

8

ENGINEERING CHANGE NOTICE

Page 1 of 2

1 ECN **670781**

Proj
ECN

2 ECN Category (mark one) <input type="checkbox"/> Supplemental <input checked="" type="checkbox"/> Direct Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void	3 Originator's Name Organization MSIN and Telephone No B M Hanlon Inventory & Flowsheet Eng R3-72 373-2053	4 USQ Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5 Date 10/02/01	
	6 Project Title/No /Work Order No Waste Tank Summary Report for Month Ending August 31 2001	7 Bldg./Sys /Fac No N/A	8 Approval Designator N/A	
	9 Document Numbers Changed by this ECN (includes sheet no and rev) HNF-EP-0182 Rev 160	10 Related ECN No(s) N/A	11 Related PO No N/A	

12a Modification Work <input type="checkbox"/> Yes (fill out Bk 12b) <input checked="" type="checkbox"/> No (NA Bks 12b 12c 12d)	12b Work Package No N/A	12c Modification Work Completed N/A Design Authority/Cog Engineer Signature & Date	12d Restored to Original Condition (Temp or Standby ECNs only) N/A Design Authority/Cog Engineer Signature & Date
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13a Description of Change
 Complete revision

 Computer generated
 File \\AP001\CHGCONTROL\HNF-EP-0182
 Size ~~2.47MB (2,600,448 bytes)~~ ^{2.87 3,638,728} *bnh*

13b Design Baseline Document? Yes No

Modified Tuesday October 02 2001 ^{9:11 10:41 AM} ~~9:52-59 AM~~ *bnh*

14a Justification (mark one) <input type="checkbox"/> Criteria Change <input type="checkbox"/> Design Improvement <input type="checkbox"/> Environmental <input type="checkbox"/> Facility Deactivation <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const <input type="checkbox"/> Const Error/Omission <input type="checkbox"/> Design Error/Omission	14b Justification Details This ECN is being generated to update waste tank farm summary information
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15 Distribution (include name MSIN and no of copies)
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ENGINEERING CHANGE NOTICE

Page 2 of 2

1 ECN (use no from pg 1)

670787

16 Design Verification Required

Yes
 No

17 Cost Impact

ENGINEERING

CONSTRUCTION

Additional \$ _____
Savings \$ _____

Additional \$ _____
Savings \$ _____

18 Schedule Impact (days)

Improvement _____
Delay _____

19 Change Impact Review Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13 Enter the affected document number in Block 20

<p>SDD/DD <input type="checkbox"/></p> <p>Functional Design Criteria <input type="checkbox"/></p> <p>Operating Specification <input type="checkbox"/></p> <p>Criticality Specification <input type="checkbox"/></p> <p>Conceptual Design Report <input type="checkbox"/></p> <p>Equipment Spec <input type="checkbox"/></p> <p>Const Spec <input type="checkbox"/></p> <p>Procurement Spec <input type="checkbox"/></p> <p>Vendor Information <input type="checkbox"/></p> <p>OM Manual <input type="checkbox"/></p> <p>FSAR/SAR <input type="checkbox"/></p> <p>Safety Equipment List <input type="checkbox"/></p> <p>Radiation Work Permit <input type="checkbox"/></p> <p>Environmental Impact Statement <input type="checkbox"/></p> <p>Environmental Report <input type="checkbox"/></p> <p>Environmental Permit <input type="checkbox"/></p>	<p>Seismic/Stress Analysis <input type="checkbox"/></p> <p>Stress/Design Report <input type="checkbox"/></p> <p>Interface Control Drawing <input type="checkbox"/></p> <p>Calibration Procedure <input type="checkbox"/></p> <p>Installation Procedure <input type="checkbox"/></p> <p>Maintenance Procedure <input type="checkbox"/></p> <p>Engineering Procedure <input type="checkbox"/></p> <p>Operating Instruction <input type="checkbox"/></p> <p>Operating Procedure <input type="checkbox"/></p> <p>Operational Safety Requirement <input type="checkbox"/></p> <p>IEFD Drawing <input type="checkbox"/></p> <p>Cell Arrangement Drawing <input type="checkbox"/></p> <p>Essential Material Specification <input type="checkbox"/></p> <p>Fac Proc Samp Schedule <input type="checkbox"/></p> <p>Inspection Plan <input type="checkbox"/></p> <p>Inventory Adjustment Request <input type="checkbox"/></p>	<p>Tank Calibration Manual <input type="checkbox"/></p> <p>Health Physics Procedure <input type="checkbox"/></p> <p>Spares Multiple Unit Listing <input type="checkbox"/></p> <p>Test Procedures/Specification <input type="checkbox"/></p> <p>Component Index <input type="checkbox"/></p> <p>ASME Coded Item <input type="checkbox"/></p> <p>Human Factor Consideration <input type="checkbox"/></p> <p>Computer Software <input type="checkbox"/></p> <p>Electric Circuit Schedule <input type="checkbox"/></p> <p>ICRS Procedure <input type="checkbox"/></p> <p>Process Control Manual/Plan <input type="checkbox"/></p> <p>Process Flow Chart <input type="checkbox"/></p> <p>Purchase Requisition <input type="checkbox"/></p> <p>Tickler File <input type="checkbox"/></p> <p>_____ <input type="checkbox"/></p> <p>_____ <input type="checkbox"/></p>
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20 Other Affected Documents (NOTE Documents listed below will not be revised by this ECN) Signatures below indicate that the signing organization has been notified of other affected documents listed below

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Document Number/Revision

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21 Approvals

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Date

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Date

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Design Agent _____

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PE _____

Cog Mgr N W Kirch N W Kirch 10/11/01

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Safety _____

Safety _____

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ADDITIONAL

Waste Tank Summary Report for Month Ending August 31, 2001

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

CH2MHILL
Hanford Group, Inc

Richland Washington

Contractor for the U S Department of Energy
Office of River Protection under Contract DE AC27 99RL14047

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WASTE TANK SUMMARY REPORT FOR MONTH ENDING AUGUST 31, 2001

BM HANLON

CH2M HILL Hanford Group Inc

Richland WA 99352

U S Department of Energy Contract DE AC27 99RL14047

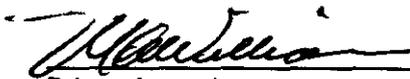
EDT/ECN ECN-670⁷⁸⁷~~87~~ UC
Cost Center Charge Code
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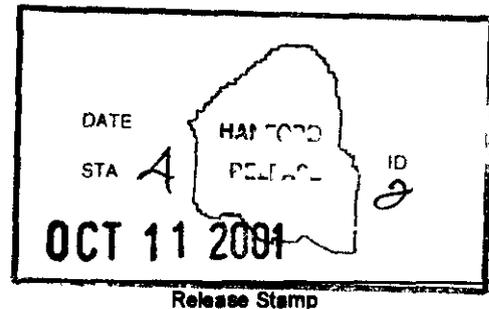
Key Words REPORT WASTE TANK SUMMARY

Abstract See page 111 of document

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Waste Tank Summary Report for Month Ending August 31, 2001

B M Hanlon
CH2M HILL Hanford Group Inc

Date Published
October 2001

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

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Contractor for the U S Department of Energy
Office of River Protection under Contract DE AC27 99RL14047

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WASTE TANK SUMMARY REPORT

B M Hanlon

ABSTRACT

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 63 smaller miscellaneous underground storage tanks and special surveillance facilities and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U S Department of Energy Richland Operations Office Order 435 1 (DOE-RL July 1999 Radioactive Waste Management U S Department of Energy-Richland Operations Office Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.

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METRIC CONVERSION CHART		
1 inch	=	2 54 centimeters
1 foot	=	30 48 centimeters
1 gallon	=	3 79 liters
1 ton	=	0 91 metric tons
$^{\circ}\text{F} = \left(\frac{9}{5} ^{\circ}\text{C} \right) + 32$		
<p>1 Btu/h = 0 2931 watts (International Table)</p>		

WASTE TANK SUMMARY REPORT
For Month Ending August 31 2001

Note Changes from the previous month are in bold print

I WASTE TANK STATUS

Category	Quantity	Date of Last Change
Double Shell Tanks	28 double-shell	10/86
Single Shell Tanks	149 single shell	1966
Assumed Leaker Tanks	67 single shell	07/93
Sound Tanks	28 double shell	1986
	82 single shell	07/93
Interim Stabilized Tanks (IS)	129 single shell	06/01
Not Interim Stabilized ^b	20 single-shell	06/01
Isolated Intrusion Prevention Completed (IP)	108 single shell	09/96
Controlled, Clean, and Stable (CCS)	36 single shell	09/96
Watch List Tanks ^d	0 single-shell	08/01
	0 double-shell	08/01
Misc Underground Storage Tanks and Special Surveillance Facilities (Active)	10 Tanks East Area 7 Tanks West Area	03/01 (AX 152)
Misc Underground Storage Tanks and Special Surveillance Facilities (Inactive)	19 Tanks East Area 27 Tanks West Area	03/01 (AX 152)

Of the 129 tanks classified as Interim Stabilized, 65 are listed as Assumed Leakers (See Table B 5)

^b Two of these tanks are Assumed Leakers (BY 105 BY 106) (See Table B-5)

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

^d The remaining 24 tanks on the Hydrogen Watch List (19 SST 5 DST) were removed from this Watch List on August 13 2001 There are no tanks on any Watch List

II WASTE TANK INVESTIGATIONS

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

A Assumed Leakers or Assumed Re leakers (See Appendix D for definition of Re leaker')

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

B Tanks with increases indicating possible intrusion

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

Candidate Intrusion List Surveillance data for following tanks indicate possible intrusions

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

The surveillance data were last reviewed on the tanks listed as having probable liquid intrusions Memo 74B20 99 045 dated November 22 1999

III SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

A Single Shell Tanks Saltwell Jet Pumping (See Table B-1 footnotes for further information)

Tank 241 A 101 Pumping began May 6 2000 No pumping has occurred since August 2000 a total of 14 1 Kgallons has been pumped from this tank since the start of pumping in May 2000

Tank 241 AX 101 Pumping began July 29 2000 No pumping between August 2000 and March 2001 pumping began again on March 22 2001 Pumping was shut down on April 3 2001 due to a transfer line failure A total of 21 7 Kgallons has been pumped since the start of pumping in July 2000

Tank 241-BY 105 – Pumping began July 11 2001 During July a total of 8 8 Kgallons was pumped from this tank **Pumping was halted in August 2001 due to transfer line leak detectors not meeting all operability requirements of the Technical Safety Requirements Compensatory actions have been established to allow resumption of pumping** Additionally, field work for Project W-314, “Tank Farm Upgrades,” has taken the primary

transfer route out of service Pumping will resume when the alternative route is established

Tank 241 BY 106 – Pumping was restarted July 11 2001 Pumping originally started in August 1995 and was halted in October 1995 due to a USQ evaluation for flammable gas concerns A total of 70 0 Kgallons has been pumped from this tank since the start of pumping in August 1995 **Pumping was halted in August 2001 due to transfer line leak detectors not meeting all operability requirements of the Technical Safety Requirements Compensatory actions have been established to allow resumption of pumping Additionally, field work for Project W 314, “Tank Farm Upgrades,” has taken the primary transfer route out of service Pumping will resume when the alternative route is established**

Tank 241 S 102 Pumping problems forced many shutdowns The pump was replaced and pumping resumed on February 19 2000 Problems with the new pump forced a shutdown on March 23 2000 Pumping was interrupted in early June 2000 Pumping was shut down due to equipment failure the lower piping needs to be replaced No pumping has occurred since June 2000 a total of 56 8 Kgallons has been pumped from this tank since the start of pumping in March 1999

Tank 241 SX 101 Pumping began November 22 2000 The pump failed on December 9 2000 No pumping has occurred since December 2000 A total of 19 2 Kgallons has been pumped from this tank

Tank 241 SX 103 Pumping began October 26 2000 All supernatant has been removed this tank is being evaluated to determine if it can be declared interim stabilized A total of 116 3 Kgallons has been pumped from this tank since the start of pumping in October 2000

Tank 241 SX 105 Pumping began August 8 2000 Pumping was shut down in late April 2001 when the saltwell screen in flow rate was measured at approximately 0 02 GPM This tank is being evaluated to determine if it can be declared interim stabilized A total of 152 6 Kgallons has been pumped since the start of pumping in August 2000

Tank 241 U 102 Pumping began January 20 2000 **During August 2001, a total of 600 gallons was pumped, a total of 86 3 Kgallons has been pumped from this tank since the start of pumping in January 2000**

Tank 241-U 109 - Pumping began March 11 2000 The saltwell pump was replaced following its failure in December 2000 and pumping was restarted March 30 2001 **During August 2001, a total of 1 4 Kgallons was pumped, a total of 78 3 Kgallons has been pumped from this tank since the start of pumping in March 2000**

B Watch List Tanks

The Flammable Gas Safety Issue was declared closed by DOE-Headquarters and 24 tanks (19 SST and 5 DST) were removed from the Flammable Gas (Hydrogen) Watch List on

August 13, 2001 Operating Specification Document OSD-T-151-00030, "Operating Specification for Watch List Tanks," will be cancelled

There are no tanks on any Watch List

APPENDIX A
DOUBLE SHELL TANKS
MONTHLY SUMMARY TABLES

TABLE A 1 INVENTORY AND STATUS BY TANK - DOUBLE SHELL TANKS

August 31 2001

TANK	TANK INTEGRITY	TANK STATUS	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgall)	AVAIL SPACE (1)	WASTE VOLUMES			PHOTOS/VIDEOS		SEE FOOTNOTE FOR THESE CHANGES
						SUPER NATANT LIQUID (Kgall)	SLUDGE (Kgall)	SALTCAKE (Kgall)	LAST IN TANK PHOTO	LAST IN TANK VIDEO	
AN TANK FARM STATUS											
AN-101	SOUND	DRCVR	92 0	253	887	253	0	0	06/30/99		
AN 102	SOUND	CWHT	383 3	1054	96	966	0	89	06/30/99		
AN 103	SOUND	CWHT	348 4	958	182	499	0	459	06/30/99	10/29/87	
AN 104	SOUND	CWHT	382 9	1053	87	608	0	445	06/30/99	08/19/88	
AN 105	SOUND	CWHT	409 5	1126	14	634	0	492	06/30/99	01/26/88	
AN 106	SOUND	CWHT	13 8	38	1102	21	0	17	06/30/99		
AN 107	SOUND	CWHT	378 2	1040	100	793	0	247	06/30/99	09/01/88	
7 DOUBLE SHELL TANKS						TOTALS	3773	0	1749		
AP TANK FARM STATUS											
AP-101	SOUND	DRCVR	405 1	1114	26	1114	0	0	05/01/89		
AP 102	SOUND	DRCVR	396 0	1089	51	1089	0	0	07/11/89		
AP-103	SOUND	DRCVR	102 5	282	858	282	0	0	05/31/96		
AP 104	SOUND	DRCVR	402 9	1108	32	1108	0	0	10/13/88		09/27/95
AP-105	SOUND	CWHT	412 4	1134	6	1045	0	89	06/30/99		
AP 106	SOUND	DRCVR	226 2	622	518	622	0	0	10/13/88		
AP-107	SOUND	DRCVR	356 0	979	161	979	0	0	10/13/88		
AP 108	SOUND	DRCVR	97 8	269	871	269	0	0	10/13/88		
8 DOUBLE SHELL TANKS						TOTALS	6508	0	89		
AW TANK FARM STATUS											
AW 101	SOUND	CWHT	409 8	1127	13	739	0	388	10/31/00	03/17/88	
AW 102	SOUND	EVFD	32 7	90	1050	60	30	0	01/31/01	02/02/83	
AW 103	SOUND	DRCVR	400 7	1102	38	788	273	40	06/30/99		
AW 104	SOUND	DRCVR	114 9	316	824	93	66	157	06/30/99	02/02/83	
AW 105	SOUND	DRCVR	154 9	426	714	171	255	0	06/30/99		
AW 106	SOUND	SRCVR	108 0	297	843	58	0	239	06/30/99	02/02/83	
6 DOUBLE SHELL TANKS						TOTALS	1910	624	824		

