 | 30 | 0.0 | 17.4 | 33 | 27 | 96 | 0 | F | F | 09/22/89 | 09/21/89 | | |
| BX-105 | NCPLX | SOUND | IS/IP/CCS | 51 | 5 | 6 | 0.0 | 15.0 | 11 | 4 | 46 | 0 | F | S | 06/30/99 | 10/23/86 | | |
| BX-106 | NCPLX | SOUND | IS/IP/CCS | 38 | 0 | 0 | 0.0 | 14.0 | 0 | 0 | 38 | 0 | MP | PS | 08/01/95 | 05/19/88 | 07/17/95 | |
| BX-107 | NCPLX | SOUND | IS/IP/CCS | 345 | 1 | 29 | 0.0 | 23.1 | 30 | 23 | 344 | 0 | MP | P | 09/18/90 | 09/11/90 | | |
| BX-108 | NCPLX | ASMD LKR | IS/IP/CCS | 26 | 0 | 1 | 0.0 | 0.0 | 1 | 0 | 26 | 0 | M | PS | 07/31/79 | 05/05/94 | | |
| BX-109 | NCPLX | SOUND | IS/IP/CCS | 193 | 0 | 13 | 0.0 | 8.2 | 13 | 8 | 193 | 0 | FP | P | 09/17/90 | 09/11/90 | | |
| BX-110 | NCPLX | ASMD LKR | IS/IP/CCS | 207 | 3 | 16 | 0.0 | 1.5 | 19 | 13 | 133 | 71 | MP | M | 06/30/99 | 07/15/94 | 10/13/94 | |
| BX-111 | NCPLX | ASMD LKR | IS/IP/CCS | 162 | 1 | 1 | 0.0 | 116.9 | 3 | 1 | 25 | 136 | M | M | 06/30/99 | 05/19/94 | 02/28/95 | |
| BX-112 | NCPLX | SOUND | IS/IP/CCS | 165 | 1 | 7 | 0.0 | 4.1 | 8 | 2 | 164 | 0 | FP | P | 09/17/90 | 09/11/90 | | |
| 12 SINGLE-SHELL TANKS | | | TOTALS: | 1496 | 24 | 107 | 0.0 | 200.2 | 132 | 78 | 1265 | 207 | | | | | | |
| | | | | | | | | BY TANK FARM STATUS | | | | | | | | | | |
| BY-101 | NCPLX | SOUND | IS/IP | 387 | 0 | 5 | 0.0 | 35.8 | 5 | 0 | 109 | 278 | P | M | 05/30/84 | 09/19/89 | | |
| BY-102 | NCPLX | SOUND | IS/PI | 277 | 0 | 11 | 0.0 | 159.0 | 11 | 0 | 0 | 277 | MP | M | 05/01/95 | 09/11/87 | 04/11/95 | |
| BY-103 | NCPLX | ASMD LKR | IS/PI | 400 | 0 | 38 | 0.0 | 95.9 | 38 | 32 | 9 | 391 | MP | M | 06/30/99 | 09/07/89 | 02/24/97 | |
| BY-104 | NCPLX | SOUND | IS/IP | 326 | 0 | 18 | 0.0 | 329.5 | 18 | 0 | 150 | 176 | P | M | 06/30/99 | 04/27/83 | | |
| BY-105 | NCPLX | ASMD LKR | /PI | 503 | 0 | 111 | 0.0 | 0.0 | 111 | 111 | 48 | 455 | P | MP | 08/31/99 | 07/01/86 | | |
| BY-106 | NCPLX | ASMD LKR | /PI | 562 | 0 | 119 | 0.0 | 63.7 | 119 | 119 | 84 | 478 | P | MP | 12/31/98 | 11/04/82 | | |
| BY-107 | NCPLX | ASMD LKR | IS/IP | 266 | 0 | 25 | 0.0 | 56.4 | 25 | 0 | 40 | 226 | P | MP | 06/30/99 | 10/15/86 | | |
| BY-108 | NCPLX | ASMD LKR | IS/IP | 228 | 0 | 9 | 0.0 | 27.5 | 9 | 0 | 154 | 74 | MP | M | 04/28/82 | 10/15/86 | | |
| BY-109 | NCPLX | SOUND | IS/PI | 290 | 0 | 37 | 0.0 | 157.1 | 37 | 20 | 57 | 233 | F | PS | 07/08/87 | 06/18/97 | | |
| BY-110 | NCPLX | SOUND | IS/IP | 398 | 0 | 9 | 0.0 | 213.3 | 9 | 0 | 103 | 295 | M | S | 09/10/79 | 07/26/84 | | |
| BY-111 | NCPLX | SOUND | IS/IP | 459 | 0 | 0 | 0.0 | 313.2 | 0 | 0 | 0 | 459 | P | M | 06/30/99 | 10/31/86 | | |
| BY-112 | NCPLX | SOUND | IS/IP | 291 | 0 | 8 | 0.0 | 116.4 | 8 | 0 | 0 | 291 | P | M | 06/30/99 | 04/14/88 | | |
| 12 SINGLE-SHELL TANKS | | | TOTALS: | 4387 | 0 | 390 | 0.0 | 1567.8 | 390 | 282 | 754 | 3633 | | | | | | |

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUME | | VOLUME DETERMINATION | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| | | | | | | | | C TANK FARM STATUS | | | | | | | | | | |
| C-101 | NCPLX | ASMD LKR | IS/IP | 88 | 0 | 3 | 0.0 | 0.0 | 3 | 0 | 88 | 0 | M | M | 11/29/83 | 11/17/87 | | |
| C-102 | DC | SOUND | IS/IP | 316 | 0 | 30 | 0.0 | 46.7 | 30 | 17 | 316 | 0 | F | FP | 09/30/95 | 05/18/76 | 08/24/95 | |
| C-103 | NCPLX | SOUND | /PI | 198 | 79 | 4 | 0.0 | 0.0 | 83 | 83 | 119 | 0 | F | S | 12/31/98 | 07/28/87 | | |
| C-104 | CC | SOUND | IS/IP | 295 | 0 | 11 | 0.0 | 0.0 | 11 | 5 | 295 | 0 | FP | P | 09/22/89 | 07/25/90 | | |
| C-105 | NCPLX | SOUND | IS/PI | 135 | 46 | 30 | 0.0 | 0.0 | 32 | 9 | 89 | 0 | F | S | 06/30/99 | 08/05/94 | 08/30/95 | |
| C-106 | NCPLX | SOUND | /PI | 54 | 48 | 0 | 0.0 | 0.0 | 48 | 42 | 6 | 0 | F | PS | 10/31/99 | 08/05/94 | 08/08/94 | (g) |
| C-107 | DC | SOUND | IS/IP | 257 | 0 | 24 | 0.0 | 40.8 | 24 | 15 | 257 | 0 | F | S | 06/30/99 | 00/00/00 | | |
| C-108 | NCPLX | SOUND | IS/IP | 66 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 66 | 0 | M | S | 02/24/84 | 12/05/74 | 11/17/94 | |
| C-109 | NCPLX | SOUND | IS/IP | 66 | 4 | 0 | 0.0 | 0.0 | 4 | 0 | 62 | 0 | M | PS | 11/29/83 | 01/30/76 | | |
| C-110 | DC | ASMD LKR | IS/IP | 178 | 1 | 28 | 0.0 | 15.5 | 29 | 15 | 177 | 0 | F | FMP | 06/14/95 | 08/12/86 | 05/23/95 | |
| C-111 | NCPLX | ASMD LKR | IS/IP | 57 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 57 | 0 | M | S | 04/28/82 | 02/25/70 | 02/02/95 | |
| C-112 | NCPLX | SOUND | IS/IP | 104 | 0 | 32 | 0.0 | 0.0 | 32 | 26 | 104 | 0 | M | PS | 09/18/90 | 09/18/90 | | |
| C-201 | NCPLX | ASMD LKR | IS/IP | 2 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 2 | 0 | P | MP | 03/31/82 | 12/02/86 | | |
| C-202 | EMPTY | ASMD LKR | IS/IP | 1 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 1 | 0 | P | M | 01/19/79 | 12/09/86 | | |
| C-203 | NCPLX | ASMD LKR | IS/IP | 5 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 5 | 0 | P | MP | 04/28/82 | 12/09/86 | | |
| C-204 | NCPLX | ASMD LKR | IS/IP | 3 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 3 | 0 | P | MP | 04/28/82 | 12/09/86 | | |
| 16 SINGLE-SHELL TANKS | | | TOTALS: | 1825 | 178 | 162 | 0.0 | 103.0 | 296 | 212 | 1647 | 0 | | | | | | |
| | | | | | | | | S TANK FARM STATUS | | | | | | | | | | |
| S-101 | NCPLX | SOUND | /PI | 427 | 12 | 68 | 0.0 | 0.0 | 80 | 80 | 211 | 204 | F | PS | 12/31/98 | 03/18/88 | | |
| S-102 | DSSF | SOUND | /PI | 506 | 0 | 212 | 0.0 | 42.8 | 212 | 206 | 105 | 401 | P | FP | 11/30/99 | 03/18/88 | | (e) |
| S-103 | DSSF | SOUND | /PI | 231 | 0 | 105 | 1.0 | 23.8 | 105 | 93 | 9 | 222 | M | S | 06/30/99 | 06/01/69 | | (h) |
| S-104 | NCPLX | ASMD LKR | IS/IP | 294 | 1 | 28 | 0.0 | 0.0 | 29 | 23 | 293 | 0 | M | M | 12/20/84 | 12/12/84 | | |
| S-105 | NCPLX | SOUND | IS/IP | 456 | 0 | 35 | 0.0 | 114.3 | 35 | 13 | 2 | 454 | MP | S | 09/26/88 | 04/12/89 | | |
| S-106 | NCPLX | SOUND | /PI | 328 | 0 | 25 | 1.7 | 203.3 | 25 | 3 | 0 | 328 | P | FP | 12/31/99 | 03/17/89 | 09/12/94 | (f) |
| S-107 | NCPLX | SOUND | /PI | 376 | 14 | 47 | 0.0 | 0.0 | 61 | 61 | 293 | 69 | F | PS | 06/30/99 | 03/12/87 | | |
| S-108 | NCPLX | SOUND | IS/PI | 450 | 0 | 4 | 0.0 | 199.8 | 4 | 0 | 5 | 445 | P | MP | 06/30/99 | 03/12/87 | 12/03/96 | |
| S-109 | NCPLX | SOUND | /PI | 507 | 0 | 83 | 0.0 | 111.0 | 83 | 83 | 13 | 494 | F | PS | 09/30/75 | 12/31/98 | | |
| S-110 | NCPLX | SOUND | IS/PI | 390 | 0 | 30 | 0.0 | 203.1 | 30 | 23 | 131 | 259 | F | PS | 05/14/92 | 03/12/87 | 12/11/96 | |
| S-111 | NCPLX | SOUND | /PI | 472 | 111 | 64 | 0.0 | 3.3 | 175 | 175 | 117 | 244 | P | FP | 09/30/99 | 08/10/89 | | |
| S-112 | NCPLX | SOUND | /PI | 523 | 0 | 70 | 0.0 | 125.1 | 70 | 70 | 6 | 517 | P | FP | 12/31/98 | 03/24/87 | | |
| 12 SINGLE-SHELL TANKS | | | TOTALS: | 4960 | 138 | 771 | 2.7 | 1026.5 | 909 | 830 | 1185 | 3637 | | | | | | |

