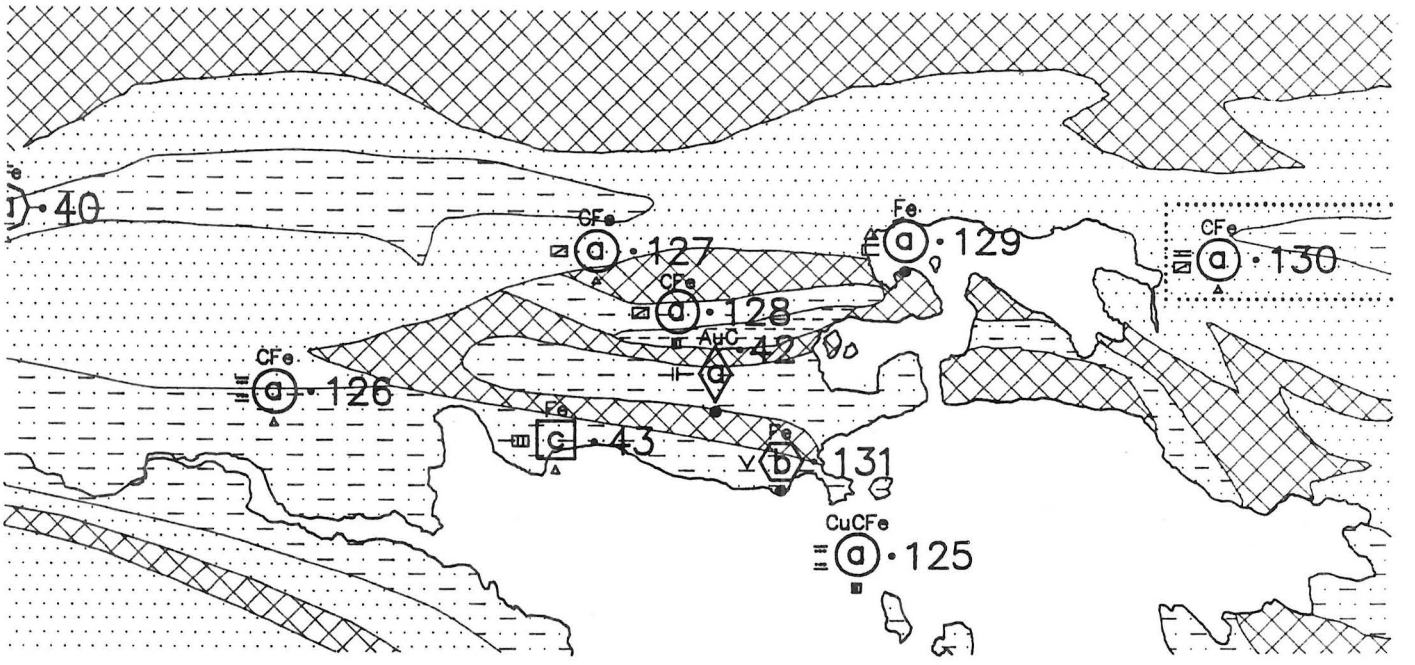
Mineral Deposit Series

Report No. 12



Mineral Deposits and Occurrences in the Saw Lake Area, NTS 63J/14

by M.A.F. Fedikow and K.J. Ferreira

Manitoba
Energy and Mines
Geological Services

Contribution to programming conducted under the
Canada-Manitoba Mineral Development Agreement

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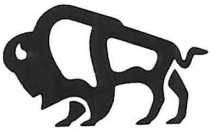
Geological Services



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Mineral Deposits and Occurrences in the Saw Lake Area, NTS 63J/14

by M.A.F. Fedikow and K.J. Ferreira

Energy and Mines

Hon. Harold J. Neufeld
Minister

Ian Haugh
Deputy Minister

Geological Services

W. David McRitchie
Director

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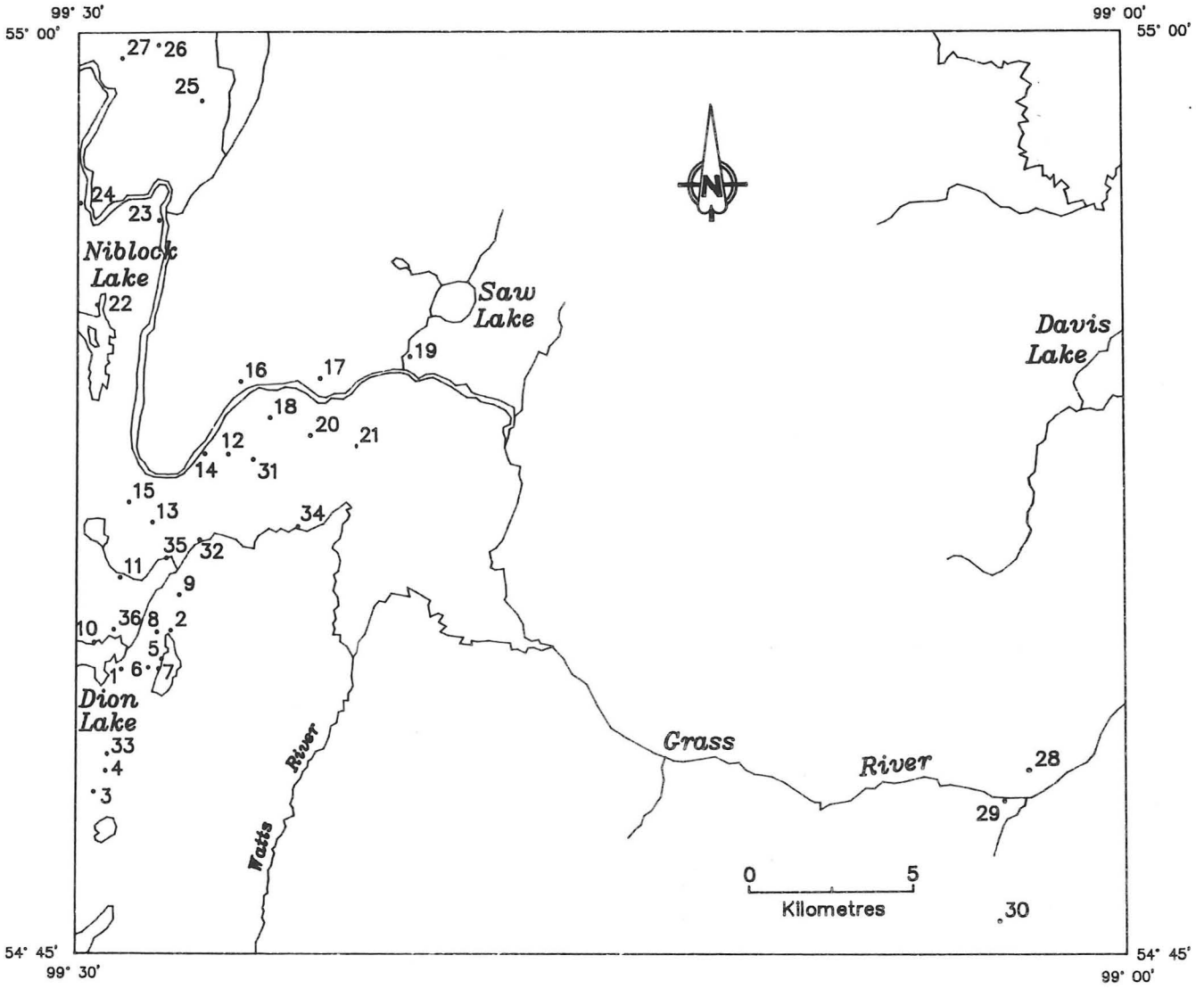

Figure 1: Location of mineral deposits and occurrences (63J/14).

INTRODUCTION

This report and accompanying map are part of a Mineral Deposit Series presenting a uniformly organized and up-to-date collation and analysis of information on mineral occurrences in the Province of Manitoba. The series is intended: (1) to provide explorationists with a geoscientific data base that can be used in mineral exploration; and (2) to provide a technical data base for other government users in resource evaluations, formulation of mineral and land use policies and the initiation of regional development programs.

METHODOLOGY

The documentation program was initiated in the main mining districts of the province under the 1984-1989 Canada-Manitoba Mineral Development Agreement. Under this project mineral deposit geologists of the Geological Services Branch have attempted to inspect and evaluate each known mineral occurrence. These site visits ranged from a preliminary half day or less search of an area for old workings, to extensive geological mapping of selected occurrences for a week or more. In addition, for each occurrence the geologists have attempted to synthesize available data from published and unpublished sources. The Manitoba Mineral Inventory Card Index and the cancelled Assessment Files have been used extensively in the preparation of the report. Mineral occurrence documentations representing only cancelled assessment file compilations are identified as such under the heading 'Name'. Information for all other occurrences was acquired primarily by field examination and are commonly supplemented by cancelled assessment file compilations.

Information has been collated and maps prepared with the assistance of junior staff geologists and summer assistants. Senior mineral deposit geologists have provided the deposit classifications and text for the report.

The locations of all mineral deposits and occurrences are presented in Figure 1.

Deposit versus Occurrence

Throughout this report mineralization is referred to as a deposit if tonnage and grade figures are known; all other mineralization is referred to as an occurrence.

Massive Sulphide versus Solid Sulphide

The use of 'massive sulphide' in the geological literature is confusing in that it is not always clear whether the authors are referring to a 'massive sulphide deposit' (cf. Sangster, 1972) or a section of sulphide-rich rock. In this publication 'massive sulphide' will be used in reference to a deposit type, i.e., a volcanogenic massive sulphide deposit type, rather than the nature of the mineralization. A volcanogenic or sedimentogenic massive sulphide deposit can contain a sulphide lens that locally contains as little as 10% sulphide minerals by volume. The alteration zones that are an integral part of many massive sulphide deposits rarely contain more than 50% sulphide minerals. Consequently, the use of 'solid sulphide' for 75% to 100% and 'near solid sulphide' for 50% to 75% sulphide minerals is adopted in place of the commonly used term 'massive' to describe the textural aspects of a sulphide mineralization.

FORMAT OF MINERAL DEPOSIT MAPS

Location:

One of the incentives spurring the mineral deposit documentation was the absence of accurate location maps for known mineral occurrences. Inaccurate land bases have previously resulted in failure to find old workings, surveys conducted in wrong areas, and even cancellation of intended surveys by explorationists. Consequently, considerable field time has been spent in establishing occurrence locations and attempts have been made to display exact locations both on the map and in the accompanying report.

The location number on the map is a unique reference number that will be used both in the report and the geologists' unpublished data base. These numbers are consecutive within each 1:50 000 NTS map sheet (but not within portions of a map sheet such as Map MDS87-1).

Deposit Types:

In order to maintain a mineral deposit classification, which will be useful to both explorationists and metallogeneticists, a simplified descriptive classification was selected. This classification is based on the use of common deposit types for the classification of both deposits and occurrences. The classification of mineralization is based on the premise that the mineral explorationist requires information on metals and types of mineralization in an area as well as on the economic deposits (past, present and future producers).

All deposits and occurrences are classified according to the Deposit Type classification in Table 1.

The deposit type displayed on the map represents mineralization with the greatest economic potential, for example a disseminated narrow chalcopyrite layer is emphasized rather than a much thicker solid pyrite-graphite layer.

Mineralization:

A symbol is used to denote the percentage and/or type of mineralization present. At some localities more than one type of mineralization is present. The type of mineralization displayed in the symbol represents the mineralization with the greatest economic potential as indicated by the deposit type symbol. It should be noted that in the context of this report a "sulphide facies iron formation" is equivalent to a "sulphide stratum". For a discussion of sulphide stratum the reader is referred to Gale *et al.* (1980).

TABLE 1: MINERAL DEPOSIT TYPES

STRATABOUND MASSIVE SULPHIDE TYPE DEPOSITS
- a) Volcanic rock associated
- b) Sedimentary rock associated
- c) Alteration zone associated with a or b

CHEMICAL SEDIMENT TYPE DEPOSITS
- a) Sulphide facies iron formation
- b) Oxide facies iron formation
- c) Carbonate facies iron formation
- d) Silicate facies iron formation
- e) Other chemical sediments

VEIN TYPE DEPOSITS
- a) Single vein
- b) Multiple veins or lenses
- c) Stockwork

MAGMATOGENIC TYPE DEPOSITS ASSOCIATED WITH MAFIC/ULTRAMAFIC ROCKS
- a) Disseminated
- b) Layered
- c) Net textured
- d) Podiform

DEPOSITS WITH PORPHYRY AFFINITIES
PEGMATITE TYPE DEPOSITS
CLASTIC SEDIMENT TYPE DEPOSITS
REPLACEMENT TYPE DEPOSIT
DISSEMINATED MINERALIZATION - NOT CLASSIFIED

Host Rocks:

In general, this description refers to the immediately underlying and overlying rock types. When a number of rock types are present in an extensive zone of mineralization, the most common rock types are indicated.

Elements:

This description allows for a maximum of three metals present in increasing order of abundance by volume. The precious and base metals are indicated in preference to elements such as iron and carbon.

In some instances it has been more efficient on the map and in the report to make reference to an area of mineralization rather than individual deposits or occurrences. All mineralization in the area delineated by a dotted line on the map is referenced in the report under the location number within that area.

FORMAT OF MINERAL DEPOSIT REPORTS

Location:

Each deposit or occurrence description will contain the unique deposit reference number, deposit or claim name where applicable, UTM coordinates, general area description, the reference number of the airphoto on which the deposit can be located and a brief description of method(s) of access.

Exploration Summary:

This section provides a summary of the extent of exploration. Information for this section was compiled from Mineral Inventory Cards, cancelled Assessment Files, and maps and files from the Mining Recording Office.

Geological Setting:

In this section the general geology of a deposit or occurrence is described. The information levels of the descriptions vary considerably and depend largely upon the extent of geological mapping during the documentation project. For further details the reader should consult the references cited.

Mineralization:

A detailed description of the mineralization provides the reader with the opportunity to make their own evaluation of the significance of a mineral occurrence or deposit.

Geochemical Data:

In addition to detailed geological mapping around individual mineral occurrences, rock samples were routinely collected from outcrops in the vicinity of the occurrences. Multi-element analyses are presented for 49 rock samples collected from mineral occurrences 1 to 36. Details of the sampling and analytical procedures are presented in Appendix I along with multi-element geochemical data.

Classification:

In this section the geologist may indicate the reasons for the classification appearing on the Mineral Deposit Map. For those localities containing more than one deposit type, the deposit types not shown on the map are documented here.

References:

These include both published and unpublished sources. For published and assessment report information the reader should obtain desired material directly from the source. The mineral deposit geologists will endeavour to supply copies of unpublished material on a deposit by deposit basis. References listed at the end of each occurrence description may also include sources of additional information not directly cited in the text.

ABBREVIATIONS

The following abbreviations are used throughout the occurrence descriptions:

A.F.	Assessment file
apy	Arsenopyrite
CB	Claim block
c.g.	Coarse grained
cm	Centimetre
cp	Chalcopyrite
DDH	Diamond drill hole(s)
diss.	Disseminated
EM	Electromagnetic

f.g.	Fine grained
g/t	Grams per tonne
HBED	Hudson Bay Exploration and Development Company Limited
HLEM	Horizontal loop electromagnetic
km	Kilometre
m	Metre
m.g.	Medium grained
oz/ton	Ounces per ton
po	Pyrrhotite
py	Pyrite
sp	Sphalerite
t	Tonne
v.f.g.	Very fine grained
VLEM	Vertical loop electromagnetic

NOTE: This mineral deposit report and the accompanying map are intended to be active documents that can be updated as new information becomes available. Although revisions of the publication are anticipated, any additional unpublished information may be obtained by contacting the authors or the Director, Geological Services Branch.

ACKNOWLEDGEMENTS

During the course of mineral occurrence documentation in the Saw Lake area seasonal students provided assistance with sampling, grid construction, outcrop preparation, outcrop map production and portions of the geological mapping. We would like to acknowledge the following for their contributions in the field and the office:

1985: Senior Geological Assistant - Roy Eccles
1986: Junior Geological Assistant - Tim Robbie
1987: Junior Geological Assistant - Craig Malis
1989: Senior Geological Assistant - Craig Malis
Junior Geological Assistant - Andrew Lebedynski

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Computing - Glenn Conley
Typing - Leah Chudy
Review - G.H. Gale, W.D. McRitchie
Editing - D.A. Baldwin

GENERAL GEOLOGY OF AREA 63J/14

The geological base for mineral deposit map sheet 63J/14 is the 1:50 000 map of Bailes (1985). In the Saw Lake area the supracrustal rocks comprise portions of the Proterozoic Flin Flon and Kisseynew belts. Flin Flon volcanism and Kisseynew sedimentation are considered to be contemporaneous (Gordon *et al.*, in press; Bailes, 1980a, b). The rocks of both belts have been dated at between 1800 and 1900 Ma by Sangster (1978) and Gordon *et al.* (in press) and were deformed and metamorphosed during the Hudsonian orogeny at about 1760 Ma.

In the Saw Lake area supracrustal rocks of the Flin Flon belt have been subdivided into Amisk Group volcanic and derived sedimentary rocks and Missi Group volcanic and sedimentary rocks. These two groups of rocks have been traced across steep metamorphic gradients into coarsely recrystallized equivalents in the adjacent Kisseynew belt (Byers and Dahlstrom, 1954; Bailes, 1971, 1980a). The transition across the Flin Flon belt to the Kisseynew belt at its western end is reflected by a facies change from volcanic to predominantly sedimentary rocks, as well as an abrupt increase in grain size and metamorphic grade (Bailes, 1980a, b; Froese and Moore, 1980). The eastern portion of the Flin Flon belt, including the Saw Lake area, is characterized by abundant sedimentary rocks, and accordingly, the transition from Flin Flon belt to Kisseynew belt is difficult to delineate. This problem was addressed by Froese and Moore (1980) by using the biotite-sillimanite-almandine isograd to separate the two belts, and Bailes (1985) adopted this approach in the Saw Lake area. In this area 90% of the rocks lie above this isograd, and accordingly, belong to the Kisseynew belt. Consequently, the terminology used in the Saw Lake area (Bailes, 1985) is consistent with that of the Flin Flon belt, i.e., Amisk and Missi, rather than Nokomis (Robertson, 1953) and Sherridon (Bateman and Harrison, 1946) nomenclature.

The stratigraphic succession in the Saw Lake area is controlled by a series of east- and northeast-trending faults. These faults divide the area into a series of blocks, each of which has a different supracrustal sequence, grade of metamorphism and suite of intrusive rocks. Gross similarities between the blocks permit the development of a tentative stratigraphic succession for the area. Crosscutting relationships between intrusive rocks are rare, and accordingly their relative ages are approximate. In the Saw Lake area, upper Ordovician, flat-lying, mottled dolomitic limestone overlies the Precambrian basement rocks and is, in turn, overlain and largely obscured by glaciolacustrine deposits of glacial Lake Agassiz.

The Amisk Group, centred on Niblock Lake, is represented by subalkaline mafic and felsic volcanic and volcaniclastic rocks overlain by greywacke, siltstone and mudstone. Low-potassium tholeiitic basalt is aphyric, pillowed to massive and includes weakly to strongly vesicular varieties. These units are weakly foliated and recrystallized to upper greenschist facies. Local interbeds of plagioclase-phyric rhyolite tuff and lapilli tuff are intercalated with the basalt flows. The basalt flows are overlain by heterolithologic volcaniclastic breccias representing debris flows. Strongly vesicular dacite flows overlie the debris flows. Vesicles are commonly carbonate filled and constitute 20 to 50% of the rock. Amisk Group paragneisses in the Saw Lake area comprise immature felsic to intermediate volcanic detritus, derived from greywacke, siltstone and mudstone, deposited by subaqueous mass sediment gravity flows.

Missi Group sedimentary and volcanic rocks dominate the supracrustal succession in the Saw Lake area. These coarsely recrystallized heterolithologic rocks are the metamorphic equivalents of products of marine and terrestrial environments of deposition. The rock units in the Saw Lake area record local influxes of volcanic flows and immature volcaniclastic detritus. In the Saw Lake area the Missi Group is considered to lie unconformably on the Amisk Group although the base of the Missi Group is not exposed (Bailes, 1985). Stratigraphic relationships are obscured in Missi Group rocks of this area as a result of recrystallization and complex folding and faulting. Metamorphism in the area varies from upper greenschist to almandine-amphibolite facies near Niblock Lake in the northwest part of the map area, to upper almandine-amphibolite to lower granulite facies in the south and east portions of the area.

To date, mineable deposits of base and precious metals have not been discovered in the Saw Lake area. Bailes (1985) recognized three types of sulphide mineralization within Missi Group rocks: (i) volcanic rock hosted solid pyrite-pyrrhotite; (ii) sedimentary rock hosted sulphide/carbonate facies "iron formation", and (iii) sedimentary rock hosted disseminated sulphide minerals. The solid Fe-sulphide deposits occur predominantly in subaqueously deposited basalt near Niblock Lake, and to a lesser extent, in subaerially deposited basalt throughout the Saw Lake area. They are characterized by ground EM geophysical conductors with long strike lengths. Graphite is commonly associated with this style of mineralization. At one mineral occurrence (location 13), a 5 m thick zone of near solid to solid pyrite-pyrrhotite-sphalerite, underlain by rhyolite containing "chloritic fractures" and disseminated and veinlet Fe-sulphide minerals, represents a classical massive sulphide type deposit complete with a footwall alteration zone. Minor disseminated chalcopyrite and sphalerite occur in association with silicified calc-silicate gneisses and interlayered amphibolite south of Dion Lake. Solid to near solid Fe-sulphide layers with graphite also occur in these rocks indicating a contemporaneous chemical sedimentation process. The solid to near solid sulphide chemical sediment type deposits are particularly abundant northeast of Dion Lake. Disseminated chalcopyrite is common in garnetiferous amphibolite along the west

shore of an unnamed lake about 1 km east of Dion Lake; its genesis is unknown.

Bailes (1985) indicates two areas in the Saw Lake area recommended for further exploration. Firstly, the similarity between Saw Lake area Missi Group marine sandstone and the host rocks to the Sherridon Cu-Zn deposits suggests potential for Cu-rich massive sulphide deposits. Recently, Ashton and Froese (1988) suggested that the Sherridon quartz-rich gneisses may have been derived from felsic volcanic rocks. If this reinterpretation is correct, then Missi Group marine sandstone in the Dion Lake area (Bailes, 1985) may be re-interpreted as felsic volcanic and/or volcaniclastic rocks. Accordingly, the base metal massive sulphide type deposit potential in these felsic rocks, as described by Bailes (1985), is reaffirmed. Secondly, disseminated chalcopyrite-pyrite mineralization occurs in terrestrially deposited Missi Group sandstones east of Dion Lake. This mineralization occurs at or near the terrestrial to marine depositional boundary and has no geophysical expression or associated gossan. This mineral deposit type has not been explored in the Saw Lake area.

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MINERAL DEPOSITS AND OCCURRENCES IN THE SAW LAKE AREA (63J/14)

LOCATION: 1

NAME:
UTM: 6075534N/469198E
ACCESS: Via bush plane to Dion Lake and traverse.

AREA: South of Dion Lake.
AIRPHOTO: A20169-68

EXPLORATION SUMMARY:

Noranda Exploration Company Limited drilled DDH Dat-1, -5 and -14, totalling 227 m, on the Dat claims in 1965 (A.F. 90208). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks, para-amphibolite, sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 1-1; Bailes, 1985). Ground EM geophysical conductors with long and short strike lengths occur at or near the contact between the carbonate-rich sedimentary rocks/amphibolite unit and the sandstone-siltstone unit. Rusty weathered amphibolite and calc-silicate gneiss were mapped at site 1 (Fig. 1-2). Diamond drill holes, testing the ground EM geophysical conductors, intersected quartz-hornblende-biotite ± garnet ± muscovite gneisses, chlorite-biotite ± muscovite ± hornblende gneiss, chlorite-talc schist and silicified graphite (Fig. 1-3; A.F. 90208).

MINERALIZATION:

Disseminated and veinlet chalcopyrite, pyrite and pyrrhotite occur in 0.1 to 0.5 m intersections in core from DDH Dat-1; host rocks are quartz-hornblende-biotite-garnet gneiss. DDH Dat-5 intersected similar mineralization; mineralized intersections range from 0.1 to 0.7 m in silicified garnetiferous-hornblende gneiss and in pegmatite. The occurrence of sulphide mineralization in pegmatite is interpreted to represent the assimilation of mineralized wall rock during pegmatite intrusion. A 0.1 m intersection of disseminated pyrite in "silicified" graphite and a 5.9 m intersection of chlorite-talc schist occur in core from DDH Dat-14 (Fig. 1-3; A.F. 90208). The rusty weathered amphibolite and calc-silicate gneiss at site 1 (Fig. 1-2) contains disseminated pyrrhotite and pyrite.

GEOCHEMICAL DATA:

DDH Dat-1 intersected four mineralized intervals 0.1 to 0.5 m wide with nil to 1.0% Cu. DDH Dat-5 intersected seven mineralized intervals 0.1 to 0.7 m wide that contain 0.53 to 2.29% Cu and 0.3 to 0.5% Zn (A.F. 90208). Assays were not reported for core from DDH Dat-14. Sample 01663, a rusty weathered and fine grained amphibolite with 5 to 7% pyrrhotite, contains low base and precious metals (Appendix I).

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. Long and short strike length ground EM geophysical conductors are associated with a stratigraphic contact, disseminated iron and base metal sulphide mineralization, chlorite-talc schist and "silicified" graphite.

REFERENCES:

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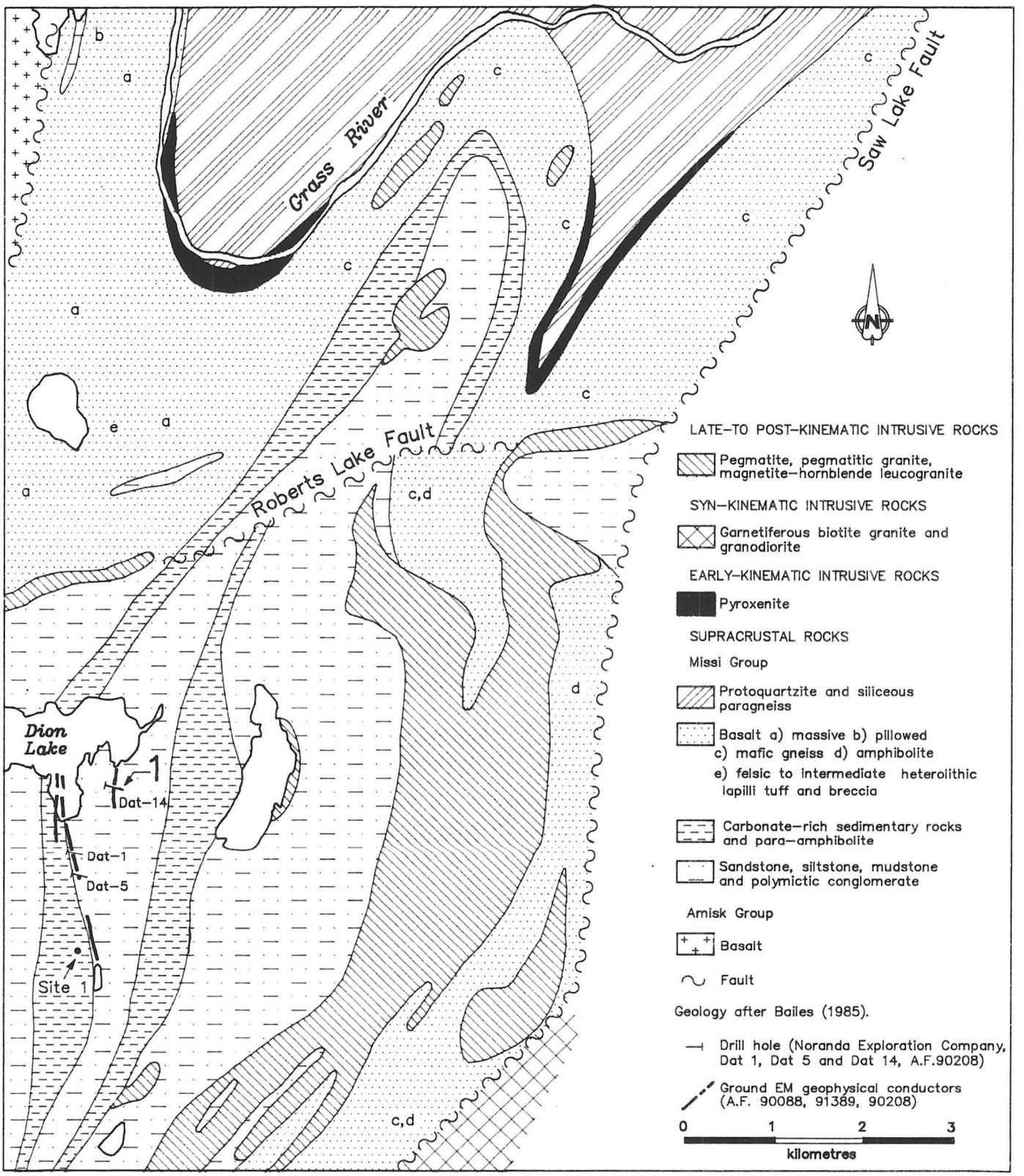

Figure 1-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrence 1.

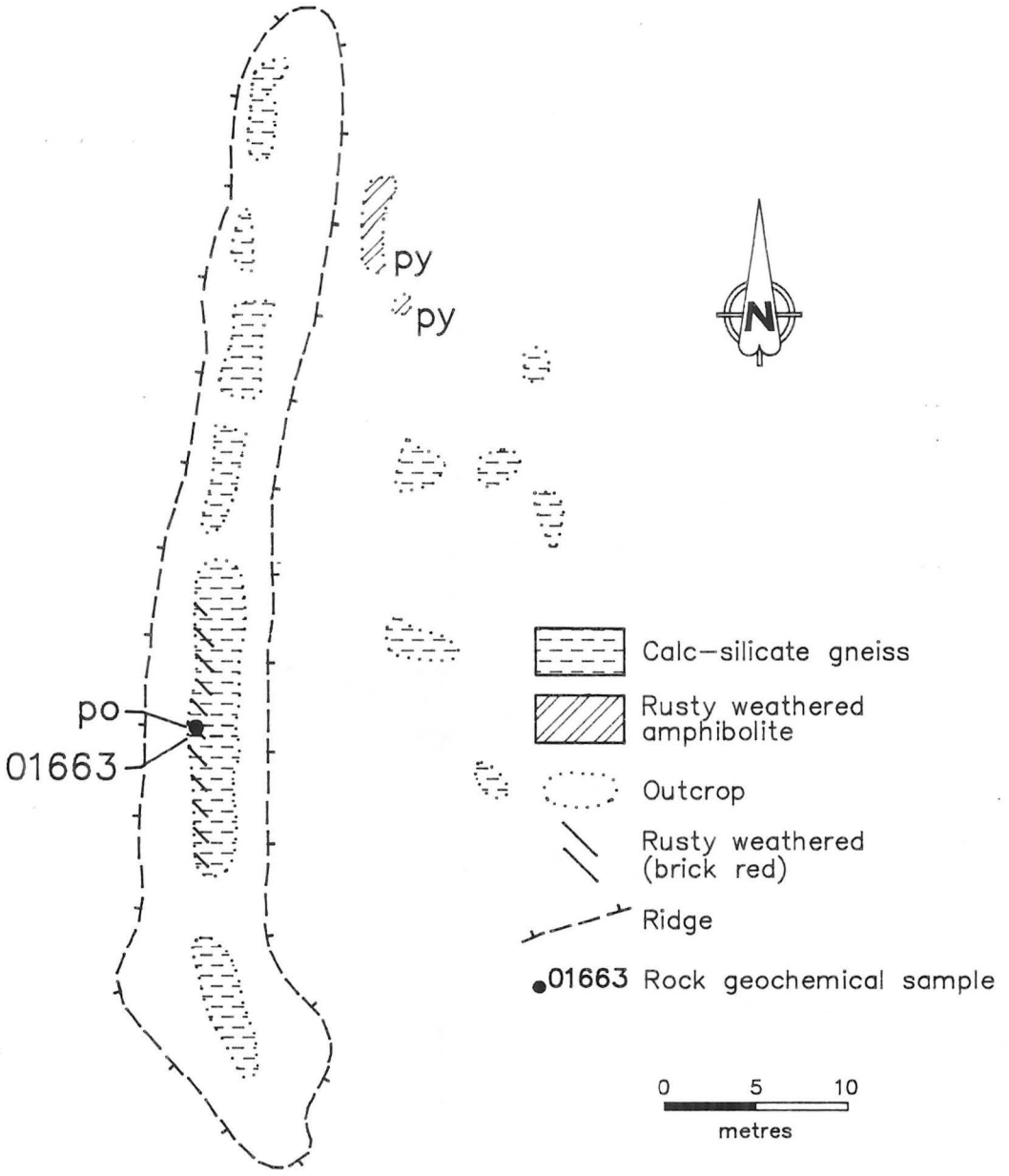

Figure 1-2: Detailed geology and sample location map, site 1, occurrence 1.

