521284

COMPOSITE GEOLOGICAL STUDY OF TEETA CREEK PROPERTY (QUATSINO SYNDICATE), RUMBLE BEACH, B. C.

N. T. S. 92 L/5 E

Submitted By: Tatsuya Takeda

Date: August, 1969

SUMMARY

It is generally agreed that exploration work in 1968 obtained the best results with a limited amount of diamond drilling, due to the good co-ordination of line-cutting, surveying, geochemical, geophysical, and detailed geological work.

Additional detailed geological mapping and the following compilation of available geological information revealed the presence of a horseshoe-shaped diorite mass which would probably control the localization of three types of mineralized zones:

a) Cu-Mo zone - main Cu-Mo occurrences of Teeta Creek.

b) Cu-Py zone - newly discovered. One anomaly only.

c) Cu-Au zone - Teeta Gold property.

Dacitic intrusives mapped by Leitch are surrounded by the partly chloritized diorite mass, and forms an intensely altered core which has similarity to the Ajax molybdenite property, Alice Arm, B. C.

Intense fracturing is indicated by the distribution of dyke swarms in the intensely altered core as well as in the diorite mass.

For this reason, one of the largest geochemical copper anomalies on the E-W base line from 700 - 1200 W can be the target of further exploration. A good potential can be expected from the size of the zone (maximum - 2,400 feet long and 800 feet wide).

INTRODUCTION

A program of additional geological mapping in the area of Teeta Creek was approved by Newmont Mining Corporation of Canada Limited and Can-Fer Mines Ltd. for the 1969 season.

The writer carried out detailed geological mapping of the Teeta Gold property (Quatsino King) from June 24th to July 9th, 1969 and the Teeta Creek property from July 21st to August 9th. Throughout the project the writer was ably assisted by H. Turnbull, a U. B. C. engineering student.

The property consists of 31 mineral claims held by location, adjoining the Teeta Gold property and the Perky claim on the southeast. Additional detailed mapping, of 1" = 200' scale, was carried out over an area of approximately 1 mile square, including the Teeta Gold property.

GEOLOGIC HISTORY

Tertiary-Quaternary	Glaciation	
Cretaceous ?	Intrusion of lamprophyre-porphyrite dykes	Strike - mainly N30°E, dip 90° rarely N-S, dip steep
Cretaceous ?	Mineralization	Teeta Gold - Strike N15°W, dip 60°E - copper, gold. Perky - Strike N30°E, steep dip ?. Copper, trace gold, Mo. Teeta Creek - Strike N35°E, steep dip - copper, Mo.
Cretaceous ?	Bleaching of intrusives and Bonanza Formation	Flooding of albitization and some silicification.
Cretaceous ?	Intrusion of feldspar porphyry dyke	Few inches to 50 feet wide. Strike N45°E, steep dip (mainly) Strike N-S, dip 75°E (rare)
Cretaceous ?	Crustal movement	Development of fracture patterns and brecciation. Strike N-S, dip 60°E Strike N60°E, dip 80 - 90°
Upper Jurassic	Coast Range Intrusive	Diorite-gabbro, monzonite and possible formation of brown hornfels.
Upper Triassic	Bonanza Formation	Mainly volcanics by intense submarine volcanism. Very rare sediments.

The main purpose of the mapping program in 1969 was as follows:

a) to investigate the distribution of sulphide-bearing dioritic intrusives in the vicinity of the Teeta Creek property;

b) to determine the relationship between geochemical - geophysical anomalies and geologic features in an effort to check the possibilities of locating additional mineralized zones;

c) to study the nature of mineralization in the area between the main Teeta Creek mineralized zone and the Teeta Gold property.

Regarding location, access, climate, topography, vegetation and water, an elaborate description may be obtained from Leitch's 1968 report.

PROPERTY

As of this date, the Teeta Creek property consists of 31 mineral claims as listed below:

STAR 2, 3, 5, 7 - 15, 17, 21 - 32
BOY 1, 2
STAR Frs. No. 1 - No. 4

As these claims are held by location, some tie-in difficulties are encountered along common boundaries with the adjoining claim group on the southeast, east and northeast side of the Teeta Creek property.

For instance, most part of Star 22 claim overlaps the Perky claim which has been owned and held since 1944 by E. L. Tipping of Vancouver. Also, North Pole, North Pole No. 2 and No. 3 of Teeta Gold property, held by G. Nordstrom of Quatsino, may be partly overlapped by Star 21, Star 3, Star 2 and possibly Boy 1, located near the mouth of Teeta Creek.

Near grid line 2800 N at 1200 W, a claim post is located with tags of Star 3, 4, 5 and 6 claims instead of Star 5, 6, 7 and 8. A correction of this error is necessary because claims Star 4 and 6 have expired.

In the rest of the area, the claims are believed to satisfactorily cover the main mineralized zones of the Teeta Creek property.

FIELD WORK IN 1969

During the investigation of Teeta Gold property, a two-man fly tent camp was set up on the beach near the mouth of Teeta Creek. Subsequent to this the old Teeta Creek base camp was repaired and used as a base for additional geological mapping on the Teeta Creek property.

