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

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

Montreal. April 17th, 1958

CANADA

Lt.Colonel Gustave E.Rainville, President
Canabel Syndicate
Suite 1 - 2
1121 Sherbrooke St.West
M O N T R E A L, Que.

Dear Sir:-

You will find attached hereto a coloured geological map of the surface of Aho-Authier's group of mining claims held under option by your syndicate at Big Duck Lake, in the Thunder Bay District of Western Ontario. This map embodies all the geological field work executed last summer on this property.

This map, on a scale of 200 ft. to 1 inch, completes the geological work undertaken last summer on the three groups of mining claims then held by your syndicate at Big Duck Lake, the other two having been issued respectively on December 20th, 1957 for the East Group and February the 24th, 1958 for the West Group. The covering reports bear Nos. M-101 and M-103 with the maps bearing Nos.E-4391, sheets 1 and 2, and, E-4394, sheets 1 and 2. The present map is issued in one single sheet. This geological work was done to facilitate the interpretation of the various electromagnetic anomalies which, in the present case, had been indicated by C.T.Bis-

Cana , Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

choff in his report of March 28th, 1957 to C.Authier.(1)

The property consists of 18 mining claims bearing Nos.T.B.67114 to 67131 inclusive forming an area of approximately 720 acres.

These claims were taken under option in the spring of 1957 because they were lying along the course of some strong and extensive electromagnetic anomalies which had, first, been indicated by Aerophysics of Canada Limited as the result of an airborne survey executed in November 1956 over an area of about 225 square miles. The electrically anomalous zone extended for a distance of about 5 miles in a direction slightly north of east at a very short distance to the south of a large granite batholith. Canamine Explorers Limited, who had originated the airborne survey, staked the ground both to the east and to the west of Authier's property and, had McPhar Geophysics Ltd. execute a ground E.M.survey which confirmed the airborne results and showed the possibility that the anomalies might be continuous across the present property.

In the meantime and independently, Authier and his partner Aho had C.T.Bischoff,P.Eng. carry out a ground electromagnetic survey of their property and, made the results available to Canamine Explorers Ltd. This work showed two conductors running continuously across the entire property, about 600 to 800 feet apart, and, a third conductor also crossing the entire property but, with an offset segment. The third conductor was shown to run parallel with the other two at a distance of about 500 ft. further north. Hence, as a protective measure, Canamine Explorers Ltd. took an option on this property.

The geological mapping completed last summer on Authier's property was for a two-fold purpose:

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(1) C.T.Bischoff - "Report on Authier-Aho Group Electromagnetic Survey." March 28th, 1957.

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

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.

This survey was carried out along picket lines cut 400 ft. apart over the entire property and, 200 ft. apart across the central, anomalous zone, and, consisted almost exclusively of field mapping without the benefit of microscopic or other laboratory work on rock specimens.

All field mapping was done by J.O.Stewart under the immediate supervision of the writer assisted by Dr.J.P.Nowlan who acted as Consulting Geologist and, issued his own report.(2)

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

a) The South Zone, which has been traced for a total and continuous distance of over 5,000 feet across the property, appears to be due entirely to sulphide mineralization(pyrite-pyrrhotite);

b) No sulphide mineralization has yet been found associated with the Middle and Northern electromagnetic anomalies which appear to coincide generally with geological contacts between sediments and volcanics. However, this possibility has not been eliminated as no rock exposures were found along these two Zones which follow linear depressions.

c) Neither has there been found any sulphide mineralization along the electromagnetic offset related to the Northern Zone. Again, such possibility has not been eliminated as, part of this offset is running across a lake and the balance along low ground to the east of it. This offset is running obliquely across a band of Keewatin volcanics and, some of the cross-overs exceeded 40 deg. with the westernmost cross-over reaching 60 deg.

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

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

d) No graphite was observed in sufficient concentrations to account for the electromagnetic anomalies.

e) The pyrite mineralization found along the South Zone is mostly syngenetic in origin and, not in itself "conductive" whereas the associated pyrrhotite is epigenetic and was found to be quite "conductive". Large masses of quartz were also noticed along some sections of the South Zone.

f) No base metals of commercial concentrations have been observed in the course of the present survey but, their existence is a definite possibility on account of good geology, favorable structures, strong conductive zones and, pyrite-pyrrhotite mineralization associated with some of them.

