

ARIS SUMMARY SHEET

District Geologist, Kamloops

Off Confidential: 90.12.14

ASSESSMENT REPORT 19858

MINING DIVISION: Kamloops

PROPERTY: Getty
LOCATION: LAT 50 34 15 LONG 120 59 45
UTM 10 6048666 629564
NTS 092I10W

CAMP: 018 Highland Valley Camp

CLAIM(S): Getty A Fr., Getty 1-24

OPERATOR(S): Robak Ind.

AUTHOR(S): Gower, S.C.

REPORT YEAR: 1990, 49 Pages

COMMODITIES

SEARCHED FOR: Copper, Molybdenum/Molybdenite, Gold, Silver

KEYWORDS: Guichon Creek Batholith, Fracture zone, Malachite, Chrysocolla
Azurite, Chalcocite

WORK

DONE: Geological, Geochemical
META 1 sample(s) ; BULK
Map(s) - 1; Scale(s) - 1:200

RELATED

REPORTS: 17974
MAP FILE: 092INE038

BULK SAMPLING AND METALLURGICAL STUDIES
on the

GETTY CLAIMS

HIGHLAND VALLEY AREA

FILMED

KAMLOOPS MINING DIVISION, B.C.
NTS 92 I/10W
LATITUDE 50°34'
LONGITUDE 121°00'
120 59 54

LOG NO:	0404	RD.
ACTION:		
FILE NO:		

Prepared for
ROBAK INDUSTRIES & JOHN LEPINSKI

2520 Ashurst Avenue
Coquitlam, B.C.
V3K 5T4

LOG NO:	0731	RD. 2
ACTION:	date received back from amendment	
FILE NO:		

by
GOWER, THOMPSON & ASSOCIATES LTD.
#201 - 615 Eighth Street
NEW WESTMINSTER, B.C.
V3M 5T5

February 14, 1990

STEPHEN C. GOWER
B.Sc., F.G.A.C.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

19,858



Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
METALLURGICAL	32,005.01

AUTHOR(S) ... STEPHEN C. GOWER SIGNATURE(S) *Stephen C. Gower*

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED December 14, 1989... YEAR OF WORK 89..

PROPERTY NAME(S) ... Getty.....

COMMODITIES PRESENT Copper, Molybdenum, Gold, Silver.....

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

MINING DIVISION ... Kamloops..... NTS .. 92.I./10W.....

LATITUDE ... 50° 34'..... LONGITUDE ... 121° 00'.....

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 92 (claims involved)]:

... Getty 1 - 24. "A" FR, 26 (8 units) 27-53, 54 (4 units) 55-60, 61 (9 units) 62....
... (9 units) 63-66, 67 FR, 68-74, 75 FR, 79 FR, 80, 81, 82 FR, 83 FR, 84 FR, 85-92.

OWNER(S)

(1) Getty 1-24. "A" FR. - ROBAK (2) ALL OTHERS - JOHN LEPINSKI.....
Industries Ltd. (Controlled by John Lepinski)

MAILING ADDRESS

2520 Ashurst Avenue.....
Coquitlam, B.C. ... V3K 5T4.....

OPERATOR(S) (that is, Company paying for the work)

(1) John Lepinski..... (2)

MAILING ADDRESS

2520 Ashurst Avenue.....
Coquitlam, B.C. ... V3K 5T4.....

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The claim area is underlain by Guichon Quartz diorite intruded by Bethlehem
Porphyry. The Porphyry copper deposit occurs within a northwest trending fracture
system. The deposit consists of a zone of copper oxides partially capping an
underlying primary sulphide zone.

REFERENCES TO PREVIOUS WORK ... Assessment Reports Gower Thompson & Associates Ltd.

..... 1989: 1986

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- Appendix A - Metallurgical Test Report ✓
- Appendix B - Break Down of Costs - Bacon & Donaldson & Assoc. Ltd. ✓

ILLUSTRATIONS

Property Location Map	1" = 136 miles /
Property Location Map	1: 1,584,000 /
Geology Map	1: 190,080 /
Claim Map	1" = 1/2 mile /
Sample location map - surface oxide zone	1: 200 ✓

STATEMENT OF COSTS

A) Bacon Donaldson & Associates Ltd. - See Appendix A	
Technicians - Professional Fees	\$14,109.00
Engineers - Professional Fees	7,550.00
Secretarial - Wages	917.50
Assays	5,548.28
Direct Charges	<u>900.39</u>
Sub Total	<u>\$29,025.17</u>
B) Gower Thompson & Associates Ltd.	
Bulk sampling of Mineral Zone	
Stephen Gower May 23, 24, 25, 26 (4 days @ \$250.00)	\$ 1,000.00
Elaine Thompson May 23, 24, 25, 26 (4 days @ \$250.00)	600.00
Truck Rental 5 days @ \$70.00 per day	350.00
Motels	159.84
Feed Sacks & Flagging	<u>35.00</u>
Sub Total	<u>\$ 2,144.84</u>
C) Report Costs	
Drafting 4 hours @ \$22.50 per hour	\$ 90.00
Typing	175.00
Professional Fees 2 days @ \$285.00	<u>570.00</u>
Sub Total	<u>\$ 835.00</u>
TOTAL A, B, C	<u>\$32,005.01</u>
AMOUNT CLAIMED AS PER FILING DEC. 14, 1989	<u>\$30,173.35</u>

TERMS OF REFERENCE

Gower Thompson & Associates Ltd. was retained by Robak Industries to procure an additional bulk sample from the oxide zone of the Getty deposit and transport it to Bacon Donaldson & Associates Ltd. for metallurgical testing. This sample consisted of thirty sacks of rock totalling approximately 350 kilograms. Each sack contained approximately four samples of rock in sealed plastic bags. Extreme care was taken to minimize loss of oxide copper during the sampling procedure.

The sample material procured was obtained by breaking into the outcrop face with sludge hammers over a distance of approximately 5 metres to a depth of approximately 0.3 metres. Representative samples of broken rock were randomly selected and placed into sample bags. The sample selected constituted a representative panel sample across the cliff face over a distance of 5 metres X 2 metres X 0.1 metres.

SUMMARY

The Getty Property is located approximately 650 metres (2,200 feet) east of North Forge Mountain about 10 kilometres (6 miles) north of Valley Copper Mine in the Highland Valley District, Kamloops, M.D., N.T.S. 92 I/10W, Latitude 50°34', Longitude 120°00'. The property consists of the Gerry #II group of mineral claims. These claims are wholly owned by Robak Industries, or John Lepinski.

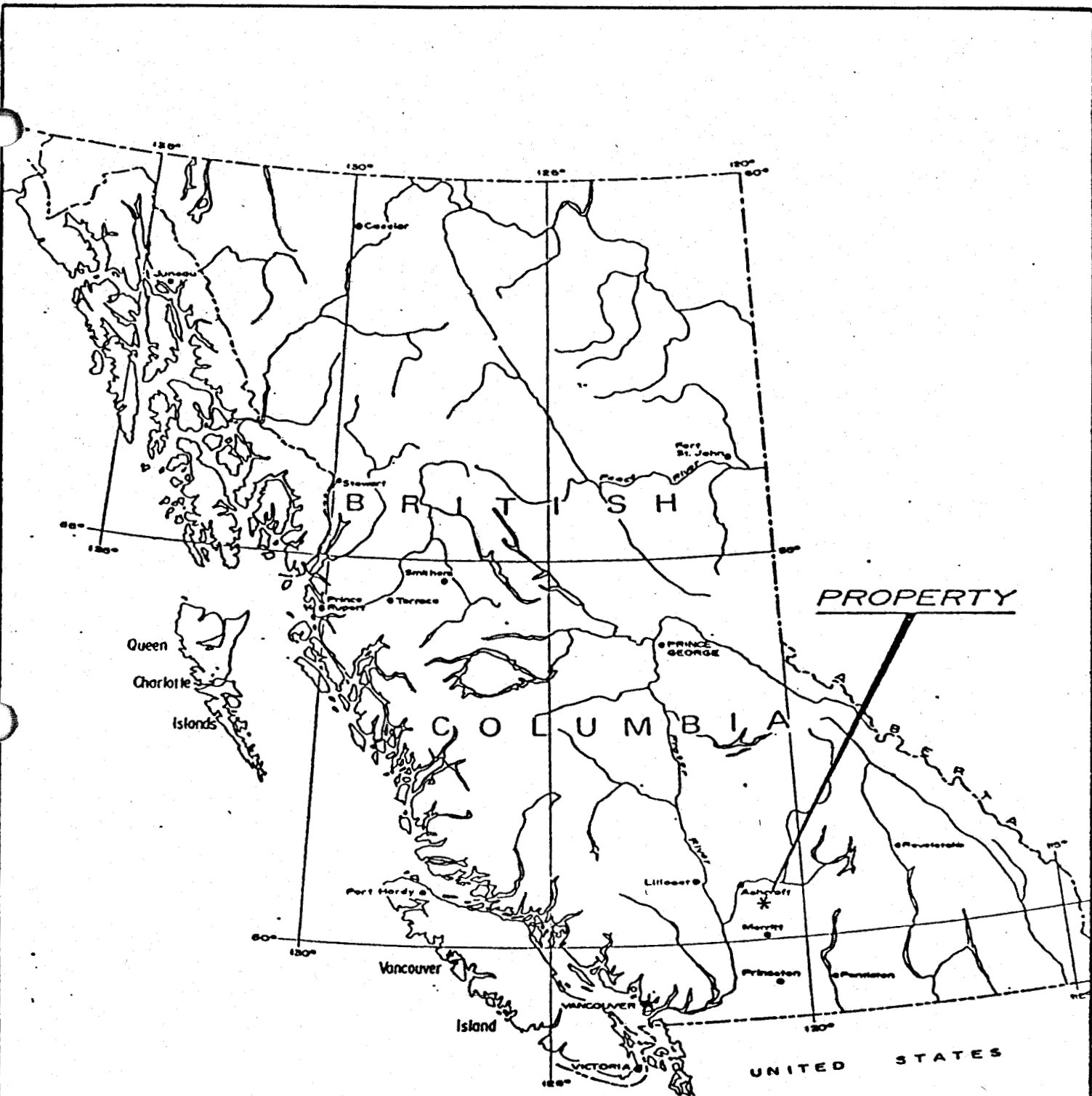
Access to the property is via the South Seas Trojan Road, which leaves the main Highland Valley road at the Old Bethlehem Mine.

The claim area is underlain by Guichon quartz diorite intruded by Bethlehem Porphyry. The mineral zone occurs within a northwest trending fracture system which also hosts the Bethlehem and Trojan South-Seas deposits.

The mineral deposit consists of a zone of copper oxides partially capping a primary sulphide mineral zone which extends to an additional depth of at least 150 metres (500 feet).

This program consisted of procuring an additional bulk sample across the oxide zone at surface to test the leaching characteristics of the mineralization.

A program of reverse circulation or diamond drilling, metallurgical testing and bulldozer trenching is recommended to evaluate the feasibility of mining the oxide and primary deposits.