A 16 foot aluminum boat equipped with 15 H.P. outboard engine was used to visit Rumble Beach for supplies and communication purposes.

Camp mobilization and demobilization was accomplished by use of an Okanagan helicopter.

Additional detailed mapping was carried out over the area of approximately 1 mile square covering most of the Teeta Creek property. In addition to the use of stations along grid lines for control, selected creeks were traversed by chain and compass survey to take advantage of better bedrock exposures and of more efficient work in heavily timbered forest.

Numerous waterfalls were encountered at higher elevations near the shoulders of the U-shaped valley of Teeta Creek. In the southwest corner of the mapped area, a creek has canyon walls of almost 80 feet high, and was barely accessible.

The geological information thus obtained was plotted on the base map of 1" = 200' scale.

In the Teeta Gold property, where more detailed investigation was required, 1" = 40' scale mapping was carried out in the main mineralized area on both surface and underground.

Five samples were taken from the wall of the main adit and analysed for Cu and Au-Ag.

On the Perky claim, held by Tipping and overlapped by the Star 22 claim, 1" = 40' scale mapping was done to indicate the locations of 17 samples analysed for Cu, MoS_2 and Au-Ag.

The geological and sampling work done during the 1969 field season was favoured by good weather.

GENERAL GEOLOGY

As a result of the compilation of geological data obtained in 1968 and 1969, main rock units were classified as shown in the three sheets of geological maps attached to this report.

Although Leitch's observation of occurrences for various rock types is very accurate and thin section study was undertaken by Dr. J. Libby of U. B. C. at the request of Leitch, minor revisions of genetical interpretation and change of rock names were made by the writer, based on additional detailed mapping. These changes are itemized as follows:

a) "Dacitic intrusion" and "dacite"

Leitch admits "dacite" is probably an altered porphyritic andesite with silicified and feldspathized matrix which has been recrystallized and assimilated to some degree.

In order to prevent misinterpretation, the term "dacite" is changed to signify "intensely altered core of volcanics" and "light grey coloured altered porphyritic andesite with partially resorbed quartz eyes".

b) "Fragmental rocks"

Leitch postulated the fragments probably originated as explosive breccia fragments from crystallized dacitic material. However, it is probable that fragments were originally brown hornfels or argillitic tuff and that "dacitic" appearance was introduced by further alteration.

c) "Brown rock"

Leitch believes it was originally basaltic and H. Tremblay called it "purple biotitized volcanics". Based on the writer's observation of the less altered mass in the southwestern corner of the mapped area, it is noted that the brown rock changes gradationally to dark grey, fine-grained, argillitic tuff. Accordingly, it is called a brown hornfels with microscopic biotitization and occasional secondary growth of plagioclase grains.

Brief descriptions of the rock types are given below:

A. Bonanza Formation - mainly volcanics

This thick horizon of volcanics and minor sediments is tentatively classified as Bonanza Formation of Upper Triassic Vancouver Group, by Dr. Muller of the G. S. C. who has been doing 1" = 1 mile scale regional mapping in the northern part of Vancouver Island since 1968.

From northeast to southwest along Teeta Creek, this "Bonanza Formation" is vaguely subdivided into the following units:

a) Alternation of dark coloured tuffs and minor tuffaceous argillites occurring near the mouth of Teeta Creek.

b) Altered porphyritic andesite ("dacitic" by Leitch)
- light grey coloured with locally resorbed quartz eyes or grains. Microscopically albitized and silicified with locally intense argillic alteration.

c) Fragmental volcanics
   - brown hornfels or its albitized - silicified equivalent enclosed in light grey coloured, altered, porphyritic andesite with occasional quartz eyes.

d) Argillitic tuff with rate limestone lens
   - fine-grained, dark grey coloured. Often altered to brown hornfels, locally intensely silicified or albitized with argillic alteration and very rarely containing thin layers of dark coloured impure limestone.

e) Fragmental volcanics and rare conglomerate
   - conglomerate composed of argillite with poor sorting in the sandy matrix. Fragmental volcanics are similar to (c).

In addition, vesicular andesites, possible lava flows, and green coloured andesite with gigantic feldspar laths, have limited exposures at higher elevations near the edges of mapped area.

Those two types are tentatively classified as members of the Bonanza Formation, and the contact was drawn based on their strong magnetism. Brown hornfels is also magnetic in areas adjoining the lavas.

B. Intrusives

It has been known from the mapping done by Gunning and Spat and from the observations by Leitch, that strings of small intrusives chiefly consisting of rocks of monzonite and diorite-gabbro composition, are exposed in the inland area west of Neroutsos Inlet from a point north of Yreka to the south end of Neroutsos. These all appear to occur at lower or intermediate elevations exposed largely by creeks or along the inlet shoreline.

Additional detailed mapping in 1969 unexpectedly revealed extensive distribution of diorite and lesser monzonite in a horseshoe-shaped distribution with the opening in the northeast.

Due to the magnetic nature of the diorite, ground magnetometer survey data was helpful in assuming the contact, except at the north end of the horseshoe, where diorite is almost non-magnetic, possibly due to fair chalcopyrite - pyrite mineralization and chloritization.

