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Tank Farm Surveillance and Waste Status Summary Report for November 1993

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

Pacific Northwest Laboratory
Richland, Washington

Health, Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC05-87RL10620

Approved for Public Release

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Tank Farm Surveillance and Waste Status Summary Report for November 1993

B. M. Hanlon

Date Published
February 1994

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
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**Westinghouse
Hanford Company**

P.O. Box 1970
Richland, Washington 99352

Hanford Operations and Engineering Contractor for the
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Manager, Tank Farms
Plant Engineering Date

Date Received: <i>1/10/94</i>	INFORMATION RELEASE REQUEST	Reference: WHC-CM-3-4
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**TANK FARM SURVEILLANCE AND WASTE STATUS
SUMMARY REPORT FOR NOVEMBER 1993**

B. M. Hanlon

ABSTRACT

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

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

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

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

I. WASTE TANK STATUS

Category	Quantity	Date of Last Change
In-Service Tanks ^c	28 double-shell	10/86
Out-of-Service Tanks ^a	149 single-shell	07/88
Assumed Leaker Tanks ^f	67 single-shell	7/93
Sound Tanks	28 double-shell 82 single-shell	1986 7/93
Interim Stabilized Tanks ^{b,d}	106 single-shell	04/93
Not Interim Stabilized ^f	43 single-shell	04/93
Intrusion Prevention Completed ^e	98 single-shell	09/91
Watch List Tanks ^g	45 single-shell 6 double-shell	8/93 ^h 6/93
Total	51 tanks	8/93

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

^b Of the 106 tanks classified as interim stabilized, 59 are listed as assumed leakers. The total of 106 interim stabilized tanks includes six tanks that do not meet current established supernatant and interstitial liquid stabilization criteria: B-104, B-110, B-111, T-102, T-112, and U-110. (The five tanks did meet the criteria in existence when they were declared interim stabilized). B-110, B-111, and U-110 are assumed leakers but surveillance data do not show an indication of a continuing leak.)

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

^d Of the 45 single-shell tanks on Watch Lists, 19 have been Interim Stabilized.

^e Of the 45 single-shell tanks on Watch Lists, 28 have completed Intrusion Prevention (this category replaced Interim Isolation). See Appendix C, Tank and Equipment Codes and Status Definitions, for "Intrusion Prevention" definition.

^f Eight of the tanks are both assumed leakers and not Interim Stabilized. See Appendix I, Leak Volume Estimates, for more details. Tank SX-102 was declared an assumed leaker in May, and reclassified as Sound in July, 1993. See "Waste Tank Investigations" section of the July 1993 report for more details.

^g See Tables A-1 through A-5 for more information on Watch List Tanks. Three tanks are currently on more than one Watch List.

^h Dates for the Watch List tanks are "officially added to the Watch List" dates. See Table A-1, Watch List Tanks, for further information.

II. WASTE TANK INVESTIGATIONS

This section includes all single-shell tanks or catch tanks which are showing surface level or interstitial liquid level (ILL) decreases, or drywell/lateral radiation level increases.

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

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

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

Tank 241-BX-111. This tank was declared an assumed re-leaker on April 30, 1993. Pumping of the tank commenced on October 22, 1993. A total of 31,000 gallons was pumped by the end of November. The surface level measurement was 68.50 inches on November 30, 1993.

Resolution status: Upon completion of pumping, the surface level baseline for the tank will be adjusted. Tanks 241-BX-110 and 111 were removed from the ferrocyanide Watch List on July 9, 1993, on the basis that the tanks contain <1000 gm moles of ferrocyanide.

Pumping stopped on October 29, 1993, when a leak in the 244-BX pit was detected, and resumed on November 5, after a faulty connection was repaired. Saltwell pumping from BX-111 is halted upon reaching maximum allowable level in 244-BX Double Contained Receiver Tank (DCRT). The contents of the DCRT are then transferred to AN-101, and pumping is resumed in BX-111. This will be ongoing until pumping is completed for BX-111. A total of 31,000 gallons was pumped by the end of November 1993.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell 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.

Tank 241-B-202. A steady increase in the surface level measurement has been observed since December 1984. The manual tape pencil plummet is contacting liquid. When the quarterly reading was obtained on October 6, 1992, the level was recorded as 144.75 inches, thus exceeding the 2.00-inch increase criteria from the established baseline of 142.50 inches. The surface level measurement was rechecked on October 9, 1992, (145.50 inches) and October 13 (145.00 inches), verifying the increase and that the criteria had been exceeded. The surface level remained stable at 145.50 inches for November 1993. The monitoring frequency has been increased from quarterly to monthly. Occurrence Report RL-WHC-TANKFARM-1993-0024 was issued February 13, 1993. This tank is Sound, and Interim Stabilized/Intrusion Prevention completed.

Resolution status: A photo package was initiated on May 11, 1993, to investigate the possibility of an intrusion. Review of previous photos was inconclusive. New photos are required to determine the actual supernatant increase, if any. A temporary baseline was established at 145.25 inches, until the new photos are available.

Tank 241-BX-101. On September 2, 1993, the surface level increased from 10.00 to 12.00 inches and has remained stable through November, fluctuating between 11.50 and 12.00 inches. In-tank photographs show the manual tape donut plummet contacting liquid in a shallow pool. This tank is an Assumed Leaker, and Interim Stabilized/Intrusion Prevention completed.

Resolution Status: Comparison of October 1986 photos with November 1988 photos shows evidence of an ongoing intrusion. A work package was initiated October 14, 1993, to obtain in-tank photographs which will be used to inspect the area under the plummet and investigate the possible intrusion. A site-wide in-tank photography program is being formed and photo schedules will be produced upon finalization. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for May 1994.

Tank 241-BX-103. This tank has shown an erratic increase in surface level measurements since January 6, 1986. On January 18, 1993, the surface level measurement in 103-BX exceeded the 0.50-inch increase criteria from the reference baseline of 19.50 inches, and was verified on January 20, 1993. Discrepancy Report S&DA 93-522 was issued January 21, 1993. Occurrence Report RL-WHC-TANKFARM-1993-0036 was issued March 25, 1993. The surface level measurement has remained stable at 20.50 inches during the month of November. The FIC plummet is contacting liquid as indicated by in-tank photographs taken October 31, 1986. This tank is Sound, and Interim Stabilized/Intrusion Prevention completed.

Resolution status: The current level is greater than that prior to stabilization in November 1983. The tank was previously determined to have experienced an intrusion from 1977 to March 1983 (prior to stabilization). Subsequent isolation was expected to halt the intrusion, however, the intrusion is apparently ongoing. A work package was initiated on May 11, 1993, to re-seal pits and risers and to obtain in-tank photos. The photos will be used to assess the current stabilization status of the tank. A visual survey of the area was performed to determine possible paths for precipitation to enter the tank. The weather covering on the pits and risers was found in place and undamaged. The existing grade is level and revealed no obvious draining problems. Ongoing design/isolation drawing review revealed that nozzles, floor drains and some transfer lines entering the heel pit have been left open. Photo verification of the intrusion will determine the need to provide additional isolation measures. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for May 1994.

Tank 241-BY-105. The LOW ILL has shown a slow increasing trend since 1986. Discrepancy Report S&DA-93-561 was issued June 15, 1993. This tank showed what appeared to be an intrusion based on the old LOW analysis system, which assumed a constant baseline. Under the new LOW analysis system, however, the ILL is within acceptable tolerance (assuming a sloping baseline). The ILL is currently at 13.38 feet. The baseline is 13.392 feet. The monitoring frequency has been increased from quarterly to weekly. The manual tape

surface level measurement does not show an increase. This tank is on the ferrocyanide Watch List, an Assumed Leaker, and not yet Interim Stabilized.

Resolution Status: The surface level and ILL are displaying behavior similar to TX-113 and TX-115. The ILL is showing an increase, while the surface level measurement is showing a decrease. This phenomena could be due to either solids dissolution or formation of a depression in the solids beneath the plummet in conjunction with an intrusion. Review of previous photos indicates the liquid volume is increasing, although it cannot be verified that the solids level is decreasing. A photo package was initiated to investigate the possibility of intrusion, or solids dissolution. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for May 1994.

Tank 241-S-103. The FIC was out of service from March 8 to May 14, 1993. The surface level increased from 104.15 inches on March 8 to 104.80 inches after FIC repair on May 14, 1993. On August 20, 1993, a temporary baseline of 104.80 inches was established. This tank has previously been on report for an increase but showed an erratic decreasing trend the latter part of November 1993. The readings ranged from 104.80 to 103.80 inches. The surface level measurement is currently at 104.00 inches. A request has been made for a reference elevation check. The LOW, last scanned November 29, 1993, is within the .08 foot tolerance. This tank is Sound, and not yet Interim Stabilized.

Resolution status: After recalibration of the FIC on June 7, 1993, the surface level (SL) remained stable at approximately 104.65 inches. The SL shows a general increase since 1981. Review of tank level history has also shown the SL to show sudden increases following calibration. Recalibration has normally returned the SL to previous levels. Since the SL currently remains high after recalibration, it is possible that the SL has indeed reached the action criterion for this tank. A photo package for in-tank photos was initiated to investigate the possibility of an intrusion and will still be pursued. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for April 1994.

Tank 241-TX-111. The ILL has been showing a slow increase since 1989 based on the old LOW analysis system, which assumed a constant baseline. Under the new LOW analysis system, however, the ILL is within acceptable tolerance (assuming a sloping baseline). Discrepancy Report S&DA 93-600 was issued September 8, 1993, when the ILL reached the 0.4-foot increase criteria from the reference baseline of 4.6 feet. The monitoring frequency has been increased from quarterly to weekly.

Resolution Status: The ILL trend was re-analyzed for this tank using the new "count rate" method. A steady, significant increase of 1.32 inch/year is evident. Surface level data is showing a decrease. Photos show a dry surface. The surface level decrease is expected to be caused by crumbling of the waste beneath the plummet. Overall, the waste level behavior of the tank is similar to that of TX-113 and 115. A photo package was initiated on October 13, 1993, to investigate the possibility of an intrusion. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for March 1994.

Tank 241-TX-113. The LOW ILL has shown a slow increase since March 12, 1986, with both the neutron and gamma probes. The scan data on February 5, 1993, showed the ILL to be 5.5 foot and at the 0.4-foot increase criteria from the

reference baseline. S&DA Discrepancy Report 93-534 was issued March 10, 1993. On September 3, 1993, the ILL exceeded the 0.4-foot increase criteria from the reference baseline of 5.1 feet. A revision to Discrepancy Report S&DA 93-534 was issued September 9, 1993. This tank showed what appeared to be an intrusion based on the old LOW analysis system, which assumed a constant baseline. Under the new LOW analysis system, however, the ILL is within acceptable tolerance (assuming a sloping baseline). The ILL is currently at 5.26 feet, .001 feet above the reference baseline of 5.259 feet. This tank is an Assumed Leaker, and Interim-Stabilized/Intrusion Prevention completed.

Resolution status: The technical evaluation of this tank was completed April 14, 1993. The results were inconclusive, with recommendation to accelerate the October 1997 waste characterization of the tank. This characterization is expected to confirm that solids are dissolving, causing an increase in ILL. Acceleration of waste characterization is not possible. Watch List tanks have first priority for core sampling. In-tank photos are expected to be available for review by February 1994. LOW scans are taken weekly, and surface level readings have been increased from a quarterly to a monthly frequency. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for March 1994.

Tank 241-TX-115. This tank has been on report since 1988 for what appeared to be an intrusion based on the old LOW analysis system, which assumed a constant baseline. Under the new LOW analysis system, however, the ILL is within acceptable tolerance (assuming a sloping baseline). Comparison of past and present in-tank photographs show no significant change in surface conditions or obvious evidence of intrusion. This tank is an Assumed Leaker, and Interim Stabilized/Intrusion Prevention completed.

Resolution status: The technical evaluation of the alert condition in this tank was completed April 14, 1993. The results were inconclusive, with recommendation to accelerate the October 1997 waste characterization. Waste characterization is expected to confirm that solids are dissolving, causing an increase in ILL. Acceleration of waste characterization is not possible for non-Watch List tanks. The 1981 photos show evidence of rain intrusion through a central pump pit riser. However, it cannot be concluded from the 1988 photos that the intrusion is ongoing. This tank will be included in the waste characterization with TX-113. LOW scans are taken weekly, and surface level readings have been increased from a quarterly to a monthly frequency. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for April 1994.

Tank 241-TY-102. On November 8, 1992, the automatic FIC surface level measurement of 32.10 inches exceeded the 0.50-inch increase criteria from the reference baseline of 31.40 inches. Discrepancy Report S&DA-92-489 was issued November 9, 1992. The tank has a history of intrusions and icicle-shaped mineral buildup on the FIC plummet. The FIC plummet is contacting a shallow pool of liquid. The surface level measurement was 31.70 inches for November 1993. The increase criteria of 0.50 inch, considered to be an extremely tight tolerance for this tank, was revised to 1.00 inch, which is more in line with other tanks that exhibit similar erratic surface level behavior. This tank is Sound, and Interim Stabilized/Intrusion Prevention completed.

Resolution status: This tank is experiencing an ongoing intrusion as is evident by comparison of November 1984 photos with July 1987 photos and an increasing trend in surface level data. A visual survey was conducted to

determine possible paths for precipitation to enter the tank. The grade around the tank is level and weather covering is on the pits and intact. The photo package, initiated May 17, 1993, will be required to assess the current stabilization status of the tank, and to assist in determining the possible paths of intrusion. Ongoing design/isolation drawing review revealed that nozzles, floor drains and some transfer lines entering the pump pit have been left open. Photo verification of the intrusion will determine the need to provide additional isolation measures. A finalized photo schedule is not complete, however, in-tank photos for this tank are tentatively scheduled for June 1994.

Tank 241-TY-106. Surface level readings were stable during 1990 through 1992, ranging between 13.25 to 13.50 inches. The surface level readings fluctuated between 13.50 to 15.00 inches during 1993. In-tank photographs taken August 22, 1989, show the manual tape pencil plummet contacting a dry cracked surface with discarded tapes near the plummet. This tank is an Assumed Leaker, and Interim Stabilized/Intrusion Prevention completed.

Resolution status: Two readings reached 15.00 inches on October 2 and October 4, 1993, which constitute a sudden increase from 14.50 inches on August 1, 1993. On October 6, 1993, the readings returned to 14.25 inches. Similar behavior occurred on October 8, 1987, when the surface level jumped to the same level then returned to allowable limits. Photos taken August 22, 1989, show a number of discarded tapes beneath the plummet. Occasional anomalous readings would be expected because of the plummet touching the discarded tapes rather than the dry waste. The monitoring frequency has been increased from quarterly to monthly in order to determine a consistent trend.

241-E/W-151 Vent Station Catch Tank. The zip cord surface level reading exceeds the maximum operating limit of 36.00 inches. The manual tape has been out of service since July 7, 1992. A temporary zip cord was installed December 16, 1992. The level was 45.50 inches which exceeded the active tank limit of 50% volume of 40 inches (400 gallons). Transfers are not permitted until the tank is pumped and the level is within limits. Discrepancy Report S&DA-92-511 was issued December 24, 1992. A new calibrated zip cord was installed May 26, 1993. The surface level reading is currently 69.00 inches.

Resolution status: Work packages are out to repair the manual tape and pump the catch tank. Extensive surface contamination in the surrounding area is hampering efforts to perform the needed activities. Sampling of the solution in the tank is necessary before pumping can begin. Because of the current stand down of work in tank farms, the resolution to pumping this vent station is on hold. Efforts to resolve this issue will resume as priority allows and transfers are required through this facility.

UX-302-A Catch Tank. The surface level measurement exceeds the maximum operating limit of 50.00 inches. Discrepancy report S&DA-92-465 was issued May 12, 1992. The current surface level reading is 64.90 inches, which exceeds the 50% volume of 54 inches (8840 gallons). The FIC plummet is contacting liquid.

Resolution status: Work packages for the transfer of waste from UX-302-A and the repair of necessary instrumentation are being prepared, and the transfer of waste is being scheduled as a prestart item for the Cross Site Transfer. A work package has been prepared to sample/pump this catch tank. Because of the

current stand down of work in tank farms, the resolution to pumping UX-302-A is on hold. Efforts to resolve this issue will resume as priority allows.

III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

1. Tank 241-BX-111 Saltwell Jet Pumping

Saltwell jet pumping began on October 22, 1993, to pump tank BX-111 into 244-BX Double Container Receiver Tank. Pumping continued until October 29, when a leak in the 244-BX pit was detected. Pumping was resumed on November 5 after a faulty connection was repaired. Saltwell pumping from BX-111 is halted upon reaching maximum allowable level in 244-BX Double Contained Receiver Tank (DCRT). The contents of the DCRT are then transferred to AN-101, and pumping is resumed in BX-111. This will be ongoing until pumping is completed for BX-111. A total of 31,000 gallons was pumped by the end of November 1993.

2. Tank Waste Remediation System Safety Initiatives

The U. S. Secretary of Energy has directed that six safety initiatives be implemented in the Tank Waste Remediation System Program to accelerate the mitigation/resolution of the higher priority waste tank safety issues at the Hanford Site. Forty two milestones were established for accomplishing the initiatives. In FY 1993 four milestones were completed on or ahead of schedule. One milestone was completed behind schedule. In November 1993, one milestone was completed (2a "Accept Interim Safety Basis by November 1993"). This brings the total for FY 1994 to two milestones completed on schedule.

3. Tank Farms Stand Down (Administrative Hold)

On August 12, 1993, non-essential work activities in the tank farms were put on administrative hold by WHC senior management, with only minimal essential activities to be conducted. Corrective actions were addressed in a Tank Waste Remediation System Tank Farm Resumption of Work Plan, dated September 13, 1993. Contained within the Work Plan is the Integrated Schedule for reinitiating individual work activities on an ongoing basis.

Testing of the SY-101 mixer pump continues to be successfully accomplished. Radioactive waste is being saltwell jet pumped from BX-111, with completion of the pumping scheduled for the end of January 1994. Many other tank farm work activities have now been fully resumed. In addition, reorganization is taking place to reduce management layers, and a new action plan for total upgrade is expected by February 1994.

4. Tank 241-SY-101 Mixer Pump

Test #16 of Phase B testing was completed on November 29. This test was six 30-minute runs at a motor speed of 750 rpm, at nozzle orientations of 35, 65, 95, 125 and 185 degrees. This successful test lasted the entire 3-hour run. Gas concentrations reached the following levels: 250 ppm hydrogen and 111 ppm ammonia from a baseline of 31 ppm and 58 ppm, respectively. This successful test will allow operations to proceed to test #17, scheduled to be performed on December 1, 1993.

5. Tank Being Reviewed for Potential Addition to Watch List

Tank T-107 continues to be reviewed for inclusion on the Hydrogen Watch List.

6. Criticality Safety Issues

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

7. Interim Safety Basis (ISB) for the Hanford High-Level Waste Storage Tanks

Westinghouse Hanford Company (WHC) developed an integrated approach for Site compliance with DOE orders (5480.21, 5480.22, 5480.23). These orders required contractors to provide "a basis for interim operation and restrictions on interim operations" for existing facilities, and a plan for upgrading Safety Analysis Reports (SAR) and developing Tank Safety Reports (TSR). The WHC approach called for the preparation of "Interim Safety Basis" (ISB) documents to satisfy the first requirement while providing a basis for planning the SAR and TSR upgrades.

