

Figure 126-1: Geological setting of occurrence 126.

## LOCATION: 127

NAME: mineralization intersected by diamond drilling  
UTM: 399870E, 6092495N  
AREA: approximately 2.1 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse  
AIRPHOTO: MB90024-160

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 127-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This assemblage has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-7 intersected quartz-hornblende schists to gneisses, with minor garnetiferous "tuff" (A.F. 90490). Gabbro and diorite occur at the bottom of the hole.

## MINERALIZATION

Hole MUZ-7 intersected "near solid" pyrrhotite with minor pyrite from 55.2-56.1 m (181.0-183.9 ft.) (A.F. 90490). The host rock is hornblende-quartz schist to gneiss with dioritic intervals.

## GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

- A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.
- Zwanzig, H.V.  
1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.  
1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.  
1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

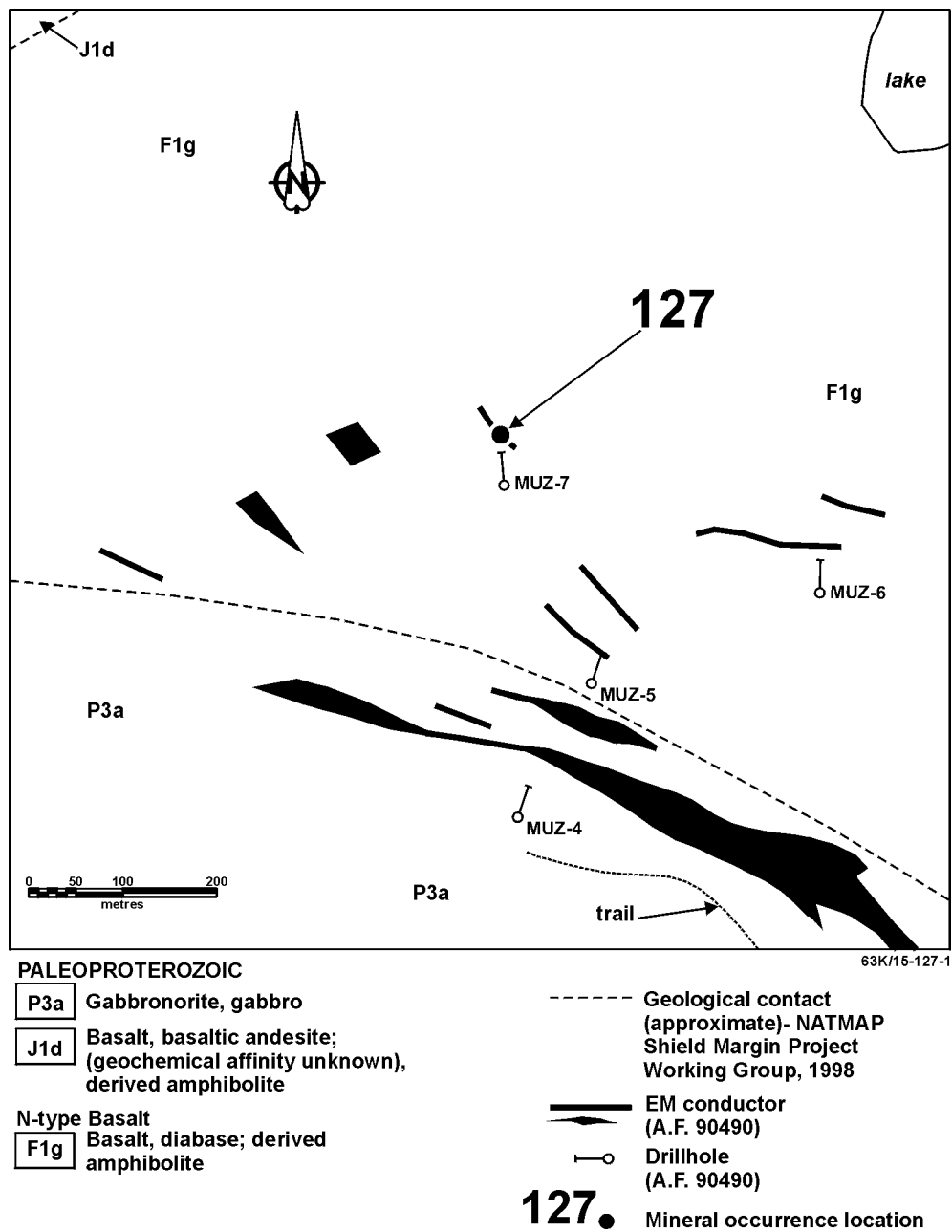


Figure 127-1: Geological setting of occurrence 127.

## LOCATION: 128

NAME: mineralization intersected by diamond drilling  
UTM: 400210E, 6092375N  
AREA: approximately 1.8 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse  
AIRPHOTO: MB90024-160

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 128-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss that has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-6 intersected foliated "andesite", diorite, quartz-hornblende schistose to gneissic rocks, with minor "tuff" (A.F. 90490). Gabbro occurs at the bottom of the hole.

## MINERALIZATION

The following mineralized intervals were intersected in hole MUZ-6 (A.F. 90490) (see table below).

Interval	Mineralization
46.4-48.9 m (152.1-160.4 ft.)	"slight to near solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
53.0-53.2 m (174.0-174.7 ft.)	"near solid" pyrrhotite, in quartz-hornblende-biotite schist
72.1-72.5 m (236.7-237.9 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende schist
85.0-86.0 m (278.9-282.2 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende schist
91.1-92.5 m (299.0-303.5 ft.)	"fair to near solid" pyrrhotite, minor pyrite, trace chalcopyrite in quartz-hornblende schist
100.9-105.3 m (331.0-345.5 ft.)	"fair to near solid" pyrrhotite, minor pyrite, in quartz-biotite-horn-blende schist
144.5-146.1 m (474.2-479.3 ft.)	"fair to near solid" pyrrhotite, in quartz-hornblende schist

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

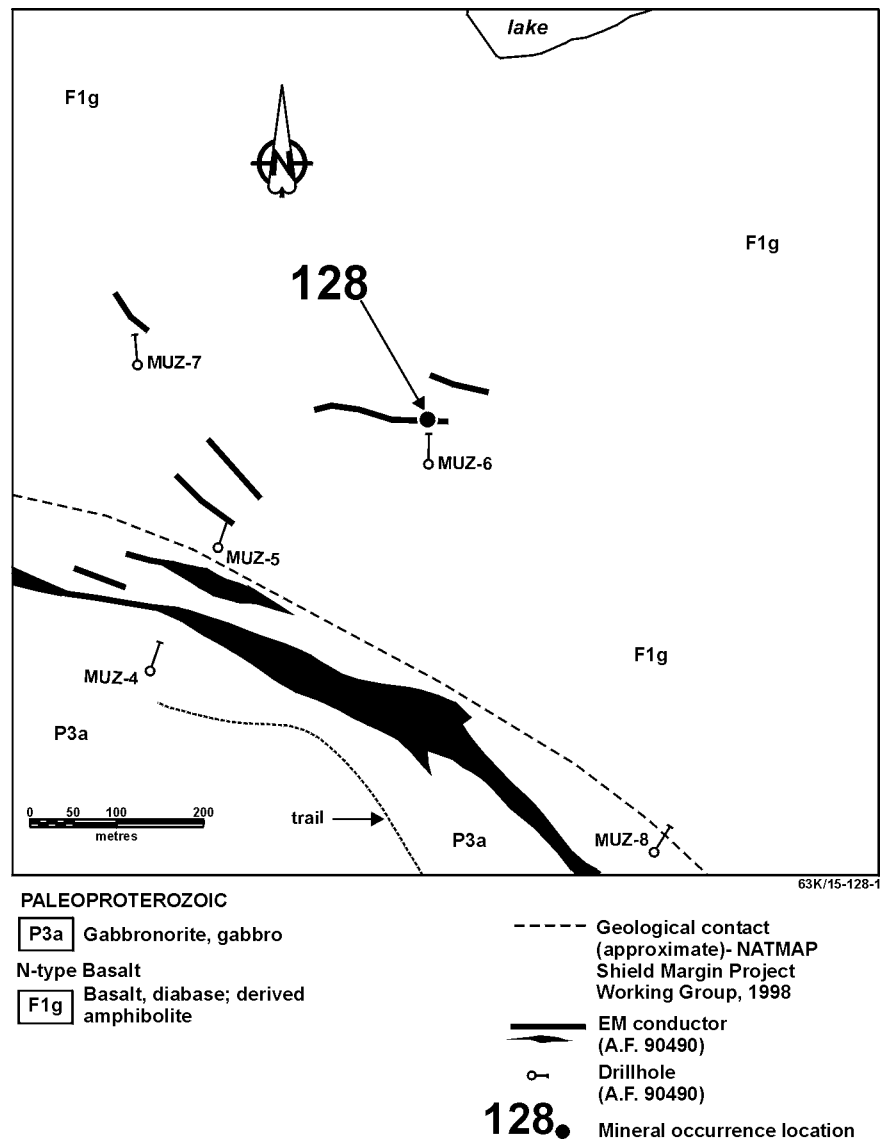


Figure 128-1: Geological setting of occurrence 128.

## LOCATION: 129

NAME: mineralization intersected by diamond drilling  
UTM: 399970E, 6092275N  
AREA: approximately 2.0 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse  
AIRPHOTO: MB90024-160

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 129-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-5 intersected a sequence consisting of hornblende-quartz±biotite±sericite schists to gneisses with minor "andesite" and unspecified coarse-grained units ("pegmatite") (A.F. 90490).

## MINERALIZATION

The following mineralized intervals were intersected in hole MUZ-5 (A.F. 90490) (see table below).

