D O M I N I O N G U L F C O M P A N Y

INTERPRETATION OF ELECTROMAGNETIC SURVEY DATA

Jamieson I

Porcupine-Kirkland Area Ontario.

J. H. Ratcliffe Feb. 4, 1955.

INTRODUCTION

Over a period of a year and a half, the Dominion Gulf Company has acquired a group of 27 contiguous claims lying in Lots 10, 11 and 12 Concessions 2 and 3, Jamieson township, and 7 adjoining claims in Robb township to the west. These claims were staked in order to permit systematic examination of an area which appears to be favourably located with respect to the copper-zinc ore body exploited during 1943-45 by the Hollinger - controlled Kam-Kotia Copper Mines. The Kam-Kotia ore, which was mined by open pit methods, was an intimate mixture of pyrrhotite, pyrite, chalcopyrite and sphalerite. Geophysical surveys by Jones, indicated that the ore was highly magnetic, and moderately conductive. The ore occurs as a pod near the sheared contact between rhyolite and andesite flows. From the strike of the formations in the vicinity of the open pit, it was reasonable to assume that the same contact would occur on the Dominion Gulf Company property.

Field work conducted by Dominion Gulf Company geologists during the summers of 1953 and 1954 was successful in locating a few scattered rock outcrops on the property. The rock types found consisted of rhyolite, andesite, breccia, gabbro and diabase. Two shear zones were found, one of which was mineralised with pyrite. It is estimated, however, that rock outcrop comprises less than 1% of the surface area of the claim group. Thus the problem of locating an ore body on the property, if such exists, becomes one of applied geophysics.

A ground magnetometer survey of the property was carried out in an attempt to determine the structural relationships existing between the various rock types known to occur on the property. Unfortunately several north-south trending diabase dyke anomalies interfere with the patterns produced by the country rocks thus rendering the magnetic interpretation of the area more difficult. Two major shear zones were interpreted from the magnetic data, however, and the hope that these shear zones might be mineralised along some portion of their course, was aroused.

Test surveys of the Kam-Kotia deposit and the adjoining New Kelore showings proved that these sulphide occurrences responded to electromagnetic methods. It was therefore proposed to test the more favourable portions of the Jamieson I claim group as constituted at that time, with an electromagnetic survey, in an attempt to locate any buried metallic conductors.

The survey equipment consisted of a vertical hexagonal transmitting coil, having a radius of 9 feet, powered by a 3,000 watt, 1,000 cycles per second gasoline motor-driven generator, and two circular, 14 inch diameter receiving coils, mounted on tripods, and fitted with miniature amplifiers and earphones.

The transmitter was set up at a particular station on one picket line and pointed at successive stations on another picket line, which were occupied in turn by the receiving coils, in such a manner as to "fan" across the interpreted strike of the formations. Two angles were measured, the "strike" angle, and the "dip" angle. The "strike" angle is the deviation of the direction of the electromagnetic field from the vertical plane containing both the transmitter and receiver, and is measured in a horizontal direction. The "dip" angle is the angle of tilt of the electromagnetic field measured from the horizontal about a horizontal line coincident with the plane of the "strike" angle.

In all a total of 921 stations were observed from 9 transmitter locations. In this manner 19 claims were covered in at least a reconnaissance manner.

The data were observed by a Dominion Gulf Company crew under the direction of the author, during the last half of September, 1954. On completion of the survey, the field data were transmitted to the Toronto offices of the Dominion Gulf Company for further processing and interpretation. The survey data are presented on two charts at scales of 1 inch = 400 feet, and 1 inch = 20°, accompanying this report.

SUMMARY AND RECOMMENDATIONS

The results of this survey point out a weakness in the electromagnetic technique. Upon completion of the entire program, it is only possible to say that no conductors were found within range of the apparatus employed. While a number of strong strike angles were observed, these angles may be explained by misorientation factors. No dip angles over 5° were observed during the course of the survey. As a result, it is believed that the survey has resulted in negative information only.

It would be presumptuous to state that since no conductors have been indicated by the survey, no commercial sulphide bodies occur on the property. Such factors as depth and conductivity of the overburden, bulk conductivity of the sulphide body, and the coefficient of coupling between the survey apparatus and the ore body all play important parts. Each one of the factors could easily reduce the response from the ore body to a point below that of the "noise" level, which from experience has been arbitrarely chosen as about 5° for the dip angle.

It is therefore suggested that the potentialities of this property be evaluated in the light of data from other survey methods, which have been conducted on the property, and the program for future exploration be based upon the positive information thus obtained, rather than the negative information gained from the electromagnetic survey.

