

ELECTROMAGNETIC SURVEY MCARTHUR GROUP 1 + 3 1960

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ELECTROMAGNETIC SURVEY

McArthur Group I & III

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SUMMARY AND CONCLUSIONS

An EM survey was conducted on the McArthur Group I and III claims. The survey was restricted to the ultrabasic sections which were outlined by magnetics and geology. Many conductors were found, all explained by the presence of magnetite in the exposed rock outcrops. The results of this survey indicates the absence of a conducting sulphide deposit and no further work can be recommended from these results.

INTRODUCTION

This report deals with an EM survey on twenty-four (24) claims, located in the central part of McArthur Twp., Ont. The property can be reached by road, 30 miles south from South Porcupine. Ontario. Five hundred and ninety-four (594) EM stations were established at 100 foot intervals. Traverses were run at 400 foot intervals using old picket lines for control. A few pace and compass traverses were run between chained claim lines in the extreme east end of the property. The instrument used was the highly portable Sheridan Kelk Vertical Coil Magnephase employing a frequency of 1230 cps. The transmitter unit was moved parallel to the receiver for every reading, maintaining a constant separation of about 400 feet. The depth of penetration of this method and instrument was considered sufficient because it is doubtful if the overburden exceeds 50 feet in the area surveyed. About 50% of the area is exposed outcrop. The purpose of the survey was to attempt to locate, in the ultrabasic rocks, nickel sulphide conductors similar to, or better than, the Fatima nickel deposit a few miles south and in the same ultrabasic complex. The ultrabasic areas were located from previous magnetometer and geological work by

Dominion Gulf Co. (previous owners), supplemented by dip needle work and geology observed while conducting the present EM survey. One hundred and sixteen (116) dip needle readings were taken. The EM work was restricted to the ultrabasic areas as it would be here that a nickel deposit would likely occur. The survey was conducted by W. Rainboth, assisted by E. O'Connor and D. Longley from July 7th to Aug. 10th, 1960.

GENERAL GEOLOGY

The area consists of a belt of vertical NW striking Keewatin volcanics, intruded by Haileyburian ultrabasic rocks and Algoman acidic rocks.

The volcanics consist of 2 types underlying 30% of the claim group:

(1) Tuffaceous banded acid to intermediate rock types.

(2) Andesitic volcanic material with altered phases approaching amphibolite.

The ultrabasics consist of 3 types underlying about 60% of the claim group:

- (1) Olivine rich peridotite and/or dunite.
- (2) Peridotite and/or pyroxenite peridotite.
- (3) Amphibolatized peridotite (chicken track dikes).
 The Algoman rocks contain 3 phases underlying 10% of

the claim group:

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- (1) Granite
- (2) Syenite-diorite and altered phases.
- (3) Syenite and porphyry dikes.

OUTLINE OF ULTRABASIC AREA

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Dominion Gulf Co. formerly owned part of the property. They conducted a ground magnetometer survey and a detailed geological survey. The results of this work indicated the position of the ultrabasic rocks except in the north and west sections. Previous geological work by Paymaster in the NE section was of value in locating the ultrabasic outline there.

The present work included dip needle readings which outlined the ultrabasic rocks in the north and west sections very satisfactorily. The magnetic difference between the ultrabasics and volcanics averaged 9° by dip needle readings. In the north central section two outcrops containing the ultrabasic-volcanic contact were noted.

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RESULTS OF EM SURVEY

Due to the magnetite content in the ultrabasic rocks, a situation of erratic anomalous indigestion was encountered. This was to be expected. Many crossovers, reverse crossovers and isolated high readings were obtained. Reverse crossovers and high readings were attributed to the effect of the magnetite, there being high magnetics in these sections. An extreme example of the erratic nature of the readings is the traverse on line 46/00 E. Magnetite concentrations were found scattered throughout the rock along the entire traverse.

Seven (7) normal type crossovers indicated on the acompanying map were thought to be possibly due to sulphides. These locations were investigated geologically. Magnetite concentrations were found in each case. Many erratic readings were also found due to magnetite. There are no anomalous conditions that can be explained by anything but magnetite concentrations.

Respectfully submitted, W. Rainboth, P. Eng., Geologist.



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REPORT OF AEROPHYSICS OF CANADA LTO. MARNE LAKE AREA BURROWS & KEMP TWP. DECEMBER 1957 Extracts from report of AEROPHYSICS of Canada Limited relating to Marne Luke area in Burrows and Kemp Townships.

1. INTRODUCTION

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At the request of Mr C. S. Longley of Paymaster Consolidated Mines, Limited, an sirborne electromagnetic survey was carried out over three areas in the Timuins area of Ontario. ... A group of 53 elaims in Burrows and Memp Tourships was surveyed on east-west flight lines at one-eighth mile spacing. The results are shown on the plan, Marne Lake area. All three plans are on a scale of 1 inch equals 1320 feet, approximately. Anomaly designation is explained in the legends to these plans. A total of 376.4 line miles was flown. (38.95 miles was in the Marne Lake Lake Lake area on the Burrows and Memp property.)

2. General Geology

The regional garlogy is shown on Ontario Dept. of Mines' map Fo. 1931s, Porcupine-Shiningtree area. The geology of the three areas is decaribed briefly in Ontario Dept. of Mines Volume XXXV, Part VI, in the articles "GRascy River Area", "Notes on the Southern Part of the Grassy River Area". The geological succession is early Precembrian in age and consists of generally altered volcanic flows of breecia, with minor sediments. Iron formation occurs and serves as a good magnetic structurel marker for both ground and sirborne magnetic surveys. These formations are introded by Maileyburian basis to ultrabasis sills and by Algoman granite and porphyry. Diabase dykes of both Matachewan and Kewsenawan age occur. Ocbolt conglomerate may cover the older formations over part of the area surveyed. Current prospecting in the area is mainly directed toward the location of copper-nickel mineralization, which is generally associated with the ultrabasis sills.