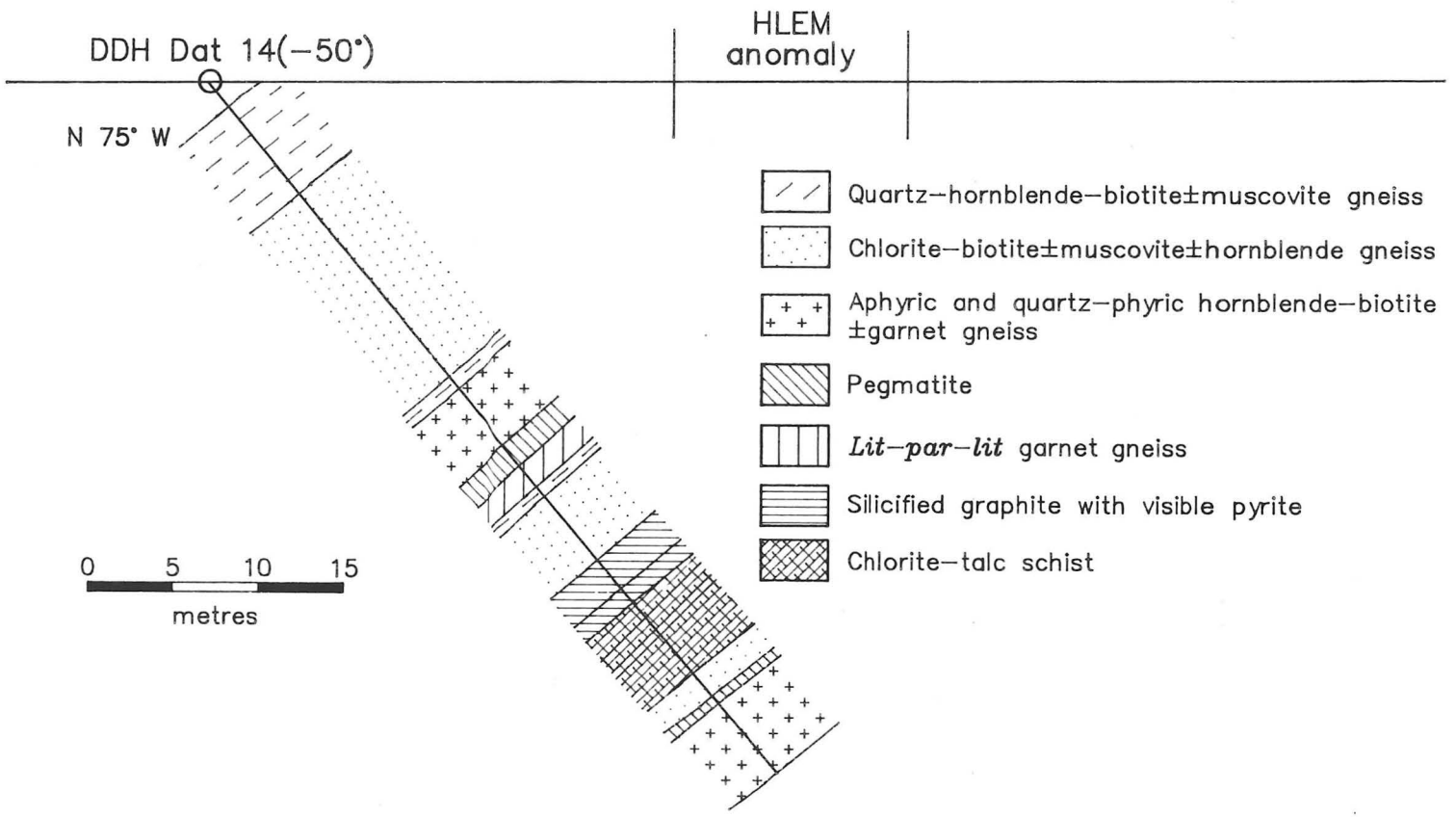

Figure 1-3: Lithologies and mineralization in DDH Dat-14.

LOCATION: **2**

NAME:

UTM: 6076712N/470778E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: One km northeast of Dion Lake.

AIRPHOTO: A20169-103

EXPLORATION SUMMARY:

HBED conducted an EM survey in 1969 (A.F. 91388) and drilled DDH Kus-140 (76 m depth) on claim Kus 893 in 1970 (A.F. 91389). The area is covered (1989) by claim Kus 12392, staked by HBED in 1984.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by sandstone, siltstone, mudstone and polymictic conglomerate, flanked to the west by garnet-porphyroblastic para-amphibolite. These rock units have been assigned to the Missi Group (Bailes, 1985). Late- to post-kinematic felsic intrusive rocks occur to the east. The area is bounded to the north by Roberts Lake Fault (Fig. 2-1). Fine grained, light grey quartz-biotite-feldspar ± chlorite gneiss was intersected by diamond drilling (DDH Kus-140; A.F. 91389).

MINERALIZATION:

Trace to 3% disseminated pyrrhotite occurs over a 15.7 m interval in core from DDH Kus-140. Additionally, nonmineralized quartz veins with core lengths >0.3 m were intersected by the drill hole. Silicified garnetiferous amphibolite containing disseminated chalcopyrite and pyrrhotite is present in outcrop.

GEOCHEMICAL DATA:

Chip sample 01691, collected from outcrop at the occurrence, contains low amounts of base and precious metals (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified. Disseminated chalcopyrite hosted by silicified garnetiferous amphibolite in outcrop contrasts with minor drill-indicated disseminated pyrrhotite in quartzofeldspathic gneiss.

REFERENCES:

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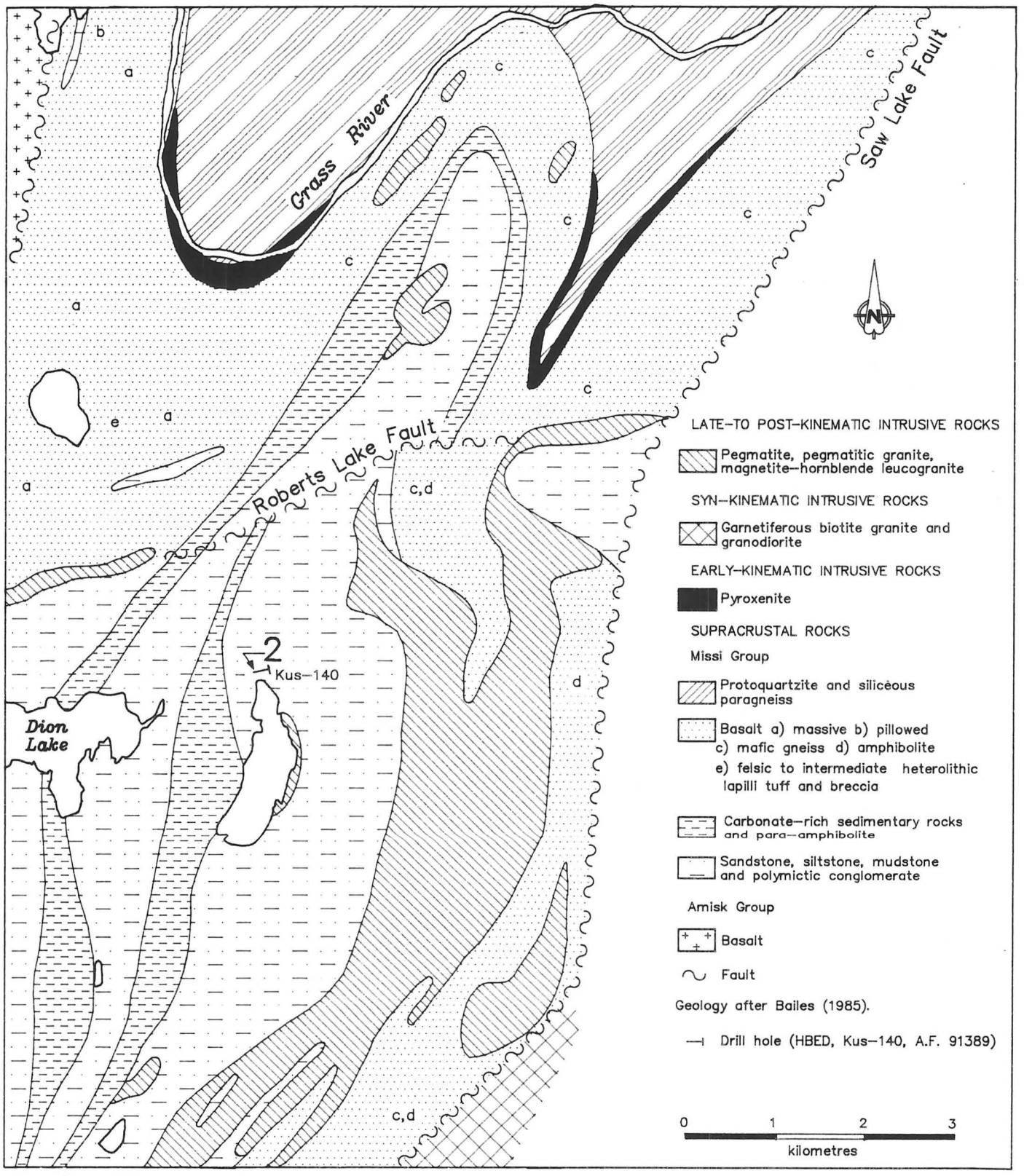


Figure 2-1: Geological setting and drill hole location, occurrence 2.

LOCATION: **3**

NAME:

UTM: 6071825N/468292E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: South of Dion Lake.

AIRPHOTO: A20169-66

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks and para-amphibolite, flanked to the east and west by sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 3-1; Bailes, 1985). The occurrence is situated at or near the contact between calc-silicate gneiss and a 10 m wide unit of garnetiferous quartz-feldspar-biotite gneiss (Fig. 3-2).

MINERALIZATION:

The calc-silicate and garnetiferous quartz-feldspar-biotite gneiss are rusty weathered, locally silicified and contain up to 3% disseminated pyrrhotite.

GEOCHEMICAL DATA:

Five representative chip samples were collected from exposures in the area of the occurrence. Samples 01651, 01652 and 01654 are silicified calc-silicate gneiss that contain 1 to 3% disseminated pyrrhotite (Fig. 3-2). Samples 01653 and 01655, collected outside of the area of Figure 3-2, are coarse grained amphibolite and unaltered calc-silicate gneiss, respectively. All samples contain low base and precious metals (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.

1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

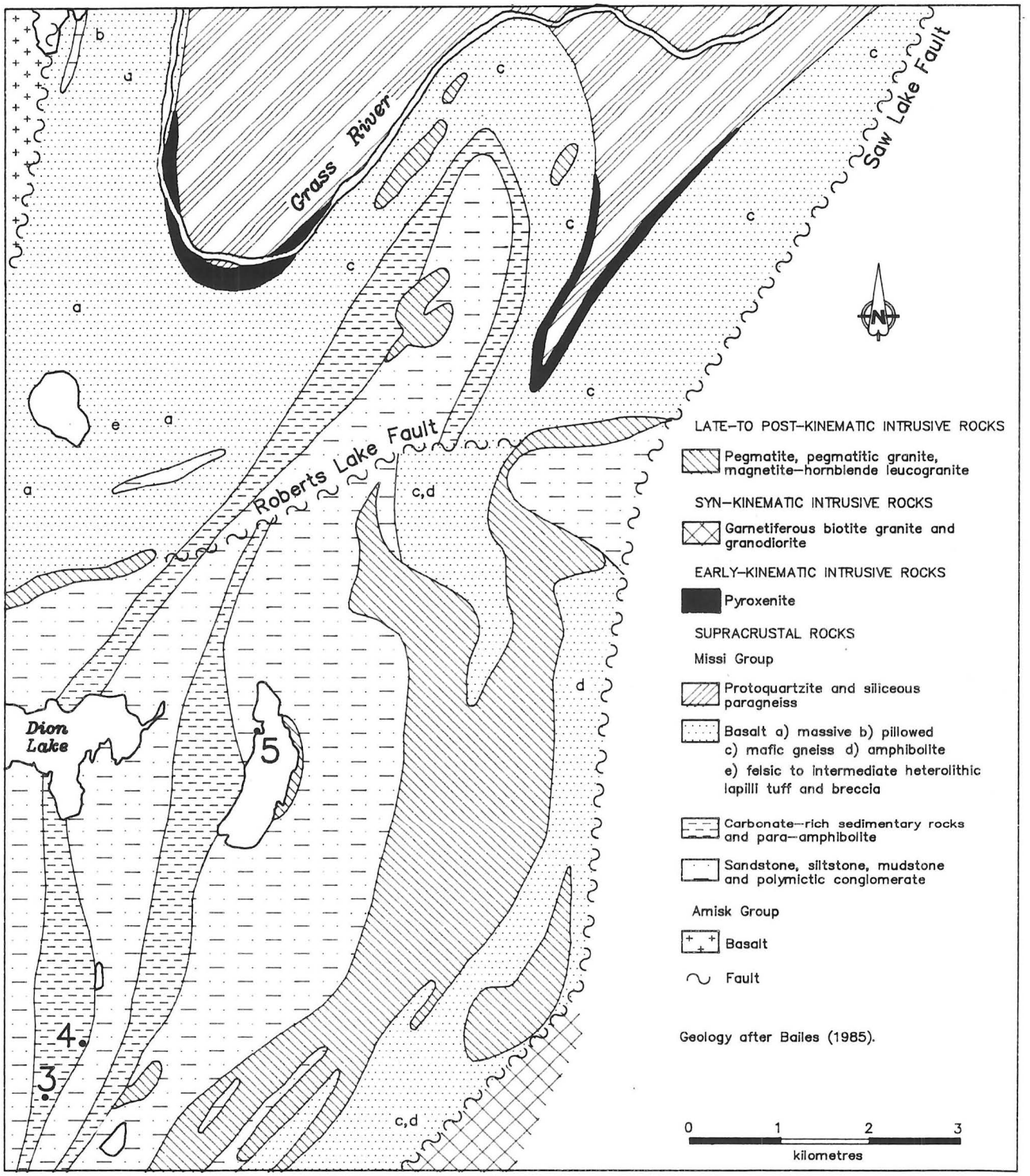


Figure 3-1: Geological setting of occurrences 3, 4 and 5.

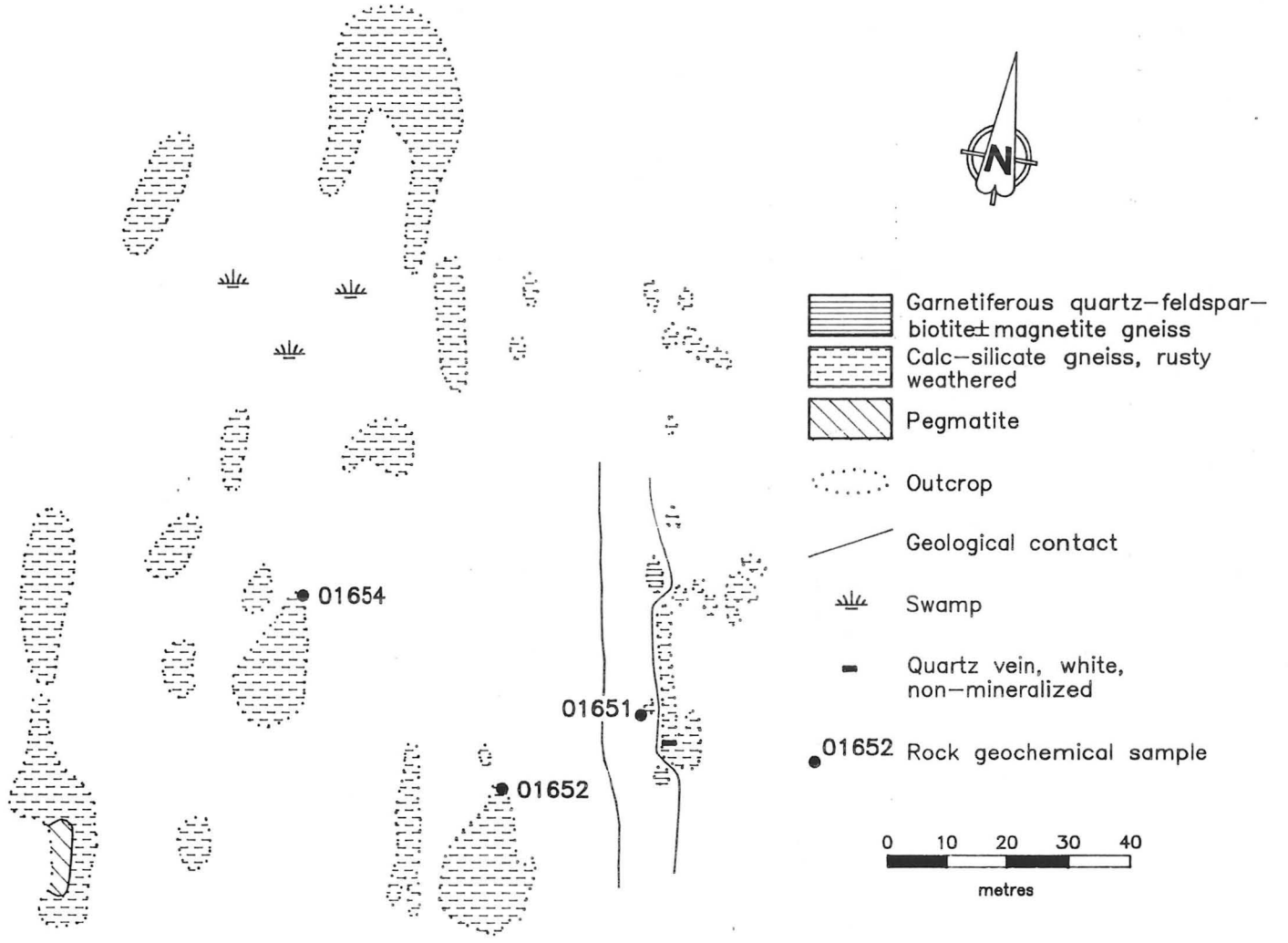


Figure 3-2: Detailed geology and sample location map, occurrence 3.

LOCATION: 4

NAME:

UTM: 6072465N/468662E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: South of Dion Lake (Fig. 3-1).

AIRPHOTO: A20169-66

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks and garnet-porphyroblastic para-amphibolite, and by sandstone, siltstone, mudstone and polymictic conglomerate (Bailes, 1985). The occurrence is situated at or near the contact between sandstone and carbonate-rich sedimentary rocks (Fig. 3-1).

MINERALIZATION:

Up to 4% disseminated pyrite and pyrrhotite occur in rusty weathered and locally silicified carbonate-rich sedimentary rocks and amphibolite.

GEOCHEMICAL DATA:

Two representative chip samples were collected from outcrops at the occurrence. Sample 01656 is silicified calc-silicate rock with 3 to 4% disseminated pyrite and sample 01657 is from rusty weathered amphibolite. Both samples contain low base and precious metal contents (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.

1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: 5

NAME:

UTM: 6075847N/470483E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: East of Dion Lake (Fig. 3-1).

AIRPHOTO: A20169-104

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is covered (1989) by claim KLM 1, staked by Charles McLeod in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by sandstone, siltstone, mudstone and polymictic conglomerate flanked to the west by carbonate-rich sedimentary rocks and garnet-porphyroblastic para-amphibolite. These rock units have been assigned to the Missi Group (Fig. 3-1; Bailes, 1985).

MINERALIZATION:

Rusty weathered and locally silicified quartz-feldspar-biotite-garnet ± magnetite gneiss contains 1 to 2% disseminated pyrrhotite and chalcopyrite (Fig. 5-1).

GEOCHEMICAL DATA:

Two chip samples were collected from outcrops; samples 01668 and 01669, silicified and rusty weathered quartz-feldspar-biotite ± magnetite gneiss, contain 1 to 2% disseminated pyrrhotite and lesser chalcopyrite. Base and precious metal contents are low; sample 01668 contains 137 ppm As (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.

1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

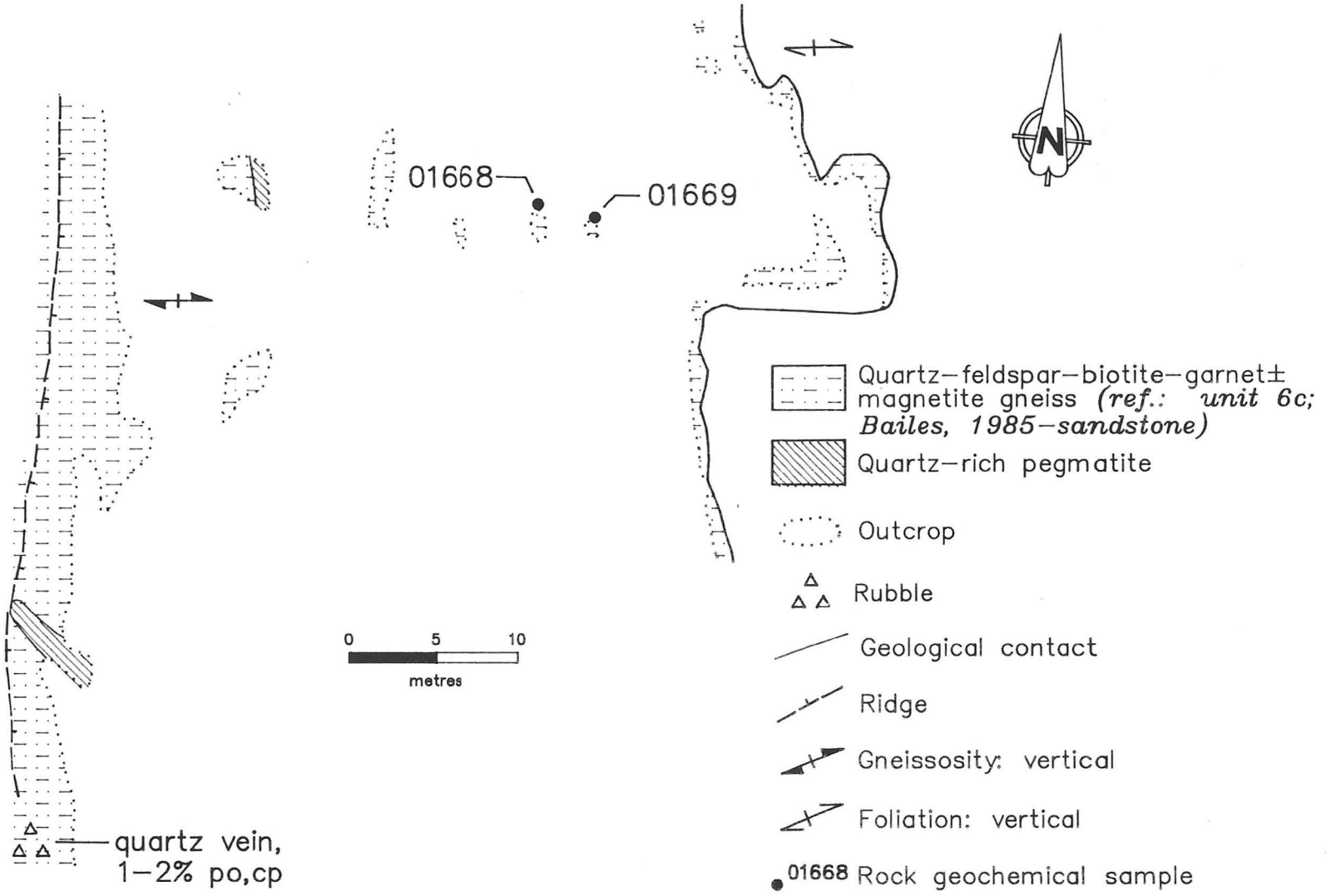


Figure 5-1: Detailed geology and sample location map, occurrence 5.

LOCATION: 6

NAME:
UTM: 6075586N/470039E
ACCESS: Via bush plane to Dion Lake and traverse.

AREA: One km east of Dion Lake.
AIRPHOTO: A20169-104

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is covered (1989) by claim KLM 1, staked by Charles McLeod in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by carbonate-rich sedimentary rocks and garnet-porphyroblastic para-amphibolite, flanked to the west and east by sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 6-1). These rocks have been assigned to the Missi Group. A small late- to post-kinematic gneissic magnetite-hornblende leucogranite occurs to the east (Bailes, 1985).

MINERALIZATION:

The garnetiferous amphibolite is locally silicified and rusty weathered with zones of 1 to 2% disseminated pyrrhotite and chalcopyrite. A maximum of 5% pyrrhotite was observed at this occurrence.

GEOCHEMICAL DATA:

A total of eighteen chip samples were collected from outcrops in the vicinity of the occurrence (Appendix II). Samples 01665 and 01666 are of silicified and locally garnetiferous mafic volcanic rocks that contain 1 to 2% disseminated pyrite. Sample 01665 contains 141 ppm Zn and 135 ppm As, as well as high Ni (373 ppm) and Cr (626 ppm). Base and precious metal contents for sample 01666 were low (Appendix I). In addition to these two samples, 16 chip samples were collected from outcrops of altered and mineralized garnetiferous amphibolite that extend south and west from the west shore of an unnamed lake east of Dion Lake (Fig. 6-1). Geochemical analyses for these samples are summarized in Table 6-1; the multi-element analyses are presented in Appendix I.

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

Table 6-1: Summary of geochemical results for location 6.

Sample No.	Rock Type	Mineralization	Analytical Summary
01667	silicified garnetiferous amphibolite	1-2% diss. po and cp	148 ppm Cu; all others low
01675	rusty weathered, silicified, carbonatized, garnetiferous amphibolite	3-5% po	384 ppm Cu; all others low
01676	rusty weathered, silicified garnetiferous amphibolite	1-2% po	low base and precious metal contents
01677	rusty weathered, silicified garnetiferous amphibolite	1-2% po	low base and precious metal contents
01678	rusty weathered garnetiferous amphibolite	1-2% po and cp	698 ppm Cu; all others low
01679	c.g. garnetiferous amphibolite	1% diss. cp associated with white to brown carbonate veinlets	499 ppm Cu; all others low
01680	amphibolite with anthophyllite along fractures and abundant epidote	no visible sulphide minerals	508 ppm Cu; all others low
01681	silicified rusty weathered garnetiferous amphibolite	1% v.f.g. cp	370 ppm Cu, 31 ppb Au, 0.5 ppm Ag and 16 ppm W
01682	silicified garnetiferous amphibolite	1% finely diss. py	259 ppm Cu; all others low
01683	silicified, biotite-rich garnetiferous amphibolite	<1% py and cp	low base and precious metal contents
01684	c.g. amphibolite	<1% cp and py	184 ppm Cu; all others low
01685	silicified, malachite stained, garnetiferous amphibolite	1% cp and py	192 ppm Cu and 12 ppb Au
01686	m.g., locally garnetiferous, amphibolite	1% v.f.g. po, py and cp	478 ppm Cu; all others low
01687	silicified m.g. amphibolite	<1% cp and py	249 ppm Cu; all others low
01688	m.g. equigranular amphibolite	<1% v.f.g. cp and py	263 ppm Cu; all others low
01689	c.g. garnetiferous amphibolite	<1% v.f.g. cp and py	249 ppm Cu; all others low

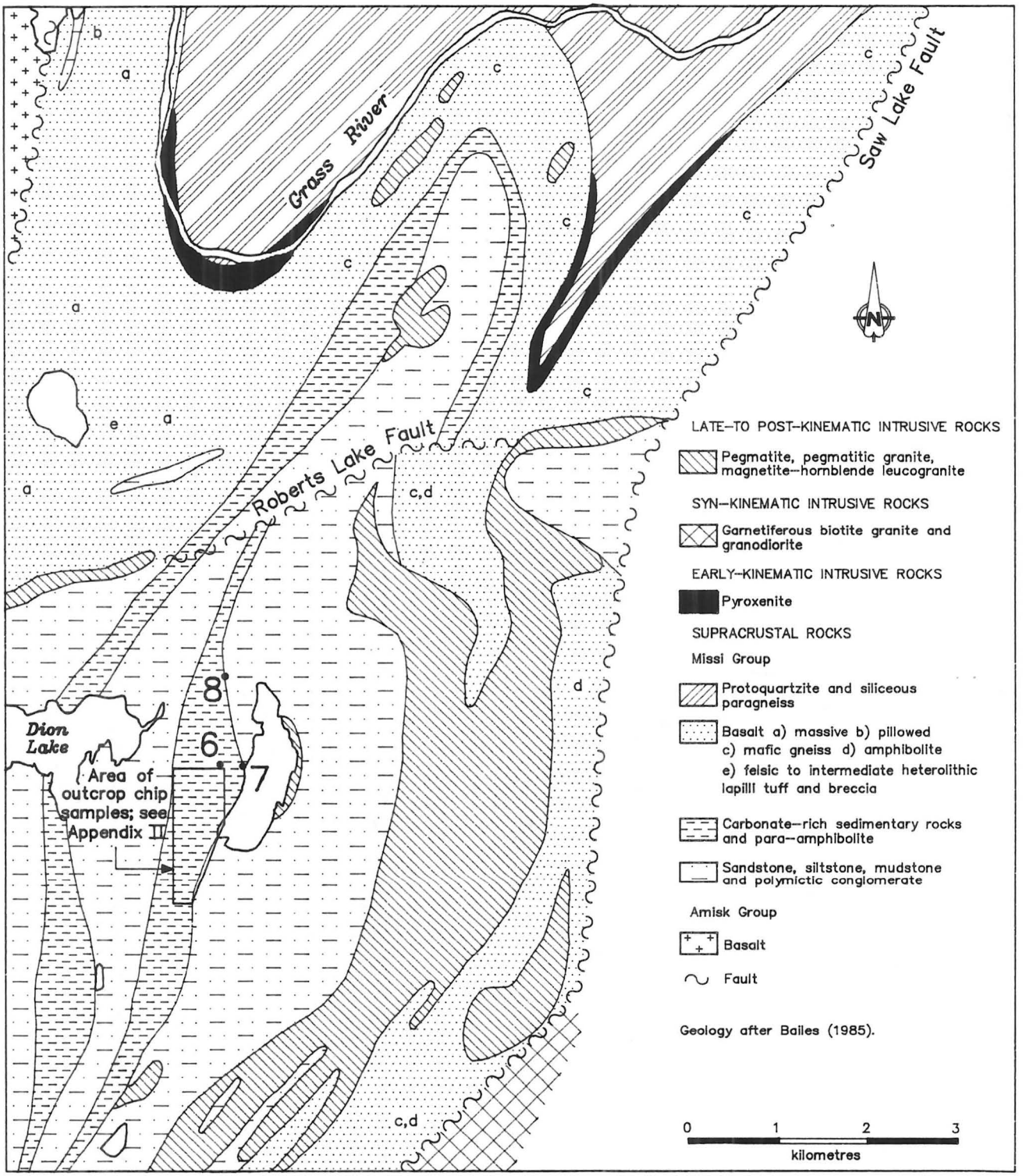


Figure 6-1: Geological setting of occurrences 6, 7 and 8.

