START

0030717

WHC-EP-0182-62

UC-721

Tank Farm Surveillance and Waste Status Summary Report for May 1993

B. M. Hanlon

Date Published
August 1993

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

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

Approved for Public Release

THIS PAGE INTENTIONALLY
LEFT BLANK

This report has been reproduced from the best available copy.
Available in paper copy and microfiche.

Available to the U.S. Department of Energy
and its contractors from
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831
(615) 576-8401

Available to the public from the U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

Printed in the United States of America

DISCLM-1.CHP (1-91)

THIS PAGE INTENTIONALLY
LEFT BLANK

APPROVAL

Prepared by: B. M. Hanlon 6-30-93
B. M. Hanlon
Engineer
Date

Approved by: R E Raymond 7-26-93
R. E. Raymond
Manager, Single-Shell
Tank Technology
Date

ORIGINAL

Date Received: 7/28/93 KMB

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- [ ] Speech or Presentation (Check only one suffix)
  - [ ] Full Paper
  - [ ] Summary
  - [ ] Abstract
  - [ ] Visual Aid
- [ ] Speakers Bureau
- [ ] Poster Session
- [ ] Videotape
- [ ] Reference
- [X] Technical Report
- [ ] Thesis or Dissertation
- [ ] Manual
- [ ] Brochure/Flier
- [ ] Software/Database
- [ ] Controlled Document
- [ ] Other

ID Number (include revision, volume, etc.): WHC-EP-0182-62

List attachments.

Date Release Required

Title: TANK FARMS SURVEILLANCE AND WASTE STATUS SUMMARY REPORT FOR MAY 1993

Unclassified Category: UC-721

Impact Level: 2

New or novel (patentable) subject matter? [X] No [ ] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[ ] No [ ] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [ ] Yes (Identify)

Copyrights? [X] No [ ] Yes
If "Yes", has written permission been granted?
[ ] No [ ] Yes (Attach Permission)

Trademarks?
[ ] No [X] Yes (Identify) TEFZEL, trademark of E. I. du Pont de Nemours & Company

Complete for Speech or Presentation

Title of Conference or Meeting

Group or Society Sponsoring

Date(s) of Conference or Meeting

City/State

Will proceedings be published? [ ] Yes [ ] No
Will material be handed out? [ ] Yes [ ] No

Title of Journal

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[ ]	[X]			
Patent - General Counsel	[X]	[ ]	OGC Memo 2/4/93		
Legal - General Counsel	[X]	[ ]	OGC Memo 2/4/93		
Applied Technology/Export Controlled Information or International Program	[ ]	[X]			
WHC Program/Project	[X]	[ ]	T. E. Rainey	T E Rainey	7/22/93
Communications	[ ]	[X]			
RL Program/Project	[X]	[ ]	G. E. Bishop	G E Bishop	7/26/93
Publication Services	[X]	[ ]	~~A. F. Watte~~	A. F. Watte	8/2/93
Other Program/Project	[ ]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[ ]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[ ]	[X]

Author/Requestor (Printed/Signature) Date

B. M. Hanlon B.M. Hanlon 6/30/93

Intended Audience

[ ] Internal [ ] Sponsor [X] External

Responsible Manager (Printed/Signature) Date

R. E. Raymond R E Raymond 7/26/93

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE OFFICIAL CW DOCUMENT Date 9-19-93

Date Cancelled

Date Disapproved

9313216.0695

TANK FARM SURVEILLANCE AND WASTE STATUS SUMMARY REPORT FOR MAY 1993

B. M. Hanlon

ABSTRACT

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 49 smaller catch tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U. S. Department of Energy-Richland Operations Office Order 5820.2A, Chapter I, Section 3.e. (3) (DOE-RL, 1990, Radioactive Waste Management, U. S. Department of Energy-Richland Operation Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm Tanks.

This page intentionally left blank.

CONTENTS

This page intentionally left blank.

LIST OF TABLES

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)		

This page intentionally left blank

TANK FARM SURVEILLANCE AND WASTE STATUS SUMMARY REPORT FOR MAY 1993 SUMMARY

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

TANK STATUS

Category	Quantity	Date of Last Change
In-Service Tanks[c]	28 double-shell	10/86
Out-of-Service Tanks[a]	149 single-shell	07/88
Assumed Leaker Tanks[f]	**68 single-shell**	**5/93**
Sound Tanks	28 double-shell 82 single-shell	1986 10/92
Interim Stabilized Tanks[b,d]	106 single-shell	04/93
Not Interim Stabilized [f]	43 single-shell	04/93
Interim Isolated Tanks[e]	98 single-shell	09/91
Watch List Tanks	48 single-shell 6 double-shell	1991 11/92

[a] Although all 149 single-shell tanks were removed from service (i.e., no longer authorized to receive waste) as of November 21, 1980, the category of "Out-of-Service" was not established until July 1988.

[b] Of the 105 tanks classified as interim stabilized, 58 are listed as assumed leakers. The total of 105 interim stabilized tanks includes eight tanks that do not meet current established supernatant and interstitial liquid stabilization criteria: 104-B, 107-B, 110-B, 111-B, 110-BX, 102-T, 112-T, and 110-U. (These tanks did meet the criteria in existence when they were declared interim stabilized.)

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

[d] Of the 48 single-shell tanks on Watch Lists, 22 have been Interim Stabilized.

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

[f] Nine of the tanks are both assumed leakers and not Interim Stabilized. See Appendix H for more details.

I. TANK INVESTIGATIONS

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

There were no tanks under investigation for surface or ILL decreases or for drywell/lateral radiation increases during May 1993.

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

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks. Tanks/catch tanks will remain on this list until either a) completion of Interim Stabilization, or b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker.

Tank 241-BX-111. The surface level showed a slow erratic increasing trend since 1986. The level had increased approximately 1.00 inch from the reference baseline of 79.00 inches. A decreasing trend was observed during February 1993, but has since remained stable, fluctuating between 78.75 and 79.00 inches during March and April 1993. The decrease criteria for this tank is 1.00 inch from the reference baseline. The liquid observation well (LOW) interstitial liquid level (ILL) was stable as of April 1, 1993.
Resolution status: When this tank was under investigation, preliminary notifications were made to regulatory agencies on March 24 and April 16, 1993. Preparations to begin emergency pumping were initiated in late March. This tank was declared an assumed re-leaker on April 30, 1993. Upon completion of pumping, the tank will be rebaselined.

Tank 241-SX-102. The quarterly Liquid Observation Well (LOW) reading taken April 30, 1993, indicated a decrease of 0.2 feet from the established baseline. The rerun requested and taken on May 5, 1993, indicated a decrease of 0.3 feet which equals the established decrease criteria. Previous neutron LOW readings had been stable, fluctuating between the baseline and a 0.2-foot decrease, but the May 5, 1993, reading was the first indication of a 0.3 foot or larger decrease. An Off-Normal Report was issued at that time and the LOW frequency was increased from quarterly to weekly. The neutron LOW is the primary means of liquid level detection as this tank has a solid surface. The LOW readings taken on May 20, 1993, indicated a further decrease to 0.4 feet below the established baseline. This exceeds the decrease criteria. The previous Off-Normal was upgraded to an Unusual Occurrence Report and proper notifications were initiated. Because of the recently observed decreasing trend, this tank was declared an "assumed leaker" on May 20, 1993.
Resolution status: Emergency pumping efforts for this tank have been initiated, but are complicated by several factors. The tank is on the hydrogen Watchlist and will require extensive safety assessment to determine the safety aspects of pumping liquids out of the tank. An initial characterization period may be required to gather data regarding hydrogen gas generation. In addition, Tank 102-SX contains Complexed Concentrate waste and will require detailed sampling and compatibility evaluation to ensure that the waste is compatible with the chosen receiver tank. There are strong indications that the waste would have to be sent through the Cross-Site transfer route, because there may not be an acceptable receiver tank in the 200 West Area. This tank is a not yet stabilized, Partial Isolated tank, actively ventilated, with 183 Kgallon drainable liquid. See Highlights Item #5, Occurrence Report RL-WHC-TFARM-1993-0044, for further information.

B. Tanks with increases indicating possible intrusions:

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

Tank 241-B-202. A steady increase in the surface level measurement has been observed since December 1984. The manual tape pencil plummet is contacting liquid. When the quarterly reading was obtained on October 6, 1992, the level was recorded as 144.75 inches, thus exceeding the 2.00-inch increase criteria from the established baseline of 142.50 inches. The surface level measurement was rechecked on October 9, 1992, (145.50 inches) and October 13 (145.00 inches), verifying the increase and that the criteria had been exceeded. **The surface level continues to show an increase and is at 145.50 inches for May 1993.** The monitoring frequency has been increased from quarterly to monthly. Occurrence Report RL-WHC-TANKFARM-1993-0024 was issued February 13, 1993. The tank was administratively stabilized in May 1985.
Resolution status: **A photo package was initiated on May 11, 1993, to investigate the possibility of an intrusion. Review of previous photos was inconclusive. New photos are required to determine the actual supernatant increase, if any. A temporary baseline will be established at 145.25 inches, until the new photos are available.**

Tank 241-BX-103. On January 18, 1993, the surface level measurement in 103-BX exceeded the 0.50-inch increase criteria from the reference baseline of 19.50 inches, and was verified on January 20, 1993. The surface level measurement is currently at 20.40 inches. This tank has shown an erratic increase in surface level measurements since January 6, 1986. Discrepancy Report S&DA 93-522 was issued January 21, 1993. Occurrence Report RL-WHC-TANKFARM-1993-0036 was issued March 25, 1993. The FIC plummet is contacting liquid as indicated by in-tank photographs taken October 31, 1986. Tank 241-BX-103 is Sound, and Interim Stabilized/Interim Isolated.
Resolution status: The current level is greater than that prior to stabilization in November 1983. The tank was previously determined to have experienced an intrusion from 1977 to March 1983 (prior to stabilization). Subsequent isolation was expected to halt the intrusion, however, the intrusion is apparently ongoing. **A work package was initiated on May 11, 1993, to re-seal pits and risers and to obtain in-tank photos. The photos will be used to assess the current stabilization status of the tank. A visual survey of the area was performed to determine possible paths for precipitation to enter the tank. The weather covering on the pits and risers was found in place and undamaged. The existing grade is level and revealed no obvious draining problems. Design/isolation drawings will be reviewed to determine possible paths for intrusion.**

Tank 241-TX-113. The LOW ILL has shown a slow increase since March 12, 1986, with both the neutron and gamma probes. This tank appeared on the Alert List in 1989, when the ILL reached 50% of the 0.4-foot increase criteria, but was removed in 1990 when the ILL appeared stable for longer than a 12-month period. The scan data on February 5, 1993, showed the ILL to be 5.5 foot and at the 0.4-foot increase criteria from the reference baseline. S&DA Discrepancy Report 93-534 was issued March 10, 1993. **The LOW was last scanned May 14, 1993, and showed the ILL to be 0.3 foot above the baseline.**
Resolution status: The technical evaluation of this tank was completed April 14, 1993. The results were inconclusive, with recommendation to accelerate the October 1997 waste characterization of the tank. This characterization is expected to confirm that solids are dissolving, causing an increase in ILL. It is also recommended that new photos be taken of the tank interior. **A photo package was initiated on May 15, 1993. A letter will be written in July to request acceleration of waste characterization. LOW scans and surface level readings have been increased from a quarterly to a monthly frequency.**

Tank 241-TX-115. The LOW ILL is exceeding the 0.4-foot increase criteria from the reference baseline. This tank has been on report since 1988, when the increase criteria was first exceeded. Comparison of past and present in-tank photographs show no significant change in surface conditions or obvious evidence of intrusion. Surveillance Deviation Report #88-08 was issued on May 18, 1988, and Event Fact Sheet #TF-EFS-88-140 was issued October 27, 1988. This tank appeared on the Executive Summary Report and Alert List until December 31, 1991, when the report was discontinued. The ILL continues to show an increase with both the neutron and gamma probes. **The LOW was last scanned May 14, 1993, and showed an additional 0.2-foot increase from the previous February 2, 1993, LOW reading.**
Resolution status: The technical evaluation of the alert condition in this tank was completed April 14, 1993. The results were inconclusive, with recommendation to accelerate the October 1997 waste characterization. Waste characterization is expected to confirm that solids are dissolving, causing an increase in ILL. The 1981 photos show evidence of rain intrusion through a central pump pit riser. However, it cannot be concluded from the 1988 photos that the intrusion is ongoing. **A photo package was initiated on May 11, 1993. This tank will be included in the waste characterization with 113-TX. LOW scans and surface level readings have been increased from a quarterly to a monthly frequency.**

Tank 241-TY-102. On November 8, 1992, the automatic FIC surface level measurement of 32.10 inches exceeded the 0.50-inch increase criteria from the reference baseline of 31.40 inches. Discrepancy Report S&DA-92-489 was issued November 9, 1992. The tank has a history of icicle buildup on the FIC plummet and intrusions. **The surface level measurement was 31.80 inches as of May 31, 1993. Resolution status: This tank is experiencing an ongoing intrusion as is evident by comparison of November 1984 photos with July 1987 photos and an increasing trend in surface level data. A visual survey was conducted to determine possible paths for precipitation to enter the tank. The grade around the tank is level and weather covering is on the pits and intact. The photo package, initiated on May 17, 1993, will be required to assess the current stabilization status of the tank, and to assist in determining the possible paths of intrusion. Design/isolation drawings will be reviewed in July to further determine possible paths of intrusion.**

Vent Station Catch Tank. The zip cord surface level reading exceeds the maximum operating limit of 36.00 inches. The manual tape has been out of service since July 7, 1992. A temporary zip cord was installed December 16, 1992. The level was 45.50 inches which exceeded the active tank limit of 50% volume of 40 inches (400 gallons). Transfers are not permitted until the tank is pumped and the level is within limits. Discrepancy Report S&DA-92-511 was issued December 24, 1992. **A new calibrated zip cord was installed May 26, 1993.**
Resolution status: Work packages are out to repair the manual tape and pump the catch tank. Extensive surface contamination in the surrounding area is hampering efforts to perform the needed activities. Sampling of the solution in the tank is necessary before pumping can begin. **Completion of the transfer procedure is expected June 30, 1993. Estimated date of completion of pumping is July 15, 1993.**

UX-302-A Catch Tank. Surface level measurement exceeds the maximum operating limit of 50.00 inches. The level is 62.60 inches which exceeds the 50% volume of 54 inches (8840 gallons). The FIC plummet is contacting liquid. Discrepancy report S&DA-92-465 was issued May 12, 1992. A work package was

initiated to pressure test lines and to pump liquid level to below alarm limits.
Resolution status: Work packages for the transfer of waste from UX-302-A and the repair of necessary instrumentation are being prepared, and the transfer of waste is being scheduled as a prestart item for the Cross Site Transfer. **Completion of transfer procedure is expected June 30, 1993. A work package has been prepared to sample/pump this catch tank. Expected completion date is July 15, 1993.**

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

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

II. HIGHLIGHTS

1. Criticality Safety Issues

On April 30, 1992, an Unreviewed Safety Question (USQ) concerning criticality safety issues in the Tank Farms was declared to be a reportable event. Unusual Occurrence report RL-WHC-TANKFARM-1992-0037 was issued. A prohibition was placed on all waste transfers into and between the tank farm facilities which is negatively affecting various Hanford programs. On September 1, 1992, the approved Justification For Continued Operations (JCO) was received. This establishes the limitations for all tanks receiving transfers and also excludes any interim stabilization of single-shell tanks until further evaluations are completed and approved by DOE-HQ. On December 15, 1992, the approved JCO was issued as WHC-SD-WM-JCO-001, "Justification for Continued Operations of Hanford High Level Waste Tanks Resulting From the Criticality USQ, 492-CRITSAS." Resolution of the USQ is scheduled for summer 1993.

2. Interim Stabilization of Tank 241-T-101

Tank 101-T was declared an assumed leaker on October 4, 1992. Total leakage is assumed to be approximately 7500 gallons. Approval from DOE-HQ to pump the tank was received on February 25, 1993. Pumping was completed on April 6, 1993, total gallons pumped was 25,300. **The evaluation for meeting interim stabilization criteria was completed on April 14, 1993, and official notification to regulating agencies declared the tank interim stabilized on May 28, 1993. (Further information appeared in the April report)**

3. Tank 241-C-105

Evaluation has been completed on the heat load from Tank 241-C-105. The thermal analysis (WHC-SD-WM-ER-189, *Thermal Analysis of Tank 241-C-105 in Support of Process Test*, January 1993), indicated the best-estimate heat generation rate for 105-C is approximatley 20,000 Btu/hr, with a conservative upper bound of about 25,000 Btu/hr. This is considerably less than the high-

heat criterion of 40,000 Btu/hr. Tank 241-C-105 will be reclassified from high heat to normal in June 1993.

4. Occurrence Report

RL-WHC-TFARM-1993-0044 (OFFNORMAL) - LIQUID OBSERVATION WELL (LOW) ON TANK 241-SX-102 INDICATES INTERSTITIAL LIQUID LEVEL DECREASE (10-Day Report - May 20, 1993

On April 30, 1993, the quarterly Liquid Observation Well (LOW) reading taken in Tank 241-SX-102 indicated a decrease of 0.2 feet from the established baseline value. The reading was repeated on May 5, 1993, and this reading indicated a decrease of 0.3 feet which was equal to the established decrease criteria. Another reading taken on May 20, 1993, indicated an additional 0.1-foot decrease. This reading brought the total decrease to 0.4 foot, and exceeded the decrease criteria. On May 20, 1993, Tank 241-SX-102 was declared to be an "assumed leaker." Previous neutron LOW readings have been stable showing minor fluctuation between the baseline and 0.2-foot decrease. Instrument repeatability is ± 0.1 foot. The LOW is the primary means of liquid level detection because this tank has a solid surface.

This tank is actively ventilated with a waste temperature of approximately 150° F. Although decreasing level trends attributed to evaporation have been recorded on other SX Tank Farm tanks (i. e., 105-SX), the 102-SX liquid level has decreased more rapidly than typically observed. 102-SX is a Non-stabilized, Partial Isolated Watch List Tank (Hydrogen list), actively ventilated, with 183 Kgallon drainable liquid.

This event will result in either the need for additional funding/resources or the reprogramming of existing resources from other projects. Plans are being prepared to pump the liquid contents from Tank 241-SX-102 to a double-shell underground storage tank.

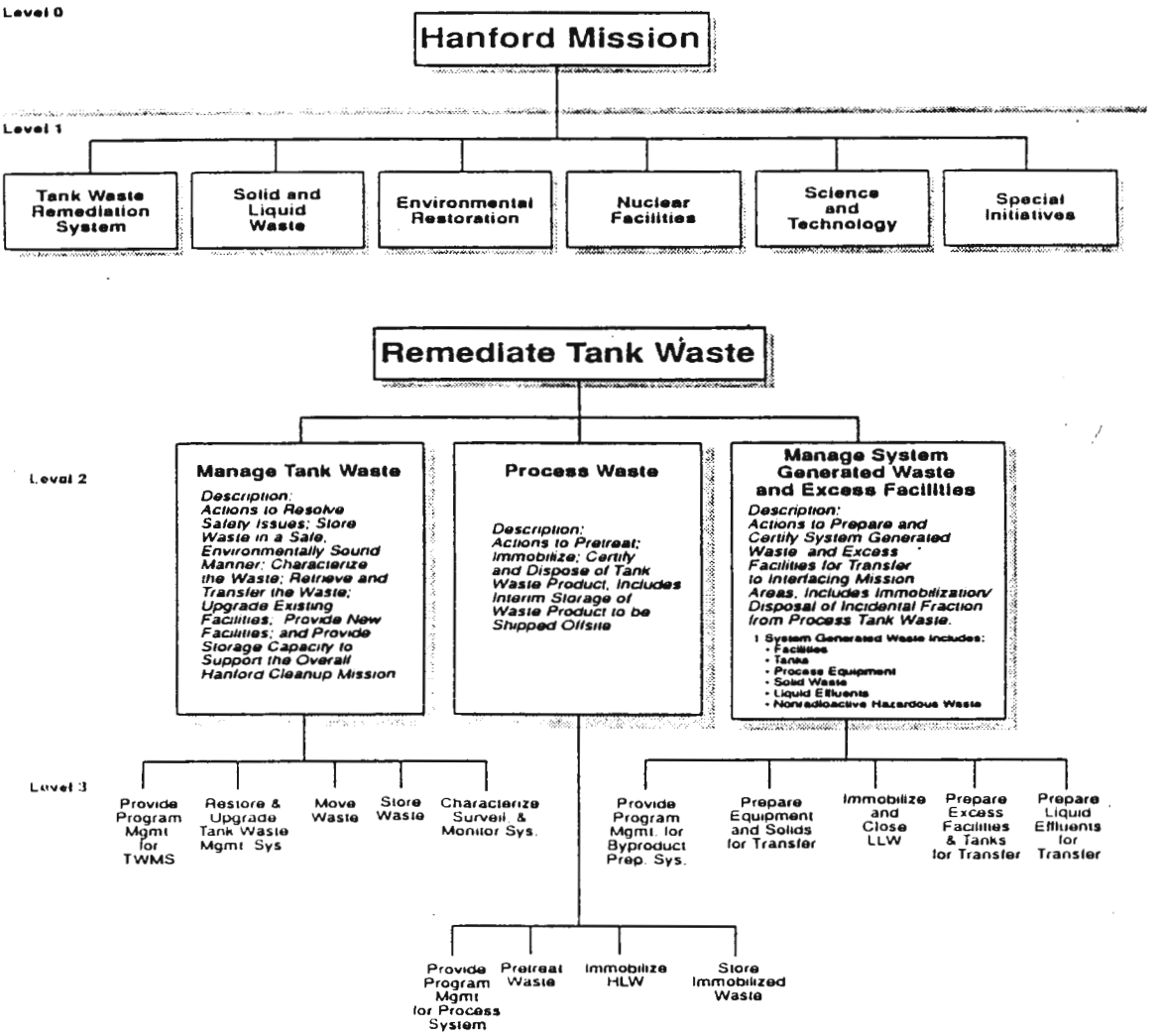
4. Tanks Advisory Panel (TAP) Meeting Held May 25-27, 1993

The following pages are excerpts from the presentation made at the TAP meeting:

TWRS Problem Statement

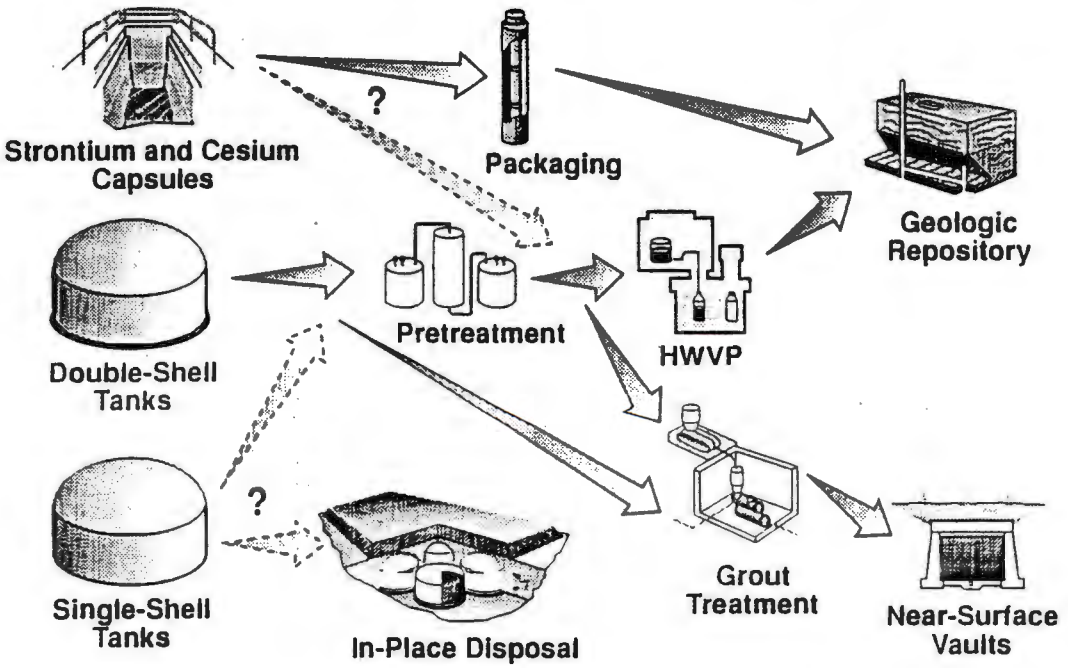
- Remediate tank waste to strive for unrestricted use of the Hanford Site

Why strive for unrestricted use? To not prejudice future Hanford land use decisions.



