REPORT ON

GEOPHYSICAL SURVEYS
DRAYTON TOWNSHIP PROPERTY
SIOUX LOOKOUT, ONTARIO.

for

CONSOLIDATED MANITOBA MINES LIMITED

by

NORMAN PATERSON & ASSOCIATES LIMITED

JULY 1970 TORONTO, CANADA.

Norman Paterson & Associates Limited

TABLE OF CONTENTS

LIST OF FIGURES

LOCATION

253241

The property consists of 22 unpatented mining claims 25341 to 253246, 253251 to 253262 and 253303 to 253306 inclusive located in Drayton Township, Patricia Mining Division, District of Kenora, Ontario, as shown on the index map accompanying Figure 2.

RECONNAISSANCE WORK

Lines were cut at 400 foot intervals over the entire property during March, 1970 by Carl Bayly, Sioux Lookout, Ontario. A reconnaissance survey with readings at 100 foot intervals on these lines was then carried out by Norman Paterson & Associates Limited, using a Geonics VLF EM-16 and a Barringer G.M.-102A proton precession magnetometer. The quadrature component of the observed EM field was profiled, as shown in Figure 2; the in-phase component was filtered by the method described by D. C. Fraser *, and then contoured, as shown in Figure 2. The contoured magnetometer readings are presented in Figure 3.

The reconnaissance work showed a moderate conductor with in-phase responses exceeding 100% extending from about 51N on Line 44E to 60N on Line 64E. This conductor was directly associated with a magnetic body with readings from 5,000 to 10,000 gammas above background. The anomaly crossed the "Ritchie showing" which is located 25 feet east of 55 + 00N on Line Line 52E. A trench about 15 feet deep had been cut in this showing during previous work, exposing heavy pyrrhotite and chalcopyrite. A number of other smaller conductors were also found, most of which were concentrated in the northwest corner of the property. It was therefore decided to carry out detailed geophysical surveying of the northern part of the property, in conjunction with geological mapping and trenching in order to determine the

* "Contouring VLF-EM Data" Geophysics Vol. 34, 1969, P.458-67

source of the observed anomalies.

GEOLOGY

The geological setting is described in a separate report by W. T. Millward, which is included as Appendix A to this report.

Geological mapping at a scale of 1 inch to 100 feet by W.T . Millward is included as Figure 15 with this report.

DETAIL WORK

During May 1970 Jean Alix Co. cut new lines between the original lines on that part of the property north of Tie Line 2, so that all lines in this area were spaced at about 200 foot intervals. During the original line cutting all lines were chained northward from the southern boundary of the property. The result was that the chainages at Tie Line 3 were not the same from line to line, even though the southern boundary and Tie Line 3 are parallel, straight Concession lines. The lines cut for the detail work were all chained from Tie Line 3. In addition, quite a few of the lines were not cut completely parallel to each other. The resulting discrepancies are shown in Figure 1.

The detailed geophysical work was carried out using a Geonics VLF EM-16 and an M.700 McPhar fluxgate magnetometer. The detail work was divided into three areas. The results of both the E.M. and the magnetometer surveys are plotted in profiled form in Figures 5, 6 and 7.

INTERPRETATION

VLF-EM anomalies caused by conductive overburden are characterized by strong out-of-phase responses of the same sign as the in-phase responses. Most of the anomalies on the property are of this type and many of the anomalies of this type are observed to coincide with low, swampy areas.

These anomalies are therefore interpreted as being caused by conductive overburden, as illustrated in Figure 4. Five small anomalies at 46+40N, 47+90N and 49+70N on Line 0, and at 47+20N and 51+80N on Line 60E appear not to be caused by conductive overburden. These anomalies are, however, still probably caused by poor conductors since the quadrature and in-phase responses are still of the same sign. They are interpreted as being possibly caused by shallow, conductive shear zones.

One puzzling anomaly occurs at 54+20N and 55+10N on Line 62E and at 53+40N on Line 64 (See Figure 4). This anomaly occurrs directly over the swampy area at the end of Pelican Lake. A conductive overburden type of anomaly should therefore have been observed but little or no quadrature response was observed, so that the anomaly may be caused by a moderate conductor at a depth of about 70 feet.

Ritchie Anomaly

The most promising VLF-EM anomaly on the property is the large one associated with the Ritchie showing. Individual profiles of this anomaly from Line 44E to 64E are drawn up and a detailed interpretation is presented in Figure 4. The geologicaldip in the vicinity of the anomaly appears to be near vertical so that the anomaly is interpreted as if it is caused by vertical slabs of conductive material. The shape of the anomaly on most of the cross sections shows that this is a reasonable assumption. On Lines 46E, 48E and 50E the anomaly could, however, be caused by a shallow, horizontal slab, or a series of vertical slabs. The apparent depth to the tope of the slabs is interpreted as being the distance between the steepest point (inflection-point) of the anomaly and the peak of the anomaly on either side of the inflection point. This probably provides maximum depth, while a minimum depth would be about one half of the values thus obtained. Where the quadrature responses are over 10% and of the same sign as the in-phase response, the causative body is interpreted as being a poor conductor; if the quadrature response is less than 10% the body is interpreted as being a moderate conductor. A good conductor has a quadrature response of over 10%, and of the opposite sign as the in-phase response. Such a classification of conductivity is only approximate since the amplitude of the quadrature response and its phase relationship to the in-phase response depends on the depth of burial, the conductivity of surrounding rocks and the direction of the primary field relative to the strike of the body, as well as on the actual conductivity of the body.

Under these assumptions, the body causing the Ritchie VLF anomaly appears to be relatively shallow, with depths from 15 feet to 50 feet to its top surface and with moderate conductivity along its entire length, except on Line 44E where the conductivity appears to be poor. The body may extend to depth since the flanks of the anomaly are quite wide. The body also appears to be composed of a series of discrete, parallel conductors occurring en echalon along the strike of the anomaly.

There is also a strong magnetic anomaly associated with the Ritchie showing. The anomaly is interpreted as if it is caused by vertical slabs. The depth to the top of the slabs is estimated to be 0.625 x d, where d is the distance between two points of one half the maximum slope on one side of the anomaly.

The percent magnetite in the slab is estimated assuming no permanent magnetism. This will give an upper estimate of the percentage of magnetite since any remanent magnetization will increase the anomaly strength. On the basis, depths were found to be from 10 to 15 feet and percent magnetite from 5% to 70%. The assumption that the anomalies were caused by magnetite was judged to be reasonable since the samples from most of the trenches showed the presence of banded iron formation. Pyrrhotite could also have caused the anomalies, but the susceptibility of pyrrhotite is normally only about one tenth that of magnetite so that it is unlikely that pyrrhotite could be more than a contributing factor.

Examination of the interpretation on Figure 14 shows that the axes of the magnetic bodies are generally coincident with or just offset from the axes of the VLF conductors on the Ritchie anomaly. However, some of the conductors are associated with very strong magnetic anomalies while others are associated with weak magnetic anomalies, thus indicating that there are two types of conductors present. Unfortunately magnetic data was obtained only on every second line so that the magnetic and EM data could not be compared as well as they should have beer..

The depth estimates for the magnetic bodies of the Ritchie anomaly is generally about 1/3rd of the depth estimates for the conductive bodies. This discrepancy is probably due to inherent differences between the methods of interpretation for EM and magnetic date, to the fact that the magnetic bodies are not necessarily coincident with the conductive bodies, to the fact that surface weathering decrease the surface conductivity of a conductive body but not the magnetization of a magnetic body, and to the fact that peak response from a conductive body may not necessarily come from the top of the body. Evidence of the last two effects is given by the location of conductive mineralization in trenches only a couple of feet deep over the peaks of the anomalies.

INSTRUMENTATION.

The VLF EM-16 used for the reconnaissance and detail work uses distant military radio transmitters with vertical antennae as a signal source to give a horizontal primary field at an observation point. If any conductive material is present near an observation point a secondary field will also be present. The VLF instrument measures the components of the vertical part of the secondary field which are in-phase and out-of-phase with the primary signal. For this survey the transmitter at Seattle, Washington with a frequency of 18.6 Kcs was used as a signal source.

The proton precession magnetometer used for the reconnaissance work measures the frequency of precession of the molecules in a bottle of water. This frequency is directly proportional to the total strength of any steady magnetic field passing through the water. If, however, there is a very strong gradient in the magnetic field the frequency of precession will differ from one end of the bottle to the other, thus causing lack of signal and errors in reading. For detail work it was therefore decided to use a fluxgate magnetometer, which measures the vertical component of the magnetic field and is not subject to as much error as the proton precession magnetometer when the gradient of the field is large.

One problem did occur with the VLF EM-16. The particular instrument used had a wiring fault causing the quadrature response to appear to be of the opposite sign from what it should have been. This resulted in an initially incorrect interpretation of the reconnaissance survey, but the error was discovered before the detail survey was carried out and all results were corrected.

TRENCHING AND ASSAY RESULTS

Shallow trenches were blasted at various points along the Ritchie anomaly during May 1970. These trenches are described in the geological field report by W. T. Millward and plotted in profile form along with geophysical data in Figures 8 to 13. The following assay results were obtained from samples in the trenches:

Trench No.	Sample No.	Description.	Au. oz/ton	Cu. %	Zn. %
1	P.L. 13	Chalco. and	0.01	0.12	0.27
	P.L. 15	pyrrh. in altered	0.01	0.12	0.26
	P.L. 19	sediments	trace	0.91	0.24
	P.L. 21		0.01	0.40	0.46
	P.L. 24		trace	0.22	0.41
2	P.L. 18	Iron formation	trace	<0.01	<0.01
3	P.L. 23	"	trace	<0.01	0.01
4	P.L. 14	Minor pyrrh.	0.01	0.13	0.01
	P.L. 20	and chalco.	0.02	0.02	<0.01
5	P.L. 1		0.02	0.05	0.33
	P.L. 2	Pyrrh. and	0.01	0.09	0.18
	P.L. 3	minor chalco.	trace	0.10	0.09
	P.L. 4	altered	trace	0.09	0.04
	P.L. 5	sediments	0.01	0.12	0.20
	P.L. 6		trace	0.06	0.02
	P.L. 7		trace	0.02	0.05
	P.L. 8		trace	0.04	0.02
	P.L. 9		trace	0.06	0.09
	P.L. 10		trace	0.02	0.01
	P.L. 11		trace	0.10	0.02
6A	P.L. 17	No visible min.	trace	0.01	<0.01
6B	P.L. 12	Chalco. and	0.01	0.10	0.13
	P.L. 26	pyrrh. in	trace	0.18	0.42
	P.L. 27	altered seds. (?)	trace	0.15	0.20
	P.L. 28		trace	0.05	0.06
7	P.L. 16	Pyrrh. and pyrite	0.01	0.06	<0.01
	P.L. 22	in altered	trace	0.13	0.26
	P.L. 25	seds.	trace	0.10	<0.01

(< less than)

Assay results are more or less consistent with the field observations, except that copper values are disappointingly low. The nature of the chalcopyrite, namely as smears and thin veinlets in fractures and shear planes, seems to give a visual impression of higher concentration.

Because of topographic conditions and the presence of relatively thick overburden in places, trenching was necessarily limited to a few of the more exposed locations. It was not possible to trench directly on the major conductor axes, except in the cases of Trenches 6B and 7. Trench 5 (the Ritchie showing) also coincided with a major conductor. All three of these trenches showed heavy sulphide mineralization. Trenches 1 and 4 were considerably displaced from both conductive and magnetic axes. Trenches 2 and 3 were located to test magnetic anomalies, away from conductive effects, and showed well-developed, banded, iron-formation.

The best chalcopyrite mineralization was found in Trenches 1 and 6B, 900 feet apart on the main anomaly.

SUMMARY AND RECOMMENDATIONS

Reconnaissance VLF E.M. and magnetometer surveys and geological mapping have been carried out on lines 400 feet apart over the property. Detail E.M. surveys and mapping have been done on 200 foot lines over the northern one-half. Over the prominent E.M. conductors both VLF E.M. and magnetometer work was done at a close station interval, in some cases as little as 10 feet.

Trenching and sampling were done on the Ritchie showing (Trench 5) and in seven other locations. The results are presented in the form of cross-sections in Figures 8 to 13.

The cause of the E.M. anomalies, as evidenced by Trenches 5, 6B and 7, is moderate to heavy pyrrhotite mineralization, accompanied in some cases by pyrite, with minor amounts of chalcopyrite and sphalerite. The concentration of chalcopyrite and sphalerite is less than appears from visual examination, and seldom exceeds 1% (by volume) combined, over grab samples approximately 50 - 60 cubic inches in size. Gold assays ran from a trace to 0.02 oz/ton, without any obvious correlation with the sulphide minerals.

None of the other E.M. anomalies were investigated by trenching, partly because they appeared less favourable, and partly because of greater apparent depth of burial. Further exploration of these anomalies should be done only if future work on the Ritchie anomaly shows favourable results.

Although the assay results are discouraging, it is felt that additional work should be carried out on the property. Chalcopyrite and sphalerite, although weakly represented, are widespread on the Ritchie anomaly, and show rapid variations in concentration laterally and along strike. The trenching results which are from the more exposed locations, cannot be considered representative of the anomaly as a whole.

Diamond drilling is recommended to test the conductive zone on Lines 43E and 56E. Favoured locations are as follows:

Line 43E,	56 + 00 N,	length 500 feet
	54 + 00 N,	length 500 feet
Line 56E,	59 + 00 N,	length 500 feet
	Total	1500 feet

The holes should be drilled southward along the picket lines, at a dip of -45°.

The above recommendations should be reviewed by a competent geologist, who should also study the samples obtained from the trenching program.

Respectfully submitted,

NORMAN PATERSON & ASSOCIATES LIMITED

Victor Esbensen, B.Sc.
Geophysicist.

REGISTERED PROFESSIONAL ENGINEER
N. R. PATERSON
PROVINCE OF ONTARIO

Norman R. Paterson, Ph.D., P.Eng.
Geophysicist.

APPENDIX A

REPORT ON

GEOLOGICAL WORK

DRAYTON TOWNSHIP PROPERTY
SIOUX LOOKOUT, ONTARIO.

for

CONSOLIDATED MANITOBA MINES LIMITED

by

W. T. MILLWARD

NORMAN PATERSON & ASSOCIATES LIMITED

JUNE 2nd, 1970. TORONTO, CANADA.

SUMMARY

During March of this year the writer with assistance from Mr. W. Irvine conducted a geophysical survey using a Geonics VLF EM-16 and a Barringer GM-102A Precession Magnetometer on property optioned from a Mr. M. Chambers of Timmins, Ontario, as copper mineralization had been noted in samples obtained from Mr. Chambers. The geophysical results outlined several anomalies and a program of additional work involving mapping, trenching and detailing the original anomalies commenced the middle of May and was concluded on June 1. The findings of this program, excluding the geophysical interpretation, is contained in this report. Considerably more work is necessary in the form of drilling and/or trenching if any economic orebodies are to be found.

LOCATION

The property known as JOB 003/7 - Pelican Lake Area, consists of twenty-two unpatented mining claims optioned from Mr. M. Chambers of Timmins, Ontario They are located in Drayton Township, approximately five miles from the town of Sioux Lookout, Ontario. It is accessible by water through Pelican Lake or by road on highways 72 and 116 from Sioux Lookout.

PHYSIOGRAPHY

The southern portion of the property is quite low and is devoid of any noticeable outcrops. Large low wet swampy areas cover 70% of the southern half.

The northern half, with the exception of some isolated areas, is quite well exposed and outcrops are numerous. The south facing hils give rise to steep cliffs up to 50 feet while the north sides have a gradual slope.

In the low areas are found good stands of cedar while poplar trees cover the majority of the higher area. Partridge, rabbit and deer are quite plentiful.

