SUMMARY REPORT
ON THE
1986 EXPLORATION PROGRAM
ON THE CLEAVER TOWNSHIP
LARDER LAKE MINING DIVISION
PROPERTY OF
CLEYO RESOURCES INC.
PROJECT #6436

Timmins, Ontario
December 19, 1986

by: Stephen Conquer, B.Sc.
for: David R. Bell
Geological Services Inc.

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1.0 SUMMARY

The Cleyo Resources-Cleaver Township property is located in an area which has only seen sporadic exploration since the early 1900's. In the spring of 1986, Mr. Cleo Clement in the company of the property vendor, undertook a site examination. From this property visit several grab samples were collected, from which highly anomalous assay results (0.10-0.20 range) were received. These encouraging results, prompted Mr. Clement on behalf of Cleyo Resources Inc. to approach the firm of David R. Bell Geological Services Inc. with a request that a property visit be made and introductory report be prepared. It was as a result of this visit and report that the recommended exploration program was initiated. In light of the late start to the program and the early arrival of winter, the proposed program could not be completed and as a result, only the mapping and IP surveys were finished.

A minor amount of stripping was completed late in the program, with these new exposures to be examined during the recommended program.

The property was found to be underlain by a series of interbedded intermediate to mafic flows. These flows show a variety of flow features, strike northeast-southwest, dip steeply to the south, and vary from non-magnetic to highly magnetic.

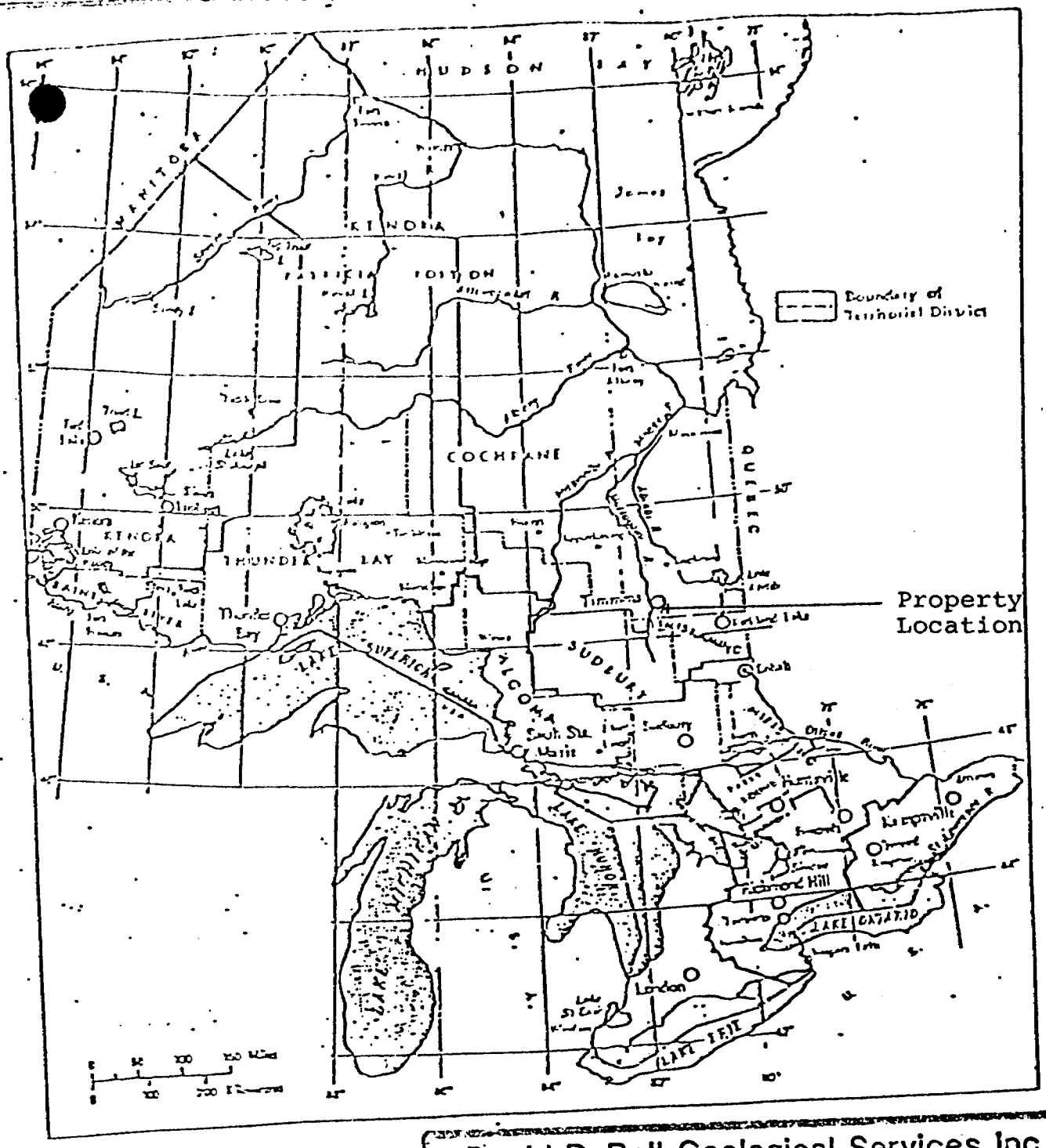
During the mapping program two auriferous zones were located. One of these showings is located in the same outcrop as the "Main Showing" that had been previously visited by the author. Examination of this showing, which was limited by a lack of good weather, found a highly brecciated, altered and mineralized rock that gave assays of up to 0.088 oz Au/ton. The second gold showing, also the site of some earlier trenching, was hosted by intermediate to mafic volcanics that have

been silicified and mineralized. Assays from this zone of up to 267 ppb Au were received. The results from both zones are found to be very encouraging in light of the limited work that has been completed. These zones also show a correlation with either magnetometer, VLF-EM, or IP anomalies.

Due to these promising results, a three phase exploration program totalling $263,000.00 has been recommended. The initiation of this third phase will be contingent upon the receipt of encouraging results from the first two phases.

2.0 INTRODUCTION

In October of 1986 the firm of David R. Bell Geological Services Inc. was contracted to initiate a exploratory program. This program was recommended as a result of a property visit made during May of 1986 and a search of all pertinent company and government information. The McNeil-Cleaver Township area is the location of several gold showings, but at the time has received only sporadic exploration activity. One showing in McNeil Township is hosted by mineralized rock that contains visible gold.



David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

LOCATION MAP

PROVINCIAL

Twp/Area Cleaver Twp.		Province Ont.
Mining Division Larder Lake		Project 6436
References		N.T.S.
Drawn	Drafted	Checked
Scale	Date June 17/86	Sheet Fig. 1

3.0 LOCATION AND ACCESS (see Figure 1 and 2)

The Cleyo Resources property is located 29 miles south-east of the city of Timmins in Cleaver Township, Larder Lake Mining Division, in the District of Timiskaming, Ontario. This claim group is found in the west-central portion of the township at 48.13 degrees north latitude and 81.47 degrees east longitude.

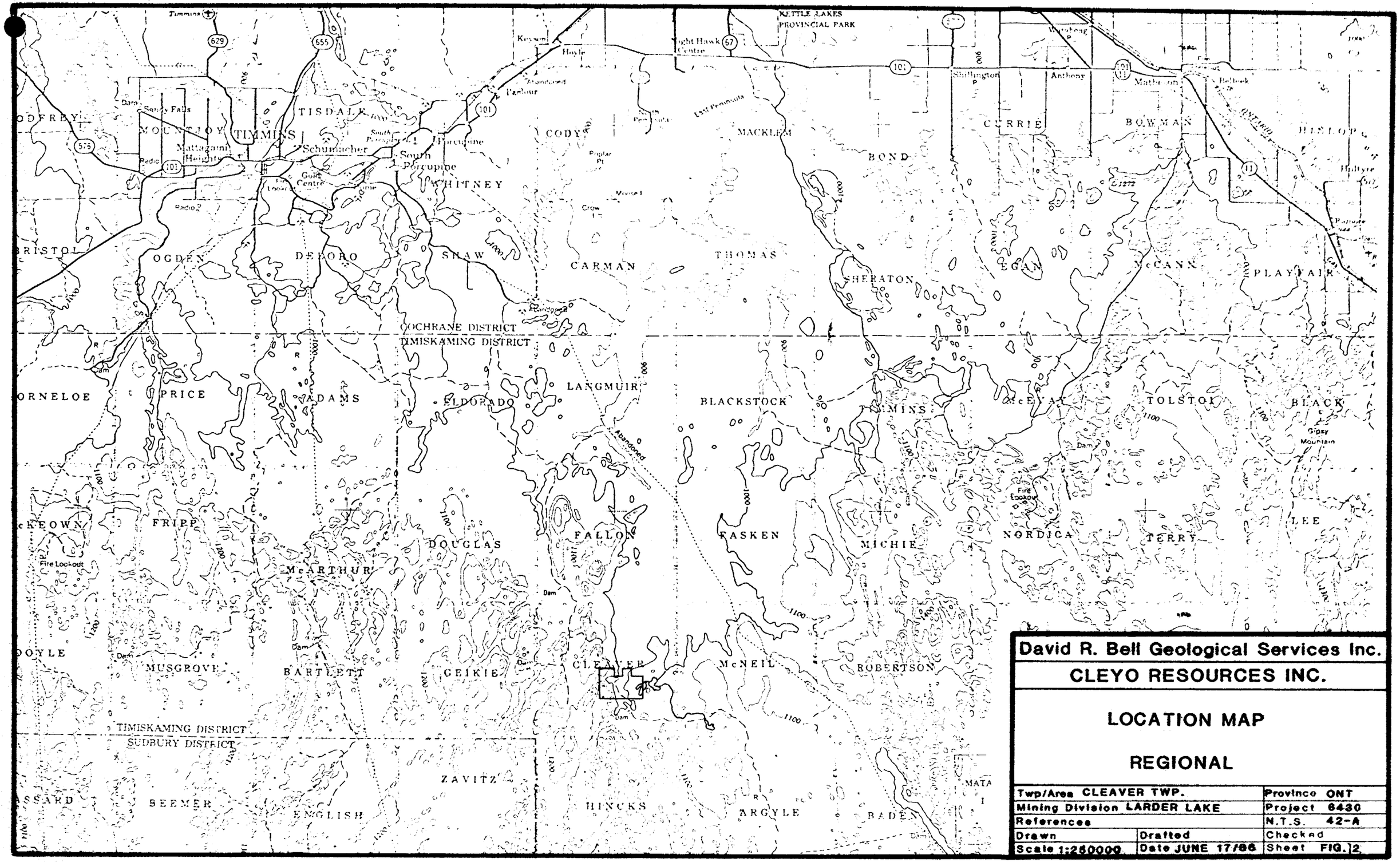
Access to Cleaver Township is gained by travelling approximately 30 miles on the Langmuir Road, an all weather lumber road that runs southwest from the town of South Porcupine. Once in the vicinity of the property, three routes can be used to access the northwest, north-central and south-central portions of the claim group. These access routes can be travelled using a two-wheel drive vehicle, but spring and fall weather may necessitate a vehicle with four-wheel drive capabilities.

4.0 PROPERTY AND OWNERSHIP (see Figure 3)

The Cleyo Resources, Cleaver Township property is composed of 27 contiguous unpatented mining claims (see Table 1) which are held in trust by Mr. Cleo Clement of Timmins, Ontario.

The property was optioned from Mr. William Dellaire of Timmins, Ontario, in January of 1986 and at that time consisted of only 23 claims. After reviewing the results of previous geophysical surveys and noting the location of the primary showing, the author recommended that an additional four claims should be staked. The acquisition of these claims would give complete coverage of this principle showing and any possible strike extension. These claims were subsequently staked in April of 1986, bringing the total number of claims to the present twenty-seven.

At the present time the 23 original claims (various recording dates in 1983) are under extension until Dec. 31, 1986, and require 40 days of assessment credits. The filing of this report for linecutting and geological survey credits will fulfill the necessary requirements to keep all claims in good standing until their respective anniversary or next filing dates in 1987 and 1988.



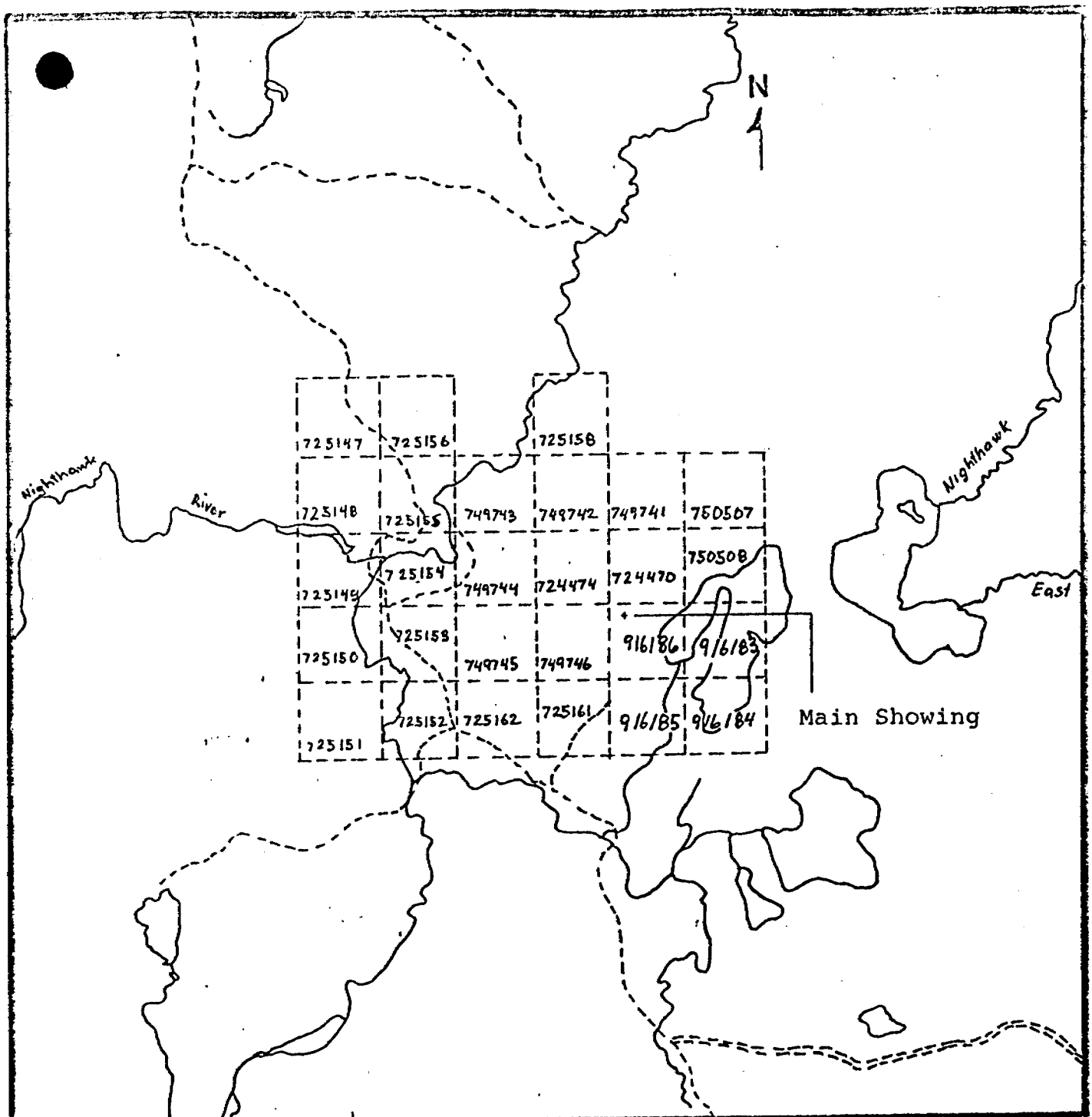
David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

LOCATION MAP

REGIONAL

Twp/Area CLEAVER TWP.		Province ONT
Mining Division LARDER LAKE		Project 8430
References		N.T.S. 42-A
Drawn	Drafted	Checked
Scale 1:250000	Date JUNE 17/86	Sheet FIG. 2



David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

CLAIMS CONFIGURATION

Twp/Area Cleaver Twp.		Province Ont.
Mining Division Larder Lake		Project 6436
References		N.T.S. 42A/3
Drawn M.R.S.	Drafted	Checked
Scale 1"=1 mile	Date June 17/86	Sheet Fig. 3

TABLE 1

CLEYO RESOURCES INC. - CLEAVER TWP. PROPERTY

PROJECT 6436

CLAIM STATUS

Claim No.	Recording Date	Next Filing Date	No. of Days Required
L724470	June 30, 1983	June 30, 1986	40
L724474	July 25, 1983	July 25, 1986	40
L725147	September 15, 1983	September 15, 1986	40
L725148	September 15, 1983	September 15, 1986	40
L725149	September 15, 1983	September 15, 1986	40
L725150	September 15, 1983	September 15, 1986	40
L725151	September 15, 1983	September 15, 1986	40
L725152	September 15, 1983	September 15, 1986	40
L725153	September 15, 1983	September 15, 1986	40
L725154	September 15, 1983	September 15, 1986	40
L725155	September 15, 1983	September 15, 1986	40
L725156	September 15, 1983	September 15, 1986	40
L725158	September 15, 1983	September 15, 1986	40
L725161	September 15, 1983	September 15, 1986	40
L725162	September 15, 1983	September 15, 1986	40
L749741	August 23, 1983	August 23, 1986	40
L749742	August 23, 1983	August 23, 1986	40
L749743	August 23, 1983	August 23, 1986	40
L749744	August 23, 1983	August 23, 1986	40
L749745	August 23, 1983	August 23, 1986	40
L749746	August 23, 1983	August 23, 1986	40
L750507	September 15, 1983	September 15, 1986	40
L750508	September 15, 1983	September 15, 1986	40
L916183	April 30, 1986	April 30, 1987	20
L916184	April 30, 1986	April 30, 1987	20
L916185	April 30, 1986	April 30, 1987	20
L916186	April 30, 1986	April 30, 1987	20

*Claims under extension until Dec. 31, 1986
Report of Work submitted Dec. 9, 1986

5.0 PHYSIOGRAPHY AND CLIMATE (see Figure 4)

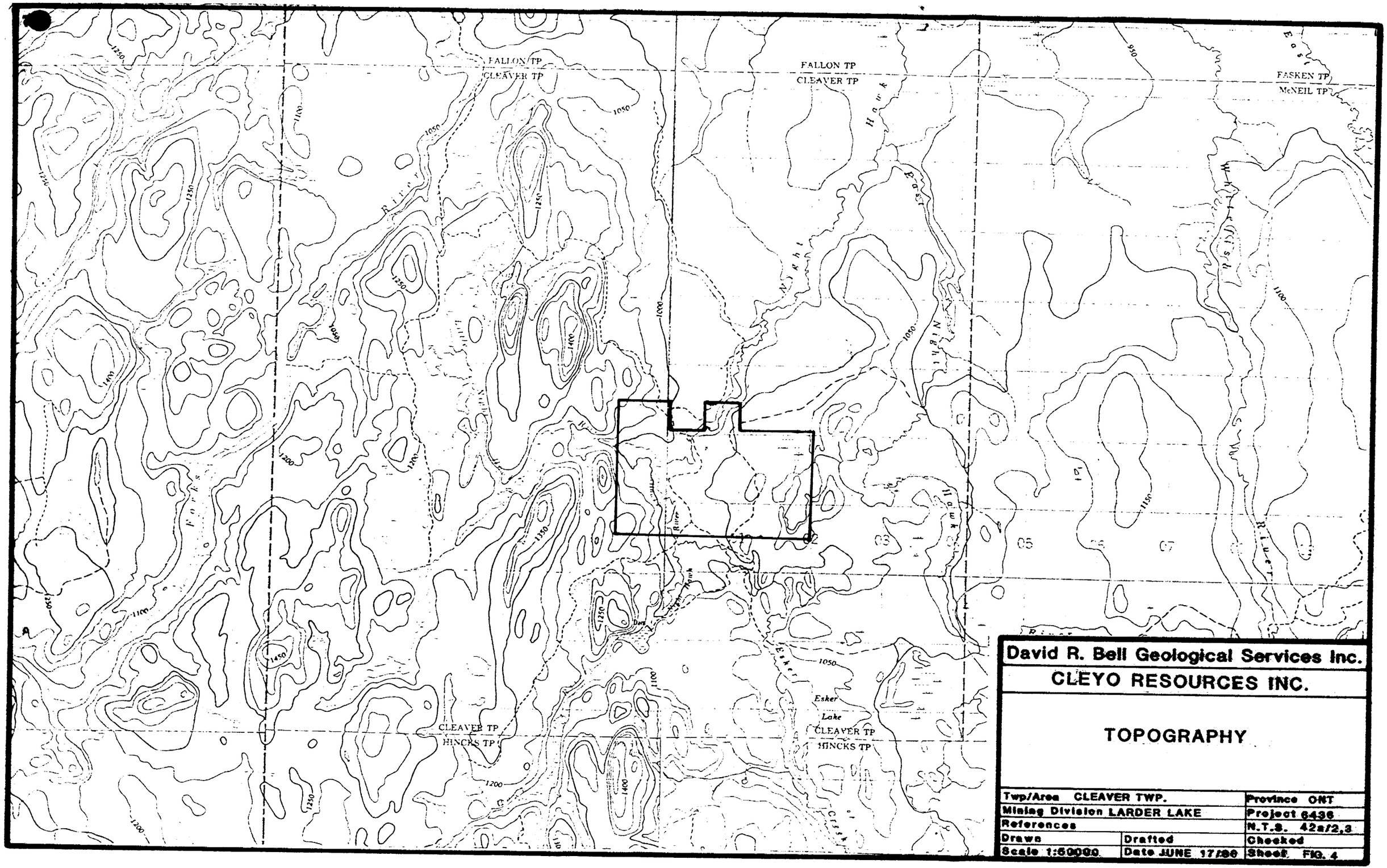
The Cleyo property is situated in an area of mixed topography. A general pattern of low relief dominates this region with the elevation ranging from 1050 to 1150 feet above sea level. In the west half of Cleaver Township an area of moderate to high relief is present, here the terrain attains a maximum of 1500 feet above sea level. This north trending area of higher ground is probably caused by the Middle-Precambrian Sediments of the Cobalt Group.

The claim group is drained by numerous lakes and rivers of the Nighthawk River system. This river system flows north and eventually drains into Nighthawk Lake.

Vegetation and overburden are typical of Northern Ontario. Sand, gravel and moderate to well developed "B" soil horizons are found in the higher better drained areas of the claim group, where poplar, birch, spruce and local stands of balsam fir are located. The lower lying areas of this property are covered by clay and water rich organic soils. It is in these areas that stands of cedar, spruce and alder dominate. In all areas, numerous types of mosses and grasses are present.

As a result of the Northern Ontario Engineering Geology Terrain Studies that were completed by the Ministry of Natural Resources, several sources of sand and gravel were located in this region (see Figure 5). In fact one such source is located on the Cleyo property. This source is a north trending esker that is found in the southeastern portion of the property. The Ministry has estimated that these local sources have a medium to high potential for coarse aggregate. These coarse aggregates will be valuable if the construction of access roads or mining facilities is ever initiated.

The climate of the area is characterized by hot, humid summers and long winters. An abundance of snowfall, and extreme cold are common during the winter months.

