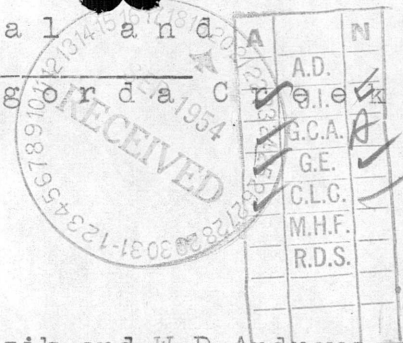


Report on the Geological and  
Geochemical Survey, Vangorda Creek



Introduction.

In the summer season of 1954, V.Papezik and W.D.Andrews made a geological and geochemical survey of the Vangorda Creek property, Yukon Territory. In the absence of a detailed topographic map, claim-posts were used as control. Position of outcrops and soil samples was determined by 1500' long traverses (pace and compass), run every 500' approximately at right angles to the claimline, with samples collected at 500' intervals. In view of the obvious limitations of this method, the mapped locations of outcrops and soil samples are only approximate.

Topography.

The Vangorda Creek property extends from the base of Mt. Mye in the north to Shrimp Lake in the south in a succession of broad ridges and swampy valleys, for the greater part covered with moss and thick underbrush with large burnt-out areas. Outcrops are fairly numerous in on the northern and eastern fringes of the property, becoming scarce in the central group and lacking almost entirely in parts of the south,

Most of the area is covered by a mantle of glacial drift of variable thickness. Alluvial terraces were observed on the Ralph and Mike claims in the valley of Vangorda Creek, and long twisting ridges of gravel, probably eskers and parts of a terminal moraine, cover the ground close to the base of Mt. Mye adjacent to the creek between the Jack and Art claimgroups. A layer of volcanic ash about 3" thick lies on top of the

glacial drift over the whole area, directly below the vegetation.

## Geology.

### a) Metamorphic rocks.

Almost three quarters of the area are underlain by a broad belt of metamorphic rocks, mainly sericite and graphite schists. The sericite schist is light to dark grey, strongly fissile, with a glossy luster, grading in places into the black graphitic schist. Both are minutely crumpled and strongly folded. Planes of schistosity cut across the folds, striking generally northwest and dipping about 30 degrees SW, with local variations due probably to plunging. These rocks seem to be a series of strongly metamorphosed sediments with possibly some interbedded volcanics, similar to the schists of the Yukon group described by J.R. Johnston (GSC Mem.200)

On Art No.7 and 8 claims there is a much smaller schistose belt of a different type, characterized by large crystals of staurolite. Outside the property boundaries towards the north this belt changes to garnet schist and in part to skarn. This may be a local metamorphic effect. The staurolite schist contains numerous small pegmatite veins with quartz, muscovite and some pink tourmaline.

Part of the Rose Creek valley in the northwest is underlain by a broad area of reddish brown biotite gneiss, in places striking NW and dipping NE. Two lenses of crystalline limestone were found in the gneiss conformable to the general strike, suggesting that this is another zone of strongly metamorphosed sediments.

b) Igneous rocks.

The northern edge of the property is underlain by a mass of granitic rocks, intruding the schist. The intrusive ranges probably from g r a n i t e to g r a n o d i o r i t e. Within the property boundaries it is fine-, to medium-grained, grayish to brownish in color, consisting of quartz, feldspar, biotite and hornblende. Locally, especially in the vicinity of Rose Creek, it contains a large amount of biotite, which may be due to partial assimilation of the adjacent biotite gneiss. Parts of the contact zone are characterized by hornfelses. On the Firth claims in the northwest section of the property the contact zone contains a mineralized belt, which was described in a separate report earlier in the season.

Extending diagonally across the property from the Van - Hodge group in the northwest to the Winter group in the south east, a belt of intermediate to basic rocks intrudes the schists. It consists of coarse-grained plugs of d i o r i t e and locally g a b b r o, forming distinct knob-like hills, connected by fine-grained basic dykes, strongly altered to greenstone. These rocks are greenish grey to black in appearance, containing plagioclase feldspar with abundant hornblende strongly altered to chlorite. The greenstones are in places slightly mineralized with pyrrhotite. Narrow zones of hornfelses are scattered along the contact. The intrusive belt probably increases in extent towards the east where large areas are underlain by coarse-grained diorites and gabbros, and towards the south where it forms the bulk of the mountain south of Shrimp Lake. A small part of this area is included in the Tony claims in the southwest corner of the property.

Since the differences between diorite and gabbro are probably

due to local differentiation rather than separate intrusions, and both types appear to be genetically associated with the connecting dykes, these rocks have been mapped as a unit.

Small lenses of quartz - feldspar porphyry  
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 appear along the northern edge in the central part of the intrusive belt, increasing in thickness and extent toward the east, where they reach their maximum development on the Insurance group. This rock is light buff in appearance, with prominent phenocrysts of feldspar and quartz in a fine groundmass. The age relation between the porphyry and the adjacent intermediate intrusives could not be determined accurately, but similar porphyritic rocks are considered by Johnston (GSC Mem.200) to be of Tertiary age. In this case their emplacement could have been guided by zones of weakness along the contact of the intrusives and the schists. Though in the east they contain a few rusty spots, their ~~xxxx~~ connection with mineralization, if any, could not be discovered.

