5193

92L/3E #5193

A GEOLOGICAL AND GEOCHEMICAL

REPORT ON THE

KWOIS CREEK COPPER PROPERTY

CU CLAIMS #1 to #10

ALBERNI MINING DIVISION

VANCOUVER ISLAND

BRITISH COLUMBIA

92L/3E

Latitude: 50°10'N
Longutude: 127°10'W

NTS 92L - 3E

on behalf of

MONETA PORCUPINE MINES LTD.
during the period

May 22 to May 29, 1974

by:

G. C. Gutrath, B.Sc., P.Eng., Geologist
ATLED EXPLORATION MANAGEMENT LTD.

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INTRODUCTION

The Cu claim group was examined at the request of Mr. D. M. Mercier, President of Moneta Porcupine Mines Ltd.

The writer and an assistant, Mr. G. Baker, carried out a preliminary exploration program on a portion of the CU claim group between May 22 and May 29, 1974. The outcrop geology was mapped on a scale of 1 inch equals 400 feet, using existing enlarged topographic maps, aerial photographs and chain and compass for survey control. A reconnaissance soil and silt sampling program was carried out simultaneously with the geological mapping.

The geological mapping and soil sampling was hampered by an unusually late spring resulting in the snowline being at the 2,100 foot elevation. The principal copper occurrences are located at the 2,300 foot elevation, but exposed in near vertical cliff faces and in creek canyons. With 3 to 10 feet of snow at the 2,500 foot elevation it is doubtful if the entire claim group would be clear of snow before late July. Because of the snow conditions it was necessary to camp near the creek instead of on the ridge as originally planned.

A petrographic study by Clarence J. Duffy under subcontract to Vancouver Petrographics Ltd., has been completed on a typical specimen suite of rocks from the property.

CONCLUSION

A complex copper mineralized intrusive extends over an area approximately 1,000 feet by 1,000 feet and over a vertical interval of 800 feet. The mineralized zone has not been delineated to the north and south although it appears to be narrowing to the south. To the north the zone is trending directly for an area of high grade copper mineralization (Phelps Dodge Report) that could not be examined because of snow conditions.

The initial surface sampling of the copper mineralized intrusive indicates that the core of the zone, a trachyandesite porphyry is over 0.30% copper. The surface sample results do not indicate an economic grade of mineralization but are encouraging because they were taken from leached, weakly oxidized weathered outcrop. Precious metal content associated with the copper mineralization is also important since it could add considerable value to the copper concentrate. The overall molybdenum sulphide content of 0.04% (Phelps Dodge Sampling) is slightly higher than that found at Island Copper. It should also be noted that molybdenite is readily leached from surface outcrops, so a considerable increase in grade should be realized when fresh material is sampled.

The results of the initial program have indicated that this property is a good exploration target for a large tonnage porphyry copper type deposit. A more detailed program is warranted to define the limits and grade of the copper mineralization.

RECOMMENDATIONS

The following exploration program is recommended:

Phase 1

1. Survey a northwest trending base line along the ridge between the two helicopter pads with southwest crosslines extending down the slope as far as the biotite hornfels-volcanic contact. The spacing of the grid lines should be at 400 foot intervals but this will be dependent on the terrain.
2. Map the outcrop geology on the grid and collect geochemical soil samples at 200 foot intervals and analyse for copper and molybdenum.
3. More detailed mapping is required in the Craig Creek canyons to outline the feldspar porphyry core and to determine the extent of the biotite hornfels.
4. Carry out a reconnaissance geological mapping program on the entire claim group including the eastern portion of the Kauwinch pluton.

Phase 11

It is doubtful if surface sampling or trenching is adequate to determine the grade of the mineralization. The Phase 1 program should define drill targets and it is expected that a minimum of 1,000 feet of NQ core drilling will be required.

