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GEOPHYSICAL REPORT

On The

ELECTRO-MAGNETIC & MAGNETIC SURVEY

For

Mt. Sicker Mines Ltd (N.P.L.)

Duncan Area, Vancouver Island, B.C.

By

E. P. Sheppard, P. Eng.
Consulting Geologist

November 30, 1968
Vancouver, B.C.

I N D E X

(Maps in accompanying folder)

Mt. Sicker Mines Ltd (N.P.L.) - GEOPHYSICAL REPORT

SUMMARY

After three profiles of magnetometer work were completed, the survey was discontinued. The magnetometer did not detect sufficient magnetic variations in either the ore zones or the geologic formations traversed to be of value in locating possible ore zones, contacts, faults, etc.

The Electro-magnetic survey outlined seven well-defined, east-west trending anomalies, a few of which showed flexures toward the southeast. This has been interpreted as folding in the schistose rocks traversed by the survey.

A definite east-west trending anomaly was outlined over the Tyee and Lenora ore zones. This anomaly shows flexures toward the north and south which may again represent folding in the ore zones.

In several cases overburden was sufficiently shallow to expose bedrock and at the cross-over, or center of the anomalies, schistose rock containing pyrite and chalcopyrite was observed.

RECOMMENDATIONS

It is recommended that the anomalies described in this report be explored by (1) bull-dozer trenching where the overburden is shallow and (2) diamond drilling where overburden depths preclude the use of surface trenching.

GEOPHYSICAL REPORT

ELECTRO-MAGNETIC & MAGNETIC SURVEY
Mt. Sicker Mines Ltd
Duncan Area, Vancouver Island, B. C.

INTRODUCTION

A program of Electro-magnetic and magnetometer surveys was carried out on the Mt. Sicker Mines Ltd property in the Duncan area, Vancouver Island, British Columbia, during the period June 17 and July 24, 1968. The surveys were carried out by Geotronics Surveys, 5107 Victory Street, Burnaby, B.C., under the direct supervision of the writer.

The surveys covered approximately 3000 acres along 30 miles of flagged lines at right angles to an East-West base line 2.5 miles long.

The purpose of these surveys was to obtain information from drift-covered areas of the property adjoining the Tyee and Lenora shafts.

PROPERTY

The Mt. Sicker Mines Ltd property consists of 3340 acres, more or less, lying on the flanks of Mount Sicker in the Victoria Mining Division, British Columbia. (48° 123° NW)

The holdings are made up of 29 mineral claims, 26 Crown-Granted mineral claims and fractional claims, totalling approximately 800 acres, plus an option on lands held by V. H. Patriarche under a Mining Agreement dated October 1, 1963, with Canadian Pacific Oil & Gas Limited, totalling about 2540 acres.

29 Mineral Claims - Chemainus District

C. F. Group Numbers:

14150 to 14159	inclusive	10 claims
14162 to 14169	"	8 "
14174		1 "
14185 to 14188	"	4 "
14197 to 14202	"	6 "

26 Crown-Granted Mineral Claims and Fractions

Lot No.	Name	Lot No.	Name
35 G	Lenora*	43 G	N T Fraction*
36 G	Tyee*	39 G	Richard III*
37 G	Key City*	41 G	Magic Fraction*
60 G	International Fraction*	53 G	Estelle*
18 G	Tony*	18 G	Donagan***
19 G	X L*	54 G	Westholme*
63 G	Donald*	51 G	Blue Bell*
108 G	Muriel Fraction*	50 G	Moline Fraction*
87 G	Doubtful Fraction**	59 G	Westholme Fraction***
85 G	Thelma Fraction**	21 G	Dixie Fraction***
86 G	Imperial Fraction**/***	44 G	Golden Rod*
20 G	Herbert*	47 G	Nellena*
110 G	Phil Fraction**	4 G	Acme***

• Chemainus District **Seymour District ***Somenos District

Lands Optioned From V.H.Patrierche

"All those parcels of land situate in the Chemainus Land District on Vancouver Island in the Province of British Columbia lying within the boundaries of the area outlined in red shown on the attached sketch marked Plate I described as commencing at a point nine thousand (9000) feet due east of the northwest corner of Block 278, thence due north in a straight line a distance of six thousand (6000) feet, thence east at a right angle in a straight line to the western boundary of the east one-half of section seven (7), range one (1), thence northerly along said western boundary of the east one-half of section seven (7), range one (1) to the northern boundary of section seven (7), thence easterly along said northern boundary of section seven (7), to the eastern boundary of range two (2) thence southerly along said eastern boundary of range two (2) to the point of intersection with the southern boundary of the Chemainus Land District, thence westerly along the said southern boundary of the Chemainus Land District to a point on said southern boundary being the intersection of the southerly extension of the first described line, thence northerly along said extension to point of commencement, the area herein described comprising twenty-five hundred and forty (2540) acres, more or less."

OWNERSHIP

The properties described above are owned or held under option by Mt. Sicker Mines Ltd, N.P.L.

LOCATION AND ACCESS

Situated about 14 miles by road from the city of Duncan, the property lies upon the slopes of Mount Sicker, which is a heavily-wooded mountain of medium to rugged relief rising to an elevation of nearly 2300 feet above sea level. The Chemainus River flows along the northerly base of the mountain.

The mine and mill sites are serviced by eight miles of all-weather road, partly paved, partly gravelled, which joins Trans-Canada I six miles north of Duncan.

Electric power and telephone services are four for five miles distant; however, for preliminary work, diesel-driven units could be rented. Labour and supplies for a surface and underground program should not be a problem. Water can be taken from hillside creeks or pumped from the Chemainus River. Timber required for underground renovation is in good local supply. The old office and Change House buildings can be repaired and put to good use. A 150-ton concentrator on the property is not in good condition and is being disposed of.

HISTORY

The Mount Sicker area owes its development to the fact that in 1897 a forest fire and subsequent rains swept bare the hillside, disclosing a gossan outcrop which proved to be the surface exposure of the Lenore and Tyee south orebodies. During that year separate interests began surface and underground work on each claim.

A brief history of the three main claims (Lenora, Tyee and Richard III) is given in chronological order. Much of the following information was gleaned from the annual reports of the Minister of Mines of British Columbia.

LENORA

1898	Drifting, crosscutting and sinking. Two parallel ore zones identified.
1899	Development and stoped ore stored in dumps. Some hand-picked ore sent to a smelter.
1900 to mid-1902	Lenora-Mount Sicker Mining Company formed. Development and stoping continued. Shipped ore by wagon, narrow-gauge railway, E & N Railway, to Ladysmith thence by steamer to Van Anda, Everett and Tacoma smelters.
Late 1902	Railroad completed to the mine. Smelter completed at Crofton. Shortly after shipments commenced to Crofton the mine was closed because of litigation.

1903 to 1907 Minor work done and small shipments of ore from the dump made to Crofton.

1924 Re-opened under lease and bond by R.C.Mellin, primarily to re-examine the north ore zone, which was reported to assay 2% copper, 7% zinc, with $1.50 in gold and silver. This ore had become attractive because of advances made in separating copper and zinc by flotation.

1925 No work.

1926 Ladysmith Tidewater Smelters Ltd. took over assets of Tyee mine and smelter and leased the Lenora. Under the direction of R. C. Mellin an adit was started on the Lenora to connect both mines to provide efficient working conditions.

1929 The lease on Lenora was dropped and work ceased.

TYEE

1897 to 1901 Explored and developed the property with drifts, crosscuts and shafts. Made a small shipment of sorted ore in 1901 which ran 8% copper, $5 in gold and $5 in silver perton. The bulk of production stored in surface dumps.

1902 to 1907 Completed construction of aerial tramway to Somenos where ore was transshipped by E & N Railway to the newly-built Tyee Smelter at Ladysmith. A 1250-foot shaft sunk to develop lower grade ore zone found on 1000, 1150 and 1250 levels. Much development, exploration and production during these years. Concentration tests were being made on low grade ore when mine closed due to low price of copper. Work done on Tony, X L, Key City and Westholme claims disclosed some copper mineralization.

1928 Tyee holdings taken over by Pacific Tidewater Mines, Ltd, which then obtained from Mellin the Lenora lease. The adit being driven on the Lenora towards the Tyee was continued and ore was encountered.

1929 Pacific Tidewater Mines, Ltd. taken over by Ladysmith Tidewater Smelters, Ltd. No work done on Tyee or Lenora, and Lenora lease dropped.

