

31M04SW0124 63.185 STRATHY

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May 10th., 1949.

The Directors,
Big Dan Mines Limited,
Room 710 - 36 Toronto Street
Toronto, Ontario.

Dear Sirs:-

REPORT ON RESISTIVITY SURVEY ON PROPERTY OF
BIG DAN MINES LIMITED, STRATHY TOWNSHIP,
TEMISKAMING MINING DIVISION, PROVINCE OF QUEBEC. *Ontario*

The work described in this report was begun on April 1st., when the writer arrived at your property. Actual survey operations were, however, not commenced until April 3rd., due to unforeseen and unexpected delays. Line-cutting started March 24th., when the line-crew left Val D'Or and was completed April 15th., the party returning to Val D'Or on the following day. The heavy bush and sudden onset of spring weather, considerably delayed all operations and when the writer found it necessary to leave the property on April 6th., survey operations had caught up to the line-cutters. Field work was finally completed April 18th., and the survey crew returned to Val D'Or April 18th.

The survey was at the start, supervised by the writer, following which, Messrs. F. W. Brown and J. Eveleigh were in charge.

PROPERTY:

The property of Big Dan Mines Limited is located in the eastern portion of the Township of Strathy, in the Temiskaming

Mining Division, Province of Ontario. It lies about three-quarters of a mile east of No. 11 Highway, some two and one-half miles north of the village of Temagami. The claims are readily accessible from the highway and a road into the property, recently completed by the present management, will be suitable for automobile transportation with very little further work, during the summer months. Your group comprises nine claims, totaling 593 acres, which are numbered as follows:

W.D. 271, T.R.T. 6733-34-35-36-38-39-40 and 41.

The group is bordered on the west by the Holmes and International Nickel claims, while on the south-west a portion of the Hermiston group is contiguous to your boundary.

Topography:

The topography can be described as rugged when compared to the flat muskeg covered area common to the Pre-Cambrian, although the hills are not particularly high. In general, strike valleys are common and cedar swamps extensive over the low ground, while the approach to these are cut by numerous gulleys resulting from surface erosion. The irregularity of the topographic features renders mapping quite difficult and in consequence only the more important expressions have been depicted on the map accompanying this report. The boundaries of swamps are very likely to change with season, and it will be recalled that the survey was carried out during what may be called the wettest season of the entire year, thus, it is obvious that more surface water than is usual was encountered.

A considerable area of rock outcrop occurs on the claims

and while the north-eastern portion is largely drift-covered, the writer suspects that very little difficulty would be experienced in locating rock. The draws and gulleys generally exhibit exposures along their sides and hilltops are covered only with light drift. With the absence of snow, the writer feels that outcrops would be sufficiently frequent to obtain by detailed mapping, a complete cross-section of the geological sequence.

The claims are heavily wooded, mostly with second growth, and slash is extensive. In general, the bush is typical, with cedar and alders in swamps, jackpine on the dry sandy ridges, and spruce, birch and poplar restricted to hill slopes. In some areas, however, fir is quite extensive and very thick. Such occurrences are not alone restricted to swamps as is customary but are most frequent in minor depressions on the higher ground.

Cedar swamp is extensive bordering the eastern part of the creek flowing from between Link and Net Lakes. Numerous such swamps occur in the central and northern parts of the group, while along the shore of Net Lake, which comprises your northern boundary, the ground is generally high and rocky.

Several buildings are present on Claim W.D. 271, which have been recently erected by your company. One such camp is situated on the road near the western boundary of this claim while other camps were under construction at the time of the writer's visit. These are situated on the eastern side of the point of land projecting into Net Lake.

The Ontario Northland Railway crosses the property and a power line traverses the south-eastern corner of the group.

GEOLOGY:

The area is underlain by rocks of the Pre-Cambrian age, and while little specific information on the geological conditions underlying your group is available to the writer, he is familiar with other groups in Strathy Township. Generally, the formation comprises volcanic flows with a north-easterly strike and which have been intruded by Haileyburian diabase, serpentine and peridotite. Following this, the Algoman granites invaded the volcanics and the contact between these two rock types is known to occur on the northern portion of Claim W.D. 271.

