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GEOLOGY REPORT
INEZ/GWEN CLAIMS

N.T.S. 82-E-5 W

By: D. L. Cooke
Union Carbide

PROPERTY SUBMITTAL
C. I. Brett

Charles I. Brett
R. R. 4, Okaview Road
Kelowna, B. C. V1Y 7R3

From

460

1.

D.L. COOKE

Union Carbide - 1973

LOCATION AND ACCESS

The property is located 2.5 miles north from Olalla (B.C.) along Provincial Highway No. 3 and above the highway on the east side on a high terrace at about 2500' elevation.

Access to the E showing is southeast along the Twin Lakes Road for 0.6 miles from the highway, then by foot for 0.6 miles in a west and southwest direction, along the slopes of a steep mountain.

The west showing and adit are best approached directly from the highway, opposite the Indian rock paintings and straight up the mountainside.

OWNERSHIP

The mineralized areas are covered by three claims, Inez 1, Inez 2 and Gwen 3, (Record No's. 26116 to 26118). The only other claim in the group is the Gwen 4 (Record No. 26119). All these claims are owned by C.I. Brett of 5530 Carson Street, S. Burnaby, B.C., now a resident of Kelowna. They were staked February 14th 1970 and recorded two days later.

No other claims are currently held in the immediate area.

HISTORY

The showings were apparently discovered by Ben E. Williams of Keremeos some time in, or prior to 1942. Soon after, Williams optioned the property to Kelowna Exploration Co. of Hedley.

Past work on the area is evidenced today by 16 pits and trenches, one adit and the remnants of a 100' survey grid. The latter over the east showing. It is not known who carried out this work. No drilling is known on the property.

GEOLOGY AND MINERALIZATION

According to H.S. Bostock (1927), the geological setting is that of a granodiorite stock (Post-triassic) intrusive into chert, tuff, greenstone and limestone of the Shoemaker Formation (Triassic or older).

The present examinations have shown two or three small lensoid skarns (average strike length 100' or 200'), about 1000' apart in an E-W direction and immediately adjacent to and south of a granitic stock. (Post-triassic).

The skarn is interbedded with poorly bedded white and gray quartzite and greenstones of the Shoemaker Formation (Triassic or older).

The greenstones were probably of andesitic and/or basaltic composition as potassium feldspar is absent. One greenstone is north of the eastern skarn, is high in plagioclase and low in mafics, the other greenstone is south of the eastern skarn, is low in plagioclase and high in mafics.

A small granitic stock (covering about 500 acres) of post-triassic age (Bostock 1927) has intruded the Shoemaker Formation. Bostock identified this stock as Granodiorite but in the claim area, two samples were identified as a quartz monzonite using the HF/Sodium Cobaltinitrite staining technique. The skarn showings are closely associated with embayments in the southern boundary of this stock.

Narrow aplite dykes trending north-south and dipping steeply east, are seen intruding the southern volcanic.

Ultrabasic dykes* up to 5' thick intrude both the intrusive and Shoemaker Formation. They are generally steeply dipping but with variable strike. They are probably lamprophyres and a last phase of the granitic intrusion. One of these dykes appears to have intruded partly along the contact between the western skarn, a fault and the quartzite. It has also been the path along which the adit has been driven.

* See thin Section Reports of 3 samples by B. D. Ryan (Nov. 1973).

No limestone was seen in the area, although it is known to occur elsewhere in the Shoemaker Formation and massive limestone of unknown age occurs about 1/2 mile to the southeast.

The eastern skarn is of pyrōxene, black quartz and minor garnet, glassy crystals of yellow fluorescent molybdoscheelite, chalcopyrtie, pyrrhotite and molybdenite. It occurs as a 40' wide (at its widest) lensoid body about 150' long. The eastern termination of this skarn is assumed to be immediately west of the easternmost trench which is in greenstone. Its western termination is probably just west of the main trench although it may be continuous with the following skarn.

A lesser occurrence of skarn occurs in a band about 3' wide in two trenches 100' to 200' west and more or less on strike from the "eastern skarn." The mapping suggests this skarn terminates to the west against the quartz monzonite but to the east it could either pinch out or be continuous with the "eastern skarn."

About 800' further west (horizontal distance) and down the mountainside is another skarn showing, also a lensoid body but of somewhat different mineralogy being much richer in sulphides and garnet.

All the skarns show some molybdoscheelite with the highest grades in the "eastern skarn" and the central part of the western skarn. Minor molybdenite and chalcopyrite were noted in the eastern showings.

Eight chip samples were taken from the eastern showings and lamping estimates were made for the western skarn as shown on the accompanying geological maps and in the table below.