RICHARD III:

1898 to 1907 Developed and explored sporadically but lacked sufficient working capital for efficient operations. Shipped some ore from dump to Tyee Smelter. When work stopped ore was showing on floor of the 500 level.

1924 to 1925 Victoria interests undertook further exploration of north ore zone through drifting, crosscutting and sinking after which no further work done until the beginning of World War II.

SHEEP CREEK GOLD MINES LTD

1939 Sheep Creek optioned Lenora, Tyee and Richard III.

1940 A considerable amount of diamond drilling and development was done before option dropped due to low zinc price. Geophysical Survey (April 1940)

TWIN J MINES LTD

1924 to 1944 Taken over by Twin J Mines Ltd. who drilled and sampled followed by underground rehabilitation and preparation of mine site. Milling began in mid-1943 at 125-150 tons daily. Much exploration and development done. Operations suspended in 1944 when sales contract with Wartime Metals Corporation was cancelled. Most production came from the Lenora North ore zone.

1946 1947 Retimbered underground operations. Mining and milling resumed. Concentrate shipped to Tacoma and Trail. Closed in September.

1949 Property taken over by Vancouver Island Base Metals, Ltd. They repaired Tyee shaft, retimbered tunnels, developed and drilled before ceasing work.

1951 1952 Re-opened and milled 9,754 tons. Modest exploration program carried out. Closed in January 1952.

1964 to 1966 1967 The present interests blasted an outcrop on the Lenora and shipped 167 tons to Tacoma Smelter. Subsequently, Mt. Sicker Mines Ltd. was formed to work the property. A feasibility study has been made with regard to leaching of copper from the ore zones and dumps.

GEOLOGY

The area is underlain by a series of cherty tuffs, graphitic schists, sodic-andesites, porphyry, sodic-rhyolite porphyry and sodic-diorite. The cherty tuffs are light grey rocks, usually consisting of 1/8" to 1/2" laminae of cherts separated by thin layers of sericite schist. Where undeformed, the rocks are slaty, but where they are deformed they possess laminae and are bent into small canoe-shaped folds. Where intensely deformed, either by close shearing or folding, the tuffs are very schistose and it is difficult to identify the former chert layers which serve to distinguish these rocks from the more schistose phases of the rhyolite porphyry. The cherty tuffs are always associated with black graphitic schists.

Much of the black schist has been folded into a succession of small drag-folds, and where dragfolding has been so extreme that it passes into shearing, the thin laminae of the schist have been nearly destroyed and are difficult to identify in the resultant sheared rock. This series is classified tentatively as belonging to the Mount Sicker Group of rocks.

The series strikes N 70° W and dips 50° to the southwest. The andesite porphyry is intrusive into the sediments, andesite porphyry and early phases of the diorite, but it is cut by the later phases of the diorite. Diorites are generally older than both the sediments and the andesite porphyry but some phases are younger than the rhyolite porphyry and other phases are older than the rhyolite.

ORE DEPOSITS

The ore deposits occur as a replacement of folded, cherty tuffs and related graphitic schists. There are two separate, easterly-trending bodies about 150 feet apart known as the North orebody and the South orebody. The ore is of two closely allied types; one type, called "Barite ore", consists mainly of barite and sulfides with small amounts of quartz; the second type, called "Quartz ore", consists mainly of quartz and chalcopyrite. The two orebodies are parallel and lie along two main dragfolds in the band of sediments. Study of the ore deposits from underground openings is impossible because of caved workings.

The North orebody measures about 1700 feet along the strike, 120 feet down dip, and from one to 10 feet in width.

The South orebody lies about 150 feet south of the North orebody and has a length of 2100 feet, a depth of about 150 feet, and a thickness of 20 feet or more. The upper limit of this orebody is about 150 feet higher than the North orebody.

Post Ore Faults: Two main faults striking east and west and dipping vertically displaced the orebodies. The north fault is between the two orebodies. This fault strikes into the South orebody at a small angle. Near the Richard III shaft it is 26 feet north of the ore, further west near the Tyee shaft it is closer, and near the portal of No. 1 adit it makes the north wall of the ore. The fault displaces the South orebody 200 feet upward and an unknown distance eastward with respect to the North orebody. Long sections of barite drag-ore may be seen in the north fault below the South orebody.

The south fault lies 80 to 100 feet south of the Tyee shaft and south of the South orebody. Very little is known about this fault. Diagonal faults, which moved segments of the ore southward and downward relatively small distances, give a resultant plunge to the orebody that is steeper than the horizontal crestlines of the drag fold. However, because of reversal of the vertical displacement in some of the diagonal faults, the orebody does not exhibit any appreciable plunge.

Ores: The Barite ores are a fine-grained mixture of pyrite, chalcopyrite, sphalerite and a little galena in a gangue of barite, quartz and calcite. The order of mineralization from oldest to youngest is as follows: barite, calcite, pyrite, sphalerite, chalcopyrite and galena, quartz and late calcite. A characteristic of this ore is its banded appearance. Quartz ore is fairly uniformly mineralized with chalcopyrite. Mineralogical composition of this ore is as follows: Pyrite 4.1%, chalcopyrite 20.5%, sphalerite 0.3%, galena trace, barite 1.1%, quartz 68.1%, calcite 5.6%. In addition, some of the chalcopyrite occurs as layers or streaks that follow unreplaced layers of schist in the quartz.

Barite: The presence of barite as a gangue mineral in the "barite ore" and as separate occurrences in the mine adds another economic consideration to the ores. It is reported that an appreciable tonnage of barite was indicated by early operators. Tentative markets for the barite have been investigated and samples have been sent to an interested company for analysis and study. The Mount Sicker areas have been mentioned in the 1947 report of the Minister of Mines of British Columbia as a source of by-product barite. This mineral occurrence warrants further consideration.

The ores are later than both the folding and metamorphism of the sediments. They appear to be closely related to the sodic-rhyolite porphyry and sodic-diorite. This association has been observed in important pyrite deposits of the Rio Tinto district in Spain and elsewhere.

The localization of the orebodies has been controlled structurally by a regional fracture zone and by drag folds in the narrow band of tuffs and graphitic schists. The fracture zone is a regional feature, which can be traced for a total distance of eight miles and was encountered on the bottom level of the 1250-foot Tyee shaft. Little is known about the mineralization along the full length and depth of this zone because the early operators largely ignored it as uneconomic, but it constitutes a potential exploration target of great importance.

Lands Under Patriarche Option: Because of the scarcity of outcrops, these lands were explored by geochemical methods. The results were subsequently checked and reasonably confirmed the Self-Potential surveys.

Several anomalous areas and zones up to 1000 feet in length were found to be lying approximately parallel to the major regional fracturing and to the Twin J orebodies. Soil samples indicate the presence of copper, lead and zinc mineralization.

GEOPHYSICAL SURVEYS

Magnetometer Survey

The Magnetometer Survey was carried out along three lines on a reconnaisance basis to determine whether the magnetite content of the ore zones and various geologic formations was sufficient to outline significant features.

The survey indicated that there was insufficient magnetite content in the geologic formations to register a response on the magnetometer. Such a survey was, therefore, of no value in this instance.

The survey was conducted by personnel of Geotronics Surveys, 5107 Victory Street, Burnaby 1, B.C.

The instrument used was an "ELSEC" nuclear free precession proton magnetometer manufactured by Littlemore Scientific Engineering Company Ltd., Oxford, England. This instrument has been designed for measuring the total magnetic field to better than 1 part in 100,000 over the entire range of field strengths normally found on the earth's surface. The instrument itself measures the total magnetic vector with a sensitivity of $\pm$ .5 gamma or better.

In this survey readings were taken along lines L 8W, L0 & L 15W, at 100 foot separations. The magnetometer readings were taken at the same time as the Electro-magnetic test survey was run and at the same stations.

The magnetometer readings are plotted on Geological Map Sheet 1, accompanying this report.

Electro-magnetic Survey

This survey was carried out over approximately 28 mineral claims of the Mt. Sicker Mines Ltd property, Duncan area, Vancouver, Island. The survey was conducted by personnel of Geotronics Surveys, 5107 Victory Street, Burnaby 1, B.C., during the period June 17 to July 24, 1968.