For the foregoing reasons, the author strongly believes that the property offers definite possibilities for the existence of base metals in economic concentrations and, should, therefore, be carefully prospected. However, diamond drilling is considered premature at the present time and, might only serve to jeopardize whatever chances there might be of having a commercial ore deposit present on this property. It would take a considerable amount of good luck to find such a deposit by diamond drilling with the information presently available. Consequently, some cheap prospecting method will have to be found to obtain the necessary base metal indications required to justify a diamond drilling program that will present fair chances of success. A geochemical soil survey of the glacial drift on the lee side of the electromagnetic anomalies appears indicated. It is cheap, does not take much time and, might supply the information desired.

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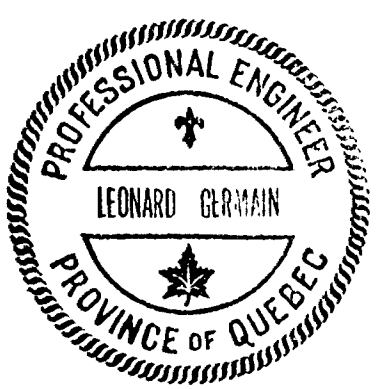

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

S U R F A C E G E O L O G Y

In mapping the surface geology of the property, the author has followed closely the rock classification given by M.W.Bartley in his report on the regional geology,(3) to which the reader is referred for a detailed description of the various rock types. In addition, as the present report forms part of a trilogy including geological work both to the east and to the west of Authier's ground, certain rock types are mentioned in the following Table of Formations as well as on the attached map which were not observed on this property but were found on the adjoining ones, this being done to give a certain homogeneity to the entire work.

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)
Volcanic Group:-	Basic to intermediate lavas and pyroclastics, altered to hornblende schists, including beds of garnetiferous schists;
Keewatin:	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 the exception of some lineaments and a few small isolated areas of low ground, bedrock exposures are very numerous and generally well distributed to cover more than 50% of the

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

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

property area so that each geological formation is well represented statistically.

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

Of the consolidated material, the greatest development consists of an alternation of Keewatin volcanics and sediments, interstratified conformably, each of varying thicknesses, trending roughly N-70°-E. and dipping steeply to the north. This basement complex was later intruded on Authier's property by a large irregular mass of quartz and feldspar porphyry.

K E E W A T I N

By far the greatest 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 six major lithological units as follows, from north to south across the property:

U N I T	FORMATION	THICKNESS
I	Sediments	1,200 ft. plus
II	Volcanics	500 ft.
III	Sediments,	700 ft.
IV	Volcanics,	5-600 ft.
V	Sediments,	700 ft.
VI	Volcanics,	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 lava flows 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, like all the other sedimentary units found at the property, weathers light brown in colour. It underlies the northern part of the property area and, has been traced continuously across the entire property.

A very striking feature of this Unit is the presence within it of a highly magnetic band which has been traced continuously from line 17W westward to the west boundary of the property and beyond. This magnetic zone has proved to consist of more than one layer of mica-quartz schists containing as much as 25% magnetite. For lack of proof to the contrary, this magnetite is assumed to have been introduced and, might indicate a major "break" somehow related to the large granite batholith known to be present at a short distance to the north of the property.

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

NIT No.II is a well-defined series of basic tuffs, the section being fully exposed along Sucker Creek between Cable and Sky Lakes. These tuffs, as well as those of Units Nos.IV and VI, weather light green and are finely banded. This band is quite homogeneous on Authier's property but, a number of fine bands of sedimentary material was observed within it to the west, more particularly to the south of Burslem Lake.

UNIT No.III consists of mica-garnet schists with a few tuff bands.

UNIT No.IV which is quite wide to the west of Authier's ground where it exhibits its greatest development, has narrowed down to a width of 5 to 600 ft. across the property. Moreover, it does not exhibit on Authier's ground the heterogeneity which is its characteristic as it is deployed to the west. It consists of basic tuffs characterized by many amphibolite lenses and, contains a few thin flows, all apparently chloritized. This belt carries a considerable amount of pyrite throughout. The amphibolites may locally cut the tuffs at a small angle but, in many cases they parallel the bedding.

UNIT No.V is another sedimentary band with tuffaceous horizons which has been traced entirely across Authier's property and beyond to the east, across Valmont's ground, where it has been extensively invaded by quartz-feldspar porphyries.