Interval	Mineralization
8.0-9.4 m (26.3-30.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopryrite, in quartz-biotite-sericite schist
12.9-13.7 m (42.3-45.0 ft.)	"near solid" pyrrhotite, minor pyrite and magnetite, trace chalcopryrite, in quartz-hornblende-biotite schist
14.3-16.4 m (47.0-53.8 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopryrite, in cherty quartz-biotite-hornblende schist
47.5-48.2 m (155.9-158.0 ft.)	"fair to near solid" pyrrhotite, minor pyrite, in cherty quartz-biotite schist
118.6-119.8 m (389.0-393.0 ft.)	"well mineralized" to "near solid" sulphides, in quartz-sericite-horn-blende schist to gneiss

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

- A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.
- Zwanzig, H.V.
- 1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.
- 1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.
- 1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

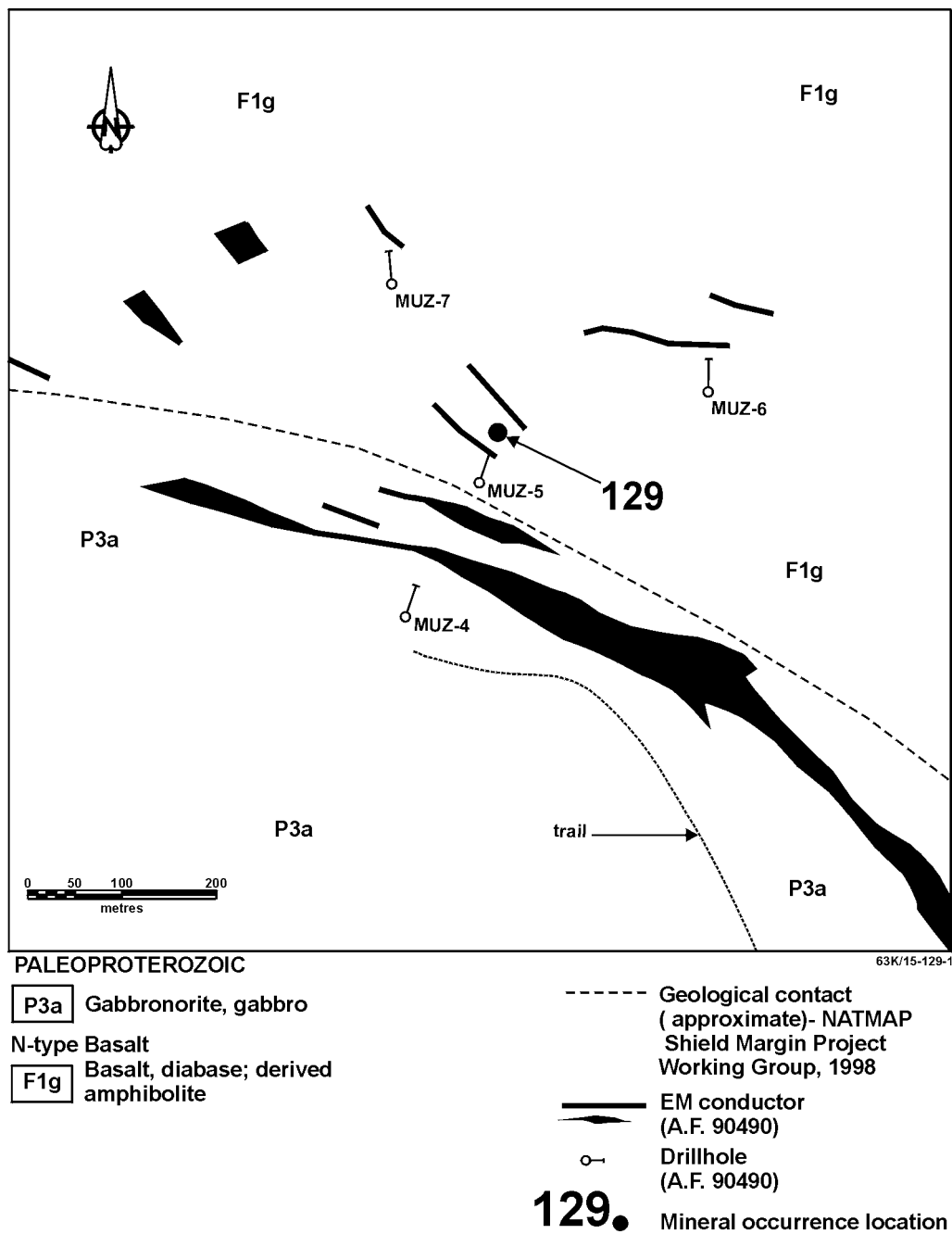


Figure 129-1: Geological setting of occurrence 129.

## LOCATION: 130

NAME: mineralization intersected by diamond drilling  
UTM: 399900E, 6092145N  
AREA: approximately 2.0 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse  
AIRPHOTO: MB90024-160

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 130-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Holes MUZ-3 and -4 intersected a sequence consisting of hornblende-quartz±biotite±sericite±chlorite schists to gneisses with minor "andesite" and unspecified coarse-grained units ("pegmatite") (A.F. 90490).

## MINERALIZATION

The following mineralized intervals were intersected in holes MUZ-3 and -4 (A.F. 90490) (see table below).

Hole No.	Interval	Mineralization
MUZ-3	43.4-55.0 m (142.5-180.5 ft.)	"well mineralized to near solid" pyrite and pyrrhotite, in fine grained, siliceous horn-blende rock
	92.0-93.9 m (301.8-308.2 ft.)	"well mineralized" with pyrrhotite and slight pyrite, in quartz-horn-blende-sericite schist
	97.5-102.1 m (320.0-335.0 ft.)	"well mineralized to near solid" pyrite and pyrrhotite, in fine grained hornblende rock
MUZ-4	53.5-59.3 m (175.5-194.5 ft.)	sections "well mineralized to near solid" pyrite and pyrrhotite, in hornblende-sericite schist
	101.0-111.6 m (331.5-366.0 ft.)	"slight to near solid" pyrrhotite, in quartz-hornblende±sericite schist to gneiss
	112.9-115.4 m (370.5-378.5 ft.)	"near solid" pyrrhotite, in quartz-hornblende-sericite schist
	116.0-126.5 m (380.5-415.0 ft.)	"slight to near solid" pyrrhotite, in quartz-hornblende-sericite schist

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

- A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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



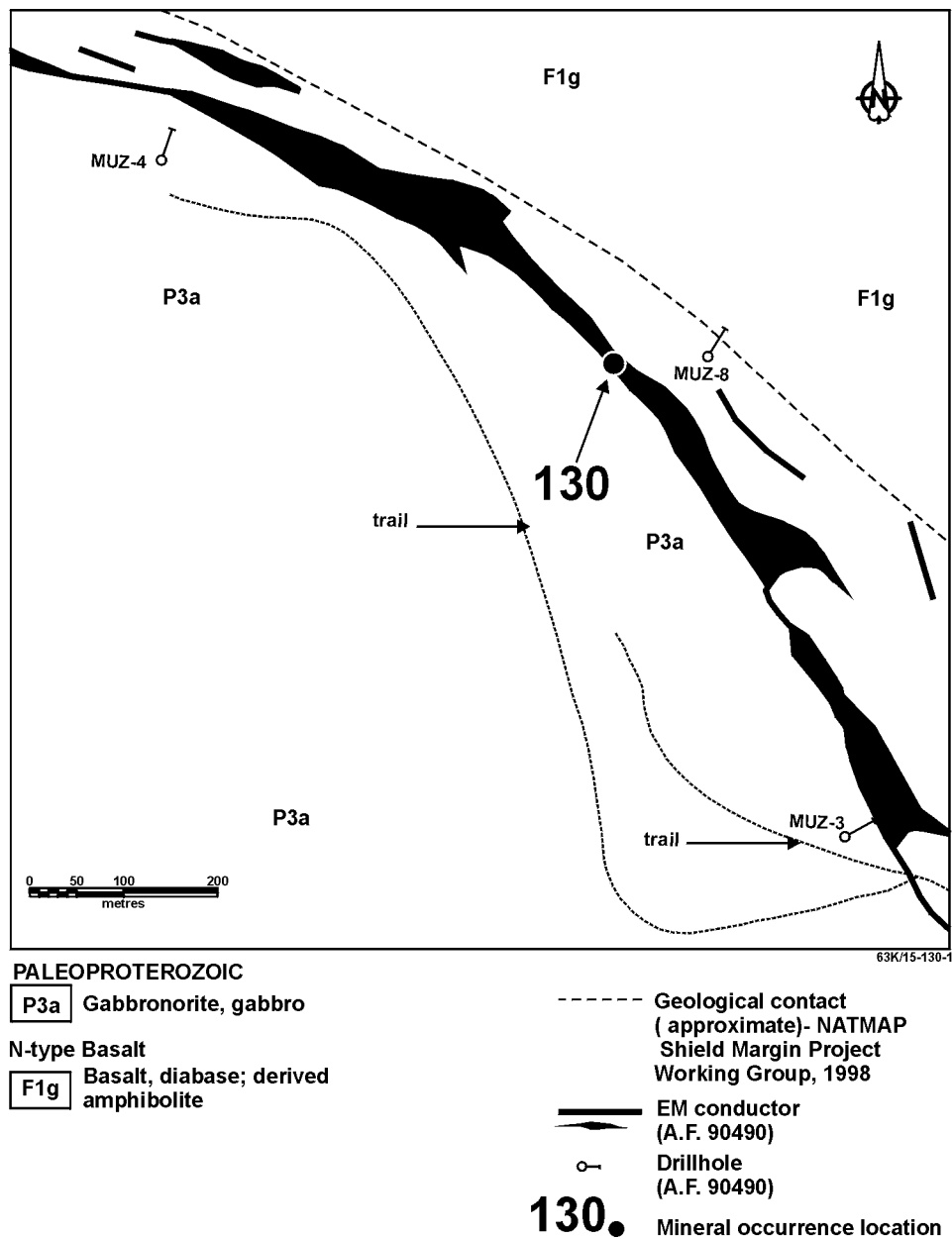


Figure 130-1: Geological setting of occurrence 130.