ESTIMATED COSTS

Phase 1

1.	Supervision, grid survey, geochemical sampling, detailed reconnaissance geological mapping - 15 days @ $200.00/day		$ 3,000.00
2.	Geochemical Analysis - 350 samples @ $1.50/sample		525.00
3.	Assaying - 20 samples @ $7.50/sample		150.00
4.	Transportation - Truck - 800 miles @ 20¢	$ 160.00	
	15 days @ $20.00/day	300.00	460.00
5.	Helicopter - 206 B Bell - 3 hours @ $275.00/hour		825.00
6.	Accommodation and Food - 30 man days @ $15.00/man/day		450.00
7.	Consulting, data compilation and report		750.00
			6,160.00
	Overhead and contingencies @ 10%		610.00
	TOTAL ESTIMATED COST PHASE 1		$ 6,770.00

Phase 11

(contingent on results of Phase 1)

1,000 feet of NQ wire line drilling -overall cost of $30.00/foot		$ 30,000.00

GEOGRAPHY

Location

The property is located on northwestern Vancouver Island, 3 miles to the northwest of Tahsish Inlet. The claim group is bordered by Kwois Creek on the east and the small community of Zeballos is 20 air miles to the southeast. Port McNeil on the west coast of Vancouver Island is 28 miles to the north.

Co-ordinates of the property are approximately 50°10' north latitude and 127°10' west longitude.

Access

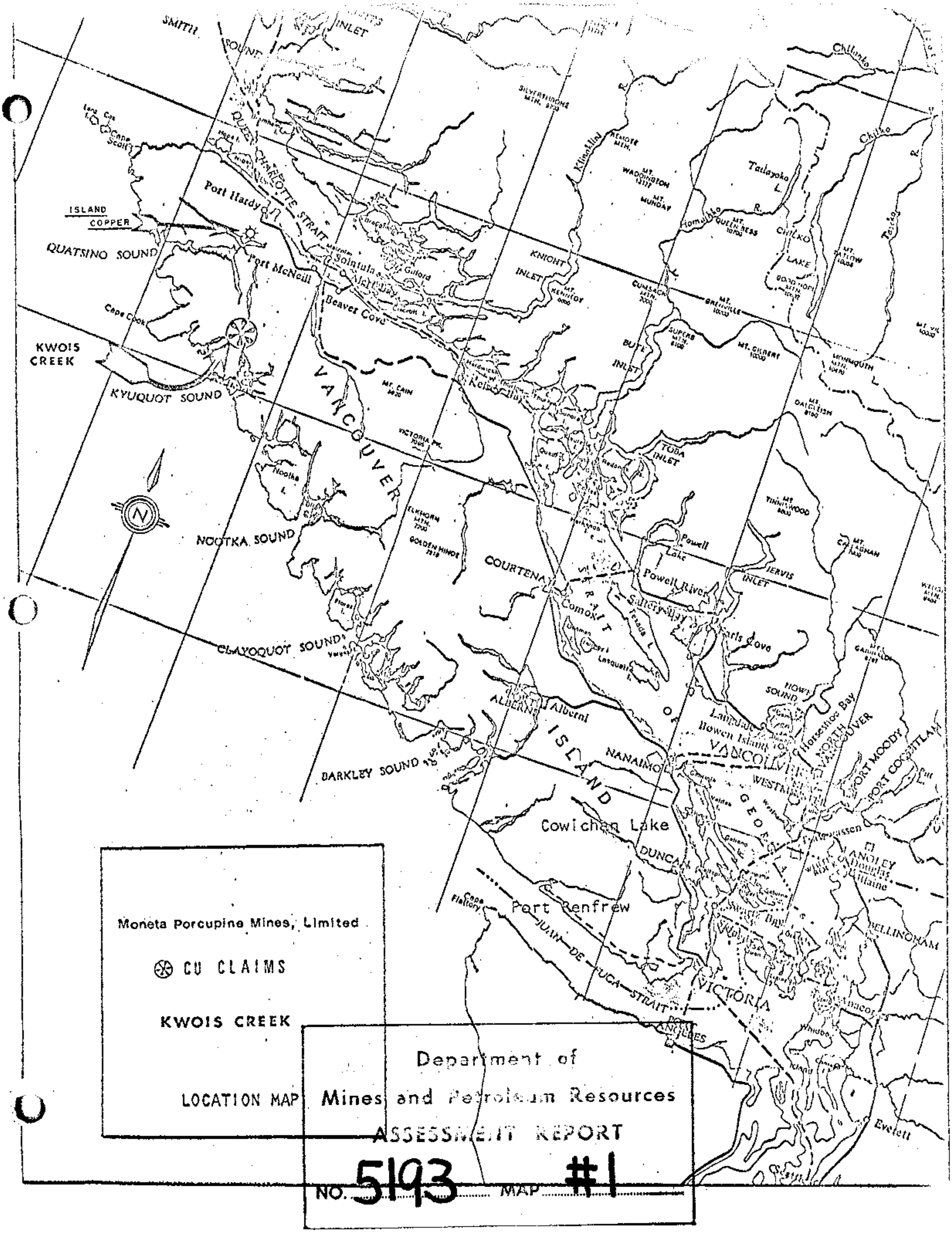
Access to the property is by helicopter. There is good road access to an abandoned logging camp at Fair Harbour that is located 8 miles southwest of the property on the southern arm of Tahsish Inlet. This road connects Fair Harbour with Zeballos, a distance of 23 miles. It takes approximately 7 hours to drive from Nanaimo to Fair Harbour.