INTERPRETATION

The results of the survey are plotted on the two charts accompanying this report. It is immediately evident that strong anomalies appear on the "strike" angle chart while the "dip" angle chart is remarkably uniform. In order to explain the strike angle anomalies it is necessary to understand the difficulties encountered in orienting both the transmitting coil and the receiving coil. In order to achieve coplanarity between the transmitter coil and the receiver coil it is necessary to precompute the angles of departure from the reference line - the picket line being

surveyed - for each individual station. A square grid is presumed in most cases in order to permit simultaneous operation of two receiving coils. Thus if the picket lines are non-parallel, or if chainage errors are introduced, anomalies in the strike angle will result. It is obvious therefore, that only in those few cases where "line of sight" orientation can be achieved, is there any guarantee that the strike angle anomalies are valid. As a result, the only purpose in measuring the strike angle is to ensure proper orientation of the dip angle, and possibly to complement the dip angle when anomalous dip angles are recorded. It may be shown that in all cases where large strike angle anomalies were observed, the picket lines were non-parallel or chainage errors were present.

Due to the difficulty of locating the "null" point by means of aural methods - the null may be spread over 10 degrees - it is believed that a dip angle anomaly is significant only if it exceeds 5 degrees and is followed by a dip in the opposite direction of a similar magnitude to form what is known as a normal cross over. No dip angles over 5 degrees were observed during the course of the survey. Several normal type cross overs were observed, but the magnitude of the anomalies involved, generally of the order of 2 degrees, was so small compared with the band width of the null, that pure chance could be responsible for the suggested anomaly.

It is therefore believed that neither the dip angles or the strike angles are significant over the area covered by the survey. This does not mean, however, that no metallic conductors indicative of sulphide deposits are present on the property. From the tests conducted prior to the survey it would appear that an outcropping sulphide body of the Kam-Kotia type would give a dip angle anomaly of about 25 degrees. The New Kelore deposit on the other hand, which appears to be a much smaller body from the limited diamond drilling information available at present, gives a dip angle anomaly of only 10 degrees when buried under 25 feet of overburden. While a direct comparison of the anomalies cannot be made due to the differences in size and composition, the decrease in anomaly magnitude may be significant.

It suggests that 50 feet of overburden may be sufficient to reduce the anomaly magnitude of similar sulphide occurrences to a point within the so-called "noise" level. Other factors which must be considered are bulk conductivity of the sulphide body, and the electromagnetic coupling between the transmitter coil and the sulphide body.

It is evident from the foregoing that this survey cannot be considered conclusive in any respect. This, unfortunately, is a typical characteristic of the electromagnetic method, which often results in obtaining negative results over economic concentrations of the very sulphide ores which it was designed to detect, due to the limitations which have been previously mentioned. It is therefore impossible to condemn a property on electromagnetic data alone.

JHR/bj

J. H. Ratcliffe.

ATTACHMENTS

1. Dominion Gulf Company Chart, Electromagnetic Survey, Dip Angles, Jamieson I, Jamieson township, Porcupine-Kirkland Area, Ontario, Scales 1 inch = 400 feet, 1 inch = 20 degrees, dated October 15, 1954.

2. Dominion Gulf Company Chart, Electromagnetic Survey, Strike Angles, Jamieson I, Jamieson township, Porcupine-Kirkland Area, Ontario, Scales 1 inch = 400 feet, 1 inch = 20 degrees, dated October 15, 1954.

References

1. W. A. Jones, "Experience With Some Electrical and Magnetic Methods of Prospecting," Trans. C.I.M.M., Vol. L, 1947, pp. 537-557.

2. Dominion Gulf Company Report, Interpretation of Electromagnetic Survey Data, Robb I, Porcupine-Kirkland Area, Ontario, by J. H. Ratcliffe, dated Jan. 28, 1955.

D O M I N I O N G U L F C O M P A N Y

DETAILED GEOLOGY - JAMIESON I

JAMIESON TOWNSHIP

BASE MAP 42A/12S

PORCUPINE - KIRKLAND ONTARIO

C. G. MACKINTOSH SEPT. 28, 1954.

SUMMARY

The Jamieson I claim group comprises 22 unpatented claims in Lots 9, 10, 11 and 12, Concession 2 and 3, Jamieson Township, Ontario.

The claims are located about 13 miles northwest of the Town of Timmins and are accessible by the Timmins, Kamiskotia Lake road and the Little Kamiskotia River.

There is little surface relief on the claims. Outcrops rise to a maximum height of about 25 feet above the general level. Rock exposures are small and scattered, and occur only in the south part of the claim group. They occupyabout 1.5% of the total area.

The exposed rocks are chiefly volcanic formations comprising fragmental rhyolite, rhyolite, fragmental andesite, andesite and dacite.

The volcanics are intruded by small bodies of basalt and gabbro and by northerly trending diabase dikes. Pillow attitudes indicate that the volcanic formations occur on the southwest limb of a northwesterly trending syncline.

Flows outcropping southwest of the claim group are chiefly andesites, while those occurring to the northeast are rhyolites. The contact zone apparently strikes through the claims, where andesite and rhyolite are interbedded.

A fault, striking N-40°W, is indicated by a 15 foot width of breccia in the southwest corner of claim No. P-37884.