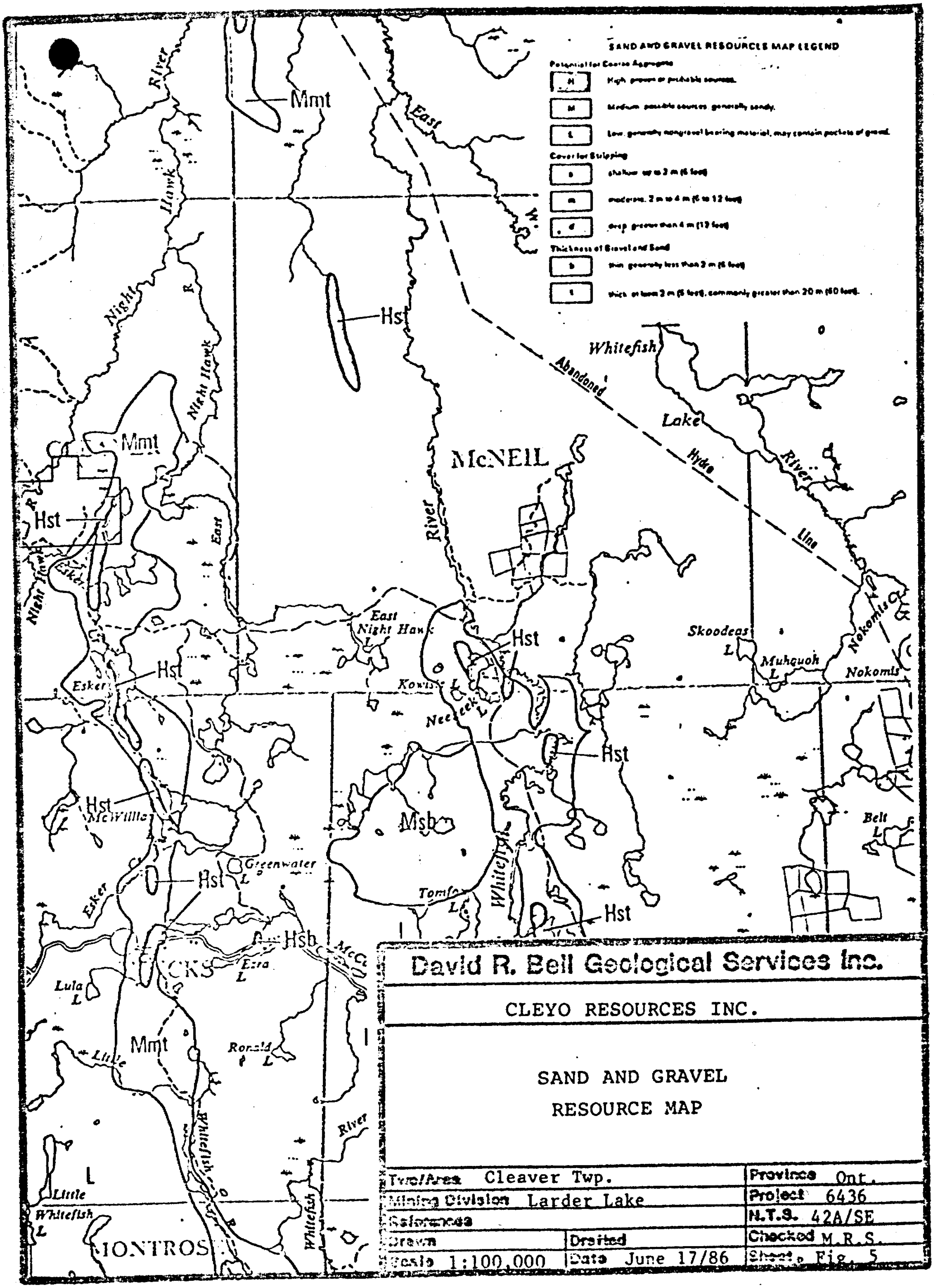


David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

TOPOGRAPHY

Twp/Area CLEAVER TWP.		Province ONT
Mining Division LARDER LAKE		Project 6436
References		N.T.S. 42a/2,3
Drawn	Drafted	Checked
Scale 1:50000	Date JUNE 17/80	Sheet FIG. 4


SAND AND GRAVEL RESOURCES MAP LEGEND
Potential for Coarse Aggregate
H High: proven or probable sources.
M Medium: possible sources, generally sandy.
L Low: generally nongravel bearing material, may contain pockets of gravel.
Cover for Stripping
s shallow: up to 2 m (6 feet)
m moderate: 2 m to 4 m (6 to 12 feet)
d deep: greater than 4 m (12 feet)
Thickness of Gravel and Sand
t thin: generally less than 2 m (6 feet)
t thick: at least 2 m (6 feet), commonly greater than 20 m (60 feet).
Mmt
Hst
Msb
Hsb
River
Hawk
Night
Night Hawk
East
Esker
Whitefish
Abandoned
Lake
Hyde
Line
McNEIL
East Night Hawk L
Skoodeas L
Muhquoh L
Nokomis
Kowtsi L
Neeteek L
Greenwater L
Tomfo L
Belt L
Lula L
Ezra L
Ronald L
Little
Little Whitefish L
MONTROS
David R. Bell Geological Services Inc.
CLEYO RESOURCES INC.
SAND AND GRAVEL
RESOURCE MAP
Twp/Area Cleaver Twp.
Mining Division Larder Lake
References
Drawn
Drafted
Scale 1:100,000
Date June 17/86
Province Ont.
Project 6436
N.T.S. 42A/SE
Checked M.R.S.
Sheet Fig. 5

6.0 POWER AND WATER

The power requirements for any early stages of exploration or development would have to be supplied by diesel generators. Although a major north-south power line is located 12 miles due east of the Cleaver Township property, it may be more cost effective to construct a power line from Matachewan, which is located approximately 21 miles to the southeast. This is due to the fact that the appropriate sub-stations are already present and therefore construction costs may be minimized.

An abundant water supply for any exploration or early development programs is present within the boundaries of this property. If greater quantities of water are required, then accessing the larger lakes to the southwest, or Nighthawk Lake to the north, should meet any foreseeable requirements.

7.0 ANCILLARY SERVICES

All goods or services that would be needed for any of the various exploration or mining phases could be acquired from the city of Timmins.

8.0 PREVIOUS WORK

Prospecting and exploration for gold had begun in the Matachewan district in as early as 1909, but the attention of the prospectors soon swung to silver, as the discoveries near Gowganda and Elk Lake were made. When the news of a major gold discovery within the Porcupine Camp (1909) became wide spread, the Matachewan area saw a renewed interest in gold exploration. Numerous occurrences were uncovered in the townships of Powell, Cairo, Alma and Baden. As well as private exploration, several geological and topographical surveys were conducted by government agencies during the 1910's, especially in the vicinity of the then, most current gold discoveries.

It was not until 1923 that any gold discoveries were made in the Cleaver-McNeil Townships area. Three Indians named Isador, Micmack and Tom Fox uncovered a gold showing in the south-central part of McNeil Township. This discovery led to the uncovering of several more occurrences in McNeil Township and eventually, Mr. Dan O'Connor located two gold showings in the west-central section of Cleaver Township. Apparently nothing of significance ever came of these discoveries.

The Cleaver-McNeil area received very little attention during the intervening years between the 1920's and the 1950's. When exploration activities again increased, the bulk of the work was concentrated in the west half of Cleaver and the eastern part of McNeil Township. The companies and their respective exploration activities as conducted in Cleaver Township are listed in Table 2.

The only work that has been recorded for the vicinity of the present Cleyo Resources property, has all been completed since 1974. Stripping and trenching have been completed by J. Boissoneault and R. Rousseau on ground that is now covered by claims L724470 and L724474. Linecutting, magnetometer and VLF-EM surveys were completed in early 1984 under a previous option agreement. The assessment credits for this work are still valid and in fact are being used to keep the claims in good standing. These surveys have outlined several areas of interest that have as yet not been examined.

9.0 REGIONAL GEOLOGY AND STRUCTURE (see Figure 6)

9.1 Regional Geology

Cleaver Township, and subsequently the Cleyo Resources property, is underlain by rocks that are entirely Precambrian age. The majority of the bedrock belongs to the Abitibi Greenstone Belt, which being Early Precambrian or Archean in age, is a tectonically differentiated portion of the Superior Province

TABLE 2

CLEYO RESOURCES INC. - CLEAVER TWP. PROPERTY

PROJECT #6436

PREVIOUS REGIONAL EXPLORATION ACTIVITIES

leaver Twp.

ompany	Activity	Year	Assessment File No.
Amax	trenching, assaying, HLEM, Max-Min	Oct. 76-Oct. 77	429441
mperial Oil	ground EM and Mag	1982	420367
eck	Seismic, mag, drilling for placer gold	1980-1981	537428
oranda	mag, HEM	1981	2.4423
omstate Res. Ltd.	mag, EM	?	2.4762
'Connor	correspondence	1924	330
amothe, Charles	EM, drilling	1956	T-643
exmont	EM profiles	1965	?
ang, Bert W.	EM	1966	63.1838

McNeil Twp.

Company	Activity	Year	Assessment File No.
Noranda	EM, mag	?	?
Cominco	EM, mag	?	?

of the Canadian Shield. Rocks of Middle and Late Precambrian age are respectively represented by Cobalt Group sediments and minor intrusions of diabase.

The Abitibi Greenstone Belt, in the vicinity of Cleaver Township, is composed of variably metamorphosed igneous, sedimentary and volcanically derived rocks (Pyke, 1978).

9.11 Metavolcanic Rocks

The metavolcanic rocks of this area are represented by at least two cycles of volcanism. The ultramafic rocks occupy the lowest position of each cycle, while the mafic, intermediate and felsic rock types sit in respectively higher stratigraphic locations. The lowest of these two cycles, trends in a north-south direction through Fripp, McArthur, Bartlett and English Townships. The dominant, or upper cycle, shows an east-west, as opposed to the expected northerly trend. This may in part be the result of the intrusion of the Geikie Pluton, even though the regional magnetometer survey suggests that this east-west trend, is more typical of the Cleaver-McNeil area.

The ultramafic metavolcanic rock types are by far the most sparcely distributed. Massive, polysutured and spinifex textured flows are the most common of these rocks, while pyroclastic units are found locally.

The most dominant of all rock types in this area are the mafic to intermediate metavolcanics. Lithological varieties included within these units are the massive, pillowed and variolitic flows. In conjunction with these flows, pyroclastic rocks in the form of tuff, lapilli tuff and volcanic breccia are found.

The felsic metavolcanic rocks are represented by massive and pillowed flows as well as the aforementioned types of pyroclastic rocks. Centers of felsic volcanism are located in the area of Douglas-Fallon-Fasken and McArthur-Bartlett-English-Hutt Townships.

9.12 Metasediments

Metasediments apparently, form only a very small portion of this section of the Abitibi Greenstone Belt, comprising no more than five percent of the exposed area. Where noted by previous workers, the Early Precambrian metasediments are found to be associated with the intermediate to felsic volcanics (Pyke, 1978). Middle Precambrian metasediments are represented by the Cobalt Group, which in this area is composed of arkoses, greywackes and argillites. These rocks lie in a thin band that runs in a north-south direction through Montrose, Hincks, Cleaver and Fallon Townships.

9.13 Intrusives

The intrusive rocks which are present in this area, range in chemical composition from felsic to untramafic.

The major felsic intrusions, such as the Peterlong Lake Complex, and the Adams and Geikie Plutons, are composed of feldspar and quartz porphyries, trondhjemites, granodiorites, quartz diorites and diorites. Smaller intrusions of the same relative compositions are also present in this area along with intrusions of syenitic composition such as the Fallon Stock.

A large zone of mafic to ultramafic intrusions, is found in the central portion of the lower most volcanic cycle, sitting at the contact between the mafic and the intermediate to felsic volcanics. There appears to be a genetic relationship between these intrusive bodies and the more "felsic" rock types, as is noted by their close spatial association in the Bartlett-McArthur and Zavitz-Hutt Townships area. These intrusives may be composite bodies of the following, gabbro, gabbroic anorthosite, pyroxenite, serpentinized peridotite, and quartz gabbro. Other gabbro intrusions have been noted in McNeil Township. As a result of the

linear magnetic trends in the Cleaver-McNeil area and the magnetic anomalies in Cleaver Township it is possible that other mafic stocks or plugs may be located within the vicinity of the project area.

9.2 Regional Structure

As previously noted, the volcanic rocks of this area show two major trends. The lower cycle trends north-south, generally dips to the east at 65 to 80 degrees (local variations are present), while tops face east showing that these units have not been overturned. Except for major north-south faults these rocks do not appear to have been severely deformed, at least folding on a large scale is not evident.

The upper volcanic cycle, has undergone deformation, by both folding and faulting. Numerous anticlinal and synclinal structures are located within Douglas, Zavitz and Hutt Townships. These are crosscut and offset by the northerly and northwesterly trending faults that transect this area.

Details as to the structural make-up of the Cleaver-McNeil area are limited due to the lack of any detailed exploration by either government or private industry.

10.0 PROPERTY GEOLOGY AND STRUCTURE

During the course of the mapping program approximately 200 bedrock outcroppings were examined for geological, mineralogical and structural information. Although this sounds like a substantial amount of exposure, it in fact represents only about 10-15% of the entire property. In so far as this is the situation, geophysical (magnetometer and VLF-EM) data from previous surveys was used as an interpretational aid to develop a geological framework from which further exploration could be recommended.

10.1 Property Geology (see Map 6436-86-4-1)

The Cleyo Resources-Cleaver Township property is found to be underlain by rocks that are of early Precambrian age. Through field examinations the following rock types have been recognized; magnetic and non-magnetic mafic flows, intermediate to mafic flows and minor felsic intrusions.

10.1.1 Mafic Flows

By far the most dominant rock types that were seen during the mapping program, are the mafic flows. Visual classifications, based upon colour and mode of occurrence, suggest that these rocks are of basaltic composition. Major and trace element geochemical analysis has for the most part confirmed this assumption.

The geochemically determined rock types were dominantly found to be of the tholeiitic chemical trend, while being of either basaltic or "iron-rich" basaltic composition. A few exceptions were noted. One exposure located at L8W at 0+30N is still of the tholeiitic chemical trend but is of andesitic composition. This is not uncommon by virtue of the fact that the exposure sits near a flow top environment and may only be an isolated occurrence. The other exception, located on L16W at 28+50N and while being of basaltic composition is found to be of the calc-alkalic chemical trend. This analysis matches with the magnetometer survey which shows a trend of lower susceptibility in the area.

These basalts are found as both massive and pillowed flows, while well developed sections of flow top breccia are locally noted. The massive flows being green to dark green in colour range from aphanitic to coarse grained in texture, with the fine to very fine grained varieties being dominant. It is only within the coarse grained sections that the mineraology can be discerned, and then only the plagioclase feldspar from the mafic (pyroxene-amphibole) component. Well developed sections of pillowed flows are seen to top the massive sections, with

individual pillows attaining dimensions of at least four feet in length and three feet in width. Locally the pillows may contain well developed vesicules which can be used for tops determination. The selvages are seen to contain both variolitic growths and hyaloclastite (glass shards). The flow top breccia are characterized by angular to sub-rounded flow brecciated fragments in a chloritic matrix, which may contain both variolites and hyaloclastite.

All varieties of basalts, whether massive, pillowed or flow breccias were found in both magnetic and non-magnetic phases. The magnetic and some non-magnetic sections have been chemically defined as iron-rich tholeiites, while the non-magnetic sections are represented by iron-rich tholeiitic basalts, tholeiitic andesites and basalts, and calc-alkalic basalts.

10.1.2 Intermediate to Mafic Tuff

Only one exposure of tuffaceous rock was round during the course of the mapping program. This outcrop, located on L16W at 17+40N is composed of a grey to grey-green rock, which weathers to a buff colour and shows definite, clastic features when examined closely. The rock is composed of approximately equal proportions of rounded to sub-rounded quartz and feldspar clasts, that are supported by a chlorite-muscovite-carbonate rich matrix. Both orthoclase (pink) and plagioclase (zoned) are found to represent the feldspar minerals in the portion of the clasts.

10.1.3 Intermediate to Felsic Flows

Exposures of the intermediate to mafic flows have been located in the south-central section of the property. These exposures all appear to be part of the same northeast trending unit. This horizon is coincident with a zone of low

magnetic susceptibility, as is expected from visual examination. These rocks are characterized by their pale grey to green and locally grey green colour, dominantly aphanitic texture and lack of magnetic response.

Geochemical analysis of these rocks has returned rhyolitic compositions of both the calc-alkalic and tholeiitic chemical trends. This is in agreement with the gross visual aspects of these rock units.

An exposure of these flows is located at 6+00W and 7+20S, these rocks are found to contain up to 10% fine grained disseminated pyrite, and are extremely hard. At this time it is unknown whether these features are of primary origin or are a result of an alteration process. Samples from this outcrop have been collected and analyzed, the results are discussed in the mineralization and alteration section.

10.1.4 Felsic Intrusions

Two felsic intrusive exposures were located as a result of the geological mapping. The first of these, located on L8W at 0+80N, is a rock of intermediate composition, that shows a dominantly grey colour with green to dark green mafic clots, and has an aphanitic texture. The exact nature of the mineralogy is undiscernable due to the microscopic grain size.

The second exposure is located at 15+00W-5+85N. This rock is of syenitic composition. This classification is based on colour alone, as the fine grained nature of the rock does not allow for mineralogical determinations. The pink colour represents the dominant orthoclase feldspar, while the black mineral (3-5%) represents the mafic component.

10.2 Property Structure

The Cleyo claim block is underlain by a northeast-southwest trending series of intermediate to mafic metavolcanics, with isolated felsic intrusions. Direction or tops determination can be made due to the well developed and exposed flow structures. These features or structures, are found in the form of flow top breccia and pillowed horizons, and in conjunction with the observed grain size gradation in the massive flows, indicate

a south facing (tops face south) sequence of variable magnetic to non-magnetic volcanic flows. Since these rocks dip steeply to the south it can also be said that they are not overturned. This information can be of incalculable value when trying to determine possible extensions to known auriferous showings, as well as located areas of potential mineral wealth.

Two cross structures have been located via the surface mapping. These structures have a northerly trend and are seen to truncate and cause an offset to the geological continuity. One structure a northeast trending shear zone has been located on L8W at 15+85S. The exact extent of this shear is unclear, but striking at 027° and dipping at 080°E it is believed that it extends northwards to the baseline, as is also shown by the offset in a southwest trending VLF-EM conducting (L12E at 3+00S to L12W at 12+50S). The second mapped structure is found in the vicinity of the principle showing at 0+40W and 1+10S, and has a strike of 156° and a dip of 82° to the southwest, with a relative movement of west block-south and east block-north being noted.

11.0 MINERALIZATION AND MINERALIZED SHOWINGS

All rock types, as mapped during this program display at least minor degrees of metallic mineralization, whether it be primary pyrite or magnetite as in the mafic volcanics, or secondary pyrite as seen in the breccia-alteration zones, with pyrite being the dominant form. Two areas of interest were located, but received only a limited degree of exploration due to the early snowfall. Anomalous assay results were received from grab sampling that was independently conducted at both locations.

11.1 A-Zone

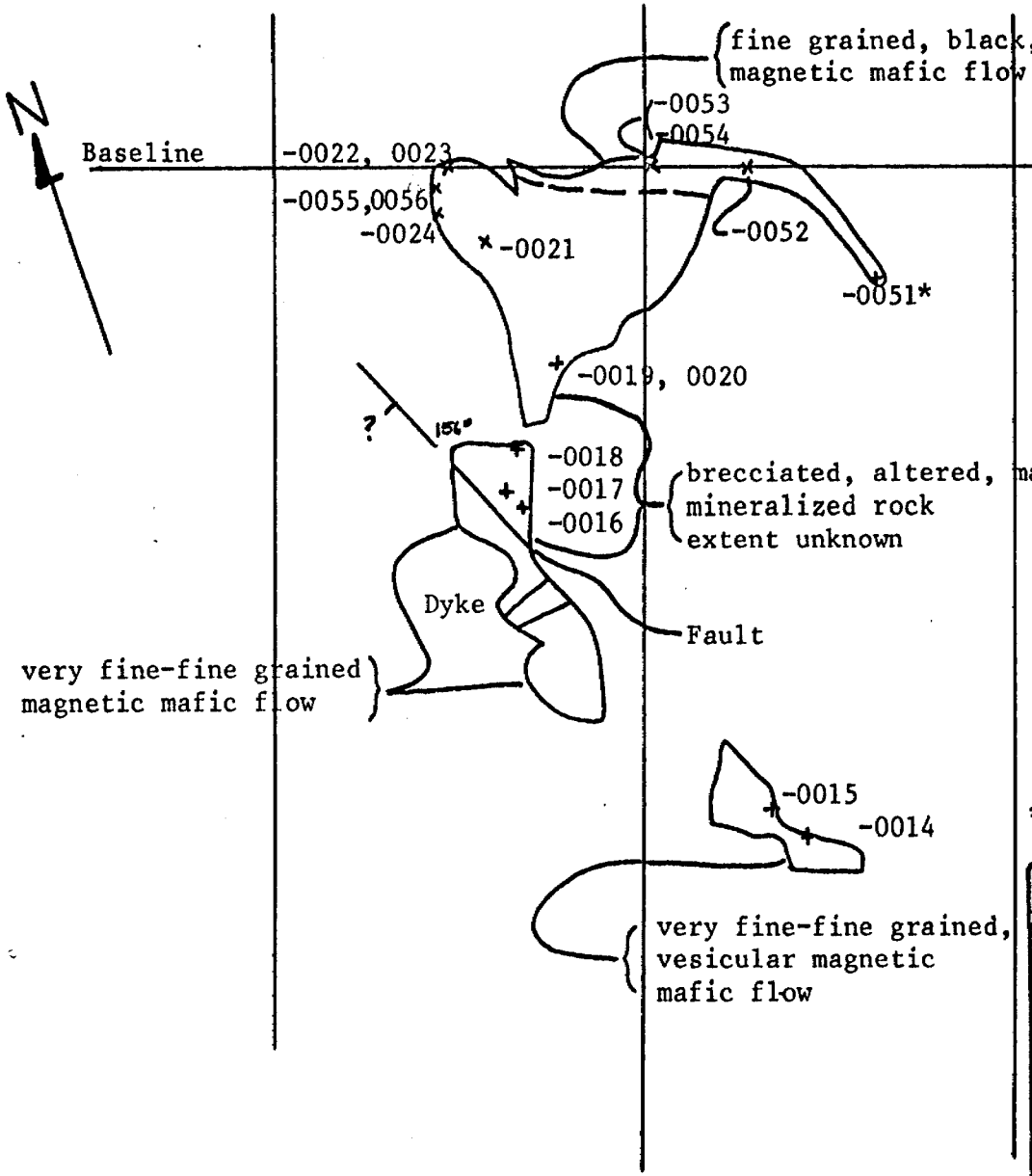
The "A-Zone" was located in the same outcropping as the previously named "Main Showing", but these two targets at

present appear unrelated. A diagram of the A-Zone (Figure 7) showing sample locations and assay results has been included. This showing is located within a dark green, brecciated, carbonatized and magnetic rock that shows silicified and carbonatized fragments with 10-15% fine grained disseminated pyrite. Due to the types and degree of alteration and mineralization, it was believed that these rocks would contain at least anomalous quantities of gold. The assays of up to 0.088 oz Au/ton that were received from grab sampling of this zone show that this was in fact the case (see Appendix I). This showing is coincident with an IP anomaly. (See the geophysics section for a further description)

11.2 B-Zone

The second target or the "B-Zone", located at 6+00W and 7+20S, is the site of previous trenching. As is the case with the A-Zone, the B-Zone has not received a thorough nor complete examination. This showing is found within the intermediate to mafic volcanics, and is distinguished by the apparent silicification, silica filled fractures and 5-7% pyrite mineralization. Grab samples collected from this showing have returned anomalous assays of up 267 ppb Au (0.008 oz Au/ton. This showing is found to be coincident with a southwest trending "mag" depression (L4E-5S to L8W-9S), as well as a similar trending VLF-EM conductor (see Figures 8 and 9).

The IP survey has highlighted an area that shows slightly higher chargeability. This zone is also coincident with the Mag and EM, but the exact form is unknown as the survey boundaries prohibited a full disclosure of this anomalous zone. It is these multiple-overlapping anomalous zones, along with anomalous assay results that place the B-Zone as a very promising exploration target, which will require a thorough field examination next season.



Sample No.	Assay Results ppb Au	oz Au/ton
6436-0014	10	
-0015	7	
-0016	14	
-0017	19	
-0018	77	
-0019		0.088
-0020	34	
-0021	549	
-0022	343	
-0023	349	
-0024	490	
6436-0051	22	
-0052	10	
-0053		0.108
-0054	960	0.028
-0055		0.042
-0056		0.036

*samples 6436-0051 to -0056 collected during May, 1986 property examination

David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

A-Zone

Geology, Assays and

Sample Locations

Twp/Area Cleaver		Province Ont.
Mining Division Larder Lake		Project 6436
References		N.T.S. 42A/2 & 3
Drawn S.W.C.	Drafted S.W.C.	Checked
Scale 1"=50'	Date Dec., 1986	Sheet 7

The "Main Showing" as described in a previous report (Conquer, 1986) did not receive any further examinations during this phase of exploration. Although this showing would appear to be of less importance than both the A- and B-Zones, it should still be examined during any further phase of exploration.

The anomalous assay results in conjunction with the coincident geophysical anomalies present both the A- and B-Zones as high priority exploration targets, that should receive a more detailed examination during the next field season.