*"A V.L.F. Electro-magnetic set manufactured by Geotronics Instruments Ltd of Vancouver, B.C., was used to locate conductive zones. This instrument is designed to measure the electro-magnetic component of the very low frequency field, transmitted at 18.6 KHz from Seattle, Washington. The direction of this field, in particular the dip angle, is distorted by the presence of a conductor within the earth. Thus, by measuring the dip angle, the presence of a conductor can be detected and its location determined. The normal V.L.F. field is horizontal and the effect of a conductor is to distort this horizontal field, causing a change in the direction and angle. Thus, if dip angle measurements are made and plotted, they will produce a profile with the conductor being located at the cross-over point."

SURVEY PROCEDURE AND METHOD:

"A grid was established, using the TYEE shaft as the centre point. A base line was set up running in an East-West direction, 4500 feet West of the TYEE shaft and 7600 feet East of TYEE Shaft. This base line is marked every 50 feet with orange flagging tape and orange and blue flagging tape at 400 foot cross lines. The grid lines run North-South at 400 foot intervals with E.M. Stations at 50 feet along the lines and 25 feet over anomalous zones. These grid lines are marked and flagged with red survey flagging tape. All bearings and distances were surveyed by chain and compass, using TYEE Shaft and base line for control. No level corrections were made for topographic changes. The grid lines were established in a North-South direction, so as to cross the known structural trends of this property. The base line length is approximately 2.5 miles and the grid lines total approximately 27.5 miles. Due to E.M. readings taken at 50 foot intervals and 25 feet over anomalous zones, the total E.M. mileage is 63.2 line miles, a total of 3166 E.M. readings mapped and plotted. The plotting and mapping consists of one grid map covering the complete survey on one inch equals 400 feet scale, covering an area of 28 mineral claims with anomalous zones indicated by shaded areas. The survey is also divided into 5 equal sections with E.M. readings plotted both on grid map and E.M. profile map using one inch equal to 100 feet scale."

The E-M readings are plotted with plus readings above and negative readings below the 0 line on the Profile Section; thus, the 0° reading on points at which the profile crosses the 0° line represents an anomalous condition below that point.

*Report of Geotronics Surveys - appended.

INTERPRETATION

The Plan encloses all O points and connects up anomalous conditions in an East-West direction parallel to the geological structures and more definitely to the trace of the North and South orebodies shown on the accompanying Geological Sketch map. Sections 1, 3 and 5 are taken together, also 2 and 4, as they represent the full strike length. The anomaly through the Tyee Shaft and over the North and South orebodies is cross-hatched in red. It shows fair correlation with the trace of the ore bodies and may be used as a "type indicator" for the rest of the survey.

"A" anomaly lies 600 feet north of the Tyee Shaft and continues east-west across Sections 1, 3, 5. Pyrite and chalcopyrite have been found in places along this anomaly. One sample taken over the anomaly assayed 0.8% Cu. It is felt that the anomaly deserves testing by diamond drilling.

"B" anomaly lies 1600 feet north of the Tyee Shaft and runs westerly across Sections 1, 3, 5. A bend toward the South is observed at the west end on Section 5 and this may be attributed to folding in the geological structure. Evidence of folding was observed in the North ore zone. This major anomaly requires further exploration by drilling.

"C" anomaly lies 2700 feet north of the Tyee Shaft, extends in an east-west direction across Section 1 and becomes indefinite toward Section 3. Section 5 shows an anomaly in approximately the same latitude, and again folding may account for the peculiar shape of the anomaly.

"D" anomaly is located in the Tony claim, L 44 & 40 W, 800' south. It is a sharp, narrow, drift-covered anomaly.

"E" anomaly trends across Sections 2 and 4 in an east-west direction. Pyrite and chalcopyrite have been observed at wide-spread intervals along this anomaly. In the east end it coincides with an anomaly outlined by a Self-Potential instrument.

"F" anomaly is located on 169 E-N (Section 5), lies 1900' north of the base line and trends easterly across 169 E-N. The connection with "G" has not been established. It is felt that "F" and "G" are linear anomalies representing schistose material, carrying small amounts of pyrite and chalcopyrite.

"G" lies 1100' north of the base line, located on 169 E (Section 5) and trends south-easterly across the section. It appears to be similar to the "B" and "F" anomalies.

The above represent the main outlined anomalies. Further study is necessary to determine whether the smaller ones are connected up or if they represent folding and faulting of the rocks of the area, as mentioned earlier.

Heavy timber and shallow overburden obscured many of the anomalies, making geological investigation difficult. Recent bulldozing on the old Right-of-Way near its intersection with the Mt. Sicker Mines road, approximately 6000 feet south and west of the Tyee Shaft, opened up 70 feet of schisted and sheared diorite and quartz sericite schist mineralized with pyrite and disseminated chalcopyrite. Visual estimates indicate at least 0.5% copper across this width.

In several cases diorite was encountered over the anomalies. It is felt that this rock did not produce the anomaly but lies above a conducting body. It is known that the Tyee Shaft was sunk through diorite before ore-bearing material was encountered.

In conclusion, the E-M Survey has indicated new targets for exploration in areas adjacent to and along strike from the original mining zones. Exploration in the form of diamond drilling is necessary to evaluate these areas.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
E. P. SHEPPARD

E. P. Sheppard

E. P. Sheppard, P. Eng.
Consulting Geologist

November 30, 1968
Vancouver, B.C.

C E R T I F I C A T E

I, E. PERCY SHEPPARD, of the City of Vancouver, in the Province of British Columbia, hereby certify THAT:

(1) I am a Consulting Geologist with offices at 314-402 W. Pender Stree t, Vancouver, B.C.;

(2) I am a graduate of Dalhousie University with a B. Sc. in Geology, and have been active in the mining exploration and geophysical profession for thirty-two years;

(3) The information for the accompanying report was obtained from a study of the Plans and Sections made by GEOTRONICS SURVEY, and an examination of the ground surface along profiles which indicated anomalous areas. Previous geological work was also utilized in this interpretation and study;

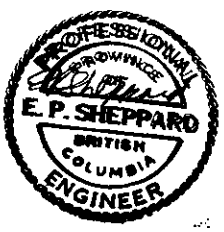
(4) I have no direct or indirect interest in the property described herein, nor in the share capital or securities of Mt. Sicker Mines Ltd, and do not anticipate any interest as a result of writing this report;

(5) I am a member of the Professional Engineers Association of British Columbia, the American Institute of Mining Engineers, the Society of Exploration Geophysicists, and a Fellow in the Geological Association of Canada.

DATED AT VANCOUVER, B.C., this 30th day of November, 1968.

E. P. Sheppard

E. P. Sheppard, P. Eng.
Consulting Geologist



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Various Annual Reports of the Minister of Mines for British Columbia, from 1897 onward.

Robert Musgrave: Copper Deposits of Mt. Sicker, Vancouver; The Engineering & Mining Journal, p. 673 & 674, Oct. 27, 1904.