Small blebs and disseminations of pyrite and pyrrhotite occur in the southwest part of claim No. 37882. The mineralization occurs in moderately sheared andesite adjacent to a contact with rhyolite. The shearing strikes northwesterly parallel to the formational trend. Moderate carbonatization is associated

with some of the mineralization

INTRODUCTION

The Jamieson I claim group comprises 27 claims numbered P-37641, P-37647 to P-37654, P-37676 to P-37678 and P-37680 to P-37689. They are located in Lots 9, 10, 11 and 12, Concessions 2 and 3, Jamieson Township.

The claims lie about 13 miles northwest of the Town of Timmins and are accessible by the Timmins - Kamiskotia Lake road and the Little Kamiskotia River.

Geological mapping was done during the months of August and Sept., 1954 by R. Lemire, H. Johnston, P. Temple, A.K. Temple and C. G. MacIntosh. A thorough search was made for outcrops. Stripping and trenching in the outcrop areas preceded mapping.

Ground magnetometer and electromagnetic surveys are in progress on the claims at the present time.

TOPOGRAPHY

Much of the claim group area is nearly flat. The only appreciable relief is provided by the depressions, up to about 30 feet in depth, occupied by the Little Kamiskotia River and Godfrey Creek.

Forest growth consists of spruce, balsam, poplar birch and alder. Most of the spruce south of the Little Kamiskotia River has been cut.

Where observable, the overburden is fine sand and clay.

GEOLOGY

Table of Formations:

Intrusives

Matachewan
Diabase

Haileyburian
Gabbro

Basalt

Extrusives

Keewatin
Fragmental rhyolite

Rhyolite

Fragmental andesite

Andesite

Dacite

Description of Formations:

A diabase dike, exposed in the west part of claim No. 37653, trends N-25W and is over 100 feet in width. In some places it has a spotted appearance, owing to the presence of large feldspar phenocrysts.

A small exposure of gabbro occurs in the southwest part of claim No. P-37884. It is medium to fine grained, and grey-green in color. Megascopically, the principal constituent minerals appear to be feldspar and pyroxene. Minor amounts of pyrite and magnetite occur as accessories. This formation has a dull, altered appearance.

In the southwest part of claim No. P-37882 the volcanics have been intruded by a fine grained, black, altered basic rock. This basaltic intrusive has very fine grained contacts. In the north part of the exposure area there are large and small inclusions of fragmental rhyolite. Chlorite and occasional quartz grains are the only minerals recognized. The quartz may have been introduced.

Fragmental rhyolite outcrops in the south part of claim No. P-37882 and the central part of P-37888. This formation consists of light colored, cherty, angular fragments in a slightly darker, fine grained siliceous matrix. The fragments are usually aligned in the direction of the formational trend. The fragments vary in size, the largest pieces having maximum dimensions of about 18 inches. The weathered surface is light grey in color.

A band of rhyolite lies between the fragmental rhyolite and andesite in the southwest part of claim No. P-37882. It is porphyritic. Small feldspar and quartz phenocrysts are embedded in a fine grained, siliceous groundmass. A narrow band of very fine grained, white weathering, cherty rock occurs along the rhyolite-andesite contact. Similar material forms small irregular lenses in the adjoining andesite. This cherty matter appears to have been intruded.

Andesite outcrops occur on claims No. P-37853, P-37881, P-37882 and P-37888. They are fine to medium grained and light to medium green in color. Fragmental horizons were observed on the tops of some flows. Pillows, amygdules and scoriaceous horizons are the principal diagnostic features.

Dacite is exposed in a few small trenches in the southwest part of claim No. P-37884. It is fine grained, massive and dark green or black in color. Small quartz grains are observable in a hand specimen. It breaks with conchoidal fractures.

STRUCTURE

Faulting, Schistosity, Shearing

Apparent faulting is indicated by a 15 foot width of breccia in the southwest part of claim No. P-37884. This fault is vertical and strikes N-40°W. There is no mineralization associated with the breccia.

Displacement of the rhyolite andesite contact in the southwest part of claim No. P-37882 maybe explained by a fault, striking northeasterly and later

occupied by the basaltic intrusive.

Minor lineations are evident on most of the volcanic rock exposures. The schistosity is nearly vertical and varies in strike from N70°W to N45°W.

There is moderate shearing in the southwest part of claim No. P-37882. The shear planes strike about N55°W, parallel to the trend of the volcanic formations.

Folding

Owing to the scarcity of outcrops the major structural pattern can only be tentatively indicated. Contacts and flow structures indicate that the volcanic formations trend in a northwesterly direction. Pillow top determinations indicate that the tops of the flows face toward the northeast. Formational dips vary from nearly vertical to 60 degrees northeast.

METAMORPHISM

Alteration of the andesitic volcanics is evidenced by the development of chlorite.

Metasomatic processes have introduced carbonate in the vicinity of the shear zone in the southwest part of claim No. P-37882.

The phenocrysts in the porphyritic rhyolite may be results of recrystillisation or absorption.

MINERALIZATION

Disseminations and small blebs of pyrite and pyrrhotite are associated with the shear zone in the southwest part of claim No. P-37882. A little chalcopyrite was also observed in this area. Mineralization is most intense in the andesite near the rhyolite contact. Over widths of 12 feet the sulphide content does not exceed 2% of the volume. The host rock appears to be slightly silicified.

