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MATTAGAMI LAKE MINES LIMITED

Matagami, Que.

INTER-OFFICE MEMORANDUM

FROM K.V. Konigsmann

TO R.L. Coleman

DATE July 30, 1976

COPY TO B.P. Wallace

SUBJECT

COPY TO E. Kirkpatrick

FILE No.

COPY TO

Grum Flotation

Results obtained lately in flotation tests with Grum ore are discussed below. Tests were with "B" ores, which represent the most important tonnage of reserves. Current cycle tests yield the following average analyses - for the last three cycles of a six cycle test:

(VAN-86, appended)

	Analyses, oz/t or %		
	Ag	Pb	Zn
Mill Feed	3.8	8.7	16.1
Lead Concentrate	19.0	50.0	15.8
Zinc Concentrate	2.4	3.0	57.2
Mill Tailings	1.1	1.9	3.6

There has been improvement in lead rougher flotation which gives cause for hope of a pure flotation solution to the mineral beneficiation challenge at Grum. Zinc flotation yields a high grade concentrate but is still far from satisfactory with respect to recovery. High circulating loads are carried in cleaner circuits. The above tailings analyses are not indicative of circuit performance. After six cycles a flotation test with Grum ore has not yet reached equilibrium.

It might be opportune to discuss at some length the interpretation of cycle test results for the purpose of prognosis of metal recoveries. A forecast based solely on analyses is acceptable only if circuits had reached "steady state". There are two criteria which have to be fulfilled in cycle tests before "steady" conditions can be assumed.

a. Analyses of final products should show an even trend.

b. The combined weights of the final products of the last cycle have to be equal to the weight of ore used in this cycle; if they are not, a circulating load accumulates somewhere. In the case of test #VAN-86 product weights were:

Lead Conc (3 last cycles)	110	gr per cycle
Zinc Conc	153	gr " "
Flotation Tailings	659	gr " "
	922	gr " "

feed weight per cycle averaged 950 grams. The circuit was close to but had not reached steady state.

Metal distributions based on analyses only are:

	% Metal Distribution		
	Ag	Pb	Zn
Mill Feed	100	100	100
Lead Concentrate	68.1	75.5	13.4
Zinc Concentrate	12.8	7.0	71.8
Flotation Tailings	19.1	14.5	14.8

Metal distributions determined from actual concentrate weights in the last three cycles give much lower recoveries.

	% Metal Distribution		
	Ag	Pb	Zn
Mill Feed	100	100	100
Lead Concentrate	57.9	66	
Zinc Concentrate			57.2

The wide gap between both interpretations is another indication of still increasing circulating loads during the last cycles.

After careful scrutiny of results produced in recent testing, I assess the current state of flow-sheet development as yielding products on "B" ores as follows:

	Analyses, oz/t or %			Recoveries %		
	Ag	Pb	Zn	Ag	Pb	Zn
Mill Feed	3.8	8.7	16.1			
Lead concentrates	20	50+	10-15	65	75	
Zinc concentrates	3	3	54+			65

Saleable products are now consistently produced, tests of the immediate future will be focussed on

- increased recovery of zinc in particular and reduction of circulating loads in cleaner circuits by regrinding zinc cleaner products

- the B sample of the Lakefield pilot plant run will be subjected to the same test procedure.

- tests will be lengthened up to ten cycles to reduce the ambiguity of interpretation of results.

