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Flammable Gas Tank Waste Level Reconciliation Tank 241-SX-102

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Abstract: This document provides verification/reconciliation of unexplained waste level increases for tank 241-SX-102 as reported in *Waste Storage Tank Status and Leak Detection Criteria, Vol. 1 and 2, WHC-SD-WM-TI-356* also known as the Welty Report. Waste level increases are studied during the period from 1973 to 1980. Historical records were used to provide the verification/reconciliation.

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LETTER REPORT

**FLAMMABLE GAS TANK
WASTE LEVEL RECONCILIATION
TANK 241-SX-102**

WORK ORDER E40697

Prepared for

Lockheed Martin Hanford Corporation

June 1997

Prepared by

**Fluor Daniel Northwest
Richland, Washington**

LETTER REPORT

FLAMMABLE GAS TANK WASTE LEVEL RECONCILIATION TANK 241-SX-102

WORK ORDER E40697

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LETTER REPORT
FLAMMABLE GAS TANK
WASTE LEVEL RECONCILIATION
TANK 241-SX-102

INTRODUCTION

Fluor Daniel Northwest (FDNW) was authorized to address flammable gas issues by reconciling the unexplained surface level increases in Tank 241-S-111 (S-111, typical). The trapped gas evaluation document (ref 1) states that Tank SX-102 exceeds the 25% of the lower flammable limit (LFL) criterion (ref 2), based on a surface level rise evaluation.

The Waste Storage Tank Status and Leak Detection Criteria document, commonly referred to as the "Welly Report" is the basis for this letter report (ref. 3). The Welly Report is also a part of the trapped gas evaluation document criteria. The Welly Report contains various tank information, including: physical information, status, levels, and dry wells, see Appendix A.

The unexplained waste level rises were attributed to the production and retention of gas in the column of waste corresponding to the unaccounted for surface level rise. From 1973 through 1980, the Welly Report tracked Tank SX-102 transfers and reported a net cumulative change of 19.95 in. This surface level increase is from an unknown source or is unaccounted for. Duke Engineering and Services Hanford (DESH) and Lockheed Martin Hanford Corporation (LMHC) are interested in determining the validity of the unexplained surface level changes reported in the Welly Report based upon other corroborative sources of data.

The purpose of this letter report is to assemble detailed surface level and waste addition data from daily tank records, logbooks, and other corroborative data that indicate surface levels, and to reconcile the cumulative unaccounted for surface level changes as shown in the Welly Report from 1973 through 1980.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Tank SX-102 initially received waste from REDOX in 1954, and after January 1975, received processed waste (slurry) from the 242-S Evaporator/Crystallizer and transferred supernate waste to Tanks S-102 and SY-102.

The Welty Report shows a cumulative change of 19.95 in. from June 1973 through December 1980. During this period, there were unexplained increases that totaled 27.40 in. and decreases that totaled 7.6 in. in the Welty Report. FDNW focused primarily on the larger increases, and after reviewing daily records for the same period, identified an unexplained increase of 49.35 in., and a decrease of 15.60 in., for a net unexplained increases of 33.75 in. (see Table 1).

From the FDNW review and comparisons of the Welty Report versus other daily records for Tank SX-102, FDNW determined that the majority of the time, the Welty Report is consistent with daily records. There are slight differences between the Welty Report and the daily tank level records when comparing the larger (> 1 in.) unexplained increases. These differences, could be caused by the method for establish the baseline, by the method used to round off numbers, or by the time that the increase or decrease is identified.

The Welty Report ignored most of the surface level increases (+ 9.55 in.) when they were identified in Occurrence Reports, 77-07 (+7.85 in.) and 77-37 (+4.20 in.), but included a decrease (- 1.9 in.) identified in Occurrence Report 77-71. In 1980, the Welty Report attributed more level increases to flushing activities than the daily records did. The 9.55-in. increase identified in the two occurrence reports should be included as part of the Welty Report cumulative change value, thereby, increasing the total cumulative change by 148% to 29.50 in.

Because the flammable/trapped gas issue is linked to the unexplained increase in the surface level (ref 1 and 2), FDNW recommends that all occurrence reports concerning tank waste increases or decreases from 1970 through 1980, be reevaluated for acceptability of the evaluation as to the cause of the occurrence. This review should include all tank farms to determine if other suspect

evaluations have been identified for waste level increases. FDNW also recommends that the Welty Report be revised to include the unexplained increases identified by the occurrence reports and that levels increases following transfers and increases attributed to flushing be reviewed.

APPROACH/EVALUATION

CLARIFICATION OF SCOPE PARAMETERS

The limits of this report were defined based on the Welty Report that exhibit data from June 1973 to July 1987. Because level data is readily available on PC-SACS, a computer-based system with data from 1981 to the present, the scope was limited to 1973 through 1980. The scope was further limited by any complete emptying of the tank between 1973 through 1980. If it was determined that the tank was emptied, the limit would be from the emptying through 1980.

FDNW evaluated the base line as established by the Welty Report and prepared a plot of that data for Tank SX-102 (see Appendix A). The top portion of this plot shows the increases and decreases of the tank waste level (in inches) versus time as stated in the Welty Report data sheets. The bottom portion of the plot shows the unexplained cumulative changes, time versus inches. As seen in the cumulative change plot, some changes are slow increases and others are rapid changes.

FDNW evaluated Tank S-111 to determine if the tank had been completely emptied during 1973 to 1980. FDNW reviewed the plot of the waste and level history (shown in Appendix B) taken from the historical tank content estimate reports (ref 4, and 5). From this graph, it was determined that there was no evidence of an empty tank during that time. FDNW observed that the plot was generated from quarterly data and felt that monthly level information might reveal additional tank activity not shown by the three-month period.

A plot (shown in Appendix C) of the tank level was created based on the waste status summary reports (ref 7 through 12). From this level plot, it was determined that Tank S-111 was not emptied

during the eight years of concern. Waste summary reports were issued quarterly basis from 1973 through September 1976, and monthly thereafter. Therefore, quarterly data were used through September 1976 and monthly reports thereafter.

HISTORICAL INFORMATION

FDNW identified that Tank SX-102 initially received waste from REDOX in 1954. Between 1954 and February 1973, Tank SX-102 was actively transferring and receiving waste from other SX tanks and other tank farms (ref 5). In 1974 and January 1975, Tank SX-102 was actively receiving waste from Tanks S-106 and SX-106. Both 106 tanks were receiving 242-S Evaporator bottoms during this time (ref 5 and 6). Beginning in February 1975, Tank SX-102 started receiving processed waste (slurry) from the 242-S Evaporator/Crystallizer (242-S Evaporator). These slurry transfers continued through August 1975. During this same period, Tank SX-102 was pumping supernate to Tank S-102. Tank S-102 was the initial feed tank for the 242-S Evaporator, but the feed was changed to Tank SY-102 in the late 1970s.

The Welty Report identified some of the occurrence reports that were issued regarding surface level changes in Tank SX-102 from 1973 to 1980, specifically, reports 77-07, 77-37, and 77-71 (see Appendix F). FDNW obtained copies of these reports and also retrieved two additional reports not listed in the Welty Report, Occurrence Reports 74-151 and 75-116 issued in 1974 and 1975, respectively. These two reports address surface level decreases not referenced in the Welty Report. The Welty Report identified Operating Limit Deviation Report (OLDR) 80-12 that possibly addressed the solids movement or a level increase in Tank SX-102. An OLDR, similar to an occurrence report, was issued based on different limit criteria than the occurrence report. FDNW is trying to locate copies of OLDRs.

DATA EVALUATION

FDNW reviewed historic tank farm daily record sheets and tabulated logbook data (ref 13, 14 and 15). From these records, yearly plots of the waste surface level (see Appendix D) and data files

were generated (see Appendix E). The plots and data were generated on a monthly basis when the tank was inactive, and on a daily basis when the tank was actively receiving or transferring waste. These plots and data were then compared against the Welty Report plot and data to reconcile the unexplained increases identified in the Welty Report. To reconcile the surface level increases, FDNW looked primarily at the larger (> 1 in.) unexplained increases or groups of increases.

1975 Data

According to the Welty Report, the first large unexplained surface level increase in Tank SX-102 was 5.65 in. that occurred between August 2, 1975 and September 12, 1975. The daily records showed a waste level increase from 274.6 in. on August 2, 1975, to 280.4 in. on September 12, 1975, for a 5.80-in. increase, which is consistent with the Welty Report level increase (see Table 1).

1976 Data

A significant unexplained slow rise in Tank SX-102 waste level occurred in two steps between April 25, 1976, and November 21, 1976. From the Welty Report, the level gained 0.85 in. from April through July, and 1.65 in. from August through November for a total increase of 2.5 in. During a seven-month period prior to and during these level increases, waste was transferred from Tank SX-110 into Tank SX-102 and from Tank SX-102 into Tank S-102. Tank SX-110 contained waste from REDOX from the third quarter of 1959 until the third quarter of 1975. Tank SX-110 also contained sixteen, 3-in. diameter by 54 in. long, plastic bottles or containers that contained 113 g of natural uranium, 63 g of depleted uranium, 6 g of enriched uranium, and 204 g plutonium total volume (ref 5).

In August 1974, approximately 185 in. of waste were pumped from Tank SX-110, to Tank S-110 leaving approximately 165 in. of waste in Tank SX-110. From August 1974 until September 1975, the waste level in Tank SX-110 dropped from 165 in. to 150 in. with no transfers noted in the records. In September 1975, Operations started pumping waste from Tank SX-110 to Tank SX-102 and continued pumping on and off through August 1976. During this time, Tank SX-110 received

waste transferred from Tanks B-103, BX-103 and BX-105. In 1976, Tank SX-110 was established as an assumed leaker (ref 5).

1977 Data

Occurrence Reports 77-07 and 77-37, issued by tank farm Operations, identified gradual liquid level increases in Tank SX-102. Report 77-07 identified that an unexplained increase of 7.85 in. (exceeding the 3-in. action criteria) that occurred between April 1976 and January 11 or 12, 1977, (see Appendix F, pages F-11 through F-13). Report 77-37 also identified a gradual surface level increase of 4.20 in. (exceeded the 3-in. action criteria) for the period from February 15, 1977, through March 13, 1977, (see Appendix F, pages F-14 through F-16). These occurrence reports present a 12.05-in. cumulative change from April 1976 through March 18, 1977, (page F-16) while during the same period, the Welty Report shows only the 2.5 in. as discussed in the previous paragraph. It appears that a cumulative change of 9.55 in. has not been shown in the Welty Report and this omission may be based on the occurrence reports and their evaluation of the increase. During this period, a 1.9-in. decrease occurred on May 14, 1977. The Welty Report and Occurrence Report 77-71 both identified this decrease. The occurrence reports are discussed further in the Uncertainties and Recommendation for Further Study section.

The Welty Report identified a large surface level increase of 6.30 in. between June 14, 1977, and August 23, 1977. From the daily records, there were no transfer activities and Operations personnel were actively seeking to get an accurate level reading and were flushing the FIC gauge to ensure correct surface level readings. Transfer activity from November 21, 1976, to June 1977, proceeded as follows:

- Waste transferred to Tank S-102 in late November 1976.
- Tank SX-102 received slurry from the 242-S Evaporator between December 9 and 16, 1976.
- Supernate transferred to Tank S-102 from December 20 through 23, 1976.
- Tank SX-102 received more slurry in mid-February 1977.

- Waste pumped to Tank SY-102 between April 9 and 13, 1977.
- Waste transferred from Tank SX-103 on April 14, 1977, and from Tank S-103 on April 28 and 29, 1977.
- Tank SX-102 received slurry from the 242-S Evaporator with transfers to Tank SY-102 throughout May to June 15, 1977.

After receiving a slurry transfer from the 242-S Evaporator on June 14, 1977, no other waste was received or removed from Tank SX-102 until August 24, 1977. The net change in the measured waste depth increased from 354.8 in. to 360.9 in., or a 6.1-in. increase.

After a small transfer to Tank SY-102 on August 25, 1977, a baseline was established at 354.2 in. From August 25, 1977, through October 31, 1977, the waste level increased to 356.70 in. for an unexplained increase of 2.5 in. (Welly Report +2.5 in.) Between November 1, 1977, and January 9, 1978, the surface level fluctuated slightly with a small increase from pressure-testing water.

1978 Data

After a waste transfer to Tank SY-102 on January 10 through 12, 1978, a baseline was reestablished at 295.0 in. on January 17, 1978. From January to December 1978, the level fluctuated reaching a high of 297.8 in. (+2.8 in.) on March 5, 1978, down to 296.1 in. (-1.7 in.) in April 1978, up to 297.7 in. (+1.6 in.) on May 21, 1978, and back down to 295.0 in. (-2.7 in.) with some oscillation in August, September, and October. In November 1978, the level again increased to 296.9 in. on November 9, 1978, and then decreased to 295.0 in. by the end of the month. The Welly Report showed similar activity but at different times (see Table 1).

