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GEOLOGICAL REPORT
KASHAWEOGAMA LAKE
IRON PROSPECT

FOR

R. G. RAMSAY

10 COOK STREET

BARRIE, ONTARIO

OCTOBER 30, 1975

BY: GEORGE C. SHARPE

TABLE OF CONTENTS

ABSTRACT	Page 1
INTRODUCTION	3
ACKNOWLEDGEMENTS	4
PREVIOUS GEOLOGICAL WORK	5
LOCATION AND ACCESS	6
LITHOLOGICAL TABLE	7
GENERAL GEOLOGY	9
ROCK TYPES	
MAFIC METAVOLCANICS	11
INTERMEDIATE METAVOLCANICS	11
FELSIC METAVOLCANICS	13
METASEDIMENTS	
CHEMICAL	14
CLASTIC	19
INTERMEDIATE TO MAFIC INTRUSIVE ROCKS	20
STRUCTURAL GEOLOGY	21
GENESIS OF THE IRON FORMATION	22
IRON FORMATION FACIES	23
DESCRIPTION OF ZONES	27
CONCLUSIONS AND RECOMMENDATIONS	29
BIBLIOGRAPHY	34

PLATES, TABLES AND FIGURES IN BACK APPENDIX

KASHAWEOGAMA LAKE IRON FORMATION

ABSTRACT

The Kashaweogama Lake iron formation is an Archean, Algoma Type, oxide facies iron formation that occurs south of Kashaweogama Lake. Occupying portions of McCubbin and Conant Townships and areas to the west, the approximate total length of this iron formation is estimated to be about three miles.

In the eastern portion the iron is interbedded with greywackes, argillites, cherts, and arkose. The western portion is largely in contact with a metavolcanic sequence of intermediate to mafic composition. Andesites, basalts, tuffs and tuffaceous metasediments are the main rock types found here. Some dacitic tuffs have been noted but these are thought to be far less common than the more mafic rocks.

Overall grades of this iron formation range from 15% soluble iron to as high as 42.5% soluble iron. In one of the earlier reports (Moore 1910) one sample from the northwest zone assayed 70%. The richest material previously thought to be in the eastern zone is now known to be in the central zone just west of the McCubbin - Conant township line.

Here grades over 30% soluble magnetic iron have been obtained in bulk samples.

This iron formation is believed to have originally been derived from the mafic metavolcanics and deposited as carbonate in a deep water environment.

Subsequent metamorphism and recrystallization has changed it largely to magnetite, but several occurrences of remnant carbonate are known to occur in the western area.

The overall shape of the iron formation indicates folding about a probable synclinal axis with a steep plunge to the west. Apart from the main body of iron formation, numerous outliers of iron formation occur to the west and south. These outliers should all be searched for economic concentrations of iron.

GEOLOGY OF THE R.G. RAMSAY CLAIMS

KASHAWEOGAMA LAKE IRON FORMATION

DISTRICT OF THUNDER BAY

BY

G. C. SHARPE

INTRODUCTION

The R.G. Ramsay claims at Kashaweogama Lake, District of Thunder Bay are located approximately 10 miles north of the town of Savant Lake. These claims consist of:

PA 295106 to PA 295109 inclusive

PA 346602 to PA 346607 inclusive

PA 328248 to PA 328252 inclusive

totalling fifteen claims in all. The claim posts of all of the above claims were sighted by the author in the field and some traverses were run along claim lines. This report is based on information collected by the author during field traverses in 1971, 1972 and on a more recent detailed survey during August and September of 1975. Other information was derived from the many various sources listed in the bibliography.

The base map was derived from aerial photographs of the Silviculture Section of the Ontario Ministry of Natural Resources. Much of the geology of certain outlying areas was derived from maps by W.D. Bond, a geologist of the Geological Branch of the Ontario Division of Mines.

ACKNOWLEDGEMENTS

The author wishes to express his most sincere gratitude for the help and encouragement of the individuals listed below without which this report would not have been possible.

W.D. Bond and G.R. Edwards, of the Geological Branch of the Ontario Ministry of Natural Resources; Dr. R.T. Bell of Brock University; Mr. R.G. Ramsay, owner of the property, who provided the author with metallurgical test results; Mr. George Stevens of the Ontario Division of Mines assessment files library, who assisted the author in obtaining assessment files on several occasions; and also to Mr. Paul Leahy of Sault Ste. Marie who was a geologist with Algoma Steel at the time the author first began studies on the Kashaweogama Lake iron formation.

PREVIOUS GEOLOGICAL WORK

The first discovery of iron formation at Kashaweogama Lake appears to have been made by W.H. Collins of the Geological Survey of Canada around 1906. Following that discovery prospecting of the area began and some of earlier pits made by these prospectors were seen in the field by the author. In 1910 and 1928, E.S. Moore of the Ontario Division of Mines did reconaissance geological mapping of the area. In 1957 Pershland Gold Mines conducted geological mapping, geophysics, and diamond drilling on the property in the eastern zone. Further drilling was done by Moore Iron Ore of Duluth, Minnesota, and in 1968 Algoma Steel did a detailed geological geophysical and diamond drilling programme on the eastern zone. In 1971, 1972 and again in 1973, W.D. Bond of the Ontario Division of Mines, Geological Branch, conducted geological mapping traverses over the area encompassed by this report. During the 1971 and 1972 field seasons the author was employed as a junior assistant for W.D. Bond, during which time the author saw much of the aurrounding area as well.

LOCATION AND ACCESS

The R.G. Ramsay claims are located 3 - 4 miles, 5 - 6.5 Km. west of Provincial Hwy. 599 at the end of a dirt road which leaves Hwy. 599 ten miles north of Savant Lake. Beyond the dock at Phillips Lake the road is passable only by four wheel drive or tractored vehicles. The present road ends near the central portion of the eastern zone southwest of Lee Lake. The western zone is accessible by boat along Kashaweogama Lake.

TOPOGRAPHY

Typically the area consists of a peneplaned landscape. Relief in the area is not thought to exceed 75 ft. (22 M). The highest elevations are believed to lie just south of Lee Lake. It is also in this area where the best outcrop exposures were seen where area of exposed bedrock is concerned. To the west flatter topography and poor bedrock exposure are more the rule. Much of the better grade iron formation of the centre zone is marked by overburden.

TABLE 1 LITHOLOGICAL TABLE

CENOZOIC

QUATERNARY

RECENT

Unconsolidated swamp and stream deposits.

PLEISTOCENE

Unconsolidated silt, sand, clay, gravel and boulders.

GREAT UNCONFORMITY

PRECAMBRIAN

ARCHEAN

INTERMEDIATE TO MAFIC INTRUSIVE ROCKS

Diorite, quartz diorite, gabbro, amphibolite.

INTRUSIVE CONTACT

CLASTIC METASEDIMENTS

Greywacke, arkose, argillite, cherty siltstone, tuffaceous metasediments.

CHEMICAL METASEDIMENTS

Chert, quartz-magnetite iron formation, jasper iron formation, specularite-magnetite iron formation, massive magnetite, carbonate iron formation.

METAVOLCANICS

INTERMEDIATE METAVOLCANICS

Tuff, lapilli tuff, anclesite, porphyritic anclesite.

MAFIC METAVOLCANICS

Fine to medium grained massive basaltic rocks and derived amphibolites, chloritic schists.

GENERAL GEOLOGY

The western zone of the iron formation along the southern shore of Kashaweogama Lake consists of an east-west striking zone of iron formation about 500 ft. (150 M) thick that is in contact with metavolcanic rocks to the south and highly sheared and metamorphosed metasediments to the north. The central zone, hereafter called the centre zone, is the richest in iron content and appears to be well in excess of 1,000 ft. (300 M) thick and curves about the metavolcanic sequence to the west. This may be due to a dioritic intrusive to the west, the actual size of which could not be determined. The southern zone borders on Shallow Lake and curves to the west in a narrow band which continues westward for about 3 kilometers passing to the south of Fisher Lake. This band averages about 1,000 ft. (300 M) in thickness but is of rather lean grade. The eastern zone to the south of Lee Lake has received considerable attention and exploration. Trending east west and averaging about 1,000 ft. (300 M) in thickness, this zone has grades varying from 15 - 25% soluble magnetic iron. These are much below those recently uncovered in the centre zone which are 30 - 40% soluble magnetic iron. The southeast zone in Conant Township is considerable in area, but exposures observed in this area indicate leaner phase iron formation.

Different facies of iron formation were observed during the mapping and these are dealt with in detail later in this report.

Almost all of the iron formation is interbedded with greywacke, argillite, and arkose, especially in the eastern zone. Small dikes of gabbro and amphibolite intrucle the metasediments in the eastern zone.

The general shape of the entire iron formation is crescent shaped and indicates a synclinal structure with a steep plunge to the west.

This structure may be caused in part by an east-west fault under Kashaweogama Lake and an intrusive body of diorite to the west of the centre zone.

ROCK TYPES

Following is brief descriptions of the rock types listed in the lithological table.

MAFIC METAVOLCANICS

South of the iron formation in the western zone small outcrops of basalt and chlorite schist were observed. Weathering dark green to black, these rocks are fine to medium grained and exhibit a slaty cleavage. Fresh surfaces of these rocks are dark grey-green and equigranular. The finer grained rocks are more predominant and are often closely associated with the tuffs. South of Shallow Lake narrow bands of mafic metavolcanics also occur and are similar to those seen by the author near Kashaweogama Lake in the western zone.
(Bond 1973, O.D.M. P 933)

INTERMEDIATE METAVOLCANICS

The intermediate metavolcanics represent a large portion of the metavolcanic sequence to the south and west of Shallow Lake. South of the iron formation at the northwestern zone west of the claim group, other intermediate metavolcanic rocks occur. In this locality south of Kashaweogama Lake, porphyritic andesite andesitic flows tuff and lafilli tuff were all seen within a few tens of metres of each other traversing accross strike. The only rock type observed in this area that did not occur in the other area underlain by similar rocks, was the porphyritic andesite. Weathering grey-green to pale green with a mottled appearance this rock type was seen to border the south contact of the iron formation. Amphibole phenocrysts up to 1 cm. in diameter give the rock its mottled appearance. On fresh surface this rock is medium green with the phenocrysts readily distinguishable.

The tuffs, tuffaceous metasediments, lapilli tuff and andesite interflows were seen south of the "northwest zone" and west and south of Shallow Lake. These rocks weather grey-green to huff brown and are medium grey and fine-grained on a fresh surface. The fragments in the tuffs are felsic in composition and weather buff white to creamy yellow. On fresh surfaces the fragments are harder to distinguish and are usually only slightly different in colour from the matrix rock.

FELSIC METAVOLCANICS

On claim PA 346603 some felsic metavolcanics occur. These are similar in appearance to the intermediate rocks but are markedly lighter in appearance on weathered and fresh surfaces. This rock type is intercalated with intermediate to mafic metavolcanics and is limited in extent where seen on the above mentioned claim.

METASEDIMENTS

CHEMICAL METASEDIMENTS

The chemical metasediments described below are those metasedimentary rock units derived from chemical precipitation from ancient seawaters. These include ferrugenous and non ferrugenous types. Ferrugenous types include magnetite, quartz magnetite, jasper, specularite, and magnetic chert. Non ferrugenous types include chert and the non ferrugenous carbonates.

In the eastern zone all of the above are intercalated with clastic metasediments suggesting alternating periods of chemical precipitation and clastic deposition. In the central and northwestern zones far less clastic metasediments occur and the chemical metasediments are very prominent.

Following are general descriptions of each type of chemical metasediment.