GEOPHYSICAL WORK

During March grid lines were cut at 400-foot spacings under contract by Mr. Karl Bayly of Sioux Lookout. Geophysical surveys using a Geonics VLF EM-16 and a Barringer GM-102A Precession Magnetometer were conducted over this grid taking readings at 100-foot intervals. The VLF station used was Seattle, Washington. The results obtained were sufficient to warrant additional work and in May detail lines at 200-foot spacings were cut over the Northern half of the property by Jean Alix of Val D'Or, Quebec. Detailing of the priority anomalies commenced on May 18th and was completed by June 1st. The Geonics VLF EM-16 was again used in conjunction with a McPhar M.700 magnetometer. This magnetometer was used due to the steep gradients encountered on the number one target. At places, the readings went off scale. These geophysical results are now in the process of being interpreted by Norman Paterson & Associates Limited.

GEOLOGICAL WORK

The exposed bedrock formations are of Precambrian age. They are metasediments consisting mainly of conglomerate, greywacke and argillite in contact with metavolcanics composed mainly of pillow lava and basalt. The main contact is between the conglomerate and pillow lava and can be traced over most of the property. An apparent north-south trending fault zone appears to be on the extreme eastern boundary at approximately 60N as there is considerable dragging of the formations from a strike of N 70° E to N 20° E. The conglomerate is tightly squeezed and the rock inclusions are stretched out into narrow lenses giving the rock a gneissic impression.

An iron formation was found betwee Line 44 E and 64 E with the widths varying between 10 and 150 feet. These widths could be greater or less as overburden covers much of the contact. The magnetite occurs as lenses and small stringers in a heavily banded quartzitic rock which has been subjected to minor folding throughout its entire strike length.

Where mineralization has been noted, there is an absence of this banded zone so it is a question whether or not these mineralized zones are continuous or just small intrusive lenses or plugs inside the iron formation. These main mineralized zones vary from a few feet up to fifty or sixty feet. Barren pyrrhotite is the predominant mineral with minor chalcopyrite and traces of sphalerite occurring as thin smears and small stringers in association with minor slips, shears, and fractures. Chlorite shearing was evidenced on several occasions. One fact which was noted and could have some bearing on future work is that mineralization was found outside this zone of quartzite in the wall rock of the basalt. It was situated approximately fifty feet north and although it was a small zone of about 3 feet, some of the best samples so far obtained came from here. There was fine disseminated pyrrhotite and chalcopyrite for at least five feet on either side of this zone. Considerable pyrite in the form of crystals was noted at 58 + 25 N on Line 60E.

TRENCHING

Trenches were put down on several different locations to test rusty gossan zones, EM-16 anomalies or magnetometer highs. The results of these trenches are listed below:

Trench #1 - located at 52 + 05N to 52 + 15N, L 46 + 50E.

This trench was blasted over a length of 10 feet to a depth of 4 feet on a rusty gossan zone. Considerable pyrrhotite and some of the better chalcopyrite was found here. The chalcopyrite is in the form of small stringers, thin smears on slips and an occasional bleb. The rock is dipping NW at 20° with a slight plunge to the west and is striking SW - NE. Some minor magnetite was noted. This zone appears to be about 60 feet wide.

Trench #2 - located at 54 + 15N to 54 + 20N, L 48 E.

This trench was on a magnetic high and the blasting exposed a banded quartzite structure with stringers and lenses of magnetite.

Trench #3 - located at 54 + 25 N, 70 feet east of L 50 E.

This trench was also on the banded iron formation and as in the previous trench, magnetite was found as lenses and stringers.

Trench #4 - located at 55 + 22N to 55 + 25N, L 52 E.

This trench is very close to the original "Ritchie Showing". It was blasted on a magnetic high and a rusty gossan. Pyrrhotite and minor chalcopyrite was noted.

Trench #5 - located at 54 + 95N to 55 + 25N, 25 feet east of L 52 E

This is the "Ritchie Showing". Over the years this trench has been taken down to where it is now, about 15 feet deep by 30 feet long. Heavy pyrrhotite and chalcopyrite occurs throughout. Again the chalcopyrite is on the slips and shears and the outer appearance gives the impression of a high grade speciman, but this is not the case as there is very little dissemination. The rock appears to be a quartzite with considerable chlorite shearing and minor chlorite alteration.

Trench #6A - located at 58 + 47N to 58 + 50N, L 56 E
#6B - located at 58 + 32N to 58 + 42N, L 56 E

These trenches were blasted over a strong magnetic high situated just north of the banded iron formation. Trench 6A gave some fine disseminated pyrrhotite and chalcopyrite. Trench 6B gave some of the best samples found on the property to date. The pyrrhotite appears as fine, minute stringers grading occasionally into heavy dissemination and blebs in the host rock.

Over a width of about 3 feet, heavier concentrations of chalcopyrite occur as blebs sometimes mixed with pyrrhotite or sometimes by itself. Sphalerite was noted in a sample mixed with quartz. The pyrrhotite is nearly massive in places. This is not in the iron formation but about 50 feet north of the assumed contact.

Trench #7 - located at 58 + 32N to 58 + 36N, T, 60 E.

This trench is on an EM-16 anomaly and a magnetic high. Once again pyrrhotite is the predominant mineral, nearly massive in places. Pyrite was noted in the form of pyritehedrons and cubes. Minor chalcopyrite was noted.

CONCLUSION

The original samples containing mineralization were not seen by the writer, but it was reported that the copper was associated with a diorite. To date, we have not encountered any mineralization resembling the original samples.

On the work conducted to date several interesting EM-16 and magnetic anomalies have been detected. Prospecting and mapping have outlined the number one priority target situated in the north-east corner of the property over a strike length of about 2,000 feet. This is the most interesting target to date as considerable mineralization is associated with this and the mineralization outcrops in several places. No mineralization was noted on the other EM-16 anomalies but there is overburden in several places.

On surface showings and trenches blasted on the number one target, mineralization in the form of pyrrhotite, chalcopyrite, magnetite and sphalerite was noticed in different trenches. The pyrrhotite appears to be barren and although the samples seen were not of economic grade, there is not reason why grade and widths could not improve at depth. Actually, in the original Ritchie showing the chalcopyrite seems to be improving at depth.

Therefore, in conclusion I would recommend that a program of diamond drilling and/or deep trenches be carried out on the main target. The drilling would consist of a series of holes along strike to intersect the mineralized structure at a depth of 100 feet. It appears that the structure is dipping north at 60° - 70° so the holes would be in the order of 175 feet in length. An initial drilling program of 1,000 feet to test this anomaly could be recommended at a cost of $6,000.00.

Signed W. T. Millward
Field Geologist,
Norman Paterson & Associates, Limited
Toronto, Ontario.

June 2nd, 1970.

Approved

REGISTERED PROFESSIONAL ENGINEER
N. R. PATERSON
PROVINCE OF ONTARIO

N. R. Paterson

TRENCH 1

LINE – 46E

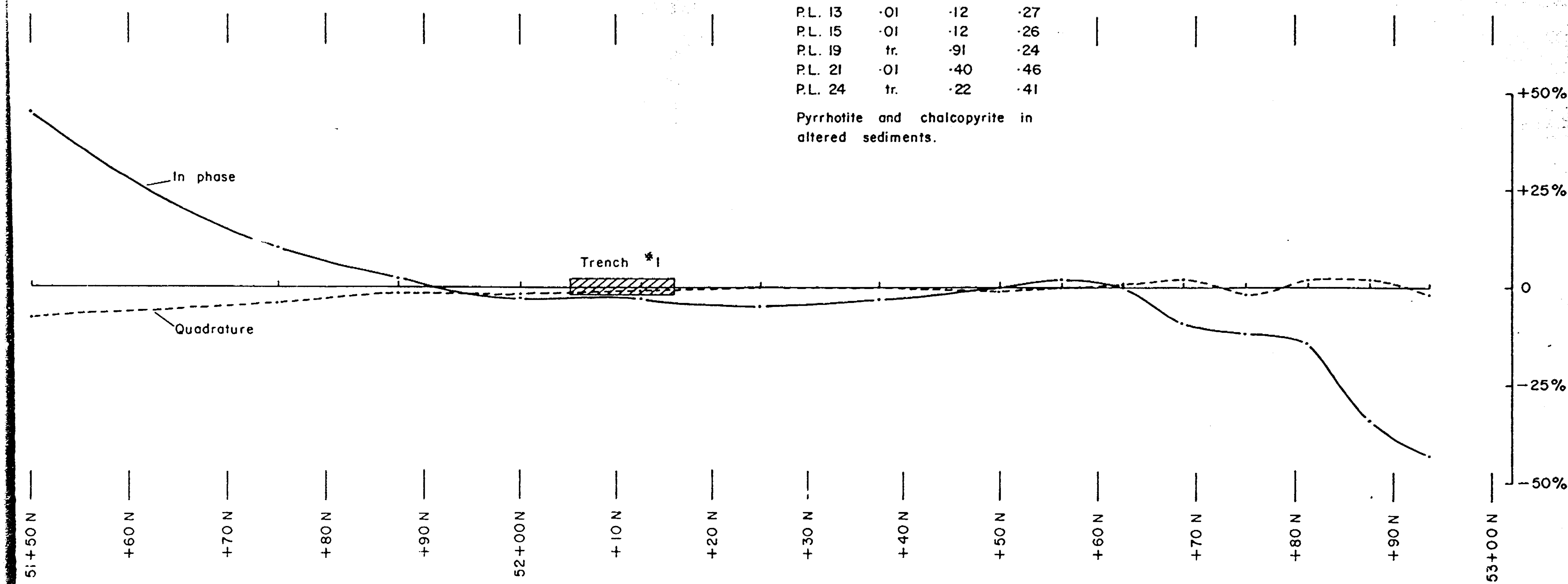
Scale: 1" = 10'

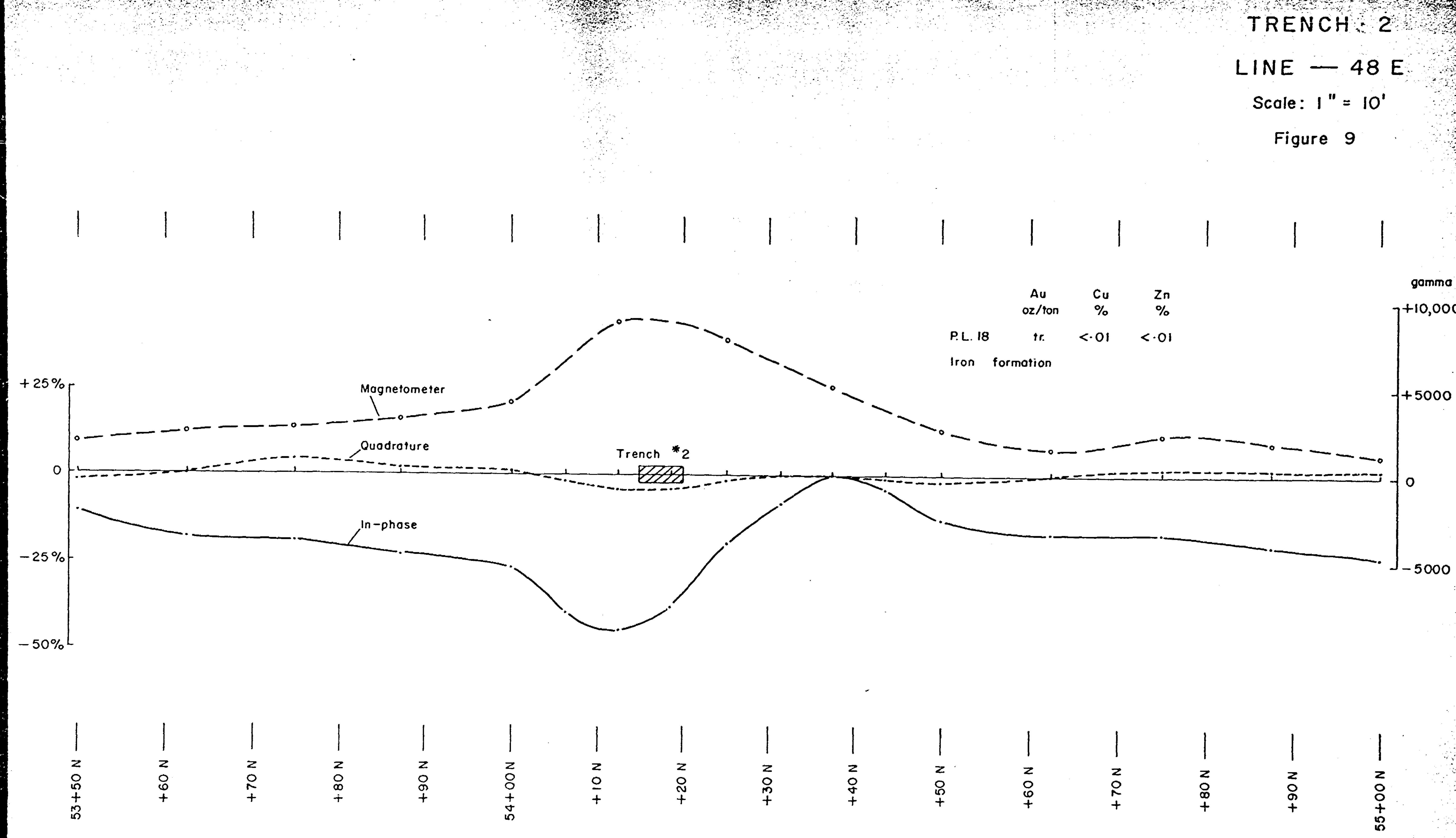
Figure 8

(Trench is 100ft. East of L-46E)

	Au oz/ton	Cu %	Zn %
P.L. 13	·01	·12	·27
P.L. 15	·01	·12	·26
P.L. 19	tr.	·91	·24
P.L. 21	·01	·40	·46
P.L. 24	tr.	·22	·41

Pyrrhotite and chalcopyrite in altered sediments.





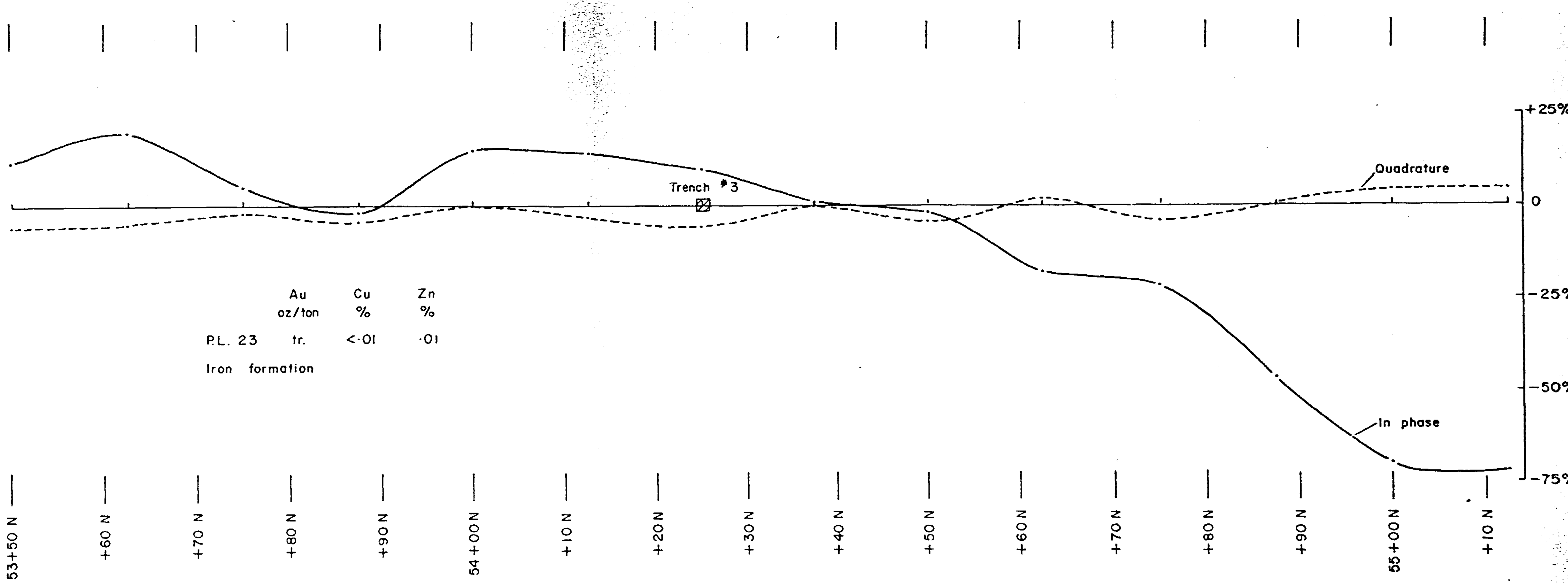
TRENCH : 2
LINE — 48 E
Scale: 1" = 10'
Figure 9
gamma
+10,000
+5000
0
-5000
Au oz/ton
Cu %
Zn %
P.L. 18
tr.
<·01
<·01
Iron formation
+25%
0
-25%
-50%
Magnetometer
Quadrature
Trench *2
In-phase
53+50 N
+60 N
+70 N
+80 N
+90 N
54+00 N
+10 N
+20 N
+30 N
+40 N
+50 N
+60 N
+70 N
+80 N
+90 N
55+00 N