1979 Data

In December 1978 and January 1979, the level was slightly below the 295.0-in. baseline. In February, March, and April 1979, the waste level fluctuated around 295.0 in. In May 1979, the level started to slowly increase to 296.2 in. (+1.2 in.) by the end of August 1979, and then decreased to

295.8 in. (-0.4 in.) on September 14, 1979. The Welty Report shows a 0.80-in. increase between April 28, 1979, (1978 shown in error in Welty Report.) and September 14, 1979.

Waste was transferred from Tank SX-104 into Tank SX-102 from September 14 through 19, 1979, with a baseline established at 319.1 in. on September 21, 1979. The surface level increased through October and on November 9, 1979, reached 320.9 in. (+1.8 in.). Recirculating activities November 11 through 16, 1979, caused the level to drop to 319 in. for a short period, but then the level continued to increase to 321.6 in. (+2.6 in.) on December 16, 1979. By January 15, 1980, the surface level had decreased to 319.6 in. (-2.0 in.). The Welty Report shows a 0.5-in. increase from September 24, 1979, through January 15, 1980.

1980 Data

On January 16 and 17, 1980, waste was transferred to Tank SY-102 and a baseline was established at 309.60 in. By February 11, 1980, the level in Tank SX-102 had increased to 312.10 in. (+2.5 in.). The waste level continued to oscillate to 313.3 in. (+1.2 in.) on April 5 and 21, 1979; to 311.9 in. (-1.4 in.) on April 29, 1980; and to 312.85 in. (+0.95) on May 20, 1980. The Welty Report shows a 0.35-in. increase between March 9, 1980, and May 19, 1980. Tank SX-102 received flush water and ash on May 21, 1980, with levels jumping to 313.35 in. Following the flush, the surface level continued to increase to 314.1 in. on June 1, 1980, an increase of 0.75 in.

The level was constant until June 10, 1980, when the surface level jumped to 316 in. This level continued until June 20, 1980, when problems with the FIC were identified in the daily reports. OLDR 80-12 was identified in the Welty Report as issued during this period but a copy of the report has not been found, therefore, the contents of the report are unknown. Following a flush of the FIC, the level reading dropped to 314 in. The waste level increased to 315.2 in. on July 25, 1980, an increase of 1.1 in.

Waste from Tank SX-102 was pumped to Tank SY-102, starting July 26, 1980, and continued off and on through August 15, 1980. This pumpdown of 113.8 in. (approximately 313,000 gallons) removed almost all the supernate from the tank and reduced the total depth of waste in the tank to 201.4 in.

The final unexplained surface level increase occurred between August 15, 1980, and October 10, 1980, when the waste level gradually increased to 204.2 in., a 2.8-in. increase. From October 10, 1980, through November 7 1980, the level increased to 205.9 in. (+1.7 in.) when the FIC was flushed and the level dropped to 204.2 in. (-1.7 in.). The Welty Report shows an increase of 3.2 in. between August 28, 1980, and November 7, 1980, followed by a 1.7-in. drop (205.9 in. to 204.2 in.) after flushing the FIC gauge, on November 8, 1980. From November 8 through the end of December 1980, the level fluctuated but remain fairly consistent and no significant increases were noted.

Data Conclusion

During the eight-year evaluation of Tank SX-102, the Welty Report showed a total decrease of 8.5 in. and an increase of 28.45 in., for a net cumulative change increase of 19.95 in. FDNW addressed the major increases and decreases according to the Welty Report (totaling +27.4 in. and -7.60 in., respectively) and compared these values against the daily reports (see Table 1). Starting with the 5.65-in. increase on September 12, 1975, the comparison of these major values shows minimum differences. The differences possibly were caused by the establishment of a baseline value or the rounding off of surface level numbers.

However, there are periods of major differences. On November 21, 1976, and March 18, 1977, the daily records show a 7.85-in. and 4.20-in., respectively, increase that is partiality included in the Welty Report values. This 12.05-in. increase was identified in Occurrence Reports 77-07 and 77-37 while the Welty Report only identified a 2.5-in. increase.

The next groups of increases occurred between January 1978 and April 1979. According to the daily records, the surface level fluctuated with increases in March, May, and November 1978, and decreases in April, August, and November 1978. The Welty Report showed increases in May and November 1978, and decreases in May and June 1978 and April 1979. In both the daily records and the Welty Report the level started and ended with a surface level of 295.0 in.

Similarly, in 1979 and 1980, daily records indicate oscillation with increases and decreases occurring at different frequencies. In June, July, and August 1980, the Welty Report indicates that flushes and information in OLDR 80-12 accounted for level increases. FDNW was unable to obtain the OLDR and determined that the minor FIC flushes were too insufficient to increase the level as indicated by the Welty Report.

Totaling the daily record increases and decreases, the values are 49.35 in. and 15.6 in., respectively, for a net cumulative change increase of 33.75 in. This cumulative change value (33.75 in.) from daily records compares to the Welty Report cumulative change value (19.95 in.) for a difference of 13.80 in., or a 169% increase between the Welty Report and daily records. A large part of the 13.80-in. increase is precipitated by the 9.55-in. increase identified in Occurrence Reports 77-07 and 77-37. If the 9.55-in. increase was added to the Welty Report, the net cumulative change value would increase 48% from (19.95 in. to 29.50 in.), thereby, increasing the possibility of additional flammable gas buildup within Tank SX-102.

TABLE 1
Daily Records versus Welty Report

Date	Daily Records (in.)	Welty Report (in.)	Comments
9/12/75	+5.80	+5.65	
11/21/76	+7.85	+0.85, 1.65	Occurrence Report 77-07
3/18/77	+4.20	0	Occurrence Reports 77-37
5/14/77	-1.9	-1.9	Unexplained drop following transfer from Tank S-103, Occurrence Report 77-71
8/23/77	+6.1	+6.3	
10/31/77	+2.5	+2.5	
3/5/78	+2.8		
4/2/78	-1.7		
5/21/78	+1.6	+2.7	
5/22/78		-1.2	
6/21/78		-0.9	
8/25/78	-2.7		
11/9/78	+1.9	+1.3	
11/27/78	-1.9		
4/28/79		-1.9	
8/29/79	+1.2		
9/14/79	-0.4	+0.8	
11/9/79	+1.8		
11/16/79	-1.9		
12/16/79	+2.6		
1/15/80	-2.0	+0.50	
2/6/80		+1.6	

TABLE 1 (cont.)
Daily Records versus Welty Report

Date	Daily Records (in.)	Welty Report (in.)	Comments
2/11/80	+2.5		
4/5/80	+1.2		
4/28/80	-1.4		
5/20/80	+0.95	+0.35	
6/1/80	+0.75		OLDR 80-12
7/25/80	+1.1		
10/10/80	+2.8		
11/07/80	+1.7	+3.2	
11/08/80	-1.7	-1.7	
Total Net	+49.35 /-15.60 +33.75 in.	+27.40 /-7.60 +19.80 in.	Note: Welty Report totals are 28.45-in. increase, 8.5-in. decrease, Net 19.95-in. increase.

UNCERTAINTIES AND RECOMMENDATIONS FOR FURTHER STUDY

There are questions and concerns regarding some of the results discussed in the data reviewed. A primary concern is the evaluation of Occurrence Reports 77-07 and 77-37. These reports explain that, "The surface level increase is evaluated as a build-up of crust and growth characteristic of the salt cake. The concentrated slurry on standing and cooling will start dropping solids out which are less dense than the solution and float to the surface causing the liquid level increase." During telephone discussions, Dan Reynolds (LMHC) and Dan Herting (Numatec Hanford Corporation) both expressed doubt about this evaluation and with today's waste knowledge, it is felt that the increase was a factor of gas generation. The flammable gas issue has been a concern for a number of years and the probability of gas generation and trapped gas in Tank SX-102 is not that unlikely.

The concern regarding questionable evaluation of identified unexplained increases in tank levels extends to other tanks. FDNW recommends that further studies should look at all tanks in the S and SX Tank Farms, and possibly all tank farms, to determine if the cumulative change value identified in the Welty Report for other tanks may also appear low because of the occurrence reports evaluation.

This letter report primarily looked at daily records for the specific tank being evaluated and briefly looked at daily records for the 242-S Evaporator/Crystallizer. With more review, these records could provide more detail on Evaporator operations and on the amount and types of waste pumped into the tanks. The records also identify the amount of flush water used to clean the lines after a transfer. These records could lead to a better understanding of the waste transferred to the tanks and possibly resolve some of the unknown waste additions within the tank.

Records exist on miscellaneous catch tanks and water additions to the tanks. These records were not reviewed during the FDNW evaluation because these additions are normally fairly small and insignificant; however, added together, the additions may resolve some of the concerns regarding the cumulative level increase.

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APPENDIX A

WELTY REPORT PLOT AND DATA

PLOT GENERATED BY: R. P. Schwehr
B. D. Andres

241-SX-102 WELTY REPORT DATA
1973 TO 1980

SD-WM-TI-356
41-02-01

TANK: 102-SX

<p>11</p> <p>02</p> <p>14</p> <p>4</p> <p>08</p> <p>07</p> <p>05</p> <p>RISER AND DRY-WELL LOCATIONS</p>	<p>LOCATION: 241-SX COMPUTER CODE: 41-02</p> <p><u>TANK DESCRIPTION:</u> Type: Single Shell Diameter: 75 ft Height: 30 ft 9 in. Capacity, gal: 1,000,000 Bottom, Type: Dish Volume (gal) = : (in. 12) 2,750 + 18,200 Airlift Circ: None Coils: None Exhauster: Sludge cooler Construction Date: 1953-54 In-Service Date: 05-54 Out-Service Date:</p> <p><u>LEAK-DETECTION SYSTEM:</u> Liquid Level Manual Tape: No FIC: Yes (R-4) Intrusion mode LOW: Yes (R-14) 41-02-61</p> <p>Annulus System Exhaust Radiation Detector: N/A Leak Detection (Conductivity Probes): N/A</p> <p>Leak-Detection Pit Liquid Level: N/A Specific Gravity: N/A Radiation Detector: N/A External Dry Wells: Yes (5) Laterals: None</p>
<p style="text-align: center;">TANK STATUS</p> <p>CATEGORIZED: Sound/Deactivated (08-15-80) ISOLATION: Partially (06-85) STABILIZATION: PROJECTED USAGE: Jet salt-well pumping program SALT-WELL STATUS/HISTORY: P-10 (10-76) production only Installation: Pumping Initiated: Completion Date: MEAS. LEVEL (in.): 202.20 (FIC) (see photograph comments) SOLIDS LEVEL (in.): 203.00 = 543,000 gal (04-28-82), salt cake and sludge SUPERNATANT (gal): 0 (RHO-RE-SR-14, 06-86) DRAINABLE INTERSTITIAL (gal): 183,000 TOTAL JET PUMPED (gal): 0 TOTAL PUMPABLE REMAINING: 161,000 gal PHOTOGRAPHS: 83473 (09-14-78), 91539 (06-05-80), 91717 (06-24-80), 8401845 (03-22-84) 03-22-84 photographs reveal an irregular surface of solids with pools of liquid visible. The manual tape plummet is contacting solids and the FIC plummet appears to have penetrated the slurry forming a small hole of liquid.</p>	

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SD-WM-TI-356
41-02-02TANK 102-SX
Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
06/13/73	336.95				
07/19/73	336.90		-0.05	-0.05	Stable
07/21/73	342.50				FIC calibration
06/26/74	342.40		-0.10	-0.15	Stable
06/29/74	353.20			-0.15	Transfer
07/17/74	353.60			-0.15	Line flush
09/19/74	354.00		+0.40	+0.25	Slow increase
09/20/74	354.45			+0.25	Flush and recalibrate FIC
09/30/74	137.55			+0.25	Transfer
10/19/74	137.90		+0.35	+0.60	Slow increase
10/21/74	162.10			+0.60	Transfer
11/08/74	162.10			+0.60	Stable
11/11/74	211.20			+0.60	Transfer
11/27/84	211.20			+0.60	Stable
12/22/74	227.40			+0.60	Transfer--active since 11/27/74
01/06/75	227.20		-0.20	+0.40	Stable
01/13/75	179.50			+0.40	Transfer
01/15/75	179.10		-0.40	0.00	Unexplained decreases
01/30/75	179.10			0.00	Stable
02/02/75	214.80			0.00	Transfer
02/18/75	215.00		+0.20	+0.20	Stable
08/02/75	274.75			+0.20	Transfer and received slurry, active since 2/18/75
09/12/75	280.40		+5.65	+5.85	Steady increase
01/21/76	177.85			+5.85	Transfers, active since 8/12/75
03/26/76	177.70		-0.15	+5.70	Stable
04/25/76	306.00			+5.70	Transfers, active since 3/26/76
07/21/76	306.85		+0.85	+6.55	Slow increase
08/18/76	342.75			+6.55	Transfers
11/21/76	344.40		+1.65	+8.20	Slow increase
12/23/76	313.50			+8.20	Transfer and received slurry
02/14/77	319.00			+8.20	Steady increase
02/16/77	354.60			+8.20	OR No. 77-07 written
04/08/77	360.15			+8.20	Received slurry
05/13/77	333.10			+8.20	Steady increase. OR No. 77-37 written
					Transfers and slurry

