63.942

McPHAR GEOPHYSICS LIMITED

ELECTROMAGNETIC SURVEY

of

BIG DUCK LAKE GROUPS, SCHRIEBER, ONTARIO

for

CANABEL SYNDICATE.

1. INTRODUCTION

At the request of Mr. Leonard Germain, Consulting Engineer for Canabel Syndicate, an electromagnetic ground follow-up survey was carried out over two groups of claims which had been staked to cover a series of airborne electromagnetic anomalies. The location of these two groups, known as the west and east groups, and the intervening claims, under option to Canabel Syndicate, are shown in Figure 1. The program consisted of two stages; (1) reconnaissance surveying of the N-S claim lines to pin point the airborne indications and (2) detail dual frequency surveying on grids cut to cover anomalies encountered in the reconnaissance survey. This report covers the detail surveying.

The geology of the area is covered by the Ontario Department of Mines reports, Vol. XXX, Part 4, 1921 and Vol. XLIX, Part 7, 1940. The geophysical data on the intervening optioned claims (Authiers Option) was made available as an aid in interpreting our results and to assist in compiling an integrated presentation.

2. PRESENTATION OF RESULTS

The results are shown on the accompanying series of maps which are on a scale of 1" to 200'. Maps E4394-1 and -2 cover the West Group and maps E4391-1 and -2 cover the East Group.

3. DISCUSSION OF RESULTS

WEST GROUPS. Map Nos. E4394-1 and -2

Several conductive zones have been outlined by the detail survey of this group. These have been labelled alphabetically. A number of weaker isolated anomalies also are shown on the maps, but these are considered to be of secondary importance at present and have not been included in the discussion.

ZONES A-1 and A-2

A zone of good to excellent conductivity has been traced from the eastern boundary of the west group to 54SOS of Baseline No. 2 on line 120W and undoubtedly continues farther west. To the west of line 64W, the zone seems to represent a single conductive band, while east of this line it appears to be due to two separate conductors which have been labelled Zones A-1 and A-2.

Detailed investigation is suggested for the following areas in the vicinity of these conductors:- 1. Line 96W to 104W. 2. Line 72W to 76W from 6+00S to 2+00N of Baseline No. 2. 3. The area east of line 60W to the edge of the claim group in the vicinity of both Zones A-1 and A-2. These areas are considered to be of primary importance because of the indicated structural variations.

ZONE B

Zone B is a series of weak conductors which lies in the vicinity of Snake Lake. It is considered of secondary importance at present.

ZONE C

This zone has been traced from 20+25N of Baseline No. 2 on line 76W eastward to 15+75N on line 48W. Further work is recommended on its eastern end in the vicinity of lines 48W and 52W where the zone appears to be nearest surface or of best conductivity.

ZONES D and E

These two zones have been outlined east of the lake located in claim 85674, and one or the other probably represents the extension of Zone C.

Zone D has been traced from 2+50N of Baseline 1 line 36W, to 5+00N line 24W. Zone E is a parallel zone which lies approximately 500' south and probably continues east of the surveyed area.

Both zones display good to excellent conductivity and are near surface. Surface investigations or trenching of both zones on line 32W should reveal the cause of the anomalies.

EAST GROUP. Map Nos. E4391-1 and -2

This claim group is separated from the west group by approximately one mile. The intervening area, consisting of some eighteen claims, are under option to Canabel Syndicate. The results of an earlier electromagnetic survey of this optioned property have been made available to us for purposes of correlation.

Three main sub-parallel conductive zones were indicated on the East Group and these have been correlated with Zones A-1, A-2 and E mentioned above. (see figure 2) These three zones appear to be continuous across the optioned property from the East to the West Group.

ZONE A-1

This zone, which continues across all three properties; appears to coincide with the pyrite-quartz band indicated on Hopkins map (ODM Vol. XXX, 1921). The conductivity on the East Group is good to excellent throughout its length, although it appears to be at considerable depth between lines 20E and 30E, and has been interpreted to continue under the lake. Detailed investigation of the following areas is recommended:-

1. Lines 32E - 36E. Near surface, excellent conductivity
2. Lines 44E - 50E. Two parallel conductive bands
3. Lines 62E - 78E. Numerous conductors suggesting complex structure of perhaps large widths.

East of line 80E the zone appears to be linear and of uniform conductivity.

ZONES A-2 and A-3

Zone A-2 has been interpreted to continue from the West Group through the optioned claims eastward under the lake and has been outlined on the East Group. The zone is of good to excellent conductivity and has been traced at least as far east as line 68E.

Zone A-3 consists of a series of weak indications which lie between Zones A-1 and A-2.

Further work on Zone A-2 is suggested in the vicinity of lines 32E and 34E where it appears to be near surface and between lines 46E and 56E where Zones A-2 and A-3 appear to join.

ZONE E

This zone of good to excellent conductivity has been interpreted to extend across all three properties more or less continuously. It has been traced on the East Group to the lake in claim 85681 and may correlate with Zone F. Further work should be carried out from the ice of the lake to determine if this interpretation is correct, since folded or faulted structure would necessarily then be present. Detailed investigations should also be carried out between lines 16E and 24E where strong near-surface indications were obtained, and near the west boundary of claim 85684 where the axes suggest a sharp offset of the zone and the presence of minor overburden.

ZONE F

This zone of good conductivity has been traced from the lake-shore on claim 85681 at least as far east as line 58E. It appears to plunge or weaken to the east, although reconnaissance work on 600 foot lines suggest it may continue as far as line 90E. A preliminary examination should be undertaken between lines 39E and 44E.

ZONE G

This zone has been interpreted from a series of weakindications on reconnaissance lines at 600 foot intervals. It appears to parallel Zone F between lines 66E and 90E and is considered to be of secondary significance.

ZONE H

A series of weak indications near the south shore of South Pine Lake have been correlated to form this zone. On the basis of the electromagnetic results, it is considered to be of secondary significance.

ZONE J

A series of conductors striking approximately east-west has been traced from 11+25N Baseline No. 2, line 94E to the eastern end of the claim group. Indications approximately 200 feet south on lines 108E, 112E and 116E possibly represent a localized subparallel band.

Although the indications are weak on each band suggesting relatively thick overburden, this zone displays moderate to good conductivity and further work is suggested on both limbs, between lines 108E and 114E.

ZONE K

A series of scattered weak indications were obtained within 300 feet of Baseline No. 2 between lines 86E and 116E. Some or all of these occur in the vicinity of a large swamp and the zone may be due to this material.

CONCLUSIONS AND RECOMMENDATIONS

A number of conductive zones striking approximately east-west have been established on the properties held by the Syndicate. Three of these (A-1, A-2 and E) have been interpreted to extend across all three groups and sulphide mineralization (locally massive) has been found in association with at least one (Zone A-1).

Assuming that the remaining zones encountered are due to similar mineralization, the problem is to locate areas within the conductors which will contain economic mineralization.

On the basis of conductivity, several zones have been suggested as warranting further work and specific areas within these zones have been selected on the basis of indicated structural changes.

The following program to evaluate the properties is recommended.

1. A geological survey of the entire block with particular attention to the specific zones mentioned above.

2. Magnetic and geochemical profiling, where practical, in the vicinity of the anomalies should supplement the geological mapping.

The results of these combined surveys should be carefully assessed before planning any additional extensive drilling or geophysical programs.

McPHAR GEOPHYSICS LIMITED

Frank Clifton

F. T. Clifton,
Geophysicist.

D. B. Sutherland
per [signature]

D. B. Sutherland,
Geophysicist.

DATED: August 14th, 1957.

