LAFOREST-HLAVA EXPLORATION SERVICES LTD.

010

MAGNETIC and ELECTROMAGNETIC SURVEYS

on the

TURNBULL PROPERTY

for

MIKE CARON

in

2.13157

TURNBULL TOWNSHIP

PORCUPINE MINING DIVISION

DISTRICT OF COCHRANE

ONTARIO

OPAP GRANT NUMBER OPG89-115
OPAP REGISTRATION OP89-141

by

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Consulting Geologist/Geophysicist

January, 1990

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INTRODUCTION

During January, 1990, 10.445 miles or 16.81 km of linecutting was established. A total field magnetic survey and a VLF-EM survey were conducted on the 10 contiguous unpatented mining claims known as the Turnbull Property of Mr. Mike Caron.

A total of 672 magnetic readings and 639 VLF-EM readings were obtained during the survey period from January 12 to 16, 1990. The line cutting, geophysical surveying, data reductions, and drafting were completed by personnel of Laforest-Hlava Exploration Services Limited.

The claim group is located in the southeastern portion of the northeast quadrant of Turnbull Township, Porcupine Mining Division, District of Cochrane, approximately 15 miles (22 km) west of Timmins, Ontario.

The purpose of the geophysical surveys was to identify the lithological units, location of the major structural features, and to identify favourable gold bearing mineralization. In this area, gold is associated with quartz-carbonate veins and sulphide mineralization.

The exploration activities covered by this report was assisted by an OPAP grant. The OPAP Grant Number is OP89-115 and the Registration Number is OP89-141.

LOCATION AND ACCESS

The claim group is located in the southeastern portion of the northeast quadrant of Turnbull Township, Porcupine Mining Division, District of Cochrane, approximately 15 miles (22 km) west of Timmins, Ontario, as shown in Figure 1.

Access to the claim group is via Highway 101 westwards from the centre of Timmins 5.6 miles (9.0 km) to the junction of Highway 576. Northwards for about 6.96 miles (11.2 km) from this junction to a gravel road leading westwards . Travelling on this gravel logging road for about 1.93 miles (3.1 km) passes the turnoff to the Genex Mine, another 2.92 miles (4.7 km) the road crosses over Godfrey Creek. About 0.5 miles (0.8 km) past Grodfrey Creek, an old bush road leads northwards for approximately 0.5 miles (0.8 km). From this point, the access is via foot along the partially overgrown north branch of the Lally Mine Road to the claim post number 2 of P-1129094 and 3 of P-1129093.

PROPERTY

The Turnbull Property consists of 10 contiguous unpatented mining claims which are located on the east boundary of Turnbull Township as shown in Figure 2. The Turnbull Township mile post 3 is located approximately 20 meters or 65 feet south of post 2 of P-1129093.

The unpatented mining claims are held 100% by Mr. Mike Caron of Timmins, Ontario, and consists of the following claims:

P-1087592 to P-1087597 inclusively
P-1129092 to P-1129095 inclusively

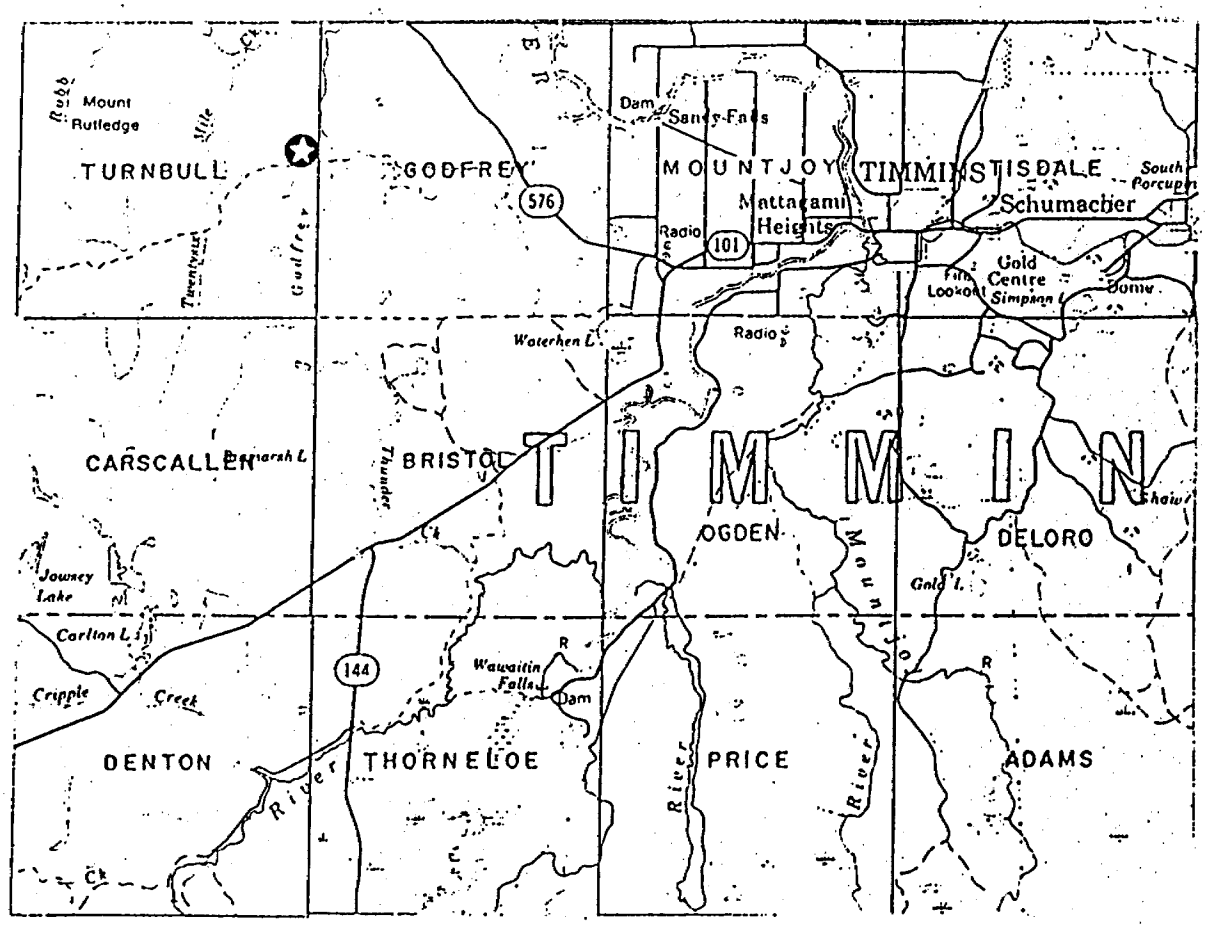


Figure 1: Location Map of the Timmins Area, and the Turnbull Property in Turnbull Township, Porcupine Mining Division, Ontario. Scale 1 inch to 4 miles.