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SD-WM-TI-356
41-02-03TANK 102-SX
Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
05/14/77	331.20		-1.90	+6.30	Unexplained drop OR No. 77-71 written
06/14/77	354.60			+6.30	Transfers and slurry
08/23/77	360.90		+6.30	+12.60	Steady increase associated with slurry growth
08/30/77		354.20		+12.60	Transfer
10/31/77	356.70		+2.50	+15.10	Slow increase
11/01/77	357.00	354.50		+15.10	SX A and B pit work
01/09/78	357.10		+0.10	+15.20	Readings vary from 356.30 to 357.60 in.
01/17/78		295.00		+15.20	Transfer
05/21/78	297.70		+2.70	+17.90	Slow erratic increase
05/22/78	296.50		-1.20	+16.70	Unexplained drop
06/21/78	295.60		-0.90	+15.80	FTC QA'd
11/09/78	296.90		+1.30	+17.10	Erratic increase
04/28/78	295.00		-1.90	+15.20	Readings fluctuate 294.25 to 295.95 in.
09/14/79	295.80		+0.80	+16.00	Slow erratic increase
09/24/79		319.10		+16.00	Transfer
01/15/80	319.60		+0.50	+16.50	Erratic increase. Readings vary from 318.40 to 321.90 in.
01/23/80		309.60		+16.50	Transfer
02/06/80	311.20		+1.60	+18.10	Associated with flushes
03/09/80	312.50			+18.10	Received flushes
05/19/80	312.85		+0.35	+18.45	Erratic readings
06/02/80		312.40		+18.45	Flush diversion box and leak check
06/13/80		316.00		+18.45	Solids movement (OLDR 80-12)
07/03/80		313.70		+18.45	Solids movement (OLDR 80-12)
07/23/80		315.20		+18.45	Received backflush
08/28/80		202.70		+18.45	Active
11/07/80	205.90		+3.20	+21.65	Steady increase
11/08/80	204.20		-1.70	+19.95	FIC flush
10/28/81	204.35		+0.15	+20.10	Readings fluctuate 203.70 to 205.10 in.
10/30/81	203.20		-1.15	+18.95	Unexplained decrease
07/31/82	203.65		+0.45	+19.40	Erratic increase
07/31/83	203.40		-0.25	+19.15	(Stable) fluctuations
05/21/84	203.20		-0.20	+18.95	Stable
05/22/84		205.00			Intrusion mode

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SD-WM-TI-356
41-02-04

TANK 102-SX

Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
08/13/84	203.10			+18.95	Measurement level
02/12/85	202.20			+18.95	Measurement level
07/01/86					Intrusion mode
07/01/87					Intrusion mode

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SD-WM-TI-356
41-02-07

TANK 102-SX

Photographs on File.

Order No.	Number of views	Photo date	Synopsis		Surface-level measurement		Plummet photo No.	
			yes	no	FIC (in.)	MT (in.)	FIC	MT
714352	36	71/09/22		X				
67437	30	75/02/16		X	215.00			
752598	29	75/04/22		X	240.00			
757446	29	75/10/13		X	292.80			
757594	18	75/10/16		X	288.00			
757769	24	75/10/22		X	297.80			
760989	26	76/01/28		X	177.75			
7610486	13	76/11/15		X	344.55			
770918	13	77/01/27		X	318.00			
7801331	30	78/02/15		X	353.50			
7802998	30	78/03/21		X	296.70			
83473	29	78/09/14		X	295.00			
91539	30	80/06/05	X		314.20		13	
91717	19	80/06/24	X		313.90		1	
8401845	17	84/03/22		X	212.75		1,2,3	

SD-WM-TI-356
41-02-08

SUMMARY

Tank 241-SX-102 is categorized Sound/Deactivated and has been pumped to a minimum supernatant heel. Future plans include installation of a jet pump salt-well system for the removal of as much of the remaining interstitial liquid as is permitted by the existing technology. The tank is connected to the 241-SX sludge cooler facility as temperatures in the bulk waste range to above 200 °F.

Operating Limit Deviation Report 80-12 was issued in June 1980 because of an apparent liquid-level decrease. The liquid-level decrease, as well as a 06/09/80 liquid-level increase was attributed to movement of surface solids. The FIC was placed in the intrusion mode in May 1984.

Dry-well readings have remained stable during the review period and are now the only means of leak detection:

ACTION CRITERIA

1. Dry-well increase: see p. 41-00-05.
2. Liquid-level limits: see p. 41-00-06.

Rev. 0

APPENDIX B

WASTE AND LEVEL HISTORY

1954-1996

APPENDIX C

WASTE LEVEL HISTORY
QUARTERLY/MONTHLY
1973-1980

PLOT GENERATED BY: R. P. Schwehr
B. D. Andres

241-SX-102 WASTE LEVEL HISTORY
QUARTERLY/MONTHLY
1973 TO 1980

Quarterly/Monthly Waste Volume and Level Summary
 241-SX-102
 1973 to 1980

Tank Number	Date	Liquid Volume (kgal)	Sludge Volume (includes saltcake, kgal)	Total Waste Volume (kgal)	Total Waste Level (inches)	Comments	Book Number	Page Number
SX102	3/31/73	853	59	912	337	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 A	8
SX102	6/30/73	853	59	912	337	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 B	8
SX102	9/30/73	868	59	927	342	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 C	8
SX102	12/31/73	868	59	927	342	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 D	8
SX102	3/31/74	868	59	927	342	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-CD-133A	8
SX102	6/30/74	897	59	956	353	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste. 30,000 gal from 106-SX.	ARH-CD-133B	8
SX102	9/30/74	304	59	363	137	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste. 598,000 gal to 102-S.	ARH-CD-133C	8
SX102	12/31/74	492	117	609	227	Evaporator Bottoms Waste. 242-S bottoms and recycle. There is uncertainty in the liquid-to-solid ratio.	ARH-CD-133D	8
SX102	3/31/75	828	150	978	361	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 307,000 gal from 106-SX.	ARH-CD-336A	8
SX102	6/30/75	135	612	747	277	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio.	ARH-CD-336B	8
SX102	9/30/75	355	612	967	357	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 221 kgal from 110-SX.	ARH-CD-336C	8
SX102	12/31/75	77	499	576	215	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 1,215 kgal from 110-SX.	ARH-CD-336D	8
SX102	3/31/76	165	475	640	238	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 778 kgal from 110 SX.	ARH-CD-702A	8
SX102	6/30/76	352	475	827	306	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 442 kgal from 110 SX.	ARH-CD-702B	8
SX102	9/30/76	456	475	931	344	ACTIVE-EVAPORATOR FEED (CONCENTRATE)	ARH-CD-702 I	12, 33
SX102	10/1/76	456	475	931	344	ACTIVE-EVAPORATOR FEED (DILUTE)	ARH-CD-822 OCT	13, 33
SX102	11/1/76	-75	475	400	151	ACTIVE-EVAPORATOR FEED (CONCENTRATE) Not charted	ARH-CD-822 NOV	13, 33
SX102	12/1/76	360	491	851	315	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 DEC	15, 35
SX102	1/1/77	365	497	862	319	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 JAN	15, 35
SX102	2/1/77	365	497	862	319	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 FEB	15, 35
SX102	3/1/77	478	497	975	360	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 MAR	15, 35
SX102	4/1/77	332	497	829	307	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 APR	15, 35
SX102	5/1/77	393	497	890	329	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 MAY	15, 36
SX102	6/1/77	470	497	967	357	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 JUN 77	15, 36

Quarterly/Monthly Waste Volume and Level Summary
 241-SX-102
 1973 to 1980

Tank Number	Date	Liquid Volume (kgal)	Sludge Volume (includes saltcake, kgal)	Total Waste Volume (kgal)	Total Waste Level (inches)	Comments	Book Number	Page Number
SX102	7/1/77	470	497	967	357	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 JUL 77	15, 36
SX102	8/1/77	464	497	961	355	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 AUG 77	15, 36
SX102	9/1/77	464	497	961	355	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 SEP 77	15, 36
SX102	10/1/77	470	497	967	357	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 OCT 77	16, 38
SX102	11/1/77	470	497	967	357	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 NOV 77	16, 38
SX102	12/1/77	470	497	967	357	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 DEC 77	16, 38
SX102	1/1/78	302	497	799	296	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 JAN 78	16, 38
SX102	2/1/78	302	497	799	296	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 FEB 78	16, 38
SX102	3/1/78	302	497	799	296	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAR 78	16, 38
SX102	4/1/78	305	497	802	297	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 APR 78	16, 38
SX102	5/1/78	305	497	802	297	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAY 78	16, 38
SX102	6/1/78	302	497	799	296	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUN 78	16, 39
SX102	7/1/78	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUL 78	21
SX102	8/1/78	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 AUG 78	21
SX102	9/1/78	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 SEP 78	21
SX102	10/1/78	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 OCT 78	21
SX102	11/1/78	302	497	799	296	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 NOV 78	21
SX102	12/1/78	297	497	794	294	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 DEC 78	21
SX102	1/1/79	299	497	796	295	PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JAN 79	21
SX102	2/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 FEB 79	21
SX102	3/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAR 79	21
SX102	4/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 APR 79	21
SX102	5/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAY 79	21
SX102	6/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUN 79	21
SX102	7/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUL 79	21
SX102	8/1/79	299	497	796	295	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 AUG 79	21
SX102	9/1/79	368	497	865	320	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 SEP 79	21
SX102	10/1/79	368	497	865	320	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 OCT 79	21
SX102	11/1/79	371	497	868	321	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 NOV 79	21
SX102	12/1/79	371	497	868	321	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 DEC 79	21

Quarterly/Monthly Waste Volume and Level Summary
 241-SX-102
 1973 to 1980

Tank Number	Date	Liquid Volume (kgal)	Sludge Volume (includes saltcake, kgal)	Total Waste Volume (kgal)	Total Waste Level (inches)	Comments	Book Number	Page Number
SX102	1/1/80	341	497	838	310	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JAN 80	21
SX102	2/1/80	346	497	843	312	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 FEB 80	21
SX102	3/1/80	349	497	846	313	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAR 80	21
SX102	4/1/80	346	497	843	312	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 APR 80	21
SX102	5/1/80	352	497	849	314	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAY 80	21
SX102	6/1/80	351	497	848	314	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUN 80	21
SX102	7/1/80	222	497	719	267	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUL 80	21
SX102	8/1/80	20	518	538	201	Inactive-Double Shell Slurry Feed	RHO-CD-14 AUG 80	21
SX102	9/1/80	20	518	538	201	Inactive-Double Shell Slurry Feed	RHO-CD-14 SEP 80	21
SX102	10/1/80	20	518	538	201	Inactive-Double Shell Slurry Feed	RHO-CD-14 OCT 80	21
SX102	11/1/80	20	518	538	201	Inactive-Double Shell Slurry Feed	RHO-CD-14 NOV 80	21
SX102	12/1/80	20	518	538	201	Inactive-Double Shell Slurry Feed	RHO-CD-14 DEC 80	21

APPENDIX D

**WASTE LEVEL HISTORY PLOTS
JUNE 1973 - DECEMBER 1980**

PLOT GENERATED BY: R. P. Schwehr
B. D. Andres

241-SX-102 WASTE LEVEL HISTORY 1973

WASTE LEVEL (in.)