Leromagnetic coverage is available on Geological Survey of Canada Georphysical Papers 285, 286, and 291. These are particularly useful for showing the structure of the ultrabasic sills and iron formation

3. RESULTS

The results of the survey are shown on the accompanying map.... In eddition, provolies will be specified by the anomaly designation with the flight line number following ismediately.

(3) Morne Loke area (Burrows, Kemp Townshirs)

Inorthies ID(37) = ID(38) and ID(39) are possibly lake effects but may merit ground follow up.

4. RECONTINDATIONS

The minor conductors mentioned should take second priority after these, (Zones . & B) but may be of interest.

Signed. W. M. Merharson for D.W. Smellie, Geophysicist

and J. H. McPherson (Approved)

Lerophysics of Canada Limited. December 1957.



REPORT ON PAYMASTER SERPENTINE MOUNTAIN PROPERTY MCARTHUR TWP. JANUARY 16, 1958.

HEAD OFFICE

PAYMASTER CONSOLIDATED MINES, LIMITED

(NO PERSONAL LIABILITY)

SOUTH PORCUPINE, ONTARIO

ADDRESS ALL CORRESPONDENCE TO COMPANY, NOT TO INDIVIDUALS January 16, 1958

Mr C. F. Cook, President and Managing Director, Paymaster Consolidated Mines, Limited,

Dear Sir:-

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Following please find report on the Paymaster Serpentine Mountain property in Mainthur township.

Introduction

The central part of the Paymaster McArthur property is the re-staking of the eighteen claims Nos. 37306 to 37323 held by Dominion Gulf Co. in 1952,3. The new claims are Nos. 43427 to 43444. The property is well described in a report by J. A. Larocque dated June 18, 1953 available for copying at the office of the resident geologist, Timmins. The property has been enlarged by adding 14 claims along the north side so as to include the north contact of the peridotite intrusive. These claims are Nos. 43757 to 43761 inclusive and 43988 to 43990 inclusive. The property extends from Low Lake, an enlargement of the Mountjoy River, two miles southeest past McArthur creek and is a mile wide.

Topog raphy

Serpentine Hountain just east of Low Lake rises 250 feet above the lake level. Rock exposures are plentiful on the mountain with some rock bluffs along the north side of the mountain that are difficult to climb. There is a marshy area along McArthur Creek with other swampy areas on the property. The northern slope of Serpentine Mountain has considerable second growth birch six inches in diameter. The sand hills are covered with poplar with a sesttering of jackpine up to 15 inches in diameter. Some outcrop areas and some low-lying sections are covered with thicker stands of eight inch jackpine with some spruce.

Geology

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	LEGEND
Recent	- Hummoocky hills and ridges of glacial sand and gravel.
	Swamp deposits.
Algoman	- Granite; Syenite and porphyry dykes.
•	Syenite-diorite and altered phases.
	Gabhro.
Pailewhurian	- Clivine rich peridotite or dunite.
-	Fyromene rich peridotite
	Chicken Tracks rock
Keowatin	- Inffectous material and Iron Formation.
	Intermediate volcanics (andesite) with altered phases
	approaching amphibolite.
Alteration R	coks: Carbonate, Tale, Chlorite, Brown hornblende.

January 27, 1958

Keewatin: Diamond Drill Hole No. 4 drilled north on claim 43435 went out of peridotite into lava. This indicates that the central area of high sond hills is underlain by Keewatin lava. The peridotite may be two separate bodies at the surface with outliers or is connected west from McArthur creek across the northern claims with a tongue extending west along the south edge of claim 43435. D. H. No. 3 on claim 43441 intersected lava southwest of the peridotite. The lave seemed to be acid of trachyte composition but due to olteration resembled andesite.. Examination of the lave outcrops near the peridotite showed that some of the amphibole rich rock in the lave is intrusive.

In each of D.H. Nos. 2 and 4 there is a narrow inclusion of iron formation or tuff in the peridotite.

On claim 43757 there is a north facing cliff across the northeast corner of the claim. There is pillow lava along the cliff with the diorite-gabbro associated with the peridotite lying to the south. The cliff is not far from the granite lying to t he north.

Haileyburian Peridotite

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The diamond drilling has confirmed the observations of the surface outcrops that the peridetite intrusion of Serpentine Mountain in McArthur township is quite complex. The various types are as outlined in the report by Mr J. A. Lavocque.

- 1. Peridotite with chicken tracks or oriss-cross structure.
- 2. Pyroxene rich peridotite.

3. Olivine rich peridotite or dunite type.

There does not seen to be any explaination for the distribution of the various types except that the dunite type is found along the southwestern edge or bottom of the intrusive as well as elsewhere. This dunite type in places shows crystals 3/16" in diameter.

The gubbro seems to be a separate intrusive indicated by being harder and less altered. The gabbro may be an end phase of the main intrusive or more probably belongs to the Algoman group.

Along the northern edge of the intrusive there is fine grained diorite or gabbro that is considered to be a differentiate or chilled top of the main peridotite intrusive. Some suggestions of dips are as flat as 30° north where seen along the north edge of the outcrop area.

Chicken Trocks Rock or Criss-Cross Structure: The chicken tracks structure is very widespread on this property. The distribution would suggest that the chicken trocks structure is characteristic of the main body of the peridotite intrusive as well as occurring near the contact.

Gabbro: Diamond drill holes Hos. 2 and 3 cut medium grained gabbro that was harder and less altered than the peridotite. This would suggest that the gabbro is a younger intrusive perhaps from the same magma but more probably early Algoman. The fact that D. H. No. 1 cut gabbro at the bottom of the hole below the syenite-diorite is suggestive that the gabbro is closely related to the syenite-diorite or is part of the same intrusive body. The diamond drilling in Bartlett township cut considerable gabbro near the western iron formation that was quite fresh and unaltered.

