REPORT ON THE 1994

DRILLING PROGRAM

ON THE

KENOGAMI LAKE EAST PROJECT
(4045)

Prepared by: Rex Brommecker

Date: May 20, 1994

42A01SE2026 om94-071 GRENFELL 010

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Location

The Kenogami Lake East Project is 15 kilometres WSW of Kirkland Lake in Eby and Grenfell Townships (fig. 1). The centre of the project is located at approximately longitude 80° 12' and latitude 48° 06' on NTS map sheet 42A/1.

Access

The property can be accessed from highway 11 at the town of Kenogami. Private lands surround the lake so permission must be requested for access.

Claim Status

The property consists of 5 claims (16 units) covering 256 hectares (table 1, fig. 2). The claims are under option from Premier Exploration Inc. and Mr. Michael Leahy.

Table 1: Kenogami Lake East Claim List

CLAIM NUMBER	UNITS	HECTARES	TOWNSHIP
1186326	2	32	EBY
1186327	2	32	EBY
1186328	1	16	EBY
1186329	9	144	EBY
1187142	2	32	EBY
5 claims	16	256	

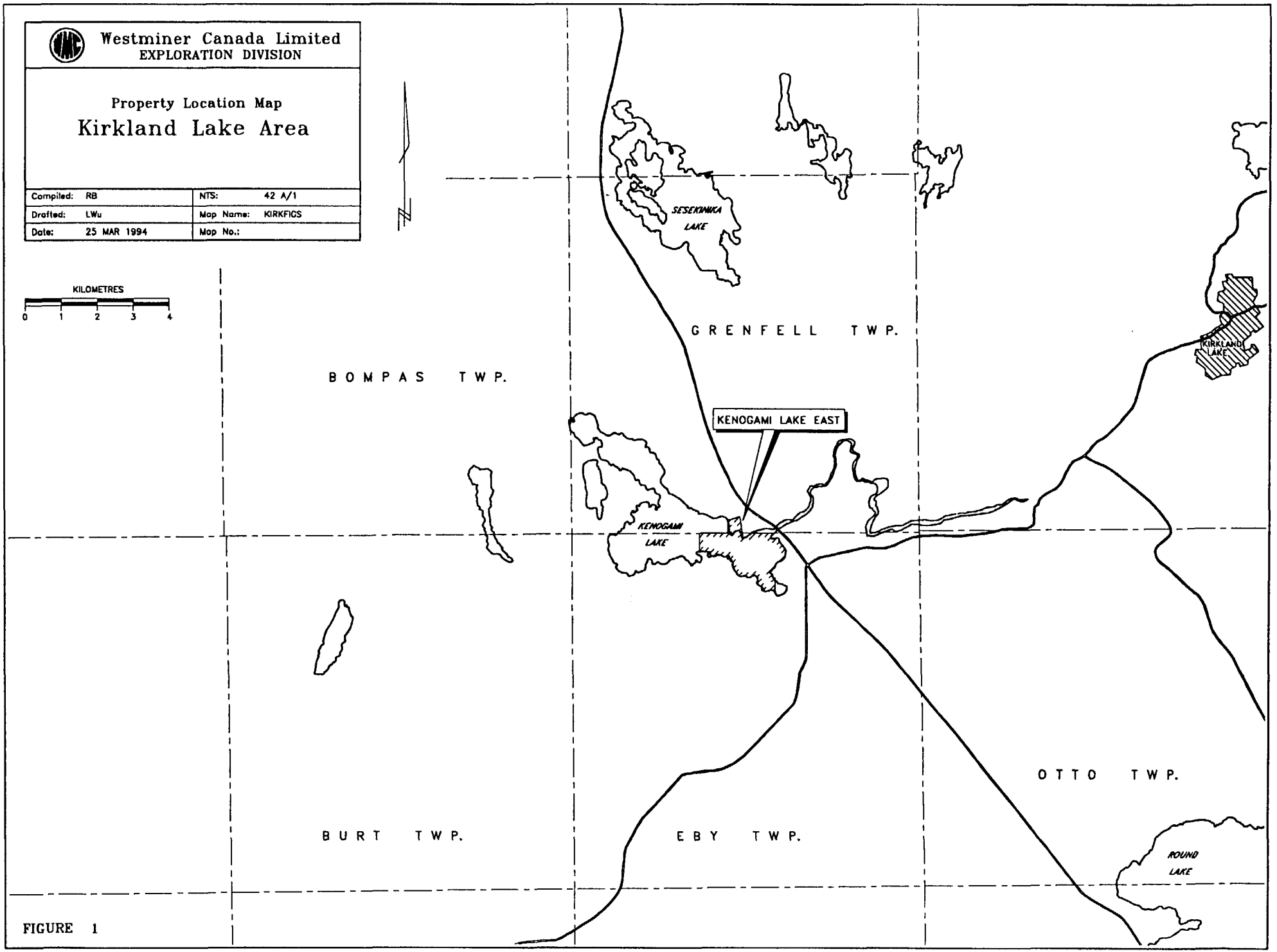
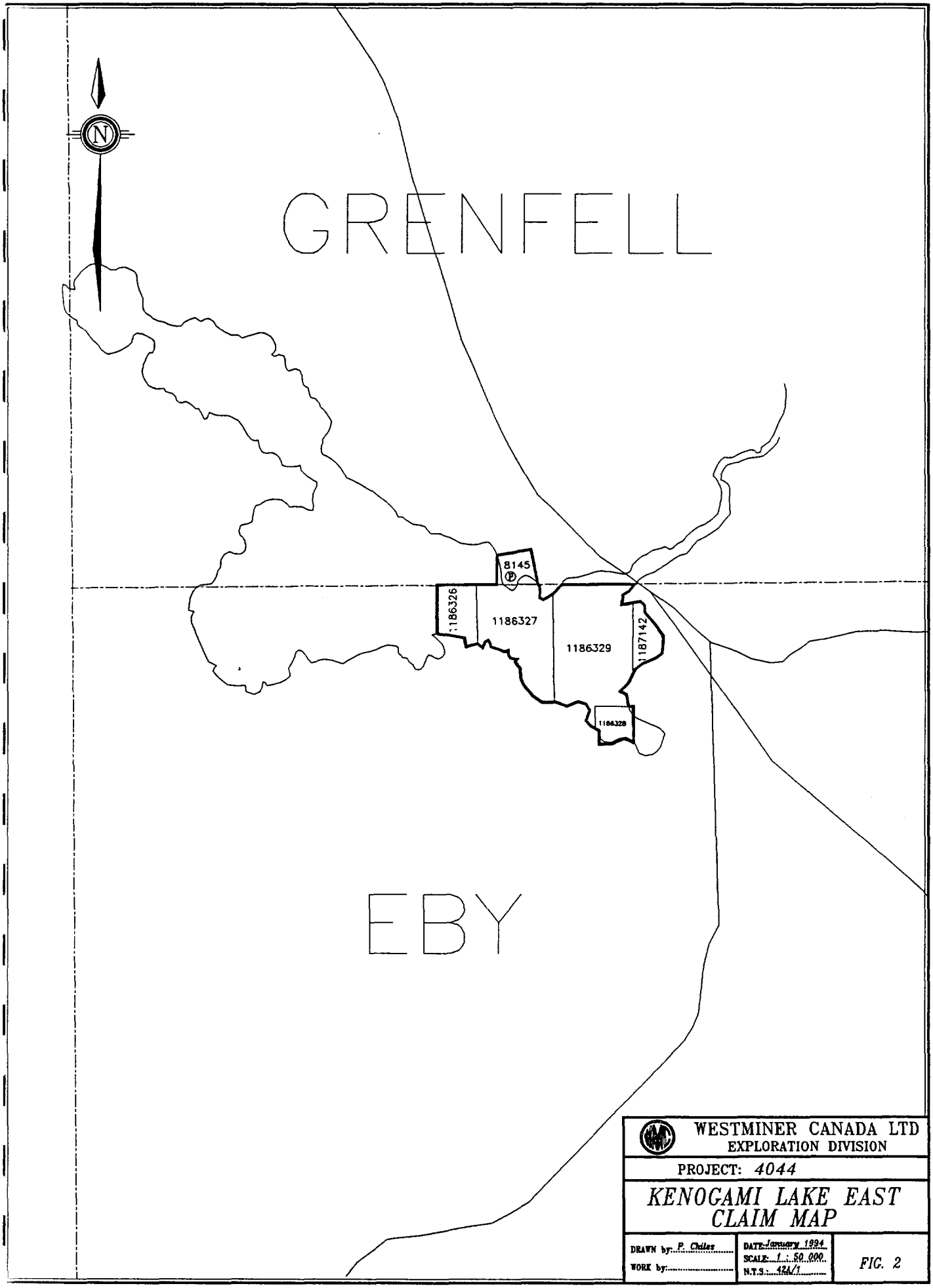

Westminer Canada Limited
EXPLORATION DIVISION
Property Location Map
Kirkland Lake Area
Compiled: RB
NTS: 42 A/1
Drafted: LWu
Map Name: KIRKFIGS
Date: 25 MAR 1994
Map No.:
KILOMETRES
0 1 2 3 4
SESEKINIKA LAKE
GRENFELL TWP.
KIRKLAND LAKE
BOMPAS TWP.
KENOGAMI LAKE EAST
KENOGAMI LAKE
OTTO TWP.
BURT TWP.
EBY TWP.
ROUND LAKE

FIGURE 1



WESTMINER CANADA LTD
EXPLORATION DIVISION

PROJECT: 4044

KENOGAMI LAKE EAST
CLAIM MAP

DRAWN by: P. Chiles
WORK by:
DATE: January 1994
SCALE: 1 : 50 000
N.T.S.: 42A/1

FIG. 2

Regional Geology

The property is in the southwestern Abitibi Greenstone belt of the Superior Province. It lies 20 kilometres WSW and along strike of the famous gold deposits located at Kirkland Lake. Combined the Kirkland Lake deposits produced more than 24 million ounces of gold (Meyer, 1992).

The geology of the Kirkland Lake area (fig. 3) has been most recently described by Jensen and Langford (1985) who concentrated on the stratigraphy of the area, and Hodgson et al. (1990) who concentrated on the structure of the area. The stratigraphic nomenclature of Jensen and Langford (1985) is used in this report.

The area is generally underlain by Archean ultramafic to mafic volcanic rocks of the Kinojevis and Larder Lake Groups. The Timiskaming Group, which consists of both late sedimentary and alkalic volcanic rocks unconformably overlies the Abitibi volcanics and is spatially related to the Larder Lake-Cadillac "Break". The Abitibi volcanics and Timiskaming Group rocks are intruded by various Archean aged felsic to intermediate granitic to syenitic rocks. The Archean rocks are locally unconformably overlain by embayments of flat lying Proterozoic sediments of the Gowganda Formation. The Gowganda Formation consists of conglomerates, wackes, and siltstones of glaciogenic origin.

The Archean rocks have generally been metamorphosed to greenschist facies and suffered several periods of ductile, cleavage forming deformation. Archean stratigraphy dips moderately to steeply and is complexly folded and faulted. The Larder Lake-Cadillac Break is an important regional-scale deformation zone which is spatially related to large gold deposits from Matachewan (Ont.) to Val d'Or (Que.). The Kirkland Lake gold deposits are hosted by quartz-veins in a parallel structure (the Kirkland Lake Main Break) less than 2km from the Larder Lake-Cadillac Break.

Local Geology

The project area is covered mainly by Kenogami Lake. The area surrounding the lake has been mapped in detail by Thomson (1950). Projecting the geology under the lake indicates that the project area is underlain by mafic volcanic rock in the south, Timiskaming Group rocks in the centre and Gowganda Formation in the north. The Larder Lake-Cadillac Break passes through the southern part of the claim group. The northern part of the claim group is directly along strike of the Kirkland Lake Main Break.

Target and Rationale

The rocks beneath the lake have an extremely good chance of hosting a large gold deposit given the proximity to the Larder Lake-Cadillac Break and the potential that the Kirkland Lake Main Break passes through the northern part of the property. The lake cover has hindered effective exploration of this very high potential area. A combination of detailed modern geophysical methods including induced polarisation and magnetics will be used to evaluate targets. Geophysical targets were drilled.

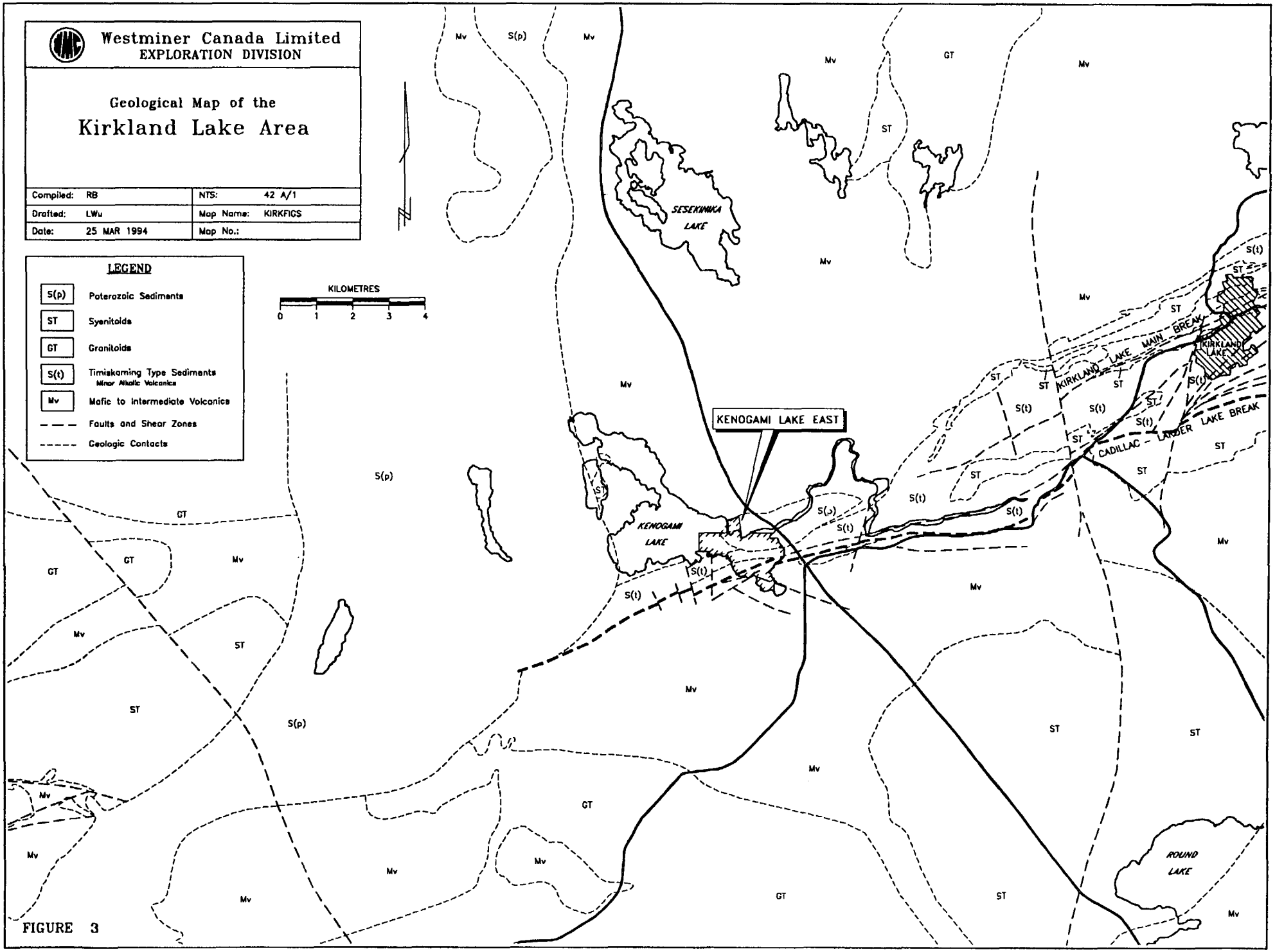

Westminer Canada Limited
EXPLORATION DIVISION
Geological Map of the
Kirkland Lake Area
Compiled: RB
NTS: 42 A/1
Drafted: LWu
Map Name: KIRKFIGS
Date: 25 MAR 1994
Map No.:
LEGEND
S(p) Poterozoic Sediments
ST Syenitoids
GT Granitoids
S(t) Timiskaming Type Sediments
Minor Alkalic Volcanics
Mv Mafic to Intermediate Volcanics
Faults and Shear Zones
Geologic Contacts
KILOMETRES
0 1 2 3 4
KENOGAMI LAKE EAST
SESEKINIKA LAKE
KENOGAMI LAKE
KIRKLAND LAKE MAIN BREAK
KIRKLAND LAKE
CADILLAC - LARDER LAKE BREAK
ROUND LAKE

FIGURE 3

Previous Work

Little previous work has been done on the property. A small amount of drilling has been done in the SE bay of Kenogami Lake. The following is a summary of previous work done on the lake.

1939 - **Siscoe Gold Mines**

Siscoe gold mines drilled two short holes for a total of 773' off of the point on the eastern shore of the SE bay of Kenogami Lake. Syenite dykes and altered lava were intersected. The best values reported were 0.17$/oz.

1948 - **Burtho Gold Mines Ltd.**

Burtho drilled 7 diamond drill holes for a total of 5066' in the vicinity of the SE bay of Kenogami Lake. A major ENE-trending shear zone was outlined. The zone locally cut syenite and "porphyry". A letter indicated that no gold values were obtained but no specific values were reported. Burtho outlined a major shear zone in the SE bay.

1983 - **Gren-Teck Kirkland Resources Ltd.**

A ground magnetic and VLF survey was done over the property at 100m line spacing.

1985 - **Premier Explorations Inc.**

An airborne magnetic and VLF survey was flown.

Previous Work by Westminer Canada

No previous work has been done by Westminer Canada on this project.

1994 Drilling Program

Three BQ-sized diamond drill holes (KEN-94-01, -02, and -03) were completed for a combined length of 830.6m. The holes were drilled from February 14 to March 5, 1994. Drill hole locations are shown in figure 4. Logs are provided in appendix IV and a cost breakdown is given in appendix V. A plan and sections can be found in the rear pouch. Summary logs are as follows:

KEN-94-01 (324.92m, at 45 degrees NNW)

0-29.8m	-Overburden
29.8-42.75m	-Syenite cut by numerous quartz veins with 1% pyrite and traces of molybdenite
42.75-52.9m	-Intensely sheared and altered zone of mafic rocks and sediments, abundant ankerite and fuchsite with up to 5% pyrite.
52.9-194.5m	-Weakly altered and sheared mafic volcanics and gabbro
94.5-243.43m	-Magnetic mafic dyke
243.43-307.83m	-Weakly altered and sheared mafic volcanics and gabbro
307.83-324.92m	-Komatiite with spinifex
324.92m	-EOH

The section from 38.7 to 43.6 is anomalous in the pathfinder element Mo (up to 108ppm) as well as contains a gold anomalous sample of 67ppb Au. The best assay in the hole was 243ppb Au over 50cm.

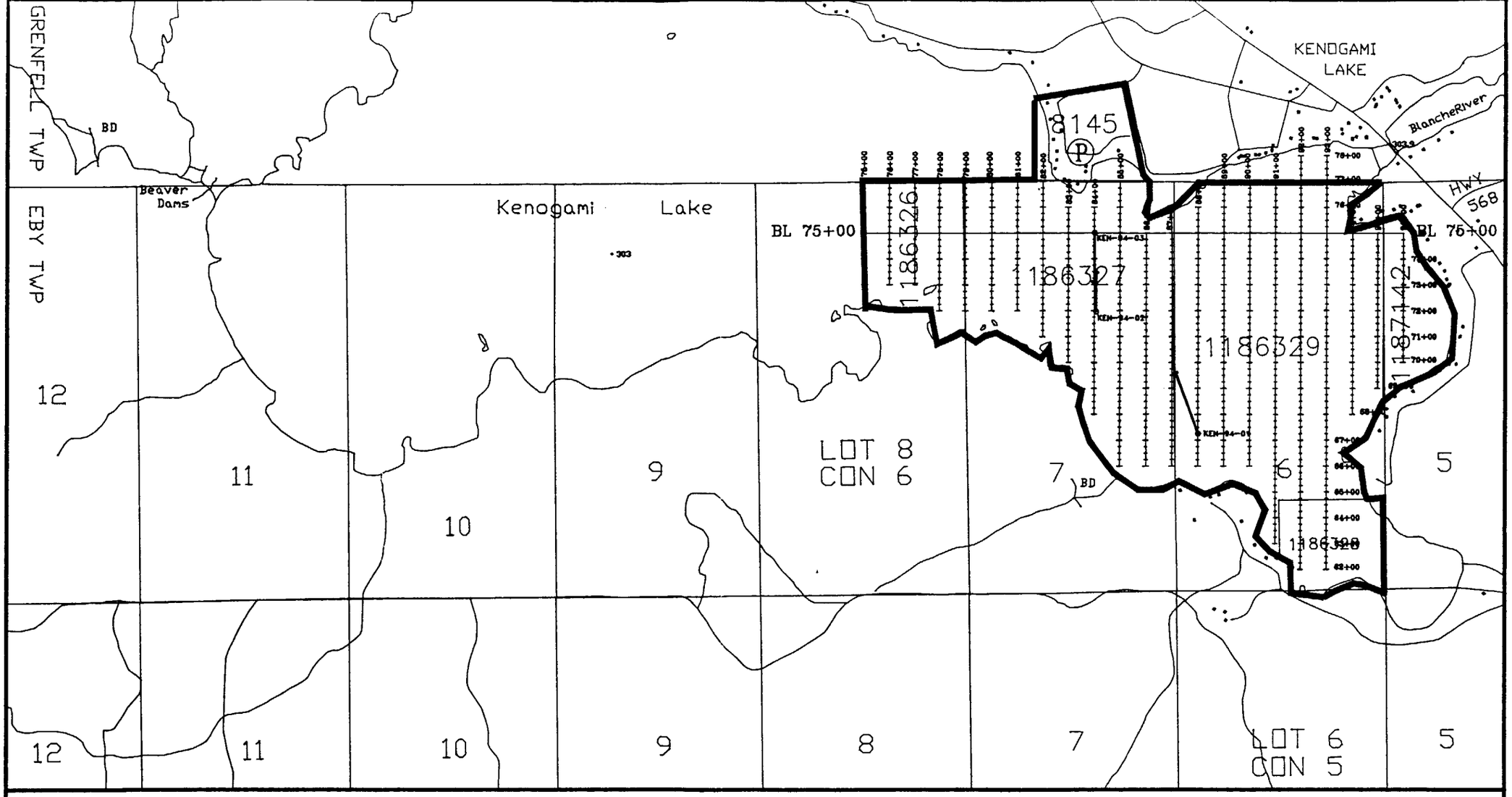
KEN-94-02 (218.24m, at 45 degrees Northwards)

0-23.3m	-Overburden
23.3-140.48m	-Timiskaming-type conglomerate, variably sheared and altered
140.48-183.96m	-Timiskaming-type wacke (basal grit), variably sheared and altered with 12m section of 1% pyritic veinlets
183.96-218.24m	-ankerite-fuchsite-sericite schist, foliation at very low core angle, minor quartz veins
218.24m	-EOH

No significant pathfinder element anomalies. The best assay was 79ppb Au over 40cm.

KEN-94-03 (287.43m, at 50 degrees Southwards)

0-65.14m	-Overburden
65.14-174.9m	-Proterozoic Gowganda siltstone, wacke. and conglomerate
174.9-175.56m	-Fault breccia
175.56-183.46m	-Archean ankerite-fuchsite schist at high core angle
183.46-260.8m	-Moderately altered mafic volcanic rock (ankerite-sericite)



0 500 1000m

FROM BASE MAP 20 17 5500 53200

WESTMINER CANADA LTD
Div. EXPLORATION

KENOGAMI LAKE EAST

DRILL HOLE LOCATION
FIGURE 4

DRAWN by: REX	DATE: MAY 1994	PLAN NO.
WORK by: REX	SCALE: 1:20000	4045-07-03
	N.T.S.: 42 A / 1	

260.8-280.0m -Ankerite-sericite-fuchsite schist
280.0-287.43m -Timiskaming-type wacke (basal grit)
287.43m -EOH

No significant pathfinder element anomalies. The best assay was 17ppb Au over 66cm.

Conclusions

Two favourable zones for gold mineralization were intersected:

1) SOUTH ZONE: The beginning of Hole KEN-94-01 intersected a structure and syenite drilled by Burtho Gold mines along strike. The structure is an alteration and shear zone with significant ankerite and fuchsite. Weakly anomalous gold and molybdenum values were intersected. This zone may be the continuation of the Larder Lake-Cadillac Break.

2) NORTH ZONE: Holes KEN-94-02 and 03 intersected a major structural zone with significant ankerite and fuchsite. This zone is at the contact between Timiskaming sediments in the south and mafic volcanic rocks in the north. This zone did not contain anomalous gold values or pathfinder element values.

Recommendations

1) SOUTH ZONE: The "South Zone" has been drilled along strike both east and west by Burtho Gold mines. Burtho reports no significant values in their drilling. It is deemed that this structure has been adequately tested by present and past drilling. Therefore, no further work is recommended on the "south zone" at this time. Some residual potential rests in testing this zone at depth (>200m).

2) NORTH ZONE: The "North Zone" represents a significant favourable structure for gold mineralisation. Although no significant gold values were intersected, it is wide and strongly altered. If sufficient funds are available, residual potential lies in testing this structure along strike.

References

Hodgson, C.J., and Hamilton, J.V., 1990. Structural setting of gold deposits and the tectonic evolution of the Timmins-Kirkland Lake area, southwestern Abitibi Greenstone Belt; in Gold and Base Metal Mineralization in the Abitibi Subprovince, Canada with emphasis on the Quebec Segment, Ho, S.E., Robert, F., and Groves, D.I., eds., pp. 101-120.

Jensen, L.S., and Langford, F.F., 1985, Geology and petrogenesis of the Archean Abitibi Belt in the Kirkland Lake area, Ontario: Ontario Geological Survey, Miscellaneous Paper 123, 130p.

Jensen, L.S., 198?, Open File Map 139, 1 Map.

Meyer, G., Guindon, D., Boucher, F.M., Madon, Z., 1992. Annual Report for the Kirkland Lake Resident Geologist's District 1992, in OGS Miscellaneous Paper 161.

Thomson, J.E., 1950. Geology of Teck Township and the Kenogami Lake Area, Kirkland Lake Gold Belt, ODM Annual Report for 1948, Volume 57, Part 5. 196p.