K. Kaugsmann

VAN # 86

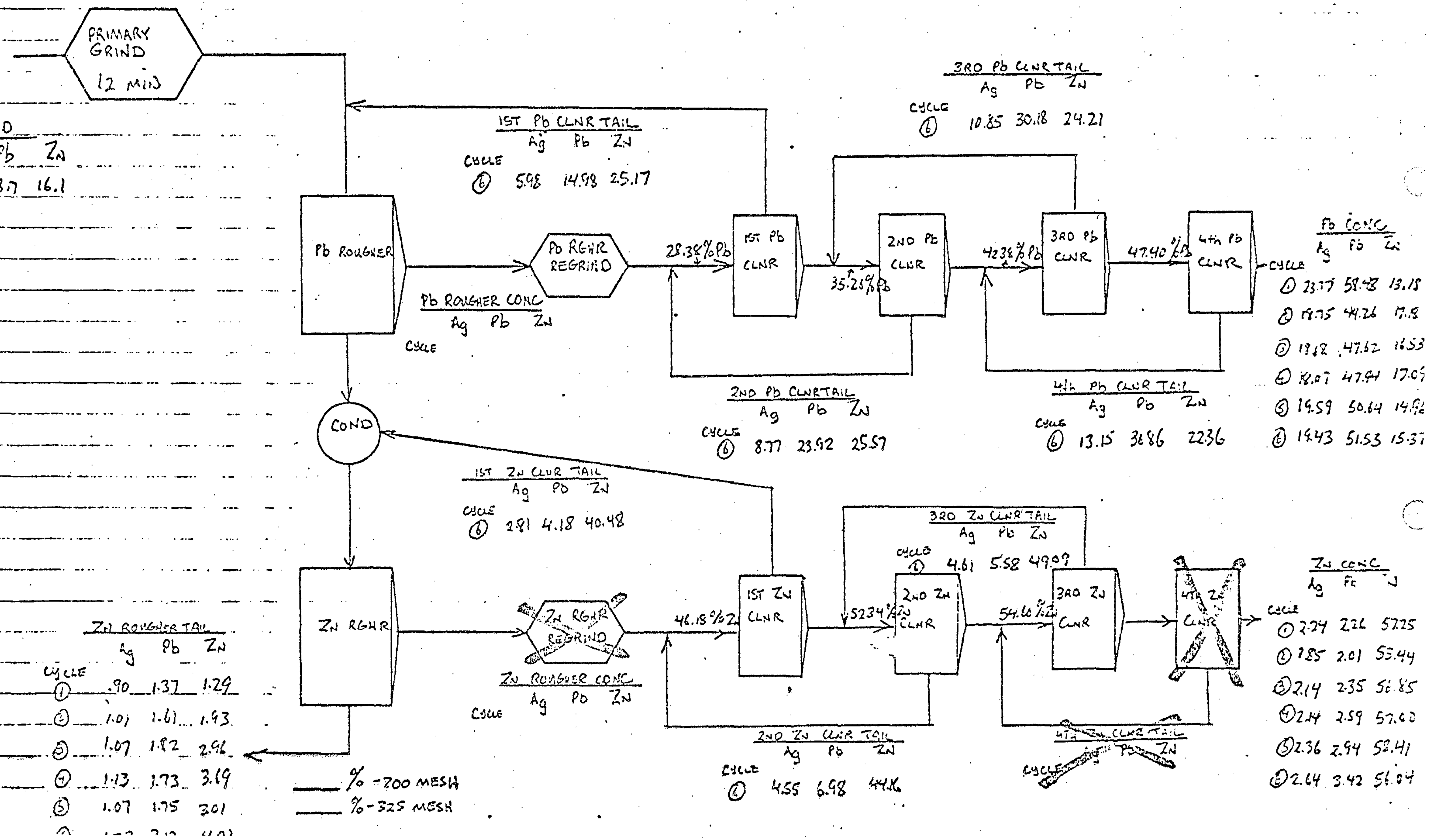
DATE : 30 JULY

SAMPLE		WEIGHT GMS	Ag OZ/T	% Pb	% Zn
Pb CONC	1	48.7	23.77	58.48	13.18
	2	115.3	18.75	49.26	17.18
	3	118.1	18.68	47.62	16.53
	4	139.4	18.07	47.94	17.09
	5	99.4	19.59	50.64	14.96
	6	93.3	19.43	51.53	15.37
Zn CONC	1	58.6	2.24	2.26	57.25
	2	195.8	1.85	2.01	55.44
	3	111.0	2.14	2.35	56.85
	4	160.6	2.14	2.59	57.00
	5	149.0	2.36	2.94	58.41
	6	149.5	2.64	3.42	56.04
Zn RGHR TAILS	1	411.2	.90	1.37	1.29
	2	489.6	1.01	1.61	1.93
	3	590.5	1.07	1.82	2.96
	4	664.7	1.13	1.73	3.69
	5	664.4	1.07	1.75	3.13
	6	647.8	1.23	2.12	4.01
1ST Pb CLNR TAILS		152.8	5.98	14.95	25.17
2ND Pb CLNR TAILS		115.1	8.77	23.92	25.57
3RD Pb CLNR TAILS		53.5	10.85	30.18	24.21
4TH Pb CLNR TAILS		36.5	13.15	36.86	22.36
1ST Zn CLNR TAILS		258.7	2.81	4.18	40.48
2ND Zn CLNR TALS		53.0	4.55	6.98	44.16
3RD Zn CLNR TAILS		37.1	4.61	5.58	49.09
HEADS		5613.6	3.83	8.65	16.12

