GM 51083

GEOLOGICAL REPORT, MACLEOD LAKE PROPERTY (NEW CLAIM BLOCK)

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GEOLOGICAL REPORT

ON THE

MACLEOD LAKE PROPERTY

(NEW CLAIM BLOCK)

1:5 000

FOR

WINDY MOUNTAIN EXPLORATIONS LTD.

David Pilkey
Norwin Geological Ltd.
December, 1990

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1. SUMMARY

The Windy Mountain Explorations Ltd. property consists of an original 54 claims surrounding surface showings of silica enriched quartzo-feldspathic biotite gneiss with chalcopyrite and molybdenite mineralization. Diamond drilling programmes to September, 1990 in this area have outlined a mineral inventory tonnage for the Main Zone of 37,500,000 tonnes with an average grade of 0.44% copper, 0.05% Mo, 0.04 grams/t gold and 3.68 grams/t silver.

Areas surrounding the main block were staked from November, 1989 to August, 1990 with a total of 209 additional claims acquired.

A programme of geological line mapping was initiated by Norwin Geological Ltd. on behalf of Windy Mountain Explorations Ltd. The programme covered approximately 60% of the 209 claims with minimal additional mapping slightly west of the claim blocks. The results of the geological mapping programme are presented in the following report.

The geology of the area tends to be dominated by two (2) main lithologies including a suite of quartzo-feldspathic biotite gneisses to migmatite in the northwest and granodioritic fels in the southeast. Small bands of amphibolite exist in the western and northern parts of the map area. Granitoid and pegmatite units exist within the gneissic suite of rocks. Pegmatites are generally conformable but locally are present as cross-cutting features. A northerly trending diabase dyke is present in the eastern map sheet.

The contact between the gneisses and granodiorite fels is traceable across the entire map area although not directly observed in outcrop. Two (2) major directional changes in the contact are interpreted through geological mapping and observations of the airborne total field magnetic map (Podolsky, 1990). These changes may be caused by structural controls or erosional levels along a shallow dipping granodioritic fels contact.

A series of mineralized gneissic boulders observed during the fall of 1989 where traced to their source through mapping and limited ground geophysics (beep-mat). A strong zone of chalcopyrite with molybdenite, bornite, pyrite and pyrrhotite was found on the east end of what is now referred to as Richard Point.

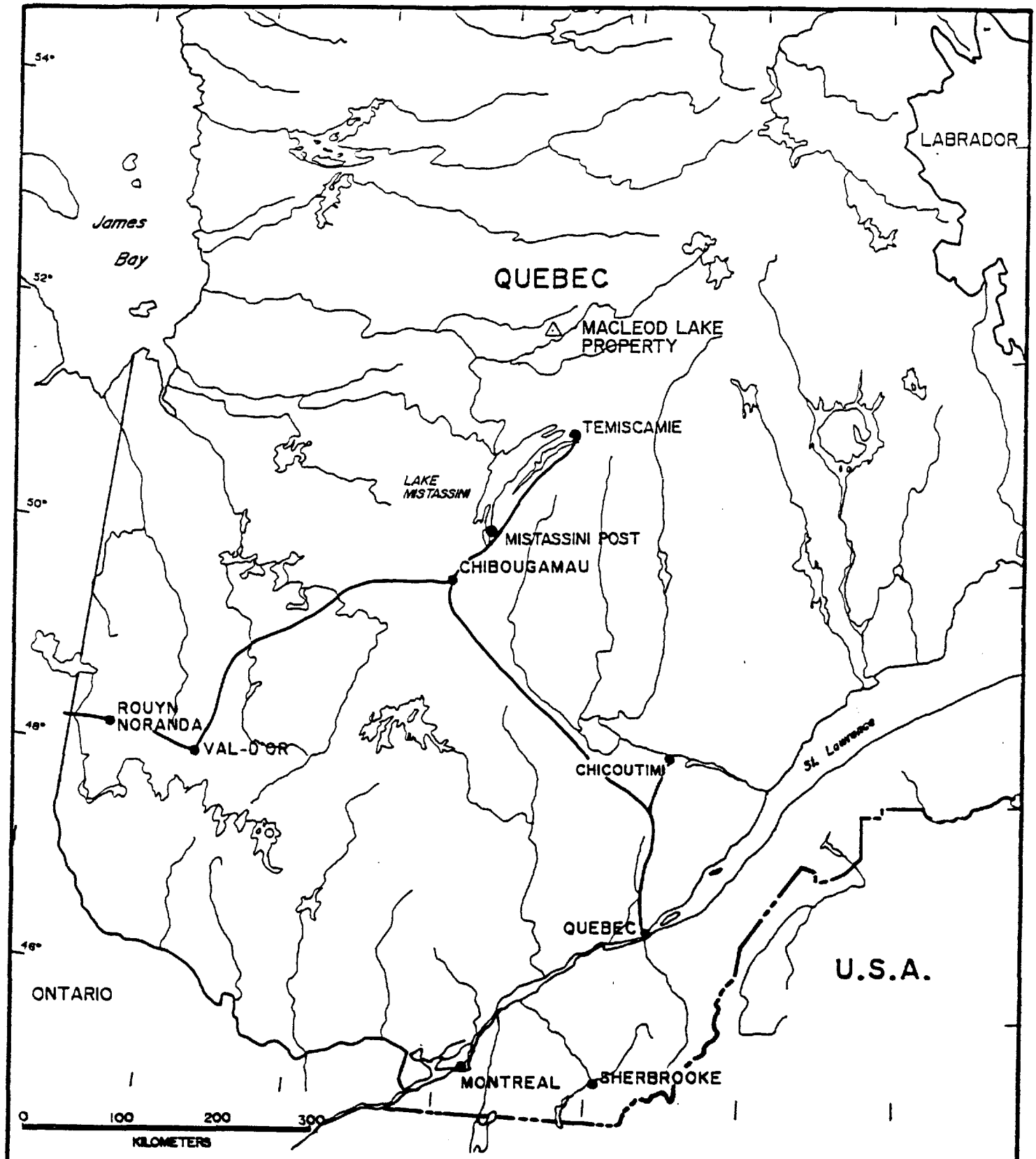
Local showings of chalcopyrite and molybdenite are observed in the gneisses and granodioritic fels along the contact. Values of up to 2.65% Cu (190709) occur in outcrop along the contact within a zone of chalcopyrite mineralization south of the baseline between L38+00E and L42+00E.

Assessment of the contact is difficult due to heavy accumulations of till and sand but it appears that its entire length has potential for mineralization.

The use of geophysics and detailed prospecting along the contact may be useful in determining the presence of sulphide rich zones. A zone of strongly mineralized granodiorite fels is described by (McAuley, 1990) from a showing north of Richard Point. The zone contains up to 15% chalcopyrite, 7% bornite and trace molybdenite and suggests that copper mineralization of ore grade can also occur within the granodioritic fels rather than only in the gneissic suite of rocks as previously observed.

2. INTRODUCTION

Windy Mountain Explorations' Macleod Lake property is located in the Lac Autric area, north-central Quebec (NTS 33A/3) approximately 100 km north of Lake Mistassini, Quebec (Figure 1). The property consists of the original 54 claims covering a series of chalcopyrite showings with an additional 209 claims staked around the perimeter of the original block to the north, south and east. The property is situated at 52° 10'N latitude and 73°W longitude. Diamond drilling along the trend of the original mineralized occurrences has delineated a mineral inventory of 37,500,000 tonnes with an average grade of 0.44% copper, 0.05% Mo, 0.04 grams/t gold and 3.68 grams/t silver. Norwin Geological



PROPERTY LOCATION MAP

WINDY MOUNTAIN EXPLORATIONS LTD.

MACLEOD LAKE PROPERTY

DECEMBER, 1990

Ltd. was requested by Windy Mountain Explorations Ltd. to carry out a geological mapping survey at a scale of 1:5 000 along cut lines in portions of the new 209 claims. The programme was completed between June and October, 1990. Previous geological surveys include mapping of the original 54 claims during the summer of 1989 (Brack, 1989) with a small portion of the property, adjacent to zones of copper mineralization mapped at 1:1 000 (Prior, 1989). Results of the recent mapping programme at 1:5 000 scale form the basis of this report.

3. PROPERTY DESCRIPTION

3.1 CLAIM DESCRIPTION

The Macleod Lake property of Windy Mountain Explorations Ltd. consists of 263 claims as of August, 1990 which includes the original 54 claims staked by E. Canova and W. Brack of Montreal (Figure 2). The claims are listed below in Table 1.

The entire group of 263 claims is contained within Windy Mountain Explorations Ltd., Licence of Exploration PE-881. Licence PE-881 is one of three (3) licences held by Windy Mountain Explorations Ltd. totalling 1,065 square kilometres (Figure 3).

Table 1

Claims numbers for new 209 claims

Claim No.	Total	Location (with respect to original claim block)
5046359 - 5046404	48	North Sheet
5046407 - 5046517	111	South Sheet
5052101 - 5052150	50	East Sheet
TOTAL	209	

