

824093
Richter 1989

SOME EXAMPLES OF YEAR ENDS
complete as info allows

LINDA

P.N. 624 S. Oranagan
628 Jolly
640 Lamb
658 Brenda Recce
659 Velvet

Nick

P.N. 655 Ferroux
656 Richter

~~FIN~~ RORY

P.N. 622 L.C.
642 Clapper
643 Wart

need 1 or 2 $8\frac{1}{2} \times 11$'s show + tell maps

DUSTY MAC OPTION (PN 235, 627)

G. Evans

Introduction

The Dusty Mac property is located 1 km east of Okanagan Falls at the SE end of Skaha Lake. It consists of 88 units and a production lease covering 1750 ha. In 1975/76, a quartz breccia lens was mined, producing 93,653 tonnes grading 6.89 g/T Au and 146.59 g/T Ag. In 1988, mapping and drilling started to define the controls on mineralization in this epithermal system.

1988 Programme

Geology	Verified and revised Esso's grid geology 1:2000 scale.
Geophysics	14.85 km CSAMT survey.
Trenching	300 m in 11 trenches to test structures.
Drilling	1537.1 m of NQ diamond drill (11 holes).
Geochemistry	47 base survey samples (36 elements analyzed) 12 channel samples (Geochem) 69 chip samples from trenches (Geochem) 382 split sections of core (Geochem and Lithochem) 10 samples analyzed for total metallics

Results

The 1988 program went a long way towards understanding the epithermal environment on the Dusty Mac property. The host rocks are a sequence of volcanics and sediments forming the Eocene White Lake basin. These consists of felsic and intermediate domes, flows and lahars mixed with lacustrine sediments. Steeply dipping faults accommodating folding are believed to be the main conduits for epithermal fluids which have allowed boiling and precipitation of both base and precious metals along structural and stratigraphic traps.

The system is believed to be of the adularia-sercite group which greatly improves dip and strike potential for multiple epithermal deposits. Fault intersections, porous units, and impermeable boiling traps are all present with alteration and mineralization. The nearby Vault property, actively being worked on by Inco, has had very encouraging results at the base of the impermeable Marama dacites. These occur on the Dusty Mac property but have never been tested.

In 1988, alteration and mineralization was studied and found to be very widespread over the property. Wide envelopes of carbonate and propylitic alteration encompass smaller argillic and potassic zones with siliceous cores anomalous in Fl, Ba, Te, Tl, Cu, Pb, Zn, Ag and Au. Alteration and mineralization are complex and multi-episodic with the highest grades of mineralization within quartz breccias, chalcedony veins and complex zones of silicification. Surface sampling has returned values of up to 80 g/T Au and 500 g/T Ag while drill testing structures produced values up to 3.62 g/T Au and 52.5 g/T Ag over 1.5 m. To date the CSAMT and IP surveys do not appear effective in outlining potential zones and with numerous targets defined, drill testing is the most effective approach.

Recommendations

1. Geological mapping and lithogeochemical sampling at 1:5000 over the whole property.
2. Drill test the following:
 - a. Beneath the pit at depth.
 - b. Test the base of the Marama under known alteration and mineralization.
 - c. Test the A zone at depth.
 - d. Test the adit and chalcedony zones.

LAST CHANCE (LC) PROPERTY (PN 228, 622)

G. Evans

Introduction

The property consists of 91 units (2275 ha) located 60 km NW of Kamloops. The property covers an area with old mercury showings along Tertiary structures. These structures control high level epithermal systems that are analogous to the large McLaughlin deposit in California.

1988 Programme

Geological mapping with lithogeochemical sampling was carried out on the property on a reconnaissance basis. This was to define structures and targets for the 1989 programme.

Geology 1:5,000 scale property mapping.

Geochemistry 10 Heavy Mineral samples collected and split in to 3 size fractions which were analyzed for Au, Ag, Hg, Tl, Ba, As, Bi, Cu, Pb, Zn and Sb.

95 rock samples were collected and analyzed for the lithogeochemical package as well as Cu, Pb, Zn, As, Hg, Ag, Au.

