GEOPHYSICS

of the

BLUE MOUNTAIN PROPERTY

P.A.Diorio Feb 1988

TABLE OF CONTENTS

ABSTRACT

The Blue Mountain Property lies 16 kilometers northwest of Kirkland Lake, Ont and is underlain by massive and pillow basalts and andesites of the Kinojevis group. The property has seen sporadic gold exploration since the 1920's most of which appears to have been concentrated near two showings. The Kinika showing yielded interesting gold values over 1-2 meter widths. The intervening 2 kilometers between the showings is largely overburden covered and apparently untested. The primary objective of the geophysical surveys described here is to establish targets, if any, related to the two showings and to aid planned geological mapping.

A pole-dipole IP survey completed in January 1988, outlines a weak to moderate IP anomaly which passes close to the Jumbo showing and extends semicontinuously for more than 2 kilometers to within 100meters of the old Kinika shaft. Many other IP anomalies are also identified, several of which provide excellent exploration targets. A combined magnetometer VLF survey delineates several structures which may prove to be of interest.

BLUE MOUNTAIN PROPERTY DESCRIPTION

The following description of the property, geology and history is taken from internal memos by G. Holland, BHP-Utah Mines Geologist and is based on property examination, assessment file review and published geologic maps for the area.

Property Description - Claims, Location and Access

The Blue Mountain property consists of forty contiguous unpatented claims in Bernhardt and Maisonville Twps. Twenty four of these claims are under option to BHP Utah Mines Ltd from Glencairn Exploration Ltd. The remaining 16 claims were added in July 1987 to protect the property position.

The property is located approximately 16 kilometers northwest of Kirkland Lake and may be reached via highway 11 to the rail station at Bourkes and a succession of bush roads as shown on figure 1. The base of operations was established one kilometer east of Bourkes and the property was accessed from there via truck and snow mobile.

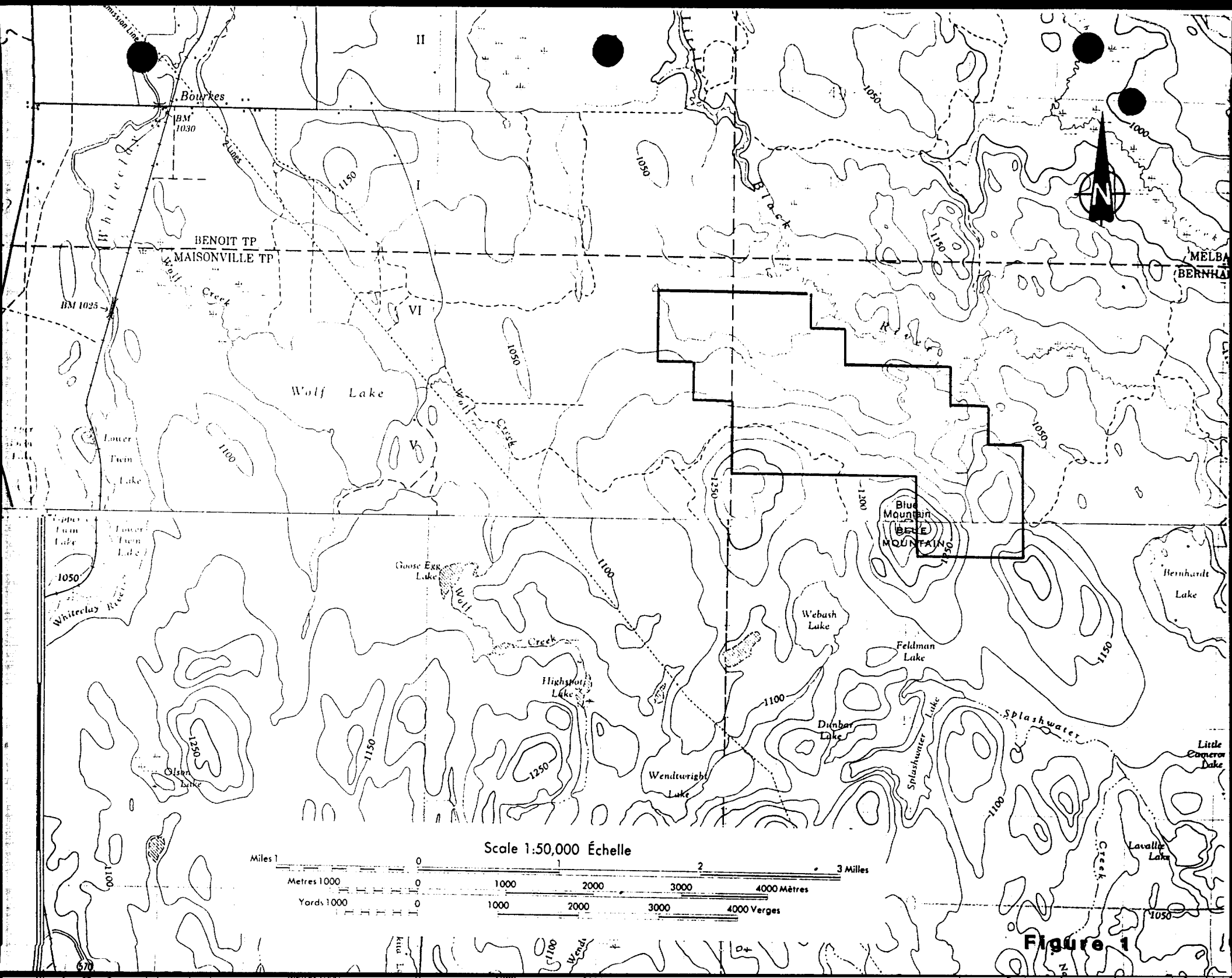

Bourkes
BM 1030
2 Lines
BENOIT TP
MAISONVILLE TP
BM 1025
Wolf Creek
Wolf Lake
Lower Twin Lake
Upper Twin Lake
Whiteclay River
Goose Egg Lake
Highshot Lake
Olson Lake
Wendtwright Lake
Webash Lake
Feldman Lake
Dunbar Lake
Splashwater Lake
Splashwater
Blue Mountain
BLUE MOUNTAIN
Bernhardt Lake
Little Cameron Lake
Lavallie Lake
Black
Little
1050
1100
1150
1200
1250
I
II
V
VI
N
Scale 1:50,000 Échelle
Miles 1 0 1 2 3 Milles
Metres 1000 0 1000 2000 3000 4000 Mètres
Yards 1000 0 1000 2000 3000 4000 Verges

Figure 1

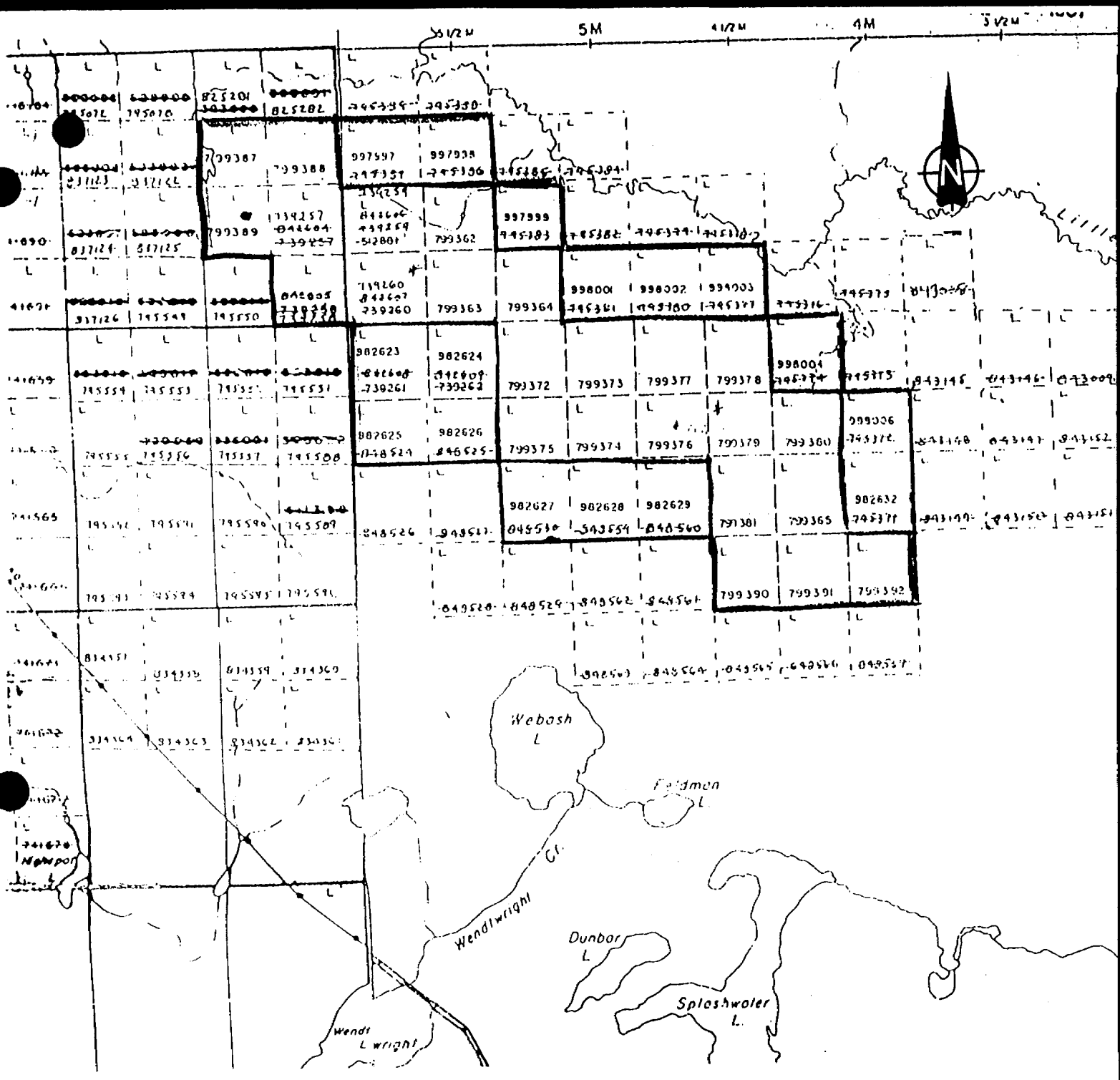

5M
4M
N
Webash L
Wendlwright Cr.
Dunbar L.
Spleshwater L.
Wendl L wright

Figure 2

Exploration History

1920 Ontario Gold Veins Ltd. sank two shafts on the property. The Kinika shaft reached 55 Ft with a 45 Ft crosscut at the 50 Ft level. The Jumbo shaft reached 50 Ft. No geology or assay data was recorded.

