GPU Nuclear
TMI-2 DIVISION

DATA REPORT

REACTOR BUILDING BASEMENT — HISTORY AND PRESENT CONDITIONS

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DATA REPORT

REACTOR BUILDING BASEMENT (EL 282'-6")

HISTORY AND PRESENT CONDITIONS

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SUMMARY

As a result of the March 28, 1979 loss of coolant accident, the reactor building basement at TMI-2 remained flooded with highly contaminated water for over two years. The water has been a major contributor to the general area radiation on the higher elevations. Significant efforts have been expended on characterization for planning cleanup of the basement. Results of sample analyses indicated that Cs 134, Cs 137, and Sr 90 have been the predominant activities.

The SDS/EPICOR systems, in series, are utilized for decontaminating the water and, to date, almost all the water has been successfully processed at an overall rate of 3.3 gpm. The processed water is being used for decontamination of the building, resulting in dilution of the basement water contents.

Current efforts emphasize sampling the sludge deposits on the floor, visually inspecting the basement area via remote controlled television, and preparing to decontaminate the basement. Preliminary results of early sludge sample analysis indicate high contents of cesium and strontium activities, with strontium mainly in solid phase. Chemically, the sludge is found to contain high concentrations of Zr, Cu, Na, B, Ti, In, and Sn. Presently, plans are being drawn to sample the sludge and conduct further visual inspection of the basement and the sludge. Sufficient understanding of the chemical and isotopic compositions, curie content, the amount of fuel present, and other characteristics of the sludge is necessary for technical planning of removal and disposal of the sludge.

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SECTION 1.0

INTRODUCTION

1.1 OBJECTIVE

The purpose of this report is twofold: first, to give a summary of the conditions that existed in the containment basement since March 1979; and second, to provide a brief summary of the efforts to cleanup and decontaminate the containment basement, and the results of these efforts.

1.2 BACKGROUND

On March 28, 1979, the loss of coolant accident (LOCA) at Three Mile Island's Unit 2 (TMI-2) resulted in a large amount of heavily contaminated water in the containment basement. Investigations have concluded that this water has been a major contributor to the general area radiation in the containment building. In addition to the defueling and reactor coolant system (RCS) decontamination, the safe cleanup and removal of this water has been a major task in General Public Utilities' (GPU's) recovery effort. This is because, in addition to the obvious need to clean and dispose of the water, removal of the highly contaminated water was expected to reduce general area radiation and dose rate to personnel. Hitherto, efforts pertaining to processing of the water and characterization of the prevailing conditions have been conducted. Documentation of these activities and of the current conditions in the containment basement are the subjects of this report.

1.3 SCOPE

This report is essentially a documentation of the conditions that existed, the efforts that have been conducted, and the results achieved to date. Conditions such as water level, the radiological properties of the water before processing, the efforts expended on the processing and the results achieved, the current conditions and the near term planned activities will be addressed in the order presented. The report is not intended to be final or comprehensive, and it only presents relevant data and information available at the time of this report. Future developments will be included in addendums or revisions to this report.

SECTION 2.0

REACTOR BUILDING BASEMENT

The space between the floors on El 282'-6" and El 305' in the reactor building is referred to as the basement. The basement houses several major components. A partial list of these components is given below:

1.* The reactor coolant drain tank (RCDT), WDL-T-3
2.* Letdown coolers, MU-C-1A and 1B
3.* Lower section of steam generators A and B (OTSG A and B)
4.* Leakage coolers, WDL-C-1A and 1B
5.* Leakage transfer pumps, WDL-P-9A and B
6.* Reactor coolant drain pump (WDL-P-7)
7. OTSG secondary side drain pump SU-P-1
8. OTSG wet layup recirculation pump SU-P-2
9. Chemical addition tank SU-T-1
10.* Bottom of the reactor
11.* Incore instrumentation
12.* Reactor building sump pumps, WDL-P-2A and 2B
13.* Tendon access gallery sump pump, SD-P-13 A and B
14.* Decay heat system piping
15.* Radiation monitor cabinets

* Possible significant sources of radiation.

The flooding of the basement entailed the immersion of the above components in highly contaminated water for over two years. Efforts are being undertaken by various organizations to investigate the effects of such accident-imposed conditions on the mechanical and electrical components.

Having taken components, concrete shields, and walls in the basement into consideration, calculations have generated the following correlation between the elevation above the basement floor and volume of the space below that level (Reference 1):

El. 282'-6" - El. 286'-0"	6080 gal per in.
El. 286'-0" - El. 289'-0"	6100 gal per in.
El. 289'-0" - El. 291'-1"	6200 gal per in.

Along with the following known volumes, this correlation has allowed estimation of the volume of the water in the basement.

Sump volume	2,722 gal
Drain pipes	1,274 gal
Incore Instrument Chase	~2,700 gal
Elevator Pit	~700 gal

SECTION 3.0

FLOODING OF THE BASEMENT

Before the start of processing of the water in September 1981, an estimated 640,000 gallons of water had been discharged into the basement. This water is attributed to three major sources: reactor coolant system, containment spray system, and the river water cooling system.

3.1 THE REACTOR COOLANT SYSTEM

At 15 minutes and 27 seconds into the March 28 incident, the rupture disk on the reactor coolant drain tank (RCDT) broke at a pressure of 190 psig (set point) and relieved highly radioactive water and steam into the basement. This continued until the pressurizer block valve was secured. However, further release was repeatedly initiated when the pressurizer block valve was cycled in an effort to regulate pressure in the system. Apart from the quantity that was pumped into the auxiliary building, an estimated 265,000 gallons of water has been released into the basement sump from this source before SDS startup. There has also been a continuous leak rate on the order of 0.13 gpm from the RCS for over two years. The total quantity of water from the RCS is estimated at about 69% of the water before the SDS startup.

3.2 THE CONTAINMENT SPRAY SYSTEM

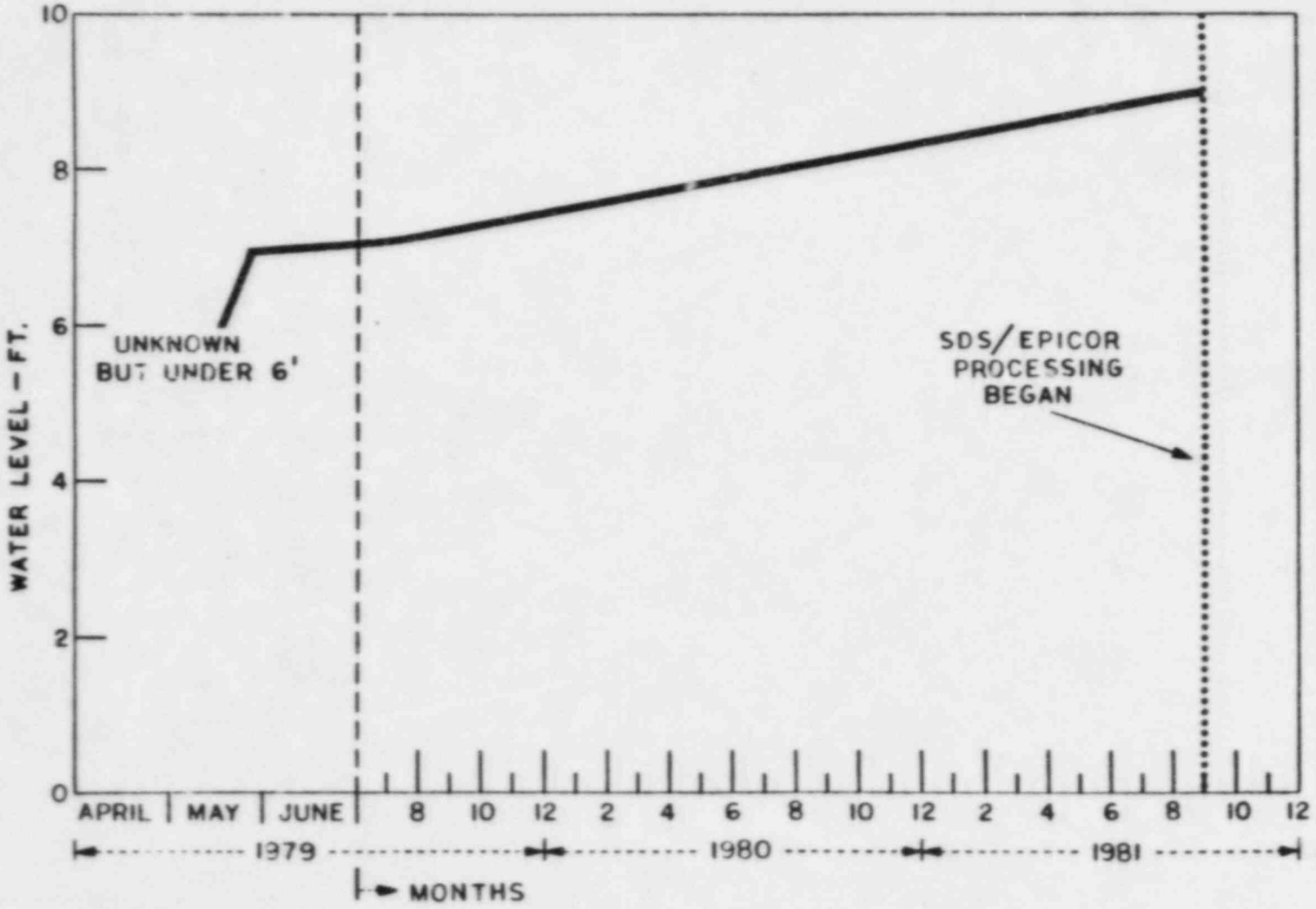
At about 9 hours and 50 minutes into the accident, the hydrogen burn resulted in a containment pressure spike of at least 26 psig, which is the set point for the actuation of the containment spray system. The spray system operated for 5 minutes and 40 seconds, dumping an estimated 17,000 gallons of water into the containment, which eventually resided in the basement sump. The amount attributable to this source amounted to less than 3% of the water in the basement before the SDS startup. Because of the addition of chemicals (NaOH) that automatically accompanies the spray solution, the sodium ion concentration became elevated.

3.3 THE RIVER WATER COOLING SYSTEM

The investigation initiated by the readily unaccountable increase of water level in the basement attributed the extra water to leakage from the river water cooling system. The leak was suspected to be from a relieving relief valve on the containment building cooling coils. Based on available data, back projections of water levels, and reconstruction of events associated with water inventory, it has been estimated that 180,000 gallons of water was released into the containment from this source before it was secured. This amounts to about 28% of the inventory before the SDS startup (Reference 2).

Figure 3-1 illustrates a schematic of the water level rise as a function of time until the SDS startup. The maximum depth attained by the basement water was 8 ft 6 in. The rate of decrease of the water level after initiation of SDS processing of the water is addressed in Section 5.0.

FIG. 3-1 REACTOR BUILDING WATER LEVEL



SECTION 4.0

BASEMENT WATER ANALYSIS

Before the SDS processing, efforts were expended to obtain and analyze samples from the basement water. Such data were to determine contents of the water to support mass balance, decontamination, and other recovery-related activities. In addition, because the basement water has been a major source of radiation in the building*, understanding its composition would assist in assessing the effect of removal of the water on dose levels.

Several samples of the basement water were drawn and analyzed before processing began. Table 4-1 presents analysis of samples taken in August 1979, May 1981, and September 1981. The August 1979 sample was retrieved from top, middle, and bottom depths of water. The data presented in the table, however, are average values for selected isotopes. For details, refer to Reference 4. Four samples were obtained in May 1981 from 84-3/4 in., 47-3/4 in., 5-3/8 in., and 0.0 in., respectively, above the basement floor. Again, the data in Table 4-1 are average values for the different levels for selected isotopes of interest. For comparison purposes, another sample was drawn from the basement floor in September 1981. Results of analysis of this sample are presented in the table for selected isotopes. Details relevant to the latter two sets of data are given in Reference 5. A close look at the results of the analysis depicts the following observation:

- The predominant activities detected were due to Cs^{134}, Cs^{137}, and Sr^{90}. Cs^{137} represented about 70% of the total measured activity. This value had increased to 85% by the later date due to decay of shorter lived isotopes.
- There was no apparent significant stratification at either of the points where samples had been obtained from several different levels.
- Curie concentrations decreased with time, probably due to dilution.

TABLE 4-1

ISOTOPIC ANALYSES OF THE BASEMENT WATER
(selected isotopes)

	8/79 (μCi/ml)	5/81 (μCi/ml)	9/81 (μCi/ml)
Cs^{137}	176.3	142.3	137.0
Cs^{134}	39.9	19.15	16.2
Sr^{90}	2.81	5.225	4.8
H^3	1.03	0.6025	0.587

* A study concluded that a high percentage of the general area radiation on El 305' was due to the contaminated water and sludge in the basement. (Reference 3) Radioactivity associated with the basement sludge is discussed in Section 6.2 of this report.

Table 4-2 illustrates the chemical composition of samples corresponding to Table 4-1. The data in Table 4-2 are averages, as was indicated for the ones in Table 4-1. Results of the analysis further elaborate on the observation that there was no significant stratification at the points where the samples were taken. The data also indicate high contents of boron and sodium resulting from the reactor coolant injection and the containment spray water.

TABLE 4-2

CHEMICAL ANALYSIS OF THE BASEMENT WATER
(data presented only for selected chemicals)

	8/79 (μg/ml)	5/81 (μg/ml)	9/81 (μg/ml)
B	2116.7	2120	2300
Cl	11	--	--
Cu	4.7	<1	<1
Na	1160	1182	1241
Sn	--	<5	<5
Ti	≤ 0.13	--	--
Zr	--	1.5	1.4

SECTION 5.0

PROCESSING OF THE BASEMENT WATER

5.1 SDS/EPICOR SYSTEMS

Processing the highly contaminated water in the reactor building basement has been one of the major phases in the recovery effort. The system developed for this purpose employed a combination of the submerged demineralizer system (SDS) and a modified EPICOR system in series.

The SDS, which utilizes inorganic zeolites such as mineral chabazite and synthetic type-A zeolites, removed Cs^{134}, Cs^{137}, and Sr^{90}. The effluent from the SDS is then polished via EPICOR-II. A detailed account of the design and operation of the SDS/EPICOR-II systems is outlined in Reference 6. A schematic of the combined process is shown in Figure 5-1.

Processing of the basement water began on September 23, 1981. The water was removed from the basement in batches of between 30K and 50K gallons using a surface suction pump. This pump lost suction after the water level was reduced from 8.5 feet to 6.0 inches. A small jet pump was then used to remove the remaining water at a low rate of less than 5 gpm. This pump removed virtually all the remaining water and is still being used as the water level increases.

To date, almost all of the water in the basement has been successfully processed at an overall rate of 3.3 gpm. The effectiveness of the SDS and EPICOR-II in curie removal are summarized in Tables 5-1* and 5-2*.

TABLE 5-1

SDS EFFECTIVENESS IN PROCESSING REACTOR BUILDING SUMP WATER

Radionuclide	Influent (μCi/ml)	Effluent (μCi/ml)	Decontamination Factor	Curies Removed
Cs-134	13.1	1.0E-4	1.3E+5	29,800
Cs-137	123	8.6E-4	1.4E+5	278,000
Sr-90	5.14	8.8E-3	5.9E+2	11,600
Sb-125	1.1E-2	1.1E-2	--	
Ce-144	4E-4	4E-4	--	
Co-60	2E-5	2E-5	--	
			TOTAL	319,400

* The data presented herein represent averages after processing about 810,000 gallons.

TABLE 5-2

EPICOR-II PROCESSING OF SDS EFFLUENT

Radionuclide	Influent (μCi/ml)	Effluent (μCi/ml)	Decontamination Factor	Curies Removed	Curies Remaining
Cs-134	1.0E-4	2E-7	500	0.23	4E-4
Cs-137	8.6E-4	3.2E-7	2,700	2.0	7E-4
Sr-90	8.8E-3	1.7E-5	500	19.9	3.9E-2
Sb-125	1.1E-2	4E-7	27,500	24.9	9E-4
Ce-144	4E-4	9.7E-7	400	0.9	3.2E-3
Co-60	2E-5	2E-7	100	0.04	5E-4
		Total (excluding TRITIUM)		47.97	4.5E-2
H-3	8.8E-1	8.8E-1	1		2000

Part of the effluent from this combined system is being utilized for decontamination purposes. As the effort to decontaminate the containment building continues, contaminated water will accumulate in the basement. Therefore, the SDS/EPICOR system will remain in use. In addition, this system is being used for processing the RCS.

During processing of the water, samples were obtained from the SDS influent before and after the prefiltering. The available data for sample points A and D are presented in Table 5-3. The table shows average values for Sr and Cs contents and depicts the water level and volume at the start of the removal of the particular batch. Refer to Figure 5-1 for locations of sample points A and D. Results of a sample analysis by ORNL, taken from sample point A, are also included. Although some variation is seen in the cesium numbers, there is no consistent trend to show any stratification; in effect, supporting the observations in Section 4.0. The significant decrease in cesium concentration in the most recent batches is due to dilution by the processed water introduced during decontamination.

FIG. 5-1

SCHEMATIC OF

TMI 2 SUBMERGED DEMINERALIZER SYSTEM

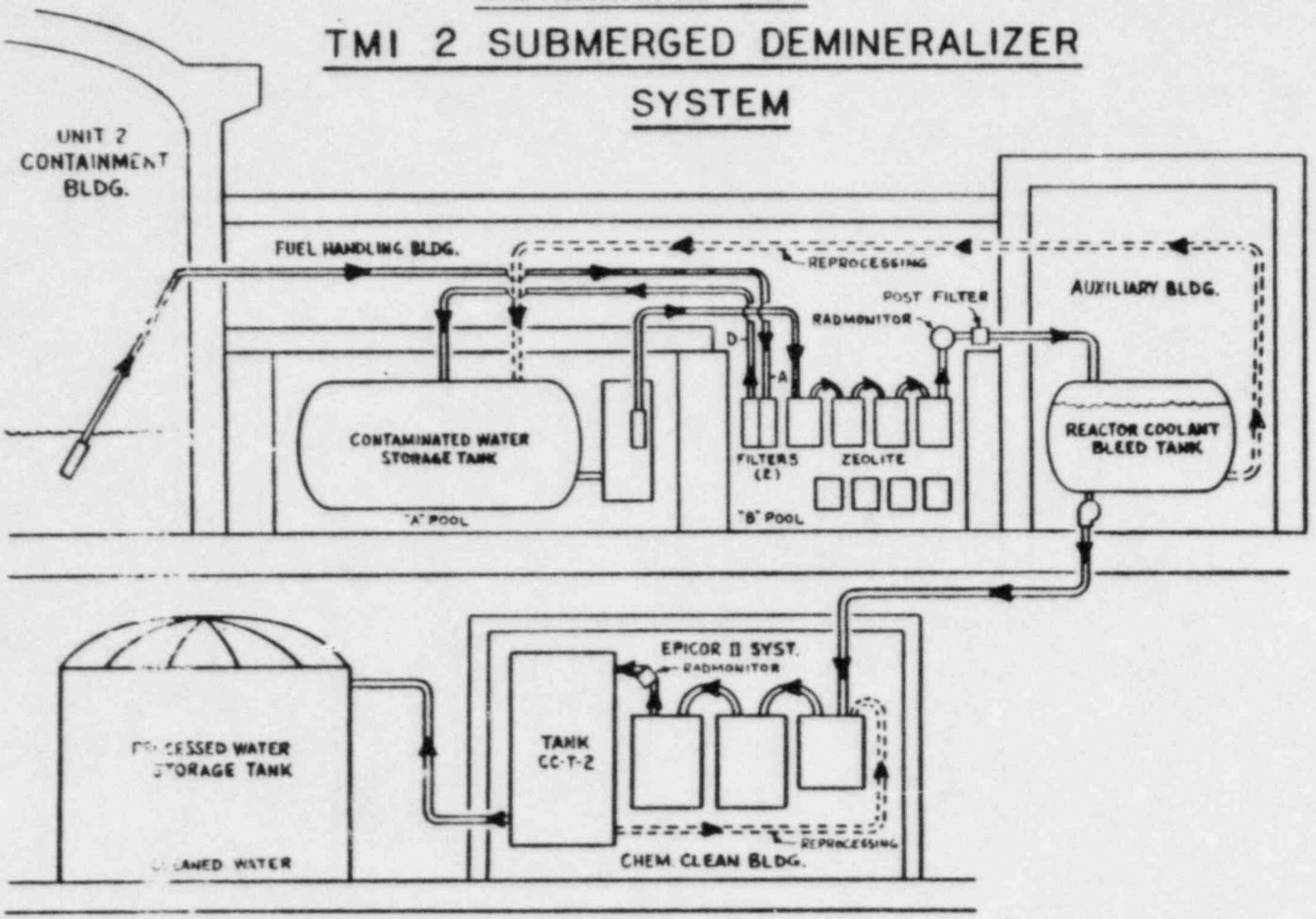


TABLE 5-3

RB SUMP PROCESSING

Batch	Isotope	Point A*	Point D*	ORNL*	Volume of Water in Basement ($\times 10^5$ Gallons)	Basement Water Level Elevation (ft
5	Sr^{90}	-	3.23	5.10	6.31	291
	Cs^{134}	12.33	8.67	11.20		
	Cs^{137}	106.00	82.33	128.00		
6	Sr^{90}	-	3.78	5.40	6.24	290.91
	Cs^{134}	11.98	10.49	136.00		
	Cs^{137}	112.00	101.58	128.00		
7	Sr^{90}	-	3.91	5.06	5.64	290.1
	Cs^{134}	9.92	10.00	13.30		
	Cs^{137}	94.60	101.98	129.00		
8	Sr^{90}	-	4.19	5.13	5.23	289.54
	Cs^{134}	12.82	11.21	12.70		
	Cs^{137}	115.40	102.84	128.00		
9	Sr^{90}	-	2.85		4.79	288.96
	Cs^{134}	8.92	8.50			
	Cs^{137}	83.65	77.63			
10	Sr^{90}	-	5.13	5.02	4.41	288.44
	Cs^{134}	12.75	11.99	13.90		
	Cs^{137}	122.50	104.80	123.00		
11	Sr^{90}	5.30	4.69	5.24	3.92	287.76
	Cs^{134}	10.7	10.81	13.00		
	Cs^{137}	135.67	100.39	119.00		
14	Sr^{90}	-	2.66	5.50	3.50	287.19
	Cs^{134}	9.62	8.45	13.30		
	Cs^{137}	93.80	81.79	132.00		
15	Sr^{90}	-	2.96	5.65	3.10	286.64
	Cs^{134}	9.33	9.31	13.90		
	Cs^{137}	93.00	92.08	133.00		
16	Sr^{90}	-	2.49	-	2.64	286.02
	Cs^{134}	9.25	7.75	-		
	Cs^{137}	96.50	76.50	-		
17	Sr^{90}	-	3.02	5.05	2.49	285.81
	Cs^{134}	10.00	9.24	13.10		
	Cs^{137}	100.00	94.00	124.00		
18	Sr^{90}	-	4.18	5.56	2.07	285.23
	Cs^{134}	11.66	11.68	13.40		
	Cs^{137}	113.3	110.50	128.00		
19	Sr^{90}	-	4.80	-	1.63	284.63
	Cs^{134}	11.5	12.00	-		
	Cs^{137}	110.00	115.00	-		
17	Sr^{90}	-	4.36	5.67	1.43	284.36
	Cs^{134}	11.64	11.10	13.20		
	Cs^{137}	113.30	106.30	126.00		

WRONG one before -0.2 after 129.5

QC

Batch	Isotope	Point A*	Point D*	ORNL*	Volume of Water in Basement ($X10^5$ Gallons)	Basement Water Level Elevation (ft)
21	Sr^{90}	-	4.43	5.53	1.14	283.96
	Cs^{134}	13.00	12.42	13.60		
	Cs^{137}	130.00	116.42	131.00		
22	Sr^{90}	-	4.71	5.47	0.84	283.53
	Cs^{134}	13.00	12.70	14.20		
	Cs^{137}	123.30	123.00	138.00		
			DECON WATER ADDED			
25+	Sr^{90}	-	-	5.18	0.63	283.26
	Cs^{134}	11.00	-	11.20		
	Cs^{137}	110.00	-	118.00		
29+	Sr^{90}	-	-	-	0.30	282.80
	Cs^{134}	8.00	-	-		
	Cs^{137}	87.00	-	-		
33	Sr^{90}	-	7.00	-	-	-
	Cs^{134}	-	9.31			
	Cs^{137}	-	106.67			
34	Sr^{90}	-	5.32	-	-	-
	Cs^{134}	-	6.64	-		
	Cs^{137}	-	76.20			
36	Sr^{90}	2.875	5.75	-	0.36	282.88
	Cs^{134}	1.77	2.15	-		
	Cs^{137}	20.60	25.25			
38	Sr^{90}	3.35	N/A	-	-	-
	Cs^{134}	0.64	N/A	-		
	Cs^{137}	8.00	N/A			

* All activities are in µci/ml.

\+ Staged to tank farm only, processed in batches 33 & 34

5.2 IMPACT OF PROCESSING

Cleanup and removal of over 640,000* gallons of highly contaminated water has been a significant milestone in the general recovery effort. It also had its significance in reducing the general area radiation on the higher elevations to facilitate minimizing personnel exposure because it had been one of the major sources. Lowering of water level had three possible outcomes:

1. If there had been stratification, reduction of the water level would probably result in an increase of radiation levels. Part of this effect may also be attributed to uncovering other sources in the basement as the water is removed.

2. If there had been no stratification and no uncovering of sources, reduction of the water level would actually result in lower radiation levels and a consistent or uniform trend would be seen.

3. If there had been no stratification and there were other sources uncovered during the water removal, a more complicated, (i.e., inconsistent or at least nonuniform) trend would be observed.

Ten fixed points were designated on El 305' where radiation readings were consistently taken during the basement water removal to determine how the general radiation level changes with water level. The data obtained thus far, consistent with the previous ones, does not support any stratification hypothesis. Furthermore, although it is not uniform, there is a general trend of reduction of the radiation level with decrease of water level. The nonuniformity of the data may be attributed to the uncovering of sources in the basement when the effective shielding of the water was removed. This supports the third possibility mentioned above.

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* It is noted that less than five percent of the water subsequently left the building in vapor form as a result of containment air purges.

SECTION 6.0

CURRENT CONDITIONS

6.1 WATER LEVEL

By late May 1982, the water level in the basement had been reduced to less than four inches. The subsequent decontamination activities periodically increased the water level. To date, an estimated 105,000 gallons of processed water has been used for decontamination purposes, and has returned to the basement. The continuing decontamination effort is estimated to result in 10,000 gallons of water being collected in the basement each week for the remainder of 1982. There is also an inleakage from the RCS, but it is insignificant relative to the decontamination-induced increase in water level. (The most recent data shows a leak rate of 0.018 gpm.)

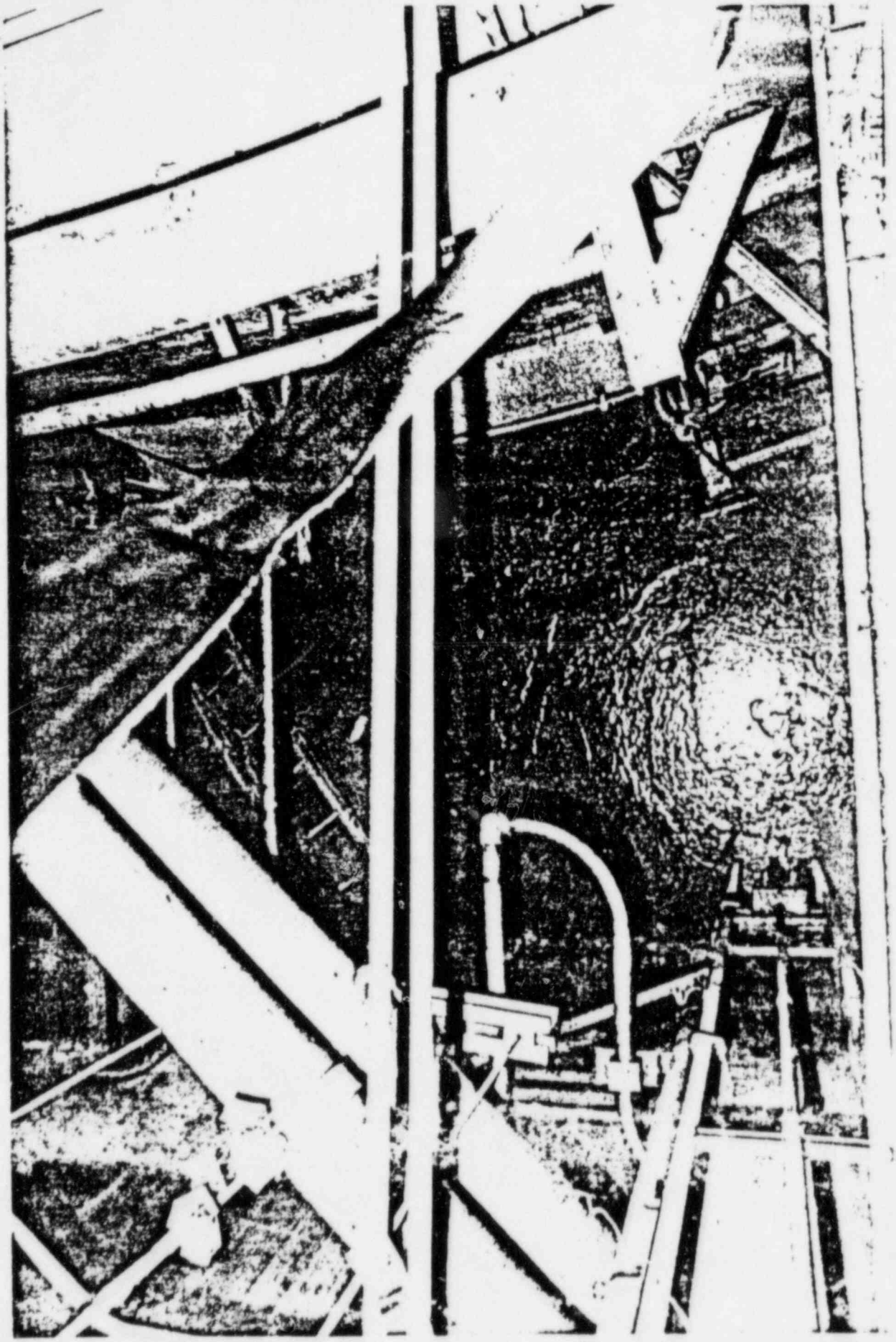
An upper limit of 100,000 gallons has been set for the water in the basement, including the amount in the SDS/EPICOR-II systems. This limit was set based on the available tankage in the event of a need to transfer the basement water. Therefore, continued processing of the water is necessary to maintain the water level below this limit.

6.2 RADIOCHEMISTRY AND CHEMICAL COMPOSITION

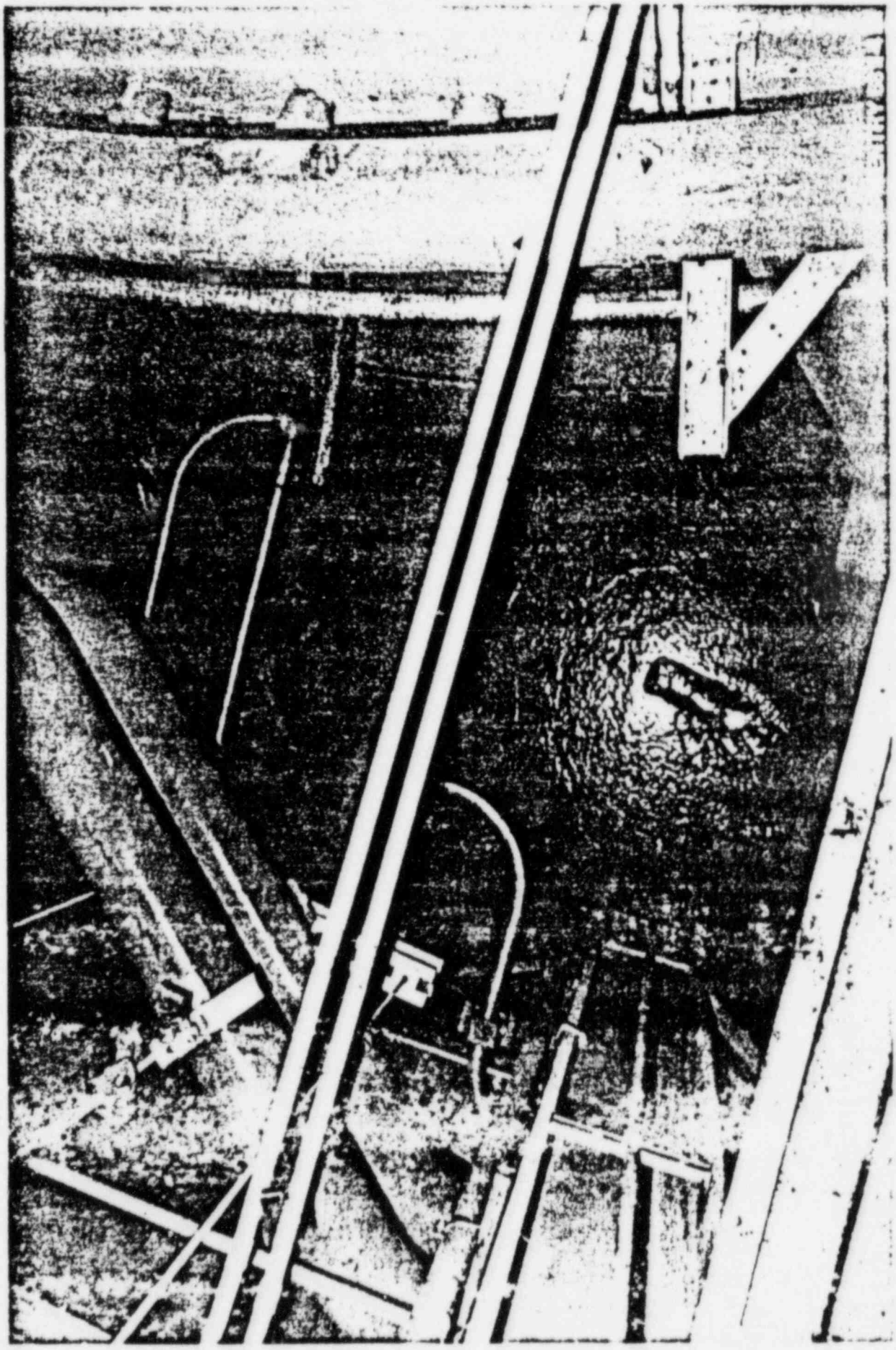
A quick visual inspection of the remaining water on June 24, 1982 revealed a dark brown sediment on the floor. Photographs of the sump water in the vicinity of the open stairwell were taken and the relevant ones are presented in Figures 6-1 and 6-2. The preliminary visual inspection estimates solid sediment less than one-inch thick below approximately a half-inch of clear water. Inspection personnel also indicated that there seems to be variation of these thicknesses from area to area. Figures 6-1 and 6-2 show photographs of the water before and after a scoop of the sediment was taken for analysis. The pictures indicate the sediment to be thick enough to retain its shape.

The sample obtained was analyzed by GPU, Westinghouse Hanford Engineering Development Laboratory, and Oak Ridge National Laboratory (ORNL). Preliminary results are obtained from GPU, Westinghouse, and ORNL on isotopic analysis and from Westinghouse and ORNL on chemical composition of the sludge. Because of the method employed in sampling the sediment, the solid content and other related data are not expected to be representative of the basement sediment. The slight variation in the results obtained by the different labs, apart from methods of analysis employed, is largely due to the way the sample was divided into three parts. However, the results give good general information, although they may not be sufficient for planning purposes. Planning activities warrant a good understanding of the contents and amount of sludge. Preliminary assumptions are that a large fraction of the solid sediment was river mud attributed to the 180,000 gallons of water that leaked from the river water cooling system.

Table 6-1 presents results of isotopic analysis of the basement water by Westinghouse. The data suggests that the major curie sources were Cs 134, Cs 137, and Sr 90. Cesium was mainly in the liquid phase while strontium existed mainly in the solid phase. The former is consistent with previous analysis, and the latter is due to higher solubility of Cs relative to Sr.



6-1 REACTOR BUILDING BASEMENT WATER (BEFORE SAMPLING)



6-2 REACTOR BUILDING BASEMENT WATER (AFTER SAMPLING)

TABLE 6-1

RADIOCHEMICAL ANALYSIS OF BASEMENT SLUDGE
(ANALYSIS BY WESTINGHOUSE)*

Isotope	Solids μCi/g	Solids μCi/l Original Slurry	Filtrate μCi/l	Total μCi/l
Co60	11.4±.2	(2.98±.04)x10^2	(1.1±.2)x10^{-1}	(2.98±.04)x10^2
Sb125	136±1	(3.56±.02)x10^3	(2.5±.3)x10^1	(3.56±.02)x10^3
Ru106	35.9±.3	(9.4±.1)x10^2	(2.3±.4)	(9.4±.1)x10^2
Ce144	44.0±.4	(1.15±.01)x10^3	ND	(1.15±.01)x10^3
Cs134	173±1	(4.51±.03)x10^3	(1.35±.01)x10^4	(1.80±.01)x10^4
Cs137	2032±4	(5.31±.01)x10^4	(1.58±.01)x10^5	(2.11±.01)x10^5
SN113-In113m	0.14±.06	(3.7±1.7)	ND	(3.7±1.7)
Mn54	0.53±.07	(14±2)	(4±2)x10^{-2}	(14±2)
Ag110m	0.8±.3	(20±8)	ND	(20±8)
Sr+Y 90	(4.9±0.2)x10^3	(1.29±.06)x10^5	(1.16±.06)x10^4	(1.41±.06)x10^5

* Source: Reference 8

Table 6-2 shows preliminary results on the chemical composition of the sludge. The analysis was conducted by ORNL. The data in the table show slight differences from those obtained by Westinghouse. However, both analyses indicate that the sludge contains large amounts of copper, titanium, zirconium, chlorine, sodium, indium, and tin. The large percentage of the solids (over 25%) appears to be copper.

TABLE 6-2

TMI-2 SLUDGE SAMPLE CHEMICAL COMPOSITION
(ANALYSIS CONDUCTED BY ORNL)+
(ppm)

Element	Solids	Supernate	Acid Insolubles	Element	Solids	Supernate	Acid Insolubles
Pb	300		8	Fe	8K	0.6	1000
La	2			Mn	1K	0.2	20
Ba	300	0.1	<5	Cr	400	3	200
Te	900	2	20	V	3		0.8
Sb	10		5	Ti	800	<5	2000
Sn	1000	<2	70	Ca	2K	30	100
In	1.5K	1	700	K	800	70	300
Cd	5K	2	200	Cl	5K	30	3000
Ag	5K	0.1	Matrix	S	2K	5	100
Mo	100	1	<10	P	400	0.4	3
Nb	40	<0.7	9	Si	20K	20	Major >50K
Zr	2K	<0.4	3000	Al	5K	3	700
Y	8	4		Mg	2K	5	50
Sr	100	0.2	<1	Na	3K	3K	80
Rb	2	0.7	<0.5	B	3K	3K	300
Br			40	Ce	30		2
As	30		1	Tc-99	<5		
Ge		4					
Zn	2K		30				
Cu	40K	5	300				
Ni	12K	0.5	200				
Co	10	0.1	2				

+ Source: Reference 9

With respect to transuranics, ORNL indicated 95.403 mg of plutonium and 64.251 mg of uranium per litre of sample. Westinghouse, on the other hand, depicted 160 mg of plutonium and 101 mg of uranium per litre of sample. The two analyses, nevertheless, show uranium to plutonium ratio within 6.5 percent of each other.

The two analyses were also in agreement with regard to the pH of the water. ORNL indicated a pH value of 8.1 and Westinghouse reported a pH of 8.2. Further analyses of samples taken from various points in the basement are necessary for drawing conclusions. Better methods of sampling will have to be devised to guarantee representative samples.

The soluble and suspendible contents of the water are expected to be diluted by the significant increase of water level due to the continuing decontamination effort. Therefore, the soluble or suspendible curie and chemical content per unit volume will be reduced as the SDS-decontamination-SDS cycle continues. This is also caused, to a limited degree, by the leak from the RCS. The Curie content of the reactor coolant is currently lower than that of the basement water. This is primarily due to the bleed and feed method of processing the RCS via the SDS and, to a smaller degree, due to leakage makeup with clean water.

This point is further emphasized by the significant decrease in the sodium content of the water since the decontamination began. The only source of sodium in the water had been the NaOH storage tank that released the solution into the building via the containment spray system and the RCS.

6.3 RADIOLOGICAL CHARACTERIZATION

Several efforts have been expended to radiologically characterize the reactor building basement. Strings of TLDs in series have been suspended between El 305 and El 282'-6" at different locations. Access for the TLD trees was attained through available penetrations and manholes. Representative data of TLD tree analysis are presented herein. The data are from TLDs suspended in the RCDT cubicle, beneath the "A" core flood tank, and in the "B" D-ring. In the first two cases, attempts were made to give directionality for the data obtained. For details, see Reference 7. Preliminary interpretations of the data are presented below.

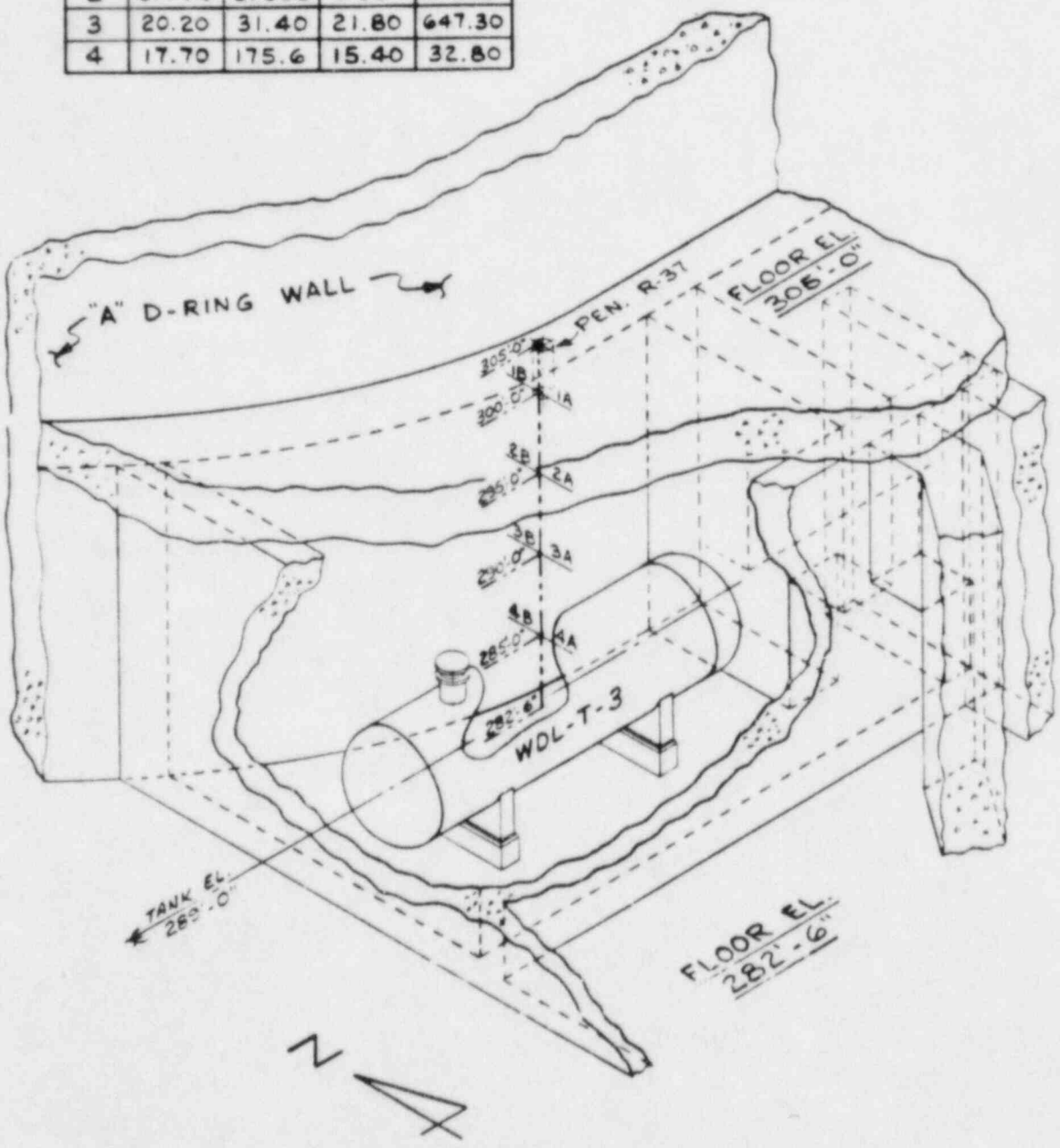
6.3.1 RCDT Cubicle

The data from analysis of the TLDs suspended in the RCDT cubicle from El 305' via penetration R-37 is presented in Figure 6-3. There were four TLDs at five feet intervals along the string. The "A"s in the figure indicate readings from TLDs facing toward the tank and the "B"s represent data from TLDs facing the "A" D-ring wall. A close look at the data suggests the following observations:

- o A significant increase of both beta and gamma levels is seen closer to the basement floor.

PT.	A		B	
	γ REM/HR	β RAD/HR	γ REM/HR	β RAD/HR
1	6.214	0.906	6.753	0.553
2	9.744	5.682	9.857	6.942
3	20.20	31.40	21.80	647.30
4	17.70	175.6	15.40	32.80

FIG 6-3
TLD TREE ANALYSIS
RC DRAIN TK. CUBICLE



- o High beta and gamma levels are detected from both the "A" D-ring wall and the RCDT outer surface.

  The readings suggest high level of contamination on both surfaces. This may be attributed to the immersion of the RCDT and the wall in 8.5 feet of contaminated water for over two years.

- o Contaminated water in the tank is estimated to contribute significantly to the gamma readings obtained.

6.3.2 Beneath CF-T-1A

The data obtained from analysis of TLDs suspended beneath CF-T-1A into the basement via penetration 220 are shown in Figure 6-4. There were four TLD systems attached to the string, each with a TLD facing toward the wall and one facing away from it. The "A"s indicated data from TLDs facing the east wall of the refueling canal; the "B"s indicate data from TLDs facing away from the wall. The following are preliminary observations:

- o Both beta and gamma readings are higher closer to the floor. A significant increase is seen below the highest water level attained in the basement.

- o The TLDs at the end of the string show relatively high readings. This could be from particles retained in the radiation monitor cabinet (IC-R-1092) due to the filtration effect as the water level decreased or a pool formed on top of the cabinet during reduction of water level that has subsequently dried up via evaporation.

6.3.3 Inside the "B" D-ring

The data obtained from analysis of the TLDs suspended in the "B" D-ring along the walls are shown in Figure 6-5. Nine TLDs were attached to each of the five 85 ft long strings. The relative positions of the strings in the "B" D-ring are shown in the figure. A close look at the data suggests the following:

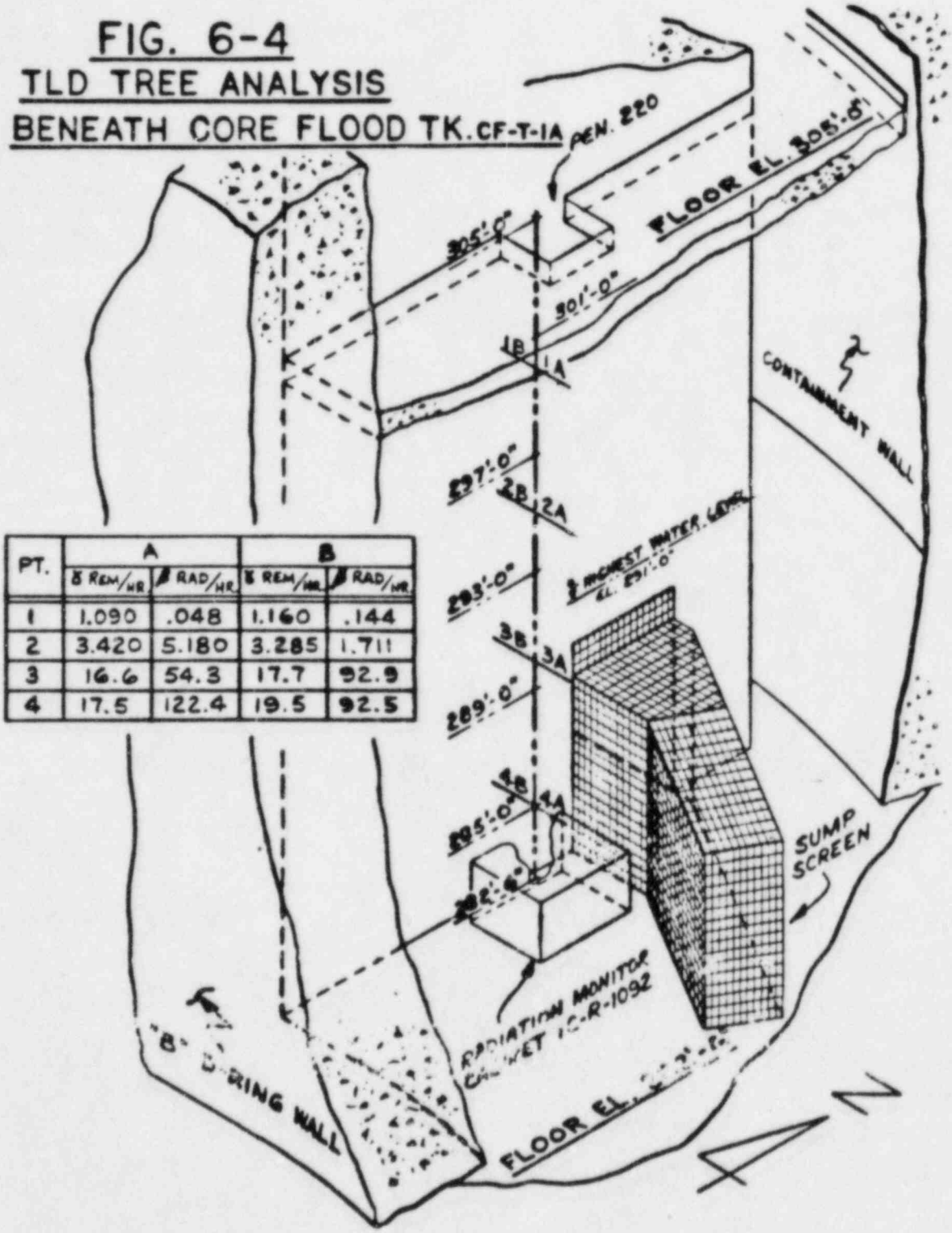
- o The readings closer to the floor are significantly lower than those presented in Figures 6-3 and 6-4. A possible explanation is the low pressure warm water decontamination of the D-ring walls. This is suspected to have resulted in washing the sludge into the incore instrumentation chase, which is one foot lower than the 282'-6" floor elevation, thereby eliminating contribution from the major source in the basement.

- o There seems to be high beta sources at the top of the D-ring above the reactor coolant pumps RC-P-2A and 2B.

- o Lower sections of OTSG-B and suction lines of the pumps appear to be high gamma sources.

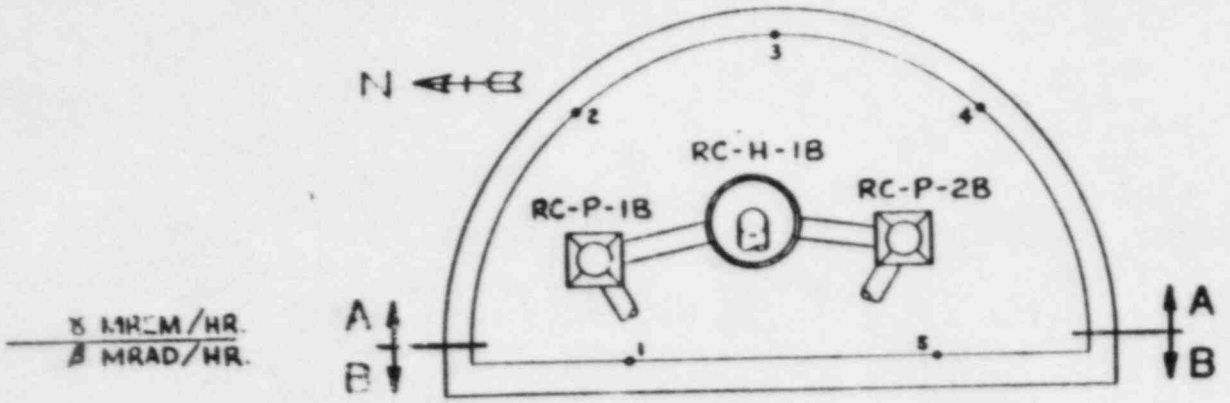
- o The upper section of RC-P-2B appears to be a high gamma source.