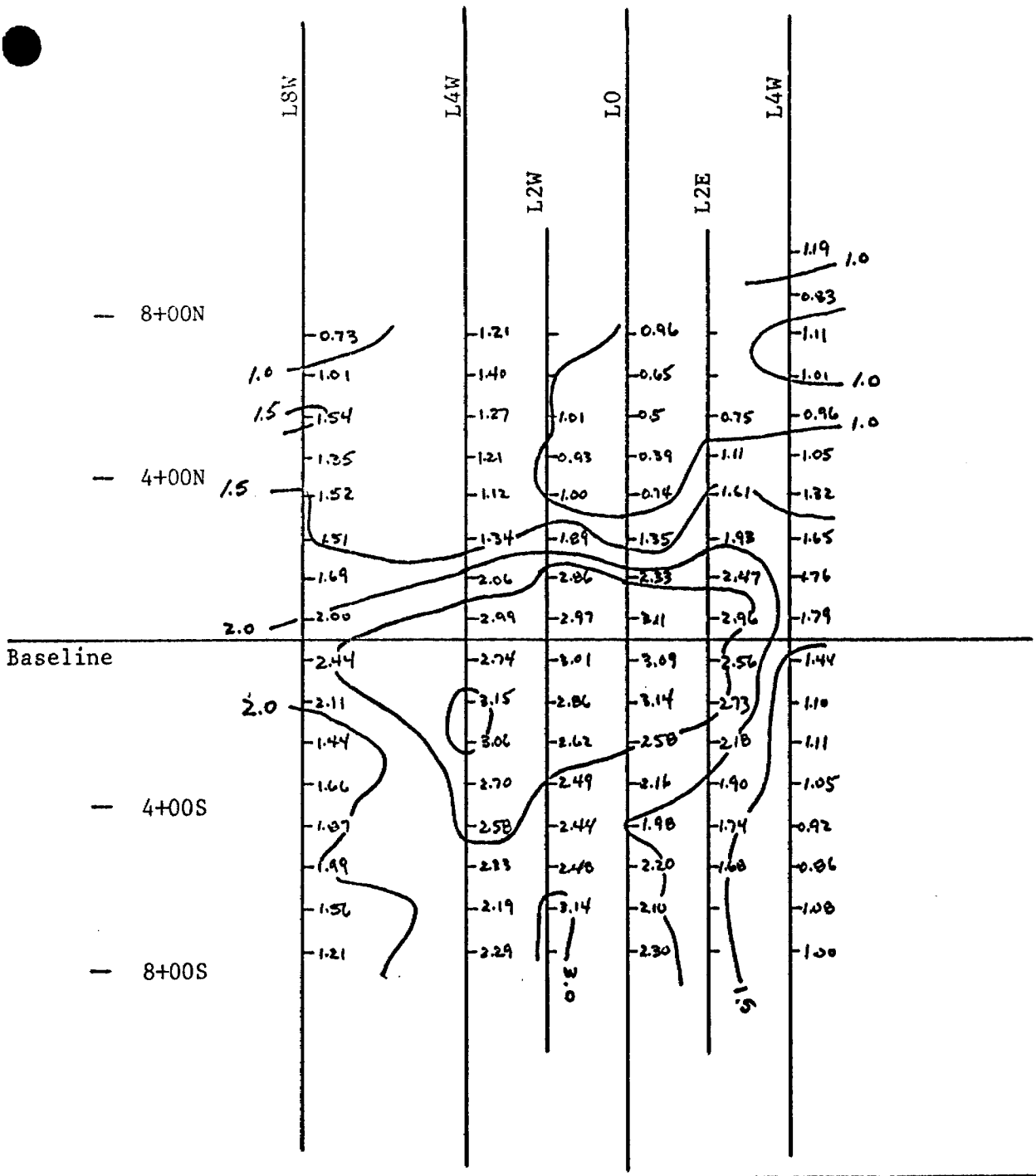
12.0 GEOPHYSICS (see Figures 8-10 and Maps 6436-86-5-1 to -6)

An orientation Induced Polarization survey was conducted as part of this exploration program. This newly acquired geophysical data was used in conjunction with previously acquired "mag" and VLF-EM data was used to interpret geological and mineralogical trends.

When the A-Zone was found, it was observed that the pyrite content was not high enough to produce a VLF-EM response, but with the observed 2-3% pyrite concentration, would be sufficient to give an IP response. This survey did outline an elliptical zone that extends for approximately 1,000 feet from 3+00W to 7+00W and is about 500 feet wide straddling the baseline. Also from this survey a second weak but distinct chargeable zone was located. As previously mentioned, this zone is coincident with other anomalies that highlight the B-Zone.

The structure which is inferred to be associated with the B-Zone is shown to be at least 5,000 feet long by the VLF-EM and the mag surveys. This does not appear to be one continuous structure, but may be composed of several dependent sections.

Several other parallel to sub-parallel structures can be inferred from the mag data, but apparently lack the similar EM association as is found with the B-Zone. An attempt should be made to further delineate the B-Zone geophysical structure in light of the current evidence.



David R. Bell Geological Services Inc.

CLEYO RESOURCES INC.

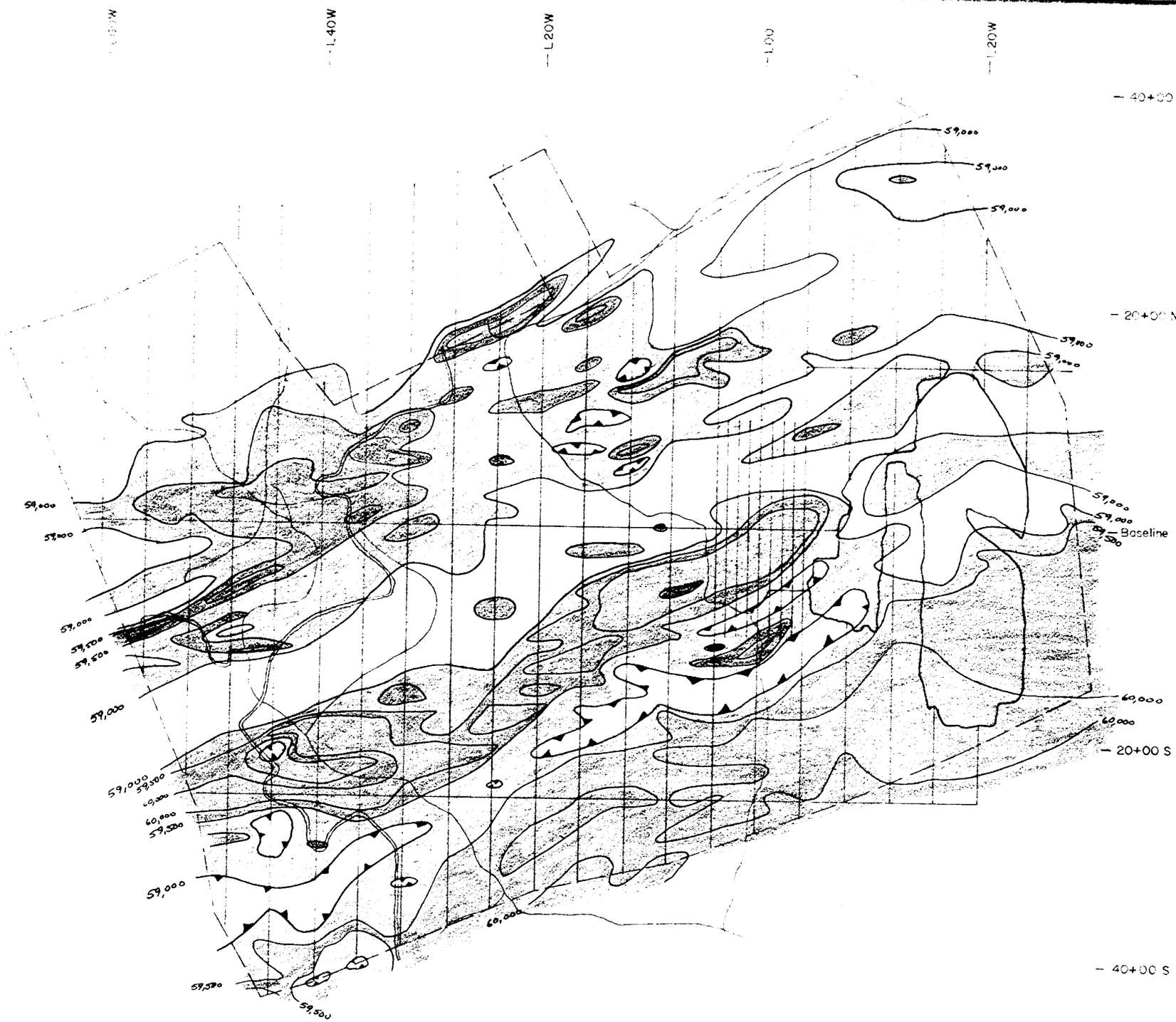
INDUCED POLARIZATION

FILTERED DATA

% FREQUENCY EFFECT

Twp/Area Cleaver Township		Province Ontario
Mining Division Larder Lake		Project 6436
References		N.T.S. 42A/2, 3
Drawn S.W.C.	Drafted S.W.C.	Checked
Scale 1"=400'	Date Dec. 1986	Sheet 10

Analysis of the magnetometer date reaffirms what has been seen from the mapping and that is a series of magnetic to non-magnetic flows. At least within the confines of the Cleyo property, a definite magnetic trend can be seen to exist. This trend shows that the southern portion of the property is dominated by a series of highly magnetic, presumably, "iron-rich" tholeiitic basalts. While other highly mganetic "zones" are defined, they decrease in both length and width becoming only isolated occurrences. As has been shown by the geochemistry, a correlation can be drawn between the high magnetic susceptibility zones and the tholeiitic basalts, as well as the less susceptible or non-magnetic zones and the calc-alkalic rocks.



LEGEND

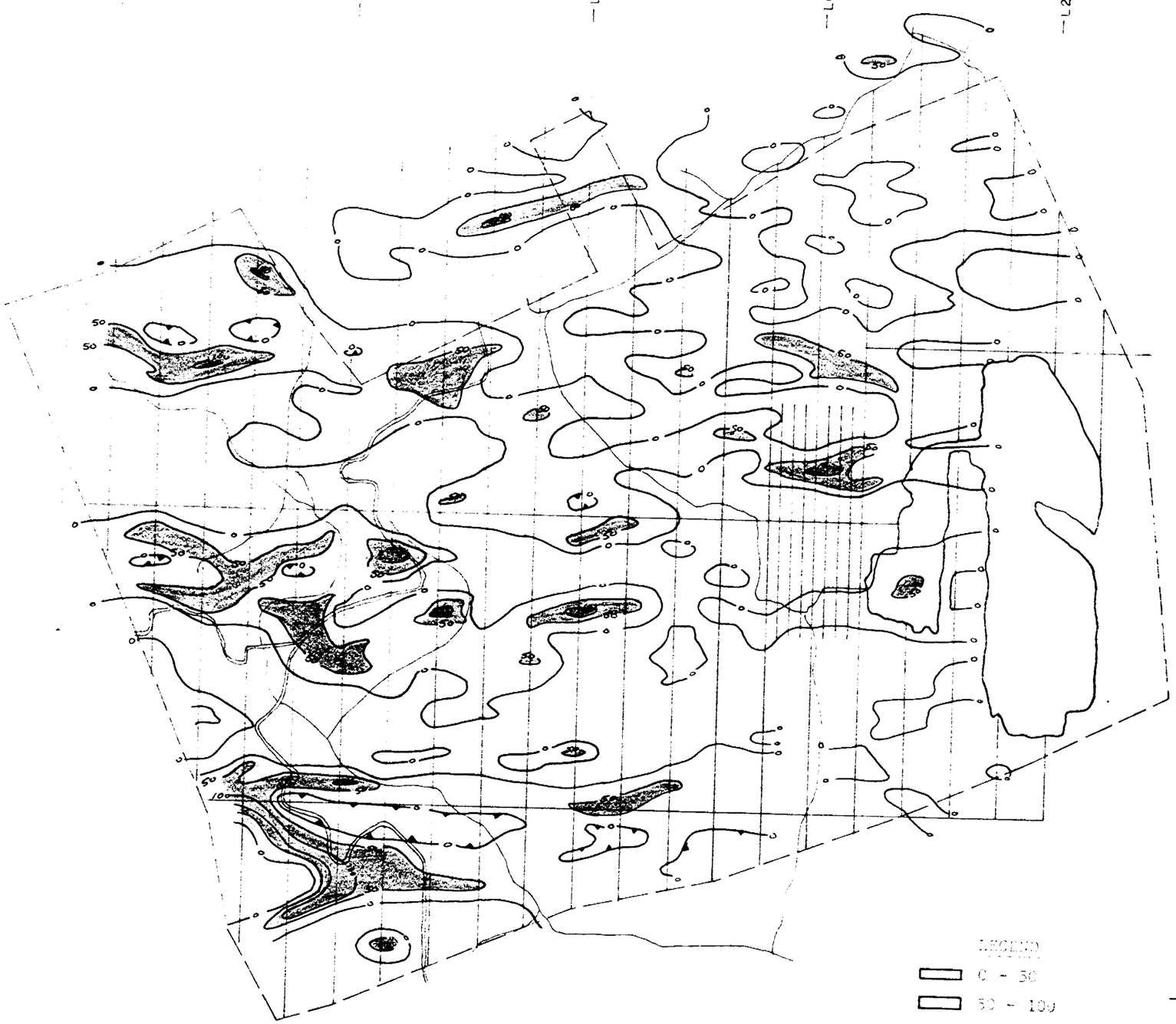
- below 59,000
- 59,000 - 59,500
- 59,500 - 60,000
- 60,000 - and up
- "mag" depression

David R. Bell Geological Services Inc.

Cleyo Resources Inc.

MAGNETOMETER SURVEY

Twp/Area: Cleaver Twp
Province: Ontario
Mining Division: Larder Lake
Project: 6436
References
N.T.S.: 42A/2,3
Drawn: S.W.C. Drafted S.W.C. Checked S.W.C.
Scale: 1"=1000' Date: Dec. 1986 Sheet 8



David R. Bell Geological Services Inc.

Cleyo Resources Inc.

VLF-EM
FRASER FILTER

Twp/Area: Cleaver Twp
Mining Division: Larder Lake
References
Drawn: S.W.C.
Scale: 1" = 1000'
Drafted S.W.C.
Date: Dec. 1986
Province: Ontario
Project: 6436
N.T.S. 42A/2,3
Checked S.W.C.
Sheet 9

13.0 CONCLUSIONS

The geological mapping program which was completed over the 27 claim Cleaver Township property of Cleyo Resources, was done so for two reasons. First, to gain a better understanding of the local geology, mineralogy and stratigraphy such that a better insight could be gained into the source of and to extend to the gold bearing zone of the "Main Showing." Second, to locate other areas of possible economic significance. This mapping program was in fact only one part of a previously recommended multiphase exploration program.

It was found that the property was underlain by a series of magnetic to non-magnetic basalts, intermediate to mafic flows and tuffs and localized felsic intrusions. These rocks have a northeast-southwest strike, dip steeply to the south and show a tops up configuration. From geochemical analysis it would appear as if the basalts, both magnetic and non-magnetic varieties are of the iron-rich tholeiitic trend, while the intermediate to mafic flows were magnesium-rich tholeiites.

The amount of structural data acquired through the mapping, precludes any meaningful interpretation beyond the mention that cross-faults or structures are known to exist. Their influence on any auriferous zones is at present unknown, and will only be understood as a result of future exploration.

In light of the completed work, two promising auriferous zones were located. Both the A- and B-Zones were only examined in the most precursory fashion, due to the sudden arrival of winter. These zones have given definitely encouraging results, such that further work is a necessity. Therefore the following recommendations are made.

14.0 RECOMMENDATIONS

With the discovery of two gold bearing zones on the Cleyo Resources property, it is recommended that a two and possibly three phase exploration program be completed, such that these showings can be properly evaluated. The work that has been completed to date was only a small part of a larger scale program, that due to deteriorating weather conditions, could not be completed.

The first phase will consist of linecutting and geochemical sampling. The lines will be cut to facilitate completion of program segments from all phases of work. The sampling and subsequent analysis of the humus and "B"-horizon material across both A- and B-Zones, will serve to generate a "geochemical signature", which it is hoped can be used to show the aerial extent of these auriferous zones, as well as a base against which future geochemistry results can be compared. This work by its very nature must be completed before the stripping is started and the overburden is forever disturbed.

Phase two is designed to actually open up and physically examine both showings plus geochemically investigate other areas on the property. This phase will consist of stripping, trenching, sampling, assaying and geological mapping. Through this work an overall geological picture can be developed, so as to further define the potential economic significance of these showings.

The other areas of interest that are outside the principle showings and that are either geologically or geophysically inferred should be examined. This examination may be best completed via geochemical sampling, especially in areas of poor exposure and shallow overburden (less than 20 feet).

The budget for the geochemical sampling has been calculated for coverage of the entire property. This may in fact not be practical due to overburden thicknesses, but it should be included in the planned program.

Diamond drilling is proposed for the third phase of this program, and will be contingent upon the results of the two previous phases. At the present time a 5,000 foot drill program is envisioned for the two known showings. The planned footage is based upon an equal split of 2,500 feet per showing. Program modifications may be made upon in field results.

The above recommended three phase program is estimated to cost $263,000.00

15.0 COST ESTIMATES

Phase I

Linecutting	
-estimated @ 5 miles for grid extension and detailed lines	
-5 miles @ $325./mile	1,625.00
Orientation Geochemistry Survey on the Detailed Grid	
-50 foot sample intervals	
-360 samples of both humus and B-horizon therefore 720 samples	
-720 samples @ 76 samples/day = 9.6 days	
-9.6 days @ $200./day	1,920.00
Soil Analysis	
-720 samples @ $11./sample	7,920.00
Supervision	
-3 days @ $300./day	900.00
Meals and Accommodation	
-13 man days @ $40./man/day	520.00
	12,885.00
10% contingencies	1,288.50
Phase I total	$14,173.50

Phase II

Stripping and Trenching		
-20 days @ $1,000./day		20,000.00
Assaying		
-200 samples @ $11./sample		2,200.00
Geological Mapping		
-geologist and assistant		
-20 days @ $500./day		10,000.00
Property Geochemistry		
-100 foot sample interval		
-1,689 samples @ 75 samples/day		
-23 days @ $200./day		4,600.00
Soil Analysis		
-2,409 samples @ $11./sample		26,499.00
Supervision		
-10 days @ $300./day		3,000.00
Meals and Accommodation		
-53 man days @ $40./man/day		2,120.00
Supplies		2,000.00
Secretarial		
-5 days @ $160./day		800.00
Report and Drafting		
-10 days @ $500./day		5,000.00
		76,219.00
	10% contingencies	7,621.90
	Phase II total	$83,840.90

Phase III

Diamond Drilling

-5,000 feet @ $30./foot all incl.		150,000.00
	10% contingencies	15,000.00
	Phase III total	$165,000.00

Total

Phase I	14,173.50
Phase II	83,840.90
Phase III	165,000.00
	263,014.40
say	$263,000.00

Respectfully submitted by,

Stephen Conquer

Stephen Conquer, B.Sc.

December 19, 1986
Timmins, Ontario

CERTIFICATE OF QUALIFICATIONS

I, Stephen W. Conquer, hereby certify:

1. that I am a geologist employed by David R. Bell Geological Services Inc., 261 Third Avenue, Timmins, Ontario

2. that I am a graduate of the University of Waterloo, holding a Bachelor of Science degree (1979)

3. that I have been practising my profession as a geologist since 1979

4. that I do not have nor do I expect to receive either directly or indirectly, any interest in this property or the securities of Cleyo Resources Inc.

Timmins, Ontario
December 19, 1986

Stephen W. Conquer, B.Sc.

REFERENCES

Conquer, S.W.
1986 Introductory Report on the Cleaver Township, Larder Lake Mining Division, Property of Cleyo Resources Inc., Project #6436 - internal Company Report)

Cooke, H.C.
1919 Geology of Matachewan, District Northern Ontario, Geological Survey, Department of Mines, Ottawa

Guy, Kenneth
1984 Report on a Ground Magnetic and Electro-magnetic Program for Melrose Resources Ltd.

Hopkins, Percy E.
1924 Notes on Gold in McNeil and other Townships, Ontario Department of Mines, Volume 33, pt.3 pp 37-40

Lee, Hulbert A.
1979 Northern Ontario Engineering Geology Terrain Study, Sand and Gravel Resources Map, Kirkland Lake, Ontario Geological Survey, Map 5032, scale 1:100,000

Pyke, D.R.
1978 Geology of the Peterlong Lake Area, Districts of Timiskaming and Sudbury, Ontario Geological Survey Report 171, 53p, Map 2345, scale 1:50,000

REFERENCES cont'd

1968 NTS 42-A "Timmins" Surveys and Mapping Branch, Department of Energy Mines and Resources, scale 1:250,000

1970 Map 8442 G "Radisson Lake" Aeromagnetic Series, Department of Energy Mines and Resources, Geological Survey of Canada scale 1"=½ mile

1970 Map 84476 "Peterlong Lake" Aeromagnetic Series, Department of Energy Mines and Resources, Geological Survey of Canada scale 1"=½ mile

1975 NTS 42a/3 "Peterlong Lake" Topographic Series: Surveys and Mapping Branch Department of Energy Mines and Resources scale 1:50,000

1975 NTS 42a/2 "Radisson Lake" Topographic Series: Surveys and Mapping Branch Department of Energy Mines and Resources scale 1:50,000

APPENDIX I
SAMPLE LOCATIONS AND ASSAY RESULTS

DAVID R. BELL GEOLOGICAL SERVICES INC.

251 THIRD AVE., SUITE E
BOX 1250
TIMMINS, ONTARIO
P4N 7J5
(705) 264-4286

SAMPLE LOCATION SHEET

COMPANY: Cleyo Resources Inc.

PROJECT No. 6436

TWP. (AREA): Cleaver Township

NTS: 42A/2 and 3

Sample No.	Field Number	Location	Au ppb	Whole Rock Analysis			Remarks
6436-0001	CRC-SWC-001	L4E/9+30N	43	BT			
-0002	-003	L4W/0+30N	20	AT			
-0003	-004	L4W/7+60N	11	FT			
-0004	-006	L12W/5+36N	4	FT			
-0005	-008	8+20W/1+37N	6	FT			
-0006	-010	9+20W/6+20N	6	FT			
-0007	-011	11+50W/1+80S	35	FT			
-0008	-013	11+50W/1+20S	256				
-0009	-016	L8W/5+44S	4	FT			
-0010	-019	8+80W/8+90S	3	RC			
-0011	-022	7+20W/16+80S	<1	FT			
-0012	-024	L8W/15+85S	<1	FT			
-0013	-026	L8W/15+85S	<1	DC			
-0014	-029	0+45E/1+75S	10				
-0015	-030	0+35E/1+70S	7				
-0016	-031	0+32E/0+88S	14				
-0017	-032	0+36E/0+85S	19				
-0018	-033	0+34E/0+73S	77				
-0019	-034	0+24E/0+51S	0.088 oz Au/ton				
-0020	-035	0+24E/0+51S	34	FT			
-0021	-036	0+44E/0+20S	549				
-0022	-037	0+54E/0+02S	343				
-0023	-038	0+54E/0+02S	349				
-0024	-039	0+56E/0+11S	490				
-0025	-040	51+20W/23+60N	<1	BT			
-0026	-041	50+30W/24+80N	4	FT			
-0027	-043a	55+20W/10+40S	<1	BT			
-0028	-044	46+40W/40+40S	<1	FT			
-0029	-045	44W/37+00S	<1	FT			
-0030	-046	43W/34+60S	<1	FT			

DAVID R. BELL GEOLOGICAL SERVICES INC.

251 THIRD AVE., SUITE 6
BOX 1250
TIMMINS, ONTARIO
P4N 7J5
(705) 264-4286

SAMPLE LOCATION SHEET

COMPANY: Cleyo Resources Inc.

PROJECT No. 6436

TWP. (AREA): Cleaver Township

NTS: 42A/2 and 3

Sample No.	Field Number	Location	Au ppb	Whole Rock Analysis			Remarks
6436-0031	CRC-SWC-049	L16W/20+70N	<1	BC			
-0032	-051	15+10W/5+10N	<1	BT			
-0033	-054	BL/14+50W	<1	FT			
-0034	-057	L0/7+00S	46	RC			
-0035	-058	L0/17+10S	<1	FT			
-0036	-059	4+30W/10+00S	25	RT			
-0037	-060	4+30W/10+00S	193				
-0038	-061	6+00W/7+20S	221				
-0039	-062	6+00W/7+20S	12				
-0040	-063	6+00W/7+20S	267				
-0041	-064	6+50W/7+40S	27				
-0042	-065	L4W/4+90S	28	AC			

APPENDIX 2
ASSAY CERTIFICATES

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

Certificate of Analysis

NO. 1892

DATE: November 13, 1986

SAMPLE(S) OF: Rock (11)

RECEIVED: November 1986

SAMPLE(S) FROM: Mr. Stephen Conquer, David R. Bell Geological Services Inc.