ALGOMAN- Granite

The contact of the large granite mass cuts across the north edge of the northern claims. Northwest of the No. 1 post of claim 43990 there is granite with narrow irregular granite dykes intruding the altered lava complex almost as far south as the claim line. Other granite outcrops are found along the north edge of the claims

Syenite-Dicrite

The syenite-diorite mass on claim 43440 must have a northerly dip as D.H. No. 1 did not enter the syenite-diorite but out gabbro.

Alteration Products and Rocks

The peridetite is altered to serpentine, chlorite, and talc with sections so soft as to cause difficult drilling. From the report of E. Abraham Ont. Dept of Mines, Vol. 62 Part 6 "the peridetite alters to talc and a brownish hornblende". This brown rock was erroniously identified as biotite and recorded as such in the drill logs. The brown hornblende was in at least one place found associated with a more acid intrusive cutting the peridetite.

In D. H. No. 3 asbestos was found in stringers up to $\frac{1}{2}$ " wide but even the best sections were not of ore grade.

Nickel Values

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Dominion Gulf Co. reported nickel values on claims 43440 and 43435. Mineralization was found on these claims that reacted for nickel with the dimethylglyoxime "spit test". All the mineralization that we found was very spotty. A five foot section was taken from each box of core. These were checked gualitatively. Several samples were analysed giving 0.2% nickel. The rejority of the samples checked qualitatively seemed to contain only slightly below 0.2% nickel. It seemed surprising to find such a widespread distribution of nickel.

Airborne Electromagnetic Survey

An sirborne electromagnetic survey was done by Spartan Air Services for Paymaster over these Paymaster McArthur claims. This survey covered the other claims in Bartlett and English townships. The survey detected only two small conductors of this property. One of these lies west of McArthur creek and may indicate a bog deposit. The second lies just east of Low Lake at the west side of the property. This might be caused by metal left at a lumber camp site but is easily accessible so should be investigated.

Signed,

C.S. Longley. C. S. Longley,

Engineer-Geologist.

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CLEBERGE FLECTROMAGNETIC SURVEY

OF THE

DEST CLEEP, MUSKASENDA LAKE AND MARKE LAKE AREAS

FOR

PAUMASTER CONSOLIDATED MINES, LIMITED

1. INTROD STICK

At the request of Mr. C.S. Longley of Paymaster Consolidated Minos, Limited, an airborne electromagnetic survey was carried out over three areas in the Timbus area of Ontario. A group of 100 claims in Kelvin Township, Madaery Mistrict, was flown on north-south flight lines at an average spacing of one-eighth mile and the results shown on the plan, Bigfour Creek area. Groups of 14 claims in McArthur Township, 92 in Bartlett, 15 in Geikie and 69 in English were flown on north-south flight lines at an average spacing of one-eighth mile. The survey of these groups also included 240 line miles on unstaked ground between the two groups involved. The results are shown on the plan, Mskarends Lake area. A group of 53 claims in Burrows and Kemp Townships was surveyed on cast-west flight lines at one-eighth mile spacing. The results are shown on the plan, Marne Lake ares. All three plans are on a scale of 1 inch equals 1320 feet, approximately. Ancasty designation is explained in the legends to these plans. A total of 376.4 line miles was flown.

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2. GENERAL GEOLOGY

The regional geology is shown on Outario Department of Mines' Map No. 1931a, Forcupine--Shiningtree area. The geology of the three areas is described briefly in Ontario Department of Mines Volume XXX, Part VI, in the articles "Grassy River Area", "Notes on the Southern Part of the Grassy River Area" and "McArthur, Douglas, Bartlett and Geikie Townships". The geological succession is early Precembrian in age and consists of generally altered volcanic flows of breccia, with minor sediments. Iron formation occurs and serves as a good magnetic structural marker for both ground and airborne magnetic surveys. These formations are intruded by Haileyburian basic to ultrabasic sills and by Algoman granite and porphyry. Diabase dykes of both Matachewan and Keweenawan age occur. Cobalt conglomerate may cover the older formations over part of the area surveyed. Current prospecting in the area is mainly directed toward the location of copper-nickel mineralizstion, which is generally associated with the ultrabasic sills.

Aeromagnetic coverage is available on Geological Survey of Canada Geophysics Papers 285, 286 and 291. These are particularly useful for showing the structure of the ultrabasic sills and iron formation.

3. RESULTS

The results of the survey are shown on the accompanying maps. Lones A, B and C, have been labelled on these to designate zones of particular interest. In addition, anomalies will be specified by the anomaly designation with the flight line number in brackets following immediately.

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(1) BIGFOUR CREEK AREA (KELVIN TOWNSHIP)

ZONE A

This anomaly follows 5A(19) - 11A(20) - 4B(21). Its indicated strike is NNE and it occurs in an area underlain by altered Keewatin basalt striking about north-south. There is no corresponding magnetic aromaly. It is given first priority for ground electromagnetic investigation.

(2) MUSKASENDA LAKE AREA (MCARTHUR, BARTLETT, GEIKIE, ENGLISH TOWNSHIPS)

Geological and aeromagnetic data in this area indicate that Keewatin lavas are intruded by Haileyburian peridotite, marked by a broad magnetic anomaly running northwest from McArthur Lake to the south end of Papakomeka Lake. This changes to a NNE-SSW trend across Eartlett, Geikie and English Townships. To the west of this, a narrower anomaly marks iron formation (e.g., vicinity of Boomeran and Scott Lakes).

Zone B

3A(64) - 3A(65). This appears to be due to a relatively localized conductor between lines 64 and 65, likely closer to 65, and correlates with a 300 gamma closure to the northeast of the main aeromagnetic anomaly in this area. This could be due to the conductive effects of iron formation, but the fact that it is so localized leads to the recommendation that it be investigated by ground electromagnetic work.