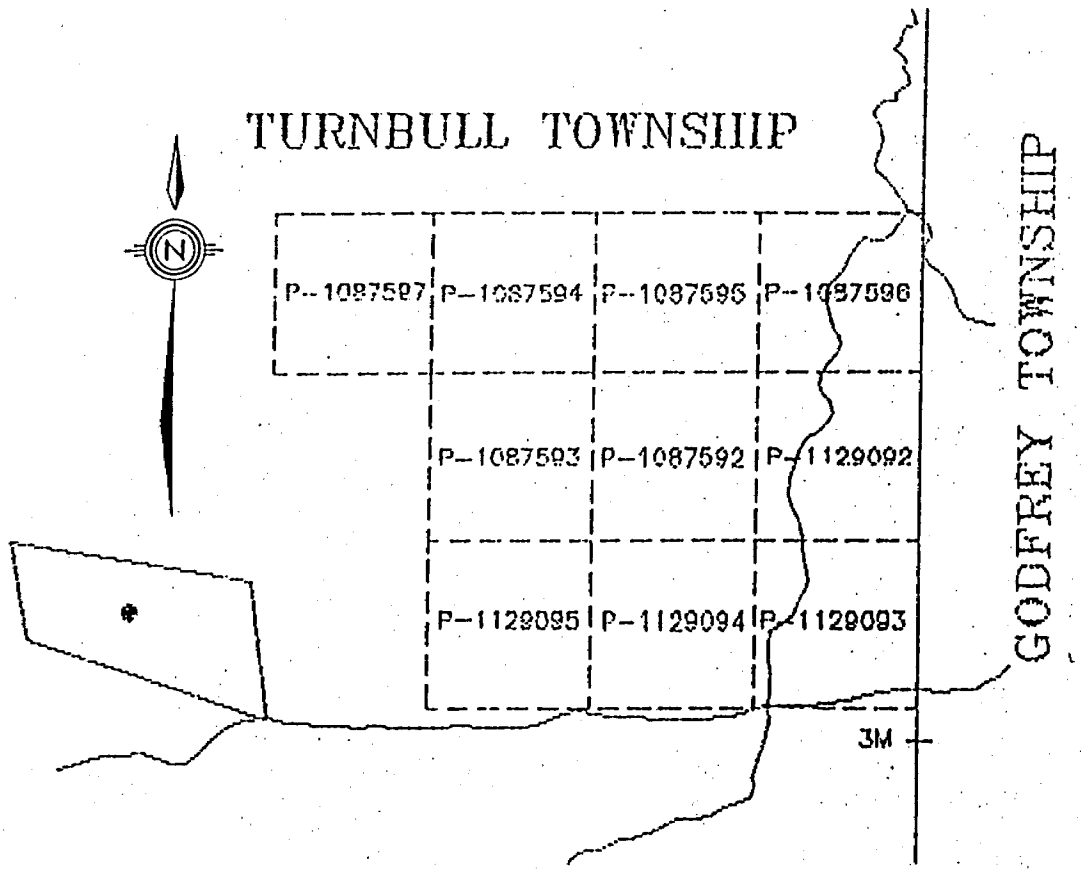


Figure 2: Claim Map and Property Map of the Turnbull Property in Turnbull Township, Porcupine Mining Division, Ontario. Scale 1 inch to 1/4 mile.

TOPOGRAPHY AND VEGETATION

The topography is very typical of the Timmins area with low scattered outcrops to generally north trending bedrock ridges up to 30 feet above the valley floor. About 60% to 70% of the claim group is covered by overburden

The vegetation is second growth spruce, poplar and minor anounts of birch and jack pine. Generally, the valley floor vegetation consists of small spruce and tag alders. The very low areas consist of spruce swamps, muskeg and tag alder swamps.

The area is moderate drained by Godfrey Creek, which traverses the Turnbull - Godfrey township boundary, and is the main water course near the claim block.

GENERAL GEOLOGY

The bedrock with the excention of north to northwest trending diabase dikes, is composed of an Early Precambrian intrusive-extrusive complex of metavolcanics, metasediments, and mafic, intermediate and felsic intrusives. The eastern portion of Turnbull Township is principally underlain by felsic and mafic metavolcanics which are in turn intruded by gabbro, microdiorite, quartz porphyry and feldspar porphyry.

The majority of the felsic metavolcanics in the township consists of breccias and tuffs with the coarsest breccia occurring 0.5 miles (0.8 km) east of Twenty Mile Creek. A sheared quartz porphyry centred 0.75 miles (1.2 km) north of the Lally Road.

The table of lithological units given in Table 1 show the various rock types found in Turnbull Township and correspond to the generalized geology map of the claim group area, Figure 3.

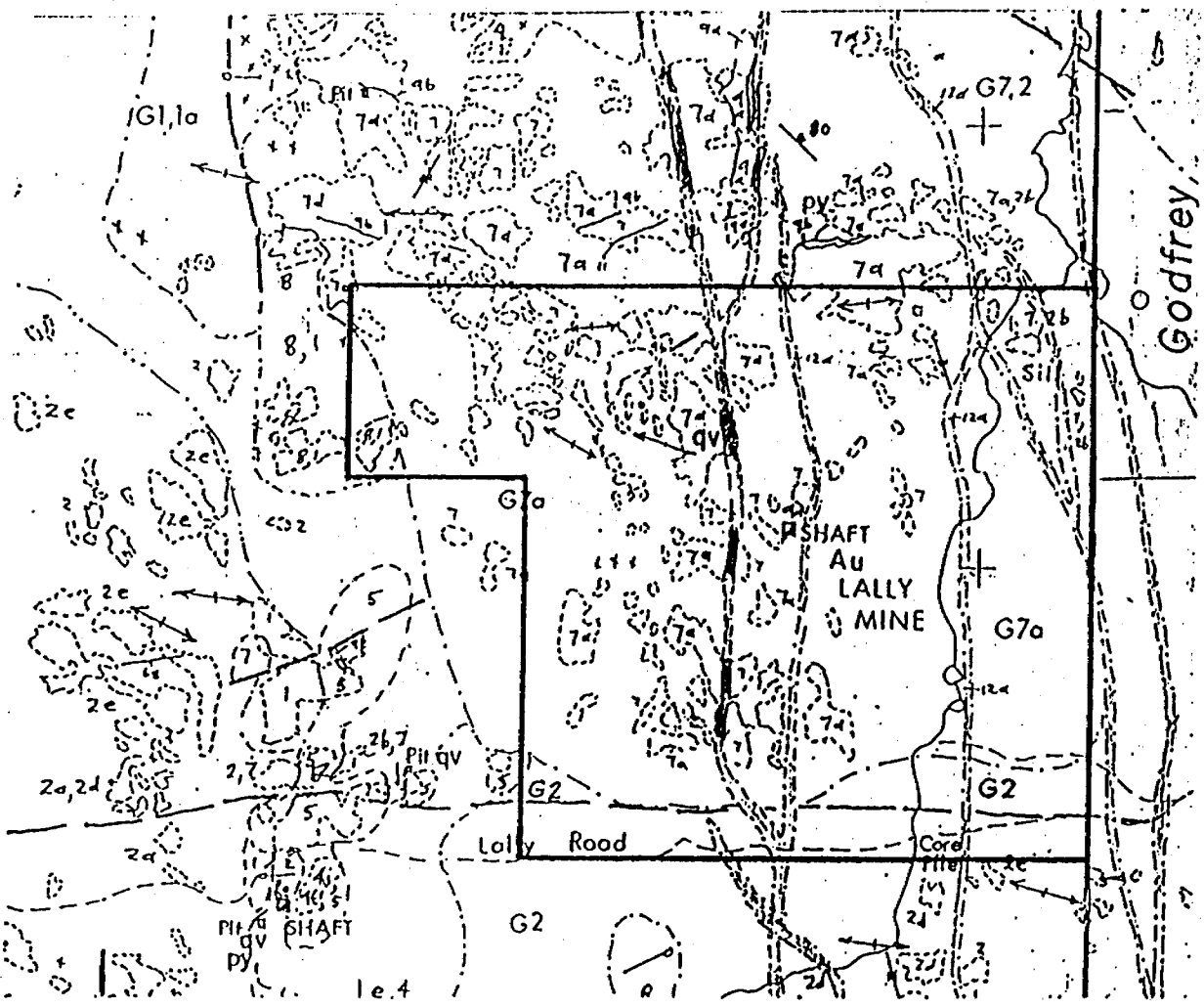


Figure 3: General Geology (after R.S. Middleton, 1974) of the area around the Turnbull Property, Turnbull Township, Porcupine Mining Division, Ontario.
Scale 1 inch to 1/4 mile.