C.G.MacI:BJ

C.G. MacIntosh

c.c. Mr. R. D. Wyckoff.

ATTACHMENTS

Dominion Gulf Company - Detailed Geology, Jamieson I, - Base Map 421/12E, Porcupine-Kirkland, Ontario. Scale 1" = 200' (Two Sections - North Half and South Half) - C. G. MacIntosh, September 28, 1954.

REFERENCES

"Geology of the Robb-Jamieson Area" - by L. G. Berry- Ontario Department of Mines Report, Vol. 53, Part 4, 1944.

D O M I N I O N G U L F C O M P A N Y

Interpretation of Ground Magnetometer Survey

Jamieson I

PORCUPINE - KIRKLAND AREA ONTARIO.

J. H. Ratcliffe Nov. 12, 1954.

INTRODUCTION

The claim group consists of 22 claims located in Lots 9, 10, 11 and 12, Concessions 2 and 3, Jamieson township, Porcupine Mining Division, Province of Ontario. The claims were acquired over a period of about one year, beginning in the month of October 1953, in order to permit exploration of an overburden covered area in the vicinity of several promising base metal showings. The best known of these is the Hollinger controlled Kam Kotia Copper Mines, from which 189,064 tons of 2% copper ore were removed by open pit mining operations during 1943 and 1944. The northwestern corner of the Jamieson I property lies less than 3/4 of a mile southeast of the Kam Kotia pit.

A study of the sulphide occurrences at the Kam Kotia revealed at once that the mineralisation lay along the sheared contact between andesitic and rhyolitic flows. The mineralisation consisted of pyrite, pyrrhotite, chalcopyrite, and sphalerite. In high-grade sections the pyrrhotite content also appeared to to increase so that the ore became highly magnetic. This property of the ore immediately prompted consideration of the magnetic method for expleration of the Jamieson I claims. In addition to the direct location of ore by this method, it was hoped that the magnetic data might aid in locating the andesite - rhyolite contact.

Accordingly, picket lines were cut on the property during the spring and summer of 1954, and a ground magnetometer survey carried out during the months of July, August, September and October. The survey was interrupted several times during the season due to pressure of other field assignments. An Askania Schmidt - type magnetic balance having a sensitivity of about 20 gammas per scale division was used in the survey. Basic coverage consisted of stations observed at 100 foot intervals on picket lines 400 feet apart. In anomalous areas additional detail picket lines and stations were added to define the anomalies. In all, a total of 3,119 stations were observed an 33.06 miles of picket line.

The basic data were observed and reduced by a Dominion Gulf Company magnetometer crew under the direction of R. McDonald. On completion of the survey, the basic data, field notes, and field maps were transmitted to the Toronto office of the Dominion Gulf Company for further processing and interpretation. The basic data, together with isomagnetic contours and interpretation are presented on 2 maps having a scale of 1 inch equals 200 feet accompanying this report.

SUMMARY AND CONCLUSIONS

A number of north-south trending magnetic anomalies have been attributed to diabase dykes. Although these dykes are unimportant from an economic stand point, they have led to the interpretation of two strike faults cutting across the claim group in a southeasterly direction. A weak magnetic lineament trending southeasterly from the northwestern corner of the claim group has been assumed to represent an andesitic flow. It therefore represents the strike of the country rock.

A rather unique feature is a north-south trending anomaly having an inverse remanent magnetization. From the strength of the magnetic field associated with this anomaly, it would appear that the rock could be diabasic to gabbroic in composition. While it is probably of little importance from an economic point of view, it is of great interest scientifically.

It is recommended that the results of the magnetic survey be studied in conjunction with the regional geological information in an attempt to delineate structural traps which may control mineralization. In this respect, it is believed that this survey has provided a number of valuable clues which may assist in unravelling the structural problems of the area.

INTERPRETATION

For ease in reference, the anomalous features on the map sheet have been numbered from west to east. It is obvious that the major anomalies outlined by the survey trend generally north-south. A secondary, but important, trend direction is southeasterly. This trend is established by deviations in the north-south

trending anomalies, and, to a lesser extent, by minor magnetic lineaments.

The major anomalies found in the area are all remarkably alike. These anomalies numbers 3, 7 and 17 extend in a general north-south direction across the entire claim group and can be directly correlated with diabase dykes known to occur in the area. Anomalies 3 and 7 are remarkably similar in width, intensity, and character. Anomaly 17, however, appears to be much weaker and lacks the distinctive character exhibited by anomalies 3 and 7. While these dykes are of little value from an economic viewpoint, they may be of considerable interest as indicators of structural conditions active in the area.

Anomaly 9 is quite similar in intensity, width and strike to anomalies 3 and 7. However it is cut off in strike extent at both its north and south ends. It is, however, believed reasonable to presume that anomaly 9 is caused by a similar agent to that responsible for anomalies 3 and 7. Anomaly 9 has therefore been attributed to an isolated segment of a diabase dyke.