This is the most complex of the recognizable Keewatin Units and, includes: slates, pyritized iron formation and lenses of arkosic material as well as a narrow band of acidic tuffs and, a series of well-bedded, apparently water-lain tuffs.

UNIT No.VI consists of metamorphosed volcanics and underlies almost the entire south half of the property area. Like Units Nos.II and IV, it consists of hornblende schists weathering dark green and, from the magnetic results obtained over it must contain substantial amounts of magnetite irregularly disseminated throughout this Unit and, more particularly towards the south boundary of the property and beyond. One narraw band of sedimentary material was observed for a distance of about 1,400 ft. in the southwest corner of the property but, this band could not be traced to the east of Cable Lake.

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(loc.cit.) that the mica schists seemingly underlie the volcanics.

POST-KEEWATIN(Algoman) INTRUSIVES

Intrusive rocks are almost entirely limited to a development of feldspar porphyry on Authier's ground.

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

The only other evidence of intrusive action within the property boundaries consists of a few small pegmatite dykes observed within lithological Unit No.1 and granitization of the basement complex at certain points in the northern hald of the property.

Quartz or feldspar porphyry intrusives, which are limited almost exclusively to Unit No.V(sediments) on the East Group(4) are found mostly within the volcanics of Unit No.VI on Authier's ground. The distribution of outcrops found on this property suggests a single mass forming a band having a width of about 800 ft. extending from the eastern boundary westward to within 400 ft. of the west boundary. This band follows the contact between the sediments of Unit No.V and the volcanics of Unit No.VI but, some isolated "outliers" have been observed within the sediments more particularly along the western boundary and east of Cable Lake. No outcrop of feldspar porphyry was observed within Unit No.VI to the south of the sedimentary tongue or its extension in strike eastward.

KEWEENAWAN

No outcrops of Keweenawan diabase were found on this property during the present survey.

STRUCTURAL GEOLOGY

No adequate description can be given of local structural conditions without an outline of the regional structure of which 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(loc.cit.) across a width of about 4 miles for 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 part of the batholithic granite 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 to the north boundary of the property.

Folding. Locally the Keewatin stratified rocks have a general strike of N-70°-E. Dips vary from 65° north to vertical with 80° predominating.

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

Faulting. From the topography of the ground, from the results of a magnetometer survey and, from 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. However, as none of these faults have been indentified with certainty in the field, they have been left out of the present map. Some of them are inferred with a high degree of

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(4) L.Germain,P.Eng.:- "Geology of East Group, Big Duck L.Project"; Canabel Syndicate. Rep.No. M-101; Dec.30/57.

Canabel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

assurance. For instance, the highly magnetic zone traced along the northern boundary of the property seems to be cut by a series of northerly or northwesterly-trending cross-faults of slight displacements. In each case, the west side has moved south. Suck cross-faults are also indicated when the contacts between the various units of Keewatin rocks are drawn. However, it seems very peculiar that such faults do not appear to extend to the south all the way across the property. For instance, contacts between Units Nos. IV and V and, between V and VI can be drawn in straight lines without breaks.

Linear depressions running across the property would tend to indicate some strike faults. Suck a depression coincides with the contact between Units Nos.III and IV and, might be the expression of a strike-fault. The extent of movement on such strike faults is completely unknown.

ECONOMIC GEOLOGY

Widespread sulphide mineralization has been observed during geological mapping and, some of it has been indicated on the attached map. Some pyrite mineralization has already been mentioned in connection with the geological description of the Keewatin rocks. Some units contain appreciable amounts. However, such pyritic mineralization, in our opinion, does not offer much possibilities for finding a commercial base metal deposit in association therewith.

On the other hand, a pyrite-pyrrhotite zone has been traced sporadically across the entire property. This zone lies within the sediments of Unit No.V close to the contact with Unit No.VI. An electromagnetic survey has showed it to be highly conductive and surface work has disclosed massive pyrrhotite at some points. This zone has been traced continuously ofr a total distance of over 5 miles and, suggests some similarity with a similar zone in which the ore-bodies have been found at Geco and Willroy.

Two other conductive zones have been indicated by Bischoff(loc.cit.) one of them coinciding in location with the contact between Units Nos.III and IV and between IV and V. An electrical offset is also running obliquely across Unit No.IV with a segment in the lake.