A detailed geological and resistivity survey conducted on the eastern claims of Penrose Gold Mines Limited (formerly Manitoba & Eastern) three-quarters of a mile to the west of your boundary, indicated that the volcanics had strikes varying from N. 65°E to N. 60°E. Locally, greater variations were encountered resulting from step-faulting. The strikes of these formations on your group, appear to lie between N. 45°E. and east-west at the granite contact.

Further information on your group available to the writer comes from a map drawn by N. W. Byrne, and which was obtained from the files of Penrose Gold Mines Limited. This plan shows a dyke of Matachewan diabase striking about N. 15°E. and crossing the central portion of W. D. 271. While this was not observed by the writer due to snow conditions, some suggestion of its presence is depicted by the survey.

In the south-west corner of Claim W.D. 271, a dyke of olivine diabase is shown striking N. 45°W., while immediately to the north is a northerly striking porphyry which is assumed to be that in the

north-south fracture zone in which your showing occurs. Investigations of these occurrences may afford some information regarding the ore and its relationship to the fractures which are obviously important as will be shown below.

The ore occurrence on the Trebor Mines Limited property is related to the intersection of a N.25°E. fault and a peridotite tongue. Two gold showings, (No. 1 and No. 2 veins) on the property of Penrose Gold Mines Limited, lie in a N. 25°W. fault, in both cases immediately off the nose of diabase intrusives assumed to be of Halleyburian age. In the former case, the dip of the ore is not related to the fault, however, on Penrose, the fault dips 55° to the east and it is possible that the ore may be localized in one or two competent, but favourable, flows. Obviously, then, the Penrose conditions are similar to those on the Big Dan claims, where the fault strikes north-south and dips at 55° to the west. Unfortunately, this showing is too close to your west boundary for immediate development.

While gold and sulphidebearing zones are known to occur parallel to the formational trend (Sterling vein, on Penrose) it would appear that the more important occurrences are related to favourable horizons which are intersected by transverse faults or fractures. As a rule, the displacement along these fracture zones is very limited and there is a suggestion that the plane of fracture is often discontinuous depending largely on the competency of the formation which it traverses. That is, in one flow the fracture may be offset

10 to 50 feet from its position in the adjacent horizon and this offset will depend entirely on the angle of stress and the degree of relative competency between the volcanic flows,

The writer believes that many more of these north-south tension fractures or faults occur and that they are related to regional strike movement in the nature of shearing or faulting. It has been assumed that the zone along which this movement occurs, lies beneath Link Lake and the creek connecting same with Net Lake, although insofar as the writer is concerned, no drill-hole has ever been put under this depression to investigate this assumption. Topographically, however, the hypothesis appears well-founded because numerous northerly trending topographical depressions seem to emanate to the north from this assumed line of weakness. Should this theory be correct, similar fractures could be expected on the south side of the shear, however, these need not have the same relative trend as those on the northern side. It was for this general purpose that the survey was conducted, i.e., to determine the location and delineation of the strike fault zone and any tension fracture or faults which may be related thereto. Obviously, the intersection of such fractures could be a favourable local for ore deposition.

The ore occurrences in the Temagami Area vary considerably. At Trebor, disseminated copper and nickel has been found approaching commercial grade-tonnage, while on Penrose, the north-south fault zone contains a small gold-copper shoot. In the same fault to the south, the gold occurs with massive arsenopyrite and on the east-westerly

trending Sterling vein on the same property, gold and copper is found in massive arsenopyrite. One small lense of arsenopyrite located by Mr. Paul Hermiston on the Penrose claims last summer, also contains up to 6% zinc as well as appreciable gold assays. This vein is also a strike occurrence. The showing on your claim apparently contains gold-zinc-copper-silver, in arsenopyrite and is therefore somewhat similar to the Sterling vein type although differing from it in strike. The dip is, however, identical with that of the Penrose No. 1 vein on which a 500 foot shaft has been sunk.