FIG. 6-4
TLD TREE ANALYSIS
BENEATH CORE FLOOD TK. CF-T-1A

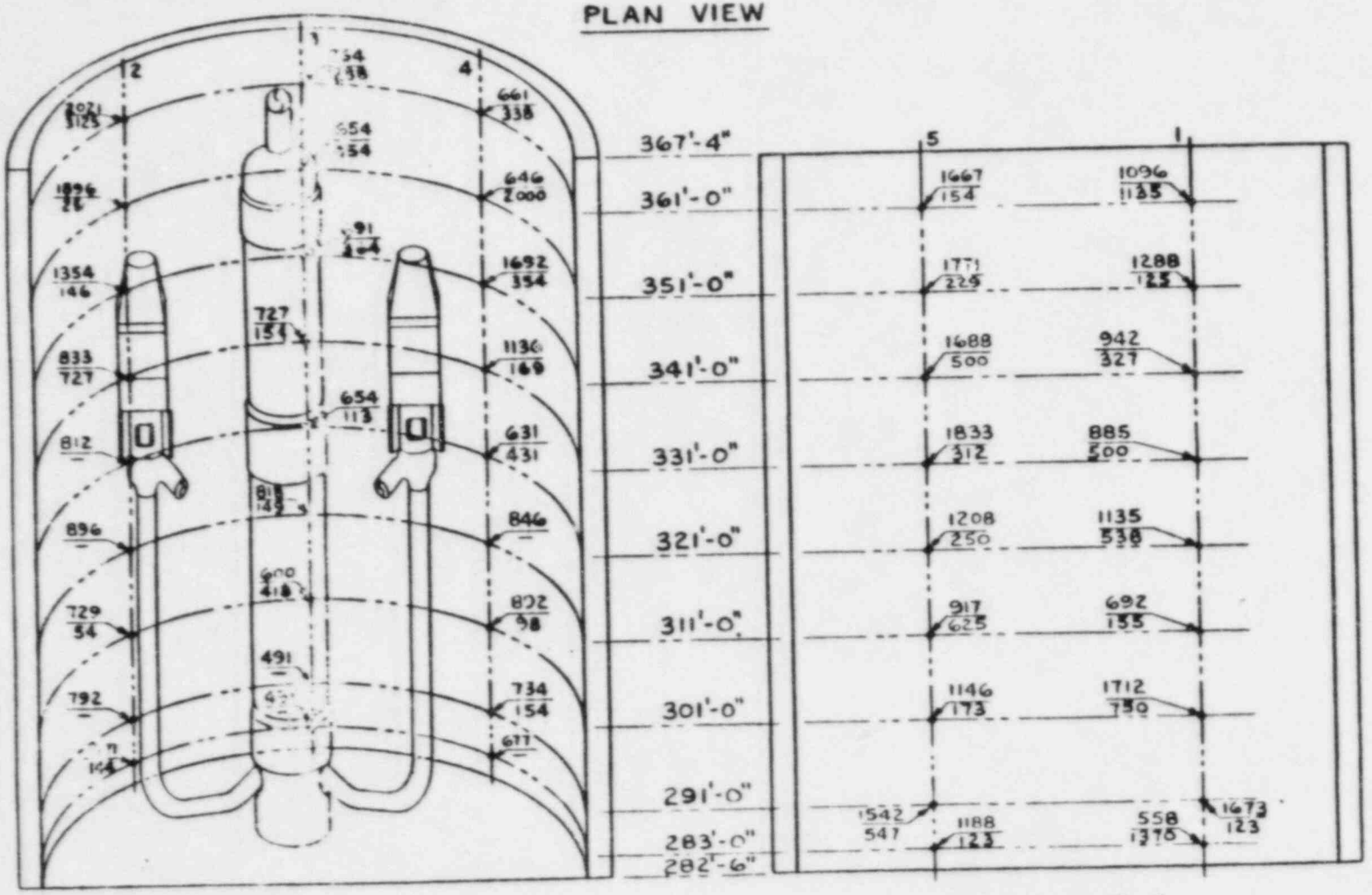


PT.	A		B	
	β REM/HR	∅ RAD/HR	β REM/HR	∅ RAD/HR
1	1.090	.048	1.160	.144
2	3.420	5.180	3.285	1.711
3	16.6	54.3	17.7	92.9
4	17.5	122.4	19.5	92.5

FIG. 6-5
TLD TREE ANALYSIS
"B" D-RING



PLAN VIEW



VIEW B-B

VIEW A-A

SECTION 7.0

CURRENT AND FUTURE TASKS

The following are tasks that are currently underway or in the planning stage for near-term implementation:

- o Remote decontamination of El 282'-6"
- o Visual inspection of the basement
- o RCDT inspection and sampling
- o Removal of the remaining water and sludge.

7.1 REMOTE DECONTAMINATION OF EL 282'-6"

Currently, efforts are underway to decontaminate the walls in the reactor building basement. Areas of planned decontamination are shown in Figure 7-1. To date, Area 1 has been completed and Area 2 is in progress.

Decontamination is being performed by lowering a troll ball assembly* at increments of five feet beginning at El 300' and flushing the walls for specified periods of time. Access to the basement is achieved through the seismic gap.

There are plans in progress to estimate the effectiveness of the decontamination. Pre-and post-decontamination data are being generated using TLD strings at specified locations. The data obtained will enable evaluation of the effectiveness of methods of decontamination in use. They will also provide more comprehensive data for the radiation levels in the basement.

7.2 VISUAL INSPECTION

Efforts have been initiated to visually inspect the basement area using a remote control color television camera. Available tapes from the first effort show the upper elevations of the basement at two different locations. The water and lower elevations are visible only in one area due to lack of lighting. The first looks indicate the following:

- o There is very minimal corrosion visible in the area.
- o There seem to be some reflective insulation pieces missing from piping.
- o Painted carbon steel components appear to be in good shape.
- o The general area is clean.

Plans are in progress to improve the lighting system and inspect the basement, including the sludge on the floor at several locations.

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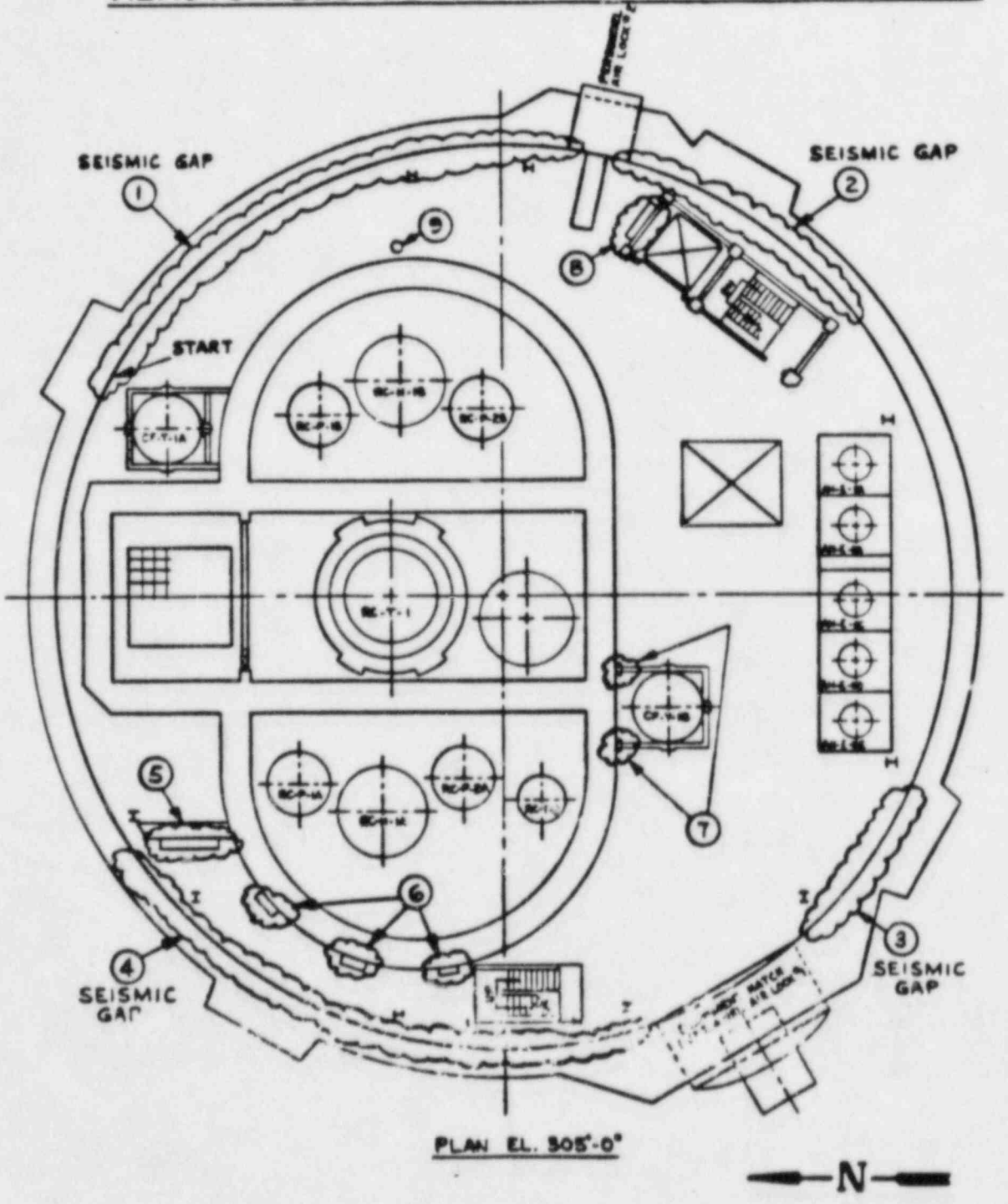
* This is essentially a suspended spinning sphere that sprays water through holes on the surface at about 2500 psi.

FIG. 7-1
REACTOR BLDG. BASEMENT FLUSHING LOCATIONS



7.3 RCDT INSPECTION AND SAMPLING

The RCDT had been one of the major participants in the LOCA. The condition and contents of this tank are not sufficiently clear at this time. Efforts are underway to visually inspect the tank and the cubicle via a remote controlled TV camera. There are also preliminary plans to sample the tank and the basement water. These activities are to support planning of cleanup of both the basement and the RCDT. The first look into the cubicle indicated that pipes and components are intact. There also seems to be minimal sign of corrosion and some deposits of boron crystals on pipes. The view angle of the first attempt was limited. Further efforts are required for a more comprehensive visual inspection.

7.4 REMOVAL OF THE REMAINING WATER AND SLUDGE

Major considerations are now being given to the removal of the water and sludge in the basement. This is important because the basement water and sludge is considered to be a major contributor to the radiation levels on the upper levels. A good understanding of the contents of the basement water is necessary to devise a method for removal and cleanup. Plans are underway currently to sample the sludge at different points to get a more representative evaluation of its contents.

REFERENCES

1. General Public Utilities, May 5, 1982, Reactor Building Water Level Measurements, Interoffice Memorandum from R. H. Greenwood to L. P. King.

2. General Public Utilities, September 10, 1981, Reactor Building Flooding Following TMI-2 Accident, Interoffice Memorandum from R. H. Greenwood to D. K. Croneberger.

3. General Public Utilities, October 12, 1982, Radiological Source Terms and Field Calculations for the Unit II Reactor Building, Interoffice Memorandum from H. K. Peterson to C. A. Shorts.

4. Letter from W. D. Shults of Oak Ridge National Laboratory to J. A. Daniel of GPU Service Corporation, September 14, 1979.

5. U. S. Department of Energy, August 1982, "Containment Sump Radionuclide Distribution Studies", Draft GEND-INF-011, Vol. II.

6. K. J. Hofstetter, C. G. Hitz, T. D. Lookabil, S. J. Eichfield, "Submerged Demineralizer System Design, Operation, and Results", General Public Utilities Nuclear Corporation, 1982.

7. EG&G, Characterization of the TMI-2 Reactor Building Basement, attachment to letter from H. M. Barton to K. Pastor, September 1, 1982.

8. Analysis of TMI Containment Building Sump Sludge, Attachment to letter from J. J. McCown of Westinghouse Hanford to H. M. Burton of EG&G Idaho Inc., September 10, 1982.

9. Oak Ridge National Laboratory, October 27, 1982, Preliminary TMI Sludge Results, Intra-Laboratory Correspondance from J. A. Carter to D. O. Campbell.

GPU Nuclear **Memorandum**

Subject: SDS BATCH REPORTS

Date: December 6, 1984

4410-84-M-0698

From: Manager, TMI-2 Licensing
J. J. Byrne

Location: TMI-2 Licensing

To: Deputy Program Director
W. D. Travers

Attached for your information are Submerged Demineralizer System (SDS) Batch Reports 106 and 107 which represent processing of water from the Makeup and Purification Demineralizer elution project and the Reactor Building Sump, respectively.

If you have any questions, please contact me.

J. J. Byrne
Extension 8461

JJB/JEP

Attachment

cc: Site Operations Director, S. Levin - w/o attachment
CARIRS - TMI

BATCH #	S106
DATE	10/27-28/84
GALLONS	12981 ✓

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE	SYSTEM AVERAGE INFLUENT (A)	AVERAGE EFFLUENT (H)
STRONTIUM 90	0.156	0.026
CESIUM 134	0.31	1.1×10^{-3}
CESIUM 137	7.125	2.8×10^{-2}

ION EXCHANGE DEPOSITION

	2A	2B	2C	"CATION" 'A'
LINER #	U00009	U00013	U00003	U00006
THIS BATCH				
GALLONS	12981	12981	12981	12981
CESIUM	376.149	5.693×10^{-1}	3.845×10^{-1}	2.918×10^{-2}
STRONTIUM 90	14.756	1.663	2.261×10^{-1}	1.384×10^{-2}
TOTAL CURIES	770.744	8.45	2.879	8.448×10^{-2}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	271067	109243	29368	608380
CESIUM	2705.62	34.627	7.219×10^{-1}	1.15×10^{-1}
STRONTIUM 90	570.404	124.037	1.783	1.732
TOTAL CURIES	6405.31	332.725	6.966	3.843

WATER SUMMARY

FILTERED

RB WATER	1036086
TOTAL	2561566
TOTAL CURIES DEPOSITED	3889.8

PROCESSED:

RB WATER	1056935
TOTAL	2555504
TOTAL CURIES DEPOSITED	652577.038
RCS WATER	880445
RCS CURIES DEPOSITED	[illegible]

SDS PROCESSING SAMPLE SUMMARY

BATCH S106

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137			10	—	18	0.036	0.02	0.027	0.032
Sr 90	10/27 0530	1195	0.23	—	0.5	0.063	0.02	0.021	0.033
Gross β,γ			—	—	—	0.19	0.095	—	—
Cesium 137			11	—	10	0.043	0.034	0.028	0.031
Sr 90	1800	4997	0.18	—	0.38	0.054	0.025	0.021	0.026
Gross β,γ			—	—	—	0.24	0.2	—	—
Cesium 137			3.8	—	5.4	0.036	0.026	0.023	0.023
Sr 90	10/28 0530	8495	0.12	—	0.46	0.067	0.027	0.023	0.024
Gross β,γ			—	—	—	0.24	0.19	—	—
Cesium 137			3.7	—	3.6	0.026	0.021	0.012	0.021
Sr 90	1732	12981	0.092	—	0.21	0.05	0.02	0.013	0.02
Gross β,γ			—	—	—	0.2	0.14	—	—
Cesium 137			—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—
Gross β,γ			—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—
Gross β,γ			—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—
Gross β,γ			—	—	—	—	—	—	—

BATCH # 5107
DATE 11/1-7/84
GALLONS 41275

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (uCi/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT (A)	AVERAGE EFFLUENT (H)
STRONTIUM 90	1.6	9.9×10^{-4}
CESIUM 134	0.21	$< 4.7 \times 10^{-4}$
CESIUM 137	4.9	7.9×10^{-4}

41275

ION EXCHANGE DEPOSITION

	2A	2B	2C	CATION "A"
LINER #	U00013	U00003	U00005	U00006
THIS BATCH				
GALLONS	41275	41275	41275	41275
CESIUM	812.784	3.953×10^{-1}	4.609×10^{-1}	2.473×10^{-2}
STRONTIUM 90	326.096	36.306	8.909×10^{-1}	2.322×10^{-2}
TOTAL CURIES	2087.635	79.407	6.648	8.717×10^{-2}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	130518	70643	41275	649655
CESIUM	847.411	1.117	4.609×10^{-1}	1.397×10^{-1}
STRONTIUM 90	350.133	38.089	8.909×10^{-1}	1.754
TOTAL CURIES	2430.36	86.373	6.648	3.93

WATER SUMMARY

FILTERED

RB WATER	1077361
TOTAL	2602841
TOTAL CURIES DEPOSITED	3934.826

PROCESSED:

RB WATER	1098210
TOTAL	2656779
TOTAL CURIES DEPOSITED	657756.813
RB WATER	[illegible]
TOTAL CURIES DEPOSITED	[illegible]

SDS PROCESSING .PLE SUMMARY

BATCH 5107

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137			5.1	___	5.4	4.3(-3)	6.5(-3)	3.4(-4)	6.6(-4)
Sr 90		5450	1.7	___	1.8	0.055	8.5(-3)	2.5(-4)	1.6(-3)
Gross Bq			___	___	___	0.14	0.086	___	___
Cesium 137			5	___	5	6.2(-3)	2.4(-3)	<6.1(-4)	<6.1(-4)
Sr 90		12040	1.5	___	1.6	0.032	3.4(-3)	2.4(-4)	1.3(-3)
Gross Bq			___	___	___	0.14	0.047	___	___
Cesium 137			4.9	___	4.9	3(-3)	6.1(-4)	<6.1(-4)	<6.1(-4)
Sr 90		19179	1.6	___	1.6	0.16	1.7(-3)	2.5(-4)	9.4(-4)
Gross Bq			___	___	___	0.16	0.09	___	___
Cesium 137			5	___	5	3.2(-3)	2.9(-4)	<4.7(-4)	2.5(-4)
Sr 90		26296	1.6	___	1.5	0.29	2.7(-3)	<8.5(-5)	7.8(-4)
Gross Bq			___	___	___	0.4	0.12	___	___
Cesium 137			4.8	___	4.8	2.5(-3)	<6.1(-4)	<6.1(-4)	<6.1(-4)
Sr 90		33084	1.6	___	1.9	0.34	6.9(-3)	1.6(-4)	4.8(-4)
Gross Bq			___	___	___	0.4	0.076	___	___
Cesium 137			4.6	___	4.6	3.8(-3)	<6.2(-4)	6.1(-4)	3.8(-4)
Sr 90		41275	1.7	___	1.7	0.53	0.016	3.9(-4)	4.8(-4)
Gross Bq			___	___	___	0.37	0.081	___	___
Cesium 137			___	___	___	___	___	___	___
Sr 90			___	___	___	___	___	___	___
Gross Bq			___	___	___	___	___	___	___

Inter-Office Memorandum

Date July 21, 1983
4410-83-M-0634

GPU Nuclear

Subject SDS BATCH REPORT

To L. H. Barrett Location TMI-2 Licensing

Attached, for your information, is the batch report for SDS Batch S-05[illegible] representing the processing of Reactor Building decon water.

If you have any question, please call me.

J. J. Byrne
Manager, TMI-2 Licensing

JJB/grs

Attachment

CC: E. H. Gischel w/o attachment
J. E. Larson "
T. D. Lookabill "

BATCH # 3059
DATE 7/8-12/83
GALLONS 29093

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE	(c) AVERAGE INFLUENT	SYSTEM	(H) AVERAGE EFFLUENT
STRONTIUM 90	1.9		3.513×10^{-3}
CESIUM 134	1.35×10^{-1}		1.089×10^{-5}
CESIUM 137 N/A	2.225		9.875×10^{-6}

ION EXCHANGE DEPOSITION

	2A	2B	2C
LINER #	D20037	D20024	D20035
THIS BATCH			
GALLONS	29093	29093	29093
CESIUM	241.301	16.747	7.144(-4)
STRONTIUM 90	95.485	99.584	13.897
TOTAL CURIES	662.436	231.902	27.815
CUMULATIVE (THROUGH ABOVE LINERS)			
GALLONS	358301	264781	169097
CESIUM	2102.82	413.956	5.416(-3)
STRONTIUM 90	1043.994	469.277	41.724
TOTAL CURIES	6151.093	1023.1	83.579

WATER SUMMARY

FILTERED:

RB WATER	1001109
TOTAL	1875009
TOTAL CURIES DEPOSITED	3219.6

PROCESSED:

RB WATER	1021958
TOTAL	1895009
TOTAL CURIES DEPOSITED	3219.6
RB WATER	[illegible]
RB CURIES DEPOSITED	[illegible]

Inter-Office Memorandum

GPU Nuclear

Date June 23, 1983
4410-83-M-0562

Subject SDS BATCH REPORT

To L. H. Barrett

Location TMI-2 Licensing

Attached find SDS Batch Report S-055 representing the processing of Reactor Building decon water.

Please feel free to call me if you have any questions.

J. J. Byrne
Manager, TMI-2 Licensing

JJB/JEP

Attachment

CC: J. J. Barton w/o attachment
E. H. Gischel "
J. E. Larson "

BATCH #	5055
DATE	6/3-15/83
GALLONS	83081

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

NL

RADIONUCLIDE	(c) AVERAGE INFLUENT	SYSTEM NRC	(H) AVERAGE EFFLUENT	NRC
STRONTIUM 90	1.782	1.82	8.073(-4)	8.07(-4)
CESIUM 134	1.682 (-1)	1.74 (-1)	8.325(-6)	8.32(-6)
CESIUM 137 ~~2.70~~ 2.41	2.673	2.71	1.024(-5)	1.03(-5)

ION EXCHANGE DEPOSITION

	2A	2B	2C
LINER #	D20037	D20024	D20035
THIS BATCH			
GALLONS	83081	83081	83081
CESIUM	899.848	14.112	1.494(-3)
STRONTIUM 90	348.907	183.02	18.075
TOTAL CURIES	2440.131	394.009	36.189
CUMULATIVE (THROUGH ABOVE LINERS)			
GALLONS	329208	235688	140004
CESIUM	1961.519	26.249	4.677(-3)
STRONTIUM 90	949.009	369.693	27.927
TOTAL CURIES	5498.667	791.199	55.764

WATER SUMMARY

FILTERED:

RB WATER	972016
TOTAL	1757213
TOTAL CURIES DEPOSITED	3189.908

PROCESSED:

RB WATER	692865
TOTAL	1825048
TOTAL CURIES DEPOSITED	627805.10
RCS WATER	475 [illegible]
RCS CURIES DEPOSITED	[illegible]

SDS PROCESSING SAMPLE SUMMARY

BATCH 505c

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137	6/3 0519/0545 0835	1035/1175	3.6	3.6	___	5.7(-3)	1.8(-5)	___	1.7(-)
Sr 90			2.1	2.9	___	.28	3(-2)	___	2.9(-)
Gross βγ			___	___	___	.17	2.3(-2)	___	6.6(-)
Cesium 137	6/4 0455/0524	8382/8498	3.3	3.5	___	8.9(-3)	1.6(-5)	___	1.3(-)
Sr 90			1.7	1.7	___	.26	2.3(-2)	___	1.7(-)
Gross βγ			___	___	___	.14	1.9(-2)	___	6.7(-)
Cesium 137	6/5 0451/0527	15561/15733	3	-	___	1.2(-2)	1.9(-5)	___	1.6(-)
Sr 90			1.6	-	___	.37	2.2(-2)	___	9.2(-)
Gross βγ			___	___	___	.19	2(-2)	___	9.7(-)
Cesium 137	6/6 0501/0539	22732/22907	2.8	2.8	___	1.9(-2)	1.9(-5)	___	1.3(-)
Sr 90			1.9	1.8	___	.59	2.9(-2)	___	2.1(-)
Gross βγ			___	___	___	.31	2.2(-2)	___	6.3(-)
Cesium 137	6/7 0504/0535	30084/30227	2.5	2.5	___	1.8(-2)	9.7(-6)	___	7.6(-)
Sr 90			1.9	1	___	.67	3.7(-2)	___	3.6(-)
Gross βγ			___	___	___	.35	2.7(-2)	___	7(-)
Cesium 137	6/8 0423/0521	37425/37551	2.3	2.5	___	3.2(-2)	9.5(-6)	___	4.3(-)
Sr 90			1.7	1.7	___	.72	5.3(-)	___	4.3(-)
Gross βγ			___	___	___	.39	3.3(-2)	___	6.3(-)
Cesium 137	6/9 0443/0513	44227/44365	2.4	2.2	___	3.9(-2)	1.2(-5)	___	5(-)
Sr 90			1.5	1.4	___	.71	6.2(-2)	___	6.2(-)
Gross βγ			___	___	___	.42	3.9(-2)	___	6.9(-)

SDS PROCESSING SAMPLE SUMMARY

BATCH 5055

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137	6/10 0438/0503	50483/50596	2.4	2.1	___	5.1(-2)	2(-5)	___	1.6(-5)
Sr 90			1.6	1.5	___	.83	6.6(-2)	___	8.4(-4)
Gross βγ			___	___	___	.45	4.3(-2)	___	7(-5)
Cesium 137	6/11 0507/0550	56363/56564	2.5	2.5	___	5.2(-2)	1.3(-5)	___	7.8(-4)
Sr 90			2.1	2.2	___	.76	8.4(-2)	___	1.4(-5)
Gross βγ			___	___	___	.44	4.2(-2)	___	6.5(-5)
Cesium 137	6/12 0508/0536	63244/63396	2.5	2.5	___	6.7(-2)	1.2(-5)	___	5(-4)
Sr 90			1.4	1.6	___	.83	7.5(-2)	___	1.4(-5)
Gross βγ			___	___	___	.5	4.1(-2)	___	6.5(-5)
Cesium 137	6/13 0448/0518	70171/70258	2.4	2.5	___	7.3(-2)	1.1(-5)	___	6.5(-4)
Sr 90			1.7	1.7	___	.77	8(-2)	___	1.5(-5)
Gross βγ			___	___	___	.52	4.7(-2)	___	6.4(-5)
Cesium 137	6/14 0507/0540	77048/77199	2.7	2.7	___	8.7(-2)	1(-5)	___	5.9(-4)
Sr 90			1.9	2.1	___	1.1	.13	___	2.4(-5)
Gross βγ			___	___	___	.59	5.9(-2)	___	6.6(-5)
Cesium 137			___	___	___	___	___	___	___
Sr 90			___	___	___	___	___	___	___
Gross βγ			___	___	___	___	___	___	___
Cesium 137			___	___	___	___	___	___	___
Sr 90			___	___	___	___	___	___	___
Gross βγ			___	___	___	___	___	___	___

Inter-Office Memorandum

GPU Nuclear

Date May 4, 1983
4410-83-M-0418

Subject SDS Batch Report

To L. H. Barrett

Location TMI-2 Licensing

Attached for your information are batch reports for SDS Batches S-046, S-047, and S-048 representing the processing of Reactor Building decon water.

Please call if you have any questions.

J. J. Byrne
Manager, TMI-2 Licensing

JJB/JEP

Attachment

CC: J. J. Barton w/o attachment
J. E. Larson "

BATCH # 5046
DATE 3/4-24/83
GALLONS 21786

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	2.73 ⑤	2.866×10^{-3}
CESIUM 134	4.54×10^{-1}	3.871×10^{-5}
CESIUM 137 6.50± 0.61	6.6	3.3×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20022	D20037	D20024	
THIS BATCH				
GALLONS	21786	21786	21786	
CESIUM	577.831	1.095(-1)	1.313(-3)	
STRONTIUM 90	147.475	66.718	14.354	
TOTAL CURIES	1461.516	133.672	28.732	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	213E3	156620	65300	
CESIUM	2205.755	4.764(-1)	5.077(-3)	
STRONTIUM 90	666.349	194.465	32.813	
TOTAL CURIES	6188.959	396.226	65.703	

NOTE:

THIS BATCH PROCESSED DIRECTLY FROM RB SUMP.

WATER SUMMARY

STAGED:

RB WATER	858551
TOTAL	1546528
TOTAL CURIES DEPOSITED	3090.503

PROCESSED:

RB WATER	645739
TOTAL	1567040
TOTAL CURIES DEPOSITED	6172E5.054
RCS WATER	777824
RCS CURIES DEPOSITED	37322

SDS PROCESSI' AMPLE SUMMARY

BATCh -046

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			6.9		6.7					
Sr 90	3/4 0930	3022	-		-					
Gross βγ			-		-					
Cesium 137			6.8		6.8					
Sr 90	3/6 0510	25236	-		-					
Gross βγ			-		-					
Cesium 137			5.8		5.9					
Sr 90	3/12 2100	53425	-		-					
Gross βγ			-		-					
Cesium 137						6.5	5.1(-4)	7.3(-5)		2.2(-5)
Sr 90	3/21 2100	1223				2.5	0.83	0.14		1.1(-3)
Gross βγ						19	1.4	0.34		0.15
Cesium 137						6.7	8.6(-4)	3.3(-5)		4.3(-5)
Sr 90	3/23 0808	11355				3.4	0.74	0.19		2.4(-3)
Gross βγ						21	1.7	0.46		0.2
Cesium 137						6.5	1.8(-3)	4.9(-5)		3.7(-5)
Sr 90	3/24 080	18329				2.8	1.2	0.21		4.9(-3)
Gross βγ						20	1.9	0.5		0.2
Cesium 137										
Sr 90										
Gross βγ										

BATCH # 5047
DATE 4/13-18/83
GALLONS 30364

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	2.417	1.227×10^{-2}
CESIUM 134	0.25	2.136×10^{-5}
CESIUM 137	3.7	2.366×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20022	D20037	D20024	
THIS BATCH				
GALLONS	30364	30364	30364	
CESIUM	350.121	93.536	5.024(-3)	
STRONTIUM 90	125.53	117.541	24.921	
TOTAL CURIES	456.264	423.131	59.911	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	243467	182264	95664	
CESIUM	2555.876	94.012	1.011(-2)	
STRONTIUM 90	1013.679	312.006	62.734	
TOTAL CURIES	7145.243	813.355	125.614	

WATER SUMMARY

STAGED:

RB WATER	82935
TOTAL	157652
TOTAL CURIES DEPOSITED	3112.765

PROCESSED:

RB WATER	876123
TOTAL	1577424
TOTAL CURIES DEPOSITED	6156724.35
RCL WATER	877624
RCL CURIES DEPOSITED	37822

SDS PROCESSING SAMPLE SUMMARY

BATCH 3047

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137	4/13 1410/2038	332/2300	4.1	4.5		2.8	3.6(-5)		8.4(-6)
Sr 90			2.6	2.1		1.2	0.24		5.9(-3)
Gross βγ			—	—		1.3	0.23		2(-2)
Cesium 137	4/14 0725/1621	5522/5700	3.3	3.5		0.55	1.7(-5)		7.8(-6)
Sr 90			2.4	2.4		1.3	7.3(-2)		2.7(-2)
Gross βγ			—	—		2.1	0.22		2(-2)
Cesium 137	4/15 0840/0425	12711/12922	3.6	3.4		0.72	6(-5)		4.2(-5)
Sr 90			2.3	2.5		1.5	0.3		8.6(-3)
Gross βγ			—	—		2.3	0.27		2.2(-2)
Cesium 137	4/16 1322/1404	16597/16813	3.7	3.6		0.76	4.9(-5)		3.3(-5)
Sr 90			2.1	2.4		1.3	0.27		8.3(-3)
Gross βγ			—	—		1.3	0.15		1.4(-2)
Cesium 137	4/17 0830/0915	22329/22579	3.5	3.5		0.71	2.9(-5)		3.4(-5)
Sr 90			2.3	2.3		1.4	0.32		1.1(-2)
Gross βγ			—	—		2.4	0.31		2.6(-2)
Cesium 137	4/18 0820/0910	29318/29643	3.8	3.7		0.31	—		9(-5)
Sr 90			2.7	2.8		1	—		1.8(-2)
Gross βγ			—	—		1.1	—		3.1(-2)
Cesium 137			—	—		—	—		—
Sr 90			—	—		—	—		—
Gross βγ			—	—		—	—		—

BATCH # 5048
DATE 4/24-26/83
GALLONS 33661

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE	A	SYSTEM AVERAGE INFLUENT (D)	AVERAGE EFFLUENT
STRONTIUM 90		2.959	2.378×10^{-4}
CESIUM 134		3.911×10^{-1}	8.533×10^{-6}
CESIUM 137	N/A	6.078	3.511×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20031	D20024	D20035	
THIS BATCH				
GALLONS	33661	33661	33661	
CESIUM	810.262	11.758	2.442(-3)	
STRONTIUM 90	287.056	66.642	6.625	
TOTAL CURIES	2128.328	196.517	13.293	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	222865	129345	33661	
CESIUM	904.294	11.768	2.442(-3)	
STRONTIUM 90	591.102	149.576	6.625	
TOTAL CURIES	2941.687	322.131	13.293	

NOTE: THIS BATCH STAGED AND FILTERED AS PART OF BATCH 5046.

WATER SUMMARY

STAGED:

RB WATER	899035
TOTAL	1576512
TOTAL CURIES DEPOSITED	3112.765

PROCESSED:

RB WATER	909764
TOTAL	1631085
TOTAL CURIES DEPOSITED	6210622.518
RCS WATER	377824
RCS CURIES DEPOSITED	77322

SDS PROCESSING SAMPLE SUMMARY

BATCH 5048

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137					63	0.2	8.1(-3)		2.3(-3)
Sr 90	4/21 0805	3120			4	0.96	0.19		2.1(-4)
Gross $\beta\gamma$					12	0.77	0.11		0.024
Cesium 137					60.1	0.02	3.2(-3)		3.3(-3)
Sr 90	4/22 0815	10071			2.6	0.54	0.024		2.2(-4)
Gross $\beta\gamma$					11	0.56	0.027		0.066
Cesium 137					5.9	6(-3)	4.4(-3)		3.2(-3)
Sr 90	4/23 0825	17100			2.4	0.62	0.028		2.6(-4)
Gross $\beta\gamma$					11	0.68	0.091		0.066
Cesium 137					6.1	5.1(-3)	6.2(-3)		3.4(-3)
Sr 90	4/25 0825	27910			2.9	0.81	0.038		2(-4)
Gross $\beta\gamma$					11	0.70	0.041		0.02
Cesium 137									
Sr 90									
Gross $\beta\gamma$									
Cesium 137									
Sr 90									
Gross $\beta\gamma$									
Cesium 137									
Sr 90									
Gross $\beta\gamma$									

Inter-Office Memorandum

GPU Nuclear

March 3, 1983
4410-83-M-0207

Subject: SDS BATCH REPORT

To: L. H. Barrett

Location: TMI-2 Licensing

Attached for your information is the SDS Batch Report for batch S-045 representing the processing of Reactor Building Decon Water.

If you have any questions, please call me.

J. J. Byrne
Manager, TMI-2 Licensing

JJB/JEP

Attachment

CC: E. H. Gischel w/o attachment
J. E. Larson "
T. D. Lookabill "
R. P. Warren "

BATCH # S04[illegible]

DATE 2/16-22/8[illegible]

GALLONS 43514

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE		AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90		3.033	9.135×10^{-4}
CESIUM 134		6.675×10^{-1}	2.725×10^{-5}
CESIUM 137	11.13 ± 3.40	8.375	6.608×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20022	D20037	D20024	
THIS BATCH				
GALLONS	43514	43514	43514	
CESIUM	1625.042	3.622(-1)	3.764(-3)	
STRONTIUM 90	442.709	99.201	18.455	
TOTAL CURIES	4125.412	199.168	36.971	
CUMULATIVE (THROUGH-ABOVE LINERS)				
GALLONS	191297	137034	43514	
CESIUM	1627.954	3.669(-1)	3.764(-3)	
STRONTIUM 90	740.874	127.747	18.455	
TOTAL CURIES	4727.443	256.356	36.971	

WATER SUMMARY

STAGED:

RB WATER	805126
TOTAL	1493103
TOTAL CURIES DEPOSITED	3[illegible]53.436

PROCESSED:

RB WATER	823953
TOTAL	1[illegible]5254
TOTAL CURIES DEPOSITED	615[illegible].934
RCS WATER	377824
RCS CURIES DEPOSITED	373[illegible]

SDS PROCESSING SAMPLE SUMMARY

BATCH 5045

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137	2/10 2100	9939	15	—	12					
Sr 90			3.8	—	3.6					
Gross βY			39	—	34					
Cesium 137	2/12 1945	25,000	8.6	—	8.5					
Sr 90			3.1	—	2.9					
Gross βY			—	—	—					
Cesium 137	2/14 1900	41519	9.8	—	8.6					
Sr 90			—	—	—					
Gross βY			—	—	—					
Cesium 137	2/17 0825	2920				9.4	1.5(-2)	6.1(-5)	—	6.8(-5)
Sr 90						2.8	1.3	0.24	—	1.1(-5)
Gross βY						27	2.3	0.58	—	0.21
Cesium 137	2/18 0817	10265				9.5	1.9(-3)	8.5(-5)	—	8.4(-5)
Sr 90						3.1	0.48	7.7(-2)	—	1.8(-5)
Gross βY						29	1.3	0.5	—	0.31
Cesium 137	2/20 0825	24730				9.1	6.1(-4)	8(-5)	—	7.5(-5)
Sr 90						3.2	0.68	9.6(-2)	—	2(-4)
Gross βY						27	1.6	0.59	—	0.37
Cesium 137	2/22 0800	39099				11	8.5(-4)	5.2(-5)	—	3.5(-5)
Sr 90						4.6	0.88	0.14	—	1.4(-5)
Gross βY						30	2	0.79	—	0.53

BATCH # 5041

DATE 12/31/82 - 1/22/83

GALLONS 49343

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (uI/ML)

SYSTEM

RADIONUCLIDE	A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90		3.423	9.411×10^{-3}
CESIUM 134		6.715×10^{-1}	3.323×10^{-5}
CESIUM 137	9.90± 2.70	8.746	3.208×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20026	D20022	D20037	N/A
THIS BATCH				
GALLONS	49343	49343	49343	
CESIUM	1757.695	2.004	3.113(-3)	
STRONTIUM 90	354.518	253.615	28.255	
TOTAL CURIES	4075.528	511.117	56.532	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	245008	147783	93520	
CESIUM	4035.562	2.912	4.723(-3)	
STRONTIUM 90	1343.458	298.165	28.546	
TOTAL CURIES	10404.68	602.031	57.188	

WATER SUMMARY

STAGED:

RB WATER	763607
TOTAL	1363019
TOTAL CURIES DEPOSITED	2930.649

PROCESSED:

RB WATER	780439
TOTAL	1413175
TOTAL CURIES DEPOSITED	606153.5
RB WATER	290755
RB CURIES DEPOSITED	32246

SDS PROCESSI[illegible]MPLE SUMMARY

BATCH 3041

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			13	___	12					
Sr 90	12/31/82 1100	1000	6.4	___	3.4					
Gross βγ			___	___	___					
Cesium 137			8.1	___	8					
Sr 90	1/2/83 1235	28266	2	___	2					
Gross βγ			___	___	___					
Cesium 137			8.6	___	8.5					
Sr 90	1/3/83 2000	47920	2.2	___	2.1					
Gross βγ			___	___	___					
Cesium 137						8.7	5.9(-4)	4.5(-5)	2.5(-5)	___
Sr 90	1/6/83 0837	13805				3.5	0.99	2.9(-2)	1.2(-4)	___
Gross βγ						24	1.4	0.11	7.7(-2)	___
Cesium 137						86	7(-4)	4.2(-5)	3.5(-5)	___
Sr 90	1/18/83 2022	22950				3.2	0.88	4.5(-2)	7.9(-4)	___
Gross βγ						24	1.4	0.11	7(-2)	___
Cesium 137						8.6	3.3(-3)	4.1(-5)	3.1(-5)	___
Sr 90	1/20/83 0840	34408				3.5	1.4	0.16	6.5(-3)	___
Gross βγ						21	0.23	3.6(-2)	1.5(-2)	___
Cesium 137						9.1	4.5(-2)	3.5(-5)	2.7(-5)	___
Sr 90	1/22/83 0828	48902				3.3	2.8	0.53	4.3(-2)	___
Gross βγ						23	3.4	0.79	0.15	___

Inter-Office Memorandum

GPU Nuclear

Date August 30, 1982
4240-82-670

Subject SDS Batch Report

To L. P. King

Location TMI-2 Site Ops.

Attached please find a batch report for SDS Batch S-033 representing the processing of Reactor Building sump water staged in batches S025 and S029.

If you have any questions on this information, please contact me.

RP Warren

for E. H. Gischel
Plant Engineering Director
TMI-2

JDL

EHG:TDL:hh

Attachment

cc: J. J. Chwastyk
W. T. Conaway
J. C. Devine
C. G. Hitz
K. J. Hofstetter
J. E. Larson (2)
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
T. E. Rekart
B. G. Smith
H. K. Peterson

BATCH # 0033
DATE 8/19-24/92
GALLONS 32774

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	7	2.412×10^{-2}
CESIUM 134	9.311×10^{-1}	2.35×10^{-4}
CESIUM 137 N/A	106.667	3.02×10^{-3}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D10014	D10018	D20026	
THIS BATCH				
GALLONS	32774	32774	32774	
CESIUM	14259.630	2.567	1.479	
STRONTIUM 90	746.232	2.066	184.594	
TOTAL CURIES	28644.017	9.509	372.0	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	352638	287743	97225	
CESIUM	14554.005	2231.066	23.553	
STRONTIUM 90	1407.941	200.127	200.615	
TOTAL CURIES	30531.617	4632.3	446.922	

WATER SUMMARY

STAGED:

RB WATER	642272
TOTAL	1191279
TOTAL CURIES DEPOSITED	1796.407 *

* SEE BATCH 5008

PROCESSED:

RB WATER	636240
TOTAL	1224053
TOTAL CURIES DEPOSITED	571836.54
RCS WATER	249852
RCS CURIES DEPOSITED	26234.915

SDS PROCESSING S/ '.E SUMMARY

BATCH 5053

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
esium 137			___	___	110	1.4(-1)	4.8(-3)	___	2(-3)
r 90	8/20 0820	2757	___	___	7.7	7(-1)	1.8	___	6(-3)
ross βγ			___	___	177	2.27	2.69	___	7.96(-1)
esium 137			___	___	110	2.8(-2)	4.2(-3)	___	2.4(-3)
r 90	8/21 0832	9724	___	___	7.4	7.1(-1)	2.2	___	1.4(-2)
ross βγ			___	___	151	2.15	2.52	___	1.06
esium 137			___	___	110	1.3(-2)	7.4(-3)	___	2.9(-3)
r 90	8/22 0758	16806	___	___	7.3	8.8(-1)	1.6	___	2(-2)
ross βγ			___	___	174	2.37	2.63	___	1.11
esium 137			___	___	100	1.3(-2)	1.6(-2)	___	3.4(-3)
r 90	8/23 0813	24085	___	___	7.2	1	1.3	___	3.8(-2)
ross βγ			___	___	142	2.69	2.68	___	1.15
esium 137			___	___	100	1.6(-2)	3.9(-2)	___	4.5(-3)
r 90	8/24 0825	31264	___	___	7.2	1.3	1.2	___	5.7(-2)
ross βγ			___	___	162	3.04	2.6	___	1.28
esium 137			___	___	___	___	___	___	___
r 90			___	___	___	___	___	___	___
ross βγ			___	___	___	___	___	___	___
esium 137			___	___	___	___	___	___	___
r 90			___	___	___	___	___	___	___
ross βγ			___	___	___	___	___	___	___

Inter-Office Memorandum

GPU Nuclear

Date November 19, 1982
4410-82-M-0283

Subject BATCH REPORTS

To L. H. Barrett

Location TMI-2 Licensing

Attached for your information is a batch report for SDS Batch S-038 representing the processing of decon water from the Reactor Building Sump, and batch reports for EPICOR II Batches 146, 147, 148, and 149 which includes a processing summary of SDS effluent water originating in SDS Batch S-038.

If you have any questions, please contact me.

J. J. Byrne
Manager, TMI-2 Licensing

JJB/JEP

Attachment

CC: E. H. Gischel w/o attachment
B. K. Kanga "
J. E. Larson "
T. D. Lookabill "

NOV 19 82

Inter-Office Memorandum

Date November 17, 1982
4240-82-889

GPU Nuclear

Subject SDS Batch Report

To - L. P. King, Site Ops. Director Location TMI-2 Bldg. 222

Attached please find a batch report for SDS Batch S-038 representing the processing of decon water from the Reactor Building Sump.

If you have any questions on this information, please contact me.

RD Warren
FOR E. H. Gischel
Plant Engineering Director
TMI-2

JOL
EHG:TDL:hh

Attachment

cc: J. J. Byrne (2)
J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
C. M. Hrbac
J. E. Larson
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove
B. G. Smith
H. K. Peterson

BATCH # 5038
DATE 11/1-14/82
GALLONS 44177

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	3.833	2.592×10^{-4}
CESIUM 134	9.5×10^{-1}	2.094×10^{-5}
CESIUM 137 ~~[illegible]~~ 15.0	12.483	3.749×10^{-5}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D20026	D20022	D20037	N/A
THIS BATCH				
GALLONS	44177	44177	44177	
CESIUM	2243.747	7.238(-1)	4.692(-3)	
STRONTIUM 90	608.595	37.648	2.906(-1)	
TOTAL CURIES	5501.568	76.752	6.558(-1)	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	195665	98440	44177	
CESIUM	2277.867	9.075(-1)	4.642(-3)	
STRONTIUM 90	988.94	44.55	2.906(-1)	
TOTAL CURIES	6328.64	90.914	6.558(-1)	

WATER SUMMARY

STAGED:

RB WATER	715687
TOTAL	1273760
TOTAL CURIES DEPOSITED	* 2728.6
	SEE BATCH 5008

PROCESSED:

RB WATER	731096
TOTAL	1322403
TOTAL CURIES DEPOSITED	507301.7
RCS WATER	249552
RCS CURIES DEPOSITED	25235

SDS PROCESSING SAMPLE SUMMARY

BATCH 5038

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			8.3	___	8.7					
Sr 90	11/2 1400	9000	3.6	___	3.6					
Gross βγ			21.5	___	20					
Cesium 137			7.7	___	7.7					
Sr 90	11/4 1100	25678	2.9	___	2.8					
Gross βγ			18	___	17					
Cesium 137			34	___	34					
Sr 90	11/6 0800	41681	9.4	___	6.2					
Gross βγ			88	___	64					
Cesium 137						14	4.6(-2)	2.6(-4)	___	3.9(-3)
Sr 90	11/6 1950	1706				3.3	0.7	7.8(-3)	___	2.6(-4)
Gross βγ						36	1.19	0.124	___	0.141
Cesium 137						11	3.5(-3)	3.1(-5)	___	2.8(-5)
Sr 90	11/8 0830	12308				3.8	9.9(-2)	7(-4)	___	2.6(-4)
Gross βγ						26	0.31	0.13	___	0.13
Cesium 137						11	1.5(-3)	6.8(-5)	___	3.1(-4)
Sr 90	11/11 1945	28538				4	0.22	1.1(-3)	___	2.4(-4)
Gross βγ						26	0.47	0.16	___	0.17
Cesium 137						13	1.1(-3)	4.9(-5)	___	4.3(-5)
Sr 90	11/13 2103	43236				3.7	0.38	4.5(-3)	___	2.5(-4)
Gross βγ						27	0.68	0.17	___	0.17

SEP 09 1982

8211160644

Inter-Office Memorandum

Date September 8, 1982
4240-82-689

GPU Nuclear

Subject SDS Batch Report

To L. P. King

Location TMI-2 Site Ops.

Attached please find a batch report for SDS Batch S-034 representing the completion of the processing of Reactor Building sump water staged in batches S-025 and S-029, and SDS Batch S-035 representing the processing of water in RCBT 'C' (originally processed as RCS, but left over during feed and bleed due to chemical addition).

If you have any questions on this information, please contact me.

RP Warren
FOR E. H. Gischel
Plant Engineering Director
TMI-2

EHG:TDL:hh
Attachment
cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
J. E. Larson (2)
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
T. E. Rekart
B. G. Smith
H. K. Peterson

A0000641

BATCH # 5034
DATE 8/27-30/82
GALLONS 18945

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE	A	AVERAGE INFLUENT	SYSTEM AVERAGE EFFLUENT
STRONTIUM 90		5.32	7.32×10^{-3}
CESIUM 134		6.64	2.24×10^{-4}
CESIUM 137	N/A	76.2	2.82×10^{-3}

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D10014	D20026	D20022	
THIS BATCH				
GALLONS	18945	18945	18945	
CESIUM	5770.452	1.91	9.945(-2)	
STRONTIUM 90	304.811	64.754	4.259	
TOTAL CURIES	11669.981	133.215	8.705	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	371583	116170	18945	
CESIUM	20329.457	25.463	9.945(-2)	
STRONTIUM 90	1712.362	265.369	4.259	
TOTAL CURIES	92201.798	580.137	8.705	

WATER SUMMARY

STAGED:

RB WATER	642272
TOTAL	1191279
TOTAL CURIES DEPOSITED	1796.407*

* SEE BATCH 5008

PROCESSED:

RB WATER	655195
TOTAL	1242098
TOTAL CURIES DEPOSITED	5636.461
RCS WATER	249552
RCS CURIES DEPOSITED	2873.915

SDS PROCESSING SAMPLE SUMMARY

BATCH 3034

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137			—	—	97	2.4(-2)	3.7(-3)	—	2.7(-3)
Sr 90	8/28 0835	4026	—	—	6.7	1.1	8.8(-2)	—	1.3(-2)
Gross βγ			—	—	140	2.1	7.4(-1)	—	9.3(-1)
Cesium 137			—	—	90	2.8(-2)	4.8(-3)	—	3.2(-3)
Sr 90	8/28 1942	6804	—	—	6	1.3	7.4(-2)	—	5.4(-3)
Gross βγ			—	—	170	2.6	1.18	—	1.01
Cesium 137			—	—	85	3(-2)	4.4(-3)	—	2.9(-3)
Sr 90	8/29 0815	10504	—	—	5.9	1.2	6.8(-2)	—	4.4(-3)
Gross βγ			—	—	130	2.53	1.15	—	1.06
Cesium 137			—	—	62	3.1(-2)	4.1(-3)	—	2.8(-3)
Sr 90	8/29 1955	13916	—	—	4.2	8.6(-1)	7.2(-2)	—	8.4(-3)
Gross βγ			—	—	112	2.26	1.12	—	1.04
Cesium 137			—	—	47	3.2(-2)	3.4(-3)	—	2.5(-3)
Sr 90	8/30 0440	18945	—	—	3.5	5.9(-1)	4.3(-2)	—	5.4(-3)
Gross βγ			—	—	68.1	1.45	6.5(-1)	—	6.3(-1)
Cesium 137			—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—

BATCH # 5035
DATE 8/30-31/82
GALLONS 3564

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	8.3	9.3(-3)
CESIUM 134	2.4(-1)	5(-5)
CESIUM 137	2.7	5.2(-4)

2.9 (one sample)

ION EXCHANGE DEPOSITION

	2A	2B	2C	D
LINER #	D10014	D20026	D20022	
THIS BATCH				
GALLONS	3564	3554	3584	
CESIUM	39.268	5.52(-1)	2.564(-2)	
STRONTIUM 90	96.315	15.288	8.641(-1)	
TOTAL CURIES	274.779	31.668	1.75	
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	375167	119754	22529	
CESIUM	20343.725	26.015	1.251(-1)	
STRONTIUM 90	1809.117	280.857	5.123	
TOTAL CURIES	42476.577	611.817	10.495	

WATER SUMMARY

STAGED:

RB WATER	642272
TOTAL	1194863
TOTAL CURIES DEPOSITED	1797.289 *

SEE SDS BATCH 5008

PROCESSED:

RB WATER	655185
TOTAL	1266582
TOTAL CURIES DEPOSITED	1829.65
RCS WATER	249852
RCS CURIES DEPOSITED	28236.915

SDS PROCESSING SAMPLE SUMMARY

BATCH 5035

	DATE/TIME	GALLONS	A	C	D	E	F	G	H
Cesium 137			2.9	2.7					
Sr 90	8/30 2009	517	9.8	8.3					
Gross βγ			–	–					
Cesium 137						4.2(-2)	2.3(-3)		5.2(-4)
Sr 90	8/30 2040	660				1.2	7.3(-2)		9.3(-3)
Gross βγ						2.11	5.61(-1)		4(-1)
Cesium 137									
Sr 90									
Gross βγ									
Cesium 137									
Sr 90									
Gross βγ									
Cesium 137									
Sr 90									
Gross βγ									
Cesium 137									
Sr 90									
Gross βγ									
Cesium 137									
Sr 90									
Gross βγ									

82-M-0513
MAR 2 5 1982

Inter-Office Memorandum

GPU Nuclear

Date March 19, 1982

Subject SDS Batch Report

To L. P. King
Acting Director, Site Operations

Location TMI U-2 Plant Engineering
4240-82-241

Attached please find batch reports for SDS Batch S-022 & 023. Batch No. S-022 represents the processing of the 16th and last batch of Reactor Building sump water, Batch No. S-023 represents the processing of miscellaneous water from RCBT "B".

If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/tn JDS

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. E. Rekart
B. G. Smith

A0000641

BATCH # 5022
DATE 2/28 - 3/5/82
GALLONS 33149

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (uI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.71	5.67(-3)
CESIUM 134	12.7	5.567(-5)
CESIUM 137 137± 0.058	123	5.4(-4)

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT'B')
LINER #	D10016	D10014	D20027	D20029
THIS BATCH				
GALLONS	33149	33149	33149	33149
CESIUM	1670.184	272.463	1.86(-1)	2.414(-2)
STRONTIUM 90	252.647	283.353	40.361	1.994
TOTAL CURIES	32005.587	1088.621	81.094	4.053
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	616037	319864	210029	110491
CESIUM	53947.566	294.969	5(-1)	7.342(-2)
STRONTIUM 90	1586.375	661.759	65.787	3.068
TOTAL CURIES	106412.596	1887.8	132.672	6.332

POST FILTER

BATCH START 24 mr/hr BATCH END 30 mr/hr MAXIMUM 32 mr/hr.

