Report

on the Moneta-Fripp Property

(Project 8210)

Fripp-Musgrove Townships

Timmins Area

1991 Exploration Program

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1.0 Executive Summary

The Moneta-Fripp property is situated at the base of the Deloro Group volcanics, a historically Cu-Zn, and Cu-Ni unproductive cycle of volcanism. The property is underlain by komatiite enclaves within the diorite to trondhjemite of the Kenogamissi Batholith and basalts of Fe-rich tholeiitic affinity. The area is transected by NE-trending diabase dykes of the Keweenawan swarm, and NW-SE and E-W trending fractures or shear zones. Mineralization consists of stringers of pyrite, chalcopyrite and pyrrhotite, hosted by fault/shear zones within komatiite-diorite in association with quartz veins. Alteration on the property is restricted to retrograde effects and greenschist to amphibolite facies metamorphism, and not related to conventional VMS ore forming processes.

Geophysics has delineated three types of conductive zones, each attributed to specific geological or topographic sources. The "A-series" conductors have economic significance, and identified areas of previously documented sulphide mineralization. These include the Donut Lake and Jules Lake Showings. Mineralization consists of secondary quartz vein-hosted pyrite-pyrrhotite and chalcopyrite filling fractures or shear zones occurring near diorite-komatiite geological contacts. The "B-series" geophysical anomalies are interpreted to be the result of magnetite-bearing NW-trending iron formation or fracture zones, the latter having possible economic significance. "C-series" anomalies are weak conductors and are attributed to lake edge effects.

The economic potential of the Moneta-Fripp property is "low" since no economic Cu-bearing (with no associated gold mineralization) fracture/shear zone deposit has been identified to date in the Abitibi Belt. Although remote, potential exists for base metal mineralization in the "B-series" geophysical anomalies. Of the two anomalies situated within the present Moneta-Falconbridge property, B8 has been tested by previous workers (two holes). The anomalies are attributed to iron formation containing pyrrhotite and magnetite. Anomaly B7 remains untested, and lies within an area of extensive overburden cover. In order to properly evaluate the anomaly, two diamond drill holes are recommended totalling 244 metres.

2.0 Introduction

A re-evaluation of the Fripp-Moneta property located in southeastern Fripp and Northeastern Musgrove Townships was initiated as part of a multi-property joint-venture agreement secured between Falconbridge Limited and Moneta Porcupine Mines Limited.

The program consisted of airborne geophysics, linecutting, geological mapping and whole rock geochemical sampling.

The property received significant exploration in the 1960's by Hollinger Consolidated Gold Mines Limited in the form of ground geophysics, geological mapping and diamond drilling. Drilling outlined a rod or pipe-like zone of Cu-bearing mineralization (Hollinger Main Zone) trending northwest and plunging moderately 40-60 degrees. The zone is reported to contain 49,895 tonnes (55,000 tons) of approximately

2% Cu above the 400-foot level. Potential for additional mineralization down-plunge is low. Follow-up drilling the 1960s and 1970's failed to delineate any mineralization below the 400-ft level.

The main goals of the present investigation are:

1- To document all mineralized zones on the property in terms of geological setting and to relate these observations to accepted geological models of ore genesis.
2- To determine the economic potential of the "Hollinger Main Zone" and other mineralized showings.
3- To delineate high-priority areas which may require additional work.
4- To determine the overall economic potential of the property.

3.0 Location and Access

The Property is located 30 km south of the city of Timmins, within the District of Timmins, Porcupine Mining Division, NTS 42-A-3. The area is administered by the Ministry of Northern Development and Mines, and the Resident Geologist's office located in the city of Timmins.

The Moneta-Fripp property is accessible on a year around basis by Pine Street South from the city of Timmins. The drive from Timmins to the northern Musgrove Township boundary takes about 40 minutes. A series of old overgrown logging roads cover the southern part of the property. They are only usable as walking trails or ATV access routes. A new logging road passes through the southwest part of the claim group and provides excellent access to the western part of the property. This route is accessible by the Splitrock Lake-Grassy River Dam access road.

The property has no provisions for electrical power. Any power for industrial purposes would either have to be supplied by an on-site generator, or diverted from the main Hydro line following Pine Street. Milling facilities are present at Kidd Creek 60 km to the north. A location map (Figure 1) is provided.

Access to the Hollinger Main Zone of mineralization for the purpose of diamond drilling is best accomplished via an old trail branching from Pine Street at concession line II in Fripp Township. This trail extends west from Pine Street into the Moneta-Fripp property. It has not been used since the last drilling program conducted on the property in the 1970's and requires refurbishing.

4.0 Topography, Vegetation and Water Availability

The prevalent topographic expression can be described as relatively flat highly glaciated terrain consisting of low relief typical of most of the Abitibi Subprovince. Elevation on the property averages about 100.6 metres (330 ft) above MSL. Topography is governed somewhat by underlying geology and structural features. Creeks and lakes usually follow topographic lineaments suggestive of fault-controlled processes. Examples in the vicinity of the property include the north to northwest trending faults following Jules, Bruce and Splitrock Lakes. Furthermore, topographic high areas are underlain largely by highly resistant diabase dykes and granitoid rocks of the Kenogamissi Batholith. Ridges of ENE-WSW trending diabase mark the highest ground on the property.

Vegetation in the area is dominated by muskeg swamp and poplar-birch, the latter occurring in well drained areas. The southern part of the property shows 5-10 % outcrop exposure while the northern two thirds of the claim group is underlain by muskeg and swamp.

Water for the purposes of a bush camp or diamond drill supply, is readily available in the southern part of the property by Bartlett, Donut, and Jules Lakes. Water availability is more problematical in the northern part of the claim group and is restricted to the Splitrock River and its subsidiary creeks.

5.0 Property

The Moneta-Fripp property consists of a total of 44 contiguous mining claims straddling the Fripp-Musgrove Township boundary. Thirty nine claims are unpatented and 5 are leased. The majority of the claims (35, including the 5 patented claims) are located in Fripp Township while the 9 southernmost unpatented claims are situated in Musgrove Township. All claims are registered at the Timmins Mining Recorder Office under the Porcupine Mining Division.

Table 1 summarizes pertinent claim information. Figure 3 shows the disposition of the claims.

Table 1

Claim Number	Type of Claim	Date Recorded	Expiry Date	Registered Owner	Township
51061	Leased	----	08/01/94	Moneta, Lease No. 102836	Fripp
51070-51072	Leased	----	08/09/94	Moneta, Lease No. 102836	Fripp
50174	Leased	----	08/09/94	Moneta, Lease No. 102836	Fripp
1170917-1170918	Unpatented	01/24/91	01/24/93	Falconbridge	Fripp

Claim Number	Type of Claim	Date Recorded	Expiry Date	Registered Owner	Township
1172108-1172111	Unpatented	01/25/91	01/25/93	Falconbridge	Fripp
1172112	Unpatented	01/26/91	01/26/93	Falconbridge	Fripp
1175376-1175378	Unpatented	01/26/91	01/26/93	Falconbridge	Fripp
1175379-1175381	Unpatented	01/27/91	01/27/93	Falconbridge	Fripp
1175397-1175401	Unpatented	01/29/91	01/29/93	Falconbridge	Musgrove
1175402-1175403	Unpatented	01/29/91	01/29/93	Falconbridge	Fripp
1175409-1175413	Unpatented	01/29/91	01/29/93	Falconbridge	Fripp
1175546-1175552	Unpatented	01/29/91	01/29/93	Falconbridge	Fripp
1175566-1175569	Unpatented	01/29/91	01/29/93	Falconbridge	Musgrove
1175570-1175571	Unpatented	01/29/91	01/29/93	Falconbridge	Fripp
1175572	Unpatented	01/29/91	01/29/93	Falconbridge	Musgrove

5.1 Falconbridge-Moneta Joint Venture Agreement

The Moneta-Fripp joint-venture agreement is part of broader agreement encompassing three separate claim groups. Included are Moneta's holdings (100 percent at present) in 5 leased claims in Fripp Township, 15 leased claims Denton and Thorneloe Townships, 12 leased mining claims and 8 unpatented mining claims in Godfrey Township.

Moneta has agreed to grant Falconbridge (50%) interest in the above properties over a four year term. Falconbridge's contractual responsibilities include;

1- paying Moneta $2,000.00 on signing for each of the three properties.

2- paying Moneta $3,000.00 on the 1st 2nd and 3rd anniversaries of the agreement for each property.

3- paying Moneta $4,000.00 on the 4th anniversary of the agreement for each property.
4- incurring an aggregate of $50,000.00 of work by the first anniversary, and $500,000.00 by the fourth and final year of the agreement.
5- incurring $50,000.00 on each of the three properties (total of $150,000.00) by the third anniversary of the agreement.

Conditions include;

1- if the total aggregated expenditures for all three properties totals $500,000.00 and the $15,000.00 for each property (total of $45,000.00) has been paid, and at least $50,000.00 was spent on each property before May 3, 1995, Falconbridge will have the right to acquire 50% undivided beneficial interest in the three properties.

2- If either Party's undivided interest in any of the properties is reduced to 10% or less its interest shall be automatically extinguished and converted to a royalty interest equal to 2% NSR if the property is brought into production by the other party.

3- Any additional claims staked by either party within a 2-claim (800 metres) area of influence from the existing holdings of Moneta shall become part of the agreement.

6.0 History

The property has received considerable exploration in the past. The area covering the present Moneta-Falconbridge claims has been geologically mapped, and prospected by four main players since the 1950's. The following table summarizes information obtained from the Timmins Assessment File Office, supplemented by unpublished Hollinger proprietary reports provided by Moneta. The section below was compiled by Mr. Doug Cruji, former Project Geologist, at Falconbridge.

Table 2

Date	Company	Work Description	Notes
pre 1957	-Mr. Sandrelli, local prospector.	-Shallow test pits and trenches blasted into 2 sulphide showings on the south shore of Donut Lake on claim 1175567.	-Reported in Kerr-Addison report of previous work on Sanderelli claims for old claim 41399.

Date	Company	Work Description	Notes
June 1957	-Kerr-Addison Gold Mines Limited (Sanderelli Claims).	-Linecutting, geological and electromagnetic surveys.	-Survey area corresponds to approx. current claims 1175403, & 1175566-1175569 incl.
Jan-Feb & June 1962	-Hollinger Consolidated Gold Mines.	-Mag., EM surveys.	-Work covered 79 cls. P51040-51088, 51102-51116, 51123-51134, 51137-51139.
May-Aug. 1962	-J.L. Kirwan & G. D. Robinson for Hollinger.	-Geol. mapping.	-As above.
July-Sept. 1963	-Hollinger.	-Prospecting & geological mapping -18 ddhs totalling 1,681 metres (5,515 feet).	-Hollinger Group I holdings. -test geophysical conductors and surface showings. (F12-F15 located in SE part of the area).
Sept-Dec 1964	-Hollinger.	-10 DDHs, F19-F28, totalling 1,591.7 metres (5,220.9 feet).	-F20-F23 & F26-F28 totalling 1,193.3 metres (3913.9 feet) were drilled to explore the Cu mineralization of the "Main Hollinger Zone". -F19, F24 & F25 were located on claims 55172, 55415 & 55410 respectively.

Date	Company	Work Description	Notes
Feb-Mar 1965	-Harold O. Seigel and Associates for Hollinger.	-Turam electromagnetic and pulse-type induced polarization surveys.	-P51058-51063, 51067-51073, 51077-51078, 55170-55174, 55409-55416.
Sept-Oct 1965	-C.D.Mackenzie for Hollinger.	-Geol survey and remapping.	-Property as above.
Jan-May 1966	-Hollinger.	-11 DDHs totalling 1,504.3 (4,934 feet).	-F29-F32 tested IP and Turam anomalies. -F33-F38 drilled in vicinity of F21 (Cu mineralization).
Mar 1967	-Hollinger.	-Staking previous and new claims.	-55171 to 55173 restaked (became 92848 to 92850) & new claims 93673 to 93675.
Nov 8, 1967 - Jan 22, 1968	-Hollinger.	-13 ddhs totalling 1,359.45 metres (4,459 feet).	-Delineation of Cu mineralized body claim P-51071. DDH's: 6A,6B,7A-1,7B, 8A,9A,10A,10B,10C,11A,1A,5A,12A.
May 1966	-Hollinger.	-F-39, (88.7 metres/291 feet).	-To test northern portion of magnetic anomaly.
Jan-Feb 1968	-Hollinger.	-F-40, (197.6 metres/648 feet)	-Testing 150 m northwest of F21 for the down plunge extension of the Cu mineralization.

Date	Company	Work Description	Notes
Jan 1969	-Hollinger.	-F-41, (243.9 metres/800 feet).	-Testing down plunge extension of Hollinger Zone.
Feb 1971	-J. Stubbins, Labrador Mining and Exploration Co. Limited.	-Open pit mining evaluation.	
Nov 1971	-Hollinger.	-F-1-50-71, 186.0 metres/610 feet).	-Testing 330 m northwest of F21 for the down plunge extension of the Cu mineralization.
Oct 1983	-Northgate Exploration Ltd. (T-2525)	-Geological mapping, soil geochemical sampling and EM 16 VLF surveys (reference is made to an earlier Mag. survey).	-The Northgate claims surrounded the 5 leased Hollinger claims.

From 1963 to February, 1968, a total of 3,462.2 metres (11,355.9 feet) of drilling was completed in 27 holes to explore copper mineralization of the Hollinger Main Zone on claim P-51071. The holes were spaced over a total strike length of 182.9 metres (600 feet) from cross section line 39+100S (hole 12A) at the northwest to section line 39+300S (holes F-23, 9A) at the southeast margin of the drilling. Copper assays were obtained over a strike length of 61 metres (200 feet) from section line 39+00S southeast to line 39+200S with a discontinuity on line 39+050S, where holes F-33 and 5A did not obtain Cu values.

7.0 Exploration Program

7.1 Geology

7.1.1 Regional Geology (refer to figures 1 and 2)

The property lies within the east-west trending Abitibi Subprovince of the Canadian Precambrian Shield. This Archean-aged greenstone belt is comprised of numerous overlapping ultramafic-mafic (komatiitic-tholeiitic) to felsic (calc-alkalic) cycles of volcanism. Each complete cycle is interpreted as being a distinct volcanic complex or volcano having an originally circular to sub-circular outline (Goodwin, 1982). Interflow clastic and chemical sediments are common, representing basinal accumulations adjacent to margins of individual volcanic complexes. Pyke (1978) assigned the names Deloro and Tisdale Groups to the older and younger volcanic cycles identified in the Timmins area. These volcanic piles are thought to be separated by, and locally time equivalent to, coarse clastic sediments of the Porcupine Group (formerly Timiskaming Group). Plutonic rocks intruding the supracrustal succession include peridotite-gabbro bodies, tonalite-trondhjemite-granodiorite of the Kenogamissi batholith to the west and northwest, and quartz-feldspar-porphyry stocks. Younger mafic intrusions include diabase dykes of the Matachewan and Keweenawan swarms. Unconformably overlying the Archean basement are sediments of the Proterozoic Cobalt Group (Gowganda Formation).

From an economic perspective, volcanogenic massive sulphide deposits are localized in the upper part of the youngest volcanic piles. Examples include the Noranda Camp within the 2702 Ma upper Blake River Group (Nunes and Jensen, 1980) and in the Kidd Creek area (2713 Ma) (Barrie, 1990).

The Fripp Township property is situated at the base of the Deloro Group within komatiitic to tholeiitic flows of Jensen's (1986) formation 2c. This succession is interpreted to be time-equivalent to Wabewawa Group rocks in the Kirkland Lake-Larder Lake area east of the Round Lake Batholith. Goodwin and Ridler (1970) and Goodwin (1982) interpret the komatiites of in Fripp-Musgrove-Price Township area, to be part of the base (lower platform) of the Deloro volcano (later renamed Redstone River volcano).

The ultramafics observed in Fripp-Musgrove and Price Townships are completely engulfed by diorite to granodiorite-trondhjemite of the Kenogamissi batholith. They represent enclaves, xenoliths or "roof pendants" of supracrustal material entrapped during intrusion of the batholith.

From a regional perspective, the Fripp Township property has characteristics favourable for komatiitic-hosted Cu-Ni magmatic deposits, and Cu-Au structurally-controlled felsic intrusive-hosted deposits. There is no basis for expecting a "Noranda-type" VMS deposit at this stratigraphic position. The Cu-Ni model is plausible. However, Coad (1979) showed that most, if not all economic Cu-Ni deposits in the Timmins area are hosted by lower Tisdale ultramafic rocks. This implies that the Deloro group is a seemingly Cu-Ni unproductive cycle of volcanism. The model which has the highest potential for economic base metal mineralization is the Cu-Au scenario.

7.1.2 Local Geology

The Moneta-Fripp property is underlain predominately by intermediate to felsic intrusive rocks of the Kenogamissi batholith. Diorite is most common, with granodiorite and trondhjemite less prevalent. The diorite shows considerable variability in colour, being dark and "gabbro-like" near the eastern supracrustal-plutonic contact. A gradational change from mafic diorite to diorite to granodiorite is observed from the outer margins of the batholith inward (westward). Conspicuous opaline-blue quartz-eyes are common in most specimens of the diorite.

Engulfed within the diorite are enclaves of komatiitic volcanics showing amphibolite metamorphic effects. The main ultramafic enclave on the property extends from Donut Lake in Musgrove Township, to the extreme northwest part of the claim group in central Fripp Township. It is an estimated 1.2 km long by 400 metres wide. This unit is readily identifiable on magnetic susceptibility maps as broad highs several hundred to 2,000 nanoteslas above background values.

The komatiites are recrystallized and show both amphibolite and greenschist metamorphic mineral assemblages. Retrograde talc, chlorite and serpentine are also common. Spinifex texture was not observed during mapping but is reported in the vicinity of Donut Lake by Pyke (1978). Other suspected komatiite enclaves are included on the geology map (in back pocket). They are characterized as isolated sub-circular to oblate magnetic highs situated within the otherwise magnetically featureless diorite of the Kenogamissi batholith.

High Fe-tholeiitic basalts were identified along the western shore of Bartlett Lake, east of the main batholith-volcanic contact.

Diabase dykes of the Keweenawan swarm intrude all rock types. A ENE-WSW trending dyke 50 to 200 metres wide transects the southern part of the property. This feature can be traced for tens of kilometres on OGS geophysical maps. It is also identifiable as a linear topographic high ridge.

7.2 Structural Geology

Property scale deformation is dominated by the pervasive development of a penetrative foliation within the supracrustal rocks contrasted by brittle fractures occurring in the intermediate-felsic plutonic rocks.

The komatiite enclave shows a northwest trending, steeply dipping foliation which increases in intensity near it's margins. At the outer margins of the enclave, the foliation patterns display crude sigmoidal asymmetries. This observation, combined with airborne VLF-EM data, suggests that the enclave is entirely fault-bound by northwest-trending fractures transecting the Kenogamissi batholith. The asymmetry of the foliation patterns in the vicinity of these breaks suggests dextral offset for the eastern break and a sinistral offset along the western break. The vertical component of displacement along these structures in not known.

ENE-WSW trending faults are also documented on the property. These are interpreted to be later than, and offsetting, northwesterly trending structures. They represent very late brittle features.

Of possible economic significance are sulphide-bearing fractures south and southwest of Donut Lake. The "Donut Lake Showing", first trenched in the 1950's, consists of late brittle fractures ranging in orientation from E-W to N-S. The fractures are intimately associated with the fault-bound komatiite-diorite contact. Individual fractures are up to 2 feet wide, and are filled with quartz veining and sulphides (up to 15% Py, Po, Cpy). The mineralized zone was traced by geophysics (Kerr Addison Gold Mines) in the 1950's for a strike length of 91.5 metres (300 feet) in an E-W direction. The zone pinches out at both ends.

No top indicators were observed during the mapping program. Pyke (1978) noted a single outcrop of spinifex texture along the northern shore of Donut Lake. Based on spinifex texture and flow contacts, tops are interpreted to be to the southwest.

7.3 **Geophysics** (refer to Aerodat Map, in back pocket)

In January, 1991, Aerodat Limited was contracted to conduct a helicopterborne Mag-VLF-EM survey over the Moneta-Fripp Property. Flight lines were spaced at 100 metres, using a cesium vapour magnetometer and a two frequency VLF-EM system. Cutler Maine (NAA), Annapolis Maryland (NSS) and Jim Creek Washington (NLK) transmitter stations were used for the VLF-EM survey.

Total field magnetic responses show background values of around 58,500 nT. Broad northwest trending anomalies 200-500 metres wide are present, approximately +1500-2000 nT in amplitude above background. Strong ENE and NW linear magnetic high trends are also prevalent. These patterns corroborate geological mapping. The northwest trending broad anomalies are underlain by komatiite, while the ENE-trending features correlate well with a mapped diabase dyke. The strong NW narrow linear magnetic features are attributed to iron formation. Although none was observed during geological mapping, banded oxide-facies iron formation is documented in Hollinger and Shadrack drill logs, and is also shown on regional O.G.S geology maps of the property area (Pyke, 1978).

Due to the lack of outcrop exposure in the north and central parts of the property, geophysically interpreted geological contacts have been used extensively. Three moderate magnetic anomalies are noted within relatively featureless areas underlain by diorite of the Kenogamissi batholith. These anomalies are attributed to small inclusions or enclaves of ultramafics within diorite. Of note, is the apparent correlation between one of the interpreted enclaves, and the location of the Hollinger Main Zone at 100+20E, L99+50N. No associated VLF-EM, or resistivity low zones are observed at this locality, however, depth penetration of the geophysical survey (up to 70 metres) should have detected this zone.

Geophysical EM anomalies are shown on the Aerodat Map (back pocket) with identifiers corresponding to the classification shown in Johnson's (1991) geophysical report. They are classified into three categories (Johnson, 1991). First, (type 1) is the traditional 935/850 Hz complimentary inphase and quadrature responses. Vertical thin sheet conductance estimates are high. The second type (type 2) is seen as a small positive anomaly in the 935 Hz inphase channel in an area where the 935 and/or 850 Hz inphase channel shows a negative response. The source is interpreted to be a near vertical thin sheet source which is conductive and magnetic-or in a narrow sandwich which is magnetic. The conductance estimates for these anomalies are totally unreliable because of negative inphase responses. The third type of anomaly (type 3) are attributed to lake edge effects.

A total of 12 EM anomalies were delineated by Johnson (1991), 6 of which are situated within the Moneta-Falconbridge claim block. They are prioritized as A-series (type 1), B-series (type 2) and C-series (type 3). Only Type 1 are confirmed to be of economic significance. The locations of A1 (Donut Lake Showing) and A2 (hereafter referred to as the Jules Lake Showing) anomalies correlate with trenched mineralized showings shown on the geology map. Of the 4 (total of A and B-series) conductors on the property, three have been tested by drilling in the 1960's and 1970's. Anomaly B7 is the only remaining untested geophysical target.

Eight B-series anomalies are identified, two of which are within the Moneta-Falconbridge property. A third B-series anomaly (B6) is located just west of the western boundary of the property (claim P1175548). Due to high magnetism and narrow-linear shapes they are interpreted to be either iron formation or diabase. One of the B-series anomalies (B8) was tested by Hollinger in the 1960's and Shadrack in the 1970's. Although no assays are included in drill log descriptions, both diabase and sulphide facies iron formation are documented. It is worth noting that the possibility for base metal mineralization in association with anomaly B7 cannot be ruled out without testing by drilling.

7.4 Geochemistry

A total of 91 samples were obtained and submitted to T.S.L. for lithium-metaborate fusion whole rock analysis. All results are listed in Tables 3 and 4. Volcanic and plutonic rocks are shown on the Jensen (1976) and the LeMaitre (1989) plots respectively (Figures 4 and 5).

Volcanic samples concentrate in the HFT (high Fe tholeiite), BK (basaltic komatiite) and PK (peridotitic komatiite) fields in Figure 4. The data imply two separate magmatic sources for the volcanic rocks. This is corroborated by the MgO frequency plot (Figure 6) where a clearly bi-modal distribution is observed. Field identification of rock types supports this hypothesis. Komatiitic samples were noted primarily within the "main ultramafic enclave" following TL 105E while high Fe-tholeiites (field labelled basalt) were identified exclusively in the eastern part of the property near Bartlett Lake.

Plutonic rocks mapped on the property fall into four main categories. Mafic intrusive rocks are restricted to diabase dykes and rare gabbro bodies. Intermediate to felsic plutonic rocks of the Kenogamissi batholith show a wide range of compositions from mafic diorite near the eastern plutonic-supracrustal contact in the east, to more felsic diorite, granite to leuco-granite (trondhjemite) in the central and western parts of the claim group. Rare felsic dykes of fine grained trondhjemite are found within the batholith. A concentration of points for Kenogamissi batholith samples is observed in field 5 (tonalite) and 10* (quartz diorite) of the LeMaitre diagram (see Figure 5). Diabase dyke samples by contrast, plot in the monzonite and monzodiorite/monzogabbro fields of LeMaitre (1989). Zr/Y frequency distribution (Figure 7) illustrates the more highly evolved nature of the felsic as compared to the mafic intrusive rocks.