APPENDIX I

Appendix I: Certificate of Qualification

I, Rex Brommecker, of the City of Nepean, Province of Ontario, do hereby certify that:

1. I am a geologist residing at 35 Rideaucrest Drive, Nepean, Ontario.

2. I am a graduate of the University of Waterloo having received a Bachelor of Science in Applied Earth Science in 1988.

3. I am a graduate of Queens University having received a Master of Science in Geology in 1991.

4. I have been a practising geologist since 1988.

5. I have been an employee of Westminer Canada Ltd. since 1991.

6. I supervised and performed the work relevant to this study from December 1/1993 to May 1/1994.

APPENDIX II

Appendix II: Description of Project Management

Project Managers

Geological- Rex Brommecker, Westminer Canada
22 Gurdwara Road
Nepean, Ontario
K2E 8A2

Diamond Drilling Contractors

Grenville Whyte- Heath and Sherwood Drilling (1986) Inc.
P.O. Box 998
34 Duncan Ave. North
Kirkland Lake, Ontario
P2N 3L3

APPENDIX III

CODES USED IN DRILL LOG

ROCK CODES

Sedimentary Rocks

O/B	- Overburden (mainly Quaternary Till)
Sc	- Conglomerate
Sw	- Wacke
Ssl	- Siltstone
Sag	- Argillite
Srdt	- Polymictic conglomerate (Timiskaming)
Swt	- Wacke or grit (Timiskaming)
Sant	- Arenite (Timiskaming)
Srdp	- Conglomerate (Proterozoic- Gowganda)
Swp	- Wacke (Proterozoic- Gowganda)
Sndp	- Arkose, wacke, and siltstone (Proterozoic- Gowganda)
Sslp	- Siltstone (Proterozoic- Gowganda)
Sagp	- Argillite and siltstone (Proterozoic- Gowganda)

Volcanic Rocks

e-Upx	- Pyroxenitic komatiite
Mv	- Mafic volcanic
Mtb	- Tholeiitic basalt
Mtbm	- Mg-rich tholeiitic basalt
Mcab	- Calc-alkaline basalt
Iak	- Intermediate alkalic volcanic rock
Fv	- Felsic volcanic
Fak	- Alkalic felsic volcanic

Intrusive Rocks

i-Upx	- Pyroxenite
Mg	- Gabbro
Mgq	- Quartz gabbro
Mgm	- Matachewan Diabase
DT	- Diorite
GD	- Granodiorite
MO	- Monzonite, Monzodiorite
AG	- Monzogranite
G	- Granite
ST	- Syenatoid

Rocks of Uncertain Protolith

U	- Ultramafic rock
M	- Mafic rock
I	- Intermediate rock
F	- Felsic rock

Alteration Products and Veins

ak-s	- ankerite-sericite rock
ak-fu	- ankerite-fuchsite rock

Alteration Products and Veins (continued)

ak-s-fu	- ankerite-sericite-fuchsite rock
q-vn	- Quartz vein
q-ab-vn	- Quartz-albite vein
q-ak-bx	- Quartz-ankerite breccia
q-fu-vn	- Quartz-fuchsite vein

PRIMARY FEATURES

fg	- fine grained
mg	- medium grained
cg	- coarse grained
p(a)	- porphyritic (amphiboles)
x	- spinifex
rx	- random spinifex
pl	- pillowed
am	- amygdaloidal
mt	- primary magnetite

ALTERATION, SULPHIDE, AND VEIN MINERALOGY ABBREVIATIONS

ab	- albite
ak	- ankerite
as	- arsenopyrite
c	- chlorite
cc	- carbonaceous/graphitic
cp	- chalcopyrite
ep	- epidote
fu	- fuchsite
gn	- galena
h	- hematite
l	- calcite
lx	- leucoxene
mo	- molybdenite
po	- pyrrhotite
py	- pyrite
q	- quartz
s	- sericite
sil	- silicified
sp	- sphalerite
sul	- sulphides

STRUCTURAL CODES

bx	- breccia
ft	- fault
v	- vein
wsh	- weakly sheared
msh	- moderately sheared
ssh	- strongly sheared
S0	- bedding
S1	- first foliation
S2	- second cleavage
frac	- fracture

* All distances given are in metres

APPENDIX IV

KEN-94-01

HOLE NUMBER:	KEN-94-01				
GRID LOCATION:	L88+00E	67+25N		**CLAIM NUMBER:**	1186329
SURVEY LOCATION (UTM):	568824 mE	5336711 mN		**ELEVATION:**	303m
CORE SIZE:	BQ		**LENGTH:**	324.92m	
BEARING:	340		**DIP:**	46	
START:	14/02/94		**FINISH:**	22/02/94	
CORE STORED AT:	Kirkland Lake Industrial Plaza				
DRILLING CONTRACTOR:	Heath and Sherwood				
LOGGED BY:	Rex Brommecker		**LOG COMPLETED:**	01/03/94	
SIGNED:					

TESTS

TYPE:	**ACID**				
DEPTH:	93.8	**DIP:**	40	**BEARING:**	340
DEPTH:	200	**DIP:**	38	**BEARING:**	340
DEPTH:	306	**DIP:**	38	**BEARING:**	340

KEN-94-01

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
0	29.8	O/B											silt
29.8	30.4	M	fg	c-ak	wsh	0.1	py	0.1	q-ak	30	v	15	green, local 2% fine lx and
										30	wS1	45	10%-2mm mafic phenocrysts
													5% random chloritic fractures
30.4	32.1	ST	mg-cg	sil-s-py	wsh	1	py	50	q	30.5	v	65	pink, medium grained,
						0.1	mo?			32	v	45	contacts obscured by veins
													and shearing,
													brecciated by q-veins
													many random q-veins with
													ave. 1% py., tr. mo?, tr. to,
													1% yellow sericitic slips,
32.1	32.85	LOST											Ground Core
32.85	39.95	ST	mg-cg	sil-s-py	wsh	1	py	50	q	35	v	35	as ST above
						0.1	mo?			38	v	70	
										36	ser-slip	50	
39.95	40.25	q-vn			v	1	py	100	q	40.3	v	60	white, massive
						0.1	mo?						
						0.1	to						
40.25	40.75	ST	mg-cg	sil-s-py	wsh	2	py	50	q	40.5	v	65	as ST above
						0.1	mo?						
						0.1	to						
40.75	41.25	q-vn			v	0.1	py	100	q	40.75	v	60	white, massive
						0.1	mo?						
						0.1	to						
41.25	41.95	ST	mg-cg	sil-s-py	wsh	2	py	50	q	41.5	v	70	as ST above
						0.1	mo?						
						0.1	to						
41.95	42.75	q-vn			v	0.1	py	100	q	42.7	ser-slip	75	white, numerous sericitic slips
						0.1	mo?				frac	5	fractured parallel to CA.
						0.1	to						
42.75	43.6	ST+M-Sw	mg-cg	ak-s-fu	msh-bx	0.1	py	25	ak-q	43	msh	80	light olive green and pink,
													intermixed mafic wacke and
													small ST dykes (50-50),
													contacts tectonised+gradational,
													brecciated appearance of a
													discrete fault or "BREAK".
43.6	44	M-Sw	mg	ak-c-s	wsh			5	q-ak	44	wS1	60	green-gray, 60% mafic- 40%
													felsic clasts, clasts 1-2mm,
													could be Mg,
44	45	M-Sw?		ak-s-fu	ssh	1	py	30	ak-q	44.3	ssh	65	basically a c-ak-s-fu schist,
45	46.44	M	fg-mg	ak-c-(fu)	wsh	0.1	py	5	ak-q	46	ws1	55	green, probably a volcanic,
											v	55	lower contact sheared
46.44	46.54	q-fu-vn			ssh	0.1	py	100	q-fu	46.44	ssh	65	white quartz brecciates
													fuchsitic rock
46.54	46.9	M-Sw	mg	ak-s-(fu)	wsh	0.1	py	5	q-ak	46.7	wS1	55	green-brown, 30% sercite
													replaced clasts 3-4mm in size,
													35% felsic 35% mafic clasts
													2mm in size,
46.9	47	Ssl	fg	s-ak	wsh	0.1	py	5	q-ak	46.7	S0?	45	beige, strong s-alteration,
													chloritic fractures perp.
													to bedding?

KEN-94-01

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
47	48.7	M-Sc	cg	ak-s-fu	msh	0.1	py	20	q-ak	47.3	msh	50	green-beige-gray, mainly mafic clasts, all clasts strongly altered, clasts 1cm-10cm generally, clasts generally flattened and sheared, therefore could also be purely tectonic breccia
48.7	49.95	M-Sc	cg	ak-s-fu	ssh	5	py	30	q-ak	49	ssh	55	as above but more intensely sheared and altered, minor black carbonaceous seams,
49.95	50.7	M-Sc+Sw	mg-cg	ak-c-s	wsh	0.1	py	5	q-ak	50.7	wS1	50	mixture of Sw and Sc, 8cm mg-Mg-dyke at 50.4
50.7	51.36	M	fg	ak-c-s	wsh			5	q-ak	51	wS1	45	green, fine mafic rock, numerous random chloritic frac.
51.36	51.86	M+ak-q-vn	fg	ak-s-c	msh	3	py	50	ak-q	51.5 51.6	v msh	5 40	ak-q-vn parallel to core axis, strong alt. and fol. around vein,
51.86	52.6	M	fg	ak-c-s	wsh	1	py	5	q-ak-cc	52.2	wS1		as M above, 1cm carbonaceous veins near base
52.6	52.9	Sag	fg		wsh	0.1	py			52.6 52.9 52.9	S0? S0? msh	40 30 40	black carbonaceous argillite, possibly minor graphite, contacts sharp but tectonically modified, ak-vn on bottom contact
52.9	54.14	M	fg	ak-c-s	wsh	0.1	py	5	q-ak-cc	53.2 53.3	wS1 v	45 30	green-gray, very blocky,
54.14	55	M	fg	ak-s-c	ssh	1	py	50	q-ak	54.2 54.3 54.5 54.5 55	ssh v ssh v ssh	15 10 50 55 35	minor shear zone, appears to be folded, breccia appears near base, very blocky, lower contact sharp at 35 to CA,
55	59.74	M	fg	ak-c-s	wsh	0.1	py	20	q-ak	56 56	wS1 v	45 40	green-gray, very blocky, vuggy q-cc veins and fracs at low angle to CA offset q-ak veins, locally rusty weathering,
59.74	62.79	M	mg	c-(ak)-(s)		0.1	py	10	q-ak	60	v	30	gray, not blocky
62.79	68.9	M	fg	(c)-(ak)				10	q-l	64 64	v frac	35 10	gray-green, locally blocky , generally featureless, good location to see low angle fractures,
68.9	73.43	M	fg	l				10	q-l	69	v	40	as M above but calcite alt.
73.43	74.33	M	fg	ak-s	wsh-bx	1	py	40	q-ak	74.85 74.33	wS1 v	50 40	fault-bx in M above, beige
74.33	76.6	M	fg					5	q-l	76	ws1	55	typical M
76.6	76.9	q-vn			v			100	q	76.6	v	45	white, wallrock fracs chloritic
76.9	85.55	Mg	mg	lx		0.1	py	5	q-l	83 78.7	wS1 v	45 18	gray-green, 50% mafic- 50% felsic minerals, 5% obvious 1mm leucoxenes, generally equigranular 1-2mm grain size, mafic mins are aligned and form foliation,
85.55	92.77	Mgq	mg-mt			0.1	py	5	q-l-h			15 40	gray-green, 50% mafic- 50% felsic minerals, 5% 1-2mm quartz crystals, equigranular 1-2mm grain size, 5% hematite filled veins, 5% mag. and fractures, local cleavage,

KEN-94-01

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
92.77	93.57	q-vn			v	0.1 0.1 0.1	cp py h	80	q-h	93 93	v wS1		
93.57	96.5	Mg	mg-mt					5	q-h	96	v	30	as Mgq but slightly finer grained and no quartz, extremely blocky, numerous vuggy low CA l-veins,
96.5	105.06	M	fg			0.1 0.1	cp h	5	q-l-h	99.2 102.4	v v	80 3	gray-green, vuggy q-l-h veinlets at low CA,
105.06	105.76	Mg	p(a)-dyke	(ab)				2	q	105.5	S1	65	gray-green, fine grained matrix hosts 15% 1-3mm elongate amphibole phenocrysts, amphibole phenos. are flattened in plane S1, upper margin is clearly chilled showing increase in pheno. size to center of dyke., incipient pinkish albitization.
105.76	110.46	M	fg					2	q	109.5	S1	38	typical featureless M,
110.46	110.9	M	fg	s-ak	wsh	1	py	10	q	110.6	v	35	green-buff, altered,
110.9	113	M	fg					2	q				typical featureless M,
113	113.2	q-vn			v	1	py	100	q				white with minor pink albite, core ground- contacts not available.
113.2	118	M	fg	(ak)		0.1 0.1	py h	5	q				slightly alt. M.
118	119.2	q-ab-vn		ab-ak	ssh-v-bx	0.1	py	80	q-ab-ak	118	ssh v v	55 50 20	strongly sheared zone with brecciated q-ab-ak-vein, white+brown+pink, shearing on either side of vein has a high CA.
119.2	119.8	M	fg	ab-ak-s	wsh-bx			25	q-ab-ak				brecciated and altered M,
119.8	120.1	Mg	p(a)-dyke	ab	wsh	0.1	py	10	q-ab				red-pink, fine grained red-pink albitic matrix with 20% amphibole phenocrysts, (albitite??).
120.1	121	Mg	p(a)-dyke	(ab)	ssh	0.1	py	10	q-ak	120.8	ssh	55	buff-green, p(a)-Mg dyke, sheared and altered, blocky
121	122.8	Mg	p(a)-dyke	ab	wsh			5	q				red-pink,
122.8	125	Mg	p(a)-dyke	(ab)	wsh			2	q	123	wS1	45	gray-green,
125	125.9	Mg	p(a)-dyke	ab	wsh	0.1	py	5	q				red-pink,
125.9	128.34	M	fg	(ab)	wsh	0.1	py	5	q-l				green-buff, very blocky
128.34	129.34	Mg	p(a)-dyke	ab	wsh			2	q				red-pink, blocky,
129.34	135.44	M	fg	(ak-s)	(bx)	0.1	py	2	q-l				green-gray, network of chloritic fractures give brecciated appearance,
135.44	136.8	M	fg	ak-s	(bx)	0.1	py	40	q-ak	136	v	30	green-buff,
136.8	143	M	fg	ak-s	wsh-(bx)	0.1	py	5	q-ak	138.9 142	wS1 v	50 10	buff-green, chloritic fracs. brecciate, fracs appear as polysuturing but deemed to be secondary because they offset some veins,

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FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
143	148.13	M	fg	(ak-s)	wsh-(bx)	0.1	py	3	q	148	wsh	40	gray-green, blocky
148.13	164.97	M	fg	l-(c)	(bx)	0.1	py	2	q-l	150.5	wS1	45	gray-green,
154.73	155.18	q-ak-bx			v-bx	0.1	py	80	q-ak				white-pink,
155.18	164.97	M	fg	l-(c)	(bx)	0.1	py	2	q-l				gray-green,
164.97	182.36	Mg	mg	l-(ep)				1	q-l				dark green, upper contact intrusive at CA=20, appears less altered than the fg-M above, lower contact also at a low CA,
182.36	194.5	M	fg	(ak-s)	(bx)	0.1	py	3	q-ak				green-buff, again looks polysutured due to chloritic fractures,
194.5	206.7	Mg	mg-mt-dyke	(ep)									fine-grained black chilled margins grade into medium grained equigranular diabase, massive and undeformed, may be Matachewan, contacts obscured by blockiness,
206.7	211	M	fg	l-s	wsh-(bx)	0.1	py	20	q-l	207	wsh	45	green, strongly bx and calcite altered,
211	211.6	mud			fault	0.1	py	10	q				gray mud seam, small q-vein with trace py. at upper contact.
211.6	243.43	M	fg-mt	(ep-l)		0.1	py	3	q-l-h	217 217	c-frac v	25 30	gray-green, locally slightly brecciated with chloritic fracs, local 1cm patchos of massive magnetite, at 217 chloritic fractures offset q-l veins,
243.43	245.7	M	mg	(l)				2	q-l	245	wsh	30	gray-green,
245.7	246.3	M	fg	(l)				1	q-l				gray-green, upper contact is gradational, possible chilled margin?
246.3	247.9	Mg	mg	c-l-bx	wsh			1	q-l	247.5	S1	35	gray-green, foliated, 5% leucoxene, 50-50 mafic-felsic mins,
247.9	248.72	Mg	mg	l-s	msh			5	q	248	msh	50	green-buff,
248.72	250.7	M	fg	l-s	bx	0.1	py	10	q-l-h	250	v	5	buff-green, chloritic fracs, fault+vein along CA,
250.7	251.7	M	fg	l				3	q-l				gray-green,
251.7	256.9	Mg	mg	l		0.1	py	1	q-l	259	S1	45	gray-green, slightly amphibole porphyritic and 60% felsic 40% mafic minerals, contacts sharp,
256.9	276.75	M	fg	l		0.1	py	2	q-l-h				green, slight grain size variations, local py. patches
276.75	275.95	M	fg	l	fault-bx			5	q-l	276.75	fault	40	angular green fragments in white q-l matrix, fragments 2-20mm
275.95	276.25	mud			fault								drillers had no return
276.25	285.29	Mg	cg	(s-ak)	ssh	0.1	py	5	q	278	ssh	35	mottled dark green + buff, 50% mafic 50% felsic minerals, grains 4-6mm + flattened, deformation decreases down hole, at 279.20 possible moly. or graphitic slip,

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FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
285.29	287.9	Mg	cg	(s-ak)	wsh			3	q	289	wsh	30	as above but less deformed,
287.9	289.79	Mg	mg	(s-ak)	wsh			2	q				green, difficult to see feldspars unless altered,
289.79	296.08	Mg	cg	(s-ak)	msh	0.1	py	5	q	295	msh	35	as above but more deformed, vuggy late calcite filled frac. at 05 to CA.
296.08	298.08	Mg	mg	ep-l				3	q-l				green, difficult to observe primary textures gabbro due to alteration,
298.08	303	Mg	fg-mg	l-lx	wsh	5 0.1	py cpy	5	q-l-py	300	wsh	45	dark green, 4% lx, grain size generally 1-3mm, some courser patches, 2cm band of fine pyrite at 301,
303	306.03	Mg	mg	l	wsh	0.1	h	10	q-l	303.5	wsh	45	green-white mottled, 3-5mm grains, 50/50 mafic/felsic minerals, grains flattened,
306.03	307.83	M*	mg	l		0.1	h	2	q-l-h				gray-green with slight red tinge, mafic to intermediate unit with grain size varying from 1-6mm, contains 2-5% angular mafic clasts or phenocrysts (3-6mm) , some phenocrysts appear blotitic, probably a lamprophyre dyke in local terms, contacts are sharp, foliated but more massive than surrounding units,
307.83	309.61	Upx	fg-mg	l				3	q-l				gray, soft, talcose where sheared, probably volcanic,
309.61	314.25	M*	mg	l		0.1	h	2	q-l-h	311.1	wsh	50	as M* above
314.25	316.97	Upx	fg-rx	l				2	q-l				gray, fine grained Komatiite with spinifex section down-hole, excellent spinifex at 316.80,
316.97	321.77	M-Upx	fg-mg	l	wsh	0.1 0.1	py h	5	q-l-h	320	wsh	55	mixed unit of fine Upx and medium Mg, Upx sections more sheared and talcose,
321.77	324.92	M*	mg	l		0.1	h	3	h-q-l				as M* above

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FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
29.8	30.4		411551	-5	0.1	-5	65	6	86	73
30.4	31.1		411552	12	0.1	-5	10	1	16	9
31.1	32.1		411553	-5	0.1	-5	7	3	9	6
32.1	33		411554	-5	0.1	-5	12	3	1	8
33	34	Lost 75cm	411555	3	0.1	-5	6	1	1	8
34	35.05		411556	3	0.1	-5	5	4	1	7
35.05	36		411557	-5	0.1	-5	10	5	1	8
36	37		411558	5	0.1	-5	10	2	1	7
37	38.1		411559	3	0.1	-5	9	5	1	8
38.1	38.7		411560	5	0.1	-5	15	6	1	5
38.7	39.45		411561	17	0.1	-5	9	16	2	8
39.45	39.95		411562	15	0.1	-5	7	22	2	6
39.95	40.25		411563	7	0.1	-5	11	25	1	5
40.25	40.75		411564	15	0.1	-5	8	21	3	9
STANDARD		HR-9	411565	1776	0.3	433	10	17	52	8
40.75	41.25		411566	-5	0.1	-5	4	8	1	5
41.25	41.95		411567	14	0.2	-5	17	15	3	7
41.95	42.75		411568	17	0.3	-5	7	27	1	7
42.75	43.6		411569	67	0.3	-5	22	108	3	29
43.6	44		411570	3	0.2	-5	28	5	1	83
44	45		411571	10	0.4	-5	16	7	1	38
45	46.44		411572	-5	0.1	-5	11	5	1	68
46.44	46.54		411573	2	0.1	-5	11	3	1	46
46.54	47		411574	10	0.2	-5	34	11	2	56
47	47.7		411575	2	0.1	-5	71	2	1	72
47.7	48.1	mainly q-ak-vn	411576	22	0.1	21	82	2	1	65
48.1	48.7		411577	7	0.1	14	106	1	1	64
48.7	49.95		411578	33	0.2	9	73	2	2	63
49.95	51.36		411579	-5	0.1	-5	102	3	1	78
STANDARD		HR-8	411580	33	0.7	68	9	4	14	9
51.36	51.86		411581	29	0.2	10	135	4	1	95
51.86	52.28		411582	-5	0.1	-5	50	2	1	65
52.28	52.6	cc-vn	411583	27	0.3	21	193	4	2	126
52.6	52.9		411584	36	0.3	46	250	3	5	71
52.9	53.34		411585	-5	0.1	-5	60	2	2	92
53.34	54.14		411586	7	0.1	-5	194	3	11	178
54.14	55		411587	21	0.3	22	202	2	7	132
55	56.39		411588	2	0.1	-5	63	2	3	144
56.39	58		411589	31	0.1	-5	156	2	1	89
58	59.74		411590	5	0.1	-5	169	1	1	136
73.43	73.78	less intensely altered and bx'd than 411592	411591	5	0.1	-5	89	1	1	69
73.78	74.33		411592	51	0.1	-5	82	2	2	33

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FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
92.77	93.57	q-vn	411593	122	0.1	-5	2420	4	1	60
99.12	99.36	patch cp-h 1% total	411594	3	0.1	-5	46	1	1	110
STANDARD		HR-9	411595	1735	0.4	425	11	17	52	8
110.46	110.9		411596	34	0.2	-5	183	2	1	107
113	113.2		411597	12	0.2	-5	31	1	5	22
76.6	76.9		411598	21	0.1	-5	91	2	4	61
78.7	79	2-1cm q-vns with 1% py in selvage	411599	53	0.1	-5	42	5	1	145
118	119.2		411600	5	0.1	-5	11	1	2	33
STANDARD		HR-9	411601	1680	0.4	435	10	18	53	8
119.2	119.8		411602	15	0.1	-5	16	7	1	61
119.8	120.1		411603	2	0.1	-5	10	1	1	18
120.1	121		411604	9	0.1	-5	7	5	2	70
121	122.8		411605	5	0.1	-5	12	1	1	28
122.8	123.75		411606	3	0.1	-5	5	1	1	81
123.75	125		411607	5	0.1	-5	7	1	1	83
125	125.9		411608	10	0.1	-5	24	4	2	27
125.9	128.34		411609	21	0.1	-5	83	4	1	103
128.34	129.34		411610	14	0.1	-5	32	2	1	50
132.3	134.05		411611	12	0.1	-5	82	1	1	132
134.05	135.44		411612	29	0.1	-5	148	2	1	98
135.44	136.8		411613	21	0.2	13	99	2	1	73
136.8	138.89		411614	10	0.1	-5	71	2	1	88
STANDARD		HR-8	411615	27	0.8	58	9	3	14	9
138.89	140.5		411616	33	0.1	-5	90	3	1	89
140.5	143		411617	3	0.1	-5	98	2	5	82
154.73	155.18		411618	65	2.3	20	97	6	1	55
186.86	187.76	1% py, 10% q-ak vns	411619	12	0.1	27	72	1	1	74
193	193.3	30% q-ak-vns, tr. py	411620	21	0.1	15	60	2	2	119
206.7	209.09		411621	17	0.1	16	100	1	1	136
209.09	210.5		411622	3	0.1	18	94	1	1	104
210.5	211		411623	2	0.1	-5	75	27	29	132
211	211.61		411624	34	7.3	-5	158	3	3	89
229.63	230.53	1% py in low CA q-vn	411625	7	0.1	-5	83	1	3	100
247.9	248.22		411626	9	0.1	-5	19	1	1	95
248.22	248.72		411627	9	0.1	-5	23	1	1	83
248.72	250.7		411628	17	0.1	-5	109	2	1	75
256.8	257.25	wsh, tr. py	411629	10	0.1	-5	172	3	2	120
STANDARD		HR-9	411630	1745	0.3	422	10	18	52	7
259.9	260.33	2% q-l vns, tr. py in q-l-c vnlet.	411631	7	0.1	-5	108	1	1	113
269.25	270.05	tr. py	411632	24	0.2	-5	95	4	1	94
270.05	271.15	tr. cubic py.	411633	12	0.1	-5	132	1	1	119
276.75	276.95		411634	14	0.1	-5	11	1	1	150

KEN-94-01

FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
277.25	279.3		411635	10	0.1	-5	70	5	1	59
279.3	282.29		411636	7	0.1	80	76	1	1	66
282.29	285.29		411637	14	0.1	88	70	1	1	78
285.29	287.9		411638	3	0.1	63	84	1	1	70
289.79	291.39		411639	2	0.1	23	91	1	1	89
291.39	294.44		411640	2	0.1	62	58	2	1	80
294.44	296.08	3cm l-py veinlet at 296	411641	7	0.1	260	74	1	8	112
296.08	297.48		411642	10	0.2	132	164	1	1	164
298.8	300.75	q-l-py vns.	411643	33	0.2	143	143	1	1	172
300.75	301.15	10% py diss and in q-l-py vns	411644	243	0.9	180	452	1	15	202
STANDARD		HR-8	411645	29	0.8	63	9	3	14	10
301.15	301.85	2% py in q-l-py vnlt	411646	58	1.2	321	793	5	7	157
301.85	303.3	tr. cp, tr. py	411647	14	0.1	-5	238	1	1	175
303.3	304.18	20% q-l-vn (30 cm vn) tr. py.	411648	3	0.1	-5	37	1	1	128
318.32	318.82	2% h, tr. py in fracs, 5% q-l-vns	411649	21	0.2	-5	1130	1	1	82
320.9	321.77	2% h in 15% q-l-h-vns, ssh	411650	21	0.7	-5	100	7	1	87

