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PRELIMINARY SUMMARY REPORT

OF

YUKON EXPLORATION - 1952

PROSPECTORS AIRWAYS COMPANY, LIMITED

BY

CHAS. L. COLEMAN

## INTRODUCTION

The decision to undertake an exploration program in the Yukon, followed favourable consideration of a memorandum presented by the writer dated April 30th 1952.

This memorandum was largely a summary of information contained in a G.S.C. bulletin entitled: "Potential Mineral Resources of Yukon Territory", by H. S. Bostock.

It was my recommendation, that a preliminary reconnaissance should be made by geologists, of the potential areas described by Bostock. The findings of these geologists would determine the employment of prospectors, for detailed search of favourable sections in subsequent seasons.

It was indicated at the outset, that the major problem in undertaking the proposed work was the acquisition of an experienced personnel. As it was not until the latter part of May that the decision was made to proceed with the work, the field of potential candidates was even more restricted.

An attempt was made to secure the services of Dr. Bostock to direct the work. His lengthy experience in the territory and other qualifications have been previously noted. However, Dr. Bostock did not care to relinquish his position with the G.S.C. to join our company.

The nature of our program was thoroughly discussed with Dr. Bostock and he found it very gratifying that we proposed to follow his recommendations. Although unable to act for us, he promised all co-operation from his department. This has been accorded during the past season when he facilitated the early delivery of maps, aerial

photographs and other information.

Dr. Bostock gave the names of several geologists that he could recommend for our project, but in every case subsequent enquiry found the men unavailable.

The imminent opening of the short effective prospecting season in the Yukon, June 1st to September 20th, decided us to employ men who were qualified field geologists, although not experienced in the Western cordillera.

E. O. Chisholm, formerly resident geologist at Kenora for the Ontario Department of Mines was engaged to direct a party.

F. Campbell, geologist at the Newlund Mine, was transferred to the field staff as an assistant to Chisholm. However, later developments placed him in charge of a party.

R. Baker, formerly geologist with Dominion Gulf Company, was employed to direct a party. This man had some previous brief experience in the Yukon.

Prior to becoming an employee of the Company, Baker submitted information regarding a possible base metal occurrence in the McArthur mountains southwest of Mayo. The information had been obtained through a prospecting syndicate in which Baker participated. It was agreed, that we would investigate this possible occurrence and if anything was found, the syndicate would receive 15% of the vendor consideration for the prospect.

The areas chosen to investigate were the Hess and Wernecke Mountains. Shortly after the arrival of the geologists in the Yukon, a discovery in the St. Elias Mountains area resulted in the separation of Chisholm and Campbell. Campbell proceeded with the originally planned

reconnaissance of the Hess Mountains area, while Chisholm organized a party in the St. Elias region.

Additional personnel consisting of prospectors and packers were employed locally by the three geologists. Due to the greatly increased activity in the Yukon, sufficient men were not available and later in the season, it was necessary to bring in three men from outside for staking.

#### TRANSPORTATION

Although the Yukon Territory is easily accessible by the West Coast Steamer route and Alaska Highway, considering the long distances, air transportation of personnel from outside is the most practical.

Within the Yukon, the Alaska Highway and Whitehorse-Mayo road provide easy transportation to large areas. The Canel road connecting the Alaska Highway with Norman Wells, N. W. T. traverses the northeastern portion of the territory.

The Yukon River and its tributaries form a great branching system of waterways connecting railhead at Whitehorse with most parts of the Yukon plateau. However, these waterways are only open for a brief summer season.

A railroad connects Whitehorse with Skagway, an ocean port on the Alaskan coast.

A branch road also connects the Alaska Highway with Haines, another port on the Alaskan coast.

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Although the above-mentioned routes provide entry to most of the potential areas described by Bostock, float planes or helicopters are required to operate in the more remote sections. The generally mountainous topography requires the use of pack horses for reconnaissance work and prospecting.

During our operations for the past season pack horses were rented, aeroplanes chartered and automobile transport employed.

#### AREAS EXAMINED

As at this date the final reports of the field geologists have not yet been submitted, the following descriptions have been compiled from letters received during the course of the season.

#### WERNECKE MOUNTAINS

According to Bostock very little is known of this area. Scattered geological explorations have shown, that the formations along the southwest side are very similar to those of the Mayo district where large silver-lead deposits occur. Important prospecting zones are anticipated around some of the many granitic stocks scattered in these mountains where possibilities exist for tin.

