GEOLOGICAL REPORT ON A.J., KLIK, K.K. GROUPS OF CLAIMS ON VANGORDA CREEK, PELLY RIVER AREA, Y.T.

Dr. A.E. Aho,
P. Eng.

Oct.21, 1954.

Approved by Commissioner
letter dated Dec. 20, 1954.

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Submitted to British Yukon Exploration Company, Vancouver, B.C.

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INTRODUCTION

This report outlines the geology of twenty mineral claims, the A.J. Nos. 3, 4, 6 and 8, A.L.C. Nos. 1 to 8 inclusive and K.K. Nos. 1 to 8 inclusive, situated in the Whitehorse Mining district, Yukon Territory, and owned by British Yukon Exploration Company. These claims adjoin claims held by Prospectors Airways and lie two miles southwest of their orebodies on Vangorda Creek, 36 miles down Pelly River from Rose River Post, and 120 miles northeast of Whitehorse, Y.T.

At present this general area can be reached best by air to Jackknife Lake, or by truck along the Canol Road to Rose River Post and then by launch down Pelly River. A short freight road from Pelly River and Jackknife Lake leads to Prospectors Airways' drill camp, which has radio communication with Whitehorse. Trails traverse the two miles to British Yukon Exploration's claims, and travel within the claims is not difficult. The claims lie in rolling hills between 3000 and 4000 feet elevation and most of the cover is old burn, with local thick deadfall, willow and aspen.

An all-weather road now being surveyed from the Whitehorse-Mayo road near Carmacks, up Yagunda River to Prospectors Airways' camp, will extend within at least

two miles of the claims in easy road-building terrain.

Prospectors Irwyn's showing, exposed for a hundred feet along the north bank of Vampire Creek, consists of banded, fine-grained replacement of sphalerite, galena, pyrite, minor pyrrhotite, chalcopyrite, and magnetite in flat-lying schists. To date, drilling of vertical holes at regular intervals has proved flat-lying bodies of over 10 to 15 million tons of low grade lead-zinc ore containing about 3% Pb, 7% Zn, 0.4% Cu, 1.5 oz Ag and 0.03 oz Au. Concentrates from this ore would not pay costs of shipping any great distance so economic extraction would have to await building of a nearby smelter. Much exploration remains to be done on this property and reasonable possibilities do exist for proving sufficient tonnage to justify a smelter.

Prospectors Airways' showing was staked by A. Nulsen and associates in July 1953, was optioned, and additional claims were staked later. The A.J., K.L.M. and K.K. groups were staked on October 1 and 3 by A.J. Yardley, Otto Bonatti, and K.K.J. Kalliotto respectively.

Geology (see enclosed map)

General

The Vangorda Creek area lies on the northeast side of the Kelly River trench, part of a regional fault zone extending several hundred miles northwest-southeast across Yukon Territory. Too little is known of the geology and mineralization of the territory to decide whether or not this regional structure has direct significance in regional ore localization but many recent discoveries have been made in subsidiary structures within 30 miles of it.

Rocks exposed on the A.J., KLK and K.L. claims can be divided as follows:

Superficial deposits	----------	Quaternary
Gabbro and serpentine	----------	Mesozoic ?
Greenschists	}	
Chert, grit, chert conglomerate	} --	Paleozoic ?
Greenstone	}	
Yukon Group schists	----------	Age uncertain

The Yukon Group, exposed on the south end of the KLK group of claims, consists in part of medium-grained grey, grey-weathering, lustrous quartz-mica schist which is highly contorted in detail with broader scale foliation apparently dipping gently northeastward. The grade of metamorphism of these schists (lower amphibolite facies, characteristic of moderate regional metamorphism) is considerably higher than that of greenstone (lower greenschist facies) which adjoins it on the northeast, suggesting a fault between these two rock units.

The greenstone is mostly brown-weathering, fine-grained and massive with closely spaced blocky jointing. Some members appear to be fragmental but are difficult to distinguish and to trace. Attitudes cannot be obtained on these rocks even though they form most of the large outcrop areas on the A.J. and KLIK groups of claims. Original minerals and small scale structures have been largely obliterated by small veins and replacements of epidote, jasper, quartz and carbonate. Jointing, faulting and northwest strike of the members are all the structural information that can be obtained. A few small frost-heaved outcrops of barren, massive, grey crystalline limestone were noted near the northeast edge of the greenstone formation.