There are two helicopter pads on the ridge and one on a gravel bar in the creek to the west of the claim group.

Mr. Craig has a good trail cut from this lower helicopter pad into Craig Creek.

Topography

The claim group is located on a northwest trending ridge. The camp site on the west side of the claim group is at an elevation of 550 feet and the ridge where the copper showings are located is at an elevation of 2,700 feet. The ridge continues to rise to the northwest to an elevation of 3,200 feet.



Moneta Porcupine Mines, Limited

⊛ CU CLAIMS

KWOIS CREEK

LOCATION MAP

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5193 MAP #1

The copper occurrences are located on the west slope of the ridge in an area that is very precipitous and is cut by numerous canyons that lead into Craig Creek.

Climate

The climate is typical westcoast marine with an estimated 150 to 300 inches of rain per year. Winter compacted snow fall is variable but normally the area would be clear of snow from April to November.

Vegetation

The entire claim group is covered by overmature, virgin forest composed of hemlock, spruce, cedar and balsam. There is very little underbrush or windfalls.

Water

There is ample water on the property for drilling purposes or mill requirements.

HISTORY

The property was first staked in 1969. Stream sampling was carried out but there is no evidence of any other work being done during this period.

The Island Copper deposit owned by Utah Construction Ltd. is located 30 miles to the north of the Craig CU Group. Island Copper has reported reserves of 230 million tons of 0.52% copper and 0.029% molybdenum sulphide. The property was put into production in 1971 and its present milling capacity is approximately 30,000 tons per day.

Mr. Craig staked the property in 1971 for a small mining company which subsequently allowed the claims to lapse. Mr. Craig restaked the property in 1973 and invited Phelps Dodge Corporation of Canada to examine it.

Phelps Dodge did some reconnaissance geological mapping, limited soil and silt sampling and sampled a number of the copper mineralized outcrops. The results of their sampling were made available to Mr. Craig.

Moneta Porcupine Mines Ltd. optioned the property in November, 1973.

CLAIMS

The claims are located in the Alberni Mining Division

Name	Record Numbers	Expiry Date
CU #1 to #10	20314 to 20323	October 11, 1974

GEOCHEMICAL SURVEY

Geochemical soil sampling could only be done along the traverse routes below the 2,000 foot elevations because of snow conditions. As a result all the soil sampling was done completely within the Bonanza volcanics.

Silt samples were collected from Craig Creek and its tributaries as an initial orientation survey for future work to be completed on the claim group and surrounding area.

The results of the sampling are as follows:

SILT SAMPLES		
Sample Number	Copper ppm	Molybdenum ppm
G-0	77	3
G-4	63	17
G-14	203	3
G-13	300	4
G-15	380	19
G-16	450	16

SOIL SAMPLES		
Sample Number	Copper ppm	Molybdenum ppm
G-1	20	1
G-6	405	8
G-7	12	3
G-8	12	53
G-9	9	1
G-10	14	2

Inadequate silt sampling has been done to establish a good frequency distribution but it is assumed that background for copper is less than 100 ppm., threshold anomalous between 100 and 200 ppm. and anomalous values over 200 ppm. Background for molybdenum is less than 8 ppm., threshold is 8 to 15 ppm. and over 15 ppm. is anomalous.