WATER SUMMARY

STAGED:

RB WATER	600594
TOTAL	852845
TOTAL CURIES DEPOSITED	1018.627*

SEE BATCH S-006

PROCESSED:

RB WATER	603446
TOTAL	850654
TOTAL CURIES DEPOSITED	498639.307

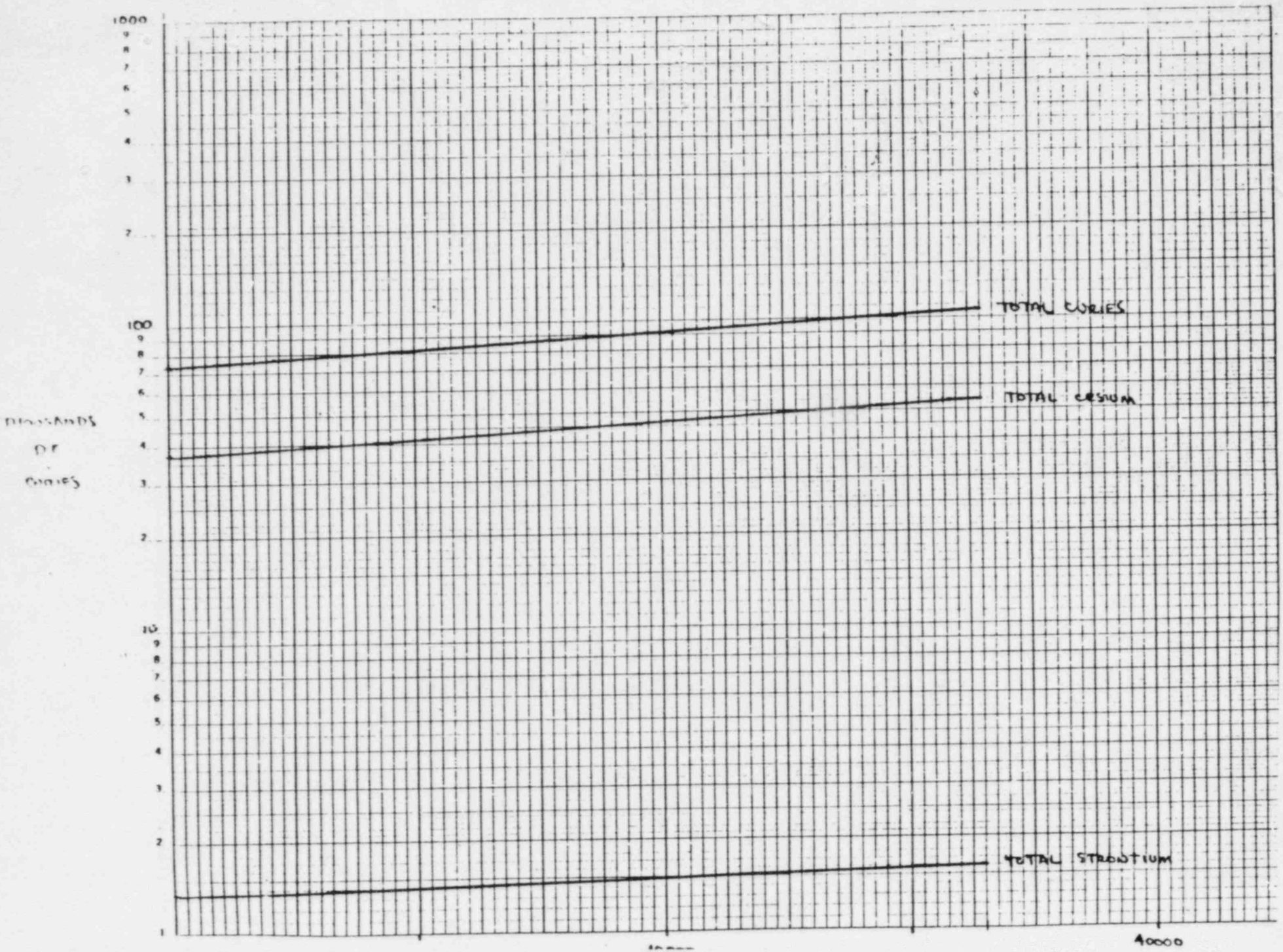
SDS PROCESSING SAMPLE SUMMARY

BATCH 5022

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.3	___	1.4					
Sr 90	2/27 1728	11527	4.86(-2)	___	2.99(-2)					
Gross βγ			–	___	–					
Cesium 137			1.4	___	1.2					
Sr 90	2/28 0148	24253	5.82(-2)	___	3.7(-2)					
Gross βγ			–	___	–					
Cesium 137			1.4	___	1.2					
Sr 90	2/28 0810	31948	7.15(-2)	___	7.45(-2)					
Gross βγ			–	___	–					
Cesium 137						120	25(-1)	6.7(-3)	5.9(-4)	3.9(-4)
Sr 90	2/28 2014	1990				5	2.4	2.1(-1)	1.1(-2)	3.1(-3)
Gross						210	5.9	1.7	1.3	9.4(-1)
Cesium 137						130	7.9(-1)	1.5(-3)	6.1(-4)	5.1(-4)
Sr 90	3/2 0748	11621				5	2.7	3.2(-1)	1.8(-2)	5(-3)
Gross βγ						230	7.3	2.1	1.6	1.4
Cesium 137						120	18	1.7(-3)	7.7(-4)	6(-4)
Sr 90	3/4 0808	20479				4.8	2.5	3.2(-1)	1.7(-2)	5(-3)
Gross βγ						230	8.9	1.8	1.2	1.1
Cesium 137						110	4.5	2.2(-3)	1(-3)	7.6(-4)
Sr 90	3/5 1846	31109				3.4	2.6	3.9(-1)	2.6(-2)	6.2(-3)
Gross βγ						178	14.4	2.42	1.78	1.63

} uci/ml. filterable

IX-2A (10016)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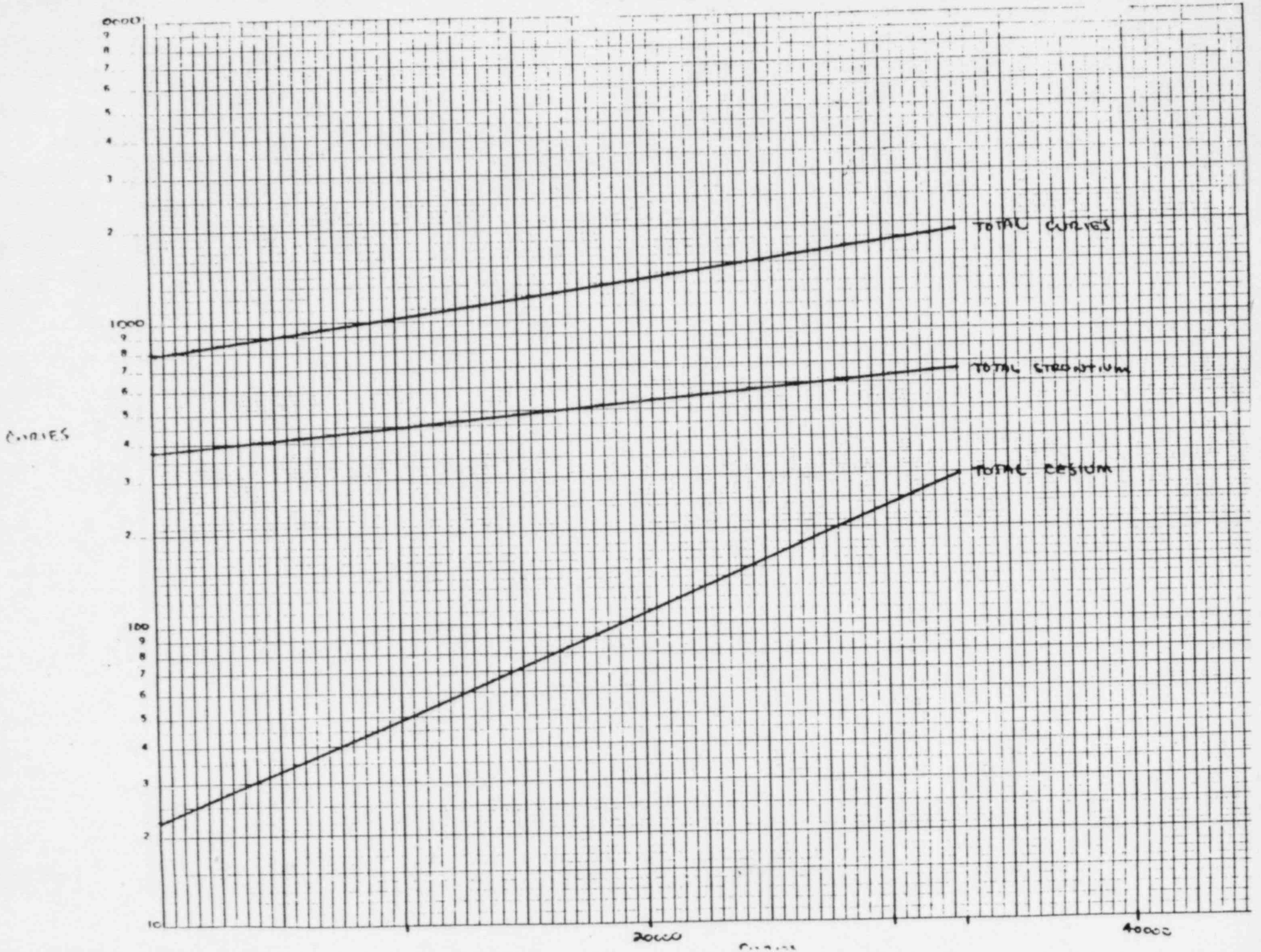
X-28 (D10014)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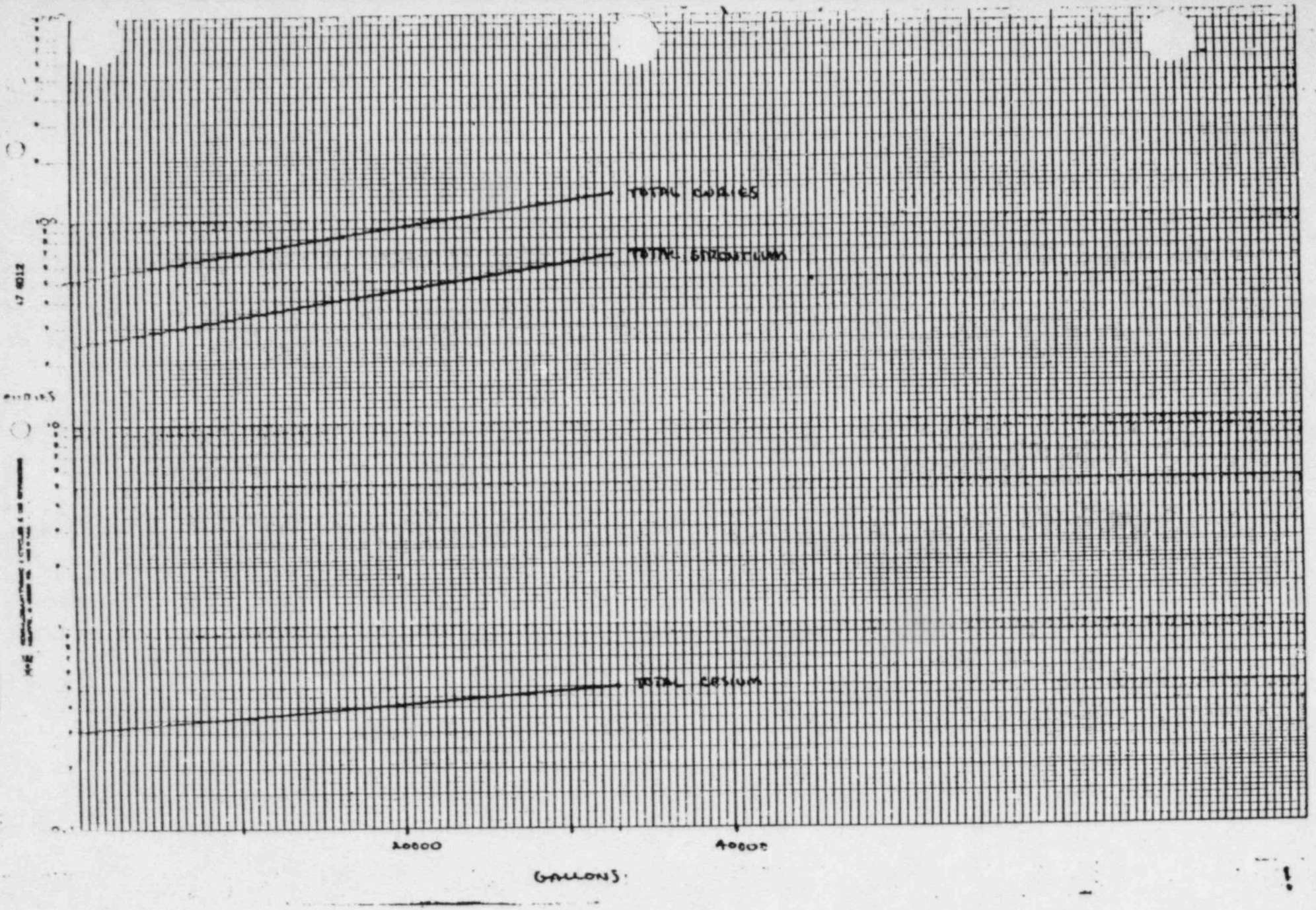
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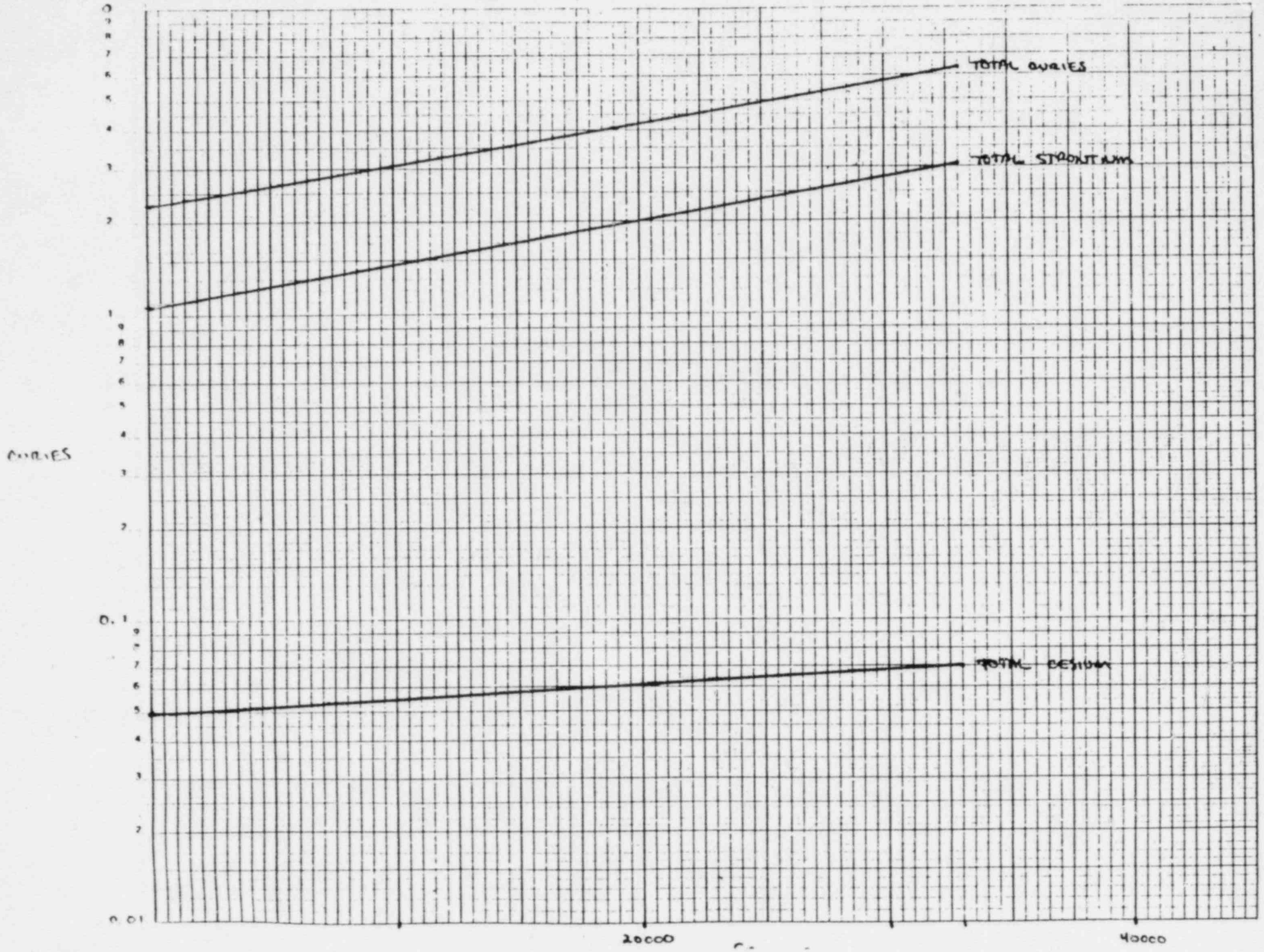
(D20029' ITION B



BATCH # 5023
DATE 3/9-12/82
GALLONS 20120

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	8.78 (-1)	1.367(-2)
CESIUM 134	1.34	1.233(-3)
CESIUM 137 0.035 1.0057	14	1.3(-2)
	13.75 1.58	

ION EXCHANGE DEPOSITION

	1A	1B	2D (CAT B)
LINER #	D10018	D20026	D20029
THIS BATCH			
GALLONS	20120	20120	13470
CESIUM	1165.201	21.86	6.448(-2)
STRONTIUM 90	54.293	7.803	1.528(-1)
TOTAL CURIES	2315.683	58.026	4.331(-1)
CUMULATIVE (THROUGH ABOVE LINERS)			
GALLONS	254969	64451	123961
CESIUM	2228.499	22.074	1.401(-1)
STRONTIUM 90	198.061	16.021	3.22
TOTAL CURIES	4622.791	74.922	6.765

POST FILTER

BATCH START 28 mr/hr. BATCH END 40 mr/hr. MAXIMUM 40 mr/hr.

WATER SUMMARY

STAGED:

RB WATER	600594
TOTAL	870839
TOTAL CURIES DEPOSITED	1023.363 *

* SEE BATCH 5008

PROCESSED:

RB WATER	603446
TOTAL	870974
TOTAL CURIES DEPOSITED	501013.WWG

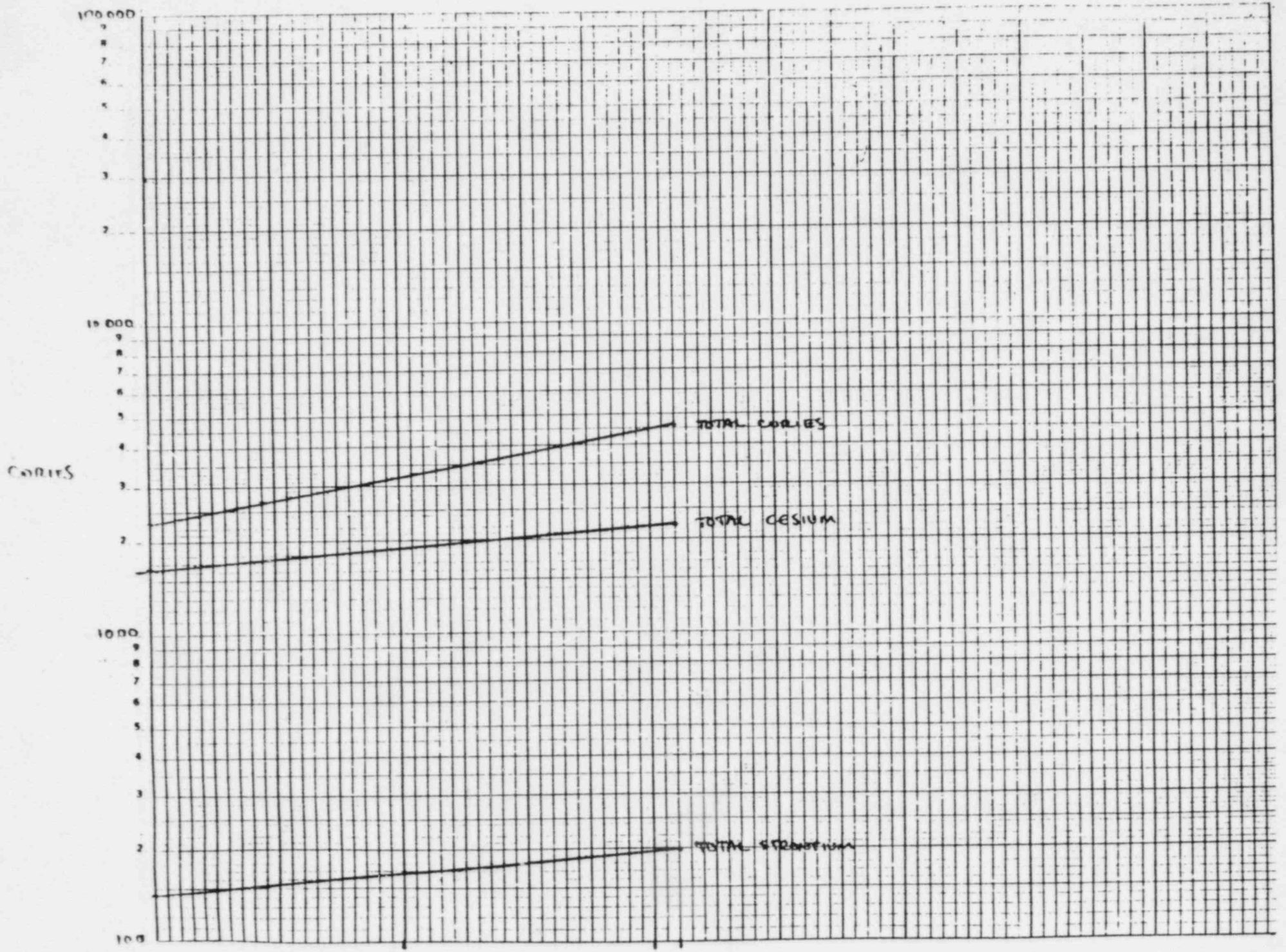
BATCH 3023

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			3.9(-2)	—	6.9(-2)					
Sr 90	3/9 1110	10000	1(-1)	—	6.8(-2)					
Gross βY			—	—	—					
Cesium 137			3.1(-2)	—	6.8(-2)					
Sr 90	3/9 1745	17994	9.5(-2)	—	5.7(-2)					
Gross βY			—	—	—					
Cesium 137			—	—	—					
Sr 90			—	—	—					
Gross βY			—	—	—					
Cesium 137						13	7.4(-2)	9.7(-4)		
Sr 90	3/10 0804	2903				1.1	1.1(-1)	1.8(-2)		
Gross βY						26	1.2	8.9(-1)		
Cesium 137						14	3.4(-2)	1.3(-3)		1.3(-2)
Sr 90	3/11 0810	10235				1	1.2(-1)	1.8(-2)		1.3(-2)
Gross βY						23.1	1.21	9.97(-1)		9.24(-1)
Cesium 137						14	2.5(-2)	1.3(-3)		1.3(-2)
Sr 90	3/12 0822	17536				6.6(-1)	1.4(-1)	1.6(-2)		1.5(-2)
Gross βY						24.5	1.31	1.04		9.79(-1)
Cesium 137						—	—	—	—	—
Sr 90						—	—	—	—	—
Gross βY						—	—	—	—	—

uci/ml. filterable

13.7±

IX-1A (D10018)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CURIES
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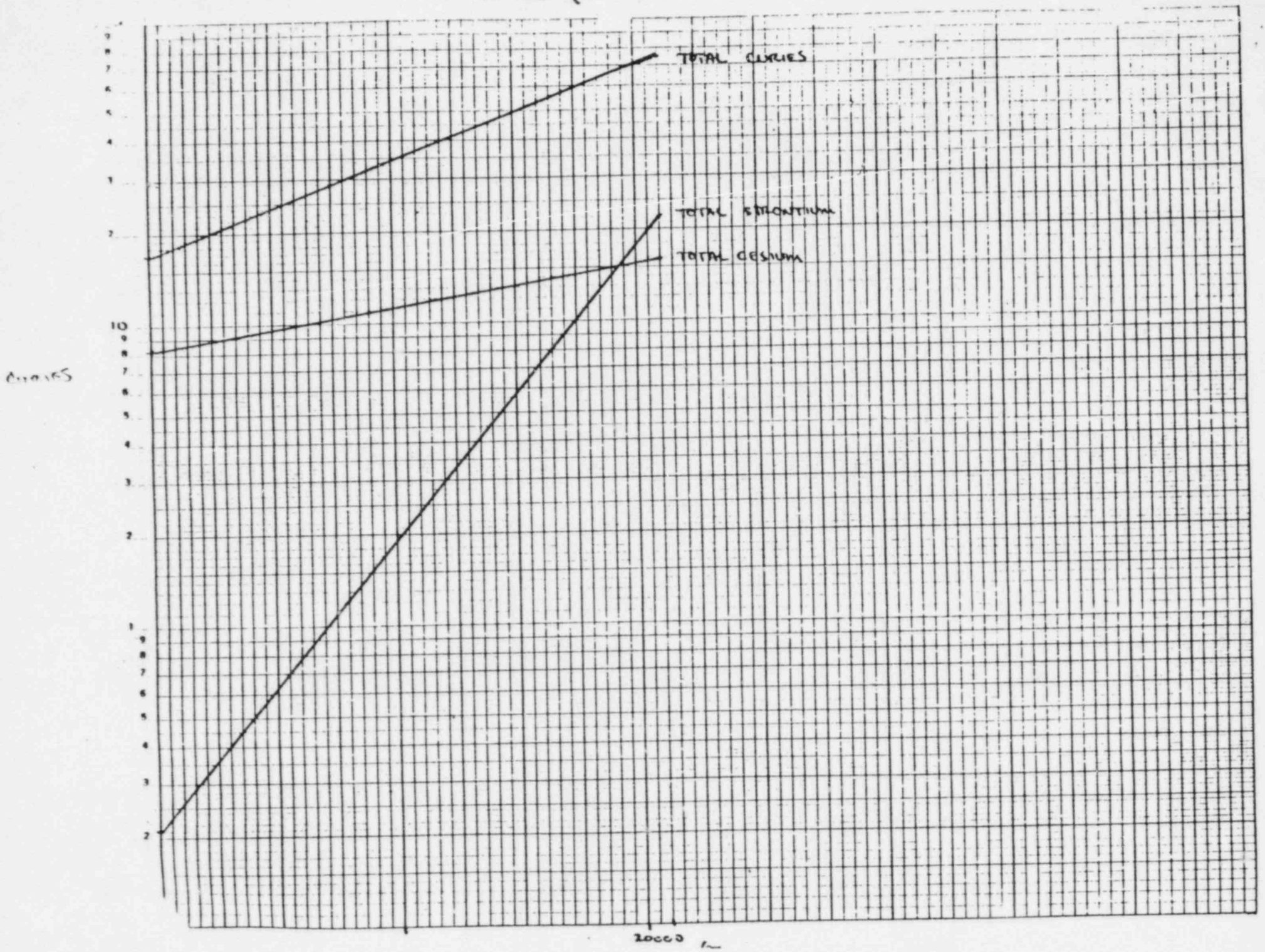
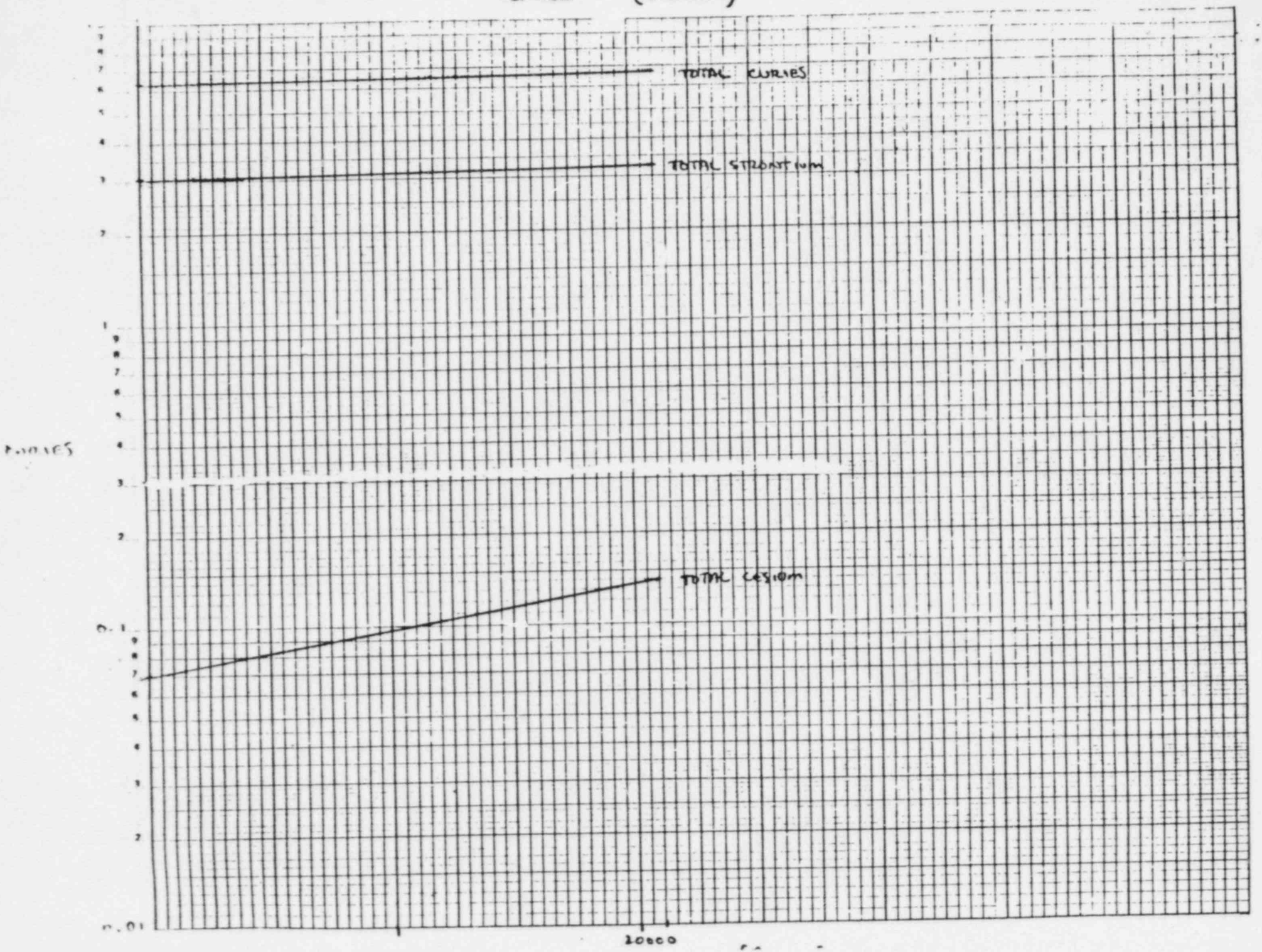
TOTAL STRONTIUM

IX-1B (T 3026)



CATION (D 20029)



Inter-Office Memorandum

GPU Nuclear

Date March 15, 1982
4400-82-M-0303

Subject SDS BATCH REPORT S-021

To L. H. Barrett

Location TMI-2 Licensing

Attached for your information is SDS Batch Report S-021. The cover memo describes the status. Please call if you have questions.

J. E. Larson
Supervisor, TMI-2 Licensing

JEL:djb

Attachment

cc: J. J. Barton wo/a
J. J. Byrne "

BATCH # 3021
DATE 2/21-27/92
GALLONS 43844

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.433	5.967×10^{-3}
CESIUM 134	12.417	6.308×10^{-5}
CESIUM 137	116.417	6.642×10^{-4}

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT B)
LINER #	D10016	D10014	D20027	D20029
THIS BATCH				
GALLONS	43844	43844	43844	43844
CESIUM	20436.896	9.757	1.346(-1)	2.817(-2)
STRONTIUM 90	463.672	239.776	17.367	6.875(-1)
TOTAL CURIES	20446.248	497.776	34.991	1.462
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	562688	286715	176880	77342
CESIUM	37277.382	22.506	3.14(-1)	4.926(-2)
STRONTIUM 90	1333.728	378.406	25.426	1.074
TOTAL CURIES	74407.009	799.179	51.576	2.279

POST FILTER

BATCH START 30 mr/hr BATCH END 27 mr/hr MAXIMUM 35 mr/hr

WATER SUMMARY

STAGED:

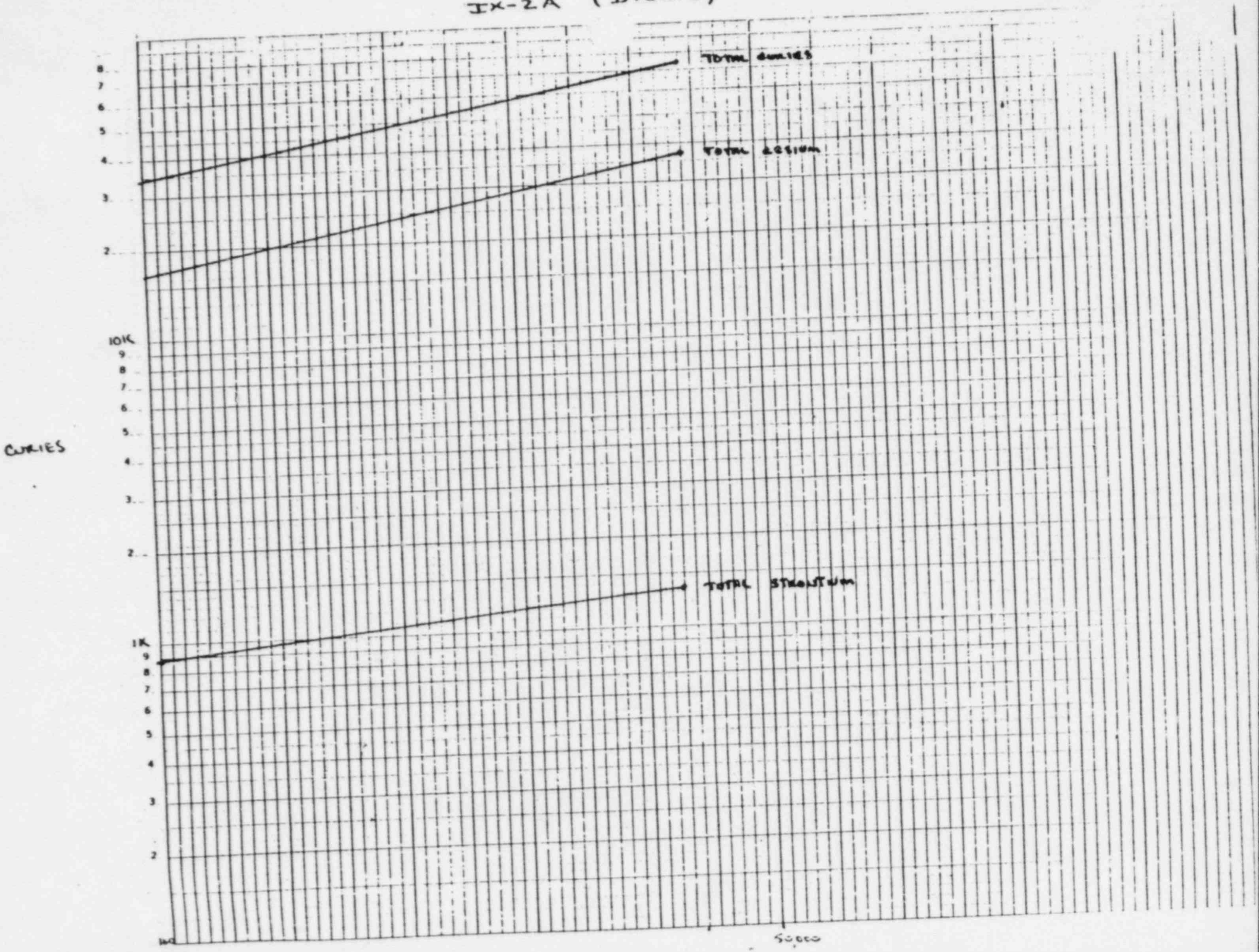
RB WATER	568646
TOTAL	820897
TOTAL CURIES DEPOSITED	992.886 *

* SEE 5008

PROCESSED:

RB WATER	570297
TOTAL	817705
TOTAL CURIES DEPOSITED	465459.952

IX-2A (D10016)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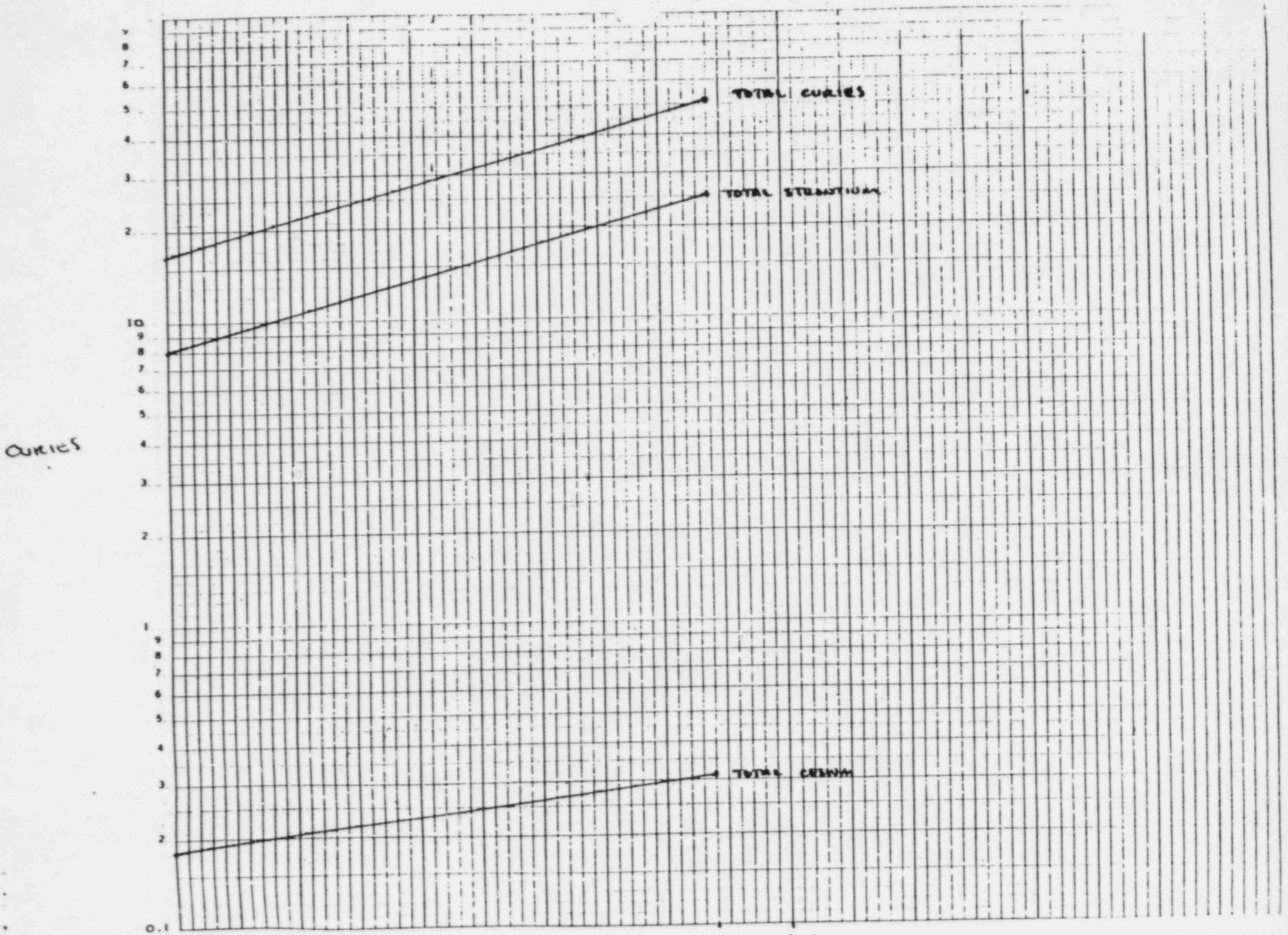
IV 2.C (D20027)


TOTAL CURIES
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82-H-0358

MAR 15 1982

Inter-Office Memorandum

GPU Nuclear

March 9, 1982

Subject SDS Batch Report

Location TMI U-2 Plant Engineering
4240-82-193

To L. P. King
Acting Director, Site Operations

Attached please find batch report for SDS Batch S-021. Batch No. S-021 represents the processing of the 15th batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. E. Rekart
B. G. Smith

A0000641

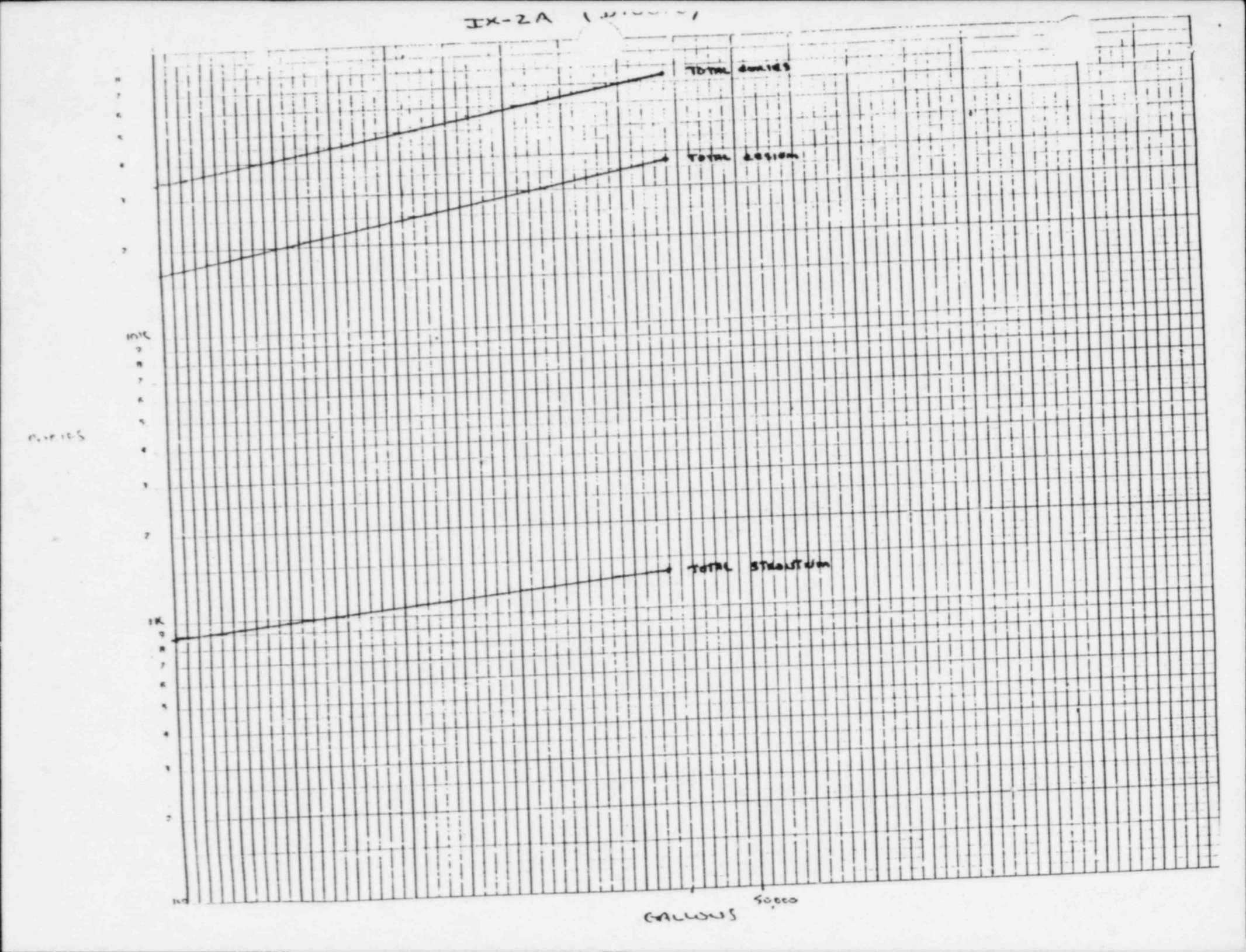
SDS PROCESSING SAMPLE SUMMARY

BATCH 5021

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			9.2(-1)	___	8.7(-1)					
Sr 90	2/17 0215	10000	6.58(-2)	___	4(-2)					
Gross βY			1.47(-1)	___	9.5(-2)					
Cesium 137	" " "		1.7	___	1.1					
Sr 90	2/17 1230	20030	7(-2)	___	4.3(-2)					
Gross βY			1.9(-1)	___	1.1(-1)					
Cesium 137			1.2	___	1.4					
Sr 90	2/17 1645	31150	6.5(-2)	___	5.1(-2)					
Gross βY			1.5(-1)	___	1.4(-1)					
Cesium 137						120	8.6(-3)	1.3(-3)	6.8(-4)	3.3(-4)
Sr 90	2/21 0605	2133	1.27±0.40			4.6	1.1	5.7(-2)	5.9(-3)	4(-3)
Gross βY						233	3.75	1.8	1.7	1.52
Cesium 137						120	1.36(2)	1.4(-3)	1.2(-4)	5.9(-4)
Sr 90	2/23 0800	15440				5.8	1.5	1(-1)	8.5(-3)	4.0(-3)
Gross βY						226	4.4	2.7	1.89	1.62
Cesium 137						120	4.4(-2)	1.5(-3)	8.6(-4)	6.1(-4)
Sr 90	2/25 0505	20933				3.4	1.0	1.2(-1)	1(-2)	5.5(-3)
Gross βY						223	5.81	2.63	2.41	2.17
Cesium 137						97	1.5(-1)	2.4(-3)	1.5(-3)	1.1(-3)
Sr 90	2/26 0823	39325				4.0	1.6	1.5(-1)	1.6(-2)	1.1(-4)
Gross βY						176	5.8	2.69	2.34	2.14

114 ± 11.5

IX-2A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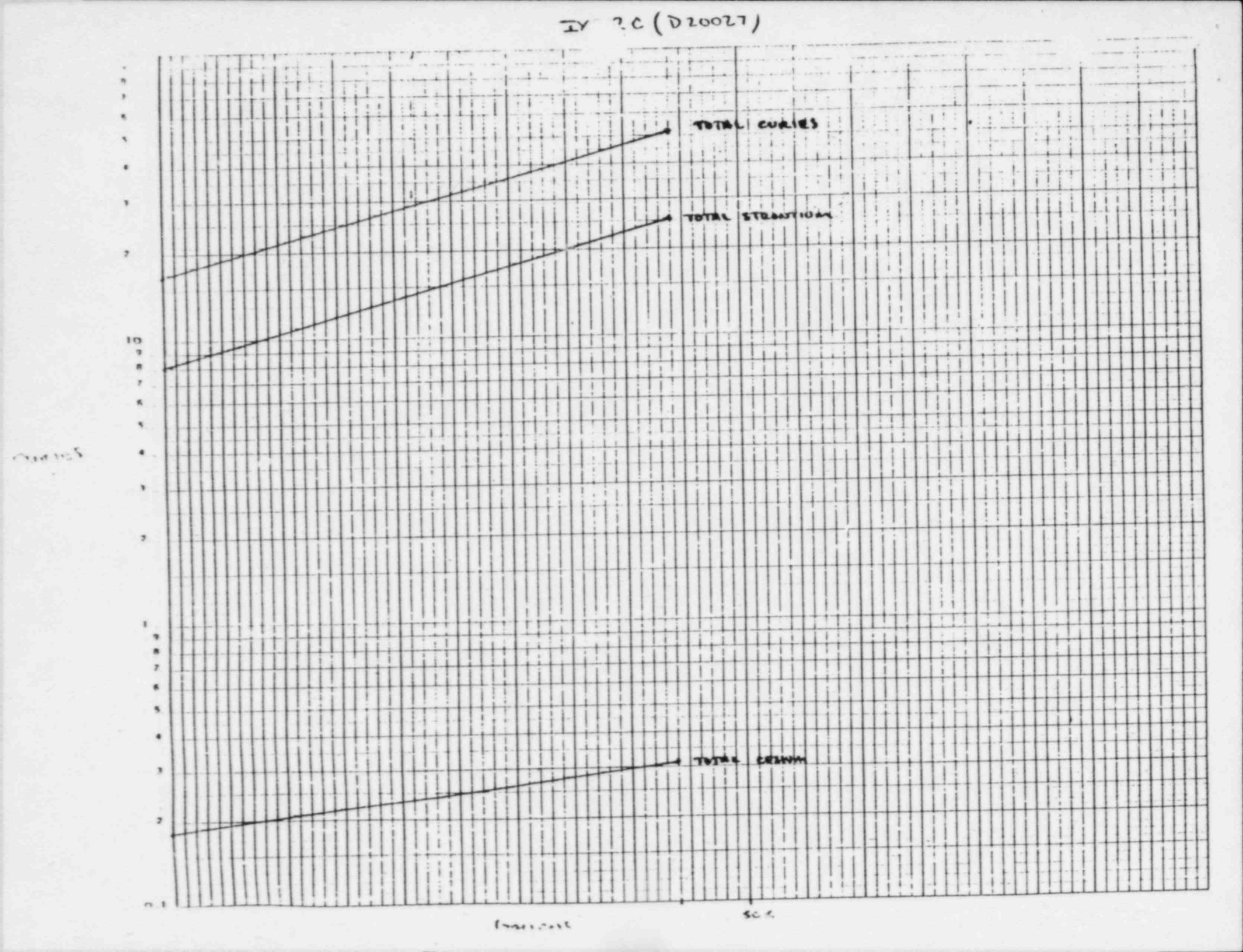
TOTAL CALCIUM
TOTAL STRONTIUM
GALLONS
50,000

IV 2.C (D20027)



82-M-0318

Inter-Office Memorandum

GPU Nuclear

Date February 22, 1982

Subject SDS Batch Report

Location TMI U-2 Plant Engineering
4240-82-128

To L. P. King
Acting Director, Site Operations

Attached please find batch report for SDS Batch S-020. Batch No. S-020 represents the processing of the 14th batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

RP Warren
FOR E. H. Gischel
Plant Engineering Director
TMI-2

3of
TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. E. Rekart
B. G. Smith

A0000841

BATCH # 5020
DATE 2/11-16/82
GALLONS 33498

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.36	6.15 (-3)
CESIUM 134	11.1	6.55 (-5)
CESIUM 137	106.3	7.19 (-4)

1-3 filterable

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT 'B')
LINER #	D10016	D10014	D20027	D20029
	previously 2B	previously 2C	previously cat'B'	
THIS BATCH				
GALLONS	33498	33498	33498	33498
CESIUM	14865.469	12.402	1.109(-1)	2.111(-2)
STRONTIUM 90	454.132	91.1	5.816	3.861(-1)
TOTAL CURIES	29954.666	205.559	11.868	8.173(-1)
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	539044	242871	133036	33498
CESIUM	16340.446	12.749	1.744(-1)	2.111(-2)
STRONTIUM 90	870.056	138.63	8.055	3.861(-1)
TOTAL CURIES	33960.161	301.403	16.587	8.173(-1)

POST FILTER

BATCH START 30mr/hr BATCH END 35mr/hr MAXIMUM 34 mr/hr

WATER SUMMARY

STAGED:

RB WATER	537496
TOTAL	769747
TOTAL CURIES DEPOSITED	926.736 *

* SEE BATCH REPORT S-008

PROCESSED:

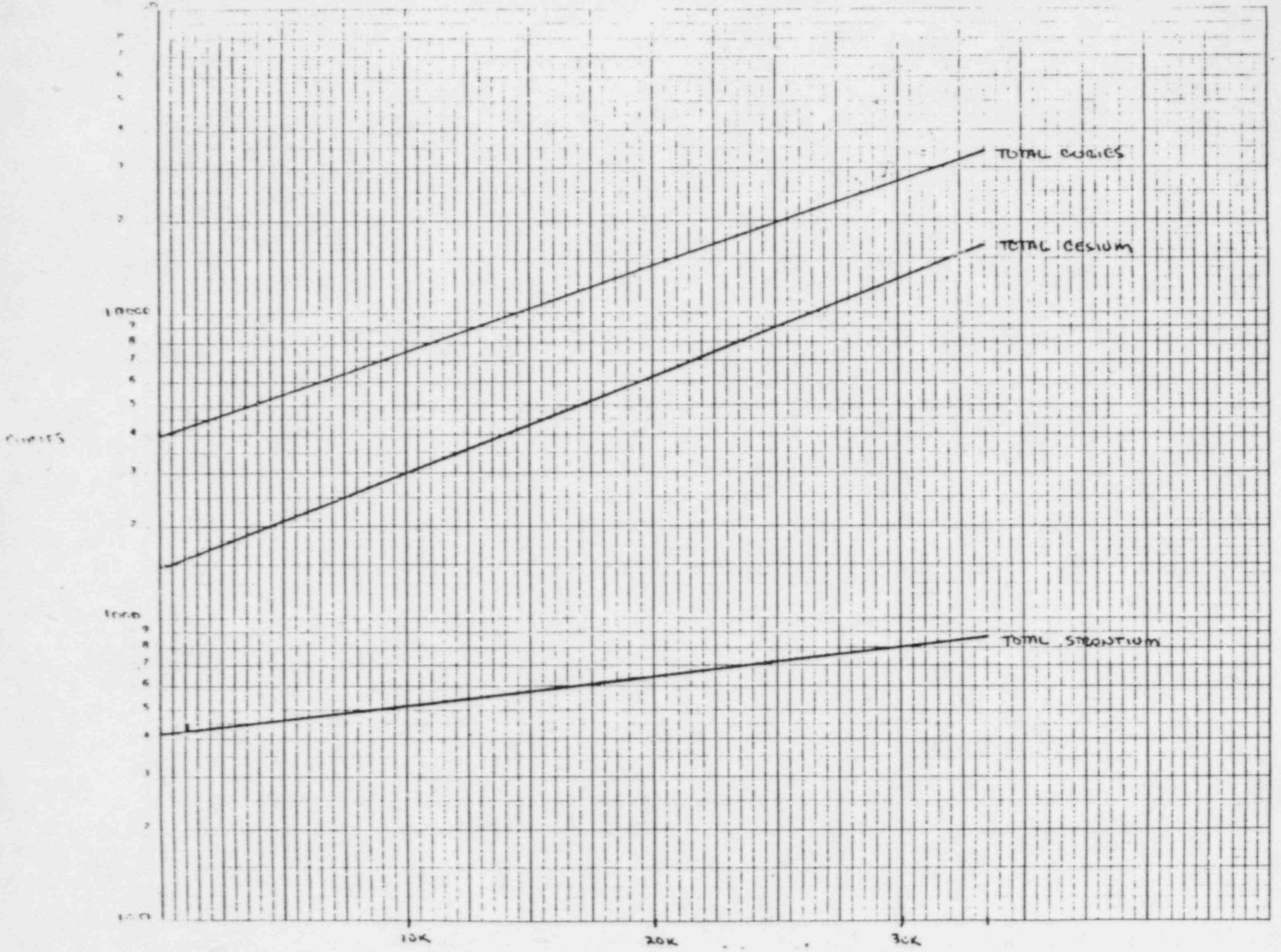
RB WATER	526453
TOTAL	773551
TOTAL CURIES DEPOSITED	926.676.675