1937 Kinika Mines Ltd reopened the Kinika shaft. Mapping and sampling were completed. The shaft was sunk through altered basalts. The rock is silicified and mineralized with pyrite. Visible gold is noted in several places with erratic, occasionally very high assays.

1974 Consolidated Beaumont Resources completed a magnetic survey and a 2860 Ft diamond drill program in the Kinika shaft area. Anomalous assay values include 0.24 oz/ton Au over 3.2Ft, .30 oz/ton over 4.5Ft, and 0.145 oz/ton over 6.2Ft.

1981 Cedar Ridge Exploration Ltd carried out magnetic and VLF-EM surveys on a grid with 200Ft line separation. Limited stripping and trenching was done however the results were largely unsatisfactory due to overburden thickness.

1985 Premier Explorations Inc. completed a reconnaissance proton magnetometer survey over parts of the property followed by bulldozer stripping, backhoe trenching, sampling and mapping.

Basal till sampling was undertaken to evaluate the area between the two shafts, and to check some of the VLF-EM anomalies. The basal till survey failed to detect the known mineralization.

GEOLOGY

Regional Geology

The property is located near the top of the Kinojevis Group which is overlain conformably to disconformably by the Blake River Group. The Kinojevis Group consists of alternating formations of Mg-rich/Fe-rich tholeiitic basalt. Minor tholeiitic andesite, dacite and rhyolite occur. The Blake River Group consists of calc-alkaline basalt, andesite, dacite with rhyolite flows and pyroclastic rocks.

The region has been folded into a series of anticlines and synclines with steeply dipping limps. The claims are near the nose of a major east-west trending synclinorium. Faulting in the region varies from northeast to north with north and northwest trending faults predominant in the area of the property.

Property Geology

The property is underlain by northwest trending, steeply northeast dipping volcanic rocks consisting of an intercalated sequence of massive granular basalt/andesite and pillowed basalt/andesite. Flow top breccias can be significant enough to appear as units, particularly in the area of the Kinika vein. The flow top breccia is silicified and in places carbonatized with minor sulphides.

Mafic intrusives, particularly diabase, cut the volcanics and trend north south. A small intrusive diorite is reported in the southeastern portion of the claim group.

Gold mineralization is reported in irregular patches and finely disseminated grains within gash quartz veins in the flow top breccias. The flow top breccias are reported to contain sulphide mineralization that extends into the country rock.

TARGET DESCRIPTION

Most Archean 'gold only' deposits do not exhibit a direct geophysical signature, the concentration of gold being far to low to appreciably alter the bulk physical properties of the rock. Geophysics may be used in at least three ways: as an aid to geologic mapping, detecting structures and delineating possible ore related alteration zones.

Structures (folds and faults) are often recognizible in the magnetic data by the distortion of the magnetic pattern. Faults may sometimes be inferred indirectly from magnetic dykes or alteration effects produced in the wall rock by fluid movement along the fault zone.

Faults and shear zones may also be sufficiently conductive to be detected by VLF or other EM systems. This requires that the zone be mineralized, or to have been otherwise mechanically or chemically altered so that an appreciable reduction in resistivity results. In many cases, a fault or shear will be differentially eroded resulting in a sharp bedrock trough which, if filled with relatively conductive sediments, will often be detected by a VLF survey.

Alteration accompanying gold mineralization may have profound effects on the physical properties of the host rock. Silicification and carbonization will tend to eliminate pore space thus increasing the resistivity (and durability) of the rock. Unfortunately, variable thickness conductive overburden will often obscure the increased resistivity. Most Archean deposits contain appreciable sulphides which can often be detected by induced polarization and sometimes by EM methods. Note that very thorough silicification may effectively insulate each sulphide grain and

completely eliminate the IP effect.

Alteration may also effect the magnetic signature. Both carbonization and sulphidation may tend to eliminate the magnetic response by chemically reducing magnetite to iron carbonate or iron sulphides.

In summary, prospective targets may exhibit some or all of the following geophysical characteristics:

VLF anomaly / magnetic lineament suggesting structural control

Extreme resistivity high reflecting silicification etc.

Weakened magnetic response

IP anomaly refection sulphide concentration

As implied above, these criteria are indirect and in no way unique to gold deposits. They do however permit us to focus exploration effort on specific areas. The application of these can be greatly enhanced when combined with the responses observed over known mineralization in the area.

DESCRIPTION OF GEOPHYSICAL SURVEYS

Survey Grid

A total of 58.4km of cut line survey grid was established using traditional compass and chaining techniques. Lines were emplaced at 100 meter intervals with 25 meter pickets. This work is not being claimed for assessments at this time since. A somewhat expanded grid will be filed with the geological report (to be completed in the spring of 1988.) The location of the survey grid with respect to the claim group as well as the respective coverage for each survey is shown on the enclosed "CLAIM MAP and GEOPHYSICAL COVERAGE, 1:5000".

Combined Magnetometer/VLF Survey

The magnetometer and VLF data were acquired simultaneously by a single operator using a SCINTREX IGS2 equipped with pack mounted proton precession and self orienting VLF EM sensors. Magnetometer readings were take every 12.5 meters and VLF readings were taken every 25 meters. A continuously cycling base station magnetometer located at the base of operations (Bourkes,Ont.) was used to automatically correct for diurnal drift.

Magnetometer and VLF data are shown as stacked profile maps with

data values posted. Total field mag and Fraser Filtered VLF are also included in contoured form.

Induced Polarization Survey

The IP/Resistivity survey was performed using a SCINTREX IPR11 receiver and Phoenix IPT1 transmitter operated in the time domain mode. A pole-dipole array with A=50m and N=1 to 4 was employed. Three short line segments on lines 110E and 111E were covered with 25 meter dipole-dipole data to improve resolution, to extend the coverage on the south end of 110E and to verify results where suspect resistivity values were recorded with the Pole-Dipole survey.

The survey was performed using a 5 person crew and required 25 days to complete. Significant difficulty was encountered in obtaining electrical contact in rocky areas.

Data is presented in plan contoured form for N=1 resistivity and chargeability and as stacked pseudosections for resistivity and chargeability. Both map sets are presented at 1:5000 however the pseudosection maps are only to scale in the direction parallel to the survey lines. Spacing between each survey line is arbitrary.

RESULTS and INTERPRETATION

Geophysical Compilation Map

Geophysical results have been transferred on to a single map for compilation purposed. Considerable license has been taken in transferring anomalies on to this map. In particular, IP anomalies have been represented by a line whereas they are more appropriately represented by areas, as can be seen on the IP maps. With this limitation in mind the compilation map provides a useful vehicle to show the relationship between the data set.

Magnetic Survey Results

The aeromagnetic data over the property vicinity show strong correlation between mapped volcanic units and the intensity of the magnetic response. The predominantly intermediate rocks north of the property are relatively non magnetic. This is typical of the calc-alkaline Blake River Group. On the other hand, the tholeiitic basalts of the Kinojevis Group (which underlie most of the property) are distinctly more magnetic.

The ground magnetic data, in a general sense, exhibits the same sort of magnetic striping seen elsewhere within the Kinojevis Group. This striping may reflect alternating band of Fe rich and Mg rich basalts similar to the results described by Letros et al (1983) when they examined a portion of the KLIP aeromagnetic data immediately north and east of the area. If this observation can be applied to the property area, then the magnetic response is somewhat unusual for a volcanic package in that it rather directly reflects the total iron concentration.

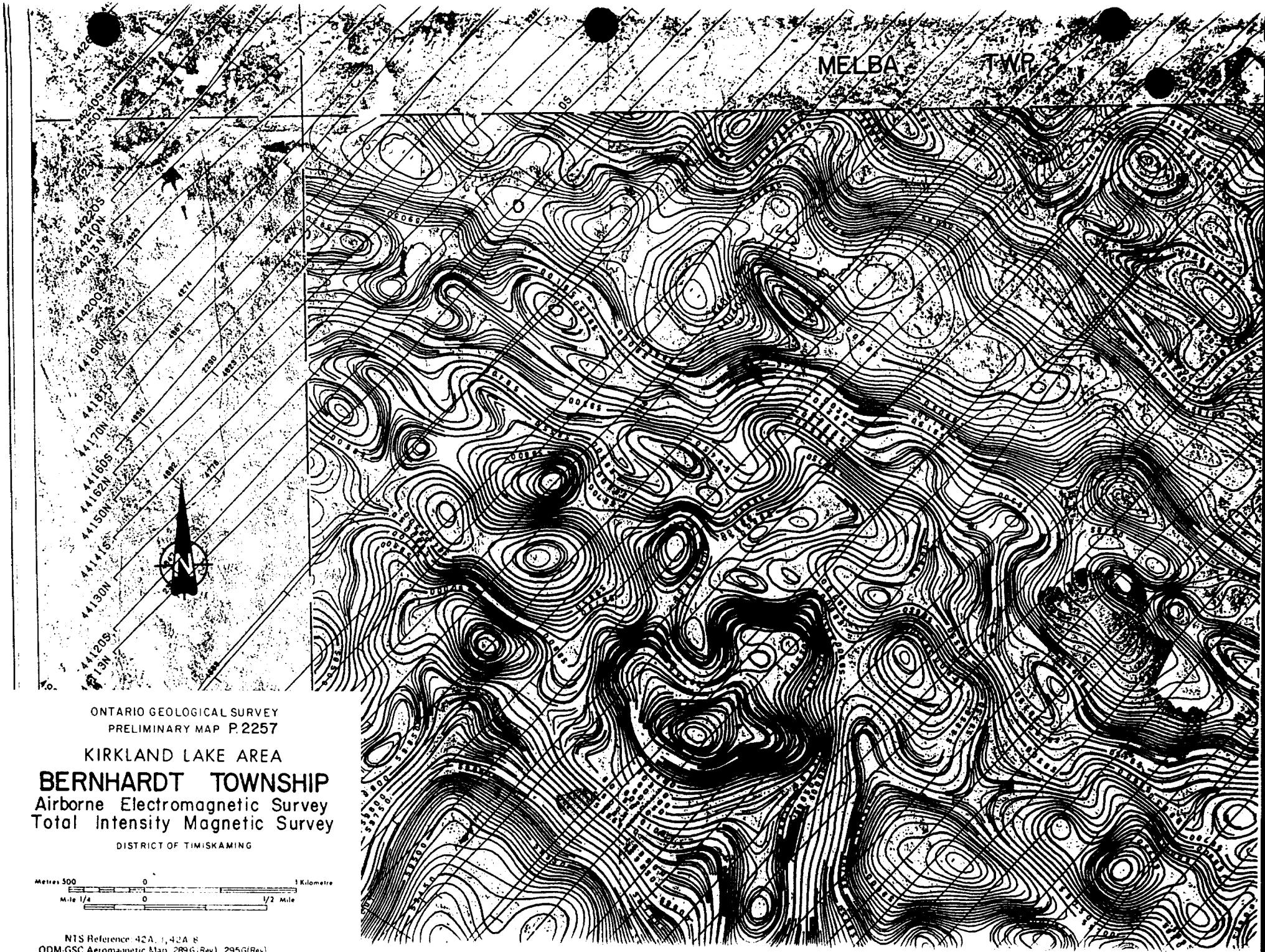
The geologic sequence may be repeated by folding about an axis roughly coincident with the baseline (30N) giving rise to the repetition of strongly magnetic units near the southern and northern limits of the grid lines. Following this scenario the magnetic anomaly which follows line 133E traces the nose of the fold. Alternatively, this anomaly could be an intrusive dyke unrelated to the stratigraphy.