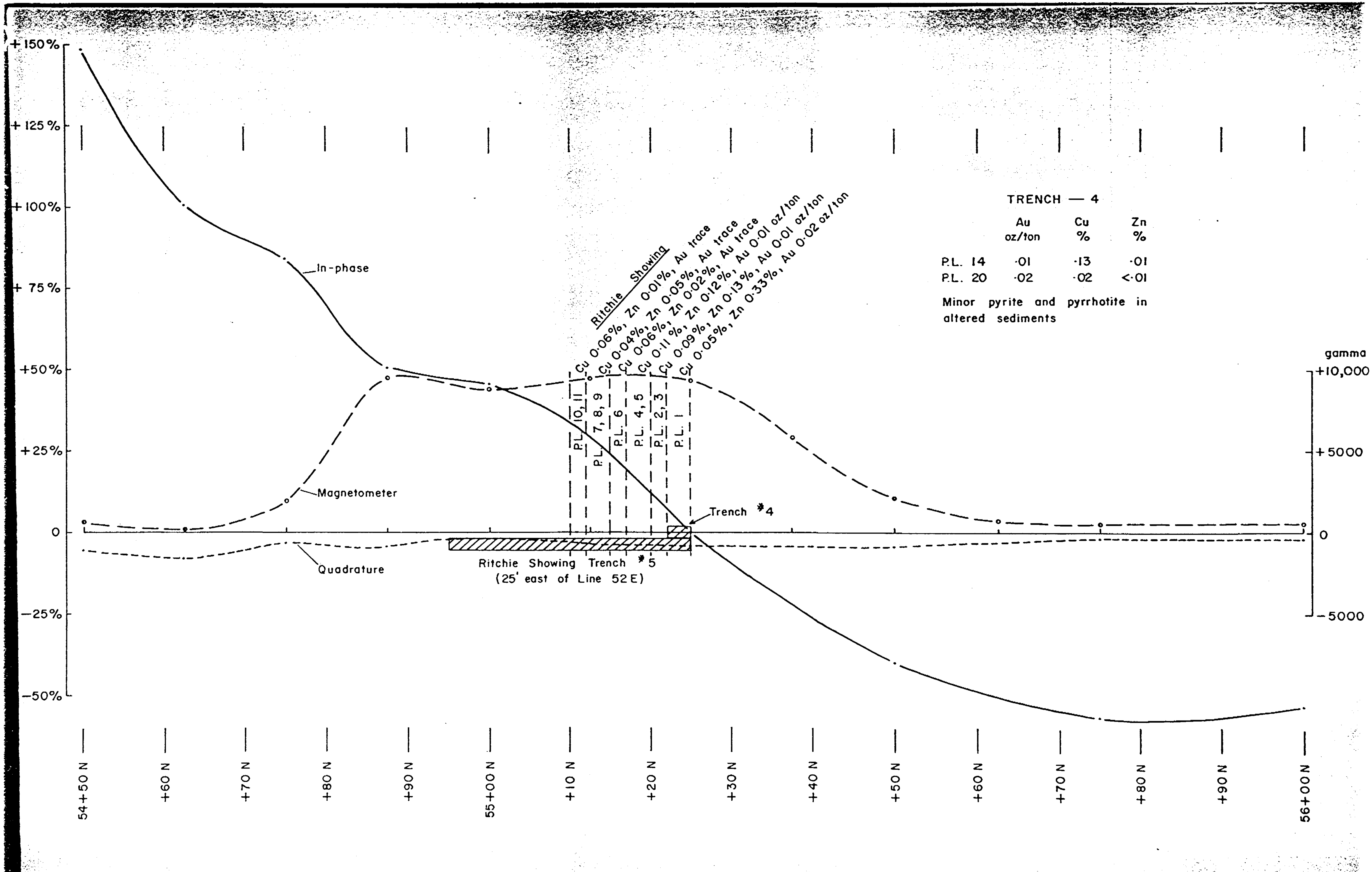
TRENCH 3

LINE – 50E

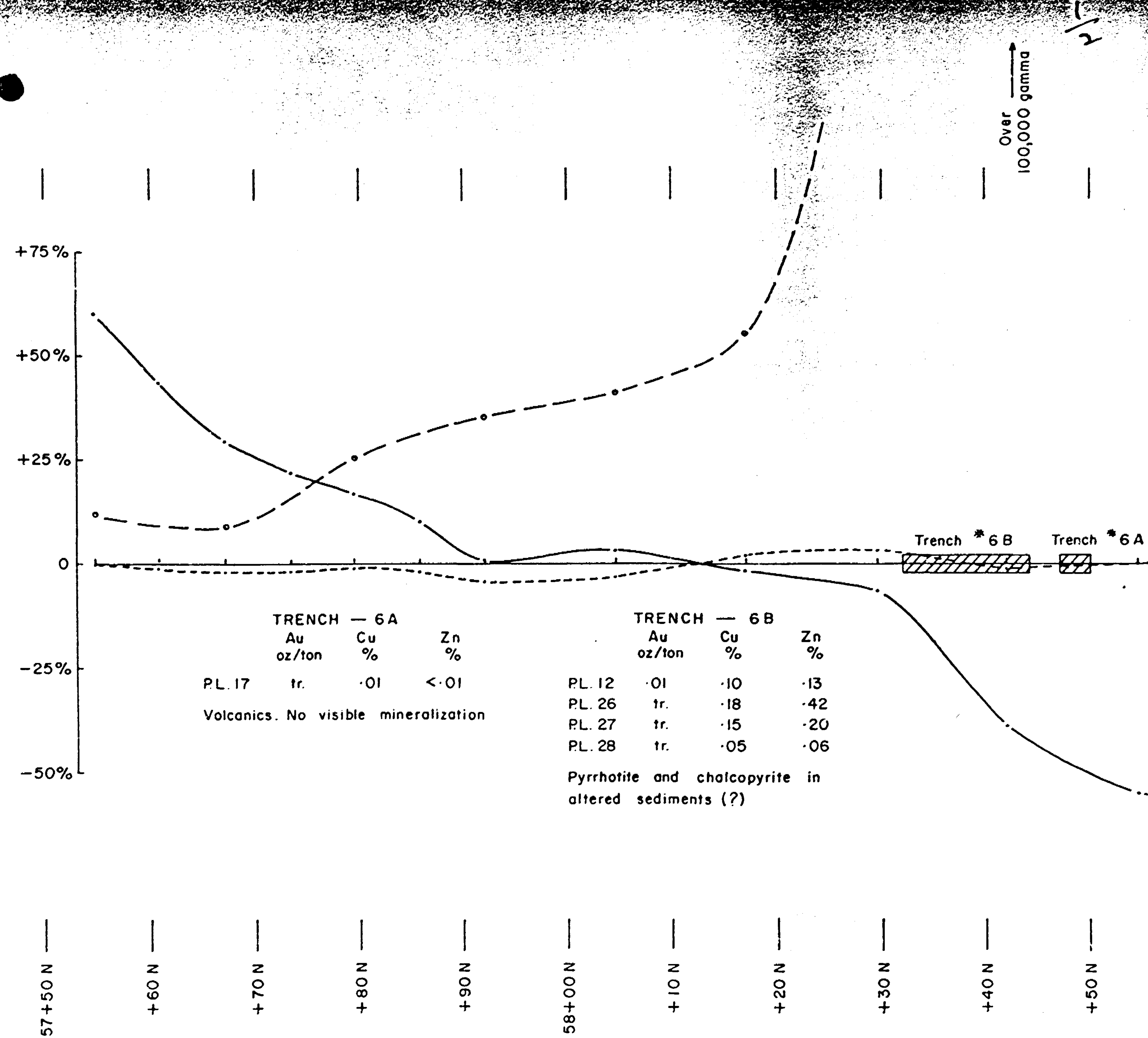
Scale: 1" = 10'

Figure 10

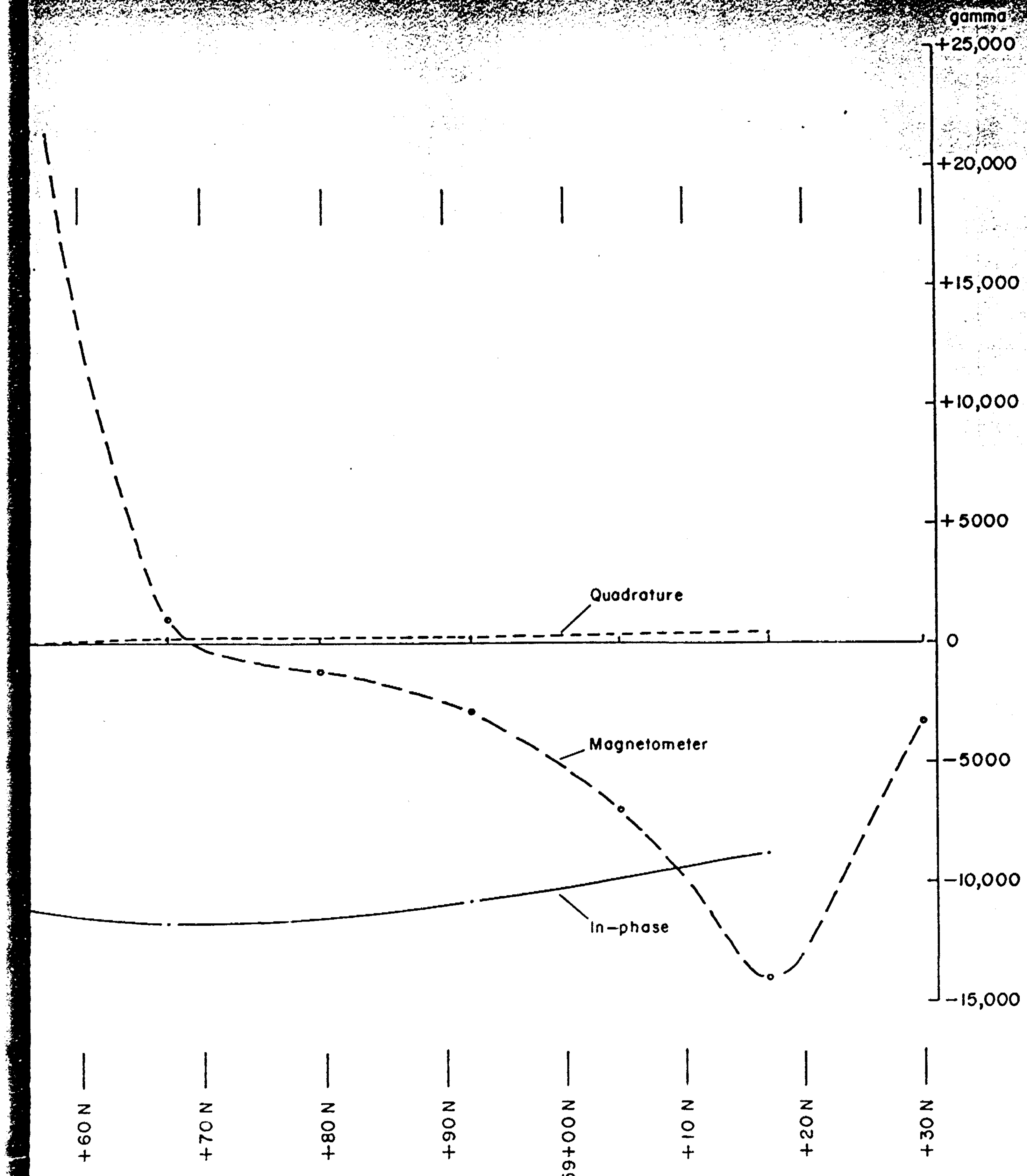




+150%
+125%
+100%
+75%
+50%
+25%
0
-25%
-50%
In-phase
Magnetometer
Quadrature
Ritchie Showing
Cu 0·06%, Zn 0·01%, Au trace
Cu 0·04%, Zn 0·05%, Au trace
Cu 0·06%, Zn 0·02%, Au trace
Cu 0·11%, Zn 0·12%, Au 0·01 oz/ton
Cu 0·09%, Zn 0·13%, Au 0·01 oz/ton
Cu 0·05%, Zn 0·33%, Au 0·02 oz/ton
P.L. 10, 11
P.L. 7, 8, 9
P.L. 6
P.L. 4, 5
P.L. 2, 3
P.L. 1
Trench #4
Ritchie Showing Trench #5
(25' east of Line 52E)
TRENCH — 4
Au oz/ton
Cu %
Zn %
P.L. 14 ·01 ·13 ·01
P.L. 20 ·02 ·02 <·01
Minor pyrite and pyrrhotite in altered sediments
gamma
+10,000
+5000
0
-5000
54+50 N
+60 N
+70 N
+80 N
+90 N
55+00 N
+10 N
+20 N
+30 N
+40 N
+50 N
+60 N
+70 N
+80 N
+90 N
56+00 N



1/2
Over 100,000 gamma
+75%
+50%
+25%
0
−25%
−50%
Trench *6 B
Trench *6 A
TRENCH — 6A
Au oz/ton
Cu %
Zn %
P.L. 17 tr. ·01 <·01
Volcanics. No visible mineralization
TRENCH — 6B
Au oz/ton
Cu %
Zn %
P.L. 12 ·01 ·10 ·13
P.L. 26 tr. ·18 ·42
P.L. 27 tr. ·15 ·20
P.L. 28 tr. ·05 ·06
Pyrrhotite and chalcopyrite in altered sediments (?)
57+50 N
+60 N
+70 N
+80 N
+90 N
58+00 N
+10 N
+20 N
+30 N
+40 N
+50 N