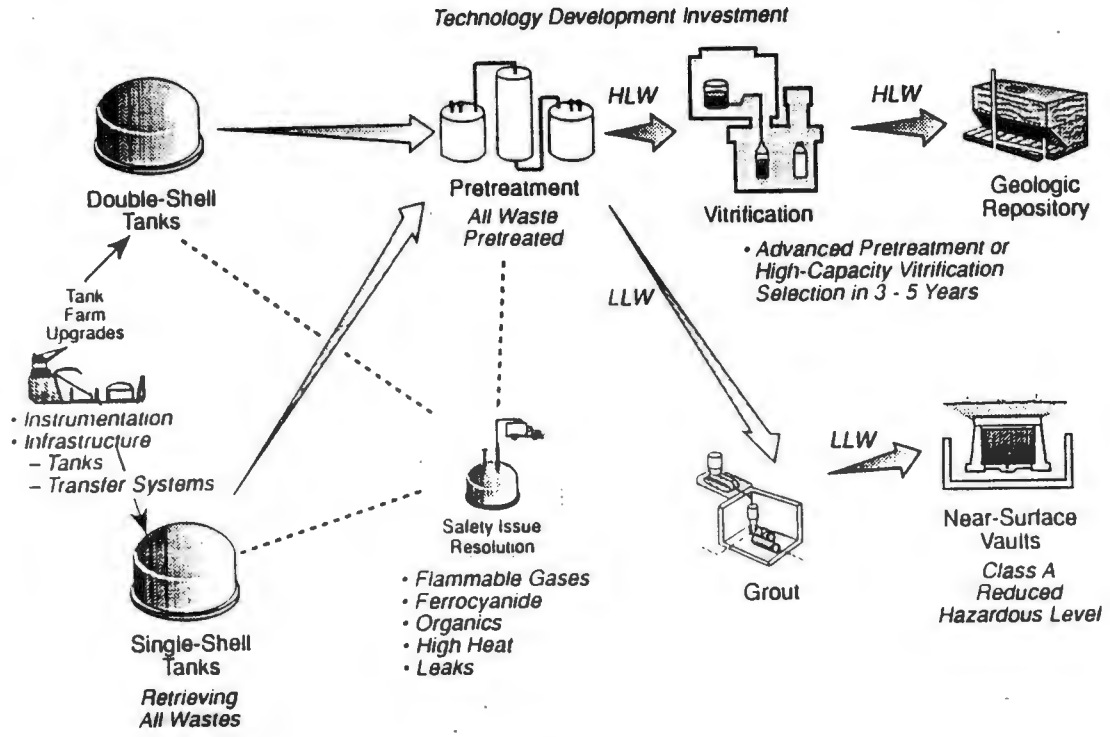
1988 Hanford Defense Waste – Environmental Impact Statement Baseline

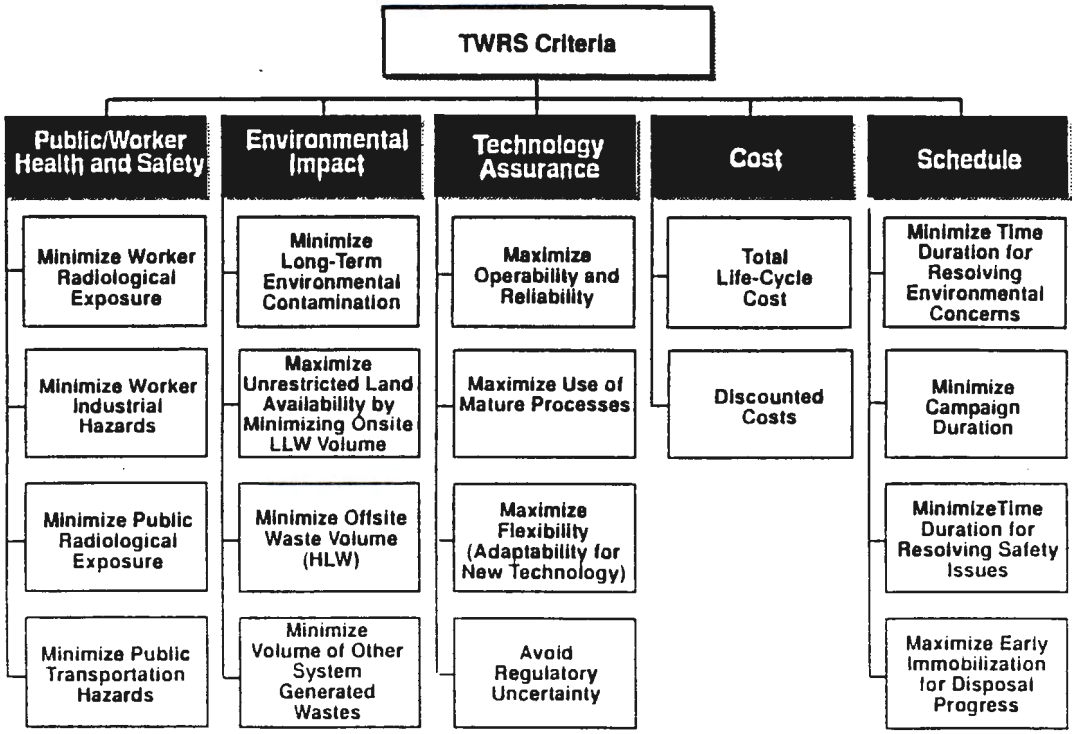
Basis for Tri-Party Agreement



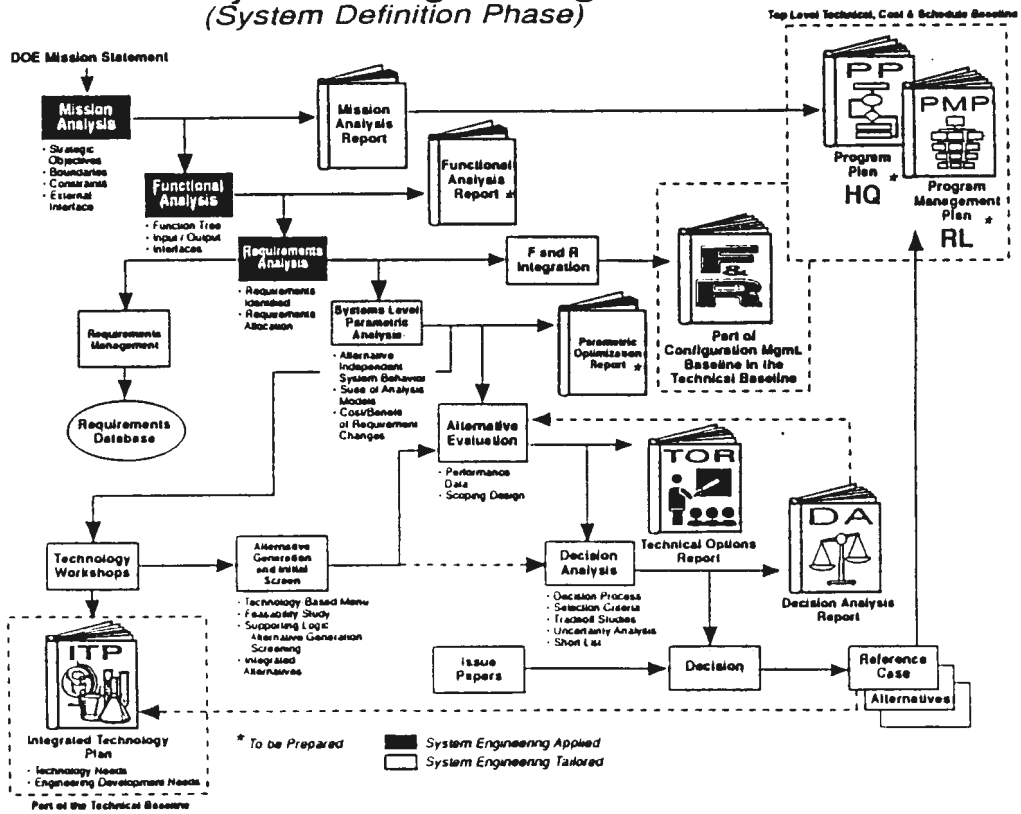
Hanford Site Tank Waste Remediation System

Proposed New Technical Strategy

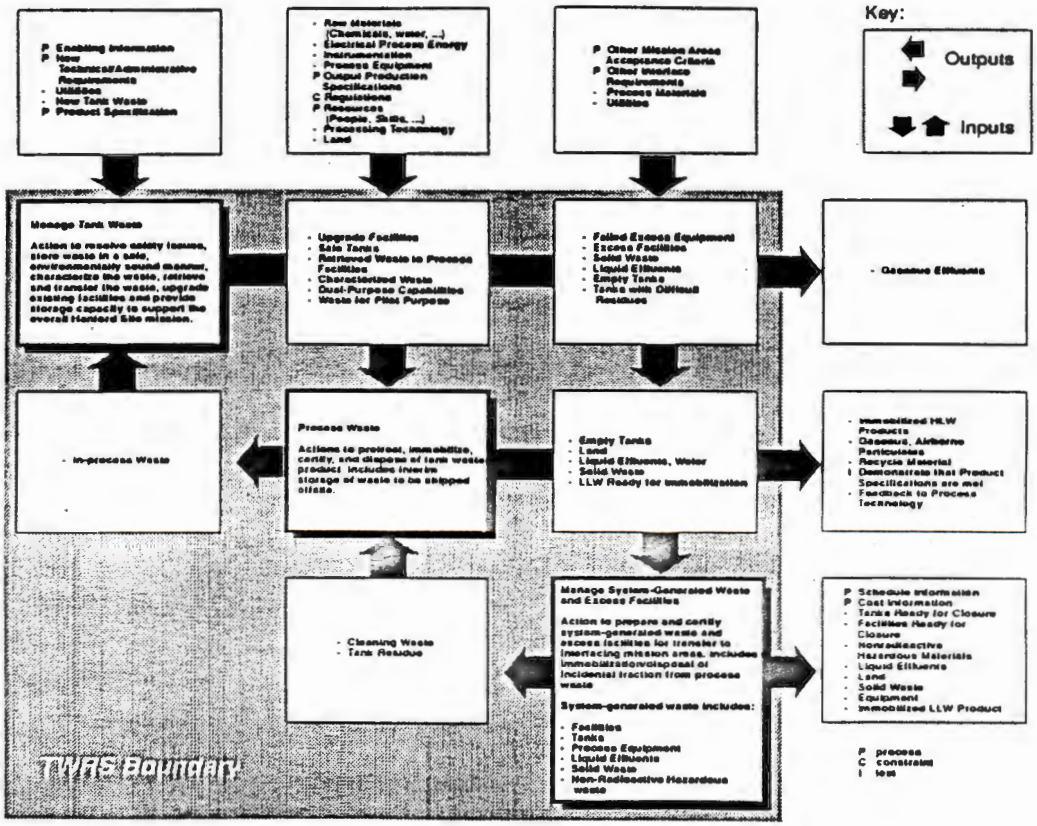




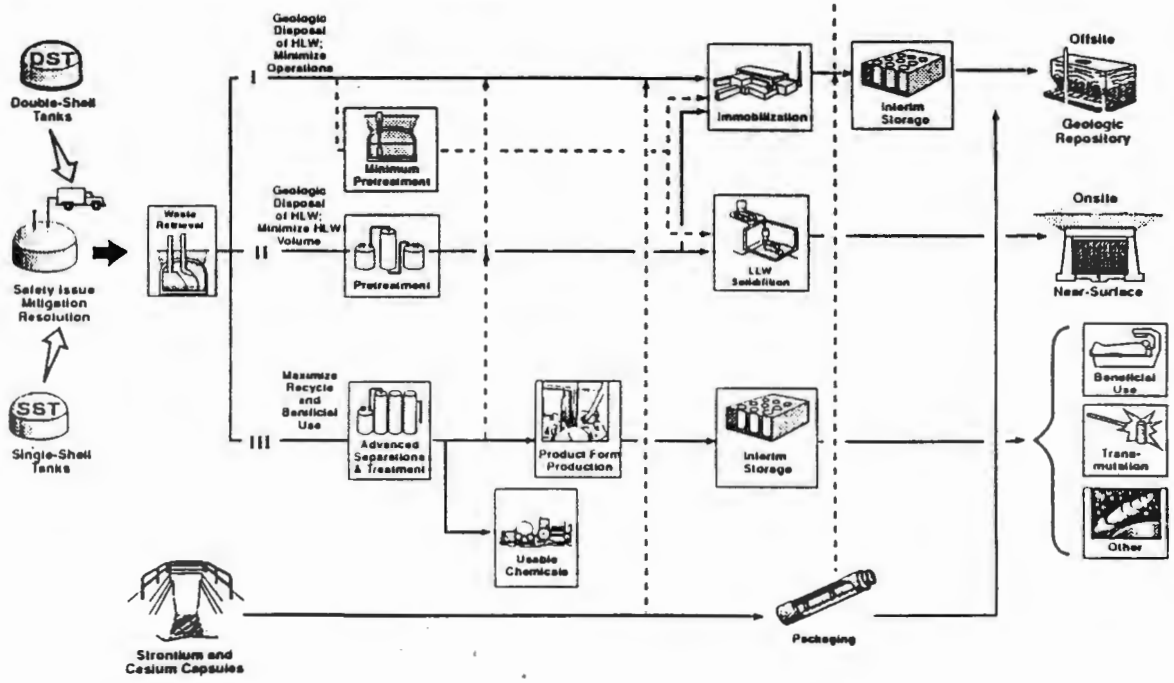
Systems Engineering Process
(System Definition Phase)



TWRS Level 2 (N^2 Diagram)



Tank Waste Remediation System Waste Treatment and Disposal Alternatives



Interim Organic Watch List Tank Criteria:

- **Level I Criterion: TOC $\leq$ A wt.% (dry basis)**
- **Level II Criteria:**
  - **TOC $\leq$ B wt.% (dry basis)**
  - **Moisture $\geq$ C wt.%**
  - **Organics concentration mechanisms**
  - **Maximum waste temperature**
  - **Composition tank vapor space gases**

Theoretical Organic-Nitrate Reactivity Envelope

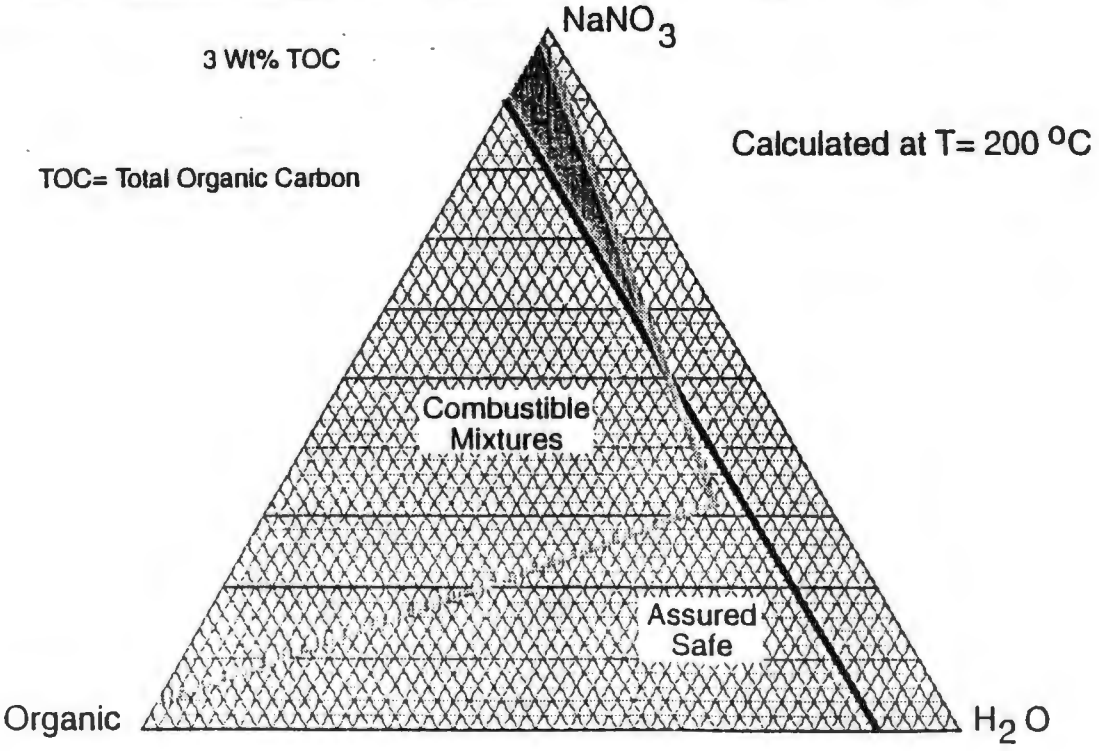


TABLE 1. WATCH LIST TANKS

These tanks have been identified as Watch List Tanks in accordance with Public Law 101-510, Section 3137, " Safety Measures for Waste Tanks at Hanford Nuclear Reservation," (1990). These have been identified as the Priority 1 Hanford Site Tank Farm Safety Issues: "Issues/situations that contain most necessary conditions that could lead to worker (onsite) or offsite radiation exposure through an uncontrolled release of fission products, e. g., Tank 101-SY."

May 1993

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

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

Note: Tank 241-AW-101 was added to this list in November 1992.

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

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

Temperatures in these tanks did not exceed the maximum temperature criteria or surveillance frequency limits for May 1993. All Watch List tanks are reviewed for increasing temperature trends. Tanks not connected to TMACS are monitored manually. Thermocouples evaluated as "failed" (8) are not used in this report. Temperatures are taken in the waste unless indicated otherwise.

