GM 39160

REPORT CONCERNING MINERAL EXPLORATION WORK, ISLE-DIEU TOWNSHIP

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Northern Abitibi Option

Project M-156

Report concerning mineral exploration work conducted on the Northern Abitibi Mining Corp. property, Isle-Dieu township, Matagami area, from March 1981 to May 1982

presented to Northern Abitibi Mining Corporation

Pierre Bernard, Geologist
June [illegible] 1982

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SUMMARY OF WORK

Detailed Crone Deep E.M. surveys were conducted over the two most promising mineralized zones (the "East Sullivan Zn prospect" and the "Ghislau Cu zone") by using closely-spaced grids. In both areas, good geophysical responses were obtained directly over the known mineralized zones.

1) Strong responses were detected over the zinc prospect where thin massive sulphide layers are known to occur in a thin rhyolitic tuff horizon. This conductor, however, has no lateral extension beyond areas of known near-surface mineralization.

2) Weaker responses were obtained over the Ghislau Cu prospect, which consists of disseminated sulphides in a fragmental rhyolite horizon. The conductor is shown to extend northeasterly for a distance of at least 100 m. Extending southwest from the Ghislau Cu zone, geophysical profiles indicated a stronger and slightly deeper conductor revealed to be a pyrite-graphite horizon. This conductor is probably connected to the pyrite-graphite bearing rhyolite tuff sequence tested farther to south-west by Mattagami Lake Exploration in 1976.

The area immediately to the north-east of the Cu zone was untested by drilling and appeared to be geologically promising. Deep E.M. results indicated a possible extension of mineralization down dip from the near surface known prospect. This area was therefore chosen as a combined geological/geophysical target.

D.D.H. N.A.-82-1 (967') sunk to test this target did not intersect the sulphide-host contact and thus failed to outline additional mineralization. Basalts and diorite/syenite/monzonite were encountered. The geophysical anomaly tested is believed to be caused by conductive overburden (100' thick at hole collar).

No further work is recommended at the present time.

I - INTRODUCTION

Report concerning mineral exploration work conducted on the Northern Abitibi Mining Corp. property, Isle-Dieu township, Matagami area, from March 1981 to May 1982 (project M-156)

The Northern Abitibi property, located west of Dunlop Bay, contains two small near-surface Cu-Zn prospects, consisting of disseminated to semi-massive sulphides in thin fragmental rhyolitic tuff horizons. Although several exploration programs have been intermittently conducted on this ground during the last 25 years, no deep exploration has really been performed below the two mineralized zones. We believe the geological setting of the property to be still favourable for a deeper, more important, Cu-Zn discovery. In addition, traces of Mo and Pb mineralization (probably related to the Dunlop Bay Granite) enhance the economic interest of the ground.

Following positive recommendations, Noranda Exploration Co., Ltd. entered into an option agreement with Northern Abitibi on March 9, 1981 with the aim to perform more detailed and deeper exploration, in particular, below the more important "Ghislau" Cu prospect.

The report summarizes the exploration history and the geology of the property, and describes work conducted during this option agreement (line cutting, Crone Deep E.M. survey and diamond drilling).

The discouraging results obtained during the first and limited phase of exploration and the adverse economic situation prevailing at the present time, led us to return the property to its owner before the first anniversary date of the option.

II - DESCRIPTION OF THE PROPERTY

a) Localisation
(refer to map of claims)

This Northern Abitibi Mining Corporation* property is located in the north-eastern quarter of Isle-Dieu township, on the west side of Dunlop Bay, in proximity to Matagami Lake. This property lies adjacent to north-east of the Northern Quebec Explorers Ltd., property (prospected for gold).

The claims held by Northern Abitibi Mining Corporation are:

Mining license No.	Claim No.
203492	1 to 5
203493	1 to 5
293602	1 to 3
281622	2 and 3
310442	1 to 5
310443	1 to 5
310507	1 and 2
	Total: 27 claims (~1100 acres)

The property is roughly 8.5 km north-east of Matagami and can be reached using a gravel road (closed during winter) from km 9 of the James Bay highway and leading to the southern extremity of Dunlop Bay. The final access to the claims has to be done by boat, crossing the Bay. Obviously, access is easier during winter using snowmobile. Another old lumber (gravel) road at km 3.5 on the James Bay highway leads to the south-west of Gouin Lake. From there, a drill road leads to the south-western corner of the property. Most parts of the forest on the property have not been lumbered.

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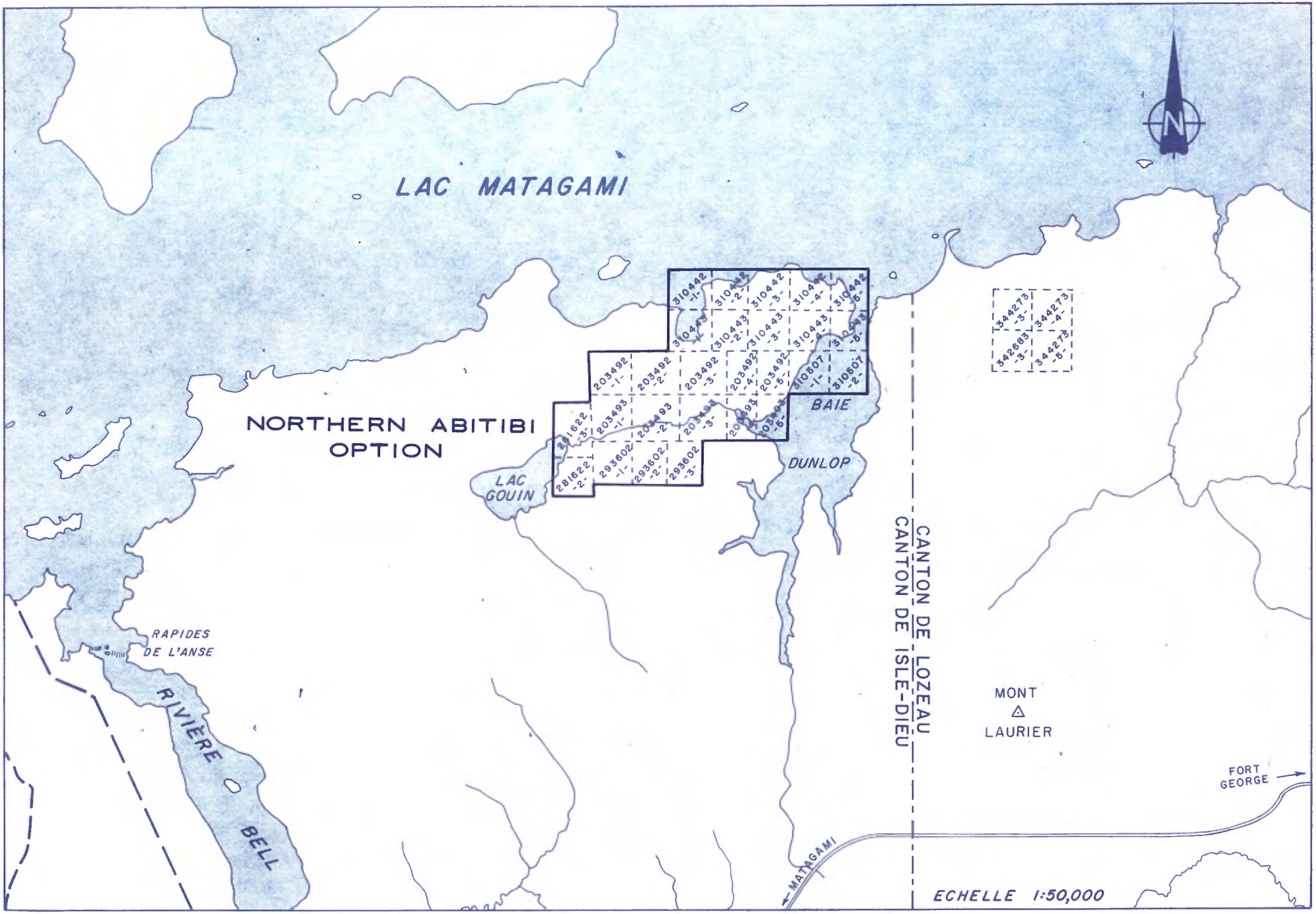
* Corporation Minière Nord-Abitibi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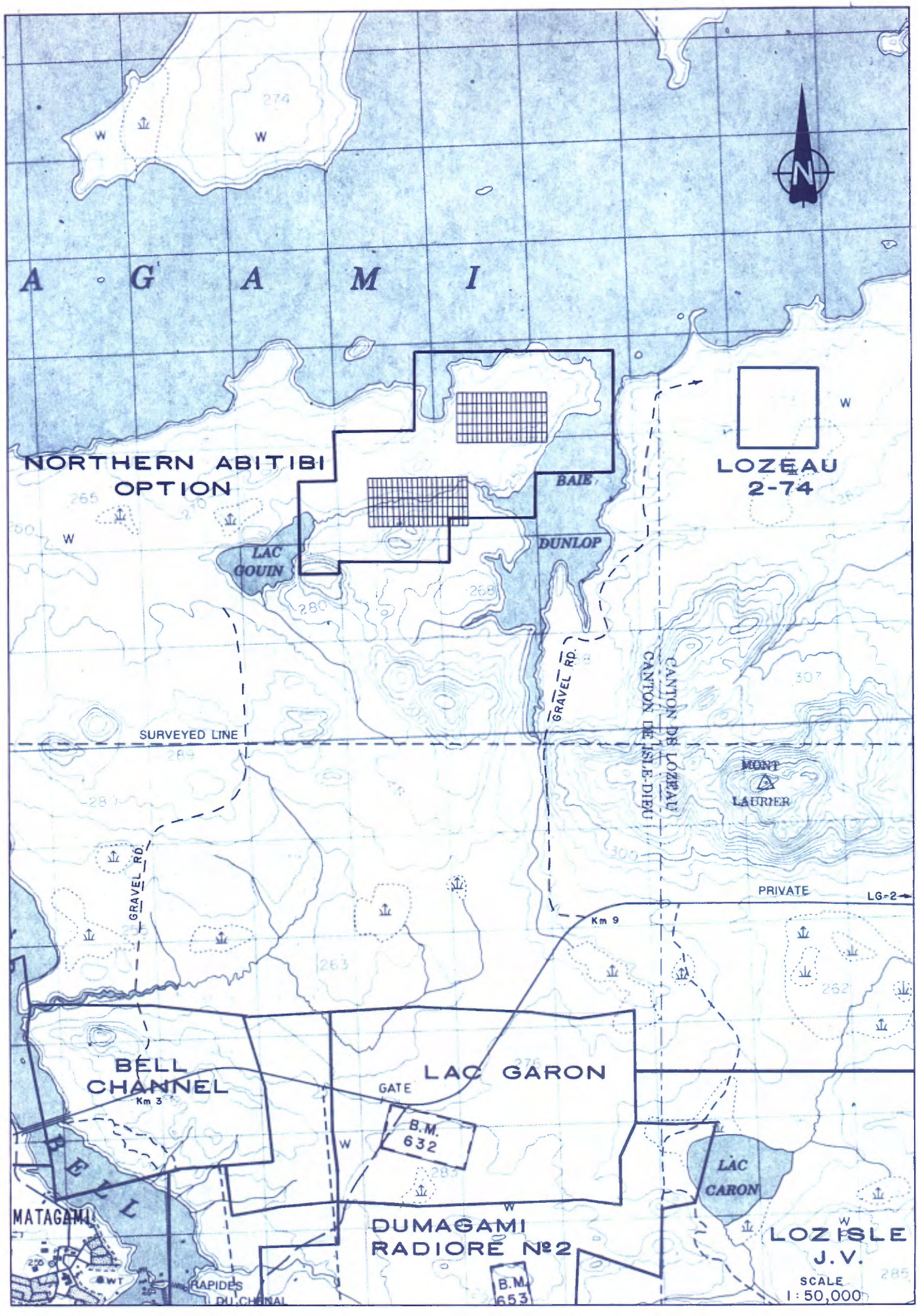
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BELL CHANNEL
Km 3
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MATAGAMI
DUMAGAMI RADIORE Nº2
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b) Resumé of exploration history