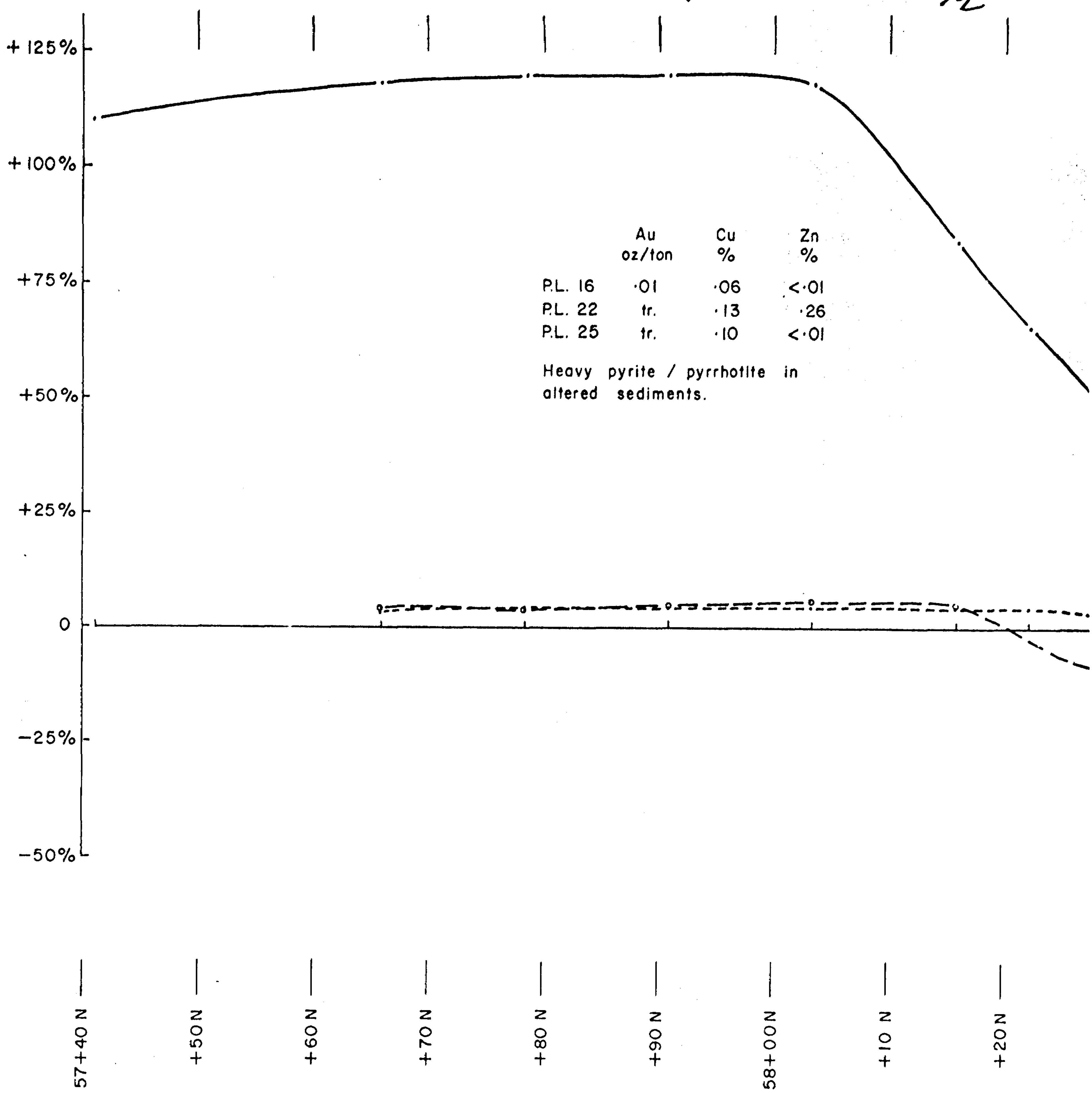
TRENCH 6A & 6B

LINE — 56E

Scale: 1" = 10'

Figure 12

1/2



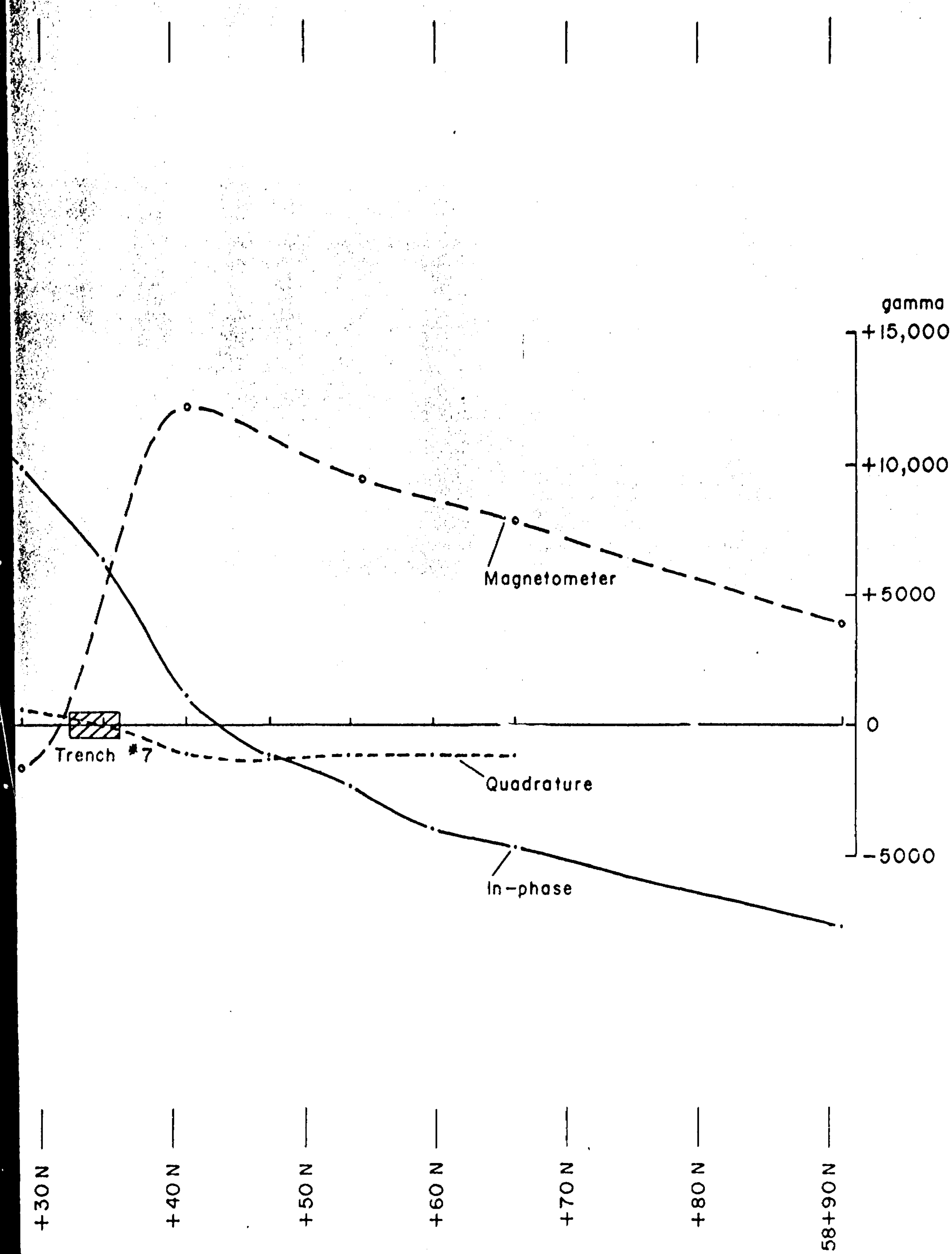
	Au oz/ton	Cu %	Zn %
P.L. 16	·01	·06	<·01
P.L. 22	tr.	·13	·26
P.L. 25	tr.	·10	<·01

TRENCH 7

LINE-60E

Scale: 1" = 10'

Figure 13



52J04SW8930 2.268 DRAYTON

900 NES AND NORTHERN AFFAIRS

FILE: 2.268

TECHNICAL ASSESSMENT WORK CREDITS

Recorder Holder .... Mr. P. F. Thalheimer ....

Township ~~or Area~~ .... Drayton Twp. ....

Type of Survey and number of Assessment Days Credits per claim	Mining Claims
GEOPHYSICAL Airborne [ ] Ground [X]	
Magnetometer ....20........days	Pa. 253241 to 46 incl.
Electromagnetic ....40........days	253251 to 62 "
Radiometric ....days	253303 to 06 "
....	
GEOLOGICAL ....20........days	
GEOCHEMICAL ....days	
SECTION 84 (14) ....days	
Special Provision [X] Man days [ ]	

NOTICE OF INTENT TO BE ISSUED

- [ ] Credits have been reduced because of partial coverage of claims.
- [ ] Credits have been reduced because of corrections to work dates and figures of applicant.
- [ ] NO CREDITS have been allowed for the following mining claims as they were not sufficiently covered by the survey:

____

____

____

____

____

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical – 80; Geological – 40; Geochemical – 40;

PERFORMANCE & COVERAGE CREDITS

ASSESSMENT WORK DETAILS

Township or Area: DRAYTON

Type of Survey: E.M.
A separate form is required for each type of survey

Chief Line Cutter or Contractor: KARL BAYLY (Name)
P.O. Box 1042, SIOUX LOOKOUT (Address)

Party Chief: W. T. MILLWARD, (Name)
Suite 517, 85 Richmond Street West, Toronto (Address)

Consultant: N. R. Paterson (Name)
Suite 517, 85 Richmond Street West, Toronto. (Address)

COVERING DATES

Line Cutting: March 1 - 18, 1970

Field: March 10 - 21, 1970
Instrument work, geological mapping, sampling etc.

Office: March - July, 1970

INSTRUMENT DATA

Make, Model and Type: Geonics EM-16

Scale Constant or Sensitivity: ± 1%

Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count: ____

Number of Stations Within Claim Group: 987*

Number of Readings Within Claim Group: 1882*

Number of Miles of Line cut Within Claim Group: 22½*

Number of Samples Collected Within Claim Group: ____

***Plus subsequent detailing**

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

DATE: January 11th, 1971.

SIGNED: [signature]

MINING CLAIMS TRAVERSED

List numerically

253241,	253242,
253243,	253244,
253245,	253246.
253251,	253252,
253253,	253254,
253255,	253256,
253257,	253258,
253259,	253260,
253261,	253262,
253303,	253304,
253305,	253306

If space insufficient, attach list

TOTAL: 22

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

PERFORMANCE & COVERAGE CREDITS

ASSESSMENT WORK DETAILS

Township or Area: DRAYTON

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

Chief Line Cutter or Contractor: KARL BAYLY (Name)
P.O. Box 1042, SIOUX LOOKOUT (Address)

Party Chief: W. T. Millward, (Name)
Suite 517, 85 Richmond Street West, Toronto (Address)

Consultant: N. R. Paterson, (Name)
Suite 517, 85 Richmond Street West, Toronto (Address)

COVERING DATES

Line Cutting: March 1 - 18, 1970

Field: March 20 - 21, 1970
Instrument work, geological mapping, sampling etc.

Office: March - July, 1970

INSTRUMENT DATA

Make, Model and Type: Barringer GM-102A

Scale Constant or Sensitivity: ± 10 Gamma

Or provide copy of instrument data from Manufacturer's brochure.

Radiometric Background Count: ______

Number of Stations Within Claim Group: 983*

Number of Readings Within Claim Group: 1008*

Number of Miles of Line cut Within Claim Group: 22½*

Number of Samples Collected Within Claim Group: ______

*Plus subsequent detailing

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

DATE: January 11th, 1971

SIGNED: [signature]

MINING CLAIMS TRAVERSED

List numerically

253241,	253242,
253243,	253244,
253245,	253246,
253251,	253252,
253253,	253254,
253255,	253256,
253257,	253258,
253259,	253260,
253261,	253262,
253303,	253304,
253305,	253306,

If space insufficient, attach list

PROJECTS SECTION
TORONTO
RECEIVED
JAN 12 1971
AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

TOTAL 22

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

PERFORMANCE & COVERAGE CREDITS

ASSESSMENT WORK DETAILS

Township or Area DRAYTON

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

Chief Line Cutter or Contractor KARL BAYLY (Name)
P.O. Box 1042, SIOUX LOOKOUT (Address)

Party Chief W. T. MILLWARD, (Name)
SUITE 517, 85 RICHMOND STREET WEST, TORONTO. (Address)

Consultant N. R. PATERSON (Name)
SUITE 517, 85 RICHMOND STREET WEST, TORONTO. (Address)

COVERING DATES

Line Cutting

Field May 18 - June 1, 1970
Instrument work, geological mapping, sampling etc.

Office June - July 1970

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 28

MINING CLAIMS TRAVERSED
List numerically

253241, 253242,
253243, 253244,
253245, 253246,

253251, 253252,
253253, 253254,
253255, 253256,
253257, 253258,
253259, 253260,
253261, 253262.

253303, 253304,
253305, 253306

If space insufficient, attach list

PROJECTS SECTION TORONTO
RECEIVED
JAN 12 1971
AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

TOTAL 22

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

DATE January 11th, 1971

SIGNED Norman Paterson

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

AREA CODE -- 416
TELEPHONE -- 365-6918

ONTARIO

2.268

WHITNEY BLOCK
QUEEN'S PARK
TORONTO 182, ONT

DEPARTMENT OF MINES AND NORTHERN AFFAIRS
MINING LANDS BRANCH

October 6, 1971

Mr. W.A. Buchan,
Mining Recorder,
Court House,
Sioux Lookout, Ontario.

Dear Sir:

Re: Mining Claim PA 253241, et al
Drayton Township File 2.268

The Geophysical (magnetometer and electromagnetic) and Geological assessment work credits as shown on the attached list have been approved as of the date above. Please inform the recorded holder and so indicate on your records.

Yours very truly,

Fred W. Matthews,
Supervisor
Projects Section

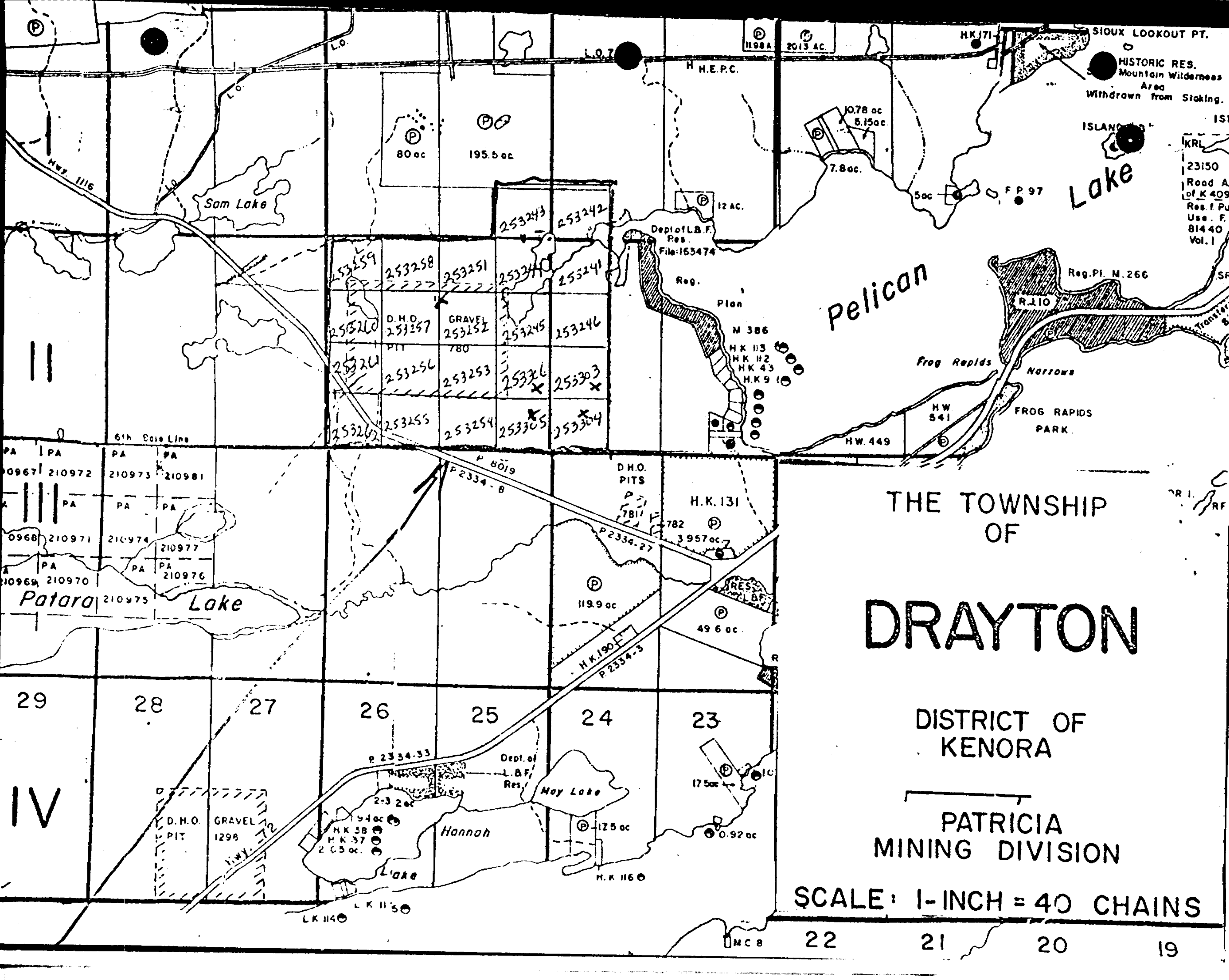
OJ/mw

Encl.

cc: Norman Paterson & Associates,
Suite 517,
85 Richmond Street,
Toronto, Ontario.

cc: Mr. P.F. Thalheimer,
46 Pine Street,
Timmins, Ontario.

cc: Mr. H.L. King,
Resident Geologist,
808 Robertson Street,
Kenora, Ontario.


