Flammable Gas Tank Waste Level Reconciliation Tank 241-SX-105

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Abstract: This document provides verification/reconciliation of unexplained waste level increases for tank 241-SX-105 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-105**

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-105

WORK ORDER E40697

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LETTER REPORT

**FLAMMABLE GAS TANK
WASTE LEVEL RECONCILIATION
TANK 241-SX-105**

INTRODUCTION

Fluor Daniel Northwest (FDNW) was authorized to address flammable gas issues by reconciling the unexplained surface level increases in Tank 241-SX-105 (SX-105, typical). The trapped gas evaluation document (ref 1) states that Tank SX-105 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-105 transfers and reported a net cumulative change of 20.75 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 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-105 initially received waste from REDOX starting the second quarter of 1955. After June 1975, the tank primarily 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 20.75 in. from June 1973 through December 1980. During this period, there were unexplained increases that totaled 25.25 in., and decreases that totaled 4.5 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 52.35 in. and a decrease of 16.05 in., for a net unexplained increase of 36.30 in. (see Table 1).

From the FDNW review and comparisons of the Welty Report versus other daily records for Tank SX-105, 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 (14.10 in. of 18.30 in.) when they were identified in Occurrence Reports, 76-40 (+2.2 in.), 76-172 (+3.00 in.), 77-133 (+3.2 in.) and 77-184 (+5.70 in.). In 1978, levels fluctuated considerably more than the Welty Report indicated. In 1979, the Welty Report did not identify any increases or decreases although the levels continued to oscillate. In 1980, the daily records supported the Welty Report.

Because the flammable/trapped gas issue is linked to the unexplained increases 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 level 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-105 (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-105 initially received waste from REDOX in the second quarter of 1955. Beginning in June 1975 through September 1977, Tank SX-105 received processed waste (slurry) from the 242-S Evaporator/Crystallizer (242-S Evaporator). Tank SX-105 primarily pumped supernate to Tanks S-101 and S-102, and in April 1977, started pumping to Tanks SY-102, S-107, and S-101. 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 the occurrence reports for Tank SX-105 that were issued regarding surfaces level changes from 1973 to the end of 1980, specifically, reports 76-40, 76-172, 77-74, 77-133, 77-184 and 79-125. FDNW retrieved copies of these reports (see Appendix F).

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.

1973 - 1975 Data

From reviewing the daily transaction details and the daily waste level manual plots and records, FDNW determined that Tank SX-105 was inactive in 1973, 1974, and until May 1975, with a waste/level depth of approximately 344 in. Between May 2 and May 7, 1975, waste was pumped

from Tank SX-105 to Tank S-102. After the transfer, the waste depth was 137.8 in. For the next eight months, Tank SX-105 actively received slurry from the 242-S Evaporator, and primarily pumped supernate to Tank S-102. The waste depth varied from a low of 63 in. on June 21, 1975, to a high of 362 in. during September 1975.

1976 Data

From January 24 through February 3, 1976, approximately 136 in. of slurry was received from the 242-S Evaporator. Between February 3 and March 31, 1976, there were no identified transfers into the tank while the waste depth increased from 355.45 in. to 361.2 in., or 5.75 in. According to the Welty Report, the first large unexplained surface level increase 5.80 in. occurred April 1, 1976. Between April 1 and April 6, 1976, approximately 150 in. of supernate were pumped to Tank S-102 and approximately 38 in. of slurry were received. From April 6 to April 27, 1976, the waste depth increased by 2.3 in., from 249.7 in. to 252.0 in. (Welty Report, 2.25 in) with no identified transfers identified on the daily tank farm records (see Table 1).

On April 29 and 30, 1976, Tank SX-105 received additional slurry. This established a new baseline waste depth at 274.2 in. on May 1, 1976. Between May 1 and August 11, 1976, there were no waste transfers except periodic gauge flushing. On August 11, 1976, the tank waste depth was 276.75 in. for an unexplained increase of 2.55 in. (Welty Report, 0.35 in.). However, Occurrence Report 76-40 identified an increase of 2.1 in., from 274.3 in. to 276.4 in. between, May 1 and June 9, 1976.

On August 12 and 13, 1976, Tank SX-105 received additional slurry. Thereafter, a new baseline 283.1 in. was established. Prior to a transfer to Tank S-102 on November 8, 1976, the waste level had increased to 285.6 in., a growth of 2.5 in. (Welty Report, 2.5 in.).

On November 12 and 13, 1976, a slurry transfer increased the tank waste depth to 355.3 in. Between November 12 and December 15, 1976, the waste level had an unexplained increase of 3.0 in. to 358.3 in. (Welty Report, none). This increase was identified in Occurrence Report 76-172.

1977 Data

In 1977, the Welty Report identified five separate unexplained waste depth increases: January, 2.8 in.; February, 1.9 in.; April, 2.4 in.; August, 1.9 in.; and November, 1.95 in., for a total of 10.95 in. Waste transfer activity continued similar to 1976, with slurry receiving and pumping to Tanks S-101, S-102, S-107 and SY-102.

Daily records showed that between December 15, 1976, and January 20, 1977, the waste level increased 2.8 in. to 361.1 in. On January 21, 1977, the waste baseline level was established at 350.6 in. after a supernate transfer to Tank S-102. Between January 21 and February 15, 1977, the waste level increased 1.9 in. to a depth of 352.5 in. Tank SX-105 received approximately 6 in. of waste from Tank S-101 on February 16, 1977, for a new baseline of 358.7 in. Between February 16 and April 9, 1977, there were no transfers, but an unexplained increase of 2.4 in. to 361.1 in. was recorded.

Between April 9 and 12, 1977, supernate was pumped from Tank SX-105 to Tank SY-102 establishing a new baseline of 266.4 in. From April 9 to May 15, 1977, the level increased to 267.0 in. but then dropped to 265.4 in. (-1.0 in.) before receiving slurry on May 27, 1977. The Welty Report showed no decrease and identified Occurrence Report (77-44) 77-74. (NOTE: Error in Welty Report number 77-44, it should be 77-47.)

Slurry was received and supernate transferred to Tanks SY-102 and S-107 from May 29 through June 15, 1977, raising the waste level to 346.3 in. A baseline of 348.5 in. wasn't established until July 5, 1977, after an unexplained increase of 2.2 in. (Welty Report, none). There are no recorded transfers into Tank SX-105 during this period. Between July 5 and August 20, 1977, the waste level increased to 353.6 in. for an unexplained increase of 5.1 in. (Welty Report, 1.9 in.). Occurrence Report 77-133 (Welty Report, 77-13 [error]) identified part of this increase.

NOTE: A comment in 77-133 states *"The growth phenomenon is frequently observed in all active SX tanks. Superimposed on this general growth, however, are sudden drops attributed to cracks and crevices in the thick, dry crust."*

From August 20 through September 25, 1977, waste was sent to Tanks S-107 and S-101 and slurry was received from the 242-S Evaporator. The waste level varied from a low of 309.5 in. up to a baseline of 354.6 in. on September 25, 1977. Between September 25 and December 1, 1977, there were no noted transfers in the daily records (ref 13 and 14) while the waste level increased to 362.25 in., for a total increase of 7.65 in. (Welly Report, 1.95 in.). Occurrence Report 77-184 identified 4.2 in. of this unexplained increase. Tank waste was pumped to Tank SY-102 from December 1 through 5, 1977, and a new baseline of 275.6 in. was set on December 8, 1977.

1978 Data

By January 1, 1978, the waste level in Tank SX-105 had increased to 277.3 in., up 1.7 in. from the baseline. During 1978, waste level oscillated with an average depth of 277 in. through September 21, 1978, with no waste transfer activity. The waste level increased to 278.4 in. on January 15, 1978, decreased to 275.7 in. on April 17, 1978, increased to 277.6 in. on June 14, 1978, decreased to 276.8 in. on July 14, 1978, increased to 277.6 in. on September 1, 1978, increased to 277.5 in. on September 20, 1978, and then decreased to 275.6 in. before a gauge flush on September 22, 1978 that further dropped the level to 275.1 in. (see Table 1). The Welly Report shows an increase of 1.8 in. between December 8, 1977, and August 21, 1978, and a 2.20-in. decrease on August 22, 1978, with a FIC gauge flushing. The daily records indicate that the FIC gauge was flushed on September 22, 1978, not August 22, 1978; the waste levels correspond between the Welly Report and the daily records. The waste level increased slightly through the end of the year (see Appendices D and E).

1979 Data

The daily records show that the waste level baseline (275.6-in.) continued into 1979 with the waste level starting at 276.1 in. The level continued to oscillate and slowly increased to 278.2 in., between September 22, 1978, and October 1979, an increase of 3.1 in. (Welly Report, none). On October 19, 1979, a transfer from Tank S-107 increased the waste level to 302.55 in. From October 19 to November 6, 1979, the level dropped until a new baseline was established at 299.5 in., an unidentified decrease of 3.05 in. From November 6 through December 14, 1979, levels increased

to 301.3 in. (an increase of 1.8 in.), and then dropped to 297.2 in. (a decrease of 4.1 in.) on December 17, 1979. Occurrence Report 79-125 identified part of these level fluctuations. The Welty Report did not identify any activity in 1979.

1980 Data

On January 17, 1980, a new baseline level of 298.0 in. was established as a result of a recommendations in Occurrence Report 79-125. The waste level increased to 300.0 in. (an increase of 2.0 in.) by the end of the January 1980, with the possibly of some flush water entering the tank. Waste was transferred to Tank SY-102 and received from Tank S-103 during the first part of February 1980 with a new baseline of 326.6 in. established on February 14, 1980. Levels slowly increased to 328.0 in. through May 15, 1980. This 1.4-in. increase was identified in the Welty Report as two separate increases of 0.90 in. and 0.55 in., with the possibility that the 0.55-in. increase was associated with line flushes. Daily records indicate that some flush water entered the tank but it is difficult to establish an amount.

There was a steady decrease from mid-May 1980 to June 12, 1980, to a level of 326.0 in. (-2.0 in.), followed by a slight increase to 326.5 in. (+0.5 in.) in the later part of July 1980. This equals the 1.3-in. decrease identified in the Welty Report. A saltwell screen was installed August 7, 1980, and waste was transferred to Tank S-107 on August 28, 1980. A baseline of 255.6 in. was set September 2, 1980, and readings fluctuated from 254.75 in. to 257.05 in. throughout the remainder of 1980.

Data Conclusion

During the eight-year evaluation of Tank SX-105, the Welty Report showed a 4.5-in. decrease and a 25.25-in. increase, for a net increase of 20.75-in. cumulative change in Tank SX-105. FDNW addressed the major increases and decreases according to the Welty Report (totaling +25.1 in. and -3.50 in., respectively) and compared these values against the daily records (see Table 1). FDNW also reviewed the occurrences reports from 1973 through 1980 and the period between the time of the transfers and the establishment of the baseline. The FDNW review agrees with the Welty Report

in general additions (5.80 in. vrs. 5.75 in., 2.25 in. vrs. 2.30 in., etc.). The FDNW evaluation differs from the Welty Report regarding level changes associated with the occurrence reports as follows:

- The Welty Report identified a 0.35-in. increase for August 11, 1976; the total unexplained increase from daily records was 2.55 in. The difference of 2.2 in. was not accounted for because of the occurrence reports.
- In 1976, the Welty Report identified a 10.90-in. increase while the daily records identified a 16.10-in. increase. The difference of 5.2 in. was not accounted for because of the occurrence reports.
- In 1977, these differences continue with: 10.95 in. vrs. 22.05 in..
- In 1978, the daily records and the Welty Report increases and decreases balanced out with an increases of 5.4 in. vrs. 1.8 in. and a decrease of -5.9 in. vrs. -2.2 in., for net of -0.5 in. in the daily records and -0.4 in. in the Welty Report.