While gold showings are widely scattered throughout the area, the absence to date of any producing mine is most certainly due to the general lack of any major structure. Insofar as the writer knows, most gold occurrences are related to weak structural conditions, thus, shoots are short and erratic. A strong control exists on the Trebor claims and the ore there underlies a narrow lake and swamp, consequently, it may be expected that similar structures will be found elsewhere. In the past, however, too much attention has been paid to surface prospecting, the results of which have not been correlated. No detailed geological map of the area exists and prospectors pay relatively little attention to geological structures which could eventually lead to the detection of an ore-body beneath swamps. The writer is convinced that the application of geology and geophysics to the Temagami Area if intelligently applied, can, and will, discover perhaps not mines, but at least other occurrences with better structural

control and mine making possibilities than are now known.

RESISTIVITY SURVEY :

The results of the electrical resistivity survey are shown on Plan No. 1 which accompanies this report. Variations in resistance are depicted by the contour lines and the "high" contour readings represent areas of high resistivity or poor conductivity, while the "low" readings show zones of relatively good conductivity. As with most geophysical methods, the measurements are relative and are expressed in terms of ohms per cubic centimeter. For simplicity in mapping, only the first two or three significant figures are plotted and these must be increased by a factor of 10^3 to express the true resistance measurement. Thus, 50 on Plan No. 1, becomes 50×10^3 , or 50,000 ohms per cubic centimeter.

Sulphide bodies and, fault or shear zones are much better conductors of electrical current than is the rock in which they are found. Massive sulphides are excellent conductors and usually depict a resistance of 5×10^3 or less, while the resistance of fault zone depends on the original resistance of the rock, the degree and width of shearing, and the percentage of moisture and/or mineralization along the fault plane. When wide shear zones are encountered over widths of 200 feet or more, these are usually expressed as a zone of multiple "highs" and "lows", the "highs" representing what may be called islands of lesser sheared rock within the zone.

On Plan No. 1, it may be seen that traverse lines on the northern portion of your claims run in a north-south direction. The writer, upon arrival at the property, decided to have the

lines on the southern part, cut in a south-easterly direction because these would not only cross the strike of the flows, but would also intersect at an angle of any north-south trending fractures parallel to that in which the known gold bearing vein is located.

Plan No. 1 shows a considerable divergence in the strike of the formations. On the point projecting into Net Lake and representing the most northerly tip of your claims, an outcrop of granite was noted. Immediately south of this, the survey shows the formations to have a "strike trend" of east-west and the line so designated near the shore of Net Lake, is believed to very closely approximate the granite contact. It is believed that these east-westerly strikes are probably due to the granite and that this intrusive will dip in a southerly direction beneath the volcanics. Proceeding south across the map area, the formations show an east-west strike near the west boundary with a pronounced swing to the north-east, near the eastern border of the claims. South of the base-line the strike is almost without exception about N. 45°E. In this area, the creek enters your claims from the east, flowing south-west, parallel to the formations until it reaches the shear or fault shown on Plan No. 1, when it swings westerly until approaching the western boundary, it again follows the formational trend. The shear mentioned above, on T.R.T. 8740, shows no evidence of crossing the claims and it must be assumed to terminate at a formation which was relatively incompetent to shearing.

Furthermore, there is no evidence here of north-east shearing which could have displaced it. This zone is not important insofar as massive mineralization is concerned, but it is possible that an auriferous quartz vein could be located therein.

It has been stated under a previous heading that the creek was assumed to occupy a depression which could represent a major zone of east-west movement to which the north-south trending fractures were related. Unfortunately, there is absolutely no evidence of this in the survey results and the writer is forced to conclude that the zone of shear lies to the north. The only continuous horizon across the claims which could represent this fault, is the first "strike" trend depicted on Plan No. 1 immediately north of the base-line. This appears to intersect the "A" fault or vein zone near what appears to be its southern extremity, although such a statement cannot be made with certainty to the proximity of your western boundary in this area.