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Zone C

1C(78) - 1B(79) - 1DIC (80). This portion of the cone is weak but relatively localized and may correspond with iron formation known to the author in this area.

lClClC(62) - lC2B(83). This portion of Zone C is located near a structural bend in the ultrabasic shown by the aeromagnetics. It is possible that this response is due to a alight increase in conductivity accompanying serpentinization of the ultrabasic, since known mineralization in this vicinity is too disseminated to make a good conductor.

Several minor conductors occur, including the following: A 1.D anomaly near Boomerang Lake correlates with iron formation shown by the aeromagnetics and geology, as do anomalies 1B(69) - 1D(69).

At Muskrat Lake, a group of 1B, 1C and 1D anomalies, and at Scott Lake a group of 1D anomalies appear weak and coincident with the lakes, but may be of interest. Along the Bartlett-English boundary, a group of 1D anomalies coincides with an extensive swamp area.

3. MARGE LARE AREA (BURROWS, KEMP TOWNSHIPS)

Anomalies 1D(37) - 1D(38) - 1D(39) and 1C(25) - 1D(26) are possibly lake effects but may merit ground follow up.

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4. RECOMMENDATIONS

Zones A and B are recommended for detailed ground

investigation, using the electromagnetic method. The minor conductors mentioned should take second priority after these, but may be of interest. Zone C may indicate affects associated with mineralization, but it is doubtful if it is caused by the mineralization itself.

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D.W. Smellie Geophysicist

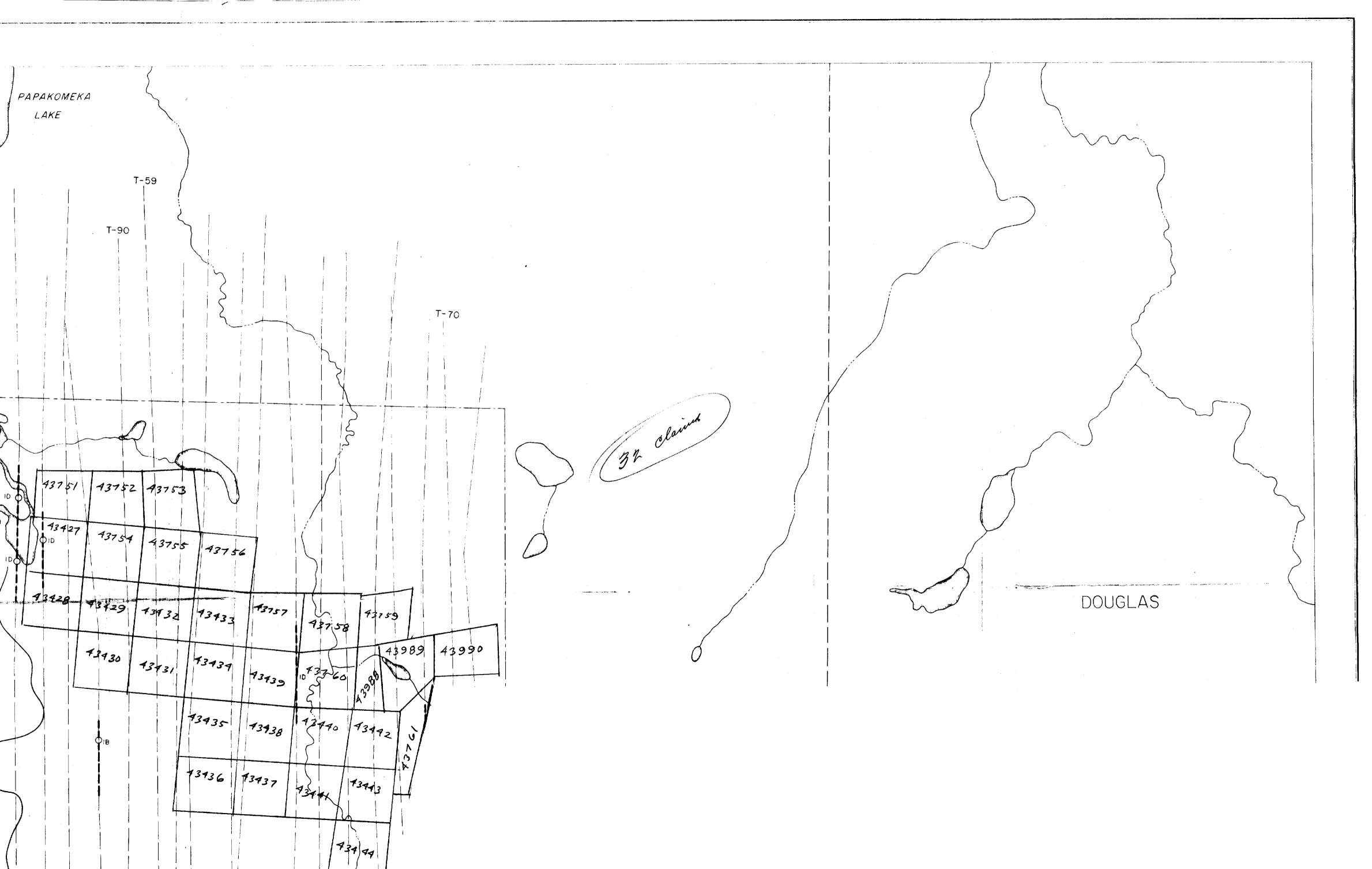
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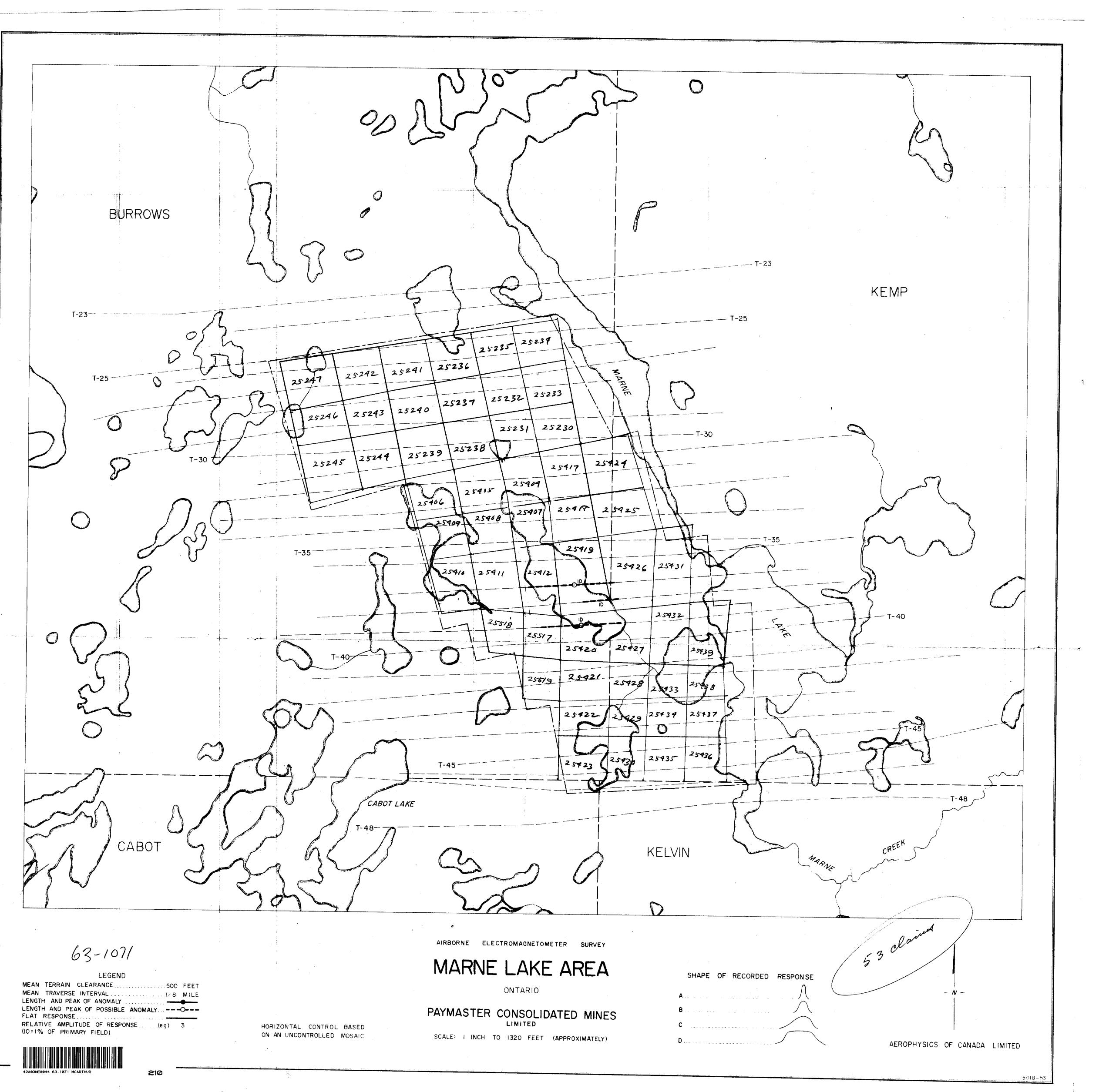
 $\left(\frac{1}{2} \right)$) tin (W.H. McPherson)

