86-115-14808

REPORT ON THE

WIM, WIM-TA CLAIMS)
ARNE CLAIM TOM CL) 16 claim group

Sovereign Mountain Area
N.T.S Maps 93A/13W ~~& 93H/4~~
CARIBOO MINING DIVISION
Lat. 52°59.2' Long. 121°53.5'

FOR

Owner/Operator: R. Trifaux & Trifco Minerals Ltd.
308 - 751 Clarke Road,
Coquitlam, B.C.
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by

R. Trifaux

February 1986

FILMED

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,808

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NOTE: Maps showing details of geology are included in the geological report.

ASSESSMENT WORKS 1985 - 1986

WIM - WIM-TA - ARNE - TOM CLAIMS GROUP

CARIBOO MINING DIVISION

INTRODUCTION

The areas where the physical works were done, also where the samplings have been taken out, the reports issued, are situated on the Sovereign Mountain, on the right bank of the Sovereign Creek. They are located on the Main Forestry Road, called the Swift River Road, between km 10 and km 13.

The general area is situated 38 to 40 kms in a south-easterly direction from the town of Quesnel. The claims units are situated north and south and parallel to the Forestry Road (see map M.93A/13 Swift River). To reach this area from Quesnel, one takes the Barkerville Road from the bifurcation of Road 99 to Prince George and the road going to the airport, proceeds to the Cottonwood Bridge, from there drives for 10 km (approx.) to the junction of the Barkerville Road with the Swift River Forestry Road. One follows the Swift River Road to road sign 1316, where the areas begin and continue to 1319, where the areas end.

We received Mr. Brian Fairbank, P.Eng., geologist of Nevin Sadlier-Brown Goodbrand Ltd. in Quesnel.

On the 3rd of June, 1985, we went together to the Wim - Wim-Ta claim sites, to show the peridodite talc outcrops in the Do-Do Creek. We also showed the area where we did the diamond drilling in the talc, we also showed some of the cores bits coming from the holes. Mr. Fairbanks and I measured the width of the metamorphics where the talc formations are occuring.

I showed the remaining bits of the structure of the shed we built to come with the tools and the machinery needed for the drilling. We worked during 5 days, 3 men at 8 hours per day on the drilling in 1971. Mr. Fairbank saw the collar of one hole, the others have been filled with silt in the creek, with soil where drilling started in soils. We showed to Mr. Fairbank the talc exposures from the two banks of the Do-Do Creek and the ridges where talc has been encountered. Mr. Fairbank took samples in the Do-Do Creek in what is called the peridodite talcs, and with the author of this report measured the width of the deposit.

I showed where the ultrabasics started to the north of the metamorphics. Overburden to the east and west of the talc, in some areas of the outcrops the overburden didn't permit a full evaluation of the deposit.

Mr. Fairbank and myself went to see the presence of talc in the following creeks;

Creek No. 1 - I showed the detritus (debris) of talc in the creek bed and also the gravels on each bank. Some pieces were more than 2 inches in length and 1 inch in width. Creek No. 1 is situated 520 m east of the Do-Do Creek. It flows in a north-south direction. Between 300 and 400 m in the creek, several pieces of grey talc rocks with pyrite have been found on the right bank and in the creek.

<u>Creek No. 2</u> - 150 m to the east of creek no. 1, flowing in the same direction is creek no. 2. Approximately same debit of water in the two creeks. When we arrived in this creek it was easy to realize that the coarseness of the talc was bigger than in creek no. 1. We went 55 m upstream and found several boulders weighing 2 or 3 kg each, and smaller ones. Mr. Fairbank commented saying, and I quote "the talc deposit is not far away from this."

<u>Creek No. 3</u> - 240 m to the east, immediately north of the Swift River Road, I showed a boulder measuring approximately 2 m x 2 m and 0.60 m in thickness containing more than 6 tonnes of platy talc - numerous boulders are scattered in that area north of the road, plus more rolled boulders south of the road. Mr. Fairbank took samples of this type of talc. North of the boulders with platy talc, in the creek, all the big trees on the two banks, have fallen in the creek over the years. In this creek the talc is very foliated; in each spring run-off, the waters are penetrating the tiny crevasses of the foliations and cause the talc to swell; by this same action the roots of the trees lack their hold and they fall in the creek. It is also an indication of the great width of the talc deposit in this creek.

In this creek a lot of tactites have been discovered in different places in the banks and in the streams. There is a skarn (metasomatism of rock with carbonate) with green colours (fuschite) containing sulfides with nickel and cobalt, the exposures of the skarn are in place and will be further investigated in 1986. 300 m east of this creek, there are exposures of dolomite approximately at the same level than the skarn.

In the left bank affluent of creek no. 3, there is a big vein of calc-silicate, which is the same as wollastonite, white with calcium and quartz. The talcose zones are south of the skarn and the wollastonite. At the

Swift River Road level, 245 m east of creek no. 3, creek no. 4 & 5 (in one flow) are seen before they enter the culvert which passes under the road in a north-south direction.

At the bottom of the huge embankment of the road, I showed boulders of talc in the creek and on the left and right banks of the creek themselves. Boulders can be seen in all areas south of the road going north in the creeks 4 & 5, 200 m north of the culvert, talc disappears.

From the Do-Do Creek, east to Creek No. 1	520 m
From Creek No. 1, east to Creek No. 2	150 m
From Creek No. 2, east to Creek No. 3	240 m
From Creek No. 3, east to Creeks No. 4 & 5	345 m
	1255 m (approx)

There is a continuity of showings of talcs from Do-Do Creek to Creek 4 & 5. There are also indications of talcs west of Do-Do Creek.

Physical Works 1985 - 1986

Arne & L. Fardal staked 6 claims which are included in this group as Wim-Ta 7 & 8 plus the Arne claims. Clearing and building of trails for accesses to Creek No. 1 and from No. 1 to Creek No. 2. Clearing trail to the graphitic exposures on right bank of the Do-Do Creek. Scrubbing in Do-Do Creek for new talc exposure. 200 # talc sample taking in Do-Do and between Creek No. 3 & 4.

The beneficiations tests have shown a highly good quality of talcs in the peridodites (cosmetic and pharmaceutical) and also the ores of platy talcs contain from 80 to 90 % talc.

Talc has a wide variety of uses and markets with specifications such as:

Grain size	Weight per unit volume
Shape	Oil absorption
Color	Hardness
Chemicals and minerals	Brightness
Compositions	etc.

Our talc has the same specifications as some talc imported from the United States, and this represents a definite advantage for the Company because it will permit the elimination of imports from the U.S.A.

Previously a "notice to group" has been issued at my request for the Tom, Kimo Itula claims. Today, looking at the map of claims locations, the configuration of the claims as they are, demand a new "notice to group" as shown on the most recent map with the new claims plotted on it.

I introduce with this report, a new "notice to group" asking that Tom claim - (4766C4) be cancelled from the previous "notice to group", and be transferred to the new one executed by R. Trifaux for Trifco Minerals Ltd.

The assessment works of 1985 - 1986 have been done by R. Trifaux (author of the present report). A resolution of the Board of Directors of Trifco Minerals Ltd. accepted the transfers of the claims from R. Trifaux to the Company.

The official papers have not been completed as yet, so the assessment works are still in the name of R. Trifaux himself. The mining recorder of Quesnel told me to do the assessment works in my name in a phone conversation dated 29-01-86.

We established a reserve of 112,500 tons of ores in the peridodites alone. (See drawing and calculations of the above indicated reserves), based on diamond drilling (small rig 3/4 inch bit) the drilling of 6 holes, never reached the bed rock, there was talc at the end of the cores. Our probable reserves are 112,500 tons of ores in the peridodites alone. The possible ores reserves can be more extensive. They will be established in 1986.

Our chartered accountant gave a valuation of the reserves of talc, magnetite and precious metals from our informations and the geological report.

We are planning to increase our indicated reserves in 1986.

TECHNICAL DATA

RESEARCH

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MATERIALS DIVISION

Minerals Resources Centre

EVALUATION OF SIX ROCK SAMPLES

Industrial Mineral Services
Report No. IMS 63-40223-85

C. A. Booth
April 18, 1985

for

Trifco Minerals Limited
308-751 Clarke Road
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Attention: Mr. R. Trifaux

1. INTRODUCTION

A total of six rock samples were received by Ontario Research from Trifco Minerals Limited. These rock samples were taken at random from the surfaces of various rock bodies located in several mining districts of British Columbia. Ontario Research was requested by Trifco Minerals to analyse these samples as specified in a letter dated January 21, 1985. The samples were to be analysed for:

(1) Sample No. I - the amount of Wollastonite present;

(2) Sample No. II - the amount of talc, magnesite nickel, cobalt and gold present;

(3) Sample No. IV - the amount of mica present;

(4) Sample No. VII - the amount of carbon and flake graphite present;

(5) Sample No. VIII - the amount of Barite present;

(6) Sample No. IX - the amount of ilmenite, magnetite, vanadium and niobium present.

This report describes the test work that was undertaken by Ontario Research on the six rock samples.

2. TEST PROCEDURES

Each rock sample was ground to minus thirty-five mesh using a shatter box. Representative portions were taken from the ground material by using the riffle method for sampling. These portions were used for the following test procedures.

All six rock samples were analysed by X-ray diffraction to identify the major mineral components present, and to provide semi-quantitative estimates of their relative amounts. Where specified, chemical analyses were performed using conventional test procedures.

3. RESULTS AND DISCUSSION

The results obtained for each sample are discussed separately.

3.1 Sample No. I

The semi-quantitative X-ray diffraction technique indicated that the following mineral components were predominant in this sample:

Dolomite	Approx. 35%
Quartz	Approx. 30%
Magnesite	Approx. 30%
Talc	<5%
Other Minor Phases	<5%

The unidentified minor phases may include Kaolin or a serpentine mineral. This rock sample appeared to be a siliceous magnesium/calcium carbonate. Wollastonite is formed by the metamorphism of siliceous limestones (igneous contact zones and in high grade, regionally memamorphosed rocks). Therefore, although Wollastonite was not observed to be present in this rock sample, there is a possibility that Wollastonite may be found if there is evidence that high grade regional metamorphism or an igneous contact zone is present in the area.

3.2 Sample No. II

The semi-quantitative X-ray diffraction technique revealed the following major mineral components present in the sample.

Talc	Approx. 35%
Dolomite	Approx. 30%
Serpentine	Approx. 30%
Other Minor Phases	Approx. 5%

These results are encouraging, and may warrant further work in the area from where this sample was taken. Although the serpentine mineral appears to be the non-fibrous, antigorite form, further test work should include microscopy in order to investigate the presence of chrysotile, an asbestos mineral. The unidentified minor phases may include chlorite.

The chemical analysis revealed the following elemental concentrations.

Au	0.002 oz/ton
Ag	0.01 oz/ton
Co	0.006%
Ni	0.0096%

These results indicate that the contents of these elements are marginal in the sample.

3.3 Sample No. IV

The semi-quantitative X-ray diffraction results were as follows.

Chlorite	Approx. 50%
Talc	Approx. 30%
Dolomite	Approx. 15%
Magnesite	<5%
Other Minor Phases	<5%

Although mica was not present as expected, the results are encouraging for a talc concentrate. Some commercial talc products contain chlorite. The quality of the products may, however, be poor if the chlorite contains a high amount of iron in its crystal structure, thereby lowering the brightness of the potential products.

3.4 Sample No. VII

The semi-quantitative X-ray diffraction results revealed that the following mineral phases were present in the sample.

Quartz	Approx. 55%
Calcite	Approx. 20%
Dolomite	Approx. 10%
Muscovite	Approx. 10%
Other Minor Phases	Approx. 5%

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This sample, which was believed to contain graphite, was stage crushed and screened on a 200 mesh screen cloth. The plus 200 mesh fraction was examined for the presence of graphite flake using a microscope. Graphite flake was not found to be present in any of the plus 200 mesh fractions during the stage crushing operation. Consequently, if any graphite was present in the sample, it would have to be amorphous. This could possibly explain why the graphite was not identified by X-ray analysis (amorphous material will appear transparent by the X-ray diffraction technique).

The results of the chemical analysis for carbon content in the sample were as follows.

Total Carbon	8.63%
Carbonate	1.33%
Other Carbon	7.30%

These results indicate that there is in fact a significant carbonaceous phase present in the sample, and reinforces the argument that it is probably amorphous.. In order to further study this phase, a portion of the crushed material was slurried in a test tube with distilled water. One or two drops of pine oil were added, and the slurry was shaken and allowed to settle. The pine oil apparently allowed the carbonaceous phase to float on top of the water; this may indicate the presence of graphite.

3.5 Sample No. VIII

Both the Barium content of 0.04% and the specific gravity of 2.5 indicated that this sample could not contain barite. This was confirmed by the semi-quantitative X-ray diffraction analysis. The following minerals were detected in the sample.

Clay Mineral	Approx. 30 - 50%
Feldspar	Approx. 10 - 20%
Quartz	Approx. 10%
Dolomite	Approx. 10%
Other Minor Phases	Approx. 10 - 20%

The clay mineral was found to be a poorly defined component which appeared to be a mixture of montmorillonite and vermiculite. The unidentified minor phases may include small amounts of muscovite and an amphibole mineral. There is also a possibility that this sample contains some non-crystalline phases.

3.6 Sample No. IX

The X-ray diffraction pattern obtained for this sample was very complex, and consequently only the following mineral phases could be identified.

Amphibole Mineral	Approx. 50%
Chlorite	Approx. 25%
Other Phases	Approx. 25%

The unidentified portion of this sample was a complex mixture which appears to contain other silicate minerals and possibly some magnetite.

The chemical analysis for this sample is as follows.

Acid Soluble Fe	7.17%
TiO_2	0.79%
V	0.39%
Nb	to follow

The low TiO_2 content indicates that there is very little ilmenite, if any, present in this sample. The niobium assay is unavailable at the present time, and will be reported at a later date.

4. CONCLUSIONS

Of the six samples evaluated in this program, two may warrant further investigation should the volume of their deposits permit. The two samples, namely "Sample No. II" and "Sample No. IV", indicated relatively high talc contents. Further geological prospecting may reveal even higher talc contents from these two areas.

It should be noted that most of the present-day talc products actually contain mixtures of many other minerals such as tremolite, chlorite, dolomite, mica and magnetite. In fact, most of the filler grade talcs sold to the paper, plastics and rubber industries contain, at best, 90% talc.

It should also be kept in mind, however, that talc, along with many of the other filler type minerals, is being subjected to increasing demands for higher purity and quality talcs. In the case of purity, associate minerals may cause deleterious side effects in the end users' products; for example, carbonates that will react with alum in the papermaking process or the presence of quartz which may cause excessive wear on the machinery.

Particle size and brightness are two very important parameters for quality. In general, the finer the particle size and the higher the brightness value, the higher the quality of the talc product.

These two factors (quality and purity) should be kept in mind should an exploration campaign be considered on these two properties.

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MATERIALS DIVISION

Mineral Resources Centres

BENEFICIATION AND EVALUATION OF TWO TALC-BEARING BULK SAMPLES FROM QUESNEL, BRITISH COLUMBIA

Industrial Minerals Services
Report No. IMS 63-40334-85

C. A. Booth
December 4, 1985

for

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Attention: Mr. R. Trifaux

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1. INTRODUCTION

Trifco Minerals Limited is currently investigating a talc property located near Quesnel, British Columbia, for possible commercial exploitation. Field examination of the surface occurrences of talc, coupled with a preliminary market study, has indicated that the property constitutes a potential source of talc for domestic markets, particularly as a pitch control agent in the pulp and paper industry.

Based upon these encouraging results, Trifco Minerals sampled several surface occurrences of talc from several locations on their claims. Based upon a field examination of the samples, two talc types were identified: "peridodite" and "platy talc", respectively. A total of approximately 50 lbs. of each talc type was collected and shipped to Ontario Research for analysis.

Ontario Research was requested by Trifco Minerals to evaluate the two talc-bearing bulk samples for their quality as potential saleable products. This report describes the work undertaken by Ontario Research, as well as recommendations for future work on the Quesnel talc property.

2. TEST WORK

2.1 Bench Scale Studies

The two talc-bearing bulk samples were size reduced in a laboratory impact crusher (1/4" gap, 2264 rpm). One pass was required for both bulk samples.

A brief program was undertaken to determine the time required to liberate the individual talc particles from the undesirable (gangue) minerals in a laboratory batch ball mill. All ball mill tests were conducted using dry ball mill systems. Ball mill times of 15, 30, 60 and 120 minutes were evaluated in this program.

It was concluded that a ball mill time of 120 minutes for each talc-bearing sample is required to liberate the individual talc particles. The ball mill time would prepare a product approximately 80% finer than 325 mesh (44 µm) in particle size. The particle size would conform to commercial talc-milling practice.

Approximately 5 kg of each crushed talc-bearing sample was ball milled for two hours. The ball milled material would be the feed sample for the flotation test work.

A program was conducted to establish the conditions for a talc concentrate. A total of 16 tests were conducted to determine the effect of dispersing agents, pH modifiers, frothing agents, conditioning and the number of flotation stages in preparing a talc concentrate. Sodium hexameta phosphate, sodium hydroxide and MIBC were evaluated as dispersing agent, pH modifier and frother, respectively.

Based upon the best results obtained from the flotation test program, the two talc-bearing samples were subjected to a locked-cycle test which required a rougher and four cleaner stages. All floats were conducted at a pH ranging between 10 and 13 units. These tests will be further discussed in section 3 of this report.

The locked-cycle concentrates from the two talc-bearing samples were further cleaned with a Carpco, laboratory Wet High Intensity Magnetic Separator (WHIMS). Both talc concentrates were subjected to five stages of magnetic separation, using steel wool as the magnetic medium. The current was 5.6 amps for all five stages.