TABLE A-1 INVENTORY AND STATUS BY TANK DOUBLE SHELL TANKS

August 31 2001

TANK	INTEGRITY	TANK STATUS	EQUIVALENT WASTE INCHES (Kgal)	TOTAL WASTE (1)	AVAIL SPACE (Kgal)	WASTE VOLUMES			PHOTOS/VIDEOS		SEE FOOTNOTE FOR THESE CHANGES
						SUPER NATANT LIQUID (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN TANK PHOTO	
AY TANK FARM STATUS											
AY 101	SOUND	DRCVR	66.2	182	798	86	96	0	06/30/99	12/28/82	
AY 102	SOUND	DRCVR	228.7	629	351	445	184	0	10/31/00	04/28/81	
2 DOUBLE SHELL TANKS			TOTALS	811	1149	531	280	0			
AZ TANK FARM STATUS											
AZ 101	SOUND	CWHT	347.6	956	24	904	52	0	06/30/98	06/18/83	
AZ 102	SOUND	DRCVR	362.5	997	0	882	105	0	06/30/99	10/24/84	
2 DOUBLE SHELL TANKS			TOTALS	1953	24	1786	157	0			
SY TANK FARM STATUS											
SY 101	SOUND	CWHT	352.7	970	170	686	0	275	06/30/99	04/12/89	
SY 102	SOUND	DRCVR	332.7	915	225	844	71	0	06/30/99	04/29/81	
SY 103	SOUND	CWHT	269.8	742	398	400	0	342	06/30/99	10/01/85	
3 DOUBLE SHELL TANKS			TOTALS	2627	793	1939	71	617			
GRAND TOTAL				20868	10429	16457	1132	3279			

Note: +/- 1 Kgal diff. re: re-uit f comput rounding

Available Space Calculations Used in Document	
Tank Farm	(Most Conservative)
AN AP AW SY	1 140 Kgal (414.5 in)
AY AZ (Aging W. ste)	980 Kgal (356.4 in)

NOTE: Supernate + Sludge (incl. liquid) + Saltcake (incl. liquid) = Total W. at

(1) Available Space volumes include restricted space

TABLE A 2 SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANK (DST) SYSTEM
August 31 2001

All volumes in Kilo-Gallons (Kgals)

The DST system received waste additions from SST pumping AZ 151 and miscellaneous water in August 2001
 There was a net change of +35 000 gallons in the DST system for August 2001
 The total DST inventory as of August 31 2001 was 20 868 million gallons
 There were 0 Kgals of Saltwell Liquid (SWL) pumped to the East Area DSTs (AN 101) in August 2001
 There were ~9 Kgals of SWL (2 Kgals SWL + 7 Kgals water) pumped to the West Area DSTs (SY 102) in August 2001
 The SWL numbers are preliminary and are subject to change once the system engineers do a validation
 the volumes reported contain the actual waste volume plus any water added for dilution and transfer line flushes
 The solid waste volumes in two DST's (AY 101 SY 103) were updated in August 2001 The waste volume changes as supplied by Best Basis Engineers are Tank AY 101 Sludge was reduced from 108 Kgals to 96 Kgals and Tank SY 103 Saltcake was reduced from 372 Kgals to 342 Kgals (22 Kgals Retained Gas included in volume) Supernatant liquid was adjusted accordingly

AUGUST 2001 DST WASTE RECEIPTS					
FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
SWL (West)	+9 Kgal (2SY)	SLURRY	+2 Kgal	SLURRY	-3 Kgal
X-Site Flush	+28 Kgal (8AP)	CONDENSATE	+6 Kgal	CONDENSATE	-8 Kgal
Tank Farms	+3 Kgal (1AZ 2AZ 7AN)	INSTRUMENTATION	+0 Kgal	INSTRUMENTATION	-0 Kgal
TOTAL	+40 Kgal	UNKNOWN	+1 Kgal	UNKNOWN	-3 Kgal
			TOTAL=	+9 Kgal	TOTAL=
					14 Kgal

PROJECTED VERSUS ACTUAL WASTE VOLUMES						
	ACTUAL DST WASTE RECEIPTS	PROJECTED DST WASTE RECEIPTS (1)	MISC DST CHANGES (+/-)	PROJECTED WVR (1)	NET DST CHANGE	TOTAL DST VOLUME
OCT00	222	155	24	0	198	20653
NOV00	261	262	14	0	247	20900
DEC00	139	300	1	0	138	21038
JAN01	113	397	25	0	88	21126
FEB01	100	303	19	0	81	21207
MAR01	100	283	2	-684	580	20627
APR01	74	321	13	0	61	20688
MAY01	25	302	4	0	29	20717
JUN01	33	334	7	0	26	20743
JUL01	82	296	8	0	90	20833
AUG01	40	289	-5	0	35	20868
SEP01		282		0		

(1) The "PROJECTED DST WASTE RECEIPTS" and "WVR" numbers were updated in November 2000 the projected volumes will be updated as new and/or more accurate information is obtained The projected volumes are the most current available as supplied by cognizant systems engineers

242-A Evaporator Waste Volume Reduction	
Campaign 94-1 (04/15/94 06/13/94)	2417
Campaign 94-2 (09/22/94 11/18/94)	2787
Campaign 95-1 (06/09/95 07/28/95)	2161
Campaign 96-1 (05/07/96 05/25/96)	1117
Campaign 97 1 (03/24/97 04/02/97)	-351
Campaign 97 2 (09/16/97 09/30/97)	-653
Campaign 99-1 (07/24/99 08/15/99)	-818
Campaign 00-1 (04/20/00 05/05/00)	-682
Campaign 01 1 (03/13/01 03/27/01)	-682
Total waste reduction (WVR) since restart on 4/15/9	11668

Table A-3 Double-Shell Tank Space Usage and Inventory by Waste Type

August 31 2001

TOTAL AVAILABLE DST SPACE	
NON AGING =	27360
AGING =	3620
TOTAL =	31280

MONTHLY INVENTORY CHANGE	
07/31/01 TOTAL	20833
08/31/01 TOTAL	20868
CHANGE =	35

Tank Space Usage

TANK SPACE CHANGE	
07/01 TANK SPACE	10463
08/01 TANK SPACE	10429
CHANGE =	34

OPERATIONAL SPACE	
AN 101 =	867
AP 106 =	871
AW 102 =	1050
AW 105 =	714
AW 106 =	843
SY 102 =	225
TOTAL =	4590

RESTRICTED SPACE	
AN 102 =	86
AN 107 =	100
AP 102 =	51
AZ 101 =	24
AZ 102 =	0
SY 101 =	170
TOTAL =	431

WATCH LIST SPACE	
AN 103 =	182
AN 104 =	87
AN 105 =	14
AW 101 =	13
SY 103 =	368
TOTAL =	694

NON ALLOCATED SPACE	
AN 106 =	1102
AP 101 =	26
AP-103 =	658
AP 104 =	32
AP 105 =	6
AP 106 =	518
AP 107 =	161
AW 103 =	38
AW 104 =	824
AY 101 =	798
AY 102b =	351
TOTAL =	4714
EMERGENCY SPACE	1140
LAW or HLW RETURN	1140
REMAINING SPACE	2434

Inventory Calculation by Waste Type

DILUTE SUPERNATE (DN)	
AN 101 =	253
AP 106 =	299
AW 102 =	60
AW 104 =	93
AW 105 =	171
AY 102 =	445
TOTAL DN =	1291
TOTAL SOLIDS	692

SLURRY SUPERNATE (DSS/DSSF)	
AN 103 =	499
AN 104 =	606
AN 105 =	634
AP 101 =	1114
AP 105 =	1045
AW 101 =	736
AW 103 =	789
AW 106 =	58
TOTAL DSS/DSS	5486
TOTAL SOLIDS	2425

PHOSPHATE SUPERNATE (CP)	
TOTAL CP =	1089

COMPLEXED SUPERNATE (DC/CC)	
AN 102 =	965
AN 106 =	21
AN 107 =	793
AP 103 =	282
AP 104 =	1108
AP 106 =	622
AP 107 =	979
AY 101 =	86
SY 101 =	695
SY 102 =	844
SY 103 =	400
TOTAL DC/CC =	6795
TOTAL SOLIDS	1137

AGING SUPERNATE (AW)	
AZ 101 =	904
AZ 102 =	892
TOTAL AW =	1796
TOTAL SOLIDS	157

GRAND TOTALS	
DILUTE SUPERNATE (DN/DC) =	3736
SLURRY (DSS/DSSF) =	5486
CONCENTRATED COMPLEXED (CC) =	4350
CONCENTRATED PHOSPHATE (CP) =	1089
AGING SUPERNATE (AW) =	1796
DST SOLIDS (SL/SC) =	4411
TOTAL =	20868

TABLE A 4 DOUBLE SHELL TANKS MONITORING COMPLIANCE STATUS
 28 TANKS (Sheet 1 of 2)
 August 31 2001

There were no Double Shell Tanks Out of Compliance (O/C) this month

NOTE

Dome Elevation Surveys are not required for DSTs
 Psychrometrics and in tank photos/videos are taken as needed no psychrometrics are currently being taken

LEGEND

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

The following table indicates Double Shell Monitoring devices which were Out of Service as of the last day of this month

Tank Number	Temperature Readings (1) (OSD)	Surface Level Readings (2) (OSD)			Radiation Readings		Annulus (OSD)
					Leak Detection Pits (3) (OSD)		
		M T	FIC	ENRAF	W F	Rad (4)	
AN 101			None			N/A	O/S (10)
AN 102			None			N/A	O/S (10)
AN 103			None			N/A	O/S (10)
AN 104		O/S	None			N/A	O/S (10)
AN 105		O/S	None			N/A	O/S (10)
AN 106			None			N/A	O/S (10)
AN 107			None		O/S	N/A	O/S (10)
AP 101		O/S	None		O/S (5)	N/A	O/S (11)
AP-102			None		O/S (5)	N/A	
AP-103			None		O/S (5)	N/A	O/S (11)
AP-104		O/S	None		O/S (5)	N/A	
AP-105			None		O/S (5)	N/A	
AP 106			None		O/S (5)	N/A	
AP-107			None		O/S (5)	N/A	
AP-108			None		O/S (5)	N/A	
AW 101		O/S	None			N/A	
AW 102						N/A	
AW 103			None			N/A	
AW 104			None			N/A	
AW 105			None			N/A	
AW 106			None			N/A	
AY 101			None			N/A	O/S (8)
AY 102		O/S	None			N/A	O/S (8)
AZ 101			None			N/A	O/S
AZ 102			None			N/A	O/S
SY 101		None	None		O/S (7)	N/A	O/S (9)
SY 102		O/S (6)	None			N/A	O/S (9)
SY 103		O/S (6)	None		O/S (7)	N/A	

AW 102 has an M T FIC and ENRAF The FIC is scheduled to be removed

TABLE A-4 DOUBLE SHELL TANKS MONITORING COMPLIANCE STATUS 28 TANKS
(Sheet 2 of 2)

Footnotes

- 1 The OSD T 151 0007 specifies double shell tank temperature limits gradients etc
- 2 Some double-shell tanks have both an FIC and a manual tape (M T) which is used when the FIC is out of service Noncompliance [Out of Compliance (O/C)] will be shown when no readings are obtained ENRAF gauges are being installed to replace the FICs The ENRAF gauges are being connected to Temperature Monitor and Control System (TMACS) but some are currently being read manually
- 3 The applicable OSD and HNF IP-0842 latest revisions are used as guidelines for monitoring Leak Detection Pits (LDP) See also (4) and (5) below
- 4 USQ TF 97-0038 dated April 28 1997 specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double shell tank farms where the leak detection pits are used as tertiary leak detection This applies to all double shell tank farms
- 5 Leak Detection Pit (LDP) weekly readings are being obtained by Instrument Technicians for the following
AP 103C (for tanks AP 101 104)
AP 105C (for tanks AP 105 108)
- 6 SY 102 Manual Tape has sporadic readings The ENRAF is the primary device
SY 103 Manual Tape has sporadic readings The ENRAF is the primary device
- 7 SY 101 LDP readings are above normal range EDL #S0007 to repair it
SY 103 LDP readings are above normal range EDL #241 SY 95 5 to repair it
- 8 AY 101 and 102 annulus The return line was venting inside the CAM cabinet a new return line will be installed.
- 9 SY 101 and SY 102 two annulus leak detectors in SY farm are out of service due to excessive nuisance alarms The ENRAF gauges are believed to be overly sensitive a buffer will be installed between the gauge and the annunciator panel This modification is expected to be completed in September 2001 **Daily readings are being obtained manually on temporary operator rounds for annulus leak detectors SY 101 WSTA LDT 152 and 153, (151 is O/S), and for SY 102 WSTA LDT 151 and 153, (152 is O/S)**
- 10 **AH AN Farm annulus CAMs require calibration**
- 11 **AP 101 and 103 annulus CAMs failed the monthly inspections and source checks (TF OPS-012)**

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APPENDIX B
SINGLE SHELL TANKS
MONTHLY SUMMARY TABLES

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	TOTAL WASTE (Kgal)	WASTE VOLUMES					SALT CAKE (Kgal)	SLUDGE (Kgal)	SOLIDS VOLUME UPDATE	PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES
				SUPER-NATANT LIQUID (Kgal)	DRAINABLE LIQUID (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)				PUMPABLE LIQUID REMAINING (Kgal)	LAST IN-TANK PHOTO	
A. TANK FARM STATUS														
A-101	SOUND	/PI	877	494	95	0.0	14.1	590	574	3	380	09/30/99	08/21/85	(a)
A-102	SOUND	IS/PI	41	4	8	0.0	39.5	12	4	15	22	07/27/89	07/20/89	
A-103	ASMD LKR	IS/IP	371	5	45	0.0	111.0	50	43	366	0	06/03/88	12/28/88	
A-104	ASMD LKR	IS/IP	28	0	4	0.0	0.0	4	0	28	0	01/27/78	06/25/86	
A-105	ASMD LKR	IS/IP	37	0	0	0.0	0.0	0	0	37	0	10/31/00	08/20/86	
A-106	SOUND	IS/IP	125	0	9	0.0	0.0	9	1	125	0	09/07/82	08/19/86	
6 TANKS - TOTALS			1479	503	161	0.0	164.6	665	622	574	402			
AX. TANK FARM STATUS														
AX-101	SOUND	/PI	662	364	74	0.0	21.7	438	422	3	295	09/30/99	08/18/87	(b)
AX-102	ASMD LKR	IS/IP	30	0	7	0.0	13.0	7	0	7	23	06/30/99	06/05/89	
AX-103	SOUND	IS/IP	112	0	23	0.0	0.0	23	11	8	104	06/30/99	08/13/87	
AX-104	ASMD LKR	IS/IP	8	0	1	0.0	0.0	1	0	8	0	06/30/99	08/18/87	
4 TANKS - TOTALS			812	364	105	0.0	34.7	469	433	26	422			
B. TANK FARM STATUS														
B-101	ASMD LKR	IS/IP	113	0	24	0.0	0.0	24	17	0	113	06/30/99	05/19/83	
B-102	SOUND	IS/IP	32	4	7	0.0	0.0	11	4	0	28	06/30/99	08/22/85	
B-103	ASMD LKR	IS/IP	59	0	11	0.0	0.0	11	3	0	59	06/30/99	10/13/88	
B-104	SOUND	IS/IP	371	1	45	0.0	0.0	46	42	308	61	06/30/99	10/13/88	
B-105	ASMD LKR	IS/IP	158	0	20	0.0	0.0	20	16	28	130	06/30/99	05/19/88	
B-106	SOUND	IS/IP	117	1	25	0.0	0.0	26	19	0	116	02/29/00	02/28/85	
B-107	ASMD LKR	IS/IP	165	1	22	0.0	0.0	23	19	93	71	06/30/99	02/28/85	
B-108	SOUND	IS/IP	94	0	15	0.0	0.0	15	11	53	41	06/30/99	05/10/85	
B-109	SOUND	IS/IP	127	0	21	0.0	0.0	21	17	63	64	06/30/99	04/02/85	
B-110	ASMD LKR	IS/IP	246	1	27	0.0	0.0	28	20	245	0	02/28/85	03/17/88	
B-111	ASMD LKR	IS/IP	237	1	23	0.0	0.0	24	29	236	0	06/28/85	06/26/85	
B-112	ASMD LKR	IS/IP	33	3	4	0.0	0.0	7	3	30	0	05/31/85	05/29/85	
B-201	ASMD LKR	IS/IP	29	1	4	0.0	0.0	5	1	28	0	04/28/82	11/12/86	
B-202	SOUND	IS/IP	27	0	4	0.0	0.0	4	0	27	0	05/31/85	05/29/85	
B-203	ASMD LKR	IS/IP	51	1	5	0.0	0.0	6	1	50	0	05/31/84	11/13/86	
B-204	ASMD LKR	IS/IP	50	1	5	0.0	0.0	6	1	49	0	05/31/84	10/22/87	
16 TANKS - TOTALS			1909	15	262	0.0	0.0	277	203	1211	683			

