A PROSPECTING REPORT COVERING THE PIRATE MOLYBDENITE PROSPECT OMINECA MINING DIVISION. BRITISH COLUMBIA

CLAIMS

NAME
UNITS
RECORD NUMBER
DATE

PIRATE
20 units
2036(8):
AUGUST 31

PIRATE 2
16 units
2049(8)
AUGUST 31

LUCATION.

AREA: SHASS MOUNTAIN, BABINE LAKE

MINING DIVISION: OMINECA

NTS: 93K/7

COORDINATES: LATITUDE 54° 21'N LONGITUDE 124° 55" W

OWNER OPERATOR

CHARLES KOWALL

AUTHOR

CHARLES KOWALL

EXPLORATION GROLOGIST

DATE

AUGUSI 25th, 1980

8475

Charles Kowal

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INTRODUCTION

GEOGRAPHY:

The Pirate group of claims consisting of 36 contiguous units is located about 25 miles north-northeast of Endako B.C. at latitude 54 21'N and longitude 124 55'W.

The property can be reached by turning north from Highway16 on to the Top Lake forest access road at the east end of Fraser Lake. The forestry road connects up with the Sutherland Valley thaul road which is followed to mile post 323, which is about 28 miles from Highway 16. At this mile post turn right and follow the old Amax exploration access road for hine miles to the property. The total distance is about 37 miles. The Amax road is in locally poor condition so that a four wheel drive vehicle and winch is recommended for this stretch.

The claims are located on the north side of the Sutherland River Valley at elevations of between 3000 and 3500 feet. The terrain is covered by spruce and pine forest with an undergrowth of various kinds of brush. Small streams drain the area into the SutherlandRiver and some small ponds and marshes are also present. The tributary stream valleys are locally deeply incised for several hundreds of feet.

The climate is of continental interior type with warm summers and cold winters. It is estimated that snowfall accumulates to an average depth of five feet in winter and is usually present on the ground from late November until mid May.

HISTORY:

The property was originally discovered by Amax through a regional program of geochemical sampling and prospecting covering an area between Endako and the south end of Babine Lake thought to be underlain by various types of Topley intrusives which could be possible host to

porphyry molybdenum type deposits. Amax staked 46 mineral claims in August of 1968 and the prospect became known as Shass Mountain.

work programs consisted of prospecting, geologic mapping, soil sampling, geophysical surveys, road building and percussion drilling. The final program of 26 percussion holes was conducted during the summer of 1974 and is the last work that was conducted by anyone until the present time. Assessment reports numbered 1866, 4543, and 5119 covers some of the work done by Amax but not all of the work has been made public, in particular the assay results of the 6670 feet of percussion drilling as well as a magnetometer survey.

At the height of their activity Amax had held in excess of 100 claims covering the prospect, but all of these claims had lapsed by August of 1979 which is when the author restaked the area as the Pirate and Pirate 2 Claims totaling 36 units.

GEOLOGICAL SUMMARY:

Exploration work done by Amax and the author indicates that the property is composed of a multi-phase intrusive of quartz monzonite composition which has been intruded into Cache Creek argillaceous sediments. The Cache Creek formation is hormfelsed surrounding the intrusive contact. A stockwork composed of quartz stringers is present in both the quartz monzonite and the hornfelsed sediments. The stockwork both pyrite and molybdenite over an ill defined area of at least two square miles. Some areas of stockworks are estimated visually to assay between .05% MoS2 up to .1% MoS2 by Amax with some hand specimens and float assaying up to .4% MoS2. The full extent of the mineralization both laterally and to depth has not been ascertained due to insufficient exploration which has been hindered by extensive overburden. WORK PROGRAM:

The author spent a total of 16 days on the property conducting a

prospecting and sampling program in an attempt to better define the economic potential of the prospect.

A total area of 3000 by 5000 metres was prospected covering approximately 15 square kilometres. Triverses were conducted averaging about 200 metres apart and totaled about 75000 metres in total length.

Rock outcrops, mineralization, and other geologic features were noted on a map—and rock and soil samples were taken where deemed of interest. Since the claims are covered by extensive overburden (in excess of 95%) attention was given to the locating of mineralized and silicified float as a guide to delineating areas of bedrock favorable for molybdenite mineralization.