AEROPHYSICS OF CANADA LIMITED

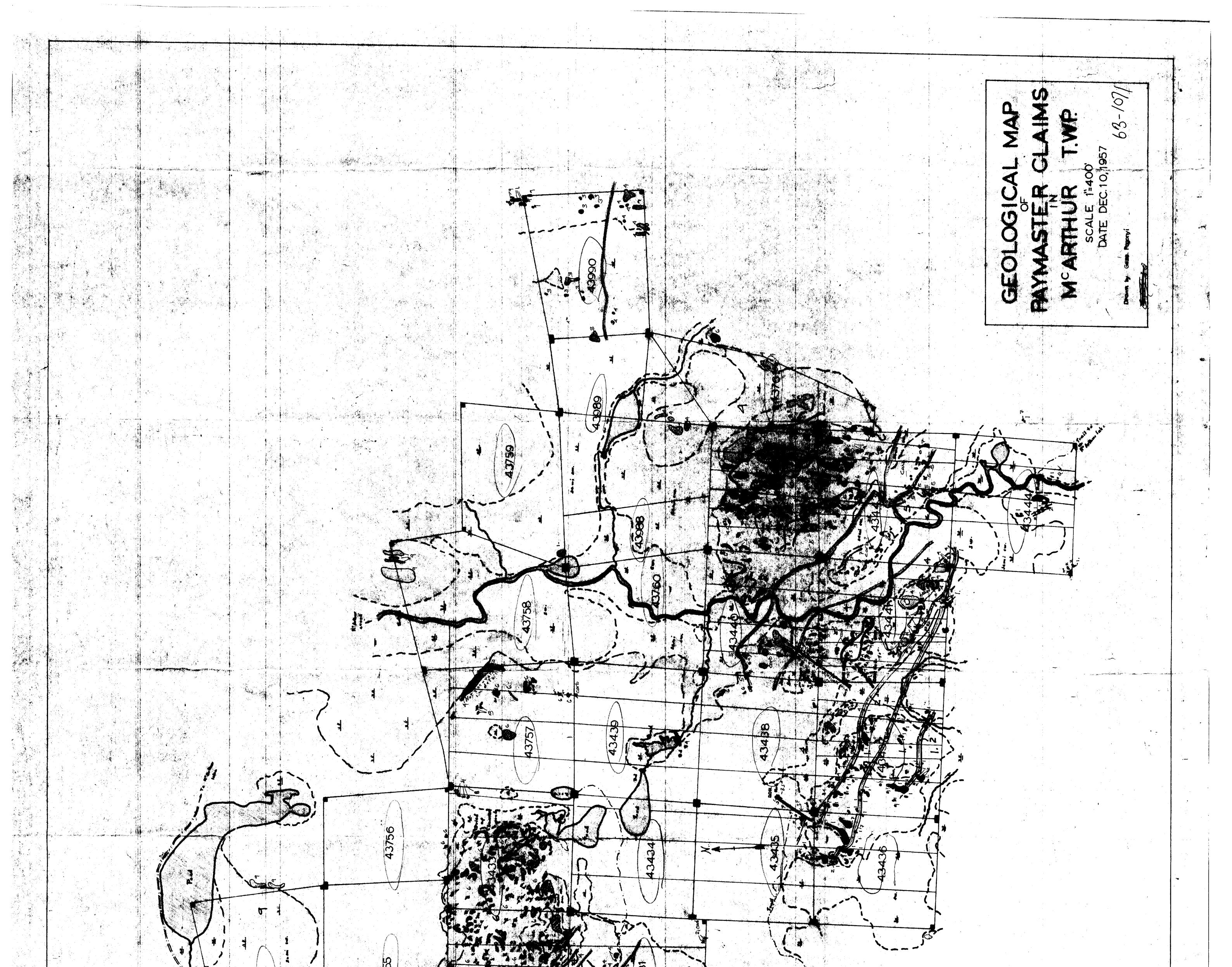
December 1957

Airborne Electromagnetometer Survey PAPAKOMEKA SERPENTINE MOUNTAIN LAKE McArthur Township Paymaster Consolidated Mines, Limited Scale: 1 inch to 1320 feet (Approximately) - N -Horizontal Control Based on an Uncontrolled Mosaic T-90 HOPKINS LAKE 43751 LEGEND 434271 Mead Terrain Clearance - - - - - 500 feet Møan Traverse Interval - - - - - - 1/8 mile Length and Peak of Anomaly - - - --MARTHUR Length and Peak of Possible Anomaly -Relative Amplitude of Response - - (e.g.) 3 1 73730 1 (10= 1% of Primary Field) SHAPE OF RECORDED RESPONSES -Φib _ _ _ ~ ABROPHYSICS OF CANADA LIMITED 018-53 42a03NE0044 63.1071 MCARTHUR 200