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	TOTAL WASTE (Kgal)	WASTE VOLUMES						SLUDGE (Kgal)	CAKE (Kgal)	SALT VOLUME UPDATE	PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES
				SUPER-NATANT LIQUID (Kgal)	DRAINABLE LIQUID (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)	PUMPABLE LIQUID REMAINING (Kgal)				LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
BX TANK FARM STATUS															
BX-101	ASMD LKR	IS/IP/CCS	43	1	4	0.0	0.0	5	1	42	0	04/28/82	11/24/88	11/10/94	
BX-102	ASMD LKR	IS/IP/CCS	96	0	0	0.0	0.0	0	0	96	0	04/28/82	09/18/85	10/27/94	
BX-103	SOUND	IS/IP/CCS	71	9	4	0.0	0.0	13	9	62	0	11/29/83	10/31/86	10/27/94	
BX-104	SOUND	IS/IP/CCS	93	3	4	0.0	17.4	7	3	90	0	02/29/00	09/21/89		
BX-105	SOUND	IS/IP/CCS	51	5	4	0.0	15.0	9	5	46	0	06/30/99	10/23/86		
BX-106	SOUND	IS/IP/CCS	38	0	4	0.0	14.0	4	0	38	0	08/01/95	05/19/88	07/17/95	
BX-107	SOUND	IS/IP/CCS	345	1	36	0.0	23.1	37	33	344	0	09/18/90	09/11/90		
BX-108	ASMD LKR	IS/IP/CCS	26	0	4	0.0	0.0	4	0	26	0	07/31/79	05/05/94		
BX-109	SOUND	IS/IP/CCS	193	0	25	0.0	8.2	25	20	193	0	09/17/90	09/11/90		
BX-110	ASMD LKR	IS/IP/CCS	207	3	28	0.0	1.5	31	26	133	71	06/30/99	07/15/94	10/13/94	
BX-111	ASMD LKR	IS/IP/CCS	162	1	5	0.0	116.9	6	2	25	136	06/30/99	05/19/94	02/28/95	
BX-112	SOUND	IS/IP/CCS	165	1	9	0.0	4.1	10	7	164	0	09/17/90	09/11/90		
12 TANKS - TOTALS			1490	24	127	0.0	200.2	151	106	1259	207				
BY TANK FARM STATUS															
BY-101	SOUND	IS/IP	387	0	28	0.0	35.8	28	24	109	278	05/30/84	09/19/89		
BY-102	SOUND	IS/PI	277	0	40	0.0	159.0	40	33	0	277	05/01/95	09/11/87	04/11/95	
BY-103	ASMD LKR	IS/PI	400	0	58	0.0	95.9	58	53	9	391	06/30/99	09/07/89	02/24/97	
BY-104	SOUND	IS/IP	326	0	40	0.0	329.5	40	36	150	176	06/30/99	04/27/83		(c)
BY-105	ASMD LKR	/PI	494	0	112	0.0	8.8	112	102	48	446	07/31/01	07/01/86		(d)
BY-106	ASMD LKR	/PI	556	0	126	0.0	70.0	126	113	84	472	07/31/01	11/04/82		
BY-107	ASMD LKR	IS/IP	266	0	39	0.0	56.4	39	35	40	226	06/30/99	10/15/86		
BY-108	ASMD LKR	IS/IP	228	0	33	0.0	27.5	33	26	154	74	04/28/82	10/15/86		
BY-109	SOUND	IS/PI	290	0	31	0.0	157.1	31	26	57	233	07/08/87	06/18/97		
BY-110	SOUND	IS/IP	398	0	21	0.0	213.3	21	17	103	295	09/10/79	07/26/84		
BY-111	SOUND	IS/IP	459	0	14	0.0	313.2	14	6	0	459	06/30/99	10/31/86		
BY-112	SOUND	IS/IP	291	0	24	0.0	116.4	24	12	0	291	06/30/99	04/14/88		
12 TANKS - TOTALS			4372	0	566	0.0	1582.9	566	483	754	3618				

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	TOTAL WASTE (Kgal)	WASTE VOLUMES						SEE FOOTNOTES FOR THESE CHANGES						
				SUPER-INATANT LIQUID (Kgal)	DRAINABLE INTERSTITIAL LIQUID (Kgal)	PUMPED MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)	PUMPABLE LIQUID REMAINING (Kgal)		SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
C TANK FARM STATUS																
C-101	ASMD LKR	IS/IP	88	0	4	0.0	0.0	4	0	0	88	0	11/29/83	11/17/87		
C-102	SOUND	IS/IP	316	0	62	0.0	46.7	62	55	316	0	0	09/30/95	05/18/76	08/24/95	
C-103	SOUND	/PI	198	79	18	0.0	0.0	97	83	119	0	0	12/31/98	07/28/87		
C-104	SOUND	IS/IP	263	0	0	0.0	0.0	0	0	263	0	0	02/01/00	07/25/90		
C-105	SOUND	IS/PI	132	0	20	0.0	0.0	20	0	132	0	0	02/29/00	09/05/94	08/30/95	
C-106	SOUND	/PI	48	42	0	0.0	0.0	42	9	6	0	0	10/31/99	09/05/94	08/08/94	
C-107	SOUND	IS/IP	257	0	30	0.0	40.8	30	25	257	0	0	06/30/99	00/00/00		
C-108	SOUND	IS/IP	66	0	4	0.0	0.0	4	0	66	0	0	02/24/84	12/05/74	11/17/94	
C-109	SOUND	IS/IP	66	4	4	0.0	0.0	8	4	62	0	0	11/29/83	01/30/76		
C-110	ASMD LKR	IS/IP	178	1	37	0.0	15.5	38	30	177	0	0	06/14/95	08/12/86	05/23/95	
C-111	ASMD LKR	IS/IP	57	0	4	0.0	0.0	4	0	57	0	0	04/28/82	02/25/70	02/02/95	
C-112	SOUND	IS/IP	104	0	6	0.0	0.0	6	1	104	0	0	09/18/90	09/18/90		
C-201	ASMD LKR	IS/IP	2	0	0	0.0	0.0	0	0	2	0	0	03/31/82	12/02/86		
C-202	ASMD LKR	IS/IP	1	0	0	0.0	0.0	0	0	1	0	0	01/19/79	12/08/86		
C-203	ASMD LKR	IS/IP	5	0	0	0.0	0.0	0	0	5	0	0	04/28/82	12/09/86		
C-204	ASMD LKR	IS/IP	3	0	0	0.0	0.0	0	0	3	0	0	04/28/82	12/09/86		
16 TANKS - TOTALS			1784	126	189	0.0	103.0	315	207	1658	0	0				
S TANK FARM STATUS																
S-101	SOUND	/PI	427	12	83	0.0	0.0	95	80	211	204	0	12/31/98	03/18/88		
S-102	SOUND	/PI	492	0	93	0.0	56.8	93	89	105	387	0	05/31/00	03/18/88		
S-103	SOUND	IS/PI	237	1	45	0.0	23.9	46	39	9	227	0	04/30/00	06/01/89	01/28/00	(e)
S-104	ASMD LKR	IS/IP	294	1	34	0.0	0.0	35	31	293	0	0	12/20/84	12/12/84		
S-105	SOUND	IS/IP	455	0	42	0.0	114.3	42	33	2	454	0	09/26/88	04/12/89	01/28/00	
S-106	SOUND	IS/PI	455	0	26	0.0	203.6	26	2	0	455	0	02/28/01	03/17/89	01/28/00	
S-107	SOUND	/PI	376	14	61	0.0	0.0	75	61	293	69	0	06/30/99	03/12/87		
S-108	SOUND	IS/PI	432	0	0	0.0	199.8	0	0	5	427	0	10/01/99	03/12/87	12/03/96	
S-109	SOUND	IS/PI	533	0	16	0.0	34.0	16	12	13	520	0	06/30/01	12/31/98		
S-110	SOUND	IS/PI	390	0	30	0.0	203.1	30	27	131	259	0	05/14/92	03/12/87	12/11/96	
S-111	SOUND	/PI	501	48	82	0.0	3.3	130	97	116	337	0	09/30/99	08/10/89		
S-112	SOUND	/PI	523	0	81	0.0	125.1	81	70	6	517	0	12/31/98	03/24/87		
12 TANKS - TOTALS			5116	76	593	0.0	963.9	669	541	1184	3856	0				

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	WASTE VOLUMES										SEE FOOTNOTES FOR THESE CHANGES	
			TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAINABLE INTERSTITIAL LIQUID (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)	PUMPABLE LIQUID REMAINING (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE		LAST IN-TANK PHOTO
SX TANK FARM STATUS														
SX-101	SOUND	/PI	429	0	93	0.0	19.2	93	80	0	429	12/31/00	03/10/89	(f)
SX-102	SOUND	/PI	514	134	95	0.0	0.0	229	216	0	380	04/30/00	01/07/88	(g)
SX-103	SOUND	/PI	518	0	31	0.0	116.3	31	16	115	403	04/30/01	12/17/87	
SX-104	ASMD LKR	IS/PI	446	0	48	0.0	231.3	48	44	136	310	04/30/00	09/08/88	02/04/98
SX-105	SOUND	/PI	484	0	0	0.0	152.6	0	-12	65	419	04/30/01	06/15/88	(h)
SX-106	SOUND	IS/PI	397	0	37	0.0	147.5	37	31	0	397	05/31/99	06/01/89	
SX-107	ASMD LKR	IS/IP	102	0	0	0.0	0.0	0	0	85	17	10/31/00	03/06/87	
SX-108	ASMD LKR	IS/IP	87	0	0	0.0	0.0	0	0	87	0	12/31/93	03/06/87	
SX-109	ASMD LKR	IS/IP	249	0	0	0.0	0.0	0	0	60	189	10/31/00	05/21/86	
SX-110	ASMD LKR	IS/IP	62	0	0	0.0	0.0	0	0	62	0	10/06/76	02/20/87	
SX-111	ASMD LKR	IS/IP	122	0	8	0.0	0.0	8	3	122	0	06/30/99	06/09/94	
SX-112	ASMD LKR	IS/IP	108	0	6	0.0	0.0	6	1	108	0	06/30/99	03/10/87	
SX-113	ASMD LKR	IS/IP	31	0	0	0.0	0.0	0	0	31	0	06/30/99	03/18/88	
SX-114	ASMD LKR	IS/IP	165	0	0	0.0	0.0	0	0	44	121	10/31/00	02/26/87	
SX-115	ASMD LKR	IS/IP	12	0	0	0.0	0.0	0	0	12	0	04/28/82	03/31/88	
15 SINGLE-SHELL TA TOTALS:			3726	134	318	0.0	666.9	452	379	927	2665			
T TANK FARM STATUS														
T-101	ASMD LKR	IS/PI	102	1	20	0.0	25.3	21	16	37	64	06/30/99	04/07/93	
T-102	SOUND	IS/IP	32	13	3	0.0	0.0	16	11	19	0	08/31/84	06/28/89	
T-103	ASMD LKR	IS/IP	27	4	3	0.0	0.0	7	3	23	0	11/29/83	07/03/84	
T-104	SOUND	IS/PI	317	0	31	0.0	149.5	31	27	317	0	12/31/99	06/29/89	10/07/99
T-105	SOUND	IS/IP	98	0	5	0.0	0.0	5	0	98	0	05/29/87	05/14/87	
T-106	ASMD LKR	IS/IP	21	2	0	0.0	0.0	2	2	19	0	04/28/82	06/29/89	
T-107	ASMD LKR	IS/PI	173	0	34	0.0	11.0	34	20	173	0	05/31/96	07/12/84	05/09/96
T-108	ASMD LKR	IS/IP	44	0	5	0.0	0.0	5	0	21	23	06/30/99	07/17/84	

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	WASTE VOLUMES										SEE FOOTNOTES FOR THESE CHANGES	
			TOTAL WASTE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAINABLE LIQUID (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)	PUMPABLE LIQUID REMAINING (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	SOLIDS VOLUME UPDATE		LAST IN-TANK PHOTO
T-109	ASMD LKR	IS/IP	58	0	10	0.0	0.0	10	3	0	58	06/30/99	02/25/93	
T-110	SOUND	IS/PI	369	1	48	0.0	50.3	48	43	368	0	01/31/00	07/12/84	10/07/99
T-111	ASMD LKR	IS/PI	446	0	38	0.0	9.6	38	35	446	0	04/18/94	04/13/94	02/13/95
T-112	SOUND	IS/IP	67	7	4	0.0	0.0	11	7	60	0	04/28/82	08/01/84	
T-201	SOUND	IS/IP	29	1	4	0.0	0.0	5	1	28	0	05/31/78	04/15/86	
T-202	SOUND	IS/IP	21	0	3	0.0	0.0	3	0	21	0	07/12/81	07/06/89	
T-203	SOUND	IS/IP	35	0	5	0.0	0.0	5	0	35	0	01/31/78	06/03/89	
T-204	SOUND	IS/IP	38	0	5	0.0	0.0	5	0	38	0	07/22/81	08/03/89	
16 TANKS - TOTALS			1877	29	218	0.0	245.7	246	168	1703	145			
TX TANK FARM STATUS														
TX-101	SOUND	IS/IP/CCS	87	3	8	0.0	0.0	11	7	74	10	06/30/99	10/24/85	
TX-102	SOUND	IS/IP/CCS	217	0	27	0.0	94.4	27	16	0	217	08/31/84	10/31/85	
TX-103	SOUND	IS/IP/CCS	157	0	18	0.0	68.3	18	11	0	157	06/30/99	10/31/85	
TX-104	SOUND	IS/IP/CCS	65	5	9	0.0	3.6	14	9	23	37	06/30/99	10/16/84	
TX-105	ASMD LKR	IS/IP/CCS	609	0	25	0.0	121.5	25	14	0	609	08/22/77	10/24/89	
TX-106	SOUND	IS/IP/CCS	341	0	37	0.0	134.6	37	30	0	341	06/30/99	10/31/85	
TX-107	ASMD LKR	IS/IP/CCS	36	1	6	0.0	0.0	7	1	8	27	06/30/99	10/31/85	
TX-108	SOUND	IS/IP/CCS	134	0	8	0.0	13.7	8	1	6	128	06/30/99	09/12/89	
TX-109	SOUND	IS/IP/CCS	384	0	6	0.0	72.3	6	2	384	0	06/30/99	10/24/89	
TX-110	ASMD LKR	IS/IP/CCS	462	0	14	0.0	115.1	14	10	37	425	06/30/99	10/24/89	
TX-111	SOUND	IS/IP/CCS	370	0	10	0.0	98.4	10	6	43	327	06/30/99	09/12/89	
TX-112	SOUND	IS/IP/CCS	649	0	26	0.0	94.0	26	21	0	649	05/30/83	11/19/87	
TX-113	ASMD LKR	IS/IP/CCS	953	0	30	0.0	19.2	30	0	0	953	10/31/00	04/11/83	09/23/94
TX-114	ASMD LKR	IS/IP/CCS	535	0	17	0.0	104.3	17	11	4	531	06/30/99	04/11/83	02/17/95
TX-115	ASMD LKR	IS/IP/CCS	568	0	25	0.0	99.1	25	15	0	568	06/30/99	06/15/88	
TX-116	ASMD LKR	IS/IP/CCS	631	0	21	0.0	23.8	21	17	68	563	06/30/99	10/17/89	
TX-117	ASMD LKR	IS/IP/CCS	626	0	10	0.0	54.3	10	5	29	597	06/30/99	04/11/83	
TX-118	SOUND	IS/IP/CCS	286	0	0	0.0	89.1	0	0	21	265	02/01/00	12/19/79	
18 TANKS - TOTALS			6810	9	297	0.0	1205.7	306	176	697	6104			

