GEOPHYSICAL REPORT

ON

IP, RESISTIVITY, AND MAGNETIC SURVEYS

OVER THE

JESSE CREEK PROPERTY

(CINDERELLA - CHASE GRID)

MERRITT AREA

NICOLA MINING DIVISION, B.C.

PROPERTY

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WRITTEN FOR

WRITTEN BY

DATED

- : To the immediate north and west of the town of Merritt, B.C.
- : 50° 09' N Latitude
- : 120° 47' W Longitude
- : N.T.S. 921/2
- : CONLON COPPER CORPORATION 1965 - West 16th Avenue Vancouver, B.C., V6J 2M5
- : DAVID G. MARK, P. Geo. GEOTRONICS SURVEYS LTD #405 - 535 Howe Street Vancouver, B.C., V6C 2Z4
- : December 2, 1996





GEOTRONICS SURVEYS LTD. Engineering & Mining Geophysicists

VANCOUVER, CANADA

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- : December 2, 1996

GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORT

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WRITTEN FOR

WRITTEN BY

DATED

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SUMMARY

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Induced polarization (IP), resistivity and ground magnetic surveys were carried out during October, 1996 over a part of the Cinderella-Chase Grid within the Jesse Creek property located to the immediate north and west of the town of Merritt within the Nicola Mining Division of B.C. The terrain of the property is varies from steep to fairly level. Access from Merritt is excellent to many parts of the property which is covered by a series of old mining and logging roads.

The main purpose of the geophysical surveys was to determine the response to the known mineralization and then to explore for extensions of the known mineralization as well as locate new zones. The main model is that of the nearby Craigmont deposit which is a copper-iron skarn type. A secondary purpose was to aid in the geological mapping for which magnetic and resistivity surveys are especially useful.

The IP and resistivity surveys were carried out using a BRGM Elrec 6 multi-channel receiver operating in the time-domain mode. The dipole length chosen was the 30-meter dipole read to 6 levels. The survey consisted of nine lines surveyed for a total survey length of 8,730 meters. The results were plotted both in pseudosection and plan, and contoured.

The magnetic survey was carried out with a proton precession magnetometer by taking readings every 25 m on 100-m separated lines over two parts of the grid. The number of lines totaled 13 for a total survey length of 8,180 meters. The readings were input into a computer, plotted onto a base map at a scale of 1:5000, and contoured.

CONCLUSIONS

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- 1. The IP survey has revealed a number of anomalous responses across the Cinderella-Chase grid. These have been labeled by the upper case letters, IP-A to IP-K.
- 2. The three strongest anomalies are IP-A, -B, and -C, which are located within the northern part of the grid area. They are located close together and as a unit appear to trend in a northwesterly direction though individually each trends in a different direction.
- 3. Anomalies IP-F through to IP-K have a much lower response, typically in the 3 to 7 msec range. These anomalies occur on a south-facing slope within the southern part of the grid area where it is quite dry, and therefore the lower response is probably due to a lack of moisture.
- 4. IP-A correlates with, or occurs to, the immediate east of the Chase showings. Much of the anomaly correlates with a strong resistivity low and a broad magnetic low indicating sulphides occurring within Nicola sediments and/or non-magnetic volcanics. The anomaly has a minimum strike length of 225 m and a width of up to 200 m. It is open to the northwest as well as possibly to the southeast.
- 5. Both IP-B and IP-C reflect sulphide mineralization each occurring within an intrusive. Each is open to the north and to the south with a minimum strike length of 300 m. In addition, IP-C is open to the east suggesting the sulphide body is larger than the minimum 200 m that is indicated. The width of the causative source of IP-B appears to be up to 100 m.
- 6. IP-D appears to reflect Mineral Zone B. It indicates the zone to have a minimum strike length of 200 meters with the width of the zone probably being in the order of a few meters.
- 7. IP-E and IP-K occur at the northern and southern ends of the baseline, respectively. Both anomalies are relatively low in strength, about 7 msec, but have a real possibility of being the edge of much larger anomalies and therefore zones of sulphide mineralization.
- 8. IP-F and IP-G occur on line 1200S with which there is no adjacent IP surveying. Therefore, the anomalies are open to the north and to the south. IP-F correlates with Mineral Zone D which correlates with a resistivity low within a broader resistivity high. This suggests faulting possibly occurring within calcareous volcanics. IP-G correlates with a resistivity low that is probably due to a fault crossing 1200S at a very oblique

angle. Perhaps the sulphide mineralization continues to occur with the fault to the westnorthwest

- 9. IP-H, -I, and -J occur on lines 1500S, 1600S and 1700S. All three strike in a northerly direction, have a minimum strike length of 200 m, and are open to the north and to the south. The causative sources could be up to 50 m wide. IP-H reflects Mineral Zone F which is the Cinderella Showings, and IP-I reflects Mineral Zone E. The correlation of each anomaly with the resistivity results, for the most part, is with highs. This suggests the sulphide mineralization occurs within intrusives which is known to be the case for IP-H and possibly for IP-J.
- 10. For both the resistivity and magnetic surveys, the highs are usually reflecting intrusives and the lows, especially lineal-types, faulting.