The total increases tabulated from daily reports from 1976 through 1980 is 52.35 in. versus the Welty Report value of 25.25 in. (1973 through 1980), a difference of 26.10 in. Most of this difference is accounted for by amounts identified in the occurrence reports (14.1 in.). A 2.2-in. increases occurred between the completion time of a transfer and the time that the baseline was established. The remaining increases resulted from the reporting of the additional cycles. These additional surface level values would also increase the net cumulative change value by 178%, from +20.75 to +37.05 in., thereby, increasing the possibility of additional flammable gas buildup within Tank SX-105.

TABLE 1
Daily Records versus Welty Report

Date	Daily Records (in.)	Welty Report (in.)	Comments
4/1/76	+5.75	+5.80	
4/28/76	+2.30	+2.25	
8/11/76	+2.55	+0.35	Occurrence Report 76-40 (2.1-in. increase)
11/8/76	+2.50	+2.50	
12/15/76	+3.00	0	Occurrence Report 76-172 (3.0-in. increase)
1/19/77	+2.80	+2.8	
2/15/77	+1.90	+1.9	
4/8/77	+2.40	+2.4	
5/27/77	(-1.0)	0	Occurrence Report 77-74 (decrease)
7/5/77	+2.20	0	Twenty day delay in establishing baseline.
8/20/77	+5.10	+1.9	Occurrence Report 77-133 (increase)
12/1/77	+7.65	+1.95	Occurrence Report 77-184 (4.2-in. increase)
1/1/78	+1.7	0	
1/15/78	+1.1	0	
4/17/78	-2.7	0	
6/14/78	+0.9	0	
7/14/78	-0.8	0	
9/1/78	+0.8	0	
9/20/78	+0.9	+1.8	Welty Report date (8/20/78) error.
9/22/78	-2.4	-2.2	Welty Report date (8/22/78) error.
10/13/79	+3.1	0	
11/6/79	-3.05	0	
12/14/79	+1.8	0	
12/17/79	-4.1	0	Occurrence Report 79-125 (-2.3-in. decrease)

TABLE 1 (cont.)
Daily Records versus Welty Report

Date	Daily Records (in.)	Welty Report (in.)	Comments
1/30/80	+2.0		Part of increase may be flush water.
5/15/80	+1.4	+0.90, +0.55	
6/12/80	-2		
7/27/80	+0.5	-1.3	
Total Net	+52.35/-16.05 +36.30	+25.10/-3.50 +21.6	Note: Welty Report totals are 25.25-in increase, 4.50-in decrease, Net 20.75-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 76-40, 76-172, 77-74, 77-133, 77-184, and 79-125. 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-105 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 the amount and types of waste pumped into the tanks. The records also identify the amount 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 in 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-105 WELTY REPORT DATA
1973 TO 1980

SD-WM-TI-356
41-05-01

TANK: 105-SX

02 03 05 07 08 10 12 16 4 RISE AND DRY-WELL LOCATIONS	LOCATION: 241-SX COMPUTER CODE: 41-05 <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: 02-55 Out-Service Date: <u>LEAK-DETECTION SYSTEM:</u> Liquid Level Manual Tape: No FIC: Yes (R-4) Intrusion mode LOW: Yes (R-16) 41-05-65 Annulus System Exhaust Radiation Detector: N/A Leak Detection (Conductivity Probes): N/A Leak-Detection Pit Liquid Level: N/A Specific Gravity: N/A Radiation Detector: N/A External Dry Wells: Yes (7) Laterals: Yes (3)
<u>TANK STATUS</u> CATEGORIZED: Sound/deactivated (08-29-80) ISOLATION: Partially (06-85) STABILIZATION: PROJECTED USAGE: Jet salt-well pumping program SALT-WELL STATUS/HISTORY: None Installation: Pumping Initiated: Completion Date: MEAS. LEVEL (in.): 254.10 (FIC) solids SOLIDS LEVEL (in.): 254.00 = 683,000 gal (04-28-82), salt cake and sludge SUPERNATANT (gal): 0 DRAINABLE INTERSTITIAL (gal): 261,000 TOTAL JET PUMPED (gal): 0 TOTAL PUMPABLE REMAINING: 239,000 gal PHOTOGRAPHS: 7912931 (12-17-79), 92606 (08-29-80), 107233 (04-20-83) 04-20-83 photographs reveal an uneven surface of salt cake that is cracked in some areas and appears to have flowed in others.	

Rev. 0

SD-WM-T1-356
41-05-02

TANK 105-SX

Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
06/13/73	346.10				
07/23/73	345.90		-0.20	-0.20	Stable
08/08/73	349.20			-0.20	Calibration
08/20/73	349.25		+0.05	-0.15	Stable
08/22/73	349.00			-0.15	Calibration--main-tenance
02/11/74		348.80	-0.20	-0.35	Slow decrease
03/15/74		348.40		-0.35	Evaporation
05/07/74		348.10		-0.35	Evaporation
05/08/74	347.60			-0.35	New FIC
05/21/74	348.00			-0.35	Calibration
05/22/74	348.30			-0.35	Transfer
07/03/74		347.80		-0.35	Evaporation
09/08/74		347.50		-0.35	Evaporation
10/04/74	347.20			-0.35	FIC recalibrated
10/22/74		346.80		-0.35	Evaporation
12/03/74		346.20		-0.35	Evaporation
01/06/75		345.60		-0.35	Evaporation
02/14/75		345.00		-0.35	Evaporation
03/13/75		344.70		-0.35	Evaporation
04/18/75		344.10		-0.35	Evaporation
05/02/75	344.20		+0.10	-0.25	Stable
05/07/75	137.90			-0.25	Transfer
06/01/75	137.20		-0.60	-0.85	Steady decrease
02/03/76	355.40			-0.85	Slurry receiver and transfers
04/01/76	361.20		+5.80	+4.95	Steady increase
04/05/76	249.75			+4.95	Slurry receiver and transfers
04/28/76	252.00		+2.25	+7.20	Slow increase
05/01/76	274.20			+7.20	Received slurry
06/21/76		276.40		+7.20	ARHCO OR No. 76-40
08/02/76	276.40			+7.20	FIC repaired
08/11/76	276.75		+0.35	+7.55	Slow increase
08/13/76		283.10		+7.55	Received slurry
11/08/76	285.60		+2.50	+10.05	Slow increase
11/14/76		355.30		+10.05	Received slurry and transfers
12/15/76	358.30			+10.05	Slurry growth.
01/19/77	361.10		+2.80	+12.85	OR No. 76-172 written Slow increase asso- ciated with slurry growth

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TANK 105-SX

Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
01/25/77		350.60		+12.85	Transfer
02/15/77	352.50		+1.90	+14.75	Slow increase
02/17/77		358.70		+14.75	Transfer
04/08/77	361.10		+2.40	+17.15	Slow increase
04/13/77		266.40		+17.15	Transfer
05/27/77	265.90			+17.15	Decrease. OR No. 77-44 issued
07/07/77		348.50		+17.15	Received slurry
08/03/77	351.70			+17.15	Slurry growth. OR No. 77-13
08/20/77	353.60		+1.90	+19.05	Slow increase associated with slurry growth
09/26/77		354.60		+19.05	Active
11/01/77		360.30		+19.05	Slurry growth. OR No. 77-184 written
12/01/77	362.25		+1.95	+21.00	Steady increase associated with slurry growth
12/08/77		275.60		+21.00	Transfer
08/21/78	277.40		+1.80	+22.80	Steady increase
08/22/78	275.20		-2.20	+20.60	Decrease associated with FIC flush
11/06/79		299.50		+20.60	Transfer
01/17/80		298.00		+20.60	OR No. 79-125 written
02/09/80		326.60		+20.60	Active
04/27/80	327.50		+0.90	+21.50	Erratic increase
05/16/80	328.05		+0.55	+22.05	Associated with line flushes
08/05/80	326.65		-1.30	+20.75	Steady decrease
09/02/80		255.60		+20.75	Active
12/09/80		254.50		+20.75	FIC repaired and recalibrated. Readings fluctuate from 254.75 to 257.05 in.
07/03/81	255.10		+0.60	+21.35	Erratic increase
11/18/81		253.80		+21.35	FIC recalibrated. 10/20/81 readings fluctuate
07/28/82	255.10		+1.30	+22.65	Readings fluctuate

SD-WM-TI-356
41-05-04

TANK 105-SX

Liquid Level.

Date	Liquid level (in.)	Baseline ref.	Change from previous reading (in.)	Cumulative change (in.)	Comments
07/20/83	254.00		-0.10	+21.55	Readings fluctuate
05/21/84	255.00		+1.00	+22.55	Erratic increase
05/22/84		257.00		+22.55	FIC is in intrusion mode
02/12/85	254.10			+22.55	
07/01/86				+22.55	FIC is in intrusion mode
07/01/87					Intrusion mode

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SD-WM-TI-356
41-05-10

TANK 105-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
753022	29	75/05/07		X	143.30			
754262	36	75/06/16		X	180.00			
756834	16	75/09/22		X	353.00			
762290	13	76/03/10		X	359.50			
770218	13	77/01/05		X	359.65			
774489	18	77/05/24		X	265.40			
7710613	30	77/10/19		X	358.60			
83534	31	78/09/20		X	277.50			
88503	28	79/10/26	X		300.20	299.50	1	24
7912931	06	79/12/17		X	297.30			
89152	09	79/12/20		X				
92606	30	80/08/29	X		255.10	254.50	7	17
107233	30	83/04/20	X		253.95			

SD-WM-TI-356
41-05-11**SUMMARY**

Tank 241-SX-105 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.

New lateral instrumentation was installed and operational during January 1976.

Occurrence Report 79-125 was issued in December 1979 because of a liquid-level decrease. The cause of the observed decrease was attributed to the FIC plummet contacting surface solids. In May 1984, the FIC was placed into the intrusion mode.

Readings for the dry wells and laterals 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.
3. Lateral increase: see p. 41-00-05.