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

TANK NO.	TANK INTEGRITY	TANK STATUS	TOTAL WASTE (Kgal)	WASTE VOLUMES				PUMPABLE LIQUID REMAINING				SALT CAKE		PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES	
				SUPER-NATANT LIQUID (Kgal)	DRAINABLE INTERSTITIAL LIQUID (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAINING (Kgal)	PUMPABLE LIQUID REMAINING (Kgal)	SLUDGE (Kgal)	SLUDGE CAKE (Kgal)	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO			
TY TANK FARM STATUS																	
TY-101	ASMD LKR	IS/IP/CCS	118	0	2	0.0	8.2	2	0	0	72	46	06/30/99	08/22/89			
TY-102	SOUND	IS/IP/CCS	64	0	12	0.0	6.6	12	5	0	0	64	06/28/82	07/07/87			
TY-103	ASMD LKR	IS/IP/CCS	162	0	20	0.0	11.5	20	16	162	0	0	07/09/82	08/22/89			
TY-104	ASMD LKR	IS/IP/CCS	43	0	4	0.0	0.0	4	0	43	0	0	06/27/90	11/03/87			
TY-105	ASMD LKR	IS/IP/CCS	231	0	12	0.0	3.6	12	10	231	0	0	04/28/82	09/07/89			
TY-106	ASMD LKR	IS/IP/CCS	21	0	3	0.0	0.0	3	0	21	0	0	06/30/99	08/22/89			
6 TANKS - TOTALS			639	0	53	0.0	29.9	53	31	529	110						
U TANK FARM STATUS																	
U-101	ASMD LKR	IS/IP	25	3	3	0.0	0.0	6	2	22	0	0	04/28/82	06/19/79			(i)
U-102	SOUND	/PI	289	0	17	0.6	86.3	17	7	43	246	0	08/31/01	06/08/89			
U-103	SOUND	IS/PI	418	1	33	0.0	98.9	34	28	13	404	0	05/31/00	08/13/88			
U-104	ASMD LKR	IS/IP	122	0	0	0.0	0.0	0	0	79	43	0	06/30/99	08/10/89			
U-105	SOUND	IS/PI	353	0	44	0.0	87.5	44	32	32	321	0	03/31/01	07/07/88			
U-106	SOUND	IS/PI	172	2	36	0.0	39.1	38	30	0	170	0	03/31/01	07/07/88			(i)
U-107	SOUND	/PI	408	33	92	0.0	0.0	125	115	15	360	0	12/31/98	10/27/88			
U-108	SOUND	/PI	468	24	108	0.0	0.0	132	124	29	415	0	12/31/98	09/12/84			
U-109	SOUND	/PI	387	0	49	1.4	78.3	49	41	35	352	0	08/31/01	07/07/88			
U-110	ASMD LKR	IS/PI	186	0	18	0.0	0.0	18	14	186	0	0	12/30/84	12/11/84			
U-111	SOUND	/PI	329	0	80	0.0	0.0	80	71	26	303	0	12/31/98	06/23/88			
U-112	ASMD LKR	IS/IP	49	4	4	0.0	0.0	8	4	45	0	0	02/10/84	08/03/89			
U-201	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	0	08/15/79	08/08/89			
U-202	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	0	08/15/79	08/08/89			
U-203	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	0	08/15/79	06/13/89			
U-204	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	0	08/15/79	06/13/89			
16 TANKS - TOTALS			3222	71	486	2.0	390.1	557	472	537	2614						
GRAND TOTAL			33236	1351	3375	2.0	5587.6	4726	3821	11059	20826						

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

FOOTNOTES:

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate. The category "Interim Isolated (II)" was changed to Intrusion Prevention (IP) in June 1993. Stabilization information from WHC-SD-RE-TI-178, "SST Stabilization Record," latest revision, or SST Stabilization or Systems Engineer Porosity values are 25% for saltcake and 15% for sludge, per HNF-2978, Rev. 1, "Updated Pumpable Liquid Volume Estimates and Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks," September 1999, with the exception of those tanks which have been interim stabilized and the porosities recalculated.

(a) A-101 Following information from Systems Engineer

Pumping began on May 6, 2000. No pumping since August 2000.

(b) AX-101 Following information from Systems Engineer

Pumping began July 29, 2000; shutdown in August 2000, and resumed March 22, 2001. Pumping shut down April 3, 2001, due to transfer line failure. Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 2. No pumping since April 2001.

(c) BY-105 Following information from Systems Engineer

Pumping began July 11, 2001. Remaining volumes are based on HNF-2978, Rev. 2. Saltcake volume adjusted to correspond to current waste removal. No pumping since July 2001.

Pumping was halted in August 2001 due to transfer line leak detectors not meeting all operability requirements of the Technical Safety Requirements. Compensatory actions have been established to allow resumption of pumping. Additionally, field work for Project W-314, Tank Farm Upgrades, has taken the primary transfer route out of service. Pumping will resume when the alternative route is established.

- Total Waste: 494.2 Kgal
- Supernate: 0.0 Kgal
- Drainable Interstitial Liquid: 112.2 Kgal
- Pumped this Month: 0.0 Kgal
- Total Pumped: 8.8 Kgal
- Drainable Liquid Remaining: 112.2 Kgal
- Pumpable Liquid Remaining: 101.1 Kgal
- Sludge: 48.0 Kgal
- Saltcake: 446.2 Kgal

(d) BY-106 Following information from Systems Engineer

Pumping was restarted July 11, 2001. Pumping was originally started August 1995 and halted October 1995 due to USQ evaluation for flammable gas concerns. Remaining volumes are based on HNF-2978, Rev. 2. Saltcake volume adjusted to correspond to current waste removal. No pumping since July 2001.

Pumping was halted in August 2001 due to transfer line leak detectors not meeting all operability requirements of the Technical Safety Requirements. Compensatory actions have been established to allow resumption of pumping. Additionally, field work for Project W-314, Tank Farm Upgrades, has taken the primary transfer route out of service. Pumping will resume when the alternative route is established.

- Total Waste: 555.7 Kgal
- Supernate: 0.0 Kgal
- Drainable Interstitial Liquid: 125.8 Kgal
- Pumped this Month: 0.0 Kgal
- Total Pumped: 70.0 Kgal
- Drainable Liquid Remaining: 125.8 Kgal
- Pumpable Liquid Remaining: 112.7 Kgal
- Sludge: 84.0 Kgal
- Saltcake: 471. Kgal

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

FOOTNOTES:

(e) S-102 Following information from Systems Engineer

Pumping commenced March 18, 1999. Many pumping problems occurred over the following months, and the pump has been replaced several times. Pumping was interrupted again in June 2000. No pumping since June 2000.

(f) SX-101 Following information from Systems Engineer:

Pumping began November 22, 2000. No pumping since December 2000.

(g) SX-103 Following information from Systems Engineer:

Pumping began October 26, 2000. All supernate has been removed, evaluating whether pumping will be restarted. Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 517.7 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 30.7 Kgal

Pumped this month: 0.0 Kgal

Total Pumped: 116.3 Kgal

Drainable Liquid Remaining: 30.7 Kgal

Pumpable Liquid Remaining: 15.7 Kgal

Sludge: 115.0 Kgal

Saltcake: 402.7 Kgal

In April 2001, a total of 4,393 gal of fluid was removed and a total of 1,148 gal of water added by pump priming/equipment flushes, for a net removal of 3,245 gal of waste. In addition, 5,319 gal of water were used as dilution and 827 gal of water were used for transfer line flushes. No pumping since April 2001.

(h) SX-105 Following information from Systems Engineer:

Saltwell pumping began August 8, 2000. Pumping ceased in late April 2001 when the saltwell screen in-flow rate was measured at about 0.02 gpm. Interstitial fluid level is now being allowed to stabilize to determine if the tank can be declared Interim Stabilized. An in-tank video will be taken. Remaining volumes are based on HNF-2978, Rev. 2.

TABLE B-1. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

August 31, 2001

These volumes are the result of engineering calculations and may not agree with surface level measurements

FOOTNOTES:

(i) U-102 Following information from Systems Engineer

Pumping began in this tank on January 20, 2000. Saltcake volume is adjusted to correspond to current waste removal. Remaining volumes are based on HNF-2978, Rev. 2.

- Total Waste: 288.7 Kgal
- Supernate: 0.0 Kgal
- Drainable Interstitial Liquid: 16.7 Kgal
- Pumped this Month: 0.6 Kgal
- Total Pumped: 86.3 Kgal
- Drainable Liquid Remaining: 16.7 Kgal
- Pumpable Liquid Remaining: 6.7 Kgal
- Sludge: 43.0 Kgal
- Saltcake: 245.7 Kgal

During August 2001, a total of 981 gal of fluid was removed and 380 gal of water added by pump priming/equipment flushes, for a net removal of 601 gal of waste. In addition, 2,027 gal of water were used as dilution and 0 gal of water were used for transfer line flushes.

(ii) U-109 Following information from Systems Engineer

Pumping began March 11, 2000. Saltcake volume is adjusted to correspond to current waste removal. Remaining volumes based on HNF-2978, Rev. 2. Pumping was shut down on December 3, 2000, due to jet pump failure. Attempts to restart the pump were unsuccessful; the pump was replaced and restarted March 30, 2001.

- Tank Waste: 386.7 Kgal
- Supernate: 0.0 Kgal
- Drainable Interstitial Liquid: 48.7 Kgal
- Pumped this month: 1.4 Kgal
- Total Pumped: 78.3 Kgal
- Drainable Liquid Remaining: 48.7 Kgal
- Pumpable Liquid Remaining: 41.1 Kgal
- Sludge: 35.0 Kgal
- Saltcake: 351.7 Kgal

During August 2001, a total of 1,621 gal of fluid was removed and 217 gal of water was added for pump priming/equipment flushes for a net removal of 1,404 gal of waste. In addition, 4,828 gal of water were used as dilution and 0 gal were used for transfer line flushes.

TABLE B-2. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

August 31, 2001

Partial Interim Isolated (PI)	Intrusion Prevention Completed (IP)		Interim Stabilized (IS)	
EAST AREA	EAST AREA	WEST AREA	EAST AREA	WEST AREA
A-101	A-103	S-104	A-102	S-103
A-102	A-104	S-105	A-103	S-104
	A-105		A-104	S-105
AX-101	A-106	SX-107	A-105	S-106
		SX-108	A-106	S-108
BY-102	AX-102	SX-109		S-109
BY-103	AX-103	SX-110	AX-102	S-110
BY-105	AX-104	SX-111	AX-103	
BY-106		SX-112	AX-104	SX-104
BY-109	B-FARM - 16 tanks	SX-113		SX-106
	BX-FARM - 12 tanks	SX-114	B-FARM - 16 tanks	SX-107
C-103		SX-115	BX-FARM - 12 tanks	SX-108
C-105	BY-101			SX-109
C-106	BY-104	T-102	BY-101	SX-110
East Area 11	BY-107	T-103	BY-102	SX-111
	BY-108	T-105	BY-103	SX-112
WEST AREA	BY-110	T-106	BY-104	SX-113
S-101	BY-111	T-108	BY-107	SX-114
S-102	BY-112	T-109	BY-108	SX-115
S-103		T-112	BY-109	
S-106	C-101	T-201	BY-110	T-Farm - 16 tanks
S-107	C-102	T-202	BY-111	TX-FARM - 18 tanks
S-108	C-104	T-203	BY-112	TY-FARM - 6 tanks
S-109	C-107	T-204		
S-110	C-108		C-101	U-101
S-111	C-109	TX-FARM - 18 tanks	C-102	U-103
S-112	C-110	TY-FARM - 6 tanks	C-104	U-104
	C-111		C-105	U-105
SX-101	C-112	U-101	C-107	U-106
SX-102	C-201	U-104	C-108	U-110
SX-103	C-202	U-112	C-109	U-112
SX-104	C-203	U-102	C-110	U-201
SX-105	C-204	U-202	C-111	U-202
SX-106	East Area 55	U-203	C-112	U-203
		U-204	C-201	U-204
T-101		West Area 53	C-202	West Area 69
T-104		Total 108	C-203	Total 129
T-107			C-204	
T-110			East Area 60	
T-111				
U-102	Controlled, Clean, and Stable (CCS)			
U-103	EAST AREA	WEST AREA		
U-105	BX-FARM - 12 Tanks	TX-FARM - 18 tanks		
U-106		TY FARM - 6 tanks		
U-107				
U-108	East Area 12	West Area 24		
U-109		Total 36		
U-110				
U-111				
West Area 29				
Total 40				

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

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

August 31, 2001

Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/89	SN	C-102	SOUND	09/95	JET	T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	06/86	AR	C-103	SOUND	N/A		T-110	SOUND	01/00 (5)	JET
A-104	ASMD LKR	09/78	AR	C-104	SOUND	09/89	SN	T-111	ASMD LKR	02/95	JET
A-105	ASMD LKR	07/79	AR	C-105	SOUND	10/95	AR	T-112	SOUND	03/81	AR(2)(3)
A-106	SOUND	08/82	AR	C-106	SOUND	N/A		T-201	SOUND	04/81	AR (3)
AX-101	SOUND	N/A		C-107	SOUND	09/95	JET	T-202	SOUND	08/81	AR
AX-102	ASMD LKR	09/88	SN	C-108	SOUND	03/84	AR	T-203	SOUND	04/81	AR
AX-103	SOUND	08/87	AR	C-109	SOUND	11/83	AR	T-204	SOUND	08/81	AR
AX-104	ASMD LKR	08/81	AR	C-110	ASMD LKR	05/95	JET	TX-101	SOUND	02/84	AR
B-101	ASMD IKR	03/81	SN	C-111	ASMD LKR	03/84	SN	TX-102	SOUND	04/83	JET
B-102	SOUND	06/85	SN	C-112	SOUND	09/90	AR	TX-103	SOUND	08/83	JET
B-103	ASMD IKR	02/85	SN	C-201	ASMD LKR	03/82	AR	TX-104	SOUND	09/79	SN
B-104	SOUND	06/85	SN	C-202	ASMD LKR	08/81	AR	TX-105	ASMD LKR	04/83	JET
B-105	ASMD IKR	12/84	AR	C-203	ASMD LKR	03/82	AR	TX-106	SOUND	06/83	JET
B-106	SOUND	03/85	SN	C-204	ASMD LKR	09/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/85	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	05/85	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/85	SN	S-103	SOUND	04/00	JET (6)	TX-110	ASMD LKR	04/83	JET
B-110	ASMD LKR	12/84	AR	S-104	ASMD LKR	12/84	AR	TX-111	SOUND	04/83	JET
B-111	ASMD LKR	06/85	SN	S-105	SOUND	09/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	05/85	SN	S-106	SOUND	02/01	JET (10)	TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR (3)	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	05/85	AR(2)	S-108	SOUND	12/86	JET	TX-115	ASMD LKR	09/83	JET
B-203	ASMD LKR	06/84	AR	S-109	SOUND	06/01	JET (13)	TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	06/84	AR	S-110	SOUND	01/97	JET	TX-117	ASMD LKR	03/83	JET
BX-101	ASMD LKR	09/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/78	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR(2)	SX-101	SOUND	N/A		TY-102	SOUND	09/79	AR
BX-104	SOUND	09/89	SN	SX-102	SOUND	N/A		TY-103	ASMD LKR	02/83	JET
BX-105	SOUND	03/81	SN	SX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-106	SOUND	07/95	SN	SX-104	ASMD LKR	04/00	JET (7)	TY-105	ASMD LKR	02/83	JET
BX-107	SOUND	09/90	JET	SX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/79	SN	SX-106	SOUND	05/00	JET (8)	U-101	ASMD LKR	09/79	AR
BX-109	SOUND	09/90	JET	SX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/85	SN	SX-108	ASMD LKR	08/79	AR	U-103	SOUND	09/00	JET (9)
BX-111	ASMD LKR	03/85	JET	SX-109	ASMD LKR	05/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	09/90	JET	SX-110	ASMD LKR	08/79	AR	U-105	SOUND	03/01	JET (11)
BY-101	SOUND	05/84	JET	SX-111	ASMD LKR	07/79	SN	U-106	SOUND	03/01	JET (12)
BY-102	SOUND	04/95	JET	SX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	11/97	JET	SX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/85	JET	SX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-105	ASMD LKR	N/A		SX-115	ASMD LKR	09/78	AR	U-110	ASMD LKR	12/84	AR
BY-106	ASMD LKR	N/A		T-101	ASMD LKR	04/93	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	03/81	AR(2)(3)	U-112	ASMD LKR	09/79	AR
BY-108	ASMD LKR	02/85	JET	T-103	ASMD LKR	11/83	AR	U-201	SOUND	08/79	AR
BY-109	SOUND	07/97	JET	T-104	SOUND	11/99 (4)	JET	U-202	SOUND	08/79	SN
BY-110	SOUND	01/85	JET	T-105	SOUND	06/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	08/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	06/84	JET	T-107	ASMD LKR	05/96	JET				

LEGEND:		
AR = Administratively interim stabilized		Interim Stabilized Tanks 129
JET = Saltwell jet pumped to remove drainable interstitial liquid		Not Yet Interim Stabilized 20
SN = Supernate pumped (Non-Jet pumped)		
N/A = Not yet interim stabilized		
ASMD LKR = Assumed Leaker		Total Single-Shell Tanks 149

TABLE B 3 SINGLE SHELL TANKS INTERIM STABILIZATION STATUS
(sheet 2 of 3)

Footnotes

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

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

Document RPP 5556 Rev 0, Updated Drainable Interstitial Liquid Volume Estimates for 119 Single Shell Tanks Declared Stabilized, J. G. Field, February 7, 2000, states that five tanks no longer meet the stabilization criteria (BX 103, T 102, and T 112 exceed the supernatant criteria, and BY 103 and C 102 exceed the DIL criteria).