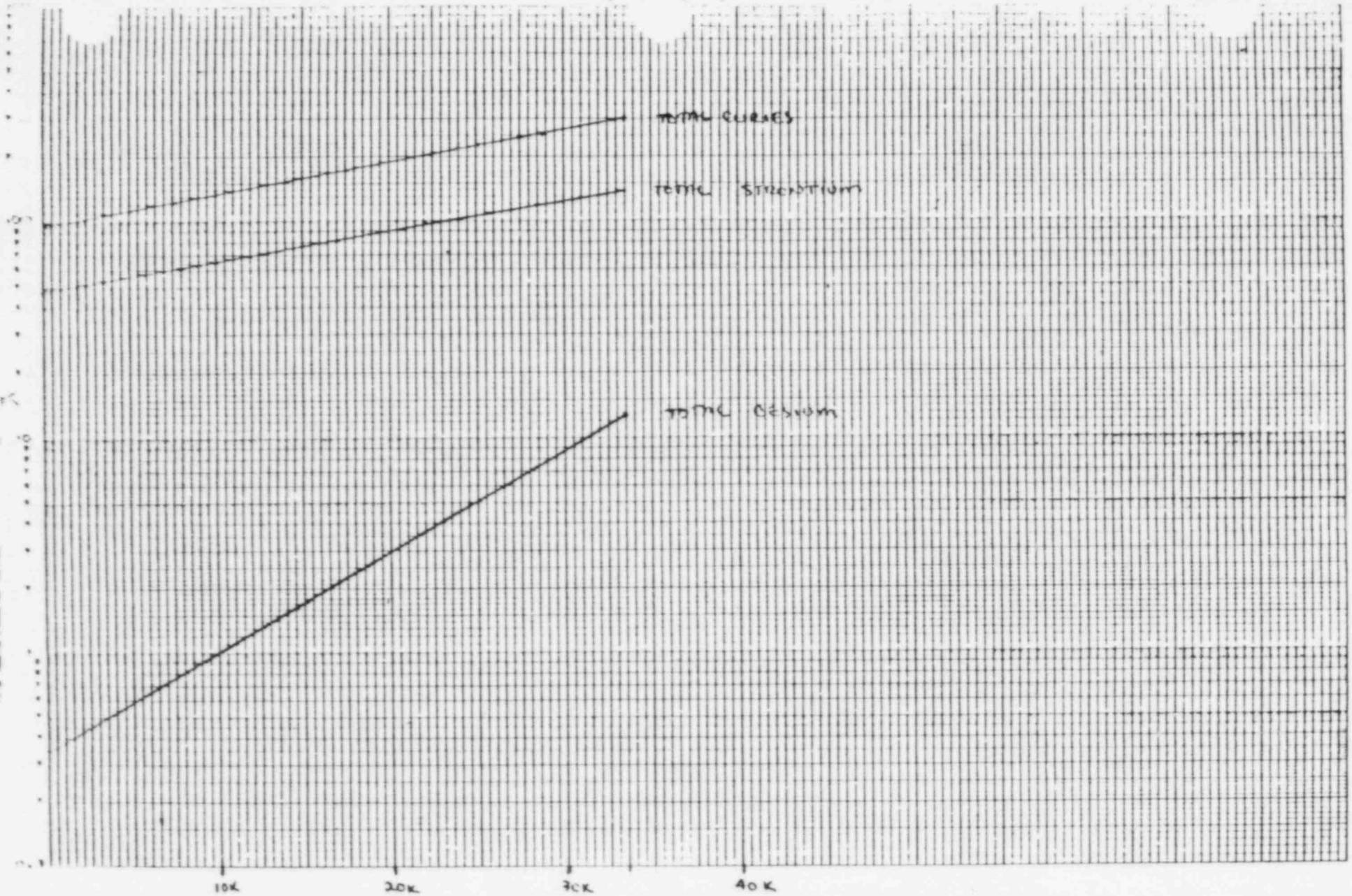
SDS PROCESSI. SAMPLE SUMMARY

BATCH 5020

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.3	___	1.2					
Sr 90	2/10 0149	10000	6.8(-2)	___	4.72(-2)					
Gross βγ			1.59(-1)	___	1.31(-1)					
Cesium 137	" "	"	1.3	___	1.7					
Sr 90	2/10 0823	20000	6.56(-2)	___	4.96(-2)		Filterable			
Gross βγ			1.56(-1)	___	1.63(-1)					
Cesium 137			1.3	___	1.1					
Sr 90	2/10 1535	31346	7.98(-2)	___	5.76(-2)					
Gross βγ			1.87(-1)	___	1.38(-1)					
Cesium 137						110	1.5(-1)	3.2(-3)	6.3(-4)	4.6(-4)
Sr 90	2/12 0800	3112				4.4	6.5(-1)	1.5(-1)	9(-3)	5.5(-3)
Gross βγ						158	4.11	1.92	1.8	1.61
Cesium 137						120	8.2(-2)	1.4(-3)	8.6(-4)	7.2(-4)
Sr 90	2/13 2002	13295				5.4	6(-1)	3.6(-2)	9.2(-3)	7.5(-3)
Gross βγ						232	3.45	2.45	2.12	1.93
Cesium 137						110	1.8(-2)	1.6(-3)	9.6(-4)	8.4(-4)
Sr 90	2/15 0827	23382				4.4	8.3(-1)	4.7(-2)	7.4(-3)	6.3(-3)
Gross βγ						127	4.15	2.41	2.21	1.98
Cesium 137						120	1.4(-2)	1.6(-3)	9.4(-4)	7.2(-4)
Sr 90	2/16 1505	31898				4.5	1	6.2(-2)	9.2(-3)	7.3(-3)
Gross βγ						220	4.43	2.38	2.14	1.93

IX- 2A (D10016)

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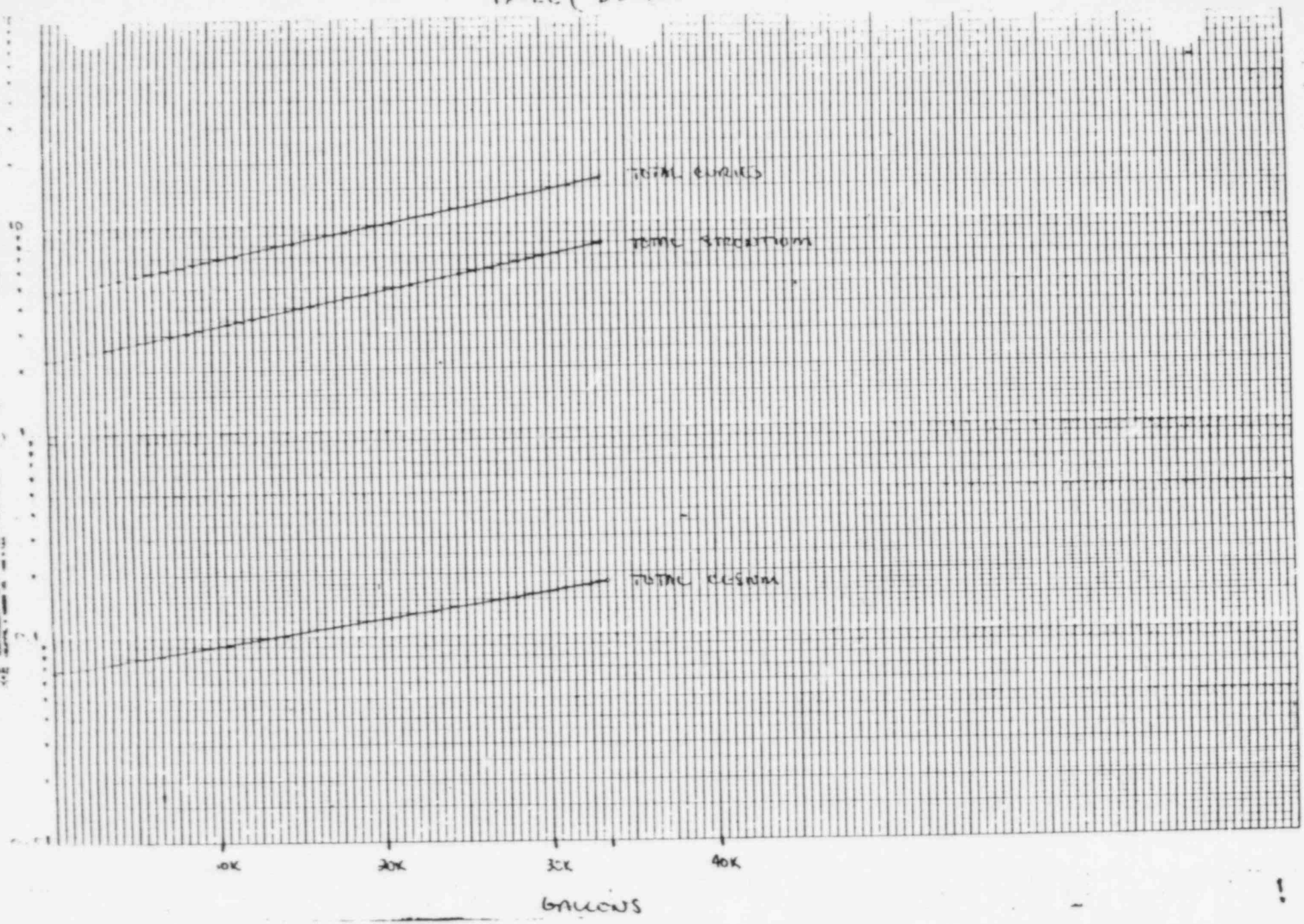
TOTAL STIMULATIONS
TOTAL DESIGNS
10K
20K
30K
40K
GALLONS

IX-2C (D2-72


TOTAL CURVES
TOTAL STRATIONS
TOTAL CLOSURE
10K
20K
30K
40K
GALLONS

FEB 19 1982 82-M-0264

Inter-Office Memorandum

GPU Nuclear

Date February 17, 1982

Subject SDS Batch Report

To L. P. King
Acting Director, Site Operations

Location TMI U-2 Plant Engineering
4240-82-114

Attached please find batch report for SDS Batch S-019. Batch No. S-019 represents the processing of the 13th batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson
T. E. Rekart
B. G. Smith

A0000647

BATCH # 5019
DATE 7/7 - 9/82
GALLONS 10985

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (ui/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.8	6.375×10^{-3}
CESIUM 134	12	6.125×10^{-5}
CESIUM 137	115	5.425×10^{-4}

1.3 ± 0.29
115 ± 5.78

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT'S')
LINER #	D20028	D10016	D10014	D20027
THIS BATCH				
GALLONS	10985	10985	10985	10985
CESIUM	4410.217	855.838	2.812(-2)	4.009(-3)
STRONTIUM 90	85.684	101.162	14.429	5.822(-1)
TOTAL CURIES	8674.586	2008.617	28.917	1.173
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	297034	505546	209373	99538
CESIUM	41381.573	1475.017	3.473(-1)	6.845(-2)
STRONTIUM 90	1272.115	415.924	47.53	2.243
TOTAL CURIES	80367.183	4006.095	95.644	4.719

POST FILTER

BATCH START 18 mr/w BATCH END 31 mr/w MAXIMUM 32 mr/w

WATER SUMMARY

STAGED:

RB WATER	506150
TOTAL	756401
TOTAL CURIES DEPOSITED	846.673 ✓

SEE BATCH REPORT S-008

PROCESSED:

RB WATER	492955
TOTAL	746352
TOTAL CURIES DEPOSITED	844306.565

SDS PROCESS1 AMPLE SUMMARY

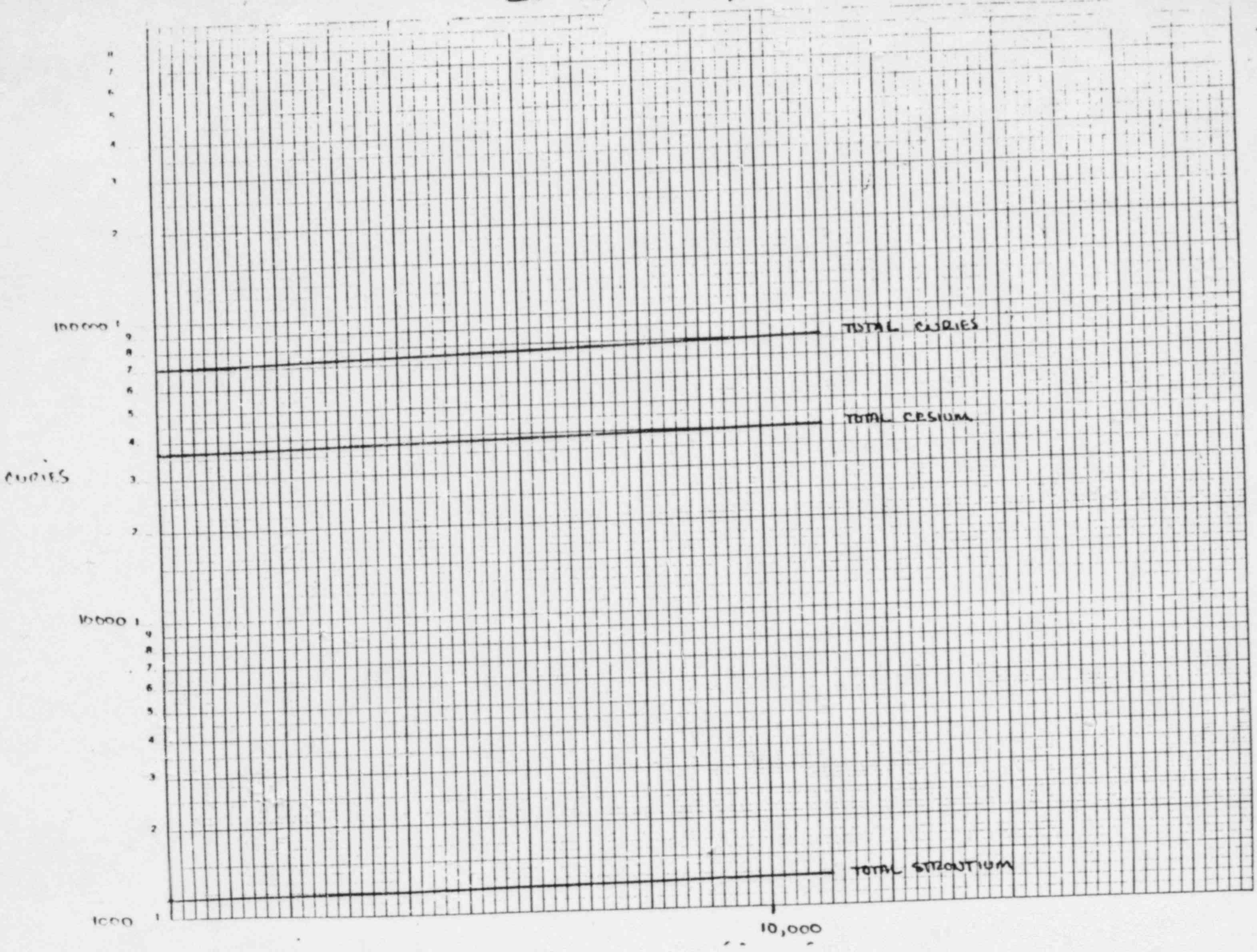
BATCH 5019

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.5	___	1.4					
Sr 90	2/7 0140	10000	7.11(-2)	___	4.57(-2)					
Gross BY			1.71(-1)	___	1.23(-1)					
Cesium 137	" "		1.1	___	1.4					
Sr 90	2/7 0730	19216	6.3(-2)	___	5.1(-2)					
Gross BY			1.5(-1)	___	1.3(-1)					
Cesium 137			___	___	___					
Sr 90	___	___	___	___	___					
Gross BY			___	___	___					
Cesium 137						120	14	1.4(-3)	6.8(-4)	5.6(-4)
Sr 90	2/7 2044	2161				4.3	2.1	2.9(-1)	1.8(-2)	5.7(-3)
Gross BY						177	32.6	2.35	1.75	1.56
Cesium 137						110	17	1.2(-3)	5.4(-4)	5.5(-4)
Sr 90	2/8 1530	5488				5	2.5	3.5(-1)	2(-2)	6.1(-3)
Gross B						210	38	2.3	1.5	1.5
Cesium 137						110	20 } *	1.2(-3)	6.7(-4)	5.6(-4)
Sr 90	2/9 0045	7998				4.4	2.85 } *	4.3(-1)	2.2(-2)	8.3(-3)
Gross BY						170	—	2.85	1.94	1.71
Cesium 137						120	22 } *	1.2(-3)	6.5(-4)	5(-4)
Sr 90	2/9 0807	9952				5.5	3.6 } *	3.3(-1)	2.1(-2)	5.4(-3)
Gross BY						214	—	2.61	1.87	1.67

L. Hawbic ?

* CALCULATED VALUES

IX-2A1 D20060)



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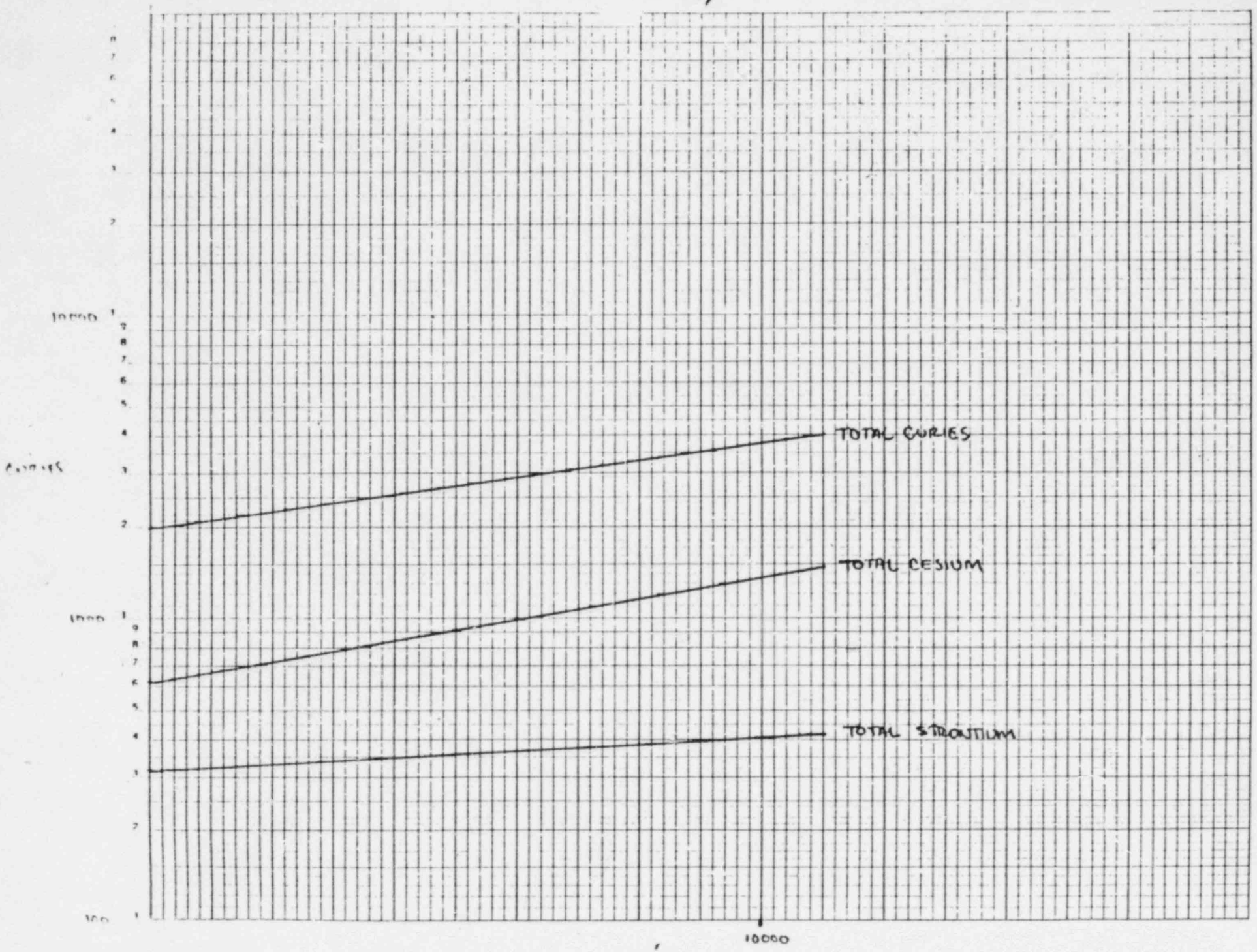

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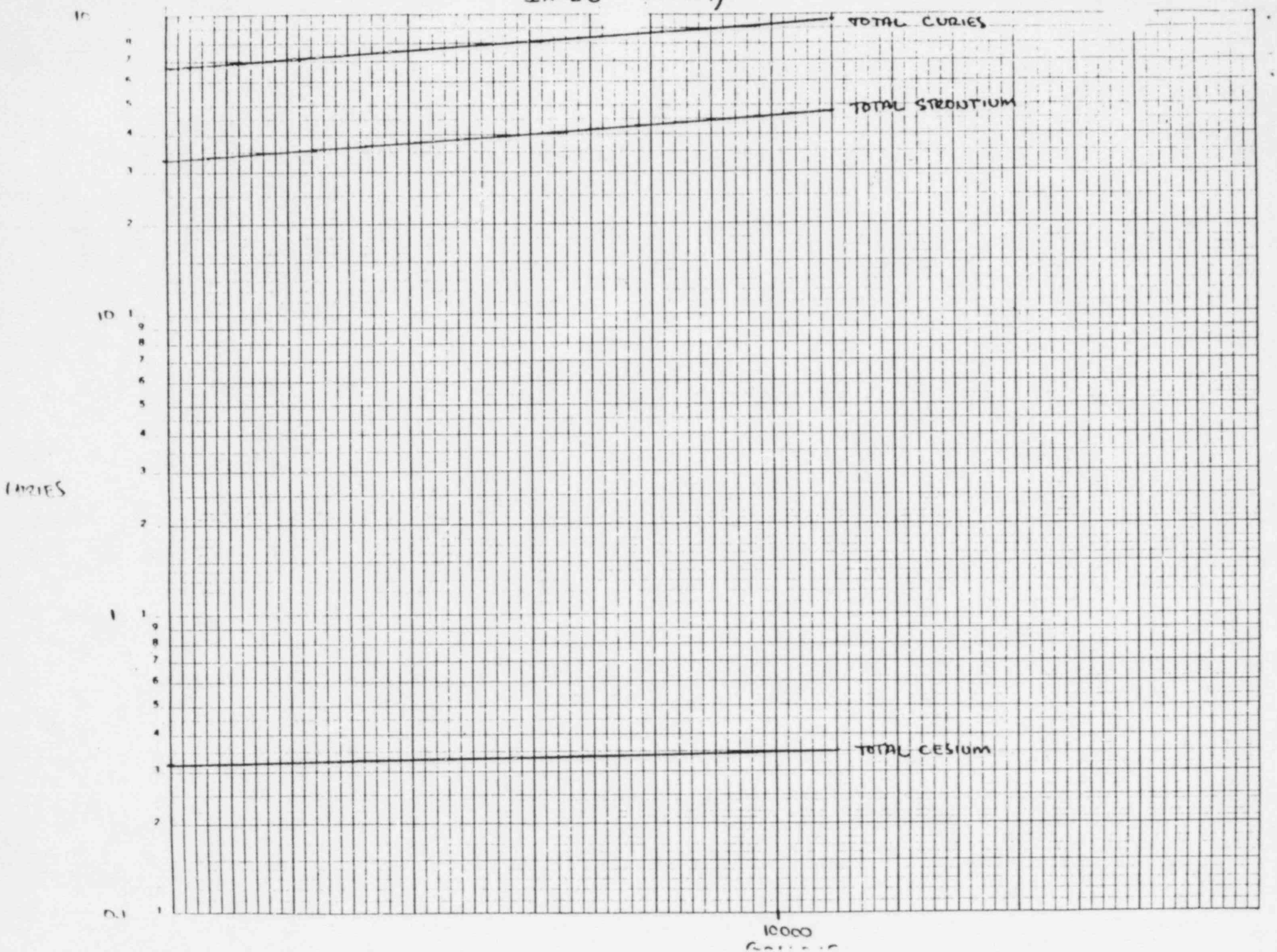
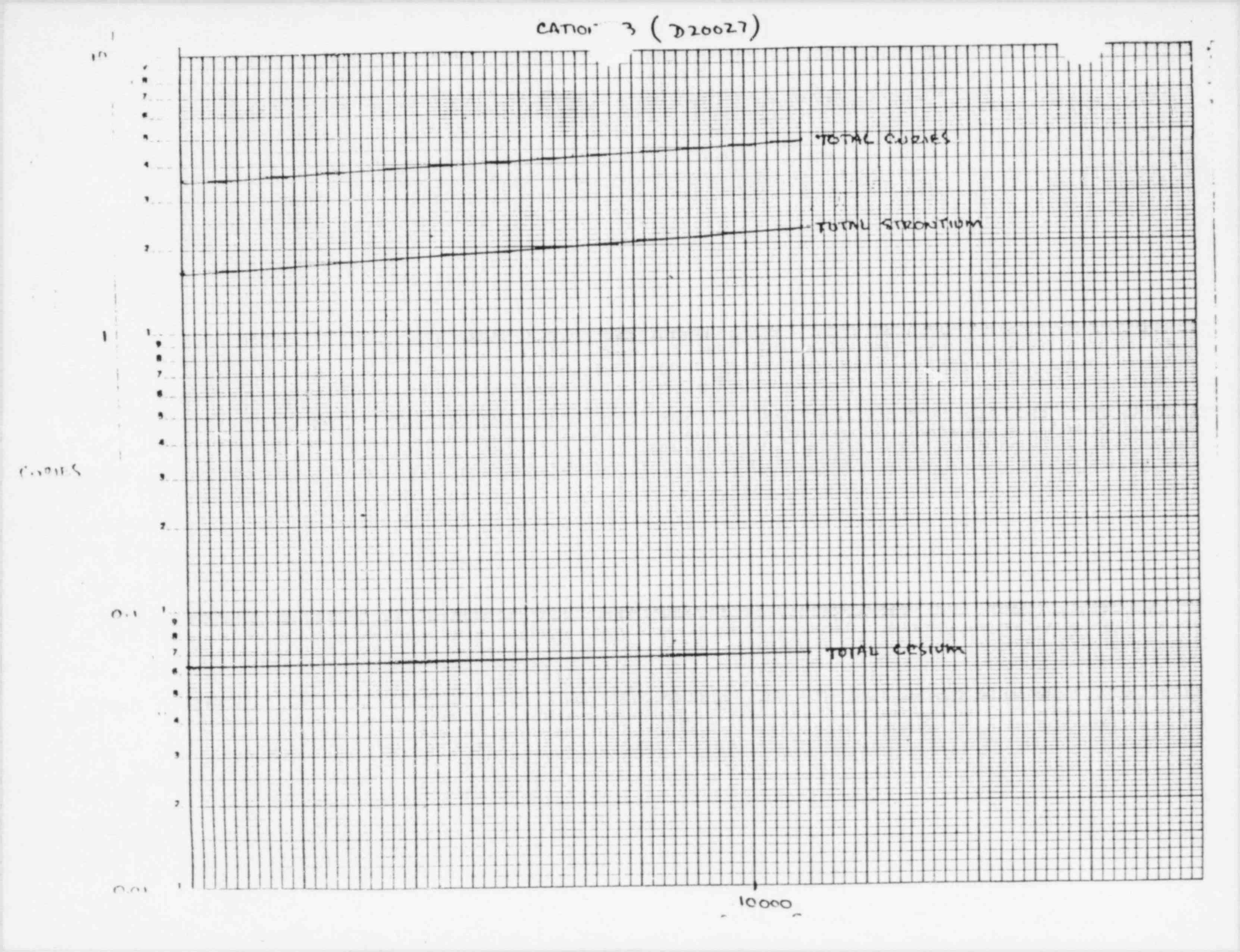


CATION 3 (D20027)



FEB 17 1982
82-M-0335

Inter-Office Memorandum

GPU Nuclear

February 11, 1982

Subject SDS Batch Report

Location TMI U-2 Plant Engineering
4240-82-105

To L. P. King
Acting Director, Site Operations

Attached please find batch report for SDS Batch S-018. Batch No. S-018 represents the processing of the 12th batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL

TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson
T. E. Rekart
R. G. Smith

A0000645

BATCH # 5018
DATE 1/31 - 2/6/82
GALLONS 43789

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.183	6.675×10^{-3}
CESIUM 134	11.683	6.5×10^{-5}
CESIUM 137 132 ± 681	110.5 100 ± 17.9	6.158×10^{-4}

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT 'B')
LINER #	D20028	D10016	D10014	D20027
THIS BATCH				
GALLONS	43789	43789	43789	43789
CESIUM	19453.881	610.572	1.041(-1)	1.958(-2)
STRONTIUM 90	431.101	227.681	27.513	1.329
TOTAL CURIES	36950.15	1807.678	55.236	2.708
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	286049	494561	198368	85553
CESIUM	36971.356	619.179	3.192(-1)	6.444(-2)
STRONTIUM 90	1186.431	314.762	33.101	1.061
TOTAL CURIES	71692.597	1997.479	66.927	3.546

POST FILTER

BATCH START 23 mr/hr. BATCH END 29 mr/hr. MAXIMUM 29 mr/hr.

WATER SUMMARY

STAGED:

RB WATER	486934
TOTAL	739165
TOTAL CURIES DEPOSITED	886.746 *

* SEE BATCH REPORT S-008

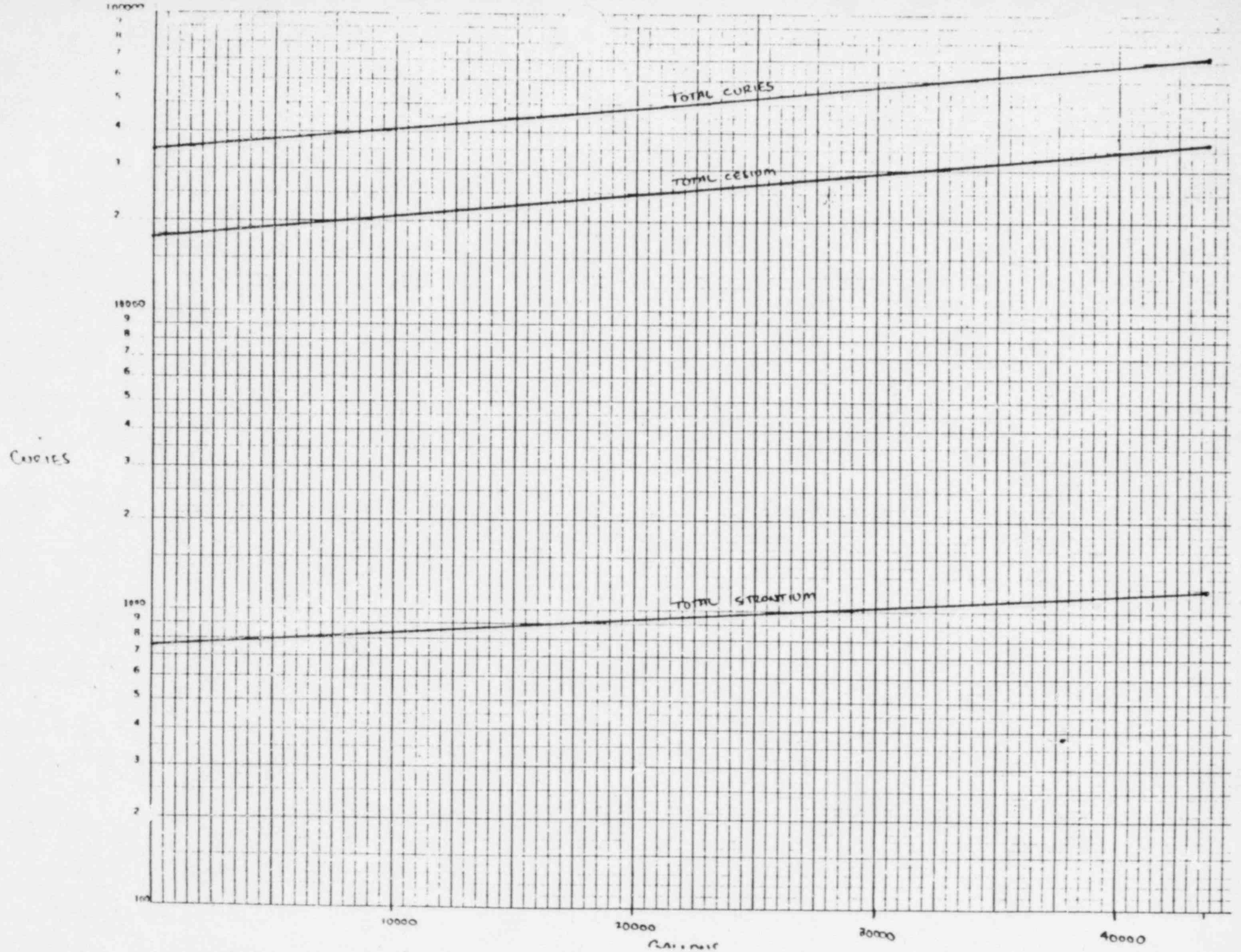
PROCESSED:

RB WATER	481970
TOTAL	729378
TOTAL CURIES DEPOSITED	383593.272

SDS PROCE G SAMPLE SUMMARY

BATCH 5018

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.5		1.4					
Sr 90	1/30 0742	10000	5.79(-4)		4.15(-4)					
Gross βγ			←	N/A	→					
Cesium 137			9.7(-1)		1					
Sr 90	1/30 1731	25000	LOST	SAMPLE						
Gross βγ			←	N/A	→					
Cesium 137	1/31 0616		1.5		1.2					
Sr 90		43385	7.02(-2)		4.26(-2)					
Gross βγ			←	N/A	→					
Cesium 137						81	2.5(-1)	1.4(-3)	6.8(-4)	6.1(-4)
Sr 90	1/31 2011	2901				3.4	1	7(-2)	6.4(-3)	5(-3)
Gross βγ						147	4.59	1.97	1.89	1.7
Cesium 137						110	1.2	1.2(-3)	7.1(-4)	5.8(-4)
Sr 90	2/2 2017	16551				3.7	1.7	1.2(-1)	1(-2)	4.6(-3)
Gross βγ						206	8.16	2.58	2.18	2.03
Cesium 137						120	BAD SAMPLE	1.3(-3)	7.2(-4)	6.3(-4)
Sr 90	2/4 2027	30381				6.5	↓	2.9(-1)	1.5(-2)	8.7(-3)
Gross βγ						217		2.76	2.35	2.12
Cesium 137						90	6.4	1.7(-3)	1.1(-3)	9.3(-4)
Sr 90	2/6 0810	40396				3.3	1.7	2.5(-1)	2.7(-2)	7.9(-3)
Gross βγ						154	17.7	2.76	2.33	2.09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TOTAL CESIUM
TOTAL STRONTIUM
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30000
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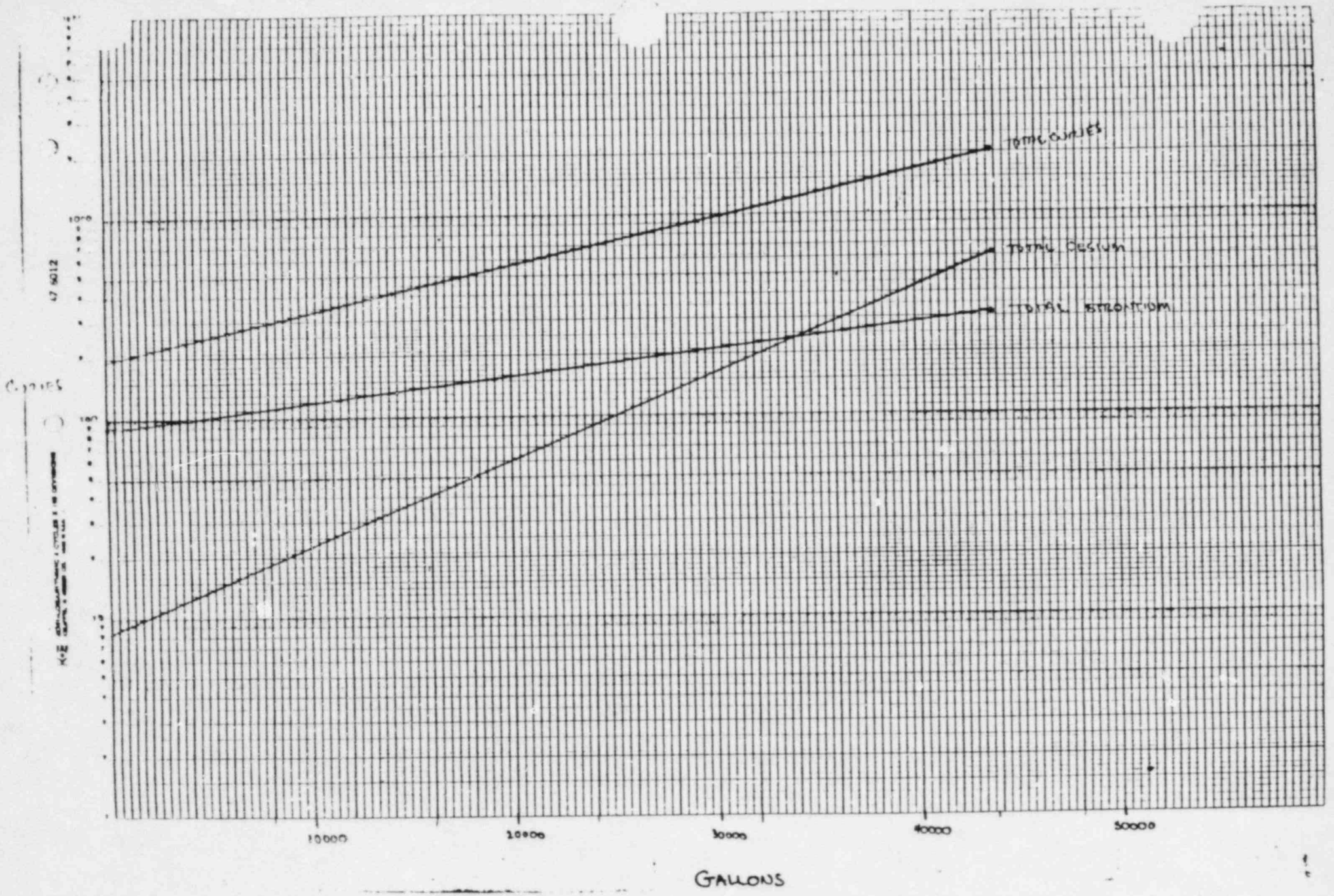
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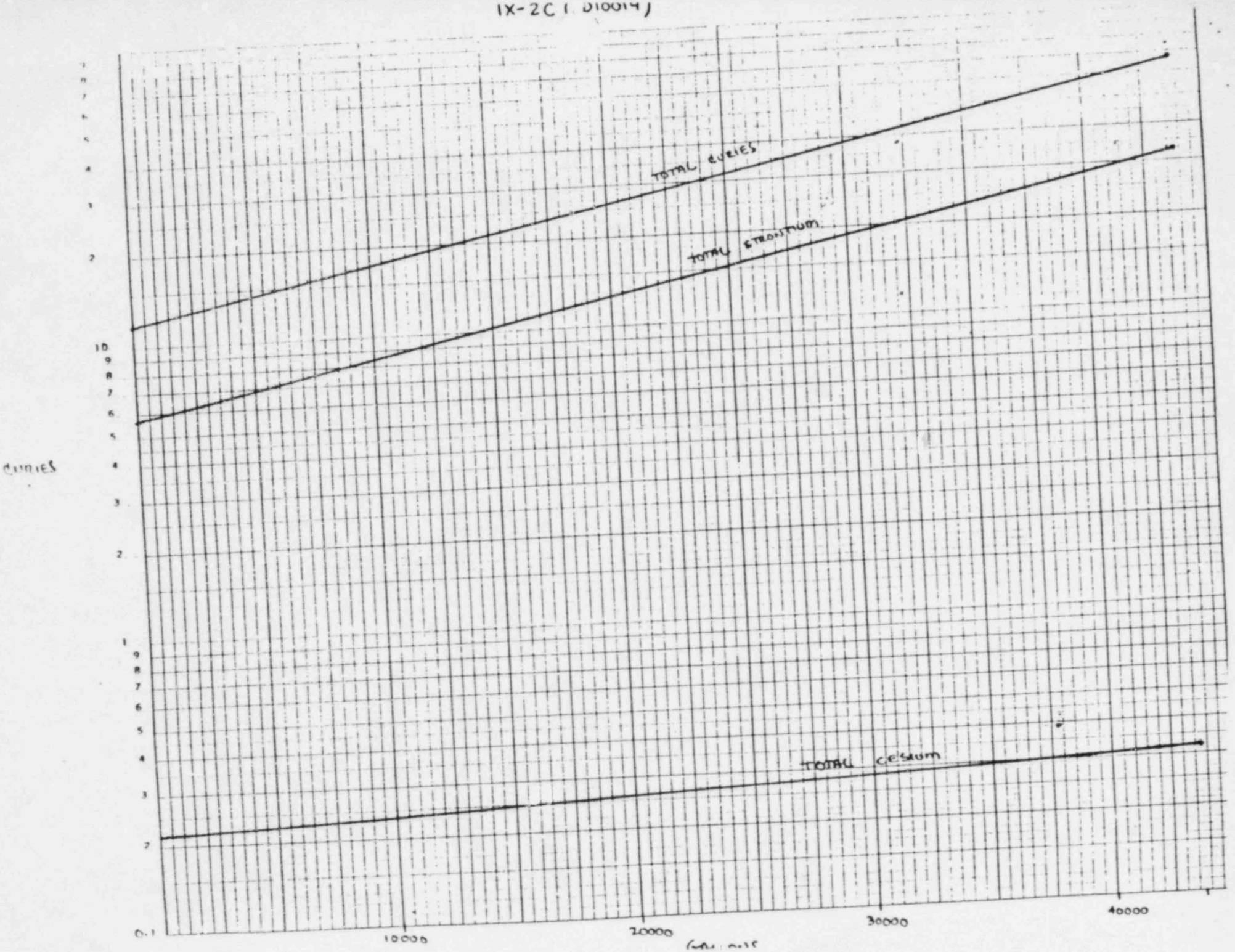
GALLONS

IX-2C (010014)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TOTAL STRONTIUM
TOTAL CESIUM
CURIES
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9
8
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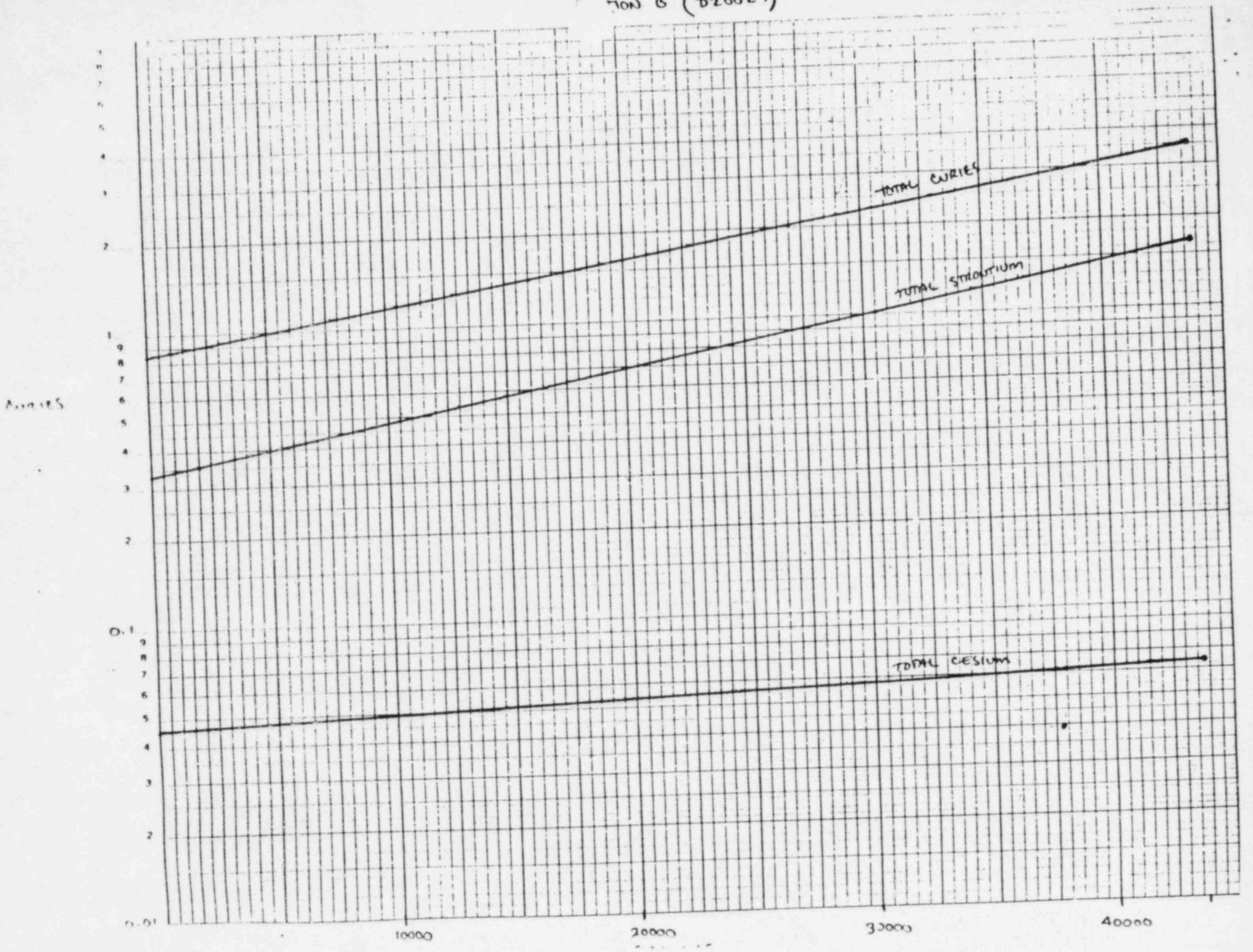
TION B (D20027)



FEB 8 1982
82-M-0196

Inter-Office Memorandum

GPU Nuclear

L February 3, 1982

Subject SDS Batch Report

Location TMI U-2 Plant Engineering
4240-82-068

To L. P. King
Acting Director, Site Operations

Attached please find batch report for SDS Batch S-017. Batch No. S-017 represents the processing of the 11th batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
R. E. Hahn
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. E. Rekart

A0000842

BATCH # 5017
DATE 1/23-29/81
GALLONS 44764

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	3.017	7.567×10^{-3}
CESIUM 134	9.242	7.808×10^{-5}
CESIUM 137 2.0 ± 0.07	94	9.075×10^{-4}
	93.0 ± 7.79 (?)	

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT 'B')
LINER #	D20028	D10016	D10014	D20027
THIS BATCH	previously 2B	previously 2C	previously CAT 'B'	
GALLONS	44764	44764	44764	44764
CESIUM	17465,292	8.027	1.206(-1)	9.486(-2)
STRONTIUM 90	439.794	71.055	4.54	3.319(-1)
TOTAL CURIES	34003.043	157.247	9.309	8.375(-1)
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	242260	450772	154599	44764
CESIUM	17517.475	8.307	2.151(-1)	9.486(-2)
STRONTIUM 90	755.33	87.081	5.588	3.319(-1)
TOTAL CURIES	34742.447	189.8	11.701	8.375(-1)

POST FILTER

BATCH START 26 mr/hr BATCH END 35 mr/hr MAXIMUM 28 mr/hr

WATER SUMMARY

STAGED:

RB WATER	443549
TOTAL	695600
TOTAL CURIES DEPOSITED	* 827.39

* SEE BATCH REPORT S-008

PROCESSED:

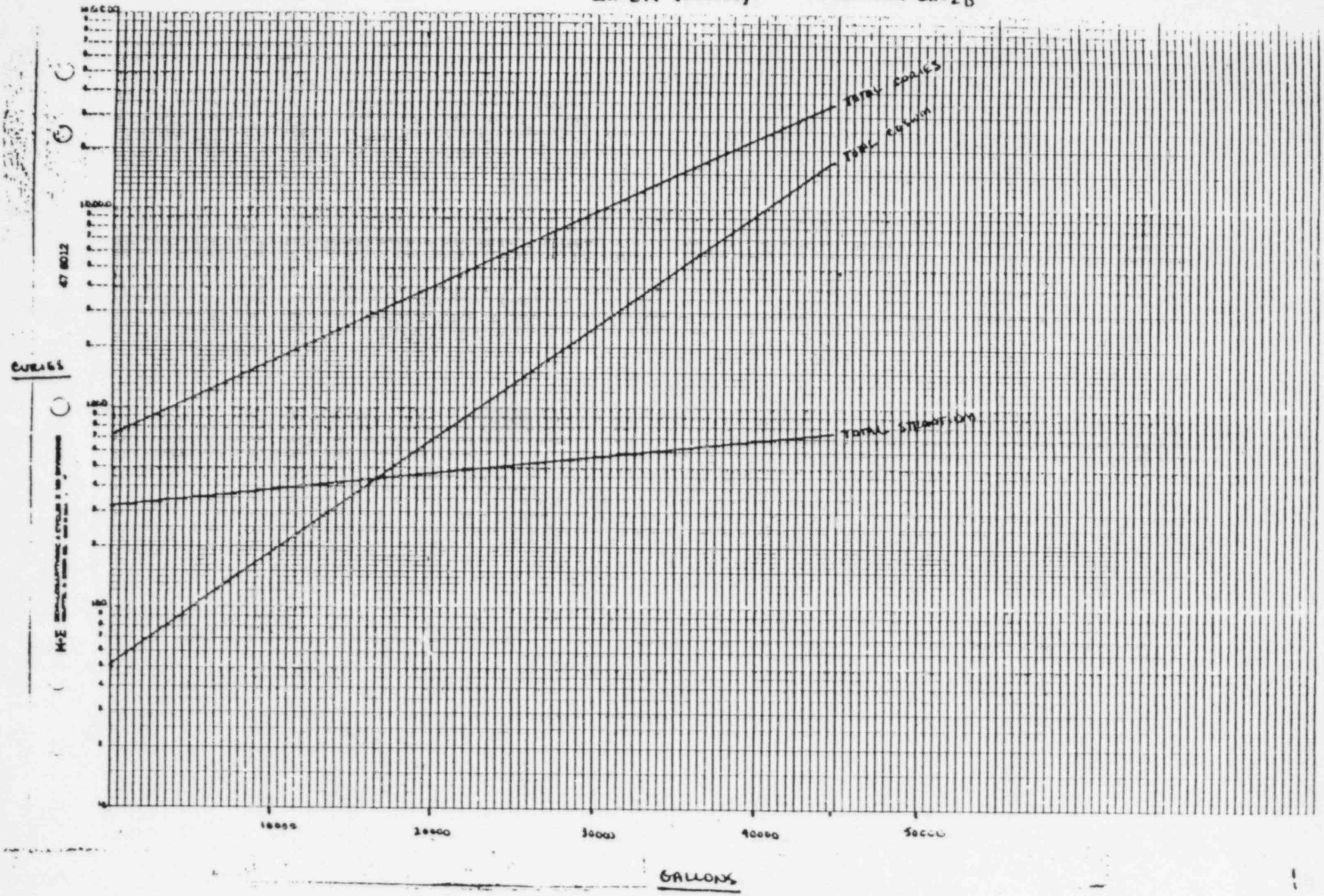
RB WATER	438181
TOTAL	665589
TOTAL CURIES DEPOSITED	344777.51

SDS PROCESSING SAMPLE SUMMARY

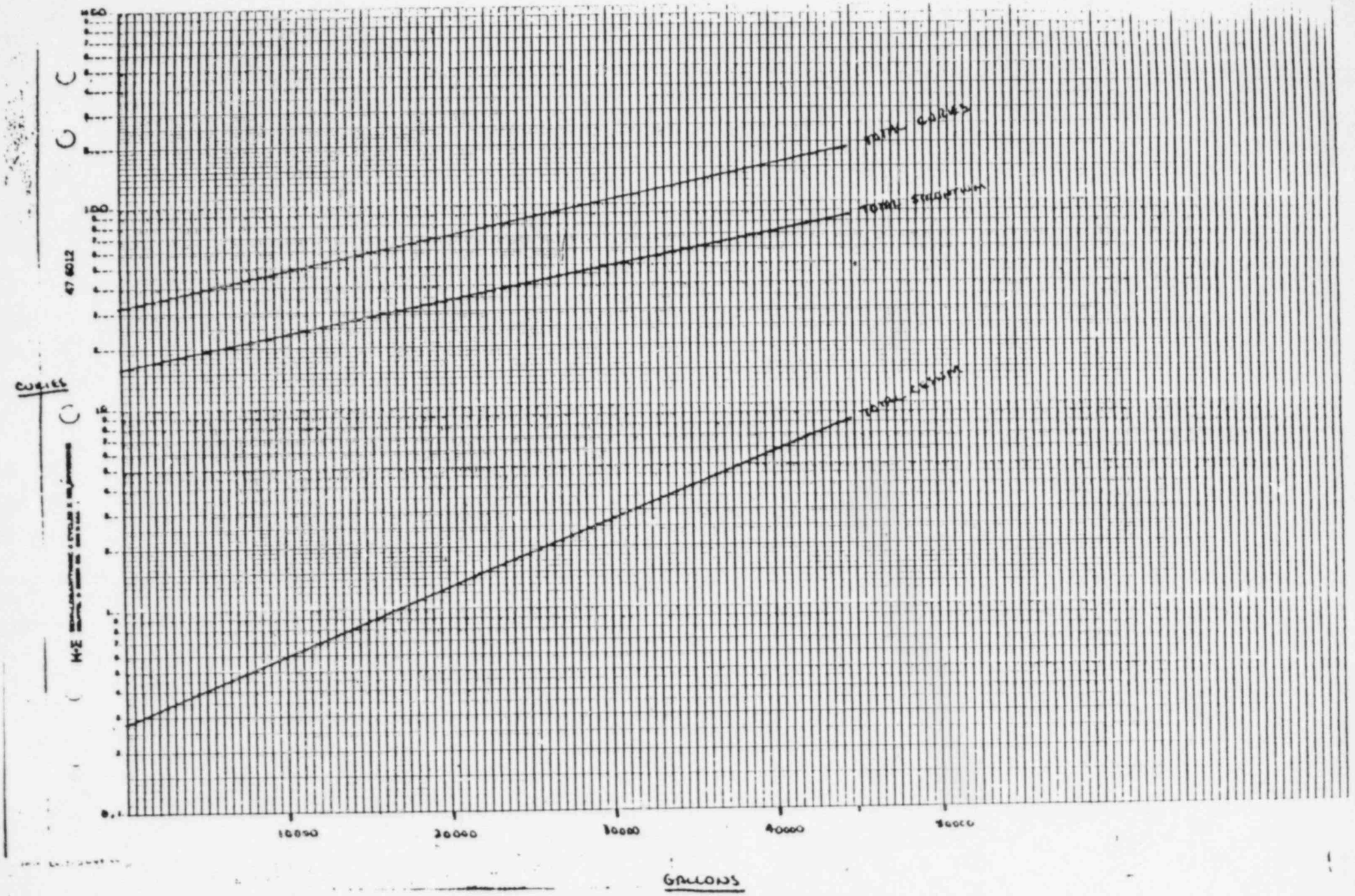
BATCH 5017

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.6	—	1.4					
Sr 90	1/10 1115	10000	1.1(-1)	—	6.9(-2)					
Gross βγ			—	—	—					
Cesium 137			3	—	3.2					
Sr 90	1/10 2350	25000	1.93(-1)	—	1.21(-1)					
Gross βγ			—	—	—					
Cesium 137			1.4	—	1.1					
Sr 90	1/11 1524	43670	1.05(-1)	—	8.29(-2)					
Gross βγ			—	—	—					
Cesium 137						82	2.2(-1)	2.8(-3)	1.1(-3)	7.5(-4)
Sr 90	1/23 1959	3412				2.6	3.2(-1)	3.4(-2)	7.3(-3)	7.6(-3)
Gross βγ						163	3.02	1.57	1.69	1.53
Cesium 137						98	1.5(-2)	1.5(-3)	1.1(-3)	8.9(-4)
Sr 90	1/25 0835	13556				2.7	2.5(-1)	2.3(-2)	8.5(-3)	7.7(-3)
Gross βγ						178	3.55	2.54	2.39	2.17
Cesium 137						99	6.5(-3)	1.9(-3)	1.2(-3)	1(-4)
Sr 90	1/27 0907	27437				3.4	4.7(-1)	3.8(-2)	1.2(-2)	1.1(-4)
Gross βγ						207	4.3	2.71	2.53	2.32
Cesium 137						93	9.5(-2)	1.8(-3)	1.2(-3)	1.3(-4)
Sr 90	1/29 0835	41685				3	7.5(-1)	6.2(-2)	1.3(-2)	7.6(-5)
Gross βγ						188	4.7	2.7	2.5	1.8

