4105

DICTATOR MINES LTD. (N.P.L.)

Geological, Geochemical & Geophysical Report

Rob Claims - Nadira Copper Property Latitude 48° 55'N Longitude 124° 35'W

AUTHOR: A. M. Homenuke, Geologist

DATE OF WORK: October 1 - December 8, 1972

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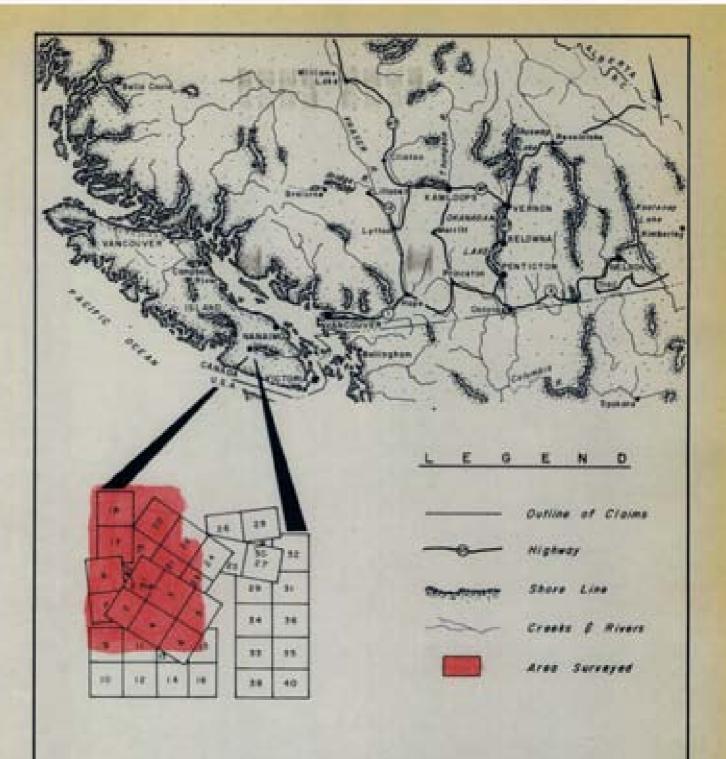
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DICTATOR MINES LTD. (N.P.L.)

ROB CLAIMS

NADIRA COPPER PROPERTY

LOCATION AND CLAIMS MAP

SCALE LOCATION WAP: C+ 80 MLES APPROX - CLAIMS WAP: C+ 4000 FEET APPROX

4105

Department of

Mines and Patroleum Resources

ASSESSMEAT REPORT

No. 4105

MAP #

SUMMARY

During October to December of 1972, Tri-Con Exploration Surveys Ltd. were retained by CAN-EX RESOURCES LTD. on behalf of Dictator Mines Ltd. (N.P.L.) to carry out a detailed exploration program on the Nadira Copper Property, Alberni Mining Division, Province of British Columbia. The program was supervised by W. G. Stevenson, P. Eng., and included geological, geochemical, magnetic and electromagnetic surveys.

The survey was centered around a known occurrence of chalcopyrite-bearing skarn bodies. The area is underlain by volcanic and sedimentary rocks of the Triassic-Jurassic Vancouver Group. These formations have been tilted and are intruded by feldspar porphyry dykes. At the contacts of these dykes with an intervolcanic limestone member, the skarn bodies have been formed.

The results of the survey defined the skarn bodies as being confined to a lenticular zone 2000 feet by 500 feet trending northwest and being largely conformable with the formations in the area.

No other zones of interest were located outside of this main skarn zone.

CONCLUSIONS AND RECOMMENDATIONS

The main skarn zone is the only area on the grid of possible economic significance. The areal outcrop of skarn covers only about 10% of this zone. The volumetric extent of these skarns and the grade of copper throughout will have to be determined by diamond drilling. The best targets for further exploration appear to be those skarn bodies with coincident magnetic highs.

LOCATION & ACCESS

The Nadira Copper Property of Dictator Mines Ltd. (N.P.L.) is located 6 miles due west of Cowichan Lake on the west side of the Parker Creek-Tuck Lake Valley. The property may be reached by restricted access logging roads from either Youbou or Port Alberni. The last couple of miles of road is relatively poor and a four-wheel drive vehicle is recommended, especially in wet weather. The location of the claim group is shown on Figure 1.

