

CONFIDENTIAL

**GEOPHYSICAL SURVEY**  
**OF KLIK AND KK MINERAL CLAIMS**  
**ON VANGORDA CREEK**  
**PELLY RIVER AREA, Y.T.**

**Conducted by W.A. Padgham,**  
**September 10-30, 1955.**

**Submitted to British Yukon Exploration Co. Ltd.,**  
**Vancouver, B.C.**

**January, 1956.**

**A.E. Aho, P.Eng.**

## INTRODUCTION

This report presents the results of a magnetometer survey carried out on the KK Nos. 1 to 8 and KLIK Nos. 5 to 8 mineral claims which lie 3 miles up Vangorda Creek in the Pelly River area of Whitehorse Mining District, 120 miles northeast of Whitehorse, Y.T. These claims are held by British Yukon Exploration and adjoin the Prospectors Airways' zinc-lead property on the southwest.

This area can be reached best by plane to Jackknife Lake, then by two miles of trail to the claims. The claims lie in rolling hills between 3000 and 3500 feet elevation. Most of the cover is old burn with local thick deadfall, willow, and aspen. Timber suitable for exploration purposes can be obtained on the spot and water for drilling is available on most of the ground.

Pyrrhotite associated with the zinc-lead mineralization on the nearby Prospectors Airways' property gives magnetic anomalies up to several thousand gammas. Since much of the KLIK and KK claims are covered with overburden of gravel and till and yet are underlain by rocks which are favourable for such zinc-lead mineralization, the magnetometer survey described below was carried out to determine if magnetic mineralization existed in the ground. Mr. W.A. Padgham and two men carried out the survey between September 10 and 30 inclusive, 1955.

In interpretation of the magnetometer results, the reader should refer to the enclosed plan and to a geologic report submitted on this property October 21, 1954.

#### PROCEDURE IN MAGNETOMETER SURVEY

A Sharpe-type magnetometer, of 20 gammas per scale division sensitivity was used to obtain readings at 200 foot intervals on lines spaced 400 feet apart with the exception of lines B to F (see enclosed plan) which had been cut 200 feet apart the previous summer (1954). A Brunton compass was used to lay off lines perpendicular to the location line of KK Nos. 1 to 6 and KLIK Nos. 5 to 8. Pickets were placed every 50 feet and the lines were cut to give an unobstructed view between the pickets, thus assuring a straight line. Stations were then chained in at 200 foot intervals and magnetometer readings taken at each station. Seventeen lines totalling 67,300 feet were chained and read; of these, twelve lines totalling 52,700 feet were cut this year (1955).

Readings were taken with a Sharpe-type magnetometer in the usual way --- that is, the instrument was oriented into the plane of the magnetic meridian, levelled, read "north", then turned 180 degrees and read "south". The results were averaged to give a final value of the horizontal component of the earth's magnetic field. Repeat readings were taken at certain base stations throughout each day to

check on diurnal variations. These variations were so small in comparison to the anomalies that can be expected from a mineralized zone in this area that no such corrections were necessary in drawing up the plan attached.