7.4.1 Alteration

Alteration is present on the property as metamorphic reactions within both amphibolite and greenschist grades. Primary mineral assemblages are not preserved in the supracrustal rocks. Plutonic rocks appear relatively pristine in terms of mineral assemblages.

The most striking feature of the ultramafic volcanics is the ubiquitous presence of retrograde mineral assemblages at the expense of primary "mantle stable" minerals. Talc-serpentine, chlorite and tremolite are common constituents while actinolite, magnetite are locally developed. Amphibolite metamorphic rank is commonly developed in both the komatiites and tholeiites and is most obvious near granitic contacts where amphibole "laths" are best observed within foliation planes.

Alteration indices were calculated for rocks mapped as volcanics, and are presented in Table 5. It must be noted that the indices are designed to be used primarily on altered felsic volcanic rocks. Therefore primary magmatic genetic processes characteristic for mafic and ultramafic volcanics may yield geochemical results which may seem anomalous to the felsic rock indices. Particular care must be used in interpreting the data. This is particularly true for ultramafic samples which have inherently low alkali contents. Alternate methods of delineating hydrothermal alteration in rocks having a single precursor composition are available (eg. MacLean, 1990). It is reported that this method may be applicable to plutonic as well as volcanic rocks. This method may be more useful in quantifying alteration observed in the Hollinger core than traditional VMS alteration indices.

As can be seen in Table 5, a total of 10 samples show Ishikawa index values in the "hydrothermal alteration" category (>80). All of these samples are mapped as komatiite to basaltic komatiite, and have MgO >20% and Ni >1000 ppm confirming a precursor ultramafic composition. The geochemistry of these seemingly altered samples are therefore attributed to primary magma genetic processes unrelated to hydrothermal alteration.

The Alum and Severin/Knuckey indexes show no anomalous results. The highest values for these indices are 185.76 (sample AM06723) and 24.01 (sample AM06734) respectively.

7.5 Mineralization

Three mineralized zones are identified on the Moneta-Fripp property. They are shown on the geology map as the "Donut Lake Showing", the "Jules Lake Showing" and the "Hollinger Main Zone". The Donut Lake and Jules Lake Showings are exposed by trenching while the Hollinger Main Zone is completely covered by up to 22.9 metres (75 feet) of overburden. All three mineralized zones share similar geological setting and characteristics. They are structurally controlled within E-W or NW-SE trending brittle fractures or shear zones in diorite of the Kenogamissi batholith. Furthermore, they are intimately associated with diorite-ultramafic contacts inferring a "structural trap" model for their origin. It should be noted that this model is intended as a preliminary working hypothesis which is to be periodically reviewed as our understanding of the property develops. At this stage, the model is supported by field evidence at the two surface showings, supplemented by the examination of old "Hollinger Main Zone" drill core stored at the Timmins Government Core Library.

A detailed description of each zone follows.

The Hollinger Main Zone:

The historical "ore zone" drilled by Hollinger in the 1960's and 1970's is centred at present grid co-ordinates 100+20E, 99+50N. The surface projection of the zone, in relation to drill hole data, is shown on a series of sections in the appendices. The zone is reported to contain 49,895 tonnes (55,000 tons) of 2 % Cu above the 122-metre (400-ft) level. It can be best described as a pipe-like or rod-shaped body trending 330°, and plunging 50-60° northwest. A discontinuity occurs at a vertical depth of 76.2 metres (250 ft) where hole 5A missed the zone along its projected plunge.

From an examination of several intersections stored at the Timmins Government Core Library, the zone consists of bands of pyrite and chalcopyrite as crosscutting stringers within a xenolith of ultramafic komatiite or peridotite. Variably lineated diorite to granodiorite of the Kenogamissi batholith are found in both the hanging and footwall of the xenolith. The sulphides are intimately associated with crosscutting fractures and quartz-carbonate micro-veins. A thin section report by Dr. Doug Scott of Falconbridge is included in the appendices.

A total of 6 samples were obtained from Hollinger drill hole F-21. The best base metal values include 1.3% Cu (from 269.2 to 272 ft.), 3.9% Cu (from 321.6 to 325 ft.) and 3.8 % Cu (from 325 to 330ft.) in samples AM06811, AM06813, and AM06814 respectively. Zinc and nickel values are insignificant. It is worth noting that these samples were taken from the "best looking" portions of the mineralized zone.

Of concern to the present exploration program is the fact that the airborne geophysical survey flown by Aerodat in 1991 failed to delineate any EM anomaly in the vicinity of the Hollinger Main Zone. Furthermore, the interpretation of VLF-EM data has also failed to identify the suspected NW-trending fracture or shear zone which is thought to host the mineralized zone.

The Donut Lake Showing:

This showing is located along the southern shore of Donut Lake (Musgrove Township) at present grid co-ordinates 84+50N, 88+94E. It consists of a 0.3-0.6-metre (1-2-foot) wide fracture/shear zone (associated with the diorite-komatiite contact) showing variable orientations. Filling the shear, is a mineralized quartz vein containing up to 40 % stringers of pyrite, pyrrhotite and chalcopyrite.

The Jules Lake Showing:

This mineralized exposure is located in a trench along the western shore of Jules Lake (Musgrove Township) at grid co-ordinates L90+00N, 88+00E. It consists of 0.15-0.30-metre (6 inch to 1 foot) wide fracture or shear in diorite filled with quartz and up to 5 % pyrite pyrrhotite and trace sphalerite. Base metal results from this trench include 195 ppm Zn and 35 ppm Cu in grab sample AM06744.

8.0 Economic Implications

The Moneta-Fripp property is situated at an unfavourable stratigraphic position from a "Noranda-Type" VMS deposit setting. It is interpreted as the basal part of the Deloro Group volcanics, a historically base metal-barren cycle of volcanism.

Base metal mineralization on the property is restricted to cross-cutting fractures or shear zones within the Kenogamissi batholith, intimately associated with supracrustal enclaves or xenoliths. The property hosts conditions favourable for a porphyry-type, or a shear zone hosted Cu deposit. No economic Archean base metal deposit of this type (i.e. with no associated gold mineralization) is known to occur in the Abitibi Belt (Jensen, 1986).

The possibility that the Hollinger Main Zone represents a komatiite-hosted Cu-Ni deposit has been extensively debated during the course of this project. This model has been rejected for several reasons. The main problems with this hypothesis arise when examining whole rock and metal analyses of samples obtained from Hollinger drill core. Although Cu values are notable (0.9-3.9% over 1.5 metres), Ni and MgO results are consistently well below expected background values for komatiites of 1000-2000 ppm Ni and >18 % (weight percent) MgO. The best Ni assay returned from sampling Hollinger core was 90 ppm. MgO values range from 8 to 12 weight percent.

The Hollinger Main Zone is not considered of economic significance at current base metal prices. The zone is small 49,895 tonnes (55,000 tons of 2% Cu), and has been proven to pinch out below the 122-metre (400-foot) level. There is no evidence to expect the mineralized zone to continue below this level.

The Donut Lake and Jules Lake showings are too narrow and low grade to be of economic significance. Airborne geophysics has delineated only single spot anomalies with these showings. Both areas have been tested by diamond drilling (Hollinger in the 1960's and Shadrack in the 1970's). Hollinger tested anomaly A2 in hole F-12 (182.3 metres). Both anomalies were drilled by Shadrack in holes H-3, (20.1 meters testing A1) and H-1 (168 metres testing anomaly A2) respectively. Although assays are not provided in assessment logs, all three holes intersected weakly mineralized (py, po, minor cpy stringers) quartz veins and late aplite dykes. Apparently, results were not encouraging enough to warrant further work.

Since the Aerodat geophysical survey failed to detect an EM anomaly associated with the Hollinger Main Zone, it is possible that similar zones have been overlooked elsewhere on the property. However, it is unlikely that a sizeable (1-2 million tonne minimum) mineralized zone could have been overlooked by the Aerodat survey.

Although remote, potential exists for base metal mineralization in association with the B-series conductors. Of the two B-series conductors (B7 and B8) situated within the present Falconbridge property, only B8 has been tested by drilling. Hollinger put down one hole in 1963 (hole F-13, 121.9 metres) and in 1974 Shadrack retested the anomaly in hole H-2 (72.24 metres). Drill log descriptions indicate that the conductor is caused by bands and stringers of magnetite and pyrrhotite within oxide-sulphide facies iron formation, and in association with cross-cutting pyrrhotite-rich shear zones hosted by ultramafic rocks. No assays are included with assessment information.

Considering the fact that no follow-up drilling was undertaken for conductors A1, A2 and B8, it must be assumed that base metal results did not warrant further work. Therefore, the probability of finding significant base metal mineralization in association with conductor B7 is remote.

10.0 Conclusions

The Moneta-Fripp property is situated at the base of the Deloro Group volcanics, a historically Cu-Zn, and Cu-Ni unproductive cycle of volcanism. The property is underlain by komatiite enclaves within the diorite to trondhjemite of the Kenogamissi Batholith and Fe-tholeiites. The area is transected by NE-trending diabase dykes of the Matachewan swarm, and NW-SE and E-W trending fractures or shear zones. Mineralization consists of stringers of pyrite, chalcopyrite and pyrrhotite, hosted by fault/shear zones within komatiite-diorite in association with quartz veins. Alteration on the property is restricted to retrograde effects and greenschist to amphibolite facies metamorphism, and not related to conventional VMS ore forming processes.

Airborne geophysics has delineated three types of conductive zones, each attributed to specific geological or topographic sources. The "A-series" conductors have economic significance, and identified areas of previously documented sulphide mineralization. These include the Donut Lake and Jules Lake Showings. Mineralization consists of secondary quartz vein hosted pyrite-pyrrhotite and chalcopyrite filling fractures or shear zones occurring near diorite-komatiite geological contacts. The "B-series" geophysical anomalies are interpreted to be the result of magnetite-bearing NW-trending iron formation or fracture zones, the latter having possible economic significance. "C-series" anomalies are weak conductors and are attributed to lake edge effects.

The economic potential of the Moneta-Fripp property is "low" since no economic Cu-bearing fracture/shear zone deposit has been identified to date in the Abitibi Belt. Although remote, potential exists for base metal mineralization in the "B-series" geophysical anomalies. Of the two B-series anomalies found within the Moneta-Fripp claim group, only one (B7) remains untested by diamond drilling. It is recommended that a two-hole 244-metre drilling program be conducted to test anomaly B7.

10.0 Recommendations

In order to properly evaluate the potential of untested conductor B7, it is recommended that two 122-metre (400-ft depth) holes totalling 244 metres be drilled at locations shown on Figure 8 and itemized in Table 6. Ground checking of anomaly locations should be conducted prior to the initiation of the drilling program.

If results of drilling are encouraging a more comprehensive ground Max-Min II survey is recommended. In conjunction with the ground survey, the existing grid should be extended from L105N to the northern property boundary. The survey should be carried out over the central part of the property bound by TL95E and TL105E from L95N to the northern property boundary. Depth penetration of the survey should cover the range between 0 and 300 metres.

Table 6

Hole No.	Location	Azim./Dip	Vert. Target Depth	Length of Hole	Comments
PH-1	L101N 98+10E	235°/-50° (Grid West)	70.4 m	122 m	---
PH-2	L102N 98+45E	235°/-50° (Grid West)	70.4 m	122 m	Contingent results of PH-1

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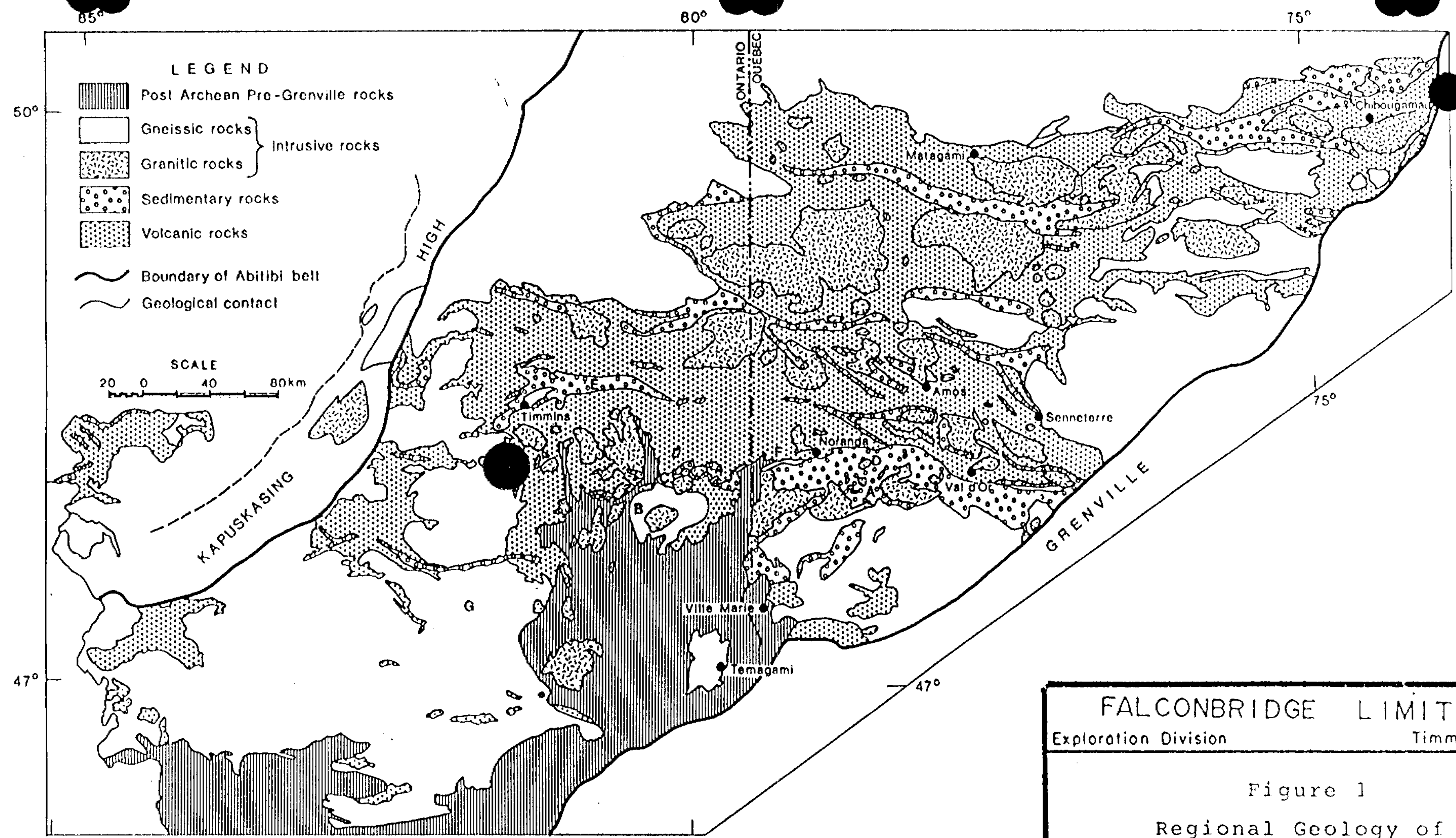


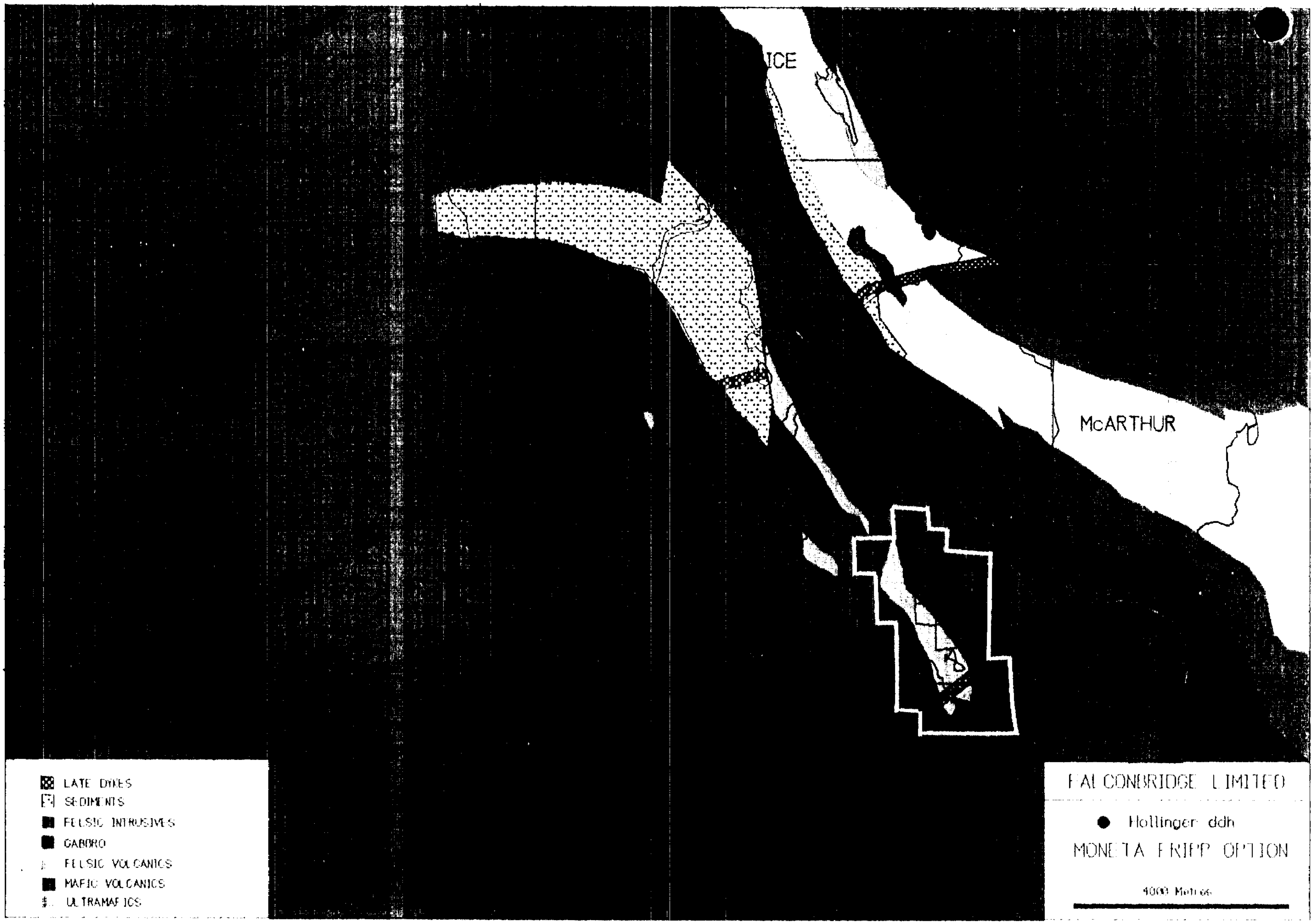
FALCONBRIDGE LIMITED

Exploration Division — Timmins, ONTARIO

Figure 1

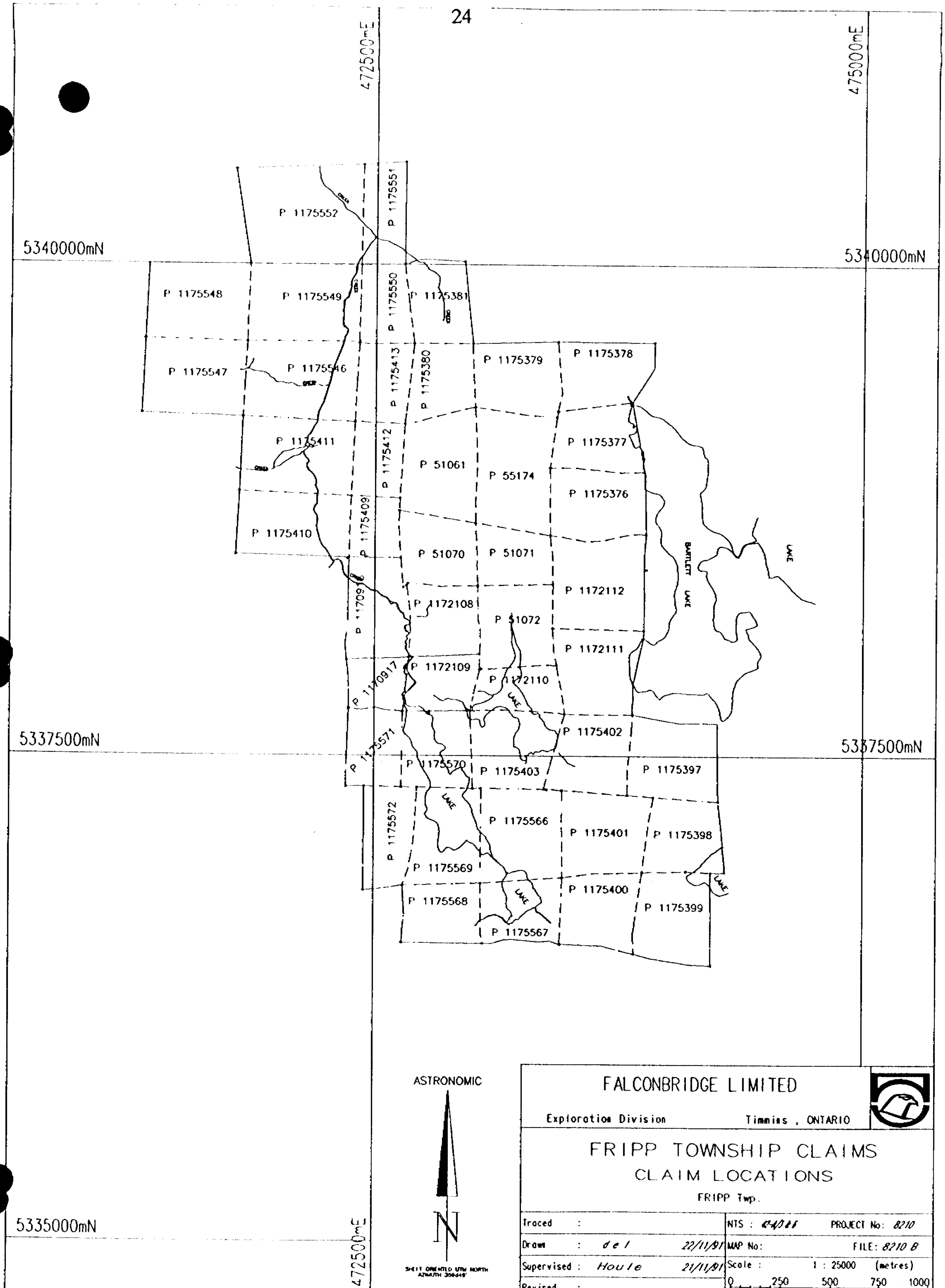
Regional Geology of The Abitibi Belt

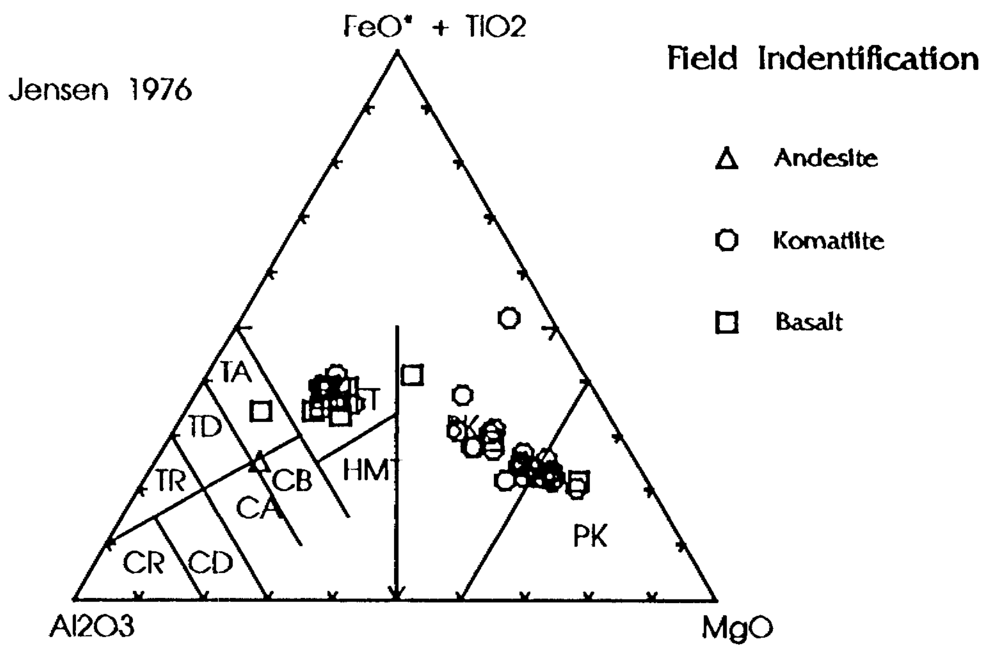
SCALE:		Date:
Drawn:	Project N°:	Date:



ICE
McARTHUR
LATE DYKES
SEDIMENTS
FELSIC INTRUSIVES
GABBRO
FELSIC VOLCANICS
MAFIC VOLCANICS
ULTRAMAFICS
FALCONBRIDGE LIMITED
Hollinger ddh
MONETA FRIPP OPTION
4000 Metres