The non-magnetic talc concentrates from the two samples were oven dried and ball milled for one hour to break up the dried fragments.

2.2 Product Evaluation

The products from the two talc-bearing samples were evaluated and compared to specifications for a commercially available talc product using standard tests.

Particle size distribution was determined using a Sedigraph. This is a sedimentation technique which is generally used by the talc industry.

Brightness of the two products was determined by the Zeiss Elrepho reflectometer using a luminous green filter. This method is one of several practiced by the talc industry.

Oil of absorption was determined by the spatula rule-out method (ASTM D 281).

Density or specific gravity was determined by the picnometer method. A soap solution was required to disperse the talc samples in distilled water, which is a problem due to its hydrophobic nature.

The pH of the two talc samples was determined by ASTM D 1208-78.

Chemical and mineral purity was determined using X-ray flourescence and X-ray diffraction, respectively.

3. RESULTS AND DISCUSSION

3.1 Rock Reduction Tests

A summary of the impactor and ball mill size distributions for the peridodite and platy talc samples are shown in Tables I and II, respectively. A comparison between the percent cumulative passing for the two samples indicated the platy talc material reduces at a faster rate than the peridodite material. The test work indicated that the talc would be sufficiently liberated with approximately 80% of the material finer than 200 mesh. Consequently, the peridodite material required a 60-minute grind, while the platy talc required a 30-minute grind (see Tables I and II).

During the flotation test work, it became apparent that a cleaner talc concentrate could be obtained with a finer grind for both samples (80% finer than 325 mesh). Therefore, approximately 5 kg of peridodite and platy talc were ground for 120 and 60 minutes, respectively.

It should be pointed out that ultrafine material could interfere with the efficiency of flotation. This ultrafine effect on flotation efficiency could not be addressed in the present dry batch method of ball milling. This effect should be studied in a continuous ball milling classification circuit placed ahead of the flotation circuit. The objective of the grinding/classification circuit would be to prepare a minus 325 mesh flotation feed having the least amount of ultrafines as possible.

3.2 Preliminary Flotation Tests

The preliminary flotation test results are summarized in Table III of this report. With the exception of one test (16), the work was conducted on the peridodite material. The platy talc batch test was conducted at the condition that produced the apparent cleanest talc concentrate from the peridodite material.

In general, an apparently clean talc concentrate could not be adequately prepared without significant losses of talc to tails. At best, the talc concentrates appeared to have a slight discolouration to them. The peridodite had a grey hue, while the platy talc had a yellow hue. These discolourations were observed for all flotation conditions. Since these samples were taken from the surface, the discolouration may be oxidation products, and may not be typical of the talc body. Oxidation products or films generally interfere with flotation efficiency as well as the quality of the final talc products.

For flotation tests summarized in Table III, the flotation feed was slurried with 1,000 ml of distilled water, conditioned for 2 minutes, and floated using 2 drops (0.02 ml) of MIBC. The various conditioning agents (NaOH and sodium hexameta phosphate) were added stepwise during the conditioning period. All of the tests were conducted at room temperature (23 - 24^{o}C). A 10% W/W solution of NaOH was used: the volume used for each test is shown in Table III. Except where indicated in Table III, the tests were conducted with a rougher and four cleaner stages.

With the exception of tests 4 and 5, 250 g of feed was used. The feed weight for tests 4 and 5 was 500 g. A dispersant (1.5 ml of sodium hexameta phosphate) was used for tests 12 and 15.

The first three tests (1, 2 and 3) were conducted to determine the response of the peridodite to initial float conditions. These tests were initial trials, and consequently their material balances were not measured. The first test was run without NaOH addition, but with approximately 0.04 ml of MIBC as the frothing agent. A very uncontrollable froth occurred which resulted in a very dirty talc concentrate. In the second test, the pH was adjusted to 12 with NaOH, and the frother (MIBC) was reduced to 0.02 ml. This reduced the visual talc content in the rougher tails, but produced a dirty talc concentrate. The third test was run to determine if any talc remained in the rougher tails of the second test conditions. This test confirmed that all floatable talc was recovered with the second test conditions. Again, the talc concentrate appeared dirty.

Tests 4 and 5 were run with similar conditions as tests 1 and 2, respectively, with the exception of the reduced frother addition (0.02 ml for test 4 and 0.04 ml for test 1). Tests 4 and 5 were fed with 500 g of material instead of a 250 g feed used for tests 1 and 2. These tests indicated that a somewhat cleaner product was recovered from test 5, but more talc was apparently lost to tails. As expected, the flotation times were longer than the previous three tests. This was obviously due to the larger weight of feed used for tests 4 and 5.

Tests 6 and 7 were conducted using a feed of 250 g and a slower impeller speed (1,000 rpm used in the previous tests to a speed of 700 rpm here). These tests were conducted to investigate the effect of impeller speed on talc recovery and concentrate quality. The pH of test 6 was adjusted to 12 units, while the pH of test 1 was not adjusted. With the exception of the scavenger stage performed in tests 6 and 7, these two tests were similar to tests 2 and 1, respectively. The results confirmed that the NaOH addition produced a cleaner talc concentrate (test 6 compared to test 5), but at the expense of a lower talc recovery. The slower impeller speed also contributed to a lower talc recovery but cleaner concentrate.

Five tests (8, 9, 10, 11 and 12) were conducted with an impeller speed of 1000 rpm for the rougher stage, and a speed of 700 rpm for the subsequent cleaner stages. A scavenger stage was not performed in these tests. These tests were designed to recover as much talc as possible from the rougher stage (higher impeller speed), and to clean the final talc concentrate as much as possible (lower impeller speed). As shown in Table III, the difference between the tests was the amount of NaOH added to the slurry. As shown in Table III, a pH greater than 12 units could not be obtained by further additions of NaOH. To some extent, this is reflected by the consistent concentrate recovery (tests 8, 9 and 11). The difference between tests 8 and 9 was that the cleaner stages of test 9 were adjusted to the pH of 12. This, as well, had little effect on the talc concentrate recovery. In all cases, talc reported to tails and a dirty concentrate was recovered. Addition of NaOH did, however, produce a somewhat cleaner concentrate. Larger NaOH conditions did not visually improve the concentrate.

Sodium hexameta phosphate was added to test 12 in order to improve dispersion of particles in the slurry. Although a larger talc concentrate was recovered, the concentrate was still dirty and talc was still present in the tails.

Three additional tests (13, 14 and 15 were conducted at a pH of 12 and the impeller speed was varied. In test 13 the impeller of the rougher was 900 rpm, while the cleaners were performed with a 700 rpm speed. The rougher and the first two cleaners were performed with an impeller speed of 900 rpm for test 14, while the third and fourth cleaners wee run with speeds of 800 rpm and 700 rpm, respectively. The impeller speed remained constant at 900 rpm for test 15. In test 15, sodium hexameta phosphate was also added to improve dispersion. A scavenger stage was also conducted for test 15.

With the exception of test 15, the quality of the talc concentrate was improved over the previous tests, but they were still fairly dirty. The dispersant was again found to recover a higher amount of talc, but prepared a dirtier concentrate (test 15).

The final test (16) conducted in the preliminary flotation test program was conducted on the platy talc material. With the exception of omitting the addition of sodium hexameta phosphate, the test was conducted with similar conditions to test 15. Very little was lost to tails, and the concentrate was cleaner than the peridodite concentrates. The concentrate did, however, contain some mineral impurities.

3.3 Locked-Cycle Flotation Tests

Locked-cycle flotation tests were conducted on the two talc-bearing samples using the 5 kg of ball milled material as feed. The objective of these tests was to prepare as clean a talc concentrate as possible, at the expense of recovery. The locked cycle tests would also determine if there would be any material build-up in the cleaner recirculating loads: a sign of unliberated particles.

The tests were conducted with a rougher and four cleaner stages of flotation. A scavenger stage was not performed in the locked-cycle tests. The tails from each cleaner stage were mixed with the feed of the previous flotation stage in the next batch test. This would simulate a recirculating load in a continuous flotation circuit. A total of 10 batches was conducted on the two talc-bearing samples.

All flotation stages (rougher and cleaners) were conducted with an impeller speed of 900 rpm. A 250 g charge was fed into 100 ml of distilled water for each rougher stage. The pH of the resultant slurry was adjusted to 12 units using a 10% W/W solution of NaOH. The pH of the subsequent cleaner stages were not adjusted, but the pH was recorded. A dispersant was not employed in the locked-cycle tests. All tests were conducted at room temperature (23^{o}/c). MIBC (0.02 ml) was added as the frother.

The consumption of NaOH and the pH of each rougher and cleaner stage in each batch are summarized in Table IV. The amount of NaOH required for the platy material decreased until batch 5, where it remained constant at 10 ml of 10% W/W NaOH. The amount of NaOH required for the peridodite material was constant throughout the locked-cycle tests, ranging from 12 to 15 ml of 10% W/W NaOH.

In both talc-bearing samples, the pH of each subsequent cleaner stage was reduced. Consequently, in further test work it may be necessary to adjust the pH in the second or third cleaner stages.

The time required to complete each flotation stage is summarized in Table V. On average, the float times decreased with subsequent cleaner stages. This may be due to the lower solids content in the cleaner stages. The platy material generally required less flotation time.

The material balances for the two locked-cycle tests are shown in Table VI. The "mids" fraction shown in Table VI is the calculated material recirculated in the batch test in question. In both material types, both the tails and concentrate became relatively stable after the second batch. In both samples, however, a proportionately higher amount of tails was recovered from batch 7. This may be due to a stabilizing effect of the gangue particle in the cleaner stages.

The circulating mids stabilized between batches 7 and 8 for the peridodite materials. The circulating mids for the platy material was significantly reduced between batches 5 - 7, where is began to gradually increase in the subsequent batches. This reduced circulating mids may be a result of stabilizing in the cleaner stages.

A proportionately higher amount of concentrate was recovered from the platy material than was recovered from the peridodite material. Consequently, a proportionately lower amount of tails was recovered with the platy material. These recovery differences could be due to the higher talc grade in the platy material than in the peridodite material.

A total of 2,500 g of ball milled material was subjected to the flotation locked-cycle tests for each material type. The total amount of talc concentrate recovered for the peridodite and platy material was 29% and 44%, respectively. This confirms the higher amount of talc present in the platy material.

3.4 Magnetic Separation

The two concentrates obtained from the locked cycle flotation tests were further cleaned by a laboratory Wet High Intensity Magnetic Separation (WHIMS) method. The concentrates were slurried (50% W/W) and passed through the separator with a current setting of 5.6 amps. A total of five WHIMS stages were conducted on each talc concentrate.

The material balances are shown in Table VI. These weight balances indicate that, in general, less magnetic material was removed in the latter magnetic separation stages. It is anticipated that the number of WHIMS stages could be reduced to one or two stages in a production model magnetic separator.

The magnetic fractions were observed to be considerably darker in appearance than their non-magnetic (talc) counterparts. The non-magnetic fractions appeared to be similar in colour to their respective feed materials. As shown in Table VI, the brightness of the talc concentrates was slightly improved by the magnetic separation stages.

3.5 Product Quality

The chemical and mineral purity of the two as-received (impacted and ball milled only) bulk samples is shown in Table VII. Also shown in Table VII is the chemical and mineral purity of the flotation fractions of test 2 which were obtained from the preliminary flotation tests (see section 3.2 for details). The chemical and mineral purity for Beaverwhite 200 (as published by Cyprus) is also shown in this table for comparison purposes.

With the exception of the SiO_2, CaO and the Fe_2O_3 contents, the chemical and mineral purity of the peridodite talc concentrate is very similar to the commercial Beaverwhite 200 material. Depending upon the "state" of the "Fe_2O_3" content, it is anticipated that the iron content could be reduced by a magnetic separation method. This would have the effect of increasing the MgO and SiO_2 contents of the peridodite sample closer to the Beaverwhite 200 contents for these two oxides. The higher CaO content is probably due to a higher dolomite content in the peridodite concentrate.

The chemical and mineral analysis of the tails and scavenger fractions obtained from the second preliminary batch flotation test are also presented in Table VIII. These results confirm that talc was lost to the tailing fraction (see section 3.2 for details).

The two final talc concentrates obtained from the WHIMS stage were subjected to further quality tests and compared to the quality of the commercial Beaverwhite 200 material. The results of this testing are presented in Table XIV.

The particle size distribution of the peridodite product is very similar to the Beaverwhite 200 size distribution. The platy talc product is slightly coarser than the commercial product.

The brightness of both the peridodite and platy products are lower than the commercial product. This may be due to weathering (oxidation) of the two Quesnel talc concentrates, since they were both sampled from the surface. The brightness of the two Quench talc concentrates, however, is higher than other commercial samples at this stage of beneficiation. (Some commercial talc samples may have a brightness as low as 60% at this beneficiation stage.) Also, the brightness may not severely affect the quality of paper if used as a pitch control. This should be further discussed with the pulp and paper industry.

The oil of absorption for the two Quesnel talc products was lower than the commercial product. Since oil of absorption is also dependent upon particle size, only the peridodite product can be directly compared with the commercial product. The lower oil of absorption value for the peridodite indicates that a lower amount of organic material is required to completely wet each mineral grain. This indirectly indicates that the peridodite product is more hydrophobic than the commercial product. This is a desirable quality for fillers in the polymer industry.

The density and pH for both Quesnel and talc concentrates were found to be similar to the commercial Beaverwhite 200 product.

4. CONCLUSIONS AND RECOMMENDATIONS

The two bulk samples were taken from the surface material, and consequently some weathered products may be present. These weathered products can affect the recovery of talc by flotation and the quality of the subsequent products. Weathered products are generally considered to be deposited as films on individual grains. Therefore, the surface of the grains may be altered, which will affect flotation responses and optical properties (brightness) of the talc.

Therefore, it is strongly recommended that further samples should be taken from the unweathered zone of the deposit(s). This can be accomplished by core drilling or by bulk sampling from a pit. Core drilling would give a more representative sample of the deposit(s), from both a vertical and lateral perspective.

It is anticipated that the talc recovery and quality (brightness) would be improved by taking unweathered samples.

A conceptual flowsheet for processing the Quesnel talc deposit(s) is shown in Figure 1. Briefly, "run of the mine" ore would be reduced by a dry impactor, followed by a wet ball mill. A portion of the flotation reagent (NaOH) may be introduced in the ball mill to aid in particle dispersion. The ball mill discharge would be classified in a hydrocyclone where the underflow (coarse particles) would be recirculated to the ball mill.

The overflow would be conditioned in a conditioner where the remaining flotation reagents would be added. The conditioned material would be subjected to one flotation rougher stage, followed by four cleaner stages. The cleaner tails would report to the feed of the previous flotation stage.

The flotation concentrate would be further purified by one or two stages of magnetic separation. The non-magnetic concentrate would be filtered, dried and stored in a silo.

Specific products would be prepared in the fine grinding circuit. These specific products are, in general, prepared by controlling the particle size. The products would then be either shipped in bags or in bulk. The method of shipment would depend upon acceptance between producer and end user.

Should the test work on unweathered material prove successful, it is recommended that a pilot plant study be undertaken on a continuous basis, up to the storage silo. The pilot plant study should further investigate the fineness of grind required to liberate the talc with limited overground material produced. The effect of adding flotation reagents in the ball mill should also be investigated in the study, as well as further reagent additions in the second or third cleaner stage.

Used equipment may be considered for the concentration circuit, but it is strongly recommended that new "state-of-the-art" equipment should be recommended for the fine grinding circuit. Various equipment should be investigated using concentrate from the pilot plant concentration circuit. "State-of-the-art" equipment should be considered, since the final end products are manufactured in this circuit.

