1/89

REPORT ON THE 1987 EXPLORATION PROGRAM ON THE MT. PROSERPINE PROPERTY

Mt. Proserpine Area
Cariboo Mining Division, British Columbia
N.T.S. Map Areas 93A/14W, 93H/3W and 93H/4E
Latitude 53° 05'N Longitude 121° 28'W

SUB-RECORDER
RECEIVED
JAN 27 1988
M.R. # ..... $.....
VANCOUVER, B.C.

for

BONAVENTURE RESOURCES LTD.
Ground Floor, 470 Granville St.
Vancouver, B.C.
V6C 1V5

FILMED

by

K.V. Campbell, Ph.D.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

December, 1987

16,981

Volume 1

Part 1 of 2

SUMMARY

The Mt. Proserpine property straddles the Barkerville Gold Belt, some 12 km southeast of Wells in the Cariboo Mining Division. The claims have been explored for gold-bearing quartz veins in the past and there are several old adits. Only a small amount of quartz ore is reported to have been milled.

The 1987 exploration program of Bonaventure Resources Ltd. included 899 m of trenching across what is believed to be the main band of mineralization, 644.6 m of NQ diamond drilling, re-opening the Warspite adit and rock chip sampling on Antler Mtn. where previous soil sampling has identified gold geochemical anomalies.

The program was successful in defining a target worthy of continued exploration. This is a 10 m wide, white, silicified pyritic quartzite with an average analysis of 1.133 ppm Au (0.033 oz Au/ton) and containing about 11% vein quartz with a weighted average analysis of 3.86 ppm Au (0.113 oz Au/ton). Individual analyses of the quartzite contain up to 0.248 oz Au/ton. Individual quartz veins in the quartzite carry up to 0.927 oz Au/ton over 8 cm and 0.866 oz Au/ton over 50 cm.

The geochemical sampling confirmed the presence of phyllites and micaceous quartzites with anomalous values of gold, silver, lead and zinc. A few narrow quartz veins in the same area as the anomalies carry almost 1 oz Au/ton.

The white silicified quartzite found in the Warspite adit was not found in drill holes or on surface. It is thought that complex faulting is responsible for this. Trenching and drilling did not reveal the presence of limestones that host pyrite replacement type ore to the northwest.

A two stage program of mapping and reverse circulation drilling is recommended at a total estimated cost of $350,000.

LOG NO: 0205 RD.
ACTION:

FILE NO:

Volume 1

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

FIGURES

TABLES

Volume 2

APPENDICES

1 INTRODUCTION

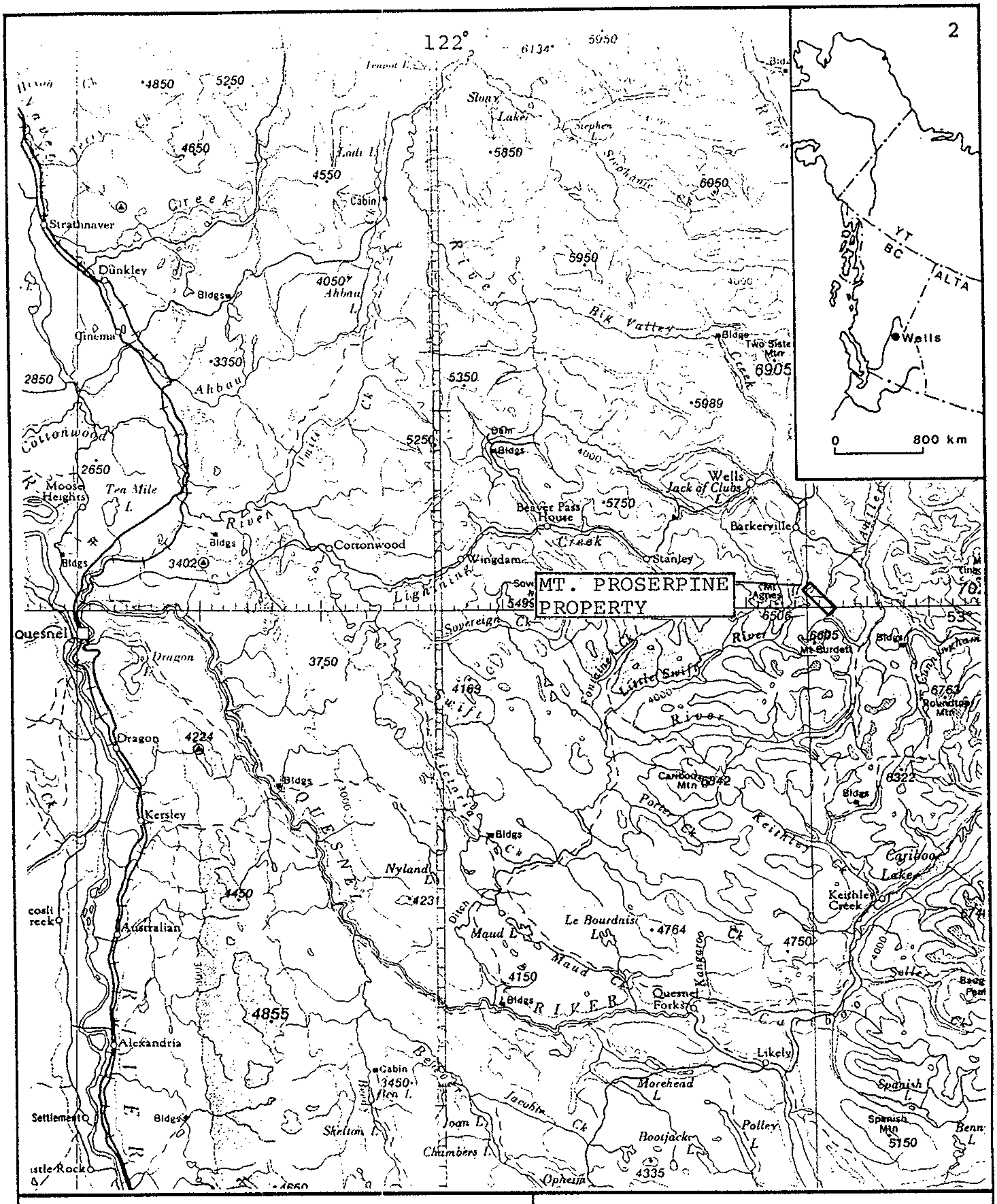
The Mt. Proserpine property consists of 48 reverted crown-granted mineral claims located southeast of Wells in the Cariboo Mining Division of central British Columbia. The property is held under option by BONAVENTURE RESOURCES LTD. of Vancouver, whose President, Mr. Gary Assaly requested the 1987 exploration program and this report. It is the intention of BONAVENTURE RESOURCES LTD. to explore for gold mineralizaton and assess the likelihood of ore being present.

The claims have been the focus of much surface and underground exploration for gold-bearing quartz veins over the years, with peak activity in the period 1934 to 1946. Several adits were established and tens of thousands of feet were stripped during that time. In recent years two limited drill programs and an extensive geochemical soil survey have been completed. The purpose of the present work program was to investigate areas that previous explorationists thought were most promising and to determine whether or not there is any potential for large tonnage low grade gold mineralization to occur, such as could be mined by open-pit methods.

The 1987 exploration work consisted of trenching, rock-chip sampling, diamond drilling and underground sampling.

1.1 Location and Access

The Mt. Proserpine property is located 12½ km southeast of the village of Wells, 80 km east of Quesnel along Highway 26. The claims are situated within National Topographic System areas 93A/14W, 93H/3W and 93H/4E and are centered approximately at 53° 05'N latitude and 121° 28'W longitude (Figure 1).



CAMPBELL & ASSOCIATES GEOLOGICAL CONSULTANTS			BONAVENTURE RESOURCES LTD.
Scale 1:500,000 0 10km	DEC., 1987	NTS 93	MT. PROSERPINE PROPERTY LOCATION MAP
	FIGURE 1		

While being contiguous, the claims (except for two isolated claims) are divided in two by Grouse Creek. The Mt. Proserpine section, where most exploration has taken place, lies northwest of Grouse Creek and the Antler Mtn. section lies to the southeast.

Access to the Mt. Proserpine area is by taking B.C. Forest Service Road No.3100, 5 km east of Wells off the Bowron Lake Road, for about 7 km to Grouse Creek. A dirt road is then taken to the southwest for 1 3/4 km to the abandoned Grouse Creek or Cariboo Hudson Road which used to be the main road from Barkerville to the Snowshoe Plateau. This road is followed to the northwest for 5 km where the Mt. Proserpine road branches sharply to the southeast, climbing up to old mining camps on the property, about 5 km further. It takes about 1 hour to make the trip from Wells to the old camps.

The availability of water for drilling was a problem during the 1987 fall program. Trucking water from Conklin Gulch, 5 km northwest, proved to be a costly procedure during the current program and it is recommended that adequate hoses and pumps be brought on site for any future drilling. Water does issue from the Warspite adit and there are a few man-made depressions that could be utilized as holding ponds.

The are numerous old roads and trails on the sub-alpine upland surface, making excellent drill access roads. There is one cabin remaining in the old Armstrong Camp on the Independance claim that could be used for core storage.

The Antler Mtn. section of the property has hiking access only at the present time. The old trenches on top of Antler Mtn.

were served by a road built in 1946 from Grouse Creek (Gordon Brown, 1946).

1.2 Claims Status

Figure 2 is a claim plan of the area. The 46 claims of the property, which cover the ground of the original 48 reverted crown-granted claims, are shown and listed in Table 1. All claims are owned by BONAVENTURE RESOURCES LTD.

1.3 History

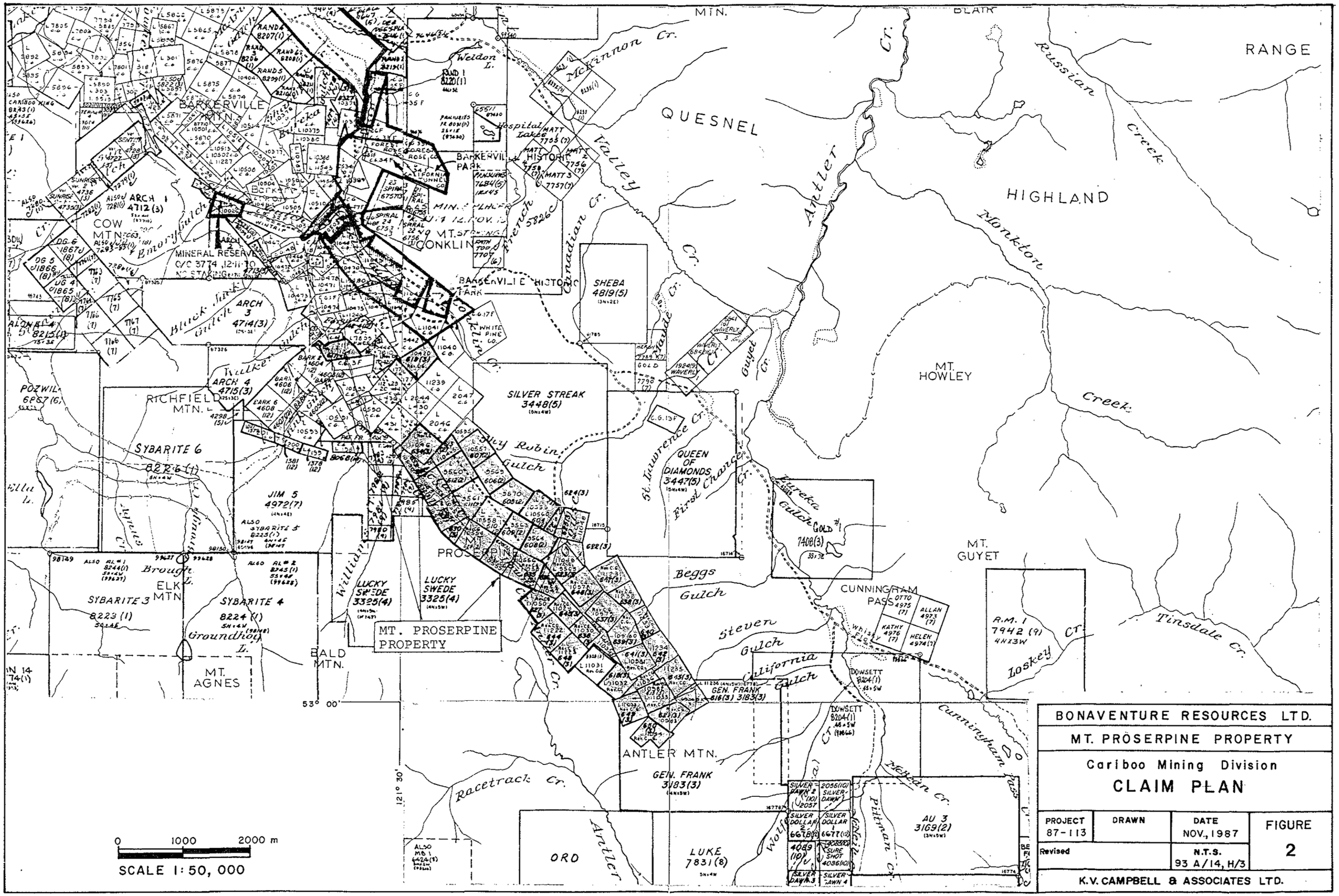
The Cariboo district is one of the oldest gold mining camps in British Columbia, the first prospectors arriving c.1858. The early miners worked placer deposits but by the 1880's gold-quartz veins were being mined.

The property lies in the central part of the Barkerville Gold Belt (Figure 3), a northwest alignment of gold-quartz veins, gold-bearing pyrite ore bodies and placer deposits. Grouse Creek was one of the important placer streams in the Cariboo and because it is generally accepted that the placer gold originated in quartz veins and pyritic deposits along the axis of the gold belt, the Tertiary watershed of Grouse Creek is the most probable source area. The Proserpine property covers most of this area.