KEN-94-02

HOLE NUMBER:	KEN-94-02				
GRID LOCATION:	L84+07E	71+95N	**CLAIM NUMBER:**	1186327	
SURVEY LOCATION (UTM):	568427 mE	5337193 mN	**ELEVATION:**	303m	
CORE SIZE:	BQ	**LENGTH:**	218.24m		
BEARING:	360	**DIP:**	46.5		
START:	23/02/94	**FINISH:**	28/02/94		
CORE STORED AT:	Kirkland Lake Industrial Plaza				
DRILLING CONTRACTOR:	Heath and Sherwood				
LOGGED BY:	Rex Brommecker	**LOG COMPLETED:**	05/03/94		
SIGNED:	Rex Brommecker				

TESTS

TYPE:	**ACID**				
DEPTH:	100	**DIP:**	45	**BEARING:**	360
DEPTH:	200	**DIP:**	43	**BEARING:**	360

KEN-94-02

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
0	23.3	O/B											
23.3	30.5	Srdt	cg	h				1	q				reddish-brown Timiskaming, 40% reddish trachyte clasts, trace jasper clasts, clasts 2-50mm in size, greenish matrix has slight foliation,
30.5	31.3	Srdt	cg	c	wsh			1	q	31	wsh	50	as above but clasts are elongated and foliation is developed,
31.3	34.6	Srdt	cg	s-l-(ak-fu)	ssh	0.1	py	3	q-l-ak	33	ssh	45	beige-green, deformation increases down-hole,
34.6	37.5	Srdt	cg	l-c	fault-bx			10	q-l				green, very angular, q-l-cemented fault breccia
37.5	51.4	Srdt	cg	h				2	q-l	47	S1	40	reddish-brown Timiskaming, 30% reddish trachyte clasts, mostly pebble sized clasts, greenish matrix, slight foliation,
51.4	53.3	Srdt	cg	h-ep		0.1 0.1	cp py	5	q-ep	52	S1	40	reddish-brown with green epidotised patches and veins, clast distribution as above,
53.3	69.08	Mg	mg-cg	ep									gray, chilled margin, blocky, totally unfoliated, late Nippissing? dyke.
69.08	72.4	Srdt	cg	h	wsh			2	q-l				reddish-brown,
72.4	78.63	Srdt	cg	s-(ak-fu)	ssh			5	q	76	ssh	55	beige-green, at 78.60 incipient seritisation is obvious, shear at good CA,
78.63	79.63	Srdt	cg	(s)	wsh			1	q	79	wsh	40	red-brown-beige, weakly sheared and altered,
79.63	84	Srdt	cg	(h)									red-brown,
84	89	Srdt	cg	s-(ak-fu)	ssh			2	q	85	ssh	30	beige-green, shearing and sericitisation gradational on either side,
89	99.36	Srdt	cg	(h)				1	q	93	S1	30	red-brown, minor shear at 95.3
99.36	107.1	Srdt	cg	s-(ak-fu)	ssh	0.1	py	5	q-ak	105.5	ssh	15	beige-green, strong shear at bad core angle,
107.1	114.1	Srdt	cg	ak-c	wsh	0.1	py	10	q-ak	109 112	wsh v	30 45	green-brown, main feature of this section is 10% q-ak-vns 2-10mm in width with 1-4mm sericitic margins, q-ak-vns are zoned: ak. on edges q. in center,
114.1	121.8	Srdt	cg	(h)				3	q	118.5	S1	35	brown-green, 10cm fine mafic dyke at 120.5,
121.8	124.5	Srdt	cg	s-(ak-fu)	msh			2	q-ak	122	msh	30	beige-green, slightly brecciated between 121.8-122.4,
124.5	126.8	Srdt	cg	s-ak-fu	ssh	0.1		15	q-ak	125	ssh	45	beige, randomly oriented q-vns. contain trace pyrite, gradational into moderately sheared rocks on either side,
126.8	134.5	Srdt	cg	s-(ak-fu)	msh			2	q	129	msh	40	beige-gray, less trachyte fragments evident,
134.5	136.64	Mg	fg-mg-dyke										gray, chilled margins, strongly magnetic, Matachewan?,

KEN-94-02

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
136.64	139.63	Srdt	cg	s-l-(fu)	msh	0.1	py	10	q-l	137.5	msh	45	beige-green, clasts not readily dissernable,
139.63	140.48	Mg	fg-mg-dyke										as dyke above,
140.48	147	Swt	mg	s	msh	0.1	py	5	q-ak	143	msh	50	beige-gray, 20% sericite matrix?, grains generally 1-2mm, 50% q- 30% feldspars, 2 1-3cm gray chert clasts,
147	150	Mg	fg-mg-dyke										as dyke above,
150	151.9	Swt	mg	s	msh			3	q-ak	151.2	msh	40	Swt as above,
151.9	154.1	Mg	fg-mg-dyke										gray, chilled margins, not very magnetic, Matachewan? lower contact sharp at 25 CA.
154.1	156.2	Swt	mg	s	msh			3	q-ak	155.5	msh	50	Swt as above but has 30cm section of centimetric bedding and not large clasts,
156.2	156.7	Sant	mg	s	msh			1	q	156.5	msh	45	white, 10% sericite, 70% 1-2mm quartz, 20% 1-2mm feldspar, all grains generally equal size and subangular,
156.7	168.7	Swt	mg	s	msh	1	py	10	q-py	162	msh	50	beige-brown, famous basal grit of the Timiskaming?, 60% 1-2mm quartz, 15% 1-2mm feldspar, 20% sericite, 5% 3-6mm subang. to subrounded quartz clasts, 10% pervasive q-ak-py veining, minor pyrite is also disseminated throughout,
168.7	172.52	Swt	mg	h	wsh	0.1 0.1	py h	3	q-py-h	170.5	wsh	35	red-brown, sedimentalogically as above, reddish due to hematite?, small seams specks and patches of hematite,
172.52	183.96	Swt	mg	h		0.1 0.1	py h	3	q-py-h	178	S1	30	as above but not significantly sheared,
183.96	184.3	ak-s-bx		ak-s	fault-bx			10	q-ak				beige-green, brecciated carbonate sericite rock, 30% sericite, 50% ankerite, upper contact sharp tectonic with a 30 CA,
184.3	185.7	ak-s		ak-s	ssh			10	q-ak	185	ssh	30	beige-green, sheared carbonate sericite rock, 30% sericite, 50% ankerite,
185.7	186.2	ak-s-bx		ak-s	fault-bx			10	q-ak				as brecciated carbonate sericite rock above,
186.2	189.2	ak-s		ak-s	ssh			10	q-ak				beige-green, sheared carbonate sericite rock, 30% sericite, 50% ankerite,
189.2	189.7	ak-fu		ak-fu	ssh	0.1	py	10	q-ak	189.5 189.6	ssh S2	15 20	green-beige, sheared carbonate-fuchsite rock, 50% ankerite, 30% fuchsite, second crenulation cleavage is evident,
189.7	206.5	ak-s-fu		ak-s-fu	ssh	0.1	py	10	q-ak	198	ssh	15	beige-green, carbonate-sericite fuchsite rock, 50% ak, 15% s, 15% fu, very low core angles, narrow quartz veins with a trace of pyrite at 196.6 and 198.4,

KEN-94-02

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
206.5	218.24	ak-fu		ak-fu	ssh	0.1	py	10	q-ak	207	ssh S2	5 30	green-beige, carbonate-fuchsite rock, 50% ak, 30% fu, low core angles for two cleavages, local brecciated zones, local disseminations of pyrite,

KEN-94-02

FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
30.5	31.3		411651	9	0.1	-5	26	2	1	44
31.3	32.2		411652	10	0.1	-5	19	1	1	25
32.2	34.6		411653	27	0.1	-5	25	1	1	29
34.6	36.6		411654	7	0.1	-5	29	2	1	47
36.6	37.5		411655	9	0.1	10	5	1	1	37
37.5	38.1		411656	5	0.1	-5	5	2	1	49
51.4	53.3		411657	2	0.1	-5	558	2	1	45
69.1	72.4		411658	9	0.1	-5	115	1	1	54
72.4	74.89		411659	14	0.1	-5	23	1	2	50
74.89	76.59		411660	10	0.1	-5	54	1	1	41
76.59	78.63		411661	10	0.1	-5	54	1	2	39
78.63	79.63		411662	7	0.1	-5	86	1	2	35
84	85.5		411663	17	0.1	-5	73	1	3	42
85.5	86.13		411664	14	0.1	-5	37	1	1	53
STANDARD		HR-9	411665	1690	0.4	440	9	19	52	8
86.13	86.5		411666	14	0.1	-5	51	1	3	58
86.5	89		411667	10	0.1	-5	41	1	1	33
95.3	95.55	minor shear with 4cm q-vn,	411668	10	0.1	-5	5	1	1	51
99.36	102.25		411669	2	0.1	-5	65	1	1	66
102.25	105.18		411670	-5	0.1	-5	45	1	3	32
105.18	107.1		411671	-5	0.1	-5	52	2	4	50
107.1	107.8		411672	2	0.1	-5	53	1	3	68
107.8	109.2		411673	3	0.1	-5	30	1	17	74
109.2	110.7		411674	5	0.1	5	17	1	4	65
110.7	112.7		411675	3	0.1	-5	14	1	1	71
112.7	114.1		411676	3	0.1	-5	13	1	2	62
121.8	122.4		411677	3	0.1	-5	5	1	1	52
122.4	124.5		411678	5	0.1	-5	56	1	1	37
124.5	126.8		411679	9	0.1	-5	71	1	6	34
STANDARD		HR-9	411680	1663	0.3	423	10	18	51	9
126.8	130.04		411681	3	0.1	-5	47	1	1	34
130.04	132.89		411682	7	0.1	-5	36	2	3	32
132.89	134.5		411683	5	0.1	-5	24	2	2	46
136.64	139.63		411684	2	0.1	-5	44	1	1	58
140.48	142.04		411685	15	0.1	-5	35	2	1	29
142.04	145.08		411686	10	0.1	-5	28	1	2	28
145.08	147		411687	12	0.1	12	30	3	1	30
154.1	156.2		411688	9	0.1	11	47	2	1	47
156.2	156.7		411689	3	0.1	22	40	1	2	33
156.7	157.28		411690	21	0.1	15	30	1	3	43
157.28	158.78		411691	2	0.1	-5	41	1	1	34
158.78	160.32		411692	24	0.1	41	52	1	3	31

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FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
160.32	163.37		411693	27	0.1	52	39	2	2	23
163.37	167.02		411694	15	0.1	18	35	1	5	38
STANDARD		HR-8	411695	27	0.8	54	9	3	15	9
167.02	167.42	80% q-vn, 1% py.	411696	79	0.1	29	35	1	3	28
167.42	168.17		411697	29	0.1	31	27	2	3	24
168.17	169.47		411698	14	0.2	31	29	2	2	25
171.38	171.9	5% q-py-h vns	411699	3	0.1	-5	22	1	1	47
181.66	183.96		411700	2	0.2	32	29	2	1	20
183.96	184.3		411701	10	0.1	13	45	1	1	54
184.3	185.7		411702	12	0.1	15	36	2	2	22
185.7	186.2		411703	2	0.1	17	95	1	2	42
186.2	187.76		411704	24	0.1	16	41	1	1	29
187.76	189.2		411705	2	0.1	20	41	1	2	36
189.2	189.7		411706	21	0.1	18	42	4	3	50
189.7	190.8		411707	2	0.1	-5	122	1	1	25
190.8	193.85		411708	5	0.1	10	36	1	2	32
193.85	196.6		411709	10	0.1	-5	25	2	2	57
196.6	197	80% q-vn, tr. py	411710	2	0.1	-5	48	1	1	33
197	198.4		411711	2	0.1	-5	62	1	1	29
198.4	198.65	80% q-vn, tr. py.	411712	24	0.1	-5	27	3	2	25
198.65	199.95		411713	14	0.1	-5	22	1	1	27
199.95	203		411714	2	0.1	9	25	1	1	31
STANDARD		HR-9 +HR-8 50/50	411715	1042	0.6	283	10	10	36	9
203	206.5		411716	3	0.1	12	48	1	2	33
206.5	209.09		411717	3	0.1	-5	12	1	4	27
209.09	212.14		411718	2	0.1	-5	22	1	3	31
212.14	215.19		411719	3	0.1	-5	37	1	3	34
215.19	218.24		411720	-5	0.1	-5	32	32	3	33

KEN-94-03

HOLE NUMBER:	KEN-94-03				
GRID LOCATION:	L84+00E	75+00N	**CLAIM NUMBER:**		1186327
SURVEY LOCATION (UTM):	568405 mE	5337495 mN	**ELEVATION:**		303m
CORE SIZE:	BQ	**LENGTH:**	287.43m		
BEARING:	180	**DIP:**	50		
START:	01/03/94	**FINISH:**	05/03/94		
CORE STORED AT:	Kirkland Lake Industrial Plaza				
DRILLING CONTRACTOR:	Heath and Sherwood				
LOGGED BY:	Rex Brommecker	LOG COMPLETED:	15/03/94		
SIGNED:	Rex Brommecker				

TESTS

TYPE:	**ACID**				
DEPTH:	105	**DIP:**	49	**BEARING:**	180
DEPTH:	209	**DIP:**	48	**BEARING:**	180
DEPTH:	287	**DIP:**	46	**BEARING:**	180

KEN-94-03

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
0	65.14	O/B											
65.14	92.65	Sslp						0.1	h-q-l	88.5	S0	40	gray-green, massive, rare bedding is hard to discern, occassional hematitic fracture, rare isolated drop-stones 5-10mm, eg. dropstone at 89m, rare wacke bed, typical Gowganda,
92.65	95.38	Sslp	mt					0.1	h-q-l				as above but magnetic,
95.38	114.61	Sslp-Swp	mt					0.1	h-q-l	97 101	S0 S0	45 45	gray-green, bedded siltstone and wacke, magnetic, beds generally 1cm to 1m wide, no grading, strong mafic component 50-70%, quartz is rare, 10-30% feldspar, rare 15-200mm dropstones, Gowganda,
114.61	119	Sslp	mt					0.1	h-q-l				gray-green, massive siltstone, sharp upper contact and gradational into wacke below, Gowganda,
119	132.45	Swp	mt										gray-green, gradational upper and lower contacts, Gowganda,
132.45	135	Srdp-Swp	mt							133.53	S0	45	gray-green-pink, pebble conglomerate and course wacke beds 10-100cm thick, pebble conglomerate is matrix supported with subangular clasts, 30% mafic, 30% sedimentary, 40% red trachyte and syenite clasts, flame structures indicate tops up hole, Gowganda,
135	147.5	Sslp-Swp	mt					0.1	h-q-l	137 139 146	S0 S0 S1	50 75 30	as Sslp-Swp above but wacke units are disrupted and chaotic due to soft sediment deformation, Gowganda,
147.5	160.62	Swp-Srdp	mt							156	S0	30	course wacke to pebble conglomerate similar to Srdp-Swp above, large drop-stone at 157.88, flames indicate top up-hole, beds 5cm-100cm thick, Gowganda,
160.62	162.05	Srdp	mt							162	S0	30	gray-green, pebble conglomerate, matrix supported with subangular clasts, sharp contact at both sides, weak foliation, 40% mafic 20% red felsic trachyte and syenite clasts 40% intermediate clasts, drop-stone at top of bed, rare jasper fragments, Gowganda,
162.05	164.47	Swp-Srdp	mt							163 164.5	S0 S0	70 45	as Swp-Srdp above, lower contact sharp, Gowganda

KEN-94-03

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
164.47	174.9	Srd(p?)	mt			0.1	py	0.1	q-l	170 173	S1 S1	45 40	gray-green-pink, clast ave. 1cm-5cm, matrix support, subrounded clasts, 50% mafic 40% reddish trachyte and syenite clasts, trace jasper clasts, weak foliation increases down-hole, brecciation begins near lower contact, probably Gowganda but deformation makes a positive identification dubious, could be Timiskaming,
174.9	175.56	Fault-bx		c-l	fault-bx	0.1	py	10	q-l	175	S1	50	gray-green, fault breccia with angular clasts in matrix of rock flour and quartz-calcite, minor fabric elongation along S1,
175.56	183.46	ak-fu		ak-fu	ssh			70 10	ak-fu q	178 180	ssh ssh	80 70	white-light green, strongly sheared green-carbonate zone, 70% ak, 20% fu, 10% q, 5% s,
183.46	193.7	Mv	fg	s-ak		0.1	py	20	q	187	S1	40	beige-green, intensely altered mafic volcanic, alteration decreasing down-hole, extreme bleaching due to sericite, local late chloritic fracturing and veining,
193.7	200.87	Mv	fg	c-ak-s				5	q-ak	197	S1	40	green-beige, moderately altered mafic volcanic, less bleached and more chlorite than above,
200.87	203.09	Mv	fg	s-ak		0.1	py	5	q-ak	203	S1	50	beige-green, intensely altered mafic volcanic,
203.09	218.24	Mv	fg	c-ak-s				3	q-ak				green-beige, moderately altered mafic volcanic,
218.24	221.28	Mv	fg	ak-s-sil	wsh	0.1	py	5	q	221	S1	45	beige-green, intensely altered mafic volcanic,
221.28	223.43	Mv	fg	ak-s-sil	msh	0.1	py	5	q	222	msh	55	beige-green, intensely altered mafic volcanic, shearing increasing down-hole,
223.43	224.03	ak-fu		ak-fu	ssh			30	ak-q	224	ssh	70	white-light green, ankerite- fuchsite rock derived from mafic volcanics, strongly sheared at good CA.,
224.03	225.75	Mv	fg	ak-s-sil	msh	0.1	py	5	q	225	msh	55	beige-green, intensely altered mafic volcanic,
225.75	260.8	Mv	fg	ak-s		0.1	py	15	q-ak	240	S1	45	green-beige, moderately altered mafic volcanic, possible pillow selvages at 241 to 243, local pyrite and quartz veinlets well developed at 254.42-255.05 and 260.0-260.91
260.8	266.75	ak-s-(Swt)		ak-s-sil	msh	0.1	py	10	q-ak	262	msh	40	beige, sericite-ankerite- quartz rock, trace fuchsite and pyrite, locally recognisable patches of Swt with 3-5mm quartz "grit",
266.75	271.65	ak-fu		ak-fu	msh			30	q-ak	270	msh	40	white-light green, ankerite- fuchsite rock, 70% ak and 20% fu,

KEN-94-03

FROM	TO	ROCK CODE	PRIMARY FEATURES	ALTERATION CODES	STRUCT. CODES	SULPHIDES %	TYPE	VEINS %	TYPE	LOCATION	STRUCTURE	CORE ANGLE	COMMENTS
271.65	277.65	s-ak-q-(Srdt)		ak-s	ssh			30	q-ak	276.3	ssh	50	beige-white-green, extremely altered and sheared rock, locally quartz and jasper pebbles can be observed so the protolith is probably Srdt, all contacts are sheared,
277.65	280	Swt-fault-bx		s-ak	msh-bx	0.1	py	30	q-l-ak	279 280	ft-bx msh	5 55	reddish-beige, 50% is sheared Swt with 3-5mm quartz "grit" and 50% is fault breccias often at very low CA, fault breccias are late q-l-cemented and vuggy, Swt is similar to that found near the bottom of KEN-94-02,
280	282.84	Swt		s-ak	msh	0.1	py	5	q-ak	282	msh	45	reddish-beige, 10% 3-5mm quartz grit" in a fine matrix, grit is subangular, no obvious bedding,
282.84	285.5	fault-bx		s-ak-l	fault-bx	0.1	py	10	q-l				reddish-brown-white-gray, late fault breccia cemented with quartz-calcite and rock-flour, generally angular clasts of Swt, foliated clasts are randomly oriented, late vuggy fractures cut early quartz-ankerite veins, local blackened graphitic appearance,
285.5	287.43	Swt		s-(ak)	msh			5	q-ak	287	msh	50	Swt as above, "grit"

KEN-94-03

FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
167.45	167.75	tr. py in Srd	411721	10	0.1	-5	63	1	5	110
174.5	174.9	Srd deformed	411722	10	0.1	-5	68	2	1	151
174.9	175.56	fault-bx, tr. py	411723	17	0.2	-5	19	2	2	64
175.56	177.2		411724	-5	0.1	-5	113	1	1	59
177.2	178.61		411725	2	0.1	-5	25	1	1	62
178.61	180.1		411726	2	0.1	-5	22	1	1	32
180.1	181.66		411727	-5	0.1	-5	26	7	1	26
181.66	183.46		411728	2	0.1	-5	95	1	11	34
183.46	184.71		411729	3	0.1	-5	88	2	3	39
STANDARD		HR-8	411730	31	0.8	55	9	3	15	10
184.71	186.15		411731	2	0.1	15	74	1	1	37
186.15	187.76		411732	-5	0.1	10	71	3	1	42
187.76	188.36		411733	-5	0.1	-5	100	1	1	35
188.36	189.16	30% q-vn, tr. py	411734	2	0.1	-5	94	1	1	39
189.16	190.8		411735	7	0.1	-5	66	2	1	45
192.2	192.5	40% q-vn	411736	5	0.1	-5	48	2	1	34
200.87	203.09		411737	-5	0.1	-5	82	1	1	34
214	216.7		411738	9	0.1	-5	66	1	1	61
218.24	221.28		411739	2	0.1	-5	68	2	1	63
221.28	223.43		411740	5	0.1	-5	50	1	1	53
223.43	224.03		411741	3	0.1	-5	43	2	1	65
224.03	225.75		411742	-5	0.1	-5	80	1	1	59
228.56	228.96		411743	-5	0.1	-5	128	1	1	42
228.96	230.43		411744	2	0.1	-5	66	1	1	62
STANDARD		HR-9	411745	1666	0.4	443	10	17	53	10
244.62	245.06		411746	2	0.1	-5	61	1	1	47
251.12	252.46		411747	-5	0.1	-5	66	1	1	42
252.46	254.42		411748	14	0.1	-5	68	1	1	68
254.42	255.05		411749	12	0.1	-5	82	2	1	44
255.05	256.1		411750	3	0.1	-5	53	2	1	68
261	257.86		411751	2	0.1	-5	77	2	1	59
257.86	260		411752	3	0.1	-5	107	1	1	66
260	260.91		411753	7	0.1	-5	69	2	1	59
260.91	263.96		411754	10	0.1	-5	84	1	1	40
263.96	265.2		411755	5	0.1	-5	44	1	1	37
265.2	266.75		411756	2	0.1	-5	67	1	1	31
266.75	268.27		411757	5	0.1	28	54	1	2	42
268.27	270.05		411758	7	0.1	15	33	1	2	43
270.05	271.65		411759	-5	0.1	-5	14	1	2	42
271.65	273.1		411760	-5	0.3	-5	49	1	1	53
273.1	276.15		411761	2	0.1	-5	113	2	1	55
276.15	277.65		411762	14	0.2	-5	92	3	2	62
277.65	280		411763	15	0.1	48	48	3	3	35

KEN-94-03

FROM	TO	COMMENTS	SAMPLE	Au (PPB)	Ag (PPM)	As (PPM)	Cu (PPM)	Mo (PPM)	Pb (PPM)	Zn (PPM)
280	282.84		411764	3	0.1	22	42	2	1	28
STANDARD		HR-8	411765	27	0.9	56	9	3	14	8
282.84	285.5		411766	12	0.1	40	42	1	1	47
285.5	287.43		411767	9	0.1	21	29	3	1	35

APPENDIX V

REPORT ON THE 1994 GEOPHYSICAL PROGRAM ON THE KENOGAMI LAKE EAST PROJECT (4045)

Prepared by:

Rex Brommecker
Roman Tykajlo

Date: May 20, 1994

42A01SE2026 om94-071 GRENFELL

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Table 2: IP/resistivity Survey Summary 5

Location

The Kenogami Lake East Project is located 15 kilometres WSW of Kirkland Lake in Eby and Grenfell Townships (Figure 1). The centre of the project is located at approximately longitude 80° 12' and latitude 48° 06' on NTS map sheet 42A/1.

Access

The property can be accessed from highway 11 at the town of Kenogami. Private lands surround the lake so permission must be requested for access.

Claim Status

The property consists of 5 claims (16 units) covering 256 hectares (Table 1, Figure 2). The claims are under option from Premier Exploration Inc. and Mr. Michael Leahy.