<u>Sample</u>	<u>%Cu.</u>	<u>Total Mo as %MoS₂</u>	<u>%WO₃</u>
A	.06	.016	.20
B	.24	.014	.46
C	.06	.036	.24
D	.02	.031	.34
E	.02	.011	.17
G	.11	.017	.26
H} highly	.02	.024	.25
I} oxidized	.05	.019	.70
Average	.07	.021	0.33

STRUCTURE

The Shoemaker Formation and other Formations in the immediate area (i.e. to the south and southeast) have a regional strike of about 70° and dips of about 60° which shallow towards the southeast. Limited information to the west suggests that the area of the showings is the southeast limb of an anticline.

Strikes and dips at the east showings and west along the mapped contact hold to this structural picture in that they strike 70° and dip 60° south. However, at the western showing the strike is north-south with an easterly dip.

A distinct fault with an average of about 4" of crush and gouge can be traced along the western margin of the west skarn showing, disappearing north into the granitic stock. The configuration of the stock contact suggests this fault has had right-hand movement (i.e. east block south).

No other faulting is in evidence in the mapped area.

WATER AVAILABILITY

There are no permanent streams conveniently close to the showings. The closest stream is Keremeos Creek, which is about 1/4 mile west and about 700' lower in elevation than the east and higher showing. As far as we know this is a permanently flowing stream.

The shaft in the adit is permanently water-filled.

RELIEF

The topography of the area is moderate by B.C. standards and not heavily forest covered. The highest peak in the area is Apex Mtn. at 7372' elevation.

The showings are at 2150' and 2500' elevation, 300' x 650' respectively, above Highway No. 3, (elevations approximate) on a steep hillside, to 5000' elevation.

Depending on the site location, there could be difficulties with the drill site locations.

CONCLUSIONS - Those in favour:

1. WO₃ assays and lamping estimates are of interest.
2. The eastern skarn or skarns are dipping south, away from the stock which decreases the possibility of the stock cutting off the skarn at depth.
3. Although the skarn bodies appear to be lensoid with little likelihood of being continuous with each other, they are very probably of the same sedimentary horizon. If this is the case other lenses may lie between them, south of the stock contact.
4. The adit has not tested the depth possibilities of the western showing, as it has been driven in an ultrabasic dyke.

Those not in favour:

1. The western skarn is dipping east towards the stock, which decreases the possibility of the skarn continuing at depth.
2. The skarn bodies are lensoid in surface expression with average strike lengths of 230' or 125' depending on whether two or three lenses are interpreted from the mapping. Assuming a classic lensoid form, that depth of lens below the surface would be about half these figures (i.e. 115' or 62').

On this basis, and using 0.3% as the bulk grade of WO_3 , tonnages of skarn and units of WO_3 are as follows:

a) If two lenses are assumed:

tonnages are $1521 + 14260 = 15,781$

units are $456.3 + 4278 = 4,734.3$

b) If three lenses are assumed:

tonnages are $1521 + 6873 + 154 = 8,548$

units are $456.3 + 2061.9 + 46.2 = 2,564.4$

RECOMMENDATIONS

If the basic assumption that these skarn bodies are lensoid is correct, then this property is of little interest. This assumption can only be tested by drilling. Recommendations then are:

1. Enter into an agreement with the owner to drill beneath each of the skarn bodies. These holes should pass through points which are below the limit of the theoretical lenses described above.
2. If skarn intersections are met then further drilling should be carried out.

This second phase drilling should include the ground south of the stock contact between the west and east showings.

REFERENCE

Bostock, H. S. (1927), Map No. 628A (Olalla), Dept. of Mines and Resources, Mines and Geology Branch.

Accompanying Maps

Ben Williams Tungsten Property - Geological Map

Scale: 1" = 50'

Overlay of Adit and Mineralization, W. Showing Ben Williams Property.

Scale: 1" = 50'

GENERAL

The samples are dark grey to black aphanitic and crystalline. None of the samples contain deformational textures. Sample No. 6 appears to be the freshest. Thin section sample No. 6 has an igneous texture. Thin sections of samples 3 and 4 are similar and these samples appear to be from the same parent rock but any primary texture in them has been totally destroyed.

SAMPLE NO. 6 THIN SECTION DESCRIPTION

The thin section is composed mostly of an interlocking network of plagioclase laths forming an igneous intergranular texture. Pseudomorphs of a mafic mineral are scattered through this network. The igneous texture has an alteration overprint compatible with attainment of middle greenschist facies metamorphism.

MINERALOGY AND MINERAL FORMS

Plagioclase (50%)

Plagioclase occurs as subhedral albite twinned laths 1 to 4mm diameter. Crystals are weakly zoned and altered to biotite, sericite and epidote. A composition of An 37 (Andesine) was determined by the Michel Leve method.

Pseudomorphs (5%)

These are equidimensional (less than 2mm diameter) and composed of a dis-oriented mesh of clean biotite flakes and grains considered to be magnetite. Magnetite sometimes outlines the shape of the original crystals which were equidimensional and could have been olivine, amphibole or pyroxene. Pyroxene is considered to be the most probable.