PROJECT: #6436

Sample No.	Gold ppb	Oz. Gold
6436-0008	256	
6436-0014	10	
6436-0015	7	
6436-0016	14	
6436-0017	19	
6436-0018	77	
6436-0019		0.088**
6436-0021	549**	
6436-0022	343**	
6436-0023	349**	
6436-0024	490**	

** Checked

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

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

Certificate of Analysis

NO. 2133 DATE: December 10, 1986

SAMPLE(S) OF: Core (5) RECEIVED: December 1986

SAMPLE(S) FROM: Mr. Stephen Conquer, David R. Bell Geological Services

PROJECT: #6436

Sample No.	Gold ppb
6436-0037	193
8	221
9	12
6436-0040	267
1	27

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

BELL-WHITE ANALYTICAL LABORATORIES LTD.

PER

APPENDIX 3

WHOLE ROCK GEOCHEMICAL RESULTS

CERTIFICATE OF ANALYSIS

TO: DAVID R. BELL GEOLOGICAL SERVICES INC.
ATTN: STEPHAN CONQUER
201 THIRD AVENUE
TIMMINS, ONTARIO
P4N 1E8

CUSTOMER NO. 621

DATE SUBMITTED
5-NOV-86

REPORT 30104

REF. FILE 25688-H3

13 ROCK PROJ. 6436

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
AU PPB	FADCP	1.000
WRMAJ %	WR	0.010
MG PPM	DCP	100.000
P PPM	DCP	10.000
CA PPM	DCP	100.000
MN PPM	DCP	2.000
FE PPM	DCP	2.000
CO PPM	DCP	1.000
NI PPM	DCP	1.000
CU PPM	DCP	0.500
ZN PPM	DCP	0.500
WRMIN PPM	WR	10.000
MO PPM	DCP	1.000
PD PPB	FADCP	2.000
AG PPM	DCP	0.500
CD PPM	DCP	1.000
PT PPB	FADCP	10.000
PB PPM	DCP	2.000

X-RAY ASSAY LABORATORIES LIMITED

DATE 19-NOV-86

CERTIFIED BY .....

SAMPLE	AU PPB	MG PPM	P PPM	CA PPM
6436-0001	43	37000	490	8900
6436-0002	20	17000	1100	32000
6436-0003	11	20000	440	20000
6436-0004	4	29000	570	26000
6436-0005	6	35000	440	15000
6436-0006	6	29000	300	20000
6436-0007	35	13000	470	4300
6436-0009	4	32000	480	6800
6436-0010	3	1900	50	3700
6436-0011	<1	19000	500	4100
6436-0012	<1	22000	940	34000
6436-0013	<1	6900	680	24000
6436-0020	34	21000	560	5200

SAMPLE	MN PPM	FE PPM	CO PPM	NI PPM
6436-0001	1000	76000	44	74
6436-0002	1400	75000	51	60
6436-0003	1400	82000	45	51
6436-0004	1400	83000	32	56
6436-0005	1300	90000	55	59
6436-0006	1800	99000	54	75
6436-0007	680	54000	28	26
6436-0009	1800	100000	54	26
6436-0010	160	11000	4	4
6436-0011	1100	80000	40	20
6436-0012	1500	98000	34	27
6436-0013	780	33000	10	8
6436-0020	1000	86000	37	22

SAMPLE	CU PPM	ZN PPM	MO PPM	PD PPB
6436-0001	100.	120.	<1	<2
6436-0002	160.	1400.	<1	<2
6436-0003	90.0	180.	<1	2
6436-0004	69.0	110.	<1	<2
6436-0005	180.	160.	<1	<2
6436-0006	94.0	150.	<1	<2
6436-0007	91.0	85.0	<1	<2
6436-0009	59.0	160.	<1	<2
6436-0010	59.0	17.0	<1	<2
6436-0011	77.0	120.	<1	<2
6436-0012	44.0	140.	<1	<2
6436-0013	13.0	59.0	1	<2
6436-0020	37.0	140.	<1	<2

SAMPLE	AG PPM	CD PPM	PT PPB	PB PPM
6436-0001	<0.5	<1	<10	24
6436-0002	<0.5	3	<10	44
6436-0003	<0.5	<1	<10	22
6436-0004	<0.5	<1	<10	8
6436-0005	<0.5	<1	<10	2
6436-0006	<0.5	<1	10	2
6436-0007	<0.5	<1	<10	32
6436-0009	<0.5	<1	<10	<2
6436-0010	<0.5	<1	<10	4
6436-0011	<0.5	<1	<10	2
6436-0012	<0.5	<1	<10	<2
6436-0013	<0.5	<1	<10	<2
6436-0020	<0.5	<1	<10	2

CERTIFICATE OF ANALYSIS

TO: DAVID R. BELL GEOLOGICAL SERVICES INC.
ATTN: STEPHAN CONQUER
261 THIRD AVENUE
TIMMINS, ONTARIO
P4N 1E8

CUSTOMER NO. 621

DATE SUBMITTED
20-NOV-86

REPORT 30316

REF. FILE 25895-PH

13 PULPS ON HAND RE:WO#25688

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
CO2 %	WET	0.010
S %	XRF	0.010

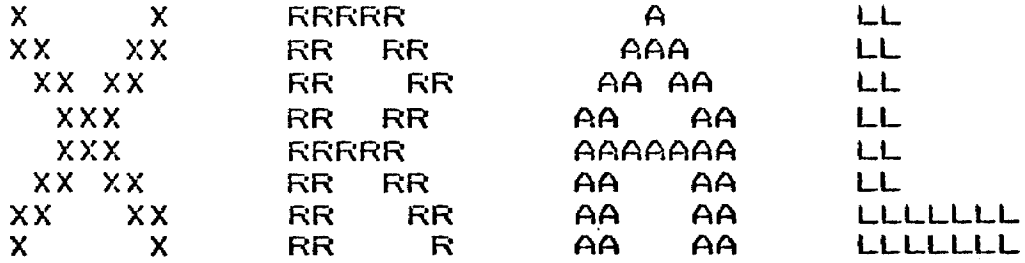
X-RAY ASSAY LABORATORIES LIMITED

DATE 08-DEC-86

CERTIFIED BY .....

08-DEC-86 REPORT 30316 REF.FILE 25895-PH PAGE 1 OF 1

SAMPLE	CO2 %	S %
6436-0001	0.73	NIL
6436-0002	4.11	0.15
6436-0003	2.25	NIL
6436-0004	3.19	NIL
6436-0005	1.72	NIL
6436-0006	2.77	NIL
6436-0007	0.27	NIL
6436-0009	0.33	NIL
6436-0010	0.43	NIL
6436-0011	0.08	NIL
6436-0012	4.46	NIL
6436-0013	2.77	NIL
6436-0020	0.60	NIL



XRF - WHOLE ROCK ANALYSIS

DAVID R. BELL GEOLOGICAL SERVICES INC.
Attn: STEPHAN CONQUER
261 THIRD AVENUE
TIMMINS, ONTARIO
P4N 1E8

CUSTOMER No. 621

DATE SUBMITTED
5-NOV-86

REPORT 30104 REF. FILE 25688 19-NOV-86

XRF W. R. A. SUMS INCLUDE ALL ELEMENTS DETERMINED.
FOR SUMMATION ELEMENTS ARE CALCULATED AS OXIDES.

X-RAY ASSAY LABORATORIES 19-NOV-86 REPORT 30104 REFERENCE FILE 25688 PAGE 1

SAMPLE	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
6436-0001	49.8	13.7	7.13	7.05	1.21	0.09	14.2	0.18	1.22	0.11	0.02	4.62	99.4
6436-0002	51.8	15.0	5.50	3.30	0.64	3.12	10.9	0.20	1.69	0.25	<0.01	6.77	99.3
6436-0003	50.9	12.7	5.84	4.24	3.64	0.42	14.4	0.23	1.49	0.13	0.01	4.70	98.7
6436-0004	53.0	13.2	4.50	4.90	2.70	0.38	12.4	0.21	1.26	0.13	0.01	6.31	99.1
6436-0005	49.5	14.0	4.20	5.82	2.98	0.09	15.6	0.21	1.47	0.11	0.01	5.08	99.1
6436-0006	49.1	14.0	4.50	4.94	2.52	0.13	16.6	0.28	1.24	0.08	0.01	5.93	99.4
6436-0007	52.1	13.1	5.49	4.37	4.71	0.17	15.1	0.19	1.57	0.12	<0.01	1.85	98.8
6436-0009	50.7	12.7	3.88	5.01	1.67	0.71	18.3	0.27	1.87	0.14	<0.01	3.85	99.2
6436-0010	76.3	12.3	0.72	0.48	5.17	1.47	1.60	0.03	0.12	0.02	0.01	1.39	99.7
6436-0011	52.3	12.4	5.64	4.30	2.46	0.15	17.5	0.23	1.82	0.14	<0.01	2.54	99.5
6436-0012	48.0	13.6	6.26	3.73	2.57	0.32	15.5	0.21	1.63	0.22	0.01	7.23	99.3
6436-0013	65.2	14.1	3.97	1.38	3.16	2.39	4.43	0.11	0.68	0.17	<0.01	4.47	100.1
6436-0020	57.1	12.2	1.04	3.52	4.35	0.25	15.6	0.15	1.62	0.13	<0.01	3.16	99.2

SAMPLE	RB	SR	Y	ZR	NB	BA
6436-0001	10	220	30	50	20	130
6436-0002	110	60	20	100	20	800
6436-0003	10	80	10	80	20	220
6436-0004	20	60	30	120	20	170
6436-0005	10	60	20	80	20	140
6436-0006	20	<10	30	70	30	120
6436-0007	20	60	30	110	20	120
6436-0009	20	180	30	110	30	320
6436-0010	90	60	50	140	20	430
6436-0011	10	120	30	90	20	120
6436-0012	20	40	30	90	20	80
6436-0013	120	50	20	160	10	350
6436-0020	30	40	30	90	20	130

X-RAY ASSAY LABORATORIES 19-DEC-86

JENSEN CATION PLOT WITH GRUNSKY MODIFICATION GRAPH 1

DAVID R. BELL GEOLOGICAL SERVICES INC (PROJ: 6436)

SAMPLE	SYMBOL	CODE	AL2O3	MGO	FE2O3+MNO+TIO2
6436-0001	1	BT	42.04	27.36	30.61
6436-0002	2	AT	54.83	15.26	29.91
6436-0003	3	FT	44.76	18.90	36.34
6436-0004	4	FT	46.69	21.92	31.38
6436-0005	5	FT	43.20	22.71	34.09
6436-0006	6	FT	43.97	19.62	36.41
6436-0007	7	FT	44.55	18.79	36.66
6436-0009	8	FT	39.55	19.73	40.71
6436-0010	9	RC	87.69	4.33	7.98
6436-0011	10	FT	40.87	17.92	41.20
6436-0012	11	FT	46.25	16.04	37.71
6436-0013	12	DC	73.49	9.10	17.42
6436-0020	13	FT	43.96	16.04	40.00

CODE REFERENCE - JENSEN CATION PLOT

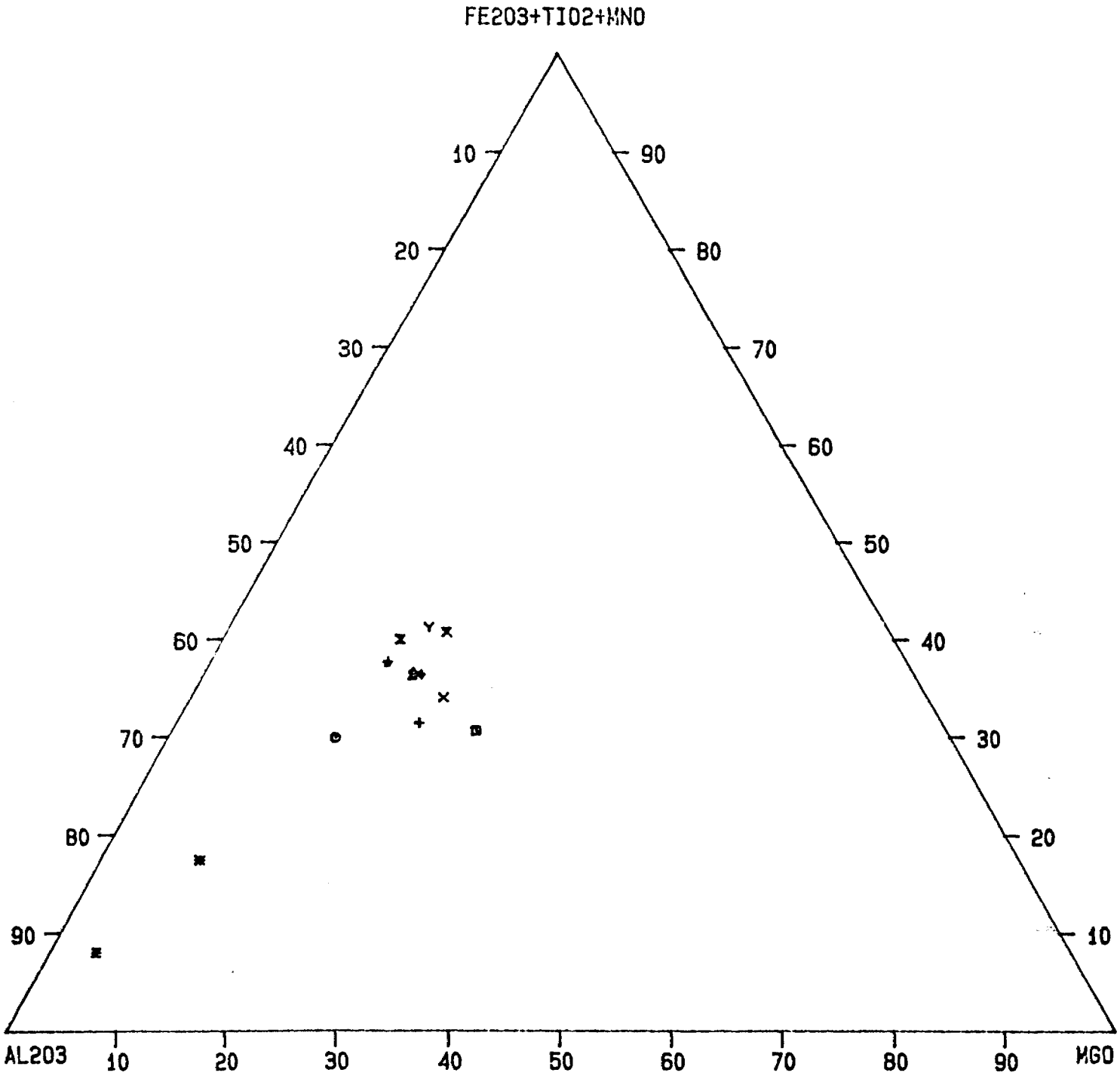
UK - ULTRAMAFIC KOMATIITE	BK - BASALTIC KOMATIITE
FT - IRON RICH BASALT	HT - HIGH MAGNESIUM BASALT
AT - THOLEIITIC ANDESITE	DT - THOLEIITIC DACITE
RT - THOLEIITIC RHYOLITE	BT - THOLEIITIC BASALT
AC - CALC-ALKALINE ANDESITE	BC - CALC-ALKALINE BASALT
RC - CALC-ALKALINE RHYOLITE	DC - CALC-ALKALINE DACITE
** - NOT DEFINED	

L. S. JENSEN (1976): A NEW CATION PLOT FOR CLASSIFYING SUBALKALIC VOLCANIC ROCKS. ONTARIO DIVISION OF MINES, MISC. PAPER 66.

E. C. GRUNSKY (1981): NO. 16 AN ALGORITHM FOR THE CLASSIFICATION OF SUBALKALIC VOLCANIC ROCKS USING THE JENSEN CATION PLOT. SUMMARY OF FIELD WORK. ONTARIO DIV. OF MINES, MISC. PAPER 100.

X-RAY ASSAY LABORATORIES 19-DEC-86
JENSEN CATION PLOT GRAPH 1

DAVID R. BELL GEOLOGICAL SERVICES INC (PROJ: 6436)



X-RAY ASSAY LABORATORIES

SYMBOL TABLE

CODE	SYMBOL	CODE	SYMBOL
1	▫	14	▾
2	●	15	◂
3	▲	16	◆
4	+	17	✖
5	×	18	▸
6	◆	19	◆
7	✦	20	✖
8	✖	21	◆
9	■	22	✖
10	▼	23	▲
11	◆	24	◆
12	■	25	✖
13	✖	26	◂

CERTIFICATE OF ANALYSIS

TO: DAVID R. BELL GEOLOGICAL SERVICES INC.
ATTN: D.R. BELL
261 THIRD AVENUE
TIMMINS, ONTARIO
P4N 1E8

CUSTOMER NO. 621

DATE SUBMITTED
3-DEC-86

REPORT 30513

REF. FILE 26052-G1

PROJ. 6436

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
AU PPB	FADCP	1.000
CO2 %	WET	0.010
WRMAJ %	WR	0.010
MG PPM	DCP	100.000
P PPM	DCP	10.000
S %	XRF	0.010
CA PPM	DCP	100.000
MN PPM	DCP	2.000
FE PPM	DCP	2.000
CO PPM	DCP	1.000
NI PPM	DCP	1.000
CU PPM	DCP	0.500
ZN PPM	DCP	0.500
WRMIN PPM	WR	10.000
MO PPM	DCP	1.000
PD PPB	FADCP	2.000
AG PPM	DCP	0.500
CD PPM	DCP	1.000
PT PPB	FADCP	10.000
PB PPM	DCP	2.000

X-RAY ASSAY LABORATORIES LIMITED

DATE 19-DEC-86

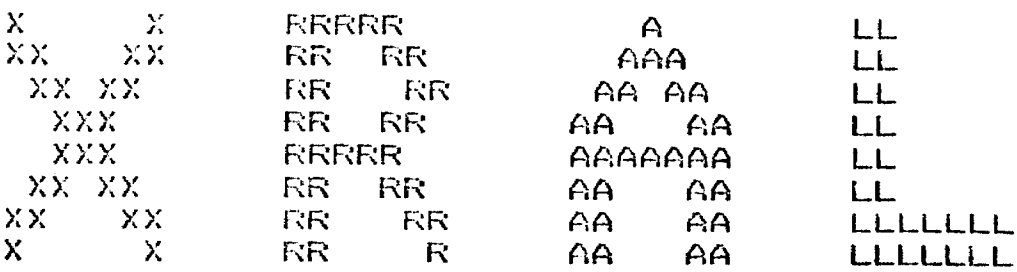
CERTIFIED BY .....

SAMPLE	AU PPB	CO2 %	MG PPM	P PPM	S %
6436-0025	<1	2.00	29000	280	0.02
6436-0026	4	0.56	23000	520	0.06
6436-0027	<1	0.18	38000	420	0.09
6436-0028	<1	2.05	16000	540	0.06
6436-0029	<1	4.41	24000	540	0.02
6436-0030	<1	0.69	15000	600	0.07
6436-0031	<1	1.31	35000	630	0.04
6436-0032	<1	4.65	40000	490	NIL
6436-0033	<1	2.29	29000	460	0.03
6436-0034	46	0.23	1000	100	NIL
6436-0035	<1	3.45	21000	660	0.03
6436-0036	25	0.38	1000	240	0.11
6436-0042	28	6.41	15000	1200	0.18

SAMPLE	CA PPM	MN PPM	FE PPM	CO PPM	NI PPM
6436-0025	18000	1200	65000	46	79
6436-0026	6800	980	82000	47	20
6436-0027	3700	970	73000	40	69
6436-0028	18000	1200	86000	42	23
6436-0029	36000	1600	98000	47	25
6436-0030	9000	960	70000	32	23
6436-0031	10000	730	57000	31	140
6436-0032	34000	1200	93000	49	81
6436-0033	21000	1500	78000	49	85
6436-0034	1800	180	8700	2	5
6436-0035	28000	1400	110000	48	27
6436-0036	3100	380	20000	3	4
6436-0042	33000	1100	56000	26	40

SAMPLE	CU PPM	ZN PPM	MO PPM	PD PPB
6436-0025	100.	89.0	<1	2
6436-0026	30.0	89.0	<1	<2
6436-0027	96.0	100.	<1	3
6436-0028	82.0	110.	<1	2
6436-0029	65.0	140.	<1	<2
6436-0030	57.0	100.	<1	<2
6436-0031	10.0	88.0	<1	<2
6436-0032	93.0	120.	<1	<2
6436-0033	73.0	120.	<1	2
6436-0034	3.0	15.0	<1	<2
6436-0035	80.0	140.	<1	2
6436-0036	7.5	34.0	5	2
6436-0042	40.0	89.0	<1	2

SAMPLE	AG PPM	CD PPM	PT PPB	PB PPM
6436-0025	<0.5	1	<10	<2
6436-0026	<0.5	<1	<10	<2
6436-0027	<0.5	1	<10	<2
6436-0028	<0.5	<1	<10	<2
6436-0029	<0.5	<1	<10	<2
6436-0030	<0.5	1	<10	<2
6436-0031	<0.5	1	<10	<2
6436-0032	<0.5	1	10	<2
6436-0033	<0.5	1	<10	<2
6436-0034	<0.5	1	<10	<2
6436-0035	<0.5	<1	<10	<2
6436-0036	<0.5	1	<10	<2
6436-0042	<0.5	<1	<10	<2



XRF - WHOLE ROCK ANALYSIS

DAVID R. BELL GEOLOGICAL SERVICES INC.
Attn: D.R. BELL
261 THIRD AVENUE
TIMMINS, ONTARIO
P4N 1E8

CUSTOMER No. 621

DATE SUBMITTED
3-DEC-86

REPORT 30513 REF. FILE 26052 19-DEC-86

XRF W.R.A. SUMS INCLUDE ALL ELEMENTS DETERMINED.
FOR SUMMATION ELEMENTS ARE CALCULATED AS OXIDES.