Soil sampling has only been done in the volcanic terrain. From the limited sampling it would appear this background in the volcanics is less than 20 ppm. copper and less than 5 ppm. molybdenum. There are two erratic high soil samples, G-6 - 404 ppm. copper and G-8 - 53 ppm. molybdenum. Additional investigation is required to determine the cause of these high values.

GEOLOGY

General

(The general geology of northwestern Vancouver Island is described in the Geological Survey Open File 170, September, 1973 Geology and Mineral Deposits of Alert Bay-Cape Scott Map - Area (92L-1021) by J.E.Muller, K.E. Northcote and D.Carlisle.)

The Tahsish Inlet area is located in a belt of volcanic rocks that extend along the west coast of Vancouver Island from Nootka Sound to the northern tip of the Island. This series is known as the Bonanza volcanics, and is the youngest member of the Vancouver Group. They range from andesites to rhyodacite in composition and are lower Jurassic in age.

The Bonanza volcanics have been cut by a series of small mesozonal intrusive stock like bodies of granodiorite to quartz gabbro composition that extend from the Zeballos River north to Victoria Lake. These have been named the Island Intrusions and are middle Jurassic in age.

The CU claim group is located at the southern end of the Kauwinch pluton. This pluton is approximately 7 miles long and 1 mile wide, and trends in a northwest direction and varies from granodiorite to quartz diorite in composition.

Structurally the property is in the Karmutsen fault block that is bounded by major north westerly trending and north easterly trending faults.

The block is largely composed of the Vancouver Group that trends northwest and in the Tahsish Inlet area has a gently southwest dip varying from 10° to 30°. The block is broken by several different fault systems.

Property

The claim group is underlain by Bonanza volcanics that have been intruded and metamorphosed by a complex intrusive stock. Both the volcanics and intrusives have been cut by a radiating series of faults.

(a) Volcanics

The Bonanza volcanics underlie the majority of the claim group. This series is predominantly of andesite composition and is composed of interbedded flows, fragmentals and tuffs.

In outcrop, the volcanics weather to a dark green or grey and unless the rock exposure is fresh, bedding is seldom recognizable. In hand specimens the ground mass is aphanitic, dark green to grey, with fine grained feldspar phenocrysts and angular fragments of similiar composition and variable size.

(b) Intrusive

The Kauwinch pluton is mapped by the G.S.C. as terminating 1/2 mile to the west of the Craig Creek intrusive. This intrusive was not mapped during this program, so it is not known if the Craig Creek intrusive is actually connected to the Kauwinch pluton.

The Craig Creek intrusive has been divided into three separate phases; a diorite contact phase, a granodiorite median phase and a feldspar quartz monzonite porphyry inner core. The two outer phases appear to be directly related but the inner core may be a separate intrusive.

These three main intrusive phases are described in the Petrographic Study by Clarence Duffy as follows:

....."

1. Hornblende Diorite (G-31)

- Mineralogy and Mode:
  Plagioclase (core An_{54} rim An_{29}) 75%
  Chlorite 7%
  Hornblende 4%
  Orthoclase 5%
  Biotite 3%
  Quartz 5%
  Sericite 1%
  Epidote tr.
  Opaques tr.

- Texture
  The rock has a medium grained hypidiomorphic granular verging on intergranular texture. The plagioclase shows normal zoning with some oscillatory zoning present. The Plagioclase is lightly sericitized especially in the cores. The hornblende and to a lesser extent the biotite show highly resorbed outlines. Both are considerably altered to chlorite with some carbonate being present in the hornblende.'

2. Granodiorite (G-30)

-Mineralogy and Mode:
  Plagioclase (Core An_{31} rim An_{12}) 51%
  Quartz 25%
  Orthoclase 15%
  Chlorite 5%
  Biotite 2%
  Sericite 2%
  Carbonate tr.
  Opaques tr.

