METALLURGICAL TEST

on the

CU 4 REDUCED CLAIM
VANCOUVER MINING DIVISION

92 G/11

49° 42'22"N
123° 27'19"W

Owner: D.K. Bragg
Operator: D.K. Bragg
Author: D.K. Bragg
Date: April 15, 2000

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INTRODUCTION & HISTORY

The history of the showings on Mt. Donaldson date from 1874 when the Howe Sound Mining Company reported finding copper mineralization on the mountain. Since then an adit has been driven for 90 feet on the best showing to date at Smithe Lake and numerous other showings have been trenched. The area has been staked numerous times since with some recorded work having been done, such as an airborne magnetic and electromagnetic survey, limited ground surveys of both magnetic and electromagnetics, geological mapping and 2,500 feet of drilling. However, this work has been sporadic and has not yet resulted in a conclusive evaluation of the potential of the area.

In researching the bibliography of the area there is little of substance to be found. There is mention of early shipments having been made from the property but no record of tonnages or assay results could be found. During 1967, five diamond drill holes were drilled for a total of 2,500 feet, but as yet no record of the logs or assays could be found.

Table 1 of the CIMM Vol 15 mentions a reserve of $\pm$ 5 million tons of .02 copper (this perhaps should have read 0.2 copper), but no record of the logs or grade intersections have been found to date. This mention in the CIMM Vol suggests that the mineralization may be hosted in a greisen.

The Cu 1 to 4 claims were located over the known mineralization in the vicinity of Smithe and Slippery Lakes north of Mt. Donaldson on NTS 92G/11 in November 1987. The claims were recorded on December 23, 1987. On December 21, 1988 the 80 units were reduced to 4 units. On that date a Prospecting Report was filed (see Prospecting Report on Cu 4 Reduced Claim by D.K. Bragg).

For numerous years the claims were held by paying cash in lieu. However, in 1990 some geological mapping was done (see Geological Report on the Cu 4 Reduced Claim by D.K. Bragg dated April 15, 1991).

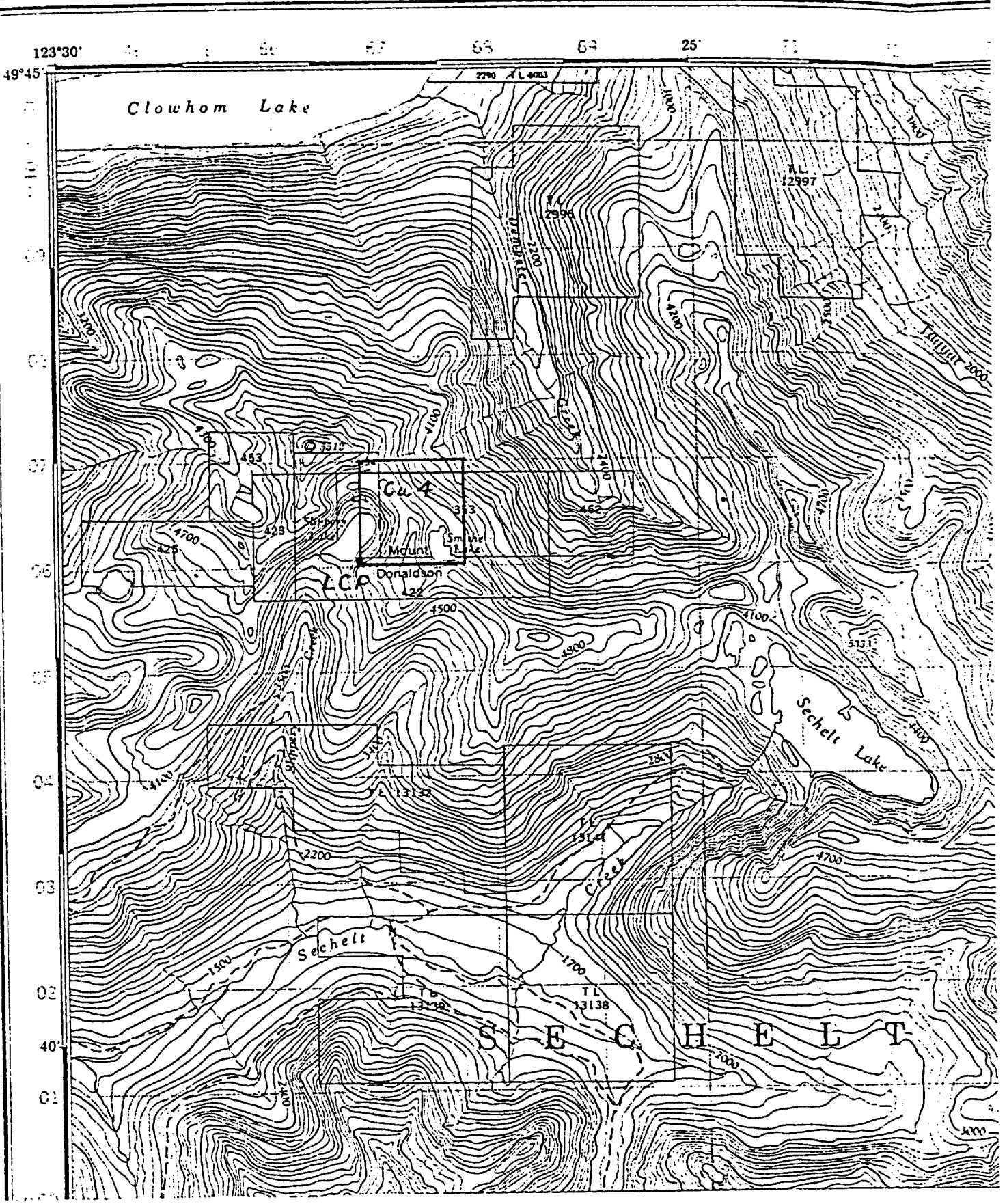
On November 1, 1995 the property was again visited and approximately 320 kg of rock samples were collected and brought off the property for metallurgical bench testing to determine if a salable product can be made of both the mica and silica in the rock, and to determine if the sulphides and precious metals can be economically extracted. This bench testing will be done in different phases over the next few years or as additional monies become available.

The first phase of the bench testing was done during 1996 (see Muscovite Processing Study Report No. 1 by Process Research Associates Ltd., dated April 9, 1997). The second phase was done during 1997 (see Muscovite Processing Study No. 2 by Process Research Associates. This is Assessment Report 25,498 dated September 1, 1998).

These first two scoping tests using a winnowing process proved to be inconclusive and appeared not to be the best method of obtaining a clean and maximum separation of the muscovite mica from the silica, feldspars and sulphides.

On December 9, 1999 another 50 kg of rock samples from the Mt. Donaldson mineralized zone that were collected in a visit to the property on November 1, 1995 for further testing.

This current report, No. 3, covers a scoping flotation test on a new head sample. The sample was pre-treated to remove the slimes and sulphides then the muscovite mica was floated with portions of the mica concentrates and tails were sent to Cominco Exploration Research Lab for study and analysis.