## LOCATION: 131

NAME: mineralization intersected by diamond drilling  
UTM: 400470E, 6091905N  
AREA: approximately 1.4 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-160

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 131-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-8 intersected a sequence consisting of hornblende-quartz±biotite±garnet schists to gneisses with minor foliated "andesite", diorite and an unspecified coarse-grained unit ("pegmatite") (A.F. 90490).

## MINERALIZATION

One interval containing "near solid" pyrrhotite with minor arsenopyrite was intersected between 41.6-42.4 m (136.4-139.0 ft.) in hole MUZ-8 (A.F. 90490). It is hosted by hornblende-biotite-quartz schist.

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

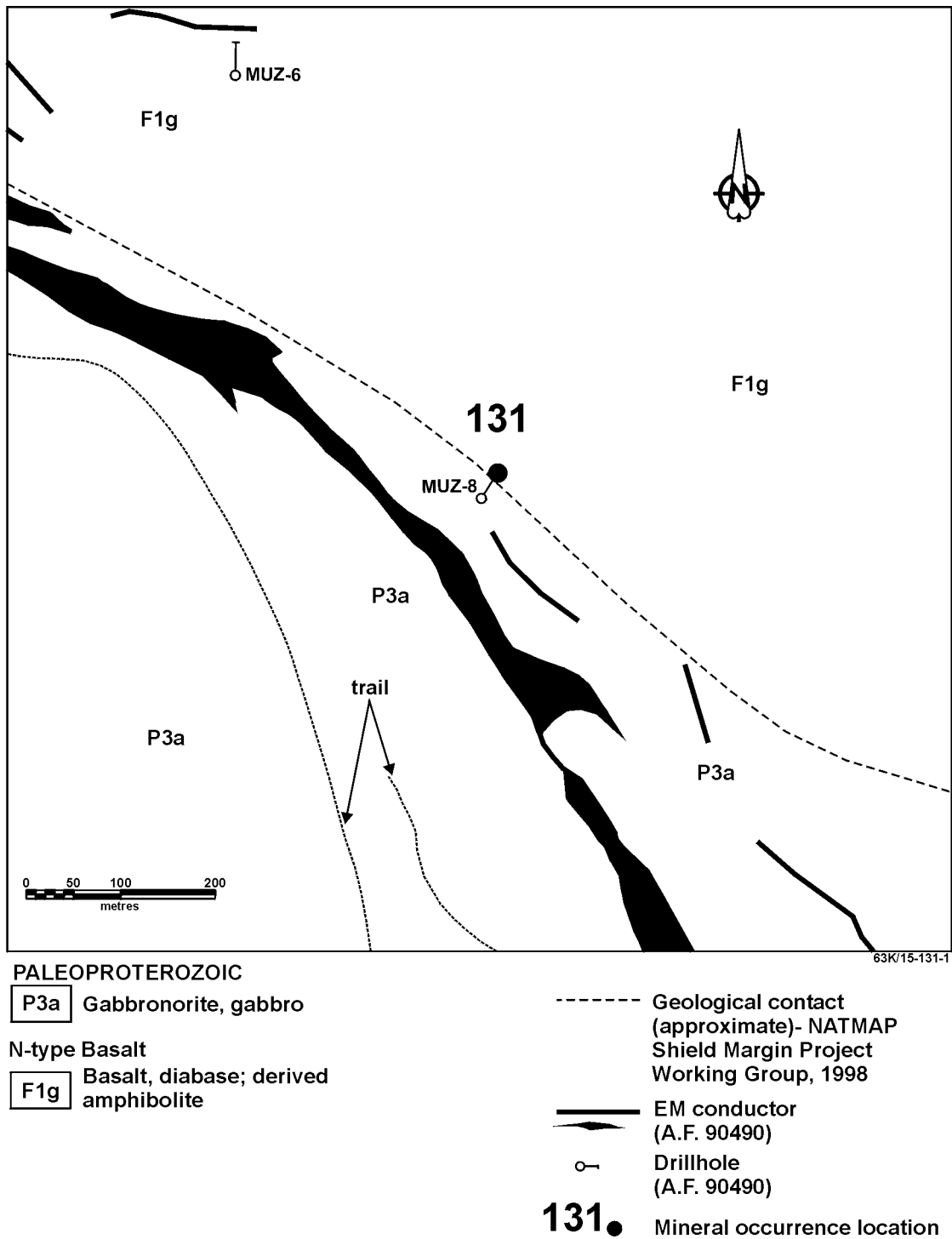


Figure 131-1: Geological setting of occurrence 131.

## LOCATION: 132

NAME: mineralization intersected by diamond drilling  
UTM: 400740E, 6071575N  
AREA: approximately 300 m W of Sewell Lake  
ACCESS: via float equipped aircraft to Sewell Lake,  
then traverse  
AIRPHOTO: MB90026-8

## EXPLORATION SUMMARY

Granges Exploration AB performed an HLEM (ABEM GUN) survey 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. 132-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by basalts and andesites (unit J1d) of the Preston formation (Bailes, 1980). These appear to be the same as the Eastern basalts of the North Star Lake area (Norquay *et al.*, 1993, 1994). In the North Star Lake area this assemblage consists of pillowed and massive basalt with abundant massive synvolcanic gabbroic units. Mafic tectonite with mafic to felsic sheets (unit W6b) of the West Reed-North Star shear zone (Syme *et al.*, 1995a, b) occurs to the west of the occurrence.

Holes C-79-35 and -39 intersected a series of chlorite±carbonate±quartz schists that appear to have been derived from variably amygdaloidal, schistose, mafic, volcanic rocks, gabbro and minor rhyolite (A.F. 92441).

## MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-35	28.0-35.8 m (92.0-117.4 ft.)	5-20% pyrrhotite, to 10% pyrite, minor chalcopyrite, in quartz-chlorite-carbonate schist and schistose andesite
	38.1-38.5 m (125.0-126.4 ft.)	10% pyrite, 2% pyrrhotite, in schistose, chloritic, siliceous, calcareous andesite
	39.1-41.7 m (128.2-136.8 ft.)	10% pyrite, tr sphalerite, in quartz carbonate rock (schist?)
C-79-39	43.5-45.8 m (142.6-150.1 ft.)	5-10% pyrite, in schistose, siliceous, slightly calcareous andesite
	24.1-24.5 m (79.2-80.3 ft.)	15% pyrrhotite, tr chalcopyrite, in quartz-chlorite-carbonate schist
	24.5-25.2 m (80.3-82.6 ft.)	5% pyrrhotite, 2% pyrite, tr chalcopyrite, in quartz-chlorite-carbonate schist
	25.2-29.6 m (82.6-97.0 ft.)	5-10% pyrite, in quartz-chlorite-carbonate schist and chloritic andesite
	33.8-34.1 m (110.9-112.0 ft.)	5% pyrite, in chloritic, schistose andesite
	34.7-35.7 m (113.8-117.0 ft.)	5% pyrite, tr pyrrhotite in chloritic, schistose andesite
	46.3-46.8 m (152.0-153.6 ft.)	5% pyrite, in talc-chlorite schist

## GEOCHEMICAL DATA

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table on following page).

## CLASSIFICATION

Massive sulphide type deposit; alteration zone. It is unclear if the schistose rocks associated with this occurrence represent an alteration zone or a more regional structural feature.

## REFERENCES

- A.F. 92441 and 92443; Cancelled Assessment Files, 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 GR78-1, 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.
- 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.
- 1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.
- 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.

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-35	28.0-28.2 m (92.0-92.6 ft.)	0.56	0.91	0.05	1.0
	28.2-29.3 m (92.6-96.0 ft.)	0.12	0.27	0.05	0.5
	29.3-30.8 m (96.0-101.0 ft.)	0.05	0.13	0.05	0.5
	30.8-32.3 m (101.0-106.0 ft.)	0.04	0.17	0.05	0.5
	32.3-33.8 m (106.0-111.0 ft.)	0.03	0.10	0.05	0.5
	33.8-35.4 m (111.0-116.0 ft.)	0.02	0.09	0.05	0.5
	35.4-35.8 m (116.0-117.4 ft.)	0.02	0.02	0.05	0.5
	38.1-38.5 m (125.0-126.4 ft.)	0.02	0.02	0.05	0.5
	39.1-40.6 m (128.2-133.2 ft.)	0.03	0.13	0.15	0.5
	40.6-41.7 m (133.2-136.8 ft.)	0.03	0.02	0.05	0.5
	43.5-45.1 m (142.6-148.0 ft.)	0.03	0.01	0.05	0.5
	45.1-45.8 m (148.0-150.1 ft.)	0.06	0.01	0.05	1.0
C-79-39	24.1-24.5 m (79.2-80.3 ft.)	0.06	0.18	0.05	1.5
	24.5-25.2 m (80.3-82.6 ft.)	0.03	0.07	0.05	0.5
	25.2-26.5 m (82.6-87.0 ft.)	0.01	0.17	0.05	1.0
	26.5-28.0 m (87.0-92.0 ft.)	0.01	0.11	0.05	0.5
	28.0-29.6 m (92.0-97.0 ft.)	0.01	0.17	0.05	0.5
	33.8-34.1 m (110.9-112.0 ft.)	0.02	0.07	0.05	0.5
	34.7-35.7 m (113.8-117.0 ft.)	0.01	0.05	0.05	0.5
	46.3-46.8 m (152.0-153.6 ft.)	0.01	0.01	0.05	0.5

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.