M. L. Petrovcic
Project Scientist

C. A. Booth
Project Scientist

TABLE I

SUMMARY OF BALL MILL TESTS ON PERIDOTITE ROCK

	Impactor		15 Min. Grind		30 Min. Grind		60 Min. Grind	
Mesh	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)
14	27.8	72.2	-	-	-	-	-	-
20	18.9	53.3	-	-	-	-	-	-
28	9.7	43.6	-	-	-	-	-	-
35	4.3	39.3	-	-	-	-	-	-
48	9.7	29.6	25.7	74.1	1.4	98.4	0.1	99.1
60	2.5	27.1	-	-	-	-	-	-
65	2.3	24.8	-	-	-	-	-	-
100	4.4	20.4	21.6	52.5	18.1	80.3	2.4	96.7
200	6.7	13.7	16.6	35.9	25.7	54.6	23.4	73.3
270	3.2	10.5	8.9	27.0	13.3	41.3	32.6	40.7
-270	10.5	-	27.0	-	41.3	-	40.7	-
Total	100.0	-	99.8	-	99.8	-	99.2	-

TABLE II

SUMMARY OF BALL MILL TESTS ON PLATY TALC

	Impactor		15 Min. Grind		30 Min. Grind		60 Min. Grind	
Mesh	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)	Weight (%)	Cum. Pass (%)
14	20.1	79.9	-	-	-	-	-	-
20	16.9	63.0	-	-	-	-	-	-
28	9.6	53.4	-	-	-	-	-	-
35	4.6	48.8	-	-	-	-	-	-
48	11.1	37.7	2.8	96.7	0.7	100.0	0.1	99.5
60	3.0	34.7	-	-	-	-	-	-
65	3.1	31.6	-	-	-	-	-	-
100	5.6	26.0	18.1	78.6	11.2	88.8	4.6	94.9
200	8.0	18.0	23.4	55.2	24.5	64.3	19.9	75.0
270	3.5	14.5	9.4	45.8	11.5	52.8	12.5	63.5
-270	14.5	-	45.8	-	52.8	-	62.5	-
Total	100.0	-	99.5	-	100.7	-	99.6	-

TABLE III

PRELIMINARY TEST RESULTS

Test Number	Pulp Density (%) Ruffler	Scavenger	Product	NaOH Used (ml)	pH	Setting (rpm)	Float Time (min.) R	S	#1	#2	#3	#4	Rougher Weight (%)	Concentrate Weight (%)
1	-	-	-	0	9	1000	5	-	3	2	15	10	-	-
2	-	-	-	28	12	1000	5	-	3	2	15	10	-	-
3	-	-	-	28	12	1000	5	3	3	2	1.5	1.0	-	-
4	13.4	-	16.4	0	9	1000	10	-	10	7	5	2	31.1	39.4
5	20.8	-	10.6	28	12	1000	10	-	10	7	5	2	52.4	23.7
6	14.3	3.0	2.1	20	12	700	20	15	10	8	5	2	67.7	12.3
7	9.0	6.7	1.9	0	9	700	20	10	5	4	3	2	40.2	29.5
8	6.3	-	3.9	20	12	1000 (R) 700 (C)	15	-	8	4	3	2	27.8	17.0
9	10.0	-	3.5	20	12	1000 (R) 700 (C)	10	-	7	3	3	2	45.2	15.4
10	8.4	-	5.1	0	9	1000 (R) 700 (C)	10	-	10	10	7	5	37.6	22.3
11	11.3	-	3.6	60	12.5	1000 (R) 700 (C)	10	-	8	5	5	4	51.7	15.7
12	9.5	-	7.4	40	12	1000 (R,C) 700 (C)	18	-	10	10	8	5	43.0	32.1
13	14.6	-	4.2	28	12	700 (R) 900 (C)	20	-	10	5	3	2	68.3	17.6
14	12.4	-	4.2	28	12	900 (R) 700 (C)	10	-	5	5	4	2	56.5	17.6
15	9.0	5.8	3.7	28	12	900	15	12	6	5	4	4	39.7	24.4
16	9.9	-	7.7	28	12	900	9	-	7	5	3	2	43.8	33.4

R = rougher
C = scavenger

#1 = 1st clearance tails
#2 = 2nd clearance tails
#3 = 3rd clearance tails
#4 = 4th clearance tails

TABLE IV

SUMMARY OF FLOTATION TIMES (MIN.) FOR LOCKED-CYCLE TESTS

Batch #	Rougher	Cleaners 1	2	3	4
		Peridotite			
1	10	7	5	4	4
2	7	5	4	3	3
3	7	6	5	5	4
4	10	6	6	6	5
5	9	7	6	6	5
6	11	10	8	8	7
7	11	10	7	5	5
8	10	8	8	7	6
9	12	10	5	5	3
10	10	6	6	5	5
Avg.	10	8	6	5	5
		Platy			
1	7	4	3	2	2
2	9	8	5	4	3
3	9	7	4	4	3
4	9	8	7	6	4
5	10	7	7	5	5
6	9	8	7	7	5
7	9	9	6	6	4
8	7	7	6	5	3
9	6	5	5	4	3
10	6	6	5	4	3
Avg.	8	7	6	5	4

TABLE V

SUMMARY OF pH FOR THE LOCKED-CYCLE TESTS

Batch #	NaOH Used (ml)	Rougher	Cleaners 1	2	3	4
			Peridotite			
1	12	12.0	11.4	11.0	10.5	10.0
2	15	12.4	11.6	11.5	10.8	10.2
3	15	12.0	11.5	11.4	11.2	10.5
4	15	12.0	11.4	11.1	10.5	10.4
5	15	12.2	11.6	11.4	10.8	10.4
6	14	12.0	11.6	11.0	10.5	11.3
7	14	12.2	11.8	11.6	10.8	10.4
8	13	12.0	11.6	11.0	10.5	10.0
9	13	12.0	11.6	11.0	10.5	10.3
10	13	12.0	11.5	11.0	10.5	10.6
Average	13.9	12.1	11.6	11.2	10.7	10.4
			Platy			
1	28	12.4	12.0	12.0	12.0	12.3
2	10	12.0	11.8	11.4	10.8	10.5
3	20	12.4	12.0	11.5	11.0	10.8
4	12	12.2	11.7	11.5	11.0	10.8
5	10	12.0	11.8	11.5	10.8	10.0
6	10	12.0	11.5	11.2	10.7	10.0
7	10	12.0	11.5	11.0	10.7	10.0
8	10	12.2	11.5	11.0	10.8	10.7
9	10	12.0	11.5	11.0	10.7	10.4
10	10	12.0	11.6	11.0	10.7	10.4
Average	23	12.1	11.7	11.3	10.9	10.6

TABLE VI

SUMMARY OF MATERIAL BALANCES FOR THE LOCKED-CYCLE TESTS

Batch #	Feed + Mids (g)	Tails (g)	Mids (g)	Conc. (g)
		Peridotite		
1	250.0	131.1	55.9	63.0
2	305.9	179.9	72.6	53.4
3	322.6	178.3	90.4	53.9
4	340.6	158.6	99.6	82.2
5	349.6	170.3	98.4	80.9
6	348.4	154.8	112.6	81.0
7	362.6	189.4	113.0	60.2
8	363.0	143.9	119.3	99.8
9	369.3	175.0	123.4	70.9
10	373.4	175.3	118.5	79.6
		Platy		
1	250.0	123.7	63.9	53.4
2	313.9	113.4	69.4	131.1
3	319.4	129.4	83.0	107.0
4	333.0	144.7	83.8	104.5
5	333.8	121.9	79.5	132.4
6	329.5	130.9	70.7	127.9
7	320.7	171.1	24.9	124.7
8	274.9	146.4	24.5	104.0
9	274.5	133.0	31.6	109.9
10	281.6	141.7	35.3	104.6

TABLE VII

SUMMARY OF MATERIAL BALANCES FOR MAGNETIC SEPARATION

	Peridotite			Platy		
Fraction	Weight (g)	Distribution (%)	Brightness (%)	Weight (g)	Distribution (%)	Brightness (%)
Feed	578.8	100.0	66.45	973.0	100.0	72.70
Mag 1	13.4	2.31	-	87.9	9.03	-
Mag 2	18.3	3.16	-	45.7	4.70	-
Mag 3	30.8	5.32	-	32.3	3.32	-
Mag 4	23.2	4.01	-	15.5	1.59	-
Mag 5	10.1	1.74	-	17.6	1.81	-
Non-mag	463.7	80.11	69.45	726.7	79.69	74.50
Total	559.5	96.65	-	925.7	95.14	-

TABLE VIII

SUMMARY OF CHEMICAL AND MINERAL PURITY

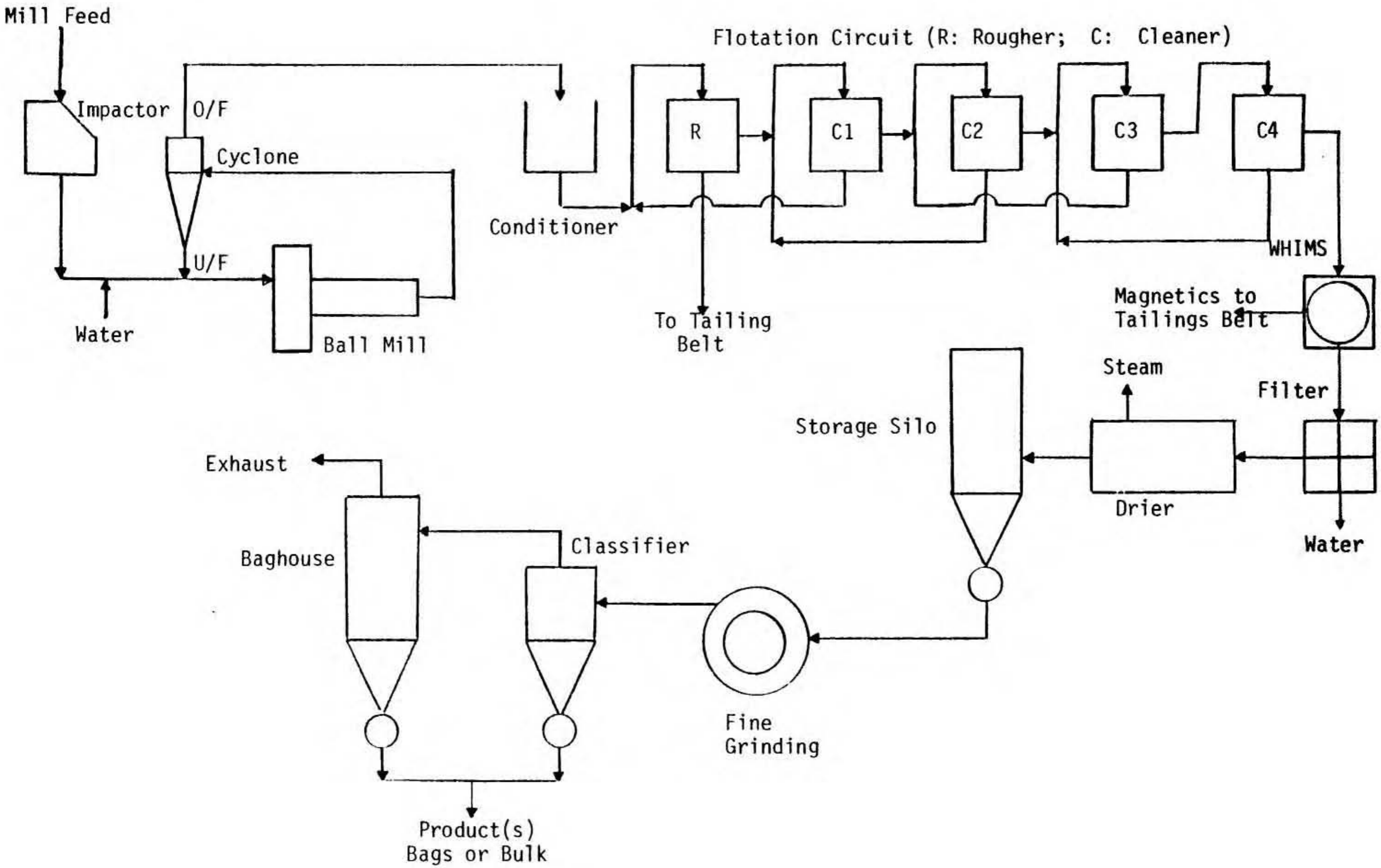
	Beaverwhite 200	Platy (as received)	Peridotite As Received	Peridotite Concentration	Peridotite Scavenger	Peridotite Tails
Chemical Analysis (%)						
Oxides						
MgO	32	24.7	27.3	29.6	27.3	26.1
SiO_2	61	36.7	34.6	54.5	33.3	23.9
CaO	0.5	11.0	9.9	1.5	9.0	14.0
Al_2O_3	1	1.1	1.4	0.7	1.56	1.71
K_2O	-	-	-	Trace	-	Trace
Fe_2O_3	0.5	6.3	6.6	4.8	6.77	7.61
TiO_2	-	0.05	0.05	Trace	0.05	0.05
LOI	5	18.7	19.5	7.8	20.2	25.7
Mineral Analysis (%)						
Minerals						
Talc	95	Major		Major	Major	Major
Chlorite	4	Minor		Minor	Minor	Minor
Dolomite	1	Major		Minor	Major	Major
Quartz	Trace	Not detected		Not detected	Not detected	Not detected
Serpentine	Not detected	Not detected		Not detected	Not detected	Not detected

TABLE IX

COMPARISON OF PRODUCT QUALITY

Particle Size Distribution Property Percent (µ)	Beaverwhite 200	Peridotite	Platy
74	99.6 - 00.8	100	98
44	96	100	90
20	90	86	66
10	68	63	44
5	34	37	23
2	15	14	8
1	6	6	4
0.5	1	2	1
Medium size µm	7.5	6.9	12
Brightness (%) (Aluminous Green Filter)	87	69.5	74.5
Oil Absorption (ASTM D 281) (g/100 g talc)	28	20	16
pH	9	9	9.1
Specific Gravity	2.8	2.6	2.7

Figure 1: Conceptual Flowsheet for Talc Beneficiation and Product Preparation



SUMMARY OF COSTS

ASSESSMENT WORKS 1985 - 1986

WIM & WIM-TA CLAIMS - CARIBOO MININD DIVISION

GEOLOGICAL REPORT - ONTARIO RESEARCH FOUNDATION

DATES	BRIEF DESCRIPTION	COSTS
June - 1985	Firm - Nevin, Stadlier-Brown, Goodman Ltd. Geologists, Vancouver, B.C.	
	Mr. Brian Fairbank, P.Eng, came on the site and did the report, included with this report of R. Trifaux, for the assessment works.	
	Invoice No. 8507-02	$4,980.85
	The expenses were included in the cost of this report. Trifco paid the meals of Mr. B. Fairbank on June 3, 1985.	
	Firm - Ontario Research Foundation	
	Report No. 1 - Analyses of Samples	$2,095.00
	Report No. 2 - Samples of Talcs (Peridodite and Platy talc) sent to Mississauga for beneficiation.	$5,000.00
	Copies of Report No. 1 and Report No. 2 are included in this report of assessment works.	
		$12,075.85
	Total Costs Assessment Works 1985-1986 on WIM & WIM-TA claims.	
	1. R. Trifaux costs $3,473.20	
	2. A & L Fardal costs 1,491.33	4,964.53
		$17,040.38

INVOICE
No. 17273

ONTARIO**RESEARCH**
FOUNDATION

SHERIDAN PARK RESEARCH COMMUNITY, MISSISSAUGA, ONTARIO, CANADA L5K 1B3 • (416) 822-4111 • TELEX 06-982311

ISSUED TO Trifco Minerals Limited
308-751 Clarke Road
Coquitlam, B.C.
V3J 3Y3

Attention: Mr. R. Trifaux

DATE April 19, 1985

***TERMS:** Net 30 days; 1½% charged on overdue accounts*

YOUR ORDER NUMBER	OUR REPORT NUMBER	DEPARTMENT
	IMS 63-40223-85	63-40223

Evaluation of Six Rock Samples	$2,095.00

Paid: 27/2/85 - 1.500 ^{00} cheq: 0004
30/4/85 - 595 ^{00} cheq. 0009

CAB:pmt

PLEASE PAY FROM THIS INVOICE – NO STATEMENT SENT

INVOICE
28239

ONTARIO RESEARCH FOUNDATION

SHERIDAN PARK RESEARCH COMMUNITY, MISSISSAUGA, ONTARIO, CANADA L5K 1B3 • (416) 822-4111 • TELEX 06-982311

ISSUED TO Trifco Minerals Limited
751 Clark Road
Suite 308
Coquitlam, B.C.
V3J 3Y3

DATE December 19, 1985

Attention: Mr. R. Trifaux

Payable on receipt
TERMS: ~~XXXXXXXXXXXXXXXXXXXXXXXXXX~~

YOUR ORDER NUMBER	OUR REPORT NUMBER	DEPARTMENT
	IMS 63-40334-85	63-40334

To cover costs of beneficiating and evaluating two talc-bearing bulk samples from Quesnel, British Columbia	$5,000.00

CAB:pmt

PLEASE PAY FROM THIS INVOICE — NO STATEMENT SENT

COPIES: WHITE & BLUE: Customer GREEN & CANARY: Accounting PINK & GOLD: Department [redacted]ND LTD

INVOICE

Suite 401 - 134 Abbott St., Vancouver, B.C. Canada V6B 2K4 (604) 683-8271

To	Date	Number
Trifco Minerals Ltd. #308 - 751 Clarke Road Coquitlam, B.C. V3J 3Y3	July 29/85	N/A

Professional Services

RE: Statement of Account

Our invoice # 8507-02, July 21, 1985	$ 5,180.85
Less: Payments received April 30/85	(500.00)
May 27, 1985	(2,000.00)
July 22, 1985	(2,500.00)
	180.85
Less: Reduction to invoice # 8507-02, July 21, 1985	(200.00)
CREDIT BALANCE IN ACCOUNT	$ (19.95)

PAID

Total 4980.85

Terms: Net 15th following. 1½% per month (18% per annum) charged on overdue accounts.

ASSESSMENT WORKS 1985-1986

WIM, WIM-TA CLAIMS - CARIBOO MINING DIVISION

SUMMARY OF COSTS

DATE	BRIEF DESCRIPTION	AMOUNT	TOTALS
R. Trifaux Expenses:			
28-05-85	Travel, time, meals, travel to sites.		
to	56.7 hours @15.00	$850.00	
08-06-85	1840 kms @ .25	460.00	
	meals	42.00	$1,352.00
	Miscellaneous expenses - see invoice numbers on resume		139.30
31-07-85	Travel, time, meals, travel to sites.		
to	34 hours @15.00	510.00	
03-08-85	1600 kms @ .25	400.00	
	meals	30.00	940.00
	Miscellaneous expenses - motel, meals etc.		169.64
15-09-85	Travel, time, meals		
to	27 hours @15.00	405.00	
18-09-85	1360 kms. @ .25	340.00	
	meals	11.70	756.70
	Miscellaneous expenses - motel		115.56
	Total Expenses - R. Trifaux		$3,473.20
A. & L. Fardal Expenses:			
25-06-85	Time A. Fardal 87 hours @7.00	$609.00	
to	Time L. Fardal 48 hours @3.50	168.00	
18-09-85	Truck mileage 621 kms @ .25	155.25	$ 932.25
	Miscellaneous expenses - see invoice numbers on resume		559.08
	Total Expenses - A. & L. Fardal		$1,491.33

Total Expenses R. Trifaux	$ 3,473.20
Total Expenses A. & L. Fardal	1,491.33
	$ 4,964.53

ASSESSMENT WORKS 1985 - 1986

WIM, WIM-TA, ARNE, TOM Group of claims

CARIBOO MINING DIVISION

DATE	BRIEF DESCRIPTION	TIME	MILEAGE	MEALS
28-05-85 29-05-85	Trip to Quesnel (for geologist)	11	680	
01-06-85	Trip to the sites (analyses of works)	7.5	120	$10.00
03-06-85	Trip to sites with geologist	10	120	12.00
08-06-85	Return to Coquitlam	9	680	10.00
	Sub - totals	37.5	1600	$32.00
	@	$15.00	25¢	
		$562.50	$400.00	$32.00
	Total time, mileage & meals			$994.50
28-05-85 to 06-06-85	Miscellaneous expenses (motel etc)			286.80
	Total			$1,281.30

NOTE: This is not a new expense to be added to the total. This amount represents the expenses of R. Trifaux to be considered with item D. Geological of the Assessment works sheet. "Statement of Exploration and Development."