2 PIE IX BOULEVARD TEL RAYMOND 2-3771

Leonard Germain

B.A., A.R.C.S. (ENGLAND)

CONSULTING ENGINEER

MINING & CHEMICAL

MEMBER OF THE CORPORATION OF PROFESSIONAL ENGINEERS OF QUEBEC

MEMBER OF THE C.I.M.M. AND A.A.A.S.

Montreal. December 30th, 1957
CANADA

Lt.Colonel Gustave H.Rainville, President
Canabel Syndicate
Suite 1 - 2
1121 Sherbrooke Street West
MONTREAL, Que.

42E03SE0025 63.942 UPPER AGUASABON LAKE 020

Dear Sir:-

You will find attached hereto a combined electromagnetic and geological map of the East Group of mining claims held by your Syndicate in the Big Duck Lake Area of Western Ontario. This map, which is in two sections bearing Nos. E-4391-1 and E-4391-2, is on a scale of 200 ft. to 1 inch and, was originally issued by McPhar Geophysics Limited as an electromagnetic map of that group. The surface geology and some topographical features have been added on to it in an attempt to facilitate the interpretation of the various electromagnetic anomalies found thereupon.

This group of mining claims was staked last February to cover some strong and extensive electromagnetic anomalies which had been indicated on that ground as the result of an airborne survey executed in November 1956 by Aerophysics Limited over an area of some 225 square miles. In early summer of 1957, a ground electromagnetic survey was executed by McPhar Geophysics Limited and, indicated a total of about eight (8) miles of linear anomalies of good to excellent conductivity.

To prospect 8 linear miles of "conductors", one of which had a length of over two miles, constituted a job of some magnitude. It was, then, decided to carry out a surface geological survey and, at the same time to look for indications of mineralization along the conductive zones. This work was done by Mr.J.O.Stewart under the immediate supervision of the writer and, assisted by Dr.J.P.Nowlan who acted as Consulting Geologist.

Although the present map could only be considered as preliminary in nature as, certain geological features could not be positively identified, this mapping has established that:

(a) one of the most extensive "conductor" is due to sulphide mineralization;

(b) the geology of the property and, its apparent structure, are definitely favorable to the existence of base metal mineralization; and

(c) the syngenetic pyrite mineralization, which is widespread on the property, is not in itself conductive whereas, the epigenetic sulphides, such as pyrrhotite, are good conductors.

(d) Moreover, no graphite has been found in sufficient concentration to account for anyone of the conductive zones;

(e) It is also quite probable that Zone "A-1", which has a length of over 2 miles, is due entirely to sulphide mineralization and, occurs in very close proximity to the south contact of a large quartz-feldspar porphyry mass.

There is, therefore, reason to believe that additional work is fully justified in the expectation that it might possibly bring to light a commercial base metal deposit along some sections of the presently indicated "conductors".

-o-o-o-o-o-o-o-o-

SURFACE GEOLOGY

All the consolidated material exposed at the surface of the property is pre-Cambrian in age. More than 70% of the property area is covered with various thicknesses of unconsolidated material of Recent age and consisting of Pleistocene sand, gravel and boulderry clay.

Of the consolidated rocks, the greatest development consists in an alternation of Keewatin volcanics and sediments, conformably interstratified, of varying thicknesses, trending roughly North-70°-East and dipping steeply to the North. This complex was later intruded by diorite, gabbro, granite, quartz and feldspar porphyry, and finally by diabase dykes.

TABLE OF FORMATIONS

QUATERNARY	
Pleistocene:	Sand, gravel, boulder clay;
PRECAMBRIAN	
Keweenawan:	Diabase dykes and sills.
Post-Keewatin(Algoman):	Quartz and feldspar porphyry; Granite, granite gneiss and pegmatitic granite. Diorite and gabbro.
(Intrusive Contact)	
Keewatin:	Volcanic Group: Basic to intermediate lavas and pyroclastics; altered to hornblende schists; including beds of garnetiferous schists; Minor acidic tuffs;
	Sedimentary Group: mica garnet schists; narrow bands of pyritic tuffs; some beds of iron formation(banded quartz and iron pyrite).

In mapping the property, the author has followed closely the nomenclature given by M.W.Bartley in his report on the Big Duck-Aguasabon Lakes area(1). His description of the rock types encountered on the pro-

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(1) Bartley, M.W. - "Geology of the Big Duck-Aguasabon Lakes Area" Ont.Dept. of Mines; Vol.XLIX, Part VII, 1940.

perty, and, their areal distribution, could be summarized as follows.

K E E W A T I N

By far, the greater portion of the property area is underlain by Keewatin-type rocks forming an alternating series of volcanics and sediments which, for present purposes, has been separated into six different lithological units as follows:

U N I T	FORMATION	THICKNESS
I	Sediments	1,200' plus
II	Volcanics	200'
III	Sediments	400'
IV	Volcanics	900'
V	Sediments	1,200'
VI	Volcanics	600' plus

the sequence being given from north to south across the property.

On account of intense metamorphism, both sediments and volcanics have been completely altered the former consisting now mainly of mica-garnet schists and, the latter to hornblende schists which are assumed to be derived from basic to intermediate lavas and associated pyroclastics.

Unit No.I consists of sedimentary schists and gneisses which have been granitized to some extent. This unit underlies the northern part of the property area and, has been traced continuously across the two map sheets.

Unit No.II is made up of basic tuffs which have been identified discontinuously from the western boundary of the property to the lake on Claim T.B.85681 on the western map-sheet.

Unit No.III appears as a separate unit on the western map sheet on account of the presence of Unit No.2 but, merges with Unit No.1 on the eastern portion of the property. Where identified as a separate unit, it is found to consist of mica-garnet schists with a dew tuff bands.

Unit No.IV has been traced entirely across the property but, exhibits its greatest thickness immediately to the south of South Pine Lake towards the east boundary of the property. It consists of basic tuffs including many amphibolitic lenses and, a few thin flows. The amphibolitic lenses generally follow the bedding but, in some case they are found to cut across at small angles.

Unit No.V is characterized by a paucity of outcrops and, by the presence of widespread acidic intrusives which have destroyed the greater part of this belt. Where observed it is seen to consist of tuffs, slates, pyritized iron formation and lenses of arkosic material. It also includes a narrow band of acidic tuffs and, a series of well-bedded, apparently water-lain tuffs.

Unit No.VI underlies the southern part of the property down to its southern boundary. It is made up of basic tuffs which appear to extent to the south beyond the south boundary of the property.

POST-KEEWATIN (Algoman) INTRUSIVES

The rocks of the Post-Keewatin intrusives consist of three types: diorite-gabbro, syenite porphyry and granite gneiss. The last two are definitely post-Keewatin but there still exists some doubt as to the age of the diorite-gabbro.

Diorite-Gabbro: A 1,000-foot long, sill-like mass of gabbro occurs within Unit No.III close and parallel to its contact with the volcanics of Unit No.IV immediately to the north of Loon Lake in the western map-sheet. This intrusive is undoubtedly a sill.

On the other hand, a dyke-like band of gabbro has been mapped in line L52E, 100 ft. south of the base line where it is reported to intrude some syenite porphyry with both contacts conforming in strike with the general strike of the Keewatin rocks. Similarly, an occurrence of gabbro has been mapped in contact with syenite porphyry in a small outcrop lying to the east of L-60E at 140 ft. south of the base line. At that point, however, the line of contact shows quite an appreciable diffenence from the strike of the Keewatin rocks.

