

Figure 51-1: Geological setting of Bonny-Castle occurrence.

## LOCATION: 52

NAME: Snow

UTM: 399780E, 6077345N

AREA: approximately 600 m south of southeast side of North Star Lake

ACCESS: via bush plane to North Star Lake, then traverse

AIRPHOTO: MB90034-69

## EXPLORATION SUMMARY

The claims were staked in 1928 by Mr Hjalmer Peterson (Stockwell, 1935). In 1956-57 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame) equipment over the occurrence area (A.F. 90491) and subsequently drilled the conductor at the occurrence (A.F. 90493). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

A cribbed pit and several trenches (Fig. 52-2) were located at the occurrence during the 1993 examination of the prospect. Bedrock is generally only poorly exposed in the excavations.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 52-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Central zone approximately 250 m west of Zaks Fault, a regional brittle structure that separates the Eastern zone basalts (unit J1d) from lithologies of the Central zone (grouped under unit W6b) (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Central zone lithologies are dominated by layered volcanoclastic rocks and minor felsic and mafic volcanic rocks.

The trench locations are shown in Fig. 52-2. The occurrence is underlain by a light medium grey weathering, weakly banded, garnetiferous lithology that may represent an intermediate volcanoclastic rock. Dark green, banded, calcareous amphibolite lenses and layers containing up to 20% garnet porphyroblasts occur within the "volcanoclastic" unit. These show a complex fold pattern with Z-asymmetry. Folded quartz masses without lateral continuity are a minor constituent of this sequence.

## MINERALIZATION

The rock around the cribbed pit consists of limonitic, decrepitated schistose fragments. Ostry (1985) examined the occurrence and indicated that it contains solid to near solid (to 80%) pyrrhotite units. Pyrite occurs as uncommon isometric poikiloblasts. Chalcopyrite is a rare constituent, and occurs as thin fracture fillings.

During the most recent examination of the occurrence, no sulphides were observed and no bedrock is exposed at the cribbed pit location. A folded limonitic zone occurs as a discrete layer within the volcanoclastic

unit NE of the pit (Fig. 52-2). Parts of this unit are moderately chloritic, and it contains up to 5% disseminated pyrrhotite. In the area of the easternmost trench, limonitic overburden suggests that the sulphide-rich layer is approximately 6 m thick. Minor pyrite is present in some places. Stockwell (1935) noted that minor sphalerite was present.

## GEOCHEMICAL DATA

Stockwell (1935) indicated the owner of the property obtained the following values across 3.6 m (12 ft.) of the occurrence: 0.41% Ni, 0.42% Cu, 0.26% Zn, 0.68 g Au/t (0.02 oz. Au/ton).

## CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Disseminated pyrrhotite in possible volcanoclastic rock layer.

## REFERENCES

A.F. 90491, 90493, and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Ostry, G.

1985: Mineral occurrence studies in the North Star Lake area of Manitoba; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, pp. 80-81.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

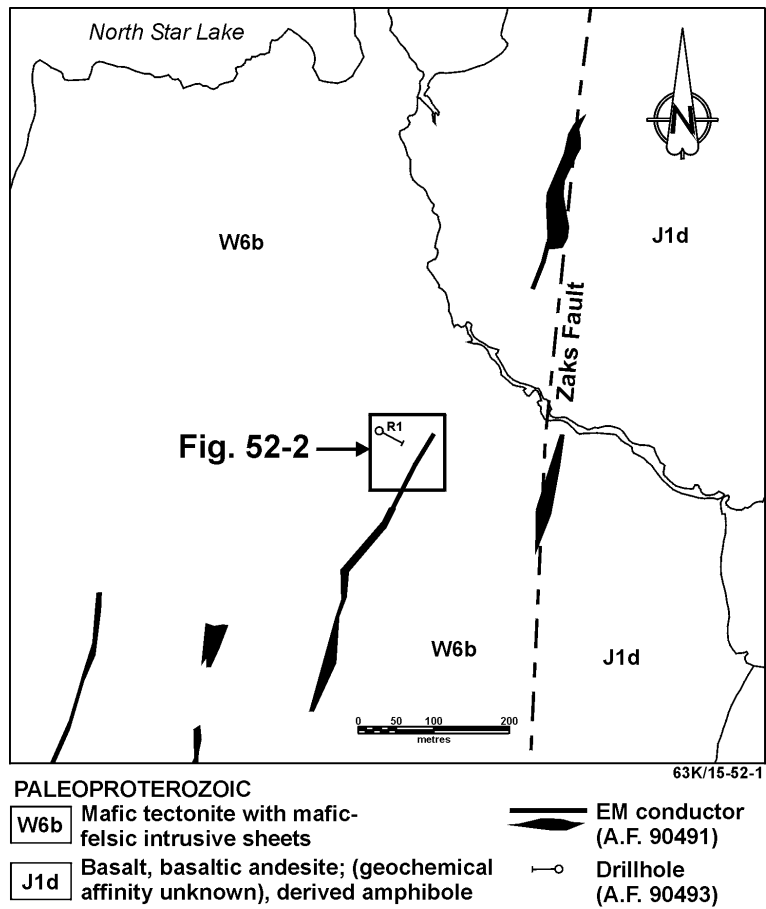


Figure 52-1: Geological setting of Snow occurrence.

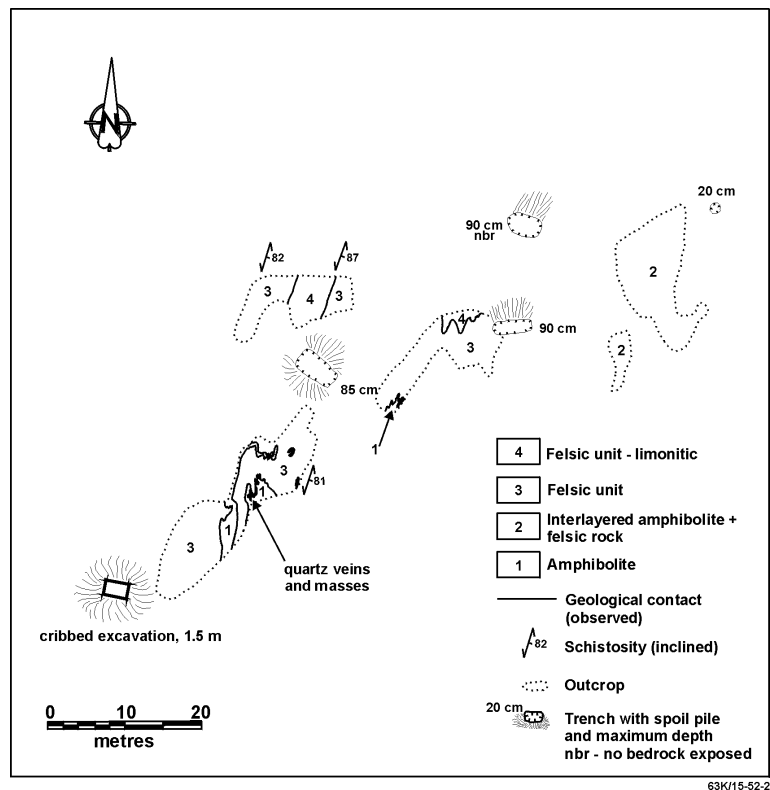


Figure 52-2: Geology and trench locations at Snow occurrence.

**LOCATION: 53**

NAME: Eva

UTM: 399560E, 6076575N

AREA: approximately 1.4 km south of southeast side of North Star Lake

ACCESS: via bush plane to North Star Lake, then traverse

AIRPHOTO: MB90027-203

**EXPLORATION SUMMARY**

This occurrence was staked in 1930 by Mr Oliver Evans (Stockwell, 1935). In 1956-57 Hudson Bay Exploration and Development Company, Limited performed an EM survey (loop-frame system) over the occurrence area, and drilled several of the conductors delineated by this survey (A.F. 90491). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

The trenches indicated by Stockwell (1935) were located in 1992 and are overgrown. Several recently excavated trenches are located to the NNE and SE of the original excavations.

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 53-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Central zone (grouped under unit W6b) of the North Star Lake supracrustal assemblage, and is dominated by layered volcanoclastic and minor felsic and mafic volcanic rocks (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993).

The trench locations are shown in Fig. 53-2. The occurrence is underlain by light medium grey weathering, weakly banded lithology that may be an intermediate volcanoclastic rock. Garnet porphyroblasts to 5 mm and averaging 1 mm are a common accessory in this unit. Dark green amphibolitic units are interlayered with the volcanoclastic rock. Minor folds showing S-asymmetry are present in some of the outcrops. Quartz masses with little strike continuity are a common minor constituent of this sequence.

**MINERALIZATION**

The original focus of exploration at this occurrence appears to have been a quartz vein. The spoil piles around the overgrown trenches contain abundant limonite stained quartz. Stockwell (1935) indicated the

quartz vein exposed in the trenches ranged from 0.5 m (1.5 ft.) to 1.7 m (5.5 ft.) thick, and was "... well mineralized with patches and veinlets of pyrite and ... scattered blebs of pyrrhotite and rare veinlets of sphalerite."

Exposures to the north and NNE of the original trenches contain limonitic areas, and some of the overburden has a red-brown colour due to abundant Fe oxides. Several trenches have been excavated in these areas. The rocks in these areas of the occurrence contain up to 5% disseminated pyrrhotite which appears to be concentrated in the more siliceous bands.

**GEOCHEMICAL DATA**

No assays have been reported for this occurrence.

**CLASSIFICATION**

Vein type deposit; single vein.

**REFERENCES**

A.F. 90491 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

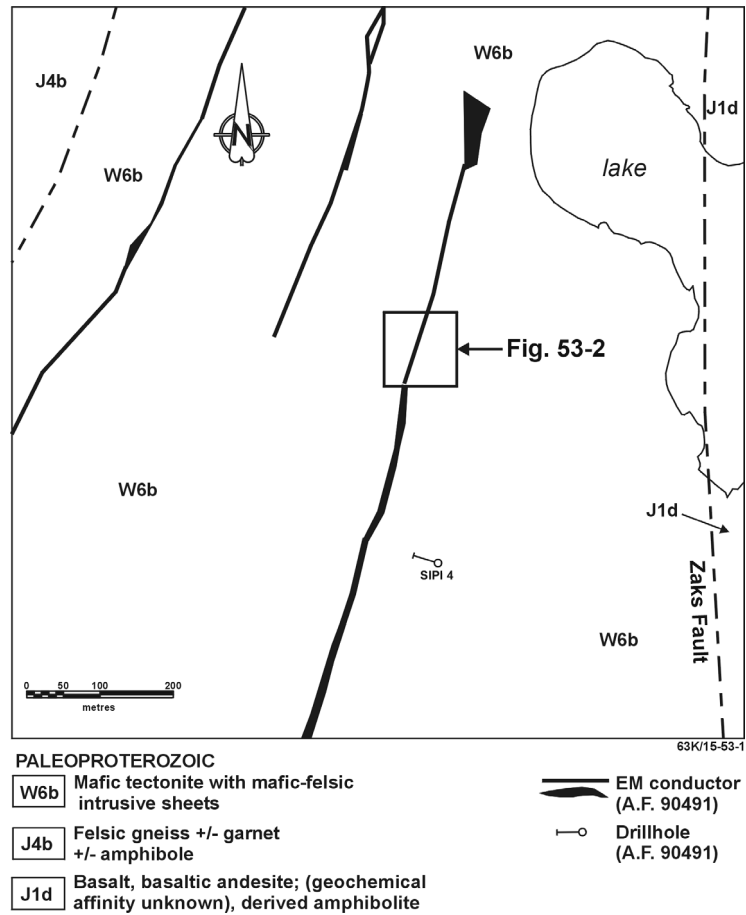


Figure 53-1: Geological setting of Eva occurrence.

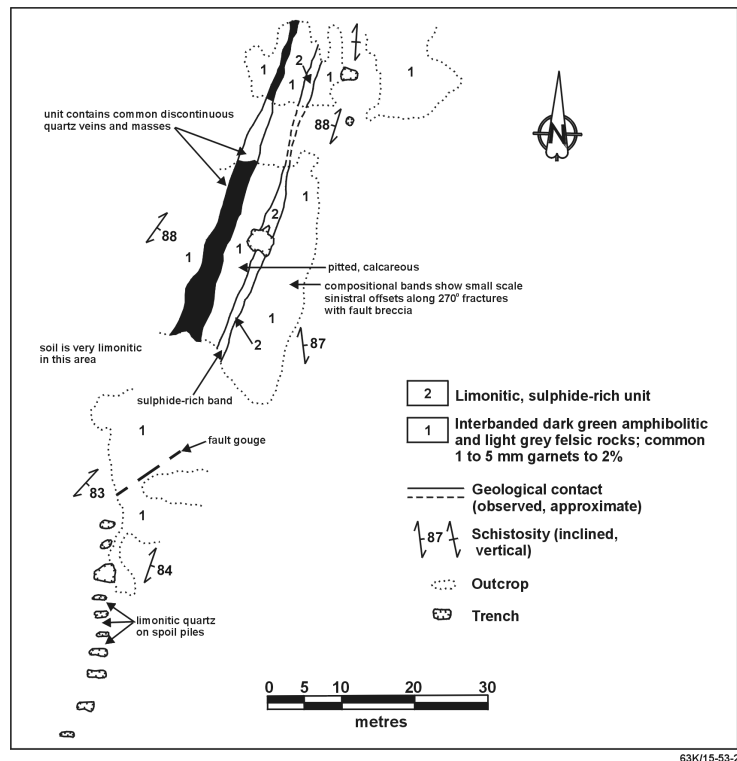


Figure 53-2: Geology and trench locations at Eva occurrence

## LOCATION: 54

NAME: Lon Zone

UTM: 399760E, 6087725N

AREA: approximately 4.3 km SW of Loonhead Lake

ACCESS: via bush plane to Loonhead Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

A property ownership summary for claims in this area is provided in Mineral Inventory File 983. In 1956 and 1957 a ground EM survey using loop-frame equipment was performed over the area by Hudson Bay Exploration and Development (HBED), and some of the conductive responses were drilled in 1957 and 1958 (A.F. 90488, 90489). HBED followed up the results of the previous programmes in 1964 with another drill programme in the Lon Zone area (A.F. 91608). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 54-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Lon Zone is located in the Central zone of the North Star Lake

supracrustal assemblage, dominated by layered volcanoclastic and minor felsic and mafic volcanic rocks (Norquay *et al.*, 1993, 1994a, b). At the occurrence the sequence consists of two rhyolite units (unit J1e), the Lower and Upper rhyolites, separated by a mafic volcanic assemblage (unit J4b) containing banded iron formation (Norquay *et al.*, 1993, 1994b).

The host rocks for the occurrence are described as "quartz-hornblende-feldspar gneisses" with various quantities of accessory minerals (A.F. 91608). "Quartzite" intervals are noted in the lithologic descriptions, and probably represent rhyolitic units. Chlorite and garnet are common accessories, and in some intervals are the dominant components.

The sequence intersected by holes LON-1, -3 and -5 consists of "quartzite" and moderately- to well-foliated quartz-feldspar-biotite±amphibole±garnet±muscovite±chlorite "gneisses" (A.F. 91607, 91608). This "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail of the lithologic descriptions for the drill holes is not sufficient to allow direct correlation with units exposed in outcrop. It appears likely the "quartzite" units described in holes LON-1 and -3 represent rhyolitic flows.

## MINERALIZATION

Mineralized intervals were intersected in holes LON-1, -3 and -5 as follows (A.F. 91607, 91608) (see table below).

Hole No.	Interval	Mineralization
LON-1	30.2-38.1 m (99.0-125.0 ft.)	to 40% pyrite, in quartz-amphibole-chlorite-feldspar "gneiss" to 40% pyrrhotite, to 20% pyrite, in quartz-amphibole-chlorite-feldspar±garnet "gneiss"
	38.1-49.8 m (125.0-163.3 ft.)	
	284.0-285.6 m (931.9-936.9 ft.)	
	285.6-286.5 m (936.9-940.0 ft.)	
LON-3	312.2-313.0 m (1024.2-1026.8 ft.)	"near solid" mineralization, to 50% pyrrhotite, "good" chalcopyrite and sphalerite, in quartz-feldspar-biotite-amphibole-muscovite "gneiss"
	313.5-315.3 m (1028.6-1034.4 ft.)	
LON-5	338.8-340.3 m (1111.7-1116.6 ft.)	minor to "near solid" mineralization, to 3% chalcopyrite, to 3.5% sphalerite, to 25% pyrrhotite, in quartz-feldspar-biotite-muscovite and amphibole-biotite "gneiss"

Fedikow (1978) examined mineralized drill core from the occurrence and provided the following description. "The sphalerite ... occurs as podiform masses or void fillings while chalcopyrite occurs as disseminations and/or stringers. In this hole (LON-1) Zn>Cu with (up to) 15% sphalerite and 5% chalcopyrite. The sulphide mineralization is irregular and is present over an approximately 1.25 m (interval) in the core." No mineralization is exposed in outcrop.

## GEOCHEMICAL DATA

No assays have been reported in the non-confidential assessment files submitted for this occurrence. Mineral Inventory File 983 indicates E & B Explorations Ltd. followed up previous drill results that had intersected a mineralized zone up to 3.9 m thick containing 1.00-8.75% Cu, and 6.1-9.0% Zn. One of their drill holes intersected a 2.2 m section grading 4.52% Cu, 8.15% Zn, 44.23 g Ag/t, and 0.93 g Au/t. Subsequent work delineated a 226 860 t deposit grading 2.51% Cu, 4.82% Zn,

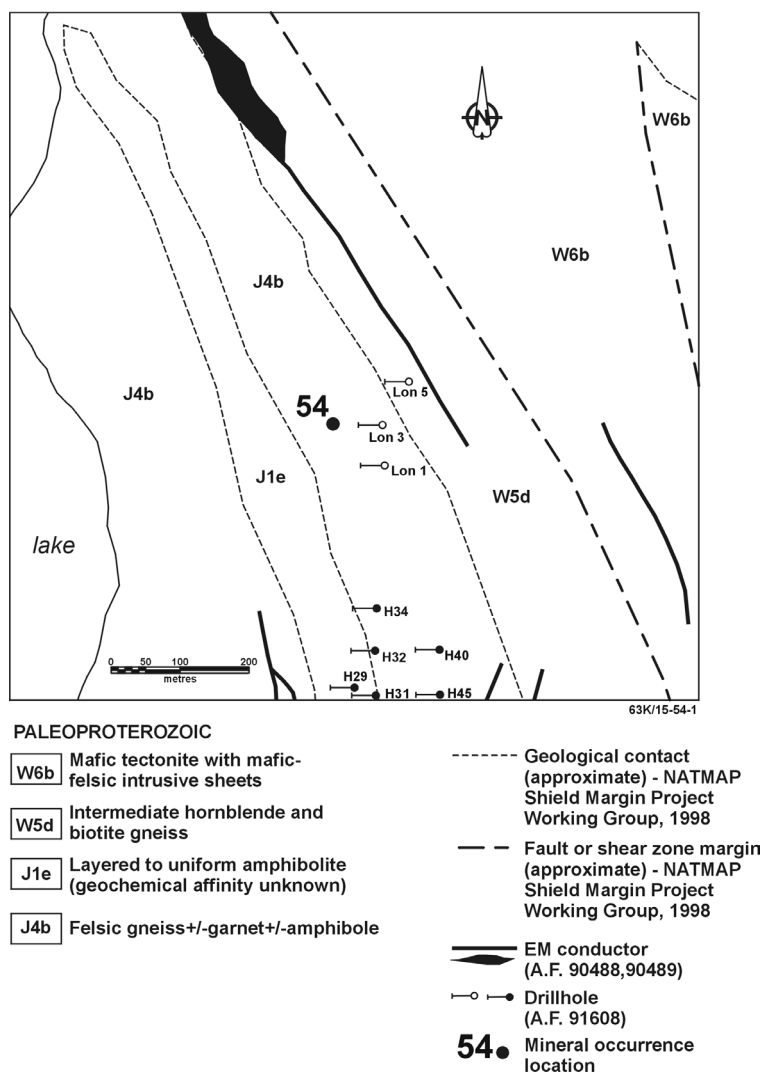


Figure 54-1: Geological setting of Lon Zone.

20.78 g Ag/t, and 0.55 g Au/t over an average thickness of 2.0 m to a depth of 366 m (November 1981, Vancouver Stock Exchange filing statement in Manitoba Mines Branch, Corporation File, Bar Resources Limited). It is unclear if these results were obtained from the Lon Zone.

## CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. The rocks associated with this occurrence show evidence of pervasive hydrothermal alteration and exhalative activity (chloritic and highly garnetiferous areas), but no well defined associated hydrothermal alteration zone has been delineated.

## REFERENCES

- A.F. 90488, 90489, 91607, 91608, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Fedikow, M.A.F.
- 1978: Notes and observations from H.B.E.D. D.D.H. LON #1 – LON #5; Manitoba Industry, Trade and Mines, personal notes.

Mineral Inventory File 983, Manitoba Industry, Trade and Mines

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

## LOCATION: 55

NAME: Martell (Wood) Lake occurrence

UTM: 394410E, 6095375N

AREA: approximately 300 m W of west shore of Martell (Wood) Lake

ACCESS: via bush plane to Martell (Wood) Lake, then traverse

AIRPHOTO: MB90026-42

## EXPLORATION SUMMARY

Robertson (1950, 1953) indicated a gold occurrence along the west side of Martell (Wood) Lake. It was also mentioned by Gale and Ostry (1984), but the workings associated with this occurrence were not located until 1987 (Ostry, 1987). An HLEM (MaxMin II) survey was carried out for Granges Exploration AB along the NE side of Martell Lake in 1984 (A.F. 92663). In 1986 and 1987 Noko Resources Incorporated undertook prospecting, geological mapping, soil and rock geochemical surveys in the area. Several shallow holes were drilled by Noko in 1987 to test the extension of the previously trenched veins (A.F. 93707), and mineralization encountered during the 1987 programme (A.F. 93720).

Seven trenches and mineralized areas were located by Ostry (1987), and the occurrence description is largely taken from his account.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 55-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Dow Lake-Martell Lake area marks the intersection of three 1.92-1.88 Ga juxtaposed terranes: the Elbow-Athapap back-arc basin floor, the Northeast Reed ocean floor basalt, and screens of volcanic arc related basalt and andesite bounded by two panels of ocean floor rocks. Metasedimentary rocks with minor metavolcanic units belonging to the Missi and Burntwood suites form a significant portion of the underlying rocks. The structure in this area is dominated by large folds, thrust faults and shear zones that separate the various assemblages (Zwanzig, 1996 a,b). The supracrustal assemblage has been intruded by a series of magmatic arc-related (1.83-1.87 Ga) and synkinematic (<1.82 Ga) intrusions.

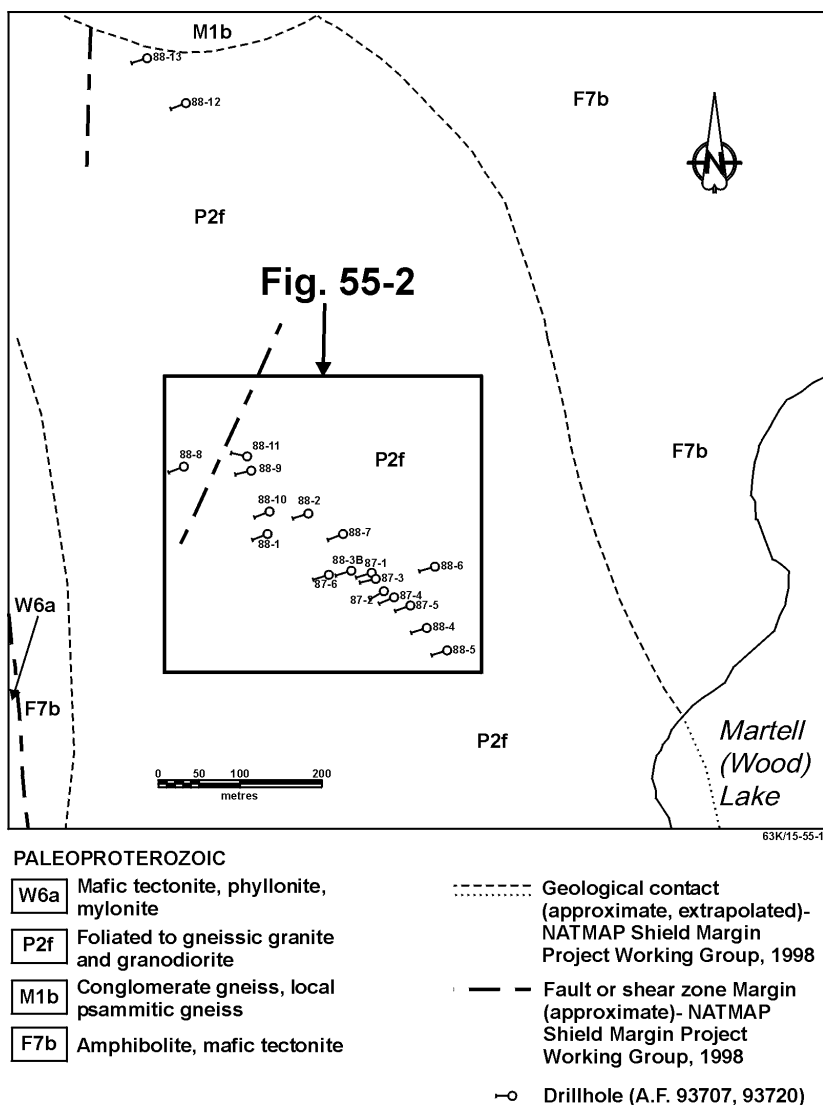


Figure 55-1: Geological setting of Wood (Martell) Lake occurrence.



Trench locations are shown in Fig. 55-2. The occurrence is located within the central part of an arc related granodioritic to granitic augen gneiss (unit P9f). The gneiss is bounded to the east and west by massive to layered amphibolite (unit F7b) (Ostry, 1987). The augen gneiss contains rounded feldspar porphyroclasts. West of Martell Lake, porphyry consisting of 20% feldspar porphyroblasts to 7 mm in a fine-grained matrix makes up the least deformed part of the granodioritic sheet. Patchy potassic alteration occurs west of Martell Lake just east of the porphyritic zone (Zwanzig, 1996).

## MINERALIZATION

The trenches expose mineralized quartz veins along a strike length of approximately 125 m. Individual veins are <1 m thick, and they appear to form an irregular network of individual and composite veins that crosscut the gneissosity. A second vein that does not outcrop was intersected by hole 87-6 NW of the trenches (A.F. 93707). The veins exposed at surface contain abundant wallrock fragments. Arsenopyrite is the dominant sulphide in the quartz veins and occurs in a variety of habits. It is the only sulphide that is also present in the gneiss. Galena, sphalerite, pyrite, pyrrhotite, chalcopyrite and

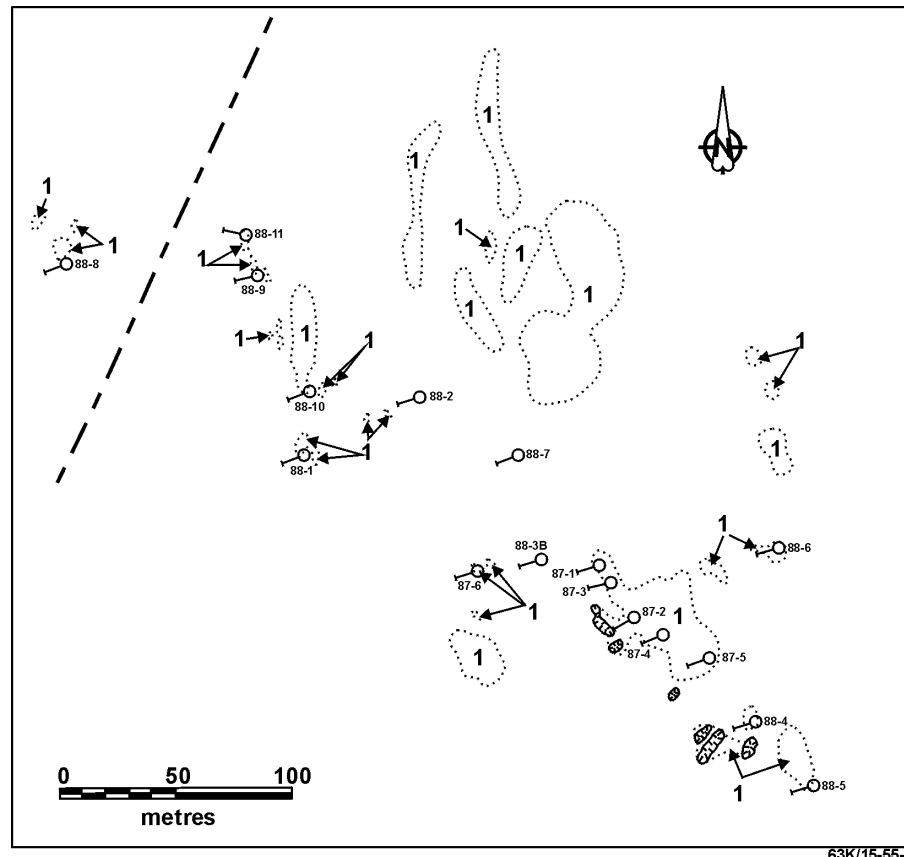
possibly gahnite are minor accessories. Patchy pink (K-feldspar?) alteration occurs at the margins of the quartz veins.

The quartz veins occupy late structural sites that postdate development of the regional gneissosity/lineation. They occupy extension fractures in pink gneiss and augen gneiss and have been affected by a post mineralization deformation event that remobilized the sulphides.

## GEOCHEMICAL DATA

Noko Resources Inc. obtained anomalous geochemical values from the vein exposed in the trenches and intersected by the 1987 and 1988 drill holes (A.F. 93707, 93720). The following ranges were returned:

Au	<5 to >10 000 ppb
Ag	<0.2 to 46.0 ppm
As	5 to >10 000 ppm
Cu	<1 to 163 ppm
Ni	<1 to 86 ppm
Pb	20 to 228 ppm
Zn	<1 to 5450 ppm



63K/15-55-2

- |  |  |
|--|--|
| <p>1 Quartz-feldspar-biotite-sericite gneiss<br/>medium- to coarse-grained, composite<br/>feldspar augen gneiss and fine- to<br/>medium-grained garnetiferous gneiss</p> | <p>— Fault</p> <p>○ Outcrop</p> <p>○ Drillhole<br/>(A.F. 93707, 93720)</p> <p>— Trench</p> |
|--|--|

Figure 55-2: Trench and drillhole locations at Wood (Martell) Lake occurrence.

Assays returned gold values ranging from 0.104-5.000 g/t (0.003-0.146 oz./ton).

Ostry (1987) obtained the following assays from grab samples:

1.14 to 32.3 g Au/t	grab samples from four trenches
nil to 3.53 g Au/t	grab samples from other mineralized areas at the occurrence

## CLASSIFICATION

Vein type deposit; stockwork.

## REFERENCES

A.F. 92663 93707, and 93720; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Gale, G.H. and Ostry, G.

1984: Stratabound gold mineralization in the Kiseynew gneiss terrain; in Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities 1987, pp. 73-80.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Ostry, G.

1987: Mineral investigations in the Kiseynew Gneiss terrain; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities 1987, pp. 87-90.

Robertson, D.S.

1950: Batty Lake, Manitoba; Geological Survey of Canada, Map 1006A.

1953: Batty Lake Map-Area, Manitoba; Geological Survey of Canada, Memoir 271, 55 pp.

Zwanzig, H.V.

1996a: Geology of the Dow Lake-Martell Lake area (parts of 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

## LOCATION: 56

NAME:

UTM: 378060E 6072345N

AREA: east side of Grass River near south end of Elbow Lake

ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse

AIRPHOTO: MB90025-123

## EXPLORATION SUMMARY

Stockwell (1935) indicates that a small amount of trenching had been undertaken south of the Murray occurrence (Location 2, this volume). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

Two trenches were located at this occurrence, but they appear to be fairly recent excavations that postdate Stockwell's investigations of the area.

## GEOLOGICAL SETTING

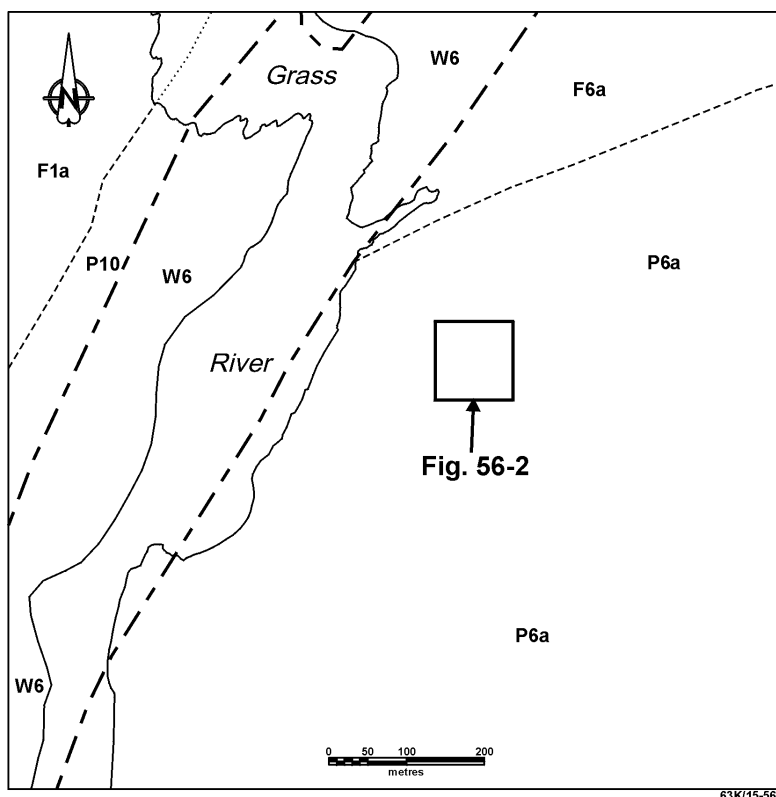
The geological unit designations indicated on the geological setting map (Fig. 56-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located within the massive, poorly-foliated Elbow Lake tonalite (unit P6a) (Syme, 1990, 1991), exposed along the east side of the Grass River (Fig. 56-1). Fine-grained mafic xenoliths are common within this intrusion. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) occurs approximately 200 m west of the occurrence.

The trench locations are shown in Fig. 56-2. At the occurrence the tonalite is massive, unfoliated, and consists of a medium-grained granitic rock containing 20% quartz, 15% biotite and 65% feldspar. Epidote is common as a fracture coating. The intrusion commonly contains xenoliths of foliated, fine-grained mafic rock (probably volcanic) and magnetite-bearing Fe-formation.

## MINERALIZATION

Two quartz veins are exposed in trenches at the occurrence (Fig. 56-2). The main quartz vein is located at the contact of a large (>20 m) foliated mafic xenolith within the host tonalite. The milky quartz vein is up to 55 cm thick and contains up to 5% brown-weathering



### PALEOPROTEROZOIC

**W6** Tectonite, phyllonite, mylonite

**P10** Dykes and dyke complexes

**P6a** Tonalite

**F6a** Gabbro, gabbro pegmatite, leucogabbro, wispy-layered gabbro

**F1a** McDougalls Point pillowed and massive basalt, diabase?

----- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998

— — Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 56-1: Geological setting of Murray South occurrence.

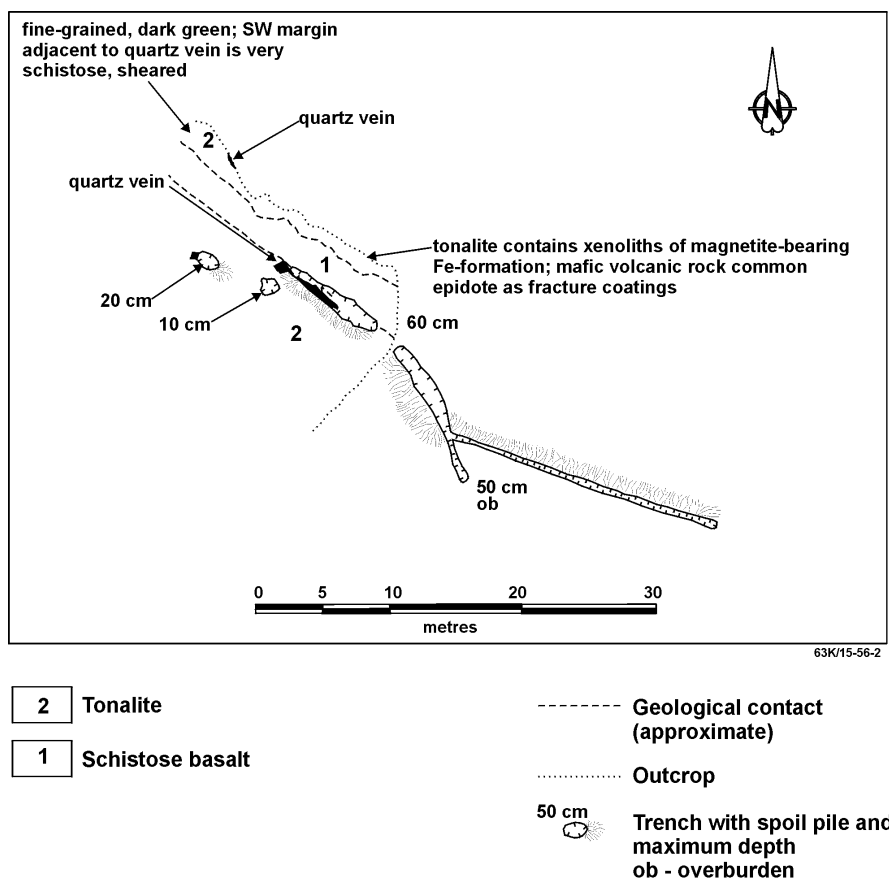


Figure 56-2: Geology and trench locations at Murray South occurrence.

carbonate. No sulphides were noted in the quartz. A white phyllosilicate (muscovite?) occurs as a fracture coating in the quartz. Tonalite and chloritic mafic fragments are common constituents of the vein.

The second vein, approximately 20 cm thick, is also located at the margin of a mafic block. It is exposed over a strike length of less than a metre.

#### GEOCHEMICAL DATA

No assays have been reported for this occurrence.

#### CLASSIFICATION

Vein type deposit; multiple veins or lenses.

#### REFERENCES

A.F. 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

## LOCATION: 57

NAME: Koscielny Lake

UTM: 374090E, 6094935N

AREA: near NE end of lake approximately 2.7 km NE of King Lake, at the north end of Koscielny Lake

ACCESS: via bush plane

AIRPHOTO: MB90025-191

## EXPLORATION SUMMARY

Several quartz veins occur in the eastern area of Koscielny Lake (Fig. 57-1). This vein has been trenched at a number of locations (A.F. 90520) (Fig. 57-2) and, apparently, some encouraging gold values were obtained. The vein was further evaluated by 24 shallow (maximum 50 m (165 ft.), but most less than 15 m (50 ft.)) drill holes (Fig. 57-2) by A.L. Parres in 1950 (A.F. 90520). Schledewitz (1993b) indicates a sulphide (pyrite, pyrrhotite and minor chalcopyrite) occurrence in this area.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 57-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates the area is underlain by hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric interme-

diate dykes and sills (unit P10a). This sequence has been intruded by well foliated, medium- to coarse-grained gabbro (unit P2a) and quartz-phyric biotite-hornblende tonalite to quartz diorite (unit P6d) of the Webb Lake plutonic complex.

## MINERALIZATION

Trench and drill hole locations are shown in Fig. 57-2. The lithologic descriptions of the drill core suggest the vein is hosted dominantly by well foliated medium- to coarse-grained gabbro. Lesser quantities of mafic volcanic rocks and magnetite bearing Fe-formation were also intersected. Thin quartz veins appear to be fairly common in this sequence.

Mineralized quartz containing pyrite and visible gold (V.G. in the lithologic descriptions) was intersected in the following holes (A.F. 90520):

No. 5	3.7-4.0 m (12-13 ft.)
No. 6	11.1-11.8 m (36.5-38.7 ft.)
No. 7	12.5-13.7 m (41.0-45.0 ft.)
No. 9	4.6-6.1 m (15.0-20.0 ft.)
No. 14	5.8-7.6 m (19.0-25.0 ft.)
No. 17	2.7-4.0 m (9.0-13.0 ft.)

## GEOCHEMICAL DATA

No assay results have been reported for this occurrence.

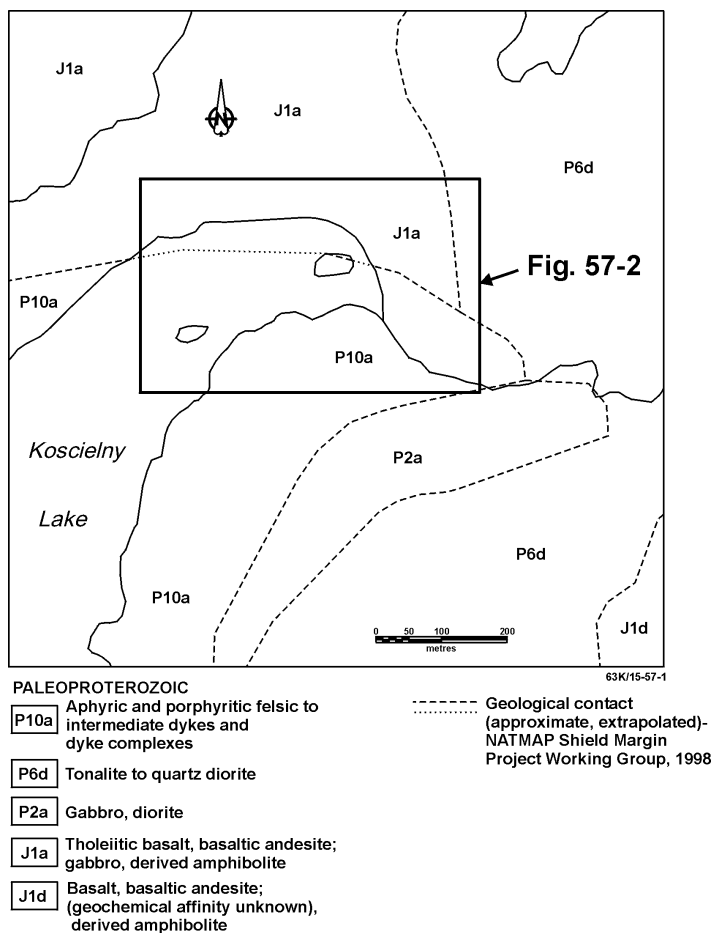
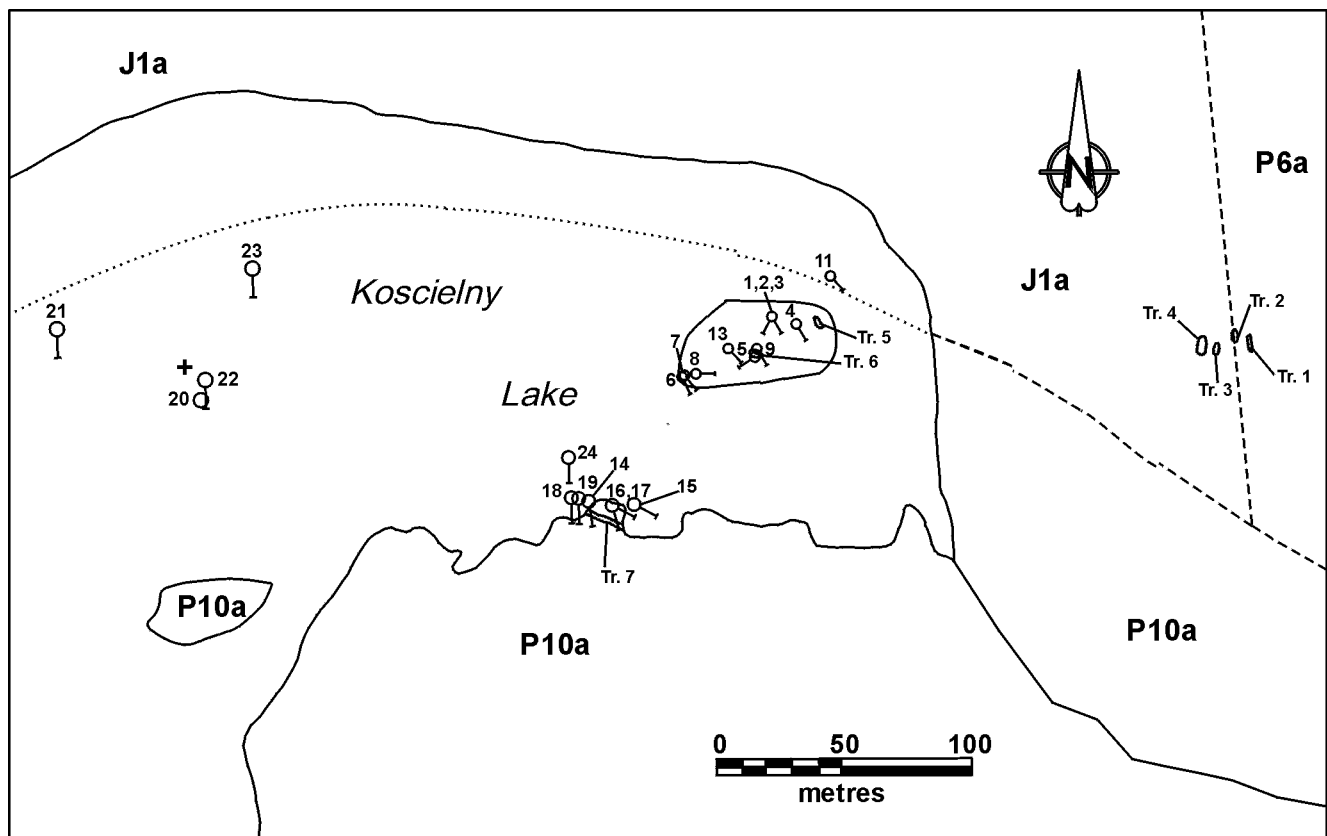


Figure 57-1: Geological setting of occurrence 57.



63K/15-57-2

Figure 57-2: Drillhole and trench locations at occurrence 57.

## CLASSIFICATION

Vein type deposit; single vein (?) at each location.

## REFERENCES

A.F. 90520: Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

**LOCATION: 58**

NAME: mineralization intersected by diamond drilling  
UTM: 384475E, 6089830N  
AREA: approximately 900 m S of Muhekun Lake,  
near north end of Sexton (Hasset) Lake (unofficial  
names)  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-25

**EXPLORATION SUMMARY**

Prospectors Airways Company, Ltd. excavated 2 trenches and drilled 4 holes at the occurrence in 1957 (A.F. 90519). In 1971 an HLEM (Ronka) and ground magnetometer survey was performed for Straus Exploration Inc. over the occurrence area (A.F. 90514).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 58-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates the area is underlain by dark green, aphyric, pillowed mafic flows, but the NATMAP compilation indicates that the sequence consists of mafic gneiss (unit U1b) and medium- to coarse-grained, equigranular biotite granodiorite±hornblende (unit P7b) of the Gauthier Lake pluton.

The lithologic descriptions for the drill core from holes Packsack #7 and #9 indicate that the sequence at the occurrence is dominated by basalt ("andesite" in the lithologic descriptions) with minor feldspar-phyric intervals (A.F. 90519).

**MINERALIZATION**

"Massive pyrite and pyrrhotite" (A.F. 90519) were intersected over the following intervals:

Hole Packsack #7	16.5-17.4 m (54.0-57.0 ft.)
Hole Packsack #9	10.7-11.9 m (35.0-39.0 ft.)

**GEOCHEMICAL DATA**

The mineralized intervals were sampled, but no assays are reported in the assessment file.

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. Graphitic intervals are present in this sequence.

**REFERENCES**

A.F. 90514, 90519, 91536, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

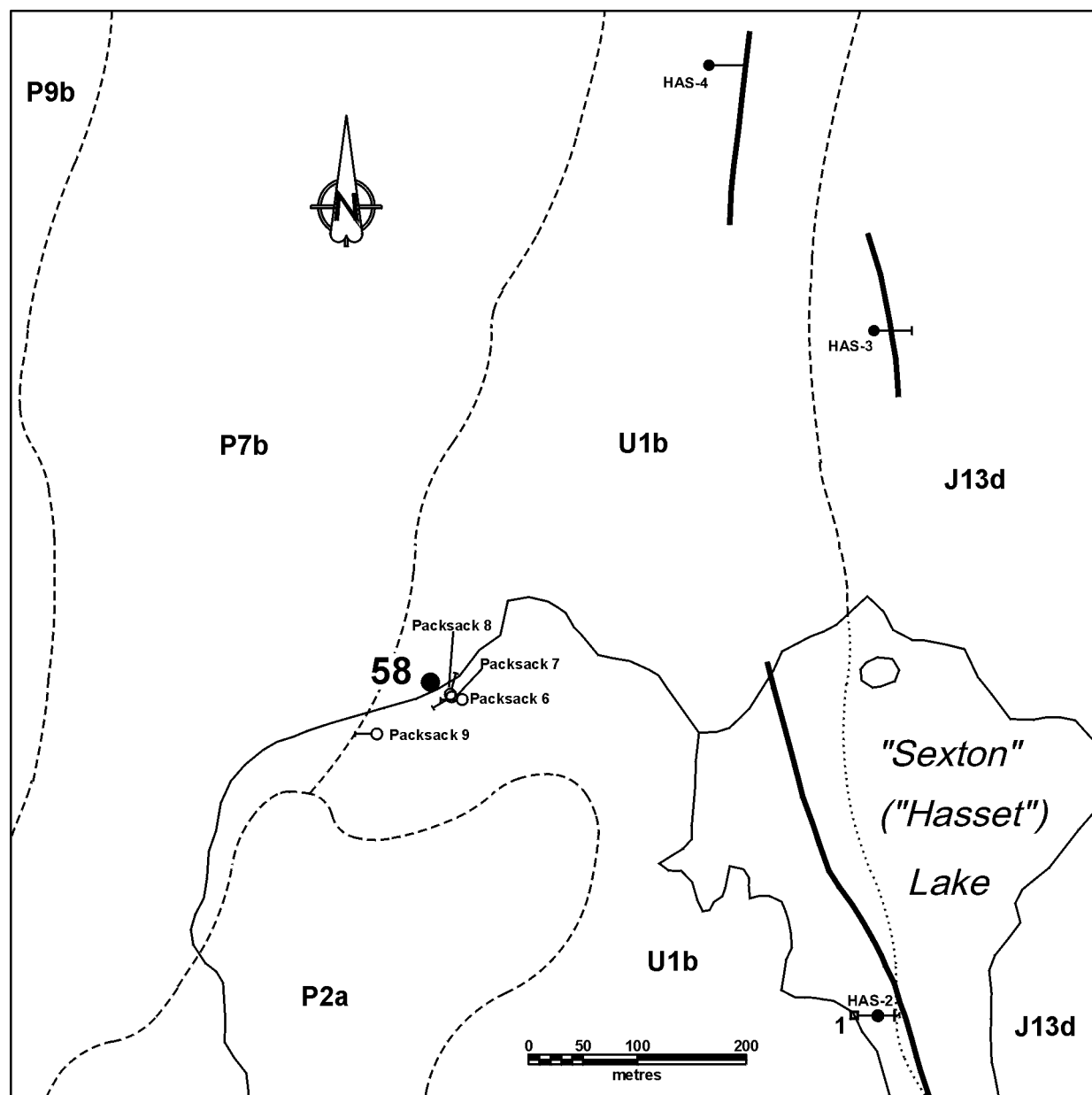
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



# **PALEOPROTEROZOIC**

- P9b** Granite to granodiorite
- P7b** Granodiorite to tonalite
- P2a** Gabbro, diorite
- J13d** Felsic to mafic dyke complex
- U1b** Mafic gneiss

- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998
- EM conductor  
(A.F. 93052)
- —● Drillhole  
(A.F. 90519, 91536, 93052)
- 58** ● Mineral occurrence location

Figure 58-1: Geological setting of occurrence 58.