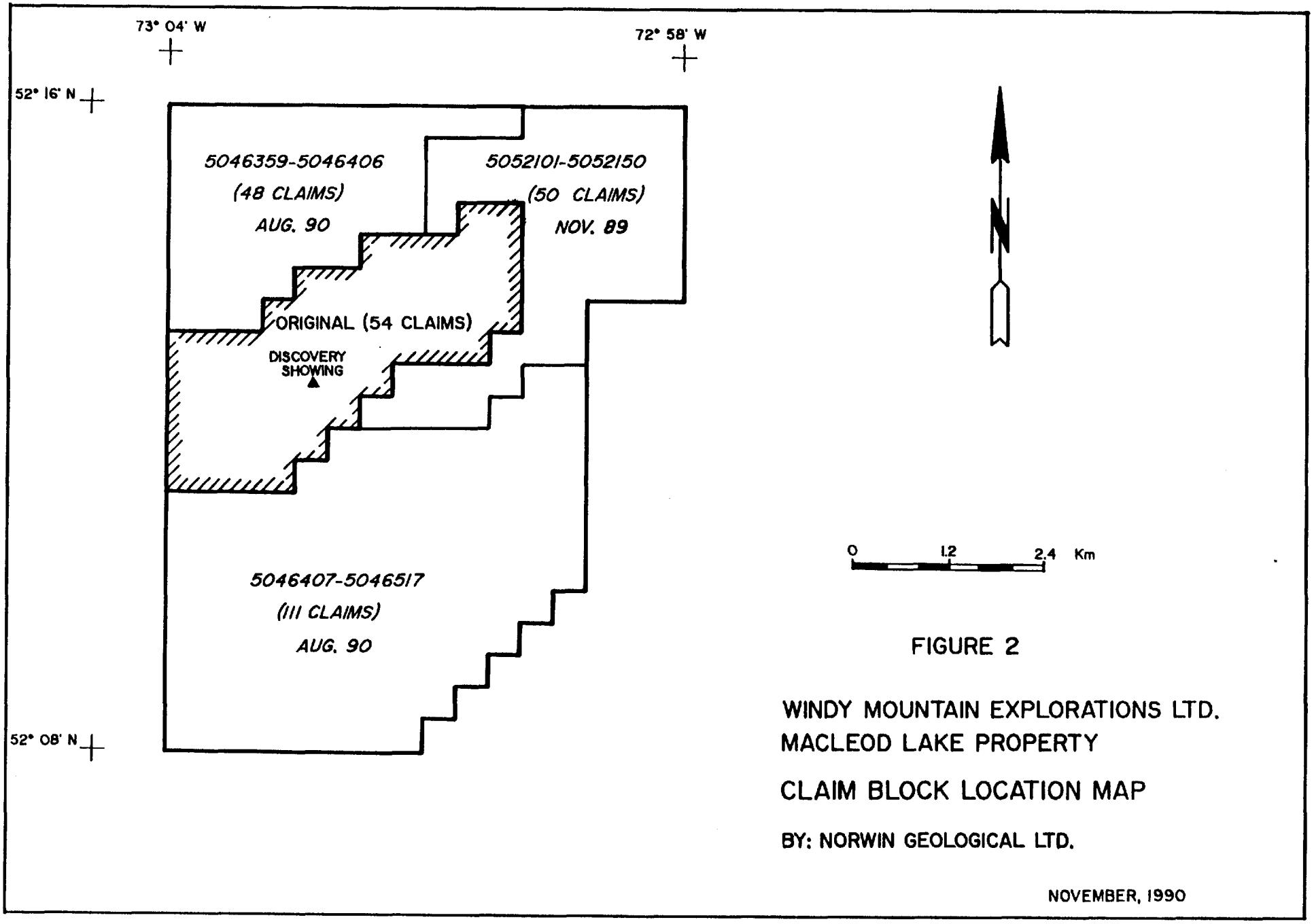


FIGURE 2

WINDY MOUNTAIN EXPLORATIONS LTD.
MACLEOD LAKE PROPERTY

CLAIM BLOCK LOCATION MAP

BY: NORWIN GEOLOGICAL LTD.

NOVEMBER, 1990

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3.2 LOCATION AND ACCESS

The property is located at 52° 10'N latitude, 73°W longitude, approximately 200 km north-northeast of Baie du Poste, Quebec on the south end of Lake Mistassini (Figure 1).

The property is accessed by air from the Waasheshkun Airways Reg'd Service base at Baie du Poste or alternatively by plane or helicopter from bases in Chibougamau, Quebec.

Macleod Lake is centered within the boundary of the original 54 claims and provides access to either Beaver or Otter aircraft. The remaining 209 claims can be accessed by canoe through smaller lakes and tributaries within the water system containing Macleod Lake.

3.3 TOPOGRAPHY AND VEGETATION

The area is generally flat with minor ridges and depressions controlled by bedrock geology and surficial glacial deposits.

The property is beyond the limit of commercial timber and for the most part the forest cover is small jack-pine and spruce.

3.4 SERVICES

There are no services or infrastructures in the area with the closest community being at Baie du Poste approximately 200 km to the south. The closest road to the property is at the northeast end of Lake Albanel at the Temiscamie River. This is approximately 120 km south of the property.

4. PREVIOUS WORK

No work was reported on the property before the fall of 1988 and all work within the general area was of a reconnaissance nature.

The original showing was discovered by E. Canova during the course of a regional helicopter-supported exploration programme aimed at evaluating the uranium potential of the area. The base metal potential of the area was not of interest so no further work was completed.

The general area is covered by an airborne magnetic survey with maps available at scales of 1:250 000 and 1:63 360 through the Ministere de l'Energie et des Ressources, Quebec. Specifically the region is covered by map 7115G, Lac Rossignol (NTS 33A) and maps 2007G, 2008G, 2019G and 2020G covering NTS areas 33A/3, 33A/6, 33A/7 and 33A/2 respectively.

Geological mapping of a broad reconnaissance nature was completed by Eade (1966), Chown (1971) and Hocq (1976, 1985) within the general area of the property but do not specifically cover the area of the subject property. Avramtchev (1983) has prepared interpretive geological maps from this data.

During a period of approximately two (2) years, from August, 1988 to the present a series of staking, line-cutting, geophysical, geochemical, geological and diamond drilling programmes were conducted over the initial 54 claim block and in lesser amounts around the periphery of this block. The work was initiated by Norwin Geological Ltd. on behalf of Windy Mountain Explorations Ltd. A brief summary of this work is listed below.

<u>1988:</u>

- Staking of original 54 claims over showing of copper mineralization by E. Canova and W. Brack.
- Line-cutting over entire area of 54 claims.
- Limited ground geophysics including VLF, magnetics and dipole-dipole induced polarization survey (Grant, 1989).
- Limited mapping and sampling of known copper mineralization showings (Winter, 1989).

1989:

- Geological mapping and prospecting over entire 54 claims at a scale of 1:5 000 (Brack, 1989).
- Geochemical B-horizon soil survey (Pilkey, 1989).
- Detailed mapping at 1:1 000 of area around main Cu and Mo showing (Prior, 1989).
- Phase 1 diamond drilling programme (Pilkey, 1990)
- Minor prospecting around periphery of original claims with subsequent discovery of the Richard Point mineralized boulder train.
- Gradient induced polarization survey over portions of claim block (Winter, 1990).
- Staking of 50 additional claims to east of main block.
- Acquisition of initial three (3) Licences of Exploration totalling 835 sq. kilometres.
- Airphoto lineament study (Brack, 1990).

1990:

- Magnetometer and VLF survey on original grid (Norwin Geological Ltd., 1990).
- Line-cutting on eastern claim block and south of main block.
- Phase 2 diamond drilling programme (Prior, 1990).
- Minor dipole-dipole induced polarization surveys were completed along 21.7 line kilometres within the Windy Mountain Explorations Ltd. claim group (Gaucher and Tshimbalanga, 1990).
- Airborne helicopter geophysical survey over entire area of Licences of Exploration (Podolsky, 1990).
- Geological mapping of the Main Zone area at a scale of 1:2 500 (McAuley, 1990).
- Limited total field magnetometer and VLF adjacent to pyrrhotite rich portions of Richard Point.

5. GEOLOGY

5.1 REGIONAL GEOLOGY

A comprehensive regional geology for the Macleod Lake property is described by S. Winter (1990, p.12-p.14) and is presented verbatim below.

"All of the rocks in the area are considered to be of Precambrian age and lie within the Superior province of the Canadian Shield. Avramtchev (1983) compiled the results of all of the regional geological work that has been done in the area. This work was of a broad reconnaissance nature and has been presented in reports by Eade (1966), Chown (1971) and Hocq (1976 and 1985). The regional geology is shown in "... figure 4 and figure 5 (this report ..." after Avramtchev (1983) with modifications by the writer based on the airborne magnetic patterns, broad reconnaissance helicopter work by the writer in 1982 and work reported by Fougues and Schumacher (1979).

All of the rock units in the area have been metamorphosed to amphibolite grade, probably during multi-staged deformation. In the western part of the area, the general structural trend is east-west and is considered to represent Archean basement rocks with an age greater than 2400 million years. (Fougues and Schumacher, 1979). In the north-central part of the region the structural and magnetic trends are northwesterly and this area was considered by Fougues and Schumacher (ibid) to be a sedimentary basin which had been filled with metasediments and metavolcanics and then metamorphosed. This trend truncates the east-west trend and these units are considered to lie disconformably on the Archean units to the west. This basin, referred to as the Laguiche basin was deformed by the Belmorian orogeny (Fougues and Schumacher, ibid). The age of the sediments and the deformation would possibly be Aphebian based on this interpretation.

The southern part of the area which contains the three (3) Licences of Exploration is underlain by units with an east-

northeast trend which appears to be superimposed on the northwest trend of the Laguiche units to the north. The east-northeast trend may be Aphebian in age with the structural features being developed during an early Hudsonian deformation since it overprints the Belmorian trend and in turn is overlain by the Otish sediments to the east. This east-northeast trend is approximately parallel to the Grenville front and there may have been some later activation during the Grenville orogeny.

The Mistassini dykes which strike northwesterly and crosscut the gneisses underlying the area are bracketed by dates of 1926 and 1960 Ma (Wanless, 1972). The Otish dyke swarm, which cuts the Otish Group sediments, has been dated, although not satisfactorily, at 1465 Ma (Wanless, ibid). Similar dates of 1615 and 1635 Ma (Megrouroche, 1981) were obtained in the Chibougamau region for similar rocks. The maximum phase of the Hudsonian deformation is placed at approximately 1735 Ma (Douglas, 1970).

At the present time, due to the lack of absolute age determinations, most broad regional maps show poorly defined features to which an Archean age has been assigned (Avramtchev, 1983).