241-SX-102 WASTE LEVEL HISTORY 1976

241-SX-102 WASTE LEVEL HISTORY
1978

241-SX-102 WASTE LEVEL HISTORY
1979

241-SX-102 WASTE LEVEL HISTORY
1980

APPENDIX E

WASTE LEVEL HISTORY DATA
JUNE 1973 - DECEMBER 1980

DATA PREPARED BY: R. P. Schwehr
B. D. Andres

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/n.)	Comments	Box Number
102SX	6/13/73					336.95		111506,7,8
102SX	7/1/73					336.9		111506,7,8
102SX	7/21/73					342.5		111506,7,8
102SX	8/1/73					342.4		111506,7,8
102SX	8/10/73					342.4		58107
102SX	9/1/73					342.6		58107
102SX	10/1/73					342.5		58107
102SX	11/1/73					342.55		58107
102SX	12/1/73					342.5		58107
102SX	12/31/73					342.5		
102SX	1/1/74					342.5		58107
102SX	2/1/74					342.5		58107
102SX	3/1/74					342.55		58107
102SX	4/1/74					342.5		58107
102SX	5/1/74					342.55		58107
102SX	6/1/74					342.5		58107
102SX	6/27/74	106SX		10.8		353.2		58107
102SX	7/1/74					353.25		58107
102SX	7/12/74					353.55	102SX to 106SX line flushed	58107
102SX	7/26/74					353.6	Installed Foil Safe FIC	58107
102SX	8/1/74					353.65		58107
102SX	9/1/74					353.85		58107
102SX	9/21/74		102S		30.25	324.2		58107
102SX	9/23/74		102S		36.05	288.15		58107
102SX	9/24/74		102S		40.75	247.4		58107
102SX	9/26/74		102S		26.7	220.7		58107
102SX	9/27/74		102S		9.95	210.75		58107
102SX	9/28/74		102S		35.05	175.7		58107
102SX	9/29/74		102S		38.15	137.55		58107
102SX	10/1/74					137.6		58107
102SX	10/19/74	106-S		10.55		148.45		58107
102SX	10/20/74	106-S		13.65		162.1		58107
102SX	11/1/74					162		58107
102SX	11/8/74	106S		19		181.1		58107
102SX	11/9/74	106S		11		192.1		58107
102SX	11/10/74	106S		19.1		211.2		58107
102SX	11/27/74	106S		12		223.2		58107
102SX	11/28/74	106S		22		245.2		58107
102SX	12/1/74					244.2	FIC recalibrated	58107
102SX	12/8/74	106S		24.6		268.8		58107
102SX	12/8/74		102S		25.7	243.1		58107
102SX	12/9/74			25.8		268.9	106S to 102SX to 102S	58107
102SX	12/10/74			27.8		296.7	Pumping	58107
102SX	12/11/74		102S		6.5	290.2		58107
102SX	12/12/74	106S		13.5		303.7		58107
102SX	12/13/74		102S		32.85	270.85		58107
102SX	12/14/74	106S		26.75		297.6		58107
102SX	12/15/74		102S		22.4	275.2		58107
102SX	12/20/74		102S		14.7	260.5		58107
102SX	12/21/74		102S		33.1	227.4		58107
102SX	12/31/74					227.2		
102SX	1/1/75					227.2		58107
102SX	1/6/75	106S		14.9		242.1		58107
102SX	1/7/75		102S		30.3	211.8		58107

**241-SX-102 Waste Level History
1973 to 1980**

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	1/8/75		102S		11.8	200		58107
102SX	1/12/75		102S		20.5	179.5		58107
102SX	1/31/75	106SX		35.6		214.7		58107
102SX	2/1/75	106SX		0.1		214.8		58107
102SX	2/18/75	106SX		37.2		252		58107
102SX	2/19/75	106SX		49.1		301.1		58107
102SX	2/20/75			47.1		348.2	Active	58107
102SX	2/21/75			11.3		359.5	Active	58107
102SX	2/21/75		102S		37.4	322.1		58107
102SX	2/22/75				22.1	300	Active	58107
102SX	2/22/75			9.55		309.55	Receiving Slurry	58107
102SX	2/23/75			6.2		315.75	Receiving Slurry	58107
102SX	2/24/75	242S		38.35		354.1		58107
102SX	2/25/75			5.7		359.8	Active	58107
102SX	2/25/75		102S		37.6	322.2		58107
102SX	2/26/75				31.3	290.9	Active	58107
102SX	2/27/75			32.3		323.2	Receiving Slurry	58107
102SX	2/28/75			35.9		359.1	Active	58107
102SX	3/1/75			0.4		359.5	Active	58107
102SX	3/5/75		102S		40.25	319.2		58107
102SX	3/6/75				20.1	299.1	Active	58107
102SX	3/6/75			25.9		325	Receiving Slurry	58107
102SX	3/7/75			33.9		358.9	Receiving Slurry	58107
102SX	3/8/75		102S		57	301.9		58107
102SX	3/9/75				10.7	291.2	Active	58107
102SX	3/9/75			29.5		320.7	Active, Received from crystalizer, Slurry	58107
102SX	3/10/75			38.65		359.35	Active	58107
102SX	3/11/75		102S		63.45	295.9		58107
102SX	3/12/75			37.15		333.05	Active	58107
102SX	3/13/75			25.45		358.5	Active	58107
102SX	3/13/75				9.55	348.95	Active	58107
102SX	3/14/75				29.25	319.7	Active	58107
102SX	3/14/75			21.8		341.5	Active	58107
102SX	3/15/75			19.9		361.4	Active	58107
102SX	3/15/75				39.4	322	Active	58107
102SX	3/16/75			32.95		354.95	Active	58107
102SX	3/17/75				55.55	299.4	Active	58107
102SX	3/18/75			44.9		344.3	Active	58107
102SX	3/19/75			16.45		360.75	Active	58107
102SX	3/19/75				36.05	324.7	Active	58107
102SX	3/20/75				16.6	308.1	Active	58107
102SX	3/20/75			20.7		328.8	Active	58107
102SX	3/21/75			30.9		359.7	Active, 102SX had received slurry	58107
102SX	3/22/75			0.2		359.9	Active	58107
102SX	3/23/75			0.1		360	Active, slurry receiver	58107
102SX	3/26/75				43.2	316.8	Active	58107
102SX	3/27/75			30.1		346.9	Active	58107
102SX	3/28/75			13.1		360	Active	58107
102SX	3/28/75				25.2	334.8	Active	58107
102SX	3/29/75				63.25	271.55	Active	58107
102SX	3/30/75			45.45		317	Active	58107
102SX	3/31/75			43.7		360.7	Active	58107
102SX	4/1/75				0.25	360.45	Active	61236
102SX	4/3/75		102S		49.65	310.8		61236
102SX	4/4/75			26		336.8	Active	61236
102SX	4/5/75			24.8		361.6	Active	61236

**241-SX-102 Waste Level History
1973 to 1980**

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	4/6/75				59.3	302.3	Active	61236
102SX	4/7/75				25.15	277.15	Active	61236
102SX	4/7/75			33.1		310.25	Active	61236
102SX	4/8/75			45.85		356.1	Slurry Receiver	61236
102SX	4/9/75			2.2		358.3	Active	61236
102SX	4/9/75				12.15	346.15	Active	61236
102SX	4/10/75				39.15	307	Active	61236
102SX	4/11/75				17.4	289.6	Active	61236
102SX	4/11/75				3.5	293.1	Active	61236
102SX	4/12/75		102S		1.55	291.55		61236
102SX	4/13/75			25.05		316.6	Active	61236
102SX	4/14/75			17.2		333.8	Active	61236
102SX	4/15/75			26.1		359.9	Active	61236
102SX	4/16/75				12.9	347	Receiving Slurry	61236
102SX	4/17/75		102S		47.4	299.6		61236
102SX	4/18/75		102S		0.7	298.9		61236
102SX	4/19/75				26.1	272.8	Active	61236
102SX	4/20/75				19.1	253.7	Active	61236
102SX	4/21/75		102S		9.75	243.95		61236
102SX	4/22/75		102S		15.35	228.6		61236
102SX	4/23/75			20.5		249.1	Receiving Slurry	61236
102SX	4/24/75			0.1		249.2	Receiving Slurry	61236
102SX	4/26/75			0.5		249.7	Receiving Slurry	61236
102SX	4/27/75				0.1	249.6	Active	61236
102SX	5/1/75			6.9		256.5	Receiving Slurry	61236
102SX	5/2/75			35.1		291.6	Receiving Slurry	61236
102SX	5/3/75			33.2		324.8	Active	61236
102SX	5/4/75			15		339.8	Active	61236
102SX	5/9/75					340.7	Flushing 102SX Pump and Trying To Pump	61236
102SX	5/10/75		102S		9.4	331.3		61236
102SX	5/11/75		102S		0.4	330.9		61236
102SX	5/12/75		102S		6.3	324.6		61236
102SX	5/13/75		102S		43.6	281		61236
102SX	5/14/75		102S		9.9	290.9		61236
102SX	5/15/75			33.7		324.6	Receiving Slurry	61236
102SX	5/16/75			3.8		328.4	Receiving Slurry	61236
102SX	5/17/75		102S		15.3	313.1		61236
102SX	5/18/75		102S		25	288.1		61236
102SX	5/18/75			9.5		297.6	Receiving Slurry	61236
102SX	5/19/75			36.4		334	Receiving Slurry	61236
102SX	5/20/75			21		355	Active	61236
102SX	5/21/75			0.6		355.6	Active	61236
102SX	5/22/75				45.4	310.2	Active	61236
102SX	5/23/75				27.5	282.7	Active	61236
102SX	5/23/75			8.3		291	Active	61236
102SX	5/24/75			30.9		321.9	Active	61236
102SX	5/25/75			32.7		354.6	Active	61236
102SX	5/26/75			6		360.6	Receiving Slurry	61236
102SX	5/27/75		102S		55	305.6		61236
102SX	5/28/75			24.5		330.1	Receiving Slurry	61236
102SX	5/29/75			29.2		359.3	Active	61236
102SX	5/30/75				33.2	326.1	Active	61236
102SX	5/31/75			26.8		352.9	Active	61236
102SX	6/1/75			7.3		360.2	Active	61236
102SX	6/2/75			0.4		360.6	Active	61236
102SX	6/3/75			0.4		361	Active	61236

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	6/4/75			0.4		361.4		61236
102SX	6/5/75			0.4		361.8		61236
102SX	6/7/75					362.2	102 and 103SX are up 2.2" and 2.3" since we stopped going into them. Suspect the FIC bobber needs flushing.	61236
102SX	6/9/75					360.7	Flushed Tape	61236
102SX	6/14/75					361.2	Reading after flush	61236
102SX	6/15/75					360.4	FIC flushed	61236
102SX	6/18/75		102S		42.5	318.7		61236
102SX	6/19/75		102S		44.3	274.4		61236
102SX	6/20/75			1.6		276		61236
102SX	6/21/75					277.2	Is erratic	61236
102SX	6/22/75					277.8	Is erratic	61236
102SX	6/24/75					275.6	Checking out FIC	61236
102SX	6/26/75					276.7	erratic	61236
102SX	6/28/75					277.8		61236
102SX	6/30/75					276.2	Checking out 102SX LL has been bouncing around	61236
102SX	7/1/75			13.2		289.4	Receiving slurry	61236
102SX	7/2/75			30.7		320.1	Received slurry	61236
102SX	7/3/75			22.9		343	Active	61236
102SX	7/4/75			12.8		355.8	Active	61236
102SX	7/5/75			0.3		356.1	Received slurry	61236
102SX	7/6/75					355.1	FIC flushed	61236
102SX	7/7/75			0.35		355.45	Active	61236
102SX	7/8/75		102S		35.35	320.1		61236
102SX	7/9/75		102S		10.1	310		61236
102SX	7/10/75		102S		36.8	273.2		61236
102SX	7/11/75			11.2		284.4	Received slurry	61236
102SX	7/12/75			27.8		312.2	Active	61236
102SX	7/13/75			33.1		345.3	Active	61236
102SX	7/14/75			12		357.3	Received slurry	61236
102SX	7/15/75					357		61236
102SX	7/16/75					357.7		61236
102SX	7/20/75					358.4		61236
102SX	7/21/75		102S		37.7	320.7		61236
102SX	7/22/75		102S		14.6	306.1		61236
102SX	7/23/75					306.5	Erratic	61236
102SX	7/24/75		102S		22.1	284.4		61236
102SX	7/25/75					285		61236
102SX	7/26/75					285.7		61236
102SX	7/30/75		102S		13.65	272.75		61236
102SX	7/31/75			1.25		274		61236
102SX	8/2/75					274.6		61236
102SX	8/4/75					275.5		61236
102SX	9/3/75					279.45		61236
102SX	9/12/75	110SX		14.3		294.8		61236
102SX	9/13/75	110SX		35.4		330.2		61236
102SX	9/16/75	110SX		20.8		351		61236
102SX	9/17/75	110SX		5		356		61236
102SX	9/18/75			0.5		356.5		61236
102SX	9/29/75					357.05	Flushed B 358.4 A 357.05	61236
102SX	10/1/75					357.4		61236
102SX	10/3/75		102S		37.55	319.9		61236
102SX	10/4/75		102S		25.85	294.05		61236
102SX	10/8/75		102S		41.65	252.4		61236

**241-SX-102 Waste Level History
1973 to 1980**

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	10/9/75				2.1	254.5	Active	61236
102SX	10/10/75	110SX		21.4		275.9	102SX was pumped as low as they could get it, it was pumped down to the mud	61236
102SX	10/11/75	110SX		20.3		296.2		61236
102SX	10/12/75				1.2	295	Active, Floating Crust	61236
102SX	10/13/75				3	292	Active	61236
102SX	10/14/75					289.8	FIC flushed	61236
102SX	10/15/75					289.1	Flushed FIC B 289.35 A 289.9 Flushed Tape B 23'-10 3/4" A Same	61236
102SX	10/16/75					288.8		61236
102SX	10/20/75		102S		6.3	282.6		61236
102SX	10/21/75	110SX		15.2		297.8		61236
102SX	10/22/75	110SX		5.8		303.6		61236
102SX	10/25/75	110SX		44.95		348.05		61236
102SX	10/29/75		102S		43.6	304.5		61236
102SX	10/30/75	110SX		26		330.5		61236
102SX	10/31/75	110SX		19.7		350.2		61236
102SX	11/5/75					350.9		61236
102SX	11/8/75					351	Used flush water to install salt well pump	61236
102SX	11/9/75					351.5		61236
102SX	11/15/75				47.2	304.3	Active	61236
102SX	11/16/75				19.85	284.35	Active	61236
102SX	11/17/75		102S		49.75	234.6		61236
102SX	11/18/75		102S		34.1	200.5		61236
102SX	11/23/75	110SX		62.6		263.3		61236
102SX	11/24/75	110SX		36.05		299.35		61236
102SX	11/25/75	110SX		40.8		339.95		61236
102SX	11/27/75				39.15	300.8	Active	61236
102SX	11/28/75		102S		8.45	292.35		61236
102SX	11/29/75				40.25	252.1	Active	61236
102SX	12/1/75		102S		16.4	235.7		61236
102SX	12/2/75		102S		47.8	187.9		61236
102SX	12/3/75	110SX		55.3		243.2		61236
102SX	12/4/75	110SX		30		273.2		61236
102SX	12/5/75	110SX		11.5		284.7		61236
102SX	12/5/75				50	234.7	Active	61236
102SX	12/5/75	106SX		49.3		284		61236
102SX	12/6/75		102S		11.9	272.1		61236
102SX	12/7/75		102S		32.9	239.2		61236
102SX	12/9/75		102S		28.1	211.1		61236
102SX	12/10/75		102S		30.7	180.4		61236
102SX	12/16/75	110SX		1.8		182.1		61236
102SX	12/27/75	110SX		32.8		214.9		61236
102SX	12/31/75					215		61236
102SX	1/1/76					215		
102SX	1/5/76	110SX		23.9		239.4		61236
102SX	1/6/76	110SX		37.6		277		61236
102SX	1/7/76	110SX		64.1		341.1		61236
102SX	1/8/76	110SX		17.1		358.2		61236
102SX	1/13/76		102S		4	354.2		61236
102SX	1/14/76		102S		23.8	330.4		61236
102SX	1/15/76		102S		33.5	298.9		61236
102SX	1/16/76		102S		22	274.9		61236
102SX	1/17/76		102S		13.9	261		61236
102SX	1/19/76		102S		37.6	223.4		61236

