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TOURNIGAN MINING
EXPLORATIONS LTD.

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February 11, 1977.

Mr. Bob Gifford
Taxasgulf Canada Inc.,
701- 1281 West Georgia St.,
Vancouver,B.C.
V6E 3J7

Re: Bear Pass Property

Dear Bob:

I am enclosing a copy of Bill's report as promised. Please give it your immediate attention Bob, as we have an early season this year up north.

Yours truly,

TOURNIGAN MINING EXPLORATIONS LTD.

J.N. Hembling
Exploration Manager.

JNH:lt.
Encl.

REPORT ON THE 1976 EXPLORATION PROGRAM AND EXPLORATION POTENTIAL

of the

BEAR PASS PROPERTY AND
RUFUS CREEK-BEAR RIVER PASS AREA
NEAR STEWART, BRITISH COLUMBIA

prepared for

TOURNIGAN MINING EXPLORATIONS LTD.
VANCOUVER, B.C.

by

W.G. Smitheringale, P. Eng.

December 1976

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SUMMARY

1. The Bear Pass property, owned by Tournigan Mining Explorations Ltd., consists of 78 Crown-granted claims and 2 staked claims containing 3 units.

2. The Bear Pass property is located in northwestern British Columbia on the Stewart-Cassiar highway 32km (20 miles) from Stewart. Stewart has deep-sea shipping facilities, air passenger and freight service, and is the center of commerce for the area.

3. In spite of rugged topography, a short exploration season and unreliable summer weather, exploration in the Bear River Pass area is feasible, although these factors hinder progress and cause costs to be high.

4. Exploration on Tournigan's property and in the surrounding areas in 1976 cost $36,000.

5. The 1976 exploration program showed that an argillite-tuff-iron formation unit favourable for the occurrence of stratabound, volcanogenic sulphide deposits passes through the Tournigan property and adjacent areas. This unit contains a number of pyritic copper showings and warrants exploration throughout its extent. The true nature and significance of this unit was not appreciated by prospectors and exploration companies previously active in the area.

6. The pyritic copper showing that occurs in the argillite-tuff-iron formation unit at the George Gold-Copper adit warrants further exploration by diamond drilling.

7. It is recommended that Tournigan Mining Explorations Ltd. acquire the properties adjacent to and through which the argillite-tuff-iron formation unit passes.

8. A program of further exploration encompassing geological investigation, E.M. surveying and diamond drilling is recommended. The proposed program would cost $102,600 in the first year and $119,000 in the second year.

INTRODUCTION

During the summer of 1976 Mr. Bert Taylor, P. Eng., of G.A. Noel & Associates Ltd., and the writer conducted an investigation of mineral properties in the area of Bear River Pass, northeast of Stewart, B.C., on behalf of Tournigan Mining Explorations Ltd. The program consisted of a detailed examination of parts of the Bear Pass property, of a more general examination of various other showings in the area and a study of some aspects of the regional geology. The program was financed entirely by Tournigan Mining Explorations Ltd.

The Bear Pass property comprises the Enterprise, Heather and George Gold-Copper claim groups, some reverted Crown Grant claims and several staked claims.

LOCATION AND ACCESS

The Bear Pass property straddles the Stewart-Cassiar highway between 27km and 34km (about 20 miles) northeast by the highway from Stewart, B.C. (Fig.1). The property extends from the floor of Bear River valley, which has an elevation of 1,200', to about elevation 4,500' on the north side of the valley and about elevation 6,000' on the south side of the valley. The most significant showings on both sides of the valley are at about elevation 3,000'.

The Enterprise showings on the north side of the valley are accessible from the Stewart-Cassiar highway by old trails and open talus slopes. The Heather and George Gold-Copper showings on the south side of the valley can also be reached by old but overgrown trails, once Bear River is crossed. The foot-bridges that used to provide access to these trails have been washed out. Sites suitable for helicopter landings are common only above elevation 3,000'.

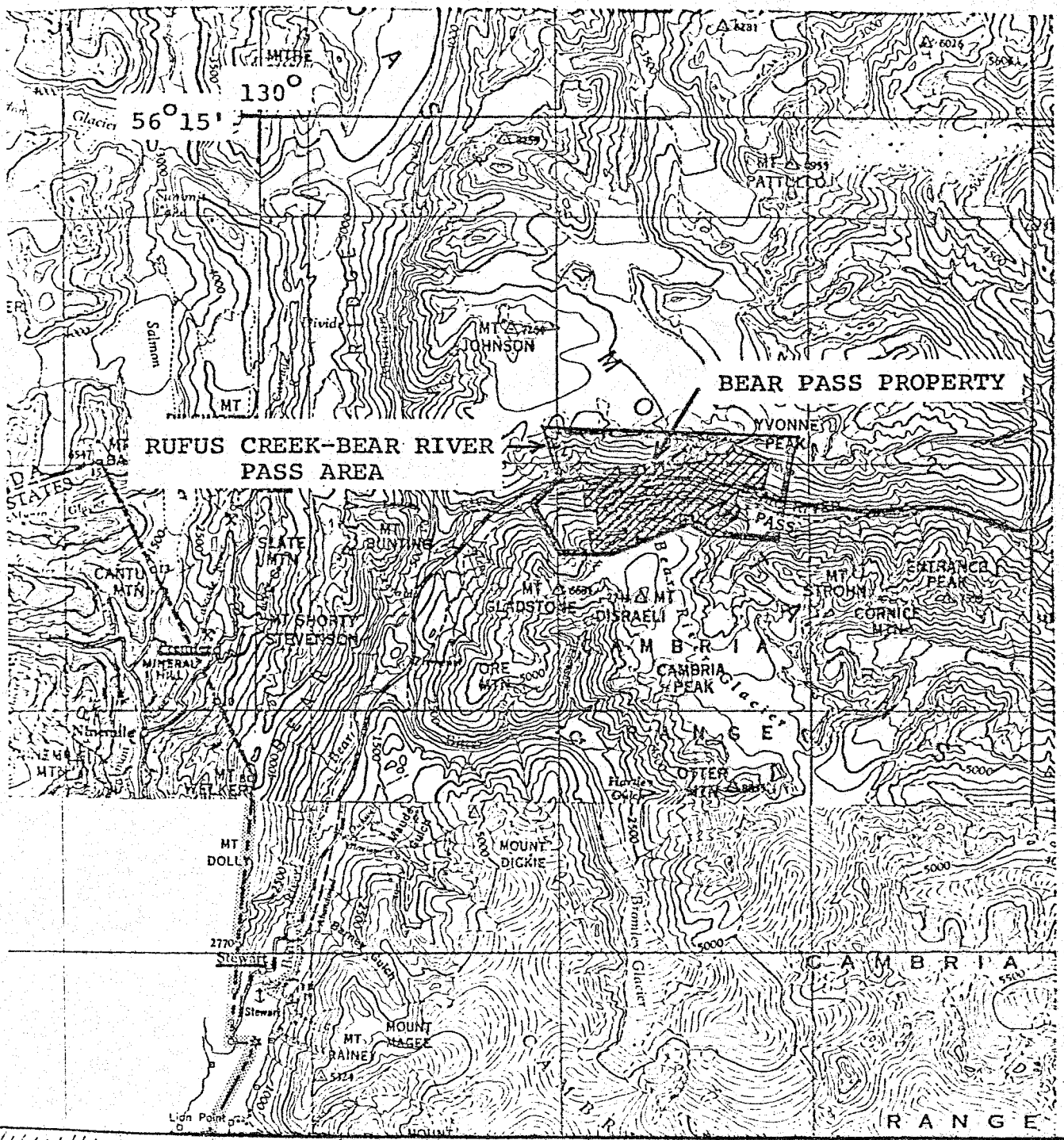


FIGURE 1

TOURNIGAN MINING EXPLORATIONS LTD.

LOCATION OF BEAR PASS PROPERTY AND RUFUS CREEK-BEAR RIVER PASS AREA

Scale 1:250,000
(1 inch equals 4 miles)

41-6

The Stewart-Cassiar highway is an all-weather gravel road. It provides access to deep sea shipping facilities at Stewart and to the future railhead at Dease Lake, which is 200km (125 miles) northeast of Bear River Pass. Stewart has a population of about 1,500 and serves as the townsite and shipping port for Granduc Mines. There is a daily air service between Stewart and Prince Rupert.

TOPOGRAPHY AND CLIMATE

The topography in the Bear River Pass area is rugged. The average slope of the valley sides, from top to bottom, is between 35° and 40° in most sections of the valley. The valley sides comprise a series of slopes, cliffs and benches. Up to about 3,000' the slopes are mostly covered with timber or slide-alder and there are many patches of 'devil's club'. In places talus slopes extend almost to the valley floor. Above 3,000' the slopes are mainly talus covered.