Historical lode gold mines located along this belt 4 to 10 km northwest of the Proserpine property were the Williams Creek, Canusa, Island Mtn. and Cariboo Gold Quartz Mines. Gold was won from both gold-quartz veins and pyritic replacement bodies in limestone and the Cariboo Gold Quartz and Island Mtn. Mines

Table 1. Claims Data

Claim Name	Record No.	Lot No.	Recording Date
Gogetter	604	10559	February 20, 1978
General Currie	605	9570	February 20, 1978
Blighty	606	9569	February 20, 1978
True Blue	607	10557	February 20, 1978
Hard Cash	608	9564	February 20, 1978
Independance	609	9563	February 20, 1978
Kitchener	610	10558	February 20, 1978
Tipperary	611	9561	February 20, 1978
Warspite	612	9560	February 20, 1978
Penelope	613	11045	February 20, 1978
Mars	615	10982	March 16, 1978
AM No.6	616	11236	March 16, 1978
King Fraction	617	11241	March 16, 1978
Antler No.2	618	11032	March 16, 1978
Pin Money	619	10420	March 16, 1978
Star Fraction	620	11035	March 16, 1978
Luna	621	10983	March 16, 1978
Ptarmigan Fraction	622	11049	March 16, 1978
Discovery	623	9565	March 16, 1978
Kumangetit	624	10560	March 16, 1978
Hackle	625	11048	March 16, 1978
Luff	626	11047	March 16, 1978
Tor	627	11050	March 16, 1978
Porphyry	628	10555	March 16, 1978
Pre-Cambrian	629	10554	March 16, 1978
Aviator	630	10553	March 16, 1978
Axoic	631	10552	March 16, 1978
Amos	632	10551	March 16, 1978
Andy	633	10550	March 16, 1978
Norah	634	11046	March 16, 1978
Granite Fraction	635	11038	March 16, 1978
Tourmaline	635	10556	March 16, 1978
Antler	636	11030	March 16, 1978
Venus	637	10979	March 16, 1978
AM No.2	638	11232	March 16, 1978
Mercury	639	10980	March 16, 1978
AM No.3	640	11233	March 16, 1978
Saturn	641	10981	March 16, 1978
AM No.4	642	11234	March 16, 1978
Nut Fraction	642	11036	March 16, 1978
AM No.5	643	11235	March 16, 1978
Tweedsmuir	644	11222	March 16, 1978
Grouse	645	11029	March 16, 1978
Jubitor	646	10978	March 16, 1978
AM No.1	647	11231	March 16, 1978
Triumph	648	11223	March 16, 1978
Antler No.3	649	11033	March 16, 1978
Antler No.4	650	11034	March 16, 1978



BONAVENTURE RESOURCES LTD.

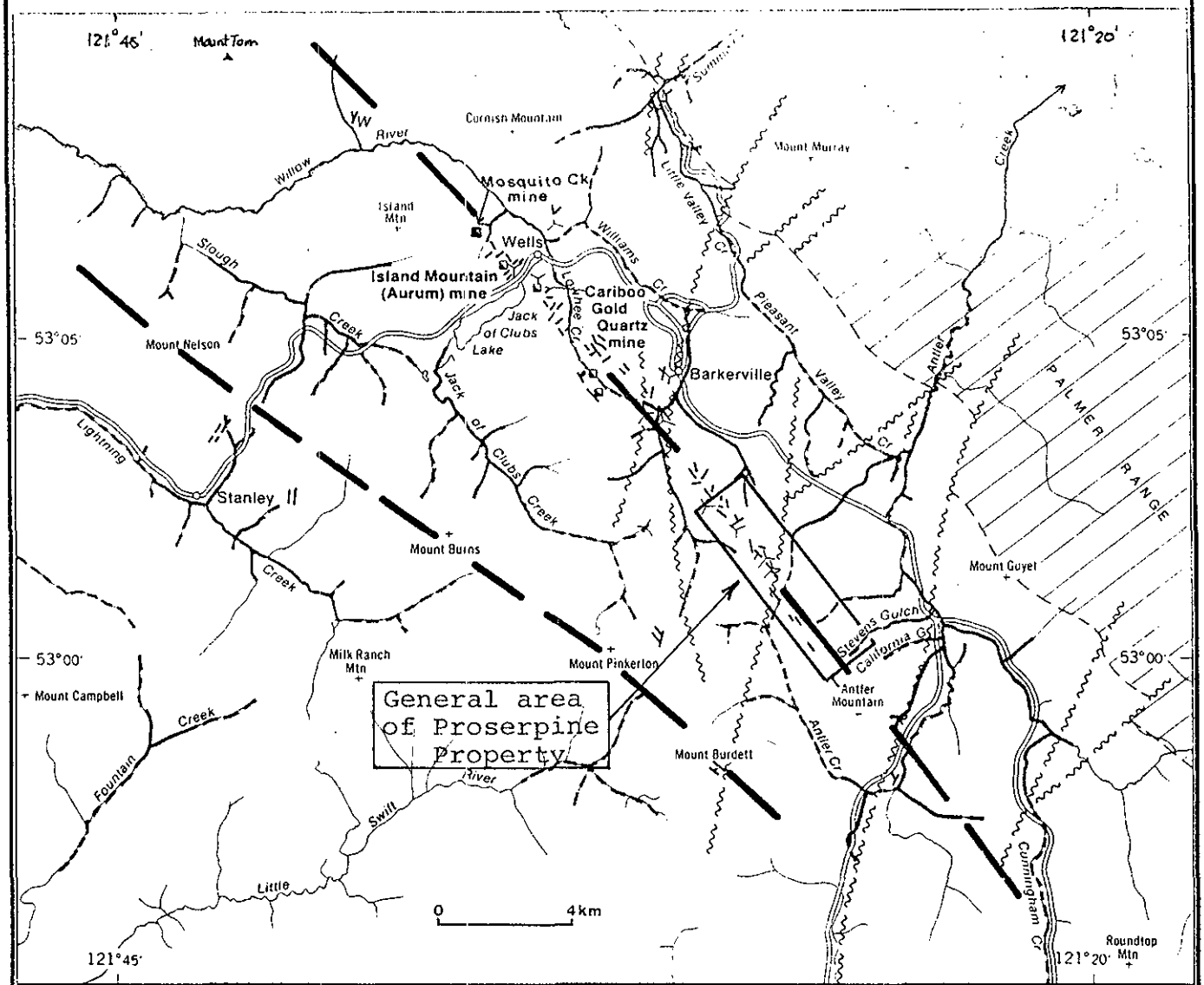
MT. PROSERPINE PROPERTY

Cariboo Mining Division

CLAIM PLAN

PROJECT	DRAWN	DATE	FIGURE
87-113		NOV., 1987	2
Revised		N.T.S. 93 A/14, H/3	

K.V. CAMPBELL & ASSOCIATES LTD.



(after Boyle, 1979)

PALEOZOIC

Slide Mountain Group: Conglomerate, limestone, andesite, basalt, chert, shale and argillite

Cariboo Group: Quartzite, slate, sericite schist, limestone, phyllite, graphitic schist and chlorite schist

Placer (highly productive, marginal)

Fault

Auriferous quartz veins and lodes.

W-with abundant scheelite

Adit

Shaft

CAMPBELL & ASSOCIATES
GEOLOGICAL CONSULTANTS

BONAVENTURE RESOURCES LTD.

DEC., 1987 | NTS 93 A,H

FIGURE 3

GOLD PLACERS AND VEINS OF CARIBOO DISTRICT

produced 1.2 million ounces of gold between 1933 and 1967. The only active mine in the area today is the Mosquito Creek Mine 12 km northwest of the Proserpine property which has had intermittent operation since 1980, producing some 19,300 ounces of gold from pyritic ore with a head grade of about 0.45 oz/ton (Annual Report 1986, The Mosquito Creek Gold Mining Co. Ltd).

The claims have been worked since c.1916 and there are numerous reports on the activities. These are listed in the Bibliography. The following is a summary of work by various companies, taken from the references cited, the most useful being Sutherland Brown (1957). Significant geological findings are incorporated into relevant sections of this report. Figure 4 is a 1:5,000 site plan of the area showing locations of the principal work areas.

Work Prior to 1916 :

Throughout the district in the early days prospectors searched for gold-bearing quartz veins. The Fountainhead and Dufferin adits on Grouse Creek date from this time. As early as 1888 Bowman reported assays of 2.042 oz Au/ton over 4 feet (Wilson et al, 1933) of quartz from the Dufferin adit. Wilson et al reference that some 10 tons of ore, yielding $8.00/ton (which is equivalent to 0.387 oz Au/ton at the gold price then of $20.67/oz) were shipped to the stamp mill in Barkerville from this adit.

1916-1932 :

The claims were most work has been done are the Warspite, Hard Cash and Independance. These and adjacent claims were located in 1916 and 1917 and optioned by Mining

Corporation of Canada Ltd. in 1919.

1933-1944 :

The same claims were optioned in 1933 by the Proserpine Syndicate, which reorganized as Proserpine Gold Mines Ltd. in 1934. Short adits were made on quartz veins on the Warspite and Independance claims and some surface stripping done on claims on Antler Mtn., which are now part of the property. In 1934 the Bell and Newberry adits were driven on the Independance claim and in 1939 the Hard Cash adit was developed. In 1940 Privateer Mines Ltd. optioned the ground, doing some 38,000 ft of bulldozer and hand stripping and some underground work in the Warspite adit.

1945-1946 :

The Proserpine Mines Ltd., later the Barkerville Mining Co. Ltd., took over the property in 1945 and 1946 performing 54,000 ft of bulldozer stripping and road building, 913 ft of drifting in the Warspite adit and 1,700 ft of diamond drilling. About 14,000 ft of the bulldozing was done on Antler Mtn. and a quartz vein on the Grouse claim opened up for a length of 110 ft. In addition, the old Dufferin adit was re-opened.

Numerous quartz veins were trenched and drifted during this early period. While several very high grade gold assays in quartz are reported (to over 24 oz Au/ton, Wilson et al, 1933) no tonnages of quartz ore could be developed due the inconsistent assay grades and the discontinuous and intermittent nature of the quartz veins. The results of this work was to effectively establish that gold-quartz ore of

sufficient grade and tonnage was not present in those areas of the property that had been explored to that time.

It was not until the late 1940's that the availability of modern cyanidation processes allowed the exploitation of gold-bearing pyritic ore which subsequently became the most important type in the district. As the Proserpine property lies along the same geological contact and structural zone that controls the situation of the pyritic ore elsewhere, there is at least the geological potential of the same type of deposit occurring. Modern programs have also tested the idea that gold might be won from quartz-flooded and silicified rocks, where sufficient volumes of low grade material might be profitably mined. An example of such a deposit in the Cariboo is the Frasergold property of Eureka Resources, Inc. located 105 km to the southeast and currently being explored.

1976-1978 :

Gold Drop Mines Ltd. (later Petra Gem of Canada) acquired the reverted crown-granted claims of the property in 1976. McIntyre Mines Ltd. optioned the ground, performing 25.8 line km of soil sampling on the grid whose baseline is shown in Figure 4. Additional geochemical soil sampling was done by McIntyre's successor, Canadian Superior Exploration Ltd. in 1979.

1981-1984 :

Geo-Ex Resources Ltd. optioned the property from Mssrs. R. Barclay and B. Price in 1981, conducting a percussion drill program in the vicinity of the Warspite adit (PW81-1 to 11) and some reconnaissance geochemical work on two outlying claims, the Pin Money and King Fraction. The

percussion drilling located anomalous, but subeconomic, gold values in three holes.

In 1983 Geo-Ex Resources was joined by Clifton Resources Ltd. in their option of the ground. They undertook detailed geochemical surveys on both the Mt. Proserpine section and on Antler Mtn., developing several worthwhile geochemical targets.

In 1984 Clifton Resources Ltd. diamond drilled 14 B.Q. wireline holes (D84-1 to 14) on the Independance and Kitchener claims. While several short, quartz veined intervals returned assays greater than 0.1 oz Au/ton and up to 0.690 oz/ton, no significant intersections or replacement type ore was found.

It can be seen that a great deal of work has been expended on the Mt. Proserpine property. Unfortunately, most of the technical data from the pre-1970 programs has been lost. Those maps that do remain are such poor quality reproductions that it is all but impossible to decipher the geological notations.

1.4 Summary of 1987 Exploration Program

BONAVENTURE RESOURCES LTD. acquired the property from Mssrs. Barclay and Price in 1987. Their work program extended from September to early November and included trenching between the Warspite and Independance claims (3 trenches, 899 m), diamond drilling (6 NQ holes totalling 644.6 m) and the re-opening of the Warspite adit and collection of 43 underground samples. In addition, 229 rock chip samples were taken from Antler Mtn.

on the existing grid. The objectives of the program were to:

1) re-sample a reportedly gold-bearing silicified quartzite in the Warspite adit,

2) re-trench across what is believed to be the main mineralized band,

3) drill two fences across the zone where most of previous exploration has been done, one of these in the vicinity of the Warspite adit, and

4) perform rock-chip geochemical sampling on Antler Mtn. where previous work has located geochemically anomalous values in soil.

2 GEOMORPHOLOGY

2.1 Regional

The property lies within the Quesnel Highland physiographic region, characterized by upland areas which are remnants of a highly dissected plateau of moderate relief at an elevation of 5,500 to 6,300 ft (1,675 to 1,920 m). The plateau was formed in Tertiary times prior to the formation of Pleistocene ice which covered most of the high areas during the Continental Ice Sheet Stage of glaciation. Most summits in the region are rounded. Incipient and weakly developed cirques formed on the northern slopes of most of the higher hills during interglacial and/or late stages of glaciation. Valley glaciers truncated spurs and deposited materials over most of the area. In many places glacial drift or till mantles the sides of the valleys up to more than 1,000 ft (300 m) above the valley floor. The till is mostly local, although foreign boulders do occur.

The regional drainage pattern indicates pronounced structural control by bedrock fractures. There are two main alignments; northwest and northeast.