EXPENSES ON WIM & WIM-TA CLAIMS

ASSESSMENT WORKS 1985 - 1986

By R. Trifaux & Trifco Minerals Ltd.

DATES	BRIEF DESCRIPTION		COSTS AMOUNT	TOTAL
28-05-85	Departure for Quesnel from Coquitlam Arrived at 100 Mile House			
29-05-85	100 Mile House to Quesnel			
		11 Hours @15.00	$175.00	
		680 Km @25¢	170.00	$345.00
30-05-85	Travelling from Quesnel to the claims and return. Wim-Ta claims - sampling of perodites - analyses of works to be done, accesses, clearing, logging, etc.. for talc, graphitic formations, and calcium carbonate.			
		9.5 Hours @15.00	$142.50	
		120 Km @25¢	30.00	
		Meals	10.00	182.50
01-06-85	From Quesnel to claims. Analyses of works to be done near and on metamorphic and ultrabasic. Initiating A. Fardal to ultrabasics and metamorphics, soils, silts, chip, samplings etc.			
		7.5 Hours @15.00	$112.50	
		120 Km @25¢	30.00	
		Meals	10.00	152.50
03-06-85	Travel to the Wim & Wim-Ta claims with Mr. Brian Fairbank - geologist from Nevin, Stadlier-Brown, Goodman firm. Showing legal posts, configuration of claims, formations of rocks in Do-Do Creek and Creek No. 1, 2, 3, 4 &5. Collation, after the work, on the road. Samples taking - photographs,measuring distances of metamorphic - showing places where diamond drilling took place.			
		10 Hours @15.00	$150.00	
		120 Km @25¢	30.00	
		Meals	12.00	192.00
07-06-85	Travel to claims and return. Works to be done with power saw on Do-Do Creek, talc showing on trails, on Creeks No. 1 & 2, miscellaneous tasks for new claims.			
		9 Hours @15.00	$135.00	
		120 Km @25¢	30.00	
		Meals	10.00	175.00
08-06-85	Return to Coquitlam			
		9 Hours @15.00	$135.00	
		680 Km @25¢	170.00	305.00
	Total Expenses			$1,352.00

ASSESSMENT WORKS 1985 - 1986

on WIM & WIM-TA claims

By R. Trifaux & Trifco Minerals Ltd.

DATES	BRIEF DESCRIPTIONS	TIME Hrs.	MILEAGE Kms.	MEALS $
31-07-85	Trip to Quesnel for new works	9	680	
01-08-85	Trip from Quesnel to claims with A. Fardal to take photographs of talcs in Do-Do Creek. (WIN claim). Showing works to be done in Do-Do Creek, clearing trails, scrubbing in graphitic formation and calcium carbonate. Samples taking of peridodite talcs.	8	120	10.00
02-08-85	WIM-TA claims. Photographs of platy talc - reconnaissance of talc extent in the ares of Creeks 3,4, & 5. Discovery of phlogopite in Do-Do Creek talcs. Diggings for Phlogopites. New claims to be staked. Diggings in platy talc. Showings north of road (Swift River access road) to know extent of formation in width	8	120	10.00
03-08-85	Trip back to Coquitlam	9	680	10.00
	Sub Totals	34	1600	30.00
	@	$15.00	25¢	
		$510.00	$400.00	$30.00
	Total time, mileage & meals			$940.00

	Miscellaneous Expenses	Amount	
31-07-85	Hope Breakfast	$ 4.16	
	Clinton,B.C. lunch (visa card)	8.19	
01-08-85	Pancake House (visa card)	14.20	
02-08-85	Supper - Green Leaf, Quesnel	21.64	
03-08-85	Good Night Inn Motel (master card)	118.45	
	Soft Drink Cache Creek - cash	3.00	
		$ 169.64	169.64
	Total Expenses		$1,109.64

ASSESSMENT WORKS 1985 - 1986

EXPENSES ON WIM - WIMTA CLAIMS

By R. Trifaux & Trifco Minerals Ltd.

DATES	BRIEF DESCRIPTION	INVOICE	AMOUNT	TOTALS
28-05-85	From Coquitlam to 100 Mile House.			
	Collation - Hope		$ 1.55	$ 1.55
	Cache Creek lunch		4.38	4.38
29-05-85	From 100 Mile House to Quesnel.			
	Meal	5649521	4.10	4.10
	SuperValu - Quesnel - Groceries $57.24			
31-05-85	SuperValu - Quesnel - Groceries $42.56			
03-06-85	Breakfast and lunch - Geologist			
	Nancy's Restaurant - Quesnel	522-1995	16.80	16.80
07-06-85	Green Restaurant - Quesnel	5-805	15.35	15.35
Miscellaneous Expenses:				
	Plastic Bags - Min-en Lab sample		17.25	17.25
	Thread spools - Elden Exploration, Vancouver. (for topolite)	51601	24.72	24.72
	Trips to Min-en Lab 5 x 18 x 2 = 180 @25¢		45.00	45.00
	Registered letter to geologist. (First payment on geological report of $2,000.00 by Trifco Minerals Ltd.		1.96	1.96
	The Frontier Restaurant - Clinton,B.C. (visa)		8.19	8.19
			$139.30	$139.30

EXPENSES ON WIM - WIMTA CLAIMS

ASSESSMENT WORKS 1985 - 1986

By R. Trifaux & Trifco Minerals Ltd.

DATES	BRIEF DESCRIPTION	AMOUNT	TOTAL
15-09-85	Trip to Quesnel for 2 - 100 # talc samples for beneficiation by Ontario Research Foundation, Mississauga, Ontario.		
	680 Km @ 25¢	$170.00	$170.00
	Hope Pancake meal - visa card	4.85	4.85
16-09-85	Diggings for 200 # talc samples		
	9 hours @15.00	135.00	135.00
17-09-85	Good Night Inn Hotel - master card	115.56	115.56
18-09-85	Lac La Hache breakfast - cash	5.05	5.05
	Cache Creek Shell Station - two soft drinks	1.80	1.80
	Return trip 680 Km @25¢	170.00	170.00
	Time during trip 18 hours @15.00	270.00	270.00
		$872.26	$872.26

ASSESSMENT WORKS ON WIM & WIM-TA CLAIMS 1985 - 1986

by A. Fardal - Independent Contractor

by L. Fardal - Independent Contractor

Date	Brief Description	Time Hrs	Mileage Kms
06-25-85	A. Fardal - staking Wim-ta claim #7	10	77
06-25-85	L. Fardal - staking Wim-ta claim #8	10	
07-03-85	A. Fardal - staking Wim-ta claim #9	8	75
07-03-85	L. Fardal - staking Arne claim	8	
07-23-85	A. Fardal - miscellaneous staking	4.5	75
08-01-85	A. Fardal works on Do-Do with R. Trifaux (samples, digging, photographs)	7	85
08-02-85	A. Fardal works on Do-Do with R. Trifaux (samples, digging, photographs)	7	77
08-05-85	A. Fardal - clearing Do-Do creek accesses	9	75
08-10-85	A. Fardal - claim staking Wim-ta #9	9	77
08-10-85	L. Fardal - claim staking Wim-ta #9	9	
08-17-85	A. Fardal - clearing access trail creek #1	6.5	80
08-17-05	L. Fardal - clearing access trail creek #1	6.5	
09-02-85	A. Fardal - clearing & scrubbing Do-Do Creek for talc exposures	8.5	
09-02-85	L. Fardal - clearing & scrubbing Do-Do Creek for talc exposures	8.5	
09-07-85	A. Fardal - clearing & scrubbing Do-Do Creek	6	
09-07-85	L. Fardal - clearing & scrubbing Do-Do Creek	6	
09-16-85	Digging 100 # Samples with R. Trifaux in Do-Do Creek	6	
09-17-85	Digging 100 # Samples Platy talc on road and in creek	5.5	
		135	621

Recap of Expenses

87 Hours @7.00	$ 609.00
48 Hours @3.50	168.00
621 Kms. @ 25¢	155.25
	$ 932.25

ASSESSMENT WORKS ON WIM, WIM-TA CLAIMS 1985-1986

Done by A. Fardal - Independent Contractor
Done by L. Fardal - Independent Contractor

DATES	BRIEF DESCRIPTION MISCELLANEOUS EXPENSES	INVOICE #	AMOUNT	TOTALS
03-06-85	Quesnel - Willis Harper	51414	$ 2.98	$ 2.98
08-06-85	Pictures	555-9588	8.45	8.45
06-06-85	Stationery (Quesnel Stationery slip)		3.19	3.19
11-06-85	West Fraser Hardware	170560	16.64	16.64
24-06-85	Recording Office - 00470 Quesnel (photocopies etc.)		10.60	10.60
24-06-85	Willis Harper	48491	12.47	12.47
02-07-85	Recording Office - Mineral Tag 4 Post.00470		4.00	4.00
05-07-85	Recording Office (Photocopies)		5.00	5.00
05-07-85	Recording Office - Minerals cls recording		60.00	60.00
08-07-85	Pictures	555-9643	7.51	7.51
22-07-85	Small slip (miscellaneous)		5.95	5.95
23-07-85	B.C.Telephone Co - June & July/85		69.56	69.56
30-07-85	Willis Harper	4179	14.64	14.64
07-08-85	Recording Office - Mineral tag 00470		2.00	2.00
12-08-85	Quesnel Agency - photocopies & tax		3.00	3.00
17-08-85	Gas invoice (visa)	5-963123	26.50	26.50
17-08-85	Paint and ribbons		9.27	9.27
12-08-85	4 Post claim (receipt)	235559	5.00	5.00
19-08-85	Gas invoice (visa)	8132049	27.01	27.01
08-85	Invoice - phone bill 21-08-85	140301	51.37	
	Tags - receipt 235622E		3.74	
	Recording office - miscellaneous		8.49	
	Registration costs - recording office		2.46	
	Stationery - Quesnel		3.10	69.16
30-08-85	Chain saw oil, gas, jerry can	30	10.00	10.00
18-09-85	Expediting talc samples to ORF, Mississauga (receipt)	10826266	70.25	70.25
18-09-85	Expediting talc samples to ORF, Mississauga (receipt)	10826255	115.90	115.90
			$559.08	$559.08

STATEMENT OF QUALIFICATIONS

Education

1. Chatelineau School of Mines, Belgium. 2 years. 1 diploma.
2. Tamines School of Mines, Belgium. 2 years. 1 diploma.
3. University of Charleroe, Belgium. 1 year Mining, Geology, Technologies, Reports. 1 certificate.

   The copies of diplomas and certificates have been presented to the Cariboo Mining District with my 1977-1978 statement of works in the Cariboo.
4. I passed successfully the test of rocks and mineral identification with a mining engineer from the Department of Mines in 1978 in Vancouver
5. Two years cost accounting with McMaster Univeresity in Ontario.

Experience

I have extensive experience in exploration and mining from Zaire (previously Belgian-Congo) and from Ruanda-Burundi in central Africa.

1. La Compagnic Des Grands Lacs Africains, Brussels, Belgium. (Cassiterite, gold mines, and explorations).
2. La Compagnic Mirudi, affiliated Company of the Grands Lacs Africains Company, Brussels, Belgium. (Cassiterite, Columbo-Tantalites, gold ores).
3. Mr. R. Henrion, Explorations Minieres in Central Africa, Busoro, Ruanda. (Cassiterites, Wolframites, Beryllium ores).
4. De Borchgrave Mines d'Etain, Kigali, Ruanda. (Cassiterites, Columbites)

I was successful in exploring the granitic massifs of Central Ruanda-Burundi. I described my methods of exploration in the 1977-1978 report (assessement works) related to the distances between lines and pits, flying prospecting and the systematic one with calculations of zones of influence in the placers. I did the topographical maps, location of deposits and calculation of reserves. I found numerous reserves extensions in the mines I exploited, in the terraces (benches) for the Companies with which I was associated. I opened several mines in placer (gold, tin, columbite). I worked mines in open pit and underground for tin, wolframite, tantalite, columbite, gold and beryl.

I started prospecting in British Columbia in 1959 for gold in placer in the Cariboo Mining District for a company. Today I have claims containing precious metals, base metals and industrial minerals. I do my geochemical surveys in silts in the creeks, in soils, in rocks, for my reconnaissance prospecting and for my systematic works, and orient my works from their results.

Beneficiation studies of industrial minerals have been done by the Ontario Research Foundation in Ontario.

I am a member of the Canadian Institute of Mining and Metallurgy (CIM), The Chamber of Mines of British Columbia, buy my literature (geological & other) from the Department of Mines of B.C. and Ottawa, from the Geological Survey of Canada.

I have subscriptions to the Engineering & Mining Journal, CIM Bulletin, Chemical Week and Northern Miner. I keep informed with reports from mining organizations of the government.

I consult with professionals and use the latest equipment available to prospectors today (geiger counters, mineral light, stereoscope, altimeters, topolites etc...)

I learned useful information about the industrial minerals with the Ontario Research Foundation, related to talc, graphite, calcium carbonate etc... I am engaged in the research of miscellaneous industrial minerals which will be needed in the following years and the following century.