The main geologic feature underlying the three (3) Licences of Exploration is a major regional synformal structure opening and plunging to the northeast as shown in Figure 4. The central core of the syncline consists of mafic metavolcanics which increase in volume to the east and which are overlain by felsic metavolcanics east of the Licences of Exploration. Underlying the metavolcanics is an area of granite to granodiorite containing biotite and/or hornblende and zones of migmatite. Muscovite pegmatites have intruded the felsic intrusives. The two (2) main units underlying the granite to granodiorite unit are a hornblende to biotite gneiss and a hornblende to biotite gneiss locally containing garnets and cordierite. Wide-scale reconnaissance work by the writer in 1982 (Winter, 1982) indicated that there were also areas of felsic to intermediate and mafic metavolcanics enclosed within areas mapped

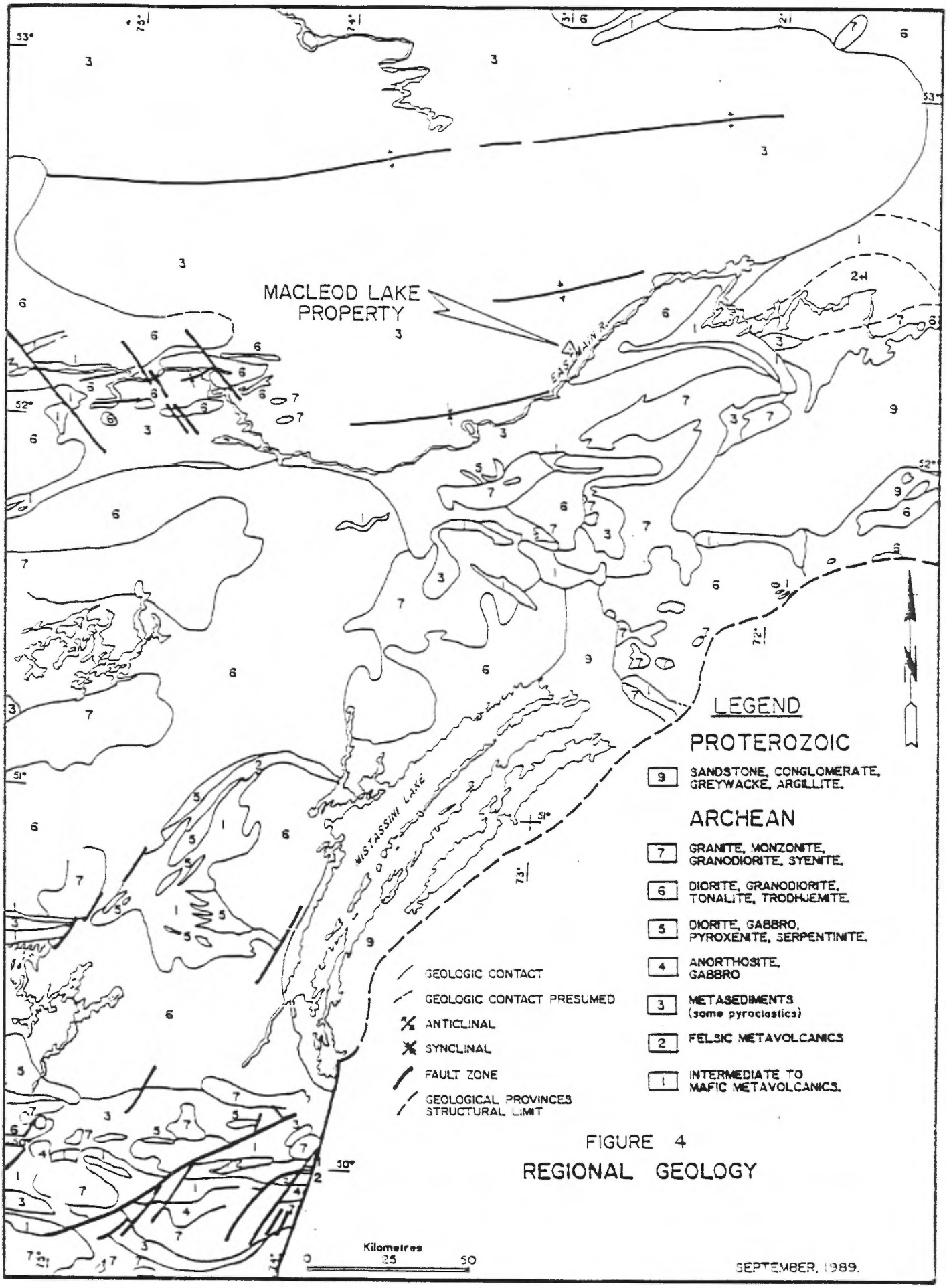

FIGURE 4
REGIONAL GEOLOGY

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as gneisses.

The units have been folded about east-northeast trending fold axes which form a series of parallel antiforms and synforms which generally plunge to the east-northeast.

A number of topographic lineaments trend east-northeast and southeast-northwest. These are interpreted to represent bedrock structures.

Diabase dykes trend northwesterly and crosscut all gneiss units. In turn, late Abitibi diabase dykes trend northeasterly through the area, cut all rock types, and are dated at approximately 1100 Ma."

5.2 PROPERTY GEOLOGY

Previous geological investigations of the property are restricted to a claim block that consists of 54 contiguous claims. These claims surround the initial chalcopyrite discovery and subsequent chalcopyrite-molybdenite showings that comprise the Main Zone.

The initial 54 claims were mapped at a scale of 1:5 000 (Brack 1989) with the property being divided into a mixture of quartzo-feldspathic biotite gneiss, migmatitic gneisses and quartzo-feldspathic hornblende gneisses. The southern portion of the claim block is dominated by a unit referred to as hornblende granite gneiss with interpreted, gradational contacts between the biotite gneisses, hornblende gneisses and hornblende granite gneiss (Brack, ibid). Pegmatites occur throughout the property as concordant layers and locally as crosscutting features.

Similar lithologies are observed by (Prior, 1989) in a 1:1 000 mapping of the area hosting the main chalcopyrite-molybdenite occurrences. Prior's unit of granodioritic fels corresponds approximately with the hornblende granite gneisses (Brack, 1989) and is described as such: "This unit consists of subequigranular, medium-grained (1-4 mm) lineated, igneous-appearing rock...".

The gneisses all tend to be moderate to strongly

foliated with foliation directions varying from 050° to 080° and dip from 15°S to 65°N with moderate to steep southerly dips most common (Prior, ibid). Lineations in the granodioritic fels trend 045°-060° and are developed by preferred orientations of hornblende grains (Prior, ibid).

A series of chalcopyrite-molybdenite showings are present just north of the contact between the gneisses and granodioritic fels. The showings occur within very siliceous portions of quartzo-feldspathic biotite gneisses. Mineralization consists of disseminated chalcopyrite, molybdenite with minor pyrite, pyrrhotite and bornite. Pegmatites in the Main Zone appear to exhibit a spatial relationship to the zones of mineralized, siliceous biotite gneisses.

6. GEOLOGICAL PROGRAMME (1990)

In June a programme of geological mapping at a scale of 1:5 000 was initiated in the area surrounding the original block of 54 claims (Figure 6). A total of 225 line kilometres were mapped using a line spacing of 100 metres with the results presented in three (3) maps, the east, north and south sheets (see back pocket).

6.1 LITHOLOGIES

Biotite Gneiss to Migmatite (1)

Rocks from this suite exhibit gradational contacts and are separated in the field on the basis of percentage of neosome present and degree of structural development. A broad classification of these different rock types is shown in Table 2 below:

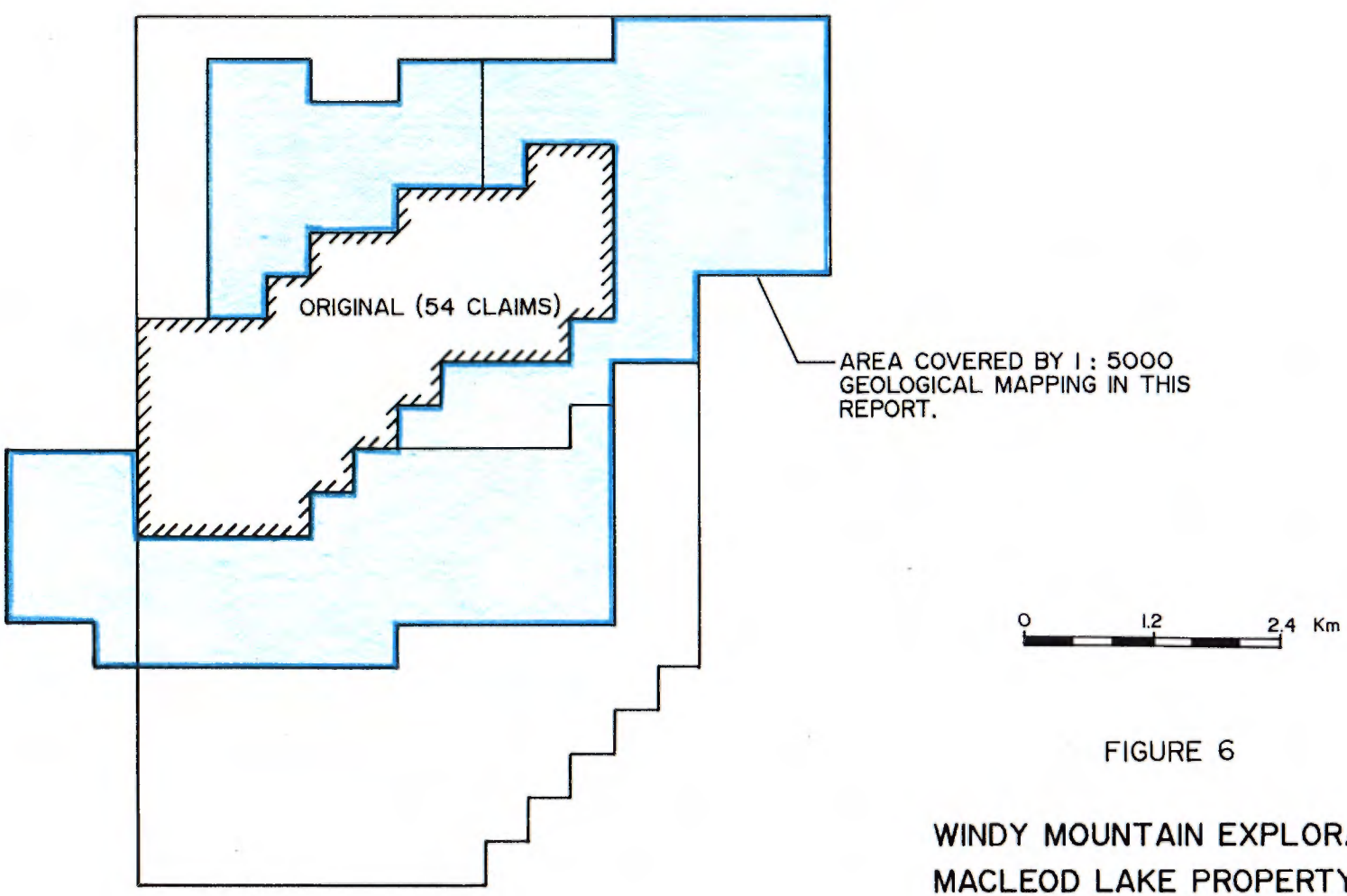

FIGURE 6

WINDY MOUNTAIN EXPLORATIONS LTD.

MACLEOD LAKE PROPERTY

AREA OF 1 : 5000 GEOLOGICAL MAPPING (1990 FIELD SEASON)

BY: NORWIN GEOLOGICAL LTD.