A broad, low amplitude fold with its axial plane roughly coincident with line 99E distorts all of the magnetic units.

Both of the above inferred fold are bests seen on the unscaled grey image of the mag reproduced here as figure 4.

Many, presumably late stage, faults with minor horizontal offset are recognizable in the magnetic data.

VLF Survey Results



ONTARIO GEOLOGICAL SURVEY
PRELIMINARY MAP P.2257

KIRKLAND LAKE AREA

BERNHARDT TOWNSHIP

Airborne Electromagnetic Survey
Total Intensity Magnetic Survey

DISTRICT OF TIMISKAMING

Metres 500 0 1 Kilometre

Mile 1/4 0 1/2 Mile

NTS Reference 42A/1, 42A/8
ODM-GSC Aeromagnetic Map: 2896(Rev), 2956(Rev)
ODM Geological Compilation Map: 2205

Figure 3

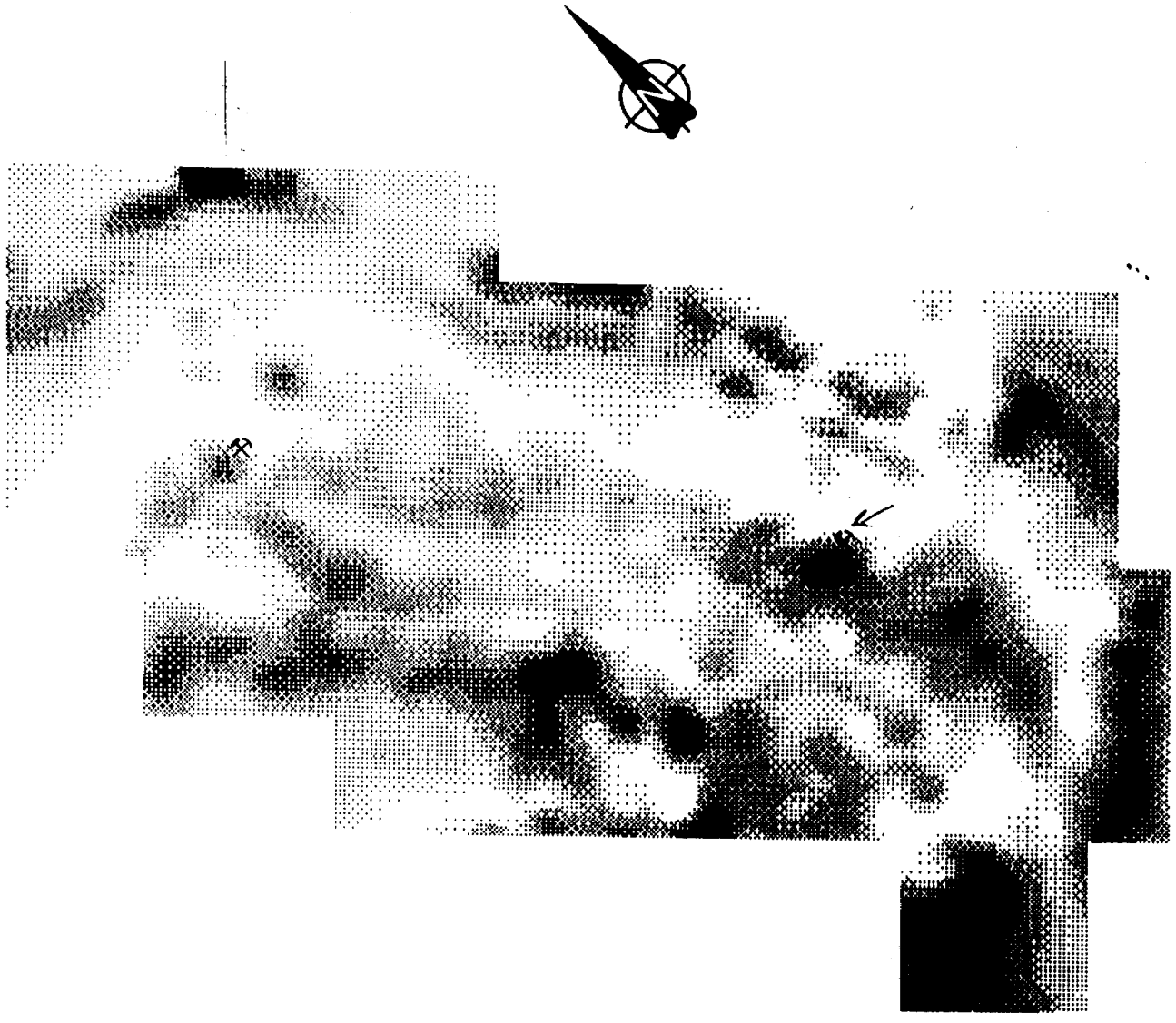


Figure 4. Total magnetic field of the Blue Mountain Property. Dark shades represent high intensity. Approximate positions of the Jumbo and Kinika shafts are shown for reference. The map is not isotropically scaled.

VLF-EM, as with all fixed transmitter EM systems, tends to accentuate large dimension conductivity anomalies. Both high sensitivity and poor depth of investigation arise from the rather high frequencies employed.

Anomalies have been categorized as discrete (presumably bedrock) sources and those resulting from the contact between high and low resistivity units. Typically the latter arise near the contact between conductive overburden (lacustrine clay?) and outcrop which normally has a much higher resistivity. The anomaly is created as VLF induced currents are preferentially channeled around the exposure. From an exploration point of view these are of little interest. Mapping the extent of the clay cover may be useful to help plan geochem surveys and guide trenching, however, this information can be obtained much more conclusively from the resistivity data.

Discussion of Target Areas

A short length VLF anomaly strikes Northwest from a point 30 meters north of the Kinika shaft and may be related to the mineralization. IP does not appear to have detect the sulphide mineralization observed in the shaft area. IP coverage was not completed on line 99E near the shaft due to difficulty in obtaining electrical contact.

A discontinuous, weak to moderate IP anomaly passes from the Jumbo shaft to approximately 100meters southwest of the Kinika shaft. This zone can be split into two distinct sections based solely on its geophysical characteristics. From 97E to 115E the anomaly (A1) is roughly conformable and has a coincident VLF anomaly and resistivity low along much of its length. Closer to the Jumbo shaft (A2) from L117E to 122E the character of the anomaly differs significantly: the anomaly appears to crosscut the magnetic trends, resistivity is much higher and there is no VLF anomaly. This may reflect more pervasive alteration which has effectively eliminated the conductive zone. Ground examination will be required to determine if A2 is the zone which was trenched by Premier Explorations.

Horizontal loop EM (100M separation, 1777Hz and 222Hz) over lines 110E and 111E identified only a weak out of phase response at the higher frequency indicating very poor conductivity.

The low resistivity/VLF anomaly accompanying A1 may reflect three things: increased pore space (mechanical deformation?), indirectly reflect a deformation zone due to differential weathering or simply reflect increased sulphide content. All three possibilities enhance the prospect of this zone hosting mineralization. The area detailed with 25 meter IP on line 111E at approximately 29+75N is the most attractive target at this time.

A possible extension of the anomalous zone southeast of the Jumbo showing (A3) exhibits essentially the same characteristics as A2. This may well be amenable to surface trenching.

Anomaly A4 may be an extension of A1 or a splay off of the main structure.

Anomaly B shows extremely interesting characteristics. The IP anomaly is not particularly intense however it is situated in an abatement in an relatively magnetic unit at the intersection with an east-west trending VLF anomaly. This trend direction is parallel anomaly A2 which pass close to the Jumbo shaft. A shear zone where magnetite rich volcanics have been sulphidized (hopefully with accompanied precipitation of gold) is hypothesized. At least two intersecting anomaly sets (B1 and B2) are identified. Detailed IP may be useful in resolving the ambiguity in strike direction.

Anomaly C is a very intense chargeability anomaly also situated in a magnetic abatement in an iron rich unit. Again, sulphidation is suggested as a possible ore forming mechanism. In this case the accompanying VLF anomaly probably arises directly from conductive sulphides and does not independently suggest the presence of a structure.

Anomaly D is a broad area of chargeability anomalies within a very high resistivity area. Note that the anomaly locations marked on the compilation map are highly speculative. In particular, the strike direction is poorly defined. The series of short strike length anomalies may in fact be a single feature running nearly parallel to line 130E. This would be consistent with the fold closure hypothesized from the mag data. This area can probably be evaluated by surface prospecting. Limited, very detailed IP may be useful to precisely locate the sources of the chargeability anomalies.

Anomaly E is an extremely intense chargeability anomaly detected on the southernmost reading on lines 110E and 111E. Detailed IP on line 110E confirmed its existence, however, follow up along strike was not pursued due to the lack of grid coverage and was deferred until spring.

Anomalies B, A2, C and possibly E are aligned along an ~80° trend which also has a subtle expression on the ground mag. This proposed structure may be an important link between each of these anomalous zones.