Index Map of Cu 4 Reduced Claim

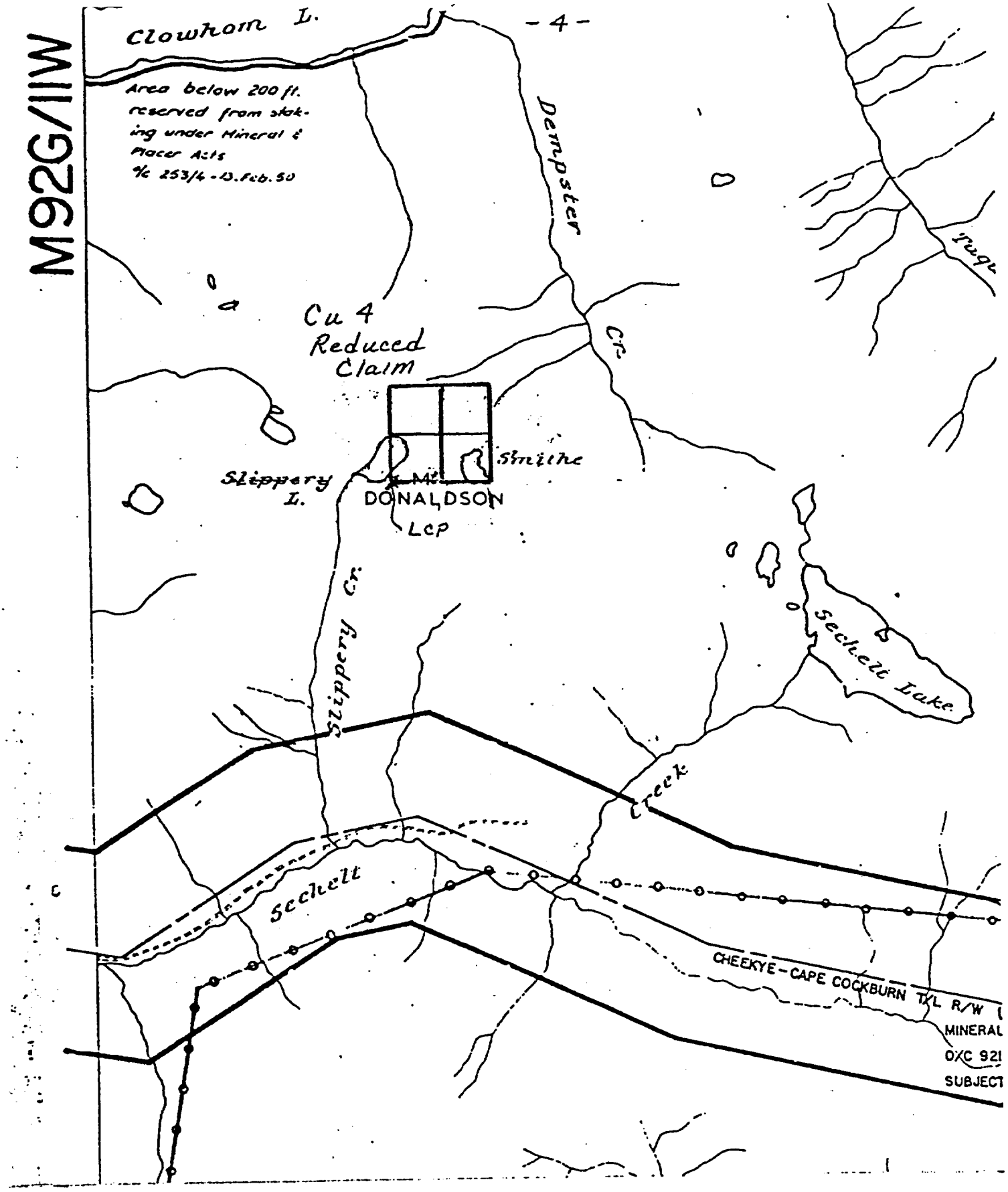
Scale 1 - 50,000

Miles .5 0 1 2 Miles

Metres 1000 500 0 1000 2000 3000 Metres

Kilometres 1 0 1 2 3 Kilometres

M92G/11W



Location Map of Cu 4 Reduced Claim

Scale 1 - 50.000

Miles 1 .5 0 1 2 Mile

Metres 1000 500 0 1000 2000 3000 Metres

Kilometres 1 .5 0 1 2 3 Kilometres

PROPERTY LOCATION AND ACCESSIBILITY

The Cu 1-4 claims were located on Mt. Donaldson within the Coast Range approximately 35 miles north northwest of Vancouver. The L C P is at 49°42'22"N and 123°27'19"W (see Figure 1). Elevations on the Cu 1-4 range from 730 metres to 1,680 metres. The elevations on the remaining 4 units of Cu 4 after reduction range from 1,150 metres to 1,550 metres (see Figure 2 and 3). The topography of the area is very steep and precipitous to the point where some areas are impassable by foot or at the least treacherous. Much of the lower elevations on the southern two claims, Cu 1 and 2, have been logged and numerous road do exist in the area, however some of these roads are now impassable due to washouts and renewed growth on the roads. The remainder of the claim area up to about the 1,350 metre elevation is covered by typical dense coast range forest. Above the 1,350 metre elevation this forest cover decreases to sub-alpine, and above 1,500 metres the area is mainly rock, talus and snow. In some areas this snow may remain all year around.

Previous assessment reports on the area had suggested that vehicular access could be via the power line from Port Mellon along the north shore of Thornbough Channel to McNab Creek and thence via the logging roads into Slippery Creek.

When the claims were located in 1987, this power line route was no longer passable, so a truck was barged into McNab Cr from Horseshoe Bay and driven to within two km of the L C P via the logging roads up McNab creek, over the pass into Sechelt creek and up to the 760 metre elevation on Slippery Creek. The only other route into the area is by barge from Sechelt up Sechelt Inlet to Salmon Inlet to Sechelt Creek and thence into the property. However, due to the aggressive deactivation of roads neither of these routes may be available.

GENERAL GEOLOGY OF THE AREA

The general geology of the area is covered by Map 42 - 1963, Squamish, B.C. by H.H. Bostock, with more specific geology present in Assessment Reports 752, 4003, 8822 and 11619.

The area of the Cu 1-4 claims is within the Coast Plutonic Complex consisting here mainly of medium grained quartz, biotite and hornblende, biotite granites. In the area of the showings west of Smithe Lake within the quartz, biotite granite is what is probably a late stage intrusive body of muscovite granite.

The mineralization appears to be closely associated with this muscovite granite and occurs as disseminations and small blebs within the muscovite granite and in many of the numerous quartz veins and quartz masses within the muscovite granite, and to some extent within the surrounding envelope of quartz biotite granite.

Small aplitic dikes cross the property parallel to the joint systems. Also within the area are linear outcrops of bedded lapilli tuffs or tuffaceous rocks. The relationship of these tuffs to the granite is unclear.

STUDIES 1999

The third phase of the metallurgical bench testing was done during December of 1999 by Process Research Associates Ltd. and the result of this is reported in Appendix - Muscovite Processing Study Report No. 3

RESULTS

In looking at the products of the mica concentrate in the different size ranges for the three stage separation (see Table 4.2 Product Concentrate Size Distribution, Page 8, Mica Flotation Study of Process Research Associates Ltd.) with a hand lens and microscope I was impressed by the apparent purity of the mica. Very little silica or feldspar could be seen. This was confirmed by the analysis done by Cominco Research Lab where two samples were prepared as a polished grain mounts and examined microscopically. The Mica Concentrate was 94% muscovite. This was on a sample that had not been recleaned. Some of the mica passed -400 mesh without being reground or delaminated. Of even greater surprise was the fact that the tails were 92% quartz.

A concentrate of the sulphides was floated prior to floating the mica. This concentrate was 0.1% of the heads and is probably a concentration of copper pyrites and iron pyrites. The heads were selected in such a manner to reflect the leanest or lower sulphide content of the deposit. In viewing this deposit in the field and looking at the past drill results, I suspect that the overall sulphides, mostly chalcopyrite will be between 0.2% and 0.3% with both gold and silver credits.

CONCLUSIONS

The flotation method of separating the muscovite from the rest of the material appears to be far superior to the winnowing method although winnowing might play a part in cleaning and sizing the product once the sulphides have been removed.

The fact that the tails were 92% quartz opens up the possibility that the tails may be of economic use. More research needs to be conducted on the tails to see if the silica content can be upgraded or cleaned, or if the tails could be used as an 'as-is' product.

This could greatly change the economics of this deposit as there may be an opportunity of using the total deposit eliminating the costs of tailings impoundment.

STATEMENT OF COSTS

Process Research Associates Ltd. - cost of Report No. 3		$ 350.00
Cominco Ltd. / Exploration Research Laboratory		252.52
Report		22.48
PAC Withdrawal		175.00
	Total Recorded	$ 800.00

STATEMENT OF QUALIFICATIONS

D.K. Bragg

Graduated Armstrong High School, Armestrong B.C., 1951

Attended U. B. C. from 1958 to 1962 in Arts and Science; Honors Geology.

Has worked in the mineral exploration industry since 1956.

Worked for Kennco Explorations during the summers of 1956. 1957, and 1959 in the Yukon and northern B.C. as an assistant prospector and geochem sampler under the direction of Dr. R. Campbell and R. Woodcock.

Worked as head prospector for the Nahanni 60 Syndicate in the Northwest. Territories in 1960 under the direction of Doug Wilmont.

Worked as head prospector in the Yukon for Dualco in 1961 under the supervision of E. Wozniak.

Worked as head prospector for Mining Corp. of Canada in southwest B.C. in 1962 under J. S. Scott and Dr. K. Northcote.

Worked as head prospector during the summer of 1963 for the Fransis River Syndicate in central Yukon, under the direction of Dr. A. Aho

Worked as field geologist in the Greenwood area of B.C. for Scurry Rainbow Oil.

Worked as field supervisor for Alray Explorations Ltd. from Sept 1965 to April 1967 under the direction of Rae Jury.

Since 1956 has also worked as a self employed contractor, working for various mining companies in the following fields: prospecting, property examination, staking claims, line cutting, topagraphical mapping, geological mapping and reconnaisance, mineral sampler, drafting, air photo interpretation, geochemistry, geophysics, and supervising property exploration programs. Since 1956 has also been a self employed prospector working in various areas in B.C. on numerous properties.

Has assisted in teaching the geochemical section of the Ministry of Energy, Mines & Petroleum Resources Mineral Exploration Course For Prospectors under the direction of Dr. S. Hoffman in 1984, 1985, 1986, 1987, 1988. 1989, 1990, 1991

Has recieved the B.C. Provincial Grubstake for the years 1964, 1968, 1969, 1970, 1980,1981, 1982, 1983, 1985, 1986, 1987, 1988. 1989, 1990.

Has worked in the Rossland Camp since 1971 as a miner on the Snowdrop and Bluebird claims. Has spent considerable time in the camp as a prospector and mining exploration contractor.

REFERENCES

Map 42 - 1963, Squamish, B.C. by H.H. Bostock

BCDM MMAR 1917 - 281
1922 - 251
1924 - 244
1928 - 389
1965 - 222
1966 - 245
1967 - 62

BCDM GEM 1972 - 277
1975 - E106

BCDM Open File

EMR MRD Corpfile (Pacific copper Mines Ltd., Grasset Lake Mines Ltd.)