**241-SX-102 Waste Level History
1973 to 1980**

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	1/19/76		102S		5.4	218		61236
102SX	1/20/76		102S		21.1	196.9		61236
102SX	1/21/76		102S		19	177.9		61236
102SX	2/4/76					177.6		61236
102SX	3/3/76					177.7		61236
102SX	3/26/76	110SX		19.3		197		61236
102SX	3/27/76	110SX		74.6		271.6		61236
102SX	3/28/76	110SX		22.65		294.25		61236
102SX	3/28/76		102S		22.65	271.6		61236
102SX	3/29/76		102S		23.2	248.4		61236
102SX	3/30/76		102S		36.5	211.9		61236
102SX	3/31/76			26.1		238	Active	61236
102SX	4/2/76		102S		9.8	228.6		61236
102SX	4/3/76		102S		9.7	218.9		61236
102SX	4/9/76	110SX		8.45		227.3		61236
102SX	4/10/76			39.7		267	110SX to 102SX to 102S	61236
102SX	4/16/76				8	259	Active	61236
102SX	4/21/76				19.1	239.9	Active	61236
102SX	4/22/76		102S		8.2	231.7		61236
102SX	4/24/76	110SX		56.5		288.2		61236
102SX	4/25/76	110SX		17.8		306		61236
102SX	4/26/76					306.1	Flushed tape B 25" A 25' 3"	61236
102SX	5/5/76					306.2		61236
102SX	6/2/76					306.6		61236
102SX	6/30/76					306.8		61236
102SX	7/21/76	110SX		17.3		324.2		61236
102SX	7/22/76			24.1		348.3	110SX to 102SX to 103SX	61236
102SX	7/28/76					348.35		61236
102SX	8/5/76		103S		11.4	337		61236
102SX	8/6/76	110SX		2.1		339.1		61236
102SX	8/9/76	110SX		2.6		341.7		61236
102SX	8/12/76	110SX		0.5		342.2		61236
102SX	8/18/76					342.7	Pressure checking line and some drain to 102SX	61236
102SX	9/1/76					343.4		61236
102SX	10/1/76					344.1		61236
102SX	10/12/76					343.9	Flushed and QA'd B 344.05 A 343.9	61236
102SX	11/1/76					344.1		61236
102SX	11/4/76					344.2	Pressure tested from 104SX to SXB, SXB drains to 102SX. Also opened up 105SX in prep for test.	61236
102SX	11/21/76		102S		13.3	331.2		61236
102SX	11/22/76		102S		33.5	297.7		61236
102SX	11/23/76		102S		21.2	276.5		61236
102SX	11/24/76		102S		16.65	259.85		61236
102SX	11/25/76		102S		30.05	229.8		61236
102SX	11/26/76		102S		1.4	228.4		61236
102SX	11/27/76		102S		35.2	193.2		61236
102SX	11/28/76		102S		6.2	187		61236
102SX	11/29/76		102S		25.5	161.5		61236
102SX	11/30/76		102S		10.1	151.4		61236
102SX	12/1/76					151.5		61236
102SX	12/8/76			8.3		160	Slurry receiver	61236
102SX	12/9/76			19.5		179.5	Slurry receiver	61236
102SX	12/10/76			0.5		180	Slurry receiver	61236
102SX	12/11/76			23		203	Slurry receiver	61236

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
102SX	12/12/76			44.6		247.6	Slurry receiver	61236
102SX	12/13/76			37		284.6	Slurry receiver	61236
102SX	12/14/76			32.1		316.7	Slurry receiver	61236
102SX	12/15/76			33.9		350.6	Slurry receiver	61236
102SX	12/16/76			4.3		354.9	Slurry receiver	61236
102SX	12/20/76		102S		10.4	344.7		61236
102SX	12/21/76		102S		7	337.7		61236
102SX	12/22/76		102S		24.1	313.6		61236
102SX	12/31/76					314.6		61236
SX102	1/1/77					314.6		61233
SX102	1/1/77					316.05	FIC flushed; before: 316.05, after: 316.05.	61233
SX102	1/13/77					316.4	Flushed 102-SX FIC. before: 316.85, after: 316.40. Occurrence Report 77-07 initiated - baseline 313.5 exceeded by 3".	61233
SX102	1/27/77					318.05	Photographs taken. Crusty broken surface.	61233
SX102	2/1/77					318.7		61233
SX102	2/5/77					319.4		61233
SX102	2/8/77					319.9	FIC 102-SX has been slowly increasing, there is a possibility that a little solution from a 103-SX transfer leaked thru a 3-way valve to 102-SX yesterday & today.	61233
SX102	2/10/77					318.75	FIC flushed, B: 320.1, A: 318.75. MT flushed, B: 304.5, A: 304.5.	61233
SX102	2/11/77					318.55	O.R. 77-07 released.	61233
SX102	2/14/77					319		61233
SX102	2/15/77	slurry		27.2		346.2	8-4 shift entry. Receiving slurry.	61233
SX102	2/16/77	slurry		21.2		354.7	4-12 shift entry. Receiving slurry. Baseline established at 354.6".	61233
SX102	2/21/77					355.45	4-12 shift entry. FIC rechecked, reads 355.5 at 102-SX. Operators checked for water leaking in, but found none. This tank has been swelling.	61233
SX102	3/1/77					356.4		61233
SX102	3/6/77					356.7	4-12 shift entry. FIC has been showing a slow increase but has also been slightly erratic as well, varying a little up and down. Checked for water, temp., etc. everything looked OK.	61233
SX102	3/13/77					358	Occurrence Report 77-37 initiated. Baseline 354.6 exceeded by 3".	61233
SX102	3/14/77					357.6	FIC 102-SX Flushed.	61233
SX102	3/14/77					358.1	FIC 8-4 shift entry.	61233
SX102	3/18/77					358.7	FIC flushed, B: 359.2, A: 358.7.	61233
SX102	3/21/77					359.2	Rechecked 102-SX LL in PM. FIC Still reading 359.2. Can find no reason for increase.	61233
SX102	3/23/77					359.6	O.R. 77-37 released.	61233
SX102	4/1/77					360.2		61233
SX102	4/6/77					360.15	FIC flushed, B: 360.65, A: 360.15.	61233
SX102	4/8/77					360.15		61233
SX102	4/9/77		SY102	10.85		349.3	8-4 shift reading.	61233
SX102	4/10/77		SY102	28.3		321	8-4 shift reading.	61233
SX102	4/11/77		SY102	15.05		305.95	8-4 shift reading.	61233
SX102	4/12/77		SY102	12.15		293.8	8-4 shift reading.	61233
SX102	4/13/77		SY102		2.1	291.7	8-4 shift reading.	61233
SX102	4/22/77					311.5	QA'd FIC, B: 313.2, A: 311.5.	61233
SX102	4/28/77	S103		22.75		334.2		61233
SX102	4/29/77					334.6	Day crew flushed line from SY Farm to 103S then to 102-SX.	61233

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
SX102	4/30/77		SY102		8.5	326.1		61233
SX102	5/1/77		SY102		23.6	302.5		61233
SX102	5/2/77		SY102		6.4	286.1		61233
SX102	5/8/77					296.5	12-8 shift reading. Previous readings were steady at 296.2 since 5/3/77.	61233
SX102	5/10/77	slurry		27.6		324.2	Receiving slurry.	61233
SX102	5/11/77	slurry		1		327.2	12-8 shift reading.	61233
SX102	5/11/77	slurry				326.2	8-4 shift reading. Active Rec. slurry.	61233
SX102	5/12/77	S103		5.9		333.1	8-4 shift reading. Pumped from 103S.	61233
SX102	5/13/77					333.1		61233
SX102	5/14/77					331.2	8-4 shift reading. TFS aware, LL being monitored hourly. O.R. 77-71 initiated on 5/13/77 for exceeding LL decrease criterion.	61233
SX102	5/16/77					331	8-4 shift reading. New motor put in 102-SX FIC.	61233
SX102	5/19/77					330.2	12-8 shift entry. Tried to pump 102SX to 102SY on swing 5-19-77.	61233
SX102	5/22/77					330.6	8-4 shift entry. FIC has been erratic.	61233
SX102	5/22/77					331.2	12-8 shift entry. FIC has been erratic.	61233
SX102	5/23/77					333.2	12-8 shift entry. 102-SX FIC up 1.6": Tape same 26'- 5 1/4 ". Leak checked slurry line to SX on 4-12 (shift) 102-SX S.L. valve was open. This water could have went to 102-SX.	61233
SX102	5/24/77					333.15	FIC. 8-4 shift entry. 102-SX SL valve was open, water went to 102-SX, the slurry line was being leak checked.	61233
SX102	5/25/77					334	12-8 shift entry. Water went to 102-SX while leak checking slurry line on swing 5-23-77. May have caused an increase in rate of expansion.	61233
SX102	5/28/77		SY102		6.5	327.6		61233
SX102	5/29/77		SY102					61233
SX102	5/31/77					329.2	FIC 12-8 shift reading. 8-4 shift reading was 328.0 and 4-12 shift recorded 328.9 while tape remained steady. Can find no reason for increase.	61233
SX102	6/1/77					328.1	FIC flushed, B: 329.2, A: 328.1.	61233
SX102	6/7/77	slurry		16.4		344.6		61233
SX102	6/8/77	slurry		8.5		353.1	12-8 shift reading. Received slurry.	61233
SX102	6/12/77		SY102		3	350.2		61233
SX102	6/13/77		SY102		10.1	340.1		61233
SX102	6/14/77	slurry		14.7		354.8	12-8 shift reading.	61233
SX102	6/20/77					354.6	102-SX LL read 354.6 to 354.9 after rec. slurry on 6/15/77. No explanation for the 355.6 reading yesterday. Manual tape reading same 28' 5".	61233
SX102	6/23/77					356.9	Inst. dept. checking on 102-SX FIC to see if it is OK. No baseline has been set on this tank as it had rec. slurry a short time ago. FIC functioning OK.	61233
SX102	6/28/77					356.9	102-SX appears to be cycling .3 inches. Yesterday's reading was 357.2.	61233
SX102	6/28/77					356.8	FIC flushed, B: 357.0, A: 356.8.	61233
SX102	7/1/77					357.4	Flushed MT, B: 28' 6 1/2", A: 28' 6 1/4".	61233
SX102	7/4/77					358.1	FIC flushed, B: 358.1, A: 358.1.	61233
SX102	7/5/77					357.6	Baseline established this day @ 358.0".	61233
SX102	8/1/77					359.6		61233