Results

The mapping confirmed that alteration and mineralization post date the Tertiary faults. Basement rocks consist of Nicola rocks in turn overlain by Eocene sediments and volcanics whose graben faults were re-activated post Miocene. The Miocene plateau

basalts are present as flows on LC4 and as a conspicuous breccia pipe forming what is known as "Split Rock".

The last event appears to be post Miocene felsic and mafic dykes with related alteration. These occur in major faults zones with all rock types hosting the alteration. Alteration consists of carbonate +/- silicification over widths of up to 50 meters. Silicification includes minor amounts of vuggy, brecciated chalcedonic vases. Hg is common as cinnabar with values of up to .15% over 1 m. Ag values are up to 3.3 ppm while silicified zones near felsic dykes run as high as 175 ppb Au. Poor outcrop exposure, limited mapping but continued Heavy Mineral sampling indicated fault zones have anomalous values in Au, Ag, As, Ba, Sb and Hg.

The main areas highlighted are N to NW trending fault structures; a) parallel to the main Deadman River fault on LC 5; b) the large fault on the east side of Split Rock; and c) dyke swarms at a fault junction near the LC showings on LC 1-4.

Many companies are active in this high level epithermal environment but low Au values have always deterred groups. The placer workings in Criss Creek must have a source which could well be the altered fault zones on the LC property. Newmont has found significant Au values (.10 oz Au over 8 m) in silicified zones proximal to felsic dykes on these structures on the south side of Kamloops Lake.

Recommendations

1. Establish grids over the priority areas.
2. Run Mag and VLF surveys over the grid areas.
3. Detail sample and trench areas where possible.
4. Drill targets as defined.

FLECK-BRITANNIA OPTION (PN 213, 614)

C.M. Burge

Introduction

The Fleck option consists of 6,500 hectares and lies adjacent to the former Britannia orebodies (figure 1). The Britannia deposit is a volcanogenic massive sulphide of the Kuroko type which produced over 50Mt containing 1.3% copper. The precious metal content of this deposit was remarkably high and over the mine life some 500 thousand ounces of gold was produced from the massive copper-zinc orebodies and quartz veins of the No.5,8 and east Bluff ore zones.

Exploration work done on the strike extension of the Britannia mine stratigraphy prior to Minnova concentrated on the premise that the Britannia shear zone provided the structural control for hydrothermal replacement deposits. The result is that the bulk of the stratigraphy in the Furry Creek valley remained untested.

Minnova Program

Since acquiring the property in 1984 from Anaconda Canada Ltd., Minnova has defined the Britannia mine package, mapped, and performed lithogeochemistry and geophysical surveys from the Victoria pit, the eastern most orebody (L35W) to Seymour Creek (L26E) where the volcanic stratigraphy is truncated by the Coast Plutonic Complex granites.

In 1985 Minnova concentrated on the Indian River portion of the property to assess the volcanogenic massive sulphide potential of the Roy prospect. The Roy area was mapped and sampled and followed up with a 1500 meter drill program including borehole PEM coverage. It was concluded that mineralization and alteration seen on the surface at Roy is the erosional remnant of an overlying VMS deposit.

Since 1985 Minnova has focused its efforts on the Watershed and Furry-Clipper divide showings located about 4 km. east of the Britannia mine (L4W to L10E). A total of 2150 metres in 14 holes has been drilled to date to test the Watershed stratigraphy. The geology consists of successive felsic flows separated by pyroclastic rocks including ash flows, with minor sedimentary chert and pyritic muds. The package is considered to have a very high potential for hosting volcanogenic massive sulphides at any (or all) of these multiple horizons. Geochemically these rocks exhibit an alteration signature of soda depletion and potassic enrichment common to many Kuroko-Britannia-Noranda type orebodies. The results are summarized in Table 1.