FERRUGENOUS TYPES

MAGNETITE - This type is dark grey to black and is deep steel grey and fine-grained on a fresh surface. Specific gravity is 4.9 to 5.2 depending on purity and is easily recognized by its magnetic properties. Usually in dense appearing dark bands of widely varying widths.

Where massive magnetite is found such as on claims PA 295106 and PA 295109, more purity and finer grain sizes are in evidence.

QUARTZ MAGNETITE - This rock type is typically banded with alternating dark grey to black and white to light grey (quartz) bands. Individual bands of both magnetite and quartz vary in thickness from 1 MM to 2 - 3 CM. This particular type of iron formation is most commonly seen in outcrops of the eastern zone.

JASPER - The jasper bands are always seen in close association with magnetite and almost always with specularite present as well. The jasper bands were seen in all zones mapped but were most common in the eastern zone and the northwestern zone. The jasper bands have a smooth texture and are a dark dull red in colour. The width of jasper bands varies from 0.5 CM to 6 CM.

SPECULARITE - Having a schistose appearance with a bright metallic lustre, this rock type is most common to the central and eastern zones, usually in close association with jasper. Specularite/magnetite ratios are variable in all areas where it occurs. The highest concentrations of specularite were seen in the south end of the centre zone north and near the north perimeter of the eastern zone. At these localities on claims PA 295109 and PA 328249 respectively, samples of specularite with a bright silvery sheen and a schistose texture were found. Grain sizes were fine in all specimens seen and where specularite bands did occur they were often found by their low weathering in relation to adjacent magnetite and jasper bands. Specularite was seen in close association with the large bands of jasper in the eastern zone.

MAGNETIC CHERT - In the richer zones within the iron formation magnetic chert occurs frequently. The magnetic chert is very similar in appearance to barren ordinary non ferrugenous chert and can usually only be detected with a magnet. Where considerable magnetite impurities exist in the cherts they tend to be darker in colour than ordinary cherts.

SIDERITE BANDS - In some areas west of the claim group are reported to be bands of siderite in close association with magnetite bands. Weathering brownish buff to yellowish brown with a cream to grey buff colour on fresh surfaces, the siderite bands were seen only once by the author on the claim group. One broken specimen from loose rock by a trench on claim no. PA 295108. Here two 1 CM bands of siderite with ankerite, magnetite, and quartz bands were seen in one sample about 50 CM in diameter. Due to the age of the pit and moss overgrowth, the author was unable to find the source of the siderite bearing sample. An excellent sample of a similar nature from an area to the west was given to the author by Mr. R.G. Ramsay in October, 1973. Roy Shegelski of the University of Toronto also reports siderite on the western zone on his report of this area. Siderite is not believed to compose a significant portion of any of the iron formation within the claim group held in the name of R.G. Ramsay.

NON FERRUGENOUS CHEMICAL METASEDIMENTS

The non ferrugenous chemical metasediments include chert and the non ferrugenous carbonates which were ankerite and possible magnesium bearing carbonates. The barren cherts are smooth textured and weather pale grey to dark grey. Fresh surfaces are pale grey to medium grey and exhibit a fine sugary texture. Owing to their high tenacity and bareness the chert bands are often raised giving some outcrops a "ribbed" surface feature.

The non ferrugenous carbonates were most commonly seen in the eastern zone. Thin brown weathering bands of ankerite and possible yellow grey to medium grey bands of magnesium carbonates were seen occasionally. At this writing no magnesium carbonates have been positively identified.

CLASTIC METASEDIMENTS

The clastically formed metasediments include siltstone argillite, greywacke and arkose. Within the eastern zone all of these rock types were seen. The siltstone is very fine grained, dark grey in colour and exhibits a silty texture on a freshly broken surface.

The argillite is fine grained, light grey in colour and is much like cemented fine sand on a fresh surface.

The greywacke is fine to medium grained, is dark grey to buff and has a grain size about the same as that of sand. It is the most common clastic metasediment in this area.

The arkose was observed in isolated areas on claims PA 328249 and in some outcrops south of the claim group. The arkose bands are medium grained, light in colour and on close examination have a texture similar to that of coarse sand.

None of the metasedimentary outcrops on the grid had bedding features that enabled tops determinations. For further description of these rocks the reader is referred to W.D. Bond's 1971, 1972 and 1973 O.D.M. preliminary maps.

INTERMEDIATE TO MAFIC INTRUSIVE ROCKS

Small dikes and bodies of gabbro, amphibolite and diorite occur near the eastern zone and west of the centre zone. The gabbros and amphibolites are dark grey to buff brown on weathered surfaces. Where freshly exposed these rocks are medium to course grained and dark blue grey to almost black.

One outcrop of biotite diorite was seen northwest of Shallow Lake just west of the claim group. This rock type has a mottled appearance and ..eathers light brown. Blebs of biotite are easily visible on fresh surfaces. Because only one outcrop of this rock type was seen, the actual size of this diorite body cannot be determined at the present time.

STRUCTURAL GEOLOGY

The Kashaweogama Lake fault and the syncline within the iron formation are the main structures in the area. In the vicinity of the northwest zone north trending minor faults are believed to be the cause of slight lateral displacement of some of the iron rich bands. Intense shearing of some of the rocks along Kashaweogama Lake plus lateral displacement of rock units in this area are the indicators of the large east-west fault under Kashaweogama Lake.

The synclinal structure within the iron formation is east-west trending and plunges steeply to the west. The general shape of the iron formation, the nature of the folding within it and bedding dips at various locations indicate the presence of a syncline.

No other major faults or folds were in evidence during the mapping.

GENESIS OF THE IRON FORMATION

Previous research by Bond, Bell, Shegelski and others indicate mafic volcanics as the original source of the iron. The iron was probably weathered from mafic volcanics, deposited and dissolved in ancient seas and subsequently precipitated from the seawater. Examination of the beds indicates alternating periods of chemical and clastic deposition. During some of the periods of chemical deposition possible changes in eh and ph of the seawater may have caused alternating depositions of iron and silica.

Remnant carbonate bands, plus examination of data on other similar iron formations elsewhere suggest that original deposition of the iron was in the form of carbonates. The iron was subsequently changed to magnetite and hematite by metamorphic processes brought on by folding and faulting with subsequent heat and pressure effects on the rocks. Another factor in regional metamorphism is the intrusion of felsic igneous rocks after deposition of the iron and associated sediments.

IRON FORMATION FACIES

Six different facies of iron formation were defined during the course of the field mapping. These were as follows:

QUARTZ MAGNETITE

MAGNETITE - CHERT

MAGNETITE - JASPER

MAGNETITE QUARTZ CARBONATE

MAGNETITE ARGILLITE

"MASSIVE MAGNETITE" BANDS

The following is a brief description of the iron formation facies on an individual basis and where they are found.

QUARTZ-MAGNETITE - This is by far the most common type and is found in all zones. Quartz-magnetite specimens are steel grey to black and exhibit good banding. The quartz can be anywhere from white to dark grey in colour and stands out against the dull steel grey colour of the magnetite. Bands average 1 to 5 cms. in width.

MAGNETITE - CHERT - Magnetite chert is similar in appearance to the quartz magnetite iron formation except for the following:

- The weathered surface is frequently "ribbed" with the chert bands standing out as dark grey smooth surfaced bands.
- Fine laminellar structures are often seen within individual chert bands.
- Chert interbands often contain magnetite impurities making them slightly magnetic.

Magnetite chert iron formation was most common in the eastern, central, and southern zones.

MAGNETITE - JASPER - This type of iron formation consists mainly of magnetite specularite bands intercalated with jasper bands. The magnetite rich bands are bright steel grey, (due to specularite impurities) with adjoining jasper bands being dark red in colour. On freshly broken surfaces the jasper is a dull reddish purple and does not stand out as well. Magnetite jasper was seen in all zones but the most extensive occurrences are as follows:

- Near the base line at 45E 1+00S on claim PA 328250. Here the most spectacular jasper bands occur in an outcrop near the drill road.

These jasper bands are brighter in colour than usual and are up to 12 cm. in width. Specularite content is high here as well.

- In a trench at the north perimeter of the northwest zone, on claim PA 346605.
- Near the south boundary of the south zone near Shallow Lake in an old trench on claim PA 295108.

From field observations it appears that the jasper rich zones are more common in areas near or at the outer perimeter of the iron formation.

MAGNETITE - QUARTZ - CARBONATE - Magnetite with quartz and carbonate bands was seen in trenches at the following locations:

On claim PA 328249 at 38E 1+00S

On claim PA 295108 just north of Shallow Lake

On claim PA 346605 just south of Kashaweogama Lake.

The carbonate mineral has been tentatively identified as ankerite.

MAGNETITE - ARGILLITE - One of the leaner phases of iron formation, magnetite argillite and similar related types were mainly confined to the eastern zone. (See Plate VI). Other closely related types were magnetite siltstone (Plate VII) and magnetite-greywacke (Plate VIII). Where magnetite and barren metasediments are intercalated as shown in the aforementioned plates, grades tend to be lower. (20 - 24% sol Fe).

MASSIVE MAGNETITE - Within the exposed areas in the centre zone some wide (up to 1 metre) bands of almost pure magnetite are visible. (See Plates X, XI and XV). The extensive bodies of this richer phase iron formation as well as consistently high magnetometer readings in the area indicate that the best grade iron is within the centre zone on claims PA 346603, PA 295109 and PA 295106. Massive magnetite bands were also seen in the southern zone on claim PA 295108 and on claim PA 346605.

DESCRIPTION OF ZONES

EASTERN ZONE - The eastern zone is about 4000 ft. (1250 M) in length and about 1000 ft. (300 M) accross. Striking due east it dips from 80° to the north to vertical. Overall grades throughout the eastern zone are believed to range from 20 - 25% SOLUBLE MAGNETIC IRON.

CENTRE ZONE - This zone is over an area about 1500 ft. (450 M) long and 1000 ft. (300 M) wide. Extensive deposits of almost pure magnetite exist here. Below is a table taken from metallurgical tests done by Ferro Magnetics Ltd., of Prescott, Ontario.

TABLE 1

GRADE OF SAMPLE	MESH SIZE		CONCENTRATE	RECOVERY
34.1%	- 400		70.3%	90.3%
% Si 02	% P	% S	% V2 05	% Ti 02
L 2	.022	.005	L.02	0.041

Other tests done by the same company gave concentrates of 69.5% Fe with a 97.8% recovery.

These tests indicate that most if not all of the centre zone would be amenable to the production of super concentrate.

SOUTH ZONE - This zone is extensive, well folded in places and is believed to be slightly higher in grade than the eastern and northwest zones. Grades are believed to be from 23 - 27% sol. Fe based mainly on close examination on outcrops on claim PA 295108.

WEST ZONE - The west zone in this report is defined as the narrow band of iron formation on claim PA 346603 that connects the centre and northwest zones.

NORTHWEST ZONE - The northwest zone occurring on claims PA 346604, PA 346605 and the west of these claims has not been bulk sampled recently but from close examination by the author is believed to grade around 22 - 26% sol. Fe.

CONCLUSIONS AND RECOMMENDATIONS

The large extent of the iron formation, the grades found in the centre zone plus metallurgical test results warrant further development of the R.G. Ramsay claims. The iron formation is of very good grade in the centre zone (35%) and metallurgical tests show that a superconcentrate can be obtained from this zone. Field mapping and more recent geophysical surveys indicate larger areas of richer phase iron formation in the centre zone than was previously shown on older maps.