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

WASTE LEVEL (in)

241-SX-105 WASTE LEVEL HISTORY
QUARTERLY/MONTHLY
1973 TO 1980

Quarterly/Monthly Waste Volume and Level Summary
 241-SX-105
 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
SX105	3/31/73	872	66	938	346	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 A	8
SX105	6/30/73	871	66	937	346	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 B	8
SX105	9/30/73	879	66	945	349	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 C	8
SX105	12/31/73	878	66	944	349	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-2794 D	8
SX105	3/31/74	878	66	944	349	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-CD-133A	8
SX105	6/30/74	876	66	942	348	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste, 2,000 gal from 111-SX	ARH-CD-133B	8
SX105	9/30/74	874	66	940	347	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-CD-133C	8
SX105	12/31/74	900	37	937	346	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste. Awaiting solidification.	ARH-CD-133D	8
SX105	3/31/75	861	73	934	345	Evaporator Bottoms Waste-REDOX Supernatant Ion Exchange Waste	ARH-CD-336A	8
SX105	6/30/75	179	73	252	97	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 206,000 to 104-SX.	ARH-CD-336B	8
SX105	9/30/75	693	263	956	353	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio.	ARH-CD-336C	8
SX105	12/31/75	401	464	865	320	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio.	ARH-CD-336D	8
SX105	3/31/76	487	491	978	361	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio. 263 kgal to 101-S; 66 kgal to 107-S, this value is not recorded under 107-S entry nor any other tank entry for same period.	ARH-CD-702A	8
SX105	6/30/76	253	491	744	276	Evaporator Bottoms Waste. 242-S bottoms and recycle. Uncertainty in liquid-to-solid ratio.	ARH-CD-702B	8
SX105	9/30/76	278	491	769	285	ACTIVE-EVAPORATOR FEED (CONCENTRATE)	ARH-CD-702 I	12, 33
SX105	10/1/76	292	480	772	286	ACTIVE-EVAPORATOR FEED (CONCENTRATE)	ARH-CD-822 OCT	13, 33
SX105	11/1/76	487	480	967	357	ACTIVE-SPACE-LOW HEAT	ARH-CD-822 NOV	13, 33
SX105	12/1/76	492	480	972	359	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 DEC	15, 35
SX105	1/1/77	211	739	950	351	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 JAN	15, 35
SX105	2/1/77	211	739	950	351	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 FEB	15, 35
SX105	3/1/77	239	739	978	361	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 MAR	15, 35
SX105	4/1/77	0	739	739	274	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 APR	15, 35
SX105	5/1/77	85	739	824	305	ACTIVE-RESIDUAL LIQUOR	ARH-CD-822 MAY	15, 36
SX105	6/1/77	203	739	942	348	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 JUN 77	15, 36
SX105	7/1/77	214	739	953	352	ACTIVE-RESIDUAL LIQUOR	RHO-CD-14 JUL 77	15, 36
SX105	8/1/77	173	739	912	337	ACTIVE-RESIDUAL LIQUOR, SLURRY RECEIVER	RHO-CD-14 AUG 77	15, 36

Quarterly/Monthly Waste Volume and Level Summary
 241-SX-105
 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
SX105	9/1/77	222	739	961	355	ACTIVE-RESIDUAL LIQUOR, SLURRY RECEIVER	RHO-CD-14 SEP 77	15, 36
SX105	10/1/77	236	739	975	360	ACTIVE-RESIDUAL LIQUOR, SLURRY RECEIVER	RHO-CD-14 OCT 77	16, 38
SX105	11/1/77	242	739	981	362	ACTIVE-RESIDUAL LIQUOR, SLURRY RECEIVER	RHO-CD-14 NOV 77	16, 38
SX105	12/1/77	8	739	747	277	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 DEC 77	16, 38
SX105	1/1/78	11	739	750	278	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 JAN 78	16, 38
SX105	2/1/78	8	739	747	277	ACTIVE-RESIDUAL LIQUOR, PART NEUT FEED	RHO-CD-14 FEB 78	16, 38
SX105	3/1/78	8	739	747	277	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAR 78	16, 38
SX105	4/1/78	8	739	747	277	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 APR 78	16, 38
SX105	5/1/78	8	739	747	277	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 MAY 78	16, 38
SX105	6/1/78	8	739	747	277	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUN 78	16, 39
SX105	7/1/78	8	739	747	277	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JUL 78	21
SX105	8/1/78	11	739	750	278	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 AUG 78	21
SX105	9/1/78	0	741	741	275	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 SEP 78	21
SX105	10/1/78	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 OCT 78	21
SX105	11/1/78	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 NOV 78	21
SX105	12/1/78	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 DEC 78	21
SX105	1/1/79	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 JAN 79	21
SX105	2/1/79	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 FEB 79	21
SX105	3/1/79	3	741	744	276	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 MAR 79	21
SX105	4/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 APR 79	21
SX105	5/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 MAY 79	21
SX105	6/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 JUN 79	21
SX105	7/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 JUL 79	21
SX105	8/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 AUG 79	21
SX105	9/1/79	9	741	750	278	INACTIVE-PRIMARY STABILIZED	RHO-CD-14 SEP 79	21
SX105	10/1/79	9	741	750	278	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 OCT 79	21
SX105	11/1/79	69	741	810	300	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 NOV 79	21
SX105	12/1/79	64	741	805	298	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 DEC 79	21
SX105	1/1/80	33	741	774	287	ACTIVE-PARTIAL NEUTRALIZATION FEED	RHO-CD-14 JAN 80	21
SX105	2/1/80	143	741	884	327	Active-Double Shell Slurry Feed	RHO-CD-14 FEB 80	21
SX105	3/1/80	143	741	884	327	Active-Double Shell Slurry Feed	RHO-CD-14 MAR 80	21
SX105	4/1/80	146	741	887	328	Active-Double Shell Slurry Feed	RHO-CD-14 APR 80	21
SX105	5/1/80	143	741	884	327	Active-Double Shell Slurry Feed	RHO-CD-14 MAY 80	21
SX105	6/1/80	142	741	883	326	Active-Double Shell Slurry Feed	RHO-CD-14 JUN 80	21
SX105	7/1/80	142	741	883	326	Active-Double Shell Slurry Feed	RHO-CD-14 JUL 80	21
SX105	8/1/80	15	673	688	255	Inactive-Double Shell Slurry Feed	RHO-CD-14 AUG 80	21
SX105	9/1/80	15	673	688	255	Inactive-Double Shell Slurry Feed	RHO-CD-14 SEP 80	21
SX105	10/1/80	15	673	688	255	Inactive-Double Shell Slurry Feed	RHO-CD-14 OCT 80	21
SX105	11/1/80	15	673	688	255	Inactive-Double Shell Slurry Feed	RHO-CD-14 NOV 80	21

Quarterly/Monthly Waste Volume and Level Summary
241-SX-105
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
SX105	12/1/80	15	673	688	255	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-105 WASTE LEVEL HISTORY 1973

D - 1

5/30/97

tblsx105.xls

241-SX-105 WASTE LEVEL HISTORY 1974

WASTE LEVEL (in.)

241-SX-105 WASTE LEVEL HISTORY
1975

WASTE LEVEL (in.)

241-SX-105 WASTE LEVEL HISTORY
1977

WASTE LEVEL (in.)

241-SX-105 WASTE LEVEL HISTORY
1978

241-SX-105 WASTE LEVEL HISTORY
1979

APPENDIX E

WASTE LEVEL HISTORY DATA
JUNE 1973 - DECEMBER 1980

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

241-SX-105 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
105SX	6/13/73					346.1		111506
105SX	7/1/73					346		111506
105SX	8/8/73					349.15		111506
105SX	8/10/73					349.25		58107
105SX	8/22/73					349	Installed Plastic Liner And Recalibrated	58107
105SX	9/1/73					348.9		58107
105SX	10/1/73					349		58107
105SX	11/1/73					348.75		58107
105SX	12/1/73					348.65		58107
105SX	12/31/73					348.6		58107
105SX	1/1/74					348.6		58107
105SX	2/1/74					348.8		58107
105SX	3/1/74					348.8		58107
105SX	4/1/74					348.65		58107
105SX	5/1/74					348.25		58107
105SX	5/8/74					347.6	New FIC unit installed	58107
105SX	5/21/74	111SX		0.85		348.25		58107
105SX	5/22/74	111SX		0.05		348.3	Salt well pumping	58107
105SX	6/1/74					348.25		58107
105SX	7/1/74					347.9		58107
105SX	7/17/74					347.9	Repaired FIC	58107
105SX	7/25/74					347.9	Installed Foil Safe FIC	58107
105SX	8/1/74					347.8		58107
105SX	9/1/74					347.6		58107
105SX	10/1/74					347.2		58107
105SX	11/1/74					346.65		58107
105SX	12/1/74					346.2		58107
105SX	12/31/74					345.7		58107
105SX	1/1/75					345.7		58107
105SX	2/1/75					345.2		58107
105SX	3/1/75					344.9		58107
105SX	3/31/75					344.45		58107
105SX	5/1/75					344.2		61236
105SX	5/2/75		102S		31	313.2		61236
105SX	5/3/75				32	281.2	Active	61236
105SX	5/4/75		102S		44.4	236.8		61236
105SX	5/5/75				47.4	189.4	Active	61236
105SX	5/6/75		102S		21.9	167.5		61236
105SX	5/7/75		102S		29.7	137.8		61236
105SX	6/1/75					137.3		61236
105SX	6/3/75			13.45		150.75	Receive Slurry	61236
105SX	6/4/75			23.05		173.8	Receive Slurry	61236
105SX	6/12/75					174.05	Attempted to pump, flush water added	61236
105SX	6/13/75			29		203	Receiving Slurry	61236
105SX	6/14/75			23.5		226.5	Active	61236
105SX	6/15/75			27.4		253.9	Receiving Slurry	61236
105SX	6/16/75			2.3		256.2	Receiving Slurry	61236
105SX	6/17/75		104SX		76.2	180		61236
105SX	6/18/75		101S		26.6	153.4		61236
105SX	6/19/75		101S		67.8	85.6		61236
105SX	6/20/75		101S		22.3	63.3		61236
105SX	6/21/75		101S		0.3	63		61236

241-SX-105 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
105SX	6/23/75			9		72.3	Receiving slurry	61236
105SX	6/24/75			2.2		74.5	Received from crystallizer	61236
105SX	6/25/75			22.95		97.45	Received from crystallizer	61236
105SX	7/1/75					97.3		61236
105SX	7/3/75					98.7	Slurry line flushed - 1,000 gallons	61236
105SX	7/4/75			19.7		118.4	Active	61236
105SX	7/5/75			34.1		152.5	Received slurry	61236
105SX	7/6/75			34.6		187.1	Received slurry	61236
105SX	7/7/75			18.8		205.9	Active	61236
105SX	7/8/75			33.75		239.65	Receiving Slurry	61236
105SX	7/9/75			38.55		278.2	Received slurry	61236
105SX	7/10/75			21.4		299.6	Received slurry	61236
105SX	7/12/75		102S		35.6	264		61236
105SX	7/13/75				53.4	210.6	Active	61236
105SX	7/14/75			24.4		235	Received slurry	61236
105SX	7/15/75			29.8		264.8	Received slurry	61236
105SX	7/16/75			39.6		304.4	Received slurry	61236
105SX	7/17/75			24.4		328.8	Active	61236
105SX	7/18/75			0.6		329.4	Active	61236
105SX	7/19/75			11.4		340.8	Received slurry	61236
105SX	7/20/75			5.4		346.2	Active	61236
105SX	7/21/75			1.5		347.7	Active	61236
105SX	7/22/75			0.6		348.3	Received slurry	61236
105SX	7/22/75		102S		19.3	329		61236
105SX	7/23/75		102S		7	322		61236
105SX	7/23/75			19.5		341.5	Received slurry	61236
105SX	7/24/75			15.4		356.9	Received slurry	61236
105SX	7/25/75		102S		18.1	338.8		61236
105SX	7/26/75		102S		59.6	279.2		61236
105SX	7/30/75		102S		26.1	254.4		61236
105SX	7/30/75			14.65		269.05	Received slurry	61236
105SX	7/31/75			32.05		301.1	Received slurry	61236
105SX	8/2/75			53.4		354.5	Received slurry	61236
105SX	8/3/75		102S		46.6	307.9		61236
105SX	8/4/75		102S		15.5	292.4		61236
105SX	8/5/75		102S		23.4	269		61236
105SX	8/5/75			15.65		284.65	Active	61236
105SX	8/6/75			28.65		313.3	Received slurry	61236
105SX	8/7/75			40.7		354	Received slurry	61236
105SX	8/8/75			4.8		358.8	Received slurry	61236
105SX	8/9/75		102S		36.1	322.7		61236
105SX	8/10/75				71.8	250.9	Active	61236
105SX	8/11/75		102S		8.2	242.7		61236
105SX	8/12/75			22.2		264.9	Received slurry	61236
105SX	8/13/75			27.4		292.3	Received slurry	61236
105SX	8/14/75			36.8		329.1	Received slurry	61236
105SX	8/15/75			33.7		362.8	Received slurry	61236
105SX	8/16/75				10.3	352.5	Active, Flushed FIC and lowered it to 361.8"	61236
105SX	8/17/75		102S		45.7	306.8		61236
105SX	8/18/75				12.2	294.6	Active	61236
105SX	8/19/75		102S		22.4	272.2		61236
105SX	8/19/75			13.8		286	Received slurry	61236
105SX	8/20/75			32		318	Received slurry	61236
105SX	8/21/75			9.6		327.6	Received slurry	61236