Tank No.		Highest Temperature Reading in Waste (F.)	Date of Reading	Monitored by TMACS (5)	Total Waste (inches) (7)	FeCN (2) (x1000 g mol)	Estimated Heat Load (3) (Btu/h)	(kW)	Assumed Leak Date	Interim Stabilized Date
102-BX		62	05/29/93	No	42	<1	<10000	<2.93	1971	11/78
106-BX		62	05/22/93	No	24	<1	<10000	<2.93	Sound	N/A
110-BX		65	05/29/93	No	80	<1	<10000	<2.93	1976	8/85
111-BX		66	05/29/93	No	91	<1	<10000	<2.93	1984	N/A
101-BY		75	05/31/93	Yes	148	<1	8200	2.40	Sound	5/84
103-BY		82	05/17/93	Yes	153	66	8600	2.52	1973	N/A
104-BY	Riser 1	128	05/31/93	Yes	155	83	5500	1.61	Sound	1/85
104-BY	Riser 10B	115	05/31/93	Yes	155	83	5500	1.61	Sound	1/85
105-BY	Riser 10C	114	05/31/93	Yes	190	36	3400	0.97	1984	N/A
105-BY	Riser 1	121	05/31/93	Yes	190	36	3400	0.97	1984	N/A
106-BY		129	05/31/93	Yes	241	70	3300	0.97	1984	N/A
107-BY		96	05/31/93	Yes	104	42	14500	4.25	1984	7/79
108-BY		110	05/03/93	Yes	90	58	23000	6.74	1972	2/85
110-BY	Riser 1	120	05/17/93	Yes	152	71	25200	7.39	Sound	1/85
110-BY	Riser 10A	108	05/10/93	Yes	152	71	25200	7.39	Sound	1/85
111-BY	LOW	86	05/17/93	Yes	174	6	34200	10.02	Sound	1/85
111-BY (6)	Riser 14	82	05/07/93	No	174	6	34200	10.02	Sound	1/85
112-BY	LOW	66 (*)	05/24/93	Yes	113	2	<10000	<2.93	Sound	5/85
112-BY (6)	Riser 5	87	05/27/93	No	113	2	<10000	<2.93	Sound	5/85
108-C		70	05/29/93	No	31	25	10000	<2.93	Sound	3/84
109-C	Riser 1	73	05/29/93	No	31	30	3800	1.11	Sound	11/83
109-C	Riser 3	75	05/29/93	No	31	30	3800	1.11	Sound	11/83
111-C		69	05/29/93	No	28	33	<10000	<2.93	1968	3/84
112-C	Riser 1	77	05/29/93	No	45	31	<10000	<2.93	Sound	9/90
112-C	Riser 8	77	05/29/93	No	45	31	<10000	<2.93	Sound	9/90
101-T		66	05/27/93	No	45	<1	<10000	<2.93	1992	4/93
107-T		62	05/27/93	No	73	5	<10000	<2.93	1984	N/A
118-TX (4)		76	05/31/93	Yes	134	<1	4900	1.44	Sound	4/83
101-TY		63	05/31/93	Yes	50	23	<10000	<2.93	1973	8/83
103-TY		68	05/31/93	Yes	66	28	<10000	<2.93	1973	2/83
104-TY		62	05/31/93	Yes	24	12	<10000	<2.93	1981	1/83

24 Tanks

Legend: TMACS = Tank Monitoring & Control System
N/A = Not Applicable

(*) Temperatures (taken by TMACS) in this single-sensor probe (LOW) were 16 degrees less than previous month. The cause is being investigated.

FOOTNOTES: See next page

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

FOOTNOTES:

(1) This Priority 1 Waste Tank Safety Issue is stated as follows: "Could the concentrations and distribution of ferrocyanide and nitrate/nitrite in the tanks lead to an explosion if allowed to heat up or if an uncontrolled exothermic reaction could occur (24 SSTs)?"

(2) The estimates of the amount of FeCN in the tanks are based on WHC-SD-WM-ER-133-REV 0, "An Assessment of the Inventories of the FeCN Watch List Tanks," (Table 3-7), October 1991.

(3) The estimated heat generation rates are from WHC-EP-0474-4, "Quarterly Report on Defense Nuclear Facilities Safety Board Recommendation 90-7 for the Period Ending March 31, 1992," Table 1-A, dated January 1992. Tank 104-BY only estimated per WHC-EP-0521, "SST 104-BY Thermal Hydraulic Analysis," October 1991 (kW = 3412 Btu/h). A new thermal hydraulic analysis of several tanks has been completed and is currently being processed for public release. Information from this document will be incorporated in future monthly reports as soon as the clearance process is completed.

(4) This tank also contains a high concentration (>3% wt TOC) of organic salts.

(5) This column indicates which tanks are connected to the Tank Monitoring & Control System (TMACS); automatic temperature readings are taken continuously. New thermocouple trees installed in 111-BY and 112-BY are not yet connected to TMACS.

(6) New thermocouples trees were installed in these tanks on March 31, 1993; not yet connected to TMACS.

(7) Calculations used to compute Total Waste Inches for temperature tables in this report:

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

* The bottom 12 inches in dish bottom tanks contains 12.5 Kgal. Inches are from centerline tank bottom. Waste Kgal are taken from Monthly Summary Report, SST Inventory and Status by Tank.

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

Good - indicated temperature compares favorably to the temperature measured by another thermocouple in an LOW
Acceptable - thermocouples with measured resistance values within normal limits and an indicated temperature within an expected range
Marginal - thermocouples with higher than normal (0.5 ohms to 20 ohms depending on length) loop resistance, higher than normal resistance in one lead to ground or having some other abnormailty, e. g., inconsistent resistance measurements
Failed - those thermocouples with either open circuits or loop resistance greater than 100 ohms.

Failed thermocouples are not used in this report.

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

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

Temperatures in these tanks did not exceed the applicable maximum temperature criteria or surveillance frequency limits for the month of May 1993. All Watch List tanks are reviewed for increasing temperature trends. Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Highest Temperature Reading (F.) in Waste	Date of Reading		Total Waste (3) (inches)	Monitoring Frequency	Assumed Leaked Date	Interim Stabilized Date
101-A	155	05/15/93		354	Weekly	SOUND	N/A
101-AX	138	05/27/93		279	Weekly	SOUND	N/A
103-AX	112	05/27/93		48	Weekly	SOUND	8/87
102-S (2)	107	05/27/93		207	Weekly	SOUND	N/A
111-S	92	05/13/93		224	Weekly	SOUND	N/A
112-S	82	05/20/93		239	Weekly	SOUND	N/A
101-SX	137	05/20/93		173	Weekly	SOUND	N/A
102-SX	152	05/20/93		205	Weekly	1993	N/A
103-SX	176	05/20/93		245	Weekly	SOUND	N/A
104-SX	168	05/20/93		231	Weekly	1968	N/A
105-SX	181	05/13/93		256	Weekly	SOUND	N/A
106-SX (2)	108	05/13/93		203	Weekly	SOUND	N/A
109-SX (1)	143	05/27/93	Riser 2	98	Weekly	1965	5/81
109-SX	142	05/27/93	Riser 8	98	Weekly	1965	5/81
110-T	60	05/27/93		145	Weekly	SOUND	N/A
103-U	85	05/29/93		178	Weekly	SOUND	N/A
105-U	88	05/29/93		159	Weekly	SOUND	N/A
108-U	86	05/29/93		178	Weekly	SOUND	N/A
109-U	83	05/29/93		176	Weekly	SOUND	N/A
103-AN	115	05/31/93	Double-shell tank		Weekly	SOUND	N/A
104-AN	123	05/31/93	Double-shell tank		Weekly	SOUND	N/A
105-AN	113	05/03/93	Double-shell tank		Weekly	SOUND	N/A
101-AW (4)	93	05/31/93	Double-shell tank		Weekly	SOUND	N/A
101-SY	127	05/31/93	Double-shell tank		Daily	SOUND	N/A
103-SY	89	05/24/93	Double-shell tank		Weekly	SOUND	N/A
24 Tanks						Legend: N/A = Not Applicable	

(1) Tank 109-SX has the potential for flammable gas accumulation only because other SX tanks vent through it
(2) Tanks 102-S and 106-SX also contain potentially high concentrations of organic salts
(3) See footnote (7) in Table 2 (Ferrocyanide Tanks) for Total Waste Inches calculations
(4) Tank 241-AW-101 was added to this list in accordance with Occurrence Report RL-WHC-TANKFARM-1992-0083

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

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

Temperatures in these tanks did not exceed the applicable maximum temperature criteria or surveillance frequency limits for the month of May 1993. These tanks are monitored weekly. All Watch List tanks are reviewed for increasing temperature trends.

Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in Waste	Date of Reading	Total Waste Inches (4)	Assumed Leaked Date	Interim Stabilized Date
103-B	57	05/23/93	29	1978	2/85
103-C (3)	118	05/07/93	78	SOUND	N/A
102-S (1)	107	05/20/93	207	SOUND	N/A
106-SX (1)	108	05/13/93	203	SOUND	N/A
105-TX	96	05/27/93	228	1977	9/83
118-TX (2)	76	05/31/93	134	SOUND	4/83
106-U	78	05/29/93	90	SOUND	N/A
107-U	76	05/29/93	155	SOUND	N/A
8 Tanks					

(1) These tanks also have the potential for hydrogen or flammable gas accumulation
(2) Tank 118-TX also contains ferrocyanide
(3) Tank 103-C was added to the Watch List because of the presence of a separable organic layer found on the surface
(4) See footnote (7) in Table 2 (Ferrocyanide Tanks) for Total Waste Inches calculations

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

High heat load tanks have temperature surveillance requirements established by SD-WM-SAR-006 REV 1, "SST Isolation Safety Analysis Report," dated January 1986, and OSD-T-151-00013 REV D-O, "Operating Specifications for Single-Shell Waste Storage Tanks," dated August 1990.

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

Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in Waste	Date of Reading	Location	Total Waste Inches (8)	Monitoring Frequency	Estimated Heat Load (1) (Btu/h)	Estimated Heat Load (1) (kW)	Assumed Leaked Date	Interim Stabilized Date
104-A (4)	192	05/20/93	R-18	18	Weekly	50000	14.65	1975	9/78
105-A (4)	150	05/17/93	R-16	14	Weekly	50000	14.65	1963	7/79
105-C (2)(6)	89	05/25/93	Riser 1	62	Monthly	42000	11.72	SOUND	N/A
106-C (2)(3)	150	05/25/93	Riser 8	91	Weekly	150000	43.96	SOUND	N/A
106-C (2)(3)	125	05/25/93	Riser 14	91	Weekly	150000	43.96	SOUND	N/A
107-SX	157	05/06/93	Tree 2	45	Monthly	42000	11.72	1964	10/79
107-SX	156	05/06/93	Tree 8	45	Monthly	42000	11.72	1964	10/79
108-SX	184	05/06/93	Tree 2	49	Monthly	45000	13.19	1962	8/79
108-SX	189	05/06/93	Tree 8	49	Monthly	45000	13.19	1962	8/79
109-SX (3)	143	05/27/93	Tree 2	98	Weekly	50000	14.65	1965	5/81
109-SX (3)	142	05/27/93	Tree 8	98	Weekly	50000	14.65	1965	5/81
110-SX	164	05/06/93	Tree 2	30	Monthly	42000	11.72	1976	8/79
110-SX	158	05/06/93	Tree 8	30	Monthly	42000	11.72	1976	8/79
111-SX	173	05/06/93	Tree 2	53	Monthly	44000	12.90	1974	7/79
111-SX	150	05/06/93	Tree 8	53	Monthly	44000	12.90	1974	7/79
112-SX	144	05/06/93	Tree 2	41	Monthly	43000	12.60	1969	7/79
112-SX	148	05/06/93	Tree 8	41	Monthly	43000	12.60	1969	7/79
114-SX	177	05/06/93	Tree 2	73	Monthly	58000	17.00	1972	7/79
114-SX	174	05/06/93	Tree 8	73	Monthly	58000	17.00	1972	7/79
11 Tanks									
105-A Laterals (5)	240	05/20/93	Beneath tank		Weekly				

Legend: Tree = Thermocouple Tree

Temperatures are taken in 34 thermocouples located in the laterals beneath 105-A. SAR requirements (see top of table) do not apply to these temperatures; however, Westinghouse Hanford has voluntarily chosen to use the waste temperature limits to the soil for surveillance reporting (see document WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria").

Footnotes – see next page

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

Footnotes:

(1) High heat loads as of 1988, evaluation completed April 20, 1989 (kW = 3412 Btu/h). The predominant heat load for these tanks is from CS 137 (half life of 30 years) and SR 90 (half life of 28.1 years).

(2) Periodic water additions are required in these tanks to maintain evaporative cooling and thus prevent overheating. Both tanks are scheduled for interim stabilization in 1996, at which time cooling water additions will be discontinued.

(3) Watch List Tanks: 106-C is on the Watch List because "without water additions (in the event of a leak) the tank could exceed structural temperature limits resulting in unacceptable structural damage." 109-SX is on the hydrogen Watch List because it has the potential for flammable gas accumulation due to other SX tanks venting through it.

(4) 104/105/106-A exhauster has been out of service from October 1, 1991, until August 20, 1992, when it was briefly restarted. Problems exist which must be resolved before the exhauster is operational. Temperatures in 104-A and 105-A are closely monitored.

(5) Maximum lateral temperatures under 105-A increased 20 degrees F. by January 1992, but then dropped a few degrees and have remained fairly stable at current temperature. These temperatures are being closely monitored.

(6) Although 105-C is required to be monitored monthly, it is actually monitored weekly.

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

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

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

(8) Calculations for Total Waste Inches: see footnote (7), Table 2 (Ferrocyanide Tanks)

(9) There are 19 single-shell tanks with active ventilation (ten are on the Watch List as indicated by an asterisk):

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

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

May 1993

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE		SPACE DESIGNATED FOR SPECIFIC USE	
Complexant Concentrate (102-AN, 107-AN, 101-AY, 101-SY, 103-SY)	4.96 Mgal	Spare Tanks (3) (1 Aging & 1 Non-Aging Waste Tank)	2.28 Mgal
Concentrate Phosphate (106-AN)	1.13 Mgal	Segregated Tank Space (4) (102-AN, 107-AN, 105-AP, 103-AW, 101-AY)	0.99 Mgal
Double-Shell Slurry and Slurry Feed (103-AN, 104-AN, 105-AN, 105-AP, 101-AW)	5.12 Mgal	Watch List Tank Space (103-AN, 104-AN, 105-AN, 101-SY, 103-SY, 101-AW)	0.68 Mgal
Neutralized Current Acid Waste (101-AZ, 102-AZ)	1.22 Mgal	Priority Tank Space (2) (101-AN, 102-AW, 106-AW, 102-SY)	1.32 Mgal
Dilute Waste (1) (101-AN, 101-AP, 103-AP, 106-AP, 107-AP, 108-AP, 102-AW, 103-AW, 104-AW, 105-AW, 106-AW, 101-AY, 102-AY, 102-AZ, 102-SY)	11.86 Mgal	Miscellaneous Head Space	0.18 Mgal
		Total Specific Use Space:	5.45 Mgal
NCRW and PFP Settled Solids (103-AW, 105-AW, 102-SY)	1.01 Mgal	TOTAL DOUBLE-SHELL TANK SPACE	
		24 Tanks at 1140 Kgal	27.36 Mgal
		4 Tanks at 980 Kgal	3.92 Mgal
Total Inventory:	25.23 Mgal		31.28 Mgal
		Total Available Space	31.28 Mgal
		Double-Shell Tank Inventory	- 25.25 Mgal
		Space Designated for Specific Use	- 5.45 Mgal
		Remaining Unallocated Space (4)	.53 Mgal

(1) Easily reduced in volume by Evaporator/LERF

(2) Reduced by Saltwell Liquid pumping

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

(4) The decrease in "Remaining Unallocated Space" is partly because of deleting Tank 105-AP inventory from this category and adding it to "Segregated Space"

Note: Net change since last month: inventory increased 93 Kgal

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

May 1993

Tank No.	Category	Date of Last Automatic FIC Reading	Reading Status	Comments	Monitoring Frequency
107-BX	IS	12/30/92	No reading taken since 04/19/93	Out of compliance as of 04/26/93	Weekly
107-T	-	03/31/93	No reading taken since 05/24/93	Out of compliance as of 05/31/93	Weekly
111-T	-	01/12/93	No reading taken since 03/29/93	Out of compliance as of 04/07/93	Quarterly
109-BY	-	10/20/92	Taking manual FIC readings	In compliance	Weekly
T-Substation		05/28/93	Taking manual FIC readings	In compliance	W/M/Q
102-T	IS	05/26/91	Taking manual FIC readings	In compliance	Quarterly
103-T	IS	11/15/91	Taking manual FIC readings	In compliance	Quarterly
112-T	IS	03/31/93	Taking manual FIC readings	In compliance	Quarterly
104-TX	IS	07/27/92	Taking manual FIC readings	In compliance	Quarterly
103-U	-	02/18/93	Taking manual FIC readings	In compliance	Weekly
105-U	-	11/17/92	Taking manual FIC readings	In compliance	Weekly
101-SY	DST	08/23/91	Taking manual FIC readings	In compliance	Daily
102-AP	DST	01/27/93	Taking manual tape readings	In compliance	Daily
103-AP	DST	12/16/92	Taking manual tape readings	In compliance	Daily
101-AW	DST	10/23/92	Taking manual tape readings	In compliance	Daily
103-AW	DST	03/21/92	Taking manual tape readings	In compliance	Daily
101-AY	DST	08/31/90	Taking manual tape readings	In compliance	Daily
101-AZ	DST	02/02/90	Taking manual tape readings	In compliance	Daily
102-AZ	DST	02/15/90	Taking manual tape readings	In compliance	Daily
102-SY	DST	01/06/92	Taking manual tape readings	In compliance	Daily
101-T	-	12/02/91	Taking manual tape readings	In compliance	Daily
Catch Tanks					
A-302-A		04/16/91	Taking manual FIC reading	In compliance	Daily
S-302		07/02/90	Taking manual FIC reading	In compliance	Daily
S-302-A		12/04/91	No reading taken since 12/04/91	Out of compliance as of 12/05/91	Daily
U-301-B		03/23/93	No reading taken since 04/29/93	Out of compliance as of 04/30/93	Daily

Frequency reading requirements:
Daily - Must be taken by 2 pm each day
Weekly - Must be taken by 2 pm each Monday
Quarterly - Must be taken by 2 pm on the seventh day of each quarter

LEGEND: IS = Interim Stabilized
DST = Double-Shell Tank

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

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

NOTE:
All Watch List and High Heat tank temperature monitoring is in compliance.
All Dome Elevation Survey monitoring is in compliance.
All Drywell monitoring is in compliance.
Psychrometrics (2)
In-tank Photographs (3)

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

Information as of 5/31/93

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

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 2 of 5)

Information as of 5/31/93

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

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 3 of 5)

Information as of 5/31/93

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

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 4 of 5)

Information as of 5/31/93

Tank Number	Category: Watch List	Category: High Heat	Temperature Readings (5)	Surface Level Readings (1) (-357): M.T.	Surface Level Readings (1) (-357): FIC	LOW Readings (-357): Gamma	LOW Readings (-357): Neutron	Radiation Readings: Lateral Readings (-357)	Radiation Readings: Drywell Readings (OSR/SAR)	Dome Elevation Surveys (OSR/SAR)
107-U	X			N/A				N/A		
108-U	X			N/A				N/A		
109-U	X			N/A				N/A		
110-U				N/A		N/A	N/A	N/A		
111-U				N/A				N/A		
112-U					N/A	N/A	N/A	N/A		
201-U			O/C		N/A	N/A	N/A	N/A		
202-U					N/A	N/A	N/A	N/A		
203-U			O/C		N/A	N/A	N/A	N/A		
204-U			O/C		N/A	N/A	N/A	N/A		
Catch Tanks and Special Surveillance Facilities										
A-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
A-302-B	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
311-ER	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
152-AX	N/A	N/A	N/A		N/A					
151-AZ	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
154-AZ	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
BX-TK/SMP	N/A	N/A	N/A		N/A					
A-TK/SMP	N/A	N/A	N/A		N/A					
204-AR	N/A	N/A	N/A							
417-A	N/A	N/A	N/A							
Vent Sta.	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
S-302	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
S-302-A	N/A	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A
S-304	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
TX-302-B	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A	N/A
TX-302-C	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
U-301-B	N/A	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A	N/A
UX-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
141-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
142-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
Totals: 149 tanks	48 Watch List Tanks (4)	11 High Heat Tanks (4)	O/C: 29 tanks – (semiannual monitoring frequency) (5)	O/C: 0 tanks 1 catch tank	O/C: 3 tanks 2 catch tanks	O/C: 3 tanks	O/C: 3 tanks	O/C: 9 tanks	0	0
						58 tanks have LOWs (2 are O/S)				

Footnotes:

(1) All SSTs have either manual tape or FIC, with the exception of 108-S and 101-T, which have both. Tank 101-T also has a zip cord. All SST FICs are connected to CASS, with the exception of 106-BX; however, the connection for many tanks is broken For such cases, manual readings are taken. Manual surface level readings include readings taken by manual tape, manual FIC (not connected to Computer Automated Surveillance System, 106-BX), manual readings of automatic FIC (if CASS is printing "0"), or automatic FIC. In some cases, the surface level readings are taken using a zip cord. While less accurate, such readings are acceptable for meeting the surface level reading requirements.

(2) Psychrometric readings are to be taken on tanks with active exhausters (High heat tanks 104/105-A, 105/106-C, 107, 108, 109, 110, 111, 112, and 114-SX). Psychrometrics were not taken from 9/91 to 9/92. Exhauster down on 104/105-A; no readings being taken. 105/106-C psychrometric readings are required to be taken on a monthly frequency. Readings were taken in high heat SX tanks in March 1993. Psychrometic frequency not specified in -357 or operating procedures.

(3) In-tank Photographs are not required by -357. In-tank photographs were not taken between 1991 and 1993.

(4) Two tanks are on both category lists (106-C, 109-SX).