Among the first Hanford Site facilities for which this approach was implemented are the High Level Waste Storage Tanks of the Hanford Tank Farms. The Tank Farms ISB document provides a ready reference to the tank farms safety envelope. The safety envelope constitutes the technical basis for safe operation and maintenance of tank farm facilities, equipment, and processes. The ISB is intended to facilitate understanding of the safety envelope and its corresponding justification, until formalized SAR upgrades can be completed in accordance with requirements. This information is intended to be utilized for consideration of proposed changes, tests, or experiments to determine any potential adverse effects on the existing safety envelope. The ISB was approved by the Department of Energy for Implementation in November 1993.

8. Review of Interstitial Liquid Level (ILL) Data Using New Analysis Method

New ILL interpretation software was developed and went into effect October 1, 1993, for the purpose of re-evaluating ILL data using a new analysis method to determine the validity of the current classifications. A seven-year period was studied. The results of this review indicate that none of the 58 tanks reviewed were misclassified as a result of improper ILL interpretations. All tanks currently classified as "assumed leakers" remain the same. Those tanks classified as "sound" showed no data trends which would compromise that classification.

9. Occurrence Reports

RL-WHC-TANKFARM-1993-0092 (OFF NORMAL) - INSTRUMENT CABLE SEVERED DURING SUBCONTRACTOR EXCAVATION RESULTS IN LOSS OF REMOTE ALARM SIGNALS FROM WEST TANK FARM FACILITIES (10-Day Report, 11/05/93)

On October 22, 1993, a subcontractor to Kaiser Engineers Hanford (KEH) was performing excavation work for piping installation when a Computer Automated Surveillance System (CASS) line was severed. The cable was severed by a backhoe while a trench was being dug for treated effluent transfer piping installation. This resulted in the 200 West Area tank farms being without remote alarm monitoring capabilities. Included in the cable severing was a 480 volt power line to the East-West vent station which had no impact to the facility. Electrical utility personnel were immediately dispatched to de-energize the power line. The CASS contingency plan was initiated by operations personnel in accordance with the procedure.

Previous excavation work conducted by KEH was to identify all known utilities in the area where excavation was to be conducted. However, the CASS cable and power line were not identified. Engineering drawings were provided showing CASS lines but were inaccurate as to location.

A work package was initiated to repair the severed CASS cable. Repairs have been delayed pending WHC company procurement of repair material.

Contributing to this incident was the lack of supervision provided to the offsite personnel by Kaiser Engineers Hanford (KEH). There were no KEH personnel at the job site when the cable was severed. Kaiser line management had the responsibility to ensure that the subcontractor personnel were aware of all utilities, including the physical markers that identified the power lines.

The root cause to this incident were the inadequate administrative controls in place to ensure that all known utilities are identified on the civil engineering drawings being used at the job site. KEH personnel are performing another verification of all drawings to ensure the proper location of all underground utilities.

RL-WHC-TANKFARM-1993-0093 (OFF NORMAL) - ROLLOVER OF WASTE TANK 241-SY-101 CAUSED MIXER PUMP TO SHUT DOWN DURING PHASE "B" ACCEPTANCE TESTING (10-Day Report, 11/09/93)

On October 25, 1993, rollover of double-shell waste tank 241-SY-101 occurred resulting in the shutdown of the hydrogen mixer pump which was operating. The pump shutdown was caused by high vent header flow resulting from the rollover. The tank rollover occurred 11 minutes into a 20-minute pump run, as part of Phase "B" testing of the mixer pump Acceptance Test Procedure. The rollover was consistent with previous hydrogen releases of the tank. Hydrogen gas peaked at a concentration of 2144 parts per million (ppm) and ammonia at 423 ppm. the highest tank pressure obtained was -1.1" weight gravity (w.g.), and recorded temperature was 119.8 °F at thermocouple sensor #4.

The decomposition of water and organic compounds appears to be the source of the flammable gas concentration below the surface of the waste

in the tank. Prior to the mixer pump being installed on July 3, 1993, the trapped gasses would be released approximately every 100 days, which resulted in a temporary positive pressure in the tank.

The venting of waste tank SY-101 is occurring on a regular basis with mixer pump operations. The corrective actions taken are sufficient. No further corrective actions are necessary at this time.

On November 2, 1993, another rollover occurred during phase "B" mixer pump operations. This resulted in high vent header flow causing the shutdown of the mixer pump. The pump shutdown occurred 13 minutes into the 20-minute pump run. Hydrogen gas peaked at 1720 ppm and ammonia peaked at 558 ppm.

The release of gasses, previously trapped, broke through the surface during pump operation, lowering the surface level and temperature of the tank. Test personnel expect further gas release events during and after mixer pump operations.

RL-WHC-TANKFARM-1993-0098 (OFF-NORMAL) - TANK FARM 241-SX SLUDGE COOLER EXHAUSTER EXCEEDS MAXIMUM VACUUM AS SPECIFIED IN OPERATING SPECIFICATIONS DOCUMENT (OSD-T-151-00013) (Notification Report, 11/16/93)

On November 16, 1993, it was discovered during review of operating data sheets that Tank Farm 241-SX sludge cooler exhauster was operating with a vacuum below the required limit of Operating Specification Document (OSD-T-151-00013). The maximum required vacuum is to be -5.9" w.g., and the exhauster was operating at -6.2" w.g. Upon review of operating data sheets it was determined that the exhauster had been operating out of specification since the installment of a new motor on October 20, 1993. A work package was initiated to adjust air flow of the sludge cooler exhauster to reduce vacuum.

This incident had no adverse effects on the 241-SX Sludge Cooler Exhauster System, the plant or the project.

RL-WHC-TANKFARM-1993-0103 (OFF-NORMAL) - TANK 101-AW OUT OF LIQUID LEVEL LIMITS WHEN NEW INTERIM OPERATIONAL SAFETY LIMITS PER WHC-SD-OSR-016 IMPLEMENTED ON NOVEMBER 30, 1993. AT 0001 HOURS (Notification Report, 11/30/93)

On November 30, 1993, Waste Tank Operations implemented section 3.1.2 of the Interim Operation Safety Requirements (IOSR) for Double-Shell Tanks (WHC-SD-OSR-0016, Rev. F). This section states the Limited Condition of Operation (LCO) limit for Primary Tank Liquid Level is ≤ 416 inches. It was previously noted that the manual tape for this tank had been giving slack tape measurements above this limit and that an occurrence report would be required upon IOSR implementation. The Food Instrument Corporation (FIC) level instrument is currently out of service. The slack tape reading on November 30 was 417.75 inches.

The LCO action statement was entered for Tank AW-101 level. All transfers into or out of this Watch List tank had previously been

suspended. Action was commenced to restore tank level to within the specified limit of 416 inches (within 184 days as stated in the LCO). The work package to repair the FIC is being prepared for field work on a priority basis. When the FIC is repaired, the expected level reading should be approximately 410 inches. The steady increase in level by manual tape is consistent with crystalline growth on the tip of the plummet. After the FIC repairs are completed, a work package will be developed to remove the crystalline on the manual tape using a series of flushes.

10. **Waste Management External Advisory Committee Meeting Held November 19, 1993**

The following excerpts on corrosion in the tank farms were presented at the Waste Management External Advisory Committee Meeting:

Waste Tank Corrosion Issues

- **SST Corrosion**
- **DST Corrosion**
- **Transfer System Corrosion**
- **Current Corrosion Activities**

DST Corrosion Issues

- **Has SCC been adequately mitigated by stress-relief anneal and chemistry control?**
- **Is corrosion at the liquid/vapor interface (or any interface) a threat to DST integrity?**
- **Can we take lessons from SSTs and apply them to DSTs?**
- **New Tank Material Selection?**

Single Shell Tank Corrosion Issues

- Why do SSTs leak?
- When will the next SST leak and which one will it be?
- Can we reasonably expect to minimize future leaks either from non-stabilized SSTs or SST retrieval with inhibitor additions?

SST Corrosion Statistics & Correlation Studies

Watch List Tanks	pH
Waste Type	Holding Time
Farm	Stabilized
Construction Date	Isolated
Capacity	Steel
Design	Contractor

Transfer System Corrosion Issues

- Is MIC a significant threat to Transfer Piping integrity?
- How should TWRS go about qualifying the existing Transfer Systems for continued service?
- Do we have adequate control of the transfer piping cathodic protection system?

Potential Corrosion Mechanisms in Hanford Waste Tanks

- Stress Corrosion Cracking
- Pitting
- Crevice Corrosion
- Uniform Corrosion
- Microbiologically-Induced Corrosion
- Hydrogen Embrittlement
- Corrosion of Concrete Reinforcing Steel

DST Corrosion Specifications for Control of SCC

	Variable	Specification Limit
For $\text{NO}_3^- < 1.0\text{M}$	OH^- NO_2^-	$0.010\text{M} < \text{OH}^- < 5.0\text{M}$ $0.011\text{M} < \text{NO}_2^- < 5.5\text{M}$
For $1.0\text{M} < \text{NO}_3^- < 3.0\text{M}$	OH^- $\text{OH}^- + \text{NO}_2^-$	$0.1 \text{ }^\circ(\text{NO}_3 \text{ concentration}) < \text{OH}^- < 10\text{M}$ $> 0.424 \text{ }^\circ(\text{NO}_3 \text{ concentration})$
For $\text{NO}_3^- > 3.0\text{M}$	OH^- $\text{OH}^- + \text{NO}_2^-$ NO_3^-	$0.3\text{M} < \text{OH}^- < 10\text{M}$ $> 1.2\text{M}$ $< 5.5\text{M}$

- Only valid for Nitrate Based Wastes (PUREX) at temperatures less than 100°C.
- Non-representative (single point) samples.

Cursory Analysis of Non-interim Stabilized Liquid Sample Data

- Only 13 of the 45 SSTs evaluated contain PUREX based waste
- Results:

MEET DST SPECS		
	YES	NO
LEAKER	5/13	5/13
SOUND	3/13	0/13

11. Changes to the Report

Appendix A. Waste Tanks Surveillance Monitoring Tables

Table A-4. Single-Shell Tanks Containing Concentrations of Organic Salts - additional organic salt concentration information for these tanks has been added to this table.

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APPENDIX A

WASTE TANK SURVEILLANCE MONITORING TABLES

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TABLE A-1. WATCH LIST TANKS (Sheet 1 of 2)

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

November 30, 1993

Single-Shell Tanks			Officially	Single-Shell Tanks			Officially	Single-Shell Tanks			Officially
Tank No.	Category	Watch List	Added to	Tank No.	Category	Watch List	Added to	Tank No.	Category	Watch List	Added to
A-101 (2)	Hydrogen	1/91		S-102 (2)	Hydrogen,	1/91		TY-101 (2)	Ferrocyanide	1/91	
AX-101 (2)	Hydrogen	1/91		(2)	Organic Salts	1/91		TY-103 (2)	Ferrocyanide	1/91	
AX-103 (2)	Hydrogen	1/91		S-111 (2)	Hydrogen	1/91		TY-104 (2)	Ferrocyanide	1/91	
B-103 (2)	Organic Salts	1/91		S-112 (2)	Hydrogen	1/91		U-103 (2)	Hydrogen	1/91	
BX-102 (2)	Ferrocyanide	1/91		SX-101 (1)(2)	Hydrogen	1/91		U-105 (2)	Hydrogen	1/91	
BX-106 (2)	Ferrocyanide	1/91		SX-102 (1)(2)	Hydrogen	1/91		U-106 (2)	Organic Salts	1/91	
BY-103 (2)	Ferrocyanide	1/91		SX-103 (1)(2)	Hydrogen	1/91		U-107 (2)	Organic Salts	1/91	
BY-104 (2)	Ferrocyanide	1/91		SX-104 (1)(2)	Hydrogen	1/91		U-108 (2)	Hydrogen	1/91	
BY-105 (2)	Ferrocyanide	1/91		SX-105 (1)(2)	Hydrogen	1/91		U-109 (2)	Hydrogen	1/91	
BY-106 (2)	Ferrocyanide	1/91		SX-106 (1)(2)	Hydrogen,	1/91		U-111 (6)	Organic Salts	8/93	
BY-107 (2)	Ferrocyanide	1/91		(1)(2)	Organic Salts	1/91		45 Tanks			
BY-108 (2)	Ferrocyanide	1/91		SX-109 (1)(2)	Hydrogen because			Double-Shell Tanks			Officially
BY-110 (2)	Ferrocyanide	1/91			other tanks vent	1/91					Added to
BY-111 (2)	Ferrocyanide	1/91		T-107 (3)	Ferrocyanide	2/91		Tank No.	Category	Watch List	
BY-112 (2)	Ferrocyanide	1/91		T-110 (2)	Hydrogen	1/91		AN-103 (1)(2)	Hydrogen	1/91	
C-103 (2)(4)	Organic Salts	1/91		TX-105 (2)	Organic Salts	1/91		AN-104 (1)(2)	Hydrogen	1/91	
C-106 (2)	High Heat Load	1/91		TX-118 (2)	Ferrocyanide,	1/91		AN-105 (1)(2)	Hydrogen	1/91	
C-108 (2)	Ferrocyanide	1/91		(2)	Organic Salts	1/91		AW-101 (1)(5)	Hydrogen	6/93	
C-109 (2)	Ferrocyanide	1/91						SY-101 (1)(2)	Hydrogen	1/91	
C-111 (2)	Ferrocyanide	1/91						SY-103 (1)(2)	Hydrogen	1/91	
C-112 (2)	Ferrocyanide	1/91						6 Tanks			

See footnotes next page

TABLE A-1 WATCH LIST TANKS (Sheet 2 of 2)

Footnotes:

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

Although on various dates beginning in March 1990, WHC identified tanks containing ferrocyanide, organic salts, etc., which were then added to this report as Watch List tanks, the following official notifications were made to DOE-RL:

- (2) Letter 9059124, H. D. Harmon, WHC, to R. E. Gerton, DOE-RL, "Safety Measures for Waste Tanks at Hanford Site, Richland, Washington," dated January 8, 1991, identified 23 ferrocyanide tanks, 23 tanks with potential for accumulation of flammable gas, eight organic tanks, and one high heat load tank, as being Watch List tanks. (52 tanks)

The ferrocyanide and hydrogen tanks were declared Unresolved Safety Questions (USQ); the organic tanks and the high heat load tank were within the safety envelope as defined by the safety analysis reports and were not designated as USQs.

- (3) Letter 9059124.1 (revision to 9059124 above), dated February 8, 1991, added T-107 to the Ferrocyanide Watch List. (53 tanks)

- (4) Tank C-103 was declared a USQ per Unusual Occurrence Report RL-WHC-TANKFARM-1992-0069, issued September 1992, because of an organic layer covering the surface. This tank was previously identified as a Watch List tank in footnote (2) above.

- (5) Letter 9354700, J. C. Fulton, WHC, to R. E. Gerton, DOE-RL, "Addition of Tank 241-AW-101 to Flammable Gas Watch List," dated June 3, 1993, added this double-shell tank to the Watch List. (54 tanks)

- (6) Letter 9353957, J. C. Fulton, WHC, to R. E. Gerton, DOE-RL, "Single-Shell Waste Tank 241-U-111," dated May 24, 1993, recommended this tank be included on the Organic Tanks Watch List. This tank was added to the Watch List on August 31, 1993.

Notes: BX-110, BX-111, BY-101 and T-101 were removed from the Ferrocyanide Watch List in July 1993, per letter 93-CAB-223, John H. Anttonen, DOE-RL, to T. M. Anderson, WHC, "Resolution of Unreviewed Safety Question for Four Ferrocyanide Tanks," dated July 9, 1993.

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

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

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

All Watch List tanks are reviewed for increasing temperature trends. Tanks connected to TMACS are required to be monitored continuously; those not connected are required to be monitored weekly. Temperatures are taken in the waste unless indicated otherwise.

Tank No.		Highest Temperature Reading in Waste (F.)	Date of Reading	Readings Taken by TMACS (5)	Total Waste (inches) (6)	FeCN (2) (x1000 g mol)	Estimated Heat Load (3)		Date Declared Assumed Leaker	Interim Stabilized Date
							(Btu/h)	(kW)		
BX-102		70	11/22/93	No	42	<1	<10000	<2.93	1971	11/78
BX-106		70	11/22/93	No	24	<1	<10000	<2.93	Sound	N/A
BY-103		82	11/08/93	Yes	153	86	8600	2.52	1973	N/A
BY-104	Riser 1	128	11/29/93	Yes	155	83	5500	1.61	Sound	1/85
BY-104	Riser 10B	114	11/29/93	Yes	156	83	5500	1.61	Sound	1/85
BY-105	Riser 10C	113	11/01/93	Yes	190	36	3400	0.97	1984	N/A
BY-105	Riser 1	120	11/01/93	Yes	188	36	3400	0.97	1984	N/A
BY-106		129	11/29/93	Yes	241	70	3300	0.97	1984	N/A
BY-107		86	11/01/93	Yes	104	42	14500	4.25	1984	7/79
BY-108		110	11/08/93	Yes	90	58	23000	6.74	1972	2/85
BY-110	Riser 1	120	11/22/93	Yes	152	71	25200	7.39	Sound	1/85
BY-110	Riser 10A	109	11/22/93	Yes	152	71	25200	7.39	Sound	1/85
BY-111	LOW	87	11/29/93	Yes	174	6	34200	10.02	Sound	1/85
BY-111	Riser 14	84	11/29/93	Yes	174	6	34200	10.02	Sound	1/85
BY-112	LOW	84	11/29/93	Yes	113	2	<10000	<2.93	Sound	5/85
BY-112	Riser 5	90	11/29/93	Yes	113	2	<10000	<2.93	Sound	5/85
C-108	Riser 5	77	11/25/93	No	31	25	10000	<2.93	Sound	3/84
C-108	Riser 1	85	11/29/93	No	31	25	10000	<2.93	Sound	3/84
C-109	Riser 5	80	11/25/93	No	31	30	3800	1.11	Sound	11/83
C-109	Riser 3	79	11/12/93	No	31	30	3800	1.11	Sound	11/83
C-111		76	11/12/93	No	28	33	<10000	<2.93	1988	3/84
C-112	Riser 1	84	11/25/93	No	45	31	<10000	<2.93	Sound	9/90
C-112	Riser 8	82	11/07/93	No	45	31	<10000	<2.93	Sound	9/90
T-107		69	11/17/93	No	73	5	<10000	<2.93	1984	N/A
TX-118 (4)		77	11/22/93	Yes	134	<1	4900	1.44	Sound	4/83
TY-101		70	11/22/93	Yes	50	23	<10000	<2.93	1973	8/83
TY-103		71	11/08/93	Yes	88	28	<10000	<2.93	1973	2/83
TY-104		70	11/15/93	Yes	24	12	<10000	<2.93	1981	1/83
20 Tanks			Legend: TMACS = Tank Monitor & Control System							

Note: Tanks BX-110, BX-111, BY-101 and T-101 were removed from this Watch List in July 1993, per letter 93-CAB-223, John H. Anttonen, DOE-RL, to T. M. Anderson, WHC, "Resolution of Unreviewed Safety Question for Four Ferrocyanide Tanks," dated July 9, 1993.