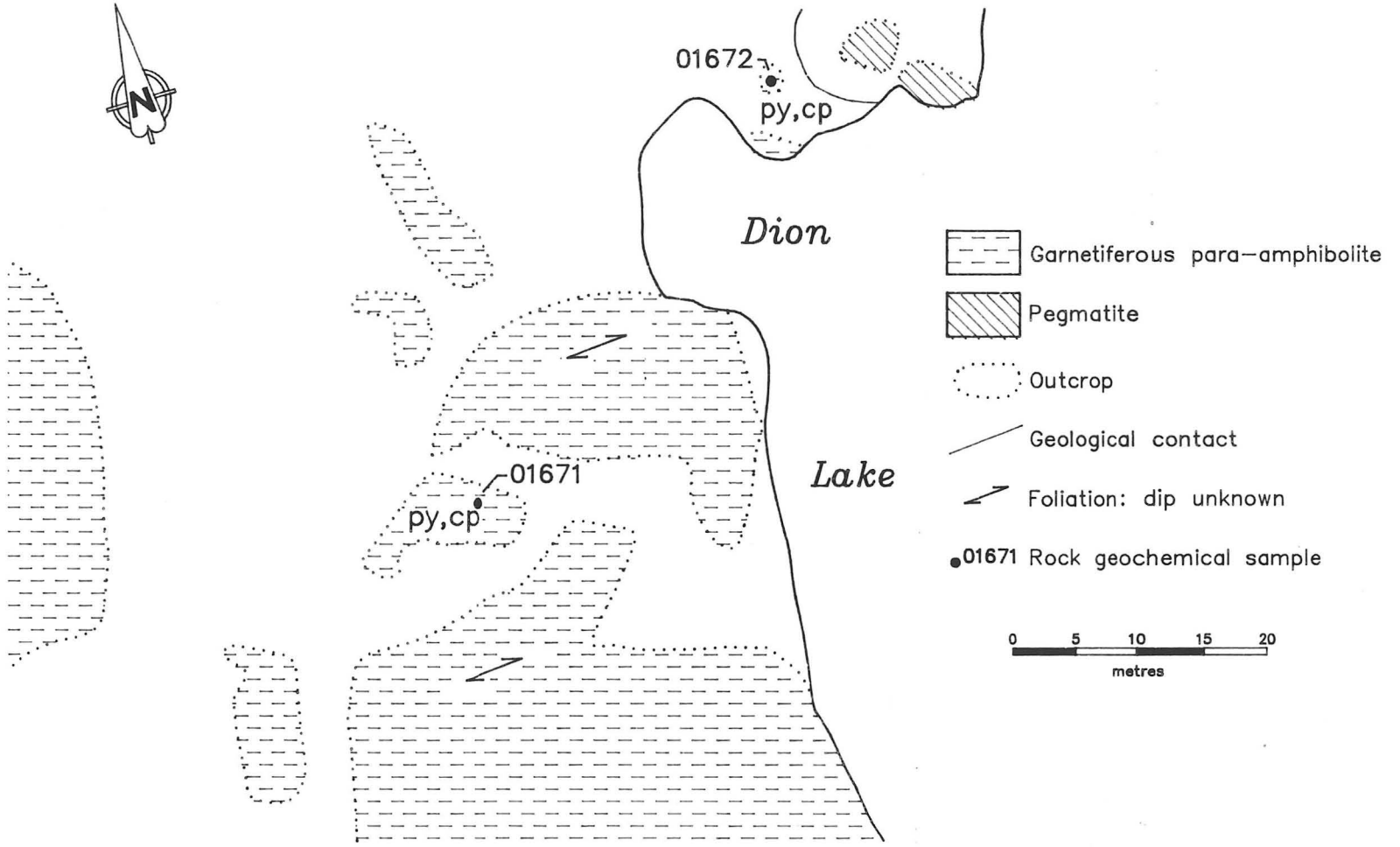


Figure 7-1: Detailed geology and sample location map, occurrence 7.

LOCATION: 7

NAME:
UTM: 6075541N/470378E
ACCESS: Via bush plane to Dion Lake and traverse.

AREA: East of Dion Lake (Fig. 6-1).
AIRPHOTO: A20169-104

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is covered (1989) by claim KLM 1, staked by Charles McLeod in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by carbonate-rich sedimentary rocks and variably altered garnet-porphyroblastic para-amphibolite, flanked to the east and west by sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 6-1). These rock units have been assigned to the Missi Group (Bailes, 1985). A late- to post-kinematic gneissic magnetite-hornblende granite occurs to the east.

MINERALIZATION:

Disseminated pyrite, pyrrhotite and trace chalcopyrite occur in fine- to coarse-grained, rusty weathered, silicified, and garnetiferous amphibolite. Sulphide mineralization does not exceed 2%.

GEOCHEMICAL DATA:

Two chip samples, 01671 and 01672, were collected from outcrops in the general area of the occurrence (Fig. 7-1). Samples 01670, 01673 and 01674 were taken outside of this mapped area. Analyses of these samples are presented in Appendix I, and a summary is presented in Table 7-1.

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

Table 7-1: Summary of geochemical results for location 7.

Sample No.	Rock Type	Mineralization	Analytical Summary
01670	c.g., quartz-garnet-biotite-kyanite/epidote(?) representing altered amphibolite	rusty weathered	104 ppm Cu, 19 ppm As; all others low
01671	intensely silicified garnetiferous amphibolite	diss. py and po	250 ppm Cu, 162 ppm Zn, 211 ppm As
01672	garnetiferous amphibolite with feldspathic sections	rusty specks	203 ppm Cu, 91 ppm Zn
01673	garnetiferous amphibolite	local rusty specks	138 ppm Cu, 108 ppm Zn, 28 ppm As
01674	garnetiferous amphibolite	local rusty specks	170 ppm Cu; all others low

LOCATION: 8

NAME:
UTM: 6076659N/470343E
ACCESS: Via bush plane to Dion Lake and traverse.

AREA: East of Dion Lake (Fig. 6-1).
AIRPHOTO: A20169-103

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is covered (1989) by claim KLM 1, staked by Charles McLeod in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by carbonate-rich sedimentary rocks and garnet-porphyroblastic para-amphibolite, flanked to the east and west by sandstone, siltstone, mudstone and polymictic conglomerate to the east and west (Fig. 6-1). These rock units have been assigned to the Missi Group (Bailes, 1985).

MINERALIZATION:

Disseminated pyrite, 1 to 2%, and rare chalcopyrite occur in silicified garnetiferous amphibolite crosscut by quartz and carbonate veins.

GEOCHEMICAL DATA:

Outcrop chip sample, 01690, of garnetiferous amphibolite with <1% chalcopyrite and pyrite was collected from the occurrence. Base and precious metal contents are low (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: 9

NAME:

UTM: 6077795N/471060E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: East of Dion Lake (Fig. 9-1).

AIRPHOTO: A20169-103

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by sandstone, siltstone, mudstone and polymictic conglomerate, flanked to the west by carbonate-rich sedimentary rocks and garnet-porphyroblastic para-amphibolite. These rock units have been assigned to the Missi Group (Bailes, 1985). A late- to post-kinematic magnetite-hornblende leucogranite occurs to the east. The occurrence is situated approximately 1 km south of the Roberts Lake Fault (Fig. 9-1).

MINERALIZATION:

Disseminated pyrite, 1%, occurs in rusty weathered quartzofeldspathic gneiss.

GEOCHEMICAL DATA:

Outcrop chip sample 01693 contains low base and precious metal contents (Appendix I).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.

1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

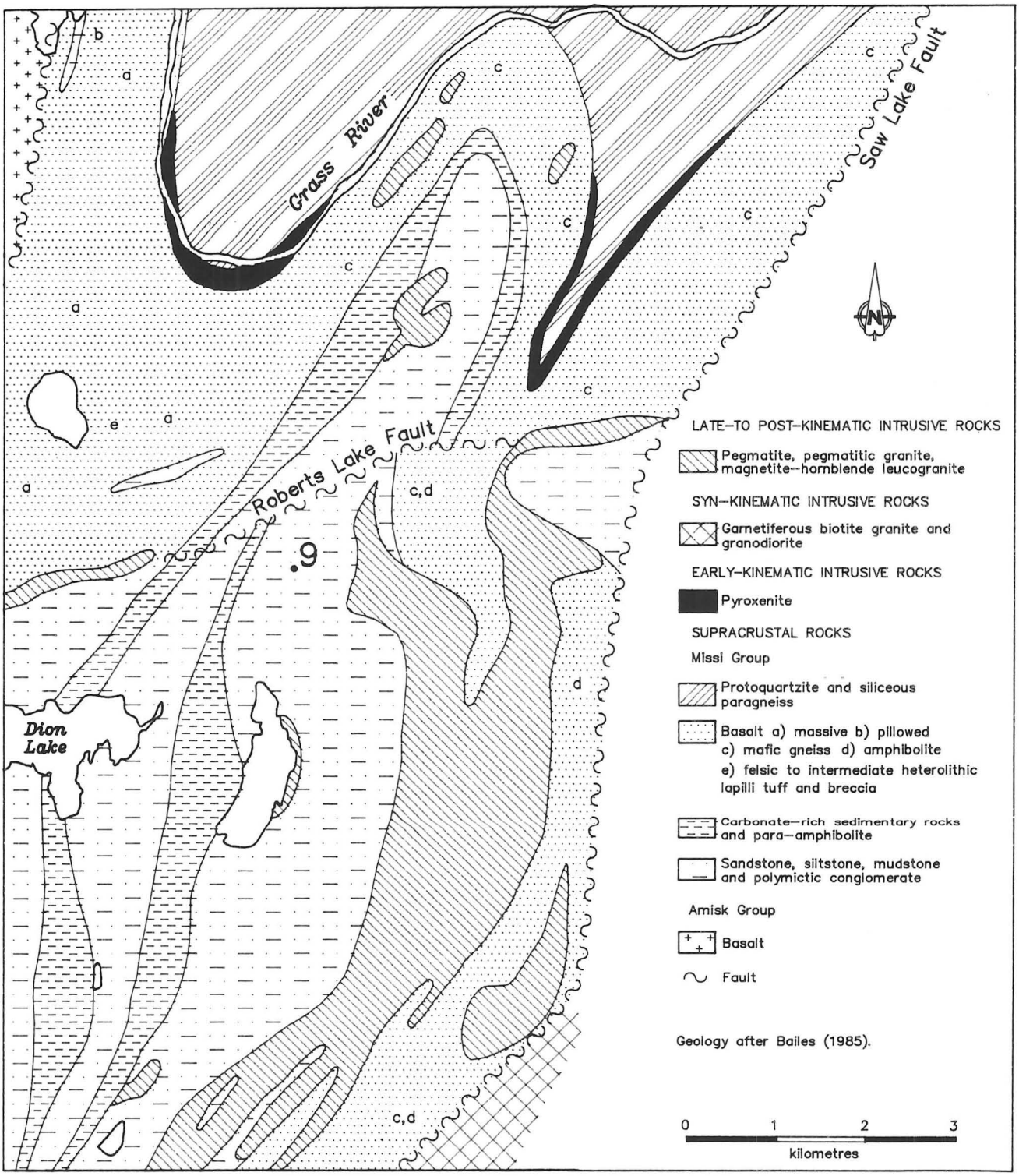


Figure 9-1: Geological setting of occurrence 9.

LOCATION: **10**

NAME:

UTM: 6076361N/468345E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: North shore of Dion Lake.

AIRPHOTO: A20169-69

EXPLORATION SUMMARY:

Canadian Nickel Company Limited drilled DDH 19517 (115 m) on claim Hog 120 in 1960 (A.F. 90604). HBED conducted a ground EM survey in the area in 1969 (A.F. 91388). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by sandstone, siltstone, mudstone and polymictic conglomerate, flanked to the east by carbonate-rich sedimentary rocks and garnetiferous para-amphibolite (Fig. 10-1). These rocks have been assigned to the Missi Group (Bailes, 1985). A late- to post-kinematic magnetite leucogranite occurs approximately 1 km north of the occurrence. Diamond drill holes, collared to test ground EM geophysical conductors, intersected "banded tuff" (A.F. 90604).

MINERALIZATION:

Pyrite and graphite (amounts not specified) occur within banded tuff in core from DDH 19517 (A.F. 90604). The surface exposure is rusty weathered, locally silicified and contains <1% pyrite (Fig. 10-2).

GEOCHEMICAL DATA:

Outcrop chip sample 01641 contains low base and precious metal contents (Fig. 10-2; Appendix I). Thirty-three core samples from DDH 19517 were analyzed for Pt, Pd, Cu and Au; the samples contain nil to trace amounts of these elements (A.F. 90604).

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment Files 90604, 91388
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

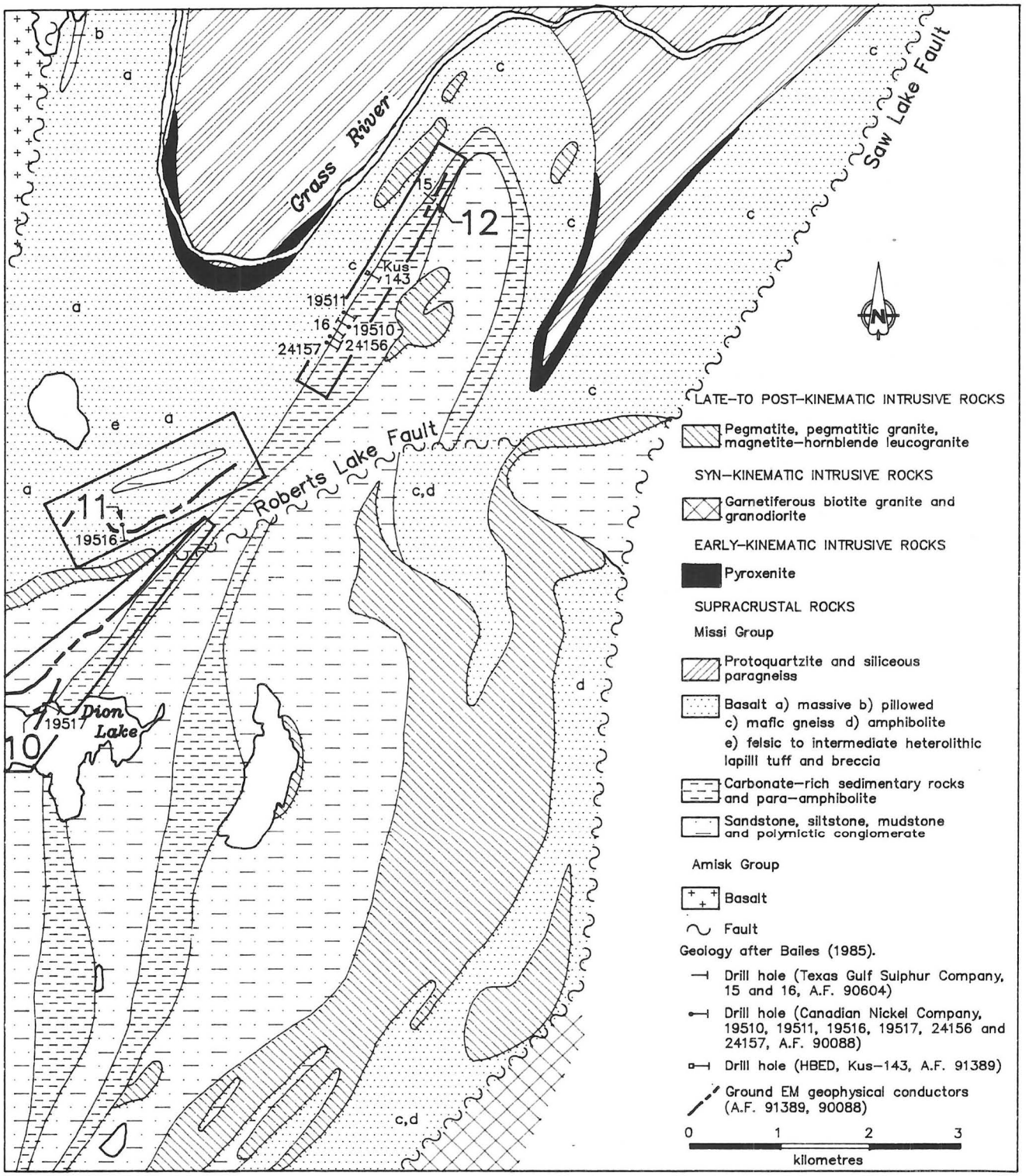


Figure 10-1: Geological setting, ground EM geophysical conductors, and drill hole locations, occurrences 10, 11 and 12.

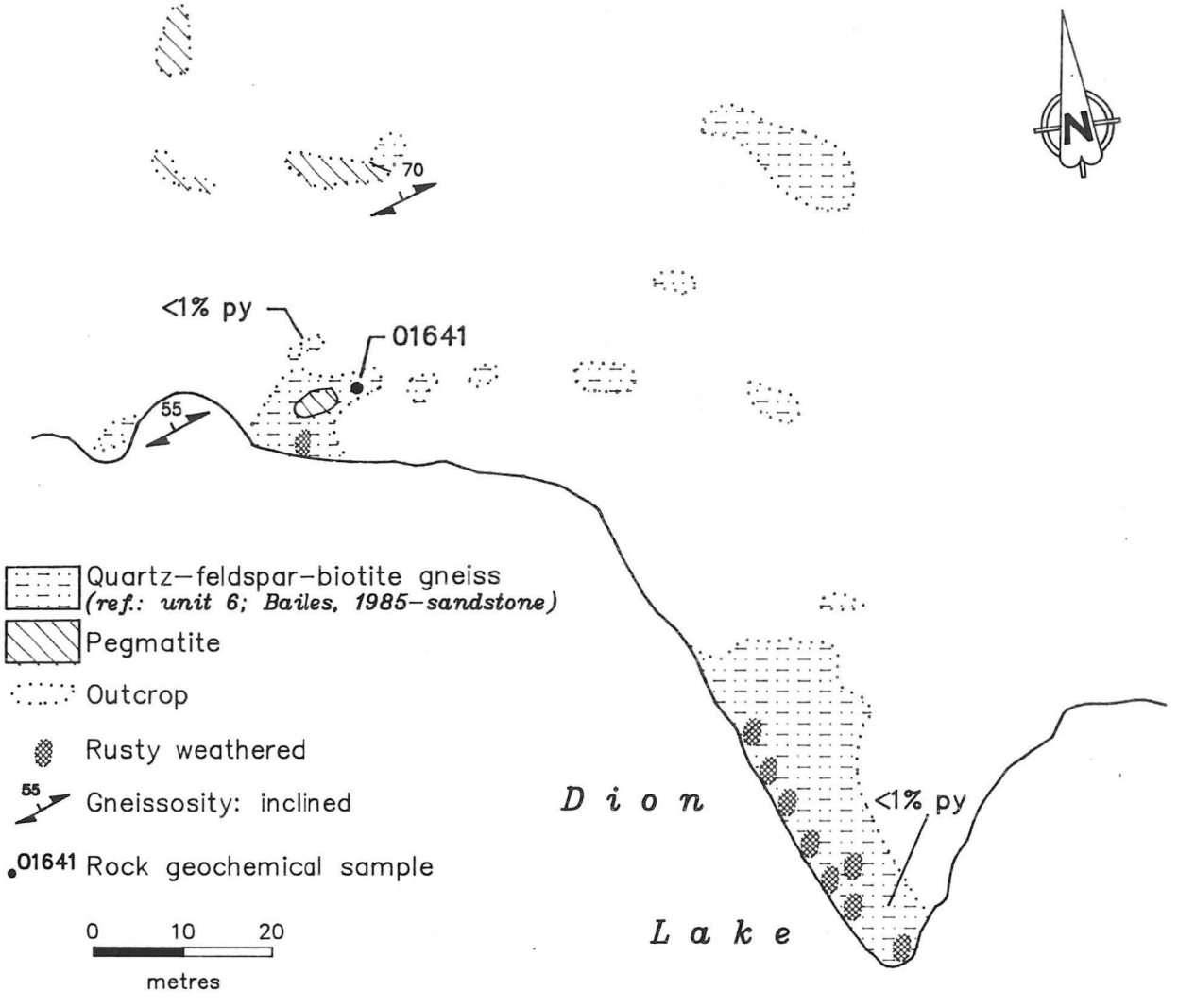


Figure 10-2: Detailed geology and sample location map, occurrence 10.

LOCATION: **11**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6078329N/469184E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: North of Dion Lake (Fig. 10-1).

AIRPHOTO: A20169-71, -101

EXPLORATION SUMMARY:

R.G. Crosby carried out ground EM and magnetometer surveys in the area in 1957 (A.F. 90607). Canadian Nickel Company Limited drilled DDH 19516 (110 m) on claim Hog 136 in 1960 (A.F. 90604). HBED conducted a ground EM survey in the area in 1969 (A.F. 91388). The area is partly covered by claims Bend 3 and Bend 5, staked by Esso Resources Canada Limited in 1986 and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by massive basalt, flanked to the east by carbonate-rich sedimentary rocks and garnetiferous para-amphibolite (Fig. 10-1). These rocks have been assigned to the Missi Group (Bailes, 1985). The east-trending Roberts Lake Fault transects the area south of the occurrence. DDH 19516 intersected "volcanics and breccia" (A.F. 90604). The mineralized zone, outlined by a ground EM geophysical conductor, is parallel to subparallel to the Roberts Lake Fault.

MINERALIZATION:

DDH 19516 intersected "mineralized volcanics" from 41.2 to 53.9 m and 87 to 109.7 m, and "mineralized breccia" at 55.3 m (A.F. 90604). Sulphide mineral species and their percentages are not reported in the drill logs.

GEOCHEMICAL DATA:

Six assay samples were collected from drill core and analyzed for Pt, Pd and Au; the samples contain nil amounts of these elements (A.F. 90604).

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Assessment Files 90604, 90607, 91388
Manitoba Energy and Mines, Minerals Division

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **12**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6082036N/472601E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: South of Niblock Lake (Fig. 10-1).

AIRPHOTO: A20169-101

EXPLORATION SUMMARY:

Texas Gulf Sulphur Company drilled DDH 15 and 16 (60 and 64 m, respectively) on the Saw claims in 1958 (A.F. 90088). Canadian Nickel Company Limited drilled DDH 19510 and 19511 (149 and 151 m, respectively) on the Hog claims in 1960 (A.F. 90604, 90605), and DDH 24156 and 24157 (294 and 291 m, respectively) on claim Hog 40 in 1963 (A.F. 90606). HBED drilled DDH Kus-143 (79 m) on claim Kus 859 in 1970 (A.F. 91389). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by mafic volcanic gneiss, carbonate-rich sedimentary rocks and layered garnetiferous para-amphibolite, flanked to the northwest by protoquartzite and siliceous paragneiss and to the southeast by sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 10-1). These rock units have been assigned to the Missi Group (Bailes, 1985). Early-kinematic pyroxenite intrusions and late- to post-kinematic felsic pegmatite and pegmatitic granite intrusions occur in the vicinity. The east-trending Roberts Lake Fault transects the area southeast of the occurrence. Diamond drill holes, collared to test ground EM geophysical conductors, intersected chlorite-biotite ± hornblende ± garnet schist, quartzite, iron formation, tuff of unknown composition and pegmatite (A.F. 90088, 90604, 90605, 90606, 91389).

MINERALIZATION:

Mineralization was detected in core from four of five drill holes (A.F. 90088, 90604, 90605, 90606, 91389). The predominant style of mineralization consists of disseminated to near solid Fe-sulphide minerals and minor graphite (maximum 5%) hosted by altered quartzite and amphibole-quartz-biotite ± garnet ± chlorite gneiss. This style of mineralization is represented in core from DDH 16 by 0.5 m of 60% pyrite and pyrrhotite hosted by altered quartzite. In core from DDH 15, a similar intersection contains 10 to 80% pyrite and pyrrhotite in 3.7 m of "highly altered impure quartzite". Sulphide mineralization is described in drill logs for DDH 19510, 24156 and 24157; however, the percentages and speciation of sulphide minerals were not given.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. Disseminated mineralization - not classified occurs in core from DDH 24156 and 24157.

REFERENCES:

Assessment Files 90088, 90604, 90605, 90606, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

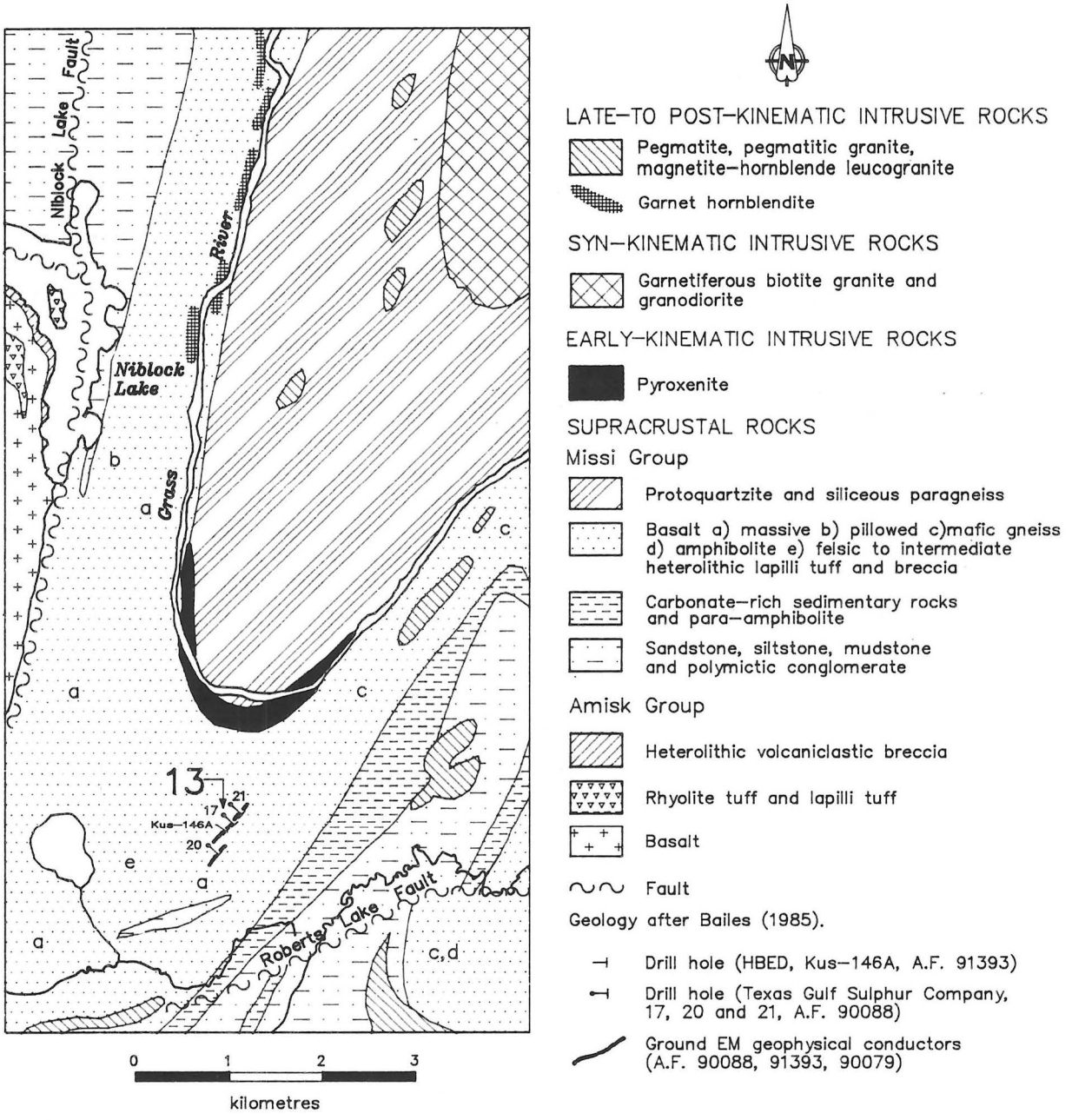


Figure 13-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrence 13.

LOCATION: **13**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6079997N/470222E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: South of Niblock Lake.

AIRPHOTO: A20169-100, -101

EXPLORATION SUMMARY:

R.G. Crosby carried out ground EM and magnetometer surveys in the area in 1957 (A.F. 90607). Texas Gulf Sulphur Company drilled DDH 17, 20 and 21 (176 m total length) on the Saw claims in 1958 (A.F. 90088). HBED drilled DDH Kus-146A (84 m depth) on claim Kus 894 in 1970 (A.F. 91389). The area is partly covered (1989) by claims Bend 4, 5, 6 and 10, staked by Esso Resources Canada Limited in 1986 and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group massive basalt and felsic to intermediate heterolithic lapilli tuff and breccia (Fig. 13-1; Bailes, 1985). Interbedded rhyolite, amphibolite and chlorite-hornblende-garnet schist were intersected by four diamond drill holes collared to test long and short strike length ground EM geophysical conductors (A.F. 90088, 91389).

MINERALIZATION:

Mineralization was intersected in each of the four drill holes (A.F. 90088, 91389). Mineralization in core from DDH 17, 20 and 21 occurs within interlayered rhyolite and amphibolite; the bulk of the mineralization occurs in amphibolite. Mineralization in amphibolite consists predominantly of iron sulphide minerals, with a maximum of 60% pyrite and pyrrhotite and minor sphalerite. However, rhyolite contains stringers of iron sulphide minerals and chlorite. Numerous, generally thin, mineralized intersections of graphitic pyrrhotite and pyrite occurs in core from DDH Kus-146A. Graphite ranges from trace to 10%; pyrrhotite and pyrite constitute 60 to 80% of a 1 m interval within garnetiferous quartz-chlorite-biotite schist. Relevant characteristics of representative mineralized intervals are described below:

DDH Kus-146A. Light grey, fine grained, massive and garnetiferous quartz-chlorite-biotite schist contains 33.5 m of iron sulphide mineralization with graphite and traces of sphalerite.