2.2 Local

Relief is about 1,300 ft (400 m) from Grouse Creek valley (4,700 ft, 1,430 m) to the rounded summit of Antler Mtn. (6,000 ft, 1,830 m). Most of the claims area lies on the well-forested, gently rolling, upland surfaces of the Mt. Proserpine ridge and Antler Mtn. This surface was part of the pre-glacial Tertiary plateau, which became covered with the continental ice-sheet. This sheet did not move any great

distance as it was static. The till it deposited is mostly a lodgement till consisting of gravelly boulder clay with angular gravels and boulders of local origin. The soil developed on this till is residual and geochemical anomalies have been transported by creep only on the steep slopes of the Grouse Creek valley.

3 GEOLOGY

3.1 Regional

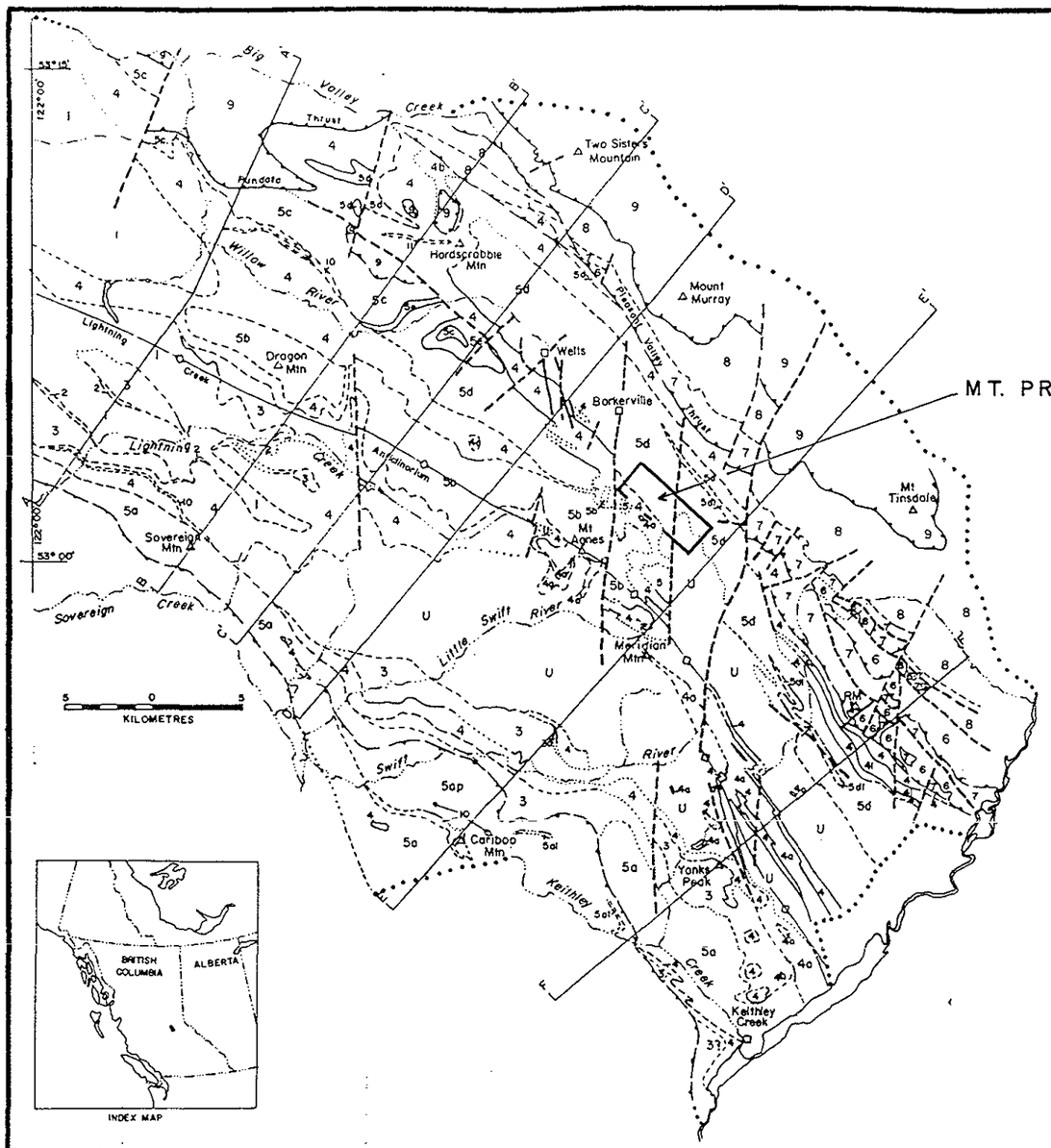
Figure 5 illustrates a recent interpretation of the regional geology (Struik, 1982) with a tentative stratigraphy outlined in the legend. The area lies along the western part of the Omineca Tectonic Belt, known for its prevalence of gold mineral occurrences. Three regional tectonostratigraphic sequences are shown in Figure 5. These are:

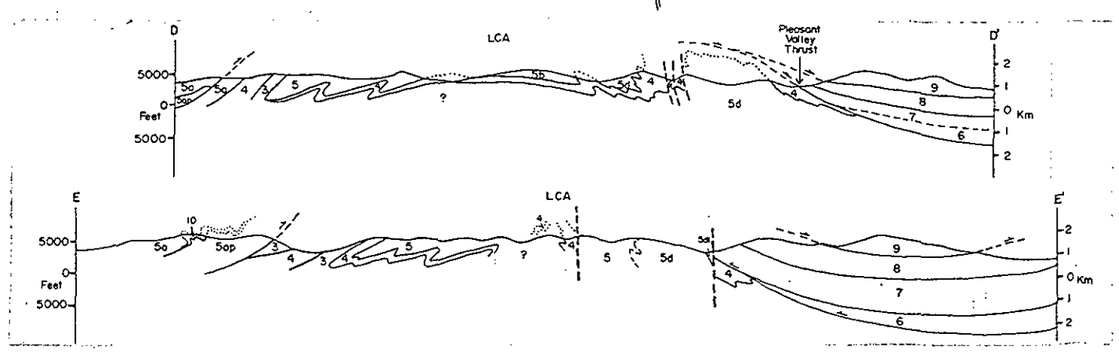
(1) a Hadrynian and Cambrian continental terrace wedge of grit, slate, orthoquartzite, carbonate and shale built up along the western margin of the North American Precambrian craton. This assemblage is further divided into two suites; the Western Cariboo Group (Units 1 to 5) and the Eastern Cariboo Group (Units 6 and 7) separated by the Pleasant Valley Thrust fault.

(2) a largely Paleozoic basinal sequence of shale, dolostone, basalt, conglomerate and limestone (Unit 8) unconformably overlying the older continental rocks.

(3) Permo-Pennsylvanian oceanic chert and mafic and ultramafic volcanic and intrusive rocks (Unit 9). This sequence, the Antler Formation, was thrust from the west over the basinal sequence in post-Permian time.

Most of the area has been regionally metamorphosed to the greenschist facies. The age of metamorphism is Mesozoic (Early Jurassic - Late Cretaceous) and it accompanied the regional folding and cleavage formation. Late-stage muscovite and chlorite development, commonly observed, were the result





MT. PROSERPINE PROPERTY

LEGEND

LOWER PERMIAN

11 bioclastic limestone

PERMIAN

10 diorite, amphibolite, may include parts of 5e

PENNSLVANIAN AND PERMIAN

9 *Antler Formation;* diorite, basalt, chert, greywacke, serpentinite, gabbro

CARBONIFEROUS ? AND PERMIAN ?

5 *a, Ramos Creek Succession;* micaceous quartzite, pelite, limestone, metatuff ? *al,* limestone, calcareous sandstone *ap,* phyllite, quartzite, amphibolite *b, Dragon Mountain Succession;* micaceous quartzite, phyllite *c, Tom Creek Succession;* micaceous quartzite, phyllite *d, Downey Creek Succession;* micaceous quartzite, slate, limestone, metatuff ? *dl,* marble, limestone, diorite, metavolcanic *e;* amphibolite

DEVONIAN ? AND MISSISSIPPIAN?

4 black siltite, phyllite, micaceous quartzite, limestone *a;* conglomerate, quartzite *b;* breccia, muddy conglomerate *l;* limestone, may be equivalent to 5dl

HADRYNIAN ?

3 siltite, quartzite, phyllite *a;* quartzite

2 marble, calcareous sandstone, quartzite, calcareous phyllite, phyllite

1 micaceous quartzite, phyllite, schist

U undifferentiated 1-5 , mainly 4 & 5

ORDOVICIAN TO PERMIAN

8 *Black Stuart and Guyet Formations;* slate, conglomerate, quartzite, greywacke, limestone, dolostone, chert, basalt, metatuff

HADRYNIAN AND CAMBRIAN

Eastern Cariboo Group

Hadrynian and Cambrian

7 *Yanks Peak, Midas and Mural Formations;* quartzite, phyllite, limestone

Hadrynian

6 *Isaac, Cunningham and Yankee Belle Formations;* phyllite, limestone, dolostone, quartzite

Geological contact (defined, approx., assumed)

Fault (defined, approx. and assumed)

Thrust (defined, approx. and assumed)

RM Roundtop Mountain

BONAVENTURE RESOURCES LTD.

MT. PROSERPINE PROPERTY
Cariboo Mining Division, B.C.

REGIONAL GEOLOGY

(after Struik 1982)

Scales: as shown	November, 1987	NTS 93 A, H

CAMPBELL & ASSOCIATES
GEOLOGICAL CONSULTANTS

FIG. 5

of a second pulse of metamorphism (Struik, 1981b).

The major folds are relatively open. The predominant fold structure in the area is the Lightning Creek anticlinorium northeast of Lightning Creek. A broad synclinorium lies along the east part of the area shown in Figure 5. The intensity of deformation increases with depth and metamorphic grade throughout the region. Complex refolding of minor folds is common in the relatively incompetent rocks, for example, in the siltites of Unit 4.

Several phases of faulting have affected the area. These are, listed from youngest to oldest, as follows (Struik, 1981b, 1982):

(1) northerly and north-northeasterly right-lateral strike slip faults,

(2) transverse northeast trending normal faults,

(3) east dipping high angle reverse and normal faults, and

(4) east dipping thrust faults.

Quartz veins are common and widely distributed in the area. In general, the sulphide content is low, but in certain areas they contain a fairly consistent quantity of pyrite with attendant gold (Sutherland Brown, 1957). Previous workers have all noted the pattern of occurrence of quartz veins.

Four types of veins are recognized:

(1) transverse veins; northeast strike, smallest and most numerous type. At the Cariboo Gold Quartz Mine these provided 60-70% of the quartz ore.

(2) diagonal veins; east-northeast strike, larger and fewer than transverse veins. At the Island Mtn. Mine only diagonal veins were mineable.

(3) northerly veins; north-northeasterly strike, occur within faults, commonly crushed and difficult to mine, and

(4) strike veins; northwest strike, subparallel to foliation, largest and fewest type, normally barren.

Earlier workers termed the strike veins 'A veins' and the transverse and diagonal veins 'B veins'.

The principal axis of the Barkerville Gold Belt (Figure 3), passing through Island Mtn. and Barkerville, is located at or near the contact between Devonian-Mississippian black phyllites (Unit 4) and micaceous quartzites containing limestone and dolomite (Unit 5). The gold occurrences consist of auriferous pyrite in quartz veins in the black metaclastic rocks or stratabound, massive auriferous pyrite lenses, termed 'replacement ore', within and at the contacts of limestone beds in micaceous quartzite (Alldrick, 1983).

3.2 Property

3.2.1 Lithology

The claims are underlain by black siltite, phyllite and micaceous quartzite (Unit 4 in Figure 5) and greenish gray to gray, micaceous, poorly sorted quartzites and grits with interbedded black phyllites (Unit 5 in Figure 5). Note that Unit 4 is now more properly referenced as unit DMs (Devonian - Mississippian siltite) and Unit 5 is referenced as unit MPd (Mississippian - Permian Downey Creek succession). These conventions are adopted for the remainder of this report. Both the phyllites and quartzites are locally porphyroblastic, with fine to coarse porphyroblasts of dolomite and/or siderite. There is considerable overlap of rock types between the two units, but unit DMs is recognized by the presence of black siltites and phyllites a few hundred meters thick. Within unit MPd there are talcose, chloritic and sericitic phyllites and quartzites, commonly with a greenish hue. No limestone was found on the claims, the nearest band being that exposed along Grouse Creek 2 to 3 km to the northeast of the property.

Figure 6 is a 1:5,000 compilation of the northwestern block of the property, showing the general distribution of rock types seen in the 1987 program. It is a preliminary sketch of the geology. There is no large scale geological map available for the Antler Mtn. claims area, however Struik (1981a, 1:50,000 mapping) indicates the entire claims area there to be underlain by unit MPd. Earlier workers, as for example Richmond (1940), have mapped the same area with much greater detail but unfortunately the black and white copies of the hand-colored maps do not allow them to be deciphered. The

numerous trenches on which the early maps are based are no longer open, and it would be a major job to map the area shown in Figure 6.

The contact between units DMs and MPd has been mapped in different places by different workers. That shown in Figure 6 is from Struik (1981a). Richmond (1940) mapped the contact farther to the northeast, in the vicinity of the main access road passing by the Warspite adit. Trenching and drilling in the 1987 program failed to locate a thick section of continuous black phyllites. Those that were encountered are invariably interbedded with light gray, micaceous quartzites, and I would agree with Struik's placement of the contact to the southeast.

It was noted that lithologies seen in drill core do not compare closely with those seen in the trenches. Rocks identified as phyllites in the trenches are thought to be equivalent to micaceous and phyllitic quartzites seen in the core. Possibly the weathering has enhanced the phyllitic aspect of rocks exposed in the trenches.

3.2.2 Structure

The property is situated on the northeast flank of the Lightning Creek anticlinorium and the rocks dip northeasterly at moderate to steep angles. The penetrative foliation is an axial plane schistosity to which bedding has mostly been transposed. The rocks have been complexly deformed and there are numerous instances of tight, overturned folds plunging to the northwest at shallow angles.

