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HISTORY OF WASTE TANK 2

1955 THROUGH 1974

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INTRODUCTION

Alkaline radioactive waste resulting from the chemical separation of fission products from plutonium and uranium at the Savannah River Plant are stored underground in carbon steel tanks having capacities that range from 0.75 to 1.3 million gallons. The waste falls into two general categories: high heat waste (HW), which contains the majority of the fission products, and low heat waste (LW), which results from purification processes and from dissolving aluminum cladding from reactor fuels. Some tanks equipped with cooling coils are for storage of high heat waste while other tanks without cooling coils are for low heat waste.

Tank 2 is a 750,000 gallon, type I tank in F Area used for HW storage (figure 1). It is 75 ft in diameter, 24-1/2-ft high, and has 34 vertical cooling coils. At the bottom, where sludge and most of the fission products concentrate, there are four horizontal cooling coils. The tank is constructed of type ASTM A-285B steel, with nonstress-relieved welds, and is inside a concrete vault with an annular space surrounding the tank. Lining the bottom of the vault is a 5-ft-high steel annulus pan (secondary container) to collect leakage from the tank. Eight risers provide access to the tank interior and four risers to the annulus.

Events in the history of tank 2 are listed chronologically in figure 2 and discussed briefly in this report. Listing of a date by month and year at any place in this report serves as a reference to the Works Technical Report for that month. This history covers the period from July 1955 through December 1974.

SUMMARY

Tank 2 was placed in service as a fresh HW receiver from the Purex process in Building 221-F in July 1955. The supernate was decanted in two transfers in 1964. Sludge removal operations prepared the tank for salt storage in February 1966. In April 1966, tank 2 began receiving evaporator bottoms, and has been used as a salt storage tank since that time. The tank has no known leaks. Eight tank 2 cooling coils have leaked.

The tank interior and annulus have been inspected by direct observation and by using an optical periscope. Samples of sludge and supernate were analyzed and tank temperature profiles were taken. There have been several equipment modifications and repairs.

DISCUSSION

OVERALL CHRONOLOGY

In July 1955, tank 2 was placed in service as a receiver of HW from the Building 221-F Purex process. The tank was filled to 276 inches by March 1956. The tank remained at this level until about 45% of the supernate was decanted in October 1964. Additional supernate was decanted in December 1964. To prepare tank 2 for salt storage, about 85% of the sludge was removed in February 1966, using high pressure water jets to slurry the sludge. In April 1966, tank 2 began receiving evaporator bottoms. Evaporator bottoms receipts continued intermittently until April 1973. The supernate was decanted several times during this period. About 452,000 gallons of salt accumulated in the tank.

Significant events, including all entries discussed in the chronology, are shown in figure 2 along with the sludge and supernate temperatures.

Chronology of Events

Jul 1955	Tank 2 began receiving HW from the Purex process in Building 221-F.
Feb 1956	Cooling water flow was increased to slow a rapid rise in the sludge temperatures (figure 2).
Mar 1956	Sludge agitation was begun to reduce sludge temperatures. Four air spargers were run at 10 cfm each, then two air lift recirculators were run at 10 cfm each. Both agitation methods lowered sludge temperatures, but the air lift recirculators increased the activity in the exhaust air.
Apr 1956	Air sparging was resumed.
May 1956	Air sparging was continued with the air flow increased to 20 cfm for each sparger.
Jun 1956	Air sparging was discontinued after testing at air rates of 10, 20, and 40 cfm for each sparger. Exhaust air activity was measured at each rate. Sludge temperatures increased after air sparging ended.
Apr 1957	The supernate was sampled (table 2)
May 1957	An air sparger was raised and all but the bottom one foot of the sparger was inspected. No corrosion was evident. The sparger was highly contaminated, and it was reinstalled in the tank after the inspection.

Nov 1957	The supernate was sampled (table 2). Caustic addition to the tank was begun to increase the hydroxide levels of the tank contents to inhibit corrosion.
Feb 1958	Caustic addition continued. A total of 152,000 pounds of 50% caustic was added.
	An air sparger was inspected for corrosion. No gross corrosion and no pitting were noted.
May 1959	Cooling water flow was reduced.
Apr 1962	The annulus was periscopically photographed and inspected beneath the north, south, east, and west risers.
Sep 1962	A transfer jet was installed in riser 6.
Oct 1962	The supernate was sampled (table 2).
Oct 1964	Approximately 320,000 gallons of supernate was transferred to tank 7.
	A permanent purge blower was installed with a pressure indicator and alarm to warn of blower failure or abnormal pressure.
Dec 1964	About 245,000 gallons of supernate was transferred to tank 7.
Jan 1965	About 83,000 gallons of supernate was transferred to tank 7.
Oct 1965	The sludge viscosity was measured (figure 3).
Jan 1966	Thermocouples in two thermowells were contaminated.
Feb 1966	About 90% of the sludge was slurried, by using high pressure water jets, and transferred to tank 7. 237,000 gallons of water were used to remove 44,000 gallons of sludge. The slurry pumped from the tank was sampled (figures 5 and 6 and table 2).
Mar 1966	The tank interior was periscopically photographed and inspected beneath riser 2.
Apr 1966	The tank interior was periscopically photographed and inspected beneath riser 1 (figures 5 and 6).
May 1966	A deposit of salt adhering to a thermowell was sampled.
Aug 1966	The tank interior was periscopically photographed and inspected beneath riser 1.
Sep 1966	Main horizontal coil 18 began leaking. The tank interior was periscopically photographed and inspected.

Jan 1967	Two vertical cooling coils began leaking.
	The three leaking coils were pressurized and visually observed for leaks. Several leaks were observed in horizontal coil 18.
	Half of the vertical cooling coils were blanked off. All leaking coils had previously been blanked off.
Mar 1967	Two samples of main horizontal cooling coil 18 were taken. Both sections were scaled with pitting found beneath the scaling.
	The leak in one of the vertical cooling coils was found under the center riser and below the 18 inch level.
Apr 1967	Four vertical cooling coils leaked.
	The supernate was sampled (table 2).
	Tank 2 began receiving evaporator bottoms.
	The wall thicknesses were measured under the north, south, east, and west annulus risers (figure 14 and table 5).
May 1967	Evaporator bottoms receipt was discontinued, and the CTS backflush valve was modified.
Jul 1967	About 56,000 gallons of supernate was transferred to tank 7.
	The tank interior was periscopically photographed and inspected beneath riser 5. A thin salt layer was present.
	Evaporator drawoff to tank 2 was resumed.
Aug 1967	Approximately 88,000 gallons of supernate was transferred to tank 7.
	The tank interior was periscopically photographed and inspected beneath riser 5. A large salt mound was noted under the inlet riser.
	Salt accumulation and cooling coil loading were studied. No excessive load was noted on the simulated cooling coil force gages (figures 15 and 16 and table 6).
Sep 1967	About 112,000 gallons of supernate was transferred to tank 7.
	The tank interior was periscopically photographed and inspected beneath riser 5.

Oct 1967	Approximately 70,000 gallons of supernate was transferred to tank 7.
	The salt levels were measured.
Nov 1967	About 195,000 gallons of supernate was transferred to tank 7.
	The tank interior was periscopically photographed and inspected beneath riser 5. The salt volume was estimated.
	Salt accumulation and cooling coil loading were studied (figure 15 and table 6).
Jan 1968	The height of the salt mound under the inlet riser was measured (table 6).
Feb 1968	The salt depth was measured (table 6).
Mar 1968	About 413,000 gallons of supernate was transferred to tank 7 in two transfers.
	The tank interior was periscopically photographed and inspected beneath riser 5. The salt volume was estimated (figures 7, 8, 9, and 15 and table 6).
May 1968	About 320,000 gallons of supernate was transferred to tank 7.
	Vertical temperature profiles were measured (figure 10).
	The tank interior was periscopically photographed and inspected beneath riser 5.
	The salt depth was measured and the salt volume estimated (table 6).
Jun 1968	The salt depth was measured (table 6).
Jul 1968	About 235,000 gallons of supernate was transferred to tank 7.
	The tank interior was periscopically photographed and inspected.
	Forces on the vertical cooling coils were estimated.
Aug 1968	An additional vertical cooling coil began leaking.
Dec 1968	The tank interior was periscopically photographed and inspected beneath riser 5. The salt volume was estimated (table 6).
Jan 1969	About 149,000 gallons of supernate was transferred to tank 7.

Feb 1969	Approximately 104,000 gallons of supernate was transferred to tank 7.
Apr 1969	About 85,000 gallons of supernate was transferred to tank 7.
	Salt accumulation in tank 2 was summarized (figure 15 and table 6).
May 1969	The CTS drawoff valve partially plugged, reducing the evaporator drawoff rate.
	Approximately 76,000 gallons of supernate was transferred to tank 7.
Aug 1969	The tank interior was periscopically photographed and inspected beneath riser 5.
	About 45,000 gallons of supernate was transferred to tank 7.
Nov 1969	The cooling coil leaks and the 1966 sludge removal were summarized.
Jun 1970	Cooling coil salt loading was studied.
Mar 1971	The salt depth under the jet riser was measured.
Jun 1972	The annulus was periscopically photographed and inspected under the north and south risers.
Jul 1972	The annulus was periscopically photographed and inspected under the east riser.
Sep 1972	A radiation profile was measured under the south annulus riser (table 4).
Oct 1972	The tank wall thickness was measured under the north annulus riser (table 5).
Nov 1972	The salt depth was measured under the jet riser. A thin layer of salt was found at the 216 inch level, and a continuous salt bed at the 181 inch level.
Feb 1973	About 78,000 gallons of supernate was transferred to tank 7 in two separate transfers.
	A supernate sample was taken (table 2).