DDH 17. Interbedded rhyolite and chlorite-hornblende schist were intersected between 29.5 and 60.7 m and contain up to 60% pyrite and pyrrhotite with minor sphalerite. Solid pyrite-pyrrhotite-sphalerite layers occur over 1.8 m intervals within the mineralized zone. The chlorite-hornblende schist is locally garnetiferous and may represent a recrystallized chloritic alteration zone.

DDH 20. Up to 10% disseminated and veinlet pyrite and pyrrhotite were intersected between 27.4 and 61.5 m, with a 0.1 m solid pyrite layer within interlayered rhyolite and "amphibolite". Isolated zones of chlorite-biotite schist in rhyolite probably represent alteration. The last 15 m of the drill core is chlorite schist.

DDH 21. Interbedded rhyolite and chlorite schist contain 20 cm intersections of solid pyrite and pyrrhotite between 34.1 and 52.9 m. Pyrite and pyrrhotite blebs and veinlets are concentrated in the chloritic zones in rhyolite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Stratabound massive sulphide type deposit; volcanic rock associated. Solid to disseminated iron sulphide minerals with minor sphalerite are hosted by altered felsic volcanic rocks. Ubiquitous references in drill logs to "chloritic" zones and fractures in rhyolite probably refer to veins and "fish-scale" chlorite alteration phenomena.

REFERENCES:

Assessment Files 90088, 90607, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

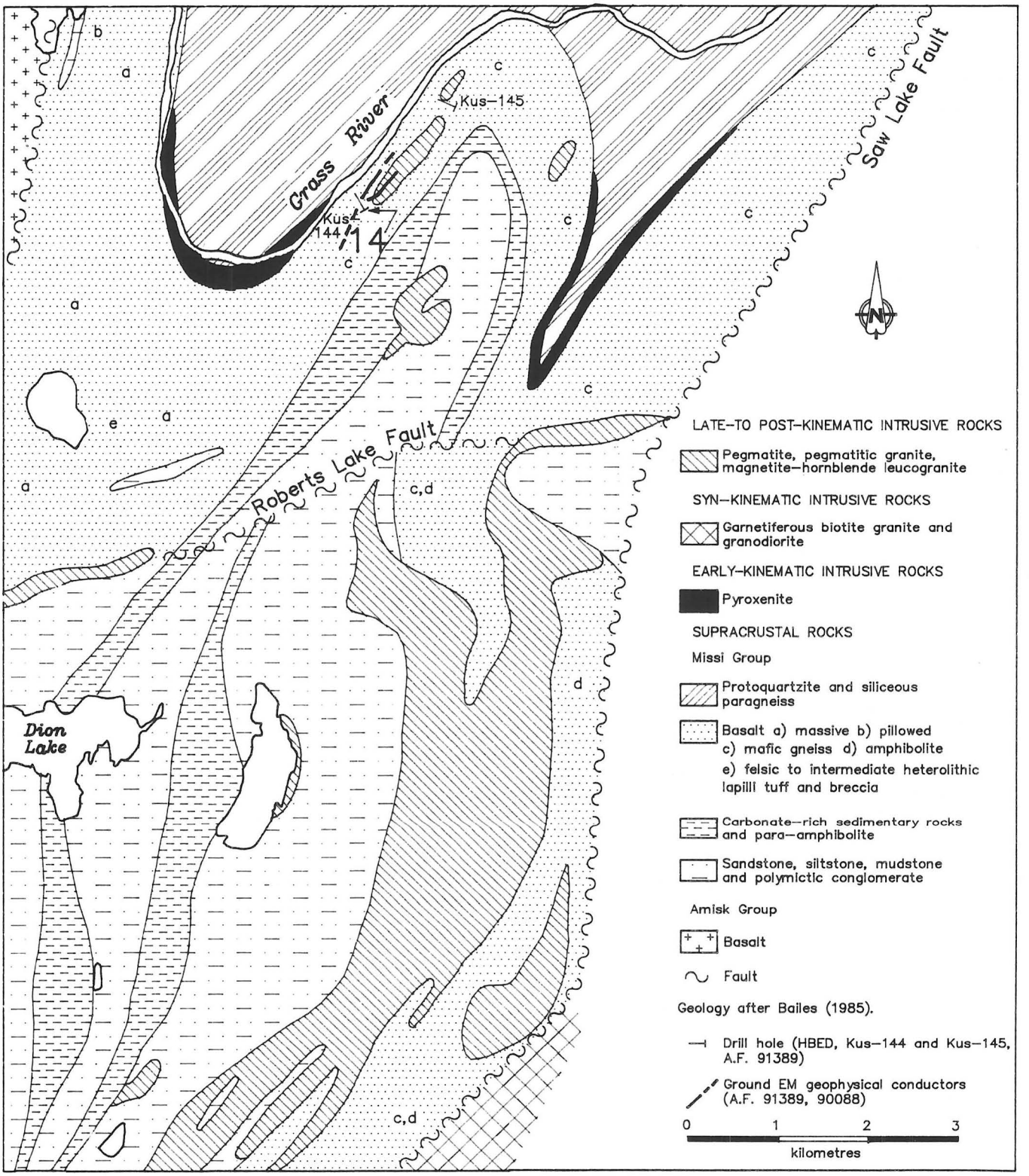


Figure 14-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrence 14.

LOCATION: 14

NAME: (A.F. - Mineralization intersected by diamond drilling).

UTM: 6082052N/471867E

ACCESS: Via bush plane to Saw Lake, and then by boat to the Grass River and traverse.

AREA: Southeast of Niblock Lake.

AIRPHOTO: A20169-100, -123, -124, -125

EXPLORATION SUMMARY:

HBED drilled DDH Kus-144 and -145 (140 and 76 m, respectively) on claims Kus 852 and Kus 831 in 1970 (A.F. 91389). The area is partly covered (1989) by claims Bend 4 and Bend 6, staked by Esso Resources Canada Limited in 1986. These claims were transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING;

The area is characterized by Missi Group mafic volcanic gneiss and late- to post-kinematic felsic pegmatite and pegmatitic granite intrusions (Fig. 14-1; Bailes, 1985). Missi Group protoquartzite and siliceous paragneiss occur to the northwest. DDH Kus-144 and -145, collared to test ground EM geophysical conductors, intersected garnetiferous greywacke, quartz-biotite-feldspar gneiss and schist and quartz-biotite-chlorite-amphibole schist (A.F. 91389).

MINERALIZATION:

Disseminated pyrite and pyrrhotite occur within a number of lithologies over variable core lengths (A.F. 91389). Trace to 10% pyrite and up to 2% pyrrhotite occur in greenish-grey, fine grained quartz-chlorite-biotite schist over 0.2 to 10 m intersections in core from DDH Kus-144 and -145. DDH Kus-145 intersected 0.2 m of 20 to 30% pyrite in medium grey, fine grained, quartz-biotite-feldspar gneiss.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Assessment File 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

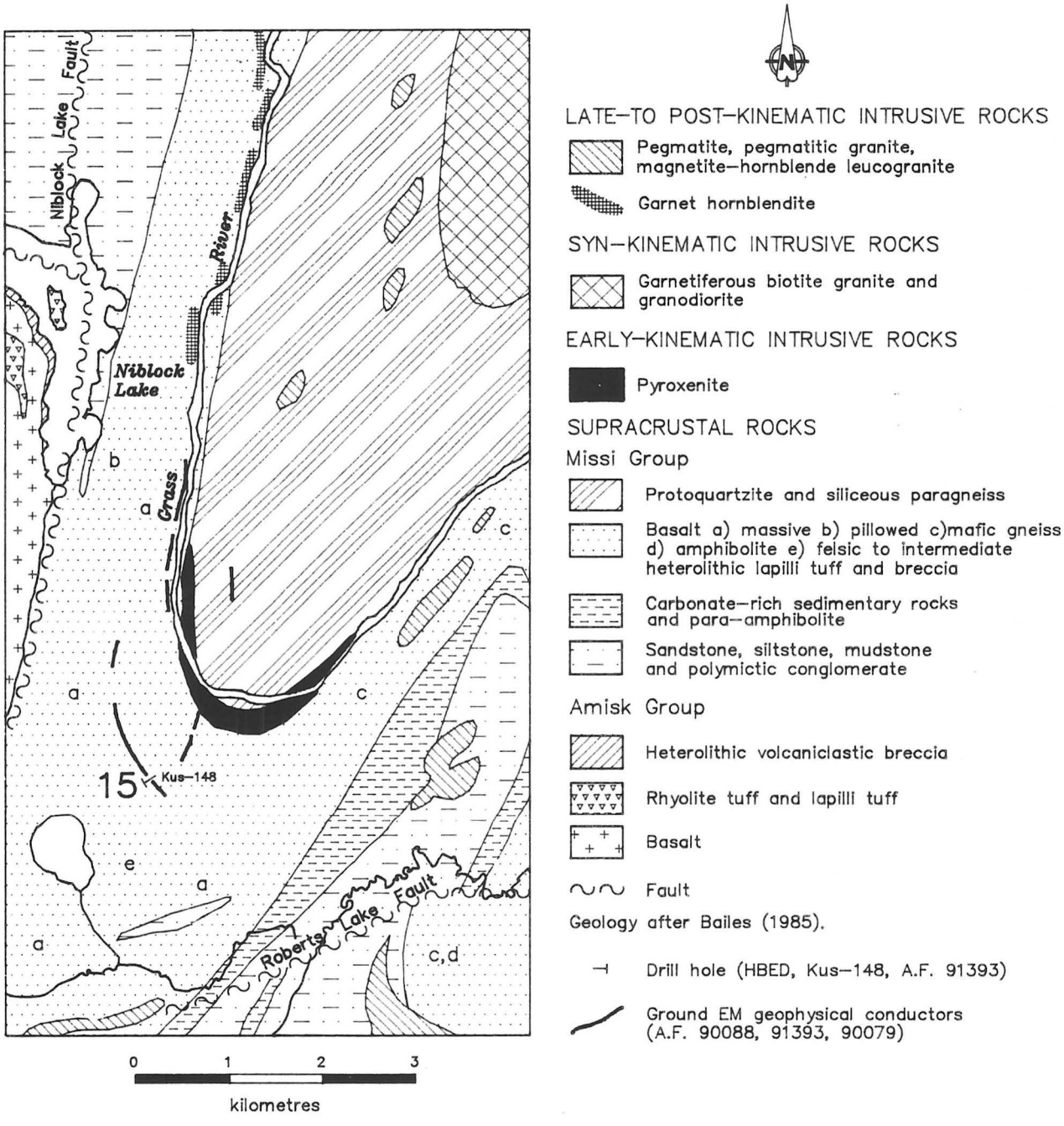


Figure 15-1: Geological setting, ground EM geophysical conductors and drill hole location, occurrence 15.

LOCATION: **15**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6080614N/469476E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse; alternatively, bush plane to Niblock Lake and traverse.

AREA: Southeast of Niblock Lake.

AIRPHOTO: A20169-98, -99, -100

EXPLORATION SUMMARY:

R.G. Crosby carried out ground EM and magnetometer surveys in the area in 1957 (A.F. 90607). HBED drilled DDH Kus-148 (59 m depth) on claim Kus 862 in 1970 (A.F. 91389). The area is covered (1989) by claims Snake 12, 13, 14 and 15, and claims Bend 1, 2 and 4, staked in 1986 and 1987 by Esso Resources Canada Limited, and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group massive basalt, protoquartzite and siliceous paragneiss (Fig. 15-1; Bailes, 1985). Early-kinematic pyroxenite intrusions are present in the area. The occurrence is situated east of Niblock Lake Fault. Several ground EM geophysical conductors occur at or near the contact between massive basalt and protoquartzite. DDH Kus-148, collared to test a long strike length EM conductor, intersected greenish-grey, fine grained quartz-chlorite-biotite-amphibole schist (A.F. 91389).

MINERALIZATION:

The occurrence is characterized by an approximately 18 m intersection in DDH Kus-148 that contains trace to 70% pyrrhotite, trace to 20% pyrite and trace to 0.5% chalcopyrite (A.F. 91389). The mineralization is hosted by quartz-chlorite-biotite-amphibole schist with local garnet and staurolite. The garnet and staurolite may be mineralogical indicators of alteration accompanying the mineralization.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Stratabound massive sulphide type deposit; volcanic rock associated.

REFERENCES:

Assessment Files 90607, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

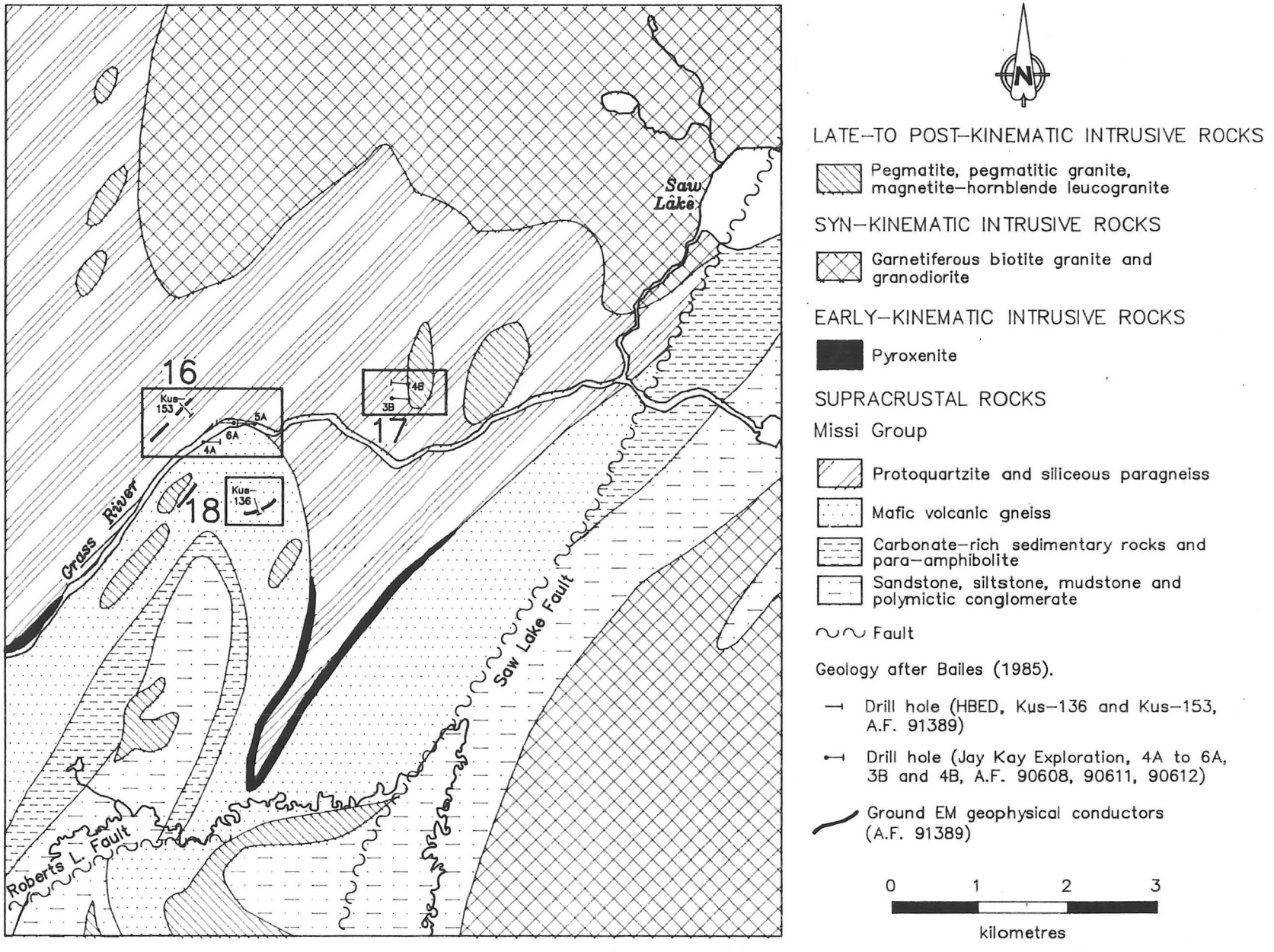


Figure 16-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrences 16, 17 and 18.

LOCATION: **16**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6084243N/473010E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River, and traverse.

AREA: Southeast of Niblock Lake.

AIRPHOTO: A20170-125

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 4A, 5A and 6A totalling 442 m on the Axe claims in 1961 (A.F. 90612). HBED drilled DDH Kus-153 (70 m) on claim Kus 818 in 1970 (A.F. 91389). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group protoquartzite, siliceous paragneiss and mafic volcanic gneiss (Fig. 16-1; Bailes, 1985). Late- to post-kinematic felsic pegmatite and pegmatitic granite intrusions are common in the area. A short strike length ground EM geophysical conductor was tested by DDH Kus-153, which intersected quartzite, quartz-biotite-hornblende gneiss and pegmatite (A.F. 91389). Three holes drilled southeast of DDH Kus-153 intersected peridotite, garnet gneiss, biotite schist and pegmatite (A.F. 90612).

MINERALIZATION:

DDH Kus-153 intersected 8.5 m of 1 to 15% pyrite and trace to 15% pyrrhotite in biotite-hornblende-garnet gneiss. The drill log notes dioritic and "limey-muddy" sections (A.F. 91389).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Disseminated mineralization - not classified. Disseminated iron sulphide minerals are hosted by altered basalt. "Limey" sections noted in the drill log may indicate carbonate alteration.

REFERENCES:

Assessment Files 90612, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **17**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6084322N/475423E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: Southeast of Niblock Lake (Fig. 16-1).

AIRPHOTO: A20170-144, -145

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 3B and 4B (112 and 116 m, respectively) on claim Axe 30 in 1959 (A.F. 90611). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group protoquartzite and siliceous paragneiss (Fig. 16-1). Late- to post-kinematic felsic pegmatite and pegmatitic granite intrusions are present in the immediate area (Bailes, 1985). DDH 3B and 4B intersected basalt, diorite, chlorite schist and pegmatite (A.F. 90611).

MINERALIZATION:

DDH 3B intersected 7.3 m of chlorite schist with graphite and pyrite, overlain by schistose basalt and underlain by schistose "sediments" and diorite. DDH 4B intersected 6.1 m of "schist" with pyrite and graphite, overlain by diorite and underlain by basalt. Quartz veins and 1.2 m of chlorite schist are also mentioned in the drill logs, but are apparently nonmineralized. Mineral percentages are not given in the logs for either DDH 3B or 4B (A.F. 90611).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 90611
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **18**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6083134N/473893E

ACCESS: Via bush plane to Dion Lake and traverse; alternatively, bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: Northeast of Dion Lake (Fig. 16-1).

AIRPHOTO: A20170-124

EXPLORATION SUMMARY:

HBED drilled DDH Kus-136 (72 m) on claim Kus 670 in 1970 (A.F. 91389). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by mafic volcanic gneiss, flanked to the north by protoquartzite and siliceous paragneiss, and to the south by carbonate-rich sedimentary rocks and garnetiferous para-amphibolite (Fig. 16-1). These rock units have been assigned to the Missi Group (Bailes, 1985). Late- to post-kinematic pegmatite and pegmatitic granite intrusions are common in the area. Diamond drill holes intersected altered mafic volcanic rocks, represented by chlorite-biotite-hornblende gneiss, fine grained grey quartz-chlorite-biotite-hornblende gneiss and greenish-grey to greenish-white, fine grained quartz-biotite-chlorite-talc schist. Pegmatite veins are also noted in the drill log of DDH Kus-136 (A.F. 91389).

MINERALIZATION:

A 14.3 m core length of greenish-grey to greenish-white, fine grained quartz-biotite-chlorite-talc schist containing trace to 60% graphite and trace to 10% pyrite occurs in core from DDH Kus-136 (A.F. 91389). In the drill core the zone is overlain by greenish-grey to greenish-white, fine grained quartz-biotite-chlorite-talc schist with trace to minor graphite and pyrite, and underlain by grey, fine grained quartz-chlorite-biotite-hornblende gneiss. "Lost core" is commonly noted in the drill log.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. The chlorite-talc schist that overlaps the graphite-pyrite layer in drill core from DDH Kus-136 represents more intensely altered rock than the quartz-chlorite-biotite-hornblende gneiss that underlies the zone. It is not clear whether the chlorite-talc alteration is genetically related to the formation of the iron sulphide-graphite zones or represents a chemical sedimentary layer.

REFERENCES:

Assessment File 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

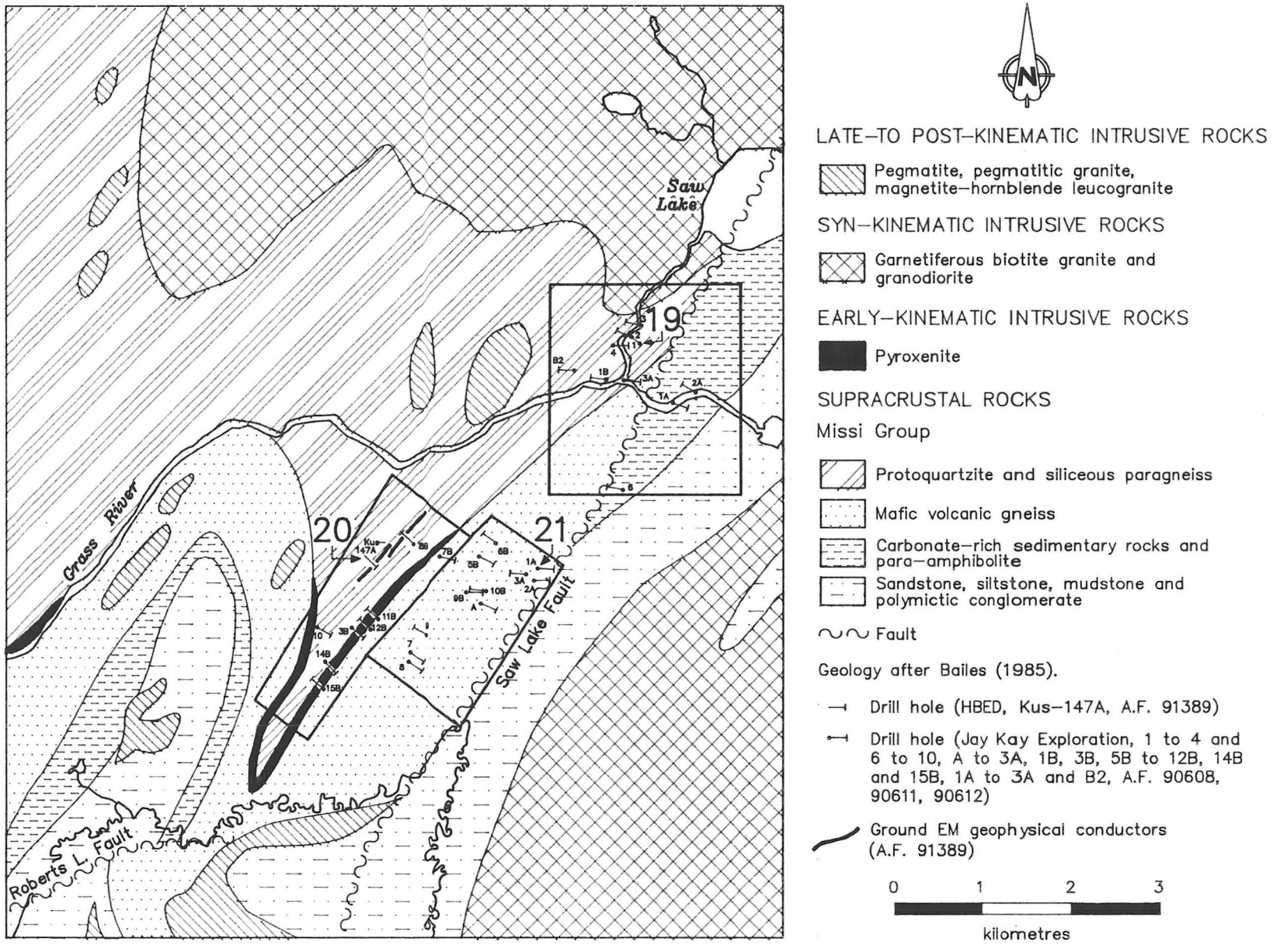


Figure 19-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrences 19, 20 and 21.

LOCATION: 19

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6084976N/478325E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: South of Saw Lake.

AIRPHOTO: A20174-10, -11, -12, A19726-121, -122

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 1, 2, 3, 4 and 6 totalling 482 m in 1957 (A.F. 90608), DDH 1B and B2 (83 and 104 m, respectively) in 1959 (A.F. 90611) and DDH 1A, 2A and 3A totalling 397 m (A.F. 90612) in 1961 on the Axe claims. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group protoquartzite and siliceous paragneiss, layered carbonate-rich sedimentary rocks and garnetiferous para-amphibolite, sandstone, siltstone, mudstone and polymictic conglomerate, and mafic volcanic gneiss (Fig. 19-1; Bailes, 1985). The area of the occurrence straddles the Saw Lake Fault. Diamond drilling intersected diorite, peridotite, basalt, and gneiss and schist of unspecified composition (A.F. 90608, 90611, 90612).

MINERALIZATION:

DDH 1 intersected 6.4 m of schist of unspecified composition that hosts pyrite- and pyrrhotite-bearing quartz veins (A.F. 90608). The remainder of the mineralized zones are characterized by disseminated pyrite and magnetite in diorite, peridotite, silicified basalt, and gneiss and schist of unspecified composition (A.F. 90608, 90612). Pyrite and graphite occur between 68.9 and 75 m and between 92.7 and 100.9 m in core from DDH 1B and B2, respectively (A.F. 90611). The percentages of sulphide minerals are not reported for any of the mineralized intersections.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Vein type deposit; multiple veins. Quartz veins in mafic intrusive and volcanic rocks contain pyrite and chalcopyrite.

REFERENCES:

Assessment Files 90608, 90611, 90612
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **20**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6082586N/475131E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: Southeast of Niblock Lake (Fig. 19-1).

AIRPHOTO: A20170-145, -146, -147, -122

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 10 (80 m) on claim Axe 95 in 1957 (A.F. 90608) and six additional holes totalling 557 m on the Axe claims in 1959 (A.F. 90611). HBED drilled DDH Kus-147A (135 m depth) on claim Kus 841 in 1970 (A.F. 91389). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group protoquartzite and siliceous paragneiss flanked to the east and west by mafic volcanic gneiss. The northeast-trending Saw Lake Fault occurs 1.5 km to the east of the mineral occurrence (Fig. 19-1; Bailes, 1985). An early-kinematic pyroxenite intrusion occurs at the contact between protoquartzite and mafic volcanic gneiss in the area of the occurrence. Diamond drill holes, collared in part to test ground EM geophysical conductors, intersected light grey, medium- to coarse-grained quartz-chlorite-biotite-garnet-plagioclase schist, fine grained quartz-biotite gneiss, basalt, peridotite and pegmatite (A.F. 90608, 90611, 91389).

MINERALIZATION:

Mineralization was intersected in seven of nine drill holes at this location (A.F. 90608, 90611, 91389). Trace to 20% graphite, trace to 15% pyrite, trace to 1% pyrrhotite and traces of chalcopyrite and sphalerite are hosted by 0.1 to 1.2 m intersections of quartz-chlorite-biotite-garnet-plagioclase gneiss in core from DDH Kus-147A, which is the only hole for which the drill logs report mineral percentages (A.F. 91389). In core from DDH 11B, 2.5 m of graphitic and chloritic schist containing pyrite and chalcopyrite was intersected; similar mineralization was intersected over 3.7 m of graphite schist in core from DDH 12B. DDH 3B, 7B, 11B and 15B intersected mineralization, 2.4 to 6.1 m in core length, characterized by graphitic and chloritic schist with pyrite, chalcopyrite and sphalerite and quartz veins. DDH 10 intersected 13.1 m of schistose basalt that contain pyrite and graphite (A.F. 90608). DDH 8B and 14B did not intersect mineralization (A.F. 90611).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. Minor to moderate pyrite, pyrrhotite and graphite with traces of chalcopyrite and sphalerite are hosted by quartz-chlorite-biotite-garnet-plagioclase schist. A vein type deposit occurs in core from DDH 7B and disseminated mineralization - not classified occurs in core from DDH 7B.

REFERENCES:

Assessment Files 90608, 90611, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **21**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6082259N/476616E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: Southeast of Niblock Lake (Fig. 19-1).

AIRPHOTO: A20170-145, -146, -147, A20174-14, -15

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled six holes totalling 601 m in 1957 (A.F. 90608) and four additional holes, DDH 5B, 6B, 9B and 10B, totalling 382 m in 1959 (A.F. 90611) on the Axe claims. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group mafic volcanic gneiss, in fault contact to the east with sandstone, siltstone, mudstone and polymictic conglomerate, and flanked to the west by protoquartzite and siliceous paragneiss (Fig. 19-1; Bailes, 1985). Multiple drill holes intersected basalt, diorite, altered and schistose serpentinite and peridotite (A.F. 90608, 90611). Gneiss of unspecified composition is also noted in the drill logs.

MINERALIZATION:

Graphite and pyrite with minor chalcopyrite occur over intervals of 8.2 to 13.7 m within schistose basalt, chlorite schist and schist and gneiss of unspecified composition. A 4.6 m interval of schistose altered serpentinite with quartz stringers and pyrite occurs in core from DDH 10B (A.F. 90611). A similar mineralized intersection, 10.4 m in core length, hosted by serpentinite is reported in the logs of DDH A (A.F. 90608). The percentages of sulphide minerals are not reported in drill logs.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. Graphite, pyrite and minor chalcopyrite are hosted by mafic volcanic and intrusive schists and gneisses. Vein type deposits occur in core from DDH A and 10B. The presence of sulphide minerals in altered ultramafic rocks is suggestive of a geological environment favourable for platinum group mineralization.