X-RAY ASSAY LABORATORIES 19-DEC-84 REPORT 30513 REFERENCE FILE 26052 PAGE 1

SAMPLE	SIO2	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO	TIO2	P2O5	CR2O3	LOI	SUM
6436-0025	50.0	14.3	8.93	5.65	1.94	0.24	12.6	0.21	1.00	0.08	0.01	5.23	100.3
6436-0026	53.1	12.5	6.07	3.79	2.20	0.20	17.2	0.17	1.62	0.13	0.01	3.08	100.1
6436-0027	50.9	13.2	6.97	7.66	1.68	0.15	14.7	0.19	1.21	0.10	0.01	3.70	100.5
6436-0028	49.8	12.3	8.91	3.13	1.99	0.23	17.4	0.22	1.73	0.14	<0.01	4.31	100.2
6436-0029	49.1	11.9	8.38	3.56	2.01	0.35	15.2	0.23	1.70	0.14	<0.01	7.54	100.2
6436-0030	50.2	12.0	7.00	4.35	2.67	0.40	17.3	0.24	1.76	0.14	<0.01	3.62	99.7
6436-0031	57.6	16.1	2.17	5.10	3.56	1.55	7.96	0.11	0.73	0.14	0.02	4.77	99.9
6436-0032	48.4	13.4	5.87	6.10	1.34	0.67	14.1	0.17	1.25	0.10	0.01	8.54	100.0
6436-0033	52.6	13.6	8.49	4.06	1.77	0.11	12.9	0.22	1.18	0.10	0.02	5.54	100.6
6436-0034	75.8	13.2	0.44	0.31	4.32	2.10	1.96	0.03	0.16	0.04	0.02	1.62	100.1
6436-0035	50.7	12.1	6.38	2.95	3.06	0.15	16.8	0.19	1.77	0.14	<0.01	5.93	100.2
6436-0036	73.5	13.4	0.70	0.26	5.97	1.33	2.84	0.06	0.22	0.06	0.02	1.62	100.1
6436-0042	55.6	13.9	5.21	2.53	3.38	2.48	7.87	0.14	0.70	0.26	0.01	8.00	100.2

SAMPLE	RB	SR	Y	ZR	NB	BA
6436-0025	580	120	<10	30	20	150
6436-0026	<10	120	30	70	30	120
6436-0027	20	90	20	60	10	70
6436-0028	20	160	40	100	10	100
6436-0029	<10	60	30	100	10	480
6436-0030	30	120	30	60	20	170
6436-0031	90	30	10	110	20	280
6436-0032	20	30	20	60	20	110
6436-0033	10	190	30	50	20	70
6436-0034	110	40	40	190	10	440
6436-0035	10	40	30	100	20	100
6436-0036	70	140	50	340	10	410
6436-0042	80	220	10	150	10	510

X-RAY ASSAY LABORATORIES 19-DEC-88
JENSEN CATION PLOT WITH GRUNSKY MODIFICATION GRAPH 1
DAVID R. BELL GEOLOGICAL SERVICE INC. (PROJ. 6436)

SAMPLE	SYMBOL	CODE	AL2O3	MGO	FE2O3+MNO+TIO2
6436-0025	1	BT	47.21	23.63	29.16
6436-0026	2	FT	42.47	16.29	41.24
6436-0027	3	BT	39.78	29.19	31.02
6436-0028	4	FT	42.96	13.83	43.21
6436-0029	5	FT	43.50	16.46	40.04
6436-0030	6	FT	40.21	18.43	41.35
6436-0031	7	BC	57.14	22.89	19.97
6436-0032	8	BT	43.17	24.86	31.97
6436-0033	9	FT	48.78	18.42	32.81
6436-0034	10	RC	88.19	2.62	9.19
6436-0035	11	FT	43.49	13.41	43.10
6436-0036	12	RT	85.21	2.09	12.70
6436-0042	13	AC	61.31	14.11	24.58

CODE REFERENCE - JENSEN CATION PLOT

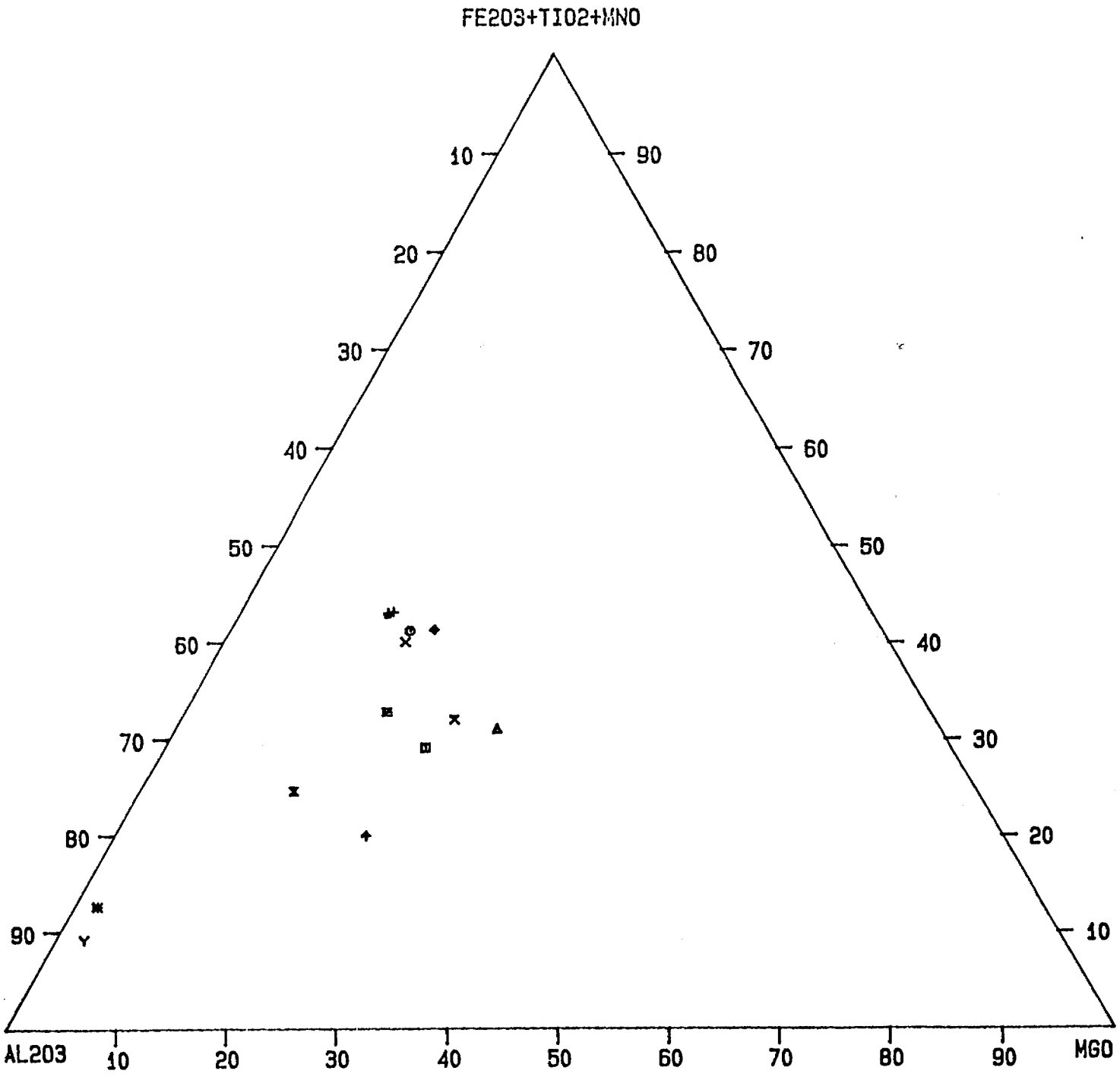
UK - ULTRAMAFIC KOMATIITE BK - BASALTIC KOMATIITE
FT - IRON RICH BASALT MT - HIGH MAGNESIUM BASALT
AT - THOLEIITIC ANDESITE DT - THOLEIITIC DACITE
RT - THOLEIITIC RHYOLITE BT - THOLEIITIC BASALT
AC - CALC-ALKALINE ANDESITE BC - CALC-ALKALINE BASALT
RC - CALC-ALKALINE RHYOLITE DC - CALC-ALKALINE DACITE
** - NOT DEFINED

L. S. JENSEN (1976): A NEW CATION PLOT FOR CLASSIFYING SUBALKALIC VOLCANIC ROCKS. ONTARIO DIVISION OF MINES, MISC. PAPER 66.

E. C. GRUNSKY (1981): NO. 16 AN ALGORITHM FOR THE CLASSIFICATION OF SUBALKALIC VOLCANIC ROCKS USING THE JENSEN CATION PLOT. SUMMARY OF FIELD WORK. ONTARIO DIV. OF MINES, MISC. PAPER 100.

X-RAY ASSAY LABORATORIES 19-DEC-86
JENSEN CATION PLOT GRAPH 1

DAVID R. BELL GEOLOGICAL SERVICES INC (PROJ: 6436)



X-RAY ASSAY LABORATORIES

SYMBOL TABLE

CODE	SYMBOL	CODE	SYMBOL
1	□	14	▽
2	○	15	◀
3	▲	16	◆
4	+	17	K
5	×	18	▶
6	◆	19	◆
7	◆	20	N
8	×	21	◆
9	≡	22	⧗
10	Y	23	A
11	◆	24	◆
12	■	25	N
13	×	26	◀

10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S 2+00S 1+00S 0 1+00N 2+00N 3+00N

3686 4313 3417 3075 5647 4720 6529 10444 10688 11100 5432 5455
1950 4235 2528 5138 6112 7412 10050 10650 14025 16674 8345 891
2171 3400 2700 4800 9353 10969 9656 14000 16263 19091 1031
2000 4875 2320 6706 13575 9150 11280 14747 17182 2128 1256

1.9 1.4 1.4 1.9 1.7 1.4 1.7 4.0 3.5 3.6 2.1 1.6
.7 1.2 1.4 1.5 1.6 2.1 3.0 2.4 2.7 3.6 1.8 1.7
.8 1.4 1.5 1.5 2.4 3.3 1.9 1.8 2.8 3.4 1.7
1.2 1.8 1.5 2.2 2.1 2.0 1.5 2.0 2.6 3.5 1.7

10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S 2+00S 1+00S 0 1+00N 2+00N 3+00N

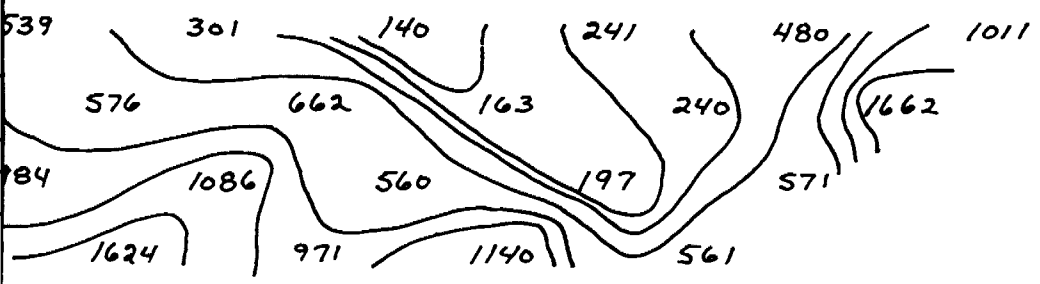
.5 .3 .4 .6 .3 .3 .3 .4 .3 .3 .4 .3
.4 .3 .6 .3 .3 .3 .3 .2 .2 .2 .2 1.9
.4 .4 .6 .3 .3 .3 .2 .1 .2 .2 1.6
.6 .4 .6 .3 .2 .2 .1 .1 .2 1.6 1.4

SWAMP.

OUTCROP

4+00N 5+00N 6+00N 7+00N 8+00N 9+00N 10+00N

RESISTIVITY (APP) IN OHM FEET



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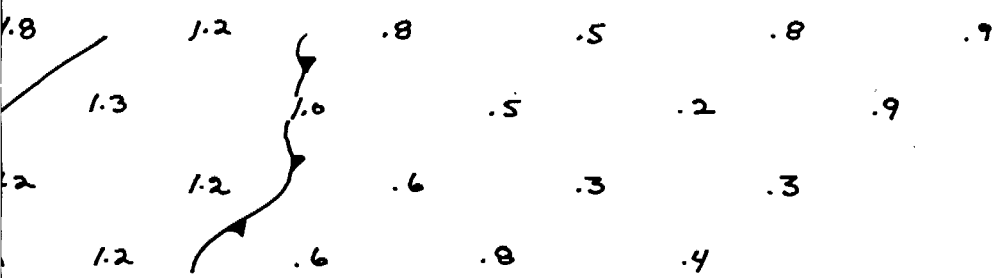
N = 3
N = 4
N = 5

FAULT

FREQUENCY EFFECT (APP) IN %



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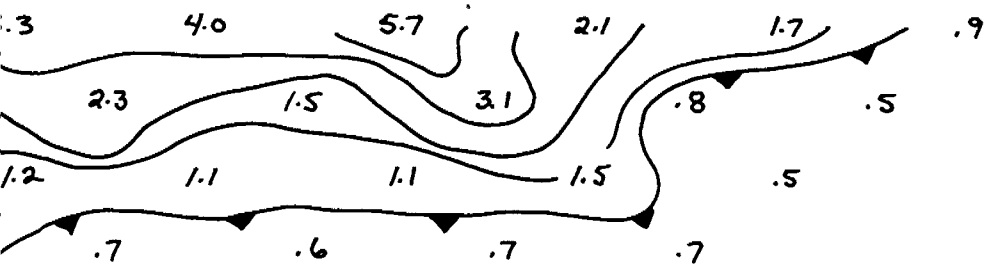
N = 3
N = 4
N = 5

4+00N 5+00N 6+00N 7+00N 8+00N 9+00N 10+00N

METAL FACTOR (APP.)



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N = 4
N = 5

SWAMP SWAMP

10+00N

RESISTIVITY (APP) IN OHM FEET

N = 1

N = 2

N = 3

N = 4

N = 5

FREQUENCY EFFECT (APP.) IN %

N = 1

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N = 4

N = 5

10+00N

METAL FACTOR (APP.)

N = 1

N = 2

N = 3

N = 4

N = 5

COMPANY: CLEYO RESOURCES INC.

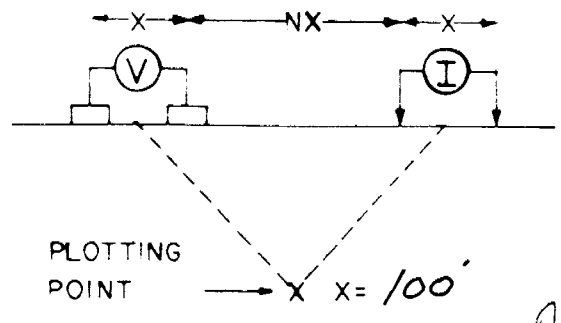
PROPERTY: CLEAVER TWP.

TIMMINS, ONTARIO

LINE NO.— 2+00E

Map 6436-86-5-2

ELECTRODE CONFIGURATION



29683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||

POSSIBLE / / / / /

FREQUENCIES: .25&4.0H.Z.

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10.0

INSTRUMENT: PHOENIX IPV-1 IPT-1

CONTRACTOR: REMY BELANGER ENRG.

DATE SURVEYED: OCTOBER 21- 1986

APPROVED: S. Conguer

OPERATOR: REMY BELANGER.

DATE: December 19, 1986

INDUCED POLARIZATION AND RESISTIVITY SURVEY

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S

14684 5055 4712 1015 5333 9980 6386 7839 400
7800 2859 5913 1713 1240 4200 8000 3716
3353 3818 1537 900 2250 4333 2400 10645
6000 6667 14060 7864 3467 2446 8000

1.8 1.5 1.5 1.1 2.2 2.7 1.7 1.4 .8
1.6 1.4 1.2 .6 1.8 2.4 2.4 .8
1.4 1.6 1.6 .6 1.8 2.4 1.1 1.8
2.1 1.5 1.6 1.0 2.0 1.7 1.8

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S

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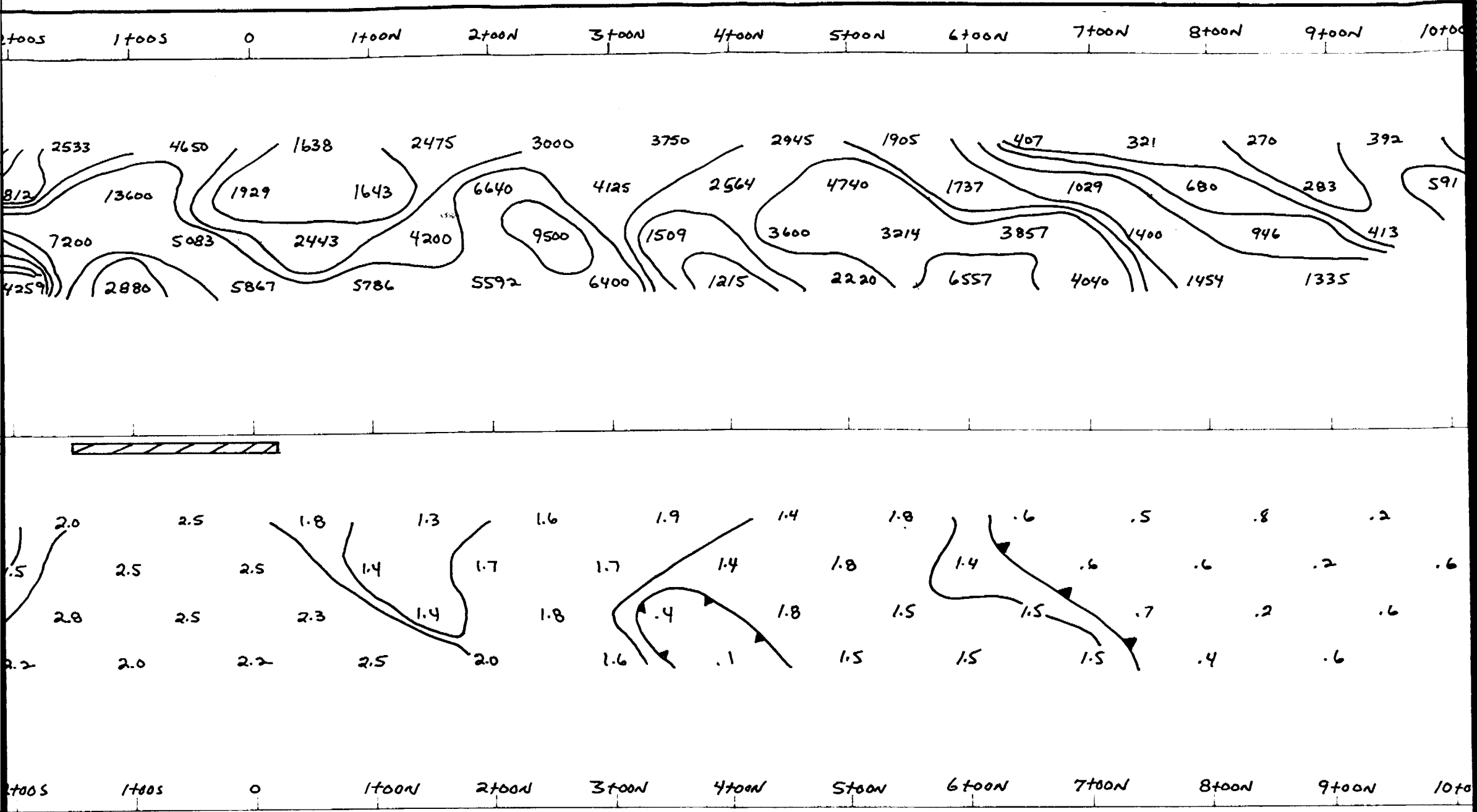
OUTCROP OUTCROP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.4
SWAMP.

ON 11+00N 12+00N

RESISTIVITY (APP.) IN OHM FEET

258

N = 1

N = 2

N = 3

N = 4

N = 5

FREQUENCY EFFECT (APP.) IN %

.6

N = 1

N = 2

N = 3

N = 4

N = 5

ON 11+00N 12+00N

METAL FACTOR (APP.)

2.3

N = 1

N = 2

N = 3

N = 4

N = 5

COMPANY: CLEYO RESOURCES INC.

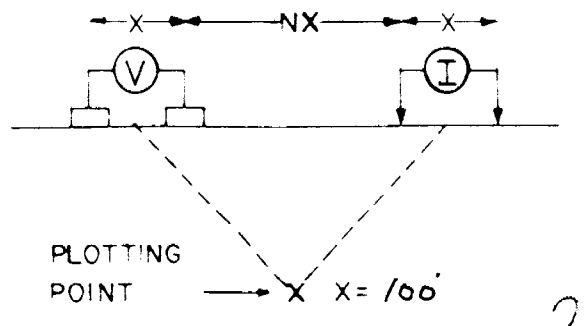
PROPERTY: CLEAVER TWP.

TIMMINS - ONTARIO

LINE NO.- 8+00W

Map 6436-86-5-6

ELECTRODE CONFIGURATION



2.9683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE !!!!!!!!!

POSSIBLE / / / / /

FREQUENCIES: .25 & 4.0 H.Z.

NOTE CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10.0

INSTRUMENT : PHOENIX IPV-1 IPT-1

CONTRACTOR : REMY BELANGER ENRG.

DATE SURVEYED

OCT. 23-24 - 1986

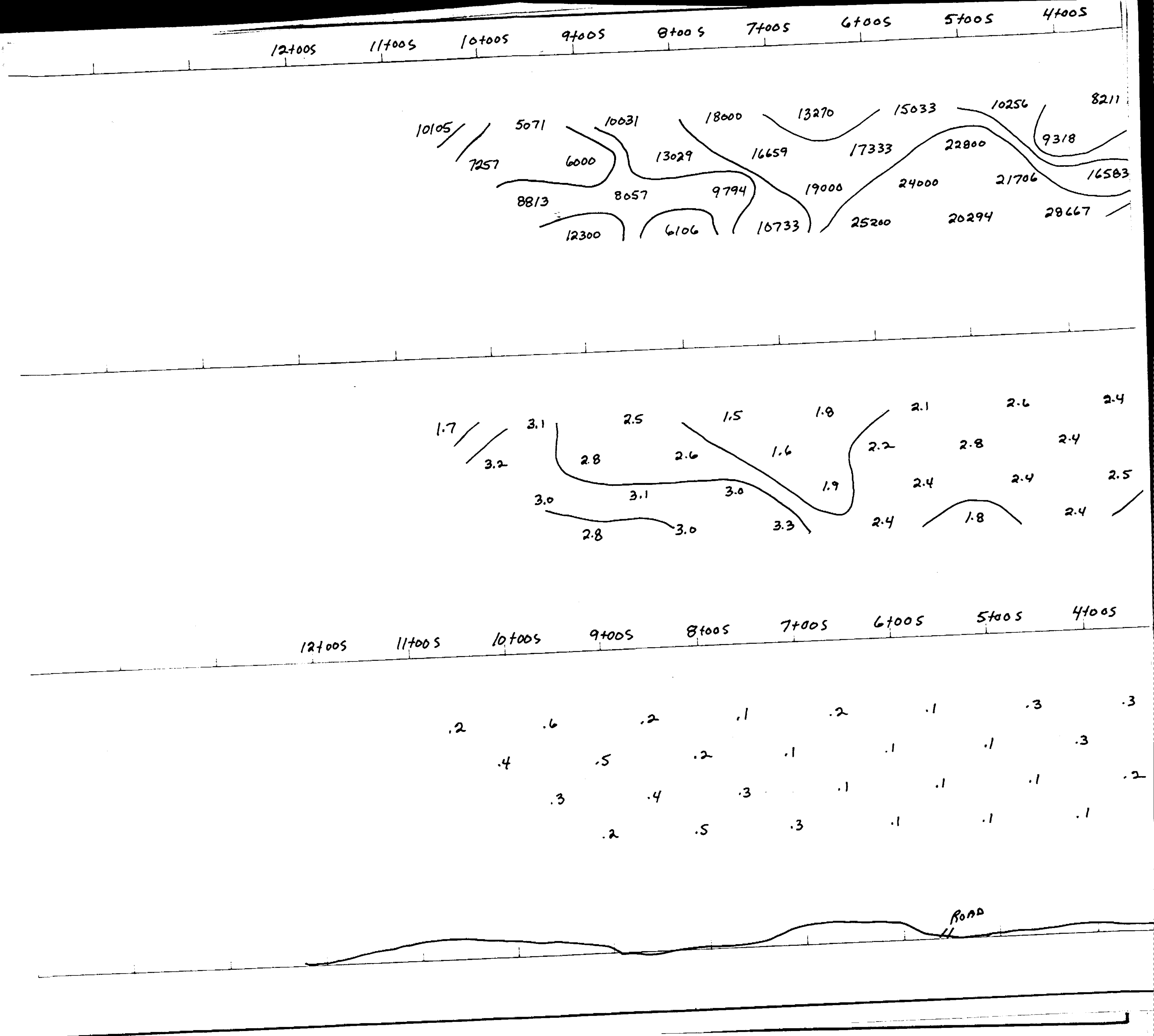
APPROVED

S Conguer

OPERATOR: REMY BELANGER.