Mar 1973	The CTS drawoff valve leaked, requiring frequent small transfers to keep the liquid level below the tank fill limit. About 110,000 gallons of supernate was transferred to tank 7 in three separate transfers from February 26 to March 16.
	The leak detection probes were inspected. The north riser probe was replaced. A 22,000 ohm resistor was installed in the alarm circuit to adjust the alarm sensitivity.
Apr 1973	Approximately 95,000 gallons of supernate was transferred to tank 7 in four separate transfers from March 21 to April 3.
	The leaking CTS drawoff valve was replaced.
May 1973	The wall thickness was measured (figure 14).
Jul 1973	The annulus was inspected beneath the east riser.
Sep 1973	The reel tape was replaced.
Oct 1973	The cooling water was valved off.
	The tank interior was periscopically photographed and inspected beneath riser 2.
	A temperature profile was taken (figure 11).
Nov 1973	The annulus was photographed and visually inspected.
Jan 1974	A temperature profile was taken under riser 1 (figure 12).
	The effects of annulus ventilation on the steel wall temperature were studied. A tank wall temperature profile was measured (figure 12).
Feb 1974	Temperature profiles were taken under riser 1 on three separate dates (figure 13).
Mar 1974	A temperature profile was taken under riser 1.
Apr 1974	About 30,000 gallons of supernate was transferred to tank 7.
	A temperature profile was taken under riser 1.
Aug 1974	The bypass valves around the cooling coils were opened to allow cooling water flow through the purge outlet condenser.
	The reel tape malfunctioned.
Nov 1974	The reel tape was replaced but did not function properly. Operation was restored in April 1975.

SAMPLES OF TANK CONTENTS

The tank contents were sampled and analyzed several times between April 1957 and February 1973. All sampling is shown in figure 2 and all available analytical results are shown in tables 2 and 3.

Chronology of Events Relating to Sampling

Sep 1956	The tank vapor was sampled in two separate risers.
Apr 1957	The supernate was sampled.
Nov 1957	The supernate was sampled.
Jul 1958	The sludge and supernate were sampled.
Oct 1962	The supernate was sampled.
Feb 1965	The sludge was sampled.
Feb 1966	Sludge slurry pumped from the tank was sampled.
May 1966	Salt on a thermowell was sampled.
Apr 1967	The supernate was sampled.
Feb 1973	The supernate was sampled.

PHYSICAL MEASUREMENTS

Temperature profiles were taken in existing thermowells. The wall thickness was measured. Other measurements include sludge and salt depths and sludge viscosity. These measurements are shown in figure 2.

Chronology of Events Relating to Physical Measurements

Apr 1963	The sludge level, measured in October 1962, was reported.
Oct 1965	The sludge viscosity was measured (figure 3).
Apr 1967	The wall thickness was measured (figure 14 and table 5).
Aug 1967	No excessive load was noted on the simulated cooling coil force gages.
Oct 1967	The salt levels were measured (table 6).
Jan 1968	The height of the salt mound under the inlet riser was measured (table 6).

May 1968	Vertical temperature profiles were measured.
	The salt depth was measured.
Jun 1968	The salt depth was measured (table 6).
Dec 1968	The salt depth was measured (table 6).
Mar 1971	The salt depth under the jet riser was measured.
Sep 1972	A radiation profile was measured under the south annulus riser (table 4).
Oct 1972	The tank wall thickness was measured under the north annulus riser (figure 14 and table 5).
Nov 1972	The salt depth was measured under the jet riser. A thin salt layer was found at the 216 inch level, and a continuous salt bed at the 181 inch level.
May 1973	The wall thickness was measured (figure 14).
Jan 1974	A temperature profile was taken under riser 1 (figure 12).
Feb 1974	Temperature profiles were taken under riser 1 on three separate dates (figure 13).
Mar 1974	A temperature profile was taken under riser 1.
Apr 1974	A temperature profile was taken under riser 1.

COOLING COIL FAILURES

One horizontal and seven vertical cooling coils in tank 2 have leaked. The coil failures occurred between September 1966 and August 1968, following the February 1966 sludge removal operations. Events related to the coil failures are listed here and are shown in figure 2. The layouts of the failed vertical cooling coils are shown in figure 17.

Chronology of Events Relating to Cooling Coil Failures

Jul 1955	Tank 2 began receiving HW from the Purex process in Building 221-F.
Mar 1956	The sludge was agitated using four air spargers and two air lift recirculators.
Jun 1956	Sludge agitation was discontinued.
May 1957	An air sparger was inspected. No corrosion was found.

Feb 1958	An air sparger was inspected for corrosion. No gross corrosion nor pitting was noted.
Feb 1966	About 90% of the sludge was slurried, by using high pressure water jets, and transferred to tank 7. 237,000 gallons of water were used to remove 44,000 gallons of sludge. The slurry pumped from the tank was sampled (figures 4, 5, and 6 and table 2).
Sep 1966	Main horizontal coil 18 leaked.
Jan 1967	Two vertical cooling coils leaked. The three leaking coils were pressurized and visually observed through risers for leaks. Several leaks were noted in the main horizontal coil. Subsequent inspection by periscope of the leak sites revealed pitting.
	Half of the vertical cooling coils were blanked off. All leaking coils had previously been blanked off.
Mar 1967	Two samples were taken of the main horizontal cooling coil 18. Both sections were scaled, with pitting found beneath the scaling.
	The leak in one of the vertical cooling coils was found under the center riser and below the 18 inch level.
Apr 1967	Four vertical cooling coils leaked.
	Tank 2 began receiving evaporator bottoms.
Aug 1967	No excessive load was noted on the simulated cooling coil force gages.
Nov 1967	Coil stresses were found to be acceptably low.
Aug 1968	Another vertical cooling coil began leaking.
Nov 1969	The cooling coil leaks and the 1966 sludge removal were summarized.
Oct 1973	The cooling water was valved off.

TESTS CONDUCTED

Cooling of the sludge by agitation with air spargers and air lift recirculators was studied in 1956. The air spargers were later checked for corrosion. In 1967 and 1970, salt accumulation and cooling coil loading were studied. In October 1973, all cooling water to tank 2 was valved off to study heating of the salt and supernate in the absence of cooling water flow to the cooling coils. In January 1974, the effects of annulus ventilation on the steel wall temperatures were studied. These events are shown here and in figure 2.

Chronology of Events Relating to Tests

Mar 1956	Sludge agitation was begun to reduce sludge temperatures. Four air spargers were run at 10 cfm each, then two air lift recirculators were run at 10 cfm each. Both agitation methods reduced sludge temperatures, but the use of air lift recirculators increased the activity in the exhaust air and was stopped.
Apr 1956	Air sparging was resumed.
May 1956	The air sparging air flow was increased to 20 cfm for each sparger.
Jun 1956	Air sparging was discontinued after testing at air rates of 10, 20, and 40 cfm for each sparger. Exhaust air activity was measured at each rate. Sludge temperatures increased after air sparging ended.
May 1957	An air sparger was raised out of the tank and all but the bottom one foot of the sparger was visually inspected. No corrosion was evident. The sparger was highly contaminated, and was reinstalled in the tank after the inspection.
Feb 1958	An air sparger was inspected for corrosion. Neither gross corrosion nor pitting were noted.
Feb 1966	About 90% of the sludge was slurried and transferred to tank 7. About 237,000 gallons of water were used to remove 44,000 gallons of sludge.
Aug 1967	Salt accumulation and cooling coil loading were studied. No excessive load was noted on the simulated cooling coil force gages.
Nov 1967	Salt accumulation and cooling coil loading were studied. Loads on the simulated cooling coil correlated well with thermal effects, and were relieved by fairly small movements of the tops of the cooling coils.
Oct 1973	The cooling water was valved off to study heating of the salt and supernate in the absence of cooling water flow in the cooling coils.
Jan 1974	The effects of annulus ventilation on the steel wall temperature were studied (figure 12).