1956-1957 East Sullivan Mines Limited
(claims optioned from the Lamarche-Sinclair group).

- combined geological, magnetic and E.M.V. surveys over the entire property followed by trenching (GM-5804A).

- 12 diamond drill holes (total of 6520 feet): holes ME-4 to ME-15 (GM-5804B).

Essentially, two (2) mineralized zones were outlined:

1) an arcuate sequence of rhyolite and rhyolitic tuff containing disseminated to semi-massive pyrite and graphite (traces of copper) in the south-western portion of the property (2000 foot long EM conductor).

2) a small zone of heavy pyrrhotite and pyrite carrying zinc (traces of copper) in a thin rhyolitic tuff sequence of restricted lateral extension in the north-eastern part of the property (EM anomaly). The option has been terminated in 1957 (big Mattagami Lake and Orchan deposits were just recently discovered at that time).

1958 Gresham Explorations Limited (Rio Tinto Canadian Exploration)
(claims optioned from

- airborne EM survey ("Otter in-phase, out-of-phase" system) (GM-7775): there were 4 anomalies located on the field.

1964 Ghislau Mining Corporation
("Beauchemin Option") The claims were optioned primarily on the basis of high grade gold mineralization located on the adjoining Northern Quebec Explorers property to the south.

- trenching was followed by geophysical surveys (Crone E.M. and mag) (GM-14208, 16343).

- a diamond drill program (20 holes; holes G-1 to G-20; total of 7185') (GM-16342) led to the discovery of a small Cu mineralized zone close to surface in the south-central part of the property (over a "weak EM conductor"). Mineralization (disseminated py and cp) is stratigraphically controlled, occurring at the top of a rhyolitic tuff sequence which is overlain by a basaltic unit.

This zone was drilled to a depth of 500'. No further work was completed due to financial difficulties of Ghislau: the property was then returned to the vendors.

1970-1973 Northern Abitibi Mining Corporation (Marcel Morin)
(Company incorporated in March, 1971)

- Turam E.M. and magnetometer surveys were conducted over the entire claim group by using a new grid orientation. New oriented conductors were outlined (GM-27152).

- further Turam (closer line spacing) was performed in 1971.

- diamond drilling program (10 holes, holes 73-1 to 73-10, total of 4858 feet) (GM-28955). Each hole tested new Turam conductors scattered on the property near previously known mineralized zones. Some Cu, Zn, Pb values were reported but there was no continuation of work.

1975-1977 Mattagami Lake Mines Limited, Exploration Division

"Northern Abitibi Option"

- geological mapping
- magnetometer, E.M.H. and detailed E.M.V. (new oriented grid)
- 4 holes (total of 2516'); holes N.A.-76-1 to 4. (GM-32640 and 32641).

The electromagnetic surveys located several conductors which were then tied to old drill holes/grid location in order to determine whether the conductors had been adequately tested. It was decided that the southwest portion of the property was the only area which warranted further drilling (where a N-S trending conductor was fitting with a mapped arcuate sequence of rhyolite - not net adequately tested). This long conductor proved to be graphitic stratas with variable quantity of barren pyrite and pyrrhotite (no cp nor sp). The property was then returned.

III - PROPERTY GEOLOGY

The geology of the property is characterized by folded and faulted sequences of acid tuffs and agglomerates, comprised in a mafic volcanic environment of the Wabassee group (Sharpe 1968). The property lies along the west margin of the younger Dunlop Bay Granite. Sulphide mineralization, consisting of disseminated to semi-massive pyrite, pyrrhotite, chalcopyrite and sphalerite, is mostly confined to the rhyolitic tuff horizon (which contains numerous graphitic layers). In addition, fracture filling Cu-Mo-Pb mineralization in granitic dykes and volcanic rocks could also suggest a later (epigenetic) episode of mineralization, genetically related to the nearby granitic pluton. Several gabbro, diorite and syenite-monzonite intrusions occur and complicate the geological framework.

On the geology-mineralization compilation map, we have sub-divided the property into 5 separate zones of interest, which are described in the following pages.

Zone #1: East Sullivan Zn prospect

This zone is characterized by a 300 m east-west trending (steeply dipping south) thin rhyolitic tuff horizon (with some chert) enclosed in a sequence of mostly mafic lavas (some "dacite" and rhyolite). This volcanic sequence is truncated to the south-east by the Dunlop Bay Granite. Polarity of lithologic units is probably facing north. Mafic volcanics are locally described as being brecciated and to be highly chloritized. The rhyolitic tuff, to which are associated some graphitic layers, contains disseminated to almost massive sulphides over short sections (mostly pyrite and pyrrhotite). Trace sphalerite, chalcopyrite and galena also occur in cross-cutting veinlets.