2. Quartz Granodiorite (G-30) continued.....

- Texture:
The rock is fine to medium grained hypidiomorphic granular. The plagioclase shows normal zoning overlain by considerable oxcillatory zoning. Plagioclase is lightly sericitized. The quartz and orthoclase are generally somewhat finer grained than the plagioclase and are generally anhedral. The biotite shows alteration to chlorite. Much of the chlorite is present in large clumps with no primary mafic remaining.

3. Trachyandesite (G-21)

-Mineralogy and Mode:

Plagioclase phenocrysts (core An_{45} rim An_{26})	30%
Plagioclase in groundmass	15%
Orthoclase	22%
Quartz	20%
Biotite	10%
Chlorite	2%
Hornblende	1%
Opaques	tr.

-Texture:
The rock is porphyritic with phenocrysts of plagioclase and hornblend set in a groundmass constituted primarily of small plagioclase laths, biotite, and fine grained intergrowths of quartz and orthoclase. The plagioclase phenocrysts show both normal and oscillatory zoning. The hornblende phenocrysts are highly corroded and often rimed by biotite, but show little alteration.

DISCUSSION ON INTRUSIVE GENESIS

The more basic outer diorite phase is believed to result from an assimilation of Bonanza volcanics by the granodiorite intrusive. Specimen G-19, Page 1 in the Petrographic Report by Clarence Duffy is described as a Hornblende Norite which is an unusual rock type for Vancouver Island.

The pyroxene in this specimen may have originated from the assimilation by the granodiorite of basalt flows in the original volcanic series. The hornblende diorite (G-31) is more typical of the outer intrusive.

The quartz granodiorite intrusive phase that borders the diorite is considered to be the main intrusive type although it has undergone varying degrees of alteration. In hand specimen it has a typical white to light grey, fine grained groundmass containing 5% to 10% fine grained greenish coloured mafic clots.

The trachyandesite porphyry from the preliminary mapping appears to occupy a central position in the intrusive mass. Its southerly contact is well exposed approximately 100 feet to the north of the forks in Craig Creek and it can be traced for another 300 feet to the north of the ridge between the forks of the creek. No other contacts have been observed although it may extend along the east fork of Craig Creek, to the north as shown on the enclosed map. A portion of the waterfall zone in the east fork of the creek looks very similiar in outcrop to the trachyandesite but it could not be examined in detail because of snow conditions.

The central core of the trachyandesite is not brecciated although it has a very close spaced fracture pattern. The fracture pattern, composition and general appearance of the trachyandesite is very different than the surrounding granodiorite. It would appear that it is a younger intrusive dike or a deep seated volcanic neck cutting the granodiorite. However if it is a volcanic neck one would expect some evidence of brecciation instead of the uniform fracturing.

(c) Metamorphics

The andesite volcanics along the most western traverse line between station 0 and station 6 have been epidotized and carry from 3% to 5% magnetite.

The volcanics along the southern contact of the Craig Creek intrusive have been altered over a width of 200 feet to a dark grey to black hornblende pyroxene hornfels carrying from 3% to 10% pyrite, chalcopyrite and pyrrhotite.

The hornfels are described in the Petrographic Report by Clarence Duffy as follows....."

Hornblende Pyroxene Hornfels (G-18)

- Mineralogy and Mode:

Plagioclase	25%
Hornblende	28%
Orthopyroxene	25%
Quartz	15%
Clinopyroxene	5%
Opaques	2%
Biotite	tr.
Chlorite	tr.

- Texture:
The rock has a fine grained granoblastic texture. Hornblende grains tend to be larger than the average and enclose some of the orthopyroxene. Overall the rock has a very fresh unaltered appearance....."

The volcanic-intrusive contact zone itself is approximately 100 feet wide and is light grey aphanitic silicified-feldspathized zone with irregular patches of dark green chlorite.

The median intrusive zone has been altered peripheral to the trachyandesite porphyry. The quartz granodiorite has been bleached and the feldspars are a cloudy white colour resulting from weak sericitization.