Three additional, small outcrops of diorite-gabbro have been mapped along line L-26E, at 1,100 ft. north of the base line where they occur in the sediments of Unit I.

Syenite-Porphyry: This intrusive is very widespread within the sedimentary Unit No.V which it has almost entirely obliterated with the exception of a thin band along both contacts with the adjoining volcanics on each side.

This syenite porphyry mass has also invaded the volcanics lying between a small pond and a creek lying in the northwest quarter of mining claim T.B.85576 within the eastrern map sheet.

Granite & Granite Gneiss: These two rock types are limited in occurrence to the eastern end of the property. Granite has been found in contact with volcanics in a small outcrop found along a creek flowing south from South Pine Lake in line L-98E at 1,600 ft. north of base line No.2 - Another outcrop has been mapped along the western shore of the lake. Both occurrences appearing within the volcanic belt of Unit No.IV. Two larger groups of outcrops have been found within the sedimentaries of Unit No.V, to the south of South Pine Lake, but, their relationship with the adjoining syenite porphyry could not be definitely established as the two formations were not found in contact with each other.

KEWEENAWAN

Diabase Dykes and Sills.- A large diabase dyke has been traced sporadically for a distance of almost 3,000 ft. in an easterly direction from line L-39E to line L-66E. This dyke, trending roughly with the strike of the Keewatin rocks, is definitely within the sediments of Unit No.V in the eastern map-sheet but, on account of the paucity of outcrops, it is presently impossible to tell if it has crossed the contact and occurs within the volcanics of Unit No.IV in the western map-sheet, where it follows a crooked course.

A second series of outcrops of fresh diabase have also been found between lines L-84E and L-90E within the southern belt of volcanic rocks. Their areal disposition would suggest a strike slightly north of west towards the contact between Units V and VI and, their relative proximity across low ground to the dyke previously described would suggest that it might be a continuation of the latter. However, there is not sufficient field evidence to definitely establish this point.

STRUCTURAL GEOLOGY

The alternation of volcanics and sediments underlying the property area lies at the base of a monoclinal fold extending across a width of about 4 miles and having a total length of about 18 miles constituting a roof-pendant within a large granite batholith. This entire greenstone belt appears to be the south limb of an overturned anticline, the north limb having been obliterated by the north granite batholithic intrusion. From the close proximity of the south contact of this granitic intrusion, it is inferred that the axis of the original fold must have been very close if not within the property area.

Within the property area, both the sediments and volcanics have a general strike of N-70deg.-E., and dip steeply to the north. No field evidence has been found yet to indicate a plunge one way or the other within the Keewatin rocks on the property.

Foliation and bedding planes in the tuffs are essentially parallel.

Faulting.

Contacts between the various Keewatin units are sharp whereever exposed, and, in some cases,appear to be fault zones.

From a study of the aerial photographs, quite a number of faults would appear to cut the pre-Keweenawan formations. Suck faults would seem to consist in both strike-faults coinciding with geological contacts, and also, some northwesterly-trending cross-faults. The present field evidence is not considered sufficiently good to justify plotting of the faults on the attached map but, the attitude of the diabase dykes would tend to confirm the above-mentioned observations. It seems that the diabase dyke followed for about 3,000 feet at the contact between lithological units Nos.IV and V was mostly emplaced along a strike fault but, a sudden twist in its strike between lines L-44E and L-46E would suggest that the dyke might have followed a cross-fault for a short distance.

Remarks

The iron formation mapped on the property is not the kind usually associated with this term, namely: banded magnetite and quartz, although certain magnetometer results obtained over the property would tend to indicate the existence of such bands. In the present case, the term has been used to denote banded quartz and pyrite as explained in the legend.

ECONOMIC GEOLOGY

On the first page of the present report it was explained that this property, along with others in the neighbourhood, had been acquired following strong electromagnetic indications given by an airborne survey. A detailed ground E.M.survey had confirmed such indications as can be seen on the attached map of the property. Geological work, general prospecting and surface trenching disclosed some highly encouraging facts which could be summarized as follows.

(a) The lithological unit No.IV was found to carry a considerable amount of pyrite throughout;

(b) The contact between Units Nos.V and VI appears to be a zone of weakness of potential significance as it coincides with a strong electromagnetic conductor which has been traced entirely across the property for a length of over 2½ miles. Wherever exposed, this zone contains appreciable amounts of pyrite and pyrrhotite, sometimes in massive quantities.

(c) Moreover, for the entire length, this zone runs along the south boundary of a large intrusive mass of feldspar porphyry. Bartley(op.cit.) is of the opinion that "the mineral deposits around Big Duck and Little Duck lakes are genetically related to these porphyry intrusions".

(d) From the geological information gathered, there is reason to believe that most of the E.M.conductors are not due to graphite but, rather, to sulphides of epigenetic origin. In fact, the syngenetic pyrite was found to be a poor conductor where tested with an ohmmeter.

(e) An argentiferous galena find has been made 500' north of the base line along line L-48E. in decidedly interesting geological conditions. Limited geochemical work has indicated the presence of base metals in the immediate neighbourhood.

(f) A total of 8 linear miles of conductors has been indicated by McPhar Geophysics Ltd. on this property, and, the concensus of opinion of McPhar's geophysicists is that most of these conductors are due to sulphide mineralization, heavy or massive, in the absence of graphite.

(g) Owing to heavy overburden at critical points, it has so far been impossible to definitely ascertain the actual cause of such E.M.conductors except, at certain isolated points along Zone A-1.