NOVEMBER, 1990

Table 2

Field Classification of Gneissic to Migmatitic Rock Suite

	Rock Type	Approx % of Neosome	Structure Present
1A	biotite gneiss	0 - 5%	- weak to moderately well developed foliation, weak local folding.
1C	migmatitic gneiss	5 - 25%	- moderately well developed foliation, local strong folding, local development of feldspar augen.
1D	migmatite	>25%	-common coarse blebby quartz-feldspar augen, abundant folding, strongly developed foliation.

This suite of rocks varies from medium to coarse grained, light to dark grey varying from weakly foliated to strongly foliated. The unit consists predominantly of feldspar and quartz with the dominant mafic mineral being biotite. Feldspar and quartz also form the greatest percentage of the leucocratic bands and neosome throughout the gneissic suite.

Neosomes are often very irregular lenses and contorted bands from a few centimetres to several centimetres in width. Bands are locally slightly pegmatitic in character. Garnets are commonly encountered within the neosomes as reddish brown clots to 1 cm in diameter. Large snowball garnets are locally encountered within the neosomes of several boulders.

Foliation throughout the property is variable. The suite often exhibits weak to moderate, S-type and ptygmatic folding and is most prevalent within the migmatite end member.

Portions of the gneiss contain up to 20% subhedral, fine to coarse grained hornblende with minor subhedral biotite. Hornblende gneisses vary from very weakly to moderately foliated,

locally exhibiting weak spotty chlorite alteration. Best developed hornblende gneisses have similar characteristics to amphibolite and are commonly spatially and possibly compositionally associated to the amphibolite.

Alteration with the gneissic suite consists of nil to weak chloritization consisting of fracture controlled slips to spotty blebs. The unit also locally exhibits weak fracture controlled epidotization, minor spotty hematization and local saussuritization of feldspar grains.

Amphibolite (2)

Amphibolites occur as massive to weakly foliated, locally banded rocks that vary from fine to locally coarse grained. Unit occasionally contain narrow veinlets of silica rich, quartz-feldspar. Amphibolites are subequigranular in character and vary from weakly magnetic to non-magnetic.

The unit varies in colour from dark green to medium green consisting predominantly of hornblende with occasional subordinate actinolite. Weathered surfaces commonly are rusty red, possibly reflecting iron staining.

Lighter coloured sections of the amphibolite are represented by increases in amounts of quartz and feldspar with the rocks approaching hornblende gneiss in character.

Alteration consists of weak spotty chlorite with local epidote and weak fracture controlled calcite.

Quartzo-feldspathic Biotite Foliate (3)

Quartzo-feldspathic biotite foliate units are weakly to locally very weakly foliated consisting of fine to medium grained feldspar and quartz. The mafic minerals consist of up to 40% combined biotite and hornblende with biotite most predominant comprising up to 80% of mafic present. Locally the foliate contains equal proportions of hornblende and biotite. The unit tends to be subequigranular in character and is non-magnetic.

Foliate units tend to be light grey in colour and rarely contain narrow bands of granitoid quartz and feldspar. Contacts between the foliate and quartzo-feldspathic biotite gneisses tend to be gradational.

Alteration within the foliate consists of nil to very weak chloritization of the amphiboles with minor fracture controlled to spotty epidotization and traces calcite veinlets.

Granodioritic Fels (4)

Granodioritic fels are medium to coarse grained, subequigranular rocks that are typically weakly lineated to locally moderately foliated. The unit consists of feldspar, (probably both potassium feldspar and plagioclase feldspar), quartz and up to 15% subhedral hornblende. Minor biotite is also encountered.

Lineation in the unit is defined by a preferred orientation of the hornblende that averages from 050°-070° in outcrop.

The unit weathers white to light brown with fresh granodioritic fels varying from light grey to pinkish white. Elongate, elliptical xenoliths of the (hornblende) gneisses comprise up to 2% of the unit and are often several centimetres in length. Xenoliths often tend to be hornblende rich with up to 70% subhedral hornblende grains oriented parallel to the direction of stretching within the xenoliths.

The unit tends to be non-magnetic except for local situations where it varies from very weak to strongly magnetic. Alteration within the granodioritic fels consists of nil-weak chloritization of the hornblende grains with nil to strong fracture controlled hematization and epidotization. Chloritization is strongly pervasive in sheared portions of the granodioritic fels producing narrow lenses and bands of chlorite to chlorite-biotite schist.

Schist (5)

Limited amounts of chlorite-biotite and chlorite schist are present in the area covered by this report.

Chloritic schists are medium grained, dark green to black in colour exhibiting strong to intense foliation development. Biotite becomes a dominant mafic phase within portions of the schist, with mafic minerals comprising 70-80% of the unit. The remainder of the unit consists of finer grained quartz and feldspar locally occurring as coarser grained bands and lenses. The unit is non-magnetic in character.

Foliation in the unit averages 140°-165° within the schists developed in either the gneisses or granodioritic fels. The unit also typically exhibits weak to moderate small scale folding with local chevron folding being very well developed.

Biotite Granite (6)

Biotite granite unit is medium to coarse grained, pink to orange in colour consisting of up to 90% felsic minerals including quartz and feldspar and 5-7% biotite flakes, with local coarse subhedral muscovite.

Unit is massive to very weakly foliated, locally slightly porphyritic with feldspar phenocrysts comprising up to 5% of the granite.

Alteration consists of variable weak chloritization of the biotite as well as weak fracture controlled hematization. Minor fracture controlled epidote is locally observed. Biotite granite is non-magnetic.

Volcanic Breccia (7)

This unit is characterized by a matrix supported breccia zone that weathers buff to tan containing 10-30% subangular to subrounded quartzo-feldspathic (granitoid) clasts. Clast vary in size from a few centimetres to several centimetres in diameter.

Locally clasts appear weakly elongate with a preferred orientation of 165°. Clasts tend to be coarse grained and light grey to white in colour.

The matrix of the unit varies from mafic to intermediate in composition and is a fine grained, grey to green mixture of quartz, feldspar and mafic minerals. The unit also contains 2-3% subrounded, glassy quartz eyes.

Pegmatite and Granitoid Rocks (8)

Granitoid rocks vary from medium to coarse grained consisting of feldspar and quartz. The unit varies in colour from light grey to pink, generally massive to locally weakly foliated and contains minor local biotite as the mafic phase.

Granitoid rocks are common as lenses and blebs within segments of migmatitic biotite gneiss. Granitoid bands are locally garnetiferous in character containing 3-5% small reddish brown garnets and garnet clusters up to 2 cm in diameter.

Pegmatites are very coarse grained with a similar composition to the granitoid rocks and vary in colour from white to pink. Feldspar and quartz are the dominant minerals with very local areas containing traces of subhedral biotite.

Pegmatites are also locally garnetiferous in character. Both granitoid rock and pegmatites are non-magnetic.

Minor narrow aplitic veinlets are found, usually within the granodiorite fels. Aplite dykes are fine to medium grained, with a granular to sugary texture.

Diabase (9)

Diabasic rocks are subequigranular, medium to coarse grained, dark green to grey with a weak to moderately developed diabasic texture.

The unit consists of subhedral hornblende and subhedral to anhedral plagioclase. The unit varies from weakly to strongly magnetic.

6.2 LITHOLOGICAL RELATIONSHIPS

The dominant lithological units contained in the area of this report are a suite of rocks grading from quartzo-feldspathic biotite gneiss to migmatite and a unit of granodiorite fels.

Contacts between the gneissic suite tend to be gradational in character and are separated on the basis of structural element present such as gneissosity, folding and the presence of feldspar augen. The distinctions between gneisses and migmatites is also based on the amount of neosome present in the outcrop.

The contact between the gneissic rocks and the granodioritic fels can be traced through the east and south geology sheets where its general trend varies from approximately 050°-060°. The contact exhibits two (2) major shifts to the north where the contact trend changes to 320°-330° with the first change occurring in the south sheet slightly east of Richard Point and the second occurring on the east sheet around L44+00E. Both are very abrupt changes and may be partially developed by a shallow dipping contact, folding and possible faulting in the region. The contact tends to be very poorly exposed throughout the entire area. Diamond drilling (Prior, 1990) and outcrop observations (McAuley, 1990) within the vicinity of the Main Zone suggest the contact between these two (2) phases varies from sharp to very weakly gradational. The contact is highlighted on a total field magnetic map (Podolsky, 1990) by a series of broad magnetic highs comprising a very busy area bordered by a band of low magnetic response up to 700 metres wide.

Two (2) main zones of amphibolite are present in the area. The first occurs as a large, possibly folded band slightly west of Richard Point extending from L14+00W to L21+00W. The best outcrops occur south of tie line 16+00S around L18+00W to L21+00W where the zone trends approximately 040°. The unit then swings north at 330° along line 15+00W on the north side of the tie line. Three (3) outcrops of volcanic breccia present in the area may be related to this amphibolite unit.

The second unit of amphibolite occurs in the north sheet between 4+00E and 16+00E, north of 19+00N. The unit is locally well banded with occasional weakly developed pillows still visible. Glacial overburden masks the extent of this amphibolite unit. Minor amounts of amphibolite are present in the remainder of the property and are generally found within the northern half of the eastern most geology sheet.

Rocks of possible ultramafic composition are present in an outcrop west of Richard Point. The outcrop occurs on a small island and is mapped as pyroxenite.

Minor amounts of chlorite schist and chlorite-biotite schist are present in the map area. The unit of chlorite schist occurs within the granodioritic fels (at 15+50E, 27+25S) and appears to represent a shear zone trending 145°-150°. A small lens of strongly-folded chlorite-biotite schist is present along L19+00E around 24+25S. The unit contains numerous chevron folds. An outcrop of chlorite-biotite schist is present along Richard Point with numerous subangular boulders of the same rock type found on the islands within Rooster Lake. This unit is very similar to the biotite-chlorite schist encountered in diamond drill holes of the Main Zone (Pilkey, 1989; Prior, 1990). The trend of this schistose unit is 145° which is subparallel to the trend of the gneiss - granodiorite fels contact through that portion of the map area.

Biotite granites are mapped in the northern portion of the eastern map sheet. The composition of the granites is similar to the biotite granites described by Hocq (1985) from the Massif du Lac Cadieux and may represent a smaller intrusion unit of similar composition and age.

A diabase dyke trending 340°-360° is present in the eastern half of the property and was traced over a strike length of approximately 2.5 kilometres. The contacts are well defined in outcrops of quartzo-feldspathic biotite gneiss crosscut by the diabase dyke and suggests an average width of between 45-50 metres.