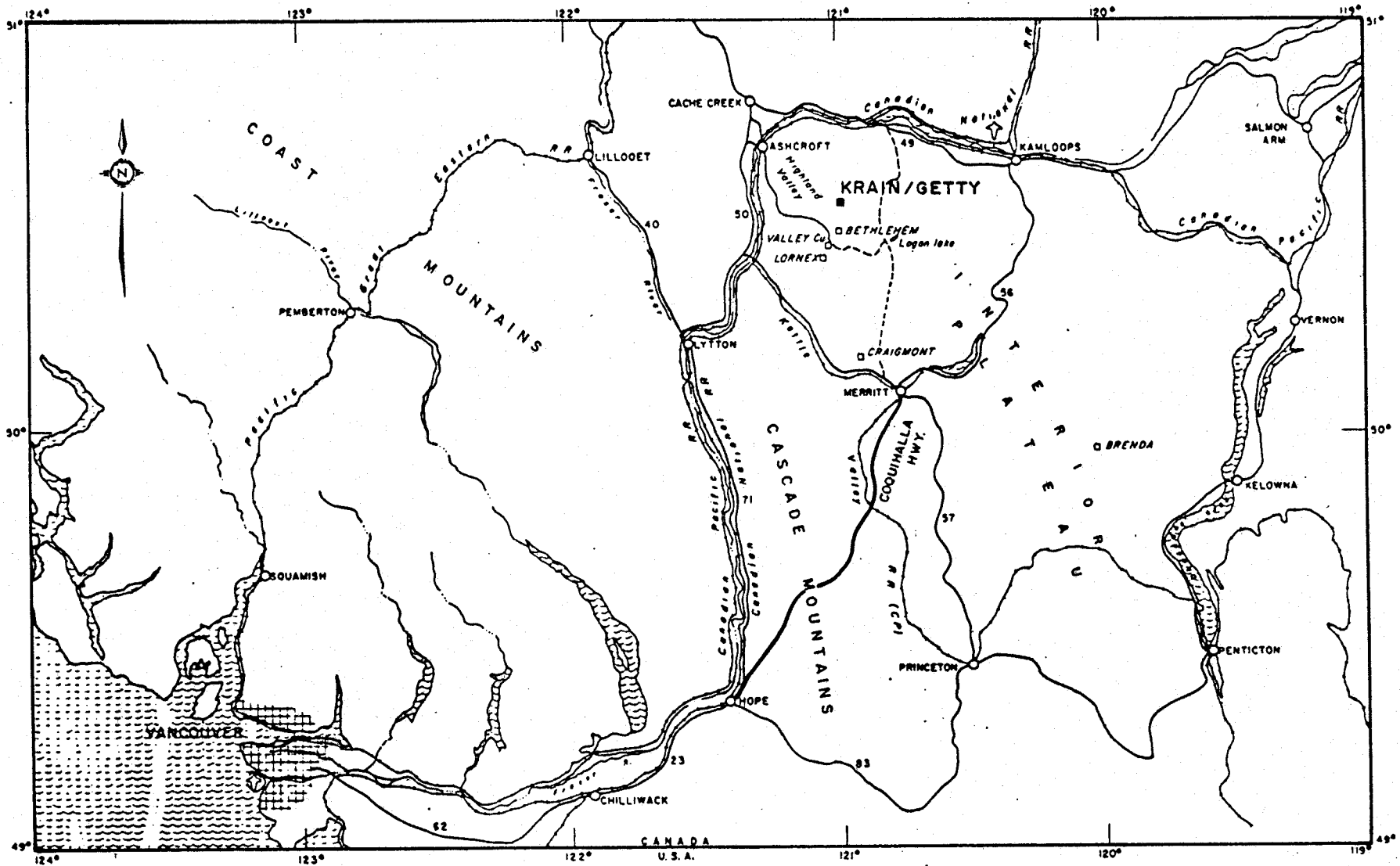


KRAIN/GETTY PROPERTY

LOCATION MAP

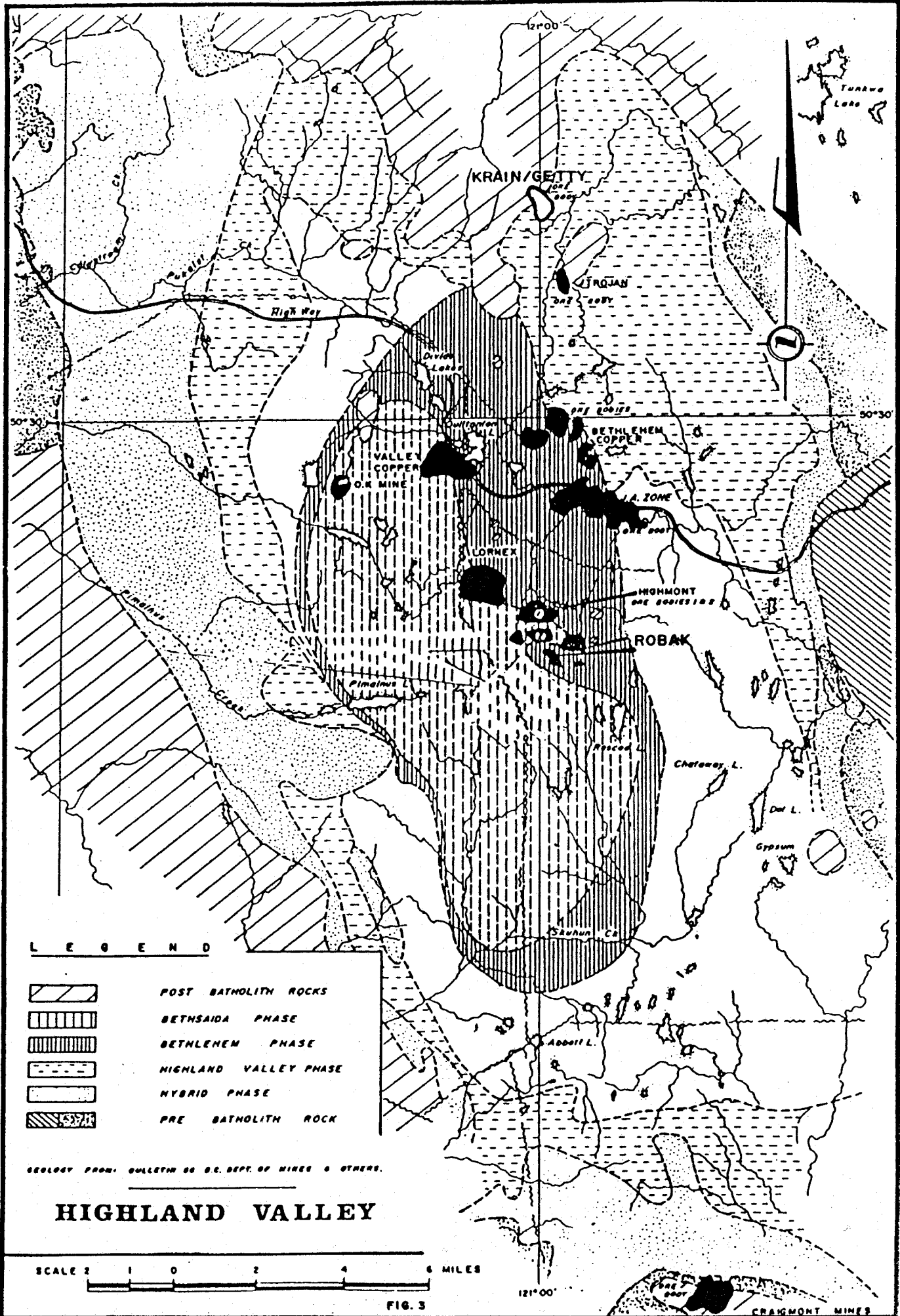
HIGHLAND VALLEY, B.C.

SCALE
1" = 136 Miles



LOCATION MAP





LOCATION AND ACCESS

The Getty property is located in the northern portion of the Highland Valley area of southern British Columbia. The claims are situated about 24 miles southeast of Ashcroft and 45 miles southwest of Kamloops, in the Kamloops Mining Division, at approximately 50 degrees 35' N latitude and 121 degrees 00'W longitude. Access to the property is via the Getty-Trojan Road for a distance of approximately 4 miles from the main Highland Valley Road at the Cominco-Bethlehem Mine. Further access is via recently constructed haulage roads from Savona.

CLAIM STATUS

The following claims were grouped December 14, 1989 as the Getty #II Group.

<u>CLAIM NAME</u>	<u>RECORD #</u>	<u>UNITS</u>
Getty 26	8269	8
Getty 27	8270	1
Getty 28	8271	1
Getty 29	8272	1
Getty 30	8273	1
Getty 31	8274	1
Getty 32	8275	1
Getty 33	8276	1
Getty 34	8277	1
Getty 35	8278	1
Getty 36	8279	1
Getty 37	8280	1
Getty 38	8281	1
Getty 39	8487	1
Getty 40	8488	1
Getty 41	8489	1
Getty 42	8490	1
Getty 43	8491	1
Getty 44	8492	1
Getty 45	8493	1
Getty 46	8494	1
Getty 47	8495	1
Getty 48	8496	1
Getty 49	8497	1
Getty 50	8498	1
Getty 51	8499	1
Getty 52	8500	1
Getty 53	8501	1
Getty 54	8502	4
Getty 55	8503	1
Getty 56	8504	1
Getty 57	8505	1
Getty 58	8506	1
Getty 59	8507	1
Getty 60	8508	1
Getty 61	8557	9
Getty 62	8558	9
Getty 63	8559	1
Getty 64	8560	1
Getty 65	8561	1

CLAIM STATUS

<u>CLAIM NAME</u>	<u>RECORD #</u>	<u>UNITS</u>
Getty 66	8562	1
Getty 67 FR	8563	1
Getty 68	8564	1
Getty 69	8565	1
Getty 70	8566	1
Getty 71	8567	1
Getty 72	8568	1
Getty 73	8569	1
Getty 74	8570	1
Getty 75 FR	8571	1
Getty 76 FR	8572	1
Getty 77 FR	8573	1
Getty 78 FR	8574	1
Getty 79 FR	8575	1
Getty 87	8583	1
Getty 88	8590	1
Getty 89	8591	1
Getty 90	8592	1
Getty 7	128549	1
Getty 8	128550	1
Getty 1	128405	1
Getty 2	128406	1
Getty "A" FR	128567	1
Getty 3	128545	1
Getty 4	128546	1
Getty 21	128563	2

SAMPLE DESCRIPTION AND LOCATION

The bulk sample was procured from the area of sample sites KR-86-001 to KR-86-003 including "A" sample sites. A map of the sample area, "fig 5", is included and should be referred to for sample information.

Copper mineralization in the bulk sample consists of malachite, chrysocolla, azurite, and a black waxy copper oxide. These minerals occur filling fractures along jointing planes and filling cavities. Chalcocite probably forms a major component of the waxy copper mineral. These minerals are contained in oxidized quartz diorite.

RECOMMENDATIONS

Based on the information developed to date it is believed that the Getty deposit contains both oxide and sulphide ore which can be mined and treated economically. Two phases of development are proposed at this time.