Grades of 20 - 25% iron in the northwest, eastern and southern zones indicate that these areas are amenable to further development. Several zones of specularite rich iron formation in the eastern zone could be upgraded to obtain better recoveries using high intensity wet magnetic separation. Specularite and jasper rich zones may be responsible for lower than expected magnetic readings in some areas. Much of this specularite and jasper could be liberated using high intensity wet magnetic separation.

With regards to further development of this property, the following is recommended:

- Further stripping and trenching in the centre zone to obtain more bulk samples.
- Additional drilling in the centre zone to obtain more information on areas not previously drilled.
- Reconaissance geophysical surveys MAG. and EM-16 to locate possible additional satelite zones.
- Full scale feasability studies by metallurgical and mining consultants to determine tonnages, average grades, production costs, etc.
- Finally, where any additional zones of good potential become known, staking of these, where necessary, is advised.

RECOMMENDATIONS KASHAWEOGAMA LAKE IRON FORMATION

1. Stake additional claims to the west and south, thoroughly covering B, C1 and C2 zones
2. Survey properties and bring to lease status.
3. Take steps to raise capital for new and extensive development program to include:
   A - Surface drilling to 1,000 ft.
   B - Bulk sampling and metallurgical testing.
   C - Both of above to be done immediately following geophysical program which shall include magnetometer and gravity surveys with readings at 25 ft. intervals over lines no more than 100 feet apart and said survey line should run as close to right angles to the strike of the formation as possible.

George C. Sharpe
TORONTO ONTARIO
30 OCTOBER, 1975

* No qualifications on record
* No qualifications on record

LITHOLOGICAL PERCENTAGE TABLE FOR DRILL HOLES

D[illegible]ILL HOLE NO.	FEET OF MINABLE IRON FORMATION	FEET OF LEAN IRON FORMATION	WASTE	% ORE	% LEAN I.F.	% WASTE	TOT[illegible] SECTI[illegible]
	20% and over	10 - 20%	Less than 10%				
PG - 1 - 57	160	260	336	21.2	34.4	44.4	756
PG - 2 - 57	400	280	72	53.2	37.2	9.56	752
PG - 3 - 57	THIS HOLE ABANDONED AND WAS NEVER	FINISHED					045
PG - 4 - 57	360	160	231	47.9	21.3	30.8	751
PG - 5 - 57	240	180	278	34.4	25.8	39.8	698
KP - 1 - 60	180	140	309	28.6	22.3	49.1	629
KP - 2 - 60	195	60	346	32.4	10.0	57.6	601
KP - 3 - 60	85	110	422	13.8	17.8	68.4	617
KP - 4 - 60	130	120	312	23.2	21.4	55.4	562
KP - 5 - 60	60	140	254	13.4	30.8	55.8	454
PG - 1 - 68	120	180	206	23.7	35.6	40.7	506
PG - 2 - 68	184	190	138	35.9	36.9	27.2	512
PG - 3 - 68	214	90	125	49.9	21.0	29.1	429
PG - 4 - 68	350	190	188	48.1	26.1	25.9	728
PG - 5 - 68	105	145	175	29.7	34.1	41.2	425
PG - 6 - 68	145	180	209.5	27.1	33.6	39.3	534.
AVERAGES				31.5	27.2	41.3	
TOTAL FOOTAGE Excluding PG - 3 - 57			Page 32				8,954.

TABLE 2

SAMPLES

To obtain further information on grades of the different types of iron formation, the author took samples as shown below.

SAMPLE NO.	TYPE	ZONE	CLAIM NO.
75 - R - 1 - S	Massive Magnetite Assay 34.5 FE.	Centre N	PA 295109
75 - R - 2 - S	Quartz-Magnetite Assay 36.9 FE.	Eastern	PA 328249
75 - R - 3 - S	Magnetite-Specularite Assay 32.7 FE.	Northwest	PA 346605
75 - R - 4 - S	Magnetite-Chert Assay 35.4 FE.	Eastern	PA 346602
75 - R - 5 - S	Magnetite-Jasper Assay 38.5 FE.	Centre S	PA 295106
75 - R - 6 - S	Magnetite Quartz Assay 34.3 FE.	Centre S	PA 295106

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1928 LAKE SAVANT AREA DIST. THUNDER BAY

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MAP NO. 1119 G KASHAWEOGAMA LAKE
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PAPER 68 - 45
WITH MAP 14 - 1968,
1 " = 4 MILES.

FIGURE 2

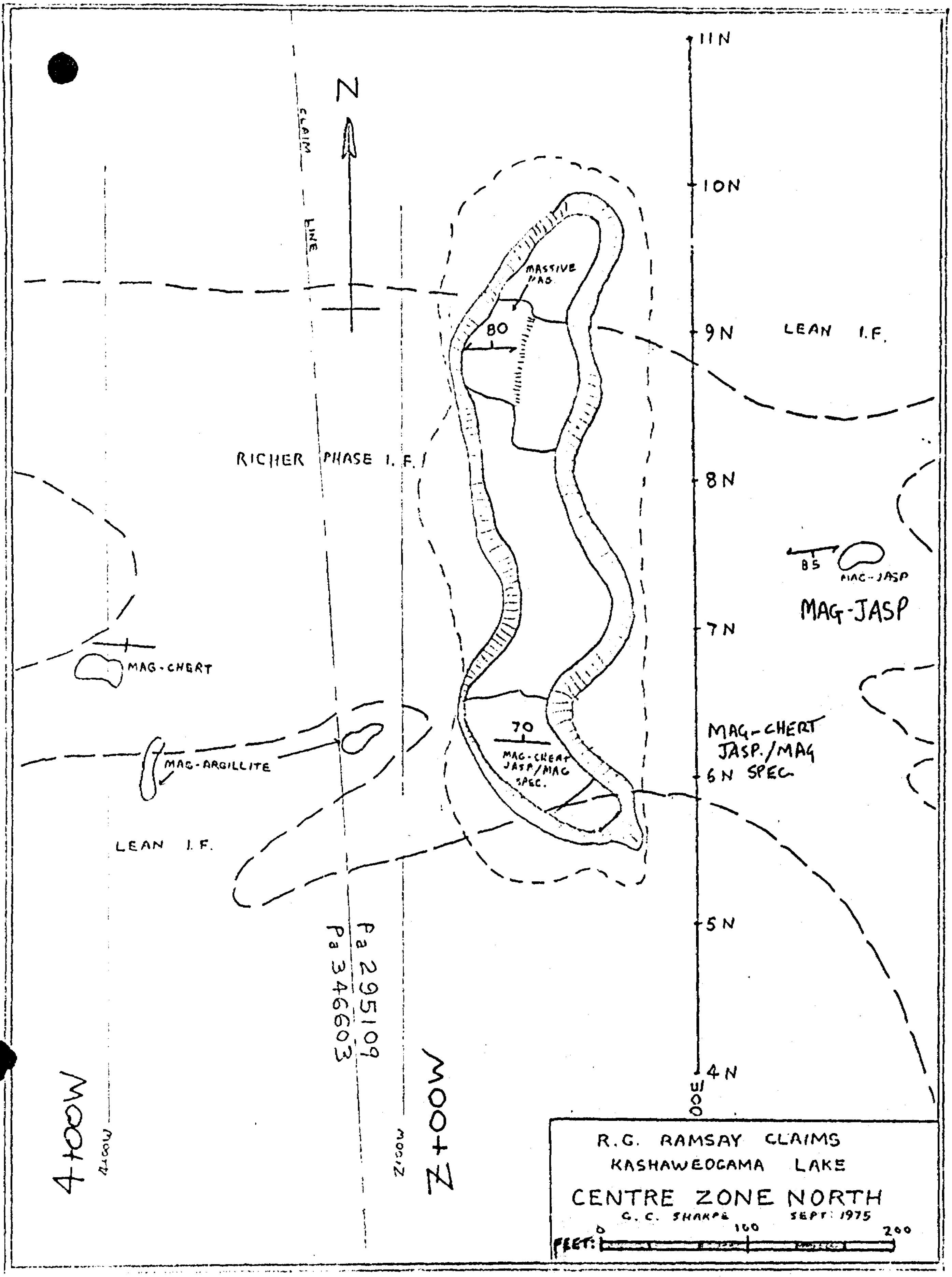
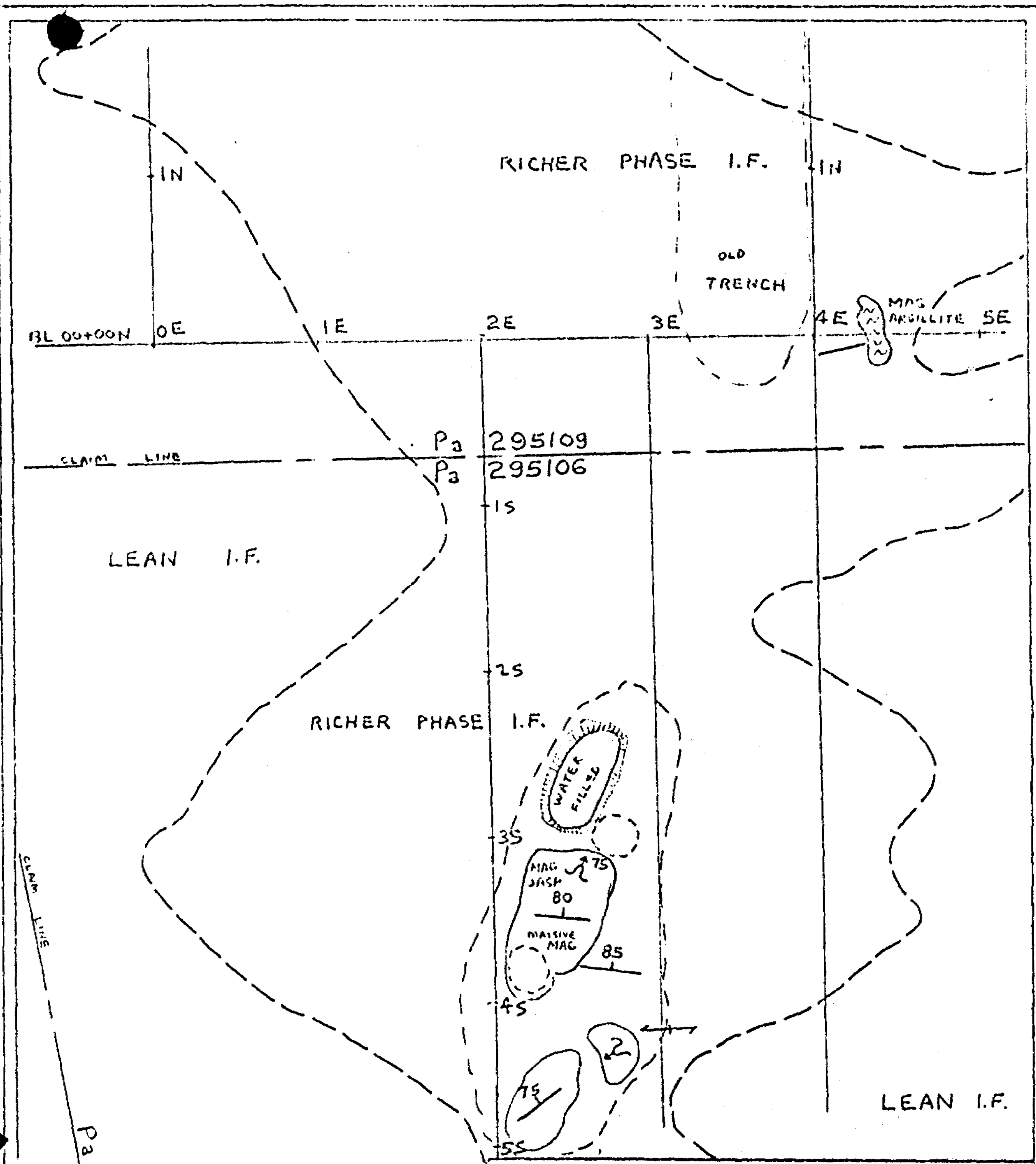

N
CLAIM LINE
11N
10N
9N
8N
7N
6N
5N
4N
MASSIVE MAG
80
LEAN I.F.
RICHER PHASE I.F.
85
MAG-JASP
MAG-JASP
MAG-CHERT
70
MAG-CHERT JASP/MAG SPEC.
MAG-CHERT JASP./MAG SPEC.
MAG-ARGILLITE
LEAN I.F.
Pa 295109
Pa 346603
4+00W
2+00W
R.G. RAMSAY CLAIMS
KASHAWEOGAMA LAKE
CENTRE ZONE NORTH
G. C. SHARPE
SEPT. 1975
FEET: 0 100 200

FIGURE 3



R.G. RAMSAY CLAIMS

KASHAWEOGAMA LAKE

CENTRE ZONE SOUTH

G. C. SHARPE SEPT 1975

FEET: 0 100 200

EXCALIBUR INTERNATIONAL CONSULTANTS LTD.