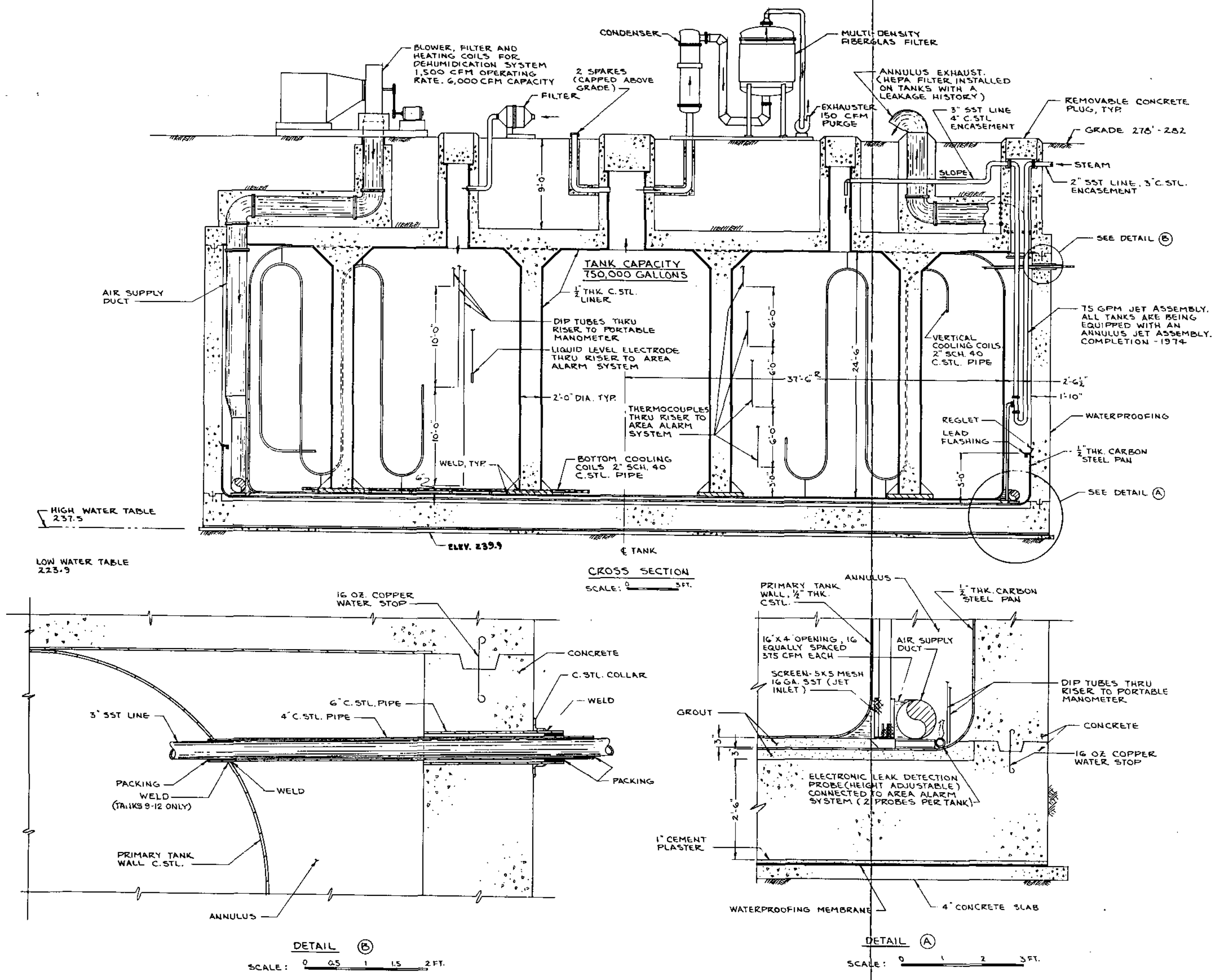


FIGURE 1. WASTE STORAGE TANK 2

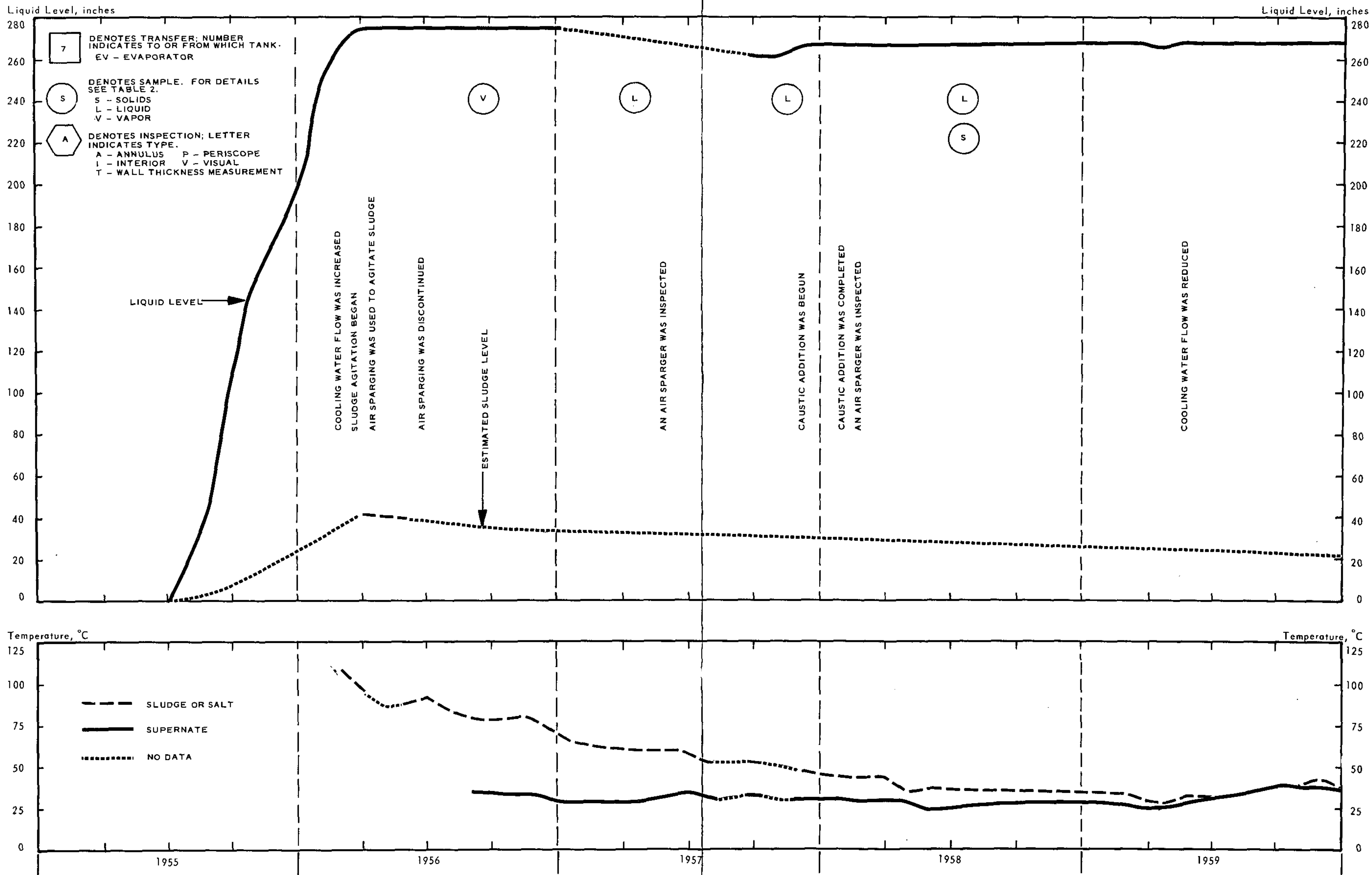


FIGURE 2. TANK 2 LIQUID LEVELS AND TEMPERATURES

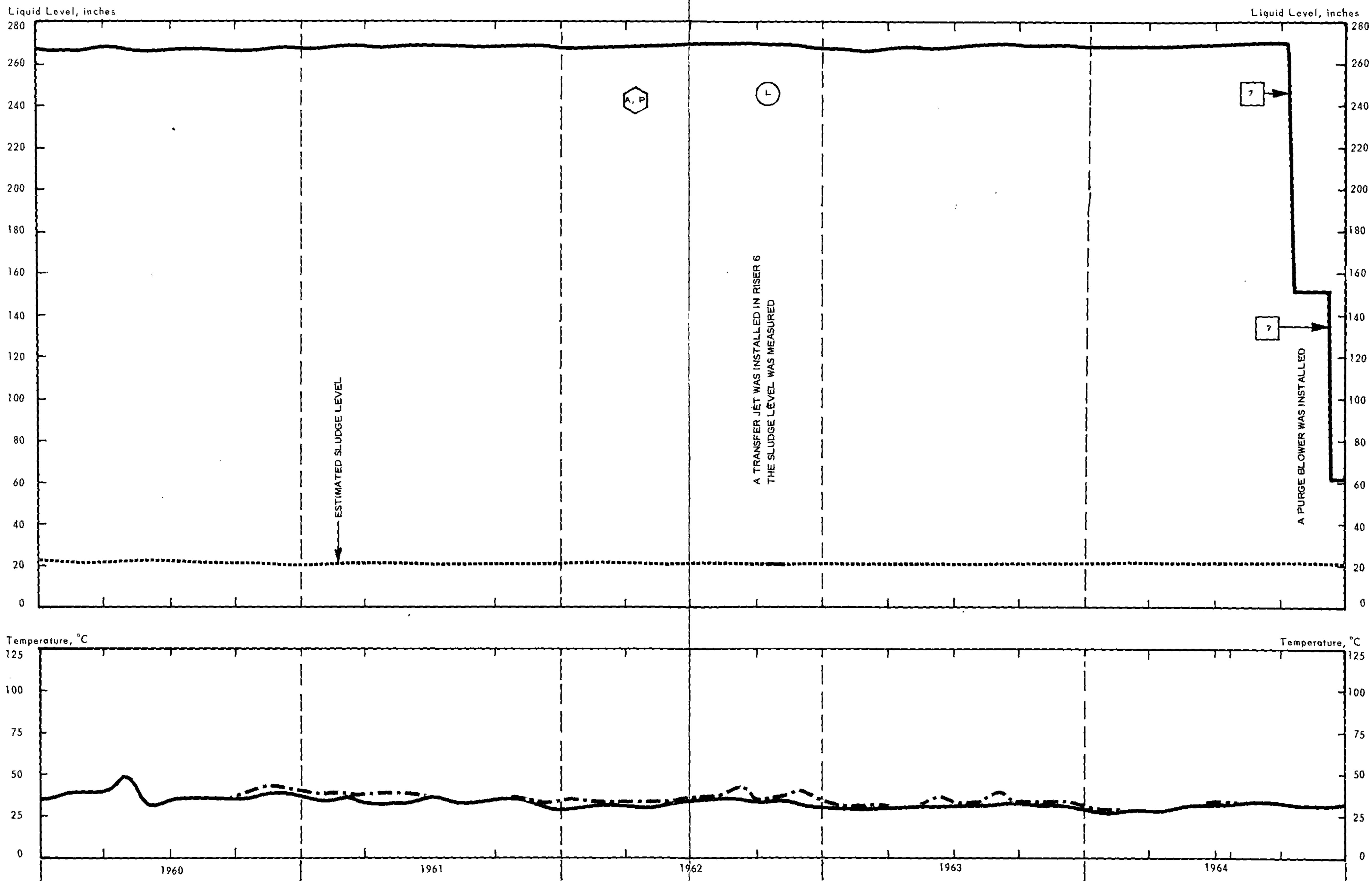


FIGURE 2 (contd)