PHASE I

This phase is directed at the rapid development of the oxide ore to bring this reserve into commercial production by the end of 1990. The major activities through to the completion of a feasibility study are as follows:

(1) DRILLING

It is recommended that a minimum of 25,000 feet of drilling be undertaken to confirm the existing data on tonnage and grade, and develop additional reserves.

(2) METALLURGICAL TESTWORK

The drilling program will provide samples from various areas of the deposit. Each sample is to be subjected to a batch laboratory acid leach test to determine the copper grade, copper extraction and acid consumption. The results of these tests will demonstrate the variability across the deposit.

(3) BULK SAMPLE TESTING

A bulk sample is to be obtained from the deposit for the detailed metallurgical testwork. Portions of this sample will be crushed to different sizes and placed in columns for leaching tests to confirm acid requirements, leaching rate and ultimate extraction at the different sizes. Solvent extraction tests will be conducted on solutions from these column tests.

(4) ENVIRONMENTAL

In order to obtain permits, environmental background information has to be developed for the property. It is preferable to start this program early in spring so that data for the spring run-off period are developed without delay. It is recommended that an environmental consultant be retained as soon as financing for this initial phase of development is in place.

RECOMMENDATIONS

(5) PERMITTING

Since the deposit is located in an active mining area no problems are anticipated in obtaining the necessary permits. Since this procedure generally requires a period of months it should be commenced as soon as development financing is obtained.

(6) FEASIBILITY STUDY

It is recommended that the preparation of a feasibility study be commenced as soon as development financing is in place. By having the engineering group responsible for the study involved during the drilling and metallurgical testing phases of the project the preparation of the feasibility study can be completed without delay.

(7) COSTS (CAN.)

	<u>FEASIBILITY PRODUCTION</u>	<u>INCREASED RESERVES SULPHIDE ORE</u>
Bulk sampling	\$100,000	Additional 50,000
Drilling - 25,000 sq.ft.	\$625,000	(1,250,000)
Metallurgical Studies	\$200,000	(100,000)
Engineering	\$100,000	(100,000)
Environmental	\$150,000	(75,000)
Feasibility	<u>\$200,000</u>	<u>(100,000)</u>
 SUB TOTAL	 <u>\$1,375,000</u>	 <u>(1,675,000)</u>
 TOTAL BOTH CATEGORIES		 <u>\$3,050,000</u>

PHASE II

This phase is directed at the development of the sulphide reserves. It is recommended that the target for achieving production from the sulphide ore be late in the third year of oxide zone production. By this time the mining of the oxide should have progressed to the point that sufficient sulphide has been exposed to sustain a production rate of ten to twenty thousand tons per day. With this schedule a substantial portion of the capital cost of the oxide operation will be paid off before the sulphide plant has to be financed This will minimize the financial exposure on the project.

CERTIFICATE OF QUALIFICATIONS

I, Stephen C. Gower, of 985 Gatensbury Street, Coquitlam, B.C., do hereby certify that:

1. I have been practising as a geologist of a period of approximately 20 years for mining, exploration and consulting companies.
2. I obtained a B.Sc. in geology from U.B.C. in 1970 and have taken Masters courses at U.B.C. in property evaluation and exploration.
3. I am a fellow in the Geological Association of Canada.
4. The bulk sampling work was carried out by Stephen C. Gower and Elaine M. Thompson during the period May 23 - 26, 1989.
5. I have no interest either directly or indirectly in the properties held by Robak Industries. It is possible at some future date that I may be entering into a business arrangement concerning the Getty property.

February, 1990



Stephen C. Gower

REFERENCES

Assessment reports Gower Thompson & Associates Ltd. 1984, 1986,
1989.

APPENDIX A

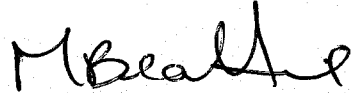
Metallurgical Test Report

**ACID LEACH TESTING
OF KRAIN / GETTY
OXIDE COPPER ORE**

Prepared for:

ROBAK INDUSTRIES LTD.

October 20, 1989


Dr. M. J. V. Beattie, P.Eng.



1.0 INTRODUCTION

Metallurgical testwork has been undertaken on a bulk sample of oxide ore from the Krain/Getty copper deposit. The objective of the test program was two fold. The first objective was to observe the effect of crush size on copper extraction while the second objective was to perform a column leach test to demonstrate the copper extraction to be achieved in a heap leach situation.

2.0 SUMMARY

The results of bottle roll tests indicate that the copper extraction increases as the ore is crushed finer. The use of a 3/4 inch topsize appears to be practical as it should be readily achieved and at the same time results in a copper extraction of greater than 70%.

A two stage column leach test was performed on ore crushed to 3/4 inches. During the first stage the copper extraction was 61.8% in 50 days of leaching. The second stage of leaching in a larger diameter column increased the overall extraction to approximately 80% over a total of 65 days of active leaching. The net sulphuric acid consumption over this period was 25.8 kg/tonne.

Future testwork should investigate the use of higher solution flowrates to determine whether a shorter leach time can be achieved.

3.0 DISCUSSION

3.1 Sample Description

The sample used for the testwork consisted of a bulk sample of oxide ore obtained from the property by S.C.Gower of Gower, Thompson & Associates Ltd. It was received by Bacon, Donaldson in 30 burlap sacks on May 31, 1989.

As received, the sample was damp and had a top size of approximately 9 cm. Oxide copper mineralization was readily visible in the sample. It was also noted that the malachite in particular tended to fall away from the sample quite readily during handling. Each sample bag had to be dried and cleaned carefully to avoid losing significant copper values.

Following air drying the entire sample was crushed to minus 1.9 cm (3/4 inch). Samples were riffled from the bulk sample for further crushing and for head assay.

The head assay for the sample was as follows:

Total Copper	=	1.80%
Oxide Copper	=	1.80%
Iron	=	3.80%

While the calculated feed assays for the bottle roll tests agree quite closely with the assay head, the calculated assay for the column test indicates a copper assay of 1.67% Cu.

The sample was analyzed for major rock forming elements and for trace impurities. The concentration of rock forming elements is summarized in Table 3.1 while the trace elements are included as Appendix I.

Table 3.1

Composition of Sample

Component	%
SiO ₂	62.10
Al ₂ O ₃	15.36
Fe ₂ O ₃	5.89
MgO	2.64
CaO	2.90
Na ₂ O	3.64
K ₂ O	1.40
TiO ₂	0.65
P ₂ O ₅	0.22
MnO	0.04
BaO	0.08
LOI	3.13

3.2 Bottle Roll Tests

Five day bottle roll tests were performed on samples crushed to three different top sizes. The test details are included in Appendix II and are summarized in Table 3.2.

Table 3.2

Bottle Roll Test Results

Test No.	Top Size Inch	Copper Extraction %	Acid Consumption kg/tonne	
			Total	Net
L11	3/4	75.9	34.1	11.9
L22	1/2	78.2	32.3	9.9
L44	3/8	78.7	31.1	9.0

The copper extraction curves for the tests as a function of time are included as Figures 1 through 3. The curves indicate that greater extraction than achieved in the five day period is possible in each case. The results indicate that the maximum copper extraction will be achieved at the finest possible crush size. For the purpose of the present program a 3/4 inch size was selected as appropriate since a copper extraction of 70 to 80% was seen as being achievable at this size.

The tests were performed by removing the pregnant solution each day and replacing it with fresh acid solution. Throughout the test the make-up acid strength was 15 g/L H_2SO_4 . As the copper in the rock became depleted the free acid remaining in the pregnant solution increased. Lower acid consumption could be achieved by reducing the free acid concentration as the test proceeds but this reduction would also decrease the copper extraction rate. The acid consumption achieved in a bottle test does not reflect accurately the consumption to be expected in a heap leach because of the short time element in the bottle test. The results do indicate however that there is no significant concentration of acid consuming minerals present in the ore.

The solutions produced on the first and fifth day of leaching were analyzed for trace elements. The results of these analyzes are included in Appendix II. Generally low levels of impurity are indicated for each sample analyzed.

3.3 Column Test

The column test was performed with 344 kg of ore which had been crushed to a top size of 3/4 inch. As the crushed ore was loaded into the column it was prewetted with 18 g/l sulphuric acid at the rate of 30 kg solution per tonne feed.

The test was initiated by pumping 15 g/l H_2SO_4 onto the top of the ore column at the rate of 0.25 litres/min/m². The test results are summarized in Table 3.3. The copper extraction as a function of time is shown in Figure 4 and the acid consumption as a function of time is shown in Figure 5.

ACID LEACHING OF ROBAK COPPER OXIDE ORE

Copper Extraction VS. Time

(Test L44 - Sample Top Size = 3/8 inch)

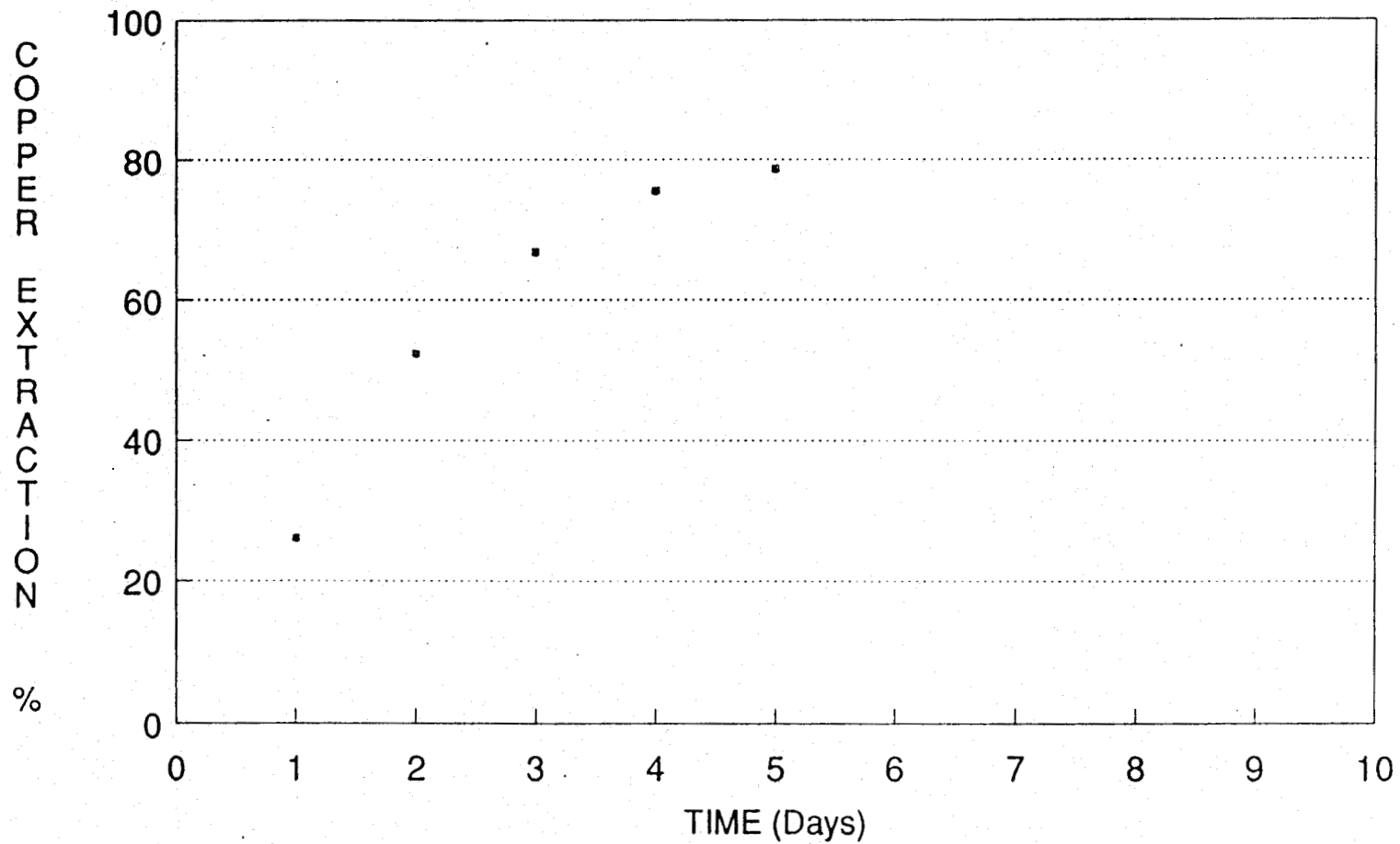


FIGURE 1.