DATE: December 19, 1986

INDUCED POLARIZATION AND RESISTIVITY SURVEY


12+00S
11+00S
10+00S
9+00S
8+00S
7+00S
6+00S
5+00S
4+00S
10105 5071 10031 18000 13270 15033 10256 8211
7257 6000 13029 16659 17333 22800 9318
8813 8057 9794 19000 24000 21706 16583
12300 6106 10733 25200 20294 28667
1.7 3.1 2.5 1.5 1.8 2.1 2.6 2.4
3.2 2.8 2.6 1.6 2.2 2.8 2.4
3.0 3.1 3.0 1.9 2.4 2.4 2.5
2.8 3.0 3.3 2.4 1.8 2.4
12+00S
11+00S
10+00S
9+00S
8+00S
7+00S
6+00S
5+00S
4+00S
.2 .6 .2 .1 .2 .1 .3 .3
.4 .5 .2 .1 .1 .1 .3
.3 .4 .3 .1 .1 .1 .2
.2 .5 .3 .1 .1 .1
ROAD

3+00S 2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N

13941 14735 10453 8842 9938 2593 618 266 119 739 518 1041 857
13895 29506 10376 9284 14905 4696 1007 1344 248 942 850 840 2851 2085
27160 18529 10765 12711 5368 2035 2389 1142 1714 831 1335 1999
30632 18316 20824 13694 4168 2842 3965 2778 6857 1200 1116 3000 1395

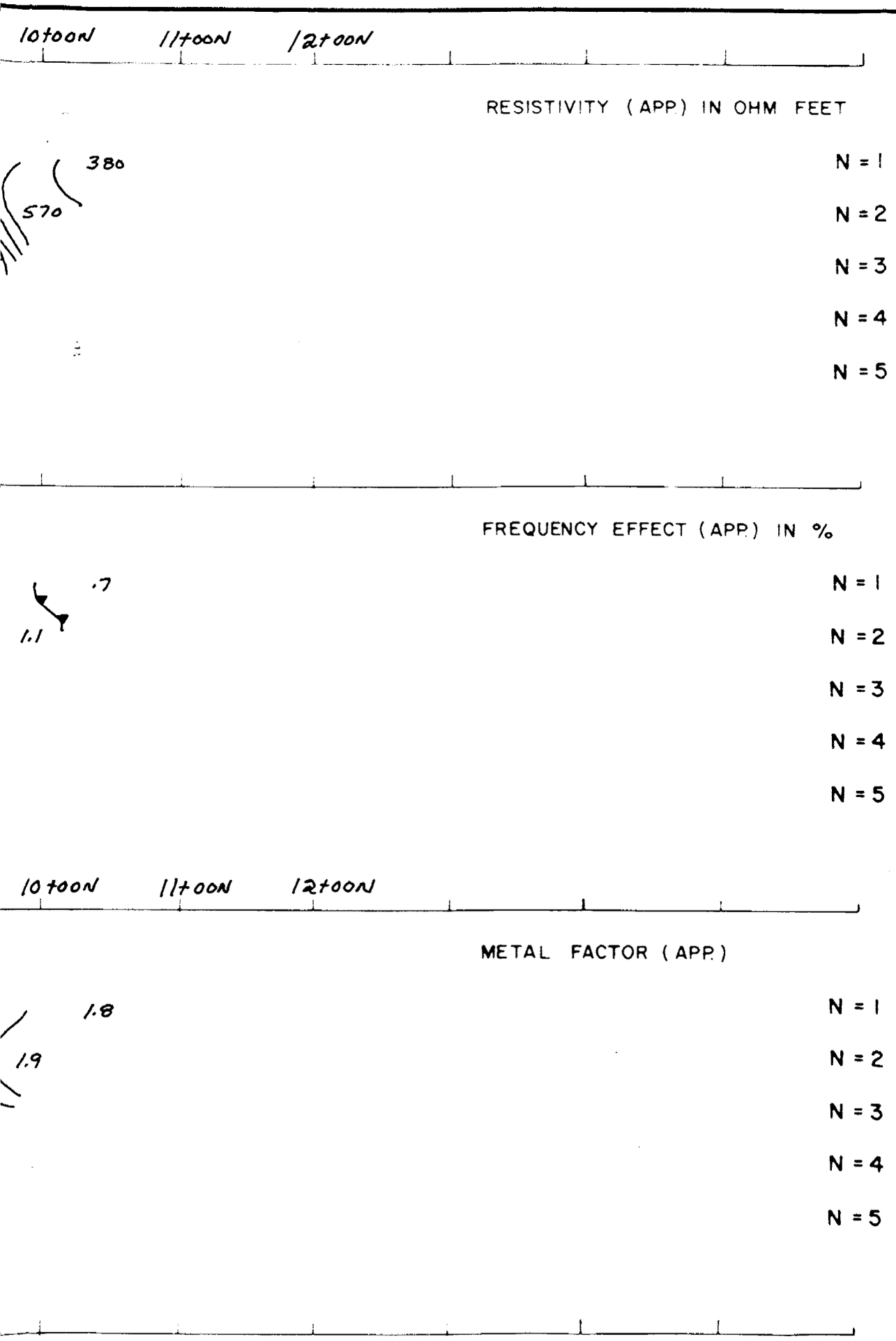
FAULT

2.4 2.7 2.7 3.7 1.8 1.0 .9 1.0 1.1 1.6 1.4 1.3 1.1
2.6 3.9 2.4 2.7 3.2 1.5 .8 1.2 1.3 1.5 1.4 1.4 1.0
4.0 3.5 2.8 2.4 3.0 .9 .9 1.1 1.8 .9 1.0 1.1 1.2
4.2 3.3 3.2 2.6 2.2 2.3 .9 1.1 2.2 1.2 .8 1.0 1.2

3+00S 2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N

.2 .2 .3 .4 .2 .4 1.4 3.7 9.2 2.1 2.7 1.2 1.2
.2 .1 .2 .3 .2 .3 .8 .8 5.2 1.5 1.6 1.6 .3
.2 .2 .3 .2 .6 .4 .4 .9 1.0 1.0 .7 .5 .5
.1 .2 .2 .2 .5 .8 .2 .4 .3 1.0 .7 .3 .8

SWAMP



COMPANY: CLEYO RESOURCES INC.

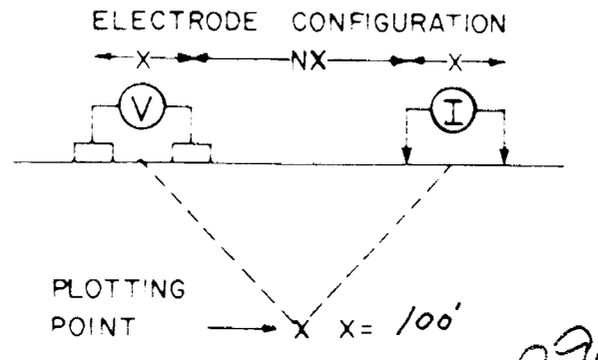
PROPERTY: CLEAVER TWP.

TIMMINS, ONTARIO

LINE NO.— 4+00 W

Map 6436-86-5-5

ELECTRODE CONFIGURATION



29683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||

POSSIBLE / / / / /

FREQUENCIES: .25 & 4.0 H.Z.

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10.0

INSTRUMENT: PHOENIX IPV-1 IPT-1

CONTRACTOR: REMY BELANGER ENRG.

DATE SURVEYED: OCTOBER 23-24-1986

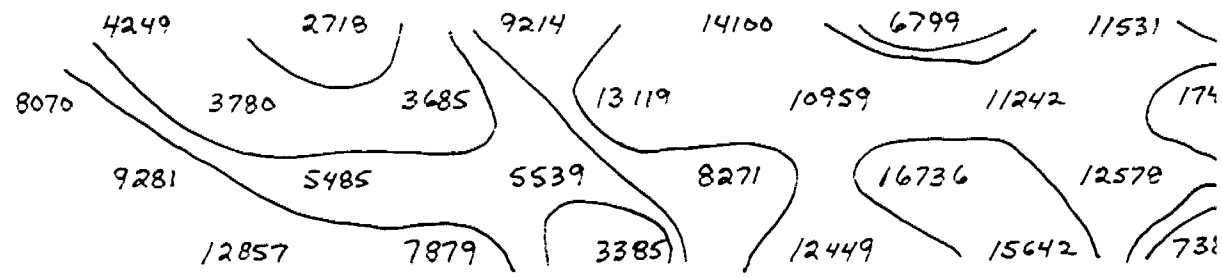
APPROVED: S. Conquer

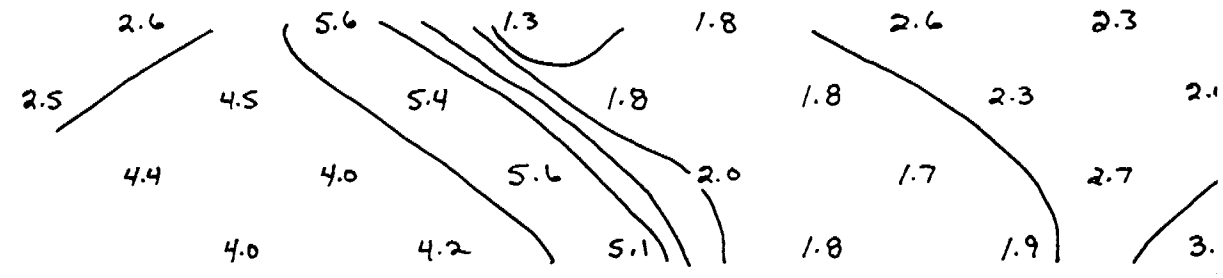
OPERATOR: REMY BELANGER

DATE: December 19, 1986

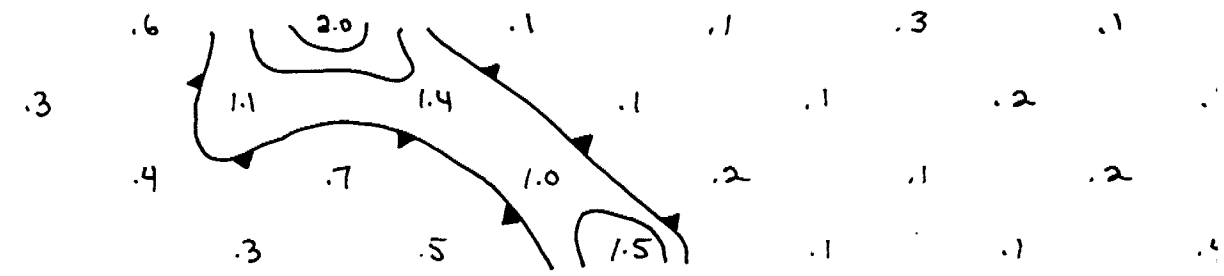
INDUCED POLARIZATION AND RESISTIVITY SURVEY

11+00S | 10+00S | 9+00S | 8+00S | 7+00S | 6+00S | 5+00S | 4+00S | 3+





11+00S | 10+00S | 9+00S | 8+00S | 7+00S | 6+00S | 5+00S | 4+00S | 3+



TRENCH

00S 2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N

4575 9375 5014 9461 7916 2236 340 115 264 708 1076 1171

100 15300 16800 8828 15692 2696 600 699 257 675 405 1162

4782 22500 23550 12214 3807 824 1063 1560 630 282 562

84 56250 26799 27150 2442 1223 1411 2770 4779 254 356

FAULT

1.8 2.0 2.4 2.6 2.7 2.2 .9 .8 1.2 1.2 1.5 1.5

4 2.5 3.0 3.1 4.0 3.1 .9 .8 1.0 1.3 1.0 1.5

3.4 3.3 3.1 3.2 3.0 1.3 1.1 1.1 .8 .4 .7

1 4.0 3.4 3.1 3.0 1.0 1.1 1.1 1.1 .8 .6

00S 2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N

.3 .2 .4 .2 .3 .9 2.6 6.9 4.5 1.6 1.3 1.2

1 .1 .1 .3 .2 1.1 1.5 1.1 3.8 1.9 2.4 1.2

.1 .1 .1 .2 .7 1.5 1.0 .7 1.2 1.4 1.2

4 .1 .1 .1 1.2 .8 .7 .3 .2 3.1 1.6

TRENCH

SWAMP

SWAMP

10+00N

RESISTIVITY (APP) IN OHM FEET

N = 1

N = 2

N = 3

N = 4

N = 5

FREQUENCY EFFECT (APP) IN %

N = 1

N = 2

N = 3

N = 4

N = 5

10+00N

METAL FACTOR (APP.)

N = 1

N = 2

N = 3

N = 4

N = 5

COMPANY: CLEYO RESOURCES INC.

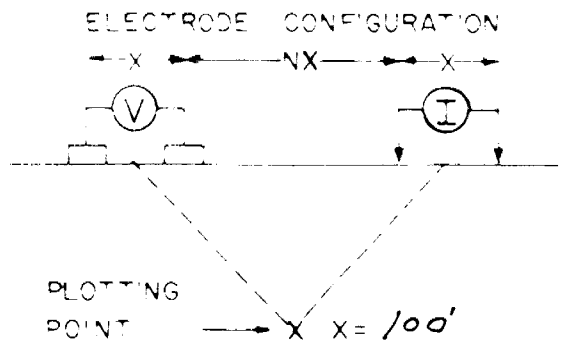
PROPERTY: CLEAVER TWP.

TIMMINS, ONTARIO

LINE NO — 2+00W

Map 6436-86-5-4

ELECTRODE CONFIGURATION



29683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||

POSSIBLE / / / / /

FREQUENCIES: .25 & 4.0 HZ.

NOTE CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10.0

INSTRUMENT: PHOENIX IPV-1 IPT-1

CONTRACTOR REMY BELANGER ENRG.

DATE SURVEYED

OCTOBER 22-23-1986

APPROVED

S. Conquer

OPERATOR REMY BELANGER.

DATE December 19, 1986

INDUCED POLARIZATION AND RESISTIVITY SURVEY

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S

11160 10938 7312 7421 7358 10740 6900 7285 16
8769 13125 10421 8775 8079 11242 10500 16800
8625 16421 10500 7999 7263 15000 20400 16
10642 17250 9171 7200 8625 24705 19999

2.0 1.9 2.0 2.2 1.9 2.7 1.8 1.8 2
1.9 2.0 2.3 2.3 1.7 2.0 1.8 2.0
1.8 2.3 2.5 2.2 1.7 1.8 2.2 3
2.2 2.7 2.4 23 21 2.6 3.3

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S

.1 .1 .2 .2 .2 .2 .2 .2 .1
.2 .1 .2 .2 .2 .2 .1 .1
.2 .1 .2 .2 .2 .1 .1 .1
.2 .1 .2 .3 .2 .1 .1

ROAD ROAD ROAD

2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N 10

588 12862 16058 16963 8590 1173 178 42 158 329 850 1060 1571
15952 15000 26117 16036 1712 813 356 97 230 380 2022 2005
53 16588 18656 20117 2672 1009 1206 1014 121 353 1288 3111 942
16015 21282 15825 3176 1494 1565 693 2907 199 623 1999 1466

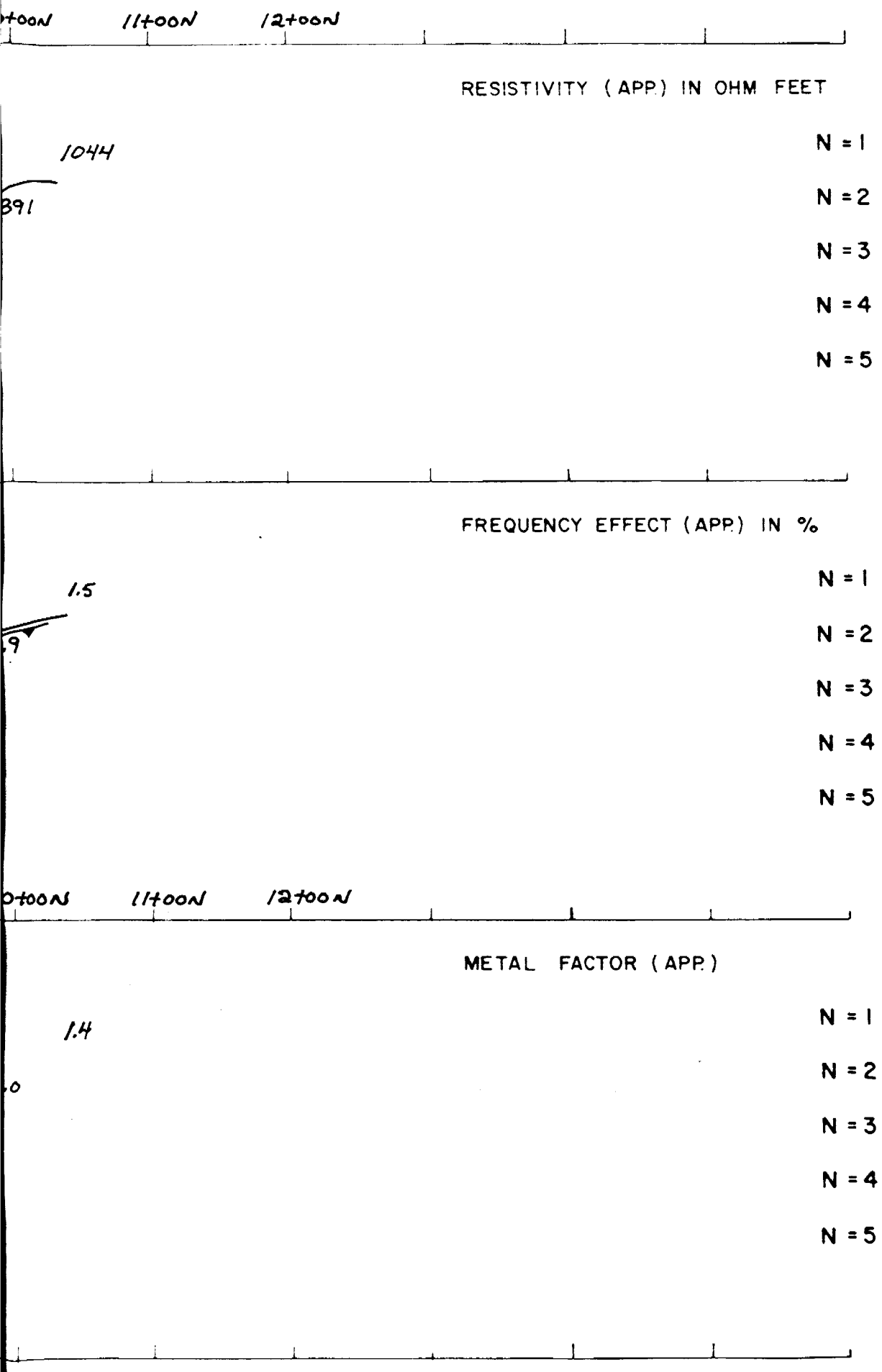
FAULT

2 3.6 3.6 3.6 2.2 1.0 .5 .2 .6 .4 .6 1.5 1.7
3.5 3.0 3.4 3.3 1.7 .8 .3 .2 .6 .4 1.5 1.5
2 2.7 3.0 3.3 2.4 1.2 .7 .3 .2 .4 1.6 1.5 1.0
2.2 2.5 3.0 2.6 2.2 1.4 .6 .5 .4 1.3 1.6 1.1

2+00S 1+00S 0 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N 9+00N 10

.2 .2 .2 .2 .8 2.8 4.7 3.7 1.2 .7 1.4 1.0
.2 .2 .1 .2 .9 .9 .8 2.0 2.6 1.1 .7 .7
.1 .1 .1 .8 1.1 .5 .2 1.6 1.1 1.2 .4 1.0
.1 .1 .1 .8 1.4 .8 .8 .2 2.0 2.0 .8 .7

TRENCH
OUTCROP
SWAMP



COMPANY: CLEYO RESOURCES INC.

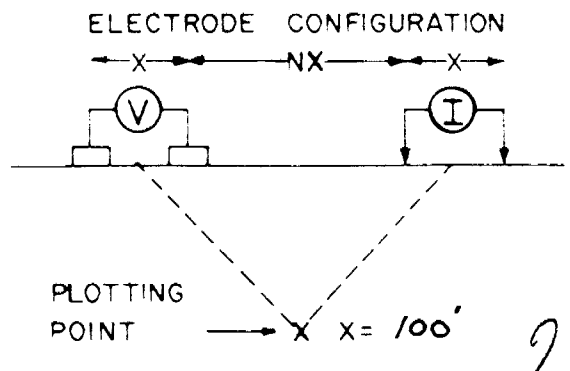
PROPERTY: CLEAVER TWP.

TIMMINS, ONTARIO

LINE NO.- 0

Map 6436-86-5-3

ELECTRODE CONFIGURATION



2.9683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE !!!!!!!!!

POSSIBLE ///////

FREQUENCIES: .25 & 4.0 H.Z.

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10.0

INSTRUMENT: PHOENIX IPV-1 IPT-1

CONTRACTOR: REMY BELANGER ENRG.

DATE SURVEYED: OCTOBER 20-22-1986

APPROVED: A. Conquer

OPERATOR REMY BELANGER

DATE: December 19, 1986

INDUCED POLARIZATION AND RESISTIVITY SURVEY

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S 2+00S 1+00S 0 1+00N 2+00N 3+

694 380 380 233 256 307 370 735 1432 3042 3675 5333 5821 2145
653 544 552 600 230 427 463 1850 3754 3319 5366 8285 3450 1434
633 605 1040 615 403 446 853 3028 3424 3949 7571 3958 1781
621 930 960 607 420 720 1685 2850 3833 5385 3083 1996 1374

.7 .5 1.0 1.2 1.8 1.2 1.0 1.1 1.0 .8 1.2 2.0 1.8 2.0
.3 1.0 .9 1.2 .8 1.0 1.0 .9 1.2 1.7 2.0 1.8 1.8 1.4
1.1 .9 1.1 .8 .5 .7 1.4 1.1 1.5 1.3 2.0 2.1 1.4
1.2 1.0 .6 .6 .7 .8 1.1 1.5 1.2 1.2 2.1 1.5 1.2

12+00S 11+00S 10+00S 9+00S 8+00S 7+00S 6+00S 5+00S 4+00S 3+00S 2+00S 1+00S 0 1+00N 2+00N 3+

1.0 1.3 2.6 5.1 7.0 3.9 2.7 1.5 .6 .2 .3 .3 .3 .9
.5 1.8 1.6 2.0 3.5 2.3 2.2 .7 .2 .3 .3 .2 .5 .9
1.7 1.5 1.1 1.3 1.2 1.6 1.6 .3 .4 .3 .2 .5 .7
1.9 1.1 .6 .9 1.6 1.1 .6 .5 .3 .2 .6 .7 .8

swamp

oN 4toON 5toON 6toON 7toON 8toON 9toON 10toON 11toON 12toON

RESISTIVITY (APP.) IN OHM FEET

N = 1: 773 179 112 134 243 739 729 375
N = 2: 748 256 225 282 894 517 432 259
N = 3: 1074 928 458 389 835 515 234 210 336
N = 4: 1283 1242 799 1162 437 198 117 225
N = 5

FAULT

FREQUENCY EFFECT (APP) IN %

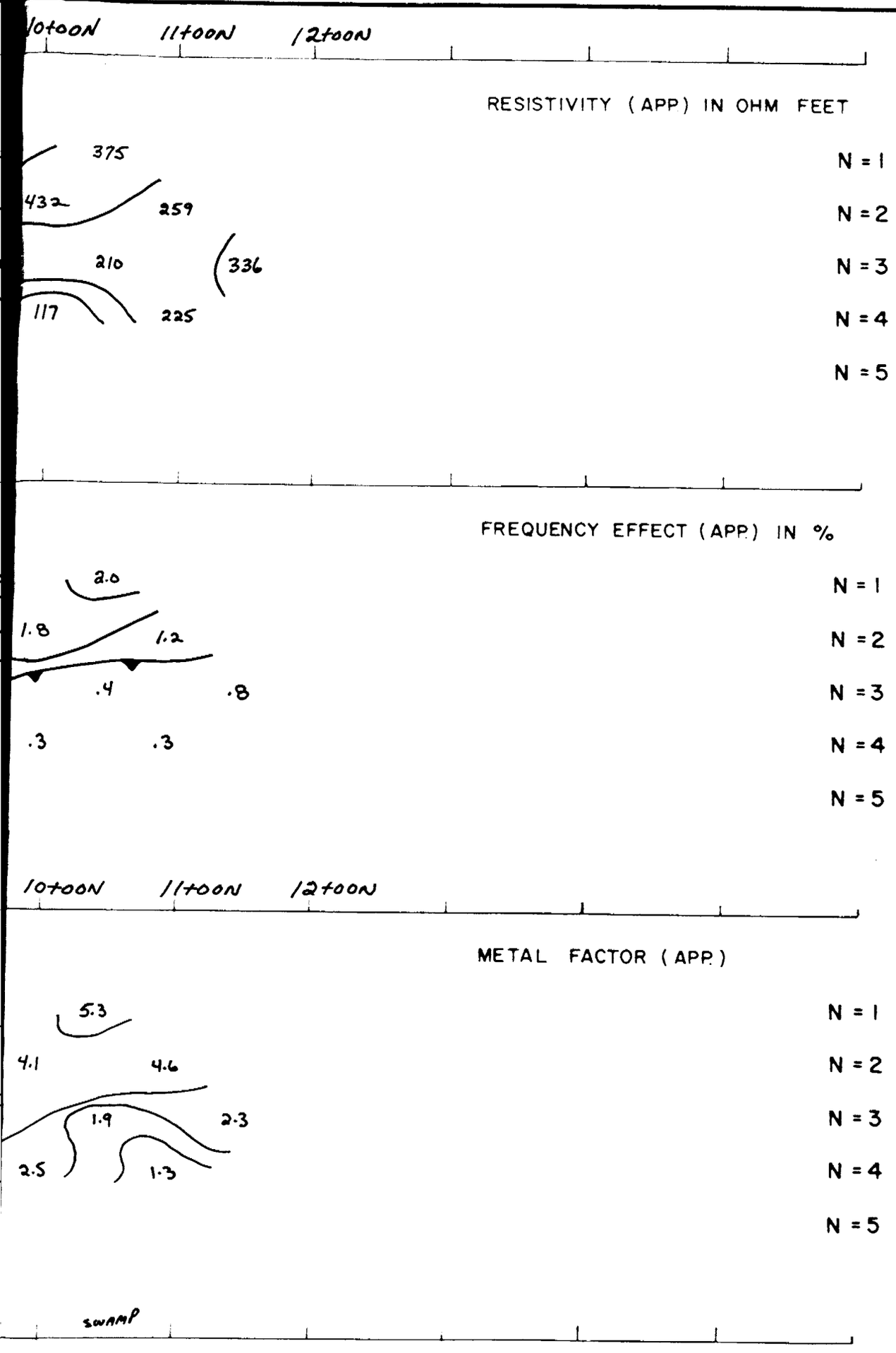
N = 1: 1.4 .9 .7 .8 1.0 1.0 1.8 2.0
N = 2: 1.3 .9 .7 1.0 1.4 1.4 1.8 1.2
N = 3: 1.1 1.3 .9 1.3 1.4 1.2 1.0 .4 .8
N = 4: 1.1 1.3 .8 1.6 1.0 .4 .3 .3
N = 5

oN 4toON 5toON 6toON 7toON 8toON 9toON 10toON 11toON 12toON

METAL FACTOR (APP.)