FOOTNOTES: See next page

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

FOOTNOTES:

- (1) This Priority 1 Waste Tank Safety Issue is stated as follows: "Could the concentrations and distribution of ferrocyanide and nitrate/nitrite in the tanks lead to an explosion if allowed to heat up or if an uncontrolled exothermic reaction could occur?"
- (2) The amount of FeCN reported in the tanks is based on WHC-SD-WM-ER-133-REV 0, "An Assessment of the Inventories of the FeCN Watch List Tanks," (Table 3-7), October 1991.
- (3) The estimated heat generation rates are from WHC-EP-0474-4, "Quarterly Report on Defense Nuclear Facilities Safety Board Recommendation 90-7 for the Period Ending March 31, 1992," Table 1-A, dated January 1992. Tank 104-BY only estimated per WHC-EP-0521, "SST 104-BY Thermal Hydraulic Analysis," October 1991 (kW = 3412 Btu/h). A new thermal hydraulic analysis of several tanks is currently being updated and is expected to be processed for external release by the end of FY1993. This document analyzes six tanks, BY-105, 106, 108, 110, and 111, and C-109. Information from this document will be incorporated in future monthly reports as soon as the clearance process is completed.
- (4) This tank also contains a high concentration (>3% wt TOC) of organic salts.
- (5) This column indicates which tanks are being monitored by the Tank Monitor & Control System (TMACS); automatic temperature readings are taken continuously. Temperatures in tanks connected to TMACS but temporarily not being monitored by TMACS are taken manually.
- (6) Total waste in Kgal taken from Table E-5, Inventory and Status by Tanks for SSTs. Kgal/inches calculations for the temperature tables are as follows: (waste in inches is an approximation only for these temperature tables)

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

* The bottom 12 inches in dish bottom tanks contain 12.5 Kgal. All tanks are calculated as dish bottom tanks for the temperature tables, although A and AX farms have flat bottoms. Inches are from centerline tank bottom.

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

These tanks have an Unreviewed Safety Question (USQ) because of the potential consequences of a radiological release resulting from a from a flammable gas burn, an event not analyzed in the SST Safety Analysis Report.

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

Tank No.		Highest Temperature Reading (F.) in Waste	Date of Reading	Total Waste (3) (inches)	Monitoring Frequency	Assumed Leaked Date	Interim Stabilized Date
A-101		154	11/29/93	354	Weekly	SOUND	N/A
AX-101		116	11/29/93	48	Weekly	SOUND	8/87
S-102 (2)		92	11/29/93	224	Weekly	SOUND	N/A
S-111		92	11/29/93	224	Weekly	SOUND	N/A
SX-101 (5)		152	11/17/93	173	Weekly	SOUND	N/A
SX-103		177	11/29/93	245	Weekly	SOUND	N/A
SX-105		182	11/29/93	256	Weekly	SOUND	N/A
SX-109 (1)	Riser 2	148	11/29/93	98	Weekly	1965	5/81
SX-109 (1)	Riser 2	148	11/29/93	98	Weekly	1965	5/81
T-110		65	11/09/93	145	Weekly	SOUND	N/A
U-105		90	11/29/93	159	Weekly	SOUND	N/A
U-106		87	11/29/93	178	Weekly	SOUND	N/A
U-109		85	11/29/93	176	Weekly	SOUND	N/A
AN-103	Double-shell tank	117	11/26/93		Weekly	SOUND	N/A
AN-104	Double-shell tank	118	11/26/93		Weekly	SOUND	N/A
AN-105	Double-shell tank	114	11/26/93		Weekly	SOUND	N/A
AW-101 (4)	Double-shell tank	109	11/30/93		Weekly	SOUND	N/A
SY-101	Riser 17b	125	11/29/93		Daily	SOUND	N/A
SY-101	Riser 17c	130	11/29/93		Daily	SOUND	N/A
SY-103	Double-shell tank	121	11/29/93		Weekly	SOUND	N/A
24 Tanks							Legend: N/A = Not Applicable

- (1) Tank SX-109 has the potential for flammable gas accumulation only because other SX tanks vent through it.
- (2) Tanks S-102 and SX-106 also contain potentially high concentrations of organic salts.
- (3) See footnote (6) in Table A-2 (Ferrocyanide Tanks) for Total Waste/inches calculations. Waste in inches is an approximation for temperature tables only.
- (4) Tank 241-AW-101 was added to this list per letter 9354700, J. C. Fulton, WHC, To R. E. Gerton, DOE-RL, "Addition of Tank 241-AW-101 to Flammable Gas Watch List," dated June 3, 1993.
- (5) Tank SX-101 is at the surveillance alert of 10 degrees over baseline. Only 2 thermocouples out of 6 are operating. Data is inconsistent and suspect. Discrepancy Report written; being investigated.

**TABLE A-4. SINGLE-SHELL TANKS CONTAINING CONCENTRATIONS OF ORGANIC SALTS
>3 WEIGHT % TOTAL ORGANIC CARBON (TOC) (Watch List Tanks) (Sheet 1 of 2)**

These tanks have organic chemicals which are potentially flammable and mixtures of organic materials mixed with nitrate and nitrate salts can deflagrate. They are listed here because of their "potential for release of high level waste because of uncontrolled increases in the temperature or pressure." Double-Shell tanks have >3 Weight % TOC and are not on the Watch List because they contain mostly liquid and there is no credible organic safety concern for tanks which contain mostly liquid. The safety concern is with tanks that primarily contain solids because they could dry out and heat up, and "high organic concentrations in the tanks could support an exothermic reaction at elevated temperatures (350 degrees F/180 degrees C)." These tanks (with the exception of C-103), do not have an associated USQ because the presence of organic material was reviewed in the SST Safety Analysis Report.

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

Temperatures are taken in the waste unless indicated otherwise.

Tank No.	Temperature Reading (F.) in waste	Date of Reading	Total Waste Inches (4)	Assumed Leaked Date	Interim Stabilized Date	Source of Waste (11)	Organic Content (wt. %) (6)	NaNO 3 and NaNO 2 (wt. %)(6)	TOC (WT.%) (7)	Waste Surface Potentially Dry (8)	Last Date Sampled
B-103	68	11/12/93	29	1978	2/85	First and second cycle waste from B Plant and in-tank solidification (ITS-1 & ITS-2) evaporator bottoms	11.4 (9)	60.5 (9)	3.3	x	9/75
C-103 (3)	122	11/22/93	78	SOUND	N/A	PUREX and insoluble strontium- rich sluicing solids from the operation of 244-CR Vault	-	-	-		9/90
S-102 (1)	108	11/29/93	207	SOUND	N/A	REDOX	21.0 (10)	41.0 (10)	6.1	x	2/80
SX-106 (1)	112	11/29/93	203	SOUND	N/A	Salt waste and first cycle condensate from REDOX, and 242-S Evaporator bottoms	14.6 (9)	80.9 (9)	4.3		8/79
TX-105	102	11/17/93	228	1977	9/83	) Tributyl phosphate (TBP)	12.8 (9)	52.7 (9)	3.7	x	1/81
TX-118 (2)	77	11/22/93	134	SOUND	4/83	) process waste and 242-T	20.2 (10)	50.4 (10)	5.9	x	9/81
U-106	82	11/29/93	90	SOUND	N/A	) Evaporator bottoms	46.6 (10)	52.4 (10)	13.6		6/77
U-107	78	11/29/93	155	SOUND	N/A	)	14.7 (9)	75.4 (9)	4.3		12/74
U-111 (5)	80	11/29/93	127	SOUND	N/A	Concentrated B Plant Waste	48.2 (10)	---(10)	14.1	x	7/93
9 Tanks											

See Footnotes next page

**TABLE A-4. SINGLE-SHELL TANKS CONTAINING CONCENTRATIONS OF ORGANIC SALTS
>3 WEIGHT % TOTAL ORGANIC CARBON (TOC) (Sheet 2 of 2)**

Footnotes:

- (1) These tanks also have the potential for hydrogen or flammable gas accumulation.
- (2) Tank TX-118 also contains ferrocyanide.
- (3) Tank C-103 was declared a USQ because of an organic layer covering the surface, reference Unusual Occurrence Report RIL-WHC-TANKFARM-1992-0069, issued September 1992.
- (4) See footnote (6) in Table A-2 (Ferrocyanide Temperature Table) for Total Waste/inches calculations. Waste inches calculations are approximations only for temperature tables.
- (5) Tank U-111 was added August 31, 1993. See August 1993 Summary Highlights for information and Table A-1. "Watch List Tanks" for applicable reference.
- (6) WHC, 1990, "The Kyshtym Explosion and Explosion Hazards with Nitrate-Nitrite Bearing Wastes with Acetates and Other Organic Salts," WHC-SD-LB-033, Westinghouse Hanford Company, Richland, Washington
- (7) Dry wt.% basis. Calculated as wt.% sodium acetate equivalent X.2928.
- (8) Due to absence of supernatant liquid.
- (9) Calculated from data developed by Track Radioactive Components (TRAC) computer code, 1984.
- (10) "Removal of Radionuclides from Hanford Defense Waste Solutions," RHO-SA-51, 1980, Rockwell Hanford Operations, Richland, Washington. All or part of liquid from which composition data were derived may have been transferred to double-shell tanks.
- (11) WHC, 1993, "Action Plan for Responses to Abnormal Conditions in Hanford Site Radioactive Waste Tanks with High Organic Content," WHC-EP-0461, Rev. 1, Westinghouse Hanford, Richland, Washington.

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

High heat load tanks have temperature surveillance requirements established by SD-WM-SAR-006 REV 1, "SST Isolation Safety Analysis Report," dated January 1986, and OSD-T-151-00013 REV D-O, "Operating Specifications for Single-Shell Waste Storage Tanks," dated August 1990. While all of these tanks are considered high heat load tanks per SAR definition, only one (241-C-106) is on the High Heat Watch List.

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

Temperatures are taken in the waste unless indicated otherwise.

Temperatures are taken at the waste lines indicated otherwise.								Date Declared	Interim
Tank No.	Location (6)	Temperature Reading (F.) in Waste	Date of Reading	Total Waste Inches (7)	Monitoring Frequency	Estimated Heat Load (1) (Btu/h) (kW)		Assumed Leaker	Stabilized Date
A-104 (4)	R-12	193	11/29/93	18	Weekly	50000	15	1975	9/78
A-105 (4)	R-12	145	11/29/93	18	Weekly	50000	15	1983	7/78
C-106 (2)(3)	Riser 1	160	11/29/93	21	Weekly	150000	44	SOUND	N/A
C-106 (2)(3)	Riser 14	121	11/13/93	91	Weekly	150000	44	SOUND	N/A
SX-107	Tree 2	173	11/29/93	45	Monthly	42000	12	1964	10/79
SX-107	Tree 8	173	11/29/93	45	Monthly	42000	12	1964	10/79
SX-108	Tree 2	180	11/01/93	49	Monthly	45000	13	1962	8/79
SX-108	Tree 8	200	11/01/93	49	Monthly	45000	13	1962	8/79
SX-109 (3)	Tree 2	148	11/29/93	98	Weekly	50000	15	1965	5/81
SX-109 (3)	Tree 8	152	11/29/93	98	Weekly	50000	15	1965	5/81
SX-110	Tree 2	170	11/29/93	30	Monthly	42000	12	1976	8/79
SX-110	Tree 8	172	11/29/93	30	Monthly	42000	12	1976	8/79
SX-111	Tree 2	194	11/29/93	53	Monthly	44000	13	1974	7/79
SX-111	Tree 8	165	11/29/93	53	Monthly	44000	13	1974	7/79
SX-112	Tree 2	151	11/29/93	41	Monthly	43000	13	1969	7/79
SX-112	Tree 8	162	11/29/93	41	Monthly	43000	13	1969	7/79
SX-114	Tree 2	190	11/29/93	73	Monthly	58000	17	1972	7/79
SX-114	Tree 8	187	11/01/93	73	Monthly	58000	17	1972	7/79

10 Tanks

Legend: Tree = Thermocouple Tree

A-105 Laterals (5) 247 11/29/93 Weekly

Temperatures are taken in 34 thermocouples located in the laterals beneath A-105. SAR requirements (see top of table) do not apply to these temperatures; however, Westinghouse Hanford has voluntarily chosen to apply the waste temperature limits to the soil temperature for surveillance reporting.

Footnotes - see next page

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

Footnotes:

- (1) High heat loads as of 1988, evaluation completed April 20, 1989 (kW = 3412 Btu/h). The predominant heat load for these tanks is from CS 137 (half life of 30 years) and SR 90 (half life of 28.1 years). Tank C-105 was re-evaluated in WHC-SD-WM-ER-178, "Thermal Analysis of Tank 241-C-105 in Support of Process Test," January 1993. Engineering Change Notice #196834, June 24, 1993, changed the status of C-105 from High Heat Load to Normal, effective July 1, 1993.
- (2) Periodic water additions are required in C-106 to maintain evaporative cooling and thus prevent overheating. This tank is scheduled for partial retrieval starting in 1997, at which time cooling water additions will be discontinued.
- (3) Watch List Tanks: C-106 is on the Watch List because "without water additions (in the event of a leak) the tank could exceed structural temperature limits resulting in unacceptable structural damage." SX-109 is on the hydrogen Watch List because it has the potential for flammable gas accumulation due to other SX tanks venting through it.
- (4) A-104/105/106 exhaustor has been out of service from October 1, 1991, until August 20, 1992, when it was briefly restarted. Problems exist which must be resolved before the exhaustor is operational. Temperatures in A-104 and A-105 are monitored weekly.
- (5) Maximum lateral temperatures under A-105 increased 20 degrees F. by January 1992, but then dropped a few degrees and have remained fairly stable at current temperature. These temperatures are monitored weekly.

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

Tank C-106

Tank C-106 has six functioning thermocouples (#1 through 6) on riser 8, and 12 functioning thermocouples on riser 14.

Tanks SX-107, 108, 109, 110, 111, 112, and 114

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

- (7) Calculations for Total Waste Inches: see footnote (6), Table A-2 (Ferrocyanide Tanks). Waste in inches is an approximation only for temperature tables.
- (8) There are 19 single-shell tanks with active ventilation (eight are on the Watch List as indicated by an asterisk):

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

TABLE A-6. NON-WATCH LIST LOW HEAT LOAD TANKS (<40,000 Btu/h)

(Page 1 of 3)

Temperatures are taken semiannually in January and July, unless otherwise indicated, in the following 96 single-shell tanks. Legend follows table.

	Tank No.	Highest Temperatures taken in waste		Total Waste (1)		Comments
		Jan. 93	Jul. 93	Kgal	Inches	
1	A-102	92	92	41	15	
2	A-103	117	117	370	135	
3	A-106	138	137	125	50	
4	AX-102	O/S	76	39	10	Only TC#5 working on 7/93, reading in vapor space Control box contaminated inside
5	AX-104	97	98	7	3	
6	B-101	110	108	113	48	
7	B-102	62	63	32	19	TC#1 O/S, reading in vapor space
8	B-104	68	66	371	142	
9	B-105	68	66	306	50	
10	B-106	61	62	117	67	TC#1 & 2 O/S
11	B-107	62	62	165	41	TC#1 thru 3 O/S, reading in vapor space
12	B-108	62	62	94	54	
13	B-109	62	61	127	97	
14	B-110	O/S	68	246	94	TC#1 thru 4 O/S. Reading in vapor space
15	B-111	O/S	86	237	19	TC#1 & 2 O/S, work order issued, historical readings erratic
16	B-112	62	63	33	7	
17	B-201	58	60	29	151	
18	B-202	59	61	27	141	
19	B-203	62	62	51	263	
20	B-204	59	62	50	258	
21	BX-101	O/S	O/S	43	27	All TCs O/S, work order issued, last reading 74 F. in 11/92
22	BX-103	O/S	O/S	66	31	All TCs O/S, last reading 77 F. in 10/92
23	BX-104	O/S	O/S	99	43	(2) No TC tree per Riser Configuration document Last reading 87 F. in 10/80
24	BX-105	66	63	51	26	
25	BX-107	O/S	O/S	345	133	All TCs O/S, work order issued, last reading 69 F. in 10/82
26	BX-108	O/S	63	26	17	No relay box in 1/93
27	BX-109	O/S	77	193	78	No relay box in 1/93, no historical readings available
28	BX-110	-	68	199	80	Formerly on ferrocyanide Watch List
29	BX-111	-	65	230	91	Formerly on ferrocyanide Watch List
30	BX-112	O/S	62	165	67	No relay box in 1/93
31	BY-101	-	75	387	148	Formerly on ferrocyanide Watch List
32	BY-102	O/S	O/S	341	131	(2) No TC tree per Riser Configuration document. Last reading 72 F. in 4/79
33	BY-109	O/S	O/S	423	161	(2) No TC tree per Riser Configuration document.

TABLE A-6. NON-WATCH LIST LOW HEAT LOAD TANKS (<40,000 Btu/h)

(Page 2 of 3)

Temperatures are taken semiannually in January and July, unless otherwise indicated, in the following 96 single-shell tanks. Legend follows table.

	Tank No.	Highest Temperatures taken in waste		Total Waste (1)		Comments
		Jan. 93	Jul. 93	Kgal	Inches	
34	C-101	91	88	88	39	
35	C-102	O/S	O/S	423	161	Broken coupling, work order issued, last reading 96 F. in 11/92
36	C-104	88	87	295	115	TC#1 thru 5 O/S, reading in vapor space
37	C-105	-	92	150	63	Monitored weekly, formerly on High Heat Load list
38	C-107	-	111	275	107	Monthly reading requirement per procedure, monitored weekly
39	C-110	65	65	187	75	TC#1 thru 4 O/S, reading in vapor space
40	C-201	60	61	2	13	
41	C-202	58	61	1	8	
42	C-203	58	60	5	29	
43	C-204	O/S	O/S	3	18	No hookup to tree, last reading prior to '91.
44	S-101	O/S	115	427	162	TC#1, 3, 5, & 6 O/S, work order issued
45	S-103	88	85	248	98	
46	S-104	108	104	294	114	
47	S-105	77	73	456	173	
48	S-106	81	78	543	205	
49	S-107	106	107	368	129	
50	S-108	87	85	604	227	
51	S-109	83	O/S	568	214	All TCs O/S
52	S-110	117	116	390	149	
53	SX-113	75	73	26	15	
54	SX-115	O/S	O/S	12	10	(2) No TC junction box, last reading prior 12/91
55	T-101	-	66	102	45	Formerly on ferrocyanide Watch List
56	T-102	O/S	O/S	32	19	(2) No TC tree per Riser Configuration document, last reading 68 F. in 2/81
57	T-103	58	59	27	17	
58	T-104	62	O/S	445	169	All TCs O/S, work order issued
59	T-105	O/S	O/S	98	43	(2) No TC tree per Riser Configuration document
60	T-106	58	59	21	15	
61	T-108	O/S	O/S	180	73	All TCs O/S, TC tree laying on ground, J-3 issued 1/92 and again 7/93, last reading 63 F. in 11/91
62	T-109	O/S	O/S	58	29	All TCs O/S, work order issued, last reading 75 F. in 2/91
63	T-111	62	59	458	174	TCs #1, 2, 5, 6 O/S
64	T-112	62	58	67	32	
65	T-201	61	59	29	150	
66	T-202	61	58	21	110	
67	T-203	61	75	35	182	
68	T-204	62	60	38	197	

TABLE A-6. NON-WATCH LIST LOW HEAT LOAD TANKS (<40,000 Btu/h)

(Page 3 of 3)

Temperatures are taken semiannually in January and July, unless otherwise indicated, in the following 96 single-shell tanks. Legend follows table.