A total of 25 rock samples were taken and analyzed as rock geochem samples for Mo. Cu. Pb.Zn.W.Sn. and Ag. The locations of the samples are plotted on the geologic map as well as the molybdenum value in parts per million, the full areay results being appended at the end of this report.

In addition, six soil samples were taken to compare the results with previous sampling and these were analyzed by Chemex Labs for Cu.Mq, and W.

DESCRIPTION OF WORK AND RESULTS

PROSPECTING:

A base camp was set up at the lower end of the property from which the author conducted his work which was carried out by a series of traverses on foot.

A network of old bulldozer trails was located which covers large parts of the Pirate 2 Claim and which lead to the 26 percussion holes which were drilled in 1974. There are probably two or three miles of these old trails which are becoming overgrown and blocked by windfall but which could be repaired with aday or so of bulldozer work.

Several bulldozer trenches were also discovered while searching for the old drill sites. These trenches were not mentioned in previous published reports and they total about 2000 feet in length and average about 10 feet in depth. These trenches are entirely in overburden except for the lowest one which is about 500 feet in length and which exposes a total of 30 feet or so of outcrops composed of silicified hornfels and quartz monžonite with low grade molybdenite present, a rusty brown basal till layer overlies the bedrock for several feet and this till carries numerous boulders of silicified hornfels. The normal gray colored transported till which commonly covers large areas of the claim group overlies the rusty till. The rusty till is strongly anomalous for molybdenum in three soil samples taken which assayed from east to west 51, 98, and > 250 ppm. Mo respectively along the trench.

Prospecting and geological mapping was carried out to help determine both the extent of porphyry type molybdenum mineralization and related alteration patterns as well as the relative position of the surface outcrops within the porphyry system as a whole. If one could delineate these features a further exploration program could be more intelligently applied in the future.

In prospecting particular attention was thus given to the location of alteration zones such as silicification, pyritization, and hornfelsing and their relation to observed mineralization. Various intrusive rock types were noted to determine their relation to the various alteration patterns. Other features such as faults, dikes, dips and strikes etc were also noted.

Because of the extensive overburden which covers the property it was also thought to be useful to plot the location of altered and or mineralized float occurrences that were found while prospecting to be used as a guide to outlining potential areas of mineralization which would require further exploration.

MINERALIZATION:

Prospecting based on the above work has partially delineated.

a large porphyry molybdenum type of system composed of a multi-phased igneous intrusion which has been intruded into Cache Creek argillites which are intensely altered to hornfels.

A stockworks of quartz stringers of varying intensity permeates both the intrusive and the hornfelsed sediments. This stockwork locally carries molybdenite in interesting amounts estimated visually at from .05% to .1% MoS2 by Amax personnel. The molybdenite mineralization if cund—within a larger pyritized zone which occurs in both the quartz stockworks—as well as the rocks that surround it.

Molybdenite occurs as fine selvedges along the borders of quartz veins, as clots and as disseminations. Several of the 25 rock samples that were submitted carried from 300 to 1800 ppm. Mo. These samples came from the northeast part of the Pirate 2 Claim and indicate the best outcropping molybdenite mineralization occurs in this area.

The zone of molybdenite mineralization extends from SW to NE for at least 3500 metres with a width of up to 2500 metres as indicated by mineralized outcrops and float. This zone may extend for a considerable distance further to the northeast where grid soil sampling by. Amax disclosed anomalous Mo values in areas completely covered by overburden. To the southwest of the zone a hornfels breccia dike cuts pyritized and carbonatized Cache Creek argillites which indicates intrusive activity and hornfelsing at depth.

Tertiary volcanic cover composed of basalts and tuffs is also present at this location covering low lieing areas of the west edge of the property. These rocks could be covering any possible continuation of the altered rocks at depth as well as eliminating the chance of picking up soil geochemical anomalies.