Near the Teeta Gold property in the southeastern part of the mapped area, monzonite is daveloped more or less along a N-S trend

D. Tectonic Breccia

Occurring near the Teeta Gold property is a north-south trending "tectonic breccia" zone of some 100 - 200 feet wide and approximately 1,800 feet long.

Southward, the extension of this zone rapidly dies out into the dioritic inclusion mass. However, another narrow band of tectonic breccia occurs en echelon with the major tectonic breccia together with a 50 foot wide feldspar porphyry dyke and porphyrite dyke. This indicates the presence of major structure and openings prior to the dyke intrusion.

ALTERATION

In the center of the main mineralized zone of the Teeta Creek property, light grey coloured, altered, porphyritic rock prevails. This type of alteration dies out somewhat rapidly in the fashion of horse-tailing into the diorite mass to the southwest and less rapdily into the monzonite to tha southeast. To the northeast there are only very poor bedrock exposures of this zone.

As noted by Leitch, there is a strong structural control of alteration direction along northeast and N 65° E oriented, pre-alteration fracturing and shearing.

Due to the secondary growth of feldspar, it is often very difficnlt to distinguish the bleached granular intrusives from albitized, altered, porphyritic rock of possible volcanic origin.

Chloritization and minor epidotization gradually increases as light grey albitization becomes weaker and becomes very common in the horseshoe-shaped diorite and in the volcanics surrounding the outer diorite contact to the north, northwest and southeast.

Brown horafels becomes more abundant in the western half of the light grey coloured altered core, even extending outside the horseshoe-shaped diorite in the southwestern part of the mapped area. Bleaching or discolouration of this rock is common.

STRUCTURES

Presence of dyke swarms and extensive alteration zones along many fissures, support the assumption of fine fracturing of this area prior to and at the time of successive mineralization.

Leitch suggested a possible caldera structure of land slide feature based on air photo interpretation. However, there are three similar features on the same northwestern side of Teeta Creek and located nearly at the same elevation and on the shoulder of the U-shaped valley. These are probably a partially developed or buried old cirque, judging from geological mapping by quick traverse.

MINERALIZATION

In 1968, a limited amount of surface trenching was followed by five holes of diamond drilling which encountered fair sized intersections of mineralization from 0.1 - 0.36% Cu and 0.05 - 0.028% MoS_2.

Drilling results were summarized by H. Tremblay in his report entitled "Teeta Creek Geological Review and Analysis of Diamond Drill Results, 1968".

Control of copper-molybdenum mineralization is generally described as follows:

a) Higher grade sections of mineralization are localized in the purple biotitized rocks.

b) Contact areas between pale grey altered and purple biotitized rocks are favourable localizers for mineralization.

c) Local concentrations of mineralization occurs adjacent to dacite dykes and within clay altered zones and the widths of these mineralized zones are not usually in excess of 30 feet.

d) Molybdenite is usually associated with quartz veinlets and silicification.

Sulphide minerals recognized in the mineralized zones, in the order of their abundance, are as follows:

Pyrite (magnetite)
Chalcopyrite
Pyrrhotite
Molybdenite
Bornite (very rare)

POSSIBILITY OF FINDING NEW MINERALIZED ZONES

As the result of detailed mapping in 1969, three types of mineralization were identified. They are as follows:

a) Chalcopyrite-molybdenite type in brown hornfels
   - well explored in 1968

b) Chalcopyrite - pyrite type in chloritized diorite.
   - newly discovered on the northwest side slope of Teeta Creek. No geochemical anomaly for molybdenum, but high for copper.

c) Chalcopyrite - gold type in intensely silicified brecciated zone.
   - Teeta Gold property. Lenticular mineralized zone of small scale and low grade.

Accordingly, type (b) is still a possibility for a significant new mineralized zone. One zone is on the E-W base line at 700 - 1200 W and is the largest lenticular zone with maximum dimensions of 2,400 feet long and 800 feet wide.

The other zone is parallel to the first and occurs in the altered brown hornfels zone. The size of the anomaly is 100 - 200 feet wide and 2,100 feet long. This zone occurs near the mineralized zone intersected by DDH S-1.

A third zone occurs on the Perky claim with chalcopyrite - pyrite mineralization occurring in brown hornfels which contains fragments of light grey, altered rock. This zone was not detected by geochemical sampling because it was exposed along Teeta Creek where no soil was available for sampling. Although there is only a limited amount of geological information, a large tonnage potential is not indicated.

In the southwestern corner of the mapped area, a silicified zone of possible brown hornfels or argillitic tuff origin was newly discovered and traced for 300 feet along the creek canyon. It is located outside of the horseshoe-shaped diorite and is not copper-bearing. Eight channel samples were taken for gold and silver assay as a check of this zone.

The porphyritic, highly altered core surrounded by the horseshoe-shaped diorite may contain more scattered copper mineralization. However, as long as copper mineralization is controlled by two factors, brown hornfels and fissures with copper related alterations, there is little hope of having a fair sized localization which would have been overlooked by the detailed exploration work in 1968.

T. Takeda.