Magnetite (15%)

As mentioned, magnetite outlines pseudomorphs and also interstitial regions forming triangular or rod shaped masses. Most of the magnetite appears to be primary.

Epidote (15%)

Epidote occurs as granular crystals. These crystals are secondary; either deuteritic or related to the later low grade metamorphism.

Biotite (10%)

Biotite occurs as a fine grained interstitial hash and as small flakes in plagioclase crystals.

Sericite (5%)

Sericite occurs as small flakes in plagioclase crystals.

Quartz (5%)

Quartz occurs as interstitial equigranular secondary grains.

DISCUSSION

The thin section has an isotropic igneous texture. Lack of trachytic texture and strong oscillatory zoning in the feldspars both tend to suggest a sub-volcanic or deeper environment. The mineralogy of the sample is compatible with a diabase, diorite or lamprophyre. The plagioclase composition is not calcic enough for a diabase and the intergranular texture is not that of lamprophyres which usually have conspicuous porphyritic textures.

The sample apparently belongs to the diorite clan. It comes from a sub-volcanic environment and could be part of a basal flow or dyke. It has a low mafic content and if it is a dyke would be a leucodioritic dyke. There is a suggestion of deuteritic alteration which produced epidote. The pervasive alteration of plagioclase suggests a distinct period of metamorphism possibly of middle greenschist facies intensity. There is no evidence of accompanying deformation so that metamorphism was static.

SAMPLES 3 AND 4 DESCRIPTION

Samples 3 and 4 are similar and are described jointly. The thin sections are composed of a fine grained hash of biotite, chlorite, epidote and sericite and dispersed grains of opaques (magnetite).

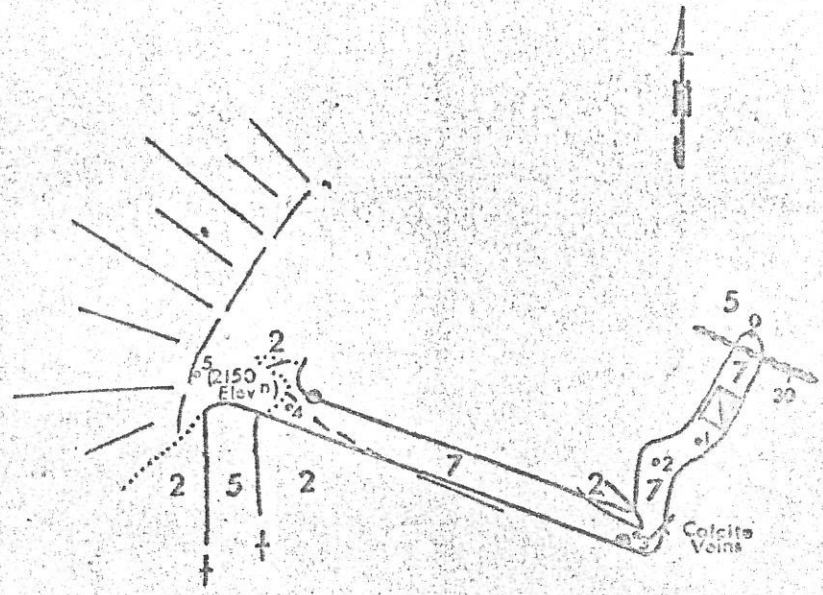
MINERALOGY AND MINERAL FORMSBiotite (20%)

Biotite occurs as a fine grained disoriented hash.

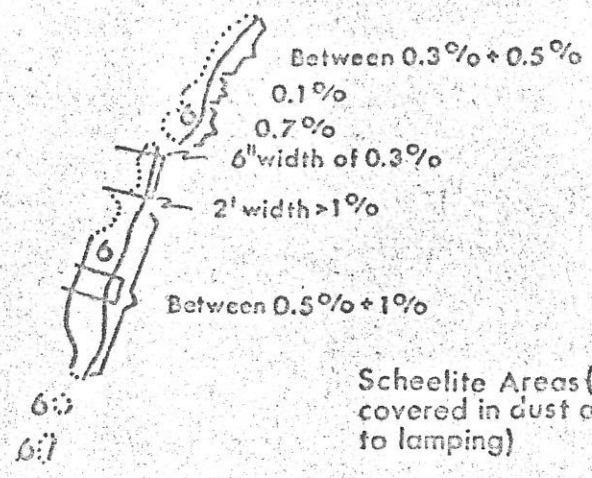
Chlorite (20%) (Fe free)

Chlorite also occurs as a fine grained disoriented hash.

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Plan of Adit



Scheelite Areas (Intervening areas are covered in dust and debris and not conduct to lamping)

Visual Estimates of Scheelite in West Showing.