1522 Clearwater Drive, Mississauga, Ont., Canada L5E 3A3 · Tel. (416) 278-1545

52J07NE0043 52J07NE0021 GREBE LAKE

020

REPORT OF GEOPHYSICAL SURVEYS

ON IRON FORMATIONS

AT KASHAWEOGAMA LAKE, ONTARIO

Previous work:
63.909 Mag (1956-57)
- different instrument
63.2036 Mag (1965)
- different instrument
63.2159 Mag (1967)
- same instrument
- different intervals
63A.529 Geological
2.838 Expenditure
2.1055 Expenditure

PREVIOUS WORK:
63.909 MAG (1956-57)
- different instrument
63.2036 MAG (1965)
63.2159 MAG (1967)
- SAME INSTRUMENT
- DIFFERENT INTERVALS
63A.529 GEOLOGICAL
2.838 EXPENDITURE
2.1055 EXPENDITURE

FOR

RAY G. RAMSAY

BY

J. B. Boniwell

EXPLORATION GEOPHYSICAL CONSULTANT

- November 12, 1975 -

LIST OF CONTENTS

	PAGE
INTRODUCTION	1
DESCRIPTION OF PROPERTY	2
WORK UNDERTAKEN	4
DISCUSSION OF RESULTS	5
(a) Magnetics	5
(b) V.L.F.	8
CONCLUSIONS AND RECOMMENDATIONS	10

LIST OF DRAWINGS

DWG. NO.	TITLE	SCALE
EIC - 139	Property & Grid Plan	1"=400'
EIC - 140	Profiles of Vertical Intensity Magnetics	1"=400'
EIC - 141	Contours of Vertical Intensity Magnetics	1"=400'
EIC - 142	V.L.F. Profiles	1"=400'
EIC - 143	Contours of Filtered V.L.F. Data	1"=400'

INTRODUCTION

A combination of magnetics and V.L.F. surveying has recently been undertaken on the iron formation occurrences of Kashaweogama Lake, Patricia Mining Division, Ontario to see what additional definition could be had thereby of the setting and its mineralized components.

DESCRIPTION OF PROPERTY

The claims covered in this investigation are given below. They total 15 in number, all within the Patricia Mining Division, north-west Ontario.

Claim No.	Twp.
PA 295106	-
PA 295107	Conant
PA 295108	-
PA 295109	-
PA 328248	Conant
PA 328249	McCubbin
PA 328250	McCubbin
PA 328251	McCubbin & Conant
PA 328252	McCubbin & Conant
PA 346602	McCubbin
PA 346603	-
PA 346604	-
PA 346605	-
PA 346606	-
PA 346607	-

Each claim is a nominal 40 acres and is contiguous with its neighbour. The single coherent block so formed sits astride the common boundary between McCubbin and Conant Townships and the boundary both provide with the unsurveyed territory lying to the west. All claims are registered in the name of Mr. R. G. Ramsay of 10 Cook Street, Barrie, Ontario.

Access to the property is readily had overland from the Pickle Lake road (Ontario highway 599) which passes a scant 2 1/2 miles east of the property centre 12 miles north of the Savant Lake station on the C.N.R. transcontinental railway. The final section from highway 599 involves an old drill road which is amenable to appropriate bush vehicle transport in both summer and winter seasons.

Typical northern forest prevails throughout, spruce mainly, some bir h and poplar in drained areas. The relief is minor but varies between outcrop or near-outcrop sections and muskeg swamp. Lee Lake to the north and Shallow Lake to the south, albeit relatively small, encroach upon the property from both sides.

WORK UNDERTAKEN

The grid of lines put in for the purpose of the present surveying was variously spaced, but primarily kept to 400' intervals; the lines themselves were oriented true N-S and were controlled from three E-W base lines (Dwg. No. EIC-139). Stations were either 50' or 100' apart according to the detail sought.

The magnetic traversing undertaken was completed with a vertical force fluxgate magnetometer, the McPhar model M-700 operated on the 100,000 gamma range. At this setting the instrument sensitivity is in the order of 250 gammas, the reading accuracy about 1000 gammas. Readings above 100,000 gammas are in effect off-scale. For consistency, the range setting has not been altered throughout the survey. Notably a large proportion of the magnetic coverage has been effected at a station interval of 50'.

V.L.F. measurements have been collected utilizing the NAA, Cutler, Maine transmitter field. A Geonics model Em-16 receiver tuned to the 17.8 kHz operating frequency of the station was employed for this survey. In this instance the reading interval was an unchanging 100' along traverses. Both in-phase and out-of-phase components of the total vertical field at a station were observed, both to an accuracy of 1% at levels below ± 10%, from 2-5% for levels above.

Totals involved in this work are as follows:

Grid line cutting and chaining:	14.9 miles
Magnetic traversing:	12.3 miles
Magnetic stations occupied:	1105
V.L.F. traversing:	11.0 line miles
V.L.F. stations occupied:	609

All geophysical field work was carried out by Mr. R. G. Ramsay of 10 Cook St., Barrie, Ontario, between 23rd August and 28th September 1975.

DISCUSSION OF RESULTS

(a) Magnetics

The magnetic profiles (Dwg. No. EIC - 140) as only to be expected are dominated by the relief of the magnetite iron formations. A number of values in excess of 100,000 gammas local relief have been observed compared to an environmental background that remains relatively steady at about 1000 gammas throughout the grid area. At this lower level lithologic changes appear minor; in fact there is no recognizable contrast between the widespread metasediments of the eastern half of the grid and the volcanic flow series occupying the west and south. This is not too surprising considering the highly interstratified nature of the two units as they come in proximity to each other. Large sections of the grid area to the south and south-west are indeed mapped as underlain by intercalated sediments. An outcrop of diorite recorded at approximately 9E/16S also appears to have no distinctive magnetic expression of its own. Again this can hardly be viewed as surprising considering its position virtually in the heart of the main iron formation system here. However in this case the non-expression can be taken as the definitive characteristic: from the gap in the local relief it causes, it is possible to discern the outline of the intrusive body as it cross-cuts the magnetite formations. On this evidence, the diorite extends much further to the south-east, in fact a full 1000' from the designating outcrop to reach virtually to the north shore of Shallow Lake, than has been previously mapped. Moreover it widens to over 600' in this distance, an important fact in assessing mineral distribution here.

While the main magnetic relief forms up into definite, sometimes precise zones of anomaly in a fairly coherent fashion, in detail almost everywhere there is considerable indication of multiple individual horizons, of lensing and folding, and of structural dislocation (Dwg. No. EIC-141). In particular there is the major synclinal fold that brings about the general swing south in the formations along lines 0, 1E, 2E, over which sector the magnetic activity becomes exceptionally tweaky and disorderly. In these circumstances, only the more broad feature emerges with authority.

There are three sectors where magnetic activity is sustained at peak levels over appreciable widths and strike distances. While magnetic amplitudes by themselves can not be taken as measures of grade, still the odds inevitably favour the persistently strong magnetic systems as potential ore zones. Thus the pre-eminent anomaly system that falls between 25E and 45E from 2N to 4S has attracted considerable past attention, and as the so-called East Zone it has in fact been the object of most of the past drilling in this region. (Pershland Gold Mines Ltd., W.S. Moore Company, Algoma Steel Corp.). An aggregate of roughly 50 million tons averaging 22% Fe to the first 600' from surface has been indicated thereby.

A second strong system lies across lines 5W to 11E at about 4N swinging north to 10N and sweeping south in an additional segment around 4E from 2N to 4S. Designated the Centre Zone, this is manifestly a much broken system, suffering folding and faulting in a relatively concentrated area. By the same token this could be a more interesting system from a mineral point of view, and indeed some of the best bulk assays (from surface trenching) for the region have been recorded here, viz. in the range 30 - 40% soluble magnetic iron. Incredibly, the Zone has seen no drilling except for one hole (DDH # KP-1-60) at its north-western extremity. Magnetic outlines are of course irregular, and in the case of the south segment which essentially falls between two traverses not necessarily fully defined, yet it is obvious that in overall dimensions a lively potential is inherent. Even taking a fairly conservative view of what is indicated in the way of size, three minable pods totalling 13 million tons in the first 300' from surface can be perceived. If the above grades are anywhere near characteristic of that tonnage, then a profitable, albeit small-scale operation can readily be projected.

By comparison, the third magnetic system of note is patently the least promising. It occurs to the north-west of the Centre Zone but is presumably connected to it through a drag fold or fault displacement about line 6+50W. In its peak expressions it is confined to 75' widths over strike distances of about 600'. Adding such local indications all together, a total of 5.5 million tons for the first 300' from surface is arrived at. However in the mining of the contained material by open cast methods, a rather severe dilution factor may have to be accommodated. This is because there is apparent to the magnetics evidence of significant widths, up to 150' say of lean country rock between the iron-rich layers in this system. Only one hole (DDH # KP-2-60) has explored the setting but it is so far to the west (line 19+50W) that it barely can be considered diagnostic.

On the other hand it should be noted, working with peak responses is not the final word in magnetics. Because of the unpredictable remanent component, plus the incidence of hematite in the magnetite context, together with the usual factors of body geometry and overburden cover, there is ever present the chance that the weaker anomaly may be more symptomatic of mineral concentration than its immediate appearances suggest. Two current anomalies that prompt this sort of possibility are the features that centre on 14N/6+50W and 20S/7E. The first is a potential pod of ore caught up in the drag fold or faulted block connecting the Centre Zone with that Zone lying to the north-west; the second has larger implications since it could represent a major extension of ore material to the south. The latter in fact as a zone could possess a near north-east strike linking in a broad way the magnetic expressions at 14S/11E with that at 28S/3E. The substantial basic intrusion of earlier mention however cuts across the zone between 15S-18S and provides a major interruption. Nevertheless it is clear from the describing magnetics that the main potential lies to the south of the intrusion; thus it comes as a surprise again that the only drilling conducted in this whole sector has been directed to the fringes, viz at the quite local anomaly segment confined to the north of the intrusive (DDH # KP-3-60), and to the west of line 3E, that is, off the west end of the zone as it is presently defined (DDH # KP-4-60). In point of fact, it is projected from geologic mapping (G. C. Sharpe, 1973) that the host formation narrows rapidly beyond line 00 to the west and thus this latter hole represents a limited sampling at best.

(b) V.L.F.