THE TOWNSHIP OF
DRAYTON
DISTRICT OF KENORA
PATRICIA MINING DIVISION
SCALE: 1-INCH = 40 CHAINS
SIOUX LOOKOUT PT.
HISTORIC RES. Mountain Wilderness Area Withdrawn from Staking.
Pelican Lake
Sam Lake
Patara Lake
May Lake
Hannah Lake
Hwy. 116
Hwy. 72
Frog Rapids
Narrows
FROG RAPIDS PARK
Reg. Pl. M. 266
Reg. Plan M 386
Dept of L.&F. Res. File:163474
H.E.P.C.
D.H.O. PIT
GRAVEL 780
D.H.O. PITS
D.H.O. PIT GRAVEL 1298
6th Base Line
80 ac
195.5 ac
12 AC.
7.8 ac.
119.9 ac
49.6 ac
H.K. 131
H.K. 190
HW. 449
H.W. 541
FP 97
KRL 23150
Road Al of K 409. Res. f Pu Use. F. 81440 Vol. I
11
IV
29
28
27
26
25
24
23
22
21
20
19

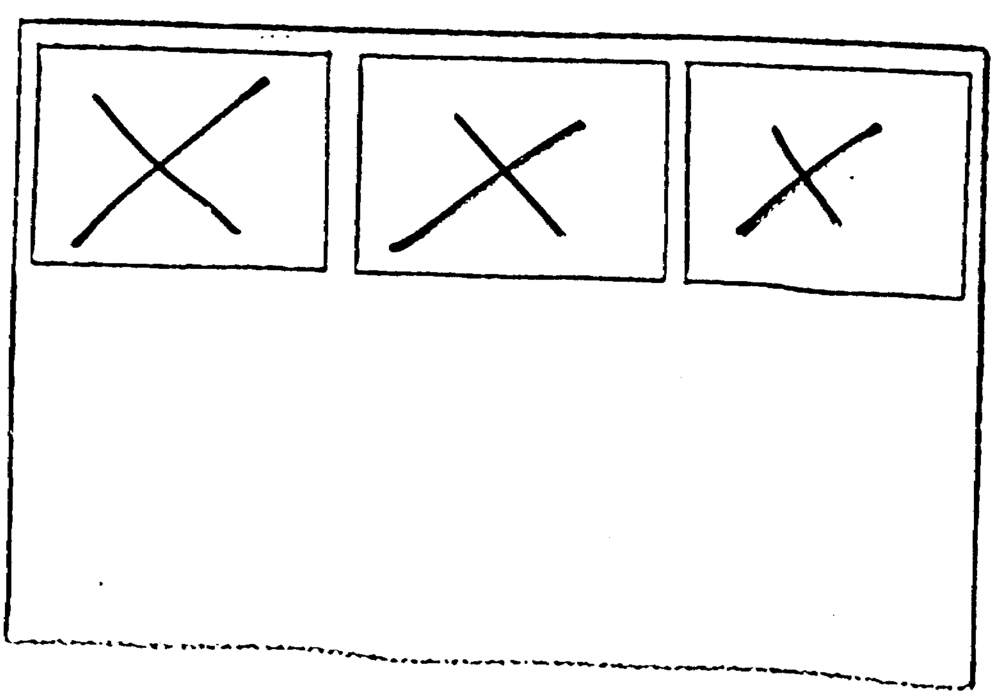
SEE ACCOMPANYING MAP(S) IDENTIFIED AS

S2K|01SE-0017 - #1

____________________ #2

____________________ #3

LOCATED IN THE MAP CHANNEL IN THE FOLLOWING SEQUENCE (X)

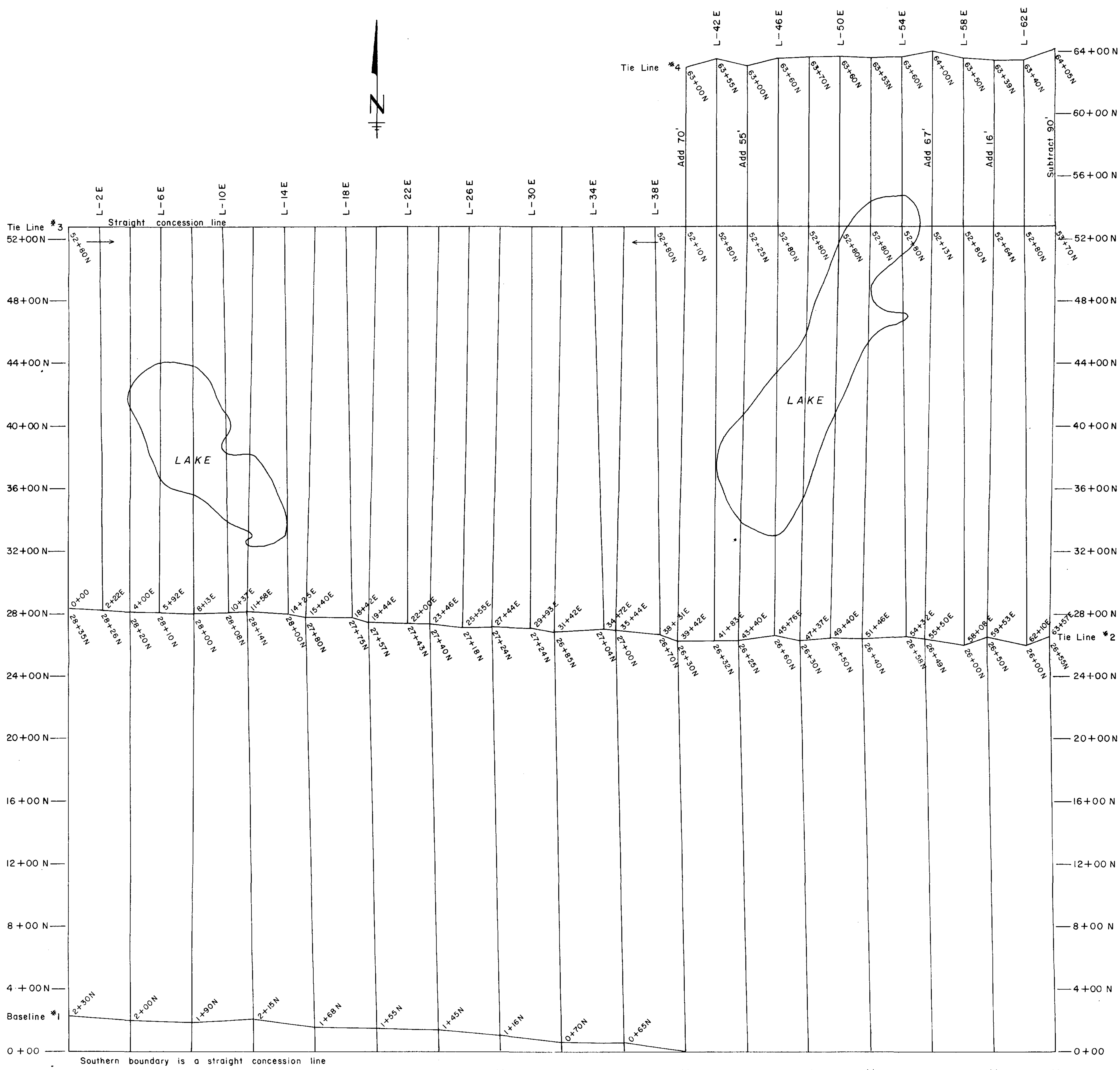


FOR ADDITIONAL

INFORMATION

SEE MAPS:

52K(01SE-0017 #4-#9



52K/01SE-0017-#1

Figure 1

NOTE: Errors in chainage caused both East – West and North – South shifts in the lines. The East – West shifts are shown to scale on this map. To obtain the proper North – South chainages used on Figure 5 and Figure 25 add or subtract the amount shown on Lines 40E, 44E, 56E, 60E and 64E on this map to the chainages marked on the pickets in the field.

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP., PATRICIA MINING DIVISION

BASE MAP SHOWING CHAINAGE ERRORS

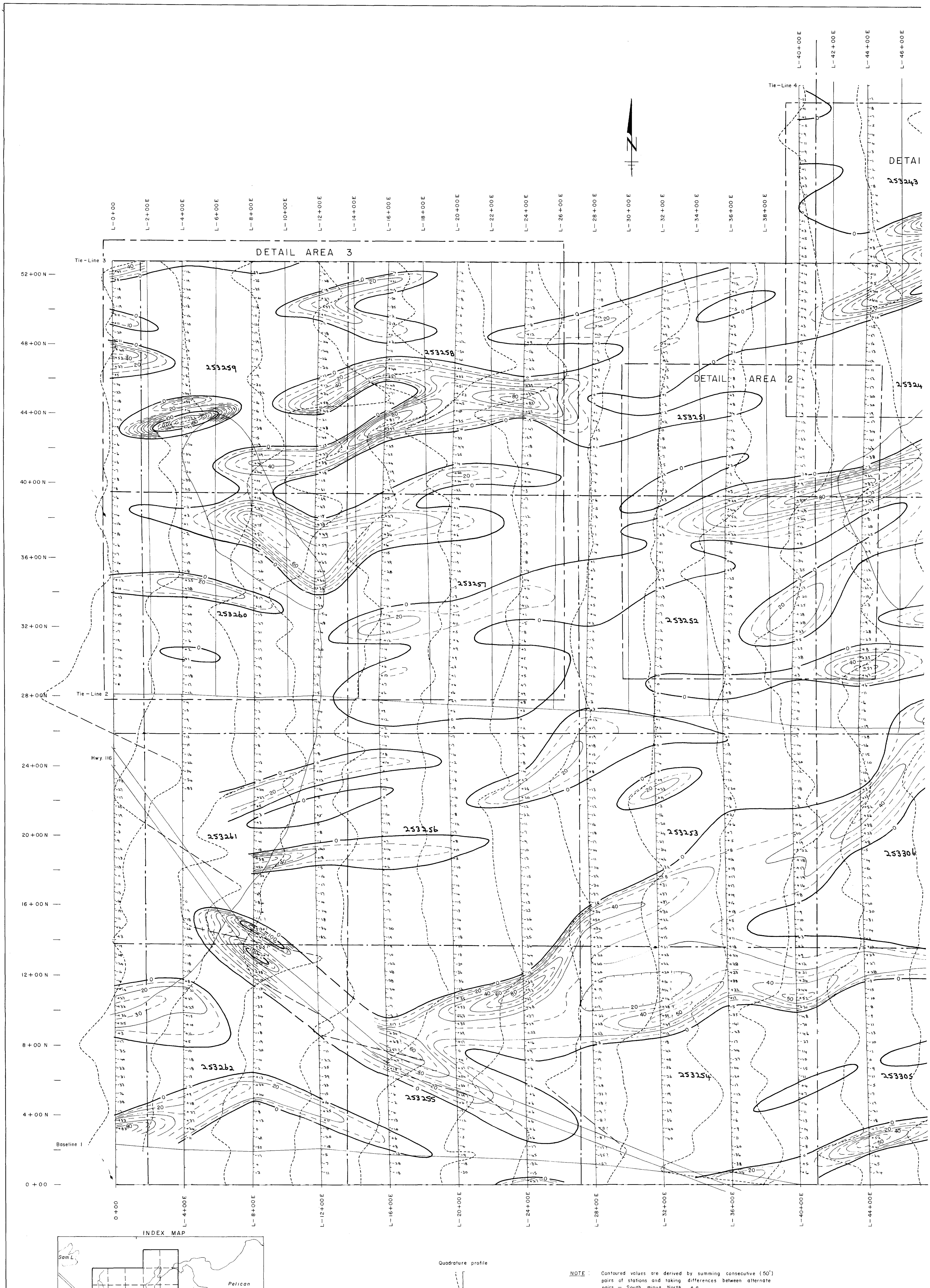
DRAWN BY: H. Ricketts	SCALE: 1" = 400'
APPROVED:	DRAWING NO: 003/7-1
	DATE: JULY, 1970

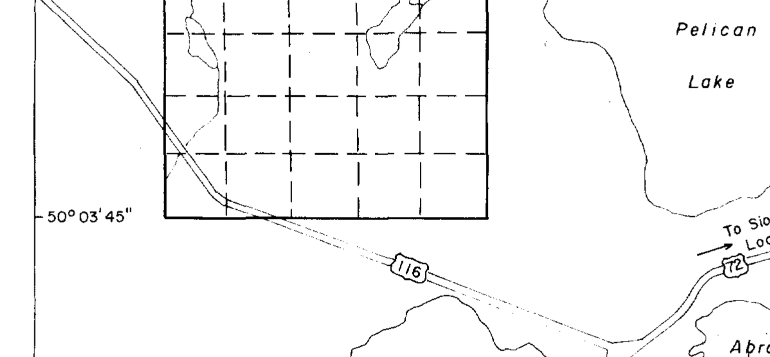
NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS – TORONTO, CANADA