**241-SX-102 Waste Level History
1973 to 1980**

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
SX102	8/20/77					359.6	102SX (FIC) baseline is 358.0 dated 7-5-77, allowable increase is 3.0". Reading 361.6 (12-8 shift reading) was double checked and is .6" above allowable increase. This tank is a CT for flush & valve pits.	61233
SX102	8/21/77					361.6	FIC flushed, B: 361.2, A: 361.6. Day shift reading was 361.2" - 3.2" above baseline.	61233
SX102	8/22/77					360.9	Day shift entry.	61233
SX102	8/23/77					360.9		61233
SX102	8/24/77		SY102		6.7	354.5		61233
SX102	8/25/77					354.2	Baseline established at 354.2.	61233
SX102	8/27/77					354.8	MT increase from yesterday. Tape reading was double checked, the reading is a sludge reading and there is some continuity also. Get good cont. @ 28" 0". The sludge is very hard. The manual tape by the FIC gives a sludge reading of 29" 6".	61233
SX102	8/30/77					355.2		61233
SX102	9/1/77					355.2		61233
SX102	9/9/77					355.1	Baseline on 102-SX is 354.2 (FIC), so this small decrease (was 355.6 yesterday) in LL does not exceed criteria.	61233
SX102	9/11/77					355.2	Inst. working on FIC - Flushing and recalibrating. Read 355.2 at 1430 when he finished.	61233
SX102	9/12/77					354.85	102-SX F.I.C. shut off. Inst. dept to check on this FIC today. Inst is functioning OK but seems to be hitting on dry cake so please turn off unit after getting a reading.	61233
SX102	10/1/77					355.1		61233
SX102	10/31/77					356.7		61233
SX102	11/1/77					357.2	4-12 shift reading. Increase. Pressure test work in SX-A pit and then all drains to 102-SX.	61233
SX102	11/22/77					357.1	FIC flushed, B: 357.5, A: 357.1.	61233
SX102	12/1/77					357.25		61233
SX102	12/2/77					356.9	FIC flushed, B: 357.4, A: 356.9.	61233
SX102	12/13/77					357.2	It rained very hard, all tanks up a little. Day shift worked in SX-A pit today. Could account for some of the LL increases. 102-SX also receives drainage from SA-SB valve & flush pits.	61233
SX102	12/15/77					357.4	FIC flushed, B: 357.45, A: 357.4.	61233
SX102	12/27/77					357	FIC rechecked - 356.8. Baseline 354.5 dated 11-2-77. Now +2.5" - allowed 3".	61233
SX102	12/31/77					356.9		61233
SX102	1/1/78					356.90	Monthly tank level - FIC	68654
SX102	1/9/78		SY102		12.90	344.00	Transfer to SY102 - FIC	68654
SX102	1/10/78		SY102		26.75	317.25	Transfer to SY102 - FIC	68654
SX102	1/11/78		SY102		22.90	294.35	Transfer to SY102 - FIC	68654
SX102	1/12/78		SY102		0.20	294.15	Transfer to SY102 - FIC	68654
SX102	2/1/78					296.00	Monthly tank level - FIC	68654
SX102	2/19/78					296.10		68654
SX102	2/22/78					296.30	received 500 gallon water flush on 2/21/78	68654 121869
SX102	3/1/78					296.90	Flushed FIC	68654
SX102	3/1/78					297.20	Monthly tank level - FIC	68654
SX102	4/1/78					296.10	Monthly tank level - FIC	68654
SX102	4/29/78					297.45	FIC erratic (MT reading same)	68654
SX102	5/1/78					297.40	Monthly tank level - FIC	68654

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
SX102	6/1/78					296.40	Monthly tank level - FIC	68654
SX102	6/20/78					296.05	QA'd FIC (MT unchanged)	68654
SX102	7/1/78					295.60	Monthly tank level - FIC	68654
SX102	7/11/78					297.10	FIC erratic (MT unchanged)	68654
SX102	8/1/78					295.20	Monthly tank level - FIC	68654
SX102	9/1/78					295.10	Monthly tank level - FIC	68654
SX102	10/1/78					295.30	Monthly tank level - FIC	68654
SX102	11/1/78					294.90	Monthly tank level - FIC	68654
SX102	12/1/78					295.20	Monthly tank level - FIC	68654
SX102	12/31/78					294.50	Year end tank level - FIC	68654
SX102	1/1/79					294.55	0100 reading - FIC	74293
SX102	1/1/79					294.50	Monthly tank level - FIC	74293
SX102	2/1/79					294.80	Monthly tank level - FIC	74293
SX102	3/1/79					295.05	Monthly tank level - FIC	74293
SX102	3/17/79					294.50	drop in FIC (tightened, now OK)	74293
SX102	3/19/79					295.90	rise, FIC calibrated - FIC	74293
SX102	4/1/79					294.90	Monthly tank level - FIC	74293
SX102	5/1/79					295.20	Monthly tank level - FIC	74293
SX102	6/1/79					295.40	Monthly tank level - FIC	74293
SX102	7/1/79					295.70	Monthly tank level - FIC	74293
SX102	8/1/79					295.30	Monthly tank level - FIC	74293
SX102	9/1/79					295.95	Monthly tank level - FIC	74293
SX102	9/13/79					295.80		74293
SX102	9/14/79	SX104		16.80		312.60	Rec'd transfer - 12-8 shift FIC	74293
SX102	9/15/79	SX104		5.60		318.20	Rec'd transfer - 12-8 shift FIC	74293
SX102	9/17/79					318.10		74293
SX102	9/18/79	SX104		0.50		318.60	Rec'd transfer - FIC	74293
SX102	10/1/79					319.55	Monthly tank level - FIC	74293
SX102	11/1/79					320.35	Monthly tank level - FIC	74293
SX102	11/11/79					319.30	Drop (recirculating) - FIC	74293
SX102	11/14/79					319.15	Drop (recirculating) - FIC	74293
SX102	11/15/79					319.60	Rise (recirculating) - FIC	74293
SX102	11/18/79					320.50	Rise (recirculating, erratic) - FIC	74293
SX102	11/21/79					319.30	Rise (crew work in SA valve pit) - FIC	74293
SX102	11/22/79					319.70	Rise (day crew work) - FIC	74293
SX102	11/24/79					321.50	Rise (erratic) - FIC	74293
SX102	11/25/79					321.20	FIC	74293
SX102	12/1/79					320.20	Monthly tank level - FIC	74293
SX102	12/30/79					321.15	Drop (erratic) - FIC	74293
SX102	12/31/79					320.80	Drop, FIC flushed - FIC	74293
SX102	12/31/79					321.15	Year end tank level - FIC	74293
SX102	1/1/80					320.7		74292
SX102	1/8/80					320.8		74292
SX102	1/13/80					319.9	erratic FIC	74292
SX102	1/15/80					319.6		74292
SX102	1/16/80		SY102		5.8	313.8		74292
SX102	1/17/80		SY102		4.2	309.8		74292
SX102	1/18/80					309.6	Baseline. Established 1/22/80.	111509
SX102	1/23/80					309.9		74292
SX102	2/1/80					309.8		74292
SX102	2/2/80					310.4	flush water	74292
SX102	2/6/80					311.2	Operations checking into increase in 102-SX. This is a CT for the present tank pumping route (103-S is being pumped to 104-SX).	74292

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
SX102	2/15/80	U152		0.15		312.1	102-SX rec. flush from 152-U - 1500 gal.	74292
SX102	2/17/80					312.35		74292
SX102	2/19/80					312.15	102SX MT on 12-8 read 25"-11 3/4". Checked 3 times. Shift operator to recheck 102-SX manual tape reading.	74292
SX102	2/20/80					312		74292
SX102	2/21/80					312	Recheck on 311.8" decimal reading during 12-8 shift.	74292
SX102	2/22/80					312		74292
SX102	2/23/80					311.7		74292
SX102	2/27/80					311.9		74292
SX102	2/28/80					312		74292
SX102	3/1/80					311.95		74292
SX102	3/9/80					312.5		74292
SX102	3/10/80					310.9	Baseline	111509
SX102	3/10/80					312.55	Baseline established at 310.9 this day.	74292
SX102	3/17/80					314.3	Reading prior to FIC flush.	74292
SX102	3/17/80					312.5	Reading after FIC flush.	74292
SX102	4/1/80					313		74292
SX102	4/29/80					311.9	A decrease from previous entry of 312.6". Backflushing 107-S to 104-SX & 105-SX; pit drains to 102-SX.	74292
SX102	5/1/80					312		74292
SX102	5/19/80					312.85		74292
SX102	5/22/80					313.45	Previous day's entry: "There was flushing of ash from blocks and 102-SX catches this drainage."	74292
SX102	6/1/80					314.1		74292
SX102	6/2/80					314.1	Baseline established at 312.4 this day.	111509
SX102	6/5/80					314.2	Photographs.	74292
SX102	6/10/80					316.65	FIC erratic. Unexplained decimal increase from 313.9 beginning 6/5/80.	74292
SX102	6/12/80					316.2	decimal still climbing	74292
SX102	6/13/80					315.95	Baseline established @ 316.0 this day.	111509
SX102	6/20/80					314	Flushed FIC.	74292
SX102	6/24/80					313.9	Photographs	74292
SX102	7/1/80					313.7		74292
SX102	7/3/80					313.7		74292
SX102	7/8/80					314.95	Crane crew flushed 102SX pump.	74292
SX102	7/11/80					314.8	Status of tank level after waiting for stability from 7/8/80 entry.	74292
SX102	7/29/80		SY102		48.8	267	Transfer started 7/25 at initial level 315.8" On 7/24, level was at 315.15" while foot-inch value did not vary.	74292
SX102	8/1/80					266.85		74292
SX102	8/5/80		SY102		23.45	243.4	Manual tape out of order.	74292
SX102	8/16/80		SY102		41.85	201.4	Transfer from 106-SX to 102-SY begins.	74292
SX102	8/20/80					202.2	102-SX F.I.C. was not working correctly, T.F.O. & Inst. aware.	74292
SX102	8/22/80					202.7	Baseline of 202.7 possibly established this day.	74292
SX102	8/23/80					202.85		74292
SX102	8/25/80					202.9		74292
SX102	8/26/80					202.85		74292
SX102	8/28/80					203		74292
SX102	9/1/80					203.1	Unexplained erratic increases since 8/16/80 entry.	74292
SX102	10/1/80					203.5		74292
SX102	11/1/80					205.1		74292

241-SX-102 Waste Level History
1973 to 1980

Tank Number	Date	Transfer Source	Transfer Destination	Tank Addition Value (inches)	Tank Reduction Value (inches)	Waste Level Value (FIC/in.)	Comments	Box Number
SX102	11/7/80					205.9	Prior to FIC flush. Unexplained increase since last transfer on 8/16/80.	74292
SX102	11/8/80					204.2	After FIC flush. Foot-Inch value remains steady.	74292
SX102	12/2/80					204.3		74292
SX102	12/31/80					204	Increase of 2.6 inches (decimal) since 8/16/80. Foot-Inch value increased 2.5 inches during same period.	74292

APPENDIX F

OCCURRENCE REPORTS

74-151

75-116

77-07

77-37

77-71

ARHCO OCCURRENCE REPORT

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Farm, Tank 102-SX		WORK AREA 200 West
REPORT NO. 74-151	☐ PRELIMINARY 12/10/74	☐ INTERIM	☒ FINAL 12/23/74	DATE AND TIME OF OCCURRENCE December 2, 1974
OCCURRENCE SUBJECT Decreasing Liquid Level In Tank 102-SX				

Reissue - See Note*

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN
 ☐ MATERIAL
 ☐ PERSONNEL
 ☐ PROCEDURE
 ☒ OTHER

The liquid level in Tank 102-SX decreased 1.0 inch over a three day period. The leak detection criteria allows up to 0.50 inch from a baseline value. The decrease occurred after a transfer from 106-S to 102-SX was completed. The liquid level in 102-SX immediately following the completion of the transfer was 245.20 inches and the liquid level three days later was 244.20. The material balance for these periods was +1.45* inches and +0.45 inches, respectively.

The dry wells adjacent to the tank have indicated no change or increase in radiation.

bcc: GE Backman
 G Burton, Jr.
 HE Campbell
 GT Dukelow
 DG Harlow
 HF Jensen
 BJ McMurray
 GC Oberg
 BJ Saueressig
 HP Shaw
 RM Smithers (2)
 GT Stocking
 JA Teal
 JH Warren
 AT White
 RA Zinsli
 Central File

* This occurrence report is being reissued because the original material balance number was in error. The material balance immediately following transfer was reported as +2.35. It has been changed to +1.45.

2. OPERATING CONDITIONS OF THE FACILITY AT TIME OF OCCURRENCE (IF APPLICABLE)

Tank 102-SX contains 597,000 gallons of supernatant and approximately 59,000 gallons of solids. This tank is scheduled for use as a 242-S Evaporator slurry receiver within the next few months.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The tank is considered to be sound for continued waste storage. This evaluation was based on material balance calculations, a stable liquid level for six days starting three days after the transfer termination, and stable dry wells. Normally, the liquid level in transfer tanks stabilizes within 24 hours. Occasionally, as in this case, there is a problem with foam and/or crust on the liquid surface and stable liquid level readings are not obtained for several days. The liquid level decrease observed was a result of the material balance being out of standard initially and then gradually returning to standard.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

The FIC gauge was calibrated in Tank 102-SX to verify correct operation. The dry wells were monitored to check for changing radiation and material balance calculations were utilized in the evaluation.

B. PERMANENT CORRECTIVE ACTION

The liquid level monitoring procedures and the leak detection criteria are being modified to further define the time period following a transfer when the baseline value will be set. Changes will also be made to the liquid level procedure to assist in the evaluation of all liquid level changes.

The written procedures for notification of responsible tank farms ARHCO managers by operating personnel are being revised to assure prompt notification of incidents.

C. IS DESIGN CHANGE NECESSARY?

☐ YES☒ NO

IF YES, WHEN

D. IS FURTHER EVALUATION NECESSARY?

☐ YES☒ NO

IF YES, BY WHOM

WHEN

5. SIMILAR OCCURRENCE: BY REPORT NUMBER AND OCCURRENCE SUBJECT

None for this tank.