V.L.F. surveying has produced a number of anomaly events in and around the iron formation(s). Consistent with the magnetics, results are fairly orderly to the east, but approaching grid centre anomaly resolution and incidence becomes increasingly jumbled and they do not really quieten down again until well to the west (Dwg. No. EIC-142). In consequence, the data have been filtered to suppress the extremely local near-surface noise (as well as long wave-length regional effects which are hardly present here) to the enhancement of the genuine bedrock conductor axes as they are represented by the in-phase measurements (Dwg. No. EIC-143).

If the two sets of contoured data, magnetics and V.L.F., are compared, it will be seen on close inspection that it is the overwhelming tendency of the V.L.F. axes to intimately flank to one side or the other the main iron formation horizons. This is exactly what is to be expected, and if in seeming contradiction a V.L.F. anomaly perchance peaks over a magnetic anomaly, e.g. on line 27E, 4W, it can be reasonably assumed that there is another factor present, for instance a fault/ shear lineament, perhaps hitherto undetected, threading the bedded iron mineralization.

V.L.F. data are in fact most appropriate to through-going, steeply dipping interfaces in resistivity contrast. Where they are not describing limits or edges to major lithologic units such as the present iron formations, they are likely to be delineating structural lines of weakness. As already implied when the latter are parallel or sub-parallel to formational strikes, they are difficult to see for themselves even though as the magnetics here portend the probabilities might favour their presence. However when a clearly transgressive cross-structure exists, V.L.F. can be very helpful in sensing it and pinning it down. In the present coverage, two such structures emerge. One bears NW and completely traverses the grid area from the north end of line 11+50W to past the south end of the line 27E. It is a very important structure since it does much to explain the termination of the volcanic flows east, and the sudden narrowing of the synclinal basin into sediments going east therefrom. The suggested throws on this fault is therefore east side up.

The second major axis described by V.L.F. is in truth only hinted at. It is not well seen in the contoured data at all, and only partially in the raw profiles. Across lines 11E, 17E, 19E towards their south ends there is evident a sequence of strong (negative) dips leading into Shallow Lake, all of which amount to a very fair indication that a major regional V.L.F. anomaly resides within the lake. The strike of this feature is almost certainly coincident with the longitudinal axis of the lake, that is, ENE. Such a circumstance evokes the likelihood of a controlling fault linear which if continued sufficiently far in the north-easterly direction, it is seen, terminates the main iron formation at its east end. Presumably then the throw of this fault is in the sense south-east side up. Again then it is an important structure to the degree it affects mineral distribution in the area; moreover any fault so located in the bottom of Shallow Lake - where incidentally and so typically, conductivity properties are enhanced by water-saturated lake bottom sediments seeping into underlying fault planes - flanks the main iron formation on its south side and hence in effect forms the limiting contact in this direction.

Not all structures of course have necessarily been sensed. Specifically those breaks that have been recognized by geology in the north-west limb of the main iron formation have apparently escaped detection by V.L.F. One cause for this can be readily attributed to the poor coupling supplied by NAA to target features striking NNE-SSW; another reason could be that the stronger V.L.F. effects arising locally from the intraformational contact of the setting could be completely masking to lesser events. Indeed these particular faults only show themselves here in the way geology sees them: by the abrupt lateral displacements they cause in iron formation strike behaviour.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the present geophysical surveys in their definition of individual iron formations, and of some of the structural elements that impinge on the setting have re-drawn attention to the significant potential residing and particularly to those portions still essentially untested. The East Zone as it stands now is an embryonic ore zone, yet by all the indications better grades belong to the Centre Zone and some rich, multi-million ton pods of ore can be projected to be contained therein. The zone to the north-west and in certain places to the south offer real chances of proving up additional ore tonnages. While all this does not constitute a major iron range and the base therefore for a massive mining venture, it does allow the conceiving of a modest scale mining operation or operations appropriate to a medium demand industry which seeks its own assured source of supply of raw material.

From the standpoint then that sooner or later more information will be required of these iron occurrences, it is recommended that there be one more geophysical stage before any future major diamond drilling is embarked upon. This further surveying is to be largely composed of gravity traversing, logically most of it directed to the three sections now demanding testing, viz. the Centre Zone, its north-west extension (to line 19+50W) and its southern limb as it swings across the intruding diorite plug of lines 11E and 15E to the north shore of Shallow Lake. The purpose of this work is to determine where the greater mass of ore lies independent of magnetic variations in susceptibility and remanence, and likewise independent of outcrop exposure or lack of it. Moreover the method embraces hematite as an attendant, relatively non-magnetic iron oxide whose presence can materially help to make ore. Prior knowledge of the heavy mineral distribution in the iron formations clearly would make for a more effective drill testing of their intrinsic worth.

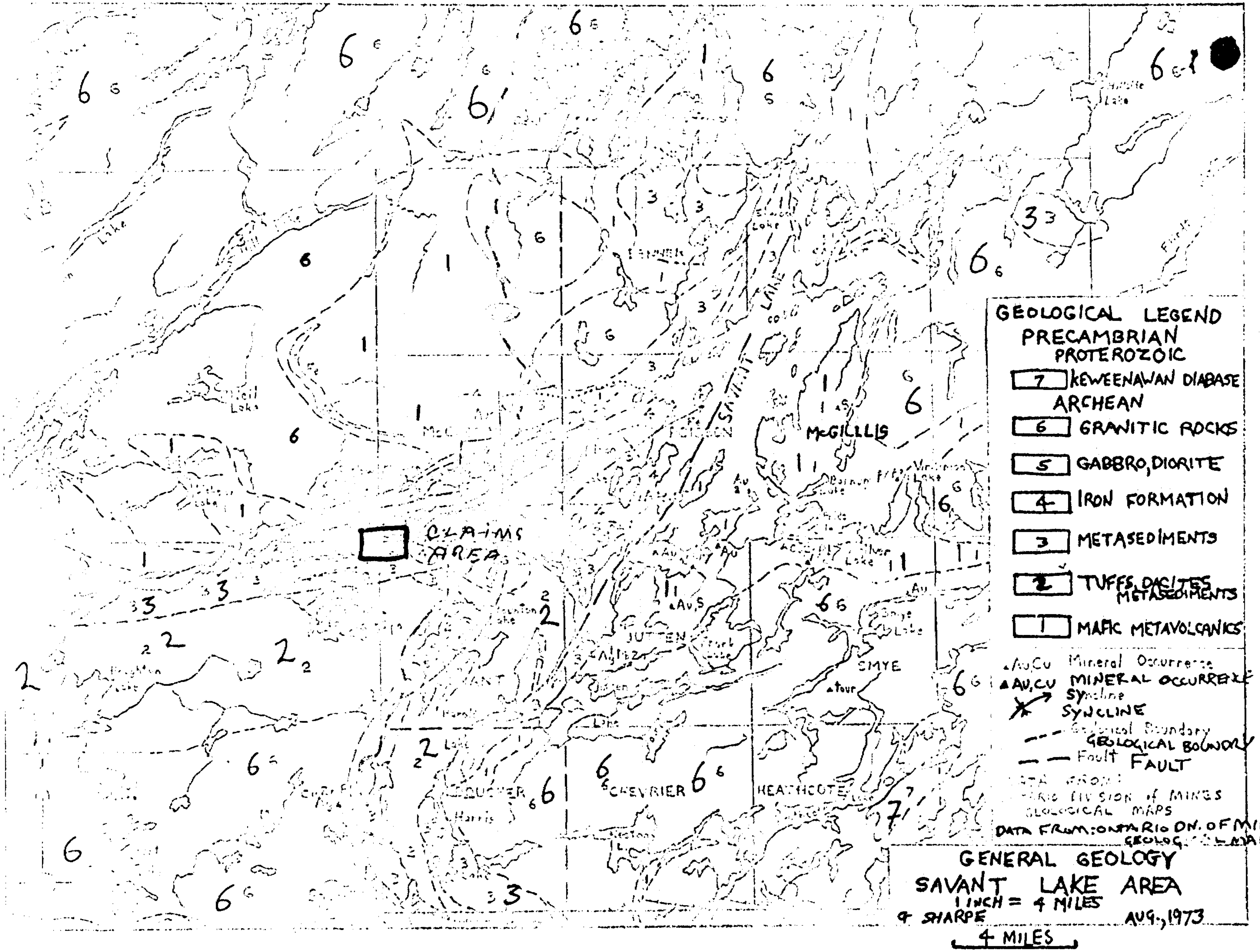
Some additional minor magnetics could also be included in this stage, filling in the odd hole of the present coverage caused either by swinging strikes or by lake, etc.

Given the completion of this geophysical work, it is then recommended that suitable drill holes be laid out to sample the most promising sections of apparent iron concentration. The gravity data already acquired would subsequently and additionally allow realistic projections quantitatively of ore reserves therefrom.

JBB:sm
November 12, 1975

J. B. Boniwell
Exploration Geophysical Consultant
*Qualification 63.1284
*QUALIFICATION: 63.1284

FIGURE 1


CLAIMS AREA
GEOLOGICAL LEGEND
PRECAMBRIAN
PROTEROZOIC
7 KEWEENAWAN DIABASE
ARCHEAN
6 GRANITIC ROCKS
5 GABBRO, DIORITE
4 IRON FORMATION
3 METASEDIMENTS
2 TUFFS, DACITES METASEDIMENTS
1 MAFIC METAVOLCANICS
AU, CU MINERAL OCCURRENCE
SYNCLINE
GEOLOGICAL BOUNDARY
FAULT
DATA FROM: ONTARIO DN. OF MINES GEOLOG MAPS
GENERAL GEOLOGY
SAVANT LAKE AREA
1 INCH = 4 MILES
SHARPE
AUG., 1973
4 MILES
McGILLIS
JUTTEN
SMYE
CHEVRIER
HEATHCOTE
SAVANT LAKE

PLATES

R. C. RAMSAY CLAIMS

PLATE I: SHALLOW LAKE
Looking East
Claim PA 295108

PLATE II: SHALLOW LAKE
Looking West
Claim PA 295108

PLATE III: BARREN METASEDIMENTS
Greywacke-Argillite
North of Eastern
Shallow Lake

Claim PA 346602

PLATE IV: LEAN IRON FORMATION
Magnetite-Greywacke-
Argillite
South Margin Eastern
Zone