CIM Special Vol 15 - Res

BCDM Ass Rpt 752
4003
8822
11619

APPENDIX

MUSCOVITE FLOTATION SCOPING TEST

Prepared for:

D. K. Bragg
1291 E. 53rd Ave.
Vancouver, BC
V5X 1K1

Attention: **Mr. Don Bragg**

Prepared by:

PROCESS RESEARCH ASSOCIATES LTD.
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V6P 6R9

PRA Project No.: **9901012**

Elaine Zhan, Ph.D.
Senior Metallurgist

Reviewed: Frank Wright, P.Eng.
Sr. Metallurgical Engineer

March 31, 2000

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1.0 SUMMARY

A scoping flotation test was conducted to recover mica from a composite sample obtained from the Mt Donaldson area of coastal British Columbia. The principal mica mineral is muscovite. The sample was first crushed to 100% -20 mesh, and pretreated to remove slimes and sulphide mineral impurities. A three stage muscovite flotation program was undertaken to recover mica.

The concentrates produced from each stage of muscovite flotation were screened, with most of the material shown to be present in a particle size range of between 50- 200 microns. The coarser portion of the products containing particles over 210 microns was primarily produced from the second and third stages of flotation.

The muscovite concentrates were then combined and examined by Cominco Exploration Research Laboratory using optical microscope and X-ray diffraction techniques. Based on this examination the combined concentrate contained 94% muscovite, 3-4% of quartz, 1-2% of plagioclase feldspar, 1% of opaque minerals, and trace amount of carbonate. The mica was reported to occur primarily as flakes, typically in the size range of 100-200 microns.

The flotation tailing was reported to contain 92% quartz, 5% muscovite, 3% plagioclase feldspar, less than 1% opaque minerals and a trace amount of apatite and carbonate. Approximately half of the mica in the tailing appeared to be present as free particles, generally exceeding 250 microns, with the remainder being intergrown into grains of quartzite.

Based on the study the head sample was calculated to contain about 30% muscovite, of which 28.3% of the original feed weight reported to the product flotation concentrate. The mica recovery to the concentrate was approximately 90%, with a grade of 94%. muscovite.

2.0 BACKGROUND

Process Research Associates Ltd. was commissioned by Mr. D. K. Bragg to conduct a metallurgical study for the recovery of muscovite from rock samples obtained from the Mount Donaldson region of British Columbia, Canada.

This report details the pre-treatment procedures and product scoping flotation tests for muscovite recovery. Size distribution of the various flotation concentrates produced and examination of a combined concentrate was undertaken by optical microscope and X-ray diffraction.

3.0 PROCEDURE

3.1 Sample Preparation

Two samples labeled as Cu and Barren were received. Each sample was separately crushed to –6 mesh. Half of the weight from each sample was then riffled and combined to form a composite sample that was used for the study program. The remainder of the sample not used for testing was archived.

The composite sample was riffled into 2 kg charges. Each charge was screened on a 20 mesh (841 micron) sieve. The +20 mesh fraction was ground in a plate pulverizer, adjusted to a coarse opening until it passed 20 mesh size fraction. This produced 2 kg of 100% -20 mesh composite sample used for testing.

3.2 Batch Flotation

The composite sample was dispersed in water, mixed, and allowed to settle. The supernatant containing suspended colloidal solids was decanted. This procedure was repeated three times prior to the flotation to remove the slimes. Flotation was first carried out to remove sulfide mineral impurities by using PAX (potassium amyl xanthate) as the collector and MIBC as the frother. Mica flotation was then undertaken in three stages. The reagents used were sodium lignin sulfonate and dodecyl amine in the first product flotation stage, and dodecyl amine only in the final two stages.

Flotation was conducted using a 4L cell with a Denver D12 flotation machine at approximately 30% solids, the natural pH and at ambient temperature. The impeller speed was set at 1800 rpm and the airflow was manually controlled to maintain the froth level. The detailed flotation procedure and conditions are given in the test reports attached in Appendix 1. Products from the flotation were dried in an oven, prior to weighing and analysis.

3.3 Product Analysis

The concentrate was dry screened using stacked test sieves in ascending mesh sizes (descending particle size) with a collection pan at the bottom of the stack. The stack was placed in a Ro-Tap sieve shaker, which imparted a circular motion to the sieves and periodically taped the stack to prevent blinding. After a set time, the shaker stopped and the individual fraction, which had been collected on each sieve, was weighed.

A portion of each screened fraction was then blended to makeup a combined product concentrate for examination by Cominco Exploration Research Laboratory, located in Vancouver. The flotation tailing were also investigated at Cominco where the samples were prepared as grain mounts and examined microscopically, as well as by X-ray diffraction. The report, attached as Appendix 2, includes diffractorgram and photomicrographs.

4.0 RESULTS AND DISCUSSION

4.1 Batch Flotation Tests

Slurring and decantation removed slimes that accounted for 13.8% of the original feed weight. The de-sliming step was conducted as the fine colloidal material could consume flotation reagents and result in reduced product recovery. A pre-float using potassium amyl xanthate collector was initially undertaken to remove sulfide minerals. The presence of sulphides could contaminate the mica concentrate. A small amount of visible sulfide minerals were observed in the sulfide flotation concentrate, representing about 0.1% of the original feed weight.

After removal of sulfide minerals, sodium lignin sulfonate was added to disperse any remaining slimes present and dodecyl amine was used as the collector during mica flotation, which was conducted in three stages.

The mass balance of the pre-treatment steps and product flotation is summarized in Table 4.1.

Table 4.1 – Mass Balance

Product	Weight	
	(g)	(%)
De-Sliming (fines)	276	13.8
Sulfide Concentrate	2.29	0.1
Mica Concentrate 1	225	11.2
Mica Concentrate 2	189	9.4
Mica Concentrate 1+2	413	20.7
Mica Concentrate 3	153	7.7
Total Mica Concentrate	567	28.3
Final Tail	1155	57.8
Calculated Head	2000	100.0

4.2 Product Analysis

The results of size analysis on the three individual mica concentrates are provided in Appendix 1 and summarized in Table 4.2 below.

Table 4.2 – Product Concentrate Size Distribution

Particle Size Range	Distribution (Wt. %)		
(microns)	Stage 1	Stage 2	Stage 3
+210	1.3	20.1	27.5
-210 / +105	21.6	37.3	8.6
-105 / +37	45.8	23.9	42.9
-37	31.3	18.7	21.0
Total	100.0	100.0	100.0

The weight of product was distributed respectively at 39.7%, 33.3%, and 27.0% to the first, second and third stages. As shown in Table 4.2 most of the coarser material was recovered in the final two stages of flotation.

The Cominco microscopic estimation (see report - Appendix 2) indicated that the combined flotation concentrate contained 94% muscovite. The mica occurred as flakes up to 500 microns, but generally was reported to be in the size range of 100-200 microns. The outline of the flakes appeared to be irregular, generally monomineralic grains of 250 microns and finer in size. Some of the quartz was rounded, but was typically irregular in shape. Minor amounts of prismatic grains of plagioclase feldspar in the size range of 100-200 microns were also observed. Both quartz and feldspar are generally free from mica inclusions. In reflected light, opaque minerals were present at up to 300 microns, but were usually finer than 100 microns. They consisted primarily of chalcopyrite, pyrite, hematite/limonite along with a few grains of tramp iron.

The mineralogy based on microscopic analysis of the combined flotation concentrate and tailing are tabulated in Table 4.3

Table 4.3 - Microscopic Estimation of Concentrate and Tailing for Mineral Content

Mineral Mode	Concentrate	Tailing
Muscovite	94%	5%
Quartz	3-4%	92%
Plagioclase	1-2%	3%
Opaques	1%	< 1%
Carbonate	Trace	Trace
Apatite	-	Trace

The tailing contained 92% quartz and was typically in the size range of 250-500 microns, and usually monomineralic. Plagioclase and possibly other feldspar were present in grains of 250 microns and finer. Rarely grains of apatite and carbonate were also noted. Opaque phases were restricted to a few grains of magnetite (100-200 microns) and limonite. Very minor tramp iron was noted.

Approximately 5% mica was reported in the tailing, with approximately half present as free particles, typically at a size of over 250 microns. The remaining 50% were present as composite grains with quartz, usually as simple intergrowths.

The X-ray diffractograms of concentrate and tail confirmed the major phases: muscovite, quartz and plagioclase feldspar.

5.0 CONCLUSION AND RECOMMENDATIONS

The head sample contained 30% muscovite; 90% of which was recovered to a product flotation concentrate. The flotation product graded 94% muscovite typically in a size range of 50-200 microns, most free from quartz and feldspar. The product concentrate represented about 28% of the original feed weight. Tailing losses of free muscovite particles was generally coarse; present in a size range exceeding 250 microns. About half of the muscovite losses occurred as simple intergrowths with quartz.

Laboratory investigation into reducing losses of muscovite could be undertaken by re-grinding and flotation of tailing. Based on this further optimization of the primary grind, future comminution studies could investigate removal of coarse fractions during batch grinding studies. Commercial practice requires avoiding over-grinding, which involves engineering the plant for correct size separation during the continuous comminution step.

Variation to the flotation reagent scheme and retention time should be investigated, followed by optimizing the reagent consumption. It should be established if decreased grade is a consequence of flotation retention time. If required cleaning of the product could also be evaluated.

APPENDIX 1

FLOTATION TEST PROCEDURE

Client: Don Bragg
Test: F1
Sample: Comp1

Date: 12-Jan-00
Project: 9901012

Objective: Initial flotation scoping test to recover Mica.