The summer weather is generally rainy and in the pass area the cloud ceiling is often below 3,000'. Above all, the weather is unreliable.

The combination of topography and climate make exploration in the Bear Pass area tedious, and results in higher than normal exploration costs.

TITLE

The Bear Pass property consists of 36 Crown-granted claims, 42 reverted Crown-granted claims and 2 regular staked claims that contain 3 units. These claims are shown on Fig.2 and are listed in Appendix 1. They are owned 100 percent by Tournigan Mining Explorations Ltd.

HISTORY

The first mineral claims in the Bear River Pass area were staked by W.B. George in 1910. These claims became the nucleus of the property owned by the George Gold-Copper Mining Company, which was incorporated in 1925. In 1919 a 115' adit driven into a zone of disseminated copper mineralization at elevation 3,250' was finished. In 1926 the company conducted trenching and mapping of veins on the Helena and Grand View claims over 1000' above the adit. At that time the veins appeared to be the most promising mineralization on the property. In 1927 the property was optioned to Consolidated Mining and Smelting Company of Canada Ltd., and during 1927, 1928 and 1929 eight holes totalling 8,162' were drilled seeking the down-dip extension of the veins. In 1929 the option was exercised by C.M.&S. and they acquired an 83% interest in the George Gold-Copper Mining Co. Ltd. that is held to this day. Since 1930 the property has remained idle.

The Enterprise property on the north side of Bear River was staked originally in the early 1900's as the Lucky Frenchman property. The principal tunnel on the property, known as the Frenchman's Tunnel, was driven at that time at elevation 3,400'. The property was restaked as the Enterprise Group in 1925 and acquired by the George Enterprise Mining Co. The Heather claims on the south side of Bear River were acquired at this time. Extensive prospecting and tenching were done on the Enterprise claims between 1925 and 1927 and several hundred feet of tunnel was driven in 1928 and 1929. Limited surface work was conducted during the early 1930's and since 1935 the property has been inactive.

Prospecting and trenching began on the Heather claims in 1928 and continued on limited scale through 1935. Interest in the property was revived in 1946 and in 1950 an adit 50' in length was completed. The property has remained inactive since then.

The George Enterprise property, which includes the Enterprise and Heather claims, was optioned by Tournigan Mining Explorations Ltd. in 1974 and purchased by Tournigan from the George Enterprise Mining Co. Ltd. in 1976. The George Gold-Copper property was purchased by Tournigan from the George Gold-Copper Mining Co. Ltd. in 1976. During 1976 a number of reverted Crown Grant mineral claims adjacent to and between the George Enterprise and George Gold-Copper properties were acquired by Tournigan by reverted Crown Grant acquisition. The Snow Lake #1 and #2 claims, which together contain 3 claim units, were staked during the summer of 1976.

1976 EXPLORATION PROGRAM

Exploration conducted between July 17 and October 22, 1976, consisted of the following:

- Examination and partial geological mapping of the George Enterprise property north of Bear River.
- Two diamond drill holes totalling 52m drilled on the George Enterprise property north of Bear River.
- Examination of showings on the George Enterprise property south of Bear River (the Heather claims).
- Geological mapping of the stratabound sulphide zone surrounding the George Gold-Copper adit.
- Limited trenching and sampling of the area around the George Gold-Copper adit.
- Two diamond drill holes totalling 51m drilled in the stratabound sulphide zone near the George Gold-Copper adit.
- Examination of some of the showings on the reverted Crown Grant claims.
- Staking the Snow Lake claims.
- Examination of showings on the New York and London Crown-granted claims on the south side of Bear River valley several kilometers west of the George Gold-Copper claims, and examination of the Erickson "vein" on the north side of the valley several kilometers west of the Enterprise claims.

- General geological reconnaissance of the Rufus Creek-Bear River Pass area.

The total cost of this program, including assays and report preparation, was about $36,000.00. The total cost of the program was paid by Tournigan Mining Explorations Ltd.

GENERAL GEOLOGY

The Bear River Pass area lies along the east side of the Stewart Complex, which is a belt of deformed volcanic, sedimentary and metamorphic rocks that lies between the Coast Crystalline Belt to the west and the Bowser Basin to the east (Grove, 1971). The complex, which extends from Alice Arm at its southern end through Stewart to Iskut River at its northern end, is one of the major mineral belts in British Columbia. It includes the currently operating Granduc copper mine and such former operating mines as the Silbak Premier gold-silver (lead-zinc-copper) mine, the B.C. Molybdenum mine at Alice Arm and the Hidden Creek copper mine at Anyox.

The Rufus Creek-Bear River Pass area is underlain by volcanic and volcaniclastic rocks belonging to the Unuk River Formation of Lower Jurassic age (Grove, personal communication). This is the same formation that contains the Granduc Mine 38km (24 miles) to the northwest. Near the ridge crests on both sides of the valley, at approximately 5,500' elevation, the Unuk River Formation is overlain by Middle Jurassic clastic and volcaniclastic sediments. A monzonite stock, about one km across, outcrops on both sides of the valley floor in the vicinity of Cullen Creek. Apart from its intrusive relationship with the Unuk River Formation, the age of the stock is unknown. It is probably one of the

younger outlying components of the Coast Crystalline Belt and is likely Tertiary in age.

In general the bedding strikes easterly, subparallel to the valley sides. On the south side of the valley the dip is gentle southwards and on the north side it is moderate northwards. In places, however, sharp folding has produced steep dips and strikes that are divergent from the general trend.

Several steeply dipping feldspar porphyry dykes trend west to northwest across the area. They belong to a regional swarm that is Tertiary in age.

Regional metamorphism in the Bear River Pass area is low grade. The rocks belong to sub-greenschist or low greenschist facies, except for local contact metamorphism of amphibolite facies.

Along the south side of the valley the Unuk River Formation can be divided into three units. On the George Gold-Copper claims the lower unit consists of generally massive flow and volcanic fragmental rocks of andesitic composition. The middle unit is composed of argillite, tuff and cherty iron formation. It outcrops at the 3,200' elevation and varies in thickness from about 6 to 30m (20' to 100'). The upper unit consists of andesitic tuff and breccia and is more distinctly fragmental than the lower unit.

The argillite-tuff-iron formation unit is important because it contains stratabound sulphide showings. On the south side of the valley it can be traced from the Heather claims westward for 5.7km (3.5 miles). A similar, if not the same, unit can be traced on the north side of the valley from the Red Top property westward for 2km (1.3 miles) or more (Fig.3).

MINERALIZATION IN THE RUFUS CREEK-BEAR RIVER PASS AREA

Three types of sulphide deposits are found in the Bear River Pass area: vein deposits, stratabound deposits, and disseminated-stringer deposits. All three types occur in the Unuk River Formation.

Veins

On the Red Top, Argenta and Grey Copper claims there are Pb-Zn-Ag-(Cu) veins containing quartz, calcite, barite and jasper as gangue minerals. The veins are up to 2m wide and 1,000m long. Most strike oblique to the regional strike of bedding and dip steeply. They occur in the upper part of the Unuk River Formation, above the argillite-tuff-iron formation unit or its projection.

Stratabound Deposits

Cu-(Zn, Pb, Ag) showings occur in the argillite-tuff-iron formation unit (or units) on both sides of the valley. Pyrite and/or pyrrhotite, chalcopyrite, sphalerite and galena are the main sulphides. Quartz (often chert), jasper, hematite, chloritic tuff or volcanic breccia and argillite form the gangue. In places the sulphides are massive to semi-massive, however, they generally occur as laminae, lenses, stringers and disseminations. Examples are the showing at the George Gold-Copper adit, the Cliff 'vein' on the New York and London claims, the Erickson 'vein' and the lower showing on the Red Top property. Some of these showings have been described as replacement or bedded replacement deposits and others, where bedding dips steeply, have been described as veins. Their true nature apparently has not been appreciated.

Disseminated-Stringer Deposits

On the Enterprise, Heather and Rufus claim groups there are zones containing disseminations and stringers of pyrite and chalcopyrite. Au and Ag is present in some. Host rocks to these zones have been weakly to strongly altered by silicification, chloritization, pyritization or the addition of quartz veins. There are also a number of highly silicified pyritic zones that are barren of economic minerals. These showings occur both below and above the argillite-tuff-iron formation unit. Many of the gossans exposed in the cliffs in the Bear River Pass area are zones of disseminated or stringer pyrite.

GEOLOGY AND MINERALIZATION ON THE BEAR PASS PROPERTY

The principle mineral showings on the Bear Pass property occur on the George Gold-Copper and the Enterprise claims.