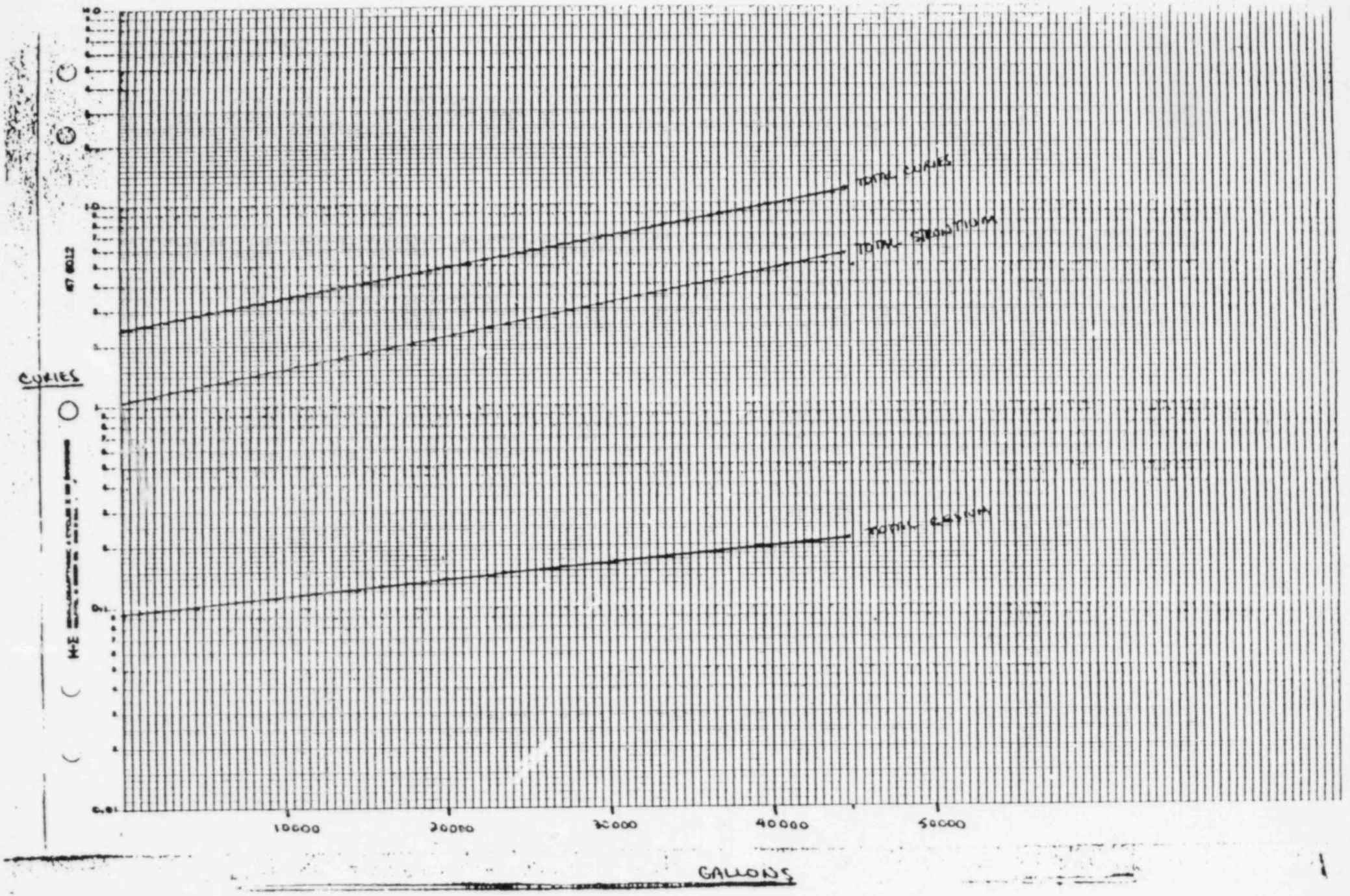
IX-2A (D20026) Previously IX-2B



IX-2B (D10016) PREVIOUSLY IX-2C



IX-2C (D10014) PREVIOUSLY CATION 'B'



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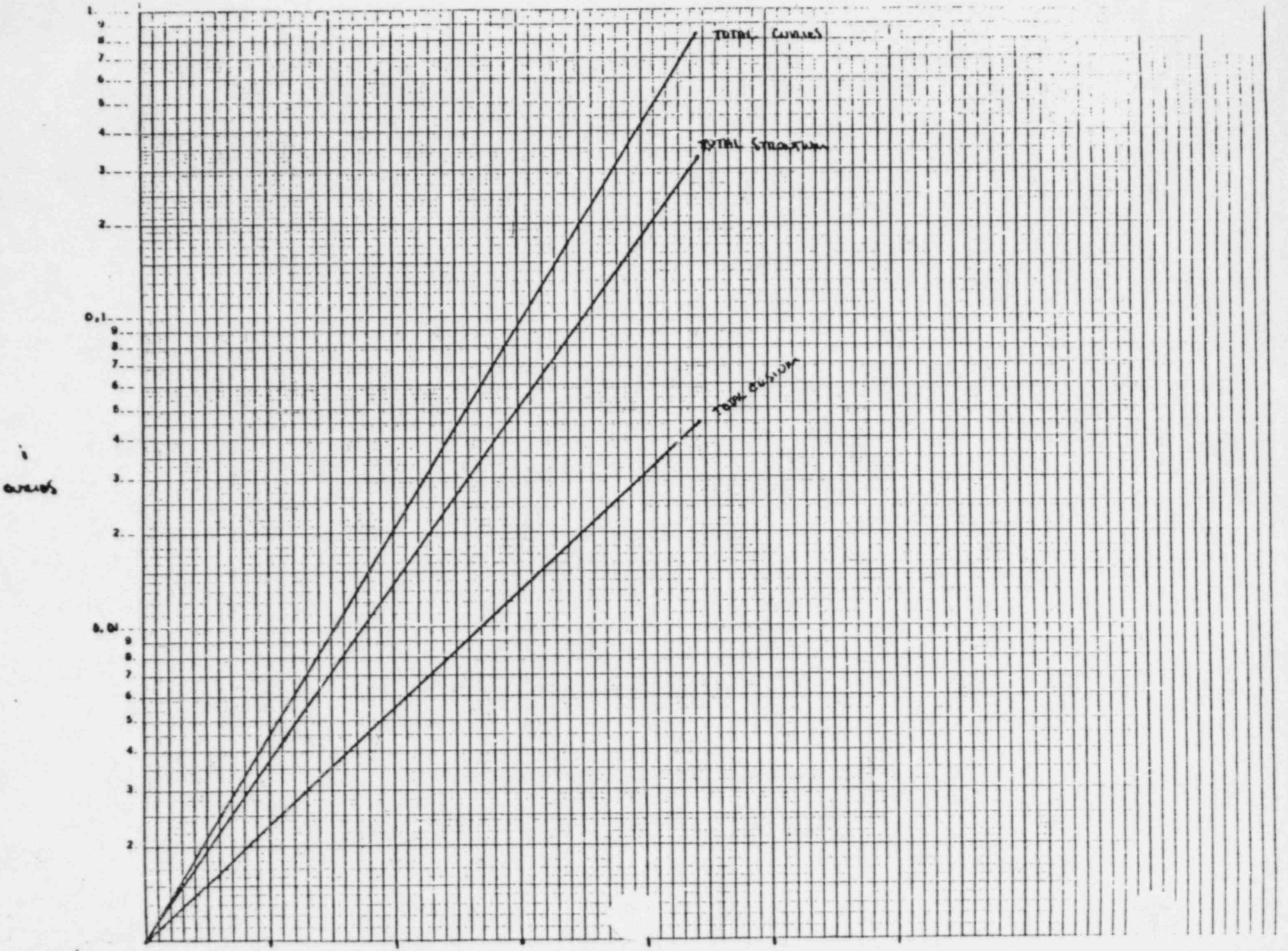


82-M-0086

Inter-Office Memorandum

GPU Nuclear

Date January 14, 1982

Subject SDS Batch Report

Location TMI U-2 Plant Engineering
4240-82-027

To L. P. King
Acting Director, Site Operations

Attached please find Batch Report for SDS Batch S-016. Batch No. S-016 represents the processing of the 10th Batch of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

JDP
TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
R. E. Hahn
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. D. Rekart

A0000848

BATCH # 5016
DATE 1/6 - 10/81
GALLONS 21867

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	2.488	7.383×10^{-3}
CESIUM 134	7.75	9.367×10^{-5}
CESIUM 137 1.25±0.071	76.5	9.433×10^{-4}
	72.5 ± 2.76 (D)	

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT B)
LINER #	D10013	D20028	D10016	D10014
THIS BATCH				
GALLONS	21867	21867	21867	21867
CESIUM	6526.459	46.633	2.96(-2)	2.028(-2)
STRONTIUM 90	57.448	129.953	7.793	3.963(-1)
TOTAL CURIES	12532.486	347.68	15.641	4.464(-1)
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	406008	197496	406008	109835
CESIUM	37043.572	52.183	2.801(-1)	9.429(-2)
STRONTIUM 90	995.712	320.536	15.986	1.048
TOTAL CURIES	72312.958	739.404	32.553	1.984

POST FILTER

BATCH START 25 mr/hr BATCH END 26 mr/hr. MAXIMUM 28 mr/hr.

WATER SUMMARY

STAGED:

RB WATER	399879
TOTAL	652130
TOTAL CURIES DEPOSITED	* 758.395

SEE BATCH S-008

PROCESSED:

RB WATER	393417
TOTAL	640825
TOTAL CURIES DEPOSITED	310607.073

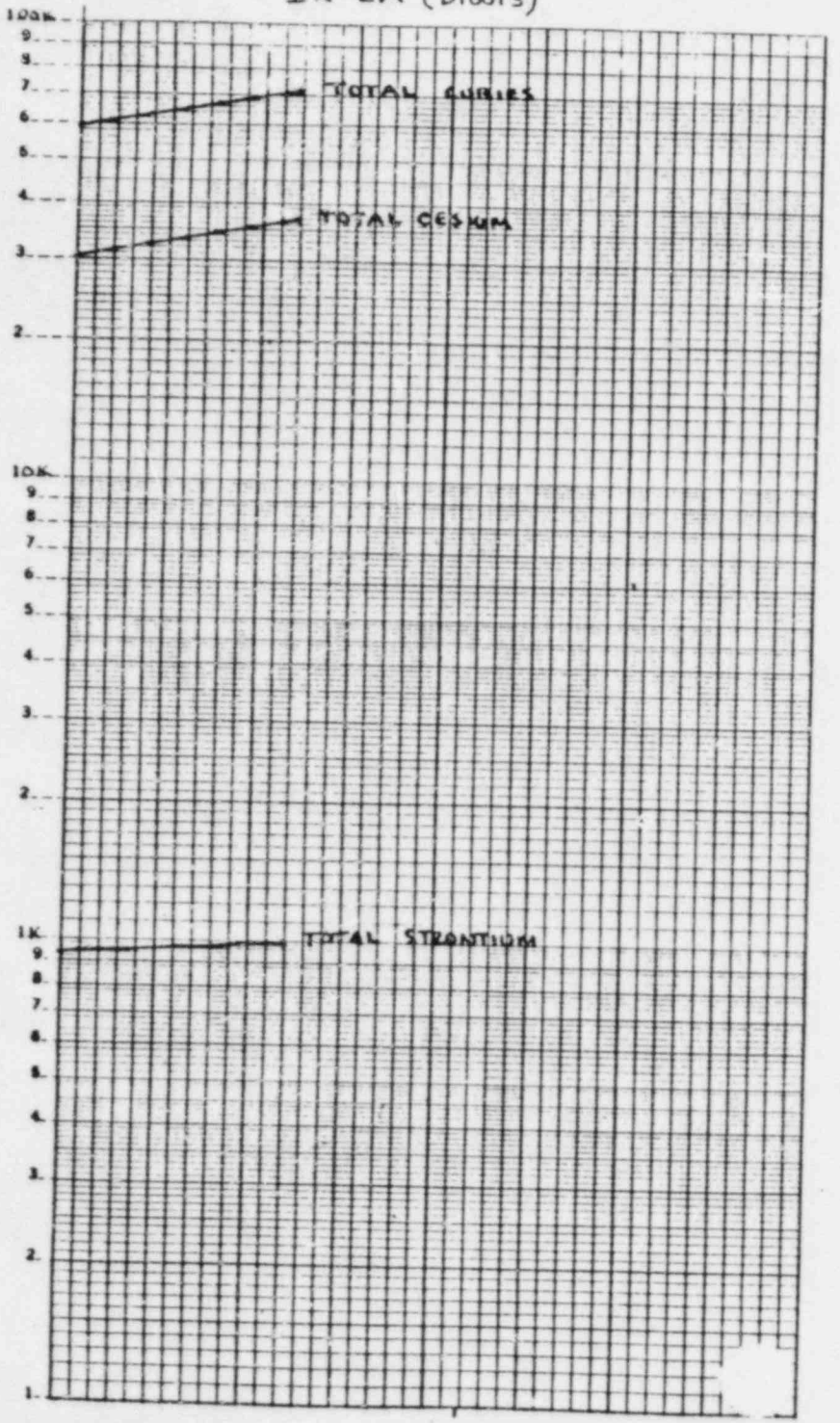
SDS PROCESSING SAMPLE SUMMARY

BATCH 5016

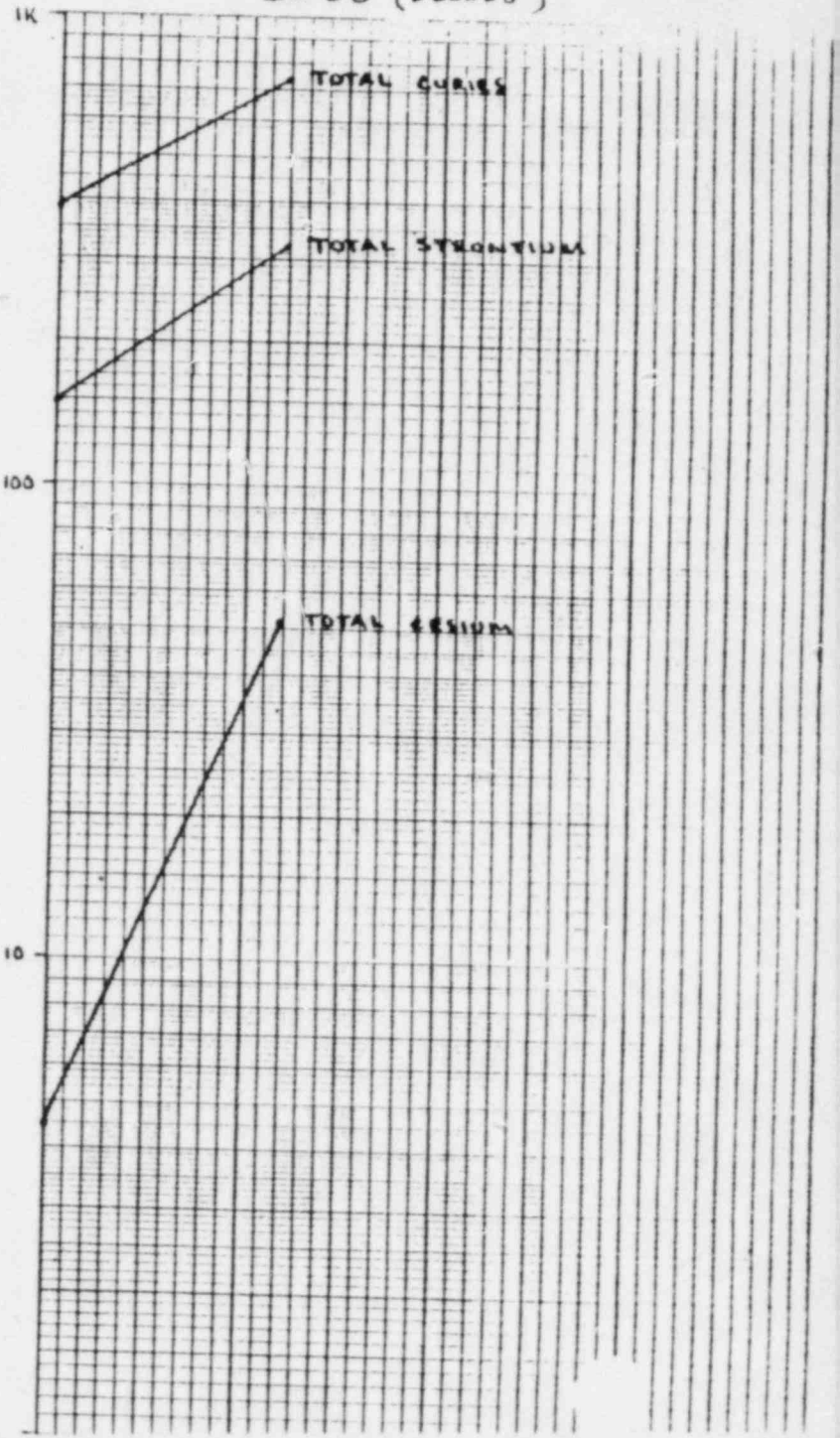
	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.3	—	1					
Sr 90	1/6 0130	10000	8.71(-2)	—	9.1(-2)					
Gross βγ			2.06(-1)	—	1.97(-1)					
Cesium 137			1.2	—	1.2					
Sr 90	1/6 0719	19252	1.17(-1)	—	8.3(-2)					
Gross βγ			—	—	—					
Cesium 137			—	—	—					
Sr 90			—	—	—					
Gross βγ			—	—	—					
Cesium 137						99	1.6(-1)	1.7(-3)	7.9(-4)	5.5(-4)
Sr 90	1/6 2018	2893				3.5	1.7	8.4(-2)	1.2(-2)	7.1(-3)
Gross βγ						172	5.32	1.72	1.57	1.44
Cesium 137						75	2.5(-1)	9.9(-4)	7.3(-4)	6.3(-4)
Sr 90	1/7 0825	6357				3	1.8	9(-2)	8.4(-3)	3.7(-3)
Gross βγ						190	5.9	2	1.7	1.6
Cesium 137						82	7.4(-1)	1.3(-3)	1(-3)	9.3(-4)
Sr 90	1/9 0824	16150				2	1.9	1.1(-1)	1.1(-2)	5.3(-3)
Gross βγ						180	6.51	1.97	1.82	1.59
Cesium 137						34	7.4(-1)	2.9(-3)	2.8(-3)	2.4(-3)
Sr 90	1/4 2010	19384				7.3(-1)	1.1	1.1(-1)	2.2(-2)	1.5(-2)
Gross βγ						62	5	1.86	1.71	1.65

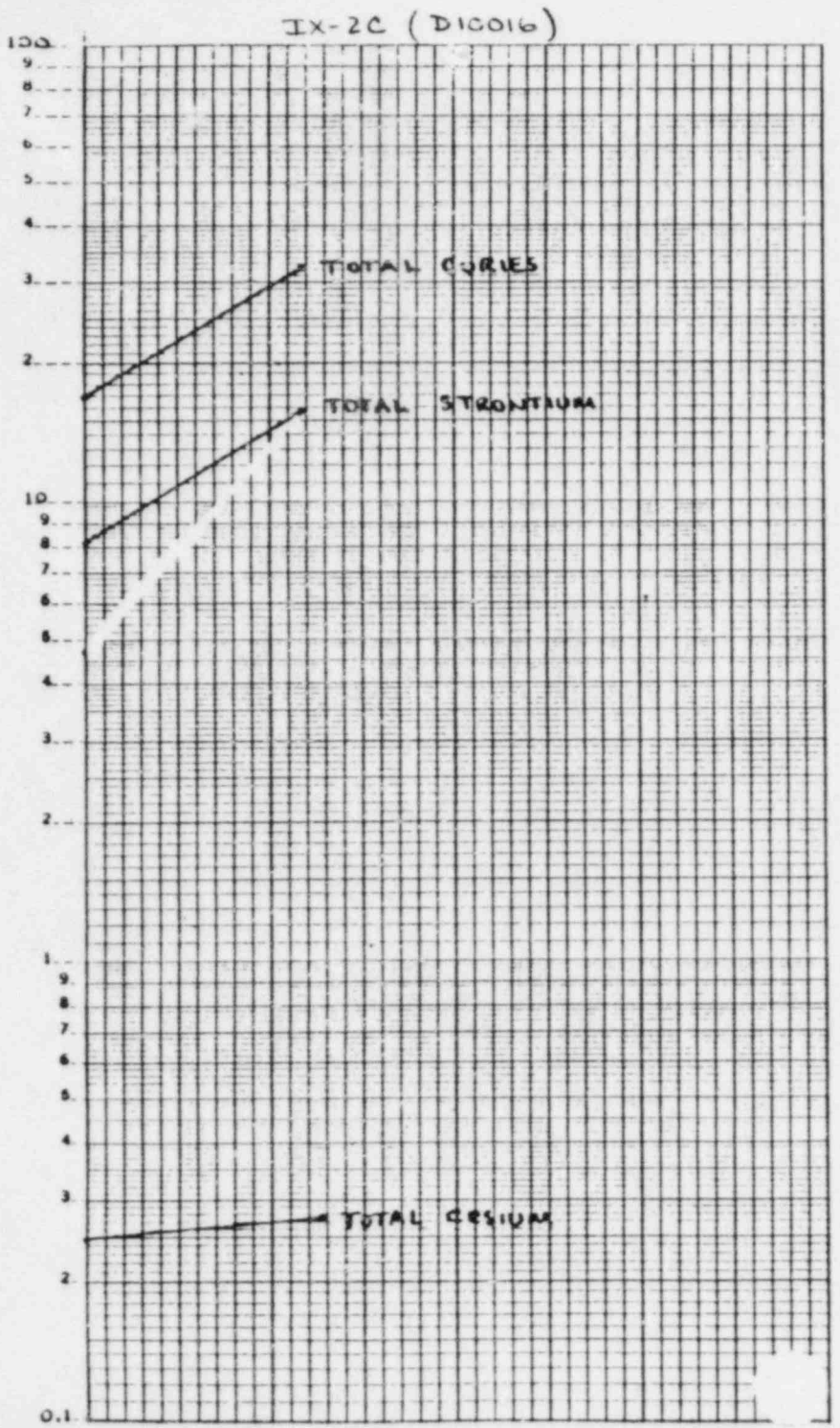
Alkaline (2)

IX-2A (D10013)



IX-2B (D20028)




IX-2C (D10016)
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TOTAL CURIES
TOTAL STRONTIUM
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TOTAL CESIUM
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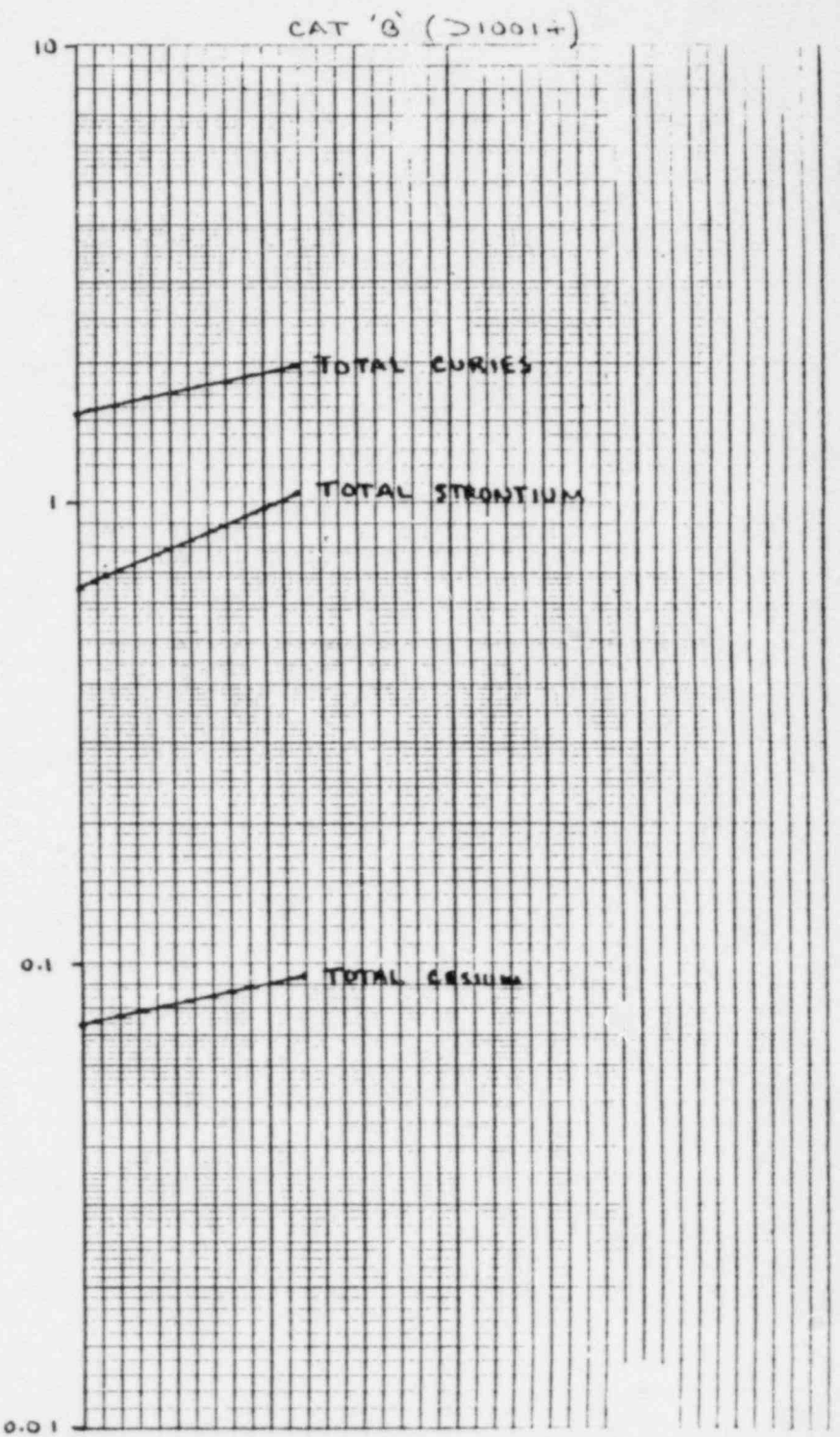
CAT 'B' (D10014)
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TOTAL STRONTIUM
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TOTAL CESIUM
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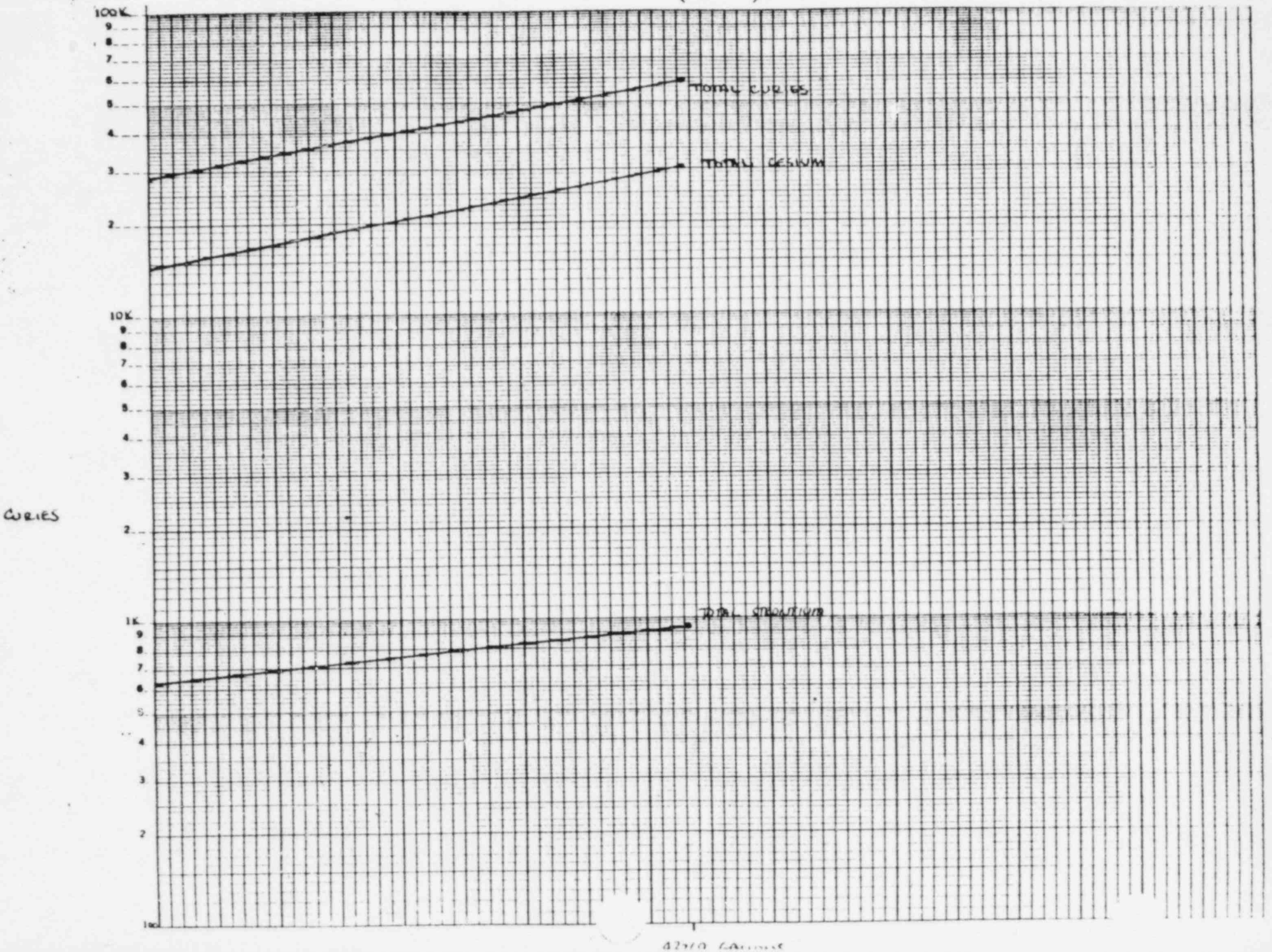
IX-2A (D10013)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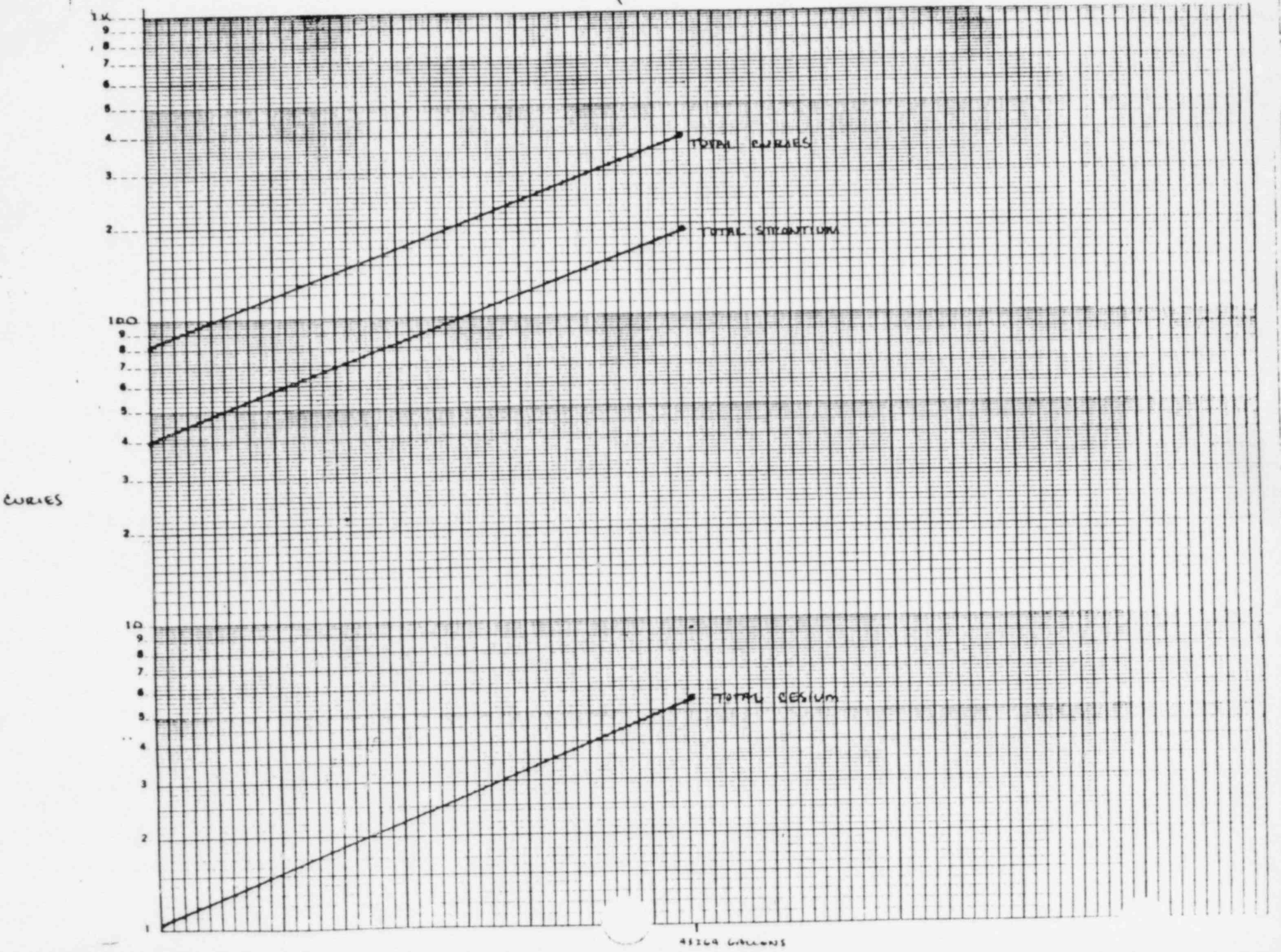
TOTAL CURIES
TOTAL CESIUM
TOTAL STRONTIUM
CURIES

IX-2B (D20028)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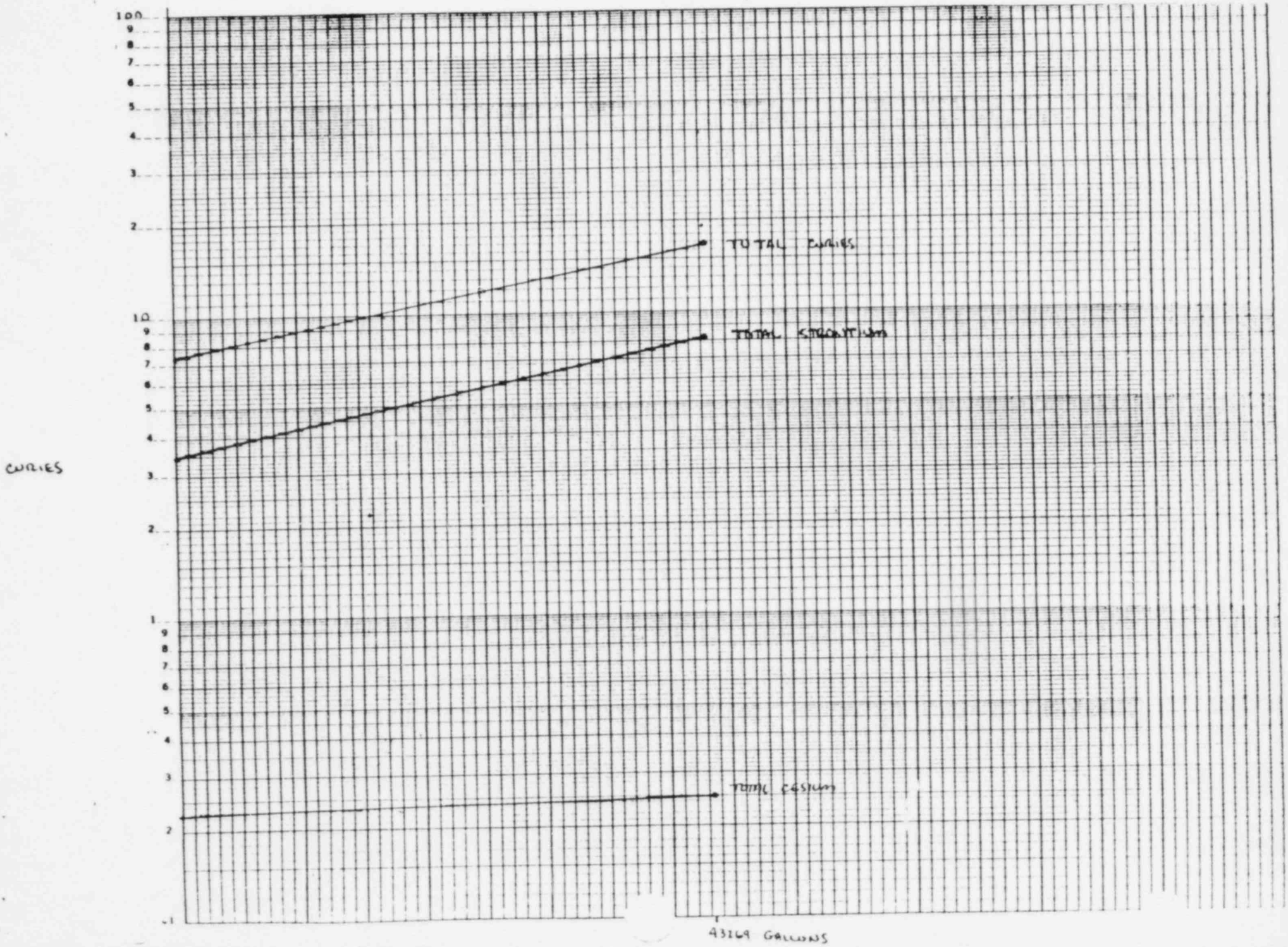
CURIES
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
41164 GALLONS

IX-2C (D10016)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CURIES
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
43169 GALLONS

Inter-Office Memorandum

GPU Nuclear

Date January 7, 1982

Subject SDS Batch Reports

Location TMI U-2 Plant Engineering
4240-82-003

To L. P. King
Acting Director, Site Operations

Attached please find Batch Reports for SDS Batches S-014 and S-015. Batches No's S-014 & S-015 represent the processing of the 8th and 9th Batches of Reactor Building sump water.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/tn

cc: J. J. Chwastyk
W. T. Conaway
J. C. DeVine
R. E. Hahn
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill (2)
R. J. McGoey
S. B. Presgrove (2)
J. E. Larson (2)
T. E. Rekart

BATCH # 5014
DATE 12/21-27/81
GALLONS 44699

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	2.657	8.329×10^{-3}
CESIUM 134	8.45	1.228×10^{-4}
CESIUM 137	81.786	1.291×10^{-3}

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT B)
LINER #	D10013	D20028	D10016	D10014
THIS BATCH	previously 2B	previously 2C	previously CAT B	
GALLONS	44699	44699	44699	44699
CESIUM	14444.572	7.35×10^{-1}	3.024×10^{-2}	3.642×10^{-2}
STRONTIUM 90	390.431	30.67	5.794×10^{-1}	1.866×10^{-1}
TOTAL CURIES	28206.372	62.76	1.227	4.673×10^{-1}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	340872	132360	340872	44699
CESIUM	14459.549	1.033	2.252×10^{-1}	3.642×10^{-2}
STRONTIUM 90	636.054	40.083	3.446	1.866×10^{-1}
TOTAL CURIES	28724.031	82.21	7.37	4.673×10^{-1}

POST FILTER

BATCH START 25 mr/hr BATCH END 35 mr/hr MAXIMUM 35 mr/hr

WATER SUMMARY

STAGED:

RB WATER	337780
TOTAL	505684
TOTAL CURIES DEPOSITED	* 656.315

* SEE NOTE - BATCH 5008

PROCESSED:

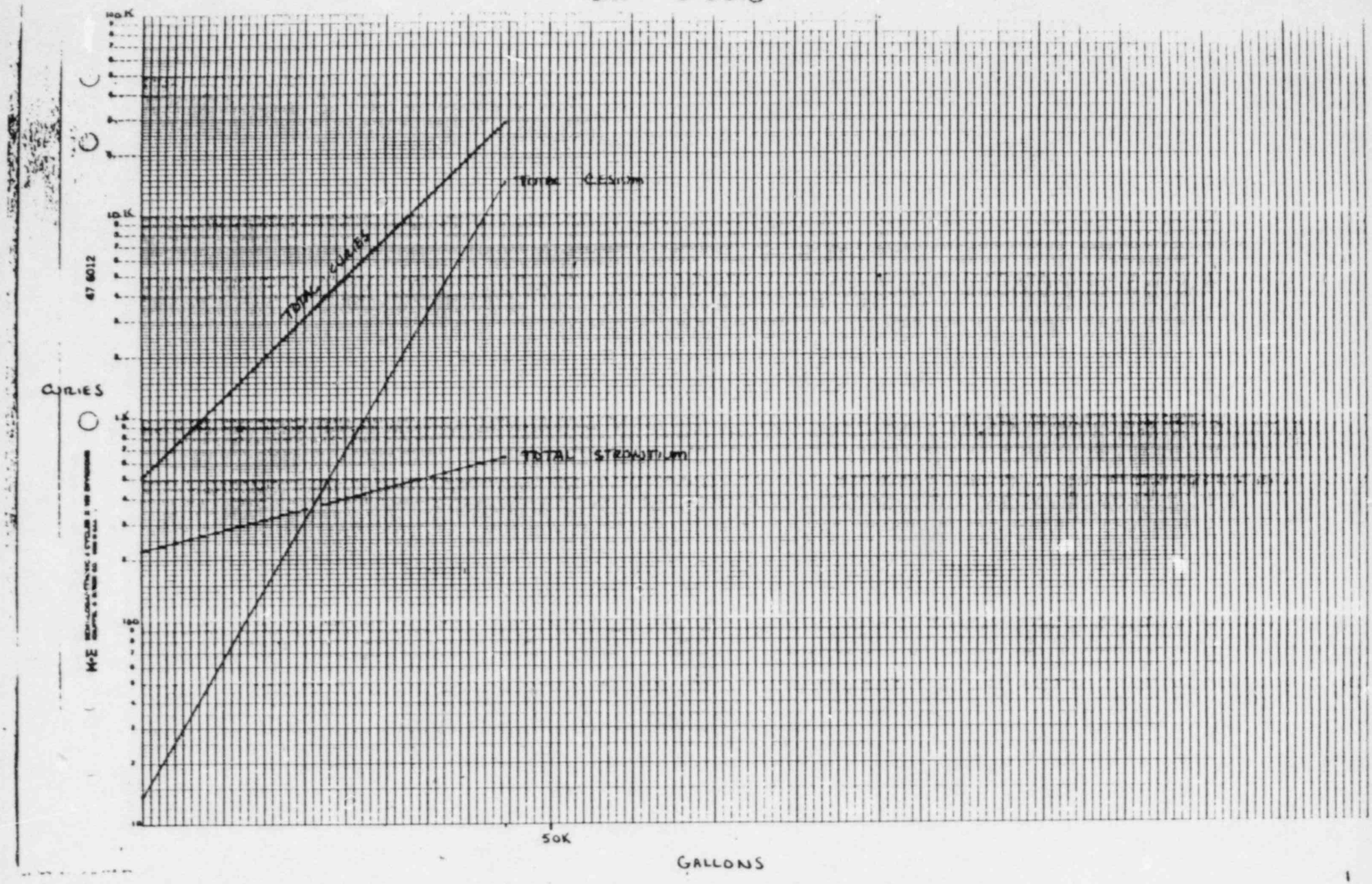
RB WATER	328281
TOTAL	575521
TOTAL CURIES DEPOSITED	266334.252

SDS PROCESSING SAMPLE SUMMARY

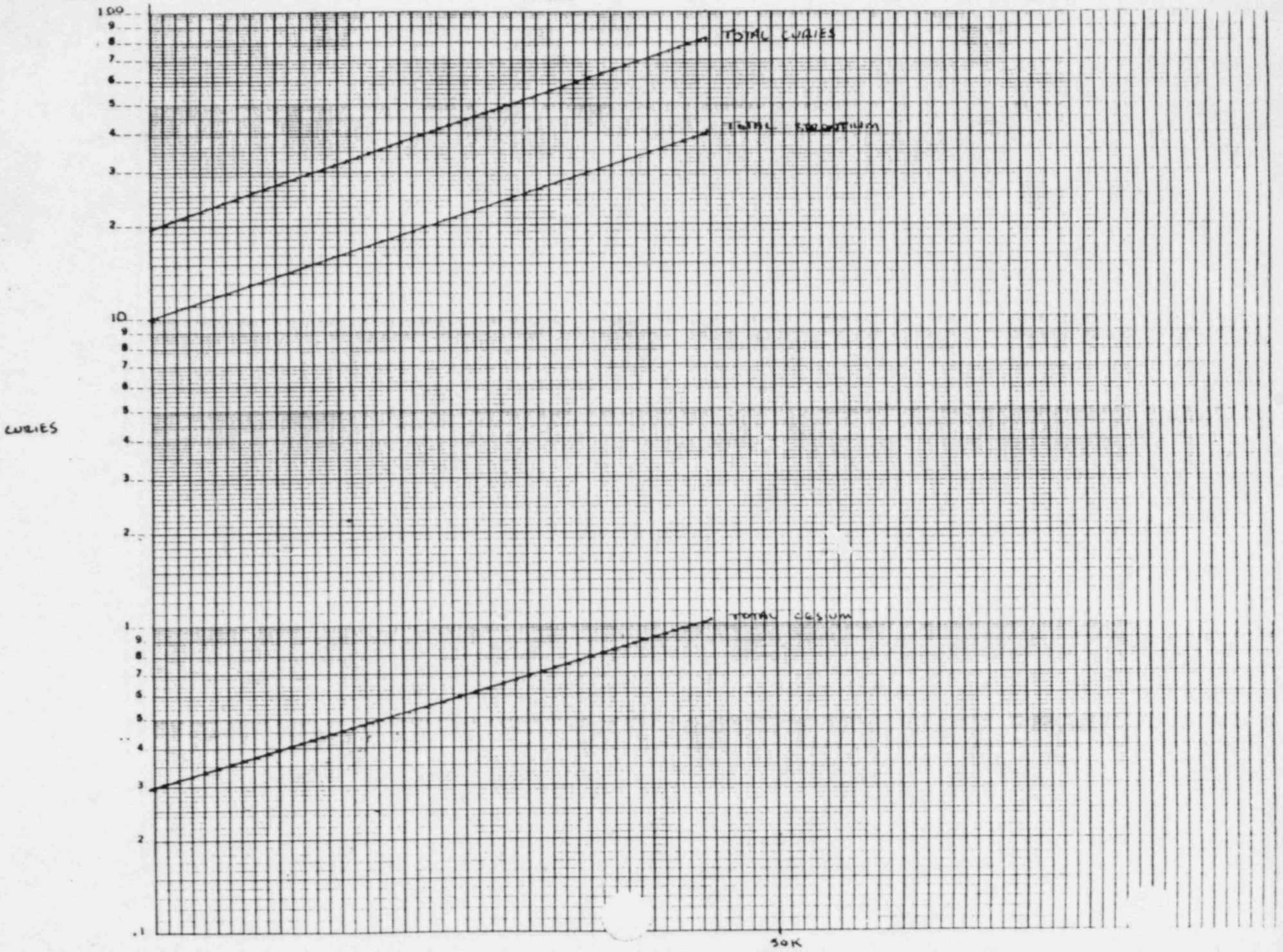
BATCH 5014

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1	___	1.1					
Sr 90	12/19 2000	1000	4.5(-2)	___	6.9(-2)					
Gross βγ			-	___	-					
Cesium 137			1.5	___	1.2	}	uc/ml filterable			
Sr 90	12/20 1050	25000	1(-1)	___	3.7(-2)					
Gross βγ			-	___	-					
Cesium 137			9.1(-1)	___	9.6(-1)					
Sr 90	12/20 2230	44361	1.99(-1)	___	1.64(-1)					
Gross βγ			-	___	-					
Cesium 137						81	5.7(-2)	1.1(-3)	79(-4)	63(-4)
Sr 90	12/21 0835	1004				2.4	3.5(-1)	2(-2)	5.8(-3)	4.8(-3)
Gross βγ						120	2.8	1.57	1.49	1.3
Cesium 137						97	2.8(-3)	9.7(-4)	9.1(-4)	69(-4)
Sr 90	12/23 0815	14083				3	1.4(-1)	9.3(-3)	6.6(-3)	5.9(-3)
Gross βγ						182	3.14	2.4	2.22	2.04
Cesium 137						82	3.1(-3)	1.3(-3)	1.1(-3)	9.3(-4)
Sr 90	12/25 0820	27183				2.1	2.1(-1)	9.6(-3)	6.5(-3)	5.5(-3)
Gross βγ						160	3.5	2.2	2.5	2.2
Cesium 137						38	8.1(-3)	5.3(-3)	4.9(-3)	4.3(-3)
Sr 90	12/27 0829	40842				1.2	2.1(-1)	2.8(-2)	2.4(-2)	2.2(-2)
Gross βγ						69.2	2.86	2.17	2.01	1.93

2A - D10013



2B- D20028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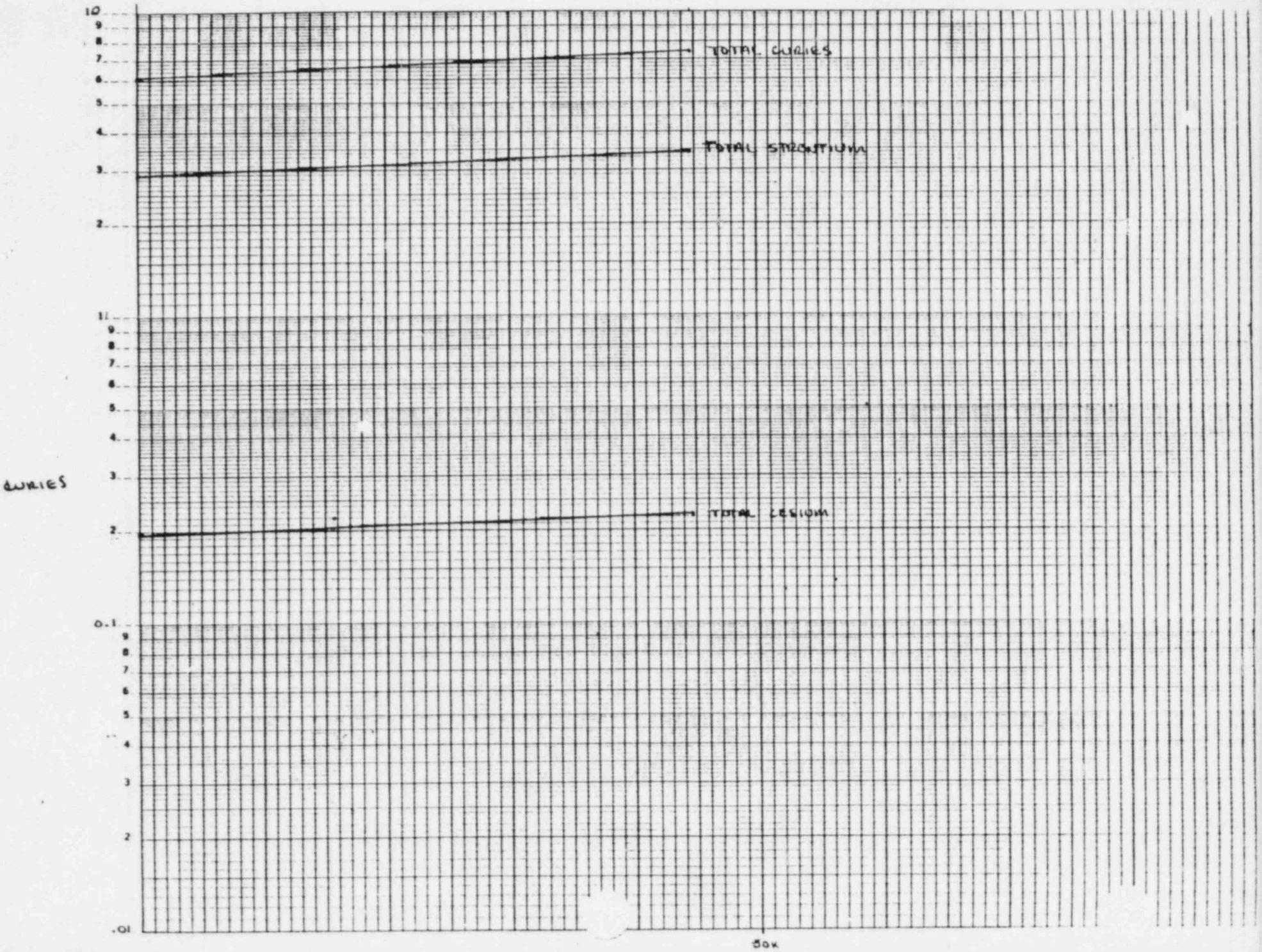
CURIES
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
50K

2C - D10016


TOTAL CURIES
TOTAL STRONTIUM
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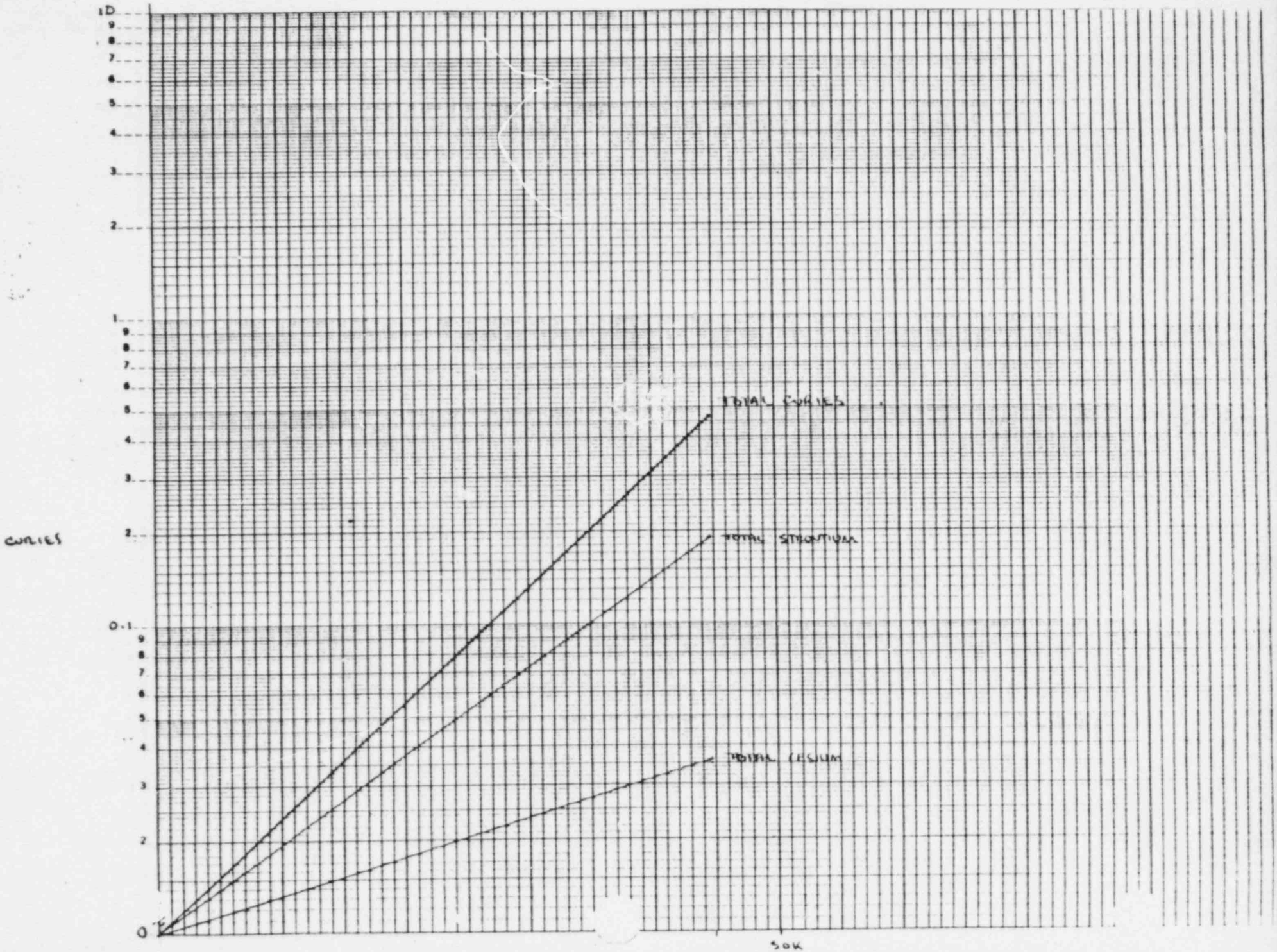
CAT 6 - D1004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CURIES
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
50K

BATCH # 3015
DATE 12/29/81 - 1/4/82
GALLONS 43269

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	2.962	7.646×10^{-3}
CESIUM 134	9.308	8.569×10^{-5}
CESIUM 137	92.077	8.315×10^{-4}

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT B)
LINER #	D10013	D20028	D10016	D10014
THIS BATCH				
GALLONS	43269	43269	43269	43269
CESIUM	10058.564	4.517	2.534(-2)	3.759(-2)
STRONTIUM 90	302.21	150.5	4.747	4.649(-1)
TOTAL CURIES	31056.441	309.514	9.542	1.071
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	384141	175629	384141	87968
CESIUM	30517.113	5.55	2.505(-1)	7.401(-2)
STRONTIUM 90	938.264	190.563	8.93	6.515(-1)
TOTAL CURIES	59780.472	391.724	16.912	1.538

POST FILTER

BATCH START 27mr/hr BATCH END 28mr/hr. MAXIMUM 30mr/hr.