Silicification of varying intensity is present over the same general extent as the molybdenum mineralization. Along the eastern edge of the Pirate 2 claim some small outcrops occur on the steep slope above and immediately to the west of the main creek which drains the property. These outcrops are composed of quartz monzonite which carries up to 50% of purple hornfels fragments so that the rock locally resembles a breccia, and this rock type is also flooded with quartz as pervasive silicification and, in addition, carries interesting amounts of molybdenite.

The density of quartz stringers varies from 1 or 2 per square foot up to 20 or more per square foot with a general increase in density from west to east across the Pirate 2 Chaim. Quartz vein stockworks are also known to occur on the Pirate Chaim but outcrops are insufficient to determine their density and mineral content. Molybdenite float similar to that found in place on the other claim has been found in the creek fork which drains the Pirate Claim.

Pyritization is present wherever outcrops are found throughout the claim group usually in amounts of from 2 to 5 per cent, but is reported to occur in amounts as high as 15 per cent. The pyrite occurs as fracture fillings and disseminations and also as thin coatings or "paint" coating biotite grains particularly in those parts of the quartz monzonite which have been flooded by quartz.

The pyrite bearing rocks extend under heavy overburden in all directions, so that their full extent would have to be discovered by geophysical methods.

ROCK TYPES:

The intrusive rocks range from a biotite quartz monzonite to a rock resembling alaskite which has no mafic minerals and contains considerable potash feldspar.

Some porphyritic phases of alaskite are oresent in the west end of the lower trench.

Fine grained quartz monzonite with about 5% biotite as a mafic accessory mineral occurs as float in the vicinity of the upper trenches. It is probably the same rock that was logged as "felsite" by Amax in their drill logs. The float samples are usually stained red by hematite.

Pegmatite dikes occur peripheral to the main intrusives along the creek in the southeast part of Pirate 2 Claim where they intrude the Cache Creeks rocks.

The Cache Creek sediments are composed of argillite and some quartzite with minor limey beds. The sediments are baked and altered to hornfels which varies from purple to green to tan and also black in color. The greenish hornfels usually carries some pyrrhotite. The rocks of this formation are usually intensely fractured and broken and often display a closely spaced stockwork of quartz stringers. The hornfels fragments found as float are usually less than 6 inches in diameter and are often stained by hematite, limonite and yellow molybdite.

Several dikes occur the largest being a mafic dike which parallels the main creek in a northwest direction and may be as much as 100 metres wide.

Tertiary volcanic rocks composed of vesicular basalt and tuff over lie the low ground along the southwest border of the Pirate 2 Claim.

CONCLUSIONS

The author feels that the exploration work done to date has outlined a large target area 3500 meters by 2500 meters in dimension, which has certain favorable geological characteristics which makes it

- a favorable place in which to search for a viable molybdenite deposit.

 Some of the more important characteristics are listed below:
- 1 The prospect is found within the Topley Intrusives which also host the Endako molybdenite deposit which is the largest in Canada. There are important differences in the structural settings of each occurrence however. The Endako deposit is located at the center of a zone of repeated faulting and discount on between several intrusive phases and is entirely within granitic rocks. The Shass Mountain prospect is located in and around a intrusive complex that is satellitic or external to the main Topley Batholita and also involves hornfelsed sedimentary rocks so that it more resembles molybdenite occurrences found in the Smithers area.
- 2 The presence of a biotite quartz monzonite stock which shows evidence of being intruded by other more acid alaskitic intrusive types which are generally associated with the economic molybdenite deposits of North America.
- 3 Extensive zones of alteration composed of quartz vein stockworks and some silica flooding plus extensive pyritization are also favorable features.
- 4 Widespread molybdenite mineralization is present within the zone of silicification and it locally occurs in interesting amounts.
- 5 There is intense hornfelsing to purple biotite hornfels by the intrusives for a considerable distance from their contacts.
- 6 Several small outcrops are present which carry brecciated fragments of hornfels within silicified quartz monzonite which also carries molybdenite. These rocks resemble breccia like rocks which were recorded by Amax in some of their percussion holes. Breccias are often host for the better grade parts of molybdenum deposits.
- 7 The nearby presence of a tertiary volcanic center indicates the area

has undergone the deep disruption that is required structurally to produce a productive molybdenite deposit.