N = 1: 1.8 5.0 6.2 5.9 4.1 1.3 2.4 5.3
N = 2: 1.7 3.5 3.1 3.5 1.5 2.7 4.1 4.6
N = 3: 1.0 1.4 1.9 3.3 1.6 2.3 4.2 1.9 2.3
N = 4: .8 1.0 1.0 1.3 2.2 2.0 2.5 1.3
N = 5

SWAMP. SWAMP OUTCROP SWAMP



COMPANY: CLEYO RESOURCES INC.

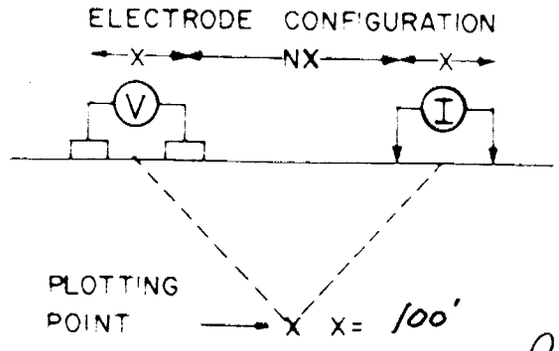
PROPERTY: CLEAVER TWP.

TIMMINS, ONTARIO

LINE NO. — 4+00E

Map 6436-86-5-1

ELECTRODE CONFIGURATION



2.9683

SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||

POSSIBLE / / / / /

FREQUENCIES: .25 & 4.0 H.Z.

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1, 1.5, 2, 3, 5, 7.5, 10 0

INSTRUMENT: PHOENIX IPV-1 IPT-1

CONTRACTOR: REMY BELANGER ENRG.

DATE SURVEYED: OCTOBER 21- 1986

APPROVED: A. Conger

OPERATOR REMY BELANGER

DATE: December 19, 1986

INDUCED POLARIZATION AND RESISTIVITY SURVEY

March 20, 1987

Your File: 521/86
Our File: 2.9683

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

Dear Sir:

RE: Notice of Intent dated February 9, 1987
Geological Survey on Mining Claims
L 724470, et al, in Cleaver Township

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,

J.C. Smith, A/Manager
Mining Lands Section
Mineral Development and Lands Branch
Mines and Minerals Division

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

Telephone: (416) 965-4888

DK/mc
cc: Cleo Clement (In Trust)
1165 McLean Drive
Timmins, Ontario

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

Stephen Conquer
261 Third Avenue
Timmins, Ontario
P4N 1E2

Resident Geologist
Kirkland Lake, Ontario

Encl.

Ministry of Northern Development and Mines

Ontario

Technical Assessment Work Credits

AMENDED

File 2.9683

Date February 9, 1987

Mining Recorder's Report of Work No. 521/86

Recorded Holder: CLEO CLEMENT (IN TRUST)

Township or Area: CLEAVER TOWNSHIP

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
Geophysical	
Electromagnetic _____ days	
Magnetometer _____ days	
Radiometric _____ days	
Induced polarization _____ days	
Other _____ days	
Section 77 (19) See "Mining Claims Assessed" column	
Geological 40 days	L 724470 724474 725147 to 56 inclusive 725158 725161-62 749741 to 46 inclusive 750507-08 916185-86
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

20 DAYS GEOLOGICAL

L 916183 - 84

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 Natural Resources

The Mining Act

(Geophysical, Geological, Geochemical and Expenditures)

521/86 2.9683

Note: – If number of mining claims traversed exceeds space on this form, attach a list.
– 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	Township or Area
Geological	Cleaver Township

Claim Holder(s)	Prospector's Licence No.
Cleo Clement (In Trust)	M 20951

Address: 1165 McLean Drive, Timmins, Ontario

Survey Company	Date of Survey (from & to)	Total Miles of line Cut
David R. Bell Geological Services Inc.	07 10 86 (Day Mo. Yr.) 19 12 86 (Day Mo. Yr.)	25 miles

Name and Address of Author (of Geo-Technical report): Stephen Conquer c/o 261 Third Ave., Timmins, Ontario

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	
	Geophysical - Magnetometer	
For each additional survey: using the same grid: Enter 20 days (for each)	Geophysical - Radiometric	
	Geophysical - Other	
	Geological	40
	Geochemical	

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

DEC 12 1986 9.4 Sam

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

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.

Mining Claims Traversed (List in numerical sequence)

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	724470	
	724474	
	725147	
	725148	
	725149	
	725150	
	725151	
	725152	
	725153	
	725154	
	725155	
	725156	
	725158	
	725161	
	725162	
	749741	
	749742	
	749743	
	749744	
	749745	
	749746	
	750507	
	750508	

Mining Claim Prefix	Mining Claim Number	Expend. Days Cr.
L	916183	
	916184	
	916185	
	916186	

RECEIVED

MINING LANDS SECTION

See attached list

Total number of mining claims covered by this report of work: 27

For Office Use Only

Total Days Cr. Recorded	Date Recorded	Mining Recorder
1980	DEC 12 1986	Acting
	Date Approved as Recorded	Branch Director

Date	Recorded Holder or Agent (Signature)
Dec. 9/86	Stephen Conquer

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: Stephen Conquer, 261 Third Ave., Timmins, Ontario

Date Certified	Certified By (Signature)
Dec. 9/86	Stephen Conquer

1362 (81/9)

Ontario

Ministry of Natural Resources

File _____

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) Geological

Township or Area Cleaver Township

Claim Holder(s) Cleo Clement (In Trust)

Survey Company David R. Bell Geological Services Inc.

Author of Report Stephen Conquer

Address of Author c/o P.O. Box 1250, 261 Third Ave.

Covering Dates of Survey Sept 12/86-Dec 19/86
(linecutting to office)

Total Miles of Line Cut 25 miles

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	
–Magnetometer	
–Radiometric	
–Other	
Geological	40
Geochemical	

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

Magnetometer _____ Electromagnetic _____ Radiometric _____
(enter days per claim)

DATE: Dec. 19/86 SIGNATURE: Stephen Conquer
Author of Report or Agent

Res. Geol. _____ Qualifications _____

Previous Surveys

File No.	Type	Date	Claim Holder

FOR USE ONLY

MINING CLAIMS TRAVERSED
List numerically

(prefix)	(number)
L	724470
L	724474
L	725147
L	725148
L	725149
L	725150
L	725151
L	725152
L	725153
L	725154
L	725155
L	725156
L	725158
L	725161
L	725162
L	749741
L	749742
L	749743
L	749744
L	749745
L	749746
L	750507

TOTAL CLAIMS 27

If space insufficient, attach list

837 (5/79)

GEOPHYSICAL TECHNICAL DATA

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

Number of Stations _____ Number of Readings _____

Station interval _____ Line spacing _____

Profile scale _____

Contour interval _____

MAGNETIC

Instrument _____

Accuracy – Scale constant _____

Diurnal correction method _____

Base Station check-in interval (hours) _____

Base Station location and value _____

_____

ELECTROMAGNETIC

Instrument _____

Coil configuration _____

Coil separation _____

Accuracy _____

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

Frequency _____
(specify V.L.F. station)

Parameters measured _____

GRAVITY

Instrument _____

Scale constant _____

Corrections made _____

_____

Base station value and location _____

_____

Elevation accuracy _____

INDUCED POLARIZATION RESISTIVITY

Instrument _____

Method ☐ Time Domain ☐ Frequency Domain

Parameters – On time _____ Frequency _____

– Off time _____ Range _____

– Delay time _____

– Integration time _____

Power _____

Electrode array _____

Electrode spacing _____

Type of electrode _____

Remaining Claims

L750508
L916183
L916184
L916185
L916186

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 _____

_____

_____

_____

_____

_____

_____

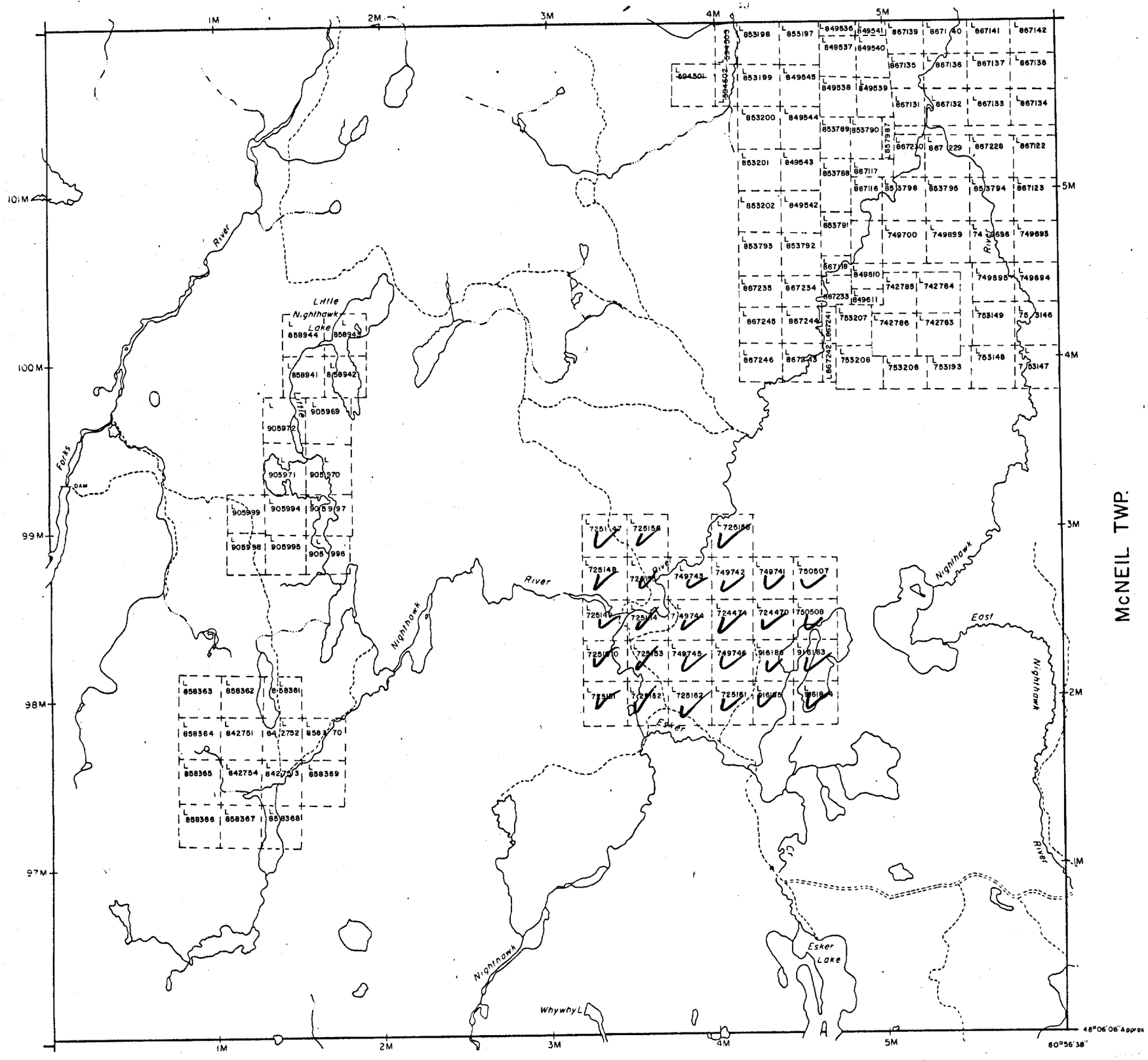
_____

_____

_____

	M	EM			M	EM			27181			
725147	✓	✓		124170	✓	✓						
48	✓	✓		74	✓	✓						
49	✓	✓		750506	1/2	1/4						
50	✓	✓		7	✓	✓						
51	✓	✓		8	✓	✓						
52	✓	✓		9	✓	1/2						
53	✓	✓		10	✓	1/2						
54	✓	✓		749741	✓	✓						
55	✓	✓		42	✓	✓						
56	✓	✓		43	✓	✓						
57	✓	1/4		44	✓	✓						
58	✓	✓		45	✓	✓						
59	1/4	1/4		46	✓	✓			3			
60	✓	1/2		47	✓	1/4						
61	✓	✓										
62	✓	✓										

FALLON TWP.



NOTES

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

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

LEGEND

PATENTED LAND	P or
PATENTED FOR SURFACE RIGHTS ONLY	
LEASE	L
LICENSE OF OCCUPATION	L.O.
CROWN LAND SALES	C.S.
LOCATED LAND	Loc.
CANCELLED	C.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
HIGHWAY & ROUTE NO.	17
ROADS	
TRAILS	
RAILWAYS	
POWER LINES	
MARSH OR MUSKEG	
MINES	

*used only with summer resort locations or when space is limited

TOWNSHIP OF

CLEAVER

DISTRICT OF TIMISKAMING

SEP 17 1986

LARDER LAKE
MINING DIVISION

SCALE : 1 INCH = 40 CHAINS (1/2 MILE)

DR.	PLAN NO. G-3619
DATE JULY 1986	

Ministry of Natural Resources
Ontario

Ministry of Northern Development and Mines

42A02NW0108 2.9683 CLEAVER

FIGURE 6

Map 2205
Timmins-Kirkland Lake
Geological Compilation Series

2.9683

ONTARIO
DIVISION OF MINES
HONOURABLE LEO BERNIER, *Minister of Natural Resources*
W. Q. MACNEE, *Deputy Minister of Natural Resources*
G. A. Jewett, *Executive Director, Division of Mines* E. C. Pye, *Director, Geological Branch*

PRODUCING MINES

Dome Mines Ltd.
Dominion Foundries and Steel Ltd.
Adams mine
Ecstall Mining Ltd.
Kidd Creek mine
Hallnor Mines Ltd.
Harrison Drilling and Exploration Co. Ltd.
Potter (Munro Copper) mine
Hedman Mines Ltd.
Hollinger Mines Ltd.
Ross mine
Jameland Mines Ltd.
Kam-Kotia Mines Ltd.
Kerr Addison Mines Ltd.
Kerr Addison mine
McIntyre Porcupine Mines Ltd.
Pamour Porcupine Mines Ltd.
Siscoe Metals of Ontario Ltd.
Miller Lake-O'Brien mine
Siscoe Metals of Ontario Ltd.—Castle Division
(lease from McIntyre Porcupine Mines Ltd.)
Castle No. 1 mine
Tegren Goldfield Ltd.
Texmont Mines Ltd.
Upper Canada Mines Ltd.
Macassa mine (management agreement with Willroy Mines Ltd.)

PAST PRODUCING MINES

Amity mine
Argosy Mining Corp. Ltd.
Raven River mine
Ashley Gold Mining Corp. Ltd.
Associated Arcadia Nickel Corp. Ltd.
Toburn mine
Associated Porcupine Mines Ltd.
Gillies Lake mine
Paymaster mine
Aunor Gold Mines Ltd.
Banner Porcupine Mines Ltd.
Scottish Ontario mine
Barry-Hollinger mine
Broulan Reef Mines
Bonetal mine
Bonwhit mine
Broulan mine
Reef mine
Canadian Jamieson Mines Ltd.
Canadian Johns-Manville Co. Ltd.
Barton Creek mine
Munro mine
Cincinnati-Porcupine Mines Ltd.
Consolidated Bidcop Mining Co. Ltd.
Bidgood Kirkland mine
Consolidated Morrison Exploration Ltd.
Morrison mine
Davidson-Tisdale Mines Ltd.
Delnite Mines Ltd.
Ethel Copper Mines Ltd.
Falconbridge Nickel Mines Ltd.
Hoyle mine
Fuller mine—Edwards Claim
Gateford Mines Ltd.
Crescent Kirkland mine
Golden Gate mine
Geo-Pax Mines Ltd.
Ryan Lake mine
Hollinger Consolidated Gold Mines Ltd.
Hollinger Consolidated Gold Mines Ltd.
Crown mine
Vipond mine
Hugh-Pam Porcupine Mines Ltd.
Hydra Explorations Ltd.
Night Hawk Peninsular mine
Kenilworth Mines Ltd.
Naybob mine
Kerr Addison Mines Ltd.
Chesterville Larder Lake mine
Kirkland Townsite Gold Mines Ltd.
Lake Shore Mines Ltd.
Langis Silver and Cobalt Mining Co. Ltd.
Casey Cobalt mine
Dolphin-Miller mine
Levega Mines Ltd.
Bishop, Caleta and Kenora mines
Matachewan Consolidated Mines Ltd.
Mirado Nickel Mines Ltd.
Cathroy Larder (Yama) mine
Moffat-Hall Gold Mines Ltd.
Moneta Porcupine Mines Ltd.
Morris Kirkland Gold Mines Ltd.
Munro-Croesus mine
Nakhodas Mining Co. Ltd.
Bowman mine
Faymar mine
New Hope Porcupine Gold Mines Ltd.
De Santis mine
Noranda Mines Ltd.
Alexo mine
Omega Gold Mines Ltd.
Canadian Associated Goldfields mine
Crown Reserve mine
Patterson Copper mine
Preston Mines Ltd.
Porcupine Lake mine
Romfield Building Corp. Ltd.
Buffalo Ankerite mine
Rustex Mining Corp.
Silverclaim Lake Mines Ltd.
Shane-Darragh mine
Siscoe Metals of Ontario Ltd.
Bonsall mine
Millerett mine
Siscoe Metals of Ontario Ltd.—Castle Division
(lease from McIntyre Porcupine Mines Ltd.)
Capitol mine
Castle-Tretheway mine
Walsh mine
Siscoe Metals of Ontario Ltd. (lease from Manridge Mines Ltd.)
Mann mine
Reeve-Dobie mine
Sylvanite Gold Mines Ltd.
Teck Corp. Ltd.—Teck Hughes Mining Division
Kirkland Lake mine
Teck-Hughes mines
Tretheway-Ossian mine
Tyranite Mines Ltd.
Upper Canada Mines Ltd.
Upper Beaver (Argonaut) mine (management agreement with Lake Beaverhouse Mines Ltd.)
Upper Canada mine
United Obalski Mining Co. Ltd.
Westfield Minerals Ltd.
Coniaurum mine
Wright-Hargreaves Mines Ltd.
Young-Davidson Mines Ltd.

The list of past-producers is limited to mines with metal production valued in excess of $25,000.

MINERAL PRODUCTION AND RESOURCES

In 1971, mines located within the Timmins-Kirkland Lake sheet produced gold, silver, cobalt, copper, zinc, lead, nickel, iron, cadmium, sulphur and asbestos. Barite is soon scheduled for production in Yarrow Township. The area also contains deposits of molybdenum, uranium, tungsten, bismuth, palladium, platinum, magnesium, nepheline, marl, sand and gravel. Two kimberlite dikes are known to occur; one in McCool Township, another in Gauthier Township.

Gold is produced at the Porcupine (Timmins), Kirkland Lake-Larder Lake mining camps, and in Hislop Township southeast of Matheson. Former production included the Matachewan and Elk Lake camps.

The largest producer of silver is the Kidd Creek mine north of Timmins. Silver is also recovered at all the producing gold mines, in addition to the operating mines in the Gowganda area. Former production included the Matachewan, Elk Lake and Cobalt (Casey Township) areas.

Zinc, copper, lead, cadmium and sulphur are produced by Ecstall Mining Limited (Kidd Creek mine). Copper and zinc are produced in the Kamiskotia area west of Timmins and at the Potter mine east of Matheson. Copper is also produced at the McIntyre Porcupine mine near Timmins, the Miller Lake-O'Brien mine near Gowganda and the Upper Beaver mine near Larder Lake. Minor copper has also been produced in the Elk Lake, Matachewan and Gowganda areas. Minor lead-zinc was formerly produced in the Matachewan area.

Nickel production commenced in 1971 at the Texmont mine located south of Timmins. Noranda Mines Limited will shortly be producing nickel from Langmuir Township, southeast of Timmins. Nickel was formerly produced at the Alexo mine, located northeast of Timmins.

Iron ore is produced at the Adams mine of Dominion Foundries and Steel Limited, located in Boston Township, south of Kirkland Lake.

Nearly all the asbestos production has come from the area east of Matheson, and most of this has been from the Munro mine, a past producer of Canadian Johns-Manville Company Limited. Hedman Mines Limited is producing asbestos in Warden Township, and Canadian Johns-Manville is currently preparing a property for production in Garrison Township; both localities are east of Matheson.

Cobalt is produced in the Gowganda area, and was formerly mined in the Elk Lake and Cobalt (Casey Township) areas.

Total value of mineral production from the map area to the end of 1969 was approximately $3,551,000,000. Quantity of minerals produced is as follows:

Gold	85,508,683 oz.	Copper	532,850,393 lbs.
Silver	130,249,224 oz.	Zinc	1,500,900,863 lbs.
Cobalt	1,726,139 lbs.	Lead	53,223,216 lbs.
Cadmium	6,808,922 lbs.	Nickel	174,287 lbs.
Tungsten	454,866 lbs.	Asbestos	370,209 tons
Molybdenum	11,393 lbs.	Iron	5,609,583 tons
		Sulphur	26,788 tons

HOW TO OBTAIN ADDITIONAL INFORMATION

Published geological maps covering this sheet are indicated on Index Maps 2079, 2080 and 2081 of the Ontario Division of Mines, Ministry of Natural Resources, Toronto, and on Index sheets 31, 32, 41, and 42 of the Geological Survey of Canada, Department of Energy, Mines and Resources, Ottawa.

Published geological reports covering this sheet are listed in Bulletin No. 25 of the Ontario Division of Mines, Ministry of Natural Resources and in the Index of Publications, Geological Survey of Canada, 1961, 1970.

Topographic maps of the area can be obtained from the Division of Lands, Ministry of Natural Resources, Toronto, or the Topographic Survey, Department of Energy, Mines and Resources, Ottawa.

Air photographs may be obtained from the Silviculture Section, Division of Lands, Ministry of Natural Resources, Toronto, Ontario, or from the National Air Photographic Library, Department of Energy, Mines and Resources, Ottawa.

Aeromagnetic maps covering this sheet can be obtained from the Geological Survey of Canada. Partial coverage may be obtained from the Ontario Division of Mines.

The name and ownership of many mineral occurrences shown on this sheet are given on Map 2148, Ontario Mineral Map, 1968.

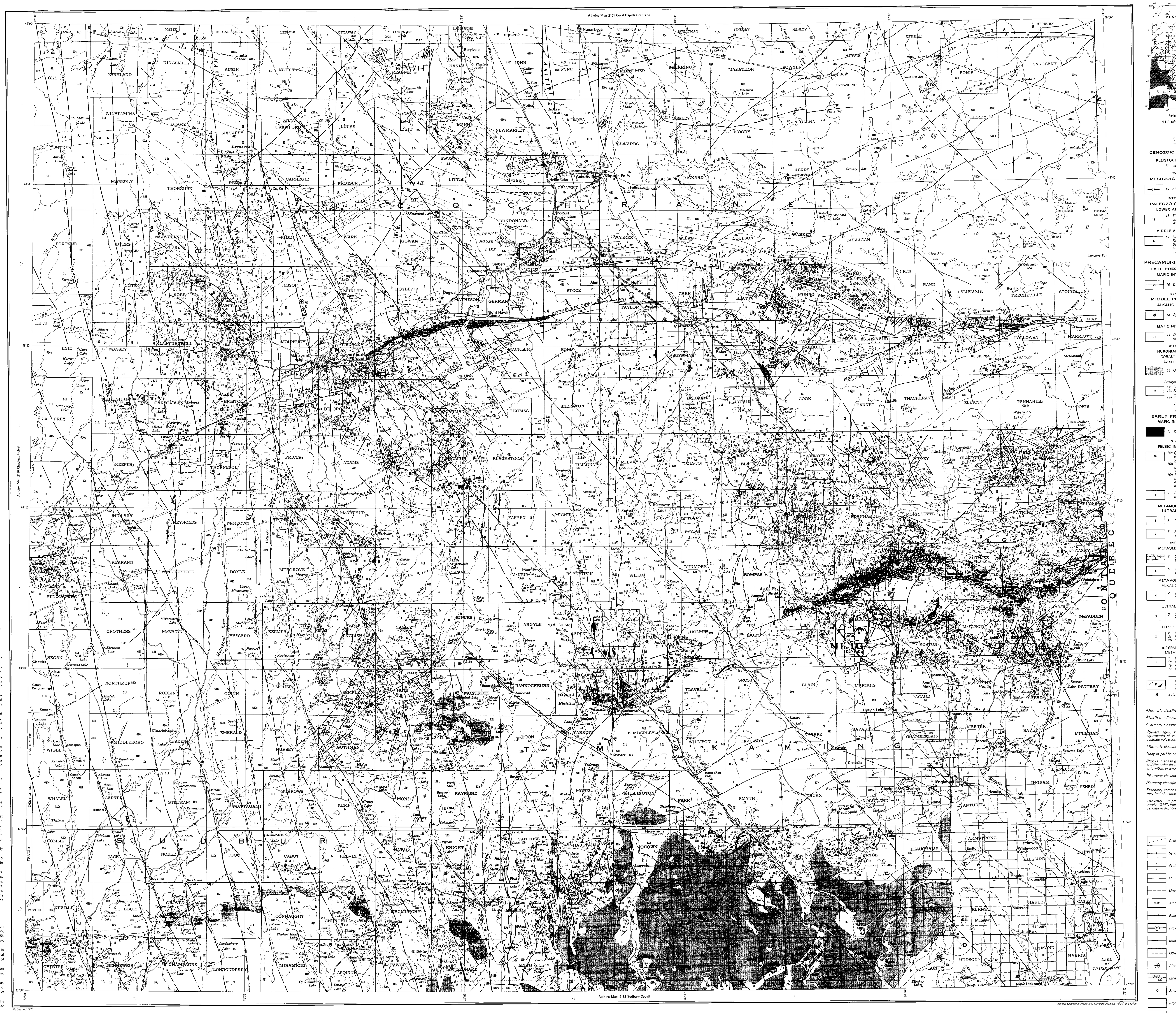
Information on geology, mines and mineral occurrences may be obtained at the office of the local Resident Geologist (Timmins, Kirkland Lake or Sudbury).