WATER SUMMARY

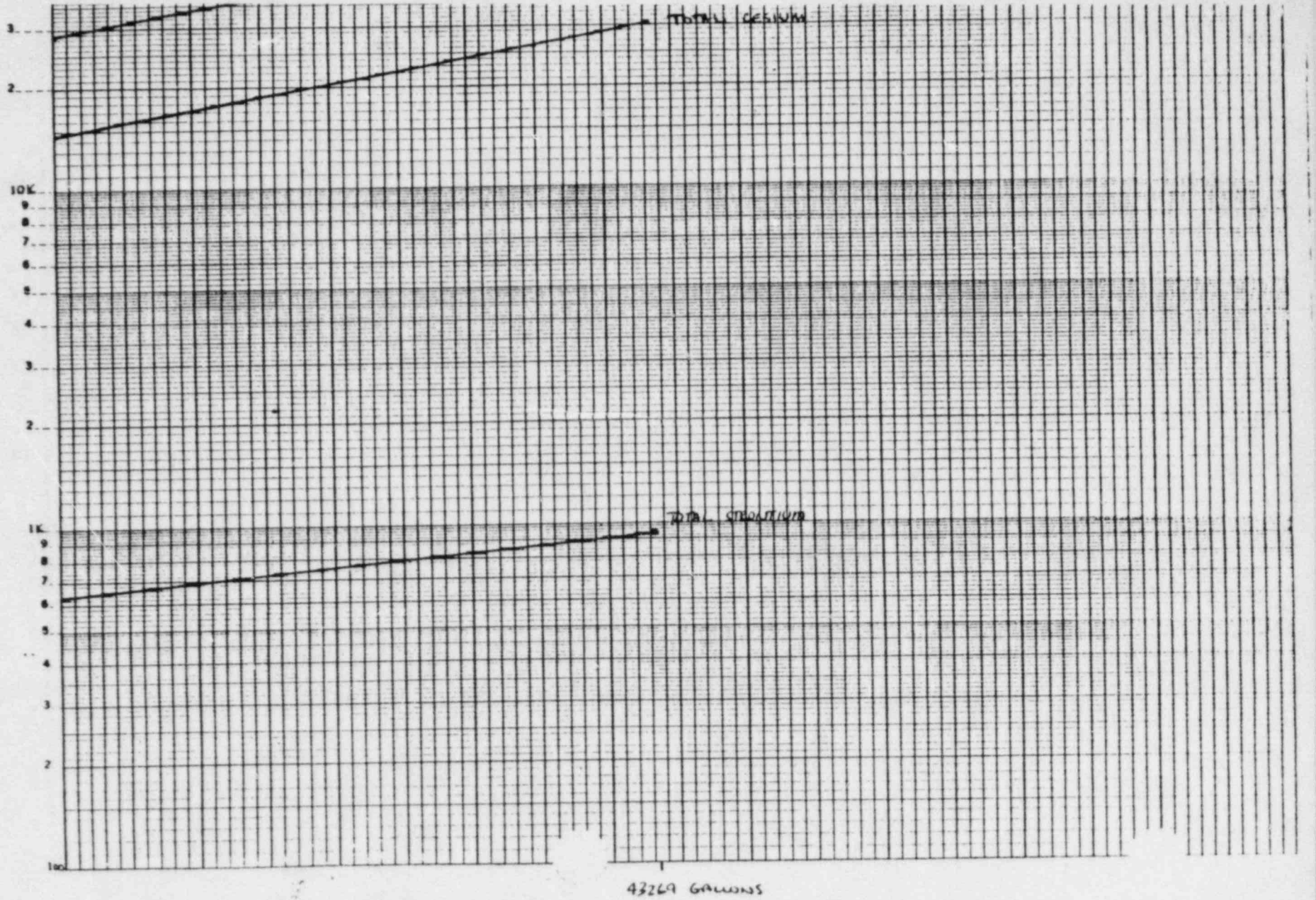
STAGED:

RB WATER	380647
TOTAL	548751
TOTAL CURIES DEPOSITED	* 732.855

* SEE NOTE BATCH 5008

PROCESSED:

RB WATER	371550
TOTAL	618990
TOTAL CURIES DEPOSITED	297710.82


CURIES
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10K
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1K
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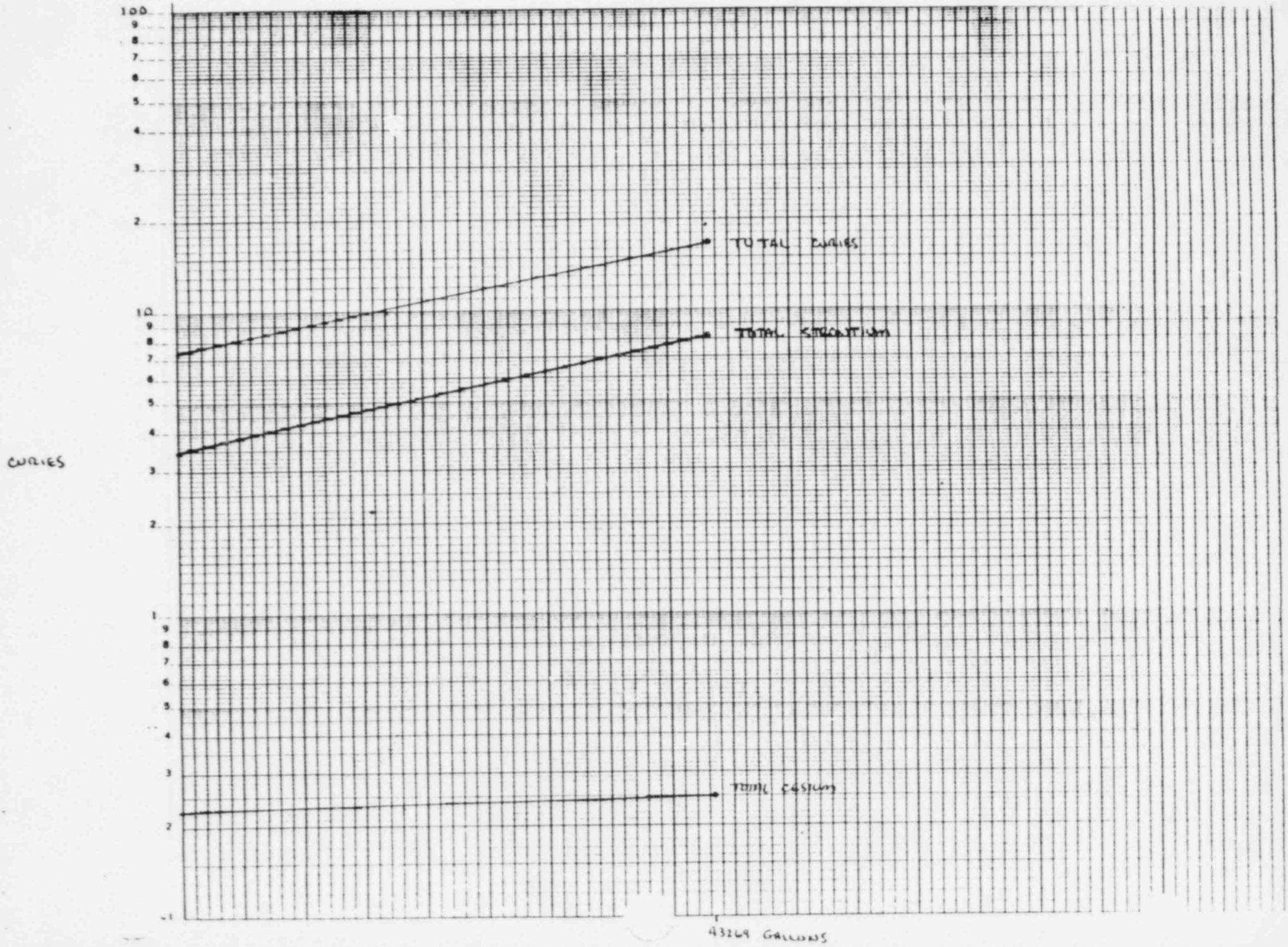
100
TOTAL CESIUM
TOTAL STRONTIUM
43269 GALLONS

IX-2C (D10016)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CURIES
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
43269 GALLONS

81-M-0752

Inter-Office Memorandum

Date December 11, 1981

GPU Nuclear

Subject SDS Batch Reports

To L. P. King

Location TMI U-2 Plant Engineering
4240-81-0457

Attached please find Batch Report for SDS Batch S-012. Batch #S-012 represents the processing of RCBT 'B' which consisted of normal RCS letdown, RCBT decon & flush, initial SDS effluent, etc. It should be noted that near 30% Strontium breakthrough was reached on the 1A liner, and Cesium 137 breakthrough on the same liner was less than 0.1%. Strontium breakthrough on the 1B liner was 10%.

However, SDS is still performing exceptionally well. If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

102

TDL/nlm

cc: J. J. Chwastyk
W. T. Conaway
R. E. Hahn
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill
R. J. McGoey
S. B. Presgrove
J. E. Larson (2)
T. E. Rekart
J. C. DeVine

A0000841

BATCH #	5012
DATE	12/2 - 9/81
GALLONS	43247

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	9.19×10^{-1}	2.25×10^{-2}
CESIUM 134	1.98	3.19×10^{-4}
CESIUM 137 0.0253 ± 0.0021 Alleid	18.72 19.75 ± 0.957	3.3×10^{-3}

ION EXCHANGE DEPOSITION

	1A	1B	C	D
LINER #	D10015	D10018		
THIS BATCH				
GALLONS	43247	43247		
CESIUM	3388.66	3.167		
STRONTIUM 90	99.27	47.79		
TOTAL CURIES	6576.293	101.541		
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	190518	190518		
CESIUM	4258.989	3.838		
STRONTIUM 90	494.215	54.494		
TOTAL CURIES	6997.417	115.917		

POST FILTER

BATCH START 2.5 mr/hr BATCH END 22 mr/hr MAXIMUM 25 mr/hr.

Is this due to zeolite fines

WATER SUMMARY

STAGED:

RB WATER	293411
TOTAL	505160
TOTAL CURIES DEPOSITED	* 651,126

PROCESSED:

RB WATER	283582
TOTAL	402900
TOTAL CURIES DEPOSITED	244701.26

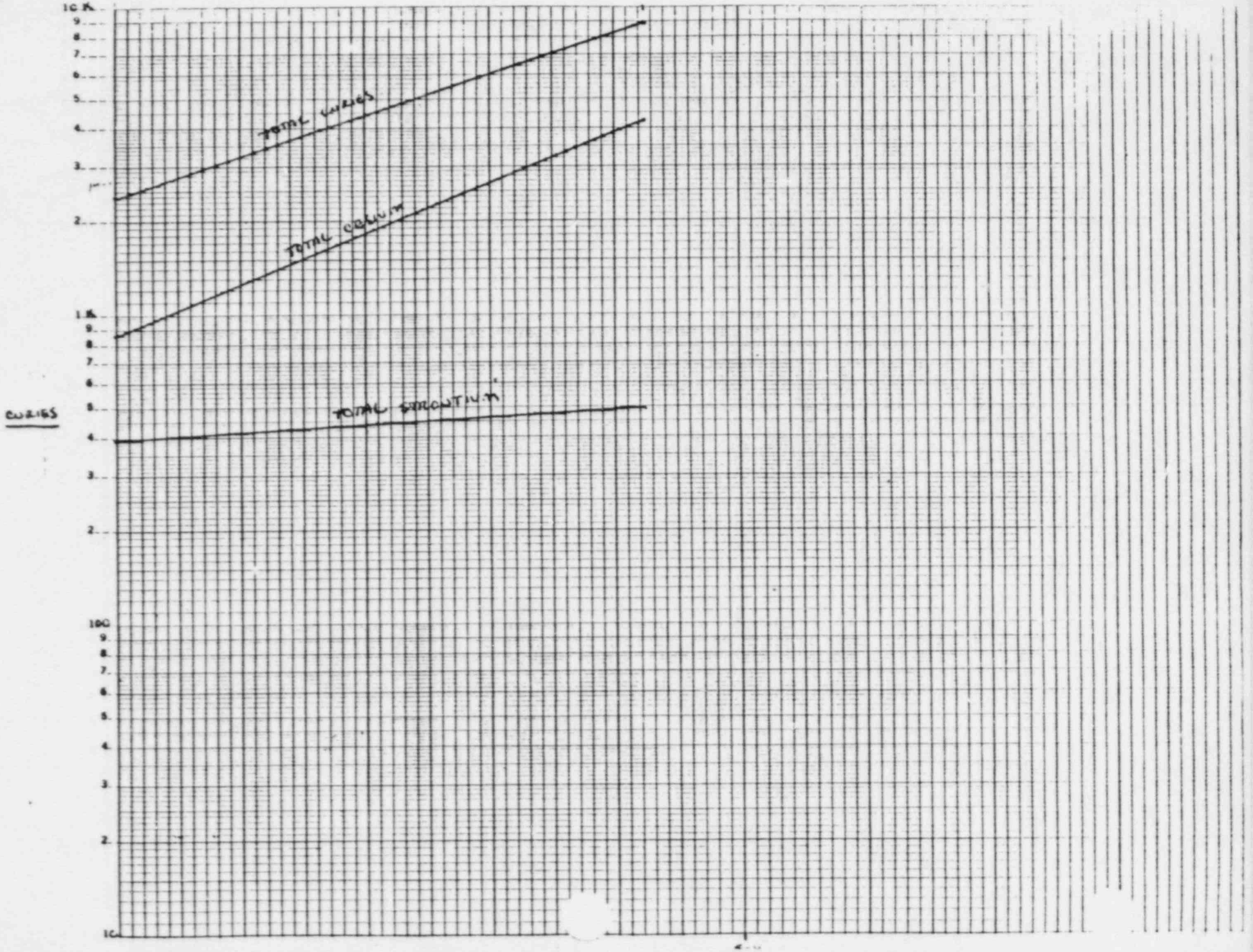
* SEE NOTE - BATCH 5008

SDS PROCESSING SAMPLE SUMMARY

BATCH 5012

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			2.3(-2)	___	2.2(-2)					
Sr 90	11/28 1720	1000	1.49(-2)	___	1.25(-2)					
Gross βY			N/A	___	N/A					
Cesium 137			2.6(-2)	___	1.9(-2)	} uci/ml. filterable				
Sr 90	11/30 0630	25000	1.2(-1)	___	4.68(-2)					
Gross βY			6.7(-2)	___	8.7(-2)					
Cesium 137			2.7(-2)	___	3.2(-2)					
Sr 90	12/1 0310	43645	5.69(-2)	___	5.64(-2)					
Gross βY			1.08(-1)	___	1.03(-1)					
Cesium 137						19	8.5(-2)	2.7(-3)	___	___
Sr 90	12/3 0853	3413				9.5(-1)	3.8(-1)	7.5(-3)	___	___
Gross βY						47	1.8	5.89(-1)	___	___
Cesium 137						21	1.3(-2)	2.8(-3)	___	___
Sr 90	12/5 0030	14324				9.6(-1)	3(-1)	1.7(-2)	___	___
Gross βY						47.6	1.88	9.25(-1)	___	___
Cesium 137						20	9.5(-3)	3.6(-3)	___	___
Sr 90	12/7 0035	27602				9.7(-1)	2.6(-1)	2.4(-2)	___	___
Gross βY						46.3	1.84	1.09	___	___
Cesium 137						19	1.2(-2)	3.7(-3)	___	___
Sr 90	12/9 0008	40360				1	3(-1)	3(-2)	___	___
Gross βY						47	1.9	1.1	___	___

D:0015 (1A)



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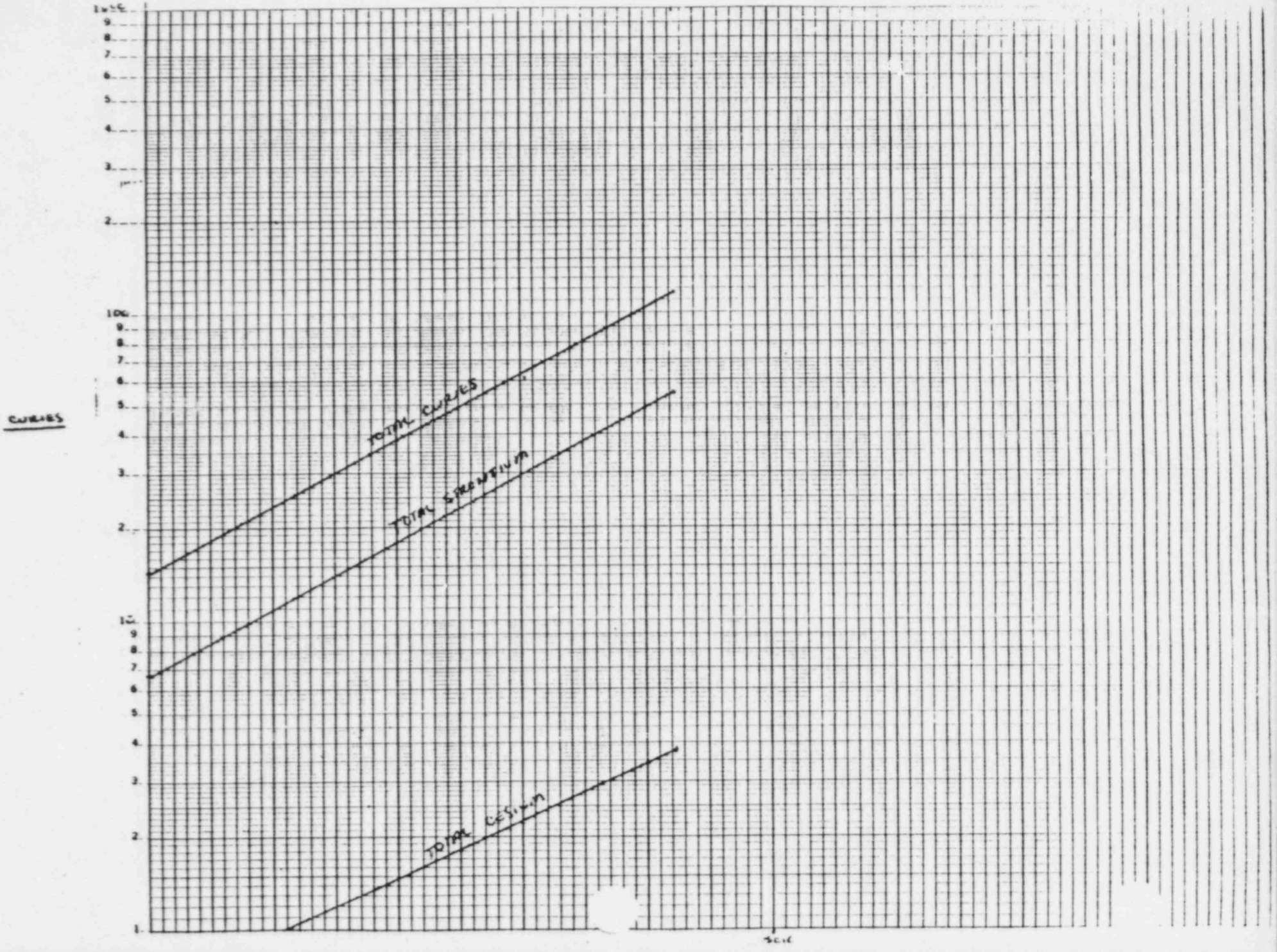
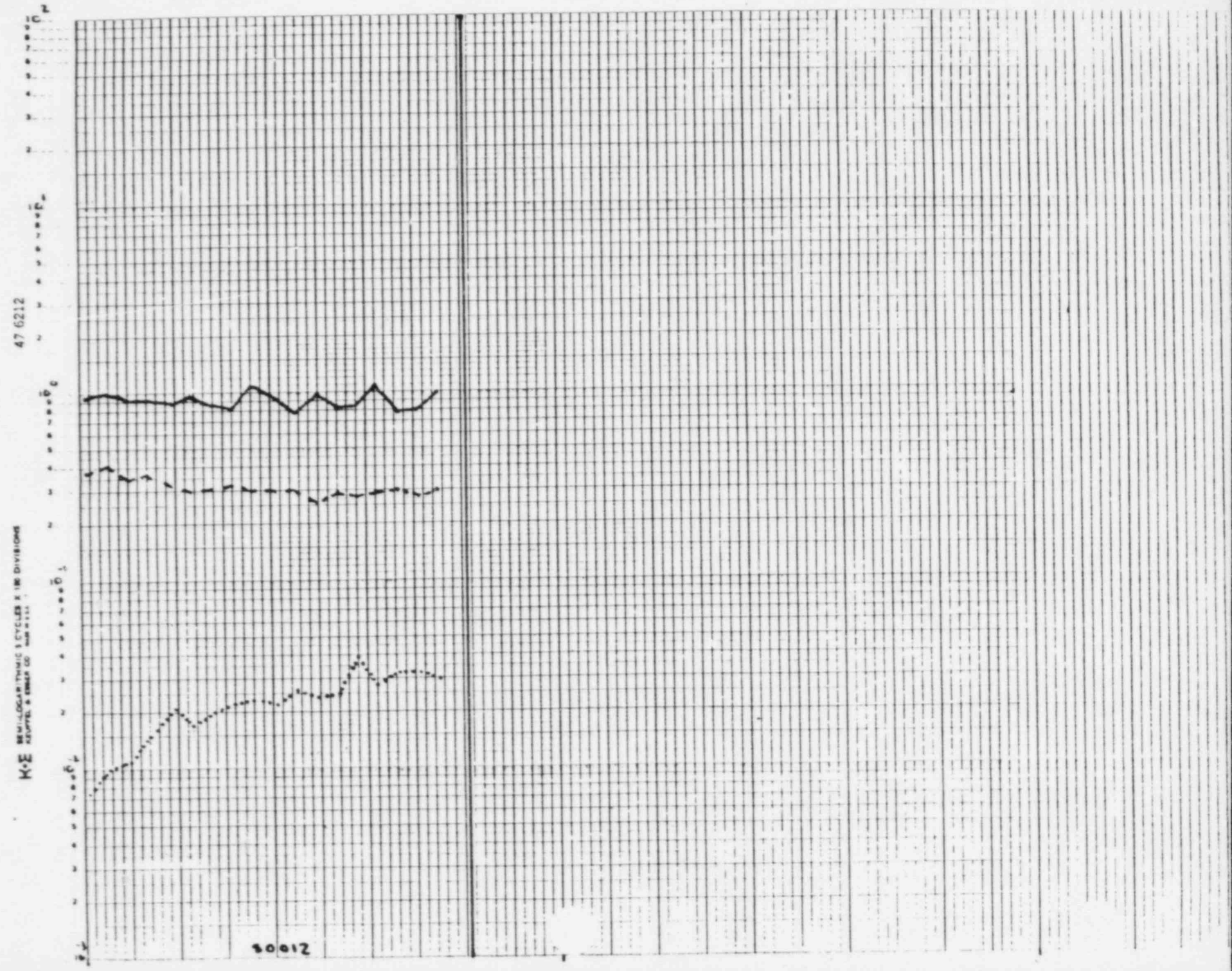
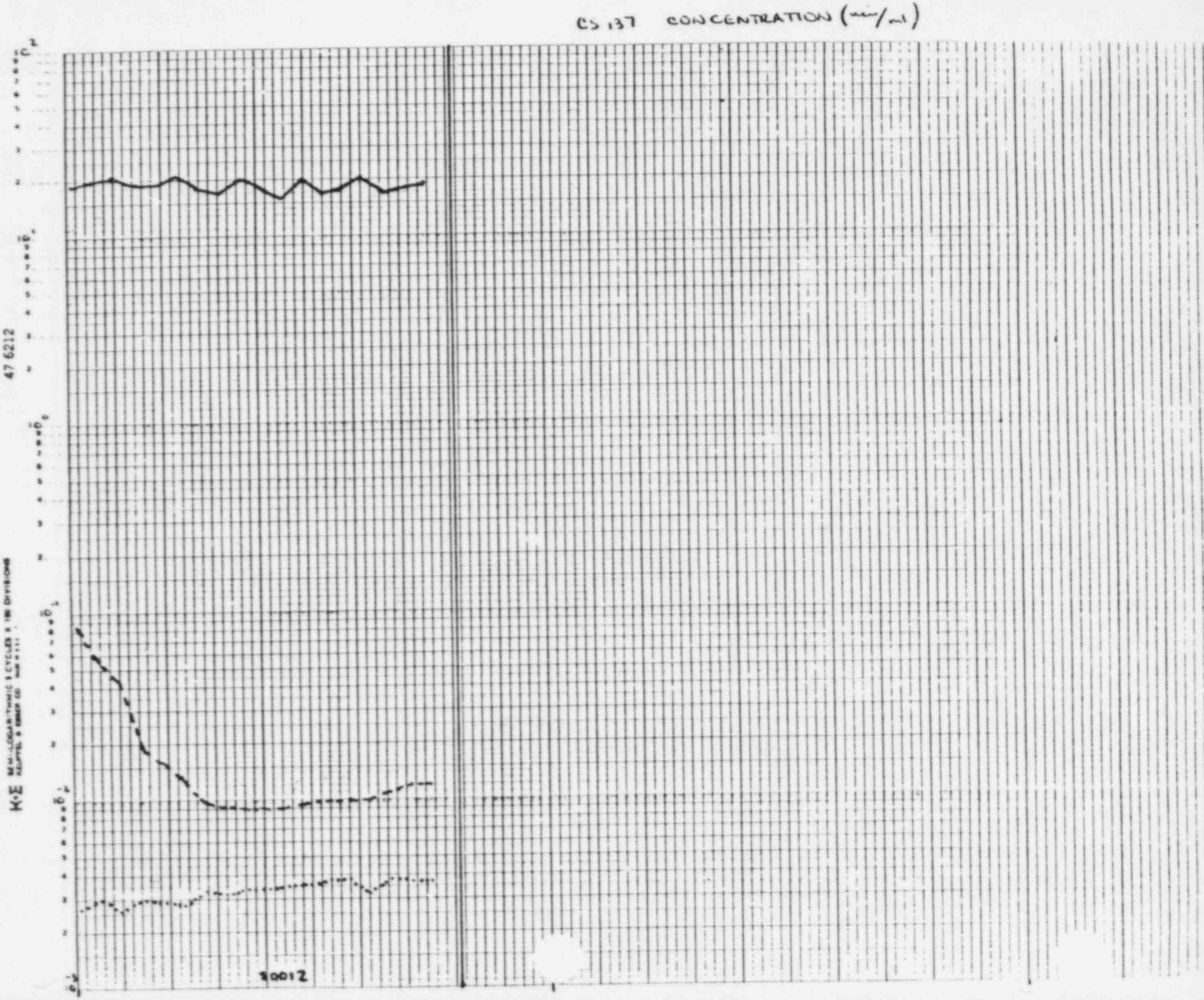



SR 90 CONCENTRATION (uuc/ml.)
47 6212
K·E
10012


CS 137 CONCENTRATION (µci/ml)
47 6212
K+E SEMI-LOGARITHMIC 5 CYCLES X 180 DIVISIONS
KEUFFEL & ESSER CO.
Z0012

81-M-C713

Inter-Office Memorandum

GPU Nuclear

Date December 4, 1981

Subject SDS BATCH REPORTS

To L. P. King

Location TMI U-2 Plant Engineering
4240-81-0428

Attached please find Batch Report for SDS Batch S-011. Batch #S-011 represents the seventh RB Sump Water processed through SDS. It should be noted that near 30% Strontium breakthrough was reached on the 2A liner, and Cesium 137 breakthrough on the same liner was less than 0.1%. Strontium breakthrough on the 2B liner was 2%.

However, SDS is still performing exceptionally well. Effluent Cesium levels are still nearly a factor of ten (10) lower than expected, however, strontium 90 effluent concentrations have been a little higher than originally anticipated.

If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

DDF

TDL/nlm

cc: J. J. Chwastyk
W. T. Conaway
R. E. Hahn
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill
R. J. McGoey
S. B. Presgrove
J. E. Larson (2)
T. E. Rekart
J. C. DeVine

A0000641

BATCH #	S0011
DATE	11/22-28/81
GALLONS	43448

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (uI/ML)

SYSTEM

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	4.694	9.172×10^{-3}
CESIUM 134	10.811	7.183×10^{-5}
CESIUM 137	100.389 (103.45)	7.178×10^{-4}
0.533 ± 0.751 Silver	102.5 ± 5.0	

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT'D)
LINER #	D10011	D10013	D20028	D10016
THIS BATCH				
GALLONS	43448	43448	43448	43448
CESIUM	18242.212	11.39	1.545×10^{-1}	6.135×10^{-3}
STRONTIUM 90	567.66	175.163	7.472	8.634×10^{-1}
TOTAL CURIES	35610.669	371.753	15.263	1.751
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	229782	296173	87661	296173
CESIUM	40926.508	13.977	2.979×10^{-1}	1.95×10^{-1}
STRONTIUM 90	1747.581	245.623	9.413	2.667
TOTAL CURIES	81117.42	517.659	19.45	6.143

POST FILTER

BATCH START 3mr/hr   BATCH END 4mr/hr   MAXIMUM 4mr/hr

WATER SUMMARY

STAGED:

RB WATER	293411
TOTAL	461515
TOTAL CURIES DEPOSITED	* 637.856

SEE NOTE - BATCH S008

PROCESSED:

RB WATER	283582
TOTAL	424652
TOTAL CURIES DEPOSITED	238063.424

SDS PROCESSING SAMPLE SUMMARY

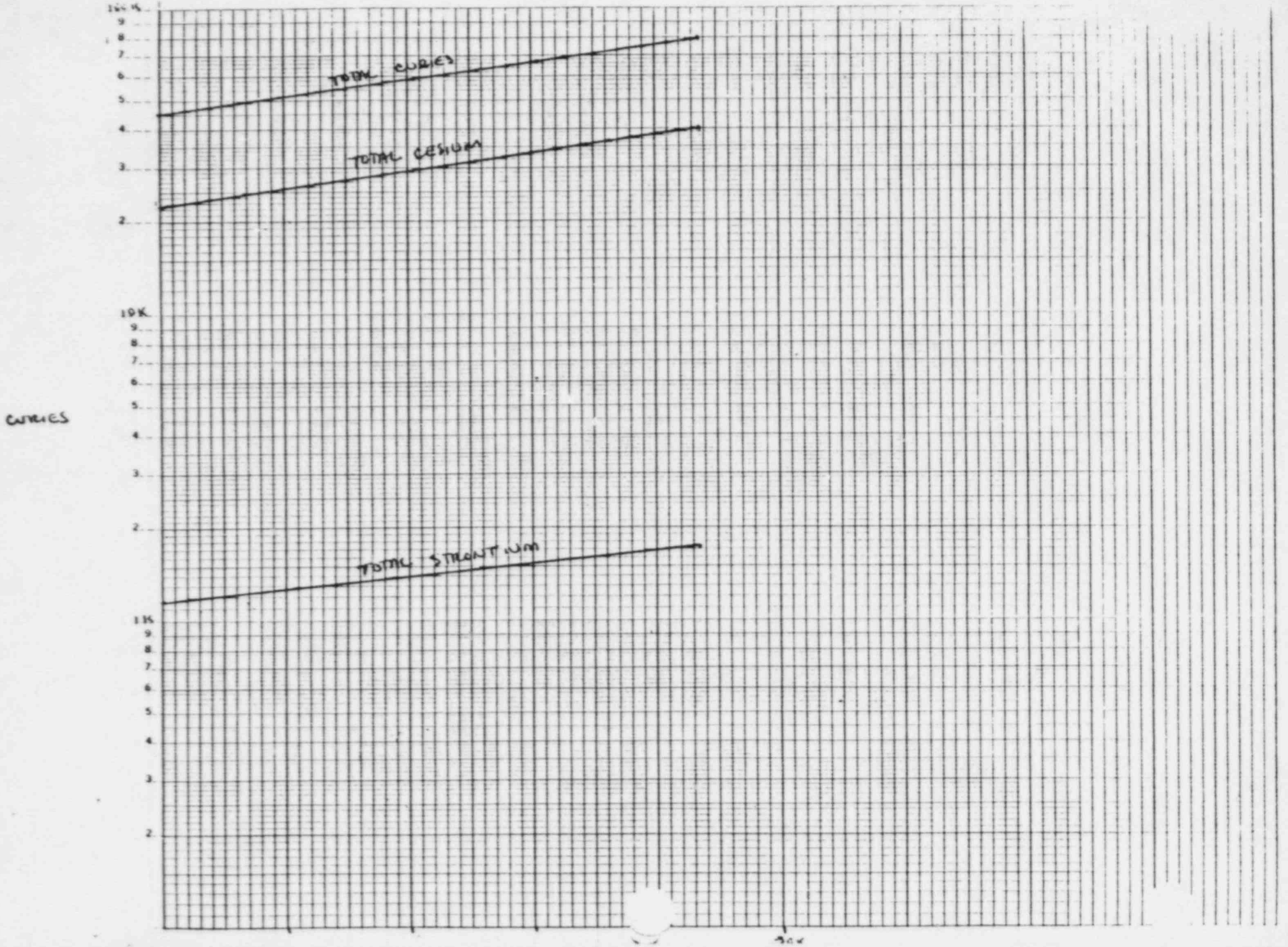
BATCH 50011

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			7.9(-2)	___	2.8(-1)					
Sr 90	11/20 2012	1000	7.1(-2)	___	8.77(-2)					
Gross βγ			1.61(-1)	___	1.76(-1)					
Cesium 137			1.4	___	1.4					
Sr 90	11/21 1155	25000	8.38(-2)	___	7.34(-2)					
Gross βγ			1.87(-1)	___	1.66(-1)					
Cesium 137			1.2(-1)	___	4.6					
Sr 90	11/21 1800	35000	5.85(-4)	___	2.3(-1)					
Gross βγ			1.46(-2)	___	5.39(-1)					
Cesium 137						100	6.6(-3)	1.1(-3)	7(-4)	7.2(-1)
Sr 90	11/22 0823	1707				6.8	8.2(-1)	3.3(-2)	9.6(-3)	9.1(-3)
Gross βγ						88.4	8.51(-1)	2.9(-1)	2.8(-1)	2.51(-1)
Cesium 137						110	1.2(-2)	1.5(-3)	7.4(-4)	6.6(-4)
Sr 90	11/24 0830	15532				7	1.3	5.4(-2)	8.3(-3)	7.4(-3)
Gross βγ						145	1.36	5.76(-1)	4.51(-1)	3.72(-1)
Cesium 137						100	8.2*	1.6(-3)	7.4(-4)	7.6(-4)
Sr 90	11/26 1617	31153				3.4	1.3	6.1(-2)	7.8(-2)	7.1(-3)
Gross βγ						305	214*	2.57	2.3	2.25
Cesium 137						100	2.1(-1)	1.8(-3)	7.7(-4)	6.6(-4)
Sr 90	11/28 0810	40056				32	1.2	8.1(-2)	8(-3)	5.5(-3)
Gross βγ						190	6.1	2.78	2.48	2.14

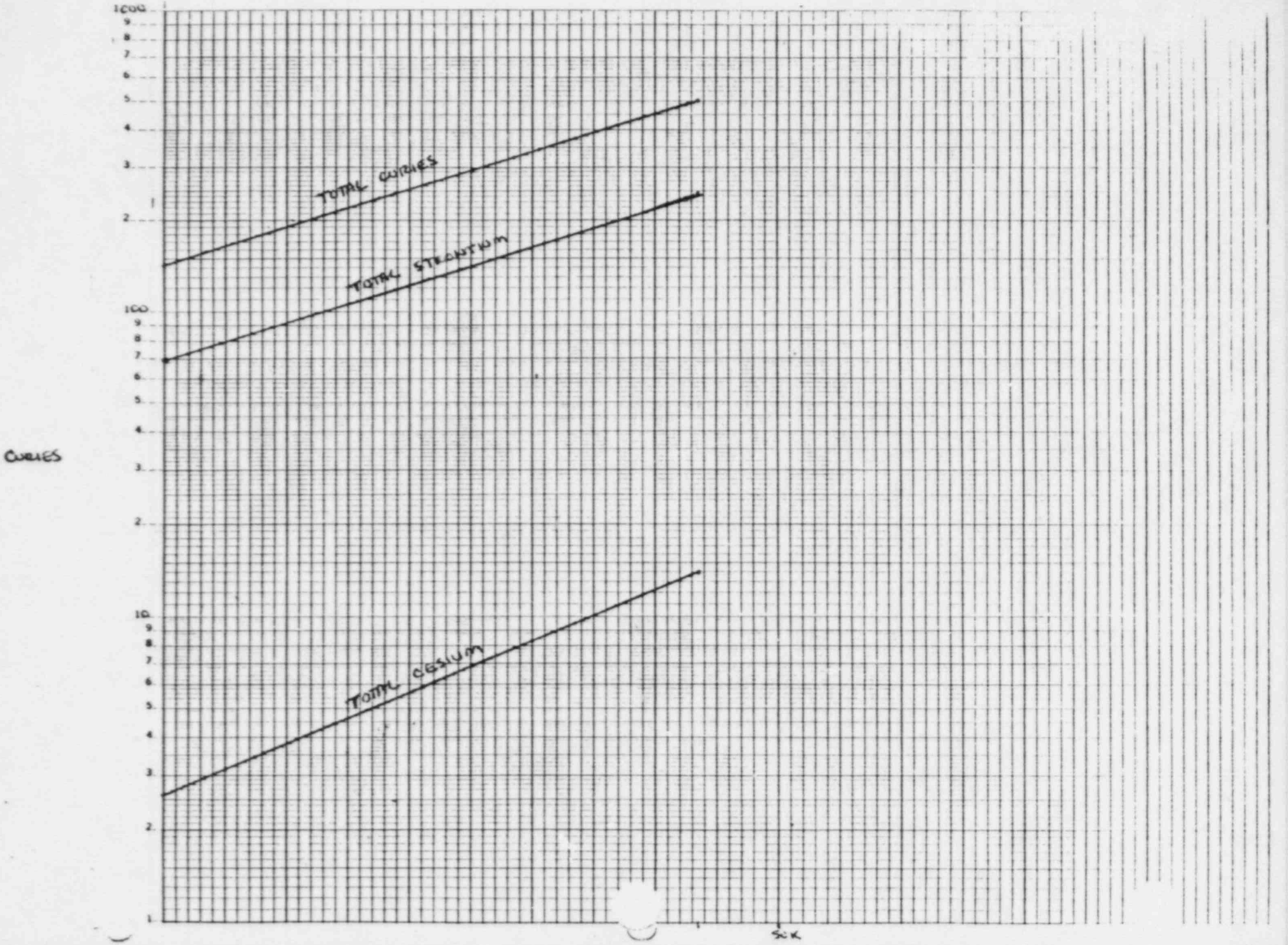
wei/ml filterable

* BAD RESULTS DUE TO CONTAMINATION BY LEAKING VALVE IN SAMPLE SINK.

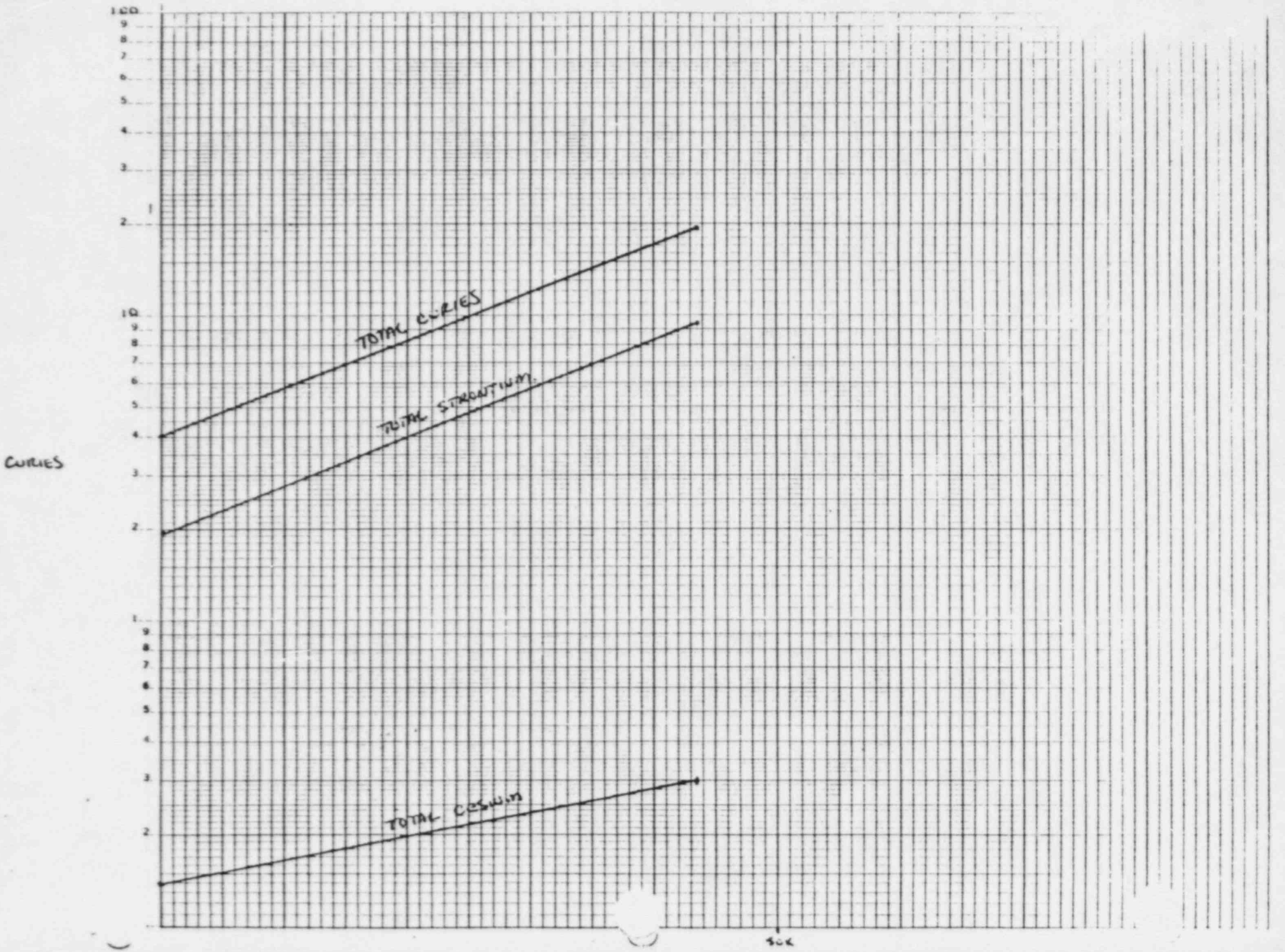
D10011 (2A)



D10013 (2B)



D20028 (2C)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TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
CURIES
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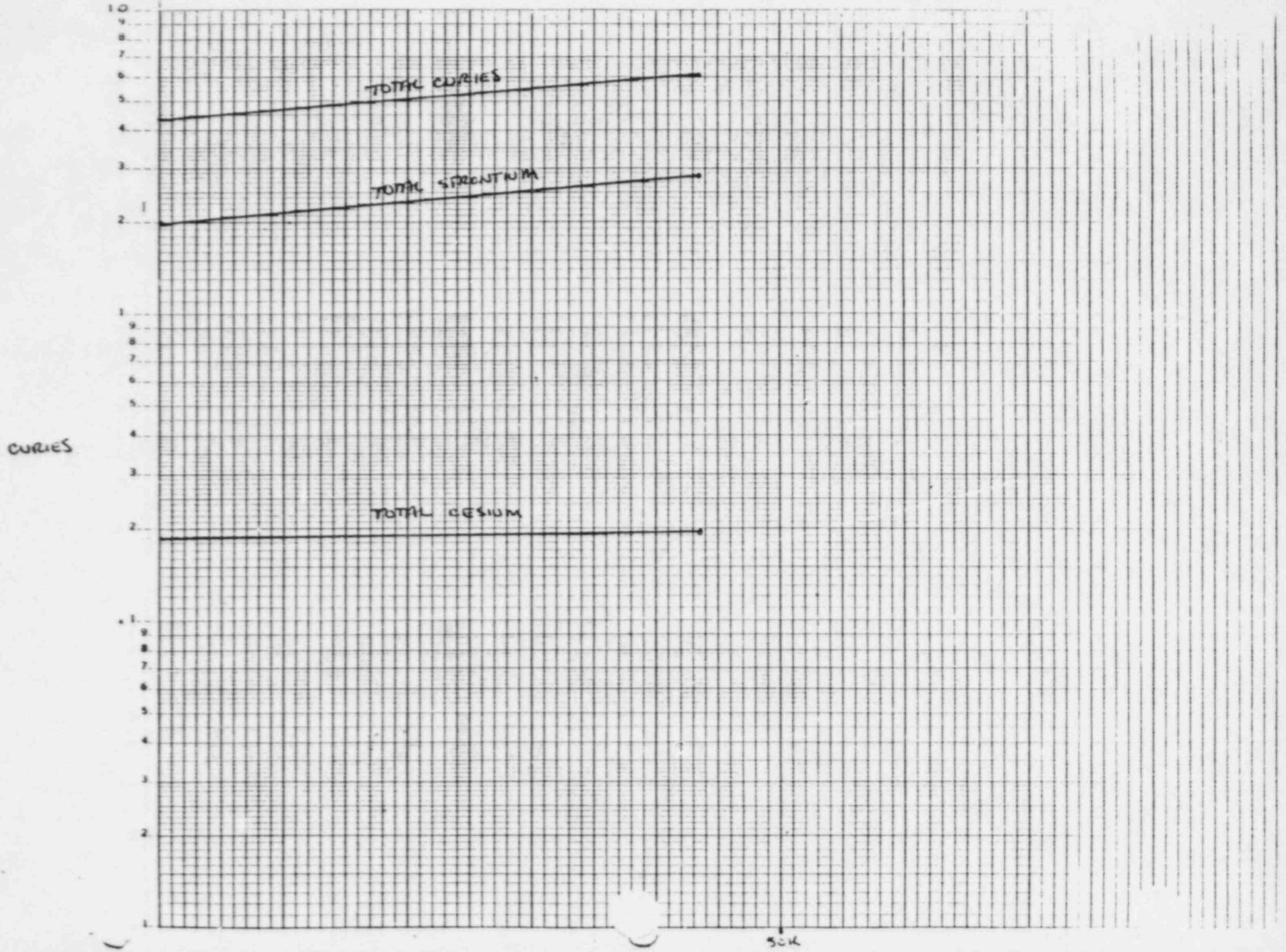
D10016 (CAT B)


TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
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NOV 30 1981

51-M-C(076

Inter-Office Memorandum

Date November 24, 1981

GPU Nuclear

Subject SDS BATCH REPORTS

To L. P. King

Location TMI U-2 Plant Engineering
4240-81-0405

Attached please find Batch Report for SDS Batch S-010. Batch #S-010 represents the sixth RB Sump Water processed through SDS. It should be noted that near 10% Strontium breakthrough was reached on the 2A liner, and Cesium 137 breakthrough on the same liner was less than .01%. Strontium breakthrough on the 2B liner was 4%.

However, SDS is still performing exceptionally well. Effluent Cesium levels are still nearly a factor of ten (10) lower than expected, however, strontium 90 effluent concentrations have been a little higher than originally anticipated.

If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

TDL/nlm

cc: J. J. Chwastyk
W. T. Conaway
R. E. Hahn (2)
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill
R. J. McGoey
S. B. Presgrove
J. E. Larson (2)
T. E. Rekart

A0000641

BATCH #	50010
DATE	11/12-14/81
GALLONS	44213

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	5.125	8.775×10^{-3}
CESIUM 134	11.955	1.094×10^{-5}
CESIUM 137	104.8	9.165×10^{-4}

filtered

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT 'B')
LINER #	D10011 (previously 2B)	D10013 (previously 2C)	D20028	D10016
THIS BATCH				
GALLONS	44213	44213	44213	44213
CESIUM	21288.906	2.489	1.434(-1)	1.001(-2)
STRONTIUM 90	187.911	61.095	1.941	2.356(-1)
TOTAL CURIES	42107.888	126.88	4.187	4.886(-1)
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	186334	252725	44213	252725
CESIUM	22664.256	2.567	1.434(-1)	1.889(-1)
STRONTIUM 90	1179.921	76.46	1.941	2.064
TOTAL CURIES	45506.751	145.906	4.187	4.392

POST FILTER

BATCH START 3mr./hr. BATCH END 5mr/hr. MAXIMUM 7mr/hr.

WATER SUMMARY

STAGED:

RB WATER	24931.2
TOTAL	417416
TOTAL CURIES DEPOSITED	* 435.617

* NO DEPOSITIONS OF SL/X 40 CREDITED FOR BATCH S-008 DUE TO LOST SAMPLES. SAME PROBLEM REPORTED ON BATCH 5009 REPORT, HOWEVER SAMPLES WERE SUBSEQUENTLY FOUND AND ARE INCLUDED (8.328×10^{4} CURIES).