241-SX-105 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
105SX	8/22/75			0.4		328		61236
105SX	8/23/75			1.9		329.9	Active	61236
105SX	8/24/75			0.4		330.3	Active	61236
105SX	8/25/75			7.3		337.6	Slurry receiver	61236
105SX	8/26/75			20.6		358.2	Slurry receiver	61236
105SX	8/27/75			0.1		358.3	Slurry receiver	61236
105SX	8/28/75		102S		34.45	323.85		61236
105SX	8/29/75		102S		27.15	296.7		61236
105SX	8/29/75			17		313.7	Slurry receiver	61236
105SX	8/30/75			30.5		344.2	Slurry receiver	61236
105SX	8/31/75			19		363.2	Active	61236
105SX	8/31/75				13.8	349.4	Active	61236
105SX	9/1/75				23.4	326	Active	61236
105SX	9/2/75		102S		3.2	322.8		61236
105SX	9/3/75			28.3		351.1	Slurry receiver	61236
105SX	9/4/75			8.8		359.9	Slurry receiver	61236
105SX	9/5/75			2.25		362.15	105SX has dropped since last being used as a slurry rec. from 361.6 to 360.1 on FIC. The tape is the same 30'-3"	61236
105SX	9/6/75				1.85	360.3	Flushed FIC 361.4	61236
105SX	9/11/75					360.8		61236
105SX	9/13/75					362	105SX FIC was flushed and it went up 1.8". It is sitting on a hard crust and the water must fill up a hole the bobber is sitting in. the manual tape goes slack at 30'-4 3/4".	61236
105SX	9/14/75					362	Flushed before 362.1 after 364.2	61236
105SX	9/15/75					364.3	Tried to pump Flushed FIC	61236
105SX	9/19/75		102S		16.45	347.4		61236
105SX	9/20/75		102S		21	326.4		61236
105SX	9/25/75			7.05		334.75	Active	61236
105SX	9/26/75			20.55		355.3	Receiving slurry	61236
105SX	9/27/75				53	302.3	Active	61236
105SX	9/28/75			41.2		343.5	Receiving slurry	61236
105SX	9/29/75			15.8		359.3	Receiving slurry	61236
105SX	9/30/75				3.1	356.2		61236
105SX	10/1/75				3.6	352.6	Tried to jump 105SX to 102S but it would not pump	61236
105SX	10/2/75				7.7	344.9	Active	61236
105SX	10/3/75		101S		70.35	274.55		61236
105SX	10/4/75				14.05	260.5	Active	61236
105SX	10/4/75			29.8		290.3	Active	61236
105SX	10/5/75			44.55		334.85	Receiving slurry	61236
105SX	10/6/75			25.15		360	Receiving slurry	61236
105SX	10/7/75				14.2	345.8	Active	61236
105SX	10/8/75		101S		29.1	316.7		61236
105SX	10/8/75			9.9		326.6	Receiving slurry	61236
105SX	10/9/75			33.6		360.2	Receiving slurry	61236
105SX	10/10/75			0.2		360.4	Receiving slurry	61236
105SX	10/11/75		102S		46.8	313.6		61236
105SX	10/12/75			41		354.6	Active	61236
105SX	10/13/75			5.1		359.7	Slurry Receiver	61236
105SX	10/13/75		102S		22.8	336.9		61236
105SX	10/14/75		102S		38.05	298.85		61236

241-SX-105 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
105SX	10/14/75			5.15		304	Slurry Receiver	61236
105SX	10/15/75			47.7		351.7	Slurry Receiver	61236
105SX	10/16/75			8.7		360.4	Slurry Receiver	61236
105SX	10/17/75		101S		29.65	330.75		61236
105SX	10/18/75				23.35	307.4	To 101S & 102S	61236
105SX	10/19/75			43.2		350.6	Slurry Receiver	61236
105SX	10/20/75			6.2		356.8	Slurry Receiver	61236
105SX	10/20/75		101S		17.2	339.6		61236
105SX	10/21/75		102S		19.3	320.3		61236
105SX	10/21/75			28.2		348.5	Slurry Receiver	61236
105SX	10/22/75			9.2		357.7	Slurry Receiver	61236
105SX	10/23/75				17.6	340.1	Active	61236
105SX	10/24/75				40.2	299.9	Active	61236
105SX	10/25/75			42.6		342.5	Slurry Receiver	61236
105SX	10/26/75			17.15		359.65	Slurry Receiver	61236
105SX	10/27/75				33.25	326.4	active	61236
105SX	10/28/75		102S		37.1	289.3		61236
105SX	10/29/75			30.9		320.2	Active	61236
105SX	10/30/75			30.75		350.95	Active	61236
105SX	10/31/75			9.45		360.4	Received slurry	61236
105SX	10/31/75		102S		7.5	352.9		61236
105SX	11/1/75				39.8	313.1	Active	61236
105SX	11/2/75				5.2	307.9	Active	61236
105SX	11/2/75			22.3		330.2	Active	61236
105SX	11/3/75			26.6		356.8	Received slurry	61236
105SX	11/4/75			1.4		358.2	Received slurry	61236
105SX	11/5/75					358		61236
105SX	11/6/75		102S		31.6	326.4		61236
105SX	11/7/75		102S		19.1	307.3		61236
105SX	11/8/75					307.1	Flushed B 307.4 A 306.2, 105SX received slurry line flush	61236
105SX	11/10/75			5.8		312.9	Active	61236
105SX	11/11/75			13.4		326.3	Received slurry	61236
105SX	11/12/75			15.7		342	Received slurry	61236
105SX	11/14/75			16.45		358.45	Received slurry	61236
105SX	11/16/75				38.2	320.25	Active	61236
105SX	11/17/75		102S		12.35	307.9		61236
105SX	11/19/75		102S		54.1	253.8		61236
105SX	11/20/75		102S		26.5	227.3		61236
105SX	11/20/75			9.8		237.1	Received slurry	61236
105SX	11/21/75			36.4		273.5	Received slurry	61236
105SX	11/22/75			32.4		305.9	Received slurry	61236
105SX	11/23/75			37.6		343.5	Active	61236
105SX	11/24/75			16.6		360.1	Received slurry	61236
105SX	11/25/75				10.8	349.3		61236
105SX	11/26/75		102S		49.65	299.65		61236
105SX	11/28/75		102S		47.55	252.1		61236
105SX	11/30/75			4.9		257	Active	61236
105SX	12/1/75			35.8		292.8	Received slurry	61236
105SX	12/2/75			36.1		328.9	Received slurry	61236
105SX	12/3/75			24.7		353.6	Received slurry	61236
105SX	12/4/75			6		359.6	Received slurry	61236
105SX	12/5/75				5.6	354	Active	61236
105SX	12/6/75		102S		53.5	300.5		61236
105SX	12/7/75		102S		29.3	271.2		61236

241-SX-105 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
105SX	12/8/75		102S		54.2	217		61236
105SX	12/9/75			13		230	Received slurry	61236
105SX	12/10/75			17.1		247.1	Received slurry	61236
105SX	12/11/75			19.5		266.6	Received slurry	61236
105SX	12/12/75			37.4		304	Received slurry	61236
105SX	12/13/75			29.6		333.6	Received slurry	61236
105SX	12/14/75			22.9		356.5	Active	61236
105SX	12/15/75			3.4		359.9	Received slurry	61236
105SX	12/19/75		102S		26.6	333.6		61236
105SX	12/19/75			8.6		342.2	Received slurry	61236
105SX	12/20/75			17.45		359.65	Received slurry	61236
105SX	12/31/75		101S		20.4	340.3		61236
105SX	1/1/76		101S		55.2	285.1		61236
105SX	1/2/76				30.1	255	Pumped to 101S and 107S	61236
105SX	1/3/76				10.3	244.7	Active	61236
105SX	1/4/76		102S		25.2	219.5		61236
105SX	1/24/76			28.9		249.3	Receiving slurry	61236
105SX	1/25/76			30.2		279.5	Receiving slurry	61236
105SX	1/26/76			12.5		292	Receiving slurry	61236
105SX	1/27/76			5.8		297.8	Receiving slurry	61236
105SX	1/28/76			15.1		312.9	Receiving slurry	61236
105SX	1/29/76			10.7		323.6	Receiving slurry	61236
105SX	1/30/76			13.4		337	Receiving slurry	61236
105SX	1/31/76			0.8		337.8	Receiving slurry	61236
105SX	2/2/76			11.2		349	Receiving slurry	61236
105SX	2/3/76			6.45		355.45	Receiving slurry	61236
105SX	2/4/76					355.5		61236
105SX	2/8/76					356	Flushed B 356 A 356	61236
105SX	2/22/76					358.3	Has been slowly increasing	61236
105SX	2/23/76					358	Flushed B 358.4 A 357.8	61236
105SX	3/3/76					359		61236
105SX	3/7/76					359.3	Reading has been slowly increasing	61236
105SX	3/18/76					360.3	FIC readings have been very erratic since 3/12/76 ranging from 355.0 to 360.3 changing up to 5" in a single shift. 3/15/76 noted that "Salt cake floating in tank".	61236
105SX	3/21/76					360	Received slurry 2/3/76 LL 355.4 when we went out of the TK. FIC reads 255.0 to 260.3 in the last few days.	61236
105SX	3/25/76					360.8	New motor control board	61236
105SX	3/26/76					361	FIC and Reel tape flushed B 360.85 30'-0", A 361.25 30'-1/4"	61236
105SX	3/31/76					361.1		61236
105SX	4/1/76		102S		25.5	335.5		61236
105SX	4/2/76		102S		13.3	322.2		61236
105SX	4/2/76			38.1		360.3	Active	61236
105SX	4/2/76		102S		53.8	306.5		61236
105SX	4/3/76		102S		24.8	281.7		61236
105SX	4/5/76		102S		31.5	250.2		61236
105SX	4/6/76		102S		0.5	249.7		61236
105SX	4/12/76					249.8	New motor in the FIC	61236
105SX	4/23/76					251	Flushed B 251.5 A 251.15	61236
105SX	4/26/76					251.2	Flushed tape B 20' 10 1/2" A 20' 10"	61236