Significant values (1956-57 drilling by East Sullivan Mines Ltd., and 1973 drilling by Northern Abitibi Mining Corp.) are:

D.D.H. #	Length of hole	Core width	Cu %	Zn %	Pb %
ME-10	472'	14.5'	0.25	1.60	
		15.0'	0.11	1.10	
ME-11	582'	2.2'		1.60	0.49
		2.8'	0.16	1.30	
ME-12	527'	4.5'		0.60	
		1.8'		6.90	1.15
ME-13	464'	3.2'	0.20		
		3.4'		0.80	
ME-14	514'	2.0'		0.50	
ME-15	487'	2.0'	0.20		
		2.0'	0.15		
		1.0'	0.57		
73-2	452'	6.0'		0.46	0.29
		9.0'		0.38	
		3.5'		3.92	0.26

(hole 73-3 is barren)
Overburden thickness is from 7 to 14 m.

Zone #2: Cu-Mo surface showing

This zone is characterized by mafic volcanics intruded by mafic and granitic dykes. Disseminated and cross-cutting mineralization (po, py, mo, cp, sp) is reported. Only significant values are from hole ME-4 (drilling by East Sullivan in 1957 after trenching):

Hole ME-4 (521')	0.60% Cu/2' and 0.37% cu/2' (cross-cutting quartz-calcite-sulphide veinlets)
Hole ME-5 (962')	barren

Zone #3: Ghislau Cu Zone

This zone is interpreted to be a 150 m east-west trending py-po-cp-bearing tuffaceous rhyolite horizon, which is overturned: polarity of stratas face south while dip is 50° to 60° to north. Tuffaceous unit is stratigraphically overlain by mafic volcanic rocks, which are partly silicified, chloritized and brecciated (with quartz, calcite, po and mo veinlets). Some chert and graphitic sections are present in the rhyolitic fragmental unit. Better Cu values occur in the more chloritized sections of the tuff. Sulphides are usually disseminated but are locally heavy to massive. Many gabbro-diorite-syenite intrusions complicate the structure, displacing and/or truncating the stratigraphy. The mineralized zone is partly truncated at depth by a gabbro sill. Granitic and syenitic dykes contain traces of Cp and Mo in fractures.

This zone has been drilled by Ghislau Mining Corp., in 1964-65 (holes G-1 to G-9 and G-13 to G-20) and later in 1973 by Northern Abitibi (holes 73-4, 6, 7 and 10). It should be pointed out that the original discovery in hole G-4 was drilled over a weak Crone EM anomaly.

Principal values are:

D.D.H. #	Length of hole	Core width	Cu %	Mo %
G-4	210'	45'*	0.33	
		45'*	1.51	0.13
G-7	300'	15'	0.96	
		11'	0.44	
G-8	404'	15'	1.06	
G-9	499'	17'	1.42	
		6'	0.40	
G-13	391'	7'	0.40	
G-16	259'	5'	2.24	
		or 15'	0.88	
G-17	254'	5'	0.61	
G-19	360'	16.2'	0.44	
G-20	577'	2.5'		0.24
		9.5'	2.00	
		or 40.4'	0.62	
73-6	497'	3'	0.29	
		4'	0.55	
73-7	348'	3.5'	0.86	

* true thickness is probably between 15 and 20 feet since this hole cut the horizon at a low angle.

Overburden thickness is from 1 to 32 m.

Zone #4: North-western extension of Ghislau Cu zone (?)

This NW-SE oriented zone consists of a sequence of rhyolite, cherty rhyolite, fragmental rhyolite,"black graphitic slate" and chert, stratigraphically underlained (?)to north-east by intermediate volcanics and gabbro. Minerali-

zation consists of disseminated (10-20%) pyrrhotite (massive over short sections) in the graphitic fragmental rhyolite. Polarity of strata is probably facing south-west: structural and stratigraphic relation with zone #3 is not well understood.

This conductor was drilled in 1964 by Ghislau Mining Corp., (holes G-10 to 12) and in 1973 by Northern Abitibi (hole 73-8). Ghislau's holes drilled to southwest, did not completely transect the rhyolitic unit. The highest Cu value was 0.27% Cu across 5.8' in hole G-12. Overburden thickness is from 2 to 18 m.

Zone #5: Main arcuate rhyolitic tuff sequence

A 200 m thick folded sequence of rhyolite, rhyolitic tuffs, agglomerates and breccias, chert and graphitic shales, characterizes this portion of the property. Lithologic units are steeply dipping and probably face west (northwest). Disseminated to heavy sulphides (mostly pyrite and pyrrhotite) are distributed in this sequence. The folded structure was first recognized by surface mapping and trenching. Drilling programs were subsequently performed by East Sullivan (holes ME-6 to 9, 1957), Northern Abitibi (holes 73-5 and 9, 1975) and by Mattagami Lake (holes NA-76-1 to 4, 1976), following different geophysical surveys.

Best metal values are:

Hole #		
ME-7	(500')	0.35% Cu/ 5'
ME-9	(360')	0.40% Cu/ 5'
		0.25% Zn/ 5'
N.A.-76-2	(816')	0.47% Zn/ 3'
		0.17% Zn/13'
		0.20% Cu/ 1'

IV - WORK CONDUCTED DURING THIS OPTION AGREEMENT

a) Line cutting:

Following compilation of all geophysical and geological data available concerning past exploration conducted over this property, it was recommended that zones #1 and #3 (respectively the "East Sullivan" Zn prospect and the "Ghislau" Cu prospect) needed more detailed geophysics and eventually deeper drilling.

In order to cover these mineralized zones and their possible east-west lateral extension, two small independent grids were cut (15.35 km over zone #1 and 16.65 km over zone #3). Orientation of lines is north (0^{o}) and spacing between lines is 50 m (see sketch of grid). Lines oriented east-west (in addition to tie lines and base lines) were also cut every 100 m for the possibility of north-south trending conductors.

The line cutting was performed in December 1981/January 1982 by contractor Rolland Mainville of Senneterre.

b) Geophysical survey:

From January to March 1982, a detailed Crone Deep E.M. survey was conducted over both grids, along north-south trending lines. Technical problems were the cause of important delays in the surveying. In consequence, most E-W oriented lines were not surveyed. However, each lateral extension of known mineralized zones were covered. We believe

this technique (using our equipment) to have a ground penetration of 100 to 125 m: although it is not much greater than conventional E.M.H., this method gives a better definition of the conductors. A brief description of the technique is given later in the text. Profiles and vector plots are included at the end of the report.

SUMMARY OF DEEP E.M. RESULTS:

(refer to map #5 and map #6)

Zone #1 (north grid - East Sullivan Zn prospect)

-- A strong east-west trending conductor, slightly arcuate, has been detected between lines 2+50 W and 0+50 E (300 m long). Response is sharp on channels 1 to 8, except at the western and eastern extremities, where weaker response on channels 1 to 6 was obtained.

-- This conductor corresponds exactly to the known extent of the steeply dipping thin mineralized zone drilled in 1957. There is no apparent near-surface lateral extension of the mineralization beyond hole ME-11 (line 2+50 W) toward west and hole ME-13 (line 0+00) toward east. The conductor terminates abruptly at both ends suggesting that it is truncated by faults.

Zone #3 (south grid - Ghislau Cu zone)

-- A weak response (5 first channels only) was obtained over the Ghislau Cu zone, from line 0+50 W to 0+50 E (100 m long). Geometry of profiles (vertical and horizontal components) confirms a dip to the north. The conductor is shown to extend northeasterly for a distance of at least 100 m. Extending southwest from the Cu zone, geophysical profiles indicated a stronger (8 channels) and slightly deeper (75-100 m) conductor revealed to be a pyrite-graphite horizon in D.D.H.-73-4 (Northern Abitibi, 1973). This highly conductive horizon is believed to be connected to the north-south trending pyrite-graphite horizon, farther to south-west and tested by Mattagami Lake in 1976 (zone #5).

-- Another strong conductor NW-SE trending detected at the northern ends of lines 3+00 W and 3+50 W is correlated with a py-po-graphite horizon (SE end of zone #4). This conductor has been tested by Ghislau (holes G-10, 11 and 12) in 1966.

The Deepem Technique

The standard Pulse Em equipment as developed by Crone Geophysics Ltd. (1975) consists of a moving horizontal loop system; two persons operate the transmitter and one the receiver. The transmitter-receiver coil separation is 50 to 150 meters. The transmitter is a multiturn loop of 6 to 15 meters in diameter laid out in a rough circle on the ground.

An alternative method utilizes a 100 meter square, single turn transmit loop out on surface consisting of #10 AWG wire. This has the advantage of a much stronger transmitted field providing greater penetration (50 to 200 meters), consequently, the technique is called the deepem method. The transmitter loop is laid out on one side of the area to be detailed and the survey lines extend away from the loop, starting 50 meters from one wire out to a distance of 350 meters. Both horizontal and vertical components are measured along the survey line at stations 25 meters apart.