RECOMMENDATIONS

- 1. The magnetic survey should be continued over the whole grid area and to its east where a number of anomalous IP results occur.
- 2. The IP/resistivity survey should be continued to the north, south, and east of lines 400S to 700S.
- 3. It is also possible that the IP/resistivity survey should be expanded in all four directions of IP lines 1200S and 1500S to 1700S. However, the IP response on these four lines is muted and therefore it would need to be determined how useful the survey is in this area by prospecting, trenching, and/or diamond drilling.
- 4. Excavator trenching should be done in areas where it appears the causative sources of the IP anomalies reach the surface. These would be as follows:
- a) Anomaly IP-A, (baseline, 390S); (400S, 75E)
- b) Anomaly IP-B, (500S, 260E); (600S, 320E)
- c) Anomaly IP-C, (500S, 495E)
- d) Anomaly IP-D, (600S, 50W);
- e) Anomaly IP-F, (1200S, 470E)
- f) Anomaly IP-I, (1500S, 360E)
- g) Anomaly IP-J, (1500S, 150W)
- 5. Geological mapping and/or prospecting should be carried out in all the areas of the IP anomalies. It is recognized that much of the area has been mapped, but this was done before the IP survey and thus in light of the IP survey revealing sulphide zones, these areas need to be checked over.
- 6. Diamond drilling should be done as there are, at this point, several targets. However, drilling should only be done once the above has been carried out and the targets have been verified and, hopefully, more accurately defined.

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INTRODUCTION AND GENERAL REMARKS

.

This report discusses survey procedure, compilation of data, interpretation methods, and the results of induced polarization (IP), resistivity and magnetic surveys, carried out over parts of the Cinderella-Chase grid within the Jesse Creek Property belonging to Conlon Copper Corporation. The property is located within the Nicola Mining Division of southern British Columbia to the immediate north of and to the west of the town of Merritt.

The IP/resistivity survey was carried out by Roger Mackenzie, geophysical technician, during the period of October 8 to 19, 1996. The magnetic survey was carried out by Andrew Molnar from October 12 to 13, 1996. All geophysical work was under the supervision of the writer with the overall exploration program being under the supervision of Ron Wells, P.Geo., consulting geologist for Conlon Copper.

The purpose of the three surveys was to determine the response of each to the known mineralization on the property and thence to determine if and where the known mineralization extends, as well as to locate any possible new zones. The main model for the exploration of the property is that of the nearby Craigmont deposit which is a copper-iron skarn type. The secondary purpose, especially the magnetic, and resistivity surveys, was to



assist in the mapping of the geology of the property. More specifically, the purpose of each survey was as follows:

IP(chargeability): The purpose of the IP was to respond to sulphide mineralization especially that which occurs as fracture-filling and as disseminated. The size of the IP anomaly is directly related to the surface area of the sulphides and thus fracture-filling and disseminated sulphides give a much higher anomalous reading than massive sulphides do. It was thus expected that the IP surveying would give the best results on the Jesse Creek property since it was expected that all the mineralization was associated with disseminated or fracture-filling sulphides.

Resistivity: The purpose of the resistivity surveying was to reflect the mineral zones by responding as lows to any geological structure and/or alteration, or as highs to silicification and/or calcification any of which may be associated with it. For geological mapping, the resistivity method is particularly adept at mapping lithology since all rock types have their own resistivities, i.e., intrusives usually respond as resistivity highs and argillites usually respond as resistivity lows. Also, as indicated above, the resistivity method is particularly proficient at mapping geologic structure.

Magnetic: Some of the mineralization contained magnetite, which is highly magnetic, and thus the purpose was to locate magnetite through magnetic highs that would often be associated with lows (dipolar anomalies). It would then be hoped that economic sulphides would be associated with the magnetite. The Craigmont deposit contained much magnetite and therefore had a strong magnetic signature. For geological mapping, the purpose would be to map intrusives, volcanics, and sediments each of which usually has a unique geophysical signature, as well as to map geological structure which often is reflected as a lineal-shaped low.

PROPERTY AND OWNERSHIP

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The property is staked within the Nicola Mining Division of British Columbia and consists of 24 contiguous claims as described below and as shown on map # 2.

The expiry date assumes that the work filed will be accepted for assessment credits.

The claims are owned by Conlon Copper Corporation of Vancouver B. C.

CLAIM NAME	RECORD NO.	NO. UNITS	EXPIRY DATE
Pete	237348	20	June 3, 1997
QZ #1	237381	20	July 6, 1997
QZ #2	237379	20	July 12, 1997
Jean	237383	10	July 25, 1997
Paul	237425	12	Nov 1, 1997
QZ #3	237426	10	Nov 10, 1997
Z #1	237427	1	Nov 10, 1997
QZ #4	237428	18	Nov 11, 1997
Bob	237450	6	Nov 23, 1997
Pete #2	237449	8	Nov 24, 1997
Z #2	237455	1	Dec 2, 1997
Z #3	237456	1	Dec 2, 1997
Pete #5	306691	1	Dec 12, 1997
Pete #6	306691	1	Dec 12, 1997
Z #6	237461	1	Dec 28, 1997
QZ #5	237460	5	Dec 28, 1997
Pete #3	237459	8	Dec 29, 1997
Jean Ext	315305	8	Dec 29, 1997
Patlo #1	315306	18	Dec 30, 1997
Patlo #2	315307	8	Dec 31, 1997
Q#2	237468	3	Feb 7, 1998
Pete #4	237617	6	Feb 7, 1998
Z #5	237477	1	Feb 22, 1998
Z #6	237478	1	Feb 22, 1998
TOTAL	24 claims	188 units	

LOCATION AND ACCESS

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The property is located to the immediate north and to the west of the town of Merritt within southern British Columbia. Merritt is located 190 km by air northeasterly of Vancouver and 270 km by road which is all freeway.