**LOCATION: 59**

NAME: mineralization intersected by diamond drilling  
 UTM: 384880E, 6089195N  
 AREA: under west side of Sexton (Hasset) Lake (unofficial names), approximately 1.7 km SSE of Muhekun Lake  
 ACCESS: via bush plane  
 AIRPHOTO: MB90025-25

**EXPLORATION SUMMARY**

This occurrence has been described in Mineral Inventory File 792. In 1971 an HLEM (Ronka) and ground magnetometer survey was performed for Straus Exploration Inc. over the occurrence area (A.F. 90514) and three holes were completed in 1971 and 1972 (A.F. 90515, 91536).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 59-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicated the area is underlain by dark green, aphyric, pillowed mafic flows, but the NATMAP compila-

tion indicates that the area is underlain by mafic gneiss (unit U1b). To the east of the occurrence the sequence consists of hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13d). This sequence has been intruded to the west by well foliated, medium- to coarse-grained gabbro (unit P2a).

The lithologic descriptions for the drill core indicate that the sequence at the occurrence is dominated by basalt ("andesite" in the lithologic descriptions) with feldspar-phyric ("felsite") intervals.

**MINERALIZATION**

Hole #1 intersected "near massive sulphides" over the interval 25.0-32.3 m (82.0-106.0 ft.) (A.F. 91536). Holes 2A and 3A also intersected sulphide-rich units over the intervals 63.4-66.8 m (208.0-219.0 ft.) and 43.3-46.0 m (142.0-151.0 ft.) respectively. The sulphides consist of pyrite and minor pyrrhotite with occasional chalcopyrite grains.

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals (A.F. 90515, 91536) (see table below).

Hole No.	Interval	%Cu	%Zn	%Ni	g Au/t (oz. Au/ton)	g Ag/t (oz. Ag/ton)
#1	9.4-10.4 m (31.0-34.0 ft.)				0.34 (0.01)	1.37 (0.04)
	20.7-22.3 m (68.0-73.0 ft.)				0.34 (0.01)	2.74 (0.08)
	25.0-29.3 m (82.0-96.0 ft.)	0.02	tr	0.02	tr	1.37 (0.04)
	29.3-32.3 m (96.0-106.0 ft.)	0.02	tr	0.03	0.34 (0.01)	1.37 (0.04)
#2A	63.4-64.0 m (208.0-210.0 ft.)	0.03	0.05	n/d	tr	2.06 (0.06)
	64.0-64.5 m (210.0-211.7 ft.)	0.12	0.08	n/d	(0.01)	5.48 (0.16)
	64.5-64.6 m (211.7-211.9 ft.)	0.45	n/d	n/d	n/d	n/d
	64.6-66.1 m (211.9-216.9 ft.)	0.12	0.11	n/d	n/d	n/d
	66.1-66.7 m (216.9-218.7 ft.)	0.03	0.01	n/d	(0.01)	1.37 (0.04)
	72.7-74.2 m (238.5-243.5 ft.)	0.02	0.06	n/d	(0.01)	tr
	74.2-75.3 m (243.5-247.0 ft.)	0.03	0.07	n/d	(0.01)	1.37 (0.04)
#3A	43.9-45.7 m (144.0-150.0 ft.)	0.05	0.03	n/d	tr	nil

**CLASSIFICATION**

Chemical sediment type deposit; sulphide facies iron formation. Within volcanic sequence possibly at mafic to felsic rock transition.

**REFERENCES**

A.F. 90514, 90515, 90519, 91536 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Mineral Inventory File 792

Manitoba Department of Energy and Mines

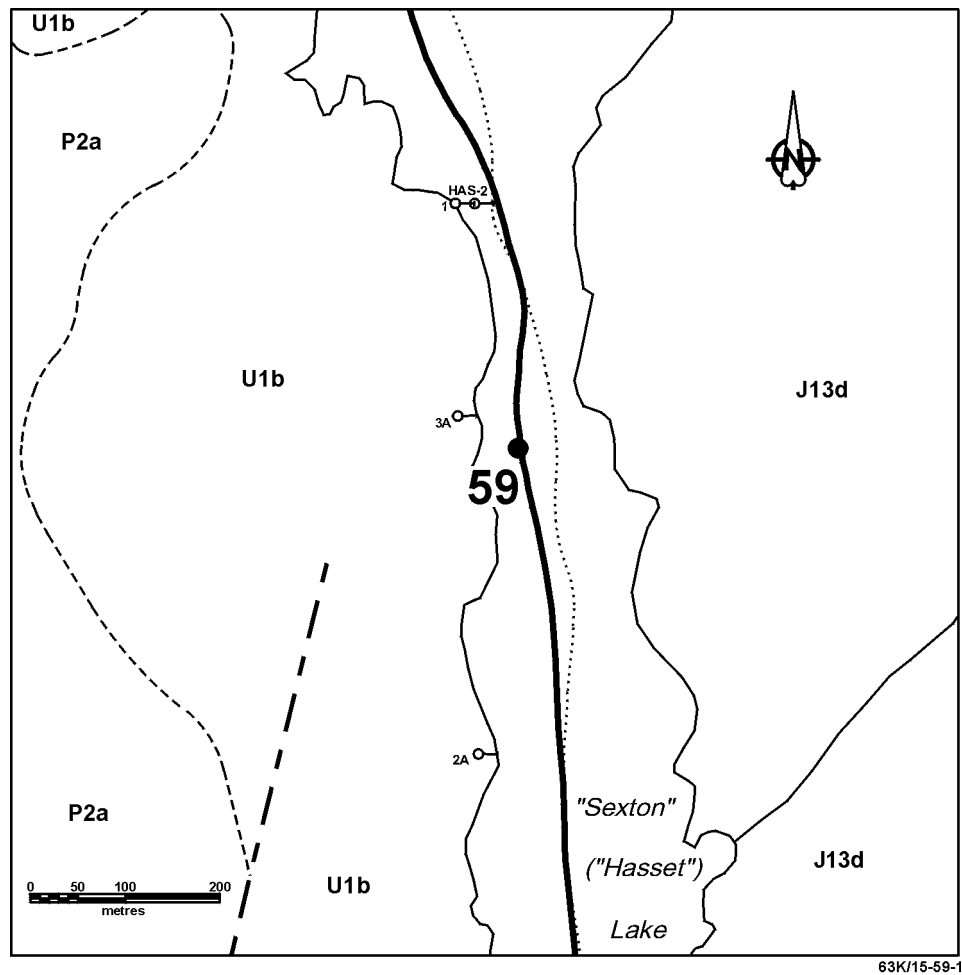
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- J13d** Felsic to mafic dyke complex
- U1b** Mafic gneiss
- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998

- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90514, 90519, 93052)
- Drillhole (A.F. 90515, 91536, 93052)
- 59.** Mineral occurrence location

Figure 59-1: Geological setting of occurrence 59.

## LOCATION: 60

NAME: mineralization intersected by diamond drilling  
UTM: 385510E, 6089525N  
AREA: east of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 0.5 km E of east shoreline  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-25

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 60-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d). The Gants Lake batholith, consisting of coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite to quartz diorite (unit P7b), occurs to the east.

The lithologic description of the drill core indicates that the sequence at the occurrence is dominated by hornblende granodiorite and schistose equivalents, with rhyolitic and minor andesitic tuffs appearing in the western part of the stratigraphy.

## MINERALIZATION

Hole E-17 intersected several sulphide-rich (up to 70%) intervals hosted by felsic tuffs (A.F. 90643, 92654). Pyrite is the dominant sulphide with somewhat lesser

pyrrhotite. Chalcopyrite and sphalerite are minor constituents.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-17 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
25.8-26.2 m (84.8-85.9 ft.)	0.04	0.95	tr
26.2-27.7 m (85.9-90.8 ft.)	0.07	0.17	tr
30.4-31.2 m (99.9-102.4 ft.)	0.05	0.08	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Within volcanoclastic sequence at contact with Gants Lake batholith.

## REFERENCES

A.F. 90515, 90643, 91536, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

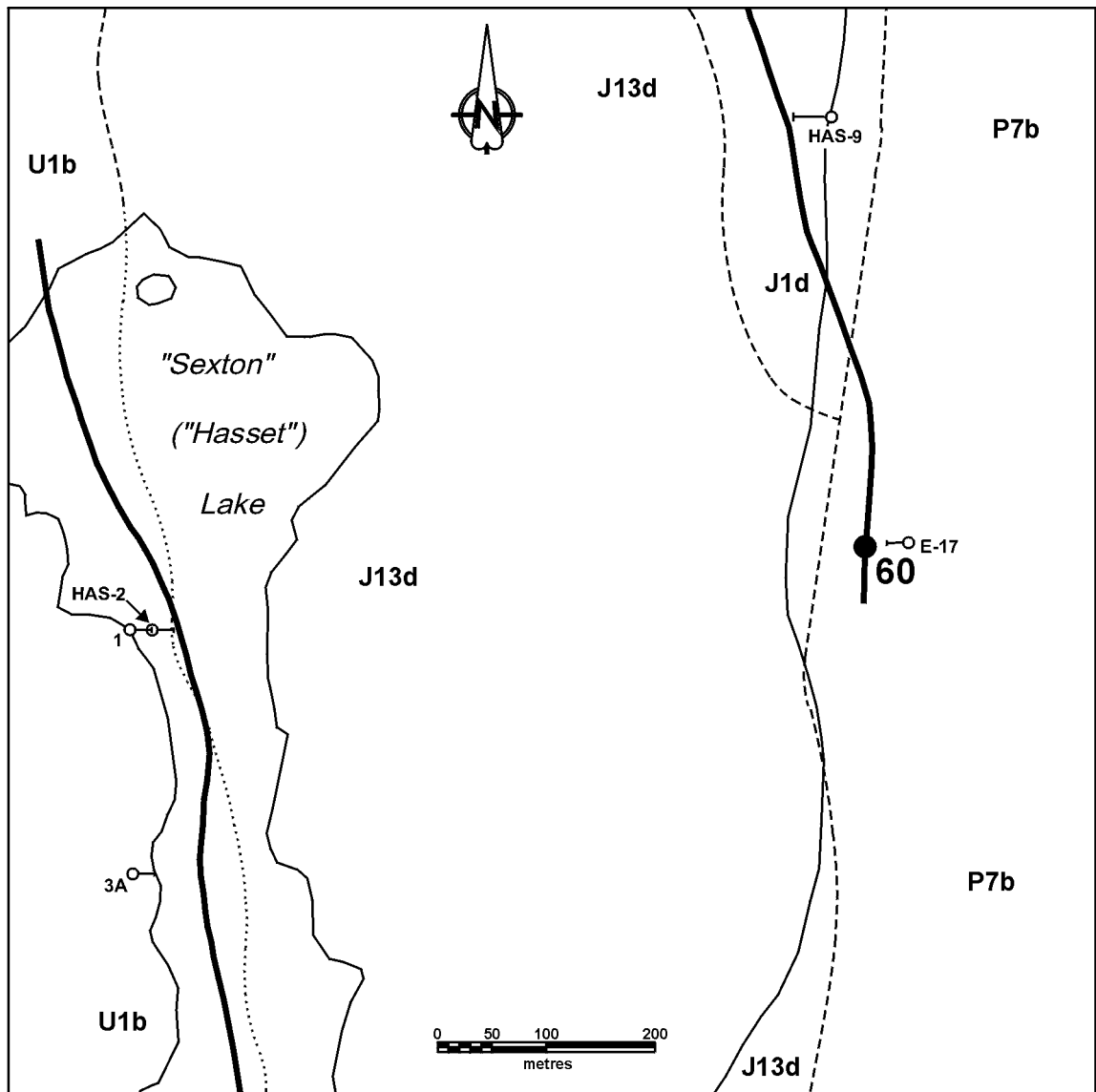
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



63K/15-60-1

#### PALEOPROTEROZOIC

- P7b** Granodiorite to tonalite
- J13d** Felsic to mafic dyke complex
- J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
- U1b** Mafic gneiss

- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998
- EM conductor  
(A.F. 92654, 93052)
- Drillhole  
(A.F. 90515, 91536, 92654, 93052)
- 60●** Mineral occurrence location

Figure 60-1: Geological setting of occurrence 60.

## LOCATION: 61

NAME: mineralization intersected by diamond drilling  
UTM: 385350E, 6088965N  
AREA: east of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 0.3 km E of east shoreline  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-25

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 61-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13d). The Gants Lake batholith, consisting of coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite to quartz diorite (unit P7b), occurs to the east.

The lithologic description of the drill core indicates that the sequence at the occurrence is dominated by mafic and felsic "tuffs" (A.F. 90643, 92654).

## MINERALIZATION

Two intervals containing up to 90% "near massive" sulphides were intersected by hole E-16 within the "tuffaceous" sequence (A.F. 90643, 92654). The character of the sulphides is not described, but pyrite is dominant with lesser pyrrhotite.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-16 (A.F. 90643, 92654):

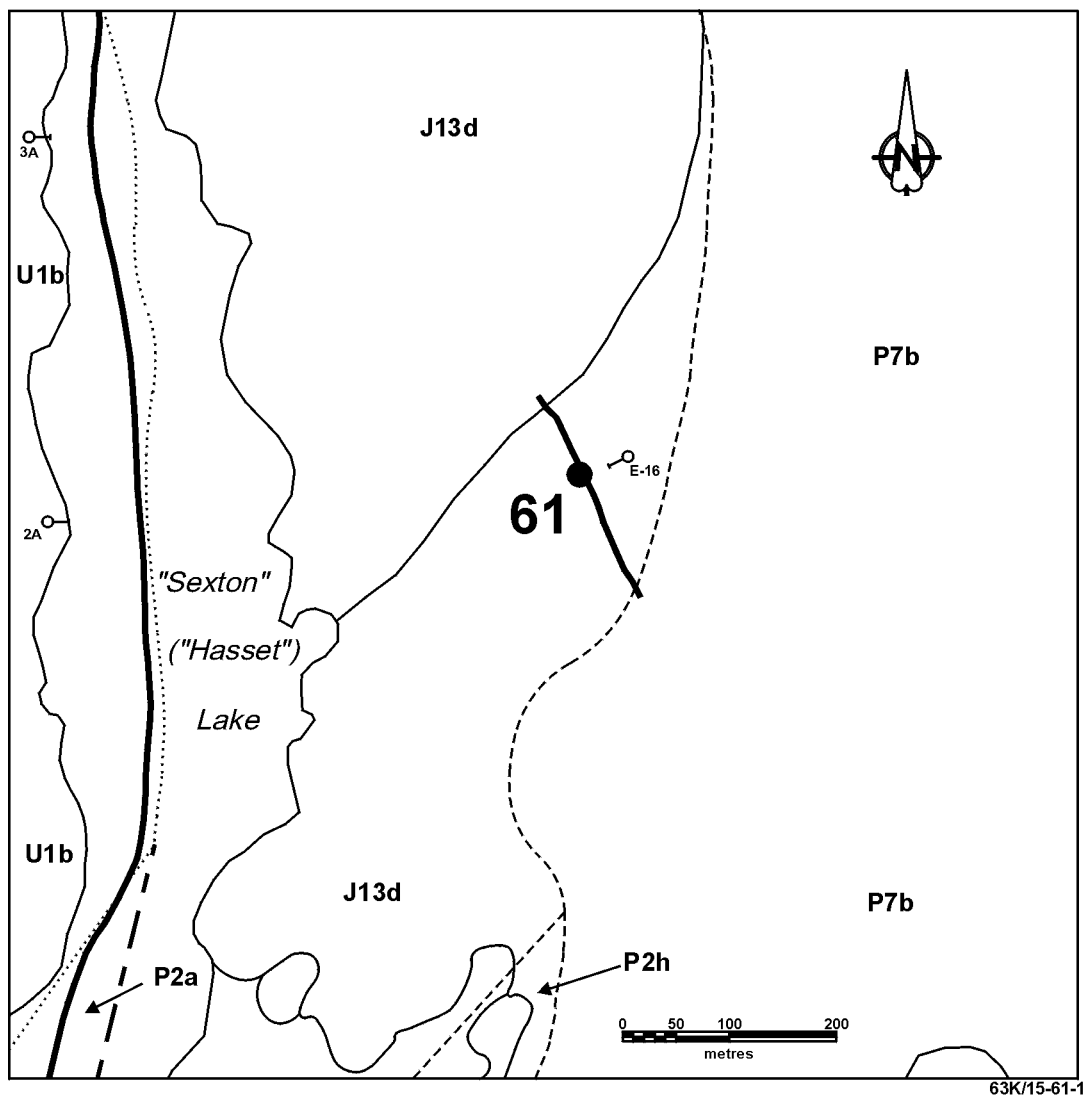
Interval	%Cu	%Zn	Au
24.7-24.9 m (81.0-81.7 ft.)	0.06	0.22	tr
25.1-25.8 m (82.5-84.7 ft.)	0.04	0.19	nil
82.4-82.9 m (270.0-272.1 ft.)	0.06	0.03	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

- A.F. 90515, 90643, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- NATMAP Shield Margin Project Working Group
- 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Schledewitz, D.C.P.
- 1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.
- 1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- P7b** Granodiorite to tonalite
- P2a** Gabbro, diorite
- P2h** Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
- J13d** Felsic to mafic dyke complex
- U1b** Mafic gneiss

----- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

--- Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 92654, 93052)

○ Drillhole  
(A.F. 90515, 92654)

**61.** Mineral occurrence location

Figure 61-1: Geological setting of occurrence 61.

## LOCATION: 62

NAME: mineralization intersected by diamond drilling  
UTM: 383205E, 6087390N  
AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 750 m W of west shoreline  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-58

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 62-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by well foliated, medium- to coarse-grained gabbro (unit P2a) and fine-grained plagioclase-phyric diabase. Dark green,

aphyric, pillowed, mafic flows and a diabase dyke complex (unit P2f) occur to the SE of the occurrence.

The lithologic description for hole E-15 suggests the sequence at the occurrence consists of schistose rhyolites and aphyric and feldspar-phyric amphibolites (A.F. 90643, 92654). Several units are described as being tuffaceous, but their layered character may be tectonic rather than depositional.

## MINERALIZATION

The main mineralized interval intersected in hole E-15 occurs between 24.3 and 37.6 m (79.8 and 123.3 ft.) (A.F. 90643, 92654). It is a graphitic interval with up to 25% pyrite, and contains narrow intervals of nearly massive sulphides. Pyrite is the dominant sulphide with lesser pyrrhotite. Several thin, sulphide-bearing intervals occur higher in the hole.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-15 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
17.8-18.3 m (58.5-59.9 ft.)	0.10	0.04	nil
22.3-23.0 m (73.2-75.5 ft.)	0.09	0.02	tr
23.0-24.0 m (75.5-78.6 ft.)	0.06	tr	tr
24.3-25.9 m (79.8-85.0 ft.)	0.05	0.03	0.34 g Au/t (0.01 oz. Au/ton)
25.9-27.4 m (85.0-90.0 ft.)	0.03	0.07	tr
27.4-29.0 m (90.0-95.0 ft.)	0.04	0.02	tr
29.0-30.5 m (95.0-100.0 ft.)	0.05	0.12	tr
30.5-32.0 m (100.0-105.0 ft.)	0.07	0.16	nil
32.0-33.5 m (105.0-110.0 ft.)	0.03	0.07	tr
33.5-34.3 m (110.0-112.6 ft.)	0.08	0.28	tr
35.1-36.8 m (115.0-120.7 ft.)	0.03	0.05	tr
37.2-37.6 m (121.9-123.4 ft.)	0.05	0.03	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite is intimately associated with the sulphides.

## REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

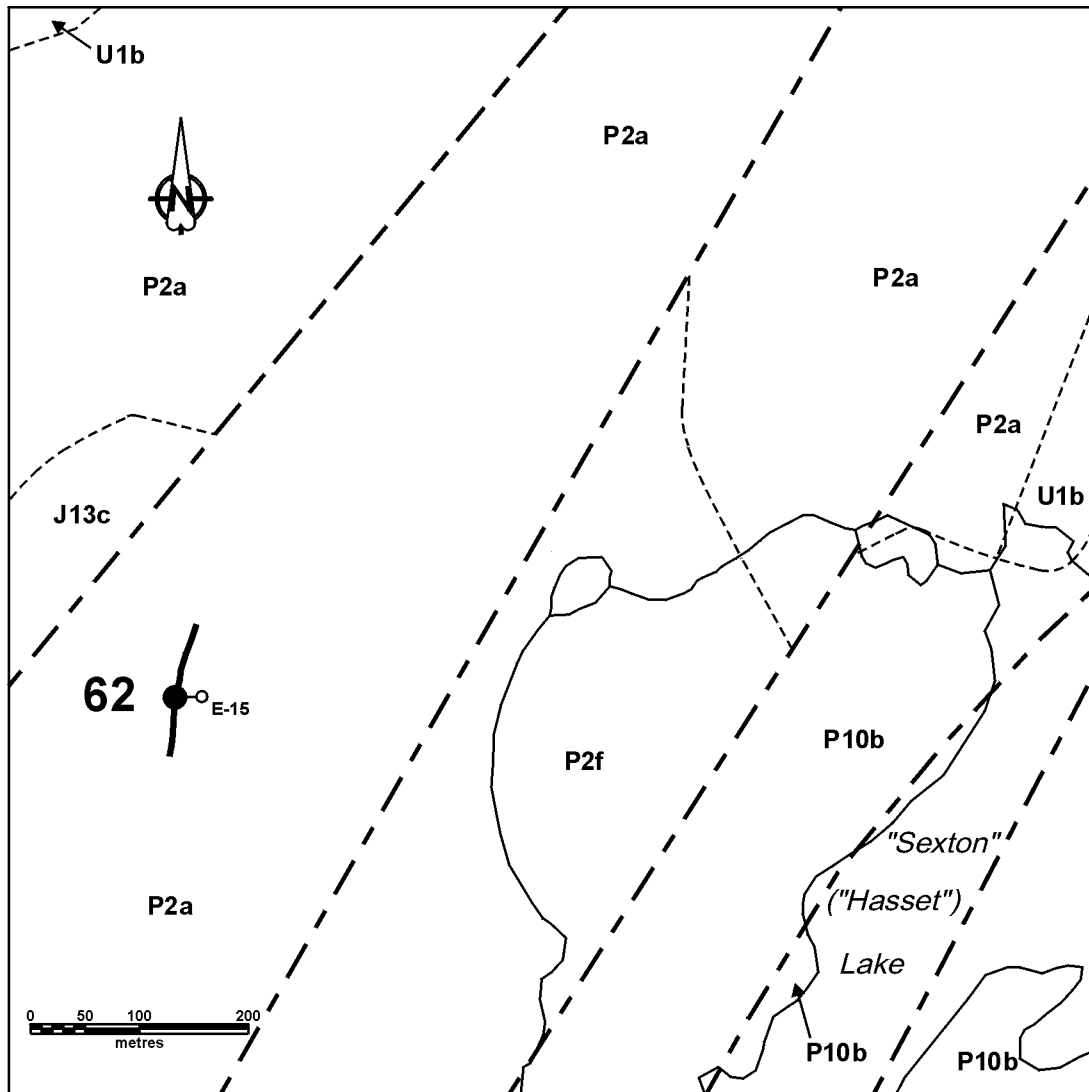
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



63K/15-62-1

#### PALEOPROTEROZOIC

- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- J13c** Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz-feldspar porphyry
- U1b** Mafic gneiss

----- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998

— — Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

———— EM conductor (A.F. 92654)

○ Drillhole (A.F. 92654)

**62 ●** Mineral occurrence location

Figure 62-1: Geological setting of occurrence 62.



**LOCATION: 63**

NAME: mineralization intersected by diamond drilling  
 UTM: 382970E, 6087205N  
 AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 800 m W of west shoreline  
 ACCESS: via bush plane, then traverse  
 AIRPHOTO: MB90025-58

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 63-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by fine-grained plagioclase-phyric diabase, oikocrystic diabase and diabase pegmatite (grouped under unit P2a). Quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes

and sills (unit J13c) occur to the NW of the occurrence.

The lithologic description for hole E-13 describes a sequence dominated by calcareous and sericitic chlorite-hornblende-feldspar schist with a variably schistose amphibole-phyric mafic rock (diabase?) (A.F. 90643, 92654). Hole E-14 is dominated by "andesite (and) rhyolite tuffs" (A.F. 90643). The description is not clear enough to ascertain if these rocks are tuffs or banded schists similar to the sequence intersected in the previous hole.

**MINERALIZATION**

Hole E-13 contains two sulphide-bearing intervals from 31.1-50.0 m (102.0 to 163.9 ft.) and 66.1-68.7 m (216.8 to 225.3 ft.) (A.F. 90643, 92654). Their sulphide content is generally fairly low, 1-5%, and is dominated by pyrite with lesser pyrrhotite. Minor quantities of chalcopryite and sphalerite were noted. Hole E-14 intersected several thin intervals containing up to 80% sulphides (A.F. 90643, 92654). These are also dominated by pyrite with lesser chalcopryite. Graphite is present in one interval.

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled in drill holes E-13 and E-14 (A.F. 90643, 92654) (see table below).

	Interval	%Cu	%Zn	Au
Hole E-13	35.8-36.1 m (117.3-118.3 ft.)	0.07	0.03	tr
	36.6-37.1 m (120.0-121.8 ft.)	0.04	0.34	nil
	38.1-38.5 m (125.0-126.4 ft.)	0.03	0.02	tr
	42.9-43.5 m (140.6-142.8 ft.)	0.04	0.08	nil
	43.8-44.9 m (143.7-147.2 ft.)	0.12	0.16	tr
	45.1-45.7 m (148.0-150.0 ft.)	0.03	0.05	0.34 g Au/t (0.01 oz. Au/ton)
	47.2-47.8 m (155.0-156.8 ft.)	0.13	0.04	tr
	48.2-49.5 m (158.3-162.4 ft.)	0.05	0.10	tr
	49.5-50.0 m (162.4-163.9 ft.)	0.08	1.44	0.68 g Au/t (0.02 oz. Au/ton)
	66.1-66.5 m (216.8-218.1 ft.)	0.05	0.29	nil
	66.6-68.0 m (218.5-223.1 ft.)	0.06	0.21	tr
Hole E-14	41.8-42.1 m (137.2-138.1 ft.)	0.04	0.19	tr
	42.1-43.3 m (138.1-142.0 ft.)	0.03	0.09	tr
	43.8-44.0 m (143.8-144.5 ft.)	0.03	0.05	nil
	44.3-44.6 m (145.4-146.4 ft.)	0.05	0.04	tr
	48.4-48.8 m (158.9-160.0 ft.)	0.11	0.16	tr
	48.8-49.3 m (160.0-161.6 ft.)	0.03	0.15	tr
	49.6-50.6 m (162.6-166.1 ft.)	0.05	0.14	tr
	50.8-52.0 m (166.6-170.5 ft.)	0.05	0.22	nil
	52.0-52.4 m (170.5-172.0 ft.)	0.05	0.14	tr
	52.4-52.7 m (172.0-173.0 ft.)	0.04	0.13	tr
	54.1-54.7 m (177.5-179.5 ft.)	0.03	0.13	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite intersected in hole E-14 suggests a biogenic component to the sequence. The schistose character of sulphide host rocks suggests structural modification.

## REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

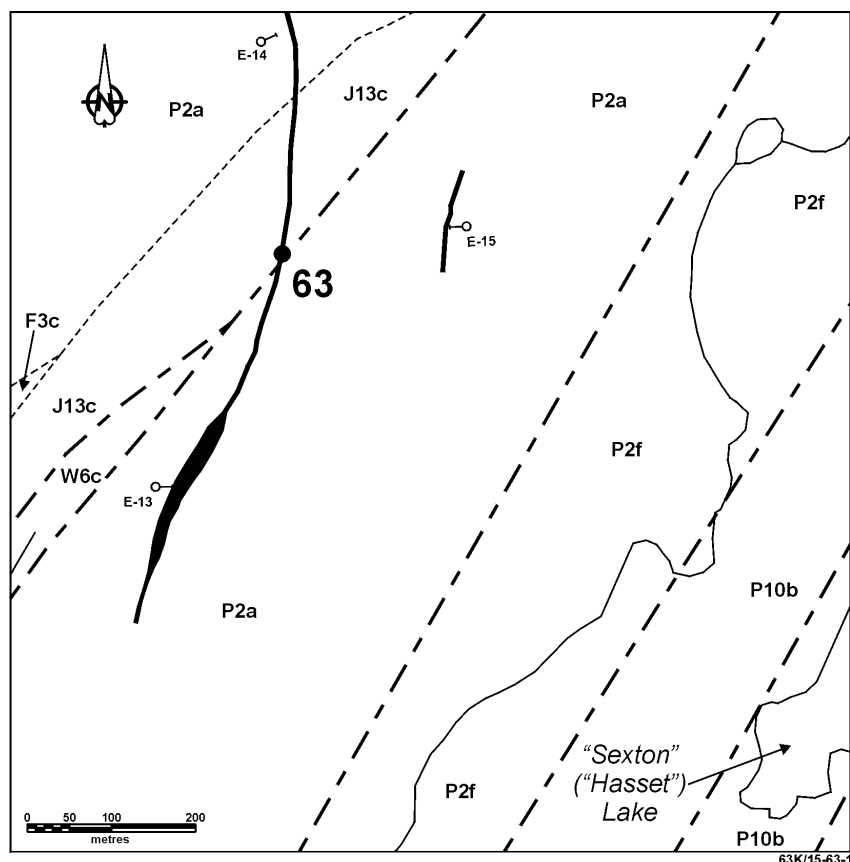
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- J13c** Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
- F3c** Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 92654)

**63●** Mineral occurrence location

Figure 63-1: Geological setting of occurrence 62.

## LOCATION: 64

NAME: mineralization intersected by diamond drilling  
UTM: 382580E, 6087215N  
AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 1.2 km W of west shoreline  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-58

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 64-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyricvolcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c), and basaltic conglomerate and sandstone (unit F3c). Mafic phyllonite±carbonate (unit W6c) occurs to the SE, and gabbro and diorite (unit P2a) occur to the NW.

The lithologic description for hole E-12 indicates that the sequence that hosts the occurrence consists of interlayered volcanoclastic ("tuffaceous") and rhyolitic to "andesitic" mafic volcanic rocks (A.F. 90643, 92654). Fine-grained amphibolites of unknown affinity are also present. Schistose intervals are common and suggest that the sequence has undergone significant deformation.

## MINERALIZATION

A poorly mineralized (no percentages given) schistose interval was intersected between 40.0-54.3 m (130.9-178.2 ft.) (A.F. 90643, 92654). The sulphides are dominated by pyrite with lesser pyrrhotite. Minor chalcopyrite was also noted. Minor graphite is also present in the mineralized intervals.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-12 (A.F. 90643, 92654):

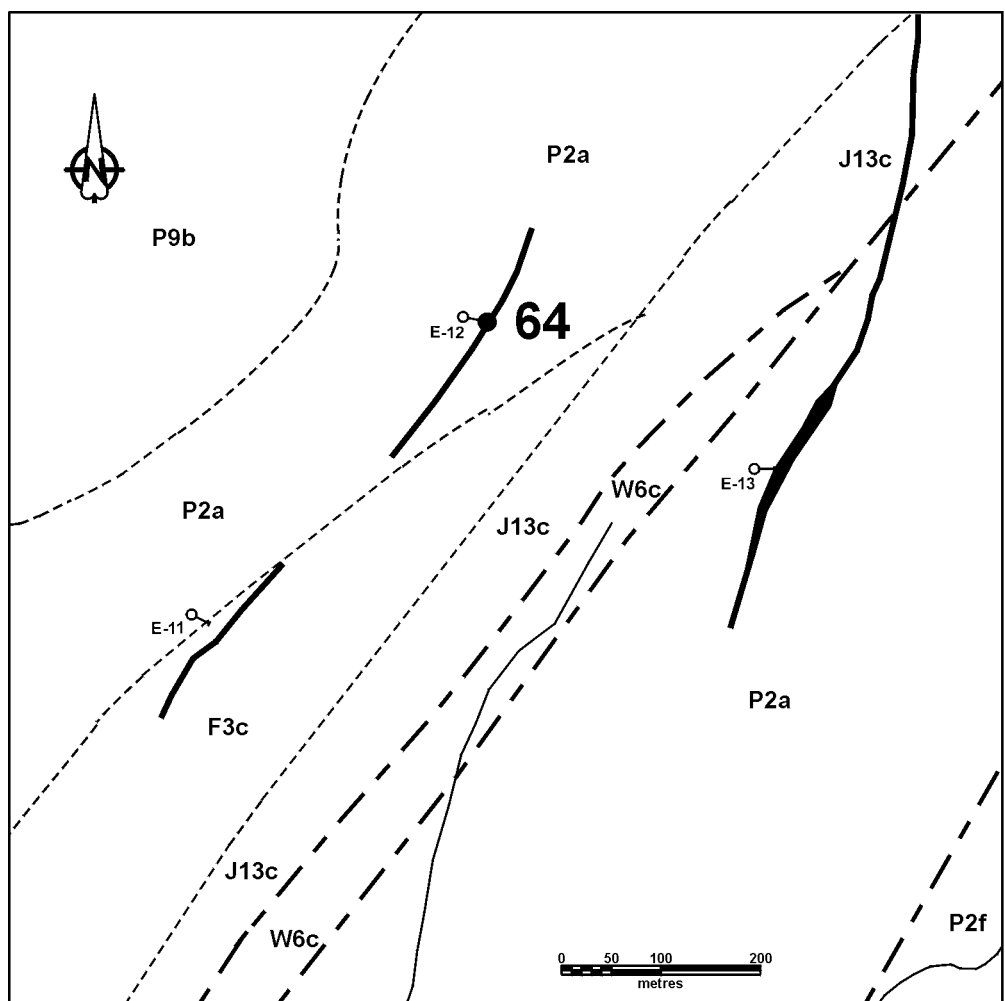
Interval	%Cu	%Zn	Au
40.1-40.8 m (131.5-133.7 ft.)	0.05	0.30	tr
41.7-42.3 m (136.9-138.7 ft.)	0.06	0.29	tr
45.3-46.7 m (148.5-153.3 ft.)	0.02	0.27	tr
47.0-48.6 m (154.2-159.3 ft.)	0.04	0.12	tr
50.0-50.7 m (164.1-166.2 ft.)	0.06	0.05	tr
51.8-53.3 m (169.8-175.0 ft.)	0.03	0.02	tr
53.9-54.3 m (177.0-178.2 ft.)	0.03	0.05	tr
99.6-100.0 m (326.8-328.2 ft.)	0.03	0.07	tr
100.2-100.6 m (328.6-330.0 ft.)	0.05	0.09	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence. Schistose character of sulphide host rocks suggests structural modification.

## REFERENCES

- A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- NATMAP Shield Margin Project Working Group
- 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Schledewitz, D.C.P.
- 1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.
- 1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



63K/15-64-1

#### PALEOPROTEROZOIC

W6c	Mafic phyllonite +/- carbonate, cataclasite
P9b	Granite to granodiorite
P2a	Gabbro, diorite
P2f	Diabase, diabase dyke complex
J13c	Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
F3c	Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 92654)
- 64.** Mineral occurrence location

Figure 64-1: Geological setting of occurrence 64.

## LOCATION: 65

NAME: mineralization intersected by diamond drilling  
UTM: 382350E, 6086875N  
AREA: west of south end of Sexton (Hasset) Lake  
(unofficial names) south of Muhekun Lake,  
approximately 1.2 km W of west shoreline  
ACCESS: via bush plane, then traverse  
AIRPHOTO: MB90025-58

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 65-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicated the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes

and sills (unit J13c), and basaltic conglomerate and siltstone (unit F3c). Mafic phyllonite±carbonate (unit W6c) occurs to the SE, and gabbro and diorite (unit P2a) occur to the NW.

The lithologic description for hole E-11 indicates the sequence that hosts the mineralization is dominated by "tuff" with rhyolitic and mafic volcanic intervals (A.F. 90643, 92654). The description is not clear enough to ascertain if these are actually volcanoclastic rocks or banded schists. Schistose intervals are common suggesting the sequence has undergone significant deformation.

## MINERALIZATION

One main mineralized interval was intersected in hole E-11 from 71.7-101.9 m (235.1-334.2 ft.) (A.F. 90643, 92654). It contains low, but unspecified quantities of sulphides, dominated by pyrite with lesser pyrrhotite and rare chalcopyrite. Graphite is present in one thin sulphide-rich interval above the main mineralized zone.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-11 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
27.8-29.5 m (91.2-96.9 ft.)	0.05	tr	0.34 g Au/t (0.01 oz. Au/ton)
72.5-73.2 m (238.0-240.0 ft.)	0.06	tr	0.68 g Au/t (0.02 oz. Au/ton)
73.4-74.0 m (240.8-242.7 ft.)	0.04	tr	1.37 g Au/t (0.04 oz. Au/ton)
84.3-85.2 m (276.7-279.5 ft.)	0.02	0.06	tr
86.1-87.0 m (282.6-285.3 ft.)	0.07	0.02	tr
88.6-89.5 m (290.7-293.7 ft.)	0.11	tr	tr
92.1-92.5 m (302.3-303.5 ft.)	0.06	0.06	tr
94.5-94.9 m (309.9-311.3 ft.)	0.10	0.15	tr
97.9-98.6 m (321.2-323.4 ft.)	0.27	0.21	tr
98.8-100.5 m (324.1-329.8 ft.)	0.01	0.27	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence.

## REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

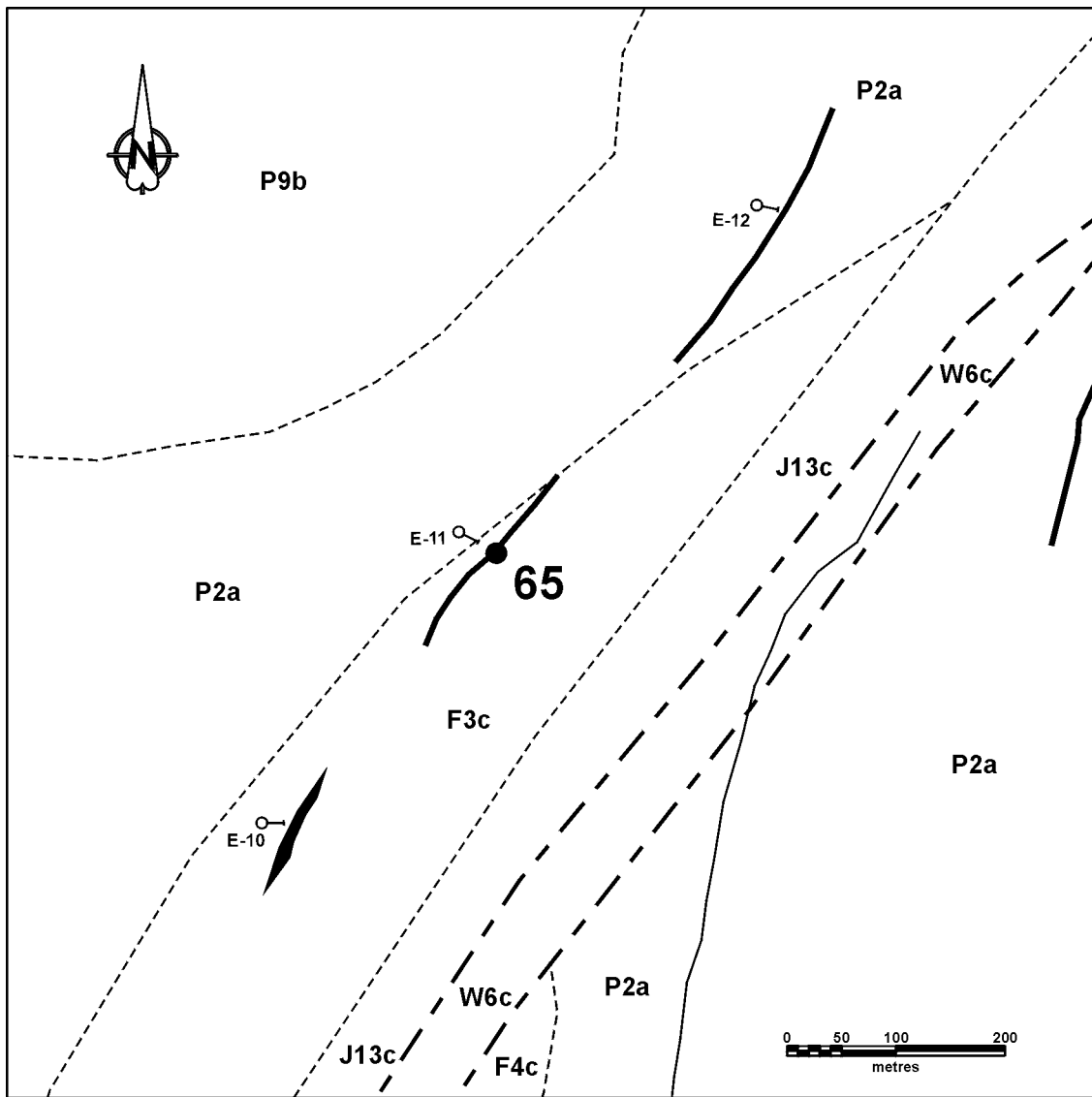
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



63K/15-65-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P9b** Granite to granodiorite
- P2a** Gabbro, diorite
- J13c** Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
- F4c** Heterolithic breccia
- F3c** Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 92654)

**65 ●** Mineral occurrence location

Figure 65-1: Geological setting of occurrence 65.

## LOCATION: 66

NAME: mineralization intersected by diamond drilling  
UTM: 382130E, 6086610N  
AREA: approximately 2.2 km NNE of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-58

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 66-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-

plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c). Basaltic conglomerate and sandstone (unit F3c) occurs west of the occurrence, and mafic phyllonite±carbonate (unit W6c) occurs to the east.

Hole E-10 intersected a sequence of interlayered rhyolites, hornblende bearing tuffs, "andesites" and feldspar porphyries (A.F. 90643, 92654). Much of the sequence is described as being sheared, but it is unclear if the tuffaceous intervals are actually volcanoclastic rocks or banded schists derived from mafic metavolcanic lithologies.

## MINERALIZATION

Hole E-10 intersected a "tuffaceous" interval from (145.7-171.2 ft.) containing "slight" to "well mineralized" intervals with pyrite and lesser pyrrhotite (A.F. 90643, 92654). Several thin sulphide-bearing zones were also intersected higher and lower in the hole. Graphite is a rare constituent of these intervals.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-10 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
41.1-41.8 m (135.0-137.1 ft.)	0.07	tr	tr
47.7-49.2 m (156.6-161.4 ft.)	0.05	0.24	tr
49.4-51.1 m (162.0-167.5 ft.)	0.10	0.10	tr
51.8-52.2 m (170.0-171.2 ft.)	0.07	0.15	tr
57.6-58.8 m (189.1-192.8 ft.)	0.09	0.02	tr
63.3-63.5 m (207.7-208.4 ft.)	0.02	0.04	nil
89.9-90.9 m (295.0-298.2 ft.)	0.06	0.30	nil

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence.

## REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

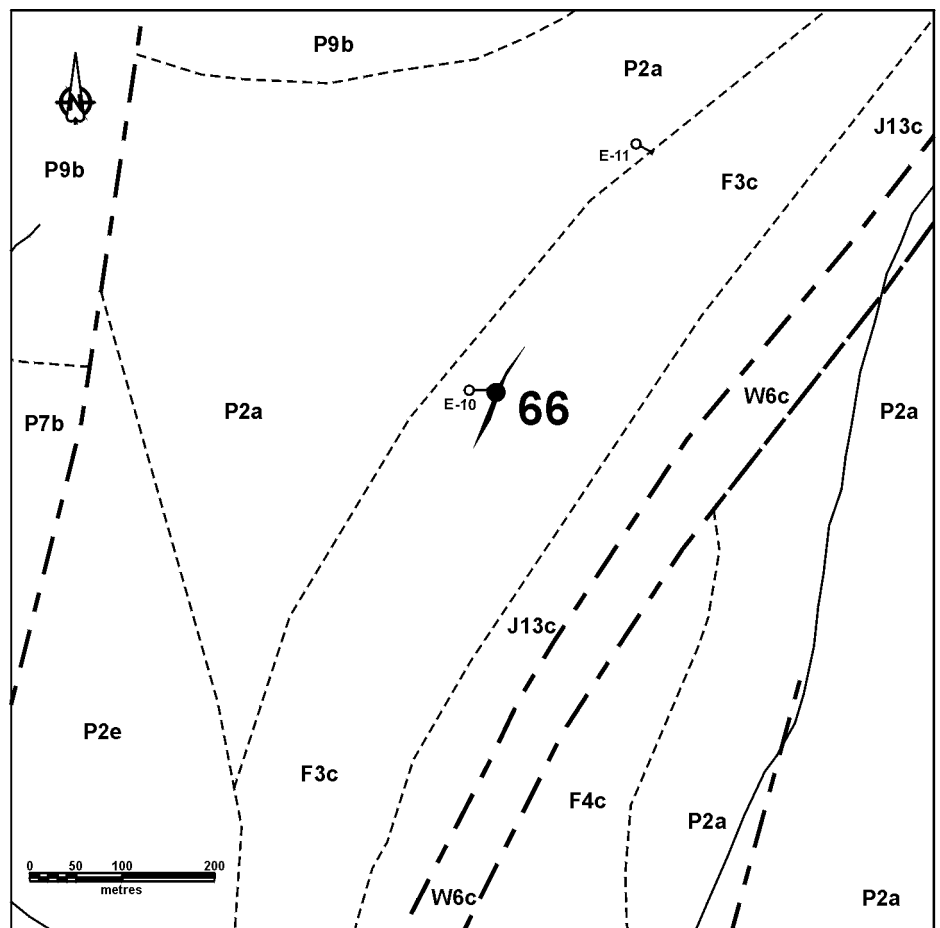
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- |             |  |
|-------------|--|
| <b>W6c</b>  | Mafic phyllonite +/- carbonate, cataclasite                                    |
| <b>P9b</b>  | Granite to granodiorite  |
| <b>P7b</b>  | Granite to tonalite  |
| <b>P2a</b>  | Gabbro, diorite  |
| <b>P2e</b>  | Diorite to quartzite   |
| <b>J13c</b> | Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry |
| <b>F4c</b>  | Heterolithic breccia   |
| <b>F3c</b>  | Long Bay ocean-island basalt conglomerate, sandstone                           |

- |            |  |
|------------|--|
| -----      | Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998         |
| ---        | Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998 |
| =====      | EM conductor (A.F. 91487, 92654)   |
| ○          | Drillhole (A.F. 92654)   |
| <b>66●</b> | Mineral occurrence location  |

Figure 66-1: Geological setting of occurrence 66.



**LOCATION: 67**

NAME: mineralization intersected by diamond drilling  
UTM: 379440E, 6086175N  
AREA: approximately 600 m E of north end of Tee Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-113

**EXPLORATION SUMMARY**

In 1957 Prospectors Airways Company Ltd. drilled a hole at the occurrence (A.F. 90504). The occurrence area was prospected in 1982 for Cangold Joint Venture (A.F. 92593).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 67-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by massive aphyric and quartz-phyric massive flows (unit J4a) that are part of the Tee Lake rhyolite. Medium- to coarse-grained, equigranular gabbro to melagabbro (unit P2a) occurs to the west, and a mafic to felsic dyke complex (unit J13d) occurs to the NE.

The litholog for hole K-9 describes a sequence consisting of massive "andesite" from 3.0-69.2 m (10-227 ft.), and "sedimentary (metamorphosed) rock" with a "rhyolitic" texture from 69.2-85.3 m (227-280 ft.) (A.F. 90504). It appears this hole intersected a basaltic flow and a rhyolitic unit. The contact between the two units is graphitic.

**MINERALIZATION**

Minor disseminated sulphide mineralization occurs from 69.2-80.8 m (227-265 ft.), with the highest quantity occurring from 69.2-73.5 m (227-241 ft.) within

"sedimentary (metamorphosed) rock", possibly rhyolite (A.F. 90504). Some intervals are described as containing "massive pyrrhotite", but a percentage sulphide content is given for only one section (5% pyrite and pyrrhotite). Pyrrhotite appears to be the dominant sulphide with lesser pyrite and trace chalcopyrite.

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled in drill hole K-9 (A.F. 90504):

Interval	%Cu	%Zn	%Ni
69.5-70.6 m (228.0-231.5 ft.)	0.15	tr	0.03
70.6-71.6 m (231.5-235.5 ft.)	0.15	0.10	0.09
73.0-73.5 m (239.5-241.0 ft.)	0.15	0.10	0.06

**CLASSIFICATION**

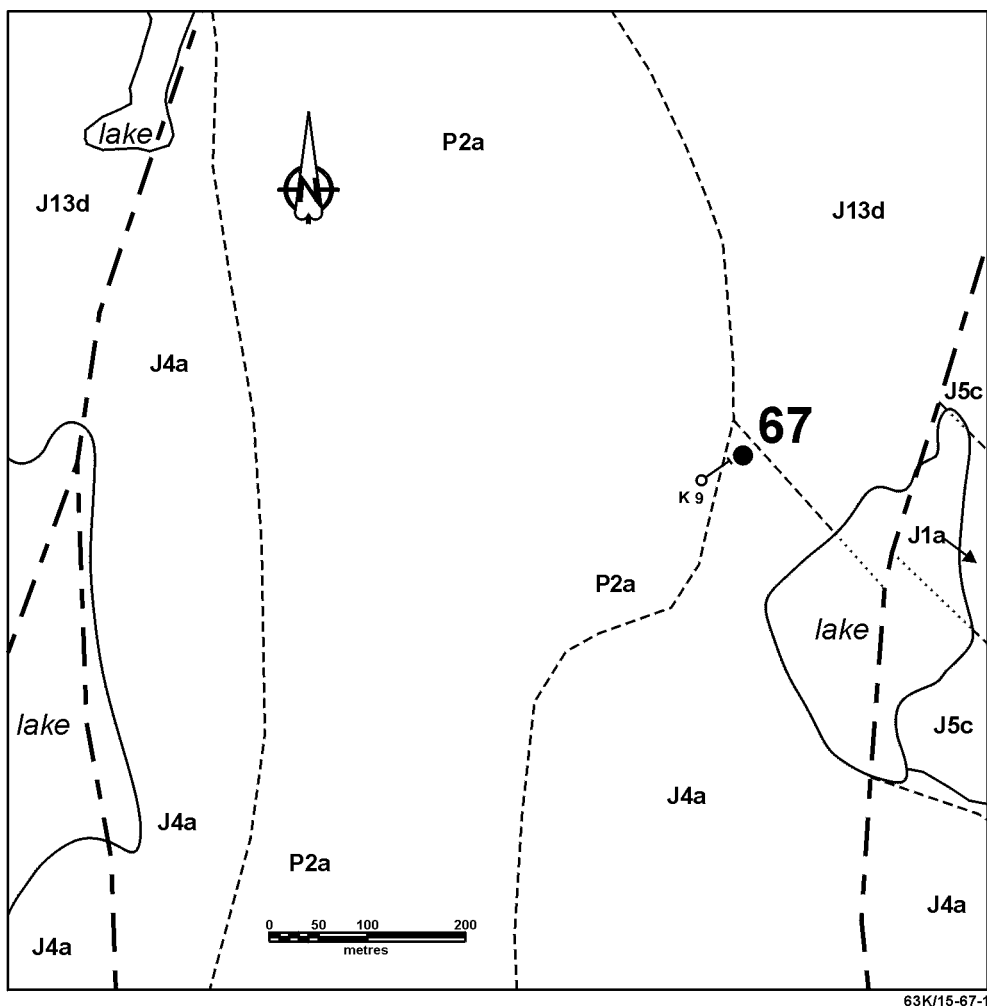
Chemical-sediment type deposit; sulphide facies iron formation. Pyrrhotite and pyrite are disseminated through the mineralized interval.