Altogether, 3.4 miles of conductors have been indicated on Authier's ground. The south conductor has also been found to be magnetic to a degree suggesting the presence of massive pyrrhotite. This conductor appears to be the most promising at the present time as a locus for the presence of a commercial base metal deposit.

It should be added that the inferred presence of quite a number of faults on the property is considered of considerable importance in an appraisal of the possibilities for the existence of a commercial mineral deposit on this property.

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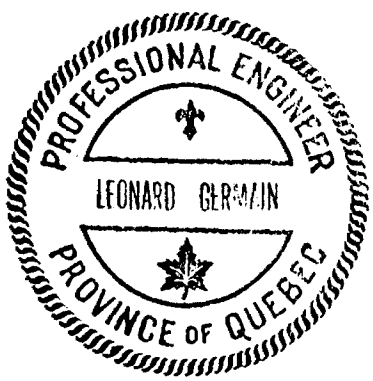


Cambel Syndicate(Authier's Property) - Big Duck L.Project(Cont'd)

C O N C L U S I O N S

No appreciable concentrations of base metals have been found up-to-date on this property but, the chances of finding concentrations of commercial size and grade are considered good. The geology and structure are definitely favorable, some of the most important conductors are known to be due to sulphide mineralization which is locally massive, and, certain portions of these conductors are running close to porphyritic intrusives in areas where they cannot be reached by surface work.

It is our opinion, however, that no diamond drilling program of any size should be undertaken before and unless definite indications of the presence of base metals are obtained on the property.

It is, therefore, recommended that a geochemical soil survey be executed by taking a total of about 250 samples at the most convenient locations within the glacial till on the down-glacier side of the electromagnetic anomalies and, within 500 ft. of them. This work should not take more than one week to complete and, should not cost more than $1,000 - It is expected to be of considerable importance to ascertain the possibilities of this property as a base metal prospect.

Respectfully submitted,

L. Germain

L. Germain, P.Eng.

PROFESSIONAL ENGINEER
LEONARD GERMAIN
PROVINCE OF QUEBEC

11, REILLY BLDG. PHONE: RO. 2-5761

C. T. BISCI
MINING ENGIN
ROUYN, QUE

020

March 28, 1957.

Mr. Charles Authier,
Chateau Windsor Hotel,
Rouyn, Que.

REPORT ON AUTHIER-AHO GROUP
ELECTROMAGNETIC SURVEY

INTRODUCTION:

An electromagnetic survey has recently been completed on the AA group of claims. This has indicated at least three strong and relatively continuous conductors extending northeast across the central portion of the property. The AA group consists of 18 claims numbered TB67114 to 67131 inclusive, approximately 720 acres, located about 15 miles north of Schreiber, Ontario. It may be reached by air by means of planes based in Fort William or Geraldton. Cable Lake located in the south central part of the property is sufficiently large to land small float planes.

The topography is rolling to steeply hilly with some precipitous cliffs in the northwest portion. Several small lakes on and adjacent to the property would provide water for any operations. The property is well wooded with birch, poplar and spruce.

The underlying rock is largely basic lava with

some sediments intruded by quartz porphyry. A large granite batholith lies immediately to the north. The general trend of the structure is northeast. A zone of pyrite-pyrrhotite occurs along the north contact of the quartz porphyry west of Cable Lake. Small but relatively rich concentrations of copper, zinc and nickel are known to occur in the area to the south.

THEORY OF THE METHOD USED:

The survey was carried out with a Sharpe SE-100 electromagnetic unit operating at 1000 cycles. The instrument operates on the principle that when a vertical coil is energized by an alternating current, an electromagnetic field is set up in a vertical plane which will induce a current in a receiving coil over a range of 1500 to 2000 feet. Such a resultant current is made audible by the use of an amplifier and earphones. In the absence of conductors in the vicinity the current in the receiving coil reaches a minimum when the receiving coil is at right angles to the planes of the transmitting loop. This is called the nul position.

When a conductor occurs in the vicinity the primary electromagnetic field of the transmitting coil will induce a secondary current in or along the edges of the conductor which is opposite in direction to the current in the transmitting coil. The resulting secondary field due to the conductor is of opposite phase to the primary field. Consequently, the resulting combined field has

a dip which varies with its distance from the conductor.

In practice the transmitter is set-up on or near the conductor to be traced and the search coil carried along lines across the conductor, measurements of field dip being made at intervals along the lines. The transmitting coil is alligned with each receiving station in turn. As the search coil is brought nearer to the conductor the resultant nul position indicates an increasing dip away from the conductor. This reaches zero immediately above the conductor and then reverses to dip away from the conductor again on the other side. This reversal of dip across the axis of the conductor is called a right-way cross-over.

