

MATTAGAMI LAKE MINES LIMITED

CONCENTRATOR LABORATORY

PROGRESS REPORT # 6

TEST WORK PERFORMED JANUARY-MAY 1977

ON ORE SAMPLES

B4

COMPOSITE 1

C

C3

G3

D3

H3

A

F3 HARD

F3 VUGGY

COMPOSITE 2

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May 27, 1977

PROGRESS REPORT # 6

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Progress Report # 6

Summary

Tests have been performed on many ore samples since January 1977, namely: B4, composite 1, C, A, H3, C3, G3, D3, F3 Hard, F3 Vuggy, and composite 2. Dates of sample reception, storage and preparation are outlined below.

SAMPLE	DATE RECEIVED	STORAGE, PREPARATION
B4	September 1976	Prepared in 3 batches: B40, B41, B42
Composite 1	December 1976	A mixture of 14-10 Kg samples as shown in Table 2.
A, C	February 1976	1000 lbs. of each; stored until February 1977; 1/2 crushed and 1/2 sent to Lakefield Research.
C3, D3, G3, H3, F3 Hard, F3 Vuggy	March, 1977	500 lbs. of each; 1/2 crushed, 1/2 is being kept as coarse ore.
Composite 2		% composition as shown in Table 2

As has been previously noted the samples show great variation in grade, hardness, type of mineralization, degree of oxidation and flotation response (D.J.T. Carson's report and Table 3). The ores covered in this report can be divided into four main groups:

GROUP #	SAMPLES	DISTINGUISHING CHARACTERISTICS
1	F3 Vuggy, A	High pyrite, oxidation; Zn pale brown-depressed by lime in cleaners
2	B4, C, D3, Comp 1	Graphitic (esp. B4 and D3) Higher collector dosages required for Pb
3	C3, C3	Low grade; more regrind required than normal
4	H3, F3 Hard, Comp 2	Good flotation response for Pb and Zn

C and C3 are very dissimilar in all respects. The flotation responses of C3, G3, D3, F3 Hard and F3 Vuggy were similar to the 10 Kg samples received in December 1976: 13C, 10G, 11D, 2F, 1F.

SAMPLE	TEST #	Pb RGHR CONCENTRATE				Pb CLNR CONCENTRATE			
		ASSAY %		% DIST.		ASSAY %		% DIST.	
		Pb	Zn	Pb	Zn	Pb	Zn	Pb	Zn
C3 13C	233	17.8	4.2	85	12.2	45.8	4.0	50	2.7
	160					39.4	3.5	61	3.3
G3 10G	229	16.1	5.6	80	13.6				
	135					18.4	6.1	75	10.8
D3 11D	303					58.7	7.5	66	3.5
	159					53.9	6.5	69	4.2
F3 Hard 2F	232	30.5	18.7	91.4	20.0	65.2	7.8	49	2.1
	151					65.3	9.3	55	2.4
F3 Vuggy 1F	298	29.7	15.4	73	15.1				
	139					31.9	15.7	74	15.5

Testwork for all ores involved two stages:-

1. batch tests to study the effects of grind, collectors, pH modifiers and zinc depressants
2. cycle tests to estimate results expected in actual mill operation.

Table 1 lists the tests performed on each ore type. Details of all tests are reported in the various appendices.

Flotation response of most of the ores was similar enough to allow the development of a standard flowsheet (FIGURE 1). Slight modifications were required for certain ores i.e.

B4, D3 - 242-404 was replaced by .13 #/T 355 to overcome the effects of the collector absorbing graphitic material- collector to the Pb cleaners was also increased

F3 vuggy, A - no lime was added to the Zn cleaners as it depressed the Zn minerals

G3, C3 - longer regrind times were required to improve concentrate grades.

The batch tests consistently showed (except for F3 vuggy and A) that sodium cyanide (.2 #/T), zinc sulphate (or sulphur dioxide, .5#/T) and Soda ash (2-3 #/T) were required for good sphalerite and pyrite depression. However increasing the level of any or all had minimal effect. In many cases high dosages of cyanide (1 #/T) depressed zinc during subsequent zinc flotation also.

A primary grind of approximately 65% -325 mesh was acceptable for all ores. For *most* ores a coarser grind would suffice and future testwork will concentrate on reducing the primary grind. Assuming an average work index of 13 Kwh/T (FIGURE 2) 15.5 Kwh/T of power would be required to grind from 1/2 inch to 65% -325 mesh.

A collector combination of Aerofloat 242-Aerofloat 404 gave good Pb rougher recovery in most instances (except for B4, D3). Aeroxanthate 355 was also used in reduced quantities in a few tests with comparable results. As well as being the primary zinc collector Aeroxanthate 343 was used for lead and zinc scavenging and cleaning. Z-200 gave no improvements in zinc metallurgy.

For most ores lead mineralization is well liberated during the primary grind and the lead regrind time is not extremely critical. Main contaminant in the lead concentrate is pyrite and zinc is relatively low as compared to previous tests with B type ores. Cleaning at pH 10 with Soda ash appeared to give no benefit.

Zinc concentrate grade was very dependent on regrind time. With sufficient regrinding premium zinc concentrates (55-58% Zn) with low lead contents were obtained.

TABLE 4 gives the screen analyses of a few selected concentrates.

Lead and Zinc losses in the flotation tailings were usually very high, probably due to three main factors

1. liberated mineralization slimed by the fine grinding and regrinding.
2. middlings particles lost with the gangue
3. oxidized sulphide mineralization for some ores.

The results of the best cycle test for each sample are listed below and suggest recoveries on the order of 70% of silver, 75% for lead and 85% for zinc.

SAMPLE	TEST #	PRODUCT	WEIGHT %	ANALYSES OPT or %			% DISTRIBUTION		
				Ag	Pb	Zn	Ag	Pb	Zn
B4	176	Pb Concentrate	8.5		47.0	9.1		83.1	8.7
		Zn Concentrate	13.4		1.4	53.0		3.9	80.2
		Float Tail	78.1		.80	1.25		13.0	11.1
		Head	100.0		4.81	8.85		100.0	100.0
COMPOSITE 1	178	Pb Concentrate	6.0		48.0	11.0		76.8	7.2
		Zn Concentrate	15.2		1.6	52.0		6.5	86.7
		Float Tail	78.8		.8	.7		16.7	6.1
		Head	100.0		3.75	9.12		100.0	100.0
C	306	Pb Concentrate	5.6		50.1	7.0		77.5	5.1
		Zn Concentrate	11.5		.6	53.9		1.9	80.4
		Float Tail	82.9		.9	1.35		20.6	14.5
		Head	100.0		3.62	7.71		100.0	100.0
C3	316	Pb Concentrate	4.2	19.3	51.3	3.8	65.8	80.6	3.5
		Zn Concentrate	7.4	1.5	1.05	51.3	9.0	2.9	82.9
		Float Tail	88.4	.35	.5	.7	25.2	16.5	13.6
		Head	100.0	1.23	2.67	4.57	100.0	100.0	100.0
G3	305	Pb Concentrate	2.1		42.2	5.4		63.8	3.6
		Zn Concentrate	4.8		.9	55.7		3.2	83.9
		Float Tail	93.1		.50	.4		33.0	12.5
		Head	100.0		1.39	3.16		100.0	100.0
D3	309	Pb Concentrate	4.15	27.7	53.7	7.1	72.8	76.8	3.7
		Zn Concentrate	12.5	1.4	1.05	55.3	10.9	4.5	86.4
		Float Tail	83.35	.3	.65	.95	16.3	18.7	9.9
		Head	100.0	1.58	2.90	7.98	100.0	100.0	100.0

SAMPLE	TEST #	PRODUCT	WEIGHT %	ANALYSES OPT or %			% DISTRIBUTION		
				Ag	Pb	Zn	Ag	Pb	Zn
H3	282	Pb Concentrate	4.5	23.9	55.3	9.3	62.5	77.8	5.1
		Zn Concentrate	11.9	2.0	1.5	54.6	13.8	5.6	79.4
		Float Tail	85.6	.48	.62	1.48	23.7	16.6	15.5
		Head	100.0	1.72	3.20	8.18	100.0	100.0	100.0
A	311	Pb Concentrate	17.8	19.2	61.0	5.3	77.9	81.8	11.5
		Zn Concentrate	11.2	3.0	5.5	53.4	7.7	4.6	73.2
		Float Tail	71.0	.90	2.55	1.75	14.4	13.6	15.3
		Head	100.0	4.39	13.28	8.17	100.0	100.0	100.0
F3 Hard	283	Pb Concentrate	8.7	26.9	58.1	12.2	71.2	79.3	6.5
		Zn Concentrate	25.4	2.0	2.0	57.2	15.0	7.9	88.6
		Float Tail	65.9	.70	1.24	1.23	13.8	12.8	4.9
		Head	100.0	3.30	6.39	16.42	100.0	100.0	100.0
F3 Vuggy	310	Pb Concentrate	6.4	27.0	53.9	11.9	69.4	72.0	5.7
		Zn Concentrate	20.5	2.1	2.2	58.7	17.3	9.4	89.6
		Float Tail	73.1	.45	1.22	.86	13.3	18.6	4.7
		Head	100.0	2.49	4.79	13.43	100.0	100.0	100.0
Composite 2	314	Pb Concentrate	5.2	23.7	56.0	7.9	65.4	75.6	4.7
		Zn Concentrate	13.7	1.8	1.5	55	13.1	5.3	86.0
		Float Tail	81.1	.5	.9	1.0	21.5	19.1	9.3
		Head	100.0	1.89	3.85	8.76	100.0	100.0	100.0

Products of one cycle test on composite 2 (test 307) were analyzed for gold, arsenic and mercury. Their distributions for this test were:

	Weight %	ANALYSES			% DISTRIBUTION		
		Au OPT	As %	Hg PPM	Au	As	Hg
Pb Concentrate *	4.5	.145	.18	85	34.2	3.0	3.8
Zinc Concentrate **	13.6	.008	<.05 ⁺	640	5.7	2.5	85.7
Float Tail ***	81.9	.014	.31	13	60.1	94.5	10.5
Head	100.0	.019	.27	102	100.0	100.0	100.0

* Avg. Cycles 4,5,6 - also 64.2% Pb, 7.0% Zn, 24.5 OPT Ag

** Avg. Cycles 6,7,8 - also 1.3% Pb, 57.7% Zn, 1.6 OPT Ag

*** Avg. Cycles 4,5,6,7,8 - also .9% Pb, 1.3% Zn, .55 OPT Ag

+ Assumed to be .05% for purpose of calculation.

Mercury levels in the zinc concentrate are very high. The mercury and zinc distributions are almost identical. Arsenic in the zinc concentrate is extremely low due to the high grade produced by effective cleaning and rejection of arsenopyrite. Gold recovery is low but will still produce a significant revenue.

TABLE 1

TESTS PERFORMED ON VARIOUS ORE TYPES

COMPOSITE 1.	A	C3	F3 Hard	F3 Vuggy	B4
177 178* 179* 182 183*	180 184 260-266 267-271 284-289 302* 311*	233 272-281 304* 316*	232 247-258 283*	298-299 301* 308* 310*	137 A,B 138 A-H 148 A-J 149 A-F 161* 162* 163-167 168* 169* 176* Plus tests reported previously in memo #4
C	D3	G3	H3	COMPOSITE 2	
181 185 186* 187* 188-226 234* 245* 306*	230 294-297 303* 309*	227 229 290-293 300* 305*	228 231* 235-244 246* 259* 282*	307* 313* 314* 315*	

* Denotes locked cycle test.

TABLE 2

ORE COMPOSITION OF COMPOSITE SAMPLES

ORE SAMPLE	Wt % OF COMPOSITE	
	COMPOSITE 1	COMPOSITE 2
1. F Vuggy	3	
2. F Hard	11	
3,5,7 B	4	
4,6,8 B	2	
9. E Received	5	
10. G Dec.1976	20	
11. D	20	
12. I	20	
13. C	15	
14. A	0	
A Received		4.7
C February 1976		9.5
C3		9.5
G3 Received		19.0
D3 March 1977		19.0
H3		9.5
F3 Vuggy		9.5
F3 Hard		14.0
Composite 1		5.3

TABLE 3

METALLURGICAL DATA FOR ORE SAMPLES

	B4 (Avg. B40) (B41, B42)	COMP 1	C	C3	G3	D3	H3	A	F3 Hard	F3 Vuggy	COMP 2
SPECIFIC GRAVITY	3.35	3.30	3.20	3.51	2.95	2.97	3.15	4.55	3.6	4.05	
Natural pH	7.2	7.6	8.1	7.3	7.9	8.1	7.1	6.9	6.9	7.2	
PPM S ₂ O ₃ ^{FR}	40	100	70	60	70	35	135	550	55	990	
WORK INDEX Kwh/T	13		13.0	11.9	14.4	15.3	12.2	10.4	12.3	12.7	
Au oz/T	.03	.027	.025	.027	.008	.016	.025	.028	.037	.04	
Ag oz/T	2.0	2.2	2.0	1.3	.72	2.1	2.0	4.2	3.7	2.8	1.9
% Cu	.07	.05	.04	.02	.05	.02	.08	.15	.01	.10	
% Zn	7.8	9.2	9.1	4.9	3.2	7.9	8.0	7.8	17.6	13.2	8.7
% Pb	4.5	4.7	4.1	2.9	1.5	3.5	3.6	12.4	6.6	5.7	4.0
% Fe	15	13.6	9	20.3	8.4	5.0	11.9	24.5	11.8	24.5	
% S	21	19.5	14.5	24.8	10.2	9.5	15.2	33	21.4	34	
% Insol	46	47	58	43.2	72.0	69.0	57.0	7.5	38.7	14.5	
% SiO ₂	43	43.9		39.5	63.0	62.5	51.5	7.1	36.2		
% CaO	.4	.7	.25	.15	.15	.3	< .01	4.5	.15	2.25	
% MgO	.1	.36		.07	.03	.05	< .01	.5	.07		
% As	.3	NIL	.4	.4	.15	.5		.1	1.2		
% Co	.004	.003		.003	.004	.002	.004		.004		
% Cd	.01	.012		.006	.004	.012	.012		.021		
% Cr	.08										
% Sb	.04										
% FeS ₂		24.5	16	40		9	20	46	22	46	
PPM Hg	65		115	64	26	115	93	28	185	160	

TABLE 4

SCREEN ANALYSES OF SELECTED CONCENTRATES

	WEIGHT PERCENT			
	VAN 307 Pb Conc 5,6,7	VAN 314 Pb Conc 3,4,5	VAN 307 Zn Conc 5,6,7	VAN 314 Zn Conc 5,6
+ 65 M	-	-	-	-
+100 M	-	-	-	-
+150 M	-	-	-	-
+200 M	-	-	-	-
+325 M	1.2	1.1	1.0	6.6
+400 M	1.6	1.6	1.8	5.1
-400 M	97.2	97.3	97.2	88.3
Specific Gravity	5.2	5.4	3.8	3.8

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TEST #: STANDARD ORE TYPE: COMPOSITE 2 DATE: _____

OF CYCLES: _____

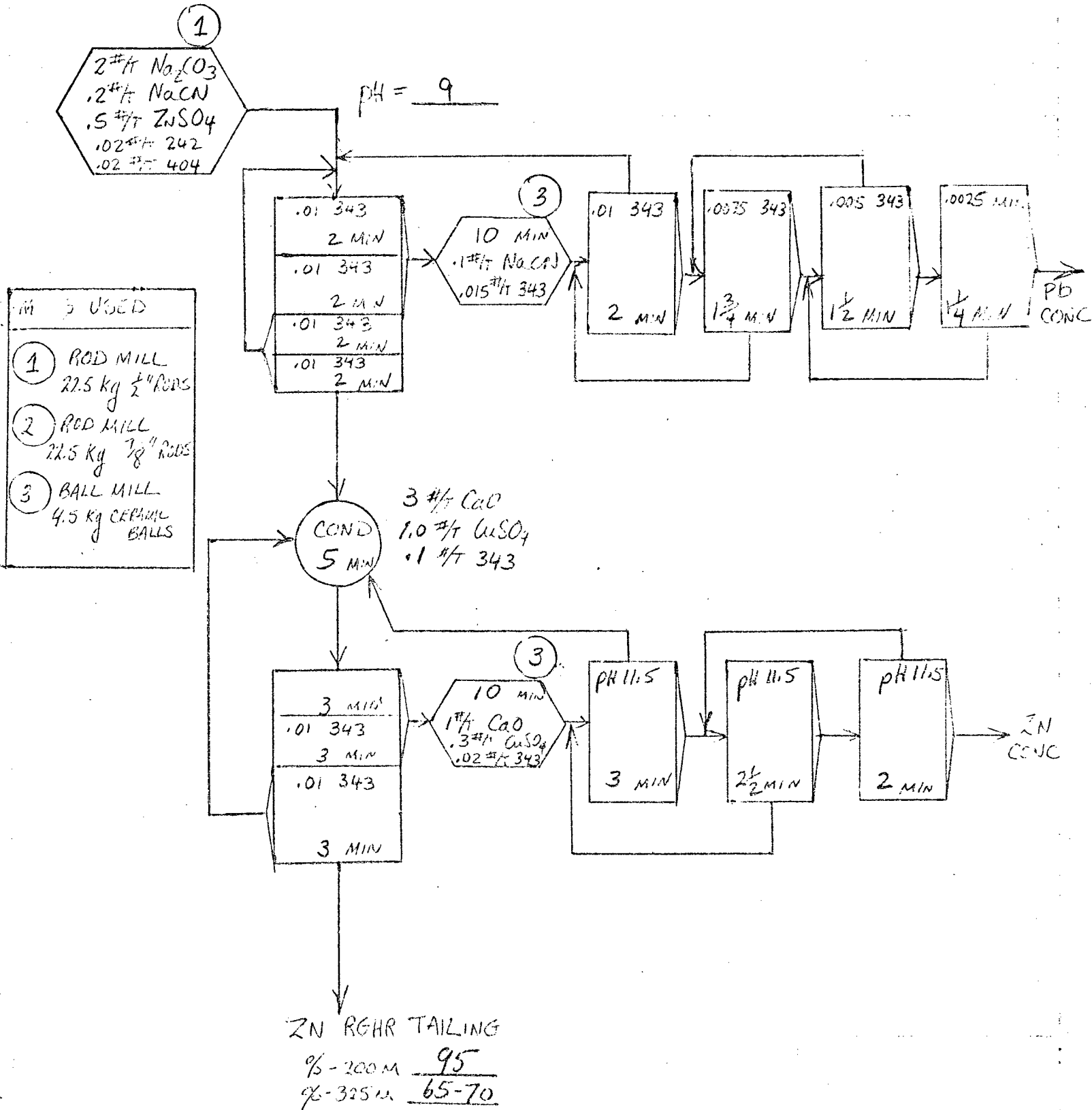


FIGURE 2

GRUM

WORK INDEX VS
SPECIFIC GRAVITY
OF VARIOUS SAMPLES

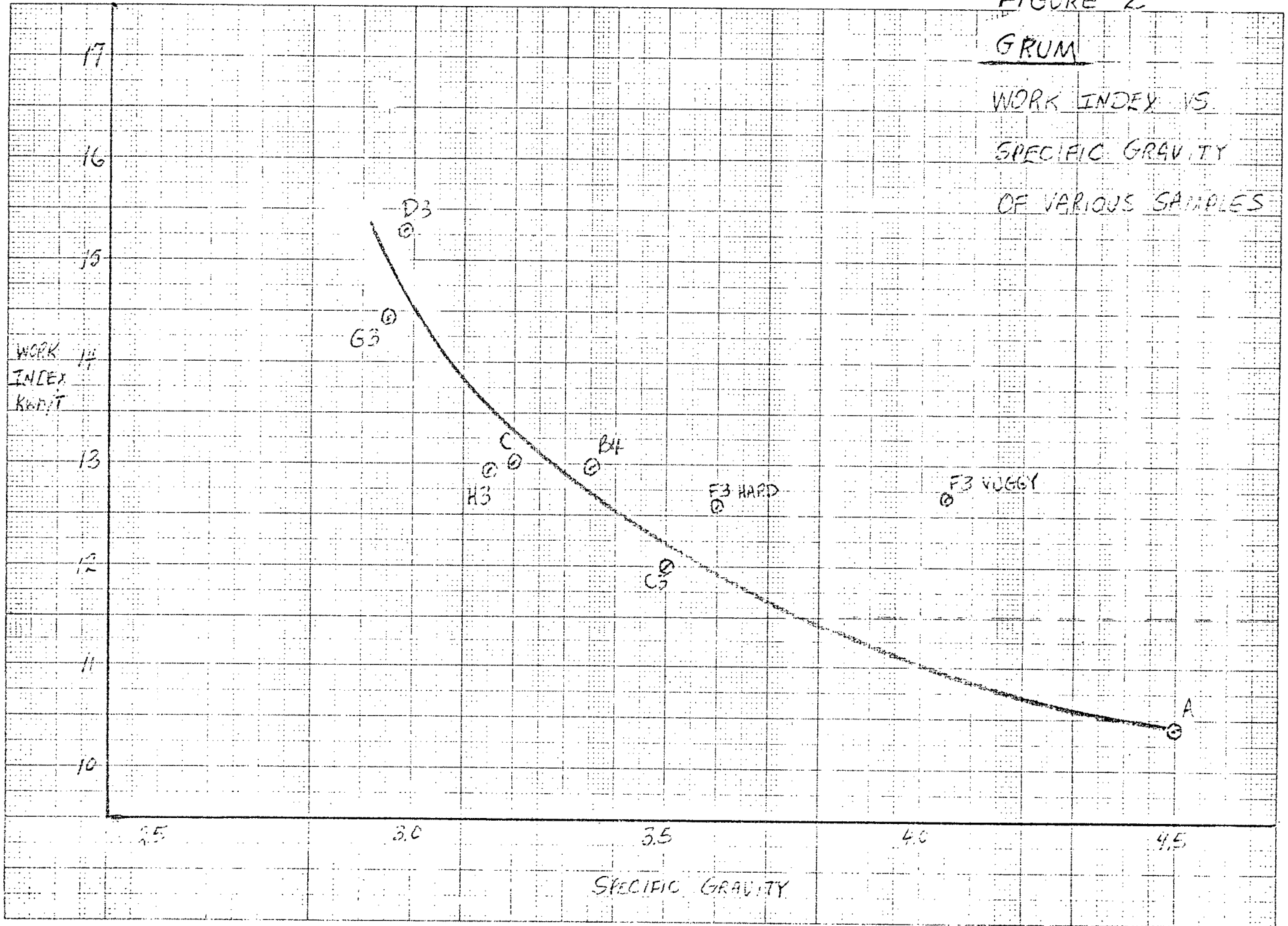


FIGURE 2

APPENDIX I

TESTS ON

GRUM SAMPLE

B 4

TEST	DESCRIPTION
137 A,B	TEST DOW A FLOWSHEET-HIGH CYANIDE A-LIME B-SODA ASH
138 A-H	DIFFERENT PRIMARY GRIND TIMES
148 A-J	SODA ASH VS CaO, VARY ZINC DEPRESSANTS ZnSO ₄ , SO ₂ , NaCN
149 A-F	VARY REGRIND TIME AND NaCN to REGRIND
161	6 CYCLE TEST ; Pb Clnrs open circuit
162	8 CYCLE TEST ; poor stability
163-167	VARY REGRIND TIME
168	6 CYCLE TEST ; Pb Clnrs open circuit
169	6 CYCLE TEST ; good results Pb
176	6 CYCLE TEST ; food results Pb, Zn

Comments on B4

B4 is a medium sulphide, high silicate ore of intermediate hardness. The presence of graphitic mineralization requires high collector dosages to float the galena. Fine regrinding increases the collector requirements in the Pb cleaners considerably due to the increased surface area of the particles. Regrinding reduced both Pb concentrate grade and Pb recovery in several tests when collector levels were not sufficient.

A grind of approximately 70% -325 mesh is required for good Pb and Zn recoveries (FIGURE 3)

Flotation at the natural pH of the ore was not selective. NaCN and SO₂ were required for optimum Zn depression during Pb flotation.

VAN 148	Pb ROUGHER CONC			
	% Pb	% Zn	% DIST Pb	% DIST Zn
GRIND 75% -325 MESH				
NATURAL pH	13.3	12.9	86.1	47.8
6#/T Na ₂ CO ₃	18.4	17.9	76.9	41.1
6#/T Na ₂ CO ₃ , 1#/T ZnSO ₄	18.6	16.5	79.4	38.3
6#/T Na ₂ CO ₃ , 1#/T SO ₂	22.5	14.8	79.1	29.2
6#/T Na ₂ CO ₃ , 1#/T SO ₂ , .2#/T NaCN	21.9	11.5	85.2	23.8
2#/T CaO	22.9	12.0	75.4	20.9
2#/T CaO, 1#/T SO ₂ , .2#/T NaCN	25.0	11.6	82.0	20.6

Pb concentrate grade was lower for this ore

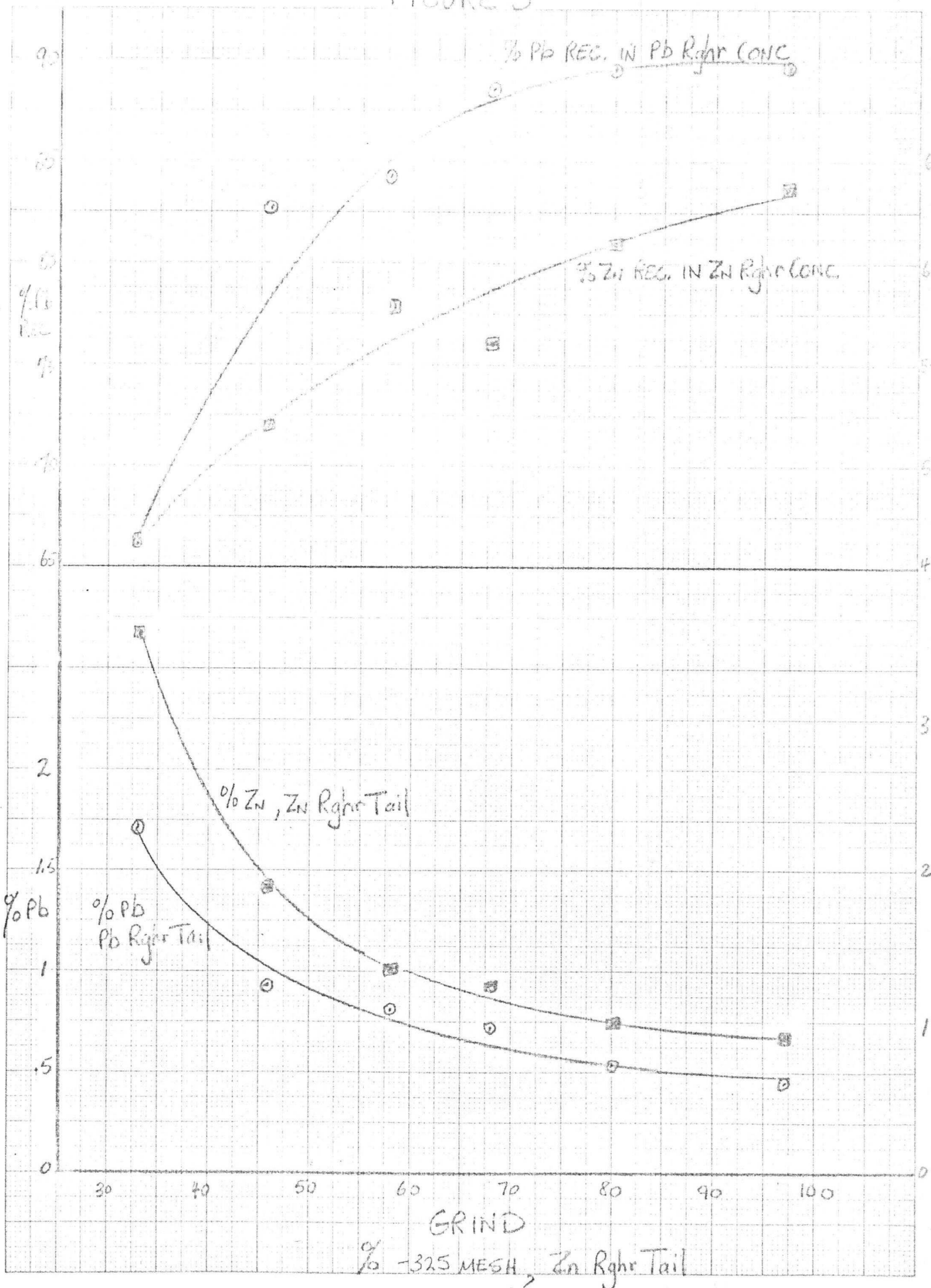
than for most of the others. D.J. Carson has reported previously (see page 40 of his report) that B4 contains about 10% highly oxidized, fine grained ore.

Increased regrinding did not noticeably improve Pb results (see below). Similarly, the use of high NaCN additions (Dowa flowsheet) had little effect.

	REGRIND MINUTES	ASSAY		DISTRIBUTION	
		Pb	Zn	Pb	Zn
1st Pb Clnr Conc	10	27.3	10.4	84.1	16.6
	20	31.7	10.2	84.7	15.5
	30	30.8	10.6	83.9	16.0
	60	28.9	10.5	80.1	16.5
2nd Pb Clnr Conc	10	41.6	9.6	80.5	10.7
	20	46.2	8.5	74.5	7.7
	30	43.9	9.1	70.9	8.2
	60	41.2	9.2	60.8	7.7
3rd Pb Clnr Conc	10	62.1	7.0	68.6	4.4
	20	58.0	6.6	56.3	3.6
	30	53.4	7.9	58.7	4.8
	60	43.8	8.1	22.6	2.4

Zn recovery was low ($\leq 80\%$) in all cycle tests due to high losses in the flotation tailings and in the Pb concentrate.

FIGURE 3



46 1516

KEE 10 X 10 TO THE CENTIMETER 18 X 25 CM. KEUFFEL & ESSER CO. MADE IN U.S.A.

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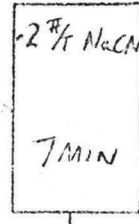
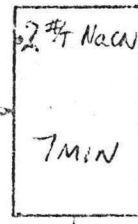
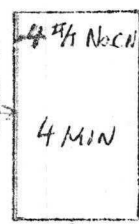
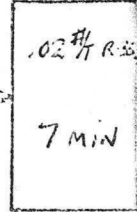
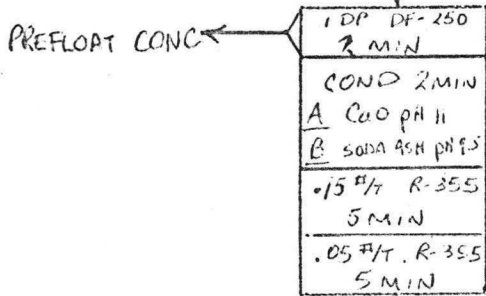
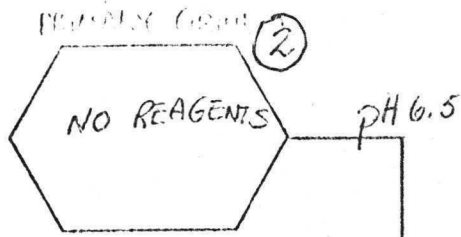
GRUM DEPOSIT
TEST VAN-137A, B

B₄

PURPOSE: TEST DOWA FLOWSHEET

137A Pb Rghr pH 11 CaO

137B Pb Rghr pH 9.5 SODA ASH



1st Pb Chlor Tail

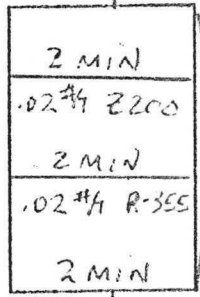
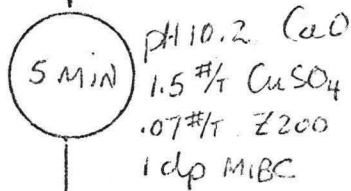
2nd Pb Chlor Tail

3rd Pb Chlor Tail

4th Pb Chlor Tail

Pb CONC

- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



Zn Rghr Conc

ZINC ROUGHER TAILINGS

% -200 MESH	100
% -325 MESH	99.2
% -400 MESH	

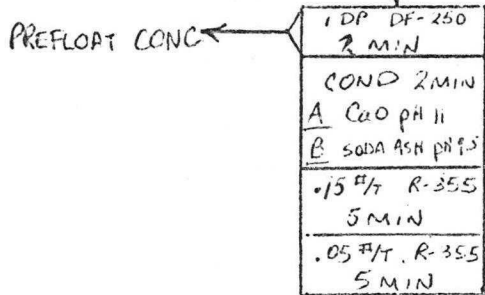
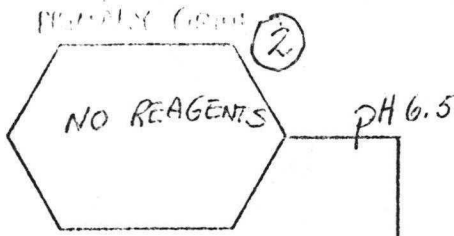
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GRUM DEPOSIT
TEST VAN-137A, B

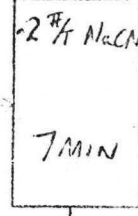
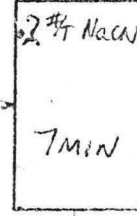
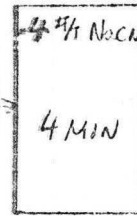
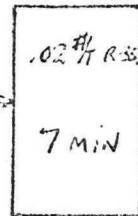
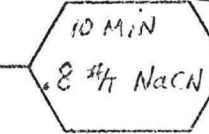
B4

PURPOSE: TEST DOWA FLOWSHEET

137A Pb Rghr pH 11 CaO
137B Pb Rghr pH 9.5 SODA ASH

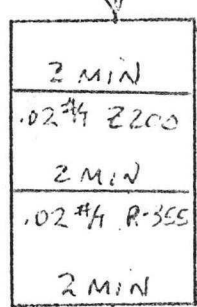
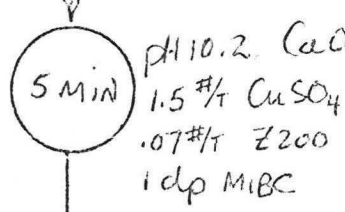


REGRIND (4)



1ST Pb Chlor Tail 2nd Pb Chlor Tail 3rd Pb Chlor Tail 4th Pb Chlor Tail

- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2" CERAMIC BALLS



Zn Rghr Conc

ZINC ROUGHER TAILINGS

% -200 MESH	100
% -325 MESH	99.2
% -400 MESH	

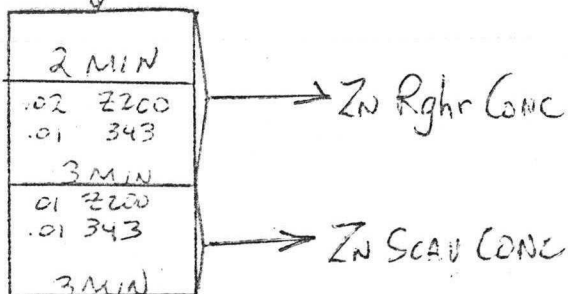
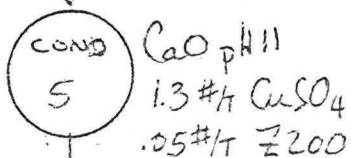
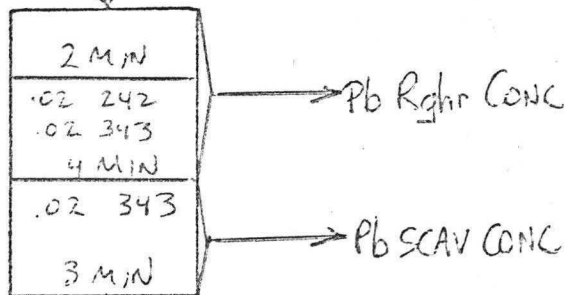
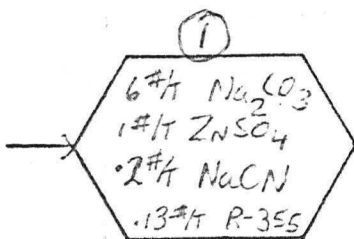
MATTAGOMI LAKE MINES LTD

GRUM TEST VAN-138 A-H

B4

PURPOSE: DIFFERENT PRIMARY GRIND
TIME

14 DEC 76



↓ Zn Rght Tail
 % - 200 M _____
 % - 325 M _____

- MILLS USED

① ROD MILL
22.5kg - 1/2" RODS

② ROD MILL
22.5kg 3/4" RODS

③ ROD MILL
10kg - 1/2" RODS

TEST	%-325	%-200
A	61.4	82.1
B	58.3	79.3
C	96.8	100.0
D	80.0	97.4
E	67.8	89.1
F	45.7	64.3
G	96.7	100.0
H	32.6	42.3

VAN 138 A	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn	Pb	Zn	Pb	Zn
Pb Rght CONC	145.3	14.74	23.42	11.08	85.2	23.2		
Pb SCAV CONC	19.6	1.98	3.84	12.39	1.4	2.6		
Zn Rght CONC	174.7	18.16	1.07	31.07	3.6	59.8		
Zn SCAV CONC	74.8	7.56	1.45	8.88	2.0	7.1		
Zn Rght Tail	519.8	52.55	.81	1.27	7.8	7.2		
HEAD	989.2	100.00	5.43	9.41	100.0	100.0		
VAN 138 B								
Pb Rght CONC	198.6	14.67	20.96	10.69	83.9	22.6		
Pb SCAV CONC	20.6	20.91	3.70	12.39	1.5	2.7		
Zn Rght CONC	142.8	14.15	1.03	37.40	2.8	57.0		
Zn SCAV CONC	76.2	7.53	1.54	11.00	2.4	8.9		
Zn Rght Tail	571.2	56.59	.81	1.43	9.4	8.8		
HEAD	1009.4	100.00	4.91	9.29	100.0	100.0		

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 138

CALCULATION SHEET.

DATE 14 DEC 76

138 C

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rohr CONC	181.6	18.15		23.60	10.23		88.7	20.4
Pb SCAV CONC	25.6	2.56		3.41	12.20		1.8	3.4
Zn Rohr CONC	149.5	14.94		.83	39.92		2.6	65.7
Zn SCAV CONC	29.8	2.98		1.36	12.51		.8	4.1
Zn Rohr Tail	614.2	61.38		.48	.93		6.1	6.4
Head	1000.7	100.00		4.83	9.08		100.0	100.0

138 D

Pb Rohr CONC	204.4	20.40		23.71	11.31		89.7	24.5
Pb SCAV CONC	26.0	2.60		2.94	12.01		1.4	3.3
Zn Rohr CONC	160.6	16.03		.78	35.77		2.3	61.1
Zn SCAV CONC	56.0	5.59		1.11	8.88		1.1	5.3
Zn Rohr Tail	554.8	55.38		.53	.99		5.5	5.8
Head	1001.8	100.00		5.39	9.40		100.0	100.0

138 E

Pb Rohr CONC	230.8	22.78		21.76	11.20		88.6	27.4
Pb SCAV CONC	15.2	1.50		2.42	12.77		.7	2.1
Zn Rohr CONC	156.5	15.45		.83	33.64		2.3	55.9
Zn SCAV CONC	66.9	6.60		1.27	10.12		1.4	7.2
Zn Rohr Tail	543.5	53.66		.72	1.28		7.0	7.4
Head	1012.9	100.00		5.59	9.30		100.0	100.0

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN

CALCULATION SHEET.

DATE

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rohr CONC	201.0	20.57		20.81	11.04		82.8	24.3
Pb SCAN CONC	22.2	2.27		3.90	12.49		1.7	3.0
Zn Rohr CONC	144.3	14.76		1.14	33.00		3.3	52.0
Zn SCAN CONC	71.8	7.35		1.66	12.25		2.3	9.6
Zn Rohr Tail	538.0	55.05		.93	1.88		9.9	11.1
Head	977.3	100.00		5.17	9.36		100.0	100.0
Pb Rohr CONC	206.5	20.48		20.95	11.45		90.2	25.3
Pb SCAN CONC	25.5	2.53		2.90	12.45		1.5	3.4
Zn Rohr CONC	141.6	14.04		.69	40.61		2.0	61.5
Zn SCAN CONC	35.0	3.47		1.07	11.12		.8	4.2
Zn Rohr Tail	599.8	59.48		.44	.89		5.5	5.6
Head	1008.4	100.00		4.76	9.28		100.0	100.0
Pb Rohr CONC	140.0	14.11		22.42	10.84		66.1	16.7
Pb SCAN CONC	23.0	2.32		6.21	11.81		3.0	3.0
Zn Rohr CONC	128.6	12.96		1.84	32.66		5.0	46.4
Zn SCAN CONC	63.4	6.39		2.31	11.85		3.1	8.3
Zn Rohr Tail	637.3	64.22		1.69	3.61		22.8	25.6
Head	992.3	100.00		4.79	9.13		100.0	100.0

138 F

138 G

138 H

MATTA AMI LAKE MINES LTD

GRUM TEST VAN - 148 A-J

B4

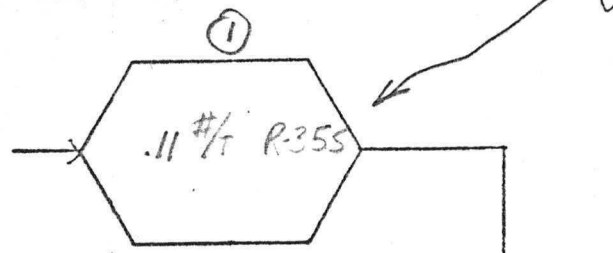
PURPOSE: SODA ASH VS CaO

VARY ZNSO₄, NaCN, SO₂

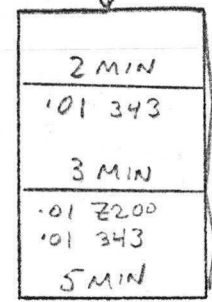
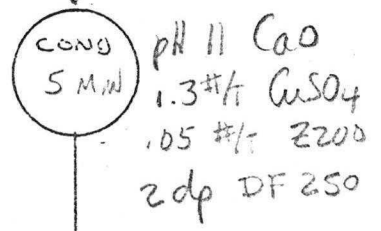
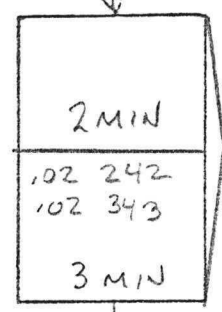
AS SHOWN

29 DEC

TEST	REAGENTS TO GRIND	pH
A	● Na ₂ CO ₃	10.1
B	2 [#] /t CaO 1 [#] /t ZnSO ₄	10.6
C	2 [#] /t CaO 1 [#] /t SO ₂ .2 [#] /t NaCN	10.1
D	NATURAL pH	7.2
E	6 [#] /t Na ₂ CO ₃ 1 [#] /t ZnSO ₄	10.0
F	6 [#] /t Na ₂ CO ₃ 1 [#] /t SO ₂	9.6
G	2 [#] /t CaO 1 [#] /t ZnSO ₄ .2 [#] /t NaCN	10.9
H	2 [#] /t CaO	11.1
J	6 [#] /t Na ₂ CO ₃ 1 [#] /t SO ₂ .2 [#] /t NaCN	9.7



- MILLS USED
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS



% - 200 M 94
% - 325 M 72

Pb Rghr CONC

Zn Rghr CONC

Zn SCAU CONC

A

B

C

	WEIGHT		ANALYSES %		DISTRIBUTION %			
	GR	%	A ₂	Pb	Zn	A ₂	Pb	Zn
Pb Rghr CONC	220.9	21.24	18.40	17.87	76.9	41.1		
Zn Rghr CONC	156.9	15.09	2.23	30.00	6.6	49.1		
Zn SCAU CONC	54.6	5.25	2.22	8.03	3.0	4.6		
Zn Rghr CONC	607.3	58.42	1.17	.83	13.5	5.2		
HEAD	1037.7	100.00	5.08	9.23	100.0	100.0		
Pb Rghr CONC	155.2	16.03	23.23	12.29	75.0	20.8		
Zn Rghr CONC	233.2	24.09	2.61	28.36	12.7	72.2		
Zn SCAU CONC	66.9	6.91	2.56	4.60	3.6	3.4		
Zn Rghr Tail	512.6	52.96	.82	.64	8.7	3.6		
HEAD	967.9	100.00	4.96	9.46	100.0	100.0		
Pb Rghr CONC	170.9	16.67	25.01	11.57	82.0	20.6		
Zn Rghr CONC	182.7	17.83	1.91	34.94	6.7	66.8		
Zn SCAU CONC	90.5	8.83	1.77	8.52	3.1	8.0		
Zn Rghr Tail	580.2	56.67	.73	.76	8.2	4.6		
Head	1024.9	100.00	5.08	9.38	100.0	100.0		

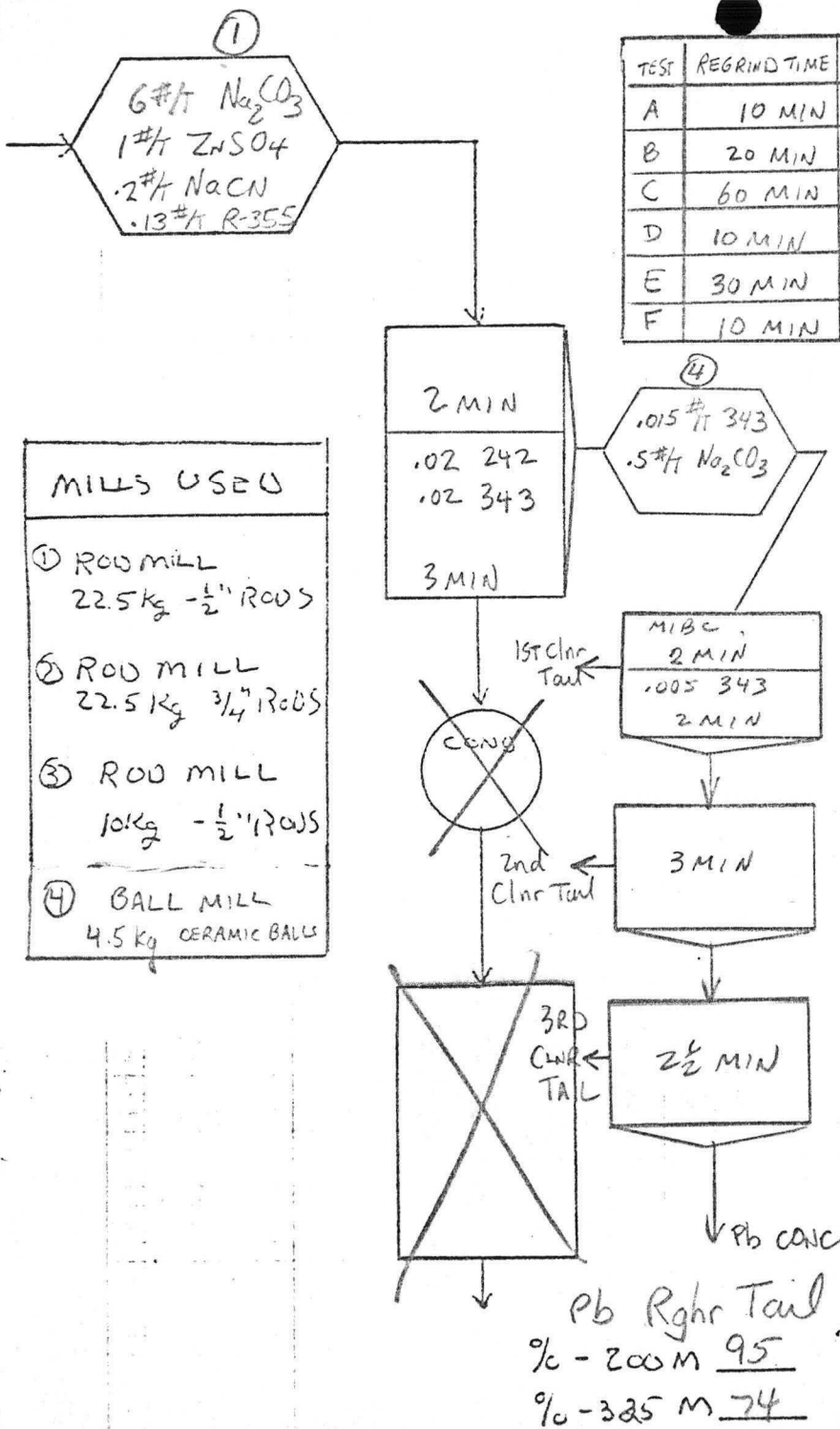
MATTAGOMI LAKE MINES LTD.

GRIM TEST VAN - 149 A-F

By

PURPOSE: VARY REGRIND TIME
AND NaCN TO REGRIND

30 DEC 76



	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb CONC	57.9	5.97	62.13	6.97		68.6	4.14	
3rd Clar Tail	43.6	4.49	14.30	13.15		11.9	6.13	
2nd Clar Tail	44.0	4.53	4.25	12.17		3.6	5.9	
1ST Clar CONC		14.99	30.31	10.39		84.1	16.6	
1ST Clar Tail	71.8	7.40	1.57	9.84		2.1	7.8	
Rghr CONC		22.39	20.81	10.21		86.2	24.4	
Rghr Tail	753.3	77.61	.96	9.05		13.8	75.6	
Head	970.6	100.0	5.41	9.31		100.0	100.0	
Pb CONC	48.7	4.85	58.04	6.60		56.3	3.6	
3rd Clar Tail	32.2	3.21	28.32	11.31		18.2	4.1	
2nd Clar Tail	53.4	5.32	9.60	12.85		10.2	7.8	
1ST Clar CONC		13.38	31.65	10.22		84.7	15.5	
1ST Clar Tail	73.5	7.33	2.34	9.42		3.4	7.9	
Rghr CONC		20.71	21.28	9.93		88.1	23.4	
Rghr Tail	795.9	79.29	.75	8.48		11.9	76.6	
Head	1003.3	100.00	5.00	8.78		100.0	100.0	

A

B

30

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 149

CALCULATION SHEET.

