

O T T A W A November 7th, 1940.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 912.

Examination of Specimen of Rock from
Aklavik, Northwest Territories.

BUREAU OF MINES
DIVISION OF METALLIC MINERALS
—
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CANADA
DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

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Sample:

The specimen of rock from Aklavik, Northwest Territories, was received by the Division of Metallic Minerals, Bureau of Mines, Ottawa, Ontario, on October 8th, 1940, from Dr. L. D. Livingstone, Medical Health Officer at Aklavik. Dr. Livingstone requested the identification of the material.

Spectrographic Analysis:

In the hand specimen two chief constituents are easily seen. The greater part consists of a blue mineral which contains a lesser quantity of a brown mineral. Before requesting chemical determinations it was decided to make spectrographic analyses to determine the elements present. One such analysis was made of the blue mineral, another of the brown material, and a third of the composite sample. These spectrographic results are:

Blue Translucent Mineral -

Major constituents: Al, Mg, P, Fe.
Minor constituents: Mn, V.
Traces: B, Si, Ti, K.
Not present: As, Be, Sn, Sb, Cd, Tl, Te, In, Hg,
Zr, Pt, Au, Ag, Li, Ta, Mo, Pb, W,
Ga, Ni, Cr, Os, Ge, Co, Ba, Zn, Rh,
Ru, Rb, Yb, Yt, Sr.

Brown Weathered Material -

Major constituents: Fe, Al.
Minor constituents: Si, P, Mn, Mg, Ti, V.
Not present: Same as blue translucent mineral.

Composite Sample -

Major constituents: Si, Fe, Al, P, Mg.
Minor constituents: V, Ti, Mn.
Not present: Same as blue translucent mineral.

Examination of Polished Section:

A polished section was prepared and examined under the reflecting microscope. The minerals identified as present are: pyrite (FeS_2), rutile (TiO_2), manganese oxide, and iron oxide (probably "limonite").

Pyrite occurs as comparatively rare tiny

(Examination of Polished Section, cont'd) -

scattered grains. A considerable quantity of rutile is present as medium to small brown grains. It has been penetrated and to some extent replaced by small amounts of manganese and iron oxides. A rather heavy veinlet of iron oxide is prominent in the hand specimen.

Examination of Thin Section:

A thin section of the powdered blue mineral was prepared for the purpose of checking its identification. These tests gave the following information:

Colour - strong pleochroic, blue to colourless.
Index of refraction - 1.6 to 1.65.
Birefringence - moderate, 0.02 to 0.03.
Optical sign - negative, biaxial.

2V - 60° to 75°.

These data, coupled with the spectrographic analysis, conclusively identify the blue mineral as

LAZULITE - $(\text{Mg,Fe})\text{O} \cdot \text{Al}_2\text{O}_3 \cdot \text{P}_2\text{O}_5 \cdot \text{H}_2\text{O}$

Conclusion:

The specimen consists largely of lazulite, with minor quantities of rutile and iron oxides and traces of manganese oxide.

Lazulite is usually found in pegmatitic associations, and rare references have been made of its use as a gem stone, presumably when it occurs as large and well-formed crystals.

The information gives no indication of the

occurrence of any mineral or element in the present sample which might be of economic value.

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