Mining claim maps and general information can be obtained at the office of the Mining Recorder at Timmins, Kirkland Lake, or Sudbury, or at the Division of Lands, Toronto.

METAL AND MINERAL REFERENCE

Silver	Marl
Asbestos	Molybdenum
Gold	Nepheline
Barite	Nickel
Bismuth	Lead
Cadmium	Palladium
Cobalt	Platinum
Chromite	Radioactive minerals
Copper	Uranium
Iron	Tungsten
Flourite	Zinc
Magnesium	

Adjoins Map 2161 Coral Rapids Cochrane



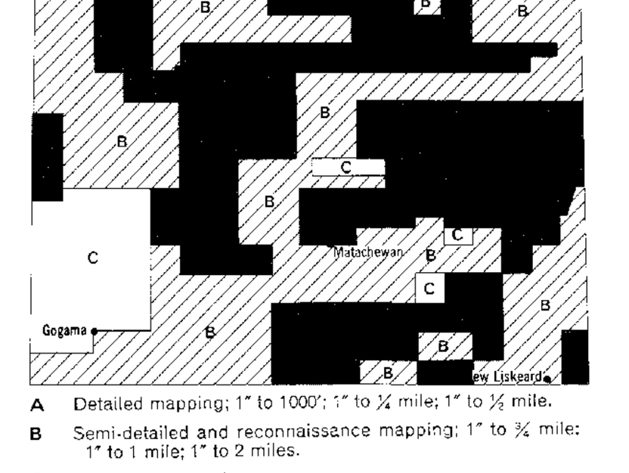
Adjoins Map 2198 Sudbury Cobalt

Adjoins Map 2116 Chapleau Foleyet

Lambert Conformal Projection, Standard Parallels 44°30′ and 53°30′

Published 1972

GEOLOGICAL RELIABILITY DIAGRAM

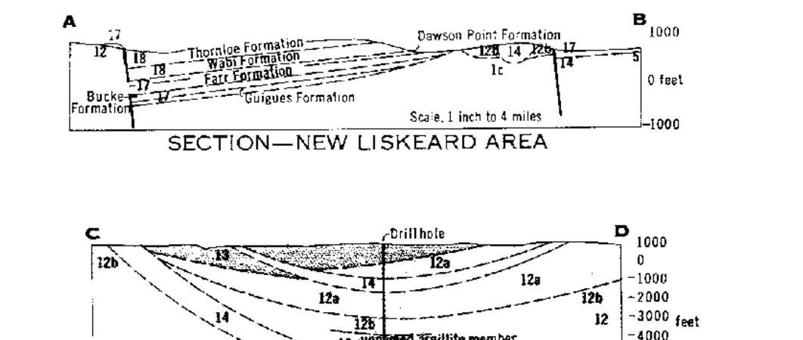


A Detailed mapping; 1″ to 1000′; 1″ to ¼ mile; 1″ to ½ mile.

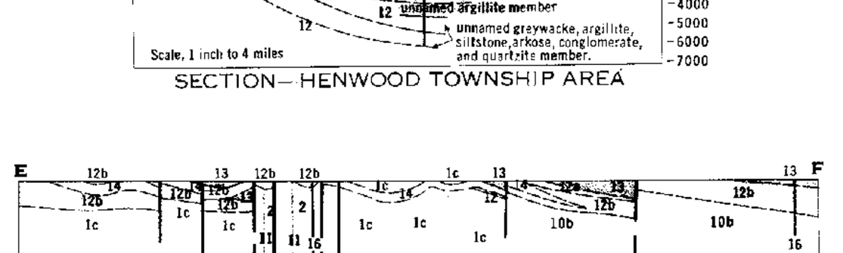
B Semi-detailed and reconnaissance mapping; 1″ to ¾ mile; 1″ to 1 mile; 1″ to 2 miles.

C Mostly unmapped.

In those areas designated on the reliability map as B or C, geological contacts were generally drawn in from limited geophysical and (or) diamond drill hole information.



SECTION—NEW LISKEARD AREA

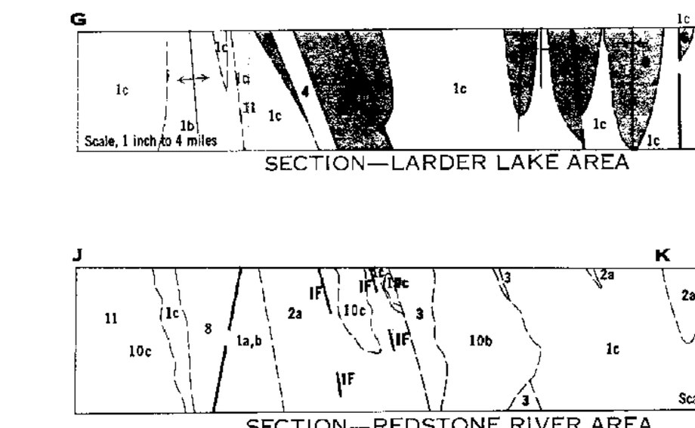


SECTION—HENWOOD TOWNSHIP AREA

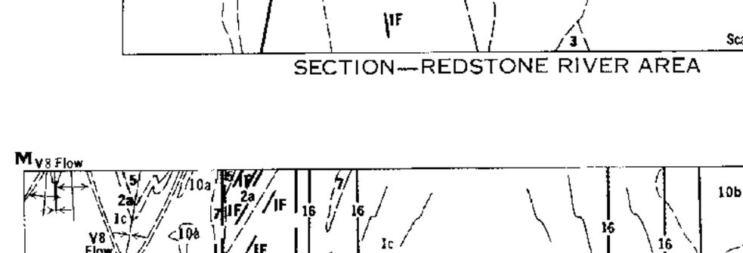
SECTION—GOWGANDA AREA

Map 2205
TIMMINS-KIRKLAND LAKE
Geological Compilation Series
COCHRANE, SUDBURY AND TIMISKAMING DISTRICTS

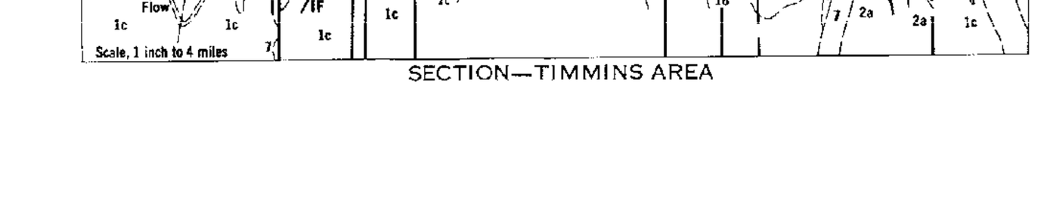
Scale 1:253,440 or 1 Inch to 4 Miles



SECTION—LARDER LAKE AREA



SECTION—REDSTONE RIVER AREA



SECTION—TIMMINS AREA

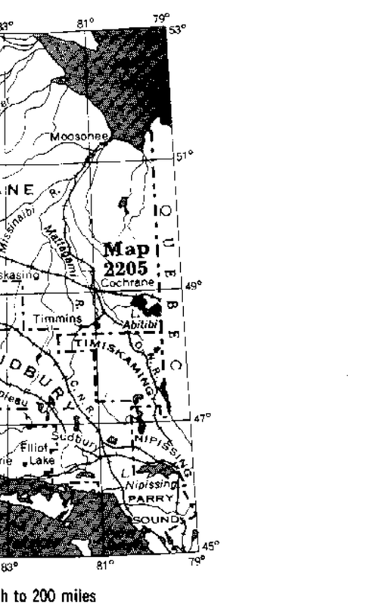
SOURCES OF INFORMATION

Geological compilation by D. R. Pyke, L. D. Ayres, and D. G. Innes, 1970, 1971. Previous compilation by Ginn, et al, Map 2046, 1964.

Geology from published maps of the Ontario Division of Mines, Geological Survey of Canada, and unpublished maps of mining companies.

Cartography by C. Harris and assistants, Division of Lands, Ministry of Natural Resources, 1972.

Base maps compiled from National Topographic Series, sheets 31 M/NW; 32 D/NW; 32 D/SW; 41 P/NW; 41 P/NE; 42 A/NE; 42 A/NW; 42 A/SW; 42 A/SE.



Scale, 1 inch to 200 miles
N.T.S. reference 31M, 32D, 41P, 42A

LEGEND

CENOZOIC

PLEISTOCENE AND RECENT
Till, varved clay, sand, gravel, peat.

UNCONFORMITY

MESOZOIC

19 *Kimberlite: dikes.*

INTRUSIVE CONTACT

PALEOZOIC

LOWER AND MIDDLE SILURIAN

18 *Thornloe Formation: limestone, dolomite, sandstone. Wabi Formation: limestone, shale.*

MIDDLE AND UPPER ORDOVICIAN

17 *Dawson Point Formation: shale. Farr Formation: limestone. Bucke Formation: limestone, shale. Guigues Formation: sandstone.*

UNCONFORMITY

PRECAMBRIAN

LATE PRECAMBRIAN

MAFIC INTRUSIVE ROCKS

16 *Diabase: dikes.*

INTRUSIVE CONTACT

MIDDLE PRECAMBRIAN

ALKALIC INTRUSIVE ROCKS

15 *Syenite, nepheline syenite.*

MAFIC INTRUSIVE ROCKS[a]

14 *Diabase, granophyre: sheets and dikes.*

INTRUSIVE CONTACT

HURONIAN SUPERGROUP

COBALT GROUP

Lorrain Formation

13 *Quartzite, arkose.*

Gowganda Formation

12 *Unsubdivided.*
12a *Firstbrook Member: argillite, greywacke, siltstone, arkose.*
12b *Coleman Member: conglomerate, arkose, greywacke, quartzite, argillite.*

UNCONFORMITY

EARLY PRECAMBRIAN

MAFIC INTRUSIVE ROCKS[b]

11 *Diabase: dikes.*

INTRUSIVE CONTACT

FELSIC INTRUSIVE ROCKS[c]

10a *Quartz porphyry, quartz-feldspar porphyry, feldspar porphyry, granophyre, felsite*[d]
10b *Trondhjemite, granodiorite, quartz monzonite: simple batholiths and stocks*[d]
10c *Trondhjemite, granodiorite, quartz monzonite, quartz diorite, aplite, pegmatite, migmatite: complex batholiths.*

9 *Syenite, monzonite, feldspar porphyry*[d]

METAMORPHOSED MAFIC AND ULTRAMAFIC ROCKS[e]

8 *Gabbro, diorite, lamprophyre.*

7 *Peridotite, dunite, pyroxenite, serpentinite*[f]

INTRUSIVE CONTACT

METASEDIMENTS[g]

6 *Conglomerate, greywacke, siltstone, slate, argillite*[h]

5 *Greywacke, siltstone, slate, argillite and minor pebble conglomerate*[j]

METAVOLCANICS[g]

ALKALIC METAVOLCANICS[h]

4 *Trachyte, leucitic trachyte; flows, tuff, breccia.*

ULTRAMAFIC METAVOLCANICS[k]

3 *Serpentinized dunitic and peridotitic flows.*

FELSIC METAVOLCANICS[j]

2 *Unsubdivided.*
2a *Pyroclastic rocks.*
2b *Flows.*

INTERMEDIATE AND MAFIC METAVOLCANICS[j]

1 *Unsubdivided.*
1a *Intermediate flows.*
1b *Intermediate pyroclastic rocks.*
1c *Mafic flows and pyroclastic rocks.*

IF *Iron formation and ferruginous chert (occurs as a member of stratigraphic units 1, 2, 4, and 5).*

S *Sulphide mineralization.*

[a] *Formerly classified as Nipissing in part.*

[b] *North-trending dikes are part of Matachewan swarm.*

[c] *Formerly classified as Algoman.*

[d] *Several ages; some units appear to be intrusive equivalents of volcanic formations whereas others postdate volcanicsm.*

[e] *Formerly classified as Haileyburian.*

[f] *May in part be composed of ultramafic flows.*

[g] *Rocks in these groups are subdivided lithologically and the order does not necessarily imply age relationship within or among groups.*

[h] *Formerly classified as Timiskaming.*

[j] *Formerly classified as Keewatin.*

[k] *Probably composed mainly of ultramafic flows, but may include some sills.*

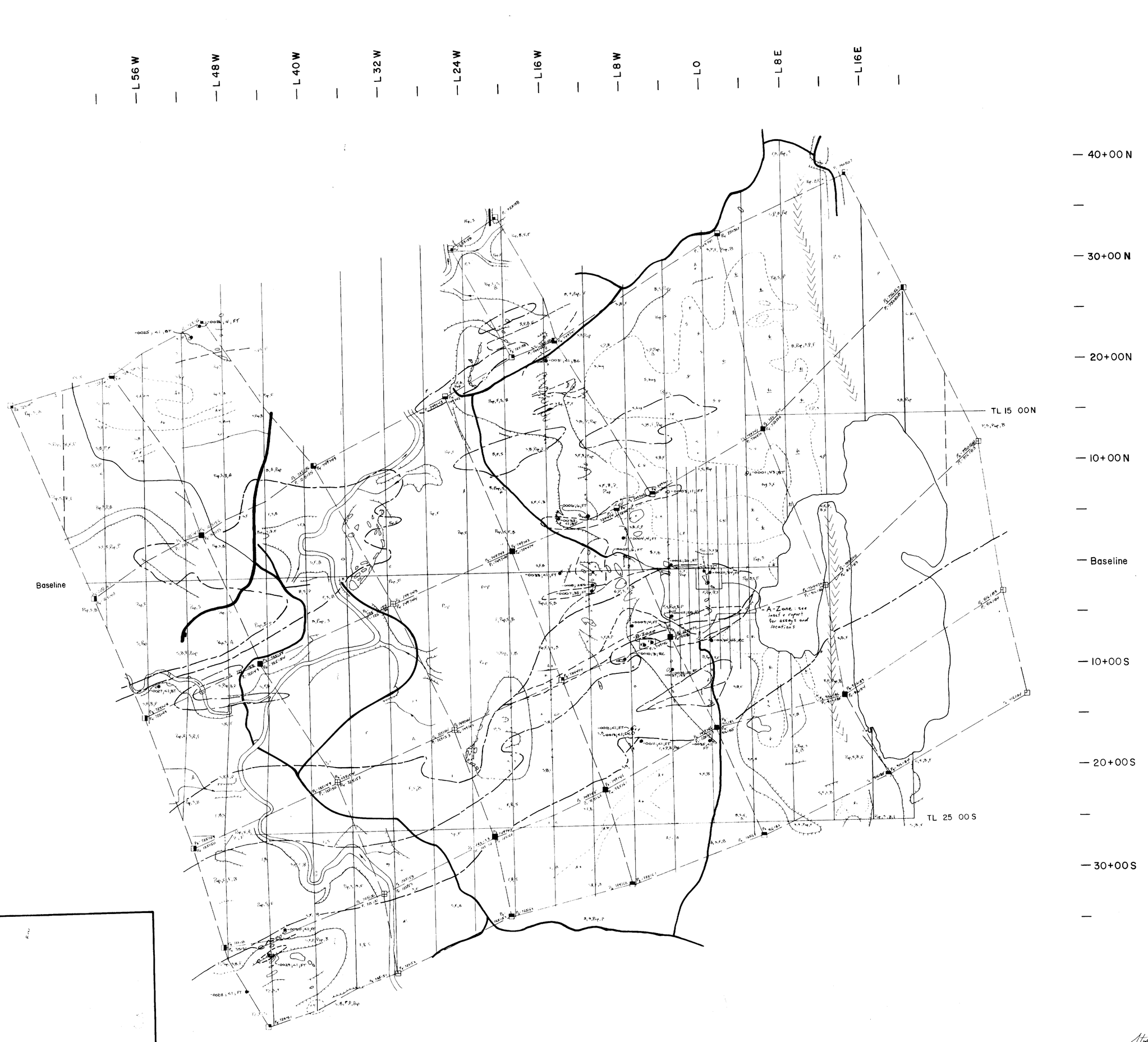
The letter "G" preceding a rock unit number, for example "G14", indicates interpretation from geophysical data in drift covered areas.

SYMBOLS

Geological boundary.
Synclinal axis.
Anticlinal axis.
Fault.
Lineament.
Altitude in feet above mean sea level.
Railway with station or flagstop.
Provincial highway.
Motor road.
Other road.
Aircraft landing facilities.
Larger community.
Smaller community.
Producing mine.
Past producing mine.
Mineral occurrence.
Resident Geologist's, Mining Recorder's offices, Kirkland Lake, Timmins.
Mining Division with boundary.
Interprovincial boundary.
District boundary.
Township boundary.
Line of section.

THE MAP INDEX

The red letters and numbers in the borders provide a location reference system based on that of Map 2024, Ontario Mineral Map.



1" = ½ mile

LEGEND

-0002 sample location and number
:20:AT Au assay (ppb); Geochemical Rock Name
Geological Contact
based on magnetic data and geology
based on geology and geochemistry
claim post location and number found / assumed
elevation contours hash marks show down slope
esker
road
swampy ground

Tree Types

S - spruce
P - pine
B - birch
F - balsam fir
A - alder
C - cedar
Pop - poplar

GEOCHEMICAL ROCK NAMES

Tholeiitic Suite
FT - iron-rich tholeiitic basalt
BT - tholeiitic basalt
AT - tholeiitic andesite
RT - tholeiitic rhyolite

Calc-Alkalic Suite
BC - calc-alkalic basalt
AC - calc-alkalic andesite
RC - calc-alkalic rhyolite
DC - calc-alkalic dacite

A-ZONE assay results

-0014 10 ppb
-0015 7 ppb
-0016 14 ppb
-0017 19 ppb
-0018 77 ppb
-0019 0.088 oz Au/ton
-0020 34 ppb
-0021 549 ppb
-0022 343 ppb
-0023 349 ppb
-0024 490 ppb

B-ZONE assay results

Trench 1
-0038 221 ppb
-0039 12 ppb
-0040 267 ppb
Trench 2
-0041 27 ppb

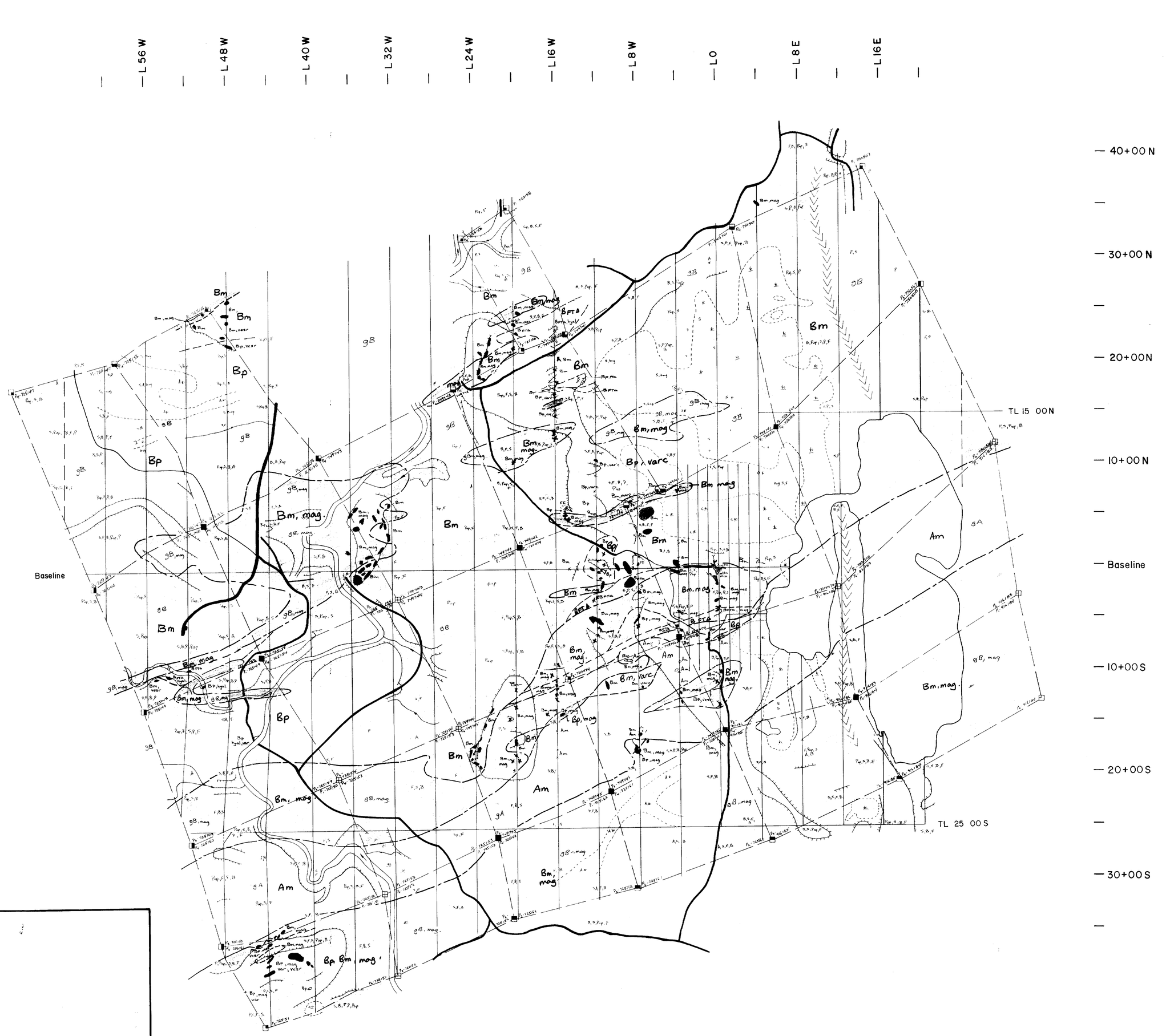
Scale 200' 400' 800'

Stephen Cooper

David R. Bell Geological Services Inc.
Cleyo Resources Inc.

Sample Location 29683 and Assay Plan

Twp/Area : Cleaver Twp.	Prov : Ontario
Mining Division : Larder Lake	Project No : 6436
References :	NTS No : 42 A/2 .D
Drawn : S.L.C. Drafted : S.L.C.	Checked : S.L.C.
Scale : 1" = 400' Date : Dec. 1986	Sheet No : 84 of 93



LEGEND

MAFIC ROCKS
- ☐ Non-magnetic
  - B -basalts undifferentiated
  - Bm -massive flows
  - Bp -pillowed flows
  - B_{PT} -flow top breccia
  - Bt -tuffaceous
- [] Magnetic
  - B basalts undifferentiated
  - Bm massive flows
  - Bp pillowed flows
  - B_{PT} flow top breccia
  - Bt tuffaceous

INTERMEDIATE - FELSIC ROCKS
- ☐ Non-magnetic
  - A -andesite undifferentiated
  - Am -massive flows

FELSIC INTRUSIVES
- ☐ FI -unsubdivided

SYMBOLS
- Geological Contact
- based on magnetic data and geology
- based on geology and geochemistry
- claim post location and number found , assumed
- elevation contours hash marks show down slope
- esker
- road
- swampy ground

Tree Types
- S - spruce
- P - pine
- B - birch
- F - balsam fir
- A - alder
- C - cedar
- Pop - poplar

- vesr - vesicular
- hyal - hyaloclastite
- var - variolitic
- mag - magnetic
- g - geophysically inferred
- sh z - shear zone

Scale: 0 200' 400' 800' 1200'

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GEOLOGY 2.9683

Twp/Area : Cleaver Twp.		Prov : Ontario
Mining Division : Larder Lake		Project No : 6436
References :		NTS No : 42 A/2 .3
Drawn : Hall	Drafted : Jane	Checked : Hall
Scale : 1" 400'	Date : Dec. 1988	Sheet No : 6436-88-A-1