241-SX-105 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
105SX	4/27/76					252	FIC QA'd B 252.4 A 251.85	61236
105SX	4/28/76			7.3		259.3	Received slurry	61236
105SX	4/29/76			14.6		273.9	Received slurry	61236
105SX	5/5/76					274.5		61236
105SX	5/18/76					275.3	Tank last active on 4/30/76 as a slurry receiver read a 273.5 to 274 after receiving slurry. Readings have been slowly increasing since and have been slightly erratic.	61236
105SX	6/2/76					275.8		61236
105SX	6/9/76					276	Flushed B 276.1 A 276.4	61236
105SX	6/15/76					276.4	Last active as slurry receiver on 4/30/76 read between 273.5 to 274 afterwards, is slightly erratic and has been increasing ever since.	61236
105SX	6/28/76					276.9	Flushed B 276.85 A 276.9	61236
105SX	6/30/76					276.75		61236
105SX	7/5/76					276.8	Flushed B 276.4 A 276.8	61236
105SX	7/6/76					276.6	Flushed B 276.35 A 276.85	61236
105SX	7/19/76					276.8	Flushed B 277 A 276.8	61236
105SX	7/28/76					277.3		61236
105SX	8/2/76					276.5	FIC repaired (New Motor)	61236
105SX	8/3/76					276.5	Manual tape feels like it is hitting saltcake- can get continuity from 23'-1/4" to 22'-11 1/2", depending on where the tape lands	61236
105SX	8/12/76			6.55		283.3	Active	61236
105SX	8/13/76					283.1	Received slurry	61236
105SX	8/14/76					283.25	Flushed B 283.9 A 283.25	61236
105SX	8/20/76					283	Poured a little water down tape to get reading, feels as if there may be sludge.	61236
105SX	9/1/76					283.6		61236
105SX	10/1/76					285		61236
105SX	10/12/76					284.7	Flushed and QA'd B 285.3 A 284.7	61236
105SX	11/1/76					285.4		61236
105SX	11/4/76					285.6	Pressure tested from 104SX to SXB, SXB drains to 102SX. Also opened up 105SX in prep for test.	61236
105SX	11/8/76		102S		2.6	283		61236
105SX	11/11/76					285.4	242S Slurry line to 105SX leak checked, FIC is erratic, probably a lot of sludge floating on top.	61236
105SX	11/12/76			42.25		327.65	Slurry receiver	61236
105SX	11/13/76			27.65		355.3	Slurry receiver	61236
105SX	11/15/76					355.3	Flushed B 355.3 A 355.15	61236
105SX	12/1/76					357		61236
105SX	12/8/76					357.9	Flushed B 357.9 A 357.9	61236
105SX	12/28/76					359.1	Flushed B 359.35 A 359.1	61236
105SX	12/31/76					359.2		61236
SX105	1/1/77					359.2		61233
SX105	1/5/77					359.7	Photographs	
SX105	1/6/77					359.8	Flushed manual tape on 105-SX. Before: 30' - 1/4". After: 30' - 1/2".	

241-SX-105 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
SX105	1/19/77					361.2		
SX105	1/21/77		S102		10.5	350.6		61233
SX105	1/25/77					350.6	Baseline.	
SX105	2/1/77					351.2		61233
SX105	2/10/77					352.5	FIC flushed, B: 352.1, A: 352.5.	61233
SX105	2/15/77					352.5		61233
SX105	2/16/77	S101		6.2		358.7		61233
SX105	2/17/77					358.7	Baseline.	
SX105	3/1/77					358.9		61233
SX105	4/1/77					361		61233
SX105	4/6/77					361.2	FIC flushed, B: 360.6, A: 361.2.	61233
SX105	4/8/77					361.1		
SX105	4/9/77		SY102		17.7	343.4		61233
SX105	4/10/77		SY102		24.3	319.1		61233
SX105	4/11/77		SY102		40.3	278.8		61233
SX105	4/12/77		SY102		12.3	266.5		61233
SX105	4/13/77					266.4	Baseline	
SX105	5/1/77					267.05		61233
SX105	5/17/77					265.9	12-8 shift entry. Manual reading; is not printing on computer. Baseline is 266.4 date 4-28-77, the allowable decrease is .5". The current reading is .5" below the baseline, will watch it the rest of the shift.	61233
SX105	5/17/77					266.6	FIC QA'd, B: 267.00, A: 266.60. New counter installed.	61233
SX105	5/19/77					266.5	12-8 shift entry. 105SX has been a little erratic since it was QA'd on 5-17-77. Baseline is 266.4 dated 4-28-77.	61233
SX105	5/23/77					265.8	105-SX has decreased some, so will get pictures in AM. Decrease has exceeded .5" criteria. Occurrence Report 77-44.	61233
SX105	5/24/77					265.4	Picture taken in 105-SX this PM. Heavily fissured crust.	61233
SX105	5/25/77							
SX105	5/27/77					266	Gave a deep FIC flush with hot water: B: 265.9, A: 266.0.	61233
SX105	5/28/77					265.4	105-SX FIC was given a good hot water flush on 5-27...., but that may be the reason for the current drop.	61233
SX105	5/29/77	slurry		10.6		276		61233
SX105	5/30/77	slurry		20.1		296.1		61233
SX105	5/31/77	slurry		9.35		305.45		61233
SX105	6/2/77	slurry		5.85		311.3		61233
SX105	6/3/77	slurry		25.6		336.9		61233
SX105	6/4/77	slurry		18.1		355		61233
SX105	6/5/77	slurry						
SX105	6/6/77		SY102		30.5	324.5		61233
SX105	6/7/77		SY102		47.4	277.1		61233
SX105	6/8/77	slurry		29		306.1		61233
SX105	6/9/77	slurry		36.2		342.3		61233
SX105	6/10/77		S107		1.5	340.8		61233
SX105	6/11/77		S107		17.4	323.4		61233
SX105	6/12/77	slurry		15.4		338.8		61233

241-SX-105 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
SX105	6/13/77	slurry		10.9		349.7		61233
SX105	6/14/77		S107		9.9	339.8		61233
SX105	6/15/77	slurry		6.5		346.3		61233
SX105	6/29/77					347.7	FIC flushed, B: 348.1, A: 347.7.	61233
SX105	7/1/77					348		61233
SX105	7/5/77					348.3		
SX105	7/7/77					348.5	Baseline	
SX105	7/8/77					348.8		61233
SX105	7/25/77					351.1	FIC flushed, B: 351.25, A: 351.1.	61233
SX105	7/27/77					350.9	Rechecked 105SX FIC - This has shown quite a bit of change the last two weeks.	61233
SX105	8/1/77					351.7		61233
SX105	8/3/77					351.7	FIC exceeds 3" increase criteria. Occurrence Report 77-133.	
SX105	8/4/77					352.8	FIC flushed, B: 353.1, A: 352.8.	61233
SX105	8/13/77					353.75	Increase. Crane crew pressure checking lines into 105-SX..	61233
SX105	8/20/77					353.6		
SX105	8/20/77		S107		21.8	331.8	12-8 shift reading	61233
SX105	8/21/77		S107			331.8		61233
SX105	8/23/77					331.1	Decrease. 105-SX double checked. It must have floated off a crust or icicle broke off.	61233
SX105	8/23/77					330.8	FIC flushed, B: 331.1, A: 330.8.	61233
SX105	8/24/77		S107		23	299.5		61233
SX105	8/25/77		S107					
SX105	8/28/77	slurry		29.8		328.6		61233
SX105	8/29/77			8.7		343.7		61233
SX105	8/29/77	slurry			23.8	352.4		61233
SX105	8/30/77		S101		7.2	336.5	Baseline.	61233
SX105	9/1/77					337.1	Water added to 105-SX while repairing valves.	61233
SX105	9/2/77		S101		27.6	309.5		61233
SX105	9/4/77					309.7	FIC needs flush, tank has salt cake. Baseline.	61233
SX105	9/6/77	slurry		7.4		317.2		61233
SX105	9/7/77	slurry		7.7		324.9		61233
SX105	9/8/77	slurry		13.5		338.4		61233
SX105	9/9/77	slurry		7.1		345.5		61233
SX105	9/10/77	slurry		8.5		354		61233
SX105	9/11/77		S101		31.6	322.4		61233
SX105	9/17/77	slurry		4.7		327.4		61233
SX105	9/18/77	slurry		3.9		331.3		61233
SX105	9/19/77	slurry		2.1		333.4		61233
SX105	9/20/77	slurry		3.2		336.6		61233
SX105	9/21/77	slurry		7.3		343.9		61233
SX105	9/22/77	slurry		2.05		345.95		61233
SX105	9/23/77	slurry		0.85		346.8		61233
SX105	9/24/77	slurry		2.1		348.9		61233
SX105	9/25/77	slurry		5.6		354.5		61233
SX105	9/26/77					354.6		
SX105	9/28/77					354.6	Baseline	
SX105	9/29/77					355.35	105-SX was a slurry receiver.	61233
SX105	10/1/77					355.45		61233

241-SX-105 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
SX105	10/2/77					355.8	4-12 shift reading. Increase of .35" (FIC, .25" for MT) since yesterday. 105-SX raised tape manually & still get 355.75. May be some flush H2O thru slurry line on 10-1-77.	61233
SX105	10/4/77					356.95	8-4 shift reading. FIC double checked. Rise may be due to flushes in SX-B valve pit jumpers on days 10-3-77 also flushed in SX-A on 10-3-77.	61233
SX105	10/4/77					355.85	4-12 shift reading. FIC flushed, B: 356.0, A: 355.85.	61233
SX105	10/10/77					357.4		61233
SX105	10/11/77					357.2	FIC flushed, B: 357.5, A: 357.2.	61233
SX105	10/12/77					358.4	FIC is up quite a bit. May be shifting of crust. Baseline is 354.6 on 9-28-77. Allowed 3" rise. Computer read 357.9 at 1500 and 358.4 at 1600, has held steady since.	61233
SX105	10/13/77					357.5	FIC flushed, B: 358.45, A: 357.5.	61233
SX105	10/15/77					358.8	FIC exceeds 3" increase criteria. See O.R. 77-184. See remarks in next two cells below.	61233
							Rechecked (swing reading of 359.2), came up on graveyard on 10-15 to 358.6 to 358.8 today. Computer P.O. showed grad. increase to 359.7 @ 1800 on 10-15 and dropped back down 359.2 @ 1900, 359.1 @ 2000 and 2100. Water is off	
							in farm, no explanation for rise. Manual tape is up 1", can feel very definite crust. Crust might be moving. Was flushed on 10-13, before 358.45, after 357.5. Baseline is 354.6 dtd 9-28-77. Flushed it per TFS 9 SW 10-15). Before 359.5 After 359.2.	
SX105	10/17/77					357.9	FIC flushed, B: 359.9, A: 357.9	61233
SX105	10/19/77					358.2	Photographs taken as noted in O.R. 77-184.	61233
SX105	11/1/77					360.3	Increase. Pressure testing to 105-SX & 104-SX.	61233
SX105	11/2/77					360.3	Baseline	
SX105	11/11/77					361.7	FIC flushed, B: 362.0, A: 361.7.	61233
SX105	11/12/77					361.05	12-8 shift entry. Rechecked - reading dropped to 361.0 on 2200 printout - base 360.3. Previous reading was 361.8.	61233
SX105	11/13/77					361.9	105-SX has alarmed at 360.0 twice over night - surveillance is aware.	61233
SX105	11/14/77					362	New limit on 105-SX has been set to 365" until Dec. 1. Also systems people are in the process of changing the LL alarm point.	61233
SX105	11/27/77					362.4		61233