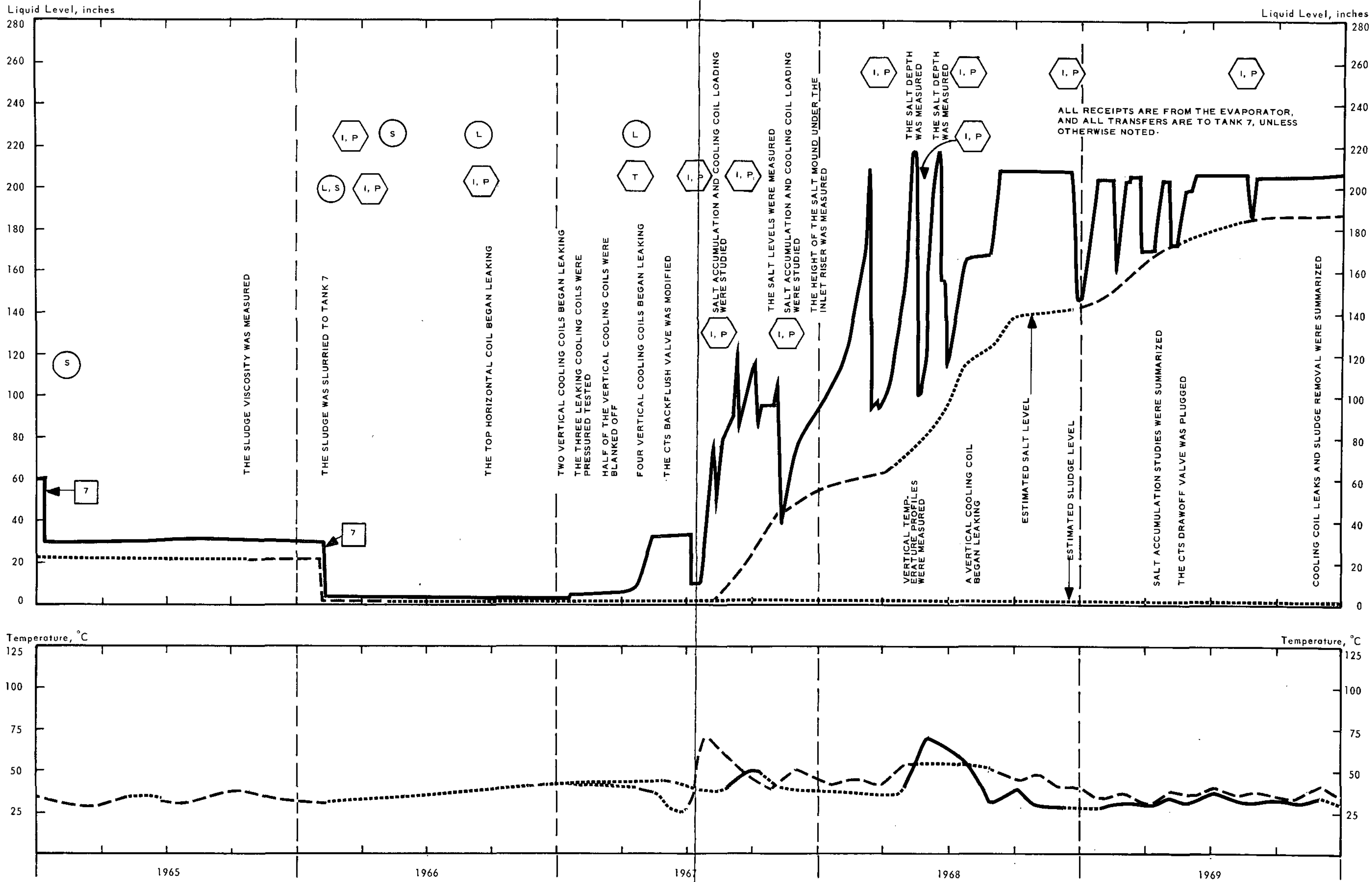


FIGURE 2 (contd)

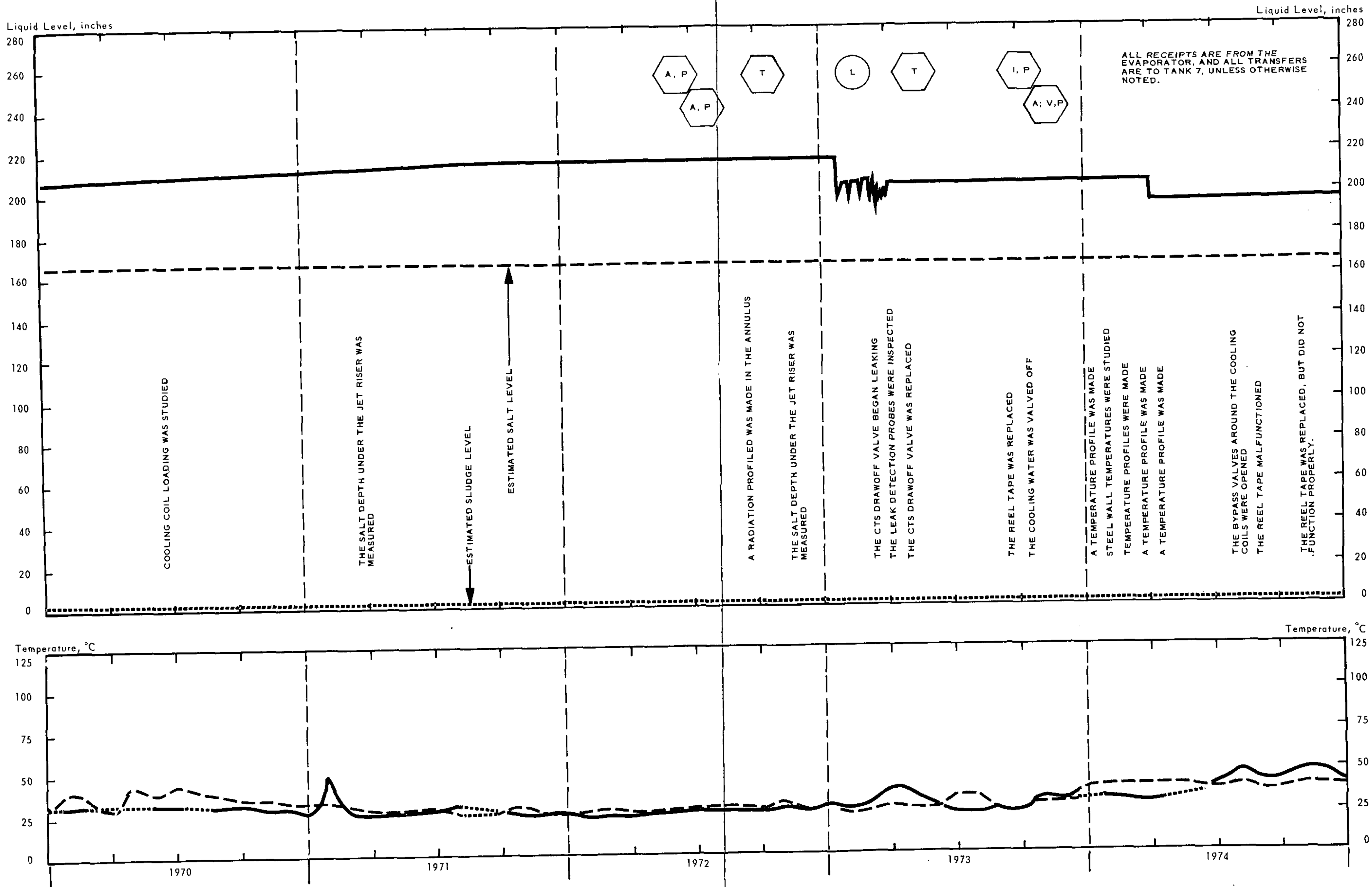


FIGURE 2 (contd)