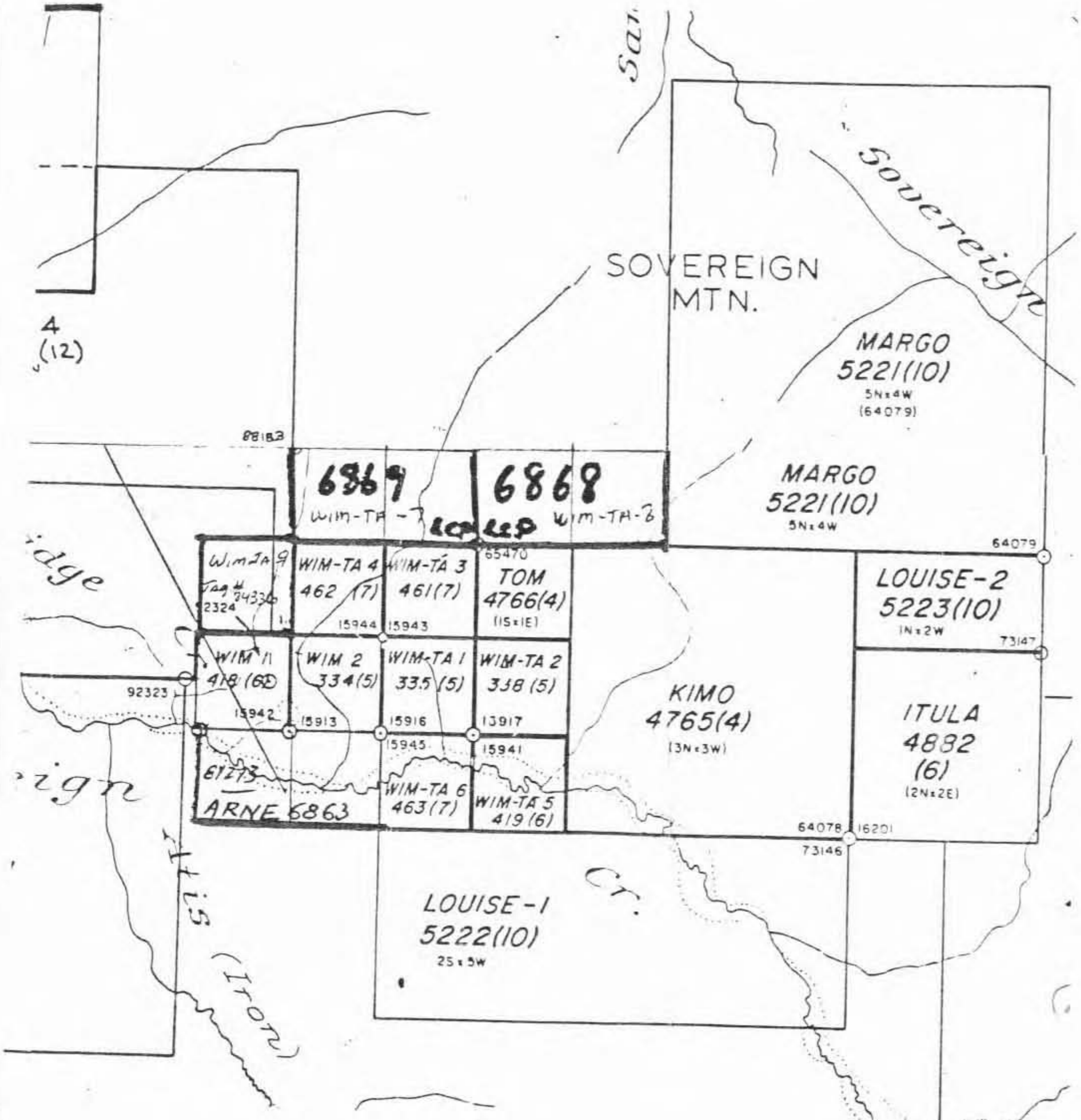
TRIFCO MINERALS LTD

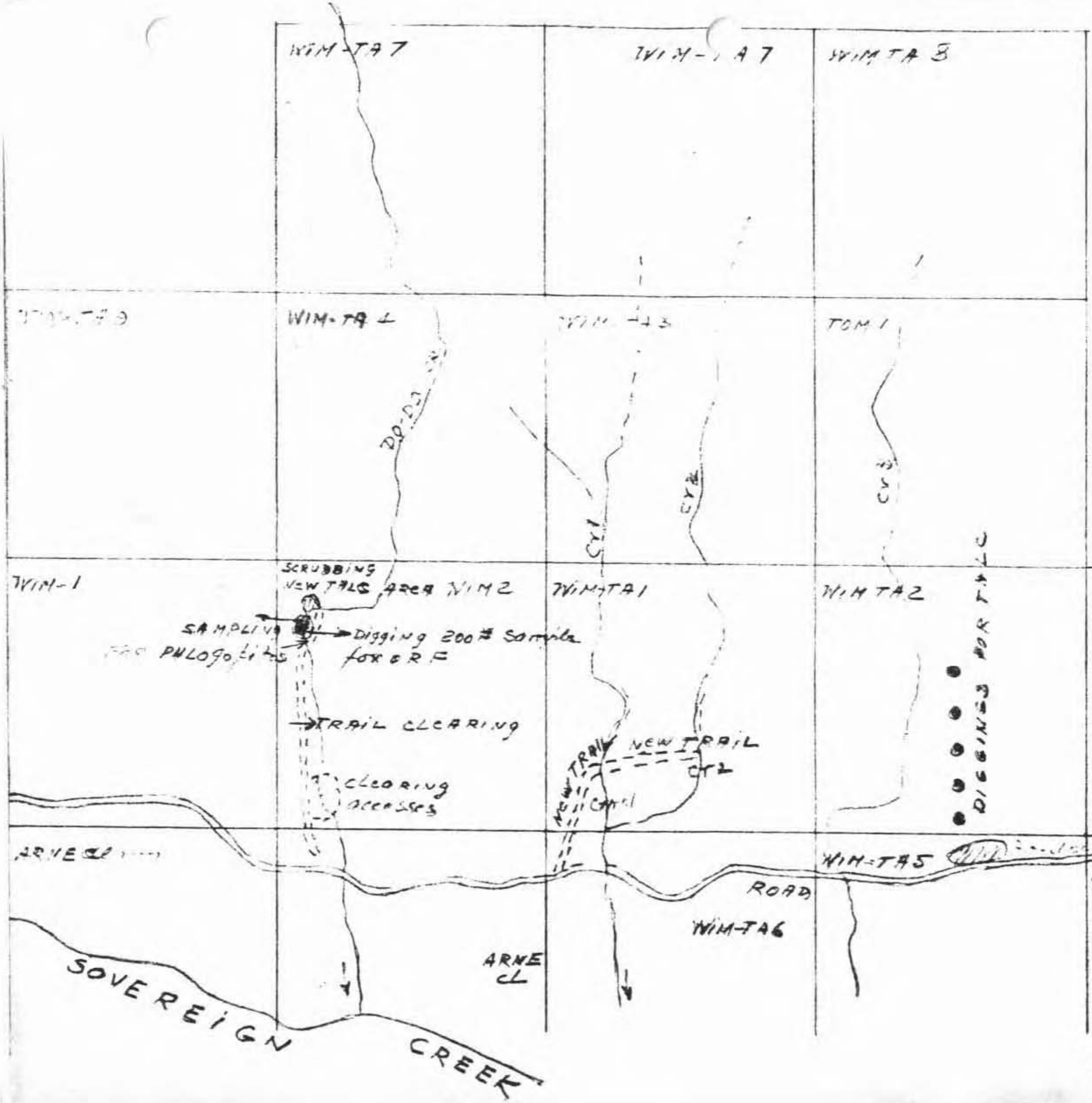
CLAIMS LOCATION

scale 1cm ½ = 500m.

WIM, WIMTA, ARNE, TOM-

No1 MAP- M 93A-13W-





N° 2. MAP.

TRIFCO Minerals LTD

scale 1cm=100 m

PHYSICAL WORKS

1985-1986

DO-DO CREEK.

N.

SAMPLES SENT TO ONTARIO RESEARCH FDN.

(I) Location - WIM-TA2 claim.

(II) " - WIM-2 "

(IV) " - WIM-2 "

(VII) " - WIM-2 "

(VIII) " - WIM-TA2 "

(IX) " - NOT IN THE CARIBOOS.

PHYSICAL WORKS - 200# samples - WIM 2 CLAIM
TRAILS - WIM2 - WIM-TA.1 - DIGGINGS FOR TALC. WIMTA2
CLEARING ACCESSES - WIM-2

86-115-14808

REPORT ON THE

WIM, WIM-TA and TOM CLAIM GROUP

Sovereign Creek Area
N.T.S. 93A/13W
CARIBOO MINING DIVISION
Lat. 52°59.2' Long. 121°53.5'

for

Owner/Operator: TRIFCO MINERALS LTD.
#308 - 751 Clarke Road
Coquitlam, B.C.
V3T 3Y3

by

B.D. Fairbank, P.Eng.
Nevin Sadlier-Brown Goodbrand Ltd.

July 8, 1985

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APPENDICES Following Text

Appendix A - Sample Descriptions
Appendix B - Photomicrographs

SUMMARY

Talc within serpentinite and serpentinized ultramafic intrusions of Mississipian to Permian age occurs at three widely separated areas along a one kilometre trend on the WIM, WIM-TA and TOM claim group of TRIFCO MINERALS LTD. Insufficient data are presently available to define any talc reserves at the separate zones or to determine the relationship between the zones, however, the property constitutes a potential source of talc for domestic markets.

A Phase I exploration program, designed to 1) determine the relationship between the known talc occurrences, 2) define the surface extent of the "Dodo Creek Zone" by trenching, 3) locate the bedrock source of talc float in Creeks 1 and 2, and 4) obtain bulk samples for preliminary milling, concentration and quality analysis by bench-scale testing, is strongly recommended at an estimated cost of $29,205.

1. TERMS OF REFERENCE

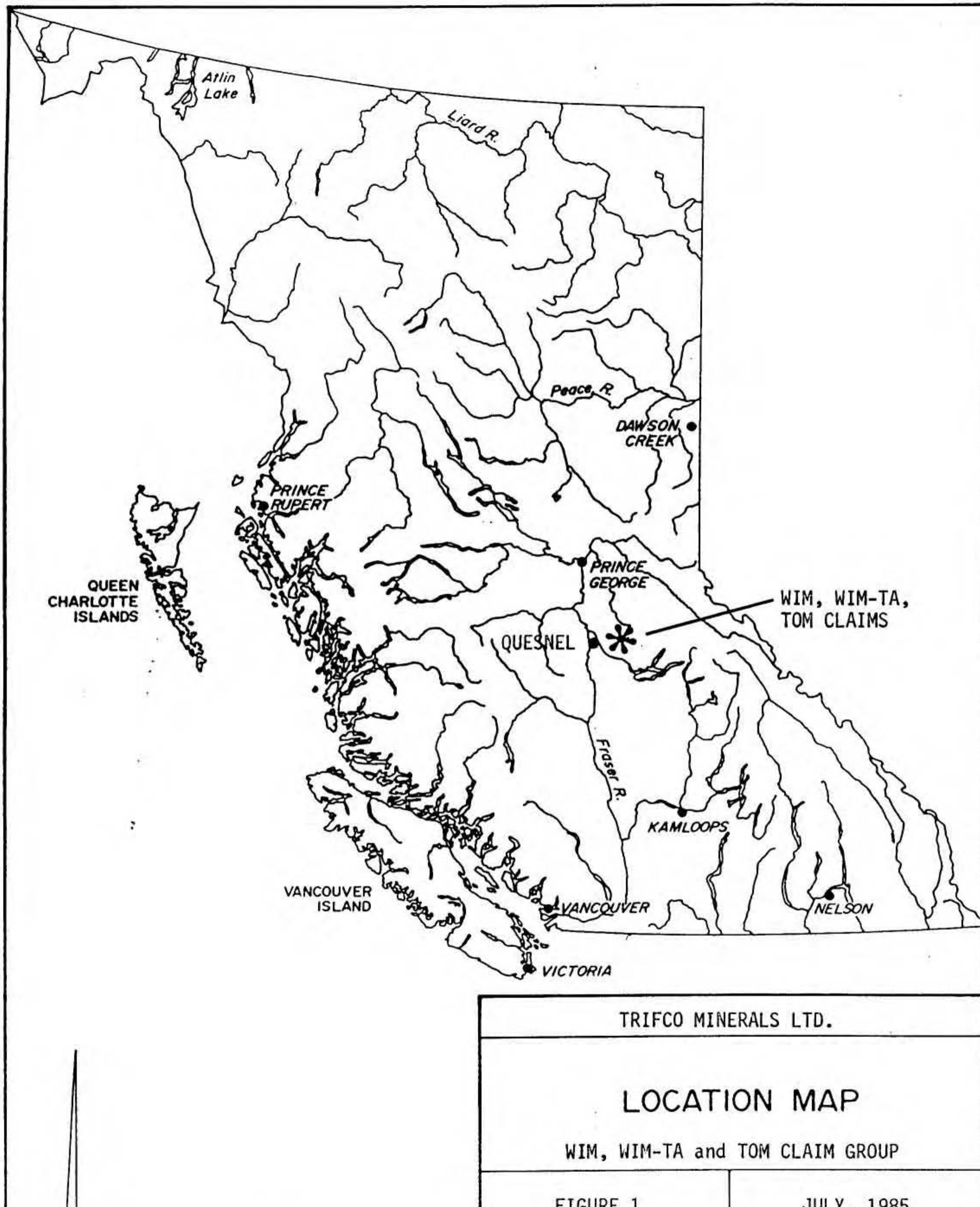
Nevin Sadlier-Brown Goodbrand Ltd. (NSBG) was retained by Mr. Rene Trifaux of Trifco Minerals Ltd. to examine talc occurrences and make recommendations for further development on the WIM and WIM-TA claims, 32km (20 miles) east of Quesnel in the Sovereign Creek area (Figure 1). This report is based on a 2-day property examination on June 3 - 4, 1985 by the author in the company of Mr. Trifaux.

Our examination and recommendations relate only to the geology and development of talc reserves on the property. A program of further exploration and development is recommended and outlined in detail in Section 4.

The potential for marketing of a saleable talc product is beyond the scope of the present work. The largest user of industrial talc in the Quesnel area is the Cariboo Pulp and Paper Company where talc is required for pitch control in pulp processing and for paper manufacture. At present talc is imported. Other potential markets for talc are in plastics manufacturing and cosmetics. The tonnage, quality and purity of the Sovereign Creek talc deposit must be determined by exploration, drilling and pilot testing before its suitability for a particular application and market price can be determined.

2. CLAIMS

The WIM, WIM-TA and TOM claim group is comprised of 9 individual but contiguous, four post claims, each 500 x 500m (Figure 2). Claim posts were inspected in the field and the staking conforms to the Mineral Act regulations for British



TRIFCO MINERALS LTD.

LOCATION MAP

WIM, WIM-TA and TOM CLAIM GROUP

FIGURE 1 | JULY, 1985

NEVIN SADLIER-BROWN GOODBRAND LTD.

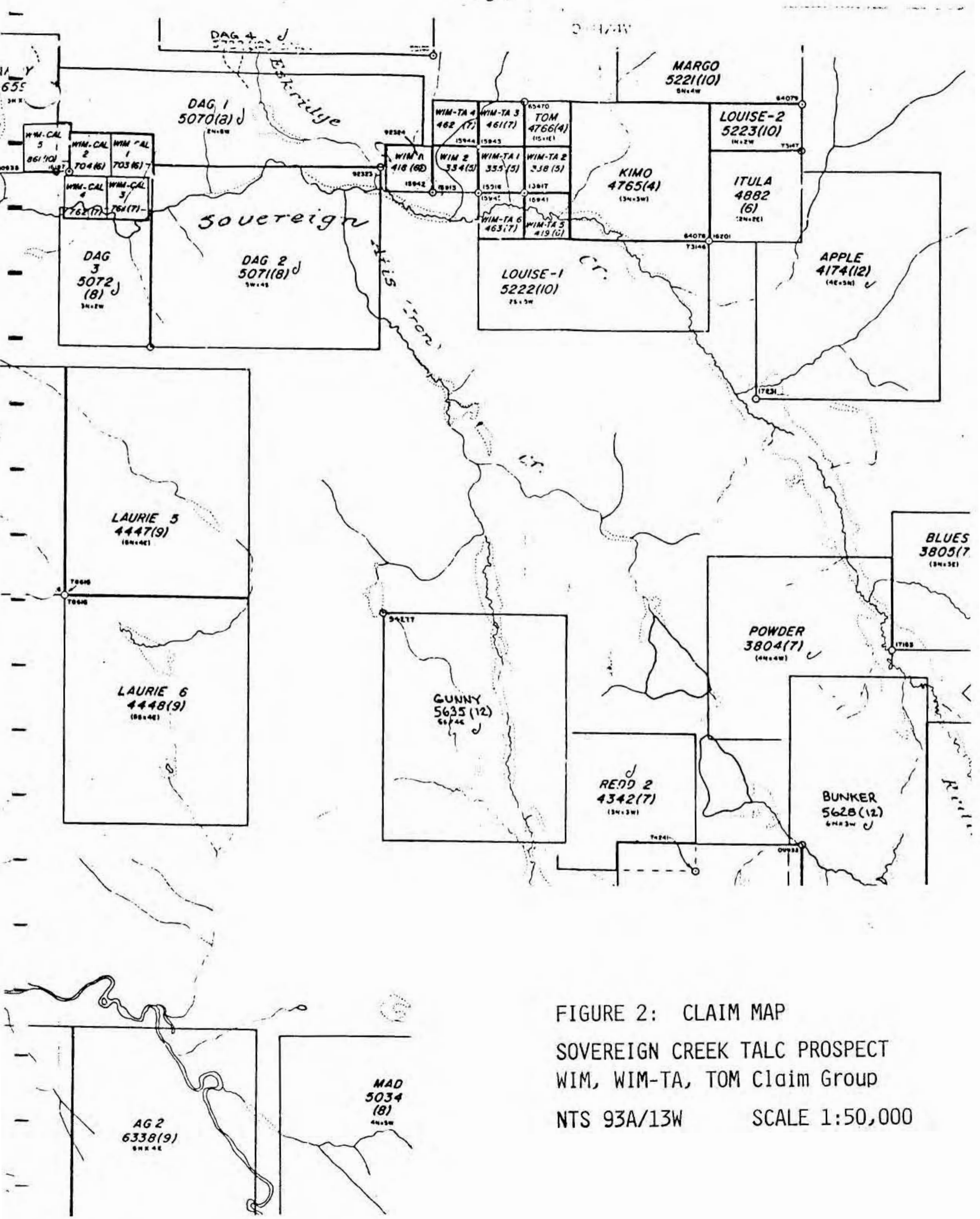


FIGURE 2: CLAIM MAP

SOVEREIGN CREEK TALC PROSPECT

WIM, WIM-TA, TOM Claim Group

NTS 93A/13W SCALE 1:50,000

Columbia. Pertinent claim data on the subject property verified at the Mining Recorder's office, is summarized in Table 1 below.

TABLE 1 - CLAIM DATA

Claim Name	Record No.	Units	Assessment Due Date	Recorded Owner
WIM 1	418	1	June 8, 1986	Rene Trifaux
WIM 2	334	1	May 12, 1986	" "
WIM-TA 1	335	1	May 12, 1986	" "
WIM-TA 2	338	1	May 16, 1986	" "
WIM-TA 3	461	1	July 25, 1986	" "
WIM-TA 4	462	1	July 25, 1986	" "
WIM-TA 5	419	1	June 8, 1986	" "
WIM-TA 6	463	1	July 25, 1986	" "
TOM	4766	1	April 14,1987	" "

It is possible to consolidate the present land holdings into a single (12-20 unit) claim and it is recommended that this be considered to simplify property administration and ensure that no open fractions exist between the single unit claims.

The KIMO (4765), LOUISE-1 (5222), MARGO (5221), LOUISE-2 (5223), and ITULA (4882) claims adjacent to the subject property are also owned by Rene Trifaux, however, they have not been examined by the writer and are not part of this report.

3. LOCATION, ACCESS AND PHYSIOGRAPHY

The property is located in the upper Sovereign Creek area 32km east of Quesnel at 52° 59' 30"N, 121° 53' 30"E on NTS mapsheet 93A/13.