Structure

The overall trend of the Bonanza volcanics in this area is in a northwesterly direction with a moderate to steep dip to the southwest. Locally there was only one outcrop noted with good bedding and it is on the south side of Craig Creek at the 1,650 foot elevation. This thin bedded tuffaceous sediment strikes north 40°east and dips at 50° to the southeast.

Fault-shear zones were noted in a number of areas in Craig Creek. There is a strong steep dipping fault zone that cuts across Craig Creek at south 70° east, 100 feet to the south of the forks and it is sub paralleled by a number of small shear zones to the forsk in the creek. Another shear zone varying from a few inches to two feet wide can be traced up the east fork of Craig Creek.

A number of other strong lineaments that probably represent fault-shear zones can be traced on the aerial photographs. The most distinct lineament forms the east fork of Craig Creek.

Mineralization

Copper mineralization in the form of chalcopyrite and bornite coats the very closely spaced fractures in the trachyandesite porphyry. This mineralization is associated with quartz and minor pyrite. The chalcopyrite is also finely disseminated in the groundmass. The best exposure of this mineralized trachyandesite porphyry is at sample point 21 on Craig Creek.

Finely disseminated chalcopyrite and pyrite occurs in the quartz granodiorite intrusive that is peripheral to the trachyandesite porphyry core. The chalcopyrite content in the granodiorite is similar to that found in the groundmass of the porphyry. However, the granodiorite has a much lower fracture density and as a result its overall copper content is lower than the porphyry.

The diorite border phase is very weakly mineralized although it does contain random discontinuous veinlets of chalcopyrite and pyrite and it is cut by 1/2 inch to 1 inch quartz veins carrying molybdenite. These veinlets are widely spaced throughout the diorite. There is very minor disseminated pyrite or chalcopyrite in the ground mass, compared with the quartz granodiorite.

The biotite hornfels are mineralized with approximately 1% chalcopyrite, 2% pyrrhotite and 2% pyrite.

Sampling

The following samples were taken by the writer:-

		MoS_2%	Cu%	Au Oz/T	Ag Oz/T
1956-A	-Waterfall zone-West side shear zone-fractured 15 feet wide. (chip sample)	.001	0.09		
1957A	-Waterfall zone-Centre section Fractured, weakly altered quartz granodiorite 20 feet. (chip sample)	.001	0.11		
1958A	-Waterfall zone-Eastside. Fractured feldspar porphyry 25 feet (chip sample)	.001	0.21		

The waterfall zone is in the east fork of Craig Creek. Good outcrop is exposed for 80 feet at the base of a vertical cliff.

	MoS_2%	Cu%	Au Oz/T	Ag Oz/T
1959A -Biotite hornfels (grab sample)	.001	0.21	0.003	0.07
1960A -Biotite hornfels (grab sample)	.001	0.20	0.003	0.007
1961A -Feldspar Quartz Monzonite Porphyry-specimen 21 area. (grab sample)	.001	0.31	0.003	0.09

The Phelps Dodge sampling is as follows:-

		Copper %	Molybdenite %
Blast area - waterfall Zone area - 3 samples		.035	.032
		.069	.050
		.17	.040
	Average	.09	.04
Quartz granodiorite From east fork area		.323	.015
		.175	.050
		.241	.060
	Average	.246	.042
Peripheral Granitic Phase of Granodiorite Collected along 3,000 foot traverse.		.272	.067
		.365	.016
		.172	.021
	Average	.269	.034

Respectfully submitted,

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

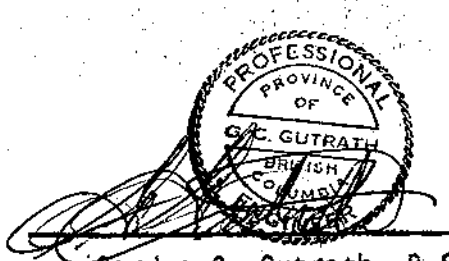
G. C. Gutrath, B.Sc., P.Eng., Geologist

ATLED EXPLORATION MANAGEMENT LTD.