PROPERTY

The property consists of the following claims. (See Figure 1.)

Claim Name	Record Number
Rob 1 - 24 inclusive	13470-13493 inclusive
Rob 25	15036
Rob 26 - 36 inclusive	15019-15029 inclusive
Rob 37	15160
Rob 38	15030
Rob 39	15161
Rob 40 - 44 inclusive	15031-15035 inclusive
Rob 45 - 48 inclusive	16379-16382 inclusive

The claims are owned by Amax Exploration Inc. and are under option to Dictator Mines Ltd. (N.P.L.).

A further 12 claims, Rob 49-60, were staked on the northwest of the above claims during the present program, but these are not shown on the claim map.

PHYSICAL FEATURES

The grid is on the east slope of a north-south ridge. The ridge is cut by several deep creek gullies. Slope angles are commonly $20^{\circ}-30^{\circ}$ and in some cases even steeper. Elevation ranges from 800 feet to 2500 feet on the gridded area.

Vegetation is typical of virgin timber of the Coastal Western Hemlock zone - large diameter hemlock, fir and cedar with the undergrowth of salal, huckleberry, blackberry and devil's club concentrated in the gullies and open areas.

The climate is temperate with high rainfall (over 100 inches) and considerable snow may be expected at higher elevations.

HISTORY

The property was first staked in the 1930's and was referred to as the Southern Cross Property. Since then, various companies have carried out trenching, diamond drilling, drifting, sampling and surveying.

Nadira Mines Ltd. (N.P.L.) obtained the property in 1955 and did further exploratory work. In 1960, this company shipped 5,142 tons of ore to the Cowichan Copper Company. The ore produced 261 tons of copper concentrate.

The property lapsed and was restaked by Amax Exploration during 1968-69. Amax carried out a program of preliminary geological mapping and geological and geochemical sampling.

In 1971, the property was optioned from Amax by Dictator Mines Ltd. (N.P.L.) and a limited amount of geochemical sampling and magnetic surveying were carried out.

For a more detailed history of the property refer to Dawson (1972) and the various B.C. Minister of Mines Reports listed in his Bibliography.

INTRODUCTION TO THE PRESENT PROGRAM (FALL 1972)

Tri-Con Exploration Surveys Ltd. were retained by CAN-EX RESOURCES LTD. on behalf of Dictator Mines Ltd. (N.P.L.) to carry out a program of geological, geochemical and geophysical mapping and sampling.

The area covered by the program is over a known zone of chalcopyrite-skarn mineralization in the northwest section of the claim group. The grid was laid out to define the limits of the known zone and to determine the possibility of there being any similar nearby zones.

Geological mapping was initiated during the 1969 program of Amax Exploration Inc. Amax also sampled the known skarn occurrences. 90 chip samples over a total of 770 feet yielded a weighted average of 1.73% copper and 0.20 oz/ton silver (Christofferson & Mustard, 1969).

During 1971, Dictator geochemically sampled a portion of the area covered by the present program. The most detailed coverage was over the main skarn zone and results indicated a direct correlation between anomalous copper values and chalcopyrite skarn occurrences. (Anselmo, 1972).

The present grid was laid out over an area of approximately 4000' x 7000'. (See Figure 1 for an outline of coverage in relation to the rest of the property). The grid is an extension of the work done by Dictator.

The mapping was carried out at a scale of 1" = 200 feet and was plotted on a topographic base supplied courtesy of MacMillan Bloedel Ltd. Surveys included geological mapping, soil sampling and magnetic and electromagnetic surveying. The earlier soil sampling results obtained by Dictator are included on the present map.

Grid lines were run at 200 foot intervals in an East - West direction from a North-South baseline which approximately divides the grid in half. Lines were also run at 100 foot intervals over the main skarn zone, which is in the south central portion of the grid.

GEOLOGY

Regional

The Nadira Copper Property is in an area underlain by volcanic and sedimentary rocks of the Triassic-Jurassic Vancouver Group. These formations are intruded to the northeast of the grid by intermediate rocks of Jurassic age belonging to the Island Intrusions.

Typical mineral deposits in the area consist of chalcopyrite bearing skarns formed along limestone-intrusive contacts and in some cases volcanic-intrusive contacts.