Att. (2)

cc: OJ Elgert, ERDA-RL (2), w/att.
 DJ Gier, ERDA-RL "
 JH Straub, ERDA-RL "

ORIGINATED BY	TITLE	DATE
G. T. Dukelow <i>G.T. Dukelow</i>	Manager, Tank Farm Surveillance	4-2-75
REVIEWED BY	TITLE	DATE
J. A. Teal <i>J. A. Teal</i>	Manager, Tank Farm Operations	2 Apr 75
C. Oberz <i>C. Oberz</i>	Manager, Operations Technical Support	4/2/75
G. Burton, Jr. <i>G. Burton</i>	VP, Production and Waste Management	
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
R. M. Smithers <i>R. M. Smithers</i>	Manager, Tank Farm Management Dept.	2 Apr 75
A. T. White <i>A. T. White</i>	Manager, Quality Assurance & Safety	4/2/75

102-SX
HISTORY REVIEW

<u>Date</u>	<u>Liquid Level (inches)</u>	<u>Change from Previous Reading (inches)</u>	<u>Cumulative Change (inches)</u>	<u>Comments</u>
4/15/74	342.50	0.00	0.00	
5/08/74	342.30	-.20	-.20	
5/15/74	342.50	+.20	0.00	
6/26/74	342.40	-.10	-.10	
6/27/74	353.20	-	-.10	Transfer
7/15/74	353.60	-	-.10	Line Flush
8/03/74	353.80	+.20	+.10	
8/10/74	353.90	+.10	+.20	
8/14/74	353.80	-.10	+.10	
8/16/74	353.90	+.10	+.20	
9/13/74	354.00	+.10	+.30	
9/19/74	354.40	-	+.30	Flush and Recalibrate
9/21/74	354.45	+.05	+.35	
9/22/74	324.20	-	+.35	Transfer
9/24/74	288.15	-	+.35	Transfer
9/26/74	247.40	-	+.35	Transfer
9/30/74	137.55	-	+.35	Transfer
10/02/74	137.60	+.05	+.40	
10/03/74	137.80	+.20	+.60	
10/08/74	137.90	+.10	+.70	
10/11/74	137.90	0.00	+.70	Instrument Check
10/19/74	137.90	0.00	+.70	
10/20/74	148.45	-	+.70	Received From 106-S
10/21/74	162.10	-	+.70	Received From 106-S
10/31/74	162.00	-.10	+.60	
11/07/74	162.10	+.10	+.70	
11/09/74	181.10	-	+.70	Received From 106-S
11/11/74	211.20	-	+.70	Received From 106-S
11/28/74	223.20	-	+.70	Received From 106-S
11/29/74	244.6	-	+.70	Received From 106-S
11/30/74	244.75	-.45	+.25	
12/01/74	244.60	-.15	+.10	
12/02/74	244.20	-.4	-.30	FIC Calibrated
12/08/74	244.20	0	-.30	
12/09/74	243.10	-	-.30	Transfer
12/12/74	290.20	-	-.30	Transfer

DRY WELL SUMMARY
TANK 102-SX

<u>Well No.</u>	<u>Date</u>	<u>Peak Reading Counts/Sec</u>	<u>Depth (Feet)</u>	<u>Comments</u>
41-02-02	5/09/74	680	48	New Monitoring Equipment
	7/30/74	190	48	
	12/02/74	155	48	
	12/09/74	150	48	
41-0502-12	4/10/74	<200		New Monitoring Equipment
	12/02/74	<100		
	12/09/74	<100		
41-02-07	4/10/74	<200		New Monitoring Equipment
	12/02/74	<100		
	12/09/74	<100		
41-02-08	4/10/74	350	46	New Monitoring Equipment
	12/02/74	80	46	
	12/09/74	<100		
41-02-11	11/14/74	<100		New Dry Well
	12/02/74	<100		
	12/10/74	<100		

ARHCO OCCURRENCE REPORT

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Tank Farm		WORK AREA 200 West
REPORT NO. 75-116	☐ PRELIMINARY 10/14/75	☐ INTERIM	☒ FINAL	DATE AND TIME OF OCCURRENCE October 11, 1975
OCCURRENCE SUBJECT Liquid Level Drop in Tank 102-SX				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE.

☐ DESIGN
 ☒ MATERIAL
 ☐ PERSONNEL
 ☐ PROCEDURE
 ☐ OTHER

Following a transfer of waste from 110-SX, the liquid level in 102-SX, the receiving tank, dropped over a period of several days exceeding the liquid level drop criteria. The characteristics of the material in 102-SX suggest that the waste transfer from 110-SX did not distribute or flow evenly across the tank but humped up in the vicinity of the tank inlet. Subsequently, the material has slumped, flowing slowly out over the waste surface seeking a flat surface. Similar phenomena have been observed in other tanks and will continue to occur.

bcc: GE Backman
 (w/att.) G Burton,
 HE Campbell, Jr.
 GT Dukelow
 DG Harlow
 HF Jensen
 BJ McMurray
 GC Oberg
 BJ Saueressig
 HP Shaw
 RM Smithers. (2)
 GT Stocking
 JA Teal
 JH Warren
 AT White
 RA Zinsli
 Central File

2. OPERATING CONDITIONS OF THE FACILITY AT TIME OF OCCURRENCE (IF APPLICABLE)

The tank is receiving 242-S slurry and transfers from other tanks as part of the 242-S Evaporator operation.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The liquid level drop is considered directly related to the consistency of the waste; a thick, relatively nonfluid mush which contained the incoming transfer and humped up in the vicinity of the liquid level gauges. The material has subsequently flowed out seeking a flat surface and causing a liquid level drop. A visual observation was obtained and the consistency of the surface checked. Photographs were taken and dry well monitoring obtained.

- * Subsequent transfer from 110-SX has provided evidence through photographs and liquid level observations that the additional wastes are diluting and liquidizing the
- * surface wastes, reducing the buildup of foam and the uneven distribution of the
- * previous heavy viscous materials. Attachments I and II illustrate liquid level plots
- * during the two transfers.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

Increase dry well surveillance and evaluate photographs.

B. PERMANENT CORRECTIVE ACTION

A continued drop in liquid level and a corresponding dry well indication would initiate an immediate pump out of the tank.

- * The investigation has found no indication that tank integrity is affected. Normal
- * service is recommended.

C. IS DESIGN CHANGE NECESSARY?

☐ YES

☒ NO

IF YES, WHEN

D. IS FURTHER EVALUATION NECESSARY?

☐ YES

☒ NO

IF YES, BY WHOM

WHEN

E. PERMANENT CORRECTIVE ACTION TO BE IMPLEMENTED BY:

NAME

DATE

5. SIMILAR OCCURRENCE: BY REPORT NUMBER AND OCCURRENCE SUBJECT

ARHCO Occurrence 75-89, "Decrease in Liquid Level in Tank 103-SX"

Att. (4)

cc: OJ Bennett, ERDA-RL
OJ Elgert, ERDA-RL (3)
PG Rhoades, ERDA-RL
JH Straub, ERDA-RL

ORIGINATED BY H. F. Jensen <i>H.F. Jensen</i>	TITLE Manager, Tank Farm Surveillance	DATE 10/27/75
REVIEWED BY J. A. Teal <i>J.A. Teal</i>	TITLE Manager, Tank Farm Operations	DATE 27 OCT 75
G. C. Oberg <i>G.C. Oberg</i>	Manager, Operations Technical Support	10/27/75
G. Burton, Jr. <i>G. Burton, Jr.</i>	VP, Production and Waste Management	10/27/75
R. M. Smithers <i>R.M. Smithers</i>	Manager, Tank Farm Management	10/27/75
A. T. White <i>A.T. White</i>	Manager, Quality Assurance and Safety	10/24/75

ARHCO OCCURRENCE 75-116

* Liquid Level Summary

Tank 102-SX

Date	Liquid Level (inches) FIC	Liquid Level (inches) Manual Tape	Comments
7/30/75	286.55	285.75	Previous to this date, tank was active.
7/31/75	273.45	274.00	Transfer to 102-S
8/01/75	274.10	274.75	
8/15/75	277.50	275.50	
8/30/75	279.15	277.75	
9/01/75	279.50	278.50	
9/12/75	280.40	279.25	
9/13/75	322.90	326.50	Transfer from 110-SX
9/14/75	330.15	332.25	" " " "
9/16/75	330.40	332.50	
9/17/75	356.20	360.25	Transfer from 110-SX
9/18/75	356.50	360.50	
9/29/75	358.40	360.50	FIC flushed 357.05
9/30/75	357.10	360.50	
10/03/75	357.50	360.50	
10/04/75	294.10	296.75	Transfer to 102-S
10/07/75	294.15	295.50	
10/08/75	281.55	283.50	Transfer to 102-S
10/09/75	254.10	253.00	" " " "
10/10/75	254.60	254.50	
10/11/75	296.45	293.25	Transfer from 110-SX 0900
10/12/75	295.85	292.50	
10/13/75	292.80	291.25 (10:00 am)	
10/14/75	292.35		4-12 shift
	292.00		12-8 shift
	291.80		7 am
* 10/15/75	289.3		
* 10/16/75	288.9		
* 10/20/75	288.85		
* 10/21/75	282.55		
* 10/22/75	304.55	301.75	Transfer to 102-S
* 10/23/75	303.30		Transfer from 110-SX
* 10/24/75	303.10		

ARHCO OCCURRENCE 75-116

* Dry Well Summary
Tank 102-SX

<u>Well No.</u>	<u>Date</u>	<u>Peak Reading Counts/Sec</u>	<u>Depth (feet)</u>	<u>Comments</u>
41-02-02	7/15/75	171	46	
	8/12/75	188	47	
	9/15/75	162	47	
	10/13/75	174	46	
*	10/21/75	177	47	
41-02-07	7/14/75	<50		
	9/15/75	<50		
	10/13/75	<50		
*	10/21/75	<50		
41-02-08	7/14/75	63	48	
	8/12/75	60	45	
	9/15/75	70	45	
	10/13/75	63	46	
*	10/21/75	64	48	
41-02-11	7/14/75	73	25	
	9/15/75	80	25	
	10/13/75	80	25	
*	10/21/75	84	25	
41-01-07	7/22/75	<50		
	10/13/75	<50		
*	10/21/75	<50		
41-01-10	7/14/75	<50		
	10/13/75	<50		
*	10/21/75	<50		
41-05-12	7/22/75	<50		
	10/13/75	<50		
*	10/21/75	<50		

ATTACHMENT I

* LIQUID LEVEL IN 102 SX 10/11/75 TRANSFER FROM 110SX

305-

300-

295-

LIQUID LEVEL INCHES

FIC LIQUID LEVEL READINGS

10/11

10/12

10/13

10/14

10/15

10/16

10/17

DAYS

OCCURRENCE REPORT

FEB 11 1977

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Farm, Tank 102-SX		WORK AREA 200 West
REPORT NO. 77-07	☐ PRELIMINARY 1/17/77	☐ INTERIM	☒ FINAL	
OCCURRENCE SUBJECT LIQUID LEVEL INCREASE IN TANK 102-SX MEETING ACTION CRITERIA			DATE AND TIME OF OCCURRENCE January 13, 1977	

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN
 ☒ MATERIAL
 ☐ PERSONNEL
 ☐ PROCEDURE
 ☐ OTHER

Waste slurry received in 102-SX has registered a gradual surface level increase similar to growth observed in other tanks receiving 242-S Evaporator slurries. The increase has exceeded the three inch action criteria. The FIC was flushed decreasing the level, but increased rapidly. This type of activity is considered typical of 242-S Evaporator slurries and represents a repetitive response mechanism even with the three inch increase criteria which recognizes the growth characteristics of this type concentrated waste.

Photographs show no evidence of in-leakage. Tank Farm Process Engineering have investigated the increase and indicate no evidence of in-leakage. The original assessment, above, is designated as cause for increase.

cc: JC Cummings, ERDA-RL
OJ Elgert, ERDA-RL (3)
PG Rhoades, ERDA-RL
JH Straub, ERDA-RL

bcc: DC Bartholomew
G Burton, Jr.
GT Dukelow
RA Freeman
JM Haines
DG Harlow
MC Jacobs
HF Jensen
EJ Kosiancic
CW Malody
S Marchetti

GC Owens
RD Prosser
BJ Saueressig
HP Shaw
JA Teal
GW Upington
JH Warren
AT White
JC Womack
RA Zinsli
Legal
Central File

2. OPERATING CONDITIONS OF THE FACILITY AT TIME OF OCCURRENCE (IF APPLICABLE)

The tank is considered sound and has been receiving 242-S Evaporator slurries.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The surface level increase is evaluated as a build-up of crust and growth characteristic of the salt cake. The concentrated slurry on standing and cooling will start dropping solids out which are less dense than the solution and float to the surface causing the liquid level increase.

No evidence of in-leakage. A review of piping and valving by Tank Farm Process Engineering indicated no evidence of in-leakage.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

No corrective action is warranted. Photographs taken November 15, 1976, revealed heavy sludge-crust formations.

Photographs on 1/27/77 show a crusty broken surface.

B. PERMANENT CORRECTIVE ACTION

No corrective action indicated.

