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GEOLOGIC REPORT - WADE GROUP

INTRODUCTION

On the 20th. of March, 1961, the author went to Merritt, B.C., to initiate an investigation of the Wade Group acquired by General Resources Ltd. The first stage of this work was continued through July 12, 1961. Approximately one and one half months were spent in a second period of work during the month of September and part of October. An average of three men were used during the two stages of work.

The purpose of this report is to accompany and supplement the map showing the geology of the area around the copper zone and the Induced Polarization anomaly of General Resources' Wade Group, ten miles west of Merritt, B.C.

WORK DONE

To start the program, a brunton and chain survey was made of the Wade Group and other claim groups were tied into this survey. A base line was run along the Wade #1 to #8 location line and cross lines were run on a 300 feet by 300 feet grid. Later, in areas of interest, this grid was taken to 100 feet by 100 feet, and even 100 feet by 50 feet in some cases.

Cross-line stations were set using pickets and orange flagging. The base line is marked with yellow flagging. These picket lines proved quite useful for geologic mapping, for the Induced Polarization survey, and for locating things on the ground in general.

A D-6 Caterpillar tractor was brought onto the property and a road was started from the H. Kinvig Ranch to an area of geologic interest. This area was then trenched, and after careful prospecting, a zone of low grade copper mineralization was discovered and thoroughly trenched.

A Hunting Survey Corporation crew was then brought onto the property to run an Induced Polarization survey over the copper zone. An anomaly was discovered lying southeast of the copper zone. A radar magnetometer was run over the I.P. anomaly with no significant variation in readings.

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Geologic mapping was started initially to cover the area of copper mineralization, but later was extended to include those outcrops in the vicinity of the I.P. anomaly.

The road was later pushed through to the Merritt - Spences Bridge Highway.

REGIONAL GEOLOGY

The rocks on the Wade Group are mainly those of the Nicola Group. The Nicola Group is upper Triassic in age and consists of greenstone, andesite, basalt, agglomerate, breccia, tuff, and minor argillite, limestone and conglomerate. Other rock types in the area are quartz porphyry, gniessic rocks, and the granitics of the Coyle stock to the east of the Wade Group. Also there are the volcanics of the Spences Bridge Group to the west of the Wade Group.

Regional trends of the Nicola Group are generally NE - SW, with the valleys and ridges generally lying the same direction. Trends at the southern end of the Wade Group are generally E - W. Possibly the Nicola Valley, which lies E - W and at the southern end of the Wade Group, is the surface expression of a major fault or structure.

LOCAL ROCK TYPES

The rock types encountered on the property are discussed in some detail below. It must be remembered that no petrographic work was done to identify and classify the rock types. Therefore, their identity is still questionable.

QUARTZ PORPHYRY : This rock is shown on the government geologic map in "Lode Metals of B.C., 1960" as part of the Coyle stock and is shown as granite. However, after a visit to the property by Dr. J. M. Carr, Government Geologist, and Mr. E. P. Chapman Jr., Consulting Geologist, it was agreed that this rock was a quartz porphyry dike and not granite.

The quartz porphyry in the mapped area is characterised by the following features. It is slightly chloritized, giving a greenish tinge to the rock in places. Calcite stringers or veinlets are present in spots scattered throughout the dike. These veinlets range up to one inch in width and carry siderite in amounts ranging from 0% to over 20% in isolated spots. The quartz porphyry carries small amounts of disseminated pyrite throughout the dike.

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A zone of alteration lies along the exposed contact of the dike and the Nicola rocks. This zone of alteration ranges to over 50 feet in width in places and is characterised by intense propylitisation. Quite a bit of calcite is present in this zone.

Four other rock types have been classified as quartz porphyry because of mineralogical and textural similarities noted in the field. However, it is anticipated that after petrographic work is done, a different classification will probably be placed on them.

NICOLA ROCKS : The Nicola rocks in the mapped area consist mainly of interbedded tuffs, with some graywacke.

The most widely spread rock type in the mapped area is the massive, dark green, limey, vitric tuff. This rock was not limey at every point tested, but is definitely limey in part. It was this rock type that Dr. Carr and Mr. Chapman considered a favourable host rock for possible copper deposition. Epidote occurs in spots, mainly north of station 18N, 10W.

The massive, black spotted, green, non-limey, vitric tuff is not a favourable host rock. It is tight and has no lime content. Where the mineralised zone passes through it, mineralisation is restricted to fissure fillings of chalcopyrite in calcite in two narrow breccia zones associated with two strong fractures. The title of this rock gives its characteristics. It is possible that the black spots are dark green chlorite altered from hornblende in the original rock.

The massive, greyish-green, limey tuff was differentiated from the massive, dark green, limey, vitric tuff mainly because of colour and texture. It may be found, after more careful examination, that the two can be thrown together.

The highly fissile, fine grained tuff is so extremely laminated that trouble was encountered knocking a piece large enough to examine from the outcrop. One piece examined consisted of fine, sand sized grains which were strikingly lineated, the width of the lineations being hardly wider than the diameter of the grains. Limonite surrounded the grains, but in a way to further accentuate the lineations. This rock is probably interbedded and intermixed tuffs, sands and muds. With careful work this outcrop could probably be subdivided further.