Several minor anomalies have been grouped under anomaly 16. All of these anomalies are elongated along an axis trending N 25°W, and aligned to form a single N 25°W magnetic lineament, paralleling a similar trend shown by that portion of anomaly 7 lying between 4,000 and 6,000 feet south of the main base line. The similarity in trend direction, which is at variance with the trend of the extrusive rocks in the area, has prompted the assumption that anomaly 16 is a minor diabase dyke possibly branching off anomaly 17 near the centre of claim P-37886. It is interesting to note that anomaly 19 is also aligned with anomaly 16, and could therefore be considered as a southeastern extension of anomaly 16, in which case it would be necessary to postulate that the dyke formed by anomalies 16 and 19 was introduced as a separate entity either before or after the dyke represented by anomaly 17.

Another dyke-like anomaly is shown as anomaly 15. This anomaly, lying immediately west of anomaly 16 is unique in that it is formed by a magnetic lineament, the values of which are all well below the regional base level. In order to compare this anomaly with those of typical diabase dyke anomalies, calculations of depth, width and magnetic susceptibility were made along profiles taken from tie line 3 between 56 + 00E and 65 + 00E, and Picket Line 32S between 46 + 25E and 51 + 50E. It was found that anomaly 15 was caused by a body lying about 25 feet below the plane of measurement, having a width of 50 feet and a magnetic susceptibility of - .00879 c.g.s.u. On the other hand anomaly 7 was caused by a body lying 50 feet below the plane of measurement, having a width of 100 feet and a magnetic susceptibility of .0178 c.g.s.u. It may therefore be seen that the magnetic susceptibility of anomaly 7 is about twice the magnitude of that of anomaly 15, but that anomaly 15 is negative with respect to the surrounding country rocks while anomaly 7 is positive. It is reasonable to assume that the country rocks, being rhyolite and andesite have susceptibilities approaching zero. Therefore it is possible to assume that the calculated susceptibilities are at least of the correct order of magnitude and have the correct sign. The calculated susceptibility for anomaly 7 is consistent with the susceptibilities quoted in the literature for such rocks as diabase, gabbro or basalt. No negative susceptibilities of the magnitude of that quoted for anomaly 15 have been discovered to date. It should be recalled, however, that the method used for determining the susceptibility of the rock from the magnetic anomaly produced, actually gives a figure which lumps both the susceptibility and the remanent magnetism together. In many cases the remanent magnetisation is sufficiently small to be neglected, so that a true figure for susceptibility is obtained. In the case of anomaly 15, however, it is at once apparent that the figure calculated for the susceptibility should be more properly referred to as a figure representing inverse remanent

magnetisation of the body causing the anomaly. Very little information is available on the causes of inverse remanent magnetization. Most observers, however, agree that two requirements for such a phenomenon are heating above the Curie point and the presence of titanium in the magma. Since anomaly 15 is closely associated with anomaly 16, it is possible that the heating action was derived from the diabase dyke, at the time of its emplacement. This suggests that the material now causing anomaly 15 was in place prior to the diabase dyke represented by anomaly 16. While it is doubtful that anomaly 15 is of either economic or structural significance, it is sufficiently unique to warrant further investigation, from at least a scientific viewpoint.

The remaining anomalies in the area are for the most part isolated units. Some of them can be connected to form trends consistent with the strike of the country rock. For example, anomalies 1, 2, 4, 5 and 10 lie along a straight line apparently cutting across anomalies 3 and 7 without deviating from their trend of N 45°W. These anomalies probably represent a somewhat basic andesite flow paralleling the strike of the rhyolite horizons.

Anomalies 6 and 8 also follow the N 45°W trend, but appear to be slightly offset by the diabase dyke represented by anomaly 7. Anomalies 6 and 8 could, therefore, be either original andesitic interflows or offshoots from the diabase dyke along interflow contacts. Since there is no other evidence to prove or disprove that some movement has occurred along the present path of the diabase dyke indicated by anomaly 7, both interpretations must be considered.

Anomalies 11, 12 and 13 occurring in the extreme southwestern corner of the claim group may be considered together. Anomalies 11 and 12 may be directly correlated with outcrops of andesite cutting into the rhyolite flows. It is therefore safe to predict that anomaly 13 is also caused by andesitic material.

Near the southern limit of anomaly 7, the anomaly becomes broken up into several units, cut by lows. From geological considerations, it is apparent that the magnetic highs on the northeastern flank of anomly 7 are caused by gabbro intrusives, while the lows are caused by isolated block of rhyolite. It is therefore suggested that anomaly 14 which lies a short distance northwest of the gabbro outcrops is also caused by gabbro.

It has been pointed out that anomaly 19 may be considered the southeastern extension of the diabase dyke represented by anomaly 16. Anomaly 18 is somewhat similar to anomaly 19 and can perhaps be regarded as an offshoot trending southeasterly from anomaly 17. Its limited strike extent perhaps signifies that the country rocks in this area are relatively competent thus limiting the flow of the diabasic magma along interflow horizons.

Several points of structural significance may be pointed out. Near the southern limit of the claim group, anomaly 7 takes a sharp bend to the southeast, from its normal north-south trend. This warp in the path of the diabase dyke may be correlated with a strike fault discovered during geological mapping.