DATE 30 DEC 76

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	26.5	2.58		43.82	8.14		22.6	2.4
3rd Clnr Tail	49.1	4.79		39.85	9.20		38.2	5.3
2nd Clnr Tail	66.4	6.47		14.92	11.95		19.3	8.8
1st Clnr CONC		13.84		28.93	10.50		80.1	16.5
1st Clnr Tail	95.5	9.31		4.90	10.18		9.1	10.8
Rghr CONC		23.15		19.27	10.37		89.2	27.3
Rghr Tail	788.1	76.85		.69	8.33		10.8	72.7
HEAD	1025.6	100.00		4.99	8.80		100.0	100.0
Pb CONC	63.7	6.42		55.59	8.07		70.2	5.9
3rd Clnr Tail	29.6	2.92		16.35	12.25		9.6	4.3
2nd Clnr Tail	56.6	5.71		5.88	12.14		6.6	7.9
1st Clnr CONC		15.11		29.07	10.55		86.4	18.1
1st Clnr Tail	66.9	6.74		1.84	10.25		2.4	7.8
Rghr CONC		21.84		20.68	10.46		88.8	25.9
Rghr Tail	775.1	78.16		.73	8.33		11.2	74.1
Head	991.9	100.00		5.09	8.79		100.0	100.0

C

D

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 149

CALCULATION SHEET.

DATE 30 DEC 76

E

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	55.3	5.54		53.41	7.91		58.7	4.8
3rd Clar Tail	26.1	2.61		23.52	11.72		12.2	3.4
2nd Clar Tail	55.7	5.58		11.77	12.70		13.0	7.8
1st Clar CONC		13.73		30.82	10.58		83.9	16.0
1st Clar Tail	86.0	8.62		2.88	10.36		4.9	9.8
Rghr CONC		22.35		20.04	10.50		88.8	25.8
Rghr Tail	775.1	77.65		.72	8.67		11.2	74.2
Head	998.2	100.00		5.04	9.08		100.0	100.0
Pb CONC	79.5	7.89		50.44	13.23		75.3	11.3
3rd Clar Tail	28.4	2.82		10.63	12.85		5.7	3.9
2nd Clar Tail	53.0	5.26		5.72	12.17		5.7	7.0
1st Clar CONC		15.97		28.68	12.81		86.7	22.2
1st Clar Tail	61.3	6.09		2.07	9.27		2.4	6.0
Rghr CONC		22.06		21.33	11.83		89.1	28.2
Rghr Tail	784.9	77.94		.74	8.44		10.9	71.8
Head	1007.1	100.00		5.28	9.19		100.0	100.0

F

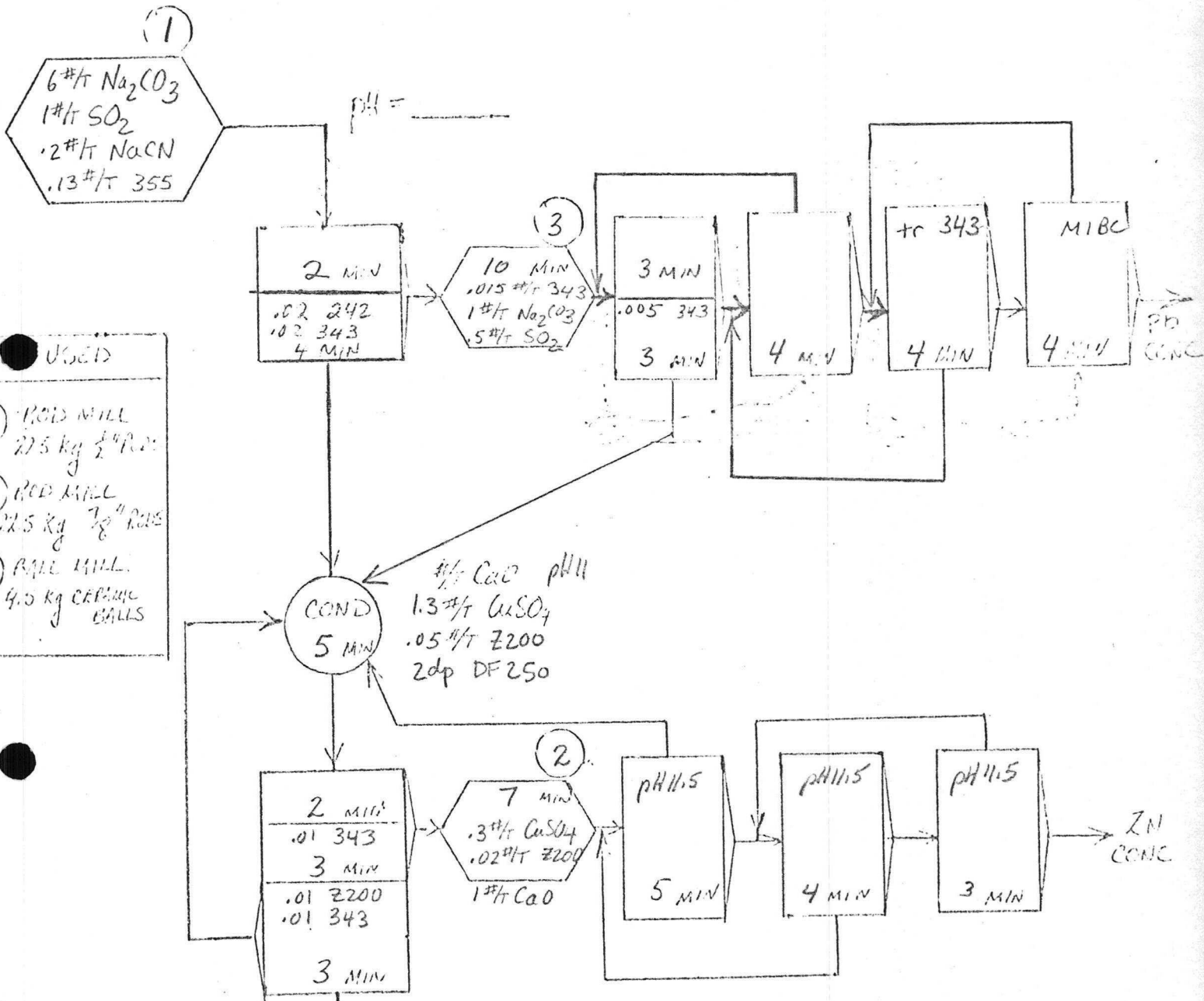
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: YAN 161

CHIT TYPE: B4

DATE: 6 JAN 77

OF CYCLES: 6



- MILL USED
- (1) RED MILL
22.5 kg 1/2" ROLL
 - (2) RED MILL
22.5 kg 1/8" ROLL
 - (3) BALL MILL
4.0 kg CERAMIC BALLS

ZN REGR TAILING (CYCLE 4)

% - 200 M	<u>98.5</u>
% - 325 M	<u>87.0</u>

MATTAGAMI LAKE MINES LIMITED

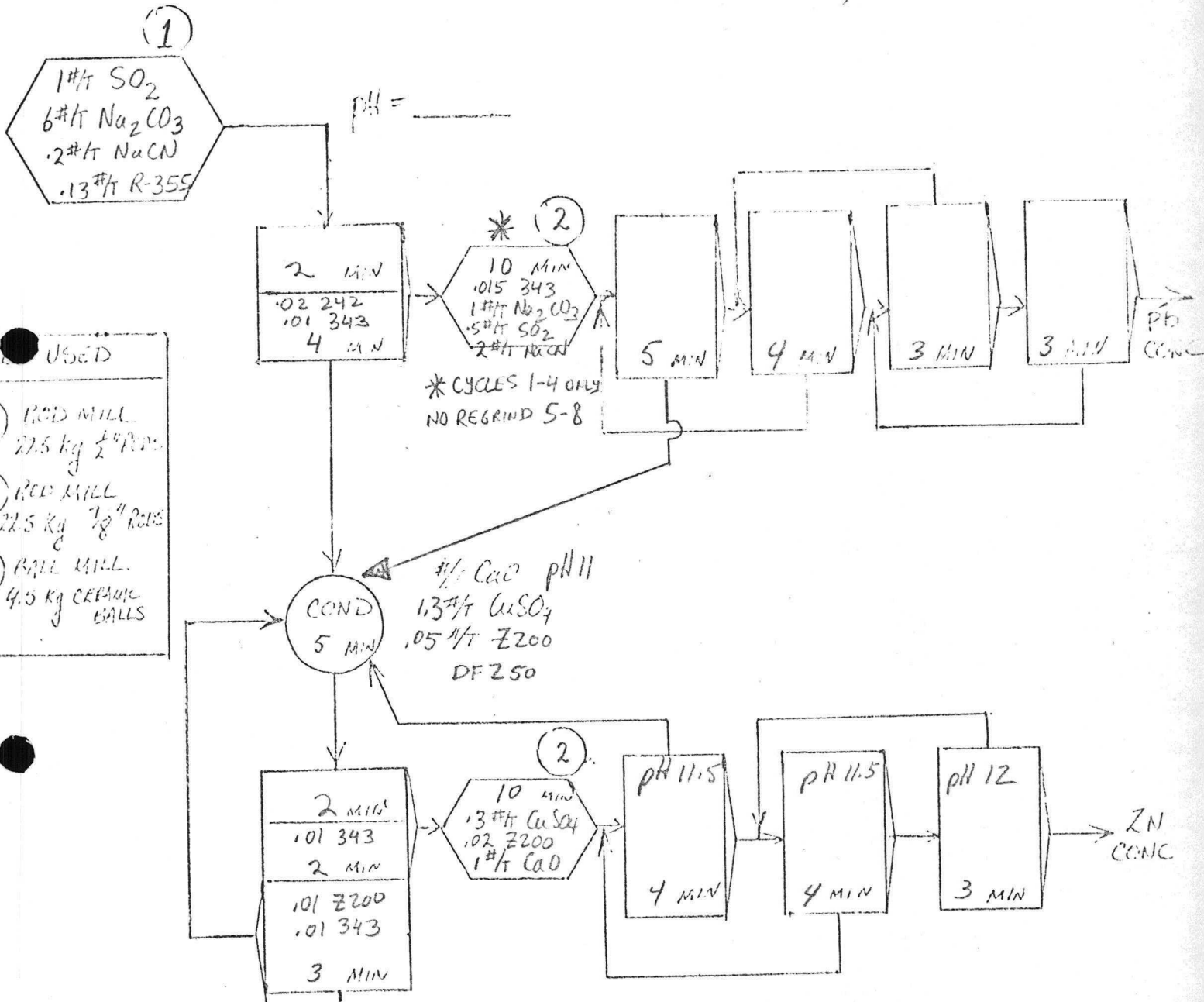
DETAILED RESULTS OF CYCLE TEST VAN 161

SAMPLE	WEIGHT GRAMS	ANALYSES		% OZ/T OR PPM	
		Pb	Zn		
Pb CONCENTRATE 1	52.9	53.93	7.88		
2	50.8	40.67	9.44		
3	57.2	48.81	8.82		
4	76.0	44.55	9.66		
5	93.8	47.99	9.76		
6	109.6	37.61	11.03		
ZINC CONCENTRATE 1	98.4	.62	56.01		
2	115.2	.89	56.01		
3	124.4	1.38	53.75		
4	135.2	1.23	49.91		
5	122.6	2.23	56.01		
6	159.1	2.20	50.45		
ZINC ROUGHNER TAIL 1	561	.49	.81		
2	696	.57	1.02		
3	715	.78	1.16		
4	668	.85	1.08		
5	770	.81	1.12		
6	738	.89	1.25		
1ST Pb Clar Tail 6	157.3	6.39	12.44		
2ND Pb Clar Tail 6	97.2	12.06	12.98		
3RD Pb Clar Tail 6	42.1	15.01	12.51		
4th Pb Clar Tail 6	27.1	14.08	12.30		
DECANT. 1-6	58.9	9.58	11.43		
ZN SCAL CONC 6	77.8	2.49	8.06		
1ST Zn Clar Tail 6	156.1	2.57	4.09		
2ND Zn Clar Tail 6	44.6	6.09	12.08		
3RD Zn Clar Tail 6	7.8	6.87	14.81		
Head	100.00	4.75	9.27		

MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 162 ORE TYPE: B4 DATE: 12 JAN 77
 # OF CYCLES: 8

CYCLES 4, 6 ONLY 3 Pb Clars



Zn REGR TAILING (5th cycle)
 % - 200M 96.2
 % - 325M 80.1

REMARKS

Pb NOT STABLE - WHEN REGRIND
 NEED MORE COLLECTOR DUE TO
 GRAPHITIC MINERAL

MATTAGAMI LAKE MINES LIMITED

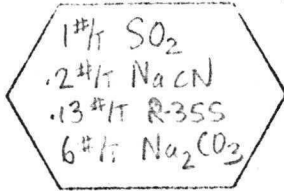
DETAILED RESULTS OF CYCLE TEST VAN 162

SAMPLE	WEIGHT GRAMS	ANALYSES		% OZ/A OR PPM	
		Pb	Zn		
Pb CONCENTRATE 1	54.1	60.82	7.12		
2	41.6	45.13	9.39		
3	38.5	48.34	8.46		
4	74.5	45.09	9.72		
5	39.3	62.34	7.19		
6	79.6	49.57	9.46		
7	49.5	58.94	8.23		
8	42.1	44.48	8.79		
ZINC CONCENTRATE 1	76.9	2.71	54.59		
2	85.5	1.32	54.78		
3	94.6	1.83	51.54		
4	101.5	3.26	49.51		
5	165.2	5.06	49.26		
6	150.1	4.45	51.54		
7	106.3	2.68	54.68		
8	137.5	2.68	52.46		
ZINC ROUGHER TAIL 1	63.3	.54	.7		
2	77.5	.96	2.05		
3	77.3	1.35	2.72		
4	74.3	1.99	2.46		
5	78.6	2.09	2.61		
6	77.3	1.49	1.66		
7	77.2	1.03	1.72		
8	73.2	1.27	2.12		
Zn Scav Conc 8	69.7	4.16	15.61		
3rd Zn Clvr Tail 8	13.2	6.33	27.57		
2nd Zn Clvr Tail 8	34.4	5.89	23.62		
1st Zn Clvr Tail 8	116.2	4.48	17.03		
4th Pb Clvr Tail 8	31.7	41.94	10.96		
3rd Pb Clvr Tail 8	99.0	27.95	12.45		
2nd Pb Clvr Tail 8	123.5	9.76	12.89		
1st Pb Clvr Tail 8	81.5	3.91	11.25		
Decant Slimes 1-8	92.2	12.08	12.89		
Head	7991.2	5.08	9.25		

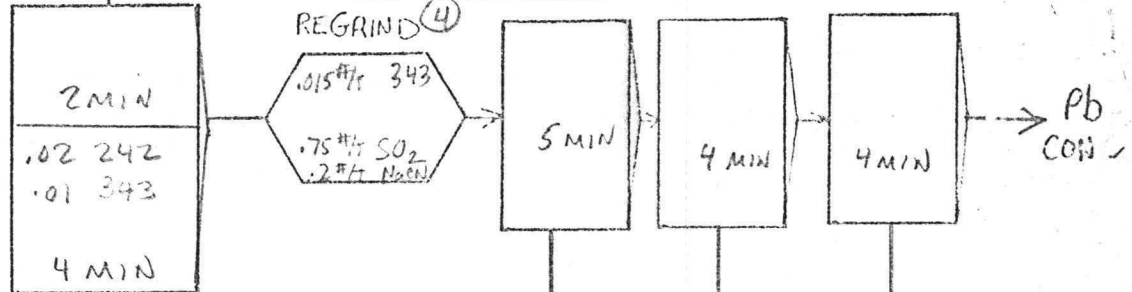
GRUM DEPOSIT
TEST VAN#163-167

B4

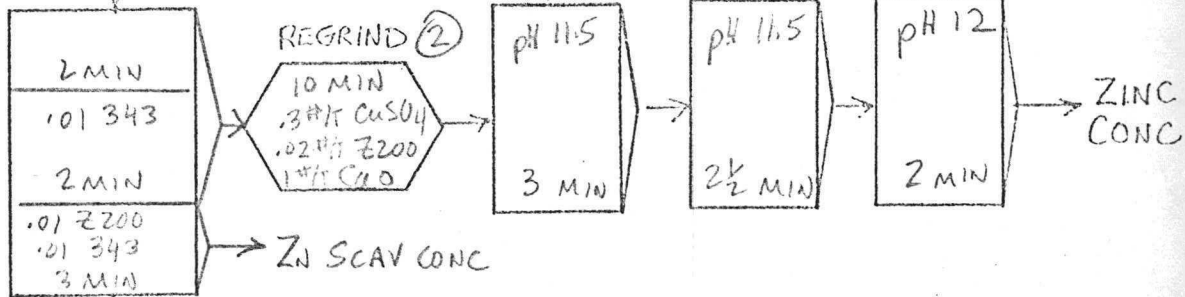
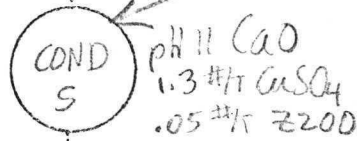
REGRIND (1)



TEST	REGRIND	Na2CO3	SO2	NaCN
163	0 MIN	1 #	YES	
164	0	1	NO	
165	5	0	YES	
166	10	1	YES	
167	5	1	YES	



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS

% -200 MESH	91.5
% -325 MESH	81
% -400 MESH	

PURPOSE TO STUDY EFFECT
OF REGRIND AND REAGENTS
ON Pb CLEANING

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 163, 164

CALCULATION SHEET.

DATE 14 JAN 77

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	64.4	6.73		44.02	9.19		58.8	6.6
ZN CONC	109.4	11.43		2.62	53.38		6.1	65.6
3rd Zn Clar Tail	22.3	2.33		7.53	29.44		3.5	7.4
2nd Zn Clar Tail	19.1	1.99		8.11	13.34		3.2	2.9
1ST Zn Clar Tail	54.7	5.72		5.71	8.32		6.5	5.1
Zn SCAV CONC	74.2	7.75		7.18	7.63		11.0	6.3
Zn Rghr Tail	613.0	64.05		.86	.88		10.9	6.1
HEAD	957.0	100.00		5.04	9.30		100.0	100.0
Pb CONC	102.5	10.78		36.45	10.41		78.7	12.3
ZN CONC	98.8	10.39		1.65	51.82		3.4	52.9
3rd Zn Clar Tail	20.1	2.11		3.20	30.01		1.3	6.9
2nd Zn Clar Tail	18.6	1.96		3.17	14.83		1.2	3.2
1ST Zn Clar Tail	24.2	2.55		2.20	9.55		1.1	2.7
Zn SCAV CONC	54.5	5.73		2.39	11.64		-2.7	7.3
Zn Rghr Tail	632.	66.48		.86	1.20		11.4	8.7
Head	950.7	100.00		5.00	9.14		100.0	100.0

163

164

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 165, 166

CALCULATION SHEET.

DATE 14 JAN 77

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	60.2	6.32		49.81	7.96		66.3	5.6
Zn CONC	102.8	10.79		2.64	50.71		6.0	61.5
3rd Zn Clnr Tail	13.9	1.46		6.53	24.95		2.0	4.1
2nd " " "	16.9	1.77		6.33	12.29		2.4	2.4
1ST " " "	22.3	2.34		4.71	8.75		2.3	2.3
Zn SCAV CONC	71.4	7.50		4.13	16.63		6.5	4.1
Zn Rghr Tail	665	69.82		.92	1.28		14.4	14.0
Head	952.5	100.00		4.74	8.90		100.0	100.0
Pb CONC	59.8	6.13		50.49	9.49		66.5	6.3
Zn CONC	95.0	9.75		3.87	51.16		8.1	54.4
3rd Zn Clnr Tail	18.2	1.87		7.35	33.12		3.0	6.7
2nd " " "	19.8	2.03		7.18	24.30		3.1	5.4
1ST " " "	29.3	3.00		5.51	18.03		3.5	5.9
Zn SCAV CONC	71.6	7.34		4.45	13.01		7.0	10.4
Zn Rghr Tail	681	69.87		.59	1.45		8.9	11.0
Head	974.7	100.00		4.66	9.19		100.0	100.0

165

166

MATTAGAMI LAKE MINES LIMITED
CONCENTRATOR LABORATORY

GRUM - No.

BATCH TEST VAN - 167

14 JAN / 77

	WEIGHT		ANALYSES				% CR OPT		% DISTRIBUTION	
	GMS	%	Pb	Zn			Pb	Zn		
Pb CONC	82.9	8.92	44.74	10.58			75.4	10.2		
Zn CONC	107.2	11.53	2.63	52.07			5.7	64.8		
3rd Zn Clnr Tail	11.6	1.25	6.33	22.03			1.5	3.0		
2nd " " "	17.1	1.84	4.24	12.03			1.5	2.4		
1ST " " "	37.6	4.04	2.82	8.94			2.2	3.9		
Zn SCAV CONC	62.2	6.69	2.84	11.17			3.6	3.0		
Zn Rghr Tail	611	65.73	.82	1.13			10.2	8.1		
HEAD	929.6	100.00	5.29	9.30			100.0	100.0		

167

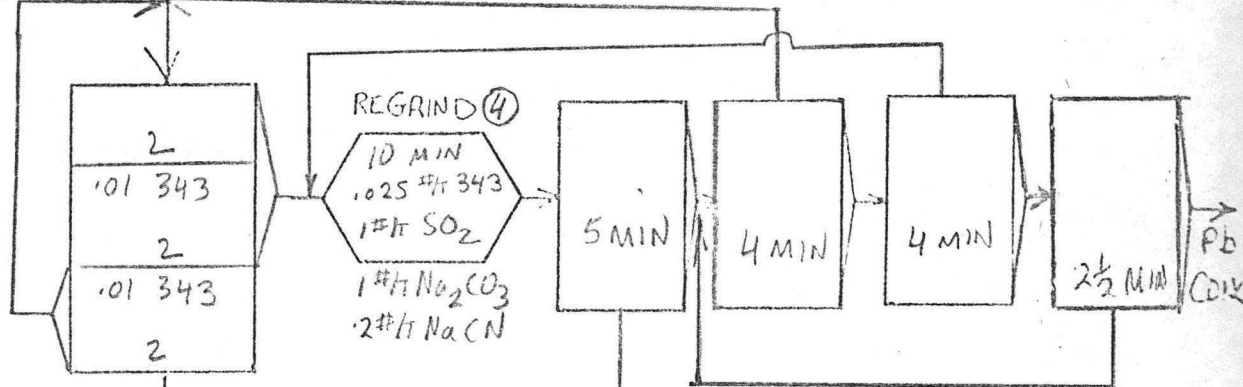
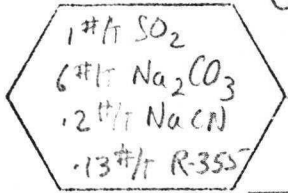
MATTAGAMI LAKE MINES LIMITED

GRUM DEPOSIT
TEST VAN-168

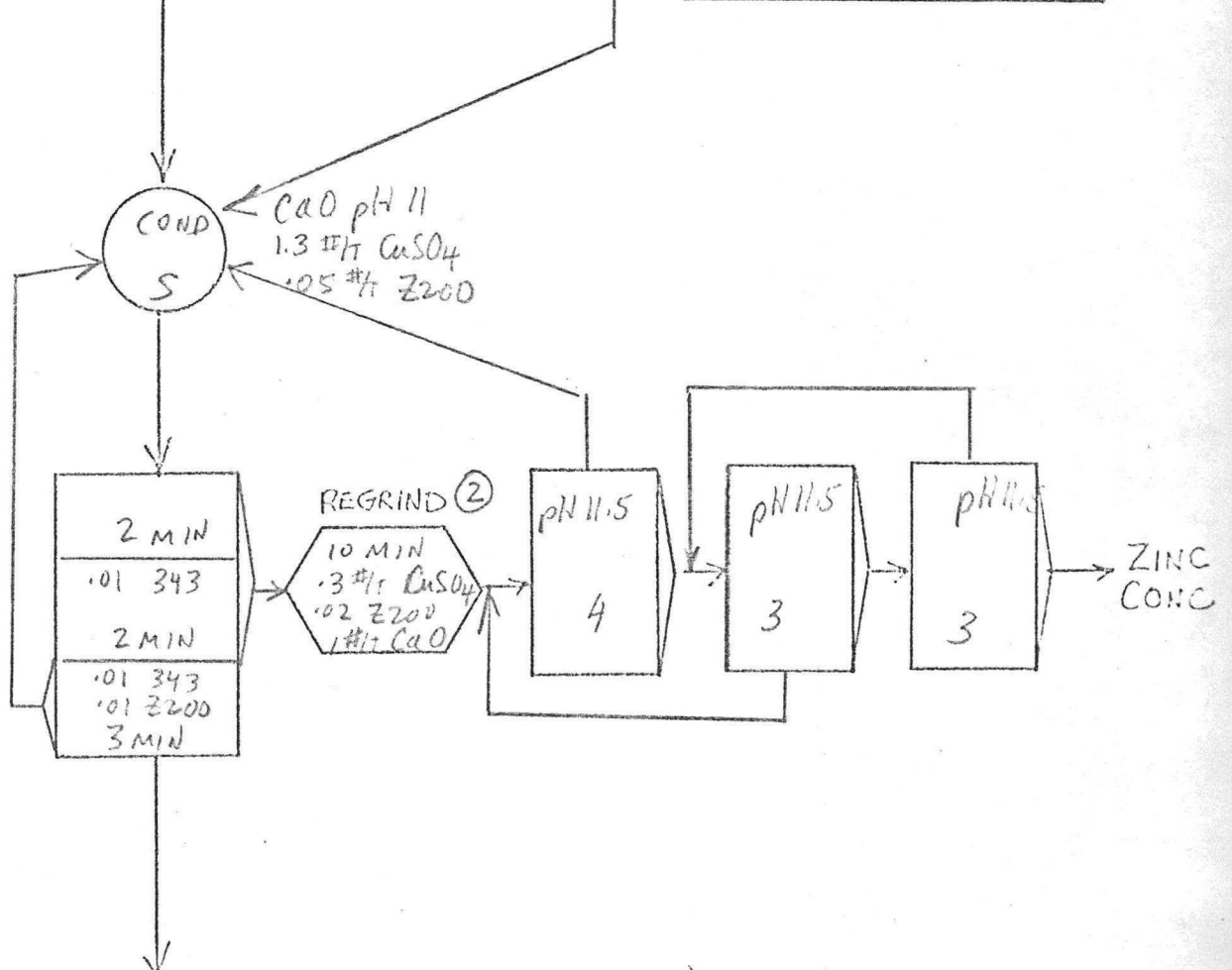
18 JAN 77

B4

REGRIND (1)



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS (4th CYCLE)

% -200 MESH	<u>99</u>
% -325 MESH	<u>85</u>
% -400 MESH	_____

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 168

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONC 1	42.5	42.60	9.69	
2	65.2	47.96	8.29	
3	70.4	47.21	8.29	
4	81.4	40.86	9.06	
5	50.7	32.02	9.84	
6	92.5	46.91	9.12	
Zn CONC 1	89.2	.60	58.73	
2	117.9	.95	54.09	
3	118.4	1.41	52.75	
4	149.1	1.92	50.26	
5	117.7	2.09	53.14	
6	130.4	4.53	53.69	
Zn Right Tail 1	562	.45	.73	
2	667	.50	1.06	
3	716	.57	1.01	
4	748	.79	1.39	
5	850	.92	1.53	
6	753	1.53	2.05	
Pb SCAV CONC 6	39.9	4.46	12.17	
Zn SCAV CONC 6	71.1	4.63	13.68	
1st Pb Clnr Tail 6	117.5	7.28	12.21	
2nd " " " 6	19.6	9.68	12.17	
3rd " " " 6	18.7	12.29	12.55	
4th " " " 6	15.5	12.15	13.57	
1st Zn Clnr Tail 6	136.1	5.09	7.80	
2nd " " " 6	50.5	6.31	16.81	
3rd " " " 6	50.1	9.39	31.13	
Decant Slimes 1-6	39.6	4.49	9.91	
Head	6030.0	4.73	9.27	

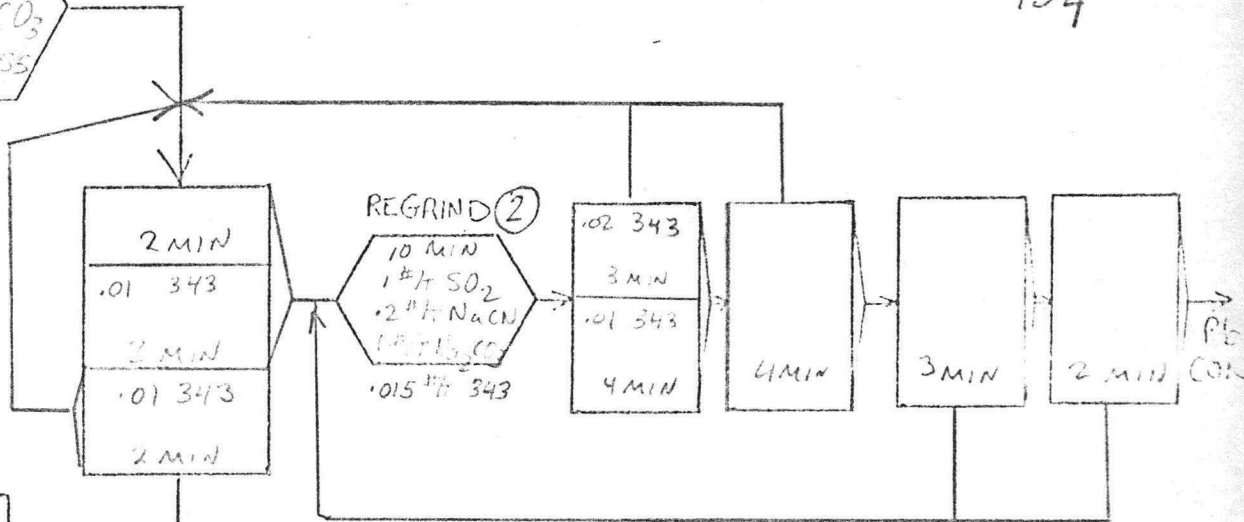
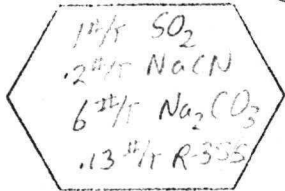
MATTAGAMI LAKE MINES LIMITED

19 JAN /77

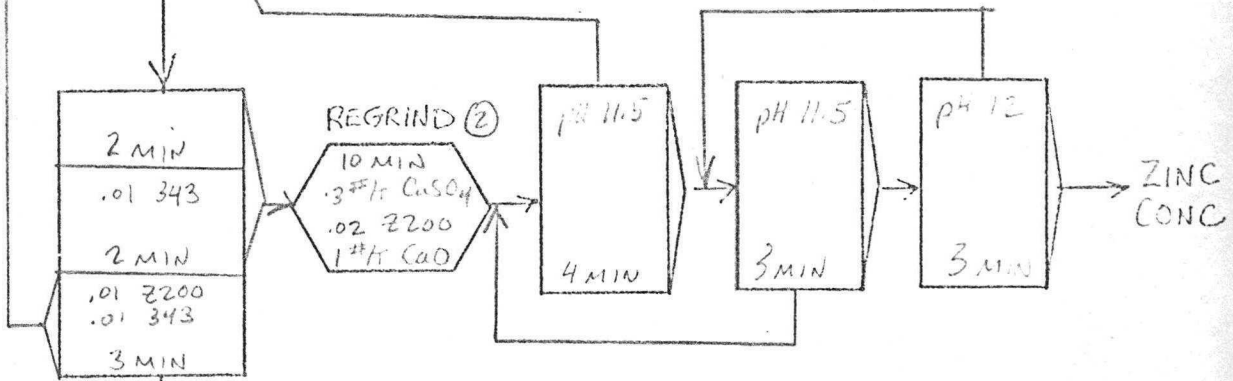
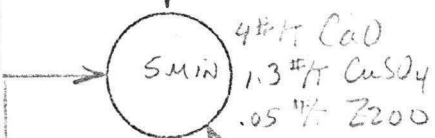
GRUM DEPOSIT
TEST: VAN-169

B4

REGRIND ①



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS (CYCLE 4)

% -200 MESH	97.7
% -325 MESH	84.0
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 169

SAMPLE	WEIGHT GRAMS	ANALYSES		% OZ/T OR PPM
		Pb	Zn	
Pb CONCENTRATE 1	66.8	49.59	7.42	
2	98.7	45.65	4.41	
3	60.2	55.22	7.10	
4	66.9	52.84	7.82	
5	82.3	44.96	4.43	
6	68.3	52.80	8.39	
ZINC CONCENTRATE 1	66.3	.63	56.20	
2	91.4	.77	56.78	
3	96.0	.97	55.29	
4	110.4	1.16	55.77	
5	114.7	1.18	56.06	
6	115.0	1.34	55.32	
ZINC ROUGHED TAIL 1	643	.69	1.29	
2	713	.75	1.78	
3	797	.73	2.39	
4	759	.71	2.04	
5	755	.89	2.22	
6	795	.87	1.82	
Pb SCAV CONC 6	31.8	6.77	13.43	
Zn SCAV CONC 6	64.5	2.23	14.12	
4th Pb Clnr Tail 6	40.6	19.21	15.39	
3rd Pb Clnr Tail 6	42.7	10.37	16.32	
2nd Pb Clnr Tail 6	44.6	7.08	15.21	
1st Pb Clnr Tail 6	109.7	6.55	13.81	
3rd Zn Clnr Tail 6	32.2	2.88	41.99	
2nd Zn Clnr Tail 6	71.5	2.91	30.91	
1st Zn Clnr Tail 6	96.2	2.24	15.86	
HEAD	6038.5	4.85	905	

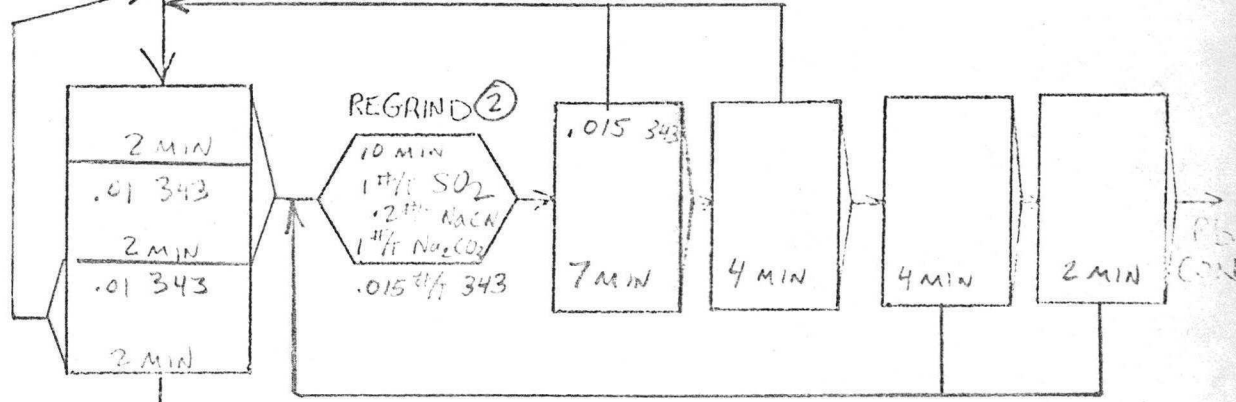
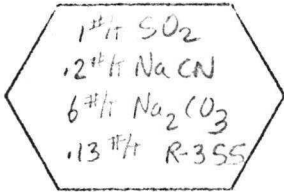
MATTAGAMI LAKE MINES LIMITED

25 JAN 77

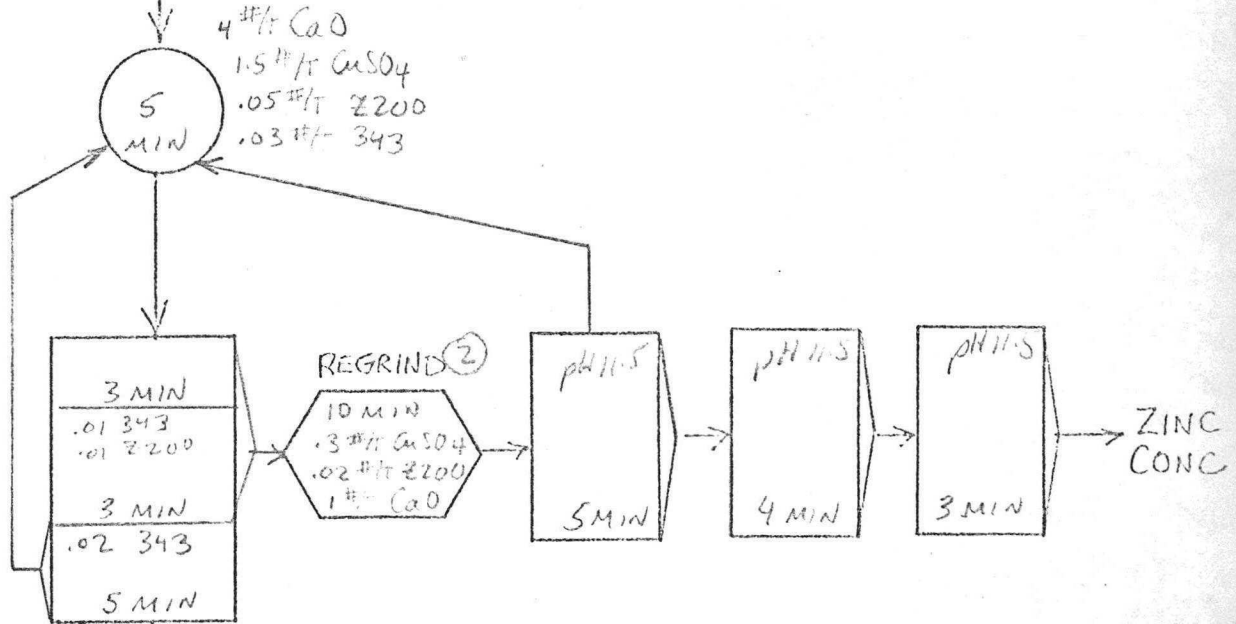
GRUM DEPOSIT TEST VAN-176

84

FEEDS (GMS)



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS (CYCLE 5)

% -200 MESH	98.5
% -325 MESH	88.6
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 176

DATE: 25 JAN 77

TOTAL WEIGHT IN: 6058 GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE 1 646
2 880.5
3 950.8
4 959.2
5 1010.6
6 967.8
7 _____
8 _____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	84	8.5	47.0	9.1		83.1	8.7	
Zn CONCENTRATE	132	13.4	1.4	53.0		3.9	80.2	
Zn ROUGHER TAIL	780	78.1	.8	1.25		13.0	11.1	
HEAD	996	100.0	4.81	8.85		100.0	100.0	

REMARKS :

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VA:1176

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	64.5	50.84	8.8	
2	75.0	51.9	8.40	
3	76.6	44.18	8.97	
4	62.6	40.67	7.79	
5	87.2	47.22	9.10	
6	81.6	46.95	9.4	
Zn CONCENTRATE 1	96.5	.61	55.56	
2	126.5	.95	54.77	
3	116.2	.81	52.36	
4	134.6	1.12	53.53	
5	123.4	1.25	52.14	
6	141.2	1.51	51.95	
Zn FINEST TAIL 1	475	.39	.67	
2	679	.47	.80	
3	758	.57	1.06	
4	762	.65	1.13	
5	800	.81	1.36	
6	745	.79	1.19	
Zn SCAN CONC 6	41.9	2.10	9.41	
Pb SCAN CONC 6	50.0	5.29	13.30	
1ST Zn Cnc Tail 6	147.4	1.86	7.23	
2ND Zn Cnc Tail 6	38.7	2.65	15.63	
3RD Zn Cnc Tail 6	29.6	3.06	26.64	
1ST Pb Cnc Tail 6	180.8	4.83	13.88	
2ND Pb Cnc Tail 6	62.3	8.22	15.83	
3RD Pb Cnc Tail 6	17.7	16.29	15.20	
4th Pb Cnc Tail 6	34.7	21.16	14.58	
HEAD	6058.0	4.59	9.31	

APPENDIX II

TEST ON

GRUM SAMPLE

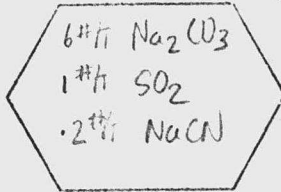
COMPOSITE 1

TEST	DESCRIPTION
177	EXPLORATORY
178	6 CYCLE TEST
179	6 CYCLE TEST, HIGH CIRCULATING LOADS
182	EXPLORATORY
183	6 CYCLE TEST, HIGH CIRCULATING LOADS, Poor results.

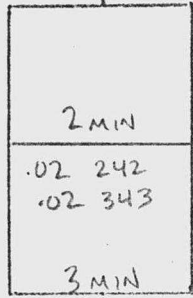
GRUM DEPOSIT
TEST VAN-177

COMP 1

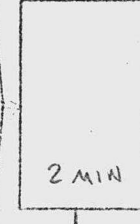
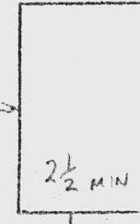
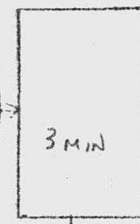
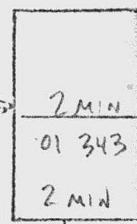
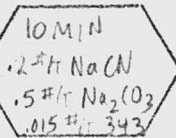
PRIMARY GRIND (1)



← .05 #t R355



REGRIND (4)



→ Pb CONC

1st Clr Tail

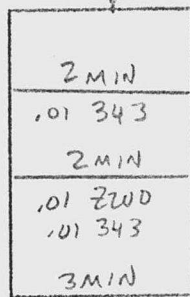
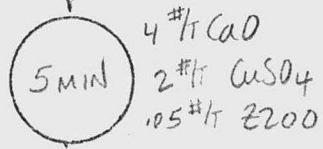
2nd Clr Tail

3rd Clr Tail

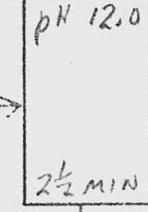
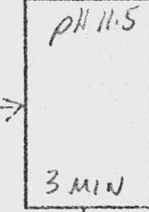
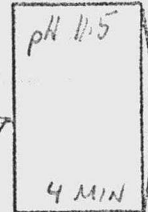
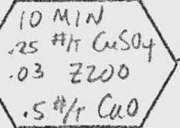
4th Clr Tail

MILLS USED

- ① ROD MILL
22.5 KG - 1/2" RODS
- ② ROD MILL
22.5 KG 3/4" RODS
- ③ ROD MILL
10 KG - 1/2" RODS
- ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



REGRIND (2)



→ ZINC CONC

→ Zn SCAV CONC

1st Clr Tail

2nd Clr Tail

3rd Clr Tail

ZINC ROUGHER TAILINGS

% -200 MESH	97.9
% -325 MESH	81.9
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

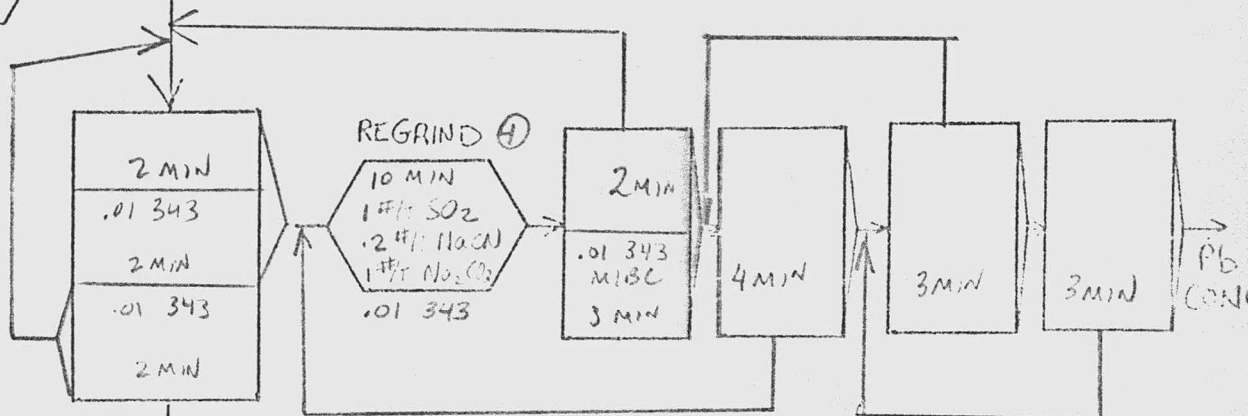
GRUM DEPOSIT
TEST VAN-178

1 FEB 77

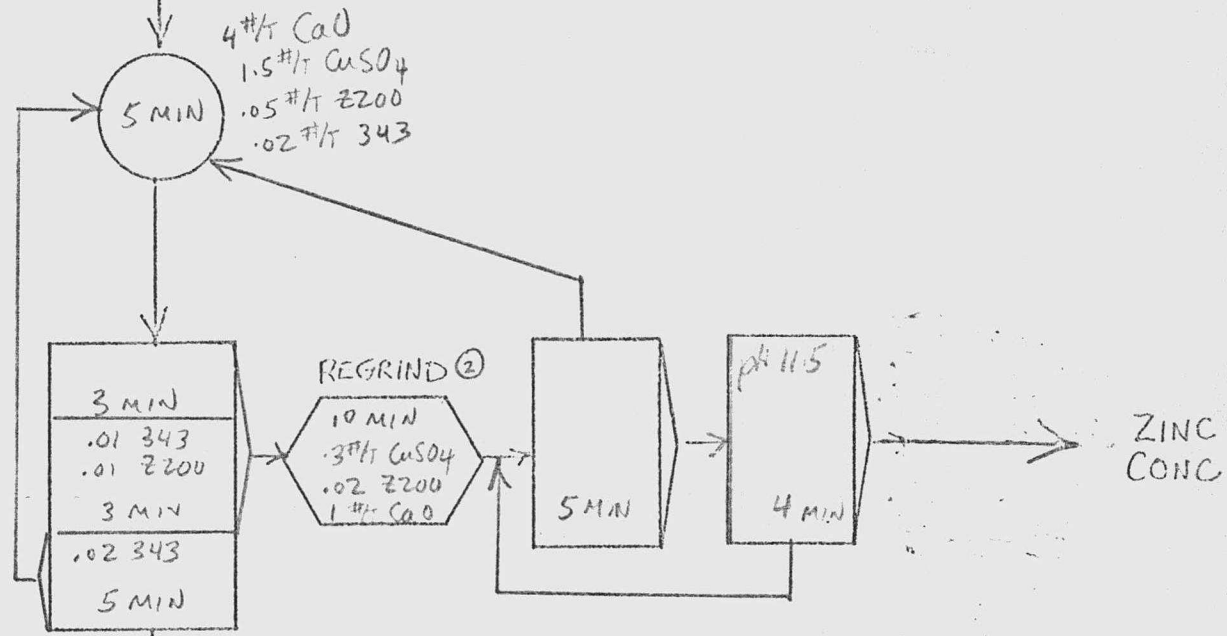
PRIMARY GRINDING ①

1 #/T SO₂
.2 #/T NaCN
6 #/T Na₂CO₃
.05 #/T R-355

COMP 1



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS (CYCLE 4)

% -200 MESH	98.0
% -325 MESH	82.1
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 178

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	31.4	52.87	9.72	
2	37.7	52.32	9.68	
3	68.8	45.69	10.84	
4	52.3	51.32	10.46	
5	49.1	48.24	10.99	
6	72.3	41.65	12.19	
ZINC CONCENTRATE 1	90.4	.63	58.03	
2	134.2	1.30	54.04	
3	131.3	1.74	53.59	
4	129.8	1.60	53.84	
5	145.7	1.52	51.70	
6	149.7	1.26	50.61	
ZINC ROUGHER TAIL 1	569	.47	.40	
2	706	.53	.51	
3	747	.59	.65	
4	722	.60	.64	
5	736	.59	.65	
6	724	.62	.58	
Pb SCAV CONC 6	33.4	6.43	12.58	
Zn SCAV CONC 6	45.0	2.80	5.52	
1st Zn Clar Tail 6	115.8	2.02	10.73	
2nd Zn Clar Tail 6	33.4	2.69	19.75	
1st Pb Clar Tail 6	123.5	7.17	13.19	
2nd " " " 6	45.0	11.29	14.35	
3rd " " " 6	70.4	16.65	15.28	
4th " " " 6	25.5	30.88	12.93	
Decant Slimes 1-6	116.4	7.83	12.19	
Head	5944.5	4.02	9.36	

MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

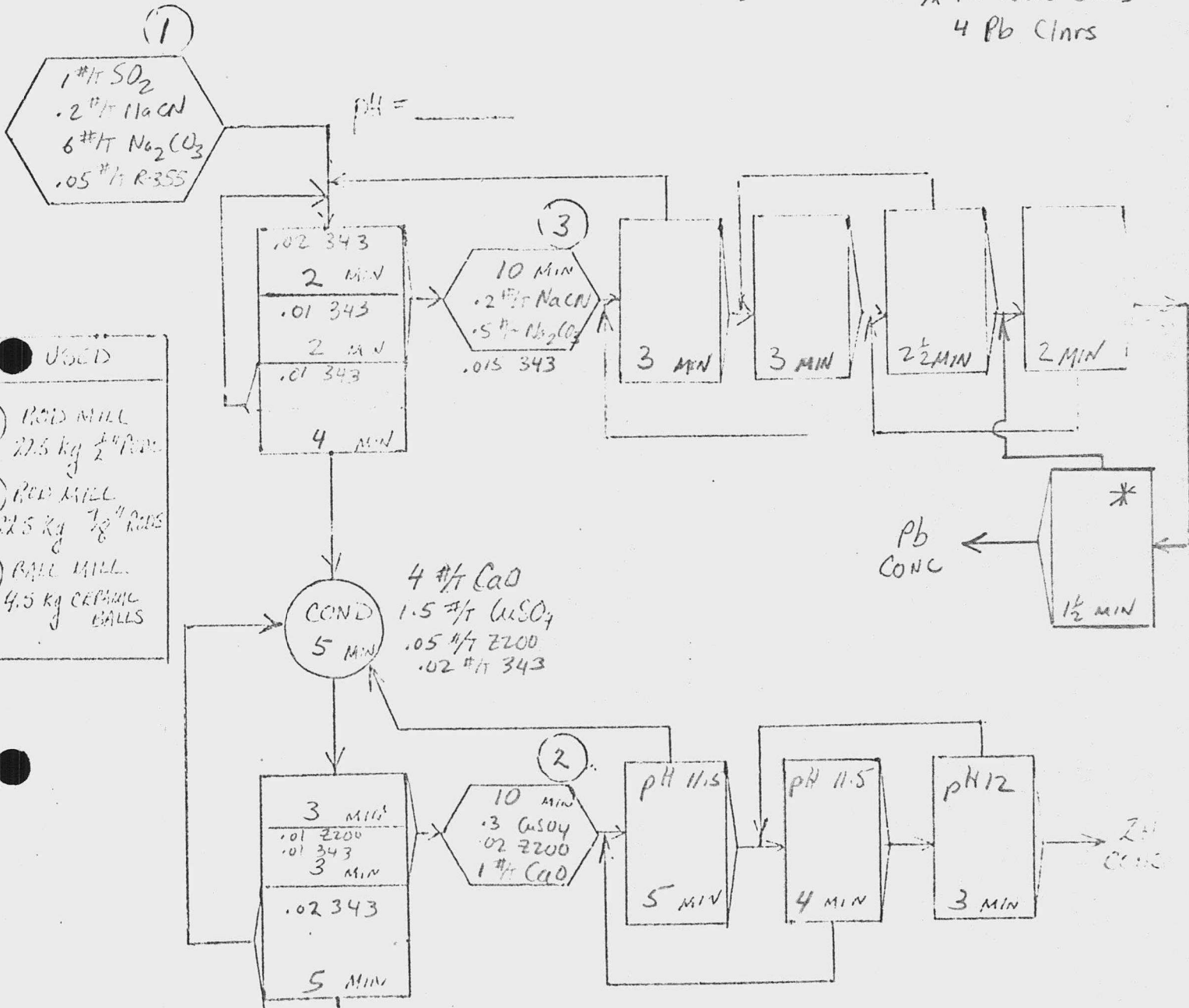
TEST #: VAN 179

ORE TYPE: COMP 1

DATE: 9 FEB 77

OF CYCLES: 6

* 1ST CYCLE ONLY
4 Pb Clnrs



- MILL USED
- (1) ROD MILL
22.5 kg 1/2" RODS
 - (2) ROD MILL
22.5 kg 7/8" RODS
 - (3) BALL MILL
4.5 kg CERAMIC BALLS

ZN REHR TAILING (4th cycle)
 % - 200M 96.6
 % - 325M 81.0

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 179

DATE: 9 FEB 77

TOTAL WEIGHT IN: 5934.2 GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE 1 651.5
2 819.5
3 820.7
4 881.7
5 926.2
6 906.3
7 _____
8 _____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T , PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	70	7.1	45.2	11.5		81.7	9.1	
Zn CONCENTRATE	115	11.6	.65	54.8		1.9	70.9	
FLAT TAIL	805	81.3	.8	2.2		16.4	20.0	
HEAD	990	100.0	3.93	8.97		100.0	100.0	

REMARKS: VERY HIGH CIRCULATING LOADS
WEIGHT NOT STABLE

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 179

SAMPLE	WEIGHT	ANALYSES		% OZ/A OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	54.0	45.24	10.92	
2	38.8	52.15	10.29	
3	46.0	53.96	10.66	
4	61.3	48.27	11.73	
5	72.6	44.89	12.69	
6	68.1	45.64	11.25	
Zn CONCENTRATE 1	93.5	.34	55.42	
2	110.7	.44	56.66	
3	111.7	.59	54.52	
4	98.4	.63	54.85	
5	115.6	.60	54.52	
6	115.2	.65	54.99	
Zn ROUGHER TAIL 1	514	.27	.36	
2	670	.36	.52	
3	663	.40	.49	
4	722	.35	.45	
5	738	.37	.52	
6	723	.40	.54	
Pb SCAV CONC 6	74.6	5.46	12.21	
Zn SCAV CONC 6	38.4	1.63	6.09	
1st Zn Clnr Tail 6	140.0	1.13	13.32	
2nd " " " 6	52.2	1.61	28.62	
3rd " " " 6	8.6	1.71	32.36	
1st Pb Clnr Tail 6	295.8	3.71	12.69	
2nd " " " 6	124.4	5.50	13.20	
3rd " " " 6	88.0	10.72	13.05	
4th " " " 6	52.1	15.67	13.72	
5th " " " 6	54.2	19.28	14.68	
HEAD	5934.2	3.95	9.05	

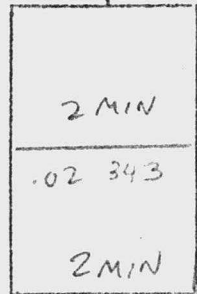
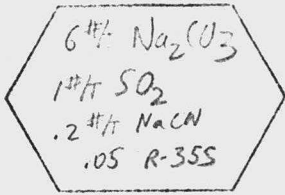
MATTAGAMI LAKE MINES LIMITED

GRUM DEPOSIT
TEST VAN-182

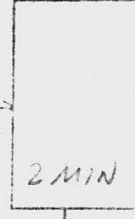
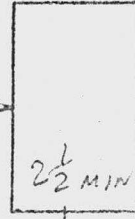
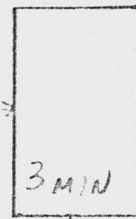
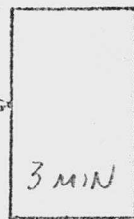
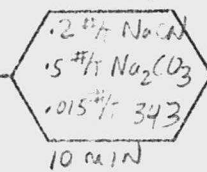
11 FEB 77

COMP 1

INITIAL REGRIND ①



REGRIND ④



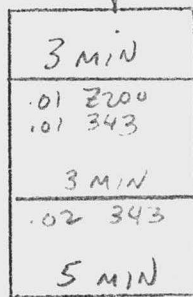
1st Clar Tail 2nd Clar Tail 3rd Clar Tail 4th Clar Tail

Pb CONC

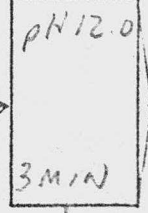
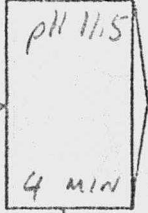
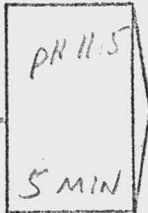
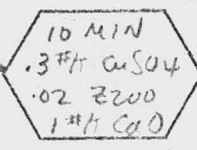
- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2 CERAMIC BALLS



4# CaO
15# CuSO4
.05# Z200
.02# 343



REGRIND ②



Zn SCAV CONC

1st Clar Tail 2nd Clar Tail 3rd Clar Tail

ZINC CONC

ZINC ROUGHER TAILINGS

% -200 MESH	<u>97.9</u>
% -325 MESH	<u>80.5</u>
% -400 MESH	_____

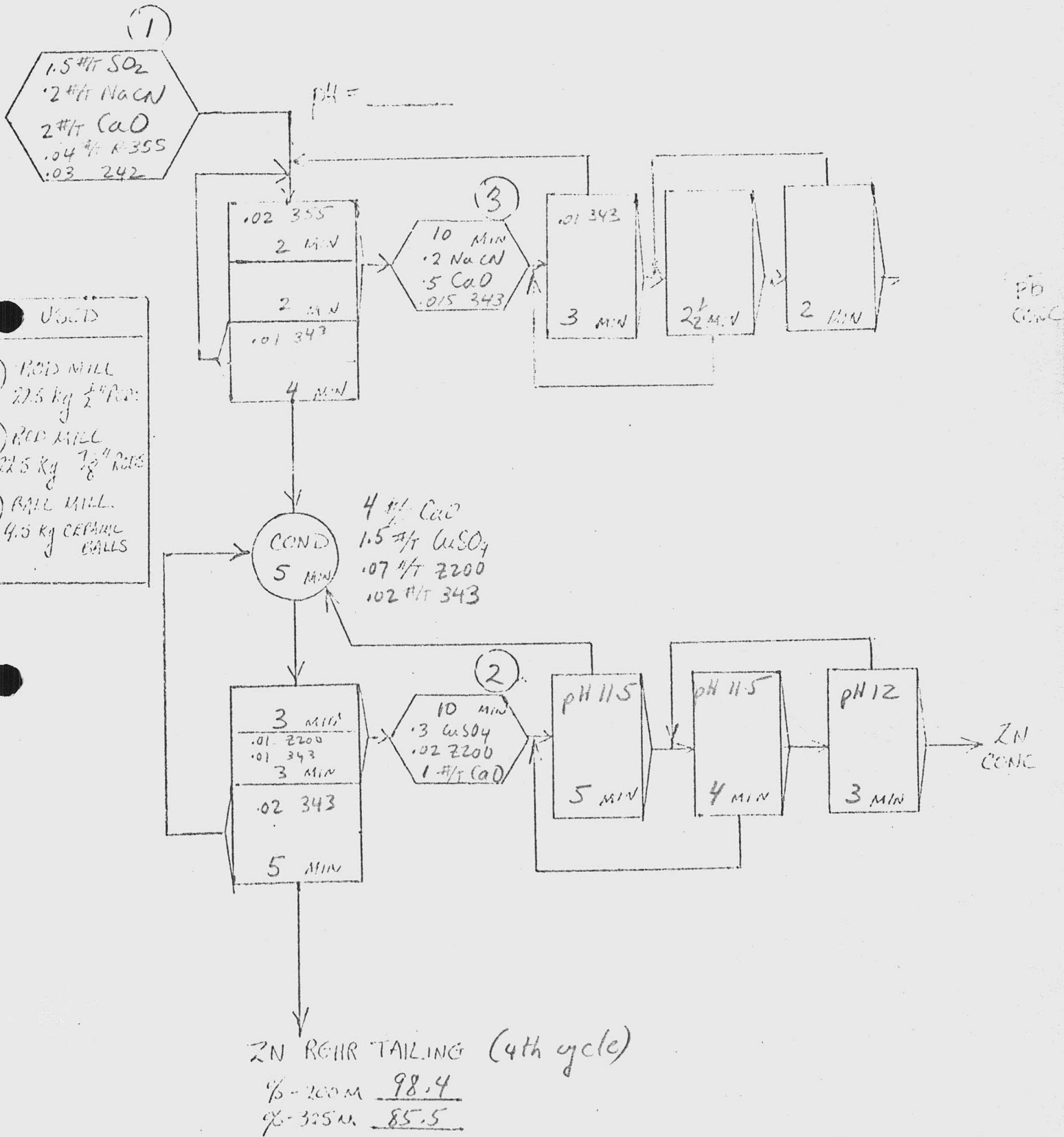
MATTAGAMI LAKE MINES LTD. CONCENTRATOR LABORATORY

TEST #: VAN 183

ORE TYPE: COMP 1

DATE: 14 FEB 77

OF CYCLES: 6



MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 183

DATE: 14 FEB 77

TOTAL WEIGHT IN: 5960.7 GRAMS

TOTAL WEIGHT OUT PER CYCLE: CYCLE 1 685.0
 2 867.2
 3 867.4
 4 914.2
 5 912.7
 6 895.6
 7 _____
 8 _____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	70	7.0	40	11		75.0	8.5	
Zn CONCENTRATE	130	13.1	1.0	54.0		3.5	78.3	
FLOAT TAIL	795	79.9	1.0	1.5		21.5	13.2	
HEAD	995	100.0	3.73	9.04		100.0	100.0	

REMARKS: HIGH CIRCULATING LOADS
 NOT STABLE

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 183

SAMPLE	WEIGHT	ANALYSES		% , OZ/T OR PPM	
	GRAMS	Pb	Zn		
Pb CONCENTRATE 1	36.3	42.54	11.39		
2	43.4	49.74	9.39		
3	53.1	44.49	10.65		
4	72.0	41.47	10.65		
5	69.6	37.49	11.57		
6	55.6	43.53	10.21		
Zn CONCENTRATE 1	85.7	.56	58.86		
2	128.4	.41	55.24		
3	129.3	.45	55.23		
4	127.2	.83	55.27		
5	127.1	.84	53.83		
6	132.0	.77	51.43		
1st ROUGHER TAIL 1	563	.30	.35		
2	695	.28	.39		
3	685	.29	.36		
4	715	.29	.41		
5	716	.31	.34		
6	702	.34	.38		
Pb SCAV CONC 6	113.6	5.77	14.08		
Zn SCAV CONC 6	89.0	.87	1.82		
1st Zn Clar Tail 6	179.7	1.33	4.51		
2nd " " " 6	52.4	2.31	13.06		
3rd " " " 6	25.4	3.27	22.05		
1st Pb Clar Tail 6	262.6	12.24	13.81		
2nd " " " 6	57.7	21.51	11.50		
3rd " " " 6	36.1	24.37	12.08		
HEAD	5960.7	3.80	9.04		

Comments on COMPOSITE 1

The three cycle tests carried out on this ore had high circulating loads, especially in the Pb circuit and good stability was not obtained after 6 cycles. Both Pb and Zn concentrates were relatively low grade. Composite 1 contains 6% of the extremely fine-grained B-type material.

TEST	Pb CONCENTRATE			Zn CONCENTRATE		
	% Pb	% Zn	% Pb REC	% Pb	% Zn	% Zn REC
178	48.0	11.0	76.8	1.6	52.0	86.7
179	45.2	11.5	81.7	.7	54.8	70.9
183	40	11	75	1.0	54.0	78.3

APPENDIX III

TESTS ON
GRUM SAMPLE
C

TEST	DESCRIPTION
181	EXPLORATORY, R-343
185	EXPLORATORY, R-242
186	6 CYCLE TEST
187	6 CYCLE TEST, OPEN CIRCUIT Pb Clnr Tails
188-198	SODA ASH Vs LIME Vs NATURAL pH; DIFFERENT COLLECTORS
199-208	VARY Zn SO ₄ , NaCN; DIFFERENT Pb REGRIND TIMES
209-218	DIFFERENT PRIMARY GRIND TIMES, INCREMENTAL FLOTATION
219-226	NATURAL pH Vs SODA ASH, VARY ZnSO ₄ , NaCN
234	9 CYCLES, EXCELLENT RESULTS
245	6 CYCLES, REDUCED REGRIND, VERY POOR RESULTS
306	8 CYCLES, STANDARD FLOWSHEET

Comments on C

C is a slightly graphitic, low sulphide, high silicate ore of average hardness.

Considerable preliminary testwork was carried out to investigate the optimum rougher flotation conditions:

1. Grind - Mineralization is relatively coarse. Recoveries and Zn depression during Pb flotation were comparable throughout the fineness of grind tested (61-96% -325 mesh). However for the coarser grinds Zn rougher concentrate grade was significantly lower and additional regrinding is necessary.

TEST	GRIND %-325 M	Pb ROUGHER CONCENTRATE				Zn ROUGHER CONC	
		% Pb	% Zn	% DIST Pb	% DIST Zn	% Zn	% DIST Zn
209	61	21.4	10.5	92.0	20.9	24.1	76.1
213	70	23.2	9.9	88.5	16.9	34.2	78.4
210	79	23.6	10.0	89.8	16.4	36.0	78.7
211	87	21.4	9.8	90.8	18.1	38.7	77.9
212	96	20.4	9.7	90.2	18.6	34.6	76.7

2. Reagents Soda ash was not required as flotation at the natural pH was selective. NaCN was the most critical reagent. Without NaCN pyrite and sphalente floated freely. ZnSO₄ also aided Zn depression somewhat.

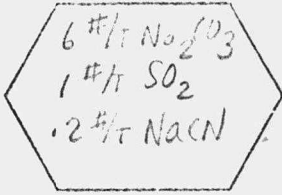
TEST	RIND % 375 M	#/T Ni ₂ O ₃	#/T NaCN	#/T ZnSO ₄	Pb ROUGHER CONCENTRATION			
					% Pb	% Zn	% Cu	% Ag
219	61	0	0	0	17.9	15.6	92.2	32.5
220	61	0	.2	0	25.9	11.0	91.8	12.3
221	61	6	.2	2	28.6	10.5	89.4	15.1
222	61	0	.2	2	26.3	9.4	92.4	14.7

MATTAGAMI LAKE MINES LIMITED

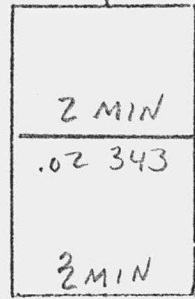
GRUM DEPOSIT
TEST VAN-181

11 FEB 77

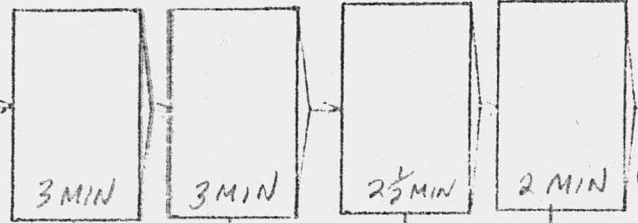
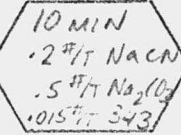
REGRIND (1)



.05 #/T 355



REGRIND (4)

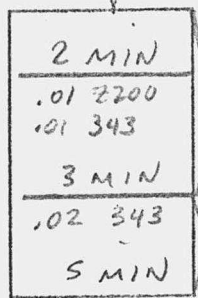


C

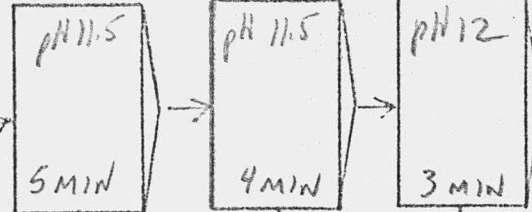
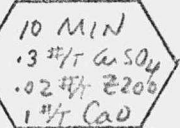
- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2 CERAMIC BALLS



4 #/T CaO
1.5 #/T CuSO4
.05 #/T Z200
.02 #/T 343



REGRIND (2)



ZINC ROUGHER TAILINGS

% -200 MESH	98.6
% -325 MESH	82.4
% -400 MESH	

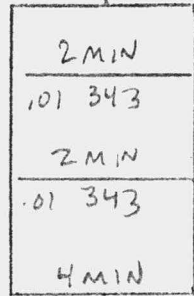
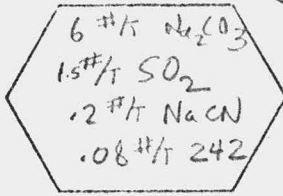
MATTAGAMI LAKE MINES LIMITED

GRUM DEPOSIT TEST VAN-185

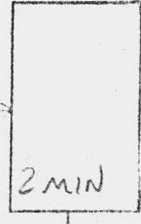
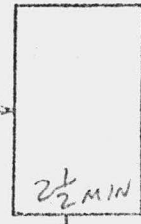
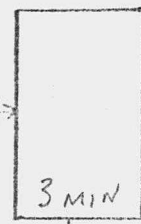
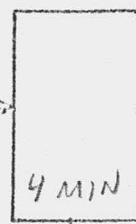
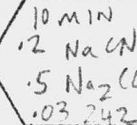
18 FEB 77

C

REGRIND (1)



REGRIND (4)



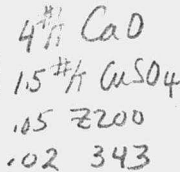
1 C.T.

2 C.T.

3 C.T.

4 C.T.

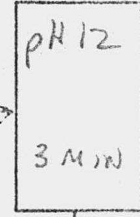
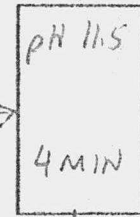
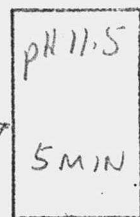
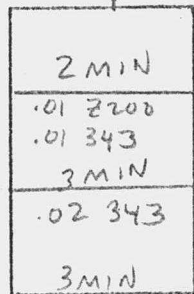
- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2 CERAMIC BALLS



Pb CONC



5 C.T.



1 C.T.

2 C.T.

3 C.T.

ZINC CONC

ZINC ROUGHER TAILINGS

% -200 MESH	97.4
% -325 MESH	78.1
% -400 MESH	

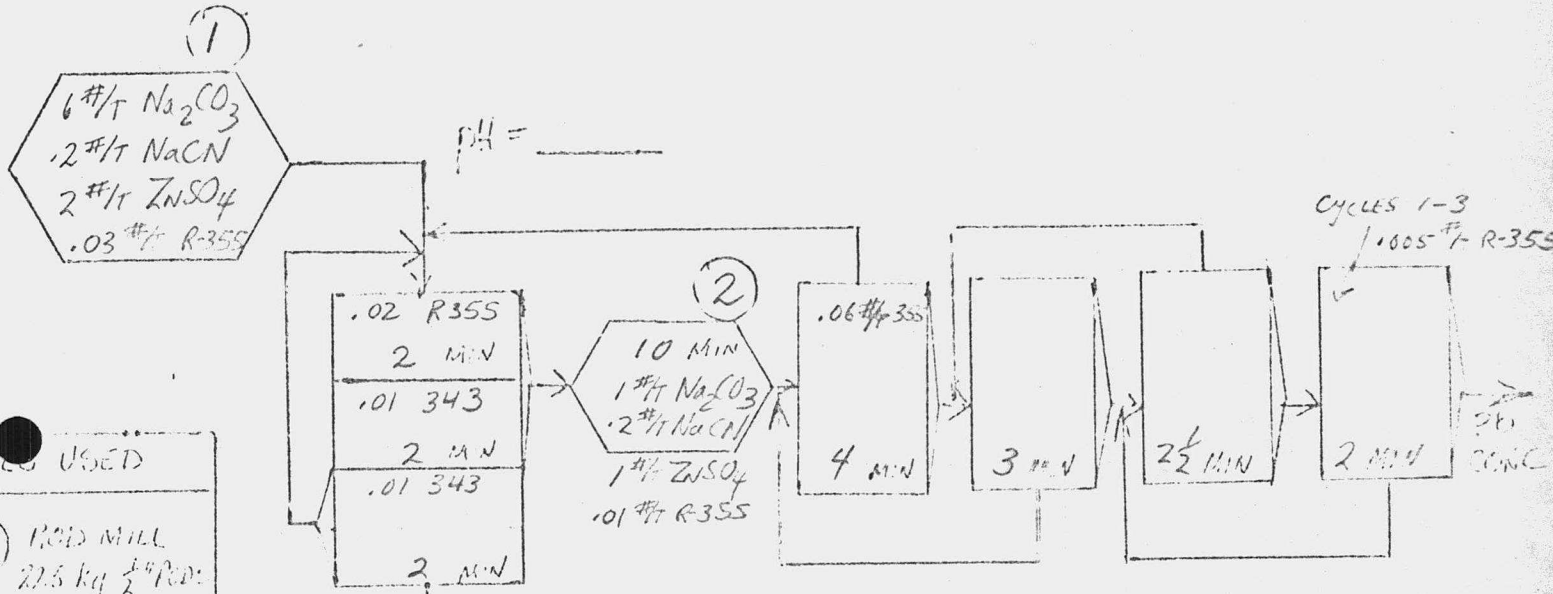
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 186

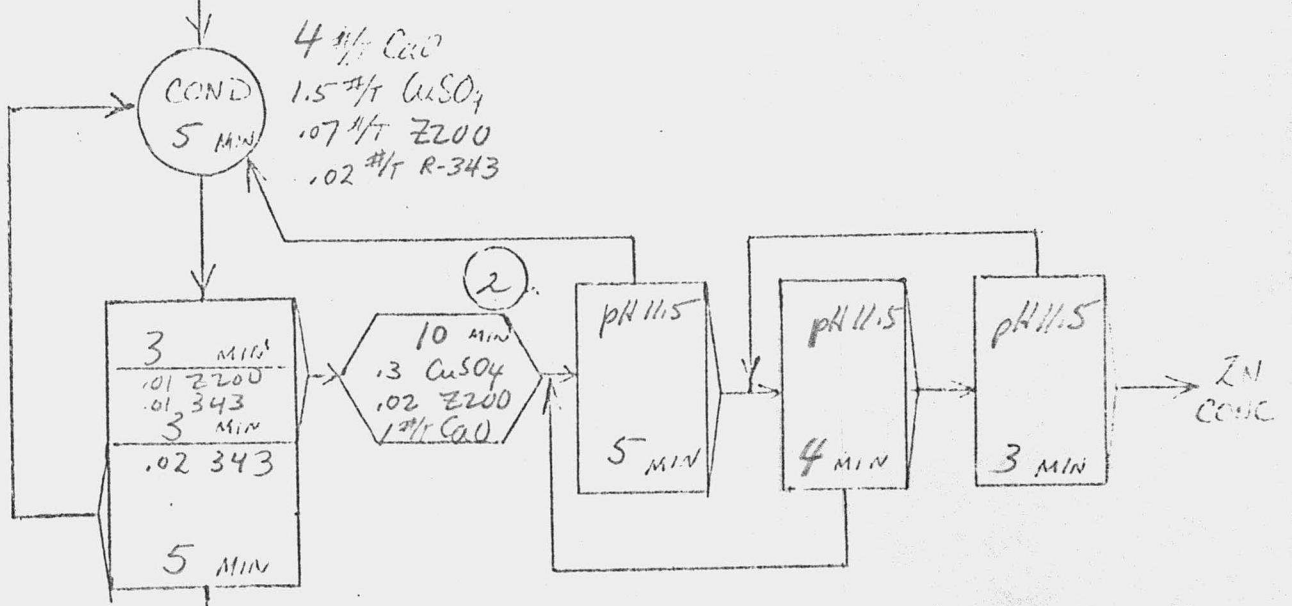
ORE TYPE: C

DATE: 28 FEB 77

OF CYCLES: 6



- MILLS USED
- ① ROD MILL
22.5 kg 1/2" RODS
 - ② ROD MILL
22.5 kg 7/8" RODS
 - ③ BALL MILL
4.5 kg CERAMIC BALLS



ZN REHR TAILING (CYCLE 4)

% - 200 M	99.1
% - 325 M	89.3

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 186

DATE: 28 FEB 77

TOTAL WEIGHT IN: 6051.4 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>622.4</u>
2	<u>825.7</u>
3	<u>986.6</u>
4	<u>838.2</u>
5	<u>1014.1</u>
6	<u>901.8</u>
7	_____
8	_____

" " " "

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	63	6.3	50.7	8.4		76.1	5.9	
Zn CONCENTRATE	136	13.6	1.5	56.0		4.9	84.3	
FLOAT TAIL	800	80.1	1.0	1.1		19.0	9.8	
HEAD	999	100.0	4.20	9.03		100.0	100.0	

REMARKS: .

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 186

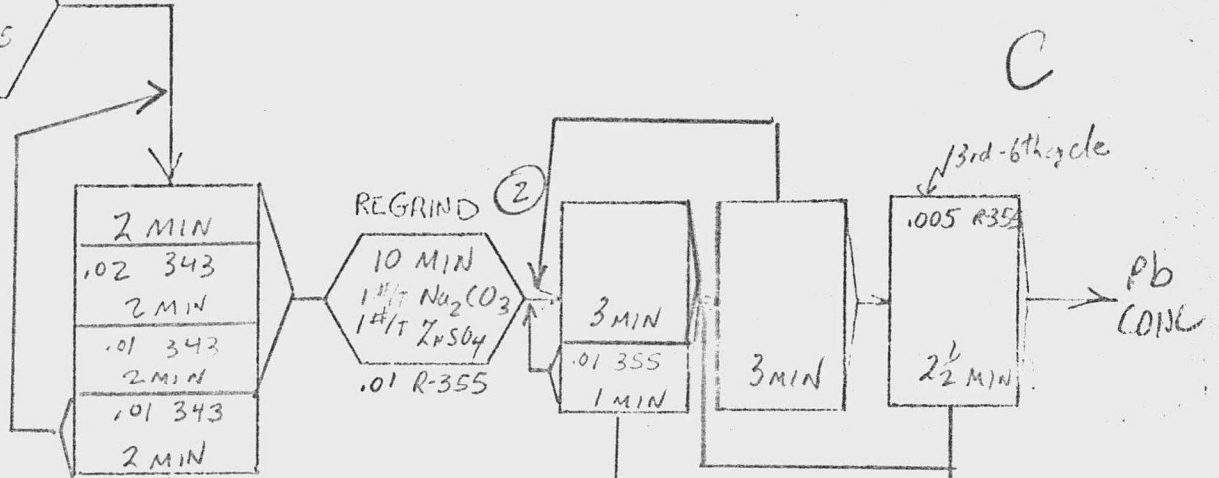
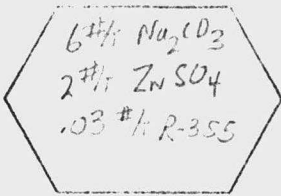
SAMPLE	WEIGHT	ANALYSES		
	GRAMS	Pb	Zn	% OZ/T OR PPM
Pb CONCENTRATE 1	26.4	53.79	7.26	
" 2	58.5	53.45	7.45	
" 3	77.6	45.96	6.81	
" 4	68.0	47.89	8.59	
" 5	56.0	54.64	7.75	
" 6	65.1	50.15	8.70	
Zn CONCENTRATE 1	78.5	.82	58.26	
" 2	98.2	1.26	57.21	
" 3	113.0	1.07	56.67	
" 4	97.2	1.29	56.62	
" 5	136.1	1.67	55.12	
" 6	105.7	1.23	56.37	
Zn ROSSER TAIL 1	517	.74	.84	
" 2	669	.81	.85	
" 3	796	.83	.94	
" 4	673	.81	.99	
" 5	822	.88	1.04	
" 6	731	1.01	1.10	
Pb SCAV CONC 6	87.4	7.27	12.08	
Zn SCAV CONC 6	80.4	3.28	8.15	
1st Pb Clnr Tail 6	192.8	7.53	12.01	
2nd " " " 6	75.3	12.54	13.77	
3rd " " " 6	46.3	19.10	13.62	
4th " " " 6	31.4	20.07	13.29	
1st Zn Clnr Tail 6	199.4	2.97	10.37	
2nd " " " 6	56.1	5.68	32.89	
3rd " " " 6	28.8	5.19	44.17	
Decant Slimes	64.7	8.94	13.22	
Head	6051.4	4.73	9.04	

MATTAGAMI LAKE MINES LIMITED

11 MARCH 77

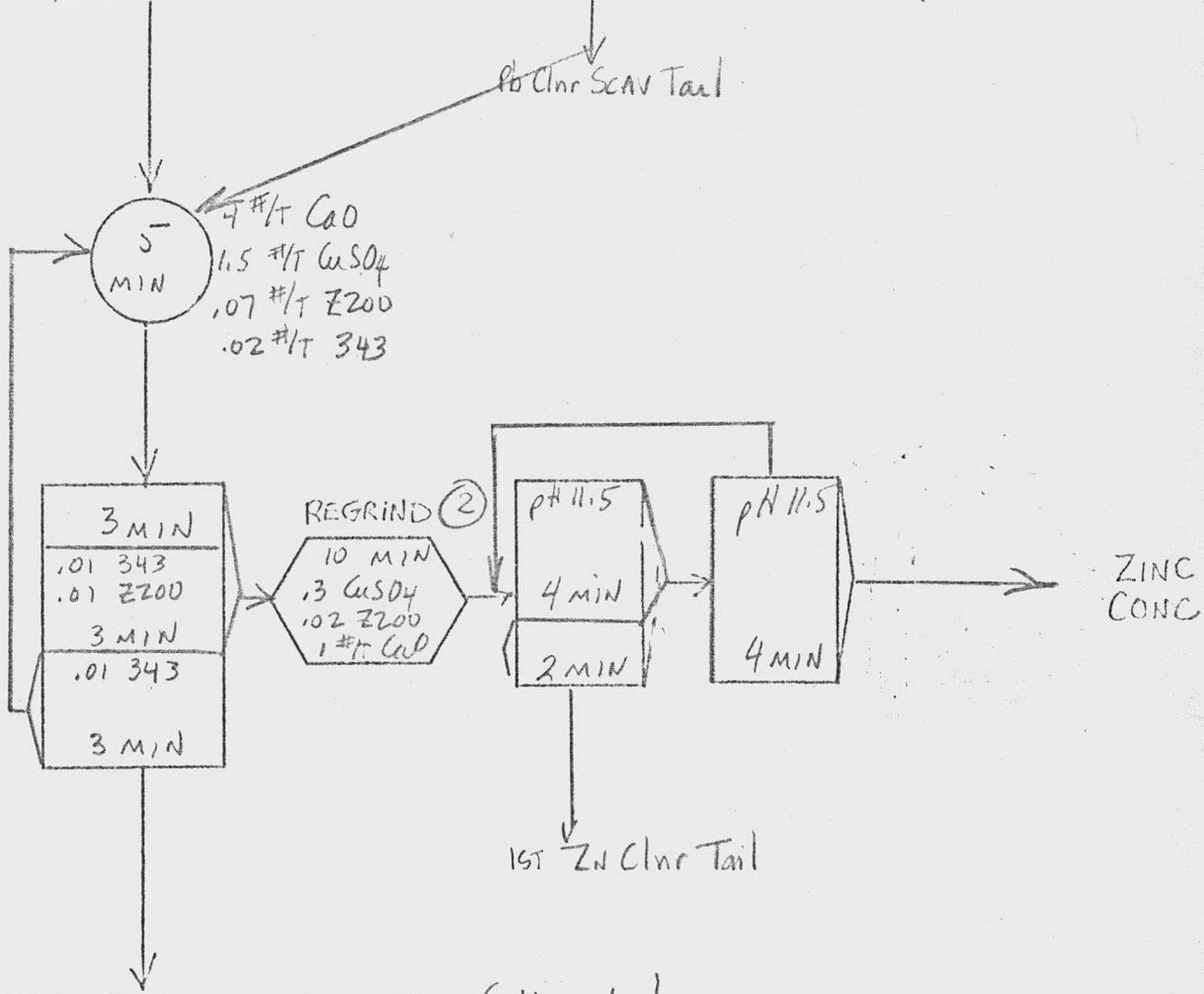
GRUM DEPOSIT TEST VAN-1R7

①



C

- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS (4th cycle)

% -200 MESH	97.5
% -325 MESH	81.0
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 187

DATE: 11 MARCH 77

TOTAL WEIGHT IN: 6031.8 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>723.8</u>
2	<u>911.6</u>
3	<u>1013.5</u>
4	<u>918.7</u>
5	<u>1010.8</u>
6	<u>1008.3</u>
7	_____
8	_____

" " " "

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	40	4.0	50	11.5		46.1	4.9	
Zn CONCENTRATE	150	15.2	7.5	51.2		26.3	82.7	
Zn Clnr Tail	100	10.1	3.5	6.0		8.1	6.4	
Zn Rghr Tail	700	70.7	1.2	.8		19.5	6.0	
FLOAT TAIL		80.8	1.5	1.5		27.6	12.4	
HEAD	490	100.0	4.34	9.41		100.0	100.0	

REMARKS :

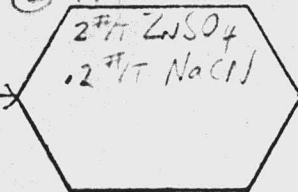
MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 187

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	24.6	47.19	8.18	
2	34.8	53.09	11.21	
3	42.7	49.72	10.94	
4	38.3	49.05	11.28	
5	46.5	54.67	11.36	
6	42.9	45.62	12.44	
Zn CONCENTRATE 1	99.9	.71	55.26	
2	147.4	2.76	52.56	
3	147.3	4.11	51.39	
4	143.9	4.85	51.64	
5	172.6	5.57	49.76	
6	154.8	7.47	51.18	
1st Zn Clnr Tail 1	57.3	.76	4.84	
2	86.4	1.25	3.84	
3	85.5	2.07	7.75	
4	94.5	2.45	6.37	
5	93.7	3.19	4.99	
6	112.6	2.63	6.79	
Zn ROUGHNER TAIL 1	542	.30	.58	
2	723	.65	.76	
3	738	1.82	1.85	
4	642	.76	.72	
5	698	1.05	1.82	
6	698	1.43	1.78	
Pb SCAV CONC 6	33.4	2.55	10.75	
Zn SCAV CONC 6	27.8	6.69	4.84	
Pb Clnr SCAV CONC 6	34.1	28.95	15.55	
Pb Clnr SCAV Tail 6	157.6	10.93	14.85	
2nd Pb Clnr Tail 6	36.3	21.75	15.85	
3rd " " " 6	38.9	30.88	14.70	
Zn Clnr SCAV CONC 6	18.7	10.89	20.19	
2nd Zn Clnr Tail 6	18.3	9.44	6.76	
Read	6031.8	4.22	9.85	

① 188-193

② 194-198



TEST	Na ₂ CO ₃	CaO	355	242	404
188	6	-	.02	-	-
189	-	2	.03	-	-
190	6	-	-	.025	.02
191	-	2	-	.025	.02
192	6	-	.03	-	-
193	6	-	-	.015	.02
194	-	2	.03	-	-
195	6	-	-	.025	.02
196	-	2	-	.025	.02
197	6	-	.03	-	-
198	-	-	-	.015	.02

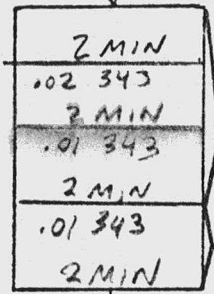
MATTAGAMI LAKE MINES LTD

GRUM TEST VAN #188-198

PURPOSE: Na₂CO₃ vs CaO vs NATURAL pH
DIFFERENT COLLECTORS

14 MARCH 77

- MILLS USED**
- ① ROD MILL 22.5kg - 1/2" RODS
 - ② ROD MILL 22.5kg 3/4" RODS
 - ③ ROD MILL 10kg - 1/2" RODS

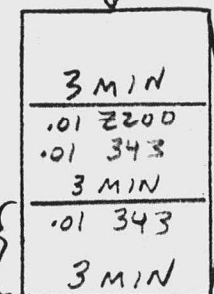


→ Pb Rght CONC
→ Pb SCAV CONC



4# CaO
1.5# CuSO₄
.07# ZnO
.02# 343

VAN 198 - NO ZINC FLOTATION



→ Zn Rght CONC

NOT FOR 189-193

	VAN 188-193	VAN 194-198
% - 200 M	98	99
% - 325 M	●	92

	WEIGHT		ANALYSES %			DISTRIBUTION %	
	GR	%	Zn	Pb	Zn	Pb	Zn
Pb Rght CONC	163.0	16.38	23.55	10.54	89.8	17.9	
Pb SCAV CONC	12.4	1.24	5.93	11.69	1.7	1.5	
Zn Rght CONC	216.1	21.71	.82	34.41	4.1	77.5	
Zn Rght Tail	604	60.67	.31	.50	4.4	3.1	
Head	995.5	100.0	4.29	9.65	100.0	100.0	
Pb Rght CONC	128.4	12.82	28.94	9.84	86.6	13.1	
Pb SCAV CONC	16.3	1.63	6.72	11.92	2.6	2.0	
Zn Rght CONC	207.3	20.71	1.09	37.75	5.3	81.3	
Zn Rght Tail	649	64.84	.37	.52	5.5	3.6	
Head	1001.0	100.00	4.29	9.61	100.0	100.0	
Pb Rght CONC	144.6	14.28	26.79	10.09	88.3	14.8	
Pb SCAV CONC	15.1	1.49	6.08	12.37	2.1	1.9	
Zn Rght CONC	206.6	20.41	1.08	38.29	5.1	80.3	
Zn Rght Tail	646	63.82	.31	.46	4.5	3.0	
Head	1012.3	100.00	4.33	9.73	100.0	100.0	

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 191-194

CALCULATION SHEET.

DATE 14 MARCH

	WEIGHT		ANALYSES			DISTRIBUTION			
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn	
191	Pb Rahr CONC	139.8	14.04		27.81	10.17		89.1	14.4
	Pb SEAV CONC	19.4	1.95		6.72	11.85		3.0	2.3
	Zn Rahr CONC	208.8	20.96		1.14	37.60		5.5	79.7
	Zn Rahr Tail	628	63.05		.17	.56		2.4	3.6
	Head	996.0	100.00		4.38	9.89		100	100
192	Pb Rahr CONC	167.8	16.61		24.49	10.43		90.2	17.7
	Pb SEAV CONC	12.3	1.22		5.97	12.33		1.6	1.5
	Zn Rahr CONC	204.1	20.20		1.02	37.79		4.6	77.9
	Zn Rahr Tail	626	61.97		.26	.45		3.6	2.9
	Head	1010.2	100.00		4.51	9.80		100.0	100.0
193	Pb Rahr CONC	178.5	17.68		22.24	10.25		89.7	18.6
	Pb SEAV CONC	15.2	1.51		4.82	11.81		1.7	1.8
	Zn Rahr CONC	207.8	20.58		.81	36.27		3.8	76.6
	Zn Rahr Tail	608	60.23		.35	.49		4.8	3.0
	Head	1009.5	100.00		4.38	9.75		100.0	100.0
194	Pb Rahr CONC	144.6	14.47		24.87	9.61		84.8	14.2
	Pb SEAV CONC	21.4	2.14		6.73	11.70		3.4	2.6
	Zn Rahr CONC	262.0	26.23		1.24	30.06		7.7	80.5
	Zn Rahr Tail	571.0	57.16		.31	.48		4.1	2.7
	Head	999.0	100.00		4.25	9.80		100.0	100.0

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 195-198

CALCULATION SHEET.

DATE 14 MAR 1958

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
195 Pb Rghr CONC	176.0	17.49		22.29	9.96		89.8	18.3
Pb Scav CONC	18.6	1.85		4.78	11.78		2.0	2.3
Zn Rghr CONC	197.7	19.65		.68	36.72		3.1	75.6
Zn Rghr Tail	614	61.01		.36	.60		5.1	3.8
Head	1006.3	100.00		4.34	9.54		100.0	100.0
196 Pb Rghr CONC	136.3	13.53		25.70	9.42		83.2	13.1
Pb Scav CONC	23.5	2.33		7.53	12.24		4.2	2.9
Zn Rghr CONC	272.8	27.07		1.31	29.18		8.5	81.1
Zn Rghr Tail	575	57.07		.30	.49		4.1	2.9
Head	1007.6	100.00		4.18	9.74		100.0	100.0
197 Pb Rghr CONC	156.0	15.91		24.20	9.88		91.7	16.1
Pb Scav CONC	14.2	1.45		3.96	11.55		1.4	1.7
Zn Rghr CONC	193.5	19.73		.68	39.35		3.2	79.3
Zn Rghr Tail	617	62.91		.25	.46		3.7	2.9
Head	980.7	100.00		4.20	9.79		100.0	100.0
198 Pb Rghr CONC	151.5	14.71		25.35	10.56		89.3	15.9
Pb Scav CONC	15.6	1.51		3.60	11.59		1.3	1.8
Zn Rghr CONC								
Zn Rghr Tail	863	83.78		.47	9.59		9.4	82.3
Head	1030.1	100.00		4.18	9.76		100.0	100.0

199-204 ①
 205-208 ②
 6#t Na₂CO₃
 .015 242
 .02 404

TEST	ZnSO ₄	NaCN	Pb REGRIND		
			MIN	ZnSO ₄	NaCN
199	2	●	0	1	.2
200	0	.2	5	1	.2
201	4	.2	10	1	.2
202	2	0	20	1	.2
203	2	.5	10	2	.4
204	2	1.0	10	0	0
205	2	.2			
206	4	.2			
207	2	0			
208	2	1.0			

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN #199-208

15 MARCH 7

PURPOSE: VARY ZnSO₄, NaCN

205-208 CHECKS

DIFFERENT REGRIND TIMES

MILLS USED

① ROD MILL
22.5 kg - 1/2" RODS

② ROD MILL
22.5 kg 3/4" RODS

③ ROD MILL
10 kg - 1/2" RODS

2 MIN
.02 343
2 MIN
.01 343
2 MIN
.01 343
2 MIN

COND
5 MIN

3 MIN
.01 2200
.01 343
3 MIN
.01 343
3 MIN

Pb Rghr CONC

Pb SCAV CONC

1 C.T. ←

2 C.T. ←

3 C.T. ←

84# MILL REGRIND

1ST Pb Clnr

2nd Pb Clnr

3rd Pb Clnr

Zn Rghr CONC

205

TEST	CaO	CuSO ₄	ZnO	343	DRYS
199	6	1.0	.07	-	3dp
200	6	1.0	.05	-	3
201	6	1.0	-	.07	3
202	6	1.5	-	.07	3
203	4	1.5	-	.07	3
204	NO ZINC FLOTATION				
205	6	1.5	.07	.02	2
206	6	1.5	.07	.02	2
207	6	1.5	.07	.02	2
208	6	1.5	.07	.02	2

	199-204	205-208
% - 200 M	97	99
% - 325 M	85	93

(199)	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb CONC	42.3	4.26	55.57	6.87		59.8	3.1	
3RD Clnr Tail	23.5	2.36	24.69	12.82		14.7	3.2	
2ND Clnr Tail	37.0	3.72	5.87	13.42		5.5	5.2	
1ST Clnr Tail	59.6	6.00	5.56	10.21		8.4	6.4	
Pb Rghr CONC		16.34	21.43	10.45		88.4	17.9	
Pb SCAV CONC	12.9	1.30	6.26	12.23		2.1	1.7	
Zn Rghr CONC	183.2	18.44	.77	39.69		3.6	76.3	
Zn Rghr Tail	635	63.92	.36	.64		5.9	4.1	
Head	993.5	100.00	3.96	9.59		100.0	100.0	
<hr/>								
Pb Rghr CONC	142.7	14.32	24.95	9.79		86.0	14.9	
Pb SCAV CONC	17.5	1.76	7.73	12.46		3.3	2.3	
Zn Rghr CONC	212.3	21.30	.95	34.89		4.9	79.2	
Zn Rghr Tail	624	62.62	.39	.53		5.8	3.5	
Head	996.5	100.00	4.16	9.38		100.0	100.0	

MOTTAGAMI LAKE MINES LTD

GRUM TEST VAN 200,201

CALCULATION SHEET.

DATE 15 MARCH 7

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	46.9	4.70		56.18	8.06		63.5	4.0
3RD Clnr Tail	7.8	.78		29.00	12.23		5.4	1.0
2ND Clnr Tail	22.1	2.22		11.82	13.68		6.3	3.2
1ST Clnr Tail	68.0	6.82		7.71	10.90		12.6	7.9
Pb Rghr CONC		14.52		25.46	10.48		87.8	16.1
Pb SCAV CONC	13.7	1.37		6.85	12.75		2.3	1.8
Zn Rghr CONC	205.6	20.62		.94	35.92		4.7	78.3
Zn Rghr Tail	633	63.48		.34	.56		5.2	3.8
HEAD	997.1	100.00		4.16	9.46		100.0	100.0
Pb CONC	33.1	3.24		59.88	5.82		49.7	2.0
3RD Clnr Tail	14.6	1.43		37.18	11.04		13.6	1.6
2ND Clnr Tail	18.2	1.78		17.85	12.23		8.1	2.3
1ST Clnr Tail	81.1	7.93		7.77	10.90		15.2	9.0
Pb Rghr CONC		14.38		23.68	9.93		87.2	14.9
Pb SCAV CONC	12.9	1.26		6.26	11.59		2.0	1.5
Zn Rghr CONC	200.2	19.57		.96	38.81		4.8	79.0
Zn Rghr Tail	662	64.77		.36	.68		6.0	4.6
Head	1022.1	100.00		3.91	9.61		100.0	100.0

200

201

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 202,203

CALCULATION SHEET.

DATE 15 MARCH

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	23.3	2.37		65.20	4.19		37.5	1.1
3RD Clnr Tail	16.2	1.65		46.25	8.76		18.5	1.5
2ND Clnr Tail	16.2	1.65		21.29	13.85		8.5	2.4
1ST Clnr Tail	100.0	10.17		8.64	14.53		21.4	15.7
Pb Rghr CONC		15.84		22.34	12.31		85.9	20.7
Pb SCAV CONC	15.5	1.58		7.70	11.64		3.0	2.0
Zn Rghr CONC	183.1	18.62		.90	36.53		4.1	72.2
Zn Rghr Tail	629	63.96		.45	.76		7.0	5.1
Head	983.3	100.00		4.12	9.42		100.0	100.0
Pb CONC	35.8	3.67		54.71	5.73		51.9	2.2
3RD Clnr Tail	17.5	1.79		33.59	11.23		15.5	2.1
2ND Clnr Tail	30.0	3.08		16.71	12.99		9.3	4.2
1ST Clnr Tail	66.5	6.82		5.62	10.52		9.9	7.5
Pb Rghr CONC		15.36		21.83	9.95		86.6	16.0
Pb SCAV CONC	12.4	1.27		8.09	12.13		2.7	1.6
Zn Rghr CONC	185.5	19.03		.99	39.32		49	78.4
Zn Rghr Tail	627	64.34		.35	.59		5.8	4.0
HEAD	974.7	100.00		3.87	9.55		100.0	100.0

202

203

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 204, 206

CALCULATION SHEET.

