

ARIS SUMMARY SHEET

District Geologist, Smithers

Off Confidential: 90.02.21

ASSESSMENT REPORT 18442

MINING DIVISION: Omineca

PROPERTY: Rat  
LOCATION: LAT 57 02 00 LONG 126 47 00  
UTM 09 6323067 634528  
NTS 094E02W

CAMP: 051 Toodoggone Camp

CLAIM(S): Rat  
OPERATOR(S): Cooke, D.L.  
AUTHOR(S): Cooke, D.L.  
REPORT YEAR: 1989, 18 Pages  
COMMODITIES  
SEARCHED FOR: Copper, Lead, Zinc, Silver, Gold  
KEYWORDS: Takla Group, Triassic, Andesite, Quartz Monzonite  
Quartz Feldspar Porphyry

WORK  
DONE: Prospecting, Geochemical  
PROS 225.0 ha  
ROCK 16 sample(s) ;ME

RELATED  
REPORTS: 01908, 02406, 05324, 06411

**D. L. COOKE AND ASSOCIATES LTD.**

MINERAL EXPLORATION CONSULTANTS

0228

Assessment Report on the  
Preliminary Geology of the  
Rat 1 and 2 Mineral Claims

Toodoggone River Area,  
Omineca M.D.

SUB-RECORDER  
RECEIVED  
FEB 21 1989  
M.R. # \_\_\_\_\_ \$ \_\_\_\_\_  
VANCOUVER, B.C.

N.T.S. 94 E/2 W  
Lat. 57° 02' N.  
Long. 126° 47' W.

FILMED

By:

DAVID L. COOKE, Ph.D., P.Eng.  
D.L. COOKE AND ASSOCIATES LTD.  
#811 - 675 West Hastings Street,  
Vancouver, B.C.  
V6B 1N2

February 15, 1989

Work Done: August 15-16, 1988.

Claims on which work was done:

<u>Claims</u>	<u>Units</u>	<u>Rec. No.</u>	<u>Record Date</u>
Rat 1	9	9463	June 15, 1988
Rat 2	18	9464	June 15, 1988

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

18,442

TABLE OF CONTENTS

	PAGE
Summary . . . . .	1
Introduction . . . . .	2
Location and Access . . . . .	2
Property and Ownership . . . . .	2
1988 Exploration Program . . . . .	3
Geology and Mineralization . . . . .	3
Conclusions . . . . .	5
Recommendations . . . . .	5
References . . . . .	6

**List of Illustrations:**

- Figure 1: Location Map, Rat Claims, Toodoggone R. Area.
- Figure 2: Claim Map, Rat Claims, 1:50,000
- Figure 3: Preliminary Geology, Rat Claims, 1:5,000

**Appendices:**

- Appendix I: Statement of Expenditures
- Appendix II: Statement of Qualifications
- Appendix III: Description of Rock Samples
- Appendix IV: Analytical Results

## SUMMARY

The Rat 1 and 2 mineral claims were staked in 1988 to cover an area of low grade disseminated copper mineralization. The property is located at the south end of Duncan Lake in the southern part of the Toodoggone River gold camp. Access is by the Omineca mine road, some 350 kilometers northwest of Fort St. James, B.C.

Exploration on the claims in 1988 consisted of preliminary geological mapping, prospecting and rock chip sampling. The results of this work confirmed the presence of disseminated pyrite and chalcopyrite mineralization in association with intermediate dikes and plugs which are intruded into Takla volcanic rocks. Fault controlled quartz carbonate veins within the volcanic rocks adjacent to the intrusions contain visible pyrite, chalcopyrite, sphalerite and galena. These sulphides carry precious metal values of 330 to 1320 ppb gold and 7.2 to 258.6 ppm silver.

The property has potential for the discovery of alkaline porphyry copper-gold and epithermal gold-silver deposits. A program of detailed soil sampling and geophysics is recommended to evaluate the precious metal potential. Drill-testing of known copper soil anomalies is warranted in the search for bulk tonnage copper-gold deposits.

## INTRODUCTION

The area of the Rat claims was previously explored by Cominco Ltd. for porphyry copper and molybdenum mineralization between 1968 and 1978. Partial drill testing of I.P. and Cu-Mo soil anomalies failed to locate economic quantities of copper or molybdenum. The property lay dormant until expiry in 1988. The current Rat 1 and 2 claims were acquired in 1988 with a view of testing the area further for porphyry copper-gold and epithermal precious metal mineralization. This report covers the results of the 1988 exploration effort on the Rat claims.