ENGINEER'S CERTIFICATE

I, GORDON C. GUTRATH, of 3636 Lakedale Avenue, in the Municipality of Burnaby, in the Province of British Columbia, DO HEREBY CERTIFY:-

1. That I am a consulting geologist with a business address of #420-475 Howe Street, Vancouver 1, B.C.
2. That I am a graduate of the University of British Columbia where I obtained my B.Sc. in geological science in 1960.
3. That I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers in the Province of British Columbia.
4. That I have practised my profession as a geologist for the past fourteen years, and
5. That I have no interest in the property with which this report is concerned, nor do I expect to receive any such interest. I have no interest in the securities of Moneta Porcupine Mines Ltd. other than as a Director of that Company.



Gordon C. Gutrath, B.Sc., P. Eng.

DATED at the City of Vancouver, Province of British Columbia, this 23 day of August, 1974.

APPENDICES

G-18 Hornblende Pyroxene Hornfels

Mineralogy and Mode:
Plagioclase 25%
Hornblende 28%
Orthopyroxene 25%
Quartz 15%
Clinopyroxene 5%
Opaques 2%
Biotite tr.
Chlorite tr.

Texture:
The rock has a fine grained granoblastic texture. Hornblende grains tend to be larger that the average and enclose some of the orthopyroxene. Overall the rock has a very fresh unaltered appearance.

G-19 Hornblende Norite

Mineralogy and Mode:
Plagioclase (core An_{68} rim An_{25}) 66%
Hornblende 17%
Orthophyoxene 6%
Biotite 6%
Quartz 3%
Orthoclase 1%
Sericite tr.
Opaques tr.
Clinopyroxene 1%

Texture:
The rock has a medium grained intergranular texture. The plagioclase generally shows normal zoning with some light oscillitory zoning being present. The orthopyroxene grains are somewhat corroded and generally rimed by hornblende. Hornblende and biotite are generally fresh in appearance. Two hornblendes appear to be present. The darker green variety is probably primary while the light green material is probably a deuteric alteration product of pyroxene.

Petrographic Report

on specimens from the

MONETA-KWOIS CREEK PROPERTY

for

ATLED EXPLORATION MANAGEMENT LIMITED

by

Clarence J. Duffy

under subcontract to

Vancouver Petrographics Limited

14 July 1974

G-21 Trachyandesite

Mineralogy and Mode:
Plagioclase phenocrysts (core An_{45} rim An_{26}) 30%
Plagioclase in groundmass 15%
Orthoclase 22%
Quartz 20%
Biotite 10%
Chlorite 2%
Hornblende 1%
Opaques tr.

Texture:
The rock is porphyritic with phenocrysts of plagioclase and hornblende set in a groundmass constituted primarily of small plagioclase laths, biotite, and fine grained intergrowths of quartz and orthoclase. The plagioclase phenocrysts show both normal and oscillatory zoning. The hornblende phenocrysts are highly corroded and often rimed by biotite, but show little alteration.

G-29 Granodiorite

Mineralogy and Mode:
Plagioclase (core An_{35} rim An_{12}) 45%
Quartz 40%
Orthoclase 10%
Chlorite 3%
Biotite 1%
Sericite 1%
Epidote tr.
Opaques tr.

Texture:
The rock is fine grained hypidiomorphic granular. The plagioclase shows normal zoning and very light sericite alteration. The biotite is somewhat altered to chlorite and shows a rather reddish brown colour indicative of having been exposed to rather oxidizing conditions. Quartz and orthoclase are slightly finer grained than the plagioclase and are invariably anhedral.

G-30 Granodiorite

Mineralogy and Mode:
Plagioclase (Core An_{31} rim An_{12}) 51%
Quartz 25%
Orthoclase 15%
Chlorite 5%
Biotite 2%
Sericite 2%
Carbonate tr.
Opaques tr.

Texture:
The rock is fine to medium grained hypidiomorphic granular. The plagioclase shows normal zoning overlain by considerable oxcillatory zoning. Plagioclase is lightly sericitized. The quartz and orthoclase are generally somewhat finer grained than the plagioclase and are generally anhedral. The biotite shows alteration to chlorite. Much of the chlorite is present in large clumps with no primary mafic remaining.