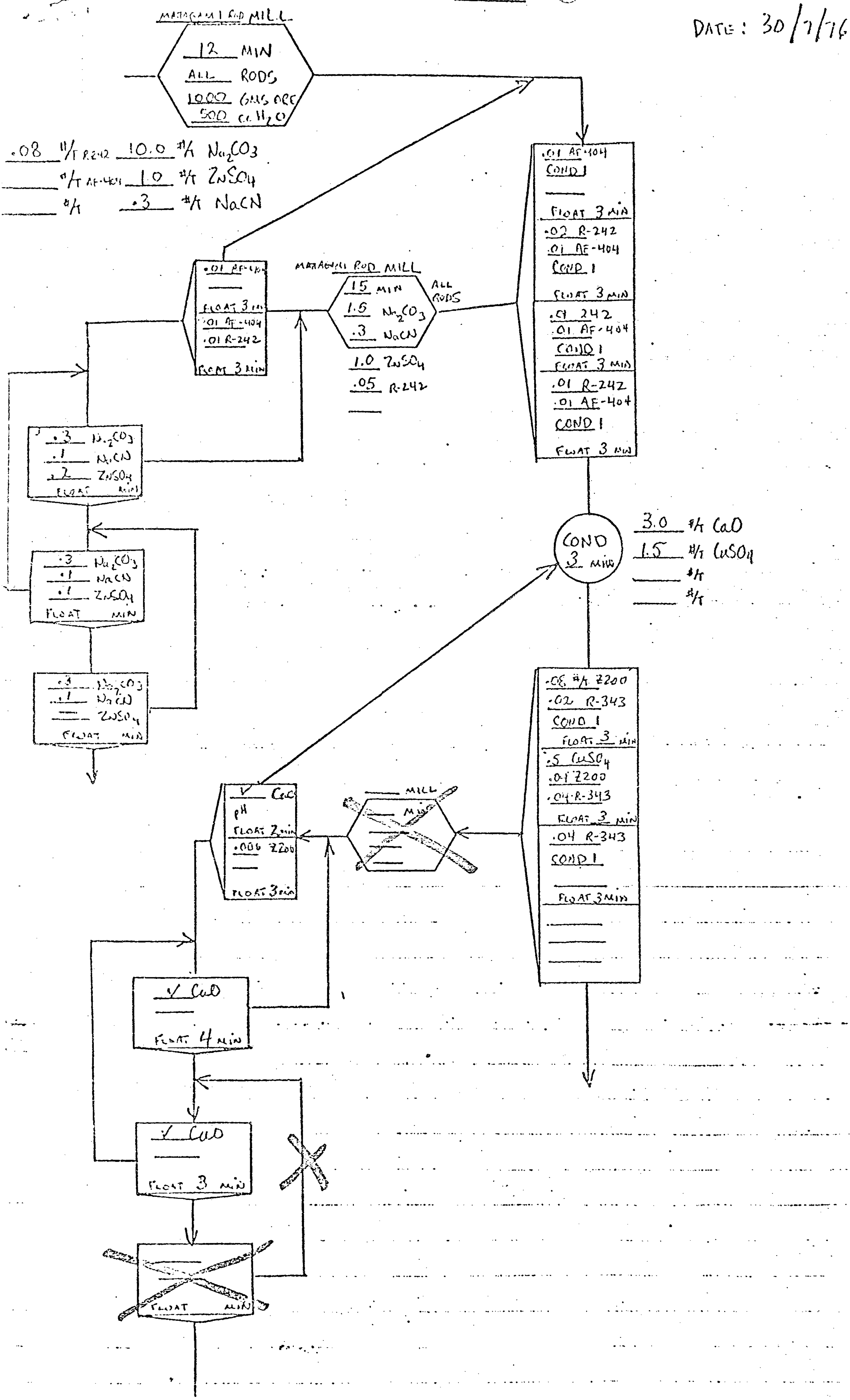
GRUM TESTWORK

TEST #: VAN-86

DATE: 30/7/76



DATE: 30/7/76



MATAGAMI ROD MILL
12 MIN
ALL RODS
1000 GMS ORE
500 cc H_2O
.08 #/T R-242 10.0 #/T Na_2CO_3
#/T AF-404 1.0 #/T $ZnSO_4$
#/T .3 #/T NaCN
.01 AF-404
COND 1
FLOAT 3 MIN
.02 R-242
.01 AF-404
COND 1
FLOAT 3 MIN
.01 242
.01 AF-404
COND 1
FLOAT 3 MIN
.01 R-242
.01 AF-404
COND 1
FLOAT 3 MIN
MATAGAMI ROD MILL
15 MIN
1.5 Na_2CO_3
.3 NaCN
ALL RODS
1.0 $ZnSO_4$
.05 R-242
FLOAT 3 MIN
.01 AF-404
.01 R-242
FLOAT 3 MIN
.3 Na_2CO_3
.1 NaCN
.2 $ZnSO_4$
FLOAT MIN
.3 Na_2CO_3
.1 NaCN
.1 $ZnSO_4$
FLOAT MIN
.3 Na_2CO_3
.1 NaCN
$ZnSO_4$
FLOAT MIN
COND 3 MIN
3.0 #/T CaO
1.5 #/T $CuSO_4$
#/T
#/T
.08 #/T Z200
.02 R-343
COND 1
FLOAT 3 MIN
.5 $CuSO_4$
.01 Z200
.04 R-343
FLOAT 3 MIN
.04 R-343
COND 1
FLOAT 3 MIN
MILL
MIN
✓ CaO
pH
FLOAT 2 MIN
.006 Z200
FLOAT 3 MIN
✓ CaO
FLOAT 4 MIN
✓ CaO
FLOAT 3 MIN
FLOAT MIN