Major faults are the north-northeasterly Grouse Creek and

Barkerville faults. Both of these are believed to be normal faults with predominant dip-slip movement and apparent right-lateral offset. Additional north-northeasterly faults shown in Figure 6 are interpreted from earlier surface mapping (Richmond, 1940).

Quartz veins are very numerous on the claims and almost all carry some sulphides; usually pyrite, galena, and arsenopyrite with less common sphalerite and occassional free gold (Wilson et al, 1933). Richmond makes reference to the presence of 247 quartz veins in the main work area between the Warspite and Independance claims. Over half of these he described as being small, 1 to 12 inches in width and most only a few feet in length, composed of massive white quartz with a few coarse pyrite crystals and grains often altered to limonite. Less than 10% of the veins were greater than 3 feet in width and only 10 had enough sulphides to encourage the early workers. While the early workers report several assays of vein quartz with 0.5 to 1.0 oz Au/ton, no economical vein ore could be developed.

A more promising development was the finding of a band of white quartzite in the Warspite adit, approximately 30 ft wide and reportedly at least 400 ft long that has been pyritized, and shot with quartz veins. One of these Richmond (1940) reports assayed to 0.58 oz Au/ton over 3 ft. This is the light quartzite that in B.C. Minister of Mines Annual Report, (1946, A 92) is described as white silicified and pyritized quartzite that assayed 0.10 oz Au/ton and whose occurrence has provided exploration interest since.

4 Trenching Program

4.1 Introduction

Three trenches totalling 399 m were opened. All three have been examined previously, most likely during the 1940's and 1978-84 programs. The location of the trenches is shown on Figures 4 and 6. The objective of the trenching was to determine if there were lithologies with elevated metal values.

Throughout the district, and particularly along the Barkerville Gold belt, gold mineralization is associated with galena, pyrite, arsenopyrite and to a lesser extent, sphalerite. Because of this Pb, Zn and As are the best pathfinder elements for gold, which is commonly depleted near surface because of leaching. Rock units with elevated Pb and Zn (>150 ppm) and silver (>1 ppm) are prospective lithologies for gold mineralization, although gold is not restricted to such rocks.

A D-8 bulldozer was used to open trenches 1 and 2. Trench 3 was opened with a Cat 225 excavator. Chip samples, collected at 25 cm intervals, were collected continuously along the trenches. Samples were composited over each 3 m interval. In addition, any vein quartz and other rock particularly mineralized were sampled separately. Figure 7 shows diagrammatic plans of the trenches. Samples of Trenches 1 and 2 were of broken bedrock. Trench 3 had walls of bedrock and structural measurements were possible.

All samples were analyzed by ACME Analytical Labs of Vancouver, B.C. and included ICP analysis of Pb, Zn, Ag, As,

Bi or Fe, plus Au by geochemical methods. The procedures are given in Appendix I and the Analyses certificates listed in Appendix II.

4.2 Results

The results for Au, Ag, Pb, and Zn are also shown in Figure 7. Bi, Fe and As are not plotted as they showed little variation.

Table 2 gives the statistics for the samples representing the interval chip samples. Table 3 summarizes the results. There are several significant intervals with elevated Pb, Zn, Ag and gold values, the best of these being 9 m in Trench 3 with 1.885 ppm Au (0.055 oz Au/ton). Four sulphide-bearing quartz veins reported minor gold values, the best is a 15 cm wide vein in Trench 3 with 3.39 ppm Au (0.10 oz/ton).

No light colored quartzite similar to that found in the Warspite adit was exposed in the trenches.

Table 2. Trench Sample Statistics

Element	Range *	Mean	Standard Deviation	Threshold **
As	2 - 1449	51	122	295
Pb	2 - 8438	124	291	706
Zn	10 - 741	93	60	213
Ag	0.1 - 65	0.26	0.3	0.86
Au	1 - 5570	5.6	12	29.6

Note: 272 samples, samples of quartz deleted from calculations

* As,Pb,Zn,Ag values in ppm
Au values in ppb

** Mean + 2(Standard Deviations)

Table 3. Summary of Trench Sampling

Interval	Width	Rock Type	Analyses
Trench No.1			
1 - 25 m	24 m	phyllite	167 ppm Zn
38 - 47 m	9 m	phyllite	261 ppm Pb, 203 ppb Au
175 - 190	15 m	quartzite	348 ppm Pb
quartz veins			
@ 20 m, vein quartz fragments to 10 cm with 650 ppb Au @ 38-41 m, vein quartz boulders to 25 cm with 1750 ppb Au			
Trench No.2			
9 - 18 m	9 m	veined phyllite	567 ppm Pb, 479 ppm Zn, 0.9 ppm Ag, 26 ppb Au
37 - 67 m	30 m	phyllite	242 ppm Zn, 0.9 ppm Ag, 39 pb Au
276 - 333 m	57 m	quartzite	217 ppm Pb
quartz veins			
@ 40 m, 1.2 m vein quartz boulders with 2.1 ppm Ag, 375 ppb Au			
Trench No.3			
21 - 30 m	9 m	veined phyllite	1885 ppb Au
42 - 66 m	24 m	quartzite, phyllite	167 ppm Pb
72 - 111 m	85 m	phyllite	567 ppm Pb
84 - 99 m	15 m	phyllite	394 ppm Zn, 1.24 ppm Ag 19 ppb Au
quartz veins			
@ 2½ m, 15 cm vein with 3390 ppb Au			

5 GEOCHEMICAL SURVEY

5.1 Introduction

Figure 4 shows the geochemical anomalies of gold in soils, as mapped by Livingstone (1984). The anomalies are contoured at 40 and 160 ppb Au. On the west sheet (Figure 4a) the anomaly on the Warspite claims is thought to be related to the quartz veins previously explored underground. Those on the Hard Cash and Independance claims are more diffuse and lie in an area of poor exposure on a hillside below the mineralized showings on the Independance claim.

A large gold geochemical anomaly was found southeast of Grouse Creek, centered about 22+00S, 0+30E with several smaller anomalies (Figure 4b). Within this anomaly are several well mineralized old prospect pits and trenches, most notably on the Grouse claim (Livingston, 1984).

The 1987 rock chip sampling had the objective of determining if the soil anomalies were reflected by the local lithogeochemistry or if they were due to local quartz veining.

5.2 Method

Rock chips were collected from the 1984 sampling between lines 18+50S and 22+00S. Additional samples were taken of vein quartz, these were notated with 'B' in addition to the grid reference. Conventional chip sampling procedures were followed, the chips taken from a one to two meter radius around the station. Where there was no bedrock, chips of angular float were sampled, there being an abundance of such material on the moderately steep slopes there.

The rock samples were analysed by ACME Analytical Laboratories Ltd. for Pb, Zn, Ag, As and Bi by ICP plus Au by geochemical methods. Procedures are described in Appendix I and results listed in Appendix II.

5.3 Results

Figure 8 shows the results from the sampling on Antler Mtn. The statistics for the rock samples are summarized in Table 4 and the details of the quartz veins are given in Table 5.

There are six areas where the rock geochemical values are anomalous and where there are multielement anomalies for lead, zinc, silver and gold.

A Line 19+00S; 0+60E to 1+50E (to 4.9 ppm Ag, 7 ppb Au, 1935 ppm Pb)

B 1+50E to 2+10E; from Line 19+00S to 20+50S (to 14 ppb Au, 354 ppm Pb, 143 pm Zn). Possibly this is a continuation of anomaly A.

C Line 21+50S to 22+00S; between baseline and 0+60E (to 8 ppb Au, 214 ppm Pb, 208 ppm Zn)

D Line 25+00S; 0+60W to 0+90E (to 26 ppb Au, 1.6 ppm Ag, 2680 ppm Pb)

E Line 25+00S; 1+50E to 1+80E (to 13 ppb Au, 395 ppm Pb)

F Line 26+00S on baseline and on Line 26+50S from baseline to 0+60E (to 72 ppb Au, 12.5 ppm Ag, 2328 ppm Pb).

Possibly anomalies D,E and F are parts of one larger anomalous area.

These six areas with anomalous lead, zinc, silver and gold are generalized in Figure 10, along with the geochemically anomalous areas of gold in soils from the 1984 survey (Livingston). It is seen from this figure that gold in rock chip anomalies A, B and C are covered by the large gold in soil geochemical anomaly between Lines 18+00S and 23+50S. Similarly, anomalies D and F are most likely the cause of gold anomaly in their vicinity.

In addition to the six larger anomalies there are a few single station anomalies. The best of these lie east of anomaly C with gold to 235 ppb and silver to 7.8 ppm.

Several quartz veins and vein quartz float on the Antler Mtn. grid were chip sampled. Most of the veins are 15 to 25 cm wide but a few were ½ to 1 m wide. Many occurrences contain pyrite and galena. Three grab samples of coarse galena and pyrite assayed about 25,000 ppm Pb, upto 443.1 ppm Ag (12.92 oz Ag/ton) and 5.15 ppm Au (0.15 oz Au/ton).

The rock chip sampling was successful in narrowing the target area of possible mineralization on the Antler Mtn. grid. Detailed mapping of this area is recommended with particular focus on the rock geochemical anomalies. It is very probable that some part of the gecchemical response is due to sulphide and gold-bearing quartz veins in the area. Anomalies A, C, D and F all had these, the best being chip samples from a 1 m wide quartz vein at 25+00S, 0+30W (anomaly D) carrying 5.15 ppm Au (0.15 oz Au/ton).

Table 4. Statistics of Antler Mtn. Grid Rock Chip Samples

Element	Range *	Mean	Standard Deviation	Threshold **
Pb	2 - 2680	59.9	118	296
Zn	13 - 208	54	30	114
Ag	0.1 - 12.5	0.2	0.19	0.58
As	0.6 - 1158	15.5	32	79.5
Au	1 - 235	2.3	2.2	6.7

Note: 202 samples, samples of quartz deleted from calculations

* As,Pb,Zn,Ag values in ppm
Au values in ppb

** Mean + 2(Standard Deviations)

Table 5. Summary Description of Quartz Samples

Grid Reference	Note
19+00S 0+60E	Float; vein quartz in old trench, coarse pyrite and galena; 24,999 ppm Pb, 292 ppm Zn, 443.1 ppm Ag, 12,737 ppm As, 1.06 ppm Au
20+00S 0+60W	Float; rusty vein quartz boulders to 20 cm
20+00S 0+60E	Float; vein quartz boulders to 20 cm
20+50S 2+40E	barren quartz veins to 15 cm width
21+50S 0+30W	Float; vein quartz to 5 cm
21+50S 0+00W	Float; small pieces vein quartz
21+50S 0+60E	Float; small pieces vein quartz
22+00S 0+00W	Float; small pieces vein quartz
22+00S 0+30E	Float; 5 to 15 cm fragments of rusty vein quartz
22+00S 0+30W	Float; small pieces vein quartz
22+50S 0+60W	Float; 5 to 10 cm fragments vein quartz
23+00S 0+60W	Float; 10 cm vein quartz
23+00S 0+30E	quartz vein 15 cm wide
23+00S 1+20E	Float; rusty vein quartz
23+50S 0+90W	Float; vein quartz
23+50S 0+00W	Float; vein quartz
23+50S 0+60E	quartz veins to 15 cm width in gray micaceous quartzite
24+00S 0+00W	Float; vein quartz in talus

Table 5. Summary Description of Quartz Samples (continued).

Grid Reference	Note
24+00S 0+30E	Float; rusty vein quartz; 184 ppm Pb, 1 ppm Ag, 0.154 ppm Au
24+00S 1+50E	Float; 12 cm fragments vein quartz
24+50S 0+30E	½ to 1 m wide quartz vein in 3 m deep pit
24+50S 1+50E	large fragments of broken quartz vein in 3 m deep pit
25+00S 0+30W	1 m wide quartz vein exposed in 2 m deep trench; 25,892 ppm Pb, 199 ppm Zn, 269.6 ppm Ag, 484 ppm As, 5.150 ppm Au
26+50S 0+00W	Float; vein quartz in trench; 25,260 ppm Pb, 410.1 ppm Ag, 2.460 ppm Au
27+00S 0+30E	10 to 20 cm wide rusty quartz vein in gray micaceous quartzite
28+00S 0+60E	10 to 20 cm wide quartz veins in old trench; 0.162 ppm Au

6 DRILL PROGRAM

6.1 Introduction

There have been two previous drill programs on the property, percussion drilling in 1981 in the vicinity of the Warspite adit (552.9 m, 11 holes) and diamond drilling in 1984 on the Independance and Kitchener claims (581.5 m, 14 BQ holes). Significant results from these programs are summarized in Table 6.

Of these the author thinks that hole PW-81-2 shows the most potential with 60 ft (18.3 m) averaging 1,411 ppb Au (equivalent to 0.041 oz/tcn. While being subeconomic this assay is of great interest as it demonstrates the potential for mineralization over significant widths.

The 1987 drill program had the objective of determining what the rock types were across the main band of exploration interest and if there were significant zones of mineralization.

Drilling was by Roger's Drilling Services Inc. of Vancouver, B.C. Six NQ (1 7/8") size holes totalling 2,115 ft (644.6 m) were sited near the Warspite adit and along Trench 2, about 600 m to the southeast. The drilling commenced on October 19 and finished on November 1, 1987.

All of the drill holes are located in Figure 4. Holes DDH 87-1 to 3 are also located in Figure 11, a plan of the Warspite adit area.