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUME | | VOLUME DETERMINATION | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID -REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| | | | | | | | | SX TANK FARM STATUS | | | | | | | | | | |
| SX-101 | DC | SOUND | /PI | 448 | 0 | 99 | 0.0 | 0.0 | 99 | 99 | 0 | 448 | P | FP | 06/30/99 | 03/10/89 | | |
| SX-102 | DSSF | SOUND | /PI | 514 | 134 | 82 | 0.0 | 0.0 | 216 | 216 | 0 | 380 | P | M | 09/30/99 | 01/07/88 | | |
| SX-103 | NCPLX | SOUND | /PI | 634 | 0 | 132 | 0.0 | 0.0 | 132 | 132 | 115 | 519 | F | S | 06/30/99 | 12/17/87 | | |
| SX-104 | DSSF | ASMD LKR | /PI | 467 | 0 | 55 | 0.0 | 231.3 | 55 | 44 | 136 | 331 | F | S | 07/31/99 | 09/08/88 | 02/04/98 | (a) |
| SX-105 | DSSF | SOUND | /PI | 637 | 0 | 141 | 0.0 | 0.0 | 141 | 141 | 65 | 572 | P | F | 06/30/99 | 06/15/88 | | |
| SX-106 | NCPLX | SOUND | /PI | 371 | 0 | 36 | 0.2 | 147.5 | 36 | 27 | 0 | 371 | F | PS | 11/30/99 | 06/01/89 | | (b) |
| SX-107 | NCPLX | ASMD LKR | IS/IP | 104 | 0 | 5 | 0.0 | 0.0 | 5 | 0 | 104 | 0 | P | M | 04/28/82 | 03/06/87 | | |
| SX-108 | NCPLX | ASMD LKR | IS/IP | 87 | 0 | 5 | 0.0 | 0.0 | 5 | 0 | 87 | 0 | P | M | 12/31/93 | 03/06/87 | | |
| SX-109 | NCPLX | ASMD LKR | IS/IP | 250 | 0 | 48 | 0.0 | 0.0 | 48 | 25 | 75 | 175 | P | M | 06/30/99 | 05/21/86 | | |
| SX-110 | NCPLX | ASMD LKR | IS/IP | 62 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 62 | 0 | M | PS | 10/06/76 | 02/20/87 | | |
| SX-111 | NCPLX | ASMD LKR | IS/IP | 122 | 0 | 7 | 0.0 | 0.0 | 7 | 0 | 122 | 0 | M | PS | 06/30/99 | 06/09/94 | | |
| SX-112 | NCPLX | ASMD LKR | IS/IP | 108 | 0 | 3 | 0.0 | 0.0 | 3 | 0 | 108 | 0 | P | M | 06/30/99 | 03/10/87 | | |
| SX-113 | NCPLX | ASMD LKR | IS/IP | 31 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 31 | 0 | P | M | 06/30/99 | 03/18/88 | | |
| SX-114 | NCPLX | ASMD LKR | IS/IP | 181 | 0 | 14 | 0.0 | 0.0 | 14 | 0 | 147 | 34 | P | M | 04/28/82 | 02/26/87 | | |
| SX-115 | NCPLX | ASMD LKR | IS/IP | 12 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 12 | 0 | P | M | 04/28/82 | 03/31/88 | | |
| 15 SINGLE-SHELL TANKS | | | TOTALS: | 4028 | 134 | 627 | 0.2 | 378.8 | 761 | 684 | 1064 | 2830 | | | | | | |
| | | | | | | | | T TANK FARM STATUS | | | | | | | | | | |
| T-101 | NCPLX | ASMD LKR | IS/PI | 102 | 1 | 16 | 0.0 | 25.3 | 17 | 0 | 37 | 64 | F | S | 06/30/99 | 04/07/93 | | |
| T-102 | NCPLX | SOUND | IS/IP | 32 | 13 | 0 | 0.0 | 0.0 | 13 | 13 | 19 | 0 | P | FP | 08/31/84 | 06/28/89 | | |
| T-103 | NCPLX | ASMD LKR | IS/IP | 27 | 4 | 0 | 0.0 | 0.0 | 4 | 0 | 23 | 0 | F | FP | 11/29/83 | 07/03/84 | | |
| T-104 | NCPLX | SOUND | /PI | 317 | 0 | 31 | 0.0 | 149.5 | 31 | 27 | 317 | 0 | P | MP | 11/30/99 | 06/29/89 | 10/07/99 | (c) |
| T-105 | NCPLX | SOUND | IS/IP | 98 | 0 | 23 | 0.0 | 0.0 | 23 | 17 | 98 | 0 | P | F | 05/29/87 | 05/14/87 | | |
| T-106 | NCPLX | ASMD LKR | IS/IP | 21 | 2 | 0 | 0.0 | 0.0 | 2 | 0 | 19 | 0 | P | FP | 04/28/82 | 06/29/89 | | |
| T-107 | NCPLX | ASMD LKR | IS/PI | 173 | 0 | 22 | 0.0 | 11.0 | 22 | 12 | 173 | 0 | P | FP | 05/31/96 | 07/12/84 | 05/09/96 | |
| T-108 | NCPLX | ASMD LKR | IS/IP | 44 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 21 | 23 | P | M | 06/30/99 | 07/17/84 | | |