Table 1: Kenogami Lake East Claim List

CLAIM NUMBER	UNITS	HECTARES	TOWNSHIP
1186326	2	32	EBY
1186327	2	32	EBY
1186328	1	16	EBY
1186329	9	144	EBY
1187142	2	32	EBY
5 claims	**16**	**256**	

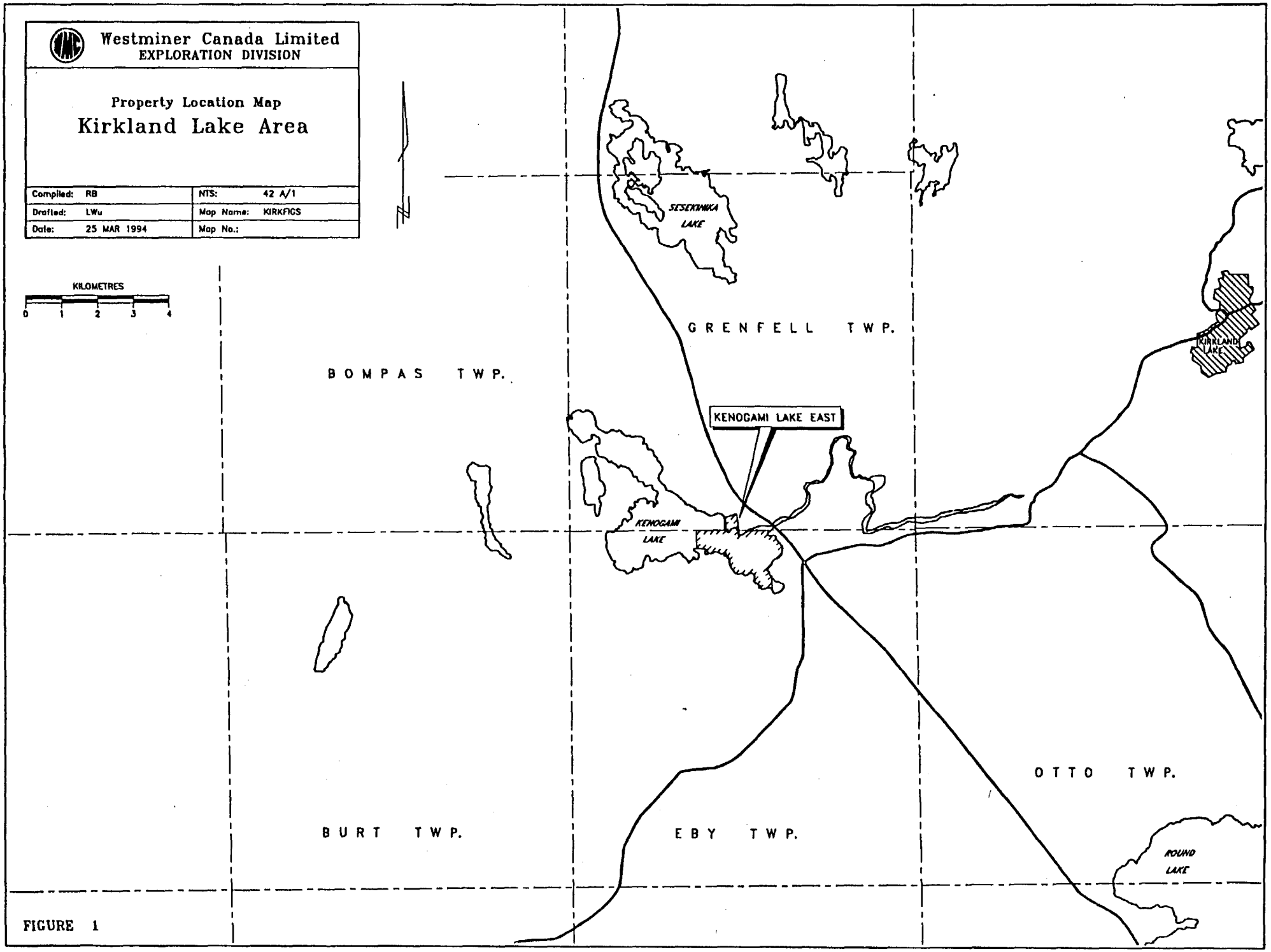
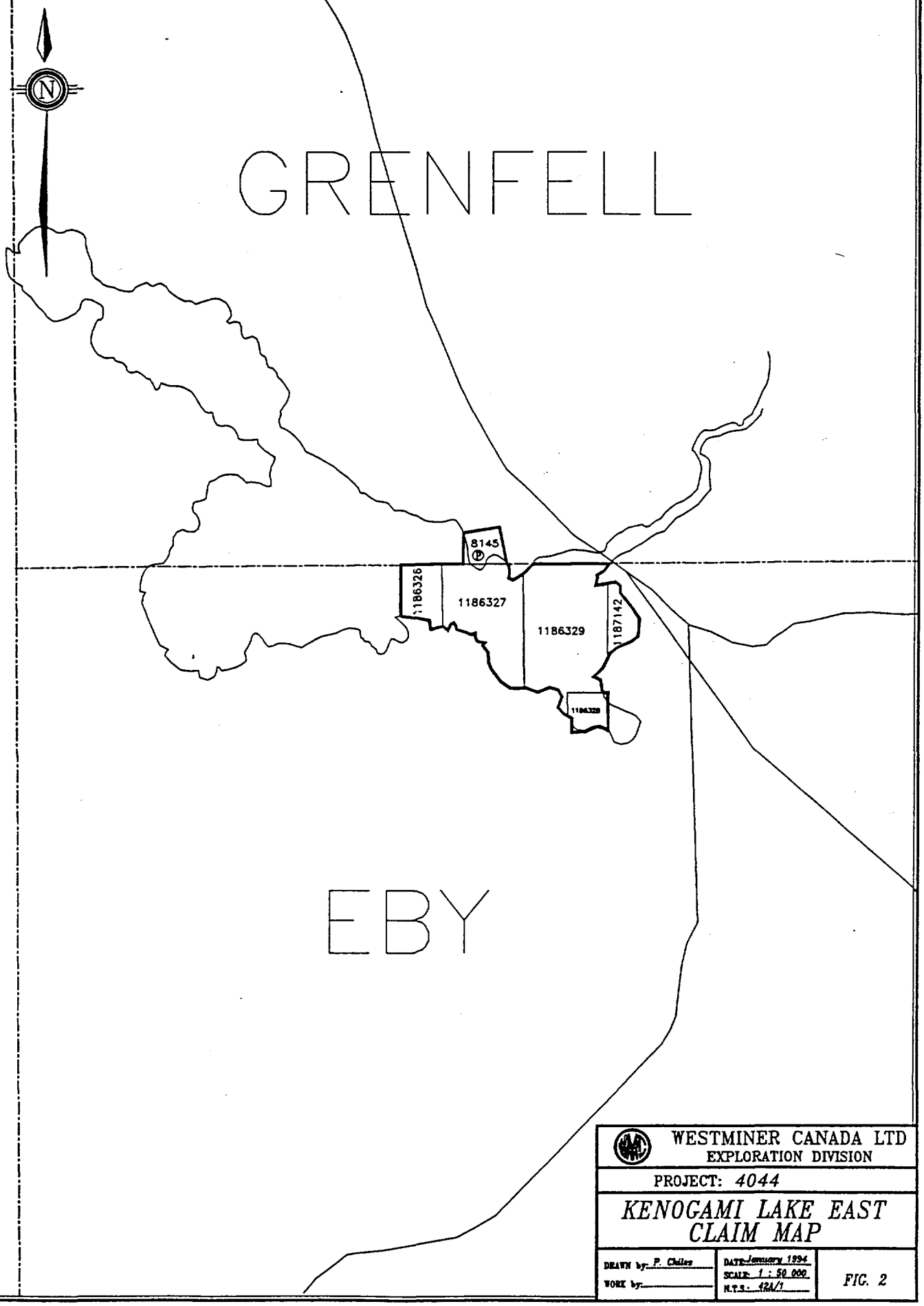

Westminer Canada Limited
EXPLORATION DIVISION
Property Location Map
Kirkland Lake Area
Compiled: RB
NTS: 42 A/1
Drafted: LWu
Map Name: KIRKFIGS
Date: 25 MAR 1994
Map No.:
KILOMETRES
0 1 2 3 4
SESEKINIKA LAKE
GRENFELL TWP.
KIRKLAND LAKE
BOMPAS TWP.
KENOGAMI LAKE EAST
KENOGAMI LAKE
OTTO TWP.
BURT TWP.
EBY TWP.
ROUND LAKE

FIGURE 1



WESTMINER CANADA LTD
EXPLORATION DIVISION

PROJECT: 4044

KENOGAMI LAKE EAST CLAIM MAP

DRAWN by: P. Chiles WORK by:	DATE: January 1994 SCALE: 1 : 50 000 N.T.S.: 42A/1	FIG. 2

Regional Geology

The property is in the southwestern Abitibi Greenstone belt of the Superior Province. It lies 20 kilometres WSW and along strike of the famous gold deposits located at Kirkland Lake. Combined, the Kirkland Lake deposits produced more than 24 million ounces of gold (Meyer, 1992).

The geology of the Kirkland Lake area (Figure 3) has been most recently described by Jensen and Langford, 1985 who concentrated on the stratigraphy of the area, and, Hodgson et al., 1990 who concentrated on the structure of the area. The stratigraphic nomenclature of Jensen and Langford, 1985 is used in this report.

The area is generally underlain by Archean ultramafic to mafic volcanic rocks of the Kinojevis and Larder Lake Groups. The Timiskaming Group, which consists of both late sedimentary and alkalic volcanic rocks unconformably overlies the Abitibi volcanics and is spatially related to the Larder Lake-Cadillac "Break". The Abitibi volcanics and Timiskaming Group rocks are intruded by various Archean aged felsic to intermediate granitic to syenitic rocks. The Archean rocks are locally unconformably overlain by embayments of flat lying Proterozoic sediments of the Gowganda Formation. The Gowganda Formation consists of conglomerates, wackes, and siltstones of glaciogenic origin.

The Archean rocks have generally been metamorphosed to greenshist facies and suffered several periods of ductile, cleavage forming deformation. Archean stratigraphy dips moderately to steeply and is complexly folded and faulted. The Larder Lake-Cadillac Break is an important regional-scale deformation zone which is spatially related to large gold deposits from Matachewan (Ont.) to Val d'Or (Que.). The Kirkland Lake gold deposits are hosted by quartz-veins in a parallel structure (the Kirkland Lake Main Break) less than 2km from the Larder Lake-Cadillac Break.

Local Geology

The project area is covered mainly by Kenogami Lake (Figure 3). The area surrounding the lake has been mapped in detail by Thomson, 1950. Projecting the geology under the lake indicates that the project area is underlain by mafic volcanic rock in the south, Timiskaming Group rocks in the centre and Gowganda Formation in the north. The Larder Lake-Cadillac Break passes through the southern part of the claim group. The northern part of the claim group is directly along strike of the Kirkland Lake Main Break.

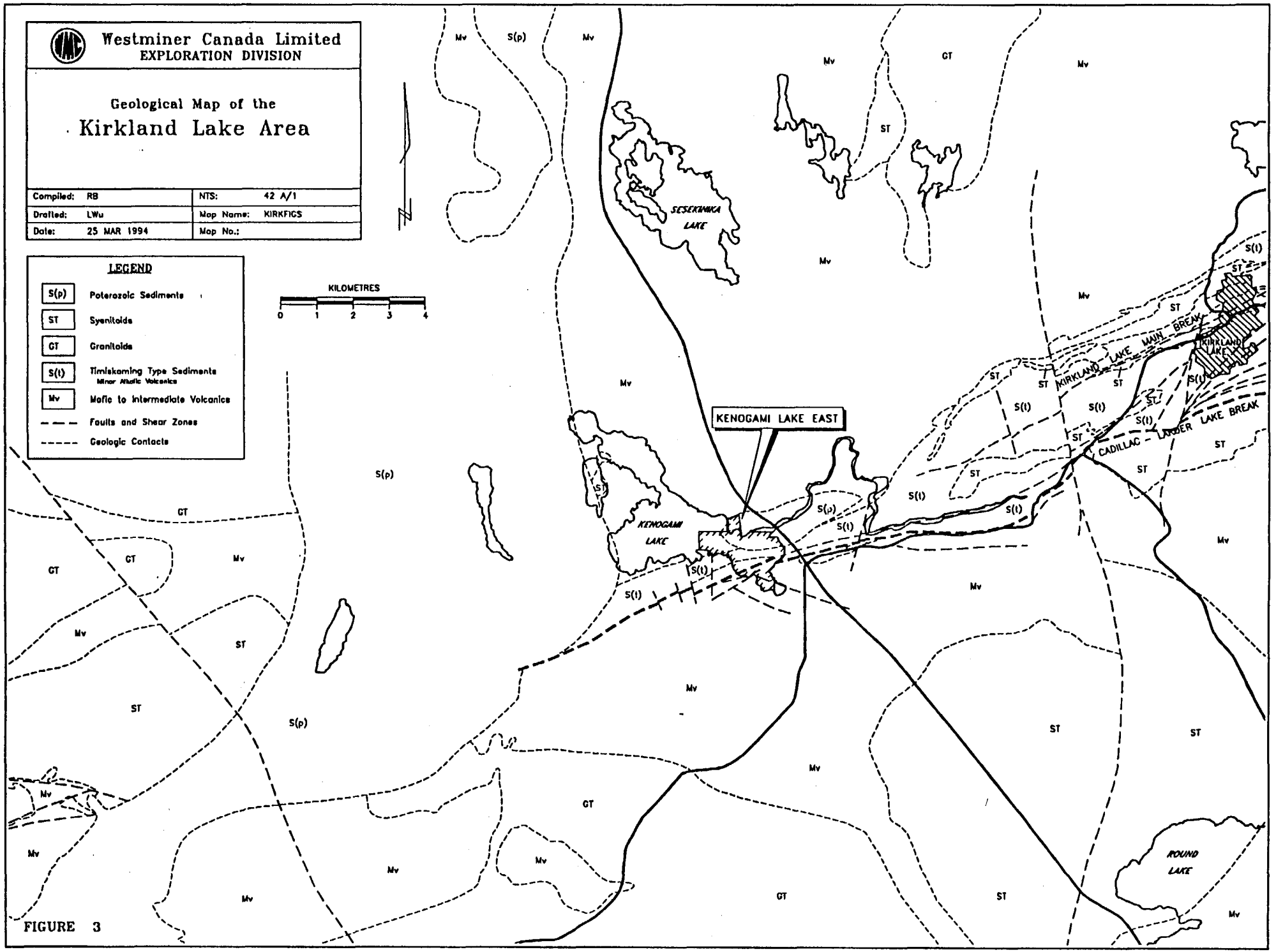

Westminer Canada Limited
EXPLORATION DIVISION
Geological Map of the
Kirkland Lake Area
Compiled: RB
NTS: 42 A/1
Drafted: LWu
Map Name: KIRKFIGS
Date: 25 MAR 1994
Map No.:
LEGEND
S(p) Poterozoic Sediments
ST Syenitoids
GT Granitoids
S(t) Timiskaming Type Sediments
Minor Mafic Volcanics
Mv Mafic to Intermediate Volcanics
Faults and Shear Zones
Geologic Contacts
KILOMETRES
0 1 2 3 4
KENOGAMI LAKE EAST
SESEKINIKA LAKE
KENOGAMI LAKE
KIRKLAND LAKE MAIN BREAK
KIRKLAND LAKE
CADILLAC - LARDER LAKE BREAK
ROUND LAKE

FIGURE 3

Target and Rationale

The rocks beneath the lake have an extremely good chance of hosting a large gold deposit given the proximity to the Larder Lake-Cadillac Break and the potential that the Kirkland Lake Main Break passes through the northern part of the property. The lake cover has hindered effective exploration of this very high potential area. A combination of detailed modern geophysical methods including induced polarisation and drilling should effectively evaluate this area.

Previous Work

Little previous work has been done on the property. A small amount of drilling has been done in the SE bay of Kenogami Lake. The following is a summary of previous work done on the lake.

1939 - Siscoe Gold Mines

Siscoe gold mines drilled two short holes for a total of 773' off of the point on the eastern shore of the SE bay of Kenogami Lake. Syenite dykes and altered lava were intersected. The best values reported were 0.17$/oz.

1948 - Burtho Gold Mines Ltd.

Burtho drilled 7 diamond drill holes for a total of 5066' in the vicinity of the SE bay of Kenogami Lake. A major ENE-trending shear zone was outlined. The zone locally cut syenite and "porphyry". A letter indicated that no gold values were obtained but no specific values were reported.

1983 - Gren-Teck Kirkland Resources Ltd.

A ground magnetic and VLF survey was done over the property at 100m line spacing.

1985 - Premier Explorations Inc.

An airborne magnetic and VLF survey was flown.

Previous Work by Westminer Canada

No previous work has been done by Westminer Canada on this project.

Geophysics Program for 1994

Introduction

Geophysical work on the Kenogami Lake East Project consisted of gridding, total field magnetic, and IP/resistivity surveys over the Kenogami Lake East Grid (Figure 4).

The purpose of magnetic surveying was to, potentially, map extension of probable east-northeast striking gold bearing structures and lithology westward through Kenogami Lake. IP/resistivity surveying was completed to test for near surface (down to approximately 85m) occurrence of significant disseminated sulphide mineralization spatially associated with possible gold bearing fault structures

Gridding

A total of 19.8 km of gridding was completed over lake ice by Thomas Obradovich of Kirkland Lake, Ontario, in January 1994. Grid pickets were placed at 25m centres along 100m spaced lines.

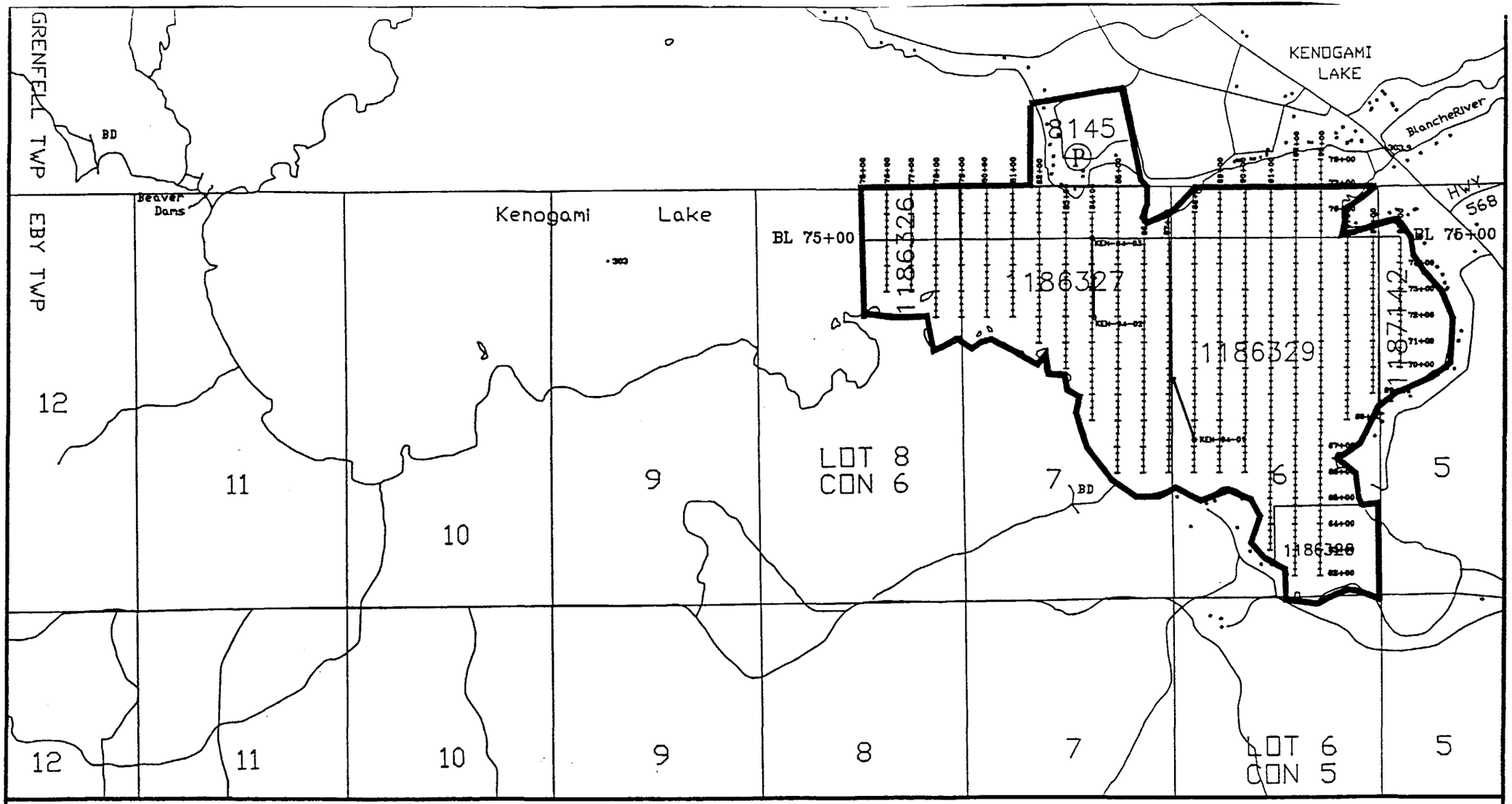
Magnetic Survey

A total of 35.9 line km was surveyed by Mertens MacNeil Geophysical Ground Surveys Ltd. of Guelph, Ontario, in January and February 1994.

Magnetic data was collected at 25m intervals along 50m spaced lines. Positioning between picketed 100m lines was estimated by the survey operator.

A "Survey Logistics and Technical Report" by Mertens MacNeil Ground Geophysical Survey Ltd. is included in Appendix A.

An EDA OMNIPLUS portable, microprocessor based field magnetometer and base station system pair was used for the survey. Diurnal drift corrections were applied to field data automatically using instrument resident software. The OMNIPLUS system utilizes a proton precession sensor carried on an extendable pole to measure the earth's total field magnetic intensity to an absolute accuracy of 1nT. Detailed instrument specifications are presented in Appendix B.



FROM BASE MAP 20 17 5500 53200

FIGURE 4

WESTMINER CANADA LTD
Div. EXPLORATION

KENOGAMI LAKE EAST

GRID LINE LOCATION MAP

DRAWN by: REX	DATE: MAY 1994	PLAN NO.
WORK by: REX	SCALE: 1:20000	4045-07-03
	N.T.S.: 42 A / 1	

IP-resistivity Survey

Approximately 6.35 line km of surveying was completed by Mertens MacNeil Geophysical Ground Surveys Ltd. in January and February 1994, using Phoenix IPT-1 transmitting, and Turbo IPV-4 receiving equipment.

IP-resistivity surveying was completed through lake ice using a dipole-dipole array with electrode spacing of a=50m, and n=1 through 6, thereby achieving an effective depth of search of approximately 85m beneath lake bottom. Current and potential electrodes were lowered to the lakebottom through holes in lake ice.

The IPT-1 transmitter, manufactured by Phoenix Geophysics Limited of Scarborough, Ontario, is a lightweight, portable, variable frequency transmitter for time domain, frequency domain, and phase IP surveying. The instrument was operated in phase mode, transmitting at a frequency of 1.0 Hz during the survey.

The Turbo IPV-4 receiver, manufactured by Phoenix Geophysics Limited of Scarborough, Ontario, is a digital IP receiver capable of phase domain measurements of six dipoles at a time.

IP/resistivity survey instrument specifications are presented in Appendix C.

The grid lines surveyed, line kilometerage of surveying, and pseudosection Figure numbers are summarized in Table 2. The grid lines surveyed are illustrated in Figure 6.

GRID LINE	LINE KM	PSEUDOSECTION
L84+00E	0.875	Figure 7a
L86+00E	1.000	Figure 7b
L88+00E	1.075	Figure 7c
L90+00E	1.100	Figure 7d
L92+00E	1.675	Figure 7e
L94+00E	0.625	Figure 7f
Total Line km	**6.35**	

Table 2: IP/resistivity Survey summary

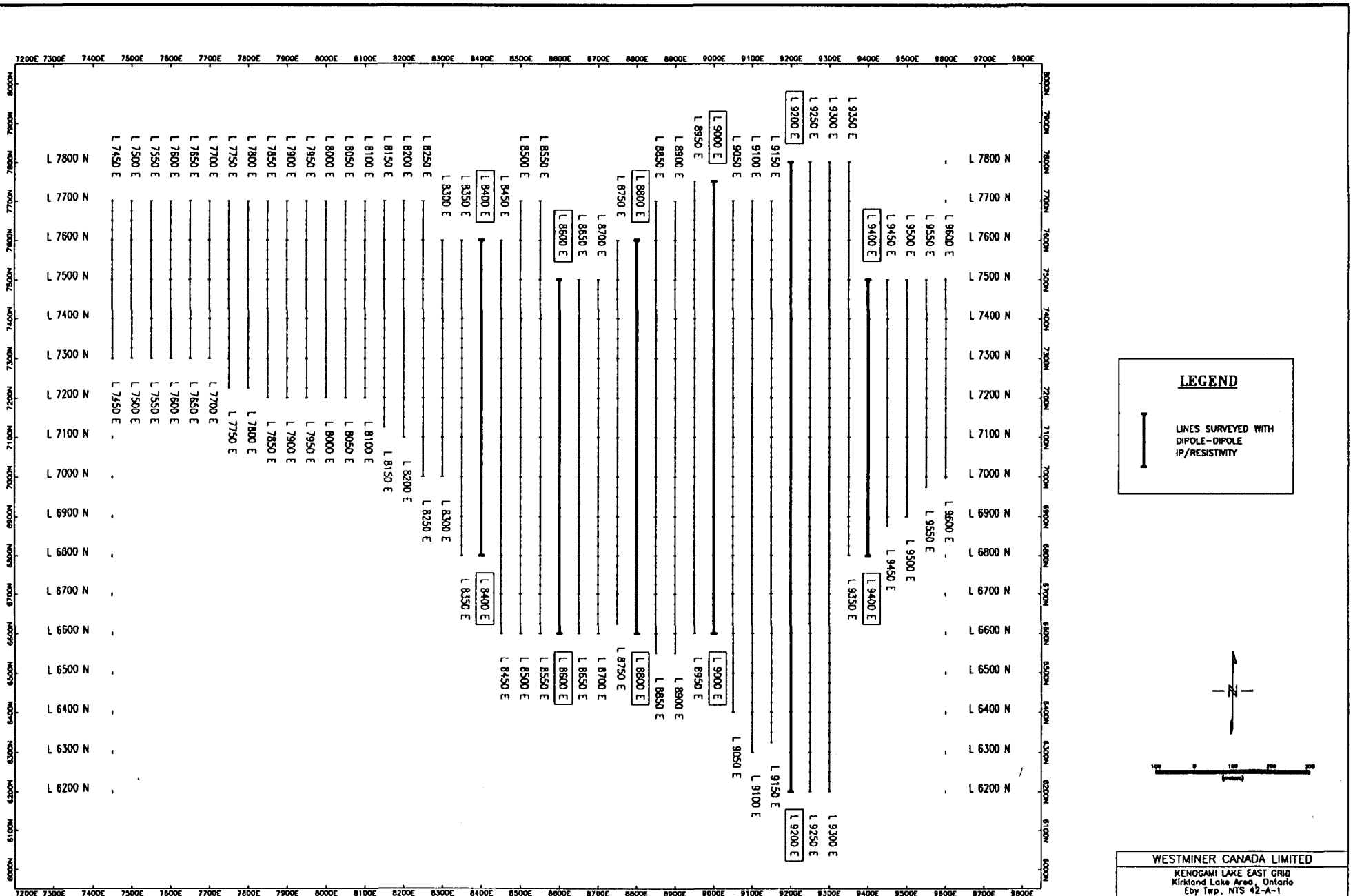

LEGEND
LINES SURVEYED WITH DIPOLE-DIPOLE IP/RESISTIVITY
N
WESTMINER CANADA LIMITED
KENOGAMI LAKE EAST GRID
Kirkland Lake Area, Ontario
Eby Twp, NTS 42-A-1
IP / RESISTIVITY SURVEY
Surveyed Line Location Map
Surveyed by: Mertens and MacNeil Ltd., Jan 1994

FIGURE 6

Geophysical Survey Results & Interpretation

Contours of diurnal drift corrected total field magnetic data are presented in Figure 5a, with posted diurnal drift corrected data in Figure 5b. IP/resistivity pseudosections are presented as Figures 7a through 7f.

Magnetic contours indicate a general east-northeast to northeast lithologic strike beneath Lake Kenogami (Figure 5a). A large amplitude (1200nT), circular to elliptically shaped anomaly was partially defined in the northwest corner of the surveyed grid.

There were no significant IP anomalies detected over the lines surveyed, although several very weak IP/high resistivity anomalies appear coincident with magnetic flank anomalies.

The most significant features, interpreted from magnetic and IP\resistivity data are compiled in Figure 8, and include:

AA': a northeast striking fault.

BB': a northeast striking fault parallel to AA', with very weak IP anomalies and weak resistivity highs coincident with the fault.

CC': an arcuate splay fault from BB'.

DD': an arcuate fault and/or lithological contact zone.

EE': a sharp fault contact truncating magnetic lithologies to the north from less magnetic lithologies to the south.

