GEOLOGICAL REPORT

of the

Cote Lake and Clam Lake Properties

Chester Township
Sudbury Mining Division

District of Sudbury

for

CHESTER MINERALS LIMITED

by

Roberta Bald

Robert S. Middleton Exploration Services Inc.
P.O. Box 1637 Timmins, Ontario P4N 7W8

July 30, 1984

TABLE OF C

LIST OF TABLES

APPENDIX

Copy of Certificate of Analysis

LIST OF FIGURES

SUMMARY

The Chester Minerals Ltd. Cote Lake property is underlain by a multi-phase, felsic intrusion, ranging in composition from diorite to quartz-rich trondhjemite. The most abundant phase is quartz-rich trondhjemite. The felsic intrusion is locally intruded by Matachewan diabase dikes.

A number of old pits and trenches were located on the property from which 19 grab samples were collected and 6 were assayed for gold and, in some cases, copper. The highest gold value obtained was 0.898 oz/ton. The mineralization appears to consist of pyrite and locally chalcopyrite and molybdenite in shear zones within the felsic intrusion. The presence of mafic-rich (chlorite $\pm$ amphibole) material in some of the trenches may be recrystallized mafic metavolcanic xenoliths. An untrenched shear zone within quartz-rich trondhjemite was uncovered at L36W, 21+50S. The trondhjemite has been altered to quartz eye sericite schist containing a trace amount of fine-grained pyrite.

The showings on the Chester Minerals Ltd. Clam Lake property were visited and 12 grab samples were collected from trenches and a dump near the Shannon Island shaft on Shannon Island. Four samples were assayed and the highest gold value is 0.221 oz/ton.

INTRODUCTION

Cote' Lake Property

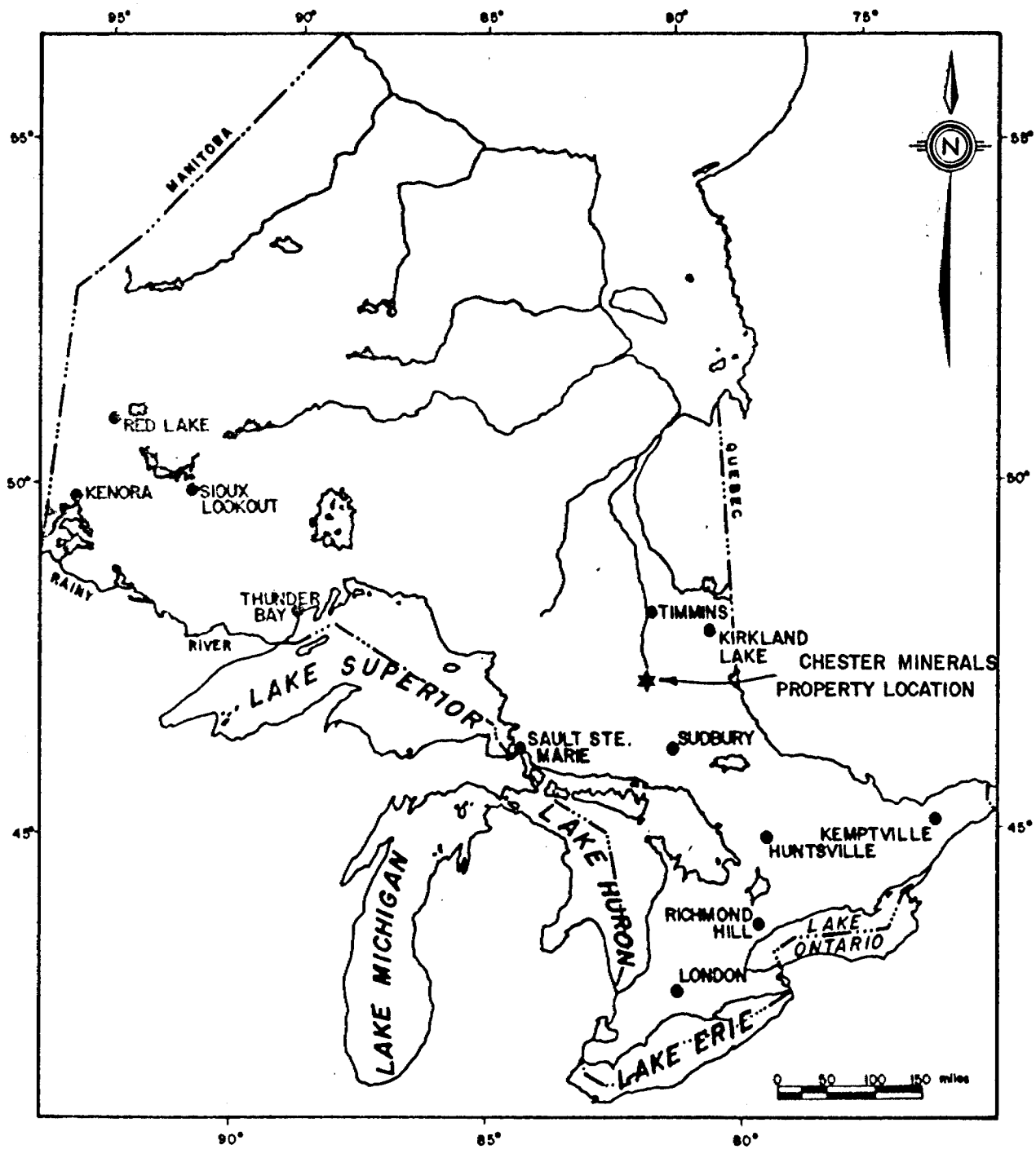
Four surveyed, patented claims were geologically mapped from July 8th to July 21st, 1984, for Chester Minerals Ltd., 18 Cedarbank Crescent, Don Mills, Ontario. The claim group is in west central Chester Township, west and south of Cote' Lake. The claim numbers are S19977, S19997, S19998 and S20000. A portion of claims S19977 and S19997 are covered by Cote' Lake, and a portion of claim S20000 is covered by Three Duck Lake.

A grid was established by cutting an easterly trending baseline zero on the northern part of claim S19977 with north-south trending lines 400' apart. The westernmost line was chained across the river emptying into Cote Lake and extended through claim S19998. A second baseline, TL20S, was cut east across the three southern claims 2,000 feet south of the baseline. North-south lines were then cut at 400' intervals. The lines were picketed every 100 feet. A total of 4.67 line miles, including 1.10 miles of baseline, were cut on the claims.

A survey of the patented claims was done in 1937. Although claim lines and more recent claim posts of adjacent claims were located in the field, the original claim posts were not found.

Clam Lake Property

Three showings were visited and the main showing on Shannon Island, was mapped at a scale of 1" = 10'.



PROVINCE OF ONTARIO

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD.		
	Title PROPERTY LOCATION		
			Fig. 1
	Date: June 84	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55

MESOMIKENDA

LAKE

ACCESS ROAD

POWER LINE

THREE

19977

20000

19998

19997

CLAM

CHESTER MINERALS

16304

20646

LAKE

DUCK

LAKE

560

144

CHESTER TOWNSHIP

0 1/4 1/2 3/4 1 miles

1" = 1/2 mile

Timmins

Foleyet

101

Gowganda

560

Property Location

144

Sudbury

17

0 10 20 30 40 miles

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD.		
	Title CLAIM INDEX Fig 2		
	Date:	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55

ONTARIO GEOLOGICAL SURVEY

PRELIMINARY MAP P.2449

GEOLOGICAL SERIES

PRECAMBRIAN GEOLOGY

OF

CHESTER AND YEO TOWNSHIPS

and parts of

NEVILLE AND POTIER TOWNSHIPS

JEROME AREA

SUDBURY DISTRICT

Scale 1:15 840

Mile ½ 0 ½ ½ Mile

Metres 100 0 0.2 0.4 0.6 0.8 1 Kilometre

LEGEND

PRECAMBRIAN

8 DIABASE

7 LAMPROPHYRE

6 FELSIC INTRUSIVE ROCKS

5 MIGMATITES

4 SUBVOLCANIC FELSIC INTRUSIVE ROCKS

3 METASEDIMENTS

2 INTERMEDIATE PYROCLASTIC METAVOLCANICS

1 MAFIC METAVOLCANICS

CHESTER MINERALS LTD.

VEINS

GEOLOGY BY G.M. SIRAGUSA AND ASSISTANTS, 1980

FROM S.B. HOBBS, 1984

LOCATION AND ACCESS AND TOPOGRAPHY

The Coté Lake property is located in the west central part of Chester Township in the District of Sudbury, Sudbury Mining Division, about 70 miles southwest of Timmins and 85 miles north of Sudbury, Ontario (Figure 1 and 2). Access to the north shore of Coté Lake is via an old mining road which extends west from the Mesomikenda Lake gravel road (formerly Highway 560) which in turn branches off Highway 144 about 10 miles south of Gogama, Ontario. The Clam Lake claims are accessible by boat from an old mining road which continues from Coté Lake to Clam Lake.

Scattered outcrop occurs throughout most of the property, with a slightly more prominent diabase outcrop on L36W. A spruce swamp dominates the northern part of claim S20000.

REGIONAL GEOLOGY

The central part of Chester Township, including the Chester Minerals Ltd. property, is underlain by a trondhjemite-granodiorite intrusive complex with migmatitic inliers (Figure 3, after Siragusa, 1981, O.G.S. map P2449). Hornblende diorite and gabbro occur to the south and southeast of the felsic intrusion. A series of intermediate pyroclastic metavolcanics were intruded by the felsic intrusion and the contact lies about 1/2 mile north of the Chester Minerals Ltd.

property. North-northwesterly trending diabase dikes cross the area, some possibly occupying pre-existing faults.

The trondhjemitic intrusive rocks host several gold bearing quartz veins generally occupying easterly trending shear zones. Variable amounts of pyrite, chalcopyrite, pyrrhotite, and lesser amounts of galena, sphalerite and tellurides have been noted in some of these shear zones. A relatively wide disseminated sulphide zone on the Chester Resources/Murgold Resources properties, apparently related to migmatites within the intrusive complex occurs about one mile northeast of the Chester Minerals property. Although considerable exploration has been done dating back to 1900, and at least five shafts sunk in Chester Township, gold production in the area has been limited.

PREVIOUS WORK

Prospecting began in the area around 1900. By 1930, numerous gold showings had been discovered, including the Shannon vein on Shannon Island. A 125 foot shaft was sunk on the Shannon Island vein on claim S16304, in 1934 by Young-Shannon Gold Mines. Another shaft was sunk on a vein on claim S19971, north of Coté Lake, about 600 feet east of claim S19977, included in the present survey. In 1965, geophysical and geological surveys and drilling were done on the Chester Minerals Ltd. property (Walker, 1965). In 1973, Barringer Research Ltd. did an induced

polarization survey for Park Precious Metals Inc. over a claim group, part of which consisted of the Chester Minerals Ltd. Coté Lake property. Five diamond drill holes tested the resulting IP anomalies. In 1978, Young-Shannon Gold Mines Ltd. leased eleven claims, adjacent to the Coté Lake property, to Canadian Crest Mines. More underground work was done on the Young Shannon showing and a steel headframe, a diesel power plant and a concentrating plant were installed. Wide zones of gold bearing disseminated sulphides were discovered in 1981 on the Chester Resources/Murgold Resources property, about one mile norheast of the Chester Minerals property. Exploration activity continues on the adjacent properties including those held by Murgold, Jarvis Minerals and Pacific (Northern) Gold Mines.

PROPERTY GEOLOGY

Coté Lake Property

The Chester Minerals Ltd. Coté Lake property is underlain by part of a felsic intrusive complex (Figure 4, back pocket). Quartz-rich trondhjemite is the most abundant phase on the property but granodiorite, granite and diorite with rare aplitic phases also occur. Diabase dikes locally intrude the felsic rocks. Table 1 lists the units found on the property.

The trondhjemite is an equigranular massive, grey rock with 1% to 20% black amphibole and/or dark green chlorite. The

quartz-rich phase generally contains 30 to 40% quartz phenocrysts and less than 5% mafic minerals but may contain as much as 15%. A rare aplitic phase occurs in the east portion of the property. This phase is grey, hard, and contains quartz eyes. Trondhjemite is locally gradational into granodiorite and rare granite, with increasing amounts of pink potassium feldspar. The felsic rocks locally contain fine- to medium-grained, dark green mafic inclusions from 1" long to over 10 feet long.

A more mafic-rich phase occurs on the property and may either be a mafic phase of the intrusion or large metamorphosed, recrystallized, partly digested mafic xenoliths. This phase was mapped as diorite and consists of medium- to coarse-grained, massive to locally slightly foliated, equigranular dark green rock. It generally consists of 35 to 40% black to dark green amphibole (hornblende to tremolite); and 60 to 65% greenish, recrystallized interstitial plagioclase, with local green epidote veinlets.

Two major diabase dikes, probably of Matachewan age, cut the felsic intrusive rocks on the property: one running just to the east of L36W and the other occurring on the south part of L65W, just west of the west boundary of claim S19998. An eight foot wide diabase dike occurs near L65W, 8S. Another outcrop of diabase occurs at L32W, 24S and may be part of the large dike located along L36W. The diabase is reddish brown on weathered

surface, black on fresh, medium- to coarse-grained and locally magnetic. It is chilled against the felsic intrusive rocks. The dikes generally trend north-northwesterly.

Table 1: Table of Formations

Matachewan Diabase Dikes

Intrusive Contact

Felsic Intrusive Complex

Quartz-rich Trondhjemite
Trondhjemite
Granodiorite
Granite
Diorite
Aplite

ECONOMIC GEOLOGY

Cote' Lake Property

A total of 19 grab samples were collected from the property of which 6 were analysed for gold and in some cases copper (Table 2). Additional samples have been sent for analysis but assay results are unavailable at the time of writing.

Four areas of interest were located on the property. These include three previously trenched quartz vein bearing shear zones and a slightly pyritiferous shear zone located in outcrop, apparently previously untrenched.

A large outcrop on the south west shore of Cote' Lake has been trenched for about 80 feet along a quartz vein known as the No. 3 Vein. A grab sample taken from the north face of the trench assayed 0.898 oz Au/ton and 2650 ppm Cu. The sample was taken from the pyrite-bearing quartz vein with minor pyrite-bearing quartz vein with minor pyritiferous mafic host rock. Minor chalcopyrite was also observed in the sample.

Two small pits were located near the north boundary of claim S19977. One sample of quartz-rich trondhjemite was taken from each of the pits. A sample containing about 1% chalcopyrite and 1% pyrrhotite assayed 111 ppb Au and 230 ppm Cu. The other sample contains about 2-3% chalcopyrite and pyrrhotite and assayed 347 ppb Au (0.01 oz Au/ton) and 1100 ppm Cu.

A series of trenches were located just south of the south

boundary of claim S20000. A pyritiferous, locally sericitic shear zone was observed in the trenches and appears to be trending onto the Chester Minerals Ltd. propery. Three south dipping drill holes were located in the field and appear to have been drilled to test this zone.

A three foot wide rusty quartz eye sericite schist zone trending about 100° AZ occurs in quartz-rich trondhjemite. The sample contains trace pyrite. Assay results are unavailable at the time of writing.

These four sulphide bearing zones appear to be the result of shearing in quartz-rich trondhjemite host rock. Locally, mafic rich material is associated with the shear zones and may indicate that mafic xenoliths, possibly of volcanic origin, provide a focus for the shearing.

Table 2: Description and Location of Rock Samples taken from the Cote' Lake property, analysed for gold and copper. N/A indicates not analysed for copper.

Sample #	Rock Type/Description	Location	Au (ppb)	Cu (ppm)
44952	quartz-rich trondhjemite with ~1% pyrite	65+20W, 4+80S	10	N/A
44953	quartz vein and minor wall rock; ~5% pyrite, minor chalcopyrite; weathered sample from trench on No. 3 vein.	58+70W, 14+60S	0.898oz/ton	2650
44954	quartz-rich trondhjemite with 1-2% pyrite	59+65W, 30+15S	121	N/A
44955	quartz vein with small amount of mafic inclusions	58+75W, 15+55S	4	N/A
44956	quartz-rich trondhjemite with 1% chalcopyrite and 1% pyrrhotite; from pit	62+00W, 0+70N	111	230
44957	quartz-rich trondhjemite with 2-3% chalcopyrite and pyrrhotite	62+10W, 0+70N	347	1100

Clam Lake Claims

A total of 12 grab samples were collected from three gold showings on Clam Lake, including the Shannon Island showing. Four samples were analysed for gold and copper.

Young-Shannon Gold Mines Ltd. sank a 125 foot, two compartment shaft to explore the Shannon Island vein and 110 feet of underground lateral work was done. The island is now mostly covered with rock piles but some mafic-rich granodiorite was mapped (Figure 5). A grab sample of quartz vein containing chalcopyrite and pyrite taken from the ore dump assayed 0.221 oz Au/ton and 1.0% Cu.

An island to the southwest of Shannon Island, commonly known as Young Island, consists mainly of medium-grained granodiorite. An old pit on the north end of the island exposes a ten foot wide easterly trending, locally sericitic schist zone in mafic-rich granodiorite. A pinch and swell quartz vein up to 1 foot wide and massive sulphide lenses up to 1 inch wide occur in this zone. A sample of mafic-rich granodiorite from the east end of the pit contains disseminated and massive pyrite. It assayed 291 ppb Au and 46 ppm Cu.