C O N C L U S I O N

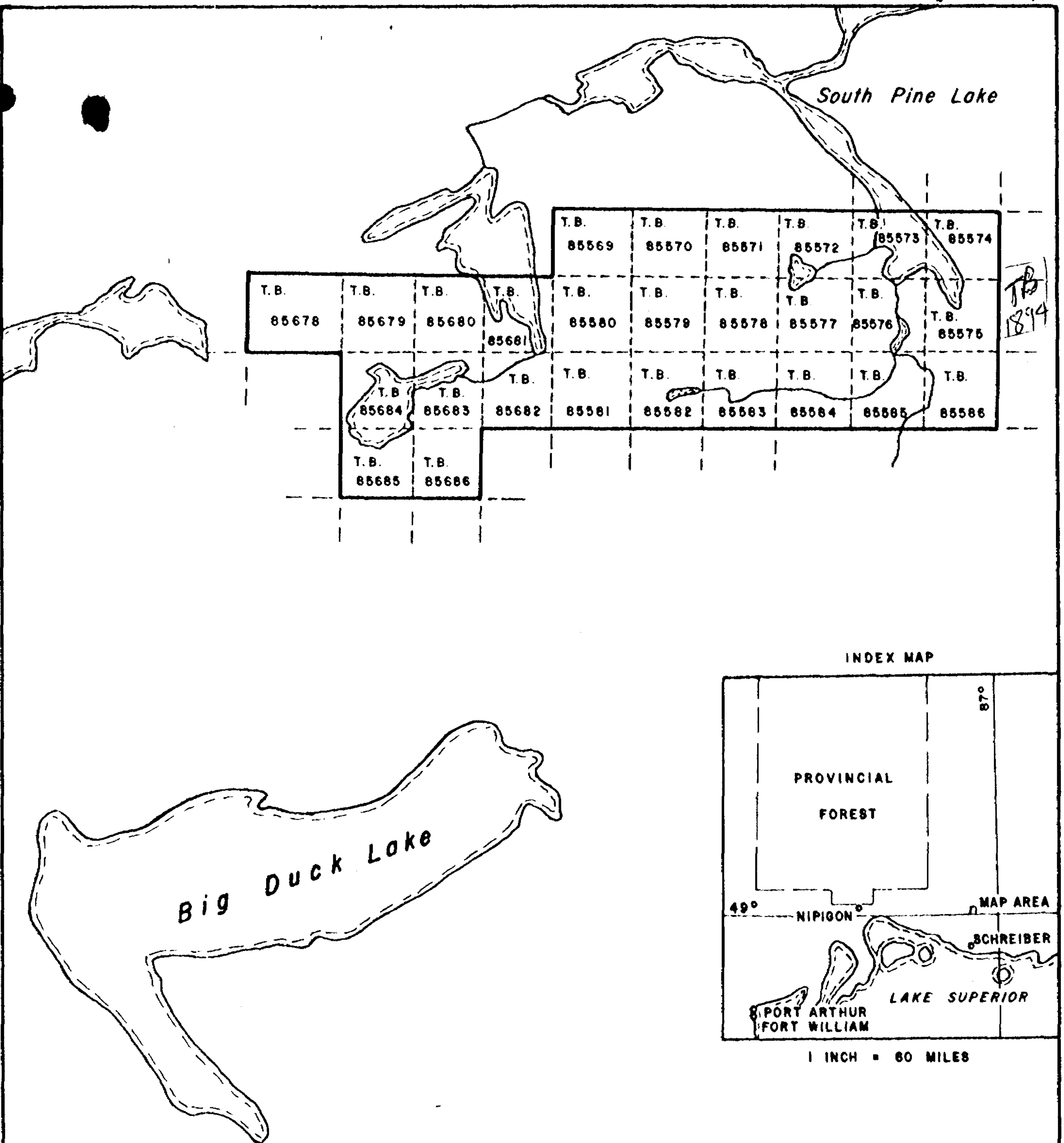
The potential for the existence of base metal deposits of commercial importance is, therefore, great on this property, and, means should be worked out to find them with the least exploration expenditures. On the other hand, the large number of anomalies and their respective lengths will require an appreciable amount of capital for their adequate probing. It is my firm belief that moneys spent for this purpose would be well spent.

Respectfully submitted

L. Germain

L. Germain, P.Eng.
Cons. Engineer

PROFESSIONAL ENGINEER
LEONARD GERMAIN
PROVINCE OF QUEBEC



VALMONT MINING EXPLORATION LTD.

Reproduced from the official claim map of the Ontario Dept. of Mines dated October 9th., 1957 showing location of mining claims.

PROFESSIONAL ENGINEER
PROVINCE OF QUEBEC

Scale: 40 chains to one inch

KEY PLAN

Map No. 1

062 PIE IX BOULEVARD

TEL. RAYMOND 2-3771

63.942

42E03SE0025 63.942 UPPER AGUASABON LAKE

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Leonard Germain

B.A., A.R.C.S. (ENGLAND)

CONSULTING ENGINEER

MINING & CHEMICAL

MEMBER OF THE CORPORATION OF PROFESSIONAL ENGINEERS OF QUEBEC

MEMBER OF THE C.I.M.M. AND A.A.A.S.

Montreal, February 24th, 1958
CANADA

Lt.Colonel Gustave H.Rainville, President
Canabel Syndicate
Suite 1 - 2
1121 Sherbrooke Street West
MONTREAL, Que.

Dear Sir:-

Please find attached hereto a combined electromagnetic and geological surface map, in two sheets, covering the West Group of mining claims held by your Syndicate in the Big Duck Lake area of Western Ontario. This map embodies all the geological field work that was executed last summer on this group of mining claims.

The two sheets are on a scale of 200 ft. to 1 inch, bear the respective numbers of E-4394-1 and E-4394-2, and, were originally issued by McPhar Geophysics Limited as an electromagnetic map of the West Group to accompany their report dated August 14th, 1957.(1) The surface geology and some topographical features have been added to facilitate the interpretation of the various electromagnetic anomalies found thereupon.

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(1) McPhar Geophysics Limited: "Electromagnetic Survey of Big Duck Lake Groups, Schreiber, Ontario for Canabel Syndicate." August 14th, 1957.

Canabel Syndicate:- Big Duck L.Project(West Group) - Cont'd)

This West Group consists of the following mining claims:

Nos. T.B.85587 to 85604 inclusive, and, T.B.85669 to 85677 inclusive, Port Arthur Mining Division, Ont.

They were staked late in February of 1957 to cover some strong and extensive electromagnetic anomalies which had been indicated on that ground as the result of an airborne survey executed in November 1956 by Aerophysics Limited over an area of some 225 square miles for the account of Canamine Explorers Limited.(2) Early in the summer of 1957, a ground electromagnetic survey was executed by McPhar Geophysics Limited(op.cit.) which indicated a total of some 4.4 miles of linear "conductors" some of which had yielded good to excellent conductivity. Altogether 6 "conductors" were detected of the following designation and corresponding lengths:

ELECTROMAGNETIC CONDUCTORS

ZONE "A-1"..................	2.0 miles
" "A-2"..................	0.6 "
" "B"	0.4 "
" "C"	0.5 "
" "D"	0.3 "
" "E"	0.7 "

Whereas Zones "B" and "C" showed poor conductivity, Zones "A-1" "D" and "E" indicated very good conductivity on the average with portions of Zone "A-1" yielding maximum conductivity for appreciable lengths.

The geological mapping completed last summer was for a two-fold purpose:

a) to ascertain the geological conditions associated with the "conductors", and also

b) to prospect the ground for the possible presence of mineralized exposures along the conductive zones.

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(2) Aerophysics of Canada Limited:- "Canamine Explorers Limited - Airborne Electromagnetic Surveys of Schreiber-Big Duck Lake Area, Ont." January 15th, 1957.

Canabel Syndicate:- Big Duck L.Project(West Group) - Cont'd.

This survey was carried out along picket lines cut 400 feet apart and, consisted almost exclusively of field mapping without the benefit of microscopic or other laboratory work on rock specimens. Some geological problems have, therefore, been raised by this procedure and, a glance at the accompanying map will show some obvious ones which only further field work and laboratory studies could solves. Nevertheless, it is believed that the primary objects of this survey have been satisfactorily attained.

All field mapping was done by C.Authier under the immediate supervision of the writer assisted by Dr.J.P.Nowlan who acted as Consulting Geologist and issued his own report.(3)

It is believed that the present mapping has established the following facts:

(a) Zone "A-1", which has been traced for a total distance of 2 miles across this Group, appears to be due to sulphide mineralization;

(b) The geology of the property and its apparent structures are definitely favorable to the existence of base metal mineralization;

(c) The widespread pyrite mineralization is mostly syngenetic in origin and not in itself "conductive" whereas some exposures of epigenetic pyrrhotite were found to be good "conductors".

(d) Some graphite was observed at a number of points, more particularly in association with slate bands, but never in sufficient concentration to account for the conductivity associated with it;

(e) There is every reason to believe that Zone "A-1" is a regional feature of considerable potential importance as it has been traced continuously for a total distance of over 5 miles into and across the East Group.(4)

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(3) Dr.J.P.Nowlan:- "Geological Report on Big Duck Lake Claim Group for Canabel Syndicate." Nov.7th, 1957.

(4) L.Germain,P.Eng.:- "Technical Report on Geology of East Group-Big Duck L.Project, Thunder Bay District,Ont." Dec.30th, 1957.

Canabol Syndicate:- Big Duck L.Project(West Group) - Cont'd.