The geographical coordinates of the center of the property are 50° , 09° north latitude and $120^{\circ} 47^{\circ}$ west longitude. It is located within NTS map area 92I/2.

The property is very accessible from Merritt since old mining and logging roads occur throughout the claims. A four-wheel drive vehicle is recommended.

PHYSIOGRAPHY

The following is quoted from Well's report:

The west trending Nicola Valley bisects the Jesse Creek Property west of Merritt. Merritt, with a mean elevation close to 600 metres, is located on the Nicola River. To the north and south, steep valley slopes with widespread talus and local cliffs give way to undulating plateau ranging from 1000 to 1300 metres in elevation. These highlands are dry with a few small ponds, and are dissected by small drainages. Jesse Creek is the largest of these and is located in the northern area.

Much of the property is dominated by open coniferous woodland, with some large meadows on the plateau regions. Jesse Creek Valley and the lower valley slopes on the Jean Claim are heavily wooded with much undergrowth. Large parts of the property, in particular to the north and west, have been logged to varying degrees. Much of the Nicola Valley on the property is under agricultural, commercial or residential use.

HISTORY OF PREVIOUS WORK

The following is quoted from Well's report with particular attention being paid to the Cinderella-Chase grid (That is, the work done on the other parts of the property are not given here. For a more thorough description, see Wells' report):

The property area has a long exploration history, dating back to the 1880s. A wide variety of deposit types are present around Merritt, and over 200 mineral occurrences have been documented. Gold-silver bearing quartz veins occur near Stump Lake (Enterprise-King William veins); polymetallic veins with combinations of copper, lead, zinc, gold and silver at Swakum Mountain, Nicola Lake (Turlight) and Iron Mountain (Leadville/Comstock); copper-iron skarns at Craigmont, Swakum Mountain and on the Jesse Creek Property (Cinderella, Mike). The Craigmont deposit became the single major producing mine in the Merritt area in 1961 (discovered in 1957). Between 1957 and 1982, Craigmont produced a total of 29.3 million tonnes of ore averaging 1.4% copper from surface and underground workings.



The property itself has a history of copper exploration dating back to the early 1900s. Until recently the showings covered by the Jesse Creek property were held by a number of different individuals and mining companies. This is the first time that the area and all the showings have been covered by a contiguous claim group under one owner.

Over thirty exploration and small development programs have been documented on the property. Details on the larger programs by Peele Resources/Nippon 1964-65, Newvan Resources Ltd. 1972, and Quintana Minerals Co. 1976 are sparse, especially on locations and results from drilling and trenching.

Cinderella-Chase (Pete and Pete #2 Claims) This northerly trending zone of limestone with associated copper skarn zones (local Pb and Zn) is over 2 km long. There has been substantial, though poorly documented trenching, stripping and some drilling in a number of areas. Three shallow pits of unknown age occur at the Cinderella copper, lead-zinc occurrence. Major exploration programs were conducted on the Cinderella-Chase zone by Peel Resources in 1964 and Nippon Mining Corporation in 1965. Peel's program included trenching, soils, magnetic, geological surveys and a single drill hole. Nippon conducted significant trenching and 12 drill holes. There is very little available information on these programs, and some doubt exists about how many of these holes were actually completed. In 1976, Quintana Minerals Co. completed an exploration program over the entire zone and adjacent areas. Results from a ground magnetic survey is all that is available. In 1979, H. Allen completed a 500 foot hole at the northern end of the Chase with disappointing results.

GEOLOGY

The following is quoted from Well's report with particular attention being paid to the Cinderella-Chase grid:

(a) Regional

The Merritt area lies in the Intermontane Belt of the Canadian Cordillera and is part of Quesnellia Terrane. With this section of Quesnellia, the Upper Triassic Nicola Group, consisting of volcanics, sediments and associated intrusive rocks constitutes an island arc assemblage. Preto (1977) subdivided the Nicola Group between Nicola Lake and Princeton into three northerly-trending, fault-bounded belts, each containing a distinct lithologic assemblage. The Eastern Belt (Tne) facies, east and south of Nicola Lake consists of mafic, augite, phyric volcaniclastic rocks, minor volcanic flows and pyroclastic rocks with abundant subvolcanic intrusions of diorite to syenite composition. The intrusive volcanic complexes host alkaline type Cu-Au porphyry deposits near Kamloops (Afton). The Western Belt (Tnw) facies is an easterly facing



succession of calc-alkaline mafic, intermediate and felsic volcanic rocks, syn-volcanic rhyolite plugs, volcaniclastic sediments and reefoid carbonates. These units are well exposed in the promontory hills west of Merritt and host the Craigmont Cu-Fe skarn deposit. Cogenetic calc-alkaline intrusive rocks such as the Guichon Creek Batholith host plutonic copper molybdenum deposits in the Highland Valley area northwest of Merritt. The Craigmont Cu-Fe skarn lies close to the southern edge of this batholith.

The Nicola Group is unconformably overlain by Jurassic Ashcroft Formation clastic sediments and Tertiary (Eocene) Princeton Group intermediate volcanic flows including local clastic sediments with coal seams (Coldwater Beds).

Major tertiary structures, notably the Guichon Creek Fault and the Clapperton-Coldwater Fault intersect west of Merritt and are extensional features.