6.3 STRUCTURE

The dominant structural feature within the region is a major synformal structure known as the Synform de Lac Lavalette. The synform axis occurs approximately 1.5 kilometres south of Richard Point and has an east northeasterly trend.

Attitudes in the gneissic rock along Richard Point vary from 050°-090° with dips varying from 10° southeast to 10° northwest. The predominant dip direction is to the southeast however, reflecting the major synformal structure to the south.

Small scale synformal and antiformal structures subparallel to the main structure may occur throughout the map area and are illustrated by a change in the dominant dip direction from northerly to southerly. Folding is also present on an outcrop scale with migmatitic gneisses and migmatites exhibiting ptygmatic, S-shaped and Z-shaped folding. Fold axis attitudes vary from northwesterly to southeasterly with shallow plunges. Chevron folding was observed in portions of the chlorite schist and chlorite-biotite schists.

Narrow shear zones are present within local outcroppings of granodiorite fels southeast of Richard Point. These shears are characterized by moderately chloritization with minor epidote and hematite alteration and attitudes of 140°-150°. Brecciation of the granodiorite fels is associated with the chloritic shears located at grid location L15+40E/27+15S.

Preferred orientations of hornblende grains within the granodioritic fels produced a moderately well developed lineation within the unit. The lineation varies from 040°-070° but is generally consistent between 055°-065°.

Feldspar augen development is present in portions of the migmatitic quartzo-feldspathic gneisses and migmatites. Augen are up to several centimetres in diameter, locally occurring in aligned clusters producing a boudinage texture.

6.4 ALTERATION

Localized alteration occurs within all of the main rock types in the map area. Gneissic rocks tend to contain local, very weak to weak fracture controlled and spotty epidotization, chloritization and hematization. Amphibolites exhibit moderate silica enrichment associated with the increases in pyrrhotite and pyrite mineralization west of Richard Point and north of Macleod Lake. Minor spotty calcite and chlorite alteration is also present within the amphibolites.

A broad zone of alteration was mapped within the granodiorite unit extending east from Richard Point from L0+00 to L33+00E, south from tie-line 16+00S. Alteration within the granodiorite fels consist of weak to moderate fracture controlled to locally pervasive hematization, weak fracture controlled epidotization and spotty to foliation controlled chloritization.

6.5 ECONOMIC GEOLOGY

Two (2) overburden bedrock pits were blasted in an area of chalcopyrite mineralization, south of tie-line 16+00S along the east end of Richard Point.

The dominant rock type hosting the sulphide mineralization is migmatitic quartzo-feldspathic biotite gneiss. The gneisses are medium grained, light to medium grey rocks that are moderately to strongly banded and non-magnetic in character.

Mineralization consists of coarse blebby to local fracture controlled chalcopyrite stringers with blebs to 1 cm in diameter. The unit contains from 5-15% chalcopyrite in areas of strongest mineralization and from 1-3% in lesser mineralized portions of the gneisses. The mineralization appears in a flat-lying band subparallel to the gneissosity with an attitude of 050°/10°NW. Minor molybdenite, pyrite, bornite and pyrrhotite are also encountered in the zone.

Strong jointing is present within the pits at 140°-150°/70°-80°NE. The mineralized, migmatitic gneisses are located

approximately 250 metres grid west of the gneiss-granodiorite fels contact. Smaller, poorly exposed outcrops of migmatitic gneiss with minor chalcopyrite are commonly encountered around the tip of Richard Point.

Four (4) overburden-bedrock pits were blasted into a unit of medium to coarse grained amphibolite located between L14+00W and L15+00W between 13+00S and 14+50S.

The host rock consists of massive to moderately banded, dark grey to black amphibolite. The unit appears weakly to strongly siliceous in character with glassy, grey quartz lenses and locally 1-2%, up to 5 mm wide quartz eyes. Weak fracture controlled chlorite and traces of calcite are also observed in the unit. Banding in the unit varies from 120°/10°-20°NE.

Sulphide mineralization consists of disseminated blebs, bands and locally semi-massive pyrrhotite comprising up to 10% of the unit. Mineralized portions of the amphibolite are moderately magnetic in character.

A second zone of strong pyrrhotite mineralization occurs within the amphibolite unit on the north geology sheet. Pyrrhotite in this zone occurs as foliation parallel, sulphide rich bands which comprise 10% of the unit. The amphibolites also contain glassy, grey silica bands with trace amounts of molybdenite. Foliation within the unit trend 065°-070°/10°NW.

A zone of mineralized gneissic and granodioritic outcrops occur along the gneissic-granodiorite fels contact on the eastern geology sheet. The strongest concentrations of chalcopyrite appear in outcroppings of both gneisses and granodiorite fels where the contacts trend changes from east-northeast to north-northwest. Similarities between this showing and the Richard Point showing suggest that the sudden change in the attitude of the contact may have some control on the position of the chalcopyrite mineralization.

Two (2) molybdenite showings with greater than 1% molybdenite are located at grid coordinates L16+30E/5+30S and L1+70E/13+50S. Both samples occur in hornblende granodiorite fels directly adjacent to the gneiss-granodiorite fels contact.

Local, scattered showings of pyrite and pyrrhotite are present throughout the area with accumulations up to 2%.

6.6 QUATERNARY GEOLOGY

The scarcity of outcrops in the map area can be directly attributed to the amount of glacial cover with most of the map area covered by flat sand plains, eskers and moraine-like features. Boulder types tend to occur in four (4) main groups including gneisses-migmatites, granodioritic fels, granitoid-pegmatites and amphibolites.

Observation in the field suggest that the position of each boulder group closely reflects bedrock geology in the area although some transportation is probable. For this reason boulder tracing is useful in following mineralized boulders to their source.

A large, mineralized, gneissic boulder train measuring 750 metres wide and trending 030°-040° was traced over a distance of 3 kilometres southwest of Richard Point. This boulder tracing with subsequent ground geophysics was responsible for the discovery of the Richard Point chalcopyrite showing. Boulders within this train consist of biotite gneiss to migmatitic biotite gneiss, locally siliceous, containing variable amounts of chalcopyrite up to 20%. Boulders tend to be subangular to subrounded in character.

A second, less extensive zone of siliceous, gneissic boulders containing chalcopyrite and molybdenite is present just south of the Richard Point chalcopyrite showing, and may be related to the induced polarization response observed in Rooster Lake east of the Richard Point showing (Gaucher, 1990).

Two (2) boulders of hornblende granodioritic fels located at 1+40E/14+70S produced values of 2400 ppm and 1.13% molybdenum respectively and correspond to a mineralized outcrop to the northeast.

Scattered boulders of mineralized gneiss and granodioritic fels occur sporadically over the map area. A

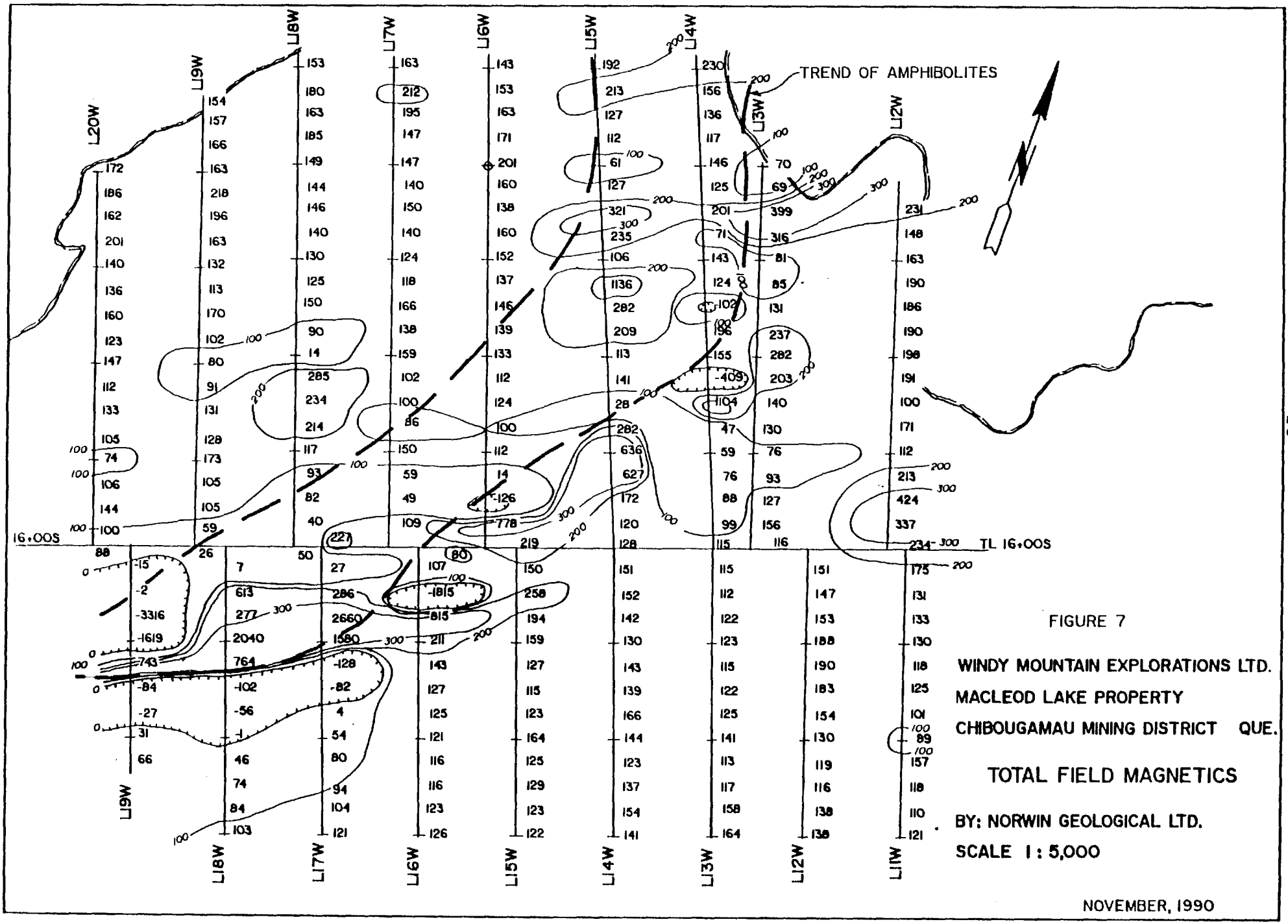

FIGURE 7

WINDY MOUNTAIN EXPLORATIONS LTD.
MACLEOD LAKE PROPERTY
CHIBOUGAMAU MINING DISTRICT QUE.