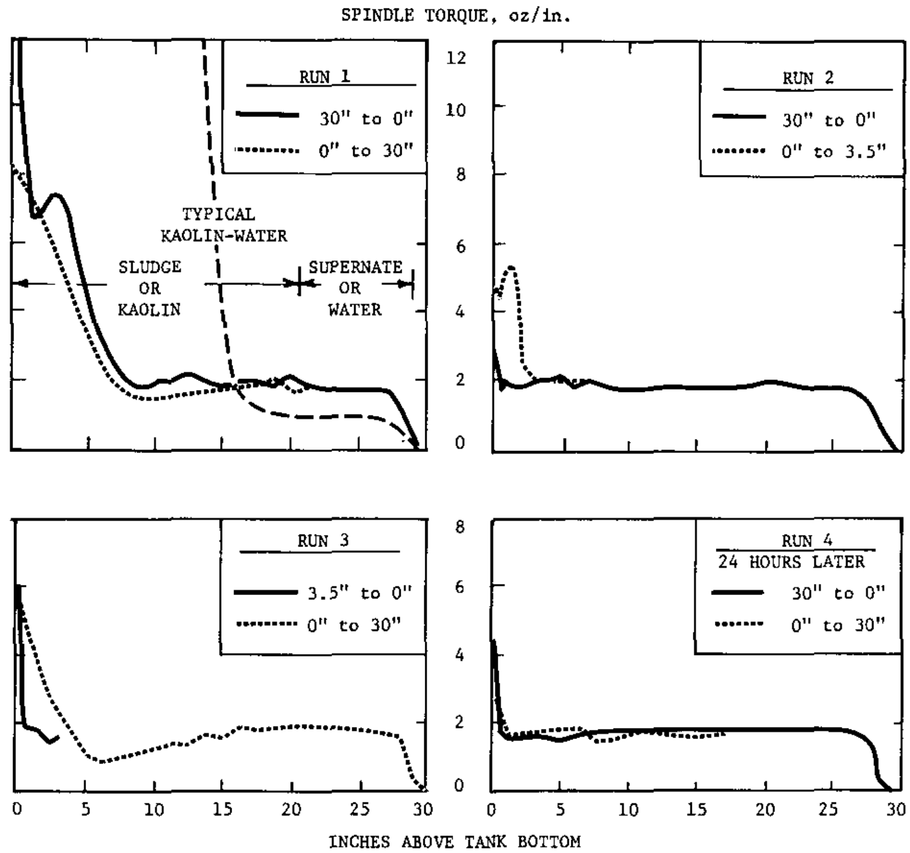


FIGURE 3. VISCOSITY TRAVERSES OF WASTE TANK SLUDGE, WASTE TANK 2, RISER 3

[CONDITIONS: TWO-BLADE PADDLE, 3-1/2" dia x 1" high; 100 rpm SPINDLE DRIVE; 1.35 in./min VERTICAL TRAVEL RATE; NO TIME DELAY BETWEEN RUNS 1, 2, AND 3.]

FIGURE 5. RESIDUAL SLUDGE IN TANK 2 UNDER VALVE HOUSE.
Periscopic view from riser 1, looking southeast. DPSPF 11080-1.

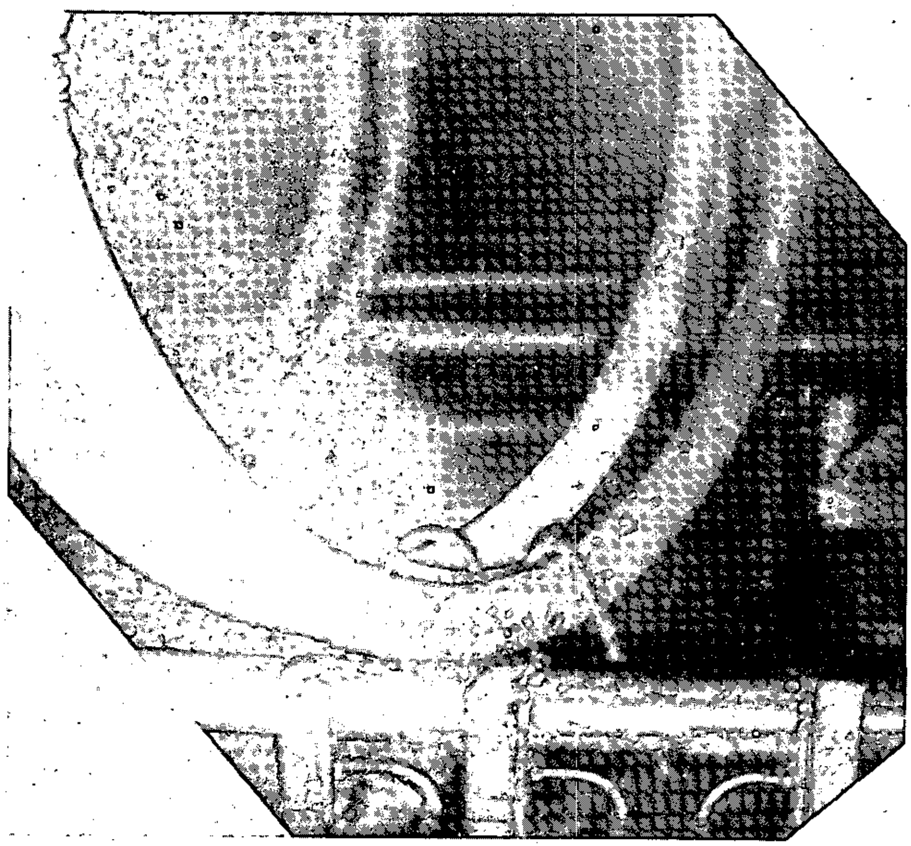


FIGURE 6. PERISCOPIC VIEW OF BOTTOM OF TANK 2. DPSPF 11080-2.

FIGURE 7. SALT DEPOSITION ON TYPICAL COILS, TANK 2-F. Periscopic view on March 15, looking N 40°W from below riser 5. The enlarged salt deposits just above the general salt level (arrow) are the tops of deposits from the preceding concentrate increment. DPSPF 12549-17.

FIGURE 9. WASTE CRYSTALS DEPOSITED ON COOLING COIL, TANK 2-F. Coil in foreground was about 3 feet from periscope objective, and is slightly out of focus. Orientation N 80°E, March 15. DPSPF 12549-5.

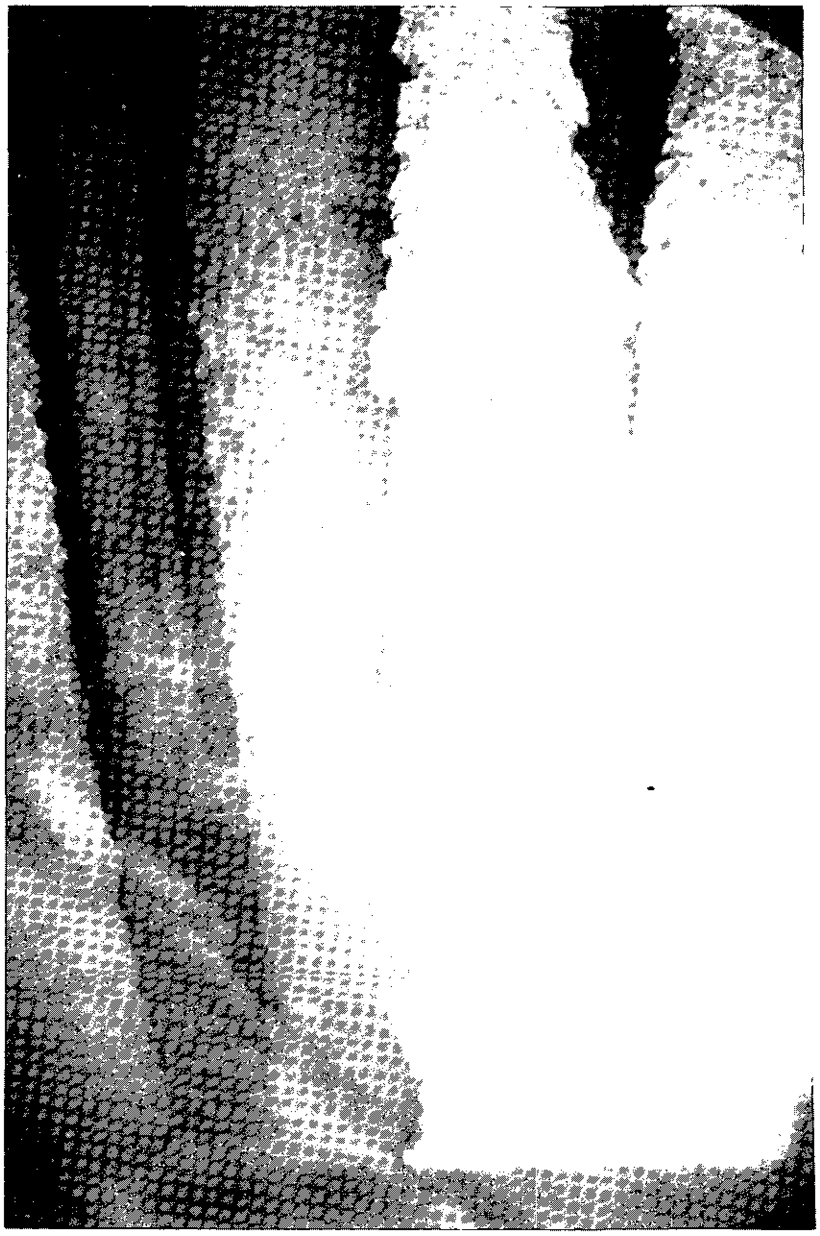


FIGURE 9. WASTE CRYSTALS DEPOSITED ON COOLING COIL, TANK 2-F. Coil in foreground was about 3 feet from periscope objective, and is slightly out of focus. Orientation N 80°E, March 15. DPSPF 12549-5.