REFERENCES:

Assessment Files 90608 and 90611
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

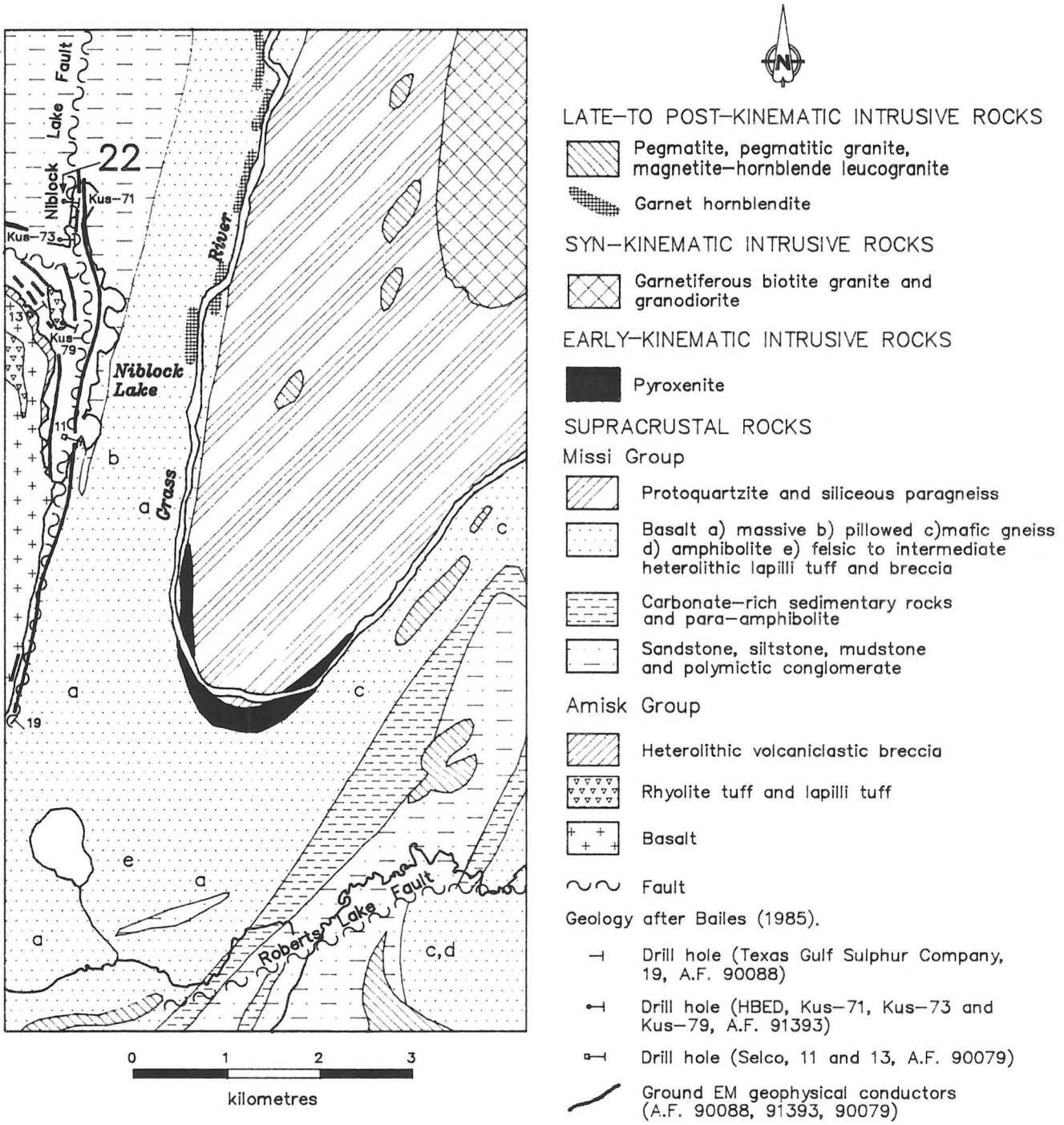


Figure 22-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrence 22.

LOCATION:- **22**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6086606N/468515E

ACCESS: Via bush plane to Niblock Lake and traverse.

AREA: Niblock Lake.

AIRPHOTO: A20169-75, -76

EXPLORATION SUMMARY:

R.G. Crosby carried out ground EM and magnetometer surveys in the area in 1957 (A.F. 90607). Selco Exploration conducted a VLEM survey and drilled DDH 11 and 13 (78 and 81 m, respectively) on claims Nib 84 and Nib 92 in 1957 (A.F. 90079). Texas Gulf Sulphur Company drilled DDH 19 (67 m) on claim Bob 79 in 1958 (A.F. 90088). HBED drilled DDH Kus-71 and -73 (101 and 97 m, respectively) to test EM conductors on claim Kus 476 in 1968 (A.F. 91393). The location of DDH Kus-79 is shown in A.F. 91393, but no details are given. The area is covered (1989) by claims Snake 1, 2, 5, 6, 11, 12 and 13 and claims Bend 1, 2 and 8, staked in 1986 and 1987 by Esso Resources Canada Limited. These claims were transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Amisk Group massive and pillowed basalt, rhyolitic tuff and lapilli tuff and heterolithologic volcaniclastic breccia, and Missi Group staurolitic siltstone, sandstone and mudstone (Fig. 22-1; Bailes, 1985). Missi Group protoquartzite, siliceous paragneiss, and pillowed and massive basalt flank the Amisk Group rocks to the east. Diamond drill holes, collared to test long and short strike length ground EM geophysical conductors, intersected altered rhyolite tuff, andesite, hornblende-quartz-biotite gneiss and chemical sedimentary rocks (A.F. 90079, 90088, 91393).

MINERALIZATION:

Several styles of mineralization were intersected by DDH 11, 13 (A.F. 90079), Kus-71 and -73 (A.F. 91393) and 19 (A.F. 90088). Graphite and pyrite intersections, 0.5 to 7.7 m in length, are present within intermediate to mafic volcanic rocks. A variety of alteration types accompanies these graphitic layers and includes: (1) sericite-garnet-staurolite ± hornblende schist (DDH Kus-71, 38 to 58.9 m), (2) chlorite-talc schist (DDH Kus-71, 32.8 to 38 m), and (3) silicification (DDH-13, 64.9 to 76.2 m). Silicification is associated with disseminated mineralization, i.e., a 5 m intersection of hornblende-quartz-biotite gneiss with 2% coarse grained arsenopyrite occurs in core from DDH Kus-73.

Altered rhyolite intercalated with chlorite-biotite schist containing 5% disseminated and veinlet pyrrhotite and minor pyrite overlies 0.8 m of solid pyrrhotite, which is underlain by garnetiferous chlorite-hornblende schist between 26.2 and 36.1 m in core from DDH 19. Quartz and carbonate veins with 2% pyrite occur within silicified brecciated andesite over a 42.7 m interval in core from DDH 11.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Stratabound massive sulphide type deposit; volcanic rock associated. This deposit type is characterized by an 0.8 m solid pyrrhotite layer overlain by intercalated chlorite-biotite schist with 5% streaks and blebs of pyrrhotite and pyrite in core from DDH Kus-71. The underlying rocks are garnetiferous chlorite-hornblende schists.

The most abundant mineral deposit type is a chemical sediment type deposit, sulphide facies iron formation. The sulphide facies iron formation is characterized by variable amounts of interlayered graphite and pyrite in core from DDH 11, 13, Kus-71 and Kus-73 over intervals that range from 0.5 to 9.1 m.

In addition to these deposit types, a vein type deposit characterized by quartz and carbonate veins with 2 to 15% pyrite hosted by silicified andesite is present in core from DDH 11. The 5.0 m of 2% coarse grained arsenopyrite crystals in andesite intersected by DDH Kus-73 represents disseminated mineralization - not classified.

REFERENCES:

Assessment Files 90079, 90088, 90607, 91393
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

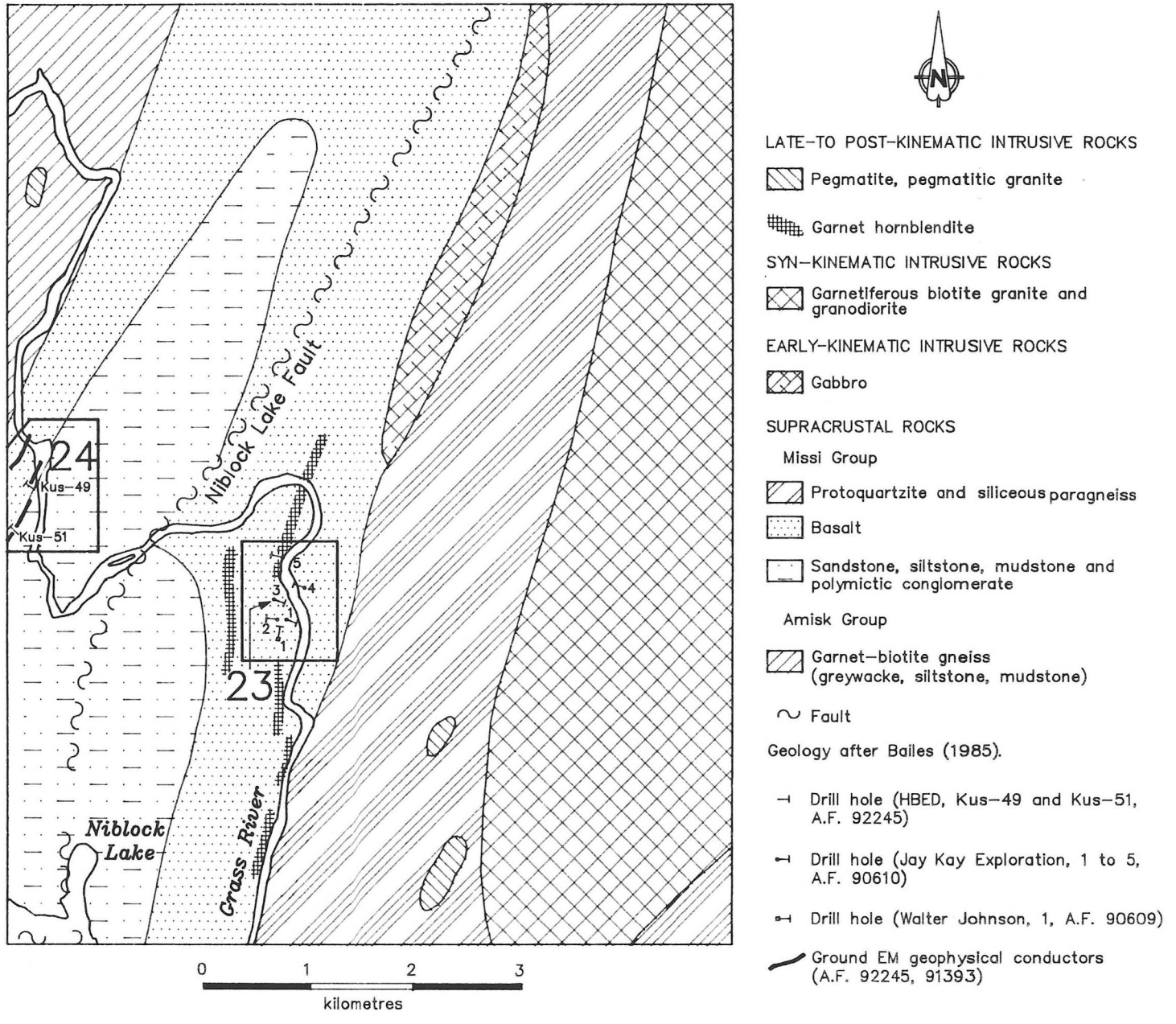


Figure 23-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrences 23 and 24.

LOCATION: **23**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6089146N/470523E

ACCESS: Via bush plane to Niblock Lake or the Grass River, and traverse.

AREA: Northeast of Niblock Lake.

AIRPHOTO: A20169-94

EXPLORATION SUMMARY:

Walter Johnson drilled one 69 m hole (A.F. 90609), and Jay Kay Exploration Syndicate drilled five additional holes totalling 291 m on the Last Hope claim in 1955 (A.F. 90610). The area is covered (1989) by claim Snake 17, staked in 1987 by Esso Resources Canada Limited, and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by massive basalt, flanked to the west by sandstone, siltstone, mudstone and polymictic conglomerate, and to the east by protoquartzite and siliceous paragneiss (Fig. 23-1). All rock units have been assigned to the Missi Group (Bailes, 1985). Drill holes intersected mineralized basalt, gabbro, and schist and gneiss of unspecified composition (A.F. 90609, 90610).

MINERALIZATION:

Sulphide mineralization was intersected in each of six drill holes. Intervals of disseminated mineralization occur within a variety of lithologies. DDH 1 intersected 2.5 to 2.8 m of schist with pyrite and 4.5 m of solid pyrite between 61.6 and 66.1 m (A.F. 90609). DDH 1, 2, 3, 4 and 5 intersected disseminated pyrite with minor chalcopyrite in gneiss, greenstone and gabbro over intersections that range from 3.4 to 19.8 m in core length (A.F. 90610). Solid pyrite with minor chalcopyrite was intersected between 21.6 and 25 m in DDH 3. A similarly mineralized intersection is recorded in the log for DDH 1, but metrages are not recorded. The drill logs for most of the mineralized intersections do not list percentages of sulphide minerals.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment Files 90609 and 90610
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **24**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6089692N/468012E

ACCESS: Via bush plane to Niblock Lake and traverse.

AREA: North of Niblock Lake (Fig. 23-1).

AIRPHOTO: A20169-79

EXPLORATION SUMMARY:

HBED drilled DDH Kus-49 and -51 (total length unknown) to test EM conductors on claims Kus 328 and Kus 327, respectively, in 1967 (A.F. 92245). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group pillowed basalt, flanked to the west by Amisk Group garnet-biotite gneiss, and to the east by Missi Group staurolitic sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 23-1; Bailes, 1985). Drill holes, collared to test ground EM geophysical conductors, intersected basalt and chemical sedimentary rocks (A.F. 92245).

MINERALIZATION:

Drill logs were not included with A.F. 92245 for DDH Kus-49 and -51; however, notes adjacent to drill hole collars plotted on HLEM survey maps indicate that disseminated pyrite, pyrrhotite and graphite were intersected in the holes.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 92245
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **25**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6092757N/471862E

ACCESS: Via bush plane to Niblock Lake or Grass River and traverse.

AREA: Northeast of Niblock Lake.

AIRPHOTO: A20169-91, -92

EXPLORATION SUMMARY:

HBED drilled six holes (total length unknown) to test ground EM geophysical conductors on the Kus claims in 1967 (A.F. 92245). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by massive and pillowed basalt flanked to the west by staurolitic sandstone, siltstone, mudstone and polymictic conglomerate, and overlain by protoquartzite and siliceous paragneiss to the east. These rocks have been assigned to the Missi Group (Fig. 25-1; Bailes, 1985). An early-kinematic gabbro was intruded along the contact between basalt and the unit of protoquartzite and siliceous paragneiss east of the occurrence. Location 25 straddles the Niblock Lake Fault. Drill holes, collared to test ground EM geophysical conductors, intersected basalt and chemical sedimentary rocks (A.F. 92245).

MINERALIZATION:

Drill logs for DDH Kus-39 through Kus-44 were not included with A.F. 92245, however, notes adjacent to drill hole collars plotted on HLEM base maps indicate that they intersected "weak" pyrite, pyrrhotite and graphite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 92245
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

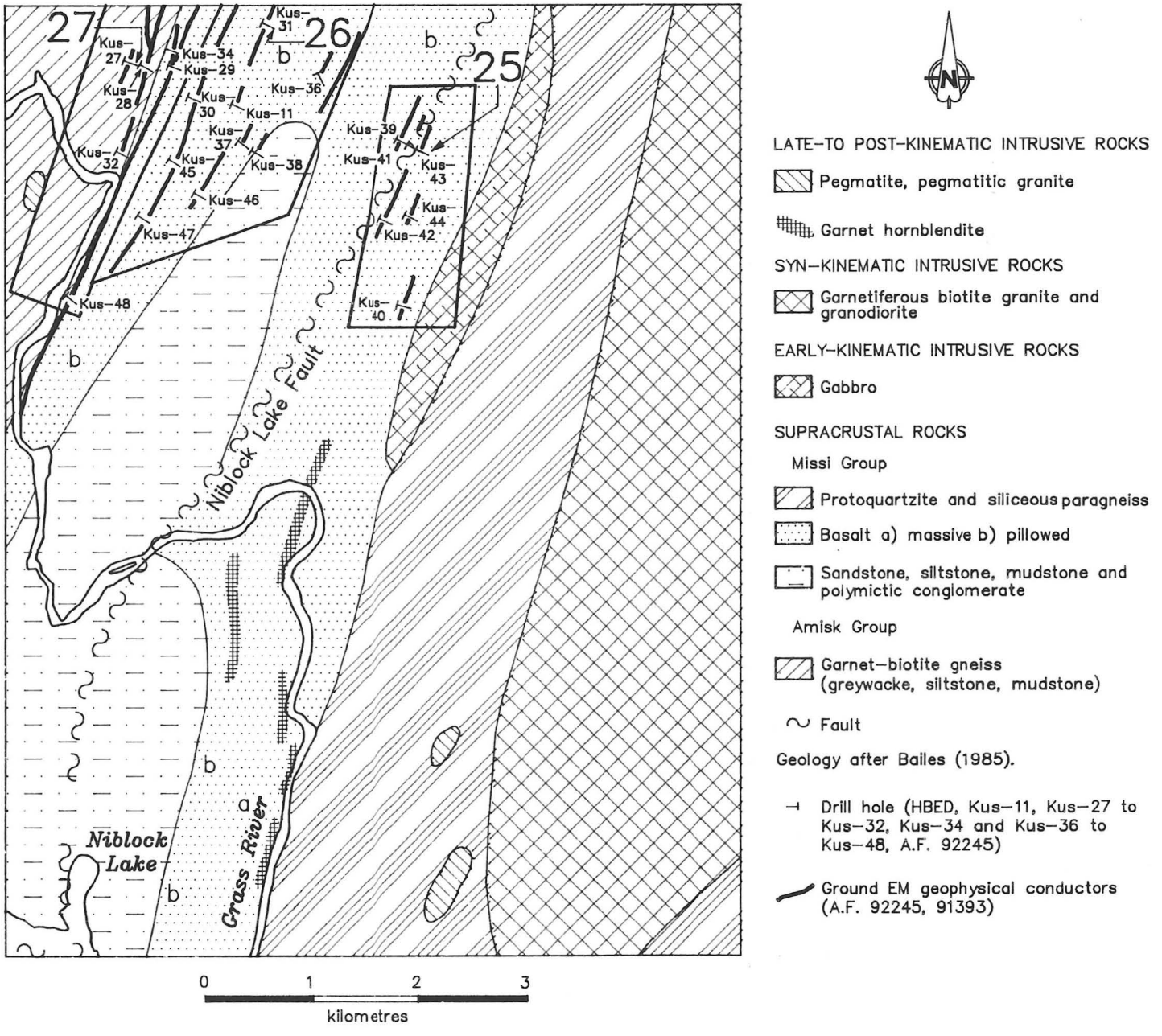


Figure 25-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrences 25, 26 and 27.

LOCATION: **26**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6094468N/470531E

ACCESS: Via bush plane to the Grass River and traverse.

AREA: Northeast of Niblock Lake (Fig. 25-1).

AIRPHOTO: A20169-91, -92

EXPLORATION SUMMARY:

HBED drilled nine holes (total length unknown) to test EM conductors on the Kus claims in 1967 (A.F. 92245). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group pillowed basalt and staurolitic sandstone, siltstone, mudstone and polymictic conglomerate flanked to the west by Amisk Group garnet-biotite gneiss derived from epiclastic rocks and to the east by Missi Group protoquartzite and siliceous paragneiss (Fig. 25-1; Bailes, 1985). Drill holes, collared to test ground EM geophysical conductors, intersected basalt and chemical sedimentary rocks (A.F. 92245).

MINERALIZATION:

Drill logs for DDH Kus-30, -31, -35 through -38, and -45 through -47 were not filed for assessment, but notes adjacent to drill hole collars plotted on HLEM base maps indicate that core from these holes contained intersections of near solid pyrite, pyrrhotite, and graphite (A.F. 92245). A maximum intersection of 13 m graphite, pyrite and pyrrhotite mineralization is indicated.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 92245
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **27**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6094079N/469369E

ACCESS: Via bush plane to Niblock Lake or Grass River and traverse.

AREA: North of Niblock Lake.

AIRPHOTO: A20169-81, -82, -91

EXPLORATION SUMMARY:

HBED drilled six holes (total length unknown) to test EM conductors on the Kus claims in 1967 (A.F. 92245). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Amisk Group garnet-biotite gneiss derived from epiclastic rocks and Missi Group pillowed basalt (Fig. 25-1; Bailes, 1985). The occurrence is located at or near the contact between these two sequences. Drill holes, collared to test long and short strike length ground EM geophysical conductors, intersected chemical sedimentary rocks, basalt, and gneissic rocks derived from siltstone, mudstone and sandstone (A.F. 92245).

MINERALIZATION:

Drill logs for DDH Kus-27, -28, -29, -32, -34 and -48 were not included with A.F. 92245; however, notes adjacent to drill hole collars plotted on HLEM base maps indicate that these holes intersected "slight to massive" graphite, pyrrhotite and pyrite. Trace chalcopyrite is noted in the log of DDH Kus-28.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 92245
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

LOCATION: **28**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6072319N/497072E

ACCESS: Via boat on the Grass River and traverse.

AREA: North of the Grass River.

AIRPHOTO: A19736-18, -19; A20784-188, -189

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 1A (104 m depth) on claim Axe 68 in 1957 (A.F. 90608). Amax Exploration Limited conducted airborne EM, airborne and ground magnetometer, airphoto lineament, and geological surveys in the area in 1967 (A.F. 90624, 90625, 90626). Falconbridge Nickel Mines Limited drilled DDH S-49, -50 and -53 totalling 449 m in 1969 (A.F. 91591), and DDH S-78 and -85 (96 and 155 m, respectively) in 1970 (A.F. 91592) to test magnetometer anomalies on the BA claims. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group quartz-feldspar-magnetite-biotite gneiss flanked to the west by Amisk Group garnet-biotite *lit-par-lit* gneiss. These rocks have been intruded by syn- and late- to post-kinematic gneissic granitic to monzodioritic rocks and garnet hornblendite dykes (Fig. 28-1; Bailes, 1985). The predominant rock type is a coarsely granoblastic quartz-feldspar-magnetite-biotite gneiss that contains microcline porphyroblasts. Diamond drill holes intersected basalt, amphibolite and granitic intrusions (A.F. 90608, 91591, 91592).

MINERALIZATION:

DDH S-78, -85 and -53 intersected disseminated pyrite in grey to pink gneissic granite and amphibolite. A 2 cm wide vein of 15% pyrite in grey gneissic granite associated with a chloritic shear zone occurs in core from DDH S-85 (A.F. 91591, 91592). A 4 m intersection of graphite schist with pyrite, overlain by gabbro and underlain by gneiss of unspecified composition, is reported in the log for DDH 1A (A.F. 90608; Fig. 28-1). No mineralization was observed in core from DDH S-49 or -50; a 10 m thick mylonite zone was described in core from DDH S-49.

GEOCHEMICAL DATA:

None.

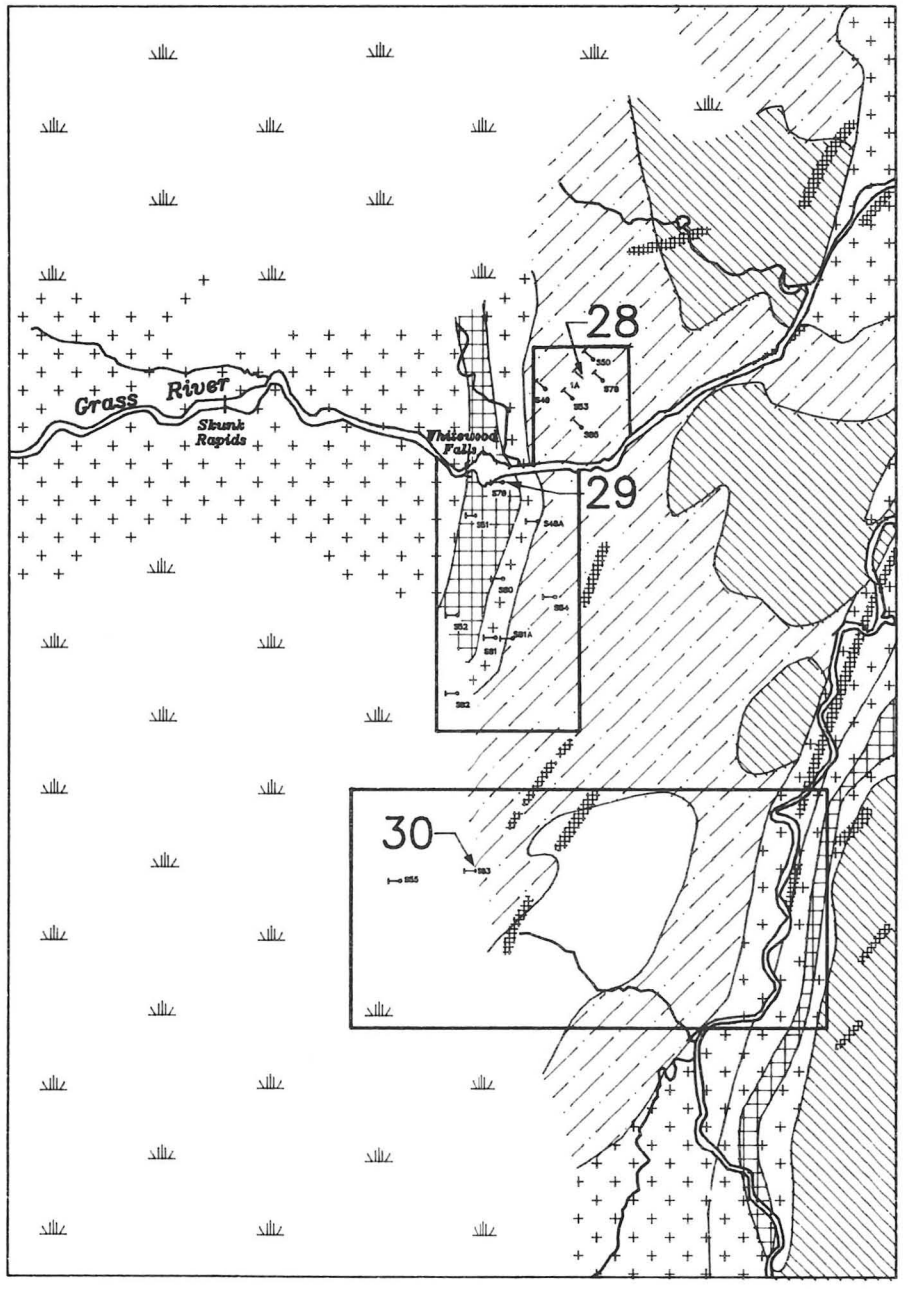
CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment Files 90608, 90624, 90625, 90626, 91591, 91592 Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.



LATE–TO POST–KINEMATIC INTRUSIVE ROCKS

Pegmatite, pegmatite granite, magnetite–biotite granite

Garnet hornblendite

SYN–KINEMATIC INTRUSIVE ROCKS

Gneissic leucomonzogranite, magnetite–microcline–biotite±hornblende granite, monzonite, quartz monzonite and monzodiorite

SUPRACRUSTAL ROCKS

Missi Group

Coarse granoblastic quartz–feldspar–magnetite–biotite gneiss

Amisk Group

Garnet–biotite ***lit–par–lit*** gneiss

Swamp

Geology after Bailes (1985)

Drill hole (Jay Kay Exploration, 1A, A.F. 90608)

Drill hole (Falconbridge Nickel Mines, S48A, S49 to S55, S78 to S83, S81A and S85, A.F. 91591, 91592)

0 1 2 3

kilometres

Figure 28-1: Geological setting and drill hole locations, occurrences 28, 29 and 30.

LOCATION: **29**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6071387N/496330E

ACCESS: Via boat on the Grass River and traverse.

AREA: South of the Grass River at Whitewood Falls (Fig. 28-1).

AIRPHOTO: A19736-19, -20, -21

EXPLORATION SUMMARY:

Amax Exploration Limited conducted airborne EM, airborne and ground magnetometer, airphoto lineament, and geological surveys in the area in 1967 (A.F. 90624, 90625, 90626). Falconbridge Nickel Mines Limited drilled four holes totalling 532 m in 1969 (A.F. 91591) and two additional holes, S-79 and -81A (99 and 158 m, respectively), in 1970 (A.F. 91592) to test magnetometer anomalies on the BA claims. Three other drill holes, S-80, -81 and -82, were abandoned in over 60 m of overburden (A.F. 91592). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group quartz-feldspar-magnetite-biotite gneiss and Amisk Group garnet-biotite *lit-par-lit* gneiss. These units have been intruded by syn- and late- to post-kinematic gneissic granitic to monzodioritic rocks and garnet hornblendite dykes (Fig. 28-1; Bailes, 1985). Diamond drilling intersected variably altered serpentinite, garnet-biotite-amphibole gneiss, biotite gneiss and pegmatitic granite gneiss (Fig. 28-1, 29-1).

MINERALIZATION:

Numerous pyritic graphite schist zones were intersected in DDH S-79, ranging in core length from 0.6 to 5.8 m. These zones are hosted by green to brown gneiss, and sheared granite (Fig. 29-1). In addition, DDH S-81A intersected <1% disseminated pyrite in a black, serpentinized ultramafic intrusion (Fig. 29-2). Calcite, tremolite and biotite are identified as alteration products in the intrusion.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. The altered and mineralized ultramafic intrusion intersected by DDH S81A should be re-evaluated for platinum group element content.

REFERENCES:

Assessment Files 90624, 90625, 90626, 91591, 91592
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

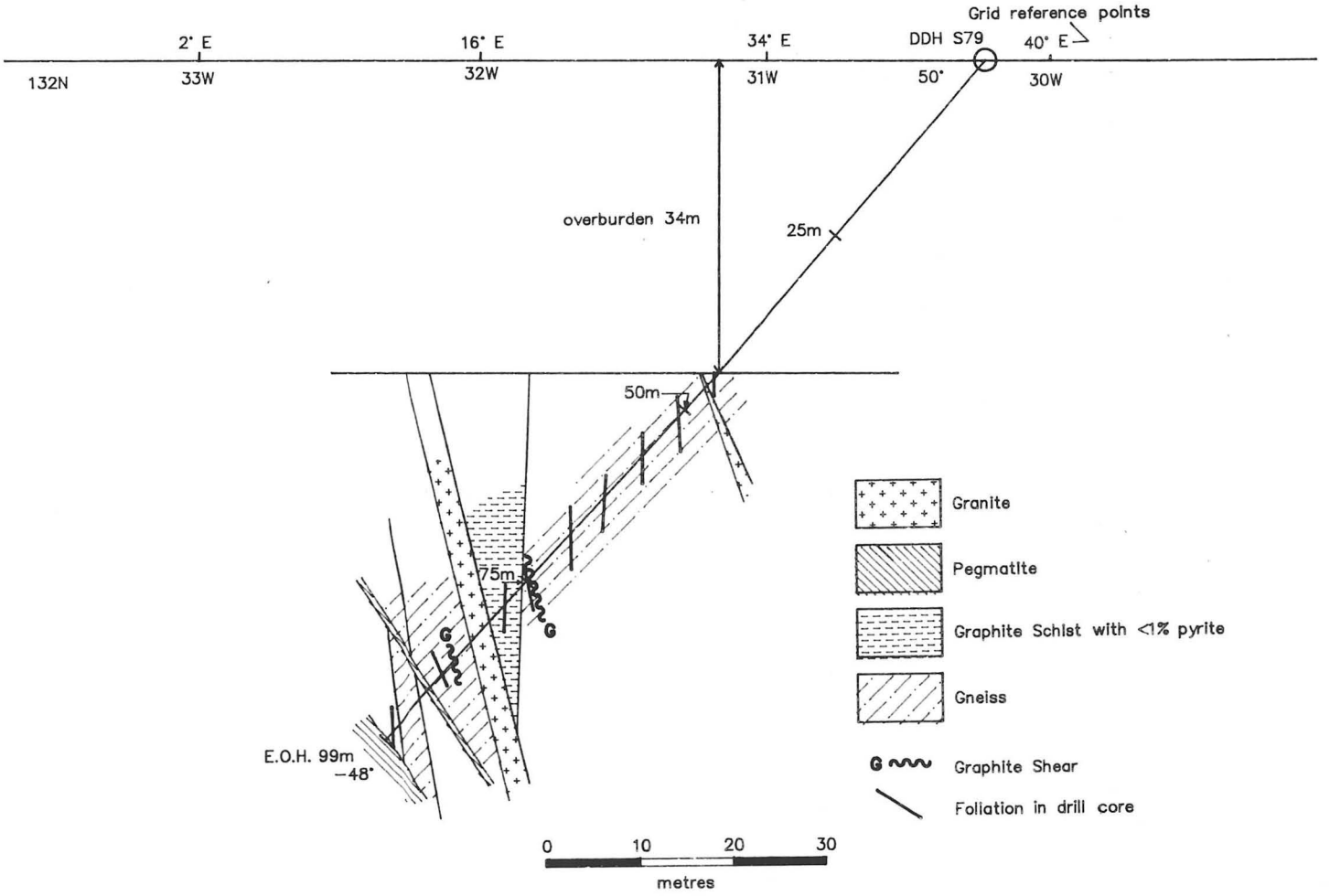


Figure 29-1: Diamond drill hole S79 with graphite zones and associated lithologies, occurrence 29.