## LOCATION AND ACCESS

The Rat property is located at the south end of Duncan Lake some 280 kilometers north of Smithers, B.C. (Figure 1.). The claims cover an area of moderate relief which rises from 1250 metres elevation at Duncan Lake to 1600 metres at its highest point. Vegetation consists of sparse growths of spruce and fir.

Access to the property is by the Omineca mine road to Kemess Creek, some 350 kilometers northwest of Fort St. James, B.C. then by four or five kilometers of rough gravel road to the southeast corner of the claims. An alternate access route is by fixed or rotary-winged aircraft from Smithers to the Sturdee River air strip. The Omineca road passes the airstrip, approximately 25 kilometers to the northwest of the Rat Claims.

## PROPERTY AND OWNERSHIP

The property consists of the Rat 1 and 2 claims (Figure 2), staked under the modified grid system, in the name of Bruce Hobson of Smithers, B.C. The claims were subsequently conveyed to David L. Cooke. The pertinent claim data is as follows:

<u>Claims</u>	<u>Units</u>	<u>Rec. No.</u>	<u>Record Date</u>
Rat 1	9	9463	June 15, 1988
Rat 2	18	9464	June 15, 1988

### 1988 EXPLORATION PROGRAM

Exploration work in 1988 consisted of reconnaissance geological mapping and rock geochemical sampling of gossans and sulphide zones of mineralization. This work was done by David L. Cooke and J. Morin on August 15 and 16, 1988, operating by helicopter from the Northern Mountain helicopter base at Sturdee River.

A total of \$3,541.70 was expended on the Rat 1 and 2 claims in 1988. This assessment work is being filed to hold the Rat 1 claim for two years and the Rat 2 claim for one year.

### GEOLOGY AND MINERALIZATION

The regional geology map of the Toodoggone River map sheet shows the area of the claims to be underlain mainly by the Takla volcanic rocks southeast of the Black Lake granite intrusion (Gabrielse, 1976, Diakow, et al., 1985). Disseminated porphyry copper-gold mineralization, in association with alkaline intrusions (monzonite porphyry), occurs on the New Kemess claims to the north and the Ron and Du claims to the southeast of the Rat property.

The 1988 reconnaissance mapping indicates the presence of a monzonite porphyry stock on the eastern boundary of the Rat 1 claim (Figure 3). The central portion of this claim is underlain mainly by augite andesite flows and minor amounts of cherty sediments believed to belong to the Takla Group of Upper Triassic age. These rocks are also intruded by a quartz monzonite porphyry (QMP) plug or dike, which may be an offshoot of the monzonite porphyry mass which lies to the southeast. The QMP plug consists of 2 - 4 mm pink feldspar phenocrysts and the occasional 1 - 2 mm quartz phenocrysts, set in a medium-grained matrix of grey feldspar and quartz. Subsidiary amounts of biotite also occur in the matrix. The QMP contains 2 - 3% disseminated pyrite mineralization.

The QMP intrusion is bordered to the south by a coarse-grained (2 - 5 mm) quartz feldspar porphyry intrusion (QFP) and a marginal quartzose zone. The QFP consists of 2 - 5 mm quartz and grey feldspar phenocrysts in a quartz and feldspar groundmass. It is leucocratic and contains 1 - 2% pyrite, localized along fractures. The quartzose zone seems to be a hybrid zone developed between the porphyry and the cherty sedimentary rocks of the Takla Group which trend northwesterly. It is characterized by a white sugary texture.

The Takla rocks surrounding the intrusions consist mainly of augite andesite flows with subsidiary interbedded cherty sediments. The volcanic rocks on the Rat 1 claim are impregnated with 2 - 5% pyrite, both as disseminations and

fracture-fillings. The pyrite weathers to limonite which imparts a rusty colour to the rocks. Surface exposures form a prominent gossan on the southern margin of the intrusive rocks. On the Rat 2 claim, the andesite appears unaltered and unmineralized.