Tank No.	Highest Temperatures taken in waste		Total Waste (1)		Comments
	Jan. 93	Jul. 93	Kgal	Inches	
69 TX-101	O/S	O/S	87	39	(2) No TC tree per Riser Configuration document
70 TX-102	O/S	O/S	113	49	Cable cut from tree
71 TX-103	71	55	157	54	Cable cut from tree, readings taken by Instrument Technician
72 TX-104	64	60	65	31	Cable cut from tree, readings taken by Instrument Technician
73 TX-106	80	59	453	172	Cable cut from tree, readings taken by Instrument Technician
74 TX-107	67	60	36	21	Cable cut from tree, readings taken by Instrument Technician
75 TX-108	65	61	134	56	Cable cut from tree, readings taken by Instrument Technician
76 TX-109	97	64	384	147	Cable cut from tree, readings taken by Instrument Technician
77 TX-110	81	O/S	462	175	Cable cut from tree, readings taken by Instrument Technician
78 TX-111	73	61	370	142	Cable cut from tree, readings taken by Instrument Technician
79 TX-112	72	72	649	243	Cable cut from tree, readings taken by Instrument Technician
80 TX-113	73	65	607	228	Dial pushed inside housing, readings taken by Instr. Tech.
81 TX-114	O/S	O/S	535	202	Cable cut from TC tree
82 TX-115	70	67	640	240	Dial pushed inside housing, readings taken by Instr. Tech.
83 TX-116	O/S	O/S	631	237	(2) Tree cut off in riser per Riser Configuration document
84 TX-117	O/S	O/S	626	235	All TCs O/S, cable cut from tree
85 TY-102	O/S	O/S	64	31	No selector switch, last reading 64 F. in 12/91
86 TY-105	75	77	231	91	
87 TY-105	60	60	17	14	
88 U-101	66	61	25	17	
89 U-102	88	81	374	143	
90 U-104	O/S	O/S	122	52	(2) No TC tree per Riser Configuration document
91 U-110	81	72	186	75	
92 U-112	62	61	49	25	
93 U-102	O/S	O/S	5	29	All TCs O/S, work order written, last reading 66 F. in 11/92
94 U-202	60	59	5	29	
95 U-203	59	O/S	3	18	
96 U-204	O/S	80	3	18	Selector knob not working 1/93, 7/93 readings suspect

- (1) See Table A-2 (footnote 6) for waste gallons/inches calculations.
- (2) Thermocouples in nine tanks (BX-104, BY-102, BY-109, SX-115, T-102, T-105, TX-101, TX-116, and U-104) are out of service due to no TC trees in these tanks, or the thermocouples have been cut off, covered over, or are otherwise unable to function, per the Riser Configuration document. (Also see comment section above)

LEGEND:	
TC - Thermocouple	
O/S - Out of service	
Riser Configuration document - WHC-SD-RE-TI-053, REV 8, "Riser Configuration Document for Single-Shell Tanks," September 1991	
SUMMARY:	
Readings obtained in July 1993	<u>71</u>
No readings (TC trees O/S - includes nine tanks with no trees - see footnote above)	<u>25</u>
Total low heat load tanks	<u>96</u> (U-111 was added to Organics Watch List, August 1993)

TABLE A-7. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 5)

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

NOTE:

All Watch List and High Heat tank temperature monitoring is in compliance. (5)

All Dome Elevation Survey monitoring is in compliance.

All Drywell monitoring is in compliance.

Psychrometrics (2)

In-tank Photographs (3)

Pressure Monitoring (6)

CAM/RAMP Monitoring (7)

Vapor Monitoring (8)

LEGEND:

(Shaded)	= in compliance with all applicable documentation
O/C	= out of compliance with documentation
-357	= WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria"
POP	= Plant Operation Procedure TO-040-850, "Obtain/Record SST Temperatures"
M.T.	= Manual Tape
FIC	= Food Instrument Corporation
OSR/SAR	= Operations Safety Requirements/Safety Analysis Report, SD-WM-SAR-006, Rev 2, 2/86; -SAR-034, Rev 0, 6/81
OSD	= Operating Specifications Doc., OSD-T-151-00013, Rev D-0, 8/90
N/A	= Not applicable (i.e., no LOW, M.T., FIC installed)
O/S	= Out of Service
Neutron	= LOW readings taken by Neutron probe

Information as of 11/30/93

Tank Number	Category		Temperature Readings (5)(6)	Surface Level Readings (1) (-357)		LOW Readings (-357) (9) Neutron	Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List(6)	High Heat		M.T.	FIC		Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
A-101	X			N/A	N/A		O/C		
A-102				N/A		N/A	O/C		
A-103				N/A			O/C		
A-104		X			N/A	N/A			
A-105		X			N/A	N/A			
A-106				N/A		N/A			
AX-101	X			N/A					
AX-102					N/A	N/A			
AX-103	X			N/A		N/A			
AX-104					N/A	N/A			
B-101				N/A	O/C	N/A			
B-102				N/A		N/A			
B-103	X			N/A		N/A			
B-104					N/A				
B-105					N/A				
B-106				N/A		N/A			
B-107					N/A	N/A			
B-108				N/A	O/C	N/A			
B-109					N/A	N/A			
B-110					N/A	N/A			
B-111				N/A	O/C	N/A			
B-112				N/A		N/A			
B-201					N/A	N/A			
B-202					N/A	N/A			
B-203					N/A	N/A			
B-204					N/A	N/A			
BX-101			O/C		N/A	N/A			
BX-102	X				N/A	N/A			
BX-103			O/C	N/A		N/A			
BX-104			O/S-O/C	N/A		N/A			
BX-105				N/A		N/A			
BX-106	X			N/A		N/A			
BX-107			O/C	N/A	O/C	N/A			

TABLE A-7. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
 149 TANKS (Sheet 2 of 5)

Information as of 11/30/93

Tank Number	Category		Temperature Readings (5)(6)	Surface Level Readings (1) (-357)		LOW Readings (-357) (9) Neutron	Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List(6)	High Heat		M.T.	FIC		Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
BX-108					N/A	N/A	N/A		
BX-109				N/A		N/A	N/A		
BX-110 (4)					N/A	N/A	N/A		
BX-111 (4)					N/A		N/A		
BX-112				N/A		N/A	N/A		
BY-101 (4)				O/C	N/A		N/A		
BY-102			O/S-O/C		N/A		N/A		
BY-103	X				N/A		N/A		
BY-104	X				N/A		N/A		
BY-105	X				N/A		N/A		
BY-106	X				N/A		N/A		
BY-107	X				N/A		N/A		
BY-108	X				N/A	N/A	N/A		
BY-109			O/S-O/C	N/A			N/A		
BY-110	X				N/A		N/A		
BY-111	X				N/A		N/A		
BY-112	X				N/A	O/C	N/A		
C-101					N/A	N/A	N/A		
C-102			O/C	N/A		N/A	N/A	N/A	
C-103	X			N/A		N/A	N/A		
C-104				N/A		N/A	N/A		
C-105				N/A		N/A	N/A		
C-106 (4)	X	X		N/A		N/A	N/A		
C-107				N/A		N/A	N/A		
C-108	X			O/C (10)	N/A	N/A	N/A		
C-109	X				N/A	N/A	N/A		
C-110					N/A	N/A	N/A		
C-111	X				N/A	N/A	N/A		
C-112	X				N/A	N/A	N/A		
C-201					N/A	N/A	N/A		
C-202					N/A	N/A	N/A		
C-203					N/A	N/A	N/A		
C-204			O/C		N/A	N/A	N/A		
S-101				N/A			N/A		
S-102	X			N/A			N/A		
S-103				N/A	O/C		N/A		
S-104					N/A	N/A	N/A		
S-105				N/A			N/A		
S-106				N/A	O/C		N/A		
S-107				N/A		N/A	N/A		
S-108							N/A		
S-109			O/C	N/A			N/A		
S-110				N/A			N/A		
S-111	X			N/A			N/A		
S-112	X			N/A			N/A		
SX-101	X			N/A			N/A		
SX-102	X			N/A			N/A		
SX-103	X			N/A			N/A		
SX-104	X			N/A		O/S-O/C	N/A		
SX-105	X			N/A			O/C		
SX-106	X			N/A	O/C		N/A		
SX-107		X			N/A	N/A	O/C		
SX-108		X			N/A	N/A	O/C		

TABLE A-7. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 3 of 5)

Information as of 11/30/93

Tank Number	Category		Temperature Readings (5)(6)	Surface Level Readings (1) (-357)		LOW Readings (-357) (9) Neutron	Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List(6)	High Heat		M.T.	FIC		Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
SX-109 (4)	X	X			N/A	N/A	O/C		
SX-110		X			N/A	N/A	O/C		
SX-111		X			N/A	N/A	O/C		
SX-112		X			N/A	N/A	O/C		
SX-113					N/A	N/A	N/A		
SX-114		X			N/A	N/A	O/C		
SX-115			O/S - O/C		N/A	N/A	O/C		
T-101 (4)						N/A	N/A		
T-102			O/S - O/C	N/A	O/C	N/A	N/A		
T-103				N/A		N/A	N/A		
T-104			O/C		N/A		N/A		
T-105			O/S - O/C	N/A		N/A	N/A		
T-106				N/A		N/A	N/A		
T-107	X			N/A		N/A	N/A		
T-108			O/C		N/A	N/A	N/A		
T-109			O/C	N/A		N/A	N/A		
T-110	X			N/A			N/A		
T-111				N/A			N/A		
T-112				N/A		N/A	N/A		
T-201					N/A	N/A	N/A		
T-202				O/C	N/A	N/A	N/A		
T-203					N/A	N/A	N/A		
T-204					N/A	N/A	N/A		
TX-101			O/S - O/C	N/A	O/C	N/A	N/A		
TX-102			O/C		N/A		N/A		
TX-103				N/A		N/A	N/A		
TX-104				N/A		N/A	N/A		
TX-105	X				N/A	O/S-O/C	N/A		
TX-106					N/A		N/A		
TX-107				N/A		N/A	N/A		
TX-108				N/A			N/A		
TX-109				N/A			N/A		
TX-110			O/C		N/A		N/A		
TX-111					N/A		N/A		
TX-112					N/A		N/A		
TX-113					N/A		N/A		
TX-114			O/C		N/A		N/A		
TX-115					N/A		N/A		
TX-116			O/S O/C		N/A	N/A	N/A		
TX-117			O/C		N/A		N/A		
TX-118	X			N/A			N/A		
TY-101	X			N/A		N/A	N/A		
TY-102			O/C	N/A		N/A	N/A		
TY-103	X			N/A			N/A		
TY-104	X			N/A		N/A	N/A		
TY-105					N/A	N/A	N/A		
TY-106					N/A	N/A	N/A		
U-101				O/C	N/A	N/A	N/A		
U-102				N/A			N/A		
U-103	X			N/A			N/A		
U-104			O/S - O/C		N/A	N/A	N/A		
U-105	X			N/A			N/A		
U-106	X			N/A			N/A		

TABLE A-7. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
 149 TANKS (Sheet 4 of 5)

Information as of 11/30/93

Information as of 1/15/2005

Tank Number	Category		Temperature Readings (5)(6)	Surface Level Readings (1) (-357)		LOW Readings (-357) (9) Neutron	Radiation Readings		Dome Elevation Surveys (OSR/SAR)
	Watch List(6)	High Heat		M.T.	FIC		Lateral Readings (-357)	Drywell Readings (OSR/SAR)	
U-107	X			N/A			N/A		
U-108	X			N/A			N/A		
U-109	X			N/A			N/A		
U-110				N/A		N/A	N/A		
U-111	X			N/A			N/A		
U-112					N/A	N/A	N/A		
U-201			O/C		N/A	N/A	N/A		
U-202					N/A	N/A	N/A		
U-203			O/C		N/A	N/A	N/A		
U-204					N/A	N/A	N/A		
Catch Tanks and Special Surveillance Facilities									
A-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
A-302-B	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
311-ER	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
152-AX	N/A	N/A	N/A		N/A				
151-AZ	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
154-AZ	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
BX-TK/SMP	N/A	N/A	N/A		N/A				
A-TK/SMP	N/A	N/A	N/A		N/A				
204-AR	N/A	N/A	N/A						
417-A	N/A	N/A	N/A						
Vent Sta.	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
S-302	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
S-302-A	N/A	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A
S-304	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
TX-302-B	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
TX-302-C	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
U-301-B	N/A	N/A	N/A	N/A	O/C	N/A	N/A	N/A	N/A
UX-302-A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
141-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
142-S	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
Totals: 149 tanks	45 Watch List Tanks (4)	10 High Heat Tanks (4)	O/C: 25 tanks – (semiannual monitoring frequency) (5)	O/C: 4 tanks 0 catch tank	O/C: 9 tanks 2 catch tanks	O/C: 3 tanks 58 tanks have LOWs (2 are O/S)	O/C: 12 tanks	0	0

See Footnotes on next page

TABLE A-7. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 5 of 5)

Footnotes:

1. All SSTs have either manual tape or FIC, with the exception of S-108 and T-101, which have both. Tank 101-T also has a zip cord. All SST FICs are connected to CASS, with the exception of BX-106; however, the connection for many tanks is broken. For such cases, manual readings are taken. Manual surface level readings include readings taken by manual tape, manual FIC (not connected to CASS; BX-106), manual readings of automatic FIC (if CASS is printing "0"), or automatic FIC. In some cases, the surface level readings are taken using a zip cord. While less accurate, such readings are acceptable for meeting the surface level reading requirements.
2. High heat tanks have active exhausters; psychrometrics are taken in these tanks (A-104/105, C-105/106 [effective July 1, 1993, C-105 is no longer a high heat load tank], SX-107, 108, 109, 110, 111, 112, and 114. The exhausters on A-104/105 have been down since October 1991; no readings are being taken. Psychrometric readings have not been taken in the SX high heat load tanks since July 1993. The frequency of psychrometric readings in SSTs is determined by the Cognizant Engineers for the applicable tank farms on an "as needed" basis, with the exception of tanks C-105/106. Hanford Federal Facility Agreement and Consent Order, Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy, 1992 (Tri-Party Agreement) requires psychrometric readings to be taken in C-105/106 on a monthly frequency. Last readings were taken October 27, 1993; readings were not taken in November. A Discrepancy Report was issued.
3. In-tank photographs are requested on an "as needed" basis. No in-tank photographs were taken between September 1990 and March 1993.
4. Two tanks are on both category lists (C-106 and SX-109). In July 1993, C-105 was removed from the High Heat Load list and BX-110, BX-111, BY-101 and T-101 were removed from the ferrocyanide Watch List. Only C-105 continues to be taken weekly; the other tanks are now taken semiannually. U-111 was added to the Organic Salts list August 31, 1993.
5. Temperature readings may be regulated by OSD, -357, or POP. Additionally, high heat load tanks are regulated by OSR/SAR. Thermocouples in the nine tanks designated O/S-O/C are out of service; there are either no thermocouple trees in these tanks, or trees have been cut off, covered over, or are otherwise unable to function. The OSD does not require readings or repair of out-of service thermocouples for the 96 low heat load (<40,000 Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks. Temperatures were taken in July 1993; a total of 25 tanks are O/C because either no attempt to obtain the temperature was made, or a reading could not be obtained.
6. "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, (the "Widen Amendment") requires continuous pressure monitoring and temperature monitoring in Watch List tanks. WHC-EP-0422 REV 1, "A Plan to Implement Remediation of Waste Tank Safety Issues at the Hanford Site," December 1991, addresses these monitoring issues. WHC-EP-0600, "Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site," issued August 1993, describes the resolution strategy for these safety issues.
7. Continuous Air Monitoring (CAM) compliance and Radiation Area Monitoring Panel (RAMP) compliance are not addressed in this table.
8. Double-shell tank farm SY has the only tanks with continuous vapor/flammable gas monitoring; not addressed in this table.
9. An Engineering Change Notice was issued November 1993, changing the monitoring frequency of LOW readings by Gamma probe to be taken "by request only." The Gamma probe column has therefore been deleted.
10. Surface level measurement monitoring is out of compliance in C-108 because the manual tape was removed to install a thermocouple tree. This tank does not have an FIC. A work package is pending to re-install the manual tape.

TABLE A-8. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS
28 TANKS (Sheet 1 of 2)

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

NOTE:

Dome Elevation Surveys are not required for DSTs.
 Psychrometrics (2)
 In-tank Photographs (3)
 Pressure Monitoring (6)
 CAM/RAMP Monitoring (7)
 Vapor Monitoring (8)

LEGEND:

= In compliance with all applicable documentation
O/C	= Out of compliance with documentation
-357	= WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria"
M.T.	= Manual Tape
FIC	= Food Instrument Company
OSR/SAR	= Operations Safety Requirements/Safety Analysis Report WHC-SD-WM-SAR-016, Rev 1, 6/86 WHC-SD-HS-SAR-010, Rev 1, 6/83 (Aging Waste)
OSD	= Operations Safety Doc., OSD-T-151-0007, Rev H-5, 1/82
N/A	= Not Applicable (i.e., no M.T., FIC installed)
O/S	= Out of Service
W.F.	= Weight Factor
Rad.	= Radiation

Information as of 11/30/93

Tank Number	Watch List	Temperature Readings (4) (OSD)	Surface Level Readings (1) (-357, OSR/SAR)		Radiation Readings		Annulus (-357)
					Leak Detection Pits (5) (-357, OSR/SAR)		
			M.T.	FIC	W.F.	Rad.	
AN-101			N/A			O/C	
AN-102			N/A			O/C	
AN-103	X		N/A				
AN-104	X		N/A			O/C	
AN-105	X		N/A			O/C	
AN-106			N/A			O/C	
AN-107			N/A				
AP-101						O/C	
AP-102				O/S		O/C	
AP-103						O/C	
AP-104			O/S			O/C	
AP-105						O/C	
AP-106						O/C	
AP-107						O/C	
AP-108						O/C	
AW-101	X			O/S			
AW-102				O/S			
AW-103						O/C	
AW-104						O/C	
AW-105				O/S		O/C	
AW-106						O/C	
AY-101				O/S			O/C
AY-102						O/C	O/C
AZ-101				O/S		O/C (6)	
AZ-102				O/S		O/C	
SY-101	X						
SY-102							
SY-103	X						
Totals: 28 tanks	6 Watch List Tanks	O/C: 0	O/C: 0	O/C: 0	O/C: 0	O/C: 20 tanks	O/C: 2 tanks

See footnotes next page:

TABLE A-8. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS
28 TANKS (Sheet 2 of 2)

Footnotes:

1. All DSTs have both manual tape and FIC, with the exception of the AM Tank Farm which has only FICs. The manual tape is used when the FIC is out of service. O/C will be shown when no readings are obtained.
2. Psychrometric readings are only taken on tanks with active exhausters; all DSTs have active exhausters. The frequency of psychrometric readings in DSTs is determined by the Cognizant Engineers for the applicable tank farms on an "as needed" basis. Currently, monthly readings are being taken on the SY-101 annulus exhaust, SY-102 tank and annulus exhaust, and SY-103 tank and annulus exhaust. SY-101 tank exhaust readings are not being taken until a port on the tank exhaust header becomes available for exhauster readings. No other psychrometric readings are currently being taken monthly.
3. In-tank photographs are requested on an "as needed" basis. Last in-tank photographs in DSTs were taken in April 1989.
4. OSD specifies DST temperature limits, gradients, etc. Tank SY-101 temperatures are obtained shiftwise with increased readings taken prior to and following gas venting.
5. Failure of both lead detection systems requires repair of at least one system within 5 working days. Failure of one system only, repair must be within 10 workdays. Per -357. If repair of out-of-service system exceeds these timeframes, all systems are O/C. Out-of-service systems which have not exceeded these timeframes will be shown as O/S.
6. "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, (the "Widen Amendment") requires continuous pressure monitoring and temperature monitoring in Watch List tanks. WMC-EP-0422 REV 1, "A Plan to Implement Remediation of Waste Tank Safety Issues at the Hanford Site," December 1991, addresses these monitoring issues. A status report on resolution of Waste Tank Safety Issues at the Hanford Site has been prepared but has not yet been cleared for public release.
7. Continuous Air Monitoring (CAM) compliance and Radiation Area Monitoring Panel (RAMP) compliance are not addressed in this table.
8. Double-shell tank farm SY has the only tanks with continuous vapor/flammable gas monitoring; not addressed in this table.
9. Although data are being received for AZ-101, this information is considered questionable.