(b) Property

The property lies at the southeastern end of the Guichon Creek Batholith (Triassic) where the Jesse Creek granodiorite to quartz monzonite stock intrudes Nicola Group (Triassic) western facies mafic to felsic volcanic flows and volcaniclastic rocks. Jesse Creek stock is detached from the main batholith by the north trending and Tertiary age Guichon Creek fault, which lies to the west of the property along the valley. The Craigmont Copper iron skarn deposit lies on the western side of this fault.

On the property, the Nicola Group consists predominantly of variably magnetic dark green to grey, massive to plagioclase porphyritic andesite to basalt flows, monolithic tuffs and breccias.

In the Cinderella-Chase area in the eastern part of the property, there is a thick northerly trending sequence of mafic to felsic (dacite) flows, volcanicalstics and immature sediments including one or more limestone units. This sequence is deformed with near vertical dips and has been intruded by several dykes, sills and small plugs of diorite to quartz monzonite composition. Calc-silicate alteration is widespread in the more calcareous units. Poorly exposed copper mineralization is associated with epidote-carbonate-magnetite-specular hematite zones (minor quartz) proximal to the main limestone unit(s) and locally in more fractured and altered micro-monzonite intrusives to the west. At the Chase occurrence, copper mineralization is also associated with significant sphalerite and galena in northwest-trending fracture-vein zones cutting the calcareous tuff, limestone sequence.

(c) Cinderella-Chase Grid

Areas on the grid which have had significant previous work (drilling, trenching) and/or have high mineral potential are identified by letters "A" to "G". The main Chase workings are "A" to "C", the Cinderella is "F".



Lithology

All of the volcanic and sedimentary units on the grid belong to the western volcanic facies of the Nicola Group (Triassic). West of the grid, the volcanics consist predominantly of dark green to grey, massive to plagioclase porphyritic andesite to basalt flows. Where exposed on the grid, these dark coloured rocks are moderate to strongly magnetic. The age of the intrusives is unknown. A late Triassic to early Jurassic age is suspected.

Structure

A number of larger faults have been interpreted in the grid area. North, east and southwest striking fault sets are present and post-date the Nicola Sequence, and probably most of the intrusives. Calc-silicate alteration is locally associated with all of these fracture directions, especially those with easterly trend. Throughout the length of the limestone zone there is widespread fracturing with variable displacements (south side east). Folding is evident in some of the finer bedded units.

Alteration and Mineralization

The close proximity of a large monzodiorite, monzonite dyke to a calcareous tufflimestone sequence over two km strike length provides all kinds of interesting possibilities for skarn deposits. However, the volcaniclastic rocks occurring between them and lying to the west of the dyke display patchy, generally weak epidotecarbonate (calc-silicate) alteration with rare garnet. A combination of structure, intrusives and limey units appears to be very important. The strongest and most extensive calc-silicate/skarn alteration with associated copper occurs at fault intersections as well as along easterly- and northerly-trending faults in the general vicinity of the limestone sequence. A variety of styles of copper, iron, lead and zinc mineralization are present.

Area A: Chlorite, epidote, magnetite, specular hematite skarn with some quartz, chalcopyrite and galena is poorly exposed on the eastern side of a large limestone unit. This appears to be a narrow reaction skarn zone. Samples returned low copper, up to 0.15%, and Pb up to 1%.

Area B: Lies on the same limestone unit 100 m to the south. There is stronger fracturing in this area and limited exposure in the old trenches. A north trending quartz vein stockwork within the limestone returned values up to 1% Cu, 45.6 gt Ag an 0.35% Zn over 1.5 meter true widths. Further to the south poorly exposed chlorite, epidote, calcite, specular hematite skarn with blebby chalcopyrite returned 0.36% Cu from a 2.5 m chip sample.



Area C: Northerly- and westerly-trending striking fault zones intersect in this area close to the limestone. Strong skarn alteration with epidote and coarse specular hematite is exposed in a deep trench. Copper mineralization is patchy over a 16 m section with local quartz veining and siliceous pods. A 4.5 m section average 0.19% Cu with anomalous gold (up to 80 ppb). To the southwest a westerly-trending, fracture-controlled skarn zone with some k-feldspar crosses the contact between monzodiorite dyke and tuffs. A 1.0 m chip sample returned 0.25% Cu. In this area, the dyke is locally epidote and k-feldspar altered and veined, with some fracture-hosted disseminated chalocpyrite.

Area D: Here there is a significant amount of old trenching, and at least one drill hole. It lies close to the intersection between easterly and northeasterly striking faults. Widespread epidote alteration with local specular hematite occurs in a thick sequence of calcareous volcanics and narrow limestone units. Disseminated chalcopyrite occurs in the epidote-carbonate alteration and narrow quartz veins. A sample in this area yielded 0.99% Cu over 1.5 m.

Area E: Lies 200 m south of Area D on the same limestone trend. The limestone units are wider in this area. Calc-silicate (epidote-carbonate) alteration covers a 75 m width of interbedded limestone and calcareous tuffs. Specular hematite, chalcopyrite and quartz occur locally and minor fine garnet may be present. Samples from this area produced 0.2% Cu and 0.3% to 1.3% Zn over 1.5 to 3.5 m widths.