Table 1: Generalized Lithological Units for Turnbull Township (after R.S. Middleton, 1974)

CENOZOIC

QUATERNARY
Pleistocene and Recent

PRECAMBRIAN

EARLY TO MIDDLE PRECAMBRIAN

11 Mafic Intrusive Rock

EARLY PRECAMBRIAN (ARCHEAN)

9 Felsic Intrusive Rocks

KAMISKOTIA COMPLEX

Late Intrusive Phase

8 Mafic Intrusive Rocks
7 Intermediate to Mafic Intrusive Rocks

Early Intrusive Phase

6 Felsic Intrusive Rocks
5 Intermediate Intrusive Rocks
4 Mafic and Ultramafic Intrusive Rocks

METAVOLCANICS AND METASEDIMENTS

3 Metasediments
2 Felsic Metavolcanics
1 Mafic to Intermediate Metavolcanics

ECONOMIC GEOLOGY AND MINERAL OCCURRENCES

The Turnbull - Godfrey Townships became active exploration areas as early as 1909 when gold prospecting extended westwards from the centre of the Porcupine Gold Camp. The quartz veins were explored for their gold potential from 1909 to the early 1930's. During the 1980's, the areas has seen moderate exploration activities usually centred around former known gold showings and development.

Active base metal exploration started as early as 1940 and reached a plateau in the mid 1960's with the discovery of the Kidd Creek base metal deposit in Kidd Township by Texas Gulf Sulphur Company. The climax of the activities was the production in 1966 of the Canadian Jamieson Mine and the Genex Mine, both located in Godfrey Township.

Basically, the mineralization for precious and base metal deposits occur in three basic forms: 1) Quartz Vein Deposits, 2) Disseminated Deposits (sulphides), and 3) Massive Sulphide Deposits (Middleton, 1975):

1) Quartz Vein Deposits:

The quartz veins containing chalcopyrite, sphalerite, galena and pyrite with variable amounts of gold and silver are found in many locations in Turnbull and Godfrey Townships.

These veins are associated with and appear to have been derived from the early and late felsic intrusive rocks. The host rocks for the veins are felsic and mafic metavolcanics, early mafic intrusives and, early and late felsic intrusives. The quartz veins contained within the early felsic (quartz-albite porphyry) intrusive rocks only contain carbonate and pyrite with variable amounts of gold, whereas, veins in the country rock surrounding the quartz-albite porphyry intrusions more often contain sphalerite and galena, pyrite and chalcopyrite.

Quartz veins have been found to pre-date and post-date the massive sulphide deposits in the area. Several deposits are known to have a quartz stockwork occurrences which possibly suggests hydrothermal activities before and after deposition of the sulphides and probably during the deposition of the sulphides.

2) Disseminated Sulphide Deposits:

Disseminated sulphide deposits are found in felsic tuff and breccias, quartz-albite porphyry intrusives, gabbroic intrusives and mafic volcanic rocks. Pyrite is the most common sulphide in these rocks.

Pyrite is common within felsic breccias and tuffs in western Godfrey and eastern Turnbull Townships. Pyrrhotite, sphalerite and galena have been located in water-lain tuff breccia, while chalcopyrite and pyrite have been obsevered in shear zone within gabbroic rocks at the contact of quartz porphyry.

3) Massive Sulphide Deposits:

Massive sulphide deposits consisting of massive, stringer, brecciated, framboidal and spherical nodular pyrite within mafic and felsic metavolcanics flows, breccias and tuffs, have been located in Godfrey Township at the Canadian Jamieson Mine and the Genex Mine.

Chalcopyrite, sphalerite and minor amounts of galena occur within the massive pyrite and in many places appear to been deposited after the pyrite.

PREVIOUS EXPLORATION ACTIVITIES

Research of the Resident Geologists' assessment files in Timmins, Ontario, yielded a large amount of data for portions of the claim group and the surrounding area. The following is a summary of detailed mineral occurrences and exploration activities for the present claim group.

The earliest known description of any part of the claim group was the Lally Mine by A.G. Burrows in 1914, and is as follows (Ontario Bureau of Mines, Volume XXIV, part 3, page 60):

> "The country rock is a porphyry, which contains a number of quartz veins with an approximate north and south strike. The larger veins are connected by cross veinlets giving the character of a stockwork. Two shafts, forty and sixty feet in depth, had been sunk when the property was visited in September, 1914, while the sixty-foot shaft was to be continued to the hundred-foot level and the vein drifted on. Some of the quartz contains visible gold."

The property and the surrounding gold prospects and showings were visited by F.L. Finley of the Ontario Department of Mines in 1924. (O.D.M. Volume XXXIV, part 6, page 61):

> "Lally - This property is situated near the east boundary of Turnbull Township about three miles from the north boundary. Development work was concentrated on claim No. 14,565, which has recently been restaked as claim No. 9779. The camp buildings have been destroyed

by fire and the property was abandoned at the time of the write's visit." Finley then quotes Burrows' description of the property.

The Lally Mine was visited and geologically mapped by Nelson Hogg in July, 1949. A brief description of the property is as follows (N. Hogg, 1949, Assessment File T-332, Timmins Resident Geologist Office):

"Claim P.9,779 was staked as claim 14,565 by James Lally, in 1909. It is located half a mile west of the Godfrey-Turnbull township boundary, midway between the 3- and 4-mile posts. ...

"The two timbered shafts are located 200 feet apart, the south shaft being located on the outcropping of the vein while the north shaft is collared in overburden about 100 feet north of the last exposure of quartz on surface. Judging by the material on the dump, most of the work was done in granite, probably in the hanging wall of the vein. Several long trenches have been excavated between the north shaft and the vein outcrop, but these are now filled with sand and water.

"The collars of three diamond drill holes were found, all located east of the vein to intersect it between the two shafts but results of this drilling are not available to the writer (N. Hogg).

"...Grey granite, and related quartz porphyry underlies most of the claim, and as indicated on the plan is considered to be the oldest rock. Evidence was seen in other places suggesting that the large mass of granite and quartz porphyry, which occupies this part of Turnbull and also the west part of Godfrey Township in the 4th concession, is older than the gabbro; but the contacts between gabbro and granite on the Lally claim provide the best evidence in support of this opinion. In every case where the gabbro and granite are in contact, the gabbro exhibits chilling and gradation in grain size away from the contact, whereas the granite retains its texture without appreciable change.

"The granite is a medium-textured, grey rock whose principal constituents are grey feldspar and quartz, with minor amounts of chloritized ferromagnesian. The texture is granitic but some quartz has crystallized in the early stages to form prominent "eyes". In the finer textured phases, the quartz "eyes" are the most striking feature of the rock, which becomes a quartz prophyry.

"The gabbro is typical of the area and has a texture somewhat coarser than granite. Rounded white plagioclase crystals and pyroxenes altered to hornblende make up most of the rock, which in its coarser phases has crystals up to a quarter of an inch in diameter.

"Quartz diabase is the youngest exposed rock, and occurs in dykes striking N 5 W.

"The Lally vein strikes N 5 W to N 10 W, parallel to, but not adjacent to, the dykes of quartz diabase. It is exposed along the east side of a steep face of quartz porphyry for a distance of 150 feet, dipping east at angles varying from 75 to 85 degrees. Throughout this distance, the vein piches and swells, from a mere crack to a width of 6 feet. Stringers of quartz diverge from the main quartz vein into the footwall in the southwesterly direction and die out within a few feet. The hanging wall is crushed and brecciated granite. To the south of the south shaft, the vein shows signs of horsetailing while the dip flattens to 45 degrees to the east. A thorough examination of the vein exposure and material on the dump of both shafts revealed a very minor amount of fine powdery pyrite in the quartz. Most of the vein is milky white but an intergrowth of coarse crystals of white carbonate was observed in a few places. A.G. Burrows visited the property when it was working and reported the presence of visible gold in some of the quartz."

During the summer of 1949, N. Hogg also visited, partially mapped and/or described other gold occurrences located within the present claim group as follows:

George Martel Properties:(Assessment File T-240)
This claim is located one half mile west of the 3 mile post on the Godfrey-Turnbull Township boundary (covered by present day P-1129095).