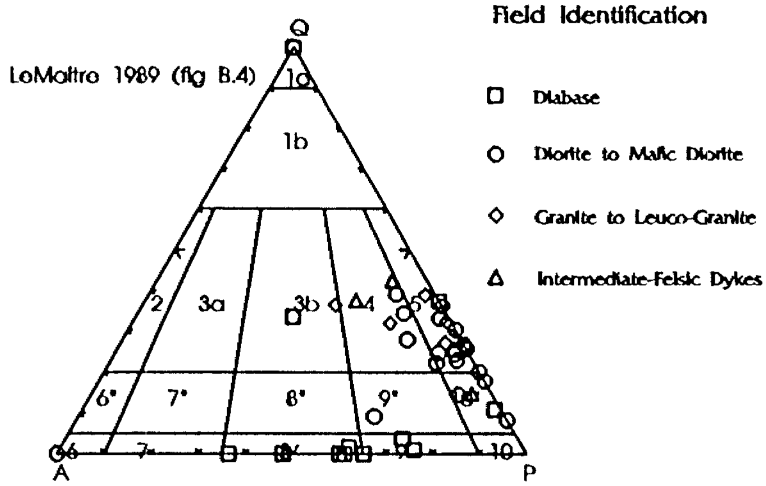
Figure 2


472500mE
475000mE
5340000mN
5337500mN
5335000mN
P 1175552
P 1175551
P 1175548
P 1175549
P 1175550
P 1175381
P 1175547
P 1175546
P 1175413
P 1175380
P 1175379
P 1175378
P 1175411
P 1175412
P 51061
P 55174
P 1175377
P 1175376
P 1175410
P 1175409
P 51070
P 51071
P 1172112
P 1172108
P 51072
P 1172111
P 1172109
P 1172110
P 1175402
P 1175571
P 1175570
P 1175403
P 1175397
P 1175572
P 1175566
P 1175401
P 1175398
P 1175569
P 1175400
P 1175568
P 1175399
P 1175567
BARTLETT LAKE
LAKE
ASTRONOMIC
N
FALCONBRIDGE LIMITED
Exploration Division
Timmins , ONTARIO
FRIPP TOWNSHIP CLAIMS
CLAIM LOCATIONS
FRIPP Twp.
Traced :
Drawn : del 22/11/91
Supervised : Houle 21/11/91
Revised :
PROJECT No: 8210
MAP No:
FILE: 8210 B
Scale : 1 : 25000 (metres)
0 250 500 750 1000



TR Tholeiitic Rhyolite
TD Tholeiitic Dacite
TA Tholeiitic Andesite
CR Calc-alkalic Rhyolite
CD Calc-alkalic Dacite
CA Calc-alkalic Andesite
CB Calc-alkalic Basalt
HFT High Fe-Tholeiite
HMT High Mg-Tholeiite
BK Basaltic Komatiite
PK Peridotitic Komatiite

Figure 4



1a	Quartzolite	7*	Quartz Syenite
1b	Quartz-rich Granitoids	7	Syenite
2	Alkali Feldspar Granite	8*	Quartz Monzonite
3a	Syeno-granite	8	Monzonite
3b	Monzo-granite	9*	Quartz Monzodiorite, Monzogabbro
4	Granodiorite	9	Monzodiorite to Monzogabbro
5	Tonalite	10*	Quartz Diorite, Quartz Gabbro
6*	Quartz alkali feldspar Syenite	10	Diorite, Gabbro
6	Alkali feldspar syenite		

Figure 5

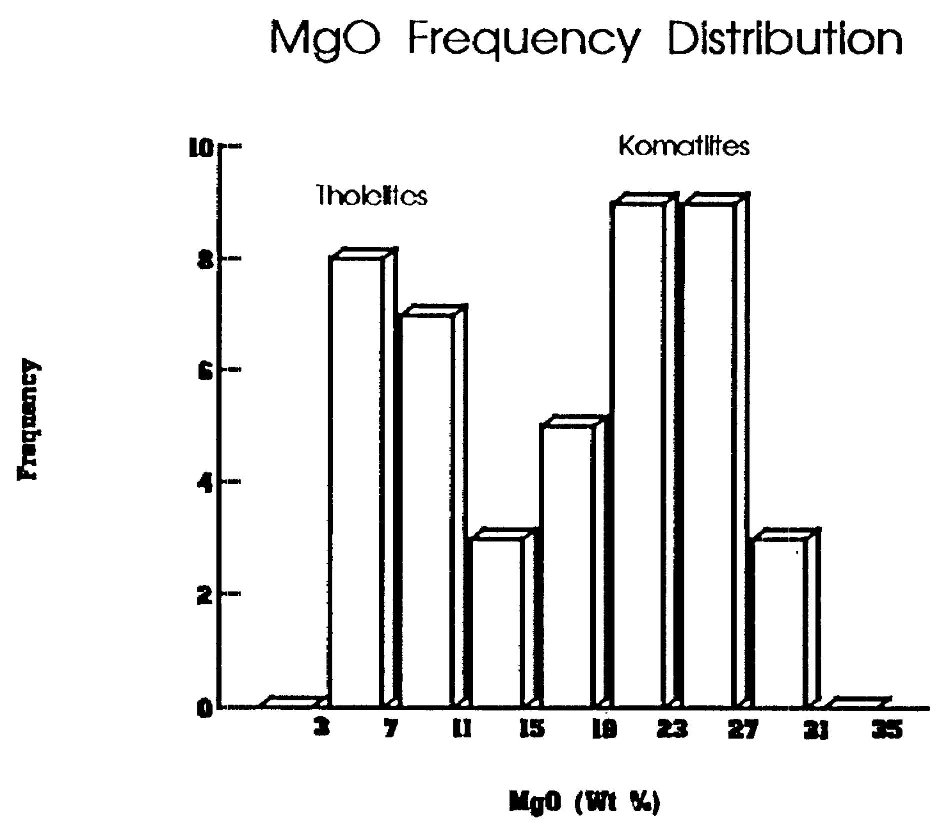
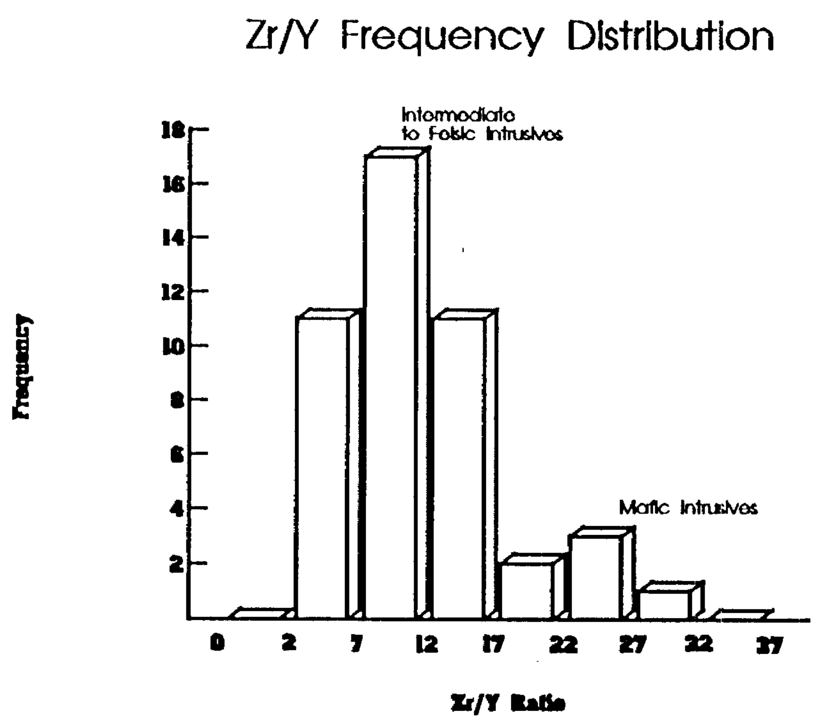

MgO Frequency Distribution
Komatiites
Tholeiites
10
8
6
4
2
0
Frequency
3
7
11
15
19
23
27
31
35
MgO (Wt %)

Figure 6



Zr/Y Frequency Distribution
Intermediate
to Felsic Intrusives
Mafic Intrusives
18
16
14
12
10
8
6
4
2
Frequency
0
2
7
12
17
22
27
32
37
Zr/Y Ratio

Figure 7

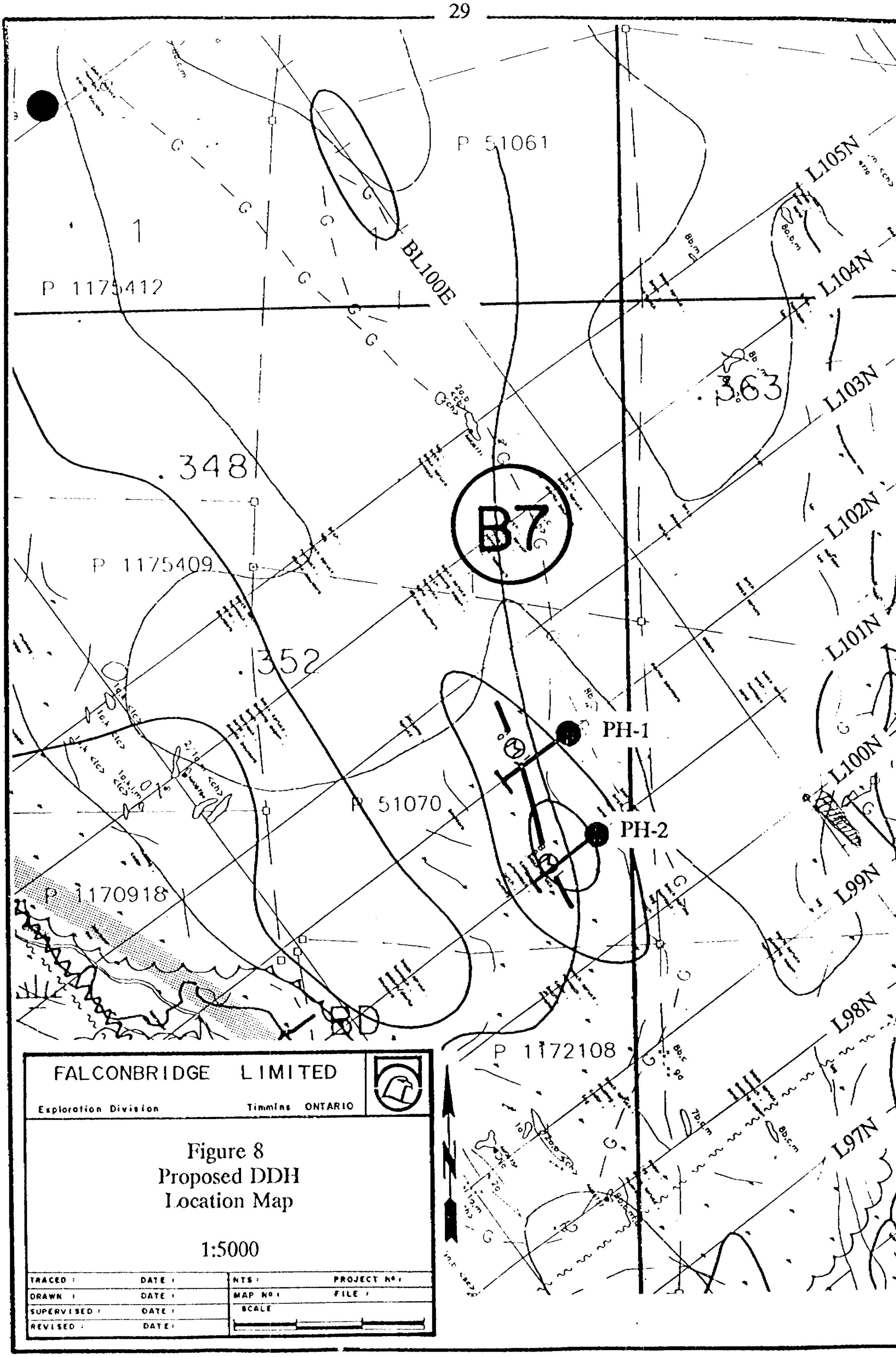


Figure 8
Proposed DDH
Location Map

1:5000

Table 3

1991 Mapping Program, Fripp Township, Whole Rock Data
(Project 8210)

Sample Number	Field Identification	Grid Coordinates Northing	Grid Coordinates Easting	TSL Report Number
AM06518	diabase	90+00	94+77	M9712
AM06519	diabase	90+00	95+60	M9712
AM06520	diabase	90+00	96+60	M9712
AM06521	diabase	90+00	98+00	M9712
AM06522	diabase	89+95	99+96	M9712
AM06523	diabase	89+03	98+80	M9712
AM06524	diabase	89+97	96+20	M9712
AM06525	diabase			M9712
AM06526	f.g. gabbro to coarse basaltic flow	86+03	96+77	M9712
AM06527	f.g. kom serpentine <tc>	85+05	95+95	M9712
AM06528	m-c.g. mafic intrusive (gabbro)	85+05	97+25	M9712
AM06529	f.g. kom. serpentine <tc>	87+00	91+37	M9712
AM06530	f.g. kom. serpentine <tc>	87+00	91+00	M9712
AM06531	granitic dyke	87+00	89+70	M9712
AM06532	diabase, shrd. foliated	89+00	93+82	M9712
AM06533	diabase, shrd. foliated	89+00	90+84	M9712
AM06534	diabase, shrd. foliated	90+20	91+20	M9712
AM06535	f.-m.gr kom., amph.			M9712
AM06536	Mg-tholeiite,-kom. <sp,tc>	91+32	91+20	M9712
AM06537	f.g. kom. serpentine <tc>	92+12	94+32	M9712
AM06538	f.g. kom. serpentine <tc,sil,cb,ep>	92+12	94+34	M9712
AM06539	Porphyritic granodiorite	87+10	87+40	M9712
AM06540	f.-m.gr kom., amph.	86+73	89+02	M9712
AM06541	felsic dyke	92+00	88+79	M9854
AM06542	f.g. kom. serpentine <tc>, magnetic	92+12	88+90	M9854
AM06543	f.g. kom. serpentine <tc>, magnetic	93+00	95+70	M9854
AM06544	f.g. kom. serpentine <tc>, magnetic	93+03	94+25	M9854
AM06545	f.g. kom. serpentine <tc>, magnetic	92+90	91+40	M9854
AM06546	basaltic komatiite	95+00	93+70	M9854
AM06547	basaltic komatiite, amph.,mte.	94+90	93+10	M9854
AM06548	diorite-granodiorite	95+03	92+06	M9854
AM06549				
AM06550	basalt-Mg tholeiite, amph.	102+00	106+16	M9854
AM06801	diorite to gabbro, mte.	101+43	109+23	M9854
AM06802	basalt-Mg tholeiite, amph., biotite	103+00	107+22	M9854
AM06803	f.g. kom. serpentine <tc>, magnetic	104+09	94+66	M9854
AM06804	basalt-Mg tholeiite-Kom. amph.	107+70	94+90	M9854
AM06805	basalt-Mg tholeiite-Kom. amph.	112+20	95+06	M9854
AM06721	msv., m.gr., gabbro	91+00	95+05	M9712
AM06722	shrd., gabbro/kom., <K,Chl>	91+20	94+86	M9712
AM06723	andesite,/dacite flow	91+00	100+37	M9712
AM06724	gabbro-granite contact	90+58	95+98	M9712
AM06725	diabase ?	88+06	96+48	M9712
AM06726	shrd., gabbro	87+01	102+45	M9712
AM06727	gabbro, blue qtz.-eyes	83+00	92+62	M9712
AM06728	biotite granite	83+60	90+12	M9712
AM06729	gabbro, blue qtz.-eyes	84+00	92+10	M9712
AM06730	biotite granite	86+10	91+50	M9712
AM06731	Kom. flow	86+00	91+80	M9712
AM06733	Kom. flow	85+00	91+42	M9712
AM06734	Kom. flow, <Tc>	84+19	89+98	M9712
AM06737	diabase ?	84+65	89+12	M9712

Table 3 (cont'd)

1991 Mapping Program, Fripp Township, Whole Rock Data
(Project 8210)

Sample Number	Field Identification	Grid Coordinates Northing	Grid Coordinates Easting	TSL Report Number
AM06739	gabbro/diorite	90+98	86+35	M9712
AM06740	KR-AP Standard			
AM06741	Kom. flow, amph., <cb>	89+99	88+45	M9712
AM06742	granodiorite	90+05	88+49	M9712
AM06743	leucocratic granodiorite	90+01	88+45	M9712
AM06744	shrd., dirorite/gabbro, qtz., 3-5% Po,Py	90+00	88+00	M9712
AM06746	mafic diorite/diabase	89+27	84+78	M9712
AM06747	diabase	89+00	87+40	M9712
AM06748	shrd., diabase, <Chl>	88+00	88+44	M9712
AM06749	foliated, diorite	88+02	87+44	M9712
AM06750	Basalt, amph., <cb>	97+00	90+70	M9954
AM06751	m.-c.gr. diorite	95+50	90+05	M9954
AM06752	shrd., diorite, <Fe-cb, chl>	99+01	90+47	M9954
AM06753	felsic dyke, sericitized	99+05	92+02	M9954
AM06754	basalt-Kom., stringers talc, carb.	99+00	93+64	M9954
AM06755	f.gr., basalt, amph., Fe-carb	99+03	94+37	M9954
AM06756	polysutured kom. <tc-cb>	99+14	95+42	M9954
AM06757	msv. diorite/gabbro	98+00	96+05	M9954
AM06758	felsic intrusive, biotitie	98+00	94+36	M9954
AM06759	shrd. Kom. flow, amph.	98+00	94+20	M9954
AM06760	msv. diorite to gabbro	98+00	90+40	M9954
AM06761	polysutured kom.-basalt, <chl>	100+00	95+20	M9954
AM06762	basalt-kom., fg., amph., <chl>	100+00	92+23	M9954
AM06763	shrd. , biotite diorite, cataclastite	100+00	91+62	M9954
AM06764	kom.-basalt, fg. msv.	103+94	95+07	M9954
AM06765	kom.-basalt, m.g., phyllitic <chl>	104+08	105+78	M9954
AM06766	basalt, fg. banded, <chl, Fe-cb>	104+03	107+16	M9954
AM06767	m.-c.gr., gabbro/diorite	104+00	111+06	M9954
AM06768	m.gr. basalt, foliated, amph., <cb>	105+01	106+52	M9954
AM06769	pillowed basalt, amph., <cb, chl>	105+24	105+87	M9954
AM06770	msv. m.gr. gabbro	105+00	104+16	M9954
AM06771	foliated basalt, amph. <chl, cb>	104+94	99+43	M9954
AM06772	msv., m.-c.gr. diorite	94+52	96+61	M9954
AM06773	basalt/tuff?, foliated	97+15	106+87	M9954
AM06774	basalt/tuff?, foliated	100+22	107+94	M9954
AM06775	m.gr. basalt, foliated, amph., <cb>	98+98	107+40	M9954
AM06776	foliated basalt, f.g.	110+00	95+80	M9954
AM06777	f.-m.gr. diorite, wkly., <sil, chl>	109+97	96+42	M9954
AM06778	KR-AP Standard			M9954
AM06745	massive po,py, trace Cpy, 15% Mte	90+00	88+00	M9712
AM06738	Qtz. vein, 60-75% po,py,mte.	84+50	88+94	M9712
AM06735	Kom. flow, <Tc>	84+19	89+90	M9712
AM06736	shrd., gabbro, qtz.-flooded, 5-8% Py	84+59	89+04	M9712
AM06732	Kom. flow	86+00	91+80	M9712

Table 4

Sample Number	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr2O3 %	Zr (ppm)	Y (ppm)	Cu (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)	S (ppm)	LOI %
AM06518	49.29	15.28	14.07	10.26	6.00	2.31	0.54	1.40	0.22	0.12	0.035	208	24	195	90	60	45	400	0.51
AM06519	49.13	13.62	15.47	9.96	6.59	2.14	0.26	1.54	0.24	0.14	0.060	222	26	215	45	70	50	500	0.19
AM06520	53.81	15.84	8.97	5.53	6.89	4.59	1.28	0.73	0.16	0.22	0.060	148	12	20	45	180	30	400	1.95
AM06521	46.25	14.19	14.17	11.09	7.62	1.64	0.70	1.02	0.25	0.06	0.055	146	20	85	55	40	50	400	1.47
AM06522	63.95	14.56	5.38	3.78	3.13	3.97	0.96	0.68	0.08	0.20	0.080	184	14	25	65	20	15	200	1.73
AM06523	49.59	15.78	14.48	9.77	4.42	2.59	0.78	1.66	0.22	0.16	0.055	194	26	190	105	60	40	500	0.75
AM06524	47.66	16.76	15.07	9.56	3.35	2.75	0.48	2.03	0.21	0.18	0.015	232	28	215	110	40	35	500	0.58
AM06525	48.65	13.06	12.62	11.08	7.63	2.19	0.36	1.04	0.20	0.06	0.045	182	20	85	55	100	40	700	1.22
AM06526	46.56	14.47	11.97	12.55	8.39	1.08	0.74	0.80	0.22	0.02	0.070	148	12	15	85	60	45	400	2.07
AM06527	50.42	2.55	21.13	4.90	15.98	0.18	0.08	0.86	0.38	0.02	0.060	258	18	35	95	20	50	300	1.36
AM06528	53.26	15.83	6.93	7.94	7.22	2.93	0.60	0.62	0.18	0.18	0.065	118	12	25	120	150	35	400	2.02
AM06529	41.38	6.77	10.37	4.59	23.97	0.14	0.24	0.34	0.21	0.02	0.305	110	8	15	40	1270	80	200	10.92
AM06530	41.20	7.38	10.61	5.31	23.31	0.10	0.04	0.36	0.18	0.02	0.320	136	10	25	85	1070	80	400	9.92
AM06531	56.71	15.05	7.94	4.93	6.65	4.73	1.38	0.67	0.14	0.16	0.055	188	12	20	45	160	35	300	1.90
AM06532	48.97	13.35	15.13	9.06	7.44	2.58	0.72	1.42	0.27	0.10	0.035	186	28	135	80	130	50	400	1.59
AM06533	42.94	6.86	10.53	5.17	26.03	0.57	0.10	0.33	0.17	0.02	0.315	124	8	10	30	1280	80	300	6.55
AM06534	42.13	6.42	10.77	5.76	26.39	0.68	0.16	0.31	0.15	0.02	0.330	146	6	10	50	1390	80	200	5.52
AM06535	45.85	9.80	11.91	8.45	19.12	1.37	0.08	0.47	0.21	0.02	0.335	136	12	55	50	660	70	300	3.07
AM06536	48.93	8.05	8.35	10.19	20.36	0.85	0.16	0.36	0.23	0.02	0.380	104	8	35	55	1040	65	200	2.87
AM06537	42.91	5.21	9.34	7.78	23.27	0.10	0.02	0.24	0.25	0.02	0.300	106	8	30	55	1690	80	500	11.38
AM06538	40.77	5.66	9.88	23.41	14.64	0.09	0.06	0.24	0.19	0.02	0.305	92	6	120	40	880	100	4000	3.86
AM06539	65.59	14.28	4.69	3.67	2.62	5.46	0.68	0.90	0.10	0.24	0.030	230	16	20	25	40	20	200	1.96
AM06540	44.01	7.61	11.08	6.23	23.92	0.76	0.10	0.35	0.18	0.02	0.380	134	10	15	45	1110	80	200	3.49
AM06541	78.13	13.73	0.97	0.67	0.11	5.32	1.26	0.03	0.03	0.04	0.035	60	12	75	25	20	10	400	0.56
AM06542	47.25	13.75	13.32	11.50	8.93	1.09	0.98	0.68	0.34	0.06	0.050	40	16	45	85	80	55	1300	1.92
AM06543	42.21	7.20	10.85	7.76	22.84	0.77	0.10	0.37	0.19	0.02	0.330	56	6	30	50	1180	75	500	5.61
AM06544	48.42	5.83	9.93	10.44	19.53	0.57	0.10	0.29	0.24	0.02	0.335	60	6	30	70	1300	75	200	3.45
AM06545	43.44	6.22	11.01	5.85	27.36	0.67	0.06	0.32	0.17	0.04	0.325	52	6	80	75	1490	85	200	3.74
AM06546	43.02	5.82	11.69	5.90	25.59	0.45	0.10	0.32	0.19	0.02	0.325	48	8	45	65	1310	85	400	6.26
AM06547	48.03	7.11	13.52	13.12	13.97	1.13	0.32	0.39	0.31	0.02	0.400	42	14	10	70	1390	110	200	0.97
AM06548	66.86	15.41	4.45	2.58	1.98	4.23	2.12	0.51	0.06	0.12	0.005	154	6	225	40	40	15	300	1.03
AM06549	48.73	5.98	8.36	9.42	21.30	0.58	0.14	0.29	0.25	0.02	0.325	52	8	50	40	1130	80	200	3.67
AM06550	47.79	13.63	14.75	8.75	6.99	3.00	0.66	1.15	0.26	0.06	0.035	84	30	90	230	130	50	900	1.04
AM06801	50.91	6.62	14.27	4.15	17.14	0.71	0.78	0.51	0.26	0.02	0.195	66	18	45	150	530	70	600	2.59
AM06802	48.08	14.58	13.38	10.30	8.10	2.40	0.32	0.90	0.22	0.08	0.040	72	24	70	250	60	40	400	0.86
AM06803	40.22	6.10	9.46	5.64	25.96	0.04	0.04	0.28	0.16	0.04	0.330	36	4	20	40	1340	80	200	9.94
AM06804	42.12	6.34	10.70	4.60	28.42	0.58	0.08	0.30	0.16	0.04	0.340	8	4	30	80	1460	80	300	5.26