PROCESSED:

RB WATER	240134
TOTAL	394205
TOTAL CURIES DEPOSITED	202063.90

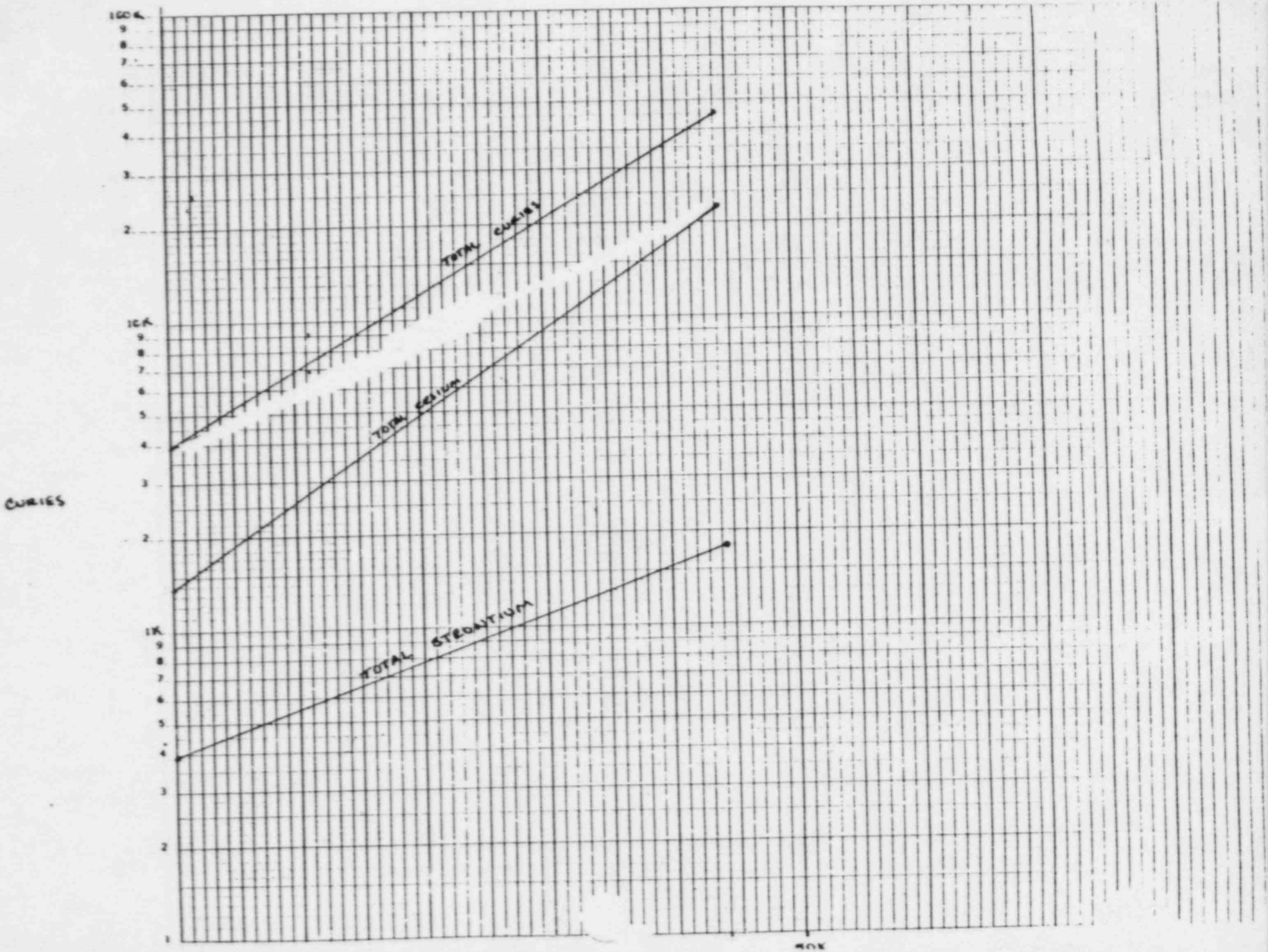
SDS PROCESSING SAMPLE SUMMARY

BATCH 50010

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			6.6(-1)		6.4(-1)					
Sr 90	11/10 2056	1000	1.7(-1)		1.2(-1)					
Gross βγ			222		231					
Cesium 137			3.8(-1)		4(-1)					
Sr 90	11/11 1454	25000	6.4(-2)		6.5(-2)					
Gross βγ			270		253					
Cesium 137			6.8(-1)		6.2(-1)					
Sr 90	11/12 0407	49497	7.6(-2)		6.4(-2)					
Gross βγ			176		166					
Cesium 137						120	1.2(-1)	3.9(-3)	8(-4)	8.3(-4)
Sr 90	11/13 0047	2231				4.2	1.0(-1)	2.2(-2)	1.8(-2)	6.6(-3)
Gross βγ						232	2.62	2.69	2.47	2.2
Cesium 137						110	6.8(-3)	1.5(-3)	9.6(-4)	9.3(-4)
Sr 90	11/15 0120	15644				5	3.5(-1)	1.4(-2)	9.7(-3)	5.3(-3)
Gross βγ						190	4.86	3.46	3.28	2.95
Cesium 137						97	5.5(-3)	1.4(-3)	8.5(-4)	7.1(-4)
Sr 90	11/17 0825	31343				5.9	5.5(-1)	2.7(-2)	1.5(-2)	1.1(-2)
Gross βγ						240	4.67	3.25	2.92	2.8
Cesium 137						110	6.4(-3)	1.5(-3)	8.5(-4)	6.2(-4)
Sr 90	11/19 0246	42474				1.2	3.4(-1)	7.8(-4)	6.2(-3)	6.2(-3)
Gross βγ						259	3.39	3.28	3.13	2.91

Cs & Sr Filterable
βγ unfiltered

D10011 (2A)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TOTAL CURIES
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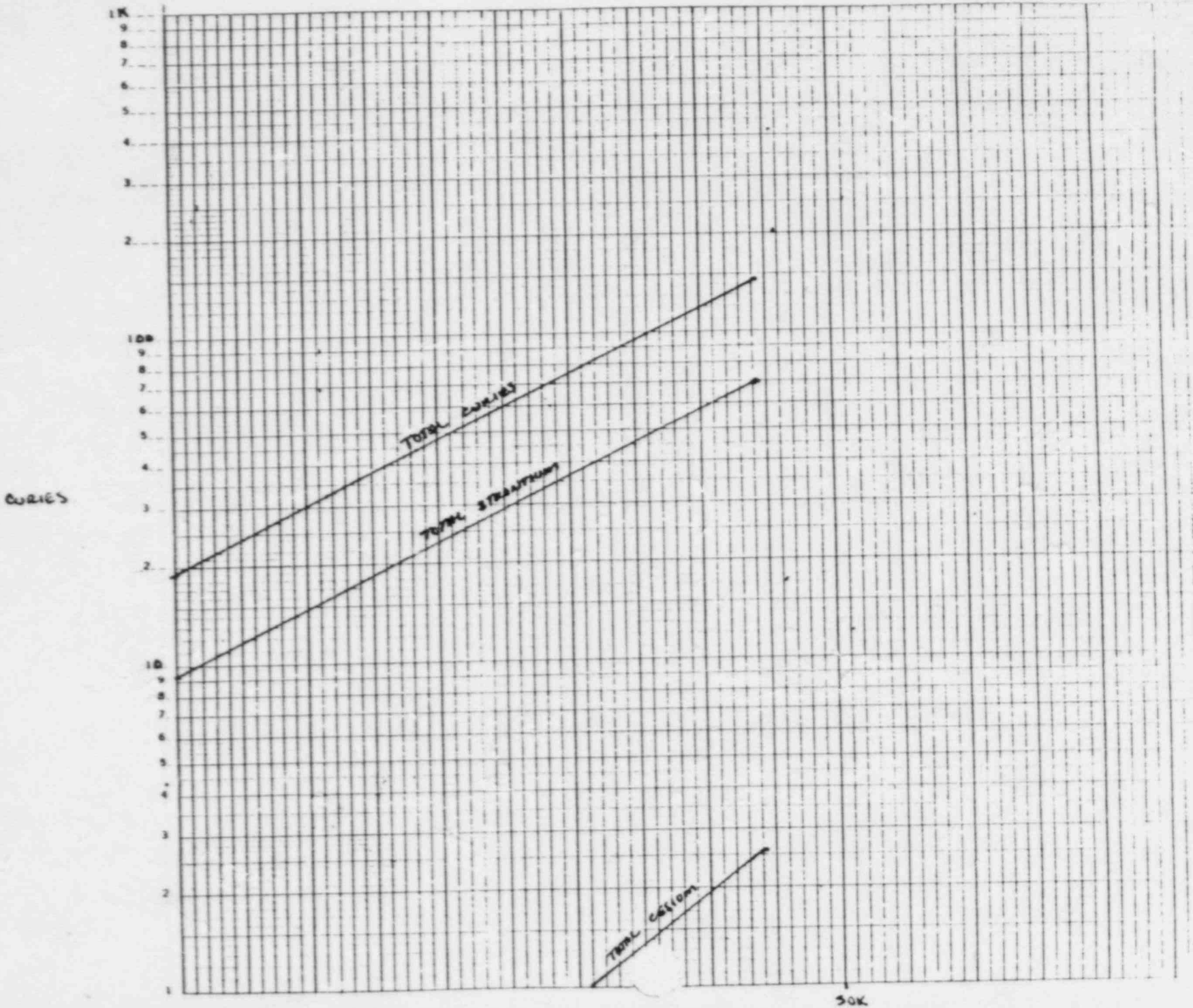
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TOTAL STRONTIUM
TOTAL CESIUM
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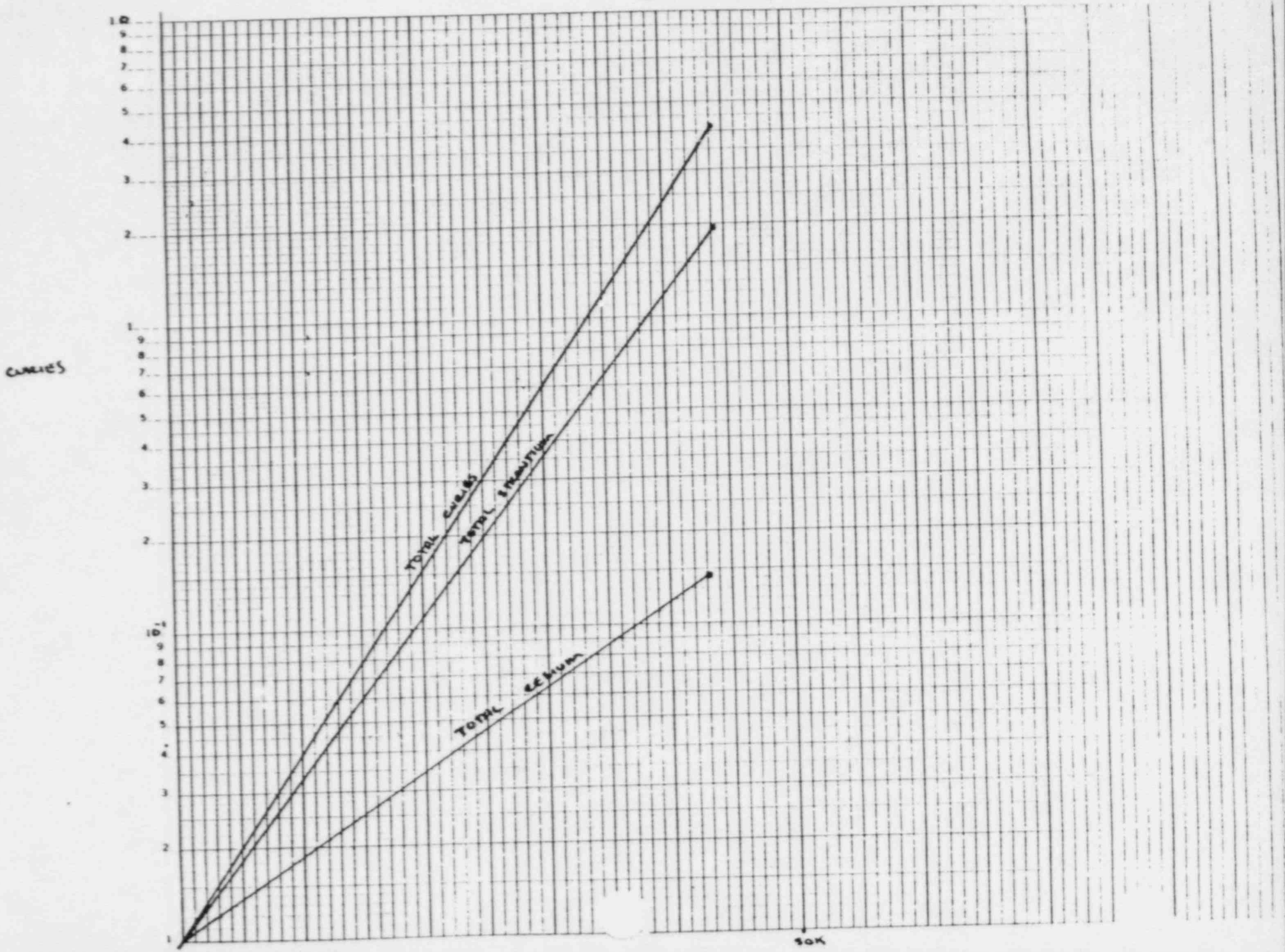
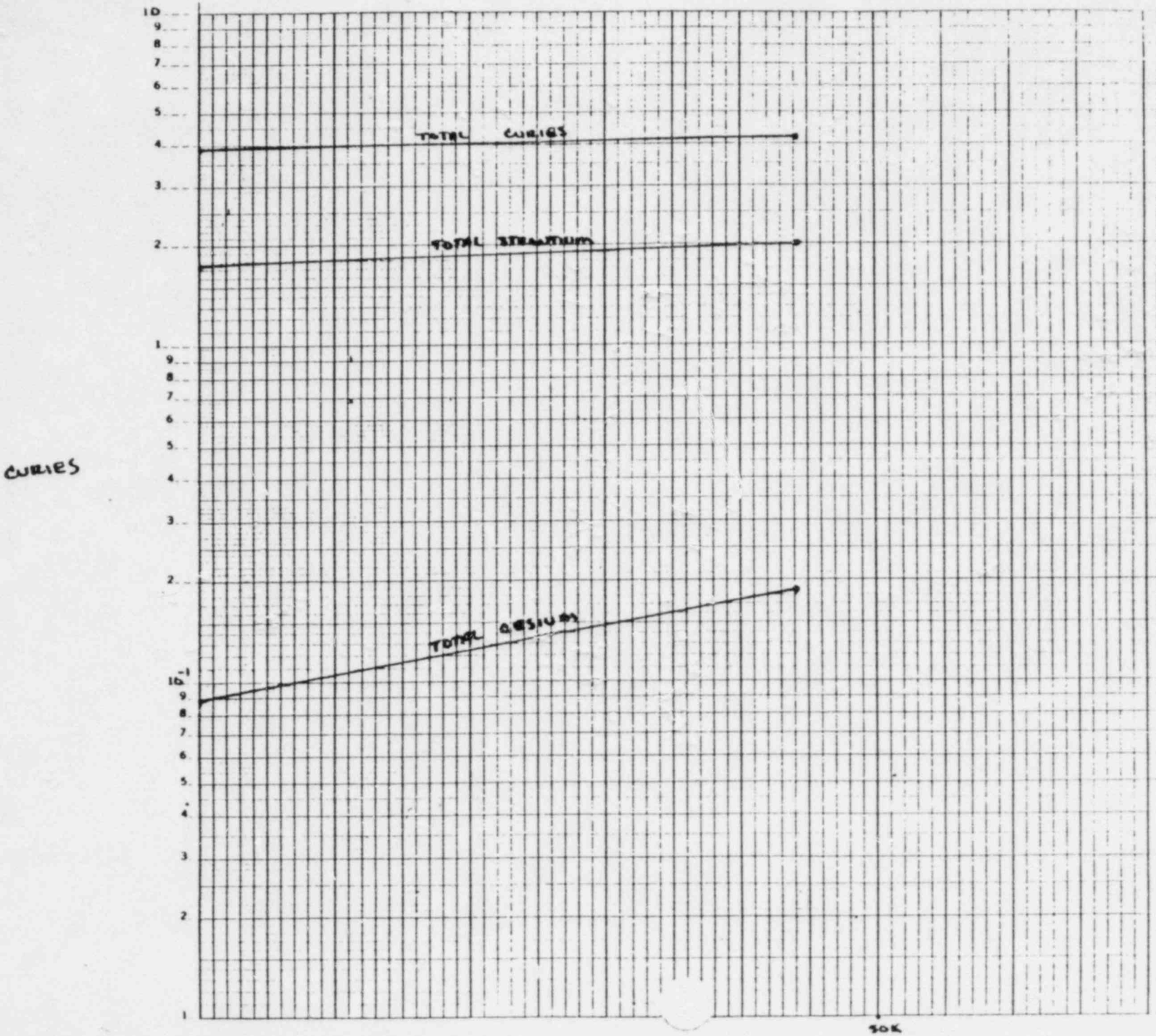
D20028 (2c)



D10016 (CAT B)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TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
50K

NOV 17 1981

81-M-0635

Inter-Office Memorandum

Date November 16, 1981

GPU Nuclear

Subject SDS BATCH REPORTS

To L. P. King

Location TMI U-2 Plant Engineering
4240-81-0378

Attached please find Batch Report for SDS Batch S-009. Batch #S-009 represents the fifth RB Sump Water processed through SDS, in addition, approximately 7,000 gal. of waste from RCBT 'A' was included in this batch. It should be noted that near 100% Strontium breakthrough was reached on the 2A liner, and Cesium 137 breakthrough on the same liner reached 40%.

However, SDS is still performing exceptionally well. Effluent Cesium levels are still nearly a factor of ten (10) lower than expected, however, strontium 90 effluent concentrations have been a little higher than originally anticipated.

If you have any questions on this information, please call me.

E. H. Gischel
Plant Engineering Director
TMI-2

30f

TDL/nlm

cc: J. J. Chwastyk
W. T. Conaway
C. P. Deltete(2)
C. G. Hitz
K. J. Hofstetter
T. D. Lookabill
R. J. McGoey
S. B. Presgrove
J. E. Larson (2)
T. E. Rekart

A0000641

BATCH #	S-009
DATE	11/2-9/81
GALLONS	47716

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (ui/mL)

SYSTEM A

RADIONUCLIDE		AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90		2.847	7.363×10^{-3}
CESIUM 134		8.5	8.3×10^{-5}
CESIUM 137	.152 ± .186 (?)	77.632	7.611×10^{-4}

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D (CAT 3)
LINER #	D10012	D10011	D10013	D10016
THIS BATCH				
GALLONS	47716	47716	47716	47716
CESIUM	13958.097	1384.085	2.27×10^{-2}	3.171×10^{-2}
STRONTIUM 90	209.544	280.66	7.331	2.666×10^{-1}
TOTAL CURIES	26780.468	3154.44	14.721	6.578×10^{-1}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	208512	142121	208512	208512
CESIUM	54423.636	1395.35	4.841×10^{-2}	8.876×10^{-2}
STRONTIUM 90	1530.6	392.01	9.365	1.766
TOTAL CURIES	106122.982	3396.663	14.026	3.903

POST FILTER

BATCH START 25mr/hr BATCH END 5mr/hr MAXIMUM 6mr/hr

WATER SUMMARY

STAGED:

RB WATER	194815
TOTAL	367919
TOTAL CURIES DEPOSITED	* 616.387

PROCESSED:

RB WATER	195521
TOTAL	351451
TOTAL CURIES DEPOSITED	154824.546

* NO DEPOSITION CREDITED BATCHES S-008 & 9 FOR SR/Y-90 DUE TO SAMPLE PLACED TO BETA SPEC

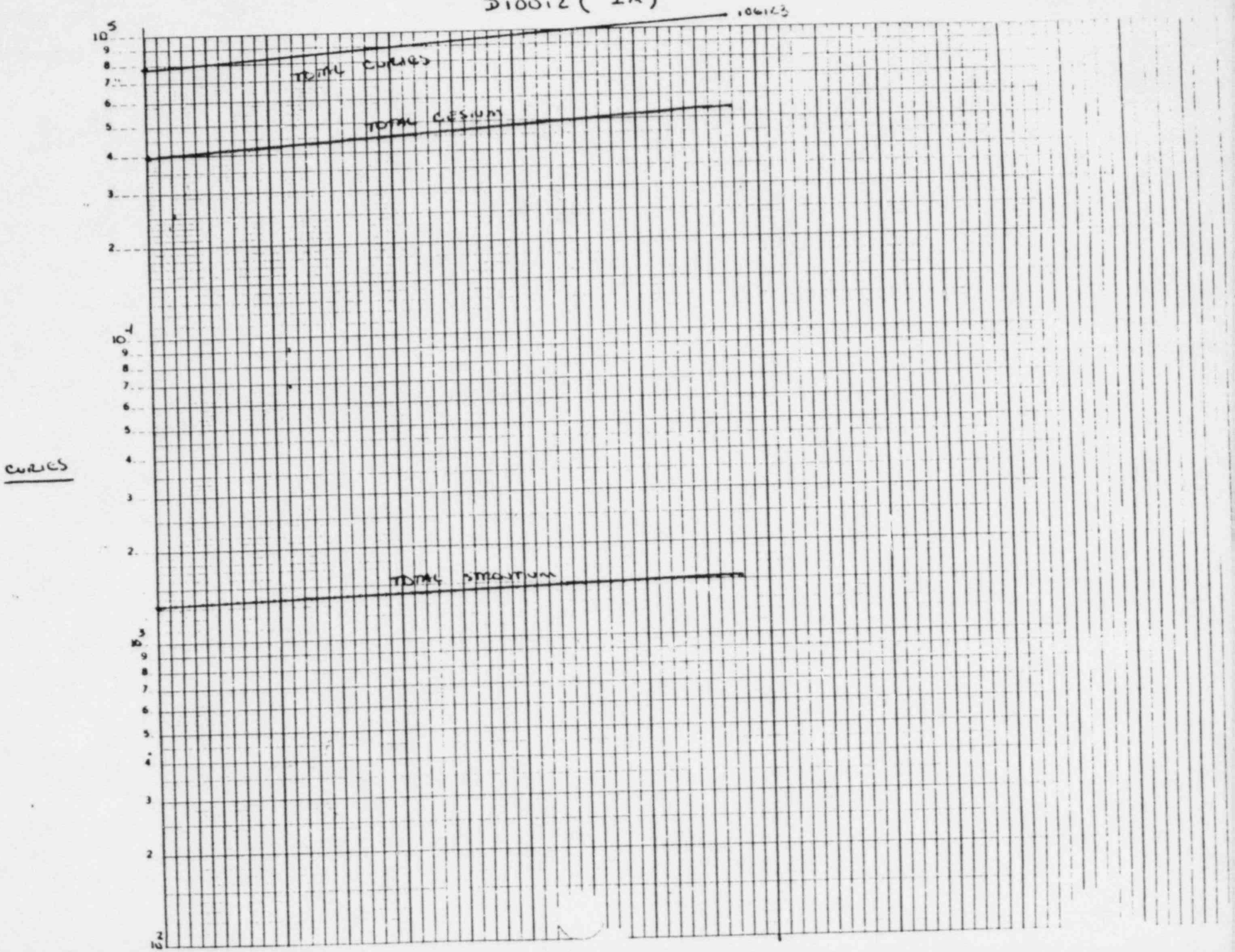
SDS PROCESSING SAMPLE SUMMARY

BATCH 5009

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			2.2(-3)	___	2.7(-3)					
Sr 90	10/31 1827	7070	-*	___	-*	} FROM RCBT A (7070 GALLONS TOTAL)				
Gross βγ			9.38(-1)	___	1.13					
Cesium 137			3.6(-1)	___	2.9(-1)					
Sr 90	11/1 0401	1000	-*	___	-*					
Gross βγ			237	___	237					
Cesium 137			9.5(-2)	___	5.5(-2)	} FROM RB SUMP (36,675 GALLONS TOTAL)				
Sr 90	11/1 0920	10000	-*	___	-*					
Gross βγ			300	___	240					
Cesium 137						90	2.8(-1)	9.4(-4)	8.3(-4)	6.8(-1)
Sr 90	11/3 0010	2785				3.5	1.2	1.8(-2)	8.7(-3)	8.1(-3)
Gross βγ						211	6.29	2.46	2.22	2.01
Cesium 137						8.7	4.2	9.6(-4)	9.3(-4)	7.1(-4)
Sr 90	11/5 0020	16132				3.5	1.8	3.5(-2)	1.1(-2)	3.7(-3)
Gross βγ						166	17.6	2.77	2.44	2.15
Cesium 137						72	8	1.1(-3)	9.4(-4)	8.1(-4)
Sr 90	11/7 0807	31239				2.5	1.7	6(-2)	1(-2)	8.5(-3)
Gross βγ						194	26.2	2.67	2.16	2.05
Cesium 137						66	16	9.3(-4)	9(-4)	1.1(-4)
Sr 90	11/9 0032	43649				1.5	1.7	7.9(-2)	7.5(-3)	6.5(-3)
Gross βγ						165	36.7	2.51	2.24	1.99

* NO STRONTIUM RESULTS DUE TO LOSS OF CARRIERS

D10012 (2A)



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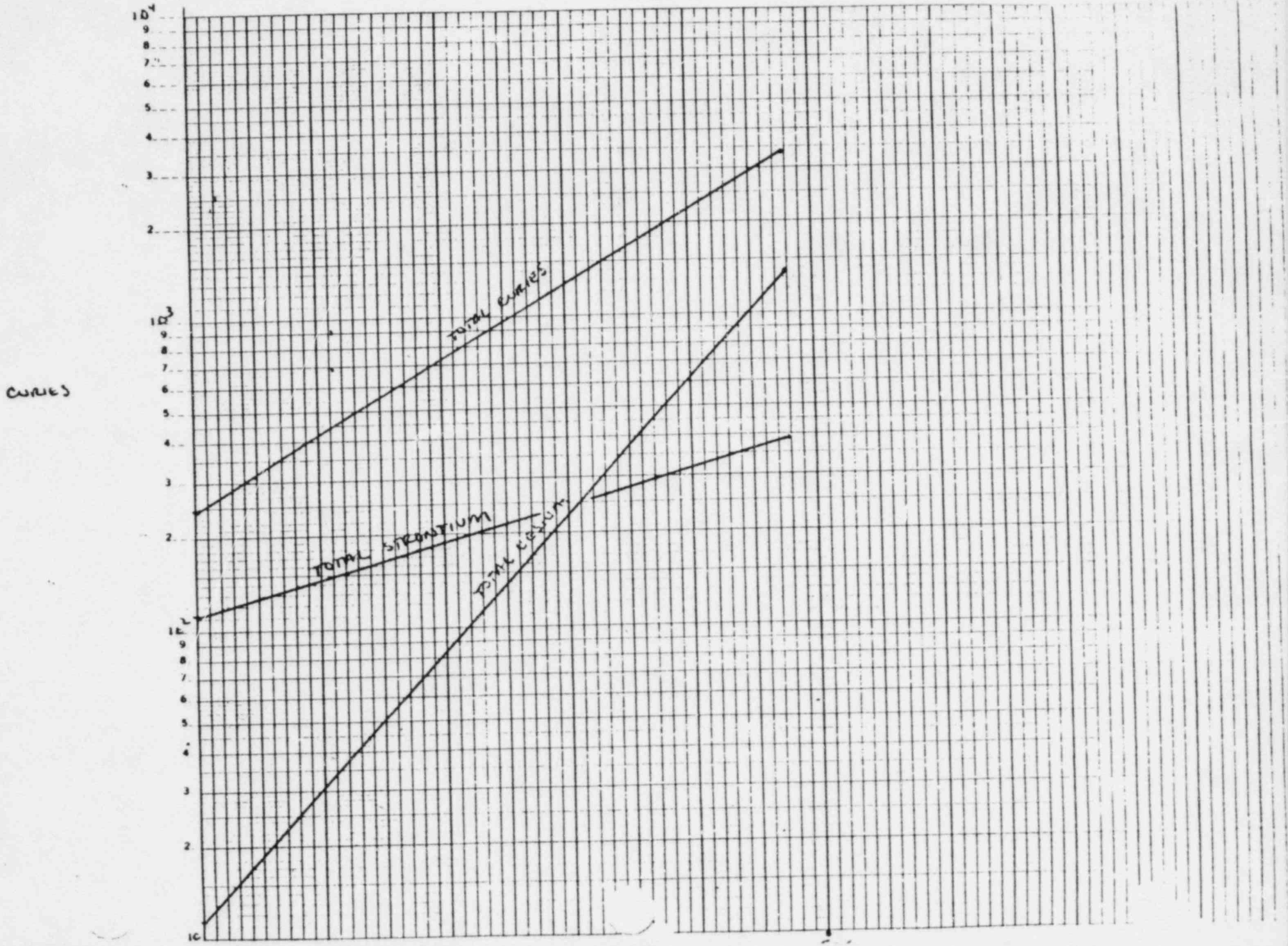
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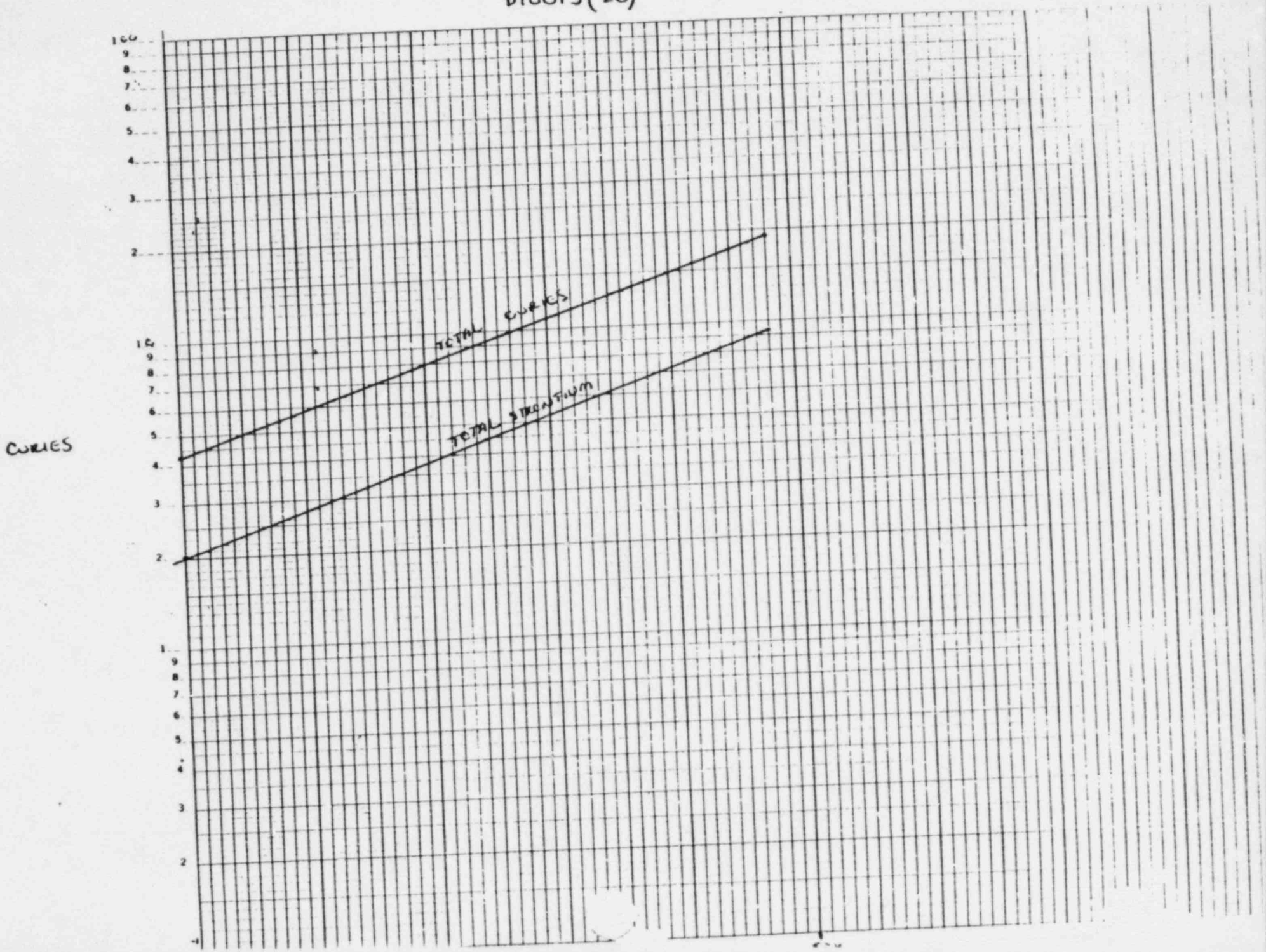
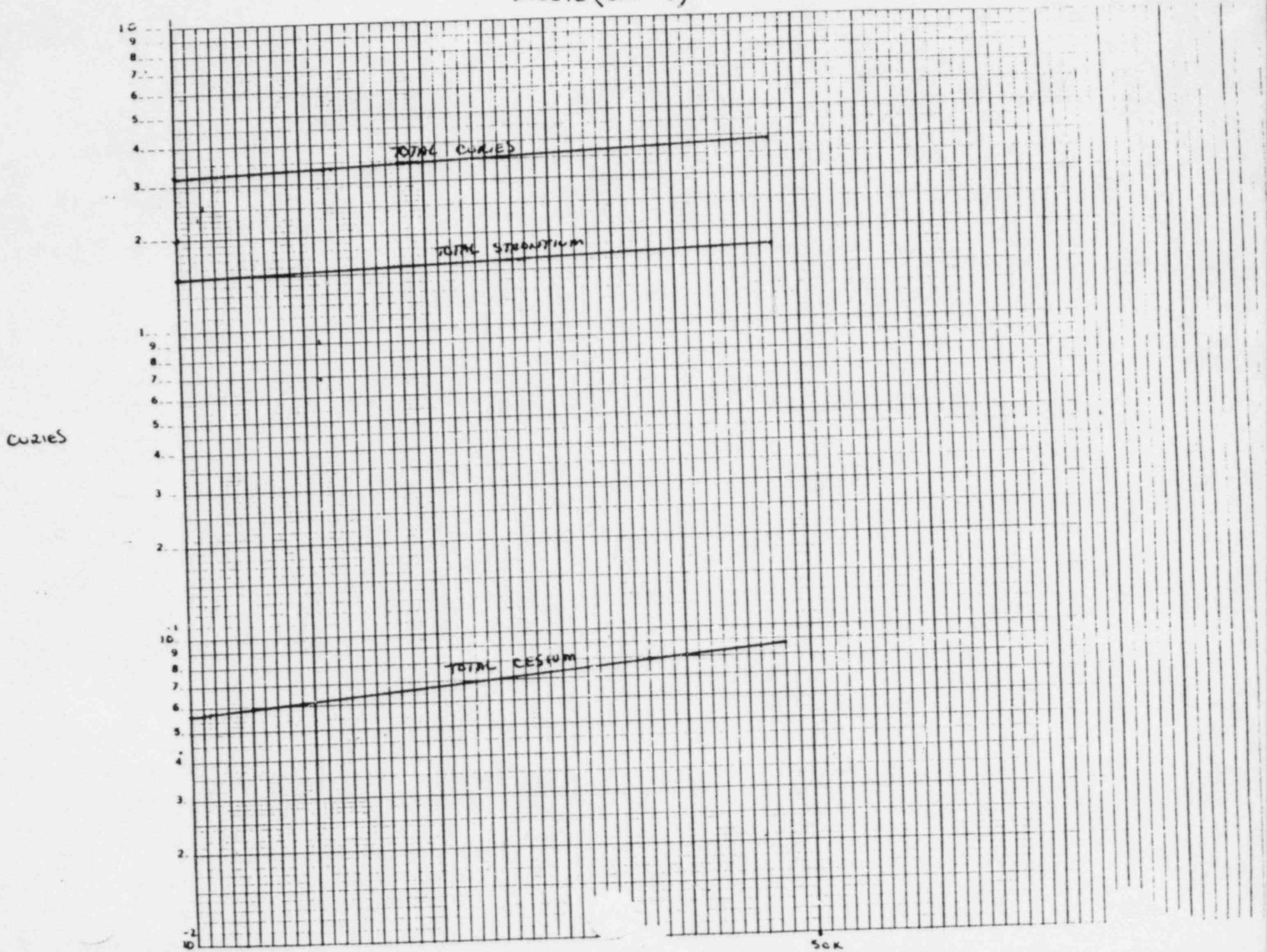
TOTAL CESIUM

D10013(2C)



D100160 (CAT B)



BATCH # 5005
DATE 9/23-25/81
GALLONS 15559

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM

RADIONUCLIDE A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	3.233	1.5×10^{-2}
CESIUM 134	8.667	8.017×10^{-5}
CESIUM 137	82.333	8.717×10^{-4}

unfiltered ?

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D
LINER #	D10011	D10012	D10013	D10016
THIS BATCH				
GALLONS	15559	15559	15559	15559
CESIUM	5125.351	2.413×10^{-2}	2.746×10^{-3}	2.699×10^{-3}
STRONTIUM 90	177.234	5.46×10^{-1}	1.569×10^{-1}	2.16×10^{-2}
TOTAL CURIES	10092.777	1.2	3.614×10^{-1}	4.783×10^{-2}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	21080	21080	21080	21080
CESIUM	5133.286	2.467×10^{-2}	3338×10^{-3}	3.019×10^{-3}
STRONTIUM 90	180.12	5.46×10^{-1}	1.569×10^{-1}	3×10^{-2}
TOTAL CURIES	10113.783	1.201	3.619×10^{-1}	7.123×10^{-2}

POST FILTER

BATCH START 2 mr/hr BATCH END 1.5 mr/hr MAXIMUM 3mr/hr

WATER SUMMARY

STAGED:

RB WATER	14005
TOTAL	175039 GALLONS
TOTAL CURIES DEPOSITED	367.531

PROCESSED:

RB WATER	15559
TOTAL	165531 GALLONS
TOTAL CURIES DEPOSITED	12552.0

SDS PROCESSING SAMPLE SUMMARY

BATCH 5005

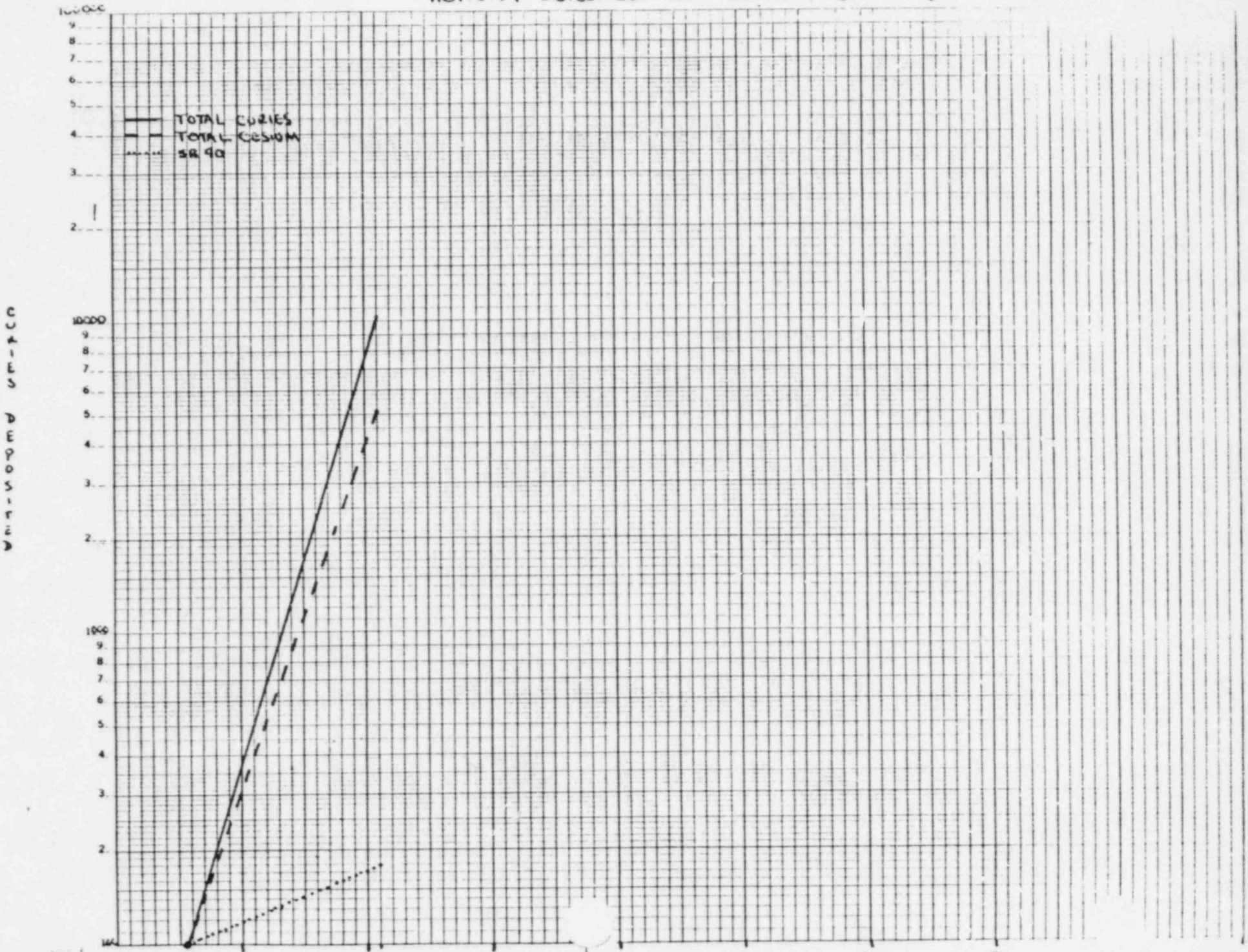
	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			6.5(-1)		7.5(-1)					
Sr 90	9/22 1735	1000								
Gross βγ			213		183					
Cesium 137			2.8(-1)		4.8(-1)					
Sr 90	9/22 2340	10000								
Gross βγ			216		204					
Cesium 137			6.3(-1)		5.3(-1)					
Sr 90	9/23 0125	14005								
Gross βγ			146		165					
Cesium 137										7.1(-4)
Sr 90	9/23 2200	1172								1.4(-4)
Gross βγ										2.23
Cesium 137						90	1.1(-3)	6.8(-4)	7.3(-4)	1(-4)
Sr 90	9/24 0055	1988				39	4.1(-2)	1.7(-2)	1.5(-2)	1.7(-4)
Gross βγ						267	3.18	2.4	2.4	2.5
Cesium 137						100	9.7(-4)	6.5(-4)	6.1(-4)	5.7(-4)
Sr 90	9/24 0833	3840				3.8	5.2(-2)	2.5(-2)	1.5(-2)	1.2(-4)
Gross βγ						255	2.57	1.81	1.88	1.83
Cesium 137						85	9.5(-4)	7.6(-4)	6.2(-4)	6.2(-4)
Sr 90	9/24 1618	6322				2.9	1.7(-2)	1.5(-2)	1.1(-2)	1.4(-4)
Gross βγ						270	2.8	2.3	2.6	2.7

SDS PROCESSING SAMPLE SUMMARY

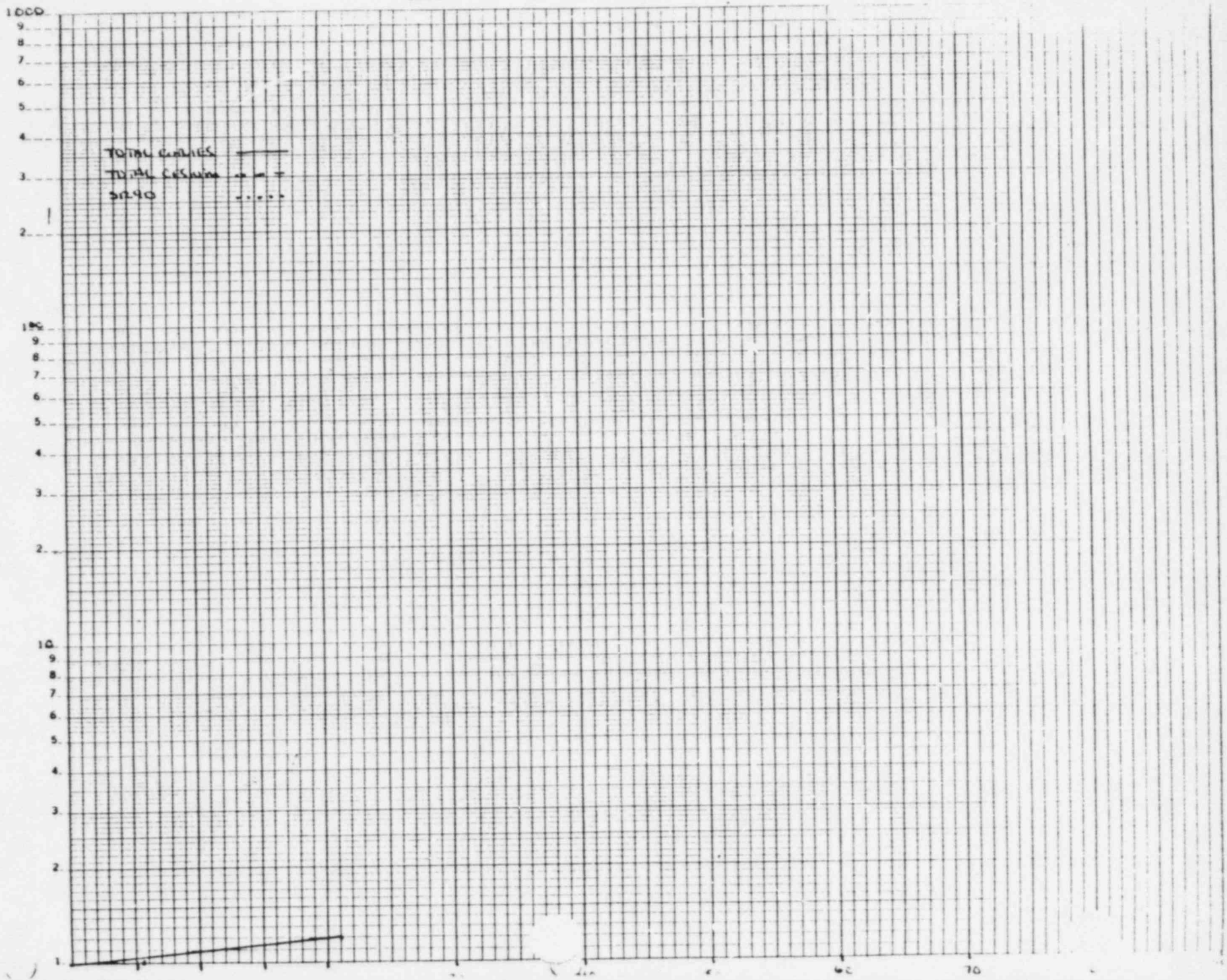
BATCH S-005

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137						87	1(-3)	82(-4)	6.9(-4)	1.1(-4)
Sr 90	9/25 0046	8961				4.3	1.9(-2)	8.2(-3)	8.1(-3)	1.2(-4)
Gross βγ						242	2.31	1.74	1.92	2.26
Cesium 137						75	1.4(-3)	1(-4)	1(-3)	8.4(-4)
Sr 90	9/25 0845	11320				2.8	1.7(-2)	1.2(-2)	1.3(-2)	1.2(-4)
Gross βγ						205	2.86	2.09	2.58	2.26
Cesium 137						57	1.6(-3)	1.2(-3)	1.5(-3)	1.1(-3)
Sr 90	9/25 1630	13480				1.7	1.3(-2)	1.3(-4)	1.1(-4)	1.1(-4)
Gross βγ						147	2.7	2.09	2.06	2.25
Cesium 137										
Sr 90	9/25 2139	15559		NO		SAMPLES - END OF BATCH				
Gross βγ										
Cesium 137										
Sr 90										
Gross βγ										
Cesium 137										
Sr 90										
Gross βγ										
Cesium 137										
Sr 90										
Gross βγ										

ACTIVITY DEPOSITED ON IX-2A (D100N)



ACTIVITY DEPOSITED ON IX-28 (D100.2)



CURIES DEPOSITED

BATCH # 5006
DATE 9/27 - 10/4/81
GALLONS 45311

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE A	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	3.784	1.263×10^{-2}
CESIUM 134	10.489	2.151×10^{-4}
CESIUM 137	101.579	6.547×10^{-4}

filtered

ION EXCHANGE DEPOSITION

	2A	2B	2C	2D
LINER #	D10017	D10012	D10013	D10016
THIS BATCH				
GALLONS	45311	45311	45311	45311
CESIUM	19187.286	6.732×10^{-2}	2.675×10^{-2}	1.134×10^{-2}
STRONTIUM 90	703.345	11.746	5.303×10^{-1}	8.317×10^{-1}
TOTAL CURIES	37730.488	23.628	1.153	1.667
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	66391	66391	66391	66391
CESIUM	24320.572	9.199×10^{-2}	3.209×10^{-2}	1.436×10^{-2}
STRONTIUM 90	883.465	12.292	6.872×10^{-1}	8.617×10^{-1}
TOTAL CURIES	47844.271	24.829	1.515	1.758

POST FILTER

BATCH START 1 mr/hr BATCH END 8 mr/hr MAXIMUM 9 mr/hr

WATER SUMMARY

STAGED:

RB WATER	63552
TOTAL	224586 GALLONS
TOTAL CURIES DEPOSITED	538.165

PROCESSED:

RB WATER	60870
TOTAL	213842 GALLONS
TOTAL CURIES DEPOSITED	503.873

SDS PROCESSING SAMPLE SUMMARY

BATCH 5-006

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			1.3		1.5					
Sr 90	9/26 0505	1000	2.9		3.1					
Gross βγ			287		279					
Cesium 137			2.9(-1)		3(-1)					
Sr 90	9/26 1130	10000	3.4		2.9					
Gross βγ			250		245					
Cesium 137			9.8(-1)		7.5(-1)					
Sr 90	9/26 2113	25000	2.5		2.8					
Gross βγ			238		247					
Cesium 137			9(-1)		8.7(-1)					
Sr 90	9/27 0330	35000	3.3		3					
Gross βγ			268		253					
Cesium 137			7.7(-1)		7.1(-1)					
Sr 90	9/27 1230	49547	4.2		3.5					
Gross βγ			275		252					
Cesium 137						110	1.5(-3)	1(-3)	7.1(-4)	6.1(-4)
Sr 90	9/28 0016	1799				3.4	1.9(-2)	1.8(-2)	2.1(-2)	1.4(-2)
Gross βγ						297	3.56	3.11	2.46	2.6
Cesium 137						89	1(-3)	8(-4)	7.2(-4)	6.4(-4)
Sr 90	9/28 0843	4231				3	1.7(-2)	1.1(-2)	13(-2)	1.4(-2)
Gross βγ						223	3.75	2.78	2.02	2.33

SDS PROCESSING SAMPLE SUMMARY

BATCH 5006

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137						110	9.9(-4)	8.3(-4)	7.6(-4)	[illegible]
Sr 90	9/28 1646	6427				2.2	1.4(-2)	2.3(-2)	1.2(-2)	[illegible]
Gross βγ						259	332	2.93	2.86	[illegible]
Cesium 137						95	9.3(-4)	7.9(-4)	6.2(-4)	[illegible]
Sr 90	9/29 0018	8523				3.8	3.8(-2)	1.5(-2)	1.3(-2)	[illegible]
Gross βγ						257	334	2.97	2.96	[illegible]
Cesium 137						100	1.1(-3)	8.4(-4)	7.5(-4)	[illegible]
Sr 90	9/29 0835	10806				3.6	2.1(-2)	1.2(-2)	1.1(-2)	[illegible]
Gross βγ						240	3.73	3.29	2.81	[illegible]
Cesium 137						110	9.5(-4)	7.5(-4)	6.3(-4)	[illegible]
Sr 90	9/29 1630	13059				4.8	1.8(-2)	1.8(-2)	1.8(-2)	[illegible]
Gross βγ						250	3.35	2.94	2.75	[illegible]
Cesium 137						100	9.5(-4)	7.2(-4)	6.8(-4)	[illegible]
Sr 90	9/30 0020	15314				3.6	2.1(-2)	1.1(-2)	1.1(-2)	[illegible]
Gross βγ						220	3.7	3.1	2.9	[illegible]
Cesium 137						110	1(-3)	8.2(-4)	7.3(-4)	[illegible]
Sr 90	9/30 0843	17705				4.1	2.4(-2)	1.4(-2)	1.2(-2)	[illegible]
Gross βγ						324	4.13	3.46	3.16	[illegible]
Cesium 137						99	1(-3)	8.4(-4)	7.2(-4)	[illegible]
Sr 90	9/30 1645	19979				4	2.8(-2)	1.2(-2)	1.1(-2)	[illegible]
Gross βγ						264	4.2	3.52	3.27	[illegible]

SDS PROCESSING SAMPLE SUMMARY

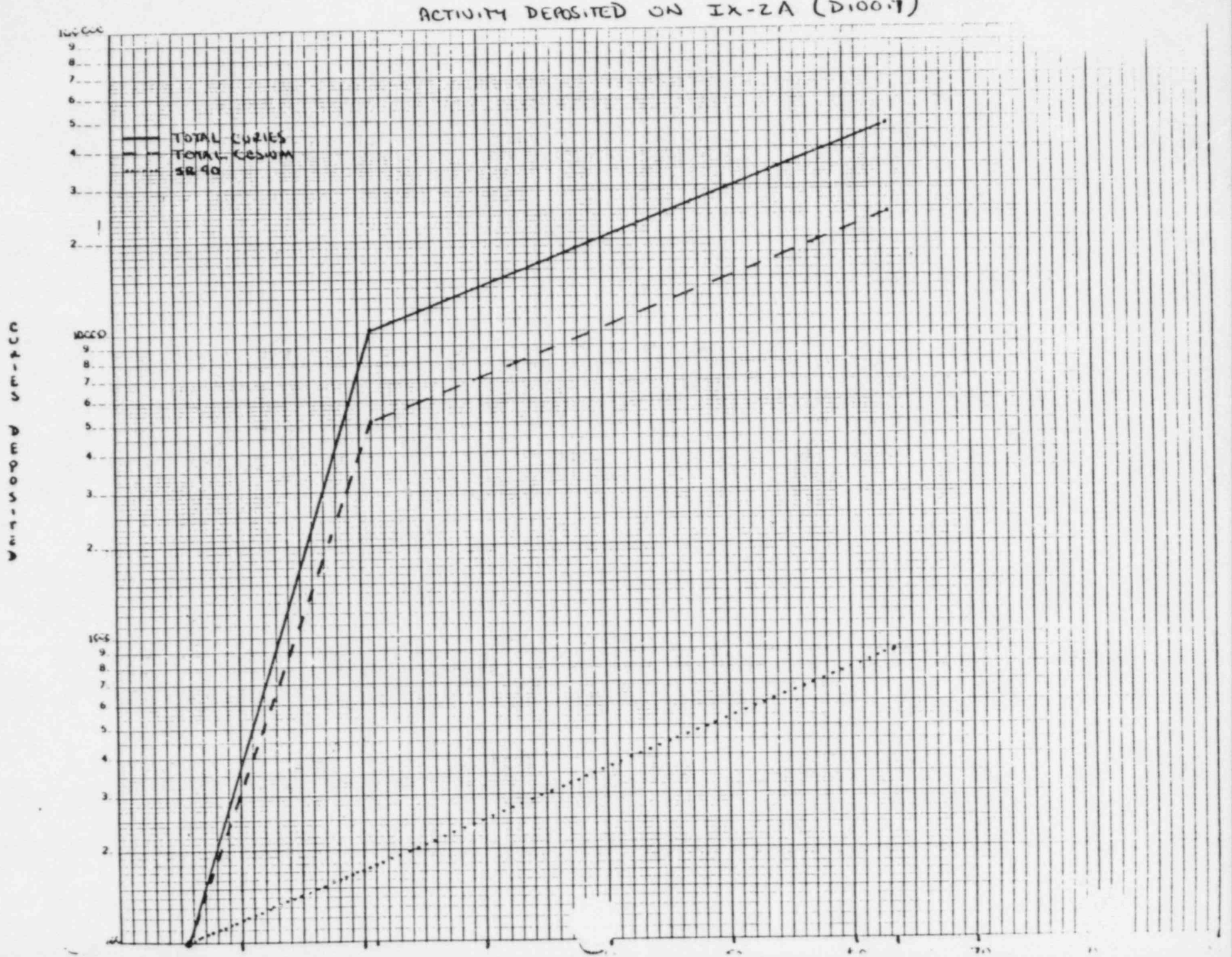
BATCH 5006

	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			___	___	___	92	8.7(-4)	7.2(-4)	6.8(-4)	6.3(-4)
Sr 90	10/1 0004	22055	___	___	___	4.2	2.8(-2)	1(-2)	9.8(-3)	1.1(-2)
Gross βγ			___	___	___	220	2.84	2.82	2.94	2.82
Cesium 137			___	___	___	110	9.9(-4)	7.8(-4)	7.2(-4)	6.2(-4)
Sr 90	10/1 0845	24473	___	___	___	4.5	6.2(-2)	4.1(-2)	2.6(-2)	1.2(-2)
Gross βγ			___	___	___	269	3.71	3.31	3.01	2.77
Cesium 137			___	___	___	96	1.1(-3)	8.4(-4)	6.6(-4)	6.2(-4)
Sr 90	10/1 1640	26740	___	___	___	39	6.2(-2)	1.2(-2)	1.2(-2)	7.1(-3)
Gross βγ			___	___	___	240	4.63	3.5	32	2.87
Cesium 137			___	___	___	100	1.1(-3)	8.2(-4)	6.8(-4)	7.4(-4)
Sr 90	10/1 2359	28797	___	___	___	3.1	7.6(-2)	1.1(-2)	2.3(-2)	9.5(-3)
Gross βγ			___	___	___	240	4.3	3.6	3.3	3
Cesium 137			___	___	___	94	9.9(-4)	7.6(-4)	6.7(-4)	5.8(-4)
Sr 90	10/2 0833	31132	___	___	___	4.1	9.1(-2)	9.7(-3)	3.2(-2)	1(-2)
Gross βγ			___	___	___	264	3.89	3.31	3.09	2.8
Cesium 137			___	___	___	100	9.5(-4)	7.5(-4)	6.9(-4)	6.2(-4)
Sr 90	10/2 1630	32909	___	___	___	3.4	1(-1)	2.8(-2)	1.7(-2)	1.4(-2)
Gross βγ			___	___	___	259	3.62	3.09	2.99	2.6
Cesium 137			___	___	___	95	1.1(-3)	8.5(-4)	5.9(-4)	6(-4)
Sr 90	10/3 0007	35168	___	___	___	3.4	1.2(-1)	1.4(-2)	1(-2)	9.3(-3)
Gross βγ			___	___	___	259	4.19	3.31	2.77	2.42