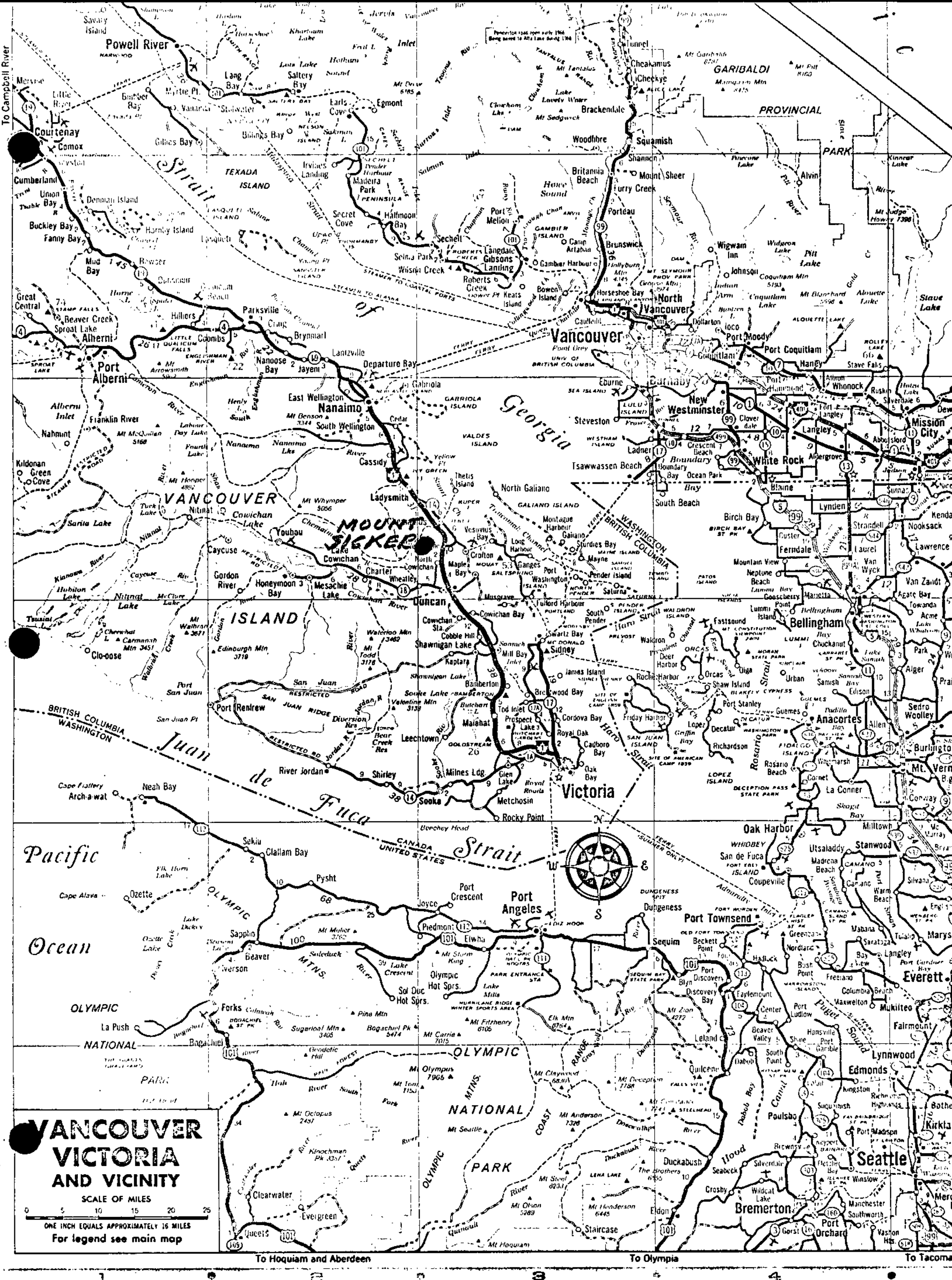
Walter H. Weed: Notes on the Tyee Copper Mine: The E. & M. Journal, p. 199 to 201, Jan. 25, 1908.

John S. Stevenson: Geology of the Twin J Mine; The Canadian Institute of Mining & Metallurgy Transactions, Vol. XLVIII, 1945, p. 294 to 308.

G. L. Oates: Geophysical Report for Sheep Creek Gold Mines Ltd. on Tyee Consolidated Mines, April 3, 1940.

GEOTRONICS SURVEYS: Field Report on Geophysical Surveys, dated June to August 1968.

* * *



VANCOUVER
VICTORIA
AND VICINITY
SCALE OF MILES
0 5 10 15 20 25
ONE INCH EQUALS APPROXIMATELY 16 MILES
For legend see main map
MOUNT SICKER
To Campbell River
To Hoquiam and Aberdeen
To Olympia
To Tacoma
Powell River
Courtenay
Comox
Cumberland
Union Bay
Buckley Bay
Fanny Bay
Bowser
Qualicum Beach
Parksville
Nanoose Bay
Lantzville
Departure Bay
Nanaimo
East Wellington
South Wellington
Cassidy
Ladysmith
Chemainus
Duncan
Cowichan Bay
Cobble Hill
Shawnigan Lake
Mill Bay
Sidney
Victoria
Sooke
Metchosin
Rocky Point
Port Alberni
Alberni
Port Renfrew
River Jordan
Shirley
Lake Cowichan
Youbou
Honeymoon Bay
Mesachie Lake
VANCOUVER
ISLAND
TEXADA
Strait
of
Georgia
Juan
de
Fuca
Strait
BRITISH COLUMBIA
WASHINGTON
CANADA
UNITED STATES
Vancouver
North Vancouver
Burnaby
New Westminster
Steveston
Ladner
Tsawwassen Beach
White Rock
Blaine
Port Moody
Port Coquitlam
Haney
Mission City
Langley
Abbotsford
Squamish
Britannia Beach
Woodfibre
Horseshoe Bay
Gibsons Landing
Sechelt
Halfmoon Bay
Egmont
Earls Cove
Lund
Bellingham
Lynden
Ferndale
Anacortes
Mt. Vernon
Oak Harbor
Coupeville
Stanwood
Everett
Mukilteo
Lynnwood
Edmonds
Seattle
Bremerton
Port Orchard
Port Townsend
Sequim
Port Angeles
Dungeness
Clallam Bay
Sekiu
Pysht
Neah Bay
Forks
La Push
Pacific
Ocean
OLYMPIC
NATIONAL
PARK
Quilcene
Brinnon
Duckabush
Hood Canal
Puget Sound
Friday Harbor
Roche Harbor
Orcas
Eastsound
Lopez
Galiano
Ganges
Pender Island
Saturna
Mayne

GEOTRONICS
SURVEYS 5107 VICTORY STREET, SOUTH BURNABY, B.C., PHONE 434-0137
Geophysical Surveys, Ground & Airborne

Mt. Sicker Mines Ltd.

June, 1968 to August, 1968

FIELD REPORT: Geophysical survey (Electro-magnetic); Mt. Sicker Mines Ltd. property, approximately 28 mineral claims, Mt. Sicker Area, Vancouver Island, B.C.

INSTRUMENTATION:

A V.L.F. Electro-magnetic set manufactured by Geotronics Instruments Ltd. of Vancouver, B.C. was used to locate conductive zones. This instrument is designed to measure the electro-magnetic component of the very low frequency field, transmitted at 18.6 kHz from Seattle, Washington. The direction of this field, in particular the dip angle, is distorted by the presence of a conductor within the earth. Thus, by measuring the dip angle, the presence of a conductor can be detected and its location determined. The normal V.L.F. field is horizontal and the effect of a conductor is to distort this horizontal field, causing a change in the direction and angle. Thus, if dip angle measurements are made and plotted, they will produce a profile with the conductor being located at the cross-over point.

SURVEY PROCEDURE AND METHOD:

A grid was established, using the TYEE Shaft as the centre point. A base line was set up running in an East-West direction, 4500 feet West of TYEE Shaft and 7600 feet East of TYEE Shaft. This base line is marked every 50 feet with orange flagging tape and orange and blue flagging tape at 400 foot cross lines. The grid lines run North-South at 400 foot intervals with E.M. stations at 50 feet along the lines and 25 feet over anomalous zones. These grid lines are marked and flagged with red survey flagging tape. All bearings and distances were surveyed by chain and compass, using TYEE Shaft and base line for control. No level corrections were made for topographic changes. The The grid lines were established in a North-South direction, so as to cross the known structural trends of this property. The base line length is approximately 2.5 miles and the grid lines total approximately 27.5 miles. Due to E.M. readings taken at 50 foot intervals and 25 feet over anomalous zones, the total E.M. mileage is 63.7 line miles, a total of 3166 E.M. readings mapped and plotted. The plotting and mapping consists of one grid map covering the complete survey on one inch equals 400 feet scale, covering an area of 28 mineral claims with anomalous zones indicated by shaded areas. The survey is also divided into 5 equal sections with E.M. readings plotted both on grid map and E.M. profile map using one inch equal to 100 feet scale.

The E.M. operator on this survey was A.R. Rolston.

GEOTRONICS
SURVEYS 5107 VICTORY STREET, SOUTH BURNABY, B.C., PHONE 434-0137
Geophysical Surveys, Ground & Airborne

CONCLUSION AND RECOMMENDATIONS:

The E.M. profile corresponds exceptionally well over the known ore bodies and has indicated in detail the location and outline of other continuous conductive zones which have E.M. profiles having the same characteristics as the known ore bodies. Possibly another geophysical method may be required on the anomalous zones only, to further assess the characteristics of these anomalies. As this is the view of the field supervisor and based only upon field experience and results of past geophysical surveys, I would strongly advocate that all of the field information and results be submitted to a competent engineer or geophysist for geophysical interpretation and engineering reports.

This is a field report only and is a report on the method and conclusions on the field work by the field supervisor, not a geophysical interpretation and is respectfully submitted to the directors of Mt. Sicker Mines Ltd. by Tom Rolston, field supervisor for Geotronics Surveys.