STAGE	TIME (min)	pH	ADDITION		COMMENTS
			Reagent	g/tonne	
Screen @ 20 mesh Plate pulverizer +20 mesh 1.99 kg 100% - 20 mesh					
Sulfide Flotation					
Condition 1	5	8.0	PAX MIBC	25 8	
Rougher Float1	4	8.0			Some sulfide minerals floated
Mica Floatation					
Condition 2	5 5	7.8 - 8.0 7.9 - 8.0	SLS DDA	750 100	Sodium lignin sulfonate Dodecyl Amine
Rougher Float2	4	8.0			A large amount of foam formed and visible mica floated
Condition 3	3	8.0	DDA	100	Dodecyl Amine
Rougher Float3	4	8.0			A large amount of foam formed and visible mica floated
Condition 4	3	8.0	DDA	50	Dodecyl Amine
Rougher Float 4	4	7.5			A large amount of foam formed but no much visible mica floated

FLOTATION TEST METALLURGICAL BALANCE

Client: Don Bragg
Test: F1
Sample: Comp 1 - Mt. Donaldson

Date: 12-Jan-00
Project: 9901012

Objective: Initial flotation scoping test to recover Mica.

Product	Weight		Microscopic Estimation	Distribution*
	(g)	(%)	(% Muscovite)	(Wt. %)
Slime Decantation	276	13.8		
Sulphide Concentrate	2.29	0.1		
Mica Stage 1 Concentrate	225	11.2		
Mica Stage 2 Concentrate	189	9.4		
Mica Concentrate 1+ 2	413	20.7		
Mica Stage 3 Concentrate	153	7.7		
Total Mica Concentrate	567	28.3	94	90
Final Tail	1,155	57.8	5	10
Calculated Head	2,000	100.0	30	100

Note:
*Distribution does not include mica removed in pretreatment steps (i.e. slime decantation)

SIZE ANALYSIS REPORT

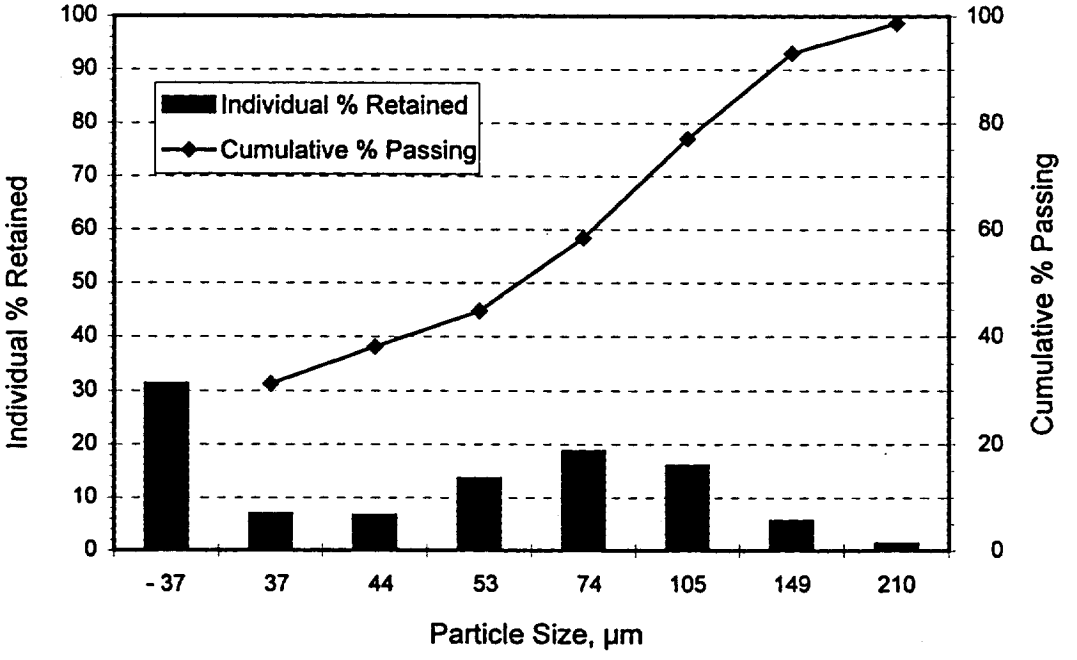
Client: Don Bragg
Test: F1
Sample: Mica - Stage 1 Concentrate
Grind: n/a

Date: 14-Jan-00
Project: 9901012

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	1.3	98.7
100	149	5.6	93.1
150	105	16.0	77.1
200	74	18.7	58.3
270	53	13.6	44.8
325	44	6.6	38.1
400	37	6.9	31.3
Undersize	- 37	31.3	-
TOTAL:		100.0	

80 % Passing Size (µm) = 113

Size Distribution



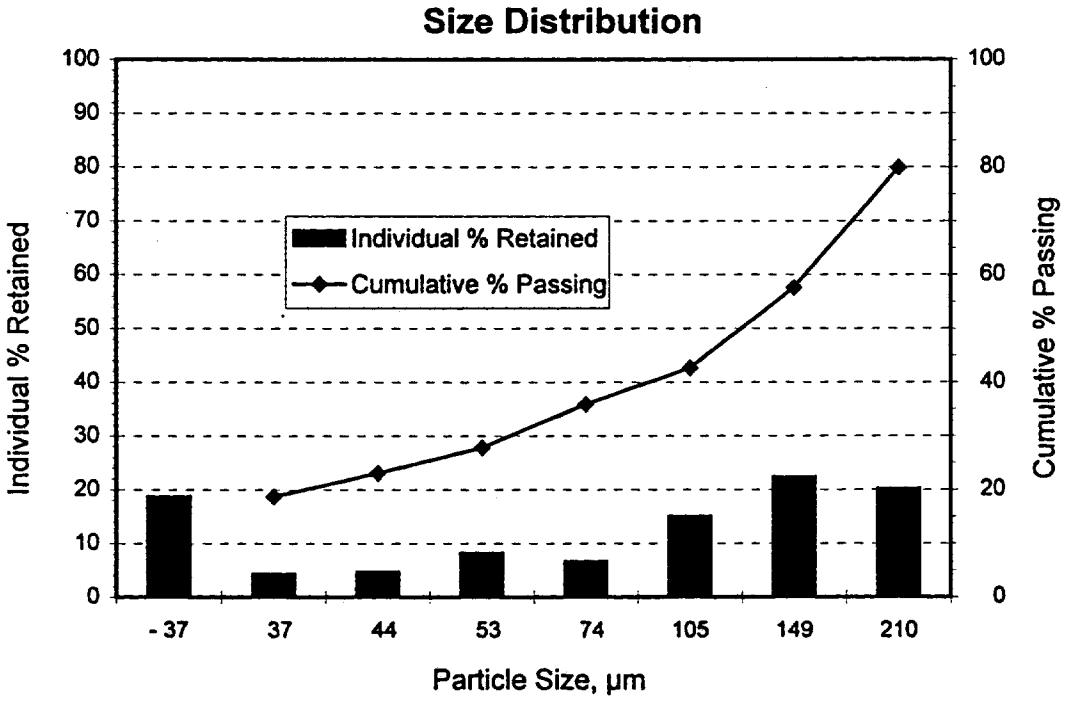
SIZE ANALYSIS REPORT

Client: Don Bragg
Test: F1
Sample: Mica - Stage 2 Concentrate
Grind: n/a

Date: 14-Jan-00
Project: 9901012

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	20.1	79.9
100	149	22.3	57.6
150	105	15.0	42.6
200	74	6.7	35.9
270	53	8.2	27.8
325	44	4.7	23.0
400	37	4.3	18.7
Undersize	- 37	18.7	-
TOTAL:		100.0	

80 % Passing Size (µm) = 210



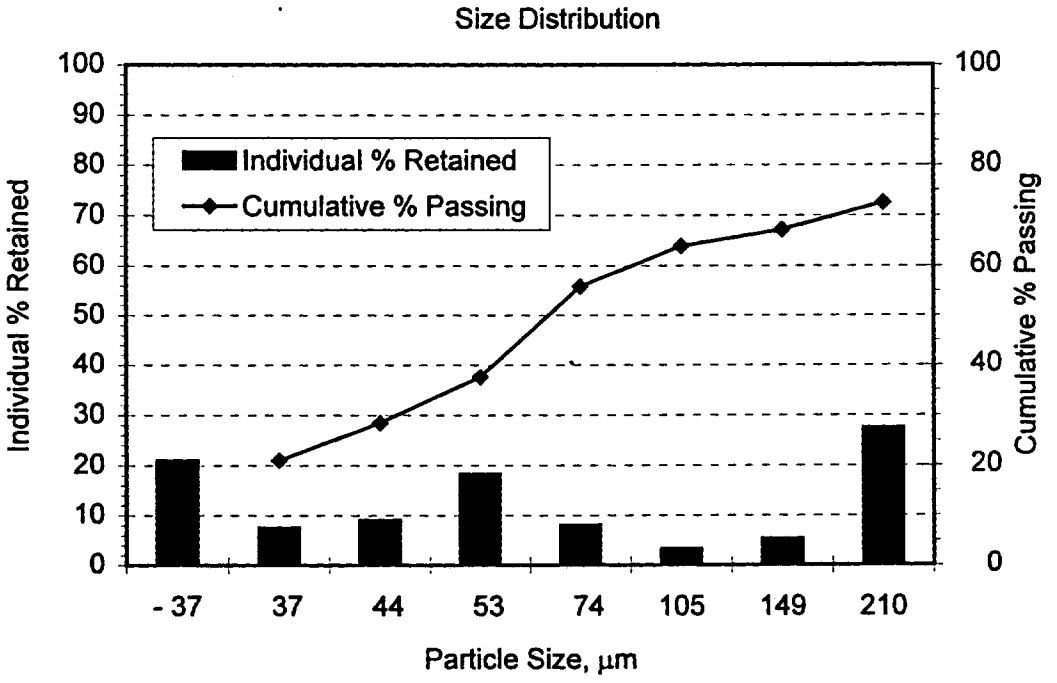
SIZE ANALYSIS REPORT

Client: Don Bragg
Test: F1
Sample: Mica -Stage 3 Concentrate
Grind: n/a

Date: Jan 14,2000
Project: 9901012

Sieve Size		Individual	Cumulative
Tyler Mesh	Micrometers	% Retained	% Passing
65	210	27.5	72.5
100	149	5.3	67.2
150	105	3.3	63.9
200	74	8.1	55.8
270	53	18.3	37.5
325	44	9.1	28.5
400	37	7.5	21.0
Undersize	- 37	21.0	-
TOTAL:		100.0	