Table 4

Sample Number	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr2O3 %	Zr (ppm)	Y (ppm)	Cu (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)	S (ppm)	LOI %
AM06805	45.38	9.94	12.98	9.78	17.34	1.18	0.12	0.46	0.20	0.04	0.380	4	8	150	110	560	70	800	1.50
AM06721	55.11	15.45	7.94	7.03	6.39	3.03	0.54	0.65	0.13	0.18	0.075	214	14	30	60	160	30	300	1.68
AM06722	48.51	7.59	11.62	9.26	18.75	0.52	0.06	0.32	0.24	0.02	0.315	132	8	10	70	940	65	200	3.69
AM06723	53.67	18.52	8.06	9.09	5.08	0.54	0.34	0.64	0.15	0.14	0.030	114	8	5	60	40	25	200	2.12
AM06724	77.33	13.83	0.52	0.37	0.15	7.36	0.40	0.04	0.01	0.06	0.080	82	20	25	35	30	5	200	0.72
AM06725	39.12	3.40	7.38	2.76	35.25	0.09	0.04	0.17	0.21	0.04	0.230	94	4	10	105	2090	75	300	11.02
AM06726	52.75	15.01	9.01	4.78	6.86	5.13	0.84	0.69	0.14	0.20	0.055	190	12	25	40	210	30	300	2.37
AM06727	56.97	15.23	8.24	6.55	5.90	3.12	0.56	0.82	0.13	0.20	0.075	186	14	35	70	130	30	500	2.20
AM06728	68.20	15.59	2.51	2.36	1.30	4.49	2.52	0.37	0.02	0.20	0.025	160	12	5	10	10	15	700	2.49
AM06729	56.32	14.86	7.88	6.05	5.92	3.13	0.86	0.70	0.13	0.20	0.070	238	16	35	65	140	30	500	2.31
AM06730	69.44	15.15	2.71	1.79	1.95	4.95	1.12	0.31	0.04	0.12	0.095	272	10	10	25	30	10	200	1.67
AM06731	43.62	5.93	8.97	5.47	23.27	0.06	0.04	0.28	0.15	0.02	0.310	108	8	20	45	1390	75	800	10.62
AM06733	36.50	4.26	7.95	7.72	24.77	0.02	0.02	0.21	0.15	0.02	0.245	88	2	15	10	1570	75	800	16.46
AM06734	49.26	6.93	9.50	4.66	20.95	0.13	0.10	0.34	0.16	0.02	0.360	132	14	10	115	1080	70	400	6.92
AM06737	39.60	5.62	9.59	11.70	21.01	0.39	0.06	0.25	0.22	0.02	0.300	122	6	15	55	1180	75	300	9.49
AM06739	57.92	16.19	7.38	6.95	5.15	3.35	0.92	0.77	0.12	0.20	0.050	164	20	25	70	140	30	200	1.19
AM06740	76.73	11.13	2.36	0.60	0.51	1.03	7.44	0.26	0.03	0.06	0.005	306	98	10	110	30	5	500	0.80
AM06741	46.21	9.10	11.34	8.10	18.36	1.08	0.24	0.43	0.19	0.02	0.350	152	8	105	45	620	70	700	3.00
AM06742	75.78	13.66	1.28	0.92	0.28	4.16	3.84	0.05	0.04	0.06	0.045	102	12	10	25	20	15	200	0.45
AM06743	77.12	13.77	0.33	0.19	0.11	7.64	0.20	0.02	0.01	0.04	0.060	82	8	5	5	10	5	200	0.52
AM06744	36.41	7.58	32.70	5.08	8.48	1.52	0.48	0.26	0.71	0.04	0.075	282	26	35	195	40	20	45800	4.25
AM06746	50.00	15.05	13.96	10.72	5.85	2.31	0.32	1.35	0.22	0.10	0.040	186	24	145	70	70	45	500	0.44
AM06747	49.68	16.67	13.33	9.64	3.31	2.77	0.46	1.50	0.21	0.20	0.030	244	32	160	100	50	35	500	0.80
AM06748	47.63	8.96	11.29	7.84	19.17	1.26	0.10	0.44	0.20	0.02	0.390	160	10	35	40	750	75	800	1.40
AM06749	65.14	17.21	3.55	3.41	1.54	5.26	1.62	0.57	0.09	0.18	0.035	116	10	10	25	30	25	200	1.30
AM06750	58.08	15.67	10.20	4.62	3.40	3.62	1.02	0.79	0.34	0.18	0.005	130	18	45	90	40	20	600	1.61
AM06751	58.00	14.80	7.92	4.72	4.94	5.16	1.02	0.69	0.14	0.20	0.045	188	24	80	75	130	25	200	1.50
AM06752	55.67	15.88	8.47	5.80	5.71	3.37	1.70	0.76	0.17	0.18	0.030	126	18	25	110	120	30	200	1.98
AM06753	76.17	13.18	1.06	0.78	0.24	4.65	3.00	0.04	0.03	0.04	0.045	64	12	45	20	20	15	200	0.44
AM06754	39.47	6.03	9.47	7.92	22.20	0.44	0.20	0.28	0.20	0.02	0.310	40	4	85	25	1210	75	400	12.11
AM06755	45.78	7.86	12.76	19.45	9.21	0.64	0.22	0.42	0.36	0.02	0.400	66	12	210	75	1180	90	3300	0.91
AM06756	42.12	5.87	10.66	5.21	26.16	0.36	0.04	0.29	0.18	0.02	0.335	56	8	30	45	1440	85	200	7.40
AM06757	55.63	15.20	9.08	6.11	6.31	3.11	1.46	0.73	0.16	0.16	0.040	120	16	35	115	160	40	400	1.91
AM06758	77.86	12.61	1.05	0.75	0.21	5.65	1.44	0.03	0.01	0.04	0.005	84	4	10	25	10	5	200	0.33
AM06759	49.05	6.15	8.45	13.98	14.87	1.14	0.54	0.33	0.26	0.02	0.260	74	8	25	85	1070	75	200	3.81
AM06760	56.55	15.18	9.01	5.33	6.14	3.46	2.06	0.53	0.16	0.16	0.040	74	16	25	105	170	30	200	2.01
AM06761	49.06	5.02	8.45	9.12	21.32	0.25	0.08	0.22	0.19	0.02	0.265	34	8	10	85	1140	75	200	4.03

Table 4

Sample Number	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr2O3 %	Zr (ppm)	Y (ppm)	Cu (ppm)	Zn (ppm)	Ni (ppm)	Co (ppm)	S (ppm)	LOI %
AM06761	49.06	5.02	8.45	9.12	21.32	0.25	0.08	0.22	0.19	0.02	0.265	34	8	10	85	1140	75	200	4.03
AM06762	48.24	6.98	8.81	6.77	21.59	0.57	0.06	0.32	0.17	0.02	0.330	30	8	50	45	1180	70	300	4.47
AM06763	58.80	14.64	8.07	5.51	4.39	3.07	1.86	0.64	0.18	0.16	0.030	172	32	70	125	120	25	500	1.77
AM06764	42.02	6.90	11.05	13.30	16.64	0.56	0.28	0.32	0.23	0.02	0.325	32	10	15	65	1010	80	300	7.17
AM06765	48.85	14.82	13.84	10.72	6.48	2.31	0.82	1.20	0.24	0.06	0.030	90	30	70	105	130	50	600	1.14
AM06766	49.65	14.09	13.91	11.07	6.84	1.65	0.22	0.96	0.23	0.04	0.025	76	22	80	90	100	50	700	0.99
AM06767	54.20	15.32	9.02	8.15	8.24	2.53	0.34	0.38	0.15	0.06	0.075	86	14	50	85	200	45	300	1.91
AM06768	47.53	13.53	14.22	9.81	8.07	1.74	0.34	0.95	0.23	0.06	0.025	98	24	75	65	140	55	500	1.17
AM06769	52.17	14.50	12.56	8.44	6.67	2.40	0.82	0.96	0.22	0.08	0.030	96	24	85	70	110	40	900	1.69
AM06770	47.53	14.52	13.32	8.45	9.84	1.93	0.64	0.93	0.21	0.02	0.050	60	20	25	75	150	55	300	2.57
AM06771	38.12	4.34	9.43	4.71	27.40	0.03	0.02	0.22	0.19	0.02	0.300	48	2	15	50	1560	80	500	13.05
AM06772	54.42	15.31	8.38	6.77	6.42	3.00	0.86	0.67	0.14	0.16	0.040	140	16	50	115	150	35	300	2.19
AM06773	51.19	14.26	13.17	8.87	6.65	2.37	0.54	1.12	0.21	0.06	0.035	160	28	225	80	110	50	600	1.20
AM06774	50.35	12.96	13.13	9.31	7.12	2.52	0.48	0.96	0.23	0.04	0.025	84	22	55	75	110	50	400	1.37
AM06775	47.67	15.31	12.54	9.82	7.07	2.41	0.94	0.85	0.23	0.06	0.030	82	22	295	70	110	50	1600	2.00
AM06776	47.33	15.85	12.38	12.14	6.83	1.14	0.74	0.77	0.33	0.04	0.060	66	18	105	50	190	45	300	1.87
AM06777	52.47	15.37	9.54	9.96	6.10	2.15	0.60	0.94	0.18	0.06	0.020	46	14	65	65	100	40	800	1.77
AM06778	75.85	11.08	2.31	0.52	0.51	1.02	7.44	0.25	0.03	0.06	0.005	274	110	20	95	20	10	600	0.89

AM06745	Results Not Available
AM06738	Results Not Available
AM06735	Results Not Available
AM06736	Results Not Available
AM06732	Results Not Available

Table 5

Fripp Township, (Project 8210) Alteration Index Table

Sample Number	Field Identification	Ishikawa Index	Alum Index	Severin/ Knuckey
AM06764	kom.-basalt, fg. msv.	54.97	48.80	4.69
AM06526	f.g. gabbro to coarse basaltic flow	40.11	100.70	6.24
AM06765	kom.-basalt, m.g., phyllitic <chl>	35.91	107.00	8.06
AM06766	basalt, fg. banded, <chl, Fe-cb>	35.69	108.89	7.08
AM06756	polysutured kom. <tc-cb>	82.47	104.63	8.08
AM06761	polysutured kom.-basalt, <chl>	69.55	53.12	9.07
AM06547	basaltic komatiite, amph.,mte.	50.07	48.80	4.91
AM06759	shrd. Kom. flow, amph.	50.47	39.27	5.62
AM06722	shrd., gabbro/kom., <K,Chl>	65.79	77.13	7.16
AM06762	basalt-kom., fg., amph., <chl>	74.68	94.32	6.13
AM06775	m.gr. basalt, foliated, amph., <cb>	39.58	116.25	5.72
AM06774	basalt/tuff?, foliated	39.11	105.28	6.34
AM06773	basalt/tuff?, foliated	39.01	121.05	7.12
AM06550	basalt-Mg tholeiite, amph.	39.43	109.83	19.57
AM06802	basalt-Mg tholeiite, amph., biotite	39.87	111.98	19.69
AM06776	foliated basalt, f.g.	36.31	113.05	3.77
AM06769	pillowed basalt, amph., <cb, chl>	40.86	124.36	6.46
AM06768	m.gr. basalt, foliated, amph., <cb>	42.13	113.79	5.63
AM06805	basalt-Mg tholeiite-Kom. amph.	61.44	89.71	10.04
AM06803	f.g. kom. serpentine <tc>, magnetic	82.07	106.64	7.04
AM06771	foliated basalt, amph. <chl, cb>	85.26	91.18	10.55
AM06804	basalt-Mg tholeiite-Kom. amph.	84.62	120.53	15.44
AM06538	f.g. kom. serpentine <tc,sil,cb,ep>	38.48	24.02	1.70
AM06542	f.g. kom. serpentine <tc>, magnetic	44.04	101.33	6.75
AM06537	f.g. kom. serpentine <tc>	74.72	65.95	6.98
AM06536	Mg-tholeiite,-kom. <sp,tc>	65.02	71.88	4.98
AM06741	Kom. flow, amph., <cb>	66.95	96.60	4.90
AM06731	Kom. flow	80.83	106.46	8.14
AM06540	f.-m.gr kom., amph.	77.46	107.33	6.44
AM06734	Kom. flow, <Tc>	81.46	141.72	24.01
AM06733	Kom. flow	76.21	54.90	1.29
AM06535	f.-m.gr kom., amph.	66.16	98.99	5.09
AM06723	andesite,/dacite flow	36.01	185.76	6.23
AM06529	f.g. kom. serpentine <tc>	83.66	136.22	8.46
AM06527	f.g. kom serpentine <tc>	75.97	49.42	18.70
AM06755	f.gr., basalt, amph., Fe-carb	31.94	38.70	3.73
AM06754	basalt-Kom., stringers talc, carb.	72.82	70.44	2.99
AM06750	Basalt, amph., <cb>	34.91	169.22	10.92
AM06544	f.g. kom. serpentine <tc>, magnetic	64.07	52.48	6.36
AM06543	f.g. kom. serpentine <tc>, magnetic	72.89	83.43	5.86
AM06545	f.g. kom. serpentine <tc>, magnetic	80.79	94.53	11.50
AM06530	f.g. kom. serpentine <tc>	81.19	135.41	15.71
AM06546	basaltic komatiite	80.18	90.23	10.24
AM06549	Kom. flow, <tc,serp>	68.19	58.97	4.00

Appendix I

FALCONBRIDGE LIMITED
Metallurgical Technology

Inter-office memo

Date: January 24, 1992

To: M.Y. Houle

From: J.D. Scott

Subject: Mineralogy and petrology of a mineralized shear zone in DDH F-21, Moneta-Fripp Property

Nine small samples of core were received from DDH F-21, Moneta-Fripp Property, with the request that an attempt be made to provide evidence for either a primary or a secondary origin for the high-magnesium assemblage in the main ore zone. Two quite different genetic models were proposed for consideration and the slides were examined for evidence which might confirm or eliminate one of them; these were:
1] A "Butte model" hydrothermally Cu-mineralized breccia or shear zone in diorite.
2] A "classic" peridotite-hosted Cu-Ni mineralization in a peridotitic xenolith in diorite.
The exploration implication of the two models is considerable, since there is the strong possibility of additional zones in the case of model [1] but model [2] would represent an isolated zone which would be too small to develop independently. The original deposit mapping by Hollinger Consolidated Gold Mines strongly favoured model [2].

A preliminary examination of the thin sections showed that what was observed in the slides bore little relationship to what was claimed to be their respective rock types. It was necessary to obtain X-ray diffraction patterns on the bulk silicate minerals in each sample in order to prove the accuracy of the present interpretation of the suite. The sample descriptions and mineralogy on which the conclusions of this report are based are given in Appendix I; the sample locations and their original field identifications are provided in Appendix II.

The silicate mineralogy of the mineralized zone (Table 1) immediately removed model [2] from consideration; furthermore, neither pyrrhotite nor nickel sulfides were observed. No olivine was found and the "peridotite" is actually a chlorite schist; the "nodular olivine" reported in field descriptions (325.0') is actually composed of fully-chloritized hornblende crystals (Figure 3). The general rock type of the zone is best described as a meta-amphibolite, which has been heavily chloritized and overprinted by stilpnomelane (Figure 2).

Model [1] is conclusively confirmed; the rocks are definitely of secondary hydrothermal origin and are not at all what they were represented to be on the basis of the old Hollinger Consolidated Gold Mines drill logs and field identifications. Only the host [hornblende] diorite was correctly identified. The rocks in the mineralized zone consist almost entirely of various mixtures of secondary amphiboles [magnesio-hornblende and actinolite], stilpnomelane and chlorite; with local growth of metamorphic pyrite and hydrothermal deposition of chalcopyrite and calcite. The host diorite of the Kenogamissi batholith has been locally comprehensively sheared and completely hydrothermally replaced within the mineralized shear zone. Note that the "tectonic banding" referred to in the field descriptions is actually now a chemical banding (c.f. 262.6'), caused by the presence of actinolite-rich layers, and any original shear-related openings have been completely obscured and can now only be inferred.

With reference to both deposit modelling and geophysical prospecting, the locally voluminous pyrite in the zone has no direct genetic connection with the chalcopyrite. All pyrite observed (with the possible exception of the first generation in 328.0', Figure 5) appears to have been metamorphically grown in place, whereas the chalcopyrite, together with minor calcite, was emplaced by late stage hydrothermal replacement of the silicates. Chalcopyrite replaces all of the silicates, except the very latest generation of "green" chlorite crystal laths, and preferentially replaces actinolite crystal mats in the "light" coloured bands of 362.6' (Figure 1).

The tentative paragenetic sequence (Table 2) derived from study of these slides strongly suggests that the deposit experienced two separate episodes of fracturing and hydrothermal mineral growth, the first with a major shearing axis near the hanging wall and the second near the foot wall of the zone. The evolution in composition of the hydrothermal solution into four sequential stages is clearly evidenced by the observed mineralogy. The sequence was: [1] high Mg, [2] high-Ca, [3] high-K, low-Fe^{+3}, low-but-increasing Ca, [4] high-Fe^{+2}. There seems to have been only a single chalcopyrite deposition episode, early in the final high-Fe stage. The high-K hydrothermal pulse was the strongest since it not only formed the voluminous stilpnomelane throughout the zone but also sericitized the albite in the host diorite.

Based on a theoretical calculation of the probable evolution of the third stage hydrothermal solution, responsible for deposition of stilpnomelane in the mineralized shear zone (see discussion under 262.6', Appendix I), I suggest that the presence of hematite deposition in other rocks in the area, possibly accompanied by calcite veining, might prove to be an exploration guide to additional "hidden" hydrothermal replacement zones.

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Senior Staff Scientist

Table 1. **Silicate mineralogy of the alteration zone**

footage	stp	hbde	act	chlorite blue	chlorite grey	chlorite green	ap	cal	qtz	tc	shearing
262.6	vc	c	c	mr	-	-	tr	tr	-	tr	none
269.2	c	-	tr	vc	r	-	tr	-	-	-	minor
278.2	vc	c	c	-	tr	-	tr	-	-	-	trace
293.8	c	c	c	-	-	tr	-	c	tr	mr	none
300.0	mr	-	-	c	c	mr	-	-	-	-	rare
325.0	-	-	tr	mr	c	mr	tr	-	-	-	minor
328.0*	tr	-	-	-	c	c	tr	-	c	tr	major

* minor sphene

	mineral		amount	chlorite type	
stp	stilpnomelane	vc	very common	blue	Mg >> Fe
hbde	hornblende	c	common	grey	Mg ≥ Fe
act	actinolite	mr	minor	green	Fe > Mg
ap	apatite	r	rare		
cal	calcite	tr	trace		
qtz	quartz				
tc	talc				

Table 2. **Tentative paragenetic sequence**

Stage	Remarks
1	faulting, probable development of many parallel "open" hanging wall fractures
2	high-Mg hydrothermal solution infiltration
	- growth of magnesio-hornblende (or replacement of diorite hornblende)
	- deposition of "blue" Mg-chlorite throughout both zones
3	high-Ca hydrothermal solution infiltration
	- growth of actinolite fills all available hanging wall zone openings
	- minor replacement of magnesio-hornblende by actinolite
	- late alteration of actinolite to a blocky amphibole (293.8')
	- probable deposition of apatite (and sphene in 328.0')
4	pro-grade metamorphic growth of crystalline pyrite
5	major faulting, development of many parallel "open" foot wall fractures
6	high-K, low-Fe^{+3} hydrothermal solution infiltration [sericitizes the host diorite]
	- hanging wall zone (262.6' to 293.8')
	- pervasive alteration of hornblende to, and deposition of, stilpnomelane
	- actinolite-rich layers weakly altered, appearance of "chemical banding"
	- foot wall zone (300.0' to 328.0')
	- replacement of "blue" chlorite by "grey" and growth of "grey" chlorite
	- growth of secondary (retrograde?) pyrite [overgrows pyrite of stage 4]
7	high-Fe^{+2} hydrothermal solution (± Cu) infiltration
	- deposition of chalcopyrite (± calcite), and replacement of actinolite
	- growth of void and fracture filling "green" chlorite laths in the foot wall zone

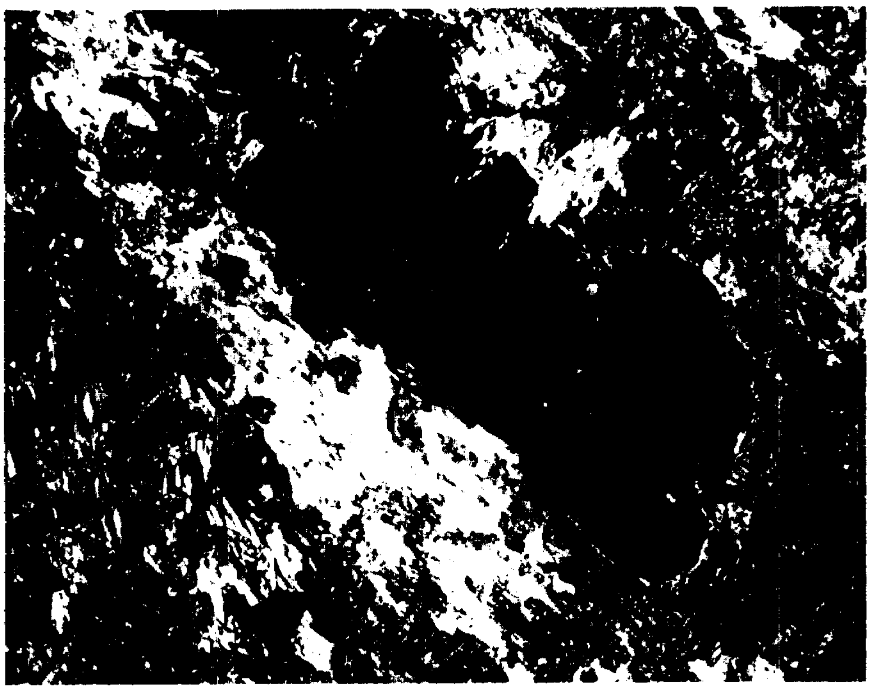


Figure 1. F-21 @ 262.6' Actinolite band in stilpnomelane schist 40X x-nicols

Fibrous amphibole (white, lightly streaked in the fibre direction; actinolite?), showing fibre directions both in the plane of a "white" band in the rock and perpendicular to the plane (the white band crosses the figure diagonally from upper left to lower right). The relatively large (200μ) "speckled" brown-with-a-black-core rounded masses, both in the actinolite and filling much of the upper right and lower left corners of the figure, are stilpnomelane. The fine grained blue and white speckled areas in the actinolite (e.g. the entire lower right corner of the figure) are "blue" chlorite, apparently a reaction product from the alteration of actinolite to stilpnomelane. The large central black mass is chalcopyrite, replacing the actinolite (and stilpnomelane, where they are in contact).

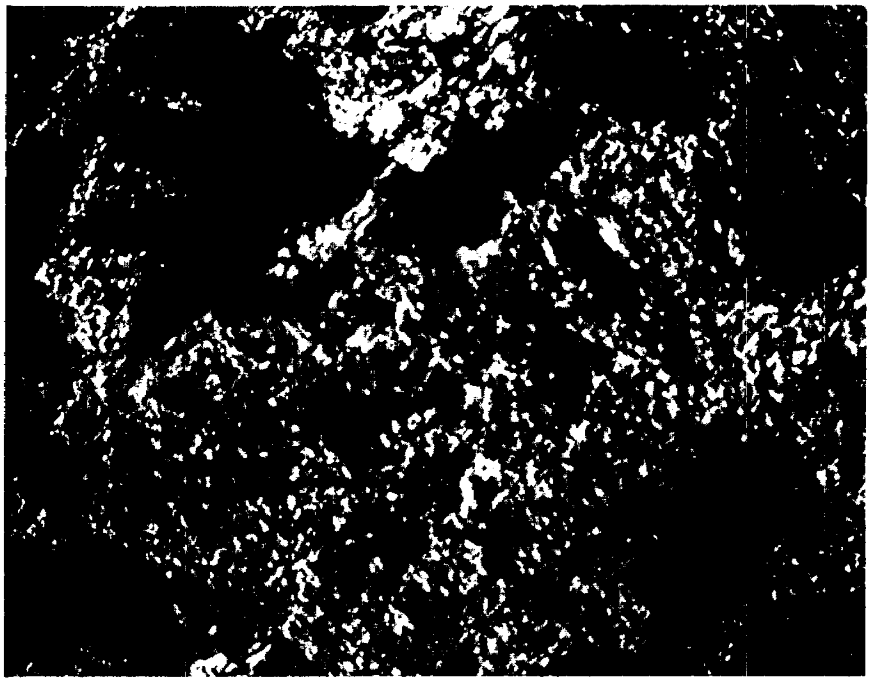


Figure 2. F-21 @ 269.2' Chlorite-stilpnomelane-pyrite 40X x-nicols

Fine grained blue-with-white-speckles (all of the central area) high-magnesian chlorite, replaced by pyrite (subhedral, black; the upper left corner area is very dark blue chlorite, not pyrite) and overprinted by fine grained stilpnomelane (brown). The stilpnomelane tends to surround the pyrite grains and to form along microshears in the blue chlorite; however, the pyrite shows no signs of replacement and does not appear to have contributed any iron to the formation of stilpnomelane. Large laths of late grey chlorite (dark "fuzzy" green-grey) replace blue chlorite, in part along microshears, in the upper central area of the figure [above and partly enclosed by the stilpnomelane band]. The "white" areas at the central upper and right edges are a complex mixture of fine grained stilpnomelane replacing somewhat coarser grained blue chlorite.