TABLE 8. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 5 of 5)

Footnotes continued:

(5) Temperature readings may be regulated by OSD, -357, or POP. Additionally, high heat load tanks are regulated by OSR/SAR. Thermcouples in the 9 tanks designated O/S-O/C are out of service; there are either no thermocouple probes in these tanks, or probes have been cut off, covered over, or are otherwise unable to function. The OSD does not require readings or repair of out-of-service thermocouples for the 92 non-heat load (>40,000 Btu/hr) tanks. However, operating procedure (POP) requires that attempts are to be made semiannually in January and July to obtain readings from these tanks. In March 1993, seven additional TX tank temperature readings were obtained by measuring resistance using the wall of the pipe as ground. Temperatures were comparable to last temperatures taken in 1983. 29 tanks are O/C because either no attempts were made to read them January - March or readings could not be obtained.

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

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

NOTE:

Dome Elevation Surveys are not required for DSTs.

Psychrometrics (2)

In-tank Photographs (3)

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

Information as of 5/31/93

Tank Number	Watch List	Temperature Readings (4) (OSD)	Surface Level Readings (1) (-357, OSR/SAR)		Radiation Readings: Leak Detection Pits (5) (-357, OSR/SAR)		Radiation Readings: Annulus (-357)
			M.T.	FIC	W.F.	Rad.	
101-AN			N/A				
102-AN			N/A			O/C	
103-AN	X		N/A				O/C
104-AN	X		N/A			O/C	
105-AN	X		N/A				
106-AN			N/A				
107-AN			N/A				
101-AP						O/C	
102-AP				O/S		O/C	
103-AP				O/S		O/C	
104-AP			O/S			O/C	
105-AP		O/C				O/C	
106-AP		O/C				O/C	
107-AP		O/C				O/C	
108-AP		O/C				O/C	
101-AW	X			O/S			
102-AW							
103-AW				O/S			
104-AW							
105-AW				O/S			
106-AW							
101-AY				O/S			O/C
102-AY						O/C	O/C
101-AZ				O/S		O/C *	
102-AZ				O/S			
101-SY	X						
102-SY				O/S			
103-SY	X						
Totals: 28 tanks	6 Watch List Tanks	O/C: 4 (4)	O/C: 0	O/C: 0	O/C: 0	O/C: 12 tanks	O/C: 3 tanks

(1) All DSTs have both manual tape and FIC, with the exception of the AN Tank Farm which only has FICs. The manual tape is used when the FIC is out of service. O/C will be shown when no readings are obtained.

(2) Psychrometric readings are taken on DSTs. All DSTs are equipped with active exhausters. Psychrometrics were not taken from 9/91 to 9/92; readings on some tanks were resumed beginning October 1992. Frequency of psychrometric monitoring is not specified in -357 or operating procedures.

(3) In-tank photographs are not required by -357. Last in-tank photographs in DSTs were taken April 1989.

(4) OSD requires DST temperatures to be taken weekly. Tank 101-SY temperatures are obtained shiftwise with increased readings taken prior to and following gas venting. Four AP tanks are O/C because the transmitting equipment is O/S.

(5) Failure of both leak detection systems requires repair of at least one system within 5 working days. Failure of one system only, repair must be within 10 working days. Per -357. If repair of out-of-service systems exceeds these timeframes, systems are O/C. Out-of-service systems which have not exceeded these timeframes will be shown as O/S.

* Although data is being received for 101-AZ, it is considered questionable.

APPENDIX A

TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS

This page intentionally left blank

TANK AND EQUIPMENT CODE/STATUS DEFINITIONS
May 1993

1. TANK STATUS CODES

WASTE TYPE

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

TANK USE (DOUBLE-SHELL TANKS ONLY)

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

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

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

3. DEFINITIONS

WASTE TANKS - GENERAL

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

WASTE TYPES

Aging Waste (AGING)	High level, first cycle solvent extraction waste from the PUREX plant (NCAW)
Concentrated Complexant (CC)	Concentrated product from the evaporation of dilute complexed waste.
Concentrated Phosphate Waste (CP)	Waste originating from the decontamination of 100 N Area reactor. Concentration of this waste produces concentrated phosphate waste.
Dilute Complexed Waste (DC)	Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetra-acetic acid (EDTA), citric acid, hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), and iminodiacetate (IDA) being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory.
Dilute Non-Complexed Waste (DN)	Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).
Double-Shell Slurry (DSS)	Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.
Double-Shell Slurry Feed (DSSF)	Waste concentrated just before reaching the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.
Non-complexed (NCPLX)	General waste term applied to all Hanford site liquors not identified as complexed.
PUREX Decladding (PD/PN)	PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.
PFP TRU Solids (PT)	TRU solids fraction from PFP Plant operations.
Drainable Interstitial Liquid (DIL)	Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity.

Supernate	The liquid above the solids in waste storage tanks.
Ferrocyanide	A compound of iron and cyanide commonly expressed as FeCN. The actual formula for the ferrocyanide anion is $[Fe(CN)_6]^{-4}$.

WASTE STATUS

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

STABILIZATION (Single-Shell Tanks only)

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

ISOLATION (Single-Shell Tanks only)

Partially Interim Isolated (PI)	The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.
Interim Isolated (II)	The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box.

TANK INTEGRITY

Sound	The integrity classification of a waste storage tank for which surveillance data indicate no loss of liquid attributed to a breach of integrity.
Assumed Leaker	The integrity classification of a waste storage tank for which surveillance data indicate a loss of liquid attributed to a breach of integrity.
Assumed Re-Leaker	A condition that exists after a tank has been declared as an "assumed leaker" and then the

surveillance data indicates a new loss of liquid attributed to a breach of integrity.

TANK INVESTIGATION

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

SURVEILLANCE INSTRUMENTATION

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

Laterals — Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells are monitored by radiation detection probes. Laterals are 4-in. inside diameter steel pipes located 8 to 10 ft below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms.

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

Automatic FIC — An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and also transmit the reading to the CASS. Some tanks have gauges connected to CASS and others are read manually.

Annulus	The annulus is the space between the inner and outer shells on DSTs. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. Alarms from the annunciators are received by CASS. Continuous Air Monitoring (CAM) alarms are also located in the annulus. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.
Liquid Observation Well (LOW)	In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are constructed of fiberglass or TEFZEL*-reinforced epoxy-polyester resin, sized to extend to within 1 in. of the bottom of the tank steel liner. They are sealed at their bottom ends and have a nominal outside diameter of 3.5 in. Three probes are used to monitor changes in the ILL: acoustic; gamma; and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 58 LOWs (56 are in operation) installed in SSTs that contain or are capable of containing greater than 50,000 gal of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (102-SY and 103-AW Tanks), are constructed of steel and are used for special surveillance purposes only.
Thermocouple (TC)	A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete. These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, there may be one or more thermocouple trees installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple may be installed in a riser, or lowered down an existing riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.
In-tank Photography	In-tank photographs may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs help determine sludge and liquid levels by visual examination.

---

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

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

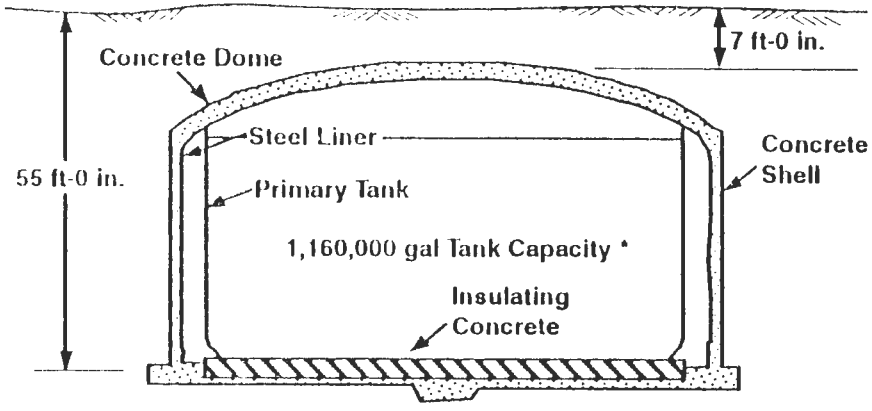
COLUMN HEADING

Total Waste	Solids Volume plus Supernatant liquid.
Supernatant Liquid	Drainable Liquid Remaining minus Drainable Interstitial. Supernate is usually derived by subtracting the solids level measurement from the liquid level measurement.
Drainable Interstitial	Drainable Liquid Remaining minus Supernate. Drainable Interstitial Liquid is calculated based on the saltcake and sludge volumes, using average porosity values or actual data for each tank, when available.
Total Jet Pumped	Cumulative total pumped 1979 to date.
Drainable Liquid Remaining	Supernate plus Drainable Interstitial.
Pumpable Liquid Remaining	Drainable Liquid Remaining less undrainable heel volume.
Sludge	Solids formed during sodium hydroxide additions to waste. Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs may be used to estimate the volume.
Saltcake	Results from crystalization and precipitation after concentration of liquid waste, usually in an evaporator. If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs may be used to estimate the saltcake volume.
Solids Volume Update	Indicates the latest update of any change in the solids volume.
Solids Update Source - See Footnote	Indicates the source or basis of the latest solids volume update.
Last Photo Date	Date of latest in-tank photographs taken.
Change Since Last Monthly Report	Indicates any change made since the previous month. Explanation for the change follows the Inventory and Status by Tank section.

APPENDIX B

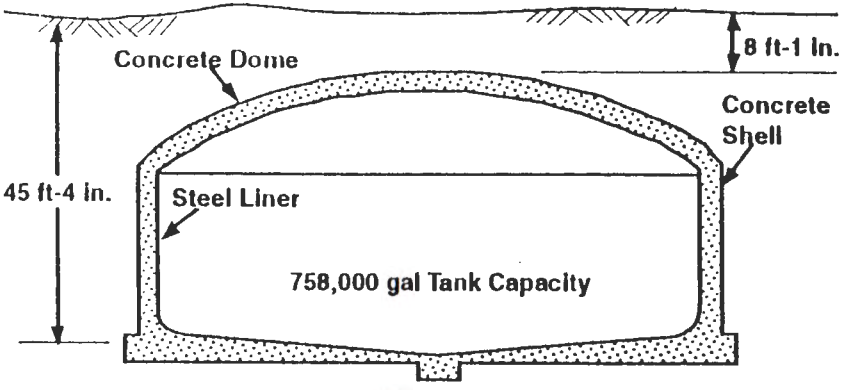
TANK FARM CONFIGURATION, STATUS, AND FACILITY CHARTS

This page intentionally left blank.

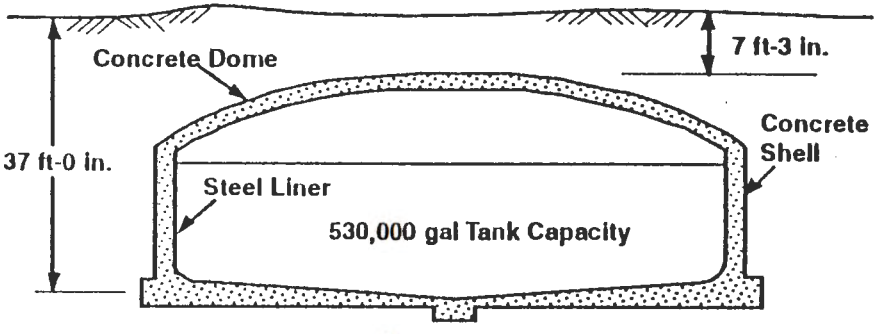


75 ft Diameter Double-Shell Tank
Tank Farms: AN, AP, AW, AY, AZ, SY

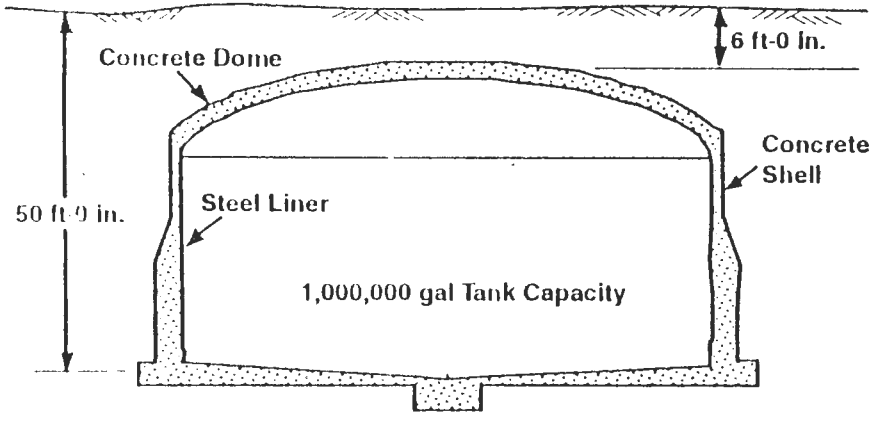
* AY and AZ Have a Tank Capacity of 1,000,000 gal



75 ft Diameter Single-Shell Tank
Tank Farms: BY, S, TX, TY

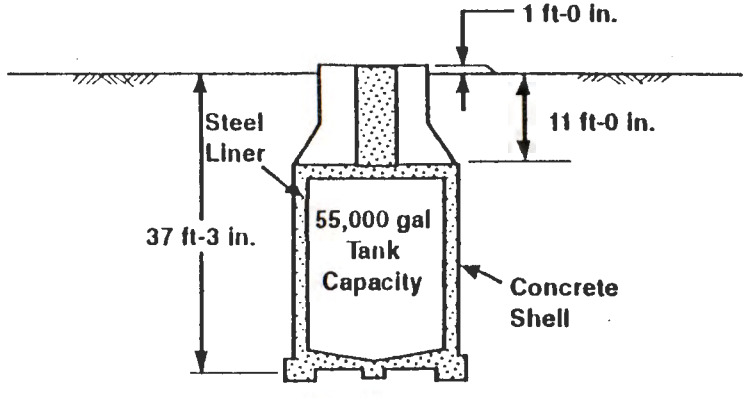


75 ft Diameter Single-Shell Tank
Tank Farms: B, BX, C, T, U



75 ft Diameter Single-Shell Tank
Tank Farms: A*, AX*, SX

* A and AX have flat bottoms



20 ft Diameter Single-Shell Tank
Tank Farms: B, C, T, U

Figure B-1. High-Level Waste Tank Configuration

29103062.1a

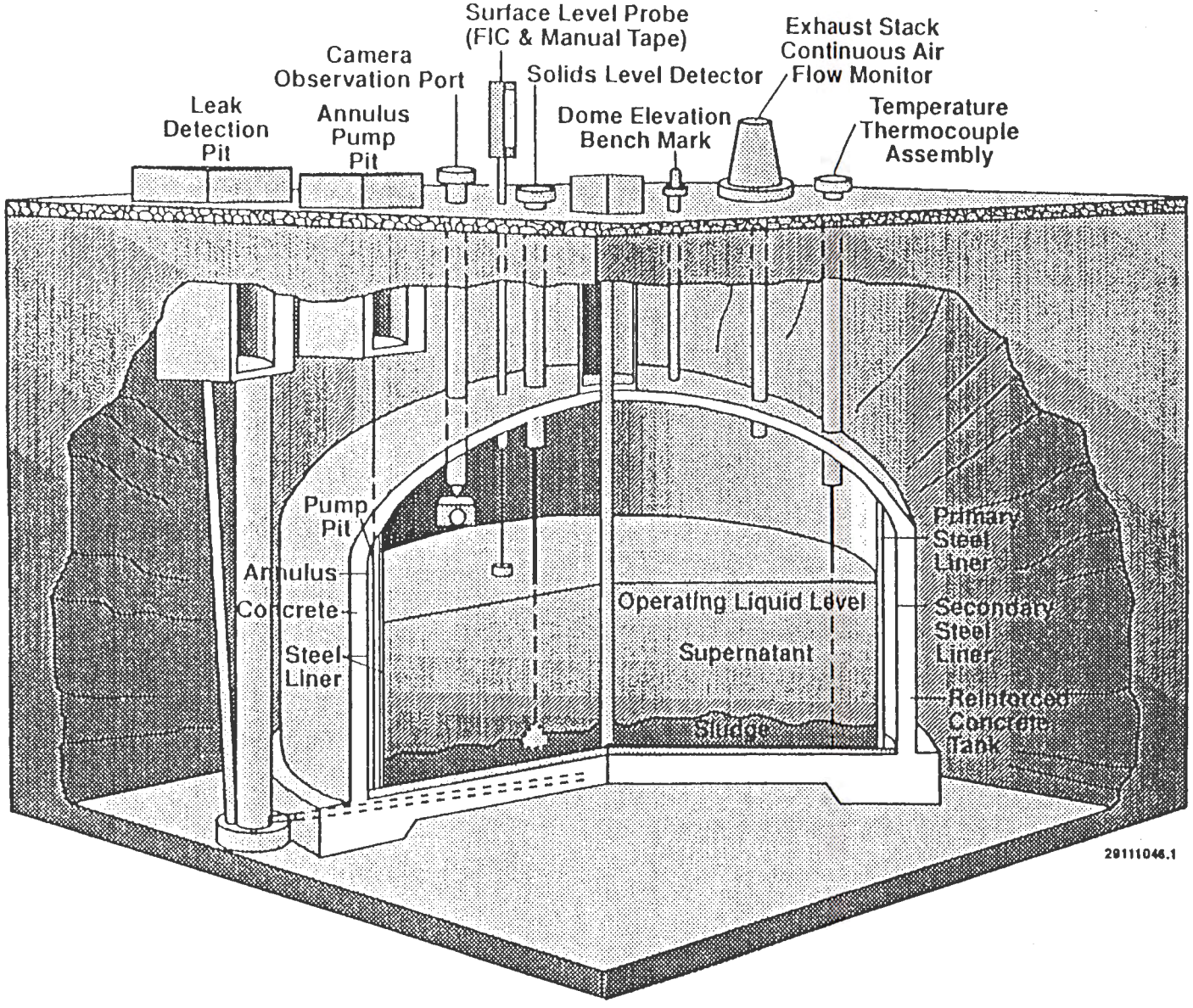


Figure B-2. Double-Shell Tank Instrumentation Configuration

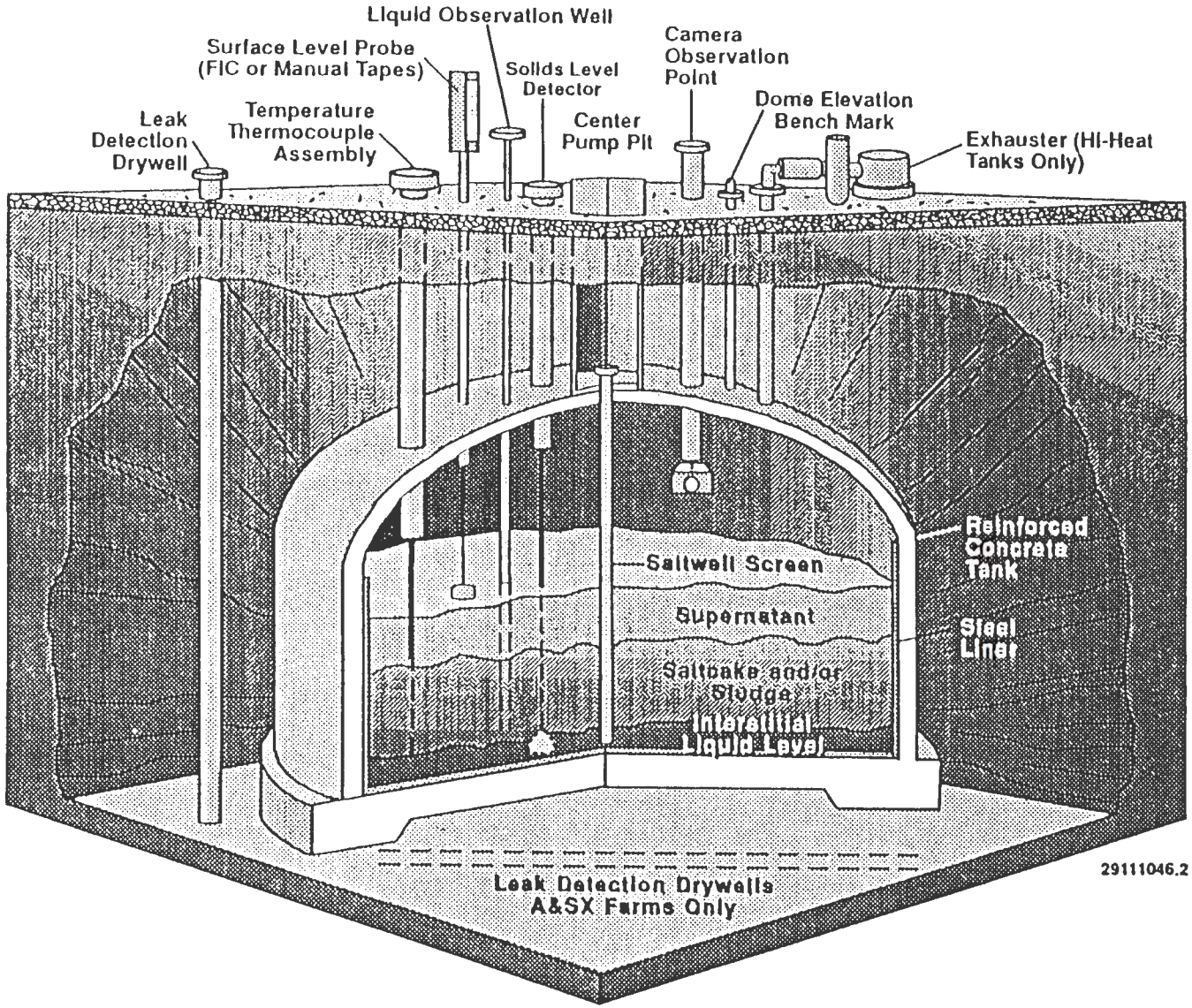


Figure B-3. Single-Shell Tank Instrumentation Configuration

This page intentionally left blank.