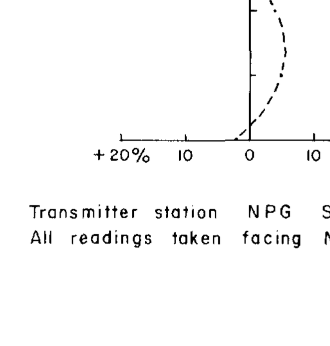
2.268

52J04SW8930 2.268 DRAYTON

200



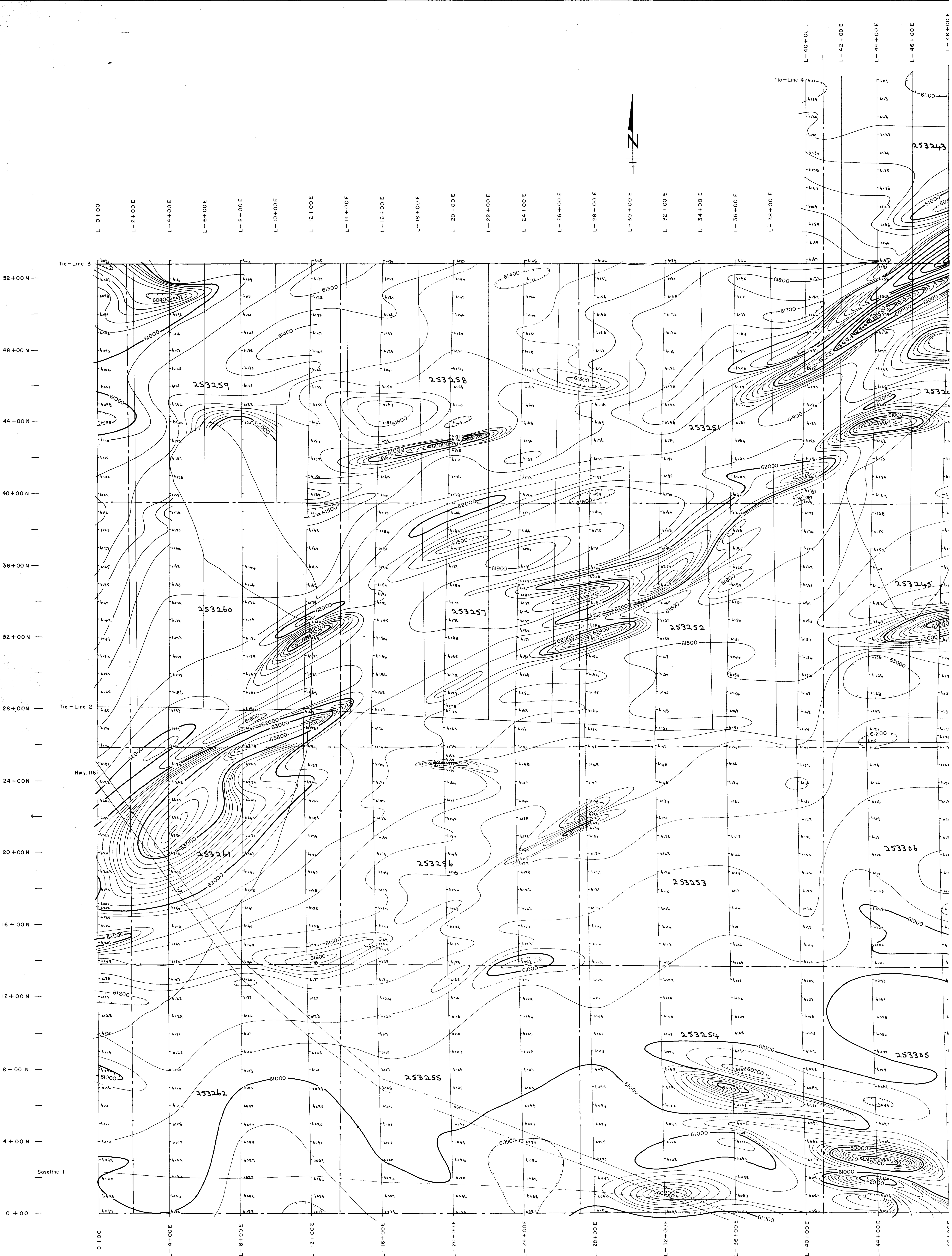




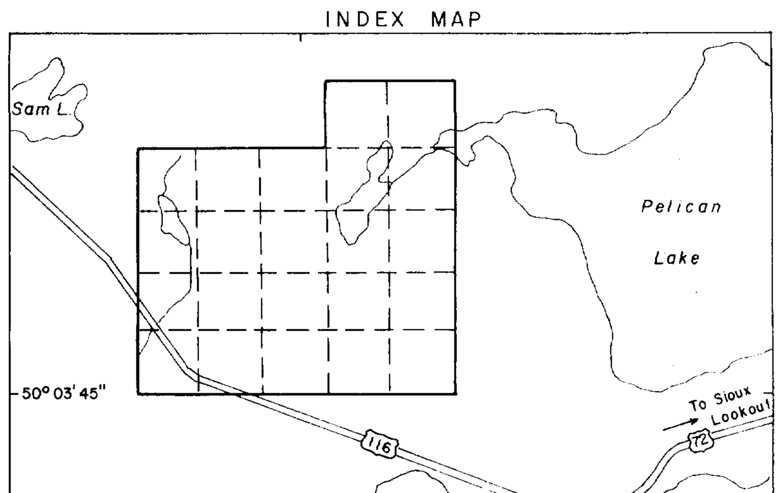
NOTE. Transmitter station NPG Seattle, Frequency 18·6 kHz.
All readings taken facing North

NOTE: Contoured values are derived by summing consecutive (50') pairs of stations and taking differences between alternate pairs — South minus North. e.g.

210

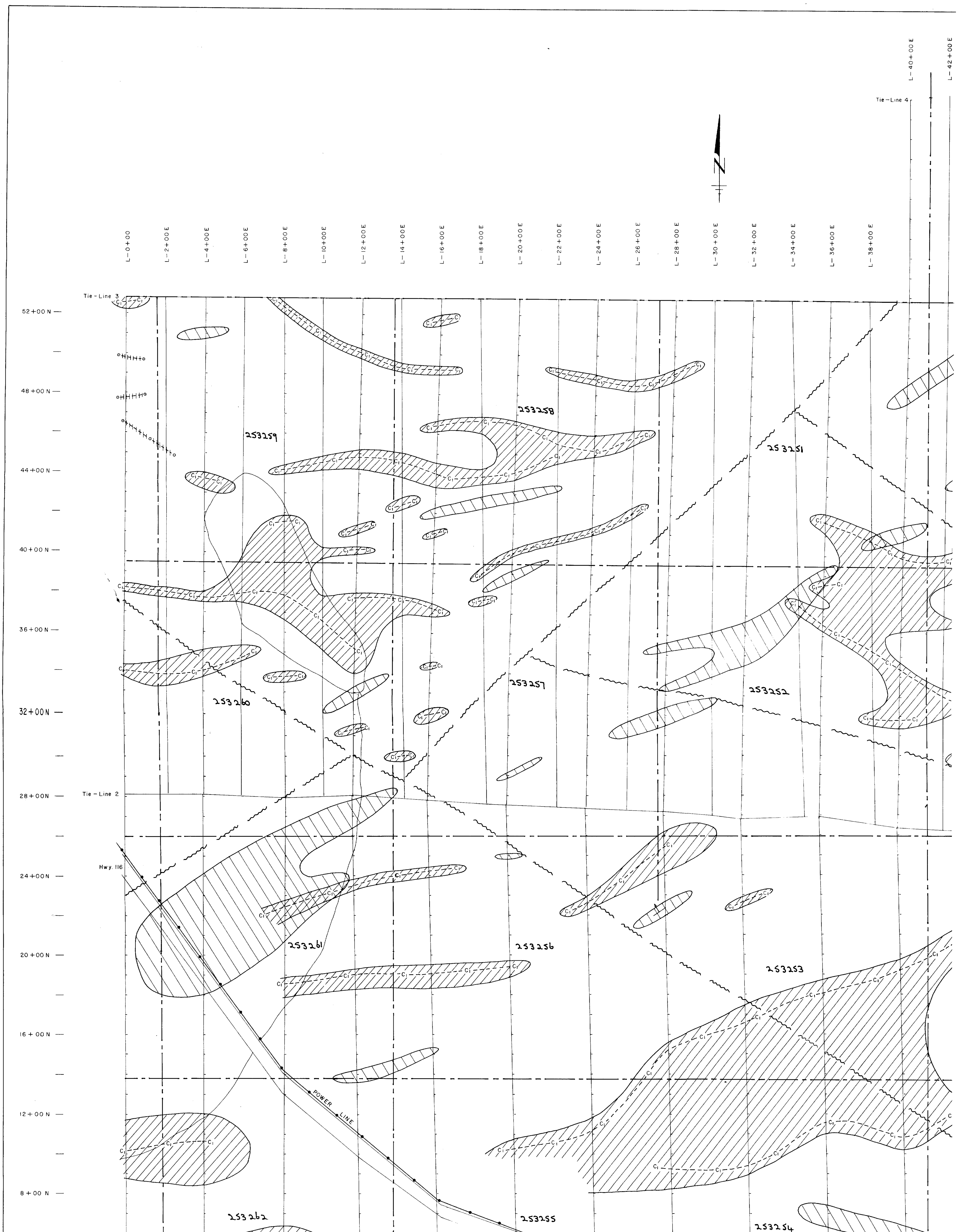


INDEX MAP

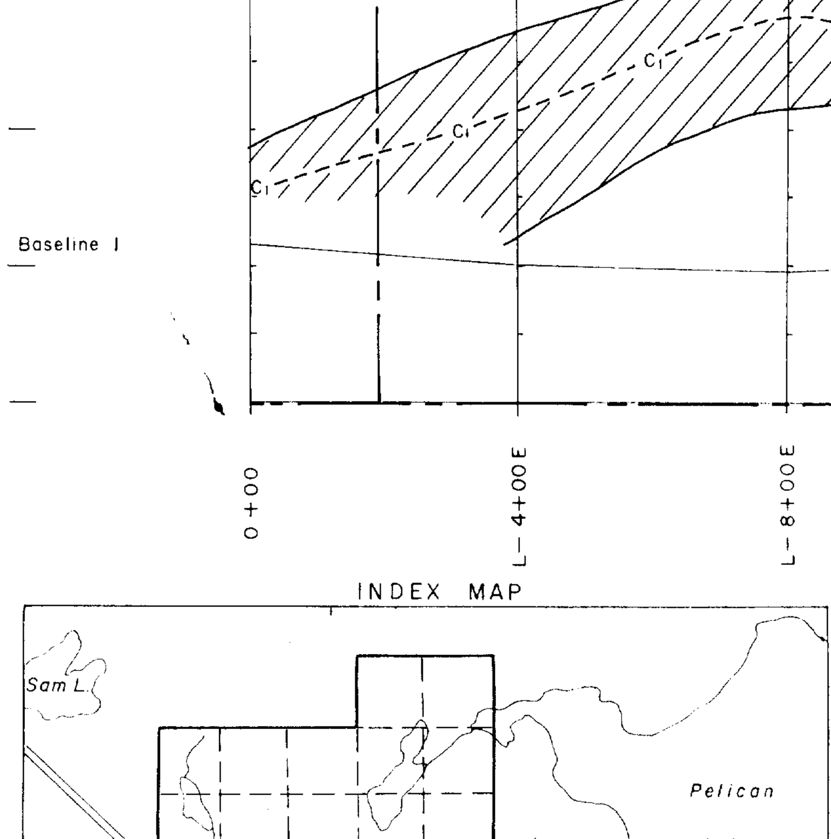


1 inch = 1/2 mile

52L04SW8939 2.268 DRAYTON



INDEX MAP

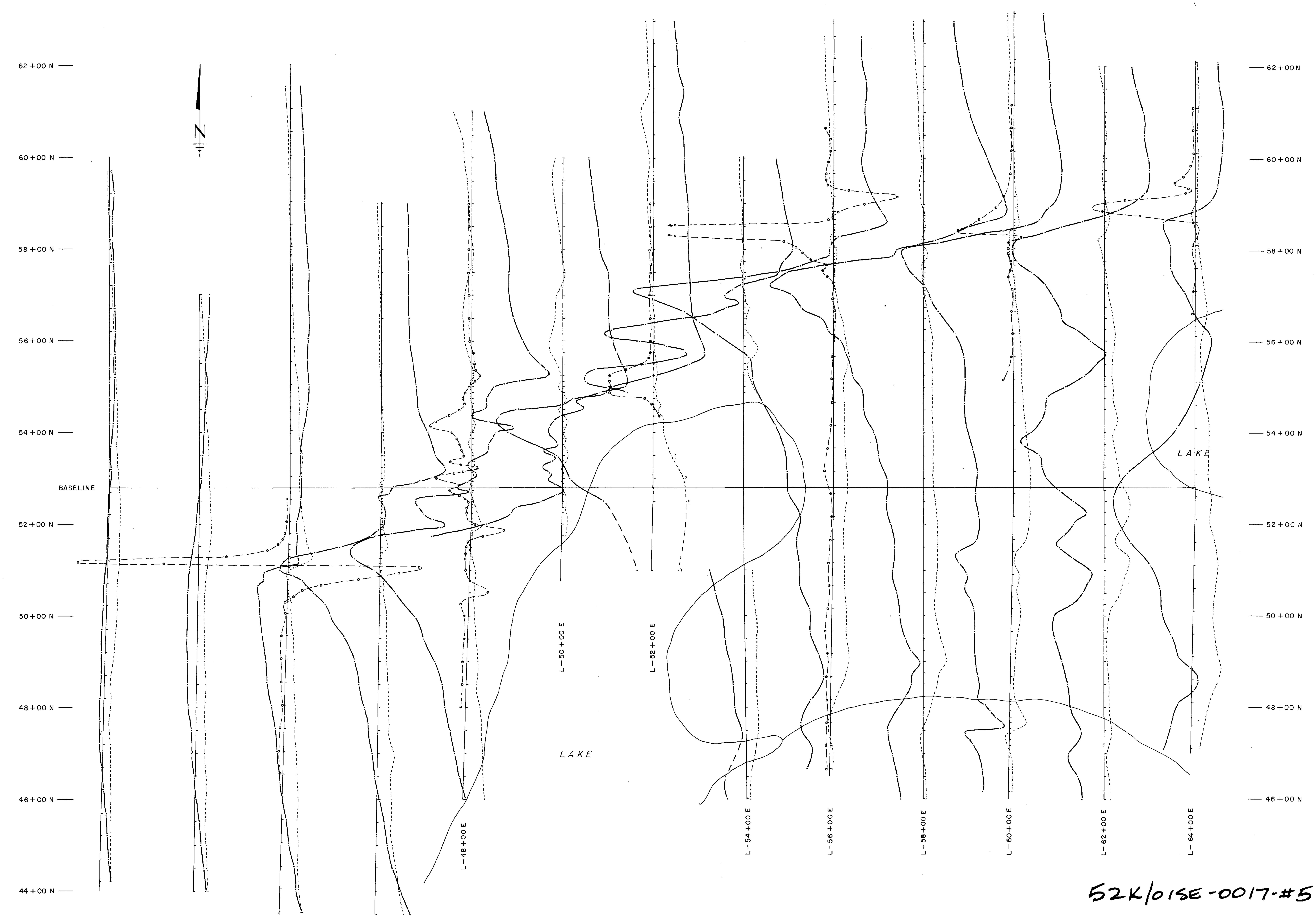


1 inch = 1/2 mile

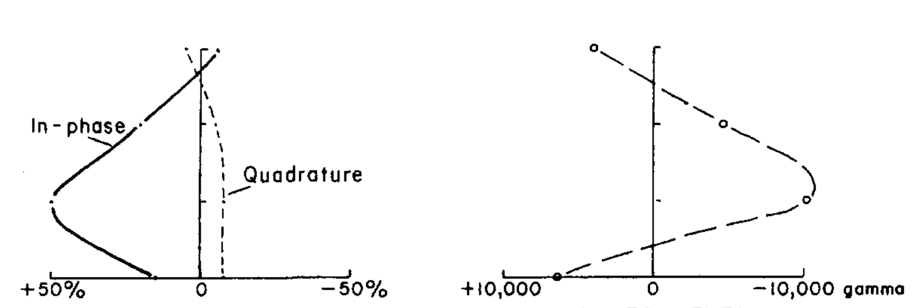
INTERPRETATION LEGEND

Axis of poor VLF conductor .... C_1 - - - - - C_1
Axis of moderate VLF conductor .... C_2 - - - - - C_2
Conductive overburden ....
Possible sheer zone .... o HIHHHHo

Axis of magnetic body, 0–20% magnetite --- M_1 - - - - - M_1
Axis of magnetic body, 20–50% magnetite --- M_2 - - - - - M_2
Axis of magnetic body, over 50% magnetite --- M_3 - - - - - M_3
Magnetic zone and dip ....
Possible faults ....



52K/01SE-0017-#5



NOTE: Chainage errors noted in Figure I have been corrected for in both the East-West and North-South directions on this map. Thus to obtain chainages marked on pickets in the field from this map add or subtract the appropriate amounts for each line as noted in Figure I.

NOTE: Add 60,790 to each reading to get same results as for reconnaisance survey.