Sampling of the core employed two methods. First, all quartz

Table 6. Significant Drill Results from Previous Programs

Percussion Drilling - 1981 : sampled at 5' intervals

Hole No.	Footage	Au Assay	
PW-81-2	75-135'	Range 609 - 2310 ppb (.018 - .067 oz/ton)	Avg. 1411 ppb (.041 oz/ton)
PW-81-9	52-67'	Range 642 - 3167 ppb (.019 - .092 oz/ton)	Avg. 1513 ppb (.044 oz/ton)
PW-81-11	28-103'	Range 4-469 ppb (.001 - .014 oz/ton) anomalous lead over this interval averages 384 ppm	Avg. 92 ppb (.003 oz/ton)

Diamond Drillling - 1984

Hole No.	Description	Width and Start	Au Assay
D-84-1	quartz vein	6' @ 85'	.113 oz/ton
	quartz vein	2½' @ 104½'	.690 oz/ton
	quartz vein	3½' @ 124½'	.334 oz/ton
D-84-5	quartz-flooded black argillite	2.2' @ 47'	.141 oz/ton
	"	4½' @ 96½'	.269 oz/ton
D-84-6	"mineralized zone"	2.7' @ 30.8'	.150 oz/ton
		2.7' @ 72'	.434 oz/ton
D-84-7	quartz vein	4' @ 162'	.108 oz/ton
D-84-8	quartz vein	1' @ 59½'	.295 oz/ton
D-84-9	quartz vein	2½' @ 188½'	.320 oz/ton

veins and other mineralized sections greater than 6" (15 cm) were split and sampled separately. Then the majority of the core was sampled over 10' (3 m) intervals by taking one-half of a 1" piece of core every foot. This provided an interval chip sample adequate for the objectives.

Rock analyses by ACME Analytical Labs are given in Appendix II and drill logs are given in Appendix III.

6.2 Results

After logging the core an attempt was made to simplify the classification of lithologies. This was necessary because of extensive interbedding and presence of intermediate lithologies. All rocks drilled are considererd to belong to unit MPd (greenish gray to gray, micaceous, poorly sorted quartzite and grits with interbedded black phyllites). The white, silicified quartzite present in the Warspite adit was not recognized in any of the 6 drill holes.

Drill profiles are presented in Appendix IV, Figures IV-1 to IV-6. Geochemically anomalous results are summarized in Table 7.

DDH 87-1,2 and 3 : vicinity of Warspite Adit
Apart from lead, zinc and minor gold values in narrow quartz veins little mineralization was encountered. DDH 87-2 intersected 45 cm (1½') of vein quartz with 11.69 ppm Au (0.34 oz Au/ton). In the bottom of this same hole, from 420 to 460', the quartzites have slightly elevated gold values but these are probably due in part to quartz stringers in this section.

DDH 87-3 intersected 3 m (310 - 320') of dark quartzose

Table 7. Summary of 1987 Drill Results

Hole No.	Interval (ft)	Width (m)	Rock Type	Average Au Analyses
87-1	70 - 110	12.2	light gray quartzite interbedded with black phyllite	54 ppb Au
	290 - 300	3	gray quartzite interbedded with black phyllite	1.9% Pb, 210 ppb Au
	290 - 330	12.2	includes 2 m of vein quartz	171 ppb Au
87-2	420 - 460	12.2	knotted quartzite interbedded with black phyllite	77 ppb Au
	quartz veins : @ 28'; 15 cm vein with 7,220 ppb Au @ 193½'; 45 cm vein with 11,690 ppb Au			
87-3	310- 320	3	quartzose grit	2,900 ppb Au
	quartz veins : @ 273½'; 46 cm vein with 1,430 ppb Au @ 298½'; 13 cm vein with 1,350 ppb Au @ 318'; 38 cm vein with 990 ppb Au			
87-6	265 - 305	12.2	green phyllitic quartzite	144 ppb Au
	quartz vein : @ 269'; 30 cm vein with 3,340 ppb Au			

grit with 2.9 ppm (0.085 oz Au/ton). This interval was also quartz veined, which could explain the high gold value. It is not thought to be the same member as the white, siliciifed quartzite in the Warspite adit.

DDH 87-4,5 and 6 : vicinity of Trench 2
The only intersection with an elevated gold content was 12.2 m in DDH 87-6 of green phyllitic quartzite which carried 144 ppb Au.

In general, the drilled rock sequence is, from top to bottom:

- >50 m greenish gray and gray micaceous quartzites and phyllites

- 60 m light gray micaceous quartzite interbedded with dark gray to black phyllite. Quartzose grits are found towards the base of this sub-unit

- >50 m of mostly porphyroblastic, dark gray to black quartzite and phyllite.

7 UNDERGROUND SAMPLING

7.1 Introduction

The underground sampling of the Warspite adit had the specific objective of locating and sampling the white, pyritized and silicified quartzite reported in the 1940's.

Figure 11 is a plan of the Warspite adit, simplified from that of Richmond (1940). The portal to the adit was re-opened using a D-8 bulldozer and Cat 225 excavator. R.F. Fry & Associates Ltd. placed two sets of timbers at the portal. The 1940 plan of the adit did not show the drift that branches off on the eastern side of the main drift and this was mapped in during the course of the present work. The floor of the drift is blocked by two sections of debris and old timbers just past the first sharp bend to the southeast. These have backed-up water so that there is about 1 to 1½' of muck and water in the drift. Apart from this the adit is in good shape with a firm floor and back.

Chip samples were taken over 10' (3 m) intervals of the white quartzite, which has a thick coating of white clays and red iron oxides. Quartz veins were sampled separately. Analysis certificates are given in Appendix II.

7.2 Results

Gold values are listed in Table 7 and shown in Figure 11. The samples were analysed for gold, lead, zinc, silver, arsenic and bismuth. The statistics are given in Table 8.

The gold content of the quartzite is clearly anomalous, with

Table 8 Underground Sampling in Warspite Adit

10' Interval Chip Samples		Quartz Veins		
Sample No.	ppm Au	Sample No.	Vein Width	ppm Au
001	.660	002	8 cm	12.95
003	.083	004	15 cm	.036
005	2.850	006	2 cm	1.58
008	.019	007	15 cm	2.10
010	1.180	009	15 cm	.038
013	.088	011	8 cm	9.21
014	.320	012	15 cm	.040
017	.045	015	90 cm	.035
019	.001	016	4 cm*	3.910
024	1.37	018	10 cm	.068
026	8.51	020	15 cm	.001
027	.014	021	90 cm	.047
029	.015	022	4 cm	.230
031	1.76	023	8 cm	31.800
034	.081	025	50 cm	29.700
036	.500	028	15 cm	8.100
039	.111	030	15 cm	.220
040	.015	032	10 cm	3.700
041	.007	033	10 cm	.330
042	.018	035	120 cm	.210
		037**	25 cm	.083
		038**	20 cm	.096
			Total 564 cm	

Average assay of white quartzite = 1.133 ppm (.033 oz/ton)
Weighted average assay of quartz veins = 3.86 ppm (.113 oz/ton)

* total width of narrow stringers
** veins in black argillite

an average assay from fifteen consecutive 3 m (10') interval samples of 1.133 ppm (0.033 oz Au/ton). These samples represent a strike length of about 45 m (150'). Individual analyses of the quartzite chipped over a 3 m sample interval contain up to 8.51 ppm Au (0.248 oz Au/ton). Quartz veins, which make up some 5.19 m of the 45 m length, have weighted average assay of 3.86 ppm (0.113 oz Au/ton) with assays up to 31.8 ppm (0.927 oz/ton) over 8 cm and 29.7 ppm (0.866 oz/ton) over 50 cm.

These results clearly demonstrate that the silicified quartzite is mineralized, as reported by earlier workers. Figure 11 shows a strike length of about 52½ m (172'), not the 400' mentioned in early reports. Possibly drilling northwestwards from the main drift during the period 1940 to 1946 located additional material. This author confirms the previously reported width of about 30' (10 m). There is no indication of the quartzite in the vicinity of the Warspite portal as there would be if it continued that far. In all likelihood, the quartzite has been faulted off there, as it has been on the hanging wall at the end of the east drift.

8 CONCLUSIONS

8.1 Geology

The Mt. Proserpine property is underlain by thin bedded micaceous quartzites, phyllitic quartzites and black phyllites and siltites, all considered to be part of the Mississippian - Pennsylvanian Downey Creek succession. These have been metamorphosed to the greenschist facies and commonly contain fine to coarse porphyroblasts of dolomite and/or siderite. The rocks dip at moderate angles to the northeast and are cut by diagonal, transverse and strike veins. The area is complexly faulted and the detailed structure of the claims is not yet known.

The same rock unit that underlies the property hosts the majority of gold deposits along the Barkerville Gold Belt, including both gold-bearing quartz veins and auriferous pyrite replacement type ore.

8.2 Geochemistry

Rock chip sampling was carried out over the portion of the Antler Mtn. grid where previous soil sampling had outlined anomalous values of gold in soil. The results confirm the presence of elevated lead, zinc, silver and gold values in the bedrocks there, mostly micaceous and phyllitic quartzites. Rock chips contained up to 235 ppb Au, 2,680 ppm Pb, 208 ppm Zn and 1158 ppm As. There are numerous quartz veins on the Antler Mtn. grid and these were sampled separately. Many had coarse galena and pyrite and a few assayed in excess of 25,000 ppm Pb and up to 443.1 ppm Ag (12.92 oz Ag/ton), 5.15 ppm Au

(0.15 oz Au/ton).

8.3 Mineralization

There are several adits on the claims, dating from before 1950 when numerous quartz veins were being explored. Many of these carried 0.5 to 1.0 oz Au/ton although sufficient quantities of gold quartz ore could not be developed.

A pyritized, silicified white quartzite, about 10 m thick, was found in the Warspite adit in the 1940's. It was then reported to assay 0.10 oz/ton Au. This quartzite was re-sampled along its entire length in the current program. The gold content is clearly anomalous, with an average assay (3 m long sampling intervals) along a 45 m strike length of 1.133 ppm Au (0.033 oz/ton) and ranging up to 8.51 ppm Au (0.248 oz/ton). A total width of 5.19 m of cross-cutting quartz veins occur along the 45 m of quartzite. These have a weighted average assay of 3.86 ppm Au (0.113 oz/ton) and range up to 0.927 oz Au/ton over 8 cm and 0.866 oz/ton over 50 cm.

Trenching across what is thought to be the main zone of mineralization exposed several sections where the rocks have anomalous lead, zinc, silver and gold values. The best of these is a 9 m wide section of silicified phyllites with an averge assay of 1.885 ppm Au (0.055 oz/ton). Several gold-bearing quartz veins were found, the best being a 15 cm wide vein with 3.39 ppm Au (0.10 oz/ton).

The drilling revealed the interbedded nature of the micaceous quartzite and phyllite unit (MPd). The white, silicified pyritic quartzite found in the Warspite adit was not intersected. DDH 87-2 intersected 3 m of quartzose grit

assaying 2,900 ppb Au, although this section had a few gold-bearing quartz veins that could be the cause of the high assay. Weakly geochemically anomalous gold values were found in DDH 87-1 and 6. DDH 87-1 intersected two 12.2 m widths of interbedded quartzite and phyllite averaging 54 and 77 ppb Au. DDH 87-6 intersected 12.2 m of green phyllitic quartzite assaying 144 ppb Au.

In conclusion, the author considers the Mt. Proserpine property should be explored for the continuation of the white, silicified quartzite containing significant gold values and numerous cross-cutting gold-bearing quartz veins.

9 RECOMMENDATIONS AND PROPOSAL FOR FURTHER DEVELOPMENT

9.1 Recommendations

Based on the encouraging results of the 1987 work, particularly the underground sampling of the Warspite adit, the author strongly recommends that BONAVENTURE RESOURCES LTD. proceed with exploration for gold mineralization on the Mt. Proserpine property. While the property has been explored for gold-bearing quartz veins over the years, there has been no systematic search for the pyritic, silicified, gold-bearing quartzite that occurs in the Warspite adit. This material could be developed should sufficient quantities be found. A three stage program is recommended.

Stage I

Despite all previous work the rather large area of the property has not been adequately mapped. A detailed plan of lithologies is a prerequisite to any further drilling. It needs to be determined whether the prospective quartzite lies within a distinct rock sequence that can be recognized elsewhere or if its location is structurally controlled. Such a task involves surface mapping including the cleaning out of old pits and trenches. Some short reverse circulation drill holes in the vicinity of the Warspite adit are recommened in order to search for the continuation of the silicified quartzite there. The walls and back of the Warspite adit should also be cleaned and re-mapped.

As an adjunct to the treatment of drill samples, I strongly recommend that a total metallic assay method be used. If the gold is of an erratic particulate nature, as opposed to being

distributed homogenously, then conventional assay methods are not sufficient to measure the gold content.

I also recommend that a self-potential (SP) test survey be done in the vicinity of the Warspite adit to see if the pyritic quartzite has a geophysical expression. In addition, a VLF-EM16R test survey should be done in the same area to see if resistivity differences between the rock units are enough to aid in the delineation of rock units and identification of structures.

Stage II

Contingent upon a favorable evaluation of the geophysical testing, more complete VLF and/or SP surveys could are recommended. The area to be covered would be 500 m wide and 11 km long with grid lines spaced initially at 50 m. Additional lines would be necessary in some areas.

Stage III

Guided by the results in Stages I and II, and contingent upon their favorable evaluation, a systematic program of reverse circulation drilling (4½" diameter) is recommended along the central zone with the most potential. At the present time this zone is thought to lie within a few hundred meters of the existing baseline.

Twenty holes, 100 m in length, plunging 45° on a bearing perpendicular to the local strike are recommended. The majority of the drill sites would be in the Mt. Proserpine area but at least 5 holes are recommended on the Antler Mtn. area.