From the foregoing, there is reason to believe that additional work is fully justified on this group of mining claims (West Group) in the expectation that it might possibly bring to light a commercial mineral deposit.

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PROFESSIONAL ENGINEER
LEONARD GERMAIN
PROVINCE OF QUEBEC

SURFACE GEOLOGY

In mapping the property, the author has followed closely the nomenclature and rock descriptions given by M.W.Bartley in his report on the regional geology(5) to which the reader is referred for detailed information. The following Table of Formations is reproduced from his report.

TABLE OF FORMATIONS

QUATERNARY		
Pleistocene:		Sand, gravel, boulder clay;
PRECAMBRIAN		
Keweenawan:		Diabase dykes and sills;
	(Intrusive Contact)	
Post-Keewatin(Algoman):		Quartz and feldspar porphyry; Granite, granite gneiss and pegmatitic granite. Diorite and gabbro.
	(Intrusive Contact)	
Keewatin:	Volcanic Group:-	Basic to intermediate lavas and pyroclastics altered to hornblende schists; including beds of garnetiferous schists; Minor acidic tuffs;
	Sedimentary Group:-	Mica-garnet schists; narrow bands of pyritic tuffs; some beds of iron formation(banded quartz and iron pyrite).

All the consolidated material exposed at the surface of the property is Pre-Cambrian in age. The terrain is extremely rugged in detail with deep valleys and block-like hills. With exception of linear bands along both the northern and the southern boundaries of the property, bed rock exposures are well distributed and cover more than 50% of the property area so that each geological formation is well represented statistically.

Of all the unconsolidated material of recent age covering portions of the bed rock surface, boulder clay is the predominant constituent with occasional small areas of gravel.

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(5) Bartley, M.W.:- "Geology of the Big Duck-Aguasabon Lakes Area" Ont.Dept. of Mines; Vol.XLIX, Part VII, 1940.

Of the consolidated rocks, the greatest development consists in an alternation of Keewatin volcanics and sediments, conformably interstratified, of varying thicknesses, trending roughly N-70°-E. and dipping steeply to the north. This complex was later intruded, first by diorite and gabbro, then by granite, quartz and feldspar porphyry and, finally, by diabase dykes. With the exception of very few isolated exposures, very little evidence has been obtained locally to establish the foregoing geological relationships which are mostly derived from the regional geology.

KEEWATIN

By far, the greater portion of the property area is underlain by Keewatin-type rocks forming an alternating series of volcanics and sediments which, for present purposes, has been divided into four major lithological units as follows from north to south across the property:

UNIT	FORMATION	THICKNESS
I	Sediments,	800 ft. plus
II	Volcanics with some infolded sediments;	600 ft.
III	Sediments,	800 ft.
IV	Volcanics with some infolded sediments;	2,400 ft. plus

On account of intense metamorphism, both sediments and volcanics have been completely altered: the former to mica-garnet schists and, the latter to hornblende schists assumed to be derived from basic to intermediate lavas and associated pyroclastics, with the pyroclastics predominating in the volcanic bands.

UNIT No.I consists of sedimentary schists and gneisses which have been granitized to some extent. This unit, which weathers light brown in colour like Unit No.III, underlies the northern part of the property area and, has been traced continuously across the two map sheets.

UNIT No.II consists predominantly of basic tuffs with minor infolded sedimentary strata more particularly well exposed immediately to the south of Burslem Lake. Although this band has been traced continuously across the two map sheets, most of the infolded sediments were observed only in the west sheet. The volcanics of this band as well as those of Unit No.IV weather dark green.

UNIT No.III has a composition roughly similar to Unit No.I and, has been traced entirely across the two map-sheets. No infolded volcanics were observed within this band which has its greatest width, more numerous and largest outcrops on the western map-sheet.

UNIT No.IV has also been traced entirely across the two map-sheets and, constitutes the broadest lithological unit found on this property, with its greatest development appearing to the south of Snake Lake. Its general composition is similar to Unit No.II but exhibits also more variations with chloritized basic flows, some arkosic bands as well as a fairly wide sedimentary band infolded within this unit. This unit underlies the southern part of the property down to the boundary and beyond. It is also traversed longitudinally by a number of linear depressions and, by a band of iron formation consisting of banded quartz and pyrite. A narrow band of rhyolitic flows has also been traced within this unit on the eastern map-sheet.

The field relations of these various lithological units did not yield any information concerning their relative ages. Wherever observed their respective contacts are sharp and parallel to the schistosity. Tops and bottoms are not definitely known but, from present indications, there appears to be agreement with Bartley that the mica schists seemingly underlie the volcanics.

POST-KEEWATIN(Algoman) INTRUSIVES

The rocks of the Post-Keewatin intrusives consist of three different types, namely: diorite-gabbro, quartz-feldspar porphyry and, granite gneiss. The last two types are definitely Post-Keewatin but the diorite-gabbro group displays some field relations suggesting that it might be in part Keewatin.

Diorite-Gabbro.- Four sill-like bands of gabbro have been mapped: two within the sedimentary Unit No.III, one within the volcanic Unit No.II and one at the contact between Units Nos.II and III. In each case, these bands are trending parallel to the contacts between the Keewatin units. Two of them occurring within the sedimentary Unit No.III are also in line suggesting that they belong to the same mass. One of these two is exposed in lines 28W and 32W in the vicinity of the base line; the second one was observed along lines 48W, 52W, 56W and 60W, west of the lake located on claim T.B.65674. These two masses appear along the same horizon within the sediments and might belong to a single mass as no rock outcrops have been found in the intervening area.

The field relations associated with the other two would seem to exclude the possibility that they belong to a single mass. One of the two has been mapped along lines 84W and 88W some 200 ft. north of the contact between Units Nos.II and III whereas, the second one appears directly at the contact between Units Nos.II and III across lines 100W to 112W, some 400 ft. north of the base line. There are indications of complex faulting in the neighbourhood so that the possibility that both masses might belong to the same body has not been entirely eliminated.

Quartz-Feldspar Porphyry. All the quartz-porphyry intrusions have been found exclusively within the volcanic Unit No. IV where outcrop exposures are widely scattered suggesting a number of small, irregular masses on the western map-sheet and, possibly, a roughly linear intrusion on the eastern map-sheet. Outcrops of quartz-feldspar porphyry are characteristically found in low ground, both on the East Group and on the West Group suggesting the possibility that this intrusive might be more extensive than could be surmised from a study of the present outcrop map. From present indications, the largest mass would seem to underlie most of the swampy ground found on claim T.B.85596 extending possibly to the west under the lake found on claim T.B.85597 with an "outlier" of small extent some 400 ft. to the north along line 104W.

Granite and Granite Gneiss. A single granitic mass has been mapped. It lies south of the discharge of Burslem Lake where it has invaded the sediments of Unit No.1 for a distance of 500 ft. north-south by about 1,600 ft. east-west. Lack of outcrops to the north does not permit to tell whether this mass represents an appendix of the large granite batholith lying to the north or, if it is merely an offshoot from the main mass.

It might be of considerable importance to mention here that a magnetometer survey completed recently over the West Group has detected a highly magnetic zone which has been traced continuously in approximately an east-west direction from the eastern boundary of the group to Burslem Lake with this zone cutting across the granitic mass.

KEWEENAWAN

Diabase. A series of outcrops of diabase have been mapped commencing at the intersection of the base line with line 64W northwesterly to line 88W immediately to the east of Burslem Lake and only a few tens of feet to the south of the granitic mass already mentioned.