The current wave form is 10.8 ms on, 10.8 ms off with a 1.4 ms ramp shut-off. Eight delay time windows, or channels, of the secondary field are sampled after the current shut-off at 0.15, 0.30, 0.55, 0.90, 1.45, 2.40, 4.00 and 6.40 milliseconds to the center of the sample. The sample amplitude is normalized by setting to 1000, a sample taken off the maximum shut-off voltage amplitude measured at the receiver. The sample measurements are therefore without dimensions. The first sample (0.15 ms) is in units of 1/1000 of the shut-off sample, with a logarithmic dispersion in between. Unlike conventional horizontal loop Em surveys elevation effects are not critical with this time domain method.

Interpretation of the deepem results is by means of comparison with model study curves. The deepem method is excellent in its ability to distinguish if a conductor is vertical, dipping or flat. With vertical conductors the vertical measurements produce a symmetrical cross-over anomaly and the horizontal component produces a positive peak at the cross-over point. For a flat conductor, the vertical component produces a positive anomaly and the horizontal component produces a cross-over. Dipping conductors produce patterns between the two extremes. Width of the conductors is best determined by the use of two transmit loops on either side of the conductor. The method is very good at detecting deep, small, lens-like conductors when the small conductor is not too far removed from the transmit loop (i.e. within 200 meters).

c) Diamond drilling :

D.D.H. N.A.-82-1 was drilled to north-east of the Ghislau Cu zone in order to test the weak extension of the Deep E.M. anomaly. This area was also expected to be a good geological target : the hole was planned to reach the possible north-eastern/deeper extension of the favourable sulphide horizon, possibly truncated by some diorite and gabbro sills.

Hole was drilled in April 1982 by Benoit Diamond Drilling. The following is a summary of the hole.

HOLE N.A.-82-1
Latitude : Base line 0-00 (~ 48-75S, 1965 grid)
Longitude : 0-76E (~ 57-00W, 1965 grid)
Direction : South (180°)
Dip at collar : -63°
Dip at 967' : -50°
Size of core : AQ

0 - 118'	:	Casing (N and A size left in place).
118 - 123'	:	Basalt : possible flow breccia.
123 - 336'	:	Massive basalt : numerous quartz-calcite veinlets. - traces of cp associated to disseminated pyrite - locally sericitized and silicified.
336 - 345'	:	Diorite (border zone of the following intrusive).
345 - 427'	:	Syenite (some basaltic xenoliths)
427 - 900'	:	Monzonite (truncated by intermediate dykes)
900 - 967'	:	Biotite-rich diorite.
967'	:	End of hole.

V - CONCLUSION

The first year of exploration work conducted on the Northern Abitibi property is now completed. Drill hole N.A.-82-1 sunk to test a combined geological/geophysical target to the north-east of the Ghislau Cu zone, failed to outline additionnal mineralization. The favourable rhyolite/basalt contact, hosting the disseminated sulphides, has not been intersected in the hole. The Deep E.M. anomaly tested, could be a lateral reflection of the known Cu zone : the focus effect obtained on the vector plot suggesting a deeper source could be attributed to conductive overburden (100' thick at hole collar).

Based on the results obtained during this exploration program, no further work is recommended at the present time. Should the economic situation improve in the near future, additionnal work (mostly drilling) could be performed. Shallow holes to better define the geology would preceed deeper exploration drilling.

NORANDA EXPLORATION COMPANY LTD.

Pierre Bernard

Pierre Bernard

Approved by : Denis Francoeur

Denis Francoeur,
District geologist, Matagami

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Direction générale de la recherche
géologique et minérale, Quebec

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SUMMARY OF COSTS

Northern Abitibi Option: Project M-156

A -	Line cutting:	
	32 km X $135.00/km	$ 4,320.00
B -	Geophysical survey:	
	(Crone Deep E.M. technique)	
	Norex crew (2 technicans)	
	120 man days X $100.00/day	12,000.00
	Repair of instruments	1,823.00
C -	Diamond drilling:	
	Hole N.A.-82-1 (967' X $22.22/foot)	21,488.76
D -	Other costs:	
	Noranda Exploration staff:	
	1 - Geology: (compilation, planification of project, logging, field supervision, writing of report)	
	55 man days X $120.00/day	6,600.00
	2 - Drafting:	
	10 man days X $120.00/day	1,200.00
	3 - Core handling:	
	4 man days X $100.00/day	400.00
E -	Administration:	
	5% of contractor costs:	
	5% X $27,631.76	1,381.59
	15% of Noranda costs:	
	15% X $20,200.00	3,030.00
	GRAND TOTAL	$52,243.35

I certify that the foregoing expenses are a true account of expenditures on the Northern Abitibi Option project for the period extending from March 1981 to June 1982.

NORANDA EXPLORATION COMPANY, LIMITED

Denis Francoeur

Denis Francoeur, M.Sc.
District Geologist, Matagami

Microfilm

PAGES DE DIMENSION HORS STANDARD

MICROFILMÉE SUR 35 MM ET

POSITIONNÉES À LA SUITE DES

PRÉSENTES PAGES STANDARDS

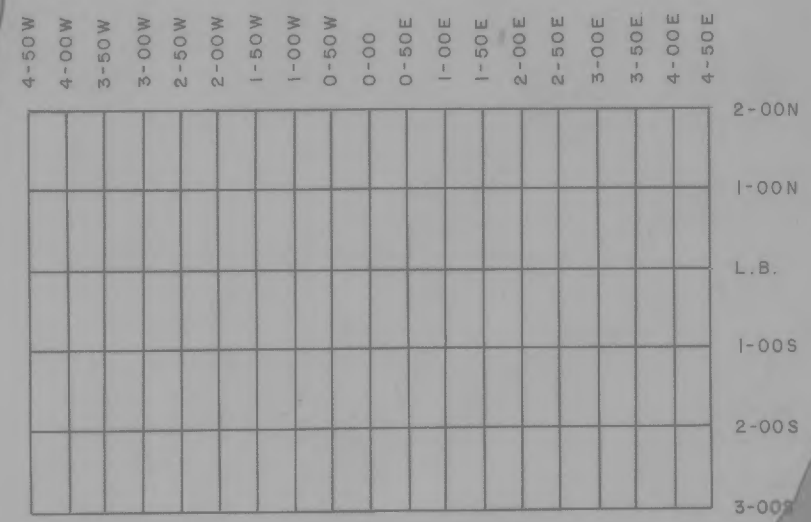
Numérique

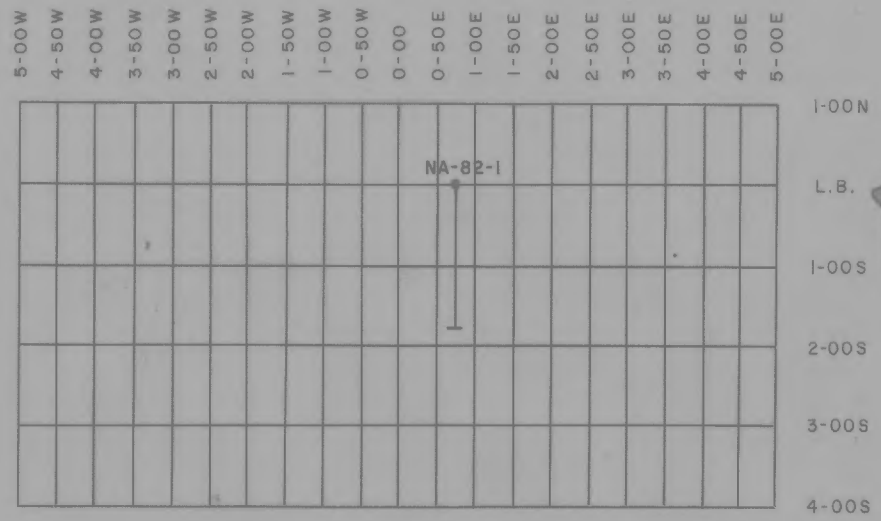
PAGES DE DIMENSION HORS STANDARD

NUMÉRISÉE ET POSITIONNÉE À LA

SUITE DES PRÉSENTES PAGES STANDARDS

LAC MATAGAMI





BAIE DUNLOP

ÉCHELLE 1:10,000

Gouvernement du Québec
Ministère des Richesses naturelles
Direction générale de la recherche géologique et minérale