Claim PA 346602

PLATE V: WELL BANDED QUARTZ MAGNETITE WITH SUGARY QUARTZ
Claim PA 328249

PLATE VI: FOLDED MAGNETITE-QUARTZ IN ARGILLITE
Eastern Zone
Claim PA 328249

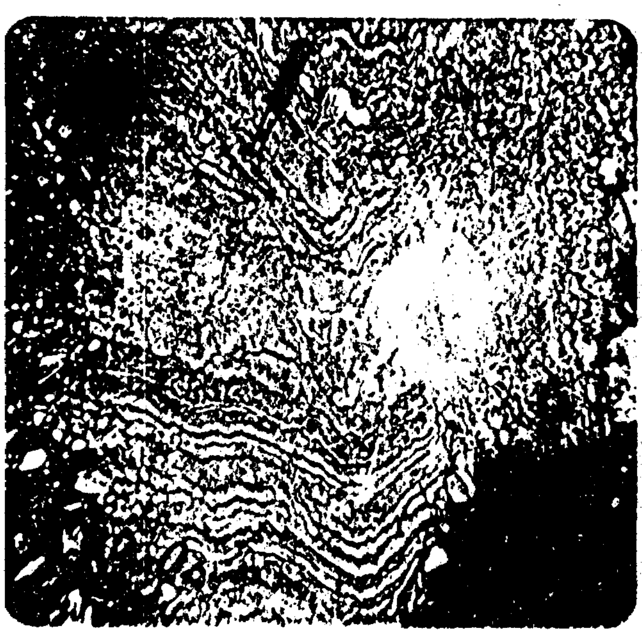


PLATE VII: MICROFOLDED, WELL BANDED LAMIELLAR MAGNETITE IN SILTSTONE
Eastern Zone
Claim PA 328249

PLATE VIII: THINLY BANDED IN GREYWACKE
Eastern Zone
Claim PA 328251

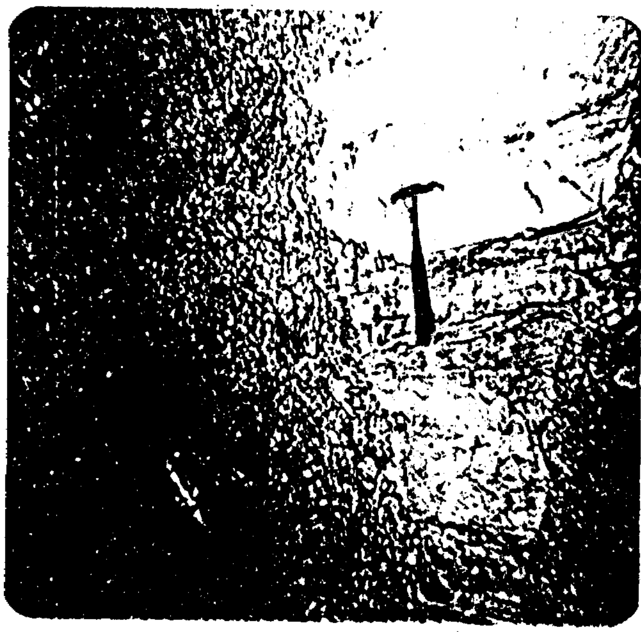


PLATE IX: CONTACT BETWEEN QUARTZ-MAGNETITE IN ARGILLITE, (Left) and QUARTZ-MAGNETITE IN GREYWACKE (Right)
North Edge of Eastern Zone
Claim PA 328249

PLATE X: EXPOSURE OF MASSIVE QUARTZ MAGNETITE
Centre Zone South
Claim PA 295106

PLATE XI: CLOSE UP OF MASSIVE QUARTZ MAGNETITE
Centre Zone South
Claim PA 295106

PLATE XII: BULK SAMPLE PILES
Centre Zone South
Claim PA 295106

PLATE XIII: BULK SAMPLE PILE AND EXPOSURE OF MASSIVE MAGNETITE
(Hammer) Centre Zone North
Claim PA 346603

PLATE XIV: QUARTZ MAGNETITE (BANDED) AND SPECULARITE-MAGNETITE (WEATHERED)
Centre Zone North
Claim PA 346603

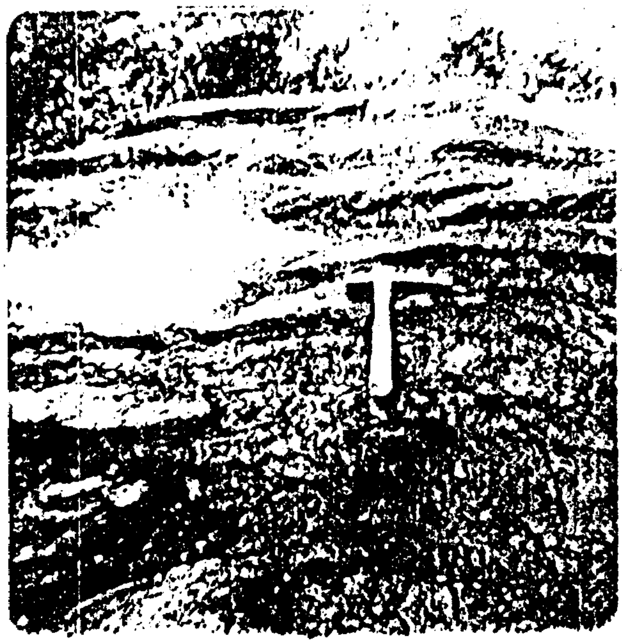


PLATE XV: CLOSE UP OF MASSIVE MAGNETITE
Centre Zone North
Claim PA 346603

PLATE XVI: CONTORTED QUARTZ-MAGNETITE
Centre Zone North
Claim PA 346603

52J07NE0043 52J07NE0021 GREBE LAKE

900

ASSESSMENT WORK DETAILS

Type of Survey: GEOLOGICAL SURVEY
A separate form is required for each type of survey

Township or Area: McCUBIN TWP + GREB LAKE ARE

Chief Line Cutter or Contractor: (Lines previously cut for EM)
Name
Address

Party Chief
Name
Address

Consultant
Name
Address

Geological field mapping by: GEORGE C SHARPE
Qualification: NEW Name - on this file
1-572 CORYDON AVE
Address
WINNIPEG MANITOBA
R3L 0P2

COVERING DATES

Line Cutting: (Lines previously cut for EM survey)

Field: AUG 7 to SEPT 3 1975
Instrument work, geological mapping, sampling etc.

Office: SEPT 5,6,7, OCT 11,12, 20,21,22,

INSTRUMENT DATA

Make, Model and Type

Scale Constant or Sensitivity
Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count

Number of Stations Within Claim Group

Number of Readings Within Claim Group

Number of Miles of Line cut Within Claim Group

Number of Samples Collected Within Claim Group

CREDITS REQUESTED

	20 DAYS per claim	40 DAYS per claim	Includes (Line cutting)
Geological Survey	☑	☐	
Geophysical Survey	☐	☐	Show Check ✓
Geochemical Survey	☐	☐	