In contact with the northeast edge of the greenstone is a sequence of buff-weathering, buff to grey and red cherts, chert conglomerates, grits, and siliceous reddish, greenish and grey argillites. These rocks tend to be massive to crudely schistose or fractured, and are commonly cut by buff-weathering carbonate veins or quartz stringers. This formation forms some of the more resistant outcrops on top of the ridge at the east end of the A.J. group of claims. The schistosity in these rocks strikes about 150° (S 30° E) and dips vertically while bedding or banding in one place strikes 135° and dips about 45° N.E.

The greenschists, outcropping on the A.J. group

of claims, are not exposed in contact with the greenstone and cherty formations; however their degree of metamorphism is similar (lower greenschist facies, characteristic of low grade regional metamorphism). They consist of greenish or greyish, grey-weathering, thinly-foliated quartz-chlorite-sericite schists, chlorite schists, and grey phyllites. Some schistose greywacke or intermediate igneous rock occurs in bands in these schists. Some of the schists are extensively carbonatized to form brown-weathering massive rocks with relict schistosity. These carbonatized areas are commonly cut by small quartz and carbonate veins, some of which carry small amounts of chalcopyrite and pyrite. Schists speckled with dark chlorite patches and eyes of quartz and pyrite, similar to rocks capping Prospectors Airways' orebodies, occur on Prospectors Airways' ground 1500 feet along strike from a deeply drift-covered part of the K.K. group of claims. Foliation in these schists strikes 130° and dips steeply southwest while linection, minor crenulation, and axes of drag folds plunge moderately northwest (about 25°). On the K.K. group the strike of the schists is the same but the dip is about 45° northeast.

Light grey weathering, coarse, varied-textured, grey gabbro forms two bands within the greenstone formation. The plagioclase in this gabbro is completely saussuritized and pyroxenes are converted to biotite, chlorite and bastite (?). There is little or no evidence of any

mineralization within or around this gabbro. Associated with the gabbro are smaller bands of serpentine, exposed as outcrops only in a gulley on the A.J. No.4 mineral claim. The serpentine is mostly massive, dark green to black, but some exposures show bastite (?) pseudomorphs up to a quarter inch across.

The area has been glaciated and is mostly covered by thin superficial deposits of ground moraine, till, soil and local muskeg. Till or moraine fills much of Vangorda Creek valley, probably to depths well over a hundred feet. During glaciation the ice moved from southeast to northwest down Kelly River valley. Some of the drift carries gossanous mineralized cobbles. Several terraces of outwash gravels lie over a hundred feet above the present creek bed which is incised largely in the drift.

Structure

Since only the more massive, structureless rocks are well exposed, structural information is difficult to obtain. Although it appears that most of the massive formations strike northwest and dip moderately to steeply northeast, they are probably faulted in several places and may be folded as well.

One strong fault zone, marked by a prominent linear depression, cuts northwest through the middle of the KLIK group of claims. Gabbro and serpentine, locally

sheared, occur along the northwest end of the depression. Along the fault zone are rusty-weathering, sheared and contorted rocks of indeterminate origin, composed of bands of ankerite and quartz with minor jasper, calcite, mariposite, chlorite and magnetite. This fault may be a branch of another probable fault to the southwest which brings Yukon Group schists against the less metamorphosed greenstones, as noted earlier. The other gabbro-serpentine zone crossing the A.J. claims may represent another structural break. These breaks may be subsidiary to the Telly valley fault zone nearby to the southwest.

Lack of outcrop and of distinctive members in the schists makes surface structural interpretation difficult, especially since the structure is apparently complex in detail. Drag folds in the schists indicate probable folds plunging about 25° northwest.

Mineralization

Barren rocks are well enough exposed on the A.J. group and KIK Nos. 1 to 4 claims that, except for possible mineralization along the drift-covered fault zones, little hope remains for any mineral deposits.

If the huge replacement deposits discovered on Prospectors Airways' property are typical, then the schists on the K.K. group have the best possibility of containing mineralization. On the location line between K.K. No. 5

and No. 6 mineral claims, a barren lenticular quartz vein 20 feet wide strikes N 30° E and dips 65° NW across the schists. The nearby schists are extensively carbonatized and minor chalcopyrite and pyrite were found in one small quartz vein on K.K. No. 5 claim. As mentioned previously, similar alteration and mineralisation were found on Prospectors Airways' ground along strike from the K.K. group of claims.

EXPLORATION

Prospecting is hindered greatly by the widespread overburden. In view of Prospectors Airways' experience in the area, a magnetometer survey would be suitable for searching for ore in the drift-covered areas; however, the possibility of anomalies resulting from gabbro, serpentine, or greenstone instead of from mineralisation should be kept in mind during interpretation of any magnetometer results. Magnetic anomalies of the order of 2000 to 3000 gammas are reported over Prospectors Airways' orebodies, and other similar anomalies have been outlined.