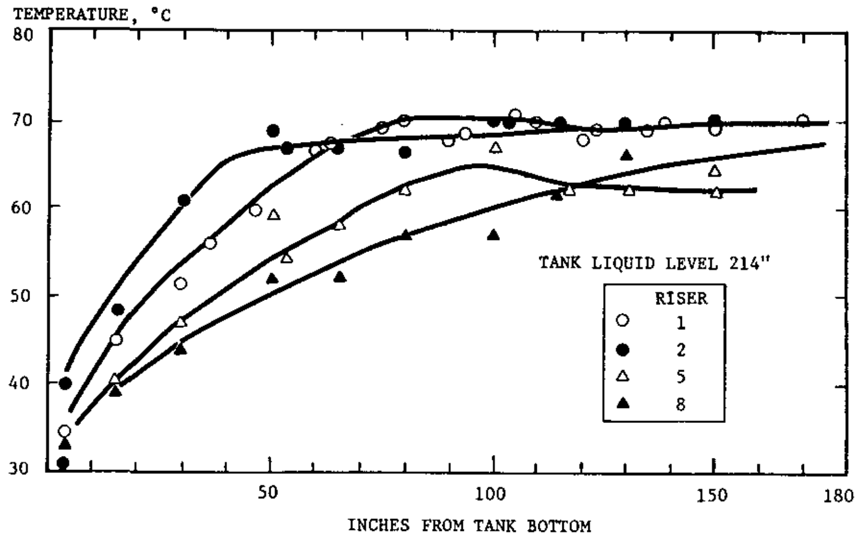


FIGURE 10. TEMPERATURES IN TANK 2F CONCENTRATE RECEIVER, MAY 6, 1968

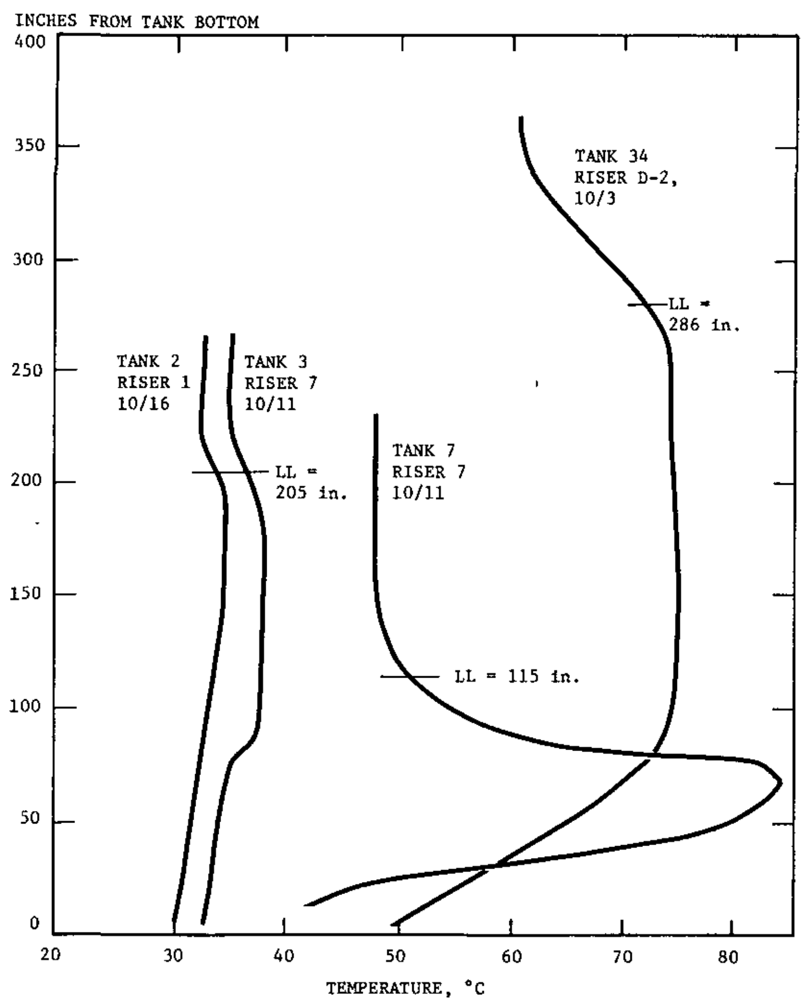


FIGURE 11. TEMPERATURE PROFILES OF F-AREA TANKS, 1973

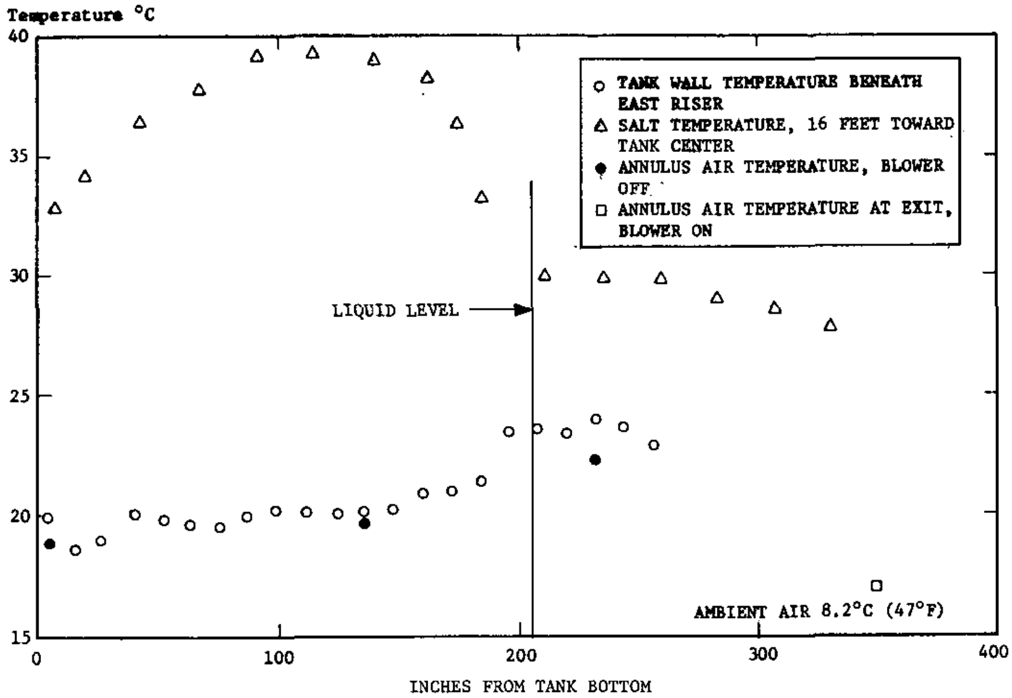


FIGURE 12. TANK 2 TEMPERATURE PROFILES OF WALL AND SALT