ACID LEACHING OF ROBAK COPPER OXIDE ORE

Copper Extraction VS. Time

(Test L11 - Sample Top Size = 3/4 inch)

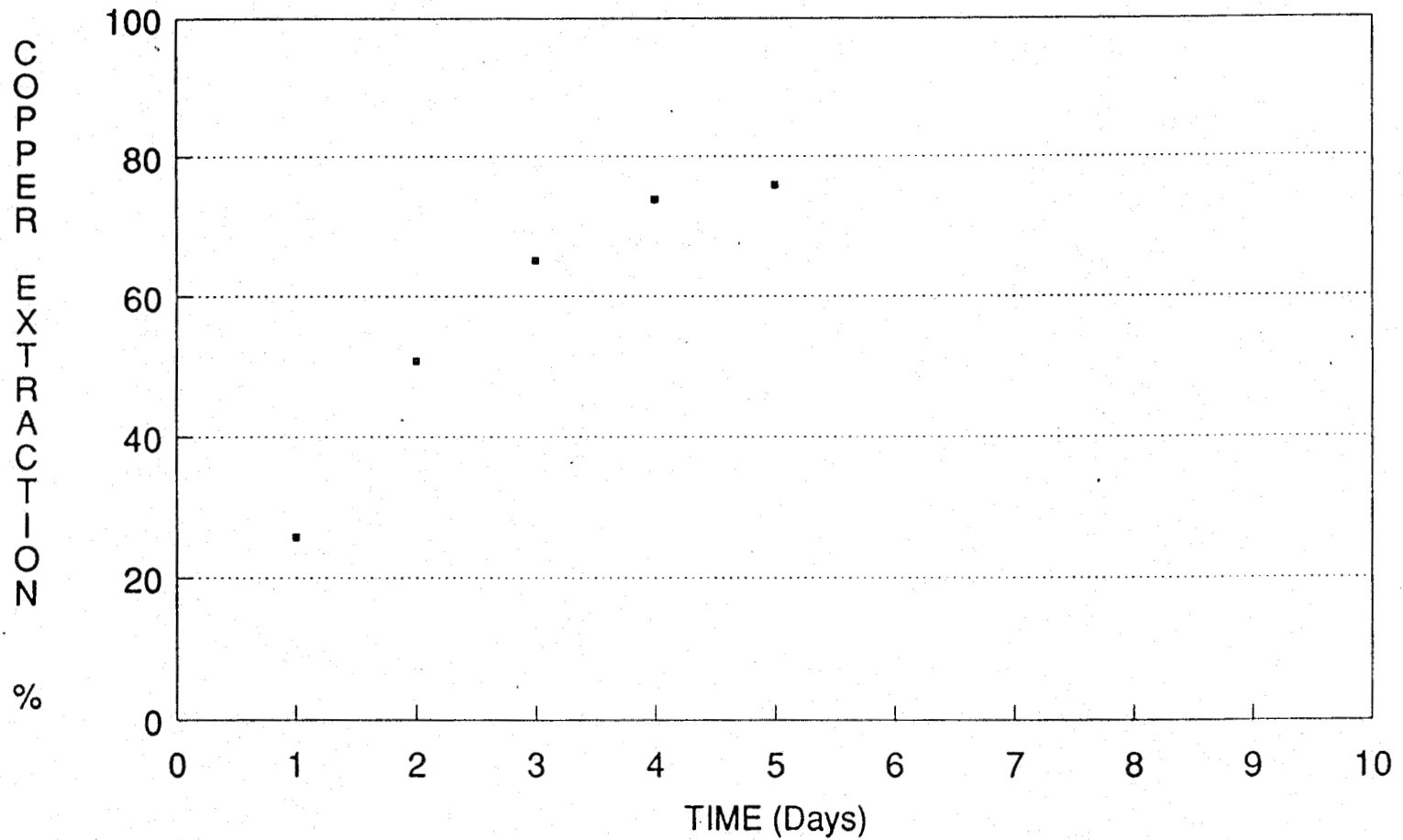


FIGURE 2.

ACID LEACHING OF ROBAK COPPER OXIDE ORE

Copper Extraction VS. Time

(Test L22 - Sample Top Size = 1/2 inch)

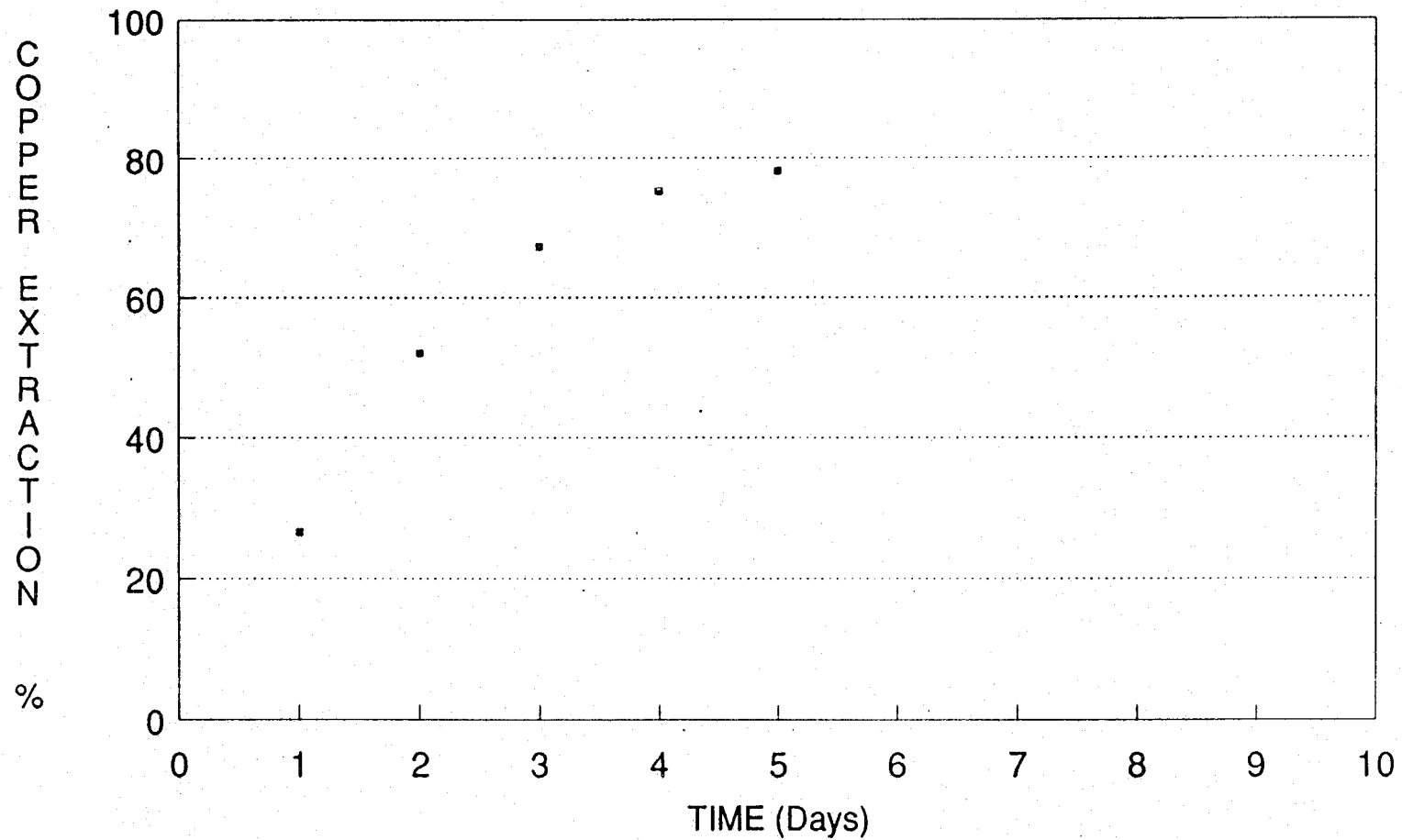


FIGURE 3.