80 % Passing Size (µm) = 233



APPENDIX 2

Cominco Ltd. / Exploration Research Laboratory / 1400 East Pender Street / Vancouver, B.C. / Canada V5L 1V8
Phone: (604) 685-3032 / Fax: (604) 844-2686

Cominco

Mr. D. Bragg
6474 Prince Albert Street
Vancouver, B.C.
V5W 3E6

29 February, 2000

Dear Sir: ***RE: Mica Products / E.R.L. Job V00-0092R***

Two samples were submitted on your behalf by Process Research Associates Ltd. They are numbered as follows:

LAB NO.	*PROCESS RESEARCH NO.*
R00:1089	9901012 RO. CON
R00:1090	9901012 TAIL

Each sample was prepared as a polished grain mount and examined microscopically. In addition, each sample was analyzed by x-ray diffraction.

Following are some brief microscopic observations:

SAMPLE R00:1089 (9901012 RO. CON.).

The following mineral mode, based on visual estimation, is as follows:

Muscovite:	94%
Quartz:	3-4%
Plagioclase:	1-2%
Opaques:	1%
Carbonate:	Tr.

Plates of mica are up to 0.5 mm but most fall in the size range of 0.1 - 0.2 mm. They tend to be irregular in outline and are flat lying. Only rare grains of mica are oriented on edge in the section, as a result of the platy nature of mica. A few percent of quartz as rounded, generally monomineralic grains are 0.25 mm and finer in size. They are typically irregular in shape. Minor amounts of prismatic grains of plagioclase in the 0.1 - 0.2 mm size range are observed. Both quartz and feldspar (plagioclase) rarely form composites with mica.

In reflected light opaques up to 0.1 x 0.3 mm, but usually finer than 0.1 mm, are seen. They consist of chalcopyrite, pyrite, hematite/limonite along with a few grains of tramp iron.

The product is relatively pure but fine grained.

SAMPLE R00:1090 (9901012 TAILS.).

The following mineral mode, based on visual estimation, is as follows:

Quartz:	92%
Muscovite:	5%
Plagioclase:	3%
Opaques:	<< 1%
Apatite:	Tr.
Carbonate:	Tr.

Quartz grains are typically anhedral and 0.25 - 0.5 mm in size. They are usually monomineralic. Plagioclase and possibly other feldspars are present in grains of 0.25 mm and finer. They are somewhat prismatic and often have polysynthetic twinning. Mica occurs as flakes and small books in the 0.25 mm size range. About 50% of the mica is free and 50% is as composite grains with quartz. They are usually as simple intergrowths. Rare grains of apatite and carbonate are noted.

Opaque phases are restricted to a few grains of magnetite (0.1 - 0.2 mm) and limonite. Very minor tramp iron is noted.

The x-ray diffractograms of both products confirm the major phases; muscovite, quartz and plagioclase feldspar.

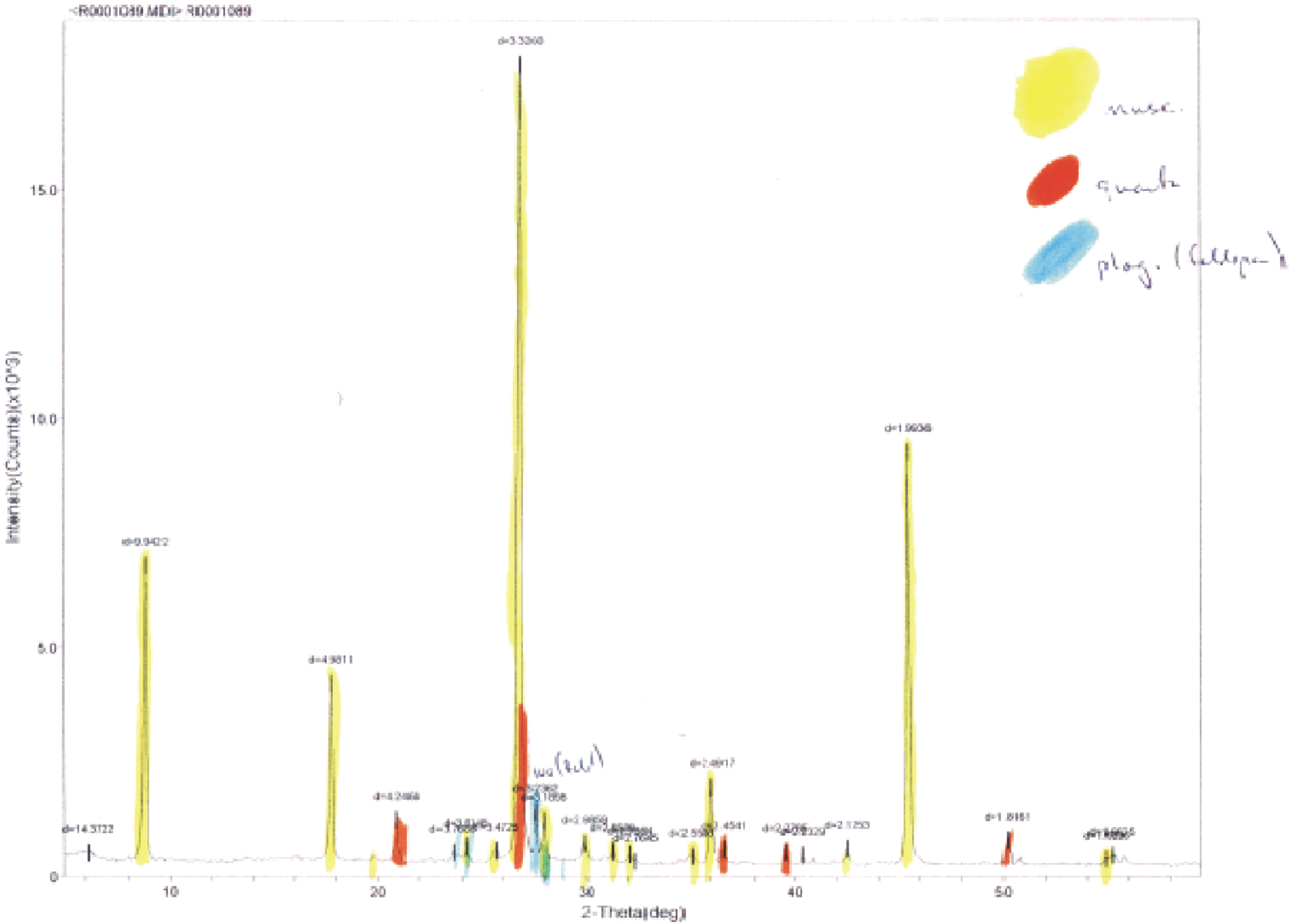
A number of photomicrographs have been taken to demonstrate mineralogy, compositing and grain size. These are captioned and appended.