1988 Summary

Drilling	Total 1446 meters (11 holes) 491m drilled NQ and 955m drilled BQ litho samples 196 assays 12
Geology	Total 8 line km. mapped litho samples 140 assays 2
Geophysics	Total 9.5 line km. pole-dipole I.P. survey Total 5 holes surveyed borehole PEM methods

Results

The Watershed stratigraphy is still considered to offer the greatest potential of targets on the property. The 1988 drill program tested the shallow potential on strike for 800 meters toward the east (see figure 2) and although no ore grade intersections occurred, numerous elevated base metal values were obtained. These results are interpreted as being distal expressions of volcanogenic massive sulphide deposits and are therefore considered to be most encouraging. The final hole of the 1988 program, FC-16 intersected an impressive 30 meters of fine pyrite and sphalerite laminae as well as a number of narrow massive sulphide bands. This mineralization is the most encouraging seen to date on the property. The 1989 work program should concentrate on evaluating the west extension of the Watershed package.

Recommendations

1. Drill test the west extension and the downdip potential of the Watershed stratigraphy including borehole PEM surveys.
2. Helicopter supported drill program to test the geological/geophysical targets in the Clipper Creek valley and test the sediment package stratigraphically above the Fairwest prospect.
3. Rehabilitate the Downing Ridge road in order to test Britannia Mine stratigraphy from Downing Ridge drilling north.
4. Investigate and assess the gold potential of the Bank of Vancouver and Sun showings.

HEATHER JOINT VENTURE (PN 224, 619)

G. S. Wells

Introduction

The Heather property is located in the south-central part of Vancouver Island, 40 km southwest of Nanaimo. The 11 claim (206 units) property was optioned from Canamin Resources in 1986 to evaluate the base metal and gold potential of the Sicker volcanics. Minnova has explored the property under a joint venture agreement with International Cherokee Developments Ltd.

Prior to 1988, detailed geological, lithogeochemical, soil geochemical and geophysical (VLF, Mag, IP) surveys were carried out on a 33 km grid covering the southern part of the claim group. Three gold showings are present on the property - the Main Showing (106.1 g/T over 1.0 m), the North Showing (5.0 g/T Au - grab) and the McDougall Veins (9.15 g/T Au - 6.5 m x 0.25 m panel). Ten drill holes totalling 1135.7 meters have tested both the Main Showing at shallow depths and IP anomalies. No significant zones of mineralization have been intersected.

1988 Exploration Program

In 1988, 7 holes totalling 541.7 meters tested the McDougall Vein (6 holes-444.5 m) and the North Showing (1 hole - 97.2 m). Reconnaissance geological traverses were done on the Tania S-2, Tania S-4, Efrem-S and Carol S-3 claims.

Results

Six drill holes tested the McDougall vein system over a strike length of 60 meters and at depths ranging between 20 to 60 meters below the surface. All of the holes intersected narrow

(<0.5 m) quartz veins except for hole H-14 which intersected a series of quartz veins over a core length of 24.8 meters. Anomalous (270 ppb Au over 0.9 m) but subeconomic gold values are present in these veins.

One hole tested the North showing. Although a 53 meter wide zone of pyritic andesitic tuffs was intersected, no anomalous gold values are associated with this zone.

The reconnaissance work helped define the geology of the property but no mineralization was located.

Future Work

Since 1986, Minnova has been actively and thoroughly exploring the Heather property. All of the three major gold showings have been drill tested with very little encouragement. In addition, detailed and reconnaissance geological work on the property has not discovered any other targets. Consequently, no further work is planned on the Heather property.

MT. SICKER PROJECTS (PN 205)

G. S. Wells

Introduction

Minnova's Mt. Sicker property, which is located 10 km north of Duncan, consists of 3 contiguous options (Postuk-Fulton, Peppa, Lieberman) and Minnova claims totalling 207 units. The Lenora-Tyee volcanogenic massive sulphide deposits, which are located on the Peppa claims, were discovered near the turn of the century and yielded approximately 300,000 tons of ore at a grade of 3.31% Cu, 7.5% Zn, 2.75 Oz/T Ag and 0.13 oz/T Au. The ore zones are hosted in felsic volcanics of the Sicker volcanic group and are considered to be analogous to Westmin's Myra, Lynx and Price ore bodies located in the Buttle Lake area.