RESULTS OF THE SURVEY:

An east-west base line was established in the central part of the property near the north side of Cable Lake from which north-south lines were turned off and cut at 400 foot intervals. Work over these lines indicated a series of three parallel conductive zones trending about northeast through the central part of the property. Intermediate lines were then cut north and south at 200 foot intervals to cover the conductive zones. The transmitter was then set up on one of the cross-overs previously obtained and the indicated conductor traced to the limits of the property. This involved moving the transmitter forward along the conductor at intervals of about 1500 feet. Similarly the other conductors were traced in the same manner. Results of this work have been plotted on

a scale of 200 feet to the inch. This shows two continuous conductors about 600 to 800 feet apart with a third conductor having an off-set segment about 500 feet further north.

The most southerly conductor coincides with the zone of pyrite-pyrrhotite previously mentioned. The middle conductor follows closely a northeast trending ravine. The western portion of the most northerly conductor also coincides with a small ravine. The angles of dip adjacent to the cross-overs are quite high ranging to 40° which indicates very strong and definite conductors. As previously mentioned the pyrite-pyrrhotite zone coincides with the most southerly conductor and as the others occur in volcanic rock it appears probable that these are also due to sulphide zones.

DATA RELATING TO THE SURVEY:

A total of 21.25 miles were cut and chained including a base line of 1.2 miles. Electromagnetic readings were taken over 25.6 miles of line including the repetition involved in the detailed work. 33 transmitter set-ups were made. 180 man days of work were carried out including calculations and drafting.

Respectfully submitted,

C.T. Bischoff, P. Eng.

CTB/cm

SYMBOLS

- Swamp, Low ground
- Geological contact, defined
- Geological contact, assumed
- Outcrop
- Strike and dip of bedding
- Strike and dip of schistosity
- Fault
- Creek
- Claim boundary
- Picket line
- Drill hole

LEGEND

KEWEENAWAN

7 — Diabase

ALGOMAN

6 — Quartz and feldspar porphyry and porphyritized tuffs

Granite gneiss ; some pegmatitic granite

4 — Diorite, gabbro

KEEWATIN

3 — Acid lavas - mainly tuff

2 — Basic to intermediate lavas (mainly tuffs) Altered to hornblende schists includes beds of garnetiferous schist

1 — Mica garnet schists ; narrow bands of pyritic tuff ; some beds of iron formation (banded quartz & pyrite)

Sulphide zones ; iron formation (banded quartz & pyrite)

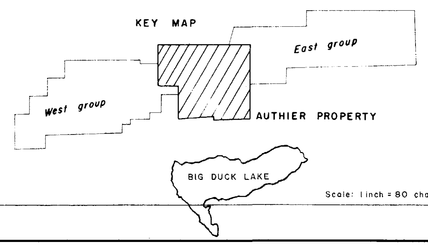
J. Thomson P. Eng
Apr. 17/56

PROFESSIONAL ENGINEER
LEONARD GRAHAM
PROVINCE OF QUEBEC

4283399844 63.629 ROPE LAKE

1/200

KEY MAP



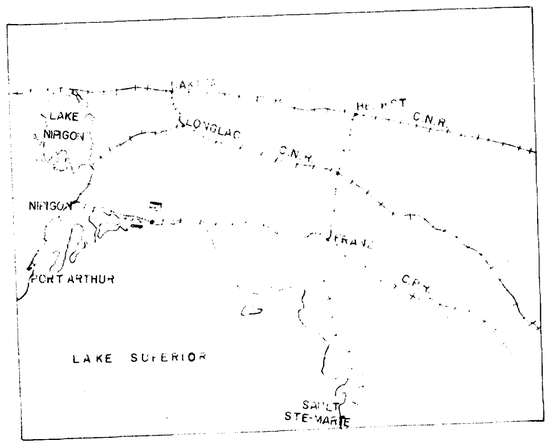
CANABEL SYNDICATE

AUTHIER PROPERTY

BIG DUCK LAKE, ONTARIO

SURFACE GEOLOGICAL MAP

Scale : 1 inch = 200 feet



61W 57W 53W 49W 45W 41W 37W 33W 29W 25W 21W 17W 13W

TB-67131 TB-67126 TB-67125 TB-67118

TB-67130 TB-67127 TB-67124 TB-67119

TB-67128 TB-67123 TB-67120

TB-67129 TB-67122 TB-67121

CABLE LAKE

A-A GROUP

BIG DUCK LAKE AREA

ELECTROMAGNETIC SURVEY

RECONNAISSANCE SHEET

SCALE: 1" = 200' MARCH 28, 1957 C.T. BISCHOFF, P.ENG.