Other Recommendations

Each of the above anomalies warrants follow up, initially by geologic mapping, prospecting, trenching, possibly geochem in selected areas and ultimately by drill testing. Of course, once the extent of the old surface workings have been mapped with respect to our grid, further surface work may be redundant and the decision to drill test can be based on previous assays.

Detailed IP with 25 or 12.5 meter separation is usually a cost effective preliminary to trenching IP targets. (The 50 meter pole-dipole nominally locates the anomalous source to ±25 meters.) Detailed IP can also give a better estimate of overburden depth. This work can be quickly completed by a 3 person crew on short sections of grid (150 meters) over prospective targets.

Detailed IP is also recommended in the Kinika shaft area. Line 99E was not covered by IP due to poor contact and similar difficulties were were encountered on line 100E. The improved resolution of a short spacing survey may be sufficient to detect and trace sulphides observed in the shaft area. This work could be completed in approximately 1 man day (assuming the ground is not frozen.)

Finally, I believe that useful information can be obtained from the magnetic data through the use of image processing techniques. This is planned for April 1988.

Peter A. Diorio Feb. 1988

REFERENCES

LETROS,S.; STRANGWAY,D.W.; TASILLO-HIRT,A.M. and GEISSMAN,J.W.: Aeromagnetic interpretation of the Kirkland Lake - Larder Lake portion of the Abitibi Greenstone Belt, Ontario ; Can.J.Earth Sci,20,548-560 (1983)

RUPERT,R.J.and LOVELL,H.L.: Geology of Bernhardt and Morrisette Townships, ODM Geological Report 84 and accompanying Map 2193.Scale, 1 Inch=1/2 Mile (1970)

Ontario Geological Survey Map P.2257: Airborne Electromagnetic Survey Total Intensity Magnetic Survey 1:20,000; (1979)

Ministry of Northern Developm and Mines

Ontario

Ministère du Développement du et des Mines

42A08SE0151 2.10906 BERNHARDT

900

May 13, 1988

Your File: W8808-73
W8808-77
Our file: 2.10906

Mining Recorder
Ministry of Northern Development and Mines
4 Government Road East
Kirkland Lake, Ontario
P2N 1A2

Dear Sir:

RE: Notice of Intent dated April 28, 1988
Geophysical (Magnetometer, Electromagnetic and Induced Polarization) Survey submitted on Mining Claims L739257 et al in the Townships of Bernhardt and Maisonville

The assessment work credits, as listed with the above-mentioned Notice of Intent, have been approved as of the above date.

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

Yours sincerely,

W.R. Cowan, Manager
Mining Lands Section
Mines and Minerals Division

Whitney Block, Room 6610
Queen's Park
Toronto, Ontario
M7A 1W3

Telephone: (416) 965-4888

BB:DK:pl
Enclosure: Technical Assessment Work Credits

cc: Mr. G.H. Ferguson
Mining & Lands Commissioner
Toronto, Ontario

Resident Geologist
Kirkland Lake, Ontario

Glencairn Exploration Ltd./Utah Mines Ltd.
137 Berkeley Street
Toronto, Ontario
M5A 2X1

Ministry of Northern Development and Mines
Ontario

Technical Assessment Work Credits

File 2.10906

Date April 28, 1988

Mining Recorder's Report of Work No. W8808-73

Recorded Holder: Glencairn Explorations Ltd./Utah Mines Ltd.

Township or Area: ~~XXXX~~ Bernhardt & Maisonville

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic 20 days	L-739257 to 60 inclusive 799362 to 65 inclusive 799372 to 74 inclusive 799376 to 81 inclusive 799387 to 89 inclusive 799391 998006 982624 982632
Magnetometer 20 days	
Radiometric ____ days	
Induced polarization ____ days	
Other ____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological ____ days	
Geochemical ____ days	
Man days ☐ Airborne ☐	
Special provision ☒ Ground ☒	
☐ Credits have been reduced because of partial coverage of claims.	
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	

Special credits under section 77 (16) for the following mining claims

15 days Electromagnetic & 15 days Magnetometer		10 days Electromagnetic & 10 days Magnetometer	5 days Electromagnetic & 5 days Magnetometer
L-799375	L-998001	L-799392	L-997997
799390	998004	982629	998002
997999	982623		982626

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geologocal - 40; Geochemical - 40; Section 77(19) - 60.

828 (85/12)

Ontario Ministry of Northern Development and Mines

Technical Assessment Work Credits

File 2.10906

Date April 28, 1988

Mining Recorder's Report of Work No. W8808-77

Recorded Holder: Glencairn Explorations Ltd./Utah Mines Ltd.

Township XXXXX: Bernhardt & Maisonville

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic _____ days	
Magnetometer _____ days	L-739257 to 60 inclusive
Radiometric _____ days	799362 to 65 inclusive
Induced polarization 27.3 days	799372 to 81 inclusive
Other _____ days	799387 to 89 inclusive
Section 77 (19) See "Mining Claims Assessed" column	799391
Geological _____ days	997997
Geochemical _____ days	997999
Man days ☐ Airborne ☐	998001-02
Special provision ☐ Ground ☐	998004
☐ Credits have been reduced because of partial coverage of claims.	998006
☐ Credits have been reduced because of corrections to work dates and figures of applicant.	982623-24
	982629
	982632

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

☐ not sufficiently covered by the survey ☐ insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geologocal - 40; Geochemical - 40; Section 77(19) - 60.

Land Management

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT No. W8808.077

Mining Act

Instructions: – Please type or print.
– If number of mining claims traversed exceeds space on this form, attach a list.
Note: – Only days credits calculated in the "Expenditures" section may be entered in the "Expend. Days Cr." columns.
– Do not use shaded areas below.

Type of Survey(s)	Township or Area
IP 2.10906	Bernhardt & Maisonville

Claim Holder(s) — Prospector's Licence No.
Glencairn Explorations Ltd. / Utah Mines Ltd. — T-4924, T-793

Address
137 Berkeley St., Toronto, Ontario M5A 2X1

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
BHP-Utah Mines Ltd.	05 01 88 (Day Mo. Yr.) to 29 01 88 (Day Mo. Yr.)	58.4 km

Name and Address of Author (of Geo-Technical report)
Peter Diorio, BHP-Utah Mines Ltd., 900-25 Adelaide St.E., Toronto, M5C 1Y2

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical	
	- Electromagnetic	
	- Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	- Radiometric	
	- Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical	
	- Electromagnetic	
	- Magnetometer	
	- Radiometric	
	- Other see attached list ~~27.3~~	
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

RECEIVED
MAR 10 1988
MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
	see attached list	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

LARDER LAKE MINING DIV
RECEIVED
MAR 4 1988
AM 10:15 am PM
7 8 9 10 11 12 1 2 3 4 5 6

Total number of mining claims covered by this report of work: 32

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s)

Calculation of Expenditure Days Credits
Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions
Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only		
Total Days Cr. Recorded: 873.6	Date Recorded: March 4/88	Mining Recorder: M.C. Wearne
	Date Approved as Recorded	Branch Director: See revised work statement

Date	Recorded Holder or Agent (Signature)
Feb 18/87	P. Diorio

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying
Peter Diorio, BHP-Utah Mines Ltd.
900-25 Adelaide St.E., Toronto, M5C 1Y2

Date Certified	Certified by (Signature)
Feb 18/87	P. Diorio

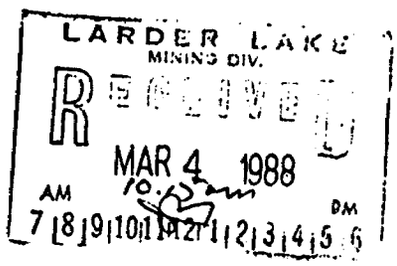
1362 (81/9)

Claims in Bernhardt and Maisonville Twps.
Covered by the Induced Polarization Survey

*	L-739257	20
*	L-739258	20
*	L-739259	20
*	L-739260	20
	L-799362	34.6
	L-799363	34.6
	L-799364	34.6
	L-799365	34.6
*	L-799372	20
*	L-799373	20
*	L-799374	20
*	L-799375	20
*	L-799376	20
*	L-799377	20
*	L-799378	20
*	L-799379	20
*	L-799380	20
	L-799381	34.6
*	L-799387	20
*	L-799388	20
*	L-799389	20
	L-799391	34.6
	L-997997	34.6
	L-997999	34.6
	L-998001	34.6
	L-998002	34.6
	L-998004	34.6
	L-998006	34.6
	L-982623	34.6
	L-982624	34.6
	L-982629	34.6
	L-982632	34.6

TOTAL CLAIMS = 32

* Credit was reduced to 20 days because they claims are now at maximum of 80 days Geophysical credit recorded. The excess days were distributed evenly on the claims which were within the maximum allowed.



Land Management

Ministry of Natural Resources
Ontario

Report of Work
(Geophysical, Geological, Geochemical and Expenditures)

DOCUMENT No. W8808.073

2.1906

Mining Act

Instructions: – Please type or print.
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– Do not use shaded areas below.

Type of Survey(s)	Township or Area
Magnetometer, VLF	Bernhardt & Maisonville

Claim Holder(s)	Prospector's Licence No.
Glencairn Explorations Ltd. / Utah Mines Ltd.	T 4924 T-793

Address: 137 Berkeley St., Toronto, Ontario M5A 2X1

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
BHP-Utah Mines Ltd.	5 01 88 (Day / Mo. / Yr.) 29 01 88 (Day / Mo. / Yr.)	58.4 km

Name and Address of Author (of Geo-Technical report): Peter Diorio, BHP-Utah Mines Ltd., 900-25 Adelaide St.E., Toronto, M5C 1Y2

Credits Requested per Each Claim in Columns at right

Special Provisions		Days per Claim
For first survey: Enter 40 days. (This includes line cutting)	Geophysical - Electromagnetic	20
	Geophysical - Magnetometer	20
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	
	Geochemical	

Man Days		Days per Claim
Complete reverse side and enter total(s) here	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Radiometric	
	Geophysical - Other ~~Report~~	~~2.4~~
	Geological	
	Geochemical	

Airborne Credits		Days per Claim
Note: Special provisions credits do not apply to Airborne Surveys.	Electromagnetic	
	Magnetometer	
	Radiometric	

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MINING LANDS SECTION

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
	see attached list	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

LARDER LAKE MINING DIV.
RECEIVED
MAR 4 1988
AM 7 8 9 10 10:15 am 11 12 1 2 3 4 5 PM

Total number of mining claims covered by this report of work: 35

Expenditures (excludes power stripping)

Type of Work Performed:

Performed on Claim(s):

Calculation of Expenditure Days Credits

Total Expenditures: $ ÷ 15 = Total Days Credits

Instructions: Total Days Credits may be apportioned at the claim holder's choice. Enter number of days credits per claim selected in columns at right.