Figure 3. F-21 @ 325.0' Chlorite schist 40X x-nicols

Large "hornblende" crystal (light grey, upper right two thirds of figure) now completely replaced by very fine grained "brown" chlorite; residual hornblende parting is outlined (white streaks at 45°) by optically continuous "grey" chlorite. The fine grained "speckled" dark material at the lower left and upper left corners of the figure is "blue" chlorite, partly replaced by "grey" chlorite in somewhat coarser crystallites. A patch of pure blue chlorite (dark grey, centre left edge) is replaced by both grey and green chlorite laths. The fracture in the "hornblende" (dark band, lower right) was first filled with elongate blue chlorite laths, these were later replaced/overgrown by green chlorite crystals (larger white to light grey "feathery" crystals, including the two white patches just below the dark band). Green chlorite crystals outline/replace most of the exterior of the "hornblende".

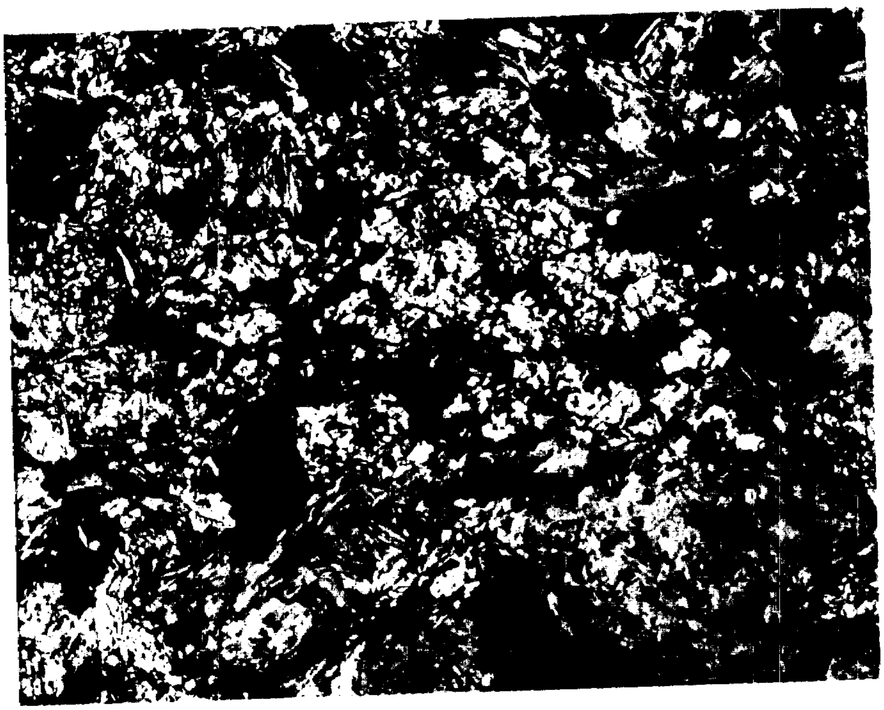


Figure 4. F-21 @ 328.0' Pyritized quartz-chlorite breccia 40X

Coarse contorted and "rolled" grey to pale greenish chlorite flakes (medium grey laths) fill microfractures (generally oriented horizontally in this view) and surround heavily brecciated and cracked quartz (white) and pyrite (black) grains. The brecciation appears to be mainly "crush" fracturing since there is very little strain observable in the quartz grains. The slightly brighter light grey area almost surrounded by pyrite at the upper right is fine grained talc, with a trace of enclosed stilpnomelane. Note the radiating texture of many of the green chlorite crystals, they obviously grew within the shear zone as open-space fillings.

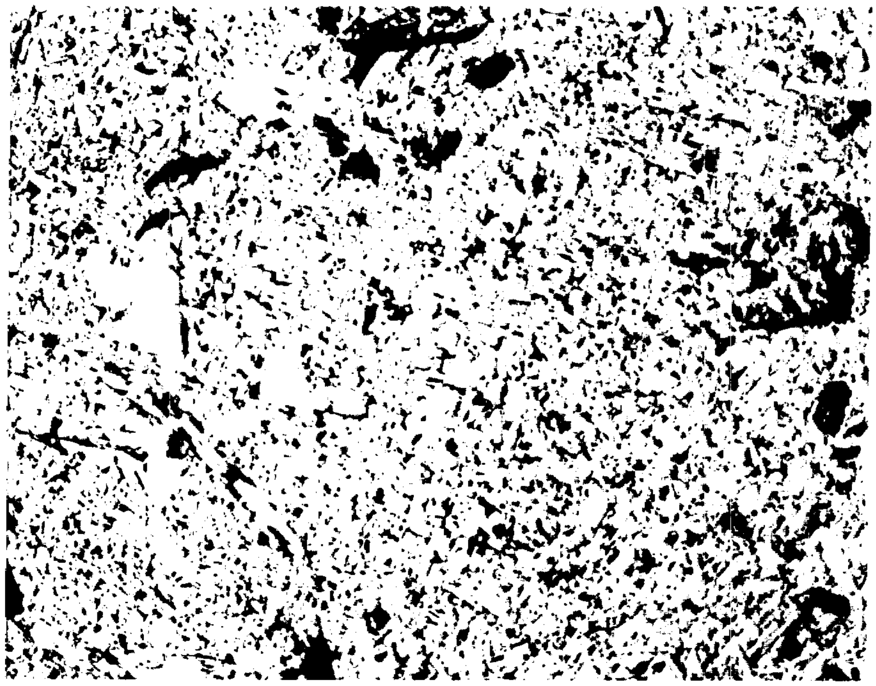


Figure 5. F-21 @ 328.0' Chalcopyrite infilled pyrite breccia 51X

Metamorphic growth pyrite (pale grey, slightly lower relief, very numerous tiny poikilitic black holes) overgrowing a crystalline pyrite (white, smooth) breccia. A 300μ grain of chalcopyrite (medium grey, upper right edge) replaces chlorite (black) and numerous tiny (10 to 20μ) chalcopyrite grains infill many of the voids in the pyrite meshwork (not distinct at this magnification).

Appendix I   Sample descriptions from polished thin sections

Note on chlorite terminology as used herein (see Table 1 for estimated Mg/Fe):

blue	Berlin blue to white interference colours; non-pleochroic white in plane light.
grey	pale grey-green interference colours; weak pleochroism in pale grey to white.
green	dark to light green interference colours; strong pleochroism in brownish greens

F-21 @ 260.7'   Hornblende diorite

A relatively coarse grained hornblende diorite with about 15% interstitial quartz. The hornblende is pargasitic and is strongly rimmed by and altered to very coarse flakes of a dark green [iron-rich?] chlorite; this appears to be late hydrothermal alteration. The plagioclase is a pure albite [XRD] which has been heavily overprinted by a very fine grained sericite [almost all of the albite twinning is obscured]. The quartz is moderately strained and frequently contains tiny rutile needles arranged in hexagonal arrays.

In order to see if the whole rock data for AM06810 (a composite of 259.0' to 260.8') would fit the observed mineralogy, the mineralogical composition linear equation matrix was solved. Three assumptions were made:
1] the feldspar is pure albite
2] the amphibole is a pargasitic hornblende [Na/K, Ca amphibole]
3] the chlorite is similar to the Pearl Lake porphyry alteration [Fe = Mg, atomic].
The calculated mineralogy was then:

chlorite	25.8%
hornblende	26.5
albite	21.6
muscovite	7.0
quartz	18.4
rutile	0.4
	99.7

This fits the thin section and the XRD quite acceptably; microprobe analyses of the actual minerals would be required to refine the balance.

F-21 @ 262.6'   Stilpnomelane-amphibolite schist

This is an unusual rock, which now consists almost entirely of stilpnomelane and amphibole, with minor calcite and chlorite and trace talc and "apatite". No quartz was observed either in thin section or on bulk XRD. The banding effect is caused by the relative absence of brown stilpnomelane and/or a relative increase in the clear amphibole; in other words it is a chemical not a tectonic banding (although the hydrothermal solutions may have followed previous shear planes, now sealed and invisible). The brown bands contain relict blocky ferroan magnesio-hornblende (by XRD and optics; possibly an Mg-rich replacement of the common hornblende at 260.7'?), heavily overprinted by contorted masses of fibrous brown stilpnomelane and, where unoverprinted, weakly altered to fine grained "blue" Mg-chlorite. There is only minor fibrous actinolite, replacing the hornblende, in the brown bands. There are occasional euhedral late-calcite crystals "replacing" the hornblende. The brown bands also contain common small clear euhedral crystals of an unknown; these vary from isotropic to weakly anisotropic (pleochroic in shades of very dark blue-grey), display an "olivine-like" crack pattern and appear flattened hexagonal or orthorhombic in outline: they are probably distorted apatite crystals, but a microprobe analysis is needed for confirmation.

The clear bands consist of abundant subhedral masses of fibrous "actinolite", usually with the fibre direction either in the plane of the band or perpendicular to it (Figure 1); they may or may not contain chalcopyrite blebs to 1 mm or minor partly replaced hornblende but all show minor to trace blue chlorite replacement and are only weakly overprinted by rounded clots of stilpnomelane. There are occasional small "spots" of alteration of the actinolite to very fine grained "blue" chlorite. Where the stilpnomelane replaces the actinolite there is a reaction rim of blue chlorite developed. The chalcopyrite appears to be preferentially replacing the actinolite and chalcopyrite grains are usually surrounded by a weak replacement "rim" in the actinolite of talc and/or fine grained chlorite. When they are in contact, chalcopyrite replaces stilpnomelane. Rare euhedral calcite crystal inclusions occur in some chalcopyrite blebs or "free" in the actinolite. Three small ($<100\mu$) subhedral-cubic blebs of pyrite were noted, replacing actinolite along the edge of one of the clear bands.

The paragenetic sequence appears to have been:

1 blocky hornblende (possibly of secondary growth)
2 crosscutting shear and/or solution banding with growth of actinolite
3 copious stilpnomelane replaces the blocky hornblende (and some actinolite)
4 chalcopyrite ($\pm$ minor talc and calcite?) preferentially replaces actinolite.

The blue magnesian chlorite alteration rims between actinolite and stilpnomelane, as about one quarter of totally enclosed composite blebs in the actinolite mats, are interesting and permit some speculation about the composition of the hydrothermal fluid which generated the stilpnomelane. The actinolite replacement can be assumed to take place at constant volume, but the hornblende replacement results in a volume increase and the deposition of "excess" Mg-chlorite. If the initial hydrothermal solution is assumed to be oxidizing (ferric iron containing), high in K and very low in silica (no quartz was deposited), then, in molar terms on a constant silica basis:

$$12 \text{ actinolite} = 3 \text{ clinochlore} + 7 \text{ stilpnomelane}$$

$$8 \text{ magnesio-hornblende} \approx 3 \text{ clinochlore} + 4 \text{ stilpnomelane}$$

Dissolution of both hornblende and actinolite greatly increase the calcium level in solution, this subsequently reprecipitates as calcite crystals and veins (c.f. 293.8') since all Timmins area solutions were rich in CO_2. The aluminum from the hornblende combines with the magnesium from both amphiboles and forms "excess" Mg-chlorite (and probably also the trace talc), the ferrous iron is partitioned between the chlorite and the stilpnomelane and any excess moves away to deposit the "grey" chlorite (e.g. 269.2'). The solution evolved from oxidizing to reducing in the course of this process.

I suggest that examination of the other rocks in the area for hematite deposition might prove to be an exploration guide to additional "hidden" hydrothermal replacement zones, since the stilpnomelane may not consume all of the ferric iron available.

F-21 @ 269.2' Stilpnomelane-chlorite-pyrite "schist"

This sample appears to be the replacement equivalent of 262.6' with almost all of the amphibole replaced by very fine grained compact anomalous-blue chlorite [high magnesian, penninite in the old usage]. There are only traces of relict "actinolite" fibres remaining. The "blue" chlorite is cut by small microshears, these are usually outlined by stilpnomelane needles and the stilpnomelane is then often replaced by late "grey" chlorite laths (Figure 2). The stilpnomelane is more widespread, although not nearly as volumetrically common as in 262.6'; it appears definitely to be later than the "blue" chlorite. "Cracked" apatite (?) crystals, similar to those of 262.6' are present; they are frequently either partly or completely replaced by pyrite. Some of the pyrite is partly rimmed by a transparent <u>very</u> soft almost isotropic massive clear white unknown (possibly cryptocrystalline talc); it is so soft that most of it has plucked during polishing, leaving a hole through the rock slice, and therefore appearing to be a grain of an isotropic "large relief" mineral. There are also small areas of this mineral weakly replacing "grey" chlorite crystal laths. The large masses of pyrite randomly replace all other phases and are composed of many 20 to 100μ subhedral crystal grains; they have the subrounded to slightly ragged outlines and weakly silicate-poikilitic appearance typical of metamorphic-growth pyrite that formed in place by replacement. The pyrite grains show strong pressure-related crush-fracturing, but are not brecciated; this brittle-fracturing is the main evidence of tectonic activity in this sample. Two small (<50μ) blebs of chalcopyrite were observed, attached to the outside of large pyrite clumps. Neither talc nor serpentine was detected.

F-21 @ 278.2' Stilnomelane-amphibolite "schist"

This sample appears to be equivalent to 262.6'. The stilpnomelane overprinting is not quite as complete and there are bands containing common very coarse grained "fresh" hornblende crystals. All hornblende shows a weakly developed [pressure ?] cleavage pattern and has been strongly surface-replaced by stilpnomelane and by bundles of laths of secondary hydrothermal fibrous actinolite. Both "wispy" stilpnomelane and bundles of needles of actinolite have also replaced the hornblende along minor cracks and there are occasional very elongate needles of actinolite "crosscutting" the large hornblende crystals. In general there is little sign of major structural deformation in this thin section, the hornblende crystals are amazingly fresh to have come from a major fault zone. It is likely that the hornblende crystals are themselves "secondary" and grew in place; microprobe analysis and comparison of their composition with those in the diorite would be required to settle this point.

The degree of stilpnomelane overprinting seems to be inversely proportional to the grainsize of the hornblende. Smaller (≈500 to 1000μ) hornblende crystals have been almost completely replaced (in a very few instances where clean cores remain there is a thick rim of biotite between the hornblende and the stilpnomelane; this has not been observed anywhere else), whereas the larger (to 1 cm) crystals are only surface attacked. They are however strongly penetrated along cleavage-following fractures and show rounded stilpnomelane replacement patches to 200μ. Stilpnomelane replacement of the actinolite can be locally intense, but is usually in the form of isolated rounded clots. "Cracked" apatite crystals are present, occasionally as euhedral inclusions in the larger hornblende crystals.

The fibrous amphibole, but not the hornblende, is strongly replaced by chalcopyrite (as 20 to 1000μ subrounded blebs). The chalcopyrite appears to have in-situ replaced the amphibole. It tends to follow the actinolite bands, in which it forms "chains" of 1 mm blebs, but also frequently occurs as isolated blebs in the stilpnomelane bands. There are occasional bright blue patches of supergene covellite alteration of the chalcopyrite. Only one 30μ subcubic crystal of pyrite was observed.

F-21 @ 293.8' Amphibolite

The rock is a complex meshwork of fibrous and blocky crystals of amphibole, probably actinolite and hornblende, which has been invaded and massively replaced by chalcopyrite and calcite. Relatively inclusion-free calcite surrounds the chalcopyrite blebs and, rarely, occurs as inclusions within the chalcopyrite; however, relict fibrous amphibole needles and stilpnomelane clots are common in the calcite which has replaced fibrous amphibole clusters. Stilpnomelane replacement of the fibrous amphibole is relatively dispersed, with the stilpnomelane occurring as individual sub-circular blebs in the actinolite mats. Rare small rounded quartz grains were noted in the fibrous amphibole mats. There is a haze of fine platelets in the calcite, and the XRD indicates the presence of minor talc; this appears to be a typical talc-carbonate replacement of the fibrous amphibole. There is a trace of dark green chlorite replacing actinolite and associated with the carbonate. Two 50μ pyrite cubes were noted in large chalcopyrite masses; there are very rare small covellite blebs in the chalcopyrite. There are <u>three</u> generations of different amphiboles present in this slide:
1] - relict large blocky Mg-hornblende crystals (heavily replaced by actinolite)
2] - fibrous amphibole (actinolite) as an intergrown mat, interstitial to the hornblende
3] - small (<200μ) euhedral blocky amphibole crystals growing in the actinolite mats.

There is no sign of tectonic deformation to produce openings, the chalcopyrite-calcite appears to have "stoped" out and replaced the actinolite by direct reaction with the hydrothermal fluid.

F-21 @ 300.0 Chlorite schist

This sample consists of a mixture of chlorites, overprinted by minor stilpnomelane, which have been massively replaced by pyrite. The pyrite has been heavily crush-fractured to locally shear-brecciated, but otherwise strongly resembles that at 269.2'. Occasional isolated rounded blebs of chalcopyrite to 250μ are present. There are at least two generations of chlorite; an early fine grained "blue" chlorite has been heavily veined and replaced by large laths of a later grey to green chlorite. There are some indications of tectonic shearing in the early blue chlorite and much of the later grey chlorite appears to follow these microfractures; as does the minor late "green" chlorite laths. The stilpnomelane has not been replaced by the pyrite, merely encapsulated, as have many of the minor subhedral "apatite" crystals.

F-21 @ 325.0' Chlorite schist

This rock is now almost entirely chlorite, of at least three generations. The only other species, present in trace amounts, are relict fibrous amphibole and "apatite" (the locally copious amount of subhedral $\approx 100\mu$ silicon carbide grains is a surface artifact of the polishing). The earliest chlorite is a fine grained "brown" chlorite, which has entirely replaced large blocky hornblende crystals (these originally seem to have comprised much of the rock, c.f. 278.2'); relict traces of the hornblende parting orientation, outlined by a change in the optical orientation of the chlorite, can still be found (Figure 3). The chlorite is probably brown from residual-iron staining from replacement of the hornblende, it appears to be a "grey" chlorite type. The interstitial fibrous amphibole has been almost completely replaced by "blue" chlorite laths and fine grained patches; these were later strongly replaced by grey chlorite laths. The rock was cut by occasional microshears which guided a final generation of coarse grained "green" chlorite; the green chlorite laths also strongly replace both of the two earlier chlorites (Figure 3). No stilpnomelane was observed. There is a trace of isolated subrounded 50 to 200μ pyrite.

F-21 @ 328.0' Pyritized quartz-chlorite breccia

Coarse grained contorted and "rolled" green chlorite flakes fill microfractures and surround heavily brecciated and cracked quartz grains (Figure 4). The brecciation appears to be mainly "crush" fracturing since there is very little strain observable in the quartz grains. Some of the pyrite grains are thinly rimmed with a zone of fine grained "sparkly" talc (very similar to a coarse sericite in appearance) which contains occasional wispy laths of brown stilpnomelane. There is also trace talc filling some of the fractures in the quartz; however, the commonest occurrence is as thin infillings of the spaces between the coarse chlorite laths, the talc appears to have been the last mineral to be deposited.

There were two generations of chlorite, an early "grey" chlorite occurring as compact very fine grained masses (after hornblende crystals (?), c.f. 325.0') and a late "green" chlorite which forms elongate crystal laths and radiating crystal clumps. The early grey chlorite masses show evidence of disaggregation, presumably via movements on the fault zone, and of replacement by both pyrite and the later green chlorite laths. The late stage green chlorite crystal laths obviously grew mainly in open spaces and tend to be "wrapped around" the pyrite grains (Figure 4). There are common 50 to 200μ euhedral sphene crystals between the chlorite laths in green-chlorite veinlets.

The sulfides show three clear generations (Figure 5). The first stage of pyrite grew as reticulated nets of cubes and elongate laths (replacing chlorite crystals?); there is still a strong suggestion of a residual "street map" texture to the pyrite. This was then rather thoroughly brecciated and later overgrown by a second generation of sub-poikilitic metamorphic-growth pyrite. The final stage was the deposition of chalcopyrite and the essentially complete infilling with it of any voids in the pyrite masses. The bulk of the chalcopyrite; however, forms isolated rounded masses to 5 mm which replace all of the silicates except the green chlorite and the talc.

F-21 @ 341.0' Hornblende diorite

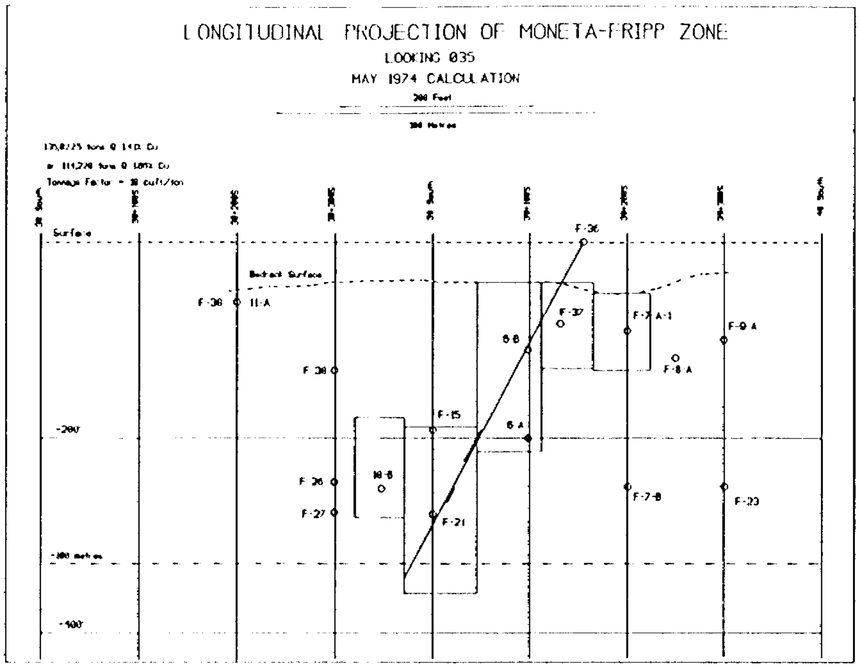
Very similar to the hornblende diorite at the beginning of the section (260.7'). The only obvious differences are that the albite is much less sericitized (original twinning is clearly visible in most grains) and there is relatively more hornblende and quartz visible. Dark green chlorite crystal laths rim and weakly replace some of the hornblende grains and are particularly common along short linear microfractures cutting the large albite grains. There are more signs of tectonic activity in this section (mainly in the form of chlorite-healed microfractures and strained quartz grains) than in the one at 260.7'.

Appendix II **Sample locations and field descriptions**

Hollinger Consolidated Gold Mines DDH F-21

footage	Field description and notes
260.7	- typical medium grained weakly lineated diorite [plag-chl-qtz] - located two feet above mineralized zone
262.6	- fine to medium grained tectonized banded diorite - highly lineated quartz ribbons - chalcopyrite stringers and blebs in quartz bands - located at beginning of mineralized zone
269.2	- medium grained amphibolitized peridotite - blebs of pyrite and chalcopyrite, trace disseminated pyrrhotite and sph?
278.2	- fine to medium grained banded amphibolite - schistose tectonized with quartz-carbonate stringers parallel to fabric - pyrite, chalcopyrite blebs/stringers, trace pyrrhotite, in quartz-carbonate
293.8	- sheared mafic volcanic - chalcopyrite with minor pyrrhotite in carbonate vein
300.0	- semi-massive py-po-cpy in amphibolitized peridotite - poorly foliated, possibly breccia
325.0	- typical coarse grained peridotite, poorly mineralized - barren section within mineralized zone, trace disseminated pyrite - good nodular peridotite, talc-serpentine-chlorite with relict olivines
328.0	- medium grained amphibolitized peridotite - chalcopyrite nodules or blebs throughout
341.0	- typical weakly foliated foot wall diorite below mineralized zone.