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

(3) Earlier versions of HNF SD RE-TI 178, SST Stabilization Record, indicated that original Interim Stabilization data are missing on four tanks: B 201, T 102, T 112, and T 201. HNF SD RE TI 178 Rev 7, dated February 9, 2001, added three additional tanks to those missing stabilization data: A 104, BX 101, and SX 115.

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

(5) Tank 241 T 110 was Interim Stabilized on January 5, 2000, after a major equipment failure. An in-tank video taken October 7, 1999 (pumping was discontinued on August 12, 1999) showed the surface of this tank as smooth, brown tinted sludge with visible cracks.

(6) Tank 241 S 103 was declared Interim Stabilized April 18, 2000. The surface is a rough, black and brown colored waste with yellow patches of saltcake visible throughout. The surface appears to be damp but not saturated, and shows irregular cracking typically seen with surfaces beginning to dry out. A pool of supernatant liquid (10 feet in diameter, 5 feet deep, 10 Kgallons) is visible from video observations.

(7) Tank 241 SX 104 was declared Interim Stabilized April 26, 2000, after a major equipment failure. The surface is a rough, yellowish gray saltcake waste with an irregular surface of visible cracks and shelves that were created as the surface dried out. The waste surface appears to be dry and shows no standing liquid within the tank.

(8) Tank 241 SX 106 was declared Interim Stabilized May 5, 2000. The surface is a smooth, white-colored saltcake waste. The surface level slopes slightly from the tank sidewall down to a large depression in the center of the tank. A second depression surrounds both saltwell screens and an abandoned LOW. The waste surfaces appear dry and show no standing liquid within the tank.

TABLE B 3 SINGLE SHELL TANKS INTERIM STABILIZATION STATUS
(sheet 3 of 3)

- (9) Tank 241 U 103 was declared Interim Stabilized September 11 2000. The surface is a brown colored waste with irregular patches of white salt crystal. Approximately 30% of the waste surface is covered by the salt formations. The surface level slopes slightly from the tank sidewall down to the first of two depressions in the center of the tank. The waste surface appears dry and shows signs of drying and cracking due to saltwell pumping. LOW readings indicate an average adjusted ILL of 60.2 inches. There is a small pool of supernatant liquid estimated to be 500 gallons.
- (10) Tank 241 S 106 was declared Interim Stabilized on February 1 2001. The surface is a rough, brown and yellow-colored saltcake waste with an irregular surface of mounds and saltcake crystals that were created as the surface was dried out. The waste surface appears to be dry and shows no standing liquid within the tank. There is no evidence of supernatant liquid from video observations. The waste surface slopes gradually from the tank sidewall to the depression in the center of the tank. The depression surrounds both of the saltwell screens but does not extend around the temperature probe and ENRAF devices.
- (11) Tank 241 U 105 was declared Interim Stabilized on March 29 2001 after a major equipment failure. The surface is a brown colored waste with irregular patches of white salt crystal. Approximately 15% of the surface is covered by the salt formations. The surface level slopes to the first of two depressions in the center of the tank. The first depression is cone shaped and estimated to be 22 feet in diameter. The second depression, inside the first, is cylindrically shaped and has a diameter of approximately 10 feet. Both depressions are centered on the saltwell screen. The waste surface appears dry and shows signs of cracking due to saltwell pumping. There is no visible liquid in the tank.
- (12) Tank 241 U 106 was declared Interim Stabilized on March 9 2001. The surface is a dark brown/yellow colored waste that is covered with many stalagmite type crystals growing on the surface. The crystals cover approximately 75% of the waste surface. The waste surface is irregular, appears dry, and shows only minimal signs of cracking due to saltwell pumping. The supernatant pool is estimated to be 13.3 feet in diameter based on the visible portion of the saltwell screen. The pool is centered on the saltwell screen.
- (13) Tank 241 S 109 was declared Interim Stabilized on June 11 2001. The surface is primarily a white colored salt crystal with small patches of dark salt visible due to saltwell/sampling activities. Approximately 95% of the waste surface is covered by the salt formations. The surface level slopes slightly from the tank sidewall down to a depression in the center of the tank. The waste surface appears rough and dry and shows signs of cracking and slumping due to saltwell pumping.

TABLE B 4 SINGLE SHELL TANK INTERIM STABILIZATION MILESTONES

August 31 2001
(sheet 1 of 2)

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

CONSENT DECREE
Attachments A 1 and A 2

Following is the schedule for pumping liquid waste from the remaining twenty nine (29) single-shell tanks. This schedule is enforceable pursuant to the terms of the Decree except for the Project Pumping Completion Dates which are estimates only and not enforceable. (Note: Schedule does not include C 106)

Tank Designation	Projected Pumping Start Date	Actual Pumping Start Date	Projected Pumping Completion Date	Interim Stabilization Date
1 T 104	Already initiated	March 24 1996	May 30 1999	November 19 1999
2 T 110	Already initiated	May 12 1997	May 30 1999	January 5 2000
3 SX 104	Already initiated	September 26 1997	December 30 2000	April 26 2000
4 SX 106	Already initiated	October 6 1998	December 30 2000	May 5 2000
5 S 102	Already initiated	March 18 1999	March 30 2001	
6 S 106	Already initiated	April 16 1999	March 30 2001	February 1 2001
7 S 103	Already initiated	June 4 1999	March 30 2001	April 18 2000
8 U 103*	June 15 2000	September 26 1999	April 15 2002	September 11 2000
9 U 105*	June 15 2000	December 10 1999	April 15 2002	March 29 2001
10 U 102*	June 15 2000	January 20 2000	April 15 2002	
11 U 109*	June 15 2000	March 11 2000	April 15 2002	
12 A 101	October 30 2000	May 6 2000	September 30 2003	
13 AX 101	October 30 2000	July 29 2000	September 30 2003	
14 SX 105	March 15 2001	August 8 2000	February 28 2003	
15 SX 103	March 15 2001	October 26 2000	February 28 2003	
16 SX 101	March 15 2001	November 22 2000	February 28 2003	
17 U 106*	March 15 2001	August 24 2000	February 28 2003	March 9 2001
18 BY 106	July 15 2001	July 11 2001	June 30 2003	
19 BY 105	July 15 2001	July 11 2001	June 30 2003	
20 U 108	December 30 2001		August 30 2003	
21 U 107	December 30 2001		August 30 2003	
22 S 111	December 30 2001		August 30 2003	
23 SX 102	December 30 2001		August 30 2003	
24 U 111	November 30 2002		September 30 2003	
25 S 109	November 30 2002	September 23 2000	September 30 2003	June 11 2001
26 S 112	November 30 2002		September 30 2003	
27 S 101	November 30 2002		September 30 2003	
28 S 107	November 30 2002		September 30 2003	
29 C 103	The Decree states that no later than December 30 2000 DOE will determine whether the organic layer and pumpable liquids will be pumped from this tank together or separately and will establish a deadline for initiating pumping of this tank, the parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree. Completion: ORP issued a letter to WDOE on December 22 2000 meeting the requirements of this milestone.			

* Tanks containing organic complexants

TABLE B 4 SINGLE SHELL TANK INTERIM STABILIZATION MILESTONES
 (sheet 2 of 2)

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

Percentage of Pumpable Liquid Remaining to be Removed

93% of Total Liquid	9/30/1999 (1)
38% of Organic Complexed Pumpable Liquids	9/30/2000 (2)
5% of Organic Complexed Pumpable Liquids	9/30/2001
18% of Total Liquid	9/30/2002
2% of Total Liquid	9/30/2003

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

- (1) The Pumpable Liquid Remaining was reduced to 88% by September 30 1999 exceeding this milestone Reference LMHC 9957926 R1 D I Alien LHMC to D C Bryson DOE ORP dated October 26 1999
- (2) The Complexed Pumpable Liquid Remaining was reduced to 38% by September 15 2000 Reference CHG 0004752 R F Wood CHG to J J Short, DOE ORP dated September 13 2000

TABLE B 5 SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (Sheet 1 of 6)

August 31 2001

Tank Number	Date Declared Confirmed or Assumed Leaker (3)	Volume Gallons (2)	Associated KiloCuries 137 Cs (9)	Interim Stabilized Date (11)	Leak Estimate	
					Updated	Reference
241 A 103	1987	5500 (8)		08/88	1987	(j)
241 A 104	1975	500 to 2500	0.8 to 1.8 (q)	09/78	1983	(a)(q)
241 A 105 (1)	1983	10000 to 277000	85 to 760 (b)	07/79	1991	(b)(c)
241 AX 102	1988	3000 (8)		09/88	1989	(h)
241 AX 104	1977	(8)		08/81	1989	(g)
241 B-101	1974	(8)		03/81	1989	(g)
241 B-103	1978	(8)		02/85	1989	(g)
241 B-105	1978	(8)		12/84	1989	(g)
241 B-107	1980	8000 (8)		03/85	1986	(d)(f)
241 B-110	1981	10000 (8)		03/85	1986	(d)
241 B-111	1978	(8)		06/85	1989	(g)
241 B-112	1978	2000		05/85	1989	(g)
241 B-201	1980	1200 (8)		08/81	1984	(e)(f)
241 B-203	1983	300 (8)		06/84	1986	(d)
241 B-204	1984	400 (8)		06/84	1989	(g)
241 BX 101	1972	(8)		09/78	1989	(g)
241 BX 102	1971	70000	50 (l)	11/78	1986	(d)
241 BX 108	1974	2500	0.5 (l)	07/79	1986	(d)
241 BX 110	1976	(8)		08/85	1989	(g)
241 BX 111	1984 (13)	(8)		03/95	1993	(g)
241 BY 103	1973	<5000		11/97	1983	(a)
241 BY 105	1984	(8)		N/A	1989	(g)
241 BY 106	1984	(8)		N/A	1989	(g)
241 BY 107	1984	15100 (8)		07/79	1989	(g)
241 BY 108	1972	<5000		02/85	1983	(e)
241 C 101	1980	20000 (8)(10)		11/83	1986	(d)
241 C 110	1984	2000		05/95	1989	(g)
241 C 111	1988	5500 (8)		03/84	1989	(g)
241 C 201 (4)	1988	550		03/82	1987	(i)
241 C 202 (4)	1988	450		08/81	1987	(i)
241 C 203	1984	400 (8)		03/82	1986	(d)
241 C 204 (4)	1988	350		09/82	1987	(i)
241 S 104	1988	24000 (8)		12/84	1989	(g)
241 SX 104	1988	8000 (8)		04/00	1988	(k)
241 SX 107	1964	<5000		10/79	1983	(a)
241 SX 108 (5)(14)	1962	2400 to 35000	17 to 140 (m)(q)(t)	08/79	1991	(m)(q)(t)
241 SX 109 (5)(14)	1965	<10000	<40 (n)(t)	05/81	1992	(n)(t)
241 SX 110	1976	5500 (8)		08/79	1989	(g)
241 SX 111 (14)	1974	500 to 2000	0.6 to 2.4 (l)(q)(t)	07/79	1986	(d)(q)(t)
241 SX 112 (14)	1969	30000	40 (l)(t)	07/79	1986	(d)(t)
241 SX 113	1962	15000	8 (l)	11/78	1986	(d)
241 SX 114	1972	(8)		07/78	1989	(g)
241 SX 115	1965	50000	21 (o)	09/78	1992	(o)
241 T 101	1992	7500 (8)		04/83	1992	(p)
241 T 103	1974	<1000 (8)		11/83	1989	(g)
241 T 106	1973	115000 (8)	40 (l)	08/81	1986	(d)
241 T 107	1984	(8)		05/96	1989	(g)
241 T 108	1974	<1000 (8)		11/78	1980	(f)
241 T 109	1974	<1000 (8)		12/84	1989	(g)
241 T 111	1979, 1994 (12)	<1000 (8)		02/95	1994	(f)(r)
241 TX 105	1977	(8)		04/83	1989	(g)
241 TX 107 (5)	1984	2500		10/79	1986	(d)
241 TX 110	1977	-- (6)		04/83	1989	(g)
241 TX 113	1974	(6)		04/83	1989	(g)
241 TX 114	1974	(6)		04/83	1989	(g)
241 TX 115	1977	(8)		09/83	1989	(g)
241 TX 116	1977	(8)		04/83	1989	(g)
241 TX 117	1977	-- (6)		03/83	1989	(g)
241 TY 101	1973	<1000 (8)		04/83	1980	(f)
241 TY 103	1973	3000	0.7 (l)	02/83	1986	(d)
241 TY 104	1981	1400 (8)		11/83	1986	(d)
241 TY 105	1960	35000	4 (l)	02/83	1986	(d)
241 TY 106	1959	20000	2 (l)	11/78	1986	(d)
241 U 101	1959	30000	20 (l)	09/79	1986	(d)
241 U 104	1961	55000	0.09 (l)	10/78	1986	(d)
241 U 110	1975	5000 to 8100 (8)	0.05 (q)	12/84	1986	(d)(q)
241 U 112	1980	8500 (8)		09/79	1986	(d)
87 Tanks		<750,000	1,050,000 (7)			

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

TABLE B 5 SINGLE SHELL LEAK VOLUME ESTIMATES
(Sheet 2 of 6)

Footnotes

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

- 1 Reference (b) contains an estimate of 5 to 15 Kgallons for the initial leak prior to August 1968
- 2 Reference (b) contains an estimate of 5 to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970
- 3 Reference (b) contains an estimate of 610 Kgallons of cooling water added to the tank from November 1970 to December 1978 but it was estimated that the leakage was small during this period. This reference contains the statement "Sufficient heat was generated in the tank to evaporate most, and perhaps nearly all of this water." This results in a low estimate of zero gallons leakage from November 1970 to December 1978
- 4 Reference (c) contains an estimate the 378 to 410 Kgallons evaporated out of the tank from November 1970 to December 1978. Subtracting the minimum evaporation estimate from the cooling water added estimate provides a range from 0 to 232 Kgallons of cooling water leakage from November 1970 to December 1978

	<u>Low Estimate</u>	<u>High Estimate</u>
Prior to August 1968	5 000	15 000
August 1968 to November 1970	5 000	30 000
November 1970 to December 1978	<u>0</u>	<u>232 000</u>
Totals	10 000	277 000

- (2) These leak volume estimates do not include (with some exceptions) such things as (a) cooling/raw water leaks (b) intrusions (rain infiltration) and subsequent leaks (c) leaks inside the tank farm but not through the tank liner (surface leaks pipeline leaks, leaks at the joint for the overflow or fill lines etc) and (d) leaks from catch tanks diversion boxes encasements etc
- (3) In many cases a leak was suspected long before it was identified or confirmed. For example Reference (d) shows that Tank 241 U 104 was suspected of leaking in 1956. The leak was confirmed in 1961. This report lists the 'assumed leaker' date of 1961. Using present standards Tank 241 U 104 would have been declared an assumed leaker in 1956. In 1984 the criteria designations of "suspected leaker" "questionable integrity confirmed leaker" "declared leaker" "borderline and dormant" were merged into one category now reported as "assumed leaker". See Reference (f) for explanation of when, how long and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single shell tanks because of the nature of their design and instrumentation
- (4) The leak volume estimate date for these tanks is before the declared leaker date because the tank was in a suspected leaker or questionable integrity status however a leak volume had been estimated prior to the tank being reclassified