Tom Rolston

Tom Rolston

Geotronics Surveys

c.c. E.P. Sheppard

GEOTRONICS
SURVEYS 5107 VICTORY STREET, SOUTH BURNABY, B.C., PHONE 434-0137
Geophysical Surveys, Ground & Airborne

Resume of technical and field experience of Tom Rolston, manager of Tom Rolston - Electronic Services and Geotronics Surveys.

(i) Eleven years with R.C.A.F. as Instrument and Electronic Technician with supervisory capacity in various electronic and instrumentation systems.

(ii) Two years with Kerr-Addison Mines Ltd., as Electronic Technician servicing, repair and maintenance of various types of geophysical instruments. Also, two seasons as field supervisor and geophysical instrument operator in mining exploration, including airborne and ground geophysical surveys, geochemical surveys, geophysical and geochemical drafting and mapping.

(iii) Three years for Tom Rolston - Electronic Services, manager and field supervisor of geophysical and geochemical survey, including instrument operator of various geophysical instruments; airborne and ground systems magnetometer, electro-magnetic, gravity meter, self potential meter, scintilometer, induced polarization.

(iv) One year for Geotronics Surveys, manager and field supervisor with close association with mining engineers for various mining companies.

(v) One year director of Geotronics Instruments Ltd; various duties in the field of geophysical instrument design, manufacture, sales and rentals.

Tom Rolston

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of Mount Sicker Mines Ltd. Geophysical surveys conducted on Mt. Sicker property, Duncan Area, B.C., Victoria Mining Division; surveys conducted by Geotronic Surveys

I, T.W. Rolston

of GEOTRONICS SURVEYS, 5107 Victory Street, Burnaby

in the Province of British Columbia, do solemnly declare that expdnses were expended on Mt. Sicker property to conduct a magnetometer reconnaisance survey and follow-up, Electro-magnetic survey on 400' line spacing grid, with 25' E.M. stations, June 17, 1968 to July 24, 1968.

'ELSEC' proton Magnetometer instrument rental	$ 100.00
Geotronics Instruments Ltd. Electro-magnetic receiver instrument rental	300.00
T. Rolston wages - mapping and plotting	400.00
Map printing, survey materials, etc.	34.19
	$ 834.19
Wages:	
T.W. Rolston, field supervisor and instrument operator 3 days @ $60.00	180.00
A.R. Rolston, instrument operator, 33 days @ $40.00	1320.00
M.J. Foort, instrument operator, 30 days @ $40.00	1200.00
	$3534.19

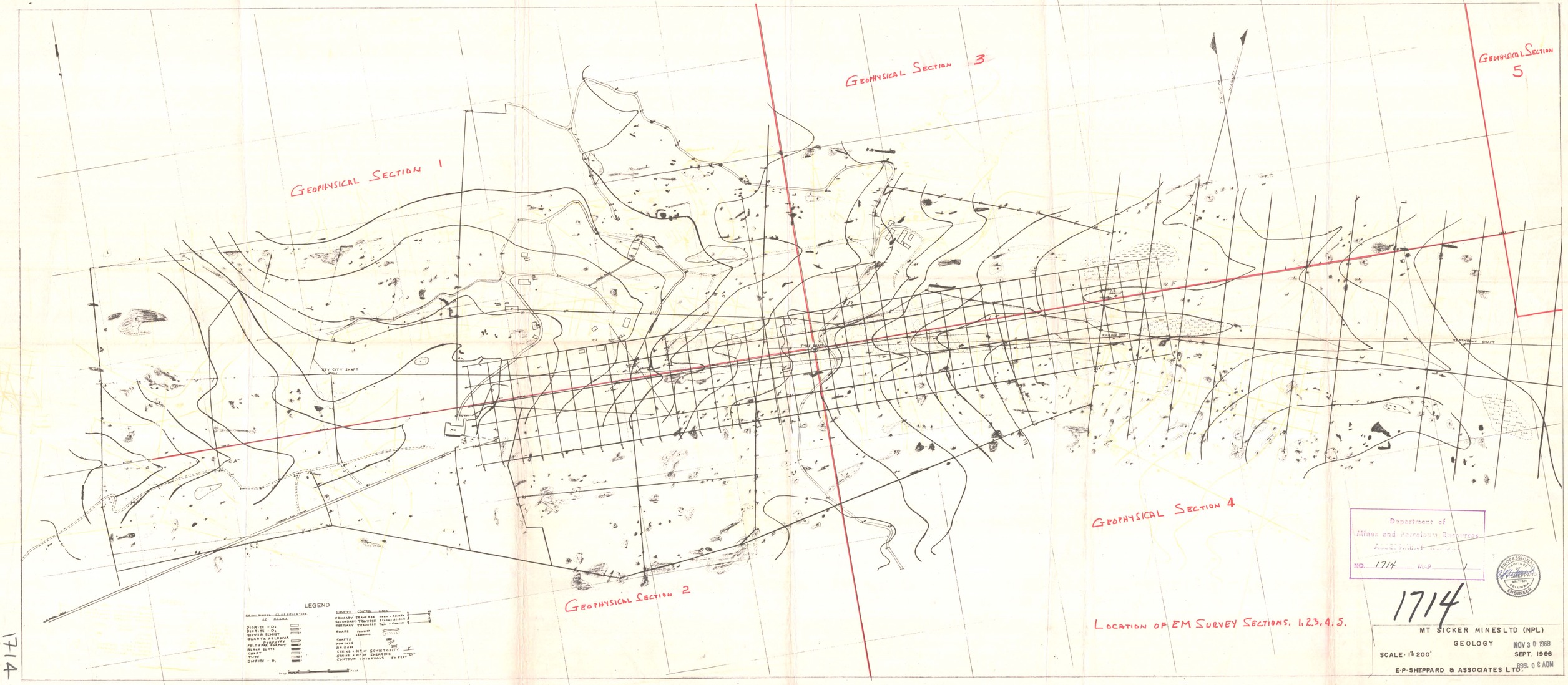
And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the Mun of Burnaby, in the Province of British Columbia, this 29th day of Mar. 1968, A.D.

T.W. Rolston

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

ALF. ERNEST ANDERSEN
A Commissioner for taking affidavits for British Columbia.



LOCATION OF EM SURVEY SECTIONS, 1, 2, 3, 4, 5.

1714

MT SICKER MINES LTD (NPL)