In the western part of the property, covering almost entirely the Ralph claim group, lies a wide zone of andesitic lava.  
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 This rock is light green, fresh looking, with numerous small amygdules often filled with calcite and possibly zeolites. On Ralph No.5 claim two large quartz veins cut the andesite. They are about 10' thick and several hundred feet long, being possibly parts of the same vein. In places they contain some scattered tetrahedrite and chalcopyrite. A grab sample of the mineralized quartz was sent for assay for Au and Ag, but no important economic values have been reported.

c) Sedimentary rocks.  
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In the vicinity of the dioritic belt in the south

and southeast a group of sedimentary rocks occurs in narrow zones and disconnected erosion remnants. It is characterized by greenish grey banded argillites, silicified and thermally metamorphosed on contact with the intrusives. Their banding is varve-like in nature. Associated with the argillite there are a few outcrops of massive dark grey limestone along the southern boundary of the property and in an isolated area on the Hull claims in the west. On Slim No.7 claim the limestone grades into black limy shale and partly to phyllite.

The belts and patches of sedimentary rocks often include outcrops of light greyish green schistose rock of probably volcanic origin, mapped originally as greenstone schist. Its structural relations to the sedimentary series were not definitely determined from the isolated outcrops; but the whole series resembles so strongly Johnstons Lower Paleozoic group that it was mapped as a unit. The schistose greenstones may then represent either altered tuffs or sills and ~~xxxxx~~ lava flows interbedded with the sedimentary rocks. However, their classification remains doubtful.

The whole group is folded, but to a lesser extent than the graphite and sericite schists. The fold axes, where determined, trend NW. Thermal metamorphic effects show that the diorites and gabbros intrude the older sediments which probably overlie the Yukon ~~xxx~~ schists.

On the north bank of Vangorda Creek about 1000' west of the main showing, and 1500' southeast of the camp, there are two small areas where a rusty conglomerate outcrops on the surface. It consists of fragments of schist and boulders of granitic rock with some mineralized pebbles, cemented by iron oxide. This may represent

old stream gravels and surface detritus cemented by limestone derived from the erosion of orebodies exposed before or during glaciation. This conglomerate, the youngest consolidated rock in the area, was not seen ~~any~~ anywhere else on the property.

### Geochemistry.

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Geochemical survey of the area was done in connection with the geological mapping. Soil samples were collected from the layer below the volcanic ash wherever possible; but a thick moss cover in ~~-----~~ places prevented this, which may account for some of the negative results.

Almost all chemical tests were ably done by W.D. Andrews. The soil-sample was first shaken with water for 30 seconds to break up the colloids and dissolve part of the contained metals. After the heavy particles and mud had been allowed to settle, the clear top layer of water was decanted and tested with an acetic solution of dithizone. This test was done under the optimum conditions for zinc (pH 5.5), but a positive may also mean the presence of copper and/or lead. Although most of the samples tested yielded negative results, a sufficient number of positive and neutral results was obtained to prove the efficiency of this method for a large-scale reconnaissance. The systematic soil - sampling was supplemented by direct testing of water in creeks and swamps wherever thought useful.

A majority of the positives and neutrals can be grouped into four areas of geochemical anomalies. These lie mostly in the broad belt of sericite schist, trending NW - SE.

The first anomaly is situated on the Firth claim group in the north-west part of the property, close to the contact of schist and granite.

A mineralized fault-zone and a possible extension of mineralization along the contact was described in a previous report.

A second positive area lies between the Grum and Champ claim-groups, northwest of the main showing. This part of the property is covered with moss and underbrush with almost no outcrops. No traces of mineralization were seen on the surface, but a presence of a base metal concentration below the overburden is indicated.

The third, largest anomaly occurs around the main showing on Vangorda Creek. Its elongation toward the west is probably due to the prevalent westerly direction of drainage in this area. The presence of ore in this region has been proven by drilling.

The fourth concentration of positives lies on the Rocky and Insurance claim groups. The anomaly extends from the schists into the quartz-feldspar porphyry, characterized there by rusty zones without visible mineralization. The western part may then mean a continuation of the main mineralized belt while the eastern fringe may be a local effect due to the porphyry, or the whole anomaly may be caused by mineralization along a single structural feature.

Only 5 out of a total of 33 positives lie outside the four main anomalous areas. These may be due to slight amounts of contact metamorphic mineralization (such as occurs on Winter No.1 claim north of Shrimp Lake, where small areas of copper stain were seen on the contact of argillite and a narrow basic dyke), or to other local effects, and probably have no economic significance.

Conclusions.  
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The geochemical as well as the magnetic anomalies found so far indicate that economic deposits are restricted to the northwest trending belt of sericite and graphite schist. On a regional scale, the trend of these anomalies lines up remarkably with the prominent valley of Rose Creek and the recently staked mineralized area on Green Eagle Creek to the NW, suggesting a long regional fault or a zone of faulting which may have guided the ore deposition.

Although the final evaluation of the claims will depend on a magnetometric survey, the geology of the area indicates that the southwest corner of the property (the Tony group), the Van and Hodge claim-groups in the northwest and the claims on the northern fringe, underlain by granitic intrusives, are less likely to contain economic mineralization than the remaining claims. The rest of the property shows an excellent promise.

Vangorda Creek, Y.T.

September 8, 1954.

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