LÉGENDE DE LA

SYMBOLES LITHOLOGIQUES

ROCHES VOLCANIQUES ARCHEENNES

V	Roches volcaniques indéterminées
V1	Roches volcaniques felsiques ou intermédiaires
V2	Rhyolite
V3	Trachyte
V4	Dacite
V5	Roches volcaniques intermédiaires ou mafiques
V6	Andésite
V7	Basalte
V8	Roches pyroclastiques indéterminées
V9	Tuf
V10	Agglomérat
V13	Roches volcaniques ultramafiques

ROCHES SEDIMENTAIRES ARCHEENNES

S	Roches sédimentaires indéterminées
S1	Conglomérat
S2	Arkose
S3	Grauwacke
S4	Argilite, shale, ardoise, phyllade
S5	Quartzite
S6	Formation de fer
S7	Calcaire et autres roches de carbonate

FORMATIONS DE FER ARCHEENNES

F1	Formation de fer indéterminée
F2	Formation de fer sulfurée
F3	Formation de fer oxydée
F4	Formation de fer carbonatée

ROCHES SEDIMENTAIRES PROTEROZOIQUES

P	Roches sédimentaires indéterminées
P1	Conglomérat
P2	Arkose
P3	Grauwacke
P4	Quartzite et grès
P5	Argilite, shale, ardoise et phyllade
P6	Formation de fer
P7	Dolomie et autres roches à carbonates
P8	Tillite

ROCHES SEDIMENTAIRES PALEOZOIQUES

P1	Calcaire

ROCHES METAMORPHIQUES

M	Roches métamorphiques indéterminées
M1	Schiste
M3	Roches hybrides
M4	Brèche ignée
M5	Migmatite
M6	Gneiss d'injection
M7	Gneiss
M8	Amphibolite
M9	Granulite
M10	Mylonite
M11	Quartzite
M12	Marbre

ROCHES INTRUSIVES

1	Roches intrusives felsiques indéterminées
1S	Syénite
1G	Granite
1A	Monzonite quartzifère (Adamellite)
1M	Monzonite
1D	Granodiorite
1P	Pegmatite
1B	Albitite
1X	Aplite
1Z	Granophyre
1R	Rhyolite et felsite intrusive
2	Roches intrusives intermédiaires indéterminées
2T	Diorite quartzifère (Tonalite)
2D	Diorite
2L	Lamprophyre intermédiaire
3	Roches intrusives mafiques indéterminées
3G	Gabbro
3N	Norite
3R	Anorthosite
3L	Lamprophyre mafique ou indéterminé
3D	Diabase *
4	Roches intrusives ultramafiques
4P	Péridotite
4H	Hornblendite
4S	Serpentinite
4D	Dunite
4Y	Pyroxénite
4L	Lamprophyre ultramafique

* Dans certains cas, utilisé comme suit:

3D1: diabase de première génération

3D2: diabase de seconde génération

COMPILATION GÉOSCIENTIFIQUE

SUFFIXES POUR STRUCTURES PETROGRAPHIQUES ET TEXTURES CARACTERISTIQUES

- porphyre (*plus de 50% de phénocristaux*)
- porphyrique (*10% à 50% de phénocristaux*)
- variolitique, sphérulitique
- coussinée
- amygdalaire
- à spinifex
- rubanée
- cisaillée
- turbidites
- bréchiforme
- brèche tectonique
- brèche intrusive
- brèche pyroclastique
- brèche explosive
- brèche de coulée
- hyaloclastique

SUFFIXES POUR LES MINERAUX DES ROCHES

b	biotite	j	carbonate	s	staurotide
c	chlorite	k	séricite-paragonite	t	trémolite-actinote
d	disthène	m	muscovite	u	amphibole (indéterminé)
e	épidote	n	néphéline	v	** veine de
f	feldspath (indéterminé)	o	feldspath potassique	w	tourmaline
g	grenat	p	plagioclase	x	sillimanite
h	hornblende	q	quartz	y	pyroxène
i	talc	r	chloritoïde	z	zéolite

** Utilisé avec un autre suffixe de minéraux des roches.
Ex.: vq: veine de quartz

SUFFIXES POUR LES METAUX NATIFS

Sb	antimoine	*Cu*	cuivre	*Ni*	nickel
Ag	argent	*Sn*	étain	*Au*	or
As	arsenic	*Fe*	fer	*Pt*	platine
Ba	baryum	*Li*	lithium	*Pb*	plomb
Be	béryllium	*Mg*	magnésium	*Ti*	titane
Bi	bismuth	*Mn*	manganèse	*W*	tungstène
Cr	chrome	*Hg*	mercure	*U*	uranium
Co	cobalt	*Mo*	molybdène	*Zn*	zinc

SUFFIXES POUR COMPOSITION, ORIGINE ET ALTERATION

COMPOSITION

- α felsique
- β mafique
- γ ultramafique

ORIGINE

- δ sédimentaire
- ν volcanique
- ψ intrusive

ALTERATION

- ω amphibolitisée
- σ silicifiée
- μ albitisée
- π pyritisée
- ε épidotisée
- θ porphyritisée
- φ chloritisée
- λ sericitisée
- η carbonatisée
- χ serpentinisée
- κ altération potassique
- τ altération indéterminée

SUFFIXES POUR LES SUBSTANCES D'INTERET ECONOMIQUE

MINERAUX ET ROCHES

Am	amiante
Ap	apatite
Asp	arsénopyrite
Ay	anthophyllite
Ba	barytine
Bi	biotite
Be	béryl
Bo	bornite
Bs	bismuth
Cor	corindon
Cp	chalcopyrite
Cn	chalcosine
Ch	chert, jaspe
Cr	chromite
Ct	cordiérite
Cv	covelline
Fl	fluorine
Ff	formation de fer
Fp	feldspath
Gn	galène
Gp	graphite
Hem	hématite
Il	ilménite
Ilm	ilménite
Mt	magnétite
Ma	marcasite
Mc	malachite
Md	minéraux décoratifs
Mi	mica
Mo	molybdénite
Ol	olivine
Pc	pierre de construction
Pi	pyrophyllite
Pm	pierre ornementale
Pn	pentlandite
Po	pyrrhotine
Py	pyrite
Ra	minéraux radioactifs
Su	sulfures (indéterminés)
Sd	sirérose
Sh	scheelite
Si	silice
Sp	sphalérite
Sm	spodumène
Tc	talc
Ta	tantalite
Va	vanadinite

SYMBOLES D'ANOMALIES GEOCHIMIQUES ET SYMBOLES D'ANOMALIES MINERALOGIQUES DES ALLUVIONS

SR: sédiment de ruisseau

SL: sédiment de fond de lac

SO: sol

EZ: eaux souterraines

ES: eaux de surface

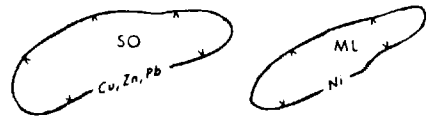
VG: végétaux

R: roches

ML: minéraux lourds (battée)

FA: forage alluvionnaire

Les zones de fortes teneurs géochimiques sont délimitées par une ligne de contour renfermant l'identification du genre de levé et interrompue par le symbole des éléments d'intérêt.



⊕ : échantillonnage isolé

● : échantillonnage de bloc erratique

12m ▲ Sondage alluvionnaire, avec profondeur en mètres (à gauche). On remarquera que les sondages alluvionnaires sont reportés sur la couche 3.

SYMBOLES GEOMORPHOLOGIQUES

Stries glaciaires — Sens du mouvement connu et inconnu

Moraine frontale

Esker — Sens d'écoulement connu et inconnu

Limite de transgression marine ou de submergence lacustre — Connue, présumée

SYMBOLES DES INTERSECTIONS ET ZONES MINERALISEES

5,14 g/t Au / 1,1m
4,11% Cu / 0,5m

Identification de la substance, teneur et longueur de la minéralisation indiquée par le sondage.

Zone minéralisée:

Zone de Bartec
57 000 t – 11,56 g/t Au

Nom de la zone (s'il y en a un), identification de la substance et réserves connues.

Veine ou amas minéralisé

SYMBOLES DES ANOMALIES GEOPHYSIQUES

LEVES DE RESISTIVITE

axe de hautes valeurs — RH

axe de basses valeurs — RB

LEVES DE POLARISATION PROVOQUEE

axe de hautes valeurs — PP

LEVES DE POTENTIEL SPONTANE — PS

LEVES ELECTROMAGNETIQUES

1) Aériens — EMC — conducteur

TRR: TURAIR

RPE: Radiophase, E-phase

EMC: Systèmes conventionels

AFG: AFMAG

EMM: Systèmes multifréquences (excluant l'INPUT)

EMC : Largeur d'anomalie rapportée; le pointillé indique la direction du levé.