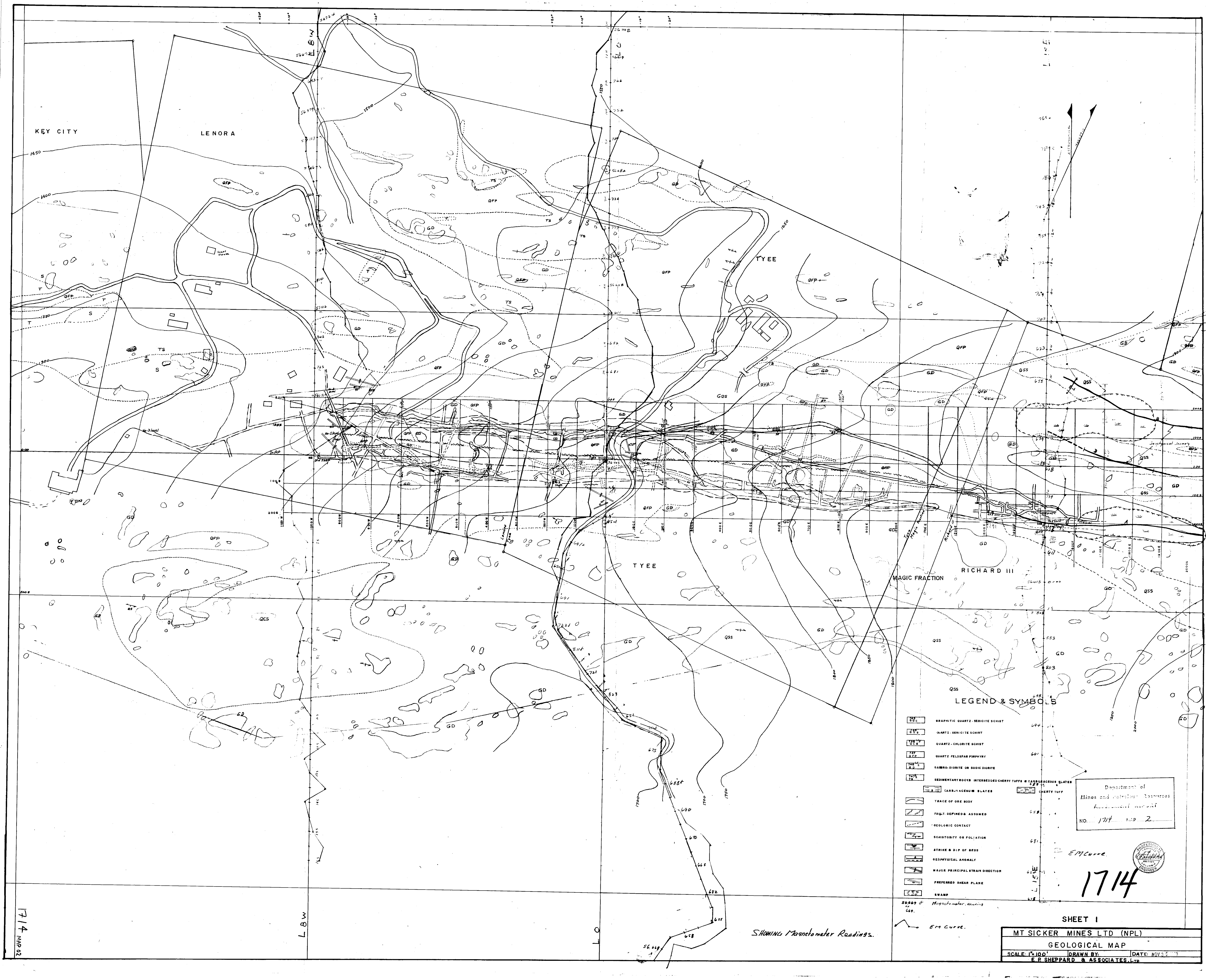
GEOLOGY

SCALE - 1" = 200'

NOV 30 1968

SEPT. 1968

E.P. SHEPPARD & ASSOCIATES LTD.


KEY CITY
LENORA
TYEE
TYEE
MAGIC FRACTION
RICHARD III
L8W
L8W
LEGEND & SYMBOLS
GRAPHITIC QUARTZ-SERICITE SCHIST
QUARTZ-SERICITE SCHIST
QUARTZ-CHLORITE SCHIST
QUARTZ FELDSPAR PORPHYRY
GABBRO-DIORITE OR SODIC DIORITE
SEDIMENTARY ROCKS INTERBEDDED CHERTY TUFFS & CARBONACEOUS SLATES
CARBONACEOUS SLATES
CHERTY TUFF
TRACE OF ORE BODY
FAULT-DEFINED & ASSUMED
GEOLOGIC CONTACT
SCHISTOSITY OR FOLIATION
STRIKE & DIP OF BEDS
GEOPHYSICAL ANOMALY
MAJOR PRINCIPAL STRAIN DIRECTION
PREFERRED SHEAR PLANE
SWAMP
56669 or 669. Magnetometer Reading
EM Curve.
EM Curve
Department of
Mines and
Resources
NO. 1714 MAP 2
1714
1714 MAP 02
SHEET I
Showing Magnetometer Readings.
MT SICKER MINES LTD (NPL)
GEOLOGICAL MAP
SCALE: 1" = 100'
DRAWN BY:
DATE: NOV 3 0
E P SHEPPARD & ASSOCIATES, LTD


MT. SICKER MINES LTD.
E.M. SURVEY SECTION No. 1
MOUNTSICKER AREA VANCOUVER ISLAND B.C.
SCALE: 1 IN. = 100 FT.
JULY 1968
INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET
SURVEY AND MAPPING:
T.W.R.
REVISED JULY 17, 1968 T.W.R.
SECTION NO. 1
SECTION NO. 3
SECTION NO. 2
SECTION NO. 4
TYEE
L26G
LENORA
L35G
INTERNATIONAL
L60G
KEY CITY
L37G
TONY
L18G
L34G
L33G
L59G
L55G
L100G
L21G
L63G
'N.T.'
L43G
'XL'
L19G
"B"
"C"
"A"
L45W.
L41W.
L36W.
L32W.
L28W.
L24W.
L20W.
L16W.
L12W.
L8W.
L4W.
L0
BL
1714

30N
25N
20N
15N
10N
5N
BL

L45W. L41W. L36W. L32W. L28W. L24W. L20W. L16W. L12W. L8W. L4W. L0'

MT. SICKER MINES LTD.

E.M. PROFILE SECTION No. 1

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

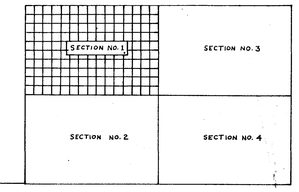
SCALE: 1 IN = 100 FT HORIZONTAL
1 IN = 10 DEGREES VERTICAL

JULY 1968

INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET

SURVEY AND MAPPING: GEOTRONICS SURVEYS

TWR



1714

L44W. L40W. L36W. L32W. L28W. L24W. L20W. L16W. L12W. L8W. L4W. L0

BL 1S 2S 3S 4S 5S 6S 7S 8S 9S 10S 11S 12S 13S 14S 15S 16S 17S 18S 19S 20S 21S 22S 23S 24S 25S 26S 27S 28S 29S 30S

L21G

DONALD L63G

KEY CITY L37G

TONY L18G

N.T. L43G

"XL" L15G

LENORA L35G

TYEE L26G

HERBERT L20G

PHIL L110G

ROAD TO RIVER

C.F. GROUP 27

C.F. GROUP 25

DOUBTFULL L87G

"E"

C.F. GROUP 29

THELMA L85G

C.F. GROUP 28

C.F. GROUP 26

C.F. GROUP 30

IMPERIAL L86G

Mines and Petroleum Resources Assessment Report NO. 1714

MT. SICKER MINES LTD.

E.M. SURVEY SECTION No. 2

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

SCALE: 1 IN. = 100 FT. JULY 1968

INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET

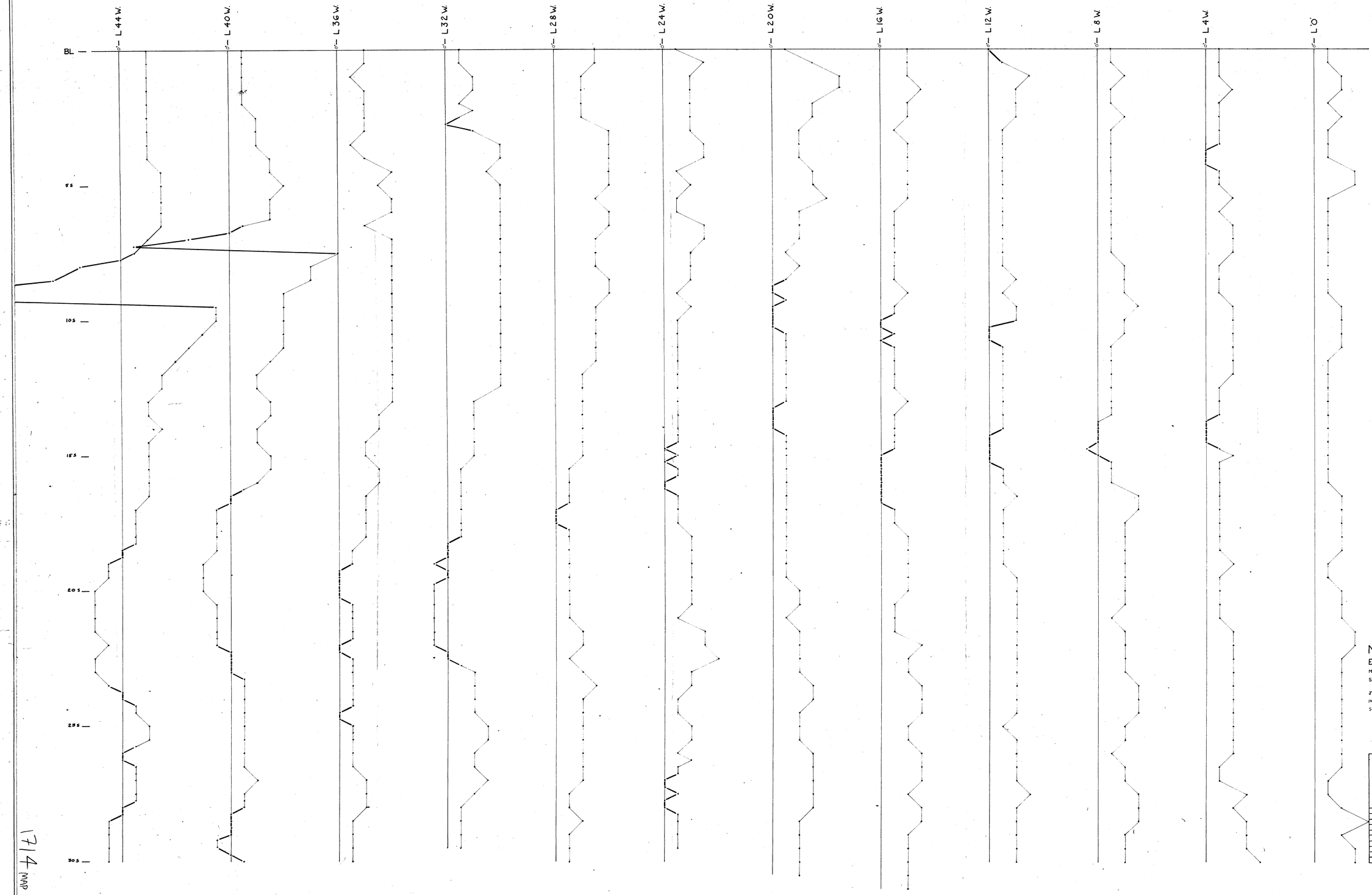
SURVEY AND MAPPING: CLOUTIER SURVEYS T.W.R.