FF': the offset westward extension of fault EE'.

GG': a possible north-northeast striking dyke, offset along inferred faults BB', CC', DD' and EE'.

HH': discrete, moderately magnetic, lithological marker units.

Conclusions:

Magnetic surveying successfully mapped a family of throughgoing, east-northeast striking structures through the eastern half of Kenogami Lake.

IP/resistivity surveying indicated that no significant disseminated sulphides are associated with structures to a depth of approximately 85m.

Recommendations:

It is recommended to drill test structures BB' and CC' below 85m depth, with a single hole on L88+00E, where very weak indications of polarization occur coincident with inferred structure.

It is recommended to drill test structure EE' / FF', below 85m depth, with a single hole on L84+00E, where magnetic data indicates a major truncation of lithologic trends.

References

Hodgson, C.J., and Hamilton, J.V., 1990. Structural setting of gold deposits and the tectonic evolution of the Timmins-Kirkland Lake area, southwestern Abitibi Greenstone Belt; in Gold and Base Metal Mineralization in the Abitibi Subprovince, Canada with emphasis on the Quebec Segment, Ho, S.E., Robert, F., and Groves, D.I., eds., pp. 101-120.

Jensen, L.S., and Langford, F.F., 1985, Geology and petrogenesis of the Archean Abitibi Belt in the Kirkland Lake area, Ontario: Ontario Geological Survey, Miscellaneous Paper 123, 130p.

Jensen, L.S., 198?, Open File Map 139, 1 Map.

Meyer, G., Guindon, D., Boucher, F.M., Madon, Z., 1992. Annual Report for the Kirkland Lake Resident Geologist's District 1992, in OGS Miscellaneous Paper 161.

Thomson, J.E., 1950. Geology of Teck Township and the Kenogami Lake Area, Kirkland Lake Gold Belt, ODM Annual Report for 1948, Volume 57, Part 5. 196p.

KENOGAMI LAKE EAST PROJECT

APPENDIX A

LOGISTICAL & TECHNICAL REPORT

MERTENS MACNEIL
GROUND GEOPHYSICAL SURVEYS LTD.

Mertens MacNeil
Geophysical Ground Surveys Ltd.

LOGISTICAL & TECHNICAL REPORT

WESTMINER CANADA LTD

Exploration Division

PROJECT:

Magnetometer and Induced Polarization Survey

Kenogami Lake East

Kirkland Lake, Ontario

February / 1994

Box 1682, Guelph Ontario N1H 6Z9 • Box 1083, Sydney Nova Scotia B1P 6J7

Mertens MacNeil
Geophysical Ground Surveys Ltd.

LOGISTICAL & TECHNICAL REPORT

Mertens & MacNeil Geophysical Ground Surveys Ltd. was contracted to carry out a Magnetometer and Induced Polarization Surveys on this project.

Magnetometer Survey:

1) Total Survey: 35.9 km.
2) Reading Interval: 25 meters
3) Base Station Interval: 20 sec
4) Data to disk in Geosoft Format
5) Equipment: EDA Omni for Base Station and Field readings

Induced Polarization Survey

1) Total Survey: 6.35 km.
2) Equipment: Receiver- Phoenix IPV-4
   Transmitter- Phoenix IPT-1
   Power Source- 3.0 kw
3) Spread: "a" = 50 meters
4) Separations: "n" = 1 to 6
5) Frequency: 1.0 hz
6) Phase Shift in milliradians
7) Data and Plots in Geosoft Format
   Colour plots were provided

Survey Stations: All stations are in relation to the baseline.

Mobilization:

The crew travelled to Kirkland Lake, Ontario by truck. The grid was accessed by truck and snowmobile from a motel in Kirkland Lake, Ontario.

Accommodation:

Motel in the Kirkland Lake, Ontario.

Crew:

Ron Mertens
RR # 5
Belwood, Ont

Jack MacNeil
Box 1682
Guelph, Ont

Dave Gouthro
Frenchvale
N.S.

Kirk Morrison
Sydney
N.S.

Kevin MacKenzie
Sydney
N.S.

Shaun MacDonald
Toronto
Ontario

Alan MacDonald
Sydney
N.S.

If further information is required please call or write:

Ron Mertens
Mertens & MacNeil
Box 1682
Guelph, Ontario
N1H 6Z9
Phone: 519-856-4431
Fax: 519-837-2268

Report by;

Ron Mertens

KENOGAMI LAKE EAST PROJECT

APPENDIX B

TOTAL MAGNETIC FIELD SURVEY

INSTRUMENT SPECIFICATIONS

Specifications

OMNI System Specifications

Operating Environment -40C to +55C; 0-100% relative humidity; weatherproof

Power Supply Non-magnetic rechargeable sealed lead-acid battery or belt; alkaline battery belt; or 12V DC power source option for base station operation.

Battery Life 1,700 to 5,000 readings, for sealed lead acid power supply, depending upon ambient temperature and rate of readings.

Weights and Dimensions

Instrument Console
3.8 kg, 122 x 246 x 210 mm

VLF Sensor Head
0.9 kg, 140 dia. x 130 mm

VLF Electronics Module
1.7 kg, 280 x 190 x 75 mm

Standard Rechargeable Battery
1.8 kg, 138 x 95 x 75 mm

Standard Rechargeable Battery Belt
1.8 kg, 540 x 100 x 40 mm

Heavy Duty Rechargeable Battery
2.0 kg, 138 x 115 x 75 mm

Alkaline Battery Belt
1.2 kg, 540 x 100 x 40 mm

Magnetometer Sensor
1.2 kg, 56mm dia. x 200mm

Gradient Sensor
(0.5m separation - standard)
2.1 kg, 56mm dia. x 790mm

Gradient Sensor
(1.0m separation - optional)
2.2 kg, 56mm dia. x 1300mm

Display
Custom designed, rugged liquid crystal display with an operating temperature range from -40C to +55C. The display contains six numeric digits, decimal point, battery status monitor, signal decay rate and signal amplitude monitor and function descriptors.

Magnetometer Component Specifications

Dynamic Range 18,000 to 110,000 gammas. Roll-over display feature suppresses first significant digit upon exceeding 100,000 gammas.

Tuning Method Tuning value is calculated accurately using a specially developed tuning algorithm.

Automatic Fine Tuning ±15% relative to ambient field strength of last stored value

Display Resolution 0.1 gamma

Statistical Error Resolution
0.01 gamma

Absolute Accuracy ± 1 gamma at 50,000 gammas at 23C • ±2 gamma over total temperature range

Memory Capacity

Standard Memory Capacity 1300 data blocks (48K) or 5200 data blocks (128K)

Total Field or Gradient 100 data blocks

Base Station 4000 data blocks (48K) or 16,000 data blocks (128K)

RS-232C Serial I/O Interface Variable baud rate from 300 to 9600 baud, 8 data bits, 2 stop bits, no parity

Gradient Tolerance 6,000 gammas per metre (field proven)

Test Mode A. Diagnostic testing (data and programmable memory)
B. Self Test (hardware)

Sensor Optimized miniature design. Magnetic cleanliness is consistent with the specified absolute accuracy.

Gradient Sensors 0.5 metre sensor separation (standard) normalized to gammas/metre. Optional 1.0 metre sensor separation available.

Sensor Cable Remains flexible in temperature range specified including strain relief connector

Cycling Time (Base Station)
Programmable from 5 seconds up to 60 minutes in 1 second increments.

VLF Component Specifications

Frequency Tuning Range 15 to 30 kHz in 100 Hz increments with bandwidth of 150 Hz; tuning range accommodates new Puerto Rico station at 28.5 kHz.

Transmitting Stations Up to 3 stations can be automatically measured at any given grid location within frequency tuning range.

Recorded VLF Magnetic Parameters
Vertical in-phase, vertical quadrature (out-of-phase), total field strength (or optional horizontal amplitude), dip angle

Channel Separation 80 dB at 600 Hz frequency separation

Standard Memory Capacity 1300 combined VLF magnetic and VLF electric measurements as well as gradiometer and magnetometer readings

SCINTREX

222 Snidercroft Road
Concord,Ontario,Canada
L4K 1B5

Telephone: (416) 669-2280
Telex: 06-964570
Telefax: (416) 669-6403
(416) 669-5132

SCINTREX

EDA Omni Geophysical System

Brief Description

When you require more flexible geophysical techniques in order to find the increasingly more elusive anomalous targets, Scintrex offers you the EDA Omni System. This system enables you to design your own unique instrument whether it is for complete Magnetic surveys, VLF Electromagnetic surveys or a combination of these techniques.



At the heart of the Omni System is the Omni System Control Console which is common to all Omni System applications. This customized approach gives you the ability to select the following options for your instrument:

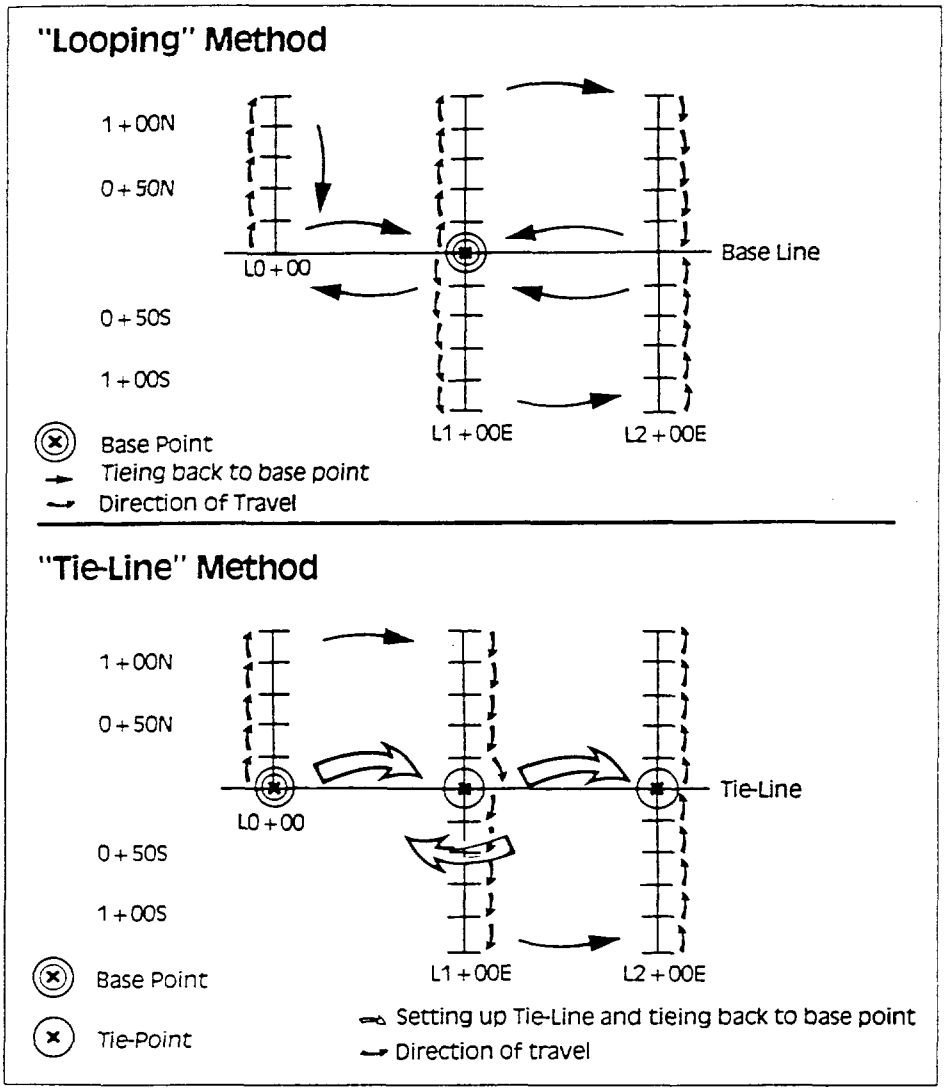
- Portable Field and Base Station Magnetometer
- True Simultaneous Gradiometer
- Portable Field and Base Station VLF Electromagnetic Receiver
- Two Probe, VLF Resistivity
- Non-Orientation, VLF Resistivity

Applications

Since the Omni System capabilities are so versatile, the data collected and recorded by the instrument can be applied to a variety of earth sciences including:

- mineral exploration
- geological mapping
- groundwater exploration
- groundwater contamination
- civil engineering
- geotechnical studies
- archaeology

Features



The "Tie-Line" feature available in all OMNI configurations provides a significant cost savings by allowing diurnal corrections to be made internally by one instrument without the need of a dedicated base station instrument

Rapid Data Recall

With a few keystrokes, you can instantly recall data from memory to the digital display by record number or in sequence. Scanning through the memory of a particular parameter is also possible.

Wide Range of Data Output Capabilities

The ability to efficiently transfer and present data in an interpretable format is important to the success of any survey or project.

The Omni System accomodates a wide selection of data output options, from simple listings of data and profile plots on a printer, to integrated software programs for computer plotting and modelling. The Omni System can transfer uncorrected, corrected or filtered magnetic and VLF data to most computers and printers with a RS-232C serial port.

Two Types of Formats available - data can be output from the Omni System in two format types. For ready to use data, the columnarized data dump format is the most suitable for direct hard copy printer outputs. For data which is to be further used with computer plotting or analysis software packages, you can select the fixed ASCII CPU dump format.

Profile Plot Outputs - Since VLF as well as magnetic data is often easier to interpret as a profile plot, data that the Omni System collects, can be presented in this analog format at a vertical scale best suited for data presentation. You can selectively output in analog and/or digital format the following:

- the magnetic total field strength
- the magnetic vertical gradient
- the VLF in-phase
- the VLF out-of-phase (quadrature)
- the VLF total field strength

Data Presentation - The grid co-ordinates under which the Omni System collects the data can be output in the standard Cartesian format (using positive and negative signs) or with the more familiar N,S,E,W compass descriptors.

Editing Capabilities - Prior to data transfer, you can program your Omni System to transfer a designated block of data, denoted by start and end points. Data can be separated into files that are best suited for survey or plotting conditions.

Pause Feature - You may stop the transfer of data at any time and resume where it left off, when it is more convenient. The Omni System will continue to pause until you press any one of keys on the keypad.

Choice of Data Outputs - The Omni System outputs data in a choice of formats, depending on the operating mode:

- corrected magnetic total field data
- uncorrected magnetic total field data
- magnetic base station data
- magnetic gradient field data
- corrected VLF field strength data
- uncorrected VLF field strength data
- VLF base station data
- corrected "Tie-Line" data
- uncorrected "Tie-Line" data

The Omni System can also transfer VLF data from all 3 VLF frequencies simultaneously or sequentially.

Features

Omni System Features

Each Omni System incorporates the following features:

Flexibility of the Omni System

You can select your own options to customize your unit to suit your specific geophysical needs.

Microprocessor Controlled

Gives you a choice of three fully protected data storage modes:

- spot record, for readings without grid co-ordinates (random samples)
- multi-record, for multiple readings at one station
- auto-record, for automatic update of station position

Complete Data Protection

The internal lithium battery assures you of complete data protection for up to 5 years.

Measures and Records in Memory

Measurement and recording in memory of the following magnetic field data for each reading:

- total field magnitude
- true gradient of the total field
- applied base station value
- statistical error
- signal strength
- decay rate

Measurement and recording in memory of the following VLF data for each field reading:

- vertical in-phase
- vertical quadrature (out-of-phase)
- total field strength
- total dip angle
- primary field direction
- apparent resistivity
- phase angle
- signal-to-noise ratio
- operator quality



The OMNI system configured as a MAG/VLF simplifies geophysical surveys by combining Magnetic and VLF EM techniques.

Records Survey Data

Records the following survey data for each magnetic and/or VLF reading:

- time of measurement and date
- grid co-ordinates
- direction of travel along grid lines
- natural and cultural features

Measures up to 3 VLF Transmitting Stations

The Omni System can measure up to 3 VLF transmitting stations and provides more complete coverage of an anomaly regardless of the orientation of the transmitter with respect to the survey grid or the anomaly itself.

Electronic Notebook

The internal Electronic Notebook enables you to record natural and cultural features that are unique to each grid location. This feature eliminates the need for a field notebook and provides additional information that can assist in interpreting recorded data.

Automatic Correction Using The Omni System's Unique "Tie-Line" Technique

The "Tie-Line" algorithm used exclusively by the Omni System allows for the self correction of atmospheric magnetic variations and variations in the primary field from the VLF transmitter(s). The instrument is able to store 'looping' or 'tie line' data in a separate memory at the beginning of each survey and then subsequently stores total field readings in a second memory along with the field readings of the tie point(s). At the end of each survey day the Omni System will then merge these two memories to automatically correct the total field data for diurnal variations.

The Omni System in the "Tie-Line" mode can:

- Store looping or tie line data, 3 ways:
  1. Using one looping base point
  2. Using one "Tie-Line" comprising a number of tie points, or
  3. Using multiple tie lines.
- Store up to 100 tie points in one survey area or divide these points into extensions of survey areas as needed.
- Store tie points or tie lines for the duration of the survey.
- Calculate the drift between established tie points, to readily see variations in the Earth's magnetic field.

Omni System Benefits

Only One Instrument Needed for Magnetometer, Gradiometer, VLF and VLF Resistivity Surveying

The Omni incorporates the capabilities of a "Tie-Line" magnetometer and simultaneous Gradiometer system with the ability to measure VLF magnetic and electric fields.

Only one complete Omni System is needed to record all of the following geophysical parameters:

1. The total magnetic field
2. The simultaneous gradient of the total magnetic field.
3. The VLF magnetic field including:
   - the vertical in-phase
   - the vertical quadrature
   - the total field strength
   - the total dip
4. The VLF electric field, including:
   - the phase angle
   - apparent resistivity

A complete Omni System can, at each location, calculate and record in less than 8 seconds, four VLF magnetic field parameters from three different transmitters, a magnetic total field reading and a simultaneous magnetic gradient reading. In addition, it can also measure and record two VLF electric field parameters from three different transmitters.

Upgrade your Unit at any Time

Since the Omni System is based on a modular design, you can upgrade your system at any time. This built-in flexibility allows you to purchase an Omni System with only the surveying equipment that you need for now but does not limit you to one application. When your surveying needs grow, so can your Omni System.

Saves you Time

The Omni System with the unique 3-coil VLF Sensor does not require orientation of the VLF Sensor head toward the transmitter station. This simplifies VLF field procedures and saves considerable survey time. The operator does not need to orient the sensor head toward the first, selected transmitting station and then re-orient towards the second or third transmitting station.

The non-orientation technique is the first of its kind, and this provides the Omni System with many additional benefits. These benefits include:

- When you use the Omni System as both a magnetometer and VLF base station, you only need one instrument instead of three, to record data automatically from 3 VLF transmitting stations.

- When you use the Omni System with the Non-orientation VLF-Resistivity option, you can record automatically from 3 different stations the phase angle and apparent resistivity without having to re-orient any of the three electrodes. You can also use the Omni System with the conventional, two electrode method.

The Omni System quickly responds with a one-key operation. For example, if you must complete a magnetometer/gradiometer and three frequency VLF survey using the Omni System, you automatically measure the magnetometer, simultaneous gradiometer and three VLF frequency data by pressing only one key. Using another combined system, up to 5 different steps may be required. Such as, the operator would have to take one magnetic reading; then another sequential magnetic reading to calculate the gradient; orient the VLF sensor to the first VLF transmitter and then take a reading; orient the VLF sensor to the second transmitter, take a new reading and then repeat the same procedure for the third frequency. The Omni System one-key operation takes less than 8 seconds; a significantly shorter time period than the 5 step operation of other combined systems.

Since the Omni System saves all of the field data in memory and has many output capabilities, the elimination of the field notebook and also the transciption errors that can occur saves you a considerable amount of time.

Diurnal corrections, using the time saving "tie-line" method, can be done automatically by the Omni System eliminating hours of manual and tedious calculations. You can then directly transfer the corrected data to a computer for further data processing.

Higher Productivity System

Combined Magnetometer/VLF systems are inherently faster than conventional methods whereby two different operators collected magnetometer and VLF data from separate instruments.

Because of its unique user-friendly design, the Omni System provides higher field productivity for the user. The increased productivity originates from its two-microprocessor approach which significantly reduces calculation time and also from the non-orientation VLF technique.

Sensitive to Weak VLF Signals

The Omni System's ability to obtain repeatable readings from weak signals offers a number of benefits:

- It extends the use of VLF on to countries where its use was previously marginal.
- It enables you to increase the number of frequencies with which you can operate.
- It reduces your need for portable VLF transmitters
- It improves the quality of your readings in rugged terrains, such as the deep valleys of the North American Rockies.

The Omni System's digital signal processing removes the modulation in the received signals. This technique helps stabilize too weak signals much greater than the conventional phase-locked loop method.

Ability to receive weaker signals (20nA/m) and a background noise reduction algorithm are among the reasons why the Omni System can obtain repeatable readings from signals which had previously been too weak to record.

Features

OMNI-PLUS Tie-line MAG/VLF R22K Ser #428150
TOTAL FIELD DATA (uncorrected)
& GRADIENT

Reference field: 56000.0
Datum subtracted: 0.0Date 13 DEC 88
Operator: 5000
Records: 10
Bat: 17.5 Volt Lithium: 3.48 Volt
Last time update: 12/13 9:50:00
Start of print: 12/13 14:34:01

Line 0+00 E Date 13 DEC 88 #2

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+80 N	56779.9	.04	0.0	11:38:55	88		1.1
0+90 N	56769.6	.04	0.0	11:39:33	88		1.2
1+00 N	56747.1	.05	0.0	11:40:10	88		2.1
1+10 N	56627.4	.05	0.0	11:41:47	88		1.7
1+20 N	56418.6	.08	0.0	11:42:30	88	PIPE	-13.8
1+30 N	56616.1	.07	0.0	11:43:36	88		-41.0
1+40 N	56733.7	.05	0.0	11:44:28	88		6.2
1+50 N	56765.6	.04	0.0	11:45:08	88		1.9
1+60 N	56764.9	.05	0.0	11:45:47	88		1.1
1+70 N	56767.2	.04	0.0	11:46:26	88		0.7

OMNI-PLUS Tie-line MAG/VLF R22K Ser #428150
VLF TOTAL FIELD DATA (uncorrected)

Date 13 DEC 88
Operator: 5000
Records: 10
Bat: 17.5 Volt Lithium: 3.48 Volt

Last time update: 12/13 9:50:00
Start of print: 12/13 14:35:51

Line 0+00 E Date 13 DEC 88 24.0 #2

POSITION	I/P	QUAD	T.FLD	TILT	TIME	CULT	S	DIR	4-FRA	5-FRA
0+80 N	20.2	-5.4	71.14	61.0	11:38:55	55		7.0		
0+90 N	28.2	-7.6	73.45	67.6	11:39:33	44		11.7		
1+00 N	41.6	-10.2	78.82	79.3	11:40:10	43		0.6		
1+10 N	68.2	-13.7	98.68	85.3	11:41:47	43		-16.4	-36.0	
1+20 N	86.9	-6.8	202.4	84.3	11:42:30	PIPE 52		-14.4	-22.7	-29.4
1+30 N	-101.3	12.2	202.0	84.3	11:43:36	59		-9.5	-4.0	-13.4
1+40 N	-81.1	21.7	95.17	81.7	11:44:28	59		-14.2	3.6	-0.2
1+50 N	-53.6	15.8	77.03	76.9	11:45:08	59		-22.2	10.0	6.8
1+60 N	-40.7	13.4	68.07	74.7	11:45:47	49		-24.3	14.4	12.2
1+70 N	-34.6	11.7	63.02	71.4	11:46:26	49		-16.9	12.5	13.4

Typical sample of data output from the OMNI system

Sealed, User Friendly Keypad

Protects your Omni System from water and dust and allows for easy operation and reliability.

Digital Display

Distinctly shows data which can sometimes be unclear with analog or audio-nulled systems.

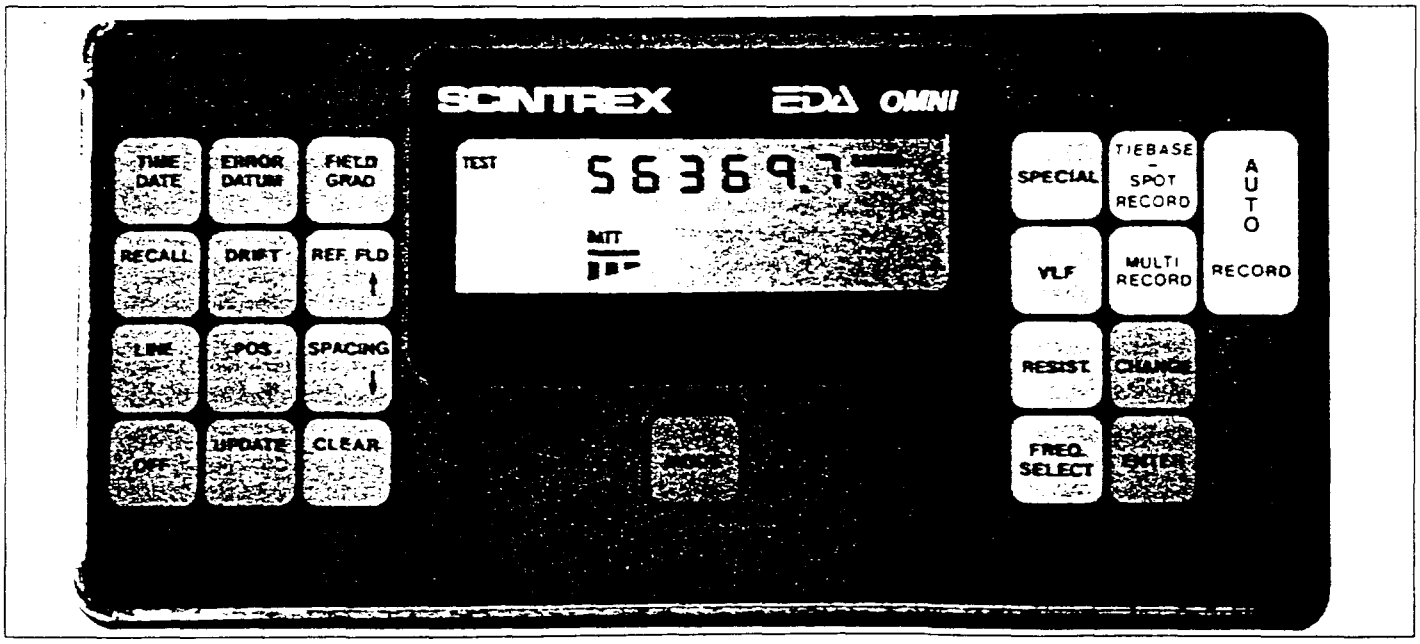
Display Descriptors

Monitor the signal strength and decay rate of the magnetic total field and/or the quality of all three VLF transmitter signals being measured.