TOTAL FIELD MAGNETICS

BY: NORWIN GEOLOGICAL LTD.
SCALE 1 : 5,000

NOVEMBER, 1990

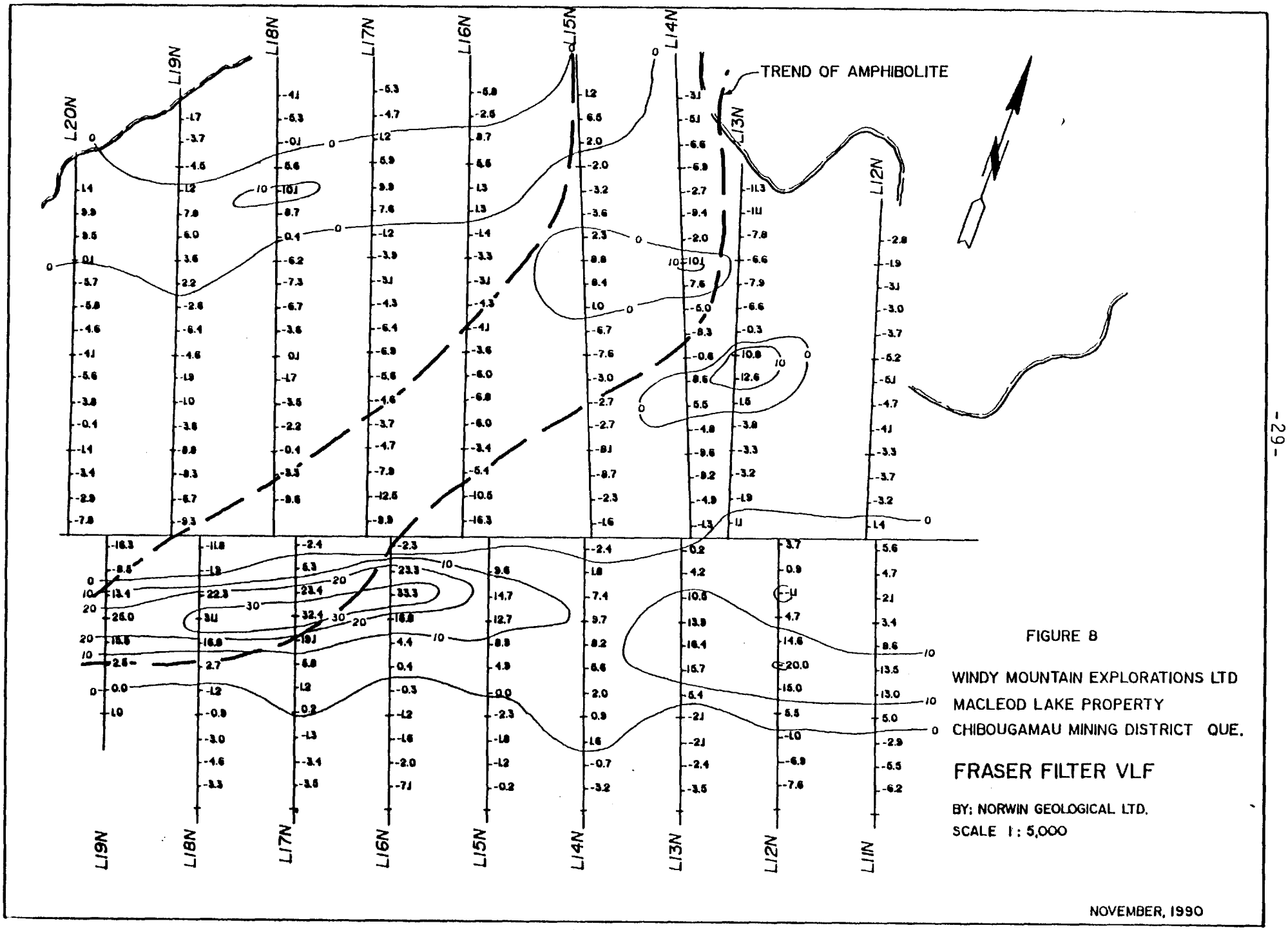

FIGURE 8

WINDY MOUNTAIN EXPLORATIONS LTD
MACLEOD LAKE PROPERTY
CHIBOUGAMAU MINING DISTRICT QUE.

FRASER FILTER VLF

BY: NORWIN GEOLOGICAL LTD.
SCALE 1 : 5,000

NOVEMBER, 1990

bedrock source for these boulders is undetermined to this point. Most returned low analytical values for gold, silver, copper and molybdenite. A boulder of siliceous, carbonatized hornblende granodioritic fels occurs at grid location 48+40E/10+35S. The boulder is weakly mineralized with rare disseminated pyrite and contains 24 ppm silver.

6.7 GEOPHYSICAL SURVEY (MAGNETOMETER + VLF)

A total field magnetometer survey was conducted along 6.75 line kilometres covering an area of known pyrrhotite mineralization within segments of amphibolite and related hornblende gneisses. The lines occur between L12+00W - L20+00W and extend from 11+00S to 19+00S. Values from the survey are plotted and contoured with the results illustrated in figure 7.

A zone of noisy magnetic response, coincident with the position of the amphibolite unit is observed.

Fraser filtered VLF values were contoured and are present in figure 8. A strong VLF response occurs slightly south of tieline 16+00S and trends subparallel to this line at 060°. The position of the VLF anomaly is approximately coincident with both an induced polarization anomaly (Gaucher, 1990) and the position of an amphibolitic unit with a similar trend. The VLF anomaly may be related to sulphide mineralization (pyrrhotite + pyrite) and magnetic in the amphibolites.

Smaller VLF anomalies along lines 15+00W - 13+00W, north of the tieline mimic change in attitude of the amphibolite along these lines.

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Norwin Geological Ltd.
December, 1990

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CERTIFICATE OF QUALIFICATION

I, David Marshall Evans Pilkey do hereby certify:

1. that I am a geologist and reside at 904 Howey Drive, Sudbury, Ontario P3B 1H4,

2. that I graduated from Laurentian University in 1984 with a Bachelor of Applied Science in Geology,

3. that I have practiced my profession continuously for the past eight seasons,

4. that my report on the Macleod Lake Property, New Claim Block is based on my personal knowledge of the geology in the area.

David Pilkey

D.M.E. Pilkey, H.B.Sc.,
Norwin Geological Ltd.
December, 1990

APPENDIX 1

ANALYTICAL PROCEDURES

ANALYTICAL PROCEDURES (utilized by Accurassay Laboratories Ltd.)

A/ Sample Preparation: (for all samples)

1) Sample is crushed in T and M jaw crusher to 1/4" size.
2) A 300 g subsample is split (the remainder forms the coarse reject material).
3) The 300 g subsample is pulverized to -150 mesh.
4) Pulp sample is matted.

B/ Analysis: (Gold by fire assay with atomic absorption finish)

1) 20 grams of matted sample is split and weighted, then mixed, fused and cupelled into dore bead.
2) Dore bead is parted in dilute nitric acid producing a gold sponge.
3) Sponge is dissolved in concentrated HCl (forming aqua regia).
4) Distilled deionized water is added to get precise volume. Solution is vortexed for A.A. stage.
5) Solutions are then aspirated into an air-acetylene flame on a varian A.A.-10 atomic absorption spectrophotometer.

Analysis: (geochemical analyses for Silver, Copper, Molybdenum

1) A 0.25 gram sub-sample is weighted from the matte. A quality control standard for each element is selected. Standards consist of mp1-a and czn-1.
2) Samples are digested in an aluminum block using an aqua regia digest with regular vortexing, then volumed up to 10 mls. using distilled deionized water. Molybdenum samples are volumed up using a solution of 1,250 mg/l Aluminum Nitrate.
3) Samples are aspirated in a varian A.A.-10 atomic absorption spectrophotometer using appropriate calibration standard. In the case of copper and silver, an air-acetylene flame is used whereas for molybdenum a nitrous oxide-acetylene flame is used.

Analysis: (Copper Assays)

1) A 2.5 gram sub-sample of the matted sample is split, and two Canmet base metal standard (mp1-a and czn-1) are selected.
2) Samples are digested using an aqua regia digestion, heated and mixed.
3) Sample is cooled, and filtered through filter paper, collecting the filtrate.
4) Filtrate is brought to 100 ml volume by adding distilled deionized water.
5) Sample is aspirated through a Varian A.A.-10 using 4 copper calibration standards and an air-acetylene flame.

Analyses: (Total Molybdenum assays)

1) A 2.5 gram sub-sample of matte is weighed with two Canmet base metal standards (mp1-a and mp-2) also weighted.
2) Samples are digested using $HCl/HNO_3/HClO_4$ digest, heated and mixed.
3) Sample is cooled and filtered, with filtrate collected.
4) Filtrate is volumed up to 100 ml using a solution of 1,250 mg/l aluminum nitrate in distilled water.
5) Sample is aspirated through a varian A.A.-10 using 4 molybdenum calibration standards and a nitrous-oxide acetylene flame.