George Gold-Copper Claims

1. Geology

From the valley floor to the adit the sequence comprises generally massive, fine-grained flow and/or pyroclastic or volcaniclastic rocks of andesitic composition. At the elevation of the adit these rocks are overlain by a unit composed of cherty iron formation, tuff and argillite that varies from about 7m to 30m (20' to 100') thick. The iron formation contains variable quantities of sulphides. This unit extends eastward and westward along the contour of the hill to beyond the boundaries of the property. Above this unit the sequence consists of andesitic breccias and tuffs that are more distinctly fragmental than those below the adit.

2. Mineralization

2-1. Veins

Four well defined copper and gold-bearing veins occur on the Helena and Grand View claims between elevations 4,300' and 4,800'. These veins were not examined by the writer. Reports written in the late 'twenties' describe the veins as being fracture controlled, replacement in origin and containing quartz, hematite, magnetite, epidote, chlorite, barite, pyrite, arsenopyrite and chalcopyrite (Smitheringale, 1926, 1928a). Gold is associated with the arsenopyrite.

Six holes were drilled from 1927 to 1929 to test the downward extent of the veins. All the holes were poorly located for this purpose, due to the sparcity of drill sites on the rugged hillside. The drilling neither established nor disproved the continuity of the veins.

The maximum ore reserves in the vein system were estimated to be as follows (McEachern, 1956):

Indicated ore	100,000 tons
Inferred ore	100,000 tons
Additional potential	300,000 tons
Total potential	500,000 tons

Grade 2% Cu., 0.5 oz./t. Ag., 0.06 oz./t. Au.

This estimate assumed continuity of mineralization along the veins. In view of reported discontinuity of mineralization, a more conservative estimate would be between 200,000 tons and 300,000 tons, with grade unchanged.

2-2. Stratabound Mineralization

The zone of disseminated mineralization in the argillite-

tuff-iron formation unit received relatively little attention prior to 1976. A moiled sample representing 35m (115') along both walls of the adit assayed 0.89% Cu. Drill hole No. 4, drilled sub-parallel to the stratification, intersected disseminated mineralization from 12.2m to 87m (40' to 285') and from 332m to 407 m (1090' to 1335'), and drill hole No. 6, also drilled sub-parallel to the stratification, intersected disseminated mineralization from 13.7m to 62.5m (45' to 205'). The best intersections within these intervals are shown in the following table (Green, 193-).

	Intersection (Reported in feet)			Cu%	Ag.oz./t.	Au.oz./t.
DDH No.4	110'	- 130'	(20')	1.86	0.42	Tr.
S5°W	222.5'	- 232'	(9.5')	1.60	0.26	Tr.
Horiz.	242'	- 263'	(21')	1.02	0.09	Tr.
	275'	- 284.5'	(9.5')	0.62	0.33	Tr.
	1235'	-1256'	(21')	0.55	0.19	Tr.
DDH No.6	127'	- 142'	(15')	1.84	0.17	Tr.
S32°W	174'	- 185'	(11')	0.36	0.05	Tr.
Horiz.						

During the summer of 1976 the area around the adit was mapped and sampled and two short holes were diamond drilled to test the thickness of the stratabound sulphide zone.

The main zone of mineralization has the form of a stratabound lens when viewed in a section parallel to the valley and perpendicular to the bedding (Fig.4). The lens is flat on top, broadly convex along its bottom, has a surface trace of about 110m (360') in a N70°E direction and is about 30m (100') thick at its center. The lens lies within the argillite-

tuff-iron formation unit that overlies the lower volcanic sequence, and at this point it constitutes the entire unit.

The lens is composed of iron formation that is variably rich in pyrite, hematite, magnetite, chlorite, epidote and chert and of massive mafic tuff and epidote rich rock. At the top of the lens there is a thin zone of thin-bedded, impure argillite that contains lenses and stringers of calcite.

Bedding in the iron formation is sporadically developed and intensely disturbed. In many places it is convoluted and broken, and the rock comprises a sedimentary breccia.

Pyrite and chalcopyrite are irregularly distributed throughout the lens in the form of disseminations, laminae parallel bedding and stringers cross-cutting bedding. They are much less abundant in the mafic tuff and epidote rock than in the iron formation.

The argillite bed at the top the lens is in sharp contact with coarse andesitic volcanic breccia. The upper portion of the lens grades northeastwards along strike into a well-bedded, sulphide poor, magnetite rich, cherty iron formation. The edges of the lens are poorly exposed but appear to grade abruptly into andesitic tuff and breccia. The bottom contact of the lens is not exposed but is underlain by massive fine-grained andesitic rock that is probably tuff. This rock is epidotized and pyritized and contains a stockwork of pyrite and epidote stringers.

The lens and adjacent rock is cut by a 4.6m (15') thick feldspar porphyry dyke that strikes northwestward and dips steeply.

Core from diamond drill holes 102 and 103 contains disseminated chalcopyrite in a number of places. Near the bottom of hole 102 a 4.3m (14') thick intersection of mostly massive

pyrite (70% to 90% pyrite) contains a 2.9m (9.5') interval that assayed 0.62% Cu and 0.24 oz./t. Ag. Assays of holes 102 and 103 are presented in Appendix II.

3. Recommended Exploration

The showing at the adit warrants further exploration by diamond drilling to determine if the grade of mineralization improves southward. It is recommended that 6 holes be drilled for this purpose, 3 from the end of the adit and 3 from the base of the cliffs at about 140m higher elevation and about 160m south of the adit. The base of these cliffs is accessible by a not-too-steep slope, and drill set-ups there would be protected from rolling rocks from above. All holes should be drilled to the bottom contact of the mineralized iron formation unit. The first hole from the end of the adit should be drilled in a direction S70°E and at an inclination of -45°, the other two holes should be drilled due south and S60°W at -35° to -45°, depending on the information obtained in the first hole. It is estimated that these holes will be in the order of 40m (about 145') long or less. The three holes drilled from the base of the cliff above the mineralized iron formation unit should be drilled one to the east inclined -45° to -60°, one vertical and one to the west inclined -45° to -60°. The exact inclination of the eastward and westward holes will depend on the location chosen for the drill-site. These holes will indicate the nature of the mineralization for a distance of about 160m (525') south of the George Gold-Copper adit.

If the results from the first six holes are encouraging a second stage of drilling can be embarked upon involving a series of holes drilled from the base of the cliffs southeastward, southward and southwestward and inclined into the hill to intersect the mineralized zone farther southward.

Estimated costs of this exploration are laid out in Appendix III.

Heather Claims

1. Geology

The Heather claims were not examined below elevation 3,000'. The topographic break that marks the location of the argillite-tuff-iron formation unit extends intermittently from the George Gold-Copper claims to the western margin of the Heather Fraction. East of this point it cannot be distinguished with any degree of certainty because the south slope of the valley becomes less steep with fewer cliffs. Flows, flow breccias and coarse pyroclastic rocks of balsaltic and andesitic composition occur between elevations 3,500' and 3,900' on Heather No. 2 claim. These rocks resemble those in the upper unit on the George Gold-Copper claims.

2. Mineralization

At about elevation 1,450' on Heather No. 4 claim a 15m (50') tunnel was driven on a zone containing a stringer of semi-massive sulphides up to 25cm (10") wide. The zone strikes N0° to 20°W and dips 70°E. A set of samples taken in 1949 and 1952 from this tunnel gave the following assays (from George Enterprise Mining Co. records):

	Ag oz.	Pb%	Zn%	Comments
1	2.7	21.1	13.2	4 handfuls from sorted ore
2	1.4	6.2	19.5	fines from sorted, broken ore
3	0.7	1.1	36.7	3 lb. specimen 35' from portal

Cont'd	Ag oz.	Pb%	Zn%	Comments
4	1.3	10.6	11.5	4 handfuls from sorted ore
5	1.1	5.7	19.3	fines from sorted, broken ore
6	1.7	13.4	16.5	bulk sample of 2 sacks ore analyzed by C.M.&S.

Several other assays from this zone indicate that Au and Cu values are low. Above elevation 2,800' oxidized zones are exposed in bluffs in a number of places. Most of these zones are heavily silicified and contain disseminated pyrite. Some contain minor quantities of chalcopyrite. Stringers of massive chalcopyrite up to 15cm (6") wide are reported in one place (Smitheringale, 1928b). There are also small zones of chalcopyrite and pyrite sparsely disseminated through volcanic rocks that have not been heavily silicified. Several small veins or stringers running high in Pb and Ag have been reported.

Several of the highly silicified pyritic zones were sampled during the 1976 program and these proved to be almost barren of Pb, Zn, Cu, Au and Ag.

Reverted Crown Grant Claims Between Heather and George-Gold Copper claims

The valleyside in this area is extremely steep and difficult to traverse, and apart from several outcrop areas near the valley floor it was not examined by the writer.

A discontinuous band of relatively gentle slopes extends across this area at approximately elevation 3,200'. This band presumably marks the trace of the argillite-tuff-iron formation unit. In various places both below and above this elevation there are oxidized zones exposed in cliff members.