#### INTERPRETATION OF RESULTS

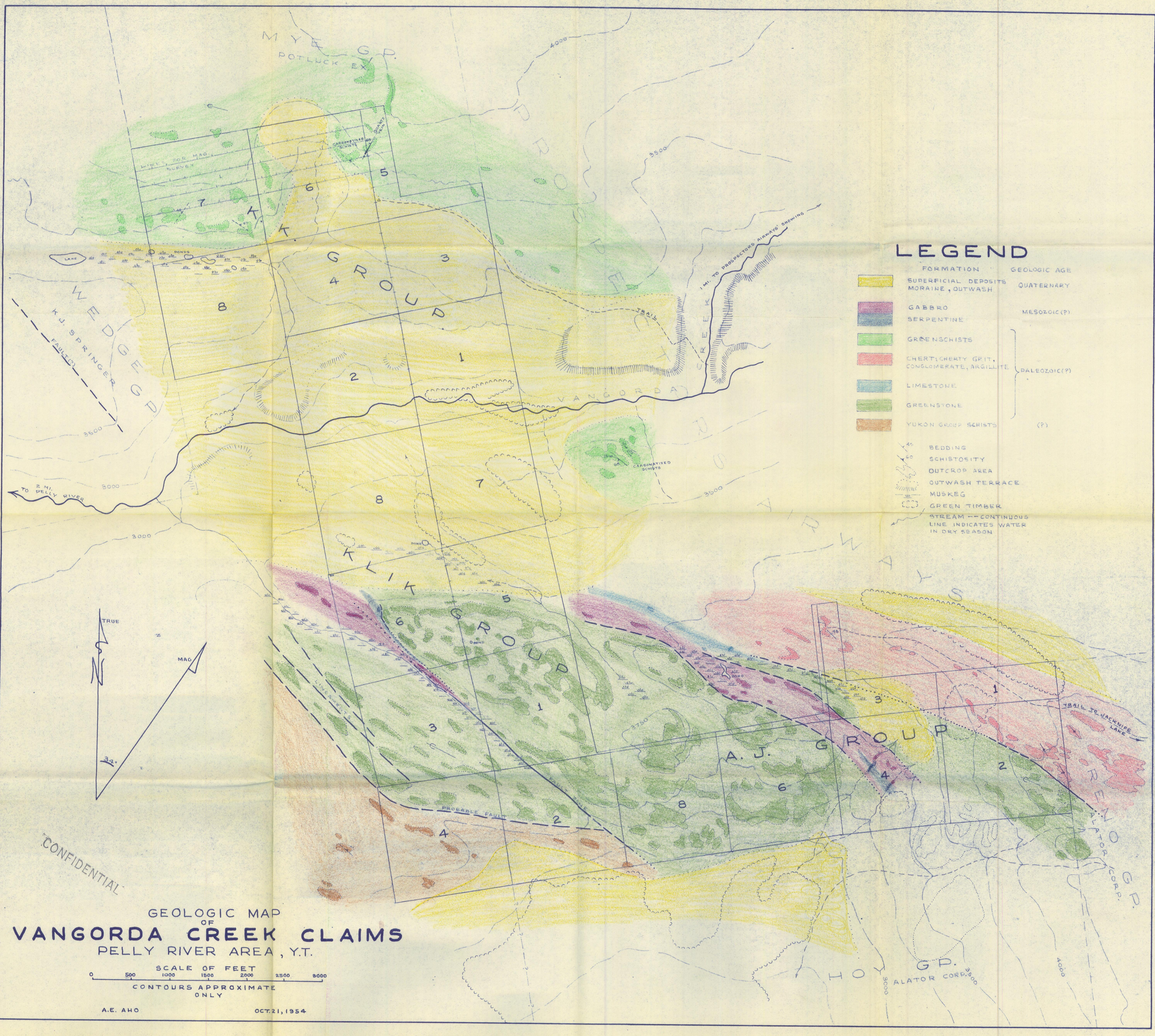
The values obtained for the earth's magnetic field above the KK Nos. 1 to 8 and KLIK Nos. 5 to 8 mineral claims do not appear to indicate the presence of any magnetic mineralized zones. The only high values obtained lie in a band over the greenstone and gabbro formations which cut diagonally across the KLIK Group, but these rocks were observed to contain enough disseminated magnetite to give such strong anomalies. The low readings obtained north of this band of high values apparently result from the less magnetic cherty, argillaceous, and limy formations, as well as from a northeast dip of the greenstones. The fairly uniform values obtained over the rest of the ground to the north indicate that the schists underlying it are rather uniform and carry little or no magnetic mineralization within reasonable depth.

Respectfully submitted,



A.E. Aho, P.Eng.

cc: F.H. Brown  
A.P. Friesen  
Mining Recorder,  
Whitehorse, Y.T.

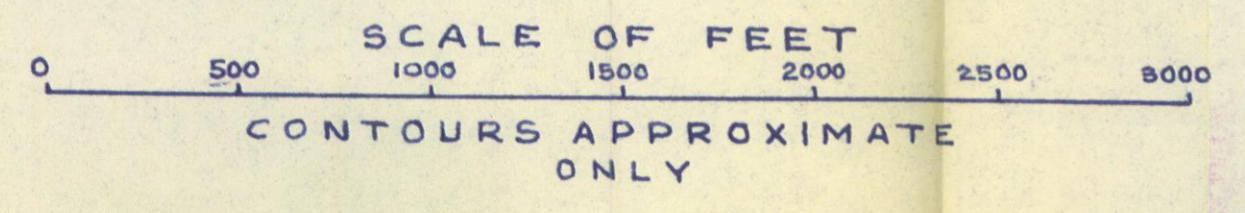


### LEGEND

FORMATION	GEOLOGIC AGE
SUPERFICIAL DEPOSITS MORaine, OUTWASH	QUATERNARY
GABBRO	MESOZOIC(?)
SERPENTINE	MESOZOIC(?)
GREENSCHISTS	PALEOZOIC(?)
CHERT; CHERTY GRIT, CONGLOMERATE, ARGILLITE	
LIMESTONE	
GREENSTONE	(?)
YUKON GROUP SCHISTS	