Revised July 17, 1968 T.W.R.

SECTION No. 1	SECTION No. 3
SECTION No. 2	SECTION No. 4

1714

1714 MAP 4



MT. SICKER MINES LTD.

E.M. PROFILE SECTION No. 2

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

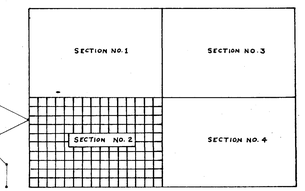
SCALE: 1 IN = 100 FT. HORIZONTAL
1 IN = 10 DEGREES VERTICAL

JULY 1968

INSTRUMENTATION: GEOTRONICS INST. LTD. VLF E.M. SET

SURVEY AND MAPPING: GEOPHYSICAL SURVEYS

T.W.R.



1714

L100G

L55G

"B"

"A"

TYEE
L36G

RICHARD III
L39G

MAGIE FRACTION
L41G

ESTELLE
L53G

MONA
L119G

MOLINE
L50G

BLUE BELL
L51G

BL

L0

L4E

L8E

L12E

L16E

L20E

L24E

L28E

L32E

L36E

L40E

L44E

- 30N
- 29N
- 28N
- 27N
- 26N
- 25N
- 24N
- 23N
- 22N
- 21N
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- 19N
- 18N
- 17N
- 16N
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- 13N
- 12N
- 11N
- 10N
- 9N
- 8N
- 7N
- 6N
- 5N
- 4N
- 3N
- 2N

N

MT SICKER MINES LTD.

E.M. SURVEY SECTION No. 3

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

SCALE: 1 IN = 100 FT NOV 30 1968 JULY 1968

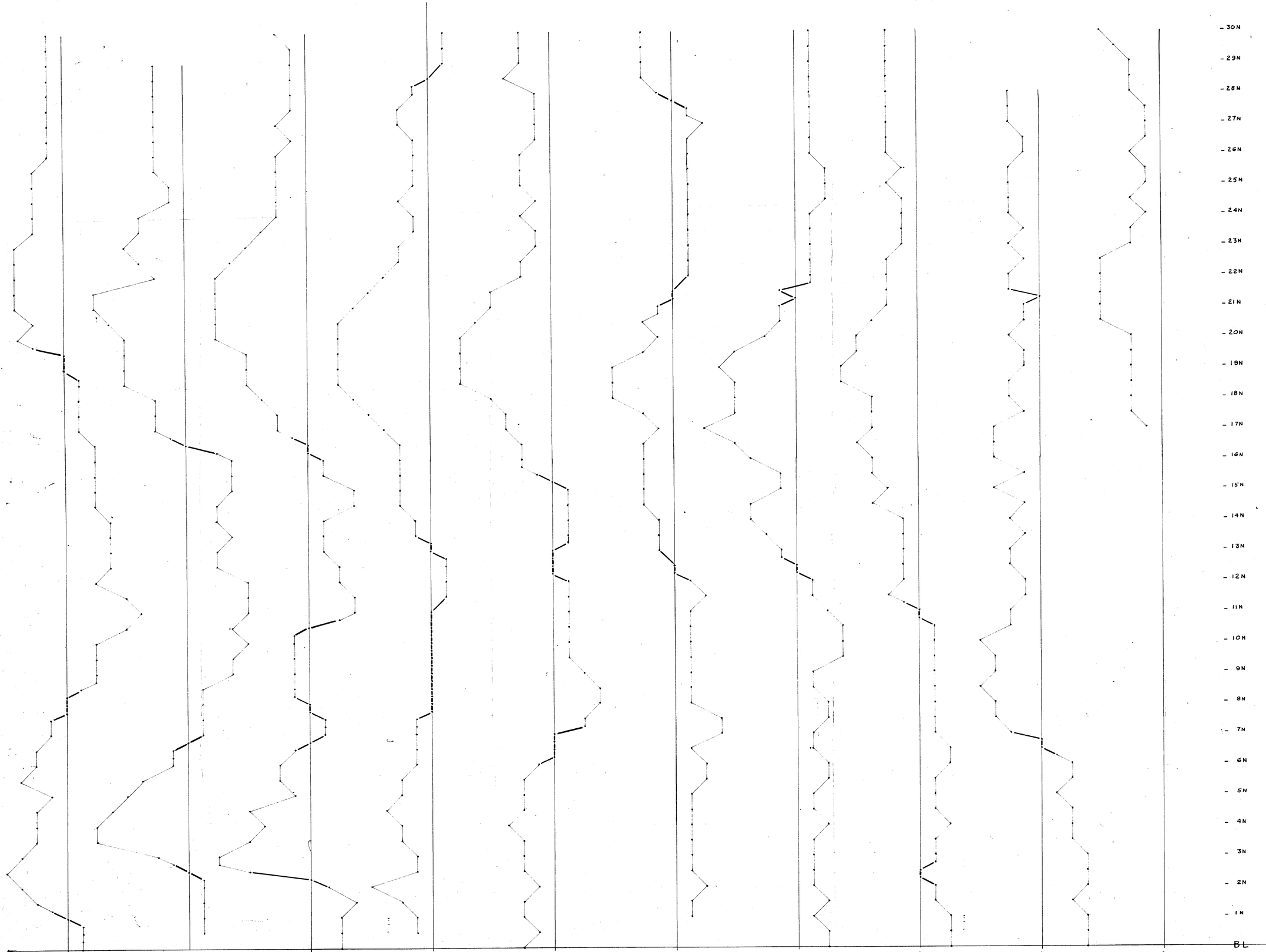
INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET

SURVEY AND MAPPING: GEOTRONICS SURVEYS T.W.P.

SECTION No. 1	SECTION No. 3
SECTION No. 2	SECTION No. 4

1714

1714 07



MT. SICKER MINES LTD.