Appendix II


LONGITUDINAL PROJECTION OF MONETA-FRIPP ZONE
LOOKING 035
MAY 1974 CALCULATION
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Bedrock Surface
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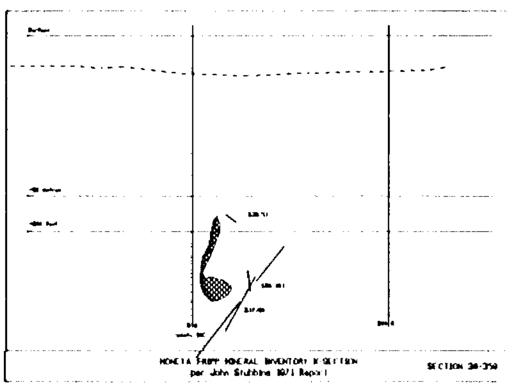
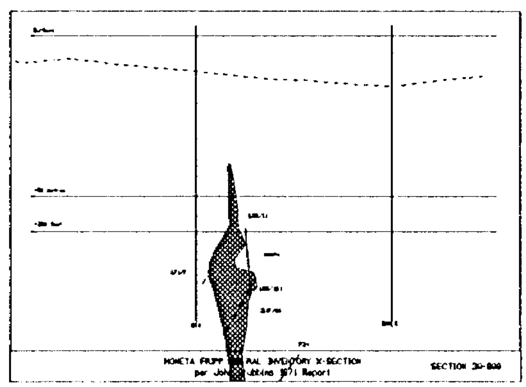
F-37
F-38
11-A
F-39
F-15
F-26
F-27
F-21
F-23
F-7-B
F-8-A
F-9-A
-200'
-400'


MONETA FRIPP MINERAL INVENTORY X-SECTION
per John Stubbins 1971 Report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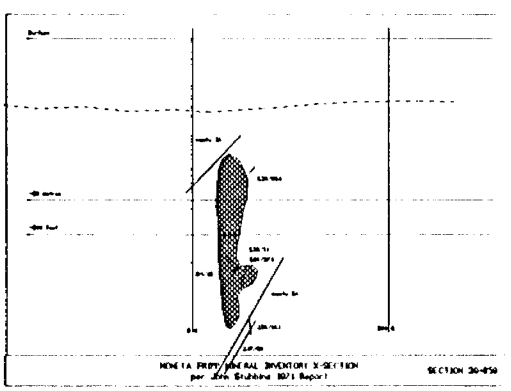
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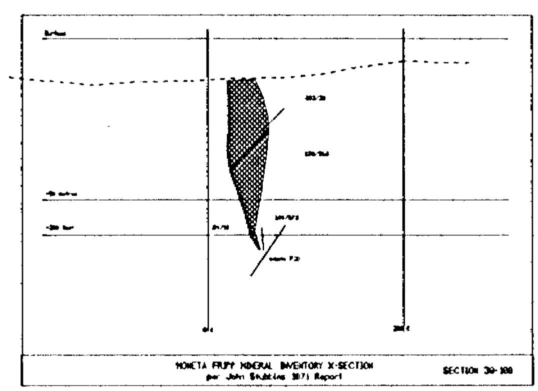
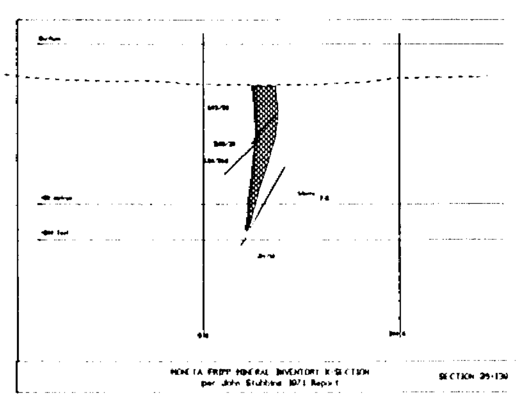
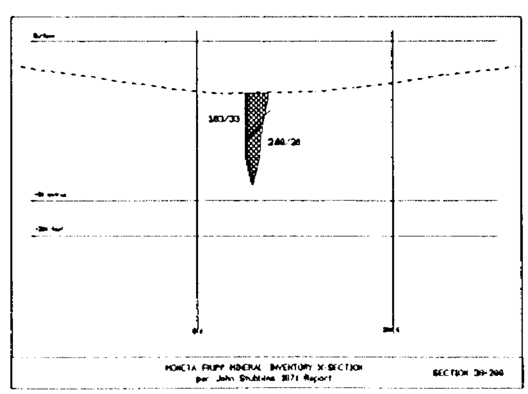

MONETA FRIPP MINERAL INVENTORY X-SECTION
per John Stubbins 1971 Report


MONETA FRIPP MINERAL INVENTORY X-SECTION
per John Stubbins 1971 Report


183/33
200/28
MONETA FRIPP MINERAL INVENTORY X-SECTION
per John Stubbins 1971 Report

CERTIFICATE OF QUALIFICATION

I, Maurice Y. Houle, hereby certify that:

1. I am a practicing geologist with a Bachelor of Science Degree in the Specialist Geology Programme, from the University of Toronto (1987 Graduate).

2. I reside at 209-691 MacLean Drive, Timmins Ontario, P4N 7W6, (705)-264-1850.

3. I am currently working as Contract Geologist at Falconbridge Limited Timmins.

4. I have practiced my profession for approximately 5 years since graduation.

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

6. I have based conclusions and recommendations contained in this report on knowledge obtained from work conducted on the property between May 31/91 and October 31/91.

dated at Timmins, Ontario
this tenth day of June, 1992.

CERTIFICATE OF QUALIFICATION

I, Maurice Y. Houle, hereby certify that:

1. I am a practicing geologist with a Bachelor of Science Degree in the Specialist Geology Programme, from the University of Toronto (1987 Graduate).
2. I reside at 209-691 MacLean Drive, Timmins Ontario, P4N 7W6, (705)-264-1850.
3. I am currently working as Contract Geologist at Falconbridge Limited Timmins.
4. I have practiced my profession for approximately 5 years since graduation.
5. I hereby certify that I have personal and intimate knowledge of the facts set forth in this report, having performed and participated in the work or witnessed same during/or after its completion and report that it is true.
6. I have based conclusions and recommendations contained in this report on knowledge obtained from work conducted on the property between May 31/91 and October 31/91.

dated at Timmins, Ontario
this tenth day of June, 1992.

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED

1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
(416) 625-1544 FAX: (416) 625-8368

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
Timmins, Ontario
P4N 7H9

REPORT No. M9712

INVOICE #:
P.O.:

SAMPLE(S) OF Pulp

Truscott & Houle
PROJECT: 8210

RECEIVED
JUN 15 1992
MINING LANDS BRANCH

	S ppm
AM06518	400
AM06519	500
AM06520	400
AM06521	400
AM06522	200
AM06523	500
AM06524	500
AM06525	700
AM06526	400
AM06527	300
AM06528	400
AM06529	200
AM06530	400
AM06531	300
AM06532	400
AM06533	300
AM06534	200
AM06535	300
AM06536	200
AM06537	500

COPY:
INVOICE:

Sep 13/91

SIGNED

For enquiries on this report, please contact Customer Service Department.
Samples, Pulps and Rejects discarded two months from the date of this report.

CTA

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED

1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
(416) 625-1544 FAX: (416) 625-8368

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM: Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
Timmins, Ontario
P4N 7H9

REPORT No. M9712

SAMPLE(S) OF: Pulp

INVOICE #:
P.O.:

Truscott & Houle
PROJECT: 8210

RECEIVED
JUN 15 1992
MINING LANDS BRANCH

	S ppm
AM06742	200
AM06743	200
AM06744	45800
AM06746	500
AM06747	500
AM06748	800
AM06749	200

COPY:
INVOICE:

Sep 13/91

SIGNED

CTA

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
(416) 625-1544 FAX: (416) 625-8368

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SAMPLE(S) FROM Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
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P4N 7H9

REPORT No. M9712

SAMPLE(S) OF Pulp

INVOICE #:
P.O.:

Truscott & Houle
PROJECT: 8210

RECEIVED
JUN 1 5 1992
MINING LANDS BRANCH

	S ppm
AM06538	4000
AM06539	200
AM06540	200
AM06721	300
AM06722	200
AM06723	200
AM06724	200
AM06725	300
AM06726	300
AM06727	500
AM06728	700
AM06729	500
AM06730	200
AM06731	800
AM06733	800
AM06734	400
AM06737	300
AM06739	200
AM06740	500
AM06741	700

COPY:
INVOICE:

Sep 13/91

SIGNED

CTA

For enquiries on this report, please contact Customer Service Department.
Samples, Pulps and Rejects discarded two months from the date of this report.

SWASTIKA LABORATORIES
P.O. BOX 10, SWASTIKA, ONTARIO
PHONE #: (705) - 642 - 3244 FAX #: (705) - 642 - 3300

FALCONBRIDGE
ATTN:TRUSCOTT & HOULE
PROJ:8210

1W-3871-RG1

REPORT No. : M9712

File No. : SE10RA
Date : SEP-13-1991
Oxides in % - Minors ppm

I.C.A.P. WHOLE ROCK ANALYSIS

Lithium MetaBorate Fusion

SAMPLE #	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr2O3 %	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	LOI %	TOTAL %
AM06734	49.26	6.93	9.50	4.66	20.95	0.13	0.10	0.34	0.16	<0.02	0.360	132	14	10	115	1080	70	6.92	99.31
AM06737	39.60	5.62	9.59	11.70	21.01	0.39	0.06	0.25	0.22	<0.02	0.300	122	6	15	55	1180	75	9.49	98.23
AM06739	57.92	16.19	7.38	6.95	5.15	3.35	0.92	0.77	0.12	0.20	0.050	164	20	25	70	140	30	1.19	100.19
AM06740	76.73	11.13	2.36	0.60	0.51	1.03	7.44	0.26	0.03	0.06	0.005	306	98	10	110	30	< 5	0.80	100.94
AM06741	46.21	9.10	11.34	8.10	18.36	1.08	0.24	0.43	0.19	<0.02	0.350	152	8	105	45	620	70	3.00	98.41
AM06742	75.78	13.66	1.28	0.92	0.28	4.16	3.84	0.05	0.04	0.06	0.045	102	12	10	25	20	15	0.45	100.57
AM06743	77.12	13.77	0.33	0.19	0.11	7.64	0.20	0.02	<0.01	0.04	0.060	82	8	< 5	< 5	< 10	5	0.52	100.01
AM06744	36.41	7.58	32.70	5.08	8.48	1.52	0.48	0.26	0.71	0.04	0.075	282	26	35	195	40	20	4.25	97.59
AM06746	50.00	15.05	13.96	10.72	5.85	2.31	0.32	1.35	0.22	0.10	0.040	186	24	145	70	70	45	0.44	100.35
AM06747	49.68	16.67	13.33	9.64	3.31	2.77	0.46	1.50	0.21	0.20	0.030	244	32	160	100	50	35	0.80	98.61
AM06748	47.63	8.96	11.29	7.84	19.17	1.26	0.10	0.44	0.20	0.02	0.390	160	10	35	40	750	75	1.40	98.71
AM06749	65.14	17.21	3.55	3.41	1.54	5.26	1.62	0.57	0.09	0.18	0.035	116	10	10	25	30	25	1.30	99.90

SIGNED : DJB

FALCONBRIDGE
ATTN:TRUSCOTT & HOULE
PROJ:8210

1W-3871-RG1

RECEIVED
JUN 1 5 1992
MINING LANDS BRANCH

SWASTIKA LABORATORIES
P.O. BOX 10, SWASTIKA, ONTARIO
PHONE #: (705) - 642 - 3244 FAX #: (705) - 642 - 3300

I.C.A.P. WHOLE ROCK ANALYSIS

Lithium MetaBorate Fusion

REPORT No. : M9712

File No. : SE10RA
Date : SEP-13-1991
Oxides in % - Minors ppm

SAMPLE #	SiO2 %	Al2O3 %	Fe2O3 %	CaO %	MgO %	Na2O %	K2O %	TiO2 %	MnO %	P2O5 %	Cr2O3 %	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	LOI %	TOTAL %
AM06518	49.29	15.28	14.07	10.26	6.00	2.31	0.54	1.40	0.22	0.12	0.035	208	24	195	90	60	45	0.51	100.04
AM06519	49.13	13.62	15.47	9.96	6.59	2.14	0.26	1.54	0.24	0.14	0.060	222	26	215	45	70	50	0.19	99.35
AM06520	53.81	15.84	8.97	5.53	6.89	4.59	1.28	0.73	0.16	0.22	0.060	148	12	20	45	180	30	1.95	100.03
AM06521	46.25	14.19	14.17	11.09	7.62	1.64	0.70	1.02	0.25	0.06	0.055	146	20	85	55	40	50	1.47	98.51
AM06522	63.95	14.56	5.38	3.78	3.13	3.97	0.96	0.68	0.08	0.20	0.080	184	14	25	65	20	15	1.73	98.48
AM06523	49.59	15.78	14.48	9.77	4.42	2.59	0.78	1.66	0.22	0.16	0.055	194	26	190	105	60	40	0.75	100.24
AM06524	47.66	16.76	15.07	9.56	3.35	2.75	0.48	2.03	0.21	0.18	0.015	232	28	215	110	40	35	0.58	98.63
AM06525	48.65	13.06	12.62	11.08	7.63	2.19	0.36	1.04	0.20	0.06	0.045	182	20	85	55	100	40	1.22	98.16
AM06526	46.56	14.47	11.97	12.55	8.39	1.08	0.74	0.80	0.22	<0.02	0.070	148	12	15	85	60	45	2.07	98.92
AM06527	50.42	2.55	21.13	4.90	15.98	0.18	0.08	0.86	0.38	<0.02	0.060	258	18	35	95	20	50	1.36	97.83
AM06528	53.26	15.83	9.93	7.94	7.22	2.93	0.60	0.62	0.18	0.18	0.065	118	12	25	120	150	35	2.02	100.77
AM06529	41.38	6.77	10.37	4.59	23.97	0.14	0.24	0.34	0.21	<0.02	0.305	110	8	15	40	1270	80	10.92	99.24
AM06530	41.20	7.38	10.61	5.31	23.31	0.10	0.04	0.36	0.18	<0.02	0.320	136	10	25	85	1070	80	9.92	98.73
AM06531	56.71	15.05	7.94	4.93	6.65	4.73	1.38	0.67	0.14	0.16	0.055	188	12	20	45	160	35	1.90	100.30
AM06532	48.97	13.35	15.13	9.06	7.44	2.58	0.72	1.42	0.27	0.10	0.035	186	28	135	80	130	50	1.59	100.66
AM06533	42.94	6.86	10.53	5.17	26.03	0.57	0.10	0.33	0.17	0.02	0.315	124	8	10	30	1280	80	6.55	99.57
AM06534	42.13	6.42	10.77	5.76	26.39	0.68	0.16	0.31	0.15	<0.02	0.330	146	6	10	50	1390	80	5.52	98.62
AM06535	45.85	9.80	11.91	8.45	19.12	1.37	0.08	0.47	0.21	<0.02	0.335	136	12	55	50	660	70	3.07	100.67
AM06536	48.93	8.05	8.35	10.19	20.36	0.85	0.16	0.36	0.23	0.02	0.380	104	8	35	55	1040	65	2.87	100.75
AM06537	42.91	5.21	9.34	7.78	23.27	0.10	0.02	0.24	0.25	<0.02	0.300	106	8	30	55	1690	80	11.38	100.82
AM06538	40.77	5.66	9.88	23.41	14.64	0.09	0.06	0.24	0.19	<0.02	0.305	92	6	120	40	880	100	3.86	99.09
AM06539	65.59	14.28	4.69	3.67	2.62	5.46	0.68	0.90	0.10	0.24	0.030	230	16	20	25	40	20	1.96	100.24
AM06540	44.01	7.61	11.08	6.23	23.92	0.76	0.10	0.35	0.18	<0.02	0.380	134	10	15	45	1110	80	3.49	98.11
AM06721	55.11	15.45	7.94	7.03	6.39	3.03	0.54	0.65	0.13	0.18	0.075	214	14	30	60	160	30	1.68	98.19
AM06722	48.51	7.59	11.62	9.26	18.75	0.52	0.06	0.32	0.24	<0.02	0.315	132	8	10	70	940	65	3.69	100.85
AM06723	53.67	18.52	8.06	9.09	5.08	0.54	0.34	0.64	0.15	0.14	0.030	114	8	5	60	40	25	2.12	98.38
AM06724	77.33	13.83	0.52	0.37	0.15	7.36	0.40	0.04	<0.01	0.06	0.080	82	20	25	35	30	< 5	0.72	100.86
AM06725	39.12	3.40	7.38	2.76	35.25	0.09	0.04	0.17	0.21	0.04	0.230	94	< 2	10	105	2090	75	11.02	99.70
AM06726	52.75	15.01	9.01	4.78	6.86	5.13	0.84	0.69	0.14	0.20	0.055	190	12	25	40	210	30	2.37	97.84
AM06727	56.97	15.23	8.24	6.55	5.90	3.12	0.56	0.82	0.13	0.20	0.075	186	14	35	70	130	30	2.20	100.00
AM06728	68.20	15.59	2.51	2.36	1.30	4.49	2.52	0.37	0.02	0.20	0.025	160	12	5	10	< 10	15	2.49	100.07
AM06729	56.32	14.86	7.88	6.05	5.92	3.13	0.86	0.70	0.13	0.20	0.070	238	16	35	65	140	30	2.31	98.41
AM06730	69.44	15.15	2.71	1.79	1.95	4.95	1.12	0.31	0.04	0.12	0.095	272	10	10	25	30	10	1.67	99.33
AM06731	43.62	5.93	8.97	5.47	23.27	0.06	0.04	0.28	0.15	<0.02	0.310	108	8	20	45	1390	75	10.62	98.72
AM06733	36.50	4.26	7.95	7.72	24.77	0.02	<0.02	0.21	0.15	<0.02	0.245	88	2	15	10	1570	75	16.46	98.29

SIGNED :

TSL/91

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
(416) 625-1544 FAX: (416) 625-8368

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
Timmins, Ontario P4N 7H9

REPORT No. M9854

SAMPLE(S) OF Pulp

INVOICE #:
P.O.:

PROJECT: 8210

RECEIVED
JUN 15 1992
MINING LANDS BRANCH

	S ppm
AM06541	400
AM06542	1300
AM06543	500
AM06544	200
AM06545	200
AM06546	400
AM06547	200
AM06548	300
AM06549	200
AM06550	900
AM06750	600
AM06751	200
AM06752	200
AM06753	200
AM06754	400
AM06755	3300
AM06756	300
AM06757	400
AM06758	200
AM06759	200

COPY:
INVOICE:

Oct 07/91

SIGNED

For enquiries on this report, please contact Customer Service Department.
Samples, Pulps and Rejects discarded two months from the date of this report.

CTA

TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
(416) 625-1544 FAX: (416) 625-8368

CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM
Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
Timmins, Ontario P4N 7H9

REPORT No.
M9854

SAMPLE(S) OF
Pulp

INVOICE #:
P.O.:

PROJECT: 8210

RECEIVED
JUN 15 1992
MINING LANDS BRANCH

	S ppm
AM06760	200
AM06761	200
AM06762	300
AM06763	500
AM06764	300
AM06765	600
AM06766	700
AM06767	300
AM06768	500
AM06769	900
AM06770	300
AM06771	500
AM06772	300
AM06773	600
AM06774	400
AM06775	1600
AM06776	300
AM06777	800
AM06778	600
AM06801	600

COPY:
INVOICE:

Oct 07/91

SIGNED

CTA

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TECHNICAL SERVICE LABORATORIES
DIVISION OF BURGENER TECHNICAL ENTERPRISES LIMITED
1301 FEWSTER DRIVE
MISSISSAUGA, ONTARIO
L4W 1A2
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CERTIFICATE OF ANALYSIS

SAMPLE(S) FROM
Falconbridge Limited (Timmins)
571 Moneta Avenue
P.O. Box 1140
Timmins, Ontario P4N 7H9

REPORT No.
M9854

SAMPLE(S) OF
Pulp

INVOICE #:
P.O.:

PROJECT: 8210

RECEIVED
JUN 1 5 1992
MINING LANDS BRANCH

	S ppm
AM06802	400
AM06803	200
AM06804	300
AM06805	800

COPY:
INVOICE:

Oct 07/91

SIGNED

For enquiries on this report, please contact Customer Service Department.
Samples, Pulps and Rejects discarded two months from the date of this report.

FALCONBR[illegible] GE
PROJ:8210

RECEIVED
JUN 1 5 1992
MINING LANDS BRANCH

1W-4008-RG1

SWASTIKA LABORATORIES
P.O. BOX 1[illegible] SWASTIKA, ONTARIO
PHONE #: (705) - 642 - 3244 FAX #: (705) - 642 - 3300

REPORT No. : M9 1

File No. : TT
Date : OCT-02-1991
Oxides in % - Minors ppm

I.C.A.P. WHOLE ROCK ANALYSIS

Lithium MetaBorate Fusion

SAMPLE #	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	CaO %	MgO %	Na_2O %	K_2O %	TiO_2 %	MnO %	P_2O_5 %	Cr_2O_3 %	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	LOI %	TOTAL %
AM06541	78.13	13.73	0.97	0.67	0.11	5.32	1.26	0.03	0.03	0.04	0.035	60	12	75	25	20	10	0.56	100.89
AM06542	47.25	13.75	13.32	11.50	8.93	1.09	0.98	0.68	0.34	0.06	0.050	40	16	45	85	80	55	1.92	99.86
AM06543	42.21	7.20	10.85	7.76	22.84	0.77	0.10	0.37	0.19	0.02	0.330	56	6	30	50	1180	75	5.61	98.23
AM06544	48.42	5.83	9.93	10.44	19.53	0.57	0.10	0.29	0.24	<0.02	0.335	60	6	30	70	1300	75	3.45	99.12
AM06545	43.44	6.22	11.01	5.85	27.36	0.67	0.06	0.32	0.17	0.04	0.325	52	6	80	75	1490	85	3.74	99.21
AM06546	43.02	5.82	11.69	5.90	25.59	0.45	0.10	0.32	0.19	0.02	0.325	48	8	45	65	1310	85	6.26	99.70
AM06547	48.03	7.11	13.52	13.12	13.97	1.13	0.32	0.39	0.31	<0.02	0.400	42	14	10	70	1390	110	0.97	99.24
AM06548	66.86	15.41	4.45	2.58	1.98	4.23	2.12	0.51	0.06	0.12	0.005	154	6	225	40	40	15	1.03	99.36
AM06549	48.73	5.98	8.36	9.42	21.30	0.58	0.14	0.29	0.25	<0.02	0.325	52	8	50	40	1130	80	3.67	99.06
AM06550	47.79	13.63	14.75	8.75	6.99	3.00	0.66	1.15	0.26	0.06	0.035	84	30	90	230	130	50	1.04	98.11
AM06750	58.08	15.67	10.20	4.62	3.40	3.62	1.02	0.79	0.34	0.18	0.005	130	18	45	90	40	20	1.61	99.52
AM06751	58.00	14.80	7.92	4.72	4.94	5.16	1.02	0.69	0.14	0.20	0.045	188	24	80	75	130	25	1.50	99.13
AM06752	55.67	15.88	8.47	5.80	5.71	3.37	1.70	0.76	0.17	0.18	0.030	126	18	25	110	120	30	1.98	99.70
AM06753	76.17	13.18	1.06	0.78	0.24	4.65	3.00	0.04	0.03	0.04	0.045	64	12	45	20	20	15	0.44	99.66
AM06754	39.47	6.03	9.47	7.92	22.20	0.44	0.20	0.28	0.20	<0.02	0.310	40	4	85	25	1210	75	12.11	98.64
AM06755	45.78	7.86	12.76	19.45	9.21	0.64	0.22	0.42	0.36	<0.02	0.400	66	12	210	75	1180	90	0.91	98.02
AM06756	42.12	5.87	10.66	5.21	26.16	0.36	0.04	0.29	0.18	<0.02	0.335	56	8	30	45	1440	85	7.40	98.65
AM06757	55.63	15.20	9.08	6.11	6.31	3.11	1.46	0.73	0.16	0.16	0.040	120	16	35	115	160	40	1.91	99.88
AM06758	77.86	12.61	1.05	0.75	0.21	5.65	1.44	0.03	0.01	0.04	0.005	84	4	10	25	< 10	5	0.33	99.97
AM06759	49.05	6.15	8.45	13.98	14.87	1.14	0.54	0.33	0.26	<0.02	0.260	74	8	25	85	1070	75	3.81	98.85
AM06760	56.55	15.18	9.01	5.33	6.14	3.46	2.16	0.53	0.16	0.16	0.040	74	16	25	105	170	30	2.01	100.71
AM06761	49.06	5.02	8.45	9.12	21.32	0.25	0.08	0.22	0.19	<0.02	0.265	34	8	10	85	1140	75	4.03	97.98
AM06762	48.24	6.98	8.81	6.77	21.59	0.57	0.06	0.32	0.17	<0.02	0.330	30	8	50	45	1180	70	4.47	98.30
AM06763	58.80	14.64	8.07	5.51	4.39	3.07	1.86	0.64	0.18	0.16	0.030	172	32	70	125	120	25	1.77	99.12
AM06764	42.02	6.90	11.05	13.30	16.64	0.56	0.28	0.32	0.23	<0.02	0.325	32	10	15	65	1010	80	7.14	98.74
AM06765	48.85	14.82	13.84	10.72	6.48	2.31	0.82	1.20	0.24	0.06	0.030	90	30	70	105	130	50	1.14	100.50
AM06766	49.65	14.09	13.91	11.07	6.84	1.65	0.22	0.96	0.23	0.04	0.025	76	22	80	90	100	50	0.99	99.69
AM06767	54.20	15.32	9.02	8.15	8.24	2.53	0.34	0.38	0.15	0.06	0.075	86	14	50	85	200	45	1.91	100.37
AM06768	47.53	13.53	14.22	9.81	8.07	1.74	0.34	0.95	0.23	0.06	0.025	98	24	75	65	140	55	1.17	97.67
AM06769	52.17	14.50	12.56	8.44	6.67	2.40	0.82	0.96	0.22	0.08	0.030	96	24	85	70	110	40	1.69	100.52
AM06770	47.53	14.52	13.32	8.45	9.84	1.93	0.64	0.93	0.21	<0.02	0.050	60	20	25	75	150	55	2.57	100.01
AM06771	38.12	4.34	9.43	4.71	27.40	0.03	<0.02	0.22	0.19	<0.02	0.300	48	< 2	15	50	1560	80	13.05	97.81
AM06772	54.42	15.31	8.38	6.77	6.42	3.00	0.86	0.67	0.14	0.16	0.040	140	16	50	115	150	35	2.19	98.35
AM06773	51.19	14.26	13.17	8.87	6.65	2.37	0.54	1.12	0.21	0.06	0.035	160	28	225	80	110	50	1.20	99.67
AM06774	50.35	12.96	13.13	9.31	7.12	2.52	0.48	0.96	0.23	0.04	0.025	84	22	55	75	110	50	1.37	98.50