TABLE A-9. AUTOMATIC FOOD INSTRUMENT CORPORATION (FIC) GAUGES OUT OF SERVICE

November 30, 1993

Date of Last Automatic		Reading Status		Required Monitoring Frequency(-357)	
Tank No.	SST/DST FIC Reading	Reading Status	Comments	Comments	Frequency(-357)
B-101	SST 08/02/93	No reading taken since 08/02/93	Out of compliance as of 10/07/93	Out of compliance as of 10/07/93	Quarterly
B-108	SST 08/04/93	No reading taken since 08/04/93	Out of compliance as of 10/07/93	Out of compliance as of 10/07/93	Quarterly
B-111	SST 07/06/93	No reading taken since 07/06/93	Out of compliance as of 10/07/93	Out of compliance as of 10/07/93	Quarterly
BX-107	SST 12/30/92	No reading taken since 04/19/93	Out of compliance as of 04/26/93	Out of compliance as of 04/26/93	Daily
S-103	SST 11/29/93	No reading taken since 11/30/93	Out of compliance as of 11/30/93	Out of compliance as of 11/30/93	Daily
S-106	SST 11/29/93	No reading taken since 11/30/93	Out of compliance as of 11/30/93	Out of compliance as of 11/30/93	Daily
SX-106	SST 11/29/93	No reading taken since 11/30/93	Out of compliance as of 11/30/93	Out of compliance as of 11/30/93	Daily
T-102	SST 09/06/93	No reading taken since 09/07/93	Out of compliance as of 09/07/93	Out of compliance as of 09/07/93	Daily
TX-101	SST 10/28/93	No reading taken since 10/28/93	Out of compliance as of 10/28/93	Out of compliance as of 10/28/93	Daily
B-Farm	SST 07/06/93	Taking manual FIC readings	In compliance	In compliance	Quarterly
C-Farm	-	Taking manual FIC readings	In compliance	In compliance	Daily/Quarterly
C-105	SST 06/06/93	Taking manual FIC readings	In compliance	In compliance	Daily
West Area	-	Taking manual FIC readings	In compliance	In compliance	Daily/Quarterly
SY-101	DST 08/23/91	Taking manual FIC readings	In compliance	In compliance	Daily
SY-102	DST 08/25/93	Taking manual FIC readings	In compliance	In compliance	Daily
U-106	SST 11/17/92	Taking manual FIC readings	In compliance	In compliance	Daily
AP-102	DST 01/27/93	Taking manual tape readings	In compliance	In compliance	Daily
AW-101	DST 10/23/92	Taking manual tape readings	In compliance	In compliance	Daily
AW-102	DST 06/16/93	Taking manual tape readings	In compliance	In compliance	Daily
AW-105	DST 06/18/93	Taking manual tape readings	In compliance	In compliance	Daily
AY-101	DST 06/31/90	Taking manual tape readings	In compliance	In compliance	Daily
AZ-101	DST 02/02/90	Taking manual tape readings	In compliance	In compliance	Daily
AZ-102	DST 02/15/90	Taking manual tape readings	In compliance	In compliance	Daily
Catch Tanks					
A-302-A	04/16/91	Taking manual reading	In compliance	In compliance	Daily
151-AZ	07/29/93	Taking Manual FIC reading	In compliance	In compliance	Shift
S-302-A	10/04/93	No reading taken since 10/04/93	Out of compliance as of 10/11/93	Out of compliance as of 10/11/93	Weekly
U-301-B	03/23/93	No reading taken since 04/29/93	Out of compliance as of 04/29/93	Out of compliance as of 04/29/93	Daily
Frequency reading requirements: Daily - Must be taken by 2 pm each day Weekly - Must be taken by 2 pm each Monday Quarterly - Must be taken by 2 pm on the seventh day of each quarter					
SST = Single-Shot Tank DST = Double-Shot Tank -357 = WHC-SQ-MU-11-357, Waste Storage Tank Status and Leak Detection Checks

Figure 1. Discrepancy Report Status

Figure 2. Discrepancy Report Cumulative Total

SIDA 11/30/93

WHC-EP-0182-68

Figure 3. Discrepancy Report Status by Age

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APPENDIX B

**DOUBLE SHELL TANK WASTE TYPE
AND SPACE ALLOCATION**

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**TABLE B-1. DOUBLE-SHELL TANK WASTE TYPE AND SPACE ALLOCATION
NOVEMBER 1993**

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE		SPACE DESIGNATED FOR SPECIFIC USE	
Complexant Concentrate (102-AN, 107-AN, 101-AY, 101-SY, 103-SY)	1.9 Mgal	Spare Tanks (3) (1 Aging & 1 Non-Aging Waste Tank)	2.28 Mgal
Concentrate Phosphate (102-AP, 106-AN)	1.13 Mgal	Segregated Tank Space (105-AP, 101-AY, 102-AN, 107-AN, 103-AW)	1.95 Mgal
Double-Shell Slurry and Slurry Feed (103-AN, 104-AN, 105-AN, 105-AP, 101-AW)	5.1 Mgal	Watch List Tank Space (103-AN, 104-AN, 105-AN, 101-SY, 103-SY, 101-AW)	5.71 Mgal
Neutralized Current Acid Waste (101-AZ, 102-AZ)	1.23 Mgal	Priority Tank Space (2) (101-AN, 102-AW, 106-AW, 102-SY)	1.14 Mgal
Dilute Waste (1) (101-AN, 101-AP, 103-AP, 106-AP, 107-AP, 108-AP, 102-AW, 103-AW, 104-AW, 105-AW, 106-AW, 101-AY, 102-AY, 101-AZ, 102-AZ, 102-SY, 102-AP, 104-AP)	12.16 Mgal	Miscellaneous Head Space	0.22 Mgal
NCR and PFP Settled Solids (103-AW, 105-AW, 102-SY)	1.01 Mgal		4.40 Mgal
		TOTAL DOUBLE-SHELL TANK SPACE	
		24 Tanks at 1140 Kgal	27.36 Mgal
		4 Tanks at 980 Kgal	3.92 Mgal
			31.28 Mgal
	Total Inventory =	Total Available Space	31.28 Mgal
	25.53 Mgal	Double-Shell Tank Inventory	25.53 Mgal
		Space Designated for Specific Use	5.4 Mgal
		Remaining Unallocated Space	0.35 Mgal

(1) Easily reduced in volume by Evaporator/LERF

(2) Reduced by Saltwell Liquid pumping, Mini Run and PFP Operations

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

Note: Net change in DSTs since last month: 6 Kgal.

WVPTOT

Note: Graphic does not Depict Waste Receipts or Depletions to Specific Use Tank Space

FIGURE B-1. CURRENT STATUS AND CONTINGENCY SPACE FOR THE 242-A EVAPORATOR RESTART

NOTE: THIS GRAPHIC DEPICTS "USABLE SPACE" DEPLETION AND NOT THE TOTAL RECEIPTS TO DSTs.

WVPFACIL

FIGURE B-2. TOTAL AVAILABLE USABLE TANK SPACE

100 K GALLONS

FIGURE B-3. PRIORITY SPACE AVAILABILITY AND USAGE

FIGURE B-5. PUREX MONTHLY WASTE GENERATIONS

FIGURE B-6. TANK FARM MONTHLY WASTE GENERATIONS

FIGURE B-7. B PLANT MONTHLY WASTE GENERATIONS

FIGURE B-8. T PLANT MONTHLY WASTE GENERATIONS

FIGURE B-9. S PLANT MONTHLY WASTE GENERATIONS

FIGURE B-10. 300 AREA MONTHLY WASTE GENERATIONS

Table B-2. Double Shell Tank Waste Inventory for November 30, 1993

(page 1 of 2)

TANKS	INVENTORY	SOLIDS	TYPE	LEFT
101AW=	1141	84	DSSF	-1
102AW=	954	3	DN	186
103AW=	648	487	PD/DN	492
104AW=	1123	267	DN	17
105AW=	1037	388	PD/DN	103
106AW=	1070	211	DN	70
101AY=	894	83	DC	86
102AY=	935	32	DN	45
101AZ=	940	35	NCAW	40
102AZ=	945	95	NCAW	35
101AN=	659	0	DN	481
102AN=	1097	89	CC	43
103AN=	954	373	DSS	186
104AN=	1057	264	DSSF	83
105AN=	1129	0	DSSF	11
106AN=	21	17	CP	1119
107AN=	1066	134	CC	74
101SY=	1101	560	CC	39
102SY=	732	133	PT/DN	408
103SY=	743	4	CC	397
101AP=	1061	0	DN	79
102AP=	1104	0	CP	36
103AP=	1132	0	DN	8
104AP=	18	0	DN	1122
105AP=	821	0	DSSF	319
106AP=	1128	0	DN	12
107AP=	1113	0	DN	27
108AP=	902	0	DN	238
TOTAL=	25525		TOTAL	5755

SEGREGATED SPACE	
* 101AW=	-1
103AW=	492
102AP=	36
105AP=	319
* 101SY=	39
* 103SY=	397
101AY=	86
102AN=	43
* 103AN=	186
* 104AN=	83
* 105AN=	11
107AN=	74
TOTAL=	1765

* WATCHLIST TANKS

PRIORITY SPACE	
102SY=	408
101AN=	481
102AW=	186
106AW=	70
TOTAL=	1145

MISC. HEADSPACE	
101AP=	79
103AP=	8
106AP=	12
107AP=	27
104AW=	17
101AZ=	40
102AZ=	35
TOTAL=	218

USABLE SPACE	
104AP=	1122
108AP=	238
105AW=	103
102AY=	45
108AN=	1119
TOTAL=	2627
SPARES	-2280
USABLE	347

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

TOTAL INVENTORY	
10/93 TOTAL	25519
11/93 TOTAL	25525
INCREASE	6

USEABLE SPACE	
10/93 TOTAL	365
11/93 TOTAL	347
DEPLETION	-18

PRIORITY SPACE	
10/93 TOTAL	1175
11/93 TOTAL	1145
INCREASE	-30

Inventory Calculation by Waste Type:

COMPLEXED CONCENTRATE (CC)		
102AN=	1097	(CC)
107AN=	1066	(CC)
101SY=	1101	(CC & DSS)
103SY=	743	(CC, DSS & SWL)
101AY=	894	(DC)
TOTAL=	4901	

NCRW		
103AW=	161	SOLIDS= 487
105AW=	649	SOLIDS= 388
TOTAL=	810	TOTAL= 875

WEST AREA WASTE (DN/PD)		
102SY=	599	SOLIDS= 133

CONC. PHOSPHATE (CP)		
106AN=	21	
102AP=	1104	

DILUTE WASTE (DN)	
101AP=	1061
103AP=	1132
106AP=	1128
107AP=	1113
108AP=	902
101AN=	659
102AW=	954
104AW=	1123
106AW=	1070
102AY=	935
104AP=	18

NCAW (AGING WASTE @ 5M Na)	
101AZ=	791
102AZ=	434
DN=	660

DSS/DSSF	
105AP=	821
103AN=	954
104AN=	1057
105AN=	1129
101AW=	1141
TOTAL=	5102

GRAND TOTALS	
CC=	4007
DC=	894
NCRW=	875
CP=	1125
NCAW=	1225
DSS/DSS	5102
PFP=	133
DILUTE=	12164

NOTE: All Values are in Kilogallons.

Table B-2. Double Shell Tank Waste Inventory for November 30, 1993 (page 2 of 2)

TOTAL AVAILABLE SPACE AS OF NOVEMBER 30, 1993:				5755 KGALS
SEGREGATED TANK SPACE:				
	TANK	WASTE TYPE	AVAILABLE SPACE	
(*) Watch List Tanks	* 101-AW	DSSF	-1 KGALS (#)	
	103-AW	NCRW	492 KGALS	
	102-AP	CP	36 KGALS	
(#) Tank 101-AW shows negative available space because it exceeds the 1140 Kgal for waste volume projections of available space (but does not exceed the operating limit criteria)	105-AP	DSSF	319 KGALS	
	* 101-SY	CC/DSS	39 KGALS	
	* 103-SY	CC/DSS	397 KGALS	
	101-AY	DC	86 KGALS	
	102-AN	CC	43 KGALS	
	* 103-AN	DSS	186 KGALS	
	* 104-AN	DSSF	83 KGALS	
	* 105-AN	DSSF	11 KGALS	
	107-AN	CC	74 KGALS	
	TOTAL =			1765 KGALS
AVAILABLE TANK SPACE =			5755 KGALS	
MINUS SEGREGATED SPACE =			-1765 KGALS	
TOTAL AVAILABLE SPACE AFTER SEGREGATION =			3990 KGALS	
PRIORITY TANK SPACE:				
	TANK	WASTE TYPE	AVAILABLE SPACE	
SWL/PFP	102-SY	DN	408 KGALS	
NON-COMPLEXED SWL RECEIVER	101-AN	DN	481 KGALS	
EVAPORATOR START-UP	102-AW	DN	186 KGALS	
EVAPORATOR START-UP	106-AW	DN	70 KGALS	
TOTAL =			1145 KGALS	
AVAILABLE SPACE AFTER SEGREGATION =			3990 KGALS	
MINUS PRIORITY SPACE =			-1145 KGALS	
TOTAL AVAILABLE SPACE AFTER PRIORITY =			2845 KGALS	
MISCELLANEOUS HEADSPACE:				
	TANK	WASTE TYPE	AVAILABLE SPACE	
	101-AP	DN	79 KGALS	
	103-AP	DN	8 KGALS	
	106-AP	DN	12 KGALS	
	107-AP	DN	27 KGALS	
	104-AW	DN	17 KGALS	
	101-AZ	AW	40 KGALS	
	102-AZ	AW	35 KGALS	
TOTAL =			218 KGALS	
AVAILABLE SPACE AFTER PRIORITY =			2845 KGALS	
MINUS MISCELLANEOUS HEADSPACE =			-218 KGALS	
TOTAL AVAILABLE SPACE AFTER HEADSPACE =			2627 KGALS	
REALISTIC USABLE TANK SPACE:				
	TANK	WASTE TYPE	AVAILABLE SPACE	
	104-AP	DN	1122 KGALS	
	108-AP	DN	238 KGALS	
	105-AW	DN	103 KGALS	
	102-AY	NCRW	45 KGALS	
	106-AN	CP	1119 KGALS	
TOTAL =			2627 KGALS	
TOTAL AVAILABLE SPACE AFTER UNUSABLE DEPLETION =			2627 KGALS	
MINUS SPARE TANK SPACE =			-2280 KGALS	
TOTAL TANK SPACE AVAILABLE AFTER SPARE SPACE =			347 KGALS	

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APPENDIX C

**TANK AND EQUIPMENT CODE
AND STATUS DEFINITIONS**

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C. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS
November 1993

1. TANK STATUS CODES

WASTE TYPE

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

TANK USE (DOUBLE-SHELL TANKS ONLY)

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

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

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

3. DEFINITIONS

WASTE TANKS - GENERAL

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

WASTE TYPES

Aging Waste (AGING)	High level, first cycle solvent extraction waste from the PUREX plant (NCAW)
Concentrated Complexant (CC)	Concentrated product from the evaporation of dilute complexed waste.
Concentrated Phosphate Waste (CP)	Waste originating from the decontamination of the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.
Dilute Complexed Waste (DC)	Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetra-acetic acid (EDTA), citric acid, and hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory (from SSTs).
Dilute Non-Complexed Waste (DN)	Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).
Double-Shell Slurry (DSS)	Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.
Double-Shell Slurry Feed (DSSF)	Waste concentrated just before reaching the sodium aluminate saturation boundary (of 6.5 molar hydroxide) in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.
Non-complexed (NCPLX)	General waste term applied to all Hanford Site liquors not identified as complexed.
PUREX Decladding (PD/PN)	PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.
PFP TRU Solids (PT)	TRU solids fraction from PFP Plant operations.
Drainable Interstitial Liquid (DIL)	Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity.

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

WASTE STATUS

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

STABILIZATION (Single-Shell Tanks only)

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

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), in accordance with WHC-SD-WM-SAR-006 REV 2, <i>Single-Shell Tank Isolation Safety Analysis Report</i> , March 1986.

TANK INTEGRITY

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

TANK INVESTIGATION

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

SURVEILLANCE INSTRUMENTATION

Drywells	Drywells are vertical boreholes with 6-in. (internal diameter) carbon steel casings positioned radially around SSTs. Periodic monitoring is done by gamma radiation or neutron sensors to obtain scan profiles of radiation or moisture in the soil as a function of well depth, which could be indicative of tank leakage. These wells range between 50 and 250 ft in depth, and are monitored between the range of 50 to 150 ft. The wells are sealed when not in use. They are called drywells because they do <u>not</u> penetrate to the water table and are therefore usually "dry." The drywell frequency monitoring schedule calls for 105 drywells weekly, 91 biweekly, 41 monthly, 151 quarterly, and 371 annually.
Laterals	Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells are monitored by radiation detection probes. Laterals are 4-in. inside diameter steel pipes located 8 to 10 ft below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms.
Surface Levels	The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or inputted to the Computer Automated Surveillance System (CASS).

Automatic FIC	An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and also transmit the reading to the CASS. Some tanks have gauges connected to CASS and others are read manually.
Annulus	The annulus is the space between the inner and outer shells on DSTs. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. Alarms from the annunciators are received by CASS. Continuous Air Monitoring (CAM) alarms are also located in the annulus. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.
Liquid Observation Well (LOW)	In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are constructed of fiberglass or TEFZEL*-reinforced epoxy-polyester resin, sized to extend to within 1 in. of the bottom of the tank steel liner. They are sealed at their bottom ends and have a nominal outside diameter of 3.5 in. Two probes are used to monitor changes in the ILL: gamma and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 58 LOWs (56 are in operation) installed in SSTs that contain or are capable of containing greater than 50,000 gal of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (102-SY and 103-AW Tanks), are constructed of steel and are used for special surveillance purposes only.
Thermocouple (TC)	A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete. These monitor temperature gradients within the concrete walls,

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

installed in a riser, or lowered down an existing bottom of the tank, and the domes. In SSTs, there may be one or more thermocouple trees installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple may be in a riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

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

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

COLUMN HEADING

Total Waste	Solids Volume plus Supernatant liquid.
Supernatant Liquid	Drainable Liquid Remaining minus Drainable Interstitial. Supernate is usually derived by subtracting the solids level measurement from the liquid level measurement.
Drainable Interstitial	Drainable Liquid Remaining minus Supernate. Drainable Interstitial Liquid is calculated based on the saltcake and sludge volumes, using average porosity values or actual data for each tank, when available.
Total Jet Pumped	Cumulative total pumped 1979 to date.
Drainable Liquid Remaining	Supernate plus Drainable Interstitial.
Pumpable Liquid Remaining	Drainable Liquid Remaining less undrainable heel volume.
Sludge	Solids formed during sodium hydroxide additions to waste. Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs may be used to estimate the volume.
Saltcake	Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator. If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs may be used to estimate the saltcake volume.

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Solids Volume Update	Indicates the latest update of any change in the solids volume.
Solids Update Source - See Footnote	Indicates the source or basis of the latest solids volume update.
Last Photo Date	Date of latest in-tank photographs taken.
Change Since Last Monthly Report	Indicates any change made since the previous month. Explanation for the change follows the Inventory and Status by Tank section.