The silicified, banded, greenish tuff is possibly an altered form of

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the massive, dark green, limey, vitric tuff, since in most cases it is found lying between the latter and a highly schistose bed. It is characterised by light coloured silicified bands of up to several inches in width. It is non-limey, although occasionally calcite is found on the fractures. It contains what appears to be feldspar laths and blobs and was originally termed, in field notes, as feldspathic vitric tuff.

Interbedded graywacke - in the field investigation of this rock type it was impossible to trace beds within this unit. However, it consists of not only graywacke but of some very fine grained, limey, rock types, probably limey argillite and some coarser grained rock which possibly could be classified as conglomeritic or lapilli tuff meaning tuffacious rock containing conglomerate sized particles which can be both rounded and angular. It is possible that some of the rock in this unit considered graywacke may be, in part, tuffacious, and it is probable also that rapid facies changes occur which would explain the difficulty of tracing beds. Common alteration consists of silicification and pyritization which occurs at scattered places throughout the rock unit.

The highly schistose quartzite was so termed because it seemed to be composed principally of silica and was extremely foliated. In fact, it might be more properly termed a schist.

STRUCTURE

FOLDING : It seems very possible with regard to the data at present available that a very tight fold may exist with its axis running approximately through stations 18N, 10W and 22N, 8W. This seems probable since the interbedded graywacke and massive, black spotted, green, non-limey, vitric tuff appear to be running directly into the massive, dark green, limey, vitric tuff as exposed in the trench from station 18N, 10W northward.

There appears to be some local warping in the outcrop between stations 22N, 4E and 22N, 6E. However, in the author's opinion, no major folding seems to be indicated in the southeastern portion of the map. There is, in this portion of the mapped area, a possible broad shallow syncline with the axis possibly running through stations 16N, 10E and 22N, 4E.

FAULTING : There are several inferred faults in the southeastern portion of the map and one observed fault in the northwestern portion running through the quartz porphyry, the graywackes and

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the black spotted tuff. At the present time this observed fault appears to be of relatively little significance. However, the inferred faults of the southeastern portion of the mapped area could be of great significance since the Induced Polarization anomaly lies under this area. It is probable that the faulting is more complex than is indicated on the map. As more data becomes available, more faults than are shown on the map will probably be found to be present.

The main fault structure appears to be the longest one shown which is indicated passing through station 20N, 6E. It is conceivable that this fault has a horizontal displacement of from 500 feet to 600 feet. To the author, there seems to be enough similarity in the stratigraphy lying between stations 22N, 4E and 14N, 2E as compared to the stratigraphy lying between stations 22N, 10E and 16N, 10E, to justify this proposal. However, more field data will be necessary to prove this conclusively. As to the apparent contradiction that the I.P. anomaly appears to be offset in an opposite direction than the rock strata, it could be explained by this hypothesis. Movement occurred along the fault in different directions at different times. First major movement moved the strata on the northwest side approximately 300 feet further to the northeast than it is at present. Mineralisation causing the I.P. anomaly was then deposited. Later movement along the fault moved it back to its present position thus making the anomaly appear to be offset in an opposite direction from the strata.

The presence of highly schistose beds between competent beds in the southeastern portion of the mapped area causes one to suspect major warping or folding which is not readily apparent from data within the mapped area. Extending the mapped area should help solve this question.

MINERALISATION

The source of the copper mineralisation was originally assumed to be the quartz porphyry dike. However, careful study of the geologic map shows that while the mineralisation follows the contact in the western area of the map, it swings away from it at approximately station 20N, 5W. Also near this point the observed fault displaced the quartz porphyry dike but apparently not the copper zone. Therefore, the copper mineralisation came in sometime after the quartz porphyry dike. Presumably the possible folding mentioned earlier caused weakness allowing the quartz porphyry dike to come in, and

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both probably contributed to fracturing the rock to allow the calcite with chalcopyrite to come in. This is believed to be the case since the author, during reconnaisance work, observed what seemed to be the quartz porphyry dike to the northwest of the mapped area and it apparently had cut across the mineral zone and the green limey tuff. Thus, to the northwest of the mapped area with trends running northwest, the possible quartz porphyry lies to the northeast side of the copper mineralisation and green limey tuff.

Two interesting features of the copper mineralisation are that the chalcopyrite, in almost every occurrence, is contained within calcite stringers and veinlets and with no other sulphide minerals, namely iron sulphides.

There is very little iron mineralisation on the property. There is the pyrite alteration previously mentioned, and extremely small amounts of hematite were noted in the outcrops eighty feet north of station 16N, 12W.

SUMMARY AND CONCLUSION

Favourable host rocks for copper replacement ore bodies seem to be present on the property.

An Induced Polarization anomaly is present on the property.

A magnetometer survey over the I.P. anomaly produced no significant variations in readings.

A mineralised zone of copper in excess of 1,000 feet long is present, and at one spot is only 400 feet from the I.P. anomaly. This zone is further characterised by the fact that the copper sulphide occurs with no other sulphide and there is very little pyrite or iron oxides in the area.

Interesting fault structures occur above the I.P. anomaly.

In Mr. E. P. Chapman's report on the Wade Group he states : "From conditions observed at the property to date, structural traps associated with faulting appear to be more probable than those related to folding."

It seems obvious that the I.P. anomaly on the Wade Group of General Resources Ltd. constitutes an attractive gamble on which further

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