TABLE 3.3

M89-166: ROBAK COPPER COLUMN

DATE	LEACH CYCLE	LITRES		FLOW (ml/min)		H ₂ SO ₄ (g/l)		CONSUMPTION H ₂ SO ₄				PREGNANT SOLUTION			CALCULATED		
		IN	OUT	IN (Aim)	OUT (Actual)	IN	OUT	GRAMS IND.	GRAMS CUM.	Kg/tonne (TOTAL)	Kg/tonne (As Cu)	Fe (g/l)	COPPER (g/l)	COPPER (g total)	% COPPER EXTRACTED IND.	% COPPER EXTRACTED CUM.	
June	13	1	33.00	20.97	20	14.6	14.79	0.98	652.8	652.8	1.90	0.16	0.007	1.72	36.07	0.6%	0.6%
	14	2	28.18	28.04	20	19.5	14.79	1.63	371.1	1023.9	2.98	0.80	0.020	5.10	143.01	2.5%	3.1%
	15	3	28.24	28.44	20	19.8	14.79	1.95	362.2	1386.1	4.03	1.54	0.060	5.80	164.98	2.9%	6.0%
	16	4	27.94	28.18	20	19.6	14.79	2.12	353.5	1739.6	5.06	2.24	0.910	5.56	156.69	2.7%	8.7%
	17	5	29.37	29.55	20	20.5	14.79	2.15	370.8	2110.4	6.14	2.98	0.105	5.55	163.99	2.9%	11.6%
	18	6	30.00		20	0.0	14.79		443.7	2554.1	7.43						
	19	7		35.88	20	24.9	14.79	2.31	-82.9	2471.2	7.19	3.87	0.150	5.55	199.16	3.5%	15.0%
	20	8	30.00	23.25	20	16.1	14.79	2.16	393.5	2864.7	8.33	4.41	0.240	5.20	120.91	2.1%	17.1%
	21	9	27.54	28.66	20	19.9	14.79	2.35	340.0	3204.7	9.32	5.09	0.300	5.25	150.47	2.6%	19.8%
	22	10	30.00	27.57	20	19.1	14.79	2.48	375.3	3580.0	10.41	5.73	0.420	5.20	143.37	2.5%	22.3%
	23	11	28.48	28.90	20	20.1	14.79	2.43	351.0	3931.0	11.43	6.34	0.460	4.72	136.40	2.4%	24.6%
	24	12	29.78	30.52	20	21.2	14.79	2.39	367.5	4298.5	12.50	6.95	0.490	4.48	136.73	2.4%	27.0%
	25	13	27.39	25.64	20	17.8	14.79	2.65	337.2	4635.7	13.48	7.42	0.620	4.12	105.62	1.8%	28.9%
	26	14	27.53	28.92	20	20.1	14.79	3.38	309.4	4945.1	14.38	8.05	0.870	4.84	139.96	2.4%	31.3%
	27	15	28.40	28.25	20	19.6	14.79	2.21	357.6	5302.7	15.42	8.45	0.460	3.16	89.25	1.6%	32.9%
	28	16	28.03	28.14	20	19.5	9.86	3.18	186.9	5489.5	15.97	8.93	0.670	3.76	105.81	1.8%	34.7%
	29	17	27.62	27.39	20	19.0	9.86	2.55	202.5	5692.0	16.56	9.32	0.510	3.24	88.73	1.5%	36.2%
	30	18	28.26	29.02	20	20.2	9.86	2.61	202.9	5894.9	17.15	9.67	0.420	2.64	76.62	1.3%	37.6%
July	1	19	26.67	26.49	20	18.4	9.86	2.54	195.7	6090.6	17.72	9.94	0.420	2.32	61.46	1.1%	38.6%
	2	20	29.87	30.02	20	20.9	9.86	3.04	203.2	6293.8	18.31	10.23	0.430	2.16	64.85	1.1%	39.8%
	3	21	27.05	26.89	20	18.7	9.86	2.89	189.0	6482.8	18.86	10.49	0.430	2.14	57.54	1.0%	40.8%
	4	22	27.42	27.46	20	19.1	9.86	2.82	192.9	6675.7	19.42	10.74	0.430	2.02	55.46	1.0%	41.7%
	5	23	28.07	28.22	20	19.6	9.86	2.88	195.5	6871.2	19.99	10.98	0.470	1.92	54.19	0.9%	42.7%
	6	24	27.65	27.86	20	19.3	9.86	2.93	191.0	7062.2	20.54	11.23	0.460	1.96	54.61	1.0%	43.6%
	7	25	29.47	29.24	20	20.3	9.86	2.99	203.2	7265.4	21.13	11.47	0.450	1.90	55.55	1.0%	44.6%
	8	26	28.89	28.76	20	20.0	9.86	2.96	199.8	7465.2	21.72	11.70	0.470	1.74	50.04	0.9%	45.5%
	9	27	28.00	28.45	20	19.8	9.86	3.09	188.2	7653.3	22.26	11.91	0.490	1.66	47.22	0.8%	46.3%
	10	28	26.63	26.28	20	18.2	9.86	3.15	179.8	7833.1	22.79	12.10	0.490	1.64	43.10	0.8%	47.0%
	11	29	28.96	28.95	20	20.1	9.86	2.94	200.4	8033.5	23.37	12.33	0.510	1.78	51.52	0.9%	47.9%
	12	30	27.74	27.49	20	19.1	9.86	2.92	193.3	8226.8	23.93	12.56	0.490	1.80	49.49	0.9%	48.8%
	13	31	28.65	29.18	20	20.3	9.86	2.98	195.6	8422.4	24.50	12.78	0.490	1.68	49.02	0.9%	49.7%
	14	32	29.78	29.66	20	20.6	9.86	3.10	201.7	8624.0	25.09	12.97	0.480	1.50	44.50	0.8%	50.4%
	15	33	28.67	27.87	20	19.4	9.86	3.02	198.5	8822.6	25.66	13.16	0.530	1.48	41.25	0.7%	51.2%
	16	34	30.00		20	0.0	9.86		295.8	9118.4	26.52						
	17	35		35.82	20	24.9	9.86	2.95	-105.7	9012.7	26.22	13.41	0.520	1.54	55.16	1.0%	52.1%
	18	36	27.95	22.48	20	15.6	9.86	1.18	249.1	9261.8	26.94	13.62	0.500	2.14	48.11	0.8%	53.0%
	19	37	29.45	28.78	20	20.0	9.86	2.49	218.8	9480.5	27.58	13.79	0.540	1.30	37.41	0.7%	53.6%

TABLE 3.3

M89-166: ROBAK COPPER COLUMN

DATE	LEACH CYCLE	LITRES		FLOW (ml/min)		H2SO4 (g/l)		CONSUMPTION H2SO4				PREGNANT SOLUTION			CALCULATED	
		IN	OUT	IN (Aim)	OUT (Actual)	IN	OUT	GRAMS IND.	GRAMS CUM.	Kg/tonne (TOTAL)	Kg/tonne (As Cu)	Fe (g/l)	COPPER (g/l) (g total)		% COPPER EXTRACTED IND.	% COPPER EXTRACTED CUM.
20	38	28.65	28.37	20	19.7	9.86	2.56	209.9	9690.4	28.19	13.98	0.520	1.46	41.42	0.7%	54.3%
21	39	27.15	27.43	20	19.1	9.86	2.38	202.4	9892.8	28.78	14.17	0.530	1.60	43.89	0.8%	55.1%
22	40	25.10	25.69	20	17.8	9.86	2.46	184.3	10077.2	29.31	14.35	0.490	1.56	40.07	0.7%	55.8%
23	41	29.84	30.61	20	21.3	9.86	2.67	212.5	10289.7	29.93	14.56	0.520	1.52	46.52	0.8%	56.6%
24	42	29.43	28.54	20	19.8	9.86	2.32	224.0	10513.6	30.58	14.75	0.480	1.46	41.66	0.7%	57.3%
25	43	28.27	27.81	20	19.3	9.86	2.55	207.8	10721.4	31.19	14.93	0.570	1.44	40.05	0.7%	58.0%
26	44	29.12	29.12	20	20.2	9.86	2.41	216.9	10938.3	31.82	15.09	0.550	1.26	36.69	0.6%	58.7%
27	45	28.52	28.73	20	19.9	9.86	2.57	207.4	11145.7	32.42	15.24	0.540	1.20	34.47	0.6%	59.3%
28	46	29.81	30.70	20	21.3	9.86	2.70	211.0	11356.7	33.04	15.41	0.580	1.17	35.92	0.6%	59.9%
29	47	25.31	24.73	20	17.2	9.86	2.77	181.0	11537.7	33.56	15.54	0.580	1.24	30.67	0.5%	60.4%
30	48	30.00	21.31	20	14.8	9.86	2.71	238.1	11775.8	34.25	15.67	0.560	1.34	28.55	0.5%	60.9%
31	49	24.74	23.88	20	16.6	9.86	2.48	184.7	11960.4	34.79	15.82	0.540	1.42	33.91	0.6%	61.5%
Aug	1	50		20	0.0	9.86		53.6	12014.0	34.95	15.82					
	2	51	12.15	20	8.4	9.86	2.25	-27.3	11986.7	34.87	15.91	0.500	1.56	18.96	0.3%	61.8%
Column dismantled (24429 g solids removed) and re-assembled in new configuration.																
	5	52	44.81	30	26.8	9.86	0.88	405.2	12391.9	36.05	16.49	0.420	3.14	121.39	2.3%	64.1%
	6	53	28.97	30	19.8	9.86	0.99	255.3	12647.1	36.79	16.92	0.580	3.10	88.40	1.7%	65.8%
	7	54	38.48	30	26.5	9.86	1.23	329.0	12976.1	37.75	17.39	0.610	2.56	97.54	1.8%	67.6%
	8	55	36.45	30	25.0	9.86	1.63	296.3	13272.4	38.61	17.86	0.670	2.72	97.87	1.8%	69.4%
	9	56	33.35	30	23.1	9.86	1.57	272.5	13544.9	39.40	18.25	0.560	2.44	81.25	1.5%	71.0%
	10	57	41.31	30	29.1	9.86	2.64	288.3	13833.2	40.24	18.62	0.620	1.80	75.38	1.4%	72.4%
	11	58	37.82	30	25.6	9.86	3.42	237.1	14070.3	40.93	18.89	0.570	1.56	57.55	1.1%	73.4%
Column allowed to sit and drain for twelve (12) days.																
Aug	24	59	33.24	30	21.1	9.86	1.90	265.6	14335.9	41.70	19.16	0.580	1.80	54.65	1.0%	74.5%
	25	60	31.62	30	21.6	9.86	3.23	203.8	14539.7	42.29	19.37	0.680	1.41	43.77	0.8%	75.3%
Column allowed to sit and drain for three (3) days.																
Aug	28	61	45.00	30	34.4	9.86	3.11	278.0	14817.7	43.10	19.67	0.620	1.26	62.37	1.2%	76.5%
	29	62	41.72	30	25.1	9.86	2.83	301.3	15119.0	43.98	19.84	0.530	0.98	35.41	0.7%	77.1%
	30	63	37.76	30	26.0	9.86	4.19	203.3	15322.3	44.57	20.00	0.730	0.87	32.60	0.6%	77.7%
	31	64	41.25	30	28.7	9.86	5.39	167.1	15489.4	45.06	20.18	0.740	0.92	37.99	0.7%	78.4%
Sept	1	65	39.59	30	27.0	9.86	3.36	249.6	15739.0	45.78	20.31	0.520	0.68	26.46	0.5%	78.9%
Column allowed to sit and drain for four (4) days.																
Sept	5	66	45.00	30	35.2	9.86	4.10	220.0	15959.0	46.42	20.49	0.590	0.76	38.52	0.7%	79.7%
Wash	1	67	34.00	30	23.9	0	0.00	0.0	15959.0	46.42	20.61	0.025	0.67	23.02	0.4%	80.1%
Wash	2	68	50.00	30	36.2	0	0.00	0.0	15959.0	46.42	20.64	0.002	0.14	7.19	0.1%	80.2%

TABLE 3.3

COLUMN TAILS:

DATE	CYCLE	TOTAL SOLIDS (g)	Total Copper		Oxide Copper		Iron	
			%	grams	%	grams	%	grams
Aug 2	51	24429	0.51	124.59	0.49	119.70		
Sept 18	68	319347	0.34	1085.78	0.27	862.24	2.50	7983.68