Area F: The Cinderella area has received a significant amount of trenching, and three pits. No evidence was found for any diamond drilling. Three or more northerly striking limestone units are interbedded with epidote, carbonate altered tuffs. Bedding is steep to the east. In the two more southerly pits, specular hematite, chalcopyrite, minor bornite and sphalerite occur with the epidote and carbonate. Easterly trending fracture sets are present. Samples from this style of mineralization returned up to 0.93% Cu, 9.6 gt Ag over 1.7 m. The best width was 0.4% Cu over 3.2 m. Zinc occurs in the 0.1% to 0.2% range.

The most northerly pit and a trench to the west exposes a 4 m wide breccia/vein zone with hematized and silicified volcanic fragments, quartz-carbonate, chalcopyrite, galena and sphalerite vein matrix. This zone trends northwest and probably represents a healed fault structure. A 4.0 m true width chip sample across the zone returned 0.2% Cu, 1.23% Pb, 2.88% Zn.

Area G: Lies at the western end of the easterly-striking fault in Area D. There is very minor skarn mineralization in this area. Old trenches expose easterly trending quartz-feldspar porphyry (breccia) dykes with disseminated pyrite and chalcopyrite. Silicified wallrocks returned 0.37% Cu (105 ppb Au) over 1 m.



INDUCED POLARIZATION AND RESISTIVITY SURVEYS

(a) Instrumentation

The transmitter used for the induced polarization/resistivity survey was a Model IPT-1 manufactured by Phoenix Geophysics Ltd. of Markham, Ontario. It was powered by a 2.5 kw motor generator, Model MG-2, also manufactured by Phoenix. The receiver used was a six-channel BRGM, model Elrec 6. This is state-of -the-art equipment, with software-controlled functions, programmable through a keyboard located on the front of the instrument. It can measure up to 10 chargeability windows and store up to 2,500 measurements within the internal memory.

(b) Theory

When a voltage is applied to the ground, electrical current flows, mainly in the electrolyte-filled capillaries within the rock. If the capillaries also contain certain mineral particles that transport current by electrons (mostly sulphides, some oxides and graphite), then the ionic charges build up at the particle-electrolyte interface, positive ones where the current enters the particle and negative ones where it leaves. This accumulation of charge creates a voltage that tends to oppose the current flow across the interface. When the current is switched off, the created voltage slowly decreases as the accumulated ions diffuse back into the electrolyte. This type of induced polarization phenomena is known as electrode polarization.

A similar effect occurs if clay particles are present in the conducting medium. Charged clay particles attract oppositely-charged ions from the surrounding electrolyte; when the current stops, the ions slowly diffuse back to their equilibrium state. This process is known as membrane polarization and gives rise to induced polarization effects even in the absence of metallic-type conductors.

Most IP surveys are carried out by taking measurements in the "time-domain" or the "frequency-domain".

Time-domain measurements involve sampling the waveform at intervals after the current is switched off, to derive a dimensionless parameter, the chargeability "M", which is a measure of the strength of the induced polarization effect. Measurements in the frequency domain are based on the fact that the resistance produced at the electrolyte-charged particle interface decreases with increasing frequency. The difference between apparent resistivity readings at a high and low frequency is expressed as the percentage frequency effect, or "PFE".

The quantity, apparent resistivity, ρ_a , computed from electrical survey results is only the true earth resistivity in a homogenous sub-surface. When vertical (and lateral)

variations in electrical properties occur, as they almost always will, the apparent resistivity will be influenced by the various layers, depending on their depth relative to the electrode spacing. A single reading, therefore, cannot be attributed to a particular depth.



The ability of the ground to transmit electricity is, in the absence of metallic-type conductors, almost completely dependent on the volume, nature and content of the pore space. Empirical relationships can be derived linking the formation resistivity to the pore water resistivity, as a function of porosity. Such a formula is Archie's Law, which states (assuming complete saturation) in clean formations:

$$\underline{\mathbf{R}}_{\underline{\mathbf{0}}} = \mathbf{O}^{-2}$$

 $\mathbf{R}_{\mathbf{w}}$

Where: R_o is formation resistivity R_w is pore water resistivity O is porosity

(c) Survey Procedure

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The IP and resistivity measurements were taken in the time-domain mode using an 8second square wave charge cycle (2-seconds positive charge, 2-seconds off, 2-seconds negative charge, 2-seconds off). The delay time used after the charge shuts off was 240 milliseconds and the integration time used was 1,600 milliseconds divided into 10 windows.

The array chosen was the dipole-dipole, shown as follows:

DIPOLE - DIPOLE ARRAY



Stainless steel stakes were used for current electrodes as well as for the potential electrodes.

The reading interval and electrode separation chosen was 30 meters and was carried out along nine lines for a total survey length of 8,730 m.

(d) Compilation of Data

All the data were reduced by a computer software program developed by Geosoft Inc. of Toronto, Ontario. Parts of this program have been modified by Geotronics Surveys Inc. for its own applications. The computerized data reduction included the resistivity calculations, pseudosection plotting, survey plan plotting and contouring.

The chargeability (IP) values are read directly from the instrument and no data processing is therefore required prior to plotting. The resistivity values are derived from current and voltage readings taken in the field. These values are combined with the geometrical factor appropriate for the dipole-dipole array to compute the apparent resistivities.

All the data have been plotted in pseudosection form at a scale of 1:2,500. One map has been plotted for each of the nine lines and are numbered GP-1 to GP-9, respectively. The pseudosection is formed by each value being plotted at a point formed from the intersection of a line drawn from the mid-point of each of the two dipoles. The result of this method of plotting is that the farther the dipoles are separated, the deeper the reading is plotted. The resistivity pseudosection is plotted on the upper part of the map for each of the lines, and the chargeability pseudosection is plotted on the lower part.