Système INPUT

2 canaux (avec produit conductivité - épaisseur, mhos)

3 canaux

4 canaux

5 canaux

6 canaux

anomalie magnétique coïncidente

anomalie magnétique juxtaposée

2) Au sol — TRM

EMH: Systèmes à cadres horizontaux (avec produit conductivité - épaisseur, mhos)

EMV: Systèmes à cadres verticaux

TRM: Systèmes TURAM

VLF: Systèmes à très basse fréquence

LEVES MAGNETIQUES (axes de hautes valeurs)

1) Aériens — AIR

2) Au sol — SOL

LEVES GRAVIMETRIQUES

a) Haut gravimétrique — HG

b) Bas gravimétrique — BG

LEVES RADIOMETRIQUES OU DE SPECTROMETRIE DES RAYONS GAMMA

U: Uranium — U

Th: Thorium — Th

U/Th: Rapport uranium/thorium — $U/_{Th}$

Tot: Total — Tot

K: Potassium — K

SYMBOLES STRUCTURAUX

AFFLEUREMENT — affleurement isolé

aire d'affleurements

CONTOUR GEOLOGIQUE — connu

probable ou présumé

d'après levés géophysiques

STRATIFICATION:

1) Sommet déterminé — horizontale, inclinée, verticale, renversée, pendage non déterminé

2) Sommet non déterminé — horizontale, inclinée, verticale, pendage non déterminé.

SCHISTOSITE OU CLIVAGE:

1) (plan S1) — horizontal , incliné, vertical, pendage non déterminé

2) (plan S2) — horizontal, incliné, vertical, pendage non déterminé

GNEISSOSITE — horizontale, inclinée, verticale

CONTACT DE COULEES

ISOGRADE DE METAMORPHISME — Les pointes indiquent le sens croissant du métamorphisme et l'isograde marque l'apparition d'un (des) minéral(aux) dont le(les) nom(s) sera(ont) indiqué(s) du côté de l'agrandissement du métamorphisme; ou encore l'isograde marque la disparition d'un (des) minéral(aux) dont le(s) nom(s) sera(ont) indiqué(s) du côté où ce(s) minéral(aux) est (sont) présent(s).

LINEAMENT — (obtenu par photo-interprétation)

LINEATIONS — horizontale, inclinée, verticale, plongée non déterminée

PLI

1) antiforme — plan axial déterminé, présumé
2) antiforme déversé — plan axial déterminé, présumé
3) synforme — plan axial déterminé, présumé
4) synforme déversé — plan axial déterminé, présumé
5) pli d'entraînement — Dextre, senestre; utilisé avec ou sans plongée et pendage
6) axe de plissement avec plongée

FAILLE, ZONE DE CISAILLEMENT

connue
d'après levés géophysiques
présumée
inclinée
avec sens de déplacement;
avec affaissement; le cercle plein indique le côté affaissé
faille de charriage; les pointes sont sur le côté relevé
faille de charriage présumée

DIACLASES

horizontale, inclinée, verticale.
système multiple

NOTES

(*): On a pu utiliser ⌀ pour symboliser stratification horizontale, sommet déterminé.

(**): Le symbole des contours géologiques présumés a été utilisé dans certains cas comme isograde de métamorphisme.

(***): Parfois, ⁞ est utilisé pour symboliser un sondage incliné avec projection horizontale; profondeur inconnue.

SYMBOLES DE SONDAGE

*** Sondage incliné avec projection horizontale: profondeur connue, profondeur inconnue.

Sondage incliné avec projection horizontale de la lithologie recoupée. La profondeur verticale du mort-terrain y est indiquée (en mètres) à gauche et le numéro d'identification du sondage au-dessus ou à droite. Ce numéro d'identification correspond exactement à celui donné dans les dossiers de travaux statutaires consultés et ne figure sur la carte de compilation *que lorsque les journaux de sondage sont disponibles.*

V8 — Sondage vertical: la première couche lithologique rencontrée y est indiquée à droite et le numéro d'identification du sondage au-dessus du symbole si un journal de sondage existe dans les dossiers consultés.

P3 — Sondage pour alimentation en eau: la première couche lithologique rencontrée y est indiquée à droite et le numéro d'identification du sondage au-dessus du symbole si un journal de sondage existe dans les dossiers consultés.

SYMBOLES DES INSTALLATIONS MINIERES

Puits de mine (avec chevalement); vertical, incliné;

Puits abandonnés

Puits d'exploration (sans chevalement); vertical, incliné;

Gravière ou sablière; en exploitation, abandonnée

Mine à ciel ouvert

Tranchée

Galerie d'exploration à flanc de coteau (adit); en usage, abandonnée

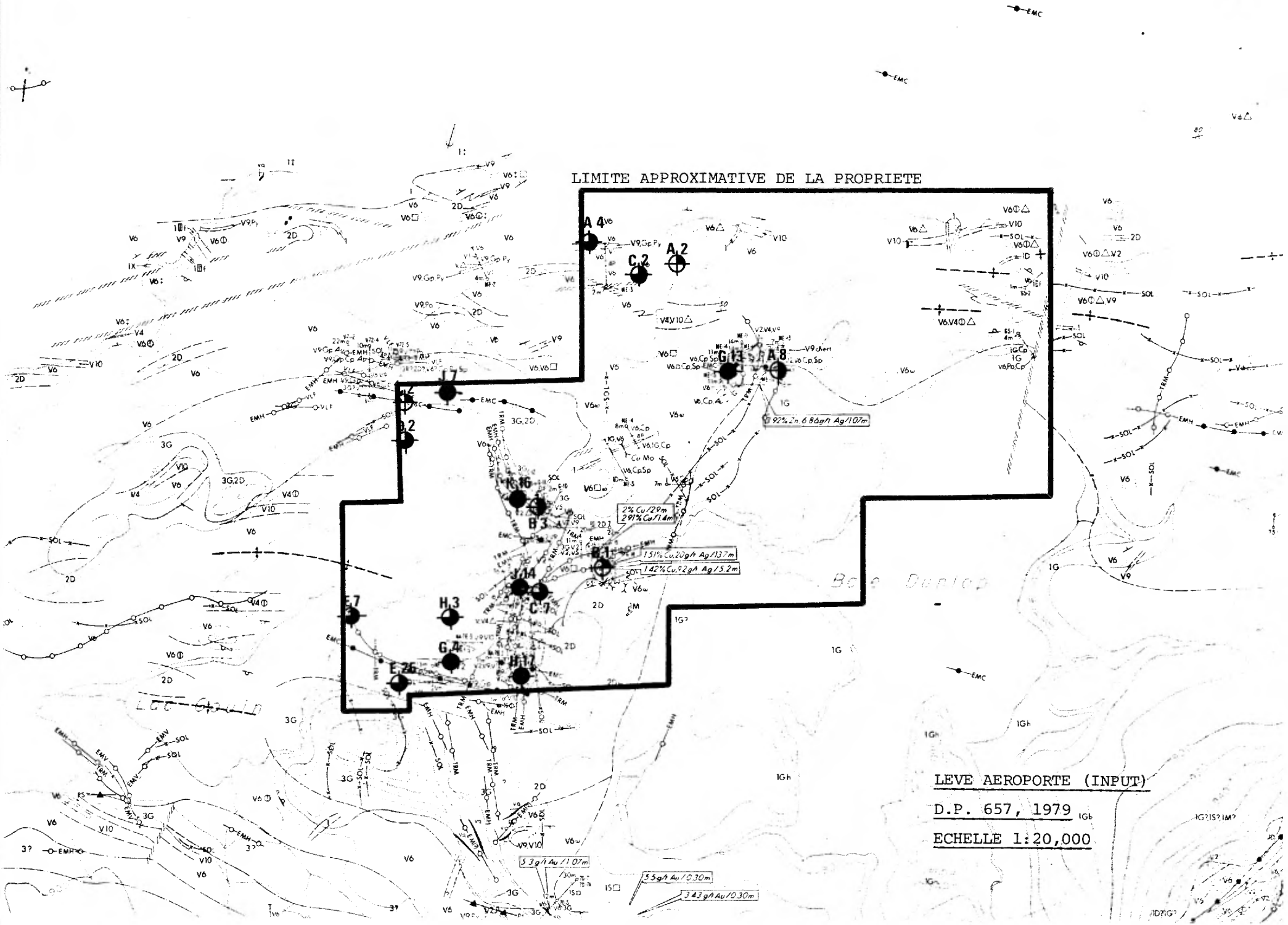
Galerie de production à flanc de coteau; en usage, abandonnée