9.2 Estimated Costs

Stage I Geological Mapping, Geophysical Tests, Reverse Circulation Drilling

Program management and supervision		$ 5,000
Geological field mapping:		
Senior geologist; 30 days @ $185	$ 5,550	
Assistant; 30 days @ $135	$ 4,050	
		$ 9,600
Petrographic analyses		$ 1,000
Geophysical test surveys		$ 2,000
Reverse circulation drilling;		
5 holes, 100 m length, @ $45/m		$ 22,500
Assays:		
330 conventional fire assays @ $15.	$ 4,950	
25 total metallic assays @ $50	$ 1,250	
100 geochemical analyses @ $11.50	$ 1,150	
		$ 7,350
Data compilation and reporting		$ 5,000
Drill site preparation and mobilization		$ 6,000
Vehicle rentals, fuel		$ 5,000
Travel		$ 2,500
Accomodation (Wells);		
6 men, 30 days @ $50/man day		$ 9,000
Total Stage I		$ 74,950

Stage II Geophysical Surveys

VLF survey; 110 line km	$ 15,400
SP survey; 110 line km	$ 20,000
Data compilation and reporting	$ 2,000
Accomodation (Wells);	
4 men, 25 days @ $50/man day	$ 5,000
Travel, vehicle rental	$ 2,500
Total Stage II	$ 44,900

Stage III Reverse Circulation Drilling

Program management and geological supervision		$ 10,000
Reverse circulation drilling:		
Mt. Proserpine area; 15 holes, 100 m length, @ $45/m	$ 67,500	
Antler Mtn. area; 5 holes, 100 m length, @ $45/m	$ 22,500	
		$ 90,000
Road building and site preparation		$ 40,000
Assays:		
1300 conventional fire assays @ $15	$ 19,500	
100 total metallic assays @ $50 ...	$ 5,000	
		$ 24,500
Camp costs:		
Camp rental; 6-10 man trailer, 1 month rental	$ 5,000	
Mobilization, set-up	$ 5,000	
Demobilization	$ 3,000	
Fuels	$ 5,000	
Food	$ 5,000	
Miscellaneous rentals and supplies	$ 5,000	
Vehicle rental (2 4x4's, 2 months	$ 5,000	
		$ 33,000
Total Stage III		$ 197,500
Total Estimated Cost		$ 317,350
Contingency (10%)		$ 31,735
Allow		$ 350,000

10 BIBLIOGRAPHY

Alldrick, D.J., 1983; The Mosquito Creek Gold Mine, Cariboo Gold Belt, B.C. Ministry of Mines, Geological Fieldwork 1982, 15 pp.

Benedict, P.C., 1945; Structure at Island Mtn. Mine, Wells, B.C., Canadian Institute of Mining and Metallurgy, Transactions, v.48, p.755.

Blanchflower, J.D., 1979a; Preliminary Exploration Report on the Proserpine Property, 4 pp., for Canadian Superior Exploration Limited.

Blanchflower, J.D., 1979b; Summary Report on the Proserpine Property, 15 pp., for Canadian Superior Exploration Ltd.

Bowman, A., 1888; Report on the Geology of the Mining District of Cariboo, B.C., Geological Survey of Canada, Annual Report, 1888, v.3, pt.1, 1887-88.

B.C. Ministry of Mines, Annual Reports for the years 1918, 1919, 1934, 1946

Campbell, R.B., Mountjoy, E.W., and Young, F.G., 1973; Geology of the McBride Map Area, B.C., Geological Survey of Canada, Paper 72-35.

Campbell, R.B. and Tipper, H.W., 1970; Geology and Mineral Exploration Potential of the Quesnel Trough, B.C., Canadian Institute of Mining, Transactions, v.LXIII, p.174-179.

Dolmage, V., 1938; Report on the Proserpine Gold Mines Ltd., 14 pp.

Dolmage, V., 1940; Gold Deposits of Proserpine Mountain, 5 pp.

Gordon Brown, C.E., 1946; Annual Progress Report, 15 pp., for Barkerville Mining Company.

Hanson, G., 1935; Barkerville Gold Belt, Cariboo District, B.C., Geological Survey of Canada, Memoir 181.

Holland, S.S., 1948,; Report on the Stanley Area, Cariboo Mining Division, B.C., B.C. Department of Mines, Bulletin No.26.

Holland, S.S., 1950; Placer Gold Production of British Columbia, B.C. Department of Mines, Bulletin No.28.

Holland, S.S., 1954; Geology of the Yanks Peak - Roundtop Mtn. Area, Cariboo District, B.C., B.C. Department of Mines, Bulletin No.34.

Johnston, W.A., 1921; Placer Mining in the Barkerville Area, B.C., Geological Survey of Canada, Summary Report, 1921A, p.59-71.

Johnston, W.A. and Uglow, W.L., 1926; Placer and Vein Gold Deposits of Barkerville, Cariboo District, B.C., Geological Survey of Canada, Memoir 149.

Johnston, W.A. and Uglow, W.L., 1932; Placer and Vein Gold Deposits of Barkerville, Cariboo District, B.C., Geological Survey of Canada, Summary Report, 1932, Part A1, p.1-75.

Lang, A.H., 1938; Keithley Creek Map Area, Cariboo District, B.C., Geological Survey of Canada, Preliminary Report, Paper 38-16.

Livingstone, K.W., 1982; Geochemical and Percussion Drill Report, 7 pp., for Geo-Ex Resources Ltd.

Livingstone, K.W., 1984; Geochemical Report on the Proserpine property, Barkerville B.C., 10 pp., for Clifton Resources Ltd.

Phendler, R.W., 1983; Report on the Proserpine Gold - Silver Property 19 pp., for Clifton Resources Limited.

Price, B.J., 1977; Geology of the Proserpine Mtn. Property, 20 pp., for Gold Drop Mines Ltd.

Richmond, A.H., 1940; Report on Proserpine Gold Mines Ltd., 17 pp.

Shearer, J.T., 1978a; Exploration Proposal on the Proserpine Gold Prospect 10 pp., for McIntyre Mines Ltd.

Shearer, J.T., 1978b; Compilation and Progress Report on the Proserpine (Warspite) Group, 19 pp., for McIntyre Mines Ltd.

Shearer, J.T., 1978c; Geochemical Report on the Proserpine Property (Warspite and Kumangetit Groups), 32 pp., for McIntyre Mines Ltd.

Smitheringale, W.V., 1940; Examination of the Proserpine Gold Mines, 9 pp., for Privateer Mine Ltd.

Spencer, B.E., 1984; Report on a Diamond Drill Programme on the Proserpine Property 7 pp., for Clifton Resources Ltd.

Struik, L.C., 1979; Stratigraphy and Structure of the Barkerville - Cariboo River Area, B.C., Geological Survey of Canada, Paper 79-1b, p.33-38.

Struik, L.C., 1980; Geological Map, Barkerville-Cariboo River Area, B.C., unpublished map, 1:50,000.

Struik, L.C., 1981a; Bedrock Geology Cariboo Lake, Spectacle Lake, Swift River and Wells Map Area, B.C., Geological Survey of Canada, Open File 858.

Struik, L.C., 1981b; Type Area of the Devono-Mississippian Cariboo Orogeny, Central B.C., Canadian Journal of Earth Sciences, v.18, p.1767-1775.

Struik, L.C., 1981c; Snowshoe Formation, Central B.C., Geological Survey of Canada, Paper 81-1a, p.213-216.

Struik, L.C., 1982; Snowshoe Formation (1982), Central British Columbia, Current Research, Part B, Geological Survey of Canada, Paper 82-1b, p.117-124.

Struik, L.C., 1983; Geology Quesnel Lake and Part of Mitchell Lake, Geological Survey of Canada, Open File 962.

Struik, L.C., 1986; Imbricated terranes of the Cariboo gold belt with correlations and implications for tectonics in southeastern British Columbia, Canadian Journal Earth Sciences, v.23, pp., 1047-1061.

Sutherland Brown, A., 1957; Geology of the Antler Creek Area, Cariboo District, B.C., B.C. Department of Mines, Bulletin No.38.

Sutherland Brown, A., 1963; Geology of the Cariboo River Area, B.C., B.C. Department of Mines, Bulletin No.47.

Sutherland Brown, A., Cathro, R.J., Panteleyev, A., and Ney, C.S., 1971; Metallogeny of the Canadian Cordillera, Canadian Institute of Mining, Transactions, v.lxxiv, p.121-145.

Tipper, H.W., 1971; Glacial Geomorphology and Pleistocene History of Central B.C., Geological Survey of Canada, Bulletin 196.

Uglow, W.L., 1922; Bedrocks and Quartz Veins of Barkerville Map Area, Cariboo District, B.C., Geological Survey of Canada, Summary Report 1922a, p.82-87.

Wilson, R.R., Campbell, C.M., Galloway, J.D.,1933; Reports on Mining Properties of Proserpine Syndicate Limited, 23 pp.

Woods-Smith, T.A., 1939; Report on Proserpine Gold Mines, Ltd., 12 pp.

11 ITEMIZED COST STATEMENT

Field Program: September 18 to November 5th, 1987, and subsequent report preparation.

SALARIES AND FEES

K.V. Campbell, Program manager, Geologist		
7½ days @ $485/day	$ 3,637.50	
13.6 days @ $400/day	$ 5,440.00	
20½ hours @ $80/hour	$ 1,640.00	
106 hours @ $50/hour	$ 5,300.00	
G.R. Peatfield, Geologist		
½ hour @ $80/hour	$ 40.00	
R.V. Longe, Geologist		
¼ hour @ $80/hour	$ 20.00	
A.W. Gourlay, Geologist		
¼ hour @ $64/hour	$ 16.00	
D. Brown, Field Assistant		
20 days @ $185/day	$ 3,700.00	
C. Chalmers, Camp Supervisor		
37 days @ $185/day	$ 6,845.00	
N. Gibson, Geologist		
27 days @ $185/day	$ 4,995.00	
J.D. Monroe, Field Assistant		
36 days @ $135/day	$ 4,860.00	
J.I. Monroe, Field Assistant		
3 days @ $85/day	$ 255.00	
C. Russel, Expediter		
8 3/4 hours @ $24/hour	$ 210.00	
14½ hours @ $32/hour	$ 464.00	
Secretarial		
42½ hours @ $12/hour	$ 510.00	
Casual		
10 3/4 hours @ $8/hour	$ 86.00	
		$ 38,018.50

IN-HOUSE CHARGES

Field equipment rental	$ 648.00	
Reprographics	$ 103.50	
Casual 4x4 rentals		
11½ days @ $50/day	$ 575.00	
Office rent (Wells)		
30 days @ $10/day	$ 300.00	
Report assembly		
2 volumes, 11 copies	$ 275.00	
		$ 1,901.50

DISBURSEMENTS

Reprographics	$ 571.02	
Airfares	$ 1,415.80	
Accomodation, food	$ 3,719.89	
Gas, fuel	$ 2,238.98	
Rental vehicles	$ 3,224,47	
Freight, courier	$ 812.77	
Hardware, lumber	$ 389.40	
Telephone	$ 398.45	
Drafting	$ 2,217.73	
General supplies	$ 1,111.90	
Equipment rentals	$ 412.50	
Taxis	$ 90.00	
Over-ride on disbursements	$ 3,167.51	
		$ 19,770.42

DRILLING COSTS

Rogers Drilling Services Inc.	$ 40,000.00

ANALYSES

ACME Analytical Labs	$ 10,026.50

CONTRACTORS

R.F. Fry & Associates Ltd.	$ 1,334.00
Purmal Contracting (Quesnel)	$ 31,384.47
Eagle Mapping Service Ltd.	$ 6,260.00
TOTAL	$148,695.39

12 CERTIFICATE

I, KENNETH VINCENT CAMPBELL, resident of Wells, Province of British Columbia, hereby certify as follows:

1. I am a Consulting Geologist with an office at the corner of Blair and Dawson Avenues, Wells, B.C.

2. I graduated with a degree of Bachelor of Science, Honours Geology, from the University of British Columbia in 1966, a degree of Master of Science, Geology, from the University of Washington in 1969, and a degree of Doctor of Philosophy, Geology, from the University of Washington in 1971.

3. I have practiced my profession for 21 years. I am a Fellow of the Geological Association of Canada (F0078).

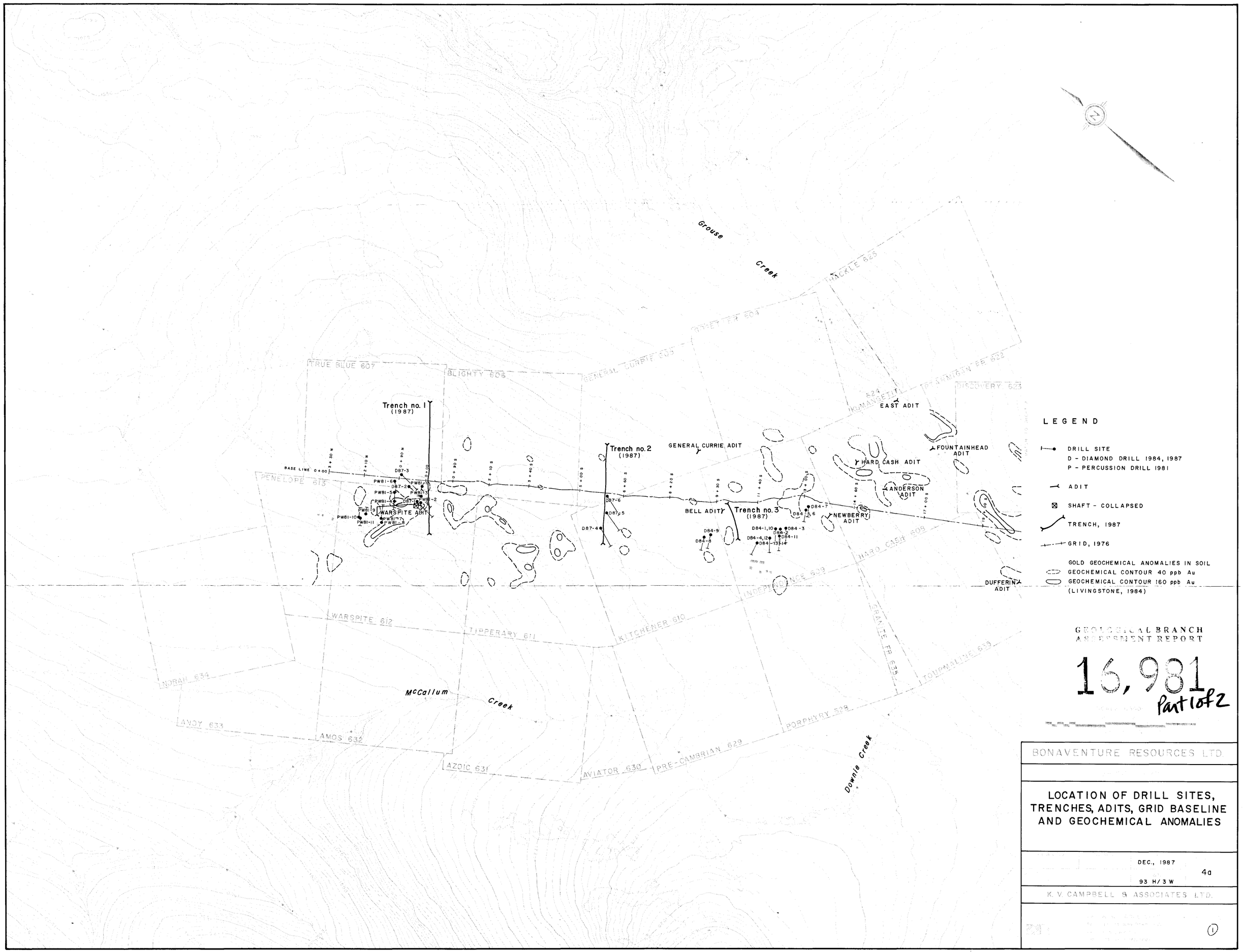
4. I have no direct, indirect, or contingent interest in the shares or business in the property of BONAVENTURE RESOURCES, LTD. nor do I intend to have any interest.