All pseudosections were contoured at an interval of 3 milliseconds for the chargeability results, and at an interval of logarithmic to the base 10 for the resistivity results.

The self-potential (SP) data from the IP and resistivity survey was plotted on top of the two pseudosections at a vertical scale of 1 cm = 75 millivolts with a base of zero millivolts. It is not expected that the SP data will be important in the exploration of the property but considering that the data was taken anyway it was thought that it could at least be plotted and profiled in case it turned out to be useful.

The magnetic data was also plotted and profiled with the two pseudosections but above the SP profile for each line. For the plotted values, 56,000 nanoTeslas (nT) has been subtracted from each reading. The vertical scale is 1 cm = 1300 nT with a base of 57,500 nT (or 1,500 nT of the plotted values).

Also, plan maps were prepared for level 1 (n=1) and level 4 (n=4) each for IP and resistivity, each at a scale of 1:5000. The data were plotted and contoured at the same contour interval as that of the pseudosections. The four plans were numbered GP-10 to GP-13, respectively.



MAGNETIC SURVEY

(a) Instrumentation

The magnetic survey was carried out with a model G-816 proton precession magnetometer, manufactured by Geometrics Inc. of Sunnyvale, California. This instrument reads out directly in gammas to an accuracy of ± 1 gammas, over a range of 20,000 - 100,000 gammas. The operating temperature range is -40° to +50° C, and its gradient tolerance is up to 3,000 gammas per meter.

(b) Theory

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Only two commonly occurring minerals are strongly magnetic, magnetite and pyrrhotite; magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Magnetics is also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

(c) Survey Procedure

Readings of the earth's total magnetic field were taken at 25 m stations along 13 survey lines for a total survey length of 8,180 m. The magnetic survey was to be done wherever the IP/resistivity survey was done. However, the location of the IP/resistivity survey lines was changed and therefore some magnetic surveying is done where there is no IP surveying, and some IP surveying is done where there is no magnetic surveying.

The diurnal variation was monitored in the field by the closed loop method to enable the variation to be removed from the raw data prior to plotting.

(d) Data Reduction

The data was first input into a computer. Then using Geosoft software, it was plotted with 56,000 nT subtracted from each posted value and contoured at an interval of 400 nT on a base map, GP-14, with a scale of 1:5000.

DISCUSSION OF RESULTS

The IP/resistivity survey has revealed a number of anomalous IP responses within the survey area of the Cinderella-Chase Grid. Eleven of these are considered to be worthy of further discussion and thus have been labeled by the upper case letters, IP-A to IP-K.

In general, the anomalies located within the upper (or northern) part of the grid area are higher in value than those within the lower (or southern) part. In verbal discussions with Wells, on the central and eastern part of IP lines 1500S, 1600S, and 1700S, sulphides are widespread. And yet the anomalous and background readings are quite low especially when



compared to anomalies IP-A, IP-B, and IP-C where there is also widespread mineralization. The probable reason for this is that there is much less moisture in the ground within the southern area of the grid than there is within the northern area. According to Wells, the southern area, which occurs on a south-facing slope, is much drier. In order for the IP process to work, there is needed electrolyte (groundwater) and electrode (sulphide), and if one of these is missing than there is no IP effect.

<u>Anomalies IP-A, IP-B, and IP-C</u> are the three strongest anomalies occurring on the eastern part of IP lines 400S to 700S. The overall trend of these three anomalies is northwesterly-southeasterly even though each anomaly individually has a different trend. It would appear, therefore, that the three anomalies are related, though the underlying lithology is different.

<u>Anomaly IP-A</u> is the westernmost of the three anomalies occurring mainly on the lines 0+00 (baseline) and 400S. It is one of the stronger anomalies with many of the readings over 30 msec. It appears to be striking northwesterly and is open to the northwest. The anomaly has a width of up to 200 m and minimum strike length of 225 m.

IP-A, which undoubtedly reflects sulphides, correlates with a resistivity low and a broad magnetic low both of which are probably caused by Nicola sediments and possibly non-magnetic volcanics (that is, non-magnetic when compared to the nearby intrusives). The lows could also be caused by alteration and/or fracturing associated with the sulphides.

The anomaly is probably part of the Chase showings, which are labeled Mineral Zones A and B by Wells (see Geology above), or are at least related to them. The Chase showings, according to Wells' maps, occur along the western boundary of IP-A. However, according to the description of the mineralization, it would appear that IP-A is reflecting mineralization that is different than that of Mineral Zones A and B. Mineral Zones A and B consist of base metal sulphides with some precious metal values occurring within a 1.5 m wide zone within limestone. However, the main part of IP-A appears to be reflecting mineralization that occurs over a much wider zone and to the east of the limestone unit within a different rock-type.

On line 400S, the eastern part of anomaly IP-A correlates with a resistivity high and occurs within the microdiorite intrusive. That is the resistivity high is obviously reflecting the intrusive. This part of the anomaly appears to be separate from the rest and it is therefore possible that it is actually the northern extension of anomaly IP-B which also correlates with an intrusive.