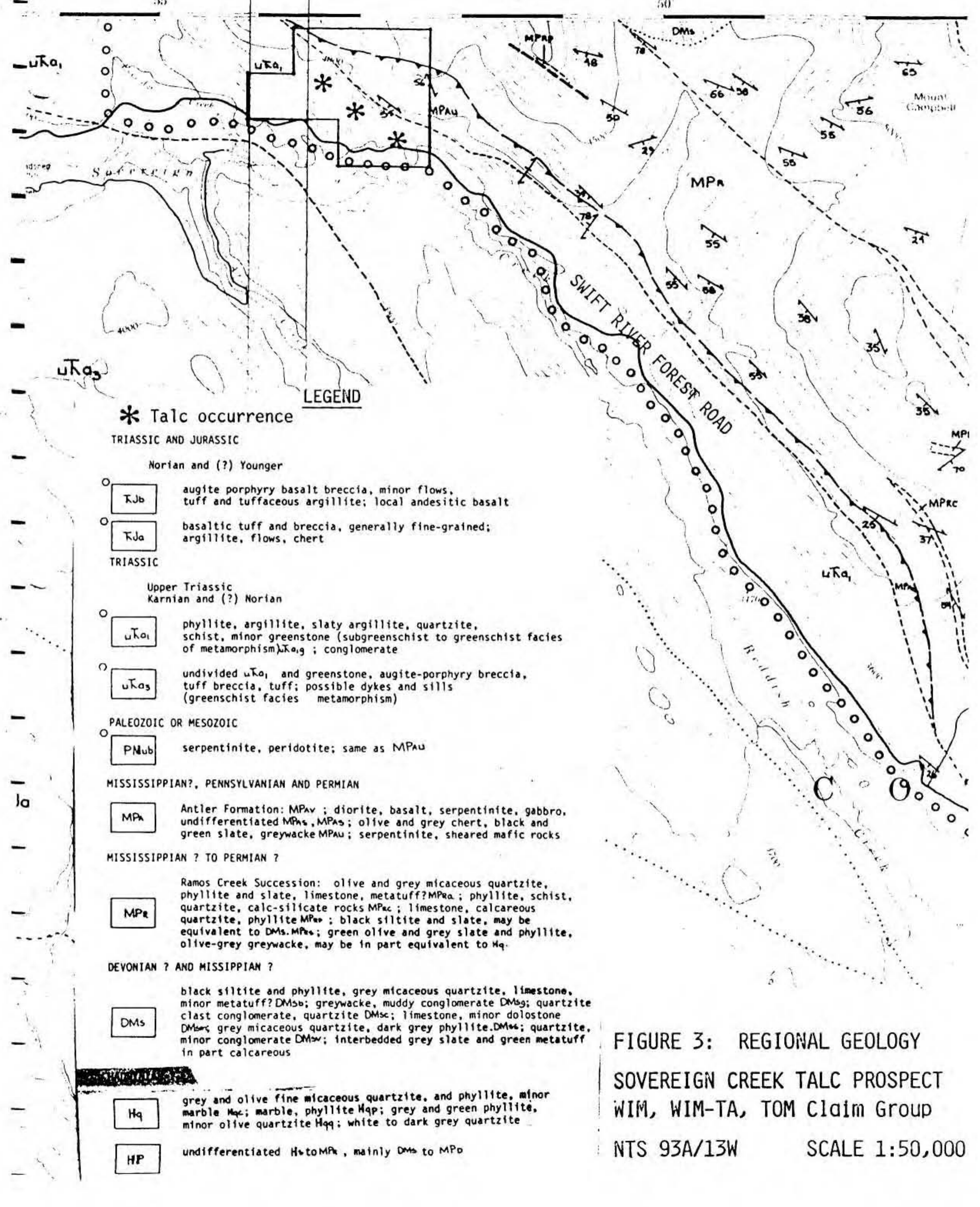
Access is via the Swift River Forest Road (No. 1300) leading from the Highway 26 between Quesnel and Barkerville. The Swift River Forest road is an all weather, secondary road that crosses the southern portion of the claims. Dodo Creek on the property is at Kilometre 16 from the highway. Talc occurrences on Dodo Creek, Creek 1 and Creek 2 are all within 500m of the road and are reached on foot.

The property is on the south flank of Sovereign Mountain between 1050-1350m (3500-4500 feet) in elevation. Local relief is 650m (2100 feet). Mountains are generally rounded with moderate forested slopes. Outcrop conditions are poor and bedrock is effectively covered by moss and variably thick overburden except locally along the creeks and at higher elevations. Glacial drift blankets the low-lying southern most part of the property.

4. GEOLOGY

The property is underlain by three main geologic units (Figure 3). From youngest to oldest, these are as follows:

- Upper Triassic phyllite, argillite, quartzite, schist and minor greenstone ($uTRa_1$) best exposed along Dodo Creek above the road



LEGEND

* Talc occurrence

TRIASSIC AND JURASSIC

Norian and (?) Younger

TRJb — augite porphyry basalt breccia, minor flows, tuff and tuffaceous argillite; local andesitic basalt

TRJa — basaltic tuff and breccia, generally fine-grained; argillite, flows, chert

TRIASSIC

Upper Triassic
Karnian and (?) Norian

uTRa1 — phyllite, argillite, slaty argillite, quartzite, schist, minor greenstone (subgreenschist to greenschist facies of metamorphism) uTRa1g ; conglomerate

uTRa3 — undivided uTRa1 and greenstone, augite-porphyry breccia, tuff breccia, tuff; possible dykes and sills (greenschist facies metamorphism)

PALEOZOIC OR MESOZOIC

PMub — serpentinite, peridotite; same as MPAu

MISSISSIPPIAN?, PENNSYLVANIAN AND PERMIAN

MPA — Antler Formation: MPAv ; diorite, basalt, serpentinite, gabbro, undifferentiated MPAs , MPAs ; olive and grey chert, black and green slate, greywacke MPAu ; serpentinite, sheared mafic rocks

MISSISSIPPIAN ? TO PERMIAN ?

MPR — Ramos Creek Succession: olive and grey micaceous quartzite, phyllite and slate, limestone, metatuff? MPRa ; phyllite, schist, quartzite, calc-silicate rocks MPRc ; limestone, calcareous quartzite, phyllite MPRp ; black siltite and slate, may be equivalent to DMs. MPRs ; green olive and grey slate and phyllite, olive-grey greywacke, may be in part equivalent to Hq.

DEVONIAN ? AND MISSIPPIAN ?

DMs — black siltite and phyllite, grey micaceous quartzite, limestone, minor metatuff? DMsb; greywacke, muddy conglomerate DMsg; quartzite clast conglomerate, quartzite DMsc; limestone, minor dolostone DMsc; grey micaceous quartzite, dark grey phyllite. DMsq; quartzite, minor conglomerate DMsv; interbedded grey slate and green metatuff in part calcareous

[redacted]

Hq — grey and olive fine micaceous quartzite, and phyllite, minor marble Hqc; marble, phyllite Hqp; grey and green phyllite, minor olive quartzite Hqq ; white to dark grey quartzite

HP — undifferentiated H to MPR , mainly DMs to MPo

FIGURE 3: REGIONAL GEOLOGY

SOVEREIGN CREEK TALC PROSPECT

WIM, WIM-TA, TOM Claim Group

NTS 93A/13W SCALE 1:50,000

- ANTLER FORMATION serpentinite and sheared mafic rocks (MP_{AU}) which are locally talcose

- RAMOS CREEK SUCCESSION (MP_R) olivine and micaceous quartzite, phyllite slate and limestone in the northern upper reaches of the property.

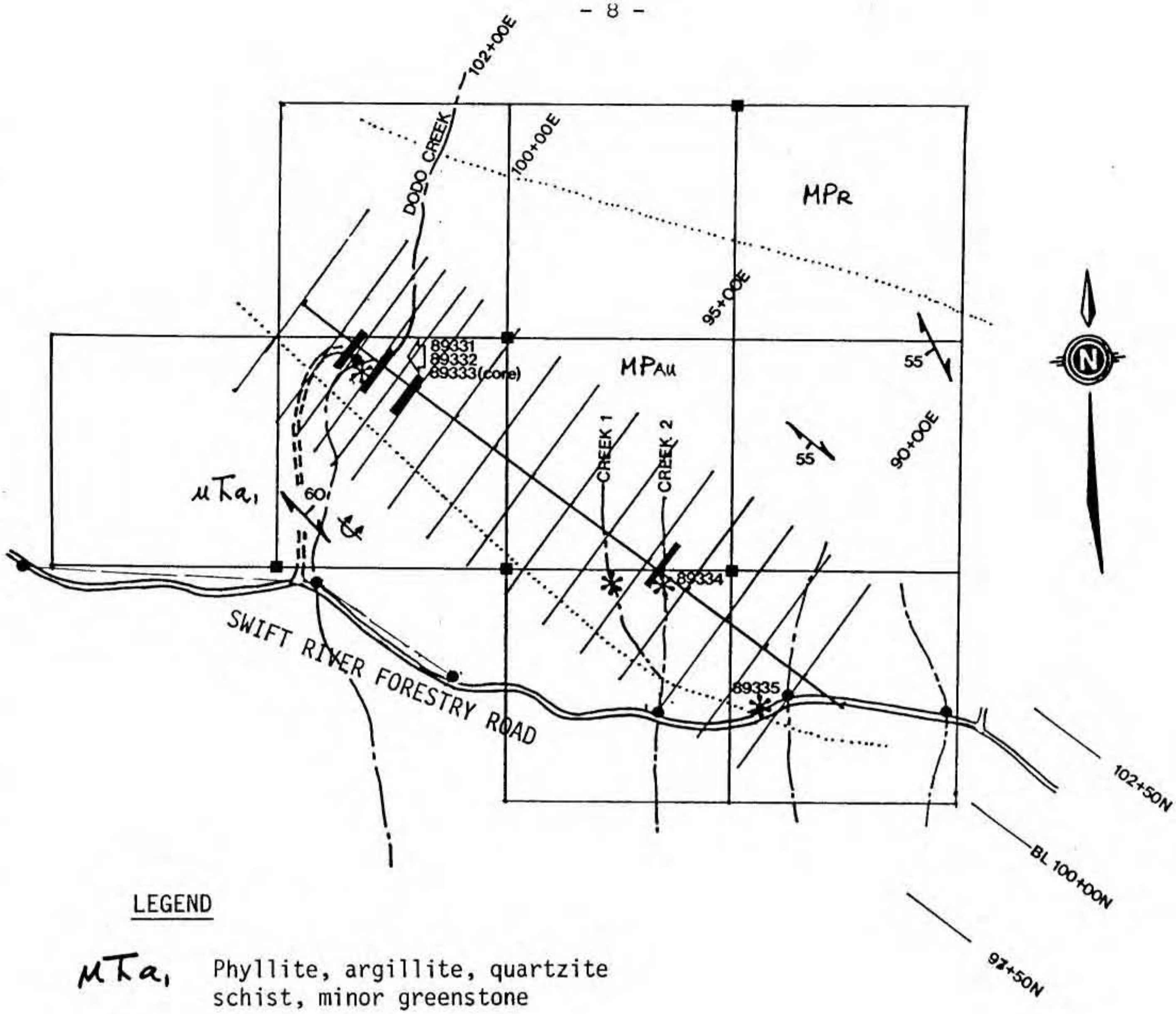
Upper Triassic rocks and the Antler Formation are thrust over the Ramos Creek Succession. Stratigraphy generally trends west-northwest and dips southwest. However, on a local or property scale recumbent drag folding and other complex structures are evident.

Folded graphitic phyllite in lower Dodo Creek (refer to Figure 4) strikes 120-145° and dips northward contrary to the regional trend. An overturned, anticline has an axial plane striking parallel to the foliation (bedding?) and dipping northward. These relationships indicate that additional fold structures must occur northward towards the Dodo Creek talc occurrence in order for strata to be in proper sequence, and that thickening and/or repetition of beds occurs locally.

5. TALC OCCURRENCES

Talc occurrences are confined to Antler Formation serpentinite and serpentinized ultramafic intrusions (Figure 4).

Three widely separated areas of talc alteration along a one kilometre linear trend have been identified as:



LEGEND

MTa1	Phyllite, argillite, quartzite schist, minor greenstone
MPAu	ANTLER FORMATION serpentinite, gabbro
MPR	RAMOS CREEK SUCCESSION quartzite, phyllite, slate, limestone
55	Foliation
*89441	Talc occurrence and sample number
	Road
■	Legal Corner Post (LCP)
●	Control Survey Station
	RECOMMENDATIONS
	Control grid (geology, magnetic survey)
	Trench to bedrock
	Tote road

Scale

500m

FIGURE 4: PROPERTY MAP

GEOLOGY AND TALC OCCURRENCES
SAMPLE LOCATIONS
RECOMMENDATIONS

1) Dodo Creek talcose serpentinized ultramafic

2) Creek 1 and Creek 2 platy talc float

3) Swift River Forest Road talc-carbonate schist boulders.

The Dodo Creek talc occurs in outcrop and shallow drill holes while the other occurrences are concentrations of angular float that have not travelled far from their bedrock source.

The allignment of the talc alteration zones indicates a probable west-northwest stratigraphic or structural control of the mineralization. Although the three occurrences may occur along the same structural zone or stratigraphic horizon, it is unlikely that they form a continuous deposit. Rather, it is expected that a series of deposits of unknown tonnage occurs, possibly elongated parallel or subparallel to regional stratigraphic and structural trends.

At Dodo Creek, talcose bedrock is exposed more or less continuously along the creek for a distance of 30m. The section is covered at each end by overburden and is possibly thicker. Talc was also recovered in shallow drill holes on the showing. Samples 89331, 2 and 3, typical of the 30 metre section, are serpentinized ultramafics with very fine grained talc making up between 20-42 percent of the rock as intimate intergrowths with serpentine.

750 metres southeast of the Dodo Creek talc showing, angular platy talc float occurs over 50 metres intervals in Creek 1 and Creek 2. Overburden appears shallow near Creek 2

and the angularity and consistent large size (typically 30-60cm across) indicates that the float is not far from its bedrock source. Creek 1 float is in an area of thicker overburden and is probably slightly further from its upstream source.

Creek 1 and 2 float boulders are distinctly different from the talc at Dodo Creek. Platy fine grained talc comprises 80-90 percent of the rock with the remainder being mostly chlorite. Pyrite and limonite are up to 5 percent by volume.

The third talc occurrence is along the Swift River Forest Road where several large boulders of talc-carbonate schist occur. Sample 89335 is taken from the largest of these which was about 3 metres across. Talc content is 85 percent with the remainder mostly carbonate (dolomite?) and minor limonite.

6. **CONCLUSIONS**

Talc occurrences on the Sovereign Creek property may constitute an important source of talc for the domestic market. Talc occurs at three widely separated areas along a one kilometre linear trend. Insufficient data are available to define any talc reserves at any one of the separate zones or to determine continuity between the zones.

A staged exploration program is recommended and required to further explore the known area and define any commercial reserves that may be present. A preliminary Phase I surface exploration program is outlined in the following section. Additional surface exploration, trenching, and diamond drilling (Phase II) would be contingent upon the results of Phase I work.

The mineralogy and talc concentration for the Dodo Creek and Creek 1 and 2 areas is simple and reasonably defined by the present work. Preliminary investigations should be initiated based on the thin-section analyses and the photomicrographs showing grain size and interrelationship with impurities to determine whether a suitable grade saleable talc product can be concentrated from these rocks assuming tonnage can be developed for mining.

7. RECOMMENDATIONS

Phase I exploration should be designed to 1) determine the relationship and any continuity between the known talc zones, 2) define the extent of the Dodo Creek zone on surface, 3) locate the bedrock source and potential size of the Creek 1 and 2 zone, and 4) sample talc zones for milling, concentration, quality analysis by bench scale testing.

A Phase I program is recommended to include installation of a control grid with Baseline 100+00N oriented west-northwest to connect the known zones and perpendicular survey lines at 100m spacing and with 20m station intervals. Fill-in survey lines at 50m spacings should be run over the showing area. All subsequent mapping, sampling, geophysical surveys and trenching will be referenced to the control grid.

Detailed geologic mapping, prospecting and rock sampling, and a magnetometer survey should be conducted over the grid area. The magnetometer survey will trace stratigraphy and structure outward from known talc areas. Trenching to bedrock should be used as an exploration tool and to determine the extent of the Dodo Creek zone and should be based on the location of talc showings, mapping and magnetometer results. Trenches should be extended until the talc zone(s) have been cut-off in section and along strike.

Bulk sampling of talc zones exposed by trenching is required for estimation of possible reserves and talc grade and for bench tests to determine if and how a saleable talc product can be concentrated. It is essential that the Phase I work be done under the direction of a qualified geological engineer.

8. COST ESTIMATE

The estimated cost of Phase I is as follows:

Personnel	
- geologist/party chief, 25 days @ $275/day	$ 6,875
- survey grid 10 line km @ $350/line-km	3,500
- magnetometer survey - 10 line km @ $200/line-km	2,000
- geological assistant/sample, 10 days @ $175/day	1,750
Trenching (back-hoe)	
- mob/demob	400
- access 16 hours @ $80/hr	1,280
- trenching 40 hours @ $80/hr	3,200
Camp, 60 man-days @ $18/day	1,080
Food, 60 man-days @ $15/man/day	900
Truck Rental	900
Expendables	500
Communications	100
Magnetometer Rental	300
Freight	500
Lab Bench Tests	3,000
Drafting	930
Report typing, Production	1,000
10% administration and carrying charges on third party costs	990
TOTAL	$ 29,205

Respectfully submitted,

NEVIN SADLIER-BROWN GOODBRAND LTD.

Brian D. Fairbank, P.Eng.

July 8, 1985

APPENDIX A - Sample Descriptions

Trifco Wim-Ta Claims, Quesnel Area

(Samples sent June 12, 1985 for rock classification, petrographic description and talc content estimate.)

Sample No.	Description
89331	Sample from main showing area along Dodo Creek. Dark green (chlorite, actinolite and mottled white fine-grained granular rock) sample by B.D. Fairbank. The talc content is not immediately apparent. Talc occurs as a light green to white mineral in clots in one instance 1cm across and more commonly as finer grained intimately mixed throughout the rock matrix. Fracture surface is rusty weathered and shows slickensides. This rock is typical of the showing area along Dodo Creek. Talc content is slightly variable but appears to be pervasive throughout the zone.
89332	Sample by Trifaux at Dodo Creek showing. Rock is as above but slightly coarser grained and with a higher percentage of dark green minerals. Talc content appears to be lower and again occurs as small blobs and possibly as grains of the same size as the other matrix grains.
89333	EX drill core provided by Rene Trifaux from hole on main Dodo Creek showing. SOS above with approximately 70% dark green minerals and 30% light green to white talc? This rock has the appearance of a breccia with the dark green minerals forming the fragments and the talcous minerals forming the matrix.
89334	Sample from large angular float boulder of platey talc. Talc forms 70% of this rock and is light green and speckled throughout with disseminated pyrite approximately 4% (pyrite is oxidized to rusty blebs). Unidentified medium dark green mineral forms 15% of the rock in small (4ml across) grains with diffuse mineral boundaries (chlorite?).

. . .