TABLE B 5 SINGLE SHELL TANK LEAK VOLUME ESTIMATES

(Sheet 3 of 6)

- (5) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations. (Repeat spectral drywell scans are not part of the current Tank Farm leak detection program but can be run on request a special needs arise. A select subset of drywells is routinely monitored by the Vadose Zone Characterization Project to assess movement of gamma-emitting radionuclides in the subsurface. There are currently no functioning laterals and no plan to prepare them for use.)
- (6) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (9). For more details see Reference (g). The total leak volume estimate for these tanks is 150 Kgallons (rounded to the nearest Kgallon) for an average of approximately 8 Kgallons for each of 19 tanks.
- (7) The total has been rounded to the nearest 50 Kgallons. Upper bound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.
- (8) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.
- (9) The curie content shown is as listed in the reference document and is not decayed to a consistent date therefore a cumulative total is inappropriate.
- (10) Tank 241 C 101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a minimum heel in December 1969. In 1970 the tank was classified as a 'questionable integrity tank'. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a 'confirmed leaker' in January 1980. See References (q) and (r) refer to Reference (s) for information on the potential for there to have been leaks from other C farm tanks (specifically C 102, C 103 and C 109).
- (11) These dates indicate when the tanks were declared to be interim stabilized. In some cases the official interim stabilization documents were issued at a later date. Also in some cases the field work associated with interim stabilization was completed at an earlier date.
- (12) Tank 241 T 111 was declared an 'assumed re leaker' on February 28, 1994 due to a decreasing trend in surface level measurement. This tank was pumped, and interim stabilization completed on February 22, 1995.
- (13) Tank BX 111 was declared an 'assumed re leaker' in April 1993. Preparations for pumping were delayed, following an administrative hold placed on all tank farm operations in August 1993. Pumping resumed and the tank was declared interim stabilized on March 15, 1995.
- (14) The leak volume and curie release estimates on SX 108, SX 109, SX 111 and SX 112 have been re-evaluated using a Historical Leak Model [see Reference (t)]. In general the model estimates are much higher than the values listed in the table both for volume and curies released. The values listed in the table do not reflect this revised estimate because. In particular it is worth emphasizing that this report was never meant to be a definitive update for the leak baseline at the Hanford Site. It was rather meant to be an attempt to view the issue of leak inventories with a new and different methodology. (This quote is from the first page of the referenced report)

TABLE B 5 SINGLE SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 4 of 6)

- (15) In July 1998 the Washington State Department of Ecology (Ecology) directed the U S Department of Energy (DOE) to develop corrective action plans for eight single shell tank farms (B/BX/BY/S/SX/T/TX/TY) where groundwater contamination likely originated from tank farm operations. A Tri Party Agreement milestone (M-45 series) was developed that established a formalized approach for evaluating impacts on groundwater quality of loss of tank wastes to the vadose zone underlying these tank farms. Planning documents have been completed for the S, SX, B, BX, and BY tank farms and will be completed shortly for the T, TX, and TY farms. The phase 1 field investigation is near completion in the S and SX tank farms and has begun in the B, BX, and BY farms. Field work is anticipated in FY-02 for the T, TX, and TY tank farms. The remaining four single shell tank farms are expected to be included in corrective action plans in the near future.

All of the information included in this appendix is currently under review and significant revisions are anticipated. Recently major tank farm vadose zone investigative efforts (such as the baseline spectral gamma ray logging of all drywells in all single shell tank farms, as well as drilling and sampling in the SX tank farm) were completed. This appendix will be revised as a better understanding of past tank leak events is developed.

SST Vadose Zone Project drilling and testing activities near tank BX 102 were completed March 2001. A borehole (299 E33 45) was drilled through the postulated uranium plume resulting from the 1951 tank BX 102 overflow event to confirm the presence of uranium, define its present depth, and survey other contaminants of interest such as Tc 99. Thirty five split spoon samples were collected for laboratory analyses. This borehole was decommissioned after collection and analysis of groundwater samples.

Borehole W33-46 adjacent to Tank B 110 was drilled to a depth of approximately 190 feet in July 2001. Soil samples were collected for analysis as part of the tank farm vadose zone characterization activities. During decommissioning this borehole was completed as a vadose zone monitoring structure. Work was accomplished in cooperation with scientists from Idaho National Engineering and Environmental Laboratory and Pacific Northwest National Laboratory. This borehole is now the first fully instrumented vadose zone hydrographic monitoring structure to be completed in a Hanford site tank farm.

TABLE B 5 SINGLE SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 5 of 6)

References

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- (b) WHC 1991a, *Tank 241 A 105 Leak Assessment* WHC MR 0264 Westinghouse Hanford Company Richland, Washington
- (c) WHC 1991b *Tank 241 A 105 Evaporation Estimate 1970 Through 1978* WHC EP 0410 Westinghouse Hanford Company Richland, Washington
- (d) Smith, D A January 1986 *Single Shell Tank Isolation Safety Analysis Report* SD WM SAR-006 Rev 1 Westinghouse Hanford Company Richland, Washington
- (e) McCann, D C and T S Vail September 1984 *Waste Status Summary* RHO RE SR 14 Rockwell Hanford Operations Richland, Washington
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- (g) Baumhardt R J May 15 1989 Letter to R E Gerton, U S Department of Energy Richland Operations Office *Single Shell Tank Leak Volumes* 8901832B R1 Westinghouse Hanford Company Richland Washington
- (h) WHC 1990a, Occurrence Report *Surface Level Measurement Decrease in Single Shell Tank 241 AX 102* WHC UO 89 023 TF 05 Westinghouse Hanford Company Richland, Washington
- (i) Groth, D R July 1 1987 Internal Memorandum to R J Baumhardt, *Liquid Level Losses in Tanks 241-C 201 202 and 204* 65950 87 517 Westinghouse Hanford Company Richland Washington
- (j) Groth, D R and G C Owens May 15 1987 Internal Memorandum to J H Roecker *Tank 103 A Integrity Evaluation* Westinghouse Hanford Company Richland Washington
- (k) Dunford, G L July 8 1988 Internal Memorandum to R K Welty *Engineering Investigation Interstitial Liquid Level Decrease in Tank 241 SX 104* 13331 88-416 Westinghouse Hanford Company Richland, Washington
- (l) ERDA, 1975 *Final Environmental Statement Waste Management Operations Hanford Reservation Richland Washington* ERDA 1538 2 vols U S Energy Research and Development Administration, Washington, D C
- (m) WHC 1992a, *Tank 241 SX 108 Leak Assessment* WHC MR 0300 Westinghouse Hanford Company Richland, Washington
- (n) WHC 1992b *Tank 241 SX 109 Leak Assessment* WHC MR 0301 Westinghouse Hanford Company Richland, Washington
- (o) WHC 1992c *Tank 241 SX 115 Leak Assessment* WHC MR-0302 Westinghouse Hanford Company Richland, Washington

TABLE B 5 SINGLE SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 6 of 6)

- (p) WHC 1992d, Occurrence Report, *Apparent Decrease in Liquid Level in Single Shell Underground Storage Tank 241 T 101 Leak Suspected Investigation Continuing* RL WHC TANKFARM 1992-0073 Westinghouse Hanford Company Richland, Washington
- (q) WHC 1990b *A History of the 200 Area Tank Farms* WHC MR 0132 Westinghouse Hanford Company Richland, Washington
- (r) WHC 1993a, *Assessment of Unsaturated Zone Radionuclide Contamination Around Single Shell Tanks 241-C 105 and 241-C 106 WHC-SD EN TI 185 REV OA*, Westinghouse Hanford Company Richland, Washington
- (s) WHC 1994 Occurrence Report, *Apparent Liquid Level Decrease in Single Shell Underground Storage Tank 241 T 111 Declared an Assumed Re Leaker* RL WHC TANKFARM 1994-0009 Westinghouse Hanford Company Richland, Washington
- (t) HNF 1998 Agnew S F and R A Corbin, August 1998 *Analysis of SX Farm Leak Histories Historical Leak Model (HLM)* HNF 3233 Rev 0 Los Alamos National Laboratory Los Alamos New Mexico

TABLE B-6 SINGLE SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 3)

August 31 2001

There were no Single Shell Tanks Out of Compliance (O/C) this month

LEGEND	
O/C	= Noncompliance with applicable documentation
O/S	= Out of Service
N/A	= Not applicable (not monitored no schedule)
None	= Applicable equipment not installed
LOW	= LOW readings taken by Neutron probe (exception Tank AX 101 taken by gamma sensors)
POP	= Plant Operating Procedure TO-040 650
MT/FIC/ ENRAF	= Surface level measurement devices
OSD	= Operating Spec Doc OSD T 151 00013 and 00031
FSAR/TSR	= Final Safety Analysis Report/Technical Safety Requirements

Notes

- All Dome Elevation Survey monitoring is in compliance
- Psychrometrics monitoring is on an as needed basis
- In tank photos/videos are taken on an as needed basis
- Drywell monitoring is no longer required

The following table indicates Single Shell tank monitoring devices which were Out Of Service (O/S) as of the last day of this month

Tank Number	Tank Category	Temperature Readings (2)	Primary Leak Detection Source (3)	Surface Level Readings (3) (OSD)			LOW Readings (OSD)(4 5)
	High Heat (1)			MT	FIC	ENRAF	Neutron
B-110			LOW	None	None	(O/S) (6)	
BY 109		None	LOW	None	O/S (7)	None	

TABLE B 6 SINGLE SHELL TANKS MONITORING COMPLIANCE STATUS -149 TANKS
(Sheet 2 of 3)

Footnotes

- 1 High heat tanks have active exhausters psychrometrics can be taken in the high heat tanks Psychrometric readings are not required, but can be taken on an as needed basis

Psychrometric readings are taken annually in SX farm

- 2 Temperature readings may be regulated by OSD POP or FSAR (FSAR only regulates high heat load tanks) (see Legend, page B 23) Temperatures cannot be obtained in 13 low heat load tanks (see Table B 2) The OSD does not require readings or repair of out of service thermocouples for the low heat load ($\leq 26,000$ Btu/h) tanks However the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks

Temperatures in some tanks cannot be taken in the waste because the waste level is lower than the lowest thermocouple in these tanks Some tanks have no temperature trees

Temperatures for many tanks are monitored continuously by TMACS see Table D-4 Tank Monitor and Control System

- 3 All SSTs have either manual tape FIC or ENRAF surface level measuring devices Some also have zip cords

ENRAF gauges are being installed to replace FICs (or sometimes manual tapes) The ENRAF gauges are being connected to TMACS but many are currently being read manually from the field See Table D 3 for list of ENRAF installations

- 4 Document OSD T 151 00031 Operating Specifications for Tank Farm Leak Detection, Rev D 5 May 30 2001 requires that single shell tanks with the surface level measurement device contacting liquid partial liquid, or floating crust surface will be monitored for leak detection on a daily basis Tanks with a solid surface will be monitored for leak detection on a weekly basis by taking neutron scan data from a Liquid Observation Well (LOW) if an LOW is present Tanks with a solid surface but without LOWs will not be monitored for leak detection until an LOW is installed The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service

This OSD revision does not require drywell surveys to be taken drywell scans will only be taken by special request since any scans would have to be subcontracted The Tank Farm contractor no longer has drywell scanning equipment

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

TABLE B 6 SINGLE SHELL TANKS MONITORING COMPLIANCE STATUS 149 TANKS
 (Sheet 3 of 3)

Tanks which will not receive LOWs

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

Total 34 Tanks

- 6 Tank B 110 The ENRAF was damaged during installation of the LOW in February 2001 The ENRAF is scheduled for repair The LOW is the primary device and good weekly readings are being obtained
- 7 Tank BY 109 – The FIC has been showing suspect readings since 1998 The LOW is the primary device and good readings are being obtained

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APPENDIX C

**MISCELLANEOUS UNDERGROUND STORAGE TANKS
AND SPECIAL SURVEILLANCE FACILITIES**

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

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements
August 31, 2001

<u>FACILITY</u>	<u>LOCATION</u>	<u>PURPOSE (receives waste from.)</u>	<u>(Gallons) MONITORED BY</u>	<u>REMARKS</u>
<i>Waste</i>				
<u>EAST AREA</u>				
241-A-302-A	A Farm	A-151 DB	670	SACS/ENRAF/Manually
241-ER-311	B Plant	ER-151, ER-152 DB	1861	SACS/ENRAF/Manually
241-AZ-151	AZ Farm	AZ-702 condensate	3708	SACS/ENRAF/TMACS
241-AZ-154	AZ Farm		25	SACS/MT
244-BX-TK/SMP	BX Complex	DCRT - Receives from several farms	24086	SACS/MT
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	7262	MCS/SACS/WTF
A-350	A Farm	Collects drainage	255	MCS/SACS/WTF
AR-204	AY Farm	Tanker trucks from various facilities	325	DIP TUBE
A-417	A Farm		13814	SACS/WTF
CR-003-TK/SUMP	C Farm	DCRT	2960	MT/ZIP CORD
<u>WEST AREA</u>				
241-TX-302-C	TX Farm	TX-154 DB	164	SACS/ENRAF/Manually
241-U-301-B	U Farm	U-151, U-152, U-153, U-252 DB	8034	SACS/ENRAF/Manually
241-UX-302-A	U Plant	UX-154 DB	3346	SACS/ENRAF/Manually
241-S-304	S Farm	S-151 DB	129	SACS/ENRAF/Manually
244-S-TK/SMP	S Farm	From original tanks to SY-102	26401	SACS/Manually
244-TX-TK/SMP	TX Farm	From original tanks to SY-102	16810	SACS/Manually
Vent Station Catch Tank		Cross Country Transfer Line	376	SACS/Manually

LEGEND:

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

Total Active Facilities 17

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

INACTIVE - no longer receiving waste transfers
August 31, 2001

<u>FACILITY</u>	<u>LOCATION</u>	<u>RECEIVED WASTE FROM:</u>	<u>WASTE (Gallons)</u>	<u>MONITORED BY</u>	<u>REMARKS</u>
216-BY-201	BY Farm	TBP Waste Line	Unknown	NM	
241-A-302-B	A Farm	A-152 DB	5798	SACS/MT	Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion
241-AX-151	N of PUREX	PUREX	Unknown	NM	Isolated 1985
241-AX-152	AX Farm	AX-152 DB	0	SACS/MT	Declared Assumed Leaker; pumped to AY-102 3/1/01, no longer being used
241-B-301-B	B Farm	B-151, B-152, B-153, B-252 DB	22250	NM	Isolated 1985 (1)
241-B-302-B	B Farm	B-154 DB	4930	NM	Isolated 1985 (1)
241-BX-302-A	BX Farm	BR-152, BX-153, BXR-152, BYR-152 DB	840	NM	Isolated 1985 (1)
241-BX-302-B	BX Farm	BX-154 DB	1040	NM	Isolated 1985 (1)
241-BX-302-C	BX Farm	BX-155 DB	870	NM	Isolated 1985 (1)
241-C-301-C	C Farm	C-151, C-152, C-153, C-252 DB	10470	NM	Isolated 1985 (1)
241-CX-70	Hot Semi-Works	Transfer lines	Unknown	NM	Isolated, Decommission Project, See Dwg H-2-95-501, 2/5/87
241-CX-72	Works	Transfer lines	650	NM	Isolated
241-ER-311A	SW B Plant	ER-151 DB	Unknown	NM	Not actively being used. Systems activated for final clean-out.
244-AR VAULT	A Complex	Between farms & B-Plant	Unknown	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-002	BX Farm	Transfer lines	2180	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-003	BX Farm	Transfer lines	1810	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-011	BX Farm	Transfer lines	7100	NM	Interim Stabilization 1985 (1)
361-B-TANK	B Plant	Drainage from B-Plant	Unknown	NM	Interim Stabilization 1985 (1)

Total East Area Inactive Facilities 19

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

(1) SOURCE: WHC-SD-WM-TI-356, "Waste Storage Tank Status & Leak Detection Criteria," Rev. 0, September 30, 1988