However, the one piece of evidence that this may not be the case is that IP-A appears to be bounded to the south by an east-northeasterly to northeasterly-trending fault. It appears that all of IP-A occurs to the north of this fault and all of IP-B occurs to the south. This suggests, therefore, that the causative sources of the two anomalies are separate. On the baseline (line 0+00), the southern two-thirds of the anomaly occurs at depth suggesting the causative source of this part of IP-A does not surface.

<u>Anomaly IP-B</u> is a north-northwesterly-trending anomaly that has a minimum strike length of 300 m and a width of up to 100 m. It is open to the south at depth indicating the causative source becomes deeper in a southerly direction. It is also possibly open to the north, as mentioned above, if the eastern part of anomaly IP-A is actually IP-B. However it does appear to be bounded to the north by the fault.

The anomaly is moderately strong with many of the higher readings above 20 msec but also consists of some extremely high readings. It correlates with a resistivity high and a magnetic high both of which appear to be reflecting a microdiorite intrusive. (The magnetic high is seen only on line 500S since on lines 600S and 700S, the lines did not extend far enough east.) In other words, the causative source of IP-B is sulphide mineralization occurring within the intrusive.

However, on line 600S, IP-B correlates directly with a resistivity low that appears to be occurring within a larger resistivity high. The low therefore may be caused by a fault within the intrusive and/or the low is reflecting the western contact of the intrusive with the Nicola volcanics.

<u>Anomaly IP-C</u> appears to be a northerly-striking anomaly that has a minimum strike length of 300 m and a minimum width of 200 m. It is open to the south where, like IP-B on line 700S, it occurs at depth. It also appears to be open to the north since the anomaly occurs on the northernmost line, 400S, but at a diminished strength. Additional surveying to the north and to the east would be needed to be done in order to verify this. In addition, lines 500S, 600S, and 700S show that the anomaly is open to the east.

It is the strongest anomaly with many of the higher readings being above 40 msec. It correlates with a resistivity high that, from verbal discussions with Wells, is caused by an intrusive. Therefore, as is the case for IP-B, IP-C reflects sulphide mineralization occurring within an intrusive.

<u>Anomaly IP-D</u> is a minor anomaly that is relatively narrow (one value wide) occurring on lines 500S, 600S, and perhaps 400S. The minimum strike length is therefore 200 m with it being open to the north which assumes the anomaly occurs on line 400S. With the width of the anomaly being only one value, the width of the causative source could be anything below 30 m, the dipole length.

The higher readings are above 10 msec reaching a value of 17 msec.

IP-D correlates with a minor resistivity high and a broad magnetic low indicating the causative source to be sulphides that possibly occur within a zone of silicification and/or calcification, which would cause the resistivity high, within Nicola sediments (limestone?)



which would cause the magnetic low. On line 500S it would appear the anomaly is reflecting Mineral Zone B which consists of 1.5 m of sulphides occurring within a quartz stockwork within limestone. This certainly fits the possible interpretation of the geophysical signature for IP-D.

Mineral Zone C occurs on line 700S at about 100W which is approximately the southern extension of IP-D. However, there is no anomalous response from the IP survey but the resistivity survey responds with a strong resistivity low that is possibility due to a fault.

<u>Anomaly IP-E</u> is also a minor anomaly that occurs within the northern part of the baseline. It reaches a high of 7 msec at depth. It also correlates with a small resistivity high that geological mapping in the area indicates it to be caused by an intrusive. The magnetic correlation is mixed.

It is quite possible that this anomaly is the edge of a much bigger anomaly either at depth, to the east, and/or to the west. Further IP surveying in the area would be needed to verify this.

<u>Anomaly IP-F</u> is an anomaly that correlates with Mineral Zone D and occurs mostly at depth on line 1200S. (This line was surveyed alone having no adjacent IP survey lines. Therefore, its anomalies, IP-F and IP-G, are open to the north and to the south) It consists of anomalous readings up to 3.9 msec within a background of 2 msec or lower.

IP-F, for the most part, correlates with a resistivity high but Mineral Zone D correlates with a low within the high. The low could be due to faulting since Wells states that Mineral Zone D occurs near the intersection of two faults. The high could be due to the calcareous volcanics.

As mentioned above, IP-F occurs at depth whereas Mineral Zone D is seen at the surface. This could be due to the dry soil conditions at and near the surface. In other words, the moisture content at depth increases and therefore the IP readings become stronger.

<u>Anomaly IP-G</u> occurs just to the west of IP-F consisting of a broad IP high with values up to 4.2 msec. It also occurs at depth. The western part correlates with a resistivity high and a magnetic high both of which are caused by an intrusive.

The eastern part correlates with a broad resistivity low that is probably due to a westnorthwesterly trending fault which occurs within Nicola volcanics. The broadness of the low would be caused by the fault crossing IP line 1200S at a very oblique angle. This would therefore suggest that the sulphides, as reflected by IP-G, are associated with the fault and therefore may occur along with the fault to the west-northwest. <u>Anomalies IP-H, -I, and -J</u> all occur on lines 1500S, 1600S, and 1700S. They are low-value anomalies that trend in a north-south direction, have a minimum strike length of 200 m, and are open to both the north and to the south.

<u>Anomaly IP-H</u> reaches a high of 7.8 msec and correlates directly with a target area as defined by Wells on lines 1600S and 1700S. The width of the zone, that is the causative source, appears to be about 50 m.

It also correlates with a resistivity high, which on line 1500S appears to be caused by an intrusive. According to Wells geological mapping, IP-H on lines 1600S and 1700S is underlain by Nicola volcanics which would suggest that the cause of the resistivity high may be a certain rock-type of the Nicola volcanics, a silicified and/or calcified zone, or an intrusive that does not surface.