A large rusty zone extends for about 400m eastward along the lower part of the valleyside from the snow-slide gulley bisecting the Copper Lord claim. This zone is at least 75m thick. The rock in this zone is highly silicified and contains an abnormal amount of disseminated pyrite. The rock is so altered that its original nature cannot be recognized, but in places ghost structures suggest it is a volcanic fragmental. Within the more altered areas the pyrite content ranges up to about 30%. In places the rock appears to be cherty. Although there are local fractures and shear zones, the silicification and pyritization does not appear to be structurally controlled. Samples from the highly altered zones prove to be almost barren of Au, Ag and Cu.

Enterprise Claims

1. Geology

The rocks on the Enterprise claims are generally pale to dark green, massive, fine-grained to aphanitic, well indurated andesitic tuffs. The rock is often featureless, however plagioclase and chloritized hornblende fragments 1 to 2cm across are common, and in some places small lithic fragments can be recognized. In a few places lithic fragments 5cm to 30cm across are present. The rocks are generally weakly pyritic (perhaps 0.1 to 0.5%) and weakly chloritic.

The three units recognizable on the south side of the Bear River valley were not recognized on the Enterprise claims. However, in the vicinity of the junction of the Enterprise Fraction and Enterprise No. 8 claim with the west boundary of Enterprise No. 1 claim, between elevations 2,500' and 3,000', there is a sequence more than 100m thick of distinctly fragmental volcanic rocks with fragments up to 30cm across overlain by about 30m of bedded volcaniclastic

rocks. The bedded interval contains some thin beds of laminated pyrite-jasper iron formation. This interval may represent the argillite-tuff-iron formation unit. Bedding at this locality strikes northeasterly and dips 20° to 45°NW.

2. Mineralization

The main showings on the Enterprise claims are at elevation 3,400' where about 135m (445') of drifts and cross-cuts known as the Frenchman's and Enterprise tunnels have been driven to explore several zones of Cu mineralization containing sporadic values in Au, Ag and Pb (Smitheringale 1928b, 1930). The workings are in a felsitic rock that in places is either pyroclastic or volcaniclastic. The rock contains an abnormal amount of disseminated pyrite throughout (up to several per cent) and the ferromagnesium minerals are altered to chlorite. In a number of places exposed underground or on surface there are small veins, stringers, pods, disseminations, mineralized shear zones or stockworks containing chalcopyrite with or without galena, sphalerite, chlorite, quartz and calcite. Some of the better concentrations of chalcopyrite stringers are in strongly chloritized rock, and in places mineralization appears to be concentrated in zones of fracturing. The mineralized zones do not appear to be continuous from one exposure to another.

The best zone of mineralization encountered was an 8m (25') interval along the Frenchman's tunnel. According to old maps this zone contains 2 to 5% copper, but no assays are reported to support this. About 5m (15') from this zone in the cross-cut joining the Frenchman's and Enterprise tunnels there was encountered an 8m section averaging 0.5% Cu and containing trace to 1 oz. per ton Ag. This zone was intercepted by the Enterprise tunnel for a distance of 9.1m

(30') where it averaged 0.6% Cu and carried trace to ½ oz. per ton of Ag (Smitheringale, 1930). These two zones are apprently not connected and their shapes are unknown.

The distribution of Cu and Ag mineralization in the area of the Enterprise and Frenchman's tunnels is too erratic and limited for this area to be considered in terms of a large scale bulk mining operation.

The writer's impression of this occurence is that it most resembles volcanogenic "stringer zone" mineralization.

Above and northwest of the Enterprise tunnel, between elevations 3,500' and 4,000', there are a number of small mineralized zones exposed in pits and tunnels. Good assays in Cu, Pb, Zn, Ag and Au over short distances are reported from some of these showings (Smitheringale, 1930). The country rock is pyritic, andesitic or dacitic tuff, similar to the country rock at the Enterprise tunnel. The mineralization in these showings occurs in fault breccia and shear zones as narrow veins, stringers or disseminations. Quartz and calcite veinlets accompany the mineralization and the host rocks are variably sericitized, chloritized or pyritized. Although these showings indicate widespread mineralization in what may be a single gently dipping zone, they are too small to warrant individual exploration by drilling or trenching.

A zone of Cu mineralization is exposed by an adit about 250m (800') southwest of the Enterprise tunnel at elevation 2,950'. The host rock is a felsitic, tuffaceous fragmental rock containing volcanic fragments up to several centimeters across and containing several per cent finely disseminated pyrite. The mineralized zone, which is exposed for about 10m along the tunnel, contains chalcopyrite in stringers and disseminations and veinlets of quartz and calcite. A chip

sample of the whole face taken in 1929 assayed 0.70% Cu. Nonrepresentative samples assaying 4 and 16% Cu and containing several ounces of Ag per ton are reported. The average grade of this zone, based on a visual estimation, appears to be only several tenths of a per cent Cu.

Several small pyrite-chalcopyrite showings, generally similar to those described above, occur on the "flats" on the northern portion of the Enterprise claims above elevation 4,200'.

Numerous zones of oxidation are exposed in cliffs on the Enterprise claims, mostly in areas of difficult access. Several of these were examined during the 1976 program and found to be stockworks or ill-defined zones of stringer and disseminated pyrite.

In summary, Cu mineralization with accessory Ag, Pb and Zn is widespread on the Enterprise claims. The distribution of these showings vaguely suggests that they are in part restricted to several gently dipping stratigraphic zones. The form of the showings and their origin is unknown, although to the writer they appear to be small zones of stringer-type mineralization, probably related to volcanic processes. Some of these showings could be tips of much larger bodies of stringer-zone mineralization, and in a more accessible terrain they would warrant exploration by I.P. and /or E.M. techniques. In particular, the zone of chalcopyrite-pyrite stringers in strongly chloritized rock that occurs about 250m (700') northwest of the Enterprise tunnel would warrant investigation. The rugged terrain, however, would prohibit meaningful geophysical surveying.

3. Recommended Exploration

It is recommended that the Enterprise claims not be investigated further at this time. However, these showings should

be re-evaluated in the future should further work in the Bear River Pass area lead to a clearer understanding of the characteristics of this type of mineralization.

EXPLORATION POTENTIAL OF THE ARGILLITE-TUFF-IRON FORMATION UNIT

The argillite-tuff-iron formation unit is a promising locus in which to explore for strataform volcanogenic sulphide deposits.

Distribution

On the south side of Bear River valley it occurs continuously from the New York claim to east of the George Gold-Copper adit. From there it appears to continue, perhaps discontinuously, to the Heather Fraction. This is a distance of 5.7km (3.5 miles). There are indications that it may extend eastward through the Heather claims and occur again on the east side of the Bear Pass Glacier in the vicinity of the old Southern Cross showings. Along the north side of the valley the unit occurs for atleast 2km (1.3 miles) and perhaps for 4km (2.5 miles). It is definitely present on the Red Top and Veteran claims and re-interpretation of old reports suggests that it is also present on the Rufus property. On the Enterprise claims a few thin beds of interlaminated pyrite and jasper are present in a volcanic fragmental sequence at elevation 2,900', and about 500m east of the Pat Fraction a 20m thick sequence of chert, pyritic and cherty tuffaceous argillite and silicified and pyritized volcanic rock was found at elevation 1,800'. These outcrops suggest that the unit extends discontinuously to east of the Enterprise claims.

Mineralization

The argillite-tuff-iron formation unit carries copper mineralization in a number of places, for example at the George Gold-Copper adit, on the New York and London claims, in the lower Red Top adit and on the Veteran No. 3 claim of the Argenta group. Some of the Rufus showings may also be in this unit.

1. George Gold-Copper Adit

This occurence is described in detail elsewhere in this report. In summary, most of the unit at this locality is composed of mafic tuff and pyritic, hematitic, cherty iron formation. Only a minor amount of argillite is present. Volcanic fragments are present both in the unit and in the immediately adjacent rocks. Chalcopyrite occurs disseminated and in stringers in all components of the unit, but mainly in the pyritic iron formation, which in places contains sections several meters thick composed of massive pyrite containing minor chalcopyrite.

2. New York and London Claims

On the New York claim, at elevation 2,830', the lower portion of the argillite-tuff-iron formation unit is exposed in an old adit and in trenches. There the unit consists of a quartzose, epidotized rock containing up to 50% semi-massive to heavily disseminated pyrrhotite, pyrite and chalcopyrite. In places this material is bedded. The thickness of the sulphide-bearing zone is about 10m (30'). About 275m (900') eastward, on the London claim, the sulphide zone is again exposed. There it consists of semi-massive to disseminated pyrrhotite, pyrite and chalcopyrite interstitial to coarse amphibole. The amphibole, which occurs in rosettes,

was formed by contact metamorphism. This sulphide zone has been explored by shallow diamond drill holes, and Cu values are reportedly low. In old reports it is referred to as the Cliff vein.