G-31 Hornblende Diorite

Mineralogy and Mode:
Plagioclase (core An_{54} rim An_{29}) 75%
Chlorite 7%
Hornblende 4%
Orthoclase 5%
Biotite 3%
Quartz 5%
Sericite 1%
Epidote tr.
Opaques tr.

Texture:
The rock has a medium grained hypidiomorphic granular verging on intergranular texture. The plagioclase shows normal zoning with some oscillatory zoning present. The Plagioclase is lightly sericitized especially in the cores. The hornblende and to a lesser extent the biotite show highly resorbed outlines. Both are considerably altered to chlorite with some carbonate being present in the hornblende.

Discussion:

G-18 is distinct in this suite in that it is of metamorphic origin. It would seem evident that it represents metamorphosed Bonanza volcanic. The other members of the suite are distinctly igneous. If the igneous members do represent a plug or stock as suggested it is interesting to note that there is a definite trend of more acid rock in the core surrounded by more basic ones. This might well be due to wall rock assimilation, but it would seem doubtful that the suite represents a single stage intrusion since G-21 is distinctly porphyritic. This would seem to suggest faster cooling of G-21 than the other igneous specimens. This in turn suggests one of two possibilities. Either G-21 is not located in the center of the intrusion or it represents a resurgance in a volcanic neck after the surrounding igneous material had cooled considerably. Another possibility might be that the suite represents a multiply resurgant volcanic neck fed by a differentiating magma.

Reported Copper Occurrence in Creek

Waterfall Zone

Craig Creek

KWOIS CREEK

OUTLINE OF KAUWINCH G.S.C. INTRUSIVE AS MAPPED BY G.S.C.

TRAIL

CAMP

Craig Camp

LEGEND

INTRUSIVES
Middle Jurassic

F - Feldspar Diorite: Fine grained, dark grey border phase intrusive. Occasional chalcopyrite and quartz-molybdenite veinlets.

E a b - Granodiorite
-(a) Light gray to white, fresh fine to medium grained.
-(b) Altered, mineralized zone, trachyandesite Porphry. White fine to medium grained, plagioclase weakly sericitized. Mafic content is lower than (a), less than 1% chalcopyrite and minor pyrite finely disseminated in groundmass.

D - Feldspar Trachyandesite Porphyry
Gray, fine grained groundmass containing subhedral plagioclase laths, minor hornsblende and quartz phenocrysts. Close spaced fractures coated with chalcopyrite, minor pyrite and bornite. Finely disseminated chalcopyrite in groundmass. Total sulphides 1%. Typical raddish weathering in outcrop.

VOLCANICS
Lower Jurassic (Vancouver Group)

C - Bonanza Volcanics: Massive dark gray to green andesite. Interbedded flows fragmental and tuffs.

METAMORPHICS

B - Hornblende Pyroxene Hornfels: Dark grey to black fine grained chalcopyrite, magnetite, pyrite and pyrrhotite.

A - Silicified, feldspathized bleached contact zone.

- Bedding Attitude
- Shear Attitude
- Fault Attitude - observed
- Fault Attitude - interpreted
- Contact
- Outline of Outcrop Area
- Molybdenite
- Pyrite
- Chalcopyrite
- Epidote
- Magnetite
- Survey Station
- Silt Sample
- Soil Sample
- Specimen Location
- Claim Post
- Helicopter Pad
- Waterfall
- Cu/Mo Geochemical Values

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G.C. GUTRATH

To accompany geological report by Gordon C. Gutrath, P.Eng., on the Cu Group on Kwois Creek, Alberni Mining Division, Dated August 23, 1974.

MONETA PORCUPINE MINES LTD.

Atled Exploration Management Ltd.
420 - 475 HOWE ST. VANCOUVER 1, B.C.

Cu Claims Kwois Creek Area

ALBERNI MINING DIVISION	N.T.S. 92 L
SCALE	1" = 400'
DRAWN	p.h.
DATE	MARCH 1974, JUNE 1974
NUMBER	306-C