Property

General

The property consists of sedimentary and volcanic rocks striking west-northwest and dipping steeply to the south. They belong to either the upper Karmutsen Formation or the Lower Bonanza Sub-group. The belt of sediments, which consists largely of limestone, is probably an intervolcanic member. However further comparative petrographic work would be necessary to adequately classify the rocks and for the purpose of this report they will be placed in the middle of the Vancouver Group. The geology is shown on Figure 2.

Lithologies

Map Unit 1: Andesite outcrops over the greatest portion of the property. The rocks are for the most part porphyritic with augite and plagioclase making up the bulk of the phenocrysts. The rocks are largely in flows, but many are in the form of dykes and irregular

injections with a pseudodioritic appearance. Some of these injections are possibly feeders to flows higher in the sequence. The rocks of the northern and eastern sections of the gridded area are generally fine grained and are often amygdaloidal. Chalcopyrite and epidote are occasionally in the amygdales and chalcopyrite also occurs as isolated disseminations. Towards the western edge of the area, the rocks appear occasionally to be tuffaceous.

Mafic minerals are mostly altered to chlorite and some albitization of plagioclase indicates a possible metamorphism to the subgreenschist facies.

Map Unit 2: Limestone, along with thin beds of shale and siltstone, occurs in a narrow and probably lenticular belt in the volcanics striking at 290°-315° with an average dip of 45° to the southwest. The limestone is light blue-grey and is finely recrystallized. The narrowness of the belt, as compared to 500 feet plus for the Quatsino Formation, indicates that it is probably an intervolcanic sedimentary member.

The detrital rocks (Unit 2 a) appear to be confined to the upper portion of the belt and the upper limit is defined by a finely banded, vitrified ash tuff or argillite.

Map Unit 3:

Vertical feldspar porphyry dykes intrude the preceding formations and strike in a northerly direction. The rock is waxy light green and grey-green with white plagioclase laths 1-4mm in length. Occasionally a few very fine grained mafics appear in the groundmass. There are also a few andesite xenoliths in the dykes.

It is apparent from the structural relationships that the dykes were intruded after tilting of the preceding formations. It is quite probable then, that these dykes are genetically related to the Island Intrusions rather than being of a synvolcanic nature. However, they could also be feeders to higher flows.

Map Unit 4: A dyke very similar to Unit 3, but intruded slightly later, runs down the center of the gridded area. The plagioclase laths are similar to above but the groundmass is very fine grained

phaneritic with conspicuous hornblende needles. The dyke is referred to as a leucodiorite dyke to distinguish it from the feldspar porphyry dykes.

Map Unit 5: Where the feldspar porphyry dykes are in contact with limestone or calcium rich volcanic rocks, calc-silicate skarns have been formed.

Pure limestone does not appear to have been extensively replaced and unreplaced blocks are common in the bodies of skarn. The "dirty" limestones appear to have been more conducive to replacement.

Skarns appear to be of three different types. From replacement of rocks richest in calcium, ilvaite-garnet epidote-magnetite skarn has been formed. This rock has an overall brown to black appearance. From less calcium rich rocks (i.e. andesite) an epidote-actinolite-garnet assemblage has been formed and has a overall green appearance. Chalcopyrite is an accessory of both the above types. Hematite, bornite and secondary copper minerals are also occasionally present. In the creek bed in the southeast section of the grid there is a small outcrop of laminated pyrrhotite-magnetite-chalcopyrite skarn. It does not appear to be genetically related to the other skarns.

Banding in all the skarns is conformable with attitudes in the parent formations. The skarns appear to have been formed parallel to the dykes and for short distances down-dip along bedding and longer distances up-dip.

Structure

Following uplift of the formations and intrusion of the dykes the area was subjected to regional compression, which caused the formation of a northwest-southeast, northeast-southwest pattern of faulting. These faults have offset the dykes and skarn bodies for short distances. The faulting was accompanied by much minor shearing in any direction and has tended to obscure many of the intrusive relationships.

Due to the lack of large areas of outcrop it was not possible in a short time to determine any pre-dyke faulting, but there was at least a system of north-south faulting, probably of a tensional nature along which the dykes were intruded.

Economic Geology

The only area of any possible economic significance on the grid is the main skarn zone. Outcroppings of larger bodies of skarn are limited to a 2000' x 500' lenticular zone essentially conformable to the regional strike.