E.M. PROFILE SECTION No. 3

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

SCALE: 1 IN. = 100 FT. HORIZONTAL. JULY 1968

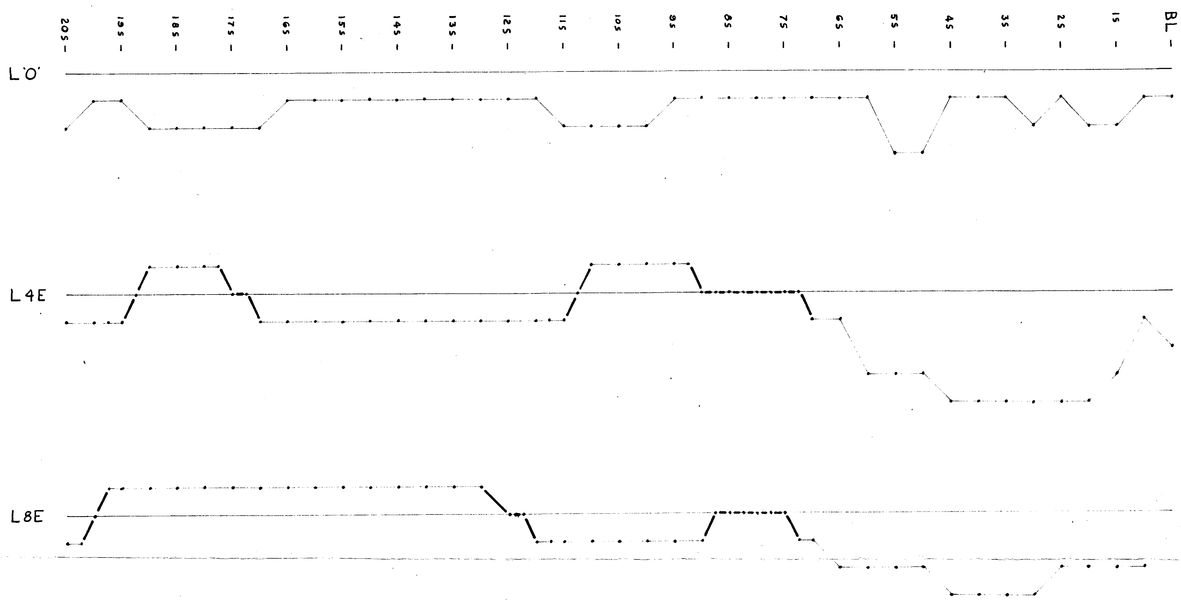
1 IN. = 10 DEGREE VERTICAL

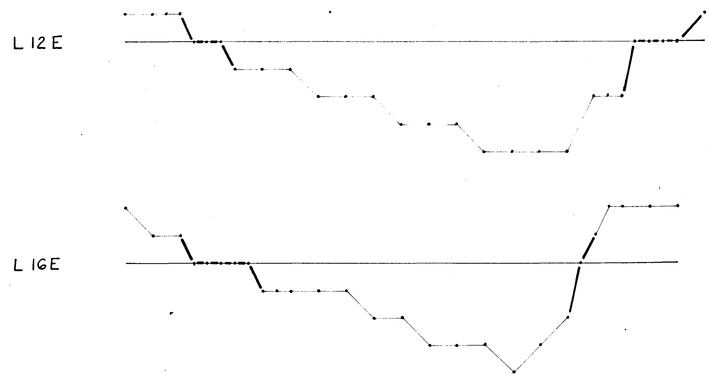
INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. EM SET

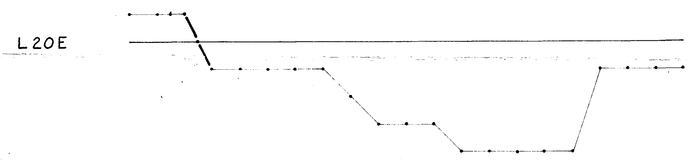
SURVEY AND MAPPING: GEOTRONICS SURVEYS T.W.R.

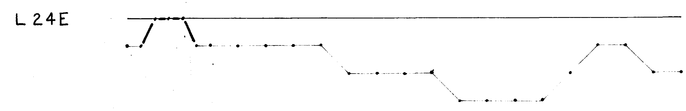
SECTION NO. 1	SECTION NO. 3
SECTION NO. 2	SECTION NO. 4

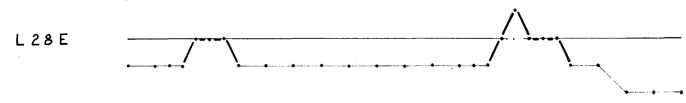
1714 MAP 09

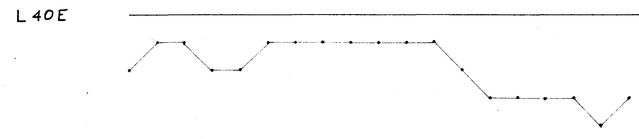


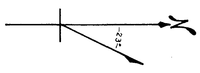












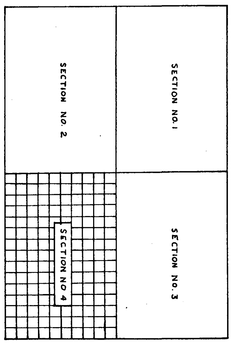
MT. SICKER MINES LTD.

E.M. PROFILE SECTION No. 4

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

SCALE: 1 IN. = 100 FT. HORIZONTAL. JULY 1968
1 IN. = 10 DEGREES VERTICAL

INSTRUMENTATION GEOTRONICS INST LTD. VLF E.M. SFT
SURVEY AND PLOTTING GEOTRONICS SURVEYS T.W.R.



1714

TYEE
L36G

RICHARD III
L38G

ESTELLE
L33G

BL

MAGIC FRACTION
L41G

BLUE BELL
L51G

HERBERT
L20G

MONA
L119G

IMPERIAL
L86G

WESTHOLME
L54G

WESTHOLM FAULT
L59G

THELMA
L85G

L12E

L16E

L20E

L24E

L28E

L32E

L36E

L40E

L0

L4E

L8E

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1714 MAP 10

1714

MT. SICKER MINES LTD.
E.M. SURVEY SECTION No. 4
MOUNT SICKER AREA VANCOUVER ISLAND B.C.
SCALE: 1 IN. = 100 FT. NOV 30 1968 JULY 1968
INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET
SURVEY AND MAPPING: GEOTRONICS SURVEYS T.W.R.

SECTION NO. 1	SECTION NO. 3
SECTION NO. 2	SECTION NO. 4

1714 MAP 10

MT. SICKER MINES LTD.

E.M. SURVEY SECTION No. 5

MOUNT SICKER AREA VANCOUVER ISLAND B.C.

SCALE: 1 IN. = 100 FT. AUGUST 1968 NOV 3 0 1968

INSTRUMENTATION: GEOTRONICS INST. LTD. V.L.F. E.M. SET

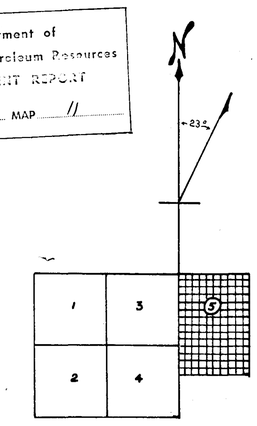
SURVEY AND MAPPING: GEOTRONICS SURVEYS

T.W.R.

E.P. SHEPPARD B.C. LAND SURVEYOR ENGINEER

PROVINCE OF BRITISH COLUMBIA E.P. SHEPPARD ENGINEER

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1714 MAP 11



30N 29N 28N 27N 26N 25N 24N 23N 22N 21N 20N 19N 18N 17N 16N 15N 14N 13N 12N 11N 10N 9N 8N 7N 6N 5N 4N 3N 2N 1N BL. 1S 2S 3S 4S 5S 6S 7S 8S 9S 10S

169 E-N

MOLINE
L 50 G

BLUE BELL
L 51 G

WESTHOLME
L 54 G

DIXIE
L 61 G

GOLDEN ROD
L 44 G

ACME
L 4 G

L36E L40E L44E L48E L52E L56E L60E L64E

F

G

B

1714 MAP 11

MOUNT SICKER MINES LTD.

E.M. PROFILE MAP · section no. 5

MOUNT SICEER AREA V.I. B.C.

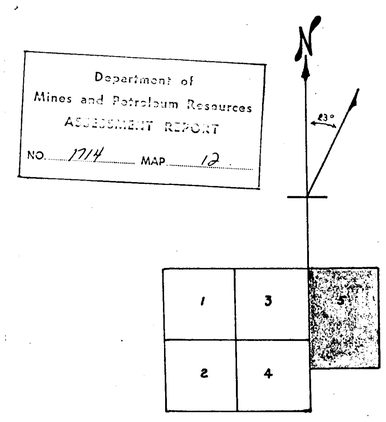
SCALE : 1 IN.= 100 FT horizontal
=10 DEG. vertical

AUGUST 1968

NOV 3 0 1969

Instrumentation: GEOTRONICS V.L.F. E.M. SET.

Mapping and Survey: GEOTRONICS SURVEYS T.W.R.



20 N
29 N
28 N
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17 N
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15 N
14 N
13 N
12 N
11 N
10 N
9 N
8 N
7 N
6 N
5 N
4 N
3 N
2 N
1 N
BL
1 S
2 S
3 S
4 S
5 S
6 S
7 S
8 S
9 S
10 S

L36E L40E L44E L48E L52E L56E L60E L64E

1714
MAP 12