120m — Chantiers souterrains, profondeur en mètres

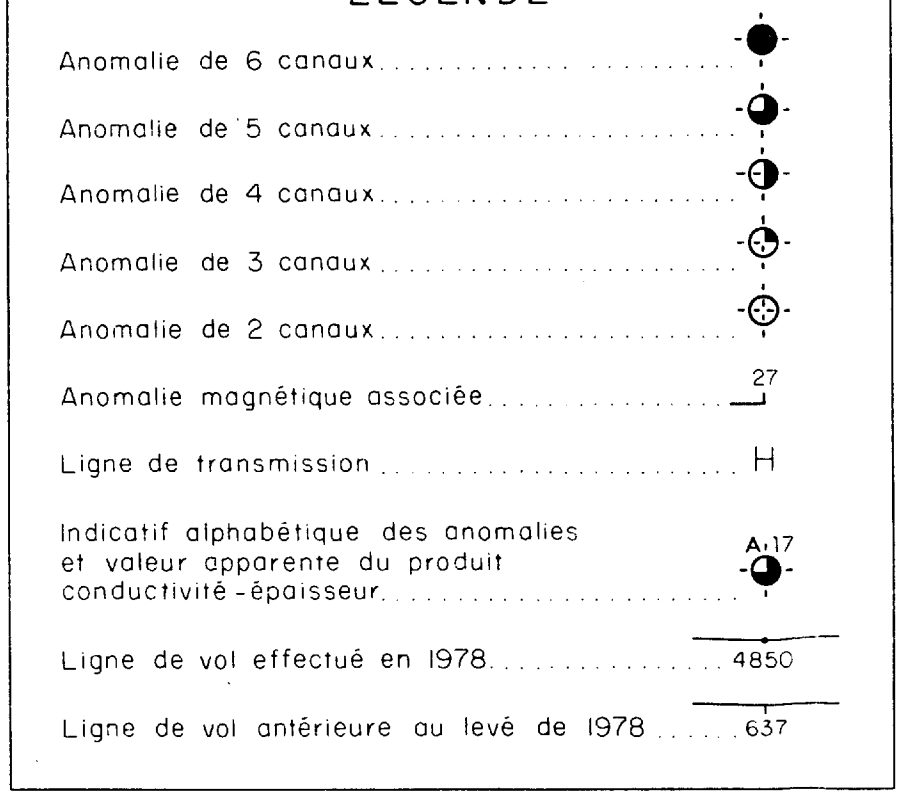
Bâtiments

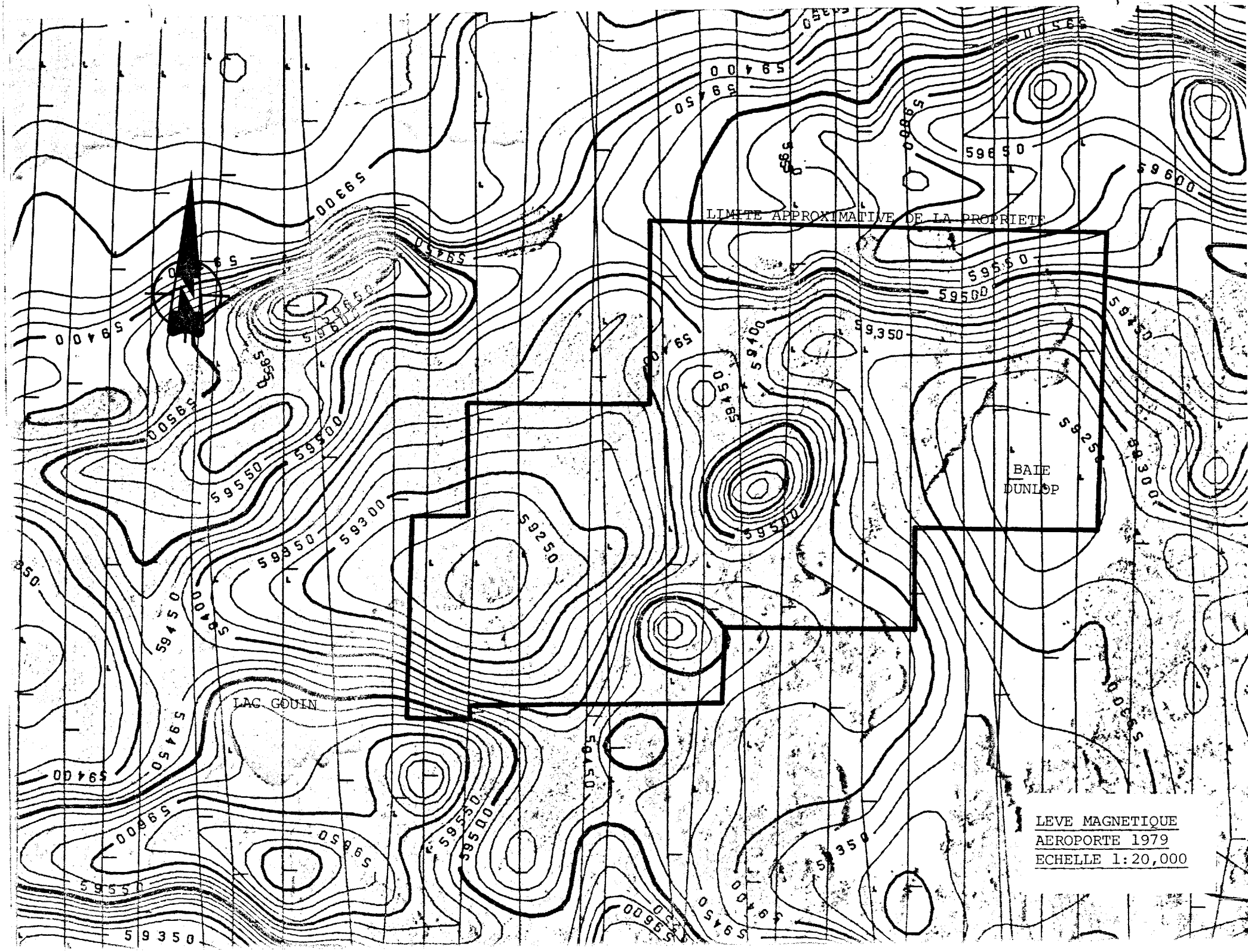
H — Halde de minerai

DM — Parc à déchet


LIMITE APPROXIMATIVE DE LA PROPRIETE
A 4
A 2
C 2
A 8
G 13
K 16
B 3
B 1
J 14
C 7
H 3
G 4
E 26
H 17
L 7
2% Cu/29m
2.91% Cu/14m
1.51% Cu, 20g/t Ag/13.7m
1.42% Cu, 9.2g/t Ag/5.2m
0.92% Zn, 6.86g/t Ag/10.7m
5.3g/t Au/1.07m
5.5g/t Au/0.30m
3.43g/t Au/0.30m
LEVE AEROPORTE (INPUT)
D.P. 657, 1979
ECHELLE 1:20,000

LÉGENDE


Anomalie de 6 canaux
Anomalie de 5 canaux
Anomalie de 4 canaux
Anomalie de 3 canaux
Anomalie de 2 canaux
Anomalie magnétique associée
27
Ligne de transmission
H
Indicatif alphabétique des anomalies et valeur apparente du produit conductivité-épaisseur
A-17
Ligne de vol effectué en 1978
4850
Ligne de vol antérieure au levé de 1978
637


LIMITE APPROXIMATIVE DE LA PROPRIETE
LAC GOUIN
BAIE DUNLOP
LEVE MAGNETIQUE
AEROPORTE 1979
ECHELLE 1:20,000

JOURNAL DE SONDAGES AU DIAMANT

Ministère de l'Énergie et des Ressources
Gouvernement du Québec
Service du Potentiel minéral

DATE: 30 SEP. 1982

No G.M.: **39160**

Supervision de forage
par P. Bernard

TESTS ACIDE	TESTS TROPARI	PENDAGE	DIRECTION CORRIGEÉ
100'		-59.9°	
200'		-61.0°	
400'		-55.5°	
600'		-54.0°	
800'		-51.2°	
967'		-49.9°	

LATITUDE : Grille Norex 1981 { 0+00 (Ligne de Base) (Lat.) / 0+76 E (Long.)

LONGITUDE : Grille Ghislau (1965) { L 57+00 W Long. / 48+75 S Lat.