A trench trending 076° AZ, about 80 feet long occurs on the west shore of Clam Lake, southwest of Yound Island. The trench reveals a 2 to 3 feet wide gossan zone with massive pyrite lenses and locally minor specular hematite but is chlorite-rich in the

trench. A weathered sample from the bottom of the trench about 20 feet west of the shore assayed 535 ppb Au (0.016 oz Au/ton) aand 34 ppm Cu. This sample was chlorite-rich granodiorite with disseminated to massive pyrite. Coarse-grained pyrite and hematite associated with quartz veins was commonly seen as float in the trench but was not seen in outcrop. A sample of this material assayed 332 ppb Au (0.01 oz Au/ton) and 108 ppm Cu.

Table 3: Description and Location of Rock Samples taken from the Clam Lake Claims, analysed for Gold and Copper.

Sample #	Rock Type/Description	Location	Au (ppb)	Cu (ppm)
44958	quartz vein from ore dump, with 5% chalcopyrite and 1% pyrite	Shannon Island (near shaft)	0.221oz/ton	1.0%
44959	mafic-rich granodiorite, with disseminated and massive pyrite lenses; from east end of pit	Young Island (Southwest of Shannon Island)	291	46
44960	mafic-rich granodiorite, with disseminated to massive pyrite; weathered sample from bottom of trench	West shore of Clam Lake, southwest of Young Island	535	34
44961	quartz vein with 15 to 25% pyrite and specular hematite; loose piece from trench	same as 44960	332	108

CONCLUSIONS AND RECOMMENDATIONS

1. Mineralization on the Chester Minerals Ltd. Coté Lake and Clam Lake properties appears to be controlled by shearing in the felsic intrusive rocks. The common occurrence of mafic-rich material in some of the old trenches may indicate the presence of mafic xenoliths.
2. Several subparallel or en echelon shear zones occur on the Coté Lake property.
3. The occurrence of disseminated pyrite and chalcopyrite in the shear zones indicate these mineralized zones could be trace by an induced polarization survey.
4. An IP survey is recommended along the present grid system which is offset approximately 200 feet from the grid used during the 1973 IP survey done by Barringer Research Ltd. for Park Preceious Metals Inc. (Caven, 1973). This second IP survey would outline more preceisely zones of mineralization on the property, especially important if the shear zones are en echelon or possibly fault offset as indicated by mapping. An IP survey over Coté Lake should also be done, possibly at 200 foot spacings since the 1973 survey did not cover Cote Lake.
5. Bulldozer power stripping to bedrock along with mapping and sampling of the exposed outcrops is recommended along anomalies outlined by the 1973 and proposed IP surveys and

along shear zones located in the field as well as areas suggested in the accompanying VLF-EM report. The budget for this work is detailed in that report.

Respectfully Submitted,

Roberta Bald

Roberta Bald

REFERENCES

Caven, R.
1973 Report on an Induced Polarization Survey in Chester Township, Sudbury Mining Division, Ontario for Park Precious Metals Incorporated - Barringer Research Limited.

Gordon, J.B., Lovell, H.L., Jande Grijs, and Davie, R.F.
1979 Gold Deposits of Ontario part 2, Ontario Geological Survey, Mineral Deposits Circular 18, pages 54 and 92.

Hobbs, L.G.
1984 A report on the Chester Twp. Property of Chester Minerals Ltd., District of Sudbury, Porcupine Mining Division, Ontario.

Laird, H.C.
1932 Geology of the Three Duck Lakes Area, O.D.M. Annual Report 41, Vol. XLI., pt.III.

Middleton, R.S.
1984 VLF-EM and Magnetometer Survey of Three Duck Lake and Clam Lake Area, Chester Township, Porcupine Mining Division, for Chester Minerals Limited.

Siragusa, G.
1981 Precambrian Geology of Chester and Yeo Townships and parts of Neville and Potier Townships, Sudbury District, Ontario Geological Survey, Preliminary Map P.2449.

CERTIFICATION

I, Roberta Bald, submit this document to certify that the following statements are to the best of my knowledge, true and correct:

1. That I mapped the geology on the Chester Minerals Ltd. Cote Lake property.

2. That I am the author of the attached report.

3. That I have received the following university degrees in geology: Honours B.Sc., Laurentian University, 1975, M.Sc., University of Manitoba, 1981.

4. That I have been working as a geologist since graduation.

5. That I am a Fellow of the Geological Association of Canada.

Respectfully Submitted,

Roberta Bald

Roberta Bald
July 30, 1984

A P P E N D I X

BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187, HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B757-84 DATE: July 26, 1984

SAMPLE(S) OF: Rock (11) RECEIVED: July, 1984

SAMPLE(S) FROM: Roberta Bald
R. S. Middleton Exploration Services Project #M-55

Sample No.	Gold/ppb	Gold/oz.	Copper/ppm	% Copper
G44952	10			
3		0.898**	2650	
4	121			
5	4			
6	111		230	
7	347		1100	
8		0.221**		1.0
9	291		46	
G44960	535		34	
1	332		108	

** Checked

ACCORDANCE WITH LONG-ESTABLISHED NORTH RICAN CUSTOM, UNLESS IT IS SPECIFICALLY STATED ERWISE GOLD AND SILVER VALUES REPORTED ON SE SHEETS HAVE NOT BEEN ADJUSTED TO COMPEN- FOR LOSSES AND GAINS INHERENT IN THE FIRE ASSAY PROCESS.

BELL-WHITE ANALYTICAL LABORATORIES LTD.

Report on the Power Stripping/Trenching Program

on the

CHESTER MINERALS PROPERTY

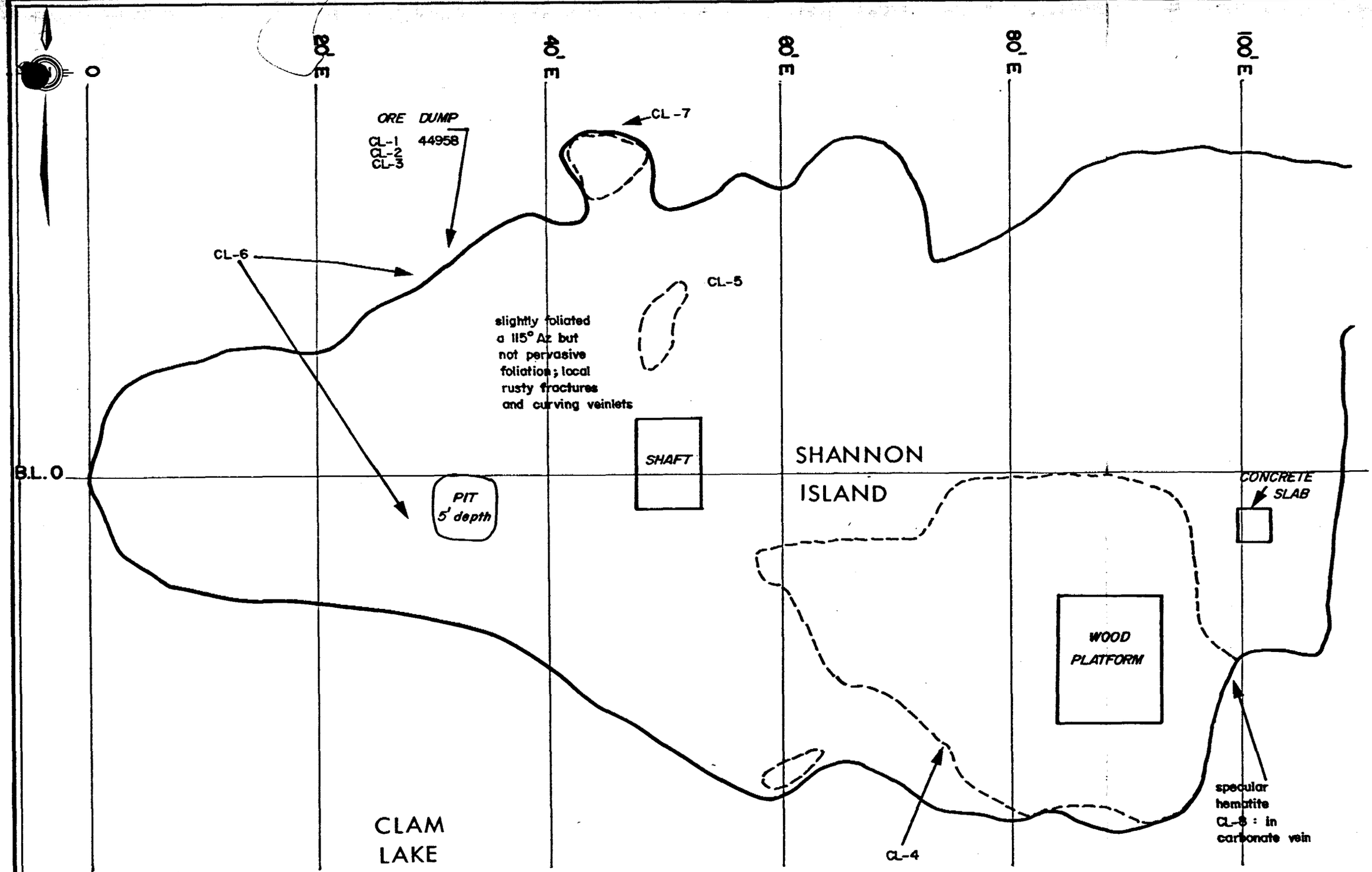
in

Chester Township

by

Nadia Caira, B.Sc.
Ian Coster, B.Sc.

R.S. Middleton Exploration Services Inc.
P.O. Box 1637
Timmins, Ontario
P4N 7W8
December 15, 1984



63.4435

LEGEND

(dashed)	OUTCROP
CL-1	SAMPLE NUMBER
44958	SAMPLE NUMBER

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for CHESTER MINERALS LTD.
	Title CLAM LAKE
	Figure 5
	Date: July 1984 | Scale: 1"= 10' | N.T.S.:

TABLE OF CONTENTS

LIST OF TABLES

APPENDIX

LIST OF FIGURES

SUMMARY

The Chester Minerals Ltd. Côté Lake property is underlain by a multiphase felsic intrusion ranging in composition from diorite to quartz-rich aplitic trondhjemite. The most abundant phase is the trondhjemite.

Mineralization on the Chester Minerals Ltd. property appears to be controlled by shearing in the felsic intrusive rocks. The common occurrence of mafic-rich material may represent xenoliths within the felsic intrusive rock. Several sub-parallel or en-echelon shear zones occur on the Côté Lake property. The occurrence of disseminated pyrite and chalcopyrite in these shear zones aided in the tracing of these zones by a past Induced Polarization survey.

The IP survey outlined several zones of mineralization on the property. In October, 1984, John Scott, B.Sc. Geology, supervised a bull-dozer power stripping to bedrock program and exposed mineralized outcrops along known IP anomalies. In early November, 1984, a total of six trenches were detailed mapped and a total of 13 rock samples were taken from the trenches and were analyzed for gold by Bell-White Labs, of Haileybury, Ontario. Figures 2 to 7 are detailed (1" = 20') scale sketches of the trenches with sample locations and results. The trenches were mapped and sampled by Nadia Caira and Ian Coster in early November, 1984 and are summarized in this report.

LOCATION AND ACCESS AND TOPOGRAPHY

The Côté Lake property is located in the west central part of Chester Township in the District of Sudbury, Sudbury Mining Division, about 70 miles southwest of Timmins and 85 miles north of Sudbury, Ontario (Figure 1 and 2). Access to the north shore of Côté Lake is via an old mining road which extends west from the Mesomikenda Lake gravel road (formerly Highway 560) which in turn branches off Highway 144 about 10 miles south of Gogama, Ontario. The Clam Lake claims are accessible by boat from an old mining road which continues from Côté Lake to Clam Lake.

Scattered outcrop occurs throughout most of the property, with a slightly more prominent diabase outcrop on L36W. A spruce swamp dominates the northern part of claim S20000.

PROPERTY GEOLOGY

Côté Lake Property

The Chester Minerals Ltd. Côté Lake property is underlain by part of a felsic intrusive complex (Figure 4, back pocket). Quartz-rich trondhjemite is the most abundant phase on the property but granodiorite, granite and diorite with rare aplitic phases also occur. Diabase dikes locally intrude the felsic rocks. Table 1 lists the units found on the property.

The trondhjemite is an equigranular massive, grey rock with 1% to 20% black amphibole and/or dark green chlorite. The

quartz-rich phase generally contains 30 to 40% quartz phenocrysts and less than 5% mafic minerals but may contain as much as 15%. A rare aplitic phase occurs in the east portion of the property. This phase is grey, hard, and contains quartz eyes. Trondhjemite is locally gradational into granodiorite and rare granite, with increasing amounts of pink potassium feldspar. The felsic rocks locally contain fine to medium-grained, dark green mafic inclusions from 1" long to over 10 feet long.

A more mafic-rich phase occurs on the property and may either be a mafic phase of the intrusion or large metamorphosed, recrystallized, partly digested mafic xenoliths. This phase was mapped as diorite and consists of medium- to coarse-grained, massive to locally slightly foliated, equigranular dark green rock. It generally consists of 35 to 40% black to dark green amphibole (hornblende to tremolite); and 60 to 65% greenish, recrystallized interstitial plagioclase, with local green epidote veinlets.

Two major diabase dikes, probably of Matachewan age, cut the felsic intrusive rocks on the property: one running just to the east of L36W and the other occurring on the south part of L65W, just west of the west boundary of claim S19998. An eight foot wide diabase dike occurs near L65W, 8S. Another outcrop of diabase occurs at L32W, 24S and may be part of the large dike located along L36W. The diabase is reddish brown on weathered

surface, black on fresh, medium to coarse-grained and locally magnetic. It is chilled against the felsic intrusive rocks. The dikes generally trend north-northwesterly.

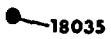
TABLE 1 LEGEND FOR TRENCHES 1-6

Unit 2 Diabase
Unit 1c Granodiorite
Unit 1d trondhjemite
Unit 1f Mafic Inclusions

py	pyrite	ovb	overburden
cp	chalcopyrite	diss	disseminated
as	arsenopyrite	sil	siliceous
hem	hematite	qtz	quartz
chl	chlorite	mod	moderate
ser	sericite	wk	weak
carb	carbonate	tr	trace
sph	sphalerite		


trench boundary


outcrop outline



rock sample location


water and/or overburden


shear


foliation


q.v., quartz vein


major fracture system

DISCUSSION OF TRENCHES 1 - 6

Trench 1

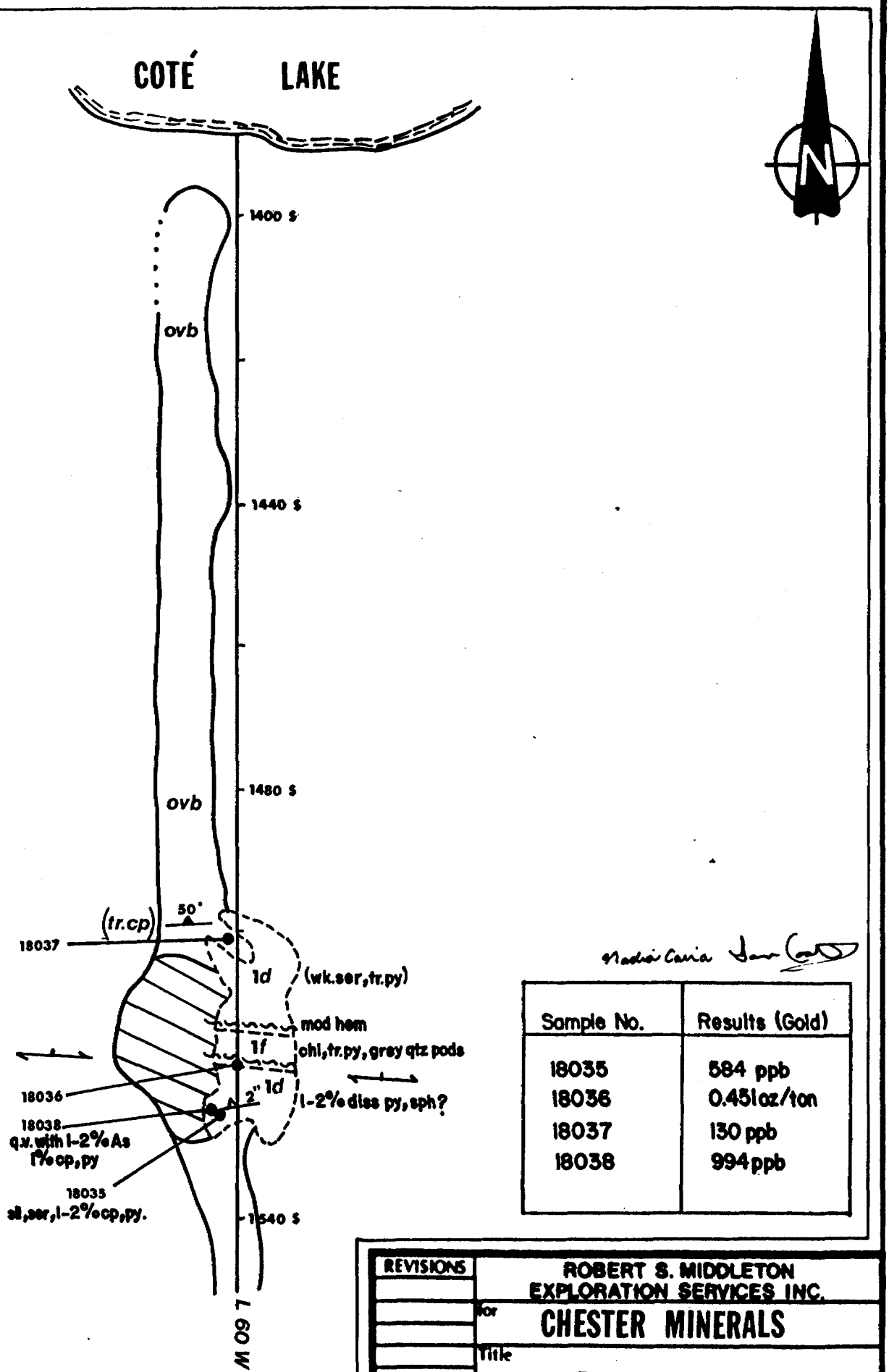
This trench is located just south of Côte' Lake at line 60W between 14+00 and 15+40 south. Exposed bedrock consists of weakly sericitized trondhjemite with disseminated pyrite ranging from trace to 1% and trace chalcopyrite, with minor sphalerite. A total of four samples were taken from this trench and all samples returned anomalous gold values (see Table 1 for descriptions). The highest gold obtained was 0.45 oz/ton from the sheared contact of a mafic xenolith. Trace amounts of pale pyrite and associated grey quartz pods were associated with the contact. A 2" wide quartz vein ranging from 1/2" to 2" crosscuts the trondhjemite at 085° and dip steeply to the north with 1-2% coarsely disseminated arsenopyrite and trace amounts of chalcopyrite an pyrite. The vein returned 994 ppb gold.