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUME | | VOLUME DETERMINATION | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| T-109 | NCPLX | ASMD LKR | IS/IP | 58 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 0 | 58 | M | M | 06/30/99 | 02/25/93 | | |
| T-110 | NCPLX | SOUND | /PI | 347 | 0 | 31 | 0.0 | 50.3 | 31 | 25 | 347 | 0 | P | FP | 07/31/99 | 07/12/84 | 10/07/99 | (d) |
| T-111 | NCPLX | ASMD LKR | IS/PI | 446 | 0 | 34 | 0.0 | 9.6 | 34 | 29 | 446 | 0 | P | FP | 04/18/94 | 04/13/94 | 02/13/95 | |
| T-112 | NCPLX | SOUND | IS/IP | 67 | 7 | 0 | 0.0 | 0.0 | 7 | 7 | 60 | 0 | P | FP | 04/28/82 | 08/01/84 | | |
| T-201 | NCPLX | SOUND | IS/IP | 29 | 1 | 3 | 0.0 | 0.0 | 4 | 0 | 28 | 0 | M | PS | 05/31/78 | 04/15/86 | | |
| T-202 | NCPLX | SOUND | IS/IP | 21 | 0 | 2 | 0.0 | 0.0 | 2 | 0 | 21 | 0 | FP | P | 07/12/81 | 07/06/89 | | |
| T-203 | NCPLX | SOUND | IS/IP | 35 | 0 | 4 | 0.0 | 0.0 | 4 | 0 | 35 | 0 | M | PS | 01/31/78 | 08/03/89 | | |
| T-204 | NCPLX | SOUND | IS/IP | 38 | 0 | 4 | 0.0 | 0.0 | 4 | 0 | 38 | 0 | FP | P | 07/22/81 | 08/03/89 | | |
| 16 SINGLE-SHELL TANKS | | | TOTALS: | 1855 | 28 | 170 | 0.0 | 245.7 | 198 | 130 | 1682 | 145 | | | | | | |
| | | | | | | | | TX TANK FARM STATUS | | | | | | | | | | |
| TX-101 | NCPLX | SOUND | IS/IP/CCS | 87 | 3 | 2 | 0.0 | 0.0 | 5 | 0 | 74 | 10 | F | P | 06/30/99 | 10/24/85 | | |
| TX-102 | NCPLX | SOUND | IS/IP/CCS | 217 | 0 | 22 | 0.0 | 94.4 | 22 | 0 | 0 | 217 | M | S | 08/31/84 | 10/31/85 | | |
| TX-103 | NCPLX | SOUND | IS/IP/CCS | 157 | 0 | 15 | 0.0 | 68.3 | 15 | 0 | 0 | 157 | F | S | 06/30/99 | 10/31/85 | | |
| TX-104 | NCPLX | SOUND | IS/IP/CCS | 65 | 5 | 14 | 0.0 | 3.6 | 15 | 0 | 23 | 37 | F | FP | 06/30/99 | 10/16/84 | | |
| TX-105 | NCPLX | ASMD LKR | IS/IP/CCS | 609 | 0 | 20 | 0.0 | 121.5 | 20 | 0 | 0 | 609 | M | PS | 08/22/77 | 10/24/89 | | |
| TX-106 | NCPLX | SOUND | IS/IP/CCS | 341 | 0 | 10 | 0.0 | 134.6 | 10 | 0 | 0 | 341 | M | S | 06/30/99 | 10/31/85 | | |
| TX-107 | NCPLX | ASMD LKR | IS/IP/CCS | 36 | 1 | 1 | 0.0 | 0.0 | 2 | 0 | 8 | 27 | FP | FP | 06/30/99 | 10/31/85 | | |
| TX-108 | NCPLX | SOUND | IS/IP/CCS | 134 | 0 | 0 | 0.0 | 13.7 | 0 | 0 | 6 | 128 | P | FP | 06/30/99 | 09/12/89 | | |
| TX-109 | NCPLX | SOUND | IS/IP/CCS | 384 | 0 | 10 | 0.0 | 72.3 | 10 | 0 | 384 | 0 | F | PS | 06/30/99 | 10/24/89 | | |
| TX-110 | NCPLX | ASMD LKR | IS/IP/CCS | 462 | 0 | 15 | 0.0 | 115.1 | 15 | 0 | 37 | 425 | M | PS | 06/30/99 | 10/24/89 | | |
| TX-111 | NCPLX | SOUND | IS/IP/CCS | 370 | 0 | 9 | 0.0 | 98.4 | 9 | 0 | 43 | 327 | M | PS | 06/30/99 | 09/12/89 | | |
| TX-112 | NCPLX | SOUND | IS/IP/CCS | 649 | 0 | 24 | 0.0 | 94.0 | 24 | 0 | 0 | 649 | P | PS | 05/30/83 | 11/19/87 | | |
| TX-113 | NCPLX | ASMD LKR | IS/IP/CCS | 607 | 0 | 16 | 0.0 | 19.2 | 16 | 0 | 183 | 424 | M | PS | 06/30/99 | 04/11/83 | 09/23/94 | |
| TX-114 | NCPLX | ASMD LKR | IS/IP/CCS | 535 | 0 | 15 | 0.0 | 104.3 | 15 | 0 | 4 | 531 | M | PS | 06/30/99 | 04/11/83 | 02/17/95 | |
| TX-115 | NCPLX | ASMD LKR | IS/IP/CCS | 568 | 0 | 19 | 0.0 | 99.1 | 19 | 0 | 0 | 568 | M | S | 06/30/99 | 06/15/88 | | |
| TX-116 | NCPLX | ASMD LKR | IS/IP/CCS | 631 | 0 | 23 | 0.0 | 23.8 | 23 | 0 | 68 | 563 | M | PS | 06/30/99 | 10/17/89 | | |
| TX-117 | NCPLX | ASMD LKR | IS/IP/CCS | 626 | 0 | 8 | 0.0 | 54.3 | 8 | 0 | 29 | 597 | M | PS | 06/30/99 | 04/11/83 | | |
| TX-118 | NCPLX | SOUND | IS/IP/CCS | 300 | 0 | 27 | 0.0 | 89.1 | 27 | 0 | 34 | 266 | F | S | 06/30/99 | 12/19/79 | | |
| 18 SINGLE-SHELL TANKS | | | TOTALS: | 6778 | 9 | 250 | 0.0 | 1205.7 | 255 | 0 | 893 | 5876 | | | | | | |

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

December 31, 1999

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

| TANK STATUS | | | | | LIQUID VOLUME | | | | | | SOLIDS VOLUM | | VOLUME DETERMINATION | | | PHOTOS/VIDEOS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TANK | WASTE MAT'L. | TANK INTEGRITY | STABIL/ ISOLATION STATUS | TOTAL WASTE (Kgal) | SUPER-NATE LIQUID (Kgal) | DRAIN-ABLE INTER-STIT. (Kgal) | PUMPED THIS MONTH (Kgal) | TOTAL PUMPED (Kgal) | DRAIN-ABLE LIQUID REMAIN (Kgal) | PUMP-ABLE LIQUID REMAIN (Kgal) | SLUDGE (Kgal) | SALT CAKE (Kgal) | LIQUIDS VOLUME METHOD | SOLIDS VOLUME METHOD | SOLIDS VOLUME UPDATE | LAST IN-TANK PHOTO | LAST IN-TANK VIDEO | SEE FOOTNOTES FOR THESE CHANGES |
| | | | | | | | | TY TANK FARM STATUS | | | | | | | | | | |
| TY-101 | NCPLX | ASMD LKR | IS/IP/CCS | 118 | 0 | 0 | 0.0 | 8.2 | 0 | 0 | 72 | 46 | P | F | 06/30/99 | 08/22/89 | | |
| TY-102 | NCPLX | SOUND | IS/IP/CCS | 64 | 0 | 14 | 0.0 | 6.6 | 14 | 0 | 0 | 64 | P | FP | 06/28/82 | 07/07/87 | | |
| TY-103 | NCPLX | ASMD LKR | IS/IP/CCS | 162 | 0 | 5 | 0.0 | 11.5 | 5 | 0 | 162 | 0 | P | FP | 07/09/82 | 08/22/89 | | |
| TY-104 | NCPLX | ASMD LKR | IS/IP/CCS | 46 | 3 | 12 | 0.0 | 0.0 | 15 | 0 | 43 | 0 | P | FP | 06/27/90 | 11/03/87 | | |
| TY-105 | NCPLX | ASMD LKR | IS/IP/CCS | 231 | 0 | 0 | 0.0 | 3.6 | 0 | 0 | 231 | 0 | P | M | 04/28/82 | 09/07/89 | | |
| TY-106 | NCPLX | ASMD LKR | IS/IP/CCS | 21 | 0 | 0 | 0.0 | 0.0 | 0 | 0 | 21 | 0 | P | M | 06/30/99 | 08/22/89 | | |
| 6 SINGLE-SHELL TANKS | | | TOTALS: | 642 | 3 | 31 | 0.0 | 29.9 | 34 | 0 | 529 | 110 | | | | | | |
| | | | | | | | | U TANK FARM STATUS | | | | | | | | | | |
| U-101 | NCPLX | ASMD LKR | IS/IP | 25 | 3 | 0 | 0.0 | 0.0 | 3 | 0 | 22 | 0 | P | MP | 04/28/82 | 06/19/79 | | |
| U-102 | NCPLX | SOUND | /PI | 375 | 18 | 75 | 0.0 | 0.0 | 93 | 93 | 43 | 314 | P | MP | 12/31/98 | 06/08/89 | | |
| U-103 | NCPLX | SOUND | /PI | 440 | 0 | 166 | 11.1 | 63.4 | 166 | 155 | 12 | 428 | P | FP | 10/31/99 | 09/13/88 | | (I) |
| U-104 | NCPLX | ASMD LKR | IS/IP | 122 | 0 | 7 | 0.0 | 0.0 | 7 | 0 | 79 | 43 | P | MP | 06/30/99 | 08/10/89 | | |
| U-105 | NCPLX | SOUND | /PI | 392 | 11 | 173 | 26.5 | 26.5 | 184 | 178 | 32 | 349 | FM | PS | 12/31/98 | 07/07/88 | | (J) |
| U-106 | NCPLX | SOUND | /PI | 226 | 15 | 41 | 0.0 | 0.0 | 56 | 56 | 0 | 211 | F | PS | 12/31/98 | 07/07/88 | | |
| U-107 | DSSF | SOUND | /PI | 408 | 33 | 82 | 0.0 | 0.0 | 115 | 115 | 15 | 360 | F | S | 12/31/98 | 10/27/88 | | |
| U-108 | NCPLX | SOUND | /PI | 468 | 24 | 100 | 0.0 | 0.0 | 124 | 124 | 29 | 415 | F | S | 12/31/98 | 09/12/84 | | |
| U-109 | NCPLX | SOUND | /PI | 465 | 19 | 99 | 0.0 | 0.0 | 118 | 118 | 35 | 411 | F | F | 05/31/99 | 07/07/88 | | |
| U-110 | NCPLX | ASMD LKR | IS/PI | 186 | 0 | 25 | 0.0 | 0.0 | 25 | 19 | 186 | 0 | M | M | 12/30/84 | 12/11/84 | | |
| U-111 | DSSF | SOUND | /PI | 329 | 0 | 71 | 0.0 | 0.0 | 71 | 71 | 26 | 303 | PS | FPS | 12/31/98 | 06/23/88 | | |
| U-112 | NCPLX | ASMD LKR | IS/IP | 49 | 4 | 0 | 0.0 | 0.0 | 4 | 0 | 45 | 0 | P | MP | 02/10/84 | 08/03/89 | | |
| U-201 | NCPLX | SOUND | IS/IP | 5 | 1 | 0 | 0.0 | 0.0 | 1 | 0 | 4 | 0 | M | S | 08/15/79 | 08/08/89 | | |
| U-202 | NCPLX | SOUND | IS/IP | 5 | 1 | 0 | 0.0 | 0.0 | 1 | 0 | 4 | 0 | M | S | 08/15/79 | 08/08/89 | | |
| U-203 | NCPLX | SOUND | IS/IP | 3 | 1 | 0 | 0.0 | 0.0 | 1 | 0 | 2 | 0 | M | S | 08/15/79 | 06/13/89 | | |
| U-204 | NCPLX | SOUND | IS/IP | 3 | 1 | 0 | 0.0 | 0.0 | 1 | 0 | 2 | 0 | M | S | 08/15/79 | 06/13/89 | | |
| 16 SINGLE-SHELL TANKS | | | TOTALS: | 3501 | 131 | 839 | 37.6 | 89.9 | 970 | 929 | 536 | 2834 | | | | | | |
| GRAND TOTAL | | | | 33722 | 1563 | 3753 | 40.5 | 5011.0 | 5272 | 4289 | 11496 | 20663 | | | | | | |