The cherty sediments adjacent to the intrusions are recrystallized almost to quartzites and are permeated by a network of quartz veinlets. Minor amounts of limonite occur in the fractures and veinlets. Other mineralization on the property occurs in a 1-metre wide shear zone which strikes at 150° through the east side of the Rat 1 Claim (Figure 3). The mineralization consists of pyrite, chalcopyrite, sphalerite and galena in quartz-carbonate gangue. Sooty manganese oxide is abundant within the vein and adjacent andesite host rock. A selected sample returned 7139 ppm Cu, 1898 ppm Pb, 99,999 ppm Zn, 352.5 ppm Ag and 1320 ppb Au.

Rock chip samples were collected from the sulphide bearing intrusive, volcanic and sedimentary rocks and sent for analysis to either Min-En Laboratories Ltd. in North Vancouver, B.C., or Acme Analytical Laboratories Ltd., Vancouver, B.C. Descriptions of these rock specimens are presented in Appendix III, and their locations are shown on Figure 3.

The samples were crushed and pulverized prior to analysis. A 1.0 gram sample was then digested with HNO<sub>3</sub> and HCl mixture. Samples were diluted to standard volume after cooling, and the solutions analyzed for six or 31 elements by computer operated Jarrell Ash 9000 Induction Coupled Plasma (ICP) Analyzer. Gold was extracted by an acid leach and determined by atomic absorption spectrophotometry, using a 10 gram sample. The analytical results are presented in Appendix IV.

## CONCLUSIONS

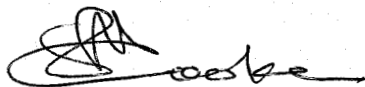
The Rat property is underlain by altered, pyritic, intermediate volcanic and alkaline intrusive rocks which contain anomalous amounts of copper and gold. The disseminated nature of this mineralization in association with monzonite and quartz monzonite porphyry stocks, plugs and dikes makes the area permissive for the discovery of bulk tonnage porphyry gold-copper deposits similar to those occurring on the adjacent New Kemess and Ron-Du claims. Precious metal quartz-carbonate veins which contain pyrite, chalcopyrite, galena and sphalerite also indicate that the property has potential for hosting epithermal precious metal deposits.

## RECOMMENDATIONS

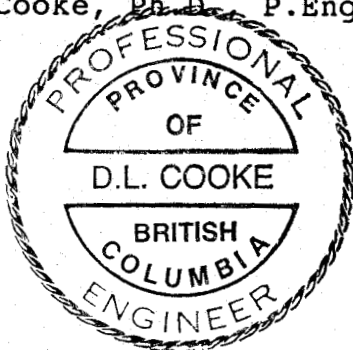
Further exploration is recommended to test the Rat claims for precious metals. A program of soil sampling should be done on the Rat 1 claim and the samples analyzed for gold and silver. Magnetometer and VLF-EM surveys are also warranted to evaluate the property for structures which may be the host to precious metals veins. Targets developed by this program of geochemistry and geophysics could be further tested by trenching and drilling.

Respectfully submitted .

D.L. COOKE AND ASSOCIATES LTD.



David L. Cooke, Ph.D., P.Eng.