**REFERENCES**

A.F. 90504, 91487, 92593, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-67-1

#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- J13d** Felsic to mafic dyke complex
- J5c** Heterolithologic breccia, dominantly mafic fragments
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

--- Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 91487, 92654)

○ Drillhole  
(A.F. 90504)

**67.** Mineral occurrence location

Figure 67-1: Geological setting of occurrence 67.

## LOCATION: 68

NAME: mineralization intersected by diamond drilling  
UTM: 380060E, 6086105N  
AREA: approximately 1.2 km E of north end of Tee Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-114

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 68-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit J1a). Heterolithic breccia

dominated by mafic fragments (unit J5c) occurs to the west, and buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The lithology for hole E-18 confirms that the occurrence is located within a mafic tectonite. The sequence is dominated by foliated "andesite" and amphibole schist with minor rhyolitic intervals (A.F. 90643, 92654). The lithologic description for hole E-19 describes a foliated "tuff" sequence, but no details are provided for individual units.

## MINERALIZATION

Sulphide units containing up to 90% pyrite were intersected in both holes (A.F. 90643, 92654). They are closely associated with a rhyolitic unit that appears lower in the hole immediately below the sulphides.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-18 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
34.7-36.4 m (113.8-119.4 ft.)	0.02	0.19	0.34 g Au/t (0.01 oz. Au/ton)
37.2-38.6 m (121.9-126.8 ft.)	0.02	0.30	tr
38.6-39.8 m (126.8-130.5 ft.)	0.07	0.13	tr
39.8-40.1 m (130.5-131.6 ft.)	0.05	tr	tr

## CLASSIFICATION

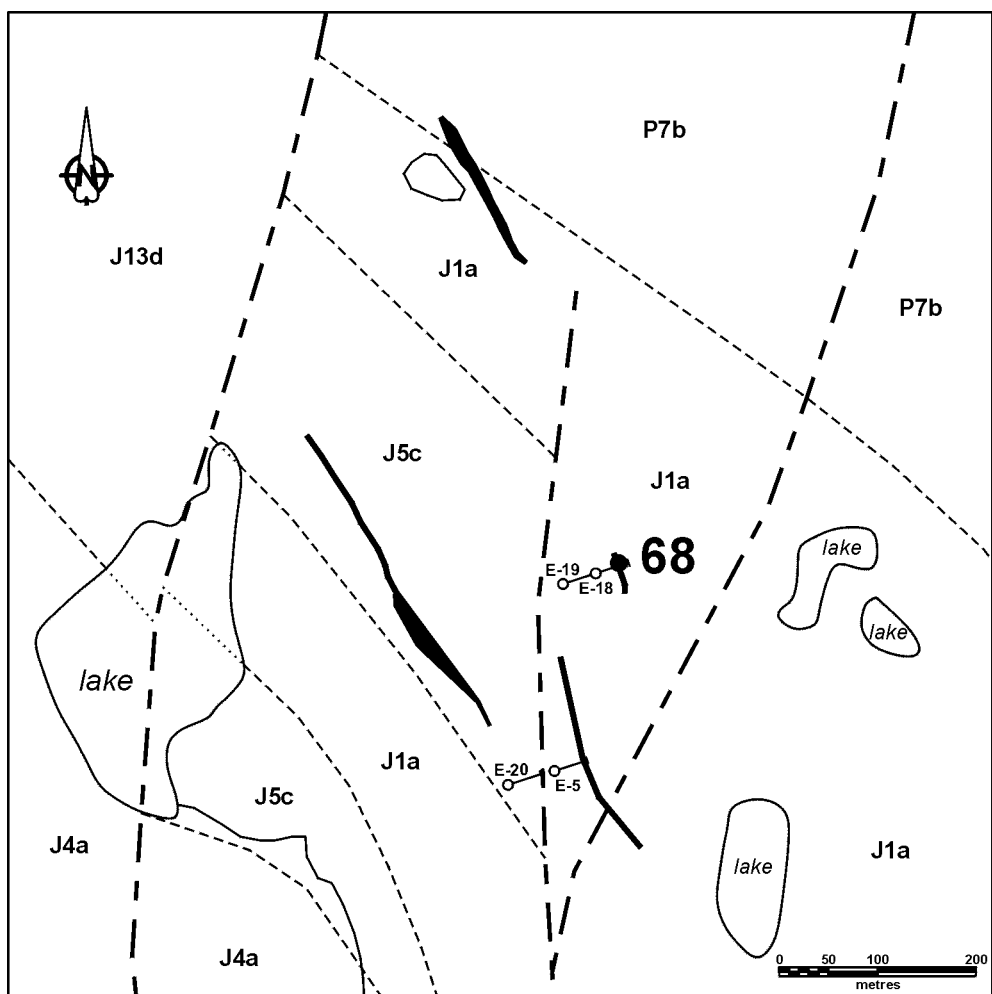
Chemical-sediment type deposit; sulphide facies iron formation. The occurrence is situated within a strongly deformed zone so original rock types cannot be identified with certainty.

## REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P7b** Granodiorite to tonalite
- J13d** Felsic to mafic dyke complex
- J5c** Heterolithic breccia, dominantly mafic fragments
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90643, 92654)
- Drillhole (A.F. 90643, 92654)
- 68.** Mineral occurrence location

Figure 68-1: Geological setting of occurrence 68.

**LOCATION: 69**

NAME: mineralization intersected by diamond drilling  
 UTM: 380030E, 6085895N  
 AREA: approximately 1.2 km E of north end of Tee Lake  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
 AIRPHOTO: MB90025-114

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 69-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit J1a). Massive aphyric and quartz-phyric rhyolite flows that (unit J4a) occur to the SW. Buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The litholog for hole E-5 indicates the sequence at the occurrence consists of amphibole-phyric basalt ("andesite") with altered rhyolitic intervals (A.F. 90643, 92654). Some schistose intervals are present. Much of the sequence is described as being altered with irregular quartz and carbonate veins and chloritic areas.

The sequence drilled by hole E-20 is described as a series of rhyolite tuffs with lesser andesite, andesite tuffs and diorite (A.F. 90643, 92654). This description suggests the sequence has been highly tectonized and the layered character of the rocks is a result of shear within this assemblage.

**MINERALIZATION**

Sulphide-rich intervals containing up to 65% combined pyrite and pyrrhotite occur in two intervals in hole E-5, from 34.4-47.4 m (113.0-155.6 ft.) and 59.3-68.5 m (194.5-224.8 ft.) (A.F. 90643, 92654). Minor chalcopryrite was also noted. Two mineralized intervals, containing up to 85% sulphides (pyrite and pyrrhotite), were also intersected in hole E-20, from 73.2-82.3 m (240.0-270.0 ft.) and 105.2-105.6 m (345.0-346.5 ft.).

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled in drill holes E-15 and E-20 (A.F. 90643) (see table below).

	Interval	%Cu	%Zn	Au	
Drill Hole E-5	34.4-35.0 m (113.0-114.9 ft.)	0.04	0.07	nil	
	35.3-37.0 m (115.7-121.3 ft.)	0.05	0.08	tr	
	37.0-38.5 m (121.3-126.3 ft.)	0.05	0.11	tr	
	39.1-40.0 m (128.2-131.3 ft.)	0.08	0.11	nil	
	40.3-42.1 m (132.3-138.2 ft.)	0.03	0.11	tr	
	44.0-44.7 m (144.2-146.6 ft.)	0.03	0.19	tr	
	56.0-56.7 m (183.6-186.1 ft.)	tr	tr	tr	
	57.3-59.3 m (188.1-194.5 ft.)	0.07	0.03	nil	
	59.3-61.6 m (194.5-202.1 ft.)	0.02	0.07	tr	
	61.8-63.6 m (202.7-208.7 ft.)	tr	0.15	tr	
	63.6-65.5 m (208.7-214.8 ft.)	0.04	0.14	nil	
	65.5-66.3 m (214.8-217.5 ft.)	0.09	0.13	nil	
	66.7-68.2 m (218.7-223.7 ft.)	0.16	0.11	tr	0.04% Ni
Drill Hole E-20	74.4-75.9 m (244.0-249.0 ft.)	0.03	0.12	tr	
	78.6-79.2 m (258.0-260.0 ft.)	0.03	0.13	tr	
	79.6-81.4 m (261.0-267.0 ft.)	0.04	0.12	tr	
	105.2-105.6 m (345.0-346.5 ft.)	0.06	0.05	tr	

**CLASSIFICATION**

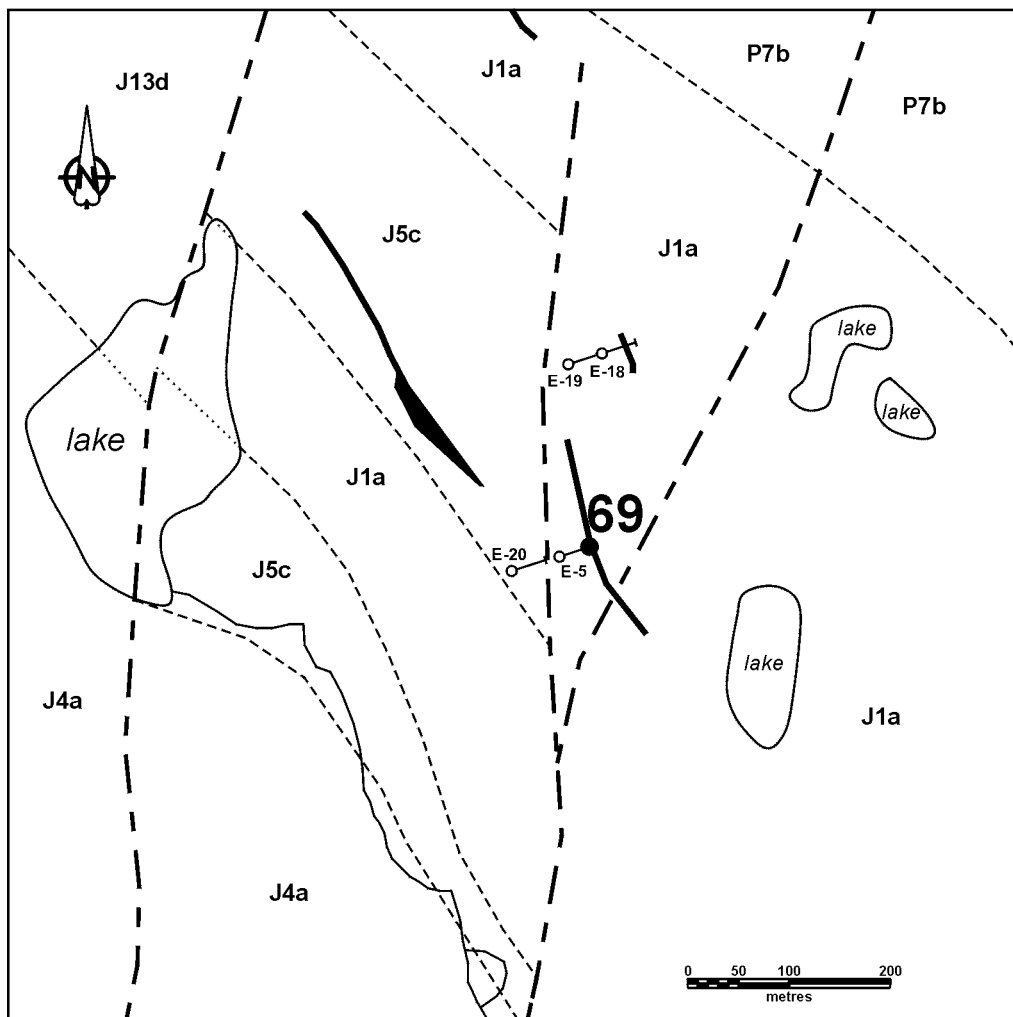
Chemical-sediment type deposit; sulphide facies iron formation. The occurrence is situated within a deformed zone so original rock types cannot be identified with certainty.

**REFERENCES**

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-69-1

#### PALEOPROTEROZOIC

- P7b** Granodiorite to tonalite
- J13d** Felsic to mafic dyke complex
- J5c** Heterolithic breccia, dominantly mafic fragments
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

----- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

--- Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 90643, 92654)

○ Drillhole  
(A.F. 90643, 92654)

**69.** Mineral occurrence location

Figure 69-1: Geological setting of occurrence 69.

## LOCATION: 70

NAME: mineralization intersected by diamond drilling and exposed in trenches

UTM: 380255E, 6085595N

AREA: approximately 1.7 km east of Tee Lake

ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse

AIRPHOTO: MB90025-114

## EXPLORATION SUMMARY

In 1948 the Consolidated Mining and Smelting Company of Canada, Ltd. drilled five holes at the occurrence (A.F. 90518). This project appears to have been a follow-up to some encouraging gold assays obtained from several trenches at the occurrence.

The trenches were not found during the field examination of occurrences in the area.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 70-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit F1a) and derived mafic tectonite. Massive aphyric and quartz-phyric rhyolite flows (unit J4a), that are part of the Tee Lake rhyolite, occur to the west, and buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The trench and drill hole locations are shown in Fig. 70-2. The lithologs for the drill holes do not provide much detail in describing the units that underlie the occurrence, but indicate the sequence is dominated by foliated "greenstone" (basalt) (A.F. 90518).

## MINERALIZATION

Quartz-carbonate stringers, veinlets, and uncommon veins of milky quartz, some carrying small quantities of pyrite and chalcopyrite, are widely distributed throughout the drill core obtained from this occurrence (A.F. 90518). The vein system exposed in the trenches at surface is discontinuous and appears to have been disrupted by continued deformation within the tectonite.

## GEOCHEMICAL DATA

No assays have been reported for samples obtained from the drill core. Samples from the trenches returned the following values (A.F. 90518):

Trench 4	14.73 g Au/t (0.43 oz. Au/ton), 1.0% Cu across 0.6 m (2.0 ft.)
Trench 9	6.16 g Au/t (0.18 oz. Au/ton) across 1.2 m (3.8 ft.)

## CLASSIFICATION

Vein type deposit; single vein.

## REFERENCES

A.F. 90518, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

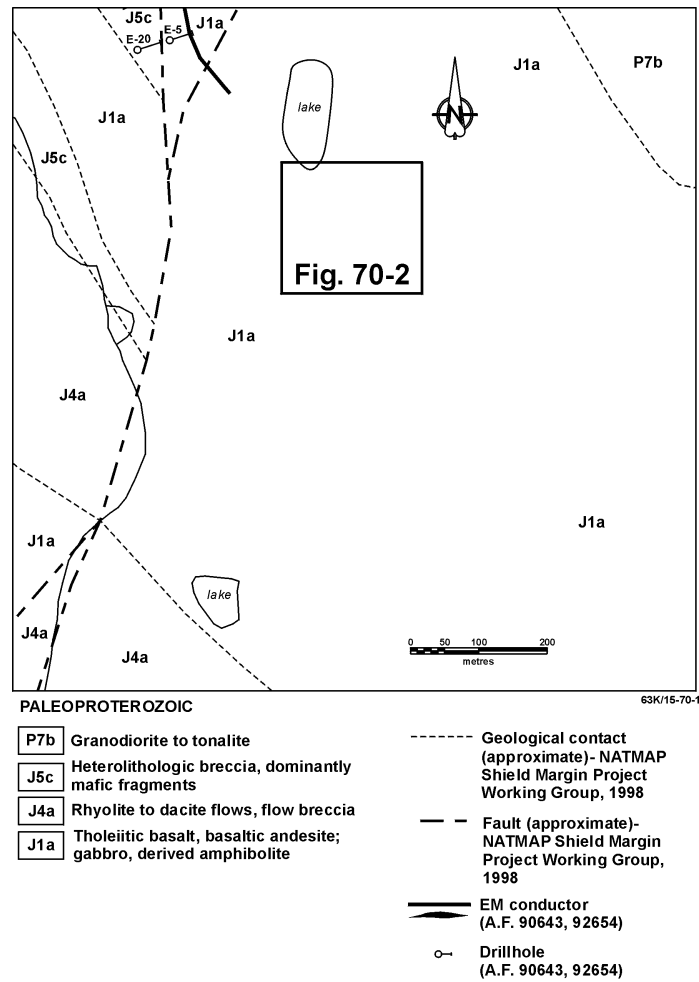


Figure 70-1: Geological setting of occurrence 70.

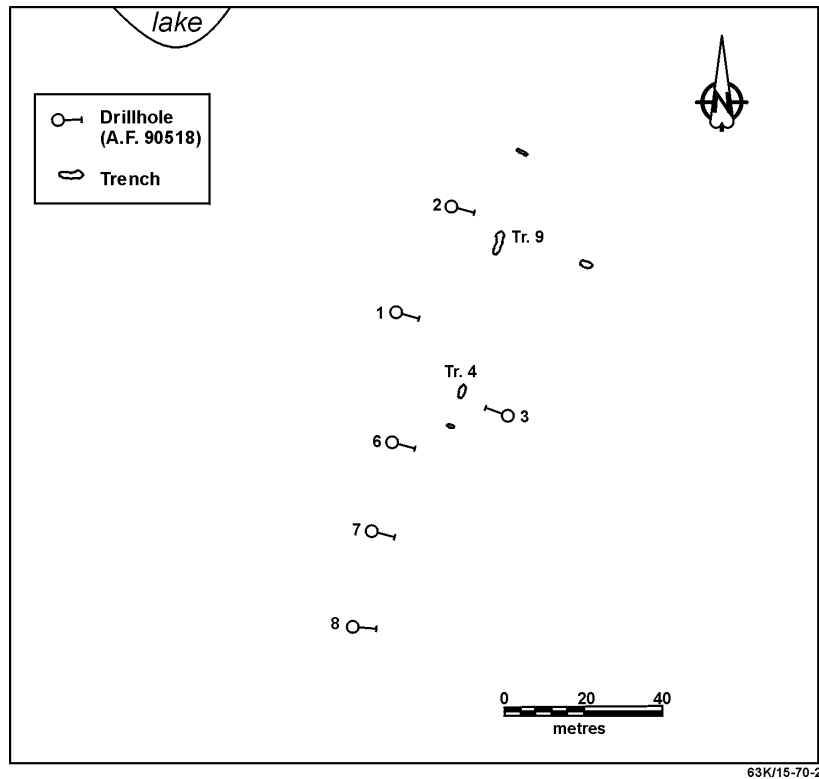


Figure 70-2: Approximate drillhole and trench locations at occurrence 70.



## LOCATION: 71

NAME: mineralization intersected by diamond drilling  
UTM: 381720E, 6085710N  
AREA: approximately 1.2 km NNE of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-57

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 71-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by metagreywacke and metasiltstone (unit F3c). Sparsely plagioclase megacrystic diabase (unit P2f), and intermediate lapilli tuff and crystal lapilli tuff (unit J6a) occur to the west. Schists (unit W6c) related to the Elbow Lake shear zone underlie the eastern part of the area (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992).

Hole E-6 intersected a sequence of mafic to felsic schists and "tuffs", with minor feldspar porphyry (A.F. 90643, 92654). The lithologic description indicates the assemblage has been extensively sheared, and the banded "tuffaceous" character of many of the units may be tectonic rather than depositional.

## MINERALIZATION

Thin (generally <30 cm) sulphide-rich intervals occur between 26.4-59.7 m (86.5-195.8 ft.) in hole E-6 (A.F. 90643, 92654). These contain up to 40% pyrite. Pyrrhotite is present in subordinate quantities and chalcopyrite is widespread as a minor constituent. Graphite is also present in the sulphide-rich intervals.

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-6 (A.F. 90643, 92654):

Interval	%Cu	%Zn	%Ni	Au
56.4-56.8 m (185.2-186.5 ft.)	0.03	0.31	0.05	tr
59.4-59.7 m (194.9-195.8 ft.)	0.10	0.35	0.05	

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Occurs within zone of strong deformation.

## REFERENCES

A.F. 90643, 91487, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: Supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

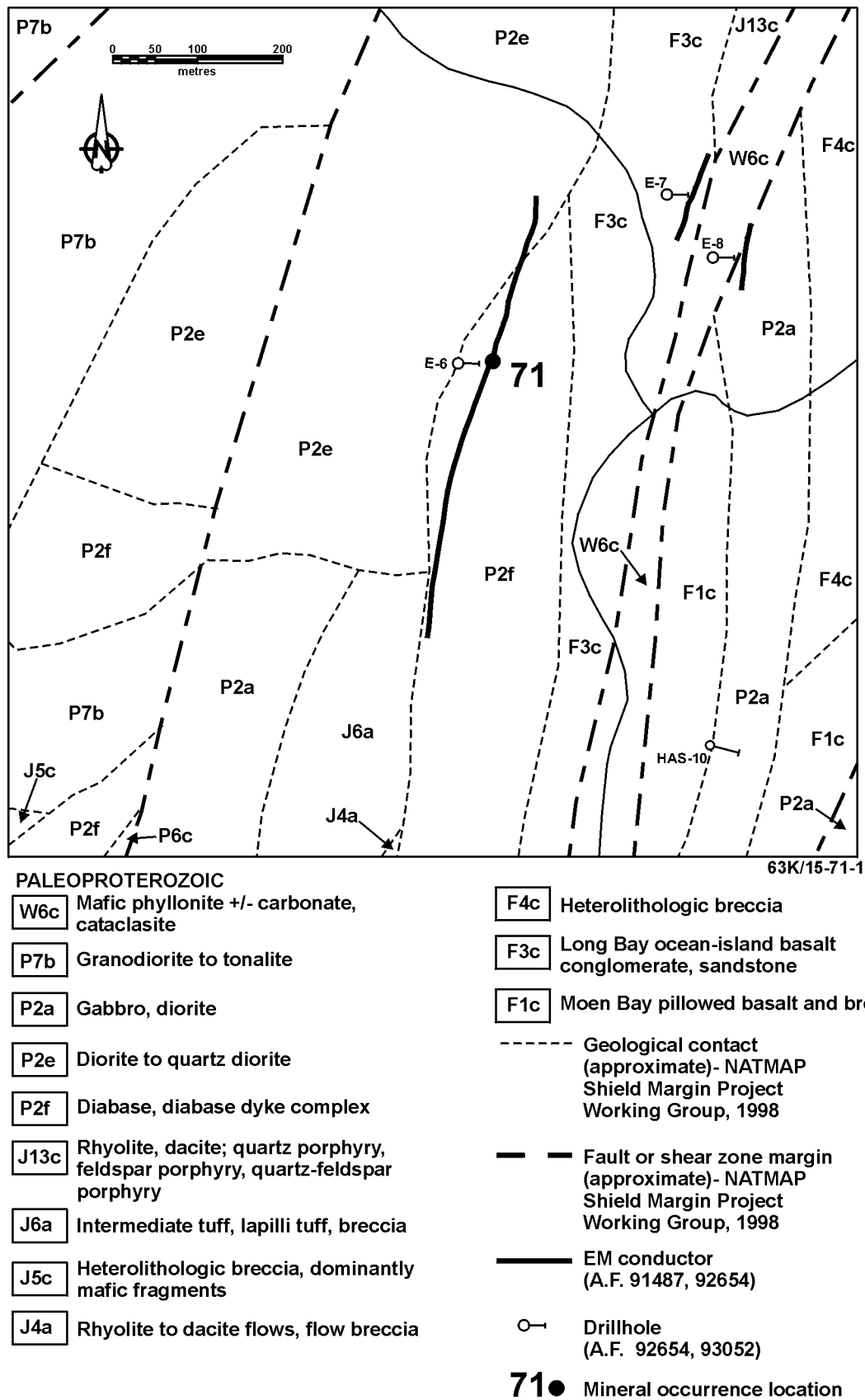


Figure 71-1: Geological setting of occurrence 71.

**LOCATION: 72**

NAME: mineralization intersected by diamond drilling  
 UTM: 377810E, 6076855N  
 AREA: under Elbow Lake, west of McDougalls Point  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-136

**EXPLORATION SUMMARY**

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 72-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the

McDougalls Point basalt (unit F1a). Fine- to medium-grained, equigranular diabase (unit F5a) is exposed in outcrops to the SW. Foliated, medium- to coarse-grained, equigranular to porphyritic hornblende-biotite granodiorite and quartz diorite (unit P7a) of the Big Rat Lake pluton occur to the west. The sequence is cut by several NNE-trending faults.

Hole E-55 intersected a sequence dominated by massive and foliated "andesite" with lesser massive rhyolite, graphitic schist, and brecciated intervals (A.F. 92654). The brecciated intervals may mark the location of one of the NNE-trending faults. Hole E-56 intersected massive and foliated "dacite", graphitic siltstone, quartzite with quartz pebbles, and well foliated rhyolitic "tuff" (A.F. 92654). The "tuffaceous" character of some intervals may be tectonic rather than a primary depositional characteristic.

**MINERALIZATION**

The following mineralization was intersected in holes E-55 and -56 (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-55	58.5-61.6 m (191.8-202.0 ft.)	10% pyrite as fine stringers in thin bands containing 30% graphite, within foliated, brecciated "andesite" with fine-grained, foliated felsic bands
	61.6-68.3 m (202.0-224.0 ft.)	10% pyrite as thin stringers in graphitic schist
	68.3-71.5 m (224.0-234.5 ft.)	20% pyrite as fine stringers in graphitic schist with rhyolitic fragments
E-56	31.0-33.8 m (101.7-111.0 ft.)	5-20% pyrite as thin stringers, in graphitic siltstone with quartzite Fragments
	33.8-34.4 m (111.0-113.0 ft.)	5% pyrite around quartzite pebbles
	35.1-38.7 m (115.0-127.0 ft.)	20% pyrite as thin stringers parallel to schistosity in graphitic siltstone
	71.0-72.2 m (233.0-237.0 ft.)	15% pyrite with graphite in massive and foliated "dacite"

**GEOCHEMICAL DATA**

No assays were reported in the assessment file for any of the mineralized intervals.

**CLASSIFICATION**

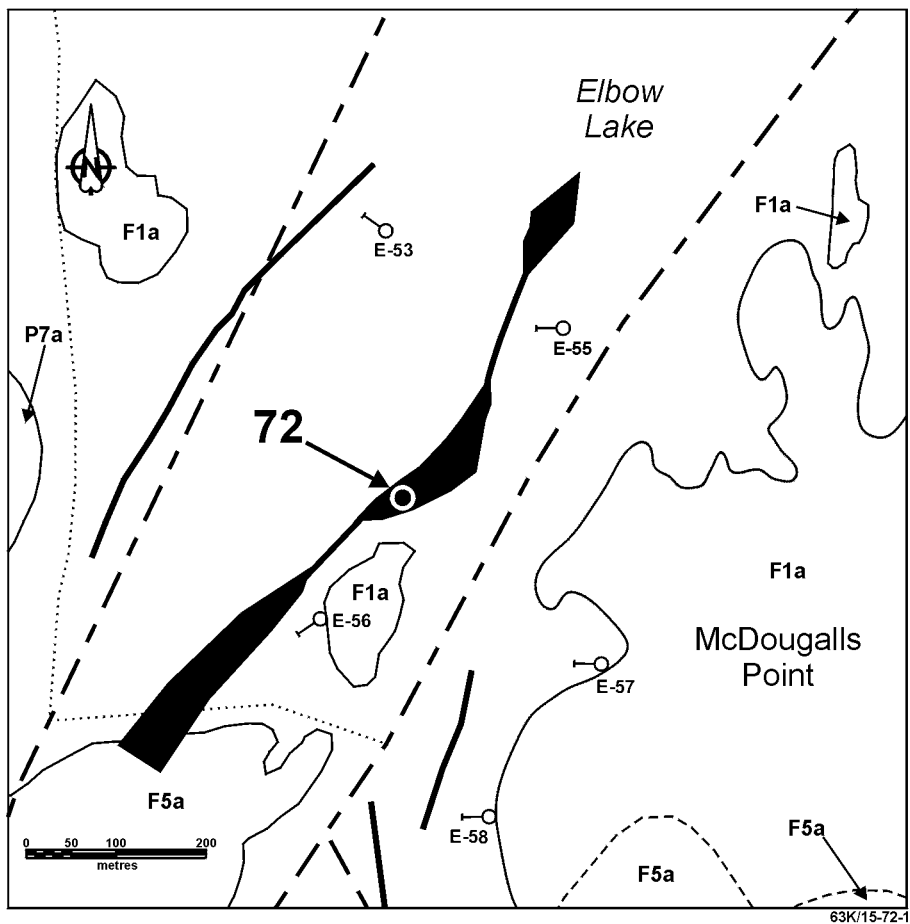
Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

**NATMAP Shield Margin Project Working Group**

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P7a** Granodiorite
- F5a** Gabbro, diabase
- F1a** McDougalls Point pillowed and massive basalt, diabase?

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

----- Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

———— EM conductor  
(A.F. 91487,92654)

○ Drillhole  
(A.F. 92654)

**72** ● Mineral occurrence location

Figure 72-1: Geological setting of occurrence 72.

## LOCATION: 73

NAME: mineralization intersected by diamond drilling  
UTM: 381640E, 6084515N  
AREA: approximately 200 m NE of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-57

## EXPLORATION SUMMARY

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 73-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), part of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), derived in this area from diabase and gabbro (unit P2f), and intruded by quartz-feldspar- and plagioclase-porphyry dykes. Diabase (unit P2f) occurs to the west of the occurrence.

The sequence intersected by the drill holes indicates that the rocks at the occurrence consist of "andesite", "quartz" and "hornblende diorite", and chloritic schist intervals (A.F. 90516).

## MINERALIZATION

The character of the sulphides was not well described in the drill hole lithologic descriptions. A zone of pyrite and pyrrhotite with minor graphite containing "good to disseminated sulphides" occurs between 104.9 and 108.6 m (344.0-356.2 ft.) in hole #2 (A.F. 90516). Two intervals containing up to 50% sulphides occur in hole #3 from 99.0-110.2 m (324.8-361.5 ft.) and 114.8-122.5 m (376.7-402.0 ft.).

## GEOCHEMICAL DATA

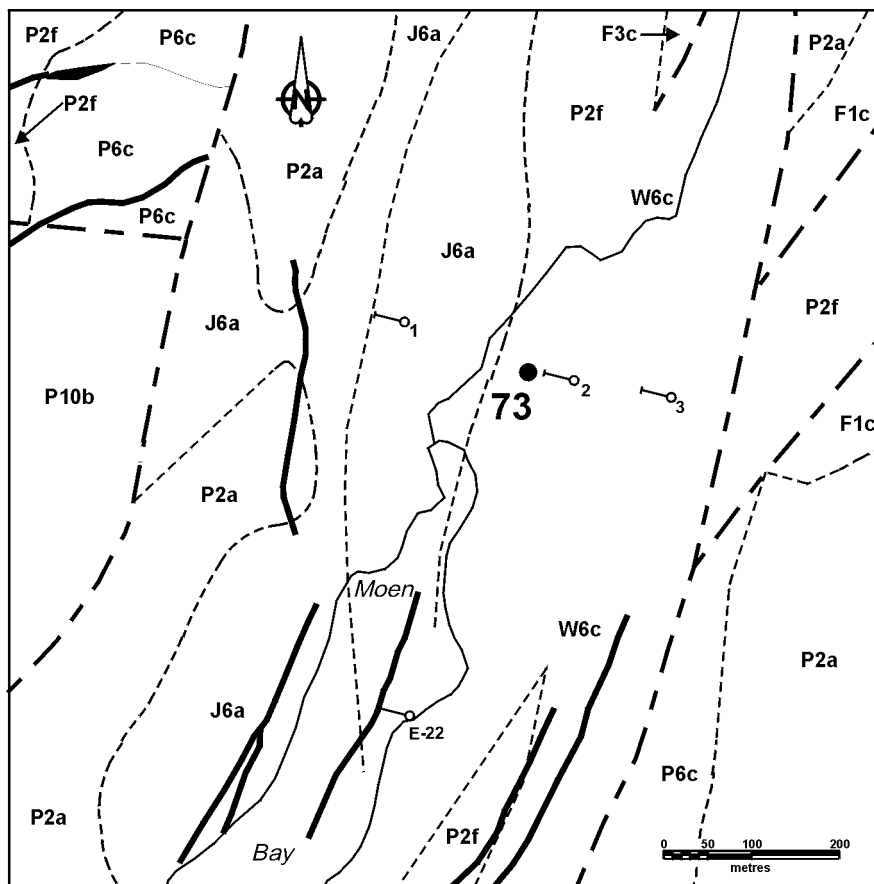
Mineralized intervals in holes #2 and #3 were sampled and assay results reported (A.F. 90516), but the location of the samples was not specified. All assays returned low metal values (Cu<0.19%, Zn<0.24%, Ni<0.07%, Au<0.52 g/t, and tr Ag).

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

- A.F. 90516, 90517, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.
- 1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.
- 1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.
- 1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.



#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P6c** Leucotonalite
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- J6a** Intermediate tuff, lapilli tuff, breccia
- F4a** Rhyolite to dacite flows, flow breccia
- F1c** Moen Bay pillowed basalt and breccia
- F3c** Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- ===== EM conductor (A.F. 90517, 90643, 92654)
- Drillhole (A.F. 90516, 92654)
- 73 ●** Mineral occurrence location

Figure 73-1: Geological setting of occurrence 73.

**LOCATION: 74**

NAME: mineralization intersected by diamond drilling  
UTM: 381370E, 6084605N  
AREA: approximately 200 m NNW of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-57

**EXPLORATION SUMMARY**

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 74-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by quartz-phyric rhyolite to dacite flows and flow breccia (unit J4a). Intermediate tuff, lapilli tuff, crystal-lapilli tuff and breccia (unit J6a) occur to the west. Sparsely plagioclase megacrystic diabase (unit P2f) occurs to the east of the occurrence.

The lithologic description for hole #1 indicates the sequence that hosts the occurrence is dominated by "andesite" and "quartz diorite", with minor chlorite schist and "granodioritic" intervals (A.F. 90516). The chlorite schist probably represents shear strands originating from the Elbow Lake shear zone.

**MINERALIZATION**

Several intervals containing up to 30% pyrite and lesser graphite were intersected in hole #1 (A.F. 90516). The character of the mineralization is not well described.

**GEOCHEMICAL DATA**

Mineralized intervals in hole #1 were sampled and assay results reported (A.F. 90516), but the location of the samples was not specified. All assays returned low metal values (Cu<0.18%, Zn<0.12%, Ni<0.06%, Au<0.18 g/t, and tr Ag).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 90516, 90517, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

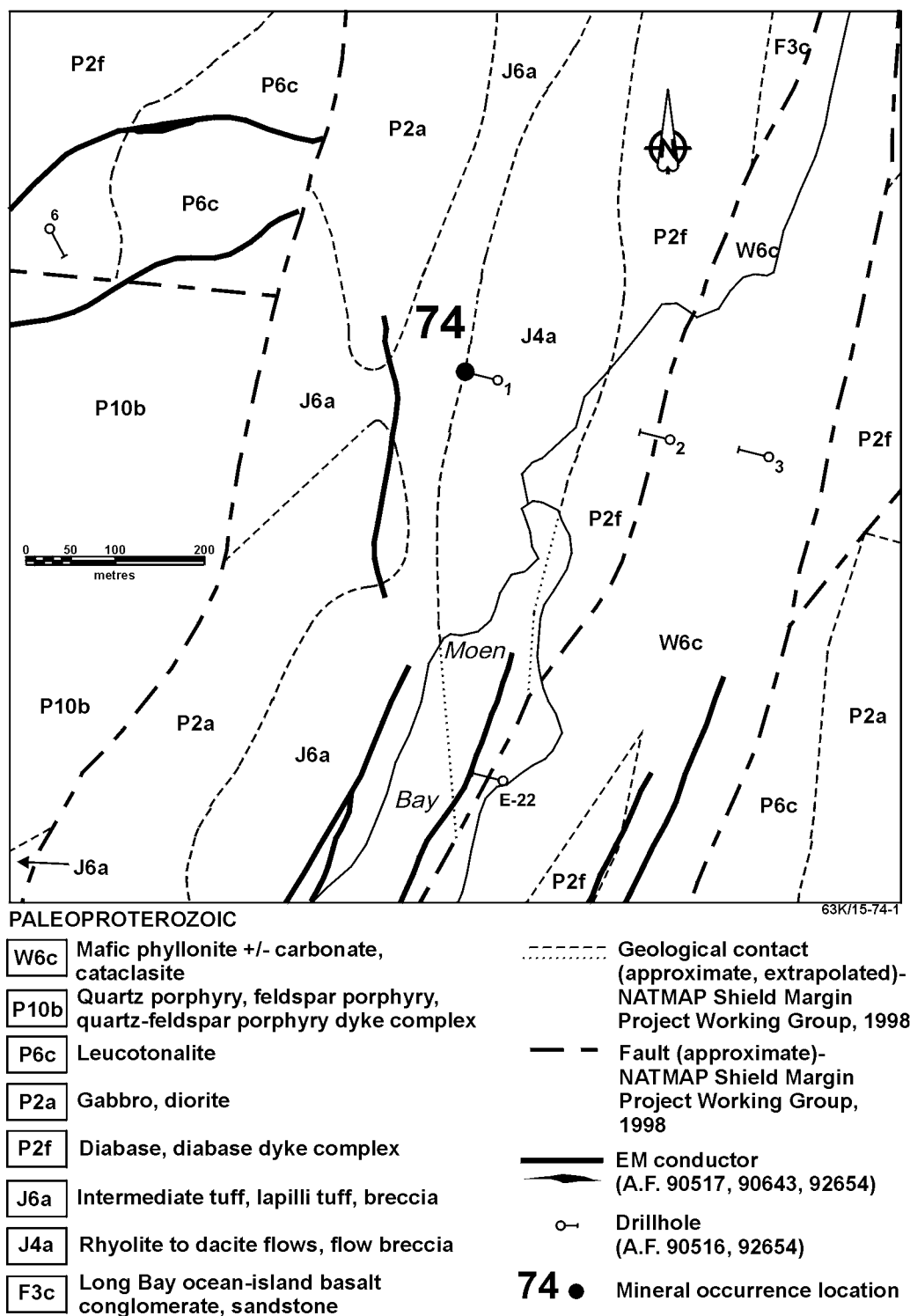


Figure 74-1: Geological setting of occurrence 74.



**LOCATION: 75**

NAME: mineralization intersected by diamond drilling  
 UTM: 380850E, 6084625N  
 AREA: approximately 600 m WNW of Moen Bay, Elbow Lake  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
 AIRPHOTO: MB90025-115

**EXPLORATION SUMMARY**

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 75-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by diabase and a diabase dyke complex (unit P2f). Fine-grained leucotonalite (unit P6c) underlies the area to the east of the occurrence.

The sequence intersected by hole #6 is dominated by "andesite", with lesser quartz-feldspar and quartz porphyry units (A.F. 90516). Minor graphitic sulphide-rich intervals are also present.

The litholog for hole E-4 indicates it is dominated by hornblende- and feldspar-phyric "andesite", with subordinate graphitic, banded and sheared "tuffs", and minor quartz-phyric "dacite" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

**MINERALIZATION**

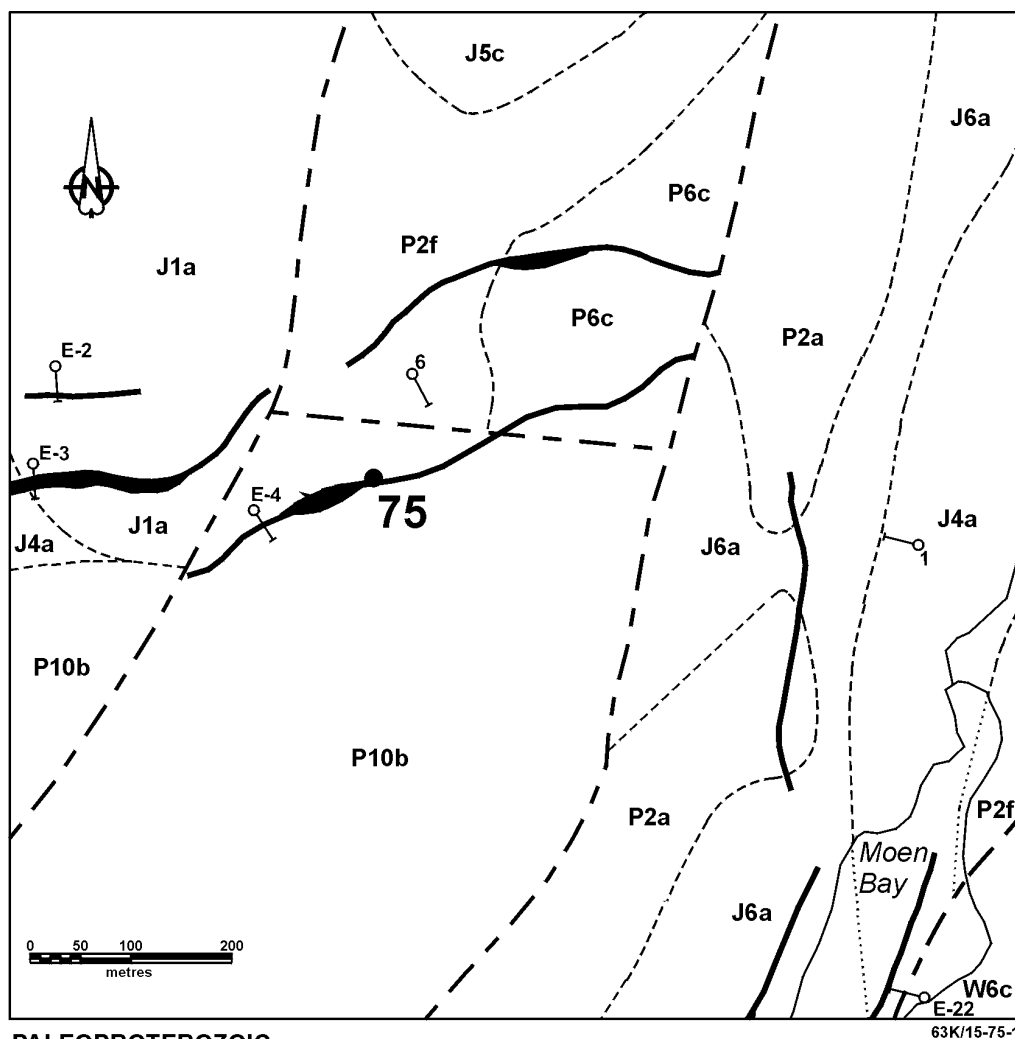
Hole #6 intersected several thin (<150 cm) "massive" sulphide (pyrite+pyrrhotite±graphite) units (A.F. 90516). The character of the mineralization was not described, but occurs in association with both the mafic volcanic rocks and the porphyries.

Several thin (generally <1.5 m) sulphide-rich intervals, containing up to 50% pyrite associated with pyrrhotite, were intersected in hole E-4 (A.F. 90643, 92654). Graphite is an associated minor constituent. The character of the mineralization is not described, but is often associated with fine-grained, "well differentiated tuff".

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled (A.F. 90516, 90643, 92654) (see table below).

Hole No.	Interval	%Cu	%Ni	Au	Ag
6	83.1-83.8 m (272.8-274.8 ft.)	0.20	0.14	tr	tr
	85.1-85.4 m (279.2-280.3 ft.)	0.15	0.06	tr	tr
	99.6-100.2 m (326.7-328.8 ft.)	0.18	0.11	tr	tr
	101.8-103.3 m (334.0-339.0 ft.)	0.18	0.09	0.01	tr
	103.3-104.6 m (339.0-343.2 ft.)	0.15	0.08	tr	tr
	109.7-111.3 m (360.0-365.0 ft.)	0.12	0.11	tr	tr
	118.1-118.6 m (387.5-389.0 ft.)	0.16	0.06		
Hole No.	Interval	%Cu	%Zn	%Ni	Au
E-4	22.6-23.9 m (74.1-78.5 ft.)	0.04	tr		nil
	25.7-26.2 m (84.4-85.9 ft.)	0.04	0.07		nil
	26.2-26.7 m (85.9-87.6 ft.)	0.04		0.02	
	28.7-29.1 m (94.0-95.5 ft.)	0.05	0.09		nil
	37.5-38.4 m (123.0-125.9 ft.)	0.05	0.16	0.03	0.34 g Au/t (0.01 oz. Au/ton)
	39.2-40.0 m (128.5-131.1 ft.)	0.03		0.02	0.34 g Au/t (0.01 oz. Au/ton)
	53.1-53.8 m (174.1-176.6 ft.)	0.06		0.03	tr
	53.8-54.9 m (176.6-180.2 ft.)	0.04	0.15		nil
	68.7-69.0 m (225.4-226.4 ft.)	0.04	0.02		nil
	75.3-75.7 m (247.2-248.5 ft.)	0.06	0.09	0.04	



#### PALEOPROTEROZOIC

<b>W6c</b>	Mafic phyllonite +/- carbonate, cataclasite
<b>P10b</b>	Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
<b>P6c</b>	Leucotonalite
<b>P2a</b>	Gabbro, diorite
<b>P2f</b>	Diabase, diabase dyke complex
<b>J6a</b>	Intermediate tuff, lapilli tuff, breccia
<b>J5c</b>	Heterolithic breccia, dominantly mafic fragments
<b>J4a</b>	Rhyolite to dacite flows, flow breccia
<b>J1a</b>	Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- - - Fault or shear margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90517, 92042)
- Drillhole (A.F. 90516, 90643, 92654)
- 75 ●** Mineral occurrence location

Figure 75-1: Geological setting of occurrence 75.

#### CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

#### REFERENCES

A.F. 90516, 90517, 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

## LOCATION: 76

NAME: mineralization intersected by diamond drilling  
UTM: 399670E, 6079345N  
AREA: approximately 400 m N of North Star Lake  
ACCESS: via bush aircraft to North Star Lake, then traverse  
AIRPHOTO: MB90026-2

## EXPLORATION SUMMARY

In 1958 Hudson Bay Exploration and Development Company, Limited drilled several EM conductors along the north side of North Star Lake (A.F. 90493). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 76-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic tectonite with mafic to felsic intrusive sheets (unit W6b). These rocks lie within the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than

25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of these units. They are located in the Central zone metasedimentary sequence. In the occurrence area the sequence consists of interlayered massive to layered amphibolite, massive to layered psammopelitic rocks, amphibolite with abundant epidote±quartz lenses, and layered quartz±feldspar-phryic rhyolite. A medium-grained gabbro intrusion (?) is also present.

The highly variable nature of this part of the sequence as indicated in outcrop was confirmed by the drill holes that intersected this occurrence. The core from holes A-1, -5, and -7 consists of quartz-biotite±garnet±chlorite "gneisses", amphibole-plagioclase±garnet±chlorite schists and "gneisses", feldspar porphyry, andesite, diorite, gabbro and quartz±garnet±biotite±sericite±chlorite±amphibole porphyry (A.F. 90493).

## MINERALIZATION

Several mineralized intervals were intersected in holes A-1, -5 and -7 as follows (A.F. 90493) (see table below).

Hole No.	Interval	Mineralization
A-1	53.5-53.8 m (175.4-176.4 ft.) 55.1-55.3 m (180.8-181.4 ft.)	"near solid" pyrite, minor chalcopyrite, in chloritic gabbro pyrite with chalcopyrite, in chloritic gabbro
A-5	63.2-63.9 m (207.4-209.6 ft.)	"nearly solid" pyrrhotite, pyrite, minor chalcopyrite, in quartz-biotite "gneiss"
A-7	115.6-119.7 m (379.2-392.6 ft.)	"slight" to "well mineralized" pyrrhotite, pyrite, trace chalcopyrite, in amphibole-plagioclase-garnet "gneiss"

## GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence may be a vein system in gabbro. If this is the case, this occurrence may have some platinum-group element potential.

## REFERENCES

A.F. 90493, 90643 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.  
NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

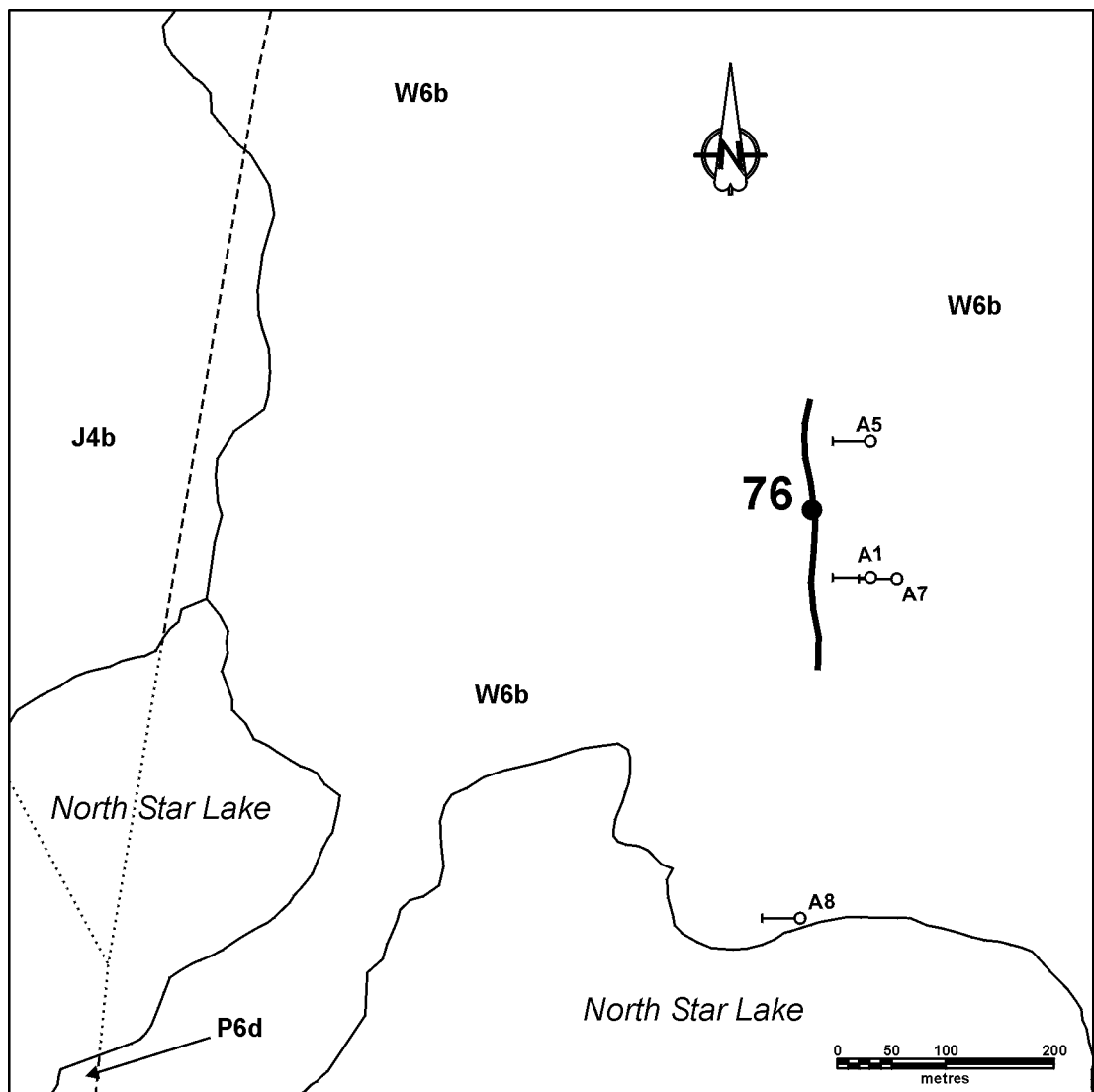
1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.



#### PALEOPROTEROZOIC

**W6b** Mafic tectonite with mafic-felsic intrusive sheets

**P6d** Tonalite to quartz diorite

#### Juvenile Arc

**J4b** Felsic gneiss +/- garnet +/- amphibole

----- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998

— EM conductor (A.F. 90643)

**76 ●** Mineral occurrence location

Figure 76-1: Geological setting of occurrence 76.

## LOCATION: 77

NAME: mineralization intersected by diamond drilling  
UTM: 380530E, 6084645N  
AREA: approximately 900 m WNW of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-115

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 77-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located near the boundary between basalt, basaltic andesite, gabbro and derived amphibolite (unit F1a) to the east and rhyolite to dacite flows and flow breccia (unit J4a) to the west. Diabase dyke (unit P2f) and felsic dyke (unit P10b) complexes occur to the east of the occurrence.