SIGNED : [signature]

TSL/91

SWASTIKA LABORATORIES
P.O. BOX 1(WASTIKA, ONTARIO
PHONE #: (705) - 642 - 3244 FAX #: (705) - 642 - 3300

FALCONBF GE
PROJ:8210

1W-4008-RG1

REPORT No. : M9 1

File No. : TT
Date : OCT-02-1991
Oxides in % - Minors ppm

I.C.A.P. WHOLE ROCK ANALYSIS

Lithium MetaBorate Fusion

SAMPLE #	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	CaO %	MgO %	Na_2O %	K_2O %	TiO_2 %	MnO %	P_2O_5 %	Cr_2O_3 %	Zr ppm	Y ppm	Cu ppm	Zn ppm	Ni ppm	Co ppm	LOI %	TOTAL %
AM06775	47.67	15.31	12.54	9.82	7.07	2.41	0.94	0.85	0.23	0.06	0.030	82	22	295	70	110	50	2.00	98.94
AM06776	47.33	15.85	12.38	12.14	6.83	1.14	0.74	0.77	0.33	0.04	0.060	66	18	105	50	190	45	1.87	99.50
AM06777	52.47	15.37	9.54	9.96	6.10	2.15	0.60	0.94	0.18	0.06	0.020	46	14	65	65	100	40	1.77	99.14
AM06778	75.85	11.08	2.31	0.52	0.51	1.02	7.44	0.25	0.03	0.06	0.005	274	110	20	95	20	10	0.89	99.95
AM06801	50.91	6.62	14.27	4.15	17.14	0.71	0.78	0.51	0.26	<0.02	0.195	66	18	45	150	530	70	2.59	98.14
AM06802	48.08	14.58	13.38	10.30	8.10	2.40	0.32	0.90	0.22	0.08	0.04	72	24	70	250	60	40	0.86	99.24
AM06803	40.22	6.10	9.46	5.64	25.96	0.04	0.04	0.28	0.16	<0.04	0.33	36	< 4	20	40	1340	80	9.94	98.14
AM06804	42.12	6.34	10.70	4.60	28.42	0.58	0.08	0.30	0.16	<0.04	0.34	8	< 4	30	80	1460	80	5.26	98.88
AM06805	45.38	9.94	12.98	9.78	17.34	1.18	0.12	0.46	0.20	<0.04	0.38	< 4	8	150	110	560	70	1.50	99.22

SIGNED : ______________________

TSL/91

Ministry of Northern Development and Mines

Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9260.00035

Personal Information collected on this form is obtained under the authority of the Mi... this collection should be directed to the Provincial Manager, Mining Lands, Minis... Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

42A03NW0026 2.14595 FRIPP 900

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requirements of filing assessment work or consult the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s): FALCONBRIDGE LTD	Client No.: 130679
Address: PO BOX 1164 571 MONETA AVE TIMMINS ONT P4N 7H9	Telephone No.: 705-267-1188
Mining Division: PORCUPINE	Township/Area: FRIPP MUSGROVE TWP
M or G Plan No.: [illegible]	
Dates Work Performed From: MAY 31/91	To: OCT 31/91

Work Performed (Check One Work Group Only) WORK ON ~~PATENT~~ LEASED CLAIMS PERFORMED FROM JUNE 15 TO 31/91

Work Group	Type
Geotechnical Survey	GEOLOGICAL MAPPING LITHOGEOCHEMICAL SAMPLING
Physical Work, Including Drilling	GRID CUTTING GRID REFURBISHING
Rehabilitation	
Other Authorized Work	
Assays	
Assignment from Reserve	

RECEIVED MAY 27 1992 MINING LANDS BRANCH

RECORDED MAR - 4 1992 Receipt

Total Assessment Work Claimed on the Attached Statement of Costs $ 49 689.00 SEE ATTACHED SHEET

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
MAURICE HOULE	691 MACLEAN DR APT 209 TIMMINS ONT P4N 7W6
DAVE TRUSCOTT	
MONETA PORCUPINE MINES	
EXICS EXPLORATION	PO BOX 1880 TIMMINS ONT P4N 7X1

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

	Date	Recorded Holder or Agent (Signature)
I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	APRIL 30 92.	[signature]

Certification of Work Report

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

Name and Address of Person Certifying: M. Y. Houle	209 691 MACLEAN DR TIMMINS ONT. P4N 7W6	
Telephone No.: 264 1850	Date: APRIL 30/92	Certified By (Signature): [signature]

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Received Stamp
$49,689.	MARCH 4th/92	D. White	RECORDED MAR - 4 1992 Receipt
	Deemed Approval Date: JUNE 2/92	Date Approved	
	Date Notice for Amendments Sent		

0241 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
SEE	ATTACHED SHEET.					
	Total Number of Claims		Total Value Work Done	Total Value Work Applied	Total Assigned From	Total Reserve

RECEIVED
MAY 2 ? 1992
MINING LANDS BRANCH

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark (✓) one of the following:

1. ☐ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☒ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature [signature]	Date APRIL 30/92

Assessm[illegible] Value to be Distributed over claims

Claim Number		Claim Type	Registered Owner	Value of Assessment Work Done on this Claim	Value of Assessment Applied to this Claim	Value of Assessment Assigned from This Claim	Reserve to Be Claimed at a Future Date
51061		Leased	Moneta	0	0	0	0
51070	*	Leased	Moneta	1840	0	1840	0
51071	*	Leased	Moneta	1840	0	1840	0
51072	*	Leased	Moneta	1840	0	1840	0
51074	*	Leased	Moneta	1840	0	1840	0
1170917	*	Unpatented	Falconbridge	1840	1099	~~741~~ 445	296
1170918	*	Unpatented	Falconbridge	1840	1099	~~741~~	296
1172108	*	Unpatented	Falconbridge	1840	1099	~~741~~	296
1172109	*	Unpatented	Falconbridge	1840	1099	~~741~~ 444	297
1172110	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1172111	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1172112	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175376	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175377	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175378		Unpatented	Falconbridge	0	1099	0	0
1175379		Unpatented	Falconbridge	0	1099	0	0
1175380		Unpatented	Falconbridge	0	1099	0	0
1175381		Unpatented	Falconbridge	0	1099	0	0
1175397	*	Unpatented	Falconbridge	1840	1099	~~741~~ 444	297
1175398	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175399	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175400	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175401	*	Unpatented	Falconbridge	1840	1099	~~741~~	297
1175402	*	Unpatented	Falconbridge	1841	1099	~~742~~ 445	297
1175403	*	Unpatented	Falconbridge	1841	1099	~~742~~	297
1175409		Unpatented	Falconbridge	0	1099	0	0
1175410		Unpatented	Falconbridge	0	1099	0	0
1175411		Unpatented	Falconbridge	0	1099	0	0
1175412		Unpatented	Falconbridge	0	1099	0	0
1175413		Unpatented	Falconbridge	0	1099	0	0
1175546		Unpatented	Falconbridge	0	1099	0	0
1175547		Unpatented	Falconbridge	0	1099	0	0
1175548		Unpatented	Falconbridge	0	1099	0	0
1175549		Unpatented	Falconbridge	0	1099	0	0
1175550		Unpatented	Falconbridge	0	1099	0	0
1175551		Unpatented	Falconbridge	0	1099	0	0
1175552		Unpatented	Falconbridge	0	1099	0	0
1175566	*	Unpatented	Falconbridge	1841	1099	~~742~~ 445	297
1175567	*	Unpatented	Falconbridge	1841	1099	742	297
1175568	*	Unpatented	Falconbridge	1841	1099	742	297
1175569	*	Unpatented	Falconbridge	1841	1099	742	297
1175570	*	Unpatented	Falconbridge	1841	1099	742	297
1175571	*	Unpatented	Falconbridge	1841	1099	742	297
1175572	*	Unpatented	Falconbridge	1841	1099	742	297
		27 Total Claims	Total	$ 49689	$ 42861	$ ~~24412~~ 17,564	$ 6828

* grid cutting, mapping and sampling conducted to assessment standards on these claims

Note: All work conducted from May, 5 to November, 31 1991

Δ ALL WORK ON LEASED CLAIMS PERFORMED AFTER JUNE 3/91

RECEIVED MAY 2? 1992

MIN

RECORDED MAR - 4 1992 Receipt

Ministry of Northern Development and Mines
Ontario
Ministère du Développement du Nord et des mines

Statement of Costs for Assessment Credit
État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction

TO BE AMENDED

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collece de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre	13375.59	13375.59
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type GRID CUTTING	16415.94	16415.94
	OLD GRID REFURBISH	1123.50	1123.50
Supplies Used Fournitures utilisées	Type FIELD EXPENSES	7032.36	7032.36
	ASSAYS/GEOCHEM	2081.95	2081.95
Equipment Rental Location de matériel	Type		
		Total Direct Costs Total des coûts directs	

40 032.34

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work Indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
	FOLLOW UP REPORT WRITING	9156.73	9156.73
	& SUPERVISORY		
Food and Lodging Nourriture et hébergement			
Mobilization and Demobilization Mobilisation et démobilisation			
		Sub Total of Indirect Costs Total partiel des coûts indirects	9156.73
		Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)	[illegible]
		Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles	[illegible]

RECEIVED
MAY 27 1992
MINING LANDS BRANCH

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit		Total Assessment Claimed
	× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation		Évaluation totale demandée
	× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Senior Geologist I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de ________________ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature	Date
B. Jeffery	Feb. 7/92

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

0212 (04/91)

Ontario
Ministry of Northern Development and Mines
M[illegible]ère du [illegible]oppement du Nord et des mines

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Transaction No./N° de transaction W9260.00035

Mining Act/Loi sur les mines

Personal information collected on this form is obtained under the authority of the **Mining Act**. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la **Loi sur les mines** et serviront à tenir à jour un registre des concessions minières. Adresser toute quesiton sur la collece de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre	13376	13376
	Field Supervision Supervision sur le terrain	9657	9657
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type GRID CUTTING	16416	16416
	OLD GRID REFURBISHING	1124	1124
Supplies Used Fournitures utilisées	Type FIELD EXPENSES	7032	7032
	ASSAYS GEOCHEM	2085	2085
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		49689

RECEIVED MAY 2? 1992 MINING LANDS BRANCH

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work Indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type		
Food and Lodging Nourriture et hébergement			
Mobilization and Demobilization Mobilisation et démobilisation			

RECORDED MAR - 4 1992 Receipt

Sub Total of Indirect Costs / Total partiel des coûts indirects	NIL
Amount Allowable (not greater than 20% of Direct Costs) / Montant admissible (n'excédant pas 20 % des coûts directs)	NIL
Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)	[illegible] → 49689

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit		Total Assessment Claimed
	× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation		Évaluation totale demandée
	× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as CONTRACT GEOLOGIST I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification ON BEHALF OF BRUCE JEFFERY (SENIOR GEOLOGIST)

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de ______ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature: [signature] Date: APRIL 30/92

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

0212 (04/91)

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Section
Mining Lands Branch
159 Cedar Street, 4th Floor
Sudbury, Ontario
P3E 6A5

Telephone: (705) 670-7264
Fax: (705) 670-7262

Our File: 2.14595
Transaction #: W9260.00035

July 9, 1992

Mining Recorder
Ministry of Northern Development
and Mines
60 Wilson Avenue
Timmins, Ontario
P4N 2S7

Dear Sir:

RE: APPROVAL OF GEOLOGICAL AND GEOCHEMICAL ASSESSMENT WORK ON MINING CLAIMS P 1170917 ET AL. IN FRIPP AND MUSGROVE TOWNSHIPS.

The deficiencies in this submission, as outlined in the Notice of Deficiency dated June 1, 1992 have been rectified.

The assessment work credits listed on the original submission have been approved as of July 8, 1992.

If you have any questions please call Dale Messenger at (705) 670-7265.

Yours sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Branch
Mines and Minerals Division

DEM/jl
Enclosures:

cc: √Assessment Files Office
Toronto, Ontario

Resident Geologist
Timmins, Ontario

REQUIREMENTS OF GEOTECHNICAL SUBMISSIONS FOR ASSESSMENT CREDIT

File #:
Report of Work #:

Type of Survey:
Township or Area:

Report

1. Typewitten, suitable for reproduction.
2. Table of Contents.
3. Identify mining claims and names and addresses of holders.
4. Location and means of access.
5. Key map showing claims in relation to topographic features, township boundaries, established survey lines.
6. Author's signature and date of completion.
7. Name of person/s who supervised survey.
8. Dates during which survey work was performed.
9. Summary of exploration and development work performed on claims.
10. All assays and analyses with appropiate certificates.
11. Statement of qualifications.
12. Interpretation of anomalous values and recommendation for futher exploration.
13. List of references or bibliography.

Maps

1. Scale between 1:10 and 1:5000 or in the case of a regional survey, between 1:500 and 1:250,000, utilizing a graphic or bar scale.
2. North arrow indicating whether bearing is astronomic or magnetic.
3. Shows lakes, rivers and other notable topographic features including railways, roads, trails, powerlines, and buildings.
4. Shows claim posts and boundary lines, township boundary lines, lot and concession lines, grid lines, traverse lines.
5. Survey stations and markers in relation to topographic features.
6. Claim numbers of all claims covered by the survey.
7. Printed name of author of accompaning report.

Section 11 Regs

REQUIREMENTS OF GEOLOGICAL SURVEY REPORTS AND MAPS

File Number:
Report of Work Number:
Township or Area:

Reports

1. Contain a table of rock types, lithologies and formations with their descriptions and illustrated on any accompanying maps and illustrations. Good description / illus. on maps.
2. Describe the regional geology.
3. Give descriptions of significant geological structures.
4. Identify the character, attitudes and dimensions of any veins, mineralization and alteration found during the survey.
5. Identify the sources of geological data contained in the report if obtained from sources other than the survey being reported.

Maps

1. Contain a table of rock types, lithologies and formations, with a descriptive list of the symbols used.
2. Show outcrops designated by a letter or number corresponding to the rock type, lithologies and formations.
3. Show the character of the overburden including boulder, clay, gravel or sand, and the distribution of swamp, muskeg and forest cover areas along all lines traversed, particularly where no outcrop is found and identified.
4. Show all observed and interpreted folds, schistosity, actual and indicated faults, attitudes of flows and stratified rocks, including strikes and dips, and the direction in which they face, locations and attitudes of actual and interpreted contacts and other structural features. SYMBOLS NOT IN LEGEND!
5. Show zones of shearing, alteration or mineralization and veins. NOT IN LEGEND!
6. Show the location of trenches, test pits, shafts and adits. "
7. Show the location, direction and dip of drill holes.

Section 12 Regs.

* Standard structural symbols but should be in the legend.

· whole RX. (91 samples).

REQUIREMENTS OF GEOCHEMICAL SURVEY REPORTS AND MAPS

File No: Township or Area:
Report of Work No:

REPORTS

1. Disclose and identify any geochemical data obtained in the report which has been obtained from any other source than the survey.
2. Provide pertinent geological, topographic, ground water and surface water data with particular emphasis on the material being sampled.
3. Describe the type, location and amount of the samples collected and the tools used in collecting the samples. whole RX
4. In the case of soil samples, indicate the depth or range of depth below the surface and the particular soil horizon sampled. N/A
5. In the case of samples of living vegetation, plant, humus or peat, describe the samples as specifically and completely as possible including giving the plant name, species, part of the plant sampled, and location of material sampled. N/A
6. If only a part of the sample is to be used for analysis, indicate the procedure used to obtain this part of the sample or particular size fraction, and in any biochemical report indicate the sample repreparation technique. N/A
7. Give the numbers of the samples and their analytical results, and state whether the analysis was made in the field, a field laboratory, or a commercial laboratory and indicate the name of the laboratory.
8. Give the weight of the sample used, extraction method, analytical method and elements determined.
9. Tabulate separately the data obtained from duplicate sampling and analysis in order to estimate data variability.
10. Indicate the total number of sample stations and kilometers of line traversed.
11. Give an analysis of the geochemical data by mathematical or other means in order to establish background, threshold and anomalous values.
12. Describe the possible causes of background, threshold and anomalous values, relating the anomalous values to known or speculated causes.
13. Give an evaluation of the significance of anomalous values together with recommendations for further exploration.

Jensen plot etc.

MAPS

1. Show all station points and values of the analysis obtained and units measured.
2. Provide a legend or explanation to identify the units plotted with clear definitions of all abbreviations used on the map.
3. Show profiles or contours as determined from the analytical results of the survey and give the vertical scale where profiles are used. N/A
4. Show the printed name of the author of the related geochemical report.

Note: A geochemical survey is not eligible for assessment work credit unless all the analytical receipt results are submitted.

REQUIREMENTS OF ASSAYING AND ANALYSIS SUBMISSIONS

File #:

Type of Survey:

Report of Work #:

Township or Area:

The results of benification, geochemical testing or other special studies of assaying and analysis are eligible for assessment work credit if the results:

1. Include a summary listing all types of work performed, the costs involved for such work, and the mining claim numbers on which the work was carried out.

2. Where assays or analysis are reported, include the assay certificates and a plan at a scale of between 1:5000 and 1:10 clearly identifying the location of each sample by number, letter or grid coordinate designation and showing the assay results;

   and

3. Where assays or analysis are reported for core or non-core drilling, indicate the intervals in metres at which the samples were taken.

Section(17).Regs.

Assessment Value to be Distributed over claims

Claim Number		Claim Type	Registered Owner	Value of Assessment Work Done on this Claim	Value of Assessment Applied to this Claim	Value of Assessment Assigned from This Claim	Reserve to Be Claimed at a Future Date
51061		Leased	Moneta	0	0	0	0
51070	*	Leased	Moneta	1840	0	1840	0
51071	*	Leased	Moneta	1840	0	1840	0
51072	*	Leased	Moneta	1840	0	1840	0
51074	*	Leased	Moneta	1840	0	1840	0
1170917	*	Unpatented	Falconbridge	1840	1099	741 445	296
1170918	*	Unpatented	Falconbridge	1840	1099	741	296
1172108	*	Unpatented	Falconbridge	1840	1099	741	296
1172109	*	Unpatented	Falconbridge	1840	1099	741 444	297
1172110	*	Unpatented	Falconbridge	1840	1099	741	297
1172111	*	Unpatented	Falconbridge	1840	1099	741	297
1172112	*	Unpatented	Falconbridge	1840	1099	741	297
1175376	*	Unpatented	Falconbridge	1840	1099	741	297
1175377	*	Unpatented	Falconbridge	1840	1099	741	297
1175378		Unpatented	Falconbridge	0	1099	0	0
1175379		Unpatented	Falconbridge	0	1099	0	0
1175380		Unpatented	Falconbridge	0	1099	0	0
1175381		Unpatented	Falconbridge	0	1099	0	0
1175397	*	Unpatented	Falconbridge	1840	1099	741 444	297
1175398	*	Unpatented	Falconbridge	1840	1099	741	297
1175399	*	Unpatented	Falconbridge	1840	1099	741	297
1175400	*	Unpatented	Falconbridge	1840	1099	741	297
1175401	*	Unpatented	Falconbridge	1840	1099	741	297
1175402	*	Unpatented	Falconbridge	1841	1099	742 445	297
1175403	*	Unpatented	Falconbridge	1841	1099	742	297
1175409		Unpatented	Falconbridge	0	1099	0	0
1175410		Unpatented	Falconbridge	0	1099	0	0
1175411		Unpatented	Falconbridge	0	1099	0	0
1175412		Unpatented	Falconbridge	0	1099	0	0
1175413		Unpatented	Falconbridge	0	1099	0	0
1175546		Unpatented	Falconbridge	0	1099	0	0
1175547		Unpatented	Falconbridge	0	1099	0	0
1175548		Unpatented	Falconbridge	0	1099	0	0
1175549		Unpatented	Falconbridge	0	1099	0	0
1175550		Unpatented	Falconbridge	0	1099	0	0
1175551		Unpatented	Falconbridge	0	1099	0	0
1175552		Unpatented	Falconbridge	0	1099	0	0
1175566	*	Unpatented	Falconbridge	1841	1099	742 445	297
1175567	*	Unpatented	Falconbridge	1841	1099	742	297
1175568	*	Unpatented	Falconbridge	1841	1099	742	297
1175569	*	Unpatented	Falconbridge	1841	1099	742	297
1175570	*	Unpatented	Falconbridge	1841	1099	742	297
1175571	*	Unpatented	Falconbridge	1841	1099	742	297
1175572	*	Unpatented	Falconbridge	1841	1099	742	297
		27. Total Claims	Total	$ 49689	$ 42861	$ 24412 (17,564)	$ 6828

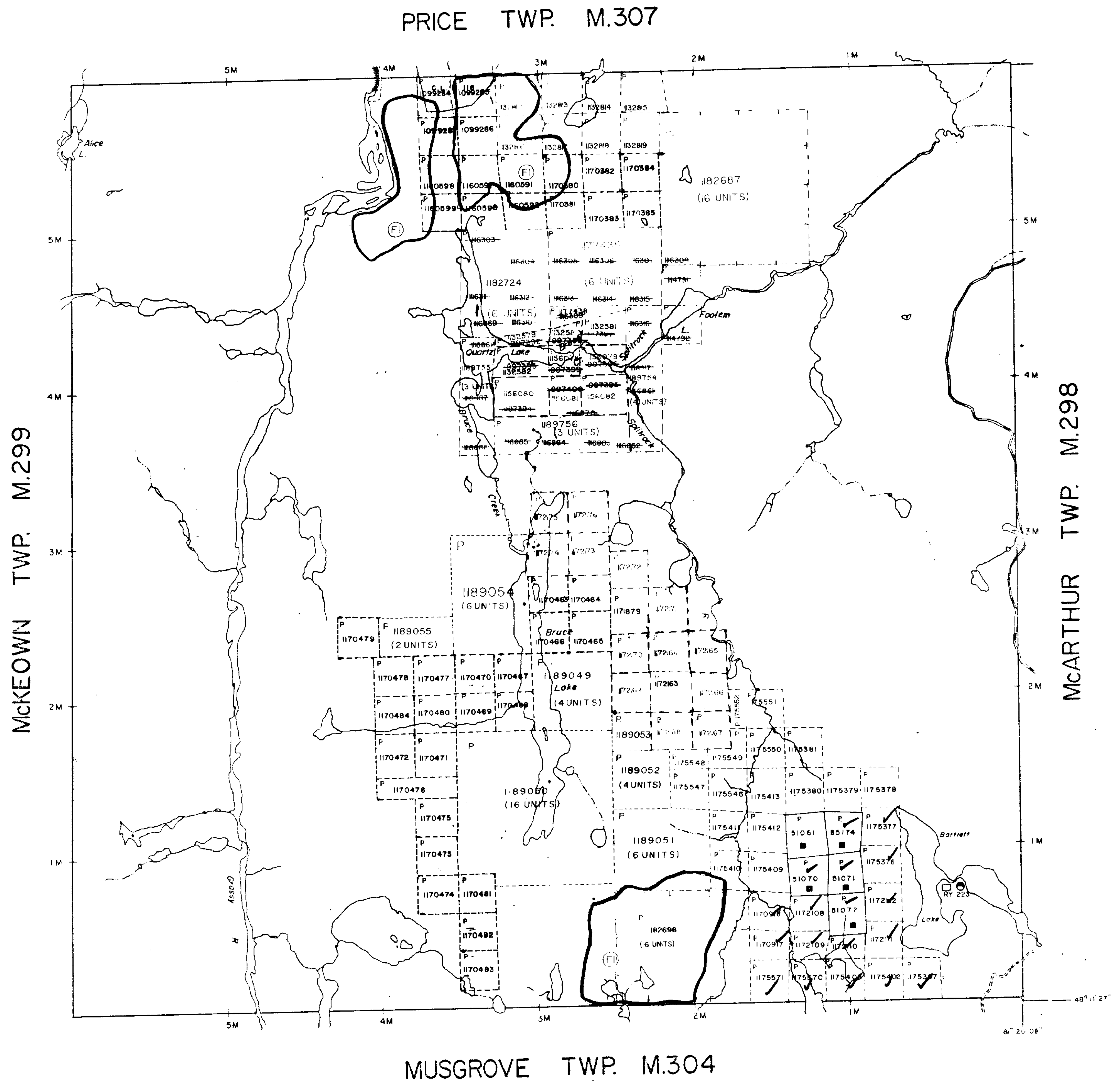
* grid cutting, mapping and sampling conducted to assessment standards on these claims

Note: All work conducted from May, 5 to November, 31 1991

Δ ALL WORK ON LEASED CLAIMS PERFORMED AFTER JUNE 3/91

RECORDED
MAR - 4 1992
Receipt

RECEIVED
MAY 27 1992
MIN



THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

THE TOWNSHIP OF

FRIPP

RECEIVED
MAY 27 1992
MINING LANDS BRANCH

DISTRICT OF TIMISKAMING

PORCUPINE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

RECEIVED
MAY 27 1992
MINING LANDS BRANCH

DISPOSITION OF CROWN LANDS

PATENT, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LEASE, SURFACE AND MINING RIGHTS
" , SURFACE RIGHTS ONLY
" , MINING RIGHTS ONLY
LICENCE OF OCCUPATION
ROADS
IMPROVED ROADS
KING'S HIGHWAYS
RAILWAYS
POWER LINES
MARSH OR MUSKEG
MINES
CANCELLED C.