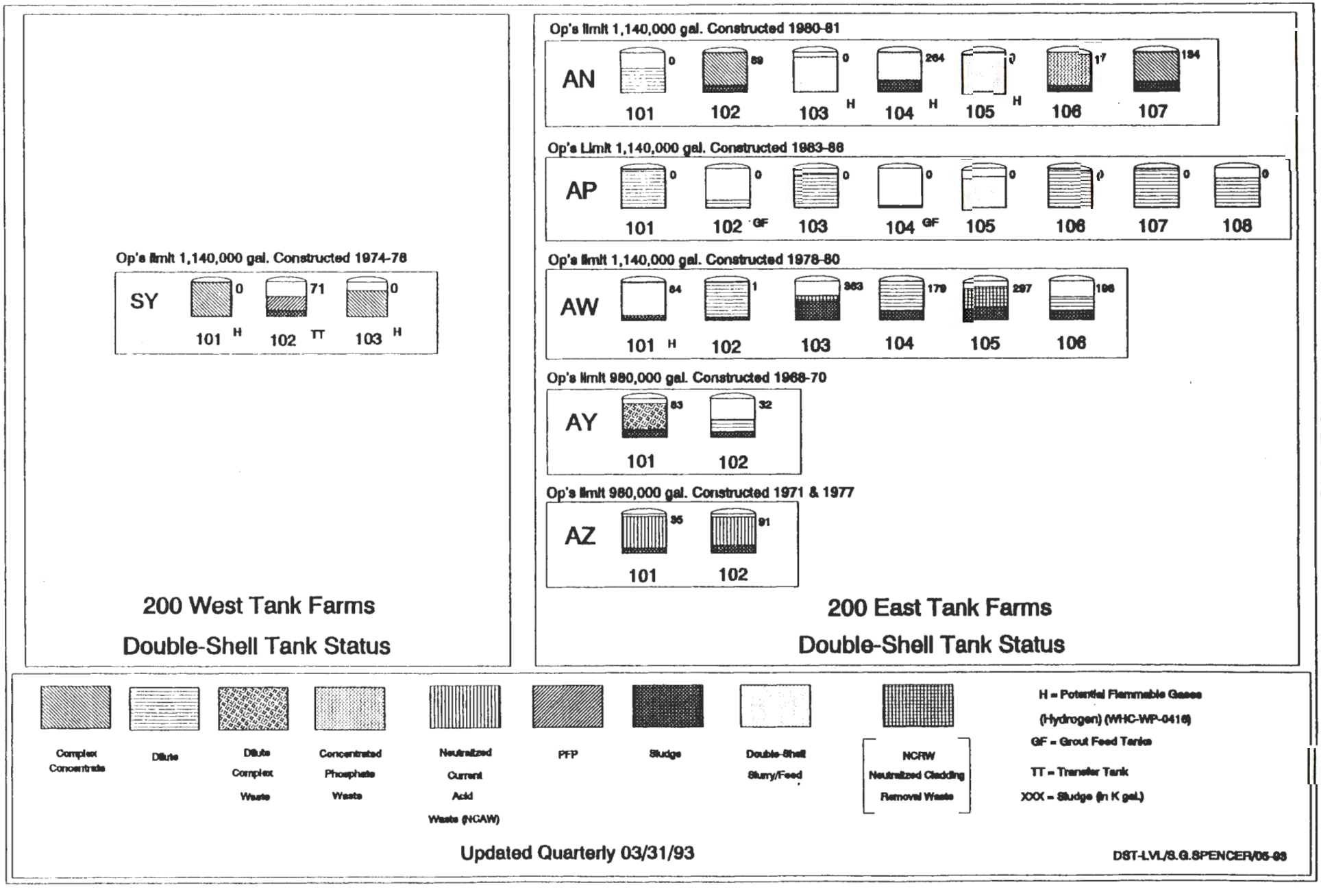


Figure B-4. Double-Shell Tank Status

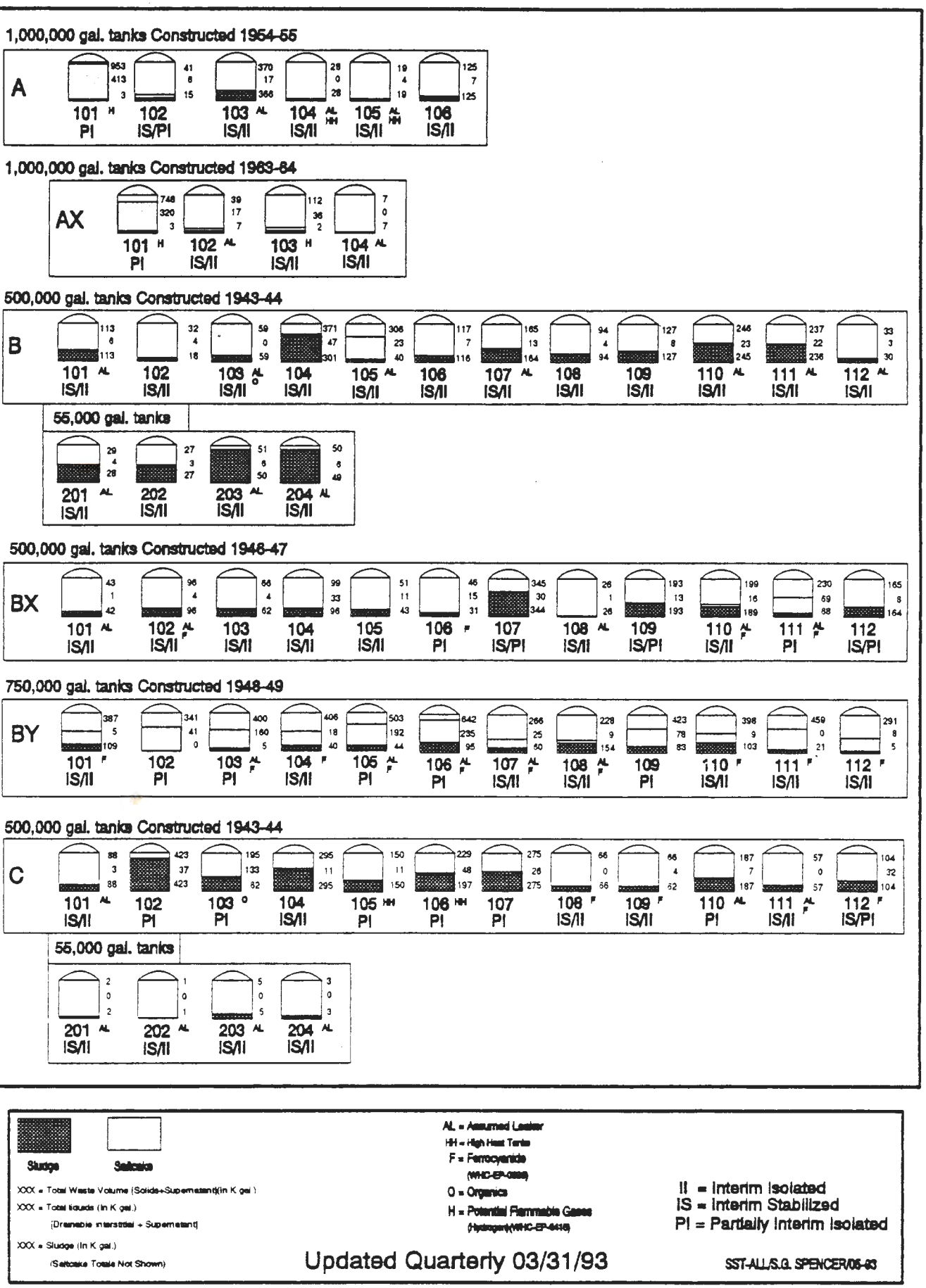


Figure B-5. 200E Single-Shell Tank Status

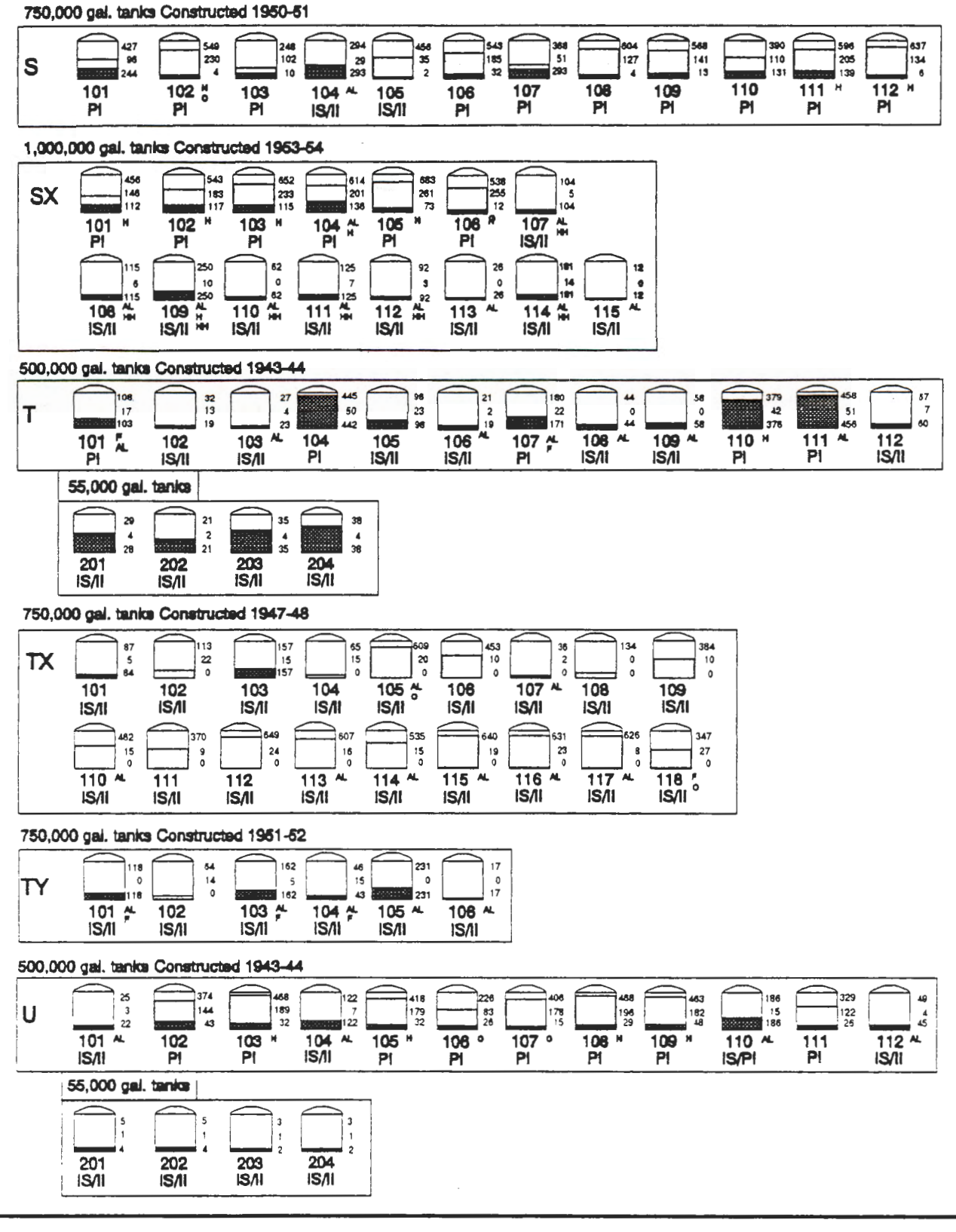
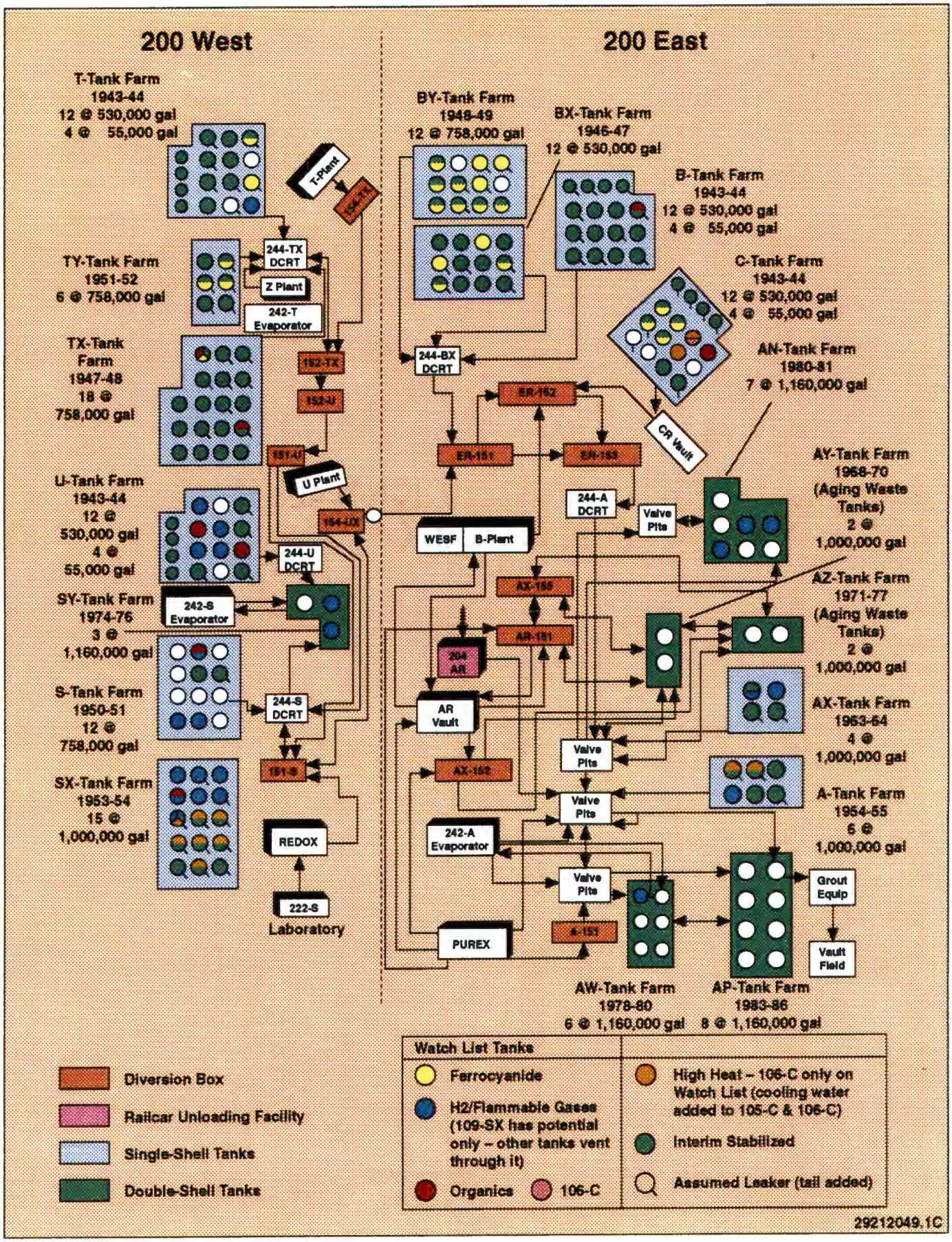


Fig. B-6. 200W Single-Shell Tank Status

THIS PAGE INTENTIONALLY
LEFT BLANK



THIS PAGE INTENTIONALLY
LEFT BLANK

200 WEST

200 EAST

T TANK FARM
1943-44
12 @ 530,000 GAL.
4 @ 55,000 GAL.
TANK CAPACITY

TY TANK FARM
1951-52
6 @ 758,000 GAL.
TANK CAPACITY

TX TANK FARM
1947-48
18 @ 758,000 GAL.
TANK CAPACITY

Z PLANT

T PLANT

154-TX DIVERSION BOX

244 TX DCRT

242-T EVAPORATOR

152-TX DIVERSION BOX

152-U DIVERSION BOX

151-U DIVERSION BOXES

U TANK FARM
1943-44
12 @ 530,000 GAL.
4 @ 55,000 GAL.
TANK CAPACITY

U PLANT

154-UX DIVERSION BOX

244 U DCRT

242-S EVAPORATOR

SLURRY

FEED

S TANK FARM
1950-51
12 @ 758,000 GAL.
TANK CAPACITY

SY TANK FARM
1974-78
3@1,160,000 GAL.
TANK CAPACITY

244 S DCRT

SX TANK FARM
1953-54
15 @ 1,000,000 GAL.
TANK CAPACITY

151-S

240-151-S

LAB WASTE

REDOX

222-S

200 WEST AREA

200 EAST AREA

BY TANK FARM
1948-49
12 @ 758,000 GAL.
TANK CAPACITY

BX TANK FARM
1948-47
12 @ 530,000 GAL.
TANK CAPACITY

244 BX DCRT

B TANK FARM
1943-44
12 @ 530,000 GAL.
4 @ 55,000 GAL.
TANK CAPACITY

C TANK FARM
1943-44
12 @ 530,000 GAL.
4 @ 55,000 GAL.
TANK CAPACITY

241-ER-152

241-ER-151

241-ER-153

CR VAULT

VENT STATION

WESF

B PLANT

244 A DCRT

AN TANK FARM
1980-81
7@1,160,000 GAL.
TANK CAPACITY

VALVE PITS
241-AN-A
241-AN-B

PAW

NHW

241-AX-155

AY TANK FARM
1968-70
(AGING WASTE TANKS)
2 @ 1,000,000 GAL.
TANK CAPACITY

AZ TANK FARM
1971-77
(AGING WASTE TANKS)
2 @ 1,000,000 GAL.
TANK CAPACITY

241-AR-151

204-AR

AR VAULT

AX TANK FARM
1963-64
4 @ 1,000,000 GAL.
TANK CAPACITY

241-AX-152

VALVE PITS
241-AX-A
241-AX-B

A TANK FARM
1954-55
6 @ 1,000,000 GAL.
TANK CAPACITY

VALVE PITS
241-A-A
241-A-B

TGE FEED

242-A EVAPORATOR

SLURRY

DUMP

FEED

AP TANK FARM
1983-86
6 @ 1,160,000 GAL.
TANK CAPACITY

TRANSPORTABLE GROUT EQUIPMENT (TGE)

VAULT FIELD

AW TANK FARM
1978-80
6@1,160,000 GAL.
TANK CAPACITY

VALVE PITS
241-AW-A
241-AW-B

241-A-151

PUREX

TANK FARM OPERATIONS SUPPORT FACILITY

NOTE: ALL SINGLE SHELL TANKS REMOVED FROM SERVICE NOVEMBER 21, 1980.

RADIATION MONITORING LATERALS UNDER TANK (X = NOT USED)

TANK NUMBER

RADIATION MONITORING DRY WELL - APPROX LOCATION (● = ACTIVE ○ = INACTIVE)

LIQUID LEVEL GAGES
▼=FIC READ MANUALLY
Y=TAPE READ MANUALLY
▽=AUTO FIC ON CASS
▼=INTRUSION MODE FIC

AIRLIFT CIRCULATORS

LIQUID OBSERVATION WELL (LOW)

OPEN HOLE PUMP

SALT WELL SCREEN

SCREEN P-10 PUMP

SCREEN - JET PUMP

OPERATING EXHAUSTER

TEMPERATURE READINGS
(● AUTOMATIC READINGS:
BY CASS FOR DSTs
BY TMACS FOR SSTs)
(○ MANUAL READINGS)

YEAR REMOVED FROM SERVICE

PRESENT

JET PUMP TRANSFER (DIRECT BURIED)

FUTURE

ALL TANKS 75 FOOT DIA
(EXCEPT 55,000 GAL. 20 FOOT DIA.)

SINGLE-SHELL DOUBLE-SHELL
SOUND

ASSUMED LEAKER

INTERIM STABILIZED
ISOLATED

P=PARTIAL INTERIM

I= INTERIM ISOLATED

DCRT=DOUBLE CONTAINED RECEIVER TANK
NHW=NEUTRALIZED HIGH LEVEL WASTE
PAW=PUREX ACID WASTE

FIGURE B-8. HANFORD TANK FARM FACILITIES, UPDATED QUARTERLY, UPDATED 3/31/93.

HANTKFRM TST2 BCAD

THIS PAGE INTENTIONALLY
LEFT BLANK

APPENDIX C

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

This page intentionally left blank.