241-SX-105 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
SX105	11/28/77					364.3	When first read, it was 362.95. Operator raised and lowered it a couple of times, now it has leveled out at 364.3. The manual tape is still the same. At 2100 print out on 11-28 it read 362.2, no reading at 2200, then 2300 362.9 and stayed there	61233
SX105	11/29/77					362.35	Flushed, B: 364.45, A: 362.35. 105-SX base is 360.3.	61233
SX105	12/1/77					362.25		61233
SX105	12/1/77		SY102		1.7	360.55	12-8 shift reading.	61233
SX105	12/2/77		SY102		17.55	343		61233
SX105	12/3/77		SY102		35.5	307.5		61233
SX105	12/4/77		SY102		27.5	280		61233
SX105	12/5/77		SY102		5.6	274.4	Graveyard entry (12-8 shift)	61233
SX105	12/6/77					275.5	Day shift reading (8-4). Mud sliding in. (Transfer to 102SY is done but don't understand "mud sliding in" comment.)	61233
SX105	12/8/77					275.6	Baseline.	
SX105	12/11/77					276.4	FIC has been erratic.	61233
SX105	12/13/77					276.85	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.	61233
SX105	12/31/77					277.3		61233
SX105	1/1/78					277.30	Monthly tank level - FIC	68654
SX105	2/1/78					278.00	Monthly tank level - FIC	68654
SX105	3/1/78					277.25	Monthly tank level - FIC	68654
SX105	4/1/78					277.10	Monthly tank level - FIC	68654
SX105	4/13/78					276.30	Flushed FIC - FIC	68654
SX105	5/1/78					276.75	Monthly tank level - FIC	68654
SX105	6/1/78					277.30	Monthly tank level - FIC	68654
SX105	6/19/78					277.45	QA'd FIC (MT unchanged)	68654
SX105	7/1/78					277.00	Monthly tank level - FIC	68654
SX105	8/1/78					277.00	Monthly tank level - FIC	68654
SX105	8/21/78					277.35		68654
SX105	8/22/78					277.50		68654
SX105	9/1/78					277.60	Monthly tank level - FIC	68654
SX105	9/20/78					277.50	Photographs.	68654
SX105	9/22/78					275.55	Flushed FIC (MT unchanged)	68654
SX105	9/23/78					275.10	Flushed FIC (MT unchanged)	68654
SX105	10/1/78					275.65	Monthly tank level - FIC	68654
SX105	11/1/78					275.50	Monthly tank level - FIC	68654
SX105	12/1/78					276.30	Monthly tank level - FIC	68654
SX105	12/5/78					275.10	Flushed FIC	68654
SX105	12/7/78					276.80	FIC flushed and calibrated	68654
SX105	12/31/78					276.10	Year end tank level - FIC	68654
SX105	1/1/79					276.10	Monthly tank level - FIC	74293
SX105	1/11/79					276.75	Unknown rise - FIC (MT unchanged)	74293
SX105	1/12/79					276.40	Unknown drop - FIC (MT unchanged)	74293
SX105	1/22/79					276.65	Unknown drop - FIC (MT unchanged)	74293
SX105	2/1/79					276.90	Monthly tank level - FIC	74293

241-SX-105 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
SX105	3/1/79					276.80	Monthly tank level - FIC	74293
SX105	4/1/79					276.70	Monthly tank level - FIC	74293
SX105	5/1/79					277.65	Monthly tank level - FIC	74293
SX105	6/1/79					277.80	Monthly tank level - FIC	74293
SX105	6/19/79					278.10	Rise in FIC (flushed)	74293
SX105	7/1/79					278.50	Monthly tank level - FIC	74293
SX105	8/1/79					275.90	Monthly tank level - FIC	74293
SX105	8/29/79					278.70	Rise, FIC flushed - FIC	74293
SX105	9/1/79					278.15	Monthly tank level - FIC	74293
SX105	10/1/79					278.30	Monthly tank level - FIC	74293
SX105	10/12/79					278.95	Drop, FIC flushed - FIC	74293
SX105	10/18/79					278.55		74293
SX105	10/19/79	S107		24.00		302.55	Rec'd transfer - FIC	74293
SX105	10/23/79					301.60	Rise, FIC flushed - FIC	74293
SX105	10/26/79					300.40	Photographs	
SX105	11/1/79					300.10	Monthly tank level - FIC	74293
SX105	11/6/79					299.50	Baseline	
SX105	12/1/79					300.30	Monthly tank level - FIC	74293
SX105	12/17/79					297.20	Drop (erratic) - FIC. Photographs.	74293
SX105	12/20/79					296.90	Photographs.	
SX105	12/31/79					297.65	Year end tank level - FIC	74293
SX105	1/1/80					297.8		74292
SX105	1/10/80					299	105SX flushed before 298.6 after 299.55.	74292
SX105	1/17/80					298	Baseline	111509
SX105	1/17/80					298.7	Baseline established at 298.0 this day.	74292
SX105	1/22/80					298.9		
SX105	1/23/80					299		
SX105	1/24/80					299.5	104-SX pumped to 102-SY. 8-4 A.M. pump flushed to 102-SY used 1,450 gal. Some flush water reached 105-SX.	
SX105	1/25/80					299.6	Some flush water reported to have reached 105-SX.	
SX105	1/28/80					300	H ₂ O added to flush pump.	74292
SX105	2/1/80		SY102		25.9	274.1	foot-inch value not given. Remarks state "broken tape".	74292
SX105	2/2/80					274.5	flush water	74292
SX105	2/7/80	S103				274.15	105-SX starts receiving from 103-S.	74292
SX105	2/8/80	S103		20.45		294.6	105-SX rec. from 103-S.	74292
SX105	2/9/80	S103		32		326.6	103-S to 105-SX. Baseline./	74292
SX105	2/11/80					326.7		74292
SX105	2/13/80					326.8		74292
SX105	2/14/80					327.2	Baseline established @ 326.6 this day.	111509
SX105	3/1/80					327		74292
SX105	3/21/80					327.2	Prior to QA.	74292
SX105	3/21/80					327.05	After QA.	74292
SX105	4/1/80					327.3		74292
SX105	4/27/80					327.5		
SX105	4/29/80					327.9	Backflushing 107-S to 104-SX & 105-SX; pit drains to 102-SX.	74292
SX105	5/1/80					327.9		74292
SX105	5/16/80					328.05	Water added- pump flush.	

241-SX-105 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
SX105	6/1/80					326.9		74292
SX105	7/1/80					326.25		74292
SX105	8/1/80					326.6		74292
SX105	8/5/80					326.65	installed pump - 1000 gallons water added	121777 121861
SX105	8/7/80					327.1	Lanced 105-SX and installed salt well screen.	74292
SX105	8/26/80		S107		28.9	298.2		74292
SX105	8/27/80		S107		37	261.2		74292
SX105	8/28/80		S107		5.6	255.6		74292
SX105	9/1/80					255.65		74292
SX105	9/2/80					255.8	Baseline at 255.6	
SX105	10/1/80					255.3		74292
SX105	11/1/80					256.7		74292
SX105	12/2/80					255.55		74292
SX105	12/9/80					254.5	Baseline @ 254.5.	
SX105	12/31/80					254.8		74292

APPENDIX F
OCCURRENCE REPORTS

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OCCURRENCE REPORT

JUN 11 1976

CONTRACTOR Atlantic Richfield Hanford Company	FACILITY 241-SX Tank Farm, Tank 105-SX	WORK AREA 200 West
REPORT NO. 76-40	☐ PRELIMINARY 3/26/76 ☐ INTERIM 5/6/76 ☒ FINAL	DATE AND TIME OF OCCURRENCE March 23, 1976

OCCURRENCE SUBJECT

LIQUID LEVEL INCREASE IN TANK 105-SX EXCEEDING ACTION CRITERIA

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN☒ MATERIAL☐ PERSONNEL☐ PROCEDURE☐ OTHER

Waste slurry received in 105-SX has registered a gradual surface level increase similar to growth observed in other tanks receiving 242-S Evaporator slurries. Liquid (surface) levels have exceeded the two inch action criteria.

- * The tank level was reduced in early April and subsequently received slurry from
 * 242-S Evaporator later in the month. The level established at 274.3 inches has
 * subsequently increased to 276.4 exhibiting the increase pattern which caused the
 * occurrence report. The increase is typical of 242-S Evaporator slurries.

bcc: DC Bartholomew

G Burton, Jr.

HE Campbell, Jr.

GT Dukelow

DG Harlow

MC Jacobs

HF Jensen

EJ Kosianic

BJ McMurray

GC Owens

BJ Saueressig

HP Shaw

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 a slurry receiver in the 242-S Evaporator-Crystallizer System.

(OVER)

54-3000-566 (2-75)

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

Photographs on March 10, 1976, show a smooth surface covered with solid material which is starting to show signs of drying up with some minor cracks visible. The photographs gave no evidence of in-leakage to tank. The surface level increase is typical of other tanks receiving this type of waste.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

The surface level increase approached the maximum operating limit of 362 inches and liquid was pumped out to prevent exceeding this limit.

B. PERMANENT CORRECTIVE ACTION

Continue operational controls presently in use for S and SX tanks containing materials exhibiting similar characteristics.

* Restrict refill of tank to allow for salt formation and expansion factor. A fill limit of 350 inches should allow sufficient room for anticipated expansion.

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

Att.

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

* Indicates changes in text from previous Occurrence Report issue.