Yours truly,

J.A. McLeod, M.A.Sc., P.Eng.
E.R.L. Manager

JAM/skw

App. (diffractogram, photomicrographs)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d=1.9936
d=14.3722
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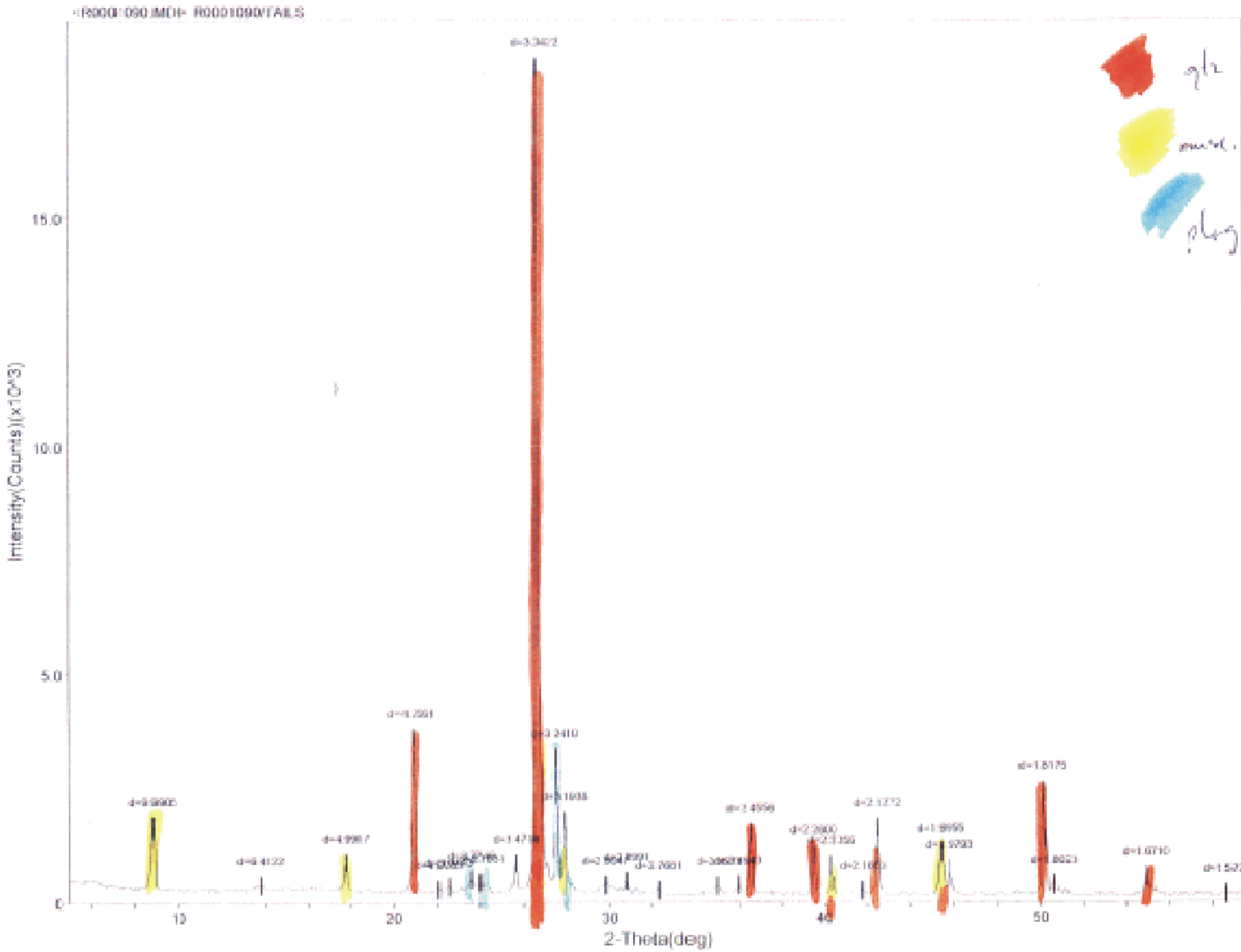
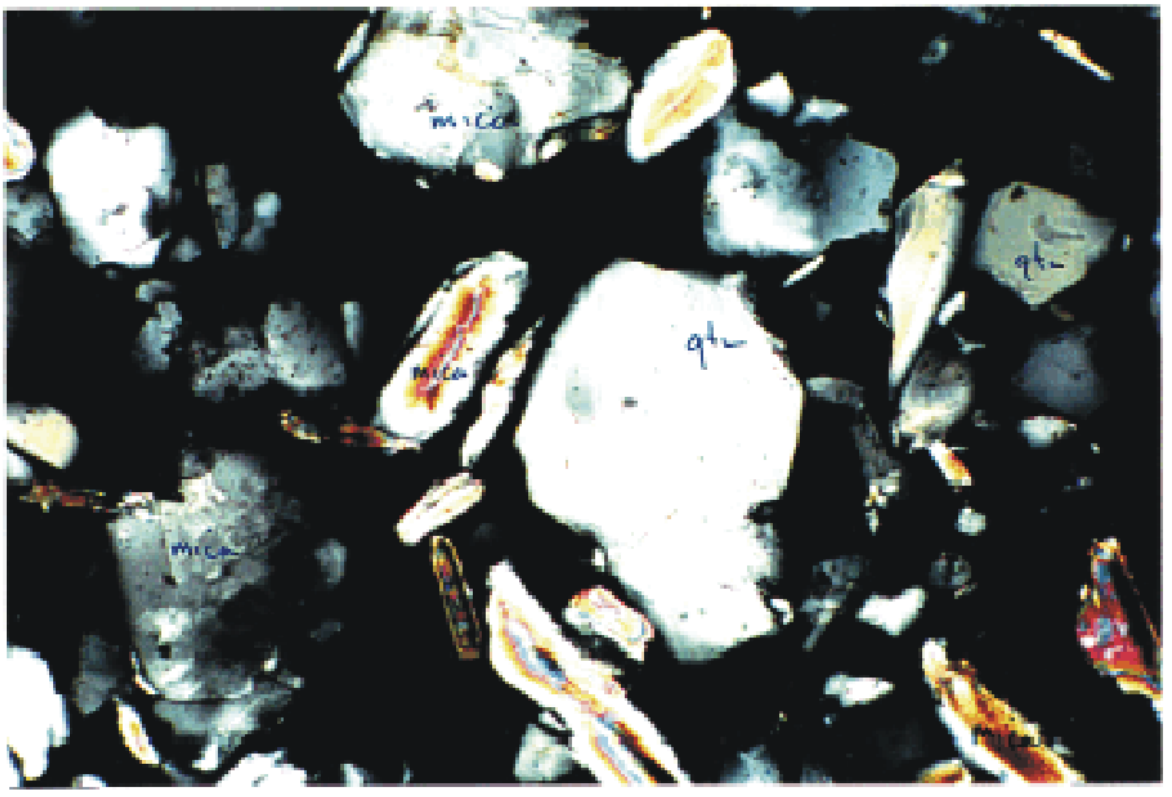
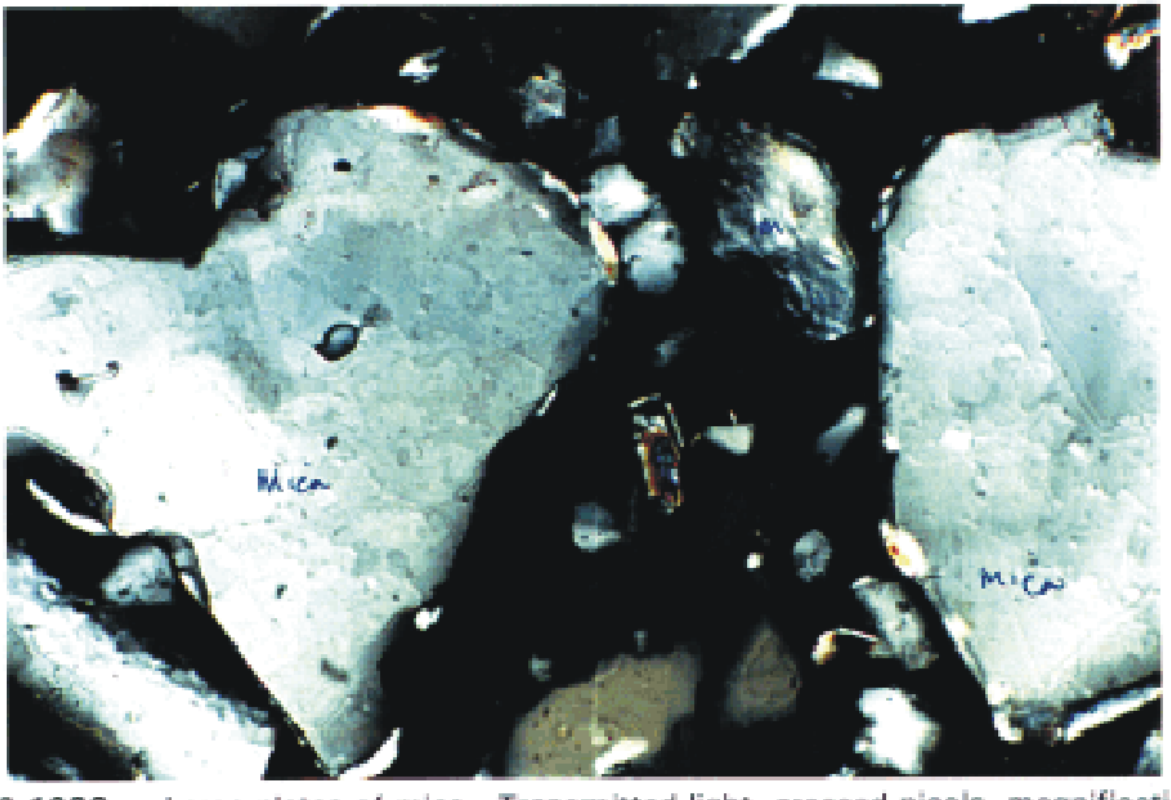
d=2.4917
d=1.8181
d=2.1250
Intensity(Counts)(x10^3)
15.0
10.0
5.0
0
10
20
30
40
50
2-Theta(deg)
muse.
quartz
plag. (albite)