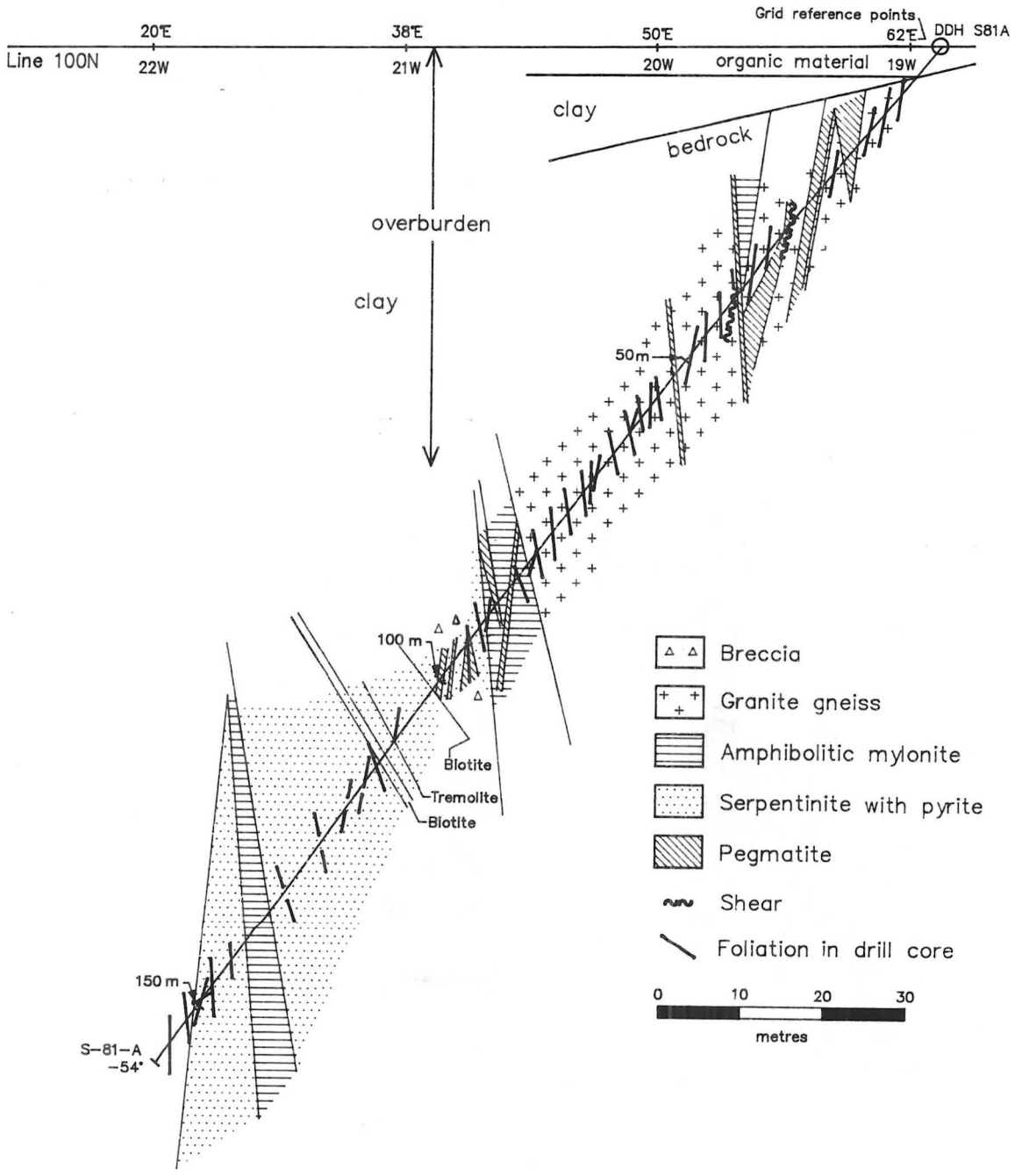


Figure 29-2: Diamond drill hole S81A with altered ultramafic intrusion containing pyrite mineralization, occurrence 29.

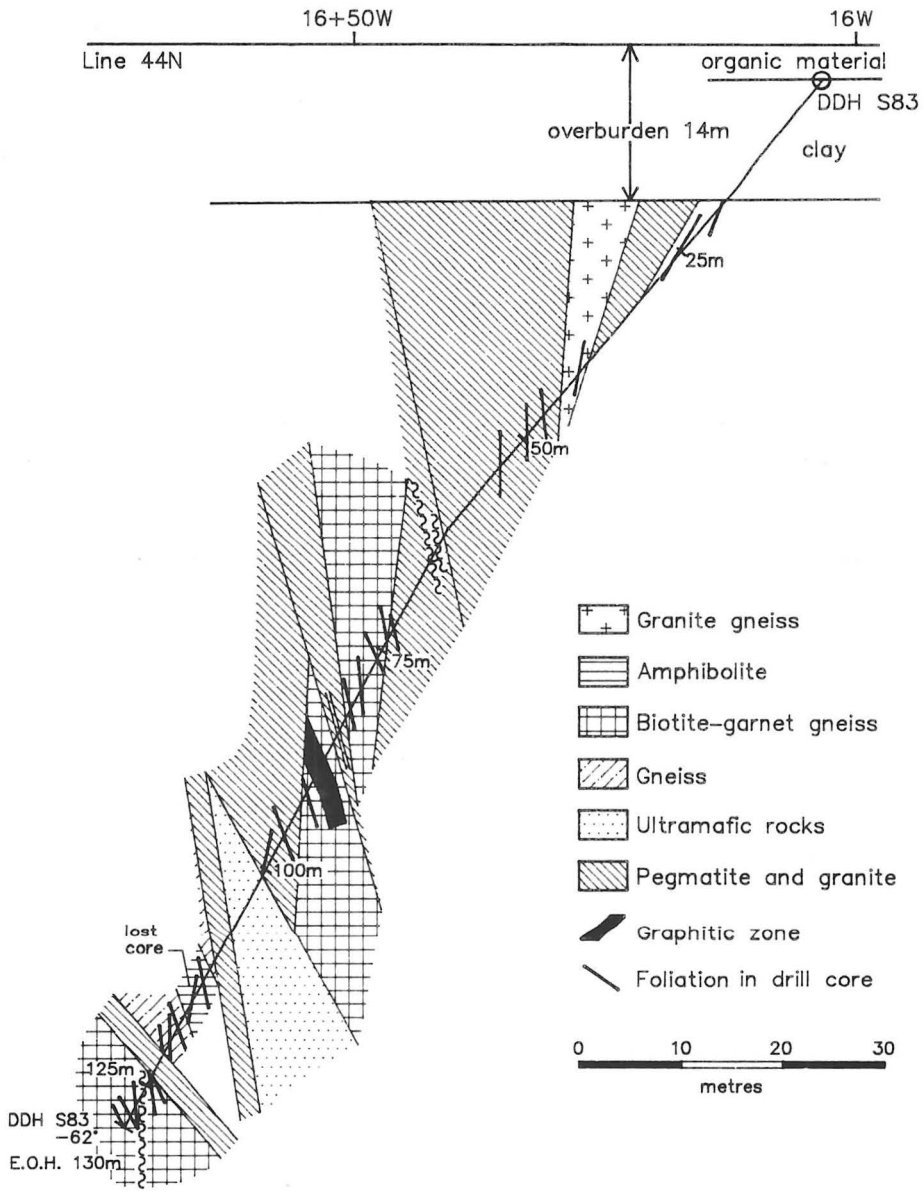


Figure 30-1: Geological profile from DDH S83 illustrating the location of mineralized zones, occurrence 30.

LOCATION: **30**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6067743N/496157E

ACCESS: Via boat on the Grass River and traverse.

AREA: South of Whitewood Falls on the Grass River (Fig. 28-1).

AIRPHOTO: A19736-21, -22, A20906-124

EXPLORATION SUMMARY:

Amax Exploration Limited conducted airborne EM, airborne and ground magnetometer, airphoto lineament and geological surveys in the area in 1967 (A.F. 90624, 90625, 90626). Falconbridge Nickel Mines Limited drilled DDH S55 (128 m) (A.F. 91591) and DDH S83 (130 m) (A.F. 91592) in 1970 to test magnetometer anomalies on the BA claims. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group quartz-feldspar-magnetite-biotite gneiss (Fig. 28-1; Bailes, 1985). These units have been intruded by syn- and late- to post-kinematic gneissic granitic to monzodioritic rocks and garnet hornblendite dykes (Fig. 28-1; Bailes, 1985). There is no outcrop in the area of the mineralization, but coarse grained granoblastic quartz-feldspar-magnetite-biotite gneiss containing up to 30% pink granite has been mapped adjacent to the swamp where diamond drilling was done (Bailes, 1985).

MINERALIZATION:

A 3 m section of grey graphitic biotite-garnet gneiss was intersected by DDH S83 (Fig. 30-1). The percentage of graphite is not specified in the drill log (A.F. 91592). Narrow (0.3-0.6 m) intersections of minor disseminated pyrite and rare chalcopyrite occur in pegmatite, grey to dark grey gneiss and chlorite-amphibole patches in granite. DDH S55 intersected nonmineralized feldspar-biotite gneiss and amphibole-biotite gneiss (A.F. 91591).

GEOCHEMICAL DATA:

None.

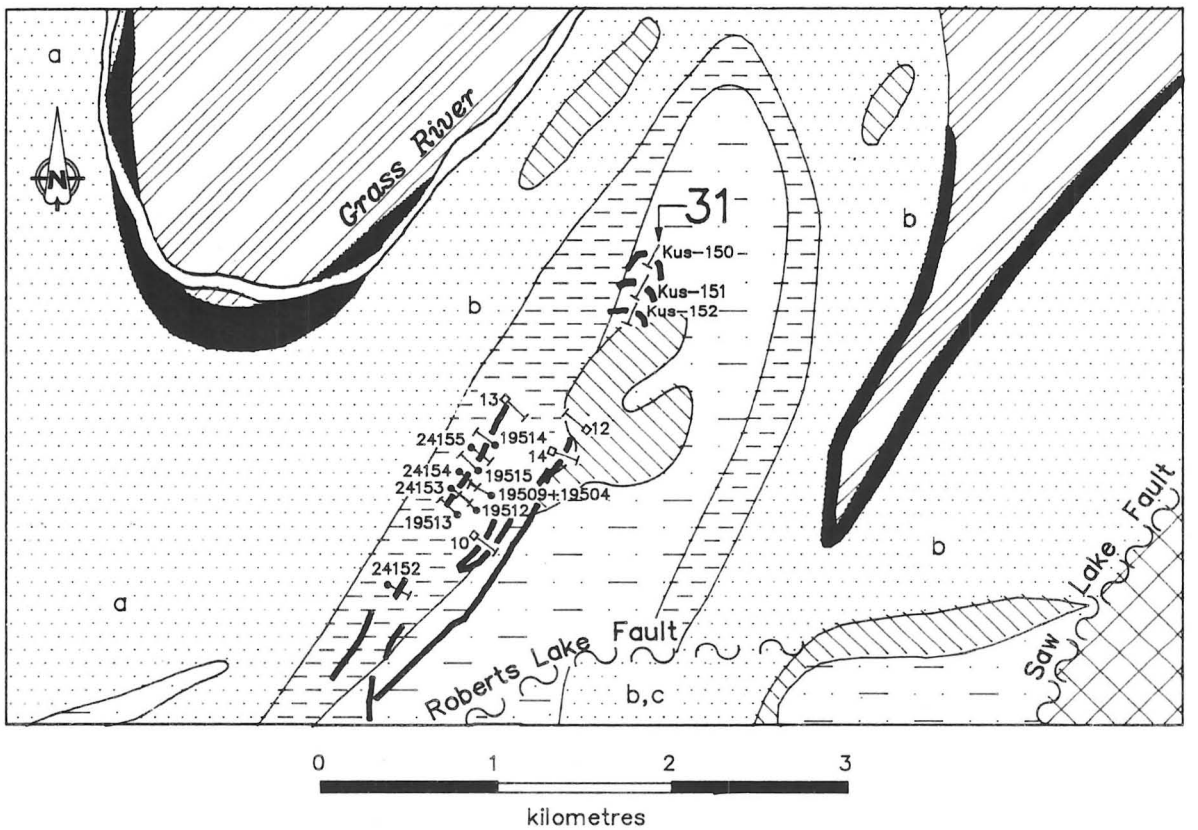
CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment Files 90624, 90625, 90626, 91591, 91592
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.



LATE-TO POST-KINEMATIC INTRUSIVE ROCKS

Pegmatite, pegmatitic granite, magnetite-hornblende leucogranite

SYN-KINEMATIC INTRUSIVE ROCKS

Garnetiferous biotite granite and granodiorite

EARLY-KINEMATIC INTRUSIVE ROCKS

Pyroxenite

SUPRACRUSTAL ROCKS

Missi Group

Protoquartzite and siliceous paragneiss

Basalt a) massive b) mafic gneiss c) amphibolite

Carbonate-rich sedimentary rocks and para-amphibolite

Sandstone, siltstone, mudstone and polymictic conglomerate

Fault

Geology after Bailes (1985).

Drill hole (HBED, Kus-150 to Kus-152, A.F. 91389)

Drill hole (Canadian Nickel Company, 19504, 19509, 19512 to 19515, 24152 to 24155, A.F. 90604)

Drill hole (Texas Gulf Sulphur Company, 10, 12 to 14, A.F. 90088)

Ground EM geophysical conductors (A.F. 90088, 91389, 90208)

Figure 31-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrence 31.

LOCATION: **31**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6081879N/473348E

ACCESS: Via bush plane to Dion Lake or Grass River and traverse.

AREA: Northeast of Dion Lake and south of the Grass River.

AIRPHOTO: A20169-100

EXPLORATION SUMMARY:

Texas Gulf Sulphur Company drilled DDH 10, 12, 13 and 14 totalling 268 m on the Saw claims in 1958 (A.F. 90088). Canadian Nickel Company drilled DDH 19514 and 19515 (113 and 150 m, respectively) in 1960 (A.F. 90605) and DDH 24152, 24153, 24154 and 24155 totalling 463 m in 1963 (A.F. 90606) on the Hog claims. HBED drilled DDH Kus-150, -151 and -152 totalling 195 m on the Kus claims in 1970 (A.F. 91389). The area is partly covered by claims Bend 4 and Bend 6, staked by Esso Resources Canada Limited in 1986 and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks, para-amphibolite, sandstone, siltstone, mudstone and polymictic conglomerate flanked to the northwest and southeast by massive and gneissic basalt (Fig. 31-1; Bailes, 1985). Ground EM geophysical conductors with long strike lengths occur in the area. Drill holes, collared to test these conductors, intersected chemical sedimentary rocks, pegmatite, skarn, quartzite, chlorite schist, hornblende-chlorite-garnet schist and garnetiferous biotite-quartz-sericite gneiss (Fig. 31-1; A.F. 90088, 90208, 90604, 91389).

MINERALIZATION:

Diamond drill holes tested the EM conductors that characterize the occurrence. Results indicate that the conductors consist of trace to 90% pyrite, pyrrhotite and graphite. The iron sulphide minerals occur as disseminations, veinlets and near solid layers in a variety of gneissose and schistose lithologies. Invariably, graphite accompanies the iron sulphide minerals as "streaks and blebs" or as graphite schist. Iron sulphide minerals and graphite occur within 0.2 to 29.7 m intersections of "altered" greywacke and basaltic gneiss and schist, as well as in tuff of unspecified composition (A.F. 90605, 90606). Alteration accompanying these mineralized zones is rarely described in the drill logs; however, DDH Kus-150 intersected 1.2 m of 5 to 15% pyrite and 25% graphite within a light grey, fine grained, garnetiferous biotite-quartz-sericite gneiss. The mineralized zones are associated with chlorite, "large" garnets and biotite "enrichment" (A.F. 91389).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment Files 90088, 90605, 90606, 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

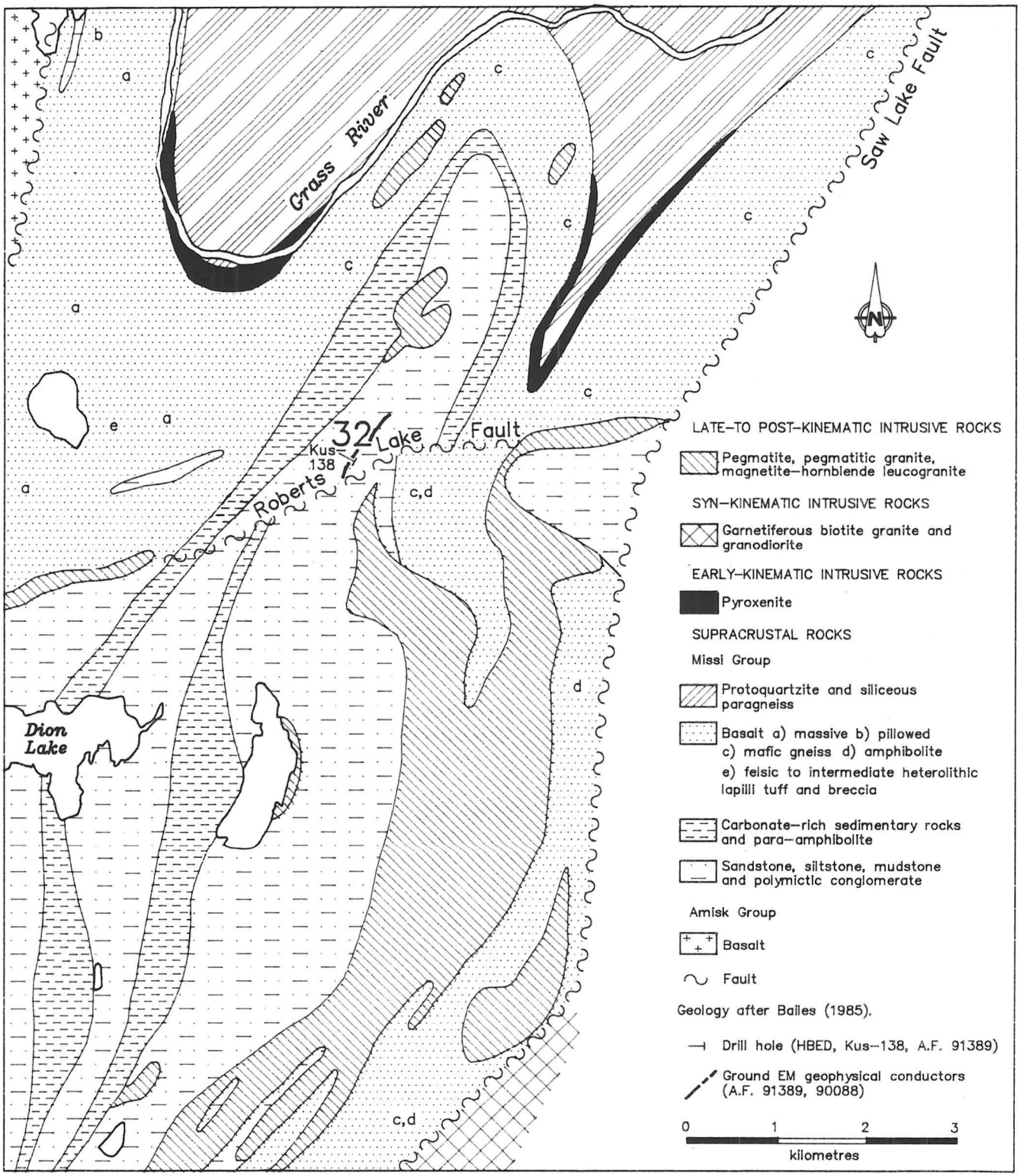


Figure 32-1: Geological setting, ground EM geophysical conductors and drill hole location, occurrence 32.

LOCATION: **32**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6079453N/471706E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: Northeast of Dion Lake.

AIRPHOTO: A20169-101, -102, A20170-121

EXPLORATION SUMMARY:

HBED drilled DDH Kus-138 (97 m) on claim Kus 890 in 1970 (A.F. 91389). The area is covered (1989) by claim Bend 10, staked in 1986 by Esso Resources Canada Limited, and transferred to Homestake Mining (Canada) Limited in 1989.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by sandstone, siltstone, mudstone and polymictic conglomerate, flanked to the east and west by carbonate-rich sedimentary rocks and para-amphibolite. These rock units have been assigned to the Missi Group (Fig. 32-1; Bailes, 1985). Missi Group basalt and late- to post-kinematic pegmatitic granite occur to the southeast. The Roberts Lake Fault transects the area south of the occurrence. Drill holes, collared to test ground EM geophysical conductors, intersected dark grey, fine grained greywacke, intruded by massive, medium grained granite and pegmatite dykes (A.F. 91389).

MINERALIZATION:

A garnet-chlorite-tremolite-rich fragment within a pegmatite contains 2 to 3% pyrite. No indication of the source of the EM conductor that characterizes this occurrence is mentioned in the drill log for DDH Kus-138 (A.F. 91389).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Assessment File 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

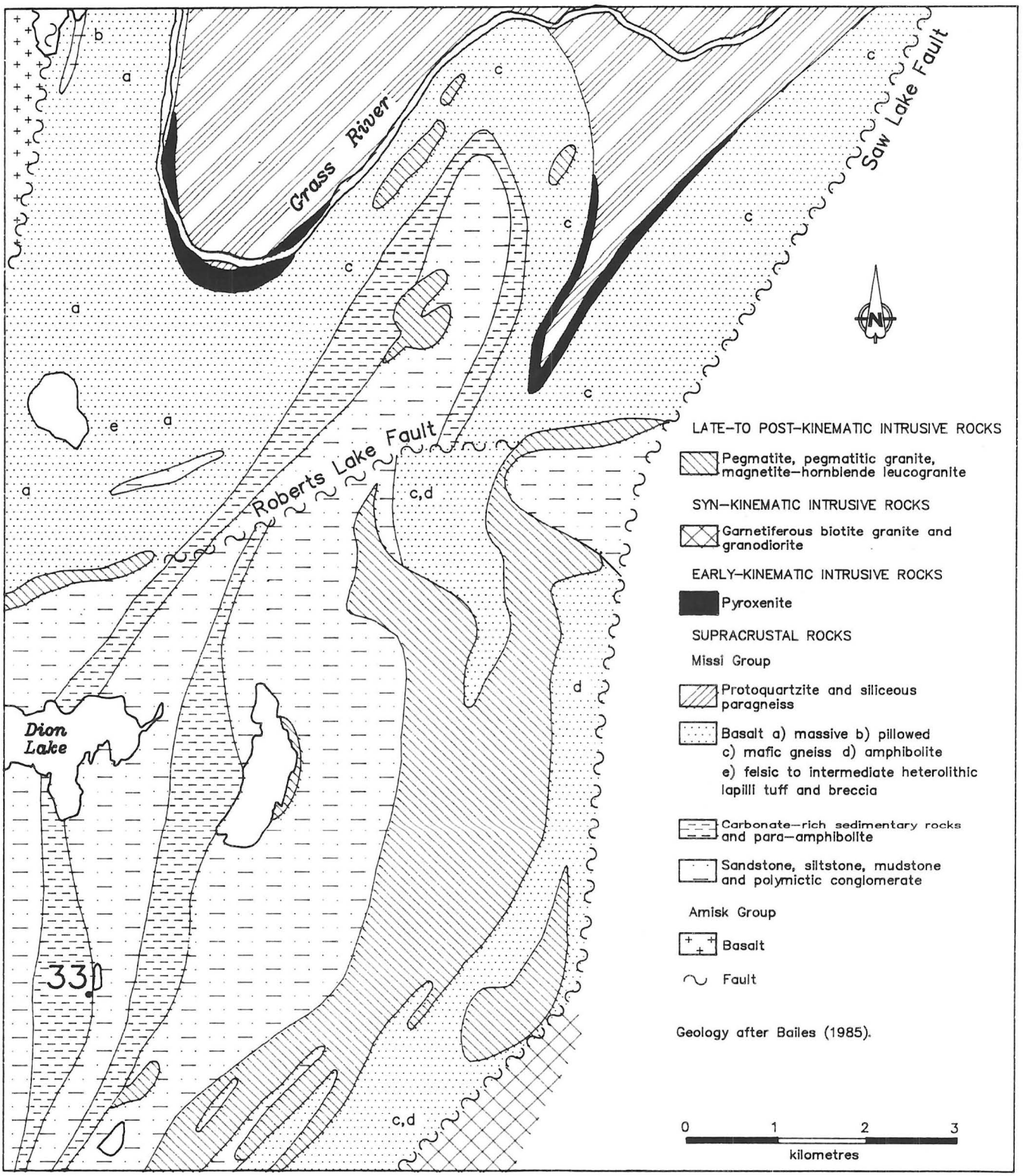


Figure 33-1: Geological setting of occurrence 33.

LOCATION: **33**

NAME:
UTM: 6072969N/468722E
ACCESS: Via bush plane to Dion Lake and traverse.

AREA: South of Dion Lake.
AIRPHOTO: A20169-105

EXPLORATION SUMMARY:

No known exploration records have been submitted for assessment for this location. The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks and para-amphibolite. These rocks are flanked to the east and west by Missi Group sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 33-1; Bailes, 1985). Rusty weathered calc-silicate gneiss and pegmatite were mapped at the occurrence (Fig. 33-2).

MINERALIZATION:

Rusty weathered zones with <1% pyrite occur in calc-silicate gneiss and amphibolite.

GEOCHEMICAL DATA:

Analytical data for five outcrop chip samples are presented in Appendix I; a summary is presented in Table 33-1. Locations of the chip samples are shown in Appendix II.

CLASSIFICATION:

Disseminated mineralization - not classified.

REFERENCES:

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

Table 33-1: Summary of geochemical results for samples from location 33.

Sample No.	Rock Type	Analytical Summary
01658	rusty weathered calc-silicate gneiss	204 ppm As
01659	rusty weathered amphibolite	all low
01660	rusty weathered calc-silicate gneiss with amphibolitic inclusions	all low
01661	garnetiferous amphibolite	all low
01662	rusty weathered calc-silicate with interlayers of amphibolite	all low

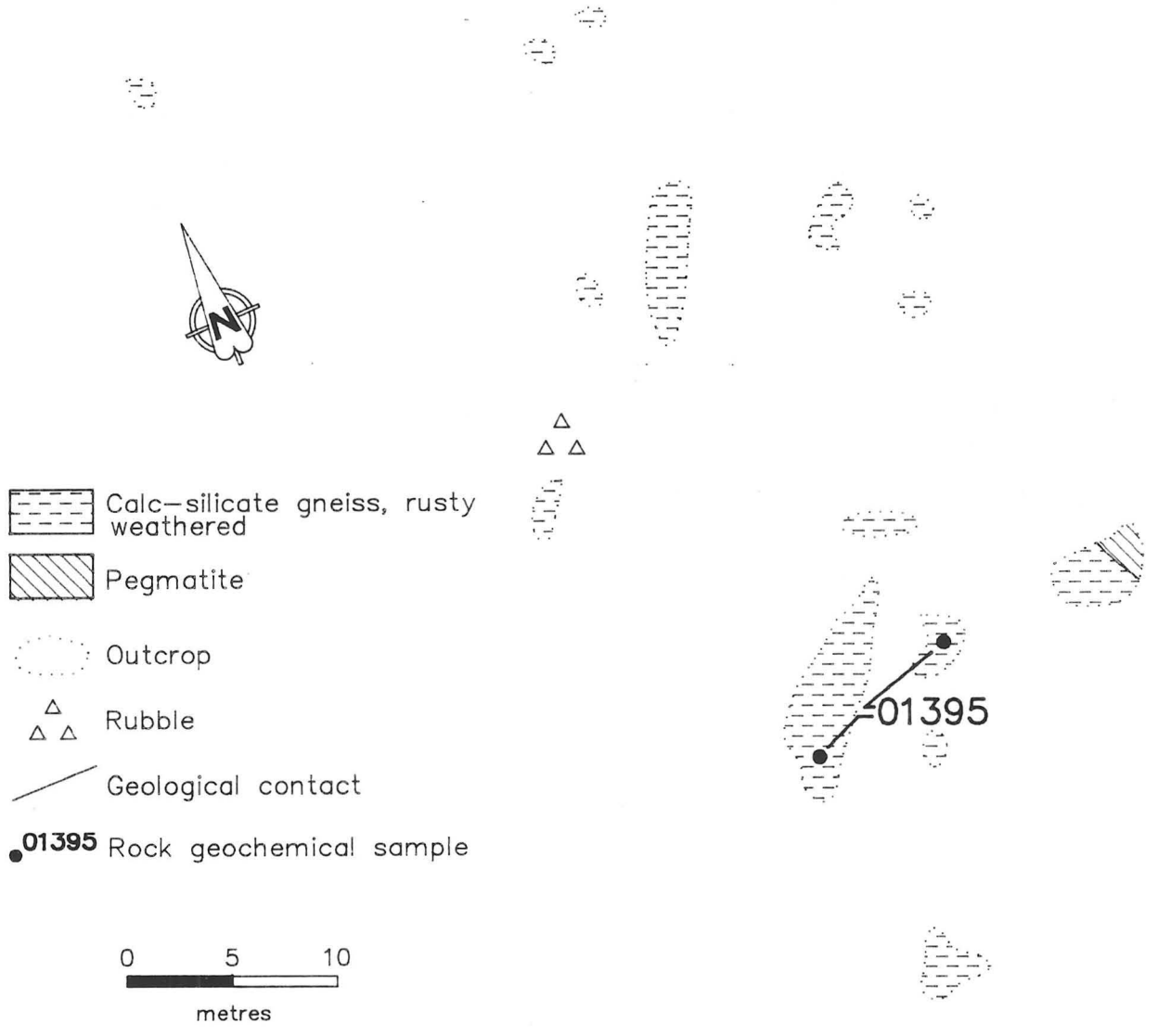


Figure 33-2: Detailed geology and sample location map, occurrence 33.

LOCATION: **34**

NAME: (A.F. - Mineralization intersected by diamond drilling)

UTM: 6079844N/474720E

ACCESS: Via bush plane to Saw Lake, then by boat to the Grass River and traverse.