ORIGINATED BY	TITLE	DATE
H. F. Jensen	Manager, Tank Farm Surveillance	6/9/76
REVIEWED BY	TITLE	DATE
J. A. Teal	Manager, Tank Farm Operations	7/6/76
D. C. Bartholomew	Manager, Engineering	6/9/76
G. Burton, Jr.	VP, Production and Waste Management	6/9/76
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
E. J. Kosiancic	Manager, Tank Farm Management	6/9/76
A. T. White	Manager, Quality Assurance and Safety	6/10/76
D. F. Kelley	Manager, Planning, Scheduling & Operation Controls	6/10/76

ARHCO OCCURRENCE 76-40

105-SX TANK

LIQUID LEVEL HISTORY

<u>Date</u>	<u>Liquid Level (inches)</u>	<u>Change from Previous Reading (inches)</u>	<u>Cumulative Change (inches)</u>	<u>Comments</u>
02/03/76	355.40	Man. Tape 354.00		
02/10/76	356.20	354.50		
02/17/76	357.30	355.50		
02/24/76	357.95	356.75		Previous Reading FIC was 358.40, FIC flushed to 357.80 inches.
03/02/76	358.80	357.50		
03/09/76	359.35	358.25		
03/16/76	356.95	358.75		Instruments checking FIC bad counter. Instrument dept. is checking the 105-SX FIC.
03/23/76	355.00	359.50		
03/24/76	360.85	360.00		
04/03/76	282.00			Transfer to 102-S.
04/06/76	249.75	249.25		Transfer to 102-S
04/20/76	251.20	249.25		
04/24/76	251.00	249.75		
04/29/76	266.10			
04/30/76	273.70			Received Slurry
05/02/76	274.30			Received Slurry
* 05/15/76	274.60			Baseline
* 05/31/76	275.70	274.25		
* 06/07/76	276.10	274.50		
* 06/09/76	276.40			Level after flush

* Indicates changes in text from previous Occurrence Report issue.

OCCURRENCE REPORT

JAN 26 1977

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Tank Farm, Tank 105-SX		WORK AREA 200 West
REPORT NO. 76-172	☐ PRELIMINARY	☐ INTERIM	☒ FINAL	
			DATE AND TIME OF OCCURRENCE December 15, 1976	
OCCURRENCE SUBJECT LIQUID LEVEL INCREASE IN TANK 105-SX MEETING ACTION CRITERIA				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☐ OTHER

Waste slurry received in 105-SX has registered a gradual surface level increase similar to growth observed in other tanks receiving 242-S evaporator slurries. The increase meets the three inch action criteria. The tank received slurries from November 9, 1976, to November 14, 1976, when the new baseline was established.

No evidence of tank in-leakage was obtained by TFO and TPFE investigations. Photographs show a considerable change in surface conditions from photographs taken in September 1976. The surface at that time presented a broken convulsed "ice-jam" view. Now, it is a smooth surface of salt - evidence of the additional slurry which has been added since September. Tank bulk temperatures are being observed and an evaluation initiated as to long term effects.

bcc: DC Bartholomew	GC Owens
G Burton, Jr.	RD Prosser
GT Dukelow	BJ Saueressig
RA Freeman	HP Shaw
DG Harlow	JA Teal
MC Jacobs	GW Upington
HF Jensen	JH Warren
EJ Kosiancic	AT White
CW Malody	JC Womack
S Marchetti	RA Zinsli
J Haines	Legal
	Central File

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

The tank is a slurry receiver in the 242-S evaporator-crystallizer system.

(over)

54-30000-586 (5-74)

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

The tank has experienced similar increases after receiving 242-S evaporator slurries. An evaluation of the liquid level plots shows similar increases, though the slope is steeper. This may indicate a change in the slurry characteristics or may indicate in-leakage from the transfer line which interconnects 102-, 103-, 104-, and 105-SX. This presents a possibility as there have been numerous transfers to these tanks during the period 105-SX has experienced the level increase.

Investigation of possible in-leakage has been negative. Photographs show a relatively smooth salt surface. The increase is considered a typical 242-S Evaporator slurry characteristic. Similar growth has been reported repeatedly. Tank temperatures have been screened. Increases due to temperature were evaluated and considered negligible. Long term effects of slow temperature increases will be studied.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

Evaluate transfer material balances for 102-, 103-, and 104-SX over the past month. Obtain other supporting evidence of tank in-leakage. No evidence of in-leakage was obtained. The increase is considered a result of the salting out of relatively low density solid particulate which floats to the surface and registers as a volume increase.

B. PERMANENT CORRECTIVE ACTION

Tank is being pumped to reduce liquid level ten to eleven inches below the maximum operating limit. An evaluation of tank temperature and possible future effect on tank volumes will be initiated. This study is considered outside the scope of this occurrence.

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

Occurrence Report 76-40 "Liquid Level Increase In Tank 105-SX Exceeding Action Criteria"

cc: w/att.

JC Cummings, ERDA-RL

OJ Elgert, ERDA-RL (3)

PG Rhoades, ERDA-RL

JH Straub, ERDA-RL

ORIGINATED BY H. F. Jensen	TITLE Manager, Tank Farm Surveillance	DATE 1/21/77
REVIEWED BY J. A. Teal	TITLE Manager, Tank Farm Operations	DATE 21 JAN 77
E. J. Kosiancic	Manager, Engineering	1-24-77
A. T. White	Manager, Quality Assurance and Safety	1/24/77
C. W. Malody	Manager, Production and Waste Management	1-25-77
D. C. Bartholome	Manager, Operations	1-24-77

54-3000-368R (5-76)

CARHCO OCCURRENCE 76-172

105-SX TANK

LIQUID LEVEL HISTORY

<u>Date</u>	<u>Liquid Level (inches)</u>	<u>Change from Previous Reading (inches)</u>	<u>Cumulative Change (inches)</u>	<u>Comments</u>
02/03/76	355.40	354.00		
02/10/76	356.20	354.50		
02/17/76	357.30	355.50		
02/24/76	357.95	356.75		Previous Reading FIC was 358.40, FIC flushed to 357.80 inches.
03/02/76	358.80	357.50		
03/09/76	359.35	358.25		
03/16/76	356.95	358.75		Instruments checking FIC bad counter. Instrument dept. is checking the 105-SX FIC.
03/23/76	355.00	359.50		
03/24/76	360.85	360.00		
04/03/76	282.00			Transfer to 102-S.
04/06/76	249.75	249.25		Transfer to 102-S
04/20/76	251.20	249.25		
04/24/76	251.00	249.75		
04/29/76	266.10			Received Slurry
04/30/76	273.70			Received Slurry
05/02/76	274.30			Baseline
05/15/76	274.60			
05/31/76	275.70	274.25		
06/07/76	276.10	274.50		
06/09/76	276.40			Level after flush
07/31/76	277.30	275.50		
08/11/76	276.75	276		
08/12 to 08/13	283.10	283		New Baseline 283.10
09/30/76	285.00	283.25		Received Slurry
10/31/76	285.60	286.50		
11/08/76	285.60	287.25		
11/05 to 11/14	355.30	354		New Baseline 355.30
11/30/76	356.90	356		
12/08/76	357.90	357.50		Flushed - No Change
12/15/76	358.15	358		
12/15/76	358.30	358		After Flushed
12/28/76	359.30	359.50		Flushed - 359.10
12/29/76	359.10	359.75		
1/18/77	361.20	362.25		

HFJ:1/21/77

OCCURRENCE REPORT

JUN 21 1977

CONTRACTOR Atlantic Richfield Hanford Company		FACILITY 241-SX Tank Farm, Tank 105-SX		WORK AREA 200 West
REPORT NO. 77-74	☐ PRELIMINARY 5/27/77	☐ INTERIM	☒ FINAL	DATE AND TIME OF OCCURRENCE May 23, 1977 9:00 a.m.
OCCURRENCE SUBJECT TK-105-SX LIQUID LEVEL DECREASE EXCEEDING CRITERIA				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☐ OTHER

A baseline of 266.4 inches was established for 105-SX Tank on April 13, 1977. At 0900 on 5/23/77 the liquid level measurement was 265.8 inches, exceeding the allowed variance from the baseline of .5 inch. (See attached table of liquid level measurements.)

The apparent cause for the change in liquid level measurements is the heavily fissured crust of material on the surface of the liquid: The FIC instrument is not in contact with clear liquid. Liquid level measurements may then be expected to vary by more than one inch, depending upon the local topography of the crust.

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

bcc: DC Bartholomew
G Burton, Jr.
JM Cashman
JL Deichman
GT Dukelew
RA Freeman
JM Haines
DG Harlow
EJ Kosiancic
CW Malody
S Marchetti
GC Owens

RD Prosser
MF Rice
BJ Saueressig
HP Shaw
SP Stalos
GW Upington/TL Bennington
JH Warren
AT White
JC Womack
RA Zinsli
Legal
Central File (Q-Safety 5.2
DJ Cockeram - Rockwell

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

Tank 105-SX is considered sound and is currently used as a slurry receiver. No transfers of material into or out of the tank have occurred since April 12, 1977. This tank is not quarantined.

77-74-1

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

Dry well data taken on 5/24/77 showed no significant changes in the vertical radiation profiles.

Routine maintenance was performed on the FIC device on 5/17/77. The reading after maintenance was .4 inch less than the reading before maintenance.

Photographs were taken on 5/24/77. They reveal a heavily fissured surface layer of salt cake, typical of 241-SX slurry tanks. The FIC plummet can be seen in an indentation in the surface.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

None.

B. PERMANENT CORRECTIVE ACTION

None.

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

None.

ORIGINATED BY	TITLE	DATE
J. L. Deichman	Manager, Tank Farm Surveillance	6/15/77
REVIEWED BY	TITLE	DATE
G. C. Owens	Manager, Environmental and Occupational Safety	6-20-77
J. M. Cashman	Manager, Tank Farm Operations	6-21-77
E. J. Kosiancic	Manager, Engineering	6/16/77
A. T. White	Manager, Quality Assurance and Safety	6/21/77
C. W. Malody	Manager, Production and Waste Management	6/21/77
APPROVED BY (SEE CONTRACTOR OPERATING INSTRUCTIONS)	TITLE	DATE
D. C. Bartholomew	Manager, Operations	6-20-77

84-3000-048R (5.74)

OCCURRENCE REPORT

AUG 16 1977

CONTRACTOR Rockwell Hanford Operations	FACILITY 241-SX Tank Farm, 105-SX Tank	WORK AREA 200 West
REPORT NO. 77-133	☒ PRELIMINARY ☐ INTERIM ☒ FINAL	DATE AND TIME OF OCCURRENCE August 3, 1977 (9:00 A.M.)
OCCURRENCE SUBJECT		

TANK 105-SX LIQUID LEVEL INCREASE EXCEEDING CRITERION

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☐ OTHER

A baseline of 348.50 inches was established for the 105-SX liquid level on 7-5-77. After four weeks of steady growth, the liquid level measurement reached 351.70 on 8-3-77, exceeding the allowable 3 inch increase above baseline.

The apparent cause is volume expansion, or growth, of the tank material.

cc: DJ Elbert, ERDA-RL (3)
PG Harris, ERDA-RL
JH Straub, ERDA-RL
JH Tiernan, ERDA-RL

cc: DC Bartholomew
JH Cashman/GT Dukelow
DJ Cockran
JL Deichman
RA Freeman
PJ Fritch
RJ Gimera
RS Gruhn
JH Haines (3)
RD Howard
WF Haine

EJ Kosiencio
S Marchetti
GC Owens
RD Prosser
JH Roacker
BJ Saueressig
HP Shaw
SP Stalos
JC Momack
Central File

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

Tank 105-SX is a slurry-receiver for the 242-S Evaporator Crystallizer. The tank is considered sound.

The tank is not quarantined.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

Frequent flushes have produced only minor, temporary decreases in the liquid level measurement.

The growth phenomenon is frequently observed in all active SX tanks. Superimposed on this general growth, however, are sudden drops attributed to cracks and crevices in the thick, dry crust.