The litholog describing the host sequence for the occurrence indicates it consists of a mixed assemblage of "andesite", quartz and quartz-feldspar-phyrlic "dacite" to "rhyolite", and subordinate graphitic, banded and sheared "tuffs" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

## MINERALIZATION

Several thin (generally <1.5 m) sulphide-rich intervals, containing up to 40% pyrite associated with

pyrrhotite, were intersected in hole E-3 (A.F. 90643, 92654). Graphite is an associated minor constituent. The mineralization occurs as disseminations and irregular masses, and is often associated with fine-grained, finely laminated "tuff".

## GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled drill hole E-3 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
24.0-25.1 m (78.6-82.3 ft.)	0.04	0.50	nil
29.1-30.2 m (95.6-99.2 ft.)	0.07	0.05	tr
43.8-44.2 m (143.7-145.0 ft.)	0.04	0.21	nil
48.8-50.0 m (160.2-164.0 ft.)	0.02	0.16	
51.7-52.6 m (169.7-172.7 ft.)	0.04	0.15	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a common minor constituent.

## REFERENCES

A.F. 90516, 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

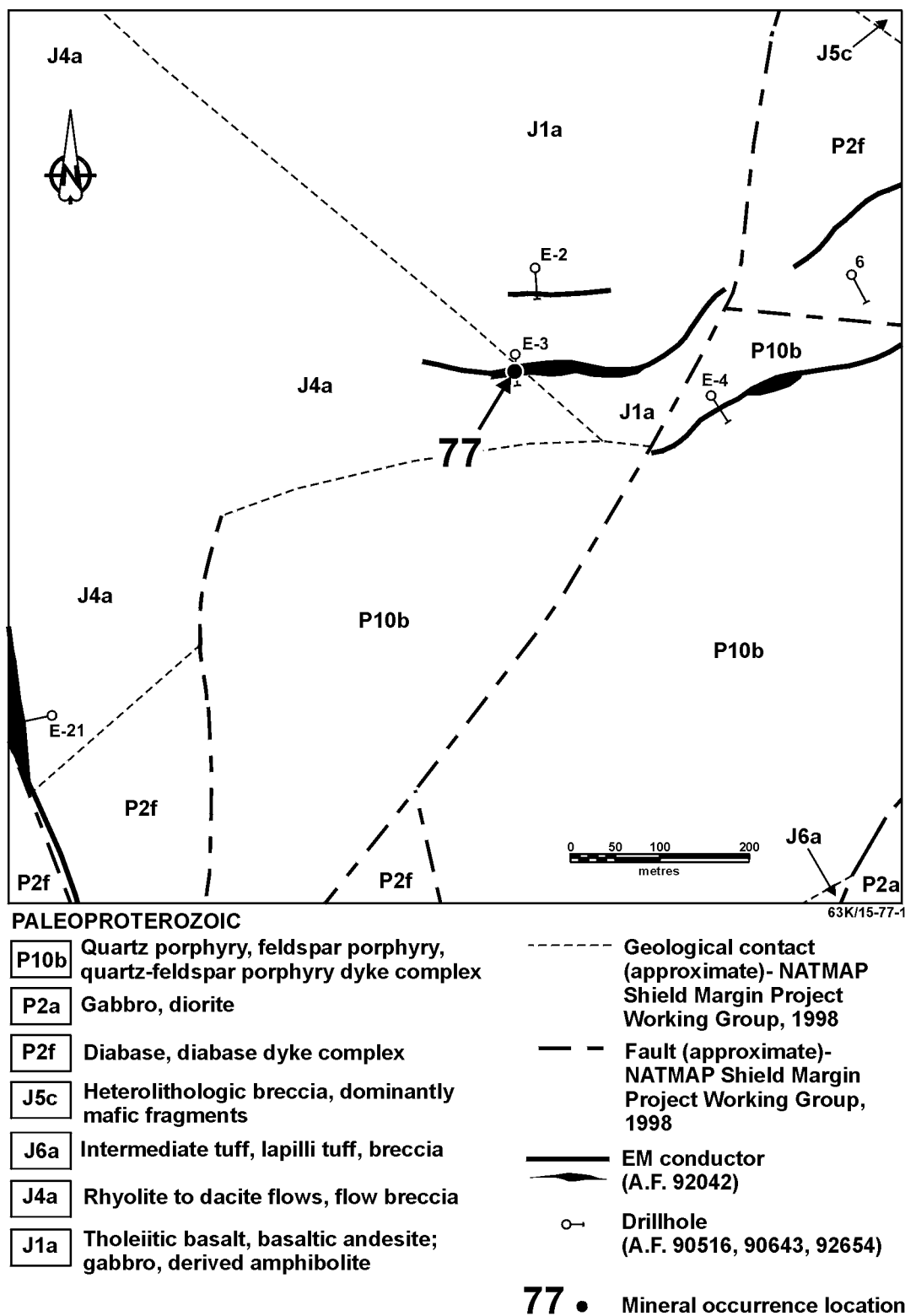


Figure 77-1: Geological setting of occurrence 77.

**LOCATION: 78**

NAME: mineralization intersected by diamond drilling  
UTM: 380550E, 6084735N  
AREA: approximately 1.0 km WNW of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-115

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 78-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located near the boundary between basalt, basaltic andesite, gabbro and derived amphibolite (unit F1a) to the east and rhyolite to dacite flows and flow breccia (unit J4a) to the west. Diabase dyke (unit P2f) and felsic dyke (unit P10b) complexes occur to the east of the occurrence.

The litholog describing the host sequence for the occurrence indicates it consists of a mixed assemblage of "andesite", "tuff", quartz-feldspar-amphibole-phyric "dacite", and "rhyolite" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

**MINERALIZATION**

Up to 50% pyrite occurs within a "tuff" interval in hole E-2, but its character is not described (A.F. 90643, 92654). Graphite is a minor constituent throughout this unit.

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled drill hole E-2 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
54.2-55.4 m (177.8-181.8 ft.)	0.20	0.05	nil
55.6-57.1 m (182.3-187.3 ft.)	0.09	0.11	nil
57.1-59.0 m (187.3-193.5 ft.)	0.08	0.07	nil

**CLASSIFICATION**

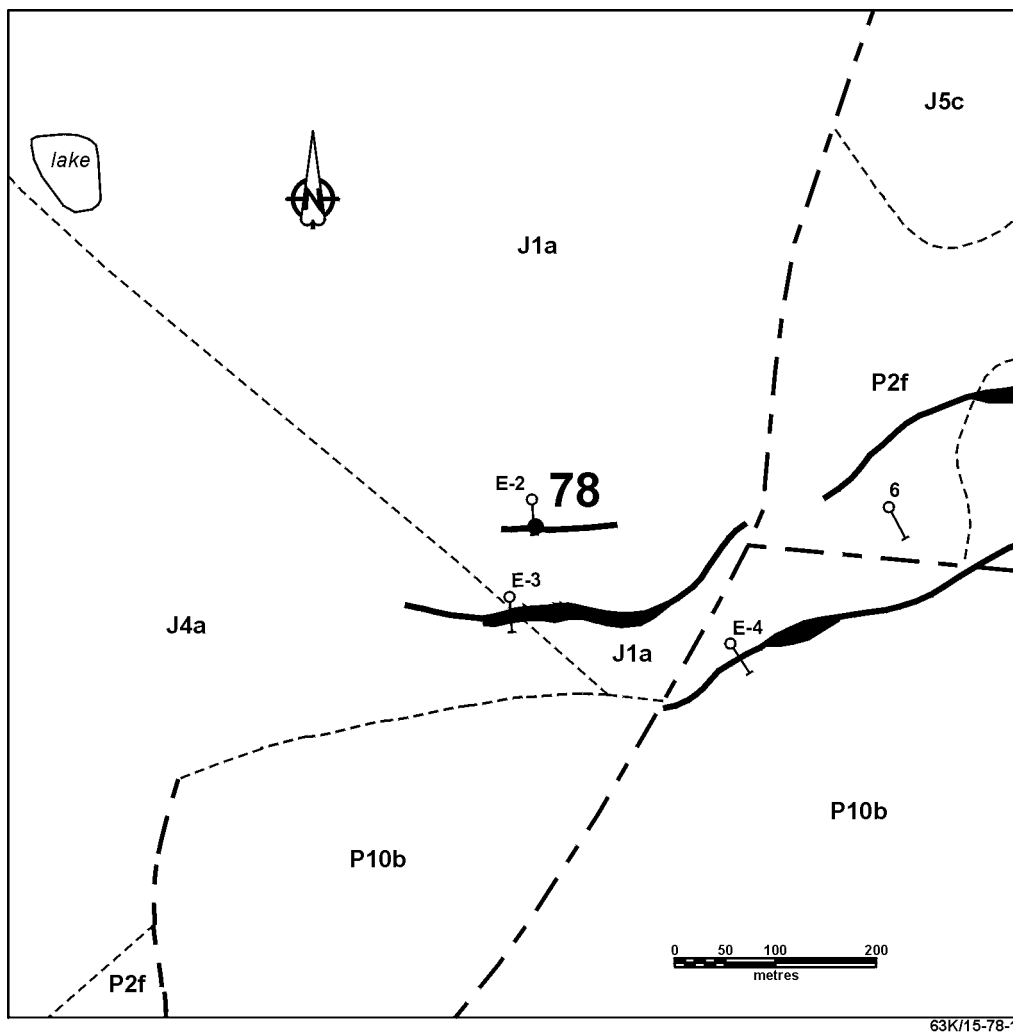
Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a common minor constituent.

**REFERENCES**

A.F. 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P2f** Diabase, diabase dyke complex
- P6c** Leucotonalite
- J5c** Heterolithic breccia, dominantly mafic fragments
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- - - Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 92042)
- Drillhole (A.F. 90643, 92654)

**78 ●** Mineral occurrence location

Figure 78-1: Geological setting of occurrence 78.



## LOCATION: 79

NAME: mineralization intersected by diamond drilling  
UTM: 380010E, 6084040N  
AREA: approximately 1.3 km W of north end of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-115

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 79-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (grouped under unit J4a), and is part of the Tee Lake dyke complex. The "North Bay" intermediate crystal-lapilli tuff (unit J6a) is located to the west of the occurrence. Sparsely plagioclase megacrystic and oikocrystic diabase (unit P2f) occurs to the south. Massive aphyric Tee Lake rhyolite (unit J10b) is in fault contact with the Tee Lake dyke complex and diabase assemblage to the west.

Hole E-21 intersected a volcanoclastic sequence consisting of intermediate tuffaceous and coarser fragmental intervals, massive intermediate volcanic rocks,

and massive and fragmental rhyolite (A.F. 92654). The tuffaceous intervals are described as being well bedded, but it is unclear if their banded character is a primary depositional feature or the result of subsequent tectonic influences.

## MINERALIZATION

Several sulphide-rich intervals, containing up to 85% pyrite, occur in hole E-21. Graphite is a minor constituent of the mineralized units. The pyrite is finely laminated and is closely associated with the tuffaceous and felsic units.

## GEOCHEMICAL DATA

The following assay was obtained from one of the mineralized intervals sampled (A.F. 92654):

Interval	%Cu	%Zn	Au
39.1-40.7 m (128.3-133.5 ft.)	0.03	0.03	tr

## CLASSIFICATION

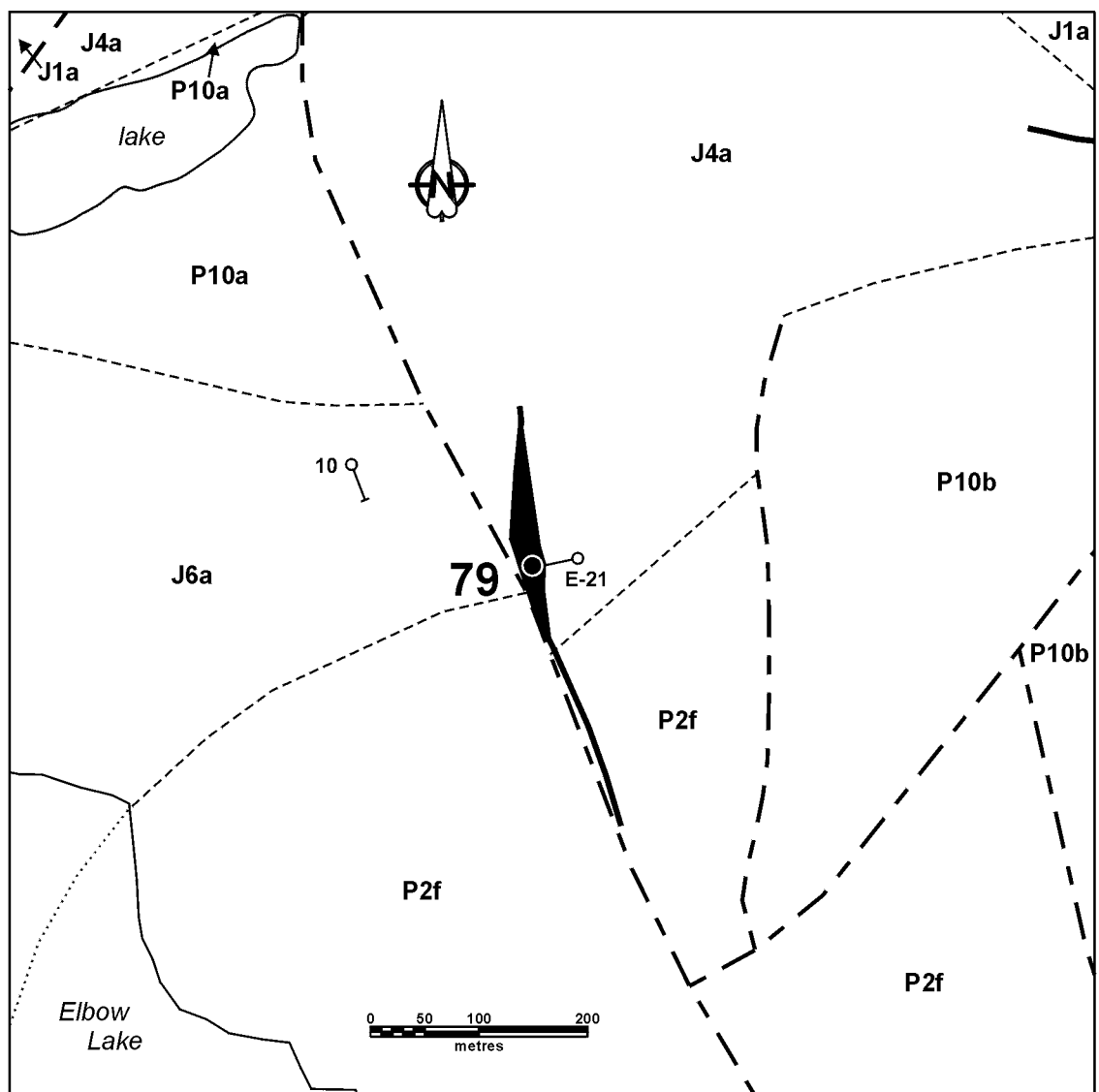
Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a minor constituent.

## REFERENCES

A.F. 91487, 92042, and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-79-1

#### PALEOPROTEROZOIC

- P10a** Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P2f** Diabase, diabase dyke complex
- J6a** Intermediate tuff, lapilli tuff, breccia
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- - - Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92042, 92654)
- Drillhole (A.F. 91487, 92654)

**79 ●** Mineral occurrence location

Figure 79-1: Geological setting of occurrence 79.

**LOCATION: 80**

NAME: mineralization intersected by diamond drilling  
 UTM: 379765E, 6084305N  
 AREA: approximately 300 m N of bay west of Moen Bay, Elbow Lake  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
 AIRPHOTO: MB90025-115

**EXPLORATION SUMMARY**

In 1957 Prospectors Airways Company Ltd. drilled a hole at the occurrence (A.F. 90504). In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 80-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the "North Bay" intermediate crystal-lapilli tuff (unit J6a). Sparsely plagioclase megacrystic and

oikocrystic diabase (unit P2f) occurs to the south, and the Tee Lake dyke complex, consisting of diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (grouped under unit P10a) occurs to the north. Massive aphyric Tee Lake rhyolite (unit J4a) is in fault contact with the "North Bay" tuff to the east.

Hole #10 intersected intermediate to felsic volcanic rocks and tuffaceous and coarser fragmental equivalents (A.F. 90504). Graphite is a common minor constituent in many of the units.

**MINERALIZATION**

Several "massive" pyrite+graphite - rich units were intersected in hole #10 at the following intervals: 110.6-124.5 m (363.0-408.5 ft.); 138.1-160.3 m (453.0-526.0 ft.); 175.3-184.4 m (575.0-605.0 ft.); 203.3-204.8 m (667.0-672.0 ft.) (A.F. 90504).

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled (A.F. 90504) (see table below).

Interval	%Cu	%Zn	%Ni	g Au/t (oz./ton)	g Ag/t (oz./ton)
111.2-111.6 m (364.7-366.2 ft.)	0.07	nil	0.06	0.68 (0.02)	1.37 (0.04)
115.4-116.9 m (378.5-383.5 ft.)	0.12	0.20	0.10	0.68 (0.02)	9.59(0.28)
121.3-122.8 m (398.0-403.0 ft.)	0.10	0.30	0.08	tr	1.37 (0.04)
122.8-124.5 m (403.0-408.5 ft.)	0.07	0.30	0.08	0.34 (0.01)	2.05 (0.06)
138.1-139.6 m (453.0-458.0 ft.)	0.07	0.20	0.08	tr	2.05 (0.06)

**CLASSIFICATION**

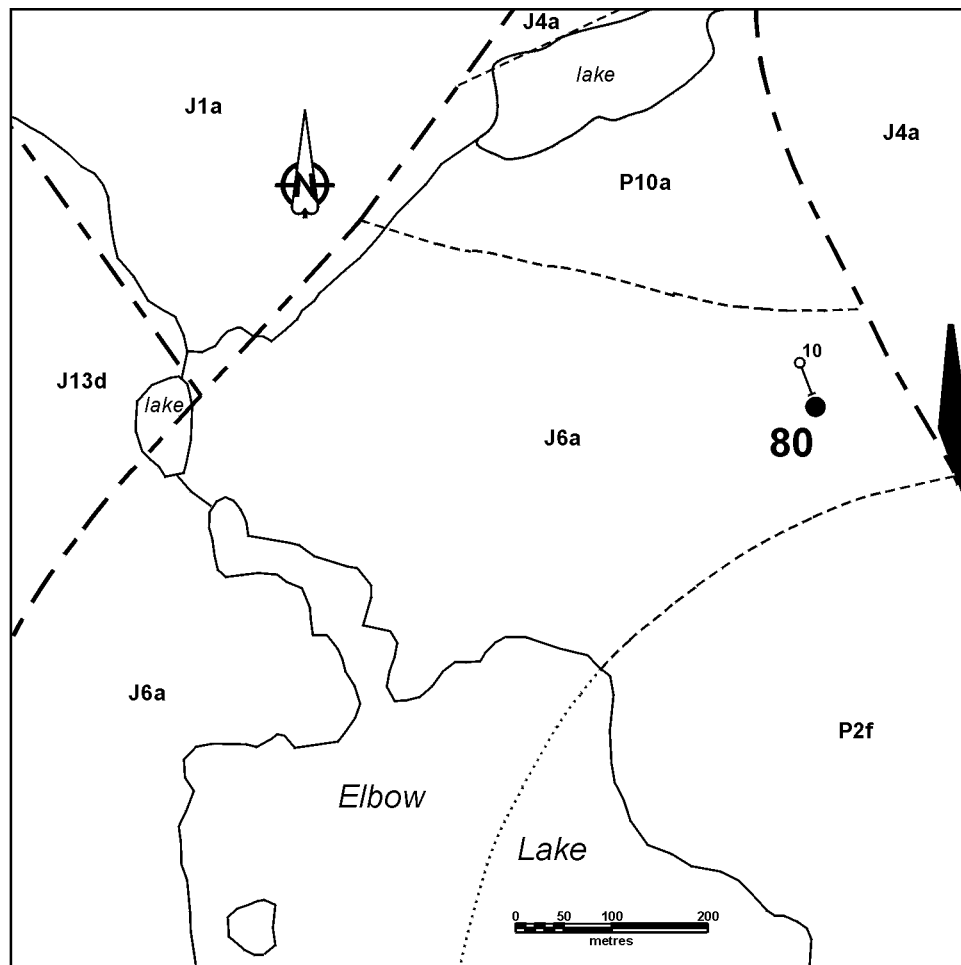
Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a major constituent.

**REFERENCES**

A.F. 90504 and 92042; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-80-1

#### PALEOPROTEROZOIC

- P10a** Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
- P2f** Diabase, diabase dyke complex
- J13d** Complex of felsic to mafic dykes
- J6a** Intermediate tuff, lapilli tuff, breccia
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 92042)
- Drillhole (A.F. 90504)
- 80 ●** Mineral occurrence location

Figure 80-1: Geological setting of occurrence 80.

## LOCATION: 81

NAME: mineralization intersected by diamond drilling  
UTM: 379510E, 6083265N  
AREA: under bay W of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-115

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 81-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by sparsely plagioclase megacrystic and oikocrystic diabase (unit P2f). The "North Bay" intermediate crystal-lapilli tuff (unit J6a) occurs to the west. An enclave of Long Bay basaltic conglomerate (unit F3c) outcrops NE of the occurrence.

Hole E-25 intersected a sequence consisting of intermediate to felsic, finely layered tuff, intermediate volcanic rocks ("dacite" and "andesite"), and feldspar porphyry (A.F. 92654).

## MINERALIZATION

One 1.5 m (5.0 ft.) interval with 80% fine-grained, finely bedded, "massive" pyrite was intersected in hole E-25 (A.F. 92654). This interval also contains 15% graphite.

## GEOCHEMICAL DATA

The following assay was obtained from the mineralized interval (A.F. 92654):

Interval	%Cu	%Zn	Au
34.2-35.7 m (112.2-117.2 ft.)	0.05	0.02	tr

## CLASSIFICATION

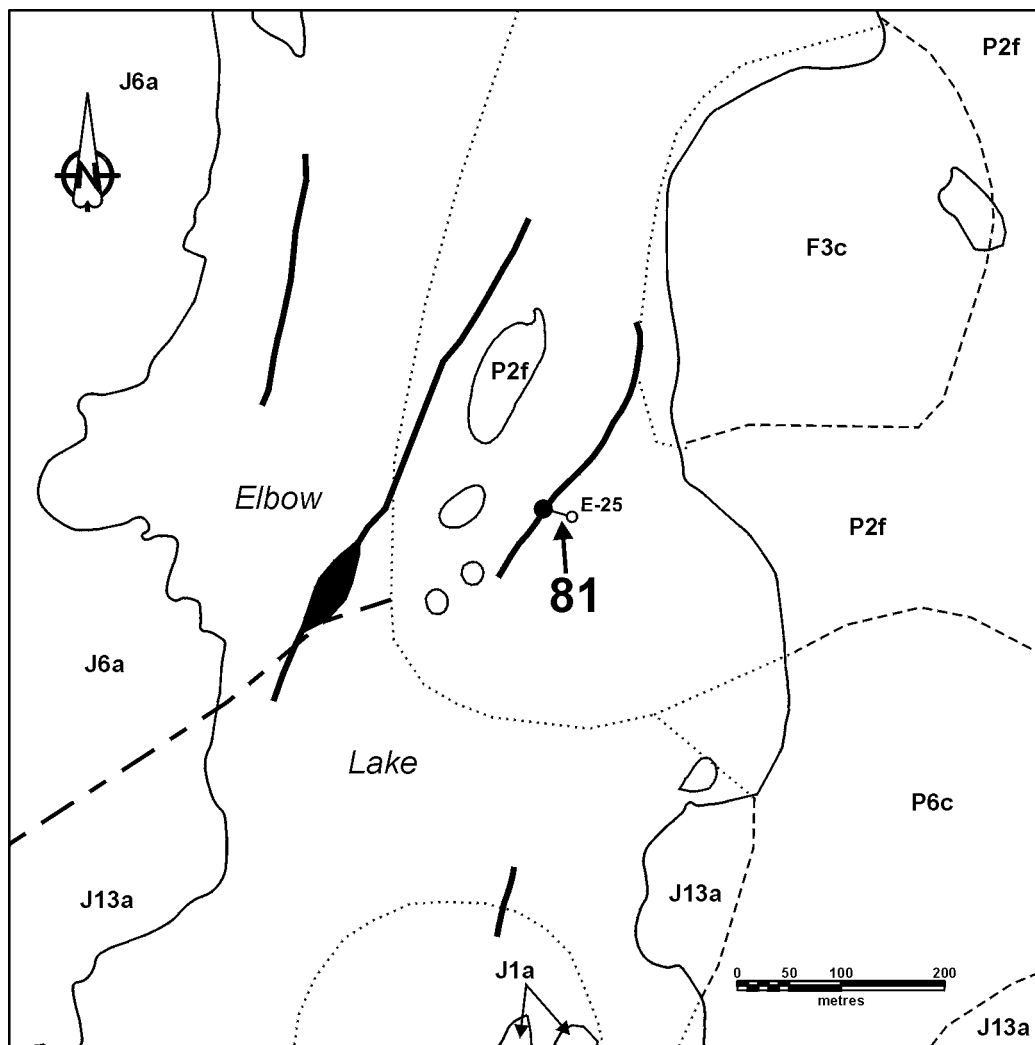
Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a major constituent.

## REFERENCES

A.F. 91487, 92042, and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P6c** Leucotonalite
- P2f** Diabase, diabase dyke complex
- J13a** Basalt, mafic porphyry
- J6a** Intermediate tuff, lapilli tuff, breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
- Plume-related basalt
- F3c** Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 92042)
- Drillhole (A.F. 91487, 92654)
- 81 ●** Mineral occurrence location

Figure 81-1: Geological setting of occurrence 81.

**LOCATION: 82**

NAME: mineralization intersected by diamond drilling  
UTM: 377750E, 6077120N  
AREA: under Elbow Lake, W of McDougalls Point  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-136

**EXPLORATION SUMMARY**

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 82-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). This unit is cut by a NNE-trending fault to the ESE of the occurrence. Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite of the Big Rat Lake pluton (unit P7a) occurs to the west.

Hole E-53 intersected a sequence consisting of massive to schistose mafic volcanic rocks with minor massive and "tuffaceous" rhyolitic intervals (A.F. 92654). Two schistose graphitic units containing massive mafic and felsic volcanic rocks are also present. Granodiorite, probably part of the Big Rat Lake pluton, was inter-

sected near the top of the hole. The bottom of the hole intersected interbedded "siltstone" and "quartzite". It is unclear if their bedded character is a primary depositional feature or the result of subsequent tectonic influences.

**MINERALIZATION**

Two intervals containing 5-10%, and locally up to 30%, pyrite as fine stringers in graphitic schist were intersected in hole E-53 (A.F. 92654). These occur between 63.4-102.4 m (208.0-336.0 ft.), and 110.6-114.6 m (363.0-376.0 ft.).

**GEOCHEMICAL DATA**

No assays were reported in the assessment file for any of the mineralized intervals.

**CLASSIFICATION**

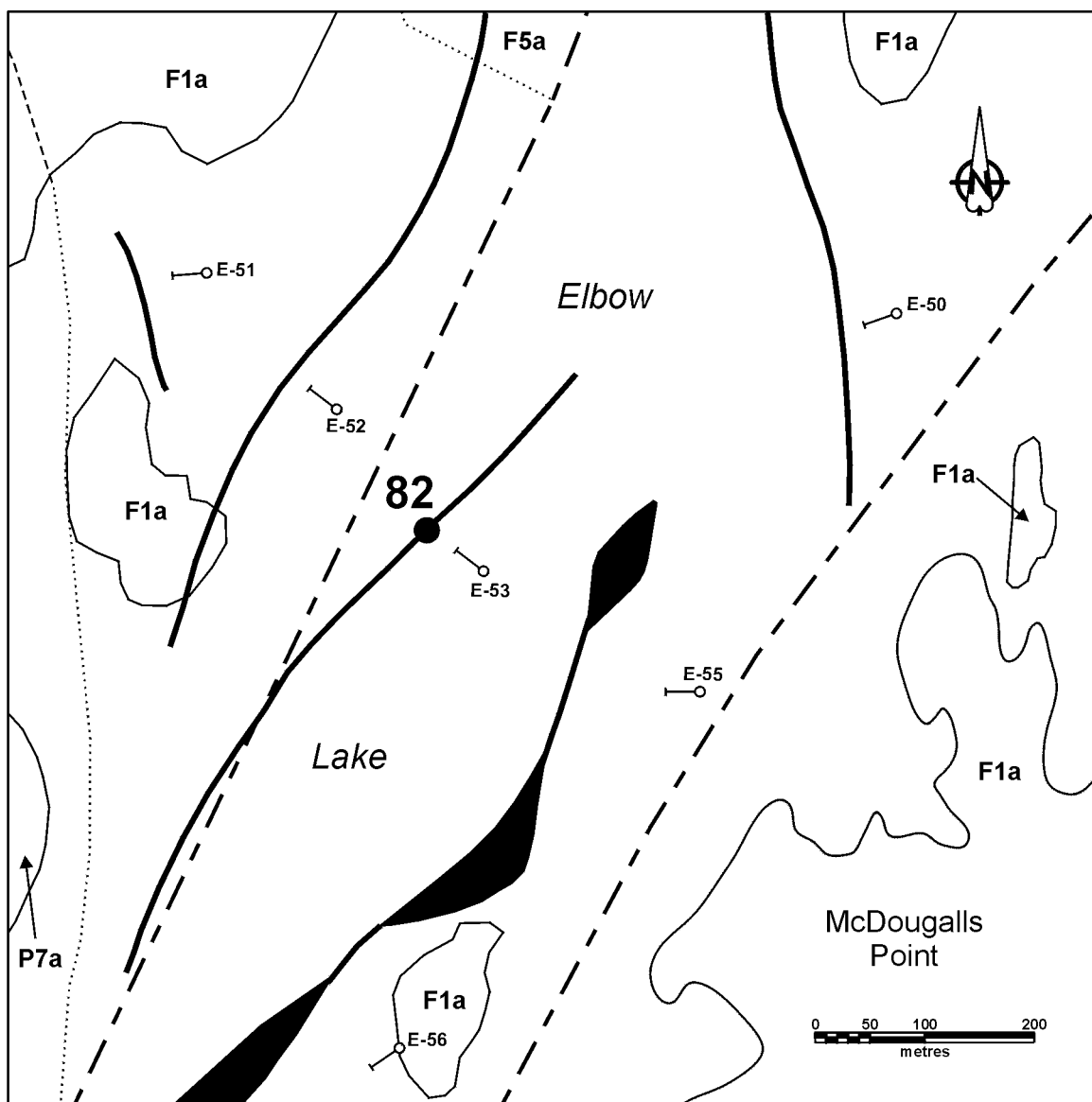
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the associated lithologies.

**REFERENCES**

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P7a** Granodiorite
- F5a** Gabbro, diabase
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- - - Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- ===== EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 92654)
- 82 ●** Mineral occurrence location

Figure 82-1: Geological setting of occurrence 82.



## LOCATION: 83

NAME: Webb ("Bay", "Two Dogs" and "Creek") occurrence

UTM: 375550E, 6087465N

AREA: along west shore of unnamed lake, approximately 800 m SSW of Webb Lake

ACCESS: via bush aircraft, then traverse

AIRPHOTO: MB90025-196

## EXPLORATION SUMMARY

In 1936 J. Macdougall staked a claim in the area. Some trenching appears to have been undertaken in the 1940's and 50's, but has not been recorded in the assessment files. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 83-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area was mapped by Schledewitz (1993a, b), who indicates it is underlain by mafic tectonite derived from mafic volcanic flows. To the east the sequence consists of foliated, homogeneous, mafic flows with isolated pillows. Hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills (unit P2f), and quartz-phyric rhyodacite also occur in the eastern sequence. This assemblage is grouped under unit J13d. The Echo Lake pluton is separated from the supracrustal sequence to the east by the Webb Creek fault, a structure that has been traced southward to west of Long Bay on Elbow Lake.

The occurrence is located within chloritic, well foliated, mafic tectonite that comprises the Webb Creek fault. This fault is coincident with HLEM conductors at and south of the occurrence.

## MINERALIZATION

The northernmost part of the Webb occurrence is exposed in two trenches along the NW shoreline of the

lake (unofficial name J.S. Lake) SSW of Webb Lake ("Bay" showing, A.F. 92997). It consists of a massive pyrrhotite lens with minor pyrite and chalcopyrite. The lens contains quartz inclusions and is cut by fine-grained chlorite and quartz stringers.

A limonitic, gossanous area, formed from weathering sulphides, is exposed in a group of seven trenches ("Two Dogs" showing, A.F. 92997) along the west shoreline of J.S. Lake. Pyrrhotite, pyrite and minor chalcopyrite are present (A.F. 92997).

The southernmost part of the Webb occurrence ("Creek" showing, A.F. 92997) is exposed in two trenches at the head of the creek draining from the SW side of J.S. Lake. The trenches expose sulphide-bearing quartz veins in mafic phyllonite. The sheared rock contains pods, lenses and stringers of "massive" and "semi-massive" pyrite and pyrrhotite.

## GEOCHEMICAL DATA

Chip and grab samples of quartz vein and sulphide-rich material were collected from various locations at the occurrence. Assay values ranged between 0.342-7.425 g Au/t (0.001-0.217 oz. Au/ton). Most values fall into the lower part of this range, and the assays average 0.479 g Au/t (0.014 oz. Au/ton).

## CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Deposit has been considerably modified, in part by deformation along the Webb Creek fault.

## REFERENCES

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

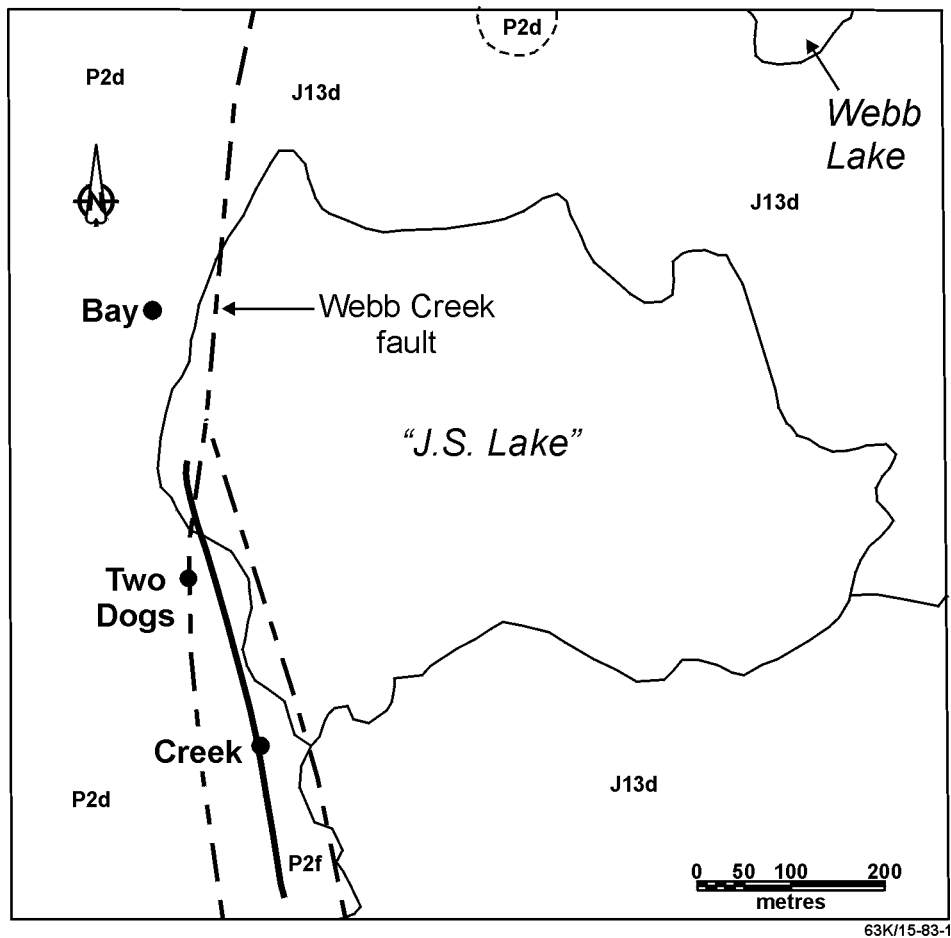
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- P2d** Quartz diorite and gabbro
- P2f** Diabase, diabase dyke complex
- J13d** Complex of felsic to mafic dykes

----- Geological contact  
(approximate)- NATMAP  
Shield Margin Project  
Working Group, 1998

— Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 92997)

**Bay ●** Mineral occurrence location

Figure 83-1: General geology at occurrence 83 (Bay, Two Dogs, Creek).

**LOCATION: 84**

NAME: mineralization intersected by diamond drilling  
UTM: 381400E, 6084145N  
AREA: under north end of Moen Bay, Elbow Lake,  
along east side  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-57

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 84-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by rhyolite to dacite flows and flow breccia (unit J4a) and intermediate tuff, lapilli tuff and breccia (unit J6a), which comprise part of the "North Bay" assemblage. Sparsely plagioclase mega-crystic diabase (unit P2f) occurs to the NNE, and mafic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) occur a short distance to the east.

The litholog for hole E-22 indicates the sequence associated with the occurrence mineralization consists of rhyolitic "tuff" and banded dacite with minor massive "andesite" (A.F. 92654). The banded character of the units may be a tectonic feature, given the proximity of the Elbow Lake shear zone, and may not be a primary depositional fabric.

**MINERALIZATION**

An interval containing up to 50% pyrite concentrated in 2.5 cm bands was intersected between 39.4-40.7 m (129.3-133.5 ft.) in hole E-22 (A.F. 92654).

**GEOCHEMICAL DATA**

The following assay was obtained from the mineralized interval (A.F. 92654):

Hole No.	Interval	%Cu	%Zn	Au
E-22	39.4-40.7 m (129.3-133.5 ft.)	0.03	0.03	tr

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. Deposit appears to have been considerably modified, in part by deformation along the Elbow Lake shear zone.

**REFERENCES**

A.F. 90516, 91487, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

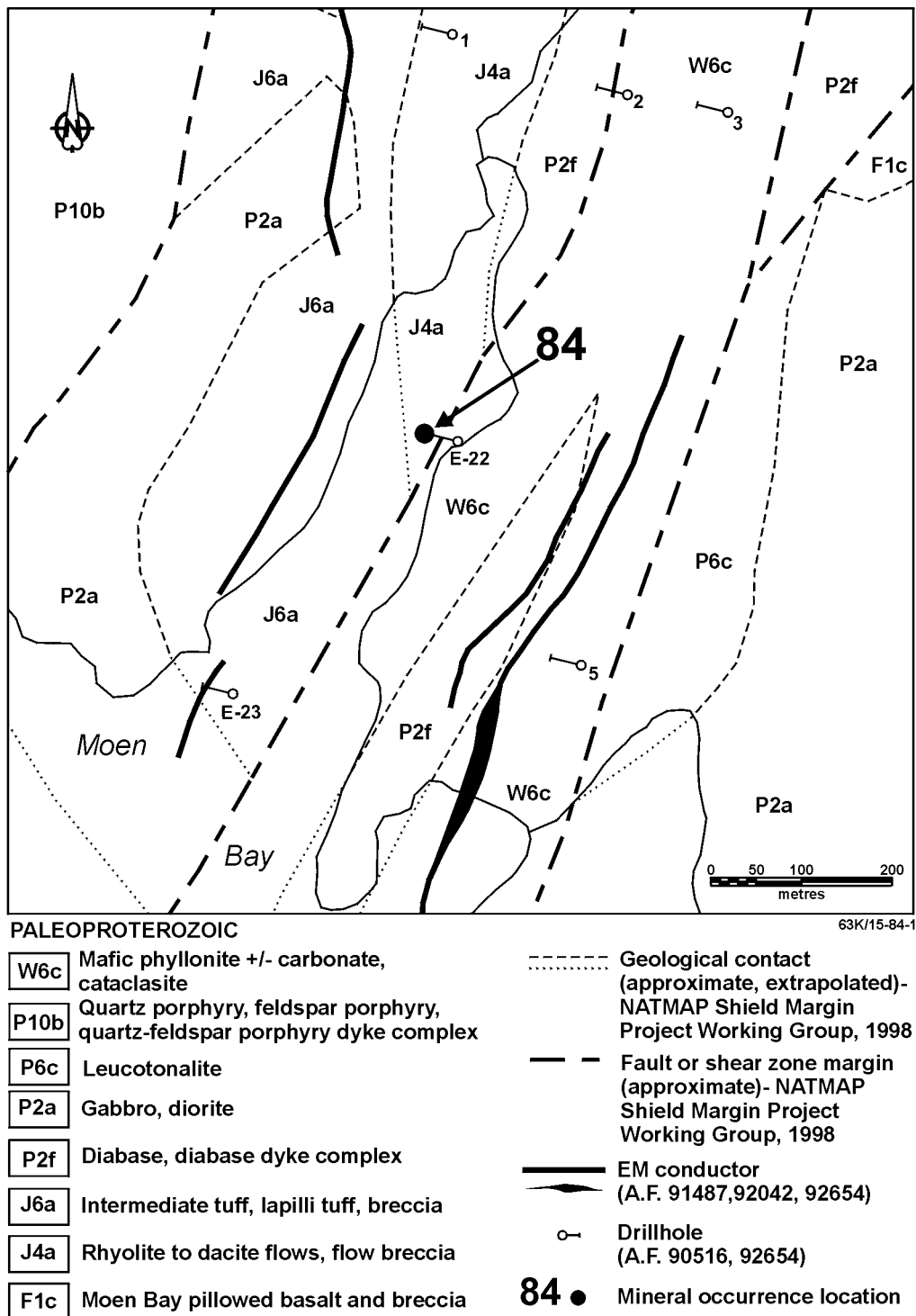


Figure 84-1: Geological setting of occurrence 84.

**LOCATION: 85**

NAME: mineralization intersected by diamond drilling  
UTM: 377400E, 6082825N

AREA: near NW shore of Elbow Lake, approximately  
800 m NW of shoreline NW of Webb Island

ACCESS: via bush plane or by boat through the  
Cranberry Lakes from Cranberry Portage, then tra-  
verse

AIRPHOTO: MB90025-140

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) geophysical survey covering Long Bay on Elbow Lake and an area to the north of Long Bay (A.F. 91954). A hole was drilled in 1971 to test an EM conductor west of Elbow Lake (A.F. 91953).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 85-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, basaltic andesite and medium- to coarse-grained, equigranular gabbro and melagabbro (unit J1a). A multiphase diabase dyke complex including diabasic pegmatite, and containing screens of pillowed basalt (unit P2f) is exposed in the south. Diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (unit J13d) occur to the north of the occurrence, and form part of the Webb Island basalt and the Tee Lake dyke complex (Syme and Whalen, 1992). A series of NNE-trending faults offset the sequence to the east and NW of the occurrence.

Hole UP-1 intersected a predominantly felsic volcanic sequence consisting of "agglomerate", "rhyolite", "rhyolitic tuff", and minor "andesite" (A.F. 91953).

**MINERALIZATION**

Two intervals containing "nearly solid pyrrhotite" were intersected by hole UP-1, from 37.9-38.3 m (124.5-125.6 ft.) and 41.3-44.9 m (135.5-147.2 ft.) (A.F. 91953). Minor disseminated chalcopyrite is present in the pyrrhotite.

**GEOCHEMICAL DATA**

No assay results were reported.

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

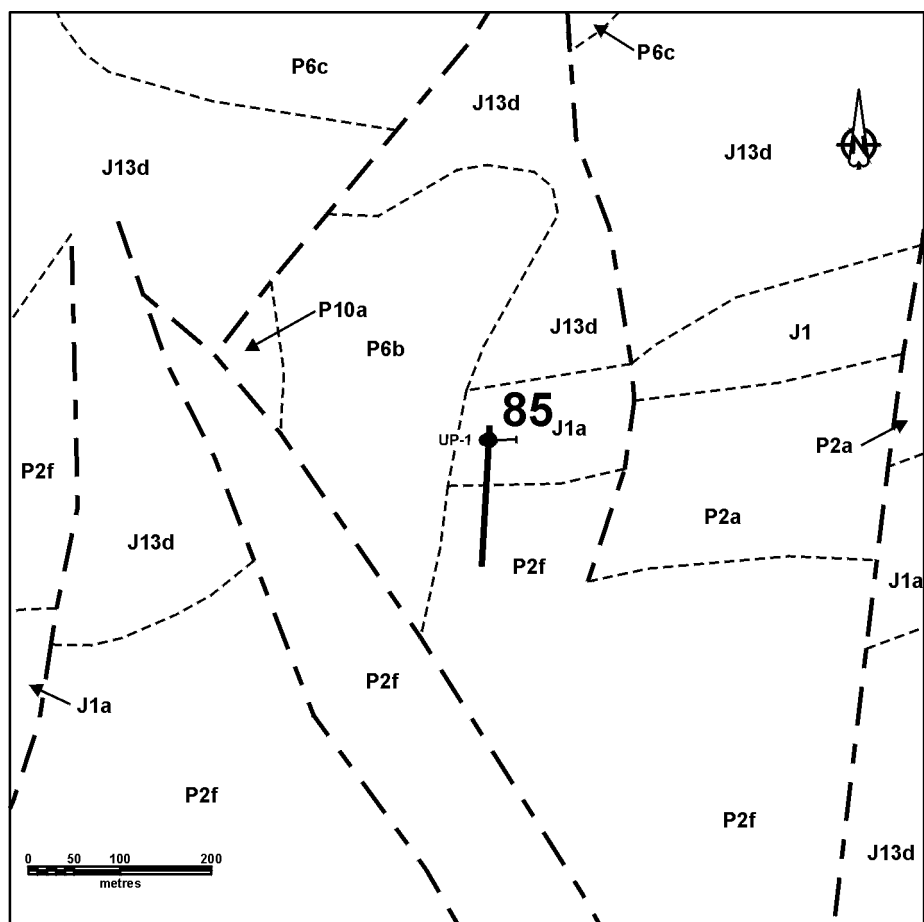
A.F. 91953 and 91954; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.



63K/15-85-1

#### PALEOPROTEROZOIC

- P10a** Aphyrlic and porphyritic felsic to intermediate dykes and dyke complexes
- P6b** Quartz diorite
- P6c** Leucotonalite
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- J13d** Complex of felsic to mafic dykes
- J1** Basalt, basaltic andesite (pillowed and massive flows)
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

----- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998

----- Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

———— EM conductor (A.F. 91954)

○ Drillhole (A.F. 91953)

**85 ●** Mineral occurrence location

Figure 85-1: Geological setting of occurrence 85.

**LOCATION: 86**

NAME: Boom showing  
UTM: 375670E, 6088315N  
AREA: approximately 500 m west of south end of Webb Lake  
ACCESS: via bush aircraft, then traverse  
AIRPHOTO: MB90025-196

**EXPLORATION SUMMARY**

In 1936 J. Macdougall staked a claim in the area. Some trenching appears to have been undertaken in the 1940's and 50's, but has not been recorded in the assessment files. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 86-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the Echo Lake pluton, consisting of an intrusion breccia margin and plagioclase-phyric granodiorite (unit P2d) (Schledewitz, 1993a, b). To the SE the area is underlain by foliated, homogeneous, mafic flows with isolated pillows, and hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d).

The occurrence is located within an east-west trending shear cutting coarse-grained hornblende-quartz-feldspar "diorite" (A.F. 92997).

**MINERALIZATION**

Small lenses, pods and stringers of pyrite, pyrrhotite and minor chalcopyrite occur within the shear aligned parallel to the schistosity, and are associated with quartz and quartz-chlorite veinlets.

**GEOCHEMICAL DATA**

Five grab samples were collected from the Boom occurrence. Assays returned values ranging from 0.137-0.411 g Au/t (0.004-0.012 oz. Au/ton), and average 0.240 g Au/t (0.007 oz. Au/ton) (A.F. 92997).

**CLASSIFICATION**

Vein type deposit; multiple veins or lenses. Associated with shear zone cutting mafic intrusion.

**REFERENCES**

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

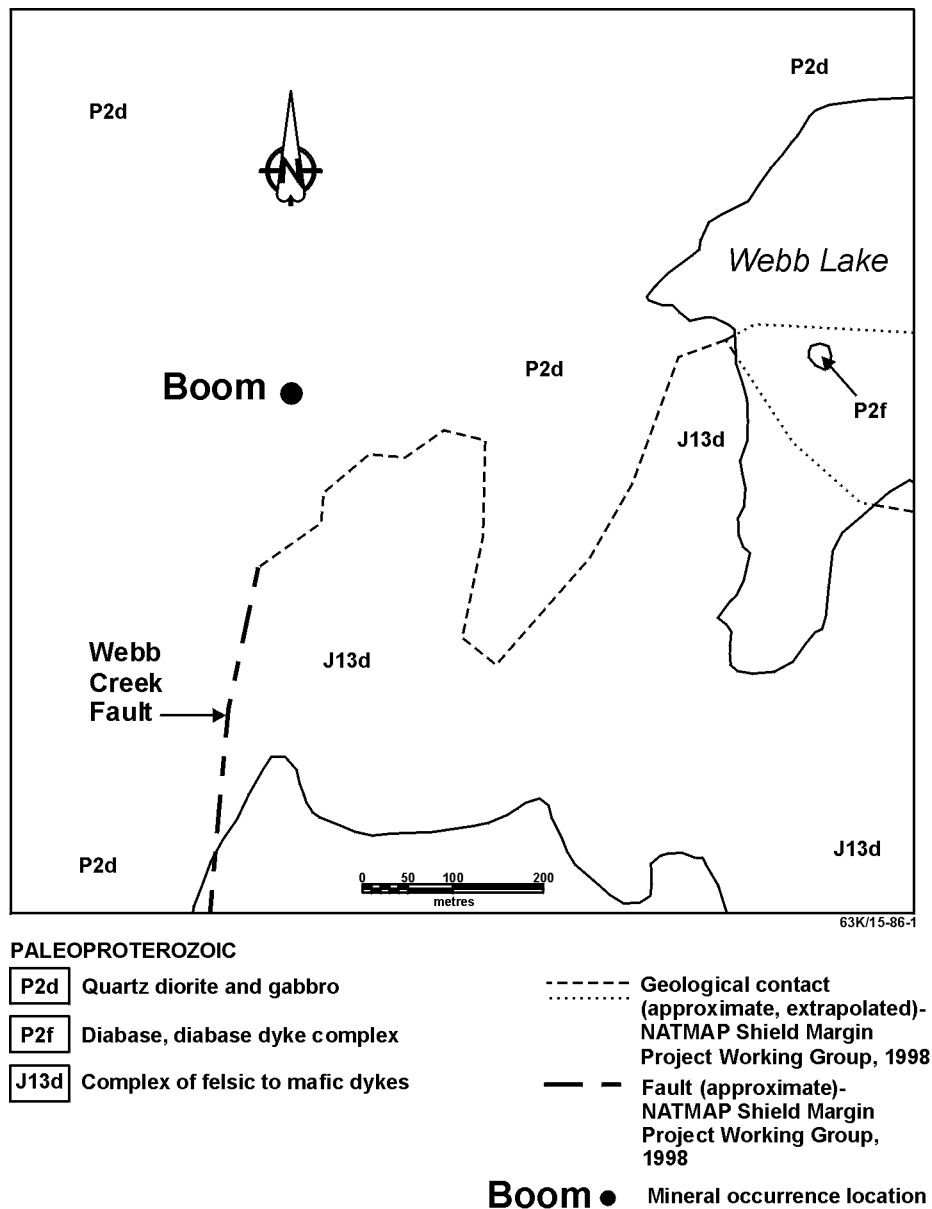


Figure 86-1: General geology at occurrence 86 (Boom).



