

MEMORANDUM

May 10, 1962

PROSPECTORS AIRWAYS COMPANY LIMITEDRe: The Lead-Zinc-Silver Deposit of Vangorda Mines Limited, Yukon

The final indicated tonnage on the lead-zinc-silver deposit of Vangorda Mines, Yukon Territory, totals 9,400,000 tons of open pit ore averaging 3.16% Pb, 4.96% Zn, 0.27% Cu, 1.76 ozs. Ag, 0.02 ozs. Au. There is an additional tonnage of 12,600,000 tons of low grade to barren sulphides. The mineralized body extends from bedrock surface to a depth of 300 feet as a series of overlapping flat lying lenses. Details of the drill intersections and geological data are included in the attached copies of Prospectors Airways' Annual Report for 1953, 1954 and 1955. Approximately \$815,000 has been expended on the deposit to date.

The claims containing the deposit are being surveyed this year and will be taken under a 20 year lease.

Under present conditions it was not considered economic to go into production but if transportation facilities improve, a re-study will be made. A government road, now being built northwards from Watson Lake on the Alaska Highway, should reach within 10 miles of the property by 1965 and this would enhance the outlook somewhat.

Vangorda Mines Limited, the present owner, is a subsidiary of Prospectors Airways Company Limited and any further inquiries can be addressed to this company. They have made detailed studies on transportation and mining costs, milling, etc.



E. O. Chisholm
Chief Geologist

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VANGORDA CREEK, YUKON TERRITORY
LEAD - ZINC DEPOSIT

CHISHOLM

The following report and accompanying enclosures summarize the detailed information on the Vangorda Creek deposit. Mine plans and sections are on hand at 40 scale but are too voluminous to include at this time.

LOCATION:

The airport is located at the headwaters of Vangorda Creek, a tributary of the Pelly River. It lies 125 miles in a direct line north-easterly from Whitehorse, the commercial centre of the Yukon Territory. The accompanying map at 20 miles to the inch shows the location and access routes.

ACCESS:

There is no road access to this property at present. Exploration was carried out by flying light supplies to a small lake on the property which is suitable for landing of Beaver Type float planes only. It lies two miles from the deposit and is connected by tractor road. Heavier supplies including oil, gasoline, diamond drills etc. were trucked from Whitehorse eastward down the Alaska Highway, 80 miles to the Pelly River intersection at Ross River Crossing. A barge was operated down the river a distance of some 40 miles to Blind Creek and from this point a tractor road 12 miles in length connects with the deposit. The accompanying $\frac{1}{2}$ mile to the inch plan shows the location of this road and surrounding topography. This supply route is only navigable during the months of June, July, August and September.

Future access may be available by all weather roads by 1965 if present Federal Government plans materialize. Under their Roads to Resources project, they plan a road from Watson Lake on the Alaska Highway running north west up the general bend of the Liard River, Hoolie River and Pelly River to Blind Creek, a distance of some 210 miles. The road would then swing west and connect with the Mayo Highway at Caracks. This leg is an additional 100 miles. Up to the present time, the first stretch of this road has been completed northwards from Watson Lake, a distance of some 40 miles. We have no up-to-date information on the estimated completion date of this route and this would have to be obtained from the Department of Northern Development, Ottawa. This road would pass within five miles of the Vangorda deposit when completed and would be the eventual route for concentrates from the property.

The total trucking distance from this property by this route to Railhead at Whitehorse would be approximately 200 miles. From Whitehorse a narrow gauge railroad, the Whitepass and Yukon, connects with the seaport of Skagway, a distance of approximately 90 miles.

An emergency airstrip for wheeled aircraft was constructed in 1954, approximately $\frac{1}{2}$ mile from the deposit. It is 2000 feet long by 500 feet wide and accommodates light aircraft only. Some light brush clearing may be necessary to operate this strip at present.

TOPOGRAPHY, CLIMATE, ETC:

The region of the deposit is generally mountainous as is seen on the attached 1" = 4 miles topography map (Tay River sheet). The deposit itself is situated in a rolling valley and the relief over the deposit is relatively flat. It is covered with an intrusive mantle of glacial clay and sand averaging about 50 feet in depth. A small stream, Vangorda Creek, cuts through one end of this deposit. It will provide plentiful water for all mining purposes. There is plentiful timber on the property.

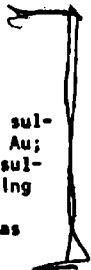
The climate is similar to Whitehorse with warm summers from June to September and extreme winter temperatures. Snowfall is light and averages two to three feet. Temperature in January and February ranges to 40 below zero.

Permafrost is absent over the deposit itself.