Chalcopyrite occurs in these skarn bodies as erratic disseminations and segregations. The chalcopyrite appears to have been formed latest in the skarn assemblages as it replaces ilvaite and actinolite. As indicated previously, Amax sampling showed an average of 1.73% copper with a range from 0.1% to 5.6%.

The skarn bodies would have to extend for a considerable distance down-dip and be of higher than average grade to be mined economically. Surface outcroppings of skarn appear to cover an area of about 10% of the aforementioned zone. Volumetrically the percentage may be higher but diamond drilling would be necessary to test this possibility.

GEOCHEMISTRY

A total of about 1100 soil samples were taken by Dictator and during the present program at locations shown on Figure 3.

The samples taken during the present program were obtained with a mattock and placed in kraft bags. They were delivered to Chemex Labs Ltd. where drying, sieving to -80 mesh, perchloric acid digestion and analysis for copper by atomic absorption were carried out under the supervision of professional chemists.

Soils on the property were examined in some detail and in most cases were from 2-5 feet thick and formed residually from bedrock. However, a compact basal till is present in certain creek gullies and depressions. Profiles taken by Anselmo (1972) indicated that samples taken from anywhere in the B horizon would give the best results when analyzed for copper.

Examinations by the author indicated that about 80% of the soil belonged to the ferro-humic or humo-ferric podzol great groups. Other groups present, but not examined in detail, were brunisols and organic soils, the latter of which was prevalent in depressions and seepages.

Several samples were taken and run with a LaMotte field kit for pH. These were correlated with geology. It was found that over areas of volcanic rock and skarns the pH ranged from 4.8 to 5.6. Over areas of limestone the range was 5.4 to 6.2. This higher pH over limestones would cause a higher concentration of background copper in the soil. Also the presence of carbonates over most of the skarn zone would cause any copper anomalies to be highly residual.

Copper values ranged from 10 ppm. to greater than 4000 ppm. The values were contoured at 100, 400 and 1000 ppm.

GEOPHYSICS

Magnetic and electromagnetic surveys were run over most of the gridded area. The results were interpreted by G. dePaoli, geophysicist for Amax Exploration Inc. Instrument specifications are appendicized.

Magnetic Survey

An MF-1 fluxgate magnetometer was used to take readings at 50 foot intervals. Corrections were made for diurnal variation using a base station magnetometer and a chart recorder.

As there appeared to be some discrepancies between lines, corrections were also made wherever possible with stations on the base line. Due to these discrepancies the values were contoured at 500 gamma intervals. The magnetic data are shown on Figure 4.

Electromagnetic Survey

A Ronka V.L.F. E.M.-16 was used to take readings at 50 foot intervals. The data were filtered to eliminate topographic effects. The results were contoured at 10° , 20° and 30° and are shown on Figure 5.

DISCUSSION OF RESULTS

A general compilation of anomalous features is shown on Figure 6. Included are skarn outcrops, geochemical anomalies (greater than 400 ppm. Cu.) magnetic highs (greater than 2500 gammas), and electromagnetic conductive zones (greater than 10°).

The geochemical anomalies best define the areas of known copper mineralization. The 100 ppm. copper contour appears to correlate well with many limestone contacts, especially on the upslope boundaries. There is some downslope migration of copper in the soil but this is not extensive due to carbonate fixation of copper ions. There are no significant copper anomalies outside of that over the main skarn zone. The anomalies in the northwest section of the grid are relatively small and are undoubtedly due to the presence of limestone.

Magnetic highs appear to be located over the largest of the skarn occurrences, and thus would be a guide to further exploration priorities. Other magnetic highs outside the main skarn zone are due probably to concentrations of magnetite in the volcanics and possibly to discrepancies in the survey. These latter highs are not as extreme as those over the main zone.

A few electromagnetic conductors coincide with skarns, but for the most part they occur on other areas of the property. Many of them seem to be due to extreme changes in relief which could not be filtered out, and the electromagnetic results should not be relied upon.

Respectfully submitted,

TRI-CON EXPLORATION SURVEYS LTD.

A. M. Homenuke Geologist

ACKNOWLEDGEMENTS

The author wishes to express his gratitude to Amax Geologists Chris Hodgson and Walter Sellmer for their contributions and discussions on the geology, and to Gary dePaoli, also of Amax, for his kind assistance with the interpretation of the geophysical data.