DATE 15 MAR

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	27.3	2.74		57.80	5.62		41.4	1.7
3RD Clar Tail	6.3	.63		39.29	10.89		6.5	.8
2ND Clar Tail	19.2	1.93		20.83	11.27		10.5	2.4
1ST Clar Tail	90.2	9.06		12.06	11.01		28.6	11.0
Pb Rahr CONC		14.36		23.10	10.00		87.0	15.9
Pb SCAV CONC	15.8	1.59		7.58	11.61		3.2	2.0
Pb Rahr Tail	837	84.05		.45	8.84		9.8	22.1
HEAD	995.8	100.00		3.82	9.05		100.0	100.0
Pb Rahr CONC	162.6	16.26		22.09	9.56		87.9	16.9
Pb SCAV CONC	21.8	2.18		4.34	11.01		2.3	2.6
Zn Rahr CONC	206.0	20.60		.93	34.53		4.7	77.1
Zn Rahr Tail	610	60.96		.34	.52		5.1	3.4
Head	1000.4	100.00		4.09	9.22		100.0	100.0

204

206

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 207, 208

CALCULATION SHEET.

DATE 15 MAR

207

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rghr CONC	193.9	18.92		20.42	12.05		90.0	23.9
Pb SCAV CONC	25.5	2.49		3.75	13.42		2.2	3.5
Zn Rghr CONC	195.2	19.05		.88	34.65		3.9	69.3
Zn Rghr Tail	610	59.53		.28	.51		3.9	3.3
HEAD	1024.6	100.00		4.29	9.52		100.0	100.0
Pb Rghr CONC	185.5	17.91		21.98	9.71		90.5	18.3
Pb SCAV CONC	18.9	1.82		6.31	11.60		2.6	2.2
Zn Rghr CONC	280.9	27.13		.63	26.29		3.9	75.1
Zn Rghr Tail	550	53.13		.24	.78		3.0	4.4
Head	1035.3	100.00		9.35	9.50		100.0	100.0

208

MATTAMAMI LAKE MINES LTD.

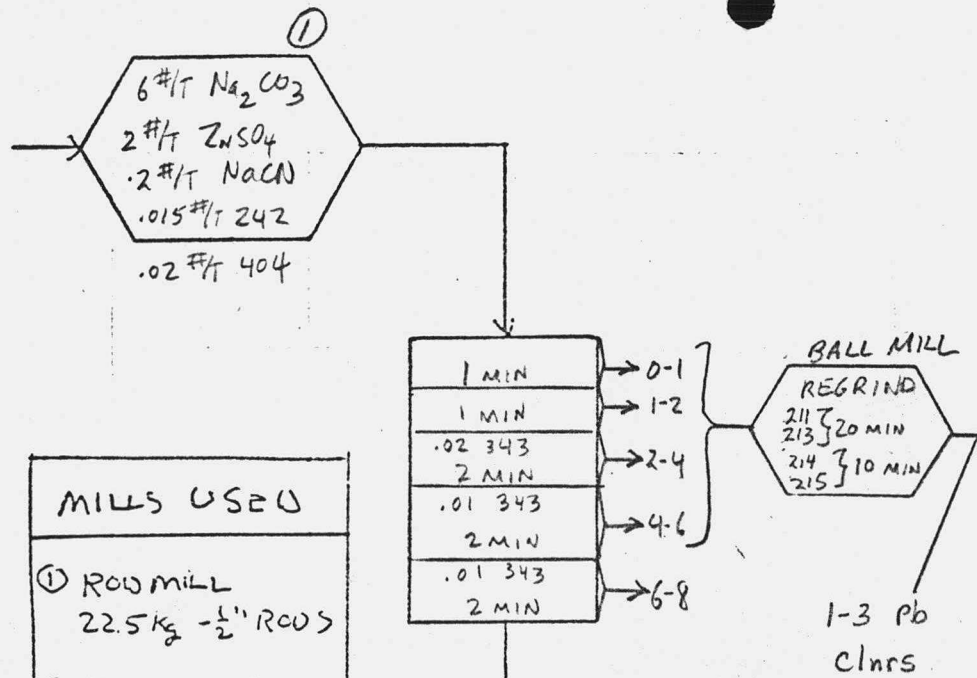
GRUM TEST VAN # 209-218

17 MARCH

PURPOSE: DIFFERENT PRIMARY GRIND

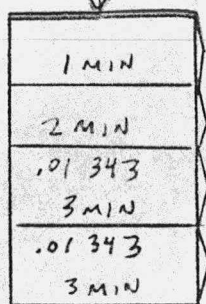
211 213-15 → Pb Clrs

C



MILLS USED	
①	ROD MILL 22.5 kg - 1/2" RODS
②	ROD MILL 22.5 kg 3/4" RODS
③	ROD MILL 10 kg - 1/2" RODS

COND 5 MIN
4#/T CaO
1.5#/T CuSO4
.07#/T Z200



Zn Rgr Tail

TEST	%-200M	%-325M
209	84.9	61.4
210	96.2	79.0
211	97.4	87.0
212	99.5	95.7
213	95.1	70.4
214	95.5	73.0
215	99.4	90.1
216	97.9	80.8
217	99.2	95.7
218	87.7	61.5

209	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb Rgr CONC 0-1	111.8	11.29		28.87	9.82		74.6	11.7
" " " 1-2	18.0	1.82		21.35	11.09		8.9	2.1
" " " 2-4	24.1	2.43		8.82	12.29		4.9	3.2
" " " 4-6	16.9	1.71		5.75	11.49		2.3	2.1
" " " 6-8	15.2	1.53		3.87	11.09		1.3	1.8
Pb Rgr CONC 0-8		18.78		21.40	10.52		92.0	20.9
Zn Rgr CONC 0-1	97.9	9.89		.34	50.31		.8	52.7
" " " 2-3	43.3	4.37		.63	35.69		.6	16.5
" " " 3-6	70.6	7.13		.79	6.58		1.3	5.0
" " " 6-9	82.5	2.33		.73	2.21		1.4	1.9
Zn Rgr CONC 0-7		29.87		.60	24.07		4.1	76.1
Zn Rgr Tail	510	51.50		.33	.54		3.9	3.0
Head	990.3	100.00		4.37	9.44		100.0	100.0

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 210

CALCULATION SHEET.

DATE 17 MARCH

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rghr CONC 0-1	64.1	6.38		35.96	8.15		56.2	5.5
1-2	26.2	2.61		25.76	9.60		11.5	2.6
2-4	35.4	3.52		14.68	12.22		12.7	4.5
4-6	20.2	2.01		6.71	11.89		3.3	2.5
6-8	10.5	1.05		4.87	11.53		1.1	1.3
Pb Rghr CONC 0-8		15.57		23.57	10.02		89.8	16.4
-								
Zn Rghr CONC 0-1	118.2	11.76		.49	53.25		1.4	65.8
1-3	31.0	3.09		1.19	28.77		.9	9.3
3-6	26.9	2.68		1.22	8.44		.8	2.4
6-9	33.2	3.30		1.02	3.42		.8	1.1
Zn Rghr CONC 0-9		20.83		.77	35.96		3.9	78.7
-								
Zn Rghr Tail	639	63.60		.40	.74		6.3	4.9
Head	1004.7	100.00		4.08	9.52		100.0	100.0
-								
-								
-								
-								
-								

210

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 214

CALCULATION SHEET.

DATE 17 MAR

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	10.9	1.10		75.55	4.28		20.0	.5
3RD CLUR TAIL	14.1	1.43		49.93	7.82		17.2	1.2
2ND CLUR TAIL	40.5	4.09		27.45	11.47		27.0	4.9
1ST CLUR TAIL	711.4	11.26		9.06	10.92		24.5	12.8
Pb Rghr Conc 0-6		17.88		20.63	10.39		88.7	19.4
" " " 6-8	19.5	1.97		6.33	11.44		3.0	2.2
" " " 8-9		19.85		19.21	10.49		91.7	21.6
Zn Rghr CONC 0-1	110.4	11.16		.53	49.33		1.4	57.2
" " " 1-3	37.9	3.83		.62	31.17		.6	12.4
" " " 3-6	28.1	2.84		.83	11.35		.6	3.3
" " " 6-9	25.4	2.57		.84	4.51		.5	1.2
Zn Rghr Conc 0-9		20.40		.63	34.99		3.1	74.1
Zn Rghr Tail	591	59.75		.36	.69		5.2	4.3
Head	989.2	100.00		4.16	9.63		100.0	100.0

214

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 215

CALCULATION SHEET.

DATE 17 MAR 7

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONC	10.5	1.05		73.78	3.02		19.0	.3
3RD Pb Cnc Tail	8.9	.89		57.62	7.04		12.6	.7
2ND " " "	34.2	3.44		31.64	10.73		26.7	3.9
1ST " " "	116.9	11.74		10.59	10.58		30.5	13.1
Pb Rgr CONC 0-6		17.12		21.14	9.96		88.8	18.0
" " " 6-8	18.8	1.89		5.12	11.18		2.4	2.2
" " " 0-8		19.01		19.55	10.08		91.1	20.2
Zn Rgr CONC 0-1	105.2	10.57		.45	52.40		1.2	58.5
" " " 1-3	35.1	3.53		.81	31.07		.7	11.6
" " " 3-6	24.2	2.43		1.06	13.87		.6	3.6
" " " 6-9	10.7	1.07		1.21	7.60		.3	.8
Zn Rgr CONC 0-9		17.60		.65	40.08		2.8	74.5
Zn Rgr Tail	631	63.39		.39	.78		6.1	5.2
Head	995.5	100.00		4.08	9.47		100.0	100.0

215

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 216

CALCULATION SHEET.

DATE 17 MAR 7

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rohr CONC 0-1	111.9	11.24		26.72	8.98		68.8	10.6
" " " 1-2	26.5	2.66		16.56	10.58		10.1	3.0
" " " 2-4	40.9	4.11		9.94	11.77		9.4	5.1
" " " 4-6	25.0	2.51		5.24	11.36		3.0	3.0
" " " 6-8	16.3	1.64		3.75	10.58		1.4	1.7
Pb Rohr CONC 0-8		22.16		18.25	10.08		92.7	23.4
-								
- Zn Rohr CONC 0-1	114.6	11.52		.39	50.18		1.0	60.7
" " " 1-3	26.6	2.67		.75	27.89		.5	7.8
" " " 3-6	21.4	2.15		.99	12.28		.5	2.8
" " " 6-9	19.0	1.91		.99	4.66		.4	.9
- Zn Rohr CONC 0-9		18.25		.58	37.69		2.4	72.2
-								
Zn Rohr Tail	593	59.59		.36	.70		4.9	4.4
Head	995.2	100.00		4.36	9.53		100.0	100.0
-								
-								
-								
-								
-								

216

MOTTAGAMI LAKE MINES LTD

GRUM TEST VAN 217

CALCULATION SHEET.

DATE 17 MAR 77

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rghr Conc 0-1	89.3	9.02		26.19	8.22		56.9	7.8
" " " 1-2	32.2	3.25		17.43	9.18		13.6	3.2
" " " 2-4	37.4	3.88		14.99	11.24		14.0	4.6
" " " 4-6	21.7	2.19		6.98	11.19		3.7	2.6
" " " 6-8	14.4	1.45		7.02	11.23		2.5	1.7
Pb Rghr Conc 0-8		19.79		19.03	9.52		90.7	19.9
-								
Zn Rghr Conc 0-1	117.6	11.88		.53	51.04		1.5	64.2
" " " 1-3	32.1	3.24		1.18	24.51		.9	8.4
" " " 3-6	18.9	1.91		1.36	10.47		.6	2.1
" " " 6-9	12.3	1.24		1.33	4.99		.5	.6
Zn Rghr Conc 0-9		18.27		.79	32.97		3.5	75.3
-								
Zn Rghr Tail	613	61.94		.39	.72		5.8	4.7
Head	989.9	100.00		4.15	9.45		100.0	100.0
-								
-								
-								
-								

217

MATTAGAMI LAKE MINES LTDGRUM TEST VAN 218

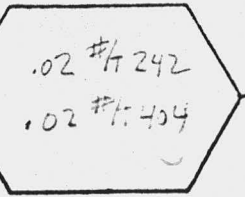
CALCULATION SHEET.

DATE 17 MAR 77

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rghr Conc 0-1	107.6	11.18		26.98	9.25		71.2	10.9
" " " 1-2	24.0	2.49		13.73	11.31		8.1	3.0
" " " 2-4	33.6	3.49		10.18	12.34		8.4	4.6
" " " 4-6	24.4	2.54		5.07	11.19		3.0	3.0
" " " 6-8	15.0	1.56		3.66	11.01		1.3	1.2
Pb Rghr Conc 0-8		21.26		18.34	10.36		42.0	23.3
-								
- Zn Rghr Conc 0-1	117.8	12.24		.38	46.82		1.1	60.6
" " " 1-3	37.0	3.84		.76	20.34		.7	8.3
" " " 3-6	32.3	3.36		.88	8.30		.7	3.0
" " " 6-9	32.8	3.41		.77	2.97		.6	1.1
- Zn Rghr Conc 0-9		22.85		.58	30.16		3.1	73.0
-								
Zn Rghr Tail	538.0	55.89		.37	.64		4.9	3.7
Head	962.5	100.00		4.24	9.45		100.0	100.0
-								
-								
-								
-								

218

①



TEST	Na ₂ CO ₃	ZnSO ₄	NaCN	pH
219	0	0	0	7.9
220	0	0	.2	8.0
221	3	2	.2	9.1
222	0	2	.2	7.1
223	3	2	.2	
224	0	0	0	
225	0	0	.2	
226	0	2	.2	

MATTAGAMI LAKE MINES LTD

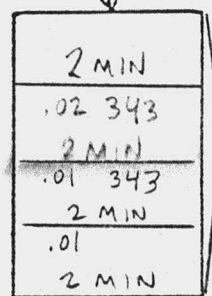
22 MAR 77

GRUM TEST VAN #219-226

PURPOSE: NATURAL pH VS SODA ASH
VARY ZnSO₄, NaCN

MILLS USED

- ① ROD MILL
22.5 Kg - 1/2" RODS
- ② ROD MILL
22.5 Kg 3/4" RODS
- ③ ROD MILL
10 Kg - 1/2" RODS



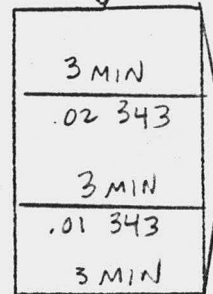
Pb Rghr CONC

219



4 #1 CaO
1 #1 CuSO₄
.07 #1 343
DF 250

220



Zn Rghr CONC

221

% - 200 M 90
% - 325 M

	WEIGHT		ANALYSES %			DISTRIBUTION %	
	GR	%	Pb	Zn	Pb	Zn	
Pb Rghr CONC		22.89	17.92	15.62	92.2	32.5	
Zn Rghr CONC		16.72	1.08	32.34	4.1	58.1	
Zn Rghr Tail	584	60.39	.27	.52	3.7	3.4	
Head	917.1	100.00	4.44	9.30	100	100	
Pb Rghr CONC		15.52	25.94	10.97	91.8	18.3	
Zn Rghr CONC		19.17	.75	37.39	3.3	77.3	
Zn Rghr Tail	182	66.31	.32	.61	4.9	4.4	
Head	1027.6	100	4.38	9.28	100	100	
Pb Rghr CONC		13.10	28.55	10.52	89.4	15.1	
Zn Rghr CONC		18.57	.99	39.29	4.4	79.9	
Zn Rghr Tail	682	68.33	.38	.67	6.2	5.0	
Head	992.1	100	4.18	9.13	100	100	

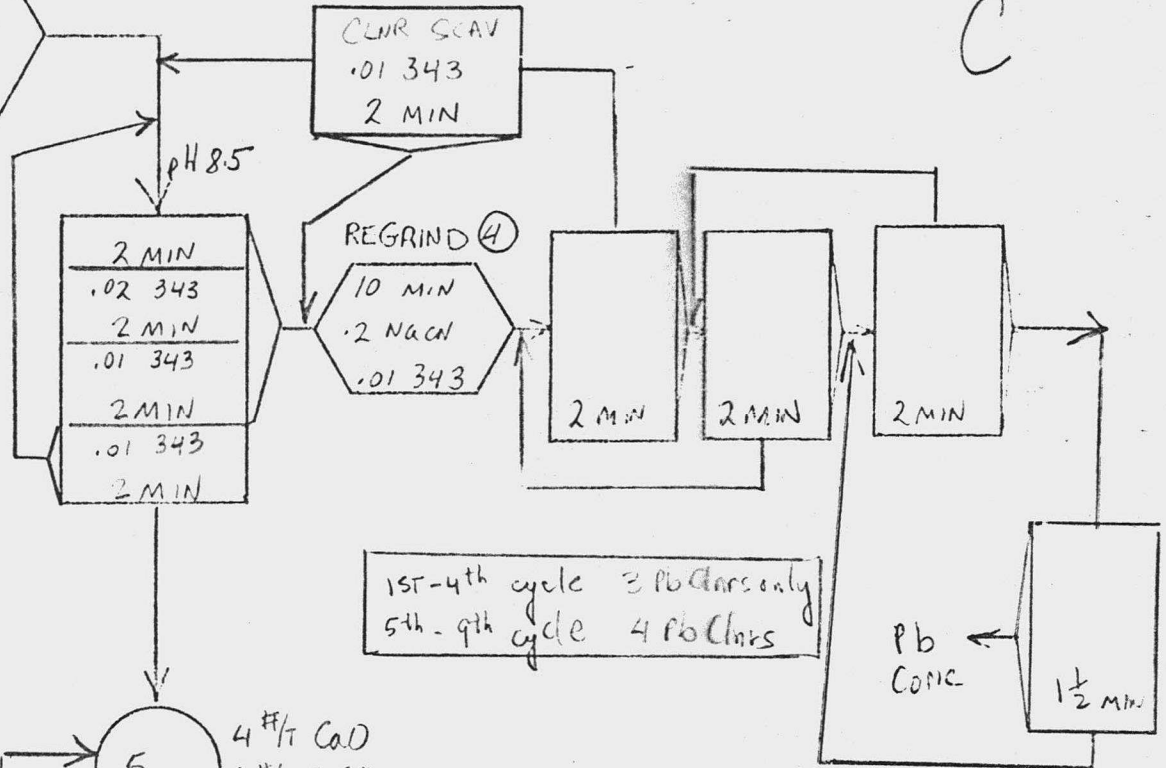
MATTAGAMI LAKE MINES LIMITED

GRUM DEPOSIT
TEST VAN-234

28 MARCH 77

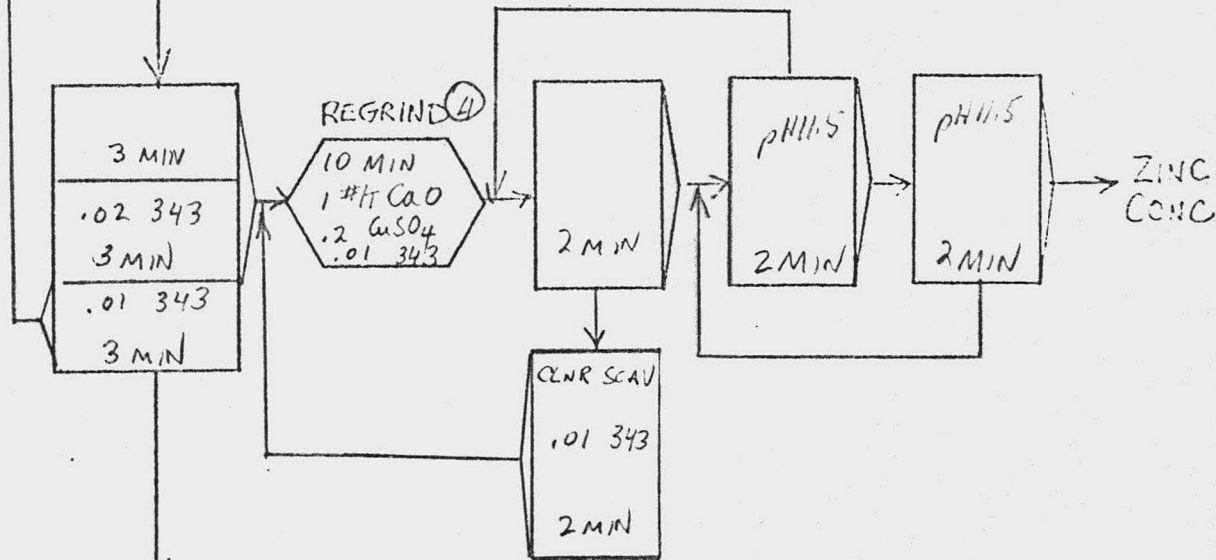
REGRIND (2)

.2 #/t NaCN
.5 #/t ZnSO₄
.02 #/t 242
.02 #/t 404



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2 CERAMIC BALLS

5 MIN
4 #/t CaO
1 #/t CuSO₄
.07 #/t 343
DF 250



ZINC ROUGHER TAILINGS
(5th cycle)

% -200 MESH	96
% -325 MESH	76
% -400 MESH	

Zn CLR SCAV TAIL

MATTAGAMI LAKE MINES LIMITED

1 of 2 DETAILED RESULTS OF CYCLE TEST VAN 234

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	34.7	62.29	5.27	
2	38.7	59.09	5.45	
3	51.1	50.76	5.17	
4	73.0	52.26	7.45	
5	57.7	59.05	6.62	
6	54.6	57.25	5.73	
7	57.7	56.79	6.16	
8	56.6	57.32	5.81	
9	54.4	53.75	5.36	
4th Pb Clnr Tail 9	11.3	32.57	12.24	
3rd " " " 9	19.6	22.35	14.21	
2nd " " " 9	42.4	17.52	14.33	
1st Pb Clnr SCAV Tail 9	28.4	51.76	1.43	
1st Zn Clnr SCAV CONC 9	94.6	7.32	14.63	
Pb SCAV CONC	79.0	4.87	12.01	
Zn CONC 1	103.3	.35	57.22	
2	114.7	.38	57.32	
3	124.1	.54	57.38	
4	90.4	.70	56.91	
5	101.6	.82	55.05	
6	111.3	.70	56.60	
7	146.6	.53	57.26	
8	128.8	.62	56.96	
9	116.7	.48	57.83	
3rd Zn Clnr Tail	12.5	1.91	56.73	
2nd Zn Clnr Tail	29.6	1.87	38.95	
Zn Clnr SCAV CONC	47.0	1.43	51.76	
Zn SCAV CONC	49.9	1.05	11.09	
Zn Clnr SCAV Tail 1	32.0	1.38	6.11	
2	39.7	2.10	13.82	
3	39.5	1.99	15.56	
4	41.1	1.87	13.31	
5	64.8	1.53	8.47	
6	42.9	1.99	17.02	
7	67.8	1.71	15.73	
8	43.6	2.12	18.85	
9	52.1	2.13	21.51	

MATTAGAMI LAKE MINES LIMITED

1 APRIL 77

GRUM DEPOSIT TEST VAN-245

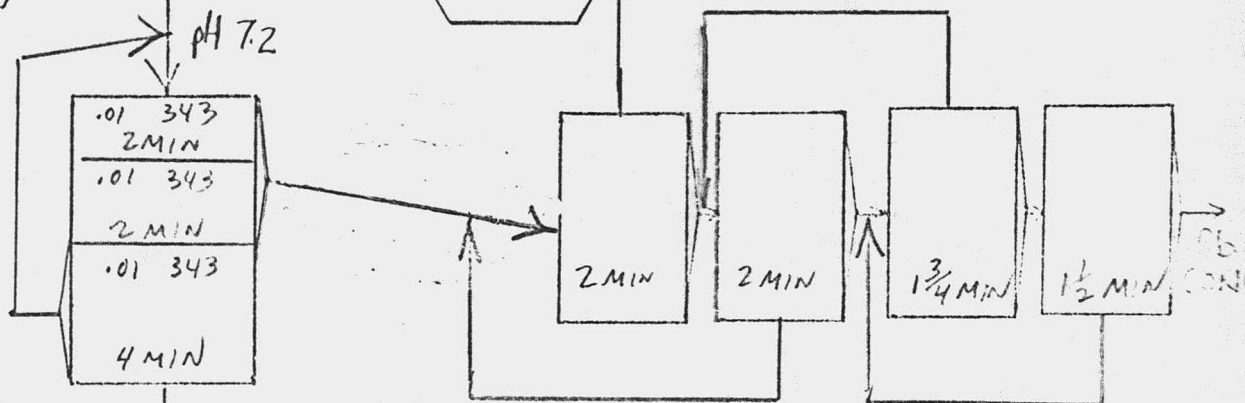
C

②

.2 #/T H₂O CN
.5 #/T ZnSO₄
.02 #/T 242
.02 #/T 404

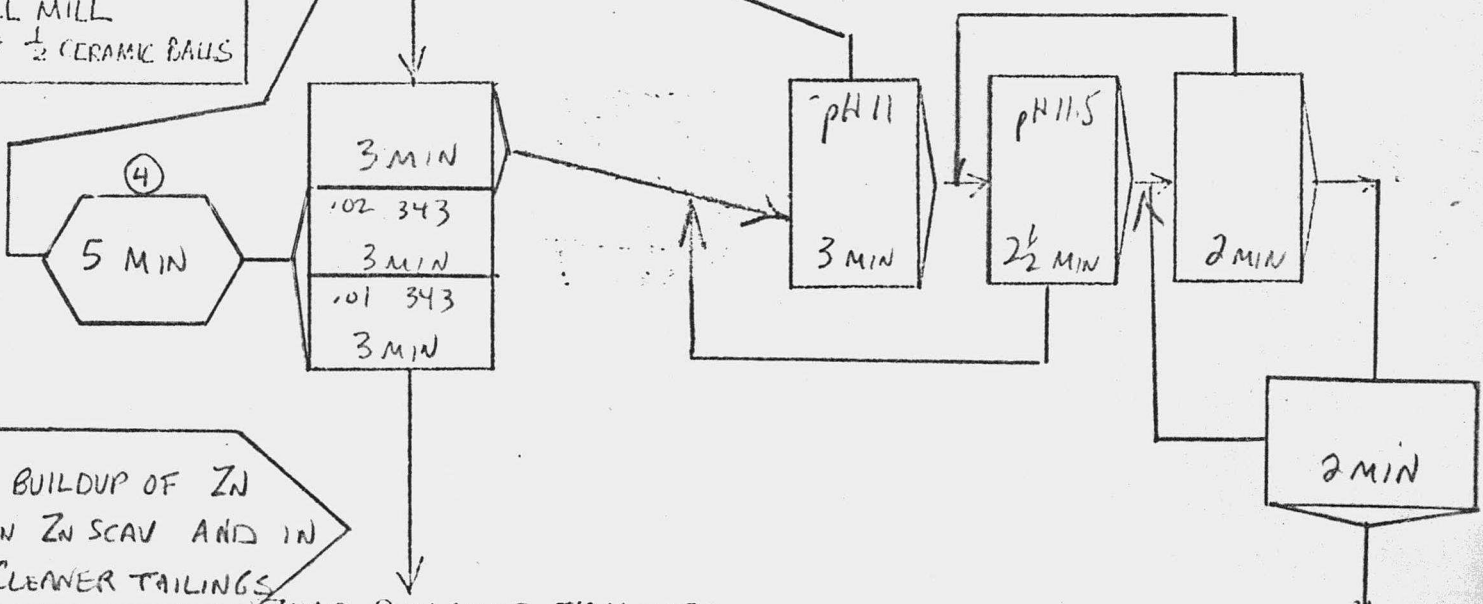
④

5 MIN
.04 NaCN



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS

5 MIN
2 #/T CaO pH 10.2
1 #/T CuSO₄
.07 #/T 343 DF250



NOTE: BUILDUP OF ZN IN ZN SCAV AND IN CLEANER TAILINGS

ZINC ROUGHER TAILINGS

% -200 MESH	96
% -325 MESH	79
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 245

DATE : 1 APRIL 77

TOTAL WEIGHT IN : 5845.8 GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE

1	<u>679.7</u>
2	<u>909.3</u>
3	<u>896.6</u>
4	<u>888.3</u>
5	<u>887.6</u>
6	<u>875.0</u>
7	_____
8	_____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T , PPM			% DISTRIBUTION		
	GMS	%						

REMARKS : POOR STABILITY ESP FOR ZN
- ZN DID NOT FLOAT READILY WITH REGRIND OF ZN RGHR CONC ELIMINATED , ZN ALSO FLOATED SLOWLY IN RGHR
- Pb RESULTS AFFECTED LESS BY CHANGE IN REGRIND

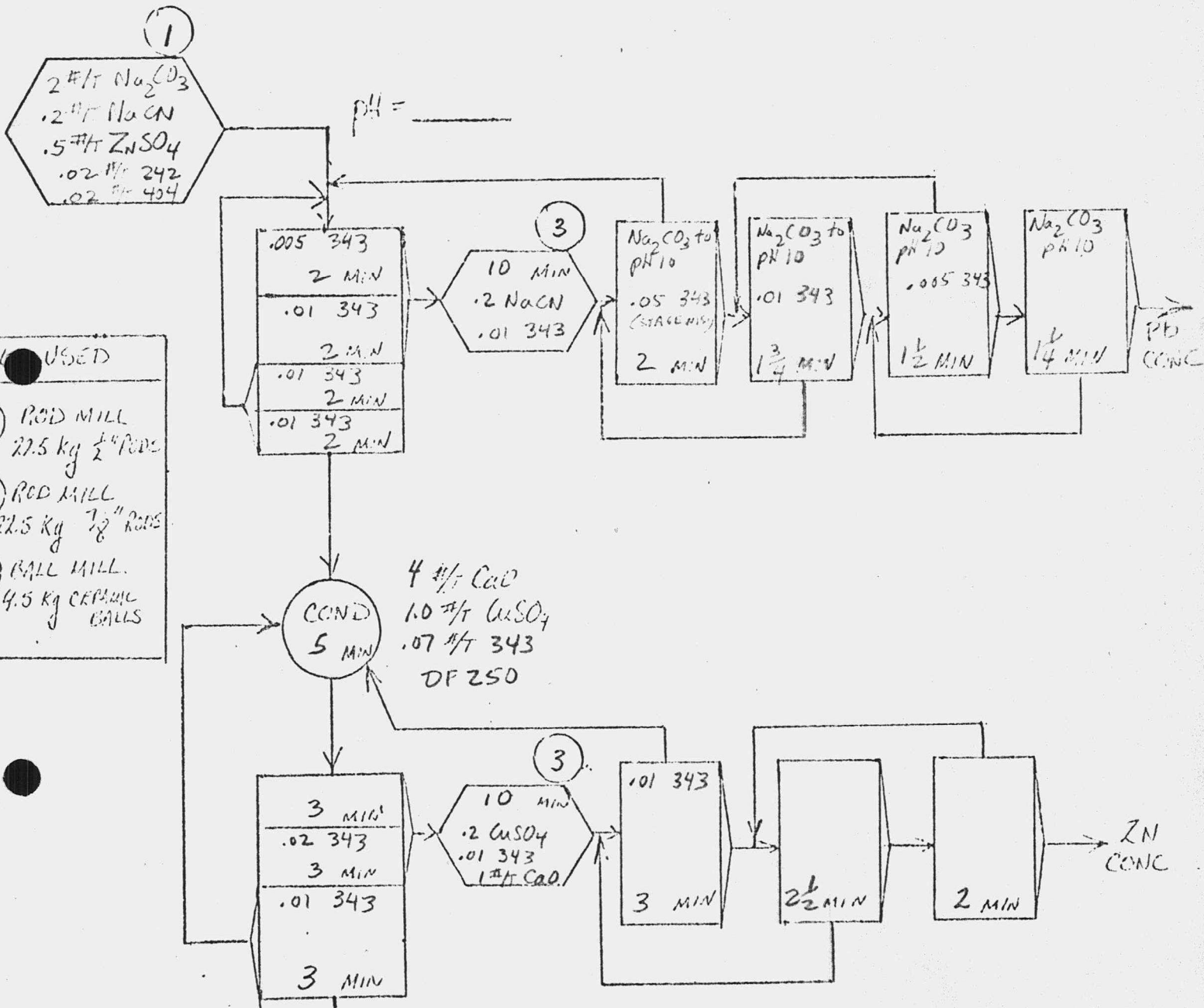
MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 245

SAMPLE	WEIGHT GRAMS	ANALYSES		% OZ/T OR PPM
		Pb	Zn	
Pb CONCENTRATE 1	22.1	64.65	457	
2	27.2	62.99	482	
3	40.3	54.07	511	
4	38.1	57.61	559	
5	43.1	53.22	546	
6	35.7	56.44	541	
Pb SCAV CONC 6	79.7	16.79	10.59	
Zn CONCENTRATE 1	86.6	.50	53.42	
2	99.1	.50	55.16	
3	70.6	.49	57.46	
4	88.2	.76	56.41	
5	60.5	.89	56.71	
6	59.3	.97	56.16	
Zn SCAV CONC 6	235.5	2.45	34.88	
4th Pb Clnr Tail 6	21.1	36.84	7.82	
3rd " " " 6	16.7	33.69	6.83	
2nd " " " 6	51.8	23.21	8.40	
1st " " " 6	58.2	18.88	8.77	
4th Zn Clnr Tail 6	18.7	2.35	50.35	
3rd " " " 6	28.3	2.87	46.84	
2nd " " " 6	66.7	3.28	43.26	
1st " " " 6	82.2	2.45	34.71	
Zn Rghr Tail 1	571	.32	.75	
2	783	.34	.77	
3	726	.53	1.03	
4	762	.72	1.29	
5	784	.69	1.33	
6	780	.81	1.36	
Head	5845.8	3.58	8.71	

MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST # : VAN 306 ORE TYPE : C DATE : 4 MAY 77
 # OF CYCLES : 8



ZN REHR TAILING (5th cycle)
 % - 200 M 94.5
 % - 325 M 72.1

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 306

DATE : 4 MAY 77

TOTAL WEIGHT IN : 8025.9 GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE 1 734.3
2 883.8
3 842.7
4 1029.6
5 980.9
6 1008.0
7 912.9
8 962.7

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE		6.0	50.1	7.0		77.5	5.1	
Zn CONCENTRATE		15.2	.6	53.9		1.9	80.4	
FLOAT TAIL		78.8	.9	1.35		20.6	14.5	
HEAD		100.0	3.62	7.71		100.0	100.0	

REMARKS : 2ND BATCH OF "C" ORE

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 306

SAMPLE	WEIGHT	ANALYSES		% OZ/A OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	20.9	64.13	5.45	
2	35.6	55.58	6.61	
3	36.0	58.52	6.58	
4	50.2	52.68	7.39	
5	41.4	56.07	6.61	
6	51.2	51.09	7.04	
7	51.0	51.31	6.71	
8	54.6	42.83	7.32	
4th Pb Conc Tail 8	15.2	26.42	8.97	
3rd " " " 8	22.4	21.04	8.69	
2nd " " " 8	27.3	15.92	9.15	
1st " " " 8	133.7	11.25	7.32	
Zn CONCENTRATE 1	78.4	.21	55.49	
2	76.2	.131	54.94	
3	77.7	.32	55.79	
4	105.4	.36	54.99	
5	111.5	.41	53.22	
6	131.8	.41	54.23	
7	107.9	.94	54.29	
8	109.1	.43	53.37	
1st Zn Conc Tail 8	163.2	3.19	25.73	
2nd " " " 8	91.0	.89	39.73	
3rd " " " 8	53.2	1.82	45.01	
Pb SCAV CONC 8	119.1	7.81	8.56	
Zn SCAV CONC 8	40.3	4.34	11.72	
Zn Rght Tail 1	635	.53	.96	
2	772	.72	1.29	
3	729	.78	1.26	
4	874	.92	1.92	
5	928	.76	1.16	
6	825	.84	1.27	
7	754	.88	1.34	
8	799	.83	1.34	
Decant Slimes 1-8	95.6	4.49	9.85	
Head	8025.9	4.21	8.53	

APPENDIX IV

TESTS ON
GRUM SAMPLE
C 3

TEST	DESCRIPTION
233	EXPLORATORY
272-276	VARY NaCN; $ZnSO_4$; NATURAL pH VS SODA ASH
277-281	DIFFERENT PRIMARY GRIND TIMES
304	6 CYCLES, NO REGRIND Zn
316	6 CYCLES, INCREASED REGRIND FOR Pb and Zn

Comments on C3

C3 is a low grade medium sulphide (high pyrite), medium silicate. This was one of the more difficult ores to treat due to its low grade and the large amount of pyrite. Both Pb and Zn concentrates were low grade with the standard regrind times. Both grades improved to acceptable levels with finer regrinding.

A fine primary grind was not required.

TEST	GRIND % -325M	Pb ROUGHER CONCENTRATE				Zn ROUGHER CONC	
		% Pb	% Zn	% DIST Pb	% DIST Zn	% Zn	% DIST Zn
277	49	23.2	4.0	73.3	7.6	26.6	79.3
280	59	23.0	4.5	73.9	8.6	29.9	78.4
278	67	23.2	4.4	76.4	9.0	29.8	83.6
279	78	23.8	4.7	75.3	8.5	28.4	78.6

A combination of Soda ash, NaCN and $ZnSO_4$ once again gave optimum Zn and pyrite depression although Zn is not as active for this ore as for others.

TEST	#/T	#/T	#/T	Pb ROUGHER CONCENTRATE			
	Na_2CO_3	NaCN	$ZnSO_4$	% Pb	% Zn	% DIST Pb	% DIST Zn
272	2	.2	0	25.2	4.5	77.8	9.0
273	2	.2	.5	22.6	4.4	82.4	10.5
274	2	0	.5	19.4	4.9	75.9	12.3
275	2	0	0	19.7	6.3	74.7	15.8
276	0	.2	.5	19.9	3.7	82.3	10.1

MATTAGAMI LAKE MINES LTD

7 APRIL 77

GRIM TEST VAN # 272-276

PURPOSE: VARY NaCN AND ZnSO₄
NATURAL pH VS Na₂CO₃

C3

TEST	Na ₂ CO ₃	ZnSO ₄	NaCN
272	2	0	.2
273	2	.5	.2
274	2	.5	0
275	2	0	0
276	0	.5	.2

pH 8.5
(272-276)

pH 6.6
(276)

.01 343
2 MIN
.01 343
2 MIN
.01 343
2 MIN

Pb Rghr CONC

Pb Rghr Tail

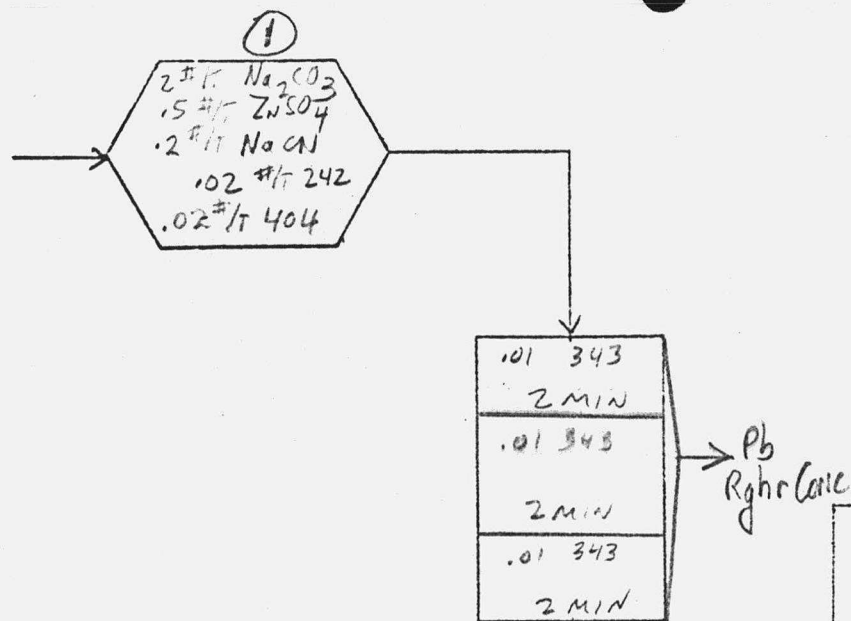
MILLS USED

- ① ROD MILL
22.5 kg - 1/2" RODS
- ② ROD MILL
22.5 kg 3/4" RODS
- ③ ROD MILL
10 kg - 1/2" RODS

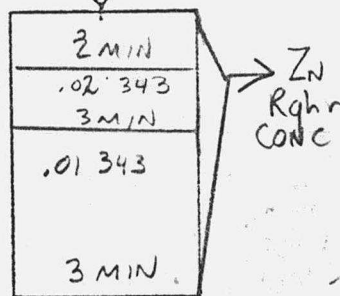
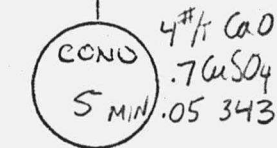
	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn	Pb	Zn		
272	Pb Rghr CONC	97.5	9.25	25.16	4.49	77.8	9.0	
	Pb Rghr Tail	957	90.75	.73	4.65	22.2	91.0	
	Head	10545	100	2.99	4.64	100	100	
273	Pb Rghr CONC	112.1	11.04	22.59	4.42	82.4	10.5	
	Pb Rghr Tail	903	88.9%	.60	4.70	17.6	89.5	
	Head	1015.1	100	3.03	4.67	100	100	
274	Pb Rghr CONC	116.0	12.01	19.37	4.87	75.9	12.3	
	Pb Rghr Tail	850	87.99	.84	4.76	24.1	87.7	
	Head	966.0	100	3.07	4.77	100	100	
275	Pb Rghr CONC	124.9	11.90	19.67	6.26	74.7	15.8	
	Pb Rghr Tail	925	88.10	.90	4.51	25.3	84.2	
	Head	1049.9	100	3.13	4.72	100	100	
276	Pb Rghr CONC	120.4	12.66	19.94	3.68	82.3	10.1	
	Pb Rghr Tail	831	87.34	.62	4.76	17.7	89.9	
	Head	951.4	100	3.07	4.62	100	100	

% - 200 M 96
% - 325 M 72

PURPOSE: DIFFERENT GRIND TIMES



MILLS USED	
①	ROD MILL 22.5 KG - 1/2" RODS
②	ROD MILL 22.5 KG 3/4" RODS
③	ROD MILL 10 KG - 1/2" RODS



Zn Rghr Tail

	WEIGHT		ANALYSIS %		DISTRIBUTION %	
	GMS	%	Pb	Zn	Pb	Zn
277						
Pb Rghr CONC	91.9	9.30	23.18	4.03	73.3	7.6
Zn Rghr CONC	145.5	14.72	2.76	26.56	13.8	79.3
Zn Rghr Tail	751	75.98	.50	.85	12.9	13.1
Head	998.4	100	2.94	4.93	100	100
278						
Pb Rghr CONC	95.2	9.54	23.20	4.38	76.4	9.0
Zn Rghr CONC	129.2	12.94	2.30	29.82	10.3	83.6
Zn Rghr Tail	774	77.52	.50	.44	13.3	7.4
Head	998.4	100	2.90	4.62	100	100

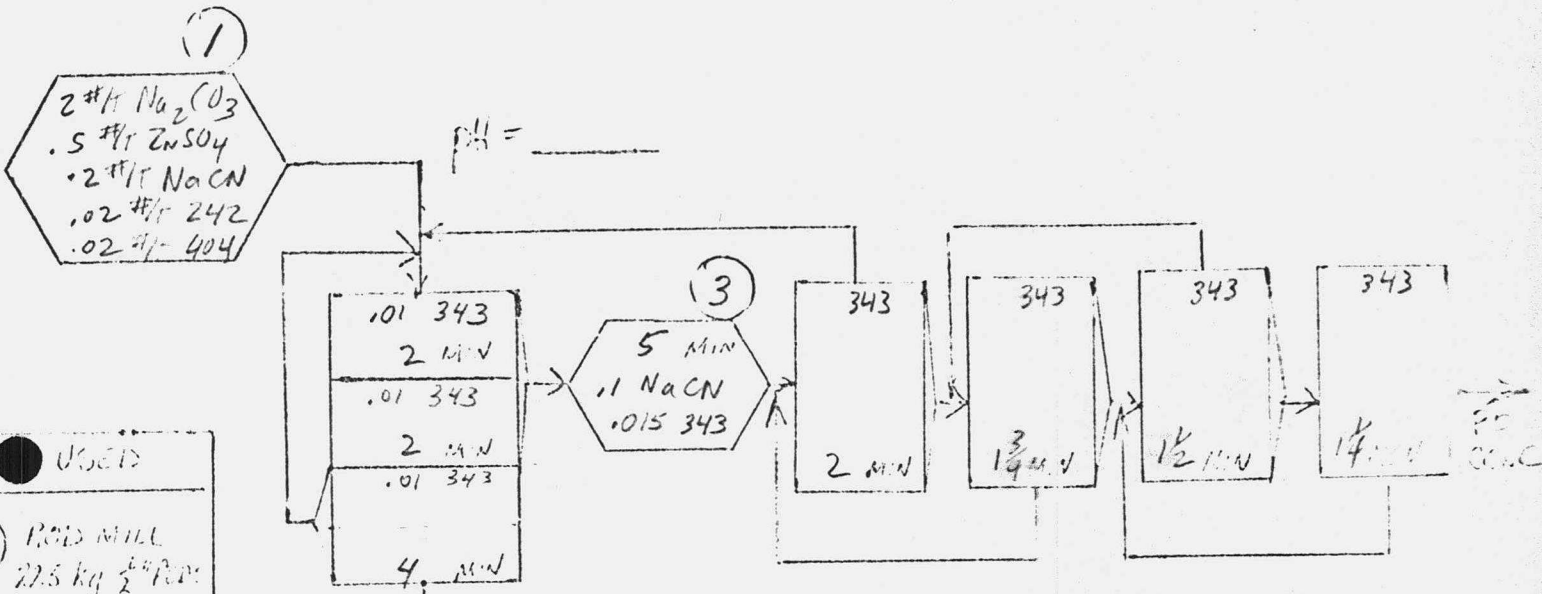
TEST	%-200 MESH	%-325 MESH
277	70.8	48.8
278	90.2	67.1
279	97.5	78.3
280	83.2	59.3
281	82.5	62.3

DATE: 7 APR 77

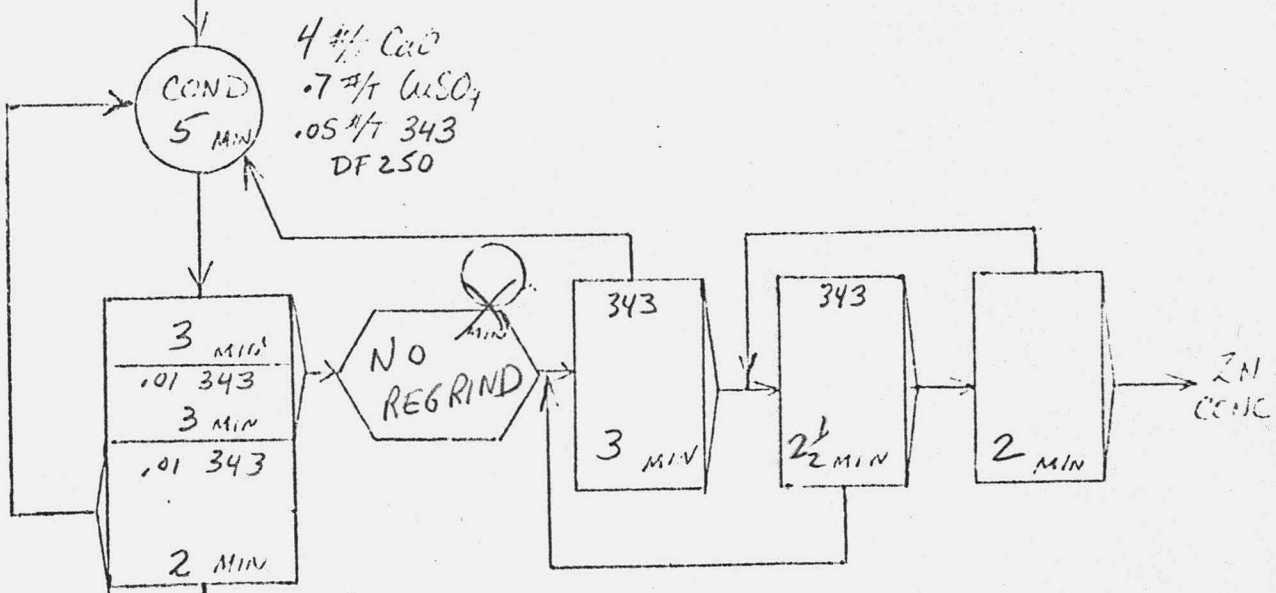
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 304 ORE TYPE: C3
 # OF CYCLES: 6

DATE: 22 APRIL 77



- MILL USED
- (1) ROD MILL
22.5 kg 1/2" RODS
 - (2) ROD MILL
22.5 kg 7/8" RODS
 - (3) BALL MILL
4.5 kg CERAMIC BALLS



Zn REGR TAILING (4th cycle)
 % - 200M 90
 % - 325M 68

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 304

DATE : 22 APR 77

TOTAL WEIGHT IN : 6094.8 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>772.2</u>
2	<u>936.6</u>
3	<u>1010.9</u>
4	<u>914.5</u>
5	<u>1007.7</u>
6	<u>944.0</u>
7	_____
8	_____

" " " " " "

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	50	5.0	35.0	4.7		73.8	5.0	
Zn CONCENTRATE	90	8.9	1.6	41.5		6.0	78.6	
FLOAT TAIL	870	86.1	.55	.9		20.2	16.4	
HEAD	1010	100.0	2.37	4.70		100.0	100.0	