Trench 2

The trench is located on line 60W from 23+50S to 24+00S. This trench was filled with water when examined in the first week in November.

Trench 3

This trench is located on line 60W from 30+00S to 31+70S. Newly exposed outcrops consists of sugary textured recrystallized trondhjemite with local blue quartz phenocrysts. The rock is aplitic and may be a differentiate of the true trondhjemite. The



Sample No.	Results (Gold)
18035	584 ppb
18036	0.451oz/ton
18037	130 ppb
18038	994 ppb

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title TRENCH 1		fig 2
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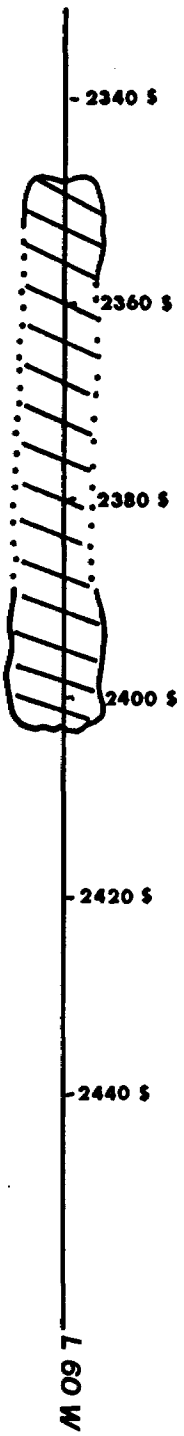

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	for CHESTER MINERALS		
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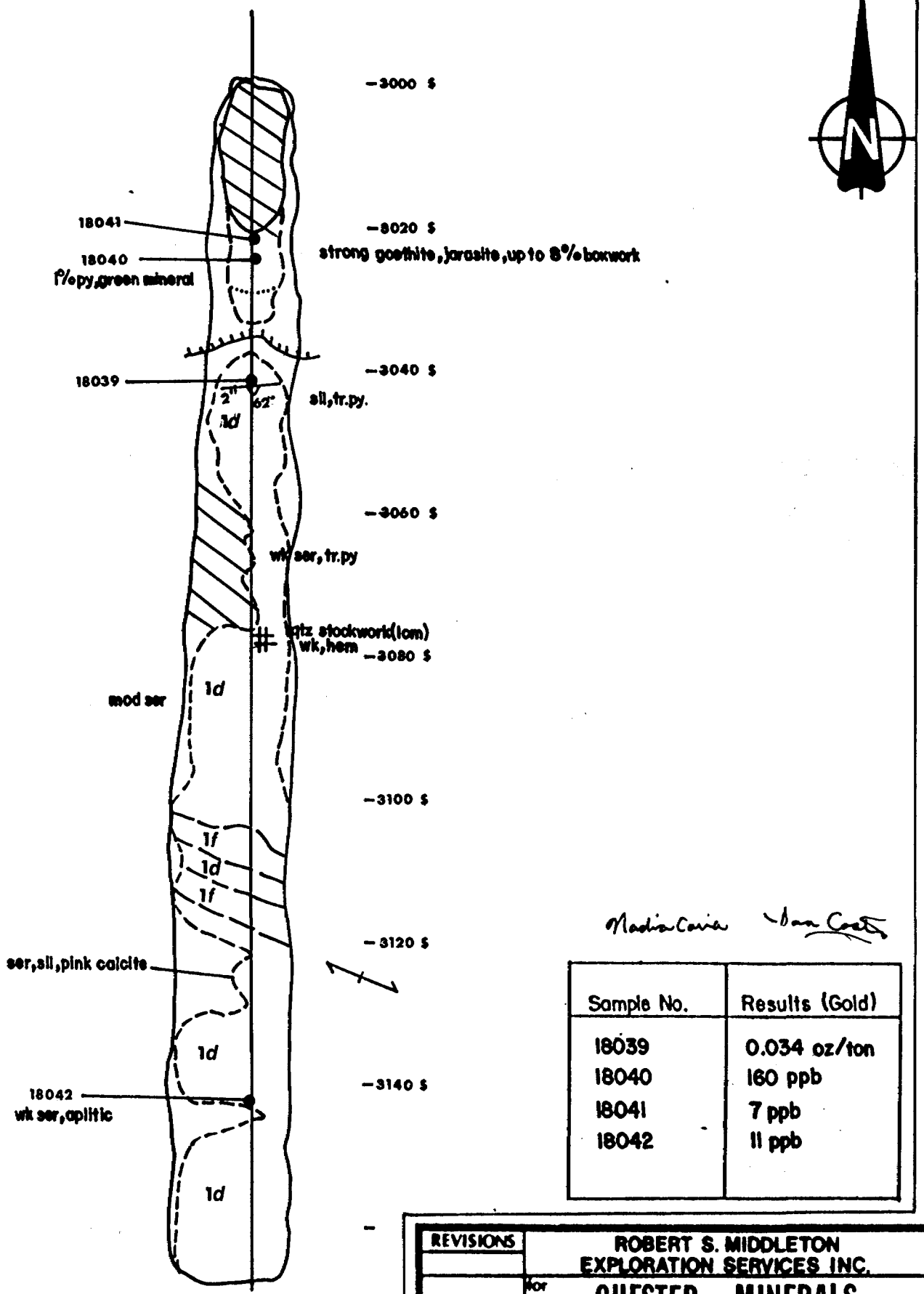
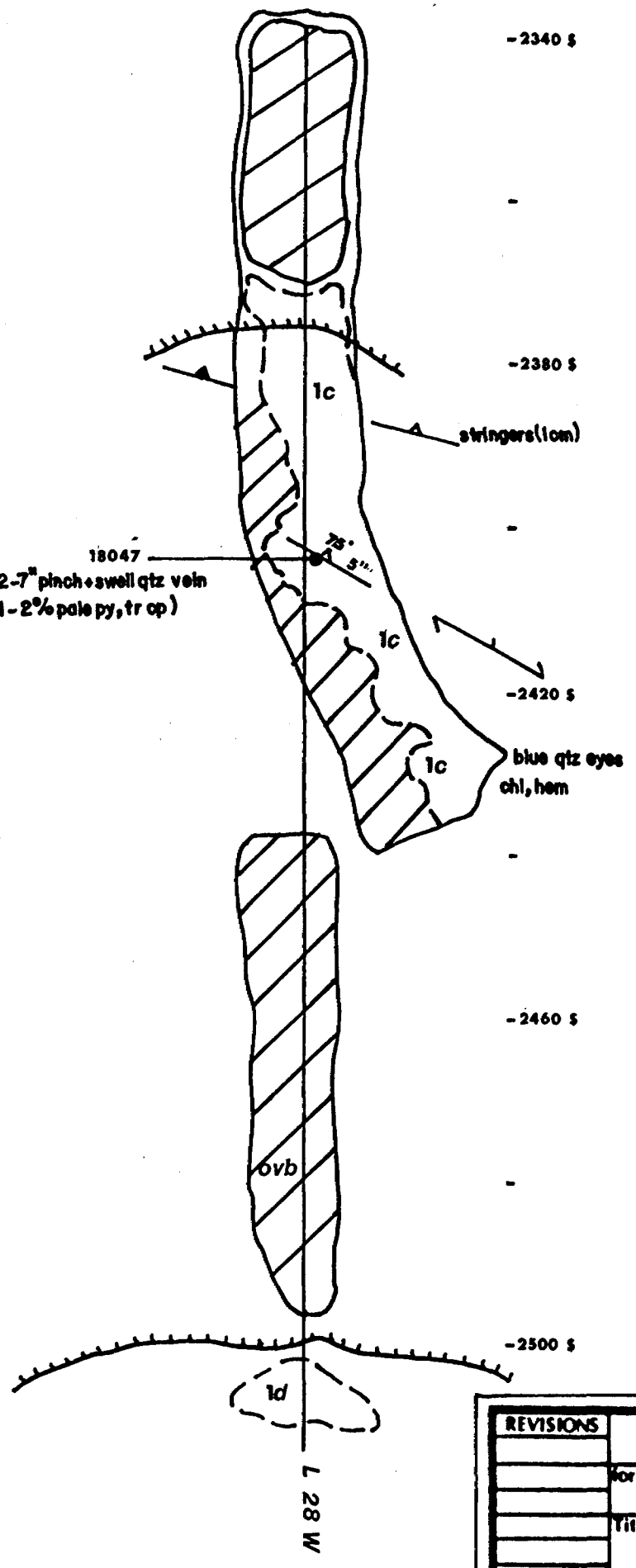
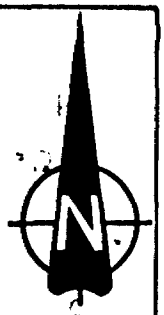


Sample No.	Results (Gold)
18039	0.034 oz/ton
18040	160 ppb
18041	7 ppb
18042	11 ppb

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for CHESTER MINERALS
	Title: TRENCH 3
	fig. 4
	Date: Nov. 1984 | Scale: 1"=20" | N.T.S.:
	Drawn: C.G. | Approved: | File: M-55

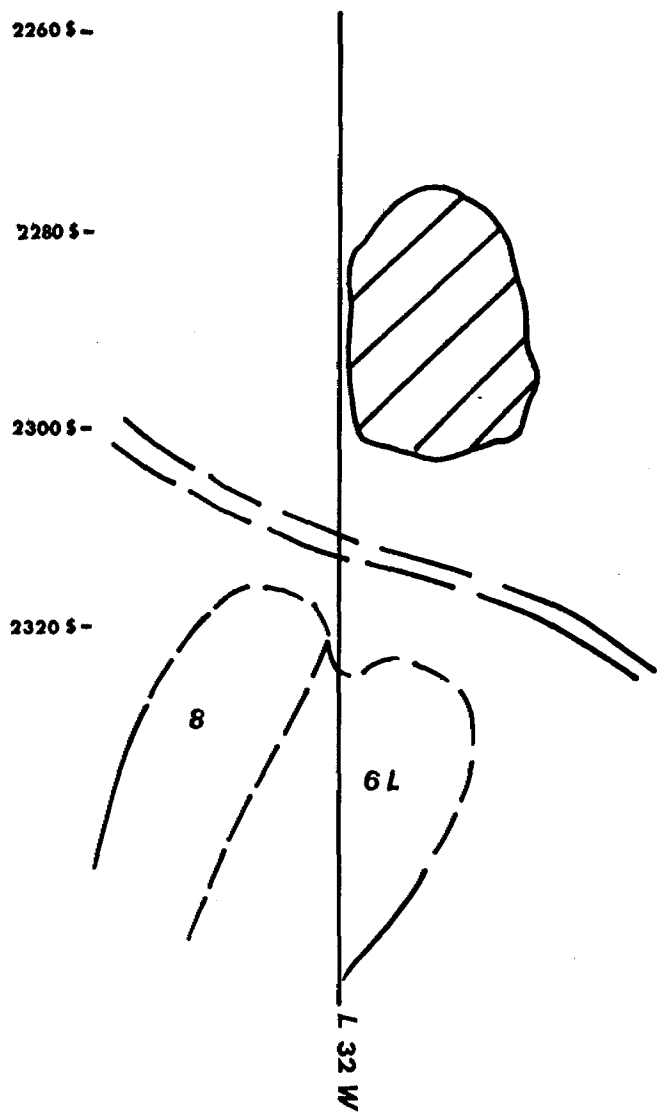




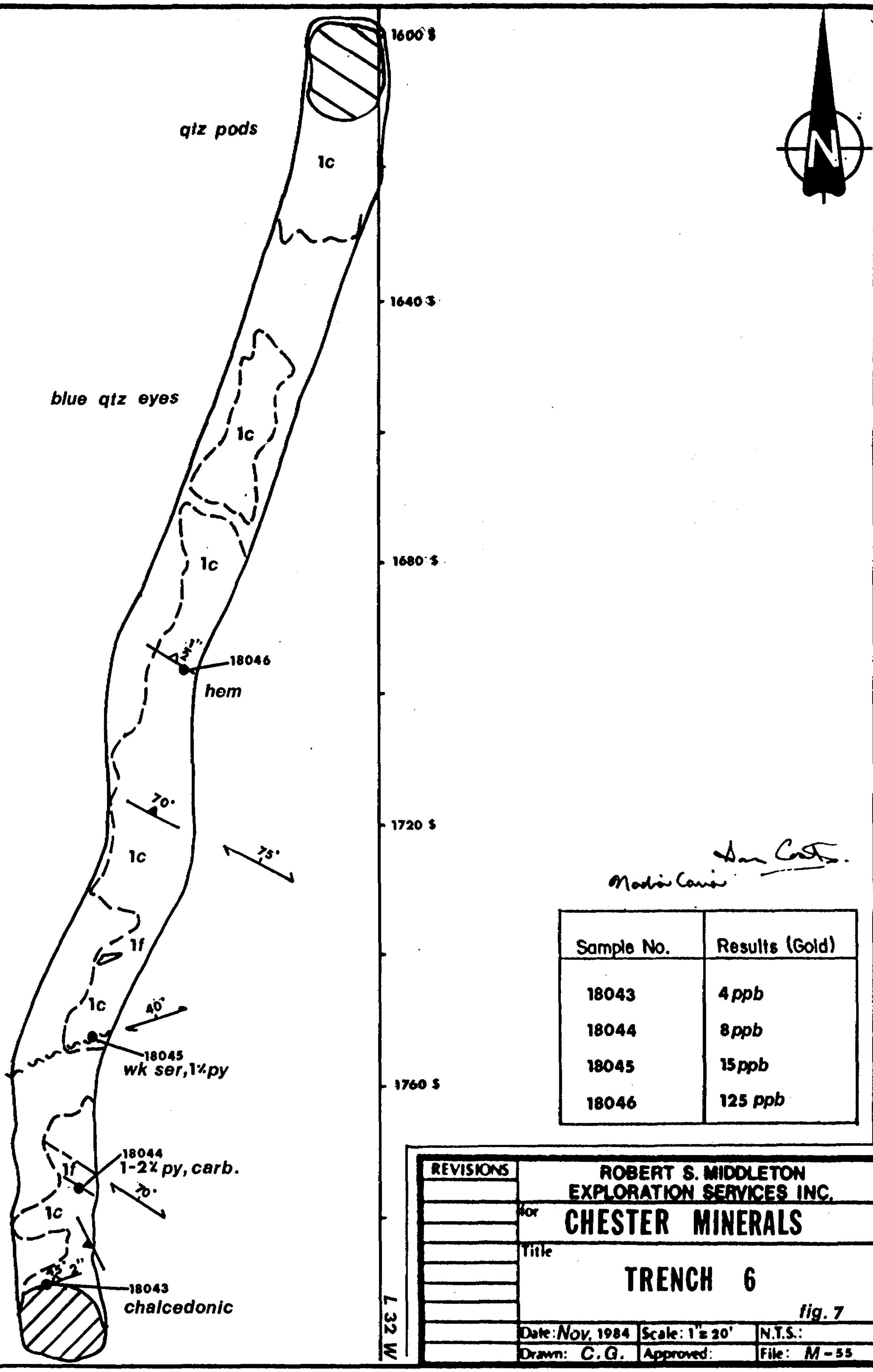
Madia Caira

Sample No.	Results (Gold)
18047	0.073 oz/ton

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
	for CHESTER MINERALS
	Title TRENCH 4 fig.5
	Date: Nov. 1984 | Scale: 1"=20' | N.T.S.:
	Drawn: C.G. | Approved: | File: M-55



REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title TRENCH 5 fig. 6		
	Date: Nov. 1984	Scale: 1" = 20'	N.T.S.:
	Drawn: C. G.	Approved:	File: M-55



Sample No.	Results (Gold)
18043	4 ppb
18044	8 ppb
18045	15 ppb
18046	125 ppb

REVISIONS

ROBERT S. MIDDLETON EXPLORATION SERVICES INC.

for **CHESTER MINERALS**

Title

TRENCH 6

fig. 7

Date: Nov, 1984 | Scale: 1" = 20' | N.T.S.:

Drawn: C.G. | Approved: | File: M-55

rock contains varying proportions of an apple green mineral (fuchsite?) and pink calcite along fractures. The rock is weakly to moderately sericitic with a strong red yellow alteration zone between 30+30S and 30+20S which is covered by water to the south.