**LOCATION: 87**

NAME: mineralization intersected by diamond drilling  
UTM: 377580E, 6077325N  
AREA: under Elbow Lake, W of McDougalls Point  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-136

**EXPLORATION SUMMARY**

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the

geological setting map (Fig. 87-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

Hole E-52 intersected a sequence consisting of massive to schistose mafic to felsic volcanic rocks (andesite, dacite and rhyolite) with several graphitic schist intervals (A.F. 92654).

**MINERALIZATION**

The following mineralized intervals were intersected by hole E-52 (A.F. 92654) (see table below).

Interval	Mineralization
49.7-77.7 m (163.0-254.8 ft.)	to 30% "brownish black, massive, aphanitic pyrite", to 20% thin pyrite stringers, in graphitic schist with minor rhyolitic intervals
78.9-79.9 m (258.8-262.0 ft.)	10% pyrite, as thin stringers, in finely banded graphitic schist

**GEOCHEMICAL DATA**

No assays were reported in the assessment files.

**CLASSIFICATION**

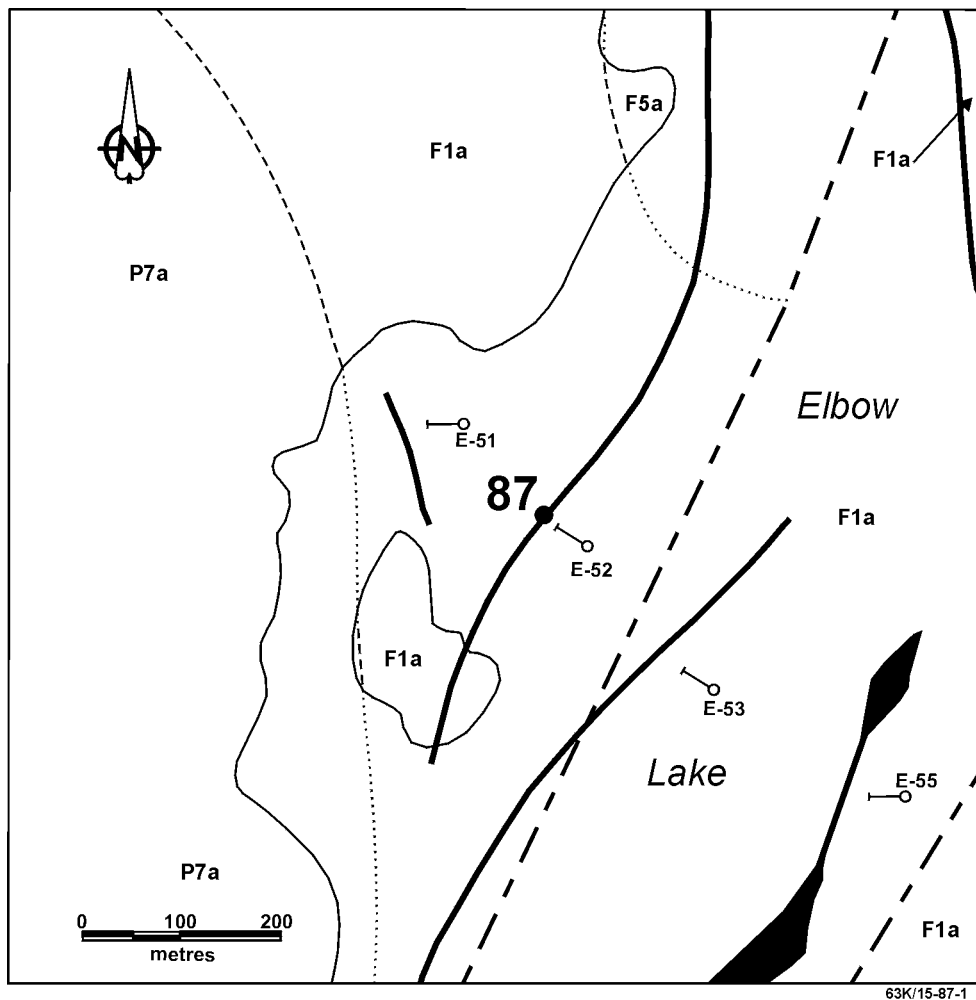
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the rocks associated with the mineralization.

**REFERENCES**

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

**P7a** Granodiorite

**F5a** Gabbro, diabase

N-type Basalt

**F1a** McDougalls Point pillowed and massive basalt, diabase?

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

— Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 91487, 92654)

○ Drillhole  
(A.F. 92654)

**87•** Mineral occurrence location

Figure 87-1: Geological setting of occurrence 87.

## LOCATION: 88

NAME: mineralization intersected by diamond drilling  
UTM: 380930E, 6082775N  
AREA: under Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-116

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 88-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), as well as a diabase dyke complex (unit P2f). In this area the shear zone is approximately 800 m thick (Syme and Whalen, 1992).

The sequence intersected by hole E-61A consists of light grey, fine-grained andesitic "tuff" (A.F. 92654), and is most likely part of the mafic phyllonite of the Elbow Lake shear zone.

## MINERALIZATION

Hole E-61A intersected a conformable graphitic interval containing 10% finely layered pyrite over the interval 86.7-88.5 m (284.3-290.2 ft.) (A.F. 92654).

## GEOCHEMICAL DATA

No assays were reported for the mineralized interval.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone. The presence of graphite suggests a biogenic contribution.

## REFERENCES

- A.F. 91485, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.
- 1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.
- 1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.
- 1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

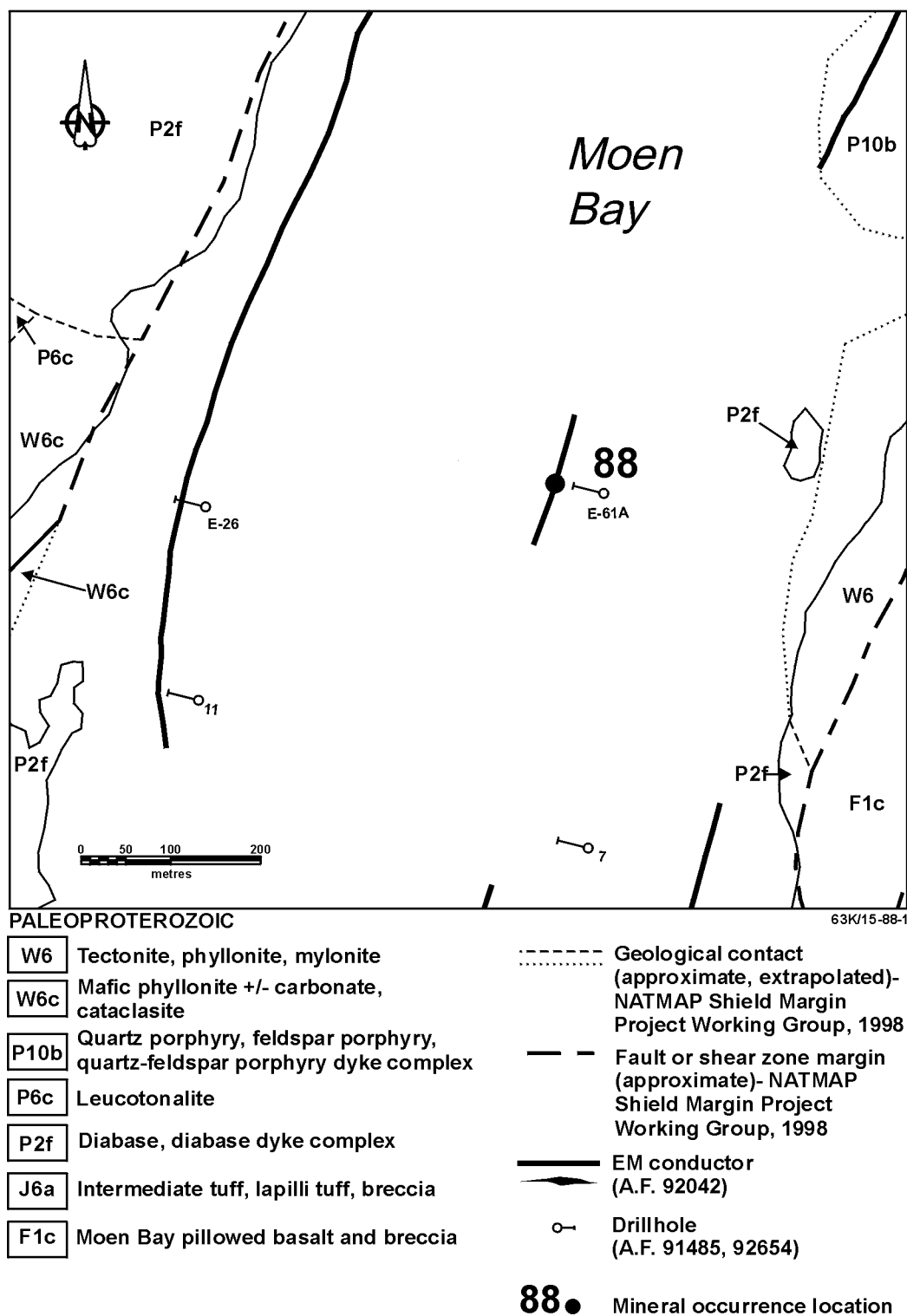


Figure 88-1: Geological setting of occurrence 88.

**LOCATION: 89**

NAME: Cabin

UTM: 376725E, 6088495N

AREA: east shore of south bay of Webb Lake

ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage

AIRPHOTO: MB90025-144

**EXPLORATION SUMMARY**

In 1936 J. Macdougall staked a claim in the area. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 89 -1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills, and quartz-phyric rhyodacite (Schledewitz, 1993a, b) (grouped under units J6b and P2f). To the SE of this assemblage, the sequence consists of basalt, basaltic andesite and thin, amygdaloidal, pillowed flows with pillow breccia and hyaloclastite (unit J1d).

The occurrence is located within sheared, altered, mafic volcanic flows.

**MINERALIZATION**

Sheared and altered mafic volcanic rocks contain pods and stringers of pyrite and pyrrhotite, and quartz veinlets and stringers.

**GEOCHEMICAL DATA**

Six samples, including 4 chip samples, were collected from the occurrence (A.F. 92997). Assays returned values ranging from 0.068-0.137 g Au/t (0.002-0.004 oz. Au/ton).

**CLASSIFICATION**

Vein type deposit; multiple veins or lenses. Deposit has been modified by a shear zone.

**REFERENCES**

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

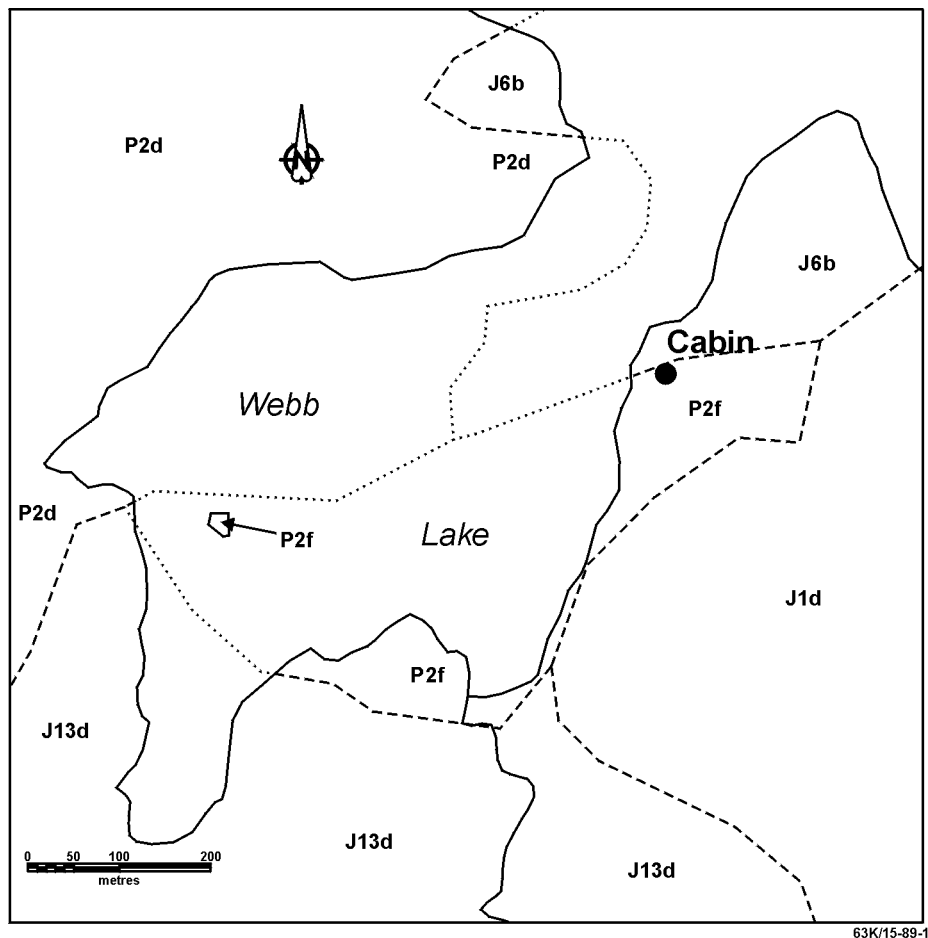
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



63K/15-89-1

#### PALEOPROTEROZOIC

- P2d** Quartz diorite and gabbro
- P2f** Diabase, diabase dyke complex
- P2d** Quartz diorite and gabbro
- J13d** Complex of felsic to mafic dykes
- J6b** Intermediate to felsic volcanoclastic rocks and flows, derived gneiss
- J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole

- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin Project  
Working Group, 1998
- Cabin** ● Mineral occurrence location

Figure 89-1: General geology at occurrence 89 (Cabin).

**LOCATION: 90**

NAME: mineralization intersected by diamond drilling  
UTM: 380750E, 6081955N  
AREA: under Elbow Lake approximately 500 m NNW of Gold Dust Island  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-55

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 90-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the shear zone is approximately 1100 m thick (Syme and Whalen, 1992).

The litholog for hole E-27 indicates it intersected a sequence of intermediate "bedded tuffs" with minor massive rhyolite (A.F. 92654). The "tuffs" are most likely phyllonites of the Elbow Lake shear zone.

**MINERALIZATION**

Two intervals containing up to 90% pyrite with minor graphite were intersected between 55.4-56.2 m (181.9-184.5 ft.) and 60.8-62.6 m (199.4-205.4 ft.) in hole E-27 (A.F. 92654).

**GEOCHEMICAL DATA**

One sample collected between 60.5-62.6 m (198.4-205.4 ft.) was assayed and returned 0.07% Cu and 0.02% Zn (A.F. 92654).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron

formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone.

**REFERENCES**

A.F. 91487, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

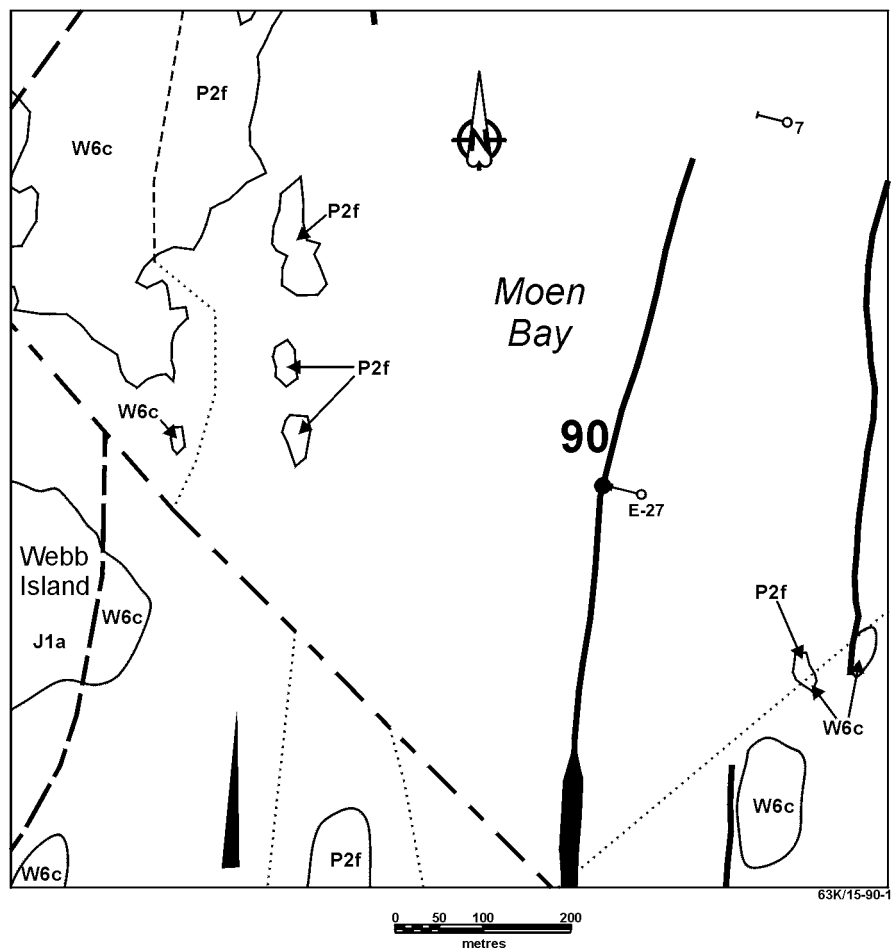
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.



#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P2f** Diabase, diabase dyke complex
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibole

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998

- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998

- EM conductor (A.F. 92042)

- Drillhole (A.F. 91487, 92654)

- 90.** Mineral occurrence location

Figure 90-1: Geological setting of occurrence 90.



## LOCATION: 91

NAME: mineralization intersected by diamond drilling  
UTM: 381470E, 6080325N  
AREA: under Elbow Lake approximately 300 m ESE of Gold Dust Island  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-53

## EXPLORATION SUMMARY

Manitoba Mineral Resources Ltd. drilled an EM (ABEM GUN) conductor at the occurrence in 1974 (A.F. 90501, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 91-1) and their descriptions are from the compilation maps of the NATMAP Shield

Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake-Claw Bay shear zones (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the aggregate thickness of the shear zone is approximately 3200 m (Syme and Whalen, 1992).

The litholog for hole E-73 indicates the sequence at the occurrence consists of mafic to intermediate "tuff" interlayered with amygdaloidal "andesite" and finely bedded "siltstone" (A.F. 92654). In light of the location of the occurrence within a major shear zone, this sequence probably represents a phyllonite rather than a volcaniclastic or sedimentary rock.

## MINERALIZATION

Hole E-73 intersected several sulphide-rich intervals, some containing black "pyrite", as follows (A.F. 92654) (see table below).

56.4-57.5 m (185.0-188.5 ft.)	20% pyrite as bands parallel to foliation
60.8-63.9 m (199.6-209.5 ft.)	20% crystallized pyrite with black, aphanitic pyrite, 10% graphite
64.2-64.5 m (210.7-211.7 ft.)	20% crystallized pyrite with black, aphanitic pyrite, 10% graphite
64.9-78.2 m (213.0-256.6 ft.)	to 20% finely crystallized pyrite, mostly black pyrite, to 10% graphite
81.4-107.9 m (267.0-354.0 ft.)	10-20% crystallized pyrite, some pyrrhotite as bands parallel to foliation, trace chalcopyrite

## GEOCHEMICAL DATA

The following assays were obtained from the mineralized interval (A.F. 92654):

Interval	%Cu	Au
62.3-63.9 m (204.5-209.5 ft.)	0.02	nil
64.2-64.5 m (210.7-211.6 ft.)	0.06	tr
64.9-66.7 m (213.0-218.9 ft.)	0.04	0.68 g/t (0.02 oz./ton)
68.0-69.4 m (223.0-227.7 ft.)	0.03	0.34 g/t (0.01 oz. Au/ton)
69.4-70.7 m (227.7-232.0 ft.)	0.04	tr
75.7-77.1 m (248.2-253.1 ft.)	0.03	0.34 g/t (0.01 oz. Au/ton)
81.4-82.9 m (267.0-272.0 ft.)	0.03	tr
82.9-83.5 m (272.0-273.9 ft.)	0.07	tr
87.7-88.6 m (287.7-290.6 ft.)	0.04	tr
89.1-89.4 m (292.3-293.2 ft.)	0.07	tr
96.9-98.4 m (317.9-322.9 ft.)	0.08	tr
98.4-98.6 m (322.9-323.6 ft.)	0.08	tr

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone.

## REFERENCES

A.F. 90501 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

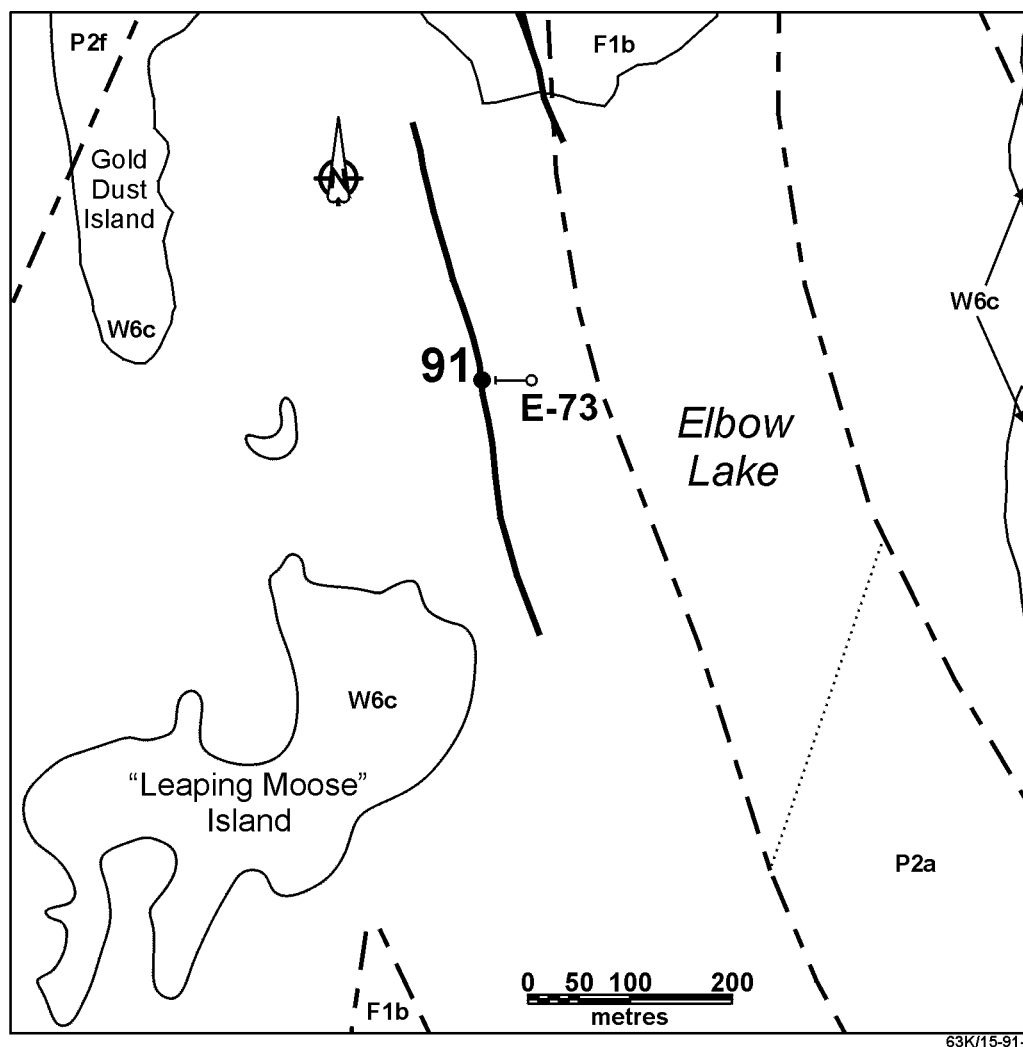
Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-91-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- N-type Basalt
- F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

- ..... Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90501,92654)
- Drillhole (A.F. 92654)

**91●** Mineral occurrence location

Figure 91-1: Geological setting of occurrence 91.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

**LOCATION: 92**

NAME: mineralization intersected by diamond drilling  
 UTM: 384920E, 6090095N  
 AREA: approximately 900 m SSE of Muhekun Lake  
 ACCESS: via bush aircraft to Hasett Lake (informal name) south of Muhekun Lake, then traverse  
 AIRPHOTO: MB90025-57

**EXPLORATION SUMMARY**

In 1981 Granges Exploration AB drilled several geophysical (EM?) anomalies in the Elbow Lake area (A.F. 93052).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 92-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by dark green, aphyric, pillowed, mafic flows (Schledewitz, 1993a, b), part of a sequence that is dominated by felsic to intermediate volcanic and intrusive rocks (unit J13d). Mafic gneiss (unit U1b) and the

Gauthier Lake pluton, consisting of medium- to coarse-grained, equigranular, biotite±hornblende granodiorite (unit P7b) occurs to the west. A sequence of hornblende-plagioclase-phyric volcanic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J1d) is exposed to the east.

Hole HAS-3 intersected a sequence of light to medium grey, intermediate to felsic "tuffs" (A.F. 93052). It is unclear if the tuffaceous character is a primary feature or a result of post depositional deformation.

**MINERALIZATION**

A sulphide-rich interval was intersected in hole HAS-3 between 19.6-21.0 m (64.4-69.0 ft.) (A.F. 93052). Bands and lenses of sulphides, consisting of 10-40% pyrite with minor chalcopyrite, occur within slightly altered "felsic tuff".

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals (A.F. 93052) (see table below).

Hole No.	Interval	%Cu	%Zn	Au	Ag
HAS-3	14.3-15.8 m (47.0-52.0 ft.)	0.03	0.01	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	18.3-19.2 m (60.0-63.0 ft.)	0.01	0.02	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	19.2-19.6 m (63.0-64.4 ft.)	0.07	0.04	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	19.6-20.1 m (64.4-66.0 ft.)	0.06	0.01	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	20.1-21.0 m (66.0-69.0 ft.)	0.17	0.13	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	21.0-21.6 m (69.0-71.0 ft.)	0.01	0.05	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

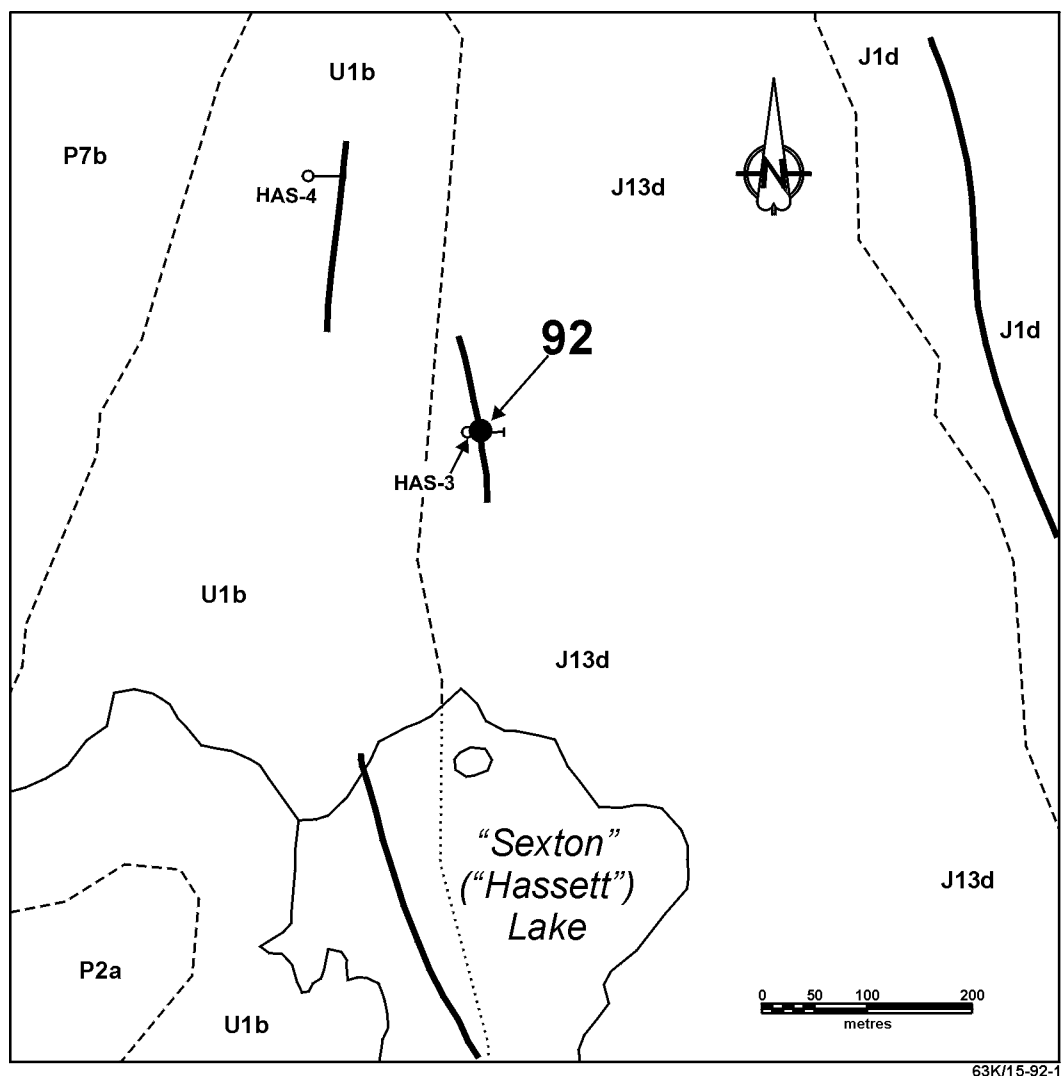
**REFERENCES**

- A.F. 93052; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.
- NATMAP Shield Margin Project Working Group  
 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- P7b** Granodiorite to tonalite
- P2a** Gabbro, diorite
- J13d** Complex of felsic to mafic dykes
- J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole
- U1b** Mafic gneiss

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin Project  
Working Group, 1998

———— EM conductor  
(A.F. 93052)

○ Drillhole  
(A.F. 93052)

**92●** Mineral occurrence location

Figure 92-1: Geological setting of occurrence 92.

## LOCATION: 93

NAME: mineralization intersected by diamond drilling  
UTM: 376980E, 6080655N  
AREA: under Elbow Lake, near north end of Long Bay  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-138

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the

geological setting map (Fig. 93-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive, aphyric McDougalls Point basalt (unit F1a). Fine to medium-grained, equigranular gabbro (unit P2a) is exposed to the east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of Long Bay.

The sequence intersected by hole E-29 consists of interlayered mafic and felsic volcanic units with common graphitic±pyritic intervals (A.F. 92654). The sulphide-rich intervals are generally closely associated with felsic volcanic units.

## MINERALIZATION

The following mineralized intervals were intersected by hole E-29 (A.F. 92654) (see table below).

42.5-51.1 m (139.5-167.5 ft.)	20% pyrite as blebs and stringers, 75% graphite
52.1-53.6 m (171.0-176.0 ft.)	20% pyrite as blebs and stringers, 75% graphite
58.6-63.1 m (192.1-207.0 ft.)	10% pyrite as blebs and stringers, 85% graphite
97.8-101.7 m (321.0-333.5 ft.)	10% pyrite as blebs and stringers, 85% graphite
102.0-107.5 m (334.7-352.7 ft.)	10-75% pyrite as blebs and stringers, 20-85% graphite
108.5-116.1 m (356.0-381.0 ft.)	10% pyrite as distinct bands and fracture fillings, 25% graphite

## GEOCHEMICAL DATA

Samples collected from the sulphide-rich intervals returned low assay values: tr-0.04% Cu, nil-0.02% Zn, and tr-0.34 g Au/t.

## CLASSIFICATION

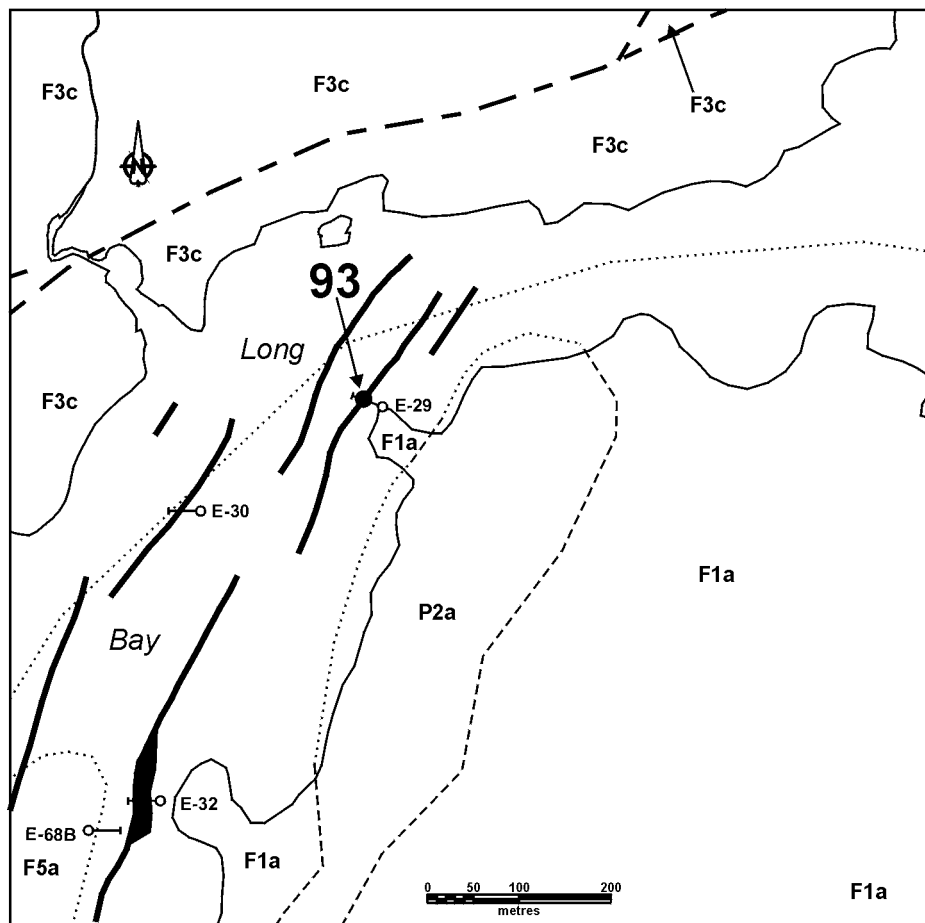
Chemical-sediment type deposit; sulphide facies iron formation. The presence of considerable graphite suggests a biogenic contribution.

## REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-93-1

#### PALEOPROTEROZOIC

**P2a** Gabbro, diorite

**F5a** Gabbro, diabase

#### Plume-related Basalt

**F3c** Long Bay ocean-island basalt conglomerate, sandstone

#### N-type Basalt

**F1a** McDougalls Point pillowed and massive basalt

----- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin Project Working Group, 1998

--- Fault (approximate)-  
NATMAP Shield Margin Project Working Group, 1998

— EM conductor  
(A.F. 91487, 92654)

○ Drillhole  
(A.F. 91487, 92654)

**93●** Mineral occurrence location

Figure 93-1: Geological setting of occurrence 93.

**LOCATION: 94**

NAME: mineralization intersected by diamond drilling  
UTM: 376780E, 6080535N  
AREA: under Elbow Lake, near north end of Long Bay  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-138

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 94-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed, massive, aphyric McDougalls Point basalt (unit F1a) occurs along the ESE side of Long Bay. Fine- to medium-grained, equigranular gabbro (unit P2a) intrudes the basalt to the east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of the bay.

The sequence intersected by hole E-30 consists of interlayered, finely laminated "tuff" and rhyolite with minor feldspar porphyry and mafic volcanic units (A.F. 92654). The laminations in the "tuff" are often contorted. It is unclear if the bedded character of the "tuff" is a primary depositional feature or the result of subsequent tectonic influences.

**MINERALIZATION**

Hole E-30 intersected the following sulphide-rich intervals (A.F. 92654):

48.2-48.3 m (158.3-158.6 ft.)	95% pyrite; graphitic interval occurs above this
57.5-57.7 m (188.5-189.2 ft.)	75% pyrite

**GEOCHEMICAL DATA**

One sample was assayed, but it contained low metal values: 0.02% Cu, tr Zn and Au.

**CLASSIFICATION**

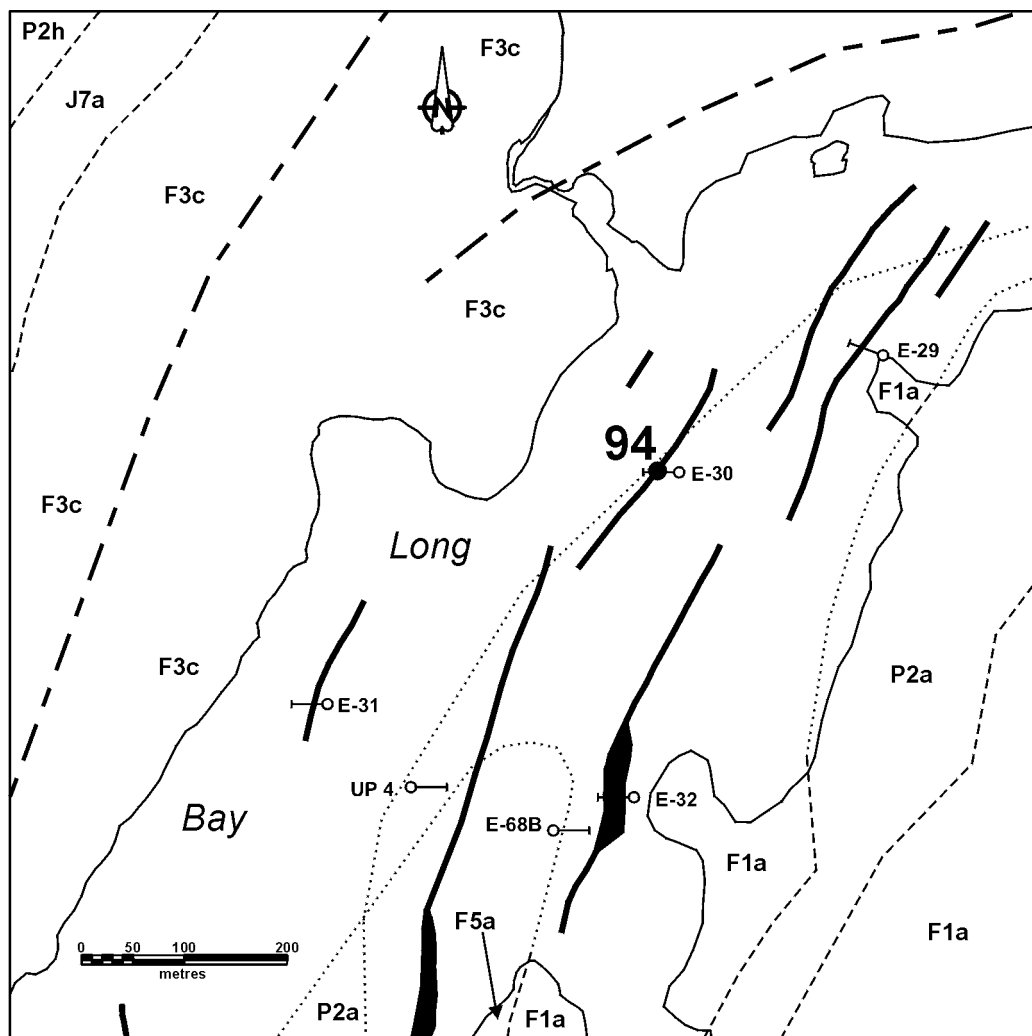
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

**REFERENCES**

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-94-1

#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- P2h** Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
- J7a** Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
- Plume-related Basalt
- F3c** Long Bay ocean-island basalt conglomerate, sandstone
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt
- F5a** Gabbro, diabase

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 90500, 92654)
- 94●** Mineral occurrence location

Figure 94-1: Geological setting of occurrence 94.



**LOCATION: 95**

NAME: mineralization intersected by diamond drilling  
 UTM: 376450E, 6080335N  
 AREA: under west side of Long Bay, Elbow Lake  
 ACCESS: via bush aircraft, or by boat through the  
 Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-138

32.0-44.5 m (105.0-146.0 ft.)	15% euhedral disseminated pyrite, 80% graphite
44.5-45.7 m (146.0-150.0 ft.)	85% fine-grained, banded pyrite, 10% graphite
53.2-54.7 m (174.5-179.5 ft.)	10% finely disseminated pyrite

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 95-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of Long Bay. Outcrops along the ESE side of Long Bay expose pillowed and massive, aphyric McDougalls Point basalt (unit F1a). Fine- to medium-grained, equigranular gabbro (unit P2a) and diabase (unit F5a) intrude the basalt.

Hole E-31 intersected a sequence dominated by graphitic and pyritic metasedimentary units, with rhyolite and mafic volcanic and volcanoclastic rocks appearing in the bottom of the hole (A.F. 92654).

**MINERALIZATION**

Several pyritic intervals were intersected by hole E-31, as follows (A.F. 92654):

**GEOCHEMICAL DATA**

One assayed sample returned trace quantities of Cu, Zn and Au.

**CLASSIFICATION**

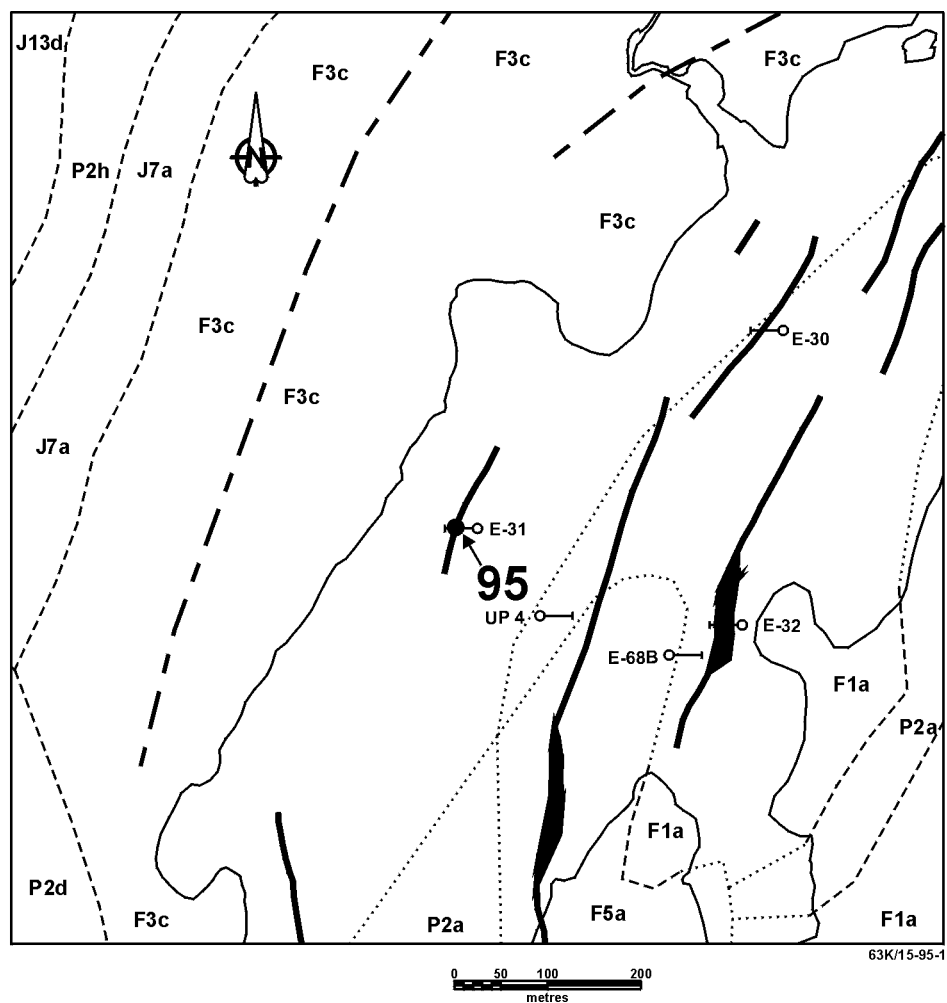
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

**REFERENCES**

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- P2d** Quartz diorite and gabbro
- P2h** Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
- J7a** Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
- J13d** Complex of felsic to mafic dykes
- Plume-related Basalt**
- F3c** Long Bay ocean-island basalt conglomerate, sandstone
- N-type Basalt**
- F1a** McDougalls Point pillowed and massive basalt, diabase?
- F5a** Gabbro, diabase

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 91487, 92654)
- Drillhole (A.F. 90500, 92654)
- 95●** Mineral occurrence location

Figure 95-1: Geological setting of occurrence 95.

## LOCATION: 96

NAME: mineralization intersected by diamond drilling  
UTM: 376710E, 6080175N  
AREA: under Long Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-138

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 96-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed, massive, aphyric McDougalls Point basalt (unit F1a) is exposed in outcrop on the ESE side of Long Bay. Fine to medium-grained, equigranular diabase (unit F5a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude the basalt to the south and

east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of the bay.

Hole E-32 intersected fine- to medium-grained mafic volcanic rock ("andesite"). Hole E-68B intersected a mafic volcanic ("andesite") interval with intercalated graphitic schist (A.F. 92654).

## MINERALIZATION

"Andesite" in hole E-32 contains up to 7% pyrite as blebs along irregular fractures (A.F. 92654). Several graphitic schist intervals containing up to 30% pyrite were intersected by hole E-68B, as follows:

38.6-41.6 m (126.8-136.4 ft.)	10% pyrite veinlets in graphitic schist
50.6-72.5 m (166.0-237.8 ft.)	to 30% pyrite along schistosity in graphitic schist

## GEOCHEMICAL DATA

The pyritic interval in hole E-32 returned only minor metal values: tr-0.02% Cu, tr Zn, and nil-tr Au. Assays from hole E-68B returned the following values (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	g Au/t (oz. Au/ton)
E-68B	50.6-52.1 m (166.0-171.0 ft.)	0.02	2.40 (0.07)
	55.2-55.8 m (181.0-183.0 ft.)	0.03	0.34 (0.01)
	63.3-64.9 m (207.8-212.8 ft.)	0.03	0.34 (0.01)

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

## REFERENCES

A.F. 90500, 91485, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

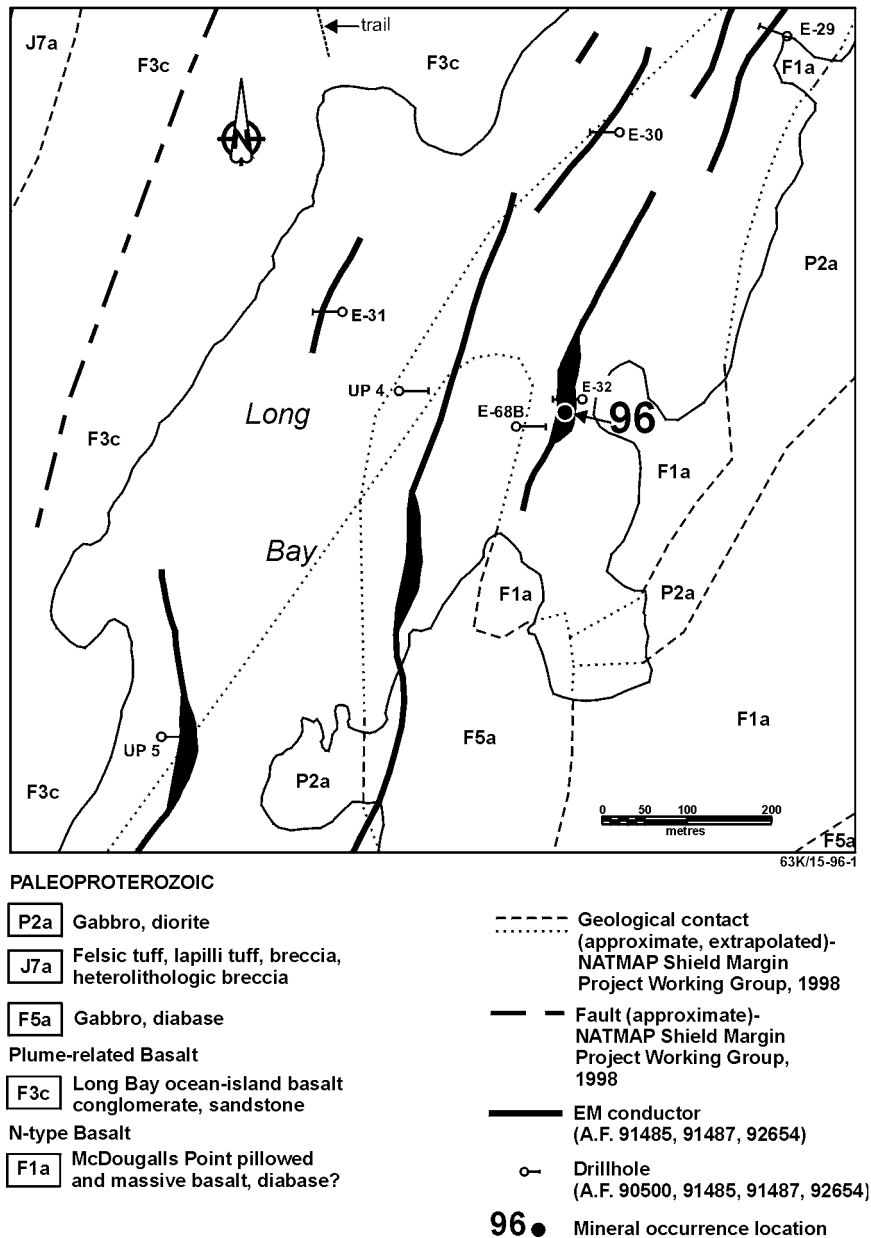


Figure 96-1: Geological setting of occurrence 96.

**LOCATION: 97**

NAME: mineralization intersected by diamond drilling  
 UTM: 376450E, 6079930N  
 AREA: along east side of Long Bay, Elbow Lake  
 ACCESS: via bush aircraft, or by boat through the  
 Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-138

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Noranda and Manitoba Mineral Resources, Ltd. (A.F. 90500, 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 97-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Long Bay basaltic conglomerate (unit F3c) occurs along the west side of Long Bay. Fine- to medium-grained, equigranular diabase (unit F5a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude pillowed, massive, aphyric McDougalls Point basalt (unit F1a) along the east side of the bay.

Andesite and amphibolite dominate the lithologic sequence intersected in hole UP-4 (A.F. 90500). Rhyolitic tuff was noted at the top of the hole. Hole E-33 intersected a sequence of mafic "tuffs", rhyolites and minor "agglomerate" containing rounded fragments of andesite and

rhyolite (A.F. 92654). It is unclear if the character of the "tuffaceous" units reflects primary depositional features, or is a result of subsequent deformation.