REMARKS : . BOTH CONCENTRATES CONTAMINATED BY PYRITE
MORE REGRINDING REQUIRED

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 304

SAMPLE	WEIGHT		ANALYSES		% OZ/T OR PPM	
	GRAMS		Pb	Zn		
Pb CONCENTRATE 1	8.5		57.16	3.27		
2	41.7		46.17	4.23		
3	41.1		39.97	4.41		
4	31.2		41.57	4.56		
5	65.2		29.94	4.56		
6	49.5		35.12	4.71		
4th Pb Clear Tail 6	21.9		28.46	4.67		
3rd " " " 6	50.6		15.11	4.98		
2nd " " " 6	51.1		13.25	4.79		
1st " " " 6	117.1		8.83	4.56		
Pb SCAV CONC 6	101.3		5.53	4.18		
Zn CONCENTRATE 1	52.7		.59	53.03		
2	87.9		1.19	44.01		
3	77.8		1.41	41.32		
4	92.3		1.53	41.43		
5	91.5		1.59	40.34		
6	82.5		1.89	42.56		
3RD Zn Clear Tail 6	48.7		.80	13.22		
2ND " " " 6	69.1		1.13	8.25		
1ST " " " 6	67.1		1.10	4.59		
Zn SCAV CONC 6	27.0		2.18	4.37		
Zn ROUGHER TAIL 1	711		.41	.79		
2	807		.52	.96		
3	892		.54	.99		
4	790		.51	.88		
5	850		.54	.92		
6	867		.51	.82		
HEAD	6094.8		2.70	4.84		

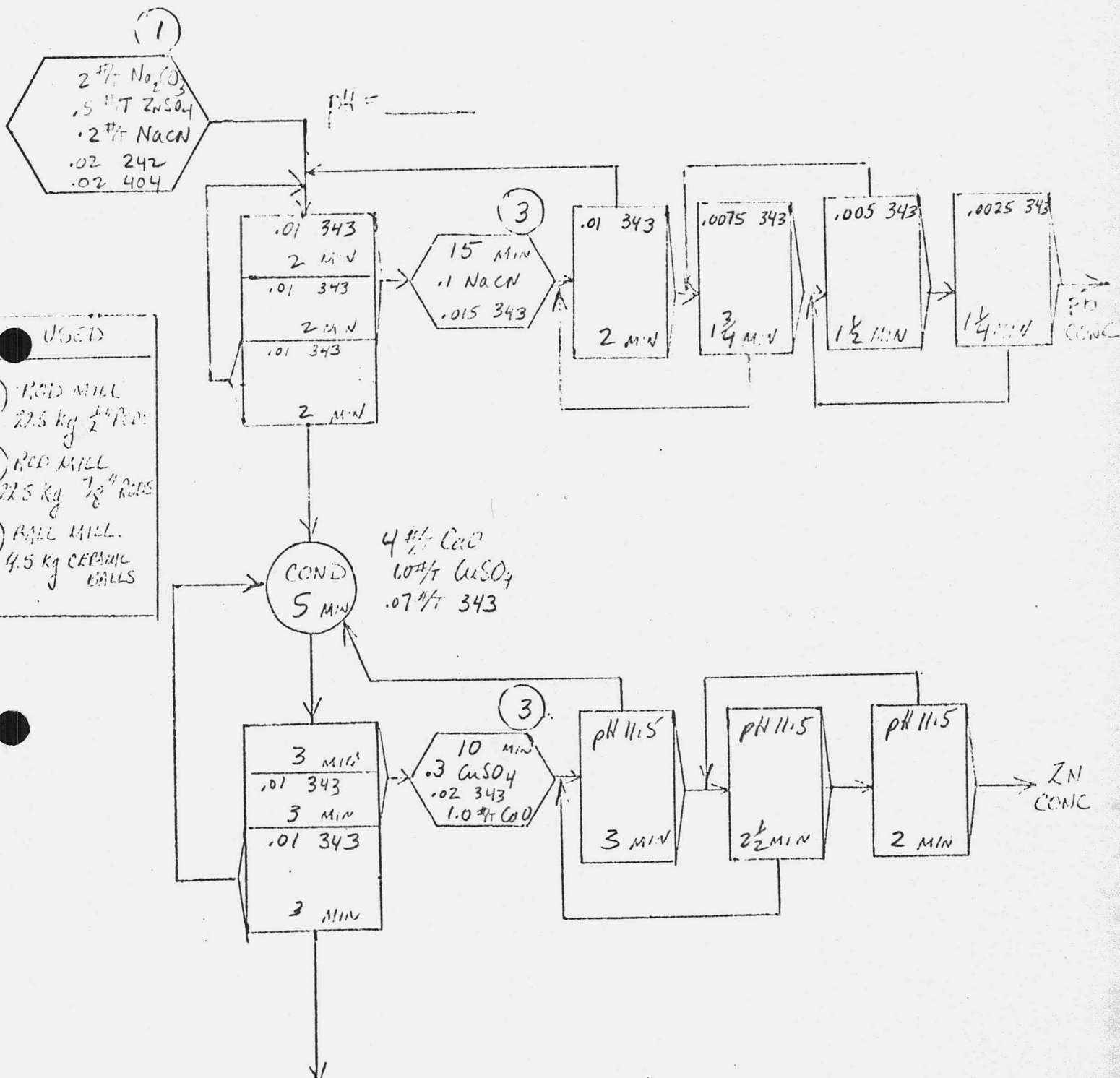
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 316

ORE TYPE: C3

DATE: 24 MAY 77

OF CYCLES: 6



- MILL USED
- ① ROD MILL
22.5 kg 1/2" RODS
 - ② ROD MILL
22.5 kg 7/8" RODS
 - ③ BALL MILL
4.5 kg CERAMIC BALLS

ZN REGR TAILING (4th cycle)

% - 200 M	92.2
% - 325 M	75.0

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 316

SAMPLE	WEIGHT	ANALYSES			% OZ/T OR PPM
	GRAMS	Ag	Pb	Zn	
Pb CONCENTRATE 1	29.3	23.12	63.82	2.85	
2	37.2	17.86	47.68	3.99	
3	33.4	19.35	53.51	3.68	
4	39.3	19.36	52.42	3.96	
5	42.3	18.60	51.23	3.88	
6	41.1	19.36	50.37	3.40	
Pb SCAV CONC 6	55.8	2.57	6.43	4.55	
Zn CONCENTRATE 1	65.1	1.28	.95	50.12	
2	62.0	1.18	.86	52.57	
3	67.6	1.40	1.15	51.53	
4	55.1	1.28	1.00	51.32	
5	69.9	1.40	1.06	52.57	
6	78.8	1.50	1.06	49.28	
Zn SCAV CONC 6	27.2	1.28	2.37	5.58	
Zn Rghc Tail 1	734	.32	.44	.62	
2	816	.32	.42	.65	
3	887	.32	.55	.69	
4	829	.32	.48	.69	
5	848	.32	.55	.72	
6	866	.43	.50	.70	
4th Pb Cntr Tail 6	76.3	9.03	24.69	5.34	
3rd " " " 6	24.1	6.13	16.73	5.25	
2nd " " " 6	39.5	4.09	10.25	5.15	
1ST " " " 6	84.6	3.01	7.18	5.42	
3rd Zn Cntr Tail 6	24.6	2.37	3.36	28.30	
2nd " " " 6	38.3	2.37	4.15	19.71	
1ST " " " 6	78.6	1.83	3.36	11.32	
Head	5981.8	1.28	2.87	4.72	

APPENDIX V

TESTS ON
GRUM SAMPLE
G3

TEST	DESCRIPTION
227	EXPLORATORY
229	EXPLORATORY
290-293	DIFFERENT PRIMARY GRIND TIMES; Zn DEPRESSANTS
300	6 CYCLES
305	8 CYCLES, INCREASED Pb REGRIND

Comments on C3

C3 is a very low grade, low-sulphide of above average hardness. Pb recovery was low throughout (< 65% for cycle tests). As for C3 additional regrinding was required to achieve concentrate grade. Zn metallurgy was very good considering the low head.

NaCN and $ZnSO_4$ were required for Zn and pyrite depression. Pb recovery increased slightly with increased fineness of grind.

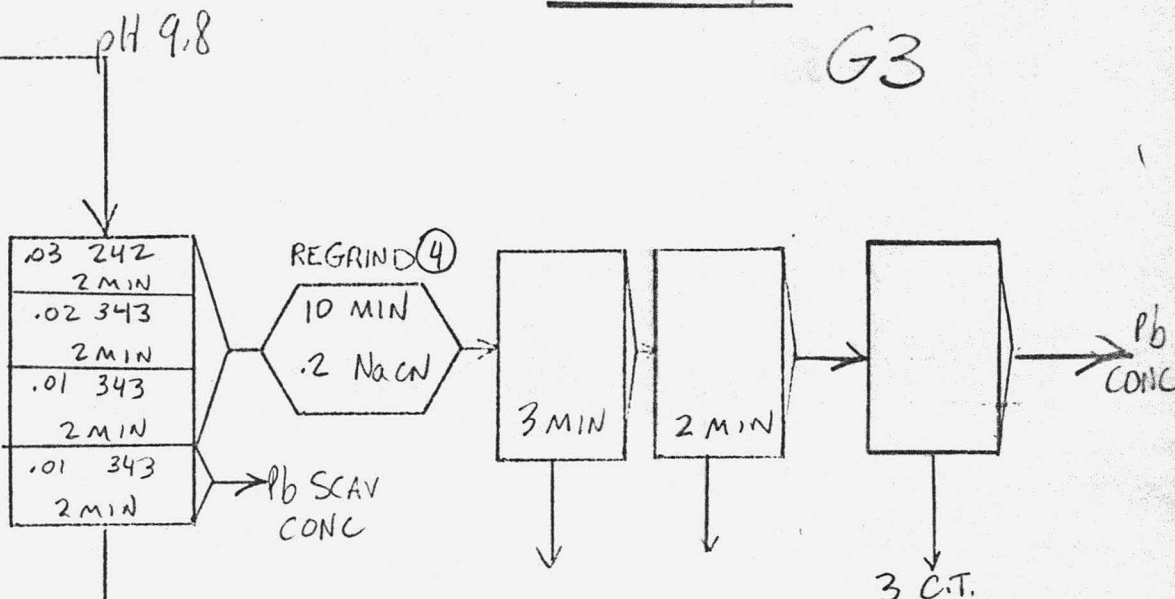
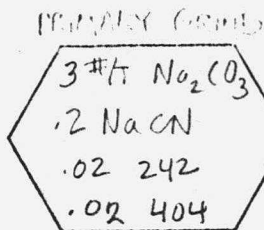
TEST	GRIND % 325M	#/t Na_2CO_3	#/t NaCN	#/t $ZnSO_4$	Pb ROUGHNER CONCENTRATE			
					% Pb	% Zn	% DIST Pb	% DIST Zn
290	59	2	.2	.5	19.4	5.4	61.3	8.9
291	66	2	.2	.5	21.0	5.3	66.9	8.5
293	66	2	0	0	14.1	8.6	71.8	23.5
292	81	2	.2	.5	19.5	5.1	67.9	8.8

MATTAGAMI LAKE MINES LIMITED

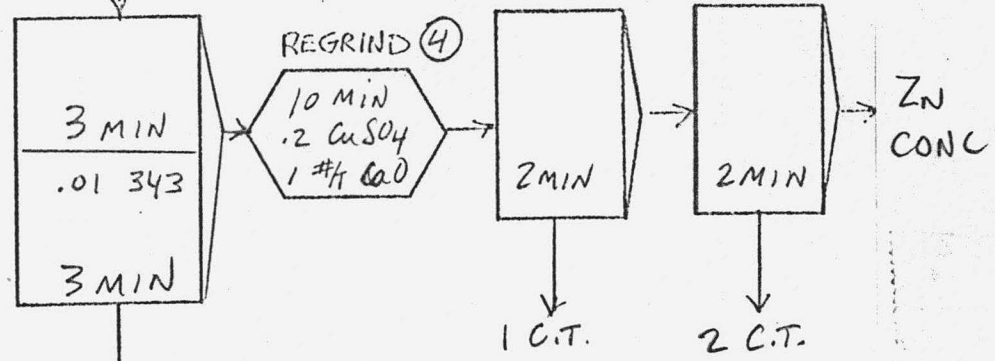
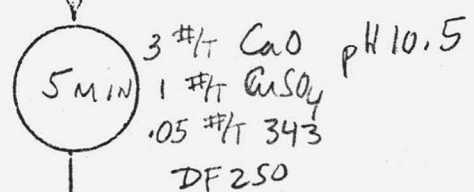
GRUM DEPOSIT
TEST VAN-227

23 MARCH 77

G3



- MILLS USED
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS

% -200 MESH	90
% -325 MESH	67.8
% -400 MESH	

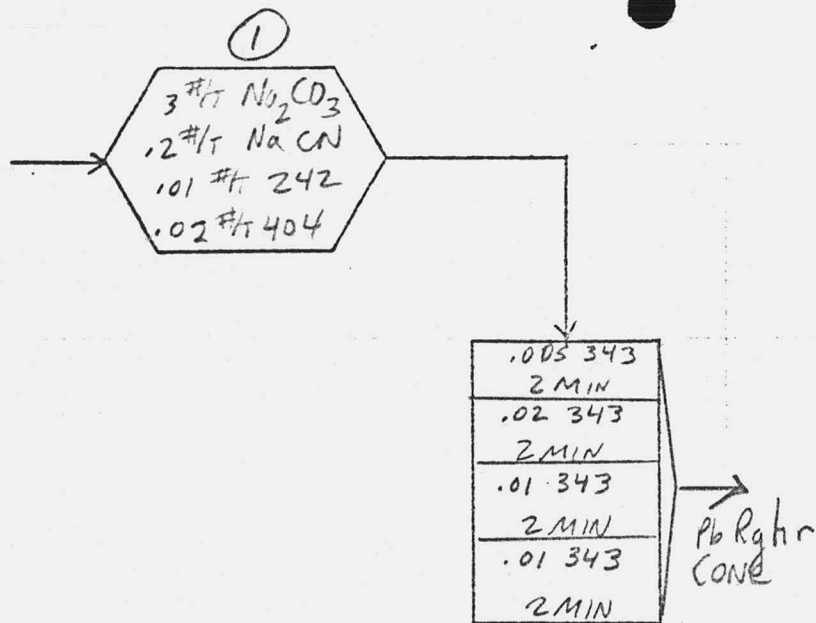
MATTAGAMI LAKE MINES LTD

GRUM

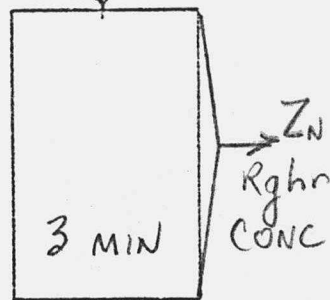
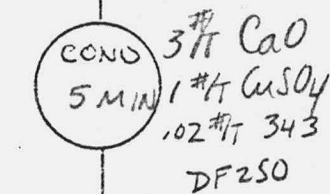
TEST: VAN - 229

G3

PURPOSE: EXPLORATORY



MILLS USED
① ROD MILL 22.5 KG - 1/2" RODS
② ROD MILL 22.5 KG 3/4" RODS
③ ROD MILL 10 KG - 1/2" RODS



95.6% - 200 M
 75.3% - 325 M

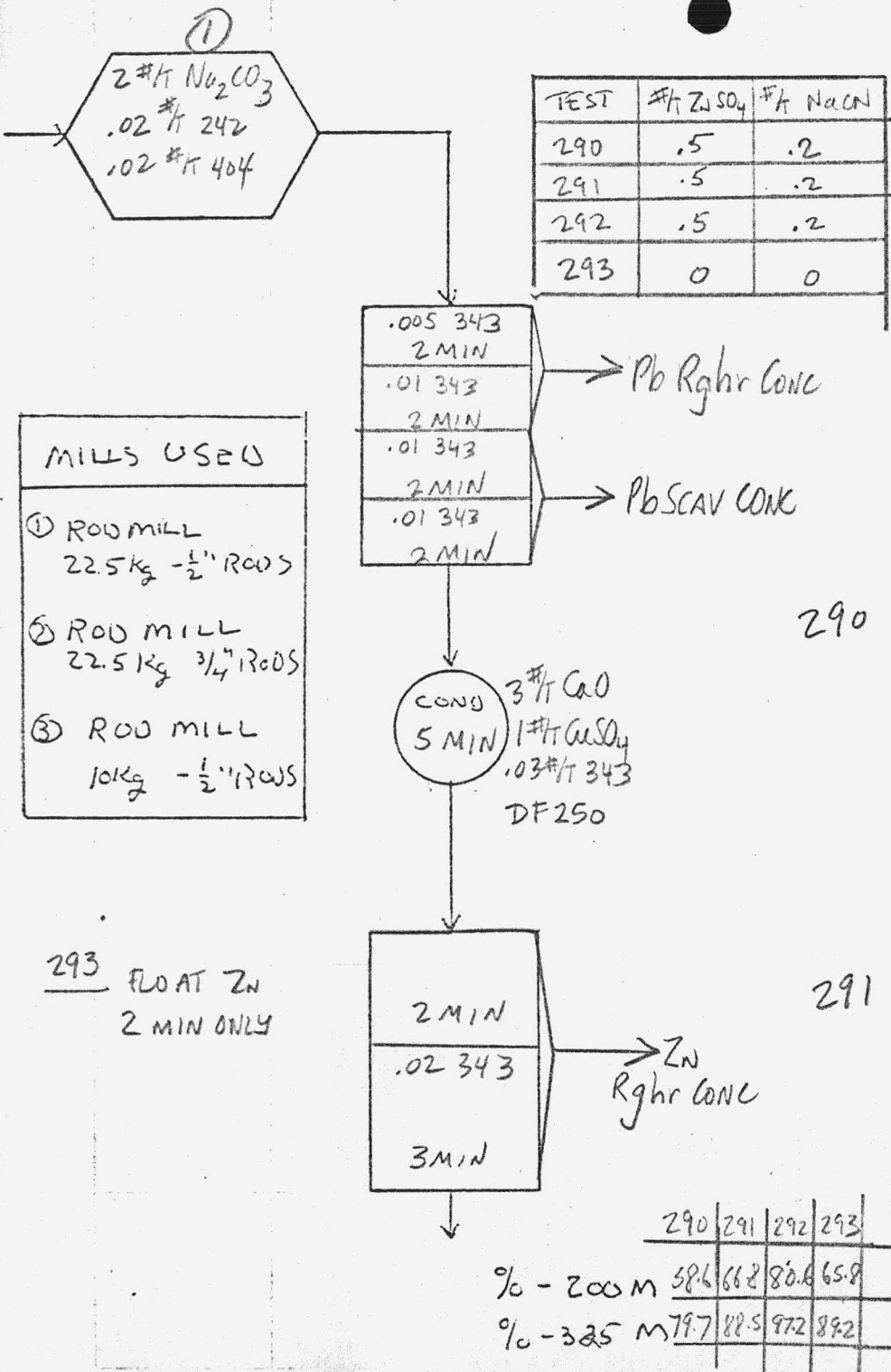
	WEIGHT		ANALYSES %		DISTRIBUTION %	
	GMS	%	Pb	Zn	Pb	Zn
Pb Rghr CONC	750	7.87	16.11	5.56	79.6	13.6
Zn Rghr CONC	78.4	8.23	.78	29.39	4.0	75.2
Zn Rghr Tail	799	83.90	.31	.43	16.4	11.2
Head	952.4	100.0	1.59	3.22	100.0	100.0

DATE: 23 MARCH 77

MATTAGOMI LAKE MINES LTD
 GRUM TEST VAN # 290-293
 15 APRIL 77

63

PURPOSE: DIFFERENT PRIMARY GRIND
 WITH AND WITHOUT ZN DEPRESSANTS



	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb Rghr Conc	49.1	5.07		19.35	5.37		61.3	8.9
Pb SCAV CONC	40.1	4.14		5.22	5.09		13.5	6.9
Zn Rghr Conc	99.3	10.25		1.18	23.82		7.6	20.2
Zn Rghr Tail	780	80.54		.35	.15		17.6	4.0
Head	9625	1000		1.60	3.04		100.0	100.0
Pb Rghr Conc	52.0	5.01		20.95	5.29		66.4	8.5
Pb SCAV CONC	37.7	3.63		4.93	4.94		11.4	5.8
Zn Rghr Conc	102.6	9.89		1.05	25.84		6.6	22.3
Zn Rghr Tail	845	81.47		.29	.13		15.1	3.4
Head	1037.3	100		1.57	3.11		100.0	100.0

MATTAGAMI LAKE MINES LTD

GRUM TEST VAN 292, 293

CALCULATION SHEET.

DATE 15 APR

292

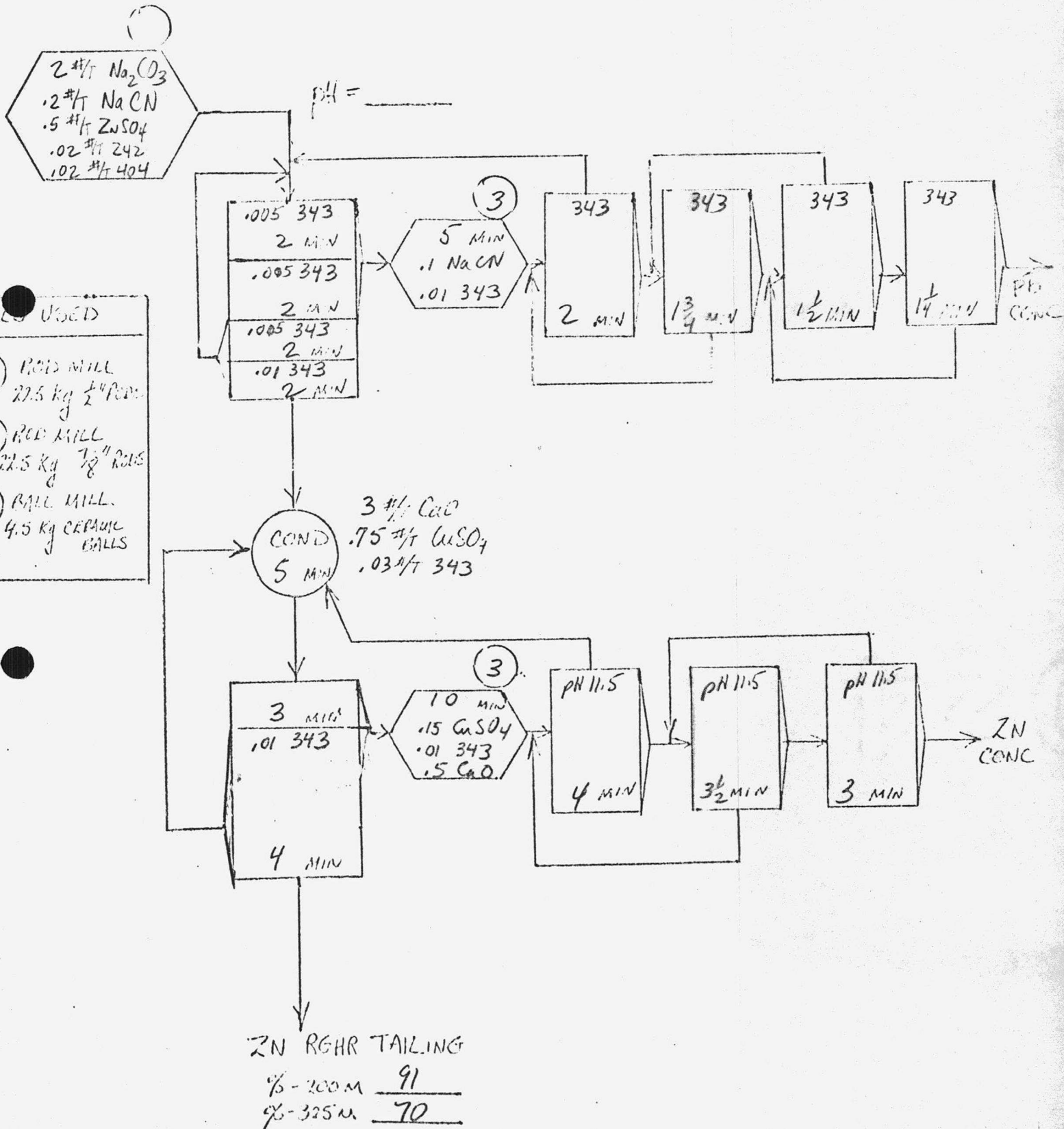
	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb Rahr CONC	53.4	5.36		19.46	5.05		67.9	8.8
Pb SCAV CONC	47.8	4.80		4.72	5.09		14.7	7.9
Zn Rahr CONC	86.4	8.68		.92	28.42		5.2	80.1
Zn Rahr Tail	808	81.16		.23	.12		12.2	3.2
Head	995.6	100.00		1.53	3.08		100.0	100.0

293

Pb Rahr CONC	81.7	8.10		14.11	8.62		71.8	23.5
Pb SCAV CONC	79.2	7.84		2.36	5.72		11.6	15.1
Zn Rahr CONC	59.1	5.86		.78	28.57		2.9	56.5
Zn Rahr Tail	789	78.20		.28	.18		13.7	4.9
Head	1009.0	100.00		1.59	2.96		100.0	100.0

MATTAGAMI LAKE MINES LTD. CONCENTRATOR LABORATORY

TEST #: VAN 300 ORE TYPE: G3 DATE: 19 APRIL 77
 # OF CYCLES: 6



MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 300

DATE : 19 APRIL 77

TOTAL WEIGHT IN : 11990.4 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>1790.8</u>
2	<u>1934.9</u>
3	<u>1915.1</u>
4	<u>1943.2</u>
5	<u>2004.0</u>
6	<u>1944.9</u>
7	_____
8	_____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	40	2.0	41.0	5.1		60.7	3.3	
ZINC CONCENTRATE	85	4.3	1.5	56.0		4.8	78.4	
FLOAT TAIL	1875	93.7	.5	.6		34.5	18.3	
HEAD	2000	100.0	1.35	3.07		100.0	100.0	

REMARKS : Pb CIRCUIT CIRCULATING LOAD STILL BUILDING UP

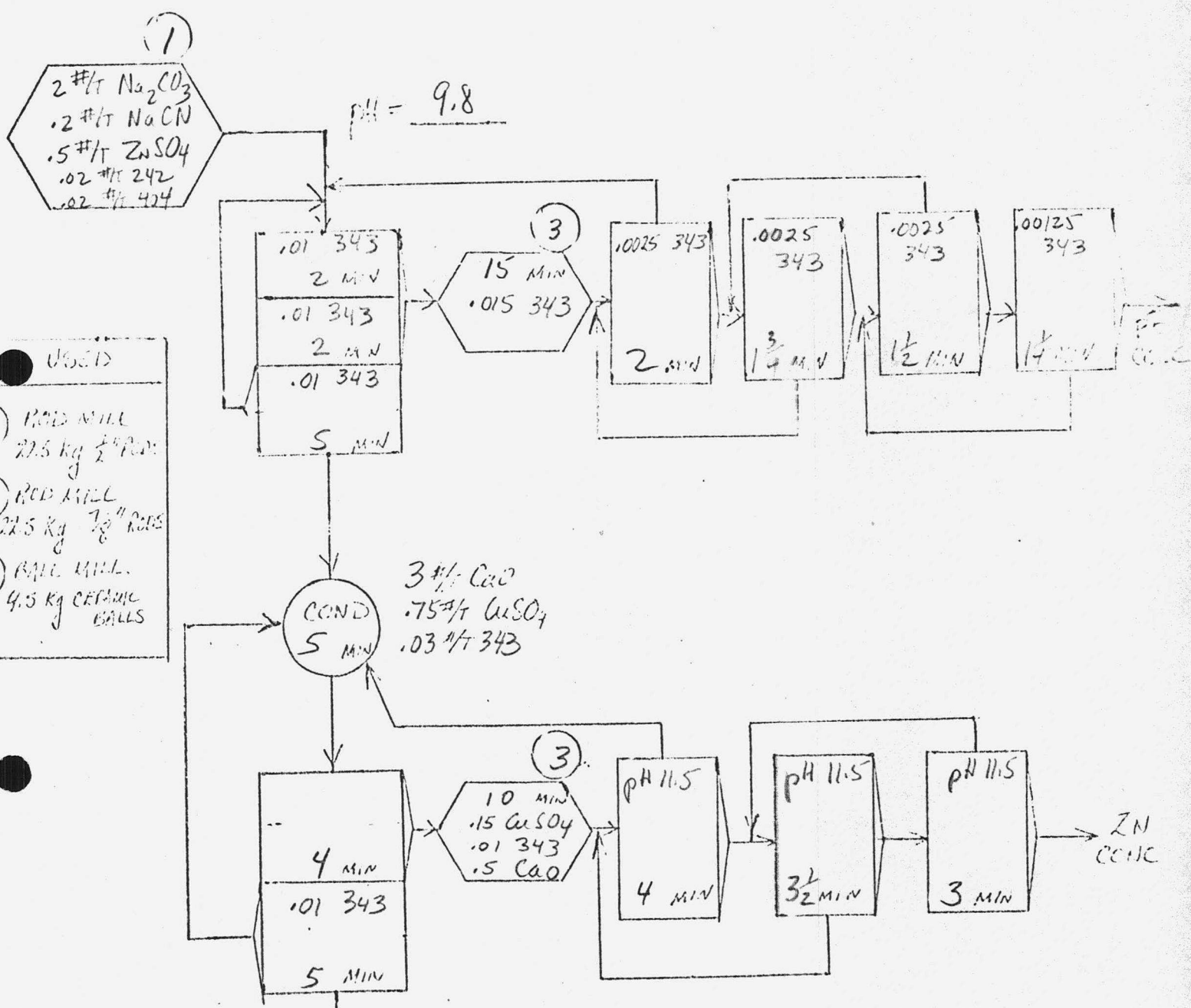
MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 300

SAMPLE	WEIGHT	ANALYSES		% OZ/A OR PPM	
	GRAMS	Pb	Zn		
Pb CONCENTRATE 1	12.6	55.21	5.87		
2	24.6	51.52	5.34		
3	25.8	42.92	5.45		
4	39.1	40.48	5.14		
5	29.6	43.93	5.14		
6	28.7	44.24	5.11		
Pb SCAV CONC 6	64.3	10.45	5.87		
4th Pb Clar Tail 6	23.6	35.22	6.33		
3rd " " " 6	38.7	24.19	6.14		
2nd " " " 6	51.3	22.13	6.56		
1ST " " " 6	106.7	14.57	6.12		
ZINC CONC 1	76.2	.96	55.02		
2	59.3	1.33	55.74		
3	93.3	1.13	56.55		
4	91.1	.99	56.05		
5	82.4	1.49	57.01		
6	85.2	1.42	55.49		
Zn SCAV CONC 6	57.1	4.58	14.66		
3RD Zn Clar Tail 6	19.6	6.52	30.44		
2ND " " " 6	33.8	7.02	19.38		
1ST " " " 6	62.4	4.62	10.29		
Zn ROUGHER TAIL 1	1702	.41	.26		
2	1851	.41	.64		
3	1796	.44	.49		
4	1813	.38	.49		
5	1892	.51	.65		
6	1831	.48	.59		
HEAD	11990.4	1.56	3.19		

MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 305 ORE TYPE: G3 DATE: 26 APRIL 77
 # OF CYCLES: 8



- USED
- ① ROD MILL
22.5 kg 1/2" ROD
 - ② ROD MILL
22.5 kg 7/8" RODS
 - ③ BALL MILL
4.5 kg CERAMIC BALLS

ZN REGR TAILING (4th cycle)
 % - 200M 92.3
 % - 325M 71.2

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 305

DATE: 26 APRIL 77

TOTAL WEIGHT IN: 15961.1 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>1803.3</u>
2	<u>1902.1</u>
3	<u>1908.2</u>
4	<u>1937.7</u>
5	<u>1927.2</u>
6	<u>1974.1</u>
7	_____
8	_____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE		2.1	42.2	5.4		63.8	3.6	
Zn CONCENTRATE		4.8	.9	55.7		3.2	83.9	
FLOAT TAIL		93.1	.50	.4		33.0	12.5	
HEAD		100.0	1.39	3.16		100.0	100.0	

REMARKS:

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 305

SAMPLE	WEIGHT	ANALYSES		% OZ/A	CR	PPM
	GRAMS	Pb	Zn			
Pb CONC 1	23.2	49.66	4.95			
2	26.3	49.97	4.99			
3	31.2	41.05	5.14			
4	34.5	42.96	5.42			
5	34.5	41.42	5.33			
6	34.3	42.83	5.6			
1st Pb Conc 7	72.4	31.55	5.79			
Pb Rough Conc 8	184.9	18.74	5.12			
Pb Seal Conc 8	111.4	8.62	5.15			
3rd Pb Conc Tail 6	32.7	22.44	6.39			
4th Pb Conc Tail 6	31.1	31.06	6.09			
Zn CONC 1	76.0	.69	55.16			
2	81.6	.81	55.76			
3	90.4	.96	54.56			
4	85.2	.92	55.01			
5	82.7	.89	56.36			
6	107.8	1.23	52.25			
Zn Rough Conc 7	200.8	1.27	31.35			
Zn Seal Conc 7	74.5	2.91	7.18			
2nd Zn Conc Tail 6	41.5	3.94	12.09			
3rd Zn Conc Tail 6	18.2	4.76	18.26			
Zn ROUGHNER TAIL 1	1704	.34	.36			
2	1794	.32	.42			
3	1786	.38	.40			
4	1813	.38	.43			
5	1810	.42	.42			
6	1832	.39	.46			
7	1812	.42	.39			
Pb ROUGHNER TAIL 8	1929	.53	3.07			
HEAD	15961.1	1.50	3.18			

APPENDIX VI

TESTS ON
GRUM SAMPLE
D3

TEST	DESCRIPTION
230	EXPLORATORY
294-297	DIFFERENT PRIMARY GRIND TIMES, VARY Zn DEPRESSANTS
303	6 CYCLE TEST, NO Zn REGRIND
309	6 CYCLE TEST, INCREASED REGRIND TIME, EXCELLENT RESULTS

Comments on D3

D3 is of average grade, highly graphitic, low in sulphides and the hardest ore tested to date. Similar to B4 a high collector dosage is required for Pb flotation. Good results were obtained for both Pb and Zn however with only a few tests (VAN 309).

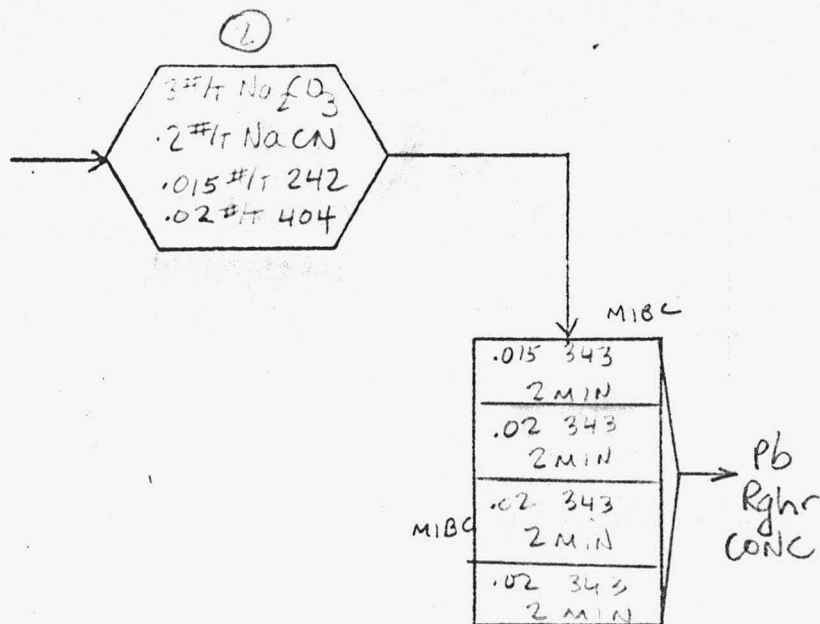
NaCN and $ZnSO_4$ were required for Zn and pyrite depression. An extremely fine grind was not beneficial (VAN 294-97)

MATTAGAMI LAKE MINES LTD

GRUM

TEST: VAN - 230

PURPOSE: EXPLORATORY D3



MILLS USED
① ROD MILL 22.5 KG - 1/2" RODS
② ROD MILL 22.5 KG 3/4" RODS
③ ROD MILL 10 KG - 1/2" RODS

NOTE: Pb float very black
lots collector required

97.6% - 200 MESH
84.2% - 325 MESH

	WEIGHT		ANALYSES %		DISTRIBUTION %	
	GMS	%	PB	ZN	PB	ZN
Pb Rghr CONC	203.3	20.50	16.33	9.64	90.8	25.1
Zn Rghr CONC	189.5	19.11	.74	30.57	3.8	74.1
Zn Rghr Tail	599	60.39	.33	.10	5.4	.8
Head	991.2	100	3.69	7.88	100	100

DATE: 23 MARCH/77

MATTAGAI LAKE MINES LTD

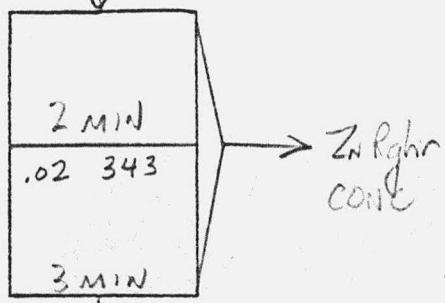
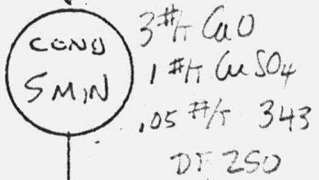
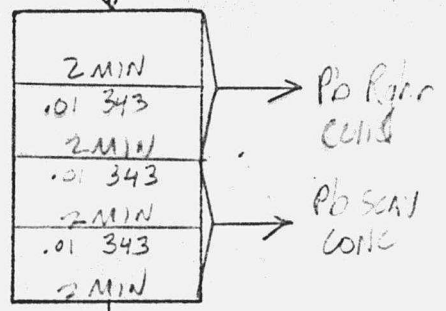
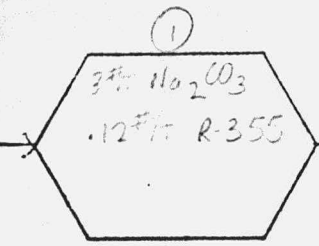
15 APRIL 77

GRUM TEST VAN # 294-297

PURPOSE: DIFFERENT PRIMARY GRINDS
WITH AND WITHOUT ZN DEPRESSANTS

D3

TEST	Zn Rght Tail		#/T ZnSO4	#/T NaCN
	%-200M	%-325M		
294	77.1	55.0	.5	.2
295	91.3	69.9	.5	.2
296	96.8	78.2	.5	.2
297	92.2	70.9	0	0



% - 200M _____
 % - 325M _____

- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS

	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb Rght CONC	101.5	10.36	28.13	11.20		81.4	14.3	
Pb SCAV CONC	60.4	6.16	4.04	4.59		7.0	7.3	
Zn Rght CONC	167.0	17.04	.62	34.62		2.9	73.0	
Zn Rght Tail	651	66.44	.47	.66		8.7	5.4	
Head	979.7	100.00	3.58	8.10		100.0	100.0	
Pb Rght CONC	119.1	11.68	24.90	10.32		85.0	15.2	
Pb SCAV CONC	47.6	4.67	3.23	9.40		4.4	5.5	
Zn Rght CONC	165.0	16.18	.53	36.69		2.5	74.5	
Zn Rght Tail	688	67.47	.41	.57		8.1	4.8	
Head	1019.7	100.00	3.42	7.97		100	100	

294

295

MATTAGAMI LAKE MINES LIMITED

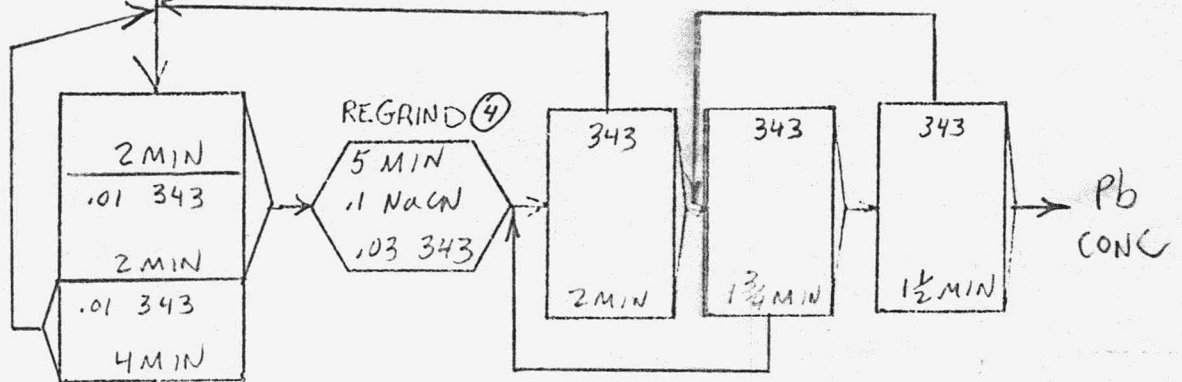
GRUM DEPOSIT
TEST VAN-303

21 APRIL 77

D3

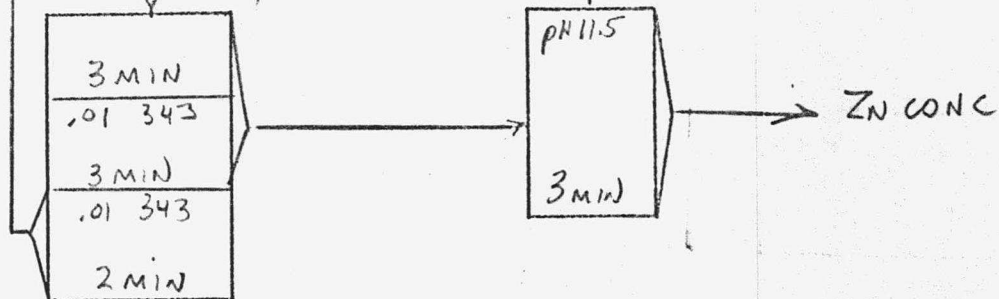
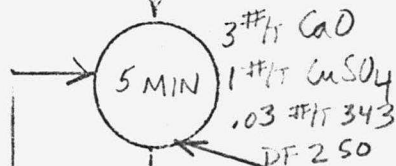
REGRIND (1)

3 #/T Na_2CO_3
.5 #/T ZnSO_4
.2 #/T NaCN
.12 #/T R-355



MILLS USED

- ① ROD MILL
22.5 KG. - 1/2" RODS
- ② ROD MILL
22.5 KG. 3/4" RODS
- ③ ROD MILL
10 KG. - 1/2" RODS
- ④ BALL MILL
4 KG. 1/2" CERAMIC BALLS



ZINC ROUGHER TAILINGS (4th cycle)

% -200 MESH	80.4
% -325 MESH	57.9
% -400 MESH	

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 303

DATE : 21 APR 77

TOTAL WEIGHT IN : 5961.0 GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE

1	<u>820.8</u>
2	<u>957.7</u>
3	<u>988.0</u>
4	<u>952.1</u>
5	<u>1034.6</u>
6	<u>920.2</u>
7	_____
8	_____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T , PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	55	5.6	47.1	9.7		80.2	6.7	
Zn CONCENTRATE	142	14.4	1.0	47.2		4.4	83.5	
FLOAT TAIL	794	80.0	.64	1.0		15.4	9.8	
HEAD	991	100.0	3.29	8.14		100.0	100.0	

REMARKS :

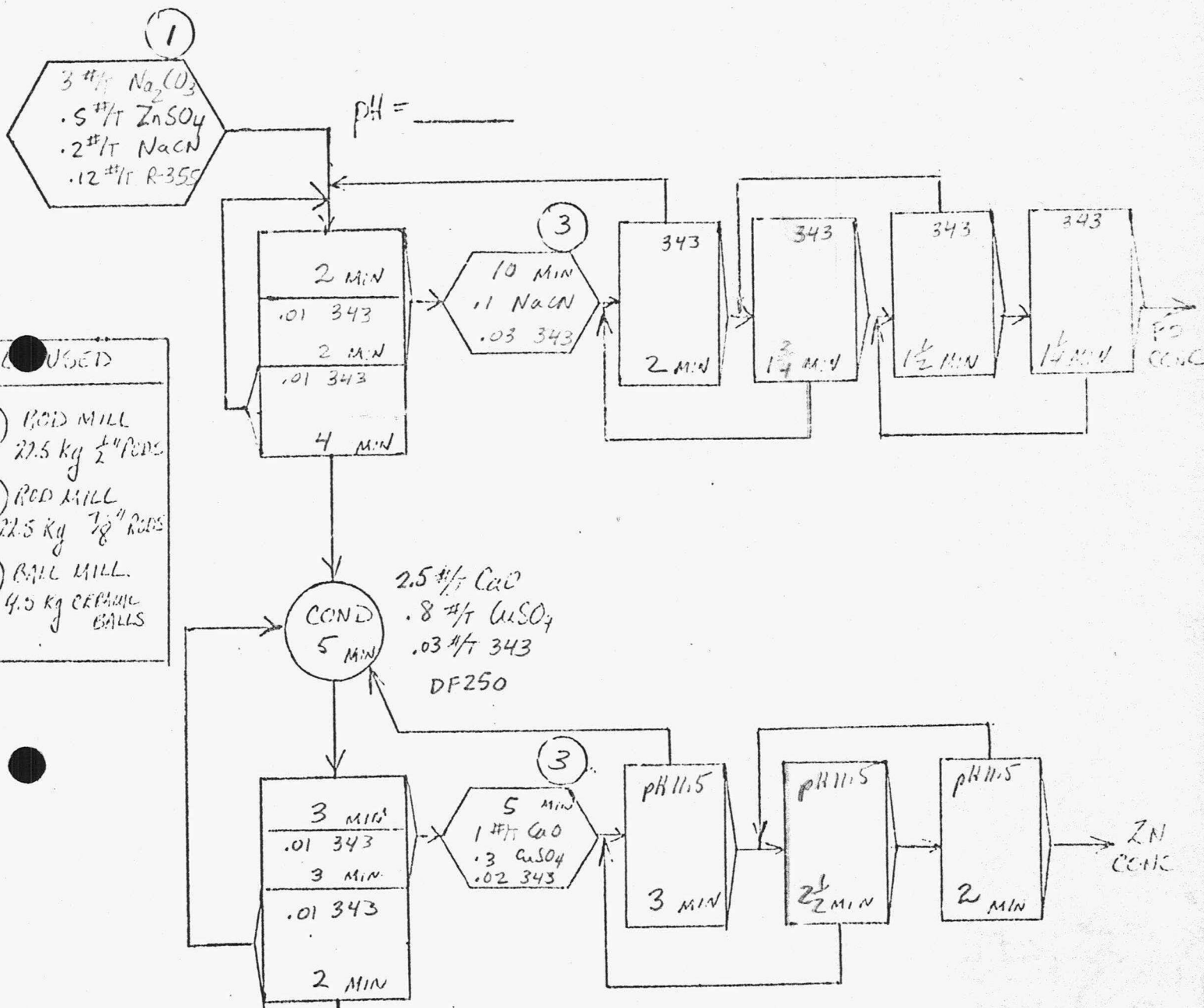
MATTAGAMI LAKE MINES LTD. CONCENTRATOR LABORATORY

TEST #: VAN 309

ORE TYPE: D3

DATE: 9 MAY 77

OF CYCLES: 6



- MILL USED
- ① ROD MILL
22.5 kg 1/2" PDS
 - ② ROD MILL
22.5 kg 7/8" PDS
 - ③ BALL MILL
4.5 kg CERAMIC BALLS

ZN REGR TAILING

%-200M	87.9
%-325M	65.4

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 309

SAMPLE	WEIGHT	ANALYSES % OZ/T OR PPM			
	GRAMS	Ag	Pb	Zn	
Pb CONCENTRATE 1	30.7	32.41	54.22	5.93	
2	38.2	29.18	51.24	7.07	
3	40.6	27.39	55.40	6.57	
4	40.0	27.04	53.26	7.29	
5	41.1	28.14	52.40	7.23	
6	41.1	25.32	53.78	7.33	
Zn CONCENTRATE 1	85.4	1.25	.49	56.88	
2	113.4	1.46	.89	56.21	
3	122.5	1.56	1.14	55.17	
4	122.4	1.46	1.04	55.33	
5	121.0	1.36	1.02	55.34	
6	120.5	1.14	.77	55.01	
Zn SCAV CONC 6	15.0	1.46	2.03	13.15	
Pb SCAV CONC 6	61.2	3.65	6.52	11.93	
Zn ROUGHER TAIL 1	742	.21	.48	.80	
2	771	.31	.56	.85	
3	711	.31	.57	.89	
4	823	.31	.61	1.00	
5	811	.31	.64	.92	
6	814	.31	.61	1.00	
4th Pb Clnr Tail 6	14.1	13.03	26.31	13.72	
3rd Pb Clnr Tail 6	20.1	11.67	21.59	12.92	
2nd Pb Clnr Tail 6	31.9	7.52	13.27	13.68	
1ST Pb Clnr Tail 6	53.9	4.79	6.73	13.30	
3RD Zn Clnr Tail 6	16.0	2.82	4.51	20.75	
2ND Zn Clnr Tail 6	25.6	2.91	4.77	13.30	
1ST Zn Clnr Tail 6	38.6	2.61	4.69	8.17	
HEAD	5966.3	1.73	3.05	7.99	

APPENDIX VII

TESTS ON
GRUM SAMPLE
H3

TEST	DESCRIPTION
228	EXPLORATORY
231	6 CYCLE TEST, POOR STABILITY
235-239	DIFFERENT PRIMARY GRIND TIMES
240-244	SODA ASH Vs NATURAL pH; VARY $ZnSO_4$, NaCN
246	4 CYCLE TEST; NO REGRIND Pb, Zn
259	8 CYCLE TEST
282	8 CYCLE TEST

Comments on H3

H3 is a medium sulphide of average grade and hardness. Mineralization is among the coarsest of all the ores. Zn losses in the flotation tailings were exceptionally high for all tests (on the order of 1.3%). This phenomenon was also reported by Lakefield Research. As a result Zn recoveries for cycle tests were only 80%.