A similar warp is seen on the northern part of anomaly 3. It is therefore suggested that this warp also represents a strike fault. If this fault is continued southeasterly it will be found to cut anomaly 7 at a sharp bend located at 40 +00S, 48 + 00E. Further to the south-east it would fall along the southern termination of anomaly 9, and cut anomaly 17 in a section where the available data suggests an interruption. It is recognized, however, that insufficient data were obtained on anomaly 17 to determine whether the anomaly is, or is not, continuous. In any case, there appears to be powerful supporting evidence for the existence of a strike fault extending southeasterly from the northern part of anomaly 3. It should perhaps be pointed out that the diabase dyke might take a similar path along a flow contact, but the termination of anomaly 9 suggests that the structure is more likely a fault.

Faulting in a north-south direction has been suggested as a means of correlating anomalies 6 and 8. The similarity between the warps in anomalies 3 and 7 was suggestive that these warps might be controlled by the same structure. This would require a movement of west side north at some point between anomalies 3 and 7. The continuity of the trend established by anomalies 1, 2, 4, 5 and 10 tends to negate this hypothesis however. It is therefore, suggested, that the north-south breaks along which the diabase dykes have been introduced, did not produce any great movements, and that two strike faults are present in the claim group.

No evidence of folding can be seen in the magnetic data, except perhaps in the eastern part of the area where the strike shown by anomalies 6 and 8 becomes more southerly as indicated by the strike of anomalies 18 and 19. Since anomalies 18 and 19 have been previously attributed to diabasic material, it is perhaps in order to suggest that these bodies have been injected along flow contacts and thus may be indicative of the strike of the country rock.

JHR/BJ

J. H. Ratcliffe.

REFERENCES

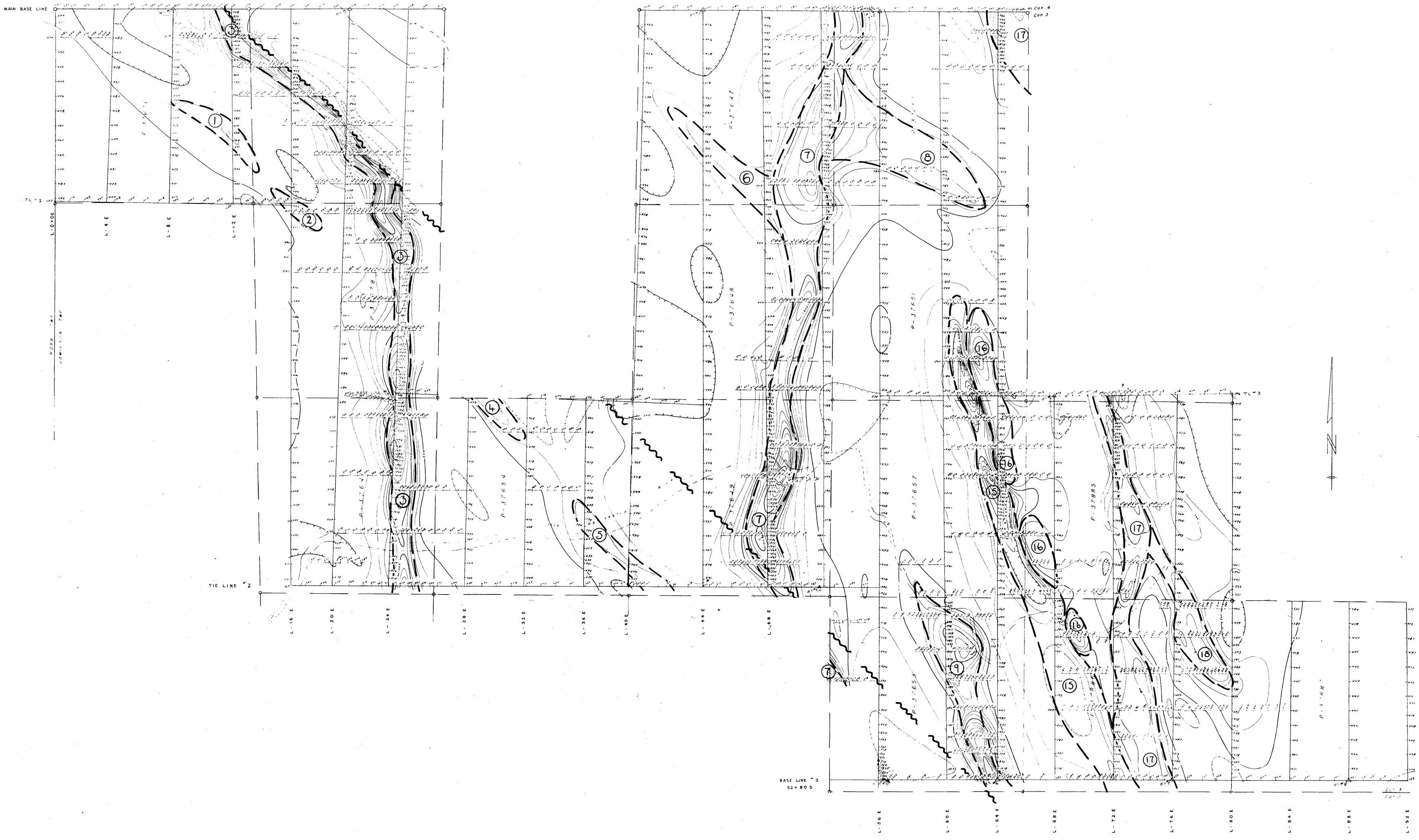
1. Hand book of Physical Constants, edited by Francis Birch et al, Geological Society of America, Special Papers, Number 36 published January 31, 1942.