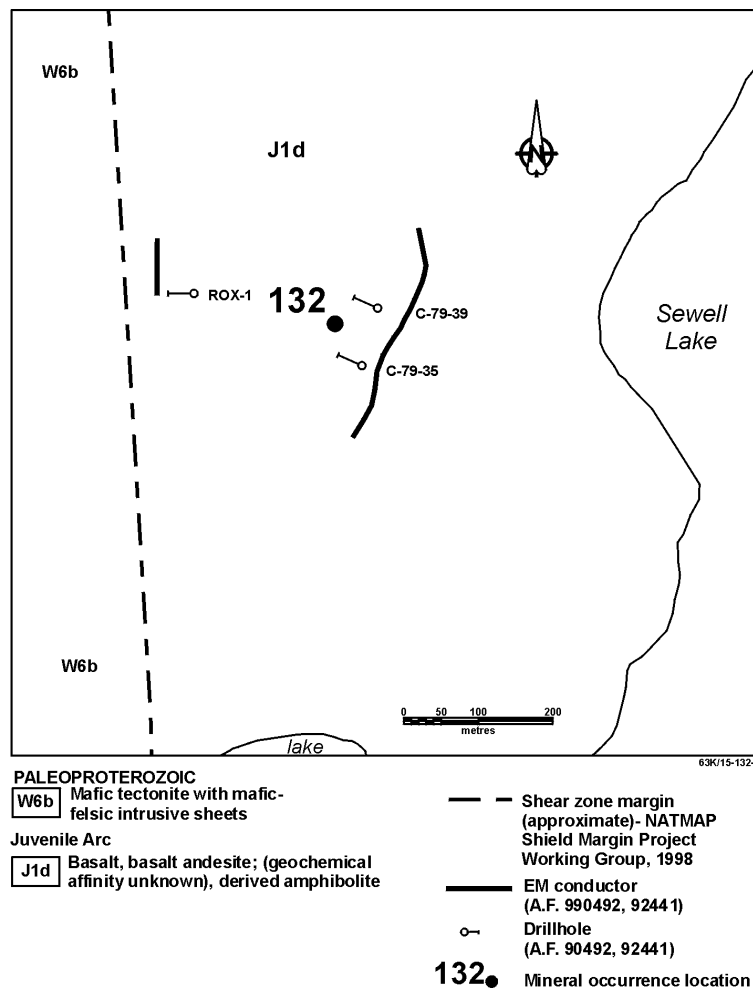


Figure 132-1: Geological setting of occurrence 132.

## LOCATION: 133

NAME: mineralization intersected by diamond drilling  
UTM: 401000E, 6091305N  
AREA: approximately 1.1 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-161

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 133-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-9 intersected a sequence consisting of hornblende-quartz-biotite±garnet schists to gneisses with minor siliceous feldspar porphyry and diorite (A.F. 90490).

## MINERALIZATION

One interval containing "light to near solid" pyrrhotite with minor pyrite and magnetite was intersected between 59.7-62.1 m (196.0-203.8 ft.) in hole MUZ-9 (A.F. 90490). It is hosted by quartz-biotite schist.

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

A.F. 90490, 92828, 92902 and 92903; 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 GR78-1, 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

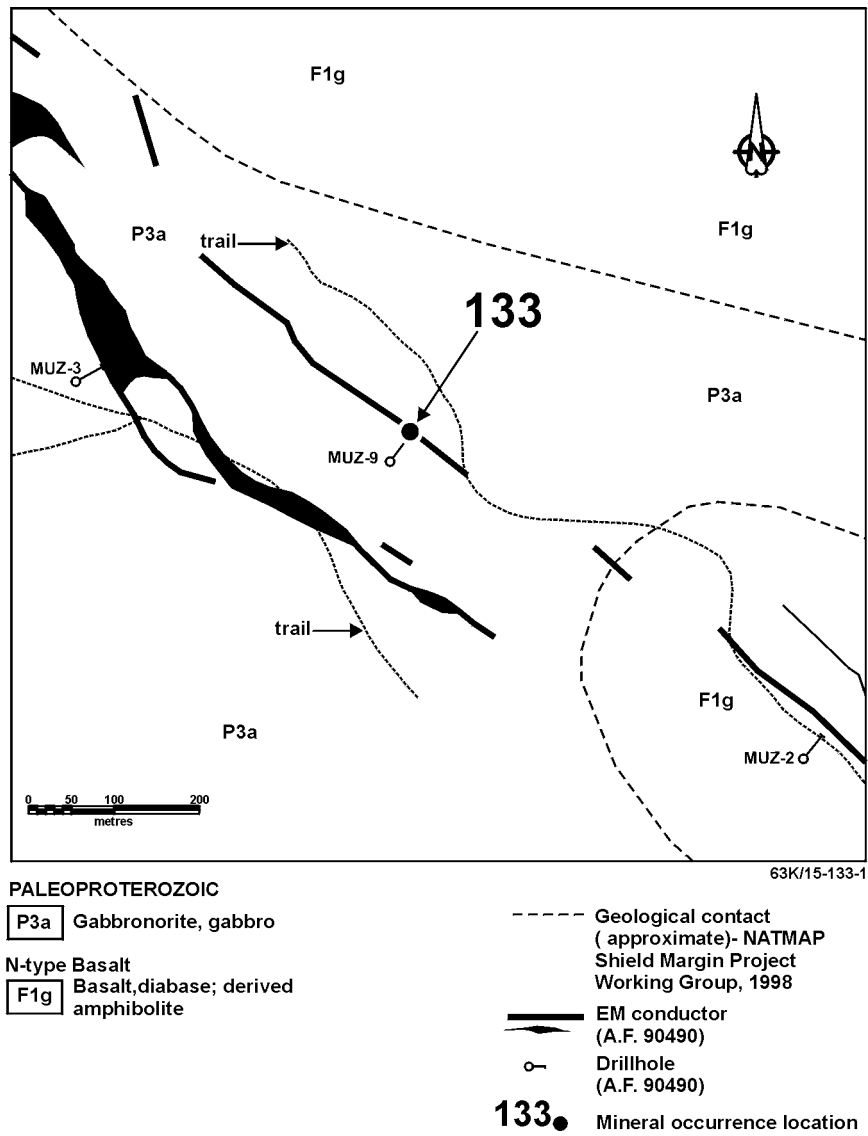


Figure 133-1: Geological setting of occurrence 133.

## LOCATION: 134

NAME: mineralization intersected by diamond drilling  
UTM: 401480E, 6090960N  
AREA: approximately 500 m W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-161

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 134-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-2 intersected a sequence consisting of hornblende-quartz±biotite±garnet±chlorite gneisses with minor granitic pegmatite, hornblende "andesite" and diorite (A.F. 90490).

## MINERALIZATION

One interval that is "well mineralized to near solid" pyrite and pyrrhotite was intersected between 62.0-70.4 m (203.3-231.0 ft.) in hole MUZ-2 (A.F. 90490). It is hosted by hornblende-biotite gneiss to schist.

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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



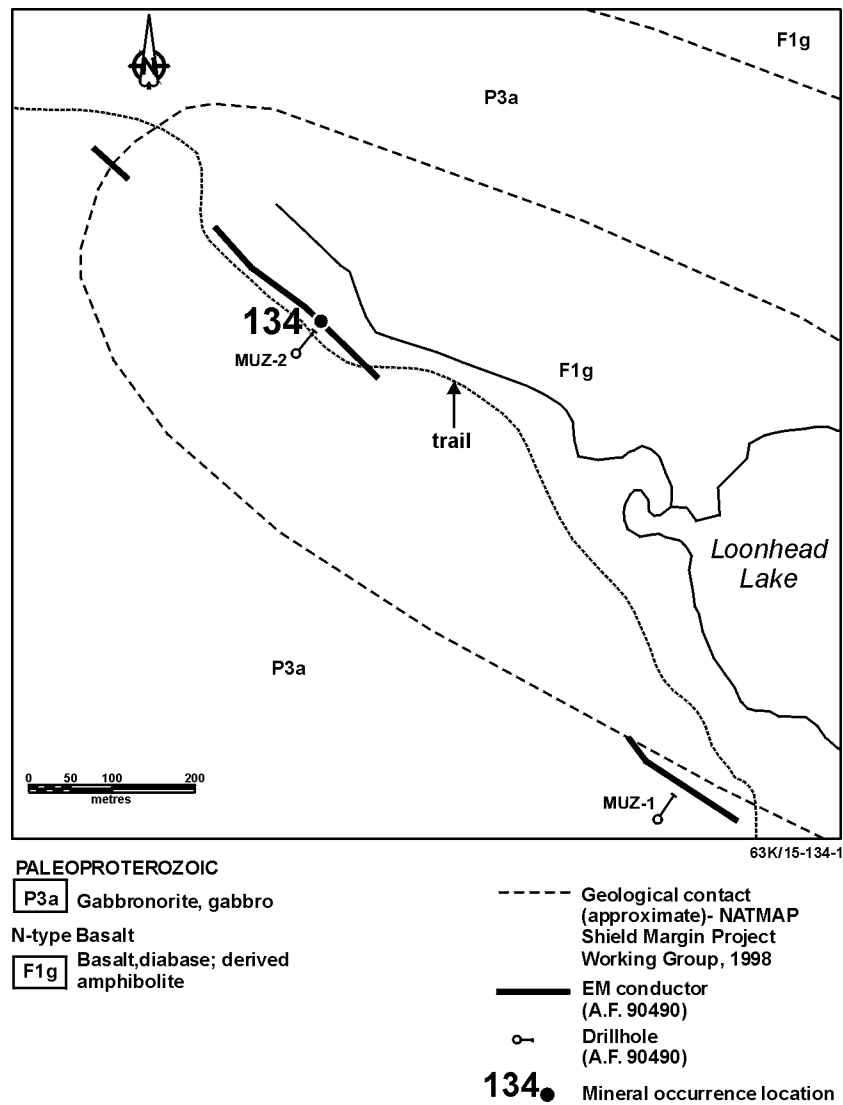


Figure 134-1: Geological setting of occurrence 134.