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
1400	March 4/88	M. G. Wearmouth
	Date Approved as Recorded	Branch Director
		See verbal work statement.

Date	Recorded Holder or Agent (Signature)
Feb 18/87	T. Diorio

Certification Verifying Report of Work

I hereby certify that I have a personal and intimate knowledge of the facts set forth in the Report of Work annexed hereto, having performed the work or witnessed same during and/or after its completion and the annexed report is true.

Name and Postal Address of Person Certifying: Peter Diorio, BHP-Utah Mines Ltd., 900-25 Adelaide St.E., Toronto M5C 1Y2

Date Certified	Certified by (Signature)
Feb 18/87	T. Diorio

1362 (81/9)

Claims in Bernhardt and Maisonville Twps.
Covered by the Magnetometer and VLF Survey

L-739257
L-739258
L-739259
L-739260
L-799362
L-799363
L-799364
L-799365
L-799372
L-799373
L-799374
L-799375
L-799376
L-799377
L-799378
L-799379
L-799380
L-799381
L-799387
L-799388
L-799389
L-799390
L-799391
L-799392
L-997997
L-997999
L-998001
L-998002
L-998004
L-998006
L-982623
L-982624
L-982626
L-982629
L-982632

TOTAL CLAIMS = 35

Ontario

File_____

Ministry of Natural Resources

GEOPHYSICAL – GEOLOGICAL – GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Magnetometer, VLF, IP

Township or Area Bernhardt & Maisonville

Claim Holder(s) Glencairn Exploration Ltd.,
137 Berkeley St, Toronto M5A 2X1

Survey Company BHP-Utah Mines Ltd.

Author of Report Peter Diorio, BHP-Utah Mines Ltd.

Address of Author BHP-Utah Mines, 900-25 Adelaide St.E.

Covering Dates of Survey Jan 5/88 - Feb 20/88
(linecutting to office)

Total Miles of Line Cut 58.4 km

SPECIAL PROVISIONS CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.

ENTER 20 days for each additional survey using same grid.

	DAYS per claim
Geophysical	
–Electromagnetic	20
–Magnetometer	20
–Radiometric	
–Other	
Geological	
Geochemical	

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer_____ Electromagnetic_____ Radiometric_____
(enter days per claim)

DATE: Feb 19/88 SIGNATURE: P Diorio
Author of Report or Agent

Res. Geol._____ Qualifications 2.4695

Previous Surveys

File No.	Type	Date	Claim Holder

MINING CLAIMS TRAVERSED
List numerically

See attached lists
(prefix) (number)

RECEIVED
MAR 10 1988
MINING LANDS SECTION

TOTAL CLAIMS_____

If space insufficient, attach list

OFFICE USE ONLY

837 (5/79)

GEOPHYSICAL TECHNICAL DATA

GROUND SURVEYS -- If more than one survey, specify data for each type of survey

Number of Stations 1845 picketed stations Number of Readings Mag=3660 VLF=1845 IP=2950

Station interval Mag=12.5m, VLF=25m, IP=50m Line spacing 100m

Profile scale see maps

Contour interval see maps

MAGNETIC

Instrument Scintrex IGS II - MP4

Accuracy – Scale constant ± .1 nT (nominal)

Diurnal correction method Continuously cycling base station

Base Station check-in interval (hours) N/A

Base Station location and value 59500 nT at base camp 4 miles northwest of property

ELECTROMAGNETIC

Instrument Scintrex IGS II - VLF 4

Coil configuration

Coil separation

Accuracy

Method: ☐ Fixed transmitter ☐ Shoot back ☐ In line ☐ Parallel line

Frequency 24.0 KHz (Cutler, Maine)
(specify V.L.F. station)

Parameters measured Vertical In Phase, Vertical Out of Phase, Horizontal

GRAVITY

Instrument

Scale constant

Corrections made

Base station value and location

Elevation accuracy

INDUCED POLARIZATION RESISTIVITY

Instrument Scintrex IPR II Receiver, Phoenix IPT I Transmitter

Method ☒ Time Domain ☐ Frequency Domain

Parameters – On time 2 sec Frequency N/A

– Off time 2 sec Range N/A

– Delay time .45 sec

– Integration time .65 sec

Power 3 KVA

Electrode array Pole-Dipole, N=1 to 4

Electrode spacing 50 meters

Type of electrode Steel rod

SELF POTENTIAL

Instrument _____ Range _____

Survey Method _____

_____

Corrections made _____

_____

RADIOMETRIC

Instrument _____

Values measured _____

Energy windows (levels) _____

Height of instrument _____ Background Count _____

Size of detector _____

Overburden _____

(type, depth – include outcrop map)

OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)

Type of survey _____

Instrument _____

Accuracy _____

Parameters measured _____

_____

Additional information (for understanding results) _____

_____

_____

AIRBORNE SURVEYS

Type of survey(s) _____

Instrument(s) _____

(specify for each type of survey)

Accuracy _____

(specify for each type of survey)

Aircraft used _____

Sensor altitude _____

Navigation and flight path recovery method _____

_____

Aircraft altitude _____ Line Spacing _____

Miles flown over total area _____ Over claims only _____

GEOCHEMICAL SURVEY – PROCEDURE RECORD

Numbers of claims from which samples taken _____

_____

_____

Total Number of Samples _____

Type of Sample _____
(Nature of Material)

Average Sample Weight _____

Method of Collection _____

_____

Soil Horizon Sampled _____

Horizon Development _____

Sample Depth _____

Terrain _____

_____

Drainage Development _____

Estimated Range of Overburden Thickness _____

_____

_____

SAMPLE PREPARATION
(Includes drying, screening, crushing, ashing)

Mesh size of fraction used for analysis _____

_____

_____

_____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ANALYTICAL METHODS

Values expressed in: per cent ☐
p. p. m. ☐
p. p. b. ☐

Cu, Pb, Zn, Ni, Co, Ag, Mo, As,-(circle)

Others _____

Field Analysis (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Field Laboratory Analysis

No. (_____ tests)

Extraction Method _____

Analytical Method _____

Reagents Used _____

Commercial Laboratory (_____ tests)

Name of Laboratory _____

Extraction Method _____

Analytical Method _____

Reagents Used _____

General _____

_____

_____

_____

_____

_____

_____

_____

_____

Claims in Bernhardt and Maisonville Twps.
Covered by the Magnetometer and VLF Survey

L-739257
L-739258
L-739259
L-739260
L-799362
L-799363
L-799364
L-799365
L-799372
L-799373
L-799374
L-799375
L-799376
L-799377
L-799378
L-799379
L-799380
L-799381
L-799387
L-799388
L-799389
L-799390
L-799391
L-799392
L-997997
L-997999
L-998001
L-998002
L-998004
L-998006
L-982623
L-982624
L-982626
L-982629
L-982632

TOTAL CLAIMS = 35

Claims in Bernhardt and Maisonville Twps.
Covered by the Induced Polarization Survey

L-739257	L-799380
L-739258	L-799381
L-739259	L-799387
L-739260	L-799388
L-799362	L-799389
L-799363	L-799391
L-799364	L-997997
L-799365	L-997999
L-799372	L-998001
L-799373	L-998002
L-799374	L-998004
L-799375	L-998006
L-799376	L-982623
L-799377	L-982624
L-799378	L-982629
L-799379	L-982632

TOTAL CLAIMS = 32

REFERENCES

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY

S.R.O. – SURFACE RIGHTS ONLY

M.+ S. – MINING AND SURFACE RIGHTS

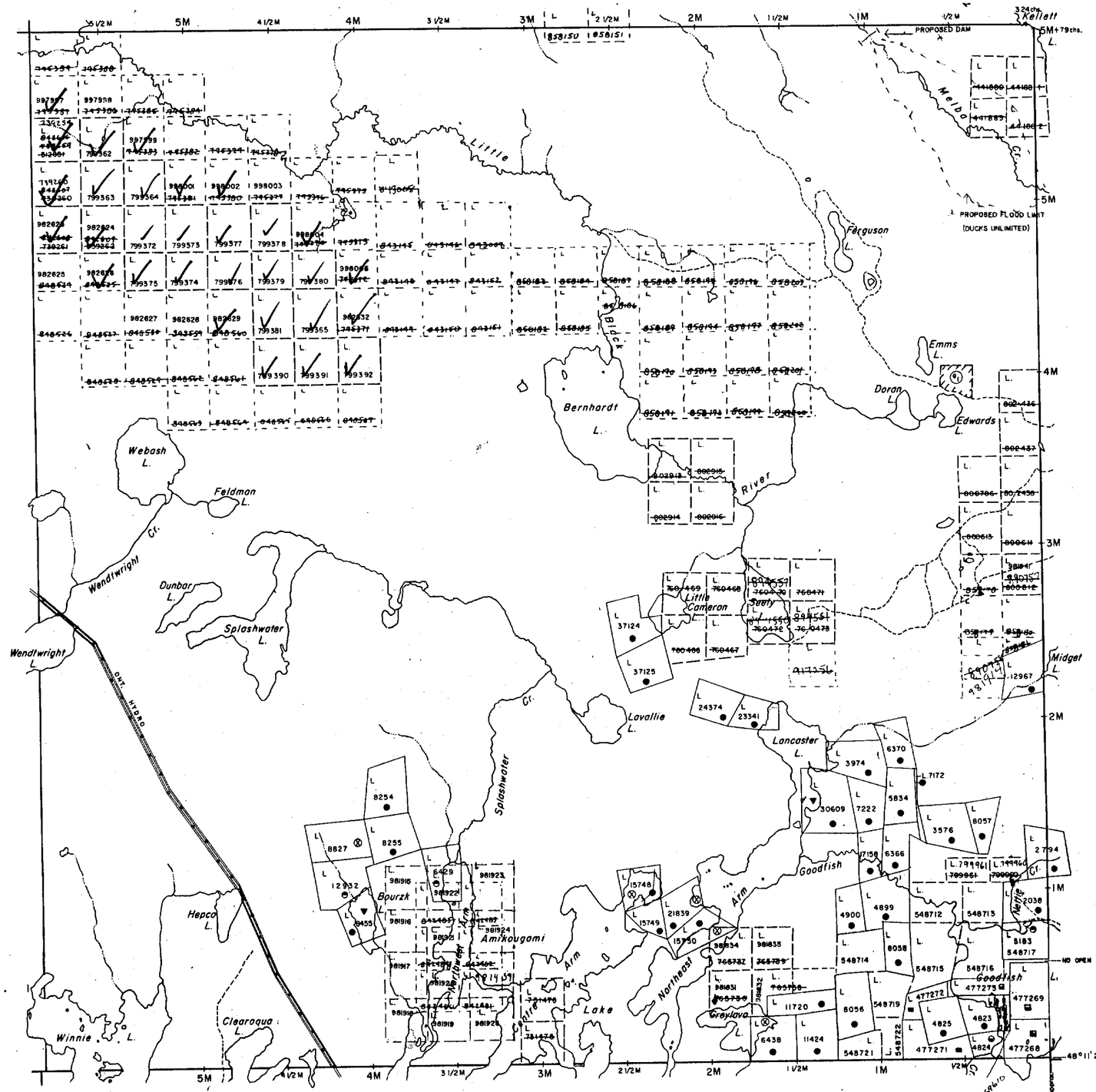
Description	Order No.	Date	Disposition	File

SAND and GRAVEL

(9) M.N.R GRAVEL RESERVE FILE 188522

PENDING APPLICATION (SURFACE RIGHTS) UNDER PUBLIC LANDS ACT

MELBA TWP.



LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES:
  - TOWNSHIPS, BASE LINES, ETC.
  - LOTS, MINING CLAIMS, PARCELS, ETC.
- UNSURVEYED LINES:
  - LOT LINES
  - PARCEL BOUNDARY
  - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
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	OC
RESERVATION	(R)
CANCELLED	⊗
SAND & GRAVEL	(S)

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC 1.

SCALE: 1 INCH = 40 CHAINS

FEET 0 1000 2000 4000 6000 8000

METRES 0 200 1000 2000 (1 KM) (2 KM)

DATE OF ISSUE

NOV 9 1987

LARDER LAKE MINING RECORDER'S OFFICE

TOWNSHIP

BERNHARDT

M.N.R. ADMINISTRATIVE DISTRICT

KIRKLAND LAKE

MINING DIVISION

LARDER LAKE

LAND TITLES / REGISTRY DIVISION

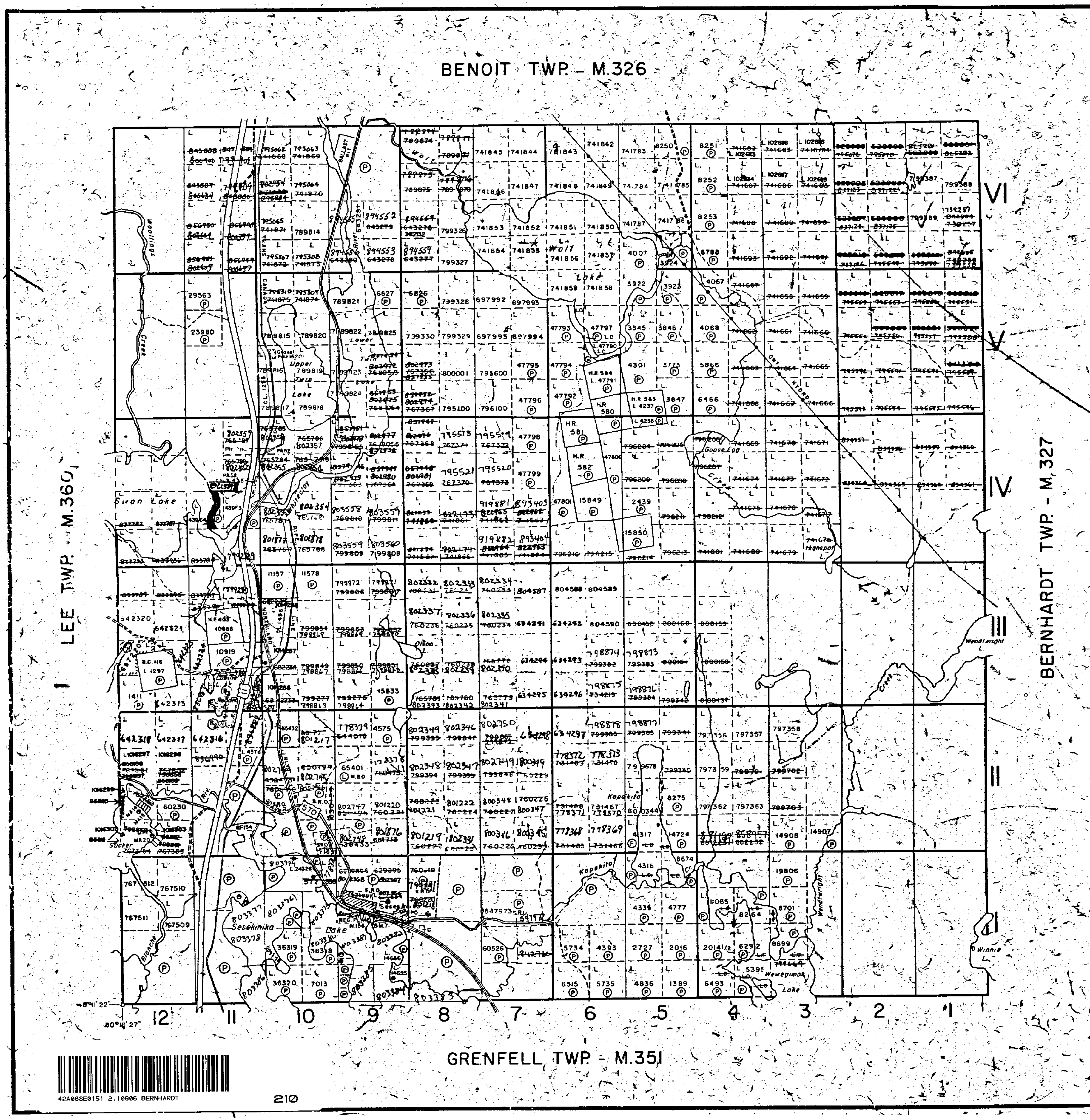
TIMISKAMING

Ontario Ministry of Natural Resources — Land Management Branch

Date JANUARY 1985

Number G-3207

42A08SE0151 2.10906 BERNHARDT



THE TOWNSHIP OF

MAISONVILLE

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

PATENTED LAND	● or Ⓟ
CROWN LAND SALE	C.S.
LEASES	Ⓛ
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	
IMPROVED ROADS	
KING'S HIGHWAYS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	
CANCELLED	C
PATENTED S.R.O.	●

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

Areas withdrawn from staking under Section 43 of the Mining Act, R.S.O. 1970. (Sec. 42, R.S.O. '80)

Order No.	File	Date	Disposition
	22032	11/8/70	S.R.O.
N.R.W. 5/81	22032	23/1/81	S.R.O.
W. 8/16	Sec 36(3)	20/01/16	

All islands in Sesekinika Lake are withdrawn from staking by Order-in-Council dated Dec. 7, 1921.

WITHDRAWN FROM STAKING; SECTION 31-6 PENDING APPLICATION UNDER PUBLIC LANDS ACT.

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, ONT. POK 1T0 705-642-3222

PLAN NO. M.361

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

42A08SE0151 2.10906 BERNHARDT

210

42A08SE0151 2.10906 BERNHARDT

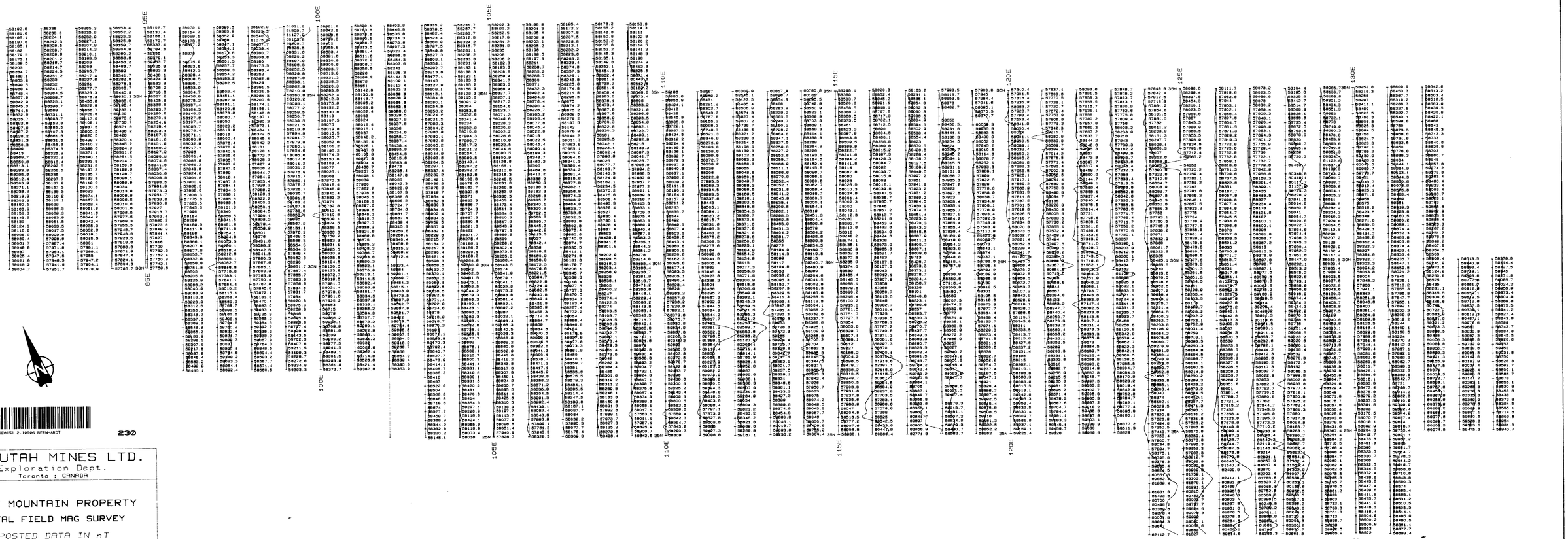
220

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto ; CANADA

BLUE MOUNTAIN PROPERTY

GEOPHYSICAL SURVEY COVERAGE and CLAIM MAP

Date	Drawn	Checked	Revised	NTS	File	Map
15/02/88	HP7585	PRD	-	/	BLUE	1



230

BHP-UTAH MINES LTD.