AREA: East of Dion Lake.

AIRPHOTO: A20170-147, -148

EXPLORATION SUMMARY:

Jay Kay Exploration Syndicate drilled DDH 7B, 8B and 9B totalling 450 m on the Axe claims in 1961 (A.F. 90612). The area is open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by mafic volcanic gneiss and amphibolite interpreted as Missi Group basalt (Bailes, 1985). These rocks are flanked to the south by late- to post-kinematic magnetite-hornblende leucogranite, and to the north by Missi Group protoquartzite and siliceous paragneiss, and to the east by Missi Group epiclastic rocks. The occurrence is situated north and west of the intersection between the east-striking Roberts Lake Fault and the northeast-striking Saw Lake Fault (Fig. 34-1). Diamond drilling intersected gneissic and schistose basalt and granite (A.F. 90612).

MINERALIZATION:

Schistose graphite-pyrite-pyrrhotite intersections of variable core widths are reported in logs for DDH 7B, 8B and 9B (A.F. 90612). Up to 60% pyrite, pyrrhotite and graphite was intersected between 76.5 and 148.4 m in core from DDH 7B. The host rocks to the mineralized zones are basalt.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 90612
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

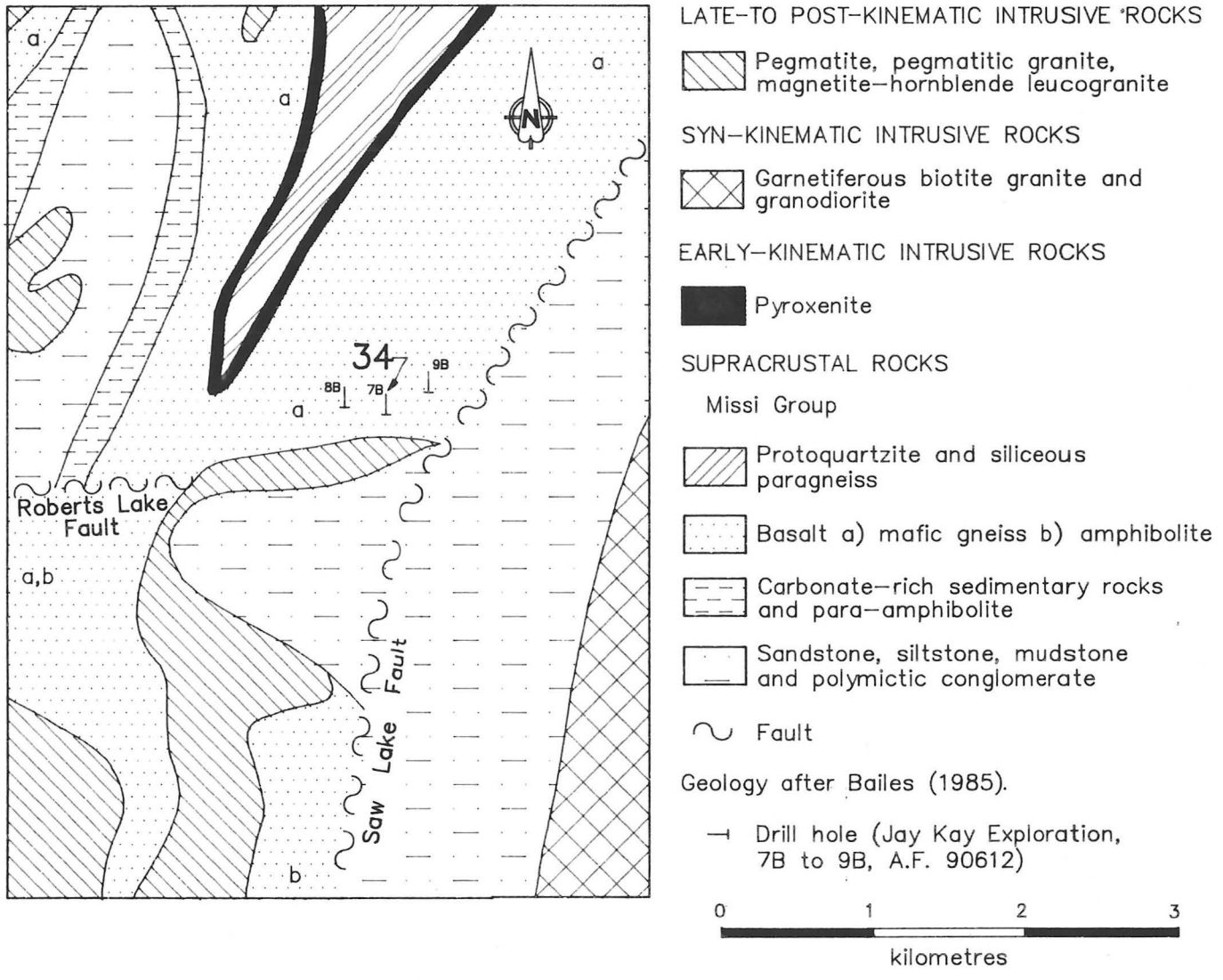


Figure 34-1: Geological setting and drill hole locations, occurrence 34.

LOCATION: **35**

NAME:

UTM: 6078907N/470653E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: Dion Lake.

AIRPHOTO: A20169-102

EXPLORATION SUMMARY:

Texas Gulf Sulphur Company drilled six drill holes totalling 382 m on the Saw claims in 1958 (A.F. 90088). The area is covered by claims KLM 1, staked by Charles McLeod in 1989, and KUS 12392, staked by HBED in 1984.

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks, para-amphibolite, sandstone, siltstone, mudstone and polymictic conglomerate. The Roberts Lake Fault transects the area of the occurrence (Fig. 35-1; Bailes, 1985). Drill holes, collared to test ground EM geophysical conductors, intersected chemical sedimentary rocks, pegmatite, chlorite-hornblende schist and greywacke (A.F. 90088). Silicified garnetiferous quartz-feldspar-biotite ± magnetite gneiss has been mapped in the area of the occurrence (Fig. 35-2).

MINERALIZATION:

DDH 1 through 6 intersected disseminated to near solid pyrite and pyrrhotite in hornblende-chlorite schist, altered impure quartzite (probable silicified greywacke), and chlorite schist. The amount of disseminated mineralization ranges from 5 to 30% in the drill holes. DDH 5 also intersected 2.4 m of 20% pyrite in a pegmatite. Near solid layers ranging from 2.5 to 30.5 cm in thickness contain 50 to 75% pyrite and pyrrhotite with blebs and streaks of graphite. DDH 1 intersected 0.3 m of 80% pyrite and pyrrhotite with blebs of graphite in an interbedded sequence of hornblende schist and silicified greywacke. The drill log notes "extensive" chlorite alteration and minor garnets (A.F. 90088).

GEOCHEMICAL DATA:

Chip sample 01692 was collected from a zone of rusty weathered quartzofeldspathic gneiss containing 1 to 2% pyrrhotite and chalcopyrite (Fig. 35-2); the sample contains low amounts of base and precious metals (Appendix I). Assays are not reported in the drill logs.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation. The relationship of the extensive chloritization to the near solid iron sulphide layers reported in core from DDH 1 is uncertain.

REFERENCES:

Assessment File 90088
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

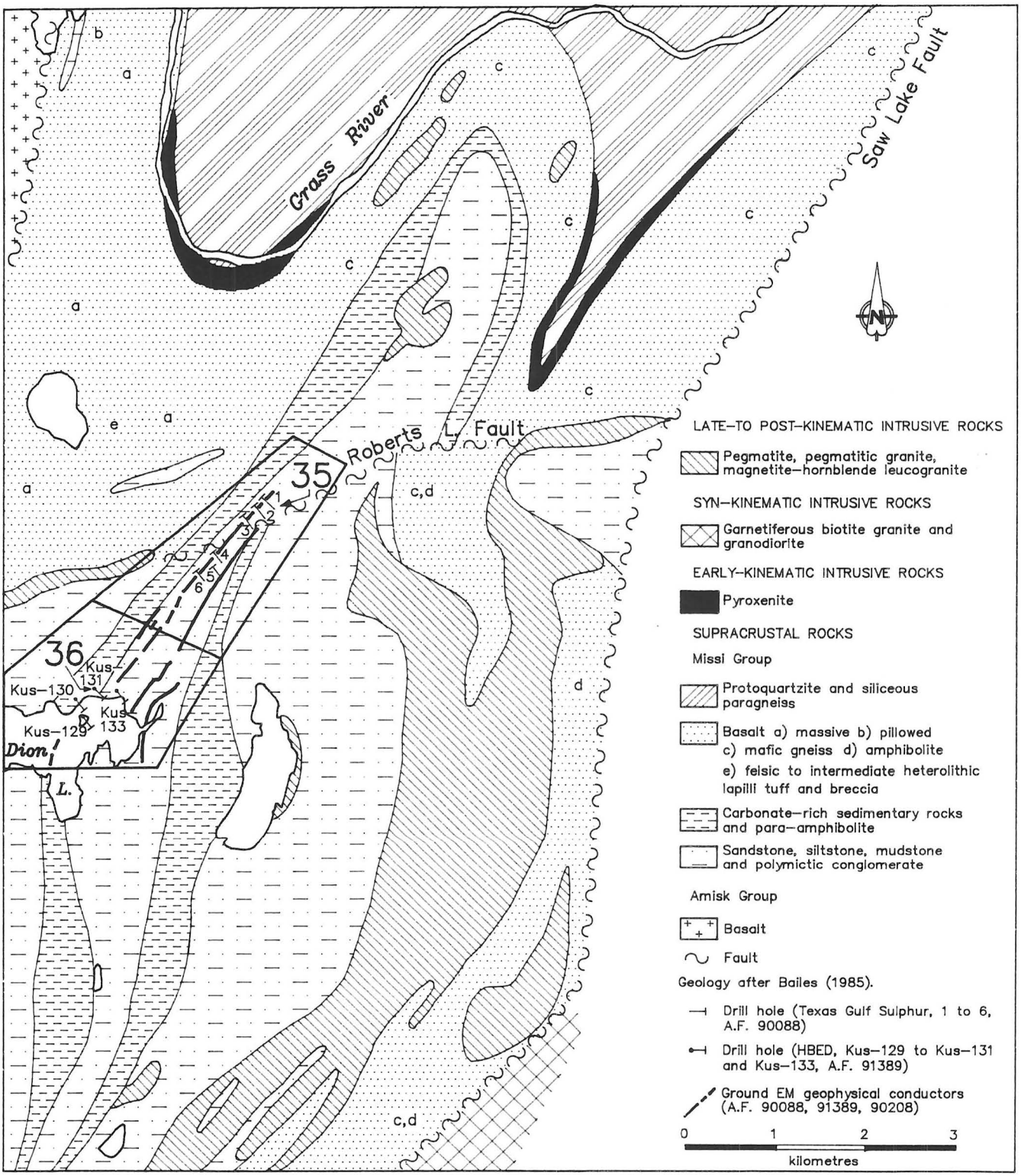


Figure 35-1: Geological setting, ground EM geophysical conductors and drill hole locations, occurrences 35 and 36.

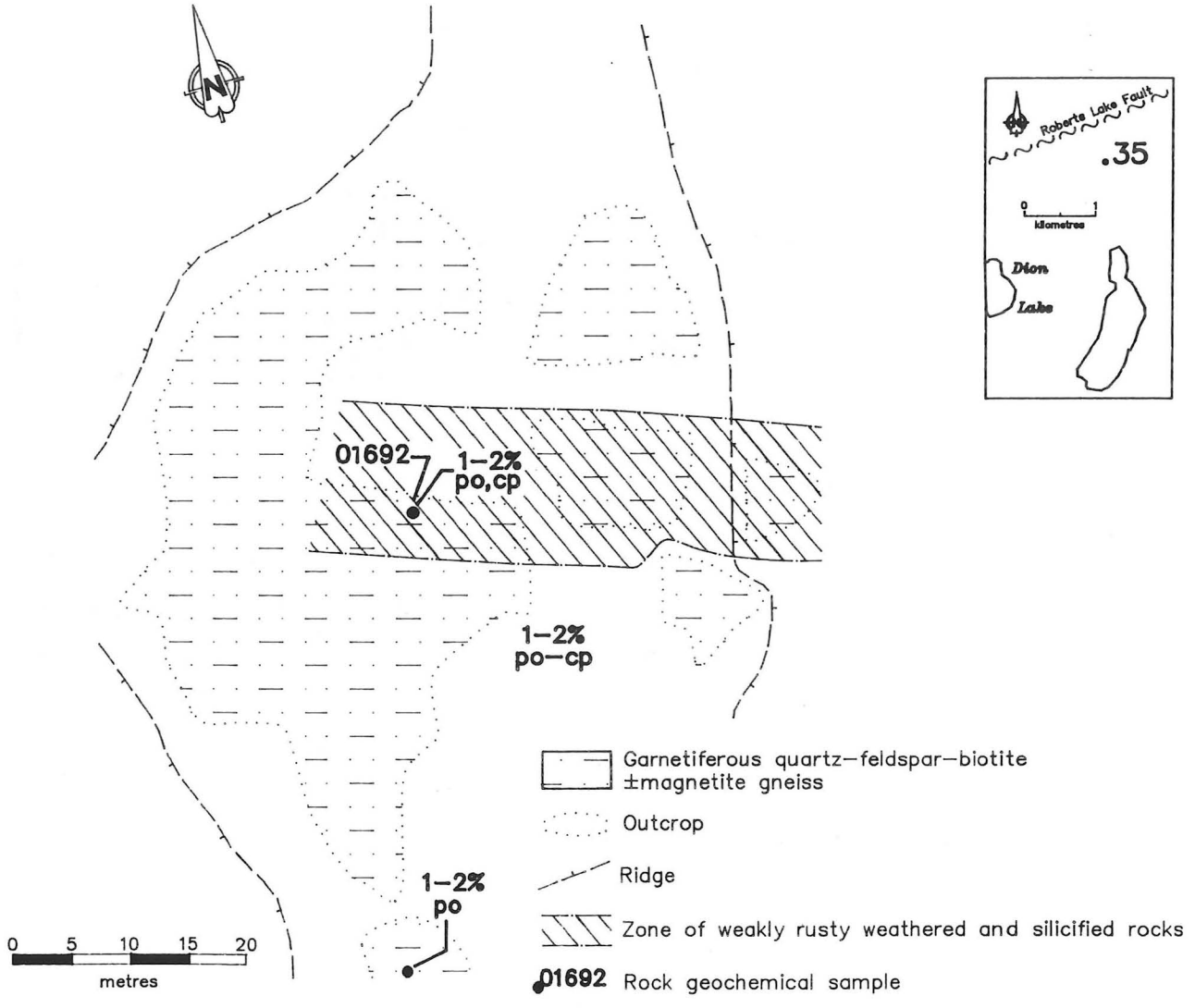


Figure 35-2: Detailed geology and sample location map, occurrence 35.

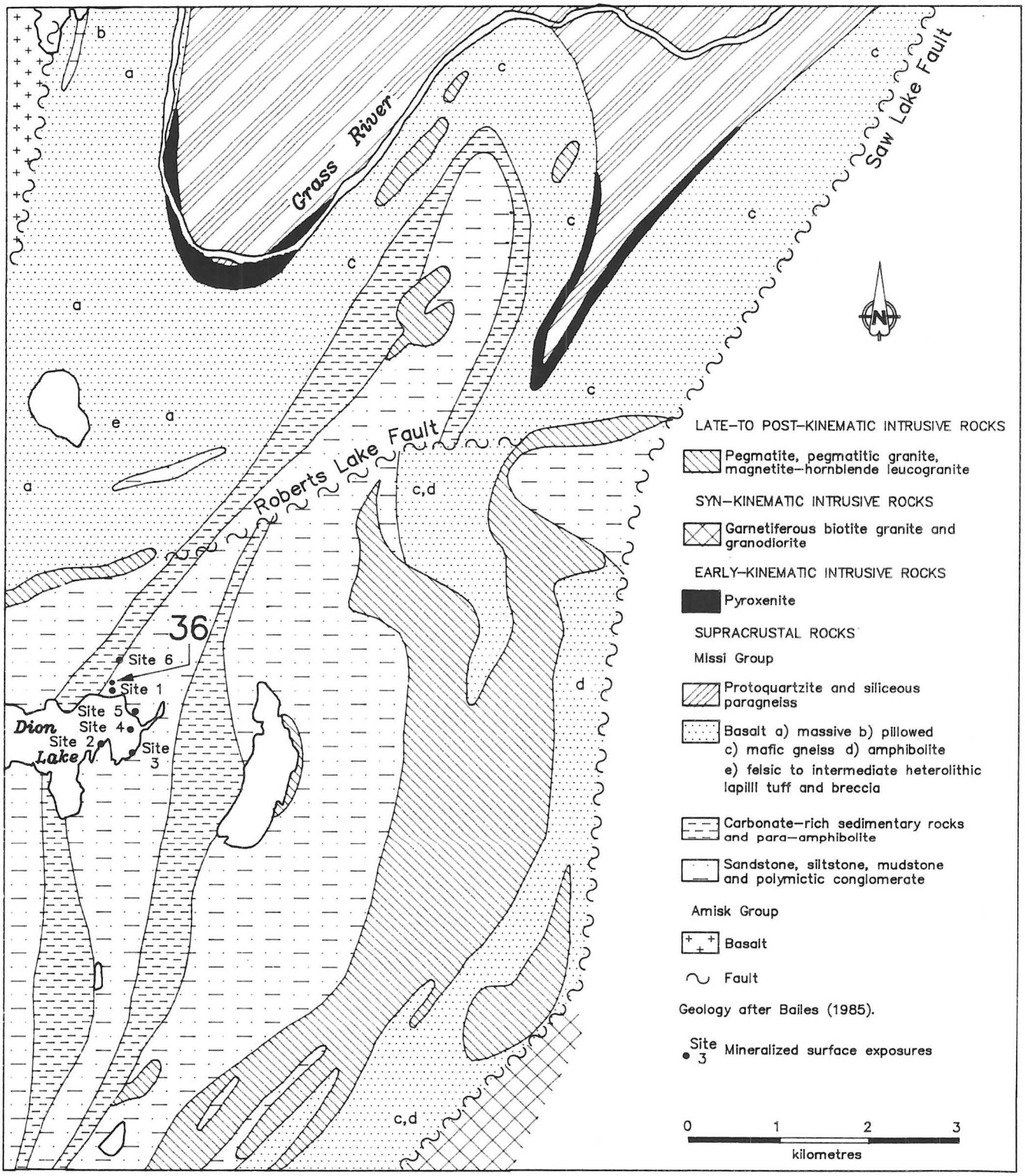


Figure 36-1: Location of mineralized outcrop areas (sites) associated with occurrence 36.

LOCATION: **36**

NAME:

UTM: 6076748N/468970E

ACCESS: Via bush plane to Dion Lake and traverse.

AREA: Dion Lake.

AIRPHOTO: A20169-69

EXPLORATION SUMMARY:

HBED drilled DDH Kus-129, -130, -131 and -133 totalling 315 m on the Kus claims in 1970 (A.F. 91389). The area is covered by claims KLM 1, staked by Charles McLeod in 1989, and KUS 12392, staked by HBED in 1984, and partly open for staking (1989).

GEOLOGICAL SETTING:

The general area of the occurrence is characterized by Missi Group carbonate-rich sedimentary rocks, para-amphibolite, sandstone, siltstone, mudstone and polymictic conglomerate (Fig. 35-1; Bailes, 1985). Diamond drill holes, collared to test ground EM geophysical conductors, intersected chemical sedimentary rocks, quartz porphyry, muscovite-hornblende schist, granodiorite and pegmatite (A.F. 91389). Rusty weathered quartz-feldspar-biotite gneiss, siliceous gneiss and pegmatite have been mapped at six locations in the area of the occurrence (Fig. 36-1, 36-2 through 36-7).

MINERALIZATION:

DDH Kus-129, -130, -131 and -133 intersected graphite-pyrite layers of variable core lengths; these intervals ranged from 0.4 m of 80% graphite, 10% talc and 10% pyrite (DDH Kus-131) to 8.3 m of 10 to 60% graphite and 2% pyrite (DDH Kus-133). The host rocks to these graphite-pyrite layers include quartz porphyry (DDH Kus-133), muscovite-hornblende schist and pegmatite (DDH Kus-130). In core from DDH Kus-130, 4.3 m of 30 to 80% talc, 10 to 30% pyrite, 10 to 40% graphite and trace to 1% chalcopyrite is overlain by 16.1 m of pegmatite with pyrite-coated shears, and is underlain by 21.4 m of granodiorite and pegmatite containing zones of 20 to 50% graphite, 10 to 20% pyrite and trace to 1% chalcopyrite. This intrusion-hosted mineralization is interpreted to represent assimilated graphite-pyrite mineralization (A.F. 91389).

GEOCHEMICAL DATA:

Geochemical and assay data are not reported in the drill logs. Representative chip samples were collected from outcrops at six sites at location 36 (Fig. 36-2). Results are summarized below; multi-element geochemical analyses are presented in Appendix 1.

Site 1: Samples 01639 and 01640 (Fig. 36-2); silicified quartzofeldspathic gneiss with 3 to 4% disseminated pyrite and pyrrhotite. The samples contain low amounts of base and precious metals. Carbonate veins are suspected in sample 01639 due to contents of 5.07% Ca and 134 ppm Sr.

Site 2: Sample 01642 (Fig. 36-3); rusty weathered quartzofeldspathic gneiss intruded by numerous pegmatite dykes. Less than 1% iron sulphide minerals were present in the sample. The sample contains low amounts of base and precious metals.

Site 3: Sample 01643 (Fig. 36-4); rusty weathered quartzofeldspathic gneiss with 1% disseminated pyrite. The sample contains low amounts of base and precious metals.

Site 4: Sample 01644 (Fig. 36-5); rusty weathered siliceous gneiss with no visible sulphide minerals. The sample contains low amounts of base and precious metals. Unexpectedly high Ni (122 ppm), Cr (933 ppm) and V (213 ppm) were obtained from the analysis.

Site 5: Sample 01645 (Fig. 36-6); rusty weathered siliceous gneiss with 5% pyrite and abundant biotite. The sample contains low amounts of base and precious metals.

Site 6: Sample 01646 (Fig. 36-7); brick-red siliceous gneiss with 1 to 3% pyrite and white non-mineralized quartz veinlets. The sample contains low amounts of base and precious metals.

CLASSIFICATION:

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES:

Assessment File 91389
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H.
1985: Geology of the Saw Lake area; Manitoba Energy and Mines, Geological Report GR83-2, 47p.

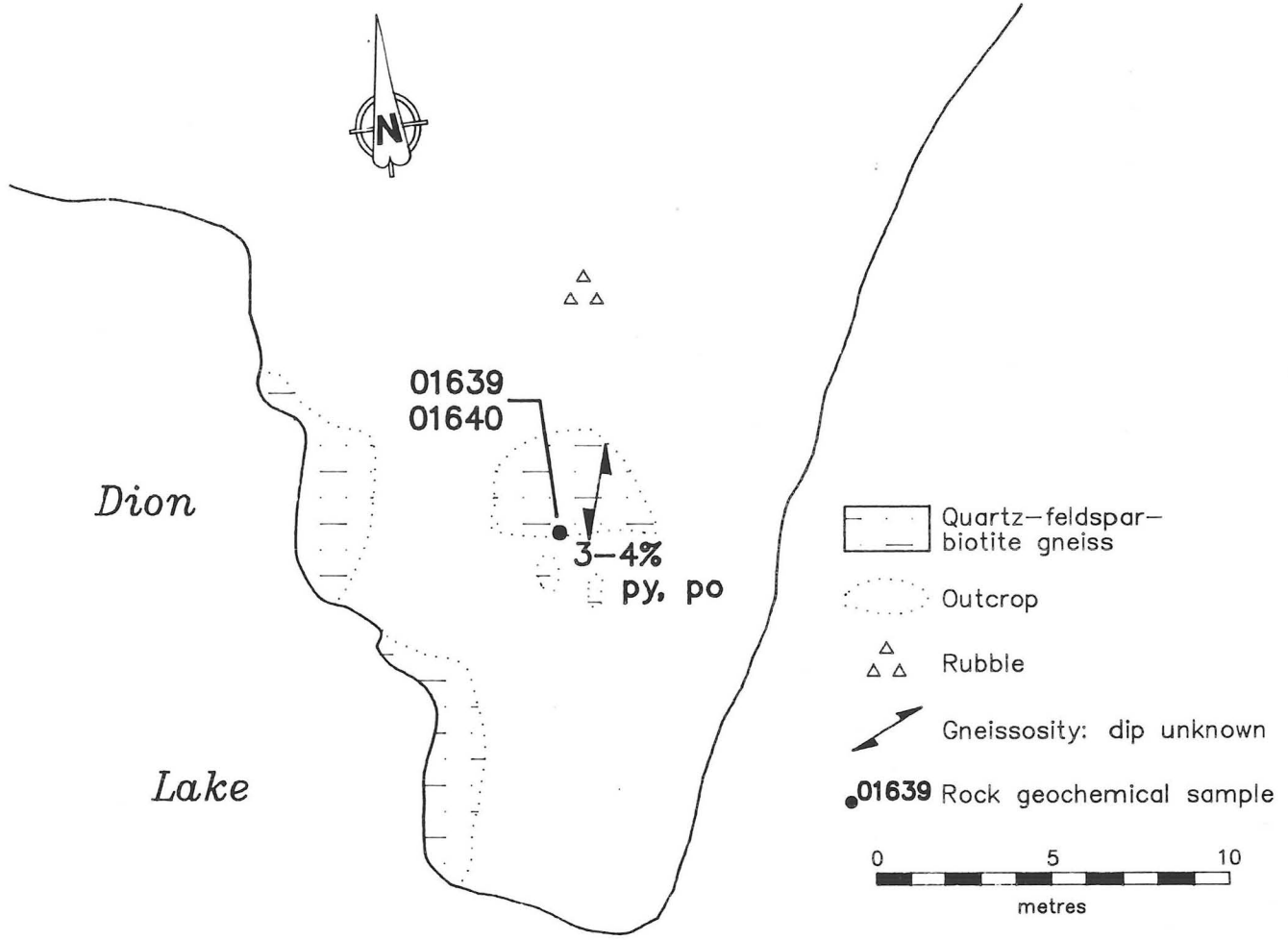


Figure 36-2: Detailed geology and sample location map, site 1, occurrence 36.

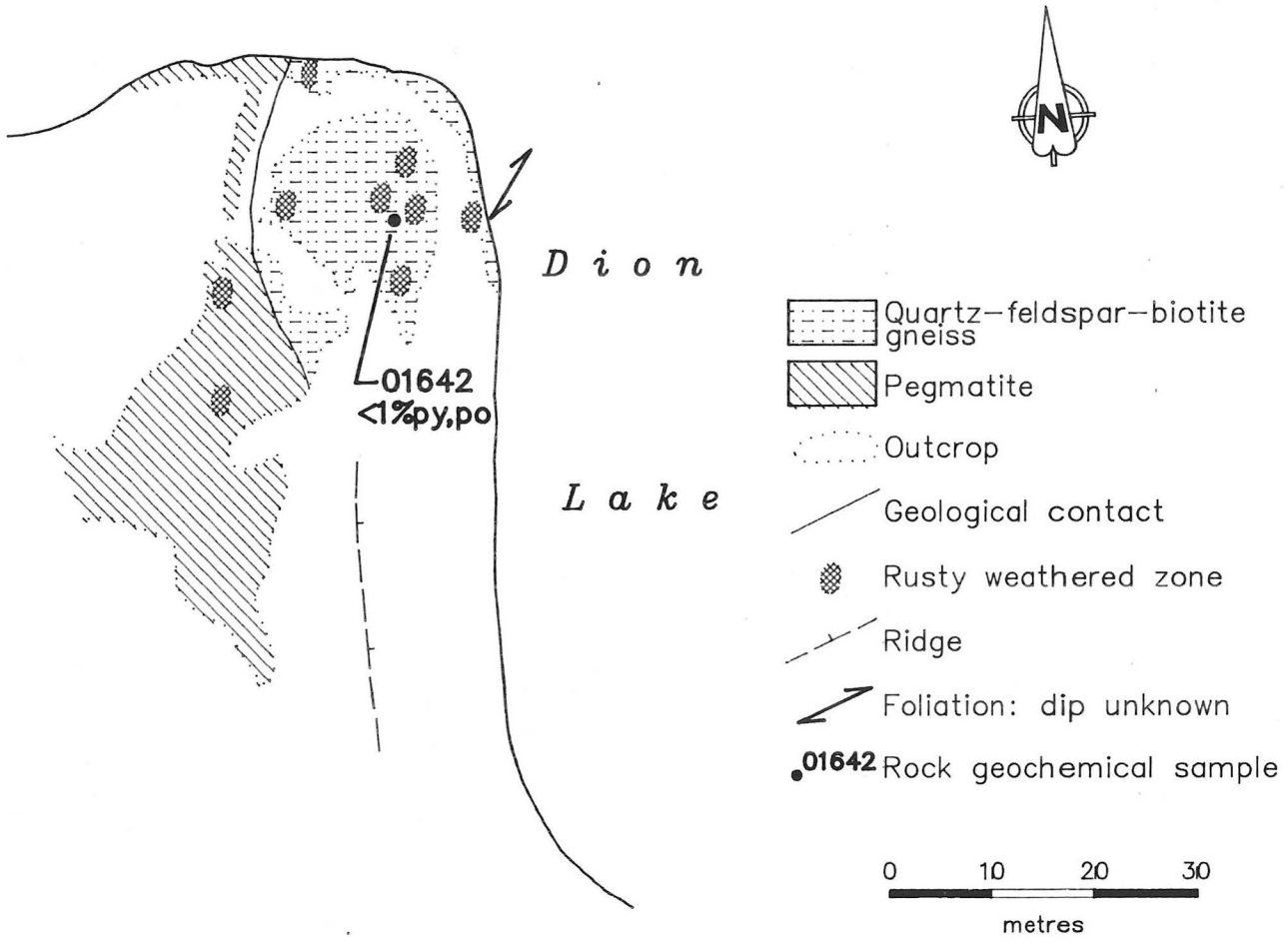


Figure 36-3: Detailed geology and sample location map, site 2, occurrence 36.