LEGEND

LINE CUT & CHAINED

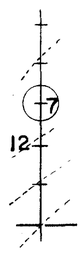
DIP ANGLE PROFILE (1" = 20°)

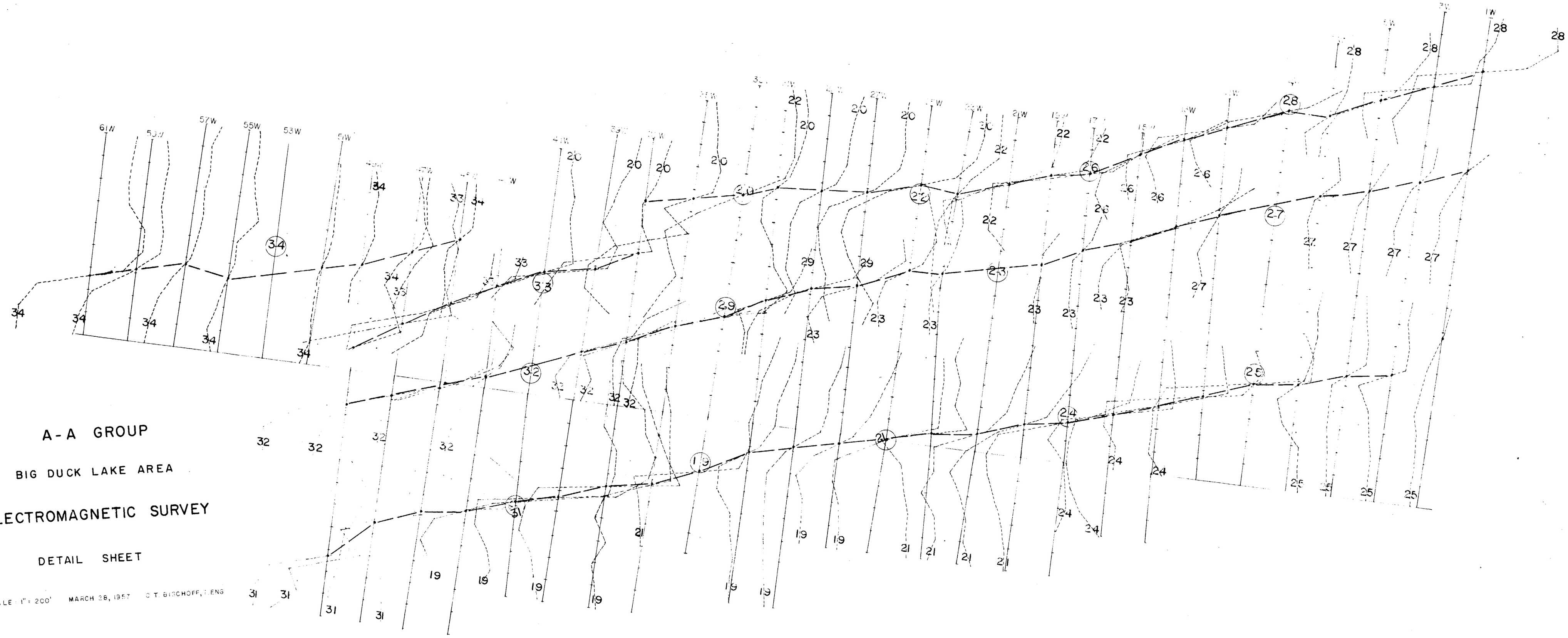
TRANSMITTER STATION

LINE READ WITH TRANSMITTER AT

RIGHTWAY CROSS-OVER

AXIS OF INDICATED CONDUCTOR





A-A GROUP

BIG DUCK LAKE AREA

ELECTROMAGNETIC SURVEY

DETAIL SHEET

SCALE 1" = 200' MARCH 26, 1957 C.T. BISCHOFF, ENG

LEGEND

LINE CUT & CHAINED