"At a point 330 feet south of the iron pin at No. 4 post of P-8407, a trench has been excavated, and 50 feet farther east is a second trench 8 feet deep and 20 feet long. The latter trench is on a dyke of quartz porphyry cut by quartz stringers and sparsely mineralized by fine pyrite. The north wall of the trench is a pale green chloritic greenstone. A characteristic sample of the best mineralized material from this trench, and consisting of porphyry and quartz with fine pyrite mineralization, assayed 0.07 ounces per ton in gold (assayed by the Provincial Assayer)."

The airborne magnetic and electromagnetic survey conducted for 655 Group Holdings Limited (T-2612) identified several anomalies within the claim group. Probably one of the more interesting anomaly is located between two diabase dikes and may represent an extension of the Lally Gold Mine vein system. No further work was filed and the claims were allowed to come open.

GEOPHYSICAL SURVEY

INTRODUCTION:

The exploration activities covered by this report was assisted by an OPAP grant. The OPAP Grant Number is OP89-115 and the Registration Number is OP89-141.

The linecutting was conducted by Laforest-Hlava Exploration Services Limited of Timmins, Ontario, from January 6 to 12, 1990. The base line was established north-south approximately 875 meters west of the Turnbull-Godfrey Township boundary. Grid lines were established every 100 meters in an east-west direction. All lines were picketed at 25 meter intervals. A total of 10.445 miles or 16.81 km of linecutting was established.

On completion of the linecutting, Laforest-Hlava Exploration Services Limited of Timmins conducted a total field magnetic survey utilizing a Geometrics G-816 proton procession magnetometer. The survey was done by G. Thibault from January 12 to 16, 1990. A total of 672 readings were established.

In conjunction with the above survey, R. Lamothe conducted a VLF-EM survey utilizing Geonics EM-16 unit. The transmitter station used throughout the survey was Annapolis, Maryland with a transmission frequency of 21.4 kHz. The survey was completed from January 12 to 16, 1990. A total of 640 readings were established.

The data from the magnetic and VLF-EM surveys were drafted by personnel of Laforest-Hlava Exploration Services Limited on base maps with a scale of 1:5000 from January 17 to 23, 1990.

The interpretation and the report were done by the author from January 23 to 26, 1990.

MAGNETIC SURVEY:

The magnetic base station was established on the Base Line at Line 3+80m South with an averaged value of 58,576 gammas. The base line was surveyed at intervals of 25 meters in a looping fashion to establish accurate control stations for each grid line at the base line. Upon completion of this phase of the survey, the grid lines were surveyed at 25 meter intervals. All the data was collected with the sensor head height of 8 feet.

The data was corrected for the daily drift and the tie-ins with the control stations. A base level of 58,000 gammas has been removed from all the obsevered readings. The data was contoured wherever possible, at 100 gamma intervals as shown in Figure 4.

VLF-EM SURVEY:

The transmitter station used throughout the survey was Annapolis, Maryland, with a transmitting power of 21.4 kHz. The direction of the primary field is at right angles from the direction of the station selected. The instrument is orientated in the direction of the primary field to obtain a minimum sound intensity. The quadrature component dial is adjusted to fine tune the minimum sound intensity. This is the quadrature or out of phase reading. After this is completed, then the mechanical inclinometer is read to obtain the in phase or dip reading. All readings of the in-phase and quadrature were obtained facing east.

The VLF-EM data is presented in profile form on the base map as shown in Figure 5. The in-phase or dip is plotted on the north side of the grid lines and the quadrature values are plotted on the south side of the lines. The north side of the grid line is positive and the south side is negative for the plotting of the profiles. The plotting scale is 1 cm to 10%.

INTERPRETATION:

The most prominent magnetic feature of the claim group are northerly trending diabase dikes. These are located near parallel to the base line, about 200m East, a smaller dike at about 650m East and complex dikes trending north-northwest from the township line at 050m North to Line 700m North from 600m East to 800m East.

A north trending magnetic low is located from Line 400m North to 700m North at 450m West. This feature could

represent a fault zone near the contact between the late mafic intrusive and the early felsic intrusive.

The remainder of the claim group appears that it is underlain by early felsic intrusive.

The structural features of the claim group are generally filled with diabase dikes. A long north-northwest trending fault is located from Line 380m South at 225m East to Line 700m North at 325m West. A notheasterly fault is located on the base line at Line 300m North and probably displaced the two easterly diabase dikes. It is possible that an east-west trending fault is near parallel or between Lines 300m South and 380m South.

The VLF-EM survey indicated several bedrock anomalies. The most western anomaly from Line 400m North to 700m North at 550m West to 750m West respectively, is probably due to the contact between the late mafic intrusive and the early felsic intrusive.

The majority of the remainder of the anomalies are either directly related to the contacts of the diabase dikes or about 25 to 50 meters away. The extreme amplitudes of the in-phase data suggests that the majority are at surface or near surface conductive zones probably due to concentrations of both magnetic and non-magnetic sulphide mineralization.

The last EM anomaly is located on Lines 300m and 380m South. These small anomalies may be due to the possible off-line response caused by the suspected east-west fault zone.

CONCLUSIONS

The geophysical surveys assisted in the location of the contacts of the lithological units within the claim group, identified several structural features and the location of suspected bedrock electromagnetic anomalies.

The area of the former Lally Mines Shaft does not have a EM anomaly and may be due to the overshadowing of the high amplitude of the anomaly about 50 meters to the east.

Strong to extremely high EM anomaly amplitudes were located and to be associated with the contact zones of the late mafic intrusive and early felsic intrusive and with the diabase dike margins or in close relationship.

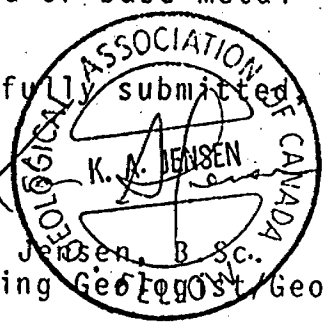
RECOMMENDATIONS

Based upon the survey results, the author recommends that the property be geologically mapped in detail with emphasis on all the areas of the electromagnetic anomalies and the former Lally Mine Shaft.

Upon completion of the mapping program, the Lally Mine Shaft area should be stripped and trenched with channel sampling. Areas near the diabase dikes which contain sulphide mineralization should be examined for both gold and base metal mineralization. Interesting areas may warrant stripping and/or trenching.

On the completion of the above recommended a diamond drilling program should be completed on the Lally Mine Shaft area to trace the quartz vein system and to test it at depth. Also, drilling should be completed on the other EM anomalies which contain either gold or base metal mineralization.

Respectfully submitted,



Kian A. Jensen, B.Sc.
Consulting Geologist/Geophysicist

Dated this 26th day of January, 1990
at Timmins, Ontario

Qual
2.3969

CERTIFICATE

With reference to my report on the magnetic and electromagnetic surveying on the Turnbull Property for Mr. Mike Caron, Dated January 26, 1990 .....

I, Kian A. Jensen, of the City of Timmins, Ontario, do hereby certify the following to be true and accurate to the best of my knowledge:

1) That I received an Honour B.Sc. degree in Earth Science, Geology Major from the University of Waterloo in 1975,

2) That I have been employed as a geologist and/or geophysicist by various exploration companies and consulting companies since 1978,

3) That I have beeen and still am a member in good standing in the following associations:

a) Society of Exploration Geophysicists - Associate, 1981
b) Geological Association of Canada - Fellow, 1983

4) That I am the author of the corresponding report, and have been actively exploring and prospecting in the Timmins area since 1981,

5) That I have no interest, directly or indirectly in the property, or adjacent property, or in any mining or exploration company.

Dated the 26th day of January, 1990
Timmins, Ontario

GEOLOGICAL ASSOCIATION OF CANADA
K. A. JENSEN
FELLOW

Kian A. Jensen, B.Sc.
Consulting Geologist/Geophysicist

REFERENCES

Burrows, A.G., and Hopkins, P.E.
1915: The Kamiskotia Lake Area, Ontario Bureau of Mines, Annual Report 1915, Volume XXIV, part 3,p.58-60.