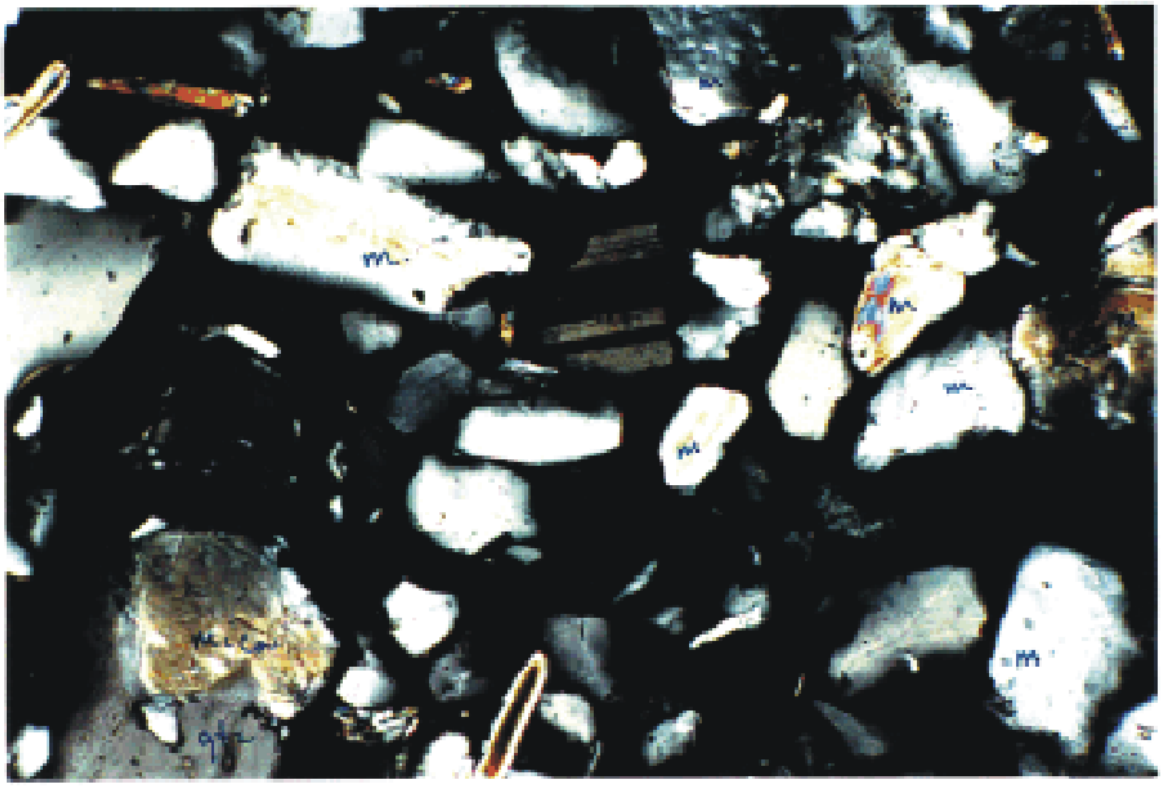

<R0001090.MDI> R0001090/TAILS
Intensity(Counts)(x10^3)
15.0
10.0
5.0
0
10
20
30
40
50
2-Theta(deg)



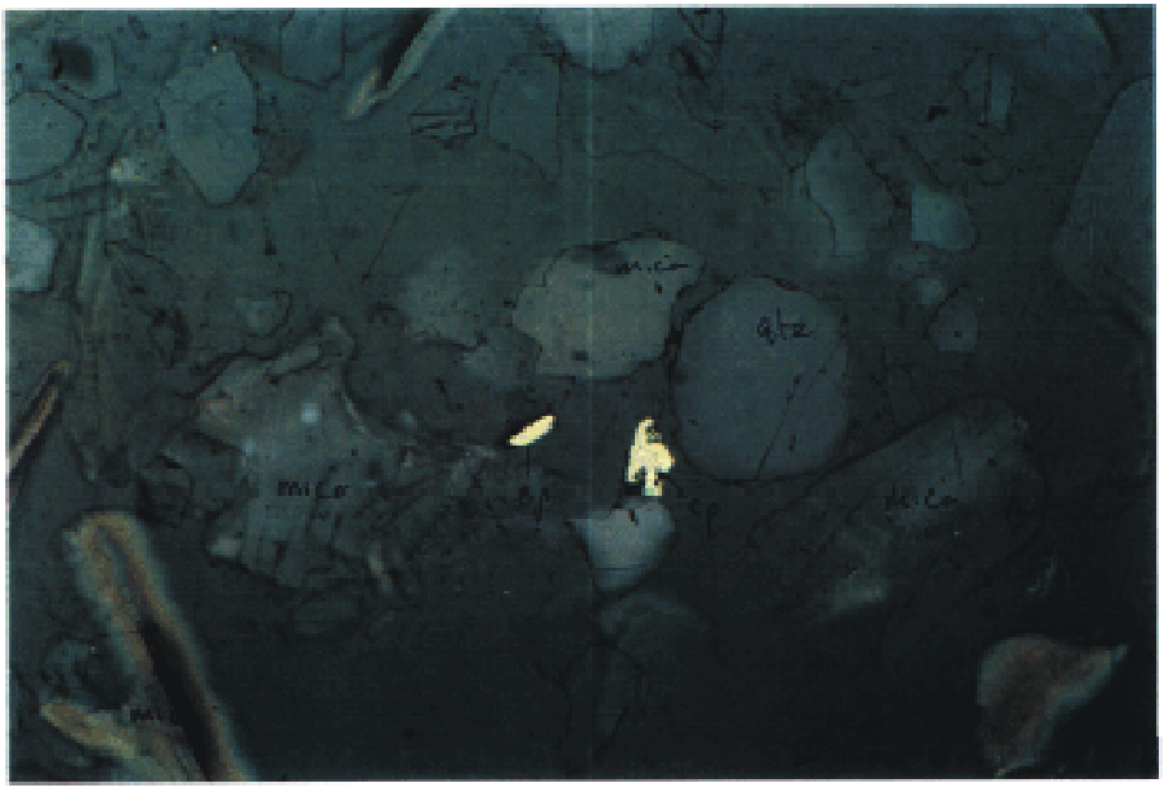
R00:1089. Mica plates and books with entrained quartz grains. Transmitted light, crossed nicols, magnification 160x.



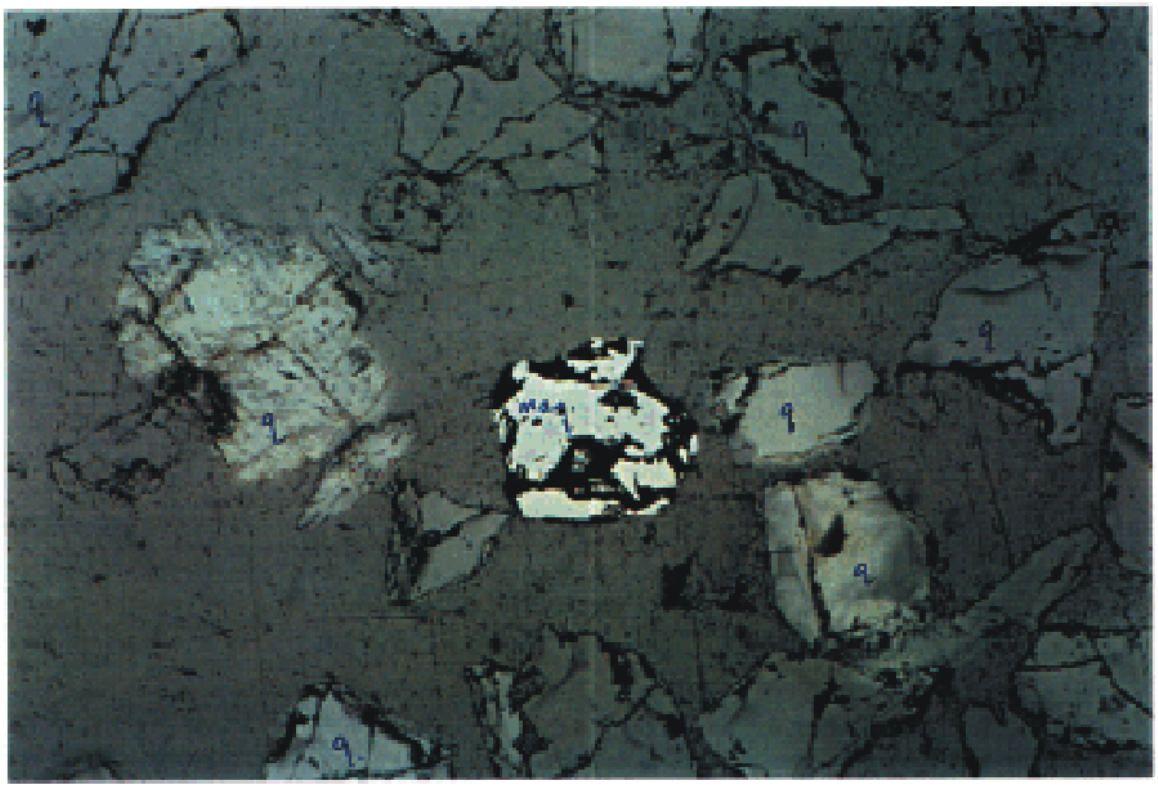
R00:1089. Large plates of mica. Transmitted light, crossed nicols, magnification 160x.