Narrow 1 to 1.5" quartz veins occur with 1/4" quartz stockwork veining. A total of four rock grab samples were taken, two of which were analyzed for gold. The highest gold assay obtained was 0.034 oz/ton from a 1.5" quartz vein with trace amounts of pale pyrite. The vein is striking at 085° and dips 62° to the north.

Trench 4

This trench is located at line 28W between 23+40 south and 25+00 south. Exposed bedrock consists of weakly chloritized granodiorite with approximately 15% blue quartz eyes. Also exposed was a pinch and swell type quartz vein, varying in width from 3 1/2 to 7 inches. It strikes at 120°, dipping 75° to the northeast. The vein contains 1-2% pale disseminated pyrite as well as a trace of chalcopyrite. A grab sample of the vein assayed 0.073 oz/ton gold.

Trench 5

This trench is located at line 32W between 22+80 south and 23+00 south. The trench was filled with water when examined, and it appeared that the trench had not reached bedrock.

Trench 6

This trench is located on line 32W between 16+00S and 18+00S. Newly exposed bedrock consists of a weakly porphyritic coarse-grained granodiorite (Unit 1c) with a series of erratic quartz veins ranging from 1/2" to 2", in width and small 2 cm quartz pods. A small shear zone was located at approximately 17+60S and contained sericite and trace to 1% finely disseminated pyrite. Various sizes of mafic xenoliths also occur here foliated at 120°. The highest gold value obtained here was 125 ppb from within a 1/2" wide southeast striking quartz vein.

TABLE 2 DESCRIPTION, LOCATION, RESULTS OF ROCK SAMPLES
taken during the power-stripping/trenching programme

Sample No.	Description	Au(ppb) oz/ton
Trench 1		
18035	Silicified, sericitized trondhjemite with 1-2% disseminated pyrite and chalcopyrite near quartz vein contact.	584 ppb
18036	Sheared mafic xenolith with trace pyrite, carbed rock is now a chlorite schist.	0.451 oz/ton
18037	Disseminated chalcopyrite and pyrite within a mafic rich rock.	130 ppb
18038	2" wide grey quartz vein with 1-2% As, cp, py within silicified, sericitized trondhjemite.	994 ppb
Trench 3		
18039	2" wide quartz vein with trace disseminated pyrite within trondhjemite (Unit 1d).	0.034 oz/ton
18040	Goethitie, jarosite; 1% py and apple green mineral with trondhjemitic rock.	160 ppb
18041	Quartz-rich trondhjemite (Unit 1e) with 1% coarse pyrite and 2% apple green mineral (fuchsite?).	7 ppb
18042	Sugary textured sericitic trondhjemite.	11 ppb
Trench 6		
18043	2" wide chalcedonic quartz vein (pod) within mafic xenolith.	4 ppb
18044	Carbonatized mafic xenolith or dike with 1-2% disseminated pyrite.	8 ppb
18045	Weakly sheared granodiorite, weakly sericitic, 1% disseminated pyrite.	15 ppb
18046	1/2" wide quartz vein with trace pyrite.	125 ppb
Trench 4		
18047	3 1/2" to 7" pinch and swell type quartz vein with 1-2% pale pyrite and trace chalcopyrite within granodiorite.	0.073 oz/ton

CONCLUSIONS AND RECOMMENDATIONS

Mineralization within the Chester Minerals Côté Lake property appears to be controlled by shearing and related quartz veining with associated sericite-silica alteration of a felsic intrusive phase and associated mafic xenoliths.

To further assess the gold potential on the Chester Minerals property a diamond drill program is recommended. The diamond drill program will better define the IP anomalies and locate possible extensions of auriferous shear zones within the Côté Lake property. The proposed diamond drill targets are discussed in the Induced Polarization Resistivity Survey on the Chester Minerals Ltd., Côté Lake property by Robert S. Middleton.

REFERENCES

Bald, R.
1984 Geological Report of the Côte Lake and Clam Lake Properties.

Hobbs, L.G.
1984 A report on the Chester Township property of Chester Minerals Ltd., District of Sudbury, Porcupine Mining Division, Ontario.

Siragusa, G.
1981 Precambrian Geology of Chester and Yeo Townships and parts of Neville and Potier Townships, Sudbury District, Ontario Geological Survey, Preliminary Map P.2449.

CERTIFICATION

I, Nadia M. Caira, B.Sc., of Timmins, Ontario, certify that:

1. I am a graduate of the University of British Columbia, Vancouver, B.C., with a B.Sc. degree in Geology obtained in 1981.

2. I have been practising my profession in Canada since 1981.

3. I have no direct or indirect interest in the properties, leases or securities of Chester Minerals, nor do I expect to receive any.

Dated this December 15, 1984, Timmins, Ontario.

Nadia M. Caira, B.Sc.

CERTIFICATION

I, IAN P.D.A. COSTER, B.Sc., of Timmins, Ontario, certify that:

1) I am a graduate of the University of British Columbia, Vancouver, B.C., with a B.Sc. degree in Geology obtained in 1981.

2) I have been practising my profession in Canada since 1981.

3) I have no direct or indirect interest in the properties, leases or securities of Chester Minerals, nor do I expect to receive any.

Dated this December 15, 1984, Timmins, Ontario.

IAN P.D.A. COSTER, B.Sc.

PHOTO DESCRIPTIONS

1. Trench 1 Looking South
2. Trench 1 Looking North
3. Trench 1 Looking North from South End
4. Trench 5 Looking North
5. Trench 4 North End
6. Trench 4 Quartz vein 3" wide
7. Trench 4 South End
8. Trench 4 South End


2


4


1


3

5

8

6

7

A P P E N D I X

BELL-WHITE ANALYTICAL LABORATORIES LTD.
P.O. BOX 187. HAILEYBURY, ONTARIO TEL: 672-3107

Certificate of Analysis

NO. B1326-84 **DATE:** November 14, 1984

SAMPLE(S) OF: Rock (13) **RECEIVED:** November, 1984

SAMPLE(S) FROM: Mr. Ian Coster
R. S. Middleton Exploration Services Project #M-55

Sample No.	Gold ppb	Gold oz.
G18035	584	
6		0.451**
7	130	
8	994**	
9		0.034**
G18040	160	
1	7	
2	11	
3	4	
4	8	
5	15	
6	125	
7		0.073**

** Checked

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER _____

VLF-EM SURVEY

of

Cote Lake and Three Duck Lake Area
Chester Township, Sudbury Mining Division
District of Sudbury

for

CHESTER MINERALS LIMITED

by

Roberta Bald

Robert S. Middleton Exploration Services Inc.
P.O. Box 1637 Timmins, Ontario P4N 7W8
July 30, 1984

TABLE OF CONTENTS

APPENDIX

SPECIFICATION SHEET EM-16

LIST OF FIGURES

INTRODUCTION

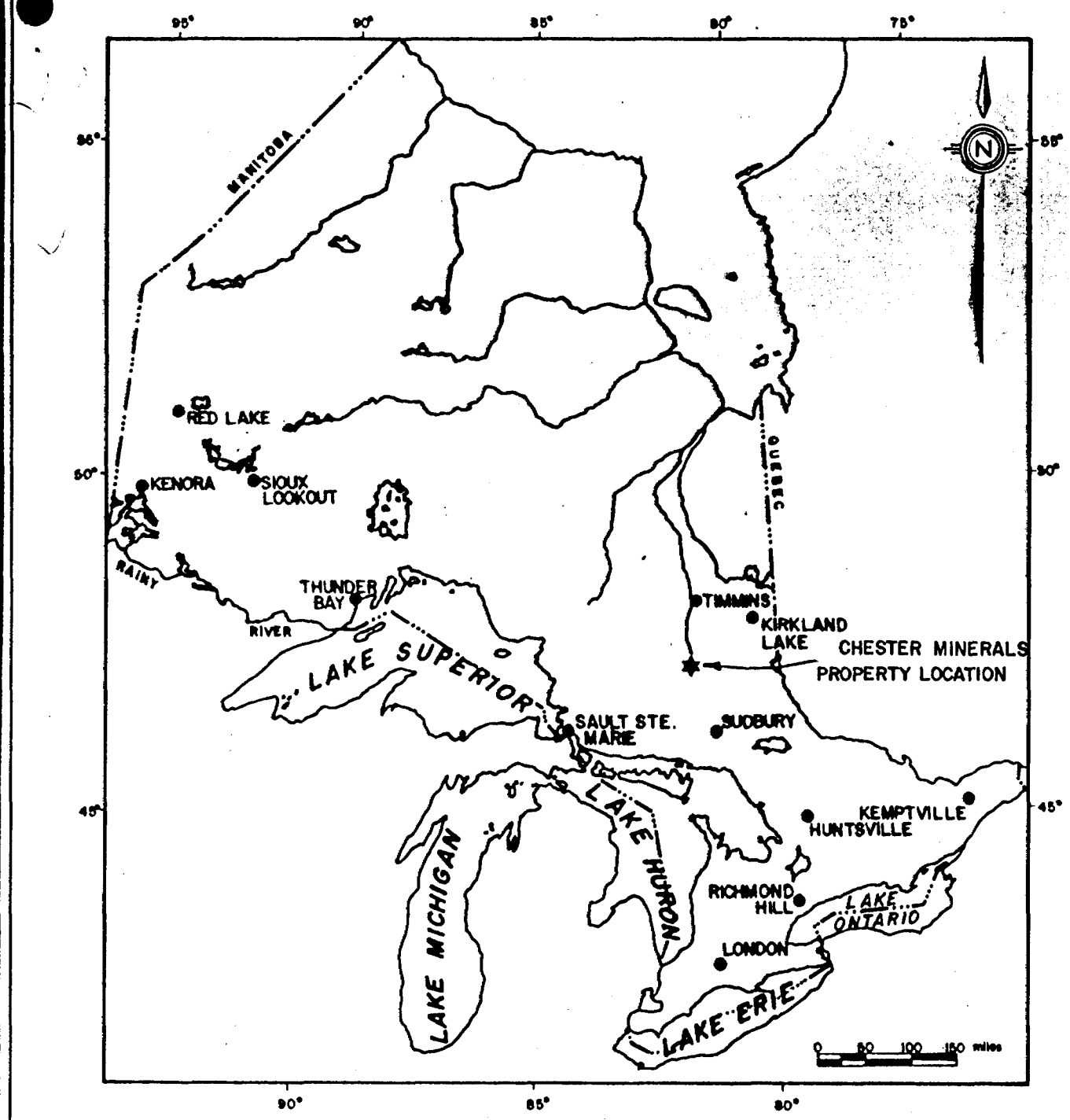
A VLF-EM survey was carried out over the land portion of four contiguous, patented claims in the west central part of Chester Township on July 10th and 12th, 1984. The claim numbers are S19977, S19997, S19998 and S20000. The survey located two strong conductors, one of which appears to be the extension of a conductor located over Cote Lake during a previous survey (Middleton, 1984). The purpose of the surveys was to outline fault zones and shear zones extending from areas of known gold showings.

LOCATION AND ACCESS

The property is located in the west central part of Chester Township in the District of Sudbury, Sudbury Mining Division, about 70 miles southwest of Timmins and 85 miles north of Sudbury, Ontario (Figures 1 and 2). The north shore of Cote Lake can be reached by an old mining road which extends west from the Mesomikenda Lake gravel road which in turn branches off Highway 144 about 10 miles south of Gogama, Ontario.

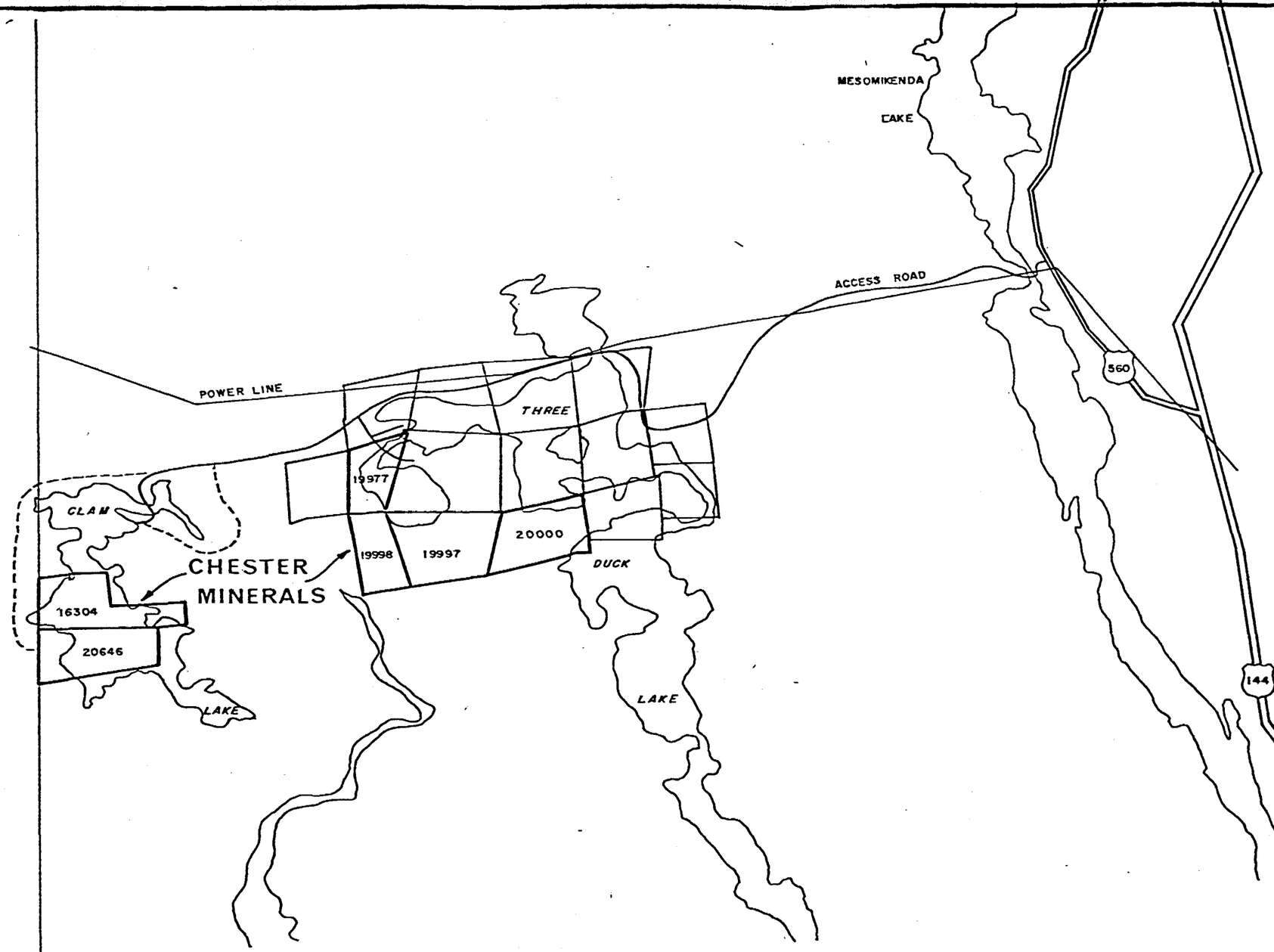
PREVIOUS WORK

The earliest geophysical surveys known to cover part of the Chester Minerals Ltd. claims include an electromagnetic survey using an EM-16, and a magnetometer survey done by Prospecting



PROVINCE OF ONTARIO

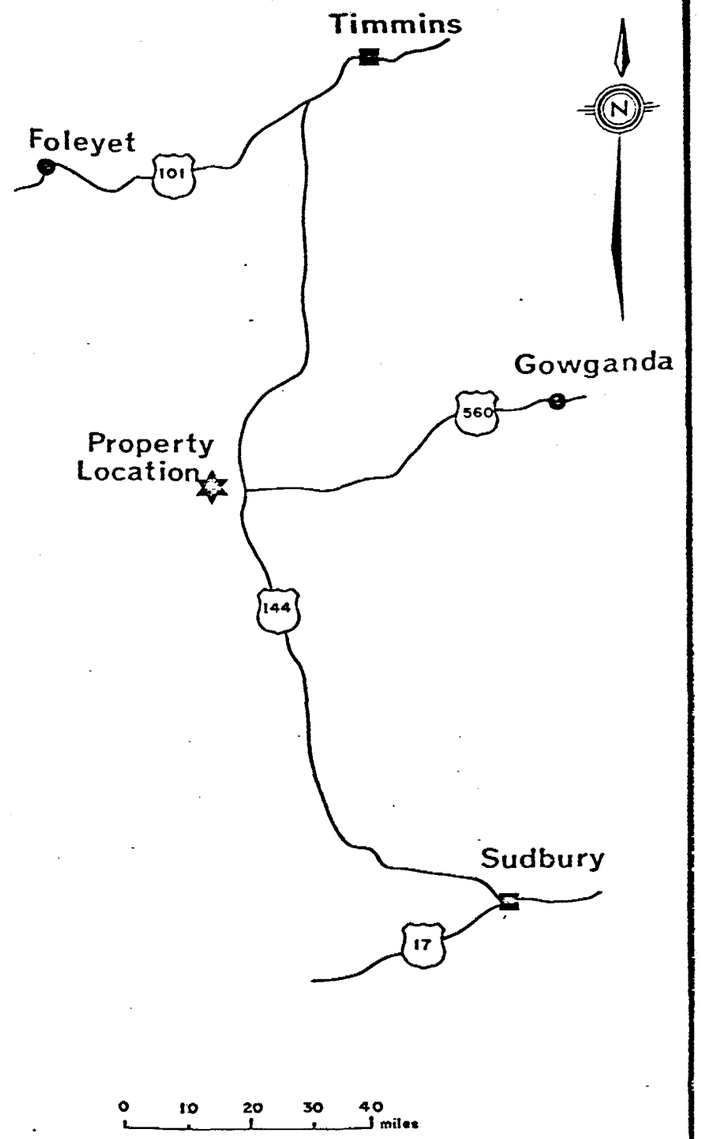
REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD.		
	Title PROPERTY LOCATION		
	Fig. 1		
	Date: June 84	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55



CHESTER TOWNSHIP

0 1/4 1/2 3/4 1 miles

1" = 1/2 mile



REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD..		
	Title CLAIM INDEX Fig 2		
	Date:	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55

Geophysics Limited in April, 1966. In 1973, an induced polarization survey was carried out for Park Precious Metals Incorporated by Barringer Research Limited (Caven, R., 1973). The IP survey covered a portion of the east claims now held by Chester Minerals.