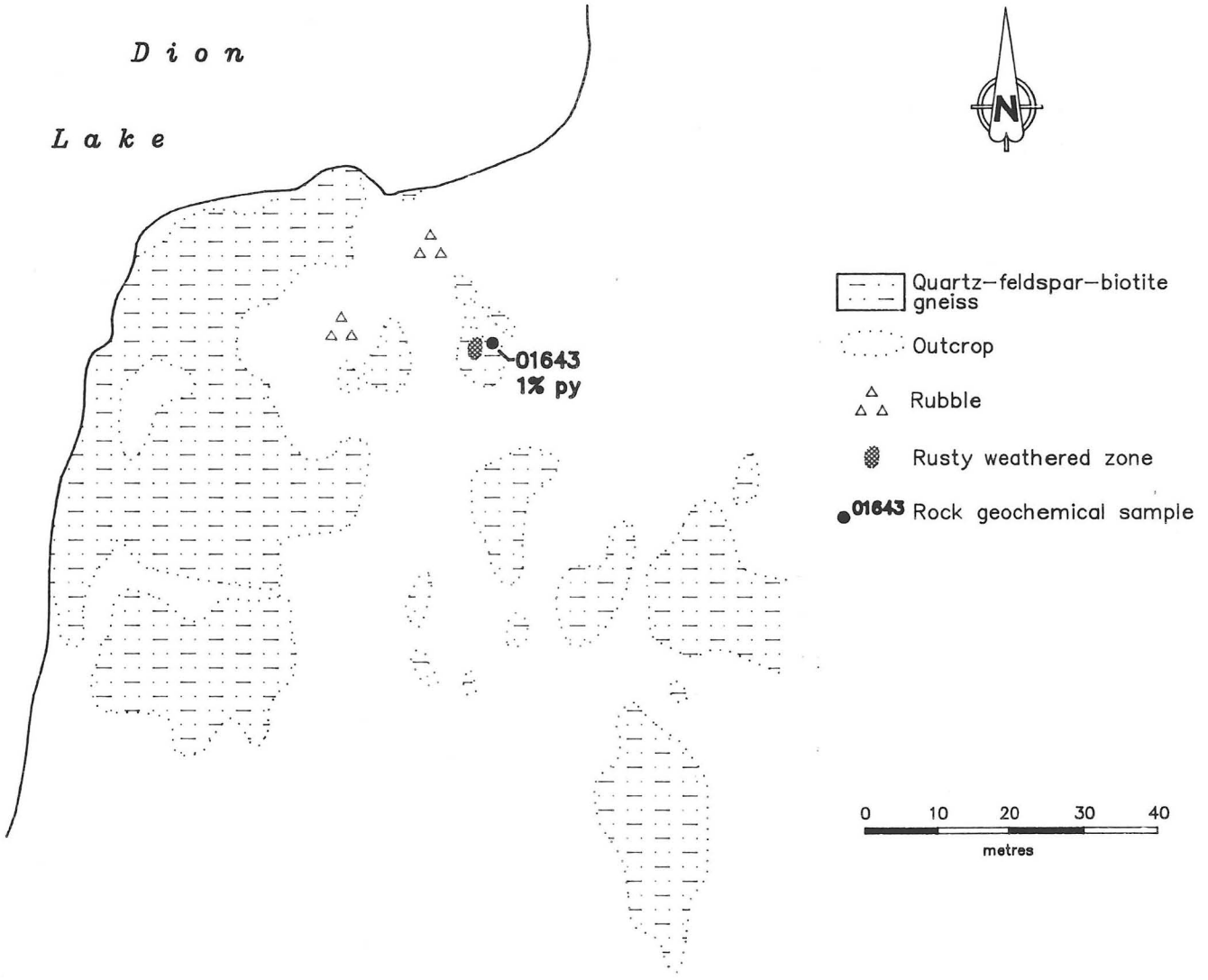


Figure 36-4: Detailed geology and sample location map, site 3, occurrence 36.

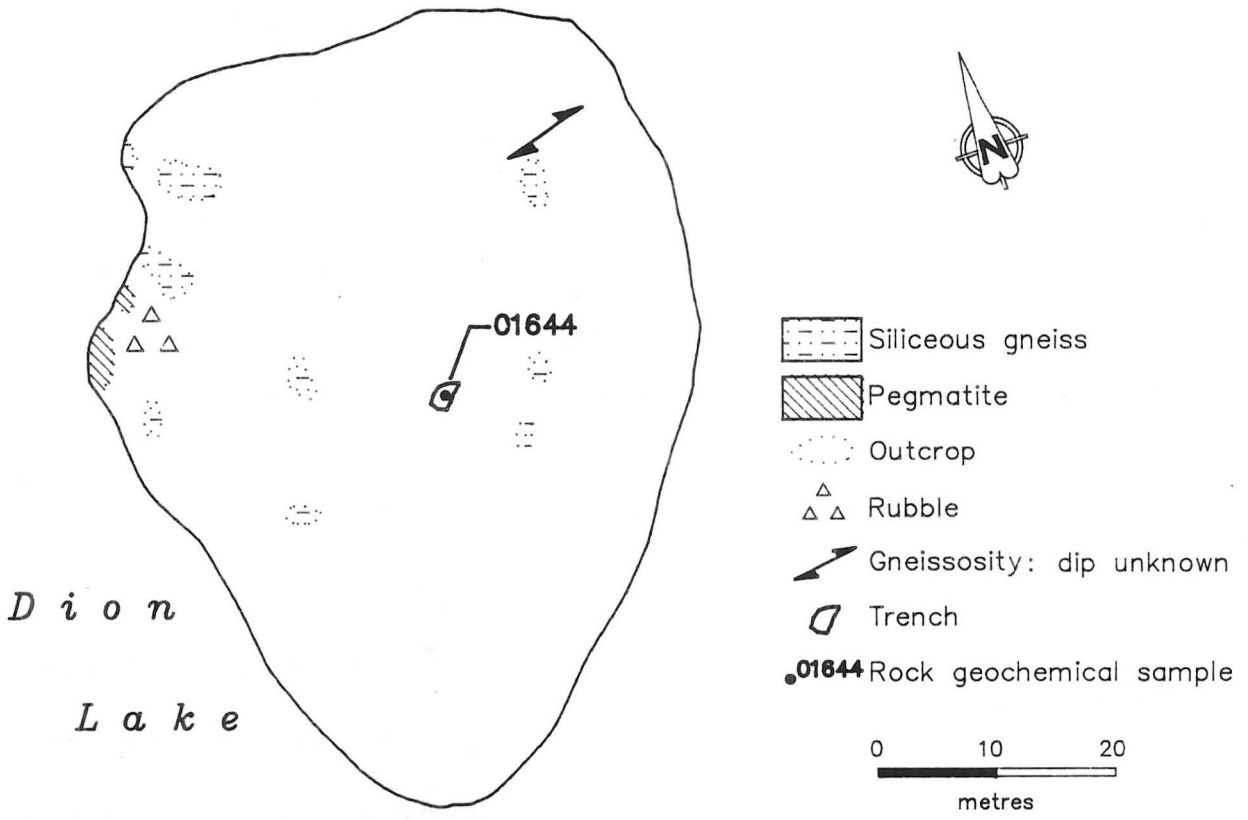


Figure 36-5: Detailed geology and sample location map, site 4, occurrence 36.

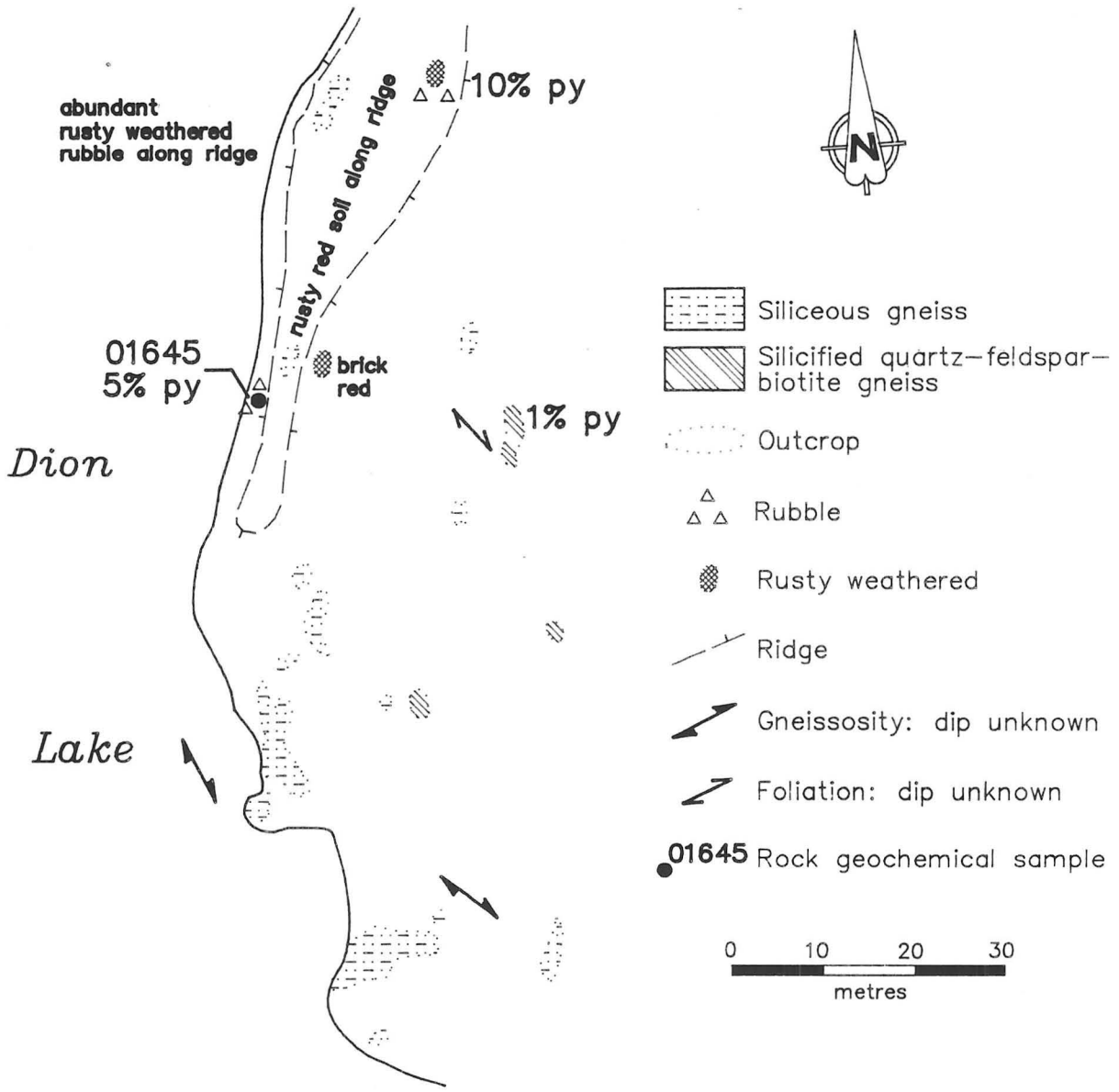


Figure 36-6: Detailed geology and sample location map, site 5, occurrence 36.

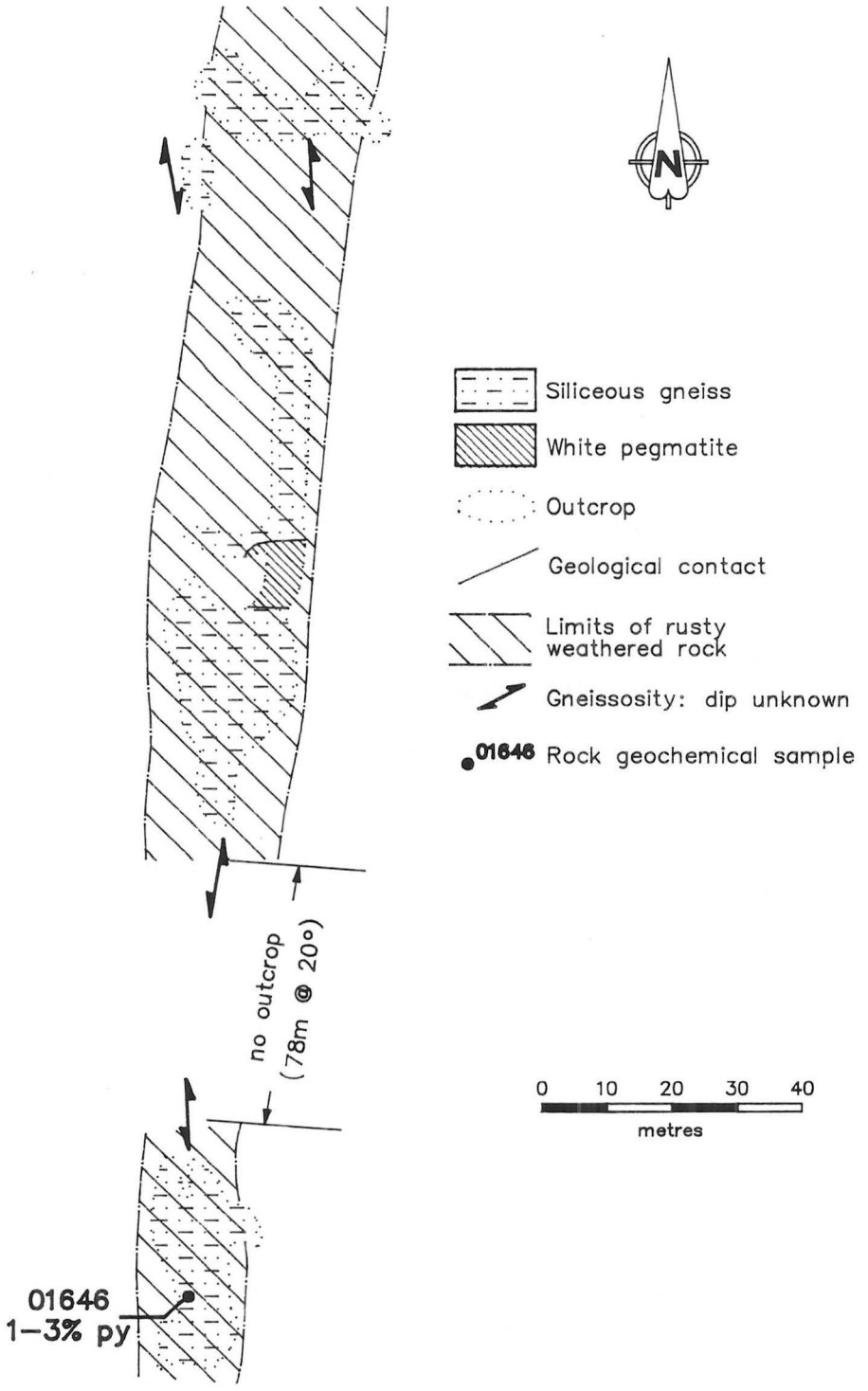


Figure 36-7: Detailed geology and sample location map, site 6, occurrence 36.

APPENDICES

APPENDIX I: MULTI-ELEMENT GEOCHEMICAL ROCK ANALYSES

Rock samples were routinely collected as (1) bulked or composite continuous chip samples over 1 or 2 m intervals from trenches and/or outcrop, (2) single or multiple 1-2 kg samples from representative mineralized zones in trenches and outcrop, or (3) chips or sections of split drill core from specific intervals in a drill hole. These samples were routinely analyzed by Acme Analytical Laboratories Ltd. (Vancouver) by digesting 0.500 g of rock powder with 3 ml of HCl, HNO_3, H_2O (in the proportions 3:1:2) at 95°C for one hour and then diluting to 10 ml with deionized water. This solution was then analyzed by inductively coupled argon plasma-atomic absorption spectrophotometry (ICP-AAS) for 30 elements. The lower limit of detection (LLD) for Au using a 0.500 g sample aliquot is 3 ppm, which was considered too high for the purposes of this study. Accordingly, a LLD of 1 ppb was attained for Au with a preconcentration of a 10 g sample and AAS finish. Assay data for Cu, PB, Zn, Au and Ag obtained from the analytical laboratories of the Geological Services Branch is presented on figures or in tables accompanying individual mineral occurrence descriptions. All other analytical specifications are given below.

Specifications:

1. Au1: Au by ICP on 10 g sample.
2. Au2: Au, Pt and Pd by INAA on 50 g sample.
3. All other analyses by ICP on 0.500 g samples after a HCl, HNO_3, H_2O dissolution in the proportions 3:1:2. This digestion is partial for Mn, Fe, Ca, P, La, Cr, Mg, Ba, Ti, B, W, Na, K, Al.
4. Hg by flameless AAS.

Mineral Occurrence	UTM Coordinates Northing	Easting	Sample Numbers	Mo (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)	Bi (ppm)	Cd (ppm)	Ni (ppm)	Co (ppm)	Fe (%)	Mn (ppm)
63J14-02	6076712	470778	01691	2	213	4	66	2	0.3	57	3	2	1	164	38	3.86	293
63J14-03	6071825	468292	01651	1	15	3	19	3	0.1	2	2	2	1	39	8	0.74	376
			01652	2	53	4	33	1	0.2	8	2	3	1	189	30	0.79	197
			01653	2	18	2	30	1	0.1	7	2	2	1	42	8	2.02	288
			01654	3	74	5	57	1	0.4	2	2	2	1	88	25	2.12	184
			01655	2	17	2	18	1	0.1	2	2	2	1	28	5	0.78	379
63J14-04	6072465	468662	01656	3	46	5	34	1	0.1	2	2	2	1	145	19	2.60	176
			01657	2	23	2	38	1	0.2	19	2	2	1	62	12	1.91	248
63J14-05	6075847	470483	01668	3	202	9	40	2	0.1	137	2	2	1	142	55	3.22	151
			01669	2	65	4	10	1	0.1	43	2	3	1	27	7	2.06	94
63J14-06	6075586	470039	01665	7	65	2	141	1	0.3	135	2	2	1	373	58	3.27	327
			01666	2	37	10	91	1	0.1	4	2	2	1	53	16	3.77	311
			01667	6	148	2	30	1	0.2	2	2	2	1	39	12	3.45	240
			01675	2	384	5	43	1	0.1	3	2	2	1	22	15	5.46	499
			01676	1	55	4	52	1	0.1	5	2	2	1	12	18	7.48	587
			01677	2	145	2	93	3	0.1	9	2	2	1	22	31	4.78	408
			01678	2	698	4	43	8	0.2	9	2	2	1	46	22	4.30	393
			01679	1	499	5	40	1	0.1	6	2	2	1	47	21	4.24	312
			01680	1	508	3	56	2	0.3	5	2	2	1	58	20	5.68	331
			01681	1	370	5	62	31	0.5	7	2	2	1	105	30	3.91	340
			01682	2	259	6	35	1	0.1	6	2	2	1	47	17	3.80	379
			01683	1	96	4	70	2	0.2	5	2	2	1	45	16	4.21	350
			01684	1	184	2	41	1	0.1	3	2	2	1	34	12	3.70	361
			01685	1	192	6	45	12	0.1	3	2	2	1	31	14	3.83	339
			01686	1	478	2	42	1	0.3	4	2	2	1	45	21	4.61	253
			01687	1	249	6	35	1	0.4	7	2	2	1	28	12	5.77	350
			01688	1	263	4	61	3	0.2	3	2	2	1	20	21	6.41	454
			01689	1	249	5	72	1	0.1	4	2	2	1	13	26	6.82	635
63J14-07	6075541	470378	01670	3	104	2	35	1	0.1	19	2	3	1	59	14	3.54	225
			01671	2	250	8	162	1	0.3	211	2	2	1	119	44	4.24	211
			01672	3	203	5	82	1	0.4	91	2	2	1	108	35	4.46	346
			01673	1	138	6	108	1	0.1	28	2	2	1	63	19	2.61	278
			01674	2	170	2	30	1	0.1	10	2	2	1	54	13	2.39	305
63J14-08	6076659	470343	01690	1	42	2	24	3	0.4	7	2	2	1	75	11	1.64	202
63J14-09	6077795	471060	01693	1	20	3	78	1	0.1	2	2	2	1	70	17	5.24	619
63J14-10	6076361	468345	01641	2	24	5	82	2	0.1	6	2	2	1	10	17	1.57	143
63J14-33	6072969	468722	01658	2	46	4	24	1	0.1	204	2	2	1	175	40	1.83	115
			01659	2	20	3	55	1	0.1	2	2	2	1	68	10	2.73	228
			01660	1	20	6	25	1	0.1	2	2	2	1	47	8	1.58	268

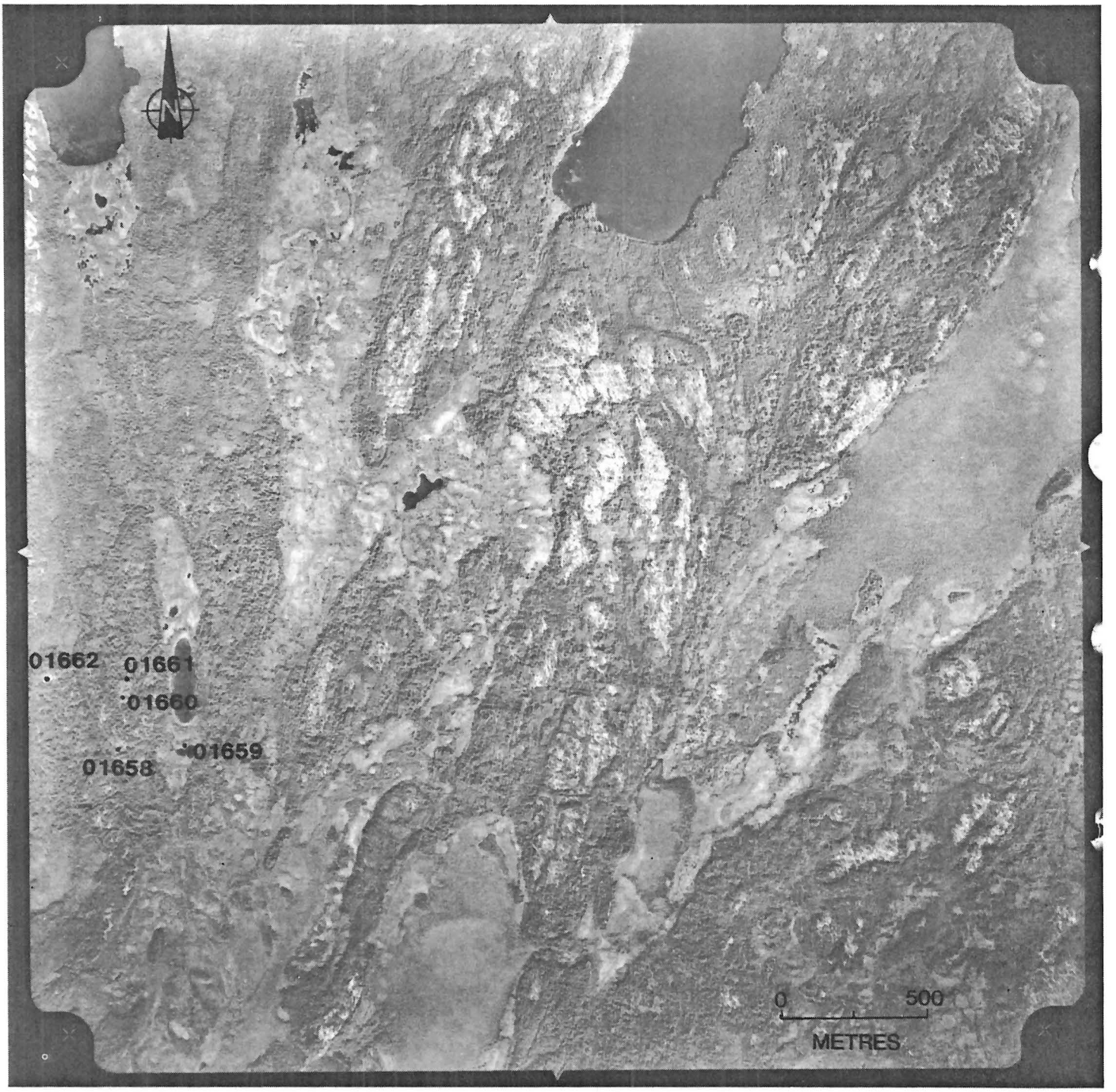
Sample Numbers	Ba (ppm)	B (ppm)	Cr (ppm)	Mg (%)	W (ppm)	U (ppm)	Th (ppm)	P (%)	La (ppm)	V (ppm)	Ti (%)	Na (%)	K (%)	Ca (%)	Sr (ppm)	Al (%)
01691	24	21	104	1.28	3	5	2	0.019	2	189	0.13	0.25	0.08	2.79	33	2.89
01651	10	5	74	0.30	3	5	4	0.084	12	17	0.07	0.24	0.15	19.77	96	1.16
01652	3	5	86	0.23	3	10	4	0.167	14	16	0.05	0.27	0.06	12.85	44	1.36
01653	17	8	84	0.99	2	6	5	0.081	16	23	0.09	0.09	0.02	1.71	46	1.13
01654	35	11	228	0.86	1	8	6	0.062	13	58	0.15	0.63	0.53	8.06	82	3.70
01655	32	5	77	0.36	3	5	5	0.055	12	18	0.08	0.51	0.20	17.02	121	2.94
01656	44	9	68	0.36	2	6	6	0.147	21	25	0.14	0.63	0.18	8.47	125	3.27
01657	10	8	73	0.64	1	7	6	0.129	23	30	0.13	0.09	0.06	2.57	20	0.84
01668	15	12	63	0.81	2	5	1	0.040	2	86	0.03	0.13	0.09	1.81	20	2.93
01669	3	6	27	0.15	1	5	1	0.036	2	23	0.03	0.05	0.03	0.23	5	0.69
01665	94	12	626	1.24	1	11	13	0.385	73	147	0.24	0.08	0.69	2.59	28	1.49
01666	168	18	82	1.50	1	5	7	0.102	28	94	0.28	0.18	1.17	1.92	52	3.24
01667	14	3	13	0.65	18	5	1	0.027	2	180	0.10	0.07	0.13	1.03	15	1.48
01675	7	4	7	0.76	2	5	2	0.090	6	25	0.10	0.02	0.08	0.77	3	1.05
01676	37	6	4	0.87	1	5	3	0.099	15	306	0.20	0.12	0.17	1.54	6	1.39
01677	23	6	5	1.13	10	5	2	0.082	6	253	0.17	0.07	0.15	1.29	10	1.49
01678	30	9	6	0.93	5	5	3	0.040	3	253	0.11	0.30	0.08	4.33	58	3.21
01679	11	9	6	1.34	2	5	1	0.043	2	312	0.15	0.20	0.03	2.27	35	1.96
01680	8	5	19	1.38	1	5	2	0.034	2	378	0.27	0.11	0.02	1.30	26	1.58
01681	49	10	19	1.20	16	5	2	0.034	3	386	0.14	0.12	0.15	1.31	22	1.96
01682	38	28	29	0.97	5	7	2	0.042	3	118	0.16	0.27	0.07	3.33	65	3.00
01683	91	10	55	1.23	1	5	3	0.030	2	213	0.16	0.21	0.39	2.86	36	3.09
01684	15	14	65	1.34	2	5	2	0.036	2	148	0.11	0.22	0.05	3.49	43	2.57
01685	12	6	19	1.04	1	5	2	0.046	3	148	0.12	0.11	0.04	2.06	8	1.08
01686	9	4	8	1.01	1	5	2	0.034	2	411	0.17	0.20	0.04	2.39	21	1.47
01687	12	5	8	0.77	1	5	2	0.058	2	393	0.18	0.22	0.05	3.03	14	1.58
01688	90	6	1	1.41	1	5	3	0.053	3	374	0.24	0.17	0.28	1.51	8	1.47
01689	79	7	6	0.94	2	5	3	0.084	5	230	0.31	0.16	0.39	3.21	16	1.81
01670	56	5	57	0.53	1	5	1	0.085	2	111	0.15	0.02	0.43	0.21	2	0.98
01671	21	25	89	2.60	1	5	2	0.052	3	296	0.27	0.21	0.14	2.75	41	4.64
01672	126	20	80	1.77	2	5	3	0.043	2	218	0.35	0.30	1.23	4.58	107	5.50
01673	7	6	60	1.01	2	6	3	0.048	2	85	0.09	0.06	0.07	3.94	32	2.76
01674	16	10	36	0.56	1	5	2	0.037	2	67	0.15	0.25	0.04	2.90	25	1.56
01690	58	19	229	0.70	1	7	12	0.399	86	41	0.16	0.12	0.25	5.65	236	2.74
01693	122	10	165	1.33	1	5	8	0.099	21	82	0.28	0.09	1.05	0.37	18	1.44
01641	38	13	6	1.26	1	5	2	0.255	9	39	0.19	0.16	0.41	1.26	27	1.41
01658	12	6	90	0.32	1	8	4	0.183	19	38	0.15	0.08	0.07	1.34	18	0.57
01659	17	3	99	1.22	1	6	5	0.150	24	45	0.09	0.11	0.16	1.19	10	1.09
01660	11	5	73	0.47	1	5	5	0.121	21	27	0.12	0.11	0.02	4.30	35	0.61

Mineral Occurrence	UTM Coordinates Northing	Easting	Sample Numbers	Mo (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Au (ppb)	Ag (ppm)	As (ppm)	Sb (ppm)	Bi (ppm)	Cd (ppm)	Ni (ppm)	Co (ppm)	Fe (%)	Mn (ppm)
			01661	2	20	5	36	2	0.1	3	2	2	1	56	9	2.14	248
			01662	3	37	4	25	1	0.3	2	3	2	1	64	8	1.25	274
63J14-35	6078907	470653	01692	1	18	4	66	1	0.1	7	2	2	1	23	19	6.02	407
63J14-36	6076748	468970	01639	1	20	8	94	1	0.1	5	2	2	1	10	13	1.42	138
			01640	2	21	4	125	1	0.1	6	2	2	1	10	9	1.55	100
			01642	3	21	4	118	1	0.1	2	2	2	1	9	5	3.81	404
			01643	3	55	3	20	1	0.1	5	2	2	1	26	10	2.69	155
			01644	2	49	2	105	1	0.2	10	2	4	1	122	24	2.29	239
			01645	4	50	8	22	6	0.1	5	2	2	1	16	4	6.96	370
			01646	3	26	5	20	1	0.1	2	3	2	1	11	1	1.56	59

Sample Numbers	Ba (ppm)	B (ppm)	Cr (ppm)	Mg (%)	W (ppm)	U (ppm)	Th (ppm)	P (%)	La (ppm)	V (ppm)	Ti (%)	Na (%)	K (%)	Ca (%)	Sr (ppm)	Al (%)
01661	42	6	118	0.96	1	5	5	0.106	21	41	0.11	0.18	0.11	2.29	34	1.21
01662	42	6	76	0.35	4	12	7	0.196	22	28	0.12	0.65	0.17	9.31	158	3.35
01692	584	3	17	2.02	1	5	8	0.087	24	155	0.46	0.11	1.60	0.76	19	2.20
01639	78	23	6	0.82	1	5	5	0.195	21	29	0.12	0.36	0.34	5.07	134	3.97
01640	123	24	7	0.87	1	5	5	0.198	25	28	0.06	0.15	0.38	1.60	44	1.74
01642	214	16	6	0.49	1	5	7	0.053	21	16	0.20	0.09	0.71	0.35	7	1.43
01643	23	8	13	0.18	1	5	10	0.090	44	19	0.32	0.05	0.09	0.59	15	0.35
01644	115	27	933	1.10	1	5	3	0.108	9	213	0.22	0.08	1.06	0.25	9	1.57
01645	19	8	11	0.26	3	5	1	0.089	2	10	0.01	0.01	0.08	0.46	16	0.17
01646	16	4	13	0.10	2	5	7	0.005	21	4	0.01	0.02	0.10	0.10	2	0.17

APPENDIX II: ROCK GEOCHEMICAL OUTCROP CHIP SAMPLE LOCATIONS, OCCURRENCES 6 AND 33.

Rock geochemical outcrop chip samples, occurrence 6.



Rock geochemical outcrop chip samples, occurrence 33