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

December 31, 1999

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

**FOOTNOTES:**

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

The category "Interim Isolated" (II) was changed to "Intrusion Prevention" (IP) in June 1993. See section C. "Tank and Equipment Code and Status Definitions."

Stabilization information from WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision, or SST Stabilization or Cognizant Engineer

(a) SX-104 Following information from Cognizant Engineer

Being pumped directly to SY-102. Pumping was interrupted on July 27, 1999, by a leaking saltwell pump. This tank is being evaluated for interim stabilization based on equipment failure. Volumes reported are based on Best-Basis Inventory Control values and will be udated annually as pumping data accumulates.

Total Waste: 466.7 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 55.3 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 231.3 Kgal
Drainable Liquid Remaining: 55.3 Kgal
Pumpable Liquid Remaining: 44.3 Kgal
Sludge: 136.0 Kgal
Saltcake: 330.7 Kgal

The values for total waste and saltcake waste have been adjusted to reflect the removal of interstitial fluid thus far. Assuming the waste is still saltcake and with an LOW level of 75 inches, the apparent lower porosity lowers the estimate of DIL, DLR, and PLR.

(b) SX-106 Following information from Cognizant Engineer

Being pumped directly to SY-102. This tank is now being evaluated for interim stabilization.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 371 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 35.8 Kgal
Pumped this month: 0.2 Kgal
Total Pumped: 147.5 Kgal
Drainable Liquid Remaining: 35.8 Kgal
Pumpable Liquid Remaining: 27.1 Kgal
Sludge: 0.0 Kgal
Saltcake: 371.0 Kgal

Pumping during December 1999 required 1,1081 gal of dilution water and 1,440 gal of water for transfer line flushes; and a total of 864 gal of water was added by pump priming and equipment flushes, for a net removal of 254 gal of waste.

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

December 31, 1999

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

**FOOTNOTES:**

(c) T-104 Following information from Cognizant Engineer

Pumping began March 24, 1996.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 326.0 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 28.7 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 149.5 Kgal
Drainable Liquid Remaining: 28.7 Kgal
Pumpable Liquid Remaining: 22.7 Kgal
Sludge: 326.0 Kgal
Saltcake: 0.0 Kgal

The tank is currently undergoing stabilization evaluation and pumping operations are not expected to resume. The in-tank video was taken October 7, 1999.

(d) T-110 Following information from Cognizant Engineer

Pumping began May 21, 1997.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 347 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 31.0 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 50.3 Kgal
Drainable Liquid Remaining: 31.0 Kgal
Pumpable Liquid Remaining: 25.0 Kgal
Sludge: 347.0 Kgal
Saltcake: 0.0 Kgal

This tank is currently undergoing stabilization evaluation and pumping operations are not expected to resume. The in-tank video was taken October 7, 1999.

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

December 31, 1999

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

**FOOTNOTES:**

(e) S-102 Following information from Cognizant Engineer

Pumping commenced March 18, 1999. The waste is pumped directly to SY-102. Pumping stopped on November 17, 1999, when problems with the pump developed. Pump repair/replacement is expected to begin in January 2000.

Total Waste: 506.2 K gal
Supernate: 0.0 Kgal
Drainable Interstitial: 212.0 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 42.8 Kgal
Drainable Liquid Remaining: 212.0 Kgal
Pumpable Liquid Remaining: 206.0 Kgal
Sludge: 105.0 Kgal
Saltcake: 401.2 Kgal

(f) S-106 Following information from Cognizant Engineer

Pumping commenced on April 15, 1999. The waste is pumped directly to SY-102.

Total Waste: 328.2 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 25.2 Kgal
Pumped this Month: 1.7 Kgal
Total Pumped: 203.3 Kgal
Drainable Liquid Remaining: 25.2 Kgal
Pumpable Liquid Remaing: 3.2 Kgal
Sludge: 0.0 Kgal
Saltcake: 328.2 Kgal

In December 1999, a total of 2,152 gal of fluid was removed from the tank and a total of 397 gal of water was added by pump priming and equipment flushes, for a net removal of 1,755 gal of tank waste. In addition, 670 gal of water were used for transfer line flushes.

The total waste volume has been revised to reflect the removal of 97,800 gal of interstitial fluid from the saltcake. Porosity is approximately 28%.

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

December 31, 1999

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

**FOOTNOTES:**

(g) C-106 Following information from WRSS Design Authority

Sluicing in this tank commenced November 18, 1998. Final volumes after sluicing completed:

Total Waste: 54.0 Kgal
Supernate: 48.0 Kgal
Drainable Interstitial Liquid: 0.0 Kgal
Drainable Liquid Remaining: 48.0 Kgal
Pumpable Liquid Remaining: 42.0 Kgal
Sludge: 6.0 Kgal
Saltcake: 0.0 Kgal

Although sluicing was considered complete in September 1999 (and DOE-RQ was requested to remove this tank from the high heat load list), in October, 0.14 inches of sludge were removed, with a cumulative total of 67.75 inches removed since sluicing began in November 1998.
Final volumes per HNF-5267, "Waste Retrieval Sluicing System Campaign Number 3 Solids Volume Transferred Calculation," Rev 2, dated November 17, 1999

(h) S-103 Following information from Cognizant Engineer

Pumping commenced on June 4, 1999. Waste is pumped directly to SY-102.

Total Waste: 231 Kgal
Supernate: 0.0 Kgal (no good estimate, but supernate still being pumped)
Drainable Interstitial: 105.0 Kgal
Pumped this Month: 1.0 Kgal
Total Pumped: 23.6 Kgal
Drainable Liquid Remaing: 105.0 Kgal
Pumpable Liquid Remaing: 93.0 Kgal
Sludge: 9.0 Kgal
Saltcake: 222.0 Kgal

In December 1999, a total of 1,790 gal of fluid was removed, and a total of 812 gal of water was added by pump priming and equipment flushes, for a net removal of 978 gal of tank waste. Transfer line flushes used 948 gal of water.

An in-tank video will be taken in January 2000 and should establish if all of the supernatant has been removed.

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

December 31, 1999

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

**FOOTNOTES:**

(i) U-103 Following information from Cognizant Engineer.

Saltwell pumping commenced September 26, 1999. The waste is pumped directly to SY-102.

Total Waste: 440.0 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial Liquid: 165.6 Kgal
Pumped this month: 11.1 Kgal
Total Pumped: 63.4 Kgal
Drainable Liquid Remaining: 165.6 Kgal
Pumpable Liquid Remaining: 154.6 Kgal
Sludge: 12.0 Kgal
Saltcake: 428.0 Kgal

In December 1999, a total of 13,686 of fluid was removed and 2,728 gal of water added for priming/flushes, for a net removal of 11,140 gal of waste. In addition, 13,853 gal of water were used as dilution and 3,257 gal of water were used for transfer line flushes.

(j) U-105 Following information from Cognizant Engineer.

Saltwell pumping began December 10, 1999. The waste is pumped directly to SY-102.