8 The occurrence of ultrabasic rocks at the summit of Shass Mountain probably represents oceanic crust that has been squeezed between closing structural plates involved in subduction parallel to the Pinchi Fault system. This also indicates favorable deep structures that are usually associated with the important molybdenite deposits.

9 The property is favorably located with respect to labor source,

highways, power and transportation routes and is located at low elevations.

In closing the author feels that the property merits further exploration work, probably over a period of several years because of the large area involved, in order to determine if a viable molybdenite deposit is present.

Charles Kowall

exploration geologist

ITEMIZED COST STATEMENT

<u>ITEM</u>	COST
WAGES: Charles Kowall 16 days prospecting and consulting at\$100 per day; Sept. 1-6 and Nov. 6-10, 1979; and Aug. 1-5, 1980	\$1600
John Taylor, Atlin B.C. prospecting 5 days at \$75 per day Nov.6-10, 1979	375
VEHICLE RENTAL: 4 wheel drive at \$25 per day 16 days	400
MEALS: 21 man days at \$20 per day	420
GASOLINE, OIL	85
STAKING COSTS AND SUPPLIES	200
ASSAYING: ROCK AND SOIL CHEMEA LABS	76.80
ASSAYING: ROCK GEOCHEM. VANCOUVER LABS	453.70
AIR PHOTOS:	25
COST OF COMPILING THIS REPORT , DRAFTING MAPS AND PHOTOCOPYING ANDBINDING TEXT 7 days at \$100 per day	700
PHOTOCOPY CHARGES FOR DUPLICATING MAPS AND CHARTS:	99.89
TOTAL COST OF WORK	\$4435.39

APPLY \$3600 OF THE TOTAL SPENT FOR ONE YEARS ASSESSMENT WORK FOR ALL 36 UNITS OF THE PIRATE GROUP

LIST OF CLAIMS UPON WHICH WORK WAS DONE

CLAIM NAME	UNITS	RECORD NUMBER	DATE
PIRATE	20 units	2036(8)	AUGUST 31
PIRATE 2	16 units	2049(8)	AUGUST 31

ONE YEARS WORK FOR EACH CLAIM

AUTHORS QUALIFICATIONS

- 1 B.S. degree in Geology from Colorado College, Colorado Springs Colorado 1964
- 2 Three years as field geologist and prospector for Highland Belll Ltd. (Carl Springer interests) under the direction of Ed Wozniak who is currently the director of Amoco's North American exploration
- 3 Seven years as staff exploration geologist for Silver Standard Mines Ltd. under the direction of Bill Dunn
- 4 Three years as independent exploration geologist
- 5 Three years under the Provincial Prospectors Grant
- 6 Total of 14 years prospecting and exploration in British Columbia, Alaska, Yukon, and the western United States



TO:

CHEMEX LABS LTD.

217 BROOKSBANK AVE NORTH VANCOUVER, B.C. CANADA V7J 2C1

CANADA
TELEPHONE:

MENTON: 384-0221

TELEX 043

043-52597

· ANALYTICAL CHEMISTS

· GEOCHEMISTS

. REGISTERED ASSAYERS

CERTIFICATE OF ASSAY

CERTIFICATE NO. 67250

INVOICE NO.

34582

RECEIVED

Jan. 7/80

ANALYSED

Jan. 17/80

ATTN: V6E 3T5

Vancouver, B.C.

Silver Standard Mines Ltd. 904 - 1199 W. Hastings St.

SAMPLE NO.	Z	%	%	%	%	oz/ton	oz/ton
SAMPLE NO.	Cu	Mo	Pb	Zn	wo3	Ag	Au
11401		130-2-1				0.30	0.005
11402				100		27.70	0.102
11403						29.06	0.050
11404						0.40	< 0.003
11405			< 0.01	8.08	un and a more	0.16	< 0.003
11406						0.14	< 0.003
11407						0.66	0.044
11408						3.23	0.052
11409						3.82	0.018
11410	0.03		3.14	2.34		8.52	0.010
11411						0.28	< 0.003
11412	1.35				200	0.20	< 0.003
11413	0.16					0.10	0.003
11414	1.58					0.06	< 0.003
11415	0.02					0.04	< 0.003
11416	0.03					0.06	< 0.003
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MEMBER CANADIAN HISTING ASSOCIATION V Juanto



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212 BROOKSBANK AVE. NORTH VANCOUVER, B.C. CANADA

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V7J2C1 984-0221

AREA CODE: TELEX:

604 04-352597

. ANALYTICAL CHEMISTS

* GEOCHEMISTS

* REGISTERED ASSAYERS

CERTIFICATE OF AMALYSIS

CERTIFICATE NO.