## LOCATION: 135

NAME: mineralization intersected by diamond drilling  
UTM: 401920E, 6090405N  
AREA: approximately 200 m SW of southwest corner of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-149

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

Interval	Mineralization
36.9-38.7 m (121.0-127.0 ft.)	"considerable" pyrrhotite, "very slight" pyrite, in siliceous hornblende-plagioclase gneiss
54.6-66.4 m (179.2-218.0 ft.)	"considerable" pyrrhotite and pyrite, in siliceous hornblende-plagioclase-garnet gneiss
80.2-83.2 m (263.0-273.0 ft.)	"considerable" pyrrhotite, "slight" pyrite, in quartz-plagioclase-hornblende gneiss

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

## REFERENCES

- A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, 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 GR78-1, 134 pp.

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 135-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-1 intersected a sequence consisting of hornblende-quartz-plagioclase±garnet gneisses (A.F. 90490).

## MINERALIZATION

Several intervals containing "considerable" pyrrhotite and lesser pyrite were intersected in hole MUZ-1 over the following intervals (A.F. 90490) (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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

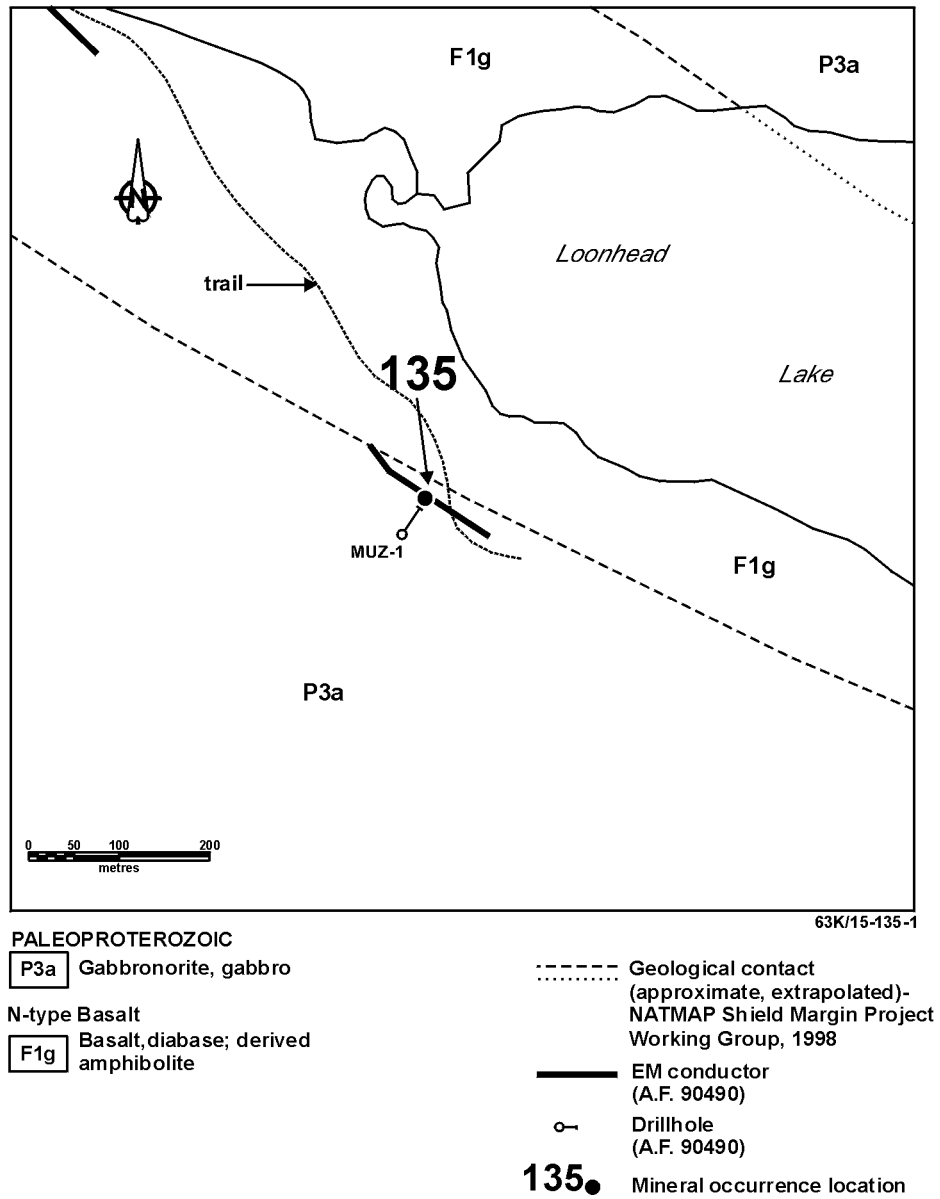


Figure 135-1: Geological setting of occurrence 135.

## LOCATION: 136

NAME: mineralization intersected by diamond drilling  
UTM: 400490E, 6072435N  
AREA: approximately 700 m SW of Preston Lake  
ACCESS: via abandoned CNR rail roadbed from Snow Lake, along Dickstone mine road, then traverse  
AIRPHOTO: MB90026-8

## EXPLORATION SUMMARY

In 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame) survey in the Sewell Lake-Peterson Lake area (A.F. 90497), after which several of the conductors were drill tested (A.F. 91544).

## GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 136-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by flow basalts and andesites (unit J1d) of the Preston formation (Bailes, 1980). These appear to be the same as the Eastern basalts of the North Star Lake area (Norquay *et al.*, 1993, 1994). In the North Star Lake area this assemblage consists of pillowed and massive basalt flows with abundant massive synvolcanic gabbroic units.

The sequence intersected by holes ROX-3 and -8 is dominated by foliated, mafic, volcanic rock and derived banded chlorite±quartz±garnet±magnetite schists (A.F. 91544). Some of the quartz-bearing schist intervals may have been derived from felsic volcanic or intrusive rocks.

## MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
ROX-3	48.3-49.2 m (158.6-161.4 ft.)	"well mineralized" pyrrhotite, minor pyrite, with graphitic bands in banded schistose, chloritic "andesite" and chlorite schist
	50.4-51.0 m (165.2-167.4 ft.)	"well mineralized" pyrrhotite, minor pyrite, with graphitic bands in banded schistose, chloritic "andesite" and chlorite schist
ROX-8	97.9-98.3 m (321.3-322.4 ft.)	"well mineralized" pyrite and graphite, tr chalcopyrite, in chlorite schist

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Massive sulphide type deposit; alteration zone. It is unclear if the schistose and chloritic intervals represent a tectonized hydrothermal alteration zone or a more regional structural feature. The presence of graphite indicates a biogenic component.

## REFERENCES

A.F. 90497 and 91544; 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 GR78-1, 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.

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.

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

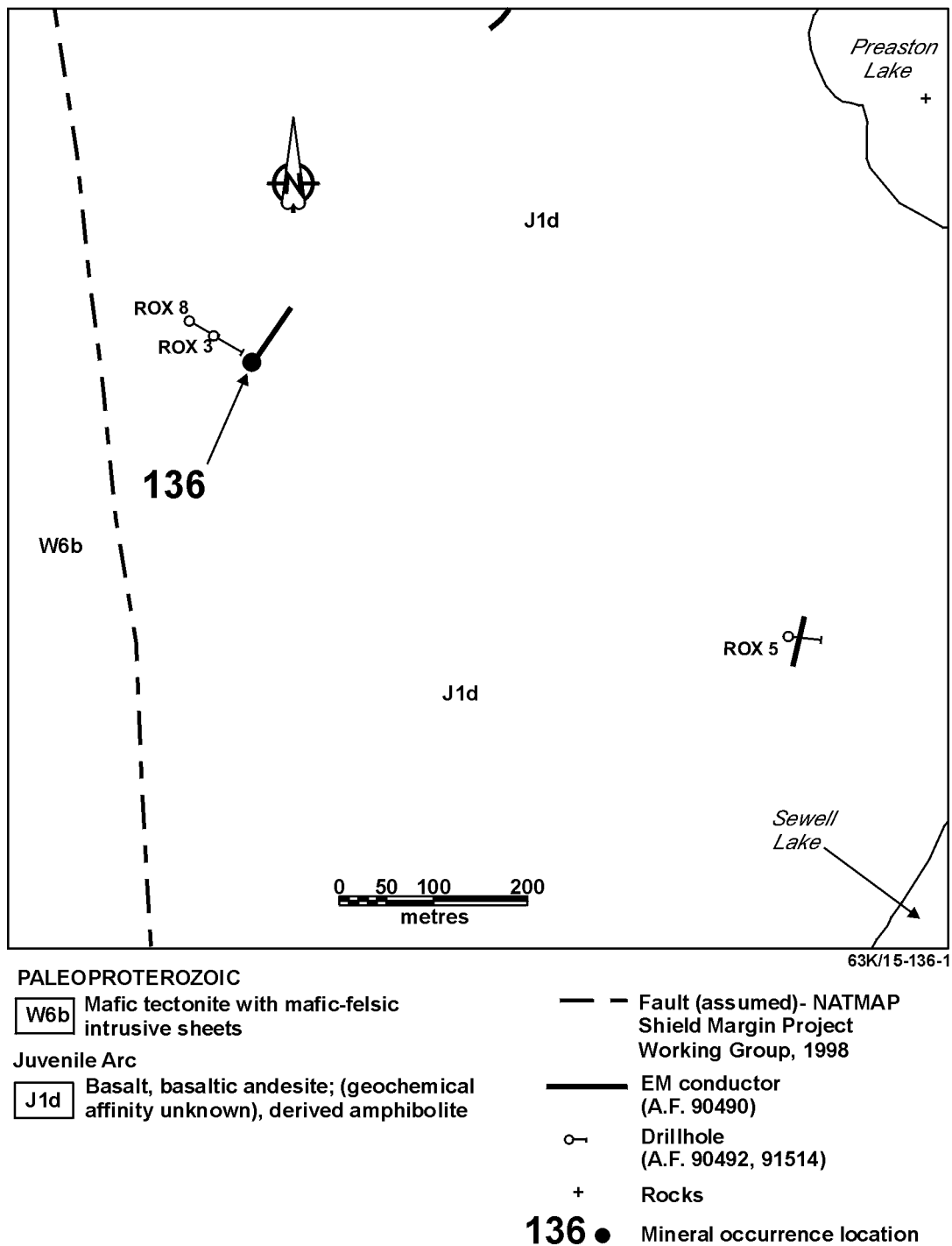


Figure 136-1: Geological setting of occurrence 136.