Total Waste: 391.5 Kgal
Supernate: 10.5 Kgal
Drainable Interstitial Liquid: 173.0 Kgal
Pumped this month: 26.5 Kgal
Total Pumped: 26.5 Kgal
Drainable Liquid Remaining: 183.5 Kgal
Pumpable Liquid Remaining: 177.5 Kgal
Sludge: 32 Kgal
Saltcake: 349 Kgal

In December 1999, a total of 26,793 gal of fluid was removed, and a total of 331 gal of water was added for pump priming/equipment flushes which includes the 172 gal of water for the saltwell screen installation, for a net removal of 26,462 gal of waste. Also, 26,139 gal of water were used as dilution and 1,112 gal of water were used for tansfer line flushes. Neutron level and ENRAF level continue to drop together which indicates supernate was pumped throughout the month. The level drop would suggest that there is some solid surface being exposed as the pumping progresses.

# APPENDIX F

# PERFORMANCE SUMMARY

# TABLE F-1. SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANKS

**SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANK (DST) SYSTEM FOR DECEMBER 1999:**
**ALL VOLUMES IN KGALS**

- The DST system received waste transfers/additions from SST Stabilization (West Area SWL) Tank Farms and Tank 241-SY-101 remediation in December.
- There was a net change of +231,000 gallons in the DST system for December 1999.
- The total DST inventory as of December 31, 1999 was 19,363 Kgals.
- There was no Saltwell Liquid (SWL) pumped to the East Area DSTs in December.
- There was ~95 Kgals of Saltwell Liquid (SWL) pumped to the West Area DSTs (102-SY) in December.
- The SWL numbers are preliminary and are subject to change once cognizant Engineers do a validation, the volumes reported contain actual waste volume plus any water added for dilution and transfer line flushes.
- Remediation of Tank 241-SY-101 commenced in December. ~86 Kgals of Tank 101-SY waste was transferred to Tank 102-SY, ~84 Kgals of water was used for dilution of Tank 101-SY waste and was received into Tank 102-SY. Tank 101-SY was backfilled with ~ 63 Kgals of water.

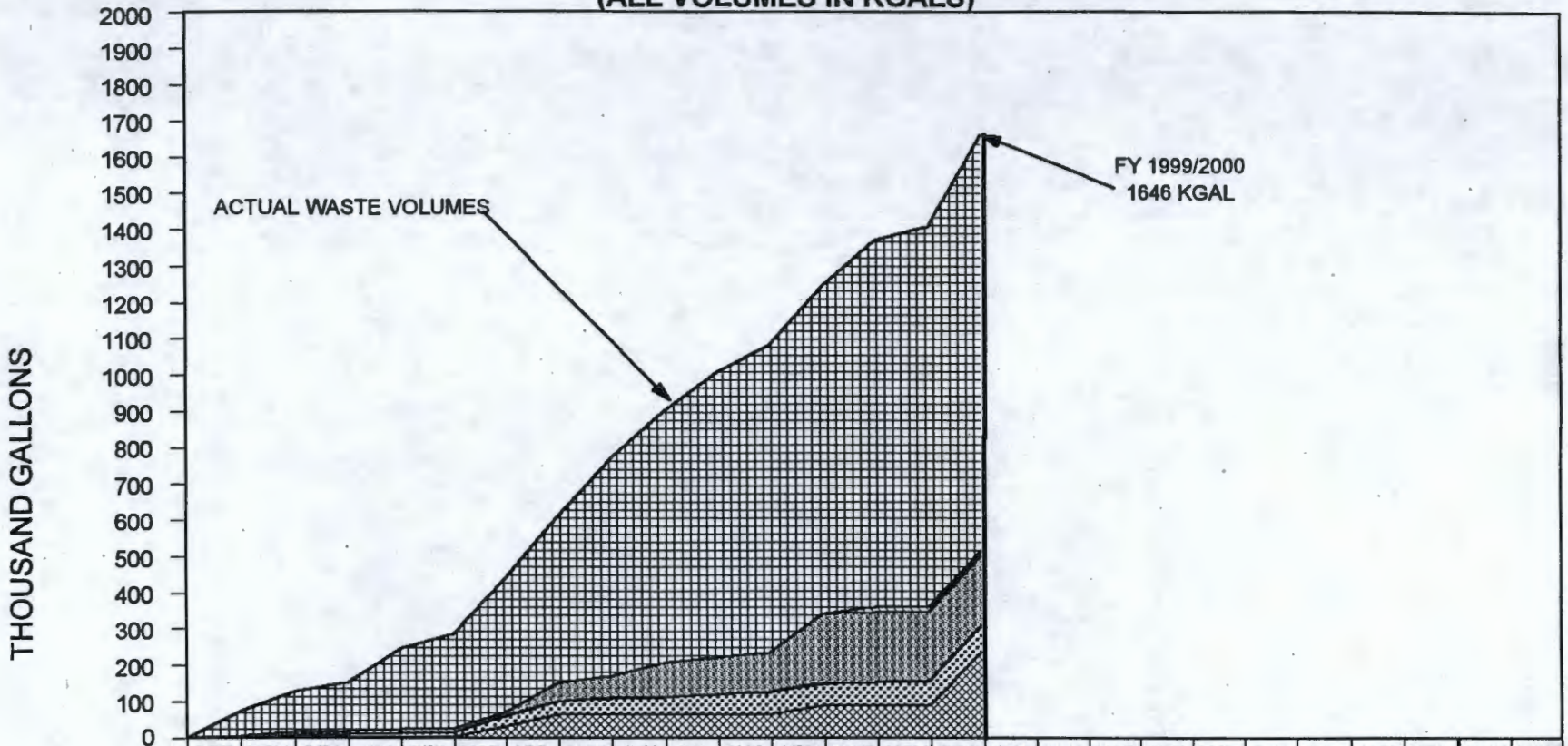
| DECEMBER 1999 DST WASTE RECEIPTS | | | | | |
|---|---|---|---|---|---|
| FACILITY GENERATIONS | | OTHER GAINS ASSOCIATED WITH | | OTHER LOSSES ASSOCIATED WITH | |
| SWL (West) | +95 Kgal (2SY) | SLURRY | +3 Kgal | SLURRY | -18 Kgal (*) |
| Tank Farms | +3 Kgal (1AZ) | CONDENSATE | +0 Kgal | CONDENSATE | -5 Kgal |
| 101-SY remediation | +147 Kgal (1SY, 2SY) | INSTRUMENTATION | +7 Kgal | INSTRUMENTATION | -0 Kgal |
| TOTAL | +245 Kgal | UNKNOWN | +3 Kgal | UNKNOWN | -4 Kgal |
| | | TOTAL | +13 Kgal | TOTAL | -27 Kgal |

(*) negative "SLURRY" includes volume of gas released during Tank 241-SY-101 remediation.

| | ACTUAL DST WASTE RECEIPTS | PROJECTED DST WASTE RECEIPTS | MISC. DST CHANGES (+/-) | WVR | NET DST CHANGE | TOTAL DST VOLUME |
|---|---|---|---|---|---|---|
| OCT99 | 124 | 127 | -19 | 0 | 105 | 19098 |
| NOV99 | 39 | 209 | -5 | 0 | 34 | 19132 |
| DEC99 | 245 | 156 | -14 | 0 | 231 | 19363 |
| JAN00 | | 361 | | 0 | | |
| FEB00 | | 137 | | 0 | | |
| MAR00 | | 95 | | 0 | | |
| APR00 | | 124 | | -600 | | |
| MAY00 | | 135 | | 0 | | |
| JUN00 | | 139 | | 0 | | |
| JUL00 | | 225 | | 0 | | |
| AUG00 | | 201 | | 0 | | |
| SEP00 | | 186 | | 0 | | |

NOTE: The "PROJECTED DST WASTE RECEIPTS" and "WVR" numbers were updated in October 1999, as supplied by cognizant engineers.