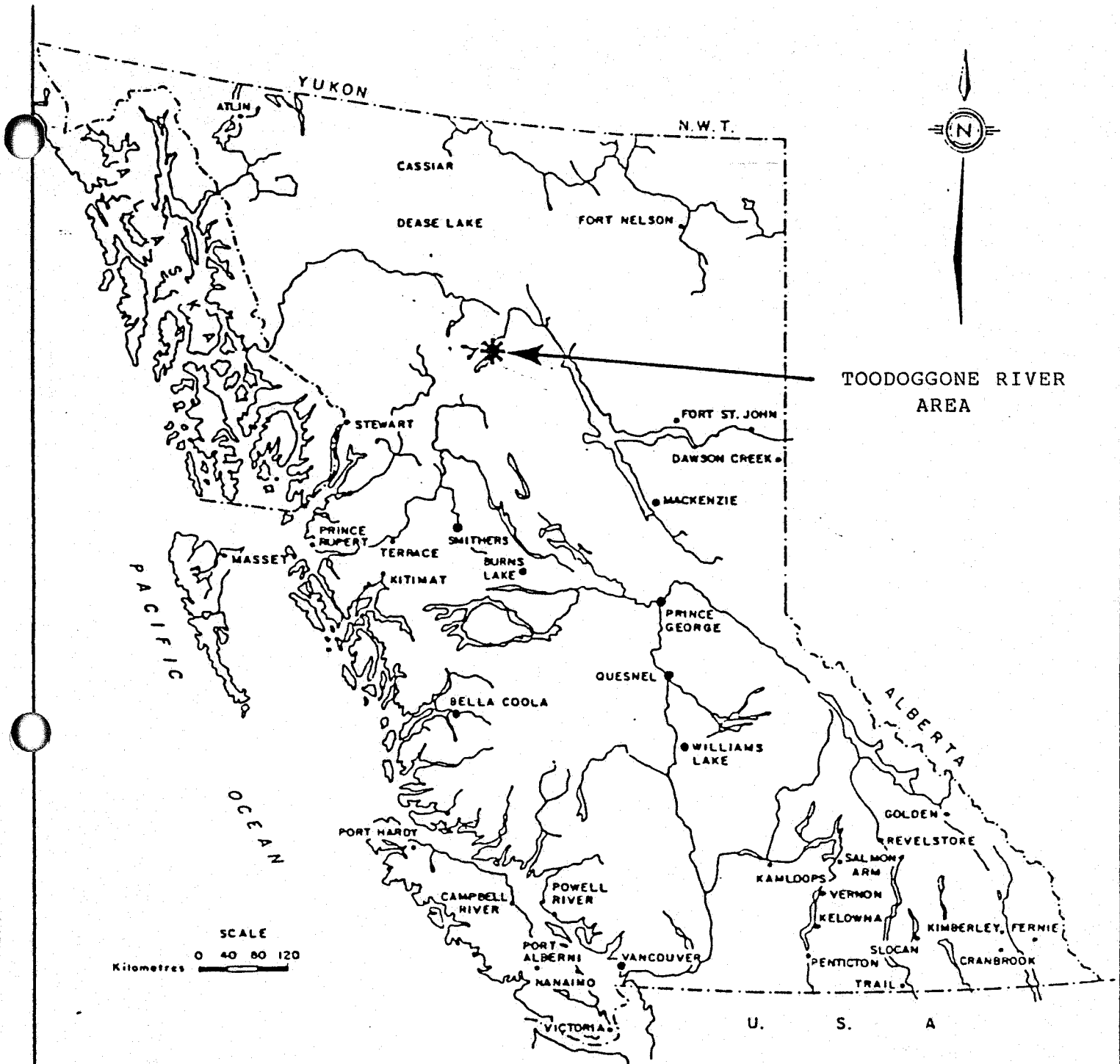


Rat1&2Re\DLC



REFERENCES

- Barr, D.A. 1978:  
The Chapelle Gold-Silver Deposit, British Columbia; CIM  
Bull, Vol. 71, pp. 66-79.
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Petroleum Res. (BCMEMP), G.E.M. 1971, pp. 63-70.
- Cooke, D.L. 1987:  
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- Diakow, L.J., Panteleyev, A., Schroeter, T.G. 1985:  
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61.
- Gabrielse, H., et. al. 1976:  
Geology of the Toodoggone River (93E) and Ware West-Half  
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D. L. COOKE & ASSOCIATES LTD.

TOODOGGONE RIVER AREA

LOCATION MAP

RAT CLAIMS

Omineca M.D.

NTS 94 E/2

Date: Feb. 1988

DWN BY:

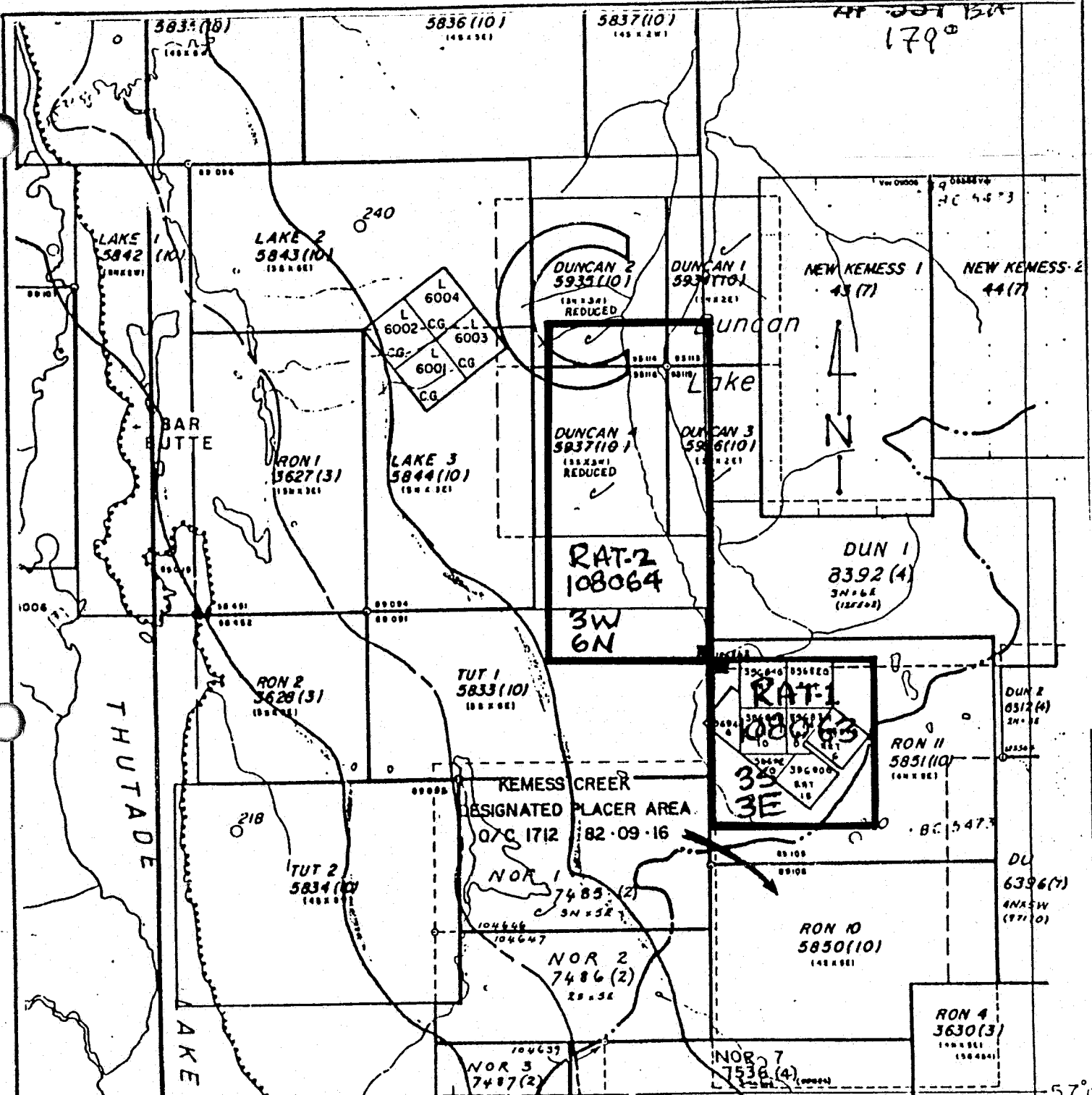
DATE:

CHK. BY:

FIGURE

SCALE: AS SHOWN

1



TO SOUTH SEE MAP 94-D-15-W

MAP 94E 12W

57°  
126°45'

D. L. COOKE & ASSOCIATES LTD.	
TOODOGGONE RIVER AREA	
CLAIM MAP RAT CLAIMS	
Omineca M.D.	N.T.S. 94E/2
Date: February 1988	
Scale: 1:50,000	Figure: 2

D.L. COOKE & ASSOCIATES LTD.

TOODOGGONE RIVER AREA

PRELIMINARY GEOLOGY

RAT CLAIMS

Omineca M.D.

N.T.S. 94E/2

Date: Aug. 24/88

Scale: ...

Figure: 3

LEGEND

- 4Q Qtz. Monz. Porph.
- 4 Monz. Porphyry
- 3 Qtz. Felds. Porph.
- 2 Quartzose Zone
- 1 Andesite
- ⊙ Outcrop
- Geol. Contact
- ~ Fault
- △ Rock Sample R88-1