## LOCATION: 137

NAME: mineralization intersected by diamond drilling  
UTM: 397390E, 6089255N  
AREA: approximately 4.8 km WSW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90026-32

## EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). 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. 137-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b) indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-251 intersected quartz-sericite±graphite±garnet schist with two highly graphitic intervals. The upper graphitic zone is staurolitic (A.F. 90492).

## MINERALIZATION

Two graphitic intervals, "well mineralized" with pyrite and minor chalcopyrite, were intersected in hole TUG-251 between 22.4-26.1 m (73.5-85.5 ft.) and 27.4-28.7 m (90.0-94.0 ft.) (A.F. 90492).

## GEOCHEMICAL DATA

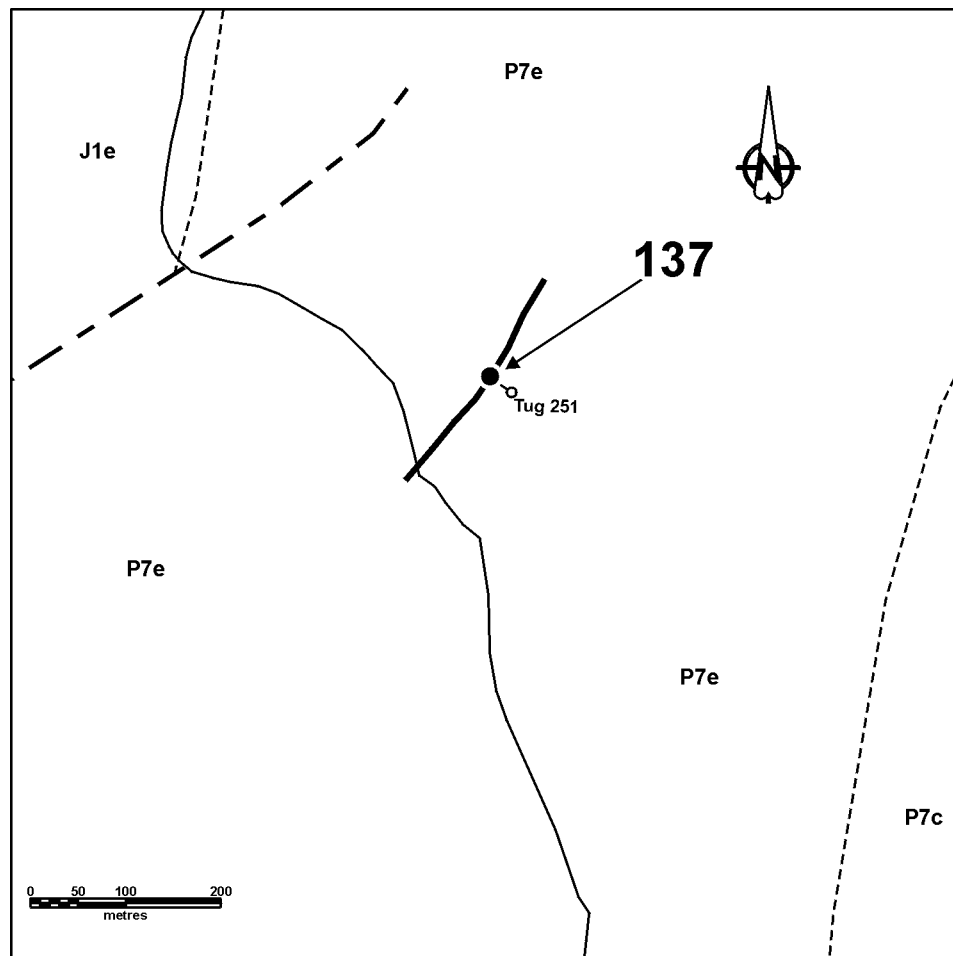
No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The sulphides have probably been extensively recrystallized as this mineralization occurs within the Gants Lake batholith contact aureole. The presence of graphite suggests a biogenic contribution.

## REFERENCES

- A.F. 90492 and 92828; 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.
- Norquay, L.I., Prouse, D.E., Bieri, M. and Gale, G.H. 1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.
- 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); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.



63K/15-137-1

#### PALEOPROTEROZOIC

**P7c** Xenolith-rich granodiorite

**P7e** Foliated and gneissic granodiorite to tonalite

#### Juvenile Arc

**J1e** Layered to uniform amphibolite (geochemical affinity unknown)

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

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

———— EM conductor (A.F. 90492)

○ Drillhole (A.F. 90492)

**137●** Mineral occurrence location

Figure 137-1: Geological setting of occurrence 137.

**LOCATION: 138**

NAME: mineralization intersected by diamond drilling  
UTM: 398570E, 6090255N  
AREA: approximately 3.4 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-162

**EXPLORATION SUMMARY**

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). 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. 138-1) 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 derived amphibolite (unit J1d) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b). The eastern margin of the Gants Lake Batholith (unit P7e) is located a short distance from the occurrence.

Hole MUZ-17 intersected a sequence composed of quartz-hornblende-biotite±garnet gneisses, chloritic diorite and biotite granite (A.F. 90490).

**MINERALIZATION**

Hole MUZ-17 intersected a single sulphide-rich interval from 53.4-59.0 m (175.3-193.7 ft.) containing "very slight to near solid" pyrite and pyrrhotite with minor chalcopyrite (A.F. 90490). The host rock is garnet-hornblende-biotite gneiss.

**GEOCHEMICAL DATA**

No assays were reported for the mineralized interval intersected in this hole.

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

A.F. 90490 and 92828; Cancelled Assessment Files, 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 GR78-1, 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.

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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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



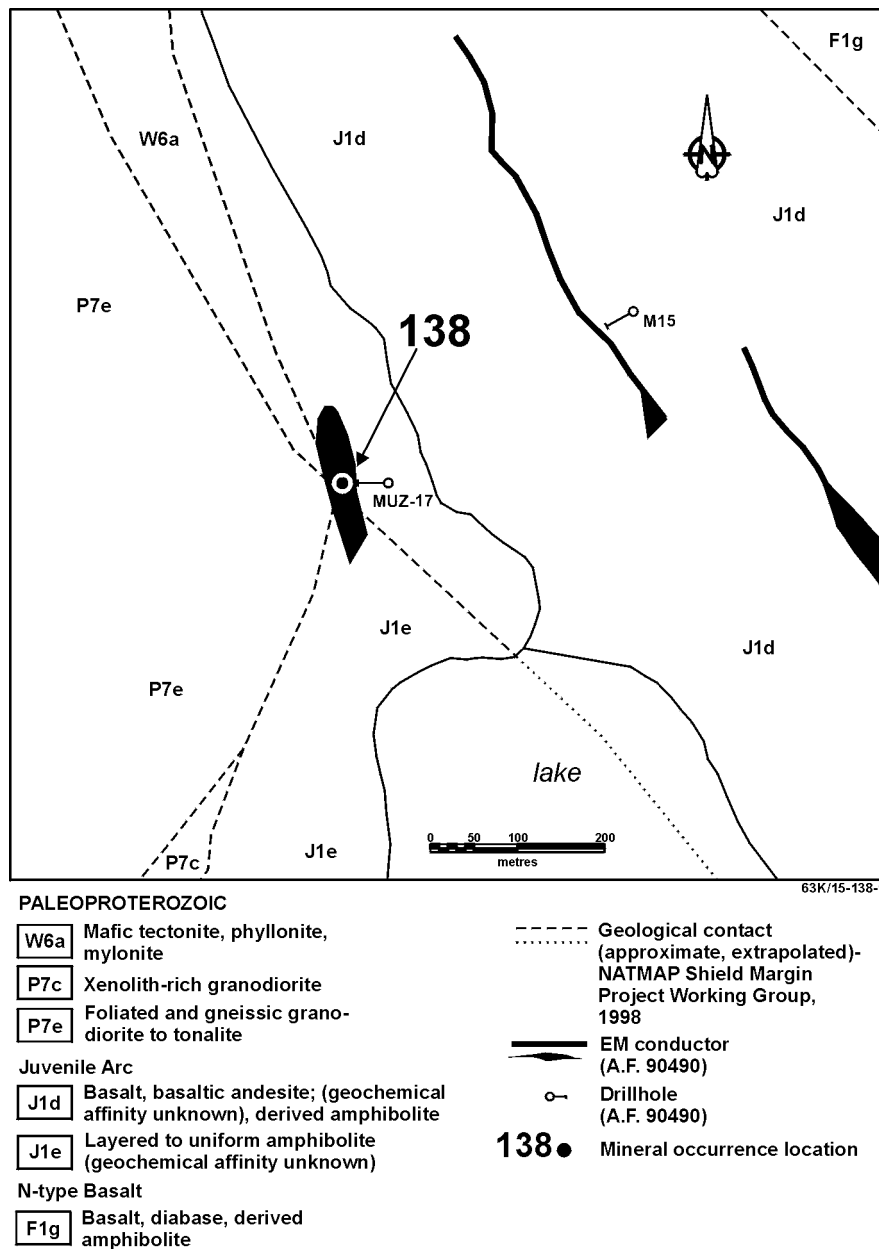


Figure 138-1: Geological setting of occurrence 138.

## LOCATION: 139

NAME: mineralization intersected by diamond drilling  
UTM: 398860E, 6090435N  
AREA: approximately 3.1 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-162

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). 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. 139-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b).

Hole MUZ-15 intersected a sequence of quartz-hornblende-biotite±garnet gneiss, "quartzite" (rhyolite?), chloritic "andesite" and quartz-feldspar gneiss (A.F. 90490).