This sector, and the claims to the west, hold the key to the structural conditions which occur and the writer would recommend that an option be taken on the Hermes claim and the three Hermiston claims to the west and south of the Hermes claim. It is understood that the International Nickel claims unfortunately, cannot be acquired.

The "A" fault, in which your auriferous vein occurs, strikes north and south between line 0-00 and 3-00 E. The resistivity readings over line 0-00 are unusually low and indicate the presence of

an excellent conductor. Since the vein dips west at 55° , this then shows that the indications which were measured on solid rock, came from a depth of between 170 and 200 feet below the rock surfaces. Anomalies "A₁" and "A₂" are also excellent conductors but appear to be more related to strike rather than transverse faulting conditions. This may also be said of Anomalies "B", "C" and "D". The "D" zone appears to be important as it could represent sulphide, and lies within a zone of shear, however, anomalies "B" and "C" are so close to the rock cut on the railway that it is believed they could be investigated from this exposure. Anomaly "E" is somewhat discontinuous from the "A" fault, but the writer has information showing a diabase dyke, which should occur immediately between "E" and the "A" zone and striking north-westerly. The "E" anomaly should be investigated but the final explanation of the structure will depend on work done on the adjoining claims to the west.

Anomaly "F" on the southern claims may be important. It is a good conductor and underlies a cedar swamp, therefore, drilling is the only way it can be further investigated. Its possible importance, apart from its conductivity, lies in its structural relationship to a gentle fold in the strike of the formation.

CONCLUSIONS AND RECOMMENDATIONS

It may be assumed with reason, that the numerous north-south fractures in the Temagami Area, represent tension faults associated with east-west or strike faulting. That these fractures are pre-mineral in age, is proven by the numerous gold and base metal showings which occur within them. The fractures themselves are not always

ore-bearing but where they intersect suitable conditions, structural control favourable for ore-deposition results.

It was previously thought that the main zone of east-west movement was marked by the valley occupied by Link lake and the creek flowing east from the lake. The survey has suggested that this must lie north of the base-line on your claims. The indications suggest that the "A" fault could intersect this fault zone on the Hermes claim and that the Hermes and three Hermiston claims which are contiguous thereto, hold the key to the structure. It is therefore recommended, that an option be obtained to extend the survey over these four claims and simultaneously conduct a detailed geological survey on both the optioned group and the northern and western portion of the Big Dan Holdings.

During the period that this geological survey is being carried out, the "B", "C" and "E" anomalies should be prospected and in the case of the former two, some stripping done. The writer feels that further information on these may be obtained without recourse to expensive drilling. Simultaneously, the east-west shear in the south-east corner of your property should be examined for geological evidence of vein material and structure.

Anomalies "D" and "F" will have to be drilled, however, it would be advisable to postpone this operation until the geological mapping has been completed and the correlation between the geological and electrical results has been studied.

In conclusion, the eastern and southern portion of the claims do not appear of particular interest at this time, and the area of

greatest structural importance, is near your western boundary. The writer cannot express too strongly his belief that immediate steps should be taken to option the four above-mentioned claims, regardless of the International Nickel claims, and that this work should be extended thereon prior to making any large payments. A three or four month option would be sufficient to determine the relative merit of this group, following which, the final decision regarding exercising of the option could be made.

The property is well worthy of further exploration but prior to any diamond drilling program, a detailed geological survey should be undertaken as outcrops are comparatively plentiful and much valuable information can be obtained therefrom.

The writer does not recommend any magnetic work at this time because the diabases are from previous experience in the area, non-magnetic and the sulphides when tested, gave only a very slight magnetic reaction. Furthermore, magnetic profiles have shown that few if any of the flows can be traced, therefore, no magnetic marker horizons present themselves. The strikes of the formations are shown by the present survey much more accurately than could be hoped by magnetic methods.

SURVEY DATA:

Line-cutting on the property was begun on March 24th., and was not completed until April 15th., totaling in all 23 days. The line-cutting crew, consisted of a party of two men and a considerably greater time was required to cut the lines on your group than is usual, due to the thick bush, the rugged terrain and the warm weather

which made snowshoeing difficult. At times it was impossible for the men to work in the afternoon and operations were usually started as early as 5 A.M. before the snow became too soft.