Exploration Dept.

Toronto : CANADA

BLUE MOUNTAIN PROPERTY

TOTAL FIELD MAG SURVEY

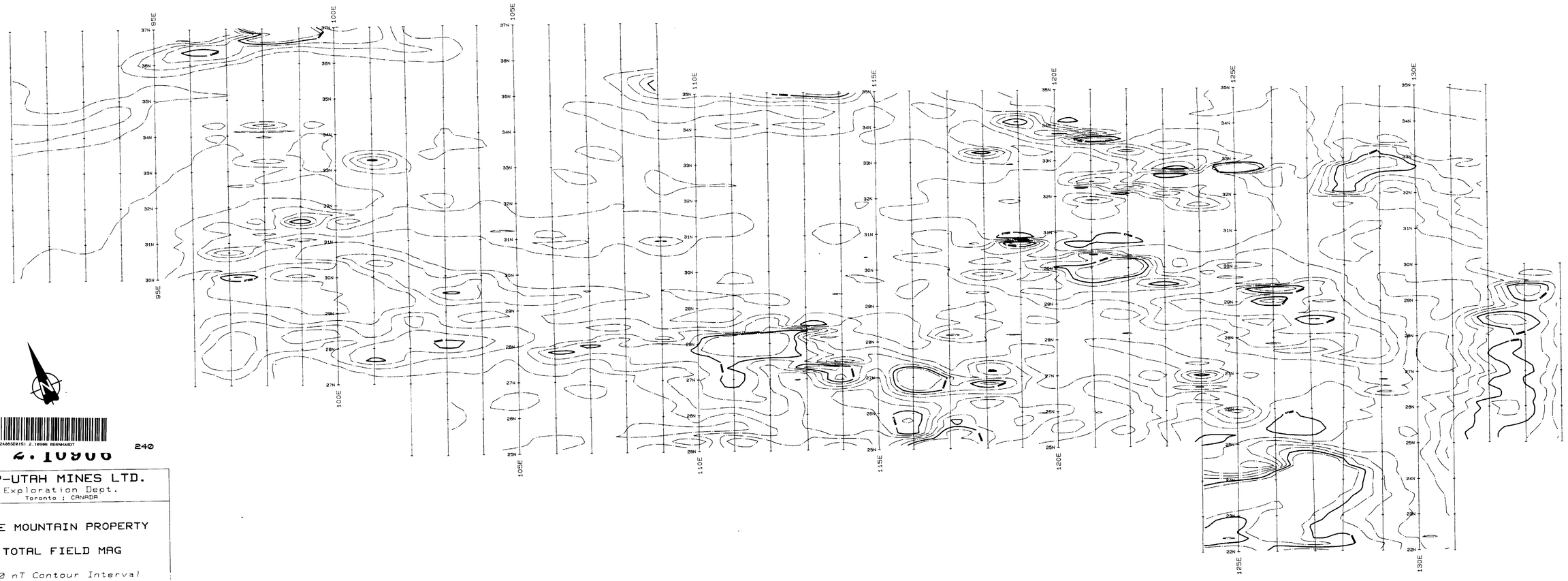
POSTED DATA IN nT

Profiles : 2000 nT / cm

Date	Drawn	Checked	Revised	NTS	File	Map
15/02/88	MP/SBS	PRO	-	/	BLMag	1

0 50 100 150

Metres



240

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto ; CANADA

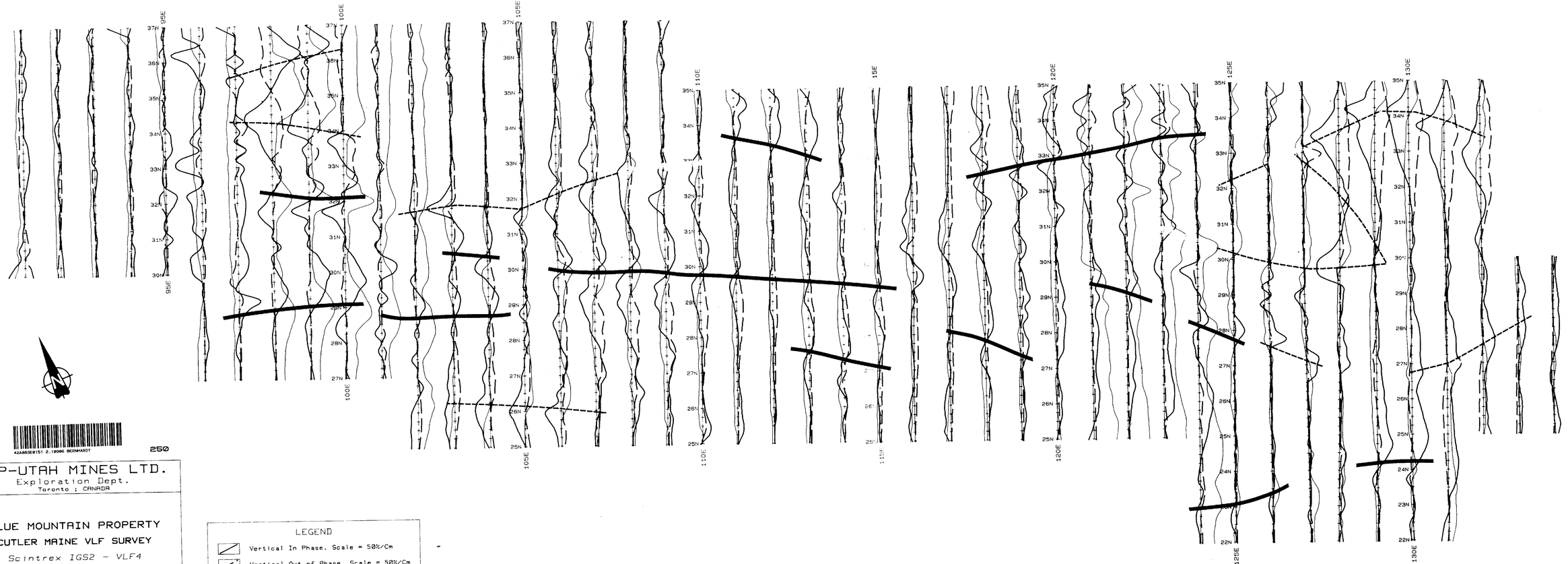
BLUE MOUNTAIN PROPERTY

TOTAL FIELD MAG

500 nT Contour Interval

Date	Drawn	Checked	Revised	NTS	File	Map
28/01/88	MP7585	PHD	-	-	BLMag	1

0 50 100 150
Meters



250

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto ; CANADA

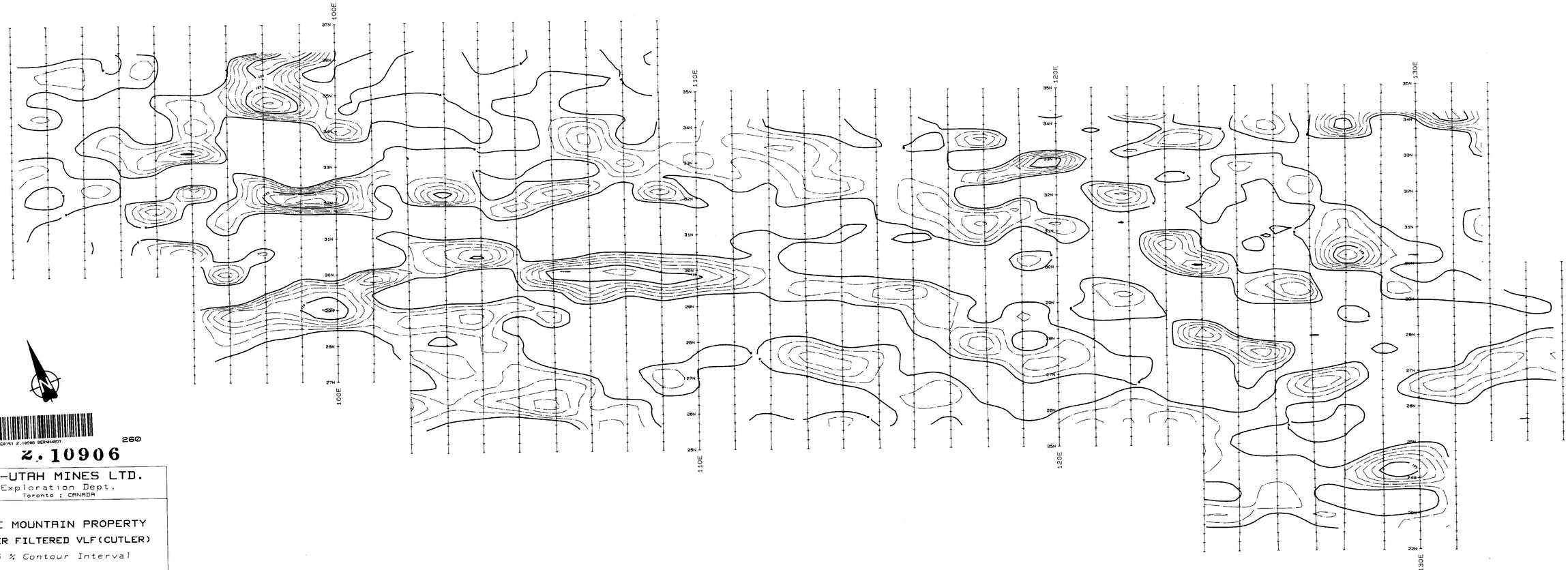
BLUE MOUNTAIN PROPERTY
CUTLER MAINE VLF SURVEY
Scintrex IGS2 - VLF4

Date	Drawn	Checked	Revised	NTS	File	Map
05/02/88	MP7585	PMD	-	/	BLV-f	1

0 50 100 150
Meters

LEGEND

- Vertical In Phase. Scale = 50%/Cm
- Vertical Out of Phase. Scale = 50%/Cm
- Horizontal Field. Scale = 50 Units/cm. Background = 50 Units
- Anomaly Axis
- HIGH/LOW RESISTIVITY CONTACT



BHP-UTAH MINES LTD.
Exploration Dept.
Toronto : CANADA

BLUE MOUNTAIN PROPERTY
FRASER FILTERED VLF(CUTLER)
25 % Contour Interval

Date	Drawn	Checked	Revised	NTS	File	Map
86/02/28	HP/SBS	PAD	-	42L-3	BUVFFF	1

0 50 100 150
Meters

BHP-UTAH MINES LTD.