100 0 200 400 metres



DUNCAN LAKE

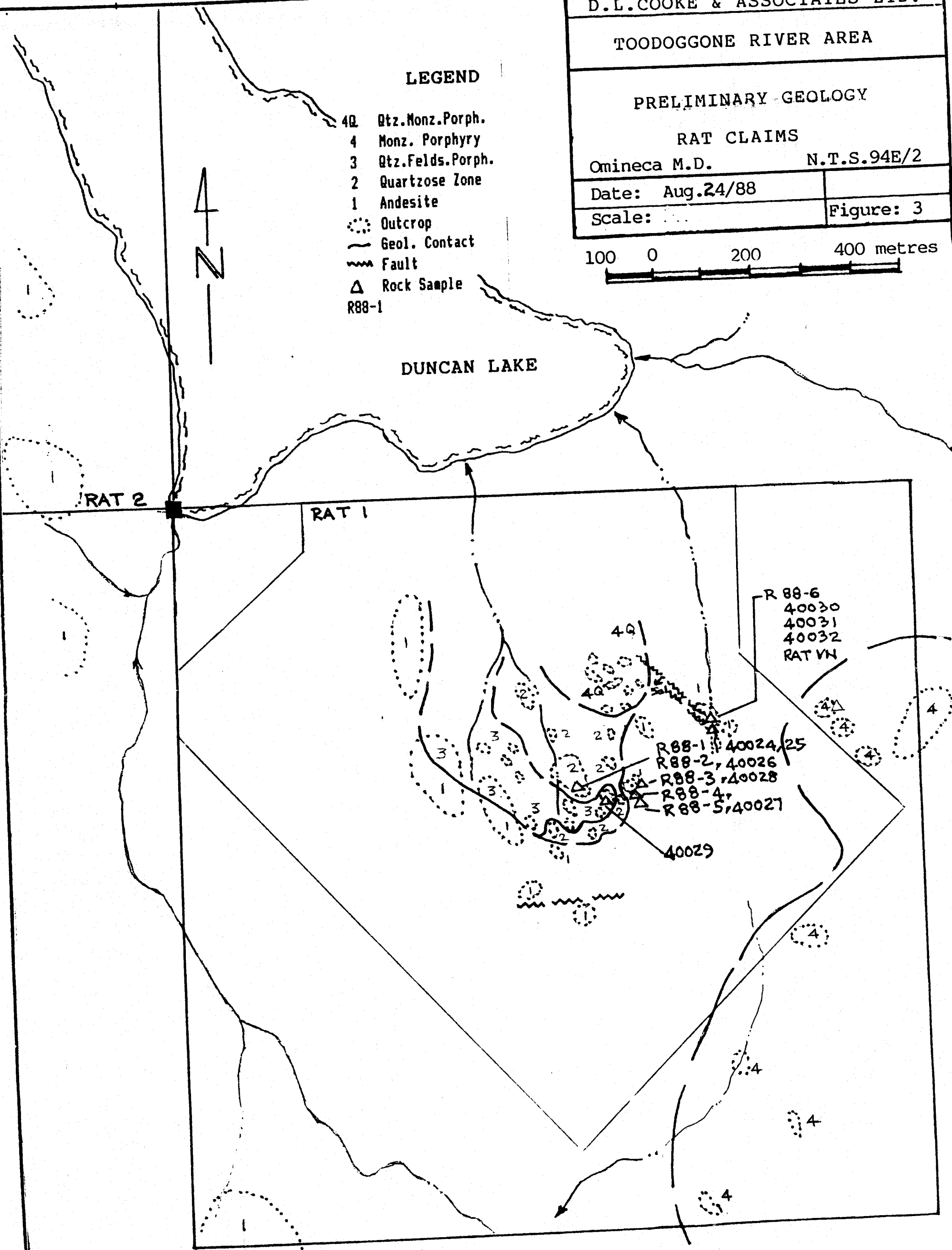
RAT 2

RAT 1

R 88-6  
40030  
40031  
40032  
RAT VI

R88-1, 40024, 25  
R88-2, 40026  
R88-3, 40028  
R88-4,  
R88-5, 40027

40029



APPENDIX I

STATEMENT OF 1988 EXPENDITURES  
RAT 1 AND 2 MINERAL CLAIMS

SALARIES: August 15 and 16, 1988

Geologists:

D.L. Cooke - 2 days @ \$300/day	\$600.00	
J. Morin - 2 days @ \$300/day	\$600.00	
D.L. Cooke Report	<u>\$300.00</u>	\$1,500.00

Geochemistry

Analysis: 6 element ICP - 6 X \$12.78 ea	\$76.70	
31 " " - 10 X \$15.00 ea	<u>\$150.70</u>	\$226.70

Transportation

Smithers/Sturdee - Central Mtn. Air	\$450.00	
Northern Mtn Helicopters - 1 1/2 hrs @ \$660/hr	<u>\$990.00</u>	\$1,440.00

