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RONDAH PROPERTY
TYEE LAKE RESOURCES LTD.

TO: C. A. R. Lammle
FROM: Western Geological Services Ltd.
RE: Rondah Group - September 1970 - November 1970

As requested, the following paragraphs are a brief summary of my observations and comments in connection with the recent drill programme on the Rondah Group.

DRILL CORE GEOLOGY

ROCK TYPES

1. Basalt (b)

A good percentage of the core is composed of fairly massive, porphyritic basalt (b). In the contact zone the identification of the intrusive becomes very difficult on a small scale. In the drill logs anything that was thought to have been basalt originally was lumped into that classification. Where possible, the specific characteristics of the rock were noted.

Four main types of basalt were encountered:

a) Medium to fine grained, dark gray basalt with plagioclase phenocrysts.

b) Medium grained, grayish green basalt with coarse grained augite phenocrysts.

c) Medium to coarse grained, dioritized basalt with plagioclase and hornblende (or augite) crystals.

d) fine grained hornfels.

Some of the basalt with large hornblendes or augites may actually be lamprophyre dykes as their extent in the core is often discontinuous or they exist over relatively short distances.

2. Intrusive Rocks

The intrusive rocks identified in the core are, in general, feldspar porphyries. These were called porphyritic syenite (p) and syenite (s). Some chemical variation exists between these dykes since some are white and some pink with variations in the amount of mafics. The intrusives are, in general, quartz deficient with a low colour index. These rocks could be broken down into four types:

a) Syenite Porphyry (p)

Syenite porphyry is strikingly porphyritic with a very fine grained gray to pink groundmass and large feldspar phenocrysts.

b) Porphyritic Syenite (p)

In the same unit as a) above in the logs is a faintly porphyritic rock with a medium grained groundmass, usually of altered mafics and feldspars surrounding coarse to medium grained phenocrysts of feldspars which vary from all white to all pink.

c) Syenite (s)

This is a medium grained, almost equigranular rock with white feldspars, 3 - 4% magnetite, and fine grained mafics (10 - 15%). This rock type is restricted to hole 70-5.

d) Gneiss (g)

The gneiss is a gray to pink, fine grained rock with fine micas, strongly aligned. Pink and gray colourings also parallel the foliation.

3. Pegmatitic Dykes

The small pegmatitic dykes which occur on the property are important economically. They are probably trachytes composed mostly of pink feldspar. They might be classified as follows:

a) Pematites (peg.)

Coarse grained pegmatitic trachytes occur as dykes in the core. These bodies are usually 6" in size or greater. Occassionally they have quartz cores.

b) Trachytes (pink dykes)

Fine to medium grained trachyte dykes which are often highly porous occur in the sections. They are usually around 6" in size.

c) Tiny Pegmatites (tiny pegs)

Tiny pegmatite dykes which are less than $\frac{1}{2}$" across, and which are composed of white or pink feldspars are commonly intruded through the important alteration zones. These are frequently found in the volcanics, may actually be metasomatic and represent the initial stages of dioritization.

ALTERATION

Hydrothermal alteration is low grade; the major minerals are chlorite, epidote, zeolites and pink feldspars.

1. Pink Alteration

a) Potassium feldspar

Pink potassium feldspar alteration commonly occurs around trachytic dykes. This alteration is fracture controlled and commonly associated

with epidote alteration and sulphide mineralization (chalcopyrite and pyrite).

b) Hematite

Some of the pinkish feldspars may owe their colour to fine hematite in the crystals. Some hematite occurs on shears and a minor amount occurs in the volcanics causing a red tinge.

2. Epidote

Epidote is the most common alteration in the core. It is generally fracture controlled and occurs in veinlets throughout the rock. It is commonly associated with chlorite in basaltic rocks and with potassium feldspar in the intrusive rocks.

Heavy sulphide mineralization (pyrite only) occurs with heavy epidote. Chalcopyrite is present usually when the epidote is moderate.

3. Chlorite

Pervasive chlorite alteration occurs in some sections of the basalt. Epidote is usually associated with it in knots or on fractures. Mineralization with chlorite is usually finely disseminated pyrite and chalcopyrite.