Power Supply Options

You can choose from the following power supply options:

- Non-magnetic rechargeable sealed lead acid battery
- Non-magnetic rechargeable sealed lead acid battery belt
- Alkaline battery belt
- 12V DC power source for base station operation



Omni System Benefits

More System Benefits

- Display descriptors monitor the status of the primary battery source used.
- Output of grid co-ordinates with the designated compass bearing, using N, S, E, W descriptors.
- Audio feedback to confirm every keystroke
- Decimal spacing of 12.5 (metres or feet) for intermediate station intervals
- The ability to clear an unwanted last reading
- Two keystrokes to record data in memory - the first verifies the grid co-ordinate; the second puts it into memory.

The Omni Magnetometer unit measures and stores in memory the Earth's magnetic field at the touch of a key. This precise instrument is able to do the following:

- identify and store the location and the time of each measurement
- compute the statistical error of the reading
- store the decay and strength of the signal that you are measuring

Provides Data-Protected Readings

The Omni Magnetometer is packaged in a compact, lightweight and rugged housing and is able to measure and store the following set of information:

- total field magnitude
- time of measurement
- grid co-ordinates
- direction of travel
- statistical error of readings
- signal strength and rate of decay

Increases Productivity

The Omni Magnetometer significantly increases survey productivity as:

- it can read and store a measurement in only 3 seconds.
- data is highly repeatable so a second measurement is usually not required.
- it calculates statistical error for each measurement which indicates whether an additional reading is required.

All of these benefits permit you to cover more ground and gather more data than would be otherwise possible.



OMNI MAG configuration used for measurement of total field magnetics

Omni System Benefits

Excellent Data Quality and Repeatability

The Omni System provides users with unparalleled data quality and repeatability. The 3-orthogonal coil sensor that the Omni System uses improves the data reliability over the conventional two-coil method as it provides a more complete calculation of both the in-phase and out-of-phase parameters. This difference becomes even more important in measuring large anomalies.

The 3-coil sensor method provides consistently high data quality unrelated to the operator's ability to orient the sensor for optimum coupling with the transmitting station. The higher data quality that the Omni System obtains with weak signals is enhanced even further when signals are stronger. Additional features, such as greater channel selectivity, atmospheric noise reduction and better immunity to spikes, improve even more the Omni System's capability to obtain repeatable data.

No Need to Take Multiple Readings

The Omni System's magnetic component uses four leading-edge design features to eliminate the need to take multiple readings, these are:

- Signal Processing Technique
- Constant Energy Polarization that maintains equal energy to the sensor
- Processing Sensitivity to ± 0.02 gamma
- Automatic Fine Tuning which uses the previous reading as the base for the next reading.

The "Tie-Line" Advantage

Not only does the Omni System eliminate hours of manual correction of data, it also gives you the flexibility of choosing the most appropriate tie-line method best suited for the survey, depending on the size and character of the grid. You can choose from:

- a single base point,
- a single tie-line,
- multiple tie-lines, or
- a random scattering of tie-points.

The self-correcting "Tie-Line" feature can remove base station requirements from some surveys. The "Tie-Line" data can be recalled even if it was stored on different days.

You can program the Omni System to automatically remove a designated datum from field data and by removing this coarse, background value, plotting and interpreting the magnetic field data is made easier. The Omni System can also automatically calculate the desired diurnal drift measured between consecutive tie-point readings.



Environmentally sealed design of the OMNI permits use in all weather conditions

Operate Your Omni System in any Environment

The Omni System is completely water proof and dust proof. The fully sealed housing console ensures that you can perform your surveying needs during adverse weather conditions.

A Variety of Software Programs Available

Although the Omni System can transfer data directly to a serial printer, most computers require some initial handshaking prior to actual data transfer. Scintrex provides such handshaking programs for many computers including IBM PS-2/ IBM PC (AT and XT), Compaq, Macintosh and compatible systems.

In addition to handshaking software, we can provide you with plotting, profiling, contouring and modelling programs available from certain software houses. Packages for use with the Omni System include:

- Mapping systems that allow you to post and plot many of the geophysical parameters available, in a plan-profile or contoured format.

- Cartographic quality large-scale and real-location plan maps, complete with custom map surrounds, legends, scale bars, etc., that can be produced in a matter of minutes on most dot-matrix printers or small and larger-scale plotters. Standard graphics screen previewing is available prior to plotting.

- Software that allows you to present the data in 2 or 3-D perspective plots, through a full menu and/or command driven system interface in which you can select different colours, sizes, scales, angles etc. For example, you can create shaded relief maps and colour image plotting on common high resolution printers, including grey-scale support on laser printers.

- Interactive filtering and modelling programs that are used to determine the possible geometry and physical characteristics of the sources of magnetic anomalies, such as the MAGMOD program.

- Autocad and image-processing capabilities.

Through new software interface programs, you can use the Omni System as a field unit together with other integrated magnetometer/VLF systems (such as the Scintrex IGS-2) or with other microprocessor based base station magnetometers.

The Omni System as a Base Station Magnetometer

The Omni Base Station Magnetometer effectively measures and stores in its memory the daily fluctuations of the Earth's magnetic field. The Omni can automatically correct total field data of other Omni units in just a few minutes.

Records Magnetic Field Activity

The magnetic field activity is recorded in the following format:

- time of measurement
- magnitude of total field
- difference from the reference field value
- difference from the previous reading
- sequential record number

Automatically Corrects Data

The Omni in the base station mode can automatically correct magnetic field data for both diurnal variations and reference field values. It can also correct total field data stored in:

- another Omni System used as a field magnetometer
- another Omni System used as a field gradiometer

This is ideal when you want to remove diurnal errors sufficiently to make use of the full 0.1 gamma resolution of the Omni System.

Automatic Drift Calculations

The Omni automatically calculates the difference between each reading and its programmed reference field. If at the end of the survey day you find that the reference field is incorrect, you can re-select a new one and the Omni System can instantly re-calculate the drift. The drift calculation can be presented in either digital and/or profile plot format. It can also be simultaneously output to a compatible printer so you can visually verify the activity of the field.

Calculates Differential Field Variations

The Omni calculates the difference between the current reading and the previous one to a resolution of 0.1 gamma. This features assists you in ascertaining the degree of activity that is occurring such as a magnetic storm or active conditions.

Stores Approximately 55 Hours Of Continuous Unattended Monitoring

The Base Station mode enables you to store up to 20,000 sets of readings which is the equivalent to approximately 55 hours of unattended monitoring at a 10 second sampling interval. You can program the cycling time at any interval between 5 seconds and 60 minutes in 1 second increments.

Outputs and Stores Data At the Same Time

The Omni can simultaneously output data in digital or ASCII format to your choice of data collection units at the same time it stores the data in memory.

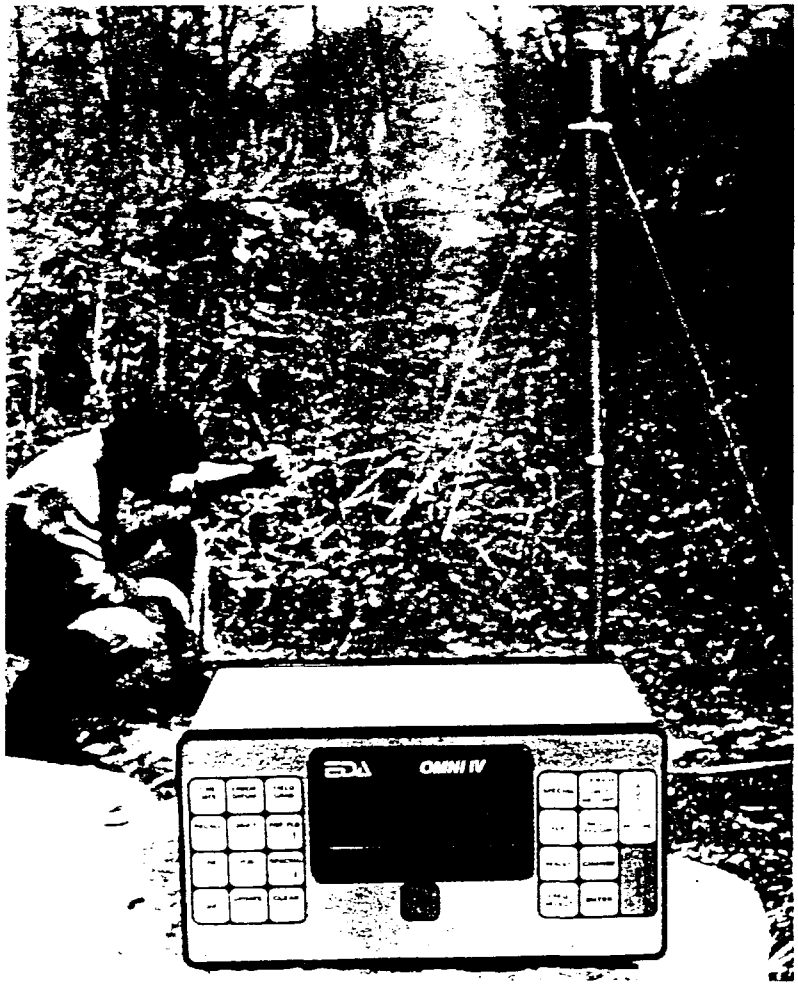
Synchronize Real Time Clocks

The Omni System real time clocks can be synchronized to the nearest second.

Magnetic Base Station Accessories Kit

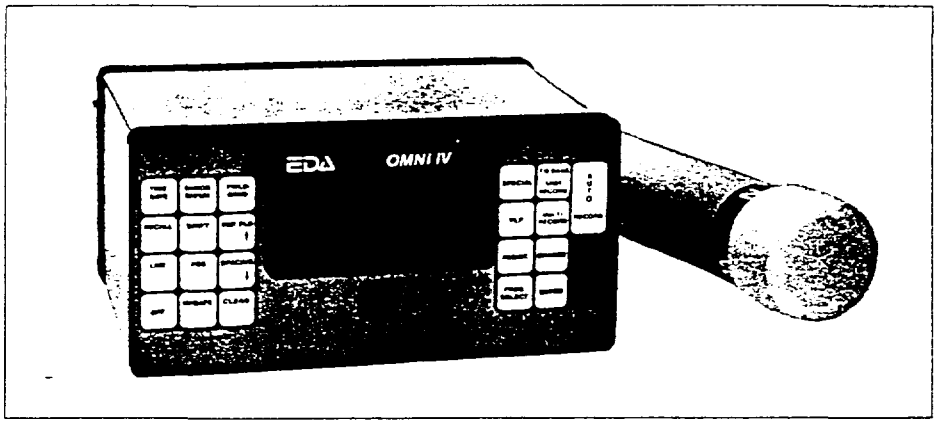
Sensor Extension Cable - This 30 metre cable enables you to place the Omni in a sheltered environment such as a tent, and position the magnetic sensor up to 30 meters away. This capability aids in eliminating possible cultural interference.

Rope Joiner - The rope joiner enables the sensor staff to be supported by ropes when it is being used as a base station sensor.



Magnetic diurnal corrections are automatically made by using an OMNI MAG as a base station magnetometer

The Omni System as a Portable Field Magnetometer



OMNI MAG electronics console with total field magnetic sensor

Simplifies Fieldwork

The Omni makes surveys easier to conduct because:

- the electronic notepad eliminates the need to write down field data. The Omni simultaneously stores time, field measurements, grid co-ordinates when you press any one of the three record keys.
- you are able to clear the unwanted last reading.
- the Omni automatically calculates the difference between the current reading and previous one.
- you can remove the coarse magnetic field value or data from the field data to simplify plotting of the field results.
- the Omni automatically calculates diurnal corrections.

The flexibility of the Omni System offers the following choices:

- if you use the Omni as a field magnetometer or as a gradiometer, the total field data can be corrected using the unique "Tie-Line" or "Looping" method.
- if you use one Omni as a base station, it will correct the total field magnetic data in:
  - an Omni set-up as a field magnetometer
  - an Omni set-up as a gradiometer

Unparalled Repeatability of Data

The Omni provides you with unparallelled data repeatability. This is a result of four leading edge design features that eliminates the need for taking multiple readings:

- Signal Processing Technique
- Constant Energy Polarization that maintains equal energy to the sensor
- Processing sensitivity to $\pm$ 0.02 gamma
- Automatic Fine Tuning which uses the previous reading as the base for the next

Saves You Time

The error analysis feature is a great time saver as the calculation of the statistical error of each reading lets you make an on-the-spot decision whether or not you should store the reading.

The Omni System also saves you time-consuming steps as it can:

- automatically assign a record number which you can also use to identify readings measured off of the grid.
- take more than one reading at one point without updating the current station number.
- according to the programmed station interval, automatically update your station position without having to program each station coordinate. The Omni magnetometer also provides a decimal digit for intermediate station intervals of 12.5 metres.
- rapidly recall readings either by record number or in sequence.

Tolerates Higher Gradients

The ability to tolerate local higher gradients of up to 6000 gammas per metre (field proven), is possible due to a sophisticated signal processing method and to a miniature sensor design using a highly optimized sensor geometry.

A Variety of Power Supply Options

You can choose from the following power supply options:

- non-magnetic rechargeable sealed lead-acid battery or belt
- heavy duty rechargeable battery
- alkaline battery belt
- 12V DC power source

KENOGAMI LAKE EAST PROJECT

APPENDIX C

IP / RESISTIVITY SURVEY

INSTRUMENT SPECIFICATIONS

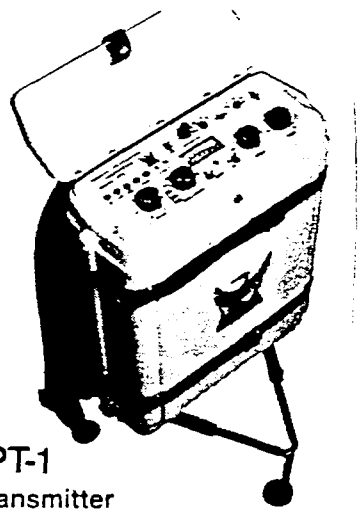
IPT-1



Variable Frequency Transmitter for:
TIME DOMAIN AND PHASE IP
TDEM - FDEM - CSAMT

- Stable: Excellent Current Regulation
- Lightweight / Portable
- Wide Selection of Power Sources
- Low Cost

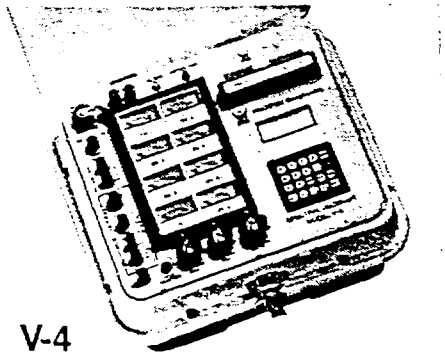
PHOENIX
GEOPHYSICS



IPT-1

Transmitter

Uses 50/60 Hz or 400 Hz Motor generators
DC-8192 Hz, DC-4 Hz versions
Drives grounded dipoles or inductive loads
For spectral IP, CSAMT, TDEM



V-4

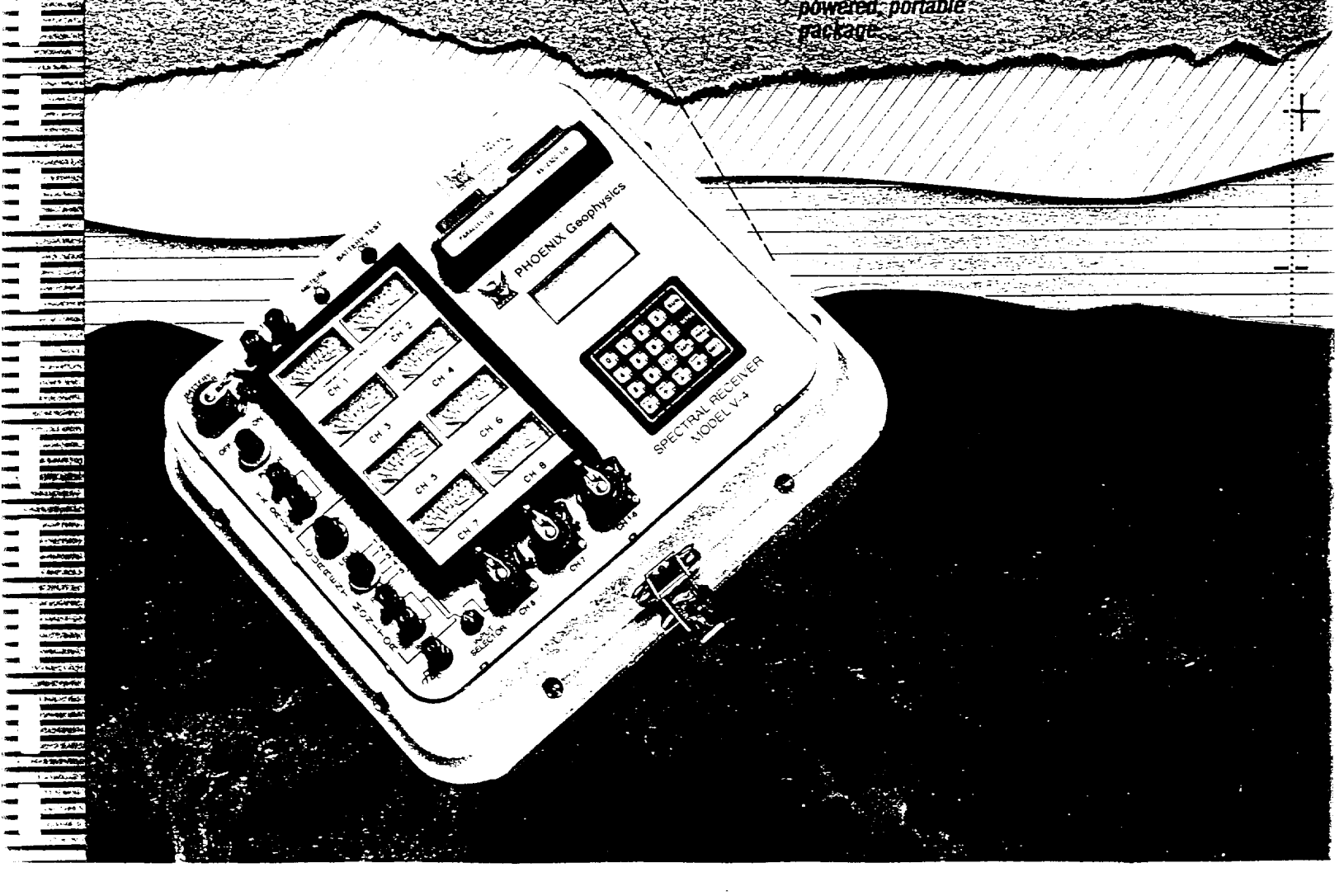
Universal Receiver

8 channels, auto gain / DC offset
Solid state memory, computer interface
Spectral IP, time domain IP, CSAMT

A NEW DIMENSION IN INSTRUMENTATION

PHOENIX

Cost-effectiveness through multiple functions: five controlled-source geophysical techniques plus generalized data acquisition/ processing/ control in a rugged, battery powered, portable package.



The Turbo V4 is an upgraded version of the V4 receiver, with a new, high-performance CPU board.

The Turbo V4 processor is 50 times faster than the original V4 processor, and features 12 times as much ROM/RAM memory for stored programs and data.

Programs for the Turbo V4 are written in high-level languages; the data processing is therefore much more efficient and intelligent than on the old CPU, which used assembler language only.

Also, the new CPU is programmable*. Users can develop their own programs in FORTRAN or C language using the IBM PC (or compatible), then download them into the V4. This capability means the V4 will remain up-to-date for years, and can be matched precisely to the user's applications.

* Optional.

SPECIFICATIONS

Analog Section

Number of channels	2, 4, 6 or 8 (in pairs)
Dynamic range	± 10 volts
Frequency range	1024 sec to 4 kHz (SIP); 4 sec to 4 kHz (CSAMT) in binary or 2/3 binary steps.
Input impedance	More than 100 megohms at low frequencies.
Powerline filtering	Triple notch 40 db powerline filter for 1/3/5 harmonics of 50/60 Hz. Switchable in/out.
Other filtering	Bad sample rejection; offset adjustment; programmable anti-alias filters; slope correction (TDIP) all under processor and/or manual control.
Gain	Automatic or manual control, range of 1 to 640.
DC offset	Processor controlled DC offset control, range: ± 2.5 volts.
Calibration	Manual external calibration; processor-controlled, internal calibration with built-in calibration/test signals: 1/128 Hz to 4 kHz ± 5 v, 200 ohm impedance; 50% or 100% duty cycle.
Sensitivity	Sufficient for stand alone controlled source applications.

Digital Section

Processor/CPU board	32/16 bit NS32C016 with NS32081 maths coprocessor. Clock rate 6-10 MHz. Programmable interrupt controller with 16 request lines. MULTIBUS interface. DIN connectors. On-board real time clock.
Monitor firmware	Monitor firmware interfaces to National 32000 series software development tools. Also provides run time environment, terminal handler, debugger execute module, floating point support module and interrupt handler.
Applications firmware	Initially offered with geophysical applications firmware, for IP in time, frequency, or phase domain; spectral IP; resistivity; and CSAMT. Other offerings (such as FDEM) may become available from time to time. The user may develop proprietary applications in FORTRAN 77, PASCAL or C on VAX, IBM PC or compatibles and download into the V4.
CPU board memory	Up to 576 Kbyte RAM + 320 Kbyte ROM.
Serial I/O	Optional RS-232 port with selectable baud rate. Can drive RS-232 printer.
Parallel I/O	8 bit port with max 1/2 MHz transfer rate. For vest-pocket printer or external computer.
Timing	Internal crystal clock; processor-controlled resetting for synchronized operation with transmitters. Optional external precision clock.
A-D conversion	16-bit resolution, 12.5 kHz conversion rate.

Mechanical

Weight	approx. 13 kg
Dimensions	32 × 36 × 27 cm high
Case	resilient, tough PVC alloy
Connectors	3 multipin connectors for analog inputs, 2 of which have power for external sensors.

Environmental

Operating temperature	−10°C to +50°C (−20°C with LCD heater)
Storage temperature	−50°C to +60°C
Humidity	Splashproof, may be operated in light rain
Shock and vibration	Suitable for transport in bush vehicles.

Battery

12 v / 6 Ah rechargeable battery. Nominal 10 h continuous operation at +20°C. Provision for external 12V battery supply.

Inputs

Signal channel	Three multipin connectors for 8 analog inputs. (6 + 1 + 1)
Battery	Multipin connector for external battery or for charging of the internal battery @ 12 V, approx 1.2 A.
Remote clock signal	Optional input.
Current Monitor	Twin plugs for RF modulated signal from transmitter (for real-time deconvolution)

Outputs

Analog meters	Eight analog meters
Display	16 char × 4 lines LCD
Analog outputs	8 outputs for analog recorders, etc. ±5V range. (Optional)
External isolated transmitter drive	Via special purpose isolated RF link.
Calibration signal	Twin connectors

Switches and Controls

Keyboard	20-key alphanumeric/command keypad (waterproof).
On/off	2 position rotary.
Meter Mode	2 position toggle, AC or DC
Battery test	2 position toggle.
Input Select	2 position rotary

Note : Specifications subject to change. Customized configurations are available.

		MT*	AMT*	CSAMT	IP TIME DOMAIN	IP PHASE/ FREQUENCY DOMAIN	RESISTIVITY	EM TIME * DOMAIN	EM FREQUENCY DOMAIN	DATA ACQUISITION CONTROL	USER-PROGRAMMABLE FUNCTION
Geophysical Applications	OIL & GAS			•	•	•	•		•		
	GROUND WATER			•			•		•		
	METALLIC MINERALS			•	•	•	•		•		
	GEOTHERMAL EXPLORATION			•			•		•		
	HAZARDOUS WASTE			•	•	•	•		•		
	ENGINEERING GEOPHYSICS			•			•		•		
General Applications	SCIENTIFIC RESEARCH & TRAINING			•			•		•	C	C
	INDUSTRIAL			•			•		•	C	C
	MILITARY										

* Not implemented

PHOENIX Geophysics Limited

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SCARBOROUGH, ONTARIO, CANADA M1W 3K5
TELEPHONE: (416) 491-7340 FAX: (416) 491-7378
TELEX: 06-986856 CABLE: PHEXCO TORONTO

KENOGAMI LAKE EAST PROJECT

APPENDIX D

CERTIFICATE OF QUALIFICATION

Certificate of Qualification

I, **Roman Tykajlo**, of the City of Nepean, Province of Ontario, do hereby certify that:

1. I am a geophysicist with Westminer Canada Limited, residing at 74 Stonebriar Drive, Nepean, Ontario, K2G 5X9.

2. I am a graduate of Lakehead University with an Honours Bachelor of Science degree in Geology/Physics (1978).

3. I have been practising my profession for 16 years.

5. I am a member of the Society of Exploration Geophysicists (SEG) and the Alberta Association of Professional Engineers, Geologists and Geophysicists (APEGGA).

5. I supervised the work relavent to this study from December 1/1993 to May 1/1994.

Dated at the City of Nepean, this 20th day of May, 1994.

Roman Tykajlo H.Bsc, P. Geol.