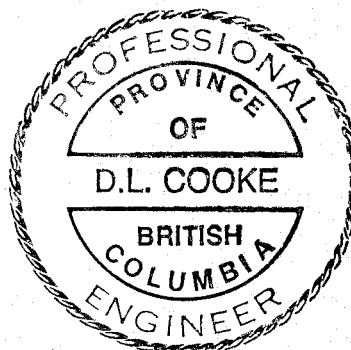

Domicile

4 man days @ \$50.00/day		\$200.00
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Drafting and Stenographic

Drafting	\$100.00	
Typing and Reproductions	<u>\$ 75.00</u>	\$ 175.00

TOTAL EXPENDITURES		<u>\$3,541.70</u>
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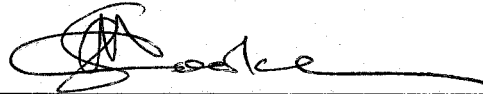


APPENDIX II

STATEMENT OF QUALIFICATIONS

I, DAVID LAWRENCE COOKE, of the Municipality of Surrey in the Province of British Columbia, hereby certify:

1. That I am a Consulting Geologist, residing at 10667 Arbutus Wynd, Surrey, B.C., V3R 0B5, with a business office at #811 - 675 West Hastings Street, Vancouver, B.C., V6B 1N2.
2. That I graduated with a B.Sc. degree in Geology from the University of New Brunswick in 1959, and with M.A. and Ph.D. degrees in Geology from the University of Toronto in 1961 and 1966 respectively.
3. That I have practised my profession as an exploration geologist from 1959 to the present time in Canada, the U.S.A., Mexico, the Caribbean and South America.
4. That I am a Registered Member of the Association of Professional Engineers of the Province of British Columbia.
5. That I carried out the exploration work on the Rat 1 and 2 mineral claims, and that I am the author of this report.



DAVID L. COOKE, PH.D., P.ENG.  
February 15, 1989



## APPENDIX III

### DESCRIPTION OF ROCK SAMPLES

#### RAT CLAIMS

SAMPLE NO.	SAMPLE DESCRIPTION
RX 040024	White to pale grey saccharoidal fine grained quartz frost-heaved rubble, minor disseminated pyrite less than 1%, composite representative chips;
RX 040025	Siliceous skarn (?) cut by pyritic quartz vein stockwork;
RX 040026	Quartz-feldspar porphyry with minor disseminated pyrite, chlorite along sub-cm - spaced fractures, cut by hairline thick stockwork of quartz veinlets;
RX 040027	Biotite-quartz-feldspar porphyry, medium grained with less than 1% very fine grained disseminated pyrite and chalcopyrite;
RX 040028	Actinolite-rich tactite (?), massive, moderately magnetic, chloritic, 1 to 5% disseminated pyrite;
RX 040029	Quartz-feldspar porphyry, altered to quartz-sericite-pyrite facies;
RX 040030	Limonitic, chloritic highly fractured and sheared andesite with disseminated pyrite; from boulders of subcrop on west slope of 150 degree-trending steep gully; this is immediate host rock to vein mineralization;
RX 040031	Quartz carbonate vein exposed in float boulders from west slope of gully; minor white to grey calcite, 5% black sphalerite in patchy clumps, more than 1% disseminated pyrite and trace chalcopyrite and galena; rock is locally weathered with black manganese oxides;

(ii)

**APPENDIX III CONTINUED**

- RX 040032            Grey quartz vein breccia with minor disseminated pyrite and rare galena; from site as above; quartz vein clasts in quartz matrix;
- RATVN                As per RX 040031;
- R88-1                Massive, sugary, white quartz rock with numerous harline fractures filled with limonite. May be fgd margin to QFP intrusion or silicified sedimentary rock of Takla Group.
- R88-2                Similar texture and grain size as R88-1, but has distinct green colour. Fractures filled with limonite and remnant py and tr. cpy. May contain epid. Usually adjacent to green Takla Volcanic rocks. Not as heavily fractured as R88-1.
- R88-3                Dark green, actinolite skarn rubble and disseminated pyrite (3-4%) and limonite (py) fractures up to 1 cm thick.
- R88-4                Rusty Limonite boxworks in rubble. Pieces up to 6" X 6" X 12".
- R88-5                Green, mgd to fgd bio-hbde(?) diorite or dioritized andesite with 2-4% disseminated pyrite and 1% cpy disseminated and in fractures. Rubble below skarn and limonite boxwork rubble.
- R88-6                Andesitic host rock in creek near top of linear SE break. Splashes and streaks of quartz with green alteration on sides; and 2-5% pyrite and minor chalcopyrite, sphalerite, galena and Mn staining throughout.