Mineral Zone F, which is the Cinderella Showings, occurs on line 1600S at the eastern part of IP-H. The correlation is with a resistivity low which is undoubtedly due to the associated fault. However, the IP is only anomalous at depth, which is probably due to dry surface conditions.

<u>Anomaly IP-I</u> is most prominent on line 1500S, where it reaches a high of 4.4 msec, and is barely seen at the eastern edges of lines 1600S and 1700S. It is open to the east on all three lines.

IP-I occurs within a target area as indicated on line 1500S with its western edge correlating with Mineral Zone E. This zone correlates with a small resistivity high which may be due to the calc-silicate alteration associated with the mineralization. The eastern part of IP-I also correlates with a resistivity high and a magnetic high both of which are due to an intrusive.

<u>Anomaly IP-J</u> occurs on the western part of lines 1500S, 1600S, and 1700S. On line 1500S it is open to the west. This anomaly reaches a high of 7.6 msec at depth on line 1700S.

IP-J correlates with a resistivity high on lines 1500S and 1600S but with a resistivity low on line 1700S. This suggests the possibility that the anomalous response on line 1700S has a different causative source than on the northern two lines. The high may be due to an intrusive, possibility a dyke, as suggested on the pseudosection for line 1500S. The low may be due to a different rock-type or possibly alteration and/or fracturing.

The correlation with the magnetic survey is mixed.

<u>Anomaly IP-K</u> occurs at the southern end of the baseline at depth where it reaches a high of 7.6 msec. It correlates with a resistivity high and a minor magnetic high. This suggests an



interpretation of sulphides occurring within an intrusive, or possibly occurring within a different rock-type of the Nicola volcanics (that is different to the rocks around it). As with IP-E at the northern end of the baseline, the occurrence of IP-K could be the edge of a much larger anomaly. Only further surveying in the area would determine this.

On the <u>resistivity survey</u>, as indicated above, many of the highs are caused by intrusives within the Nicola volcanics and sediments. The lows are usually caused by the Nicola sediments or some of the volcanics. Many of the lows, especially the lineal type, are caused by faulting, contacts, and/or shear zones, and these are labeled by the term 'FAULT?' on the pseudosections. Even many of the wider resistivity lows are caused by faults crossing the IP line at an oblique angle.

For the <u>magnetic survey</u>, also as indicated in the above discussion, almost all the highs are caused by intrusives. However, the largest high within the southeastern part of the survey area is caused by metamorphosed hornfelsed sediments and/or volcaniclastics. The much smaller north-northwesterly trending high on the western part of lines 1300S to 1600S appears to be caused by a volcanic breccia.

The magnetic lows are usually due to Nicola sediments or to non-magnetic Nicola volcanics. However, many of the more lineal-type lows are caused by faulting.

Yours sincerely,

GEOTRONICS SURVEYS LTD OFESSIO PROVINCE D.G. MARK David G. Mark, P.Geo. COLUMBIA SCIEN Geophysicist

December 2, 1996

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Note: See Table 2, The Assessment Report Index, within Wells' report for assessment reports done within the Jesse Creek property.

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify that:

I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at #405 - 535 Howe Street, Vancouver, British Columbia.

I further certify that:

- 1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.
- 2. I have been practicing my profession for the past 28 years, and have been active in the mining industry for the past 31 years.
- 3. This report is compiled from data obtained from IP, resistivity, and magnetic, surveys carried out over a portion of the Cinderella-Chase Grid within the Jesse Creek Property from October 8 to 19, 1996. The surveys were carried out under my supervision and under the field supervision of Roger Mackenzie.
- 4. I do not hold any interest in Conlon Copper Corporation, nor in the properties discussed in this report, nor do I expect to receive any interest as a result of writing this report.

ROVINCE D.G. MARK BAITISH CIEN

December 2, 1996

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David G. Mark, P.Geo., Geophysicist



AFFIDAVIT OF EXPENSES

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I.P., resistivity and magnetic surveys, were carried out over a portion of the LA Claims from April 11 to May 5, 1994 adjacent to Lillooet Lake in the Pemberton area, Lillooet Mining Division, British Columbia to the value of the following:

Magnetic Survey:		
Mob-demob, at cost	\$ 400.00	
1 man, instrument, room & board, 2 days @ \$450/day	90 <u>0.00</u>	1,300.00
Induced Polarization & Resistivity Surveys:		
Mob-demob, at cost	\$1,300.00	
Geologist (Ron Wells, P.Geo.), consulting and supervision, 5 days @ \$425/day	2,125.00	
J. Conlon, 5 days @ \$200/day	1,000.00	
5-man crew, 8 days @ \$2,000/day	16,000.00	20,425.00
Data Reduction & Report:		
Senior geophysicist, 34.5 hrs. @ \$50/hr.	\$ 1,750.00	
Computer-aided data reduction & drafting, 68.5 hrs. @ \$40/hr.	2,740.00	
Printing, photocopying, compilation	200.00	4 <u>,690.00</u>
GRAND TOTAL		<u>\$26,415.00</u>

Respectfully submitted, GEOTRONIÇS SURVEYS LTD.

OFESSIO, D.G. MARK David G. Mark, P.Geo., BRITISH COLUMBIA Geophysicist OSCIEN











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ASSESSMENT REPORT





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