Hogg, N.
1954: Geology of Godfrey Township, District of Cochrane; Ontario Department of Mines, Volume LXIII, part 7. Accompanied by Map 1954-4, scale 1 inch to 1000 feet.

Ferguson, S.A.
1959: Turnbull Township, District of Cochrane; Ontario Department of Mines, Preliminary Geology P.21, scale: 4 inch to 1 mile.

Ferguson, S.A., Groen, H.A., and Haynes, R.
1971: Gold Deposits of Ontario: Part I, Districts of Algoma, Cochrane, Kenora, Rainy River, and Thunder Bay; Ontario Division of Mines, MRC 13, 315 p., (reprint 1982).

Finley, F.L.
1925: Kamiskotia Gold Area, Cochrane District; Ontario Department of Mines, Annual Report Volume XXXIV, part 6, p.43-64. Accompanied by Map 34F.

Middleton, R.S.
1971: Ground Vertical Field Magnetics, Turnbull Township, District of Cochrane; Ontario Department of Mines and Northern Affairs, Preliminary Map P.638, Geophysical Series, scale: 4 inch to 1 miles.

1971: Ground Vertical Field Magnetics, Godfrey Township, District of Cochrane; Ontario Department of Mines and Northern Affairs, Preliminary Map P.639, Geophysical Series, scale: 4 inch to 1 miles.

1974: Geological Series, Turnbull Township, District of Cochrane; Ontario Division of Mines, Preliminary Map P.966, scale: 2 inch to 1 miles.

1974: Geological Series, Godfrey Township, District of Cochrane; Ontario Division of Mines, Preliminary Map P.967, scale: 2 inch to 1 miles.

1975: Magnetic, Petrochemical and Geological Survey of Turnbull and Godfrey Townships, District of Cochrane; Ontario Division of Mines, OFR 5118, 255p.

1976: Turnbull and Godfrey Townships, NTS 42A/W, Cochrane District, Ontario Division of Mines, Colour Map 2330, scale: 1/31680.

Operating Manual
Model G - 826
Portable Proton Magnetometer

1.0 GENERAL INFORMATION

1.1 INTRODUCTION

The Model G - 826 Portable Proton Mangetometer is a complete system designed for man-carry field applications requiring simple operation and stable measurements of the total intensity of the earth's magnetic field. The G - 826 is accurate and has a sensitivity of ± 1 gamma over a range from 20,000 to 90,000 gammas. Since the instrument measures total field intensity, the accuracy of each measurement is not affected by sensor orientation. The inherent simplicity of the G - 826 proton magnetometer allows rapid, accurate measurements to be obtained from a rugged, compact field instrument. This is a precision instrument and reasonable attention must be given to handling, battery condition, and magnetic environment.

1.2 MAGNETIC ENVIRONMENT

It is important that the earth's magnetic field is not perturbed by allowing unwanted magnetic objects to come close to the sensor. Such objects include rings, keys, watches, belt buckles, pocket knives, metal pencils, zippers, etc. When the sensor is used on the staff, one gamma surveys are easily performed provided the sensor is kept at a distance of three feet from the operator. When the sensor is used in the backpack, certain articles of clothing and some types of batteries within the console will cause a five to ten gamma heading error in the readings. The G - 826, however, still provides one gamma sensitivity and repeatability despite the presence of such a base line shift. The backpack feature is recommended for use in difficult terrain where "hands free" operation is required.

Prior to survey use, objects that are suspected to be magnetic may be checked in the following manner:

1. Attach sensor to staff and connect coiled signal cable to console. Sensor should not be moved or turned during the test, and the suspected article should be far away initially.

2. Cycle the magnetometer a few times by depressing the READ button--releasing--and waiting for a reading each cycle.

3. Observe measurement readings. Each reading should repeat to ±1 gamma. (A slow shift may occur over several minutes due to a diurnal change in the earth's field.)

4. Place the suspected article at the distance from the sensor expected during actual survey operation.

5. Cycle magnetometer several times and note the readings.

6. Remove the article and repeat steps 2 and 3 to check for diurnal shifts in the earth's field. If a diurnal shift is present, repeat entire test.

7. If the readings obtained in step 5 differ by more than ±1 gamma (± one count) from those obtained in steps 3 and 6, then the article is magnetic.

IF THE ARTICLE IS HIGHLY MAGNETIC, OR IF THE SENSOR IS INSIDE OR NEAR A BUILDING OR VEHICLE, THE PROTON PRECESSION SIGNAL WILL BE LOST, GIVING COMPLETELY ERRATIC READINGS AND LOSS OF ± 1 COUNT REPEATABILITY.

The magnetometer should not be operated in areas that are known sources of radio frequency energy, power line noise (transformers), in buildings or near highly magnetic objects. The sensor should always be placed on the staff above the ground, or in the "backpack." The sensor will NOT operate properly when placed directly on the ground.

1.3 SPECIFICATIONS

Sensitivity:	±1 gamma throughout range
Range:	20,000 to 90,000 gammas (worldwide)
Tuning:	Multi-position switch with signal amplitude indicator light on display
Gradient Tolerance:	Exceeds 800 gammas/feet

Sampling Rate:	Manual push button, one reading each six seconds.
Output:	Five digit numeric display with readout directly in gammas.
Power Requirements:	Twelve 1.5 volt "D" cell universally available flashlight-type batteries. Charge state or replacement signified by flashing indicator light on display.
Temperature Range:	Console and sensor: -40° to +85° C. Battery pack: 0° to +50° C (limited use to -15° C; lower temperature battery belt operation — optional).
Accuracy (Total Field):	±1 gamma through 0° to +50° C temperature range.
Sensor:	High signal, noise cancelling, mounted on staff or attached to backpack.
Size:	Console: 3.5 x 7 x 11 inches (9 x 18 x 28 cm) Sensor: 3.5 x 5 inches (9 x 13 cm) Staff: 1 inch diameter x 8 ft. length (3 cm x 2.5m)

Weight:

	Lbs.	Kgs.
Console (w/batteries):	5.5	2.5
Sensor and signal cable:	4	1.8
Aluminum staff:	2	.9
	11.5	5.2

VLF EM

EM16

One of the most popular and widely used electromagnetic instruments, the EM16 VLF receiver makes the ideal reconnaissance EM. This can be attributed to its field reliability, operational simplicity, compactness and mutual compatibility with other reconnaissance instruments such as portable magnetometers and radiometric detectors.

The VLF method of EM surveying, pioneered by Geonics, has proven to be a simple economical means of mapping geological structure and fault tracing. The applications are many and varied, ranging from direct detection of massive sulphide conductors to the indirect detection of precious metals and radioactive deposits.

FEATURES

- The EM16 is the only VLF instrument that measures the quad-phase as well as the in-phase secondary field. This has the advantage of providing an additional piece of data for a more comprehensive interpretation and also allows a more accurate determination of the tilt angle.
- The secondary fields are measured as a ratio to the primary field making the measurement independent of absolute field strength.
- The EM16 is the only VLF receiver that can be adapted to measure VLF resistivity.

Specifications

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

VLF RESISTIVITY METER

EM16R

A simple, button-on attachment to the EM16 converts it to a direct reading terrain resistivity meter. The EM16R attachment interfaces a pair of potential electrodes to the EM16 enabling the measurement of the ratio of, and the phase angle between, the horizontal electric and magnetic fields of the plane wave propagated by distant VLF radio transmitters.

The EM16R is direct reading in ohm-meters of apparent ground resistivity. If the phase angle is 45°, the resistivity reading is the true value and the earth is uniform to the depth of exploration (i.e. a skin depth). Any departure from 45° of phase indicates a layered earth. Two layer interpretation curves are supplied with each instrument to permit an interpretation based on a two layer earth model.