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Private files of Amax Exploration Inc.

Personal Communication: C. S. Hodgson, H. W. Sellmer, Amax Exploration Inc., Vancouver, B.C.

STATEMENT OF OPERATOR'S QUALIFICATIONS

I, Alexander M. Homenuke, DO HEREBY CERTIFY:

- That I am a graduate in Mining Technology from the British Columbia Institute of Technology.
- That I have further studied Geological Engineering at the Colorado School of Mines.
- That I have been employed by Tri-Con Exploration Surveys Ltd. since June of 1969 in mineral exploration as a geochemical, geological and geophysical operator.
- That I am presently employed by Tri-Con Exploration Surveys Ltd. in the capacity of Geologist.

DATED at Vancouver, British Columbia this 27^{th} day of 2ec., 1972.

TRI-CON EXPLORATION SURVEYS LTD.

A. M. Homenuke Geologist

APPENDIX

Instrument Specifications

ELECTROMAGNETOMETER

A. Instrument

- (a) Type-Geonics VLF-EM
- (b) Make-Ronka EM-16

B. Specifications

Measurement

- (1) Utilizes primary fields generated by VLF marine communication stations, measures the vertical field components in terms of horizontal field present.
- (ii) Frequency range 15-25 KHZ
- (iii) Range of measurement in phase ±150% or ±90° quadrature ±40%
- (iv) Method of reading null detection by earphone, real and quadrature from mechanical dials.
- (v) Accuracy ±1% resolution.

C. Survey Procedures

- Method (a) Select closest VLF station perpendicular to traverse lines.
 - (b) In-phase dial measures degree of tilt from vertical position.
 - (c) Quadrature dial calibrated in percent null.
 - (d) Station plot-plot values read at station surveyed.
 - (e) Manually filter dip-angle data.

APPENDIX

Instrument Specifications

MAGNETOMETER

- A. Instrument
 - (a) Type Fluxgate
 - (b) Make Scintrex MF-1
- B. Specifications
 - (a) Measurement Vertical Magnetic Field
 - (b) Range ±100K gammas in 5 ranges
 - (c) Sensitivity Maximum 20 gammas per scale division
 - (d) Accuracy ±10 gammas
- C. Survey Procedures
 - (a) Method ground survey with base station recorder
 - (b) Corrections (i) Base
 - (ii) Diurnal
 - (iii) Addition of constant to eliminate negative values for contouring
 - (c) Station relationship each station read for intensity of vertical magnetic field

APPENDIX

Instrument Specifications

BASE STATION MAGNETOMETER AND RECORDER

- A. Instrument
 - 1. Magnetometer
 - (a) Type Fluxgate
 - (b) Make Sharpe MF-1R-100
 - 2. Recorder Esterline-Angus Chart Recorder
- B. Specifications
 - 1. Magnetometer
 - (a) Measurement Vertical Magnetic Field
 - (b) Range ±100,000 gammas in 6 ranges
 - (c) Sensitivity Maximum ±5 gammas per scale division
 - (d) Accuracy ±5 gammas
 - 2. Recorder
 - (a) Record permanent on carbon impregnated chart paper
 - (b) Output-Continuous
 - (c) Speed 3 inches per hour

C. Procedure

- (a) Base station recorder runs continuously while survey is being carried out.
- (b) Recorded diurnal variations are applied to survey magnetometer data.

CERTIFICATE

I, William G. Stevenson, DO HEREBY CERTIFY:

- That I am a Consulting Geological Engineer with offices at Suite 209 Stock Exchange Building, 475 Howe Street, Vancouver 1, B.C.
- That I am a graduate of the University of Utah, 1946, with a B.Sc. Degree.
- That I am a registered Professional Engineer in the Association in British Columbia.
- That I have practised my profession for 22 years.
- That I have no direct, indirect or contingent interest in the Rob Claim Group or in the securities of Dictator Mines Ltd. (N.P.L.), nor do I intend to receive any such interest
- That I have reviewed a report dated December 27, 1972, based on work conducted by Tri-Con Exploration Surveys Ltd. under my supervision.

DATED at Vancouver, British Columbia, this 19 day of Darmger, 1972.

W. G. STEVENSON & ASSOCIATES LIMITED Consulting Geologists

W. G. Stevenson, P. Engineer