Northeast of Mayo, between Wind River and the head of the Stewart River, iron formation has been reported. The possibility of economic deposits of iron caused the Geological Survey to send a

party into the area during the past season. In anticipation of such a development, R. Baker was instructed to make a reconnaissance of the area and maintain a liaison with the Government geologists.

Baker arrived in Mayo June 26th and before entering the Wernecke mountains area made an abortive trip into the McArthur Range to try and locate the copper deposit of which he had informed us. Bad weather immobilized his party and he was forced to return to make contact with the aeroplane that took them in.

He then arranged to be flown to Pinguicula Lake in the Wernecke Mountains on July 9th, returning to Mayo on July 22nd. During this time he investigated sedimentary horizons in the vicinity of Pinguicula Lake on the ground from which he was able to interpret aerial observations between here and the Rackla River. The ferruginous rock in the area is described by Baker as being a carbonate or shale that weathers to a chocolate brown stain on surface. The stain is very thin and the iron content is not high.

The Rackla River had been reconnoitred by J. Wheeler of the Geological Survey and he told Baker that he did not encounter anything of interest.

About 2 miles northeast of Pinguicula Lake on Iron Creek, Baker reports narrow seams of hematite in quartzite and suggests this as a possible source of hematite float found in the past.

Baker says that Wheeler found ferruginous carbonate at Gillespie Lake similar to Pinguicula Lake and expressed disappointment in the iron possibilities.

Baker concluded his reconnaissance work in the Wernecke Mountains in the vicinity of Bonnet Plume Lake. Here he noted the same ferruginous shales but did not see any hematite similar to the Iron Creek showings. Within the stratified sediments there are dark reddish bands which resemble iron oxide from the air.

Baker states that he and Wheeler believe the reports of iron formation in the Werneck<sup>e</sup> Mountains are based to some extent on the dark reddish bands as observed here.

He also says that the portions of the Werneck<sup>e</sup> Mountains they have covered are remarkably free of igneous intrusions.

After Baker's return to Mayo August 8th, he examined some minor lead showings in that vicinity which were found to be of no consequence. He then returned to the McArthur range and during the period August 22nd to 31st, thoroughly traversed the area of the supposed copper occurrence. He found the area to be largely granite with some small sedimentary pendants and was satisfied that no important mineralization is present.

A copper prospect was examined in the vicinity of Dawson and found to be of very small dimensions. Due to snow conditions, Baker then joined Chisholm at Whitehorse September 12th. From then until September 24th, he examined some small silver-lead prospects in the vicinity of Rancheria River on the Alaska Highway, 200 miles east of Whitehorse but nothing of consequence was seen.

HESS MOUNTAINS

Bostock described this area as being little known. There has been some prospecting in the area but no mineral discoveries reported. The Canol Road traverses the southern portion of the area.

The 1951 Annual Report of the Hudson Bay Mining and Smelting Company stated that a lead-zinc find had been made in the Yukon on which work was planned during 1952. It was determined that the find was located in the Itsi Mountains, close to the Canol Road and not far from the boundary between the Yukon and Northwest Territory.

Campbell's instructions were to proceed to the vicinity of the H. B. find and see if staking was justified. He was then to proceed with a reconnaissance of the Hess Mountains area.

Campbell transported his pack horses by truck from Whitehorse to Pelly River via the Canol Road. The crossing of the Pelly and MacMillan Rivers was negotiated with some difficulty and after considerable delay he reached Jeff Lake on July 9th. This point is about 12 miles from the Hudson Bay lead-zinc discovery.

Campbell visited the H. B. Camp and found two diamond drills in operation. He described the showing as a fine-grained galena replacement along planes in a banded limestone. The limestone horizon is 15 - 20' thick with a steep dip. Only three trenches were seen and the mineralization was not impressive. No <sup>h</sup>spalerite was observed although zinc is said to be present. (Note: Albert Kaufman, Chief Geologist, H. B. M. & S. Co. advised me that <sup>h</sup>spalerite was found in considerable quantity but its colour was almost identical with enclosing barite and in consequence difficult to detect. - G.L.C.)

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The favourable limestone appeared to be 600' long and did not persist into the surrounding hills. It was decided there was no reason for staking.

Campbell and his party left Jeff Lake on the Canal Road July 21st and proceeded northwesterly to Niddery Lake following the headwaters of the Hess River. The rocks traversed were for the most part sedimentary, striking in general E-W. A considerable amount of iron oxide is present in the sediments near intrusive contacts. The only sulphides observed were pyrite and marcasite.