This highly portable resistivity meter makes an ideal tool for quick geological mapping and has been used successfully for a variety of applications.

- Detection of massive and disseminated sulphide deposits
- Overburden conductivity and thickness measurements
- Permafrost mapping
- Detection and delineation of industrial mineral deposits
- Aquifer mapping

Specifications

MEASURED QUANTITY	• Apparent Resistivity of the ground in ohm-meters • Phase angle between E_x and H_y in degrees
RESISTIVITY RANGES	• 10 — 300 ohm-meters • 100 — 3000 ohm-meters • 1000 — 30000 ohm-meters
PHASE RANGE	0-90 degrees
RESOLUTION	• Resistivity : ±2% full scale • Phase : ±0.5°
OUTPUT	Null by audio tone. Resistivity and phase angle read from graduated dials.
OPERATING FREQUENCY	15-25 kHz VLF Radio Band. Station selection by means of rotary switch.
INTERPROBE SPACING	10 meters
PROBE INPUT IMPEDANCE	100 MΩ in parallel with 0.5 picofarads
DIMENSIONS	19 x 11.5 x 10 cm. (attached to side of EM16)
WEIGHT	1.5 kg (including probes and cable)

Ministry of Northern Development and Mines
Ontario

DOCUMENT No. W 9006.062

42A05NE0140 2.13157 TURNBULL

900 m.

Mining Act

Report of Work
(Geophysical, Geological and Geochemical Surveys)

· Technical Reports and maps in duplicate should be submitted to Mining Lands Section, Mineral Development and Lands Branch

Type of Survey(s)	Mining Division	Township or Area
MAGNETIC AND ELECTROMAGNETIC SURVEY	PORCUPINE	TURNBULL

2.13157

Recorded Holder(s)	Prospector's Licence No.
MIKE CARON	M-21187
Address	**Telephone No.**
229 LUTH STREET PORCUPINE BOX 362	235-8660
Survey Company	**(Total miles) of Line Cut**
LAFOREST-MLAVA EXPLORATION SERVICES LTD.	4.25 MILES
Name and Address of Author (of Geo-Technical Report)	**Date of Survey (from & to)**
KIAN A. JONSON, P.O. BOX 37, SOUTH PORCUPINE, ONT. P0P 1H0	10 01 90 (Day Mo. Yr.) 26 01 90 (Day Mo Yr)

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	40
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Other	
	Geological	
	Geochemical	
Man Days Complete reverse side and enter total(s) here	Geophysical	Days per Claim
	Geophysical - Electromagnetic	
	Geophysical - Magnetometer	
	Geophysical - Other	
	Geological	
	Geochemical	
Airborne Credits Note: Special provisions credits do not apply to Airborne Surveys.		Days per Claim
	Electromagnetic	
	Magnetometer	
	Other	

Total miles flown over claim(s).

Date	Recorded Holder or Agent (Signature)
FEB 2, 1990	

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number
P-	1129092				
P-	1129093				
P-	1129094				
P-	1129095				

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FEB 23 1990
MINING LANDS SECTION

ONTARIO GEOLOGICAL SURVEY
ASSESSMENT FILES
OFFICE
MAY 9 1990
RECEIVED

RECEIVED
FEB - 2 1990

Total number of mining claims covered by this report of work: 4

Certification Verifying Report of Work

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

Name and Address of Person Certifying			
MIKE CARON 229 LUTH STREET PORCUPINE, ONT. BOX 362			
	Telephone No. 235-8660	Date FEB 2, 1990	Certified By (Signature)

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
240	FEB 2/90	Mining Recorder
	Date Approved as Recorded	Provincial Manager, Mining Lands
	May 3/90	

Received Stamp
RECEIVED
FEB 2 1990
11:20 A.M.

Ministry of Northern Development and Mines
Ontario

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

Mining Act

DOCUMENT No. W 9006.061

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

Contacted March 3 April 3

Type of Survey(s): MAGNETIC AND ELECTROMAGNETIC SURVEYS
Township or Area: TURNBULL TWP
Claim Holder(s): MIKE CARON 2.13157
Prospector's Licence No.: M-21187
Address: 229 CUTTY STREET TORCUPINE ONTARIO, P0N 1C0 BOX 362
Survey Company: LAFOREST-HLAVA EXPLORATION SERVICES LTD
Date of Survey (from & to): 06 01 90 (Day Mo. Yr.) 26 01 90 (Day Mo. Yr.)
Total Miles of line Cut: 6.5 miles ~~10,455 metres~~
Name and Address of Author (of Geo-Technical report): KIAN A. JENSEN, P.O. BOX 37, SOUTH PORCUPINE, ONTARIO P0N 1H0

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	40
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	
	Geological	
	Geochemical	

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
P	1087592	
	1087593	
	1087594	
	1087595	
	1087596	
	1087597	
	~~H29092~~	
	~~H29093~~	
	~~H29094~~	
	~~H29095~~	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.

RECEIVED
FEB 23 1990
MINING LANDS SECTION

RECORDED
FEB - 2 1990

Total number of mining claims covered by this report of work: 10

Expenditures (excludes power stripping)

Type of Work Performed:
Performed on Claim(s): FEB 2 1990
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: 360
Date Recorded: FEB 2/90
Date Approved as Recorded: May 3/90
Mining Recorder: S. White
Mining Recorder

Date: February 2/1990
Recorded Holder or Agent (Signature): Mike Caron

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

Ministry of Northern Development and Mines

Ontario

Mining Act

Report of Work

(Geophysical, Geological and Geochemical Surveys)

Instructions
- Please type or print.
- Refer to Section 77, the Mining Act for assessment work requirements and maximum credits allowed per survey type.
- If number of mining claims traversed exceeds space on this form, attach a list.
- Technical Reports and maps in duplicate should be submitted to Mining Lands Section, Mineral Development and Lands Branch:

Type of Survey(s)	Mining Division	Township or Area
MAGNETIC AND ELECTROMAGNETIC SURVEY	PORCUPINE	TURNBULL

Recorded Holder(s)	Prospector's Licence No.
MIKE CARON	M-21187

Address	Telephone No.
229 LUTH STREET PORCUPINE BOX 362	235-8660

Survey Company	(Total miles) of Line Cu
LAFOREST-MLAVA EXPLORATION SERVICES LTD.	4.25 MILES

Name and Address of Author (of Geo-Technical Report)	Date of Survey (from & to)					
	Day	Mo.	Yr.	Day	Mo.	Yr.
KIAN A. JENSEN, P.O. BOX 7, SOUTH PORCUPINE, ONT. P0L 1H0	10	01	90	26	01	90

Credits Requested per Each Claim in Columns at right

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

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

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

Total miles flown over claim(s).

Date	Recorded Holder or Agent (Signature)
FEB 2, 1990	Mike Caron

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number	Mining Claim Prefix	Mining Claim Number
P-	1129092	M V	✓ ✓		
P-	1129093	✓	✓		
P-	1129094	✓	✓		
P-	1129095	✓	✓		

Total number of mining claims covered by this report of work: 4

Certification Verifying Report of Work

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

Name and Address of Person Certifying			
MIKE CARON 229 LUTH STREET PORCUPINE, ONT. BOX 362	Telephone No. 235-8660	Date FEB 2, 1990	Certified By (Signature) Mike Caron

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
	Date Approved as Recorded	Provincial Manager, Mining Lands

Received Stamp

PORCUPINE MINING DIVISION
RECEIVED
FEB 2 1990
11:20 A.M.