CALCULATED HEAD GRADE: 1.67% Cu

CALCULATED TOTAL COPPER: 5742.75 g Cu

Acid Leaching of Robak Copper Oxide Ore

Copper Extraction VS. Time

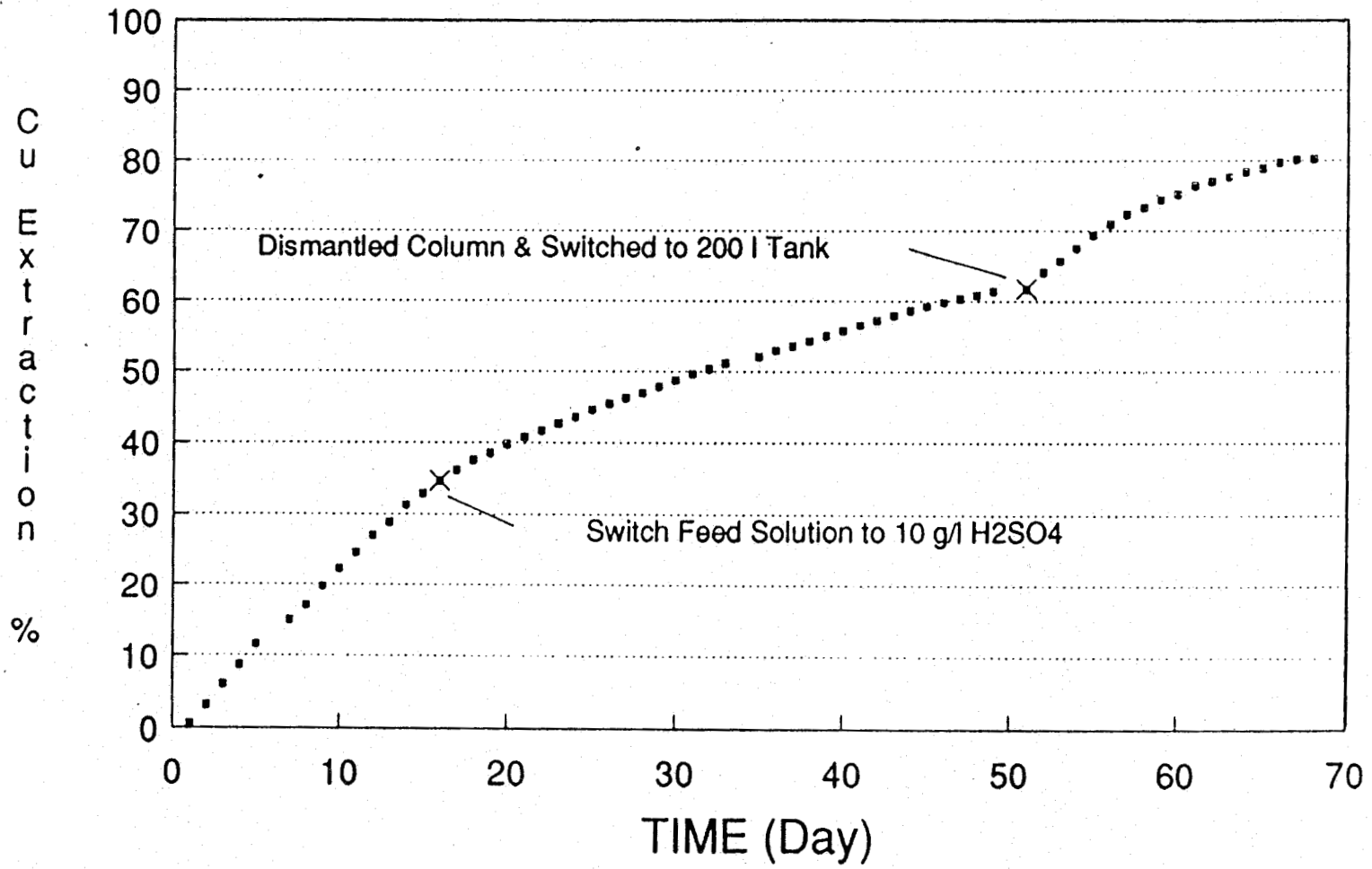


FIGURE 4.

Acid Leaching of Robak Copper Oxide Ore

Acid Consumption VS. Time

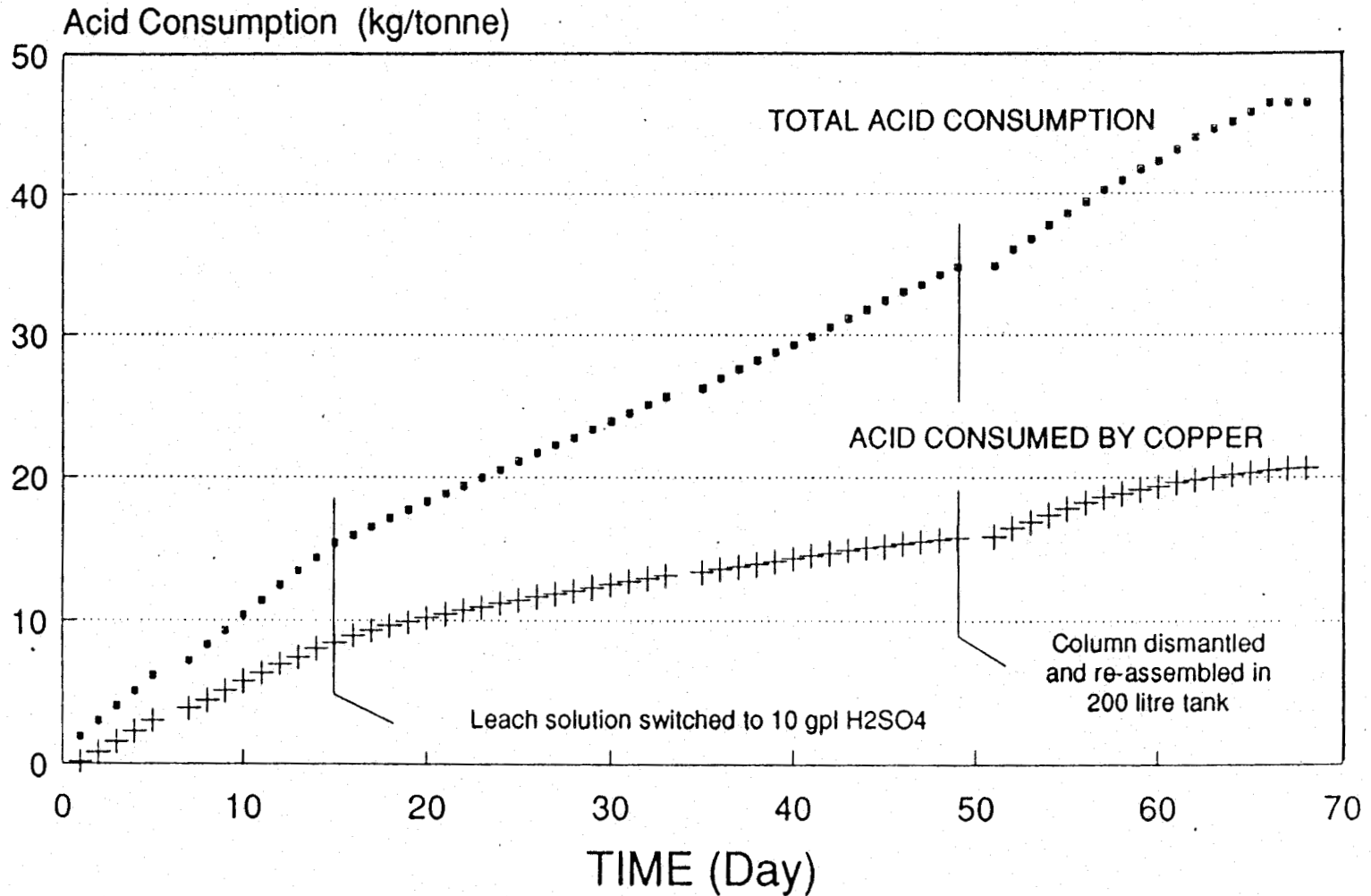


FIGURE 5. .

The initial leach rate can be seen to be very good with over 30% copper extraction being achieved in the first 15 days of leaching. At this point the acid concentration was decreased from 15 g/l to 10 g/l in order to minimize both the free acid concentration in the pregnant solution and the acid consumption.

Over the period from 15 to 51 days the copper extraction continued but at an ever decreasing rate. While the copper extraction was greater than 60% at this time, it appeared that it would have trouble exceeding 70%. However, it should be noted that the pregnant solution contained greater than 1 gpl Cu throughout this period.

The column was disassembled at this point to determine what was limiting the copper extraction. It was readily apparent that some areas of the column had not been wetted by the acid solution. Certain flow patterns had been established through the ore and the material outside these areas remained unleached.

To determine whether the column configuration was responsible for the channelling of leach solutions the ore was placed into a larger diameter column. While the original part of the test was performed in a 12.5 inch diameter column, this second phase of leaching was conducted in a column having a diameter of 22 inches. The extraction curve during this second phase of leaching was similar to that observed during the first phase with a rapid flush of copper at the outset followed by a rapid decrease in the leaching rate.

At the completion of the test the extraction had levelled off at approximately 80%. As the column was emptied it was again noted that certain areas had not been leached. It is apparent from this test that the ore is sensitive to the flow of solution through it. In future testwork increased solution flow rates should be attempted to determine whether more even wetting of the ore can be achieved.

As can be seen from Figure 5 the acid consumption increased at a fairly constant rate over the duration of the test. The total consumption during the test was 46.4 kg/tonne of which 20.6 kg/t was associated with copper for a net consumption of 25.8 kg/t.

The solutions produced in day 1, 5 and 40 of leaching were analyzed for trace impurities. The results included in Appendix III indicate low levels of contaminants.

APPENDIX I
Head Sample Trace Element Content



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
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BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

TELEACON, DONALDSON & ASSOCIATES LTD.,
2036 COLUMBIA STREET
VANCOUVER, B.C.
V5Y 3E1
Project : MR9-166
Comments : ATTN: DIANE BAKER

Page No. 1-A
Tot. Pages: 1
Date : 12-JUN-89
Invoice # : 1-8917687
P.O. # : 06082

CERTIFICATE OF ANALYSIS A8917687

SAMPLE DESCRIPTION	PREP CODE	Mb ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)	P ppm (ICP)	Pb ppm (ICP)	Bi ppm (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Ni ppm (ICP)	Ba ppm (ICP)	Fe % (ICP)	Mn ppm (ICP)	Cr ppm (ICP)	Mg % (ICP)
MB9-166 HEAD	214 232	10	< 100	160	800	60	< 20	< 5.0	30	30	500	4.20	350	40	1.70

CERTIFICATION : B. Coughlin



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 BROOKSBANK AVE., NORTH VANCOUVER,
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To: LON, DONALDSON & ASSOCIATES LTD.,

2036 COLUMBIA STREET
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Project: M89-166

Comments: ATTN: DIANE BAKER

Page No. 1-B

Tot. Pages: 1

Date: 12-JUN-89

Invoice #: 1-8917687

P.O. #: 06082

CERTIFICATE OF ANALYSIS A8917687

SAMPLE DESCRIPTION	PREP CODE	V ppm (ICP)	Al % (ICP)	Be ppm (ICP)	Ca % (ICP)	Cu ppm (ICP)	Ag ppm AAS	Ti % (ICP)	Sr ppm (ICP)	Na % (ICP)	K % (ICP)
MB9-166 HEAD	214 232	120	8.30	< 5.0	2.00	>10000	35.0	0.30	590	2.70	1.00

CERTIFICATION :