Geological mapping of the area has been carried out by the O.G.S., Siragusa, G. (1981) and Laird, H.C. (1932).

A qualifying report has been prepared by Hobbs, L.G. (1984). The report by Hobbs describes the history of exploration in the area which began in 1900. In 1936, Young-Shannon Gold Mines sank a two compartment shaft on claim S19971 north of Cote Lake.

Surveys were also carried out under the direction of W. Walker in 1965 and 1973.

SURVEY DATES AND STATISTICS

The survey was carried out by R. Bald on July 10th and 12th, 1984. The readings are plotted on a base map at a scale of 1" = 200 feet (Figure 3, back pocket). The grid consists of 3.57 miles of line. 212 VLF-EM readings were taken at 100 foot stations and ten additional readings were taken to detail anomalies.

SURVEY PROCEDURE AND INSTRUMENTATION

The VLF-EM survey was carried out using an EM-16 unit manufactured by Geonics Limited. Specifications for the unit are given in the appendix of this report. In phase and out of phase readings were measured using Cutler Maine (NAA) as a transmitter. Transmissions were at 24.0 KHz. All readings were taken facing north.

INTERPRETATION

Two strong, northwesterly trending VLF-EM conductors, each extending over 1,000 feet, were located on claims S19997 and S20000 during the present survey. A number of isolated cross-overs were also located during the survey, two of which may be due to overburden effects.

Conductor A, trending roughly 120% AZ, extends from L44W, 18+00S to L36W, 22+50S on claims S19997, southeast of Cote Lake (Figure 3, back pocket). It extends over 1,000 feet and may be the continuation of a slightly more westerly trending conductor located over the ice on Cote Lake during a previous survey (Middleton, 1984). An isolated cross-over on L65W, 10+50S may be the western extension of the water portion of conductor A. If this is the case, conductor A trends roughly east-west from L65W to L56W, gently curving southeastward to L36W. An isolated

cross-over occurs on L32W, 21+25S. It could be the eastern extension of conductor A, offset by a possible northerly trending fault now occupied by a diabase dike which crops out just east of L36W. Massive quartz-rich trondhjemite crops out on L36W at 22+50S but an easterly trending shear zone in the trondhjemite occurs about 100 feet north and may be related to conductor A. No other outcrop occurs along the conductor, but regional geology indicates it is underlain by felsic intrusive rocks.

Conductor B, trending roughly 110% AZ, extends from L32W, 14+25S to L20W, 19+00S, on claim S20000, south of Three Duck Lake (Figure 3, back pocket). It extends over 1,300 feet and trends off the claim to the southeast and northwest, where no readings were taken. No bedrock crops out along this conductor but is assumed to consist of felsic intrusive rocks.

An isolated conductor occurs on L65W, 3+50S in a swampy area. Although it may be due to overburden effects, this conductor may also be the western extension of another isolated conductor located over Cote Lake near L56W, 7+00S. However, no readings were taken between 1+50S and 5+00S on intervening line 60W. Therefore, it is unknown at this time whether the cross-overs on L65W and L56W indicate a single continuous conductor.

Two weak, isolated cross-overs occur at L56W, 24+50S and L48W, 29+50S. No outcrop occurs in these areas. These

conductors may be due to overburden effects.

CONCLUSIONS AND RECOMMENDATIONS

1. Two strong, northwesterly trending, possibly subparallel or en echelon VLF-EM conductors transect the Chester Minerals Ltd. Cote Lake property.
2. These conductors may be the result of shear zones, commonly associated with gold mineralization in the Chester Township area (Hobbs, 1984).
3. The west end of conductor B is roughly coincident with a wide induced polarization anomaly located in a previous survey (Caven, 1973) and gold bearing quartz veins intersected in diamond drill hole P-3 during a 1973 drilling programme (Hobbs, 1984). Hole P-3 intersected 1.5 feet assaying 1.44 ounces gold per ton. A narrow, weak IP anomaly is roughly coincident with the east end of conductor B.
4. The east end of conductor A coincides with an IP anomaly located during a previous survey, although the presence of a diabase dike in this area could possibly account for the IP anomaly.
5. All other IP anomalies located during the 1973 survey do not coincide with the VLF-EM conductors located during the present survey. This may indicate that mineralization

occurs only along some sections of the possible shear zones revealed by the VLF-EM survey.

6. An induced polarization survey should be conducted over Cote Lake to detect possible sulphide mineralization along VLF-EM conductor A. This would include part of claim S19997 and the adjacent claim, S19971 belonging to Young-Shannon Gold Mines Ltd. An IP survey is also recommended along the present grid system which is offset approximately 200 feet from the grid used during the 1973 IP survey done by Barringer Research Ltd. for Park Precious Metals Inc. (Caven, 1973). This second IP survey would outline more precisely zones of mineralization on the property. Total mileage for the recommended IP surveys is approximately 4.5 miles.

7. Bulldozer power stripping to bedrock along with mapping and sampling of the exposed outcrops is recommended along VLF-EM conductors A and B, especially in areas of coincident IP anomalies, as follows: L32W, 14+00S; L20W, 21+00S; and L36W, 22+50S.

BUDGET

IP Profiling	$10,000.00
Trenching	5,000.00
Assaying	300.00
Reports and Engineering	1,000.00
Contingency	1,500.00
TOTAL	$ 17,800.00

Respectfully Submitted,

Roberta Bald

Roberta Bald

REFERENCES

Caven, R.
1973 Report on an Induced Polarization Survey in Chester Township, Sudbury Mining Division, Ontario for Park Precious Metals Incorporated - Barringer Research Limited.

Gordon, J.B., Lovell, H.L., Jande Grijs, and Davie, R.F.
1979 Gold Deposits of Ontario part 2, Ontario Geological Survey, Mineral Deposits Circular 18, pages 54 and 92.

Hobbs, L.G.
1984 A report on the Chester Twp. Property of Chester Minerals Ltd., District of Sudbury, Porcupine Mining Division, Ontario.

Laird, H.C.
1932 Geology of the Three Duck Lakes Area, O.D.M. Annual Report 41, Vol. XLI., pt.III.

Middleton, R.S.
1984 VLF-EM and Magnetometer Survey of Three Duck Lake and Clam Lake Area, Chester Township, Porcupine Mining Division, for Chester Minerals Limited.

Siragusa, G.
1981 Precambrian Geology of Chester and Yeo Townships and parts of Neville and Potier Townships, Sudbury District, Ontario Geological Survey, Preliminary Map P.2449.

CERTIFICATION

I, Roberta Bald, submit this document to certify that the following statements are to the best of my knowledge, true and correct:

1. That I carried out the VLF-EM survey on the Chester Minerals Ltd. property.

2. That I am the author of the attached report.

3. That I have received the following university degrees in geology: Honours B.Sc., Laurentian University, 1975, M.Sc., University of Manitoba, 1981.

4. That I have been working as a geologist since graduation.

5. That I am a Fellow of the Geological Association of Canada.

Respectfully Submitted,

Roberta Bald

Roberta Bald
July 30, 1984

A P P E N D I X

EM16 SPECIFICATIONS

MEASURED QUANTITY	In-phase and quad-phase components of vertical magnetic field as a percentage of horizontal primary field. (i.e. tangent of the tilt angle and ellipticity).
SENSITIVITY	In-phase :±150% Quad-phase :± 40%
RESOLUTION	±1%
OUTPUT	Nulling by audio tone. In-phase indication from mechanical inclinometer and quad-phase from a graduated dial.
OPERATING FREQUENCY	15-25 kHz VLF Radio Band. Station selection done by means of plug-in units.
OPERATOR CONTROLS	On/Off switch, battery test push button, station selector switch, audio volume control, quadrature dial, inclinometer.
POWER SUPPLY	6 disposable 'AA' cells.
DIMENSIONS	42 x 14 x 9cm
WEIGHT	Instrument: 1.6 kg Shipping : 4.5 kg

INDUCED POLARIZATION SURVEY

of the

Cote Lake Properties - Chester Township
Sudbury Mining Division
District of Sudbury

for

CHESTER MINERALS LIMITED

by

R.S. Middleton, P.Eng.

R.S. MIDDLETON EXPLORATION SERVICES INC.
Box 1637
Timmins, Ontario
P4N 7W8

November 15, 1984

TABLE OF CONTENTS

APPENDIX

LIST OF FIGURES

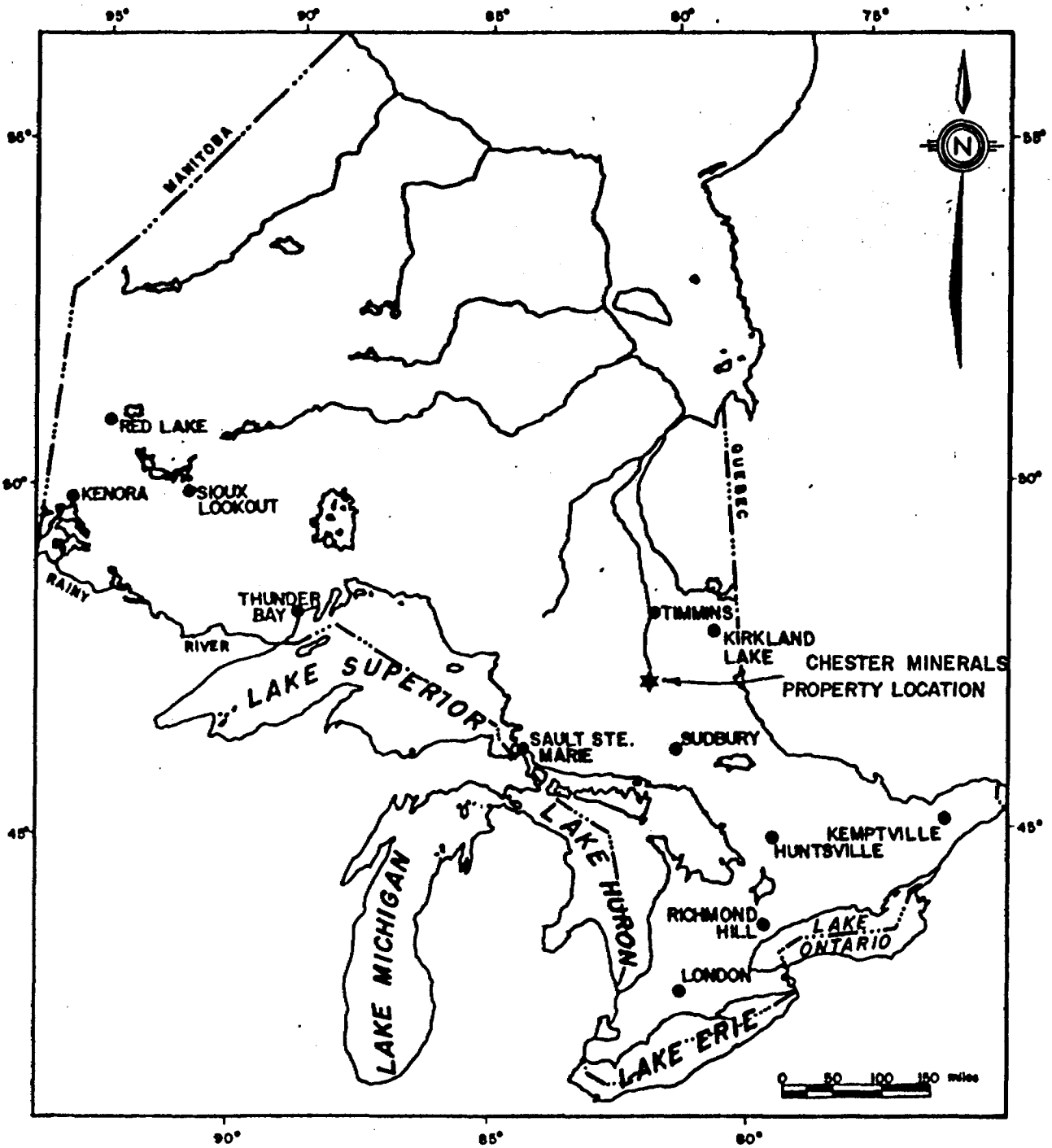
INTRODUCTION

An Induced Polarization survey was carried out on selected lines on the 4 claim group of Chester Minerals Limited near Côte' Lake during September, 1984. The purpose of the survey was to relocate IP anomalies previously outlined by a Barringer Research survey in 1973, Caven, R. (1973) and trace extensions of known zones of mineralization. This work was done prior to a trenching program which is described in a separate report by Coster, I. and Caira, N. (1984).

LOCATION, ACCESS AND TOPOGRAPHY

The Côte' Lake property is located in the west central part of Chester Township in the District of Sudbury, Sudbury Mining Division, about 70 miles southwest of Timmins and 85 miles north of Sudbury, Ontario (Figure 1 and 2). Access to the north shore of Côte' Lake is via an old mining road which extends west from the Mesomikenda Lake gravel road (formerly Highway 560) which in turn branches off Highway 144 about 10 miles south of Gogama, Ontario.

Scattered outcrop occurs throughout most of the property, with a slightly more prominent diabase outcrop on L36W. A spruce swamp dominates the northern part of claim S20000. A bulldozer road follows the baseline near 20 south, west from 35W to line 60W.



PROVINCE OF ONTARIO

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD.		
	Title PROPERTY LOCATION		Fig. 1
	Date: June 84	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55

MESOMIKENDA

CAKE

ACCESS ROAD

POWER LINE

THREE

19977

20000

CLAM

19998

19997

DUCK

CHESTER MINERALS

16304

20646

LAKE

LAKE

560

144

CHESTER TOWNSHIP

0 1/4 1/2 3/4 1 miles

1" = 1/2 mile

Timmins

Foleyet

101

Gowganda

560

Property Location

144

Sudbury

17

0 10 20 30 40 miles

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS LTD.		
	Title CLAIM INDEX Fig 2		
	Date:	Scale:	N.T.S.:
	Drawn:	Approved:	File: M-55

PREVIOUS WORK

Prospecting began in the area around 1900. By 1930, numerous gold showings had been discovered, including the Shannon vein on Shannon Island. A 125 foot shaft was sunk on the Shannon Island vein on claim S16304, in 1934 by Young-Shannon Gold Mines. Another shaft was sunk on a vein on claim S19971, north of Côté Lake, about 600 feet east of claim S19977, included in the present survey. In 1965, geophysical and geological surveys and drilling were done on the Chester Minerals Ltd. property (Walker, 1965). In 1973, Barringer Research Ltd. did an induced polarization survey for Park Precious Metals Inc. over a claim group, part of which consisted of the Chester Minerals Ltd. Côté Lake property. Five diamond drill holes tested the resulting IP anomalies and some narrow highgrade gold values were intersected. In 1978, Young-Shannon Gold Mines Ltd. leased eleven claims, adjacent to the Côté Lake property, to Canadian Crest Mines. More underground work was done on the Young Shannon showing and a steel headframe, a diesel power plant and a concentrating plant were installed. Wide zones of gold bearing disseminated sulphides were discovered in 1981 on the Chester Resources/Murgold Resources property, about one mile norheast of the Chester Minerals property. Exploration activity continues on the adjacent properties including those held by Murgold, Jarvis

Minerals and Pacific (Northern) Gold Mines.

GENERAL GEOLOGY

The Chester Minerals Ltd. Côte Lake property is underlain by a multi-phase, felsic intrusion, ranging in composition from diorite to quartz-rich trondhjemite. The most abundant phase is quartz-rich trondhjemite. The felsic intrusion is locally intruded by Matachewan diabase dikes.