At 250' higher elevation than the sulphide zone on the London claim there is exposed a sequence of thinly-bedded argillaceous chert, cherty argillite and limey argillite containing thin pyrite laminae. Barring structural complications between this exposure and the sulphide zone below, the argillite-tuff-iron formation unit is here about 100m thick.

3. Red Top Property

The lower adit on the Red Top property, at elevation 2,900', intersects chalcopyrite-bearing argillite. Hanson (1929), described the sequence as follows:

"The country rocks at this deposit are approximately horizontal volcanic fragmentals and possibly lava flows and an interbed of argillite. The mineralization consists of chalcopyrite disseminated through the argillite and to a lesser extent through immediately overlying volcanic rocks."

According to Hanson's diagrams the argillite is at least 15m (45') thick.

4. Veteran and Rufus Claims

The main mineralized structure on these claims is the Erickson "vein". The vein is reported (Morton, 192_) to have been traced from the Veteran claim westward through the Veteran No. 3, Gringo Fraction and Comet No. 2 claims, which is a distance of about 1,350m (4,500'), and from there down the face of the bluff on the Comet Fraction, under the toe of the glacier, and eventually onto Rufus No. 5 claim. This is a total distance of over 2,100m (7,000'). The vein is reported to be 15' to 30' wide and, in general, strikes

dipping. Poorly documented assays from the Erickson vein are listed in the following table (Gunn, 1973).

Reported Assays from Erickson Vein

Rufus Claim Group

Cu%	Pb%	Ag oz./t	Remarks
	0.60	0.10	1924
1.88		1.70	"
	22.60	36.00	"
	31.30	14.68	"
10.66		14.50	"
	7.50	8.80	"
	Nil	0.10	"
	5.60	11.40	"

Veteran Claim Group

	Cu%	Pb%	Ag oz./t	Width (ft)	Remarks
1179	1.96			5	Vein 5': Hem,
1182				5	Py, Cp; 1966
1184	0.53		Tr.	4	
1180	1.29			1	
1158	3.02	0.15		5	1966
1159	0.29	0.23		5	"
1160	1.86	0.43		5	"
No.1	4.25			5	1925
No.2	12.97			2	"
No.3	3.82			3.7	"
?	5.68			3.7	"
Composite	5.73			4 to 30	1967

Small amounts of Zn and Au are reported in some of the assays.

During the 1976 program the Erickson vein was examined at several localities over 200m (650') apart on the Veteran claim. There the vein outcrops at elevation 3,400'. The vein in this locality is not a vein but rather a hematitic, chloritic and siliceous tuff unit. It is 3m to 4m (10' to 13')

wide, strikes north 65° to 80°E and dips from 15° to 80°N. The unit is partly massive and partly bedded. It contains partly recrystallized chert beds, quartz-hematite beds, thinly laminated chloritic tuff beds, fragments of volcanic rocks and much featureless material consisting of a mixture of these components.

Specks and small lenses and stringers of chalcopyrite are present throughout the unit but the average Cu content over the full width of the unit would be only several tenths of one per cent. A central portion of the unit, about 1.5m thick, was visually estimated to carry about 1.5% Cu. Very little pyrite is present in this portion of the unit.

The footwall in this area is a felsitic fragmental rock that appears to be silicified in places, and the hangingwall is chloritic tuff.

It is recommended that the argillite-tuff-iron formation unit be explored throughout its full extent in the Rufus Creek-Bear River Pass area. The unit (or units) clearly contains Cu-bearing volcanogenic sulphide mineralization that is widely distributed. The thickness, mineralogy and Cu content of the unit are variable, which suggests the possiblity that there may be places in the unit where conditions were such that economic concentrations of Cu (and/or Zn, Pb and Ag) formed. Such deposits would be hidden, for all exposed mineralization of any significance has likely been discovered. Recognition of geological features that signify proximity to favourable environments for volcanogenic sulphide deposition would be an important aspect of exploration. Examination of the lower unit of the Unuk River Formation for centers of silicic volcanism is an obvious step, based on the characteristics of the Canadian Archean massive sulphide deposits and the Japanese Kuroko deposits. However, it is important to bear in mind that the exact environment in which the argillite-

tuff-iron formation unit formed is not known. The presence of argillite in mineralized portions of the unit suggests a distal environment relative to centers of volcanism. If this is the case, the absence of silicic domes is not necessarily a negative feature.

The estimated cost of this work is presented in Appendix III.

RECOMMENDATIONS

1. The showings on the Enterprise claims should not be explored further at this time.

2. The southern extension of the zone of mineralization around the George Gold-Copper adit should be explored by diamond drilling. It is recommended that 3 holes be drilled from the end of the adit and 3 holes be drilled from the base of the cliffs located 160m (525') south of and 140m (460') higher than the adit with the purpose of locating the bottom contact of the mineralized unit and of determining the grade of mineralization near its base. If the results from these holes are encouraging it is recommended that 3 southward plunging holes be drilled from the base of the above-mentioned cliffs.

3. All land along and above the trace of the argillite-tuff-iron formation unit not owned by Tournigan should be acquired. This includes the following, Crown-granted claims:

South side of Bear River Valley

Bessie	L4777
Boston	L1482

Chicago	L98
Chicago Kid Fraction	L99
Elgin	L1481
Grey Copper	L4187
Grey Copper No.1	L1488
Kensington Fraction	L1484
London	L1480
Mamie	L4778
New York	L1485
Paris	L1483

North side of Bear River Valley

Amazon	L4945
Amazon No.1	L4946
Amazon No.2	L4968
Amazon No.3	L4947
Amazon No.4	L4948
Amazon Fraction	L4950
Amazon No.2 Fraction	L4951
Argyle No.1	L4576
Argyle No.2	L4577
Argyle No.3	L4578
Argyle No.4	L4579
Argyle No.5	L4580
Argyle No.6	L4581
Argyle Fraction	L3417
Baby Rufus Fraction	L3793
Barite	L5341
Barite No.1	L5342
Barite No.2	L5344
Barite Fraction	L5345
Bear No.5	L5336
Comet	L3418
Comet No.1	L3419

Comet No.2	L3420
Comet No.3	L3421
Comet No.4	L3422
Duke Fraction	L4582
Foothill Fraction	L4941
Gringo Fraction	L3427
Hector No.1	L4805
Hub	L5343
Long Fraction	L4556
Red Top	L4803
Red Top No.1	L4804
Red Top No.2 Fraction	L4949
Red Top Fraction	L4807
Rufus	L3786
Rufus No.1	L3787
Rufus No.2	L3788
Rufus No.3	L3789
Rufus No.4	L3790
Rufus No.5	L3791
Rufus No.6	L3792
Silver Fraction	L4555
Slide Fraction	L4553
Superior	L4801
Superior No.1	L4802
Superior No.2 Fraction	L4806
Veteran	L3423
Veteran No.1	L3424
Veteran No.2	L3425
Veteran No.3	L3426

It is also recommended that land in the valley floor adjacent to the above-mentioned claims be acquired to consolidate the land position, even though this land does not appear to have any economic significance at this time.

4. The argillite-tuff-iron formation unit and the immediately underlying rocks should be examined for geological clues indicating proximity to sulphide deposits.

5. Electromagnetic surveys using the "shoot-back" technique should be carried out along the trace of the argillite-tuff-iron formation unit wherever topography will allow.

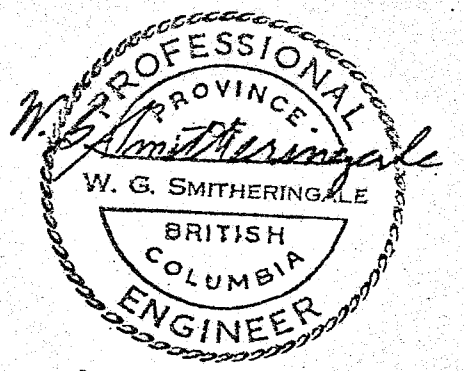
6. The veins that occur above the argillite-tuff-iron formation unit in various places should be examined and their geological relationship to the argillite-tuff-iron formation unit should be considered. For example, are the veins genetically linked to the underlying argillite-tuff-iron formation unit, and if so, do the Pb, Zn and Ag veins with barite gangue indicate concentrations of similar elements in the underlying argillite-tuff-iron formation unit; or are some of the veins actually sulphide-bearing volcaniclastic deposits, as is the Erickson "vein"?.

7. The Summit group of claims on both the north and south sides of Bear River valley should be examined, as should the old Southern Cross property on the east side of Bear Pass Glacier.

8. The cost of exploration during the first year of the program recommended, apart from land acquisition, is estimated as $102,600. A second stage of exploration, if warranted by the first stage, would cost about $119,000.