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

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



A.E. AHO

OCT. 21, 1954

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

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

**Dr. A.D. Aho,  
P. Eng.**

**Oct. 21, 1954.**

## INTRODUCTION

This report outlines the geology of twenty mineral claims, the A.J. Nos. 3, 4, 6 and 8, KLIK Nos. 1 to 3 inclusive and K.K. Nos. 1 to 3 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 Ross 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 Ross 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 Magundy River to Prospectors Airways' camp, will extend within at least

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

Prospectors Airways' showing, exposed for a hundred feet along the north bank of Vengerds Creek, consists of banded, fine-grained replacement of sphalerite, galena, pyrite, minor pyrrhotite, chalcocite, 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 0.02 oz Au. Concentrates from this ore could not pay costs of shipping any great distance so economic extraction would have to await building of a nearby smelter. Such 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 G. Kulan and associates in July 1953, was optioned, and additional claims were staked later. The A.J., KLIK and K.E. groups were staked on October 1 and 3 by A.J. Yardley, Otto Manzutti, and J.H.W. Mallette respectively.

Geology (See enclosed map)General

The Wagerda Creek area lies on the northeast side of the Belly 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., KLIK and F.C. claims can be divided as follows:

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

The Yukon Group, exposed on the south end of the KLIK 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  $150^{\circ}$  (S  $30^{\circ}$  E) and dips vertically while bedding or banding in one place strikes  $135^{\circ}$  and dips about  $45^{\circ}$  NE.

The greenschists, outcropping on the K.K. 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  $180^{\circ}$  and dips steeply southwest while lineation, minor crenulation, and axes of drag folds plunge moderately northwest (about  $25^{\circ}$ ). On the K.K. group the strike of the schists is the same but the dip is about  $45^{\circ}$  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 Pelly 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 Felly 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 KLIK 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° SW 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 mineralization 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 mineralization 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 Pelly 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 if is found only in the places shown.

#### CONCLUSIONS AND RECOMMENDATIONS

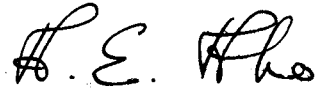
About the only possibility of mineralization on the A.J. group and the KLIK Nos. 1 to 4 claims lies along fault zones covered with overburden. The rock formations on these claims differ greatly from those which are mineralized on Prospectors Airways' ground, and may not be favourable for similar mineralization.

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.

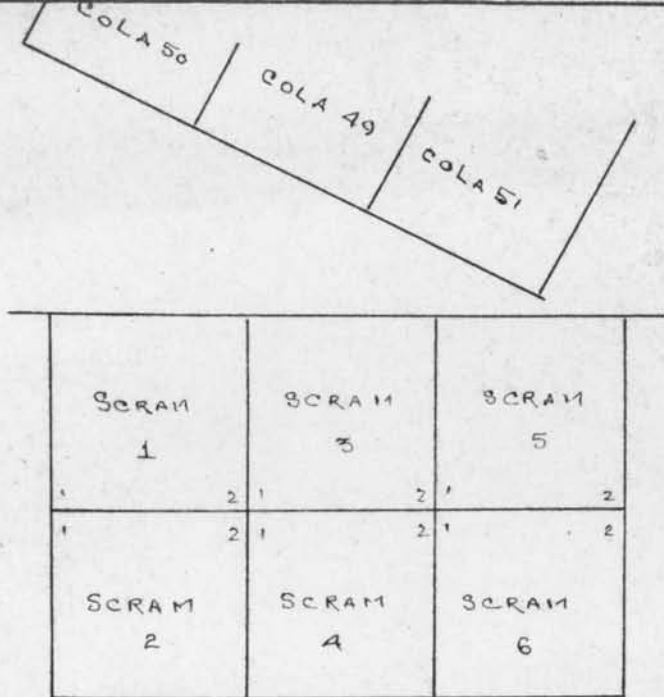
A reconnaissance magnetometer survey is recommended to test the drift-covered area on the KLIK Nos. 7 and 8 and K.K. group of claims. One and a half miles of base line and four miles of line for a magnetometer survey were already cut in September, 1954, on K.K. No. 5, 6, and 7 claims. The line cutting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

A handwritten signature in cursive script, appearing to read "A.E. Aho".

Dr. A.E. Aho.



SCRAM GROUP

PELLY R. AREA

SCALE 1" = 1500'

NOTE :

CLAIMS PROSPECTED

NO OUTCROPS DISCOVERED