Sample No.	Description
89335	Schistose rock comprised of 65-70% talc from large angular boulder (10 feet across) along highway 150m east of Creek Three. Rock has a mottled appearance from the colouration which is light green (talc) and light grey-brown.
89336	Dark green talcous rock from Shulaps Creek taken by Jim Britton. Rock is massive with dark greyish and dark greenish mottled colouration apparently from an outcrop 6 feet or so across comprised of this material.

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE, Ph. D. Geologist

P.O. BOX 39
8887 NASH STREET
FORT LANGLEY, B.C.
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PHONE (604) 888-1323

Job # 85-20

June 25th, 1985

Report for: Brian Fairbank,
Nevin, Sadlier-Brown & Goodbrand Ltd.,
401-124 Abbott St.,
Vancouver, B.C.
V6B 2K4

Samples:

6 rocks for thin sectioning and petrographic examination. Samples are numbered 89331 A - 89336 A.

Summary:

The rocks of this suite fall into two main groups. Samples 89331, 2 and 3 are typical serpentinized ultramafics showing remnant, pseudomorphed coarse crystalline textures. They contain 20 - 40% talc as intimate intergrowths with serpentine (dominantly antigorite with minor fibrous chrysotile) and carbonate (unreactive to acid and presumably magnesite or dolomite). These rocks also contain trace to minor amounts of chlorite and opaques (largely sulfides, partially limonitized, plus some oxides).

The remaining two samples from the Quesnel area (numbers 89334 and 5) are quite different. Serpentine is absent and they consist dominantly of fine-grained, felted semi-schistose aggregates of talc. In the first case this shows wispy interlaminations of chlorite, while the second has augen-like pockets and veniform segregations of carbonate. The latter rock (89335) has relatively abundant finely disseminated sulfides; these are largely limonitized, with resultant pervasive staining of the talcose matrix.

The sample from southern B.C. (89336 A) is very similar to 89335, being talc rock with rather evenly disseminated accessory carbonate and minor fine-grained sulfides and oxides.

Individual petrographic descriptions are attached, together with a set of photomicrographs showing the salient features described.

J.F. Harris

J.F. Harris Ph.D.

Sample 89331 A SERPENTINIZED ULTRAMAFIC

Estimated mode

Antigorite	37
Chrysotile	4
Talc	20
Carbonate	37
Chlorite	1
Opaques	1

This rock exhibits the typical heterogenous texture of an altered ultramafic, with pseudomorphous remnants of a coarse-grained crystalline fabric, much modified by veining and replacement.

It consists of an intimate admixture of serpentine, carbonate and talc in various modes of intergrowth. The serpentine (antigorite) forms typical pseudobrecciated masses veined and cemented by networks of carbonate and/or talc.

The talc is largely finely intergrown with the other constituents, though some small islands up to 0.5mm of relatively well segregated material are present. Larger masses showing cleavage (pseudomorphous after pyroxene) have intimately inter-laminated carbonate. Carbonate is largely a very fine-grained form as irregular permeations and some well defined vein-like segregations.

The rock is also cut by anastomosing veinlets of fibrous material. This is colourless, as compared to the green antigorite with which it is closely associated, and is believed to be the chrysotile form of serpentine.

Sample 89332 A SERPENTINIZED ULTRAMAFIC

Estimated Mode

Antigorite	38
Chrysotile	2
Talc	42
Carbonate	15
Chlorite	2
Opaques	1

This is a rock of similar general aspect to 89331. Its content of talc is relatively higher and that of carbonate lower.

The talc includes pseudomorphous masses (with relict cleavage) to 2mm or more in size. These sometimes have intimately intergrown fine-grained serpentine and/or carbonate. Talc also occurs as abundant micro-veinlets in antigorite pseudomorphs.

Carbonate occurs in like manner as a tracery of hair-line veinlets. It also forms clumps of well crystallized grains to 0.5mm. Overall the carbonate is noticeably coarser grained than in 89331.

Chlorite occurs as occasional rounded patches of fine-grained felted material.

Chrysotile forms veinlets and semi-gradational wisps in the dominant antigorite.

Sample 89333 A   SERPENTINIZED ULTRAMAFIC

Estimated mode

Antigorite	45
Chrysotile	3
Talc	24
Carbonate	24
Chlorite	2
Opaques	1
Hornblende	trace

This is another rock of the same type as 89331 and 89332.

Antigorite is the dominant constituent as blocky, pseudo-brecciated masses veined by networks of talc and carbonate. Talc locally forms a matrix to antigorite "islands" as well as intimately intergrown cores to antigorite masses. Talc also occurs partially as relatively pure streaks and patches (always of a very fine-grained felted aggregate) up to one or two mm in size.

Carbonate occurs pervasively throughout, in both fine and coarser grained aggregates, as irregular pockets.

Opaques form scattered irregular wisps and angular clusters, 0.05 - 0.5mm, often but not exclusively in talcose areas. They include oxides and partially limonitized sulfides. Chlorite occurs as a few small discrete patches. Rare scattered wisps and shreds of hornblende are also present.

Sample 89334 A

TALC-CHLORITE ROCK

Estimated mode

Talc	85
Chlorite	15
Limonite	trace

This is a totally different material from the preceding members of the suite. It contains no serpentine or carbonate and consists essentially of a fine-grained aggregate of talc in which individual talc flakes range from 5 - 50 microns in size.

The main accessory constituent is chlorite which forms intimately intergrown wisps and, locally, rounded to equant patches up to a few mm in size. The areas of chlorite/talc intergrowth display a contorted inter-laminated, sub-schistose structure.

Opaques (originally mainly sulfides) consists of sparsely scattered, small, angular grains, almost totally limonitized (with diffuse staining of the adjacent talc). In one instance the opaques are strongly concentrated within a segregation of chlorite.

Rare ghost-like pseudomorphic prismatic forms are distinguishable within the talc aggregate, suggesting that this is probably a replacement or alteration, but insufficient evidence of original rock type survives.

Sample 89335 A TALC-CARBONATE ROCK

Estimated mode

Talc	85
Carbonate	13
Limonite	2
Chlorite	trace

This is a similar rock to 89334 except that the dominant accessory is carbonate rather than chlorite.

It consists essentially of a fine-grained felted aggregate of talc 5 - 50 microns in grain size. This locally exhibits an elongate, lensy structure, emphasized by undulating anastomosing sub-parallel partings and rare intergrown wisps of chlorite.

Carbonate occurs throughout as individual, augen-like clumps, pockets and elongate segregations of well-formed grains 0.05 - 0.5mm in size.

Limonite is relatively abundant as disseminated, small, angular granules often with remnant cores of sulfides. Associated diffuse staining follows the wispy, schistose structure of the talc, and tends to produce an overall reddish-brown coloration. Some limonite occurs as clusters of shard-like fragments associated with carbonate.

Sample 89336 A TALC-CARBONATE ROCK

Estimated mode

Talc	78
Carbonate	20
Opaques	2

This is a very similar rock to 89335, consisting essentially of fine-grained felted talc with accessory carbonate.

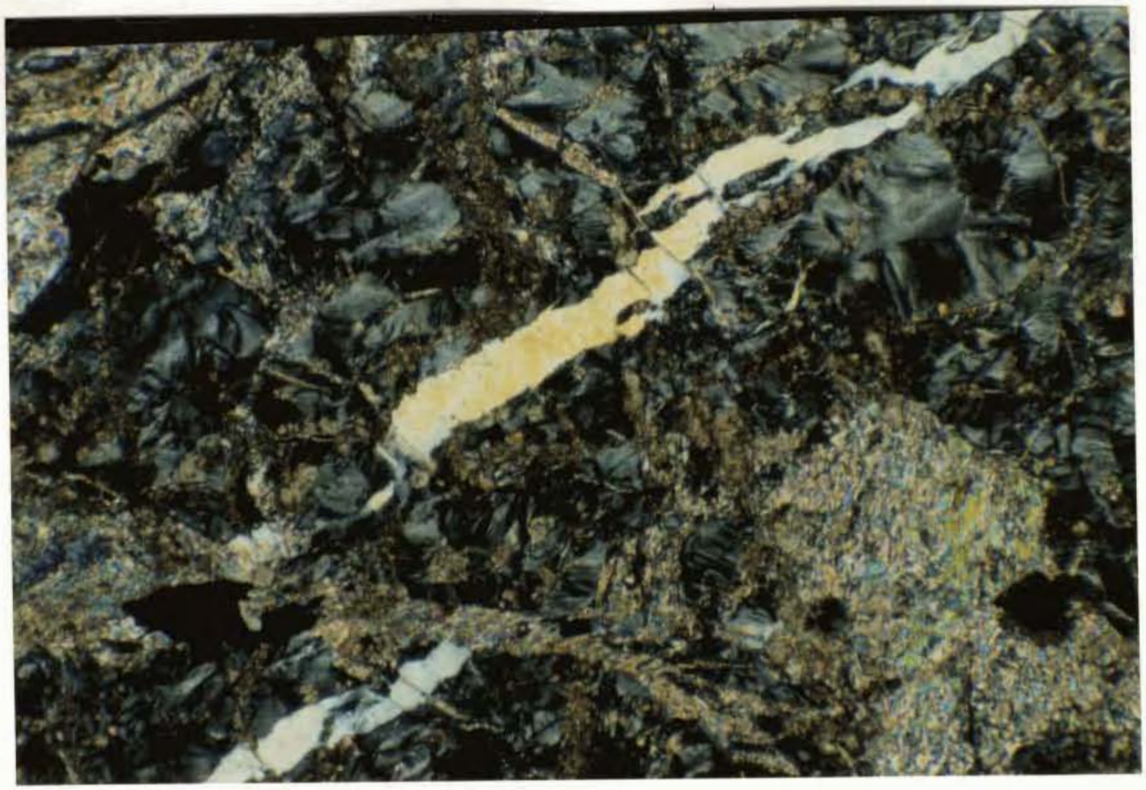
The carbonate in this rock tends to be somewhat less segregated. It occurs rather evenly disseminated as individual granules, 0.05 - 0.2mm in size, as well as equant to elongate clumps - sometimes showing very fine microgranular cores and coarser rims.

A weak, wispy, schistose structure is locally developed. Also occasional ghost-like prismatic pseudomorphs are distinguishable within the talc mass.

Opaques appear to be intergrowths of sulfides and oxides. They are rather evenly and abundantly disseminated as tiny specks (0.02 - 0.1mm) and sometimes form equant, pseudomorph-like concentrations. The opaques are commonly (though not exclusively) associated with the carbonate.

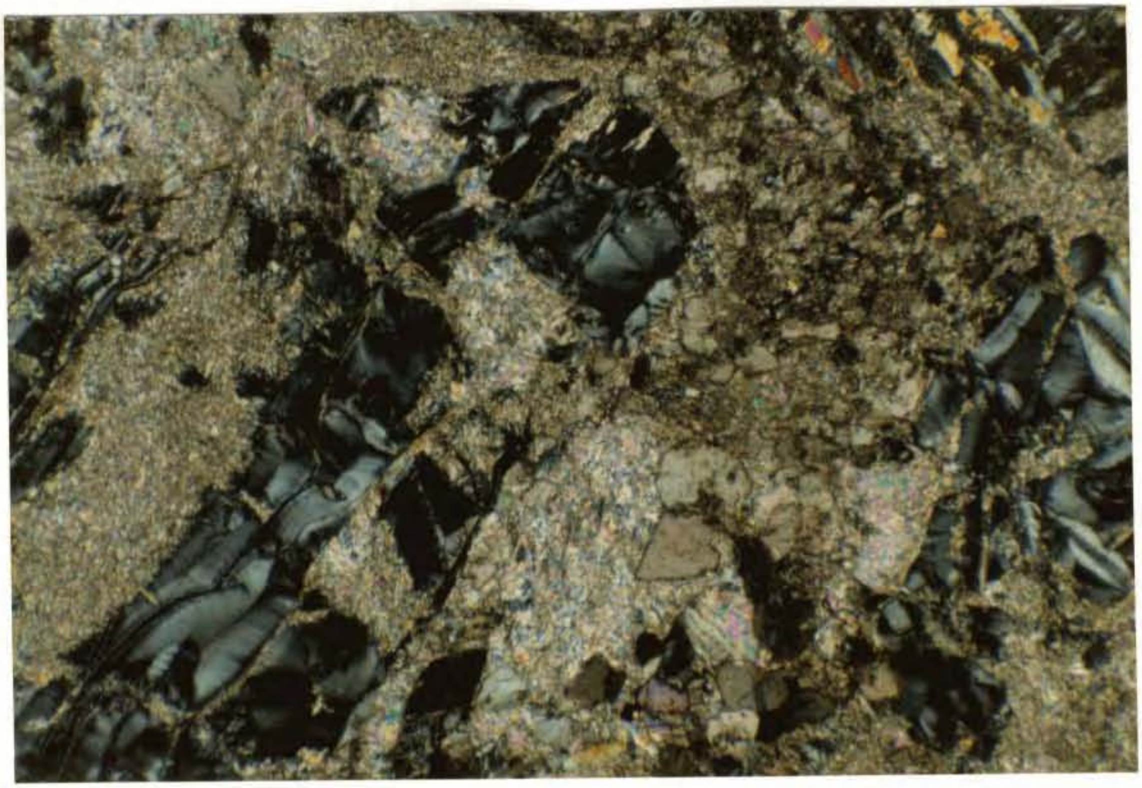
APPENDIX B - PHOTOMICROGRAPHS

Scale: 1cm = 0.2mm, except where otherwise stated.

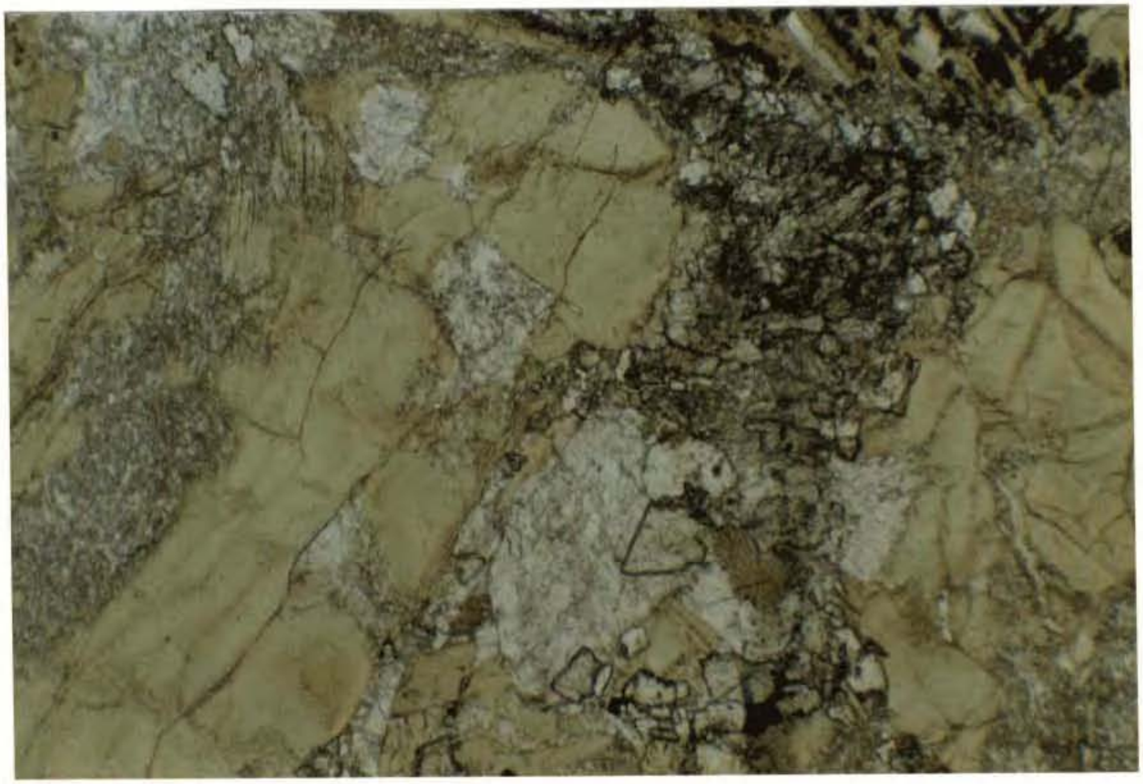


45-0 89331A. Cross-polarized transmitted light.
Areas gradationally striped medium to dark grey are antigorite, cut by veins of chrysotile (pale yellow, light grey). Talc is speckled pastel colours e.g. bottom right, top left, and veinlet offsetting the chrysotile vein. Smaller veinlets in tan colour are carbonate.