KENOGAMI LAKE EAST PROJECT

APPENDIX E

TABLE OF EXPENDITURES

Maps in Pocket

Figure 5a: Kenogami Lake East Grid
Total Field Magnetic Survey Contours (1:5000 scale)

Figure 5b: Kenogami Lake East Grid
Total Field Magnetic Survey Data Values Posted (1:5000 scale)

Figure 7a: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L84+00E (1:5000 scale)

Figure 7b: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L86+00E (1:5000 scale)

Figure 7c: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L88+00E (1:5000 scale)

Figure 7d: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L90+00E (1:5000 scale)

Figure 7e: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L92+00E (1:5000 scale)

Figure 7f: Kenogami Lake East Grid
Induced Polarization Survey - Pseudosection L94+00E (1:5000 scale)

Figure 8: Kenogami Lake East Grid
Geophysical Data Interpretation (1:5000 scale)

Ontario Ministry of Natural Resources

Ministry of Northern Development and Mines

INDEX TO LAND DISPOSITION

PLAN
G-3212

TOWNSHIP
GRENFELL

M.N.R. ADMINISTRATIVE DISTRICT
KIRKLAND LAKE

MINING DIVISION
LARDER LAKE

LAND TITLES/REGISTRY DIVISION
TIMISKAMING

Scale 1:20 000

1000 Metres 0 1000 2000 Metres

1000 Feet 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 Feet

Contour Interval 10 Metres

SYMBOLS

Boundary
- Township, Meridian, Baseline
- Road allowance; surveyed / shoreline
- Lot/Concession; surveyed / unsurveyed
- Parcel; surveyed / unsurveyed
- Right-of-way; road / railway / utility
- Reservation
- Cliff, Pit, Pile
- Contour / Interpolated / Approximate / Depression
- Control point (horizontal)
- Flooded land
- Mine head frame
- Pipeline (above ground)
- Railway; single track / double track / abandoned
- Road; highway, county, township / access / trail, bush
- Shoreline (original)
- Transmission line
- Wooded area

DISPOSITION OF CROWN LANDS

Patent
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

Lease
- Surface & Mining Rights
- Surface Rights Only
- Mining Rights Only

- Licence of Occupation
- Order-in-Council
- Cancelled
- Reservation
- Sand & Gravel

AREAS WITHDRAWN FROM DISPOSITION

MRO - Mining Rights Only
SRO - Surface Rights Only
M + S - Mining and Surface Rights

Description	Order No.	Date	Disposition	File

SAND AND GRAVEL

(R) GRAVEL FILE 127536
(R) GRAVEL FILE 127784
(M) M.T.C. GRAVEL PIT
(M) GRAVEL FILE 64647

PENDING APPLICATION FOR SURFACE RIGHTS UNDER THE PUBLIC LANDS ACT

(R) TCPL (PIPELINE) APPLICATION FOR RIGHT OF WAY

(MRO)
Surface Rights Withdrawn under Sec. 36,
The Mining Act R.S.O. 1980, ORDER NO. W-01/91/ONT
(Trans Canada Pipeline Right of Way and Buffer
Zone particularly 40.25 meters or 132 ft. on
either side of centre line of right of way)

(M2) SURFACE AND MINING RIGHTS WITHDRAWN FROM PROSPECTING, STAKING OUT, SALE OR LEASE SECTION, THE MINING ACT, RSO 1990 W-L-1996 NER

DATE OF ISSUE
JUN 17 1996
PROVINCIAL RECORDING OFFICE - SUDBURY

NOTES

ALL ISLANDS IN SESEKINIKA LAKE ARE WITHDRAWN FROM STAKING BY ORDEN -IN-COUNCIL DATE DECEMBER 7, 1921

NOTICE OF FORESTRY ACTIVITY
THIS TOWNSHIP/AREA FALLS WITHIN THE TIMISKAMING MANAGEMENT UNIT AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129
SWASTIKA, ONTARIO
P0K - 1T0
705 - 642 - 3222

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

ARCHIVED JUNE 12, 1996

CIRCULATED AUG. 11, 1992 B.R.B.
~~ARCHIVED DECEMBER 13, 1993~~
~~ARCHIVED JUNE 01, 1995~~

Map base and land disposition drafting by Surveys and Mapping Branch, Ministry of Natural Resources.

The disposition of land, location of lot fabric and parcel boundaries on this index was compiled for administrative purposes only.

200
42A01SE0026 0824-1771 GRENFELL

G-3212 GRENFELL TWP.

GRENFELL TWP

EBY TWP

Kenogami Lake

303

KENOGAMI LAKE

Blanche River

303.9

HWY 568

8145 P

BL 75+00

1186326

1186327

1186329

1187142

1186328

KEN-94-03

KEN-94-02

KEN-94-01

75+00 76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00 92+00 93+00 78+00 77+00 76+00 75+00 74+00 73+00 72+00 71+00 70+00 69+00 68+00 67+00 66+00 65+00 64+00 63+00 62+00

LOT 8
CON 6

BD

11 10 9 7 6 5

11 10 9 8 7 LOT 6 CON 5 5

N

0 500 1000 m

FROM BASE MAP 20 17 5500 53200

WESTMINER CANADA LTD
Div. EXPLORATION

KENOGAMI LAKE EAST

DRILL HOLE LOCATION
FIGURE 4

DRAWN by: REX	DATE: MAY 1994	PLAN NO.
WORK by: REX	SCALE: 1:5000	4045-07-03
	N.T.S.: 42 A / 1	

42A01SE2026 om94-071 GRENFELL

KEN-94-01

N+6800.00

N+6900.00

Rock Type Legend

O/B – Overburden
M – Mafic
Mv – Mafic Volcanic
Mg – Gabbro
Mgq – Quartz gabbro
ST – Syenitoid
Upx – Pyroxenitic Komatiite
S – Sediment
Sag – Argillite
Ssl – Siltstone
Sw – Greywacke
Sc – Conglomerate

Alteration Code

ab – albite
ak – ankerite
c – chlorite
ep – epidote
fu – fuchsite
h – hematite
l – calcite
lx – leucoxene
s – sericite
sil – silicified
q – quartz
vn – vein
sp – sphalerite
py – pyrite

Structural Codes

bx – breccia
wsh – weakly sheared
msh – moderately sheared
ssh – strongly sheared
v – vein

ICE SURFACE

WATER

OVERBURDEN

ST

M+S

STRONG (AK-S)

WEAK (AK-S)

M

Mg

Mgq -mt

Mg-mt

M+Upx

Geological Contact

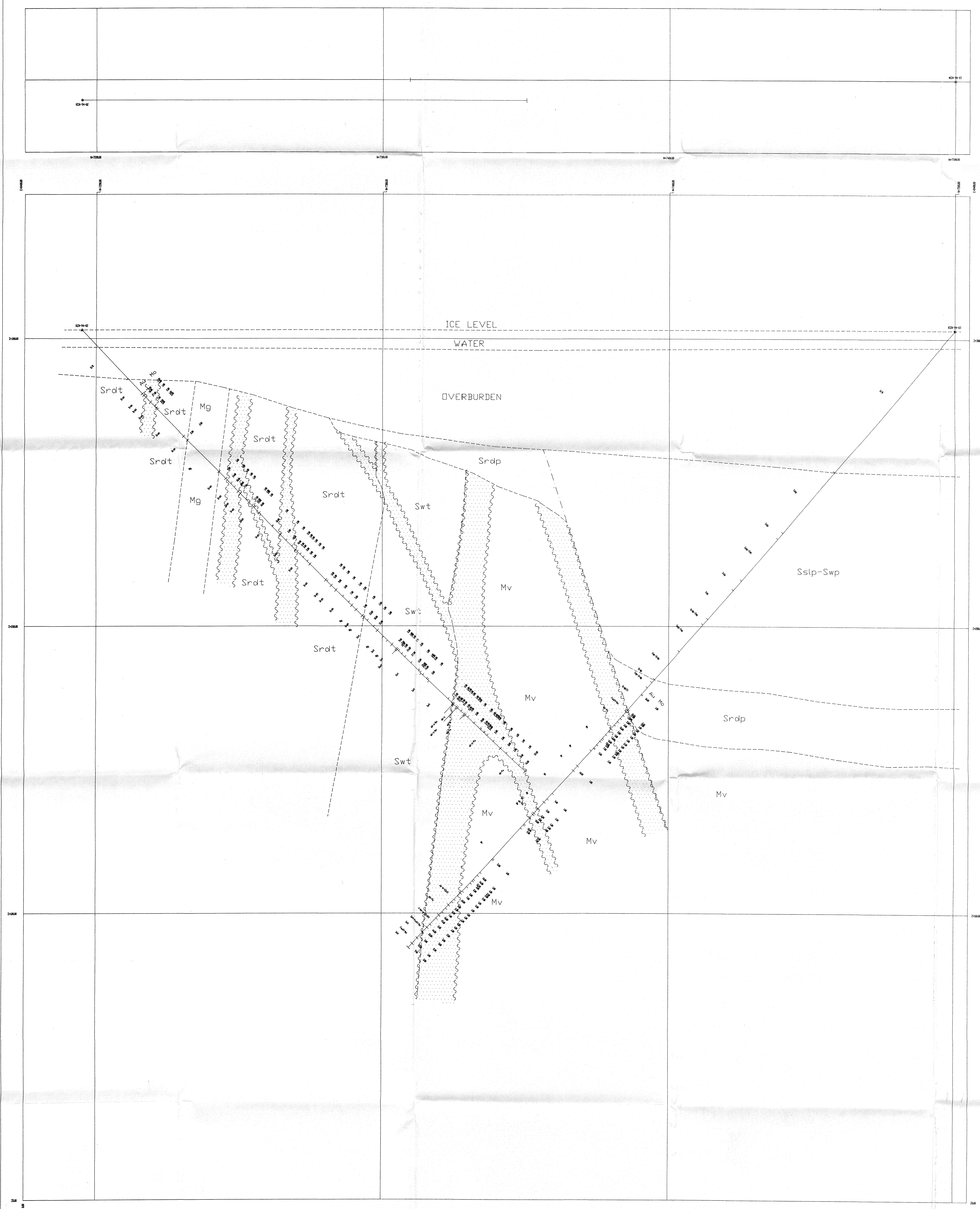
Shear Zone

WESTMINER CANADA LTD
Western Abitibi Gold Project

Hole KEN-94-01
Section 8800E (Looking West)
Geology and Gold/Moly Assays
Au (ppb) Mo (ppm)
Only assays >20ppb Au shown

Compiled By: R.B.	Drafted By: A.D. and R.B.
Date: April 1994	Map No: 4045-07-01
Scale: 1:500	

42A01SE2026 om94-071 GRENFELL
220



Rock Type Legend

O/B – Overburden	Srdp – Rudite (Proterozoic, Gowganda)
M – Mafic	Swp – Greywacke (Proterozoic, Gowganda)
Mv – Mafic Volcanic	Sslp – Siltstone (Proterozoic, Gowganda)
Mg – Gabbro	
Sag – Argillite	Srdt – Rudite (Timiskaming)
Ssl – Siltstone	Swt – Greywacke (Timiskaming)
Sw – Greywacke	Sant – Arenite (Timiskaming)
Sc – Conglomerate	

Alteration Code

ab – albite	lx – leucoxene
ak – ankerite	s – sericite
c – chlorite	sil – silicified
ep – epidote	q – quartz
fu – fuchsite	vn – vein
h – hematite	py – pyrite
l – calcite	

Structural Codes

bx – breccia
wsh – weakly sheared
msh – moderately sheared
ssh – strongly sheared
v – vein

Geological Contact

Proterozoic Fault

Shear Zone
with ak–s–(fu) alteration

WESTMINER CANADA LTD
Western Abitibi Gold Project

Hole KEN–94–02 and KEN–94–03
Section 8400 E (Looking W)
Geology and Gold/Moly Assays
Au (ppb) Mo (ppm)

Compiled By: R.B.	Drafted By: A.D. + R.B.
Date: April 1994	Map No: 4045–07–02
Scale: 1:500	

42A01SE2026 OM94-071 GRENFELL 230



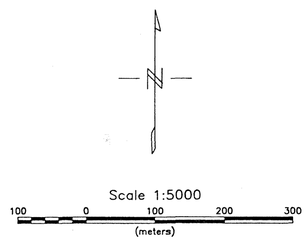


Figure 5b

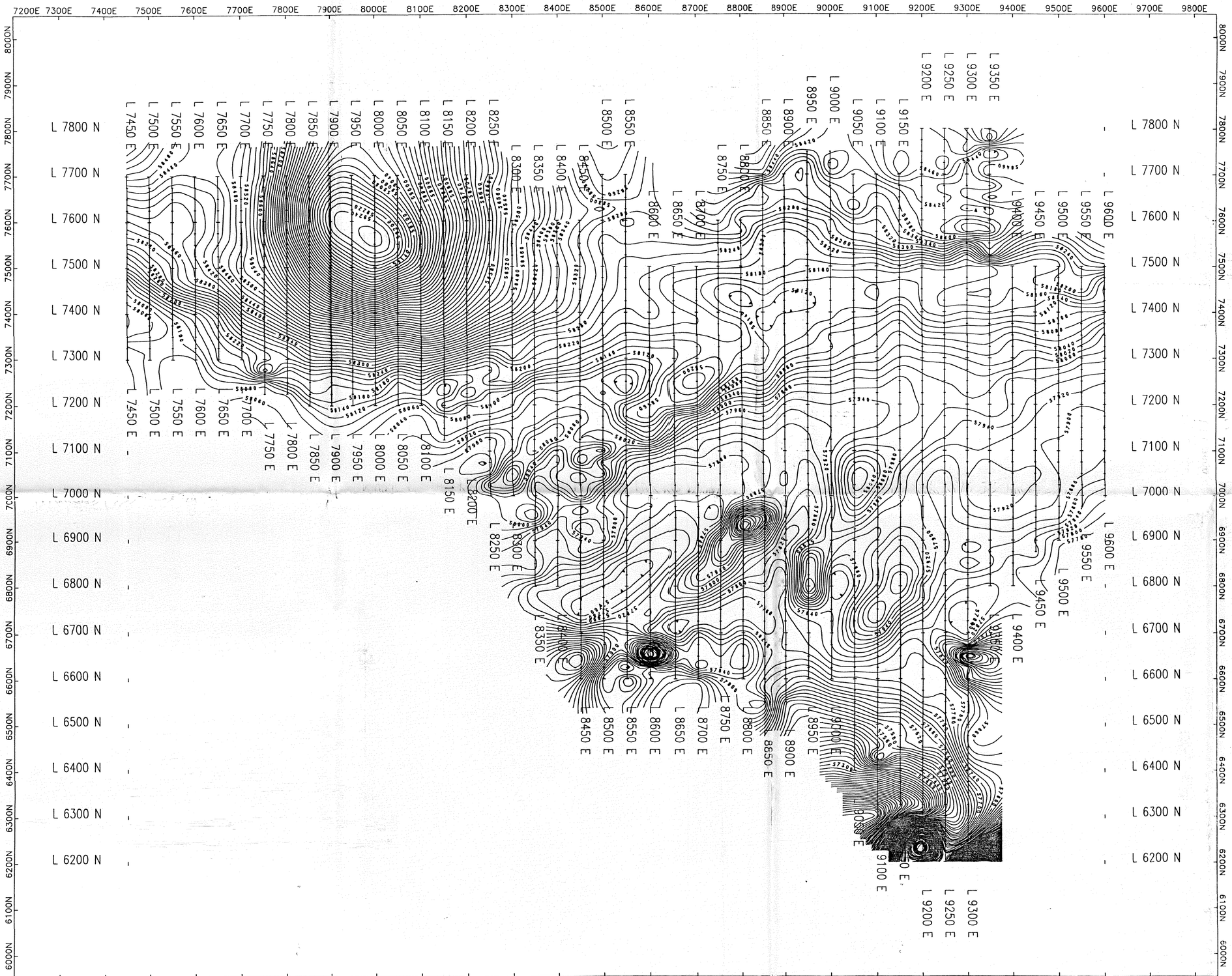
WESTMINER CANADA LIMITED

KENOGAMI LAKE EAST GRID
Kirkland Lake Area, Ontario
Eby Twp, NTS 42-A-1

TOTAL FIELD MAGNETIC SURVEY
DATA VALUES POSTED
Data Units = nT
instrument: EDA OMNI Plus - diurnal drift corrected

surveyed by: Mertens MacNeil Ltd., Jan 1994

42A01SE2026 om94-071 GRENFELL



Scale 1:5000

100 0 100 200 300 (meters)

WESTMINER CANADA LIMITED

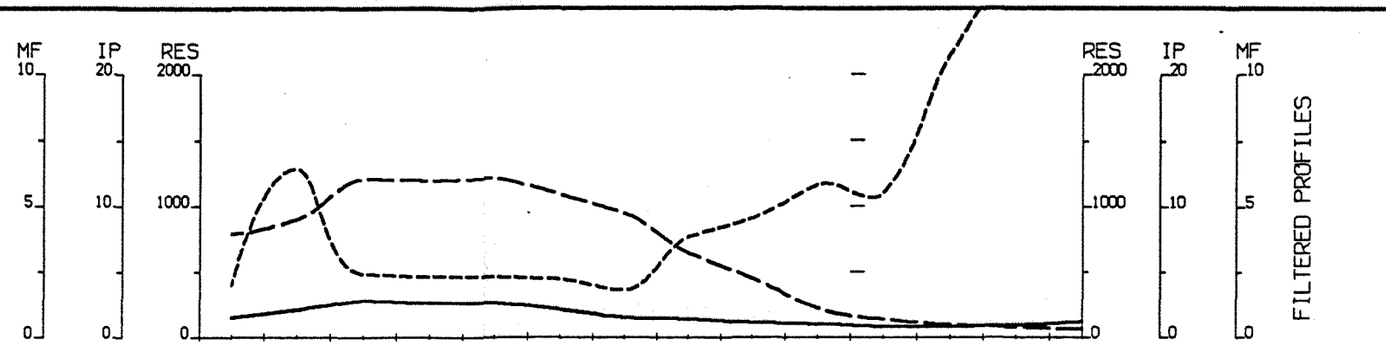
KENOGAMI LAKE EAST GRID
Kirkland Lake Area, Ontario
Eby Twp, NTS 42-A-1

TOTAL FIELD MAGNETIC SURVEY
CONTOURS
contour interval = 20 nT
instrument: EDA OMNI Plus - diurnal drift corrected

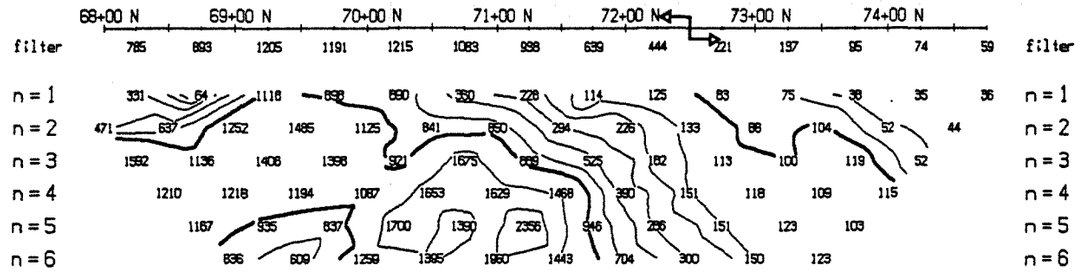
surveyed by: Mertens MacNeil Ltd., Jan 1994

Figure 5a

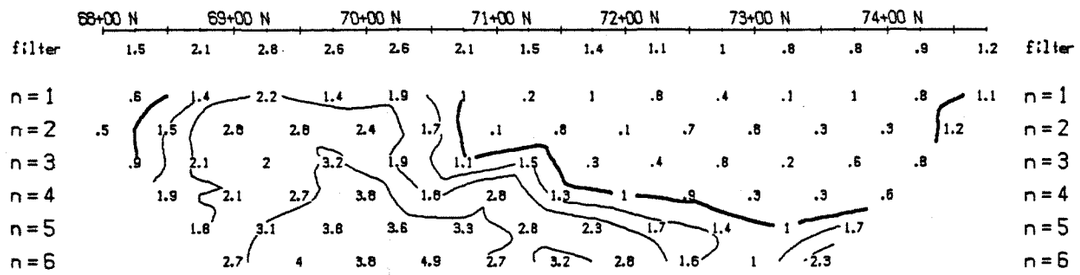
42A01SE2026 om94-071 GRENFELL



TOPOGRAPHY

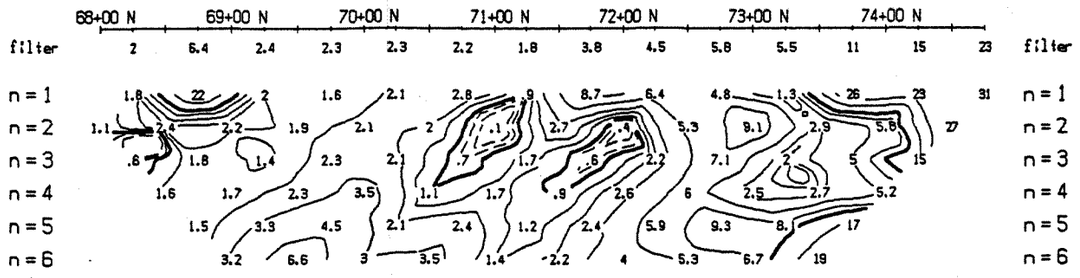


RESISTIVITY
(ohm_m)



PHASE
(milli-radians)

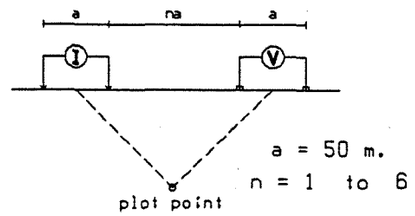
INTERPRETATION



METAL FACTOR
(ip/res * 1000)

Line 8400 E

Dipole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10....

Instruments: IPT1,TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.

LEGEND

- R — RESISTIVITY HIGH
- P — PHASE HIGH
- LO ↔ HI — RESISTIVITY CONTACT
- ○ — THICKEST LAKE SEDIMENT

WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

Kenogami Lake Grid,
Kirkland Lake, Ontario

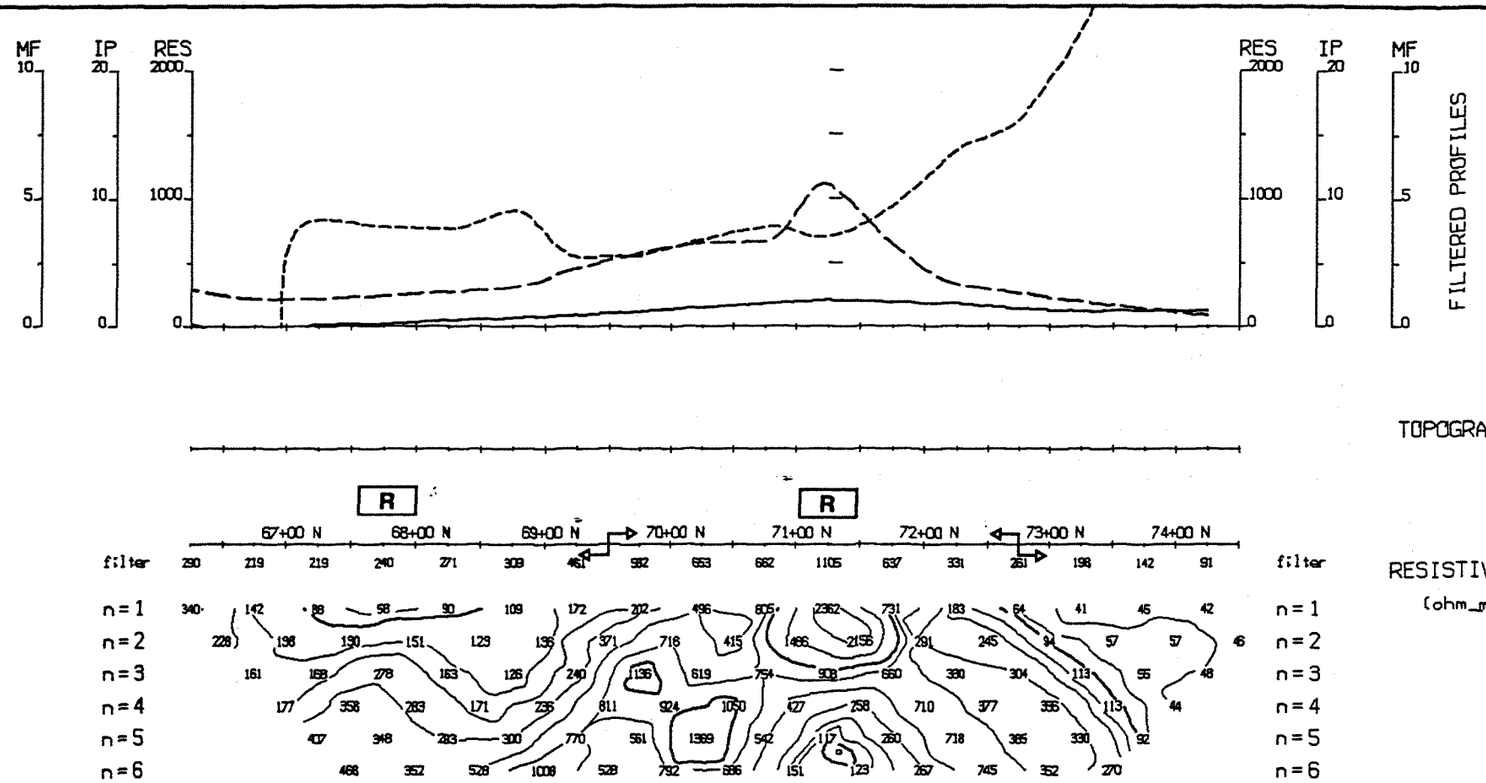
Date: Jan \ 1994 N.T.S.

Scale: 1 : 5000 FIGURE 7A

MERTENS & MacNEIL LTD.

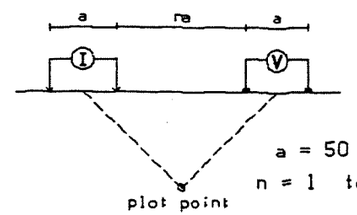
42A01SE2026 om94-071 GRENFELL
260

GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



Line 8600 E

Dipole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instruments: IPT1,TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.

LEGEND

- R — RESISTIVITY HIGH
- P — PHASE HIGH
- LO ◄► HI — RESISTIVITY CONTACT
- ○ — THICKEST LAKE SEDIMENT

WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

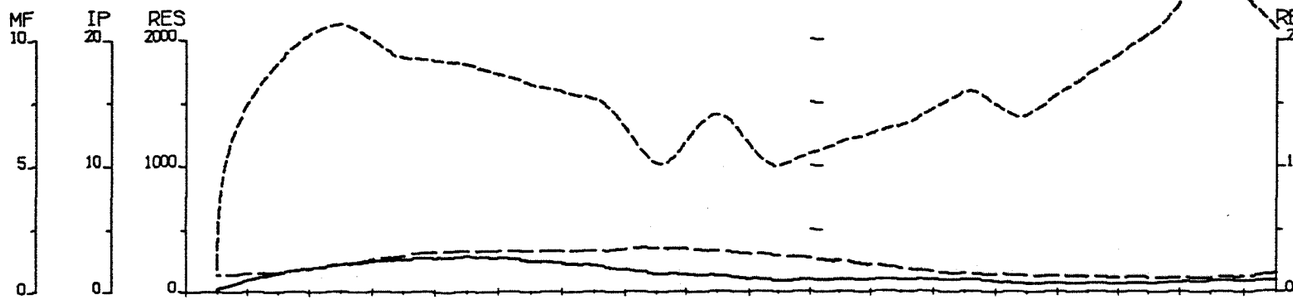
Kenogami Lake Grid,
Kirkland Lake, Ontario

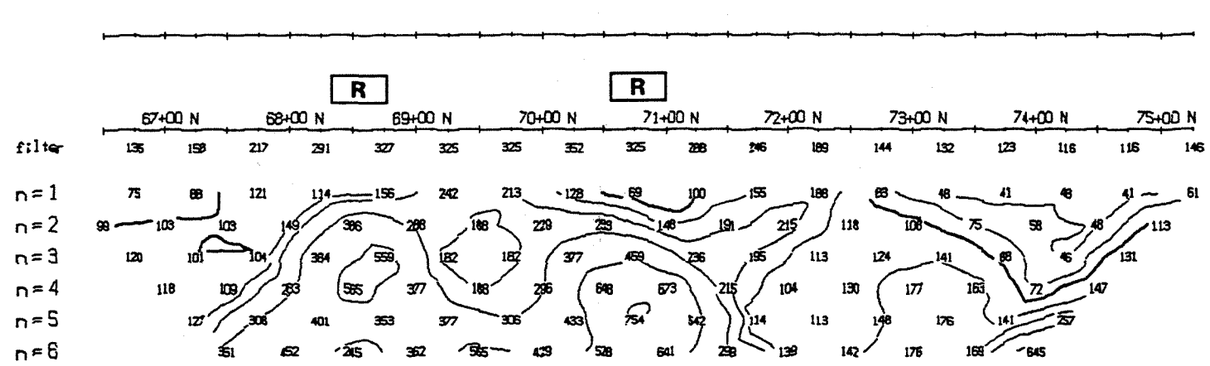
Date: Jan \ 1994 N.T.S.