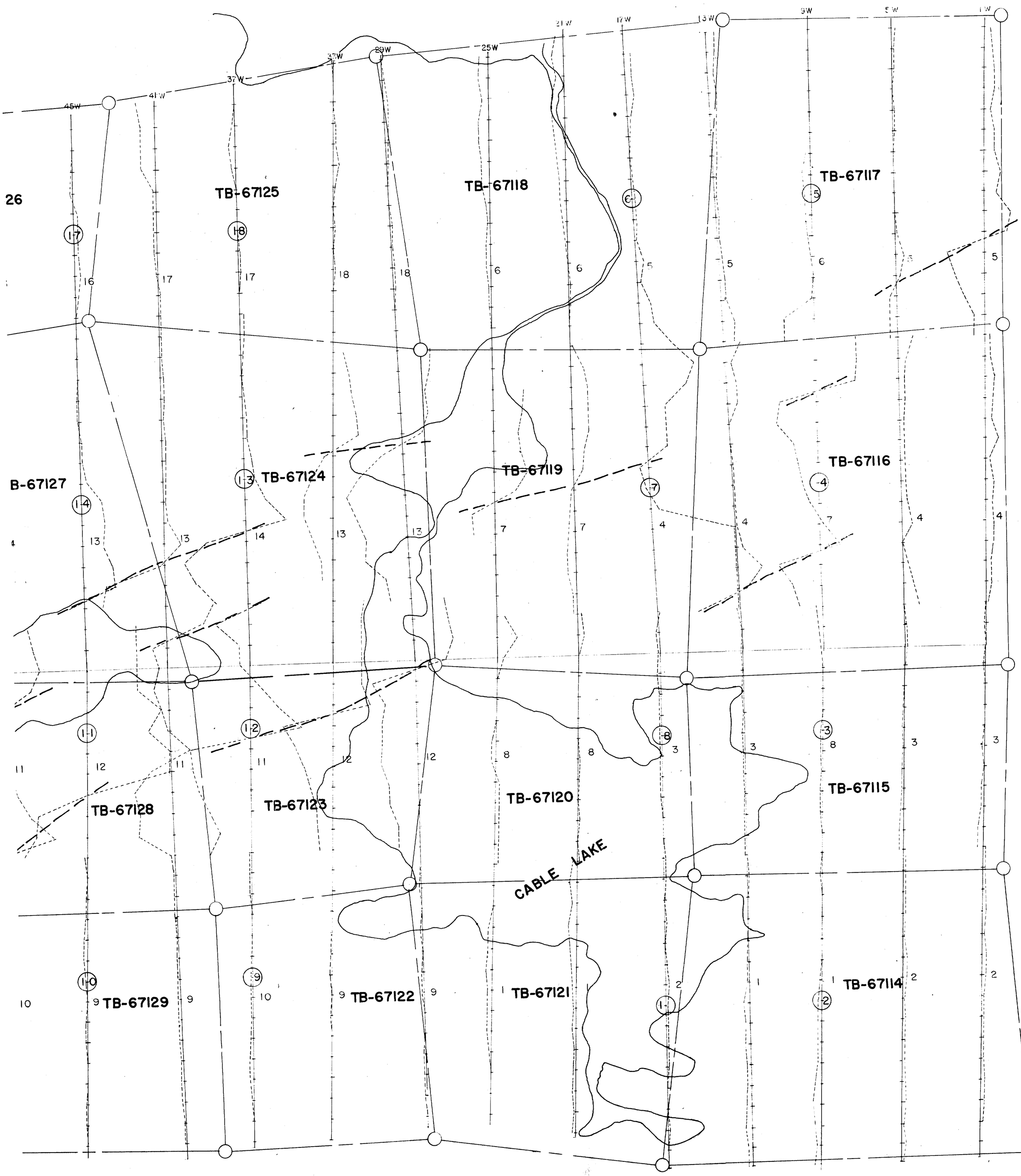
DIP ANGLE PROFILE (1" = 200)

TRANSMITTER STATION

LINE READ WITH TRANSMITTER AT

RIGHTWAY CROSS-OVER

AXIS OF INDICATED CONDUCTOR


45W
41W
37W
33W
29W
25W
21W
17W
13W
9W
5W
1W
TB-67125
TB-67118
TB-67117
TB-67124
TB-67119
TB-67116
B-67127
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CABLE LAKE
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