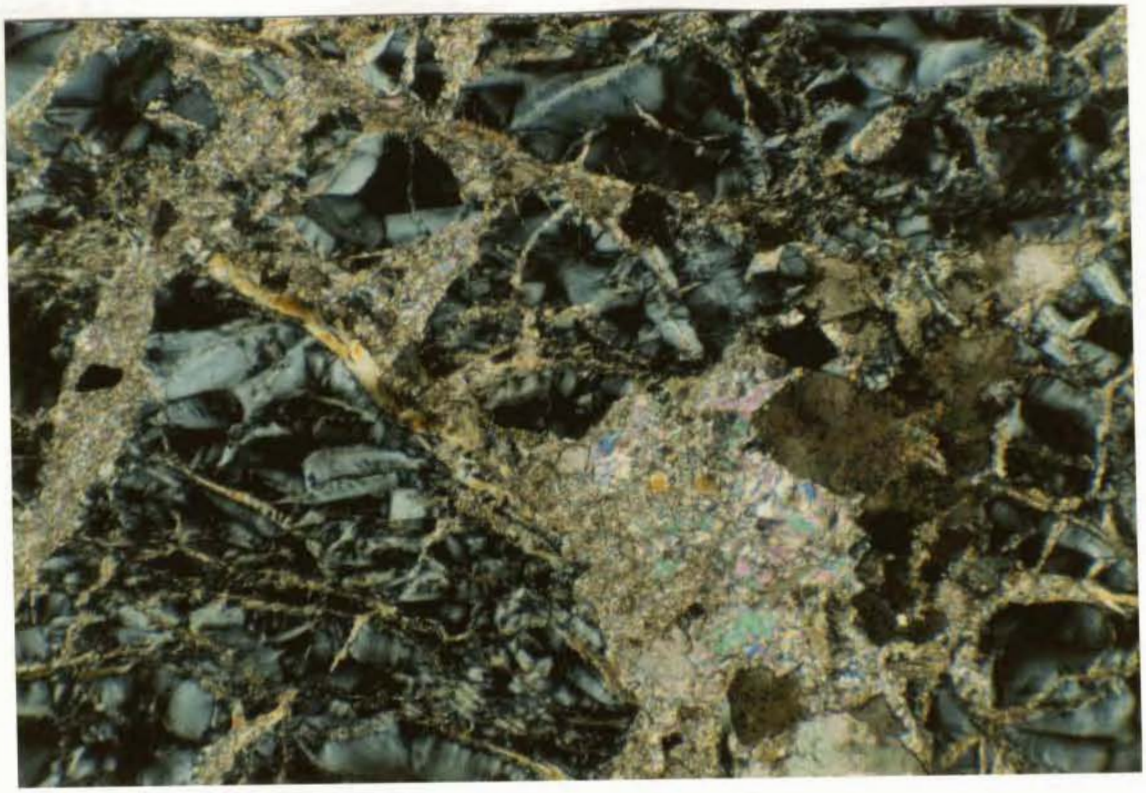
45-1 89331A. Same field as 45-0 but plane polarized light.
Shows distribution of carbonate more clearly (strings of grey, high-relief granules). Antigorite is greenish brown; talc and chrysotile are light grey. Opaque oxide grain (black) at lower left.



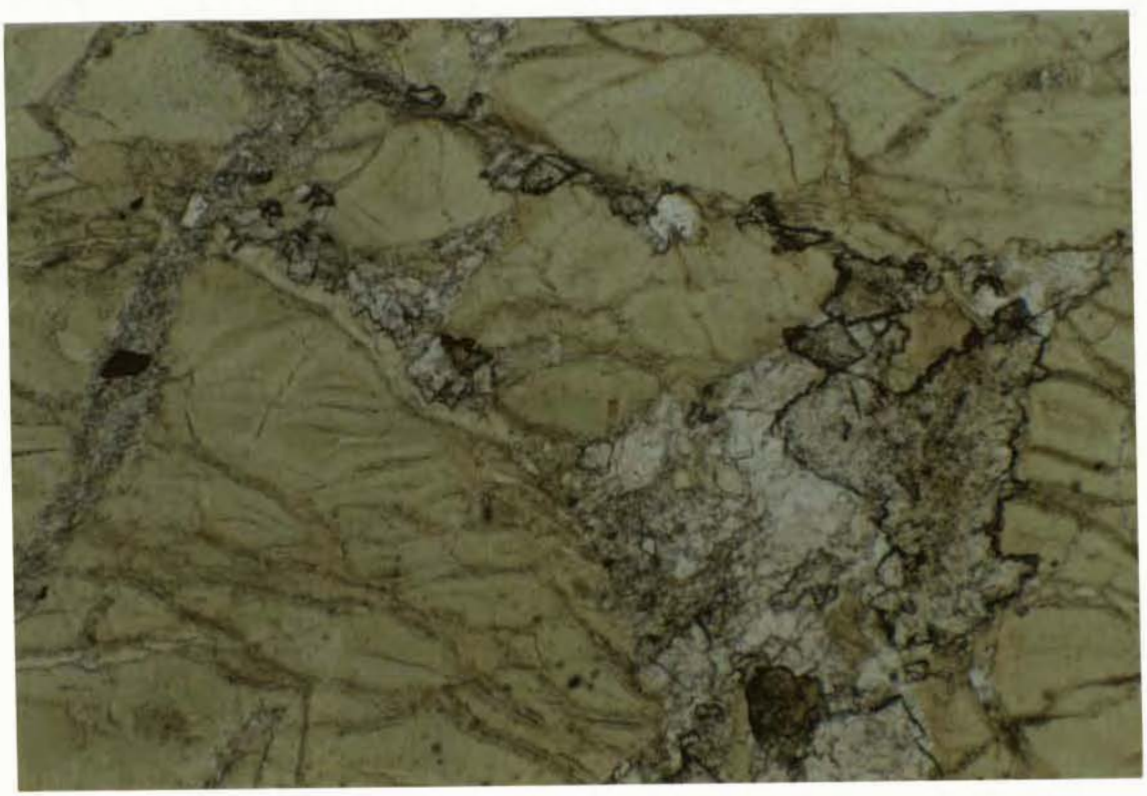
45-2 89332A. Cross-polarized transmitted light.
Shows mass of antigorite (bluish to dark greys) surrounded and partially replaced by talc (speckled, pale pastel colours.) Carbonate (brownish grey) forms individual grains and clumps within the talc.



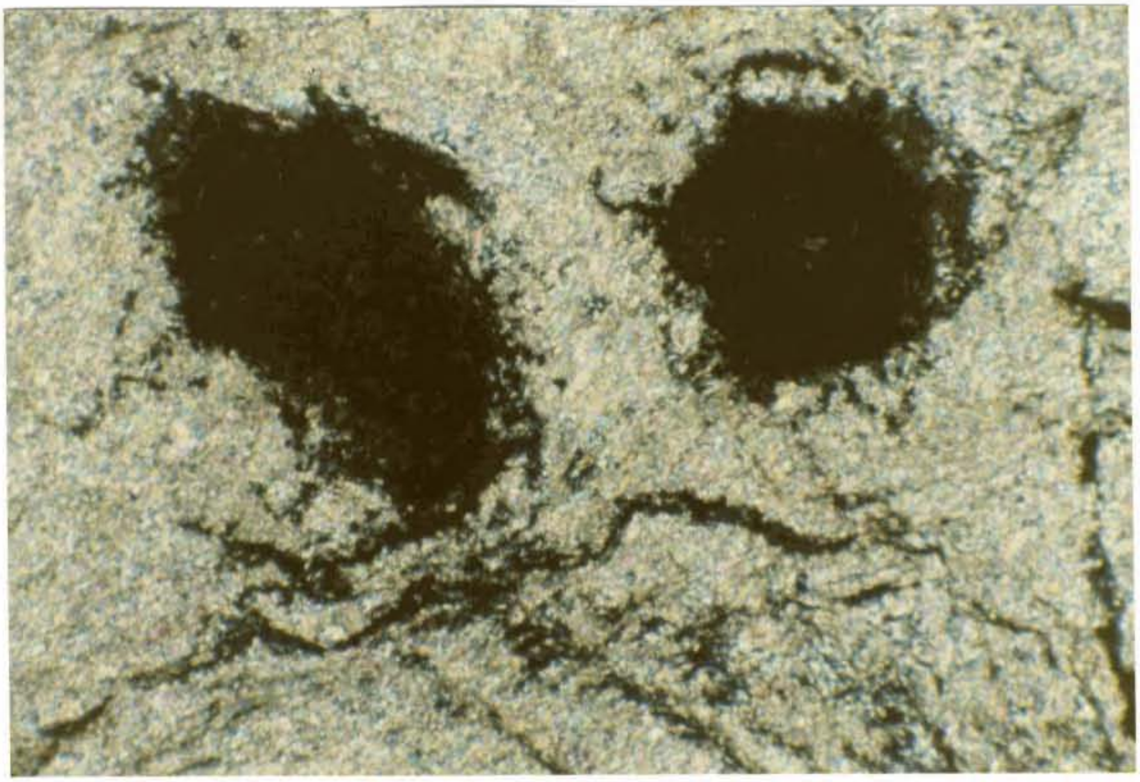
45-3 89332A. Same field as 45-2 but plane polarized light.
Distribution of carbonate (dark rimmed, high relief grains) more clearly seen. Pale green is antigorite, pale greys are talc.



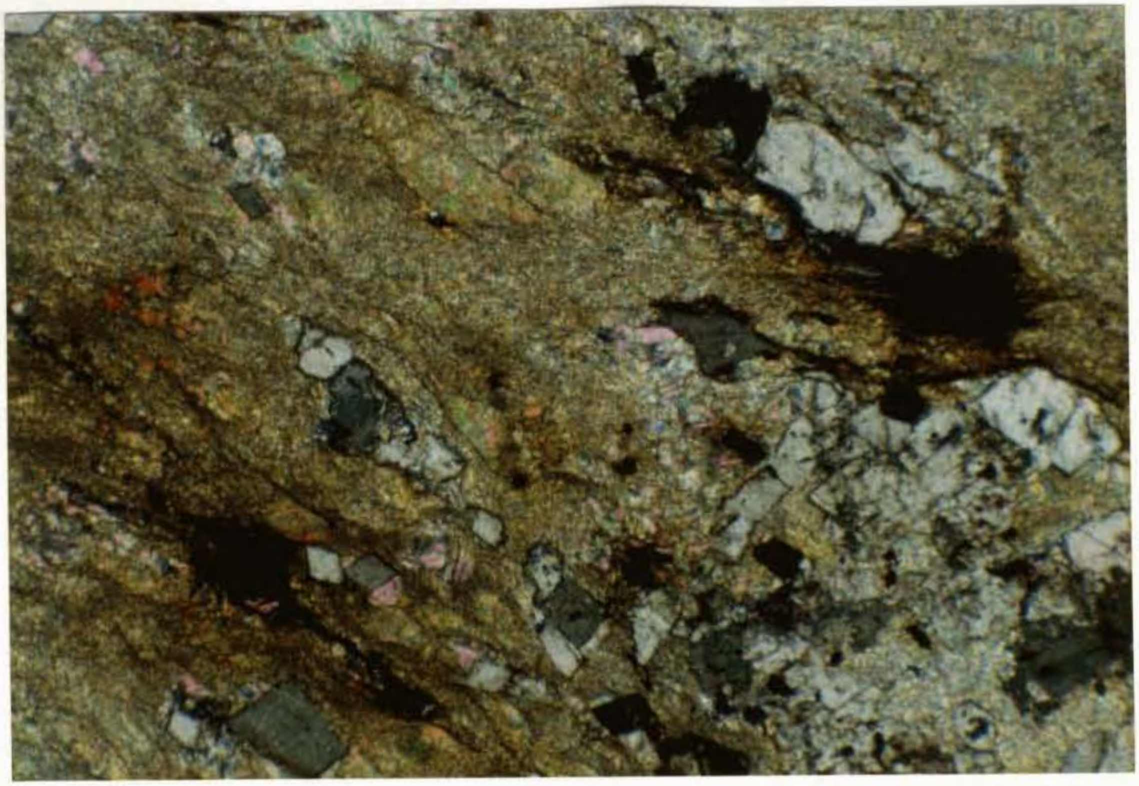
45-4 89333A. Cross-polarized transmitted light.
Antigorite (shades of bluish grey) veined by talc (pale pastel aggregates) with intergrown carbonate (brownish greys, e.g. centre right.)



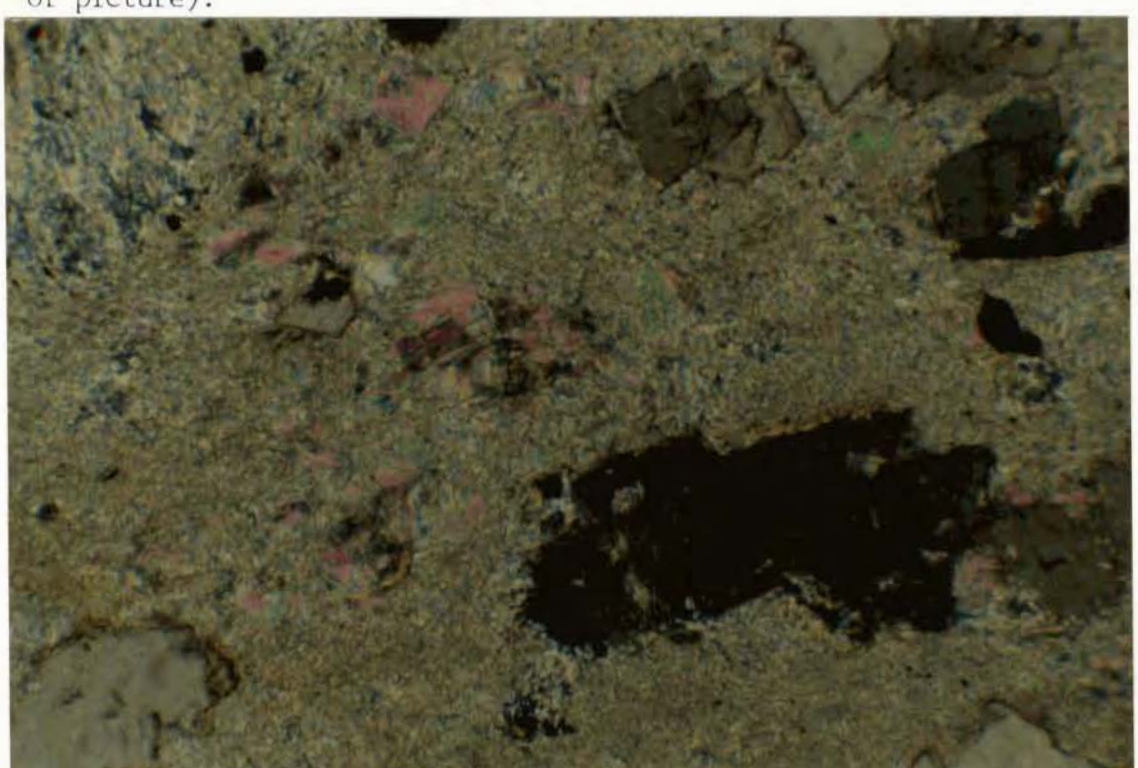
45-5 89333A. Same field as 45-4 but plane polarized light.
Shows distribution of carbonate (high relief) in talc. The two occur intergrown as veins and pockets in antigorite (greenish).



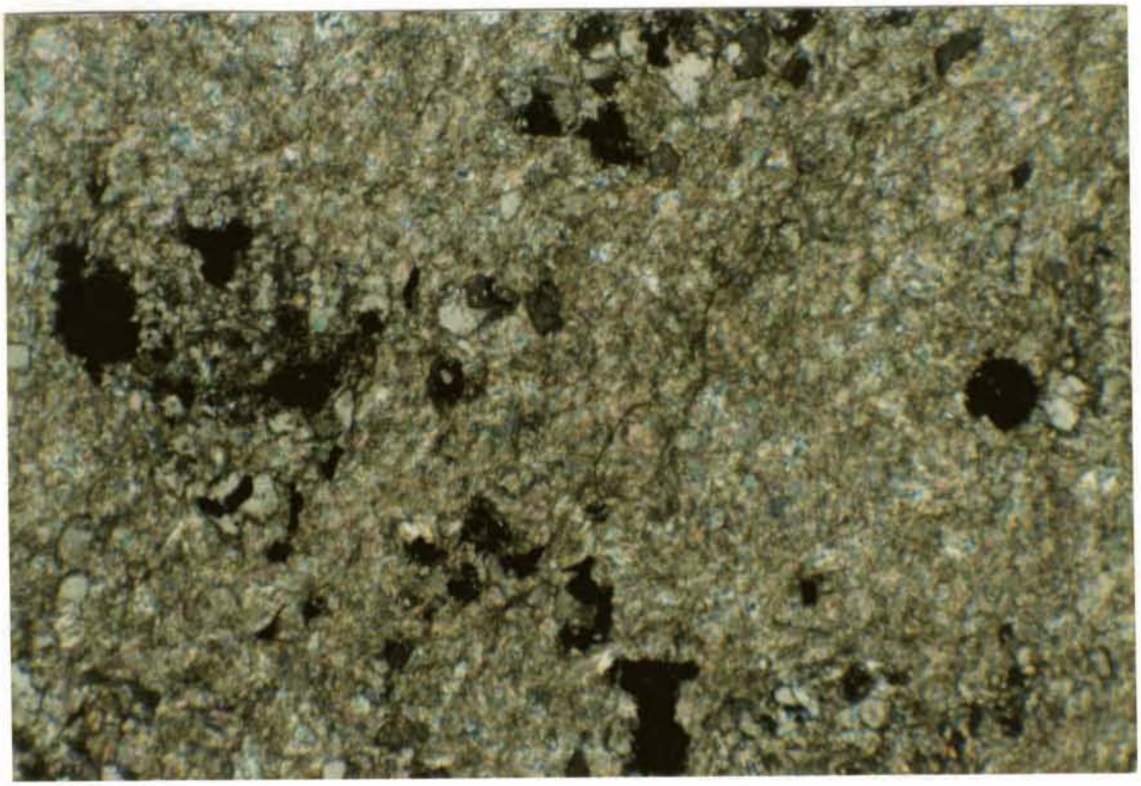
45-6 89334A. Cross-polarized transmitted light.
Patches and wisps of chlorite (dark, bluish browns) in felted aggregate of talc (matrix, pale pastel colours).



45-7 89335A. Cross-polarized transmitted light.
Fine-grained felted matrix of talc with carbonate subhedra and clusters (greys). Note limonitized sulfide grains (lower left, centre right) with dispersed limonite (brown) in foliaceous partings and grain boundaries and as diffuse staining (causing the overall brownish colour of left half of picture).



45-9 89335A. Cross-polarized transmitted light: scale 1cm = 0.1mm.
Higher magnification to show detail of felted aggregate texture in talc (pale pastels). Grey subhedral grains are carbonate.



45-10 89336A. Cross-polarized transmitted light.
Matrix of felted talc set with clumps of carbonate grains (higher relief greys) with associated fine-grained opaques (black).