9. As a long range project it is recommended that Tournigan Mining Explorations Ltd. examine all the old showings in

the American Creek and lower Bear River valley areas that occur in rocks of the Hazelton assemblage. Published descriptions of these showings and the surrounding geology suggest to the writer that the argillite-tuff-iron formation unit has regional distrubution and that some of the old showings are not veins but stratabound volcanogenic sulphide deposits.



Expiry Date Sept. 1, 1977

CERTIFICATION

I, William G. Smitheringale, do hereby certify that:

1. I am a practicing Professional Geological Engineer, now resident in Vancouver, B.C.

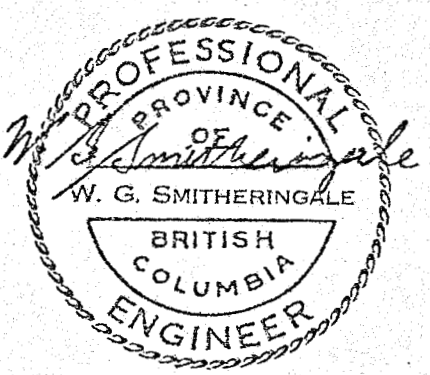
2. I am a graduate of the University of British Columbia with a degree in Geological Engineering (B.Ap.Sc., 1955) and of the Massachusetts Institute of Technology with the degree of Doctor of Philosophy in Geology (Ph.D., 1962).

3. I have practiced my profession continuously for fourteen years as geologist with the Geological Survey of Canada, as Assistant and Associate Professor, Department of Geology, Memorial University of Newfoundland, and since 1974 as a Consulting Geologist.

4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia and of the Association of Professional Engineers of Newfoundland.

5. I have personally examined portions of the Bear Pass property and adjacent areas and that this report is based on that examination and on information from references listed in the report.

6. I have no financial interest in the Bear Pass property or in Tournigan Mining Explorations Ltd.



Expiry Date Sept. 1, 1977

W.G. Smitheringale, P.Eng.

December 17, 1976

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APPENDIX I

CLAIM LIST, BEAR PASS PROPERTY
TOURNIGAN MINING EXPLORATIONS LTD.

Name of Claim	George Enterprise Claims (Lot No.)	Acres
Green Lake	6081	51.65
Green Lake No. 2	6076	51.65
Green Lake No. 3	6077	51.65
Green Lake No. 4	6078	50.02
Green Lake Fraction	6080	47.65
Enter Fraction	6079	17.05
Enterprise	5346	51.65
Enterprise No. 1	5347	51.65
Enterprise No. 2	5348	41.85
Enterprise No. 3	5349	51.65
Enterprise No. 4	5350	34.63
Enterprise No. 5	5351	28.12
Enterprise No. 6 Fr.	5352	19.50
Enterprise No. 7	5353	37.45
Enterprise No. 8	5359	50.07
Enterprise Fraction	5360	48.71
Pat Fraction	5358	48.92
Heather	5354	51.65
Heather No. 1	5355	51.65
Heather No. 2	5356	46.91
Heather No. 3	5357	51.64
Heather No. 4	5365	50.82
Heather Fraction	5366	49.26
Some Fraction	5364	36.59

Appendix I (cont'd)

CLAIM LIST, BEAR PASS PROPERTY

TOURNIGAN MINING EXPLORATIONS LTD.

Name of Claim	George Gold-Copper Claims (Lot No.)	Acres
Waterfall No. 1	4789	
Whistler	4786	
Gold Crown	4779	
Copper Queen	4781	
Copper Queen No. 1	4788	
Copper Queen No. 2	4792	
Castle Rock	4784	
Helena	4783	
Grand View	4793	
Redbird Fr.	4795	
Redbird No. 1	4794	
Sky Scraper	4897	

Claims obtained by Reverted Crown Grant Acquistion

Copper Lord	4782	51.65
Waterfall	4785	51.65
Come Again	4787	35.09
Copper King No. 1	4790	49.82
Copper King No. 2	4791	43.80
Big Gulch	4797	39.65
Canyon	4798	51.65
Kid	4799	44.19
Kid Fr.	4800	48.98
Ice Worm No. 1	4942	51.51
Ice Worm Fr.	4943	50.17
Ice Worm No. 2	4944	51.64

Appendix I (cont'd)

Bear No. 1	5332	42.16
Bear No. 2	5333	47.62
Bear No. 4	5335	43.89
Bear No. 5	5336	29.18
Bear No. 6	5337	40.66
Bear No. 7	5338	35.75
Bear No. 8	5339	44.26
Bear No. 9	5340	48.62
Heather No. 5	5361	28.31
Heather No. 6	5362	49.37
Wedge Fr.	5363	36.31
Big 4	5391	35.67
Big 4 No. 1	5392	51.59
Big 4 Fr.	5393	25.90
Big 4 No. 1 Fr.	5394	41.59
Five Fr.	5395	40.43
Dempsey Fr	5396	28.97
Gipsy Fr.	5397	29.25
Speculator No. 2	4887	51.47
Trail No. 1	4889	43.26
Trail Fr.	4896	50.71
Copper King	4780	37.60
Big Slide	4796	51.65
Trail No. 2	4890	51.48
Trail No. 3	4891	47.23
Trail No. 4	4892	51.65
Trail No. 5	4893	51.65
Trail No. 6	4894	51.65
Trail No. 7	4895	51.65
Bear No. 3	5334	47.03

Staked Mineral Claims

Snow Lake No. 1 (2 metric units)

Snow Lake No. 2 (1 metric unit)

APPENDIX II

1976 DRILL HOLE LOGS, GEORGE GOLD-COPPER ADIT SHOWING

Drill Hole 102

Length 21.3m (70')
Elev. 27m above adit
Direction N28°W, -70°

Interval (meters)	Description
0-4.0	Crudely banded pyrite-magnetite-hematite in a siliceous and chloritic tuffaceous matrix. Fragmental in places. 0-1.8: pyrite 25%, magnetite 35%, disseminated chalcopyrite 0.1% to 0.5% 1.8-3.1: pyrite 15%, magnetite 50% 3.1-3.3: pyrite 10%, magnetite 20%, hematite 15% 3.3-4.0: pyrite 25%, magnetite 25%
4.0-4.6	Banded magnetite and hematite in siliceous tuffaceous matrix. Pyrite 1%, magnetite 20%, hematite 20%.
4.6-7.1	Banded pyrite, magnetite and hematite in siliceous, tuffaceous matrix; occasional chert bands. 4.6-5.9: pyrite 10%, magnetite 25%, chalcopyrite about 0.5%. 5.9-7.1: locally 5% to 10% chalcopyrite, average 0.5% to 1%.
7.1-11.3	Banded magnetite and hematite in siliceous, tuffaceous andesitic fragmental. Magnetite 35%, hematite 35%, locally 10% pyrite and 1% to 2% chalcopyrite; average chalcopyrite under 0.1%.
11.3-16.8	Partly banded pyrite, magnetite and hematite in siliceous and chloritic tuffaceous matrix. 11.3-12.3: pyrite 10%, magnetite 15%, hematite 5% 12.3-12.7: pyrite 15%, magnetite 15%, hematite 5%, chalcopyrite about 5% Assay: 1.09% Cu; <0.01% Pb; 0.05% Zn; 0.06 oz./ton Ag; 0.003 oz./ton Au

12.7-13.6: pyrite 15%, magnetite 10%, hematite 30%
13.7-16.8: pyrite 20%, hematite 20%, local magnetite. Many rounded fragments, less than pea-size, of finely laminated pyrite and hematite that resemble small mud balls.

16.8-21.3 Crudely banded and contorted hematite and pyrite in siliceous, tuffaceous matrix; local magnetite; matrix locally chloritic. Pyrite 10%, hematite 30%.
19.1-19.6: Assay < 0.01% Cu; < 0.01% Pb; 0.05% Zn; 0.02 oz./ton Ag; 0.003 oz./ton Au

21.3 End of hole

Drill Hole 103

Length 29.9m (98')
Elev. 24m above adit
Direction S22°W, -71.5°

Interval (meters)	Description
0-1.2	Crudely banded hematite and magnetite; cherty matrix. Pyrite 5%; magnetite and hematite 70%, disseminated chalcopyrite <0.5%.
1.2-4.6	Banded pyrite and magnetite with minor hematite; tuffaceous; banding 35° to core axis. Pyrite 25%, magnetite 50% 1.2-3.0: about 0.5% disseminated chalcopyrite. Assay 1.2-1.8: 0.11% Cu; < 0.01% Pb; 0.01% Zn; 0.18 oz./ton Ag; 0.005 oz./ton Au. 1.8-2.4: 0.16% Cu; 0.01% Pb; 0.09% Zn; 0.01 oz./ton Ag; 0.003 oz./ton Au 2.4-3.0: 0.05% Cu; < 0.01% Pb; 0.09% Zn; 0.01 oz./ton Ag; < 0.003 oz./ton Au 3.0-3.9: little visible chalcopyrite 3.9-4.6: Assay: 0.03% Cu; 0.01% Pb; 0.09% Zn; 0.09 oz./ton Ag; 0.005 oz./ton Au
4.6-6.1	Poorly banded pyrite, magnetite and hematite; matrix is chloritic, argillaceous, tuffaceous and contains lithic fragments up to 1cm dia.; disseminated chalcopyrite < 0.5%. Banding 35° to core axis. Pyrite 10%, hematite 10%, magnetite 10%.