APPENDIX 2

ROCK SAMPLE DESCRIPTIONS AND

ANALYTICAL RESULTS

Rock Samples From The 1990 Mapping And Prospecting Program,
MacLeod Lake Property, Quebec

Sample Number	Grid Loc'n (UTM Loc'n)	Au ppb	Ag ppm	Cu ppm (Cu %)	Mo ppm (Mo %)	Description
190602	1+75W 19+80S ( )	2049	100	>10000 (2.81)	7600 ()	Boulder. Migmatitic biotite gneiss with siliceous bands(0.5-2.0 cm.). Contains 3-5% cp, 1-2% mb and tr-1% py.
190603	36+27E 5+25S ( )	<5	1	20 ()	>10000 (1.47)	Outcrop grab. Mineralized migmatitic biotite gneiss at granodiorite/gneiss contact. Mineralization consists of 2-3%, locally 4-7%, mb within a 15 cm band of leucosome.
190604	48+40E 10+35S ( )	<5	24	11 ()	60 ()	Angular boulder. Intensely silicified/carbonatized granodiorite. Extremely rare, very fine grained disseminated pyrite.
190605	44+75E 12+25N ( )	5	1	5 ()	3 ()	Outcrop grab. Leucocratic diorite fels with tr-2% fine to medium grained subhedral-euhedral pyrite.
190651	11+00W 14+85S ( )	18	2	170 ()	62 ()	Outcrop grab. Silica rich gneiss (?), minor epidote, 2-3% po and minor py.
190652	7+00W 15+45S ( )	11	1	30 ()	11 ()	Outcrop grab. Chlorite schist exhibiting weak spotty calcite alteration.
190653	33+00E 10+00N ( )	43	1	98 ()	4 ()	Boulder grab. Gossenous boulder of migmatitic biotite gneiss, containing tr-1% po and tr py.
190654	29+00E 8+75N ( )	161	<0.5	57 ()	2 ()	Outcrop grab. Weakly chloritized amphibolite (mafic dyke?) with tr po and py.
190655	29+00E 8+75N ( )	8	0.8	130 ()	3 ()	Outcrop grab. Contact between amphibolite unit and biotite gneiss. Unit is siliceous in character with tr po and py.
190686	15+00W 13+25S (63290E 578565N)	14	3.0	490 ()	8 ()	Blasted bedrock. Rock consists of strongly laminated, fine to medium grained felsic material with 10-15% siliceous blebs and quartz eyes. Unit contains up to 15% po and tr-1% cp.
190687	2+75W 16+35S (63427E 578607N)	1451	53.0	>10000 (2.38)	350 ()	Blasted bedrock. Rock consists of strongly foliated, medium grained quartzo-feldspathic biotite gneiss to amphibolite. Unit contains 5-6% coarse blebby cp, tr-1% mb and 2-3% py.
190701	11+95W 20+75S ( )	182	12	2100 ()	38 ()	Boulder. Coarse grained biotite gneiss, 1-2% py in 0.5-2 mm disseminated cubes.
190702	26+75W 3+50S ( )	14	0.4	30 ()	5 ()	Outcrop grab. Migmatitic biotite gneiss, locally 2-3% platy py in a 5-10 cm biotite rich area along a leucocratic band. Outcrop foliation 030/30SE.
190703	0+95E 14+10S ( )	16	0.4	69 ()	110 ()	Outcrop grab. Sample consists of a leucocratic band containing 10% magnetite. Unit is associated with contact between gneisses and granodioritic fels.
190704	1+25E 14+00S ( )	20	0.4	13 ()	77 ()	Outcrop grab. Hornblende (biotite) granodiorite. Sample of a 4 cm fault zone of rusty biotite rich granodiorite trending 065/80SE. No sulphides.
190705	1+25E 14+00S ( )	22	<0.2	7 ()	8 ()	Outcrop grab. Same outcrop as 190704. Sample of very weakly limonite stained granodiorite with tr-1/4% py in small crystals and blebs.
190707	43+75E 4+00S ( )	272	19	6200 ()	76 ()	Outcrop grab. Weathered, altered biotite (hornblende) granodiorite. Very locally 3-5% coarse grained (to 2 mm) tarnished py in moderately to strongly limonitic granodiorite.

Rock Samples From The 1990 Mapping And Prospecting Program,
MacLeod Lake Property, Quebec

Sample Number	Grid Loc'n (UTM Loc'n)	Au ppb	Ag ppm	Cu ppm (Cu %)	Mo ppm (Mo %)	Description
190708	43+90E 3+80S ( )	577	20	7300 ()	11 ()	Outcrop grab. Migmatitic biotite (hornblende) gneiss foliated 040/75NW. Sample of gneiss with moderate limonite stain and 3-5% disseminated cp and py.
190709	43+50E 3+75S ( )	1608	24	>10000 (2.65)	17 ()	Outcrop. Biotite gneiss with 1-3% py and minor cp. Sulphides occur primarily in narrow, foliation controlled bands. Very locally 5-7% sulphides.
190710	42+50E 5+00S ( )	50	4	1700 ()	9 ()	Outcrop grab. Migmatitic biotite gneiss capped by granitoid (occassionally pegmatitic) rock. Foliation 045/60NW. Locally limonitic with 2-3% fine disseminated cp or py.
190714	17+75E 17+70S ( )	6	<0.5	5 ()	3 ()	Outcrop, wr sample. Hb granodiorite, medium - coarse grained, hb is lineated, very weak spotty hm, very weak saussurite.
190715	14+00E 12+50S ( )	<5	<0.5	2 ()	2 ()	Outcrop, wr sample. Hb granodiorite, medium-course grained, hb is lineated, very weak saussurite.
190716	56+50E 4+65S ( )	6	0.8	18 ()	2 ()	Outcrop, wr sample. Hb granodiorite, medium-coarse grained, approx 30% hb. Hb lineation direction is variable. Very weak spotty pervasive lim, very wk spotty hm and saussurite.
190717	52+50E 4+10S ( )	<5	0.6	1 ()	2 ()	Outcrop, wr sample. Hb granodiorite, medium grained, approx 25% hb, very weak spotty saussurite.
190718	34+85E 4+25S ( )	7	0.8	10 ()	48 ()	Outcrop. Leucocratic dioritic fels with a 1-2 mm wide chloritic fracture. 3-4% rusty disseminated py along fracture.
190719	35+05E 4+10S ( )	5	<0.5	10 ()	14 ()	Outcrop, wr sample. Leucocratic fels-arkose ?, fine grained, 5-10% biotite, very competent, some weathering rind and lim fracture surface included. Some stretched qz blebs in outcrop.
190720	33+20E 10+75N ( )	38	1	25 ()	8 ()	Outcrop, wr sample. Migmatite, 20-30% bi in narrow bands alternating with qz/fd (1-3mm) bands with some 3-5mm bands of neosome?. In o/c the bands vary in thickness.
190721	32+05E 11+70N ( )	8	0.6	5 ()	3 ()	Outcrop, wr sample. Bi gneiss, trace hb, weakly foliated, occasional red garnets, weak spotty hm stain, some lim fracture stain in sample.
190722	29+50E 9+00N ( )	79	<0.5	52 ()	2 ()	Outcrop, wr sample. Amphibolite dyke or large inclusion in a migmatite. Black, fine-medium grained (1-2mm), Some chloritic weathering rind and lim fracture surface in sample.
190723	29+25E 6+45N ( )	5	1	11 ()	4 ()	Outcrop, wr sample. Migmatitic bi gneiss with 10-15% neosome. Sample has med grain biotite, 1-3mm qz-feld bands and a 3-10mm discontinuous neosome band. Weak spotty lim stain.
190724	22+50W 0+50S ( )	5	<0.5	27 ()	2 ()	Outcrop, wr sample. Bi migmatite. o/c is 60-70% granitoid (occasionally peg). Sample is 40% bi gneiss and 60% granitoid. Very weak spotty and pervasive hm stain, wk spotty lim.
190725	22+45W 0+50S ( )	12	<0.5	8 ()	2 ()	Outcrop, wr sample. Granitoid from same o/c as 190724. Sample, coarse grained, 30% qz, 70% feld, 1-2% bi, pale pink - rust colour, weak spotty pervasive lim stain.
190726	21+50W 0+25S ( )	11	<0.5	20 ()	3 ()	Outcrop, wr sample. Outcrop is 80% granitoid, 20% bi gneiss. Sample of migmatite selected with similar proportions. Very wk spotty lim stain. Minor fracturecontrolled lim stain in sample.

Rock Samples From The 1990 Mapping And Prospecting Program,
MacLeod Lake Property, Quebec

Sample Number	Grid Loc'n (UTM Loc'n)	Au ppb	Ag ppm	Cu ppm (Cu %)	Mo ppm (Mo %)	Description
190727	29+80W 3+70S ( )	12	<0.5	9 ()	4 ()	Outcrop, wr sample. Magnetic granodiorite, med-coarse grained, 30% qz, 60% feld, 0.5% disseminated magnetite grains, 5-10% chlorite and chl hb. Tr spotty hm and lim. Near 191005.
190728	18+70W 16+70S ( )	7	1	34 ()	2 ()	Outcrop, wr sample. Amphibolite, black and light greenish minerals, fine grained, lath like. Minor lim fracture surface in sample.
190729	13+50W 17+50S ( )	14	1	21 ()	5 ()	Outcrop, wr sample. Highly folded migmatite, 40-50% med-coarse qz and fd in bands to 10 cm. 50-60% bi gneiss in 1-15cm bands. Wk spotty pervasive lim stain.
190730	3+60E 15+80S ( )	12	<0.5	8 ()	3 ()	Outcrop, wr sample. Hb granodiorite some qz and granitoid inclusions in o/c. Med-coarse grained, 30% hb, 20-25% qz, 40-50% fd. Tr spotty lim stain.
190731	1+40E 14+70S ( )	8	<0.5	14 ()	2400 ()	Subangular boulder. Hb granodiorite, some granitoid and qz bands. Locally rusty with very local mb associated with a qz-granitoid band.
190732	1+40E 14+70S ( )	14	1	64 ()	>10000 (1.13)	Subangular boulder. Hb granodiorite with some qz-granitoid bands. Locally rusty with very local disseminated mb associated with biotite along a qz-granitoid band. .
190751	15+25W 13+25S ( )	11	1	190 ()	3 ()	Outcrop grab. Hornblende gneiss. Very weak fe-oxide stain. 1-3% yellow-brown garnets, tr-0.5% pink garnets, tr pyrite.
190752	24+00W 0+35N ( )	16	1	96 ()	6 ()	Outcrop grab. Five cm wide leucocratic lens in biotite migmatite contains very weak Fe-oxide stain, weak spotty chlorite, tr-0.5% pyrite and possible tr cp.
190753	1+55E 14+05N ( )	20	1	22 ()	>10000 (1.30)	Outcrop grab. Trace to 0.5% mb in 15 cm wide band of moderate Fe-oxide stained migmatitic gneiss immediately below contact with overlying granodiorite fels.
190754	39+90E 6+30S ( )	<5	2	34 ()	6 ()	Outcrop grab. Medium grained, subequigranular hornblende diabase. Very weak chloritization of hornblende. 0.5-1% fine to medium grained pyrrhotite.
190755	39+30E 6+65S ( )	<5	2	51 ()	6 ()	Outcrop grab. Twenty-five cm wide, very fine grained, feldspar porphyritic chill margin of diabase against granodiorite. 0.5-1% fine grained, disseminated po.
190756	40+80E 3+95S ( )	113	3	6000 ()	50 ()	Outcrop grab. Twenty-five cm wide band of weak to moderate pervasive Fe-oxide stain in coarse grained biotite gneiss. Tr fine grained disseminated cp.
190762	(6339E 57851N)	1578	28	>10000 (1.22)	>10000 (1.27)	Subrounded boulder. Coarse grained, light gray siliceous material with 75-85% qz and 15-25% white fd. 1-2% cp, 1-2% mb, trace ferrimolybdite, moderate Fe-oxide stain.
190763	(6340E 57840N)	17	5	90 ()	23 ()	Outcrop grab. Fine to medium grained biotite dioritic fels 25 m from granodiorite contact. Moderate pervasive Fe-oxide, tr py, tr fracture controlled ferrimolybdite(?).
190767	14+10W 8+50S ( )	5	<0.5	7 ()	4 ()	Outcrop, wr sample. Leucocratic feldspar-quartz-(hornblende) granitoid. 5% weakly chloritic hornblende, tr-0.5% magnetite. No mineralization.
190768	6+90W 6+75S ( )	8	0.6	2 ()	2 ()	Outcrop, wr sample. Medium grained biotite dioritic fels with 2-5% leucocratic bands up to 3 mm wide (leucocratic bands to infrequent to form noteable gneissic structure).
190769	17+20W 10+50S ( )	9	0.6	4 ()	2 ()	Outcrop, wr sample. Fine to medium grained biotite dioritic fels (locally grades into weakly banded biotite gneiss. Very similar to 190768.