Scale: 1 : 5000 FIGURE 7B

MERTENS & MacNEIL LTD.

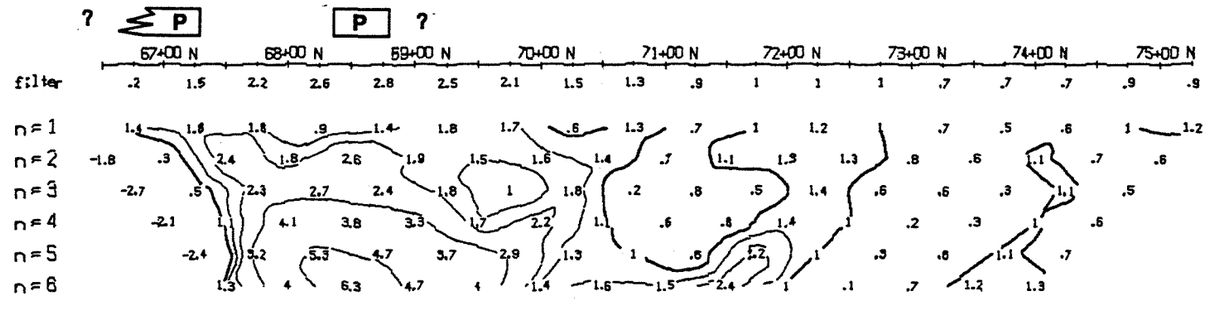
270
42A01SE2026 om94-071 GRENFELL
GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada





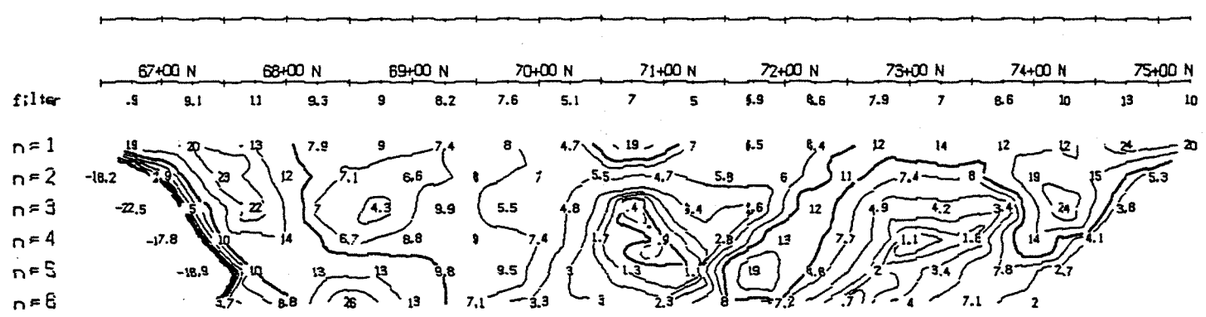
TOPOGRAPHY

RESISTIVITY
(ohm_m)



PHASE
(milli-radians)

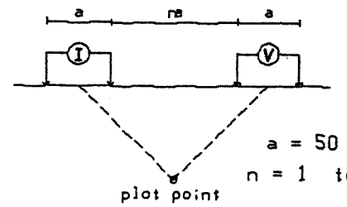
INTERPRETATION



METAL FACTOR
(ip/res * 1000)

Line 8800 E

Dipole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instruments: IPTI, TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.

LEGEND

- R — RESISTIVITY HIGH
- P — PHASE HIGH
- LO / HI — RESISTIVITY CONTACT
- THICKEST LAKE SEDIMENT

WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

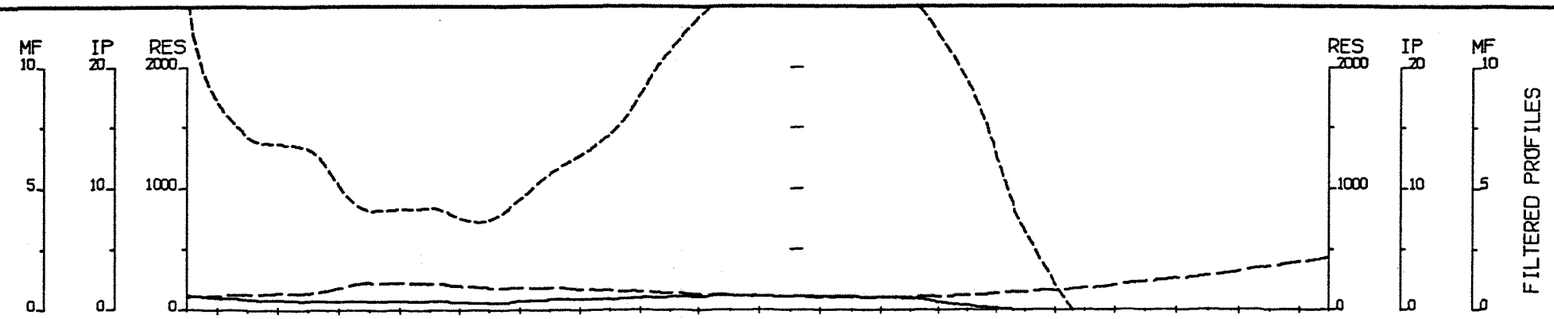
Kenogami Lake Grid,
Kirkland Lake, Ontario

Date: Jan \ 1994 N.T.S.

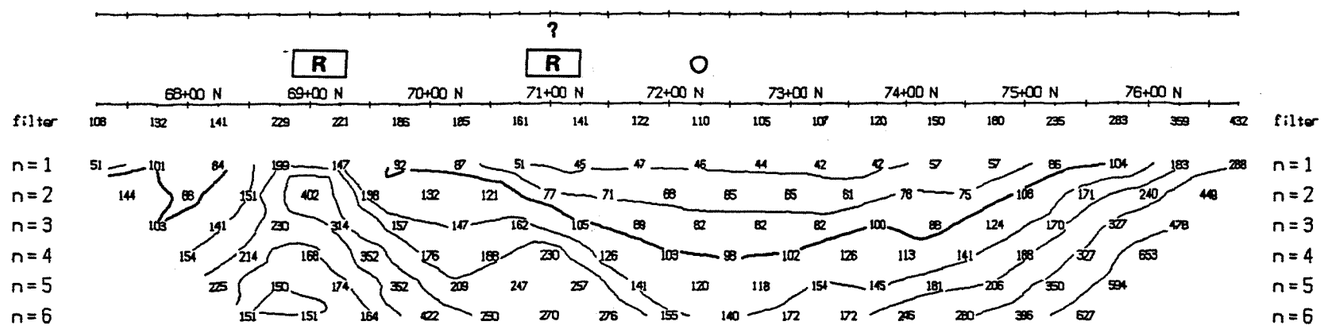
Scale: 1 : 5000 FIGURE 7C

MERTENS & MacNEIL LTD.

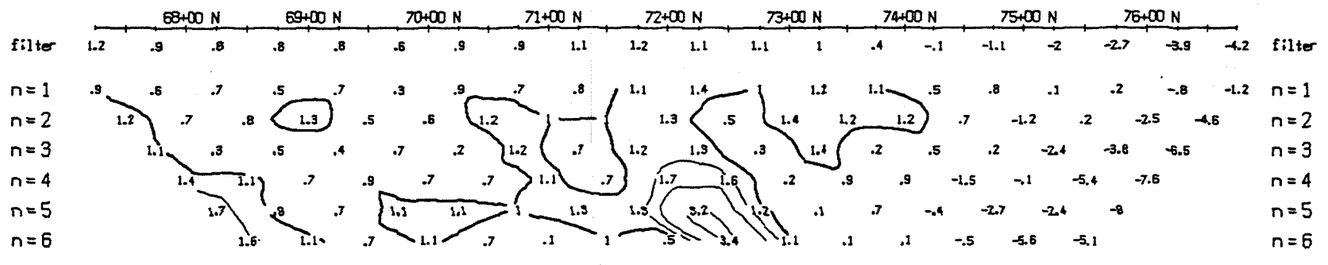
280
42A01SE2026 om94-071 GRENFELL
GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



TOPOGRAPHY

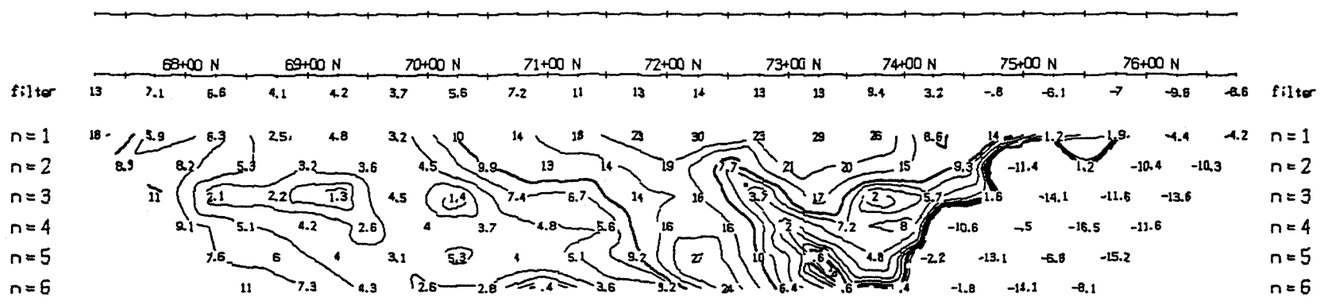


RESISTIVITY
(ohm_m)



PHASE
(milli-radians)

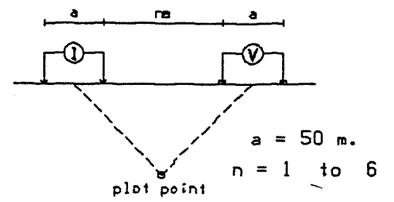
INTERPRETATION



METAL FACTOR
(ip/res * 1000)

Line 9000 E

Dipole-Dipole Array



a = 50 m.
n = 1 to 6

Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instruments: IPT1,TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.

LEGEND

- R — RESISTIVITY HIGH
- P — PHASE HIGH
- LO ↔ HI — RESISTIVITY CONTACT
- O — THICKEST LAKE SEDIMENT

WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

Kenogami Lake Grid,
Kirkland Lake, Ontario

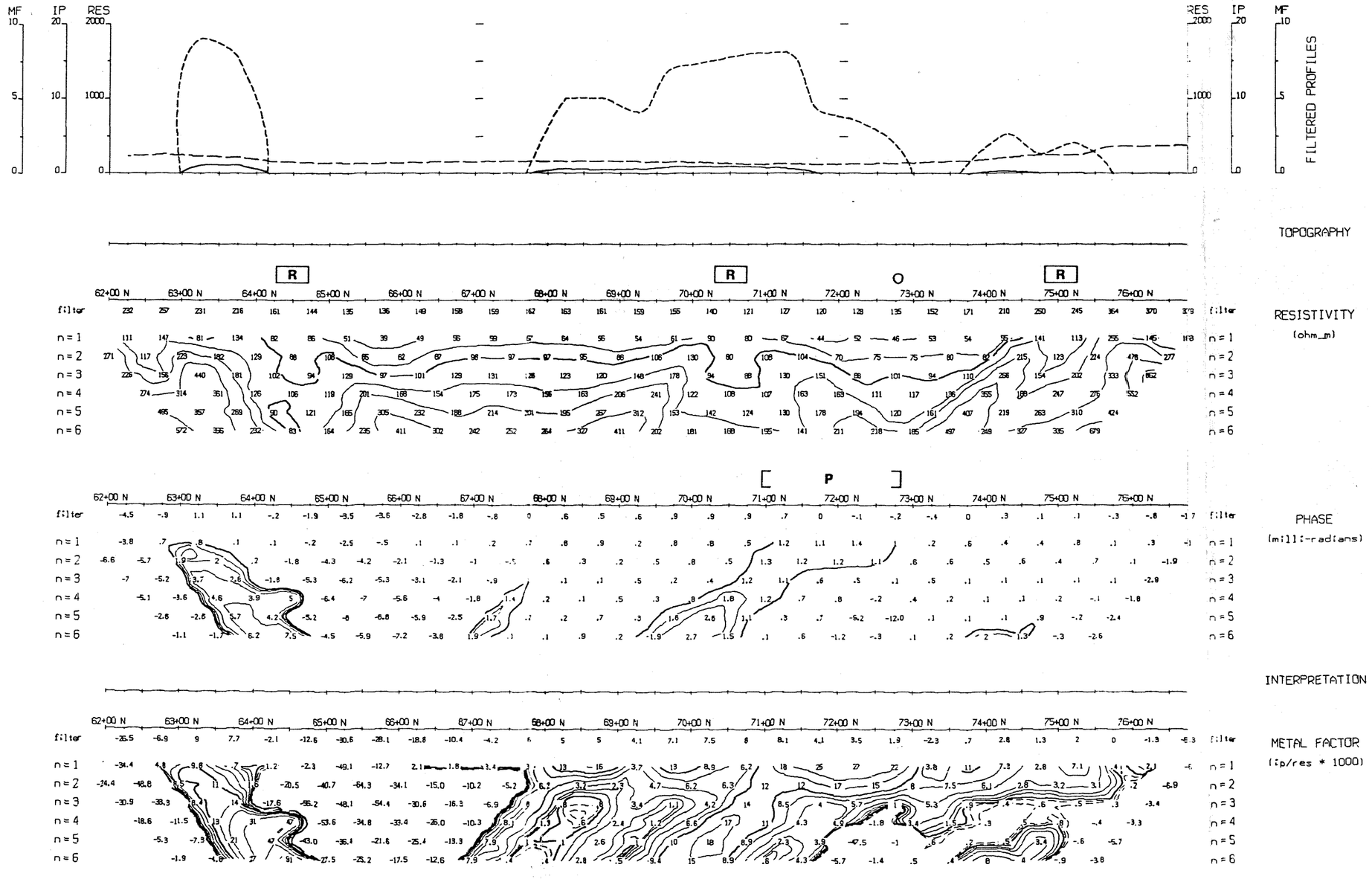
Date: Jan \ 1994 N.T.S.

Scale: 1 : 5000 FIGURE 7D

MERTENS & MacNEIL LTD.

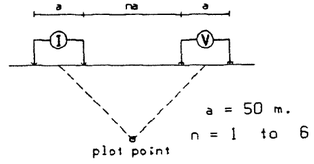
290
42A01SE2026 om94-071 GRENFELL

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Line 9200 E

Dipole-Dipole Array



Filtered Profiles

	filter
Resistivity	*
Polarization	* *
Metal Factor	* * *
	* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instruments: IPT1, TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.

LEGEND

- R — RESISTIVITY HIGH
- P — PHASE HIGH
- LO ◄ ► HI — RESISTIVITY CONTACT
- O — THICKEST LAKE SEDIMENT

WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

Kenogami Lake Grid,
Kirkland Lake, Ontario

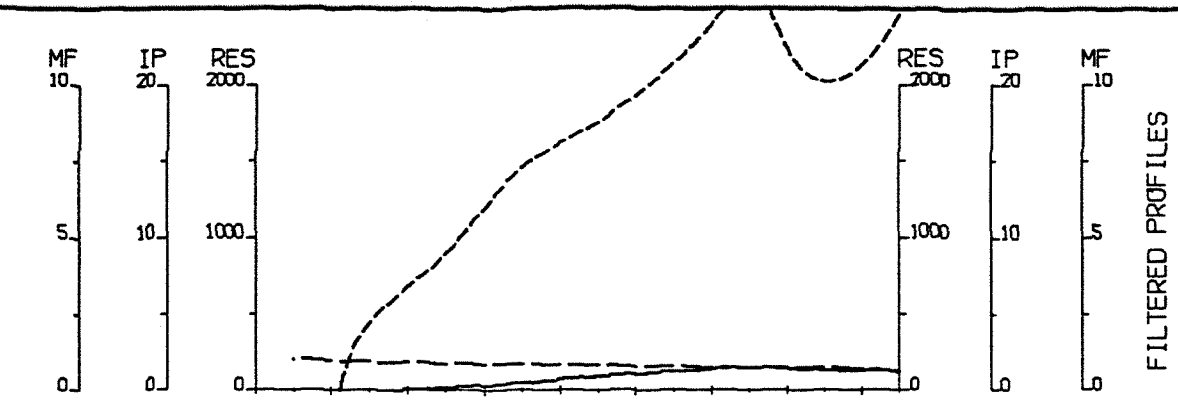
Date: Jan \ 1994 N.T.S.

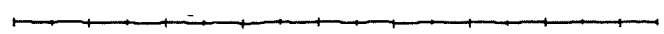
Scale: 1 : 5000 FIGURE 7E

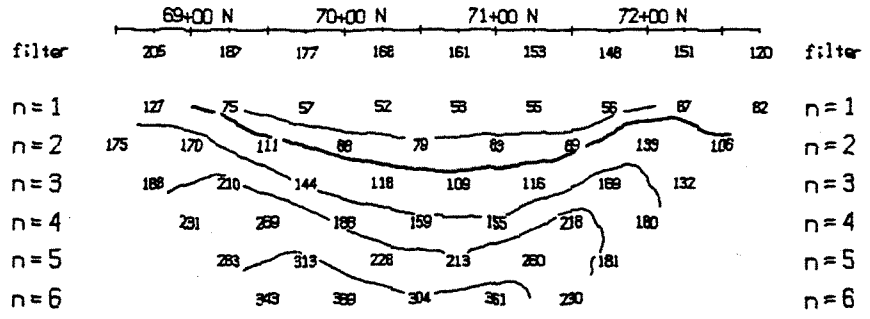
MERTENS & MacNEIL LTD.

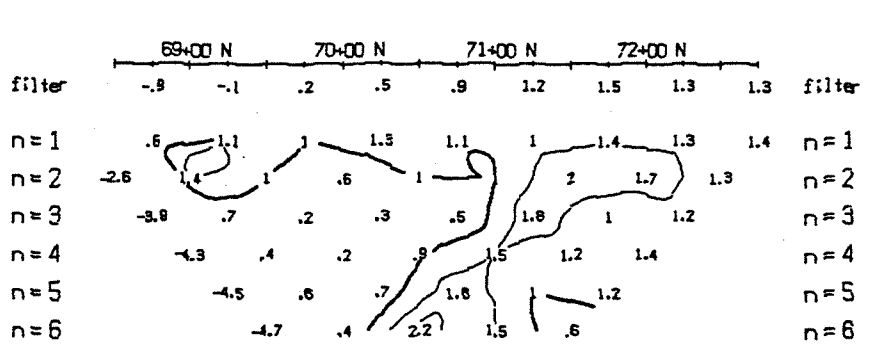
42A01SE2026 on94-071 GRENFELL 300

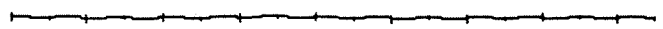
GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada

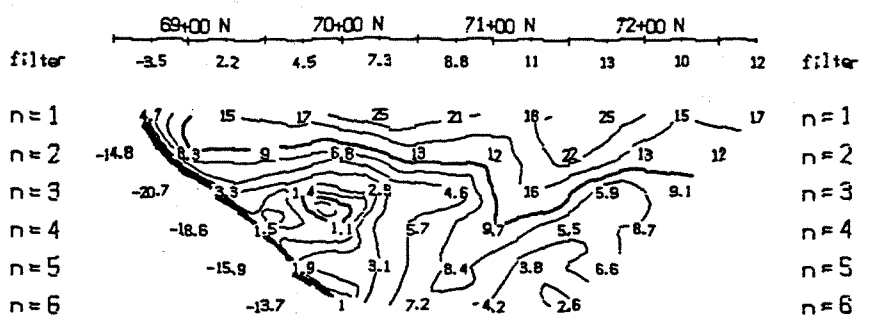






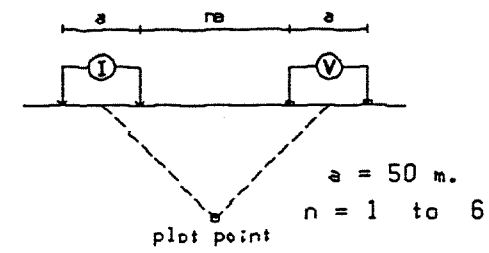






Line 9400 E

Dipole-Dipole Array

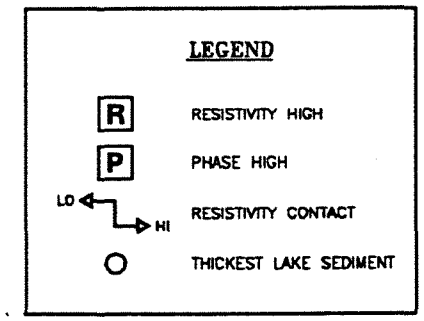


Filtered Profiles

		filter
Resistivity	———	*
Polarization	———	* *
Metal Factor	- - - - -	* * *
		* * * *

Logarithmic Contours 1, 1.5, 2, 3, 5, 7.5, 10,...

Instruments: IPT1,TURBO IPV-4
Frequency: 1.0 Hz.
Operator: J.M.N.



WESTMINER CANADA LTD.

INDUCED POLARIZATION SURVEY

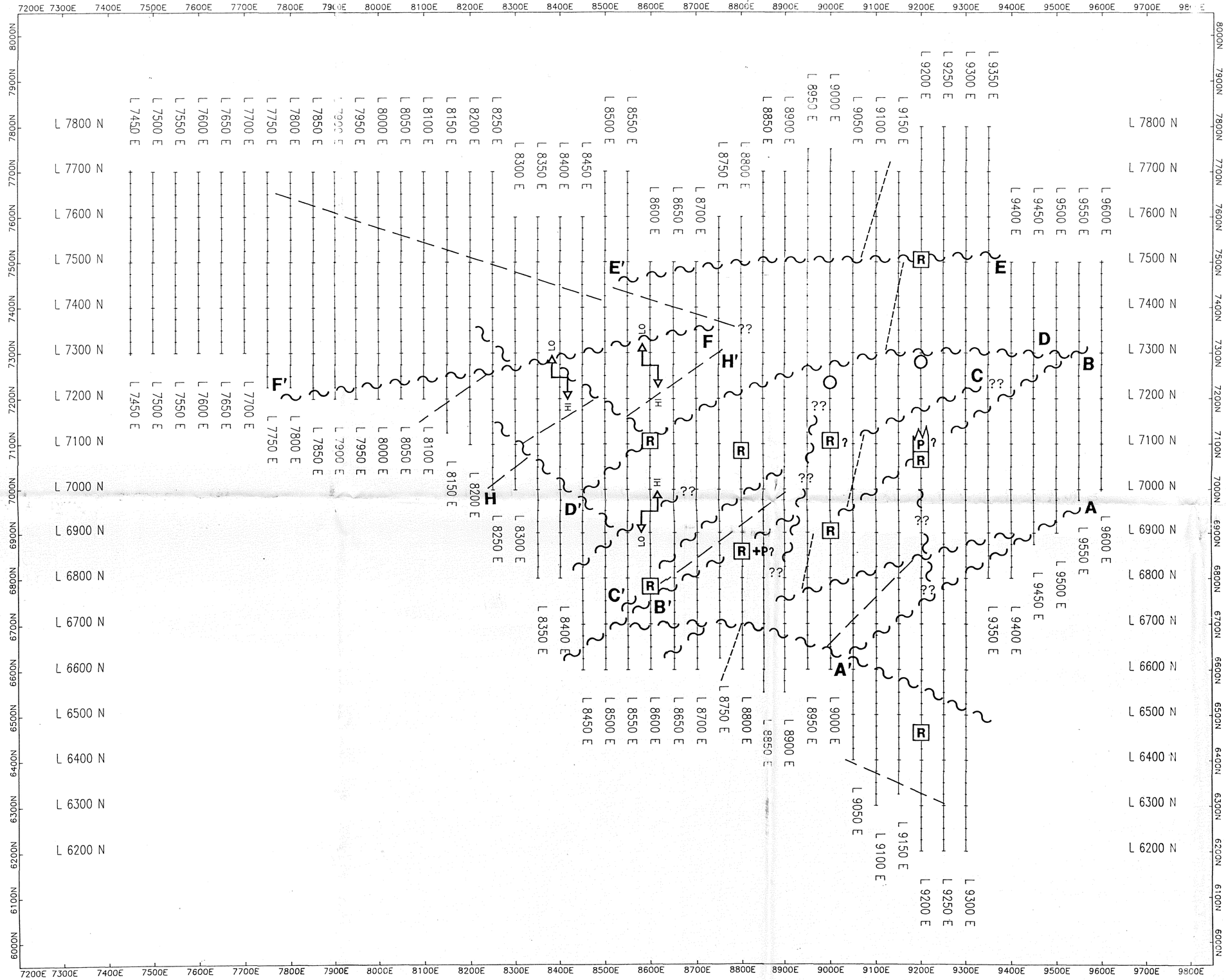
Kenogami Lake Grid,
Kirkland Lake, Ontario

Date: Jan \ 1994 N.T.S.

Scale: 1 : 5000 FIGURE 7F

MERTENS & MacNEIL LTD.

310
42A01SE2026 om94-071 GRENFELL
GEOSOFT (tm) Software for the Earth Sciences, Toronto, Canada



LEGEND

- INFERRED FAULT
- X – X' FAULT IDENTIFIER
- MAGNETIC UNIT MARKER
- MAGNETIC DYKE
- R RESISTIVITY HIGH
- P PHASE HIGH
- LO / HI RESISTIVITY CONTACT
- THICKEST LAKE SEDIMENT

Scale 1:5000

100 0 100 200 300 (meters)

WESTMINER CANADA LIMITED
KENOGAMI LAKE EAST GRID Kirkland Lake Area, Ontario Eby Twp, NTS 42-A-1
GEOPHYSICAL SURVEY INTERPRETATION
interpreted by: WMC – R. Tykajlo, Jan 1994

FIGURE 8

42A01SE2026 om94-071 GRENFELL