ÉLÉVATION : Surface

DIRECTION : 180° (Sud)

PENDAGE AU COLLET : -63° (vérifié)

PROFONDEUR DU TROU : 967'

PROPRIETE : Option Nord Abitibi

CLAIM No. : 203493 -3

TROU No. : N.A.-82-1

CAROTTE No. : A Q

DÉBUT LE : 15 avril 1982

FIN LE : 25 avril 1982

PROFONDEUR DE	PROFONDEUR A	DESCRIPTION MEGASCOPIQUE	ÉCHANT.	DE	A	ANALYSES GEOCHIMIQUES
0	118'	Tubages N et A laissés en place (Mort-Terrain).				
118	122.5'	BASALTE				
		Brèche de coulée? (sériciticisée)				
		Les fragments sont gris-verdâtres, de tailles variables passant de				
		quelques mm au cm.				
122.5	297'	BASALTE				
		Vert foncé, aphanitique, chloritisé. Il est recoupé par plusieurs				
		veinules de calcite et quartz donnant un aspect brèchiforme.				

CONTRACTEUR : Forages Benoît, Val d'Or

DÉCRIT PAR : Jean des Rivières

JOURNAL DE SONDAGES AU DIAMANT

TERRAIN: Option Nord-Abitibi **TROU No.:** N.A.-82-1 **PAGE:** 2

DISTANCE	DESCRIPTION	ÉCHAN.	DE	A		Au oz/t	Ag oz/t		Cu %		
	La densité des veinules est variable. Par endroits il n'y en a presque										
	pas donnant au basalte un aspect massif.										
	- 143' à 204', la granulométrie semble devenir plus grossière. Il y a										
	apparition de petits cristaux aciculaires long de 1 mm (feldspaths?)										
	- Cp disséminée par endroits										
	à 198'										
	à 226'	6315 A	226	228'	(2')	0.003	----		0.06		
	- Py disséminée à 205' sur 1'	6313 A	205	206'	(5')	0.001	0.05				
	209' sur 0.5'	6314 A	209	209.5'	(0.5')	0.002	----				
	236.5 sur 1.5' (20% de la roche)	6316 A	235.5	237.5'	(2')	0.002	0.05				
	251' sur 0.5'	6317 A	251	251.5'	(0.5')	0.002	----				
	292.6 sur 0.2'										
	228 sur 0.5'										
297-336.5'	BASALTE										
	La roche devient vert-pâle grisâtre. Il semble y avoir des fragments										
	(ou taches d'altération dans la roche). Ce qui donne une structure										
	brèchiforme. Petites taches de séricite occupant par endroits jusqu'à										
	10% de la roche. Le basalte est possiblement légèrement silicifié										
	par endroit.										

JOURNAL DE SONDAGES AU DIAMANT

TERRAIN: Option Nord-Abitibi **TROU No.:** N.A.-82-1 **PAGE:** 3

DISTANCE	DESCRIPTION	ÉCHAN.	DE	A
336.5-344.7	DIORITE ALTEREE?			
	Zone de bordure?			
	5% de quartz (cristaux xénomorphes) Taille: jusqu'à 3 mm.			
	40% de Plagioclases verdâtres (cristaux xénomorphes). Taille: jusqu'à 5 mm.			
	55% de minéraux mafiques (chlorite en majorité).			
	Calcite et pyrite en traces. Le contact avec le basalte ne semble			
	pas franc.			
344.7-427.3'	SYENITE			
	La limite entre cette unité et la précédente est définie par l'appari-			
	tion des premiers Fd K. La roche est de couleur rosée à grains gros-			
	siers. Fd K ou plagioclases altérés (55%). Cristaux xénomorphes, les			
	clivages sont bien visibles. Tailles jusqu'à 5 mm. Minéraux mafiques			
	40%. Il y a beaucoup de chlorite et peut-être un peu de biotite.			
	Plagioclases: 5%			
	A partir de 336.5' il y a à l'occasion des fragments (?) de basalte			
	à l'intérieur de l'intrusif. Ils peuvent être très gros. Il y en a			
	un qui occupe la carotte entre 346.2' et 354.8' (8.6'). Par contre,			
	il y en a de quelques pouces.			
	A 306', il y a apparition de très peu de quartz (Syénite quartzifère).			

JOURNAL DE SONDAGES AU DIAMANT

TERRAIN: Option Nord-Abitibi **TROU No.:** N.A.-82-1 **PAGE:** 4

DISTANCE	DESCRIPTION	ÉCHAN.	DE	A
	A 384', la syénite est de type "alkali syénite".			
	Changement graduel d'une syénite vers une monzonite.			
427.3-506.1'	MONZONITE:			
	Granulométrie grossière.			
	Fd K: 20%			
	Plagioclases: 40% cristaux automorphes. Taille: 3 mm.			
	Minéraux mafiques: 40% possiblement des amphiboles chloritisées.			
	Les plagioclases sont légèrement épidotisés.			
	A 441': Cp dans des veinules de calcite.			
	Veinules d'épidote et quartz.			
	469.2-470.4': Zone chloritisée et silicifiée. Contient des veinules			
	de calcite. Minéralisation (traces) en Cp.			
506.1-507.3'	DYKE de diabase de couleur gris verdâtre.			
	Granulométrie fine. Contact supérieur: 030°/A.C.			
	Contact inférieur: 025°/A.C.			
507.3-578.9'	MONZONITE			
	Relativement fraîche.			

JOURNAL DE SONDAGES AU DIAMANT

TERRAIN: Option Nord-Abitibi **TROU No.:** N.A.-82-1 **PAGE:** 5

DISTANCE	DESCRIPTION	ÉCHAN.	DE	A							
	Texture porphyrique (gros feldspaths dans une matrice plus fine).										
	La majorité des plagioclases sont automorphes. A certains endroits,										
	ils sont très épidotisés et ailleurs ils peuvent avoir une teinte										
	rosée (saumon). Ils ressemblent à des Fd K. Les plagioclases "saumon"										
	forment de petites unités de 0.5' à 1'. Les minéraux mafiques (amphi-										
	boles) sont très peu chloritisés. Il y a un peu de biotite. On note										
	des variations locales dans la granulométrie; Passant d'une monzonite										
	à grains grossiers à une à grains fins. Le contact est souvent net.										
	La monzonite est magnétique par endroits.										
578.9-584.2'	DYKE andésitique à phénocristaux de feldspath. Il y a environ 2% de										
	phénocristaux (2 à 3 mm). Ils sont blancs ou rosés. La matrice est										
	aphanitique grise-verdâtre. Contact supérieur: 070°/A.C.										
	Il y a 1.5' au contact avec le dyke où la monzonite est altérée. Elle										
	devient plus chloriteuse.										
584.2-610.4'	MONZONITE: Idem à précédente.										
	Quelques veinules d'épidote.										
610.4-612'	DYKE intermédiaire (andésitique)										

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DISTANCE	DESCRIPTION	ÉCHAN.	DE	A
	Couleur gris foncé. Assez dur.			
612-763.2'	MONZONITE			
	Idem à précédente.			
	652.3-653.5': Monzonite à granulométrie fine avec des phénocristaux			
	automorphes de Fd de 3 mm.			
	692.5-717': Monzonite très fraîche.			
	Granulométrie moyenne.			
	60% Plagioclases automorphes (3 mm)			
	10% Biotite			
	20% Amphiboles			
	10% Feldspaths potassiques			
763.2-766.2'	DYKE intermédiaire (andésitique), aphanitique.			
	Couleur gris foncé, assez dur. Contact: 060°/A.C.			
766.2-774.7'	MONZONITE			
	Idem à précédente.			
774.7-775.9'	DYKE intermédiaire (andésitique) aphanitique.			

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DISTANCE	DESCRIPTION	ÉCHAN.	DE	A
	Couleur gris foncé, assez dur.			
775.9-855.5'	MONZONITE			
	Idem à précédente.			
855.5-900'	MONZONITE			
	Semblable à la précédente. Par contre, il y a des passages de monzonite			
	porphyrique à l'intérieur de la monzonite équigranulaire à grains gros-			
	siers. Il y a également des passages de monzonite équigranulaire à			
	grains fins. Les différents passages ont soient l'aspect de "fragments"			
	(fragments assimilés?) ou ils se produisent de façon graduel.			
900-967'	DIORITE MELANOCRATE (riche en biotite).			
	De grains fins à moyens. Au contact avec la monzonite, il y a une			
	roche vert clair à grains fins, légèrement chloritisée. La roche devient			
	plus grossière. Il y a des variations de granulométrie. Elle est			
	magnétique.			
	A 957': traces de Cp			
	QTZ $\approx$ 5%			
	Plagioclases $\approx$ 30%			

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DISTANCE	DESCRIPTION	ÉCHAN.	DE	A							
	Amphiboles ≈ 30%										
	Biotite ≈ 30%										
967'	FIN DU TROU.										