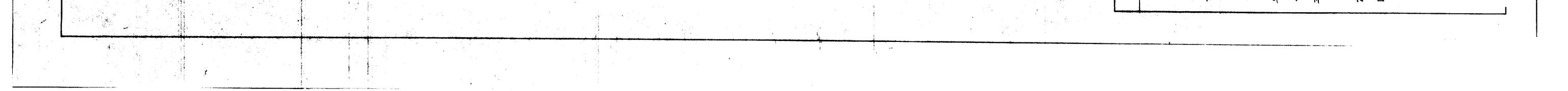


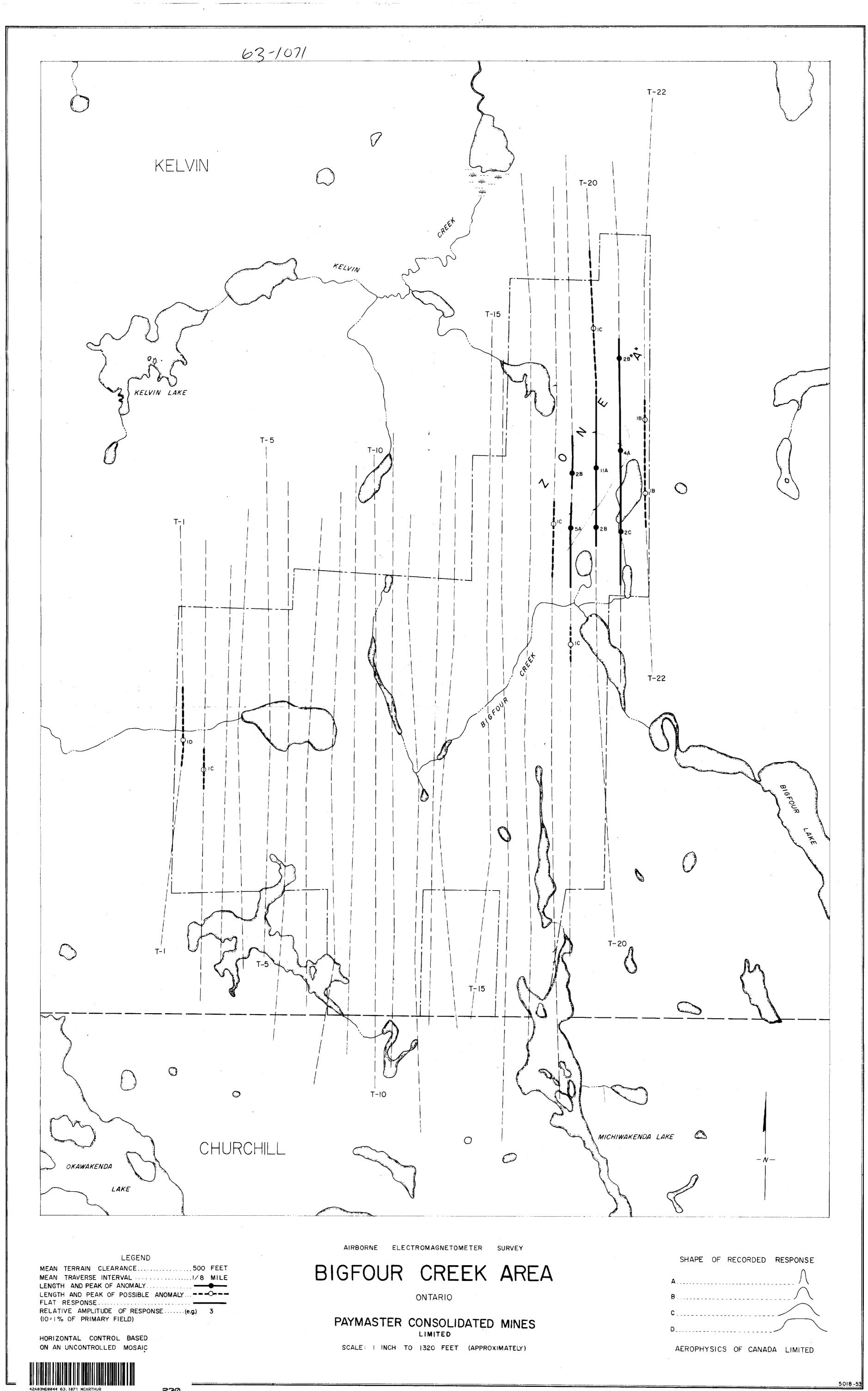