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

INACTIVE - no longer receiving waste transfers
August 31, 2001

FACILITY	LOCATION	RECEIVED WASTE FROM:	WASTE (Gallons)	MONITORED BY	REMARKS
216-TY-201	E. of TY Farm	Supernate from T-112	Unknown	NM	Isolated
231-W-151-001	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
231-W-151-002	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
241-S-302	S Farm	240-S-151 DB	8357	SACS/ENRAF	Assumed Leaker EPDA 85-04
241-S-302-A	S Farm	241-S-151 DB	0	O	Assumed Leaker TF-EFS-90-042
Partially filled with grout 2/91, determined still to be an assumed leaker after leak test. Manual FIC readings are unobtainable due to dry grouted surface.					
CASS monitoring system retired 2/23/99; intrusion readings discontinued. S-304 replaced S-302-A					
241-S-302-B	S Farm	S Encasements	Unknown	NM	Isolated 1985 (1)
241-SX-302	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-SX-304	SX Farm	SX-152 Transfer Box, SX-151 DB	Unknown	NM	Isolated 1985 (1)
241-T-301	T Farm	DB T-151, -151, -153, -252	Unknown	NM	Isolated 1985 (241-T-301B)
241-TX-302	TX Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TX-302-X-B	TX Farm	TX Encasements	Unknown	NM	Isolated 1985 (1)
241-TX-302-B	TX Farm	TX-155 DB	1600	SACS/MT	New MT installed 7/16/93
241-TX-302-B(R)	TX Farm	TX-155 DB	Unknown	NM	Isolated
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Unknown	NM	Isolated 1985 (1)
241-Z-8	E. of Z Plant	Recuplex waste	Unknown	NM	Isolated, 1974, 1975
242-T-135	T Evaporator	T Evaporator	Unknown	NM	Isolated
242-TA-R1	T Evaporator	Z Plant waste	Unknown	NM	Isolated
243-S-TK-1	N. of S Farm	Personnel Decon. Facility	Unknown	NM	Isolated
244-U-TK/SMP	U Farm	DCRT - Receives from several farms	Unknown	NM	Not yet in use
244-TXR VAULT	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-001	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-002	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-003	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
270-W	SE of U Plant	Condensate from U-221	Unknown	NM	Isolated 1970
361-T-TANK	T Plant	Drainage from T-Plant	Unknown	NM	Isolated 1985 (1)
361-U-TANK	U Plant	Drainage from U-Plant	Unknown	NM	Interim Stabilized, MT removed 1984 (1)

Total West Area Inactive Facilities 27

LEGEND:

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

(1) SOURCE: WHC-SD-WM-TI-356; "Waste Storage Tank Status & Leak Detection Criteria," Rev. 0, September 30, 1988

APPENDIX D
TEMPERATURE MONITORING
ENRAF INSTALLATIONS
TANK MONITOR AND CONTROL SYSTEM (TMACS)

TABLE D 1 TEMPERATURE MONITORING
August 31 2001

WATCHLIST TANKS

The Flammable Gas Safety Issue was declared closed by DOE-Headquarters and 24 tanks (19 SST and 5 DST) were removed from the Flammable Gas (Hydrogen) Watch List on August 13, 2001. Operating Specification Document OSD-T-151 00030, "Operating Specification for Watch List Tanks," will be cancelled.

There are no longer any tanks on a Watch List. References to Watch Lists will be deleted in the next report.

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

Nine tanks have high heat loads for which temperature surveillance requirements have been established. In an analysis WHC SD WM SARR-010 Rev 1 *Heat Removal Characteristics of Waste Storage Tanks* Kummerer 1995 it was estimated that these nine tanks have heat sources >26,000 Btu/hr which is the new criterion for determining high heat load tanks.

Temperatures in these tanks did not exceed the Technical Safety Requirements (TSR) for this month. The tanks are monitored by the Tank Monitor and Control System (TMACS). All high heat load tanks are on active ventilation.

	<u>Tank No</u>	
C 106 (1)	SX 108	SX 111
SX 103	SX 109	SX 112
SX 107	SX 110	SX 114

- (1) The final thermal analysis report for tank C 106 was issued August 9 2000 and concluded that the best estimate for C 106 was between 7,000 and 11,000 Btu/hr. It no longer meets the criterion for a high heat load tank. An AB Amendment is required to revise the temperature control limits and monitoring frequency. The AB Amendment request is on temporary hold by ORP.

Active ventilation

There are 15 single shell tanks on active ventilation (9 are high heat load tanks – see above).

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

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

There are 114 low heat load non Watch List tanks. Temperatures in tanks connected to TMACS are monitored by TMACS. Temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. These temperatures have been within historical ranges for the applicable tank.

No temperatures have been obtained for several years in the 14 tanks listed below. Most of these tanks have no thermocouple trees.

<u>Tank No</u>				
BY 102	C 104	T 102	TX 110	U 104
BY 104	C 204	T 105	TX 114	
BY 109	SX 115	TX 101	TX 117	

TABLE D-2. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR
 (Sheet 1 of 2)
 August 31, 2001

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists.

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

TABLE D-2. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR

(Sheet 2 of 2)
August 31, 2001

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists.

	Ferrocyanide	Hydrogen	Organics	High Heat	Total Tanks		
					SST	DST	Total
Deleted 12/99				-1 (C-106)	-1		
Deleted 08/00			-1 (C-102)		-1		
			-1 (C-103)		-1		
Deleted 01/01		-1 (SY-101)				-1	
Total - July 31, 2001	0	24	0	0	19	5	24
Deleted 8/01		-24 (A-101) (AX-101) (AX-103) (S-102) (S-111) (S-112) (SX-101) (SX-102) (SX-103) (SX-104) (SX-105) (SX-106) (SX-109) (T-110) (U-103) (U-105) (U-107) (U-108) (U-109) (AN-103) (AN-104) (AN-105) (AW-101) (SY-103)					
Total - August 31, 2001	0	0	0	0	0		0

TABLE D-3. ENRAF SURFACE LEVEL GAUGE INSTALLATION AND DATA INPUT METHODS
August 31, 2001

LEGEND											
SACS			= Surveillance Analysis Computer System								
TMACS			= Tank Monitor and Control System								
Auto			= Automatically entered into TMACS and electronically transmitted to SACS								
Manual			= Manually entered directly into SACS by surveillance personnel, from Field Data sheets								
EAST AREA						WEST AREA					
Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method
A-101	09/95	Auto	B-201	07/00	Auto	S-101	02/95	Auto	TX-101	11/95	Auto
A-102			B-202	07/00	Auto	S-102	05/95	Auto	TX-102	05/96	Auto
A-103	07/96	Auto	B-203	06/00	Auto	S-103	05/94	Auto	TX-103	12/95	Auto
A-104	05/96	Manual	B-204	06/00	Auto	S-104	05/99	Auto	TX-104	03/96	Auto
A-105			BX-101	04/96	Auto	S-105	07/95	Auto	TX-105	04/96	Auto
A-106	01/96	Auto	BX-102	06/96	Auto	S-106	06/94	Auto	TX-106	04/96	Auto
AN-101	08/96	Auto	BX-103	04/96	Auto	S-107	06/94	Auto	TX-107	04/96	Auto
AN-102	05/00	Auto	BX-104	05/96	Auto	S-108	07/95	Auto	TX-108	04/96	Auto
AN-103	08/95	Auto	BX-105	03/96	Auto	S-109	08/95	Auto	TX-109	11/95	Auto
AN-104	08/95	Auto	BX-106	07/94	Auto	S-110	08/95	Auto	TX-110	05/96	Auto
AN-105	08/95	Auto	BX-107	06/96	Auto	S-111	08/94	Auto	TX-111	05/96	Auto
AN-106	05/00	Auto	BX-108	05/96	Auto	S-112	05/95	Auto	TX-112	05/96	Auto
AN-107	04/00	Auto	BX-109	08/95	Auto	SX-101	04/95	Auto	TX-113	05/96	Auto
AP-101	06/99	Auto	BX-110	06/96	Auto	SX-102	04/95	Auto	TX-114	05/96	Auto
AP-102	08/99	Auto	BX-111	05/96	Auto	SX-103	04/95	Auto	TX-115	05/96	Auto
AP-103	08/99	Auto	BX-112	03/96	Auto	SX-104	05/95	Auto	TX-116	05/96	Auto
AP-104	07/99	Auto	BY-101			SX-105	05/95	Auto	TX-117	06/96	Auto
AP-105	08/99	Auto	BY-102	09/99	Auto	SX-106	08/94	Auto	TX-118	03/96	Auto
AP-106	08/99	Auto	BY-103	12/96	Auto	SX-107	09/99	Auto	TY-101	07/95	Auto
AP-107	08/99	Auto	BY-104			SX-108	09/99	Auto	TY-102	09/95	Auto
AP-108	08/99	Auto	BY-105			SX-109	09/98	Auto	TY-103	09/95	Auto
AW-101	08/95	Auto	BY-106			SX-110	09/99	Auto	TY-104	06/95	Auto
AW-102	05/96	Auto	BY-107			SX-111	09/99	Auto	TY-105	12/95	Auto
AW-103	05/96	Auto	BY-108			SX-112	09/99	Auto	TY-106	12/95	Auto
AW-104	01/96	Auto	BY-109			SX-113	09/99	Auto	U-101		
AW-105	06/96	Auto	BY-110	02/97	Manual	SX-114	09/99	Auto	U-102	01/96	Manual
AW-106	06/96	Auto	BY-111	02/99	Manual	SX-115	09/99	Manual	U-103	07/94	Auto
AX-101	09/95	Auto	BY-112			SY-101	07/94	Auto	U-104		
AX-102	09/98	Auto	C-101			SY-102	06/94	Auto	U-105	07/94	Auto
AX-103	09/95	Auto	C-102			SY-103	07/94	Auto	U-106	08/94	Auto
AX-104	10/96	Auto	C-103	08/94	Auto	T-101	05/95	Manual	U-107	08/94	Auto
AY-101	03/96	Auto	C-104	04/99	Manual	T-102	06/94	Auto	U-108	05/95	Auto
AY-102	01/98	Auto	C-105	05/96	Manual	T-103	07/95	Manual	U-109	07/94	Auto
AZ-101	08/96	Manual	C-106	02/96	Auto	T-104	12/95	Manual	U-110	01/96	Manual
AZ-102	11/00	Manual	C-107	04/95	Auto	T-105	07/95	Manual	U-111	01/96	Manual
B-101	07/00	Auto	C-108			T-106	07/95	Manual	U-112		
B-102	02/95	Auto	C-109			T-107	06/94	Auto	U-201		
B-103	07/00	Auto	C-110			T-108	10/95	Manual	U-202		
B-104	06/00	Auto	C-111			T-109	09/94	Manual	U-203	09/98	Manual
B-105	08/00	Auto	C-112	03/96	Manual	T-110	05/95	Auto	U-204	06/98	Manual
B-106	07/00	Auto	C-201			T-111	07/95	Manual			
B-107	06/00	Auto	C-202			T-112	09/95	Manual			
B-108	07/00	Auto	C-203			T-201					
B-109	08/00	Auto	C-204			T-202					
B-110	07/00	Auto				T-203					
B-111	07/00	Auto				T-204					
B-112	03/95	Auto									
Total East Area: 71						Total West Area: 77					

148 ENRAFs installed: 125 automatically entered into TMACS; data from 23 are manually entered into SACS

TABLE D 4 TANK MONITOR AND CONTROL SYSTEM (TMACS)

August 31 2001

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

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

Acceptance Testing Completed Sensors Automatically Monitored by TMACS

EAST AREA Tank Farm	Temperatures		ENRAF Level Gauge	Pressure (b)	Hydrogen (c)	Gas Sample Flow
	Thermocouple Tree (TC)	Resistance Thermal Device (RTD)				
A Farm (6 Tanks)	1		3		1	1
AN Farm (7 Tanks)	7		7	7	3	3
AP Farm (8 Tanks)			8			
AW Farm (6 Tanks)	6		6		1	1
AX Farm (4 Tanks)	3		4		1	
AY Farm (2 Tanks)			2			
AZ Farm (2 Tanks)						
B-Farm (16 Tanks)	1		16			
BX Farm (12 Tanks)	11		12			
BY Farm (12 Tanks)	10	3	2			
C Farm (16 Tanks)	15	1	3	1		
TOTAL EAST AREA (91 Tanks)	54	4	63	8	6	5
WEST AREA						
S Farm (12 Tanks)	12		12	1	3	1 (e)
SX Farm (15 Tanks)	14		14	1	7	5 (e)
SY Farm (3 Tanks) (e)	3		3	1	2	2
T Farm (16 Tanks)	14	1	3 (d)		1	(e)
TX Farm (18 Tanks)	13		18			
TY Farm (6 Tanks)	6	3	6			
U Farm (16 Tanks)	15		6	4	6	6
TOTAL WEST AREA (86 Tanks)	77	4	62	7	19	19
TOTALS (177 Tanks)	131	8	125	15	25	24

- (a) Tank SY 101 has 2 gas sample flow sensors plus 2 vent flow sensors and 2 ENRAFs
 (b) Each tank has two sensors (high and low range)
 (c) Each tank has two sensors (high and low range)
 (d) T 107 Auto ENRAF O/S manual readings taken daily
 (e) S SX, and T Farms five gas sample flow sensors have been unhooked or removed

APPENDIX E
GLOSSARY OF TERMS

TABLE E 1 GLOSSARY OF TERMS
August 31 2001

1 TANK STATUS CODES

TANK USE (Double Shell Tanks Only)

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

2 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). The remaining 24 tanks (19 SST and 5 DST) were removed from the Hydrogen (Flammable Gas) Watch List on August 13 2001.

Characterization

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

WASTE TYPES

Drainable Interstitial Liquid (DIL)

Interstitial liquid that is not held in place by capillary forces and will therefore migrate or move by gravity. (See also Section 4 below)

Supernatant Liquid

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

INTERIM STABILIZATION (Single Shell Tanks only)

Interim Stabilized (IS)

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

Jet Pump

The jet pump system includes 1) a jet assembly with foot valve mounted to the base of two pipes that extend from the top of the well casing to near the bottom of the well casing inside the saltwell screen, 2) a

centrifugal pump to supply power fluid to the down hole jet assembly 3) flexible or rigid transfer jumpers 4) a flush line and 5) a flowmeter The jumpers contain piping, valves and pressure and limit switches

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

Saltwell Screen

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

Emergency Pumping Trailer

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

INTRUSION PREVENTION (ISOLATION) (Single Shell Tanks only)

Partially Interim Isolated (PI)

The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization

Interim Isolated (II)

The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump catch tank, or diversion box In June 1993 Interim Isolation was replaced by Intrusion Prevention

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump catch tank, or diversion box Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump)

Controlled, Clean, and Stable (CCS)

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

TANK INTEGRITY

Sound

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

Assumed Leaker

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

Assumed Re Leaker

A condition that exists after a tank has been declared as an assumed leaker and then the surveillance data indicate 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

Historically the drywells were monitored with gross logging tools as part of a secondary leak monitoring system. In some cases neutron moisture sensors were used to monitor moisture in the soil as a function of well depth, which could be indicative of tank leakage. The routine gross gamma logging data were stored electronically from 1974 through 1994. The routine gross gamma logging program ended in 1994. A program was initiated in 1995 to log each of the available drywells in each tank farm with a spectral gamma logging system. The spectral gamma logging system provides quantitative values for gamma emitting radionuclides. The baseline spectral gamma logging database is available electronically.

Repeat spectral drywell scans are not part of the established Tank Farm leak detection program but can be run on request if special needs arise. A select subset of drywells is routinely monitored by the Vadose Zone Characterization Project to assess movement of gamma-emitting radionuclides in the subsurface.

Laterals

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

Surface Levels

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

Automatic FIC

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

ENRAF 854 ATG Level Detector

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

Annulus

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

Liquid Observation Well (LOW)

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

Thermocouple (TC)

A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple element 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 TC elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete.

These monitor temperature gradients within the concrete walls, bottom of the tank and the domes. In SSTs one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single TC element 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 TC elements.