A grind of approximately 65% -325 mesh gave good Zn depression and Pb rougher concentrate grade.

TEST	GRIND % -325 M	Pb ROUGHER CONCENTRATE			
		% Pb	% Zn	% DIST Pb	% DIST Zn
235	47	21.0	13.9	84.3	24.4
236	63	28.4	13.0	85.0	16.6
237	70	25.3	11.4	87.2	15.6
238	81	22.0	11.1	88.2	16.8
239	89	27.8	13.3	89.0	14.3

Soda Ash, NaCN and $ZnSO_4$ were once again critical for optimum Pb rougher results.
(VAN 240-44)

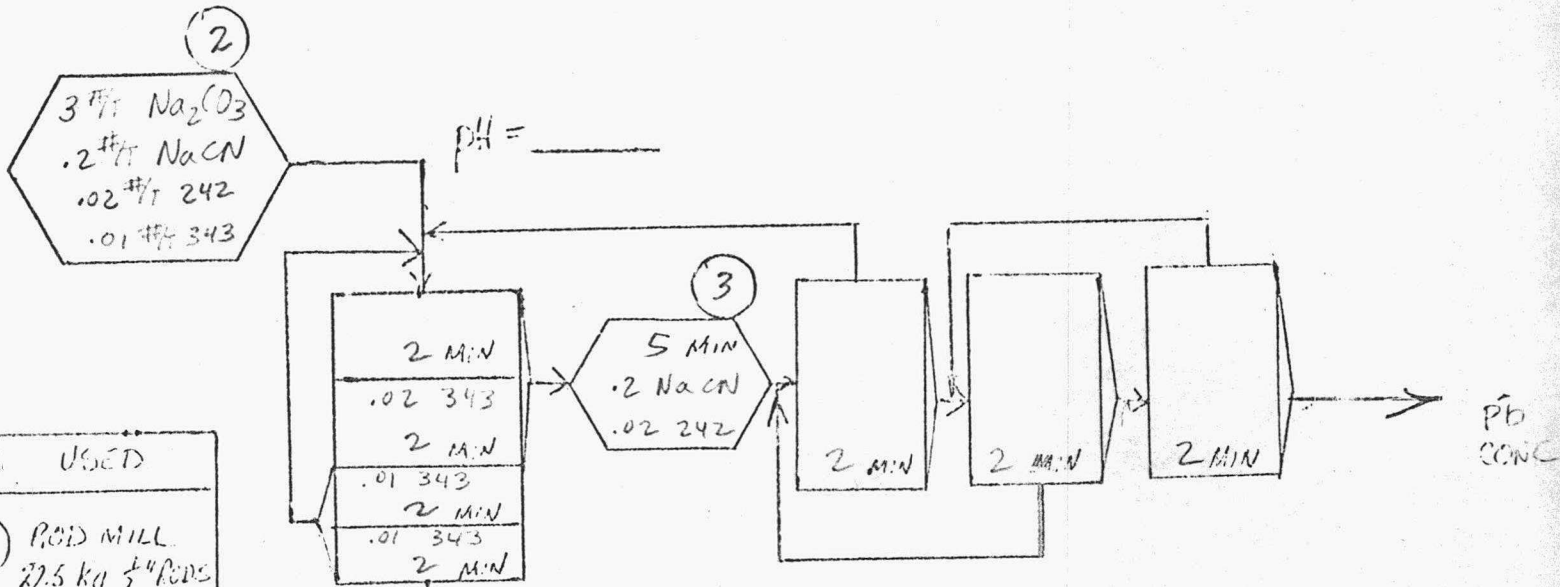
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 231

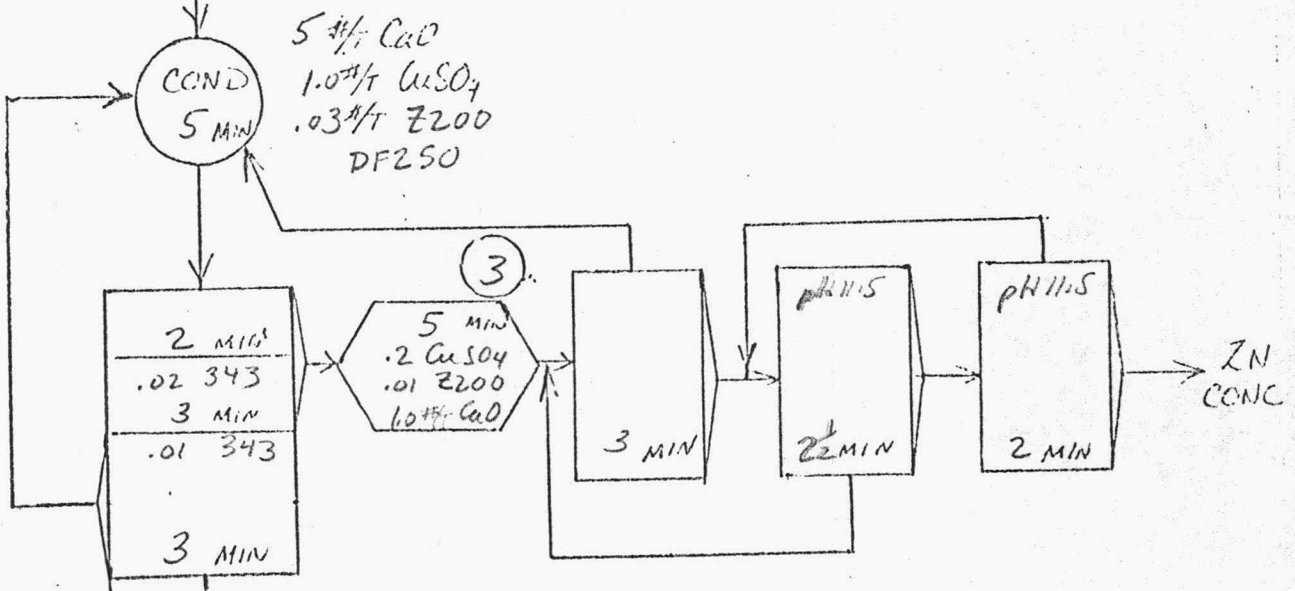
ORE TYPE: H3

DATE: 24 MARCH 77

OF CYCLES: 6



MIL	USED
①	ROD MILL 22.5 kg 1/2" RODS
②	ROD MILL 22.5 kg 3/8" RODS
③	BALL MILL 4.5 kg CERAMIC BALLS



ZN REGR TAILING (4th cycle)

%-200M 90.3
 %-325M 70.1

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 231

DATE: 24 MARCH 77

TOTAL WEIGHT IN: 5849.1 GRAMS

TOTAL WEIGHT OUT PER CYCLE :	CYCLE	1	<u>928.7</u>
		2	<u>868.4</u>
		3	<u>935.3</u>
		4	<u>955.5</u>
		5	<u>934.2</u>
		6	<u>909.2</u>
		7	<u> </u>
		8	<u> </u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%						
Pb CONCENTRATE								
Zn CONCENTRATE								
FLOAT TAIL								
HEAD								

REMARKS: . poor stability - especially for Pb

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 231

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	35.5	50.77	1.14	
2	29.1	56.05	8.52	
3	60.6	37.68	11.92	
4	34.6	53.11	8.63	
5	42.6	54.16	8.44	
6	27.1	52.39	7.60	
3RD Pb Clar Tail 6	41.0	29.66	12.56	
2ND " " " 6	78.6	19.79	13.09	
1ST " " " 6	100.2	13.26	12.07	
Pb SCAV CONC 6	30.5	5.72	14.28	
ZINC CONCENTRATE 1	88.2	.60	53.51	
2	101.8	.87	53.30	
3	98.7	.95	52.04	
4	100.9	.83	54.29	
5	104.6	1.20	54.92	
6	103.4	1.05	52.88	
3RD Zn Clar Tail 6	11.8	6.17	29.52	
2ND " " " 6	15.1	7.01	19.86	
1ST " " " 6	86.6	5.36	16.65	
Zn SCAV CONC 6	43.2	3.15	15.31	
Zn Right Tail 1	715	.36	1.18	
2	737	.46	1.26	
3	776	.49	1.44	
4	820	.47	1.37	
5	782	.52	1.45	
6	779	.56	1.43	
HEAD	5849.1	3.27	7.99	

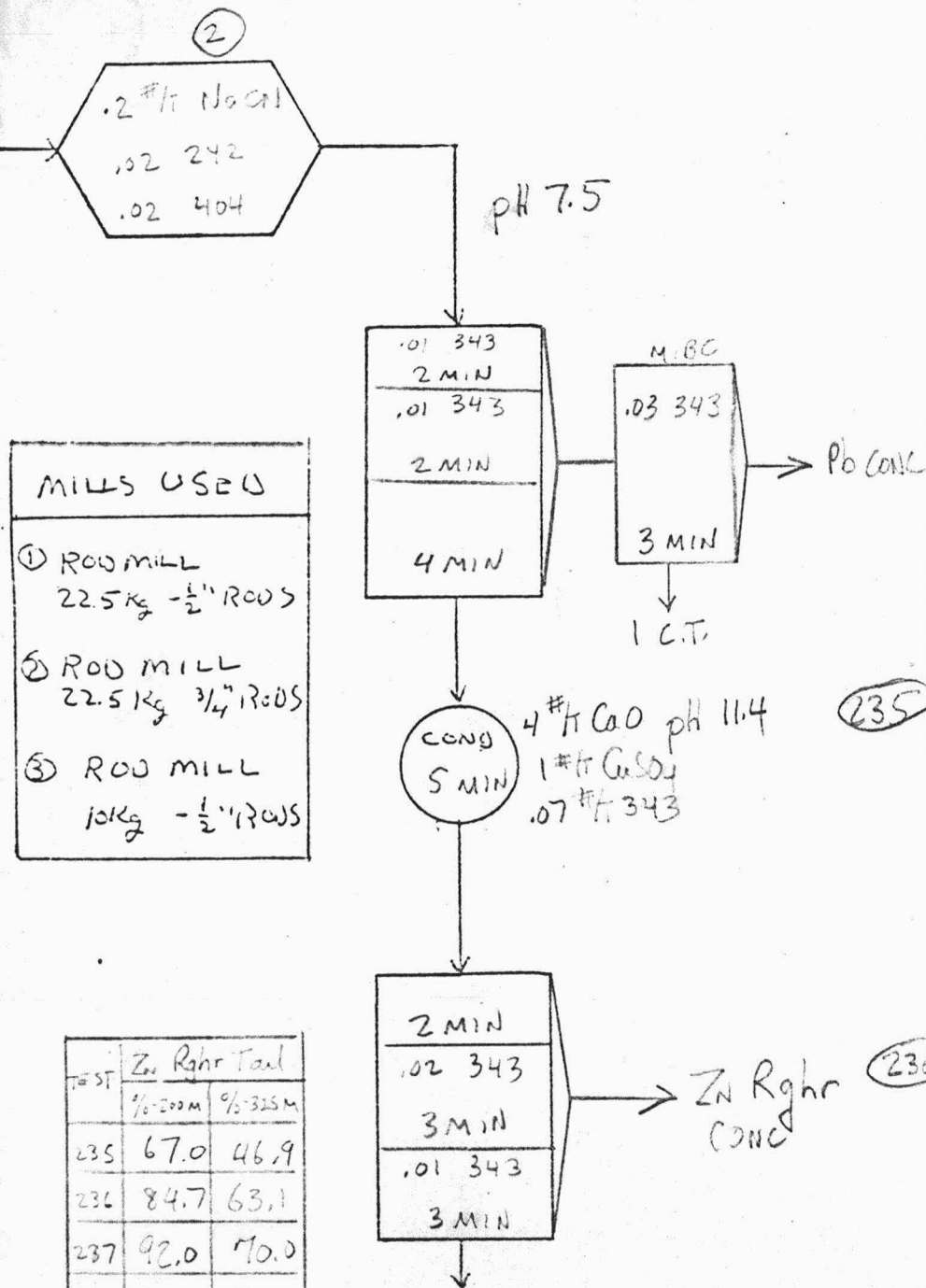
MATTAGL AL LAKE MINES LTD

GRUM TEST VAN #235-239

H3

PURPOSE: DIFFERENT PRIMARY GRINDS

29 MARCH 77



- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS

TEST	Zn Rghr Tail	
	%-200M	%-325M
235	67.0	46.9
236	84.7	63.1
237	92.0	70.0
238	96.4	82.9
239	98.4	89.2

% - 200M _____
% - 325 M _____

	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb CONC	37.7	3.70	48.80	9.35		49.4	4.1	
1ST Pb Clnr Tail	111.5	10.96	11.64	15.47		34.9	20.3	
Pb Rghr CONC		14.56	21.02	13.92		84.3	24.4	
Zn Rghr CONC	147.4	14.48	1.60	35.97		6.3	62.3	
Zn Rghr Tail	721	70.86	.48	1.56		9.4	13.3	
Head	1017.6	100.0	3.65	8.36		100	100	
Pb CONC	33.4	3.37	51.20	7.64		47.0	3.0	
1ST Pb Clnr Tail	75.5	7.63	18.29	15.31		38.0	13.6	
Pb Rghr CONC		11.00	28.37	12.96		85.0	16.6	
Zn Rghr CONC	155.1	15.67	1.49	39.23		6.4	71.7	
Zn Rghr Tail	726	73.33	.43	1.36		8.6	11.7	
Head	990.0	100	3.67	8.57		100	100	

235

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M ITAGAMI LAKE MINES LTD

GRUM TEST VAN 237-239

CALCULATION SHEET.

DATE 29 MAR 7

	WEIGHT		ANALYSES			DISTRIBUTION		
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn
237 Pb CONC	27.9	2.86		55.95	6.23		45.8	2.0
1st Pb Clar Tail	29.4	9.17		15.76	12.06		41.4	13.6
Pb Rgr CONC		12.03		25.31	11.36		87.2	15.6
Zn Rgr CONC	155.3	15.93		1.26	40.81		5.7	74.4
Zn Rgr Tail	702	72.04		.34	1.20		7.1	10.0
Head	974.6	100.00		3.49	8.71		100.0	100.0
-								
238 Pb CONC	38.4	3.89		46.70	6.88		56.3	3.1
1st Pb Clar Tail	89.3	9.04		11.29	12.96		31.9	13.7
Pb Rgr CONC		12.93		22.01	11.13		88.2	16.8
Zn Rgr CONC	154.7	15.67		.89	39.73		4.3	72.8
Zn Rgr Tail	705	71.40		.34	1.24		7.5	10.4
Head	987.4	100.00		3.23	8.56		100.0	100.0
-								
239 Pb CONC	45.5	4.45		51.49	6.84		63.8	3.5
1st Pb Clar Tail	72.1	7.04		12.86	13.34		25.2	10.8
Pb Rgr CONC		11.49		27.82	10.82		89.0	14.3
Zn Rgr CONC	156.7	15.31		1.23	43.13		5.2	76.2
Zn Rgr Tail	749	73.20		.28	1.12		5.8	9.5
Head	1023.3	100.00		3.59	8.67		100.0	100.0

MATTAGAMI LAKE MINES LTD

GRUM TEST JAN 237

CALCULATION SHEET

ECHANTILLON VAN 237 H

DATE 29 MARCH 77

Zn Rght Tail

	Poids %	Poids Cu. %		Analyses % ou oz/Ton			DISTRIBUTION %		
				Zn	Zn (OXIDE)	Pb	Zn	Zn (OXIDE)	Pb
-65.									
-100.									
-150.									
-200.	4.1			1.43	.91	.59	5.0	3.8	7.4
-56J	2.3			1.66	.98	.53	3.3	2.3	3.7
-40J	19.9			1.04	.80	.39	17.8	16.1	23.8
-20H	25.6			.80	.64	.29	17.6	16.5	22.7
-20U	20.0			.88	.81	.24	15.2	16.3	14.7
-14U	11.2			1.21	1.15	.26	11.7	13.0	8.9
-10U	7.2			1.93	1.74	.32	12.0	12.6	7.0
-10u	6.8			2.97	2.83	.56	17.4	19.4	11.8
Total	97.1		Calcule	1.19	1.02	.34	100.0	100.0	100.0
			Analyse	1.19	1.01	.35			

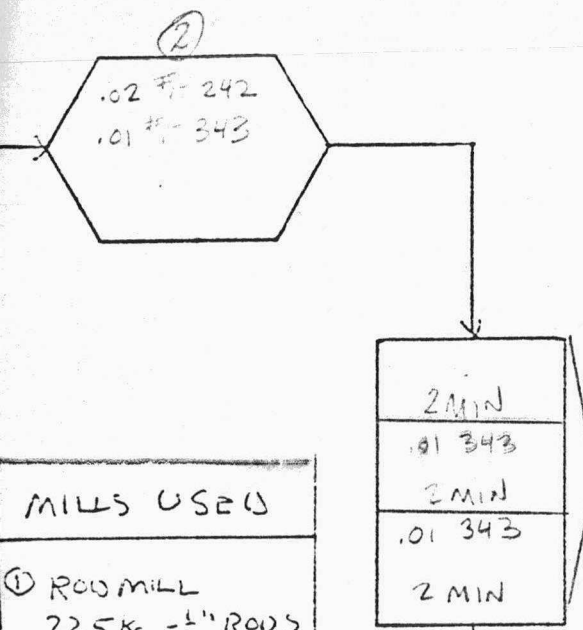
MATTAGA LAKE MINES LTD

29 MARCH 77

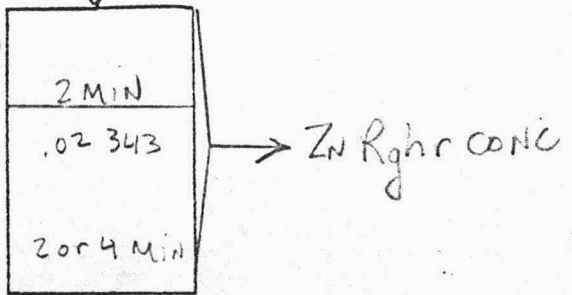
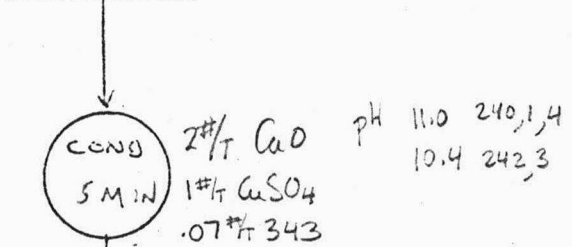
GRUM TEST VAN # 240-44

PURPOSE: soda ash is natural pH H3
VARY ZnSO₄, NaCN

TEST	#T Na ₂ CO ₃	#T ZnSO ₄	#T NaCN	pH
240	0	0	.2	7.3
241	0	0	0	7.3
242	2	1	.2	9.1
243	2	0	.2	9.1
244	0	1	2	7.3



- MILLS USED
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS



- STES: 241 float Pb 4 min ONLY
- 240, 41 float Zn 4 min
- 242, 43 float Zn 6 min
- 244 NO Zn FLOTATION

1 - NO REAGENTS, Cu floats for 1st stage Pb Rgr

% - 200 M 96

% - 325 M 82

	WEIGHT		ANALYSES %			DISTRIBUTION %	
	GR	%	Pb	Zn	Pb	Zn	
(240)							
Pb Rgr CONC	132.9	13.12	25.25	11.96	89.6	18.9	
Zn Rgr CONC	178.1	17.58	.93	33.61	4.4	71.2	
Zn Rgr Tail	702	69.30	.32	1.19	6.0	9.9	
Head	1013.0	100	3.70	8.30	100.0	100.0	
(241)							
%Cu							
Pb Rgr CONC	211.3	21.03	.34	16.02	12.73	89.4	32.3
Zn Rgr CONC	145.5	14.42	.02	1.29	33.31	4.9	51.2
Zn Rgr Tail	648	64.49	.33	1.22	5.7	9.5	
Head	1004.2	100.0	3.77	8.29	100.0	100.0	

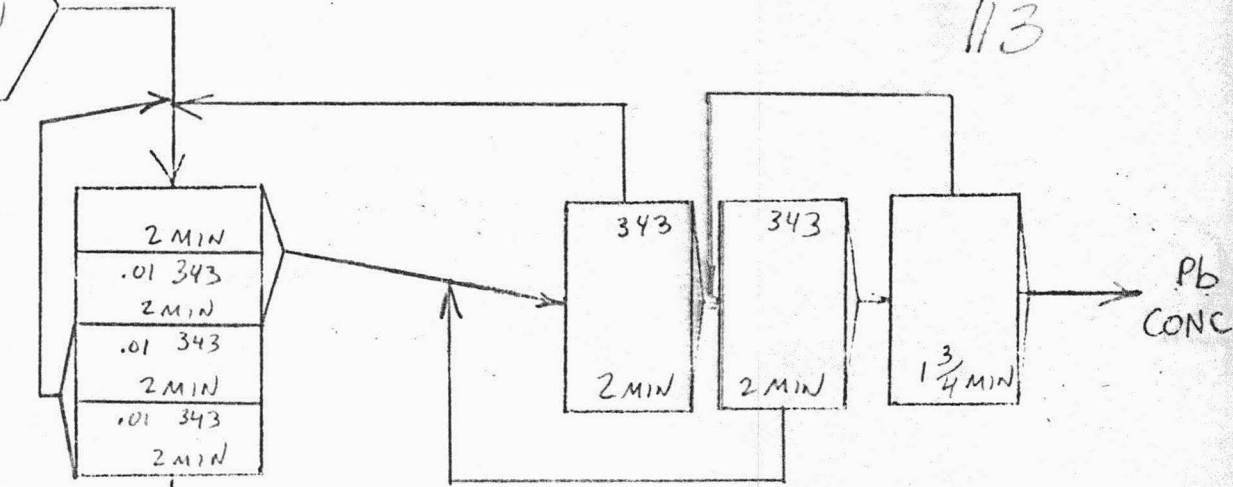
MATTAGAMI LAKE MINES LIMITED

GRUM DEPOSIT
TEST VAN-246

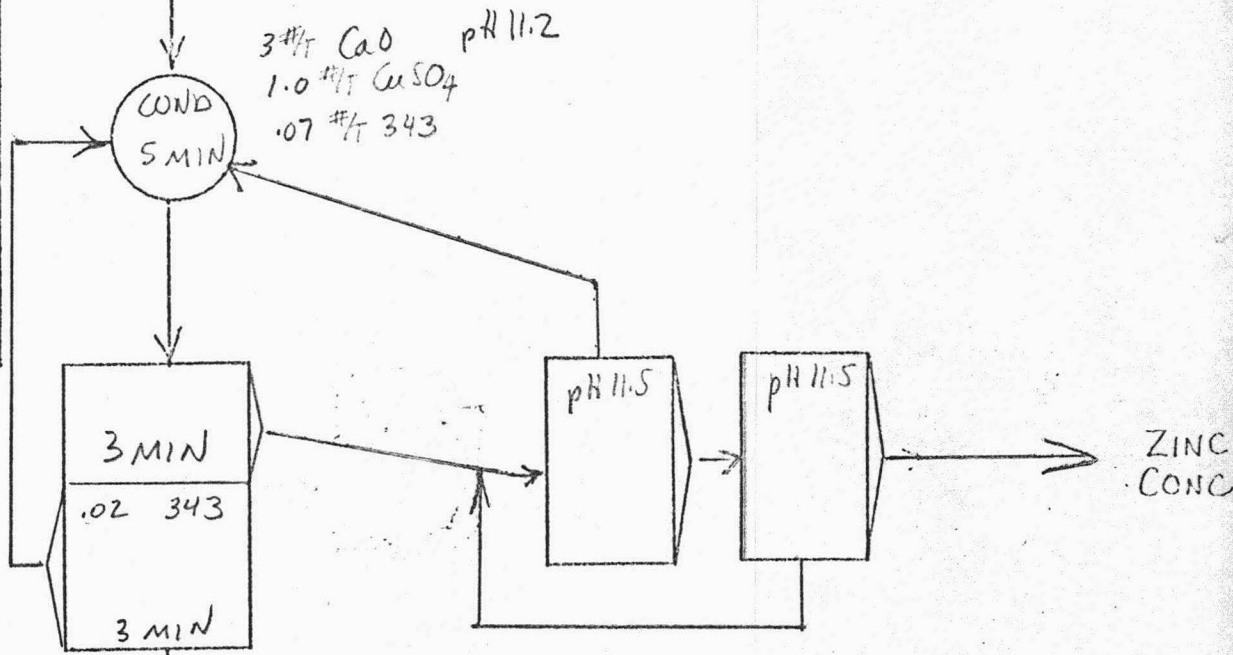
1 APRIL 77

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②
2 #/T Na₂CO₃
.5 % ZnSO₄
.2 % NaCN
.02 #/T 242
.02 #/T 404



- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS

- % -200 MESH _____
- % -325 MESH _____
- % -400 MESH _____

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 246

DATE: 1 APRIL 77

TOTAL WEIGHT IN: 3828.2 GRAMS

TOTAL WEIGHT OUT PER CYCLE :	CYCLE	1	<u>828.6</u>
		2	<u>853.2</u>
		3	<u>902.6</u>
		4	<u>825.5</u>
		5	_____
		6	_____
		7	_____
		8	_____

PROJECTED "CIRCUIT" RESULTS

WEIGHT		ANALYSES % , OZ/T , PPM			% DISTRIBUTION		
GMS.	%						

REMARKS: buildup of Zn in Zn SCAVENGER - REGRIND DEFINITELY REQUIRED FOR Zn

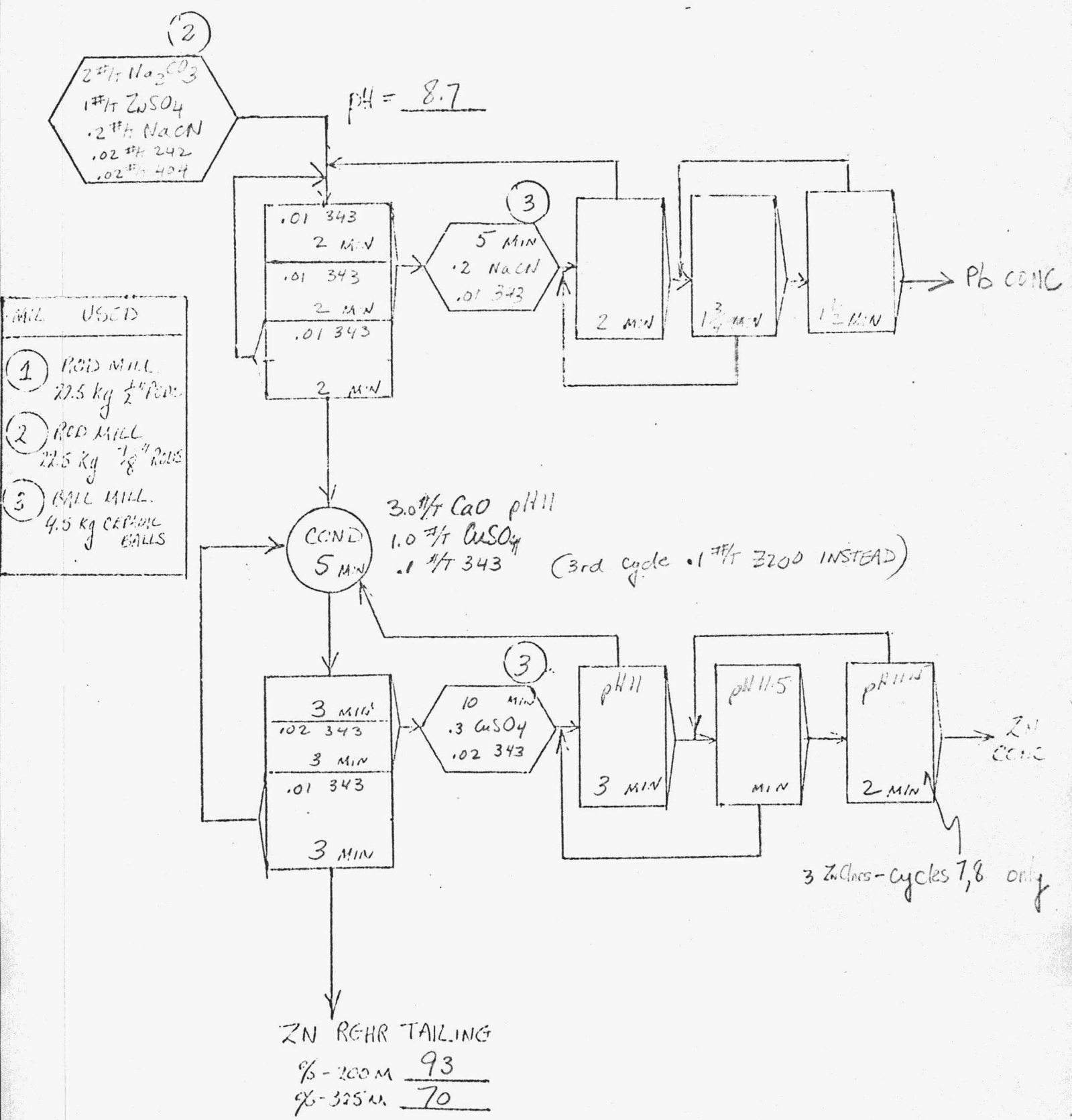
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 259

ORE TYPE: H3

DATE: 5 APRIL 77

OF CYCLES: 8



MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 259

DATE: 8 APRIL 77

TOTAL WEIGHT IN: 8011.1 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>793.0</u>
2	<u>457.7</u>
3	<u>884.0</u>
4	<u>1014.2</u>
5	<u>1006.8</u>
6	<u>1027.0</u>
7	<u>747.1</u>
8	<u>1012.8</u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	46.5	4.65	58.9	7.8		80.3	4.4	
Zn CONCENTRATE	119	11.89	1.4	55.2		5.0	80.2	
FLOAT TAIL	835	83.46	.6	1.5		14.7	15.4	
HEAD	1000.5	100.00	3.41	8.18		100.0	100.0	

REMARKS:

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST

VAN 259

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM	
	GRAMS	Pb	Zn		
Pb CONCENTRATE 1	19.9	68.09	6.57		
2	34.8	60.91	7.78		
3	30.2	62.84	7.03		
4	40.6	64.59	6.36		
5	50.8	59.19	7.46		
6	49.7	56.54	8.31		
7	32.7	64.08	7.85		
8	51.6	57.48	7.81		
ZINC CONCENTRATE 1	75.1	.70	55.83		
2	93.9	1.02	56.12		
3	49.8	1.61	55.59		
4	176.6	1.24	53.29		
5	117.0	1.70	53.01		
6	138.3	1.60	52.91		
7	103.4	1.31	55.73		
8	111.2	1.36	55.19		
ZINC ROUGHNER TAIL 1	698	.43	1.21		
2	834	.53	1.42		
3	804	.60	1.52		
4	797	.50	1.32		
5	839	.65	1.54		
6	839	.58	1.47		
7	812	.58	1.49		
8	850	.61	1.56		
3RD Pb CIRC TAIL 8	32.8	28.13	12.37		
2ND " " " 8	27.2	25.20	11.31		
1ST " " " 8	72.4	13.95	12.16		
Pb SCAV CONC 8	41.3	7.13	10.60		
3RD Zn CIRC TAIL 8	18.6	4.91	39.80		
2ND " " " 8	50.1	4.28	36.05		
1ST " " " 8	72.9	4.95	24.94		
Zn SCAV CONC 8	42.2	2.78	11.67		
HEAD	8011.1	3.46	8.20		

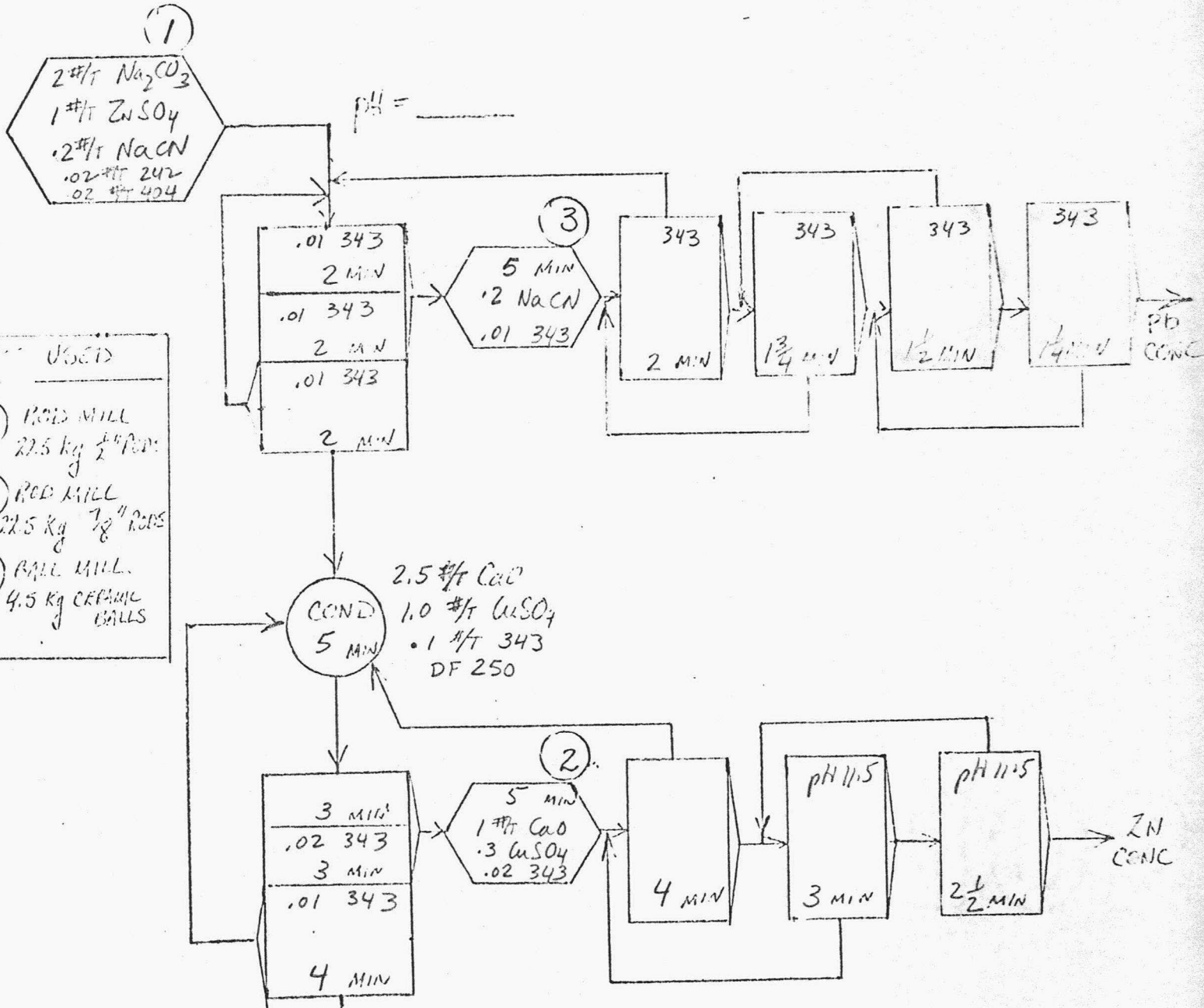
MATTAGAMI LAKE MINES LTD. CONCENTRATOR LABORATORY

TEST #: VAN 282

ORE TYPE: 113

DATE: 12 APRIL 77

OF CYCLES: 8



Zn REGR TAILING (5th cycle)

% - 200 M 84.7
% - 325 M 64.3

CYCLE TEST : VAN 282

DATE : 12 APRIL 77

TOTAL WEIGHT IN : 7977.7 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>528.2</u>
2	<u>981.1</u>
3	<u>1011.8</u>
4	<u>912</u>
5	<u>1003.1</u>
6	<u>932.4</u>
7	<u>1028.0</u>
8	<u>973.9</u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONCENTRATE	45	4.6	23.9	55.3	9.2	62.5	77.8	5.1
Zn CONCENTRATE	117	11.9	2.0	1.5	54.6	13.8	5.6	79.4
FLOAT TAIL	823	83.6	.48	.62	1.48	23.7	16.6	15.5
HEAD	985	100.0	1.72	3.20	8.18	100.0	100.0	100.0

REMARKS :

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 282

SAMPLE	WEIGHT	ANALYSES			% OZ/T OR PPM
	GRAMS	Ag	Pb	Zn	
Pb CONCENTRATE 1	25.1	26.76	62.89	7.09	
2	25.1	26.05	60.66	8.31	
3	33.6	26.05	60.61	8.23	
4	26.9	26.79	62.03	7.99	
5	37.2	26.26	58.25	8.66	
6	38.4	26.46	60.94	7.91	
7	55.3	22.09	52.51	10.11	
8	48.6	22.19	51.67	10.07	
Pb SCAV CONC 8	38.7	4.80	10.61	11.83	
1ST Pb Clar Tail 8	51.2	9.59	23.03	10.85	
2ND " " " 8	36.2	12.79	31.21	11.16	
3RD " " " 8	20.2	16.00	38.99	11.09	
4th " " " 8	29.6	16.00	39.08	12.30	
Zn CONC 1	92.1	1.58	.82	56.91	
2	94.2	1.58	.83	56.09	
3	93.2	1.58	.96	55.94	
4	126.3	2.01	1.34	54.72	
5	108.9	2.01	1.46	54.72	
6	113.0	1.91	1.52	55.06	
7	128.7	2.03	1.59	54.60	
8	117.3	2.13	1.56	54.14	
Zn SCAV CONC 8	67.0	2.24	3.43	7.44	
1ST Zn Clar Tail 8	105.1	3.19	6.19	13.67	
2ND " " " 8	32.8	4.05	7.64	26.82	
3RD " " " 8	25.2	3.73	6.08	36.67	
Zn Rght Tail 1	611	.11	.34	1.15	
2	861	.32	.45	1.28	
3	885	.43	.62	1.54	
4	759	.52	.54	1.45	
5	857	.52	.57	1.54	
6	781	.43	.64	1.45	
7	844	.53	.66	1.46	
8	808	.43	.68	1.44	
WEAD	7976.7	1.78	3.44	8.23	

APPENDIX VIII

TESTS ON
GRUM SAMPLE
A

TEST	DESCRIPTION
180	EXPLORATORY
184	EXPLORATORY
260-266	VARY Zn DEPRESSANTS
267-271	DIFFERENT PRIMARY GRIND TIMES
284-289	VARY COLLECTOR, GRIND, Zn DEPRESSANTS
302	6 CYCLE TEST
311	6 CYCLE TEST, SODA ASH ₂ IN Pb Clnr

Comments on A

A is a high grade, massive sulphide ore. It is very friable and the softest ore tested. Signs of oxidation are visible. The Pb:Zn ratio is reversed from that of all the other ores.

The sphalerite in A, as in F3 vuggy, is different from that of the other 9 ores. A type sphalerite is very pale in colour (low in Fe) and is depressed by CaO during cleaning. The typical sphalerite is cherry red in colour and not depressed by lime. Also NaCN and $ZnSO_4$ had only a minimal effect on Zn depression during Pb flotation as opposed to most other ores (VAN 284-89).

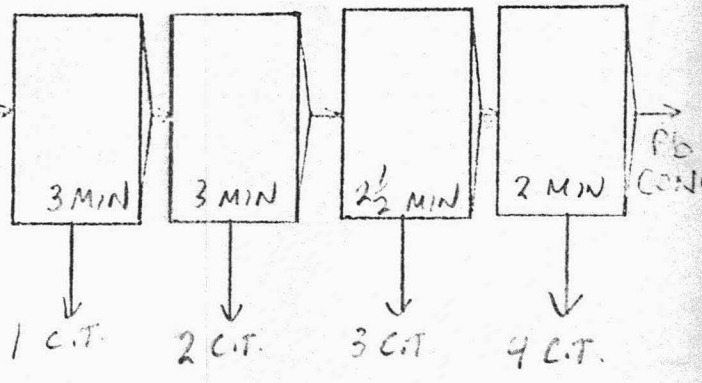
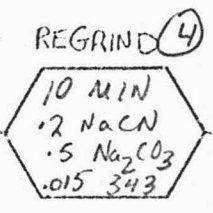
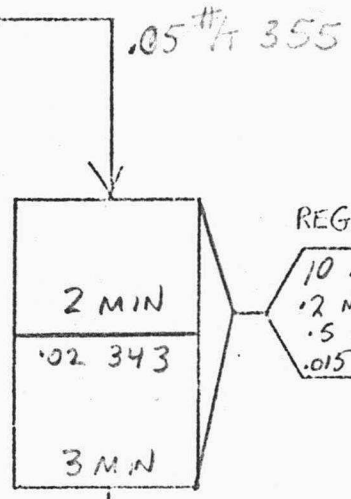
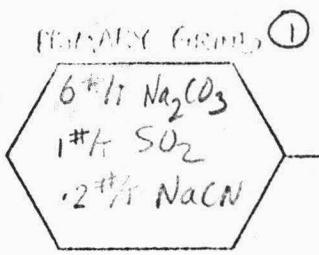
With extremely high losses in the flotation tailings Pb and Zn recoveries were low (considering the heads). Also Zn concentrates were contaminated by Pb (VAN 302).

MATTAGAMI LAKE MINES LIMITED

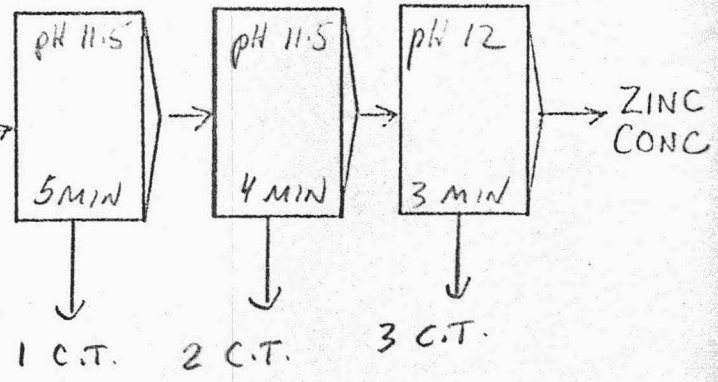
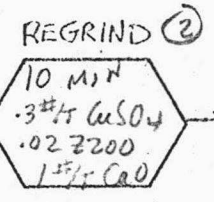
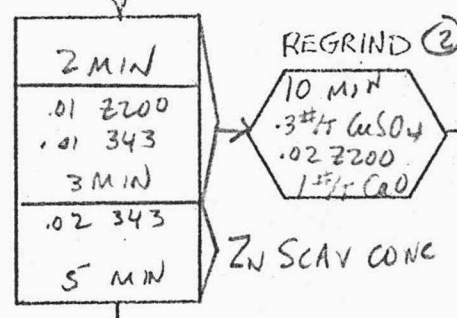
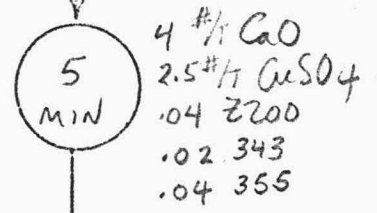
11 FEB / 77

GRUM DEPOSIT TEST VAN-180

A



- A LS USED
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG 3/4" RODS
 - ③ ROD MILL
10 KG - 1/2" RODS
 - ④ BALL MILL
4 KG 1/2 CERAMIC BALLS



ZINC ROUGHER TAILINGS

% -200 MESH	97.9
% -325 MESH	80.5
% -400 MESH	

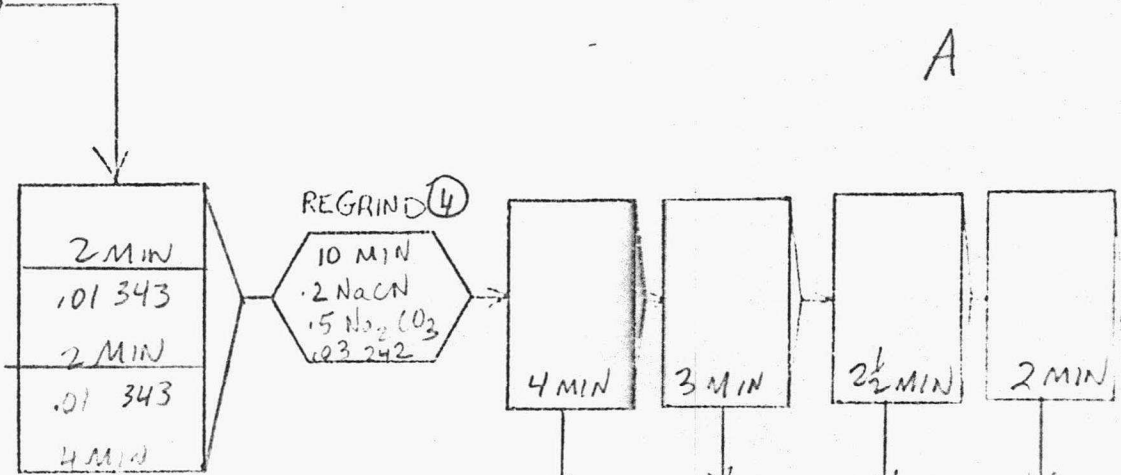
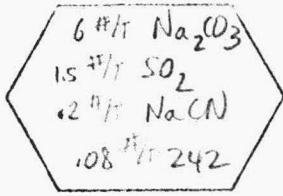
MATTAGAMI LAKE MINES LIMITED

18 FEB 77

GRUM DEPOSIT TEST VAN-184

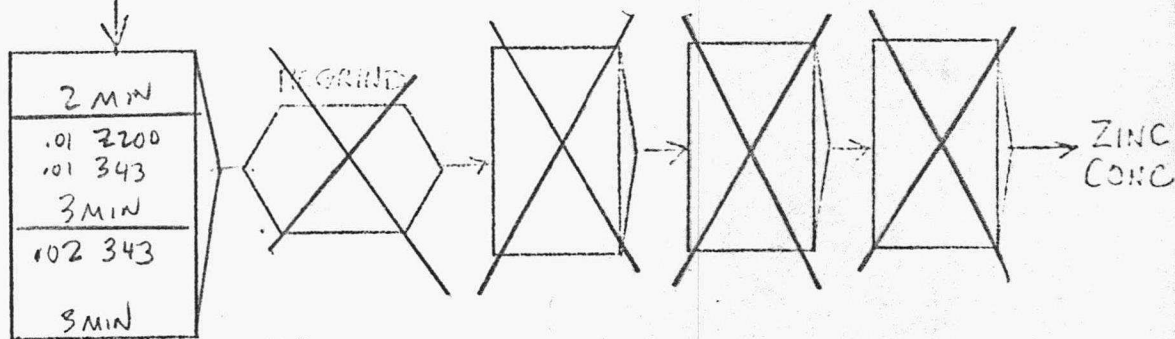
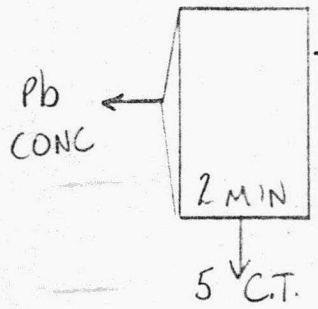
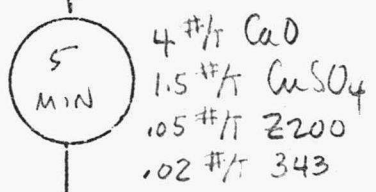
A

REGRIND ①



1 C.T. 2 C.T. 3 C.T. 4 C.T.

- MILLS USED**
- ① ROD MILL
22.5 KG. - 1/2" RODS
 - ② ROD MILL
22.5 KG. - 3/4" RODS
 - ③ ROD MILL
10 KG. - 1/2" RODS
 - ④ BALL MILL
4 KG. - 1/2" CERAMIC BALLS



ZINC ROUGHER TAILINGS

% -200 MESH	100
% -325 MESH	95.3
% -400 MESH	

MATTAC & MI LAKE MINES LTD

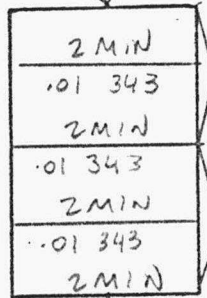
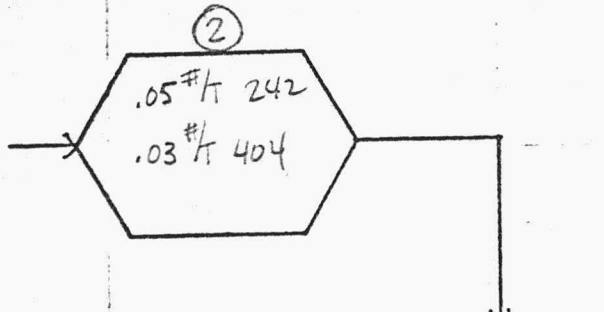
TEST VAN #260-266

A

PURPOSE: VARY ZN DEPRESSANTS

7 APRIL 77

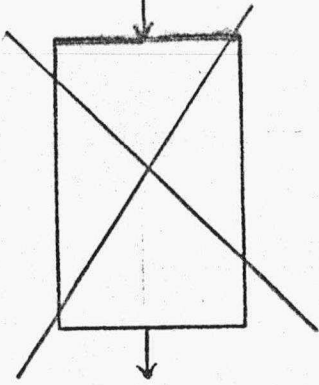
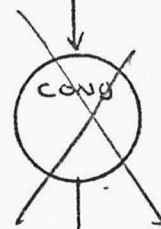
TEST	Na ₂ CO ₃	ZnSO ₄	NaCN
260	4 #/T	1 #/T	.2 #/T
261	4	1	.4
262	4	1	0
263	4	.5	.2
264	4	0	.2
265	4	0	0
266	0	1	.2



Pb Rght CONC

Pb SCAL CONC

- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS



% - 200 M 98.5
% - 325 M 88

260

261

262

	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb Rght CONC	232.4	21.75	47.34	6.96		76.6	20.1	
Pb SCAL CONC	150.2	14.06	13.94	8.98		14.6	16.7	
Pb Rght Tail	686	64.19	1.84	7.43		8.8	63.2	
Head	1068.6	100.0	13.44	7.55		100	100	
Pb Rght CONC	268.8	28.39	39.33	7.95		83.6	30.0	
Pb SCAL CONC	85.9	9.07	12.08	8.31		8.2	11.4	
Pb Rght Tail	592	62.54	1.74	7.04		8.2	58.6	
Head	946.7	100	13.35	7.52		100	100	
Pb Rght CONC	200.7	19.72	43.61	6.93		64.3	18.2	
Pb SCAL CONC	129	12.62	21.79	9.14		20.7	15.5	
Pb Rght Tail	682	67.60	2.98	7.39		15.0	66.3	
Head	1017.7	100	13.39	7.53		100	100	

N^o ITAGAMI LAKE MINES LTD

GRUM TEST VAN 263-266

CALCULATION SHEET.