**MINERALIZATION**

An interval of "massive graphite" containing "frequent intervals of heavy pyrite in large stringers and bands" was intersected from 69.0-87.3 m (226.3-286.5 ft.) in hole UP-4 (A.F. 90500). The mineralized intervals in hole E-33 contain up to 20% pyrite usually associated with up to 50% graphite within schistose ("tuffaceous") units over the following intervals (A.F. 92654):

52.9-59.7 m (173.7-196.0 ft.)	5% pyrite, 30% graphite in dark grey "tuff", minor "agglomerate" intervals
60.0-65.2 m (197.0-214.0 ft.)	10-20% pyrite, 5-40% graphite in polymictic "agglomerate" and dark grey "tuff"
65.8-67.1 m (216.0-220.3 ft.)	10% pyrite, 50% graphite, laminated
68.3-70.8 m (224.0-232.2 ft.)	20% pyrite in finely laminated mafic "tuff"

**GEOCHEMICAL DATA**

The following values were obtained from sulphide-rich intervals in hole UP-4 (A.F. 90500):

Assays from pyrite-rich areas in hole E-33 returned minor metal values: tr-0.03% Cu, tr Zn, and nil to tr Au (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	%Zn	%Ni	Au
UP-4	56.4-57.9 m (185.0-190.0 ft.)		tr		
	67.3-69.0 m (220.9-226.3 ft.)		tr		tr
	73.2-74.7 m (240.0-245.0 ft.)	0.04	tr		
	77.3-79.1 m (253.5-259.5 ft.)		tr		
	79.9-81.4 m (262.0-267.0 ft.)	0.06	0.05		
	82.3-84.7 m (270.0-278.0 ft.)	0.05	0.22	0.04	
	86.3-87.3 m (283.0-286.5 ft.)	0.09		0.04	

**CLASSIFICATION**

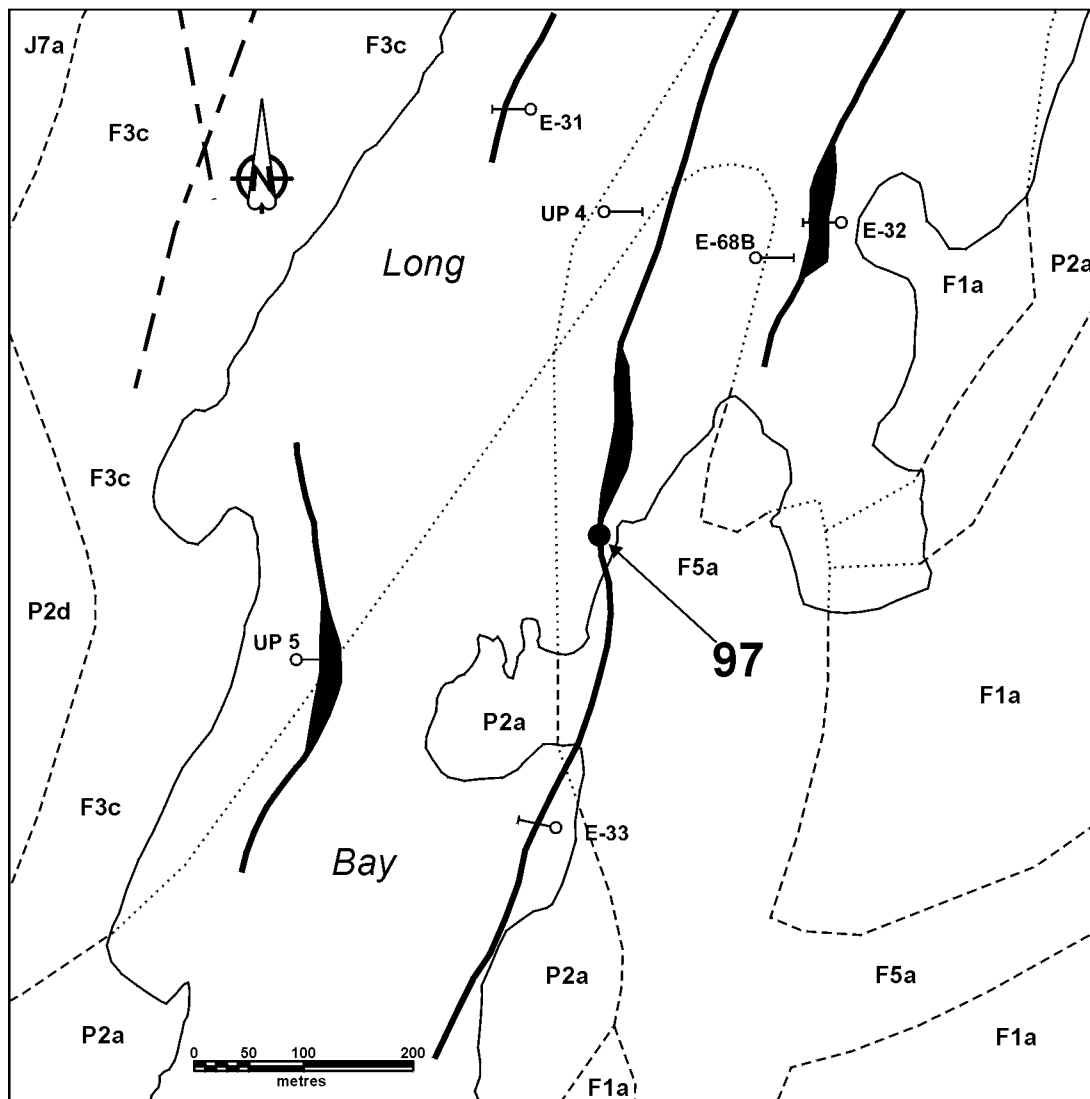
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

**REFERENCES**

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-97-1

#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- P2d** Quartz diorite and gabbro
- J7a** Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
- F5a** Gabbro, diabase
- Plume-related Basalt
- F3c** Long Bay ocean-island basalt conglomerate, sandstone
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90500, 91487, 92654)
- Drillhole (A.F. 90500, 91487, 92654)
- 97●** Mineral occurrence location

Figure 97-1: Geological setting of occurrence 97.

**LOCATION: 98**

NAME: mineralization intersected by diamond drilling  
UTM: 376210E, 6079795N  
AREA: under west side near south end of Long Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-138

**EXPLORATION SUMMARY**

In 1972 Noranda Exploration Company drilled several holes to test some EM conductors under Long Bay, Elbow Lake (A.F. 90500).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 98-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Long Bay basaltic conglomerate (unit F3c) occurs along the west side of Long Bay. Fine- to medium-grained, equigranular diabase (unit 17a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude pillowed, massive, aphyric McDougalls Point basalt (unit F1a) along the east side of the bay.

The dominant lithology intersected by hole UP-5 consists of slightly chloritic, mafic, volcanic rock ("andesite") with schistose intervals, and a lesser felsic ("rhyolitic") laminated "tuff" interval at the bottom (A.F. 90500).

**MINERALIZATION**

Hole UP-5 intersected an interval between 70.7-78.3 m (232.0-256.8 ft.) containing "fair to heavy pyrite and graphite in large stringers and bands" (A.F. 90500). The under- and overlying rocks to this unit contain lesser quantities of pyrite.

**GEOCHEMICAL DATA**

The following values were returned from an assay of the sulphide-bearing interval: 0.03% Cu, tr Zn, nil Au, 54.8 g Ag/t (1.6 oz. Ag/ton).

**CLASSIFICATION**

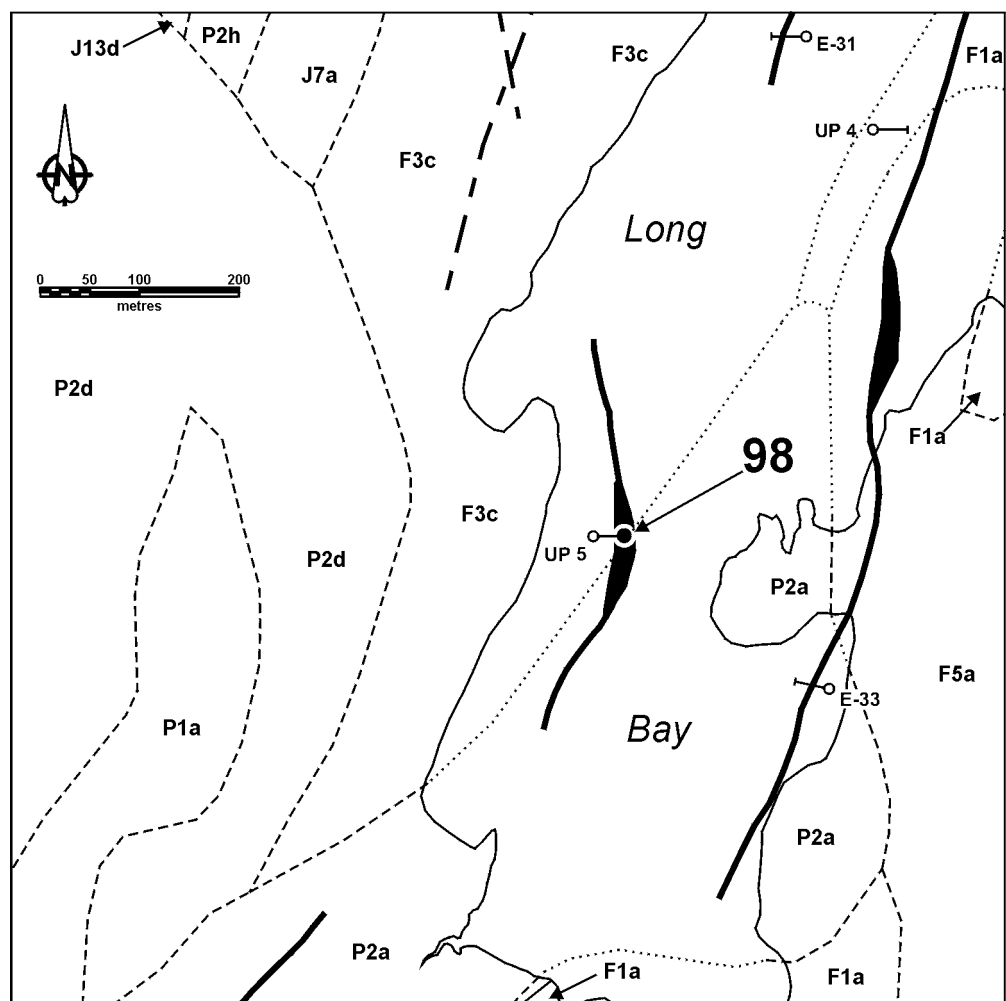
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

**REFERENCES**

A.F. 90500, 91487, 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-98-1

#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- P2d** Quartz diorite and gabbro
- P1a** Pyroxenite, melagabbro
- P2h** Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
- J13d** Complex of felsic to mafic dykes
- J7a** Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
- F5a** Gabbro, diabase
- Plume-related Basalt**
- F3c** Long Bay ocean-island basalt conglomerate, sandstone
- N-type Basalt**
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90500)
- Drillhole (A.F. 90500, 91487, 92654)
- 98●** Mineral occurrence location

Figure 98-1: Geological setting of occurrence 98.



**LOCATION: 99**

NAME: mineralization intersected by diamond drilling  
UTM: 376210E, 6079275N  
AREA: at south end of Long Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-138

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 99-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a) which has been intruded to the NW by gabbro and melagabbro (unit P2a) of the Long Bay gabbro complex.

Hole E-34 intersected massive, green, mafic, volcanic rocks, minor feldspar porphyry, and dark grey to black "tuffaceous" intervals (A.F. 92654). It is unclear if the "tuffaceous" character of the latter units is a primary depositional feature, or has been tectonically produced.

**MINERALIZATION**

Two intervals containing 10% disseminated, fine-grained pyrite in dark grey to black "tuff" were intersected between 30.8-33.1 m, and 34.0-34.6 m (101.0-108.6 ft., and 111.7-113.4 ft.) in hole E-34 (A.F. 92654).

**GEOCHEMICAL DATA**

Assays of the sulphide-rich intervals returned minor metal values: tr Cu and Zn, nil to tr Au (A.F. 92654).

**CLASSIFICATION**

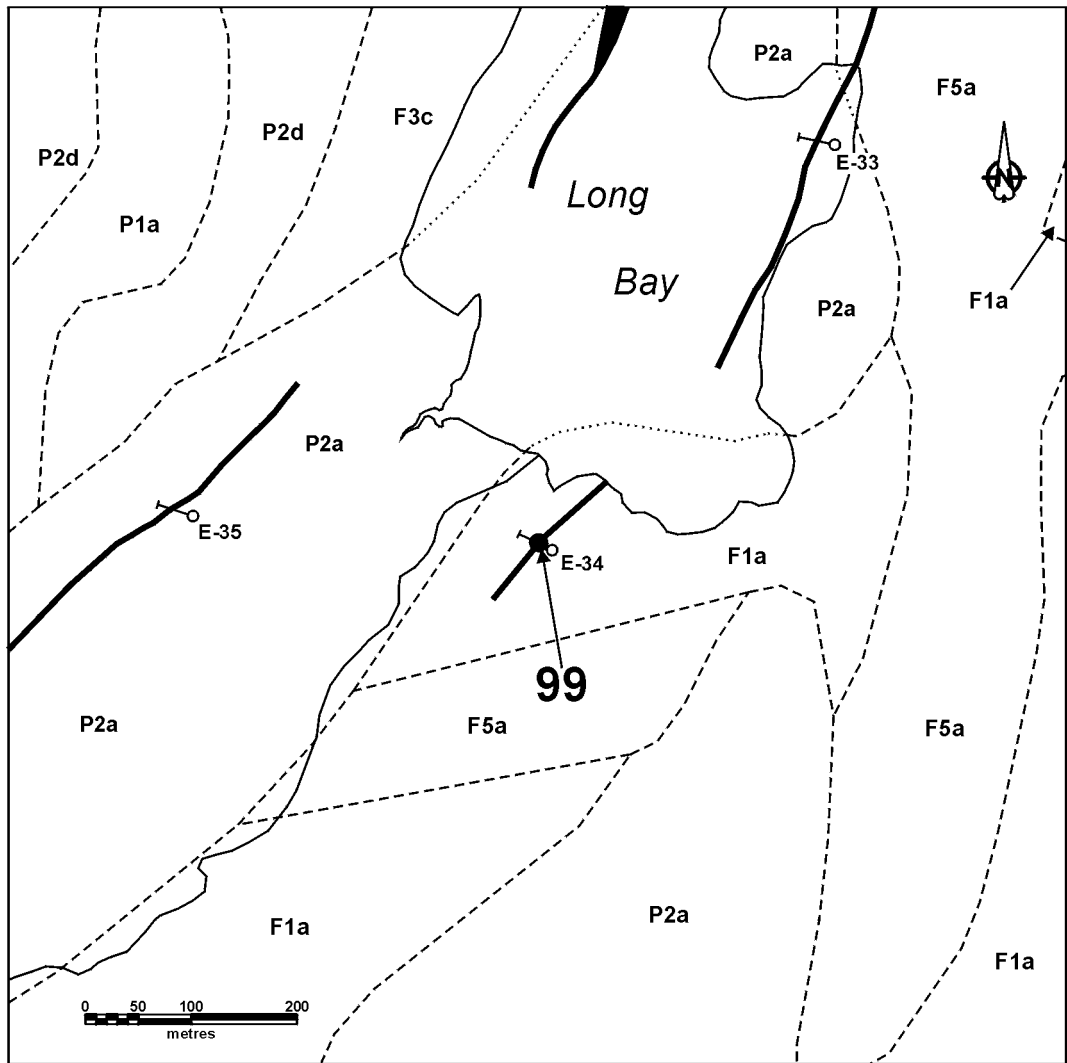
Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-99-1

#### PALEOPROTEROZOIC

- P2a** Gabbro, diorite
- P2d** Quartz diorite and gabbro
- P1a** Pyroxenite, melagabbro
- F5a** Gabbro, diabase
- Plume-related Basalt
- F3c** Long Bay ocean-island basalt conglomerate, sandstone
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90500)
- Drillhole (A.F. 90500, 91487, 92654)
- 99●** Mineral occurrence location

Figure 99-1: Geological setting of occurrence 99.

**LOCATION: 100**

NAME: mineralization intersected by diamond drilling  
 UTM: 384760E, 6090345N  
 AREA: approximately 600 m SSE of south end of Muhekun Lake  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
 AIRPHOTO: MB90025-58

**EXPLORATION SUMMARY**

In 1981 Granges Exploration AB drilled several geophysical (EM?) anomalies in the Elbow Lake area (A.F. 93052).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 100-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by dark green, aphyric, pillowed, mafic flows (unit U1b) (Schledewitz, 1993a, b). The Gauthier Lake pluton, consisting of medium- to coarse-grained, equigranular, biotite±hornblende granodiorite (unit P7b), occurs to the west, and a sequence of hornblende-plagioclase-phyric volcanic rocks with abundant horn-

blende-plagioclase and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d) is exposed to the east.

Hole HAS-4 intersected a sequence of medium grey to medium green andesite tuffs and a light to medium grey rhyolite tuff intercalated with a granitic intrusion (A.F. 93052). It is unclear if the character of the tuff is a primary depositional feature or the result of subsequent tectonic influences.

**MINERALIZATION**

The rhyolite tuff contains several sulphide-rich intervals as follows (A.F. 93052):

57.7-60.7 m (189.4-199.0 ft.)	60-70% pyrrhotite, 10-20% pyrite, tr-1% chalcopryite
64.2-64.5 m (210.5-211.5 ft.)	40% pyrrhotite and pyrite
67.7-68.2 m (222.0-223.8 ft.)	80% pyrrhotite and pyrite

**GEOCHEMICAL DATA**

The following assays were obtained from sampled sulphide-bearing intervals in hole HAS-4 (A.F. 93052) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
HAS-4	9.9-10.2 m (32.5-33.6 ft.)	0.05	0.5		
	19.2-20.1 m (63.0-66.0 ft.)	0.01	0.01	0.05	0.5
	37.2-37.5 m (122.0-123.0 ft.)			0.05	0.5
	47.9-48.8 m (157.0-160.0 ft.)			0.05	0.5
	56.4-57.3 m (185.0-188.0 ft.)	0.01	0.01	0.05	0.5
	57.3-57.7 m (188.0-189.4 ft.)	0.01	0.03	0.05	0.5
	57.7-59.1 m (189.4-194.0 ft.)	0.11	0.25	0.05	1.0
	59.1-60.7 m (194.0-199.0 ft.)	0.22	0.20	0.05	1.0
	60.7-62.2 m (199.0-204.0 ft.)	0.04	0.01	0.05	0.5
	62.2-63.7 m (204.0-209.0 ft.)	0.05	0.15	0.05	0.5
	63.7-65.2 m (209.0-214.0 ft.)	0.05	0.16	0.05	0.5
	65.2-66.4 m (214.0-218.0 ft.)	0.05	0.13	0.05	0.5
	66.4-67.7 m (218.0-222.0 ft.)	0.05	0.14	0.05	0.5
	67.7-68.2 m (222.0-223.8 ft.)	0.11	0.20	0.05	1.5
	68.2-68.9 m (223.8-226.0 ft.)	0.03	0.03	0.05	0.5

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 93052; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.  
 NATMAP Shield Margin Project Working Group  
 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

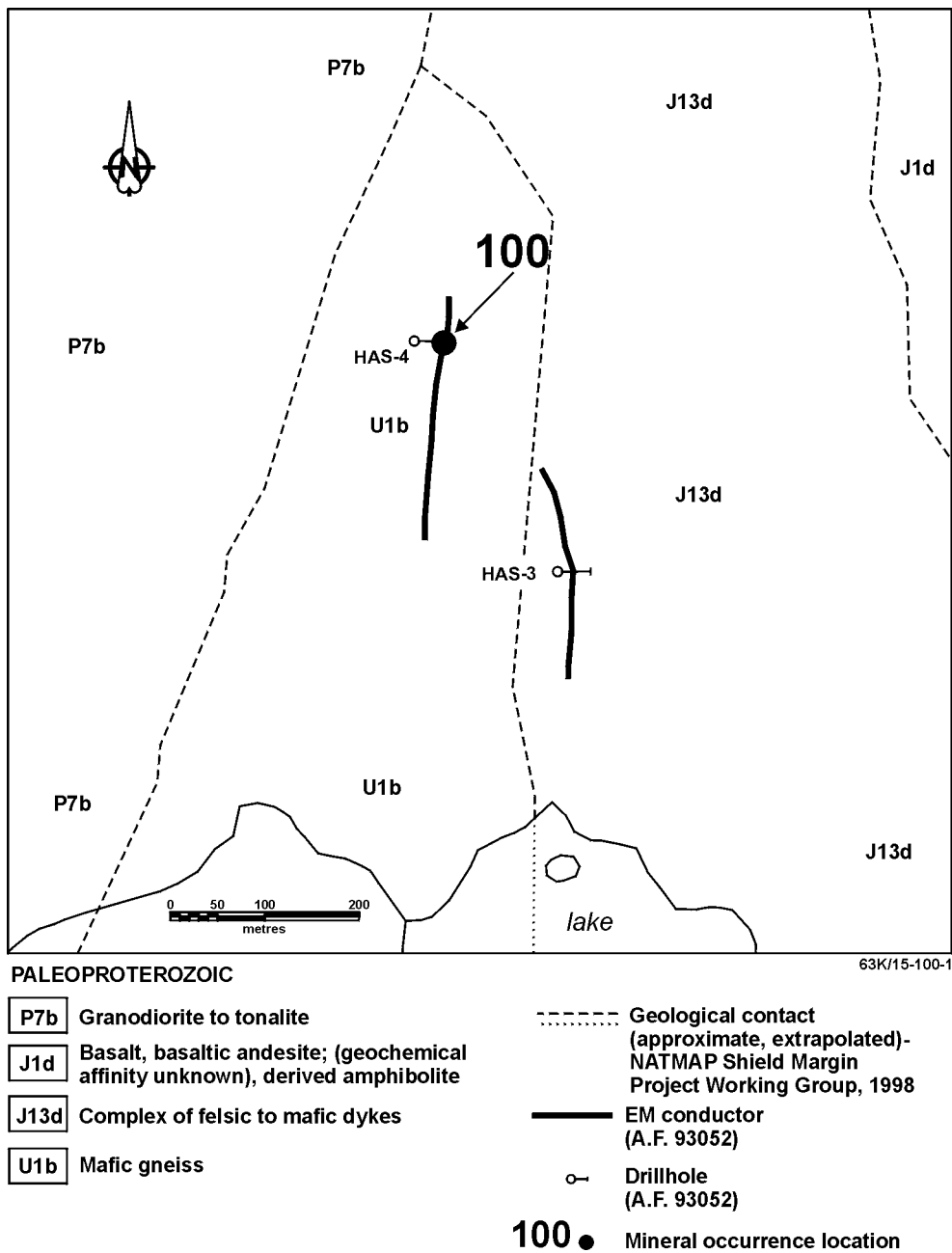


Figure 100-1: Geological setting of occurrence 100.

## LOCATION: 101

NAME: mineralization intersected by diamond drilling  
UTM: 378230E, 6080385N  
AREA: under Elbow Lake, approximately 400 m S of west end of Webb Island  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-117

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 101-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed and massive aphyric and plagioclase-phyric flows of the McDougalls Point basalt (units F1a) outcrop to the west, and Long Bay basaltic conglomerate (unit F3c) occurs to the north on Webb Island. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) is located approximately 700 m west of the occurrence. In this area the thickness of the shear zone is approximately 2600 m (Syme and Whalen, 1992).

The sequence intersected in hole E-36 consists of interlayered rhyolitic tuff and agglomerate, and black graphitic "tuff" (A.F. 92654). Green, mafic, volcanic rock ("andesite") occurs at the top and bottom of the hole. The agglomeratic intervals contain <1 to 2 cm rhyolitic fragments.

## MINERALIZATION

The following mineralized intervals were intersected in hole E-36 (A.F. 92654):

Interval	Mineralization
63.0-66.5 m (206.6-218.1 ft.)	10-80% pyrite, to 10% graphite in agglomerate and rhyolitic breccia
76.4-78.6 m (250.8-258.0 ft.)	10% pyrite as irregular blebs and stringers in black, graphitic "tuff"

## GEOCHEMICAL DATA

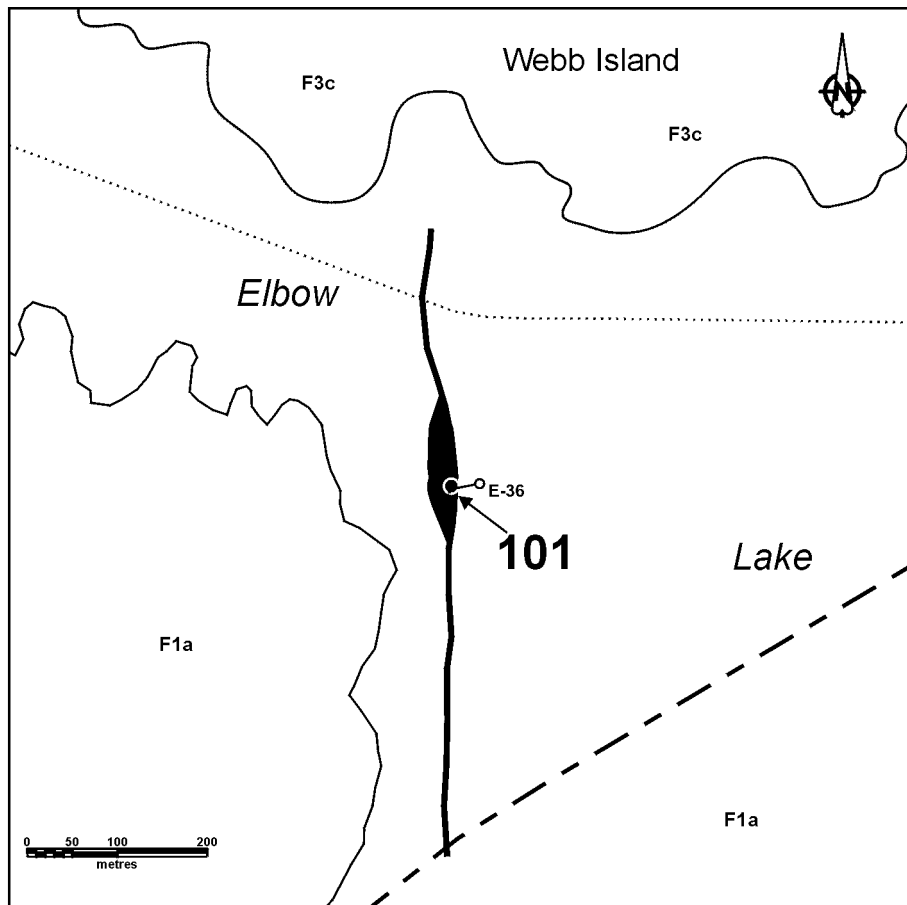
Assays from sulphide-bearing intervals returned minor metal values: tr-0.09% Cu, tr-0.04% Zn, nil Au (A.F. 92654).

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

## REFERENCES

- A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.  
1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.  
1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.  
1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.



63K/15-101-1

#### PALEOPROTEROZOIC

##### Plume-related Basalt

**F3c** Long Bay ocean-island basalt conglomerate, sandstone

##### N-type Basalt

**F1a** McDougalls Point pillowed and massive basalt, diabase?

..... Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998

--- Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

EM conductor (A.F. 92654)

○ Drillhole (A.F. 92654)

**101 ●** Mineral occurrence location

Figure 101-1: Geological setting of occurrence 101.

**LOCATION: 102**

NAME: mineralization intersected by diamond drilling  
UTM: 378140E, 6079755N  
AREA: under Elbow Lake, approximately 900 m S of  
W end of Webb Island  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-118

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 102-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Pillow top directions suggest the occurrence is located along the axis of a syncline. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) is located approximately 700 m west of the occurrence. In this area the thickness of the shear zone is approximately 2300 m (Syme and Whalen, 1992).

Agglomeratic, sulphide-bearing intervals, containing 5% fine-grained, disseminated pyrite and up to 10% graphite, form units separated by finely laminated dacitic "tuff" intervals (A.F. 92654). A white cherty layer (rhyolite?), with a poorly defined fragmental texture, occurs between 19.8-54.3 m (65.0-178.0 ft.).

**MINERALIZATION**

An interval containing 75% massive pyrite in agglomerate was intersected by hole E-37 from 13.1-15.8 m (43.0-52.0 ft.) (A.F. 92654). Dark, fine-grained pyrite is described as replacing subrounded fragments in the agglomerate.

**GEOCHEMICAL DATA**

Assays from sulphide-bearing intervals returned minor metal values: 0.02-0.03% Cu, 0.04-0.05% Zn, tr to 0.68 g Au/t (0.02 oz. Au/ton), nil Ag (A.F. 92654).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

**REFERENCES**

- A.F. 90511, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.  
1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.  
1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.  
1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

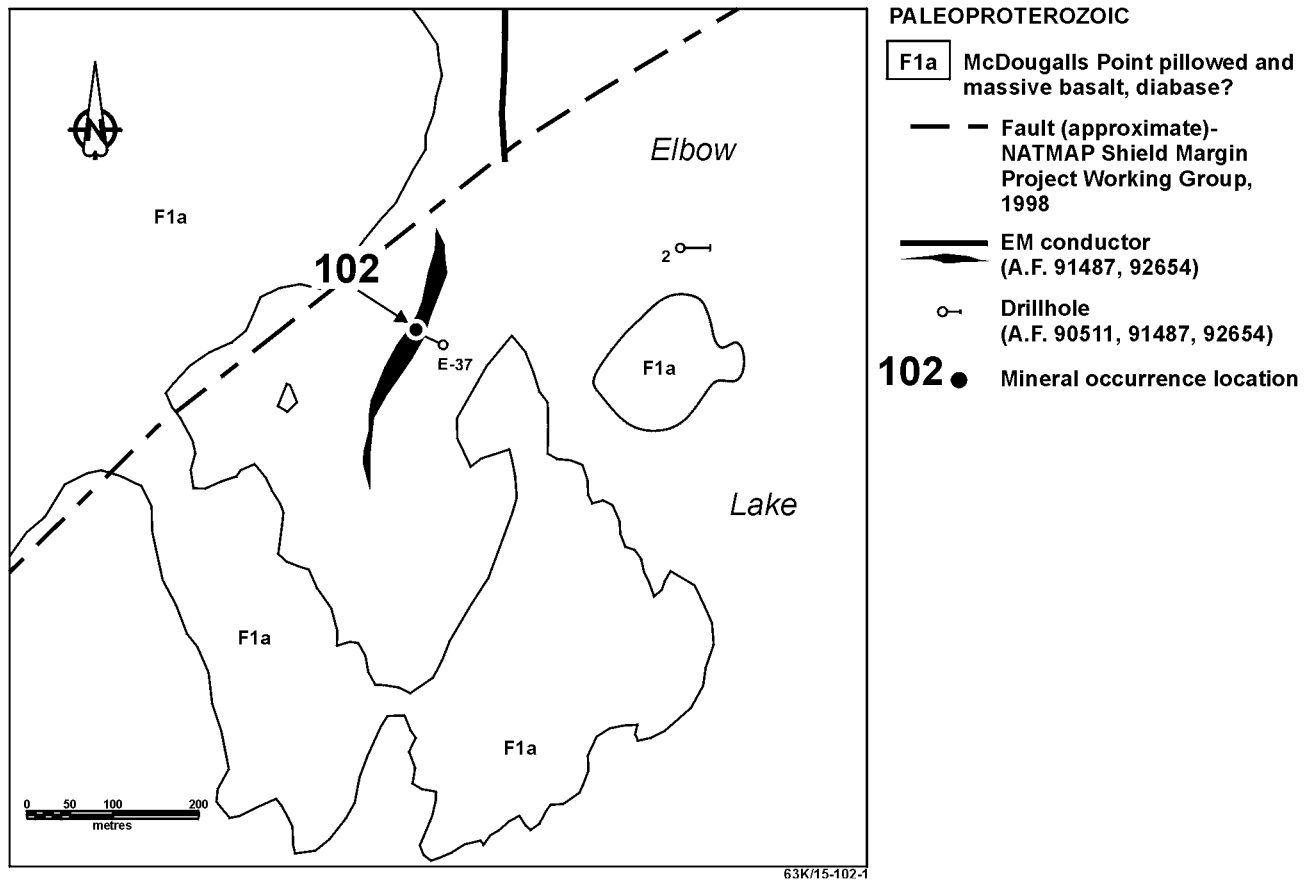


Figure 102-1: Geological setting of occurrence 102.



**LOCATION: 103**

NAME: mineralization intersected by diamond drilling  
 UTM: 377470E, 6077415N  
 AREA: under Elbow Lake, W of McDougalls Point  
 ACCESS: via bush aircraft, or by boat through the  
 Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-136

**EXPLORATION SUMMARY**

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 103-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

The sequence intersected by hole E-51 consists of massive, altered, mafic volcanic rock ("andesite") with massive rhyolite flows and graphitic schist intervals (A.F. 92654). Schistose siltstone forms a minor constituent of the stratigraphy. Granodiorite, probably part of the Big Rat Lake pluton, was intersected at the bottom of the hole.

**MINERALIZATION**

The following mineralized intervals were intersected in hole E-51 (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-51	60.0-66.8 m (197.0-219.3 ft.)	"dark brownish grey, aphanitic, massive" pyrite, with 20% pyrite stringers
	67.5-69.7 m (221.4-228.7 ft.)	30% fine pyrite stringers in graphitic schist
	69.7-70.1 m (228.7-230.0 ft.)	40% pyrite as vug fillings in grey massive rhyolite
	71.3-72.4 m (234.0-237.5 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	73.0-73.2 m (239.6-240.3 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	73.8-75.3 m (242.0-247.2 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	78.9-79.6 m (259.0-261.0 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	129.8-137.8 m (426.0-452.0 ft.)	50% "black, massive" pyrite, 40% pyrrhotite, 10% metallic pyrite stringers
	137.8-153.6 m (452.0-504.0 ft.)	30% pyrrhotite, 30% pyrite, finely disseminated in rhyolite
	153.6-155.4 m (504.0-510.0 ft.)	10% finely disseminated pyrrhotite, in "syenite" (granodiorite)
	157.8-158.1 m (517.6-518.6 ft.)	40% pyrrhotite, 50% graphite in broken core, in schistose siltstone

**GEOCHEMICAL DATA**

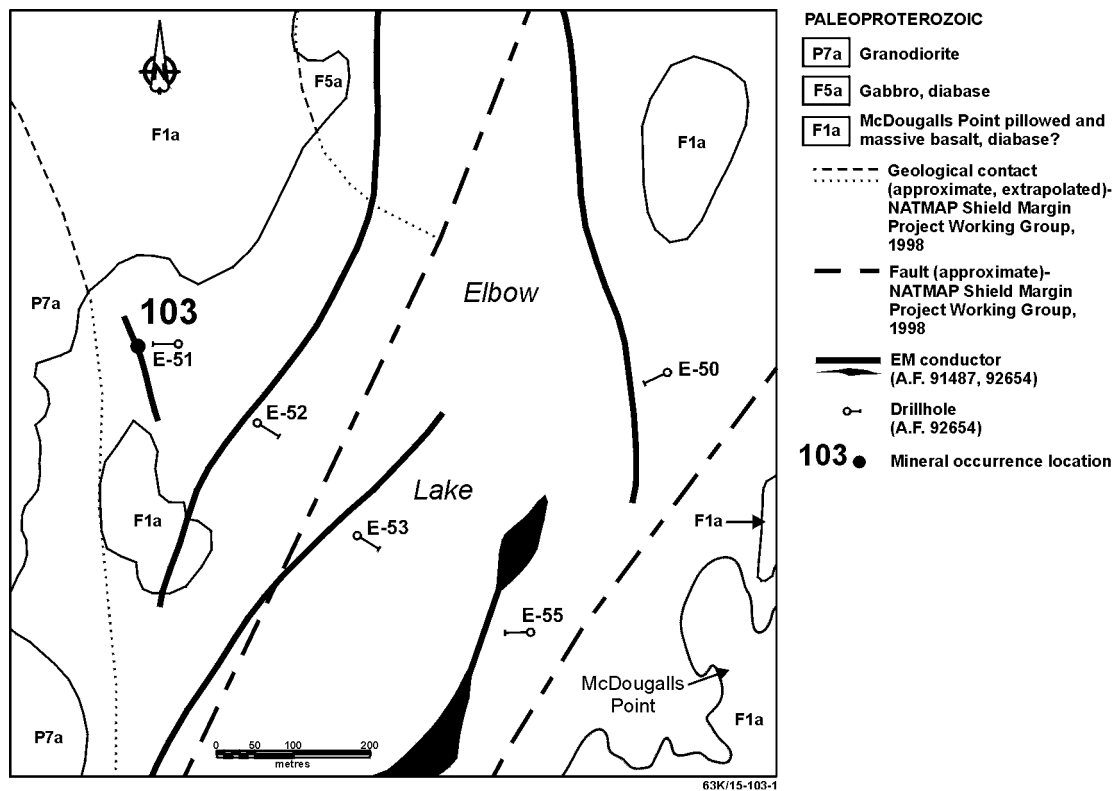
Assays obtained from the mineralized intervals returned low values: nil to 0.02% Cu, nil to 0.34 g Au/t (0.01 oz. Au/ton) (A.F. 92654).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the lithologies of this assemblage.

**REFERENCES**

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division  
 NATMAP Shield Margin Project Working Group  
 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



**LOCATION: 104**

NAME: mineralization intersected by diamond drilling  
UTM: 378005E, 6077590N  
AREA: under Elbow Lake, W of north end of McDougalls Point  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-120

**EXPLORATION SUMMARY**

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 104-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive, plagioclase-phyric McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

Holes E-48B and -50 intersected a sequence consisting of massive, mafic volcanic flows and finely laminated "tuffs", finely laminated and schistose graphitic siltstone and fine quartzite (A.F. 92654). It is unclear if the finely laminated character of some of these units is a result of tectonic influences or a primary depositional feature.

**MINERALIZATION**

Two thin intervals containing 10% pyrite were intersected between 110.6-111.1 m (363.0-364.5 ft.) and 119.5-119.8 m (392.0-393.0 ft.) in hole E-48B (A.F. 92654). The host rock is finely laminated siltstone containing 40% graphite. Hole E-50 intersected graphitic siltstone and schist containing 10% pyrite as thin stringers from 50.6-83.1 m (166.0-272.8 ft.).

**GEOCHEMICAL DATA**

No assays were reported in the assessment files for these mineralized intervals.

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the lithologies associated with this occurrence.

**REFERENCES**

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

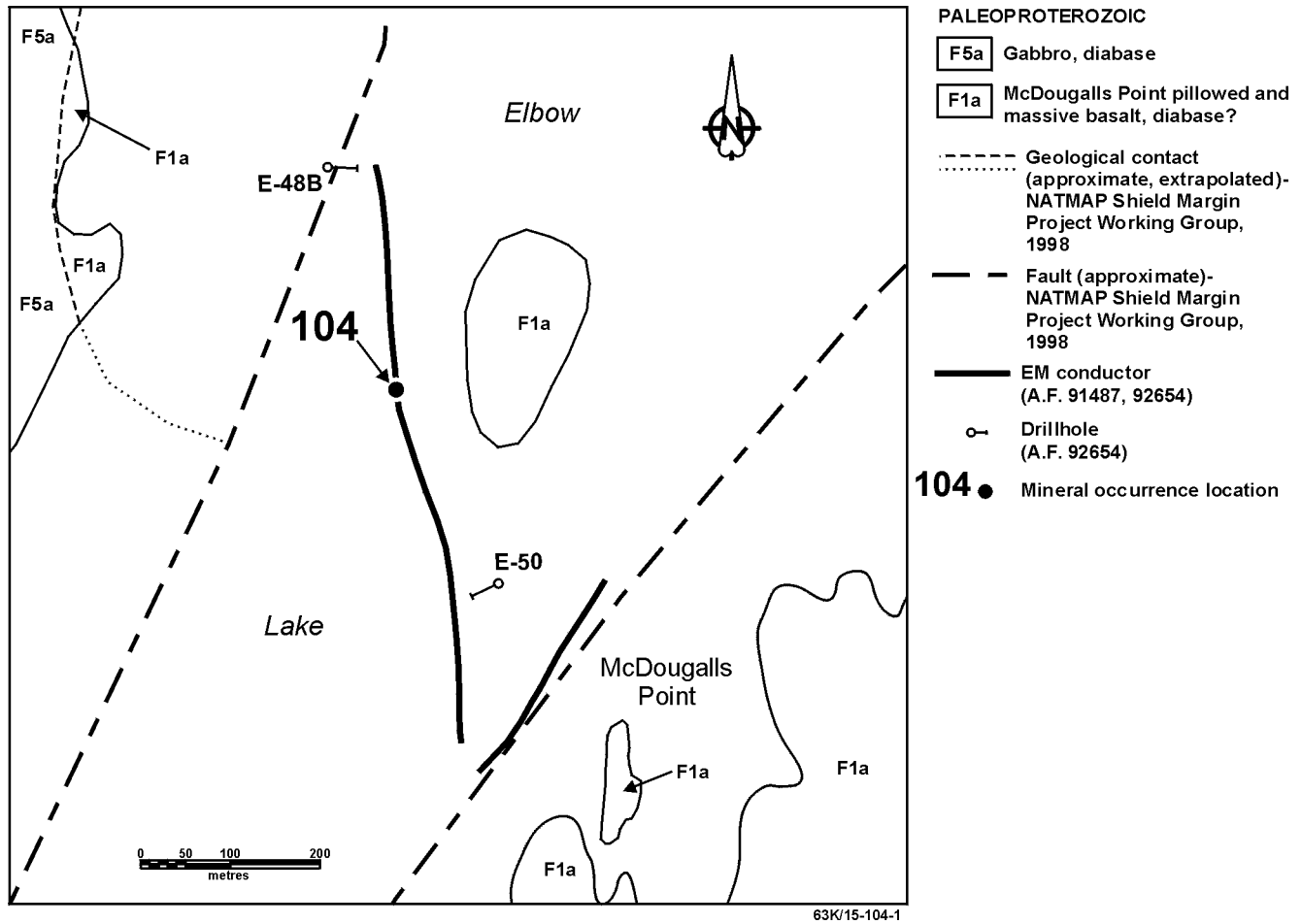


Figure 104-1: Geological setting of occurrence 104.

**LOCATION: 105**

NAME: mineralization intersected by diamond drilling  
 UTM: 385400E, 6089945N  
 AREA: approximately 1400 m SE of Muhekun Lake  
 ACCESS: via bush plane to north end of Sexton (Hasset) Lake (informal names), then traverse  
 AIRPHOTO: MB90025-27

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Granges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 105-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by well foliated and tectonically layered mafic flows (unit J1d). Hornblende-plagioclase-phyric volcanoclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric, intermediate dykes and sills (grouped under unit J13d) occur to the west. Coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite

to quartz diorite (unit P7b) of the Gants Lake batholith occurs to the east (Schledewitz, 1993a, b).

Hole E-15 intersected mafic to intermediate schist and "tuff" intervals interlayered with rhyolite, feldspar porphyry and amphibolite (A.F. 92654).

**MINERALIZATION**

Pyritic and graphitic intervals were intersected in hole E-15 (A.F. 92654). The mineralization is associated with well foliated to schistose "tuffaceous" intervals, as follows:

Hole No.	Interval	Mineralization
E-15	17.0-17.2 m (55.7-56.4 ft.)	to 20% pyrite
	17.8-18.3 m (58.5-59.9 ft.)	10-20% pyrite, associated with graphite
	22.3-34.3 m (73.2-112.6 ft.)	to 25% pyrite, very graphitic
	35.1-37.6 m (115.0-123.3 ft.)	to 20% pyrite, moderately graphitic

**GEOCHEMICAL DATA**

Assays of mineralized intervals in hole E-15 returned the following values (A.F. 92654):

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)
E-15	17.8-18.3 m (58.5-59.9 ft.)	0.10	0.04	nil
	22.3-23.0 m (73.2-75.5 ft.)	0.09	0.02	tr
	23.0-24.0 m (75.5-78.6 ft.)	0.06	tr	tr
	24.3-25.9 m (79.8-85.0 ft.)	0.05	0.03	0.34 (0.01)
	25.9-27.4 m (85.0-90.0 ft.)	0.05	0.07	tr
	27.4-29.0 m (90.0-95.0 ft.)	0.04	0.02	tr
	29.0-30.5 m (95.0-100.0 ft.)	0.05	0.12	tr
	30.5-32.0 m (100.0-105.0 ft.)	0.07	0.16	nil
	32.0-33.5 m (105.0-110.0 ft.)	0.03	0.07	tr
	33.5-34.3 m (110.0-112.6 ft.)	0.08	0.28	tr
	35.1-36.8 m (115.0-120.7 ft.)	0.03	0.05	tr
	37.2-37.6 m (121.9-123.4 ft.)	0.05	0.03	tr

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution. It appears the layered character of the "tuffs" may be tectonically induced rather than a primary depositional feature.

**REFERENCES**

A.F. 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

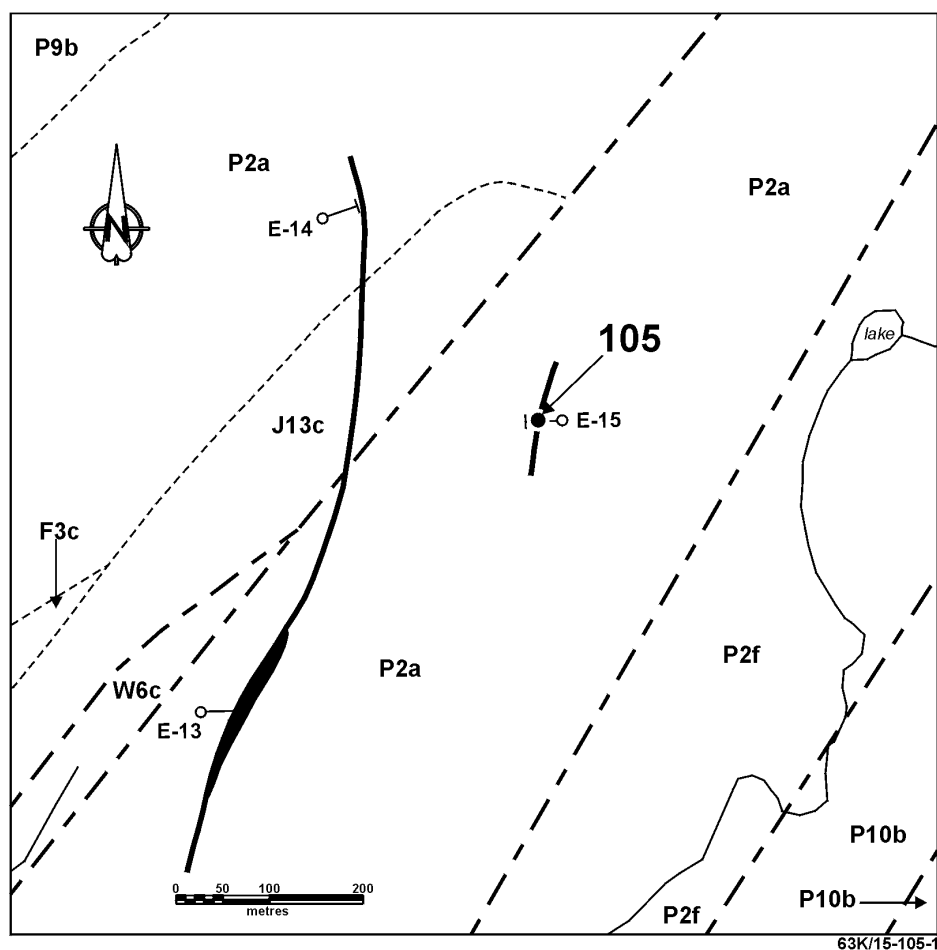
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P10b** Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
- P9b** Granite to granodiorite
- P2f** Diabase, diabase dyke complex
- P2a** Gabbro, diorite
- J13c** Rhyolite, dacite; quartz-porphry, feldspar porphyry, quartz-feldspar porphyry
- F3c** Long Bay ocean-island basalt conglomerate, sandstone

- Geological contact (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998
- Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998
- ===== EM conductor  
(A.F. 92654)
- Drillhole  
(A.F. 92654)

**105●** Mineral occurrence location

Figure 105-1: Geological setting of occurrence 105.

## LOCATION: 106

NAME: mineralization intersected by diamond drilling  
UTM: 382030E, 6085200N  
AREA: approximately 1400 m NNE of north end of Moen Bay, Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-57

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Granges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

## GEOLOGICAL SETTING

The geological unit designations indicated on the

Hole No.	Interval	Mineralization
HAS-10	28.7-29.2 m (94.2-95.8 ft.)	10% pyrite
	35.1-35.7 m (115.2-117.0 ft.)	10-15% pyrite
	47.7-48.1 m (156.5-157.8 ft.)	10% pyrrhotite
	50.7-51.4 m (166.5-168.6 ft.)	10% pyrrhotite
	57.0-60.0 m (187.0-197.0 ft.)	30% pyrite, scattered bands solid to near solid pyrrhotite
	67.7-68.1 m (222.2-223.3 ft.)	near solid to solid pyrite
	74.0-75.5 m (242.8-247.7 ft.)	near solid to solid pyrrhotite, 10% pyrite, tr chalcopyrite
	77.4-81.7 m (254.1-268.0 ft.)	20% pyrite, 10% pyrrhotite, tr chalcopyrite

## GEOCHEMICAL DATA

No assays were reported for hole HAS-10.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the units indicates significant tectonic modification.

## REFERENCES

- A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.  
1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

geological setting map (Fig. 106-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the Moen Bay pillowed basalt and breccia (unit F1c), heterolithologic breccia (unit F4c), and gabbro and diorite (unit P2a). Mafic phyllonite (unit W6c), intruded by aphyric rhyolite dykes, occurs to the east. The phyllonite is part of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992).

The sequence intersected in hole HAS-10 is dominated by chloritic schist and well foliated mafic volcanic ("andesitic") rock (A.F. 93052). Minor quartz diorite and rhyolite are also present.

## MINERALIZATION

Several sulphide-rich intervals were intersected in hole HAS-10 (A.F. 93052). The dominant sulphide is pyrite with lesser pyrrhotite. Sulphides occur over the following intervals (see table below).

## NATMAP Shield Margin Project Working Group

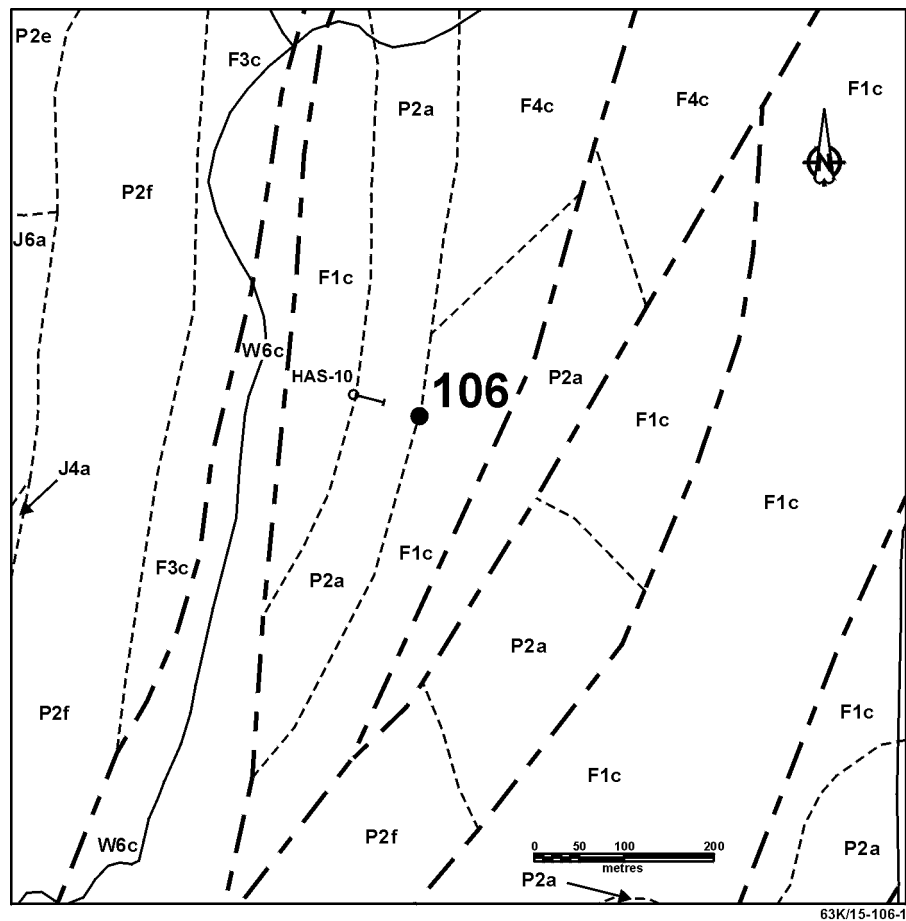
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.