Granitic stocks intrude the sediments and are very outstanding mountains. One of these stocks showed some malachite stain and fine chalcopyrite. Although none of the mineralization was of economic importance, Campbell believes the area to be worthy of prospecting.

After leaving Niddery Lake, Campbell planned to proceed downstream through the mountains to Mayo. He arrived at Mayo about September 20th and joined Chisholm and Baker at Whitehorse. No report has been received covering the last portion of his reconnaissance but in a long distance telephone conversation he said he was not impressed with the indications of mineralization.

#### ST. ELIAS MOUNTAINS

Bostock notes that about half of this area is composed of great ice-bound ranges. Some prospecting has been done of the glacier valleys and a great variety of metallic minerals have been found in the heavy placer concentrates including those of copper, lead, silver and platinum.

Lode prospects occur in the White River part of the area, between Donjek River and Klwane Lake and south of Kathleen Lakes. It is significant that the great Kennecott copper deposit in Alaska lies in the western extension of the area.

E. O. Ghisholm arrived in Whitehorse June 15th. in company with Campbell and made the preliminary arrangements for the Hess mountains reconnaissance.

En route to Whitehorse via the Alaska Highway, Ghisholm examined some small silver-lead showings and an asbestos prospect. He reported that a large belt of ultrabasic intrusives containing the asbestos, is crossed by the highway in the vicinity of Teslin Lake and the area warrants detailed prospecting for this mineral.

Shortly before Ghisholm planned to leave for the Hess mountains with Campbell, a prospector produced some mineral specimens for his identification. Tests indicated the presence of important amounts of nickel and negotiations were immediately started to examine and if favourable, acquire the claims.

After some delay, Ghisholm was permitted to examine the showing which had been staked for a small local mining company. The showing was so impressive that Ghisholm immediately sent for me. In the meanwhile, he started Campbell on the Hess Mountains trip and continued negotiations with the owners of the nickel property.

Upon my arrival in Whitehorse on July 1st, I found that a representative of Hudson Bay Mining and Smelting Co., had also examined the showing and was alleged to have made a deal for the property. However, this was erroneous and during the next few days we waged a contest with H. B. to secure the claims.

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Unfortunately for us, the H. B. man was a brother of the President of the local mining company and it became apparent, that he would have the opportunity of at least meeting any bid we might make. After a great deal of negotiation the decision was made in favour of H. B.

We were permitted to examine the showing on the understanding we would not stake, whereas H. B. through the fraternal arrangement staked a large block adjoining the original stakings on strike to the south.

Immediately after the rejection of our proposal, Ghisholm left for the area and was successful in staking 60 claims adjoining the original stakings on strike to the north.

The property acquired by H. B. is situated on the headwaters of Quill Creek in the eastern outlying mountains of the St. Elias range. Access is from a point on the Alaska Highway 200 miles west of Whitehorse and 17 miles from Burwash Landing on Kluane Lake. The trail from the Highway to the showing is 10 miles long and is a gradual ascent by way of gravel bars and benches over which a truck road has since been bulldozed by H. B. Abundant timber up to 18" diameter is found to within a short distance of the showing which is above timber line.

At this elevation, adequate water for a year round supply would be a problem.

The main showing occurs in a canyon at the contact of a peridotite sill with limestone. Erosion in the canyon has exposed a mass of sulphides 110' long and 40' wide, dipping at 75°. The strike extensions disappear under overburden on one valley slope and under limestone capping on the other.

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The oxidized surface of the sulphides is stained with nickel and cobalt bloom and has a very colorful and impressive appearance. During the course of the brief examination, we made many tests everywhere on the outcrop with dimethylglyoxime and in every case a strong nickel reaction was obtained. Sulphide dissemination and copper staining was observed for 20' or more into both the footwall and hanging wall.

The results from 3 samples cut across the massive sulphide zone were as follows:

<u>Width</u>	<u>Cu</u>	<u>Ni</u>	<u>Co</u>	<u>Zn</u>	<u>Pt</u>
40'	1.2%	3.3%	0.3%	4.2%	.08 ozs.
40'	2.06	0.93	Nil	6.8	.33
30'	2.81	1.67	Nil	6.5	.28

A sample cut across a portion of the disseminated sulphides in the footwall returned,

<u>Width</u>	<u>Cu</u>	<u>Ni</u>	<u>Co</u>	<u>Zn</u>	<u>Pt</u>
20'	0.9%	0.8%	-	0.5%	.07%

1500' to the southeast on the strike of the contact, sulphide mineralization containing copper and which reacted for nickel was seen in a small outcropping by Chisholm. Similar sulphides but over narrow widths were also seen by Chisholm about 1500' northwest of the main showing.