A number of old pits and trenches were located on the property from which 19 grab samples were collected and 6 were assayed for gold and, in some cases, copper. The highest gold value obtained was 0.898 oz/ton. The mineralization appears to consist of pyrite and locally chalcopyrite and molybdenite in shear zones within the felsic intrusion. The presence of mafic-rich (chlorite $\pm$ amphibole) material in some of the trenches may be recrystallized mafic metavolcanic xenoliths. An untrenched shear zone within quartz-rich trondhjemite was uncovered at L36W, 21+50S. The trondhjemite has been altered to quartz eye sericite schist containing a trace amount of fine-grained pyrite. The sulphides are poor conductors and for this reason the IP method was used to trace the zones.

ONTARIO GEOLOGICAL SURVEY

PRELIMINARY MAP P.2449

GEOLOGICAL SERIES

PRECAMBRIAN GEOLOGY

OF

CHESTER AND YEO TOWNSHIPS

and parts of

NEVILLE AND POTIER TOWNSHIPS

JEROME AREA

SUDBURY DISTRICT

Scale 1:15 840

Mile ½ 0 ½ ½ Mile

Metres 100 0 0.2 0.4 0.6 0.8 1 Kilometre

LEGEND

PRECAMBRIAN

8 DIABASE

7 LAMPROPHYRE

6 FELSIC INTRUSIVE ROCKS

5 MIGMATITES

4 SUBVOLCANIC FELSIC INTRUSIVE ROCKS

3 METASEDIMENTS

2 INTERMEDIATE PYROCLASTIC METAVOLCANICS

1 MAFIC METAVOLCANICS

CHESTER MINERALS LTD.

VEINS

GEOLOGY BY G.M. SIRAGUSA AND ASSISTANTS, 1980

FROM S.B. HOBBS, 1984

SURVEY PROCEDURE AND INSTRUMENTATION

The IP survey was carried out using an IPR-11 receiver and a Scintrex TSQ-3 transmitter powered by a 3.0 kwatt motor generator. A pole-dipole array was used with an "a" spacing of 50 feet, n=1,2,3,4. The seventh window after the shut off of the pulse was read and recorded on the pseudo sections given in the back of this report. A two second square wave pulse was transmitted into the ground via steel stake electrodes and the voltage readings were taken through porous pot electrodes filled with copper sulphate. Specification sheets for these instruments are given at the back of this report.

INTERPRETATION

A number of weak-narrow IP responses were recorded, and these anomaly locations are given on the plan map (Figure 4) at the back of this report. The best anomaly pattern is located west of Trench 1 (vein 3 area). A good response was also noted on line 28W, 23-24 south (near trench 4) which reflects the westward extension of a north dipping vein system that trends 110°. Trench 4 revealed a narrow vein with disseminated pyrite and sericite along the walls of the vein. This vein system had been previously tested (1973) 100 feet to the east of trench 4 and assays over 1 oz. Au across 1-2 feet were encountered.

A broad anomaly occurs on 60W/31S is associated with disseminated pyrite in the granodiorite.

CONCLUSIONS AND RECOMMENDATIONS

A program of trenching in the vicinity of the IP anomalies followed by diamond drilling to test areas that cannot be trenched is recommended. The best anomaly occurs west of Vein 3 (trench 1) and the extent of vein 3 should be checked. The down dip of an important vein on the east side of the property should be tested in line with previously drilled holes in order to create a section.

Hole	Co-ordinate	Dip	Az	Depth
1	60W/17S	-45°	0°	200'
2	61W/16S	-45°	0°	200'
3	62W/16S	-45°	0°	200'
4	22W/23S	-45°	0°	200'
			Total	1,000'

Total Budget approximately $25,000.00

Respectfully Submitted,

R. Middleton

R.S. Middleton, P.Eng.

REFERENCES

Bald, R.
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Bald, R.
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Caven, R.
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Coster, I., Caira, N.
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Gordon, J.B., Lovell, H.L., Jande Grijs, and Davie, R.F.
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Hobbs, L.G.
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Laird, H.C.
1932 Geology of the Three Duck Lakes Area, O.D.M. Annual Report 41, Vol. XLI., pt.III.

Middleton, R.S.
1984 VLF-EM and Magnetometer Survey of Three Duck Lake and Clam Lake Area, Chester Township, Porcupine Mining Division, for Chester Minerals Limited.

Siragusa, G.
1981 Precambrian Geology of Chester and Yeo Townships and parts of Neville and Potier Townships, Sudbury District, Ontario Geological Survey, Preliminary Map P.2449.

CERTIFICATION

I, Robert S. Middleton, P.Eng., of 136 Cedar Avenue South, in the City of Timmins, Province of Ontario, certify as follows concerning my report on the Chester Minerals Ltd., Chester Township property, dated November 15, 1984

1) I am a member in good standing of:

   a) Geological Association of Canada (FGAC)
   b) The Association of Professional Engineers of Ontario
   c) European Association of Exploration Geophysicists
   d) Society of Exploration Geophysicists
   e) Canadian Institute of Mining and Metallurgy

2) I am a graduate of the Michigan Technological University, Houghton, Michigan, U.S.A. with a B.S. degree in Applied Geophysics obtained in 1968, and an M.S. degree in Geophysics in 1969.

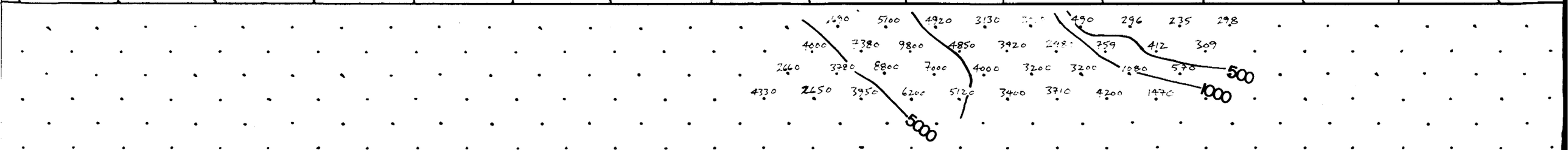
3) I have been practising my profession in Canada, occasionally in the United States, Central America, Europe and South Africa for the past 16 years.

Dated this November 15th, 1984
TIMMINS, Ontario

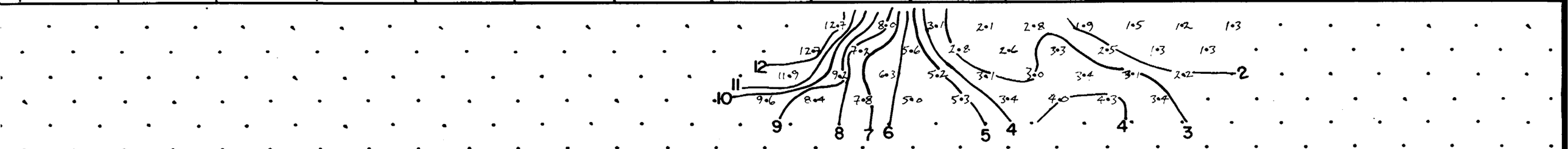
R. Middleton

Robert S. Middleton, P.Eng.

RESISTIVITY (ohm/m)



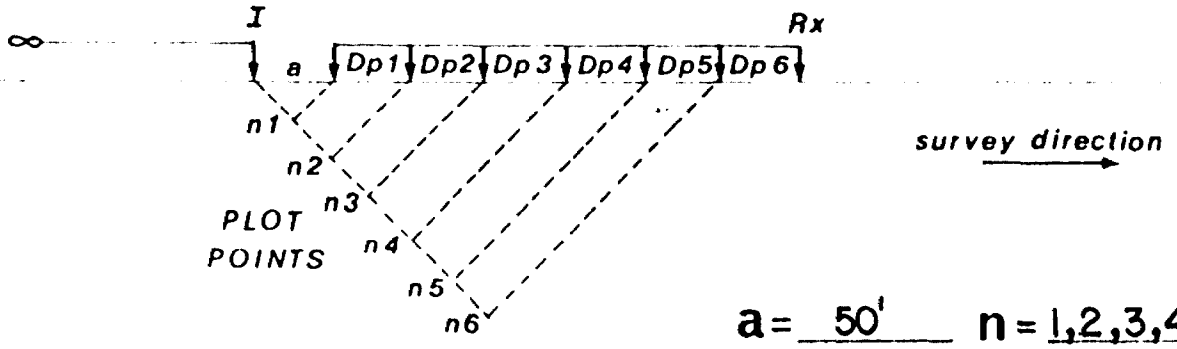
CHARGEABILITY (mv/v)



INDUCED POLARIZATION

Time Domain

POLE-DIPOLE ARRAY



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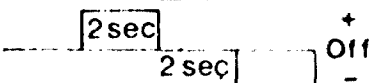
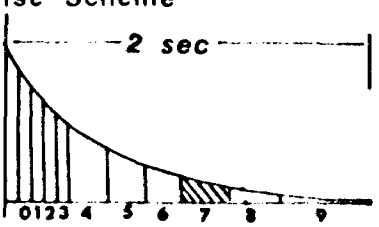


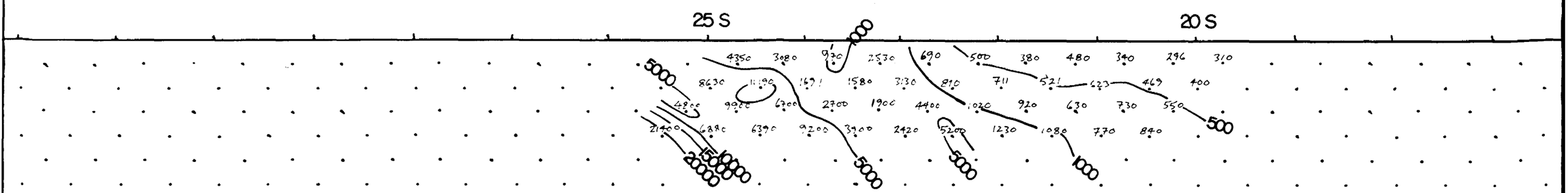
Rx: Scintrex IPR 11
reading 7th slice



Total Line 400' Total Readings 36

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 24 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

RESISTIVITY (ohm/m)



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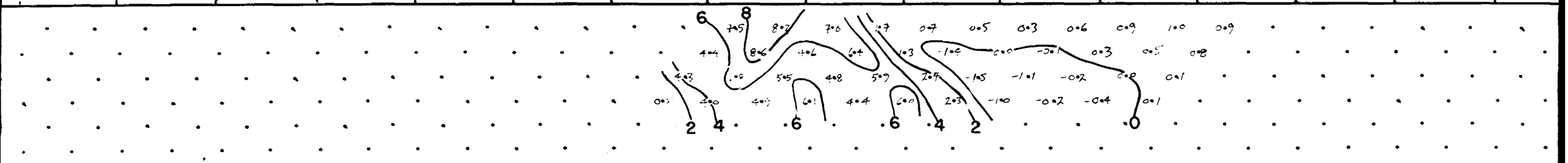
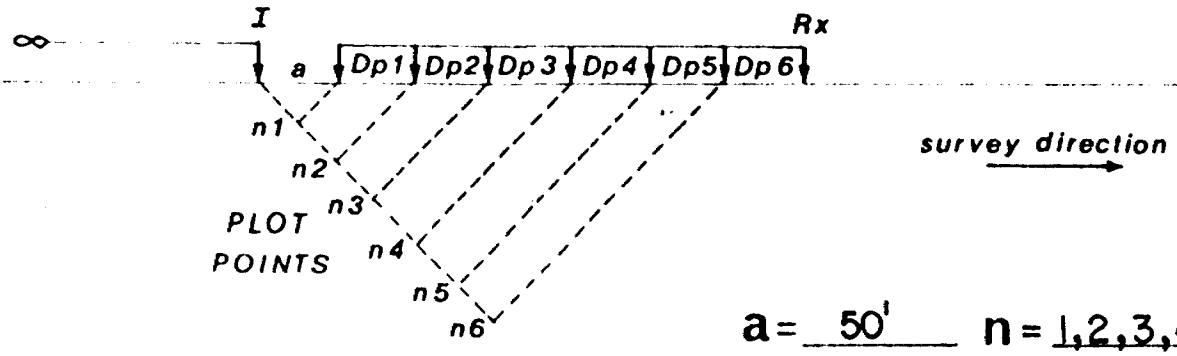


INDUCED POLARIZATION

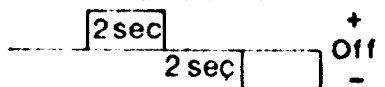
Time Domain

POLE-DIPOLE ARRAY

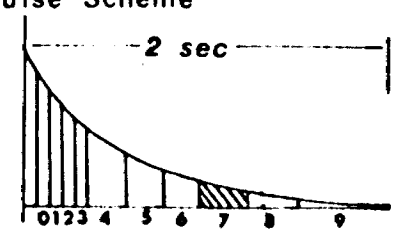


a = 50' n = 1,2,3,4

Tx: Scintrex TSQ-3 (3kw) Pulse Scheme



Rx: Scintrex IPR 11
reading 7th slice



Total Line 500' **Total Readings** 44

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 28 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

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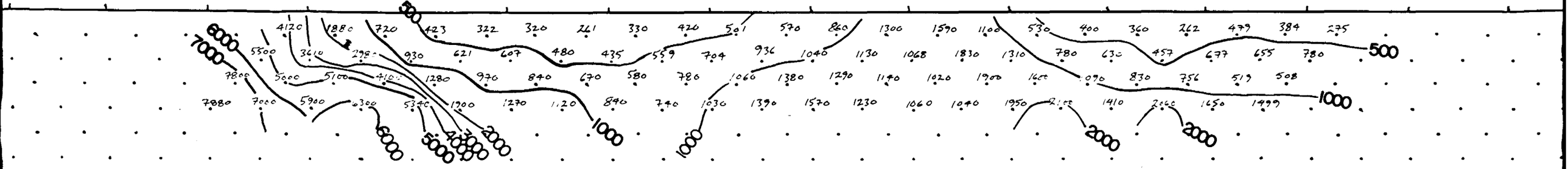

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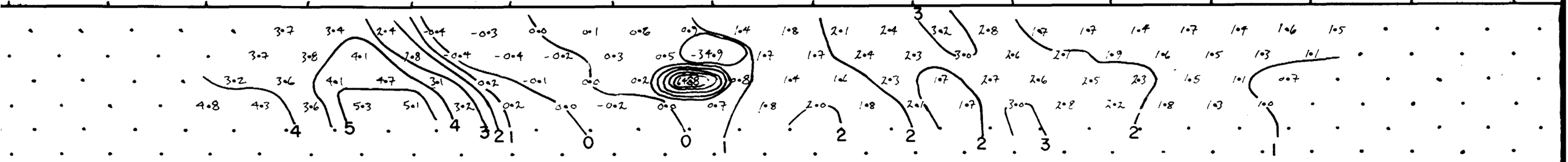
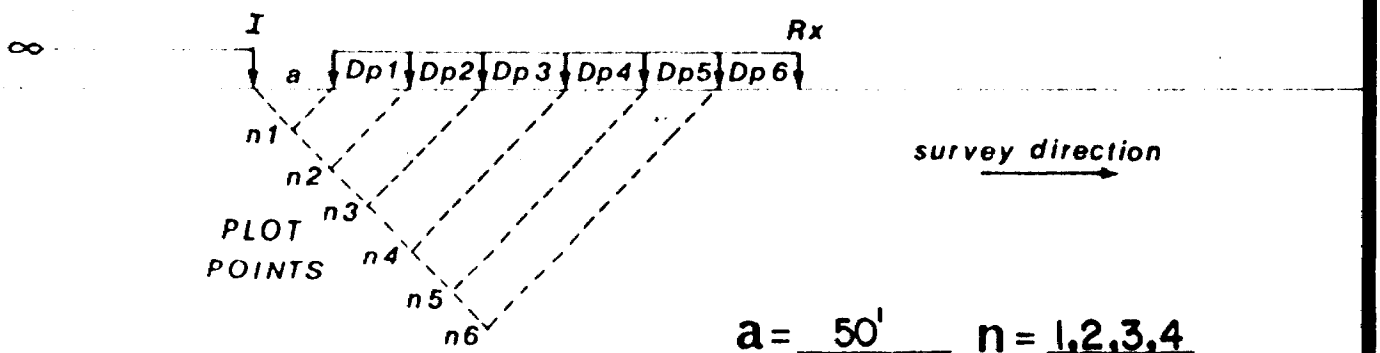


INDUCED POLARIZATION

Time Domain

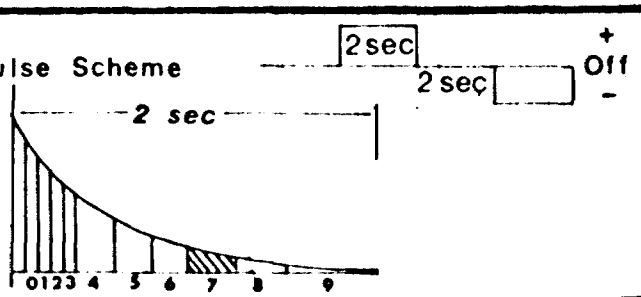
POLE-DIPOLE ARRAY



a = 50' n = 1,2,3,4

Tx: Scintrex TSQ-3 (3kw)