#### PALEOPROTEROZOIC

- |                      |  |
|----------------------|--|
| <b>W6c</b>           | Mafic phyllonite +/- carbonate, cataclasite          |
| <b>P2a</b>           | Gabbro, diorite                                      |
| <b>P2e</b>           | Diorite to quartz diorite                            |
| <b>P2f</b>           | Diabase, diabase dyke complex                        |
| <b>Juvenile Arc</b>  |  |
| <b>J6a</b>           | Intermediate tuff, lapilli tuff, breccia             |
| <b>J4a</b>           | Rhyolite to dacite flows, flow breccia               |
| <b>N-type Basalt</b> |  |
| <b>F4c</b>           | Heterolithic breccia                                 |
| <b>F3c</b>           | Long Bay ocean-island basalt conglomerate, sandstone |
| <b>F1c</b>           | Moen Bay pillowed basalt and breccia                 |

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Drillhole (A.F. 93052)
- 106●** Mineral occurrence location

Figure 106-1: Geological setting of occurrence 106.



**LOCATION: 107**

NAME: mineralization intersected by diamond drilling  
 UTM: 379080E, 6075955N  
 AREA: under Elbow Lake, E of McDougalls Point  
 ACCESS: via bush aircraft, or by boat through the  
 Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-120

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 107-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), consisting of homogeneous chlorite±carbonate schist that is part of the Elbow Lake shear zone. This shear zone is approximately

850 m thick in this area (Syme and Whalen, 1992). Pillowed and massive, aphyric flows and synvolcanic intrusions of McDougalls Point basalt (unit F1a), and fine- to medium-grained, equigranular diabase (unit F5a) occur to the west of the shear zone.

The litholog for hole E-64 describes a finely laminated, schistose assemblage interpreted as representing a tuffaceous sequence (A.F. 92654). The character of this assemblage is most likely a result of tectonic influences associated with the development of the Elbow Lake shear zone rather than a primary depositional feature.

**MINERALIZATION**

Several intervals containing 5-20% pyrite in mafic "tuff" and graphitic schist were intersected by hole E-64 over the following intervals: 58.2-58.8 m (191.0-193.0 ft.); 66.3-67.7 m (217.6-222.2 ft.); 71.0-71.7 m (232.8-235.3 ft.); 71.9-72.5 m (236.0-238.0 ft.) (A.F. 92654).

**GEOCHEMICAL DATA**

Assays of mineralized intervals in hole E-64 returned the following values (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	g Au/t (oz. Au/ton)
E-64	58.2-58.8 m (191.0-193.0 ft.)	nil	tr
	66.3-67.7 m (217.6-222.2 ft.)	tr	tr
	71.0-71.7 m (232.8-235.3 ft.)	tr	1.37 (0.04)

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly deformed by the Elbow Lake shear zone.

Syme, E.C. and Whalen, J.B.

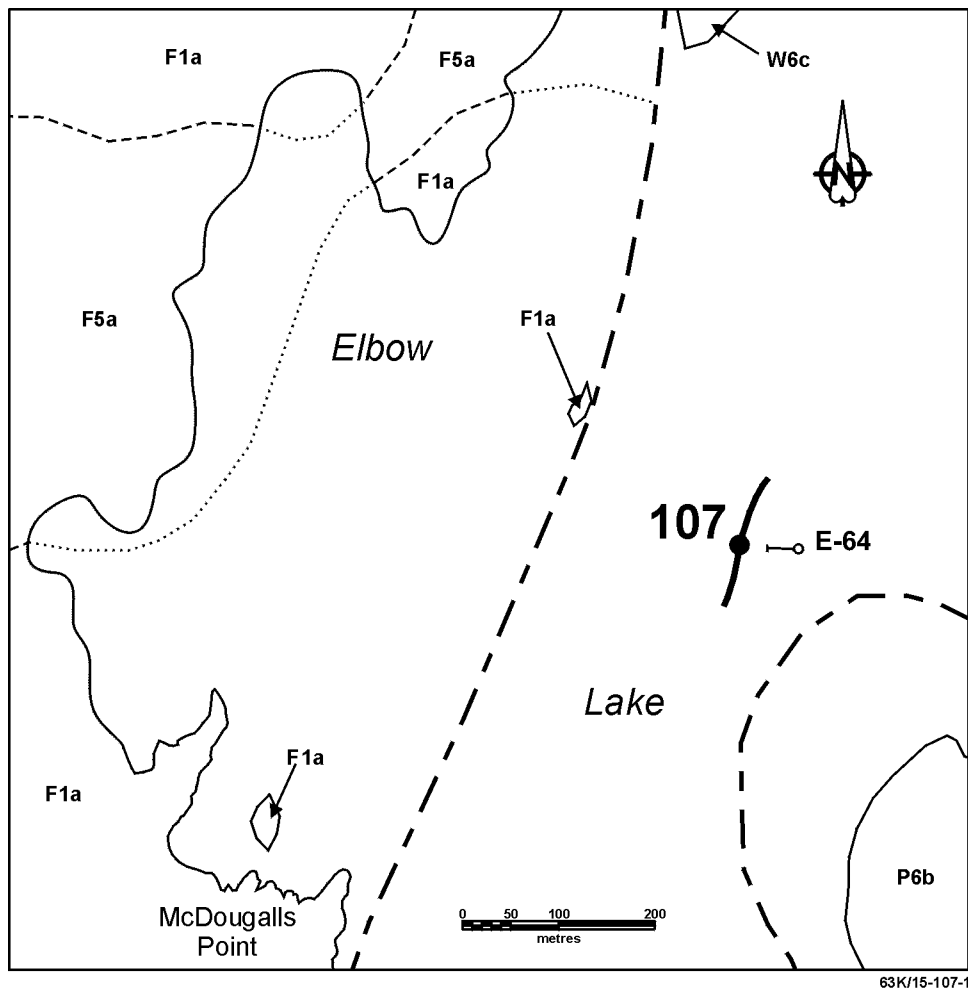
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

**REFERENCES**

A.F. 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-107-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P6b** Quartz diorite
- F5a** Gabbro, diabase
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998

- Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

- EM conductor (A.F. 92654)

- Drillhole (A.F. 92654)

- 107●** Mineral occurrence location

Figure 107-1: Geological setting of occurrence 107.

**LOCATION: 108**

NAME: mineralization intersected by diamond drilling  
UTM: 378860E, 6076125N  
AREA: under Elbow Lake, E of McDougalls Point  
ACCESS: via bush aircraft, or by boat through the  
Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-120

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 108-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), consisting of homogeneous chlorite±carbonate schist. These rocks are part of the Elbow Lake shear zone, which is approximately 850 m thick in this area (Syme and Whalen, 1992). Pillowed and massive, aphyric flows and synvolcanic intrusions of McDougalls Point basalt (unit F1a), and fine- to medium-grained, equigranular diabase (unit F5a) occur to the west of the shear zone.

The lithology for hole E-59 describes massive, aphyric, mafic volcanic rocks intercalated with finely laminated, schistose units interpreted as tuffaceous layers (A.F. 92654). The laminated character of the "tuffaceous" intervals is a result of deformation associated with the development of the Elbow Lake shear zone rather than a primary depositional feature.

**MINERALIZATION**

Several intervals containing up to 5% pyrite in graphitic schist occur between 55.0-56.7 m (180.6-186.0 ft.) and 61.9-66.8 m (203.0-219.0 ft.) in hole E-59 (A.F. 92654).

**GEOCHEMICAL DATA**

No assays were reported in the assessment files for this occurrence.

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly deformed along the Elbow Lake shear zone.

**REFERENCES**

A.F. 91487, 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

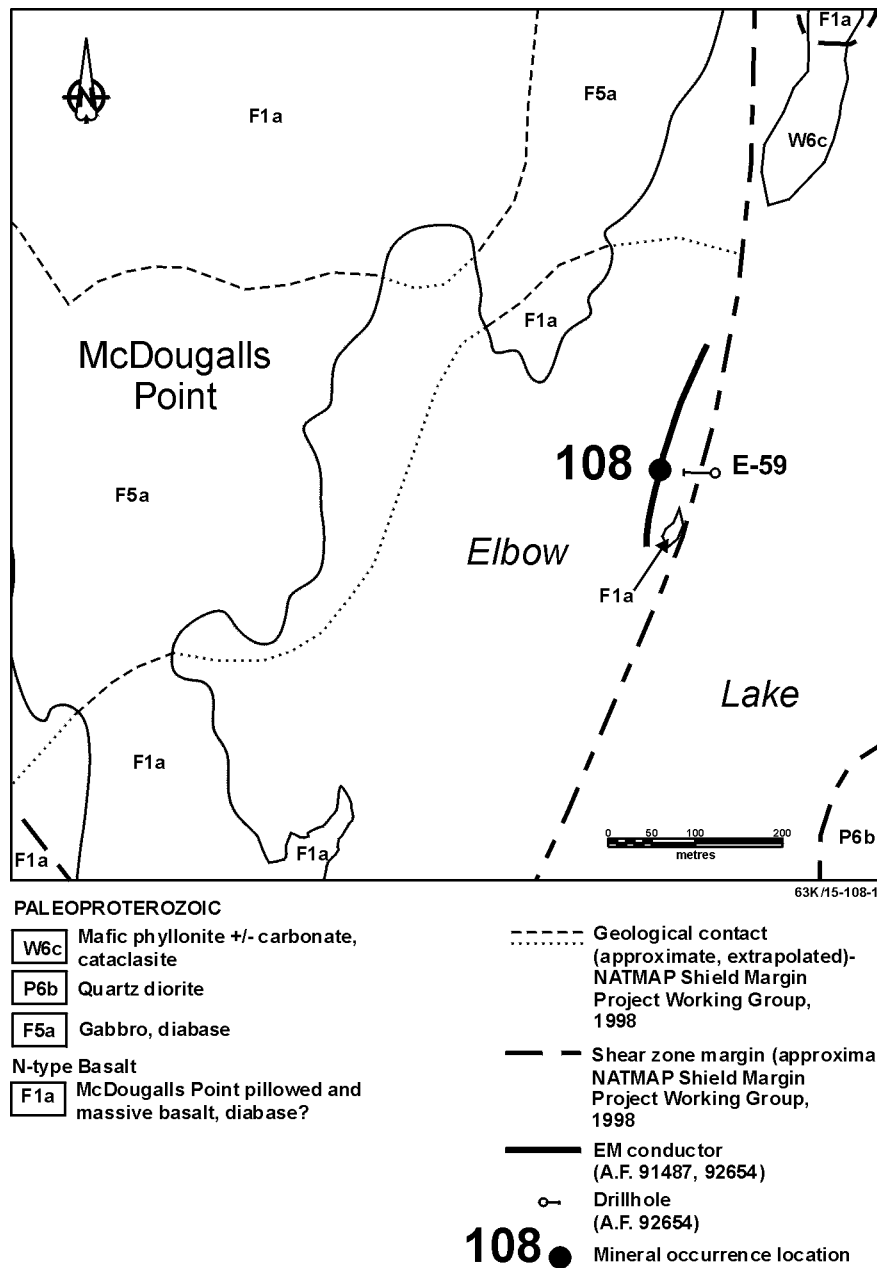


Figure 108-1: Geological setting of occurrence 108.

## LOCATION: 109

NAME: mineralization intersected by diamond drilling  
UTM: 379610E, 6081115N  
AREA: under Elbow Lake, between Big Poplar and Webb Islands  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-117

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Granges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 109-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonites (unit W6c) that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), consisting of heterogeneous chlorite±carbonate±magnetite schist and phyllonite derived from heterolithologic breccia, and siliceous iron formation. Blocks of pillowed and massive aphyric McDougalls Point basalt and fine- to medium-grained gabbro to diorite, and diabase (units P2a and P2f) are common constituents within the main shear zone, which is approximately 1900 m thick in this area (Syme and Whalen, 1992).

The occurrence is located close to the western margin of the Elbow Lake shear zone. Hole ELB-4 intersected a sequence dominated by coarse-grained gabbro with lesser intervals of fine- to medium-grained "andesite" (A.F. 93052). Quartz-chlorite-carbonate schist occurs in the bottom of the hole.

## MINERALIZATION

Near solid to solid pyrite with 10-15% graphite was intersected in hole ELB-4 between 76.5-82.6 m (251.1-271.1 ft.) (A.F. 93052). It is hosted by the quartz-carbonate-chlorite schist interval.

## GEOCHEMICAL DATA

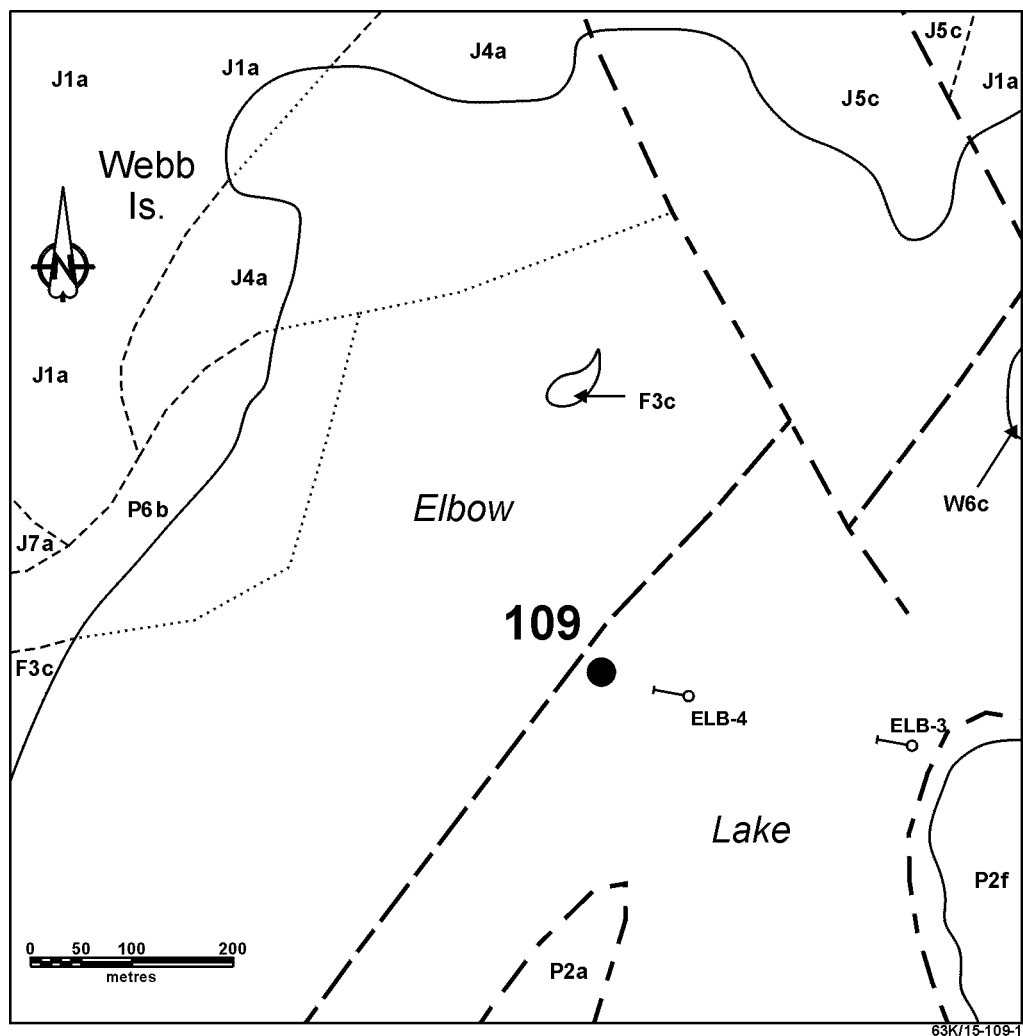
No assays were reported for this occurrence.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification. The associated graphite suggests a biogenic contribution.

## REFERENCES

- A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.  
1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.  
1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.  
1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.



#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P6b** Quartz diorite
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- J7a** Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
- J5c** Heterolithologic breccia, dominantly mafic fragments
- J4a** Rhyolite to dacite flows, flow breccia
- J1a** Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

#### Plume-related Basalt

- F3c** Long Bay ocean-island basalt conglomerate, sandstone

----- Geological contact (approximate, extrapolated)-  
NATMAP Shield Margin Project Working Group, 1998

— Fault (approximate)-  
NATMAP Shield Margin Project Working Group, 1998

○ Drillhole  
(A.F. 93052)

**109●** Mineral occurrence location

Figure 109-1: Geological setting of occurrence 109.

## LOCATION: 110

NAME: mineralization intersected by diamond drilling  
UTM: 380160E, 6078085N  
AREA: under Elbow Lake between Smith and Chinaman Islands  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-118

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 110-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonites (unit W6c) that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). These consist of heterogeneous chlorite±carbonate schist, that sometimes show relict, strongly flattened pillows. Blocks of pillowed and massive aphyric McDougalls Point basalt (unit F1a) and Claw Bay pillowed and massive basalt (unit F1b) are common within and adjacent to the main shear zone. The shear zone is approximately 1500 m thick in this area (Syme and Whalen, 1992).

The sequence intersected in hole E-45 is dominated by fine- to coarse-grained, foliated "andesite" (A.F. 92654).

## MINERALIZATION

An interval containing 15% pyrite along foliation planes within a black, fine-grained, laminated graphitic unit was intersected in hole E-45 between 50.6-54.6 m (166.0-179.0 ft.) (A.F. 92654).

## GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected by this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification. The associated graphite suggests a significant biogenic contribution.

## REFERENCES

- A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.  
1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.
- NATMAP Shield Margin Project Working Group  
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.  
1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.  
1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

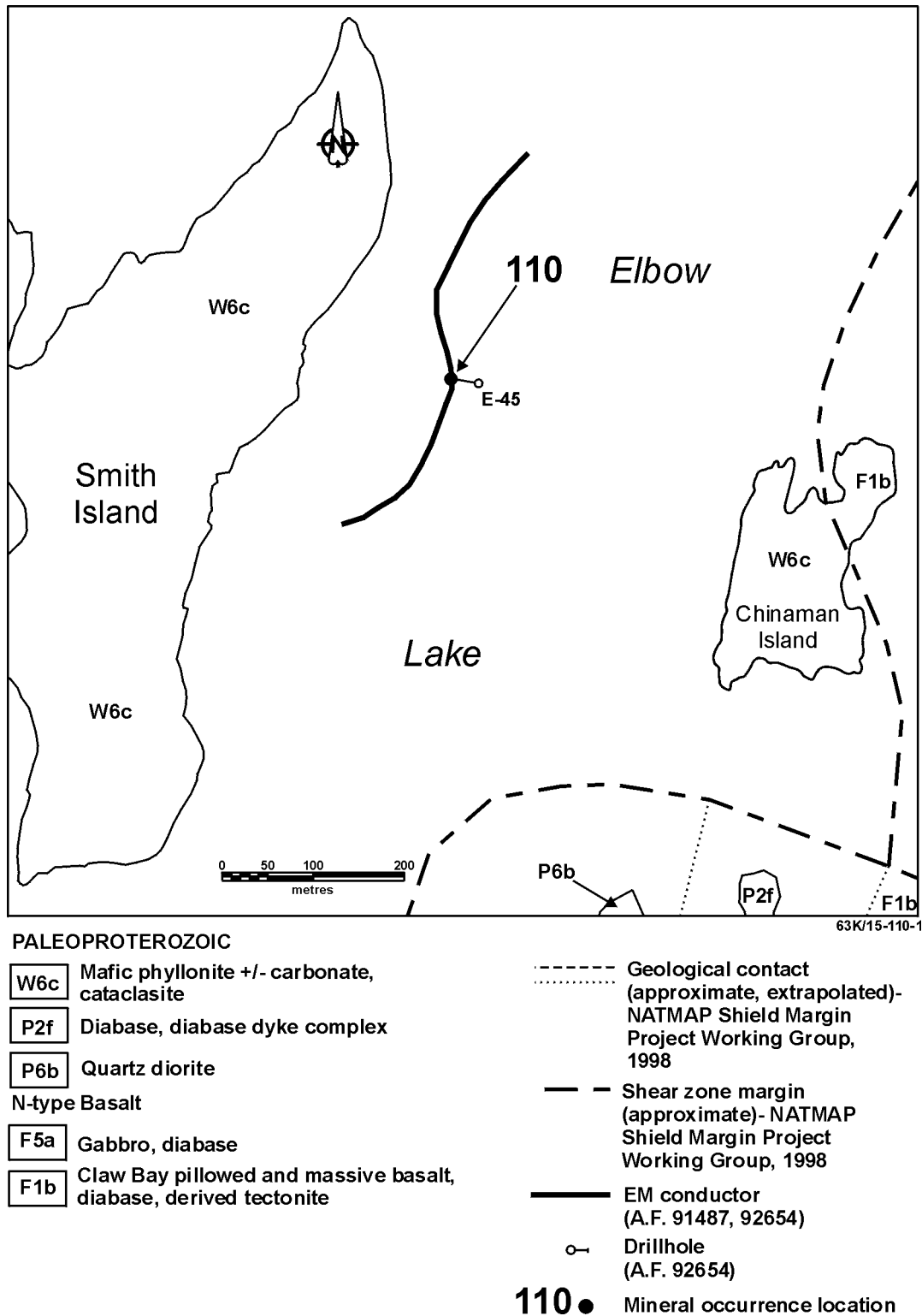


Figure 110-1: Geological setting of occurrence 110.



**LOCATION: 111**

NAME: mineralization intersected by diamond drilling  
 UTM: 382610E, 6079185N  
 AREA: along E side of Elbow Lake, ESE of Hanna Islands  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-52

**EXPLORATION SUMMARY**

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Granges Exploration AB performed an HLEM survey over the occurrence (A.F. 91506, 91580).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 111-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite (unit W6c). Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro are exposed to the west. These are part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

Hole #1 intersected a sequence of foliated dark green to light grey and green, fine- to medium-grained "andesite" (A.F. 92260).

**MINERALIZATION**

Hole #1 intersected sulphide mineralization over the following intervals (A.F. 92260) (see table below).

Hole No.	Interval	Mineralization
#1	17.8-18.6 m (58.5-61.0 ft.)	to 15% pyrite in siliceous interval in fine-grained chloritic "andesite"
	35.1-36.9 m (115.0-121.0 ft.)	15% pyrite, minor chalcopyrite, numerous quartz stringers in green-grey, medium-grained, amphibole-phyric, chloritic "andesite"
	77.4-78.0 m (254.0-256.0 ft.)	to 15% pyrite, lesser pyrrhotite, minor chalcopyrite, in green-grey, medium grained, amphibole-phyric, chloritic "andesite"
	82.4-86.4 m (270.5-283.5 ft.)	to 20% pyrite and pyrrhotite, some earthy pyrite, in green-grey, medium grained, amphibole-phyric, chloritic "andesite"

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals (A.F. 92260) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)	g Ag/t (oz. Au/ton)
#1	17.8-18.6 m (58.5-61.0 ft.)		—	nil	2.05 (0.06)
	35.1-36.9 m (115.0-121.0 ft.)	0.14		nil	tr
	77.4-78.0 m (254.0-256.0 ft.)	0.14		nil	tr
	82.4-83.4 m (270.5-273.5 ft.)	0.05	nil	nil	tr
	83.4-85.5 m (273.5-280.5 ft.)	tr	nil	nil	3.42 (0.10)
	85.5-86.4 m (280.5-283.5 ft.)	0.06	nil	nil	9.59 (0.28)
	129.5-132.0 m (425.0-433.0 ft.)	0.12		nil	nil

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

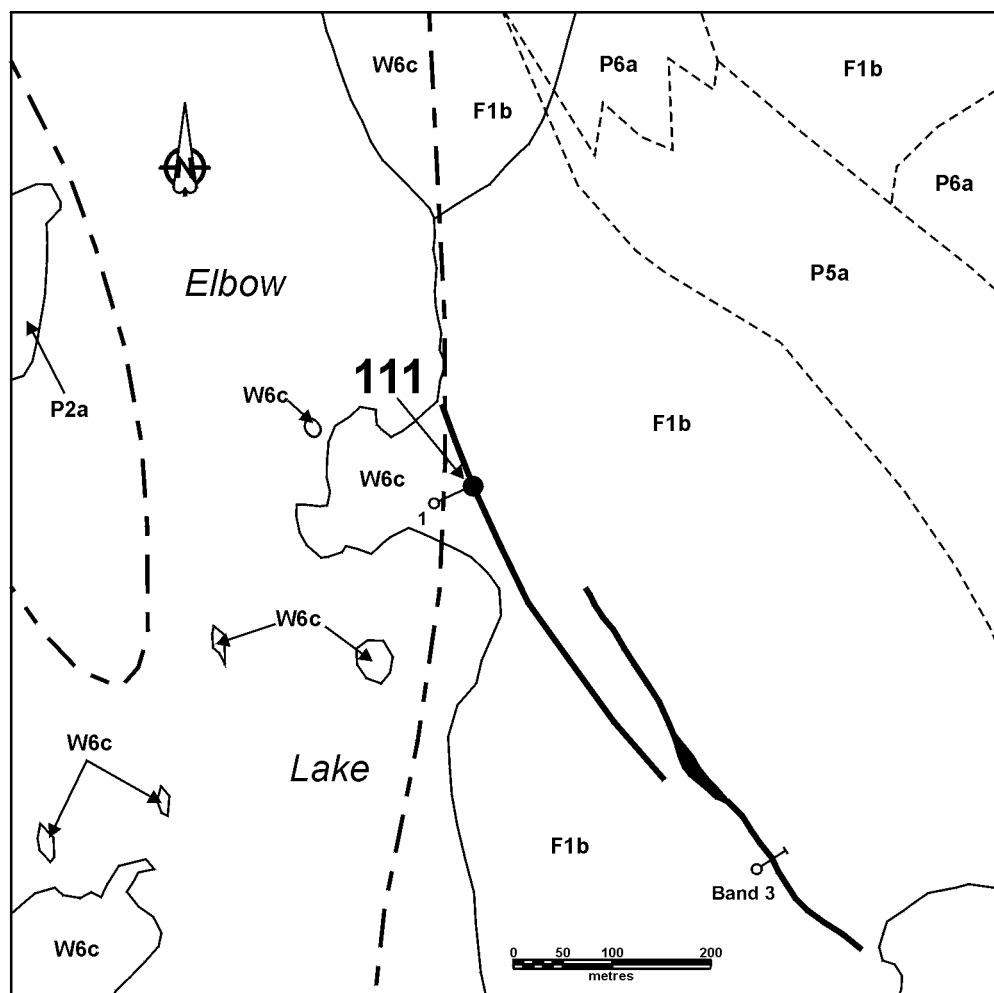
A.F. 91506, 91580, 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

**NATMAP Shield Margin Project Working Group**

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27. 1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.



63K/15-111-1

#### PALEOPROTEROZOIC

- |                      |  |
|----------------------|--|
| <b>W6c</b>           | Mafic phyllonite +/- carbonate, cataclasite                      |
| <b>P5a</b>           | Quartz diorite to granodiorite                                   |
| <b>P6a</b>           | Tonalite   |
| <b>P2a</b>           | Gabbro, diorite  |
| <b>N-type Basalt</b> |  |
| <b>F5a</b>           | Gabbro, diabase  |
| <b>F1b</b>           | Claw Bay pillowed and massive basalt, diabase, derived tectonite |

- |              |  |
|--------------|--|
| -----        | Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998 |
| =====        | EM conductor (A.F. 91506, 91580, 92260)  |
| ○            | Drillhole (A.F. 92260, 92262)  |
| <b>111</b> ● | Mineral occurrence location  |

Figure 111-1: Geological setting of occurrence 111.

## LOCATION: 112

NAME: mineralization intersected by diamond drilling  
UTM: 382930E, 6078815N  
AREA: along E side of Elbow Lake, ESE of Hanna Islands  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-52

## EXPLORATION SUMMARY

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Granges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 112-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite. Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (units W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

The sequence intersected in hole BAND-3 consists of grey-green chlorite-biotite schist and moderately foliated, amphibole-phyric "andesite" (A.F. 92262).

## MINERALIZATION

The lower part of the chlorite-biotite schist interval, from 19.0-19.8 m (62.3-65.1 ft.), contains up to 70% pyrite with a trace of chalcopyrite (A.F. 92262).

## GEOCHEMICAL DATA

An assay of the mineralized interval returned low metal values: 0.02% Cu, 0.03% Zn, 0.01% Ni (A.F. 92262).

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification.

## REFERENCES

A.F. 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

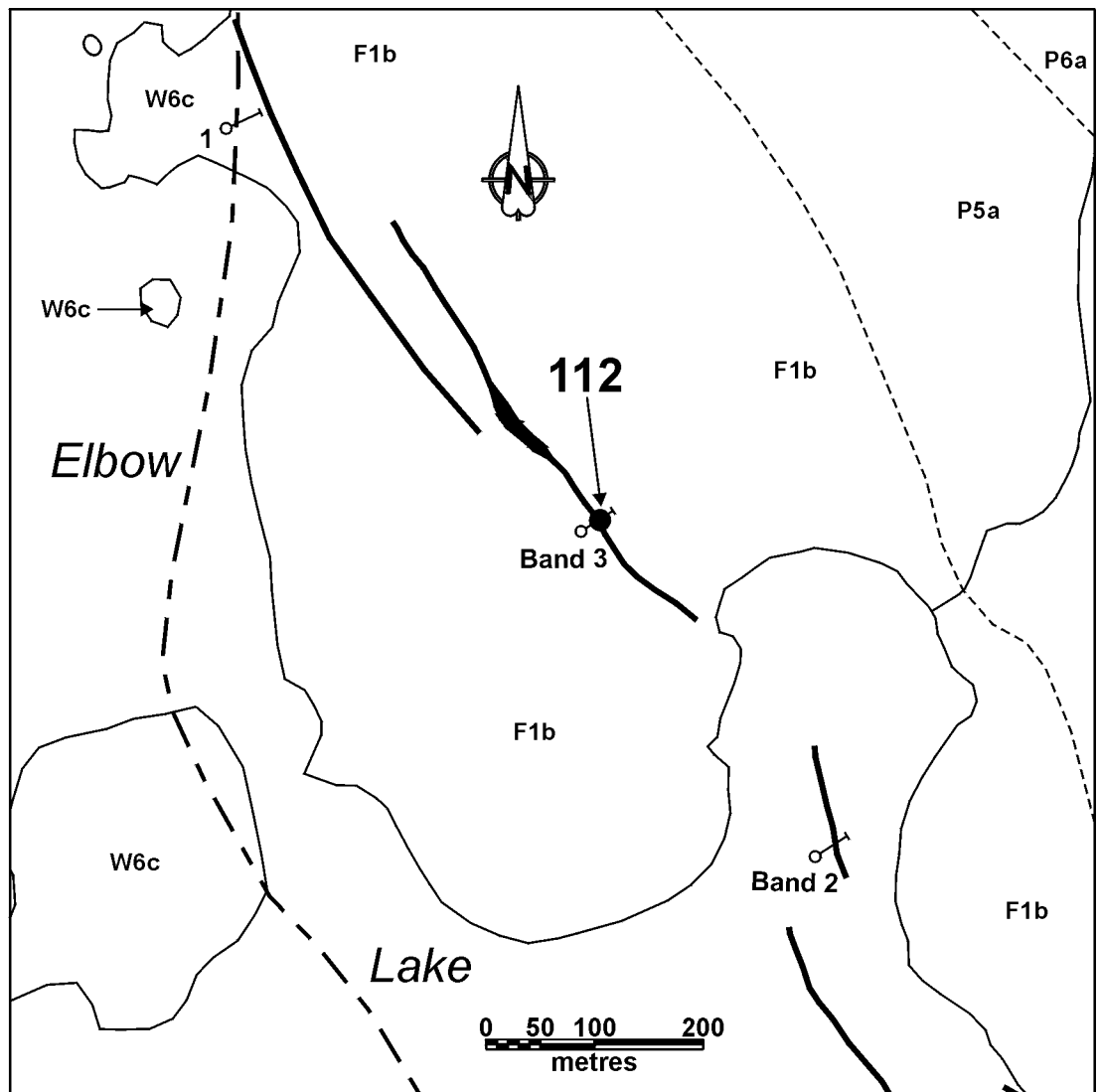
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.



63K/15-112-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P6a** Tonalite
- P5a** Gabbro, diabase
- N-type Basalt
- F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 92261, 92262)
- Drillhole (A.F. 92260, 92262)
- 112●** Mineral occurrence location

Figure 112-1: Geological setting of occurrence 112.

**LOCATION: 113**

NAME: mineralization intersected by diamond drilling  
UTM: 383070E, 6078515N  
AREA: under N side of Claw Bay, east side of Elbow Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-33

**EXPLORATION SUMMARY**

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Granges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 113-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite (unit 2a). Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (unit W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (units F5a) occurs to the NE.

Hole BAND-2 intersected a sequence consisting of moderately- to strongly-foliated, chloritic "andesite", some of which is amphibole phyrlic, and quartz-chlorite-magnetite schist (A.F. 92262).

**MINERALIZATION**

Five to 20% pyrite and 5-30% magnetite occur from 31.2-36.3 m (102.2-119.0 ft.) in hole BAND-2 (A.F. 92262). Minor chalcopyrite is also present. The host rock is quartz-chlorite-magnetite schist.

**GEOCHEMICAL DATA**

Assays of the mineralized interval in hole BAND-2 returned low metal values: 0.02-0.03% Cu, 0.02-0.03% Zn, 0.01% Ni (A.F. 92262).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

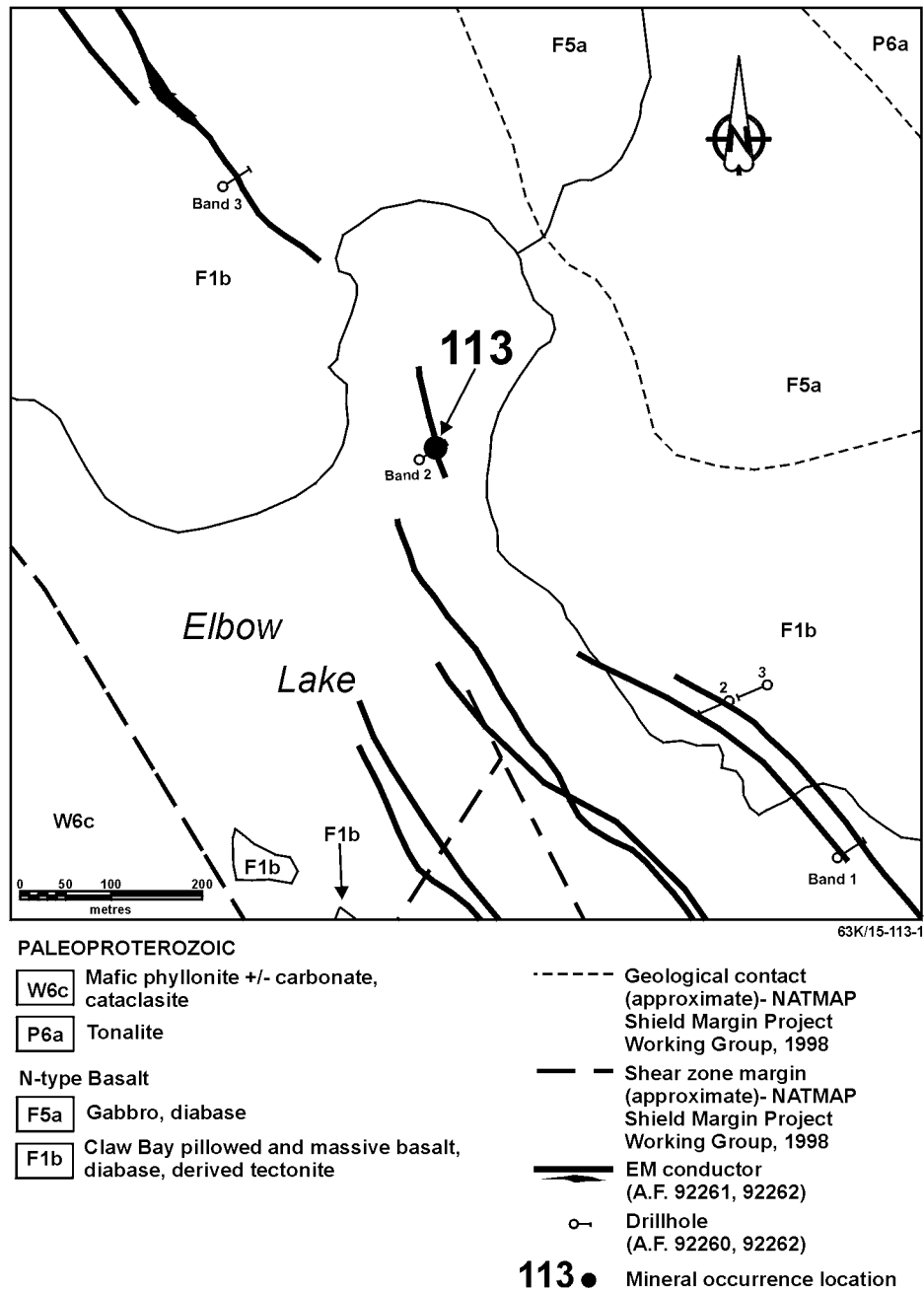


Figure 113-1: Geological setting of occurrence 113.

**LOCATION: 114**

NAME: mineralization intersected by diamond drilling  
 UTM: 383530E, 6078155N  
 AREA: under N side of Claw Bay, east side of Elbow Lake  
 ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
 AIRPHOTO: MB90025-33

**EXPLORATION SUMMARY**

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1972 three holes were drilled to test several conductive responses in the occurrence area (A.F. 92252). In 1974 Granges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 114-1) and their descriptions are from the compilation maps of the NATMAP Shield

Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite. Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (unit W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

All the drill holes that have delineated this occurrence intersected mafic, foliated, generally amphibole phyric volcanic rocks ("andesite") and schistose equivalents (A.F. 92260, 92262). The schistose intervals probably represent sheared intervals related to the Claw Bay shear zone.

**MINERALIZATION**

Sulphide mineralization was intersected at this occurrence in the following drill holes (A.F. 92252, 92260, 92262) (see table below).

Hole No.	Interval	Mineralization
#2	63.1-64.3 m (207.0-211.0 ft.)	to 15% pyrite as stringers, minor sphalerite, chalcopyrite, in quartz-hornblende-biotite schist and "andesite"
	104.2-105.9 m (342.0-347.3 ft.)	15% to "heavy" pyrite, pyrrhotite, minor chalcopyrite, in schistose "andesite"
#3	182.9-183.9 m (600.0-603.5 ft.)	intervals of massive pyrrhotite with chalcopyrite in light green, fine-grained "andesite"
PO-2	21.1-22.0 m (69.1-72.1 ft.)	pyrite stringers with minor chalcopyrite in "andesite" with schistose intervals
	90.8-92.8 m (297.8-304.5 ft.)	"slight" to "fair" pyrite and pyrrhotite, minor chalcopyrite, in "andesite" and schistose equivalent
PO-3	101.2-102.4 m (332.1-336.0 ft.)	"heavy to massive" magnetite, finely disseminated pyrrhotite, minor chalcopyrite, in "andesite"
BAND-1	30.2-32.8 m (99.0-107.6 ft.)	3-80% pyrite, 10% chalcopyrite 32.6-32.7 m (106.9-107.4 ft.), some intervals have up to 5% magnetite,

**GEOCHEMICAL DATA**

The following assays were obtained from mineralized intervals sampled (A.F. 92252, 92260, 92262) (see table on next page).

**CLASSIFICATION**

Stratabound massive sulphide type deposit; volcanic rock associated.

**REFERENCES**

A.F. 92252, 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

**NATMAP Shield Margin Project Working Group**

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

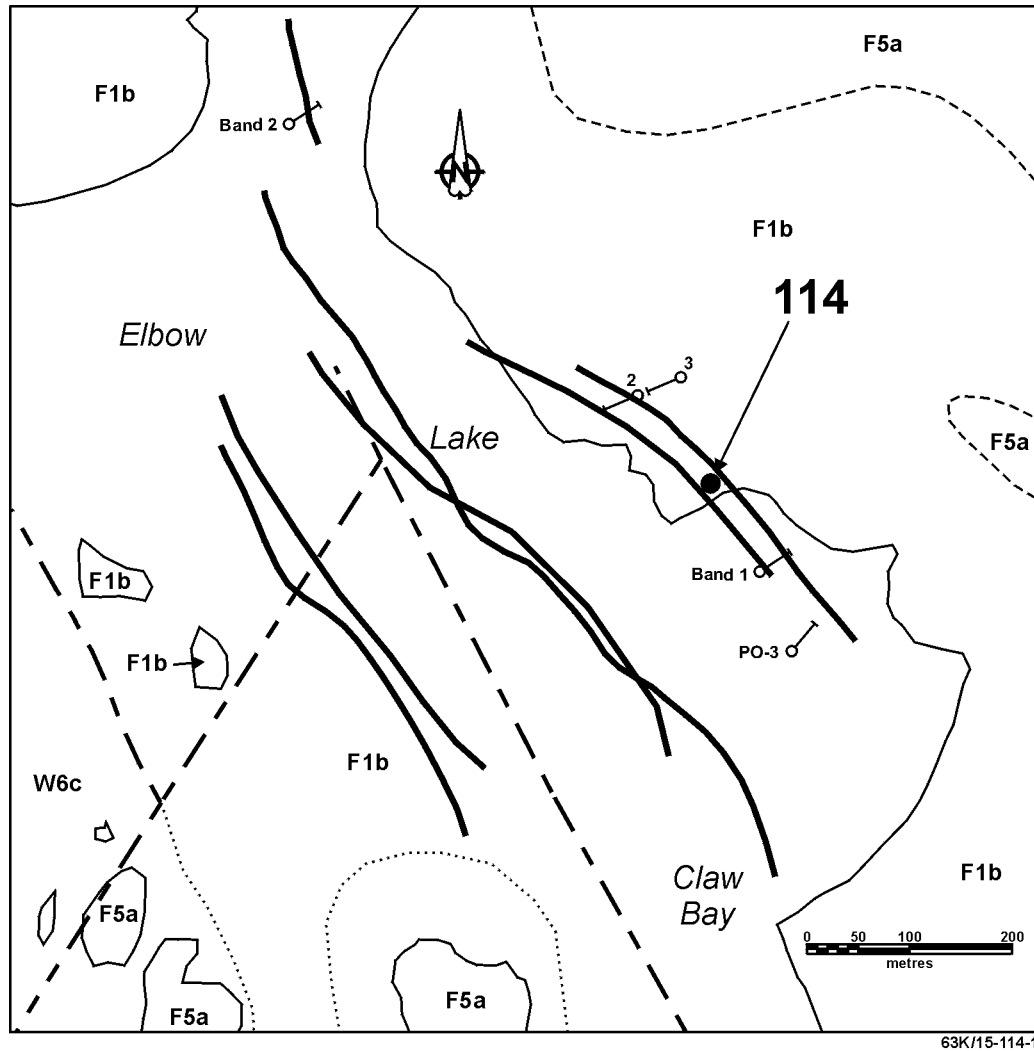
Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Hole No.	Interval	%Cu	%Zn	%Ni	%Pb	g Au/t (oz. Au/ton)	g Ag/t (oz. Ag/ton)
#2	4.3-6.1 m (14.0-20.0 ft.)	0.04	nil			tr	4.11 (0.12)
	6.1-7.6 m (20.0-25.0 ft.)	0.03	0.40			tr	2.74 (0.08)
	7.6-9.1 m (25.0-30.0 ft.)	0.06	nil			tr	nil
	9.1-10.7 m (30.0-35.0 ft.)	0.08	nil			tr	4.11 (0.12)
	51.2-51.7 m (168.0-169.5 ft.)	0.10	0.40			nil	4.79 (0.14)
	56.7-57.9 m (186.0-190.0 ft.)	0.09	nil			nil	2.74 (0.08)
	59.1-60.7 m (194.0-199.0 ft.)	0.08	nil			tr	4.11 (0.12)
	104.2-104.9 m (342.0-344.0 ft.)	0.18	nil			nil	4.11 (0.12)
	104.9-105.5 m (344.0-346.0 ft.)	2.15	nil			nil	4.11 (0.12)
	105.5-106.1 m (346.0-348.0 ft.)	3.23	nil			tr	7.53 (0.22)
	106.1-106.4 m (348.0-349.0 ft.)	0.28	nil			tr	tr
	106.4-107.9 m (349.0-354.0 ft.)	0.03	nil			nil	6.16 (0.18)
	107.9-109.4 m (354.0-359.0 ft.)	tr	0.40			tr	6.8 (0.20)
	109.4-110.9 m (359.0-364.0 ft.)	tr	nil			nil	nil
#3	135.0-136.6 m (443.0-448.0 ft.)	0.06	0.30			nil	tr
	136.6-137.8 m (448.0-452.0 ft.)	0.18	nil			0.34 (0.01)	nil
	182.3-182.9 m (598.0-600.0 ft.)	tr	nil			nil	tr
	182.9-183.9 m (600.0-603.5 ft.)	1.38	nil			0.68 (0.02)	tr
	183.9-185.3 m (603.5-608.0 ft.)	0.09	nil			tr	tr
	183.5-186.8 m (608.0-613.0 ft.)	tr	nil			0.34 (0.01)	nil
PO-2	7.6-9.0 m (25.0-29.4 ft.)	0.19	0.02				
	12.9-13.9 m (42.2-45.5 ft.)		tr				
	21.0-22.3 m (69.0-73.0 ft.)	0.08					
	82.6-84.2 m (271.1-276.1 ft.)	0.35	0.02				
	90.8-92.8 m (297.8-304.5 ft.)	0.14	0.05	tr			
PO-3	93.2-94.2 m (305.8-309.0 ft.)	0.08	0.06				
	72.0-72.5 m (236.2-238.0 ft.)	0.50					
	96.7-97.8 m (317.4-321.0 ft.)	0.02		tr			
BAND-1	100.3-102.4 m (329.0-336.0 ft.)	0.34	0.05	tr			
	13.7-15.2 m (45.0-50.0 ft.)				0.02	0.03 (0.001)	0.34 (0.01)
	30.2-31.5 m (99.0-103.3 ft.)		0.03	0.03			
	31.5-32.6 m (103.3-106.9 ft.)		0.12	0.15			
	32.6-32.9 m (106.9-107.9 ft.)		1.83	0.05	0.01		
	32.9-33.2 m (107.9-109.0 ft.)		0.23	0.32			





#### PALEOPROTEROZOIC

**W6c** Mafic phyllonite +/- carbonate, cataclasite

N-type Basalt

**F5a** Gabbro, diabase

**F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

----- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998

--- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

— EM conductor (A.F. 92261, 92252, 92262)

○ Drillhole (A.F. 92260, 92262)

**114**● Mineral occurrence location

Figure 114-1: Geological setting of occurrence 114.

## LOCATION: 115

NAME: mineralization intersected by diamond drilling  
UTM: 384350E, 6078775N  
AREA: approximately 800 m NNW of Centre Lake  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-33

## EXPLORATION SUMMARY

In 1955 and 1957 Prospectors Airways Company, Ltd. drilled several holes in the area (A.F. 90504). The drill target is not specified in the assessment file.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 115-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by fine- to medium-grained, equigranular diabase (unit F5a) and equigranular to weakly quartz

megacrystic tonalite (unit P6a) related to the East Elbow tonalite stock. Strongly flattened, pillowed, mafic flows intruded by diabase dykes (unit F1b) that host the Centre Lake mafic tectonite occur to the SE of the occurrence.

The sequence intersected in hole M-8 is dominated by amphibole-phyric "andesite" with a minor "gabbroic" unit at the top of the hole (A.F. 90504).

## MINERALIZATION

Sulphide mineralization is widely distributed in hole M-8, and most of the mafic volcanic rock contains disseminated pyrrhotite (A.F. 90504). Chalcopyrite is a rare constituent. The best mineralization, consisting of "disseminated pyrrhotite" with "minor chalcopyrite" occurs between 61.1-64.6 m (200.5-212.0 ft.) in "slightly altered andesite".

## GEOCHEMICAL DATA

The following assays were obtained from the main mineralized interval (A.F. 90504) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)
M-8	61.1-62.0 m (200.5-203.5 ft.)	0.17	0.05	0.34 (0.01)
	62.0-63.6 m (203.5-208.5 ft.)	0.16	0.05	0.17 (0.005)
	64.0-64.6 m (210.0-212.0 ft.)	0.54	0.10	0.34 (0.01)

## CLASSIFICATION

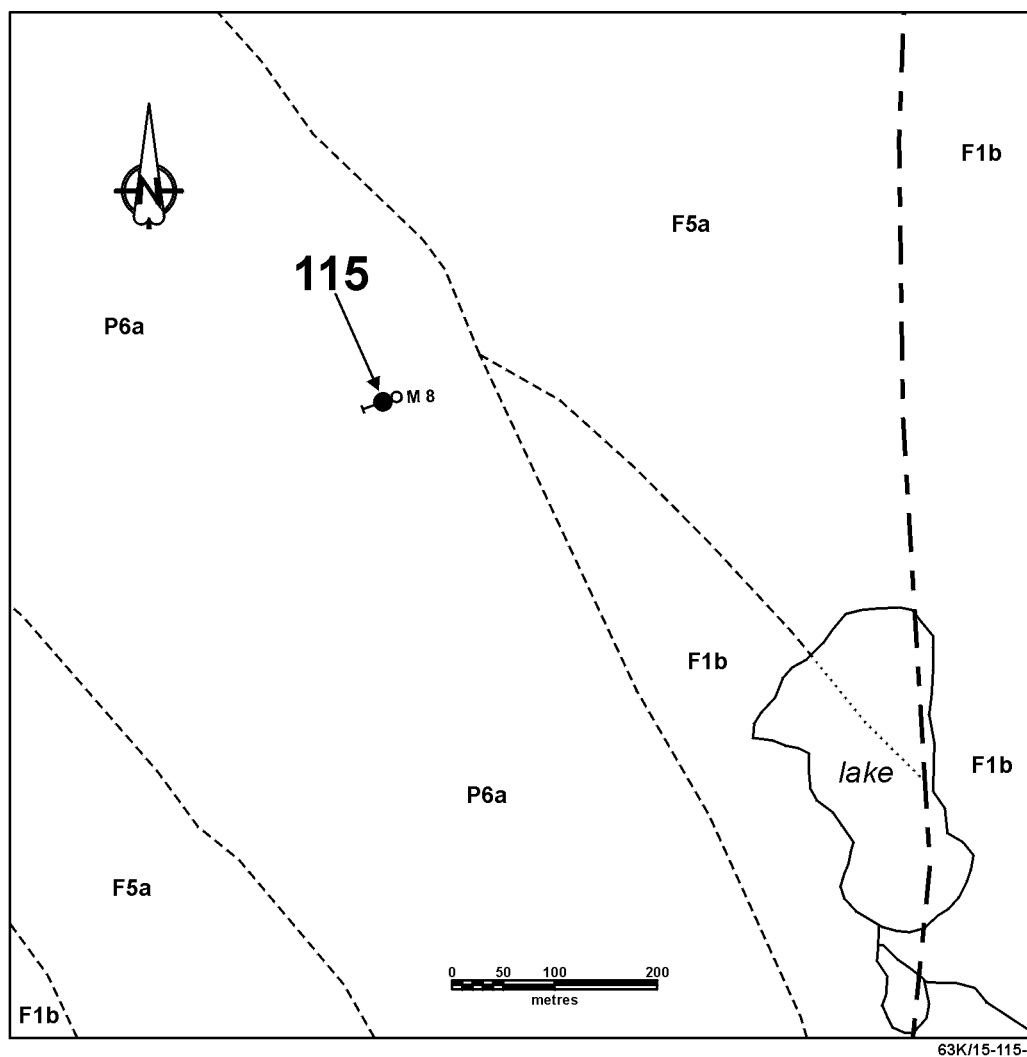
Disseminated mineralization - not classified. It may represent a sulphide-bearing alteration zone associated with a stratabound massive sulphide deposit.

## REFERENCES

A.F. 90504; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



**PALEOPROTEROZOIC**

- P6a** Tonalite
- N-type Basalt
- F5a** Gabbro, diabase
- F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group, 1998

— Fault (approximate)-  
NATMAP Shield Margin  
Project Working Group,  
1998

○ Drillhole  
(A.F. 90504)

**115●** Mineral occurrence location

Figure 115-1: Geological setting of occurrence 115.