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




| | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FY 1999 | | | | | | | | | | | | FY 2000 | | | | | | | | | | | | | |
| SWL WEST | 69 | 42 | 22 | 84 | 40 | 108 | 89 | 141 | 92 | 90 | 62 | 55 | 106 | 36 | 96 | | | | | | | | | | | |
| SWL EAST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 14 | 0 | 0 | | | | | | | | | | | |
| 100 AREA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| PFP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| 106-C | 0 | 9 | 2 | 0 | 0 | 0 | 39 | 9 | 34 | 7 | 6 | 74 | 0 | 0 | 0 | | | | | | | | | | | |
| 3/400 AREA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| S PLANT | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| T PLANT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| TANK FARMS | 4 | 1 | 2 | 5 | 0 | 16 | 4 | 6 | 5 | 8 | 7 | 0 | 4 | 3 | 6 | | | | | | | | | | | |
| B PLANT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| WESF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| OTHER | 0 | 0 | 0 | 0 | 0 | 26 | 36 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 146 | | | | | | | | | | | |

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

FACILPAC

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

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# APPENDIX G

# MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

# TABLE G-1. EAST AND WEST AREA MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

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

December 31, 1999

| FACILITY | LOCATION | PURPOSE (receives waste from:) | (Gallons) | MONITORED BY | REMARKS |
|---|---|---|---|---|---|
| **EAST AREA** | | | | | |
| 241-A-302-A | A Farm | A-151 DB | 944 | SACS/ENRAF/Manually | Foamed over Catch Tank pump pit & div. box to prevent intrusion |
| 241-ER-311 | B Plant | ER-151, ER-152 DB | 7554 | SACS/ENRAF/Manually | |
| 241-AX-152 | AX Farm | AX-152 DB | 0 | SACS/MT | Pumped 11/98 |
| 241-AZ-151 | AZ Farm | AZ-702 condensate | 6478 | SACS/FIC/Manually | Volume changes daily - pumped to AZ-102 as needed |
| 241-AZ-154 | AZ Farm | | 25 | SACS/MT | |
| 244-BX-TK/SMP | BX Complex | DCRT - Receives from several farms | 14533 | SACS/MT | Using Manual Tape for tank/sump, pumped 10/16/99 to 66.0 inches. |
| 244-A-TK/SMP | A Complex | DCRT - Receives from several farms | 2904 | MCS/SACS/WTF | WTF- pumped 3/99 to AP-108 |
| A-350 | A Farm | Collects drainage | 283 | MCS/SACS/WTF | WTF (uncorrected) pumped as needed |
| AR-204 | AY Farm | Tanker trucks from various facilities | 480 | DIP TUBE | Alarms on SACS-pumped to AP-108, 7/99 |
| A-417 | A Farm | | 11757 | SACS/WTF | WTF (uncorrected) pumped 4/98 |
| CR-003-TK/SUMP | C Farm | DCRT | 3461 | MT/ZIP CORD | Zip cord in sump O/S 3/11/96, water intrusion, 1/98 |
| **WEST AREA** | | | | | |
| 241-TX-302-C | TX Farm | TX-154 DB | 162 | SACS/ENRAF/Manually | |
| 241-U-301-B | U Farm | U-151, U-152, U-153, U-252 DB | 8083 | SACS/ENRAF/Manually | Returned to service 12/30/93 |
| 241-UX-302-A | U Plant | UX-154 DB | 2110 | SACS/ENRAF/Manually | |
| 241-S-304 | S Farm | S-151 DB | 130 | SACS/ENRAF/Manually | Replaced S-302-A, 10/91; ENRAF installed 7/98 Sump not alarming. |
| 244-S-TK/SMP | S Farm | From original tanks to SY-102 | 7622 | SACS/Manually | WTF (uncorrected) |
| 244-TX-TK/SMP | TX Farm | From original tanks to SY-102 | 15568 | SACS/Manually | MT |
| Vent Station Catch Tank | | Cross Country Transfer Line | 349 | SACS/Manually | MT |

Total Active Facilities 18

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

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

INACTIVE - no longer receiving waste transfers

December 31, 1999

| FACILITY | LOCATION | RECEIVED WASTE FROM: | (Gallons) | MONITORED BY | REMARKS |
|---|---|---|---|---|---|
| 216-BY-201 | BY Farm | TBP Waste Line | Unknown | NM | (216-BY) |
| 241-A-302-B | A Farm | A-152 DB | 5720 | SACS/MT | Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion |
| 241-AX-151 | N of PUREX | PUREX | Unknown | NM | Isolated 1985 |
| 241-B-301-B | B Farm | B-151, B-152, B-153, B-252 DB | 22250 | NM | Isolated 1985 (1) |
| 241-B-302-B | B Farm | B-154 DB | 4930 | NM | Isolated 1985 (1) |
| 241-BX-302-A | BX Farm | BR-152, BX-153, BXR-152, BYR-152 DB | 840 | NM | Isolated 1985 (1) |
| 241-BX-302-B | BX Farm | BX-154 DB | 1040 | NM | Isolated 1985 (1) |
| 241-BX-302-C | BX Farm | BX-155 DB | 870 | NM | Isolated 1985 (1) |
| 241-C-301-C | C Farm | C-151, C-152, C-153, C-252 DB | 10470 | NM | Isolated 1985 (1) |
| 241-CX-70 | Hot Semi- | Transfer lines | Unknown | NM | Isolated, Decommission Project, |
| 241-CX-72 | Works | Transfer lines | 650 | NM | See Dwg H-2-95-501, 2/5/87 |
| 241-ER-311A | SW B Plant | ER-151 DB | Unknown | NM | Isolated |
| 244-AR VAULT | A Complex | Between farms & B-Plant | Unknown | NM | Not actively being used. Systems activated for final clean-out. |
| 244-BXR-TK/SMP-001 | BX Farm | Transfer lines | 7200 | NM | Interim Stabilization 1985 (1) |
| 244-BXR-TK/SMP-002 | BX Farm | Transfer lines | 2180 | NM | Interim Stabilization 1985 (1) |
| 244-BXR-TK/SMP-003 | BX Farm | Transfer lines | 1810 | NM | Interim Stabilization 1985 (1) |
| 244-BXR-TK/SMP-011 | BX Farm | Transfer lines | 7100 | NM | Interim Stabilization 1985 (1) |
| 361-B-TANK | B Plant | Drainage from B-Plant | Unknown | NM | Interim Stabilization 1985 (1) |
| | | Total East Area inactive facilities | 18 | | |

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

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

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

INACTIVE - no longer receiving waste transfers

December 31, 1999

| FACILITY | LOCATION | RECEIVED WASTE FROM: | (Gallons) | MONITORED BY | REMARKS |
|---|---|---|---|---|---|
| 216-TY-201 | E. of TY Farm | Supernate from T-112 | Unknown | NM | Isolated |
| 231-W-151-001 | N. of Z Plant | 231-Z Floor drains | Unknown | NM | Inactive, last data 1974 |
| 231-W-151-002 | N. of Z Plant | 231-Z Floor drains | Unknown | NM | Inactive, last data 1974 |
| 240-S-302 | S Farm | 240-S-151 DB | 8456 | SACS/ENRAF | Assumed Leaker EPDA 85-04 |
| 241-S-302-A | S Farm | 241-S-151 DB | 0 | | Assumed Leaker TF-EFS-90-042 |
| | | Partially filled with grout 2/91, determined still assumed leaker after leak test. Manual FIC readings are unobtainable due to dry grouted surface. CASS monitoring system retired 2/23/99; intrusion readings discontinued. S-304 replaced S-302-A | | | |
| 241-S-302-B | S Farm | S Encasements | Unknown | NM | Isolated 1985 (1) |
| 241-SX-302 | SX Farm | SX-151 DB, 151 TB | Unknown | NM | Isolated 1987 |
| 241-SX-304 | SX Farm | SX-152 Transfer Box, SX-151 DB | Unknown | NM | Isolated 1985 (1) |
| 241-T-301 | T Farm | DB T-151, -151, -153, -252 | Unknown | NM | Isolated 1985 (241-T-301B) |
| 241-TX-302 | TX Farm | TX-153 DB | Unknown | NM | Isolated 1985 (1) |
| 241-TX-302-X-B | TX Farm | TX Encasements | Unknown | NM | Isolated 1985 (1) |
| 241-TX-302-B | TX Farm | TX-155 DB | 1600 | SACS/MT | New MT installed 7/16/93 |
| 241-TX-302-B(R) | E. of TX Farm | TX-155 DB | Unknown | NM | Isolated |
| 241-TY-302-A | TY Farm | TX-153 DB | Unknown | NM | Isolated 1985 (1) |
| 241-TY-302-B | TY Farm | TY Encasements | Unknown | NM | Isolated 1985 (1) |
| 241-Z-8 | E. of Z Plant | Recuplex waste | Unknown | NM | Isolated, 1974, 1975 |
| 242-T-135 | T Evaporator | T Evaporator | Unknown | NM | Isolated |
| 242-TA-R1 | T Evaporator | Z Plant waste | Unknown | NM | Isolated |
| 243-S-TK-1 | N. of S Farm | Pers. Decon. Facility | Unknown | NM | Isolated |
| 244-U-TK/SMP | U Farm | DCRT - Receives from several farms | Unknown | NM | Not yet in use |
| 244-TXR VAULT | TX Farm | Transfer lines | Unknown | NM | Interim Stabilized, MT removed 1984 (1) |
| 244-TXR-TK/SMP-001 | TX Farm | Transfer lines | Unknown | NM | Interim Stabilized, MT removed 1984 (1) |
| 244-TXR-TK/SMP-002 | TX Farm | Transfer lines | Unknown | NM | Interim Stabilized, MT removed 1984 (1) |
| 244-TXR-TK/SMP-003 | TX Farm | Transfer lines | Unknown | NM | Interim Stabilized, MT removed 1984 (1) |
| 270-W | SE of U Plant | Condensate from U-221 | Unknown | NM | Isolated 1970 |
| 361-T-TANK | T Plant | Drainage from T-Plant | Unknown | NM | Isolated 1985 (1) |
| 361-U-TANK | U Plant | Drainage from U-Plant | Unknown | NM | Interim Stabilzed, MT removed 1984 (1) |