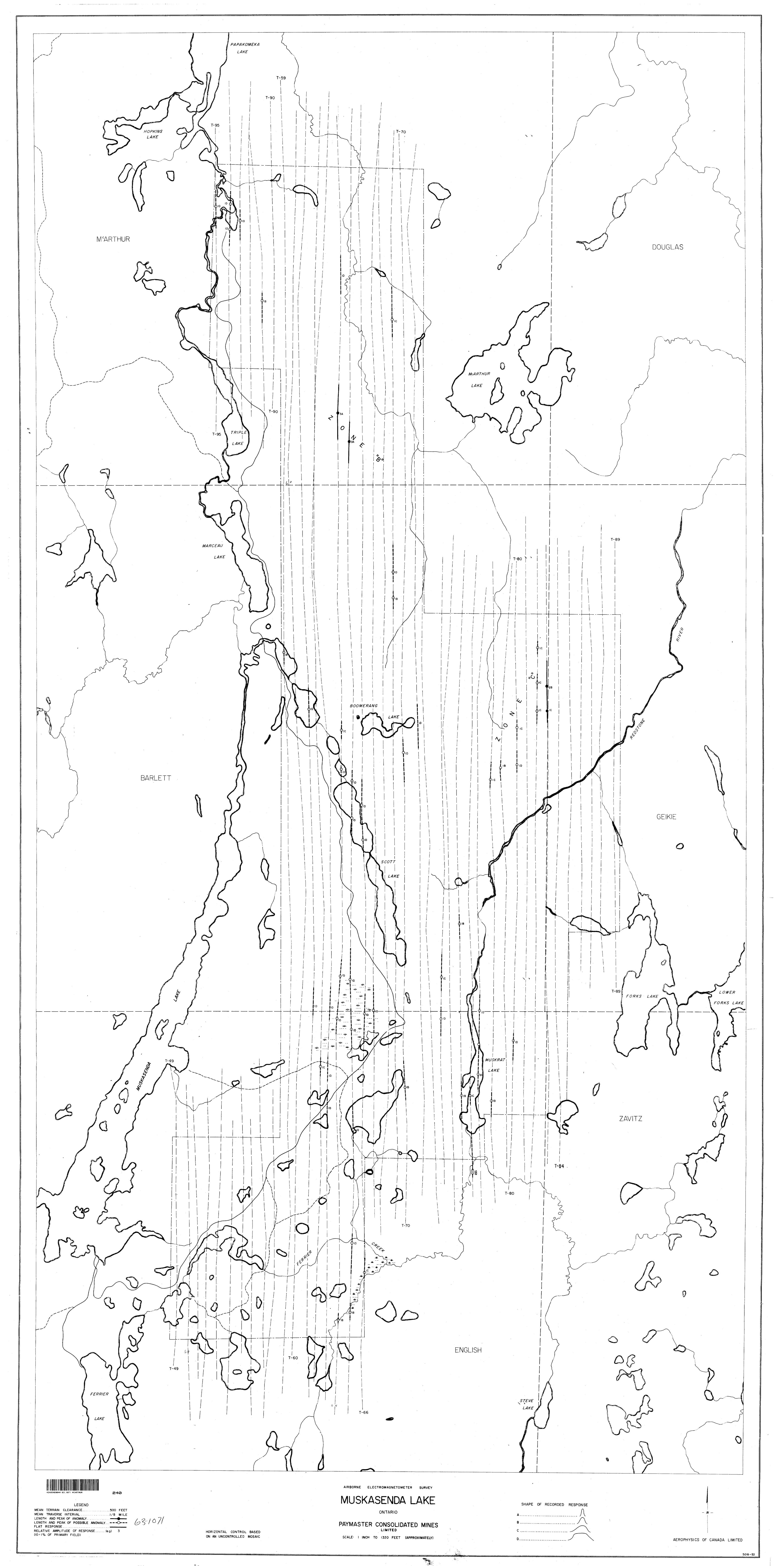


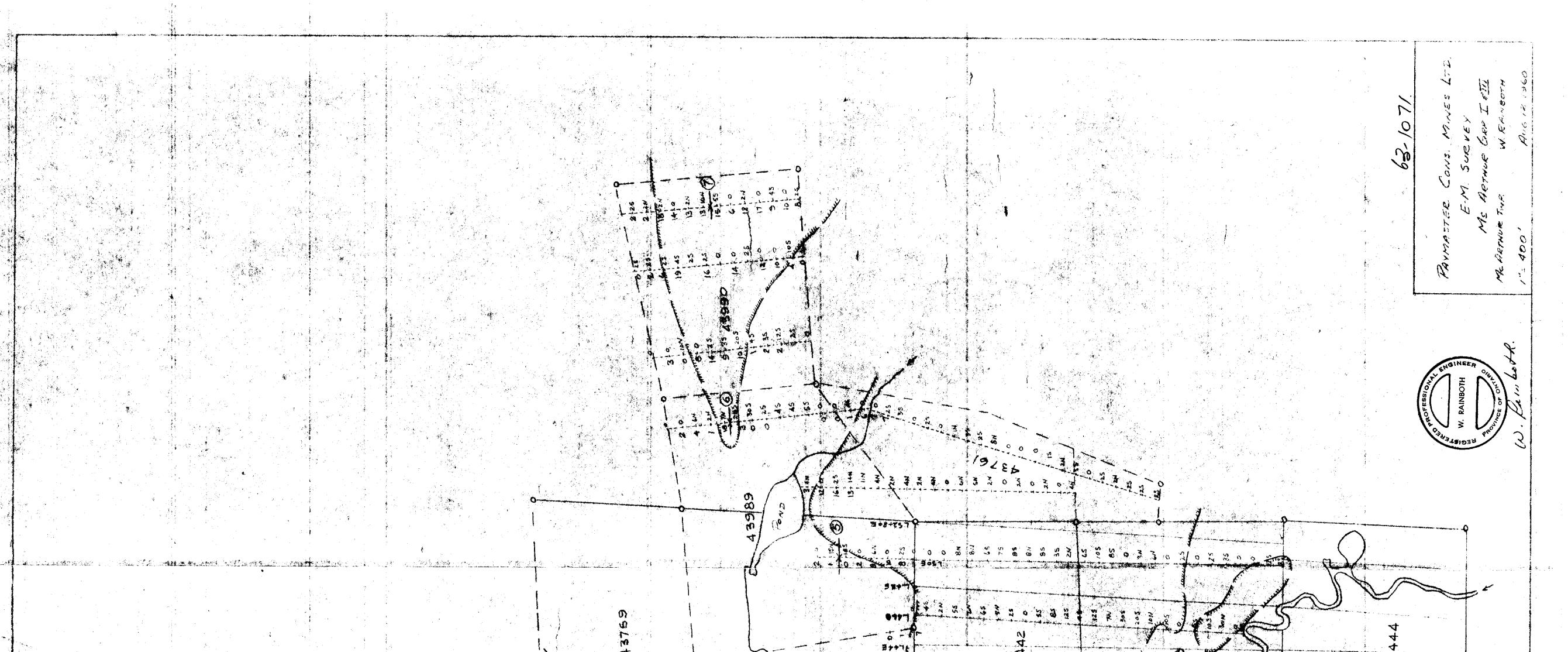
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