## MINERALIZATION

A "quartzite" intersected between 48.2-53.4 m (158.1-175.2 ft.) in hole MUZ-15 contains several thin "near solid" intervals of pyrite with minor pyrrhotite (A.F. 90490).

## GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, 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 GR78-1, 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.

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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

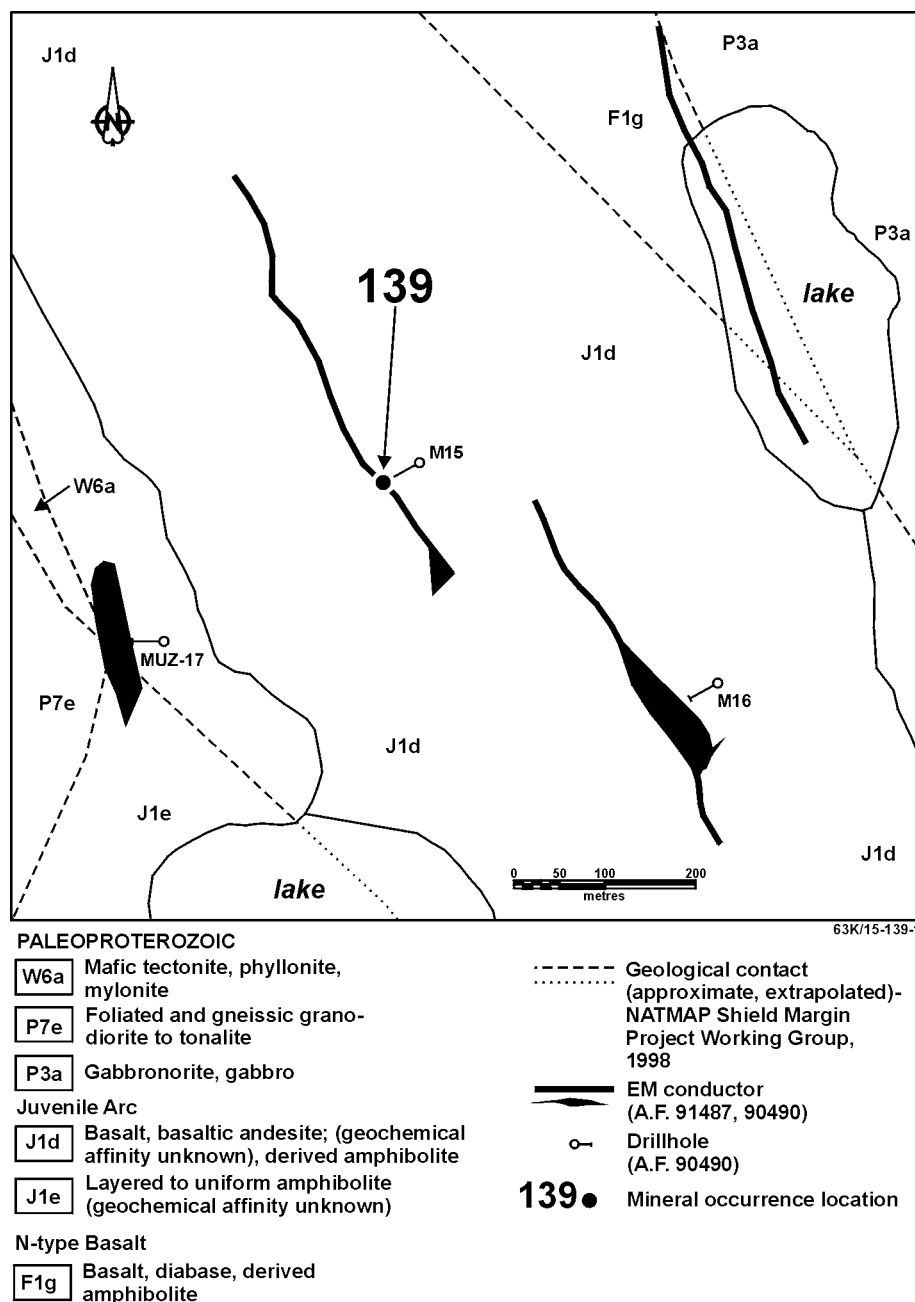


Figure 139-1: Geological setting of occurrence 139.

## LOCATION: 140

NAME: mineralization intersected by diamond drilling  
UTM: 399190E, 6090215N  
AREA: approximately 2.8 km W of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-162

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). 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. 140-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b).

Hole M-16 intersected a sequence of hornblende-biotite±quartz±garnet gneisses, rhyolite, hornblende andesite and hornblende diorite (A.F. 90490).

## MINERALIZATION

Two mineralized intervals containing pyrrhotite and pyrite with minor sphalerite were intersected in hole M-16 between 44.6-44.8 m (146.2-147.0 ft.) and 68.5-68.7 m (224.9-225.4 ft.) (A.F. 90490). They are hosted by hornblende-biotite gneiss that has siliceous and chloritic intervals.

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, 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 GR78-1, 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.

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.

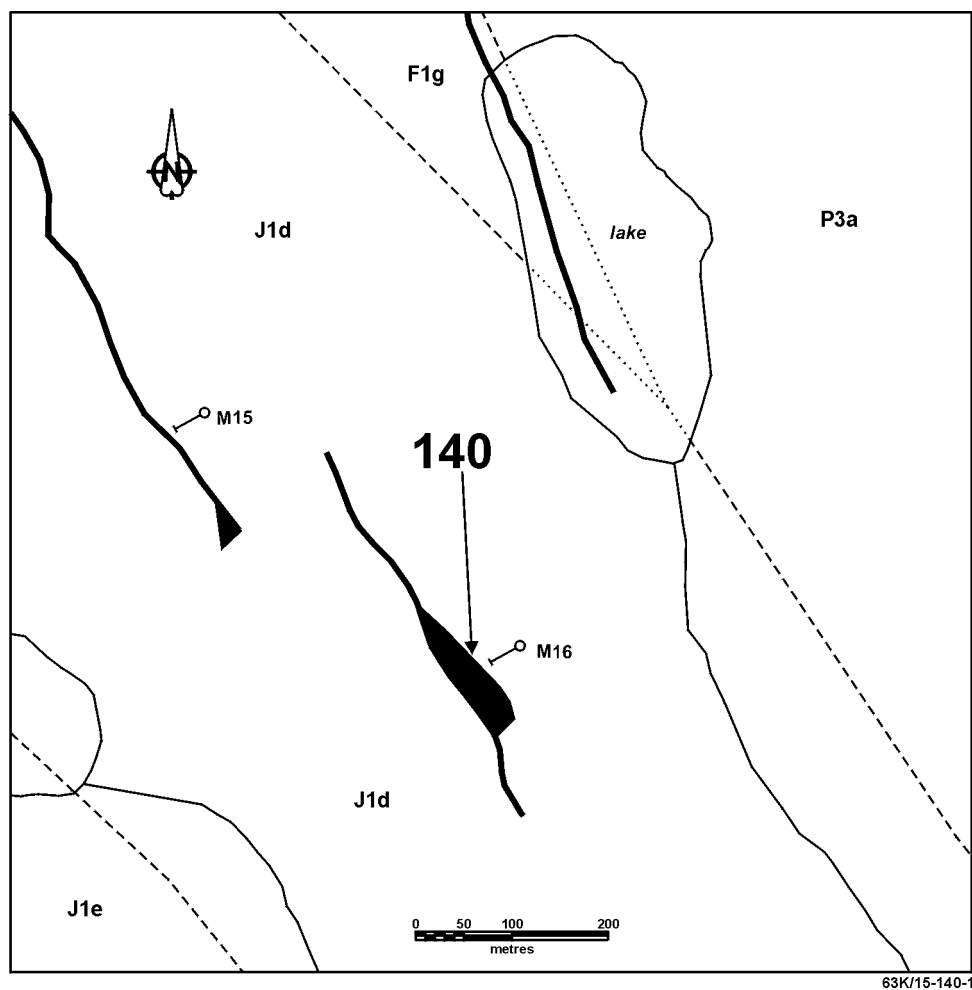
1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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



#### PALEOPROTEROZOIC

**P3a** Gabbro, gabbro

Juvenile Arc

**J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite

**J1e** Layered to uniform amphibolite (geochemical affinity unknown)

N-type Basalt

**F1g** Basalt, diabase, derived amphibolite

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

EM conductor (A.F. 90490)

Drillhole (A.F. 90490)

**140●** Mineral occurrence location

Figure 140-1: Geological setting of occurrence 140.

## LOCATION: 141

NAME: mineralization intersected by diamond drilling  
UTM: 400710E, 6089645N  
AREA: approximately 1.6 km SW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-162

## EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). 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. 141-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole M-13 intersected diorite and a sequence of quartz-hornblende±biotite schists (A.F. 90490).

## MINERALIZATION

Three mineralized intervals were intersected in hole MUZ-13 as follows (A.F. 90490) (see table below).