Ministry of Northern Development and Mines

Ontario

Report of Work

(Geophysical, Geological, Geochemical and Expenditures)

Mining Act

DOCUMENT No. W 9006·061

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): MAGNETIC AND ELECTROMAGNETIC SURVEYS

Township or Area: TURNBULL TWP

Claim Holder(s): MIKE CARON

Prospector's Licence No.: M-21187

Address: 229 RUTH STREET SOUTH PORCUPINE ONTARIO, P0N 1C0 BOX 362

Survey Company: LAFOREST-HLAVA EXPLORATION SERVICES LTD

Date of Survey (from & to): 06 01 90 (Day Mo. Yr.) – 26 01 90

Total Miles of line Cut: 6.5 miles ~~10.465 miles~~

Name and Address of Author (of Geo-Technical report): KIAN A. JENSEN, P.O. BOX 37, SOUTH PORCUPINE, ONTARIO P0N 1H0

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	40
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	
	Geological	
	Geochemical	

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

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.	Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
P	1087592	M V ✓ ✓			
	1087593	✓ ✓			
	1087594	✓ ✓			
	1087595	✓ ✓			
	1087596	✓ ✓			
	1087597	✓ ✓			
	~~1289692~~				
	~~1289693~~				
	~~1289694~~				
	~~1289695~~				

RECORDED

FEB 2 1990

Expenditures (excludes power stripping)

Type of Work Performed

Performed on Claim(s): FEB 2 1990

~~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.

Total number of mining claims covered by this report of work: 10 6

For Office Use Only

Total Days Cr. Recorded: 360

Date Recorded: FEB 2/90

Date Approved as Recorded:

Mining Recorder: S. White

Branch: Mining Recorder

Date: February 2/1990

Recorded Holder or Agent (Signature):

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

R E F E R E N C E S

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. – MINING RIGHTS ONLY
S.R.O. – SURFACE RIGHTS ONLY
M.+ S. – MINING AND SURFACE RIGHTS

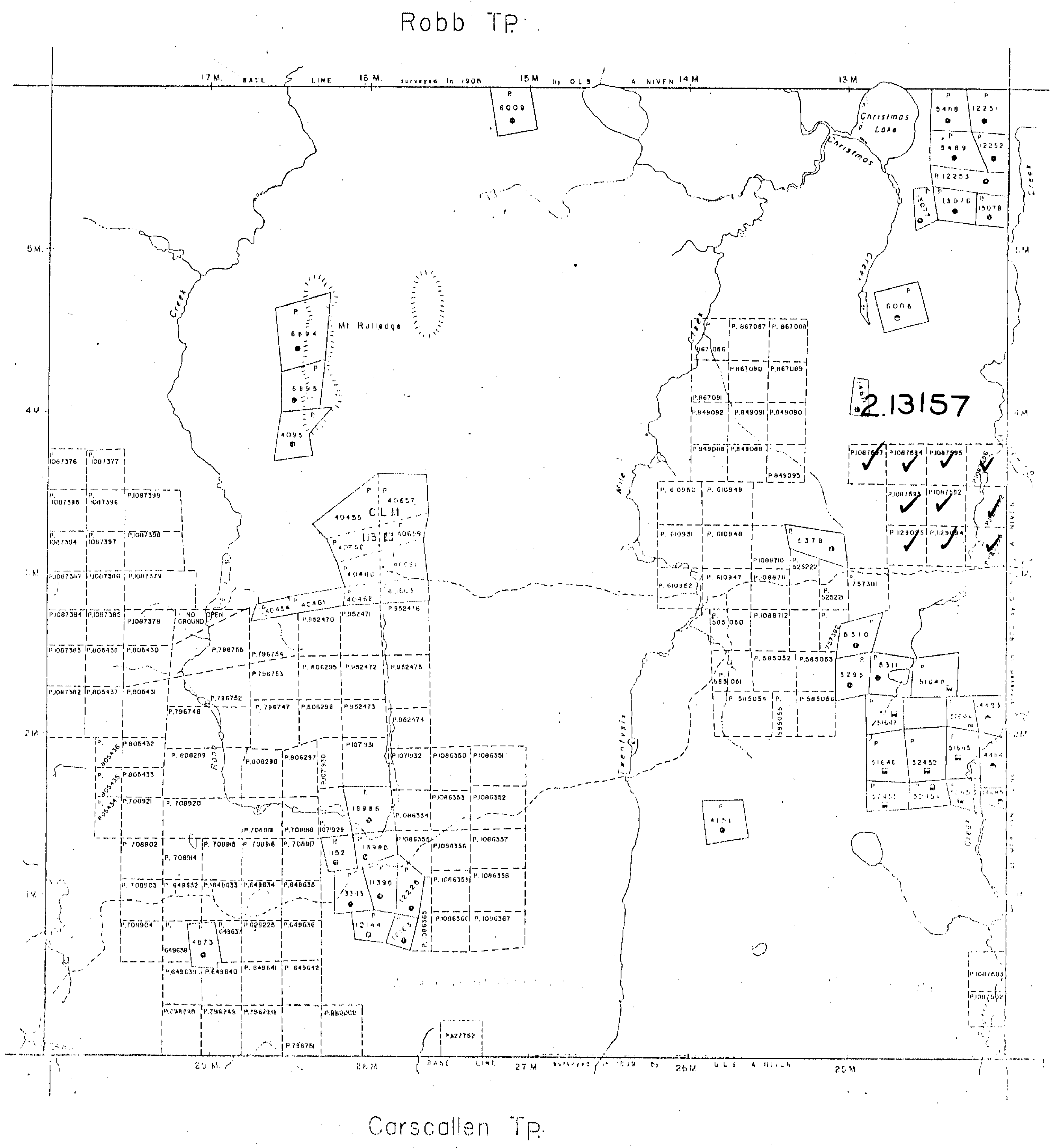
Description	Order No.	Date	Disposition	File

NOTES

THIS TOWNSHIP LIES WITHIN THE MUNICIPALITY OF THE CITY OF TIMMINS

42A05NE0140 2.13157 TURNBULL

200



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	
CANCELLED	
SAND & GRAVEL	

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 (1 KM) 2000 (2 KM)