The distribution of outcrops do not permit us to say whether they all belong to a single, faulted dyke or to a number of dykes trending N.W. with some offsets. On line 64W at the base line, the dyke has a width of about 100 ft. and strike in the direction of a second outcrop located in line 68W on the sediments-volcanics contact immediately to the east of Snake Lake. This contact appears to be faulted along a fault striking a few degrees west of north with the west side having moved south and, along line 76W another diabase segment has been followed for some 200 ft. in a northwesterly direction to what looked like a second fault trending a few degrees east of north along a depression. This fault indicates a displacement of a volcanics-sediments contact to the south for the west side. The remaining series of outcrops to the northwest seem to be more or less in line but, two sets of diabase outcrops located along line 80W are separated by some greenstone suggesting the possibility of two dykes being present at that point.

STRUCTURAL GEOLOGY

No adequate description can be given of local structural conditions without an outline of the regional structure of whoch they form part. The alternation of volcanics and sediments underlying most of the property area lies at the base of a monoclinal fold extending, according to Bartley(op.cit.), across a width of about 4 miles and having a total length of about 18 miles in an east-west direction, constituting a roof-pendant within a large granite batholith. This entire "greenstone" belt appears to be the south limb of an overturned anticline, the north limb having been completely obliterated by the north granite batholithic intrusion. From the close proximity of the south contact of this granitic intrusion it is inferred that the axis of the original fold must have been very close if not within the property area.

Folding. Locally, the Keewatin stratified rocks have a general strike of N-70°-E. Dips vary from 65 deg. to north to vertical. A few reversed dips have been recorded probably indicating minor folds within the monoclinal.

Although the strike of the schistosity has been found to coincide with the strike in the bedding, this condition does not seem to apply completely to the dips. Some of the schistosity does coincide in dip with that of the stratification but, a second set of dips has a southern direction within the schists.

No field evidence has been found yet to indicate a plunge one way or the other within the Keewatin rocks on the property and, no drag folds have been observed although some might exist.

Faulting. From the topography of the ground and, the present geological mapping it is inferred that quite a number of faults are present: some of them being strike faults and others being cross-faults. As none of these faults have been identified with certainty during field work they have been left out of the present map but, some of them are inferred with high degree of assurance, more particularly the cross-faults, as they have displaced contacts within the Keewatin-type rocks, with the west side moving south in every case.

One such fault is assumed to be present along line 100W to the north of the base line where it has displaced a volcanics-sediments contact some 300 ft. to the south. An extension of this fault, with a north-south trend, seems to be present between lines 100W and 104W south of the base line.

Again, between lines 92W and 96W a north-south trending fault appears to be present.

A northerly-trending fault could only explain the lack of alignment of the contact between Units III and IV between lines 84W and 88W.

Two major faults, one trending N.E. and the other one trending N.W. seem to come together in the vicinity of line 72W some 2,000 ft. north of the base line.

Although less misalignment is found for the various contacts on the eastern map-sheets, there again a number of cross-faults would be necessary to explain the field relations between the sediments and volcanics of Units I and II.

On account of the dips in the Keewatin rocks, it is moreover quite possible that some strike faults with vertical displacement could explain some sudden shifts in the strike of contacts. Such strike faults are suggested by some lineaments which appear on the present map.

The rugged topography and, the inferred presence of quite a number of faults on the property are considered of considerable importance in an appraisal of the possibilities for the existence of a commercial mineral deposit on this group of mining claims.

ECONOMIC GEOLOGY

Widespread sulphide mineralization has been observed during geological mapping and some of it has been indicated on the attached map-sheets. Most of the sulphide mineralization consists of disseminated pyrite and pyrrhotite with local massive concentrations, more particularly along Zone "A-1" within lithological Unit No.IV where structural conditions appear quite favorable to the deposition of epigenetic sulphides.

No commercial concentrations of base metals has been observed during mapping but, soil sampling has yielded positive results at a number of points along Zone "A-1" and, structural conditions appear also quite favorable at other points on the property.

In addition, a magnetic survey recently completed has revealed a highly magnetic zone extending for a distance of about 9,000 ft. from the eastern boundary of the property westward to Burslem Lake along the northern boundary. This zone has yielded readings of the order of 25,000 gammas justifying the belief that it is due to massive magnetite which might occur in a mass sufficiently large to be mined profitably. This zone has been found to extend an additional 3,000 ft.across the ground lying to the east.

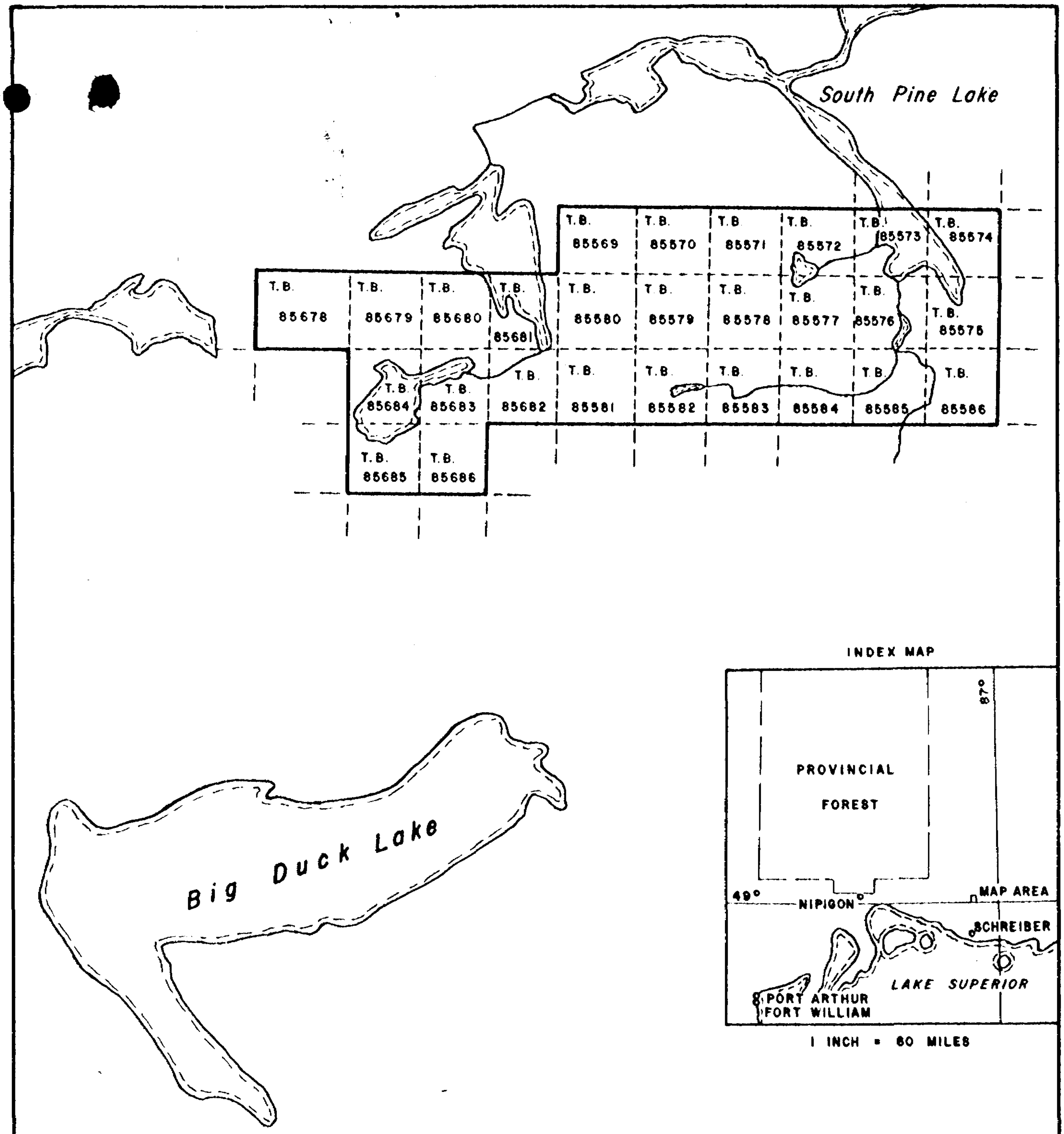
C O N C L U S I O N

When the results of the airborne survey, the ground electromagnetic survey, ground magnetometer survey, limited soil sampling are considered in combination with the foregoing geological results, it becomes obvious that this property warrants the expenditure of appreciable sums of money for its further exploration as the chances are considered good for finding a commercial mineral deposit thereupon.