DATE Nov 6/75 SIGNED Raymond L Ramsay

SPECIAL PROVISION CREDITS for PERFORMANCE & COVERAGE

MINING CLAIMS TRAVERSED
List numerically

PA: 295106
295107
295108
295109
PA: 346602
346603
346604
346605
346606
346607
PA 328248
328249
328250
328251
328252

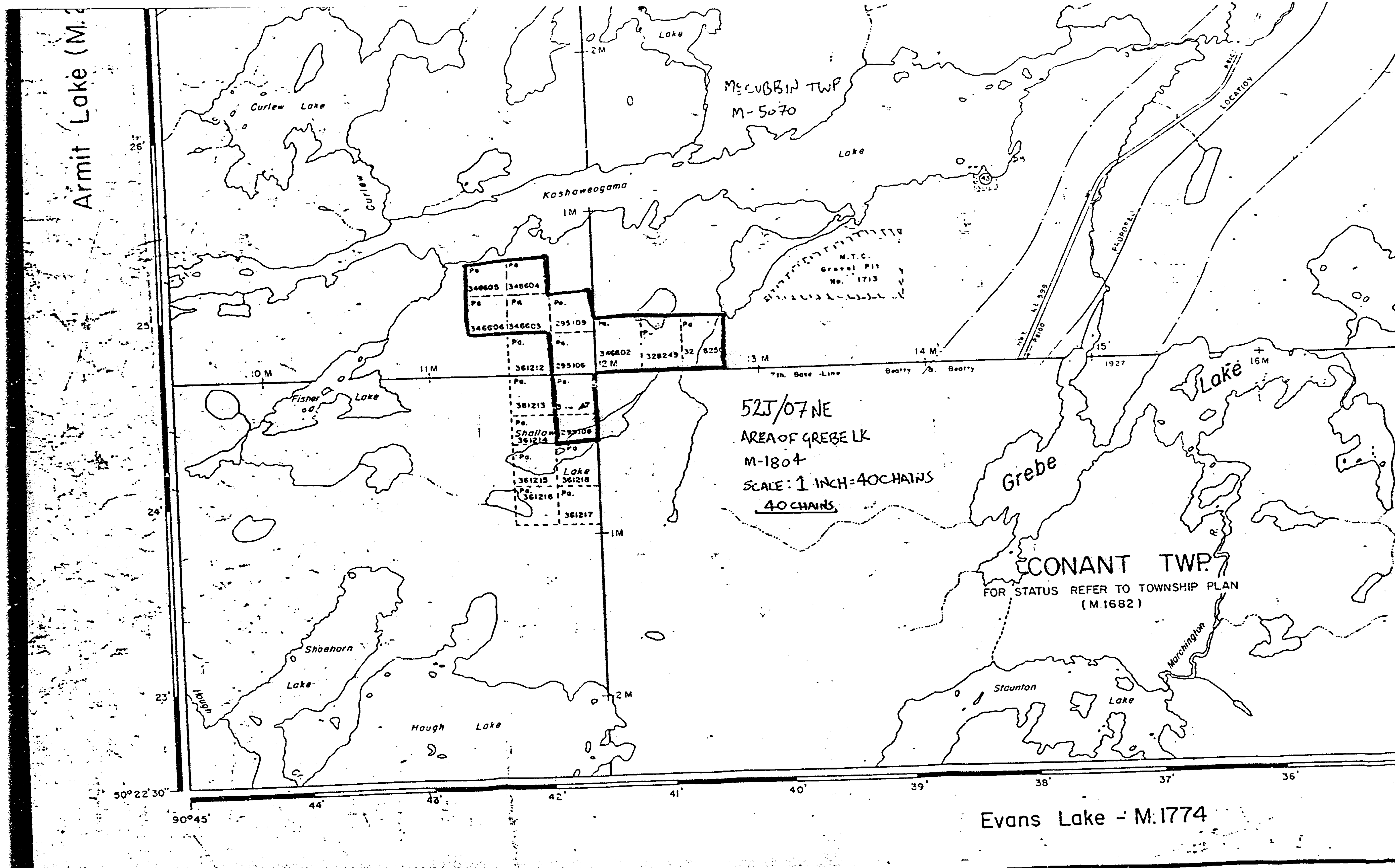
RECEIVED
NOV 7 1975
PROJECTS UNIT

If space insufficient, attach list

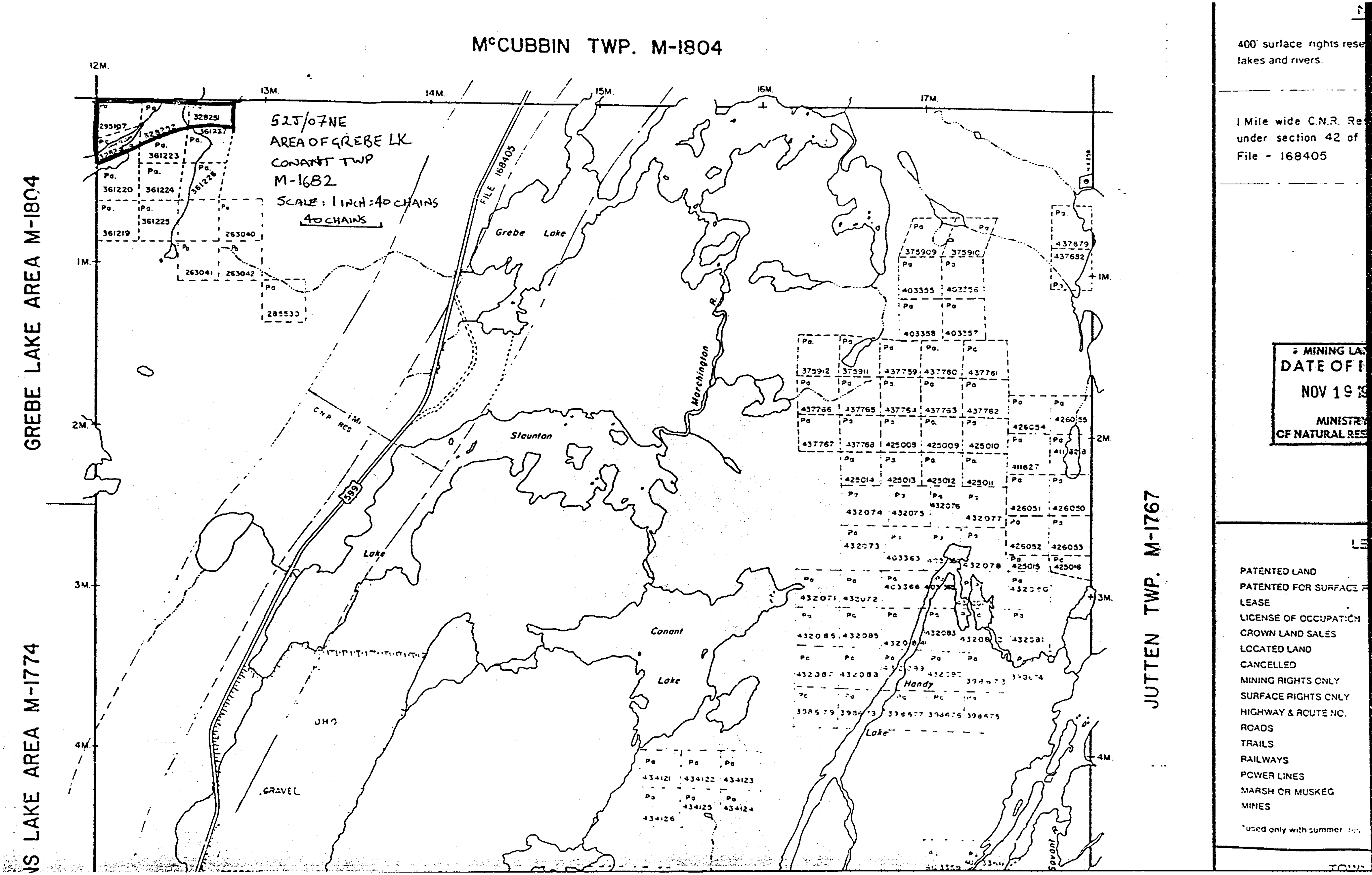
TOTAL CLAIMS 15

Send in Duplicate to:
FRED W. MATTHEWS
SUPERVISOR-PROJECTS SECTION
DEPARTMENT OF MINES & NORTHERN AFFAIRS
WHITNEY BLOCK
QUEEN'S PARK
TORONTO, ONTARIO

Performance and coverage credits do not apply to airborne surveys



Armit Lake (M.
Curlew Lake
Curlew
McCUBBIN TWP
M-5070
Lake
Kashaweogama
M.T.C.
Gravel Pit
No. 1713
346605
346604
346606
346603
295109
346602
328249
361212
295106
361213
361214
295108
361215
361218
361216
361217
Shallow
Lake
Fisher
Lake
7th. Base Line
Beatty
52J/07NE
AREA OF GREBE LK
M-1804
SCALE: 1 INCH=40CHAINS
40 CHAINS
Grebe
Lake
CONANT TWP.
FOR STATUS REFER TO TOWNSHIP PLAN
(M.1682)
Marchington
Staunton
Lake
Shoehorn
Lake
Hough
Lake
Hough Lake
50°22'30"
90°45'
Evans Lake - M.1774


McCUBBIN TWP. M-1804
GREBE LAKE AREA M-1804
...NS LAKE AREA M-1774
JUTTEN TWP. M-1767
52J/07NE
AREA OF GREBE LK
CONANT TWP
M-1682
SCALE: 1 INCH = 40 CHAINS
40 CHAINS
FILE 168405
Grebe Lake
Staunton
Lake
Conant
Lake
Handy
Lake
Harchington R.
GRAVEL
C.N.R. RES.
599
400' surface rights rese...
lakes and rivers.
1 Mile wide C.N.R. Re...
under section 42 of
File - 168405
MINING LA...
DATE OF I...
NOV 1 9 19...
MINISTRY
OF NATURAL RES...
PATENTED LAND
PATENTED FOR SURFACE
LEASE
LICENSE OF OCCUPATION
CROWN LAND SALES
LOCATED LAND
CANCELLED
MINING RIGHTS ONLY
SURFACE RIGHTS ONLY
HIGHWAY & ROUTE NO.
ROADS
TRAILS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
*used only with summer ...

Ontario

Ministry of
Natural
Resources

October 20, 1976

Our file number 2.1978

Your file number

Mr. H. L. Bell
Mining Recorder
Ministry of Natural Resources
Box 669
Court House
Sioux Lookout, Ontario
POV 2TO

Dear Sir:

Re: Mining Claims Pa. 295106 et al, Conant Township, Grebe Lake and McCubbin Township, File 2.1978

The Geophysical (Electromagnetic & Magnetometer) and Geological assessment work credits as listed with my Notice of Intent dated September 29, 1976 have been approved as of the above date.

Please inform the recorded holder of these mining claims and so indicate on your records.

Yours very truly,

J. R. McGinn, Director
Lands Administration Branch

Whitney Block, Room 1617
Queen's Park
Toronto, Ontario
M7A 1X1
Phone: 416-965-6918

OJ/mw

cc: Mr. Raymond G. Ramsay
Barrie, Ontario

cc: Mr. George C. Sharpe
Winnipeg, Manitoba

cc: Resident Geologist
Sioux Lookout, Ontario

FOR ADDITIONAL

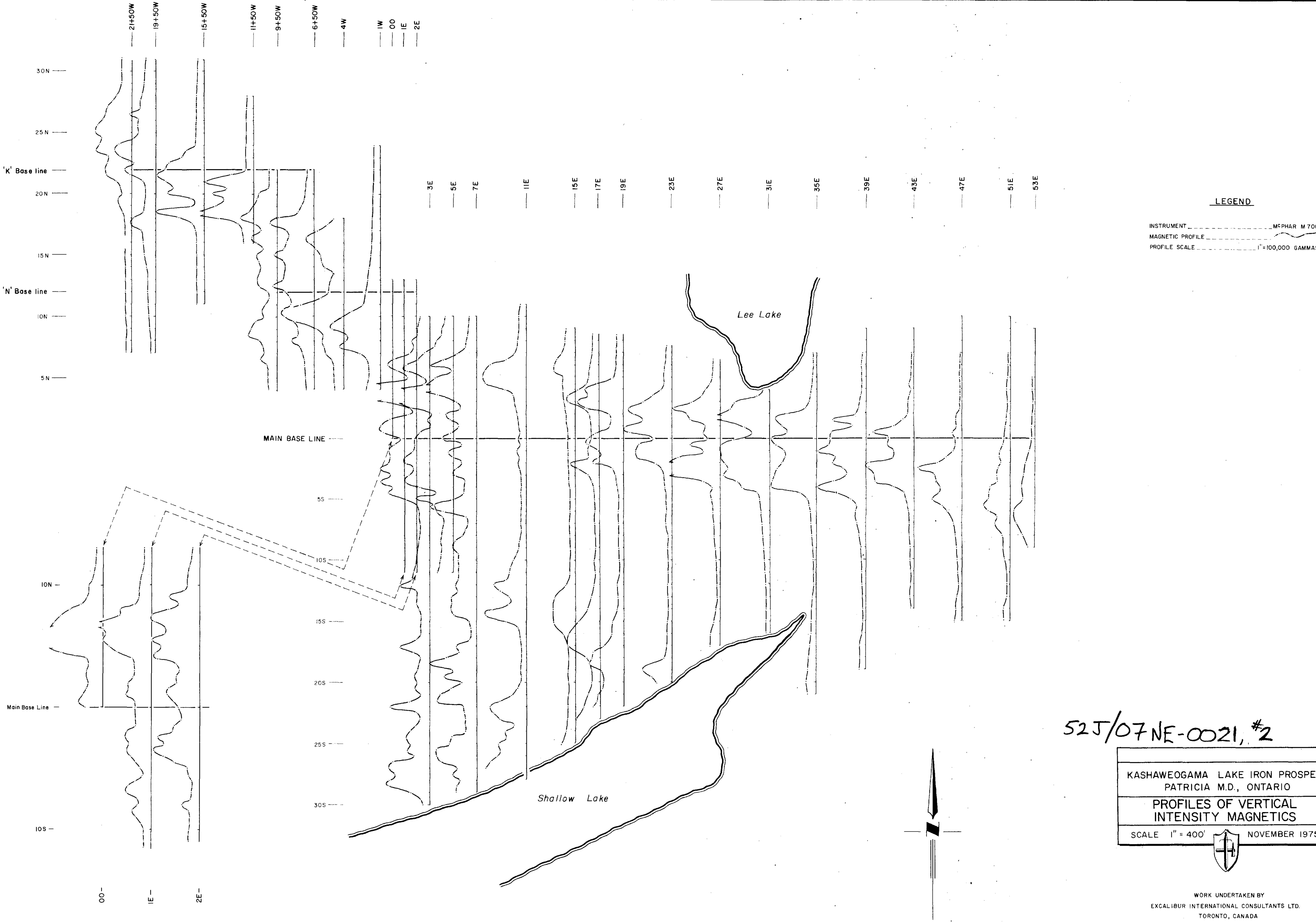
INFORMATION

SEE MAPS:

