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REPORT
on the
BUCK CLAIMS
OSOYOOS MINING DIVISION

for
CANADIAN INDUSTRIES LIMITED

by
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Vancouver, B.C.

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ILLUSTRATION

Map 341A, showing presumed location
of Buck Claims

in envelope at back
of original report

INTRODUCTION

Mr. Kenneth A. Butler is the registered owner of three full sized mineral claims, Buck 1-3, located on a mountain top about 5 miles west of Osoyoos in the Osoyoos Mining Division.

The claims are at an elevation of 3600 feet to 4000 feet in dry country covered with scrub evergreens. They are south of the Richter Pass Highway and may be reached by 6.3 miles of dirt road from a point on that highway, 4.2 miles west of its junction with the main highway in the Okanagan valley.

In company with Mr. Donald Mason, the writer examined the Buck claims on September 12th, 1969, in order to assess their potential as a source of commercially acceptable nepheline syenite.

GEOLOGY

The only official geological map of the area in question is Keremeos, Map 341A, of the Geological Survey of Canada. The mapping was done on a scale of 1" = 1 mile in 1929-30 by Dr. H.S. Bostock and he indicates an area on the map which is underlain by the "Kruger syenite". This area trends northwesterly from the U.S. Boundary to the Similkameen River, a distance of approximately 7 miles in which the width of the syenite ranges from about 3 miles to less than 1 mile.

The Kruger syenite is a granitic body that is noteworthy mainly because of its low silica content. Mineralogically this fact is expressed by the absence of quartz (SiO_2) and the presence of nepheline (approx. $\text{Na}_3\text{K}_2\text{Al}_3\text{Si}_9\text{O}_{34}$), two chemically incompatible minerals.

The Kruger syenite is by no means homogeneous and, as is usual in such cases, subdivision into varieties depends to some extent on the diligence of the geologist. For practical purposes, however, subdivision can be based primarily on the amount of ferromagnesian minerals present because on this eventuality depends the commercial possibilities of the rock.

At least three-quarters of the area designated as Kruger syenite is composed of varieties in which the ferromagnesian

(dark) minerals exceed the felsic (light coloured) minerals. The remaining one-quarter of the Kruger rocks can be subdivided further on the basis of dark minerals and it is, of course, in the variety with the least amount of dark minerals that interest centres.

Millions of tons of rock on the Buck claims and probably billions of tons to the north can be classified as "felsic nepheline syenite". This rock is ash-gray in colour and much finer in grain size than the darker varieties. It is the only variety that holds out any commercial possibilities but it is present in almost unlimited quantity.

Mineralogically, the felsic nepheline syenite consists principally of microcline ($K_2O \cdot Al_2O_3 \cdot 6SiO_2$), nepheline, amphibole (a complex bisilicate), biotite ($H_2K (Mg,Fe)_3 Al (SiO_4)_3$) and black garnet. The usual accessories, occurring generally in small euhedral grains, are apatite, titanite, zircon and magnetite. Secondary (formed by metamorphism from primary) minerals include epidote, clinozoisite, natrolite, white mica, actinolite, chlorite and calcite.

PROCEDURE

Because, on the Buck claims, there is a great tonnage of felsic nepheline syenite "sitting on top of the mountain", there are really only two questions concerning commercial exploitation of this resource:-

- 1) Can it be purified to meet industrial specifications?
- 2) Is there sufficient market to make possible an economic operation?

These questions are, of course, closely related and a satisfactory answer to the first might well answer the second. With respect to the first, tests by various private and public agencies agree that this raw material contains non-magnetic iron (in biotite and amphibole) in an amount that precludes production by magnetic separation alone of a product acceptable to the glass industry. (It might be acceptable as raw material for a mineral wool industry.)

In view of the above, the first thing to do is determine whether an acceptable product for the glass industry can be made using flotation after magnetic separation. The agency suggested for this study is the Mines Branch in Ottawa who have the personnel and are much better equipped than the B.C. Research Council to undertake such a project.

It is recommended, therefore, that the Mines Branch be approached directly concerning this matter, and that the amount of raw material required by the Branch for a bench study be ascertained.

Such matters as mining costs can be quickly calculated later if ore dressing problems are solved satisfactorily.

The only other recommendation the writer would make at this time is for a survey of the three Buck claims by a B.C. Land Surveyor in order to confirm their actual presence on the ground and establish the area involved. This should cost no more than \$300.

Respectfully submitted,

BACON & CROWHURST LTD.

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