The resistivity party arrived on your property on April 1st., under the supervision of the writer, who left April 6th., following which, Messrs. F. W. Brown and J. Eveleigh completed the survey. This operation was terminated April 15th., the party returning to Val D'Or, April 16th.

A base-line was cut in an east-westerly direction and tied into the township line between Strathy and Cassels Townships, from which lines were cut on the northern portion of your property in a north-south direction. This work had been done before the writer's arrival at the property, after which it was decided to out lines in a south-easterly direction in order that what was assumed to be east-westerly trending formations, might be intersected as well as north-south fractures which cut across these formations.

The number of man-days recordable for assessment work on this survey is as shown below.

OPERATION	MAN-DAYS (8 Hrs.)	ATTRIBUTABLE AS ASSESSMENT WORK
Line-cutting	69x4	276
Setting spreads	10x4	40
Operating	22x4	88
Field mapping	6x4	24
Office and supervision	3x4	12
Office, drafting & typing	5x4	20
Packing	7	—
Travelling	9	—
TOTAL	131	410

A total of 24 miles of line were cut on the group, including

Handwritten notes on the left margin: 320, 460, 260, 180, 260.

Handwritten notes on the right margin: 1800 ft. d., 58 ft. d. 63 ft. d.

Handwritten calculation: $\frac{3}{5} \times \frac{460}{5} =$

Handwritten calculation: $\frac{302300}{5} = 60460$

Handwritten calculation: $\frac{460}{3} = 153.33$

Handwritten calculation: $\frac{40}{1350} = 170$, $\frac{170}{180} = 160$

three-quarters of a mile to the north and south which were used for the electrode spreads. The readings as shown on Plan No. one, are expressed in terms of electrical resistivity as ohms per centimeter cubed. Each of these figures must be multiplied by a factor of 10^3 , thus, in the case of 100, the final reading becomes 100×10^3 , or 100,000 ohms per centimeter cubed.

A total of 2,020 electrical readings were taken at 50 foot intervals along the traverse lines cut on your property.

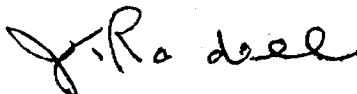
The approximate position and location of the claim boundaries on the northern portion of your group were readily located, the western boundary of course, comprising a survey line between International Nickel claims and Claim W.D.271. In the case of the southern claims however, the claim lines were not so readily located. The south-eastern corner post was found on the township line between Strathy and Cassels Townships and a tie line was run in a westerly direction from this point. Some confusion however, seems to exist in the claims comprising the small group to the south-west and here as is shown by the map, some corner posts have been located, however, in one instance the No. 1 tag is misplaced. It was assumed that the south boundary of this south-western corner group should be east-west, however, as is shown, the claim line into which the survey was tied, runs considerably south of west.

It is probable that the increase in the size of these claims accounts for the additional acreage contained in the group, that is, the difference between 550 and 592 acres. Again, the western boundary of this south-west corner group was determined only by a blazed line

which was located and which is shown on the map. Plan No. 1 also shows the theoretical location which you will note differs considerably from the actual claim lines observed.

Yours very truly,

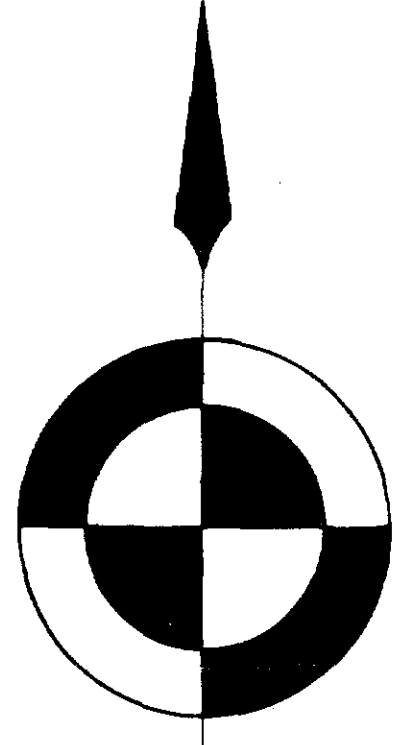
GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

A handwritten signature in cursive script, appearing to read "J. T. Randell".