51878

TO: Silver Standard Mines Ltd. 904 - 1199 W. Hastings Street

INVOICE NO.

34541

Vancouver, B.C.

RECEIVED

Jan. 07/80

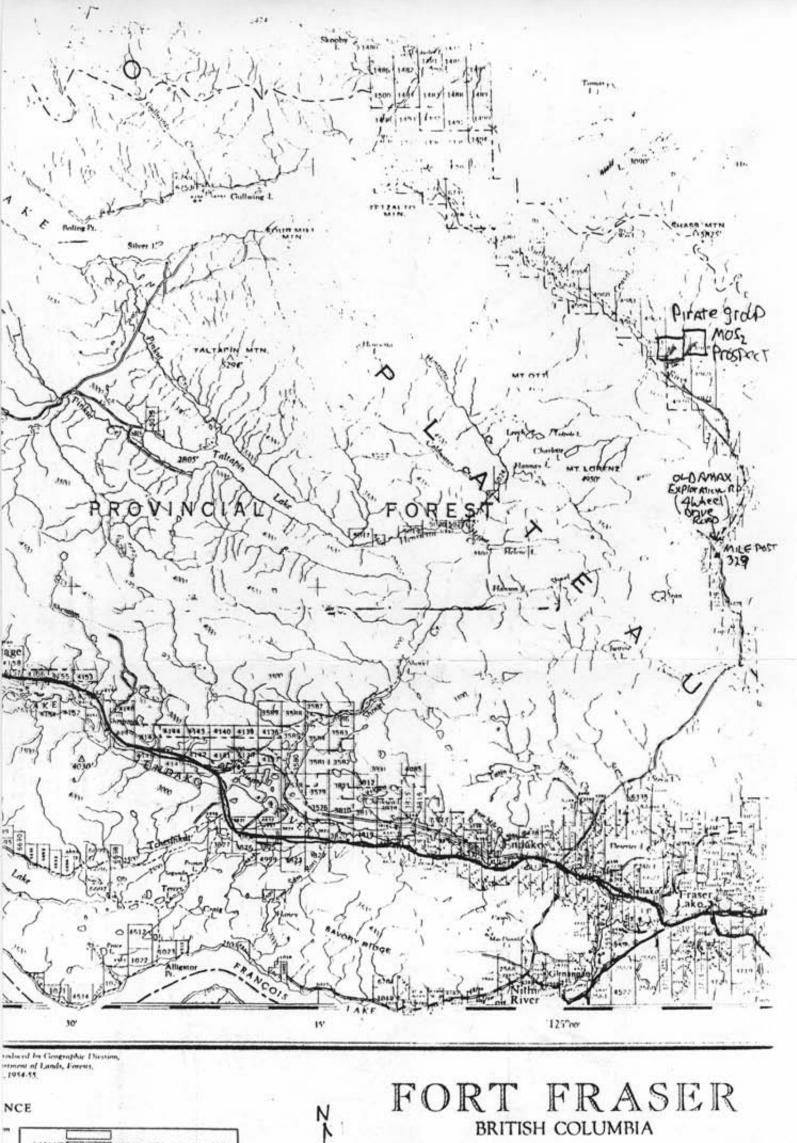
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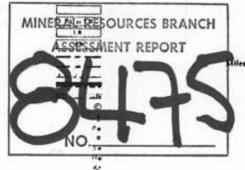
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Jan. 14/80

ATTN: Chuck Kowall

SAMPLE NO. :	PPM	PPM	PPM	
SAMPLE NO. :	Cu	Mo	W	
CK 1	80	58	12	
2	445	> 250	5	
3	96	98	2	
4	62	51	3	
5	66	34	12	
CK 6	62	34	4	