Exploration Dept.
Toronto ; CANADA

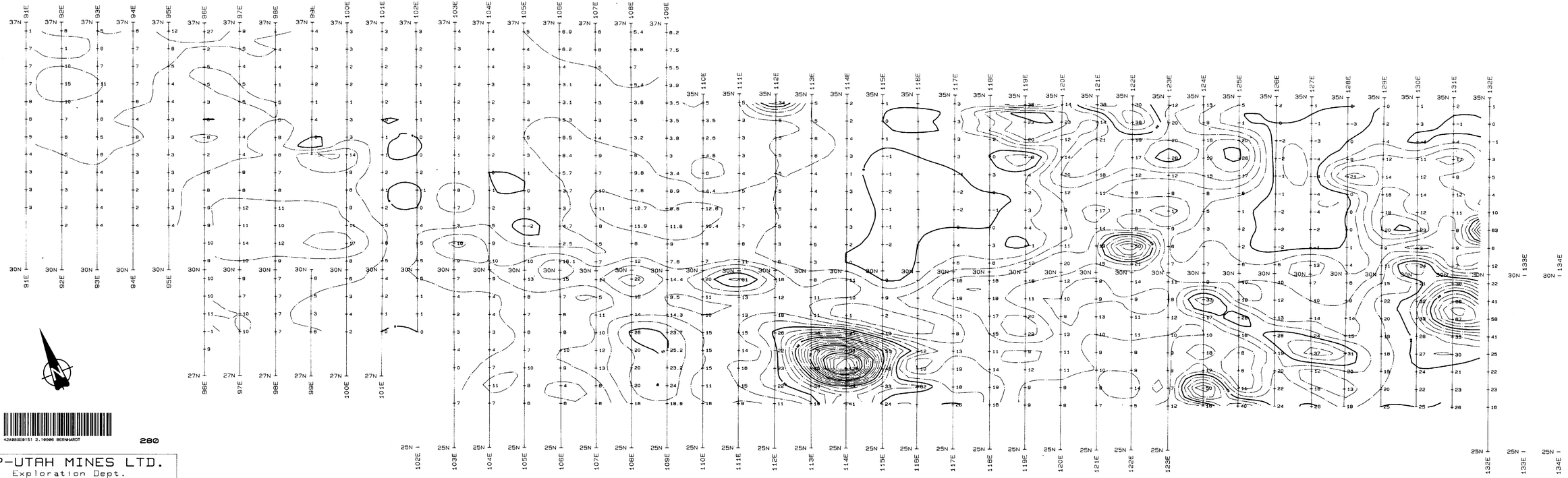
BLUE MOUNTAIN PROPERTY

CUTLER MAINE VLF SURVEY

POSTED DATA VALUES

Date	Drawn	Checked	Revised	NTS	File	Map
05/02/88	HP7585	PAD	–	/	BUvf	1

0 50 100 150
Meters



280

BHP-UTAH MINES LTD.

Exploration Dept.
Toronto ; CANADA

BLUE MOUNTAIN PROPERTY

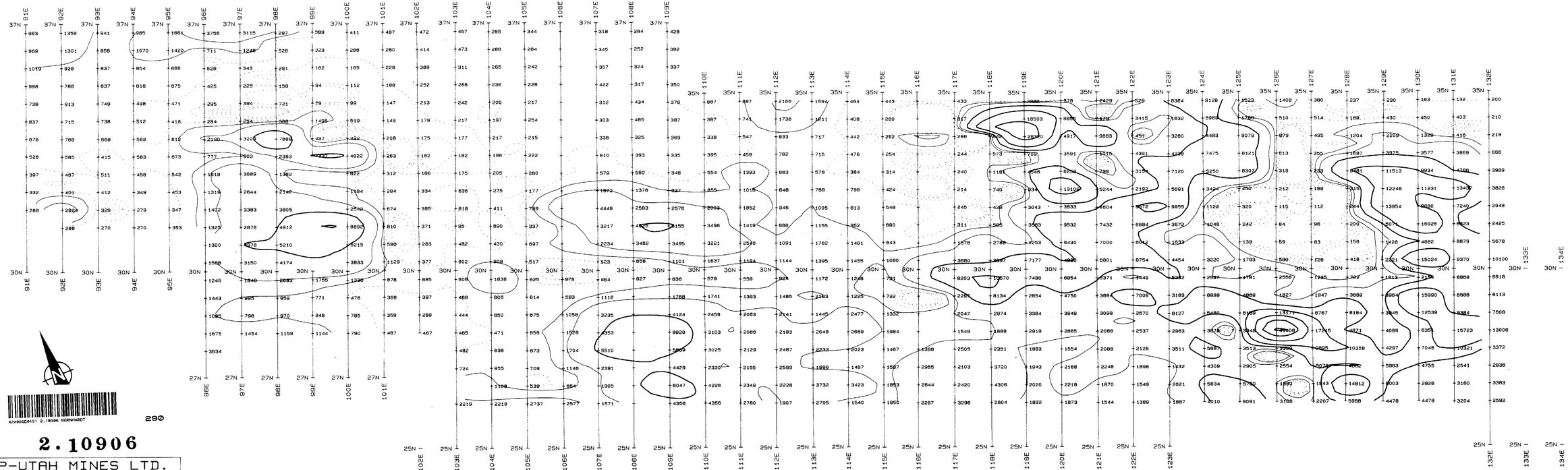
POLE-DIPOLE IP SURVEY

N = 1 CHARGEABILITY (Msec)

5 Msec Contour Interval

Date	Drawn	Checked	Revised	NTS	File	Map
10-02-88	MP7585	PRD	-	-	Bluphl	1

0 50 100 150
Metres



290

2.10906

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto ; CANADA

BLUE MOUNTAIN PROPERTY
POLE-DIPOLE IP SURVEY
N = 1 RESISTIVITY (Ohm-M)
Log Contour Interval

Date	Drawn	Checked	Revised	NTS	File	Map
18/02/88	HP7595	PRD	-	/	BlueN1	1

0 50 100 150
Meters

42A08SE0151 2.10906 BERNHARDT

300

/// **CHARGEABILITY ANOMALY**
(Intense, Moderate, Weak)

BHP-UTAH MINES LTD.

Exploration Dept.
Toronto ; CANADA

BLUE MOUNTAIN PROPERTY

POLE-DIPOLE IP SURVEY

CHARGEABILITY PSEUDOSECTIONS

2 Msec Contour Interval

A=50 Meters, N=1 to 4

Date	Drawn	Checked	Revised	NTS	File	Map
12/02/88	HP7585	PAD	-	/	BUpdNA	-

0 50 100 150
Meters

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto, ONTARIO

BLUE MOUNTAIN PROPERTY
POLE-DIPOLE IP SURVEY
RESISTIVITY PSEUDOSECTIONS

Data values in Ohm-metres
A=50 Metres, N=1 to 4

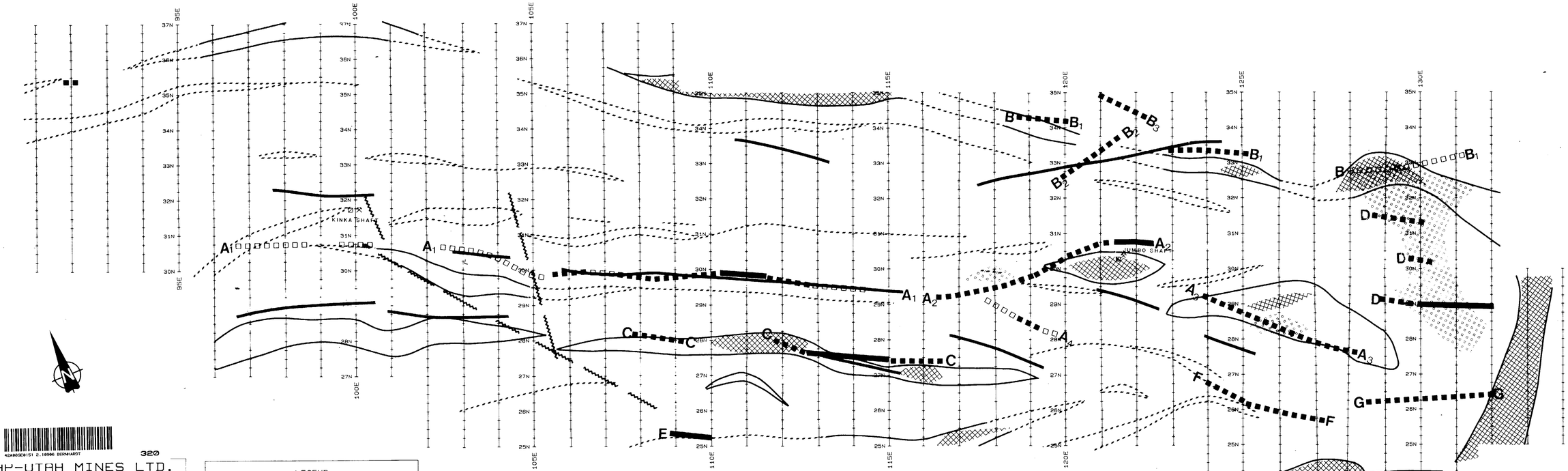
2.10906

310

91E
92E
93E
94E
95E
96E
97E
98E
99E
100E
101E
102E
103E
104E
105E
106E
107E
108E
109E
110E
111E
112E
113E
114E
115E
116E
117E
118E
119E
120E
121E
122E
123E
124E
125E
126E
127E
128E
129E
130E
131E
132E
133E
134E

22N
25N
30N
35N

1
2
3
4



320

BHP-UTAH MINES LTD.
Exploration Dept.
Toronto : CANADA

BLUE MOUNTAIN PROPERTY

GEOPHYSICAL COMPILATION

Date	Drawn	Checked	Revised	NTS	File	Map
11/02/88	HP7585	PRD	-	-	-	-

0 50 100 150
Meters

LEGEND

- MAGNETIC UNIT (weak, moderate, intense)
- CHARGEABILITY ANOMALY (weak, moderate, intense)
- HIGH BEDROCK RESISTIVITY
- VLF ANOMALY AXIS
- FAULT
- FOLD AXIS