In tank Photographs and Videos

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

TERMS/ACRONYMS

CCS Controlled Clean and Stable (tank farms)

FSAR Final Safety Analysis Report effective October 18 1999

- II Interim Isolated
- IP Intrusion Prevention Completed
- IS Interim Stabilized
- MT/FIC/ENRAF Manual Tape Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)
- OSD Operating Specifications Document
- PI Partial Interim Isolated
- SAR Safety Analysis Report
- SHMS Standard Hydrogen Monitoring System
- TMACS Tank Monitor and Control System
- TPA Hanford Federal Facility Consent and Compliance Order Washington State Department of Ecology U S Environmental Protection Agency and U S Department of Energy as amended (Tri Party Agreement)
- TSR Technical Safety Requirement
- USQ Unreviewed Safety Question
- Wyden Amendment Safety Measures for Waste Tanks at Hanford Nuclear Reservation, Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5 1990 Public Law 101 510

3 INVENTORY AND STATUS BY TANK – COLUMN VOLUME CALCULATIONS AND DEFINITIONS FOR TABLE B 1 (Single Shell Tanks only)

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (<u>Underlined</u>)/DEFINITIONS
Total Waste	<u>Solids volume plus Supernatant Liquid</u> Solids include sludge and saltcake (see definitions below)
Supernatant Liquid (1)	<u>May be either measured or estimated</u> Supernate is either the estimated or measured liquid floating on the surface of the waste or under a floating solids crust In tank photographs or videos are useful in estimating the liquid volumes liquid floating on solids and core sample data are useful in estimating large liquid pools under a floating crust.
Drainable Interstitial Liquid (DIL) (1)	<u>This is initially calculated</u> Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank Interstitial liquid is liquid that fills the interstitial spaces of the solids waste The sum of the interstitial liquid contained in saltcake and sludge minus an adjustment for capillary height is the initial volume of drainable interstitial liquid

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Pumped This Month	<u>Net total gallons of liquid pumped from the tank during the month</u> If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume.
Total Pumped (1)	<u>Cumulative net total gallons of liquid pumped from 1979 to date</u>
Drainable Liquid Remaining (DLR) (1)	<u>Supernate plus Drainable Interstitial Liquid</u> The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate.
Pumpable Liquid Remaining (PLR) (1)	<u>Drainable Liquid Remaining minus unpumpable volume</u> Not all drainable interstitial liquid is pumpable.
Sludge	<u>Solids formed during sodium hydroxide additions to waste</u> Sludge was usually in the form of suspended solids when the waste was originally received in the tank from the waste generator. In tank photographs or videos may be used to estimate the volume.
Saltcake	<u>Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator</u> If saltcake is layered over sludge it is only possible to measure total solids volume. In tank photographs or videos may be used to estimate the saltcake volume.
Solids Volume Update	<u>Indicates the latest update of any change in the solids volume.</u>
Solids Update Source See Footnote	<u>Indicates the source or basis of the latest solids volume update.</u>
Last In tank Photo	<u>Date of last in tank photographs taken</u>
Last In tank Video	<u>Date of last in tank video taken</u>
See Footnotes for These Changes	<u>Indicates any change made the previous month</u> A footnote explanation for the change follows the Inventory and Status by Tank Appendix (Table B 1)

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

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APPENDIX F
TANK CONFIGURATION AND FACILITIES CHARTS

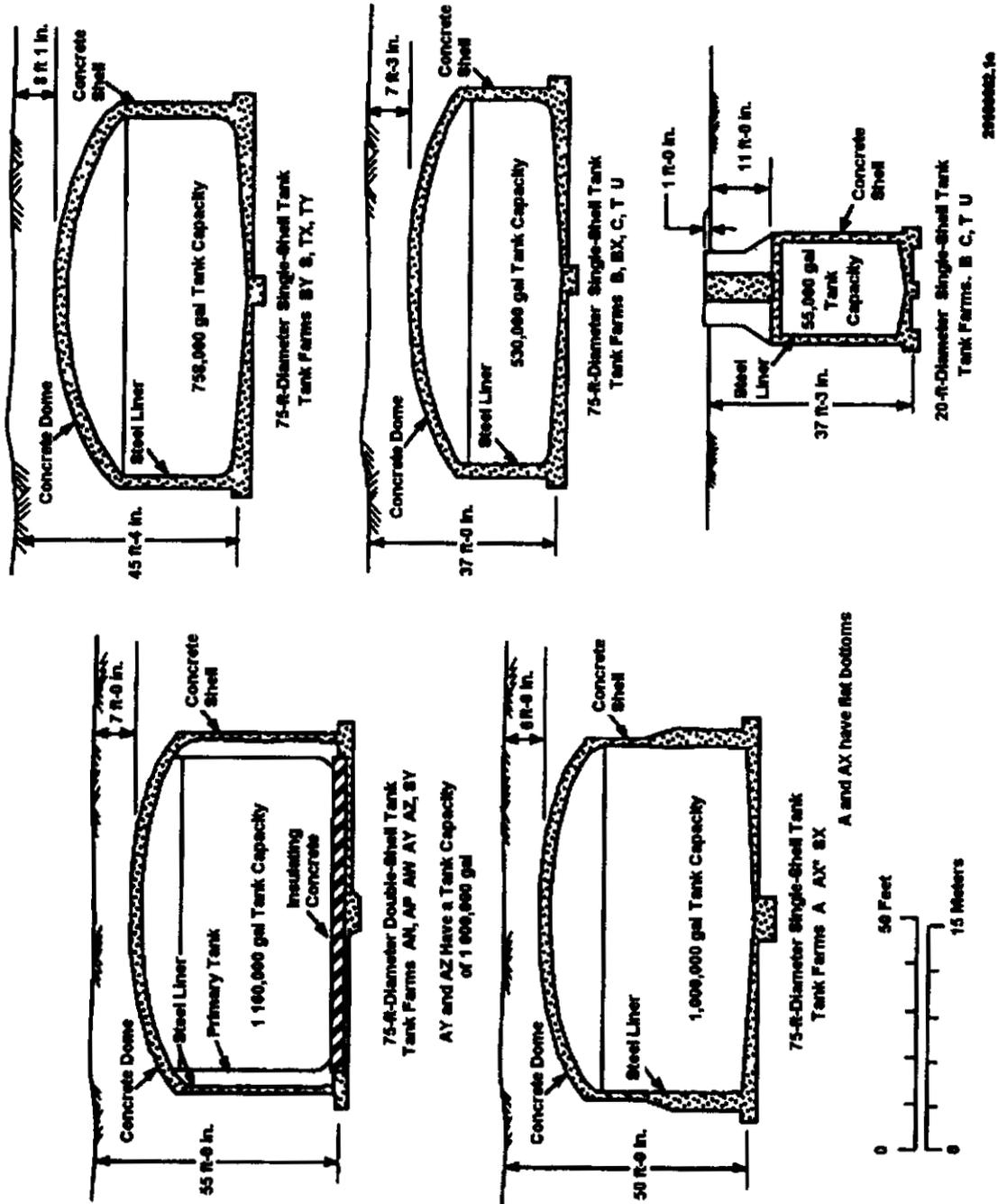
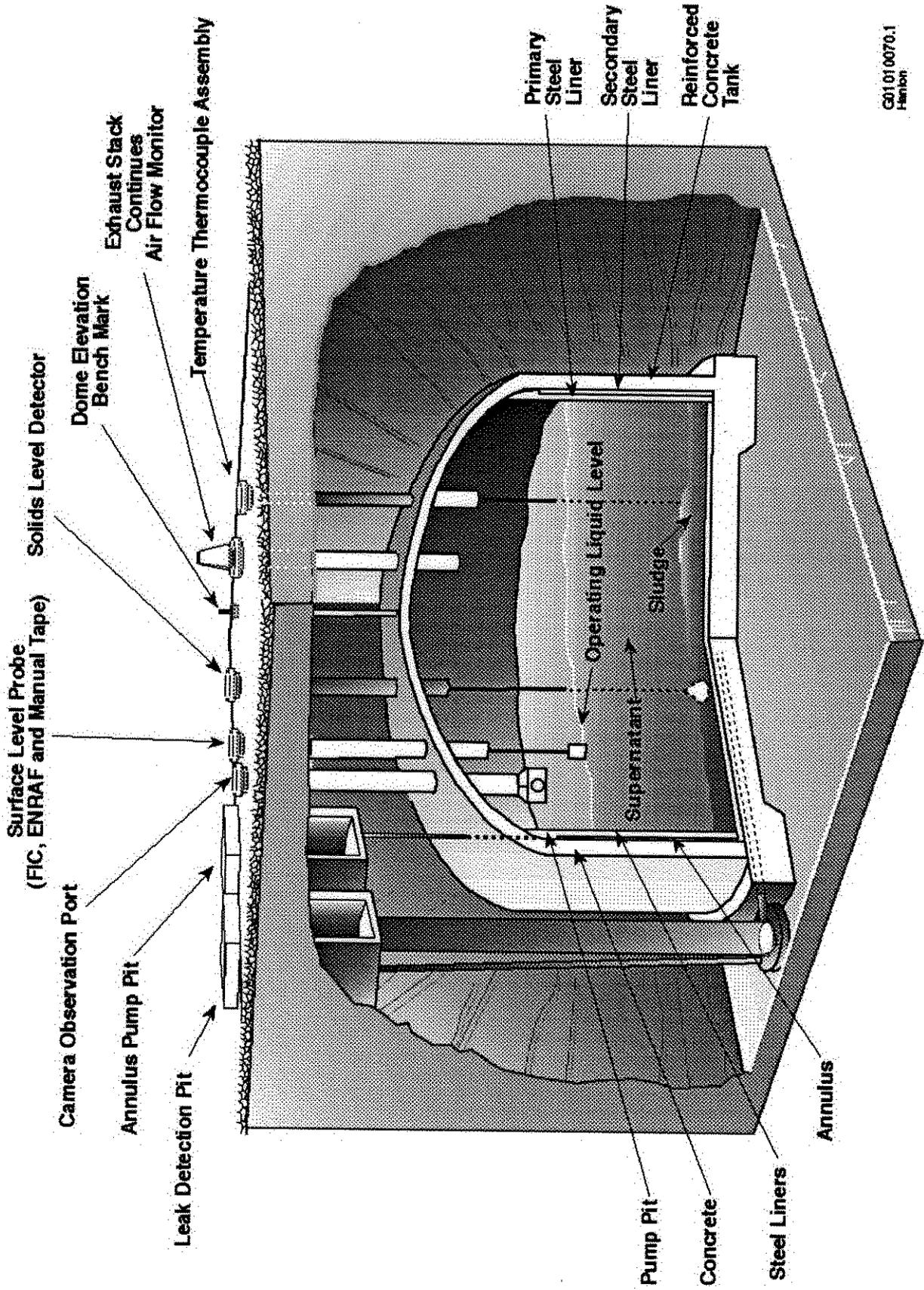


Figure F 1 High-Level Waste Tank Configuration



G01.01.0070.1
Hambon

Figure F-2. Double-Shell Tank Instrumentation Configuration

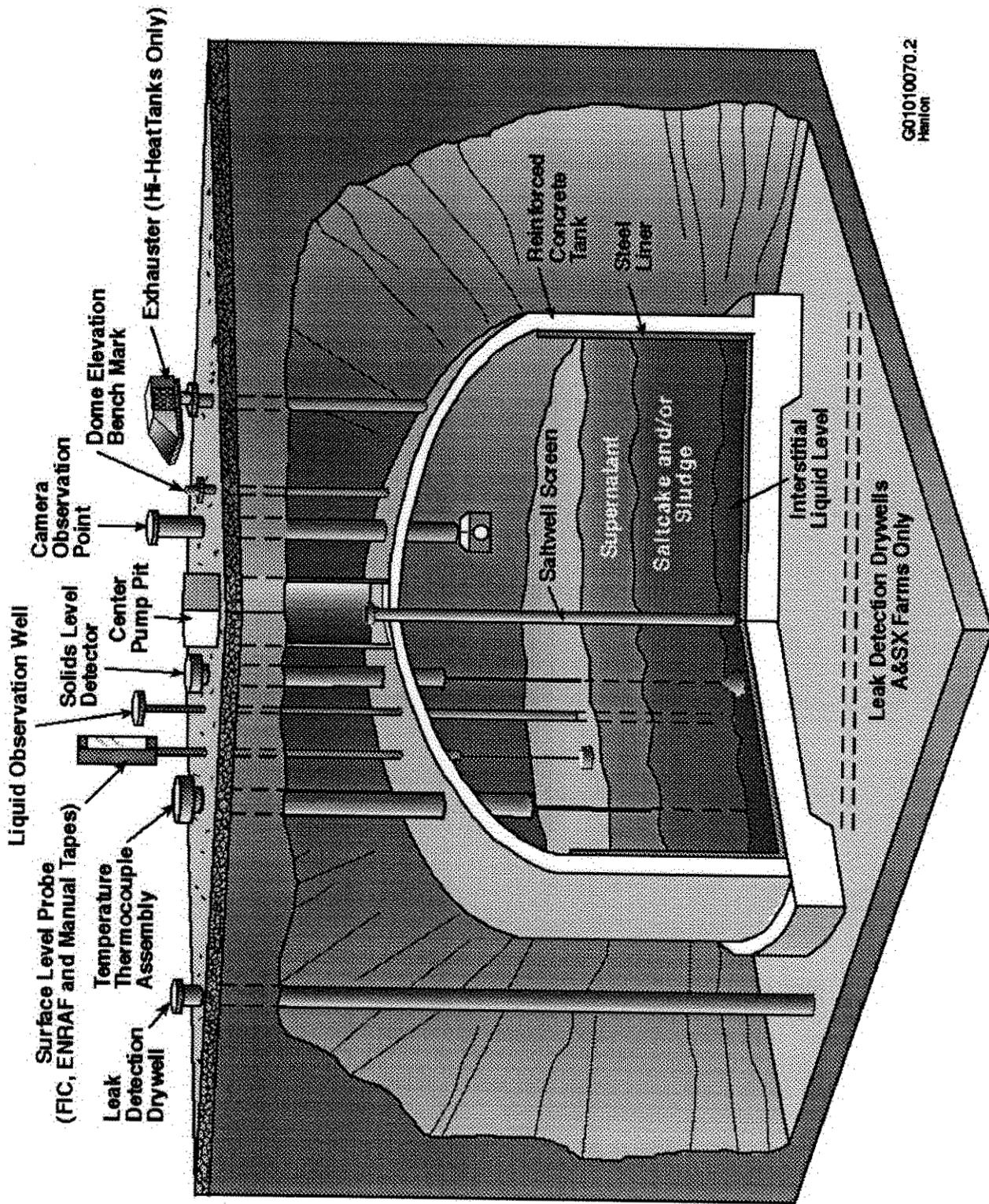


Figure F-3. Single-Shell Tank Instrumentation Configuration

THE TANK FARM FACILITIES CHARTS (colored foldouts)
ARE ONLY BEING INCLUDED IN THIS REPORT ON A QUARTERLY BASIS
(i e months ending March 31 June 30 September 30 and December 31)

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D J Williams H6 60
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J L Huckaby K7 15
B E Opitz K6 75

CH2M Hill (CHG), and Affiliated Companies

D I Allen	R2 50
J C Allen Floyd	H6 06
E S Aromi	H6 63
K M Bowen	R2 12
V C Boyles	R2 11
D L Carlile	T4 07
R J Cash	R1-04
W L Cowley	R1-44
C DeFigh Price	R2 58
M P Delozier	H6-08
R A Dodd	R2 39
A F Erhart	R3 73
S D Estey	R2 11
A C Etheridge	H6 04
J G Field	R2 12
L A Fort	R2 11
K D Fowler	R2 11
G T Frater	R3 83
J R Freeman Pollard	R2 50
J S Garfield	L4 07
K A Gasper	L4 07
B C Gooding	T4 07
B M Hanlon (6)	R3 72
D C Hedengren	R3 73
C C Hendersen	B2-05
B A Higley	R3 73
S W Hildreth	T4 07
K M Hodgson	R1 14
T M Hohl	R3 73
B A Johnson	S7-02
T E Jones	H0 22
J Kalia	R1 43
M R Kembel	S7-03
R A Kirkbride	R3 73
P F Kison	T4-07
N W Kirch	R3 73
J S Konyu	S7-64
G M Koreski	R2 11
J G Kristofzski	R2 39
J A Lechelt	R2 11
T H May	R2 11
M A Payne	H6-63
R E Pohto	S7 95
R S Popielarczyk	S5 07
R E Raymond (2)	R2 50
W E Ross	S7 83
N J Scott Proctor	S5 00
J P Sederburg	R1 04
J N Strode	R3 73
T D Taylor	H6 64
R R Thompson	R1-04
D T Vladimiroff	S7 20
L R Webb (10)	R1 10
L D Wiberg (12)	R1 51

Central Files	B1 07
200 West Shift Office	T4-00
200 East Shift Office	S7 02
Environmental	
Data Mgmt Center (2)	H6-08
Unified Dose Assessment	
Center (UDAC)	A0 20
Document Processing Center	A3 94