**Total West Area inactive facilities 27**

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

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

# APPENDIX H

# LEAK VOLUME ESTIMATES

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

December 31, 1999

| Tank Number | Date Declared Confirmed or Assumed Leaker (3) | Volume Gallons (2) | Associated KiloCuries 137 cs (10) | Interim Stabilized Date (11) | Leak Estimate Updated | Leak Estimate Reference |
|---|---|---|---|---|---|---|
| 241-A-103 | 1987 | 5500 (8) | | 06/88 | 1987 | (j) |
| 241-A-104 | 1975 | 500 to 2500 | 0.8 to 1.8 (q) | 09/78 | 1983 | (a)(q) |
| 241-A-105 (1) | 1963 | 10000 to 277000 | 85 to 760 (b) | 07/79 | 1991 | (b)(c) |
| 241-AX-102 | 1988 | 3000 (8) | | 09/88 | 1989 | (h) |
| 241-AX-104 | 1977 | -- (6) | | 08/81 | 1989 | (g) |
| 241-B-101 | 1974 | -- (6) | | 03/81 | 1989 | (g) |
| 241-B-103 | 1978 | -- (6) | | 02/85 | 1989 | (g) |
| 241-B-105 | 1978 | -- (6) | | 12/84 | 1989 | (g) |
| 241-B-107 | 1980 | 8000 (8) | | 03/85 | 1986 | (d)(f) |
| 241-B-110 | 1981 | 10000 (8) | | 03/85 | 1986 | (d) |
| 241-B-111 | 1978 | -- (6) | | 06/85 | 1989 | (g) |
| 241-B-112 | 1978 | 2000 | | 05/85 | 1989 | (g) |
| 241-B-201 | 1980 | 1200 (8) | | 08/81 | 1984 | (e)(f) |
| 241-B-203 | 1983 | 300 (8) | | 06/84 | 1986 | (d) |
| 241-B-204 | 1984 | 400 (8) | | 06/84 | 1989 | (g) |
| 241-BX-101 | 1972 | -- (6) | | 09/78 | 1989 | (g) |
| 241-BX-102 | 1971 | 70000 | 50 (l) | 11/78 | 1986 | (d) |
| 241-BX-108 | 1974 | 2500 | 0.5 (l) | 07/79 | 1986 | (d) |
| 241-BX-110 | 1976 | -- (6) | | 08/85 | 1989 | (g) |
| 241-BX-111 | 1984 (13) | -- (6) | | 03/95 | 1993 | (g) |
| 241-BY-103 | 1973 | <5000 | | 11/97 | 1983 | (a) |
| 241-BY-105 | 1984 | -- (6) | | N/A | 1989 | (g) |
| 241-BY-106 | 1984 | -- (6) | | N/A | 1989 | (g) |
| 241-BY-107 | 1984 | 15100 (8) | | 07/79 | 1989 | (g) |
| 241-BY-108 | 1972 | <5000 | | 02/85 | 1983 | (a) |
| 241-C-101 | 1980 | 20000 (8)(10) | | 11/83 | 1986 | (d) |
| 241-C-110 | 1984 | 2000 | | 05/95 | 1989 | (g) |
| 241-C-111 | 1968 | 5500 (8) | | 03/84 | 1989 | (g) |
| 241-C-201 (4) | 1988 | 550 | | 03/82 | 1987 | (i) |
| 241-C-202 (4) | 1988 | 450 | | 08/81 | 1987 | (i) |
| 241-C-203 | 1984 | 400 (8) | | 03/82 | 1986 | (d) |
| 241-C-204 (4) | 1988 | 350 | | 09/82 | 1987 | (i) |
| 241-S-104 | 1968 | 24000 (8) | | 12/84 | 1989 | (g) |
| 241-SX-104 | 1988 | 6000 (8) | | N/A | 1988 | (k) |
| 241-SX-107 | 1964 | <5000 | | 10/79 | 1983 | (a) |
| 241-SX-108 (5)(14) | 1962 | 2400 to 35000 | 17 to 140 (m)(q)(t) | 08/79 | 1991 | (m)(q)(t) |
| 241-SX-109 (5)(14) | 1965 | <10000 | <40 (n)(t) | 05/81 | 1992 | (n)(t) |
| 241-SX-110 | 1976 | 5500 (8) | | 08/79 | 1989 | (g) |
| 241-SX-111 (14) | 1974 | 500 to 2000 | 0.6 to 2.4 (l)(q)(t) | 07/79 | 1986 | (d)(q)(t) |
| 241-SX-112 (14) | 1969 | 30000 | 40 (l)(t) | 07/79 | 1986 | (d)(t) |
| 241-SX-113 | 1962 | 15000 | 8 (l) | 11/78 | 1986 | (d) |
| 241-SX-114 | 1972 | -- (6) | | 07/79 | 1989 | (g) |
| 241-SX-115 | 1965 | 50000 | 21 (o) | 09/78 | 1992 | (o) |
| 241-T-101 | 1992 | 7500 (8) | | 04/93 | 1992 | (p) |
| 241-T-103 | 1974 | <1000 (8) | | 11/83 | 1989 | (g) |
| 241-T-106 | 1973 | 115000 (8) | 40 (l) | 08/81 | 1986 | (d) |
| 241-T-107 | 1984 | -- (6) | | 05/96 | 1989 | (g) |
| 241-T-108 | 1974 | <1000 (8) | | 11/78 | 1980 | (f) |
| 241-T-109 | 1974 | <1000 (8) | | 12/84 | 1989 | (g) |
| 241-T-111 | 1979, 1994 (12) | <1000 (8) | | 02/95 | 1994 | (f)(r) |
| 241-TX-105 | 1977 | -- (6) | | 04/83 | 1989 | (g) |
| 241-TX-107 (5) | 1984 | 2500 | | 10/79 | 1986 | (d) |
| 241-TX-110 | 1977 | -- (6) | | 04/83 | 1989 | (g) |
| 241-TX-113 | 1974 | -- (6) | | 04/83 | 1989 | (g) |
| 241-TX-114 | 1974 | -- (6) | | 04/83 | 1989 | (g) |
| 241-TX-115 | 1977 | -- (6) | | 09/83 | 1989 | (g) |
| 241-TX-116 | 1977 | -- (6) | | 04/83 | 1989 | (g) |
| 241-TX-117 | 1977 | -- (6) | | 03/83 | 1989 | (g) |
| 241-TY-101 | 1973 | <1000 (8) | | 04/83 | 1980 | (f) |
| 241-TY-103 | 1973 | 3000 | 0.7 (l) | 02/83 | 1986 | (d) |
| 241-TY-104 | 1981 | 1400 (8) | | 11/83 | 1986 | (d) |
| 241-TY-105 | 1960 | 35000 | 4 (l) | 02/83 | 1986 | (d) |
| 241-TY-106 | 1959 | 20000 | 2 (l) | 11/78 | 1986 | (d) |
| 241-U-101 | 1959 | 30000 | 20 (l) | 09/79 | 1986 | (d) |
| 241-U-104 | 1961 | 55000 | 0.09 (l) | 10/78 | 1986 | (d) |
| 241-U-110 | 1975 | 5000 to 8100 (8) | 0.05 (q) | 12/84 | 1986 | (d)(q) |
| 241-U-112 | 1980 | 8500 (8) | | 09/79 | 1986 | (d) |
| 67 Tanks | | <750,000 - 1,050,000 (7) | | | | |

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

# TABLE H-1. SINGLE-SHELL LEAK VOLUME ESTIMATES
(Sheet 2 of 5)

## Footnotes:

(1) Current estimates [see reference(b)] are that 610 Kgallons of cooling water was added to Tank 241-A-105 from November 1970 to December 1978 to aid in evaporative cooling. In accordance with Dangerous Waste Regulations [Washington Administrative Code 173-303-070 (2)(a)(ii), as amended, Washington State Department of Ecology, 1990, Olympia, Washington], any of this cooling water that has been added and subsequently leaked from the tank must be classified as a waste and should be included in the total leak volume. In August 1991, the leak volume estimate for this tank was updated in accordance with the WAC regulations. Previous estimates excluded the cooling water leaks from the total leak volume estimates because the waste content (concentration) in the cooling water which leaked should be much less than the original liquid waste in the tank (the sludge is relatively insoluble). The total leak volume estimate in this report (10 Kgallons to 277 Kgallons) is based on the following (see References):

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

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

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

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

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

(2) These leak volume estimates do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.

(3) In many cases, a leak was suspected long before it was identified or confirmed. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date of 1961. Using present standards, Tank 241-U-104 would have been declared an assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline" and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.

# TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 3 of 5)

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

(5) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.

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

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

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

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

(10) Tank 241-C-101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a "minimum heel" in December 1969. In 1970, the tank was classified as a "questionable integrity" tank. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a "confirmed leaker" in January 1980. See references (q) and (s); refer to reference (s) for information on the potential for there to have been leaks from other C-farm tanks (specifically, C-102, C-103, and C-109).

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

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

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

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

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

References:


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

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

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

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

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

(f) Catlin, R. J., March 1980, *Assessment of the Surveillance Program of the High-Level Waste Storage Tanks at Hanford*, Hanford Engineering Development Laboratory, Richland, Washington.

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

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

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

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

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

(l) ERDA, 1975, *Final Environmental Statement Waste Management Operations, Hanford Reservation, Richland, Washington*, ERDA-1538, 2 vols., U.S. Energy Research and Development Administration, Washington, D.C.