Respectfully submitted

PROFESSIONAL ENGINEER
LEONARD GERMAIN
PROVINCE QUEBEC

L. Germain, P.Eng.



PROFESSIONAL ENGINEER
LEONARD GERMAIN
PROVINCE OF QUEBEC

VALMONT MINING EXPLORATION LTD.

Reproduced from the official claim map of the Ontario Dept. of Mines dated October 9th., 1957 showing location of mining claims.

Scale: 40 chains to one inch

KEY PLAN

Map No. 1

Assessment

Assessment (1) TC 85587, 85589-90-91, 85593-95-96-97-98, 85601

Prosp. 65
Geol. 45 = 1055 ÷ 10 | 20 days per claim

(2) TC 85571-72-73, 85675-76-77

Prosp. 50
Geol. 30 = 668 ÷ 6 = | 23 days per claim

[illegible] TC 85110 - 86 mil
85636 - 86 mil

Prosp. 118
Geol. 70
188 [illegible] = 27.8 days per claim

TC 85181 to 89 mil.

Prosp. 39
Geol. 17
[illegible] days per claim

TC 85575 to 86 mil

Prosp.

[illegible] days per claim

(3) Summary - 27.8 days per each of TC 85569 to 74 mil, 85578 to 82 mil, 85685-86

3(09) 44 days per each of TC 85681 to 84 mil, 85575 to 86 mil

[illegible]

(4)

[illegible] Week 21 x 4 § 26 : 4 days pro rata of
date

78 85671-72-73-75-76-77
85587-88-89-90-91-92-93
-94-95-96-97-98
85600-01

No credit for 78 85610-74, 85669, 85599
85607-03-09 which are not
sufficiently covered.

(5)

[illegible] Week 30 x [illegible] § 22 [illegible] 6 days for each of
78 85578 to 86 and
85569-70-71-72-73
85681-82 83-84-86

No credit for 78 85674-78-79-80-85

McPHAR GEOPHYSICS LIMITED

ELECTROMAGNETIC SURVEY

LEGEND

TRANSMITTER LOCATION

RECEIVER TRAVERSE AND READINGS, 1000 C.P.S.

NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS.

RECEIVER TRAVERSE AND READINGS 5000 C.P.S.

KEY MAP

E-4394 E-4394 E-4391 E-4391

CANABEL SYNDICATE

BIG DUCK LAKE AREA EAST GROUP ONTARIO

SCALE

200 150 100 50 0 200 400 600 800 1000 FEET

One Inch = Two Hundred Feet

SYMBOLS

CONDUCTOR AXIS ESTABLISHED

POSITION OF CONDUCTOR AXIS UNCERTAIN.

EXISTENCE OF CONDUCTOR AXIS UNCERTAIN.

SUGGESTED TEST DRILL HOLE

63.942

DRAWN A. TWAITES

DATE JULY 57

APPROVED

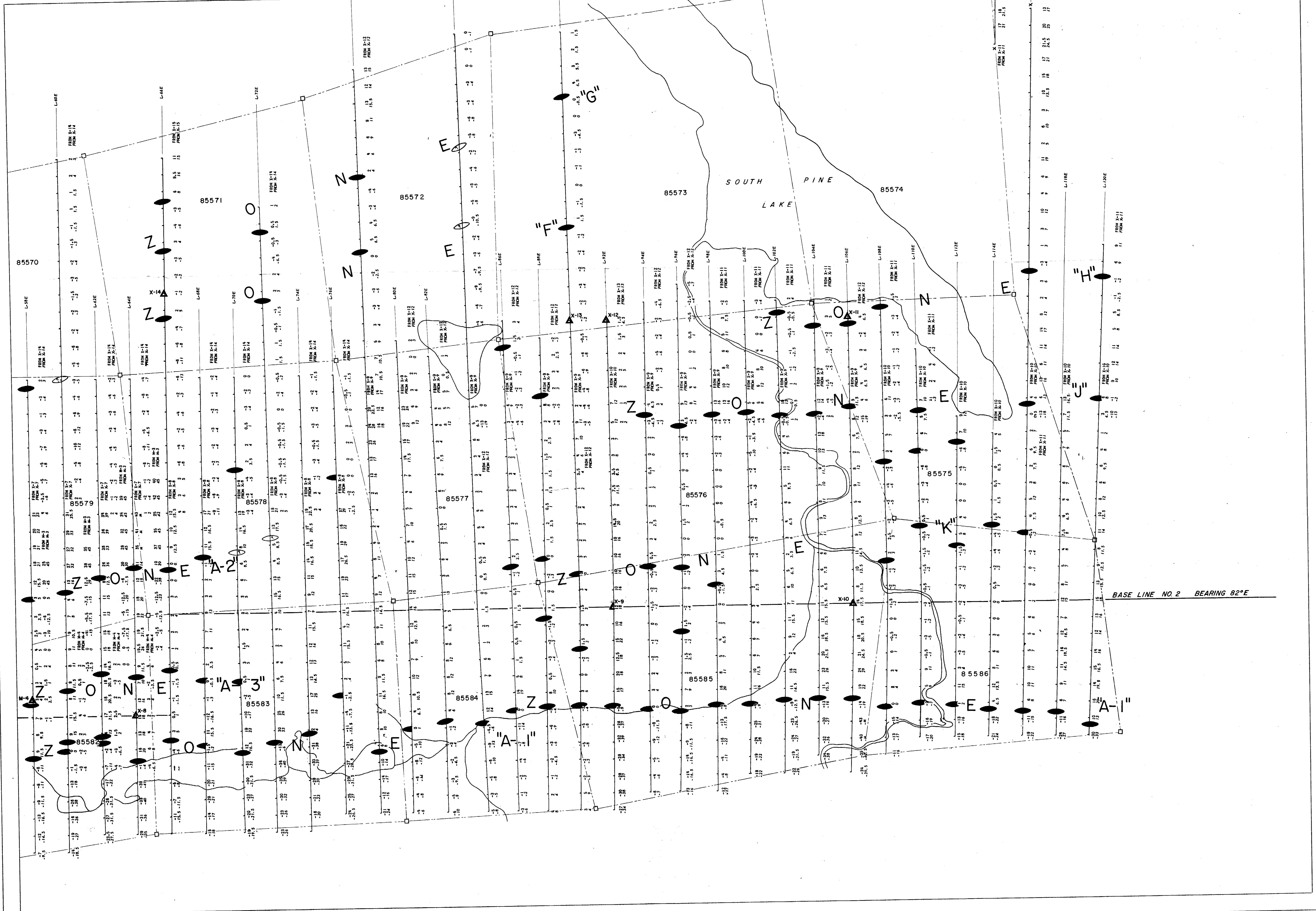
DATE

DWG. E-4391-I

DWG. E-4391-2

McPHAR GEOPHYSICS LIMITED

ELECTROMAGNETIC SURVEY



N

42E03SE0025 63.942 UPPER AGUASABON LAKE

210

LEGEND

△ TRANSMITTER LOCATION
RECEIVER TRAVERSE AND READINGS, 1000 C.P.S.
NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS.
RECEIVER TRAVERSE AND READINGS 5000 CPS