**APPENDIX IV**

**ANALYTICAL RESULTS**

ACME ANALYTICAL LABORATORIES LTD.

852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6

PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.  
 THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR HG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.  
 - SAMPLE TYPE: ROCK AU\* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE.

DATE RECEIVED: AUG 17 1988

DATE REPORT MAILED: *Aug 23/88*

ASSAYER: *C. Leong* D. TOYE OR C. LEONG, CERTIFIED B.C. ASSAYERS

INCO GOLD COMPANY PROJECT 60801-12010 File # 88-3681

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Hg	Ba	Tl	B	Al	Na	K	W	Au*
	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	%	%	PPM	PPM	%	PPM	%	PPM	%	%	PPM	PPB	
<i>Andesite</i> RAT VN	1	7139	1898	99999	257.5	1	8	13295	5.13	117	5	2	1	37	1755	12	356	8	4.57	.004	11	4	.20	40	.01	4	.38	.01	.04	2	1320
<i>Quartzose</i> RX 040024	3	207	66	2452	3.9	1	1	219	.68	4	5	ND	1	2	32	2	10	2	.02	.004	3	1	.02	133	.01	2	.05	.01	.01	2	390
RX 040025	8	67	6	108	.4	9	4	213	2.64	3	5	ND	1	2	1	2	4	15	.02	.021	4	3	1.10	77	.01	2	1.13	.01	.12	1	14
RX 040026	13	59	11	382	1.0	5	2	144	2.14	2	5	ND	1	11	4	2	3	22	.06	.011	2	6	.42	116	.01	2	.68	.05	.05	3	6
RX 040027	2	1608	8	75	1.1	3	10	416	5.37	2	5	ND	3	36	1	2	3	114	.63	.084	11	2	1.56	164	.13	2	1.81	.06	.17	1	99
<i>Andesite</i> RX 040028	432	218	7	65	.8	14	8	270	7.49	6	5	ND	1	8	1	2	4	116	.54	.210	3	4	.74	84	.02	10	.57	.01	.04	1	19
<i>QFP</i> RX 040029	28	73	8	38	.4	1	5	133	3.63	2	5	ND	3	10	1	2	3	8	.05	.032	7	1	.53	59	.01	2	.82	.03	.11	1	8
RX 040030	19	4634	194	550	80.2	15	25	1465	16.79	154	5	ND	3	6	4	10	48	16	.04	.006	2	7	.09	24	.01	2	.56	.01	.06	1	330
RX 040031	7	6338	1245	33354	258.6	3	10	12145	5.49	433	5	2	1	80	394	10	315	12	4.90	.004	2	1	.21	33	.01	2	.58	.01	.05	2	1060
RX 040032	5	220	63	2521	7.2	2	2	3297	1.85	6	5	ND	1	43	26	2	10	10	4.73	.005	6	6	.13	200	.01	2	.49	.01	.07	6	99

COMPANY: D.L. COOKE & ASSOCIATES LTD.

MIN-EN LABS ICP REPORT

(ACT: FIRE) PAGE 1 OF 1

PROJECT NO: RAT&SCRUTOR

705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2

FILE NO: 8-1382/P1

ATTENTION: D.L. COOKE

(604)980-5814 OR (604)988-4524 \* TYPE ROCK GEOCHEM \*

DATE: SEPTEMBER 8, 1988

(VALUES IN PPM)	AG	AS	CU	MN	PB	ZN	AU-PPB
R88-1	.9	15	59	187	18	44	5
R88-2	1.1	23	815	180	10	46	10
R88-3	1.0	38	138	308	6	56	5
R88-4	2.9	2	395	154	5	58	15
R88-5	1.0	25	680	585	17	71	20
R88-6	13.3	21	578	2023	94	1023	20
SC88-1	7.1	359	1090	303	28	50	.315
SC88-2	2.9	1462	1970	159	35	57	860
SC88-3	.8	13	113	405	18	42	5
SC88-4	.6	22	100	243	9	37	5