The only special problem in drilling is maintenance of water supply if operating during sub-zero winter weather. Snowfall and precipitation are moderate and present no special difficulties. Good timber in any large amounts would probably have to be obtained from Kelly River valley two or three miles away. Small amounts of usable mine timber are shown on the map. In early

summer water is available on much of the property but late in the season it is found only in the places shown.

CONCLUSIONS AND RECOMMENDATIONS

About the only possibility of mineralization on the A.J. group and the KLIK Nos. 1 to 4 claims lies along fault zones covered with overburden. The rock formations on these claims differ greatly from those which are mineralized on Prospectors Airways' ground, and may not be favourable for similar mineralization.

The drift-covered area on the KLIK Nos. 7 and 8, and on the K.K. group of claims holds some possibility for containing replacement type ore in the schists, similar to that found on the adjoining Prospectors Airways' property. The alteration and traces of mineralization found, however, are not necessarily favourable indications.

A reconnaissance magnetometer survey is recommended to test the drift-covered area on the KLIK Nos. 7 and 8 and K.K. group of claims. One and a half miles of base line and four miles of line for a magnetometer survey were already cut in September, 1954, on K.K. No. 5, 6, and 7 claims. The line cutting and geophysical work

could be completed next season. More information will then be available on adjoining properties as well, which will aid in better judging of the possibilities of this ground.

Respectfully submitted,

H. E. Aho

Mr. A.E. Aho.

STATEMENT OF EXPENSES

In Connection with Geological Report on Claims

A.J. No's 2, 4, 6 and 8, KLIK No's 1 to 8 inclusive, and K.K. No's 1 to 8 inclusive

Located in Pelly River Area, Yukon Territory
Aug. 21st to 25th Inc. and Sept. 3rd to 11th Inc. 1954

Transportation of Crew		713.35
Airplane charter, Whitehorse to Work Site & return, Aug. 21st & 25th	210.00	
Airplane charter, Whitehorse to Work Site & return, Sept. 3rd & 11th	503.35	
Salaries & Wages		1,195.50
Dr. A.E. Aho, Chief Geologist Aug. 21st to 25th inc. 5 days @ $50.00 Plus Board	250.00	
Neil Forbes, Labourer Aug. 21st to 25th inc. 5 days @ $12.50 Plus Board	62.50	
Harry Versluce Aug. 21st to 25th inc. 5 days @ $12.50 Plus Board	62.50	
E.D. Dodson, Asst. Geologist Sept. 3 to 11th inc. 9 days @ $25.00 Plus Board	225.00	
Neil Forbes, Foreman Sept. 3 to 11th inc. 9 days @ $17.50 Plus Board	157.50	
Andrew James, Labourer Sept. 3 to 11th inc. 9 days @ $12.00 Plus Board	108.00	
Norman James, Labourer Sept. 3 to 11th inc. 9 days @ $12.00 Plus Board	108.00	
Wm. Breton, Labourer Sept. 3 to 11th inc. 9 days @ $12.00 Plus Board	108.00	
H.C. Ross, Labourer ½day Sept. 2nd to 11th inc. 9½ days @ $12.00 Plus Board	114.00	
Food Supplies		143.41
TOTAL		$2,052.26

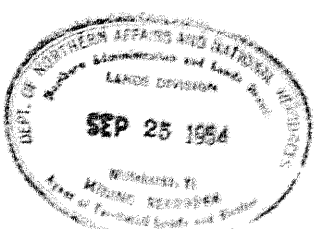
WHITEHORSE, Y.T. September 21, 1954

Certified Correct and Covered by
Appropriate Vouchers.

F.D. Smith

Comptroller

WHITE PASS & YUKON ROUTE



LEGEND

FORMATION	GEOLOGIC AGE
SUPERFICIAL DEPOSITS MORAINE, OUTWASH	QUATERNARY
GABBRO	MESOZOIC(?)
SERPENTINE	
GREENSCHISTS	
[illegible]	PALEOZOIC(?)
LIMESTONE	
GRANITE PLUG	
[illegible]	

- BEDDING
- SCHISTOSITY
- OUTCROP AREA
- OUTWASH TERRACE
- MUSKEG
- GREEN TIMBER
- STREAM — CONTINUOUS LINE INDICATES WATER IN DRY SEASON

TRUE

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GEOLOGIC MAP OF VANGORDA CREEK CLAIMS PELLY RIVER AREA, Y.T.

SCALE OF FEET
0 500 1000 1500 2000 2500 3000

CONTOURS APPROXIMATE ONLY

A.E. AHO

OCT. 21, 1954