TABLE C-1. MONTHLY SUMMARY

TANK STATUS

May 1993

	200 EAST AREA	200 WEST AREA	TOTAL
IN SERVICE	25	3	28 (2)
OUT OF SERVICE	67	83	149
SOUND	59	50	109
ASSUMED LEAKER	32	36	68
INTERIM STABILIZED	51	55	106 (1)
ISOLATED			
PARTIAL INTERIM	21	30	51
INTERIM	45	53	98

WASTE VOLUMES (Kgallons)

		200 EAST AREA	200 WEST AREA	TOTAL	SST TANKS	DST TANKS	TOTAL
SUPERNATANT							
AGING	Aging waste	1786	0	1786	0	1786	1786
CC	Complexant concentrate waste	1948	213	2161	3	2158	2161
CP	Concentrated phosphate waste	6	0	6	0	6	6
DC	Dilute complexed waste	832	1	833	1	832	833
DN	Dilute non-complexed waste	10303	0	10303	0	10303	10303
DN/PD	Dilute non-complex/PUREX TRU solids	979	0	979	0	979	979
DN/PT	Dilute non-complex/PFP TRU solids	0	655	655	0	655	655
DSSF	Double-shell slurry feed	3837	48	3885	56	3829	3885
NCPLX	Non-complexed waste	234	281	515	515	0	515
TOTAL SUPERNATANT		19925	1198	21123	575	20548	21123
SOLIDS							
Double-shell slurry		937	1103	2040	0	2040	2040
Sludge		8206	6213	14419	12464	1955	14419
Saltcake		6577	17352	23929	23169	760	23929
TOTAL SOLIDS		15720	24668	40388	35633	4755	40388
TOTAL WASTE		35645	25866	61511	36208	25303	61511
AVAILABLE SPACE IN TANKS		5174	814	5988	0	5988 (2)	5988
DRAINABLE INTERSTITIAL		2253	4516	6769	6330	439	6769
DRAINABLE LIQUID REMAINING		22173	5714	27887	6900	20987	27887

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

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

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

TABLE C-2. TANK USE SUMMARY

May 1993

TANK FARMS	IN SERVICE	OUT OF SERVICE	SOUND	ASSUMED LEAKER	ISOLATED TANKS PARTIAL	ISOLATED TANKS INTERIM	INTERIM STABILIZED TANKS
EAST							
A	0	6	3	3	2	4	5
AN	7 (2)	0	7	0	0	0	0
AP	8	0	8	0	0	0	0
AW	6 (2)	0	6	0	0	0	0
AX	0	4	2	2	1	3	3
AY	2	0	2	0	0	0	0
AZ	2	0	2	0	0	0	0
B	0	16	6	10	0	16	16 (1)
BX	0	12	7	5	6	6	10 (1)
BY	0	12	7	5	5	7	7
C	0	16	9	7	7	9	10
Total	25	66	59	32	21	45	51
WEST							
S	0	12	11	1	10	2	2
SX	0	15	4	11	6	9	9
SY	3 (2)	0	3	0	0	0	0
T	0	16	9	7	5	11	12 (1)
TX	0	18	10	8	0	18	18
TY	0	6	1	5	0	6	6
U	0	16	12	4	9	7	8 (1)
Total	3	83	51	35	30	53	55
TOTAL	28	149	109	68	51	98	106

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

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

TABLE C-3. INVENTORY SUMMARY BY TANK FARM

WASTE VOLUMES (Kgallons)

May 1993

TANK FARM	TOTAL WASTE	AVAIL SPACE	*SUPERNATANT LIQUID VOLUMES*									*SOLIDS VOLUME*			
			AGING	CC	CP	DC	DN	DN/PD	DN/PT	DSSF	NCPLX	TOTAL	DSS	SLUDGE	SALT CAKE	TOTAL
EAST																
A	1536	0	0	0	0	0	0	0	0	8	0	8	0	556	972	1528
AN	5972	2008	0	1945	6	0	639	0	0	1941	0	4531	937	504	0	1441
AP	7285	1835	0	0	0	0	6464	0	0	821	0	7285	0	0	0	0
AW	5792	1059	0	0	0	0	2415	979	0	1067	0	4461	0	1135	196	1331
AX	906	0	0	3	0	0	0	0	0	0	0	3	0	19	884	903
AY	1732	228	0	0	0	832	785	0	0	0	0	1617	0	115	0	115
AZ	1916	44	1786	0	0	0	0	0	0	0	0	1786	0	130	0	130
B	2057	0	0	0	0	0	0	0	0	0	15	15	0	1697	345	2042
BX	1559	0	0	0	0	0	0	0	0	0	50	50	0	1354	155	1509
BY	4744	0	0	0	0	0	0	0	0	0	0	0	0	719	4025	4744
C	2146	0	0	0	0	0	0	0	0	0	169	169	0	1977	0	1977
Total	35645	5174	1786	1948	6	832	10303	979	0	3837	234	19925	937	8206	6577	15720
WEST																
S	5680	0	0	0	0	0	0	0	0	17	29	46	0	1171	4463	5634
SX	4453	0	0	0	0	1	0	0	0	0	62	63	0	1532	2858	4390
SY	2606	814	0	213	0	0	0	0	655	0	0	868	1103	71	564	1738
T	2034	0	0	0	0	0	0	0	0	0	45	45	0	1989	0	1989
TX	6905	0	0	0	0	0	0	0	0	0	5	5	0	241	6659	6900
TY	638	0	0	0	0	0	0	0	0	0	3	3	0	571	64	635
U	3550	0	0	0	0	0	0	0	0	31	137	168	0	638	2744	3382
Total	25866	814	0	213	0	1	0	0	655	48	281	1198	1103	6213	17352	24668
TOTAL	61511	5988	1786	2161	6	833	10303	979	655	3885	515	21123	2040	14419	23929	40388

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

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

TANK STATUS				LIQUID VOLUME									SOLIDS VOLUME			VOLUME DETERMINATION				
TANK	WASTE MATL	TANK INTEGRTY	TANK USE	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPERNATANT LIQUID (Kgal)	DRAINABLE INTERSTIT. (Kgal)	PUMPED THIS MONTH	PUMPED TOTAL	DRAINABLE LIQUID REMAIN (Kgal)	PUMPABLE LIQUID REMAIN (Kgal)	DSS (Kgallons)	SLDG	SALT CAKE	LIQ VOL MTHD	SOL VOL MTHD	SOLIDS VOLUME UPDATE	LAST PHOTO DATE	CHANGE SINCE LAST MONTHLY REPORT
								++++++	AN FARM STATUS		++++++									
101AN	DN	SOUND	DRCVR	232.4	639	501	639	0	0.0	0.0	639	639	0	0	0	FM	S	08/22/89	0/ 0/ 0	
102AN	CC	SOUND	CWHT	400.4	1101	39	1012	3	0.0	0.0	1015	1012	0	89	0	FM	S	08/22/89	0/ 0/ 0	
103AN	DSS	SOUND	CWHT	346.5	953	187	16	0	0.0	0.0	16	16	937	0	0	FM	S	08/22/89	10/29/87	
104AN	DSSF	SOUND	CWHT	385.5	1060	80	796	25	0.0	0.0	821	799	0	264	0	FM	S	08/22/89	08/19/88	
105AN	DSSF	SOUND	CWHT	410.5	1129	11	1129	0	0.0	0.0	1129	1129	0	0	0	FM	S	10/22/84	01/26/88	
106AN	CP	SOUND	CWHT	8.4	23	1117	6	0	0.0	0.0	6	6	0	17	0	FM	S	08/22/89	0/ 0/ 0	
107AN	CC	SOUND	CWHT	388.0	1067	73	933	9	0.0	0.0	942	933	0	134	0	FM	S	08/22/89	09/01/88	
7 DOUBLE-SHELL TANKS				TOTALS:	5972	2008	4531	37	0.0	0.0	4568	4534	937	504	0					
								++++++	AP FARM STATUS		++++++									
101AP	DN	SOUND	DRCVR	385.8	1061	79	1061	0	0.0	0.0	1061	1061	0	0	0	FM	S	05/01/89	0/ 0/ 0	
102AP	DN	SOUND	GRTFD	402.5	1107	33	1107	0	0.0	0.0	1107	1107	0	0	0	FM	S	07/11/89	0/ 0/ 0	
103AP	DN	SOUND	DRCVR	411.6	1132	8	1132	0	0.0	0.0	1132	1132	0	0	0	FM	S	10/13/88	0/ 0/ 0	
104AP	DN	SOUND	GRTFD	6.9	19	1121	19	0	0.0	0.0	19	19	0	0	0	FM	S	10/13/88	0/ 0/ 0	
105AP	DSSF	SOUND	CWHT	298.5	821	319	821	0	0.0	0.0	821	821	0	0	0	FM	S	02/02/89	0/ 0/ 0	
106AP	DN	SOUND	DRCVR	410.5	1129	11	1129	0	0.0	0.0	1129	1129	0	0	0	FM	S	10/13/88	0/ 0/ 0	
107AP	DN	SOUND	DRCVR	405.5	1115	25	1115	0	0.0	0.0	1115	1115	0	0	0	FM	S	10/13/88	0/ 0/ 0	
108AP	DN	SOUND	DRCVR	327.6	901	239	901	0	0.0	0.0	901	901	0	0	0	FM	S	10/13/88	0/ 0/ 0	
8 DOUBLE-SHELL TANKS				TOTALS:	7285	1835	7285	0	0.0	0.0	7285	7285	0	0	0					

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

TANK STATUS				LIQUID VOLUME									SOLIDS VOLUME			VOLUME DETERMINATION				
TANK	WASTE MATL	TANK INTEGRTY	TANK USE	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPERNATANT LIQUID (Kgal)	DRAINABLE INTERSTIT. (Kgal)	PUMPED THIS MONTH	PUMPED TOTAL	DRAINABLE LIQUID REMAIN (Kgal)	PUMPABLE LIQUID REMAIN (Kgal)	DSS (Kgallons)	SLDG (Kgallons)	SALT CAKE (Kgallons)	LIQ VOL MTHD	SOL VOL MTHD	SOLIDS VOLUME UPDATE	LAST PHOTO DATE	CHANGE SINCE LAST MONTHLY REPORT
								++++++ AW FARM STATUS ++++++												
101AW	DSSF	SOUND	CWHT	418.5	1151	0	1067	2	0.0	0.0	1069	1067	0	84	0	FM	S	10/22/84	03/17/88	(1)
102AW	DN	SOUND	EVFD	301.8	830	310	829	0	0.0	0.0	829	829	0	1	0	FM	S	02/29/84	02/02/83	
103AW	DN/PD	SOUND	DRCVR	234.5	645	495	282	37	0.0	0.0	319	297	0	363	0	FM	S	02/01/89	0/ 0/ 0	
104AW	DN	SOUND	DRCVR	408.7	1124	16	834	49	0.0	0.0	883	861	0	179	111	FM	S	03/05/87	02/02/83	
105AW	DN/PD	SOUND	DRCVR	361.5	994	146	697	29	0.0	0.0	726	704	0	297	0	FM	S	03/05/87	0/ 0/ 0	
106AW	DN	SOUND	SRCVR	381.1	1048	92	752	42	0.0	0.0	794	772	0	211	85	FM	S	01/31/92	02/02/83	
6 DOUBLE-SHELL TANKS				TOTALS:	5792	1059	4461	159	0.0	0.0	4620	4530	0	1135	196					
								++++++ AY FARM STATUS ++++++												
101AY	DC	SOUND	DRCVR	332.7	915	65	832	2	0.0	0.0	834	832	0	83	0	FM	S	02/02/87	12/28/82	
102AY	DN	SOUND	DRCVR	297.1	817	163	785	0	0.0	0.0	785	785	0	32	0	FM	S	02/10/88	04/28/81	
2 DOUBLE-SHELL TANKS				TOTALS:	1732	228	1617	2	0.0	0.0	1619	1617	0	115	0					
								++++++ AZ FARM STATUS ++++++												
101AZ	AGING	SOUND	CWHT	355.6	978	2	943	0	0.0	0.0	943	943	0	35	0	FM	S	09/30/90	08/18/83	
102AZ	AGING	SOUND	DRCVR	341.1	938	42	843	4	0.0	0.0	847	843	0	95	0	FM	S	06/04/92	12/24/84	
2 DOUBLE-SHELL TANKS				TOTALS:	1916	44	1786	4	0.0	0.0	1790	1786	0	130	0					

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

TANK STATUS				LIQUID VOLUME									SOLIDS VOLUME			VOLUME DETERMINATION				
TANK	WASTE MATL	TANK INTEGRTY	TANK USE	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL SPACE (Kgal)	SUPERNATANT LIQUID (Kgal)	DRAINABLE INTERSTIT. (Kgal)	PUMPED THIS MONTH	TOTAL PUMPED	DRAINABLE LIQUID REMAIN (Kgal)	PUMPABLE LIQUID REMAIN (Kgal)	DSS (Kgallons)	SLDG	SALT CAKE	LIQ VOL MTHD	SOL VOL MTHD	SOLIDS VOLUME UPDATE	LAST PHOTO DATE	* CHANGE SINCE LAST MONTHLY REPORT
								++++++	SY FARM STATUS		++++++									
101SY	CC	SOUND	CWHT	410.5	1129	11	39	237	0.0	0.0	276	270	530	0	560	FM	S	01/31/92	04/12/89	
102SY	DN/PT	SOUND	DRCVR	264.0	726	414	655	0	0.0	0.0	655	655	0	71	0	FM	S	05/12/87	04/29/81	
103SY	CC	SOUND	CWHT	273.1	751	389	174	0	0.0	0.0	174	174	573	0	4	FM	S	10/22/84	10/01/85	
3 DOUBLE-SHELL TANKS				TOTALS:	2606	814	868	237	0.0	0.0	1105	1099	1103	71	564					
GRAND TOTAL					25303	5988	20548	439			20987	20851	2040	1955	760					

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

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

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

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

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

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

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

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

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

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

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT
						++++++	BX FARM STATUS		++++++									
101BX	NCPLX	ASMD LKR	IS/II	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82		11/24/88	
102BX	NCPLX	ASMD LKR	IS/II	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82		09/18/85	
103BX	NCPLX	SOUND	IS/II	66	4	0	0.0	0.0	4	0	62	0	P	F	11/29/83		10/31/86	
104BX	NCPLX	SOUND	IS/II	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	(1)	09/21/89	
105BX	NCPLX	SOUND	IS/II	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	(1)	10/23/86	
106BX	NCPLX	SOUND	/PI	46	15	0	0.0	0.0	15	15	31	0	MP	PS	04/28/82		05/19/88	
107BX	NCPLX	SOUND	IS/PI	345	1	29	0.0	23.1	30	23	344	0	MP	P	09/18/90	(2)	09/11/90	
108BX	NCPLX	ASMD LKR	IS/II	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	(1)	10/23/86	
109BX	NCPLX	SOUND	IS/PI	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	(2)	09/11/90	
110BX	NCPLX	ASMD LKR	IS/PI	199	1	15	0.0	0.0	16	10	189	9	MP	M	08/22/85	(1)	07/31/85	
111BX	NCPLX	ASMD LKR	/PI	230	19	50	0.0	0.0	69	46	68	143	M	M	07/26/77		09/18/85	
112BX	NCPLX	SOUND	IS/PI	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	(2)	09/11/90	
12 SINGLE-SHELL TANKS			TOTALS:	1559	50	155	0.0	67.8	205	135	1354	155						
						++++++	BY FARM STATUS		++++++									
101BY	NCPLX	SOUND	IS/II	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84		09/19/89	
102BY	NCPLX	SOUND	/PI	341	0	41	0.0	123.3	41	22	0	341	MP	M	08/30/91	(2)	09/11/87	
103BY	NCPLX	ASMD LKR	/PI	400	0	160	0.0	78.5	160	137	5	395	MP	M	04/03/90	(2)	09/07/89	
104BY	NCPLX	SOUND	IS/II	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82		04/27/83	
105BY	NCPLX	ASMD LKR	/PI	503	0	192	0.0	0.0	192	169	44	459	P	MP	04/28/82		07/11/86	
106BY	NCPLX	ASMD LKR	/PI	642	0	235	0.0	0.0	235	213	95	547	P	MP	04/28/82		11/04/82	
107BY	NCPLX	ASMD LKR	IS/II	266	0	25	0.0	56.4	25	0	60	206	P	MP	04/28/82		10/15/86	

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

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT
108BY	NCPLX	ASMD LKR	IS/II	228	0	9	0.0	27.5	9	0	154	74	MP	M	04/28/82		10/15/86	
109BY	NCPLX	SOUND	/PI	423	0	78	0.0	93.5	78	57	83	340	F	PS	08/30/91	(2)	10/15/86	
110BY	NCPLX	SOUND	IS/II	398	0	9	0.0	213.3	9	0	103	295	M	S	09/10/79		07/26/84	
111BY	NCPLX	SOUND	IS/II	459	0	0	0.0	313.2	0	0	21	438	P	M	04/28/82		10/31/86	
112BY	NCPLX	SOUND	IS/II	291	0	8	0.0	116.4	8	0	5	286	P	M	04/28/82		04/14/88	
12 SINGLE-SHELL TANKS			TOTALS:	4744	0	780	0.0	1387.4	780	598	719	4025						
						++++++ C FARM STATUS ++++++												
101C	NCPLX	ASMD LKR	IS/II	88	0	3	0.0	0.0	3	0	88	0	M	M	11/29/83		11/17/87	
102C	DC	SOUND	/PI	423	0	37	0.0	11.6	37	19	423	0	F	FP	04/28/82		05/18/76	
103C	NCPLX	SOUND	/PI	195	133	0	0.0	0.0	133	133	62	0	F	S	10/22/90	(2)	07/28/87	
104C	CC	SOUND	IS/II	295	0	11	0.0	0.0	11	5	295	0	FP	P	09/22/89	(1)	07/25/90	
105C	NCPLX	SOUND	/PI	150	0	11	0.0	0.0	11	4	150	0	F	S	05/31/85		04/01/88	
106C	NCPLX	SOUND	/PI	229	32	16	0.0	0.0	48	42	197	0	F	PS	04/28/82		04/05/79	
107C	DC	SOUND	/PI	275	0	26	0.0	16.3	26	20	275	0	F	S	01/30/92	(2)	00/00/00	
108C	NCPLX	SOUND	IS/II	66	0	0	0.0	0.0	0	0	66	0	M	S	02/24/84	(1)	12/05/74	
109C	NCPLX	SOUND	IS/II	66	4	0	0.0	0.0	4	0	62	0	M	PS	11/29/83		01/30/76	
110C	DC	ASMD LKR	/PI	187	0	7	0.0	8.9	7	5	187	0	F	FMP	03/01/92	(2)	08/12/86	
111C	NCPLX	ASMD LKR	IS/II	57	0	0	0.0	0.0	0	0	57	0	M	S	04/28/82		02/25/70	
112C	NCPLX	SOUND	IS/PI	104	0	32	0.0	0.0	32	26	104	0	M	PS	09/18/90	(2)	09/18/90	

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

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

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

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

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

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT
						++++++ T FARM STATUS ++++++												
101T	NCLPX	ASMD LKR	IS/PI	102	1	16	0.7	25.3	17	0	101	0	F	S	04/14/93		04/07/93	
102T	NCPLX	SOUND	IS/II	32	13	0	0.0	0.0	13	13	19	0	P	FP	08/31/84		06/28/89	
103T	NCPLX	ASMD LKR	IS/II	27	4	0	0.0	0.0	4	0	23	0	F	FP	11/29/83	(1)	07/02/84	
104T	NCPLX	SOUND	/PI	445	3	47	0.0	0.0	50	44	442	0	P	MP	04/28/82		06/29/89	
105T	NCPLX	SOUND	IS/II	98	0	23	0.0	0.0	23	17	98	0	P	F	05/29/87		05/14/87	
106T	NCPLX	ASMD LKR	IS/II	21	2	0	0.0	0.0	2	0	19	0	P	FP	04/28/82		06/29/89	
107T	NCPLX	ASMD LKR	/PI	180	9	13	0.0	0.0	22	16	171	0	P	FP	08/31/84		07/12/84	
108T	NCPLX	ASMD LKR	IS/II	44	0	0	0.0	0.0	0	0	44	0	P	M	04/28/82		07/17/84	
109T	NCPLX	ASMD LKR	IS/II	58	0	0	0.0	0.0	0	0	58	0	M	M	12/30/84	(1)	02/25/93	
110T	NCPLX	SOUND	/PI	379	3	39	0.0	0.0	42	36	376	0	P	FP	04/28/82		07/12/84	
111T	NCPLX	ASMD LKR	/PI	458	2	49	0.0	0.0	51	45	456	0	P	FP	04/28/82		08/02/84	
112T	NCPLX	SOUND	IS/II	67	7	0	0.0	0.0	7	7	60	0	P	FP	04/28/82		08/01/84	
201T	NCPLX	SOUND	IS/II	29	1	3	0.0	0.0	4	0	28	0	M	PS	05/31/78		04/15/86	
202T	NCPLX	SOUND	IS/II	21	0	2	0.0	0.0	2	0	21	0	FP	P	07/12/81		07/06/89	
203T	NCPLX	SOUND	IS/II	35	0	4	0.0	0.0	4	0	35	0	M	PS	01/31/78		08/03/89	
204T	NCPLX	SOUND	IS/II	38	0	4	0.0	0.0	4	0	38	0	FP	P	07/22/81		08/03/89	
16 SINGLE-SHELL TANKS			TOTALS:	2034	45	200	0.7	25.3	245	178	1989	0						

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

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

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

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT
						++++++	TY FARM STATUS		++++++									
101TY	NCPLX	ASMD LKR	IS/II	118	0	0	0.0	8.2	0	0	118	0	P	F	04/28/82		08/22/89	
102TY	NCPLX	SOUND	IS/II	64	0	14	0.0	6.6	14	0	0	64	P	FP	06/28/82		07/07/87	
103TY	NCPLX	ASMD LKR	IS/II	162	0	5	0.0	11.5	5	0	162	0	P	FP	07/09/82		08/22/89	
104TY	NCPLX	ASMD LKR	IS/II	46	3	12	0.0	0.0	15	0	43	0	P	FP	06/27/90	(1)	11/03/87	
105TY	NCPLX	ASMD LKR	IS/II	231	0	0	0.0	3.6	0	0	231	0	P	M	04/28/82		09/07/89	
106TY	NCPLX	ASMD LKR	IS/II	17	0	0	0.0	0.0	0	0	17	0	P	M	04/28/82		08/22/89	
6 SINGLE-SHELL TANKS			TOTALS:	638	3	31	0.0	29.9	34	0	571	64						
						++++++	U FARM STATUS		++++++									
101U	NCLPX	ASMD LKR	IS/II	25	3	0	0.0	0.0	3	0	22	0	P	MP	04/28/82		06/19/79	
102U	NCLPX	SOUND	/PI	374	18	126	0.0	0.0	144	122	43	313	P	MP	04/28/82		06/08/89	
103U	NCPLX	SOUND	/PI	468	13	176	0.0	0.0	189	166	32	423	P	FP	04/28/82		09/13/88	
104U	NCLPX	ASMD LKR	IS/II	122	0	7	0.0	0.0	7	0	122	0	P	MP	04/28/82		08/10/89	
105U	NCPLX	SOUND	/PI	418	37	142	0.0	0.0	179	157	32	349	FM	PS	09/30/78		07/07/88	
106U	NCPLX	SOUND	/PI	226	15	68	0.0	0.0	83	61	26	185	F	PS	12/30/83		07/07/88	
107U	DSSF	SOUND	/PI	406	31	147	0.0	0.0	178	156	15	360	F	S	12/30/83		10/27/88	
108U	NCPLX	SOUND	/PI	468	24	172	0.0	0.0	196	174	29	415	F	S	12/30/83		09/12/84	
109U	NCPLX	SOUND	/PI	463	19	163	0.0	0.0	182	160	48	396	F	F	11/13/77		07/07/88	
110U	NCPLX	ASMD LKR	IS/PI	186	0	15	0.0	0.0	15	9	186	0	M	M	12/30/84	(1)	12/11/84	
111U	DSSF	SOUND	/PI	329	0	122	0.0	0.0	122	99	26	303	PS	FPS	04/28/82		06/23/88	
112U	NCPLX	ASMD LKR	IS/II	49	4	0	0.0	0.0	4	0	45	0	P	MP	02/10/84	(1)	08/03/89	

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

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT
201U	NCPLX	SOUND	IS/II	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/03/89	
202U	NCPLX	SOUND	IS/II	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/08/89	
203U	NCPLX	SOUND	IS/II	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
204U	NCPLX	SOUND	IS/II	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
16 SINGLE-SHELL TANKS			TOTALS:	3550	168	1138	0.0	0.0	1306	1104	638	2744						
GRAND TOTAL				36208	575	6330	24.60	24.60	6900	5413	12464	23169						

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

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

(1) WHC-SD-RE-TI-178 SST STABILIZATION RECORD
(2) TANK FARMS SST ENGINEER MONTHLY INPUT (Retained 10 yr in Monthly Summary Report author's office)

* 102-SX was declared an Assumed Leaker on May 20, 1993, per RL-WHC-TANKFARM-1993-0044
Assumed interstitial liquid level (LOW) leak totals approximately 5940 gallons of high level mixed waste to date.