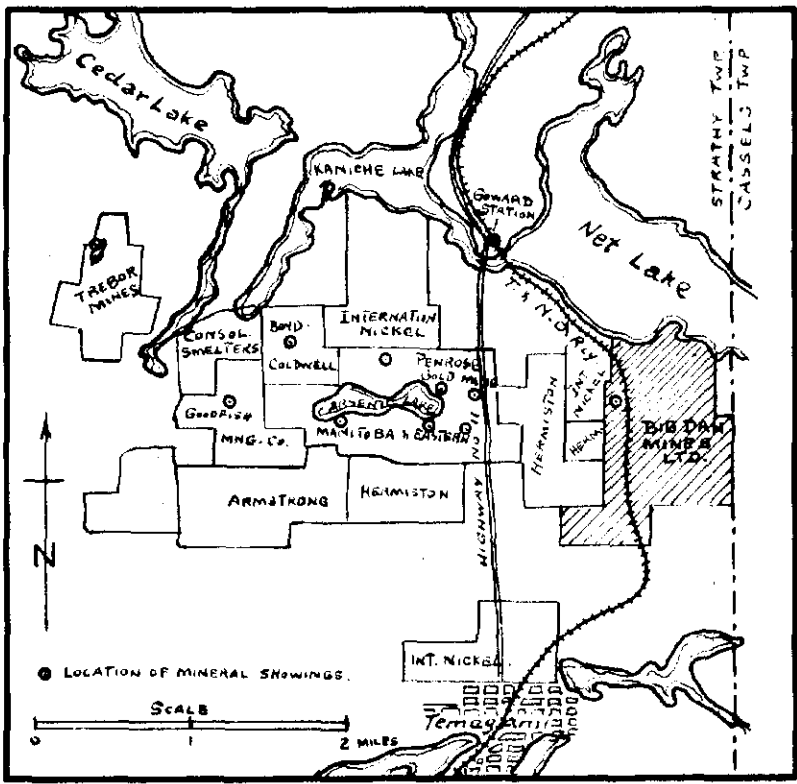
J. T. Randell - President.