## LOCATION: 116

NAME: mineralization intersected by diamond drilling  
UTM: 374760E, 6076015N  
AREA: under south end of Sulphide Lake  
ACCESS: via bush aircraft to Sulphide Lake  
AIRPHOTO: MB90025-203

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 1-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is under-

lain by undifferentiated basalt and basaltic andesite (unit F1a), possibly related to the McDougalls Point basalt, beige to grey, foliated, medium-grained, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) and medium pink, foliated, medium-grained, porphyritic, hornblende-biotite granodiorite (units P7a and P9b) of the Big Rat Lake pluton.

Hole E-62 intersected a sequence of interlayered rhyolite, andesite and dark grey, finely laminated "tuff" (A.F. 92654). It is unclear if the layered character of the "tuffaceous" intervals is a primary depositional feature or has been tectonically induced.

## MINERALIZATION

Several finely laminated, pyrrhotite-rich intervals were intersected in hole E-62, as follows (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-62	22.4-34.0 m (73.6-111.5 ft.)	2-50% pyrrhotite, 2-5% pyrite, minor chalcopyrite in "tuffaceous" unit
	35.1-36.0 m (115.0-118.0 ft.)	15% pyrrhotite, 2% pyrite in dark grey, finely laminated "tuff"
	38.7-40.7 m (126.9-133.6 ft.)	50% pyrrhotite, minor pyrite, laminated
	46.9-48.9 m (153.8-160.5 ft.)	5-50% pyrrhotite in finely laminated "tuff"
	49.8-50.4 m (163.5-165.3 ft.)	50% pyrrhotite, "massive"

## GEOCHEMICAL DATA

Assays of mineralized intervals returned low metal values: tr-0.03% Cu, tr-0.03% Zn, nil-tr Au (A.F. 92654).

## CLASSIFICATION

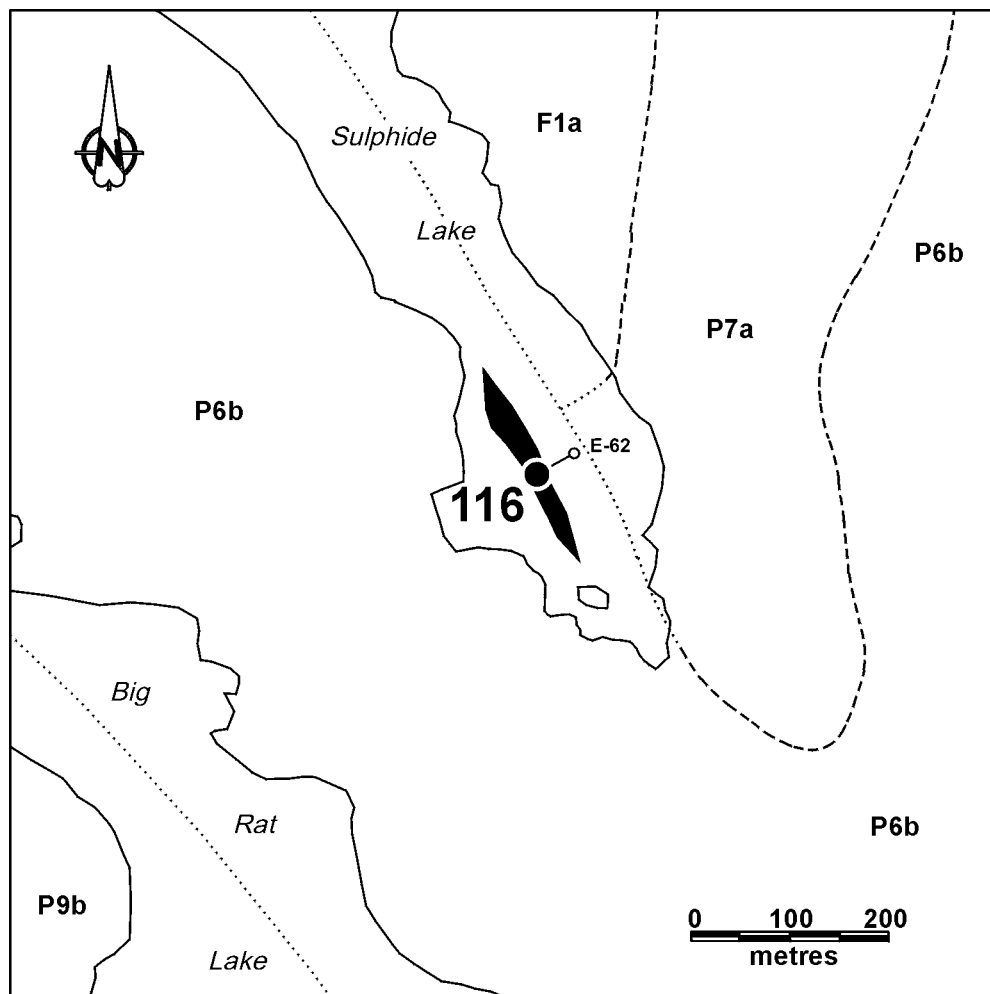
Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-116-1

#### PALEOPROTEROZOIC

- P9b** Granite to granodiorite
- P7a** Granodiorite
- P6b** Quartz diorite to granodiorite
- N-type Basalt**
- F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

----- Geological contact  
(approximate, extrapolated)-  
NATMAP Shield Margin  
Project Working Group,  
1998

— EM conductor  
(A.F. 92654)

○ Drillhole  
(A.F. 92654)

**116●** Mineral occurrence location

Figure 116-1: Geological setting of occurrence 116.

## LOCATION: 117

NAME: mineralization intersected by diamond drilling  
UTM: 378730E, 6080275N  
AREA: under Elbow Lake, south of west end of Webb Island  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-117

## EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Granges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 117-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by mafic phyllonites, consisting of chlorite±carbonate±magnetite schist, and phyllonite derived from heterolithologic breccia (unit W6c), that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), which is approximately 2800 m thick in this area (Syme and Whalen, 1992). Pillowed and massive aphyric McDougalls Point basalt (unit F1a) and medium- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) occur as blocks within the shear zone. Long Bay basaltic conglomerate (unit F3c) is exposed to the north.

The occurrence is located close to the western margin of the Elbow Lake shear zone. Hole ELB-5 intersected a sequence consisting of medium-grained and "tuffaceous andesites", gabbro, quartz-carbonate-chlorite schist, rhyolite and fine-grained siltstone (A.F. 93052). It is unclear if the layered character of the "tuffaceous" intervals is a primary depositional feature or has been tectonically induced.

## MINERALIZATION

A pyritic unit was intersected in hole ELB-5 over the following interval (A.F. 93052) (see table below).

Hole No.	Interval	Mineralization
ELB-5	89.9-92.3 m (294.8-302.7 ft.)	5% to near solid-solid pyrite and earthy pyrite, 5-10% graphite, at grey rhyolite - fine-grained siltstone contact

## GEOCHEMICAL DATA

Assays of sulphide-rich intervals returned low metal values: 0.01-0.04% Cu, 0.01-0.04% Zn, 0.05-0.15 g Au/t, 0.5-1.0 g Ag/t (A.F. 93052).

## CLASSIFICATION

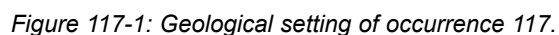
Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a significant biogenic contribution.

## REFERENCES

- A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Galley, A.G., Ames, D.E. and Franklin, J.M.  
1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.
- 1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

## NATMAP Shield Margin Project Working Group

- 1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.
- Syme, E.C.  
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.
- 1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.
- 1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.
- Syme, E.C. and Whalen, J.B.  
1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.



## LOCATION: 118

NAME: mineralization intersected by diamond drilling  
UTM: 375740E, 6071125N  
AREA: along Grass River, approximately 500 m S of Separation Creek  
ACCESS: via boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-132

## EXPLORATION SUMMARY

In 1956 Cyprus Exploration Corporation Ltd. drilled a hole on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 118-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a), fine- to medium-grained, equigranular diabase, undifferentiated rhyolite, and quartz diorite. McDougalls Point basalt and a shear zone (unit W6c) occur to the east. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

The sequence intersected in hole #13 consists of mafic to intermediate foliated volcanic rocks with minor graphitic intervals (A.F. 90503). The lithologic description does not provide much detail about the units.

## MINERALIZATION

Several sulphide-rich intervals were intersected by hole #13 as follows (A.F. 90503) (see table below).

Hole No.	Interval	Mineralization
#13	78.3-79.2 m (257.0-260.0 ft.)	20% pyrrhotite, 5% pyrite, 5% graphite, in "andesite"
	83.7-84.1 m (274.5-276.0 ft.)	"almost massive" pyrrhotite, 3% pyrite and lithic fragments
	88.2-88.8 m (289.3-291.5 ft.)	"almost massive" pyrrhotite, 3% pyrite and lithic fragments
	92.4-94.8 m (303.0-311.0 ft.)	12% pyrrhotite to "massive" pyrite, minor graphite
	96.0-96.8 m (315.0-317.5 ft.)	80% pyrrhotite, in "dacitic" unit
	98.3-98.5 m (322.5-323.3 ft.)	50% pyrite, in "dacitic" unit

## GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported in the assessment file (A.F. 90503).

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90503 and 91564; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



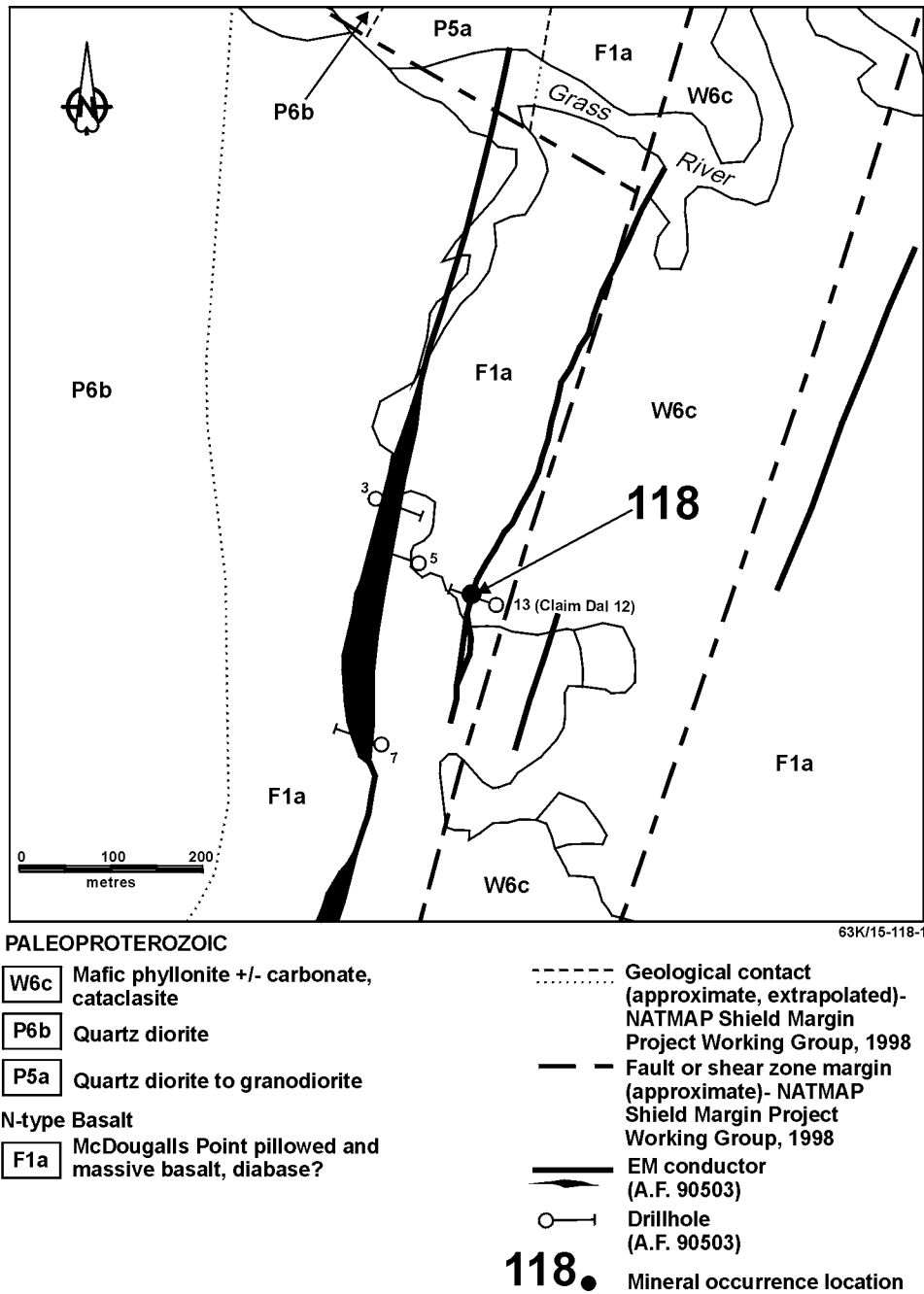


Figure 118-1: Geological setting of occurrence 118.

## LOCATION: 119

NAME: mineralization intersected by diamond drilling  
UTM: 375490E, 6070785N  
AREA: west of Grass River, approximately 900 m SSW of Separation Creek  
ACCESS: via boat through the Cranberry Lakes from Cranberry Portage, then traverse  
AIRPHOTO: MB90025-132

## EXPLORATION SUMMARY

In 1953 and 1956 Cyprus Exploration Corporation Ltd. drilled several holes on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 119-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the

McDougalls Point basalt (unit F1a), fine- to medium-grained, equigranular diabase, undifferentiated rhyolite, and quartz diorite. McDougalls Point basalt and a shear zone (unit W6c) occur to the east. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

The lithologic descriptions do not provide much information about the units (A.F. 90503). Hole #3, #5 and #12 are dominated by foliated volcanic rock that is feldspar-phyric in places. Hole #12 intersected a lithologic sequence that includes quartz porphyry, quartz-feldspar porphyry and quartz diorite. The litholog for hole #7 indicates it is dominated by "banded metasedimentary rocks". It is unclear if the layered character of the "banded" intervals is a primary depositional feature or has been tectonically induced.

## MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 90503) (see table below).

Hole No.	Interval	Mineralization
#3	30.2-32.9 m (99.0-108.0 ft.)	to 50% pyrite, graphitic
#5	32.0-32.9 m (105.0-108.0 ft.)	"well mineralized" with pyrite, in foliated mafic (?) volcanic rock
#7	26.4-39.6 m (86.5-130.0 ft.)	15-30% pyrite±pyrrhotite, graphitic, within banded "metasedimentary" rocks
#12	31.7-32.3 m (104.0-106.0 ft.)	30% pyrite in pyrite-graphite schist
	35.4-36.3 m (116.0-119.0 ft.)	35% pyrite, 10% graphite, in quartz-feldspar porphyry

## GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported in the assessment file (A.F. 90503).

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90503 and 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

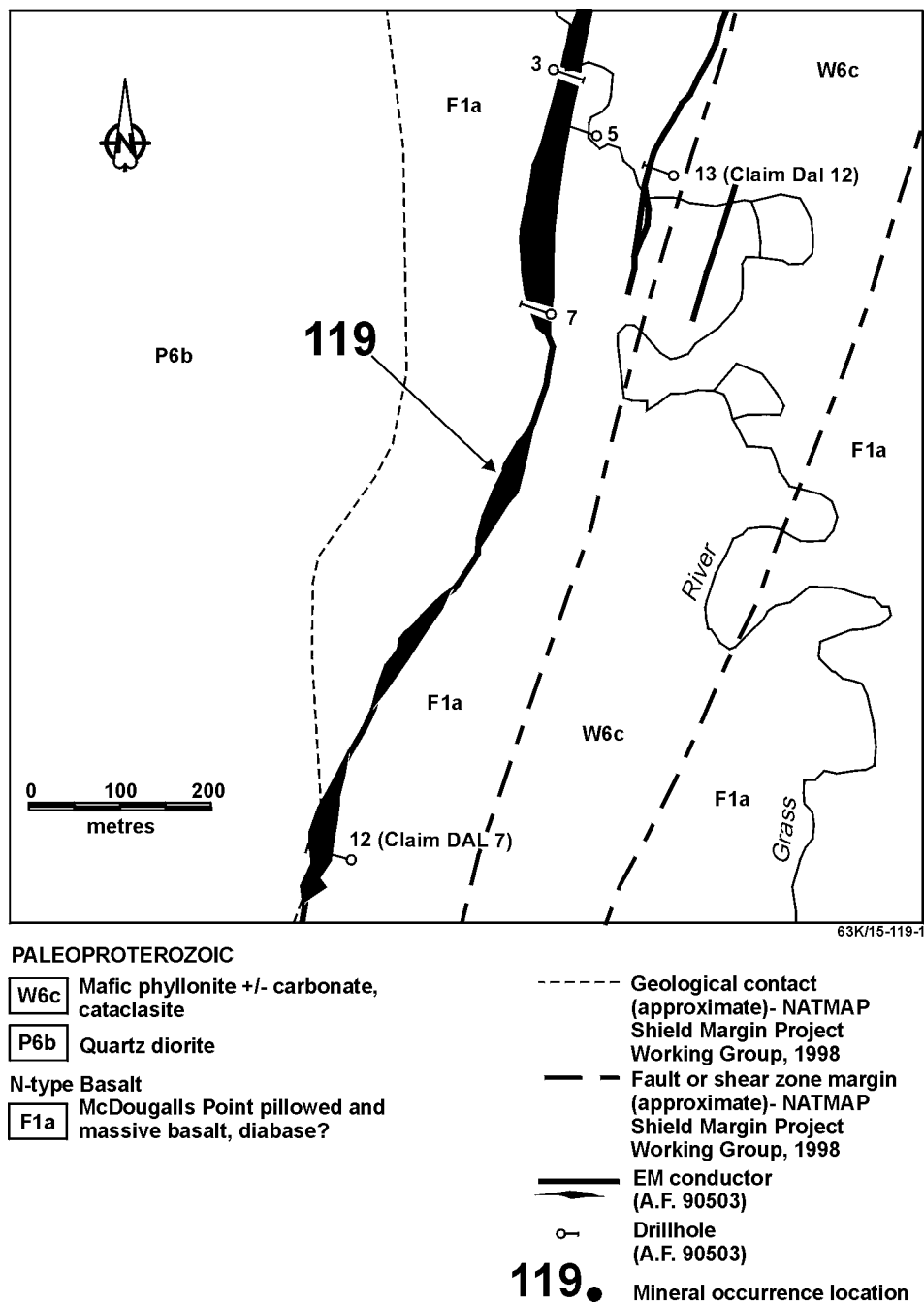


Figure 119-1: Geological setting of occurrence 119.

## LOCATION: 120

NAME: mineralization intersected by diamond drilling  
UTM: 375290E, 6069745N  
AREA: west of Grass River, approximately 2 km  
SSW of Separation Creek  
ACCESS: via boat through the Cranberry Lakes from  
Cranberry Portage, then traverse  
AIRPHOTO: MB90025-132

## EXPLORATION SUMMARY

In 1956 Cyprus Exploration Corporation Ltd. drilled a hole on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564). In 1981 Granges Exploration Aktiebolag drill tested several EM (?) responses in the area (A.F. 93256). Most of these holes intersected graphite and pyrite or pyrite-pyrrhotite-rich units.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 120-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is under-

lain by oikocrystic diabase (unit P2f), and pillowed and massive, aphyric McDougalls Point basalt (unit F1a) containing fine- to medium-grained diabase. A shear zone (unit W6c) cuts the McDougalls Point basalt and diabase to the east of the occurrence. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

Hole #11, drilled by Cyprus Exploration Corporation, intersected a sequence dominated by foliated mafic volcanic rock ("andesite") (A.F. 90503). Lesser felsic intrusions and diorite are also present. Graphite is a minor associated constituent in some intervals. The lithologic descriptions do not provide much information about the units. Hole BE-77, drilled by Granges Exploration, intersected fine-grained mafic volcanic rock ("andesite") and derived quartz-biotite-chlorite schist, and medium-grained, magnetite-bearing gabbro (A.F. 93256).

## MINERALIZATION

Sulphide mineralization was intersected over one interval in hole #11 (A.F. 90503). Two sulphide-rich intervals were intersected in hole BE-77, but the character of the mineralization was not described in the lithologs (A.F. 93256) (see table below).

Hole No.	Interval	Mineralization
#11	51.7-63.2 m (169.5-207.5 ft.)	"massive" pyrite, fine- to coarse-grained, minor graphite, in foliated "andesite"
BE-77	25.1-25.6 m (82.5-84.0 ft.)	5% pyrite in quartz-biotite-chlorite schist
	30.9-31.5 m (101.4-103.4 ft.)	15% pyrrhotite in quartz-biotite-chlorite schist

## GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported for hole #11. The following assay results were obtained for hole BE-77 (A.F. 93256):

Hole No.	Interval	g Au/t
BE-77	24.7-25.1 m (81.0-82.5 ft.)	0.30
	25.1-25.6 m (82.5-84.0 ft.)	4.40
	25.6-25.9 m (84.0-85.0 ft.)	0.60
	28.5-29.1 m (93.5-95.5 ft.)	5.85
	29.1-29.6 m (95.5-97.2 ft.)	0.20
	30.0-30.6 m (98.5-100.3 ft.)	2.05
	30.6-30.9 m (100.3-101.4 ft.)	0.55
	30.9-31.5 m (101.4-103.4 ft.)	5.85
	31.5-32.1 m (103.4-105.4 ft.)	3.20
	32.1-32.5 m (105.4-106.5 ft.)	0.25

## CLASSIFICATION

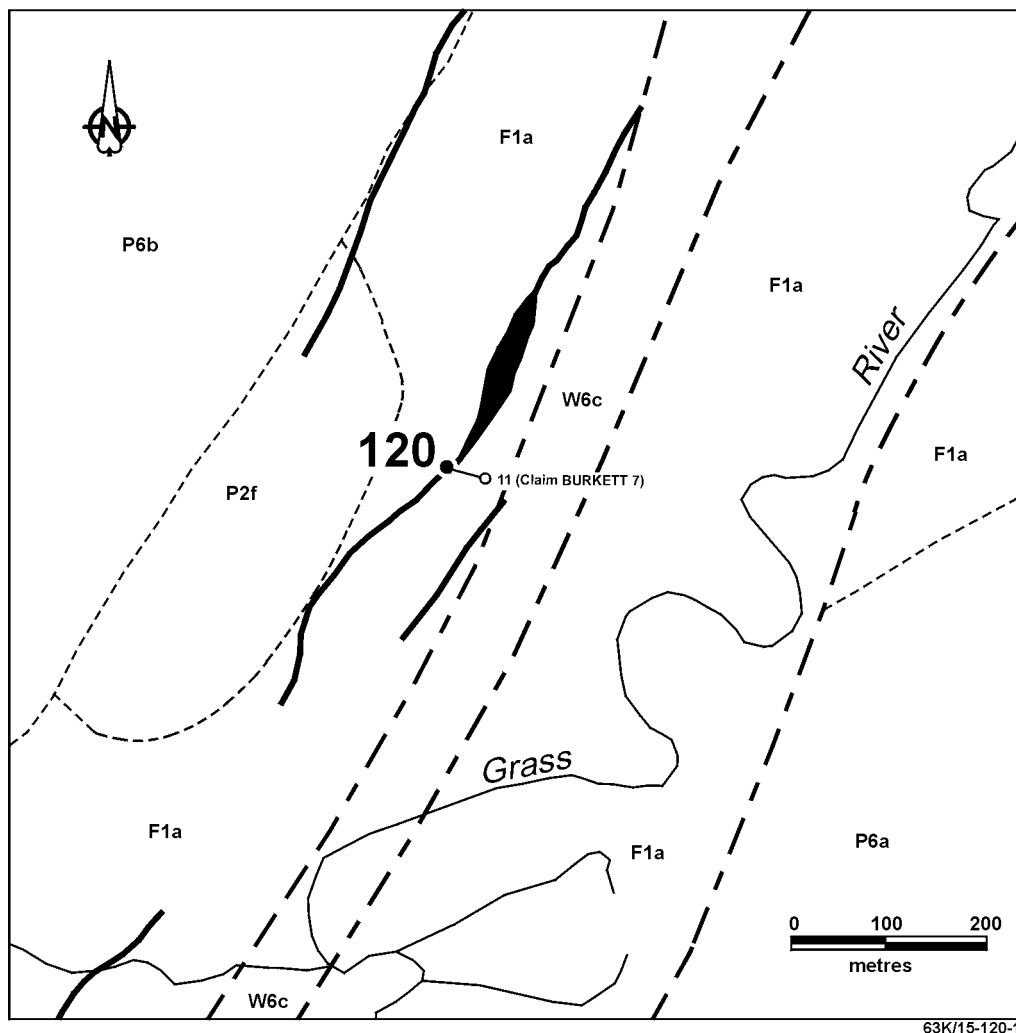
Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90503, 91564, and 93256; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



63K/15-120-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P6a** Tonalite
- P6b** Quartz diorite
- P2f** Diabase, diabase dyke complex
- N-type Basalt
- F1a** McDougalls Point pillowed and massive basalt, diabase?

- Geological contact ( approximate)-NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 93256)
- Drillhole (A.F. 93256)
- 120.** Mineral occurrence location

Figure 120-1: Geological setting of occurrence 120.

**LOCATION: 121**

NAME: mineralization intersected by diamond drilling  
UTM: 386890E, 6075765N  
AREA: under NE part of Claw Lake  
ACCESS: via bush aircraft to Claw Lake  
AIRPHOTO: MB90026-138

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 121-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is under-

lain by a heterogeneous sheeted dyke/intrusive complex that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the SSE, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

The sequence intersected in hole E-65 is dominated by a dark grey, strongly foliated rhyodacite (A.F. 92654). The bottom of the hole intersected grey-green, magnetite-bearing quartz-chlorite-biotite schist.

**MINERALIZATION**

Sulphide mineralization was intersected over the following intervals (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-65	30.2-31.7 m (99.0-104.0 ft.)	5% pyrite, 5% pyrrhotite, trace chalcopyrite, in rhyodacite
	53.3-53.9 m (175.0-177.0 ft.)	40% pyrite, at contact of rhyodacite with quartz-chlorite-biotite schist

**GEOCHEMICAL DATA**

Assays of samples collected from the two sulphide-rich areas returned only trace Au (A.F. 92654).

**CLASSIFICATION**

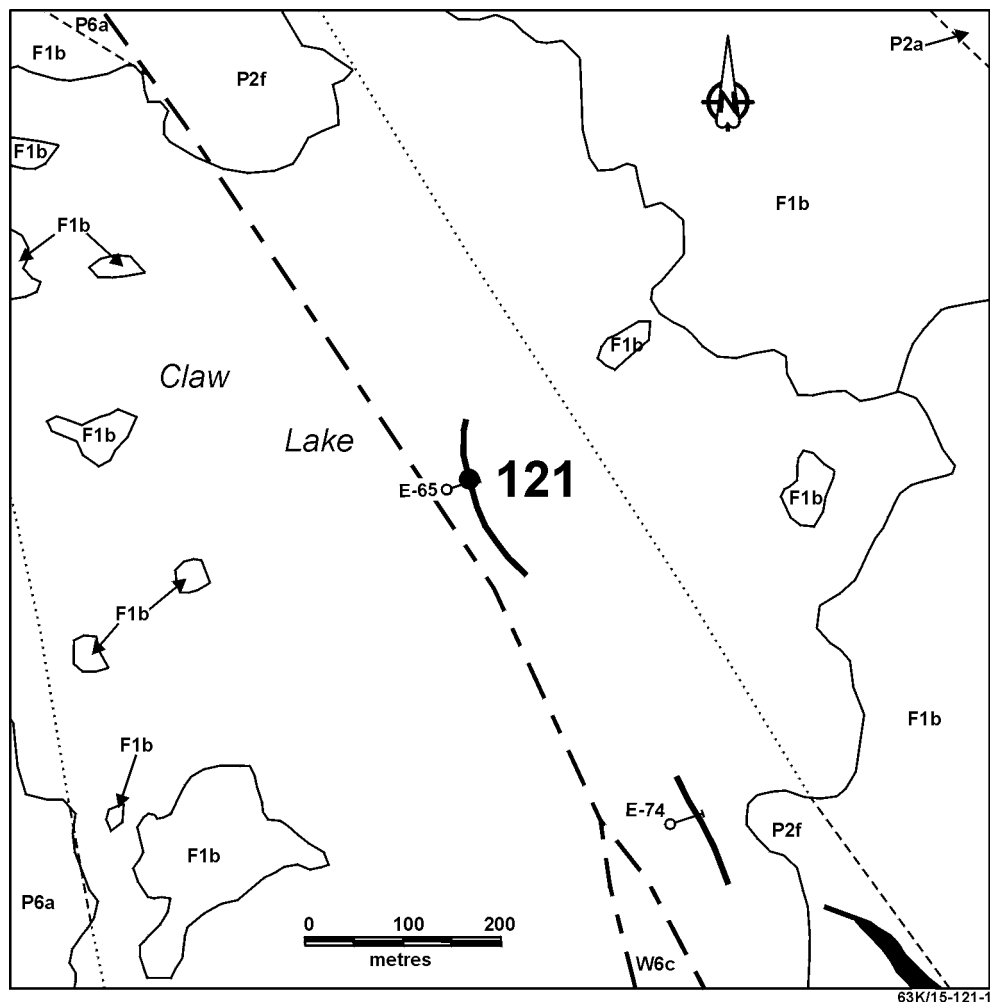
Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

**NATMAP Shield Margin Project Working Group**

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P6a** Tonalite
- P2a** Gabbro, diorite
- P2f** Diabase, diabase dyke complex
- N-type Basalt
- F1b** Claw Bay pillowed and massive basalt, derived tectonite

- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- ..... (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 92654)
- Drillhole (A.F. 92654)

**121.** Mineral occurrence location

Figure 121-1: Geological setting of occurrence 121.

**LOCATION: 122**

NAME: mineralization intersected by diamond drilling  
UTM: 387120E, 6075415N  
AREA: under NE part of Claw Lake  
ACCESS: via bush aircraft to Claw Lake  
AIRPHOTO: MB90026-138

**EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 92654).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 122-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a heterogeneous sheeted dyke/intrusive complex

that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the SSE, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

The sequence intersected by hole E-74 is dominated by moderately to strongly foliated, mafic volcanic rock ("meta-andesite" and "dacite") (A.F. 92654). Two thin units of rhyolite breccia and rhyolite were also intersected.

**MINERALIZATION**

Sulphide and oxide mineralization was intersected over the following intervals (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-74	33.2-33.7 m (109.0-110.6 ft.)	30-40% pyrite, 1-3% magnetite, in dark green "dacite"
	36.0-36.3 m (118.0-119.0 ft.)	20% magnetite, 2% pyrite, at contact between "dacite" and rhyolite breccia
	36.3-38.0 m (119.0-124.6 ft.)	50-60% pyrite, 1-3% magnetite, in rhyolite breccia

**GEOCHEMICAL DATA**

Assays of samples collected from the two sulphide- and magnetite-rich areas returned only trace Au (A.F. 92654).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide/oxide facies iron formation.

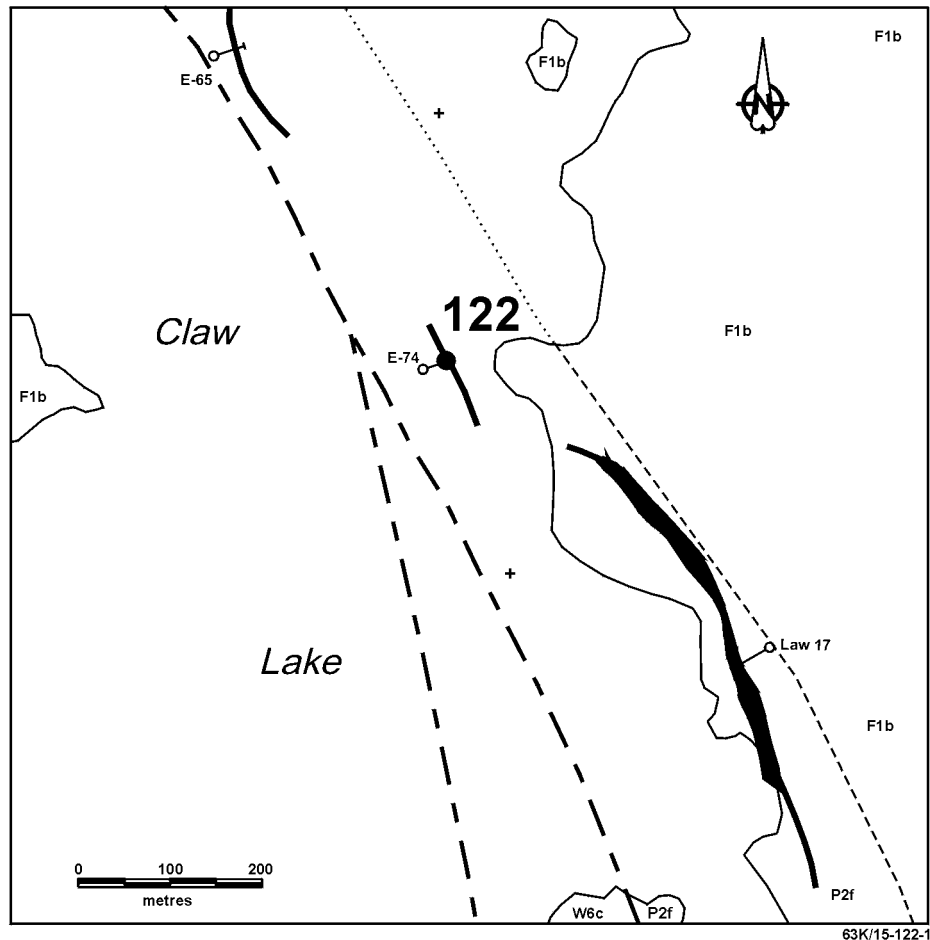
**REFERENCES**

A.F. 90508 and 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.





#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P2f** Diabase, diabase dyke complex

#### N-type Basalt

- F1b** Claw Bay pillowed and massive basalt, derived tectonite

- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- ..... (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90508, 92654)
- Drillhole (A.F. 90508, 92654)

- +
- 122.** Rocks
- Mineral occurrence location

Figure 122-1: Geological setting of occurrence 122.

**LOCATION: 123**

NAME: mineralization intersected by diamond drilling  
UTM: 387470E, 6075105N  
AREA: along eastern shoreline of NE part of Claw Lake  
ACCESS: via bush aircraft to Claw Lake, then traverse  
AIRPHOTO: MB90026-137

**EXPLORATION SUMMARY**

In 1963 Hudson Bay Exploration and Development Company, Limited performed an HLEM survey over the occurrence area. A single hole tested the conductor in 1964 (A.F. 90508).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 123-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a heterogeneous sheeted dyke/intrusive complex that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the west, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

Hole LAW-17 intersected two units consisting of chlorite-feldspar-biotite gneiss and quartz-feldspar-biotite-chlorite gneiss (A.F. 90508). No further description of the units was provided in the assessment file.

**MINERALIZATION**

One sulphide-rich interval, containing 10% pyrite and minor pyrrhotite, was intersected by hole LAW-17 between 48.2-49.5 m (158.0-162.3 ft.) (A.F. 90508). The host rock is the chlorite-feldspar-biotite gneiss. No description of the character of the mineralization was provided in the assessment file.

**GEOCHEMICAL DATA**

No assays were reported for this occurrence.

**CLASSIFICATION**

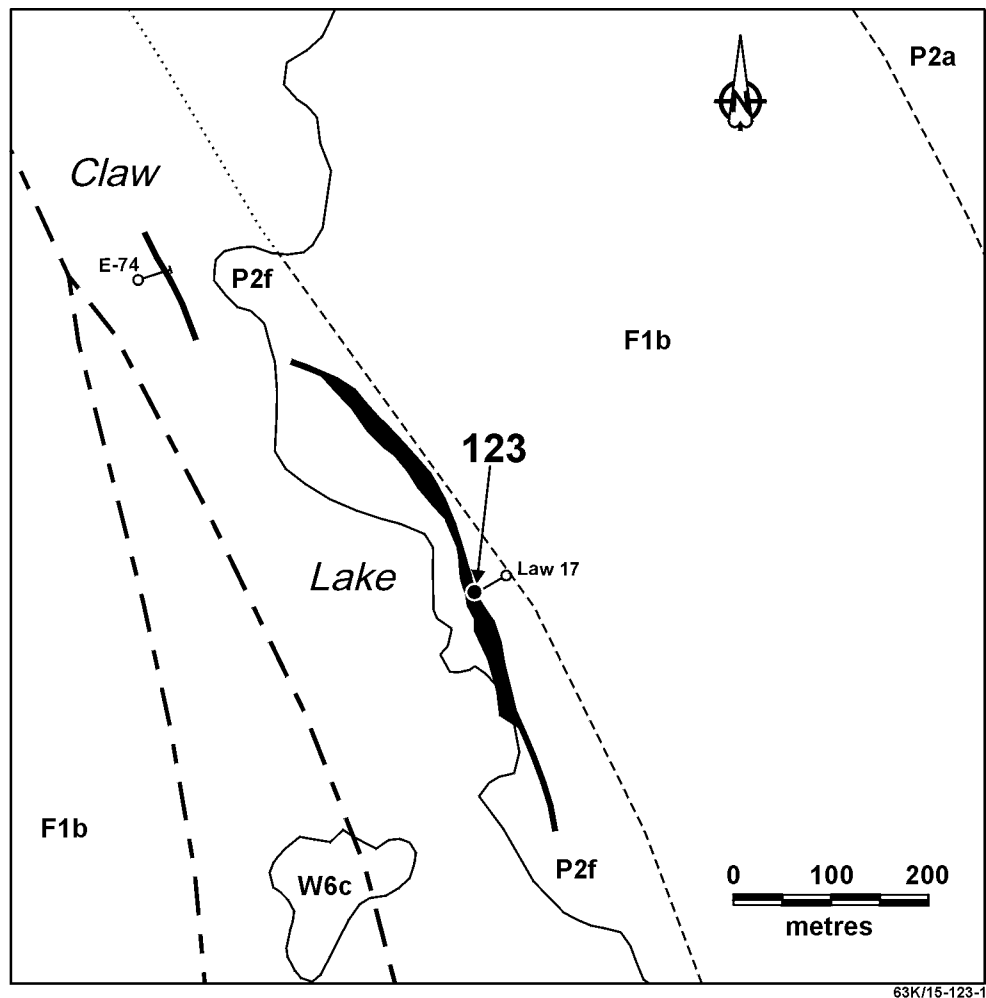
Disseminated mineralization; not classified.

**REFERENCES**

A.F. 90508 and 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

- |               |   |
|---------------|---|
| W6c           | Mafic phyllonite +/- carbonate, cataclasite             |
| P2a           | Gabbro, diorite   |
| P2f           | Diabase, diabase dyke complex                           |
| N-type Basalt |   |
| F1b           | Claw Bay pillowed and massive basalt, derived tectonite |

- |      |  |
|------|--|
|      | Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998 |
|      | Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998       |
|      | EM conductor (A.F. 90508, 92654)   |
| ○    | Drillhole (A.F. 90508, 92654)  |
| 123. | Mineral occurrence location  |

Figure 123-1: Geological setting of occurrence 123.

## **LOCATION: 124**

NAME: mineralization intersected by diamond drilling  
UTM: 378970E, 6077375N  
AREA: under Elbow Lake, E of north end of McDougalls Point  
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage  
AIRPHOTO: MB90025-120

## **EXPLORATION SUMMARY**

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

## **GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 124-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by chlorite-carbonate schist (unit W6c) of the Elbow Lake shear zone, and pillowed and massive, aphyric flows and synvolcanic intrusions (unit F1a) of the McDougalls Point basalt.

The sequence intersected in hole E-49 is described as consisting of banded graphitic schist, and finely laminated "siltstone" with fine-grained siliceous layers (A.F. 92654). The laminated character of the "siltstone" is probably related to the effects of the Elbow Lake shear zone rather than reflecting a primary depositional feature.

## **MINERALIZATION**

A single mineralized interval, from 55.9-58.5 m (183.3-192.0 ft.) and consisting of "dark brown, aphanitic, massive" pyrite, was intersected in hole E-49 (A.F. 92654). It is closely associated with finely banded "siltstone" and graphitic schist.

## **GEOCHEMICAL DATA**

No assay results were reported for this occurrence in the assessment files.

## **CLASSIFICATION**

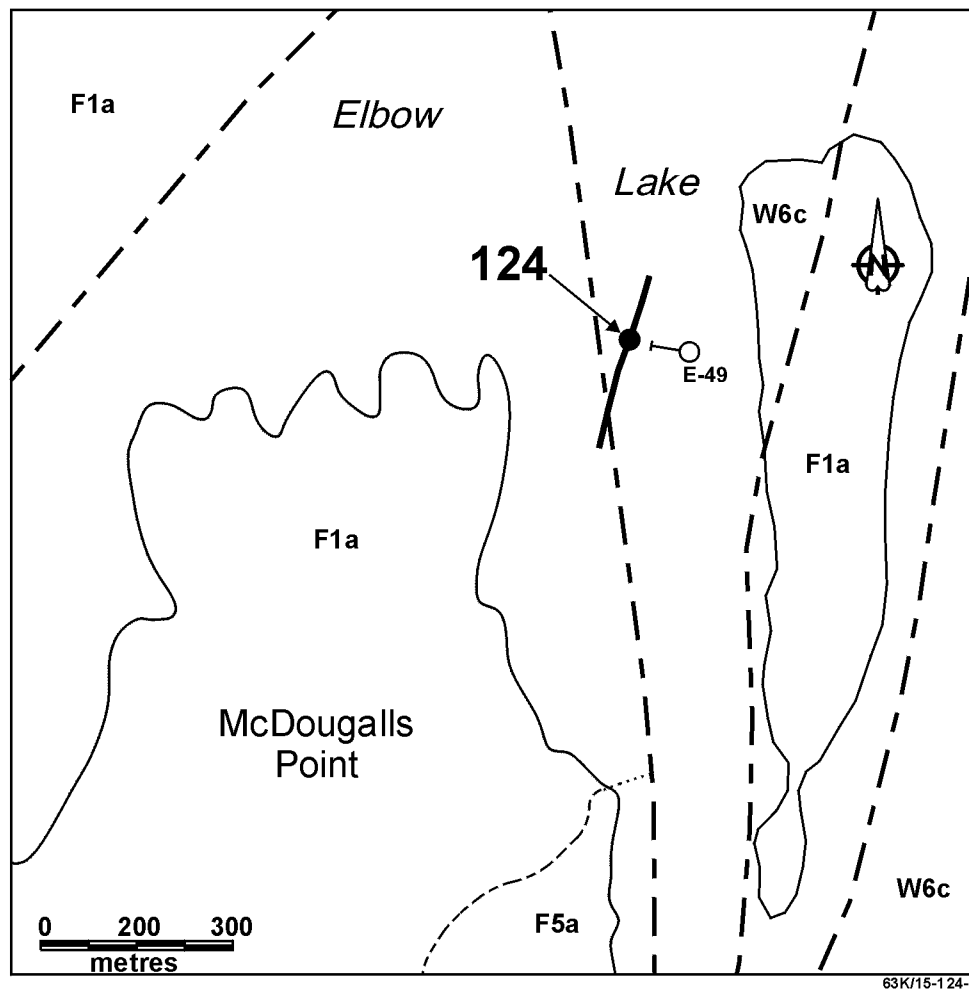
Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly affected by deformation along the Elbow Lake shear zone. The association with graphite suggests a biogenic contribution.

## **REFERENCES**

A.F. 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.



#### PALEOPROTEROZOIC

**W6c** Mafic phyllonite +/- carbonate, cataclasite

**F5a** Gabbro, diabase

#### N-type Basalt

**F1a** McDougalls Point pillowed and massive basalt, diabase?

----- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998

--- Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

— EM conductor (A.F. 92654)

○ Drillhole (A.F. 92654)

**124.** Mineral occurrence location

Figure 124-1: Geological setting of occurrence 124.

## LOCATION: 125

NAME: mineralization intersected by diamond drilling  
UTM: 402665E, 6070905N  
AREA: approximately 700 m E of Sewell Lake  
ACCESS: via float equipped aircraft to Sewell Lake,  
then traverse  
AIRPHOTO: MB90024-135

## EXPLORATION SUMMARY

Granges Exploration AB performed an HLEM (ABEM GUN) survey over the area in 1977-78 (A.F. 92443) and drilled several holes in the area in 1979 (A.F. 92441).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 125-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by gabbro and leucogabbro (unit P3c) of the differentiated Josland Lake gabbro sills (Bailes, 1980). Metasedimentary rocks (unit J9b), derived from greywacke, siltstone and mudstone, appear to the northwest of the occurrence.

Hole C-79-31 intersected medium-grained, melano-cratic diorite with a chlorite-sericite±graphite±talc schist interval. Minor dark grey "tuff" occurs at the top of the hole, but this may also belong to the schistose interval. It is unclear if the diorite was the source rock of the schists.

## MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-31	31.9-32.4 m (104.7-106.2 ft.)	5% pyrrhotite in chlorite-sericite schist
	34.1-34.7 m (112.0-113.8 ft.)	10% pyrite in sericite-chlorite schist
	35.0-36.5 m (114.7-119.7 ft.)	near solid pyrite with graphite in sericite-chlorite schist
	36.5-37.4 m (119.9-122.6 ft.)	near solid, earthy pyrite with 10% graphite in sericite-chlorite schist
	37.4-38.9 m (122.6-127.6 ft.)	5% pyrite in graphitic schist

## GEOCHEMICAL DATA

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-31	31.9-32.4 m (104.7-106.2 ft.)	0.03	0.02	0.05	0.5
	34.1-34.7 m (112.0-113.8 ft.)	0.05	0.05	0.05	0.5
	35.0-36.5 m (114.7-119.7 ft.)	0.10	0.04	0.05	2.0
	36.5-37.4 m (119.7-122.6 ft.)	0.02	0.03	0.05	2.0
	37.4-38.9 m (122.6-127.6 ft.)	0.02	0.13	0.05	1.0

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Sulphide mineralization appears to be concentrated in a schistose zone within the gabbroic intrusion. This may represent a block of pyrite-graphite chemical metasediments within the gabbroic intrusion. Its platinum-group element content should be investigated.

## REFERENCES

A.F. 92441 and 92443; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

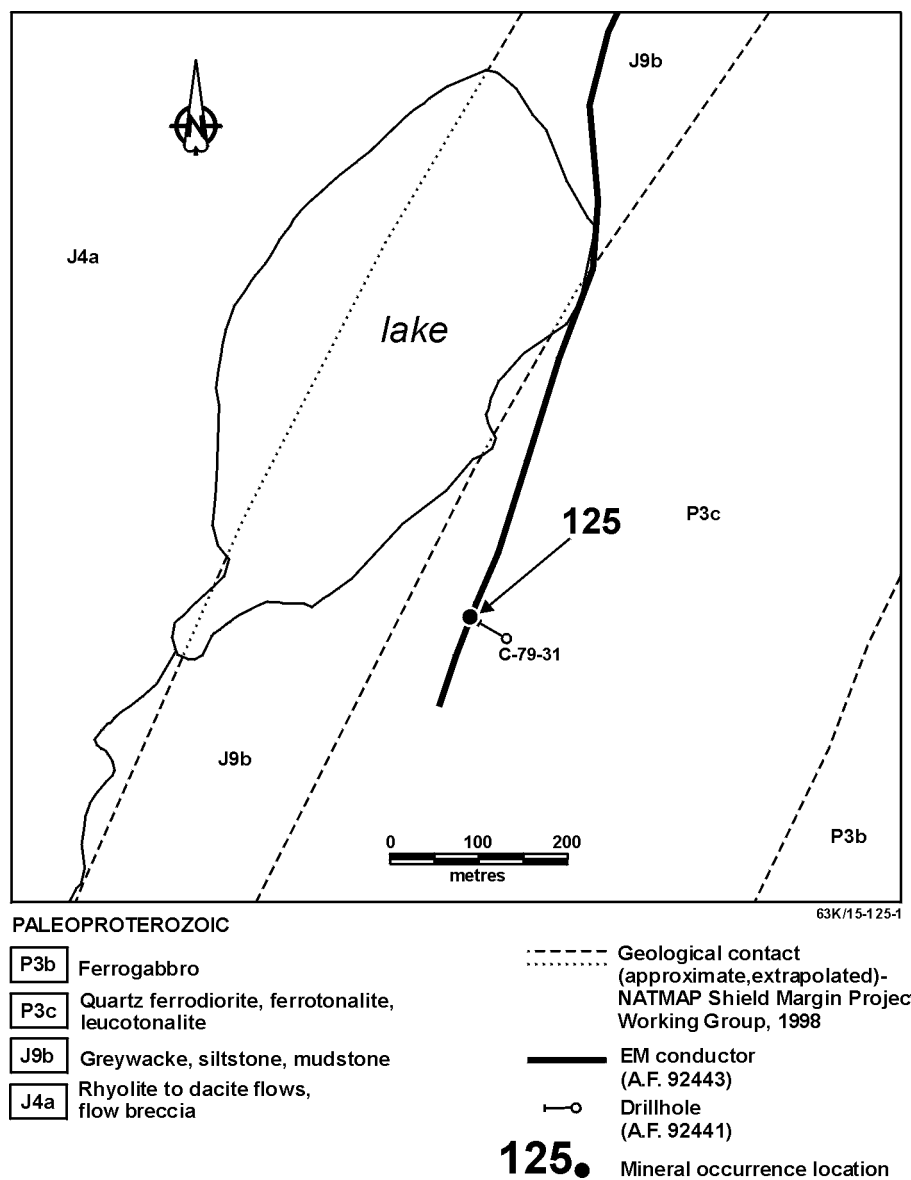


Figure 125-1: Geological setting of occurrence 125.

**LOCATION: 126**

NAME: mineralization intersected by diamond drilling  
 UTM: 403040E, 6071825N  
 AREA: approximately 900 m E of Sewell Lake  
 ACCESS: via float equipped aircraft to Sewell Lake,  
 then traverse  
 AIRPHOTO: MB90024-125

**EXPLORATION SUMMARY**

Granges Exploration AB performed an HLEM (ABEM GUN) survey over the area in 1977-78 (A.F. 92443) and drilled several holes in the area in 1979 (A.F. 92441).

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 126-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by metasedimentary rocks derived from greywacke, sandstone and mudstone (unit J9b). Rhyolitic to dacitic flows and dacitic flow breccia (unit J4a) of the Dickstone formation occur to the NW of the occurrence, and gabbro and leucogabbro of the differentiated Josland Lake gabbro sills (Bailes, 1980) underlie the area to the SE.

Hole C-79-32 intersected a sequence dominated by light grey, coarse-grained tuff, some of which is described as being fragmental (A.F. 92441). A 1.2 m (4.1 ft.) chlorite schist interval separates this lithology into two units. No indication of the composition of the tuff is provided in the lithologic description of the core.

**MINERALIZATION**

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-32	6.5-6.6 m (21.2-21.7 ft.)	5% pyrite in coarse-grained, light grey tuff
	21.2-21.9 m (69.5-71.9 ft.)	5-10% pyrite in chlorite schist
	31.9-32.4 m (71.9-73.6 ft.)	40% pyrite, 5% pyrrhotite in chlorite schist
	31.5-31.8 m (103.4-104.3 ft.)	25% pyrite in coarse-grained, light grey tuff

**GEOCHEMICAL DATA**

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-32	6.5-6.6 m (21.2-21.7 ft.)	0.02	0.01	0.05	0.5
	21.2-21.9 m (69.5-71.9 ft.)	0.05	0.05	0.05	1.0
	21.9-22.4 m (71.9-73.6 ft.)	0.25	0.37	0.05	3.0
	31.5-31.8 m (103.4-104.3 ft.)	0.20	1.06	0.05	2.0

**CLASSIFICATION**

Stratabound massive sulphide type deposit; volcanic rock associated. The presence of chlorite schist suggests alteration associated with a hydrothermal system.

**REFERENCES**

A.F. 92441 and 92443; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.