4919

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GEOLOGICAL REPORT ON THE

BUL AND WALT MINERAL CLAIMS

OSOYOOS, B.C., OSOYOOS MINING DIVISION

49° 00' North
119°35' West

for 4919

Multiple Mining Development Ltd.
5017 Ross Street
Red Deer, Alberta

by

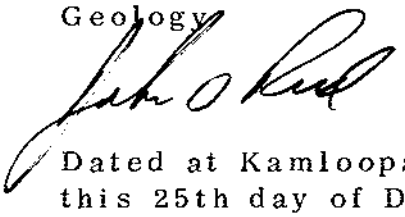
John O. Rud M.Sc.
January 15, 1974

TABLE OF CONTENT

I hereby declare that the following expenses occurred during the geological mapping project on the Walt and Bul Mineral Claims.

Geologist @100.00 per day for 15 days	$1500.00
Meleage-685 miles @ 25¢ per mile	171.25
Meals and Lodging	235.00
Thin sectioning and staining	152.50
TOTAL EXPENSES	$2058.75

John O. Rud M.Sc.
Geology



Dated at Kamloops, B.C.
this 25th day of December, 1973

WALT AND BUL MINERAL CLAIMS
OSOYOOS MINING DISTRICT, B.C.

INTRODUCTION

Geologic mapping of the Bul and Walt Mineral Claims was carried out during July 1 to July 10, 1973 by the request of Multiple Mining Development Ltd. The primary purpose of this project was to examine all rock types that crop out on these mineral claims and geologically outline the areas of greatest mineral potential.

Rock samples were collected and sent to Vancouver Petrographics for thin sectioning. Examination of the thin sections was conducted by the writer during December, 1973.

LOCATION AND ACCESS

The Bul and Walt mineral claims are located in the Osoyoos Lake area approximately 6 miles west of Osoyoos, B.C.

Access is provided by logging and ranch roads in fair condition passable to two-wheel drive vehicles.

TOPOGRAPHY

These claims are within an area of moderate topographic relief with elevations ranging between 900 and 4500 feet. Average elevation is about 3500 feet with glacial debris covering most of the lower elevations. Differential erosion has caused most of the topographic features. The ridges are composed of syenite and quartz diorite while the valleys are underlain by the less resistent sediments of the Kobau Group.

GEOLOGY

The purpose of the study was to map, describe and interpret the geology of the Bul and Walt Mineral Claims.

A Department of Energy, Mines and Resources topographic map was used to plot the field data. Aerial photos were also used to supplement the field work. All outcrops were located by pace and compass traverses along the claim location lines. A total of twenty-one rock samples were collected from the syenite, eight rock samples from the quartz diorite and five rock samples from the sediments of the Kobau Group and were then labeled accordingly.

The regional geology has been mapped by the Geological Survey of Canada, Keremeos Map Sheet by H.S. Bostock, 1930.

The northern part of the claims are underlain by the intrusive rocks of the Osoyoos granodiorite. This unit varies from a granite to a diorite with granodiorite and quartz diorite the most abundant. Quartz diorite is the type rock that crops out in the northern portion of the claim group. The southern and western region of the claim group is underlain by the Kruger Syenite of Jurassic age. These rocks have been described by Bostock as "....exhibit a concentrically zoned structure centred where the Similkameen river crosses the International Boundary. The outer zone of the syenite, half a mile wide, is medium grained and rich in dark minerals, mainly pyroxene. Inward from this body a second zone, composed of medium-grained, dark and more feldspathic alkali syenite, form the main part of the Kruger syenite..."

The central portion is underlain by rocks of the Kobau Group consisting of quartzite and quartz schists. These rocks are paleozoic in age with outcrops scarce in the lower regions of the claim group. These sedimentary rocks have been altered by the intrusives with alteration consisting largely of recrystallization and introduction of carbonate material as seen by the calcite veining. The few strikes and dips obtained indicate a northwesterly strike and a southwesterly dip.