2. Dominion Gulf Company Report, Reconnaissance Geology, Robb, Jamieson and Godfrey Townships, Porcupine-Kirkland Area, Ontario by C.G. MacIntosh, dated March 6, 1954.

ATTACHMENTS

1. Dominion Gulf Company Map, Ground Magnetometer Survey, Jamieson I, North Half, Porcupine-Kirkland, Ontario, Scale 1 inch = 200 feet, dated Nov. 12, 1954.

2. Dominion Gulf Company Map, Ground Magnetometer Survey, Jamieson I, South Half, Porcupine-Kirkland, Ontario, Scale 1 inch = 200 feet, dated Nov. 12, 1954.



LEGEND

Anomaly Contact

Fault

(3) Anomaly Number

DOMINION GULF COMPANY

GROUND MAGNETOMETER SURVEY

JAMIESON I

NORTH HALF

PORCUPINE-KIRKLAND, ONTARIO

Scale 1"=200' Nov 12, 1954

CONTOUR INTERVAL: 100 GAMMAS

L-56E L-60E L-64E L-68E L-72E L-76E L-80E L-84E L-88E L-92E

BASE LINE # 3 (52+80S)

CON 3
CON 2

TIE LINE # 5

TIE LINE # 6

LEGEND

Anomaly Contact

Fault

③ Anomaly Number

DOMINION GULF COMPANY

GROUND MAGNETOMETER SURVEY

JAMIESON I

SOUTH HALF

PORCUPINE-KIRKLAND, ONTARIO

Scale 1" = 200' Nov. 12, 1954

CONTOUR INTERVAL 100 GAMMAS


MAIN BASE LINE
ROBB TWP.
JAMIESON TWP.
L-0+00
L-4 E
L-8 E
L-12 E
L-16 E
L-20 E
L-24 E
L-28 E
L-32 E
L-36 E
L-40 E
L-44 E
L-48 E
L-52 E
L-56 E
L-60 E
L-64 E
L-68 E
L-72 E
L-76 E
L-80 E
L-84 E
L-88 E
L-92 E
BASE LINE #2
TIE LINE #4
BASE LINE #3
52+80 S
Con. 4
Con. 3
Con. 2
P-37676
P-37677
P-37678
P-37641
P-37654
P-37647
P-37648
P-37649
P-37650
P-37651
P-37657
P-37653
P-37885
P-37886
P-37887
Little Kamiskotia River
Portage
Cabin
SYMBOLS
Strike and dip
Schistosity
Fault of appreciable width
Fault plane
Direction of tops of flows
Anticlinal axis
Synclinal axis
Geological boundary - Known
Geological boundary - well defined
Geological boundary - assumed
Exposure boundary
Boundary of outcrop area
Swamp
Tote road
Electric Transmission line
Trench
Picket line
Claim boundary
X 703 Specimen No.
LEGEND
INTRUSIVES
Diabase (D)
Gabbro (G)
Basalt (B)
VOLCANICS
Fragmental Rhyolite
Rhyolite (R)
Fragmental Andesite
Andesite (A)
Dacite (D)
Carbonatization
Mineralization
JAMIESON
Claim Group
JESSOP
GODFREY
MOUNTJOY
Timmins
KEY MAP
Scale: 1 in = 4 mi