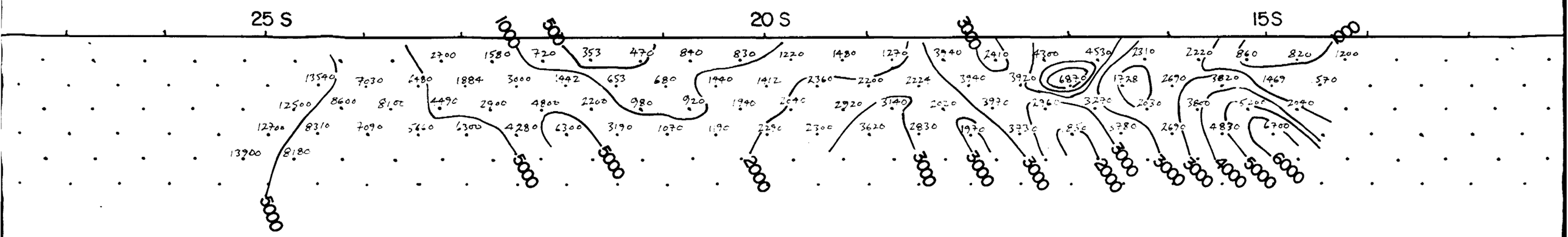
Rx: Scintrex IPR 11
reading 7th slice



Total Line 1050' Total Readings 88

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 30 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

RESISTIVITY (ohm/m)



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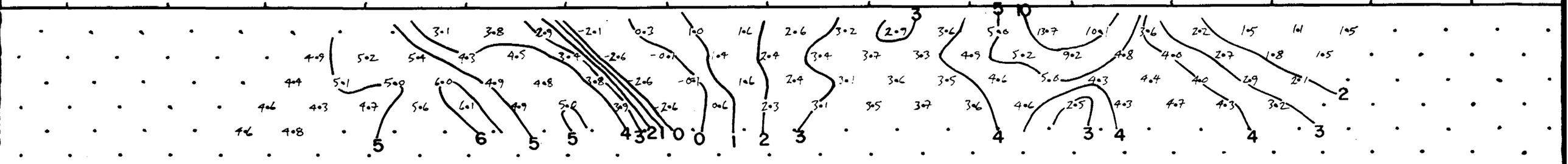

INDUCED POLARIZATION

Time Domain

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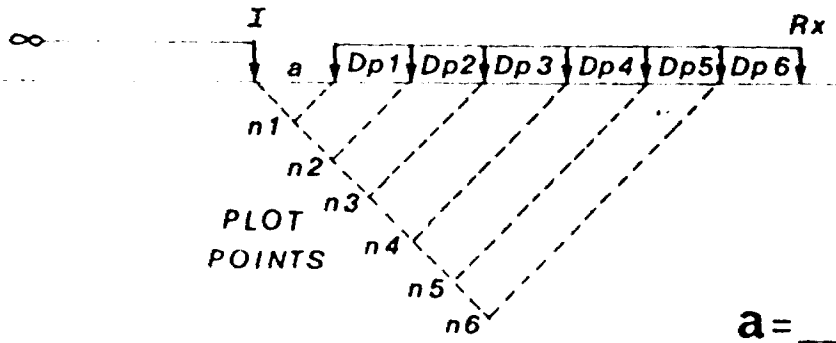

a = 50' n = 1,2,3,4 and 2,3,4,5

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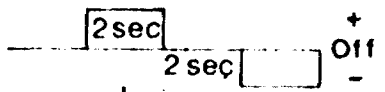
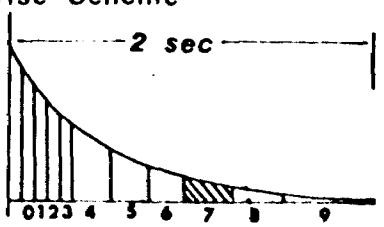


Rx: Scintrex IPR 11
reading 7th slice



Total Line 1000' Total Readings 84'

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 32 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

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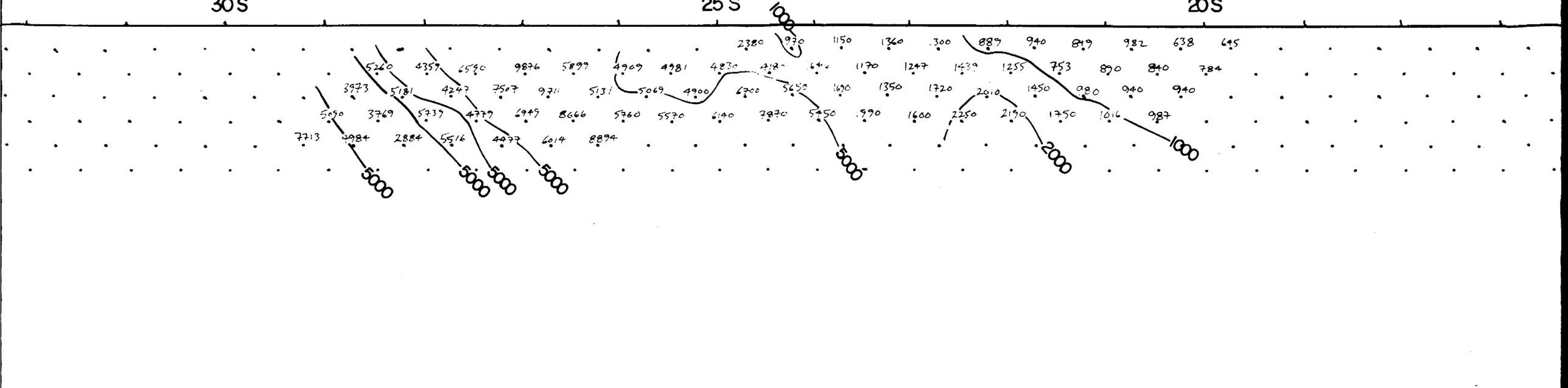
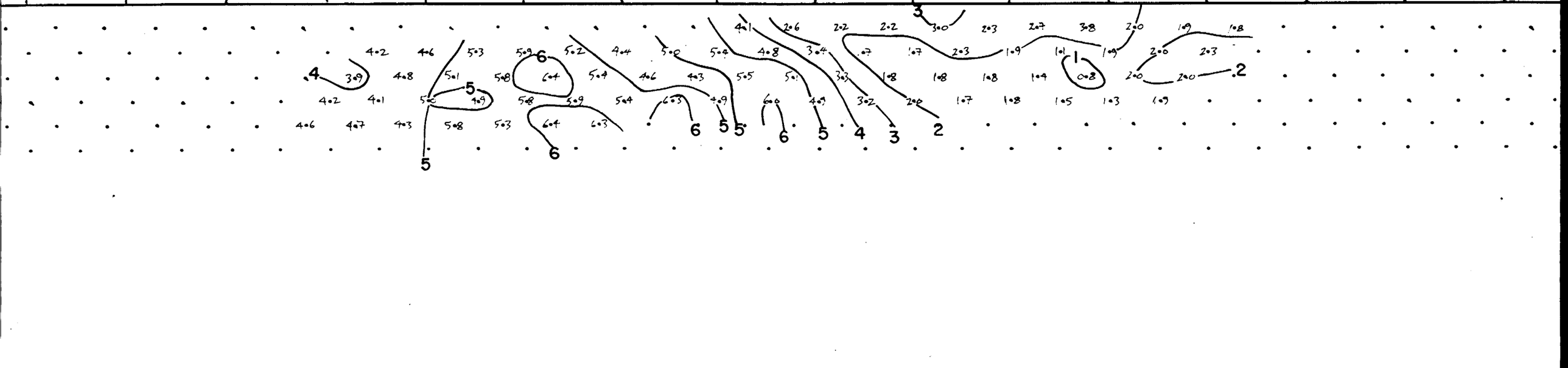


CHARGEABILITY (mv/v)



INDUCED POLARIZATION

Time Domain

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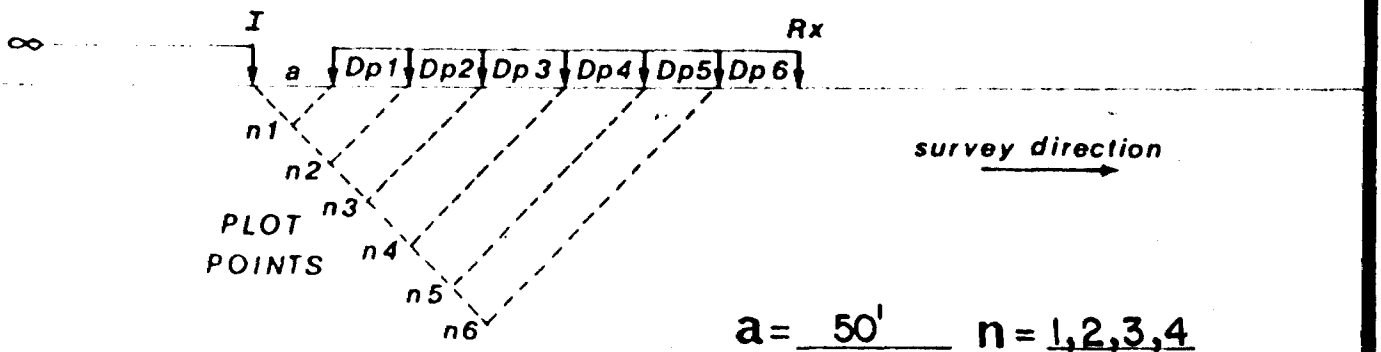

a = 50' n = 1,2,3,4 and 2,3,4,5

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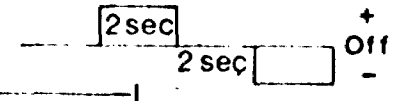

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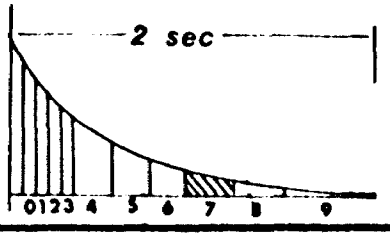
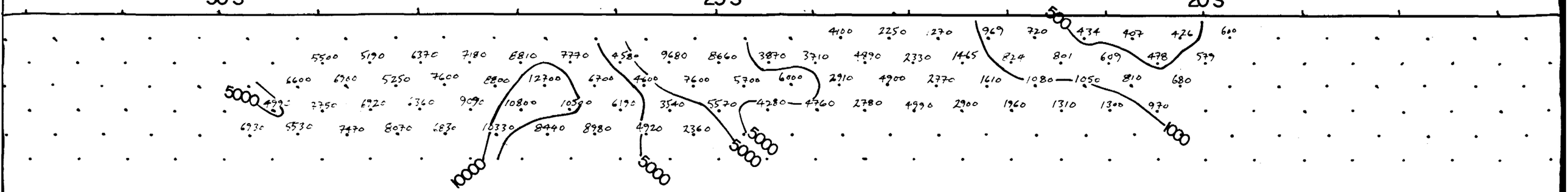
reading 7th slice



Total Line 850' Total Readings 72

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 48 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

RESISTIVITY (ohm/m)



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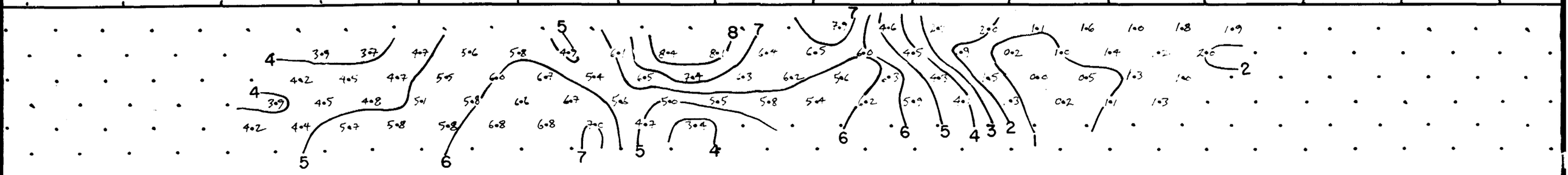
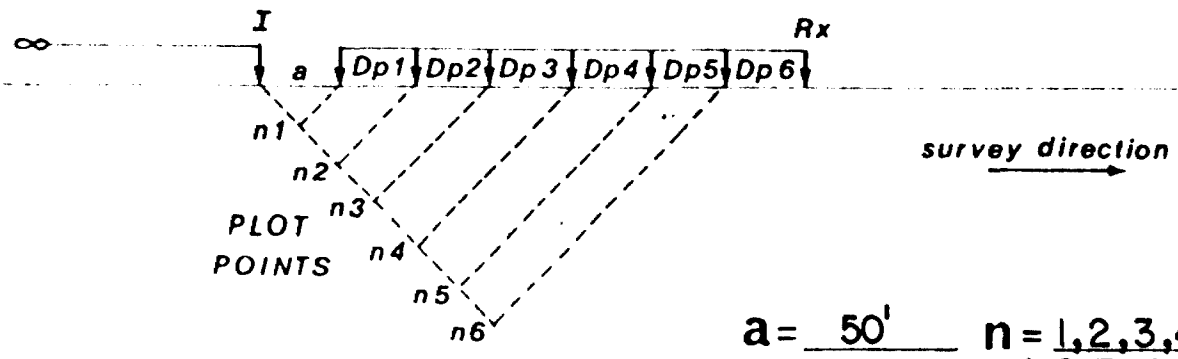


INDUCED POLARIZATION

Time Domain

POLE-DIPOLE ARRAY

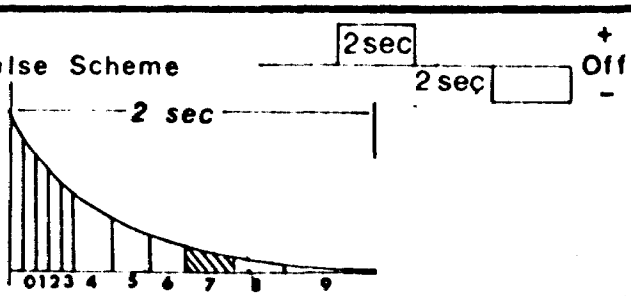


a = 50' n = 1,2,3,4 and 2,3,4,5

Tx: Scintrex TSQ-3 (3kw)

Rx: Scintrex IPR 11 reading 7th slice

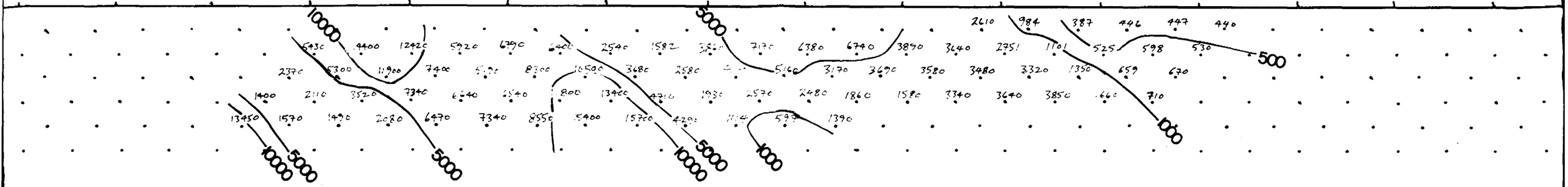
Pulse Scheme



Total Line 900' **Total Readings** 76

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 50 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

RESISTIVITY (ohm/m)



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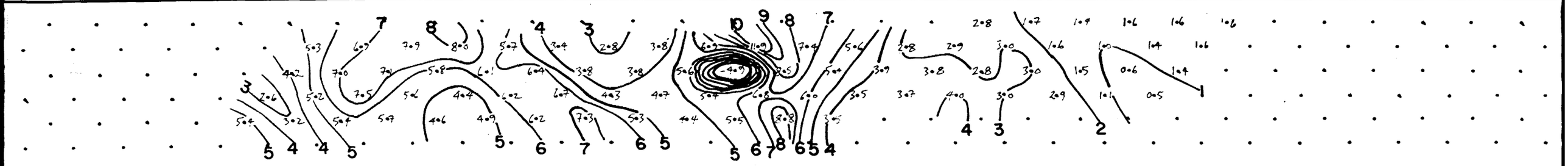
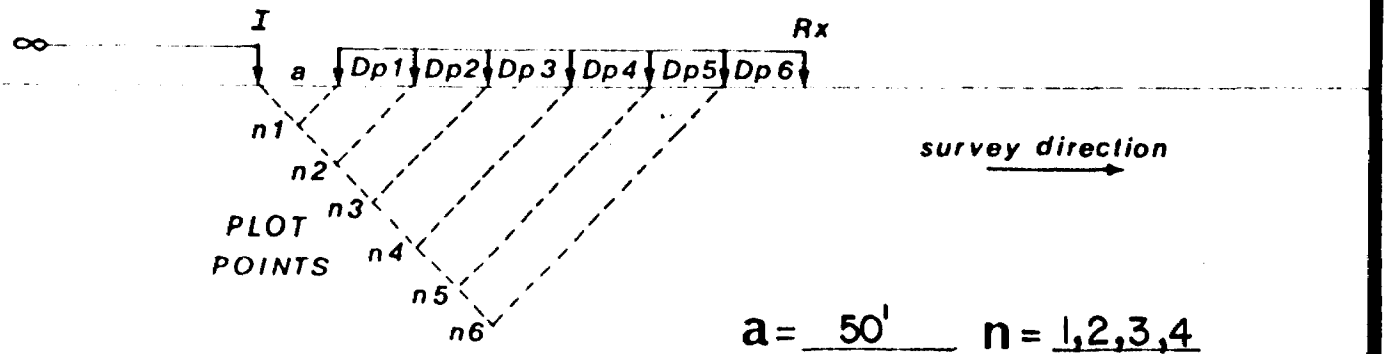