In summation the following formation underlie the Bul and Walt Mineral Claims:

MESOZOIC

Nelson Intrusive

Quartz diorite

Syenite

PALEOZOIC

Kobau Group

Quartzite, Phillite, Greenstone

Examination of the twenty-one alkali syenite thin-sections indicated a medium-grained rock with textures that ranged from hypidiomorphic-granular to porphyritic. The phenocrysts consisted of orthoclase, microcline, perthite, aegirine-augite, augite and aegirine. The phenocrysts ranged in size from 1 mm to 5 mm. The groundmass was composed of orthoclase, microcline, perthite, albite and minor amounts of muscovite.

The mafic constituents of the alkali syenite consisted of aegirine-augite, aegirine, augite, biotite and melaniferous garnet. Generally these mafic constituents occurred in clusters although not to a degree that a glomeroporphyritic texture developed.

The aegirine-augite occurs in yellow-green to green pleochroic subhedral crystals in a short prismatic habit. The crystals rarely exceed 2 mm in size, 12% of the total constituents and were generally associated with the aegirine, augite,

and biotite crystals.

The aegirine crystallized in dark to light green pleochroic long forms. Most of the aegirine was anhedral in shape, rarely exceeded 3mm in length and 10% of the total constituents. They often formed overgrowths on the aegirine-augite crystals.

The augite crystals occurred as colorless to pale brown, subhedral to euhedral minerals. Many showed the typical four or eight-sided cross sections indicative of the inosilicates. In the samples taken near the contact with the sedimentary rocks the augite was altered to tremolite-actinolite to the extent that only the crystal outlines remained. This alteration is typical of hydrothermal activity. The augite rarely exceeded 5% of the total constituents and usually was associated with the aegirine-augite, aegirine and biotite crystals.

The brownish-green biotite made up only minor amounts in the samples taken from the southern region of the mineral claims but increased in amount toward the contact with the sedimentary rocks. At no time did it exceed 3% of the total constituents. The crystals usually occurred as lamellar aggregates with the plates usually bent. Another feature was noted and that was the biotite was altered to chlorite near the contact with the sedimentary rocks.

The felsic minerals present are orthoclase, microcline, albite and nepheline. These mineral generally compose at least 90% of the groundmass and between 65 to 75% of the total constituents. In some cases the microcline and orthoclase made up some of the phenocrysts in the alkali syenite. The perthitic intergrowths that occurred so commonly within the rock samples was composed of orthoclase or microcline playing host to albite or a acid oligoclase. Generally the intergrowth was so minute that the precise composition and relative amounts could not be determined. The albite and oligoclase was identified as such by measurements of extinction angles when possible.

The colorless nepheline crystals were found in samples taken from the southern region of the claim group. No nepheline was observed in any of the samples taken from the northern and western region of the mineral claims. The nepheline usually occurred as short prismatic hexagonal crystals that showed rows of inclusions. It rarely exceeded 8% of the total volume of the thin sections and in many instances had been completely replaced by zeiolites so only the crystal outline remained.

The eight thin sections of the quartz diorite indicated a medium to coarse-grained rock with oligoclase and andesine as its chief feldspar. The mafic minerals consisted of hornblende and biotite. The texture of the quartz diorite varied from hypidiomorphic-granular to allotriomorphic-granular.

The plagioclase was normally zoned and its composition was determined by extinction angle measurements. It made up 30 to 41% of the total constituents.

The brown pleochroic hornblende made up 20 to 27% of the sample and occurred in a long acicular habit. It had somewhat a sieve-like appearance due to incomplete replacement and inclusions.

The brown biotite composed 15 to 20% of the sample and was somewhate altered to chlorite.

The anhedral quartz usually occurred in the interstitual part of the rock sample and comprised between 12 and 18% of the total constituents.

The anhedral to subhedral orthoclase did not exceed 5% of the total volume of the rock and in some occurrences formed a micrographic intergrowth with the quartz.

The accessory minerals consisted of sphene, apatite, and iron ore.

The fine to medium-grained quartzite exposed on the claim group ranges in color from greenish brown to light grey. Quartz makes up approximately 60% of the sample with feldspar 20 to 25% and interstices filled with muscovite, biotite and epidote. Some large fragments, up to 3mm in size, of orthoclase and feldspar also occur. The quartzite near the contact increases in mica until a definite schistose character appears. In some instances the biotite has been altered to chlorite to give the rock a greenstone appearance. Calcareous veining along with mineralization is also a common occurrence near the contacts with the intrusive rock.