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APPENDIX D

**TANK FARM CONFIGURATION, STATUS, AND
FACILITY CHARTS**

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D-3

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

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

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

* A and AX have flat bottoms

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

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

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

Figure D-1. High-Level Waste Tank Configuration

29103062.1a

WHC-EP-0182

Figure D-2. Double-Shell Tank Instrumentation Configuration

Figure D-3. Single-Shell Tank Instrumentation Configuration

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Op's limit 1,140,000 gal. Constructed 1974-78

200 West Tank Farms
Double-Shell Tank Status

Op's limit 1,140,000 gal. Constructed 1980-81

Op's Limit 1,140,000 gal. Constructed 1983-88

Op's limit 1,140,000 gal. Constructed 1978-80

Op's limit 980,000 gal. Constructed 1966-70

Op's limit 980,000 gal. Constructed 1971 & 1977

200 East Tank Farms
Double-Shell Tank Status

Complex
Concentrate

Dilute

Dilute
Complex
Waste Concentrated
Phosphate
Waste Neutralized
Current
Acid
Waste (NCAW)

PFP

Sludge

Double-Shell
Slurry/Food NCRW
Neutralized Cladding
Removal WasteH = Potential Flammable Gases
(Hydrogen) (WHC-WF-0418)

GF = Grout Feed Tanks

TT = Transfer Tank

XXX = Sludge (in K gal.)

Updated Quarterly 09/30/93

DST-LVI/S.G.SPENCER/10-98

Figure D-4. Double-Shell Tank Status

1,000,000 gal. tanks Constructed 1954-55

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

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

500,000 gal. tanks Constructed 1946-47

750,000 gal. tanks Constructed 1948-49

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

Sludge

Solids

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

XXX = Total Liquids (in K gal.)

(Drainable Interstitial + Supernatant)

XXX = Sludge (in K gal.)

(Settles Total Not Shown)

AL = Automated Locker

HH = High Heat Tanks

F = Ferrocyanide (WHC-EP-0009)

O = Organics

H = Potential Flammable Gases (Hydrogen)(WHC-EP-0009)

IP = Intrusion Prevention

IS = Interim Stabilized

PI = Partially Interim Isolated

Updated Quarterly 09/30/93

SST-ALL/S.G. SPENCER/10-93

Figure D-5. DOE Single-Shell Tank Status

750,000 gal. tanks Constructed 1950-51

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

500,000 gal. tanks Constructed 1949-44

55,000 gal. tanks

750,000 gal. tanks Constructed 1947-48

750,000 gal. tanks Constructed 1951-52

500,000 gal. tanks Constructed 1943-44

55,000 gal. tanks

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

Hanford Tank Farm Facilities

200 West

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

Double Walled Pipe

Single Walled Pipe Direct Buried

All Tanks 75 Foot Diameter
(Except 55,000 gal 20 foot dia.)

Radiation Monitoring
Dry Well - Approx Location
(● = Active ○ = Inactive)

Tank Number

D-13/14

Radiation Monitoring
Laterals Under Tank
(X = not used)

Drainable Liquid
Remaining (1000 gal)
(Inactive Tanks)

Liquid Level Gauges
▼ = FIC Read Manually
Y = Tape Read Manually
▽ = Auto FIC on CASS
▽ = Intrusion Mode FIC

Airlift Circulators

Liquid Observation
Well (Low)

Screen - Jet Pump

Assumed
Leaker

Total Solids
(1000 gal)
Salt Cake/
Sludge/DSS
(Inactive Tanks)

Operating
Exhauster

Watch List and
High Heat Load
Tanks

Temperature Reading
Automatic Readings:
(● By CASS for DSTs
By TMACS for SSTs)
(○ Manual Readings)

Assumed
Leaked Date

Watch List Tanks

- Ferrocyanide**
- H2/Flammable gases (109-SX has potential only-other tanks vent thru it)**
- Organics**
- High Heat - 106-C only on Watch List (cooling water added)**

Status as of September 30, 1993 - Updated Quarterly
Issued by WHC/TWRS/PE

29310073.1C

Hanford Tank Farm Facilities

200 East

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

Single Walked Pipe Direct Buried

All Tanks 75 Foot Diameter
(Except 55,000 gal 20 foot dia.)

Single-Shell

Double-Shell

Interim
Stabilized

Sound

DCRT = Double Contained
Receiver Tank
NHW = Neutralized
High Level Waste
PAW = PUREX Acid Waste

Isolated
PI= Partial
Interim
IP= Intrusion
Prevention
Completed

Tank
Number

Radiation Monitoring
Dry Well - Approx Location
(● = Active ○ = Inactive)

BY-Tank Farm

1948-49

12 @ 758,000 gal

BX-Tank Farm

1946-47

12 @ 530,000 gal

244-BX
DCRT

B-Tank Farm

1943-44

12 @ 530,000 gal

4 @ 55,000 gal

C-Tank Farm

1943-44

12 @ 530,000 gal

4 @ 55,000 gal

AN-Tank Farm

1980-81

7 @ 1,160,000 gal

Watch List Tanks

- Ferrocyanide**
- H₂/Flammable gases (109-SX has potential only-other tanks vent thru it)**
- Organics**
- High Heat - 106-C only on Watch List (cooling water added)**

Status as of September 30, 1993 - Updated Quarterly
Issued by WHC/TWRS/PE

APPENDIX E

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

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TABLE E-1. MONTHLY SUMMARY

TANK STATUS						
November 30, 1993						
	200	200				
	EAST AREA	WEST AREA	TOTAL			
IN SERVICE	25	3	28 (2)			
OUT OF SERVICE	66	83	149			
SOUND	59	51	110			
ASSUMED LEAKER	32	35	67			
INTERIM STABILIZED	51	55	106 (1)			
ISOLATED						
PARTIAL INTERIM	21	30	51			
INTRUSION PREVENTION COMPLETED	45	53	98			

WASTE VOLUMES (Kgallons)						
	200	200				
	EAST AREA	WEST AREA	TOTAL	SST TANKS	DST TANKS	TOTAL
SUPERNATANT						
AGING Aging waste	1755	0	1755	0	1755	1755
CC Complexant concentrate waste	1943	177	2120	3	2117	2120
CP Concentrated phosphate waste	4	0	4	0	4	4
DC Dilute complexed waste	811	1	812	1	811	812
DN Dilute non-complexed waste	10580	0	10580	0	10580	10580
DN/PT Dilute non-complex/PUREX TRU solids	1025	0	1025	0	1025	1025
DN/PT Dilute non-complex/PFP TRU solids	0	661	661	0	661	661
DSSF Double-shell slurry feed	3826	48	3874	57	3817	3874
NCPLX Non-complexed waste	215	281	496	496	0	496
TOTAL SUPERNATANT	20158	1168	21327	557	20770	21327
SOLIDS						
Double-shell slurry	937	1103	2040	0	2040	2040
Sludge	8206	5963	14169	12214	1955	14169
Saltcake	6577	17602	24179	23419	760	24179
TOTAL SOLIDS	15720	24668	40388	35633	4755	40388
TOTAL WASTE	35879	25836	61715	36208	25525	61715
AVAILABLE SPACE IN TANKS	4912	844	5756	0	5756 (2)	5756
DRAINABLE INTERSTITIAL	2243	4516	6759	6320	439	6759
DRAINABLE LIQUID REMAINING	22402	5684	28086	6877	21209	28086

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

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

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

AIM

Association for Information and Image Management

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Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

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2 of 2

TABLE E-2. TANK USE SUMMARY

November 30, 1993

TANK FARMS	IN SERVICE	OUT OF SERVICE	SOUND	ASSUMED LEAKER	PARTIAL INTERIM	ISOLATED TANKS INTRUSION PREVENTION	INTERIM STABILIZED TANKS
EAST							
A	0	6	3	3	2	4	5
AN	7 (2)	0	7	0	0	0	0
AP	8	0	8	0	0	0	0
AW	6 (2)	0	6	0	0	0	0
AX	0	4	2	2	1	3	3
AY	2	0	2	0	0	0	0
AZ	2	0	2	0	0	0	0
B	0	16	6	10	0	16	16 (1)
BX	0	12	7	5	6	6	10 (1)
BY	0	12	7	5	5	7	7
C	0	16	9	7	7	9	10
Total	25	66	59	32	21	45	51
WEST							
S	0	12	11	1	10	2	2
SX	0	15	5	10	6	9	9
SY	3 (2)	0	3	0	0	0	0
T	0	16	9	7	5	11	12 (1)
TX	0	18	10	8	0	18	18
TY	0	6	1	5	0	6	6
U	0	16	12	4	9	7	8 (1)
Total	3	83	51	35	30	53	55
TOTAL	28	149	110	67	51	98	106

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

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

TABLE E-3. INVENTORY SUMMARY BY TANK FARM

WASTE VOLUMES (Kgallons)

November 30, 1993

SUPERNATANT LIQUID VOLUMES

SOLIDS VOLUME

TANK FARM	TOTAL WASTE	AVAIL SPACE	<i>SUPERNATANT LIQUID VOLUMES</i>										<i>SOLIDS VOLUME</i>			
			AGING	CC	CP	DC	DN	DN/PD	DN/PT	DSSF	NCPLX	TOTAL	DSS	SLUDGE	CAKE	TOTAL
EAST																
A	1537	0	0	0	0	0	0	0	0	9	0	9	0	556	972	1528
AN	5983	1997	0	1940	4	0	659	0	0	1939	0	4542	937	504	0	1441
AP	7279	1841	0	0	0	0	6458	0	0	821	0	7279	0	0	0	0
AW	5973	868	0	0	0	0	2560	1025	0	1057	0	4642	0	1135	196	1331
AX	906	0	0	3	0	0	0	0	0	0	0	3	0	19	884	903
AY	1829	131	0	0	0	811	903	0	0	0	0	1714	0	115	0	115
AZ	1885	75	1755	0	0	0	0	0	0	0	0	1755	0	130	0	130
B	2057	0	0	0	0	0	0	0	0	0	15	15	0	1697	345	2042
BX	1540	0	0	0	0	0	0	0	0	0	31	31	0	1354	155	1509
BY	4744	0	0	0	0	0	0	0	0	0	0	0	0	719	4025	4744
C	2146	0	0	0	0	0	0	0	0	0	169	169	0	1977	0	1977
Total	35879	4912	1755	1943	4	811	10580	1025	0	3826	215	20159	937	8206	6577	15720
WEST																
S	5680	0	0	0	0	0	0	0	0	17	29	46	0	1171	4463	5634
SX	4453	0	0	0	0	1	0	0	0	0	62	63	0	1282	3108	4390
SY	2576	844	0	177	0	0	0	0	661	0	0	838	1103	71	564	1738
T	2034	0	0	0	0	0	0	0	0	0	45	45	0	1989	0	1989
TX	6905	0	0	0	0	0	0	0	0	0	5	5	0	241	6659	6900
TY	638	0	0	0	0	0	0	0	0	0	3	3	0	571	64	635
U	3550	0	0	0	0	0	0	0	0	31	137	168	0	638	2744	3382
Total	25836	844	0	177	0	1	0	0	661	48	281	1168	1103	5363	17602	24668
TOTAL	61715	5756	1755	2120	4	812	10580	1025	661	3874	496	21327	2040	14169	24179	40388

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

TABLE E-4. INVENTORY AND STATUS BY TANK
DOUBLE-SHELL TANKS
November 30, 1993

TANK STATUS				LIQUID VOLUME								SOLIDS VOLUME			VOLUME DETERMINATION					CHANGE
TANK	WASTE MATL	TANK INTEGRITY	TANK USE	EQUIVA-	TOTAL	AVAIL	SUPER-	DRAIN-	PUMPED	DRAIN-	PUMP-	DSS	SLDG	CAKE	VOL	VOL	SOLIDS	LAST	LAST	CHANGE
				LENT	WASTE	SPACE	NATANT	ABLE	THIS	TOTAL	LIQUID									
				INCHES	(Kgal)	(Kgal)	(Kgal)	(Kgal)	MONTH	PUMPED	REMAIN							PHOTO	MONTHLY	REPORT
											(Kgal)		(Kgallons)	MTHD	MTHD	UPDATE		DATE		
++++++ AN FARM STATUS ++++++																				
AN-101 DN	SOUND	DRCVR		239.6	659	481	659	0	0.0	0.0	659	659	0	0	0	FM	S	08/22/89	0/ 0/ 0	
AN-102 CC	SOUND	CWHT		398.9	1097	43	1008	3	0.0	0.0	1011	1008	0	89	0	FM	S	08/22/89	0/ 0/ 0	
AN-103 DSS	SOUND	CWHT		346.9	954	186	17	0	0.0	0.0	17	17	937	0	0	FM	S	08/22/89	10/29/87	
AN-104 DSSF	SOUND	CWHT		384.4	1057	83	793	25	0.0	0.0	818	796	0	264	0	FM	S	08/22/89	08/19/88	
AN-105 DSSF	SOUND	CWHT		410.5	1129	11	1129	0	0.0	0.0	1129	1129	0	0	0	FM	S	10/22/84	01/26/88	
AN-106 CP	SOUND	CWHT		7.6	21	1119	4	0	0.0	0.0	4	4	0	17	0	FM	S	08/22/89	0/ 0/ 0	
AN-107 CC	SOUND	CWHT		387.6	1066	74	932	9	0.0	0.0	941	932	0	134	0	FM	S	08/22/89	09/01/88	
7 DOUBLE-SHELL TANKS				TOTALS:	5983	1997	4542	37	0.0	0.0	4579	4545	937	504	0					
++++++ AP FARM STATUS ++++++																				
AP-101 DN	SOUND	DRCVR		385.8	1061	79	1061	0	0.0	0.0	1061	1061	0	0	0	FM	S	05/01/89	0/ 0/ 0	
AP-102 DN	SOUND	GRTFD		401.5	1104	36	1104	0	0.0	0.0	1104	1104	0	0	0	FM	S	07/11/89	0/ 0/ 0	
AP-103 DN	SOUND	DRCVR		411.6	1132	8	1132	0	0.0	0.0	1132	1132	0	0	0	FM	S	10/13/88	0/ 0/ 0	
AP-104 DN	SOUND	GRTFD		6.5	18	1122	18	0	0.0	0.0	18	18	0	0	0	FM	S	10/13/88	0/ 0/ 0	
AP-105 DSSF	SOUND	CWHT		298.5	821	319	821	0	0.0	0.0	821	821	0	0	0	FM	S	02/02/89	0/ 0/ 0	
AP-106 DN	SOUND	DRCVR		410.2	1128	12	1128	0	0.0	0.0	1128	1128	0	0	0	FM	S	10/13/88	0/ 0/ 0	
AP-107 DN	SOUND	DRCVR		404.7	1113	27	1113	0	0.0	0.0	1113	1113	0	0	0	FM	S	10/13/88	0/ 0/ 0	
AP-108 DN	SOUND	DRCVR		328.0	902	238	902	0	0.0	0.0	902	902	0	0	0	FM	S	10/13/88	0/ 0/ 0	
8 DOUBLE-SHELL TANKS				TOTALS:	7279	1841	7279	0	0.0	0.0	7279	7279	0	0	0					

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

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

TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION							
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST Mnthly REPORT		
+++++ A FARM STATUS +++++																				
A-101	DSSF	SOUND	/PI	953	0	413	0.0	0.0	413	390	3	950	P	F	11/21/80		08/21/85			
A-102	DSSF	SOUND	IS/PI	41	4	2	0.0	39.5	6	0	15	22	P	FP	07/27/89	(1)	07/20/89			
A-103	DSSF	ASMD LKR	IS/IP	371	5	15	0.0	111.0	20	0	366	0	-	FP	06/03/88	(1)	12/28/88			
A-104	NCPLX	ASMD LKR	IS/IP	28	0	0	0.0	0.0	0	0	28	0	M	PS	01/27/78		06/25/86			
A-105	NCPLX	ASMD LKR	IS/IP	19	0	4	0.0	0.0	4	0	19	0	P	MP	08/23/79	(1)	08/20/86			
A-106	CP	SOUND	IS/IP	125	0	7	0.0	0.0	7	0	125	0	P	M	09/07/82		08/17/86			
6 SINGLE-SHELL TANKS				TOTALS	1537	9	441	0.0	150.5	450	390	556	972							
+++++ AX FARM STATUS +++++																				
AX-101	DSSF	SOUND	/PI	748	0	320	0.0	0.0	320	298	3	745	P	F	05/06/82		08/18/87			
AX-102	CC	ASMD LKR	IS/IP	39	3	14	0.0	13.0	17	3	7	29	F	S	09/06/88		06/05/89			
AX-103	CC	SOUND	IS/IP	112	0	36	0.0	0.0	36	3	2	110	F	S	08/19/87		08/13/87			
AX-104	NCPLX	ASMD LKR	IS/IP	7	0	0	0.0	0.0	0	0	7	0	P	M	04/28/82		08/18/87			
4 SINGLE-SHELL TANKS				TOTALS:	906	3	370	0.0	13.0	373	304	19	884							

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE	CHG SINCE	
																SOURCE SEE FOOTNOTE	LAST PHOTO DATE	LAST MNTHL REPORT
+++++ BX FARM STATUS +++++																		
BX-101	NCPLX	ASMD LKR	IS/IP	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82		11/24/88	
BX-102	NCPLX	ASMD LKR	IS/IP	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82		09/18/85	
BX-103	NCPLX	SOUND	IS/IP	66	4	0	0.0	0.0	4	0	62	0	P	F	11/29/83		10/31/86	
BX-104	NCPLX	SOUND	IS/IP	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	(1)	09/21/89	
BX-105	NCPLX	SOUND	IS/IP	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	(1)	10/23/86	
BX-106	NCPLX	SOUND	/PI	46	15	0	0.0	0.0	15	15	31	0	MP	PS	04/28/82		05/19/88	
BX-107	NCPLX	SOUND	IS/PI	345	1		0.0	23.1	30	23	344	0	MP	P	09/18/90	(2)	09/11/90	
BX-108	NCPLX	ASMD LKR	IS/IP	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	(1)	10/23/86	
BX-109	NCPLX	SOUND	IS/PI	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	(2)	09/11/90	
BX-110	NCPLX	ASMD LKR	IS/PI	199	1	15	0.0	0.0	16	10	189	9	MP	M	08/22/85	(1)	07/31/85	
BX-111	NCPLX	ASMD LKR	/PI	211	0	38	24.0	31.0	38	15	68	143	M	M	07/26/77		07/16/93 (a)	
BX-112	NCPLX	SOUND	IS/PI	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	(2)	09/11/90	
12 SINGLE-SHELL TANKS			TOTALS:	1540	31	143	24.0	98.8	174	104	1354	155						
+++++ BY FARM STATUS +++++																		
BY-101	NCPLX	SOUND	IS/IP	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84		09/19/89	
BY-102	NCPLX	SOUND	/PI	341	0	41	0.0	123.3	41	22	0	341	MP	M	08/30/91	(2)	09/11/87	
BY-103	NCPLX	ASMD LKR	/PI	400	0	160	0.0	78.5	160	137	5	395	MP	M	04/03/90	(2)	09/07/89	
BY-104	NCPLX	SOUND	IS/IP	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82		04/27/83	
BY-105	NCPLX	ASMD LKR	/PI	503	0	192	0.0	0.0	192	169	44	459	P	MP	04/28/82		07/11/86	
BY-106	NCPLX	ASMD LKR	/PI	642	0	235	0.0	0.0	235	213	95	547	P	MP	04/28/82		11/04/82	
BY-107	NCPLX	ASMD LKR	IS/IP	266	0	25	0.0	56.4	25	0	60	206	P	MP	04/28/82		10/15/86	