6.1-8.0 Banded pyrite and magnetite in a tuffaceous matrix containing fragments up to 1cm dia.; pyrite thinly laminated and colloform. Pyrite 25%, magnetite 25%, disseminated chalcopyrite <0.5%.
7.8-8.0: Assay: 0.02% Cu; 0.02% Pb; 0.03% Zn; 1.02 oz./ton Ag; 0.010 oz./ton Au

8.0-10.8 Banded pyrite, magnetite and hematite; tuffaceous. Chalcopyrite generally less than 0.5%, but several 2cm to 10cm wide bands with 1% to 2% chalcopyrite; scattered pods of pale sphalerite. Pyrite 20%, magnetite 15%, hematite 10%.

10.8-14.7 Banded magnetite and hematite with minor pyrite; siliceous, and tuffaceous; Pyrite 5%, hematite 40%, magnetite 30%, disseminated chalcopyrite 0.5% to 1%.
Assay
11.6-12.2: 0.12% Cu; <0.01% Pb; 0.04 Zn; 0.07 oz./ton Ag; 0.003 oz./ton Au
12.2-13.3: 0.03% Cu; 0.02% Pb; 0.04% Zn; 0.21 oz./ton Ag; 0.005 oz./ton Au
13.3-14.7: 0.25% Cu; 0.01% Pb; 0.03% Zn; 0.06 oz./ton Ag; 0.005 oz./ton Au

14.7-15.5 Banded pyrite and hematite in argillaceous and siliceous tuffaceous matrix.
14.7-15.0: pyrite 30%; minor hematite; argillaceous matrix 60%; one 5cm thick band with 5% to 10% chalcopyrite.
15.0-15.5: pyrite 10%, hematite 50%, disseminated chalcopyrite <0.5%

15.5-16.5 Chloritic tuff and fragmental. Pyrite 5%, hematite 5%, disseminated chalcopyrite <0.5%

16.5-18.8 Banded (with contortions) pyrite and hematite in chloritic tuff and fragmental. Pyrite 5%, hematite 45%, chalcopyrite generally <0.1% but locally 1%.

18.8-19.9 Fragmental volcanic, tuffaceous and chloritic; fragments up to 2cm dia.; about 2% pyrite.

19.9-21.7 Hematite and thinly laminated pyrite in chloritic and locally siliceous matrix. Pyrite 20%, hematite 50%, chalcopyrite <0.5%.

21.7-23.3 Thinly banded pyrite 45%; hematite 45%; chloritic and siliceous tuff and fragmental matrix; chalcopyrite < 0.5%.

23.3-23.7 Chloritic and tuffaceous fragmental volcanic; 1%-2% pyrite.

23.7-24.7 Pyrite 20%, hematite 50%, chalcopyrite < 0.5%; siliceous matrix.

24.7-27.2 Very fine-grained and thinly laminated colloform pyrite (and marcasite?) 70%; hematite 20%; minor magnetite; disseminated chalcopyrite 1%.
Assay
26.0-27.2: 0.40% Cu; 0.03% Pb; 0.02% Zn; 0.17 oz./ton Ag; 0.007 oz./ton Au

27.2-27.8 Thinly banded pyrite 85%; magnetite 10%; siliceous and chloritic volcanic fragments 5%; disseminated chalcopyrite 1%-2%.
Assay: 0.82% Cu; 0.05% Pb; 0.04% Zn; 0.58 oz./ton Ag; 0.010 oz./ton Au

27.8-28.1 Chloritic and tuffaceous volcanic fragmental.

28.1-28.9 Pyrite 80%, pyrrhotite or marcasite 5%, chalcopyrite 3%-5%, magnetite 5%; siliceous and chloritic gangue with fragments up to 1cm dia.
Assay: 1.05% Cu; 0.03% Pb; 0.04% Zn; 0.18 oz./ton Ag; 0.005 oz./ton Au.

28.9-29.9 Felsitic fragmental; fragments up to 2cm dia.; chloritic; < 1% disseminated and laminated pyrite.

29.9 End of hole.

Assay summary 26m to 28.9m, DDH 103

Interval (meters)	Proportion of sulfides (vol.%)	Cu %	Pb %	Zn %	Ag (oz./ton)	Au (oz./ton
26-27.2 (1.2m)	70	0.40	0.03	0.02	0.17	0.007
27.2-27.8 (0.6m)	85	0.82	0.05	0.04	0.58	0.010
27.8-28.1 (0.3m)	1	not mineralized				
28.1-28.9 (0.8m)	90	1.05	0.03	0.04	0.18	0.005
Weighted average over 2.9m (9.5')		0.62	0.03	0.03	0.24	0.006

APPENDIX III

COST ESTIMATE OF RECOMMENDED EXPLORATION PROGRAM

STAGE I

Drilling on George Gold-Copper Adit Showing

Mobilization and demobilization, contractor	$ 2,500	
2200' drilling @ $15. per foot	33,000	
Moving from site to site	1,000	
Camp equipment	2,000	
Camp operation (salaries and supplies for 30 days)	6,000	
Camp mobilization and de-mobilization	2,000	
	$ 46,500	$ 46,500

Geological & E.M. Staff

	Time	Salary	Rm.& Bd.*	
Chief Geologist ($2,000 per month)	5 mos.	$10,000	$ 2,300	
Assistant Geologist ($1,200 per month)	3 mos.	3,600	2,300	
Two Student Ass'ts ($1,000 mo./ea.)	3 mos.	6,000	4,600	
		$19,600	$ 9,200	28,800

* Rm.& Bd. 100 days @ $23./day

Helicopter Cost

Geology & E.M. Crews, 25 days @ 1.5 hrs per day	37.5 hrs	
Mobilization and de-mobilization of drilling camp	4.0 hrs	
Service drilling camp, 10 trips @ .3 hrs per trip	3.0 hrs	
44.5 hours at $325. per hour	44.5	14,463
		$ 89,763

		Carried forward $89,763
Miscellaneous		
Truck Rental	$ 2,000	
2 footbridges (or cable crossings) across Bear River	1,000	
Other items	500	
	$ 3,500	3,500
Total estimated cost		93,263
10% contingency		9,300
Grand Total (Rounded)		$102,600

STAGE 2

Drilling

(two camps, to be selected after Stage 1)

Mobilization and demobilization of equipment and crews	$ 3,500	
2700' @ $20 per foot	54,000	
Equipment for second camp	2,000	
Additional equipment for first camp	500	
Camp operation, 30 days each, wages and supplies	12,000	
Camp mobilization and de-mobilization	3,000	
	$ 75,000	$ 75,000

Geological Staff

	Time	Salary	Rm. & Bd.	
Chief Geologist ($2,000 per month)	5 mos.	$10,000	$ 2,300	
Two Junior Geologists ($1200 per/mo. each)	3 mos.	7,200	4,600	
One Geological Ass't	3 mos.	3,000	2,300	
Geological staff salaries, room and board		$20,200	$ 9,200	29,400

Miscellaneous

Truck rental	$ 2,000	
Other items	2,000	4,000
Total estimated costs		$108,400
10% contingency		10,800
Grand Total, Stage 2 (Rounded)		$119,000