DATE 7 APR 77

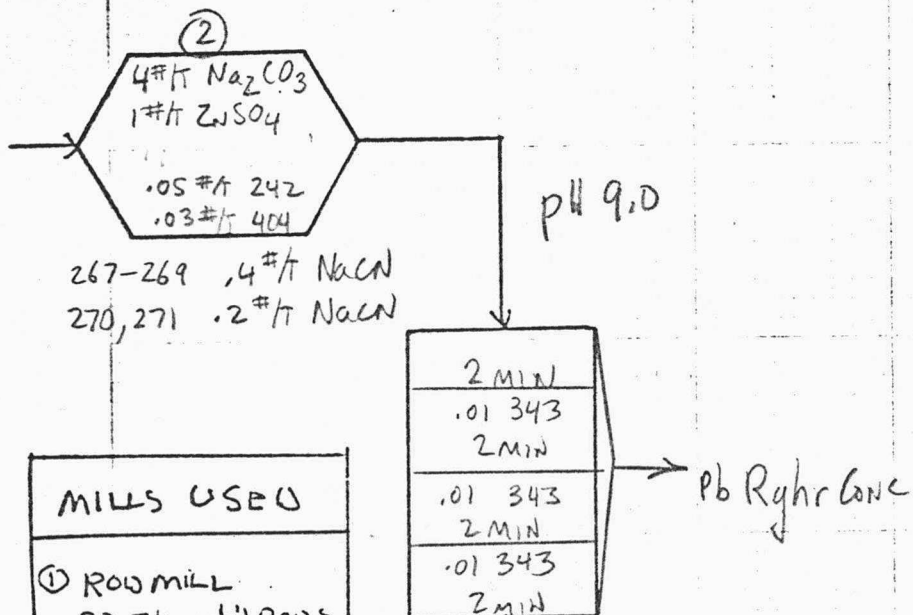
	WEIGHT		ANALYSES			DISTRIBUTION			
	GR	%	Ag	Pb	Zn	Ag	Pb	Zn	
263	Pb Rgr Conc	196.9	19.86		46.69	6.96		64.3	18.3
	Pb SEAV CONC	120.6	12.16		18.59	9.47		16.9	15.2
	Pb Rgr Tail	674	67.98		2.72	7.41		13.2	66.5
	Head	991.5	100.00		13.38	7.57		100.0	100.0
264	Pb Rgr Conc	249.8	23.66		44.22	7.95		77.1	25.0
	Pb SEAV CONC	126.2	11.95		14.41	9.51		12.7	15.1
	Pb Rgr Tail	680	64.39		2.15	7.02		10.2	59.9
	Head	1056	100.00		13.56	7.54		100.0	100.0
265	Pb Rgr Conc	233.6	24.42		43.98	8.55		72.3	27.5
	Pb SEAV CONC	111.9	11.70		13.82	9.69		11.2	14.3
	Pb Rgr Tail	611	63.88		2.13	6.85		9.9	57.6
	Head	956.5	100.00		13.72	7.60		100.0	100.0
266	Pb Rgr CONC	273.8	25.96		39.69	7.42		57.7	26.0
	Pb SEAV CONC	131.9	12.51		13.47	8.63		12.7	14.6
	Pb Rgr Tail	650	61.53		2.07	7.15		9.6	59.4
	Head	1054.7	100.00		13.26	7.41		100.0	100.0

MATTAKAMI LAKE MINES LTD

TEST VAN #267-71

PURPOSE: DIFFERENT PRIMARY GRINDS

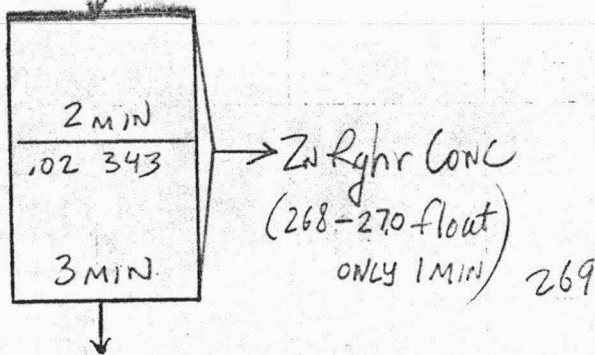
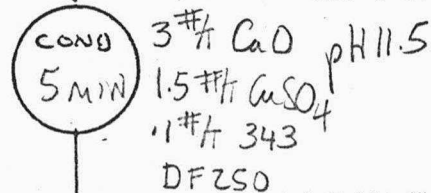
7 APRIL 77



- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS

Zn RGHr TAIL

TEST	%-200M	%-325M
267	100	96.8
268	96.7	81.5
269	98.8	86.4
270	96.8	82.2
271	98.9	89.3



% - 200 M _____
% - 325 M _____

267

268

269

	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb Rghr Conc	292.6	30.54	36.66	7.60		87.4	29.9	
Zn Rghr Conc	165.5	17.27	5.17	30.04		7.0	66.7	
Zn Rghr Tail	500	52.19	1.37	1.51		5.6	3.4	
Head	958.1	100.0	12.80	7.78		100	100	
Pb Rghr Conc	404.7	32.94	30.24	8.92		88.0	42.2	
Zn Rghr Conc	139.7	13.44	4.43	22.51		4.4	37.3	
Zn Rghr Tail	495	47.62	2.20	3.40		7.6	19.9	
Head	1039.5	100	13.65	8.12		100	100	
Pb Rghr Conc	337.9	34.26	34.18	8.14		85.9	34.8	
Zn Rghr Conc	67.4	6.95	4.63	25.42		2.3	21.7	
Zn Rghr Tail	564	58.19	2.82	6.10		11.8	43.5	
Head	969.3	100	13.88	8.15		100	100	

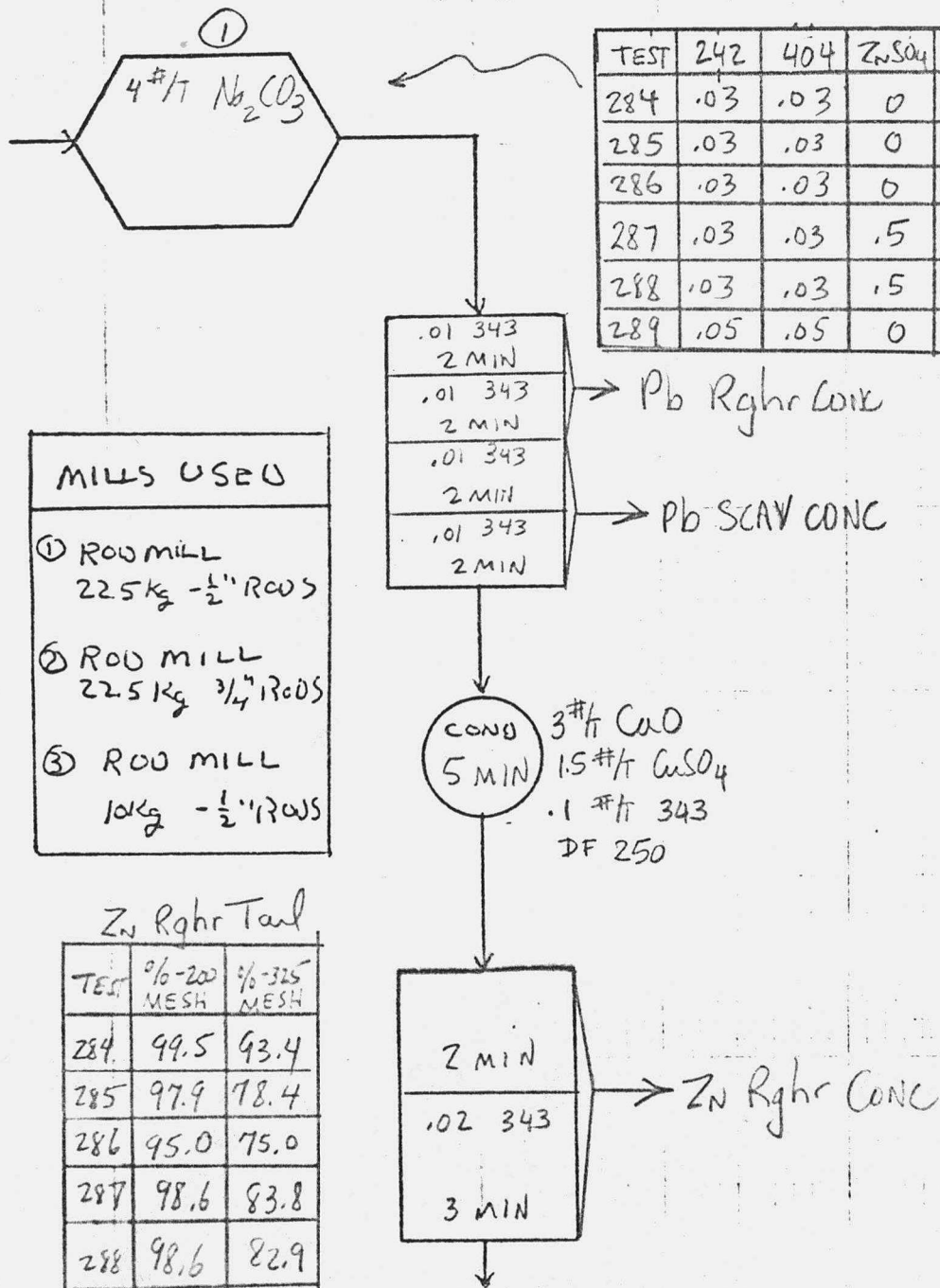
MATTA AMI LAKE MINES LTD

TEST VAN # 284-89 A

PURPOSE: VARY COLLECTOR, GRIND,
ZINC DEPRESSANTS

15 APR 77

TEST	242	404	ZnSO ₄	NaCN
284	.03	.03	0	0
285	.03	.03	0	0
286	.03	.03	0	0
287	.03	.03	.5	.2
288	.03	.03	.5	0
289	.05	.05	0	0



- MILLS USED**
- ① ROU MILL
225 Kg - 1/2" ROUS
 - ② ROU MILL
225 Kg 3/4" ROUS
 - ③ ROU MILL
10 Kg - 1/2" ROUS

Zn Rghr Tail

TEST	%-200 MESH	%-325 MESH
284	99.5	93.4
285	97.9	78.4
286	95.0	75.0
287	98.6	83.8
288	98.6	82.9
289	97.8	77.9

% - 200 M _____
% - 325 M _____

(284)	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn	Pb	Zn		
Pb Rghr CONC	175.1	18.65	49.13	9.45	66.4	21.8		
Pb SCAV CONC	91.4	9.73	23.95	10.11	16.9	12.2		
Zn Rghr CONC	122.5	13.04	7.55	38.71	7.2	62.5		
Zn Rghr Tail	550	58.58	2.24	.48	9.5	3.5		
Head	939	100	13.74	8.08	100	100		
(285)								
Pb Rghr CONC	160.4	15.85	48.57	8.56	52.9	16.3		
Pb SCAV CONC	142.5	13.37	28.85	9.41	27.7	15.9		
Zn Rghr CONC	166.6	15.63	8.86	32.58	10.0	64.4		
Zn Rghr Tail	596	55.95	2.28	.46	9.2	3.4		
Head	1065.5	100	13.83	7.90	100	100		

MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

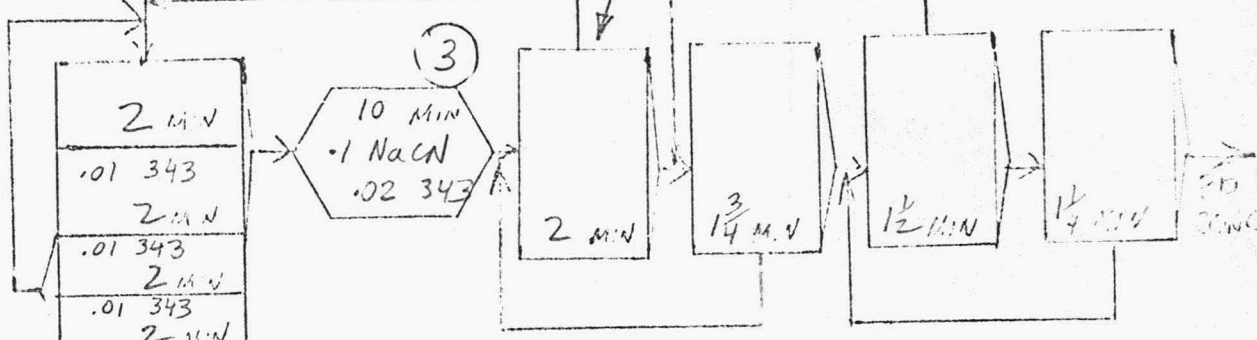
TEST #: VAN 302 ORE TYPE: A
 # OF CYCLES: 6

DATE: 21 APRIL 77

CYCLE	#F 343
1	0
2	0
3	.03
4	.02
5	.01
6	0

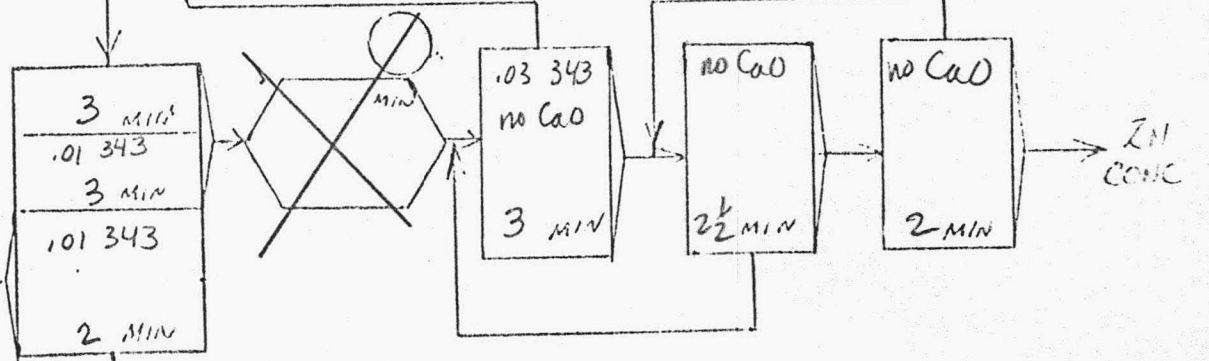
(1)
 4#t Na₂CO₃
 5#t ZnSO₄
 2#t NaCN
 .03 #t 242
 .03 #t 404

pH = _____



- Mills Used
- (1) ROD MILL
22.5 kg 1/2" ROD
 - (2) ROD MILL
22.5 kg 1/8" ROD
 - (3) BALL MILL
4.5 kg CERAMIC BALLS

COND
 5 MIN
 3#t CaO
 1.5#t CuSO₄
 .1 #t 343
 DF 250



Zn REGR TAILING (4th cycle)
 % - 200 M 97.4
 % - 325 M 81.1

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 302

DATE : 21 APRIL 77

TOTAL WEIGHT IN : 5994.8 GRAMS

TOTAL WEIGHT OUT PER CYCLE :	CYCLE 1	<u>681.0</u>
	2	<u>767.1</u>
	3	<u>924.7</u>
	4	<u>953.6</u>
	5	<u>907.1</u>
	6	<u>909.7</u>
	7	<u> </u>
	8	<u> </u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T , PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	170	17.9	54.0	6.0		79.4	14.7	
Zn CONCENTRATE	100	10.5	7.1	49.2		6.1	70.7	
FLOAT TAIL	680	71.6	2.46	1.50		14.5	14.6	
HEAD	950	100.0	12.17	7.31		100.0	100.0	

REMARKS : NOT STABLE ESPECIALLY Pb

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 302

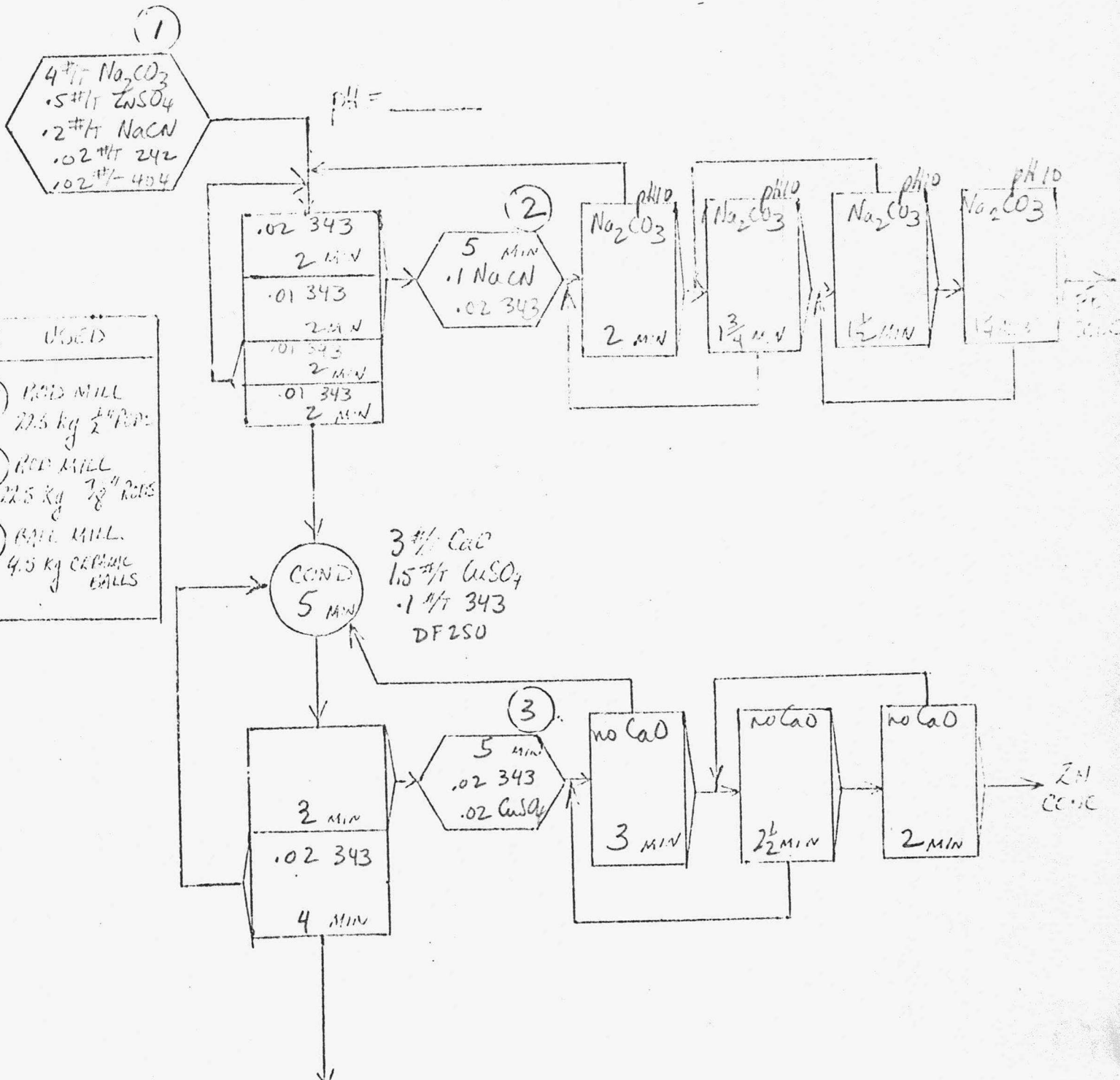
SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb CONCENTRATE 1	87.5	66.24	4.96	
2	127.6	58.12	5.52	
3	178.6	54.53	6.00	
4	133.5	56.69	6.04	
5	171.5	51.50	6.42	
6	99.2	59.77	5.24	
Zn CONCENTRATE 1	76.5	6.89	44.09	
2	182.5	7.08	37.83	
3	118.1	6.04	45.02	
4	84.1	6.38	49.01	
5	97.6	6.71	50.56	
6	104.5	8.32	42.08	
Pb SCAV CONC 6	190.4	19.14	8.78	
Zn SCAV CONC 6	55.9		13.15	
Zn ROUGHNER TAIL 1	517	1.55	.59	
2	457	1.45	.72	
3	628	1.95	.61	
4	736	2.44	1.38	
5	632	2.46	1.21	
6	706	2.42	1.91	
1st Pb Cnr Tail 6	150.2	27.86	8.88	
2nd " " " 6	91.9	28.93	9.02	
3rd " " " 6	125.1	35.56	9.02	
4th " " " 6	67.1	46.38	7.11	
1st Zn Cnr Tail 6	105.4	17.05	9.68	
2nd " " " 6	38.1	21.99	15.27	
3rd " " " 6	26.5	21.82	20.99	
HEAD	5994.8	13.21	8.05	

TEST #: VAN 311

ORE TYPE : A

DATE: 11 MAY 77

OF CYCLES: 6



MILL	USED
1	ROD MILL 22.5 kg 1/2" RODS
2	ROD MILL 22.5 kg 3/8" RODS
3	BALL MILL 4.5 kg CERAMIC BALLS

ZN REHR TAILING (CYCLE 4)
 %-200M 97.9
 %-325M 80.9

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 311

SAMPLE	WEIGHT	ANALYSES			% OZ/T OR PPM
	GRAMS	Ag	Pb	Zn	
Pb CONCENTRATE 1	85.3	19.48	61.37	5.68	
2	89.7	18.49	60.86	5.72	
3	77.3	20.07	61.18	5.18	
4	65.1	21.63	65.22	4.84	
5	99.3	21.08	66.37	4.72	
6	170.2	19.19	61.56	5.24	
Pb SCAV CONC 6	152.7	6.46	22.03	8.67	
Zn CONCENTRATE 1	50.8	2.12	3.82	57.57	
2	53.5	2.67	4.69	55.54	
3	92.5	2.46	4.09	55.84	
4	79.3	3.34	7.09	52.84	
5	112.3	3.01	5.57	55.13	
6	107.2	2.89	5.44	53.40	
Zn SCAV CONC 6	97.5	4.24	10.44	31.09	
Zn ROUGHER TAIL 1	547	.55	1.54	.55	
2	641	.78	2.13	.92	
3	606	.66	1.97	.77	
4	785	.89	2.59	2.24	
5	682	1.00	2.56	1.24	
6	680	.89	2.56	1.73	
4th Pb Cnr Tail 6	58.6	15.39	54.89	5.29	
3rd " " " 6	123.6	12.38	46.39	8.09	
2nd " " " 6	109.1	10.03	37.49	8.59	
1st " " " 6	261.5	8.47	30.53	8.18	
3rd Zn Cnr Tail 6	13.4	6.79	17.46	18.56	
2nd " " " 6	15.1	7.93	14.09	22.42	
1st " " " 6	68.2	6.58	11.89	18.94	
HEAD	5929.2	4.04	12.63	7.81	

APPENDIX IX

TESTS ON
GRUM SAMPLE
F3 HARD

TEST	DESCRIPTION
232	EXPLORATORY
247-253	NATURAL pH Vs SODA ASH; VARY NaCN, ZnSO ₄
254-258	DIFFERENT PRIMARY GRIND TIMES
283	8 CYCLE TEST

Comments on F3 HARD

F3 HARD is a very high grade, high sulphide ore which presented no flotation problems.

Mineralization is coarse grained. Soda ash, NaCN and $ZnSO_4$ are required for Zn depression (VAN 247-253).

Only 1 cycle test was run. High grade concentrates were obtained with above good recoveries.

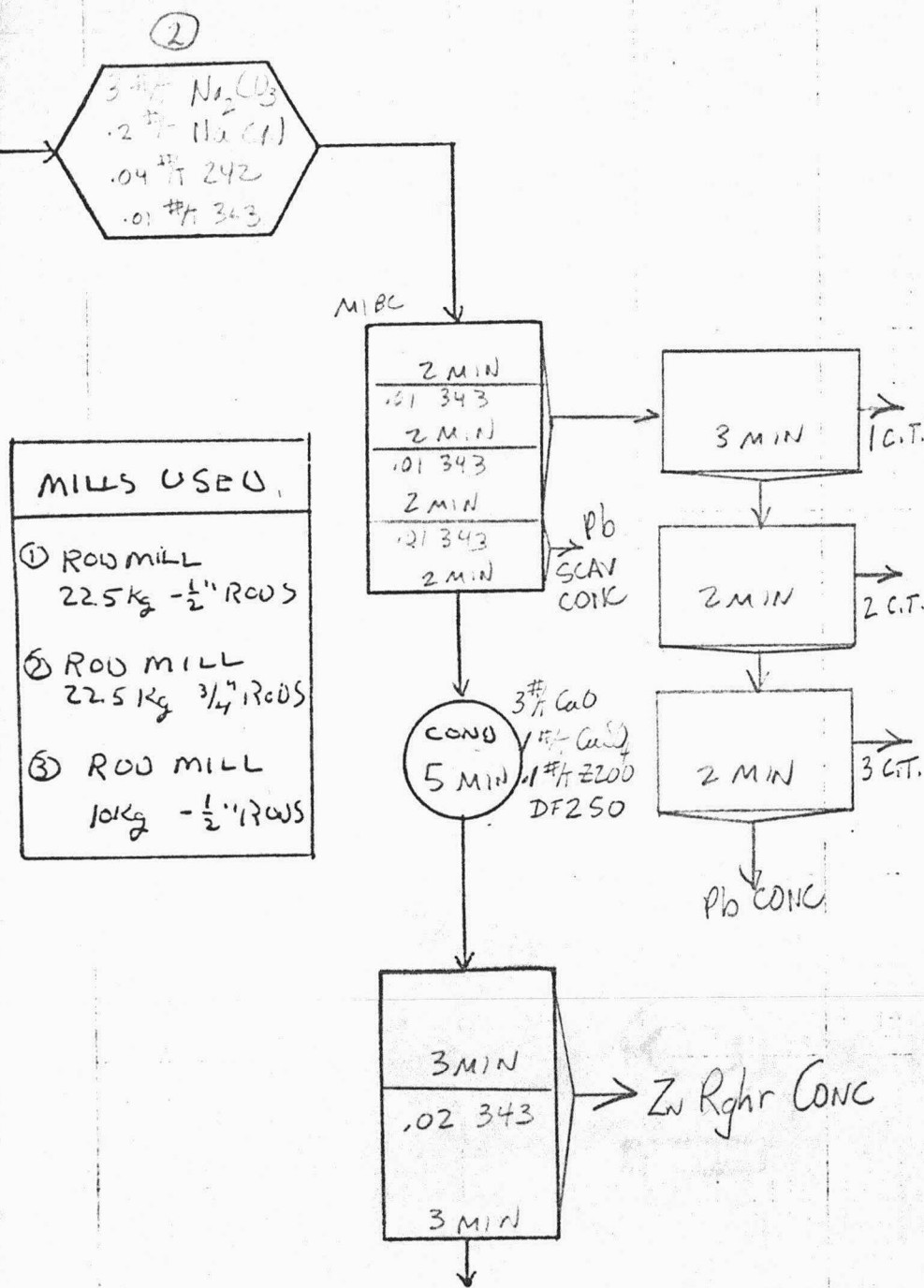
MATTAGI II LAKE MINES LTD

TEST VAN-232

F3 HARD

PURPOSE: EXPLORATORY

25 MARCH 77



- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS

	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb CONC	49.9	4.67		65.17	7.84		48.5	2.1
3RD Pb Conc Tail	49.8	4.61		33.46	20.92		24.8	5.6
2ND " " "	65.9	6.16		15.06	24.84		14.8	8.7
1ST " " "	35.4	3.31		6.24	19.27		3.3	3.6
Pb Right CONC		18.80		30.51	18.66		91.4	20.0
Pb SCAV CONC	17.3	1.62		6.58	24.41		1.7	2.3
Zn Right CONC	291.7	27.29		.78	48.49		3.4	75.4
Zn Right Tail	55.9	52.29		.43	.78		3.5	2.3
Head	1069.0	100		6.28	17.55		100.0	100.0

% - 200 M 93.8
 % - 325 M 72.5

MATTAGA LAKE MINES LTD

TEST VAN #247-253

F3 HARD

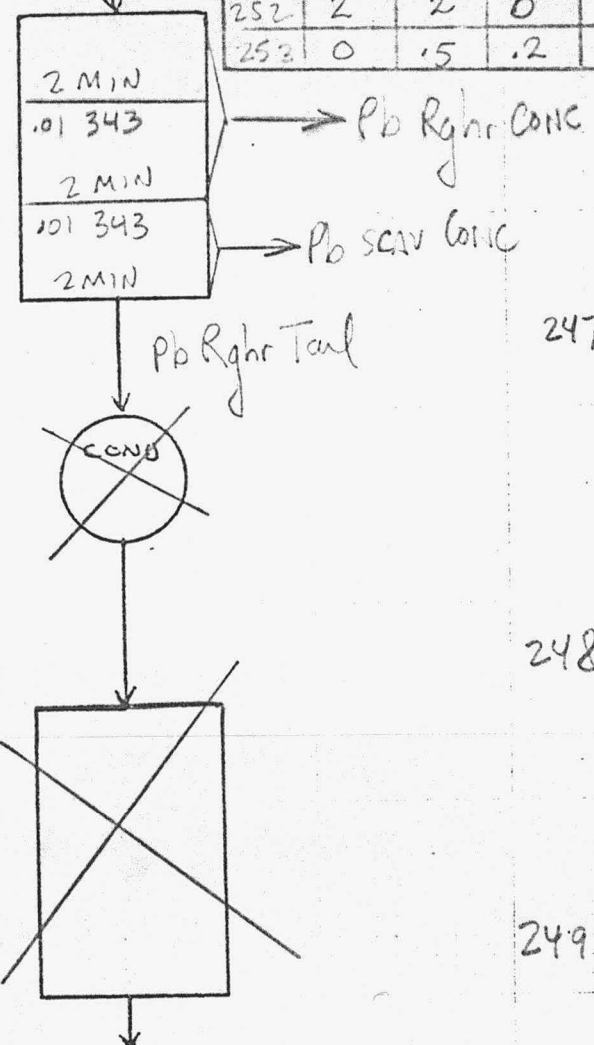
PURPOSE: NATURAL pH vs Na_2CO_3

VARY NaCl , ZnSO_4

4 APRIL 77

TEST	Na_2CO_3	CaO	NaCl	pH
247	2	0	.2	9.4
248	2	0	0	9.4
249	2	.5	.2	
250	2	0	.4	
251	2	2	.4	
252	2	2	0	
253	0	.5	.2	7.0

- MILLS USED
- ① ROD MILL
22.5 kg $-\frac{1}{2}$ " RODS
 - ② ROD MILL
22.5 kg $\frac{3}{4}$ " RODS
 - ③ ROD MILL
10 kg $-\frac{1}{2}$ " RODS



	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb Rght CONC	160.6	15.75	37.85	17.52		90.1	16.7	
Pb SCAV CONC	23.2	2.27	5.80	32.02		2.0	4.4	
Pb Rght Tail	836	81.98	.64	15.85		7.9	78.9	
Head	1019.8	100.00	6.62	16.48		100.0	100.0	
Pb Rght CONC	142.9	15.18	37.89	22.84		84.7	21.3	
Pb SCAV CONC	71.3	7.27	6.59	29.78		7.1	13.3	
Pb Rght Tail	760	77.54	.72	13.76		8.2	65.4	
Head	980.1	100.00	6.79	16.70		100.0	100.0	
Pb Rght CONC	138.9	13.48	42.53	15.58		85.3	12.9	
Pb SCAV CONC	34.7	3.37	8.89	24.51		4.5	5.1	
Pb Rght Tail	857	83.15	.83	16.04		10.2	82.0	
Head	1030.6	100.00	6.72	16.26		100.0	100.0	

% - 200 M _____
 % - 325 M _____

MATTAGA LAKE MINES LTD

TEST VAN #254-258

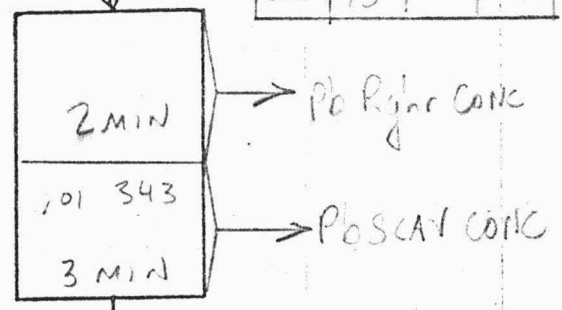
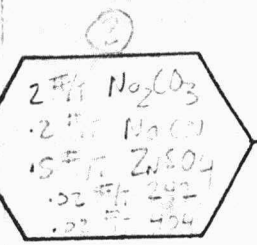
F3 HARD

PURPOSE: DIFFERENT PRIMARY GRINDS

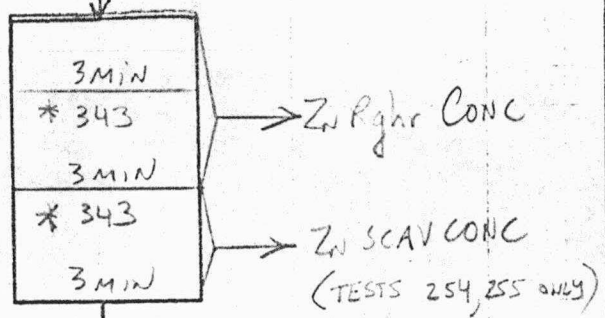
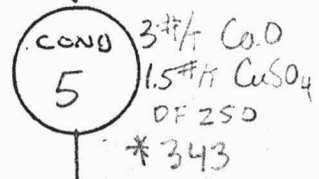
4 APRIL 77

GRIND

TEST	MIN	100-200	%-325
254	10		
255	12		
256	8	90	65
257	6		
258	15		



- ### MILLS USED
- ① ROD MILL 22.5kg - 1/2" RODS
 - ② ROD MILL 22.5kg 3/4" RODS
 - ③ ROD MILL 10kg - 1/2" RODS



% - 200 M _____
 % - 325 M _____

TEST	TO COND	AFTER 3 MIN	AFTER 6 MIN
254	.07	.04	.02
255	.10	.02	.01
256	.10	.02	
257	.10	.02	
258	.15	.02	

(254)	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	Pb	Zn		Pb	Zn	
Pb Rght CONC	80.4	7.97	56.40	9.70		65.5	4.3	
Pb SCAV CONC	82.3	8.16	19.28	22.77		23.7	10.3	
Zn Rght CONC	336.6	33.32	1.61	45.06		7.8	83.1	
Zn SCAV CONC	482	4.72	1.21	4.31		.8	1.1	
Zn Rght Tail	461	45.71	.32	.49		2.2	1.2	
Head	1002.5	100	6.87	18.10		100	100	
(255)								
Pb Rght CONC	76.6	7.72	56.46	10.51		63.2	4.5	
Pb SCAV CONC	89.0	8.96	20.39	21.64		26.5	10.8	
Zn Rght CONC	289.2	29.13	1.57	50.87		6.6	82.5	
Zn SCAV CONC	31.8	3.20	1.54	3.92		.7	.7	
Zn Rght Tail	506	50.98	.41	.51		3.0	1.5	
Head	992.6	100	6.90	17.95		100	100	

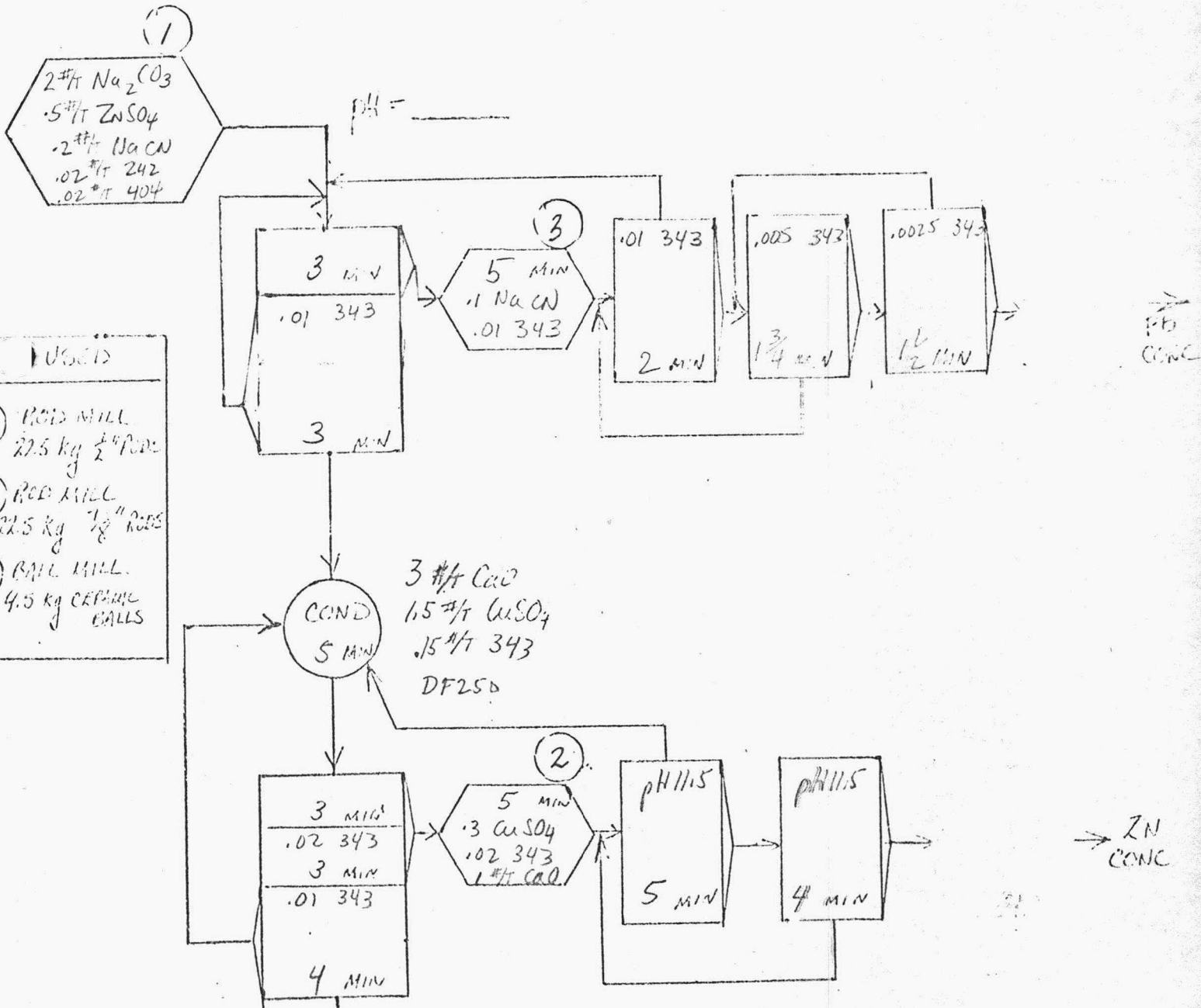
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 283

ORE TYPE: F3 HARD

DATE: 13 APRIL 77

OF CYCLES: 8



MILL	USGCS
1	ROD MILL 22.5 kg 1/2" RODS
2	ROD MILL 22.5 kg 1/8" RODS
3	BALL MILL 4.5 kg CERAMIC BALLS

ZN REGR TAILING (CYCLE 5)
 % - 200M 89.0
 % - 325M 65.7

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 283

DATE : 13 APRIL 77

TOTAL WEIGHT IN : _____ GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>757.5</u>
2	<u>432.3</u>
3	<u>908.4</u>
4	<u>951.0</u>
5	<u>946.6</u>
6	<u>1035.3</u>
7	<u>919.2</u>
8	<u>1024.1</u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONCENTRATE	86.7	8.7	26.9	58.1	12.2	71.2	79.3	6.5
Zn CONCENTRATE	252.3	25.4	2.0	2.0	57.2	15.0	7.9	88.6
FLOAT TAIL	654	65.9	.69	1.24	1.23	13.8	12.8	4.9
HEAD	993	100.0	3.30	6.39	16.42	100.0	100.0	100.0

REMARKS :

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 283

SAMPLE	WEIGHT	ANALYSES			% OZ/A OR PPM
	GRAMS	AI	Pb	Zn	
Pb CONCENTRATE 1	30.4	30.12	65.31	7.60	
2	67.7	29.93	64.02	10.47	
3	71.6	27.20	57.80	10.89	
4	62.2	27.74	61.92	11.29	
5	73.7	28.29	59.03	11.71	
6	91.7	28.83	59.40	11.09	
7	79.2	25.89	57.43	12.79	
8	89.3	26.01	56.87	12.79	
Pb SCAN CONC 8	107.5	8.17	18.51	23.21	
1ST Pb CLR Tail 1	42.6	14.25	32.62	12.61	
2nd " " " 8	20.5	16.32	36.65	19.50	
3rd " " " 1	34.4	17.09	37.94	20.47	
Zn CONCENTRATE 1	165.6	1.75	1.50	58.04	
2	260.6	1.75	2.05	55.78	
3	252.8	1.75	1.78	57.64	
4	244.1	1.75	1.65	57.84	
5	263.9	2.17	2.36	56.83	
6	243.6	1.95	2.01	57.39	
7	244.6	1.95	1.96	57.28	
8	268.1	1.95	2.03	56.97	
Zn SCAN CONC 8	105.3	3.48	7.26	19.21	
1ST Zn CLR Tail 8	154.1	4.56	9.38	42.08	
2ND Zn CLR Tail 8	37.7	4.68	8.84	45.96	
Zn Rgr Tail 1	555	.33	.64	.98	
2	604	.54	.89	1.01	
3	584	.64	1.19	1.15	
4	644	.44	1.07	1.14	
5	609	.64	1.25	1.18	
6	700	.76	1.26	1.24	
7	596	.77	1.30	1.22	
8	666	.54	1.15	1.22	
HEAD	7975.9	3.30	6.46	17.32	

APPENDIX X

TESTS ON
GRUM SAMPLE
F3 VUGGY

TEST	DESCRIPTION
298-299	EXPLORATORY, WITH AND WITHOUT Zn DEPRESSANTS
301	8 CYCLE TEST, NO REGRIND Zn
308	6 CYCLE TEST, NO LIME IN Zn Clnrs
310	6 CYCLE TEST, SODA ASH IN Pb Clnrs, no CaO in Zn Clnrs

Comments on F3 10664

F3 10664 is an oxidized, high grade massive sulphide.

As for A, NaCN and $ZnSO_4$ had no effect on Pb flotation (VAN 298-99) and CaO depressed Zn during cleaning. When CaO was removed from Zn cleaning high grade were produced (59% Zn) with excellent recoveries. Pb recovery was low for the 3 cycle tests performed.