MINERALIZATION

The mineralization that is visible seems to be restricted to the contacts or in the nearby vicinity of the Kobau Group sediments. No mineralization was noted in the syenite. The minerals that are believed to be hydrothermally introduced are quartz, calcite, magnetite, pyrite, chalcopyrite and bornite. The quartz and calcite occurs as veinlets up to 5mm in thickness. Most of the veining seems to be associated with the quartz diorite andsediments of the Kobau Group. The sulphides occur as diseminations thoughout the same type rock as the quartz and calcite veining appear.

RECOMMENDATIONS

In view of the above conclusion it is recommended that all future exploration be confined to the northern region of the claim block. Specifically along the contact between the sediments and the intrusive rocks.

It is also recommended that the southern group of mineral claims be dropped as a economy measure so that all funds may be used on the claims which has the greatest economic potential.

CERTIFICATE

I, John O. Rud, of 6402 Furrer Rd., Kamloops, B.C. do hereby certify that:

(1) I am a graduate of the University of Oregon, (Master of Science) in Geology, 1971.

(2) I have practiced my profession with the University of Oregon as an instructor for Summer Field Camp (1970) and Lone Creek Mines Ltd. since 1971.

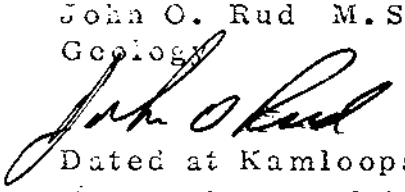
(3) Prior to attending the University I have worked underground as a minor.

(4) I am a member of the Canadian Institue of Mining and Metallurgy.

(5) I have personally examined the property as described in this report.

(7) I consent to the use of this report in, or in connection with a prospectus or a statement of material facts.

John O. Rud M.Sc.
Geology



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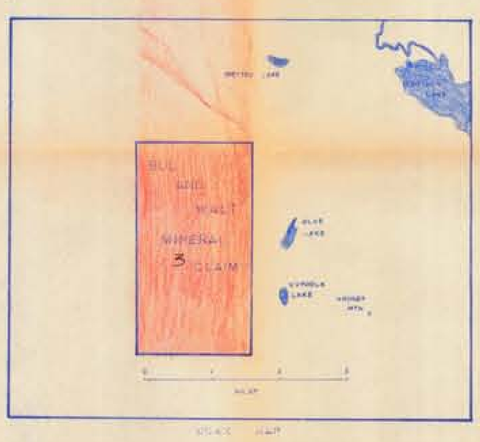

WALT 35
WALT 36
WALT 33
WALT 34
WALT 31
WALT 32
BUL 17
BUL 25
BUL 26
LAKE
BUL 23
BUL 24
BUL 15
BUL 16
BUL 21
BUL 22
BUL 13
BUL 14
BUL 19
BUL 20
BUL 11
BUL 12
WALT 14
WALT 13
BUL 9
BUL 10
WALT 11
WALT 12
BUL 7
BUL 8
WALT 9
WALT 10
BUL 5
BUL 6
BUL 3
BUL 4
WALT 7
WALT 8
BUCK 2
BUL 2
BUL 1
WALT 5
WALT 6
BUCK 1
BUCK 4
BUCK 3
WALT 39
WALT 40
WALT 3
WALT 4
WALT 15
WALT 16
WALT 1
WALT 2
WALT 37
WALT 38

N

LEGEND

1 SYENITE
2 DIORITE
3 QTZ. DIORITE
4 QUARTZITE, SCHIST

Qtz QUARTZ VEINING
Cal CALCITE VEINING

DEFINED, APPROXIMATE, & ESTIMED CONTACT

OUTCROP

BUL 17 LOCATION OF ROCK SAMPLE

SMALL SCALE FAULT, MAJOR

MULTIPLE MINING DEVELOPMENT LTD.

BUL AND WALT MINERAL CLAIMS
OSOYOOS, B.C.

GEOLOGY

DRAWN BY: JOHN O. RUD

DECEMBER, 1973

SCALE: 1" = 400'

TO ACCOMPANY ASSESSMENT REPORT ON THE BUL AND WALT MINERAL CLAIMS, PROVIDENCE MINING DISTRICT, DATED DEC 31, 1973 BY JOHN O. RUD

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