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION						
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS UPDATE	CHG		
																SOURCE SEE FOOTNOTE	LAST PHOTO DATE	SINCE LAST MNTLY REPORT	
+++++ SX FARM STATUS +++++																			
SX-101 DC	SOUND	/PI		456	1	145	0.0	0.0	146	124	112	343	P	FP	04/28/82		03/10/89		
SX-102 DSSF	SOUND	/PI		543	0	183	0.0	0.0	183	177	117	426	P	M	04/28/82		01/07/88		
SX-103 NCPLX	SOUND	/PI		652	1	232	0.0	0.0	233	211	115	536	F	S	07/15/91		12/17/87		
SX-104 DSSF	ASMD LKR	/PI		614	0	201	0.0	113.2	201	195	136	478	F	S	07/07/89		09/08/88		
SX-105 DSSF	SOUND	/PI		683	0	261	0.0	0.0	261	238	73	610	P	F	04/28/82		06/15/88		
SX-106 NCPLX	SOUND	/PI		538	61	194	0.0	0.0	255	233	12	465	F	PS	10/28/80		06/01/89		
SX-107 NCPLX	ASMD LKR	IS/IP		104	0	5	0.0	0.0	5	0	104	0	P	M	04/28/82		03/06/87		
SX-108 NCPLX	ASMD LKR	IS/IP		115	0	6	0.0	0.0	6	0	115	0	P	M	04/28/82		03/06/87		
SX-109 NCPLX	ASMD LKR	IS/IP		250	0	10	0.0	0.0	10	0	0	250	P	M	10/05/93		05/21/86		
SX-110 NCPLX	ASMD LKR	IS/IP		62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76		02/20/87		
SX-111 NCPLX	ASMD LKR	IS/IP		125	0	7	0.0	0.0	7	0	125	0	M	PS	05/31/74		03/10/87		
SX-112 NCPLX	ASMD LKR	IS/IP		92	0	3	0.0	0.0	3	0	92	0	P	M	04/28/82		03/10/87		
SX-113 NCPLX	ASMD LKR	IS/IP		26	0	0	0.0	0.0	0	0	26	0	P	M	04/28/82		03/18/88		
SX-114 NCPLX	ASMD LKR	IS/IP		181	0	14	0.0	0.0	14	0	181	0	P	M	04/28/82		02/26/87		
SX-115 NCPLX	ASMD LKR	IS/IP		12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82		03/31/88		
15 SINGLE-SHELL TANKS				TOTALS:	4453	63	1261	0.0	113.2	1324	1178	1282	3108						

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

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

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TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

TANK STATUS				LIQUID VOLUME							SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST Mnthly REPORT
U-201	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/03/89	
U-202	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79		08/08/89	
U-203	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
U-204	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79		06/13/89	
16 SINGLE-SHELL TANKS				TOTALS:	3550	168	1138	0.0	0.0	1306	1104	638	2744					
GRAND TOTAL					36190	557	6320	24	3852	6877	5382	12214	23419					

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

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

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

(1) WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision

(2) TANK FARMS SST ENGINEER MONTHLY INPUT (Retained 10 yr in Monthly Summary Report author's office)

See next page for footnotes in "Chg Since Last Monthly Report"

TABLE E-5. INVENTORY AND STATUS BY TANK
SINGLE-SHELL TANKS
November 30, 1993

TANK STATUS			LIQUID VOLUME								SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MATERIAL	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATANT LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALTCAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	SOLIDS SOURCE SEE FOOTNOTE	LAST PHOTO DATE	CHG SINCE LAST MNTHLY REPORT

Footnotes:

- (a) BX-111 - Following information from Single-Shell Tanks Cognizant Engineer
- Pumping began October 22, 1993
 - Total waste (Supernatant + Solids) - 211.0 Kgal
 - Supernatant - 0 Kgal
 - Drainable Interstitial - 38.2 Kgal
 - Pumped this Month - 24 Kgal
 - Total Pumped - 31 Kgal
 - Drainable Liquid Remaining - 38.2 Kgal
 - Pumpable Liquid Remaining - 14.9 Kgal
 - Sludge - 68.0 Kgal
 - Saltcake - 143.0 Kgal

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APPENDIX F
PERFORMANCE SUMMARY

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

WASTE VOLUMES (Kgallons)

November 30, 1993

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

SOURCE	THIS MONTH	FY1994 TO DATE
B PLANT	0	0
PUREX TOTAL (1)	22	34
PFP (1)	0	0
T PLANT (1)	0	0
S PLANT (1)	0	5
300/400 AREAS (1)	0	8
SULFATE WASTE - 100 N (2)	0	0
MINI-RUN (14)	3	3
TANK FARMS & SALTWELL LIQUID (6)	21	22
OTHER GAINS	10	44
Slurry increase (3)	1	
Condensate	2	
Instrument change (7)	7	
Unknown (5)	0	
OTHER LOSSES	-50	-98
Slurry decrease (3)	0	
Evaporation (4)	-16	
Instrument change (7)	-18	
Unknown (5)	-16	
EVAPORATED	0	0
GROUTED	0	0
Total	6	18

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

* C-105 was removed from the High Heat Load list effective 7/1/93.
(See June 1993 report)

No water was added to C-106 during November 1993

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

SOURCE	THIS MONTH	FY1994 TO DATE
106-C (8)	0	8
Gains		
Losses	-8	-13
Total	-8	-5

CUMULATIVE EVAPORATION - 1950 TO PRESENT WASTE VOLUME REDUCTION

FACILITY	
242-B EVAPORATOR (9)	7172
242-T EVAPORATOR (1950's) (9)	9181
IN-TANK SOLIDIFICATION UNIT 1 (10)	11876
IN-TANK SOLIDIFICATION UNIT 2 (10)	15295
IN-TANK SOLID. UNIT 1 & 2 (10)	7965
(after conversion of Unit 1 to a cooler for Unit 2)	
242-T (Modified) (9)	24471
242-S EVAPORATOR (11)	41983
242-A EVAPORATOR (12)	65227
B PLANT (C-123) (13)	1185
REDOX (12)	12393
Total	196748

TOTAL THROUGHPUT

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

Footnotes: See Next Page

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TABLE F-1. PERFORMANCE SUMMARY
(Sheet 2 of 2)

Footnotes:

INCREASES/DECREASES IN WASTE VOLUMES

- (1) Including Flush
- (2) Sulfate waste is generated from ion exchange backflushing and sand filter clean out, resulting in sulfate waste (Na_2SO_4).
- (3) Slurry increase/growth is caused by gas generation within the waste. The gas which is trapped in the waste expands in the tank causing the surface level and volume to increase. Slurry decrease results from the periodic release of gas in the waste.
- (4) Aging waste tanks
- (5) Unknown waste gains or losses may be the result of rounding calculations, clean water slowly leaking through a valve, changes in levels (expansion/contraction) because of ambient temperature changes, different measuring devices being used by Tank Farm operators, transfers taking place during the end of the month, Tank Farm activities such as miscellaneous water additions not associated with facility waste generation, or the addition of water which is added to aging waste tanks and then evaporated off.
- (6) Includes Tank Farms miscellaneous flushes (flushes are used to "clean out" pipelines and reduce personnel exposure, reduce potential for waste incompatibility, prevent line plugging, and reduce waste content of potential spills or leaks), and saltwell liquid, which results from pumping of single-shell tanks to double-shell tanks.
- (7) Liquid level measurement instrument changes from the automatic FIC to manual tape (and vice versa) result in unusual gains or losses because the manual tape may rest on an uneven crust surface giving a different reading from that of the automatic FIC. These instrument changes are made when the automatic FIC is out of service and the reading from the manual tape is used for reporting purposes. The reported reading reverts back to the automatic FIC when it is repaired.
- (8) Water is periodically added 106-C to provide evaporative cooling. Losses due to evaporation are calculated assuming all losses are evaporative losses. Some drywells are monitored weekly and some are monitored every two weeks on tank 106-C. If there are any indications of a leak from this tank, the assumption that all losses are due to evaporation will be reevaluated.

WASTE VOLUME REDUCTION

- (9) Currently inoperative. These evaporator systems (242-B and 242-T) were installed in 1952 in each of the two operating areas to remove water from the waste, and ran for approximately 4 yr after which both units were shut down. The 242-T Evaporator was reactivated in December 1965, and shut down again in April 1976.
- (10) Currently inoperative. These two in-tank solidification (ITS) units provided in-tank heating to promote in-tank boiling or evaporation. The ITS Unit 1 started up March 1965, and ITS Unit 2 started up February 1968. In August 1971, ITS Unit 1 was converted from an evaporator to a cooler for ITS Unit 2. Both units were shut down June 1974.
- (11) Currently inoperative. The 242-S Evaporator-Crystallizer was started up November 1973, and shut down March 1980, when its processing campaign was completed. It is in standby mode with no future mission. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals.
- (12) Currently inoperative. The 242-A Evaporator-Crystallizer was started up March 1977, and shut down April 1989 because of regulatory issues, and has remained shut down for subsequent upgrading. The projected start-up date is January 15-17, 1994. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals (forming saltcake).
- (13) Currently inoperative. Additional concentration of wastes was completed by using the concentrators at REDOX and B Plant. The REDOX concentrator was used from July 1967 to June 1972, while the B Plant concentrator was used from July 1967 to February 1968.
- (14) Waste generated for training and testing purposes prior to Evaporator restart.

APPENDIX G

**PUMPING RECORD
LIQUID STATUS AND PUMPABLE LIQUID
REMAINING IN TANKS**

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TABLE G-1. PUMPING RECORD

(Kgallons)

November 30, 1993

<i>TANK FARMS</i>	<i>PUMPED THIS MONTH</i>	<i>PUMPED FY TO DATE</i>	<i>CUMULATIVE TOTAL PUMPED 1979 TO DATE</i>
EAST			
A	0.0	0.0	150.5
AN	N/A	N/A	N/A
AP	N/A	N/A	N/A
AW	N/A	N/A	N/A
AX	0.0	0.0	13.0
AY	N/A	N/A	N/A
AZ	N/A	N/A	N/A
B	0.0	0.0	0.0
BX	24.0	31.0	98.7
BY	0.0	0.0	1387.4 (a)
C	0.0	0.0	36.8 (b)
Total	24.0	31.0	1686.4
WEST			
S	0.0	0.0	791.0
SX	0.0	0.0	113.2
SY	N/A	N/A	N/A
T	0.0	0.0	25.3
TX	0.0	0.0	1205.7
TY	0.0	0.0	29.9
U	0.0	0.0	0.0
Total	0.0	0.0	2165.1
TOTAL	24.0	31.0	3851.5

NA = Not Applicable

- (a) The total volume pumped was adjusted by the Single-Shell Tanks Engineer to account for the 14% miscalibration of the constant velocity transmitter and the amount of flush water used. DIL, DLR and PLR volumes were recalculated, based on the observed porosity in 102 and 109-BY.
- (b) The total volume pumped was recalculated by the Single-Shell Tanks Engineer based on the surface level readings taken after shutdown of the saltwell pumps on January 28, 1992, in 102-C, 107-C and 110-C, and revised again based on recalculation of flush water additions on January 26, 1993. (The total for the tank farm remains the same, the amount pumped varied among the three tanks).

**TABLE G-2. LIQUID STATUS AND PUMPABLE LIQUID
REMAINING IN TANKS**

WASTE VOLUMES (Kgallons)

November 30, 1993

<i>TANK FARMS</i>	<i>SUPERNATANT LIQUID</i>	<i>DRAINABLE INTERSTITIAL LIQUID</i>	<i>DRAINABLE LIQUID REMAINING</i>	<i>PUMPABLE LIQUID REMAINING</i>
EAST				
A	9	441	450	390
AN	4542	37	4579	N/A
AP	7279	0	7279	N/A
AW	4642	159	4801	N/A
AX	3	370	373	304
AY	1714	2	1716	N/A
AZ	1755	4	1759	N/A
B	15	164	179	80
BX	31	143	174	104
BY	0	780	780	598
C	169	143	312	254
Total	20159	2243	22402	1730
WEST				
S	46	1399	1445	1192
SX	63	1261	1324	1178
SY	838	237	1075	N/A
T	45	200	245	178
TX	5	250	255	0
TY	3	31	34	0
U	168	1138	1306	1104
Total	1168	4516	5684	3652
TOTAL	21327	6759	28086	5382 (1)

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

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

N/A = Not applicable

APPENDIX H
CATCH TANKS AND SPECIAL
SURVEILLANCE FACILITIES

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

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

November 30, 1993

			VOLUME OF CONTENTS	MONITORED	
FACILITY	LOCATION	PURPOSE (receives waste from:)	(Gallons)	BY	REMARKS
EAST AREA					
241-A-302-A	A FARM	151-A DB	1450	CASS/FIC	PUMPED 08/11/92
241-311-ER	B PLANT	151-ER, 152-ER DB	7601	CASS/FIC	PUMPED 05/29/91
241-152-AX	AX FARM	152-AX DB	4644	MANUALLY	DIAL O/S, USING ZIP CORD, PUMPED 08/29/92
241-151-AZ	AZ FARM	152-AZ DB, AZ LOOP SEAL	1290	CASS/FIC	VOLUME CHANGES DAILY
241-154-AZ	AZ FARM	102-AZ HTG COIL STEAM CONDENSATE	0	CASS/MT	AUTOMATIC PUMP
244-BX-TK/SMP	BX COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	24635	MANUALLY	USING MANUAL TAPE FOR TANK
244-A-TK/SMP	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	5931	MCS	
204-AR	AY FARM	RR CARS DURING TRANSFER TO REC. TKS	590	DIP TUBE	ALARMS ON CASS
417-A	A FARM	702-A PROCESS CONDENSATE	14750	DIP TUBE	
Vent Station Catch Tank		CROSS COUNTRY TRANSFER LINE	683	MT	
WEST AREA					
241-TX-302-C	TX FARM	154-TX DB	3898	CASS/FIC	FIC REPAIRED
241-U-301-B	U FARM	151-U, 152-U, 153-U, 252-U DB	O/S	CASS/FIC	
241-UX-302-A	U PLANT	154-UX DB	11018	CASS/MFIC	
241-S-304	S FARM	151-S DB	2101	FIC	OPERATIONAL 10/91, REPLACED S-302-A
244-S-TK/SMP	S FARM	DCRT - RECEIVES FROM SEVERAL FARMS	10429	MANUALLY	CWF
244-TX-TK/SMP	TX FARM	DCRT - RECEIVES FROM SEVERAL FARMS	18116	MANUALLY	MT

Total active facilities 16

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

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

INACTIVE - no longer receiving waste transfers

November 30, 1993

VOLUME
OF
CONTENTS MONITORED
(Gallons) BY

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	BY	REMARKS
241-A-302-B	A FARM	152-A DB	4101	CASS/MT	ISOLATED 1985, PROJECT B-138 INTERIM STABILIZED 1990
241-B-301-B	B FARM	151-B, 152-B, 153-B, 252-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-B-302-B	B FARM	154-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-A	BX FARM	152-BR, 153-BX, 152-BXR, 152-BYR DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-B	BX FARM	154-DB	UNKNOWN	NM	ISOLATED 1985(1)
241-BX-302-C	BX FARM	155-B DB	UNKNOWN	NM	ISOLATED 1985(1)
241-C-301-C	C FARM	151-C, 152-C, 153-C, 252-C DB	UNKNOWN	NM	ISOLATED 1985(1)
241-CX-70	HOT SEMI-	TRANSFER LINES	UNKNOWN	NM	ISOLATED, DECOMMISSION PROJ.
241-CX-72	WORKS	TRANSFER LINES	UNKNOWN	NM	SEE DWG H-2-95-501, 2/5/87
244-AR	A COMPLEX	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	BEING UPGRADED
244-BXR-TK/SMP-001	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-002	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-003	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
244-BXR-TK/SMP-011	BX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED 1985(1)
361-B-TANK	B PLANT	DRAINAGE FROM B-PLANT	UNKNOWN	NM	INTERIM STABILIZED 1985(1)

Total East Area inactive facilities 15

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

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

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

INACTIVE – no longer receiving waste transfers

November 30, 1993

VOLUME
OF
CONTENTS

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	BY	REMARKS
241-S-302	S FARM	240-S-151 DB	2276	CASS/FIC *	ASSUMED LEAKER EPDA 85-04
241-S-302-A	S FARM	241-S-151 DB		CASS/FIC *	ASSUMED LEAKER TF-EFS-90-042
				* FIC in Intrusion mode	Partially filled with grout 2/91, determined still assumed leaker after leak test
241-S-302-B	S FARM	S ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
241-SX-304(302)	SX FARM	152-SX TRANSFER BOX, 151-SX DB	UNKNOWN	NM	ISOLATED 1985(1)
241-TX-302	TX FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
241-TX-302-X-B	TX FARM	TX ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
241-TX-302-B	TX FARM	155-TX DB	1320	CASS/MT	NEW MT INSTALLED 7/16/93
241-TY-302-A	TY FARM	153-TX DB	UNKNOWN	NM	ISOLATED 1985(1)
241-TY-302-B	TY FARM	TY ENCASEMENTS	UNKNOWN	NM	ISOLATED 1985(1)
244-U-TK/SMP	U FARM	DCRT - RECEIVES FROM SEVERAL FARMS	UNKNOWN	NM	NOT YET IN USE
244-UR VAULT	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-001	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-002	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-UR-TK/SMP-003	U FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)
244-TXR VAULT	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
244-TXR-TK/SMP-001	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
244-TXR-TK/SMP-002	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
244-TXR-TK/SMP-003	TX FARM	TRANSFER LINES	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1984(1)
361-T-TANK	T PLANT	DRAINAGE FROM T-PLANT	UNKNOWN	NM	ISOLATED 1985(1)
361-U-TANK	U PLANT	DRAINAGE FROM U-PLANT	UNKNOWN	NM	INTERIM STABILIZED, MT REMOVED 1985(1)

Total West Area inactive facilities 20

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

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

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APPENDIX I
LEAK VOLUME ESTIMATES

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TABLE I-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (4) (Sheet 1 of 6)