Minnova has been systematically exploring the property since 1983. Several mineralized horizons have been identified but the Lenora-Tyee zone which hosts the former producers is still considered as the best exploration bet.

1988 Exploration Program

In 1988, 29 diamond drill holes totalling 10,295 meters were completed on the Mt. Sicker property during 2 drill programs. The Lenora-Tyee stratigraphy, which has been defined over a strike length of 4.5 km, was tested by 25 of these holes in the following 4 areas: Key City (4 holes-1178.5 m); Lenora-Tyee (6 holes-2238.1 m); Mona (7 holes-3475.1 m); Gap (8 holes-2390.6 m). Four holes (1012.7 m) tested IP and lithogeochemical anomalies in the Gap and central panel areas.

Other work done in 1988 includes linecutting (12.0 km), CSAMT surveying (12.0 km), downhole PEM (19 holes) and downhole IP (DHIP; 3 holes).

Results

The 1988 drill program produced significant new interpretations of the structure and stratigraphy of the Sicker volcanics exposed on Mt. Sicker. The down dip testing of the Lenora-Tyee orebodies indicated that, away from the mineralized areas, the "Mine Package" consists of a sequence of intermediate tuffs, cherts and argillites. Thin (1 cm), pyritic, exhalative beds commonly are associated with the cherts. This "Mine Package" extends from the Chemainus River to the Gap Area - a strike length of 4.5 km.

The best sulphide intersections were found in the Mona and Gap areas. In the Mona area, the "Mine Package" occurs below a thick (300 m) diorite sill. In holes MTS-48 and MTS-49, semi-massive pyritic zones with minor chalcopyrite occur near the base of the intermediate tuff-chert sequence (MTS 48: 0.11% Cu, 0.16% Zn, 2.55 g/T Ag, 0.23 g/T Au over 1.2 m, MTS 49: 1.06% Cu, 591 ppm Zn, 6.0 ppm Ag, 115 ppb Au over 0.5 m). In MTS-48, the underlying felsic ashes are intensely sericitic and contain semi-massive sulphide stringers (0.64% Cu, 4.85 g/T Ag, 0.31 g/T Au over 2.75 m). The thickness of the Mine Package is increasing towards the southwest suggesting the development of a basin. In hole MTS-41, the most southwesterly hole, a zone of fine grained disseminated sphalerite (0.3% Zn over 5.0 m) occurs immediately below a well-developed chert sequence. Further drilling is warranted to evaluate this zinc-enriched zone.

In the Gap area, a thick (21-37 m), pyritic (10-15%), copper-rich (100-300 ppm), felsic tuff which locally has chert and sulphide (py) fragments and thin (<0.1 m) zones of well-bedded pyrite occurs on top of a moderately to strongly sericitic QP flow. The pyritic tuff is characterized by moderate to strong sericite alteration with local zones of green mica and gypsum. Further drilling is warranted to evaluate the extent and significance of this sulphide-rich basin.

The identification of a well-bedded chert horizon has helped resolve the structural picture on Mt. Sicker. There are a number of northeast trending faults which have dissected the volcanics into a series of blocks. Within each block, the Sicker volcanics occur as a homoclinal sequence with variable dips depending upon the amount of rotation about the faults. The same type of structural pattern appears to be present on the Lara property. Initial evaluation of the Lara - Sicker data suggests that the Lenora-Tyee orebodies occur approximately 400 meters higher in the Sicker stratigraphy than the Coronation zone. This indicates the presence of "stacked horizons" which upgrades the potential of other sulphide horizons on both properties.

CSAMT surveying on 4 test zones failed to discover any deep conductors although several shallow anomalies were found to coincide with known showings. Downhole PEM surveys were conducted on the deeper drill holes but no anomalies were detected.

Future Work

Although no economic discoveries were made on the Mt. Sicker property in 1988, the lateral equivalent of the Lenora-Tyee orebodies has been identified. A 4000 meter drill program will test the Lenora-Tyee stratigraphy in the Gap and Mona areas where sulphide-rich basins appear to have been developed. Continued exploration of this favourable stratigraphy will eventually be rewarded with an economic discovery as it has on other Minnova massive sulphide properties.