INDUCED POLARIZATION

Time Domain

POLE-DIPOLE ARRAY

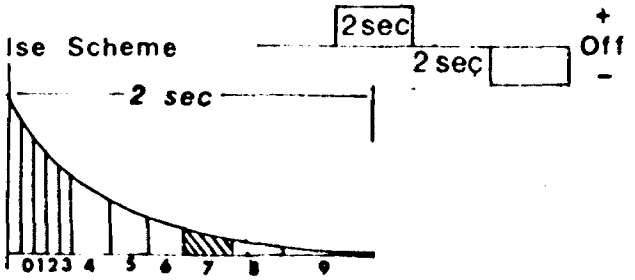


a = 50' n = 1,2,3,4 and 2,3,4,5

Tx: Scintrex TSQ-3 (3kw)

Rx: Scintrex IPR 11 reading 7th slice

Pulse Scheme



Total Line 900' Total Readings 76

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 52 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

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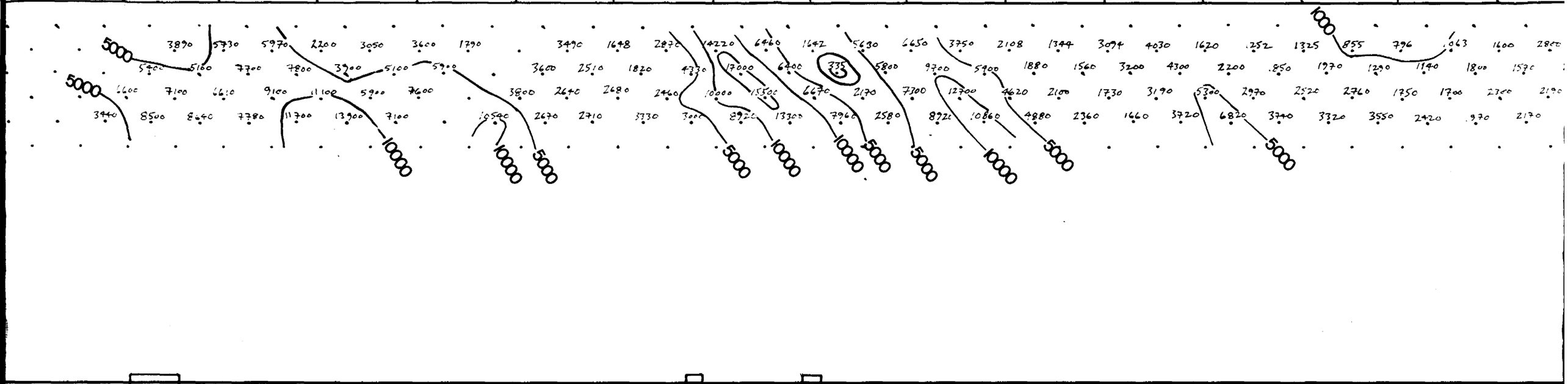
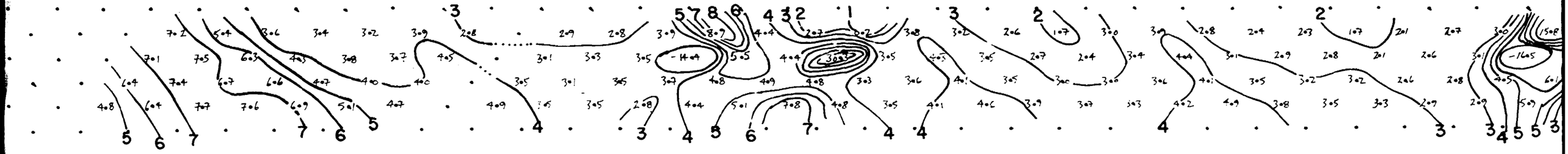
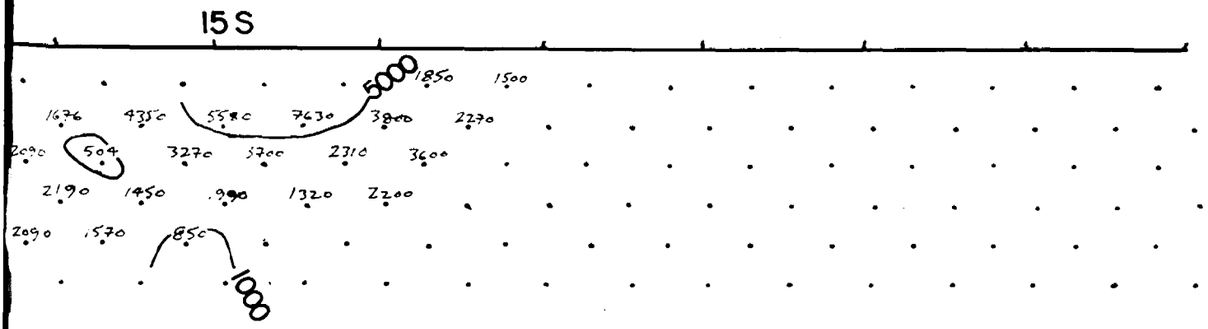
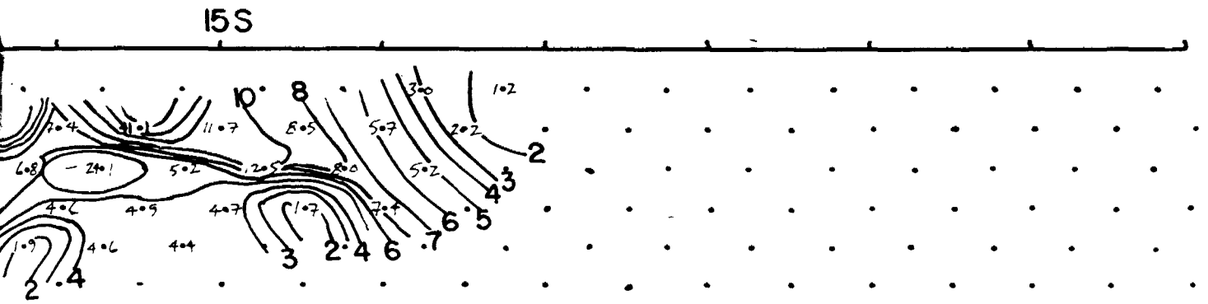


CHARGEABILITY (mv/v)



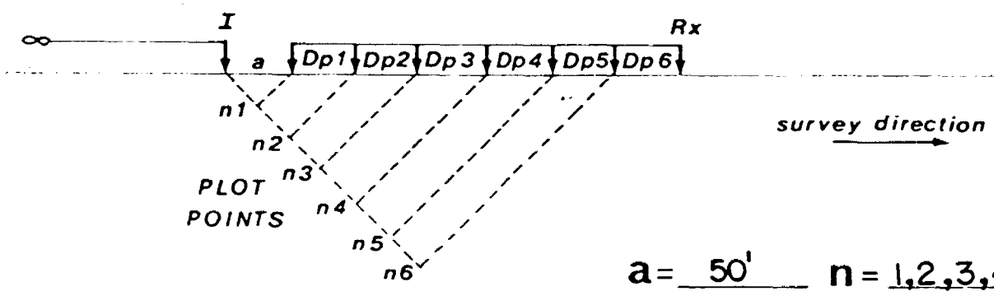




INDUCED POLARIZATION

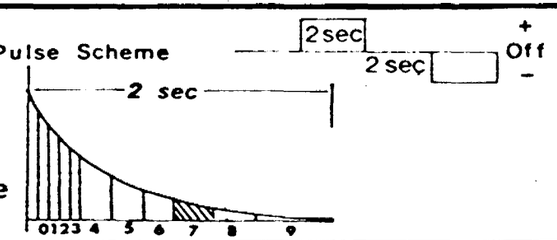
Time Domain

POLE-DIPOLE ARRAY



a = 50' n = 1,2,3,4 and 2,3,4,5

Tx: Scintrex TSQ-3 (3kw) Pulse Scheme

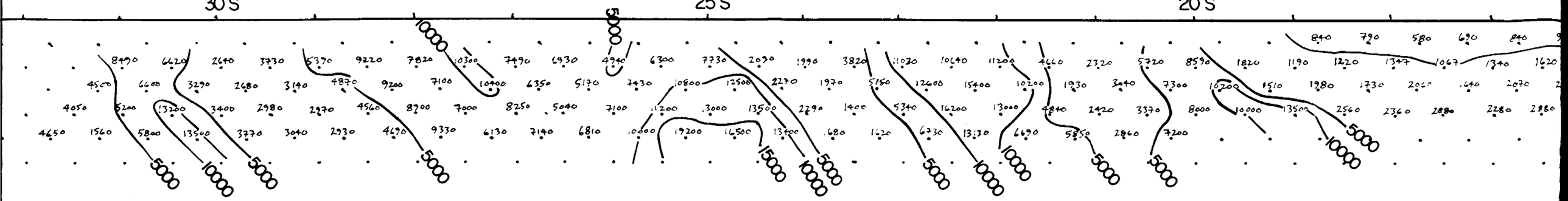


Rx: Scintrex IPR 11 reading 7th slice

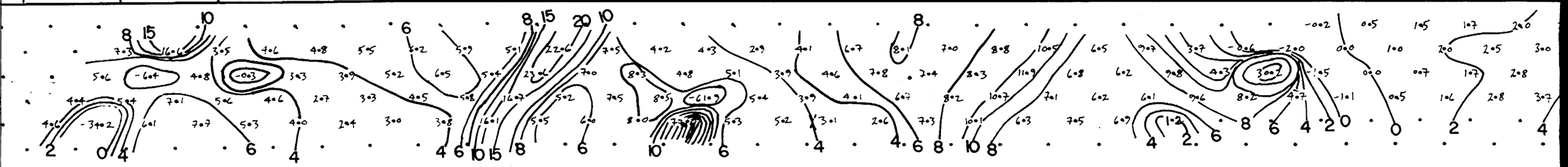
Total Line 1700' **Total Readings** 140

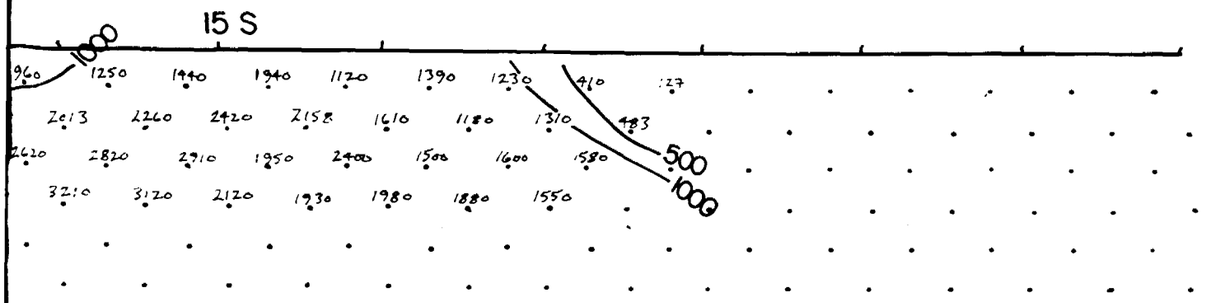
REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title L 60 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ / CG	Approved:	File: M-55

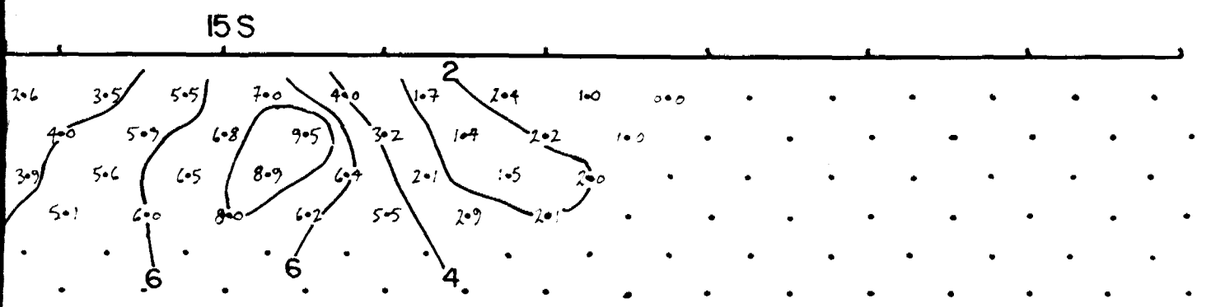
RESISTIVITY (ohm/m)



CHARGEABILITY (mv/v)



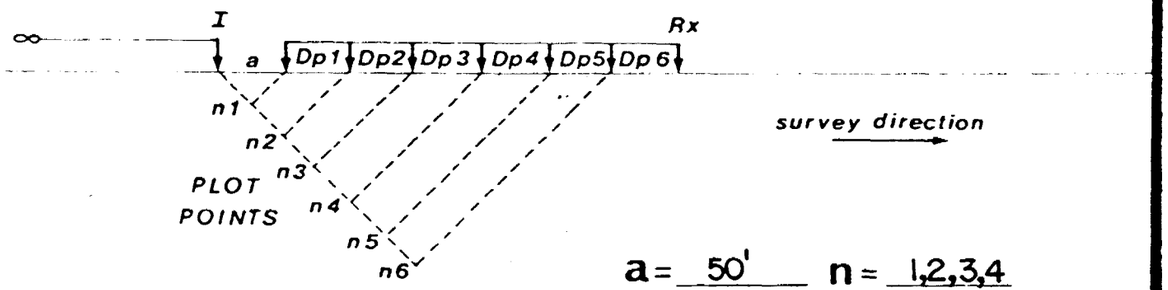




INDUCED POLARIZATION

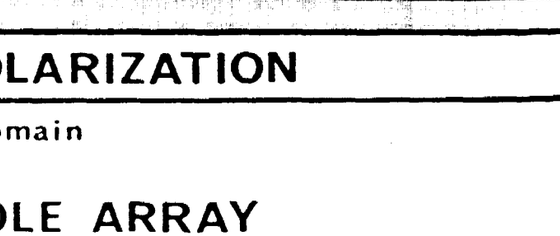
Time Domain

POLE-DIPOLE ARRAY



a = 50' n = 1,2,3,4 and 2,3,4,5

Tx: Scintrex TSQ-3 (3kw) Pulse Scheme



Rx: Scintrex IPR 11 reading 7th slice

Total Line 1850' **Total Readings** 152

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS.		
	Title L 62 W		
	Date: SEPT. 1984	Scale: 1" = 100'	N.T.S.:
	Drawn: CJ/CG	Approved:	File: M-55

LEGEND
2 Diabase
1 Felsic Intrusion
1a Diorite
1b Granite
1c Granodiorite
1d Trondhjemite
1e Quartz rich Trondhjemite
1f Mafic Inclusions
py pyrite cp chalcopyrite
po pyrrhotite g gossan
q.v. quartz vein m malachite
s.h. specular hematite
Outline of Outcrop
Contact
Trench
Foliation
Shear Zone
Road
Patented Claim Post
I.P. anomaly
Proposed DDH location
Three Duck Lake
Coté Lake
BASELINE 000
B.L. 000
Tie Line 20 S
No. 3 Vein
0.895 oz/ton Au
TO MESOMIKENDA LAKE AND HWY 144 (approx. 3 miles)
Old power line right of way
Spruce swamp
S 19977
S 19998
S 19997
S 20000
S 88° 58' W
S 89° 59' W
S 75° 25' W
S 72° 48' W
S 80° 51' N
S 80° 04' W
4.18 oz/Au/1.2
Trench 1
Trench 2
Trench 3
Trench 4
Trench 5
Trench 6
L 65 W
L 60 W
L 56 W
L 52 W
L 48 W
L 44 W
L 40 W
L 36 W
L 32 W
L 28 W
L 24 W
L 20 W
L 16 W
REVISIONS
ROBERT S. MIDDLETON EXPLORATION SERVICES INC.
for CHESTER MINERALS
Title
GEOLOGY
Fig 1
Date: JULY 84
Scale: 1" = 200'
N.T.S.:
Drawn: A. W
Approved:
File: M-55
Roberta Bald
63.4435
41P12SW0099 63.4435 CHESTER
200

Coté Lake

Three Duck Lake

S19977

4N
2N
BASELINE 000
2S
4S
6S
8S
10S
12S
14S
16S
18S
Tie Line 20S
22S
24S
26S
28S
30S
32S

L65W L60W L56W L52W L48W L44W L40W L36W L32W L28W L24W L20W

In Phase Out of Phase

VLF-EM SURVEY
STATION: CUTLER, MAINE (NAA 24.0 Khz)
FACING NORTH
INSTRUMENT GEONICS EM-16

Roberta Bald 63.4435

REVISIONS	ROBERT S. MIDDLETON EXPLORATION SERVICES INC.		
	for CHESTER MINERALS		
	Title VLF EM		
	Date: JULY 84	Scale: 1" = 200'	N.T.S.:
	Drawn: A.W	Approved:	File: M-55

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210