The common boundary between H. B.'s optioned property and our claims is 4500' northwest of the main showing. One of the smaller showings is within 2000' of our line.

After investigating certain other properties mentioned below, Chisholm organized preliminary prospecting on our Quill Creek

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claims. Shortly after the commencement of the work he was able to report a small but significant discovery.

The find is located near the central portion of the property and appears to be on strike of the peridotite dike on which the H. B. main showing is located. The showing consists of a 2' wide vein of almost massive sulphides exposed for 20' in length. The geological conditions are similar to those at the H. B. showing.

The results from two samples taken from our find are as follows:

<u>Width</u>	<u>Cu</u>	<u>Ni</u>	<u>Zn</u>	<u>Co</u>	<u>Pt.</u>
27"	1.3%	3.05%	6.3%	Tr.	Tr.
Grab	5.9	1.8	4.4	Tr.	Tr.

The peridotite sill is about 100' wide and carries scattered pyrrhotite and chalcopyrite for about 50' south of the showing.

Chisholm states, that, due to the extensive mantle of talus material along the strike of the sill which traverses several claims, he believes geophysical methods would be the most advantageous method of locating sulphide bodies.

Due to heavy snowfalls early in September, prospecting of the Quill creek claims had to be terminated until next season.

The road into the H. B. Property was continued for 2 miles more to the camp on our property so that an early start may be made with the work next year.

After completing the initial staking at Quill Creek, Chisholm left to examine a copper prospect near Dry Creek at mile 118 1/2 on the Alaska Highway or about 50 miles northwest of Quill Creek.

He described the showing as being disseminated chalcopyrite exposed at bedrock in 4 test holes sunk through 6 to 8' of gravel while testing for placer gold. He believed the showing to be sufficiently interesting to protect the ground for the prospectors who took him there, stake additional claims and option their claims.

Eight claims were staked for the prospectors and optioned for a down payment of \$600, and sixteen claims were staked for our Company.

Inasmuch as very few outcrops occur in the area, Chisholm arranged to have a bulldozer brought to the property to strip the overburden in the vicinity of the showings.

Five large trenches were excavated with some difficulty due to permafrost. However, the trenching exposed 40' - 50' width of oxidized material for 250' on strike. One end appeared to be barren of mineralization while the other plunged beneath the permafrost. Chisholm described it as a concentration of mineralization in a narrow pitching syncline eroded off at one end.

The sampling results returned 1.55% copper across 40' in one trench. After consideration of these results with the structural conditions, Chisholm was not disposed to recommend that we should make the next payment due on the option October 1st, in amount \$900. He believed that he could renegotiate the option to hold the ground until next year.

The same prospector who found the showing at Dry Creek, took Chisholm to examine a native copper showing on the headwaters of the White River on the Alaska side of the International boundary but the showing was not located.

Another prospector temporarily employed by Chisholm, took him to examine a nickel showing close to mileage 1169 on the Alaska Highway at White River crossing. The arrangement was that 8 claims were to be staked for the prospector who undertook to option them back to us for a down payment of \$800 against a total purchase price of \$5,000 in two year's time.

The showing was small and is described as massive sulphide mineralization, probably niccolite, outcropping in dimensions 2' x 10' from beneath talus material. The general geology is reported as similar to that of the Quill Creek area.

In addition to the 8 claims staked for the prospector and optioned back, 46 contiguous claims were staked for the company. Chisholm regards the ground as very favourable for prospecting. Two grab samples were taken from the best mineralization that gave the following results:

<u>No.</u>	<u>Au</u>	<u>Ag</u>	<u>Pt</u>	<u>Cu</u>	<u>Ni</u>	<u>Co</u>
1	0.33 ozs.	Tr.	Nil	0.2%	24.1%	0.04%
2	0.40	Tr.	Nil	Tr.	21.8	0.04

After Chisholm was satisfied that no further useful work could be accomplished due to snow conditions, he made arrangements for Baker, Campbell and himself to fly to Edmonton and return East.

#### CONCLUSIONS AND RECOMMENDATIONS

We have been successful in acquiring two very interesting blocks of claims in the St. Elias region, in close proximity to transportation, that will merit thorough investigation next year.

Recommendations regarding work in the St. Elias area and

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and elsewhere in the Yukon will be deferred until after complete reports have been submitted by the geologists.

CLC:NG  
5 c.c.  
Toronto, Ontario,  
October 6, 1952.

CHARLES L. COLEMAN