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

Occurrence Report 77-74

"TANK 105-SX LIQUID LEVEL DECREASE EXCEEDING CRITERIA"

ORIGINATED BY	J. L. Daichman	TITLE (Acting)	Manager, Tank Farm Surveillance	DATE	8/5/77
REVIEWED BY	G. C. Owens	TITLE	Manager, Environment and Occupational Safety	DATE	8/5/77
	J. M. Cashman	TITLE	Manager, Tank Farm Operations	DATE	8/5/77
	E. J. Kostancic	TITLE	Manager, Process Engineering	DATE	8/6/77
	M. F. Heine	TITLE	Director, Health, Safety and Environment	DATE	8/9/77
	D. C. Bartholomew	TITLE	Director, Production Operations	DATE	8/8/77
APPROVED BY (PER CONTRACTOR OPERATING INSTRUCTIONS)	J. M. Roecker	TITLE	Program Manager, Waste Management	DATE	8-4-77

SA-3000-TANK 15-701

OCCURRENCE REPORT

NOV 3 1977

CONTRACTOR Rockwell Hanford Operations		FACILITY 241-SX Tank Farm, Tank 105-SX		WORK AREA 200 West
REPORT NO. 77-184	☐ PRELIMINARY	☐ INTERIM	☒ FINAL	DATE AND TIME OF OCCURRENCE October 15, 1977 9:00 am
OCCURRENCE SUBJECT TANK 105-SX LIQUID LEVEL INCREASE EXCEEDING CRITERION		10-31-77		

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN
 ☒ MATERIAL
 ☐ PERSONNEL
 ☐ PROCEDURE
 ☐ OTHER

A liquid level baseline of 354.60 inches was established for Tank 105-SX on September 28, 1977. On October 15, 1977 the FIC liquid level measurement was 358.80 inches, exceeding the allowed 3.00 inch increase above the baseline.

The current liquid level measurement is 359.55 inches (10-28-77).

The increase is attributed to volume expansion of the slurry residing in the tank.

cc: JC Cummings, DOE
OJ Elgert, DOE (3)
PG Harris, DOE
MW Tiernan, DOE
JH Straub, DOE

bcc: DC Bartholomew
JM Cashman/GT Dukelow
DJ Cockeram
JL Deichman
PJ Fritch
JH Garbrick
RJ Gimera
RS Gruhn
JW Haines (3)
RD Hammond
WF Heine

EJ Kosiencic
GC Owens
RD Prosser
JH Roecker
BJ Saueressig
HP Shaw
SP Stalos
JA Swenson
JC Womack
Central File

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

Tank 105-SX is considered sound. The tank receives slurry from the 242-S Evaporator Crystallizer.

This tank is not quarantined.

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

Tank 105-SX has a history of liquid level increases, attributed to volume expansion of the slurry.

Manual tape readings are also taken in Tank 105-SX. From September 28 to October 15 the manual tape readings increased from 353.00 inches to 356.25 inches.

The possibility of inadvertent water addition to the tank has been investigated and discounted.

Photographs taken on 5-24-77 show a fissured crust over the entire surface. Photographs taken 10-19-77 show little change from those taken in May.

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

None indicated at this time.

B. PERMANENT CORRECTIVE ACTION

None indicated at this time.

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

77-133 - "Tank 105-SX Liquid Level Increase Exceeding Criterion"

76-172 - "Liquid Level Increase in Tank 105-SX Meeting Action Criteria"

ORIGINATED BY	TITLE	DATE
J. H. Garbrick	Manager, Tank Farm Surveillance	10-31-77
REVIEWED BY	TITLE	DATE
G. C. Owens	Manager, Environment and Occupational Safety	10/31/77
J. M. Cashman	Manager, Tank Farm Operations	11/1/77
E. J. Kosiancic	Manager, Process Engineering	11/1/77
W. F. Heine	Director, Health, Safety and Environment	10/31/77
D. C. Bartholomew	Director, Production Operations	11/1/77
APPROVED BY (OVERSIGHT AND INSPECTION)	TITLE	DATE
J. H. Roecker	Program Manager, Waste Management	11-2-77

64-5000-588R (5-76)

OCCURRENCE REPORT

JAN 08 1980

CONTRACTOR Rockwell Hanford Operations		FACILITY 241-SX Farm, 105-SX		WORK AREA 200 West
REPORT NO. 79-125	☐ PRELIMINARY 12/20/79	☐ INTERIM	☒ FINAL	DATE AND TIME OF OCCURRENCE 12/15/79, 10:00 P.M.
OCCURRENCE SUBJECT Tank 105-SX - Liquid Level Decrease				

1. DESCRIPTION OF OCCURRENCE AND DESIGNATION OF APPARENT CAUSE

☐ DESIGN ☒ MATERIAL ☐ PERSONNEL ☐ PROCEDURE ☐ OTHER

A liquid level baseline of 299.50 inches was established for Tank 105-SX on 11/08/79. On 12/15/79, the FIC liquid level measurement dropped below the one inch allowed decrease criterion. At 10:00 P.M. on 12/15/79 the liquid level was at 298.40 inches. The FIC level continued its decrease to 297.20 inches on 12/16/79.

The cause of the observed decrease is attributed to plummet/tank material condition interaction which resulted in a decreasing liquid level measurement. The material in the tank and the floating crust will continue to interfere with obtaining a true liquid level reading.

cc: J. C. Cummings, DOE-RL
O. J. Elgert, DOE-RL (2)
P. G. Harris, DOE-RL
J. H. Straub, DOE-RL
M. W. Tiernan, DOE-RL

bcc: D. C. Bartholomew
C. R. Carter
D. J. Cockeram
J. L. Deichman
J. B. Fecht
P. B. Fisk
J. H. Garbrick
R. S. Gruhn
R. D. Hammond
E. J. Kosiancio
H. B. Lindberg
P. G. Lorenzini
W. M. Lindsay
J. V. Mohatt
G. C. Oberg
L. R. Ogletree
G. C. Owens
R. D. Prosser
J. H. Roecker
W. H. Heine
H. P. Shaw
R. J. Thompson
Correspondence Control

G. T. Dukelow
G. G. Pitts

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15 1980

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HYGIENE AND SAFETY

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

Tank 105-SX was activated during October of 1979. It currently contains 810,000 gallons of waste. The tank has 69,000 gallons of supernatant, 668,000 gallons of saltcake, and 73,000 gallons of sludge. The tank has lateral dry wells located 10 feet below the tank base.

The tank is currently pending reuse up to the 327 inch level.

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FEB 11 1980

SAFETY DIVISION

79-125

3. IMMEDIATE EVALUATION, CORRECTIVE ACTION TAKEN AND RESULTS

Tank 105-SX was reactivated during October 1979. Reuse of the tank was established and the tank was filled up to the 300 inch level with waste from 107-5 on 10/18/79. The tank material in 105-SX has historically exhibited a growth buildup pattern (See Section 5). In-tank photographs were taken on 10/26/79 in order to facilitate the establishment of a reuse liquid level baseline. The entire surface area consisted of a floating saltcake. The tank material appeared to have the consistency of sponge-like foam.

Prior to the decrease of 12/15/79, the tank's liquid level was exhibiting a slow growth increase. The level was at 301.40 inches on 12/14/79, the day prior to the decrease.

(continued on Attachment)

4. RECOMMENDATIONS

A. TEMPORARY CORRECTIVE ACTION

B. PERMANENT CORRECTIVE ACTION

Flushed both the FIC and manual liquid level tapes and plummets.
(Action: C. R. Carter, 01/09/80).

Established a new liquid level baseline for Tank 105-SX after the flush
(Action: C. R. Carter, 01/11/80).

IS DESIGN CHANGE NECESSARY?		IF YES, WHEN	
☐ YES	☒ NO		
IS FURTHER EVALUATION NECESSARY?		IF YES, BY WHOM	
☐ YES	☒ NO		
PERMANENT CORRECTIVE ACTION TO BE IMPLEMENTED BY:		NAME	DATE
		C. R. Carter, Tank Farm Surveillance	1/11/80

5. SIMILAR OCCURRENCE: BY REPORT NUMBER AND OCCURRENCE SUBJECT

77-184, 10/15/77, Tank 105-SX Liquid Level Increase Exceeding Criterion.
77-133, 8/03/77, Tank 105-SX Liquid Level Increase Exceeding Criterion.
77-74, 5/23/77, Tank 105-SX Liquid Level Decrease Exceeding Criteria.
76-172, 12/15/76, Liquid Level Increase in Tank 105-SX Meeting Action Criteria.

NAME	TITLE	DATE
C. R. Carter	Manager, Tank Farm Surveillance	1/03/80
J. H. Garbry	Manager, Tank Farm Surv. & Operations	1/03/80
G. C. Owens	Manager, Env. & Occupational Safety	1/04/80
P. G. Lorenzini	Director, Health, Safety & Environment	1/7/80
D. C. Bartholomew	Director, Production Operations	1/8/80
APPROVED BY (WHS CONTRACTOR) (FOLLOWING INSTRUCTIONS)		
J. L. Deichman	Program Director, Waste Management	1-8-80

54-37000-568A (2-78)

JAN 0 8 1980

Attachment to O. R. #79-125 (Final)

3. FACTS:

In-tank photographs of 105-SX were taken on 12/17/79. A comparison between those photographs of the FIC tape/plummet and the photographs taken on 10/26/79 revealed the following:

- o The FIC plummet photographed on 12/17/79 was embedded in the tank material. The plummet was on the surface of the material in the 10/26/79 photographs.
- o The plummet was relatively clean in the 10/26/79 photographs while the exposed portion of the FIC plummet on 12/17/79 showed a material coating.
- o The 12/17/79 photographs show that the plummet bottom had a 2-1/2 inch long coating of green material. Above this coating there was a narrow light green band along the side of the plummet.
- o The 10/26/79 photographs show the surface as a relatively solid mass underneath the FIC plummet. The photographs of 12/17/79 show the surface to be definitely floating and breaking up into a number of "islands". From the photographs, the floating crust material appears to be circulating counter clockwise relative to the FIC plummet and tape.
- o The 12/17/79 pictures show the plummet to be tipped slightly, and making contact with crusty material.

The laterals and vertical dry wells showed no change in radiation activity. The vertical dry wells were monitored on 12/17/79 and 12/20/79. The laterals were monitored on 12/17/79, 12/19/79, and 12/21/79.

The manual tape readings continue to vary between 24 feet, 10-3/4 (298.75) inches and 24 feet, 11-1/4 (299.25) inches, and the FIC readings continue to vary between 297.00 and 297.30 inches.

CONCLUSIONS:

The cause of the observed decrease is attributed to a FIC plummet/tank material condition interaction which resulted in a decreasing liquid level measurement. The FIC plummet began to dig a small indentation in the crust surface. The plummet, which contacts the surface once every hour, began to register a decreasing liquid level measurement. This continuous hourly contact, aided by the crust movement on the liquid surface most likely resulted in the crust breakup. The narrow light green band of material observed on the plummet (approximately 4 inches from the bottom) could have been the result of it contacting a piece of floating crust material. The material coating the plummet and the irregular floating surface will continue to interfere with obtaining a true liquid level measurement in Tank 105-BX. The irregular manual tape readings appear to be a result of an irregularly crusted surface.

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