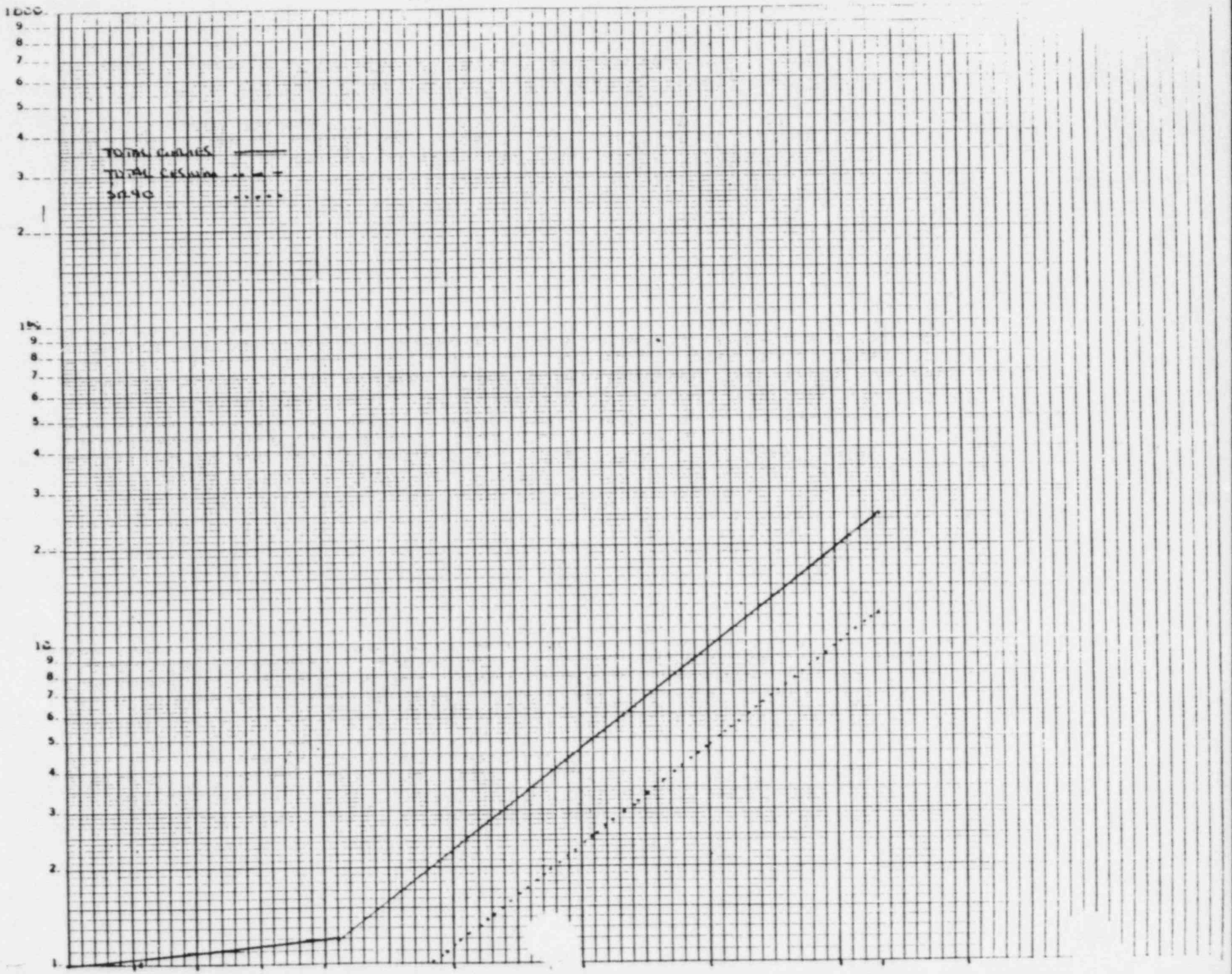
SDS PROCESSING SAMPLE SUMMARY

BATCH 5006

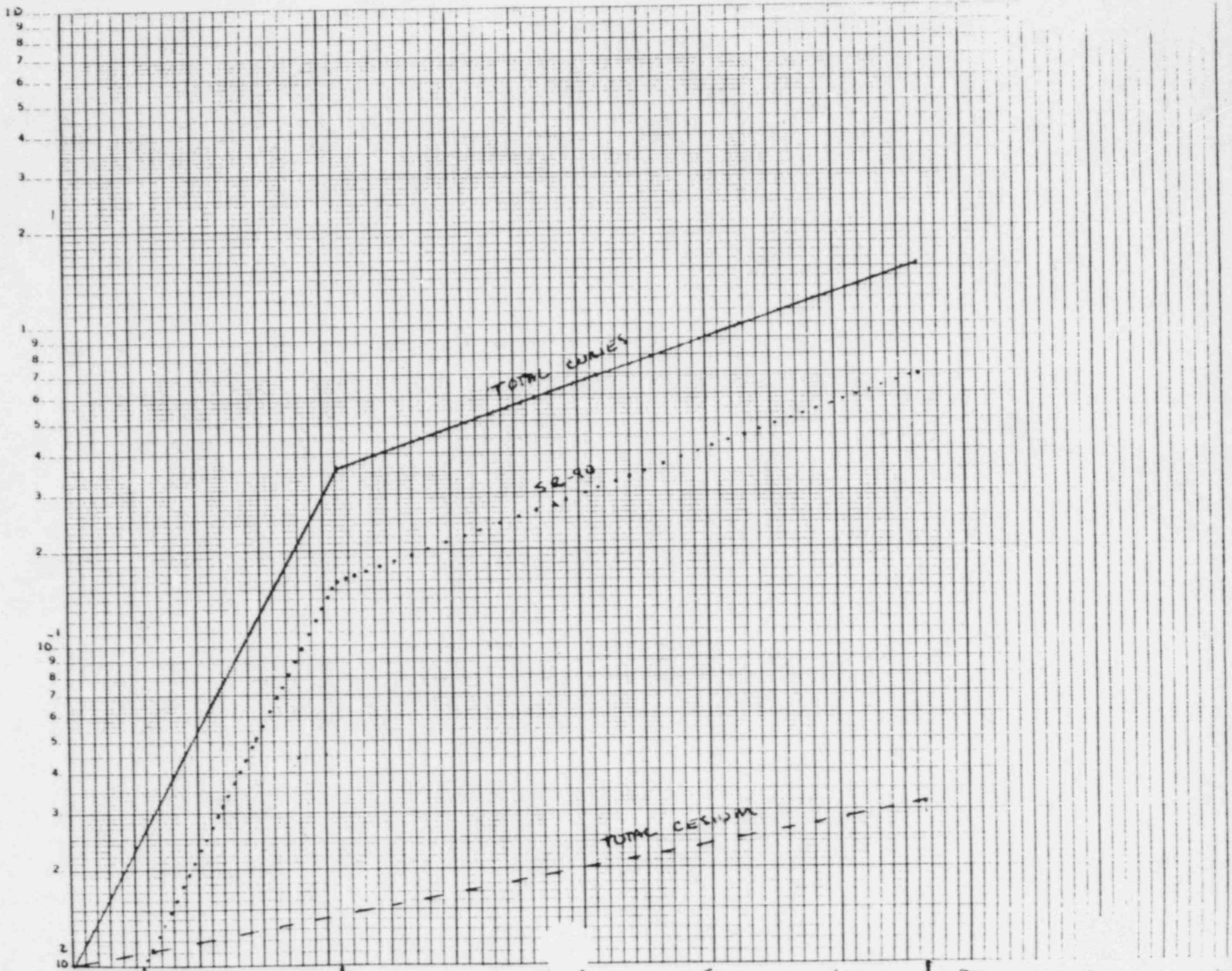
	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			—	—	—	110	1.1(-3)	7.9(-4)	6.3(-4)	6.3(-4)
Sr 90	10/3 0825	37651	—	—	—	4.3	2(-1)	8.5(-3)	1.1(-2)	7.4(-3)
Gross βγ			—	—	—	269	4.58	3.4	3.3	3.03
Cesium 137			—	—	—	110	1.3(-3)	8.4(-4)	7.7(-4)	7.7(-4)
Sr 90	10/3 1635	39259	—	—	—	4.2	2(-1)	1.2(-2)	1.2(-2)	9.4(-3)
Gross βγ			—	—	—	246	4.13	3.22	3.25	3.57
Cesium 137	10/4		—	—	—	100	1.4(-3)	8.2(-4)	6.7(-4)	6.4(-4)
Sr 90	0003	42279	—	—	—	4.3	2.3(-1)	2.6(-2)	2(-2)	1.4(-2)
Gross βγ			—	—	—	255	4.21	3.23	3.29	2.8
Cesium 137	10/4 0530		—	—	—	—	—	—	—	—
Sr 90	BATCH END	45311	—	—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—	—
Cesium 137			—	—	—	—	—	—	—	—
Sr 90			—	—	—	—	—	—	—	—
Gross βγ			—	—	—	—	—	—	—	—


ACTIVITY DEPOSITED ON IX-2A (D100:1)
TOTAL CURIES
TOTAL CESIUM
SR 90
CURIES DEPOSITED

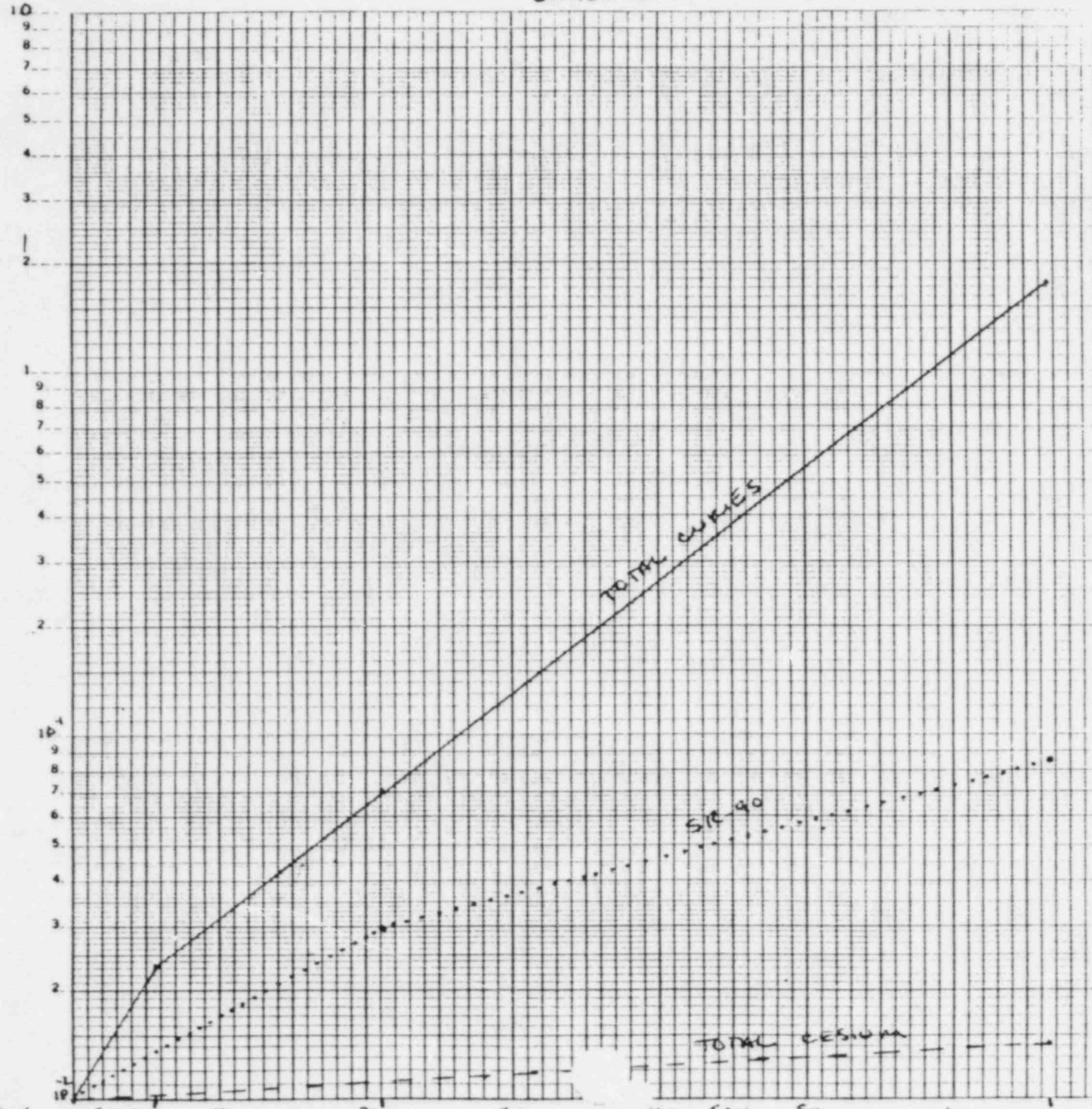
ACTINIUM DEPOSITED ON IX-2B (DICO.2)



2C- D10013



CATION 3 - D10016



BATCH # 5007
DATE 10/10-18/81
GALLONS 50168

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

SYSTEM A

RADIONUCLIDE	AVERAGE INFLUENT	AVERAGE EFFLUENT
STRONTIUM 90	3.905	1.563×10^{-2}
CESIUM 134	10.603	1.272×10^{-4}
CESIUM 137	101.975	9.085×10^{-4}

Altered

ION EXCHANGE DEPOSITION

	2 A	2 B	2 C	2 D (CAT B)
LINER #	D10012	D10011	D10013	D10016
THIS BATCH				
GALLONS	50168	50168	50168	50168
CESIUM	21570.293	4.192×10^{-1}	3.334×10^{-2}	2.226×10^{-2}
STRONTIUM 90	707.611	10.867	1.023	2.336×10^{-1}
TOTAL CURIES	42520.831	22.554	2.115	5.854×10^{-1}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	116559	50168	116559	116559
CESIUM	21570.385	4.192×10^{-1}	6.543×10^{-2}	3.662×10^{-2}
STRONTIUM 90	719.903	10.867	1.71	1.095
TOTAL CURIES	42545.66	22.554	3.63	2.343

POST FILTER

BATCH START 2 mr/hr. BATCH END 5mr/hr. MAXIMUM 7 mr/hr.

WATER SUMMARY

STAGED:

RB WATER	113643
TOTAL	274677
TOTAL CURIES DEPOSITED	565.551

PROCESSED:

RB WATER	111036
TOTAL	264016
TOTAL CURIES DEPOSITED	562.655

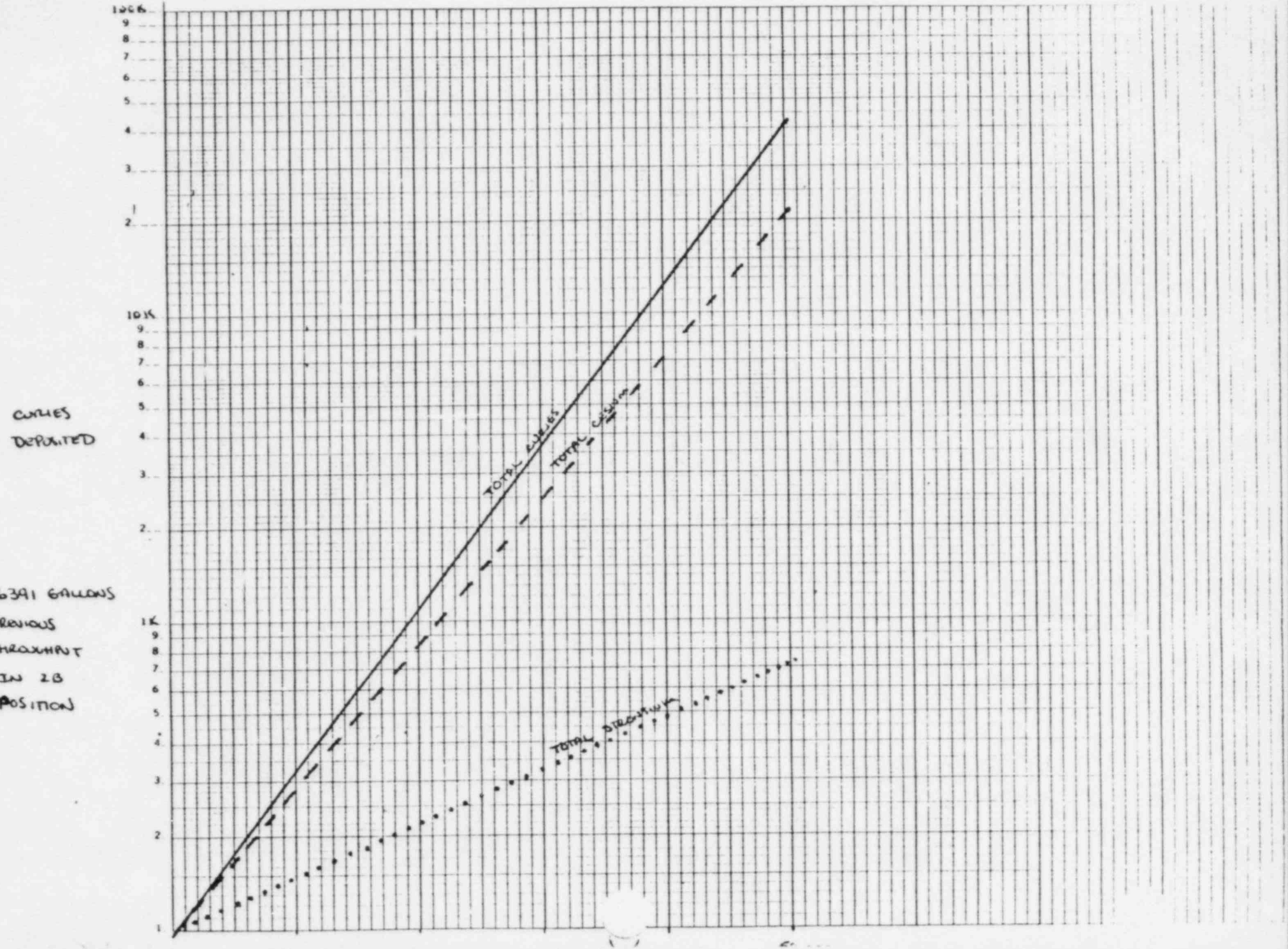
SDS PROCESSING SAMPLE SUMMARY

BATCH 5007

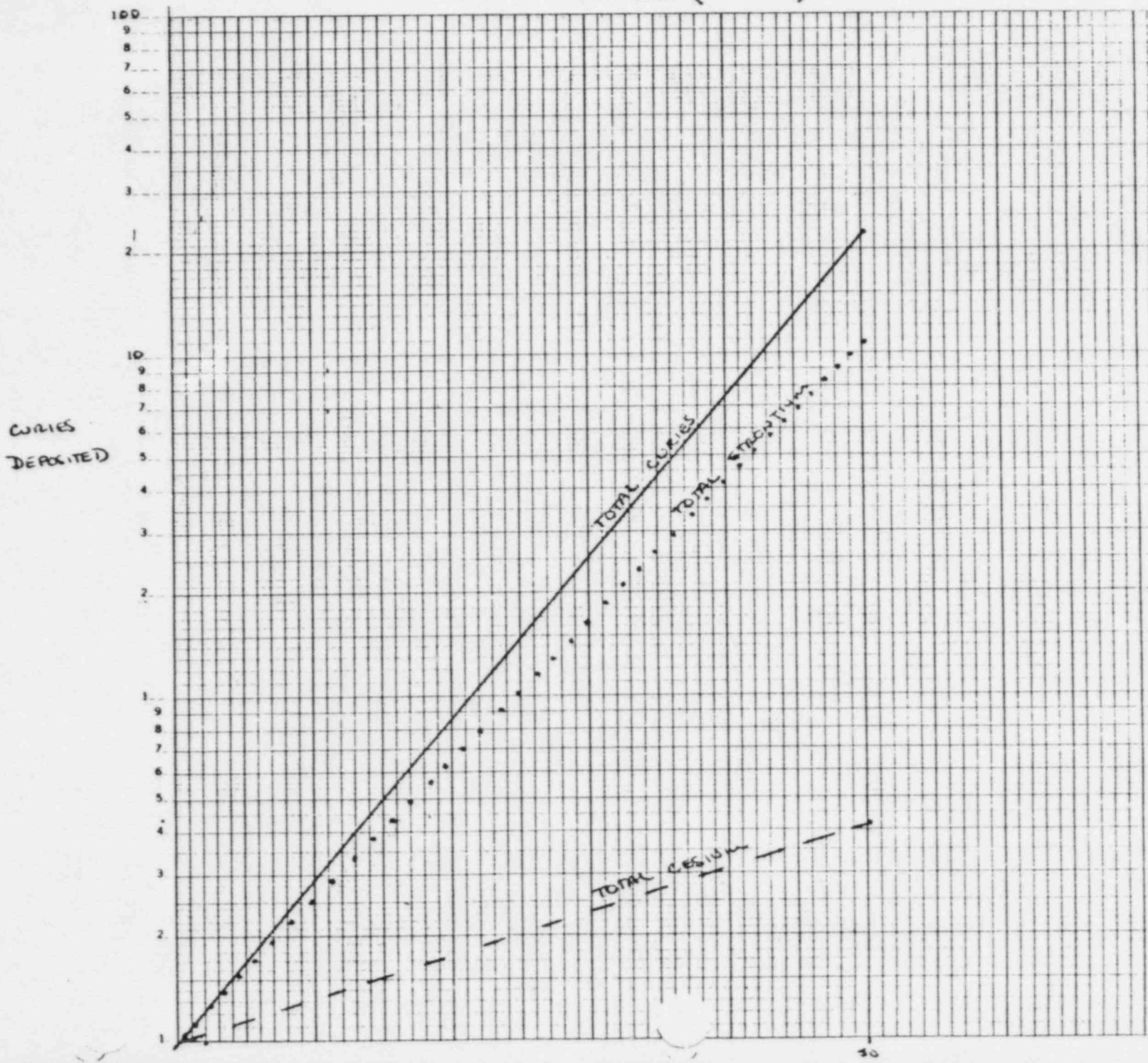
	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			9.8(-1)	—	9.8(-1)					
Sr 90	10/4 1130	1000	1.5(-1)	—	1.6(-1)					
Gross βγ			240	—	259					
Cesium 137			5.9(-1)	—	5.2(-1)					
Sr 90	10/6 0630	25000	2.1(-1)	—	1.9(-1)					
Gross βγ			270	—	280					
Cesium 137			6.5(-1)	—	6.1(-1)					
Sr 90	10/6 2125	50091	2.3(-1)	—	1.74(-1)					
Gross βγ			209	—	162					
Cesium 137						130	7.7(-3)	1.2(-3)	1.1(-3)	4.1(-4)
Sr 90	10/10 0817	3071				6	9.8(-2)	1.4(-2)	1.3(-2)	1.1(-2)
Gross βγ						320	3.4	2.5	3	2.8
Cesium 137						95	2.7(-3)	1.3(-3)	1.1(-3)	1(-3)
Sr 90	10/12 0018	15089				5.3	1.9(-2)	1.2(-2)	1.3(-2)	1.3(-2)
Gross βγ						258	4.2	3.66	3.47	3.16
Cesium 137						96	2.9(-3)	1.2(-3)	1.1(-3)	1(-3)
Sr 90	10/17 0030	35652				3	6.3(-2)	1(-2)	9.7(-3)	4.8(-3)
Gross βγ						206	3.45	2.65	2.94	2.81
Cesium 137						110	3.5(-3)	1.4(-3)	1.2(-3)	9.9(-4)
Sr 90	10/18 1659	50168				3.7	1.8(-1)	9.7(-3)	1.2(-2)	8.5(-3)
Gross βγ						210	4.01	3.15	2.97	[illegible]

NOTE: CESIUM & STRONTIUM [illegible] RESULTS [illegible]

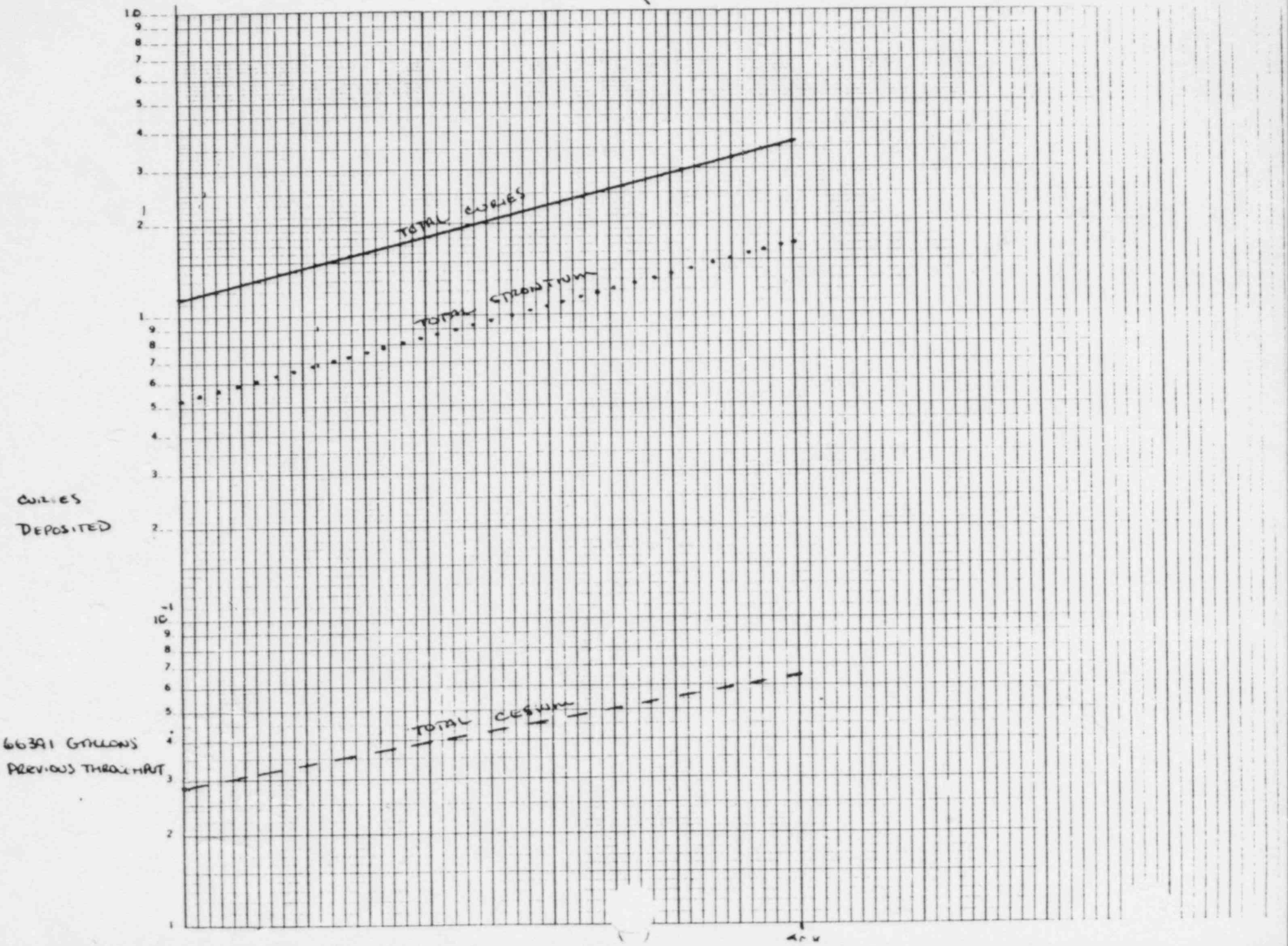
IX-2A (D·0012)


10K
9
8
7
6
5
4
3
2
1K
9
8
7
6
5
4
3
2
1
TOTAL CUBICS
TOTAL CYCLES
TOTAL DIRECTIONS
CUBICS DEPLETED
*66391 GALLONS PREVIOUS THROUGHPUT IN 2B POSITION

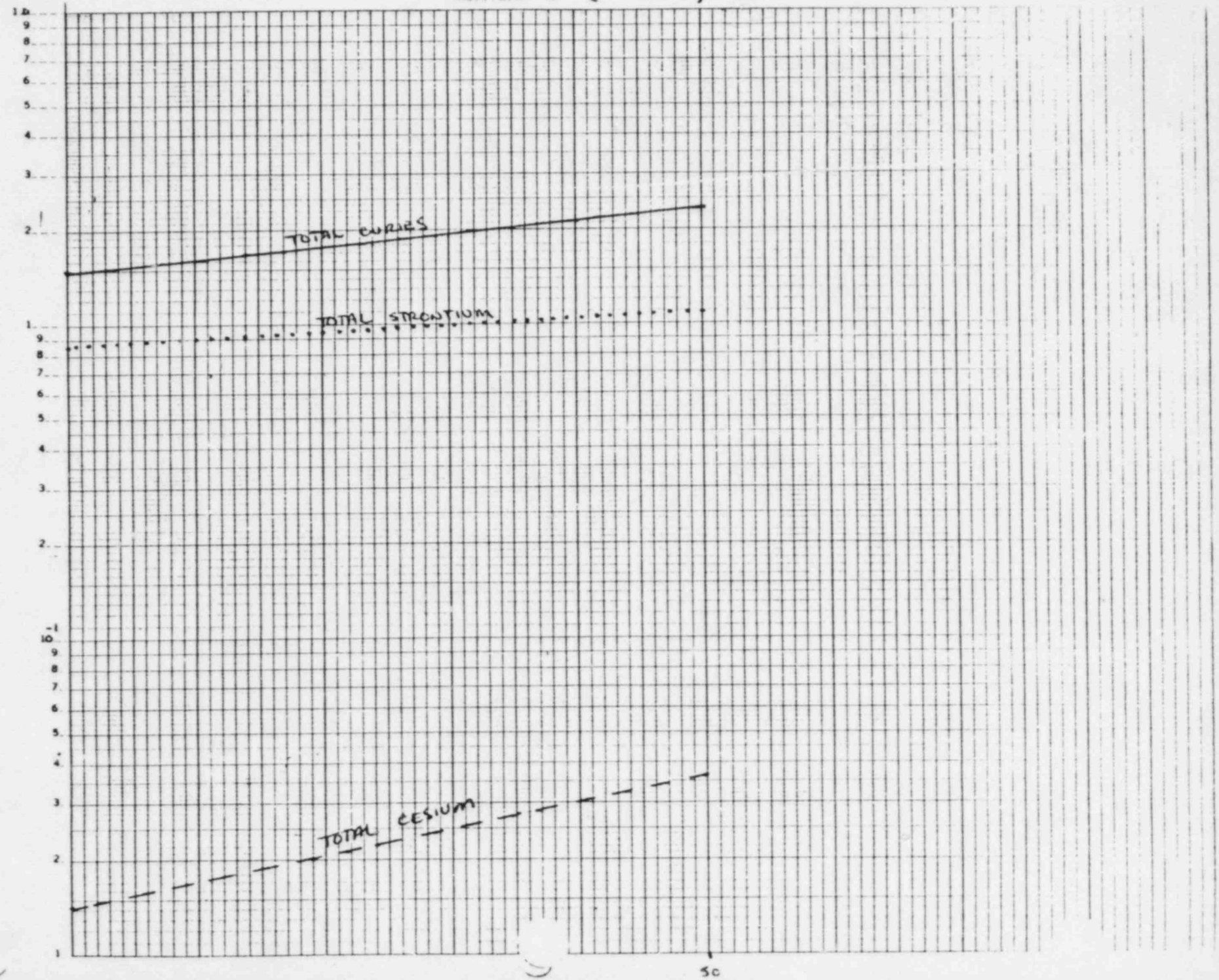
IX-2B (D10011)


CURIES DEPOSITED
100
9
8
7
6
5
4
3
2
10
9
8
7
6
5
4
3
2
1
9
8
7
6
5
4
3
2
1
TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
30

IX- 2C (D10013)


TOTAL CURIES
TOTAL STRONTIUM
TOTAL CESIUM
CURIES DEPOSITED
*6634 GALLONS PREVIOUS THROUGHPUT

CATION B (D1001C)



BATCH # 3-008
DATE 10/23-31/81
GALLONS 44237

SDS PROCESSING BATCH DATA

PROCESSING SUMMARY (UI/ML)

RADIONUCLIDE	AVERAGE INFLUENT	SYSTEM (mc/ml)	AVERAGE EFFLUENT
STRONTIUM 90	4.189		8.705×10^{-3}
CESIUM 134	11.211		6.211×10^{-5}
CESIUM 137	102.842		5.895×10^{-4}

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ION EXCHANGE DEPOSITION

	2 A	2 B	2 C	2 D (CAT B)
LINER #	D10012	D10011	D10013	D10016
THIS BATCH				
GALLONS	44237	44237	44237	44237
CESIUM	18895.154	10.686	1.029×10^{-2}	2.043×10^{-2}
STRONTIUM 90	601.353	100.283	3.242×10^{-1}	4.061×10^{-1}
TOTAL CURIES	36796.654	221.369	6.751×10^{-1}	9.024×10^{-1}
CUMULATIVE (THROUGH ABOVE LINERS)				
GALLONS	160796	44405	160796	160796
CESIUM	40465.535	11.305	7.571×10^{-2}	5.705×10^{-2}
STRONTIUM 90	1321.256	111.15	2.034	1.501
TOTAL CURIES	79342.514	243.923	4.305	3.245

POST FILTER

BATCH START 2.5 mr/hr BATCH END 4.5 mr/hr MAXIMUM 5 mr/hr

WATER SUMMARY

STAGED:

RB WATER	163140
TOTAL	324174
TOTAL CURIES DEPOSITED	* 600.164

* NOTE - NO DEPOSITION CREDITED FOR SR/Y-90 DUE TO LOSS OF SOLID SAMPLES BEFORE BETA SPEC DONE.

PROCESSED:

RB WATER	155275
TOTAL	308247
TOTAL CURIES DEPOSITED	1256.773.756

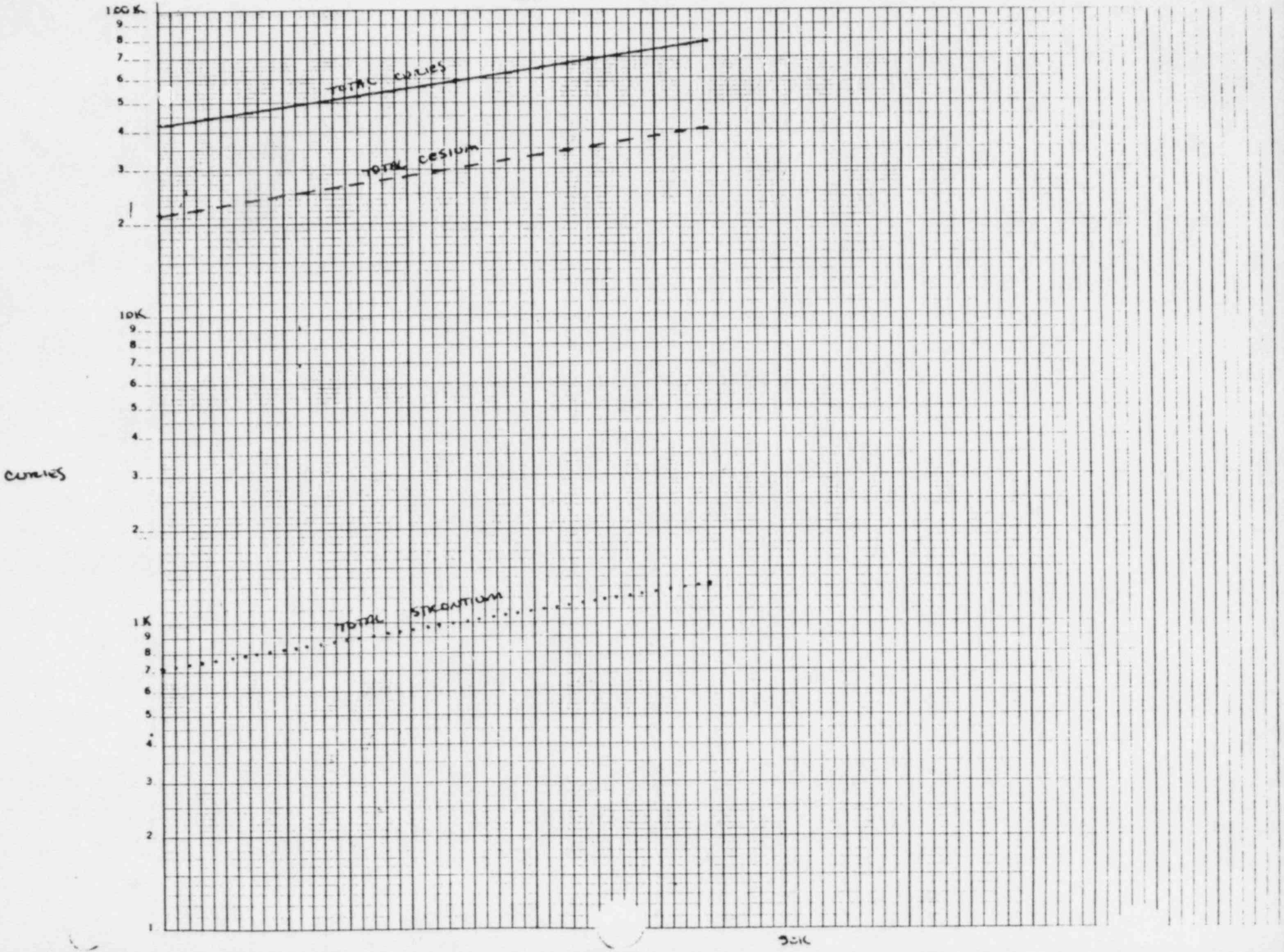
SDS PROCESSING SAMPLE SUMMARY

BATCH 5008

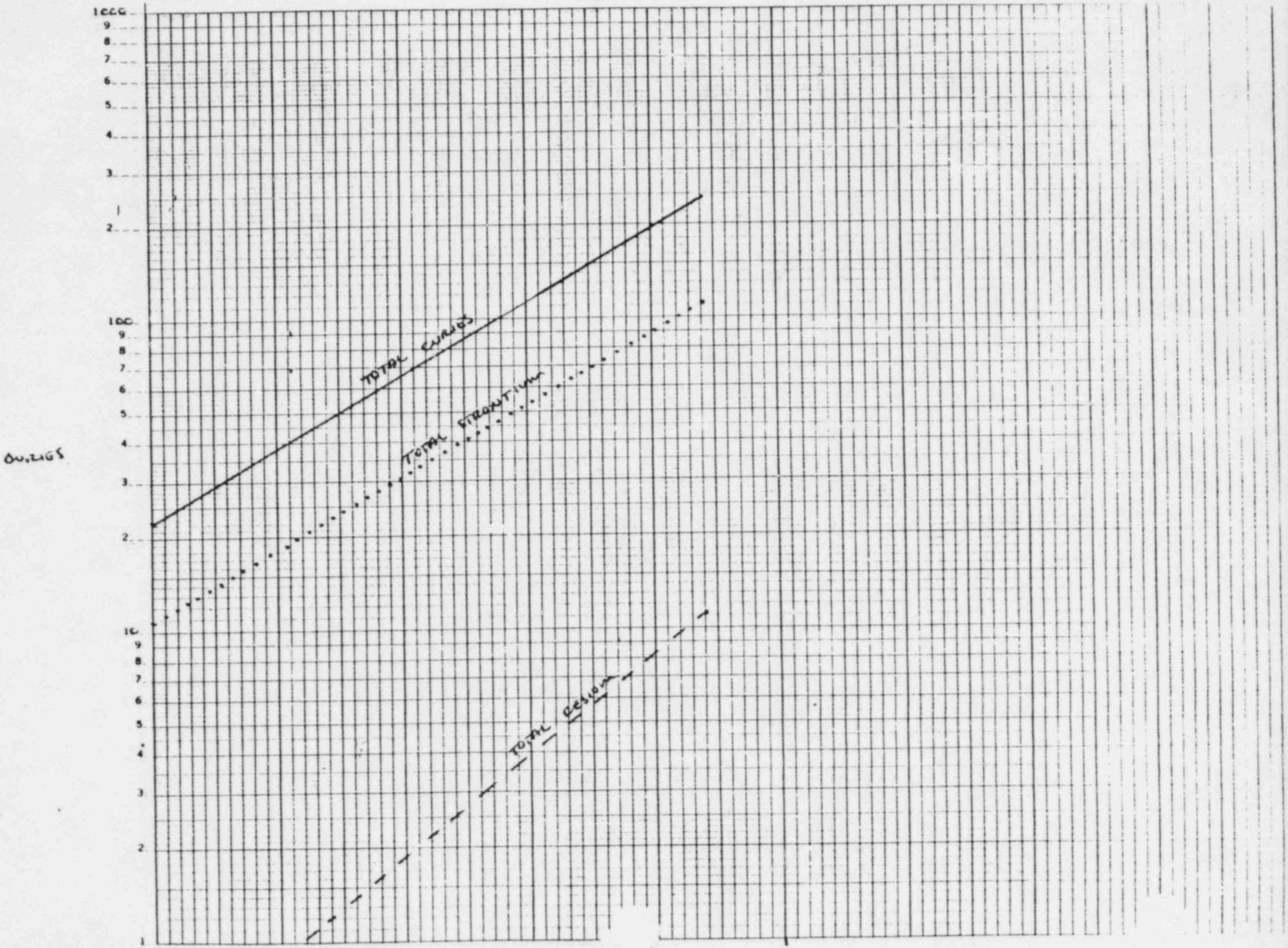
	Date/Time	Gallons	A	B	C	D	E	F	G	H
Cesium 137			3.1(-1)	___	3.6(-1)					
Sr 90	10/18 2350	1000	N/A	___	N/A					
Gross βγ			190	___	203					
Cesium 137			5(-1)	___	3.4(-1)					
Sr 90	10/19 1605	25000	N/A	___	N/A					
Gross βγ			305	___	254					
Cesium 137			4.7(-1)	___	3.6(-1)					
Sr 90	10/20 0538	49497	N/A	___	N/A					
Gross βγ			200	___	177					
Cesium 137						160	2.9(-3)	83(-4)	7.8(-4)	7.6(-4)
Sr 90	10/23 0900	1266				3.5	1.9(-1)	1.1(-2)	55(-3)	1(-2)
Gross βγ						171	3.68	2.61	2.67	2.54
Cesium 137						95	5.2(-3)	7.6(-4)	7.5(-4)	6.3(-4)
Sr 90	10/27 0846	17936				4.1	5.2(-1)	1.2(-2)	1(-2)	7.3(-3)
Gross βγ						220	4.81	3.21	2.85	2.5
Cesium 137						110	2.9(-2)	7.8(-4)	7.1(-4)	5.5(-4)
Sr 90	10/29 0816	30693				49	8.5(-4)	1.1(-2)	9.5(-3)	1(-2)
Gross βγ						277	5.51	2.95	2.83	2.4
Cesium 137						96	1.6(-4)	7.3(-4)	7.5(-4)	6(-4)
Sr 90	10/31 0030	44237				37	1	2.4(-2)	25(-2)	1.6(-4)
Gross βγ						209	5.63	2.85	2.77	2.3

CESIUM & STRONTIUM REPORTED ARE PICOCURIE SERIES

2A - D10012


100K
9
8
7
6
5
4
3
2
TOTAL CURIES
TOTAL CESIUM
10K
9
8
7
6
5
4
3
2
CURIES
1K
9
8
7
6
5
4
3
2
1
TOTAL STRONTIUM
50K

2B - DIC011


1000
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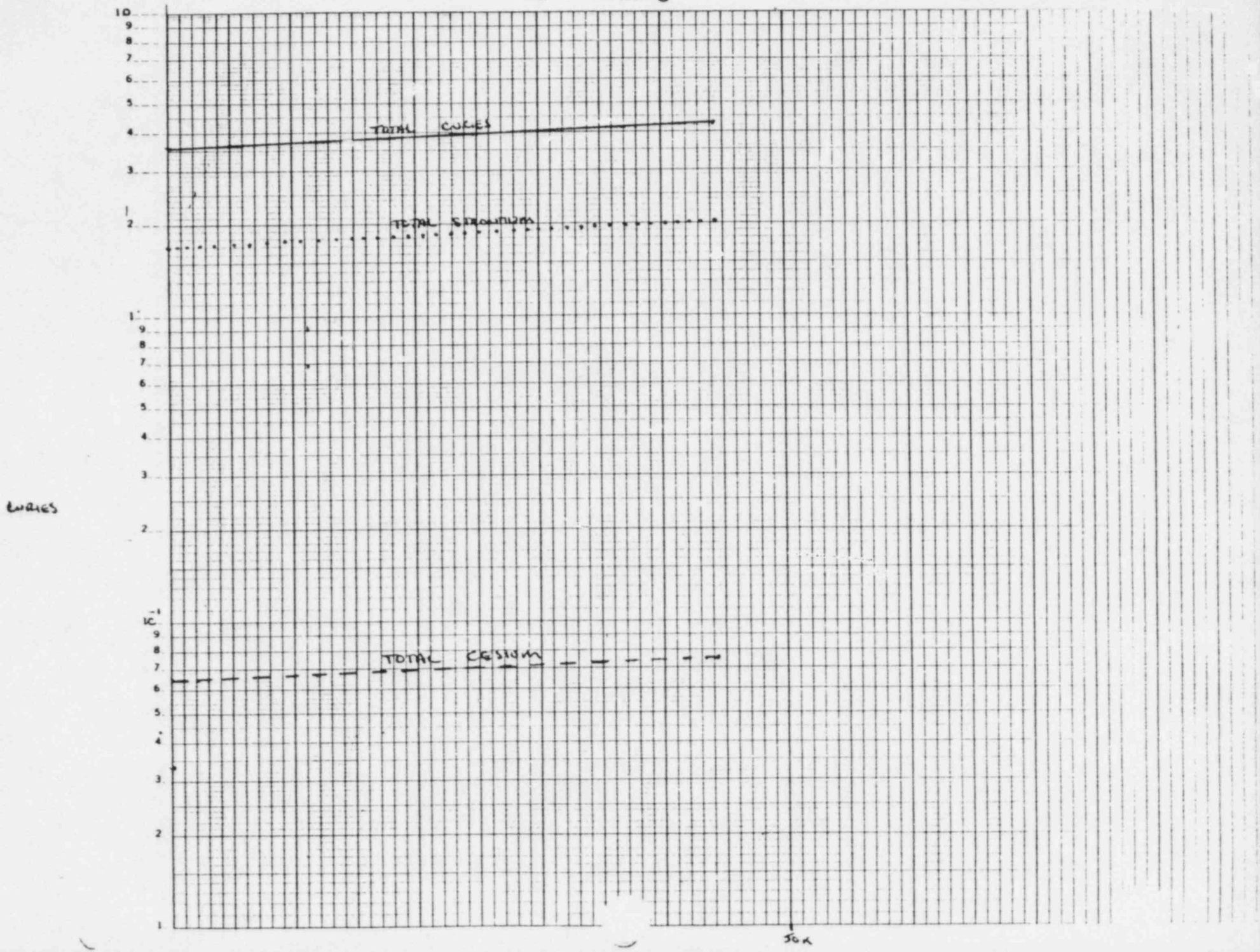
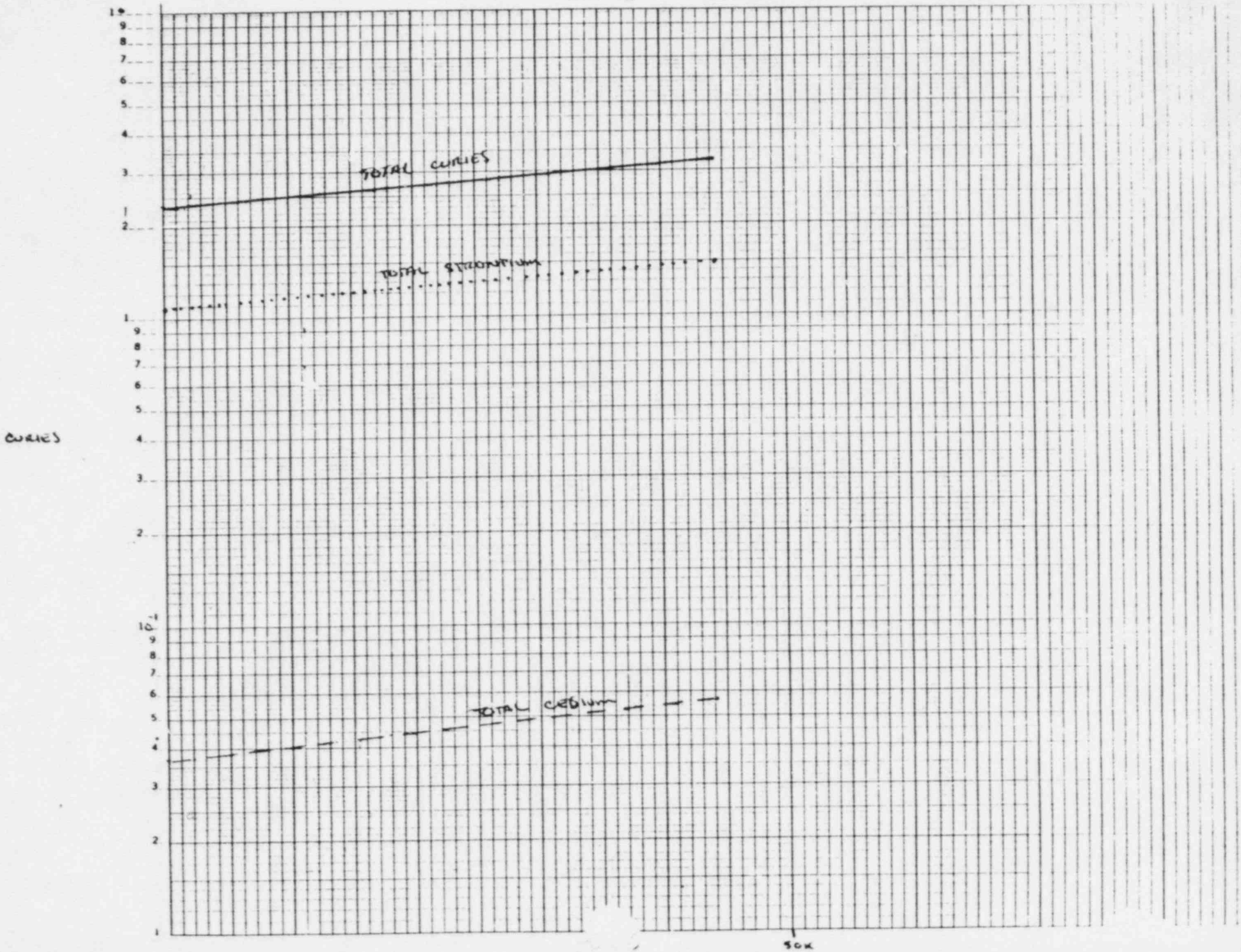
2
1
TOTAL CURVES
TOTAL STRONTIUM
TOTAL CESIUM
OUNCES

2C - D10013



CAT B - D10016



ANA-5
SDS-11

Inter-Office Memorandum

GPU Nuclear

Date December 16, 1981

Subject ORNL Analyses of SDS Samples

To Distribution

Location TMI U-2 Plant Engineering
4240-81-0465

Attached are the results of the analyses of SDS samples sent to ORNL taken during batch S-0010 processing. Table 1, gives the ORNL results for the gamma emitting nuclides and ^{90}Sr concentrations. Our on-site results on parallel samples are indicated in parentheses. Table 2, gives the results of U, Pu, Solids, and B analyses. These analyses are not routinely performed on site.

E. H. Gischel
Plant Engineering Director
TMI-2

KJH/nlm

cc: J. J. Barton
L. P. King
J. C. DeVine
J. E. Larson
K. L. Harner
C. G. Hitz
K. J. Hofstetter

A0000641

TABLE 1

TMI/GPU Sample #	Activity, uCi/ml							
	90-Sr*	134-Cs*	137-Cs*	106-Ru	125-Sb	144-Ce	54-Mn	60-Co
PT-A-92108	5.02	13.9 (12.3)	123 (110)	<0.4	<0.2	<0.3		
PT-C-92109	5.05	13.4 (12.7)	120 (111)	<0.4	<0.2	<0.3		
INF-D-92220	4.90 (6.2)	14.1 (13.2)	124 (131)	<0.4	<0.2	<0.3		
2A-E-92221	0.30 (.44)	6.1 E-4 (6.5 E-4)	5.4 E-3 (6.2 E-3)	2.5 E-4 (<1.2 E-4)	1.1 E-2 (1.3 E-2)	<2 E-4 (<5.6 E-4)		
2B-F-92222	1.06 E-2 (1.7 E-2)	1.6 E-4 (1.8 E-4)	1.4 E-3 (1.7 E-3)	3.5 E-4 (2.8 E-4)	1.1 E-2 (1.3 E-2)	1.4 E-4 (<4.8 E-4)		
2C-G-92223	4.2 E-3 (1.1 E-2)	9.5 E-5 (1.0 E-4)	8.2 E-4 (9.6 E-4)	<2 E-4 (3.9 E-4)	1.1 E-2 (1.3 E-2)	1.1 E-4 (2.8 E-4)		
CAT-H-92224	3.6 E-3 (6.1 E-3)	8.6 E-5 (1.4 E-4)	7.8 E-4 (9.9 E-4)	2.3 E-4 (2.6 E-4)	1.1 E-2 (1.4 E-2)	1.2 E-4 (<4.5 E-4)	2.6 E-6	1.4 E-5 (2.2 E-5)

*The Precision is ~±5%.

TABLE 2

IMI/GPU Sample #	Concentration, µg/ml				
	Pu	U	Total Solids	Solids Suspended	B
FT-A-92108	1.1 E-7	4.7 E-3	13.9 E3	<10	2.04 E3
FT-C-92109	1.1 E-7	3.9 E-3	14.0 E3	<10	2.03 E3
INF-D-92220	1.2 E-7	5.7 E-3	15.3 E3	<10	1.99 E3
2A-E-92221	2.4 E-7	3.8 E-3	13.0 E3	<10	1.99 E3
2B-F-92222	2.2 E-7	3.8 E-3	11.8 E3	<10	2.00 E3
2C-G-92223	1.6 E-7	2.7 E-3	13.1 E3	<10	1.95 E3
CAT-H-92224	1.2 E-7	3.6 E-3	12.8 E3	<10	1.92 E3

TRANSFER NO.	BATCH NO.	DATE	GALLONS REMOVED	µCi/ml Cs137
1	S005	9/23/81	14,004	82.3
2	S006	9/27/81	49,547	101.6
3	S007	10/10/81	50,091	102.0
4	S008	10/23/81	49,497	102.8
5	S009	11/02/81	36,676	77.6
6	S010	11/12/81	49,497	104.8
7	S011	11/22/81	44,099	100.4
8	S014	12/21/81	44,369	81.8
9	S015	12/29/81	42,867	92.1
10	S016	1/06/82	19,232	76.5
11	S017	1/23/82	43,670	94.0
12	S018	1/31/82	43,385	110.5
13	S019	2/07/82	19,216	115.0
14	S020	2/11/82	31,346	106.3
15	S021	2/21/82	31,150	116.4
16	S022	2/28/82	31,948	123.0
17	S025	~~8/10/82~~ 4/20/82	36,960	110.0 106.7
18	S029	8/19/82	4,718	87. 106.7
19	S036	9/27/82	30,031	20.7 25.3
20	S038	11/01/82	41,681	12.5
21	S041	12/31/82	47,920	8.7
22	S045	2/16/83	41,519	8.4
23	S046	3/04/83	53,425	6.6
24	S047	4/13/83	30,384	3.7
25	S055	6/03/83	83,081	2.7
26	S059	7/08/83	29,093	2.2
27	S096	7/03/84	7,897	9.3
28	S098	7/12/84	27,080	8.4
29	S107	11/08/84	41,275	4.7