MATTAGAMI LAKE MINES LTD

TEST VAN #298-99

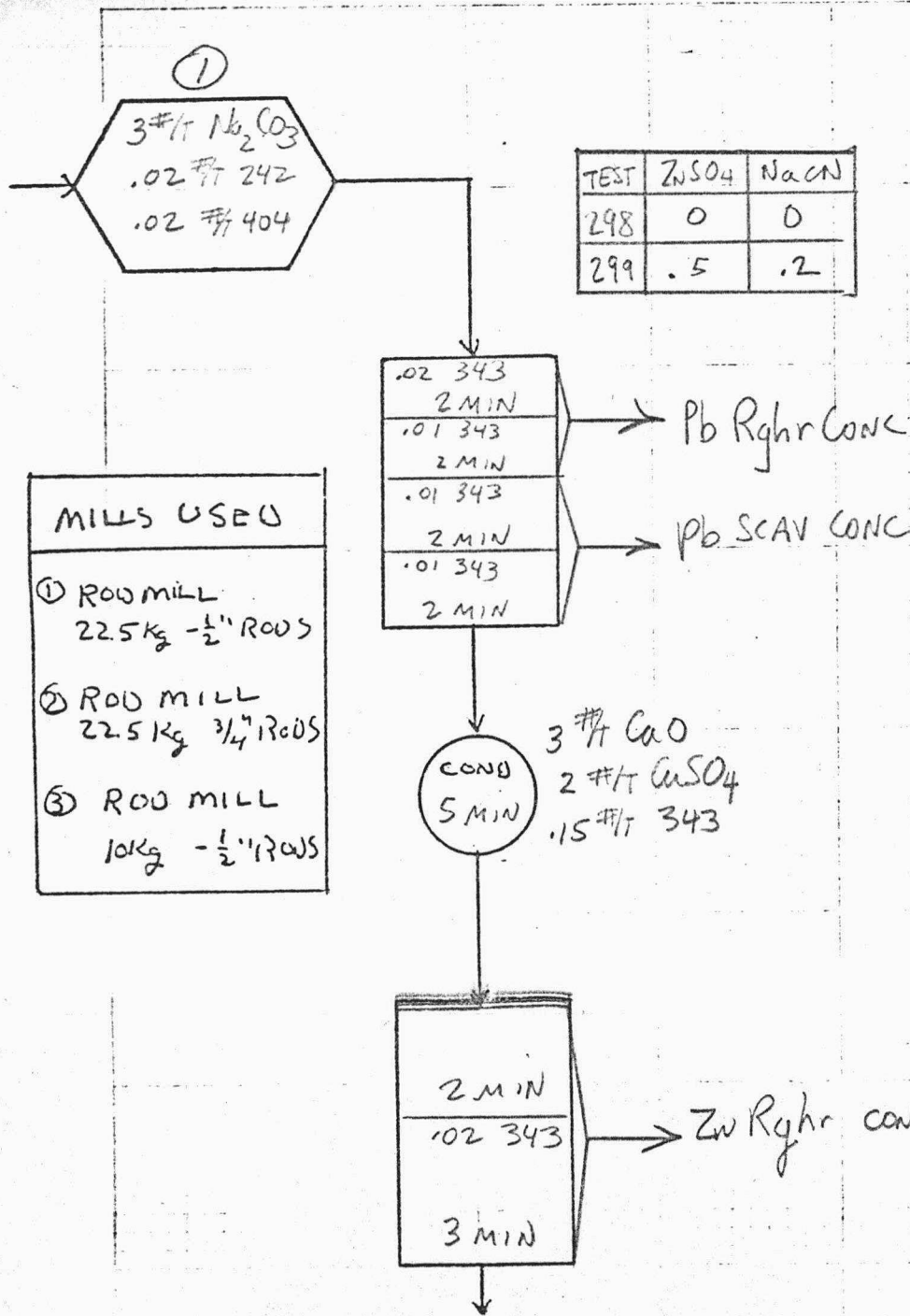
F3 WUGGY

PURPOSE: EXPLORATORY

WITH AND WITHOUT ZN DEPRESSANTS

15 APRIL 77

TEST	ZnSO ₄	NaCN
298	0	0
299	.5	.2



- MILLS USED**
- ① ROD MILL
22.5 kg - 1/2" RODS
 - ② ROD MILL
22.5 kg 3/4" RODS
 - ③ ROD MILL
10 kg - 1/2" RODS

(298)	WEIGHT		ANALYSES %			DISTRIBUTION %		
	GR	%	As	Pb	Zn	As	Pb	Zn
Pb Rght CONC	134.4	13.60		29.66	15.39		73.3	15.1
Pb SCAV CONC	50.1	5.07		9.16	18.41		8.4	6.7
Zn Rght CONC	236.5	23.94		2.62	43.51		11.4	75.3
Zn Rght Tail	567	57.39		.66	.69		6.9	2.9
Head	988.0	100.0		5.50	13.73		100.0	100.0
<hr/>								
(299)								
Pb Rght CONC	129.5	13.11		29.62	15.04		13.4	14.3
Pb SCAV CONC	62.1	6.29		7.30	14.93		8.7	6.8
Zn Rght CONC	237.9	24.09		2.94	42.46		13.4	74.5
Zn Rght Tail	558	56.51		.44	1.05		4.5	4.4
Head	987.5	100		5.29	13.73		100	100

% - 200 M 97.5
 % - 325 M 81

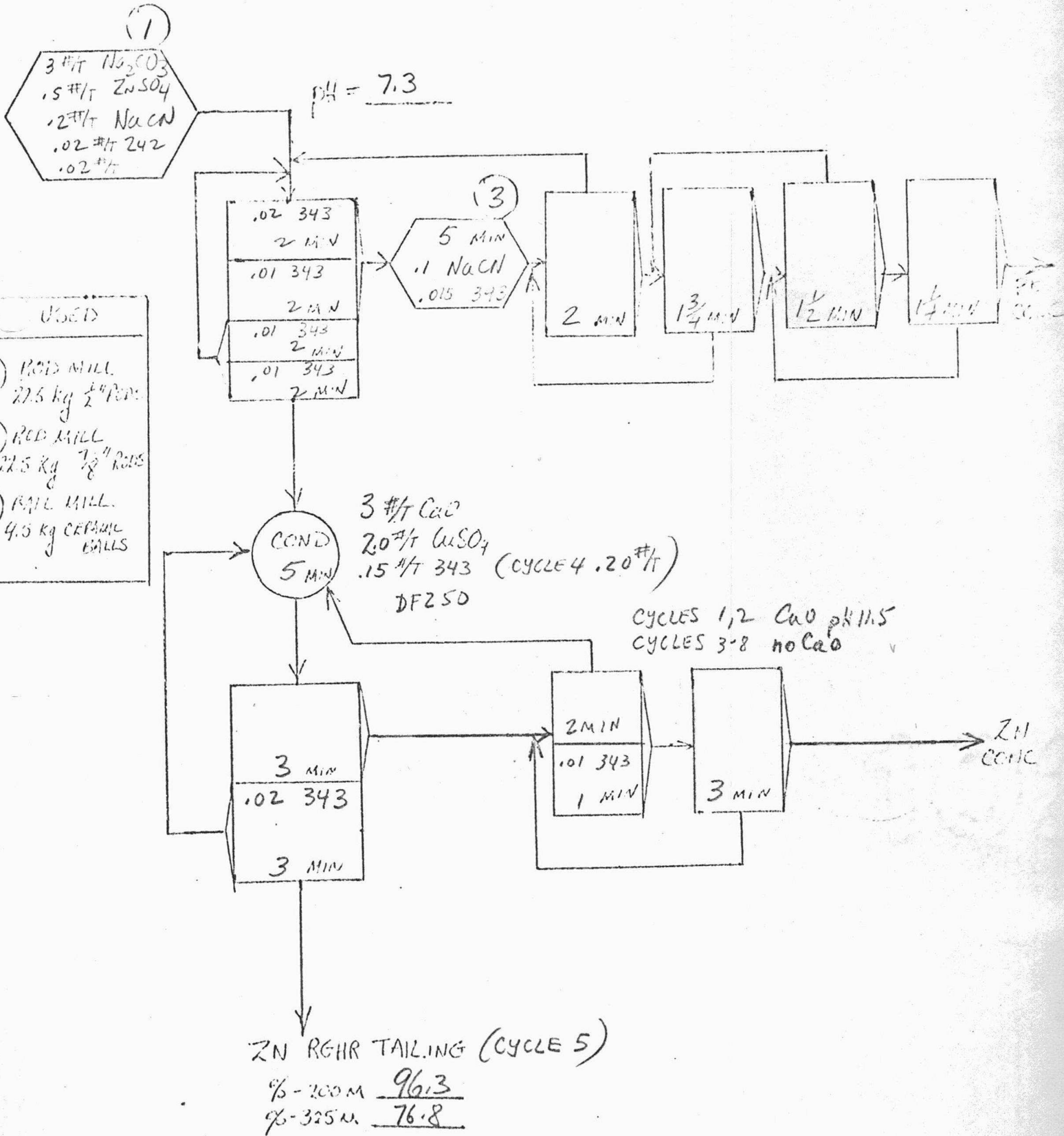
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 301

ORE TYPE: F3 VUGGY

DATE: 20 APRIL 77

OF CYCLES: 8



MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 301

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM	
	GRAMS	Pb	Zn		
Pb CONCENTRATE 1	31.2	57.39	12.61		
2	61.6	53.71	13.24		
3	52.5	53.37	13.53		
4	76.9	48.43	14.57		
5	45.6	55.72	12.54		
6	41.6	60.35	10.58		
7	58.3	55.98	12.54		
8	54.3	55.57	12.22		
1st Pb Conc Tail 8	70.3	18.44	19.27		
2nd " " " 8	54.4	9.56	23.50		
3rd " " " 8	46.7	29.24	20.61		
4th " " " 8	47.2	37.44	17.72		
Zn CONCENTRATE 1	93.1	1.77	60.37		
2	87.8	2.98	55.27		
3	360.8	2.60	55.12		
4	242.0	3.06	50.19		
5	193.2	2.51	53.51		
6	204.3	2.67	56.27		
7	216.8	2.86	53.62		
8	216.4	2.79	52.16		
1st Zn Conc Tail 8	43.0	7.16	14.57		
2nd Zn Conc Tail 8	19.3	6.96	20.84		
Pb SCAV CONC 8	75.9	11.80	19.39		
Zn SCAV CONC 8	65.6	5.08	15.67		
Zn ROUGHER TAIL 1	606	.83	.90		
2	718	1.09	1.55		
3	657	1.16	1.29		
4	667	1.22	1.42		
5	674	1.17	1.32		
6	719	1.19	1.21		
7	723	1.39	1.44		
8	641	1.22	1.18		
HEAD	7864.4	5.16	13.71		

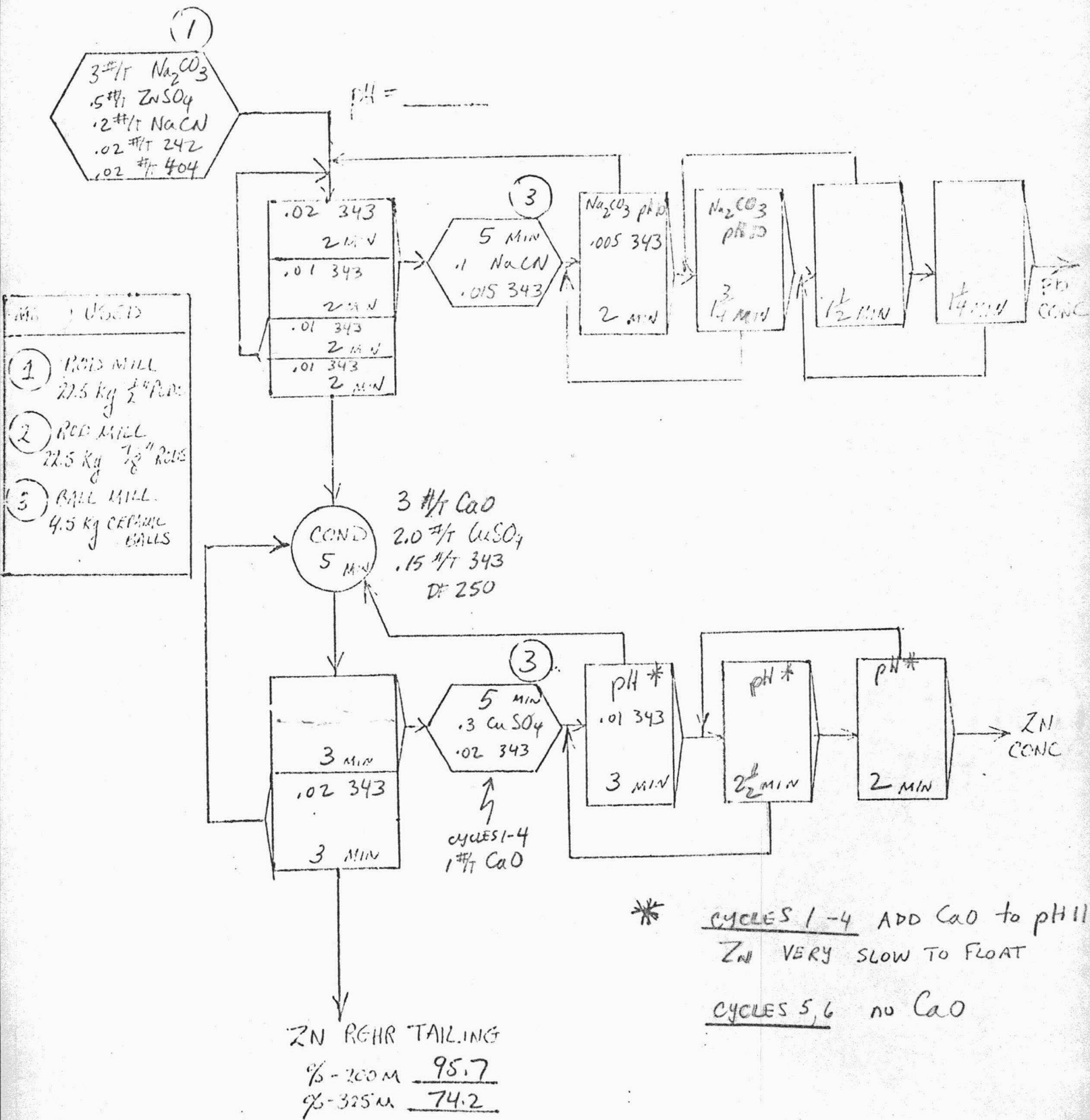
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 308

ORE TYPE: F3 VUGGY

DATE: 6 MAY 77

OF CYCLES: 6



- | MILL | USGID |
|------|-----------------------------------|
| (1) | ROD MILL
22.5 kg 1/2" RODS |
| (2) | ROD MILL
22.5 kg 7/8" RODS |
| (3) | BALL MILL
4.5 kg CERAMIC BALLS |

ZN REGR TAILING
 % -200M 95.7
 % -325M 74.2

* CYCLES 1-4 ADD CaO to pH11s
 ZN VERY SLOW TO FLOAT
 CYCLES 5,6 no CaO

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 308

DATE: 6 MAY 77

TOTAL WEIGHT IN: 5937.5 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>774.1</u>
2	<u>125.0</u>
3	<u>879.2</u>
4	<u>129.4</u>
5	<u>1104.5</u>
6	<u>990.9</u>
7	<u> </u>
8	<u> </u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	65	6.7	52.1	13.0		73.3	6.2	
Zn CONCENTRATE	215	22.2	2.1	56.0		9.8	88.7	
FLOAT TAIL	690	71.1	1.13	1.0		16.9	5.1	
HEAD	970	100.0	4.76	14.01		100.0	100.0	

REMARKS: . Zn DEPRESSED BY LIME

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 308

SAMPLE	WEIGHT	ANALYSES		% OZ/A OR PPM	
	GRAMS	Pb	Zn		
Pb CONCENTRATE 1	36.4	56.18	12.09		
2	61.9	49.89	13.39		
3	47.7	53.41	11.79		
4	67.8	52.01	12.23		
5	52.1	52.09	12.55		
6	50.7	52.29	13.08		
Zn CONCENTRATE 1	126.7	2.14	58.05		
2	83.1	2.31	56.57		
3	156.5	2.35	55.49		
4	137.6	2.22	57.19		
5	370.4	1.76	52.10		
6	251.2	1.97	56.21		
Zn ROUSSER TAIL 1	611	.82	.69		
2	680	1.11	1.06		
3	675	1.10	1.14		
4	683	1.17	1.01		
5	622	1.12	.93		
6	679	1.14	1.29		
4th Pb Clnr Tail 6	43.2	36.18	18.30		
3rd " " " 6	28.7	34.66	16.18		
2nd " " " 6	53.2	27.29	19.96		
1st " " " 6	83.9	17.81	19.25		
3rd Zn Clnr Tail 6	23.6	6.07	23.18		
2nd " " " 6	48.6	6.59	18.67		
1st " " " 6	43.7	6.41	11.72		
Zn SCAV CONC 6	96.3	3.29	17.21		
Pb SCAV CONC 6	63.2	11.27	21.06		
Head	5937.5	5.13	13.66		

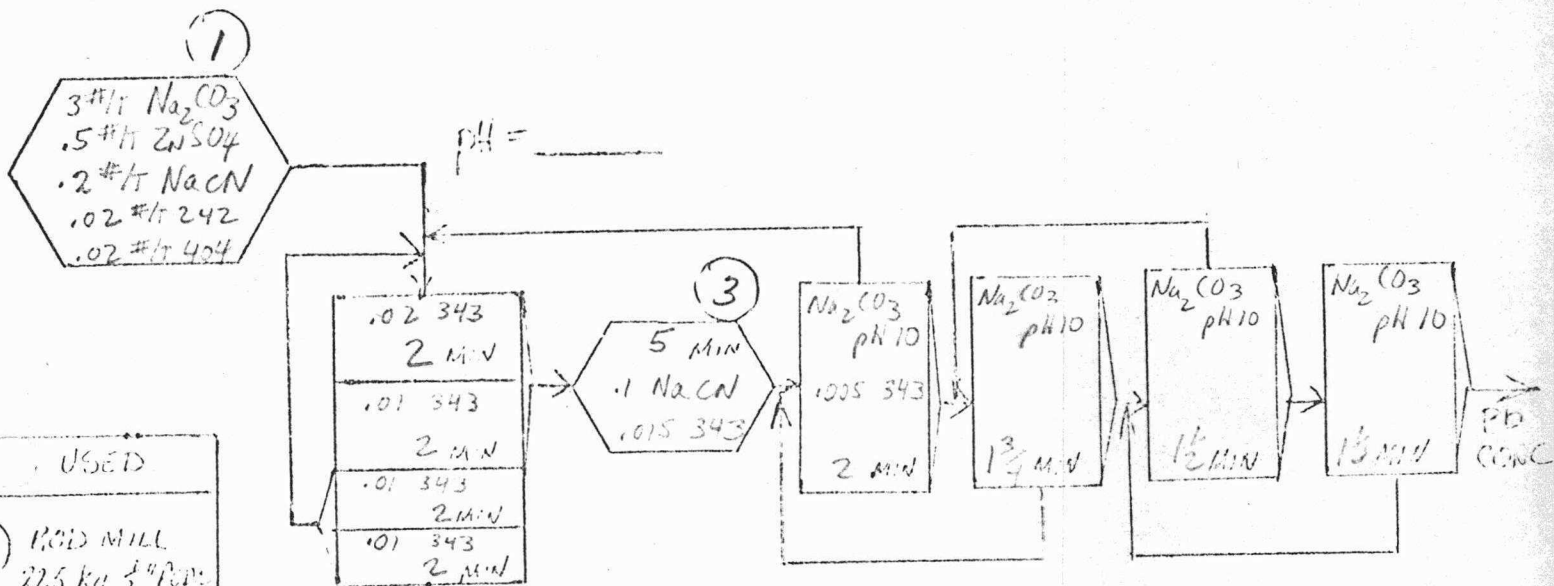
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 310

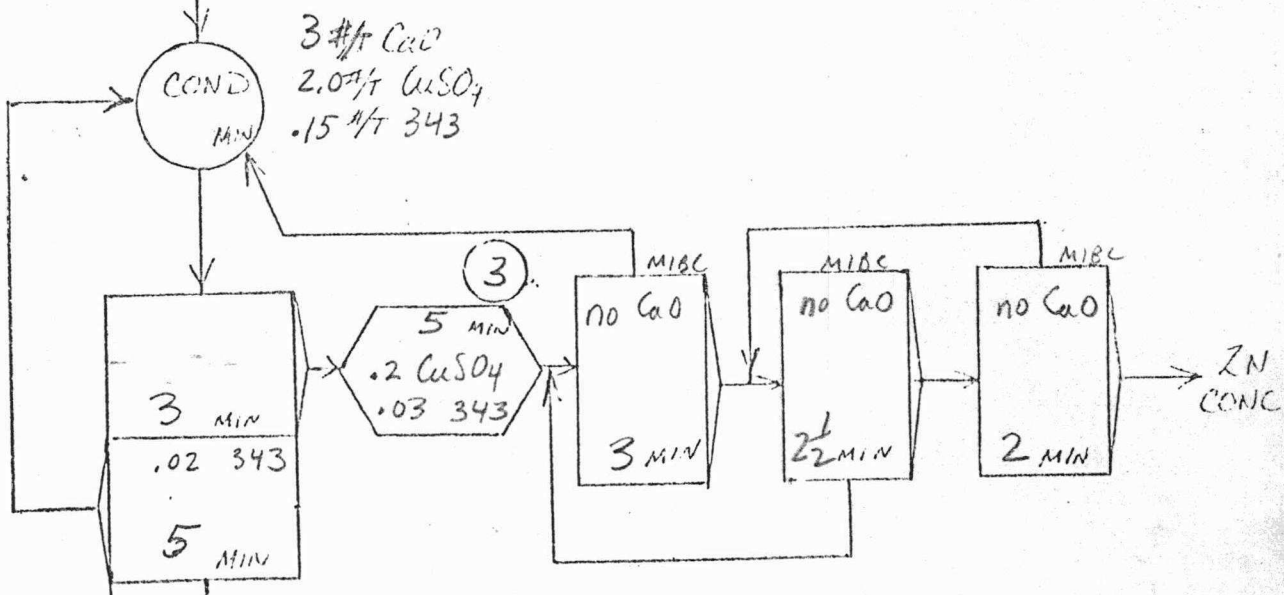
ORE TYPE: F3 VUGGY

DATE: 9 MAY 77

OF CYCLES: 6



MIN	USED
①	ROD MILL 22.5 kg 1/2" RODS
②	ROD MILL 22.5 kg 7/8" RODS
③	BALL MILL 4.5 kg CERAMIC BALLS



ZN REGR TAILING (CYCLE 4)

%-200M 95.1
 %-325M 73.9

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST : VAN 310

DATE : 9 MAY 77

TOTAL WEIGHT IN : _____ GRAMS

TOTAL WEIGHT OUT PER CYCLE : CYCLE 1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONCENTRATE	60	6.4	27.0	53.9	11.9	69.4	72.0	5.7
Zn CONCENTRATE	192	20.5	2.1	2.2	58.7	17.3	9.4	89.6
FLOAT TAIL	683	73.0	.45	1.22	.86	13.3	18.6	4.7
HEAD	936	100.0	2.49	4.79	13.43	100.0	100.0	100.0

REMARKS :

MATTAGAMI LAKE MINES LIMITED

DETAILED RESULTS OF CYCLE TEST VAN 310

SAMPLE	WEIGHT	ANALYSES			% OZ/T OR PPM
	GRAMS	Ag	Pb	Zn	
Pb CONCENTRATE 1	38.6	29.041	55.75	11.55	
2	41.5	29.76	61.10	10.13	
3	60.4	26.98	51.17	12.74	
4	60.4	26.42	51.19	12.52	
5	52.2	27.76	56.51	11.33	
6	79.9	22.21	48.03	14.68	
Pb SCAV CONC 6	81.9	4.10	9.26	15.61	
Zn CONCENTRATE 1	133.4	1.67	1.76	59.74	
2	167.1	1.89	1.96	59.69	
3	183.6	1.99	2.08	58.91	
4	190.7	2.11	2.29	57.99	
5	191.7	1.99	2.17	59.33	
6	195.1	2.22	3.33	57.89	
Zn SCAV CONC 6	25.2	2.22	6.15	11.44	
Zn ROUGHER TAIL 1	527	.45	.79	.62	
2	658	.45	1.08	.78	
3	658	.45	1.13	.81	
4	681	.55	1.22	.86	
5	683	.45	1.19	.82	
6	616	.45	1.26	.92	
4th Pb Cnc Tail 6	37.0	12.32	27.85	20.30	
3rd " " " 6	63.2	10.44	22.89	22.20	
2nd " " " 6	57.7	8.55	17.51	20.60	
1st " " " 6	88.5	4.51	8.68	16.17	
3rd Zn Cnc Tail 6	32.2	2.99	6.65	30.40	
2nd " " 6	30.2	2.99	7.59	23.47	
1st " " 6	79.1	2.78	7.23	15.16	
HEAD	5772.8	2.70	5.32	13.67	

APPENDIX XI

TESTS ON
GRUM SAMPLE
COMPOSITE 2

TEST	DESCRIPTION
307	8 CYCLE TEST, SODA ASH IN Pb Clnrs, CaO to Zn Clnrs
313	8 CYCLE TEST, NO SODA ASH TO Pb Clnrs, No CaO to Zn Clnrs
314	6 CYCLE TEST, REPLACE ZnSO ₄ by SO ₂ , Clnrs as for 313
315	6 CYCLE TEST, SLIGHTLY COARSER PRIMARY GRIND

Comments on Composite 2

All 4 cycle tests on Composite 2 gave good results, especially for Zn. Infracting of Pb concentrates from VAN 313 suggest that Pb grade could be improved by further regrinding.

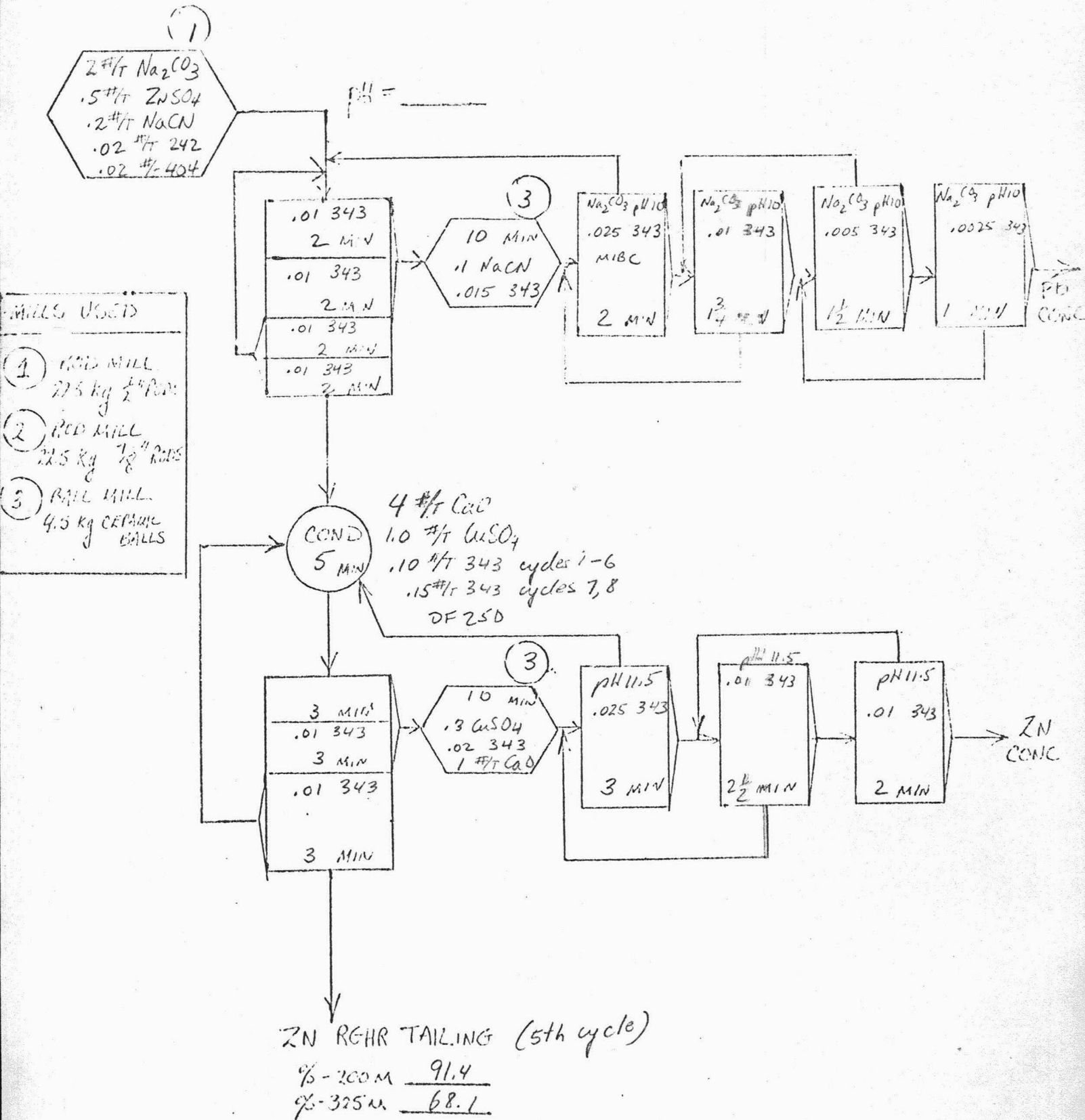
Future testwork will concentrate on reducing the primary grind time. Preliminary indications are that a significant change can be made.

TEST #: VAN 307

ORE TYPE : COMPOSITE 2

DATE: 5 MAY 77

OF CYCLES: 8



CYCLE TEST: VAN 307

DATE: 5 MAY 77

TOTAL WEIGHT IN: 7972.9 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE	WEIGHT
1	<u>758.6</u>
2	<u>948.5</u>
3	<u>896.8</u>
4	<u>473.2</u>
5	<u>917.0</u>
6	<u>117.5</u>
7	<u>1004.6</u>
8	<u>1100.0</u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % , OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Pb	Zn		Pb	Zn	
Pb CONCENTRATE	45	4.5	60	7.0		74.8	3.5	
Zn CONCENTRATE	135	13.6	1.3	57.5		4.9	87.3	
FLOAT TAIL	815	81.9	.9	1.0		20.3	9.2	
HEAD	995	100.0	3.63	8.94		100.0	100.0	

REMARKS: Cao in Zn Clms.

DETAILED RESULTS OF CYCLE TEST

SAMPLE	WEIGHT	ANALYSES		% OZ/T OR PPM
	GRAMS	Pb	Zn	
Pb Cone 1	27.4	61.47	4.94	
Pb Cone 2	33.6	59.05	7.03	
Pb Cone 3	38.3	59.72	6.99	
Pb Cone 4	39.6	64.49	6.85	
Pb Cone 5	41.4	68.42	7.28	
Pb Cone 6	42.1	59.88	6.85	
Pb Cone 7	52.5	57.33	7.92	
Pb Cone 8	37.1	59.05	7.21	
40 Pb Elev tail	20.8	42.63	10.33	
30 Pb Elev tail	30.5	35.44	10.69	
20 Pb Elev tail	59.9	27.07	11.83	
10 Pb Elev tail	67.7	16.02	11.51	
Zn Cone 1	56.2	0.68	58.63	
Zn Cone 2	104.9	1.15	57.84	
Zn Cone 3	77.5	0.85	59.08	
Zn Cone 4	101.6	1.17	59.33	
Zn Cone 5	101.6	1.22	58.34	
Zn Cone 6	135.4	1.33	57.64	
Zn Cone 7	164.5	1.26	58.29	
Zn Cone 8	144.9	1.48	57.15	
30 Zn Elev tail	22.6	5.64	37.33	
20 Zn Elev tail	53.5	5.41	35.82	
10 Zn Elev tail	63.9	5.41	30.49	
Pb savor Cone	61.7	13.25	12.86	
Zn savor Cone	26.3	5.38	17.76	
Decant.	7.6	12.76	14.92	
Zn Rybe tail 1	685.0	0.54	0.64	
Zn Rybe tail 2	810.0	0.89	0.94	
Zn Rybe tail 3	781.0	0.90	1.65	
Zn Rybe tail 4	832.0	0.86	1.59	
Zn Rybe tail 5	834.0	0.98	1.56	
Zn Rybe tail 6	802.0	1.02	1.58	
Zn Rybe tail 7	798.0	0.85	0.98	
Zn Rybe tail 8	818.0	0.72	0.86	
Head	7972.9	4.02	8.73	

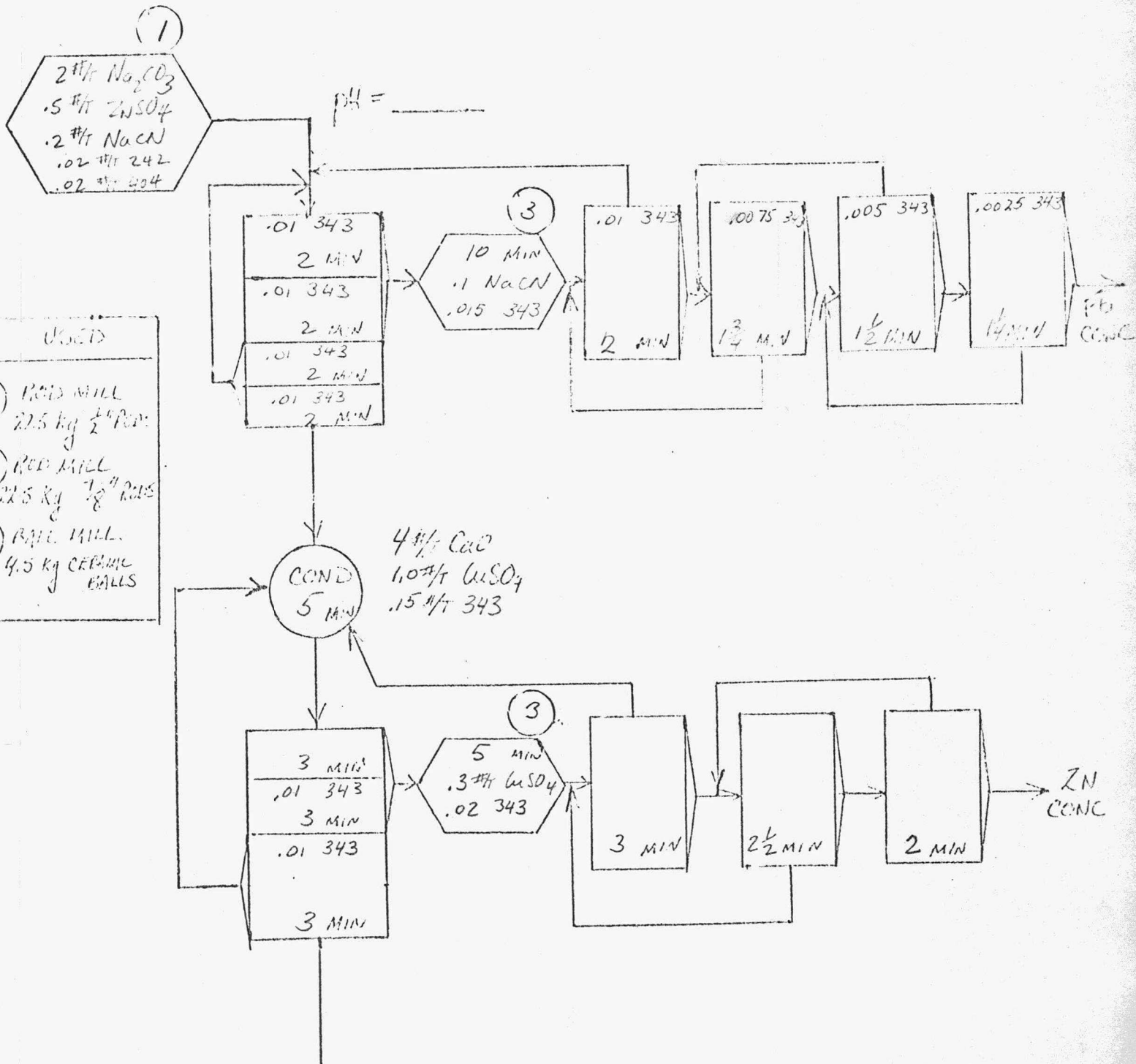
MATTAGAMI LAKE MINES LTD. CONCENTRATOR LABORATORY

TEST #: VAN 313

ORE TYPE: COMPOSITE 2

DATE: 12 MAY 77

OF CYCLES: 8



ZN REGR TAILING (5th cycle)
 % - 200M 93.2
 % - 325M 72.0

MATTAGAMI LAKE MINES LIMITED

30

CYCLE TEST: VAN 313

DATE: 12 MAY 77

TOTAL WEIGHT IN: 7895 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>750.2</u>
2	<u>926.1</u>
3	<u>947.5</u>
4	<u>955.2</u>
5	<u>925.5</u>
6	<u>960.1</u>
7	<u>970.8</u>
8	<u>934.9</u>

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS.	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONCENTRATE	58	5.9	22.3	55	9.6	70.4	79.7	6.1
Zn CONCENTRATE	144	14.5	1.6	1.5	53.6	12.5	5.4	87.2
FLOAT TAIL	790	79.6	.4	.75	.75	17.1	14.9	6.7
HEAD	992	100.0	1.86	4.02	8.94	100.0	100.0	100.0

REMARKS: NO CaO IN Zn CHRS

DETAILED RESULTS OF CYCLE TEST

SAMPLE	WEIGHT	ANALYSES			% OZ/A OR PPM
	GRAMS	Ag	Pb	Zn	
Pb conc 1	18.6	27.0	68.25	6.55	
Pb conc 2	62.7	23.09	55.52	7.88	
Pb conc 3	47.8	24.99	53.14	8.06	
Pb conc 4	58.8	20.69	49.73	8.83	
Pb conc 5	49.7	22.98	54.08	8.87	
Pb conc 6	47.1	23.19	55.54	9.57	
Pb conc 7	58.3	22.34	56.56	9.57	
Pb conc 8	54.3	21.19	51.70	8.09	
4 Pb conc tail	21.7	13.55	31.95	11.96	
3 Pb conc tail	30.9	9.53	23.49	12.07	
2 Pb conc tail	60.5	7.20	16.70	12.46	
1 Pb conc tail	136.5	5.50	11.85	12.07	
Zn conc 1	90.6	1.48	0.84	54.57	
Zn conc 2	124.4	1.48	1.21	53.05	
Zn conc 3	135.7	1.48	1.39	52.64	
Zn conc 4	133.4	1.48	1.44	52.89	
Zn conc 5	132.8	1.69	1.46	52.49	
Zn conc 6	140.0	1.59	1.36	52.09	
Zn conc 7	144.5	1.59	1.51	53.61	
Zn conc 8	128.6	1.59	1.55	54.47	
3 Zn conc tail	14.8	4.02	6.99	23.82	
2 Zn conc tail	26.8	4.02	7.48	18.68	
1 Zn conc tail	98.2	3.17	6.07	12.49	
Zn bulk tail 1	641.0	0.21	0.56	0.49	
Zn bulk tail 2	729.0	0.32	0.60	0.62	
Zn bulk tail 3	764.0	0.32	0.61	0.66	
Zn bulk tail 4	763.0	0.32	0.65	0.70	
Zn bulk tail 5	743.0	0.32	0.68	0.73	
Zn bulk tail 6	773.0	0.32	0.71	0.68	
Zn bulk tail 7	788.0	0.43	0.75	0.71	
Zn bulk tail 8	752.0	0.43	0.74	0.75	
Pb seam conc	70.9	4.13	9.09	12.39	
Zn seam conc	44.4	2.33	3.84	10.23	
Head	7895.0	1.93	4.18	8.75	

MATTAGAMI LAKE MINES LTD

GRUM TEST JAN-313

CALCULATION SHEET

ECHANTILLON UAN-313

DATE 1 Juin 77

Pb Conc

	Poids %	Poids Conc %		Analyses % ou oz./Ton			DISTRIBUTION %		
				Ag	Zn	Pb	Ag	Zn	Pb
+65.									
-100.									
-150.									
-200.									
-56J									
+40U	6.9			16.18	9.21	37.41	4.8	8.2	4.8
+28U	17.2			18.19	10.12	41.47	13.5	22.4	13.2
+20U	19.6			20.59	9.90	48.71	17.5	25.0	17.6
+14U	17.9			24.29	8.11	58.20	18.8	18.7	19.2
+10u	13.6			26.76	7.05	62.31	15.8	12.3	15.6
-10u	22.2			30.79	4.71	72.06	29.6	13.4	29.5
Total	97.4		Calcule	23.72	7.98	55.60	100.0	100.0	100.0
			Analyse	24.07	8.00	55.84			

MATTAGAMI LAKE MINES LTD

GRUM TEST JAN-3/3

CALCULATION SHEET

ECHANTILLON

UAN-313

DATE

6/6/76

In Rehtail

	Poids %	Poids Calc. %	Analyses % ou oz./Ton			DISTRIBUTION %			
			Ag	Zn	Pb	Ag	Zn	Pb	
+65.									
+100.									
+150.									
+200.	3.0		.53	2.74	.72	3.6	8.7	3.5	
+56J	4.0		.53	1.76	.57	4.8	7.5	3.7	
+40J	19.2		.32	.96	.51	13.8	19.6	15.9	
+28U	29.1		.27	.48	.37	17.6	14.5	17.6	
+20u	14.0		.21	.42	.34	6.6	6.2	7.8	
+14U	7.9		.32	.52	.35	5.7	4.4	4.5	
+10u	4.6		.63	1.07	.49	6.5	5.2	3.7	
-10u	14.5		1.27	2.17	1.83	41.4	33.6	43.3	
Total	96.3		Calcule	.46	.98	.64	100.0	100.0	100.0
			Analyse	.38	.77	.69			

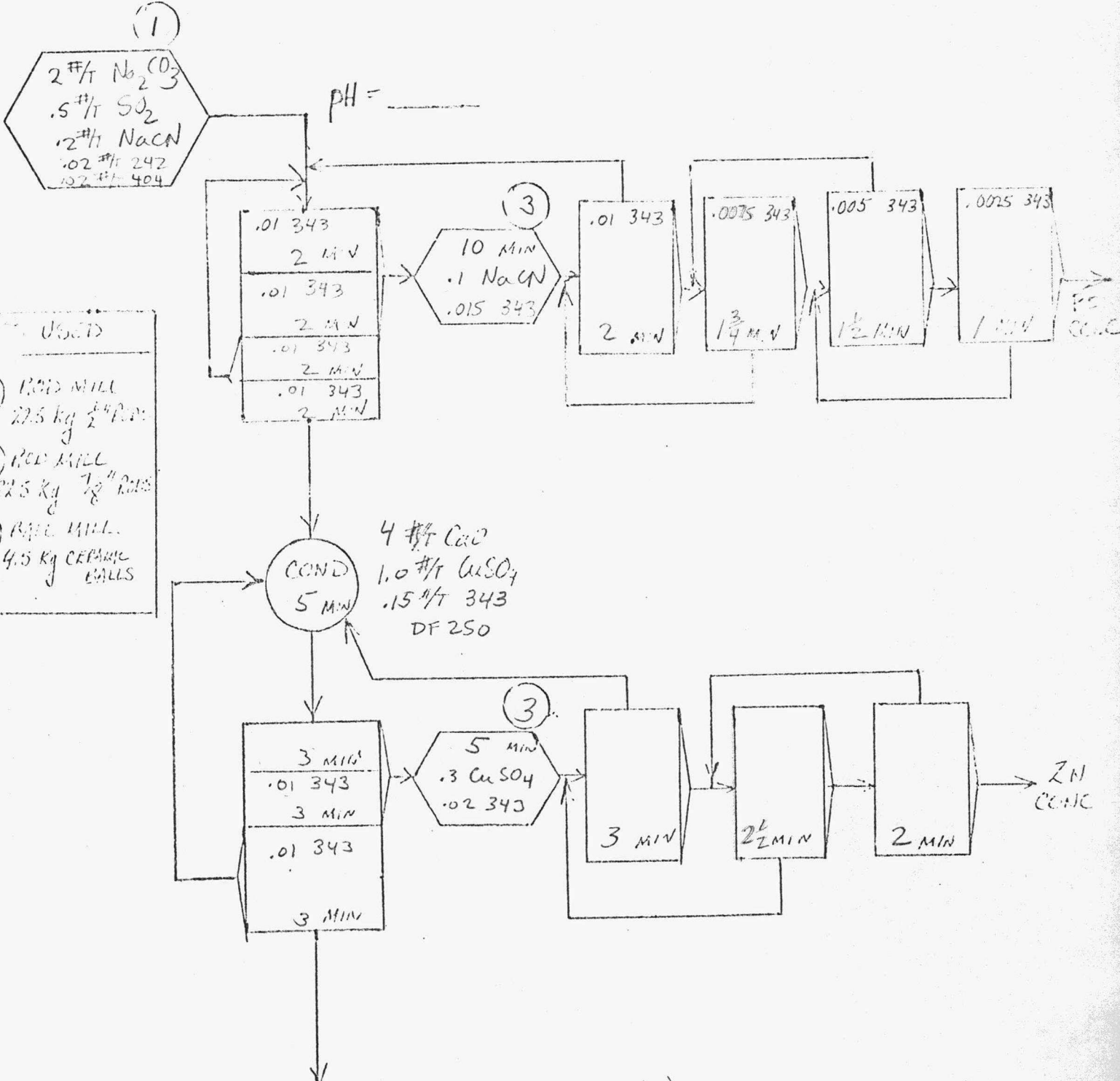
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 314

ORE TYPE: COMPOSITE 2

DATE: 17 MAY 77

OF CYCLES: 6



- UNIT USED
- (1) ROD MILL
22.5 kg 1/2" Rods
 - (2) ROD MILL
22.5 kg 7/8" Rods
 - (3) ROD MILL
4.5 kg CERAMIC BALLS

ZN REGR TAILING (4th cycle)

%-200M 93.4
 %-325M 72.1

DETAILED RESULTS OF CYCLE TEST

SAMPLE	WEIGHT	ANALYSES			% OZ/CR PPM
	GRAMS	Ag	Pb	Zn	
Pb core 1	16.7	28.35	65.41	5.78	
Pb core 2	40.7	26.57	60.13	6.89	
Pb core 3	48.5	24.29	58.34	7.12	
Pb core 4	50.8	23.67	55.14	7.89	
Pb core 5	35.9	26.14	60.87	6.75	
Pb core 6	41.7	22.92	55.32	8.16	
Pb scan core	63.0	5.78	14.59	12.12	
Zn core 1	116.1	1.82	4.55	54.25	
Zn core 2	123.6	1.92	1.33	53.25	
Zn core 3	130.0	1.92	1.47	54.39	
Zn core 4	126.6	1.82	1.50	55.39	
Zn core 5	130.1	1.82	1.54	55.64	
Zn core 6	135.4	1.72	1.53	54.94	
Zn scan core	24.2	2.78	6.22	13.75	
Zn Bldg tail 1	692.0	0.43	0.60	0.60	
Zn Bldg tail 2	738.0	0.43	0.60	0.68	
Zn Bldg tail 3	725.0	0.53	0.75	0.82	
Zn Bldg tail 4	785.0	0.43	0.75	0.86	
Zn Bldg tail 5	802.0	0.43	0.89	1.24	
Zn Bldg tail 6	790.0	0.63	0.92	0.98	
40 lb eln tail	14.5	15.75	40.45	10.01	
30 lb eln tail	19.3	11.68	30.85	10.49	
20 lb eln tail	47.5	9.10	24.13	11.49	
10 lb eln tail	73.7	6.75	12.19	11.31	
3 Zn eln tail	15.6	3.32	6.54	27.47	
2 Zn eln tail	16.8	3.85	8.05	21.32	
1 Zn eln tail	71.5	3.85	8.29	20.84	
Head	5934.8	1.96	4.06	8.84	

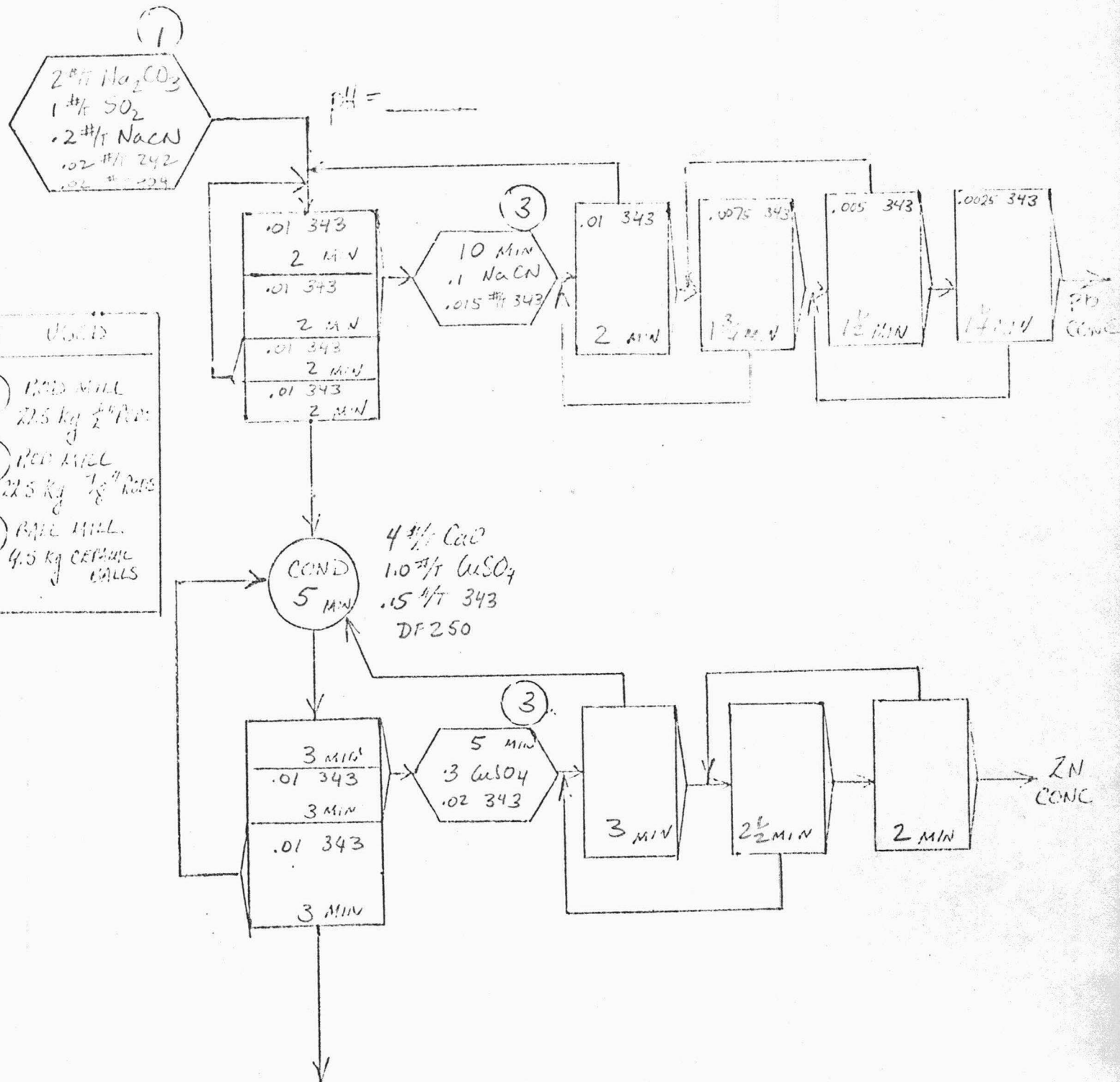
MATTAGAMI LAKE MINES LTD CONCENTRATOR LABORATORY

TEST #: VAN 315

ORE TYPE: COMPOSITE 2

DATE: 18 MAY 77

OF CYCLES: 6



- | MIN | USED |
|-----|-----------------------------------|
| 1 | RED MILL
22.5 kg 1/2" Rods |
| 2 | RED MILL
22.5 kg 1/8" Rods |
| 3 | RAIL MILL
4.5 kg CERAMIC BALLS |

ZN REHR TAILING (4th cycle)
 %-200M 88.4
 %-325M 66.0

MATTAGAMI LAKE MINES LIMITED

CYCLE TEST: VAN 315

DATE: 18 MAR 77

TOTAL WEIGHT IN: 5932.9 GRAMS

TOTAL WEIGHT OUT PER CYCLE :

CYCLE 1	<u>820.2</u>
2	<u>902.1</u>
3	<u>973.3</u>
4	<u>947.2</u>
5	<u>973.9</u>
6	<u>956.3</u>
7	_____
8	_____

PROJECTED "CIRCUIT" RESULTS

	WEIGHT		ANALYSES % OZ/T, PPM			% DISTRIBUTION		
	GMS	%	Ag	Pb	Zn	Ag	Pb	Zn
Pb CONCENTRATE	48	4.8	24.6	57	8.3	72.3	75.0	4.7
Zn CONCENTRATE	137	13.9	1.5	2.0	52.5	12.8	7.6	86.6
FLOAT TAIL	800	81.3	.3	.78	.90	14.9	17.4	8.7
HEAD	985	100.0	1.63	3.65	8.43	100.0	100.0	100.0

REMARKS: Slightly COARSER PRIMARY GRIND
 SO₂ INSTEAD OF ZnSO₄
 no CaO to Zn Clhrs.

DETAILED RESULTS OF CYCLE TEST

SAMPLE	WEIGHT	ANALYSES			% OZ/A OR PPM
	GRAMS	Ag	Pb	Zn	
Pb Cone 1	11.3	34.20	73.98	4.37	
Pb Cone 2	57.2	25.27	57.76	8.74	
Pb Cone 3	40.3	25.92	58.45	8.09	
Pb Cone 4	47.5	24.63	56.92	8.93	
Pb Cone 5	36.8	25.72	58.11	8.36	
Pb Cone 6	32.2	25.49	60.55	8.15	
Pb Seav. Cone 6	36.5	5.27	14.02	12.57	
Zn Cone 1	120.1	1.50	1.82	52.85	
Zn Cone 2	129.9	1.50	1.79	53.50	
Zn Cone 3	146.0	1.72	2.18	52.39	
Zn Cone 4	132.7	1.61	2.08	51.89	
Zn Cone 5	126.1	1.61	1.96	52.89	
Zn Cone 6	143.1	1.50	1.98	51.44	
Zn Seav. Cone	29.5	1.93	3.60	11.97	
Pb Seav. Cone 5	68.2	5.05	12.77	14.78	
Zn Byke Tail 1	688.0	0.42	0.59	0.57	
Zn Byke Tail 2	746.0	0.22	0.64	0.72	
Zn Byke Tail 3	787.0	0.22	0.76	0.92	
Zn Byke Tail 4	767.0	0.22	0.71	0.85	
Zn Byke Tail 5	811.0	0.42	0.78	1.05	
Zn Byke Tail 6	781.0	0.22	0.77	0.84	
40 Pb elev tail	14.6	16.78	38.03	12.27	
30 Pb elev tail	20.6	14.73	33.96	11.02	
20 Pb elev tail	18.8	11.83	27.75	11.48	
10 Pb elev tail	61.8	8.38	20.24	12.65	
3 Zn elev tail	26.6	3.98	7.59	15.46	
2 Zn elev tail	32.8	4.19	8.42	17.29	
1 Zn elev tail	45.3	3.22	6.76	11.02	
Head	5932.9	1.68	3.94	8.60	