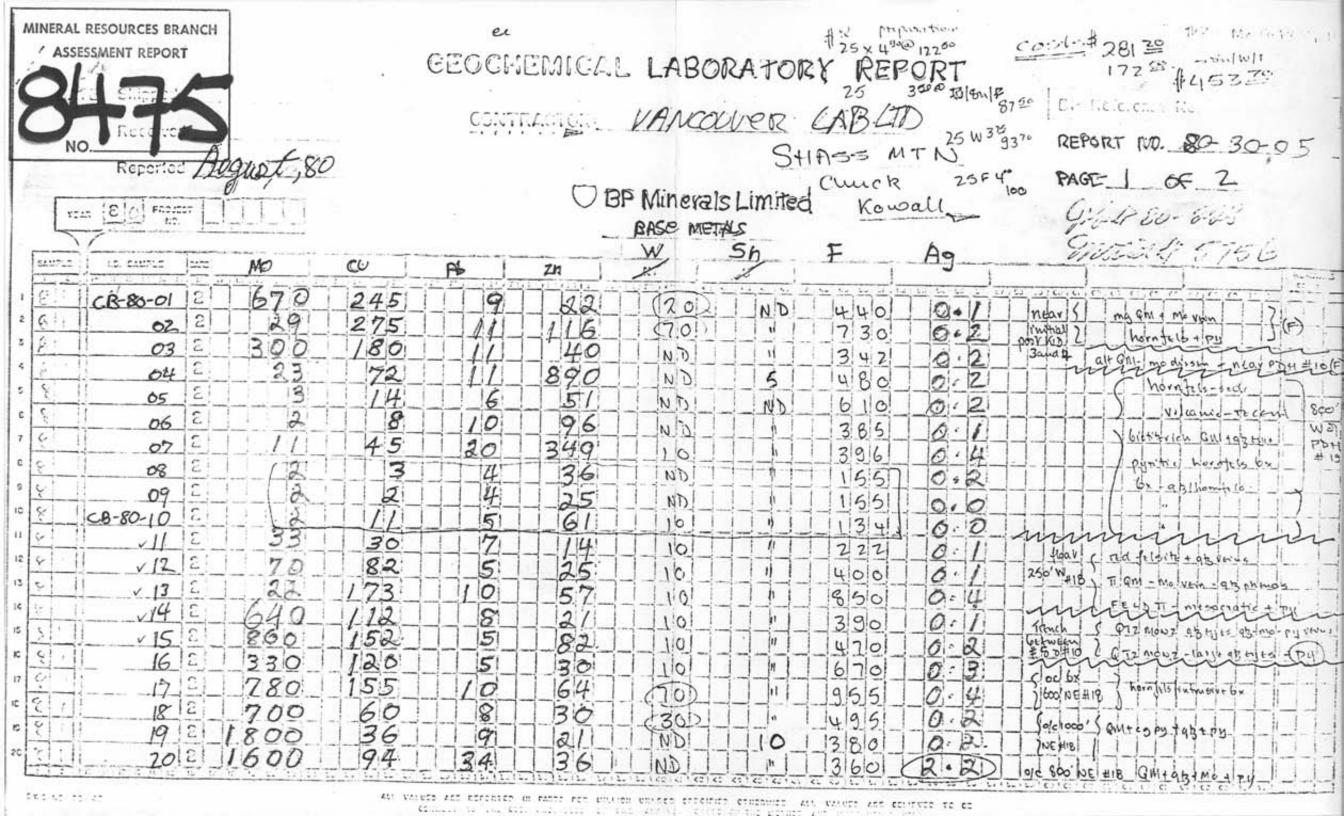


Scale 1:250,000 or approximately 1 Inch to 4 Miles

Scale of Kilometres

Magnetic Declination approximately 12700' Eart at centre of map 1961 MAP中

Copies of the met may be obtained from Goography 1 to Austria and Mapping Branch



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO.

GEOCHEMICAL LABORATORY REPORT

CONTRACTOR VANCOUVER LABLED

REPORT NO. 80-30-0-5

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