5. This report, dated December 30, 1987 is based on my geological field work, examination of available reports, supervision of drilling, trenching, and geochemical sampling between September 15 and November 5, 1987 and subsequent report preparation.

6. Written permission by the author is required to use this report dated December 30, 1987 in any Prospectus or Statement of Facts of BONAVENTURE RESOURCES LTD.

DATED at Wells, Province of British Columbia
this 30th day of December, 1987.

K.V. Campbell, Ph.D.
Geologist



GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981
Part 1 of 2

BONAVENTURE RESOURCES LTD.

LOCATION OF DRILL SITES, TRENCHES, ADITS, GRID BASELINE AND GEOCHEMICAL ANOMALIES

DEC., 1987

4a

93 H/3 W

K. V. CAMPBELL & ASSOCIATES LTD.

1

Beggs Gulch

Stevens Gulch

AM No. 1 647

AM No. 2 638

AM No. 3 640

AM No. 4 642

AM No. 5 643

AM No. 6 616

JUBITOR 646

VENUS 637

MERCURY 639

SATURN 641

NUT FR 642

MARS 615

LUNA 621

STAR FR. 620

ANTLER No. 4 650

LUFF 626

GROUSE 645

ANTLER 636

ANTLER No. 2 618

ANTLER No. 3 649

TOR 627

TRIUMPH 648

TWEEDSMUIR 644

Grouse Creek

Antler Creek

ANTLER MTN.

LEGEND

- DRILL SITE
  D – DIAMOND DRILL 1984, 1987
  P – PERCUSSION DRILL 1981
- ADIT
- SHAFT – COLLAPSED
- TRENCH, 1987
- GRID, 1976

GOLD GEOCHEMICAL ANOMALIES IN SOIL
- GEOCHEMICAL CONTOUR 40 ppb Au
- GEOCHEMICAL CONTOUR 160 ppb Au
  (LIVINGSTONE, 1984)

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981
Part 1 of 2

BONAVENTURE RESOURCES LTD.

LOCATION OF DRILL SITES, TRENCHES, ADITS, GRID BASELINE AND GEOCHEMICAL ANOMALIES

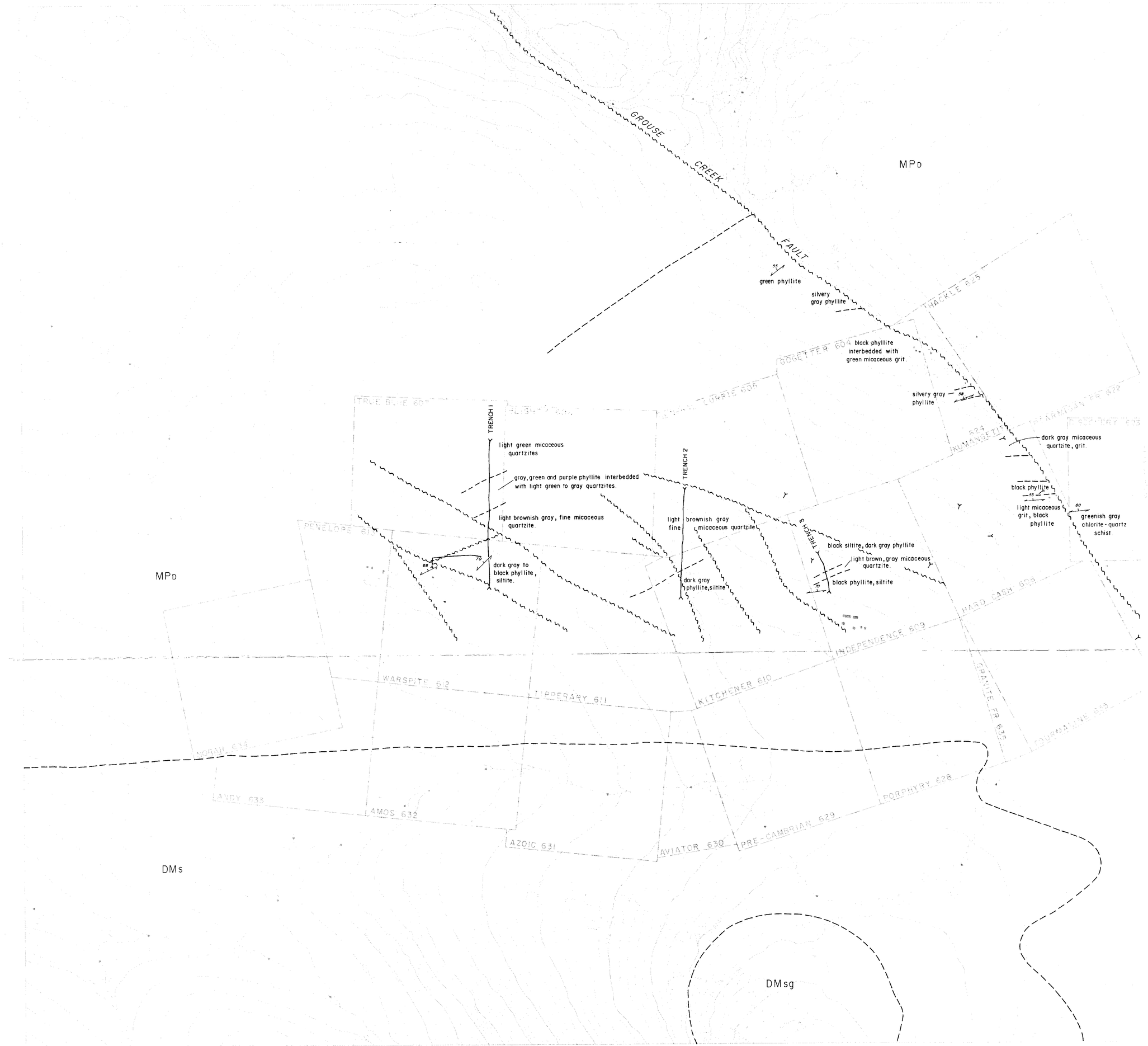
DEC., 1987

4b

93 H/3 W

K.V. CAMPBELL & ASSOCIATES LTD.

(2)



LEGEND

ROCK UNITS

MISSISSIPPIAN TO PERMIAN (?)

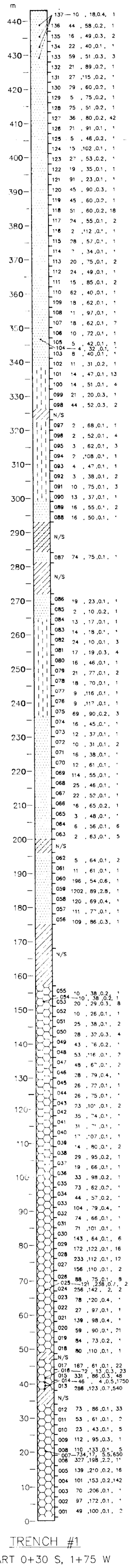
MPD DOWNEY CREEK SUCCESSION: olive and gray micaceous quartzite, grit, green slate, gray to black phyllite

DEVONIAN AND MISSISSIPPIAN (?)

DMs Black siltite and phyllite, gray micaceous quartzite

DMsg quartzite clast conglomerate

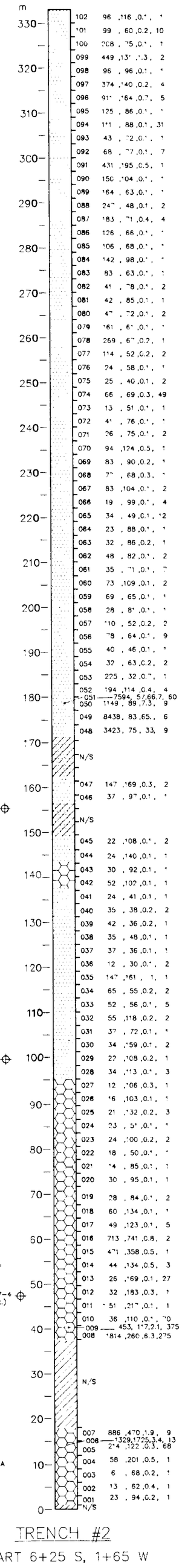
~~~ Fault

⟵ Foliation

– – – Geological contact, approximate

⋋ Adit

⋋⟵⋌ 1981 Trench

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981
Part 1 of 2

BONAVENTURE RESOURCES LTD

GEOLOGY

DEC. 1987

93H/3W

K. V. CAMPBELL & ASSOCIATES LTD
~~~



TRENCH #1

START 0+30 S, 1+75 W

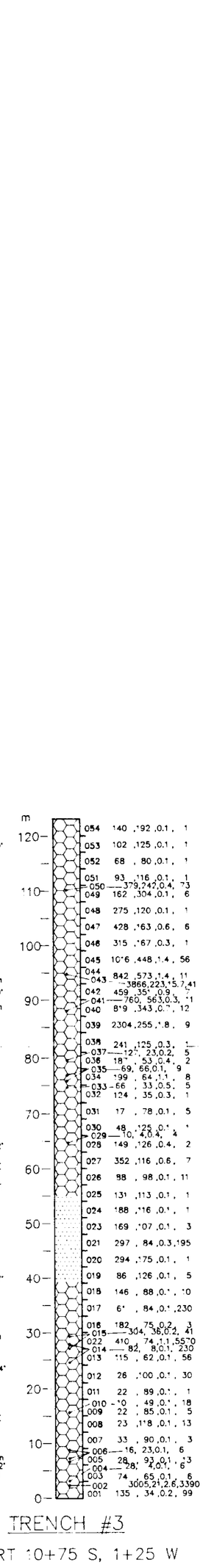
BEARING 052°



TRENCH #2

START 6+25 S, 1+65 W

BEARING 053°

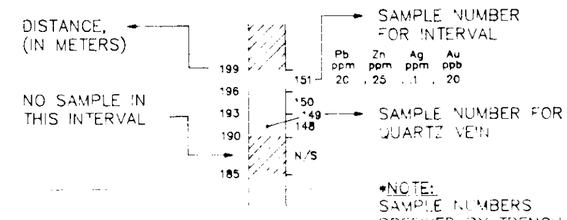


TRENCH #3

START 10+75 S, 1+25 W

BEARING 040°

LEGEND



*NOTE: SAMPLE NUMBERS PREFIXED BY TRENCH NUMBER, eg: T1-057

PHYLLITE; GREY, PURPLE, GREEN LUSTROUS EXCELLENT FISSILITY, OXIDIZED SIDERITE PORPHYROBLASTS

QUARTZITE; LIGHT GREEN TO GREY, FINE TO MEDIUM GRAINED, FOLIATED, MICACEOUS, UP TO 25% LIMONITE.

PHYLLITE; BLACK, FINELY LAMINATED, 40-60% FINE GRAINED SILTITE UP TO 25% LIMONITE.

LOCATION OF DRILL HOLES DDH 87-4,5,6

Scale 1:400

0 10 20 30 40 m

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981 Part 1 of 2

BONAVENTURE RESOURCES LTD.