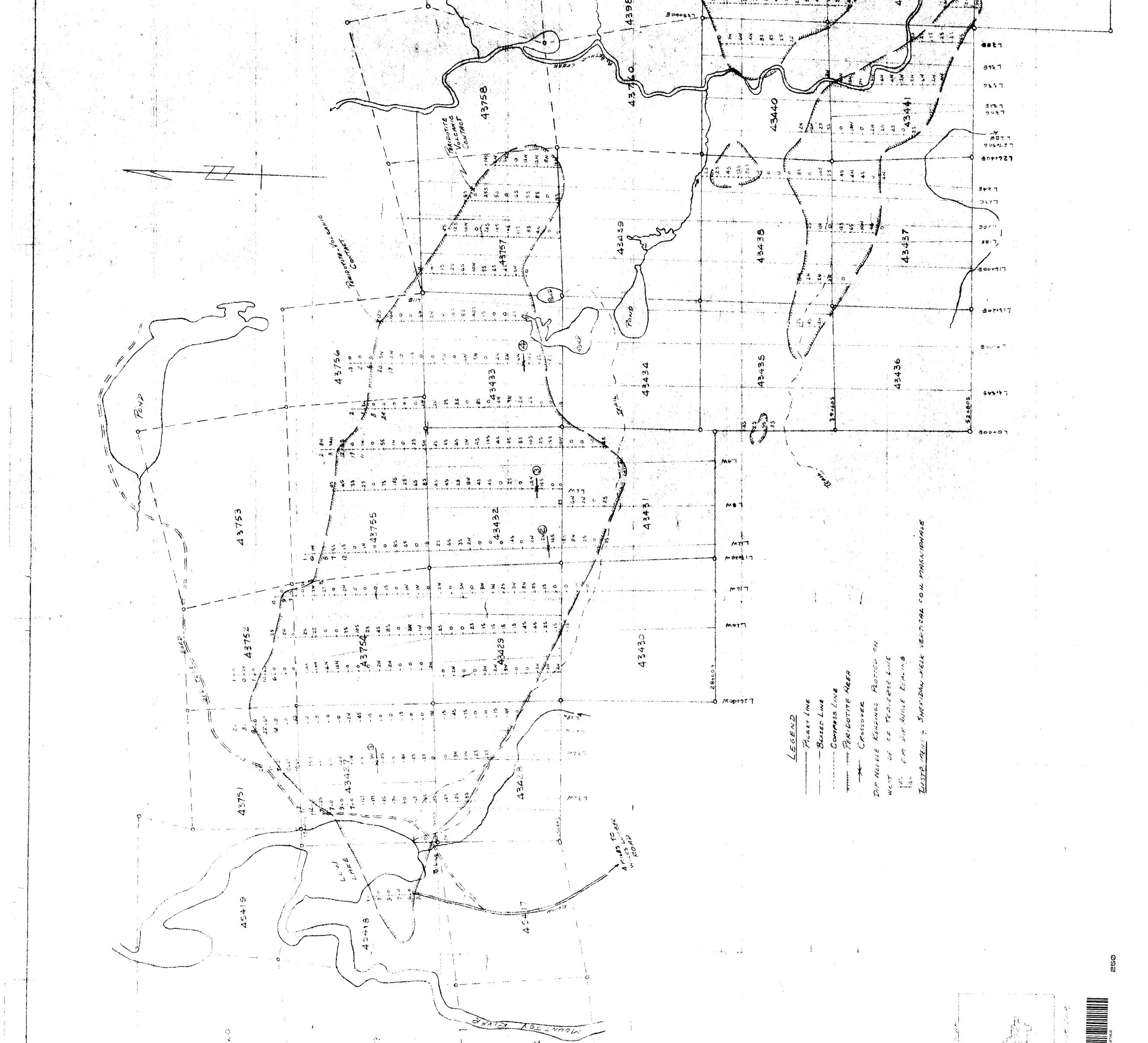




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