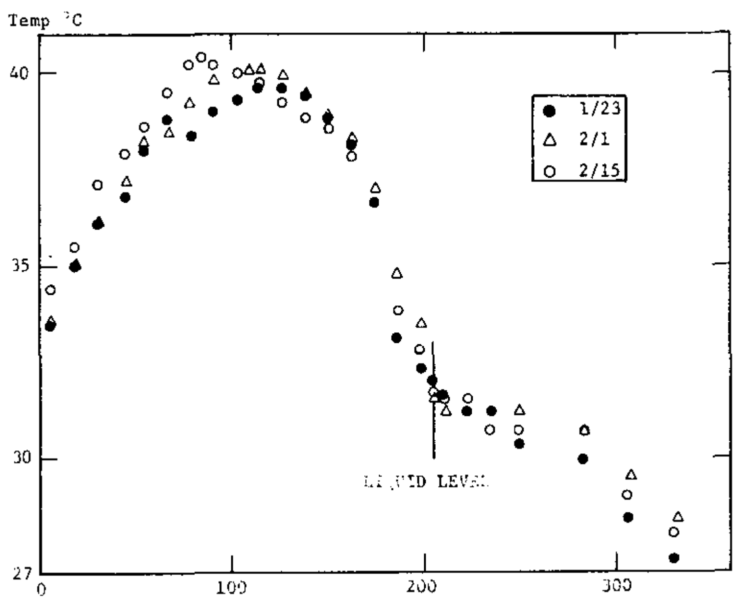


FIGURE 13. TANK 2 TEMPERATURE PROFILES, RISER 1

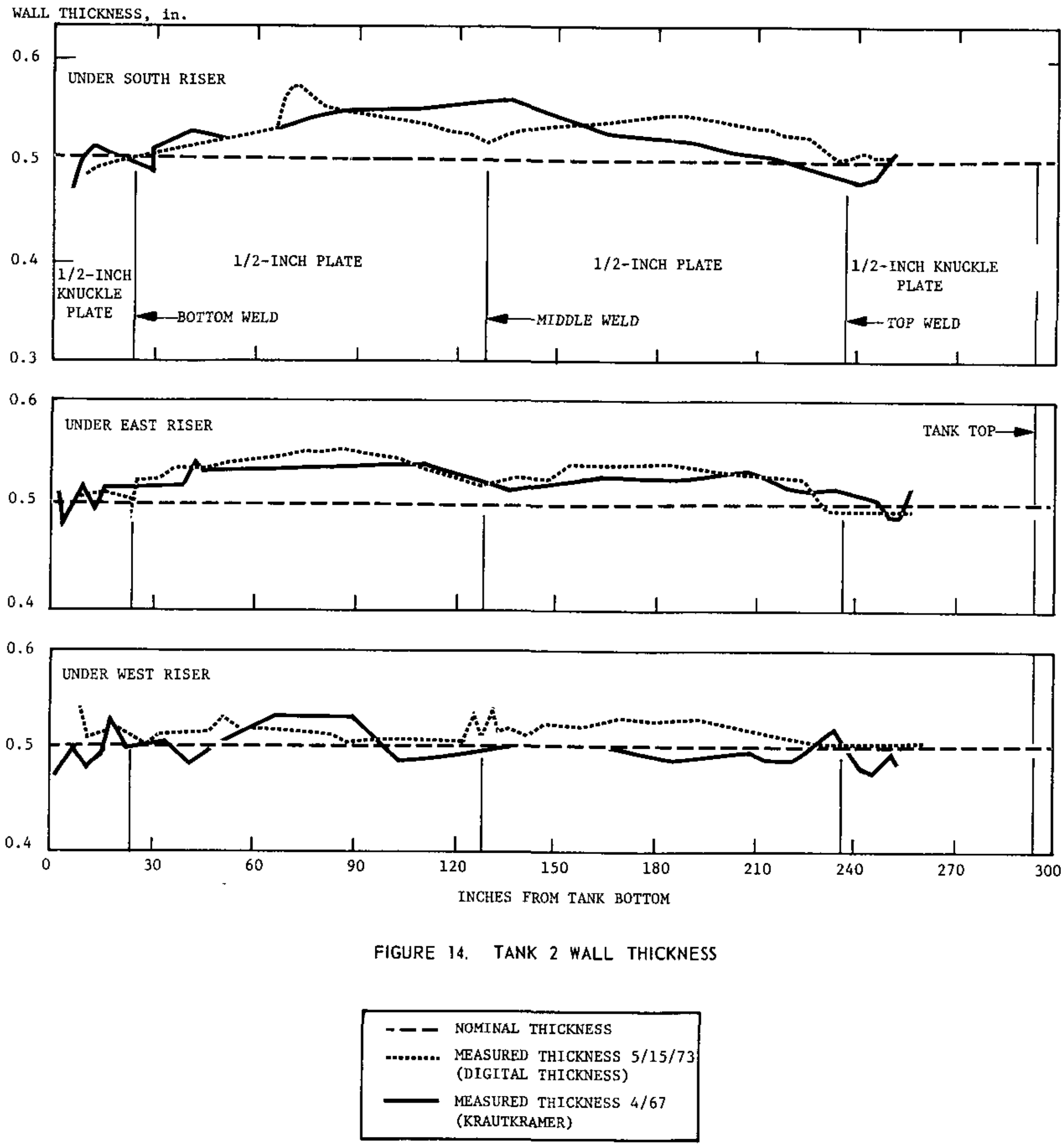


FIGURE 14. TANK 2 WALL THICKNESS

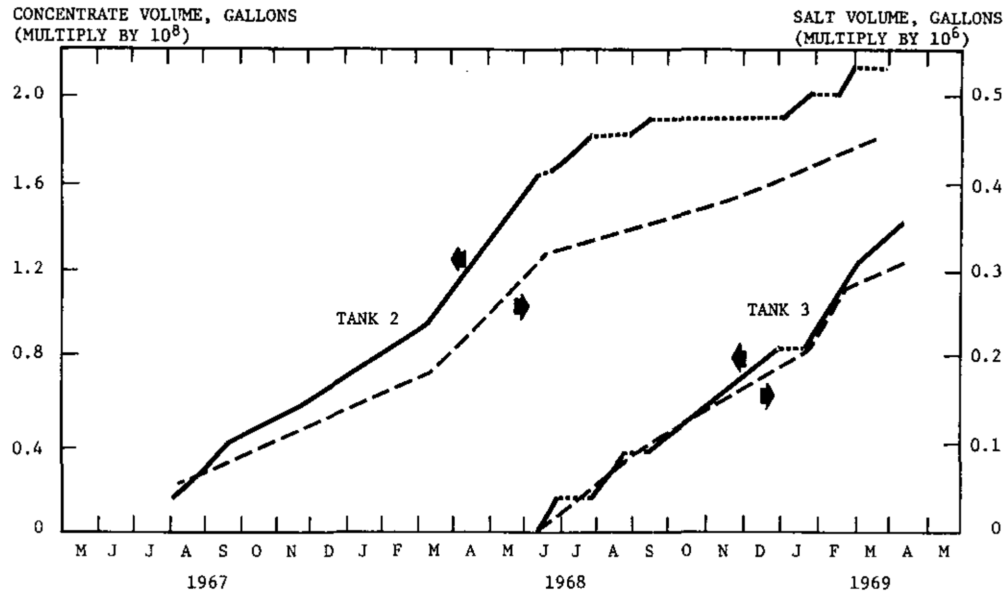


FIGURE 15. SALT ACCUMULATION, TANKS 2 & 3

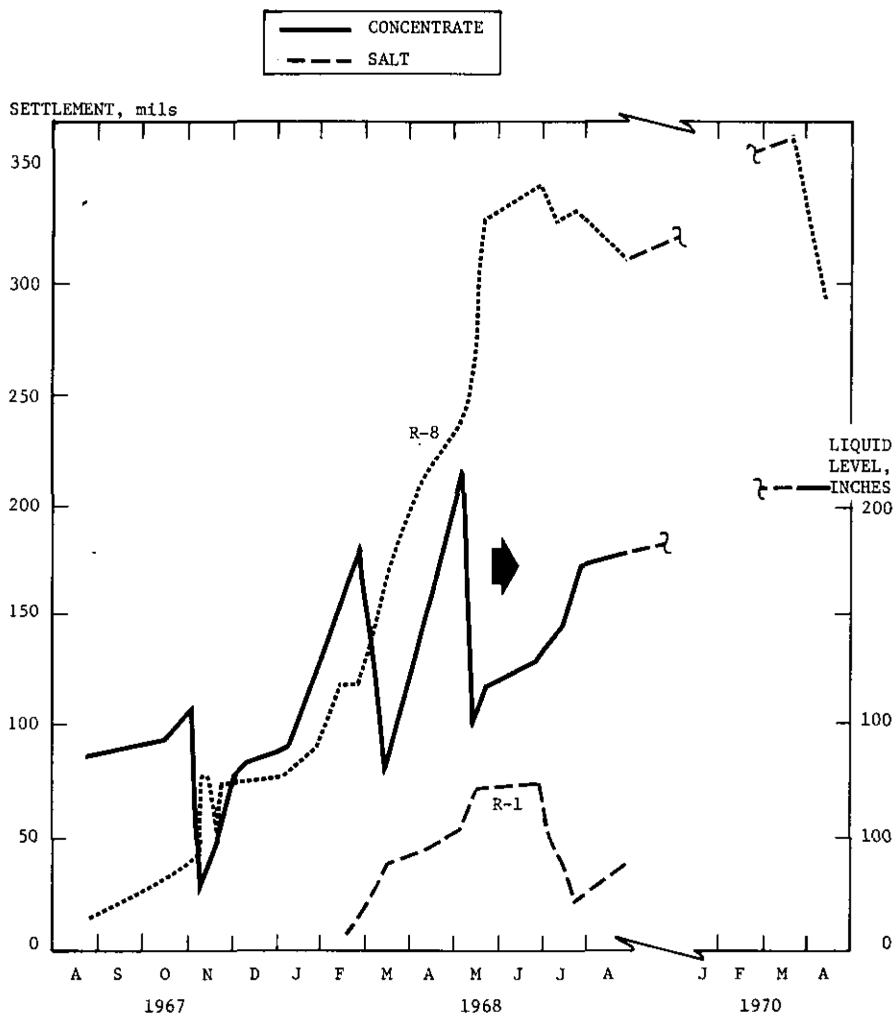
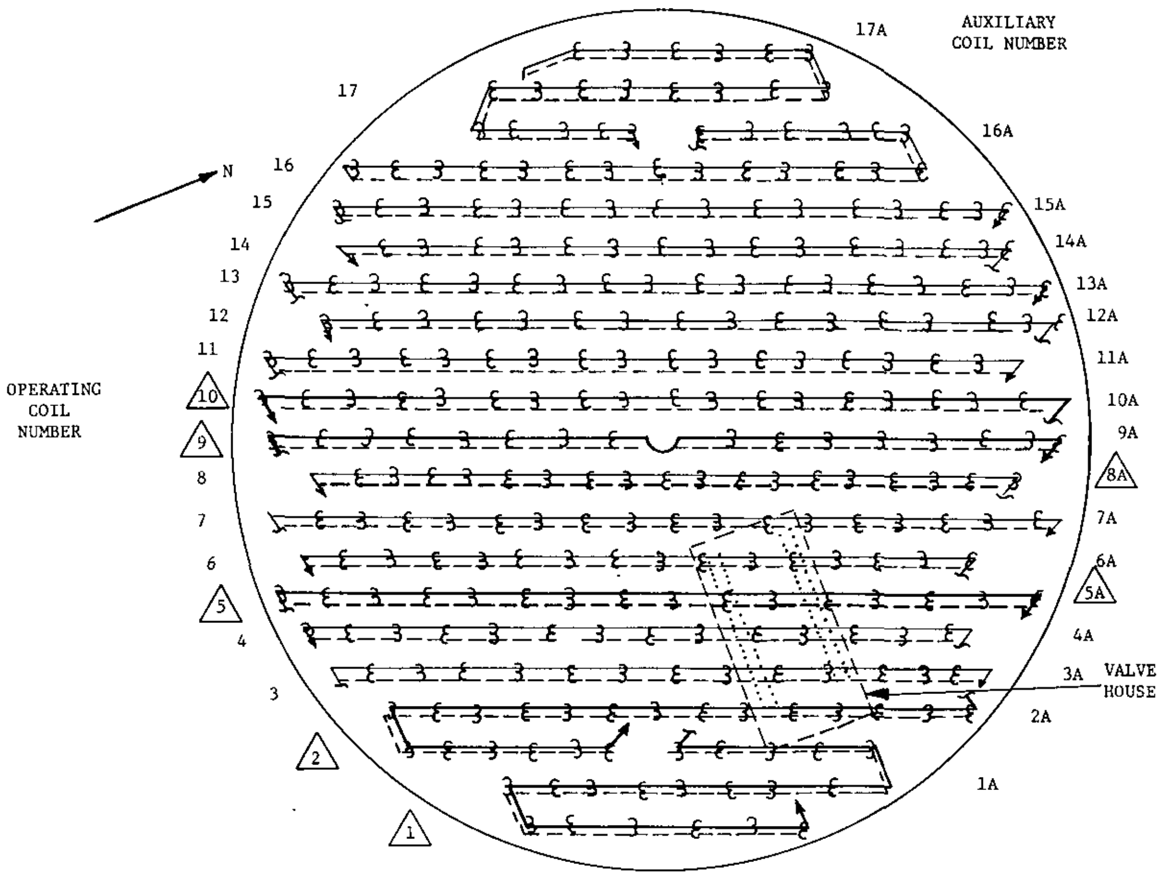