APPENDIX D

PERFORMANCE SUMMARY

This page intentionally left blank.

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

WASTE VOLUMES (Kgallons)

May 1993

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

SOURCE		THIS MONTH	FY1993 TO DATE
B PLANT		23	128
PUREX TOTAL (1)		13	68
PFP (1)		0	5
T PLANT (1)		0	43
S PLANT (1)		0	5
300/400 AREAS (1)		0	16
SULFATE WASTE -100 N (2)		0	0
MINI-RUN (14)		39	215
TANK FARMS & SALTWELL LIQUID (6)		6	69
OTHER GAINS		38	264
Slurry increase (3)	10		
Condensate	24		
Instrument change (7)	3		
Unknown (5)	1		
OTHER LOSSES		-26	-216
Slurry decrease (3)	0		
Evaporation (4)	16		
Instrument change (7)	5		
Unknown (5)	5		
EVAPORATED		0	0
GROUTED		0	0
Total		93	597

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

* 3,000 gallons of water was added to 106-C on 5/22/93

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

SOURCE			THIS MONTH	FY1993 TO DATE
105-C	(8)	Gains	0	4
		Losses	-1	-4
106-C	(8)	Gains	3	42
		Losses	-6	-47
Total			-4 *	-6

CUMULATIVE EVAPORATION - 1950 TO PRESENT WASTE VOLUME REDUCTION

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

TOTAL THROUGHPUT

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

Footnotes: See Next Page

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

Footnotes:

INCREASES/DECREASES IN WASTE VOLUMES

(1) Including Flush

(2) Sulfate waste is generated from ion exchange backflushing and sand filter clean out, resulting in sulfate waste (Na_2SO_4).

(3) Slurry increase/growth is caused by gas generation within the waste. The gas which is trapped in the waste expands in the tank causing the surface level and volume to increase. Slurry decrease results from the periodic release of gas in the waste.

(4) Aging waste tanks

(5) Unknown waste gains or losses may be the result of rounding calculations, clean water slowly leaking through a valve, changes in levels (expansion/contraction) because of ambient temperature changes, different measuring devices being used by Tank Farm operators, transfers taking place during the end of the month, Tank Farm activities such as miscellaneous water additions not associated with facility waste generation, or the addition of water which is added to aging waste tanks and then evaporated off.

(6) Includes Tank Farms miscellaneous flushes (flushes are used to "clean out" pipelines and reduce personnel exposure, reduce potential for waste incompatibility, prevent line plugging, and reduce waste content of potential spills or leaks), and saltwell liquid, which results from pumping of single-shell tanks to double-shell tanks.

(7) Liquid level measurement instrument changes from the automatic FIC to manual tape (and vice versa) result in unusual gains or losses because the manual tape may rest on an uneven crust surface giving a different reading from that of the automatic FIC. These instrument changes are made when the automatic FIC is out of service and the reading from the manual tape is used for reporting purposes. The reported reading reverts back to the automatic FIC when it is repaired.

(8) Water is periodically added to 105-C and 106-C to provide evaporative cooling. Losses due to evaporation are calculated assuming all losses are evaporative losses. Drywell monitoring for leak detection is done monthly on tank 105-C. Some drywells are monitored weekly and some are monitored every two weeks on tank 106-C. If there are any indications of a leak from these tanks, the assumption that all losses are due to evaporation will be reevaluated.

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

WASTE VOLUME REDUCTION

(9) Currently inoperative. These evaporator systems (242-B and 242-T) were installed in 1952 in each of the two operating areas to remove water from the waste, and ran for approximately 4 yr after which both units were shut down. The 242-T Evaporator was reactivated in December 1965, and shut down again in April 1976.

(10) Currently inoperative. These two in-tank solidification (ITS) units provided in-tank heating to promote in-tank boiling or evaporation. The ITS Unit 1 started up March 1965, and ITS Unit 2 started up February 1968. In August 1971, ITS Unit 1 was converted from an evaporator to a cooler for ITS Unit 2. Both units were shut down June 1974.

(11) Currently inoperative. The 242-S Evaporator-Crystallizer was started up November 1973, and shut down March 1980, when its processing campaign was completed. It is in standby mode with no future mission. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals.

(12) Currently inoperative. The 242-A Evaporator-Crystallizer was started up March 1977, and shut down April 1989 because of regulatory issues, and has remained shut down for subsequent upgrading. The restart schedule has been revised and now [illegible] mid-July 1993, as the projected start-up date. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals (forming saltcake).

(13) Currently inoperative. Additional concentration of wastes was completed by using the concentrators at REDOX and B Plant. The REDOX concentrator was used from July 1967 to June 1972, while the B Plant concentrator was used from July 1967 to February 1968.

(14) Waste generated for training and testing purposes prior to Evaporator restart

This page intentionally left blank.

APPENDIX E

LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANKS

This page intentionally left blank.

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

WASTE VOLUMES (Kgallons)

May 1993

TANK FARMS	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL LIQUID	DRAINABLE LIQUID REMAINING	PUMPABLE LIQUID REMAINING
EAST				
A	8	439	442	390
AN	4531	37	4568	N/A
AP	7285	0	7285	N/A
AW	4461	159	4620	N/A
AX	3	370	373	304
AY	1617	2	1619	N/A
AZ	1786	4	1790	N/A
B	15	164	179	80
BX	50	155	205	135
BY	0	780	780	598
C	169	143	312	254
Total	19925	2253	22173	1761
WEST				
S	46	1399	1445	1192
SX	63	1261	1324	1178
SY	868	237	1105	N/A
T	45	200	245	178
TX	5	250	255	0
TY	3	31	34	0
U	168	1138	1306	1104
Total	1198	4516	5714	3652
TOTAL	21123	6769	27887	5413 (1)

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

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

N/A = Not applicable

This page intentionally left blank.

APPENDIX F

PUMPING RECORD

This page intentionally left blank.

TABLE F-1. PUMPING RECORD

(Kgallons)
May 1993

TANK FARMS	PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE	
EAST				
A	0.0	0.0	150.5	
AN	N/A	N/A	N/A	
AP	N/A	N/A	N/A	
AW	N/A	N/A	N/A	
AX	0.0	0.0	13.0	
AY	N/A	N/A	N/A	
AZ	N/A	N/A	N/A	
B	0.0	0.0	0.0	
BX	0.0	0.0	68.9	
BY	0.0	0.0	1387.4	*
C	0.0	0.0	36.8	**
Total	0.0	0.0	1656.6	
WEST				
S	0.0	0.0	791.0	
SX	0.0	0.0	113.2	
SY	N/A	N/A	N/A	
T	0.0	0.0	25.3	
TX	0.0	0.0	1205.7	
TY	0.0	0.0	29.9	
U	0.0	0.0	0.0	
Total	0.0	0.0	2165.1	
TOTAL	0.0	0.0	3821.7	

NA = Not Applicable

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

** The total volume pumped was recalculated by the Single-Shell Tanks Engineer based on the surface level readings taken after shutdown of the saltwell pumps on January 28, 1992, in 102-C, 107-C and 110-C, and revised again based on recalculation of flush water additions on January 26, 1993. (The total for the tank farm remains the same, the amount pumped varied among the three tanks).

This page intentionally left blank.

APPENDIX G

CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

This page intentionally left blank.

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

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

May 1993

FACILITY	LOCATION	PURPOSE (receives waste from:)	VOLUME OF CONTENTS (Gallons)	MONITORED BY	REMARKS
EAST AREA					
241-A-302-A	A FARM	151-A DB	704	CASS/FIC	PUMPED 08/11/92
241-311-ER	B PLANT	151-ER, 152-ER DB	4710	CASS/FIC	PUMPED 05/29/91
241-152-AX	AX FARM	152-AX DB	2606	MANUALLY	DIAL O/S, USING ZIP CORD, PUMPED 08/29/92
241-151-AZ	AZ FARM	152-AZ DB, AZ LOOP SEAL	4330	CASS/FIC	VOLUME CHANGES DAILY
241-154-AZ	AZ FARM	102-AZ HTG COIL STEAM CONDENSATE	0	CASS/MT	AUTOMATIC PUMP
244-BX-TK/SMP	BX COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	8935	MANUALLY	USING MANUAL TAPE FOR TANK
244-A-TK/SMP	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	6744	MCS	DIRECT GAL READING
204-AR	AY FARM	RR CARS DURING TRANSFER TO REC. TKS	600	DIP TUBE	ALARMS ON CASS
417-A	A FARM	702-A PROCESS CONDENSATE	31860	DIP TUBE	
Vent Station Catch Tank		CROSS COUNTRY TRANSFER LINE	624	MT	
WEST AREA					
241-TX-302-C	TX FARM	154-TX DB	3752	CASS/FIC	FIC REPAIRED
241-U-301-B	U FARM	151-U, 152-U, 153-U, 252-U DB	O/S	CASS/FIC	
241-UX-302-A	U PLANT	154-UX DB	10730	CASS/MFIC	
241-S-304	S FARM	151-S DB	1814	FIC	OPERATIONAL 10/91, REPLACED S-302-A
244-S-TK/SMP	S FARM	DCRT - RECEIVES FROM SEVERAL FARMS	9654	MANUALLY	CWF
244-TX-TK/SMP	TX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	17155	MANUALLY	MT

Total active facilities 16

LEGEND:
DB - Diversion Box
DCRT - Double-Contained Receiver Tank
TK - Tank
SMP - Sump
R - Usually denotes replacement
FIC - Food Instrument Corporation
MFIC - Manual FIC
MT - Manual Tape
CWF - Weight Factor/SpG = Corrected Weight Factor
CASS - Computer Automated Surveillance System
MCS - Monitor and Control System
O/S - Out of Service

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

INACTIVE – no longer receiving waste transfers

May 1993

FACILITY	LOCATION	RECEIVED WASTE FROM:	VOLUME OF CONTENTS (Gallons)	MONITORED BY	REMARKS
241-A-302-B	A FARM	152-A DB	3320	CASS/MT	ISOLATED 1985, PROJECT B-138 INTERIM STABILIZED 1990
241-B-301-B	B FARM	151-B, 152-B, 153-B, 252-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-B-302-B	B FARM	154-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-A	BX FARM	152-BR, 153-BX, 152-BXR, 152-BYR DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-B	BX FARM	154-DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-C	BX FARM	155-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-C-301-C	C FARM	151-C, 152-C, 153-C, 252-C DB	UNKNOWN	NM	ISOLATED 1985(1)
241-CX-70	HOT SEMI-	TRANSFER LINES	UNKNOWN	NM	ISOLATED, DECOMMISSION PROJ.
241-CX-72	WORKS	TRANSFER LINES	UNKNOWN	NM	SEE DWG H-2-95-501, 2/5/87
244-AR	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	BEING UPGRADED
244-BXR-TK/SMP-001	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-002	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-003	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-011	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
361-B-TANK	B PLANT	DRAINAGE FROM B-PLANT	UNKNOWN	NM	INTERIM STABILIZED 1985(1)

Total East Area inactive facilities 15

LEGEND:
- DB - Diversion Box
- DCRT - Double-Contained Receiver Tank
- MT - Manual Tape
- CASS - Computer Automated Surveillance System
- 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 CATCH TANKS AND SPECIAL SURVEILLANCE FACILITIES

INACTIVE – no longer receiving waste transfers

May 1993

FACILITY	LOCATION	RECEIVED WASTE FROM:	VOLUME OF CONTENTS (Gallons)	BY	REMARKS
241-S-302	S FARM	240-S-151 DB	2276	CASS/FIC	ASSUMED LEAKER EPDA 85-04
241-S-302-A	S FARM	241-S-151 DB	O/S	CASS/FIC	ASSUMED LEAKER TF-EFS-90-042 Partially filled with grout 2/91, determined still assumed leaker after leak test
241-S-302-B	S FARM	S ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
241-SX-304(302)	SX FARM	152-SX TRANSFER BOX, 151-SX DB	UNKNOWN	NM	ISOLATED 1985(1)
241-TX-302	TX FARM	153-TX 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	155-TX DB	1320	CASS/MT	MT REPAIRED 4/93, O/S 4/93
241-TY-302-A	TY FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
241-TY-302-B	TY FARM	TY ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
244-U-TK/SMP	U FARM	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	NOT YET IN USE
244-UR VAULT	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-001	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-002	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-003	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
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)
361-T-TANK	T PLANT	DRAINAGE FROM T-PLANT	UNKNOWN	NM	ISOLATED 1985(1)
361-U-TANK	U PLANT	DRAINAGE FROM U-PLANT	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)

Total West Area inactive facilities 20

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

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

This page intentionally left blank.

APPENDIX H

LEAK VOLUME ESTIMATES

This page intentionally left blank.

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

Tank No.	Date Declared Confirmed or Assumed Leaker (3)	Volume (2)(4) (Gallons)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date	Leak Estimate Updated	Leak Estimate Reference
241-A-103	1987	5500 (9)		8/88	1987	(j)
241-A-104	1975	500 to 2500	0.8 to 1.8 (q)	9/78	1983	(a) (q)
241-A-105 (1)	1963	10000 to 277000	85 to 760 (b)	7/79	1991	(b),(c)
241-AX-102	1988	3000 (9)		9/88	1989	(h)
241-AX-104	1977	-- (7)		8/81	1989	(g)
241-B-101	1974	-- (7)		3/81	1989	(g)
241-B-103	1978	-- (7)		2/85	1989	(g)
241-B-105	1978	-- (7)		12/84	1989	(g)
241-B-107	1980	8000 (9)		3/85	1986	(d),(f)
241-B-110	1981	10000 (9)		12/84	1986	(d)
241-B-111	1978	-- (7)		6/85	1989	(g)
241-B-112	1978	2000		5/85	1989	(g)
241-B-201	1980	1200 (9)		8/81	1984	(e),(f)
241-B-203	1983	300 (9)		6/84	1986	(d)
241-B-204	1984	400 (9)		6/84	1989	(g)
241-BX-101	1972	-- (7)		9/78	1989	(g)
241-BX-102	1971	70000	50 (l)	11/78	1986	(d)
241-BX-108	1974	2500	0.5 (l)	7/79	1986	(d)
241-BX-110	1976	-- (7)		8/85	1989	(g)
241-BX-111	1984	-- (7)		N/A	1993	(g),(r)
241-BY-103	1973	<5000		N/A	1983	(a)
241-BY-105	1984	-- (7)		N/A	1989	(g)
241-BY-106	1984	-- (7)		N/A	1989	(g)
241-BY-107	1984	15100 (9)		7/79	1989	(g)
241-BY-108	1972	<5000		2/85	1983	(a)
241-C-101	1980	20000 (9)		11/83	1986	(d)
241-C-110	1984	2000		N/A	1989	(g)
241-C-111	1968	5500 (9)		3/84	1989	(g)
241-C-201 (5)	1988	550		3/82	1987	(i)
241-C-202 (5)	1988	450		8/81	1987	(i)
241-C-203	1984	400 (9)		3/82	1986	(d)
241-C-204 (5)	1988	350		9/82	1987	(i)
241-S-104	1968	24000 (9)		12/84	1989	(g)
241-SX-102	1993	5490 (9)		N/A	1993	(s)
241-SX-104	1988	6000 (9)		N/A	1988	(k)
241-SX-107	1964	<5000		10/79	1983	(a)
241-SX-108 (6)	1962	2400 to 35000	17 to 140 (m) (q)	8/79	1991	(m) (q)
241-SX-109 (6)	1965	<10000	<40 (n)	5/81	1992	(n)
241-SX-110	1976	5500 (9)		8/79	1989	(g)
241-SX-111	1974	500 to 2000	0.6 to 2.4 (l) (q)	7/79	1986	(d) (q)
241-SX-112	1969	30000	40 (l)	7/79	1986	(d)
241-SX-113	1962	15000	8 (l)	11/78	1986	(d)
241-SX-114	1972	-- (7)		7/79	1989	(g)
241-SX-115	1965	50000	21 (o)	9/78	1992	(o)
241-T-101	1992	7500 (9)		4/93	1992	(p)
241-T-103	1974	<1000 (9)		11/83	1989	(g)
241-T-106	1973	115000 (9)	40 (l)	8/81	1986	(d)
241-T-107	1984	-- (7)		N/A	1989	(g)
241-T-108	1974	<1000 (9)		11/78	1980	(f)
241-T-109	1974	<1000 (9)		12/84	1989	(g)
241-T-111 (5)	1984	<1000 (9)		N/A	1980	(f)
241-TX-105	1977	-- (7)		9/83	1989	(g)
241-TX-107	1984	2500		10/79	1986	(d)
241-TX-110	1977	-- (7)		4/83	1989	(g)
241-TX-113	1974	-- (7)		4/83	1989	(g)
241-TX-114	1974	-- (7)		4/83	1989	(g)
241-TX-115	1977	-- (7)		9/83	1989	(g)
241-TX-116	1977	-- (7)		4/83	1989	(g)
241-TX-117	1977	-- (7)		3/83	1989	(g)
241-TY-101	1973	<1000 (9)		8/83	1980	(f)
241-TY-103	1973	3000	0.7 (l)	2/83	1986	(d)
241-TY-104	1981	1400 (9)		1/83	1986	(d)
241-TY-105	1960	35000	4 (l)	2/83	1986	(d)
241-TY-106	1959	20000	2 (l)	11/78	1986	(d)
241-U-101	1959	30000	20 (l)	9/79	1986	(d)
241-U-104	1961	55000	0.09 (l)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (9)	0.05 (q)	12/84	1986	(d) (q)
241-U-112	1980	8500 (9)		9/78	1986	(d)
68 Tanks		<600,000 - 900,000 (8)				

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

FOOTNOTES: SEE NEXT PAGE

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

Footnotes:

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

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

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

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

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

	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.

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

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

(4) There has been an effort in the past two years to reevaluate these leak volume estimates. During the FY 1993 funding reviews, this reevaluation of leak volumes was given a priority which resulted in this activity no longer being funded. The priority versus funding will be reevaluated as part of the prior to FY 1994 budget planning.

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

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

(7) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (10). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgal (rounded to the nearest 10 Kgal), for an average of approximately 8 Kgal for each of the 19 tanks.

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

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

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

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

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*, 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.

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

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

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

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

(r) WHC, 1993, *Occurrence Report*, "Single-Shell Underground Waste Storage Tank 241-BX-111 Surface Level Decrease and Change From Steady State Condition," RL-WHC-TANKFARM-1993-0035, Westinghouse Hanford Company, Richland, Washington.

(s) WHC, 1993a, *Occurrence Report*, "Liquid Observation Well (LOW) on Tank 241-SX-102 Indicates Unexpected Interstitial Liquid Level Decrease: Tank Declared an Assumed Leaker," RL-WHC-TANKFARM-1993-0044, Westinghouse Hanford Company, Richland, Washington.

This page intentionally left blank.