C. IS DESIGN CHANGE NECESSARY?		IF YES, WHEN
☐ YES	☒ NO	
D. IS FURTHER EVALUATION NECESSARY?		IF YES, BY WHOM
☐ YES	☒ NO	
E. PERMANENT CORRECTIVE ACTION TO BE IMPLEMENTED BY:	NAME	DATE

5. SIMILAR OCCURRENCE : BY REPORT NUMBER AND OCCURRENCE SUBJECT

ORIGINATED BY H. F. Jensen	TITLE Manager, Tank Farm Surveillance	DATE 2/8/77
REVIEWED BY J. A. Teal	TITLE Manager, Tank Farm Operations	DATE 9 Feb 77
E. J. Kosianic	Manager, Engineering	2/9/77
A. T. White	Manager, Quality Assurance and Safety	2/10/77
C. W. Malody	Manager, Production and Waste Management	2/11/77
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
D. C. Bartholomew	Manager, Operations	2/9/77

44-3000-588R (5-76)

ARHCO OCCURRENCE 77-07

TANK 102-SX

LIQUID LEVEL

<u>Date</u>	<u>Liquid Level (inches)</u>	<u>Change from Previous Reading (inches)</u>	<u>Cummulative Change (inches)</u>	<u>Comments</u>
	306.00	-	-0.30	Active
04/25/76	306.60	+0.60	+0.30	
05/30/76	306.80	+0.20	+0.50	
06/30/76	306.90	+0.10	+0.60	
07/20/76	348.30	-	+0.60	Transfer
07/22 to 07/24	348.40	+0.10	+0.70	
08/04/76	342.75	-	+0.70	Transfer
08/05 to 08/18	343.10	+0.35	+1.05	
08/30/76	344.00	+0.90	+1.95	
09/29/76	344.10	+0.10	+2.05	
10/30/76	344.40	+0.30	+2.35	
11/21/76	313.50	-	+2.35	Transfer/New Baselin
11/22 to 12/23	314.20	+0.70	+3.05	
12/30/76	316.00	+1.80	+4.85	Flushed FIC 316.05
01/11/77	316.30	+0.30	+5.15	
01/12/77	316.90	+0.60	+4.75	
01/13/77	316.40	-0.50	+5.25	Flushed FIC
01/13/77	317.00	+0.60	+5.85	
01/19/77	318.00	+1.00	+6.85	
01/28/77	319.00	+1.00	+7.85	
02/03/77				

HFJ:2/09/77

MAR 23 1977

OCCURRENCE REPORT

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Tank Farm, Tank 102-SX		WORK AREA 200 West
REPORT NO. 77-37	☐ PRELIMINARY 3/16/77	☐ INTERIM	☒ FINAL DATE AND TIME OF OCCURRENCE March 13, 1977	
OCCURRENCE SUBJECT LIQUID LEVEL INCREASE IN TANK 102-SX MEETING ACTION CRITERIA				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☐ OTHER

Waste slurry received in 102-SX continues* a gradual surface level increase similar to growth observed in other tanks receiving 242-S Evaporator slurries. The increase has exceeded the three inch action criteria. The FIC was flushed decreasing the level temporarily. This type of activity is considered typical of 242-S Evaporator slurries and represents a repetitive response mechanism even with the three inch increase criteria which recognizes the growth characteristics of this type concentrated waste.

cc: JC Cummings, ERDA-RL
OJ Elgert, ERDA-RL (3)
PG Rhoades, ERDA-RL
JH Straub, ERDA-RL

bcc: DC Bartholomew
G Burton, Jr.
GT Dukelow
RA Freeman
JM Haines
DG Harlow
HF Jensen
EJ Kosiancic
CW Malody
S Marchetti
GC Owens
MF Rice

RD Prosser
BJ Saueressig
HP Shaw
JA Teal
GW Upington/TL Bennington
JH Warren
AT White
JC Womack
RA Zinsli
DW Campbell
Central File

* Occurrence Report 77-07, same subject

2. OPERATING CONDITIONS OF THE FACILITY AT TIME OF OCCURRENCE (IF APPLICABLE)

The tank is considered sound and has been receiving 242-S Evaporator slurries.

(OVER)

34-3000-558 (5-76)

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The surface level increase is evaluated as a build-up of crust and growth characteristic of the salt cake. The concentrated slurry on standing and cooling will start dropping solids out which are less dense than the solution and float to the surface causing the liquid level increase. The gauge was flushed 3/14/77 and indicated some change, but not enough to change the need for an occurrence report.

The P-15 exhauster plenum and filter housing drains to the tank, but Tank Farm Process Engineering could find no evidence of any major contribution to the tank volume. Tank Farm Operations reported no other evidence of in-leakage.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

Photographs on 1/27/77 show a crusty broken surface. Tank valving and operating records were evaluated for evidence of in-leakage - reports were negative.

B. PERMANENT CORRECTIVE ACTION

No corrective action indicated.

C. IS DESIGN CHANGE NECESSARY?		IF YES, WHEN	
☐ YES	☒ NO		
D. IS FURTHER EVALUATION NECESSARY?		IF YES, BY WHOM	
☐ YES	☒ NO		
E. PERMANENT CORRECTIVE ACTION TO BE IMPLEMENTED BY:		NAME	DATE

5. SIMILAR OCCURRENCE : BY REPORT NUMBER AND OCCURRENCE SUBJECT

Occurrence Report 77-07 - January 13, 1977, "Liquid Level Increase In Tank 102-SX Meeting Action Criteria"

/ Denotes change from previous report.

ORIGINATED BY	TITLE	DATE
H. F. Jensen	Manager, Tank Farm Surveillance	3/21/77
REVIEWED BY	TITLE	DATE
G. C. Owens	Manager, Environmental and Occupational Safety	3/21/77
J. A. Teal	Manager, Tank Farm Operations	21 MAR 77
A. T. White	Manager, Quality Assurance and Safety	3-22-77
E. J. Kosianic	Manager, Engineering	3-21-77
C. W. Malody	Manager, Production and Waste Management	3/22/77
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
D. C. Bartholomew	Manager, Operations	3/22/77

54-3000-888R (5-76)

ARHCO OCCURRENCE 77-37

TANK 102-SX

LIQUID LEVEL

<u>Date</u>	<u>Liquid Level (inches)</u>	<u>Change from Previous Reading (inches)</u>	<u>Cumulative Change (inches)</u>	<u>Comments</u>
04/25/76	306.00	-	-0.30	Active
05/30/76	306.60	+0.60	+0.30	
06/30/76	306.80	+0.20	+0.50	
07/20/76	306.90	+0.10	+0.60	
07/22 to 07/24	348.30	-	+0.60	Transfer
08/04/76	348.40	+0.10	+0.70	
08/05 to 08/18	342.75	-	+0.70	Transfer
08/30/76	343.10	+0.35	+1.05	
09/29/76	344.00	+0.90	+1.95	
10/30/76	344.10	+0.10	+2.05	
11/21/76	344.40	+0.30	+2.35	
11/22 to 12/23	313.50	-	+2.35	Transfer/New Baseline
12/30/76	314.20	+0.70	+3.05	
01/11/77	316.00	+1.80	+4.85	Flushed FIC 316.05
01/12/77	316.30	+0.30	+5.15	
01/13/77	316.90	+0.60	+4.75	
01/13/77	316.40	-0.50	+5.25	Flushed FIC
01/19/77	317.00	+0.60	+5.85	
01/28/77	318.00	+1.00	+6.85	
02/03/77	319.00	+1.00	+7.85	
02/11/77	318.55	-0.45	+7.40	A.O.R. 77-07 Final
02/14/77	319.00	+0.45	+7.85	
02/15 to 02/16	354.60	-	+7.85	Transfer/New Baseline
02/28/77	356.50	+1.90	+9.75	
03/13/77	358.00	+1.50	+11.25	
03/14/77	358.10	+0.10	+11.35	
03/14/77	357.60	-0.50	+10.85	Flushed FIC
03/16/77	358.40	+0.80	+11.65	
03/18/77	358.80	+0.40	+12.05	FIC Flushed/No Change
03/20/77	358.65	-0.15	+11.90	

HFJ:3/21/77

OCCURRENCE REPORT

JUN 16 1977

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Tank Farm, Tank 102-SX		WORK AREA 200 West
REPORT NO. 77-71	☐ PRELIMINARY 5/17/77	☐ INTERIM	☒ FINAL	DATE AND TIME OF OCCURRENCE May 13, 1977 2100
OCCURRENCE SUBJECT TANK 102-SX LIQUID LEVEL DECREASE				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☒ OTHER

A transfer was made from Tank 103-S to Tank 102-SX between 0200 and 0410 on May 12. The material balance was a -1.15 inches. At 0410, Tank 102-SX liquid level (FIC) read 333.0 inches. Approximately 33 hours after the transfer, the 102-SX liquid level (FIC gauge reading) began to drop. (See attached table.)

Normally, new baselines are established 24 hours after transfer to allow settling time. This level drop came after that period. The combined liquid level drop, plus the material imbalance, totals 2.95 inches, or approximately 7,500 gallons.

No apparent cause can be designated. Many plausible explanations have been investigated, but none can be singled out as the definite causative agent.

cc: JC Cummings, ERDA-RL
OJ Elgert, ERDA-RL (3)
PG Rhoades, ERDA-RL
JH Straub, ERDA-RL

bcc: DC Bartholomew RD Prosser
G Burton, Jr. MF Rice
JM Cashman BJ Saueressig
JL Deichman HP Shaw
GT Dukelew SP Stalos
RA Freeman GW Upington/TL Bennington
JM Haines JH Warren
DG Harlow AT White
EJ Kosianc JC Womack
CW Malody RA Zinsli
S Marchetti Legal
GC Owens Central File (Q-Safety 5.2)
DJ Cockeram - Rockwell

2. OPERATING CONDITIONS OF THE FACILITY AT TIME OF OCCURRENCE (IF APPLICABLE)

The tank appears sound. Material contents in 102-SX appear to be layered. Pictures (1/27/77 at liquid level of 318.0") show a heavy salt layer with cracking covering the entire surface. Pictures (11/15/76 at liquid level of 344.50") show a mirror-clear liquid surface. Solids appear to be up to approximately the 280 inch level.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The liquid coming from 103-S was dilute. The contents of 102-SX are thick with salt cake and crusted. Process Engineering states that mixing of these two liquids could account for some of the volume change. Photographs indicate a thick-dry-fissured surface. Dilute liquid running into these pockets and holes would also cause the liquid level to drop. Past history shows that tanks with heavy crusts demonstrate a liquid decrease after filling. Generally, this settling is completed in 24 hours. Past TFF practice has been to establish a baseline after 2 consecutive liquid level readings of the same level have been observed. This practice was discontinued recently because, in isolated instances, baselines were not established for several days. In this instance, the primary settling took place after the initial 24-hour period.

Since 5/13/77, transfers into and out of the tank have been made, all with acceptable material balances.

Dry well measurements taken through 6/08/77 show no significant change.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

None.

B. PERMANENT CORRECTIVE ACTION

None.

C. IS DESIGN CHANGE NECESSARY?

☐ YES ☒ NO

IF YES, WHEN

D. IS FURTHER EVALUATION NECESSARY?

☐ YES ☒ NO

IF YES, BY WHOM

WHEN

E. PERMANENT CORRECTIVE ACTION TO BE IMPLEMENTED BY:

NAME

DATE

5. SIMILAR OCCURRENCE: BY REPORT NUMBER AND OCCURRENCE SUBJECT

77-07 - "Liquid Level Increase Meeting Action Criteria"

77-37 - "Liquid Level Increase in Tank 102-SX"

ORIGINATED BY	TITLE	DATE
J. L. Deichman	Manager, Tank Farm Surveillance	6/13/77
REVIEWED BY	TITLE	DATE
G. C. Owens	Manager, Environmental & Occupational Safety	6/13/77
J. M. Cashman	Manager, Tank Farm Operations	6/14/77
E. J. Kosiancic	Manager, Engineering	6-14-77
A. T. White	Manager, Quality Assurance and Safety	6/14/77
C. W. Malody	Manager, Production and Waste Management	6/16/77
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
D. C. Bartholomew	Manager, Operations	6/15/77

54-3000-568 (5-76)

ARMCO OCCURRENCE 77-71

TANK 102-SXLIQUID LEVELS

<u>Date</u>	<u>Time</u>	<u>Liquid Level (inches)</u>
5/12/77	0410	<u>333.00</u>
5/12/77	1500	333.00
5/12/77	2300	333.00
5/13/77	0900	<u>333.10</u>
5/13/77	1300	<u>331.90</u>
5/13/77	1500	331.60
5/13/77	2100	331.20
5/14/77	<u>0700</u>	<u>331.20</u>
5/14/77	0900	<u>331.30</u>
5/15/77		<u>331.20</u>
5/16/77		<u>331.20</u>

<u>TANK</u>	<u>BEFORE TRANSFER</u>	<u>AFTER TRANSFER</u>	<u>CHANGE</u>
103-S	252.95	246.00	-6.95
102-SX	327.20	333.00	+5.80

JLD:SPS:kam - 6/09/77

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