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190770	14+70W 10+35S ( )	<5	2	38 ()	1 ()	Outcrop, wr sample. Fine grained hornblende-actinolite(?) amphibolite. Non-foliated. Very weak Fe-oxide along hairline fractures.
190771	15+20W 12+30S ( )	<5	0.8	57 ()	2 ()	Outcrop, wr sample. Fine to medium grained hornblende gneiss (banded amphibolite?). Moderately well banded. Very weak Fe-oxide along hairline fractures.
190812	49+30E 11+25N ( )	7	0.6	12 ()	3 ()	Outcrop grab. Altered (bleached) biotite gneiss. Saussuritized fine grained with 1% rusty disseminated sulphides (cp?).
190813	46+00E 12+75N ( )	8	0.6	71 ()	2 ()	Outcrop grab. Fine grained biotite gneiss with 0.5-1% fine disseminated cp.
190814	40+30E 11+75N ( )	5	1	53 ()	6 ()	Outcrop grab. Migmatite-rusty biotite gneiss with moderate rusty weathering and slight friability but no visible sulphides.
190815	47+15E 13+00N ( )	5	<0.5	6 ()	3 ()	Outcrop, wr sample. Medium grained slightly porphyritic biotite granite with 10-15% quartz, 5-7% weakly chloritized biotite and 80% feldspar-no visible sulphides.
190816	19+15W 11+05S ( )	<5	0.8	37 ()	2 ()	Outcrop, wr sample. Small island outcrop of pyroxenitic ultramafic intrusive rock. Porphyritic crystals of augite(?) to 1cm. in a fine pyroxene(?) matrix. Trace-1% fine pyrite present.
190817	25+60W 11+80S ( )	298	8	1600 ()	650 ()	Mineralized boulder. Abundant rusty iron oxides throughout a migmatitic biotite gneiss with local visible cp (1%).
190818	1+20E 19+00S ( )	36	4	770 ()	48 ()	Angular boulder. From island, slightly hematized and epidotized granodiorite with 1-2% fine subhedral disseminated py cubes and trace cp and mb. Minor sugary qv has abundant py.
190819	0+50W 18+00S ( )	14	<1	48 ()	64 ()	Angular boulder. Rusty and friable biotite gneiss(?) with chloritized mafics and a band of pegmatite. Sample contains 0.5-1% py and tr cp with mb.
190824	10+20E 19+60N ( )	9	3	57 ()	100 ()	Blasted bedrock. Sample consists of siliceous amphibolite containing 5-7% po, 1-2% bo? and tr-0.5% cp, minor mb. Sulphides occur in po rich bands.
190825	8+80E 20+25N ( )	<5	<0.5	24 ()	4 ()	Outcrop, wr-sample. Sample consists of medium grained, well laminated amphibolite with abundant hb. No sulphides are observed.
190951	11+87W 18+02S ( )	314	15	2900 ()	2100 ()	Subangular boulder. Silicified biotite gneiss with 1-2% cp, trace mb.
190952	12+59W 18+26S ( )	27	3	2600 ()	23 ()	Angular boulder. Biotite gneiss with fine to very fine cp and py? 2-4% cp, nil-tr mb.
190953	12+57W 18+65S ( )	147	28	>10000 (1.98)	79 ()	Boulder. Biotite gneiss with fine to coarse cp, some in massive bands/pods to 1.5 cm wide. 4-6% cp, nil-tr mb.
190954	13+13W 20+55S ( )	66	12	6100 ()	240 ()	Subangular boulder. Biotite gneiss with 2-4% fine cp.

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190955	12+18W 20+83S ( )	730	130	>10000 (5.49)	470 ()	Subrounded boulder. Fine biotite gneiss with 2-3% cp throughout, with local bands to 5 cm wide containing 25-40% cp. Sample: 10-15% cp, 1% mb.
190956	11+85W 20+42S ( )	1754	70	>10000 (2.99)	1200 ()	Boulder. Biotite gneiss with 1-3% cp, tr mb rich bands to 5 cm wide. Sample 2/3 low grade, 1/3 high grade: 10-12% cp, 1% mb.
190957	9+47W 19+13S ( )	1452	70	>10000 (1.88)	9300 ()	Large boulder. Moderately to strongly silicified biotite gneiss. Sample contains 5-7% cp, 3-5% mb.
190958	3+20W 16+05S ( )	923	100	>10000 (4.41)	3000 ()	Subangular boulder. Mod. to strongly silicified biotite gneiss with banded mineralization consisting of up to 15% cp. Sample: 5-10% cp, 1% mb.
190959	2+60W 16+12S ( )	443	7	2440 ()	1000 ()	Subrounded boulder. Biotite gneiss with 1% cp, tr mb.
190963	14+02W 14+35S ( )	12	1	440 ()	24 ()	Blasted bedrock. Weakly to moderately chloritized bi gn with 5-7% po (some possibly bo).
190964	(633650 5790155)	7	<1	800 ()	5 ()	Blasted bedrock. Highly silicified bi-amph gn? with epidote alteration bands to 1 cm wide. 10-20% very finely disseminated, banded po.
190965	(633600 5790150)	8	2	2600 ()	1600 ()	Blasted bedrock. Very similar to 190964. Less epidote here. 10-20% fine banded po. Sample HIGH GRADED for cp and mb which occur at trace levels at outcrop scale.
190966	(633725 5790125)	7	<1	48 ()	33 ()	Blasted bedrock. Sample consists of biotite gneiss with 2-3% po and tr cp.
190967	(633450 5789900)	6	<1	390 ()	48 ()	Blasted bedrock. Silicified biotite gneiss with 5-10% finely disseminated, banded po and tr cp.
190968	(633400 5789700)	7	<1	340 ()	27 ()	Blasted bedrock. Sample average 5-7% po from silicious bands containing up tp 20% po, within an amphibole dominated hb-bi gneiss.
190969	(633475 5789775)	7	1	580 ()	38 ()	Blasted bedrock. Highly silicfied biotite gneiss with 15-25% po and tr cp.
190970	(633500 5789800)	6	<1	380 ()	18 ()	Blasted bedrock. Locally siliceous, biotite gneiss with 3-5% po. Siliceous portions of the gneiss contain up to 20% po with 1-3% po in gneissic portions.
190971	(633450 5789825)	<5	<1	480 ()	3 ()	Blasted bedrock. Biotite gneiss containing 3-5% po and tr cp. Most of the sulphide mineralization occurs in silica rich portions of the gneiss.
190972	14+30W 13+45S ( )	7	<1	690 ()	2 ()	Blasted bedrock. Weakly siliceous and banded biotite gneiss with 4-6% po and tr cp and mb.
190973	1+85W 19+80S ( )	1845	150	>10000 ()	5200 ()	Subangular boulder. Moderately silicified biotite gneiss with 4-6% cp, 1-2% cv, tr bo and mb.
190974	14+50W 13+25S ( )	10	<1	590 ()	6 ()	Blasted bedrock. Siliceous, weakly chloritic biotite gneiss containing 3-5% po, tr-1% cp and 1-2% bo.

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190975	8+92E 16+70S ( )	<5	2	100 ()	20 ()	Subangular boulder. Quartz veined hb-bi gneiss with 3-4% py, tr-1% mb, and tr cp.
191003	22+00W 09+85S ( )	8	0.6	14 ()	3 ()	Outcrop, wr sample. Rock consists of migmatite with fine grained, qz-bi-(fd) melanosomes and coarser grained qz-fd-bi granitoid material. Melanosomes contain tr py. Minor pegmatite also noted.
191004	22+00W 09+10S ( )	8	<0.5	2 ()	3 ()	Outcrop, wr-sample. Granitoid-pegmatoid assemblage of qz-fd-bi related to the leucosome in sample 191003. Bi content increases towards contact with melanosome.
191005	29+50W 03+25S ( )	5	<0.5	5 ()	2 ()	Outcrop, wr-sample. Magnetic granodiorite related to sample 190727. Sample consists of a fine grained variety containing <18% hb and a medium grained, pink variety with <12% hb. Minor aplittic material present.
191054	2+25W 16+25S ( )	62	12.7	6570 ()	75 ()	Outcrop. Sample consists of coarse to medium grained biotite gneiss with local graintoid. Sample contains 5% cp with trace po and minor local bo.
191055	2+30W 16+40S ( )	496	16.0	7530 ()	289 ()	Outcrop. Rock consists of coarse grained granitoid with minor lenses of medium grained biotite gneiss. Sample contains 5-10% cp and 3-5% po.
191056	2+50W 16+10S ( )	1122	107.0	34100 ()	919 ()	Boulder. Rock consists of medium grained biotite gneiss with 30% cp.
191102	15+00W 13+25S ( )	15	2.3	768 ()	9 ()	Outcrop. Rock consists of moderately siliceous biotite gneiss with possible minor amounts of amphibolite. Sample contains 10-15% po bands and tr-1% cp.
191103	14+50W 13+15S ( )	10	3.8	898 ()	9 ()	Outcrop. Unit consists of moderately siliceous biotite gneiss to amphibolite containing 15% banded po and 1% spotty cp.
191104	14+50W 13+35S ( )	11	4.8	1110 ()	13 ()	Outcrop. Sample consists of siliceous biotite gneiss to amphibolite containing 15-20% banded po and tr-1% blebby cp.
191201	7+85E 20+75W ( )	3	0.6	34 ()	5 ()	Boulder. Migmatitic gneiss with trace fine grained py along neosome bands.
191202	6+60E 16+00W ( )	4	1.1	38 ()	5 ()	Boulder. Migmatite with trace fine grained py along neosome bands.