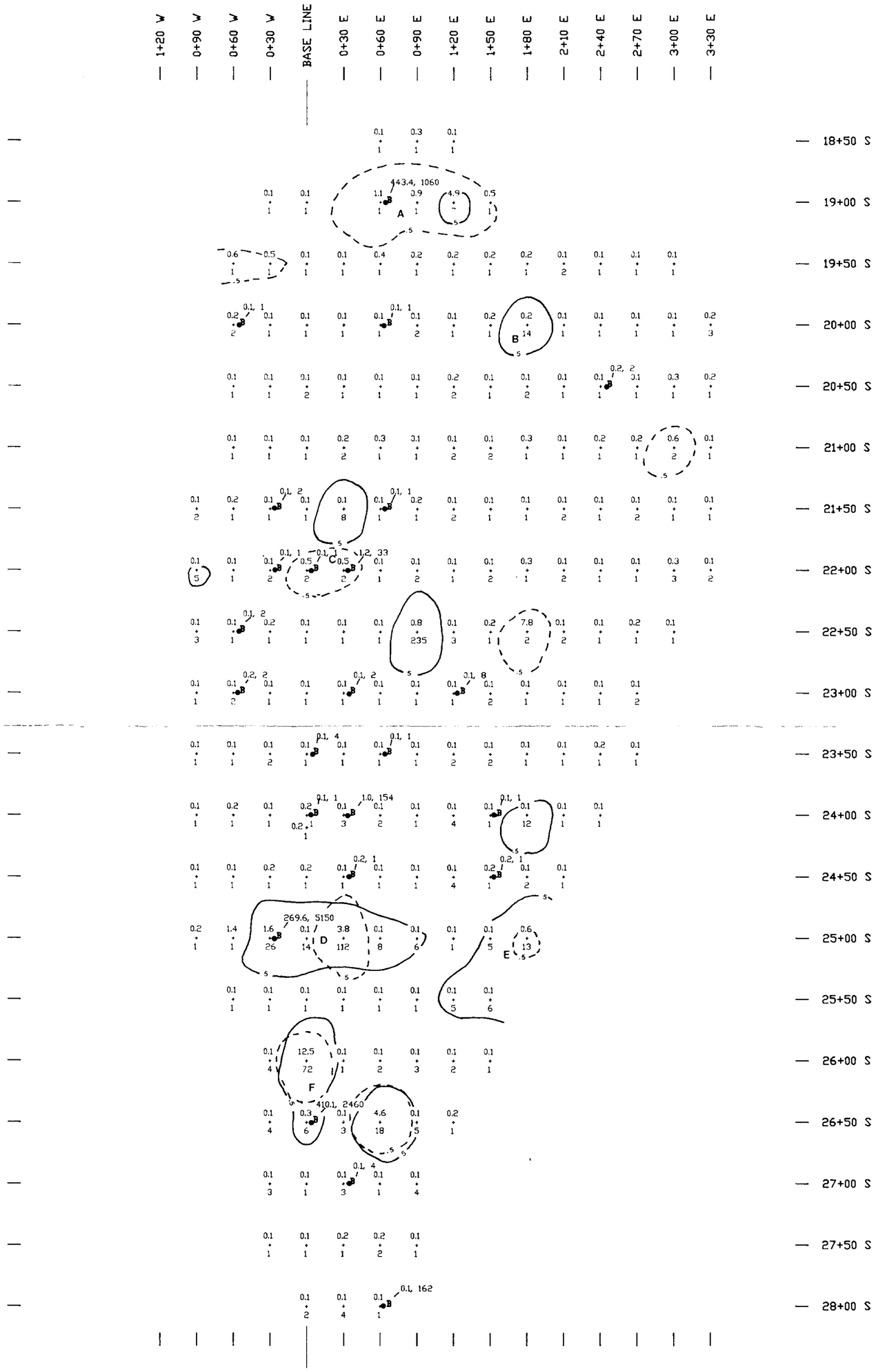
PROSERPINE PROJECT

TRENCH PLANS (4)

SCALE:	DATE:	N.T.S.	DRAWN BY:	FIGURE: 7
1:500	Dec.'87	93 H/3W	GEO-COMP	

K.V. CAMPBELL & ASSOC. LTD.

GEO-COMP DRAWING FILE: KVC/TRENCH 12-16-87



G.N.

T.N.

30°

LEGEND

- CHIP SAMPLE SITE
- 0.1 / 5 = Ag ppm / Au ppb
- 2.2, 5 Ag ppm, Au ppb — CHIP SAMPLE OF QUARTZ ONLY
- ——— Au CONTOUR OF 5 ppb
- - - - - Ag CONTOUR OF 0.5 ppm

GEOL[illegible] BRANCH
ASS[illegible] REPORT

1[illegible],981

Part 1 of 2

0 50 100 150 200
metres

BONAVENTURE RESOURCES LTD.

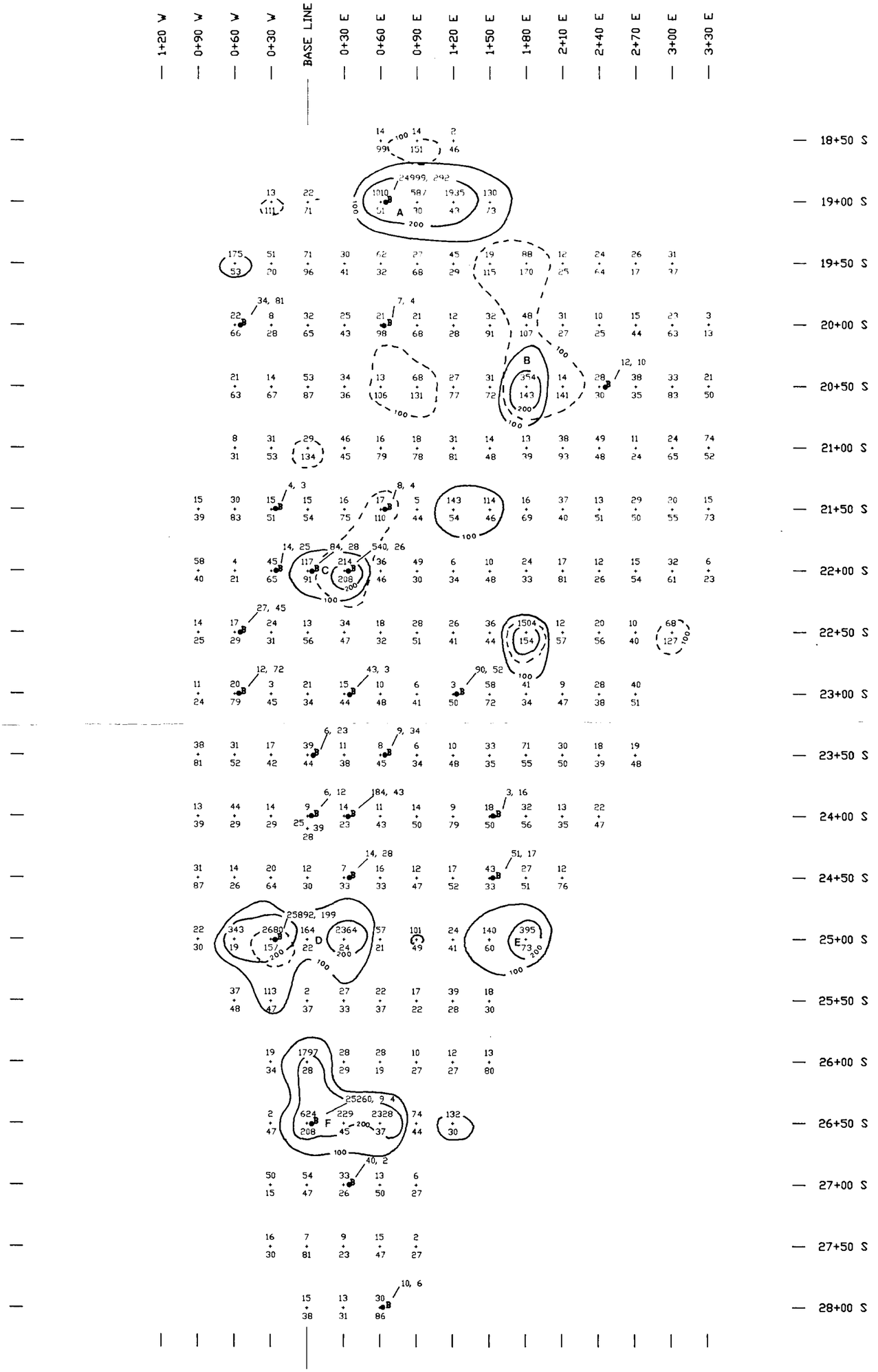
PROSERPINE PROJECT

ROCK CHIP SAMPLING (5)
Au & Ag

SCALE:	DATE:	N.T.S.	DRAWN BY:	FIGURE: 8
1:2500	Dec.'87	93H/3W	GEO--COMP	

K.V. CAMPBELL & ASSOC. LTD.

GEO-COMP DRAWING FILE: KVC\AUAG 21 Dec., 1987



G.N. 7°N 30°

LEGEND

- CHIP SAMPLE SITE
- 79 / 24 = Pb ppm / Zn ppm
- 24, 45 Pb ppm, Zn ppm — B CHIP SAMPLE OF QUARTZ ONLY
- ——— Pb CONTOURS OF 100, 200 ppm
- - - - - Zn CONTOUR OF 100 ppm

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981

part 1 of 2

0 50 100 150 200 metres

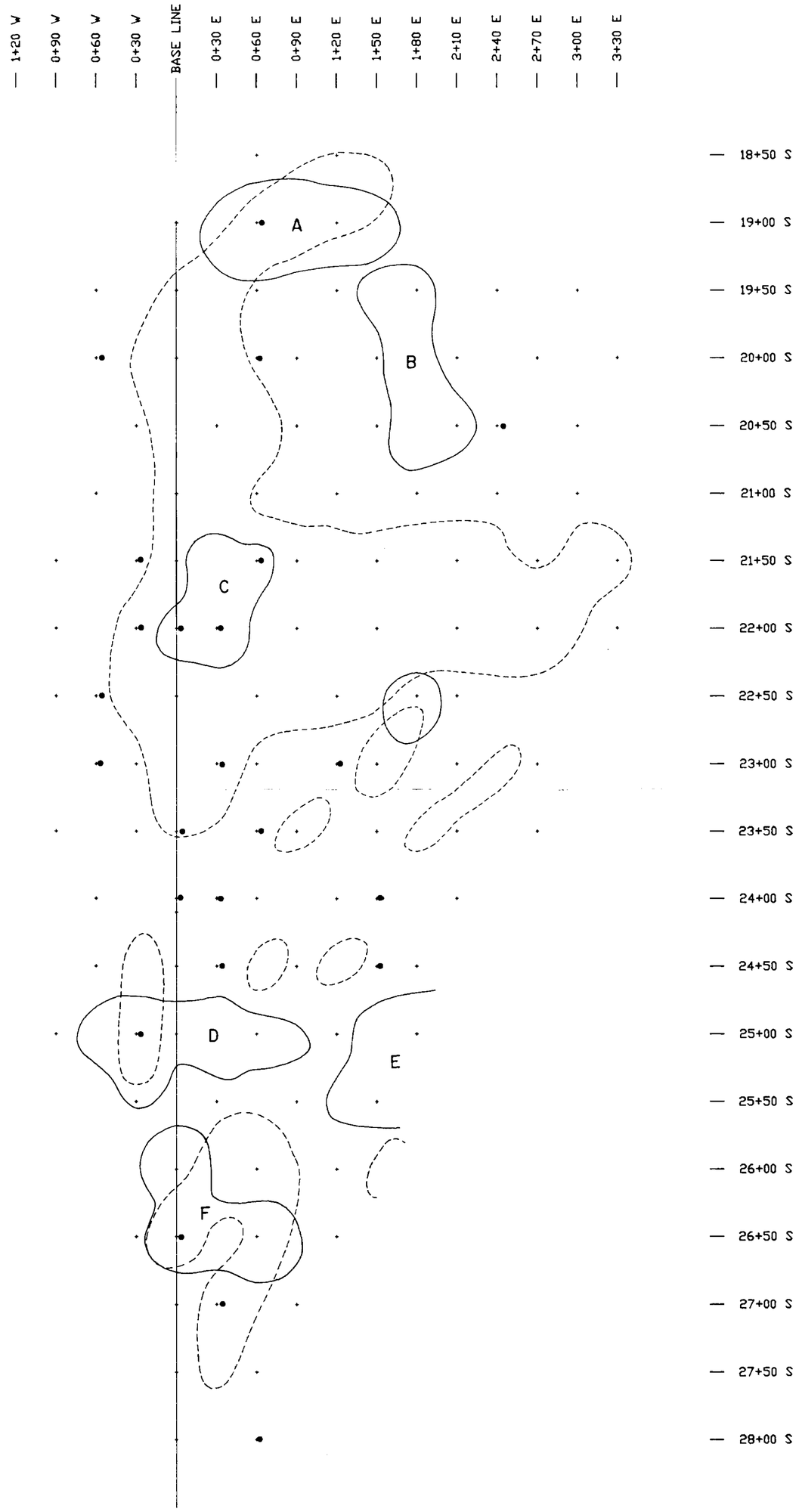
BONAVENTURE RESOURCES LTD.

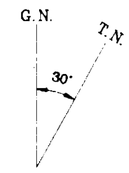
PROSERPINE PROJECT

ROCK CHIP SAMPLING Pb & Zn (6)

SCALE:	DATE:	N.T.S.	DRAWN BY:	FIGURE: 9
1:2500	Dec.'87	93H/3W	GEO-COMP	

GEO-COMP DRAWING FILE: KVC\PBZN 21 Dec., 1987





LEGEND

Geochemical Anomaly; gold in soils >40 ppb (Livingstone, 1984)

Area of multielement geochemical anomaly in rock chips (1987)

Au > 5 ppb Pb >100 ppm

Ag >0.5 ppm Zn >100 ppm

Vein quartz sample site

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981
Part 1 of 2

0 50 100 150 200
metres

BONAVENTURE RESOURCES LTD.

PROSERPINE PROJECT
ANTLER MTN. GRID

GEOCHEMICAL ANOMALIES (7)

SCALE:	DATE:	N.T.S.	DRAWN BY:	FIGURE: 10
1:2500	Dec. '87	93H/3W	GEO-COMP	

LEGEND

Geological contact ; defined, approximate, inferred

Fault

Foliation

1940 0.30 oz/ton/0.75' — Au assay reported in Richmond (1940)

54 ppb Au/12.2 m — Drill hole showing vertical projection of anomalous intersection.
P81- percussion 1981
D87 diamond drill 1987

Quartz Vein

RESULTS OF CHIP SAMPLING

156 126 — ppb Au over 3m (10') chip sample

700 — ppb Au chip sample quartz vein

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,981
part 1 of 2 (8)

Scale 1: 250

0 5 10 15 20 m

0 20 40 60 80 Ft

BONAVENTURE RESOURCES LTD.

PROSERPINE PROJECT

PLAN VIEW OF WARSPITE ADIT

	ORIGINATOR	DRAWN	DATE	PLAN No.	FIGURE
ORIGINAL	K.V.C.	Geodrafting	Dec. 1987	—	11
REVISION				N. T. S.	
REVISION				93 H / 3W	

K. V. CAMPBELL & ASSOCIATES LTD.