B. Coughlin

APPENDIX II
Bottle Roll Test Details

BOTTLE ROLL SULPHURIC ACID LEACHING OF COPPER OXIDE ORES

File No: M89-166

Date: June 12/89

Test No: L11

Sample Description: ROBAK Copper Oxide Ore (Sample top size = 3/4 inch)

TEST CONDITIONS:

Solids: 5000 g
 H₂O: 4000 g
 % Solids: 56%
 Solution Strength: 14.8 g/l H₂SO₄ day 1 thru' 4
 Test Duration: 5 days

TEST DESCRIPTION:

-solids and acid solution combined in large bottle
 -bottles placed on rollers
 -each day, acid solution decanted and replaced with fresh solution
 -decanted solution analyzed for Cu, Fe, free acid, and pH
 -test ended after five (5) days
 -solids washed and wash solutions analyzed
 -final solids assayed for TOTAL COPPER, OXIDE COPPER, IRON

TEST RESULTS:

Solution Analyses:

TIME	SAMPLE SIZE (g)	COPPER		IRON		H ₂ SO ₄		pH
		(g/l)	(g)	(g/l)	(g)	(g/l)	(g)	
Day 1	3202	6.05	19.37	1.28	4.10	1.84	5.89	2.6
Day 2	3009	7.05	21.21	0.16	0.48	2.33	7.01	2.2
Day 3	2894	5.10	14.76	0.26	0.75	2.77	8.02	1.9
Day 4	2920	3.48	10.16	0.53	1.55	4.37	12.76	1.6
Day 5	2999	1.70	5.10	0.42	1.26	4.48	13.44	1.9
WASH 1	1334	0.64	0.85	0.19	0.25	9.27	12.37	1.6
WASH 2	1324	0.41	0.54	0.08	0.11	1.92	2.54	1.7
TOTAL			72.00		8.50		62.02	

Solids Analyses:

TIME	SAMPLE SIZE (g)	TOTAL COPPER		OXIDE COPPER		IRON	
		(%)	(g)	(%)	(g)	(%)	(g)
Day 5	4714	0.46	21.68	0.39	18.38	3.50	164.99
TOTAL			21.68		18.38		164.99

CALCULATIONS:

TIME	COPPER EXTRACTION		IRON EXTRACTION		ACID CONSUMPTION	
	INDV. %	CUM. %	INDV. %	CUM. %	INDV. kg/tonne	CUM. kg/tonne
Day 1	25.83%	25.83%	2.95%	2.95%	10.37	10.37
Day 2	24.95%	50.78%	-0.22%	2.73%	7.91	18.28
Day 3	14.32%	65.10%	0.28%	3.01%	7.15	25.43
Day 4	8.84%	73.93%	0.43%	3.44%	5.68	31.11
Day 5	2.01%	75.94%	0.89%	4.33%	3.02	34.13
TOTAL		75.94%		4.33%		34.13

HEAD GRADE:

	<u>TOTAL COPPER</u>	<u>OXIDE COPPER</u>	<u>IRON</u>
ASSAY HEAD	1.80%	1.80%	3.80%
CALCULATED HEAD	1.87%	1.81%	3.47%

BOTTLE ROLL SULPHURIC ACID LEACHING OF COPPER OXIDE ORES

File No: M89-166

Date: June 12/89

Test No: L22

Sample Description: ROBAK Copper Oxide Ore (Sample top size = 1/2 inch)

TEST CONDITIONS:

Solids: 5000 g
 H2O: 4000 g
 % Solids: 56%
 Solution Strength: 14.8 g/l H2SO4 day 1 thru 4
 Test Duration: 5 days

TEST DESCRIPTION:

-solids and acid solution combined in large bottle
 -bottles placed on rollers
 -each day, acid solution decanted and replaced with fresh solution
 -decanted solution analyzed for Cu, Fe, free acid, and pH
 -test ended after five (5) days
 -solids washed and wash solutions analyzed
 -final solids assayed for TOTAL COPPER, OXIDE COPPER, IRON

TEST RESULTS:

Solution Analyses:

TIME	SAMPLE SIZE (g)	COPPER		IRON		H2SO4		pH
		(g/l)	(g)	(g/l)	(g)	(g/l)	(g)	
Day 1	3253	6.10	19.84	1.20	3.90	1.87	6.08	2.7
Day 2	3256	6.95	22.63	0.17	0.55	2.45	7.98	1.9
Day 3	3173	4.80	15.23	0.33	1.05	3.15	9.99	1.7
Day 4	3173	2.80	8.88	0.57	1.81	5.72	18.15	1.6
Day 5	3141	1.48	4.65	0.59	1.85	7.24	22.74	1.7
WASH 1	1659	0.44	0.73	0.15	0.25	9.15	15.18	1.5
WASH 2	1179	0.31	0.37	0.09	0.11	1.52	1.79	1.8
TOTAL			72.33		9.52		81.92	

Solids Analyses:

TIME	SAMPLE SIZE (g)	TOTAL COPPER		OXIDE COPPER		IRON	
		(%)	(g)	(%)	(g)	(%)	(g)
Day 5	4697	0.41	19.26	0.33	15.50	3.20	150.30
TOTAL			19.26		15.50		150.30

CALCULATIONS:

TIME	COPPER EXTRACTION		IRON EXTRACTION		ACID CONSUMPTION	
	INDV. %	CUM. %	INDV. %	CUM. %	INDV. kg/tonne	CUM. kg/tonne
Day 1	26.64%	26.64%	3.00%	3.00%	10.34	10.34
Day 2	25.38%	52.02%	-0.14%	2.87%	7.95	18.29
Day 3	15.32%	67.34%	0.35%	3.21%	7.48	25.77
Day 4	7.89%	75.23%	0.66%	3.87%	5.34	31.11
Day 5	2.95%	78.18%	1.13%	5.00%	1.15	32.26
TOTAL		78.18%		5.00%		32.26

HEAD GRADE:

	<u>TOTAL COPPER</u>	<u>OXIDE COPPER</u>	<u>IRON</u>
ASSAY HEAD	1.80%	1.80%	3.80%
CALCULATED HEAD	1.83%	1.76%	3.20%

Sample Name	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
M89-166 11-1	<1	0.01	<1	0.01	<2	<5	5	<10	<0.01	<10	<5	<5	15	<1
M89-166 22-1	<1	0.01	<1	0.01	<2	<5	5	<10	<0.01	<10	<5	<5	15	<1
M89-166 44-1	<1	0.02	<1	0.01	<2	<5	5	<10	<0.01	<10	<5	<5	14	<1
M89-166 11-5	<1	0.02	1	0.01	<2	<5	2	<10	<0.01	<10	<5	<5	7	<1
M89-166 22-5	<1	0.02	1	0.01	<2	<5	2	<10	<0.01	<10	<5	<5	6	<1
M89-166 44-5	<1	0.01	1	0.01	<2	<5	2	<10	<0.01	<10	<5	<5	7	<1

Minimum Detection Method	1	0.01	1	0.01	2	5	1	10	0.01	10	5	5	1	1
Maximum Detection Method	1000	5.00	10000	1.00	20000	1000	10000	1000	1.00	1000	10000	1000	20000	10000
ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP
ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP

--- = Not Analysed unr = Not Requested ins = Insufficient Sample

BOTTLE ROLL SULPHURIC ACID LEACHING OF COPPER OXIDE ORES

File No: M89-166

Date: June 12/89

Test No: L44

Sample Description: ROBAK Copper Oxide Ore (Sample top size = 3/8 inch)

TEST CONDITIONS:

Solids: 5000 g
 H₂O: 4000 g
 % Solids: 56%
 Solution Strength: 14.8 g/l H₂SO₄ day 1 thru 4
 Test Duration: 5 days

TEST DESCRIPTION:

-solids and acid solution combined in large bottle
 -bottles placed on rollers
 -each day, acid solution decanted and replaced with fresh solution
 -decanted solution analyzed for Cu, Fe, free acid, and pH
 -test ended after five (5) days
 -solids washed and wash solutions analyzed
 -final solids assayed for TOTAL COPPER, OXIDE COPPER, IRON

TEST RESULTS:

Solution Analyses:

TIME	SAMPLE SIZE (g)	COPPER		IRON		H ₂ SO ₄		pH
		(g/l)	(g)	(g/l)	(g)	(g/l)	(g)	
Day 1	3210	5.85	18.78	0.32	1.03	1.49	4.78	2.7
Day 2	3048	7.00	21.34	0.25	0.76	2.31	7.04	2.1
Day 3	2972	4.90	14.56	0.32	0.95	2.79	8.29	1.8
Day 4	3028	3.20	9.69	0.59	1.79	4.54	13.75	1.6
Day 5	3019	1.84	5.55	0.78	2.35	8.54	25.78	1.6
WASH 1	1659	0.66	1.09	0.22	0.36	9.02	14.96	1.5
WASH 2	1179	0.32	0.38	0.08	0.09	1.68	1.98	1.7
TOTAL			71.39		7.34		76.59	

Solids Analyses:

TIME	SAMPLE SIZE (g)	TOTAL COPPER		OXIDE COPPER		IRON	
		(%)	(g)	(%)	(g)	(%)	(g)
Day 5	4714	0.38	17.91	0.32	15.08	3.00	141.42
TOTAL			17.91		15.08		141.42

CALCULATIONS:

TIME	COPPER EXTRACTION		IRON EXTRACTION		ACID CONSUMPTION	
	INDV. %	CUM. %	INDV. %	CUM. %	INDV. kg/tonne	CUM. kg/tonne
Day 1	26.20%	26.20%	0.86%	0.86%	10.65	10.65
Day 2	26.18%	52.38%	0.50%	1.36%	7.89	18.54
Day 3	14.48%	66.86%	0.51%	1.87%	7.23	25.77
Day 4	8.69%	75.56%	0.64%	2.51%	5.74	31.51
Day 5	3.16%	78.72%	1.20%	3.72%	-0.38	31.13
TOTAL		78.72%		3.72%		31.13

HEAD GRADE:

	<u>TOTAL COPPER</u>	<u>OXIDE COPPER</u>	<u>IRON</u>
ASSAY HEAD	1.80%	1.80%	3.80%
CALCULATED HEAD	1.79%	1.73%	2.98%

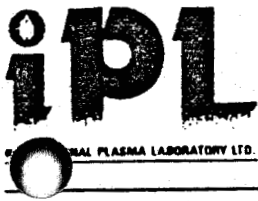
APPENDIX III
Column Test Product Analysis

SIZE DISTRIBUTION

SAMPLE NO.M89-166

Robak Column Tails

Size Fraction (mesh)	Individual Percentage Retained %	Cumulative Percentage Passing %
+ 3/4"	5.2	94.1
- 3/4" + 1/2"	39.9	54.2
- 1/2" + 3/8"	21.9	32.3
- 3/8" + 3 Mesh	9.1	23.2
- 3 + 4 Mesh	6.5	16.7
- 4 + 6	3.4	13.3
- 6 + 8	1.9	11.4
- 8 + 10	1.9	9.5
- 10 + 14	1.1	8.4
- 14 + 20	1.0	7.4
- 20 + 28	0.5	6.9
- 28 + 35	1.7	5.2
- 35 + 48	0.8	4.4
- 48 + 65	0.6	3.8
- 65 + 100	0.5	3.3
- 100 + 150	0.4	2.9
- 150 + 200	0.4	2.5
- 200	2.5	



IONOSPHERIC PLASMA LABORATORY LTD.