ACTIVATED JANUARY 30, 1990

RECEIVED FEB 1 9 1990

TOWNSHIP

TURNBULL

M.N.R. ADMINISTRATIVE DISTRICT

TIMMINS

MINING DIVISION

PORCUPINE

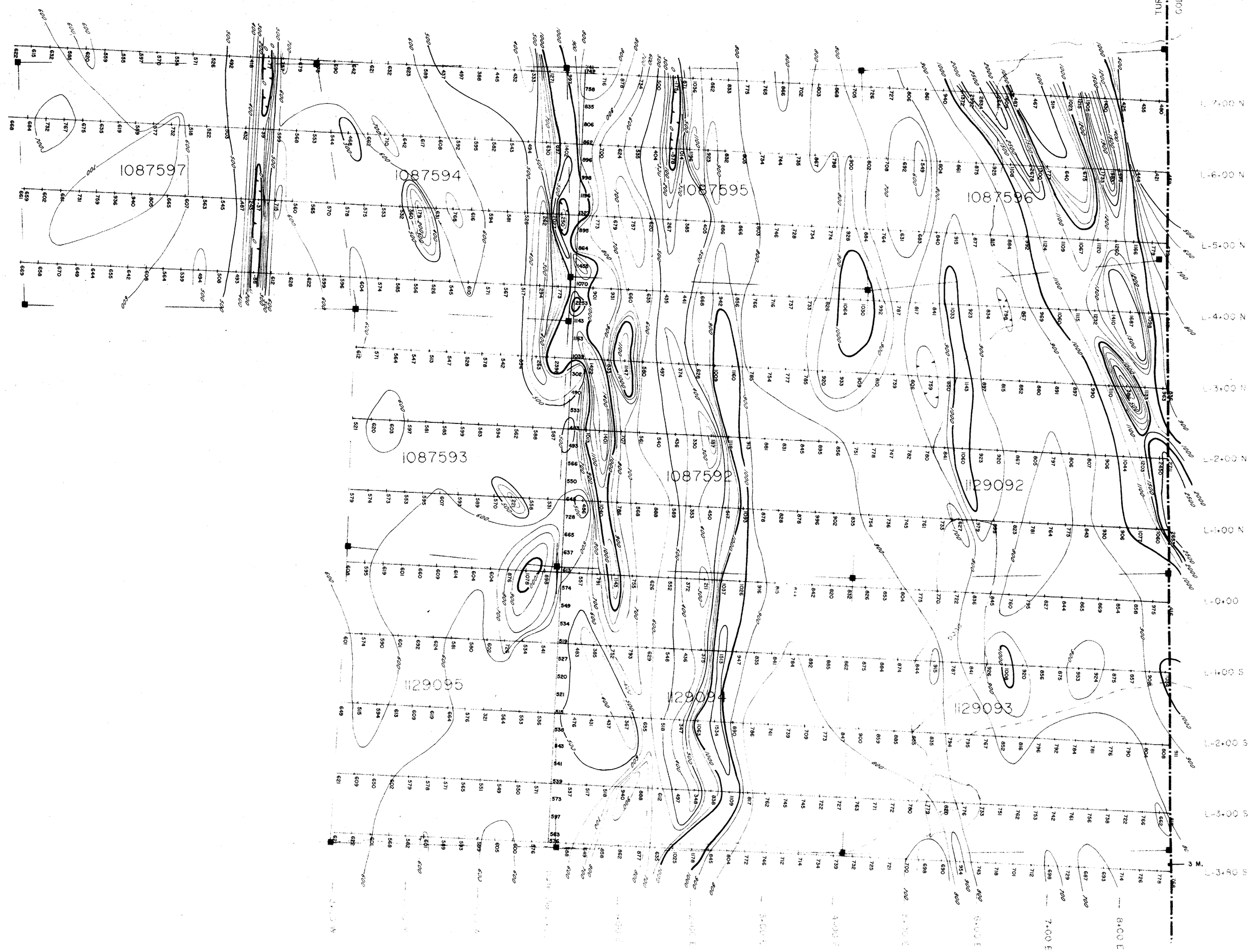
LAND TITLES / REGISTRY DIVISION

COCHRANE

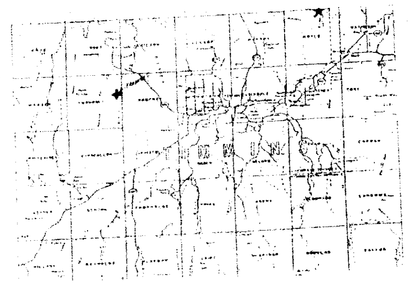
Ministry of Natural Resources Ontario — Land Management Branch

Date: MARCH, 1985

Number: G-3250



LOCATION MAP



TOPOGRAPHIC

- Trail portage
- Bush road
- Good driving road, highway
- Hydro poles
- Claim post located
- Claim post assumed location
- Witness post
- Creek, River
- Lakeshore
- Swamp, Bog
- Property boundary line
- Power line

MAGNETIC SURVEY

Add 58,000 gammas to all readings for total field values

- 1000 / 500 / 100 — Contours
- Depression Contours
- ▲ Base Station Location:
  BL-0+00 L-3+80 S 58,576
  Contour intervals: 100 gammas

2.13157

GEOPHYSICAL ASSOCIATION OF CANADA — Ross A. JENSEN — FELLOW

TURNBULL PROPERTY

TURNBULL TWP

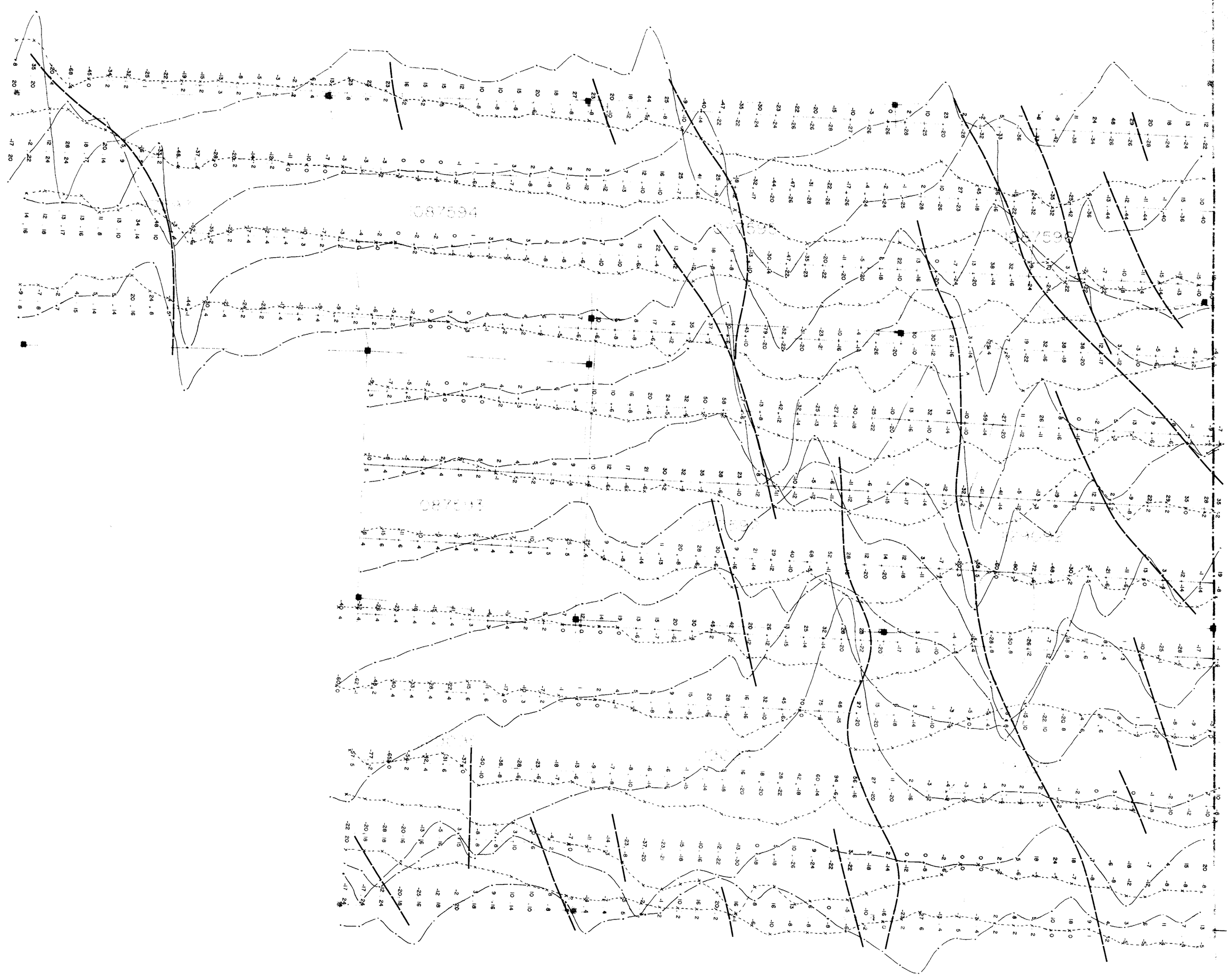
Drafted by:
LAFOREST-HLAVA EXPLORATION SERVICES LTD.

Geometrics Proton G-816

Date of Survey:
JAN. 1990
Grant #OPG-89-115

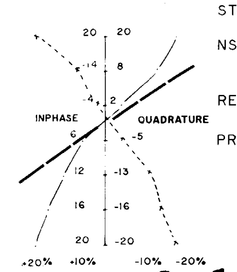
Survey by: G. Thibeault

OP-89-141



VLF EM SURVEY

ANOMALY AMPLITUDE



STATION USED:

NSS Annapolis Maryland 21.4 KHz

READINGS TAKEN: East

PROFILE SCALE: 1C=10%

2.13157

TURNBULL PROPERTY

Drafted by:
LAFOREST-HLAVA EXPLORATION SERVICES LTD.

Geonix Em 16

Survey by: R. Lamonté

JAN. 1990

Grant #OPG-89-115

OP-89-141