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

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

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

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

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

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

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

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

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

# APPENDIX I

## INTERIM STABILIZATION STATUS
## CONTROLLED, CLEAN, AND STABLE STATUS

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

December 31, 1999

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

LEGEND:

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

| | |
|---|---|
| Interim Stabilized Tanks | 120 |
| Not Yet Interim Stabilized | 29 |
| Total Single-Shell Tanks | 149 |

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

Footnotes:

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

(2) Although tanks, BX-103, T-102 and T-112 met the interim stabilization administrative procedure at the time they were stabilized, they no longer meet the recently updated administrative procedure. The tanks were re-evaluated in 1996 and memo 9654456, J. H. Wicks to Dr. J. K. McClusky, DOE-RL, dated September 1996, was issued which recommended that no further pumping be performed on these tanks, based on an economic evaluation.

An intrusion investigation was completed on tank B-202 in 1996 because of a detected increase in surface level. As a result of this investigation, it was determined that this tank no longer meets the recently updated administrative procedure for 200 series tanks.

(3) Original Interim Stabilization data are missing on four tanks: B-201, T-102, T-112, and T-201.

(4) Tank 241-T-104 was Interim Stabilized on November 19, 1999. In-tank video taken October 7, 1999, shows the surface is clearly sludge-type waste with no saltcake present. No visible water on surface. Waste surface appears level across tank with numerous cracks. There is a minimal collapsed area around the saltwell screen, with no visible bottom.

# TABLE I-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES

November 30, 1999
(sheet 1 of 2)

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

CONSENT DECREE
Attachments A-1 and A-2

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

| Tank Designation | | Pumping Initiated | Projected Pumping Completion Date | **Interim Stabilization Date** |
|---|---|---|---|---|
| 1. | T-104 | Already initiated | May 30, 1999 | **December 29, 1999** |
| 2. | T-110 | Already initiated | May 30, 1999 | |
| 3. | SX-104 | Already initiated | December 30, 2000 | |
| 4. | SX-106 | Already initiated | December 30, 2000 | |
| 5. | S-102 | Already initiated | March 30, 2001 | |
| 6. | S-106 | Already initiated | March 30, 2001 | |
| 7. | S-103 | Already initiated | March 30, 2001 | |
| 8. | U-103* | September 26, 1999 (ahead of schedule) | April 15, 2002 | |
| 9. | U-105* | **December 10, 1999 (ahead of schedule)** | April 15, 2002 | |
| 10. | U-102* | June 15, 2000 | April 15, 2002 | |
| 11. | U-109* | June 15, 2000 | April 15, 2002 | |
| 12. | A-101 | October 30, 2000 | September 30, 2003 | |
| 13. | AX-101 | October 30, 2000 | September 30, 2003 | |
| 14. | SX-105 | March 15, 2001 | February 28, 2003 | |
| 15. | SX-103 | March 15, 2001 | February 28, 2003 | |
| 16. | SX-101 | March 15, 2001 | February 28, 2003 | |
| 17. | U-106* | March 15, 2001 | February 28, 2003 | |
| 18. | BY-106 | July 15, 2001 | June 30, 2003 | |
| 19. | BY-105 | July 15, 2001 | June 30, 2003 | |
| 20. | U-108 | December 30, 2001 | August 30, 2003 | |
| 21. | U-107 | December 30, 2001 | August 30, 2003 | |
| 22. | S-111 | December 30, 2001 | August 30, 2003 | |
| 23. | SX-102 | December 30, 2001 | August 30, 2003 | |
| 24. | U-111 | November 30, 2002 | September 30, 2003 | |
| 25. | S-109 | November 30, 2002 | September 30, 2003 | |
| 26. | S-112 | November 30, 2002 | September 30, 2003 | |
| 27. | S-101 | November 30, 2002 | September 30, 2003 | |
| 28. | S-107 | November 30, 2002 | September 30, 2003 | |
| 29. | C-103 | No later than December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from Tank C-103 together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree. | | |

* Tanks containing organic complexants.

# TABLE I-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES
(sheet 2 of 2)

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

Percentage of Pumpable Liquid Remaining to be Removed.

| | |
|---|---|
| 93% of Total Liquid | 9/30/1999 |
| 38% of Organic Complexed Pumpable Liquids | 9/30/2000 |
| 5% of Organic Complexed Pumpable Liquids | 9/30/2001 |
| 18% of Total Liquid | 9/30/2002 |
| 2% of Total Liquid | 9/30/2003 |

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

# TABLE I-3. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

December 31, 1999

## Partial Interim Isolated (PI)

| EAST AREA | |
|---|---|
| A-101 | |
| A-102 | |
| AX-101 | |
| BY-102 | |
| BY-103 | |
| BY-105 | |
| BY-106 | |
| BY-109 | |
| C-103 | |
| C-105 | |
| C-106 | |
| East Area | 11 |

| WEST AREA | |
|---|---|
| S-101 | |
| S-102 | |
| S-103 | |
| S-106 | |
| S-107 | |
| S-108 | |
| S-109 | |
| S-110 | |
| S-111 | |
| S-112 | |
| SX-101 | |
| SX-102 | |
| SX-103 | |
| SX-104 | |
| SX-105 | |
| SX-106 | |
| T-101 | |
| T-104 | |
| T-107 | |
| T-110 | |
| T-111 | |
| U-102 | |
| U-103 | |
| U-105 | |
| U-106 | |
| U-107 | |
| U-108 | |
| U-109 | |
| U-110 | |
| U-111 | |
| West Area | 29 |
| Total | 40 |

## Intrusion Prevention Completed (IP)

| EAST AREA | |
|---|---|
| A-103 | |
| A-104 | |
| A-105 | |
| A-106 | |
| AX-102 | |
| AX-103 | |
| AX-104 | |
| B-FARM - 16 tanks | |
| BX-FARM - 12 tanks | |
| BY-101 | |
| BY-104 | |
| BY-107 | |
| BY-108 | |
| BY-110 | |
| BY-111 | |
| BY-112 | |
| C-101 | |
| C-102 | |
| C-104 | |
| C-107 | |
| C-108 | |
| C-109 | |
| C-110 | |
| C-111 | |
| C-112 | |
| C-201 | |
| C-202 | |
| C-203 | |
| C-204 | |
| East Area | 55 |

| WEST AREA | |
|---|---|
| S-104 | |
| S-105 | |
| SX-107 | |
| SX-108 | |
| SX-109 | |
| SX-110 | |
| SX-111 | |
| SX-112 | |
| SX-113 | |
| SX-114 | |
| SX-115 | |
| T-102 | |
| T-103 | |
| T-105 | |
| T-106 | |
| T-108 | |
| T-109 | |
| T-112 | |
| T-201 | |
| T-202 | |
| T-203 | |
| T-204 | |
| TX-FARM - 18 tanks | |
| TY-FARM - 6 tanks | |
| U-101 | |
| U-104 | |
| U-112 | |
| U-102 | |
| U-202 | |
| U-203 | |
| U-204 | |
| West Area | 53 |
| Total | 108 |

## Controlled, Clean, and Stable (CCS)

| EAST AREA | |
|---|---|
| BX-FARM - 12 Tanks | |
| East Area | 12 |

| WEST AREA | |
|---|---|
| TX-FARM - 18 tanks | |
| TY FARM - 6 tanks | |
| West Area | 24 |
| Total | 36 |

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

## Interim Stabilized (IS)

| EAST AREA | |
|---|---|
| A-102 | |
| A-103 | |
| A-104 | |
| A-105 | |
| A-106 | |
| AX-102 | |
| AX-103 | |
| AX-104 | |
| B-FARM - 16 tanks | |
| BX-FARM - 12 tanks | |
| BY-101 | |
| BY-102 | |
| BY-103 | |
| BY-104 | |
| BY-107 | |
| BY-108 | |
| BY-109 | |
| BY-110 | |
| BY-111 | |
| BY-112 | |
| C-101 | |
| C-102 | |
| C-104 | |
| C-105 | |
| C-107 | |
| C-108 | |
| C-109 | |
| C-110 | |
| C-111 | |
| C-112 | |
| C-201 | |
| C-202 | |
| C-203 | |
| C-204 | |
| East Area | 60 |

| WEST AREA | |
|---|---|
| S-104 | |
| S-105 | |
| S-108 | |
| S-110 | |
| SX-107 | |
| SX-108 | |
| SX-109 | |
| SX-110 | |
| SX-111 | |
| SX-112 | |
| SX-113 | |
| SX-114 | |
| SX-115 | |
| T-101 | |
| T-102 | |
| T-103 | |
| T-104 | |
| T-105 | |
| T-106 | |
| T-107 | |
| T-108 | |
| T-109 | |
| T-111 | |
| T-112 | |
| T-201 | |
| T-202 | |
| T-203 | |
| T-204 | |
| TX-FARM - 18 tanks | |
| TY-FARM - 6 tanks | |
| U-101 | |
| U-104 | |
| U-110 | |
| U-112 | |
| U-201 | |
| U-202 | |
| U-203 | |
| U-204 | |
| West Area | 60 |
| Total | 120 |

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