52J/07NE-0021 #1-7

52J07NE0043 52J07NE0021 GREBE LAKE

200



LEGEND

INSTRUMENT .... McPHAR M 700
MAGNETIC PROFILE ....
PROFILE SCALE .... 1" = 100,000 GAMMAS

52J/07NE-0021, #2

KASHAWEOGAMA LAKE IRON PROSPECT
PATRICIA M.D., ONTARIO

PROFILES OF VERTICAL
INTENSITY MAGNETICS

SCALE 1" = 400' NOVEMBER 1975

WORK UNDERTAKEN BY
EXCALIBUR INTERNATIONAL CONSULTANTS LTD.
TORONTO, CANADA

Dwg. No. E.I.C.- 140

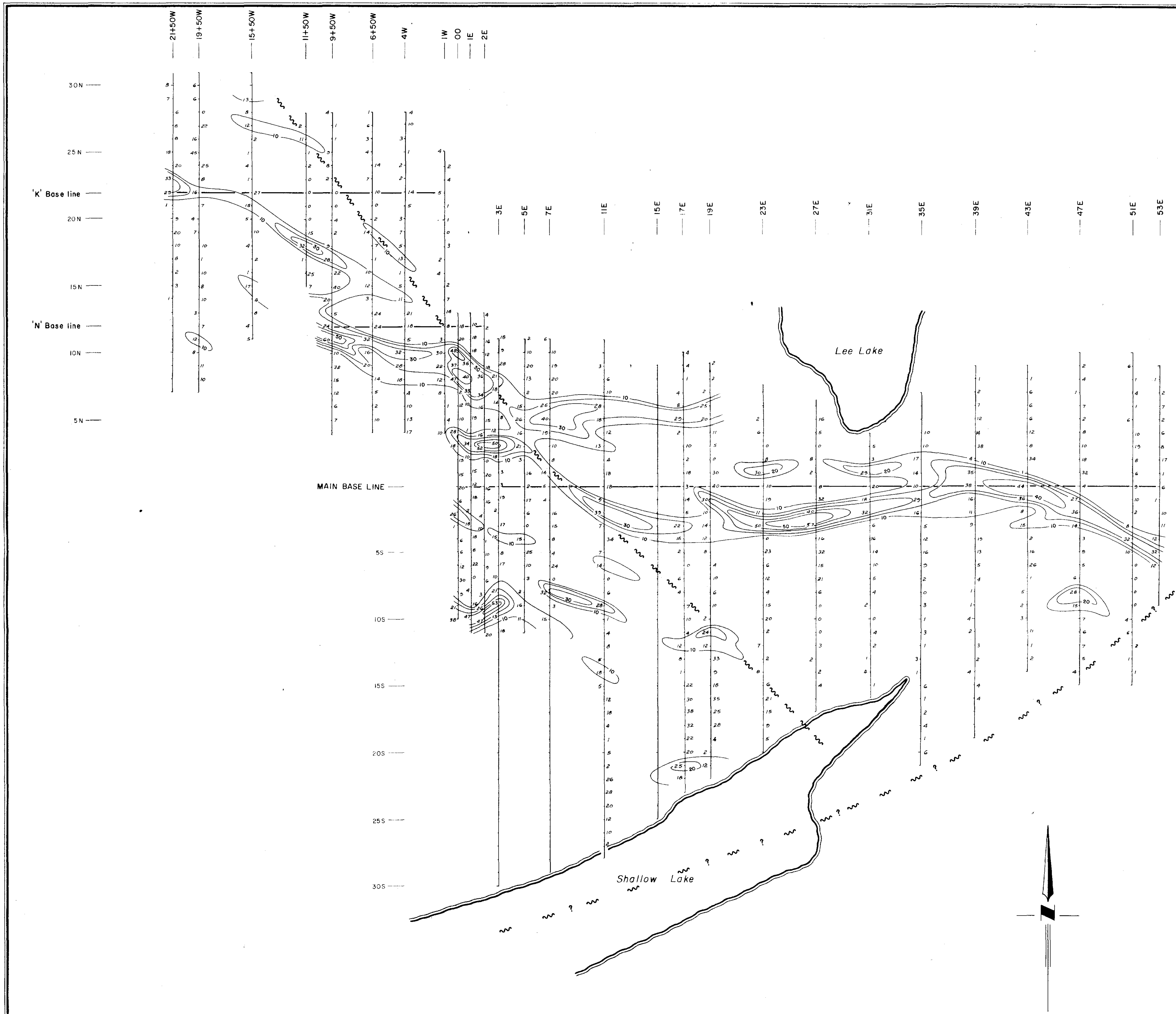
52J07NE0043 52J07NE0021 GREBE LAKE

210

52J07NE0043 52J07NE0021 GREBE LAKE

220


21+50W
19+50W
15+50W
11+50W
9+50W
6+50W
4W
1W
00
1E
2E
30N
25N
'K' Base line
20N
15N
'N' Base line
10N
5N
MAIN BASE LINE
5S
10S
15S
20S
25S
30S
3E
5E
7E
11E
15E
17E
19E
23E
27E
31E
35E
39E
43E
47E
51E
53E
Lee Lake
Shallow Lake
10N
Main Base Line
10S
00
1E
2E
LEGEND
INSTRUMENT GEONICS EM-16
TRANSMITTER USED NAA, CUTLER, MAINE
PROFILE SCALE 1" = 40%
IN-PHASE COMPONENT
OUT-OF-PHASE COMPONENT
PLOTTING CONFIGURATION + tilts - tilts
52J/07NE-0021, #4
KASHAWEOGAMA LAKE IRON PROSPECT
PATRICIA M.D., ONTARIO
VLF PROFILES
SCALE 1" = 400'
NOVEMBER 1975
WORK UNDERTAKEN BY
EXCALIBUR INTERNATIONAL CONSULTANTS LTD.
TORONTO, CANADA
Dwg. No. E.I.C. - 142
52J07NE0043 52J07NE0021 GREBE LAKE
230



LEGEND

INSTRUMENT .... GEONICS EM-16
TRANSMITTER USED .... NAA, CUTLER, MAINE
FILTERED VLF VALUES
PLOTTING CONFIGURATION .... +] −
CONTOUR INTERVAL .... 10 UNITS ≥ + 10
FILTERED VLF CONTOURS 20
INTERPRETED FAULT AXIS

52J/07NE-0021, #5

KASHAWEOGAMA LAKE IRON PROSPECT
PATRICIA M.D., ONTARIO

CONTOURS OF FILTERED V.L.F. DATA

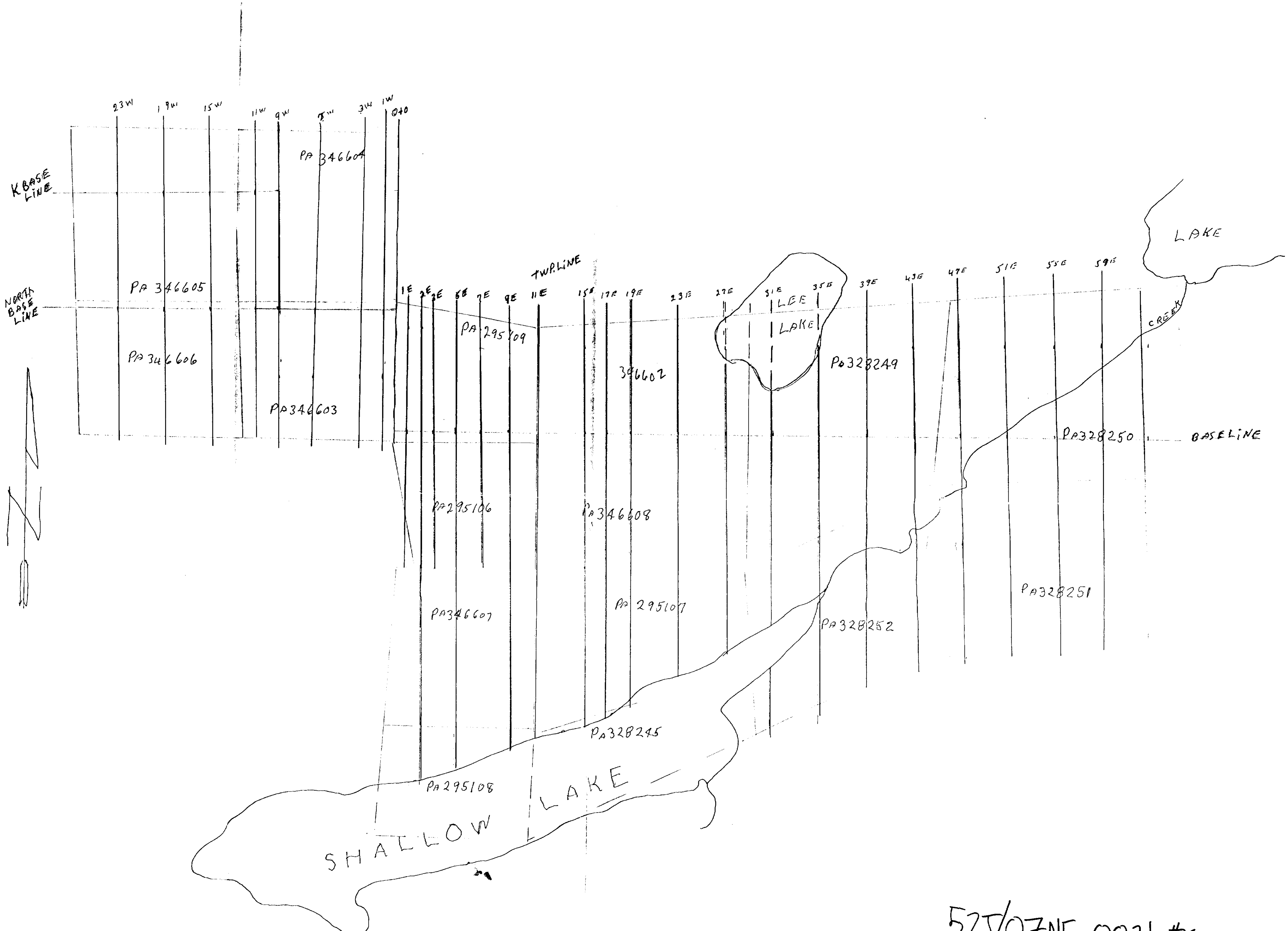
SCALE 1" = 400' NOVEMBER 1975

WORK UNDERTAKEN BY
EXCALIBUR INTERNATIONAL CONSULTANTS LTD.
TORONTO, CANADA

Dwg. N°. E.I.C. - 143

52J07NE0043 52J07NE0021 GREBE LAKE

240



52J/07NE-0021, #6

GRid PLAN

KASHAWEOGAMA LAKE
IRON FORMATION

R.G. RAMSAY CLAIMS
SCALE 1" = 500'

52J07NE0043 52J07NE0021 GREBE LAKE

250


KASHAWEOGAMA LAKE
PHILLIPS LAKE
LEE LAKE
SHALLOW LAKE
SPRUCE + PINE
SPRUCE AND CEDARS
SPRUCE PINE DRIFT COVERED SAND AND BOULDERS
DRIFT COVERD SPRUCE PINE BIRTCH SAND AND BOULDERS
SAND GRAVEL
DRIFT COVERD
BOULDERS DRIFFT COVERD SAND
SPRUCE PINE SAND AND GRAVEL COVERD
DRILL ROAD
MC CUBBIN TWP.
CONANT TWP.
Pa346604
Pa 346605
Pa346606
Pa346603
Pa295109
Pa295106
Pa346608
Pa328249
Pa328250
Pa328251
Pa328252
Pa295107
Pa346607
Pa328248
Pa295108
sand, gravel, clay
90° 42' 00"
50° 24' 30"
N
LEGEND
CENOZOIC
RECENT
Unconsolidated Swamp and Stream Deposits
PLEISTOCENE
Unconsolidated Clay, Sand, Gravel, and Boulders
GREAT UNCONFORMITY
PRECAMBRIAN
ARCHEAN
4 LATE MAFIC INTRUSIVES
4a Gabbro, Amphibolite 4b Diorite
IRON FORMATION
3b Algoma Type: Quartz-Magnetite
3b:RICHER PHASE
3a 3a:LEANER PHASE
2 METASEDIMENTS
Greywacke, Arkose, Argillite, Chert
1 METAVOLCANICS FELSIC TO INTERMEDIATE
Dacite, Andesite, Tuffs
BEDROCK OUTCROP
BEDDING, TOP UNKOWN (INCLINED, VERTICAL)
BEDDING TOP (ARROW) FROM GRAIN GRADATION VERTICAL
SCHISTOSITY (INCLINED, VERTICAL)
FOLIATION (VERTICAL)
SYNCLINAL AXIS
GEOLOGICAL BOUNDARY
FAULT
TRENCH, PIT
PG-2-57 DRILL HOLE WITH NUMBER
MUSKEG
SOURCES OF INFORMATION
ALGOMA STEEL CORP. LTD. (ALGOMA ORE DIV.)
EXPLORATION DEPT. MAPS AND PLANS
ONTARIO DIV. OF MINES
W.D. BOND: PRELIM GEOL MAPS:
MC CUBBIN TWP. 1972
CONANT TWP. 1973
GEOLOGY 1971, 1972, 1975
KASHAWEOGAMA LAKE
IRON FORMATION
GEOLOGICAL PLAN
R.G. RAMSAY CLAIMS
SCALE: 1 INCH=500 FEET
DRAWN: George C. Sharpe
DATE: SEPT. 75
52J/07NE-0021, #7
COMPILED AND DRAWN BY: G.C. SHARPE SEPT. 1975
ONTARIO
LAKE ST. JOSEPH
SAVANT LAKE
DRYDEN
IGNACE
LAKE NIPIGON
SCALE: 1"=50 MI.
MC CUBBIN TWP.
CONANT TWP.
MAP AREA
IRON LAKE
SCALE: 1"=4 MI.
52J07NE0043 52J07NE0021 GREBE LAKE
260