KEY MAP

E-4394 E-4394 E-4391 E-4391

CANABEL SYNDICATE

BIG DUCK LAKE AREA EAST GROUP ONTARIO

SCALE

One Inch = Two Hundred Feet

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POSITION OF CONDUCTOR AXIS UNCERTAIN.
EXISTENCE OF CONDUCTOR AXIS UNCERTAIN.
SUGGESTED TEST DRILL HOLE

63.942

DRAWN A. THWAITES
DATE JULY 57
APPROVED: DSB.
DATE Nov 13/67

DWG. E-4391-2

DWG. E-4394-2

McPHAR GEOPHYSICS LIMITED

ELECTROMAGNETIC SURVEY

LEGEND

220 △ TRANSMITTER LOCATION

RECEIVER TRAVERSE AND READINGS 1000 C.P.S.

NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS.

RECEIVER TRAVERSE AND READINGS 5000 C.P.S.

KEY MAP

E-4394 | E-4394 | E-4391 | E-4391

CANABEL SYNDICATE

BIG DUCK LAKE AREA WEST GROUP ONTARIO

SCALE

One Inch = Two Hundred Feet

SYMBOLS

CONDUCTOR AXIS ESTABLISHED

POSITION OF CONDUCTOR AXIS UNCERTAIN.

EXISTENCE OF CONDUCTOR AXIS UNCERTAIN.

SUGGESTED TEST DRILL HOLE

DRAWN A. THWAITES

DATE JULY 57

APPROVED

DATE

DWG. E-4394-2

DWG. E-4394-I

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ELECTROMAGNETIC SURVEY

LEGEND

230 — TRANSMITTER LOCATION

RECEIVER TRAVERSE AND READINGS. 1000 C.P.S.

NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS.

RECEIVER TRAVERSE AND READINGS 5000 C.P.S.

KEY MAP

E-4394 E-4394 E-4391 E-4391

CANABEL SYNDICATE

BIG DUCK LAKE AREA WEST GROUP ONTARIO

SCALE

One Inch = Hundred Feet

SYMBOLS

CONDUCTOR AXIS ESTABLISHED

POSITION OF CONDUCTOR AXIS UNCERTAIN.

EXISTENCE OF CONDUCTOR AXIS UNCERTAIN.

SUGGESTED TEST DRILL HOLE

63.942

DRAWN A. THWAITES

DATE JULY 57

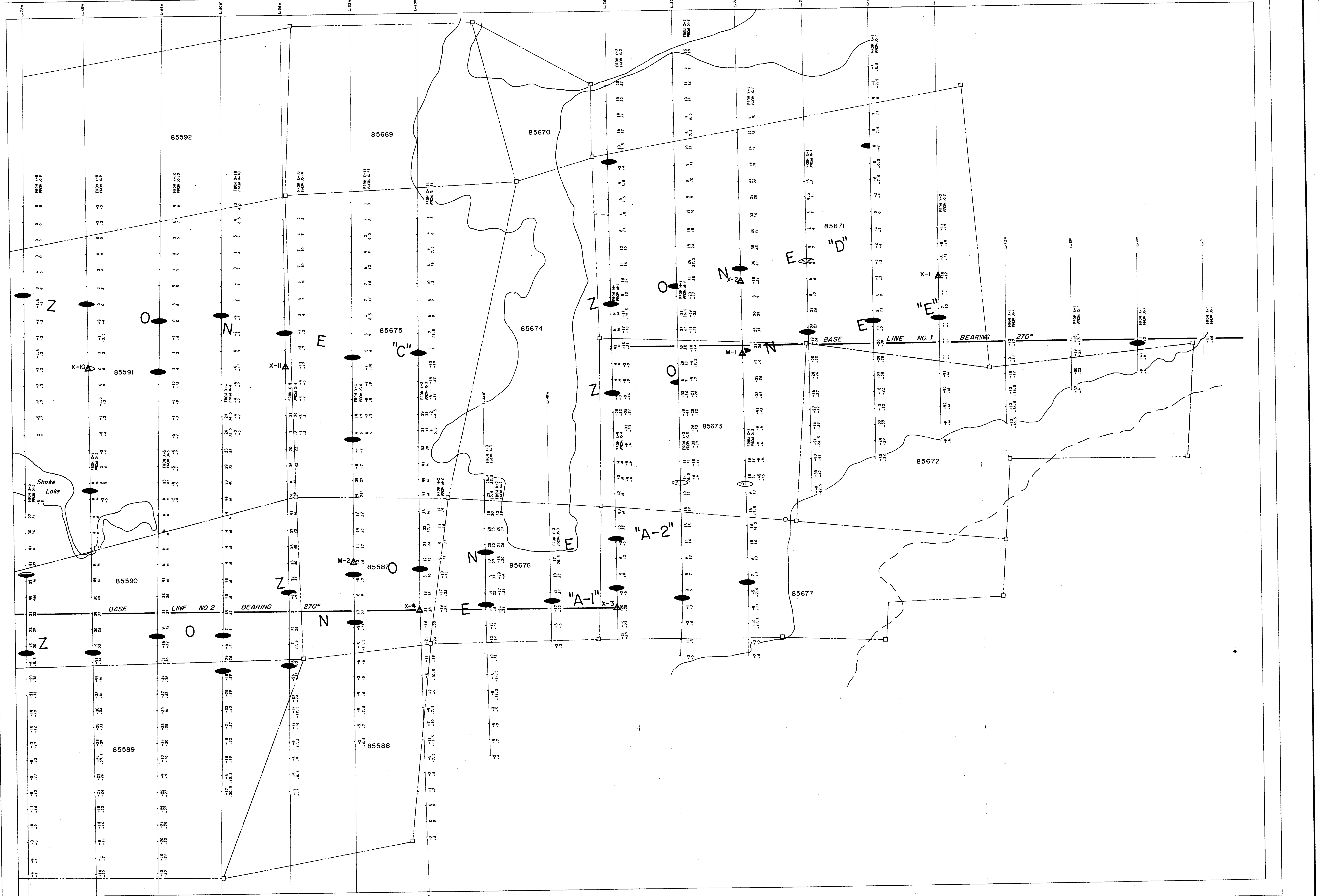
APPROVED: [illegible]

DATE: Nov-1957

DWG. E-4394-I

McPHAR GEOPHYSICS LIMITED

ELECTROMAGNETIC SURVEY



LEGEND

240 △ TRANSMITTER LOCATION

RECEIVER TRAVERSE AND READINGS. 1000 C.P.S.

NOTE: CORRESPONDING TRANSMITTER IS INDICATED AT THE END OF EACH SERIES OF READINGS.

RECEIVER TRAVERSE AND READINGS. 5000 C.P.S.

KEY MAP

E-4394 E-4394 E-4391 E-4391

CANABEL SYNDICATE

BIG DUCK LAKE AREA WEST GROUP ONTARIO

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One Inch = Two Hundred Feet

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