Figure 5

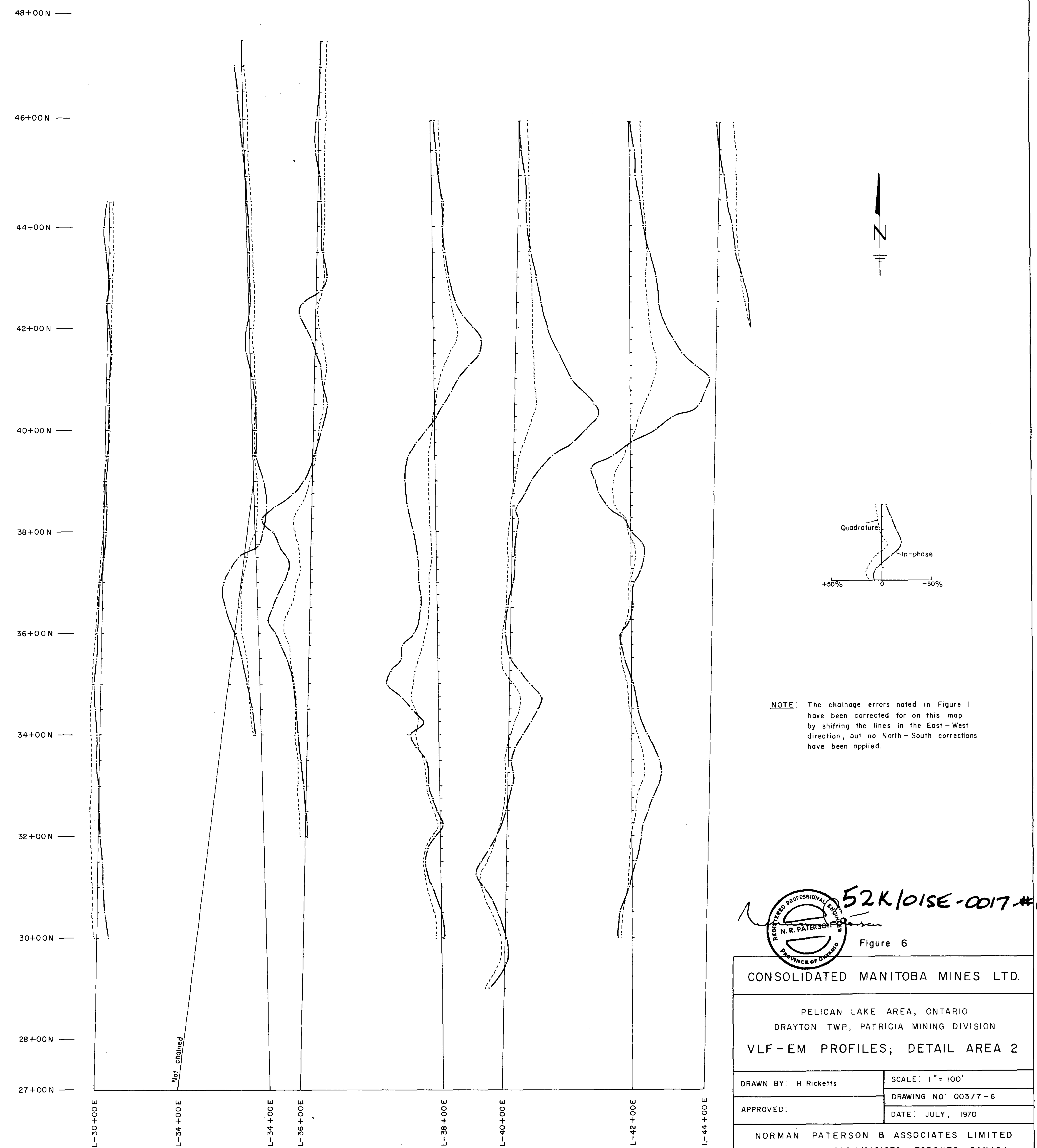
CONSOLIDATED MANITOBA MINES LTD.	
PELICAN LAKE AREA, ONTARIO DRAYTON TWP, PATRICIA MINING DIVISION	
VLF-EM and MAGNETOMETER PROFILES; DETAIL AREA I	
DRAWN BY: H. Ricketts	SCALE: 1" = 100'
	DRAWING NO: 003/7-5
APPROVED:	DATE: JULY, 1970
NORMAN PATERSON & ASSOCIATES LIMITED CONSULTING GEOPHYSICISTS - TORONTO, CANADA	

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

2.268

52J04SW8938 2.268 DRAYTON

240



NOTE: The chainage errors noted in Figure I have been corrected for on this map by shifting the lines in the East – West direction, but no North – South corrections have been applied.

52K/01SE-0017 #6

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

Figure 6

CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP, PATRICIA MINING DIVISION

VLF-EM PROFILES; DETAIL AREA 2

DRAWN BY: H. Ricketts	SCALE: 1" = 100'
	DRAWING NO: 003/7-6
APPROVED:	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS – TORONTO, CANADA

52J04SW8930 2.268 DRAYTON

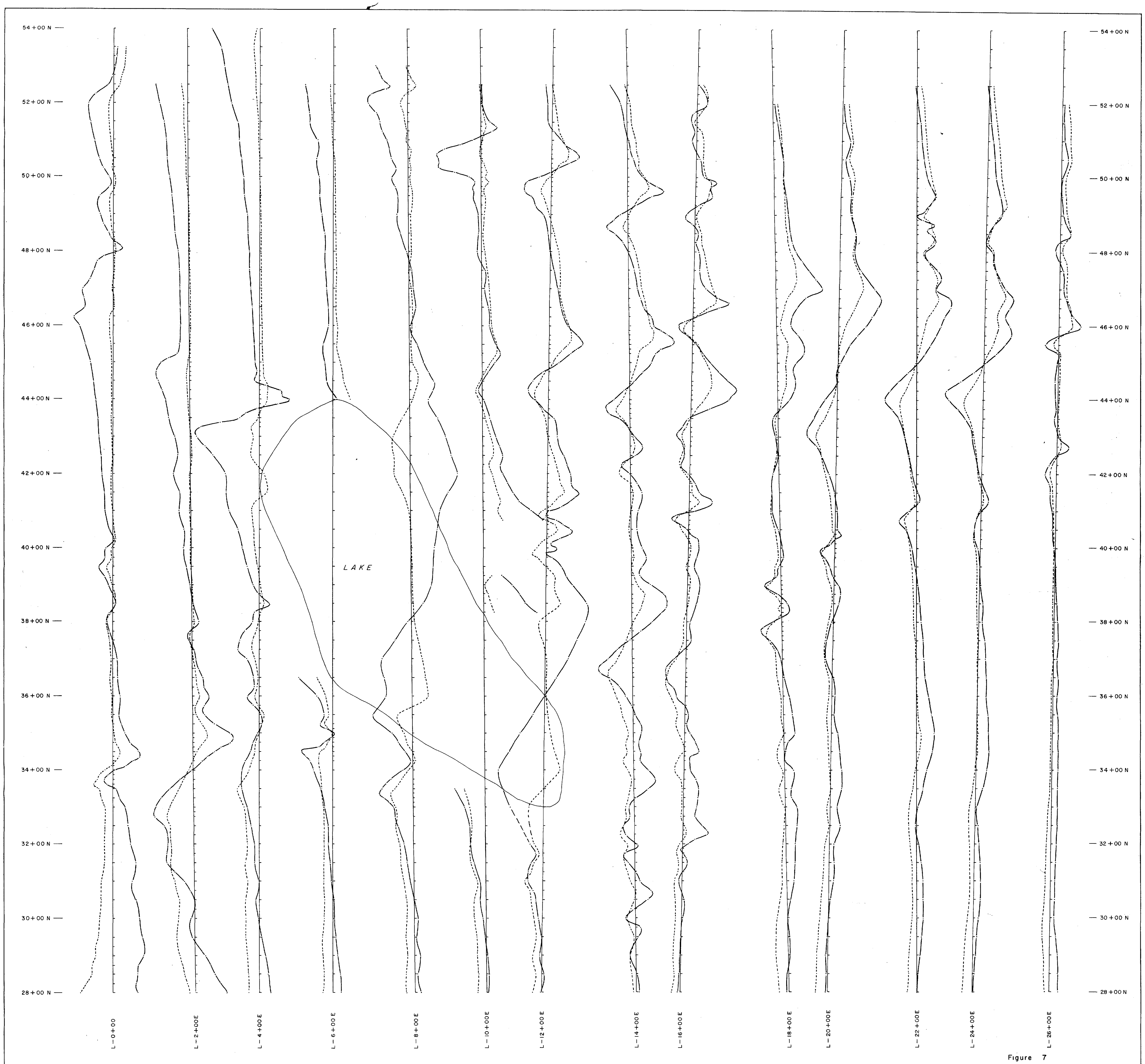
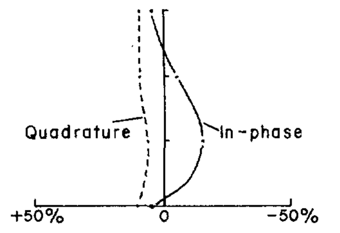


Figure 7



NOTE: The chainage errors noted in Figure I have been corrected for on this map by shifting the lines in the East-West direction, but no North-South corrections have been applied.

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO

DRAYTON TWP., PATRICIA MINING DIVISION

VLF-EM PROFILES; DETAIL AREA 3

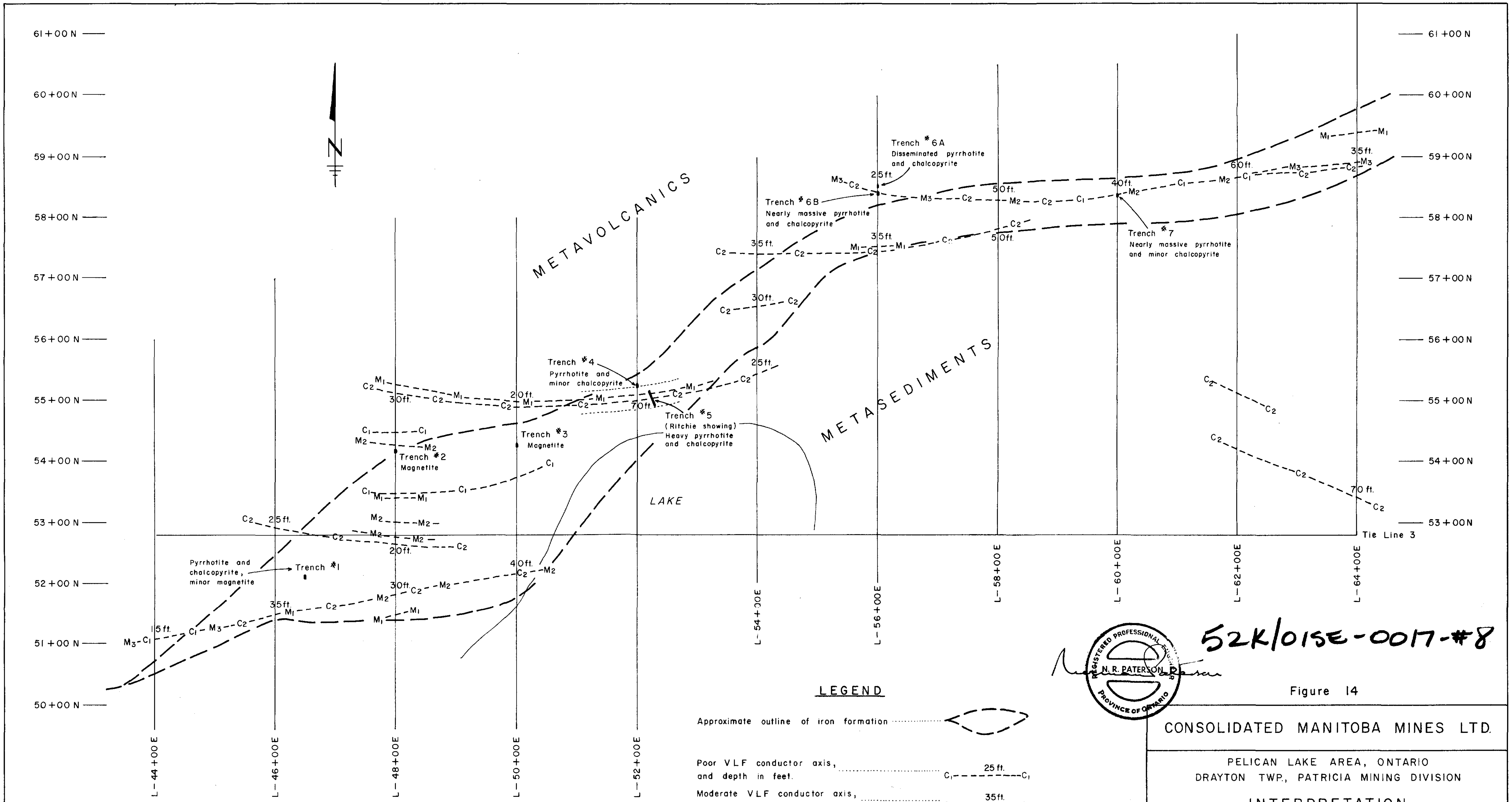
52K/01SE-0017-#7

DRAWN BY: H. Ricketts	SCALE: 1" = 100'
	DRAWING NO: 003/7-7
APPROVED:	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED

CONSULTING GEOPHYSICISTS - TORONTO, CANADA

260



LEGEND

Approximate outline of iron formation

Poor VLF conductor axis, and depth in feet — C1 ---- 25 ft. ---- C1

Moderate VLF conductor axis, and depth in feet — C2 ---- 35 ft. ---- C2

Magnetic body axis, less than 20% magnetite — M1 ---------- M1

Magnetic body axis, 20% – 50% magnetite — M2 ---------- M2

Magnetic body axis, over 50% magnetite — M3 ---------- M3

Approximate limits of magnetic body — M1 --------

NOTE: Chainage errors noted in Figure 1 have been corrected for in both East – West and North – South directions on this map. Thus to obtain chainages marked on pickets in the field from this map add or subtract the appropriate amounts for each line as noted in Figure 1.

52K/01SE-0017-#8

REGISTERED PROFESSIONAL ENGINEER — N. R. PATERSON — PROVINCE OF ONTARIO

Figure 14

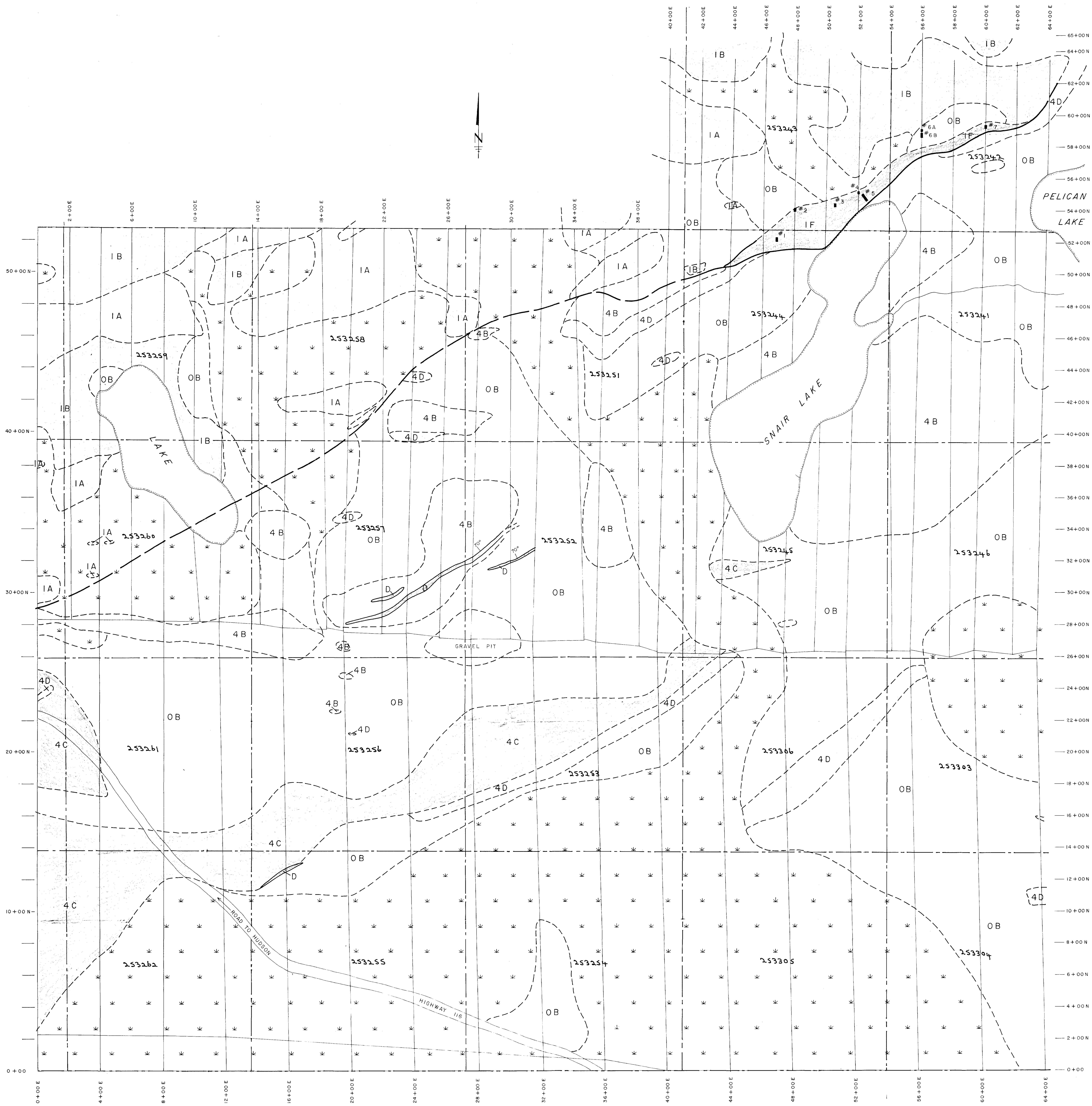
CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP., PATRICIA MINING DIVISION

INTERPRETATION
DETAIL AREA I

DRAWN BY: H. Ricketts	SCALE: 1" = 100'
	DRAWING NO: 003/7-14
APPROVED:	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS – TORONTO, CANADA



LEGEND

PRECAMBRIAN ARCHEAN
GRANITIC ROCKS

METASEDIMENTS

4
- 4B ···· Slate and Argillite
- 4C ···· Greywacke
- 4D ···· Volcanic boulder conglomerate

METAVOLCANICS

1
- 1A ···· Intermediate to mafic Lava Schistose Greenstone
- 1B ···· Pillowed Lava

IF
- IF ···· Iron formation

Reference numbers used above are taken from O.D.M. Map No. P421, ABRAM LAKE AREA - Scale: 1 inch to 1/4 mile.