FIGURE 16. TEST COIL SETTLEMENT - TANK 2,
RISERS 1 AND 8



OPERATING COIL ————

AUXILIARY COIL — — — —

LEAKING COIL △9

HEAVY LINES DENOTE LAYOUT OF FAILED COILS

FIGURE 17. TANK 2 VERTICAL COOLING COIL LAYOUT

TABLE 1

TANK 2 PHOTOGRAPHS

Date	Access Riser	Object of Photograph	PRD Number	WMT File Box or Tray	Location Slots
4/17/62	C	Top weld	8237-1/8237-9	Box 5	67-75
4/18/62	C	Center & bottom welds	8238-1/8238-18	Box 5	76-93
4/18/62	B	Top weld	8238-19/8238-25 8239-1/8239-6	Box 5	94-106
4/19/62	B	Center & bottom welds	8239-7/8239-20	Box 5	107-125
4/24/62	A	Top, center, & bottom welds	8240-1/8240-24	Box 5	126-150
4/24/62	A	Bottom weld	8240-25/8240-28	Box 6	1-4
4/25/62	D	Top & center welds	8240-29/8240-46	Box 6	5-22
4/26/62	D	Bottom weld	8247-1/8247-9	Box 6	23-31
2/18/66	2	Tank interior	10952-1/10952-5	Box 7	1-5
2/21/66	2	Tank interior	10960-1/10960-13	Box 7	6-18
2/21/66	2	Tank interior	10961-1/10961-6	Box 7	19-26
3/1/66	2	Tank interior	10977-1/10977-7B	Box 7	47-58
3/2/66	2	Tank interior	10978-1/10978-10, 11081-1	Box 7	59-71
4/12/66	1	Tank interior	11080-2/11080-21	Box 7	72-92
8/10/66	1	Tank interior	11340-1/11340-25	Box 7	93-115
7/5/67	5	Tank interior	12056-1/12056-30	Box 8	1-30
8/8/67, 8/10/67	5	Tank interior	12138-1/12138-18	Box 8	61-78
9/15/67	5	Tank interior	12223-1/12223-10 12223-12/12223-22	Box 7	128-148
11/9/67	5	Tank interior	12325-1/12325-32	Box 8	104-135
3/15/68	5	Tank interior	12549-1/12549-30	Box 9	45-62, 80-91
5/14/68	5	Tank interior	12698-1/12698-42	Box 10	17-52, 77-81
6/27/68	5	Tank interior	12814-1/12814-18	Box 10	112-129
12/30/68	5	Tank interior	13190-1/13190-12	Box 11	92-103
8/21/69	5	Tank interior	13576-1/13576-12	Box 13	49-60
6/13/72	North	Tank wall	16045-1/16045-25	Tray 4	1-25
6/13/72	South	Tank wall	15988-1/15988-25	Tray 4	26-50
7/14/72	East	Tank wall	16073	Tray 4	51-75
7/25/73	East	Tank wall	17179-1/17179-23	Tray 4	76-98
9/25/73	2	Tank interior	17453-1/17453-12	Tray 4	99-110
10/30/73	East	Tank wall	17483-4/17483-18 17483-22/17483-33	Box 46	57-83

TABLE 2

TANK 2 SOLID AND LIQUID SAMPLE ANALYSES

Date →	4/57	11/7/57	7/58	9/28/62	3/29/67	2/20/73
Sample Type →	Supernate	Supernate	Supernate	Supernate	Sludge Slurry	Supernate
Specific gravity	1.25	1.28	1.26	1.274-1.276[a]		
Total salt, %	36.3	34.3	43	34.6-34.7[a]		
pH			>11	11	10.1	
Reducing normality				0.09-0.16[a]		
OH^-, moles/liter				0.324-0.353[a]		4.5
Cl^-, moles/liter			<0.02		0.02	
NO_3^-, moles/liter				3.69-3.81[a]		2.4
NO_2^-, moles/liter						2.9
CO_3^{-2}, moles/liter				0.362-0.372[a]		<0.1
SO_4^{-2}, moles/liter				0.097-0.098[a]		0.02
CrO_4^{-2}, moles/liter						0.004
PO_4^{-3}					0.04 g/liter	0.04 mole/liter
AL^{+3}, moles/liter				<0.004		0.7
U g/liter		.02-.026[a]	0.05			
Si g/liter					0.01	
Gross alpha d/m/ml	$3.7X10^4$	$3.34X10^4$	$1.12X10^4$			<500
PU alpha d/m/ml	$3.9X10^3$	$9.55X10^3$	$6.82X10^3$	$4.7X10^3$-$5.0X10^3$[a]		<100

[a]Differing values from two separate samples.

TABLE 2 (Cont'd)

TANK 2 SOLID AND LIQUID SAMPLE ANALYSES

Date →	4/57	11/7/57	7/58	9/28/62	3/29/67	2/20/73
Gross beta c/m/ml	$3.6X10^7$	$3.66X10^7$	$3.27X10^7$	$2.42X10^7$		
Gross gamma, c/m/ml	$1.9X10^7$	$1.68X10^7$	$1.53X10^7$	$1.16X10^7$- $1.18X10^7$[a]		
$^{95}Nb-^{95}Zr$, c/m/ml	$2.0X10^6$	$2.32X10^5$	$1.0X10^5$	0.0		
^{90}Sr c/m/ml	$2.3X10^5$	$3.36X10^4$	$2.06X10^4$	$1.4X10^4$- $1.5X10^4$[a]		$1X10^5$d/m/ml
103, ^{106}Ru c/m/ml	$2.2X10^6$	$2.62X10^6$	$9.2X10^5$			
^{106}Rm d/m/ml				0.0		$1.4X10^8$
^{134}Cs d/m/ml						$1X10^8$
^{137}Cs				$1.09X10^7$- $1.10X10^7$[a] c/m/ml		$8X10^9$d/m/ml
$NaHCO_3$ g/liter	0	0	0		23	
Na_2CO_3 g/liter	38	40.1	43		21	
NaOH g/liter	0.6-2.3[a]	0.68	11			

[a]Differing values from two separate samples.

TABLE 3

TANK 2 VAPOR SAMPLE ANALYSES
(9/56)

$\%H_2$	$\%O_2$	$\%N_2$	$\%CO_2$
0.2	18.3	81.4	0.1
0.2	18.2	81.5	0.1

TABLE 4

TANK 2 RADIATION PROFILE, SOUTH ANNULUS RISER
(9/27/72)

Distance from Annulus Floor, ft.	Radiation Intensity, R/hr
27	5
22	160
17	280
12	120
7	100
2	110

TABLE 5

TANK 2 PRIMARY WALL THICKNESS MEASUREMENTS
(North Riser)

Distance from Tank Bottom Feet	Inches	Wall Thickness, in. 1972	1972	Remarks
	2	0.50		
	2.5	0.50		
	3	0.51		
	3.5	0.53		
	4	0.52		
	6	0.50		
	8.5	0.51		
	11.5	0.50	0.505	
1	2	0.51		
1	5	0.51		
1	8	0.53		
1	11	0.50		
2	0			Bottom horizontal weld
2	2	0.50	0.497	
2	4	0.51		
4	2	0.50		
5	2	0.52	0.511	
6	2	0.52		
7	2	0.51	0.518	
8	2		0.519	
9	2	0.51	0.517	
10	2		0.514	
10	9			Center weld
11	2	0.52	0.510	
12	2		0.503	
13	2	0.51	0.519	
14	2		0.533	
15	2	0.52		
16	2		0.539	
17	2	0.51	0.538	
18	2	0.51	0.536	
19	2	0.49	0.533	
19	6	0.50	0.518	Top weld (nominal)
19	11	0.49	0.506	
20	3	0.51	0.505	
20	5	0.51		
20	8	0.50		
20	11	0.50		
21	2	0.49		
21	8	0.50		
	Average	0.51	0.518	

TABLE 6

TANK 2 SALT DEPTHS

Date	Salt Depth, in. Riser 2	Riser 3	Riser 5	Riser 6	Riser 7 (Inlet)	Liquid Level, in.
8/7/67	11			34		77.5
8/10/67					165±25	44.8
8/22/67					168	88
8/23/67					158	95
8/24/67					112	98
8/28/67	13			75	107	106
8/30/67					113	106.5
9/8/67	19		22	77	115	120
9/12/67	16		22	83	119	124.3
9/13/67				76		126.8
9/18/67	15	17	23	79	96	89
9/22/67					96	92
9/25/67					96	96.5
9/27/67					99	99
10/3/67		15		76	104	107.3
10/4/67					106	106
10/9/67	16				103	90.8
12/19/67					92	90.3
1/5/68					104	102.8
1/18/68					112	112
6/19-25/68	88	95	119		218.8	
12/18/68	114	122	148		208	

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