GEOLOGY, MINERALIZATION, ALTERATION:

The deposit is comprised of an overlapping series of horizontal lenses of sulphides that appear to replace a favourable sedimentary horizon. A Longitudinal section of the body is shown in Figure (1). Seventy-three diamond drill holes indicate a length of 3,000 feet with an average width of 490 feet and a tonnage of 9,400,000 tons of sulphide containing 3.16% Pb; 4.96% Zn; 0.27% Cu; 1.76 oz. Ag; 0.02 oz. Au; and an additional tonnage of 12,600,000 tons of low-grade to barren sulphides. The total mass of sulphides is estimated from diamond drilling to be in the order of 22 million tons. The mineralized body extends from bedrock surface to a depth of 300 feet and no underlying body was encountered to a depth of 1,000 feet.

The host rocks are comprised of a flat-lying sedimentary assemblage which can be divided into two main horizons, one predominantly chloritic sericite schist and the other predominantly graphitic schist. They are closely associated and considerable intercalation takes place at the edges of the graphitic horizon. The graphitic schist is minutely crumpled, breaks easily along cleavage planes, and contains narrow (up to 1mm) quartz stringers which are often mineralized by pyrrhotite, with minor chalcopyrite and pyrite. In thin section, it consists of minutely folded bands of white mica (sericite) and black carbonaceous matter intercalated with bands of anhedral, interlocking quartz grains, and isolated siliceous lenses. Sparse mineralization is confined to the siliceous bands, pyrrhotite apparently replacing quartz. This graphitic schist seems to have been produced by strong metamorphism of impure carbonaceous slate interbedded with thin sandy layers. Calcite is present in small amounts and may have been introduced with the sulphides. The sericite horizon consists of light greenish-gray, chlorite schist. It appears less deformed than the black schist. It is sparsely mineralized in siliceous bands (mainly pyrrhotite with some galena and chalcopyrite). In thin section, it appears to be a succession of thin bands of sericite, alternating with somewhat wider layers of quartz and chlorite containing minor amounts of orthoclase and sericite. The sericite-chlorite schist



appears to have resulted from strong regional metamorphism of a succession of thin sedimentary beds, probably of impure sandstone interbedded with shale. Occasional siliceous lenses now containing sulphides may have been originally small pebbles in the sediment.

No intrusive rocks were encountered within the confines of the above area, although granite, gabbro, diorite and porphyry are present elsewhere on the claims.

The mineralization consists of a fine-grained aggregate of sulphides in a siliceous matrix. Sulphide content is variable but might average 60% overall. Minerals present in their order of abundance are as follows:

Pyrite	35%
Sphalerite	25%
Galena	15%
Pyrrhotite	10%
Chalcopyrite	6%
Arsenopyrite	5%
Magnetite	3%
Mercurite	1%
Tennantite	Small Amount

The assemblage indicates a hypothermal replacement deposit.

Alteration is predominantly sericitic and chloritic and is intensified in an envelope surrounding the deposit.

The control of deposition appears to be lithological rather than structural, but there is insufficient evidence to decide at this stage. There is a suggestion that the northwest extremity of the deposit is terminated by a fault along Vangorda Creek. Brecciation and carbonatization of the core in drill holes in this section indicate faulting. There is also a suggestion that the long axis of the deposit is controlled by faulting and/or folding. No post-ore displacement of the sulphide mass in a horizontal or vertical plane was indicated in the drilling, and it is believed that any structural elements reflected in the magnetometer and gravity surveys would indicate pre-ore controls. It is reasonable to assume the presence of feeder faults in the area and the displacement of contours in the magnetic and gravity surveys in the vicinity of Vangorda Creek and its tributary to the east near Line 19E may be caused by this. However part of the displacement of the gravity contours along the creeks is due to thinning of the overburden.

DIAMOND DRILLING:

The assay results of 93 holes drilled in the vicinity of the deposit are found in the attached annual reports of Prospectors Airways Co. Ltd. for the years 1953, 1954, and 1955.

OWNERSHIP:

The property consists of 52 unpatented mining claims owned by a Canadian company called Vangorda Mines Ltd. This company is a subsidiary of Prospectors Airways Company Ltd. The key claims are being surveyed this year so that they may be held under a long term lease. No additional work is planned on the property at present.

E. O. Chisholm
Chief Geologist.

June 29, 1962.

Enclosures:

1. Prospectors Airways Annual & Interim Reports 1953 - 1955
2. Geological Map -- Yukon Territory (1" = 20mi.)
3. Preliminary Surface Map -- Yukon Territory (1" = 20mi.)
4. Topographical Map -- Tay River Sheet (1" = 4 mi.)
5. Location & Claim Map -- Vangorda Creek (1" = 1/2 mi.)
6. Generalized Longitudinal Section -- Vangorda Creek (1" = 400')