DISTRIBUTION

Number of copies

OFFSITE - USA

2 **Congress of the United States**
House of Representatives
1111 Longworth Building
Washington, DC 20515-3703

Ron Wyden, Member of Congress, 3rd District
Josh Kardon, Legislative Director

19 **U. S. Department of Energy-Headquarters**
1000 Independence Avenue, SW
Washington, D. C. 20585

Emile Bernard	EM-50	TREV II
H. Calley	EM-36	TREV II
H. Eckert	EM-36	TREV II
Teresa Fryberger	EM-542	TREV II
Sherry Gibson	EM-55	TREV II
A. Griffith	EM-322	TREV II/343
L. Gunn	EM-36	TREV II
D. Gupta	EM-36	TREV II
J. S. Kang	EM-351	TREV II/368
Kenneth Lang	EM-36	TREV II
J. C. Lehr	EM-442	TREV II/160
G. Mellinger	EM-36	TREV II
C. O'Dell	EM-36	TREV II
C. Pepson	EM-36	TREV II
J. C. Tseng	EM-36	TREV II/366
S. Woodbury	EH-222	FORS/3G-092

19901 Germantown Rd,
Germantown, MD 20585

R. Lasky	EH-32.1	GTN/G-115
J. Psaras	NS-20 GTN	
P. Worthington	NS-20 GTN	

1 **U. S. Department of Energy - Oak Ridge Operations Office**
P. O. Box 2001
Oak Ridge, TN 37831

W. D. Adams EW-40

Distribution - continued

7 **U. S. Department of Energy - Savannah River Site**
P. O. Box A
Aiken, SC 29808

C. Anderson	707-H
Michael Chandler	703-H
Mazen Shurrab	704-H
T. C. Temple	
L. Sjostrom	
W. R. West	704-8H
V. Wheeler	704-S

1 **U. S. Environmental Protection Agency**
Region 10
712 Swift Boulevard, Suite 5
Richland, WA 99352

P. T. Day

7 **Washington State Department of Ecology**
Nuclear & Mixed Waste Management Program
P.O. Box 47600
Olympia, WA 98504-7600

M. T. Gordon
M. Lerchan
Scott McKinney
R. Stanley
Library

7601 W. Clearwater #102
Kennewick, WA 99336

S. V. Moore
Office Library

1 **Washington State Department of Health**
Radiation Protection Section
Industrial Park Building 5, LE-13
Olympia, WA 98504

A. Conklin

1 **General Accounting Office**
P. O. Box 321
Richland, WA 99352

C. R. Abraham

Distribution - continued

1 **Oregon State Department of Energy**
625 Marion St. N.E.
Salem, OR 97310

Janet Franco

1 **Oregon State Water Resources Department**
Ground Water Hanford Studies
3850 Portland Road
Salem, OR 97310

R. O. Patt

1 **Lawrence Livermore National Laboratory**
Box 808, East Avenue
Livermore, CA 94550

B. C. Hudson L-221

4 **Oak Ridge National Laboratory**
P. O. Box 2009
Oak Ridge, TN 37831-6385

C. Forsberg MS-6495

T. S. Kress MS-8088
Bldg 9108

Chemical Technology Division
P. O. Box 2008
Emory D. Collins
C. Phil McGinnis

6 **Los Alamos National Laboratory**
P. O. Box 1663
Los Alamos, NM 87545

Stephen Agnew
Group INC-14 C-346
Phyllis Baca J-514
T. Larson C-915
Sylvia Lee K-557
A. Nuels N-6
H. Sullivan N-6

5 **Brookhaven National Laboratory**
Upton, NY 11973

K. K. Bandyopadhyay, Bldg 475-C
M. K. Kaisser, Bldg 475-C
P. D. Kalb, Bldg. 703
M. Reich, Bldg 475-C
J. R. Weeks, Bldg 197-C

Distribution - continued

1 **Brookhaven National Laboratory**
1409 Jan Drive
Wilmington, DE 19803

Michael Streicher

2 **Sandia National Laboratories**
1515 Eubank, NE
P. O. Box 5800
Albuquerque, NM 87185

Scott Slezak, Division 6402
Leon D. Chapman, Program Manager
Industrial Waste Reduction Program

1 **Massachusetts Institute of Technology**
77 Massachusetts Avenue
Cambridge, MA 02139

Mujid S. Kazimi
Professor and Head
Department of Nuclear Engineering

2 **BDM International, Inc.**
20030 Century Blvd, Suite 101
Germantown, MD 20874

P. Kiang
K. J. Mahoney

3 **SAIC**
Trevion 1, Suite 300
20300 Century Blvd.
Germantown, MD 20874

J. Bunting
J. R. Pearring
R. A. Wullaert

1 102 Windham Road
Oak Ridge, TN 37830

D. O. Campbell

1 **SAIC**
1845 Terminal Drive, Suite 130
Richland, WA 99352

J. Mishima

1 **Harvard School of Public Health**
665 Huntington Avenue
Boston, MA 02115

M. First

1 **Confederated Tribes, Umatilla Indian Reservation**
P. O. Box 638
Pendleton, OR 97801

Rick George

5 **West Valley Nuclear Services Co.**
P. O. Box 191
West Valley, NY 14171

K. K. Gupta	MS-49
S. Ketola	MS-191
D. K. Ploetz	MS-305
Ram Shukla	
Don Stroud	

4 **Defense Nuclear Facilities Safety Board**
625 Indiana Ave, N. W., Suite 700
Washington, D. C. 20004

Dan Burnfield	
Lester Clemons	Suite 700
Paul Gubanc	Suite 700
Dermot M. Winters, Geological Engineer	

2 **Westinghouse Idaho Nuclear Corporation**
P. O. Box 4000
Idaho Falls, ID 83403-4000

B. Griebenow	MS-5104
A. P. Hoskins	MS-5217

1 C. Abrams
1987 Virginia Drive
Idaho Falls, ID 83404

1 F. Carlson
6965 North, 5th West
Idaho Falls, ID 83401

1 D. Oakley
409 12th Street, SW, #310
Washington, D. C. 20024

Distribution - continued

1 Dr. A. Veletsos
Department of Civil Engineering
Rice University
P. O. Box 1892
Houston, TX 77252

1 Westinghouse Electric Corporation
1801 K Street NW, 8th floor
Washington DC, 20006

Kevin Billings

1 Westinghouse Materials Company of Ohio
P. O. Box 398704
Cincinnati OH 45239-8704

David L. Jacoboski
Senior Engineer, Technology Demonstration

4 Westinghouse Savannah River Company
P. O. Box 616
Aiken, SC 29802

D. M. Barnes, 773-41A
J. R. Chandler, 703-H
P. d'Entremont
F. G. McNatt, 704-8A

1 Institute for Energy and Environmental Reseach
6935 Laurel Avenue
Takoma Park, MD 20912

Dr. Arjun Makhijani, President

1 SPAR Aerospace Ltd.
20 Avon Meadow Lane, Suite 220
Avon, CT 06001

Peter W. Kruse
Advanced Technology Systems Division

1 Redzone Robotics, Inc.
2425 Liberty Ave
Pittsburgh, PA 15222-4639

David W. White

12 National Research Council, National Academy of Sciences
2101 Constitution Ave., N. W.
Washington D. C. 20418

Robert S. Andrews, Senior Staff Officer
Board on Radioactive Waste Management

Distribution - continued

1 Converse Consultants
18 W. Mercer Street, Suite 300
Seattle, WA 98119

David Stanley

1 Brown & Caldwell
100 W. Harrison
Seattle, WA 98119

Hal Cooper

1 Benton County Department of Emergency Management
P.O. Box 6144
Kennewick, WA 99336

Gary Pira

1 BOVAY Northwest Inc.
660 Swift, Suite D
Richland, WA 99352

T. J. McLaughlin

1 Omega Environmental Technology
655 Montgomery Street, Suite 1000
San Francisco, CA 94111

Mike Bailey

1 GEC ALSTHOM Engineering Systems
P. O. Box 1274
Richland, WA 99352

J. W. Riddington,
Vice President, Nuclear Marketing

1 T. S. Elleman
North Carolina State University
Department of Nuclear Energy
P. O. Box 7909
Raleigh, NC 27606

1 Mike Lingle
Stone & Webster
7677 E. Berry Ave
Englewood, CA 80111

1 Bryant Mather
Corps of Engineers
WESSV-Z
3909 Halls Ferry Rd
Vicksburg, MS 39180-6199

Distribution - continued

1 Paul Shewmon
Prof. Metallurgical Engineer
Ohio State University
2477 Lytham Road
Columbus, OH 43220

6 Waste Management External Advisory Committee Members

Dr. Frank L. Parker
Professor of Environmental and Water Resources Engineering
Vanderbilt University
P. O. Box 1596, Station B
Nashville, TN 37235

Dr. Bruce R. Kowalski
Professor of Chemistry, Co-director of Center for Process
Analytical Chemistry
University of Washington
Chemistry Department, Bldg 10
Seattle, WA 98195

Dr. Greg R. Choppin
Professor of Chemistry
Florida State University
Department of Chemistry, B-164
Tallahassee, FL 32306

Dr. Chester Grelecki
President, Chief Scientist
Hazards Research Corporation
200 Valley Road
Mt. Arlington, NJ 07856

Dr. Alfred Schneider
Professor Meritus of Nuclear Engineering
Georgia Institute of Technology
5005 Hidden Branches Dr.
Dunwoody, GA 30338

Dr. Gary Powers
President
Design Science, Inc.
163 Witherow Road
Sewickley, PA 15143

2 Ames Laboratory
7 Spedding Hall
Iowa State University
Ames, IA 50011

Bill Haas
R. B. Thompson

Distribution - continued

1 **RKK Ltd.**
16404 Smokey Pt. Blvd, Suite 303
Arlington, WA 98223

Chris Reno

1 **MACTEC**
8320 Centerbrook Place
Alexandria, VA 22308

Stan Blacker

1 **Engineering-Science, Inc.**
1955 Jadwin Ave, Suite 470
Richland, WA 99352

Matt Sakach

1 **EBASCO Services,Inc.**
1201 Jadwin Avenue, Suite 202
Richland, WA 99352-3429

F. J. Young

1 **MTL Systems, Inc.**
3481 Dayton-Xenia Road
Dayton, OH 45431-0299

E. McDaniel

1 **Nuclear Consulting Services, Inc.**
7000 Huntley Road
P. O. Box 29151
Columbus, OH 43229

Dr. J. Louis Kovach

1 **Battelle Laboratories**
505 King Avenue
Columbus, OH 43201-2693

Rob Taylor Jr., P.E.
Rm 13-6-016

1 **Portland General Electric Co.**
121 S. W. Salmon St.
Portland, OR 97204-2991

Wayne Lei, 3WTCBR05

Distribution - continued

1 **NORCON**
7000 Huntley Road
P. O. Box 29151
Columbus, OH 43229

P. Kovach

1 **John Hopkins University**
1714 Eutaw Place
Baltimore, MD 21217

Morton Corn

1 **Roberts Engineering Services, INC.**
1980 East Ocean Boulevard
Stuart, FL 34916

Dr. Paul Roberts

1 **Columbia River United Technical Consultant**
P. O. Box 912
Bingen, WA 98605

Gregory de Bruler

1 **Government Accountability Project**
West Coast Office
1402 Third Avenue, Suite 1215
Seattle, WA 98101

Thomas E. Carpenter, Director

1 **Heart of America Northwest**
1305 Fourth Avenue
Cobb Building Suite 208
Seattle, WA 98101

Gerald M. Pollet, Executive Director

OFFSITE - FOREIGN

1 **British Nuclear Fuels Ltd**
Risley Warrington
Cheshire WA3 6AS
United Kingdom

Howard A. Edwards

1 **Ricardo Hitec Ltd**
Club street Works, Bamber Bridge
Preston, PR5 6FN
United Kingdom

P. K. J. Smith

Distribution - continued

1 **Telerobot**
Consorzio Telerobot
Via Hermada 6
16154 Genova, Italy

Bruno Sessarego

1 **SGN**
1, rue des Herons, Montigny-C-Bretonneux
78132 Saint-Quentin-en-Yvelines Cedex,
France

Serge Merlin

2 **CEA - Saclay**
DCC/DIR
Ba't 121
91190 GIF/Yvette Cedex
France

G. Baudin
R. Atabek

1 **Hans Walischmiller GmbH**
D-7778 Markdorf/Bodensee
Germany

Wolfgang Walischmiller

ONSITE

24 **U. S. Department of Energy-Richland Operations Office**

G. E. Bishop	R3-72
K. W. Bracken	R3-73
G. J. Bracken	R3-72
S. T. Burnum	R3-74
N. R. Croskrey	R1-30
R. C. Cullison	A5-55
J. J. Davis	R3-74
L. Erickson	R3-74
R. E. Gerton	R3-72
M. Glasper	R3-72
W. F. Hendrickson	R3-72
R. D. Hildebrand	A5-55
P. E. LaMont	R3-74
T. Noble	R3-72
R. L. Person	R3-72
L. E. Petersen	R3-72
G. W. Rosenwald	R3-72
G. H. Sanders	R3-74
E. J. Senat	R3-72
A. D. Toth	R3-72

Distribution - continued

	W. R. Wrzesinski	R3-74
	J. K. Yerxa	A5-15
	Reading Room	A1-65
9	**Kaiser Engineering Hanford**	
	K. K. Cleveland	S2-10
	S. A. Davidson	K6-26
	C. J. Denson	E6-51
	J. E. Fasso Jr.	S3-10
	A. L. Huegel	E6-31
	K. I. Corbin	R1-51
	R. L. Newell	E6-31
	D. J. Shrimpton	E6-21
	D. T. Vladimiroff	G7-01
1	**Stone & Webster Engineering Co.**	
	E. L. Richards	R2-83
2	**MACTEC**	
	J. Janus	G6-18
	L. Soler	A4-35
23	**Pacific Northwest Laboratories**	
	D. B. Baird	K7-34
	D. W. Bennett	K5-22
	S. A. Bryan	P7-25
	L. L. Burger	P7-25
	J. F. Fletcher	K7-97
	L. K. Holton Jr.	P7-43
	J. Janata	K2-12
	B. M. Johnson	K1-78
	E. O. Jones	P8-38
	A. L. Mitchell	K7-94
	L. G. Morgan	P7-35
	B. E. Opitz	K6-81
	M. S. Peffers	K7-94
	W. G. Richmond	P7-41
	R. D. Scheele	P7-25
	E. A. Schmieman	K6-14
	P. A. Scott	P7-19
	J. C. Spanner	K2-05
	D. Strachan	K2-38
	K. L. Steinmaus	K6-84
	R. S. Wegeng	K7-97
	P. D. Whitney	K7-34
	T. W. Wood	K6-47

256 **Westinghouse Hanford Company**

A. T. Alstad	R1-49
R. P. Anantatmula	R2-11
J. D. Anderson	N3-11
J. N. Appel	S4-58
I. J. Austin	T4-01
H. Babad	R2-78
J. K. Bajwa	H4-63
A. D. Bates	T6-07
P. K. Bhatia	S4-58
T. J. Bander	H0-33
L. L. Barry	R1-67
G. D. Bazinet	L4-71
D. L. Becker	H5-57
D. B. Bechtold	T6-09
K. H. Bergsman	L6-24
M. V. Berriochoa	B3-30
D. L. Bjorklund	S6-01
J. E. Bjorklund	R1-62
R. J. Blanchard	R1-17
D. C. Board	S1-57
K. D. Boomer	H5-49
G. L. Borsheim	R2-11
V. C. Boyles	R1-49
H. R. Brager	L5-65
D. R. Bratzel	L5-31
R. G. Brown	R2-14
J. G. Burk, Jr.	B3-25
T. M. Burke	S4-58
S. K. Burden	S4-55
J. H. Bussell	L7-06
J. A. Caggiano Jr	H6-06
K. G. Carothers	R1-51
J. W. Carey	S0-01
R. J. Cash	R2-32
G. Christensen	H4-21
J. C. Conner	H4-61
R. B. Conrad	H5-09
F. M. Coony	H6-07
W. L. Cowley	H4-61
N. R. Croskrey	R1-30
G. M. Crummel	R1-51
J. M. Cruse	L5-63
D. S. Cunningham	S0-02
L. T. Cunningham	T5-55
J. I. Dearing	H5-72
C. DeFigh-Price	R2-31
T. A. Demitruk	H5-36
D. R. Dickinson	L5-31
L. F. Dougherty	H4-63
E. C. Ladd	R1-19
R. A. Dodd	R1-51
M. R. Duncan	L6-10

Distribution - continued

G. L. Dunford	R1-51
W. S. Dunnivant	R2-88
E. G. Elfner	S2-24
D. R. Ellingson	H5-37
S. D. Estey	R2-11
W. G. Farley	H4-62
K. O. Fein	H4-63
R. A. Flores	S0-12
L. A. Fort	S4-57
K. D. Fowler	R2-11
S. B. Fowler	L0-24
G. L. Fox, Jr.	L5-01
G. T. Frater	R1-51
J. R. Freeman-Pollard	H6-03
J. C. Fulton	R2-31
K. A. Gasper	R2-08
G. J. Gauck	R1-51
R. L. Gilchrist	L5-63
D. A. Gilles	S2-14
S. D. Godfrey	R1-51
D. J. Green	H5-53
P. R. Golberg	B4-08
J. M. Grigsby	H4-62
R. D. Gustavson	R1-51
V. W. Hall	B1-59
C. S. Haller	G6-04
D. G. Hamrick	R1-51
K. L. Hampsten	L4-71
B. M. Hanlon (30)	R1-80
J. M. Hanson	B1-58
H. D. Harmon	R2-52
J. P. Harris III	S4-55
F. J. Heard	H0-34
J. M. Henderson	S4-55
D. W. Hendrickson	L5-55
E. G. Hess	R3-09
M. C. Higginson	A4-25
J. G. Hill	R2-12
B. M. Hisaw	R1-62
M. J. Holm	R1-80
J. D. Hopkins	R2-11
B. K. Horsager	B5-24
R. D. House	R2-83
J. H. Huber	R1-49
J. L. Huckaby	R2-11
L. L. Humphreys	R2-50
J. E. Hysjulien	S0-09
J. E. Irwin	B1-59
M. N. Islam	R3-08
G. D. Johnson	R2-78
J. L. Juette	G6-56
L. J. Julyk	H5-56
R. A. Kirkbride	S4-58
N. W. Kirch	R2-11

Distribution - continued

W. L. Knecht	H0-34
G. M. Koreski	R1-51
A. G. Krasopoulos	A5-55
M. Kummerer	H4-62
M. J. Kupfer	H5-49
D. R. Lance	S0-09
D. L. Lenseigne	R2-75
D. C. Lini	H5-49
P. J. Mackey	B3-15
G. T. MacLean	S4-58
M. K. Mahaffey	L4-73
R. M. Marusich	H4-60
V. D. Maupin	R1-51
T. B. McCall	H0-33
J. D. McCormack	L5-31
K. S. McCullough	H5-34
M. A. McLaughlin	H5-09
J. P. Menard	R2-40
W. C. Miller	S4-55
N. J. Milliken	H4-62
W. J. Millsap	H5-68
G. J. Miskho	R2-50
J. R. Mobley	R2-18
T. Moleff	H5-09
K. L. Morris	H5-09
J. P. Mullally	B5-24
L. D. Muhlestein	N1-28
J. R. Nelson (10)	T4-07
A. F. Noonan	R2-12
T. W. Oden	R2-18
P. C. Ohl	H5-09
D. B. Pabst	B2-35
R. B. Pan	H5-53
I. G. Papp	R3-45
L. D. Parchen	B3-63
G. L. Parsons	S4-57
M. A. Payne	R2-50
T. B. Powers	H4-65
R. K. P'Pool	T1-30
R. S. Popielarczyk	R1-30
J. G. Propson	R2-18
T. E. Rainey	R1-49
R. E. Raymond (2)	R2-54
R. W. Reed	R1-51
I. E. Reep	R2-08
M. A. Rezvani	H5-55
D. Richardson	R2-31
J. H. Roecker	B1-59
L. Ruffin	R1-51
J. A. Ryan	H5-55
P. Sathyanarayana	R2-12
C. C. Scaief	L7-06
F. A. Schmorde	B2-18
J. S. Schofield	R1-51

Distribution - continued

C. P. Schroeder	L7-06
D. D. Scott	L6-10
K. V. Scott	H5-52
J. E. Shapley	N1-83
T. N. Shaw	S4-55
R. A. Shea	L8-16
E. M. Sheen	L7-03
E. J. Shen	S4-58
P. K. Shen	H0-39
O. Serrano	S5-04
D. J. Sherwood	R2-78
A. T. Shook	S2-01
A. B. Sidpara	A3-46
C. M. Smith	H6-30
S. G. Spencer	R1-30
S. M. Stahl	H4-61
E. G. Stephan	A3-74
R. R. Stickney	R1-49
J. N. Strode	R1-51
K. C. Strong	R2-12
M. J. Sutey	R1-49
D. G. Sutherland	L4-72
J. P. Summerhays	R2-88
L. M. Swanson	H5-49
J. F. Thompson	H5-68
J. D. Thomson	R1-30
S. R. Tifft	H6-26
J. A. Tilden (2)	L6-12
H. Toffer	H0-38
T. T. Tran	L7-04
D. P. Trott	B1-32
J. B. Truitt	H5-56
D. A. Turner	R2-78
C. J. Udell	L6-12
R. E. Van der Cook	S6-17
R. J. Van Vleet	H4-62
J. A. Voogd	R4-03
O. S. Wang	R2-32
D. L. Wegener	R1-62
R. K. Welty	R1-80
G. T. Wells	H6-26
K. A. White	R1-51
R. Whitman	H5-49
D. D. Wodrich	B1-59
B. D. Zimmerman	L0-06
Docket File (2)	H5-36
272-AW Shift Office	S5-04
Central Files (2)	L8-04
Tank Farms Info Center	R1-28
Information Release Administration (3)	R1-08
Env Data Mgmt Center	H4-22