DOMINION GULF COMPANY

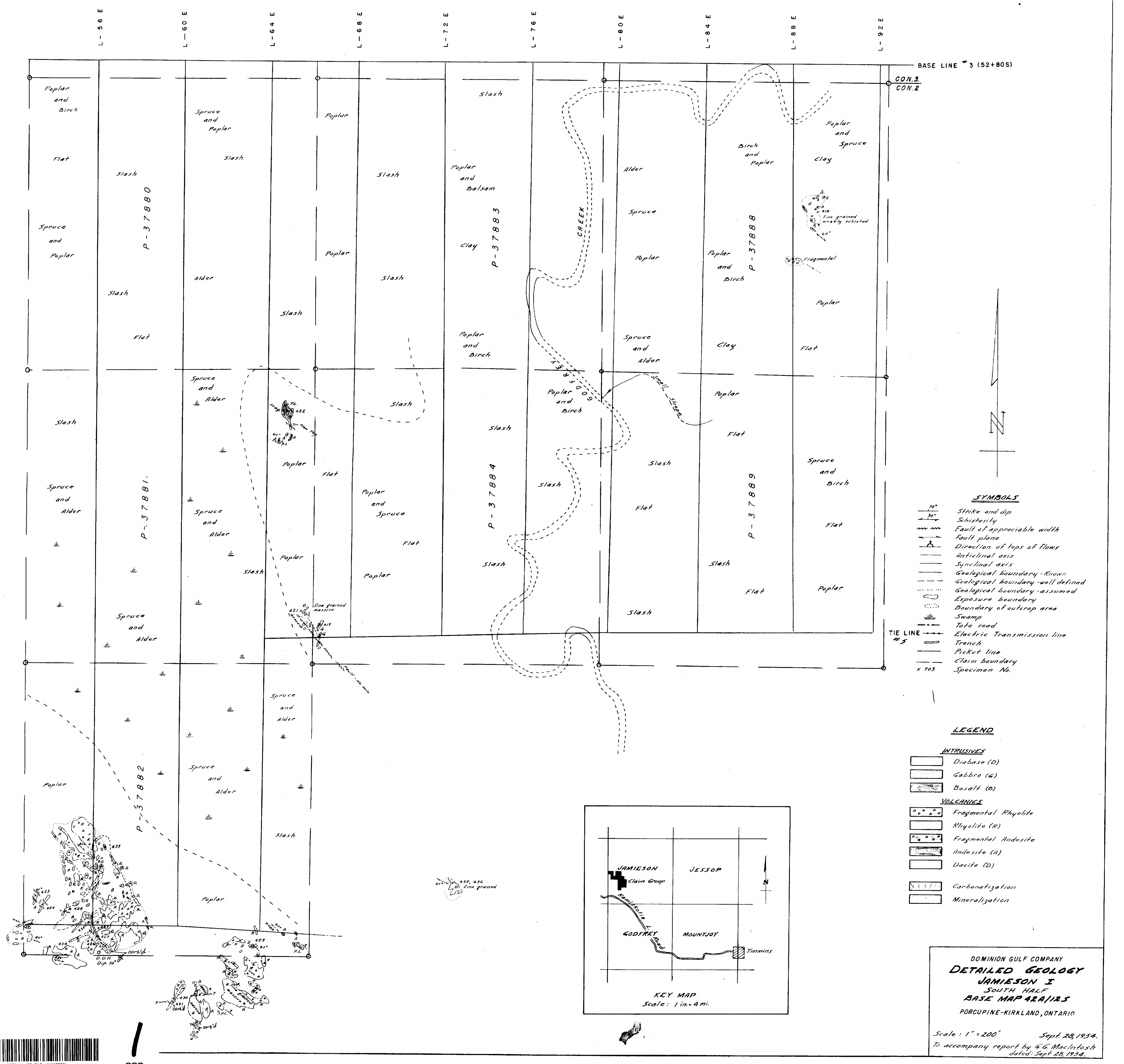
DETAILED GEOLOGY
JAMIESON I
NORTH HALF
BASE MAP 42A/12S

PORCUPINE-KIRKLAND ONTARIO

Scale: 1" = 200' Sept. 28, 1954.
To accompany report by C.G. MacIntosh
dated: Sept. 28, 1954.

515

220



DOMINION GULF COMPANY

DETAILED GEOLOGY
JAMIESON I
SOUTH HALF
BASE MAP 42A/12S
PORCUPINE-KIRKLAND, ONTARIO

Scale: 1" = 200' Sept. 28, 1954.

To accompany report by G.G. MacIntosh dated: Sept. 28, 1954.

230

0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92

LOT 12 LOT 11 LOT 10 CON 4 LOT 9

CON 3

ROBB TOWNSHIP
JAMIESON TOWNSHIP

CON 3
CON 2

DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
DIP ANGLES

JAMIESON T.

JAMIESON TOWNSHIP
PORCUPINE KIRKLAND AREA ONTARIO

Scale 1" = 400'
1" = 20°

Date Oct. 5/1954

To accompany report by J.H. Ridcliffe dated Feb. 4, 1955

0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92

LOT 12 LOT 11 LOT 10 CON. 4 LOT 9

CON. 3

ROBB TOWNSHIP

JAMIESON TOWNSHIP

P-37644 P-37645 P-37646 P-37647 P-37648 P-37649 P-37650 P-37651 P-37652 P-37653 P-37654 P-37655 P-37656 P-37657 P-37658 P-37659 P-37660 P-37661 P-37662 P-37663 P-37664 P-37665 P-37666 P-37667 P-37668 P-37669 P-37670 P-37671 P-37672 P-37673 P-37674 P-37675 P-37676 P-37677 P-37678 P-37679 P-37680 P-37681 P-37682 P-37683 P-37684 P-37685

CON. 3

CON. 2

DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
STRIKE ANGLES

JAMIESON I

JAMIESON TOWNSHIP

PORCUPINE KIRKLAND AREA ONTARIO

Scale 1"= 400'
1"= 20°

Date Oct 5/1954

To accompany report by J.H.Ratcliffe dated Dec.4, 1954