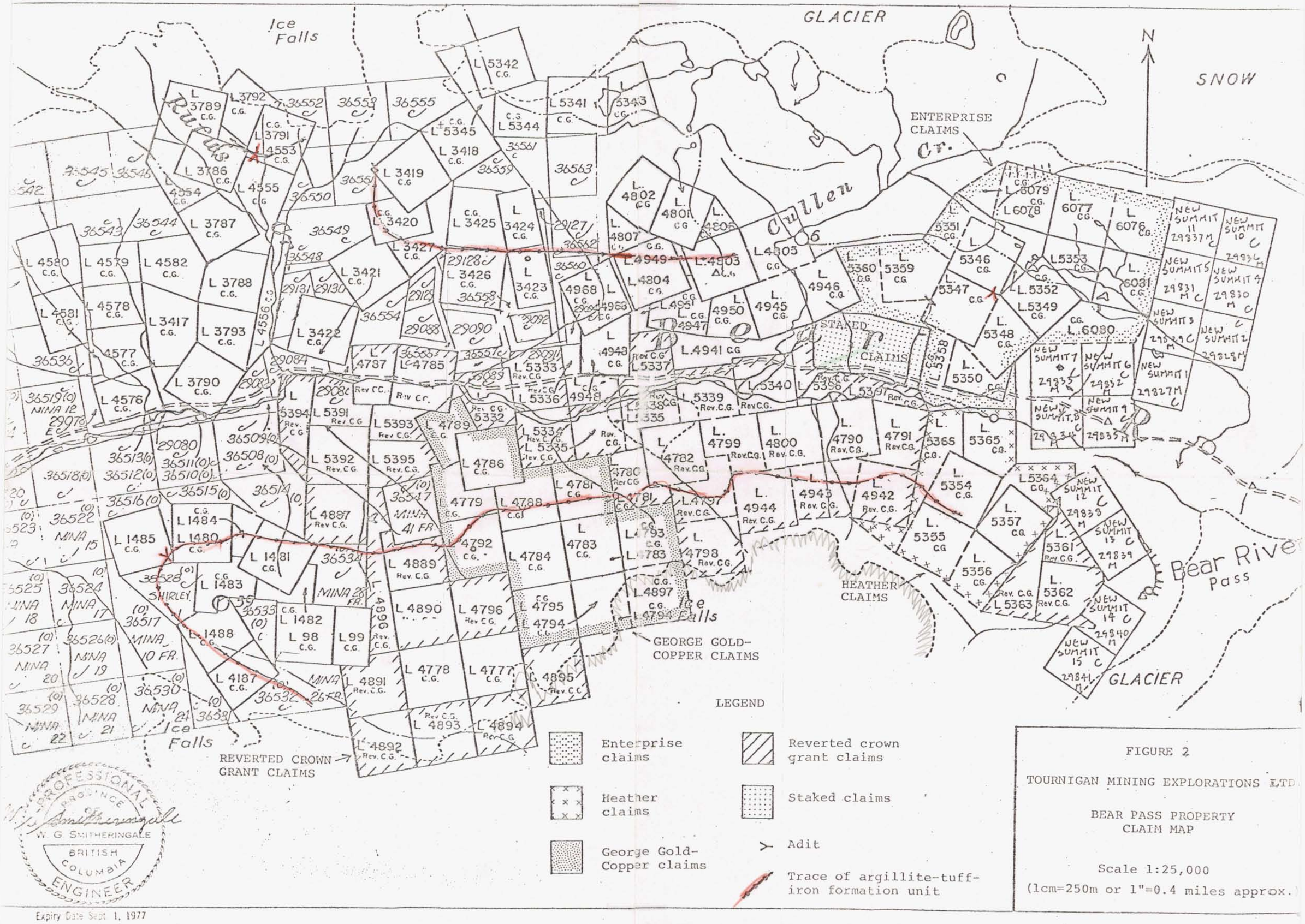

FIGURE 2

TOURNIGAN MINING EXPLORATIONS LTD.

BEAR PASS PROPERTY
CLAIM MAP

Scale 1:25,000
(1cm=250m or 1"=0.4 miles approx.)

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
W. G. SMITHERINGALE

Expiry Date Sept. 1, 1977

8.1

Rufus

Argenta

Red Top

Rufus Creek

Enterprise

George Copper

New York

Bear R. Pass

5000

4000

3000

2000

1000

1129

N

W. G. SMITHERINGALE
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

Expiry Date Sept. 1, 1977

LEGEND

Tertiary (?)
- Monzonite stock

Middle Jurassic
- Salmon River Formation greywacke, sandstone, argillite
- Volcanic breccia, tuff, sandstone, siltstone

Lower Jurassic
Unuk River Formation
- Undifferentiated
- Upper unit; andesitic breccia and tuff
- Middle unit; argillite, tuff, iron formation
- Lower unit; massive andesitic pyroclastics and flows

> Adit

FIGURE 3

TOURNIGAN MINING EXPLORATIONS LTD.

GENERAL GEOLOGY
RUFUS CREEK-BEAR RIVER PASS AREA

Scale: 1:25,000

(1cm=250m or 1"=0.4 miles approx.)

LEGEND

- 3 Sulfide-bearing iron formation
- 2 Mafic tuff and epidote rich rock
- 1 Fragmental felsite (local facies of lower volcanic unit)
  - 1b containing disseminated and stringer pyrite
  - 1a strongly epidotized, silicified and chloritized
- Geological contact
- 6 Feldspar porphyry dyke
- 5 Andesitic volcanic fragmental
- 4 Argillite

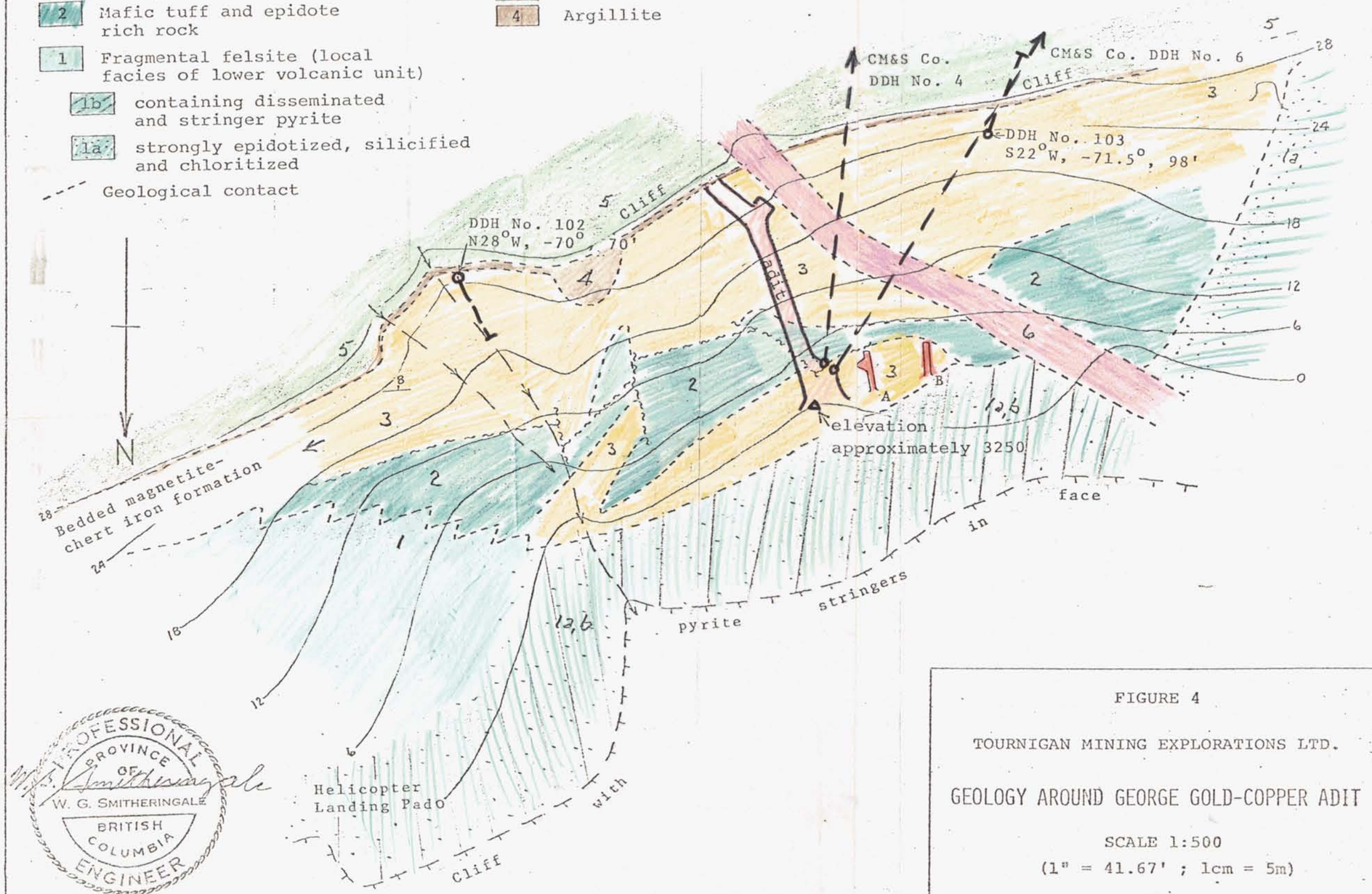

FIGURE 4

TOURNIGAN MINING EXPLORATIONS LTD.

GEOLOGY AROUND GEORGE GOLD-COPPER ADIT

SCALE 1:500

(1" = 41.67' ; 1cm = 5m)

W.G. SMITHERINGALE DECEMBER 1976