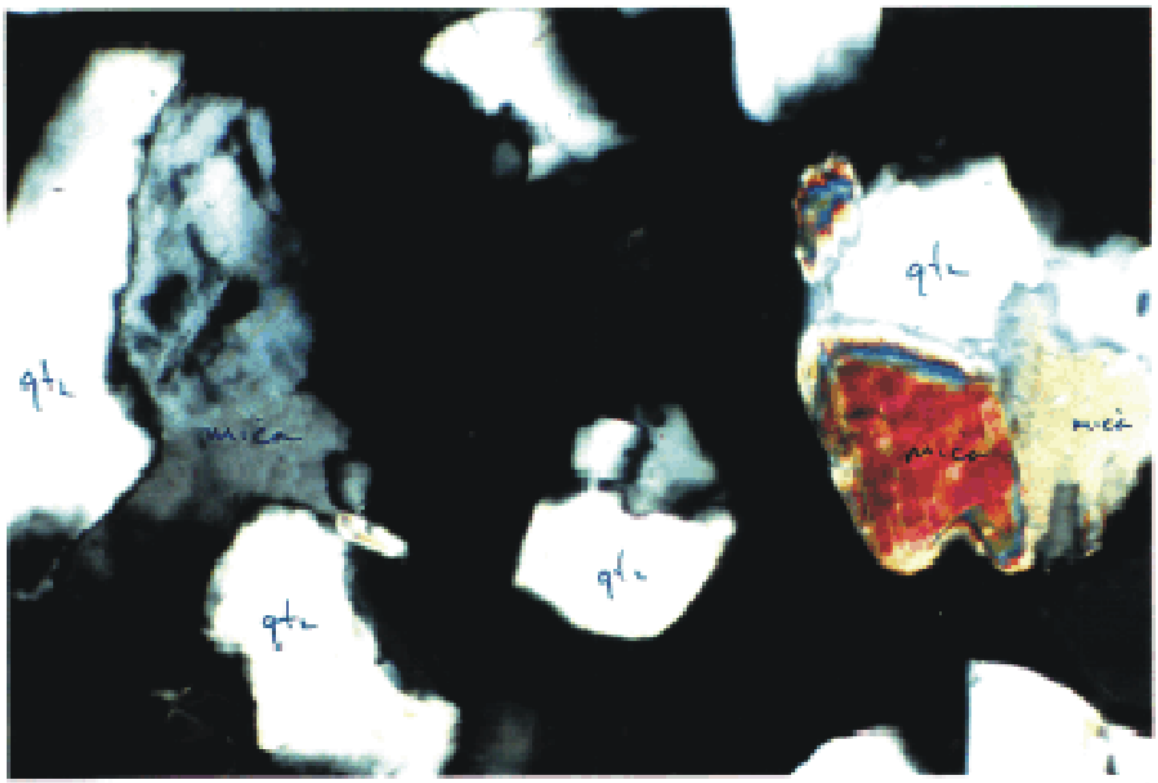
R00:1089. Plagioclase fragment, mica and quartz-mica composite. Transmitted light, crossed nicols, magnification 160x.



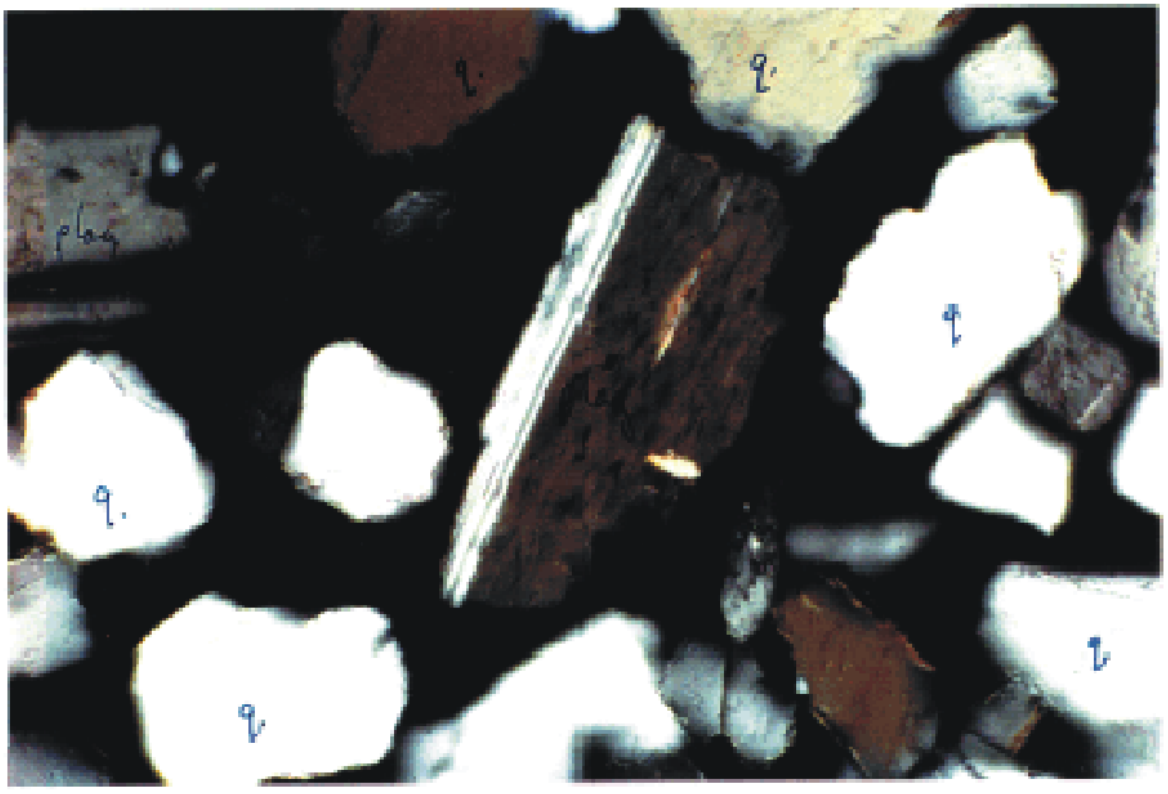
R00:1089. Two grains of chalcopyrite in quartz-mica rich mineral field. Reflected light, magnification 160x.



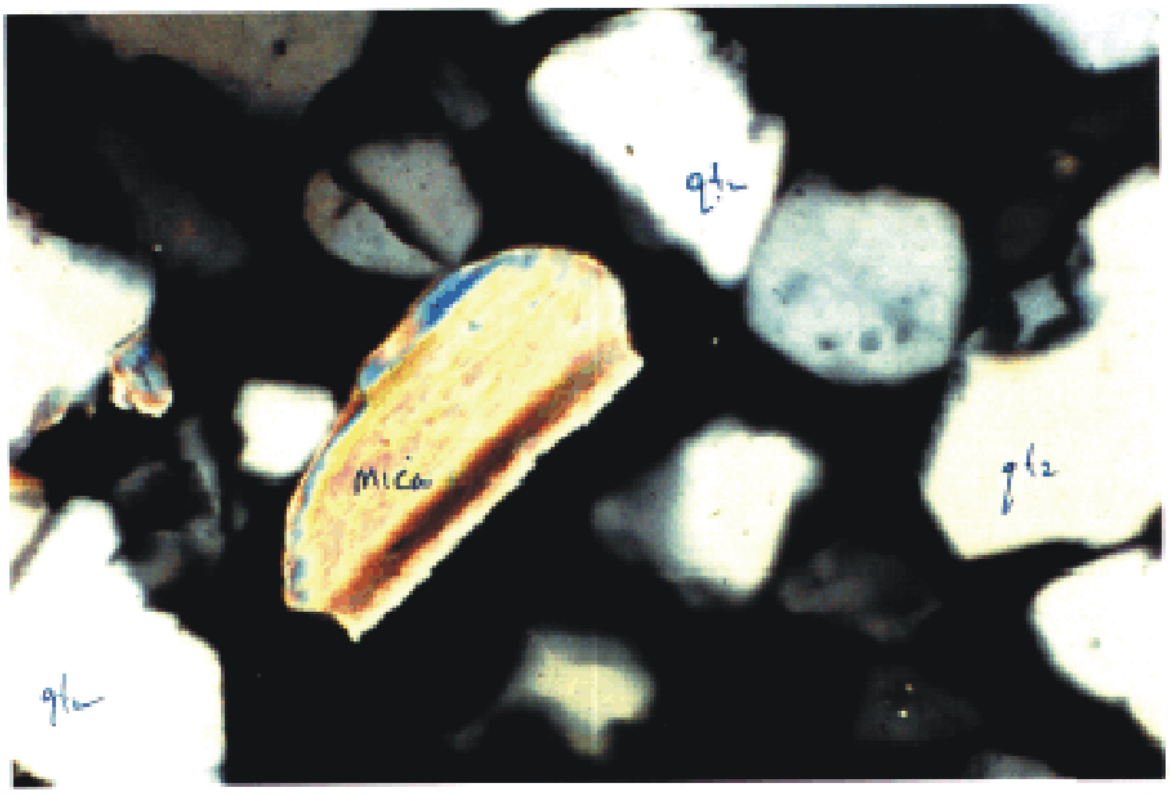
R00:1090. Magnetite grain with quartz. Reflected light, magnification 160x.



R00:1090. Quartz-mica composites. Quartz grains. Transmitted light, crossed nicols, magnification 160x.



R00:1090. Two grains of plagioclase plus quartz grains. Transmitted light, crossed nicols, magnification 160x.



R00:1090. Entrained mica in quartz rich tailings. Transmitted light, crossed nicols, magnification 160x.