NET LAKE

185



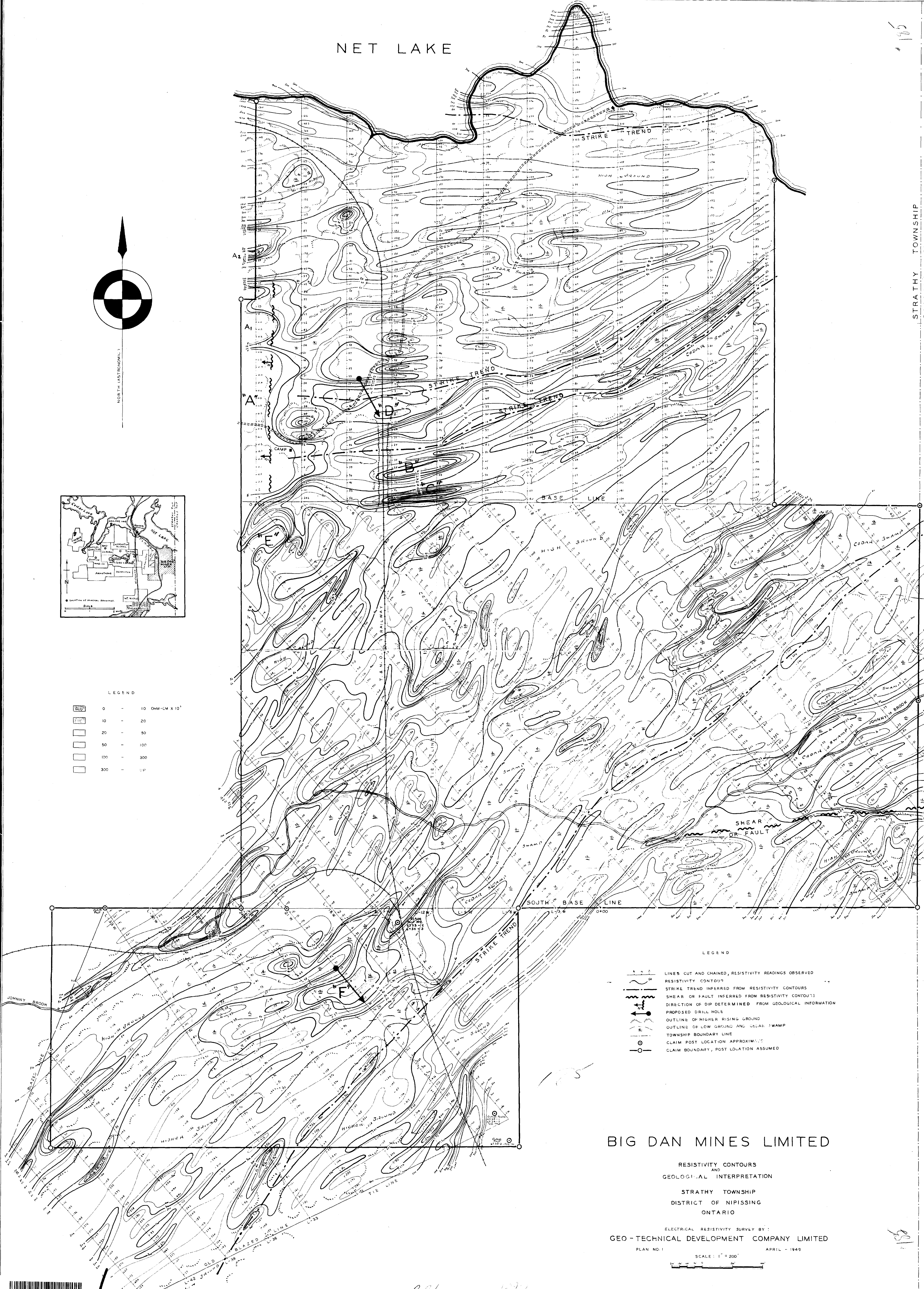
NORTH (ASTRONOMICAL)



STRATHY TOWNSHIP
CASSELS TOWNSHIP

LEGEND

0	-	10	OHM-CM X 10 ³
10	-	20	
20	-	50	
50	-	100	
100	-	300	
300	-	UP	



LEGEND

	LINES CUT AND CHAINED, RESISTIVITY READINGS OBSERVED
	RESISTIVITY CONTOUR
	STRIKE TREND INFERRED FROM RESISTIVITY CONTOURS
	SHEAR OR FAULT INFERRED FROM RESISTIVITY CONTOURS
	DIRECTION OF DIP DETERMINED FROM GEOLOGICAL INFORMATION
	PROPOSED DRILL HOLE
	OUTLINE OF HIGHER RISING GROUND
	OUTLINE OF LOW GROUND AND USLAR SWAMP
	TOWNSHIP BOUNDARY LINE
	CLAIM POST LOCATION APPROXIMATE
	CLAIM BOUNDARY, POST LOCATION ASSUMED

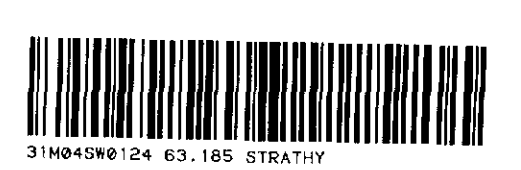
BIG DAN MINES LIMITED

RESISTIVITY CONTOURS
AND
GEOLOGICAL INTERPRETATION

STRATHY TOWNSHIP
DISTRICT OF NIPISSING
ONTARIO

ELECTRICAL RESISTIVITY SURVEY BY:
GEO-TECHNICAL DEVELOPMENT COMPANY LIMITED

PLAN NO. 1 SCALE: 1" = 200' APRIL - 1949



200

281 277

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