Tank No.	Date Declared	Confirmed or Assumed Leaker (3)	Volume (2)(4) (Gallons)	Associated Kilocurtes	Stabilized Date (12)	Leak Estimate	Updated Reference
241-A-103	1987		5500	(9)	6/88	(a)	1987
241-A-104	1976		500 to 2500	(9)	9/78	(a),(c)	1983
241-A-105	1963	(1)	277000		7/79	(b),(c)	1991
241-AX-102	1988		3000	(9)	6/88		1988
241-AX-104	1977		--	(7)	8/81		1989
241-B-101	1974		--	(7)	3/81		1989
241-B-103	1978		--	(7)	2/85		1989
241-B-106	1978		--	(7)	12/84		1989
241-B-107	1980		8000	(9)	3/85		1989
241-B-110	1981		10000	(9)	3/85		1989
241-B-111	1978		--	(7)	6/85		1989
241-B-112	1978		2000	(9)	6/85		1989
241-B-201	1980		1200	(9)	6/81		1984
241-B-203	1983		300	(9)	6/84		1989
241-B-204	1984		400	(9)	6/84		1989
241-BX-101	1972		70000	(7)	9/78		1989
241-BX-102	1971		2500	(7)	11/78	50 (f)	1989
241-BX-108	1974		--	(7)	7/79		1989
241-BX-110	1976		--	(7)	8/85		1989
241-BX-111	1984		--	(7)	8/85		1989
241-BY-103	1973		<5000	(7)	N/A		1983
241-BY-106	1984		--	(7)	N/A		1989
241-BY-107	1984		15100	(7)	7/79		1989
241-BY-108	1972		<5000	(9)	2/85		1983
241-C-101	1980		20000	(9),(11)	11/83		1989
241-C-110	1984		2000		N/A		1989
241-C-111	1988		5500	(9)	3/84		1989
241-C-201	1988		550	(9)	3/82		1987
241-C-202	1988		450	(9)	8/81		1987
241-C-203	1984		400	(9)	3/82		1987
241-C-204	1988	(5)	350	(9)	9/82		1987
241-S-104	1988		24000	(9)	12/84		1989
241-SX-104	1988		6000	(9)	N/A		1989
241-SX-107	1984		<5000	(9)	10/79		1989
241-SX-108	1982	(6)	2400 to 1400	(m) (d)	8/79		1991
241-SX-109	1986	(6)	35000		5/81		1992
241-SX-110	1976		<10000	(9)	8/79		1989
241-SX-111	1974		500 to 2000	(9)	7/79	0.6 to 2.4 (g)	1989
241-SX-112	1989		30000		7/79		1989
241-SX-113	1982		15000		11/78		1989
241-SX-114	1972		--	(7)	7/79		1989
241-SX-115	1986		50000	(7)	9/78	21 (o)	1992
241-T-101	1982		7500	(9)	4/83		1992
241-T-103	1974		<1000	(9)	11/83		1989
241-T-106	1973		115000	(9)	8/81	40 (f)	1989
241-T-107	1984		--	(7)	N/A		1989
241-T-108	1974		<1000	(9)	11/78		1989
241-T-109	1974		<1000	(9)	12/84		1989
241-T-111	1984	(5)	<1000	(9)	N/A		1989
241-TX-106	1977		2500	(7)	4/83		1989
241-TX-110	1977		--	(7)	10/79		1989
241-TX-113	1974		--	(7)	4/83		1989
241-TX-114	1974		--	(7)	4/83		1989
241-TX-115	1977		--	(7)	9/83		1989
241-TX-116	1977		--	(7)	4/83		1989
241-TX-117	1977		--	(7)	3/83		1989
241-TY-101	1973		<1000	(9)	4/83		1989
241-TY-103	1973		3000	(9)	2/83	0.7 (f)	1989
241-TY-104	1981		1400	(9)	11/83		1989
241-TY-105	1980		35000		2/83		1989
241-TY-106	1989		20000		11/78		1989
241-U-101	1969		30000		8/79		1989
241-U-104	1961		55000		10/78		1989
241-U-110	1975		5000 to 8100	(9)	12/84	0.05 (g)	1989
241-U-112	1980		8500	(9)	8/79		1989

N/A = not applicable (not yet interim stabilized)
FOOTNOTES: SEE NEXT PAGE

TABLE I-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 2 of 4)

Footnotes:

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

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

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

- (2) These leak volume estimates do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.
- (3) In many cases, a leak was suspected long before it was identified or confirmed. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date as 1961. Using present standards, Tank 241-U-104 would have been declared as assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline," and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.
- (4) There has been an effort in the past two years to reevaluate these leak volume estimates. During the FY 1993 funding reviews, this reevaluation of leak volumes was given a priority which resulted in this activity no longer being funded. The priority versus funding will be reevaluated as part of the prior to FY 1994 budget planning.
- (5) The leak volume estimate date for these tanks is before the "declared leaker" date because the tank was in a "suspected leaker" or "questionable integrity" status; however, a leak volume had been estimated prior to the tank being reclassified.
- (6) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicative of a continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.
- (7) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (10). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgal (rounded to the nearest 10 Kgal), for an average of approximately 8 Kgal for each of the 19 tanks.

TABLE I-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 3 of 4)

- (8) The total has been rounded to the nearest 50 Kgal. Upperbound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.
- (9) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.
- (10) The curie content listed is as listed in the reference document and is not decayed to a consistent date; therefore, a cumulative total is inappropriate.
- (11) 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 reference (q) and (s); refer to reference (s) for information on the potential for there to have been leaks from other C-farm tanks (specifically, C-102, C-103, and C-109).
- (12) These dates indicate when the tanks were actually stabilized. In some cases, the official stabilization documents were issued at a later date.

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

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- (m) WHC, 1992a, Tank 241-SX-108 Leak Assessment, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.
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- (r) WHC, 1993, Occurrence Report, Single-Shell Underground Waste Storage Tank 241-BX-111 Surface Level Decrease and Change From Steady State Condition, RL-WHC-TANKFARM-1993-0035, Westinghouse Hanford Company, Richland, Washington.
- (s) WHC, 1993a, Assessment of Unsaturated Zone Radionuclide Contamination Around Single-Shell Tanks 241-C-105 and 241-C-106, WHC-SD-EN-TI-185, REV 0A, Westinghouse Hanford Company, Richland, Washington.

APPENDIX J
INTERIM STABILIZATION STATUS

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TABLE J-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (Sheet 1 of 2)

November 30, 1993

Tank Number	Tank Integrity	Interim Stabilized Date (1)	Stabilized Method (2)(3)	Tank Number	Tank Integrity	Interim Stabilized Date (1)	Stabilized Method (2)(3)	Tank Number	Tank Integrity	Interim Stabilized Date (1)	Stabilized Method (2)(3)
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/88	SN	C-102	SOUND	N/A		T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	08/88	AR	C-103	SOUND	N/A		T-110	SOUND	N/A	
A-104	ASMD LKR	08/88	AR	C-104	SOUND	08/88	SN	T-111	ASMD LKR	N/A	
A-105	ASMD LKR	07/79	AR	C-105	SOUND	N/A		T-112	SOUND	03/81	AR
A-106	SOUND	08/88	AR	C-106	SOUND	N/A		T-201	SOUND	08/81	AR
AX-101	SOUND	N/A		C-107	SOUND	N/A		T-202	SOUND	08/81	AR
AX-102	ASMD LKR	08/88	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	N/A		TX-101	SOUND	02/81	AR
B-101	ASMD LKR	03/81	SN	C-111	ASMD LKR	08/84	AR	TX-102	SOUND	04/83	JET
B-102	SOUND	08/88	SN	C-112	SOUND	08/80	AR	TX-103	SOUND	08/83	JET
B-103	ASMD LKR	02/86	SN	C-201	ASMD LKR	08/82	AR	TX-104	SOUND	08/79	SN
B-104	SOUND	08/88	SN	C-202	ASMD LKR	08/81	AR	TX-105	ASMD LKR	04/83	JET
B-105	ASMD LKR	12/84	AR	C-203	ASMD LKR	08/83	AR	TX-106	SOUND	08/83	JET
B-106	SOUND	08/88	SN	C-204	ASMD LKR	08/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/86	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	08/88	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/86	SN	S-103	SOUND	N/A		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	08/86	SN	S-105	SOUND	08/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	08/88	SN	S-106	SOUND	N/A		TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	08/88	AR	S-108	SOUND	N/A		TX-115	ASMD LKR	08/83	JET
B-203	ASMD LKR	08/84	AR	S-109	SOUND	N/A		TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	08/88	AR	S-110	SOUND	N/A		TX-117	ASMD LKR	03/88	JET
BX-101	ASMD LKR	08/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/79	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR	EX-101	SOUND	N/A		TY-102	SOUND	08/79	AR
BX-104	SOUND	08/88	SN	EX-102	SOUND	N/A		TY-103	ASMD LKR	08/88	JET
BX-105	SOUND	03/81	SN	EX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-106	SOUND	N/A		EX-104	ASMD LKR	N/A		TY-105	ASMD LKR	03/83	JET
BX-107	SOUND	08/80	JET	EX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/78	SN	EX-106	SOUND	N/A		U-101	ASMD LKR	08/79	AR
BX-109	SOUND	08/80	JET	EX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/88	SN	EX-108	ASMD LKR	08/79	AR	U-103	SOUND	N/A	
BX-111	ASMD LKR	N/A		EX-109	ASMD LKR	08/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	08/88	JET	EX-110	ASMD LKR	08/79	AR	U-105	SOUND	N/A	
BY-101	SOUND	06/84	JET	EX-111	ASMD LKR	07/79	SN	U-106	SOUND	N/A	
BY-102	SOUND	N/A		EX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	N/A		EX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/88	JET	EX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-105	ASMD LKR	N/A		EX-115	ASMD LKR	08/79	AR	U-110	ASMD LKR	12/84	AR
BY-106	ASMD LKR	N/A		T-101	ASMD LKR	04/83	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	08/81	AR	U-112	ASMD LKR	08/79	AR
BY-108	ASMD LKR	08/88	JET	T-103	ASMD LKR	11/83	AR	U-113	SOUND	08/79	AR
BY-109	SOUND	N/A		T-104	SOUND	N/A		U-202	SOUND	08/79	SN
BY-110	SOUND	01/88	JET	T-105	SOUND	08/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	10/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	08/84	JET	T-107	ASMD LKR	N/A					
LEGEND: AR - Administratively interim stabilized JET - Self-well jet pumped to remove drainable interstitial liquid SN - Supernate pumped (flot-jet pumped) N/A - Not yet stabilized ASMD LKR - Assumed Leaker								Interim Stabilized Tanks 106 Not Yet Interim Stabilized 43 Total Single-Shell Tanks 149			

Footnotes: See next page

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

Footnotes:

Note: Further information on the data below can be found in WHC-SD-RE-TI-178, "Single-Shell Tank Stabilization Record," dated 1991. This document is currently being revised.

- (1) These dates indicate when the tanks were actually stabilized. In some cases, the official stabilization documents were issued at a later date.
- (2) The following six tanks do not meet current established supernatant and interstitial liquid stabilization criteria, but did meet the criteria in existence when they were declared interim stabilized :

B-104, 110, 111
T-102, 112
U-110

- (3) Interim Stabilization data are missing on four tanks. These tanks were Administratively Interim Stabilized.

B-201, T-102, 112, 201

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	L. Soler	A4-35
1	<u>EBASCO</u>	
	C. T. Anderson	G3-02
37	<u>Pacific Northwest Laboratories</u>	
	D. N. Anderson	K7-34
	W. J. Apley	K1-73
	D. B. Baird	K7-34
	R. M. Bean	P8-08
	D. W. Bennett	K5-17
	P. R. Bredt	P7-25
	S. A. Bryan	P7-25
	L. L. Burger	P7-25
	J. B. Colson	K5-10
	J. F. Fletcher	K7-97
	E. A. Flores	K3-08
	L. K. Holton Jr.	P7-43
	V. L. Hunter	K7-94
	P. R. Hrma	P8-37
	J. Janata	K2-12
	B. M. Johnson	K1-78
	E. O. Jones	P8-38
	D. E. Larson	G3-02
	S. G. McKinley	P7-22
	A. L. Mitchell	K7-94
	L. G. Morgan	P7-35
	B. E. Opitz	K6-81
	M. S. Peffers	K7-94
	W. G. Richmond	P7-41
	J. M. Robbins	P7-22
	R. D. Scheele	P7-25
	E. A. Schmieman	K6-14
	R. C. Schrotke	P7-18
	P. A. Scott	P7-19
	J. C. Spanner	K2-05
	J. L. Straalsund	K1-79
	K. L. Steinmaus	K6-84
	J. L. Swanson	P7-25
	K. M. Tominey	K7-97

Distribution - continued

R. S. Wegeng	K7-97
P. D. Whitney	K7-34
T. W. Wood	K6-47

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Westinghouse Hanford Company/Boeing Computer
Sciences Richland/Kaiser Engineers Hanford

A. T. Alstad	R1-49
W. T. Alumkal	R2-52
R. P. Anantatmula	R2-11
J. D. Anderson	N3-11
J. N. Appel	S4-58
I. J. Austin	T4-01
H. Babad	R2-78
J. K. Bajwa	H4-63
A. D. Bates	T3-01
P. K. Bhatia	S4-58
T. J. Bander	H0-33
L. L. Barry	R1-67
G. D. Bazinet	L4-71
D. L. Becker	H5-57
D. B. Bechtold	T6-09
R. V. Berg	R4-02
M. V. Berriochoa	B3-30
B. D. Biddle (6)	S5-14
K. R. Birney	H0-40
D. L. Bjorklund	S6-01
J. E. Bjorklund	R1-62
R. J. Blanchard	R1-17
D. C. Board	S1-57
K. D. Boomer	H5-49
G. L. Borsheim	R2-11
V. C. Boyles	R1-49
D. A. Bragg	R1-49
D. R. Bratzel	L5-31
W. R. Brooksher	L4-01
R. G. Brown	R2-14
S. K. Burden	S4-55
J. H. Bussett	L7-06
J. A. Caggiano Jr	H6-06
J. W. Carey	S5-07
R. J. Cash	R2-78
T. Chiao	L0-06
G. Christensen	H4-21
K. L. Chubb	L6-86
K. J. Cleveland	S3-10
G. J. Coleman	T4-07
J. C. Conner	H4-61
R. B. Conrad	H5-09
W. B. Cook	S5-20
F. M. Coony	H6-07
W. L. Cowley	H4-61
C. Crawford	R3-01

Distribution - continued

N. R. Croskrey	R1-30
G. M. Crummel	R1-51
J. M. Cruse	L5-63
D. S. Cunningham	S0-02
S. A. Davidson	K6-26
J. S. Davis	H4-64
S. J. Dechter	R2-54
C. DeFigh-Price	R2-31
T. A. Demitruk	H5-36
C. J. Denson	L4-95
D. R. Dickinson	L5-31
S. E. Dieterle	S2-20
L. F. Dougherty	H4-63
G. L. Dunford	R1-51
R. F. Eggers	S4-58
E. G. Elfner	S2-24
D. R. Ellingson	H5-37
F. W. Ellis	B4-52
D. B. Engelman	R2-18
S. D. Estey	R2-11
W. G. Farley	H4-62
J. E. Fasso Jr.	S3-10
K. O. Fein	H4-63
L. A. Fort	S4-57
K. D. Fowler	R2-11
S. B. Fowler	L0-24
G. L. Fox, Jr.	L5-01
C. R. Fox	S4-60
G. T. Frater	R1-51
J. R. Freeman-Pollard	H6-03
R. T. French	E6-61
J. C. Fulton	R2-31
K. A. Gasper	R2-08
G. J. Gauck	R1-51
C. J. Geier	R2-50
P. W. Gibbons	S4-58
R. L. Gilchrist	L5-63
D. A. Gilles	S2-14
S. D. Godfrey	R1-51
D. E. Good	S3-97
D. J. Green	H5-53
A. Greenberg	S2-66
P. R. Golberg	B4-08
P. Greenbaum	S5-20
W. T. Gretsinger	R4-01
J. M. Grigsby	H4-62
R. D. Gustavson	R1-51
K. D. Haggerty	T4-09
L. E. Hall	E6-25
V. W. Hall	R2-85
C. S. Haller	G6-04
D. W. Hamilton	T6-02
K. L. Hampsten	L4-71
B. M. Hanlon (30)	R1-80

Distribution - continued

J. M. Hanson	R2-85
H. D. Harmon	R2-52
M. S. Harrington	B4-53
J. P. Harris III	S4-55
G. A. Harvey	B4-52
F. J. Heard	H0-34
D. A. Healey	T4-07
J. M. Henderson	S4-55
D. W. Hendrickson	L5-55
E. G. Hess	R3-09
M. C. Higginson	A4-25
B. M. Hisaw	R1-62
M. J. Holm	R1-80
B. A. Holmberg	G4-02
J. D. Hopkins	R2-11
B. K. Horsager	B5-24
J. H. Huber	R1-49
J. L. Huckaby	R2-11
A. L. Huegel	E6-31
J. V. Hurley	R4-02
J. E. Irvin	R2-85
M. N. Islam	R3-08
M. T. Jansky	H6-26
G. D. Johnson	R2-78
J. L. Juette	G6-56
R. A. Karnesky	H0-39
J. R. Kasper	R2-54
D. L. Kelly	S5-20
R. A. Kirkbride	S4-58
C. A. Kuhlman	B3-30
N. W. Kirch	R2-11
D. B. Klos	S0-14
A. G. Krasopoulos	A5-55
M. Kummerer	H4-62
M. J. Kupfer	H5-49
E. C. Ladd	R1-19
D. R. Lance	S0-09
J. Lee	R2-36
D. L. Lenseigne	R2-75
J. M. Light	B4-08
D. C. Lini	H3-56
B. H. Lueck Jr.	R3-12
P. J. Mackey	B3-15
G. T. MacLean	S4-58
M. K. Mahaffey	L4-73
R. M. Marusich	H4-60
V. D. Maupin	N1-73
T. B. McCall	H0-33
J. D. McCormack	L5-31
K. S. McCullough	H4-70
M. A. McLaughlin	H5-09
J. P. Menard	R2-40
W. C. Miller	S4-55
N. J. Milliken	H4-62

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W. J. Millsap	H5-68
G. J. Miskho	R2-50
T. Moleff	R1-30
S. R. Morgan	R2-50
K. L. Morris	H5-09
J. P. Mullally	B5-24
L. D. Muhlestein	H4-64
R. L. Nelson (4)	R2-36
R. L. Newell	E6-31
D. J. Newland	R2-36
T. W. Oden	R2-18
P. C. Ohl	H1-30
P. A. Olsen	R3-12
D. L. Osowski	L6-10
D. B. Pabst	B2-35
A. L. Pajunen	H5-49
R. B. Pan	H5-53
I. G. Papp	R3-45
L. D. Parchen	B3-63
G. L. Parsons	S4-57
M. A. Payne	R2-50
L. T. Pedersen	X5-52
L. D. Pennington	T4-07
S. R. Pierce	R1-51
T. B. Powers	H4-65
R. K. P'Pool	T1-30
R. S. Popielarczyk	R1-30
R. K. Quinn	K1-73
T. E. Rainey	R4-02
R. E. Raymond (3)	R2-54
R. W. Reed	R1-51
I. E. Reep	R2-08
M. A. Rezvani	H5-55
D. Richardson	R2-31
S. K. Rifaey	S6-12
W. E. Ross	S5-07
J. A. Ryan	H5-55
P. Sathyanarayana	R2-12
C. C. Scaief	L7-06
F. A. Schmorde	B2-18
C. P. Schroeder	L7-06
K. V. Scott	H5-52
N. J. Scott-Proctor	r1-80
O. Serrano	T4-01
J. E. Shapley	H4-68
T. N. Shaw	S4-55
R. A. Shea	L8-16
E. M. Sheen	L7-03
E. J. Shen	S4-58
P. K. Shen	H0-39
D. J. Sherwood	R2-78
A. T. Shook	S2-01
K. P. Slape	S0-11
C. M. Smith	H6-30

Distribution - continued

S. G. Spencer	R1-30
S. M. Stahl	H4-61
E. G. Stephan	A3-74
B. E. Stapley	R4-02
R. R. Stickney	R4-02
D. G. Sutherland	L4-72
J. P. Summerhays	R2-88
L. M. Swanson	H5-49
J. F. Thompson	H5-68
J. D. Thomson	R1-30
S. R. Tifft	H6-26
J. A. Tilden (2)	L6-12
H. Toffer	H0-38
T. T. Tran	L7-04
A. L. Trego	B3-02
J. W. Tritz	B1-32
D. P. Trott	B1-32
D. A. Turner	R2-78
C. J. Udell	L6-12
R. E. Van der Cook	S6-17
R. J. Van Vleet	H4-62
D. T. Vladimiroff	G7-01
J. A. Voogd	R4-03
O. S. Wang	R2-78
D. L. Wegener	R1-62
R. K. Welty	R1-80
G. T. Wells	H6-26
R. Whitman	H5-49
J. H. Wicks	T4-07
D. D. Wiggins	R1-49
M. E. Witherspoon	E6-61
D. D. Wodrich	R2-85
R. D. Wojtasek	H6-27
W. R. Wrzesinski	R3-74
P. A. Young	R2-14
B. D. Zimmerman	L0-06
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