4. Zeolites

Possibly two types of zeolites occur along fractures in the core. One type is light pink, resembling potassium feldspar slightly, but is softer. It is generally very fine grained. The other type is in clear white, medium grained crystals in drusy fractures. These crystals are usually tabular in form. Neither type of zeolite shows close relation with sulphide mineralization and both appear to postdate the mineralization.

5. Calcite and Gypsum (?)

Calcite occurs fairly regularly on hairline fractures postdating other alteration and mineralization. Some possible traces of gypsum occur in a similar way.

6. Saussurite

Some sections of the volcanics are highly altered, especially the groundmass, to a light green chlorite - epidote - sericite - calcite rich saussurite. These zones are usually accompanyied by later zeolite veining. These saussurites are, in general, barren.

7. Weathering

The rocks on the property show few signs of weathering due to recent glaciation in the area. Limonite is common on fractures near the surface of all the holes, but is not extreme. Malachite occurs in a similar way in 70 - 2 where copper mineralization was noted near the surface.

MINERALIZATION

1. Pyrite

Much of the core, especially hole 70-1, contains 8 - 12% pyrite. The mode of deposition of the pyrite seems to depend mostly on the type of alteration. Pyrite with potassium feldspar alteration fills fractures or is disseminated in the feldspar. Epidote alteration sometimes accompanies pyrite which may be coarsely disseminated to massive but mostly fills fractures. Chlorite alteration often has associated pyrite which is very finely disseminated throughout the completely altered rock.

2. Magnetite

Magnetite is common throughout most of the core and is associated mainly with chlorite alteration. It may form with the chlorite of a basaltic inclusion or as massive magnetite sections up to 6 feet long. These sections are usually over

90% magnetite with some pyrite, epidote and chalcopyrite. Their origin is likely hydrothermal rather than metasomatic.

3. Chalcopyrite and Bornite

Chalcopyrite is the main primary copper mineral in the core. Only a trace of bornite was seen. Associated minerals are pyrite, magnetite, potassium feldspar and sometimes chlorite or epidote. With the magnetite, the chalcopyrite is massive or disseminated in the magnetite. With the feldspar and epidote the mineralization is fracture controlled or it is directly in the alteration veinlets. With pervasive chlorite the chalcopyrite is finely disseminated. Pyrite is almost always present with chalcopyrite and usually they are intermingled.

4. Native Copper and Malachite

Traces of native copper and malachite on fractures are associated with limonitic weathering near the top of hole 70-2.

GEOLOGY OF TRENCHES

Trenching done in the northeast section of the property near lines 4 South and 8 South was successful in exposing a considerable amount of bedrock. The rock in the trenches is, in general, a dark gray basalt which is somewhat finer grained than the basalt in the drill core. The material from this area is, in fact, a very tough hornfels implying the proximity of an intrusive.

Mineralization in the trenches consists of from 5 - 20% pyrite, as finely disseminated material or, to a lesser extent, fracture fillings. No copper mineralization was noted in the trenches examined.

Some exposures were not examined due to snow cover. The accompanying map shows which trenches were snow covered at that time.

CONCLUSIONS

1. The drill holes intersect a volcanic terrain intruded by porphyry dykes.

2. The dykes have been hybridized, in part, by the volcanics.

3. The basalt is to some extent dioritized.

4. There are pegmatitic intrusions directly related to epidote and potassium feldspar alteration.

5. The zeolite and calcite alteration postdates mineralization.

6. The copper mineralization is related to magnetite, K - spar alteration and weak chlorite - epidote alteration.

7. Some important mineral associations are: pyrite - chalcopyrite, magnetite - chalcopyrite, pyrite - chalcopyrite - potassium feldspar.

8. No significant mineralization exists in the trenches examined to the Northeast.

RECOMMENDATIONS

1. Detailed examination of the trenches in the North.

2. A program of trenching and possible diamond drilling as follows:

   a) Approximately 3000' of bulldozer trenching near the southern anomaly with the object of better exposing the extent of the surface mineralization and ore controls.

   b) Consider two 600' BQWL holes collared on the basis of previous drill results and the proposed trenching.

G. D. Ulrich

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