NOTES

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

Areas withdrawn from staking under Section 43 of the Mining Act (R.S.O. 1970.)

Order No.	File	Date	Disposition

⌽ REMOTE TOURIST CAMPS

F1 - THIS TWP. SUBJECT TO FOREST ACTIVITY IN 1992/93. FURTHER INFORMATION ON FILE

PORCUPINE MINING DIVISION
RECEIVED
MAY 26 1992

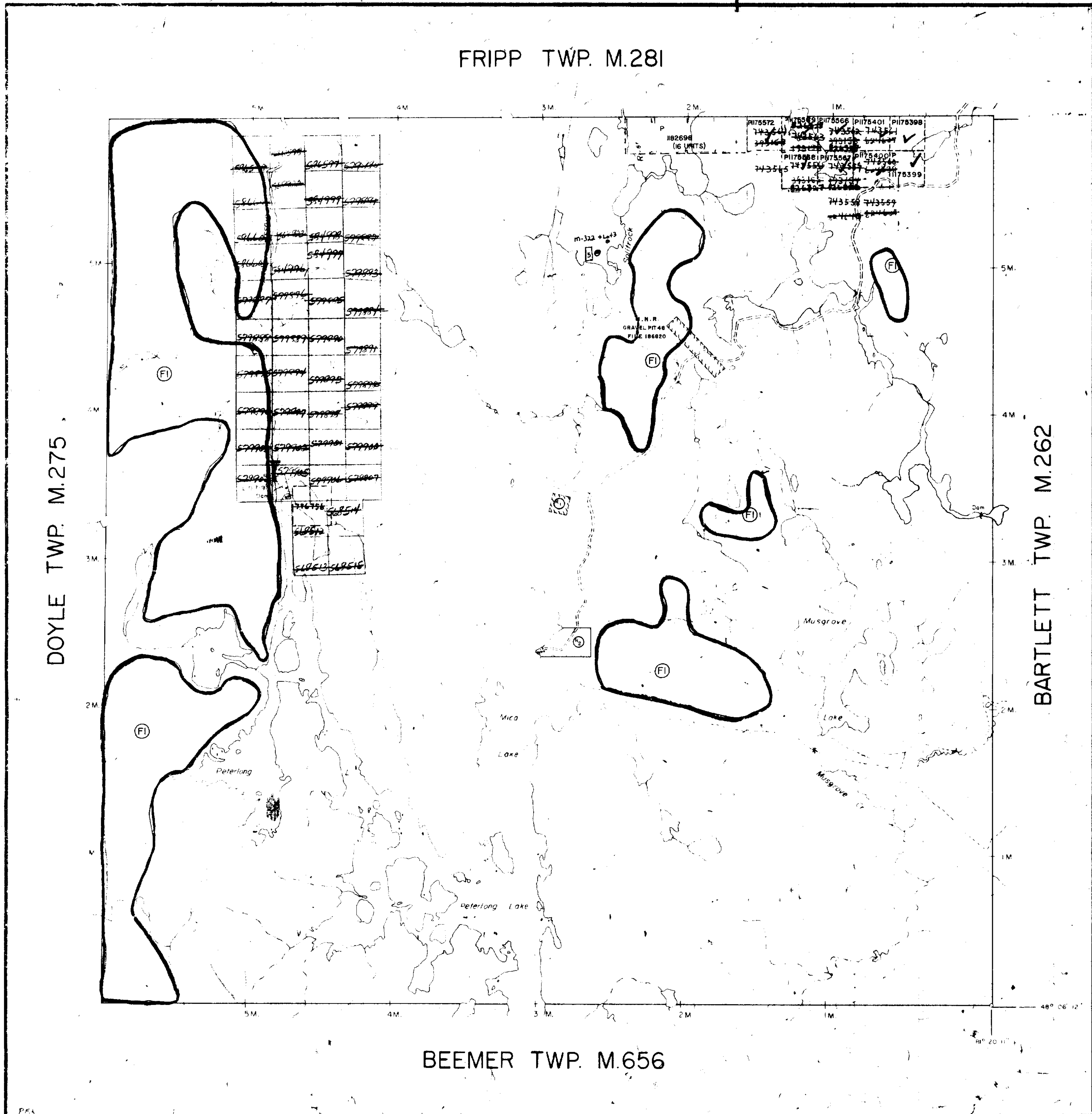
IN SERVICE NOV. 22/89 CHECKED BY S. ROWAN

PLAN NO. M.231

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

42A03NW0026 2.14595 FRIPP

200



THE TOWNSHIP OF

MUSGROVE

DISTRICT OF TIMISKAMING

PORCUPINE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

LEGEND

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

RECEIVED MAY 27 1992 MINING LANDS BRANCH

RECEIVED MAY 27 1992 MINING LANDS BRANCH

PORCUPINE MINING DIVISION RECEIVED MAY 26 1992

NOTES

400' Surface Rights Reservation around all lakes and rivers.

Flooding Rights in Peterlong and Mica Lakes assigned to H.E.P.C. L.O.7190. File 1162 Vol.4

Areas withdrawn from staking under Section 43 of the Mining Act, R.S.O. 1970

Order No	File	Date	Disposition
W.23/77	188543	11/3/77	S.R.O.
W.19/78	188543	10/4/78	S.R.O.

PLANNED REFORESTATION May 2/83

(F1) THIS TWP. SUBJECT TO FOREST ACTIVITIES IN 1992/93. FURTHER INFORMATION AVAILABLE ON FILE.

Received May 8/80

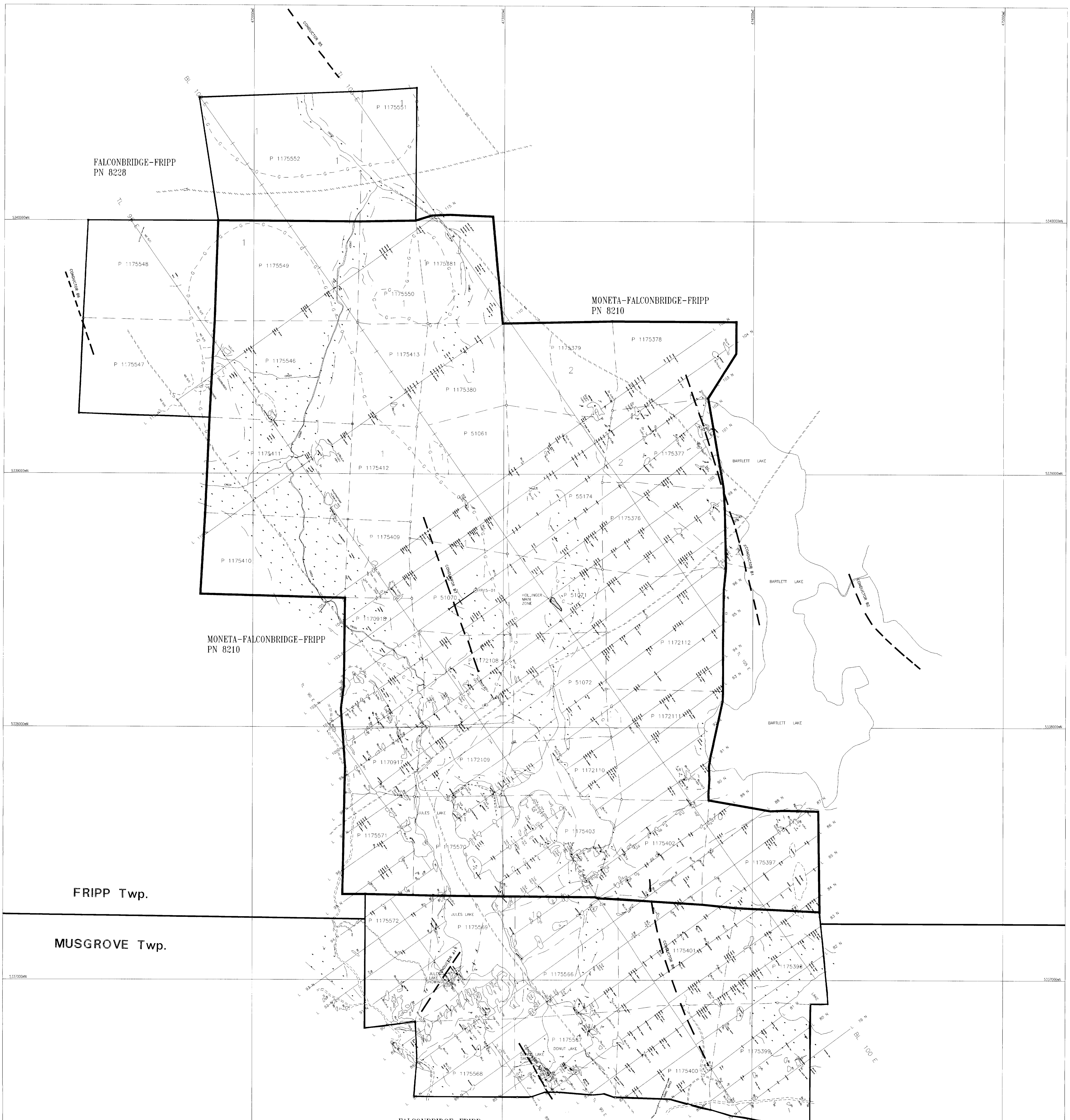
PLAN NO. M.304

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

42A03NW0026 2.14595 FRIPP

210

[redacted]



LEGEND

Geology

MAJOR ROCK DIVISIONS

10	DIABASE
9	FELSIC INTRUSIVE ROCKS
8	INTERMEDIATE INTRUSIVE ROCKS
7	MAFIC INTRUSIVE ROCKS
6	ULTRAMAFIC INTRUSIVE ROCKS
5	SEDIMENTARY ROCKS
4	FELSIC VOLCANIC ROCKS
3	INTERMEDIATE VOLCANIC ROCKS
2	MAFIC VOLCANIC ROCKS
1	ULTRAMAFIC VOLCANIC ROCKS

TEXTURAL/GEOCHEMICAL MODIFIERS

a	Fine Grained	A	Primitive (Y<20)
b	Medium Grained	B	Evolved (Y>20<60)
bx	Breccia		
c	Coarse Grained	C	text
d	Quartz-Feldspar Phyric	D	text
e	Amygdaloidal/Vesicular	E	text
f	Primary Fragmentals	F	Talc-carbonatized
g	Graphitic/Argillaceous	G	leucoxene bearing
h	Tholeiitic	H	hematization
i	Alkalic		
j	Calc-Alkalic	J	Pyroxenite
k	Komatiitic	K	net textured
l	Flows	L	peridotite
m	Massive	M	dunite
n	Variolitic/Spherilitic	N	ophitic
p	Pillowed	P	text
q	Quartz Phyric	Q	text
r	text	R	polysutured
s	Sulphides, Exhalites	S	fractured
t	Pyroclastic	T	gabbroic textured
u	High Mg	U	pyroxene spinifex
v	High Fe	V	olivine spinifex
w	High Al	W	skeletal/crescumulate
x	Andesite	X	adcumulate
y	Icelandite	Y	mesocumulate
z	text	Z	orthocumulate

ALTERATION MODIFIERS (PRODES)

<Ab>	Albitization
<Bl>	Bleached
<C>>	Carbonaceous
<Cb>	Carbonatization
<Ch>	Chloritization
<Ep>	Epidotization
<He>	Hematization
<K>>	Potassic Alteration
<Se>	Sericitization
<Si>	Silicification
<Sr>	Serpentinization
<Tc>	Talc-Carbonatized

Symbols

CONTACTS

Outcrop (small, observed, inferred, boulder/float)
Geological Boundary (observed, approximate, assumed)
Geological Boundary (gradational, geophysically inferred)
Flow Contact (defined, approximate)

MEASUREMENTS

Bedding with tops known (horizontal, inclined, vertical, overturned, dip unknown)
Bedding with tops unknown (inclined, vertical, dip unknown)
Pillow top (horizontal, inclined, vertical, overturned, dip unknown)
Spinifex top
Schistosity, gneissosity, cleavage or foliation (horizontal, inclined, vertical, dip unknown) (No. of ticks = generation - S1, S2, S3)
Jointing (horizontal, inclined, vertical, dip unknown)
Lineation (horizontal, inclined, vertical)
Folding - defined folds S fold, Z fold, multiple S, multiple Z)
Folding - undetermined type
Fault (defined, approximate, assumed) (inclined, vertical, movement w/circle on downthrow side)
Fault (Geophysically inferred, Lineament inferred)
Thrust Fault (defined, approximate, assumed) (teeth indicate upthrust side)
Shear zone
Dyke, vein (defined, approximate, assumed)
Anticline, Antiform (with or without plunge, overturned)
Syncline, Synform (with or without plunge, overturned)
Glacial striae (ice movement known, unknown) (numbers indicate relative age)
Limit of Geological Mapping

PHYSICAL WORK

Mineral Occurrence
Trench (1:20,000 +, 1:5,000 -)
Diamond Drill Hole (collar surveyed, collar located, collar unlocated)
Overburden Drill Hole
Mine, quarry or glory hole (active, abandoned)
Shaft (vertical, inclined, raise, winze)
Adit, Ramp
Rock Dump, Tailings
Gravel Pit (active, abandoned)

CULTURAL AND PHYSIOGRAPHIC FEATURES

All weather road (paved, gravel)
Four wheel drive road
Track
Trail
Buildings
Campsite
Power Line (major line, regular line)
Telephone Line (usable, unusable)
Railroad Track
Tower
Bridge
River (open, rapids)
Intermittent Stream
Lake
Swamp
Esker
Claim Post (OLS surveyed, inspected survey, located, unlocated, witness, in water)
Grids (current grid, old grid)
Survey Pin (located, unlocated)
Lot/Concession Corner Pin (located, government defined)

RECEIVED
JUL 0 7 1992
MINING LANDS BRANCH

RECEIVED
JUL 0 7 1992
MINING LANDS BRANCH

ASTRONOMIC
N
SHEET ORIENTED UTM NORTH AZIMUTH 359°49'

FALCONBRIDGE LIMITED
Exploration Division Timmins ONTARIO

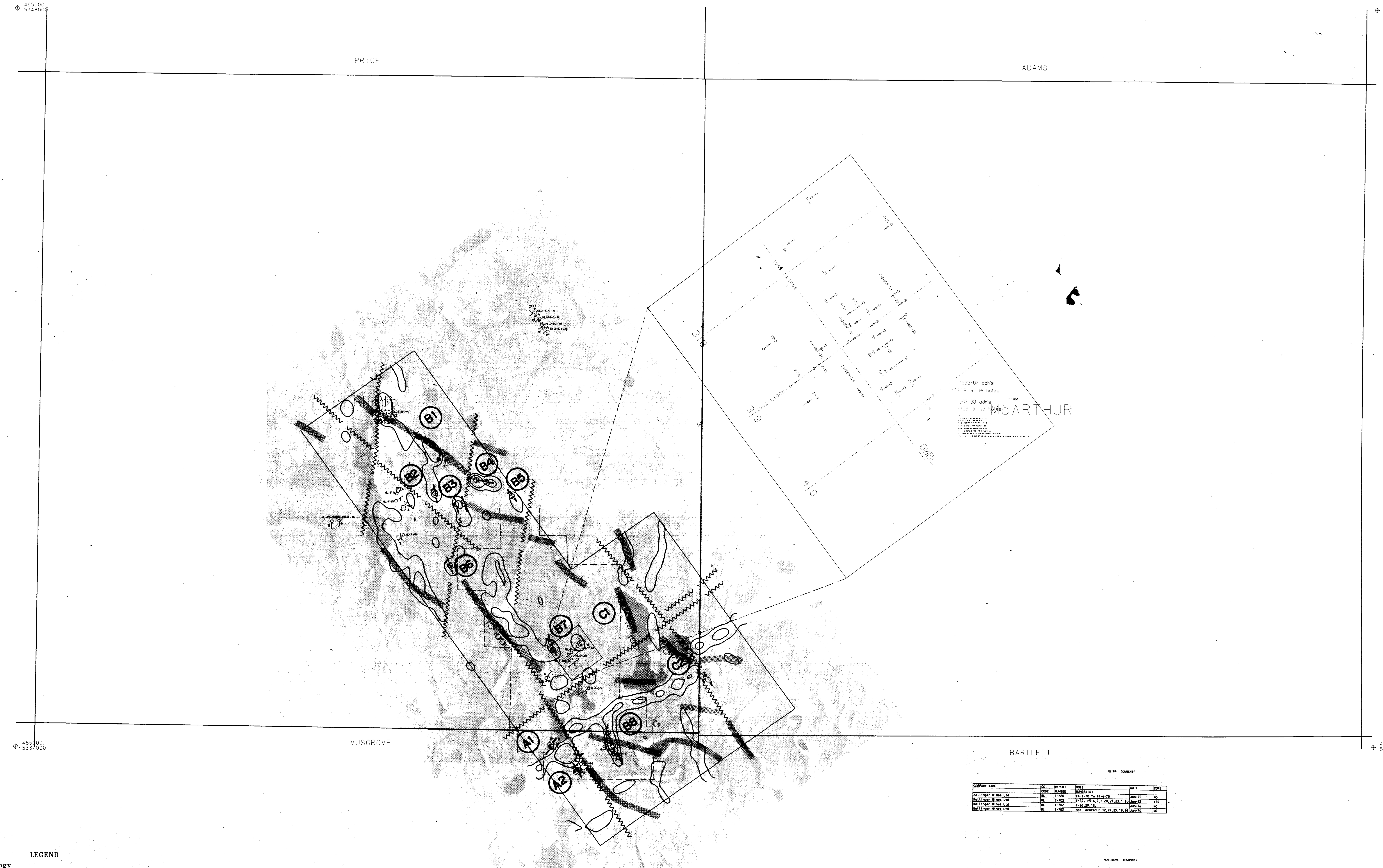
FRIPP TOWNSHIP

GEOLOGICAL COMPILATION

FRIPP Twp.

TRACED:	DATE:	NTS: 42-A/3 & 6	PROJECT: 8210
DRAWN: d e l	DATE: 12/11/91	MAP No:	FILE: 8210 A
SUPERVISED: M Houle	DATE. 09/06/92	SCALE: 1:5000 (metres)	
REVISED: d e l	DATE: 09/06/92	0 50 100 150 200	

220



FRIPP TOWNSHIP

COMPANY NAME	CO. CODE	REPORT NUMBER	HOLE NUMBER(S)	DATE	CORE
Hollinger Mines Ltd	HL	T-660	F4-1-70 To F4-4-70	Jun-70	NO
Hollinger Mines Ltd	HL	T-702	F-14, F5-6,7,F-20,21,23,1 To	Jun-63	YES
Hollinger Mines Ltd	HL	T-702	F-26,29,18,	Jun-74	NO
Hollinger Mines Ltd	HL	T-702	not located F-12,24,25,19,16	Jun-74	NO

MUSGROVE TOWNSHIP

COMPANY NAME	CO. CODE	REPORT NUMBER	HOLE NUMBER(S)	DATE	CORE
Hollinger Cons. Gold Mines	HL	T-702	F-12, F-13	Jul-63	NO
Shadrack Mining Ltd	SK	T-1618	H-1 To H-3	Jun-74	NO

LEGEND

Geology

MAJOR ROCK DIVISIONS

- 10 DIABASE
- 9 FELSIC INTRUSIVE ROCKS
- 8 INTERMEDIATE INTRUSIVE ROCKS
- 7 MAFIC INTRUSIVE ROCKS
- 6 ULTRAMAFIC INTRUSIVE ROCKS
- 5 SEDIMENTARY ROCKS
- 4 FELSIC VOLCANIC ROCKS
- 3 INTERMEDIATE VOLCANIC ROCKS
- 2 MAFIC VOLCANIC ROCKS
- 1 ULTRAMAFIC VOLCANIC ROCKS

N

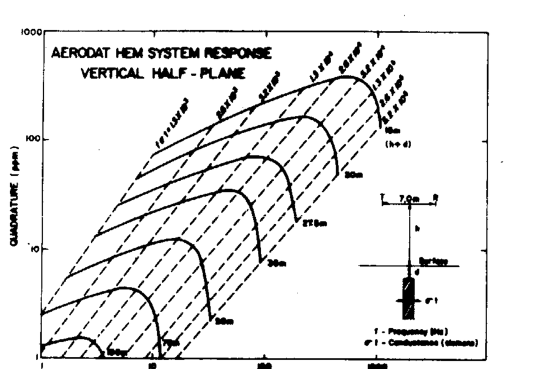
TEXTURAL/GEOCHEMICAL MODIFIERS

a Fine Grained
b Medium Grained
bx Breccia
c Coarse Grained
d Quartz–Feldspar Phyric
e Amygdaloidal/Vesicular
f Primary Fragmentals
g Graphitic/Argillaceous
h Tholeiitic
i Alkalic
j Calc–Alkalic
k Komatiitic
l Flows
m Massive
n Variolitic/Spherilitic
p Pillowed
q Quartz Phyric
r Oxide Iron Formation
s Sulphides, Exhalites
t Pyroclastic
u High Mg
v High Fe
w High Al
x Andesite
y Icelandite
z text

A Primitive (Y<20)
B Evolved (Y>20<60)
C Heterolithic
D Feldspar Phyric
E Chert
F Wacke
G Leucoxene Bearing
H Basaltic Komatiite
J Pyroxenite
K Net Textured
L Peridotite
M Dunite
N Ophitic
P text
Q text
R Polysutured
S Fractured
T Gabbroic Textured
U Pyroxene Spinifex
V Olivine Spinifex
W Skeletal/Crescumulate
X Adcumulate
Y Mesocumulate
Z Orthocumulate

ALTERATION MODIFIERS (PRODES)

<Ab> Albitization
<Bl> Bleached
<C>> Carbonaceous
<Cb> Carbonatization
<Ch> Chloritization
<Ep> Epidotization
<He> Hematization
<K>> Potassic Alteration
<Se> Sericitization
<Si> Silicification
<Sr> Serpentinization
<Tc> Talc–Carbonatized



EM Anomalies

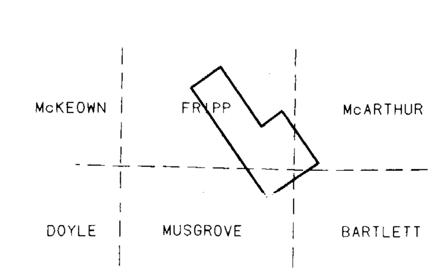
Conductivity Thickness (mhos)

- 0 - 1
- 1 - 2
- 2 - 4
- 4 - 8
- 8 - 15
- 15 - 30
- > 30
- Magnetite Anomaly

EM Anomaly A, 935 Hz inphase amplitude 7 ppm. Conductivity thickness 2 mhos (see code).

INTERPRETATION LEGEND

- Conductor Axis
- Vertical Gradient Contour Lines +5 nT/m and +25 nT/m
- Possible Fault
- A1 Target Label
- VLF Conductor Axis



FALCONBRIDGE LIMITED

INTERPRETATION

2.14595

MONETA-FRIPP PROJECT (PN 8210)

FRIPP TOWNSHIP, ONTARIO

SCALE 1:20,000

0 660 1320 2640 5280 Feet

0 200 400 1000 2000 Metres

AERODAT LIMITED

DATE :	MAR 1991
NTS No:	42 A/3
MAP No:	FRIPP & McARTHUR J9101

230