2036 Columbia Street
Vancouver, B.C.
Canada V5Y 3E1
Phone (604) 879-7878
Fax (604) 879-7898

Sample Name	Type	Project: M89-166										Page 1 of 1		Section 1 of 2			
		Ag	Al	As	Ba	B1	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	La	Mg	Mn
		ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	%	ppm	ppm
89-166 DAY 1	Solution	<0.1	<0.01	<5	<2	<2	0.06	<1.0	<1	<1	1722	<1	<0.01	<2	0.03	18	
89-166 DAY 5	Solution	<0.1	0.07	<5	<2	<2	0.05	<1.0	<1	<1	7296	<1	0.01	<2	0.02	12	
89-166 DAY 40	Solution	<0.1	0.05	<5	<2	<2	0.02	<1.0	1	1	1734	<1	0.01	<2	0.03	6	
Minimum Detection		0.1	0.01	5	2	2	0.01	1.0	1	1	1	1	0.01	2	0.01	1	
Maximum Detection		100.0	5.00	10000	10000	10000	10.00	10000.0	10000	10000	20000	10000	10.00	10000	10.00	10000	
Method		ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	ICP	

-- = Not Analysed unr = Not Requested ins = Insufficient Sample

APPENDIX B

BREAK DOWN OF COSTS

BACON, DONALDSON & ASSOCIATES LTD.



12271 HORRORSHOE WAY
RICHMOND, B.C. CANADA V7A 4Z1
TEL FPHONE (604) 277-2322
FACSIMILE (604) 274-7235

M E M O

TO: S.C. Gower
FROM: Morris Beattie
DATE: February 8, 1990
**RE: Breakdown of Charges for Metallurgical testwork for Krain/Getty deposit.
 January 5, 1989 - December 31, 1989**

PROFESSIONAL FEES

Technicians

Bruce Smith	44.5 hours @ \$60.00	2,670.00
	0.50 hours @ \$67.00	33.50
Colin Risebrough	13.5 hours @ \$30.00	405.00
Diane Baker	46.5 hours @ \$60.00	2,790.00
	17.0 hours @ \$67.00	1,139.00
John Higgins	31.0 hours @ \$60.00	1,860.00
	0.5 hours @ \$67.00	33.50
Jack Richman	25.0 hours @ \$30.00	750.00
Mat Beynon	5.5 hours @ \$30.00	165.00
	2.0 hours @ \$37.00	74.00
Martin Schwuchow	64.0 hours @ \$50.00	3,200.00
	12.0 hours @ \$57.00	684.00
Trish Hospedalis	0.5 hours @ \$60.00	30.00
Victor Steiner	5.5 hours @ \$50.00	275.00
		<hr/>
		14,109.00

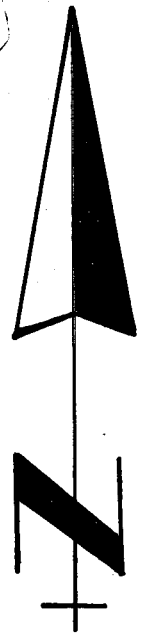
Balance from previous page		14,109.00
Engineers		
Ed Henrioulle	34.0 hours @ \$75.00	2,550.00
Morris Beattie	50.0 hours @ \$100.00	5,000.00
Secretarial	36.7 hours @ \$25.00	917.50
Assays		5,548.28
Direct charges		900.39
		<hr/>
	TOTAL	<u><u>\$29,025.17</u></u>

GOVERNMENT

MAR 09 1990

KAMLOOPS

Oxide
Zone



**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

19,858

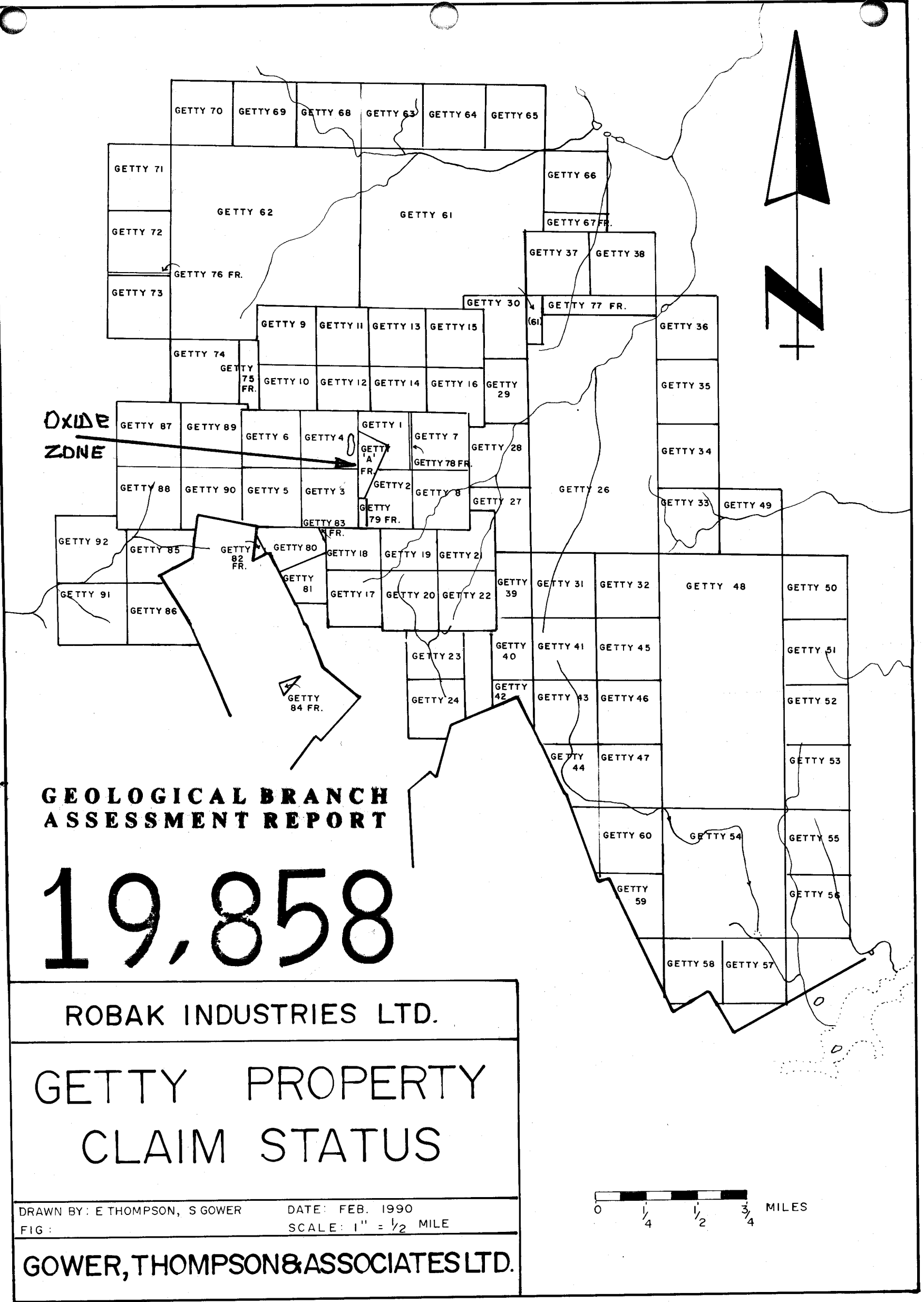
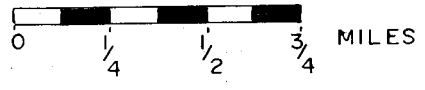
ROBAK INDUSTRIES LTD.

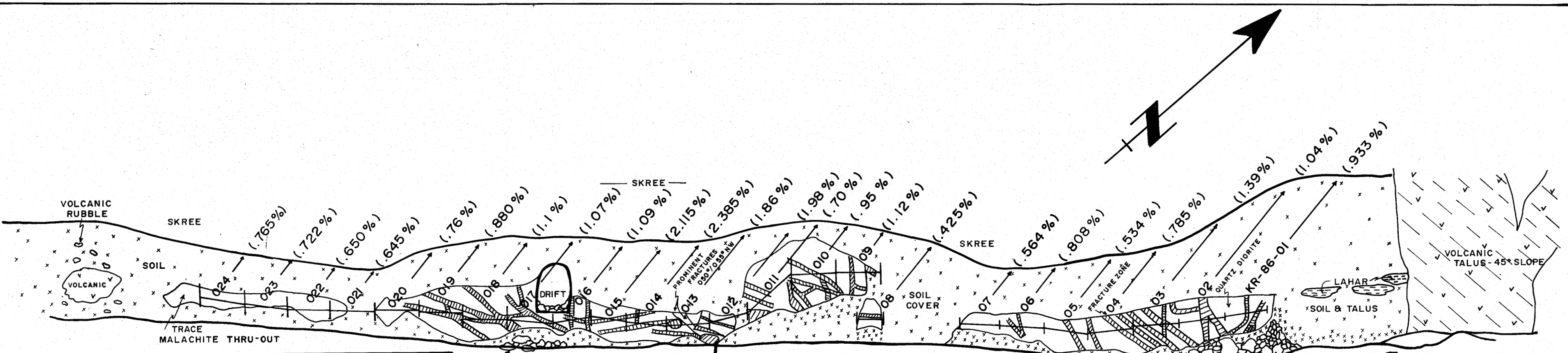
**GETTY PROPERTY
CLAIM STATUS**

DRAWN BY: E THOMPSON, S GOWER
FIG :

DATE: FEB. 1990
SCALE: 1" = 1/2 MILE

GOWER, THOMPSON & ASSOCIATES LTD.





ROBAK INDUSTRIES LIMITED

GETTY PROPERTY
SURFACE OXIDE ZONE

DRAWN BY: S.GOWER, E.THOMPSON DATE: 1986 REVISED FEB. '90
FIG. : 22 SCALE : 1 : 200

GOWER THOMPSON & ASSOCIATES LTD.

BOULDERS OF HIGH-GRADE OXIDE ORE
DDH S.E. DIP
OXIDE DUMP USED AS DRILL ROAD
ABUNDANT MALACHITE CHRYSOCOLLA CUPRITE LIMONITE
DDH 1 METRE EAST
DDH 3.7 METRES EAST
DDH DRILLED S.E. 045° 3 METRES WEST
OXIDE DUMP 7 METRES WIDE
BULK SAMPLE TAKEN 1989
DDH 20 M. WEST

LEGEND

- COPPER RICH FRACTURE ZONE - [Symbol]
- OXIDIZED QUARTZ DIORITE - [Symbol]
- SOIL COVER - [Symbol]
- KR-86-01 → (.933%) - AVERAGE VALUE of TOTAL % Cu
- VOLCANICS - [Symbol]
- 1989 BULK SAMPLE - [Symbol]

CROSS SECTION OF OUTCROP AREA

19858