- Trenches ···· #1
- Swamp ····
- Overburden Glacial Till, Sand, Gravel ···· OB
- Presumed contact
- Known contact
- Areas of outcrops
- Dike ···· D

52K/01SE-0017-#9

Figure 15

CONSOLIDATED MANITOBA MINES LTD.

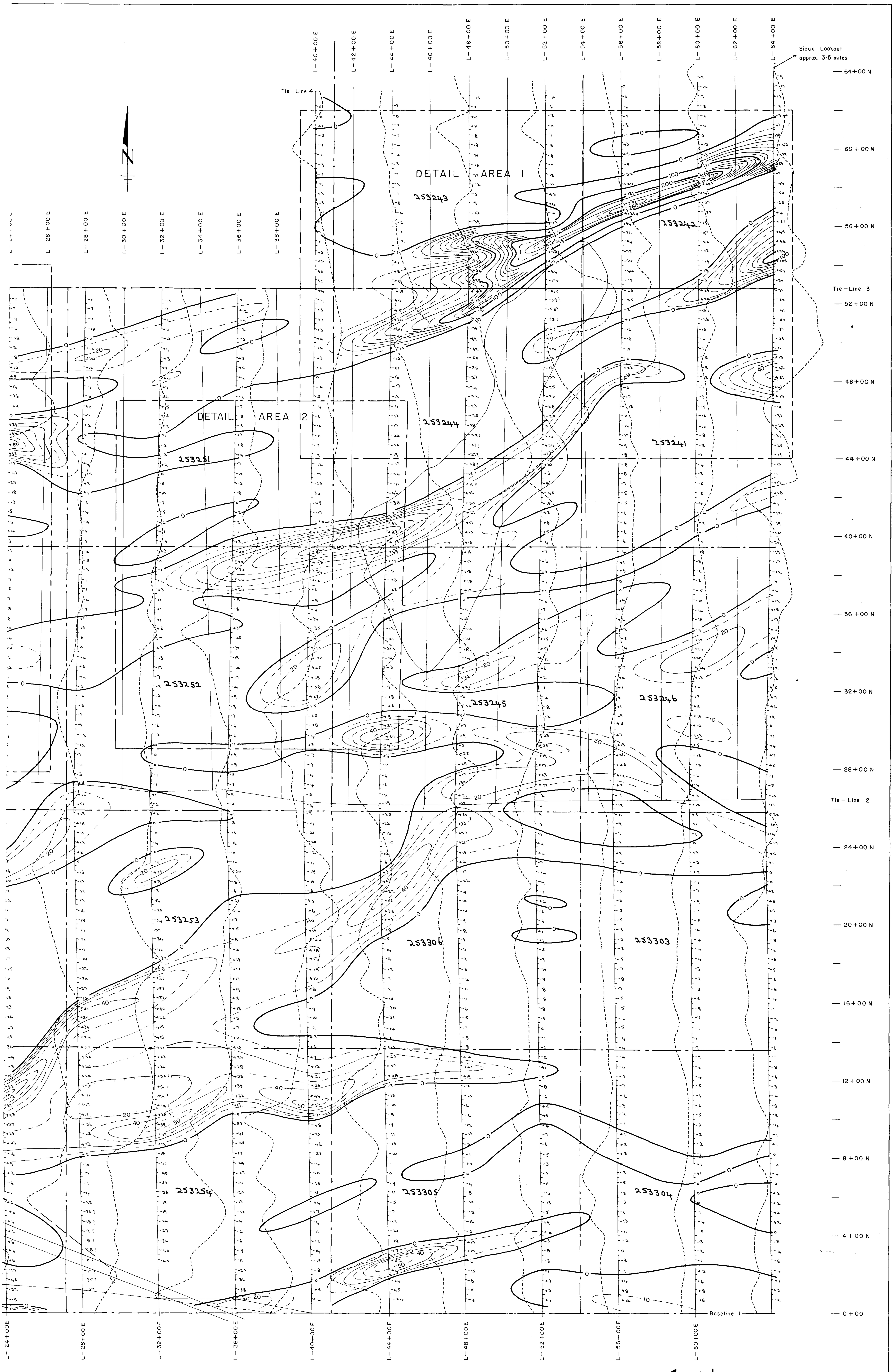
PELICAN LAKE AREA, ONTARIO
DRAYTON TWP., PATRICIA MINING DIVISION

GEOLOGY

DRAWN BY: H. Ricketts	SCALE: 1" = 200'
	DRAWING NO: 003/7-15
APPROVED:	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS - TORONTO, CANADA

280



52K/01SE-0017-#2

Figure 2

NOTE: Contoured values are derived by summing consecutive (50') pairs of stations and taking differences between alternate pairs — South minus North. e.g.

-12 -10 +2 +15 +5 -10 -4 -1 ---- Differences (plotted)
+3 +4 -2 -3 -5 +2 +5 -3 0 -2 -2 — In-phase readings
(+7) (+2) (-5) (-8) (-3) (+7) (+2) (-3) (-2) (-4) ---- Sum

ency 18·6 kHz.

NOTE: Chainage errors noted in Figure 1. have been corrected for on this map by shifting the lines in the east-west direction, but no north-south corrections have been applied.

CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP., PATRICIA MINING DIVISION

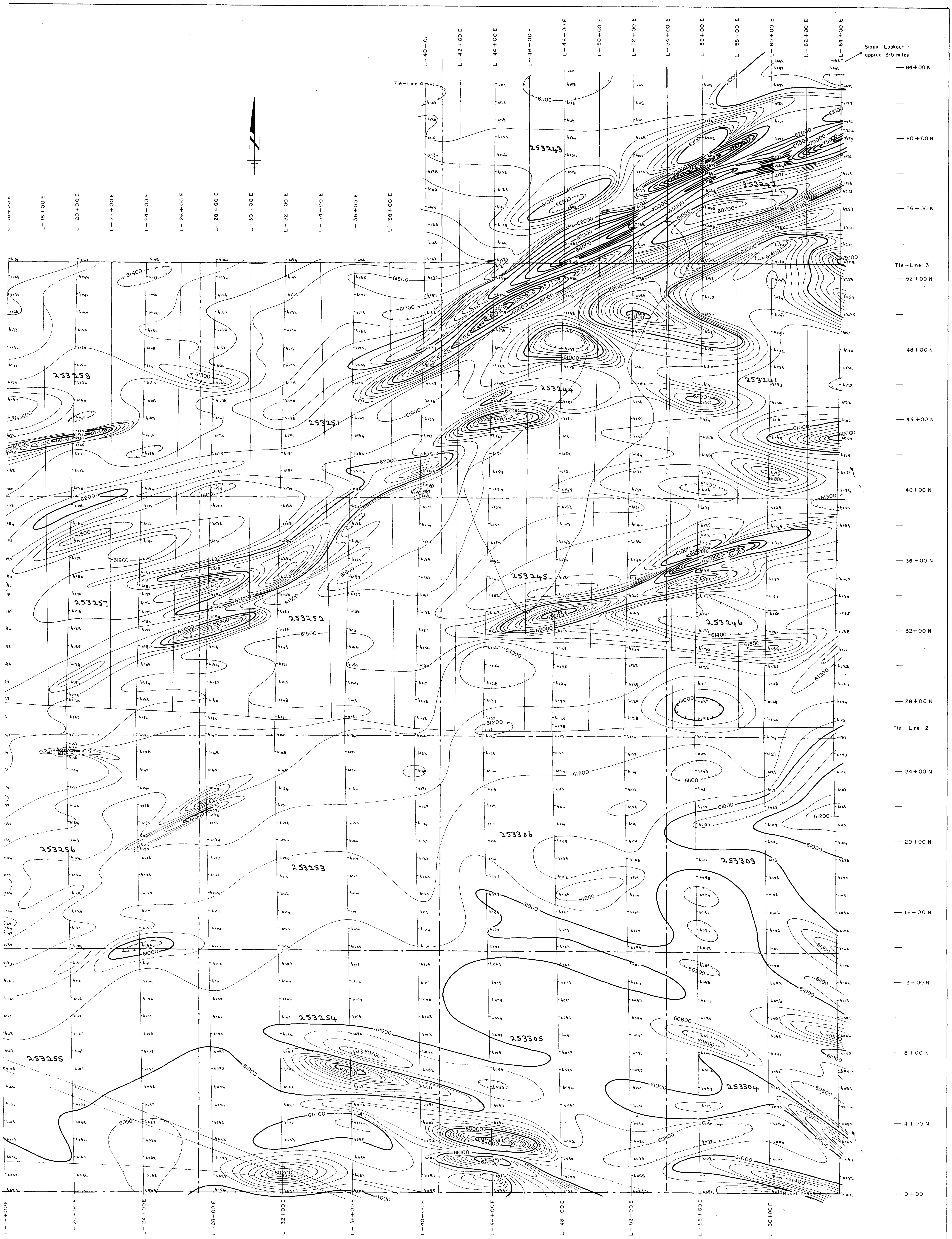
VLF-EM RECONNAISSANCE MAP

DRAWN BY: H. Ricketts	SCALE: 1" = 200'
	DRAWING NO. 003/7-2
APPROVED:	DATE: JULY, 1970

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS - TORONTO, CANADA

2.268



52K/01SE-0017-#3

Figure 3

NOTE Chainage errors noted in Figure 1. have been corrected for on this map by shifting the lines in the east-west direction, but no north-south corrections have been applied.

Contour Interval: 100 gammas

REGISTERED PROFESSIONAL ENGINEER N. R. PATERSON PROVINCE OF ONTARIO

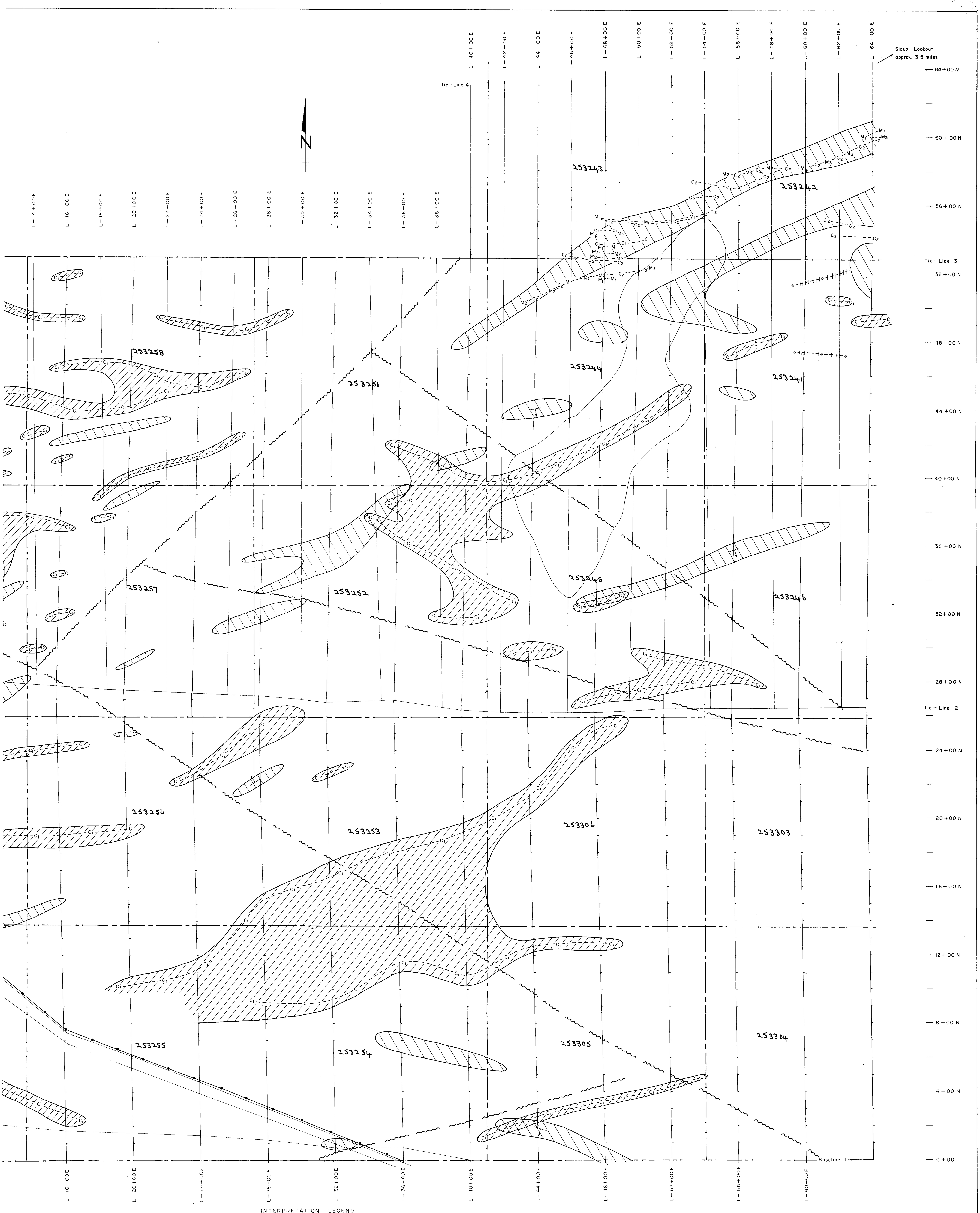
CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP, PATRICIA MINING DIVISION

MAGNETOMETER RECONNAISSANCE MAP

DRAWN BY H. Ricketts	SCALE: 1" = 200'
	DRAWING NO. 003/7-3
APPROVED	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS - TORONTO, CANADA



INTERPRETATION LEGEND

Axis of poor VLF conductor .... C1 - - - - C1
Axis of moderate VLF conductor .... C2 - - - - C2
Conductive overburden ....
Possible sheer zone .... oHHHHHo

Axis of magnetic body, 0-20% magnetite --- M1 - - - - M1
Axis of magnetic body, 20-50% magnetite --- M2 - - - - M2
Axis of magnetic body, over 50% magnetite --- M3 - - - - M3
Magnetic zone and dip ....
Possible faults ....

NOTE: Interpretation on this map is based on both detail and reconnaisance work.

This map has not been corrected for the chainage errors noted in Figure 1 so that the readings have been plotted at the positions stated on the pickets in the field.

52K/01SE-0017-#4

Figure 4

CONSOLIDATED MANITOBA MINES LTD.

PELICAN LAKE AREA, ONTARIO
DRAYTON TWP., PATRICIA MINING DIVISION

INTERPRETATION

REGISTERED PROFESSIONAL ENGINEER
N. R. PATERSON
PROVINCE OF ONTARIO

DRAWN BY: H. Ricketts	SCALE: 1" = 200'
	DRAWING NO. 003/7-4
APPROVED:	DATE: JULY, 1970

NORMAN PATERSON & ASSOCIATES LIMITED
CONSULTING GEOPHYSICISTS - TORONTO, CANADA

2.268