Interval	Mineralization
57.2-58.5 m (187.8-191.9 ft.)	"slight to near solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
63.2-63.7 m (207.5-208.9 ft.)	"solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
64.0-64.4 m (210.1-211.4 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende±biotite schist

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

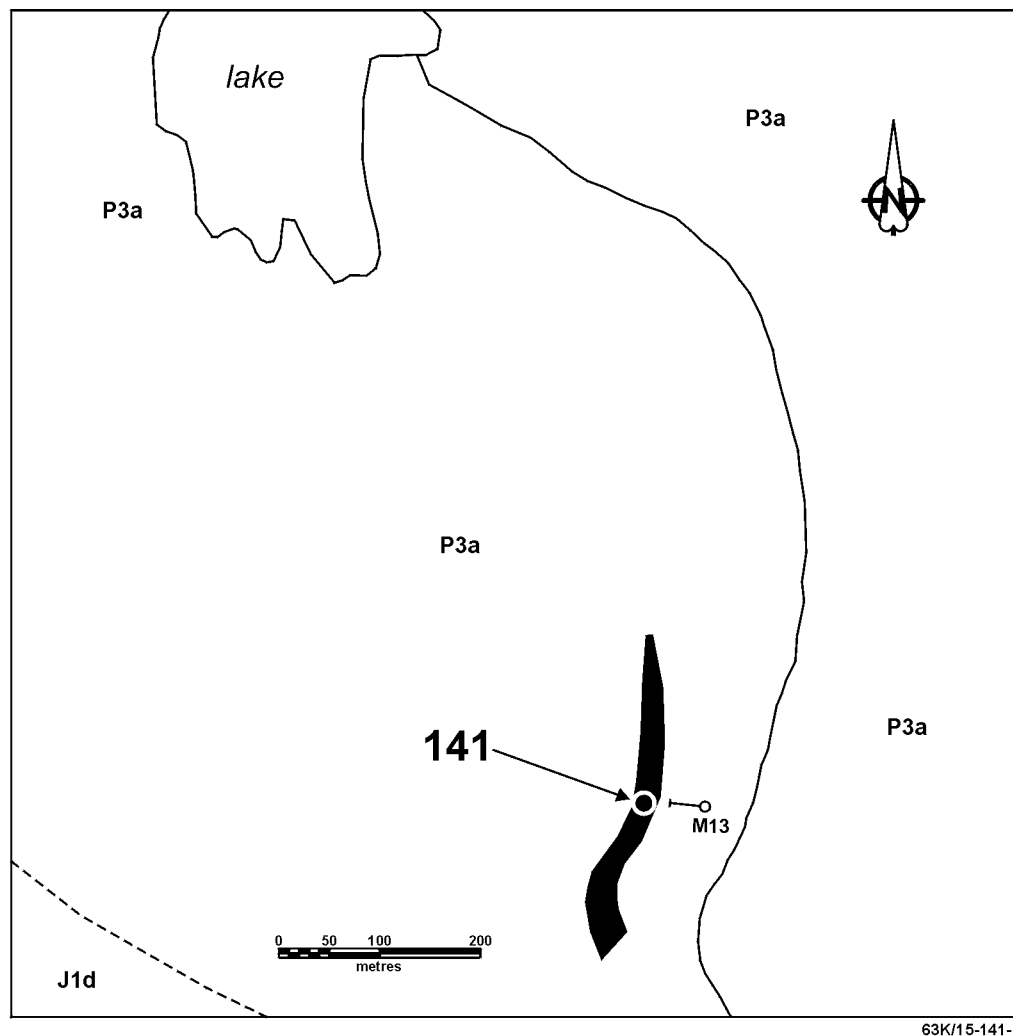
- A.F. 90490 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- Bailes, A.H.
- 1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.
- NATMAP Shield Margin Project Working Group
- 1998: 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.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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



#### PALEOPROTEROZOIC

**P3a** Gabbronorite, gabbro

#### Juvenile Arc

**J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite

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

— EM conductor (A.F. 90490)

○ Drillhole (A.F. 90490)

**141 ●** Mineral occurrence location

Figure 141-1: Geological setting of occurrence 141.

## LOCATION: 142

NAME: mineralization intersected by diamond drilling  
UTM: 396520E, 6087905N  
AREA: approximately 6.1 km SW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90026-31

## EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). 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. 142-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b)

indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-248 intersected a sequence consisting of biotite-plagioclase-garnet gneiss, amphibolite±garnet, and minor amygdaloidal basalt and gabbroic units. Hole TUG-252 intersected a similar sequence, consisting of quartz-feldspar-biotite±garnet gneisses, garnet-amphibole-biotite gneiss, quartz-feldspar-sericite gneiss, granitic pegmatite, rhyolite-dacite porphyry, staurolite-garnet-biotite schist and amphibolite (A.F. 90492).

## MINERALIZATION

Several mineralized intervals were intersected in holes TUG-248 and -252 as follows (A.F. 90492) (see table below).

Hole No.	Interval	Mineralization
TUG-248	23.0-27.4 m (75.4-90.0 ft.)	"very slight" to "near solid" pyrrhotite, lesser pyrite, minor chalcopyrite, in garnet-plagioclase-mica gneiss-schist and garnetiferous amphibolite
	31.3-32.4 m (102.8-106.2 ft.)	"slight" to "well mineralized" pyrrhotite, lesser pyrite, minor chalcopyrite, in garnet-plagioclase-mica gneiss-schist and garnetiferous amphibolite
	37.4-38.8 m (122.8-127.3 ft.)	"very slight" to "well mineralized solid" pyrrhotite, lesser pyrite, minor chalcopyrite, in amphibole-biotite schist
	43.4-43.9 m (142.4-144.0 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	45.9-50.4 m (150.7-165.4 ft.)	"slight" to "near solid" pyrrhotite, minor pyrite, chalcopyrite, in amphibolite
TUG-252	144.4-144.7 m (473.7-474.8 ft.)	"well mineralized" pyrrhotite, minor chalcopyrite, in garnet-biotite gneiss
	157.5-158.1 m (516.6-518.6 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in "granite gneiss"
	160.6-174.0 m (526.9-571.0 ft.)	"well mineralized" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	192.9-198.0 m (633.0-649.5 ft.)	scattered "solid" pyrrhotite intervals, minor chalcopyrite, in amphibolite
	206.0-208.5 m (675.8-684.2 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	209.8-216.7 m (688.4-711.1 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in these holes.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The sulphides have probably been extensively recrystallized as this mineralization occurs within the Gants Lake batholith contact aureole.

## REFERENCES

A.F. 90492 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.



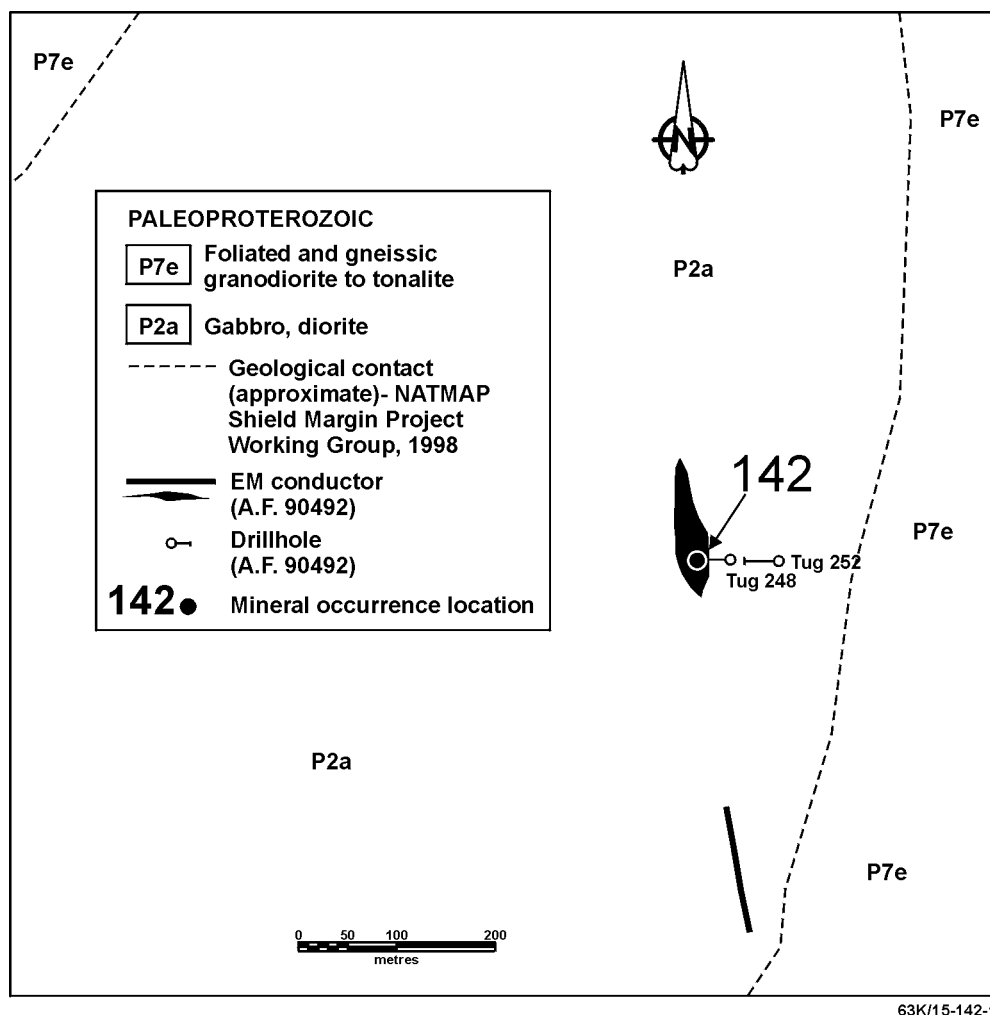


Figure 142-1: Geological setting of occurrence 142.

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., Bieri, M. and Gale, G.H.

1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.

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.

## LOCATION: 143

NAME: mineralization intersected by diamond drilling  
UTM: 396520E, 6087615N  
AREA: approximately 6.2 km SW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90026-31

## EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). 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. 143-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b) indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-250 intersected a sequence of mineralogically (mica±garnet±amphibole±sericite) and compositionally (dacite, rhyolite) variable schists, biotite-plagioclase gneiss, and granitic and mafic dykes (A.F. 90492).

## MINERALIZATION

An interval that is “well mineralized” to “near solid” with pyrite and pyrrhotite, and contains minor chalcopyrite was intersected between 28.5-29.8 m (93.5-97.9 ft.) in hole TUG-250 (A.F. 90492). The sulphides are hosted by amphibolite.

## GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The mineralogical description of the rocks associated with this occurrence suggests that they may be part of a hydrothermal alteration zone. The rocks have been extensively recrystallized as they occur within the Gants Lake batholith contact aureole.

## REFERENCES

- A.F. 90492 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., Bieri, M. and Gale, G.H.  
1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.
- 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); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

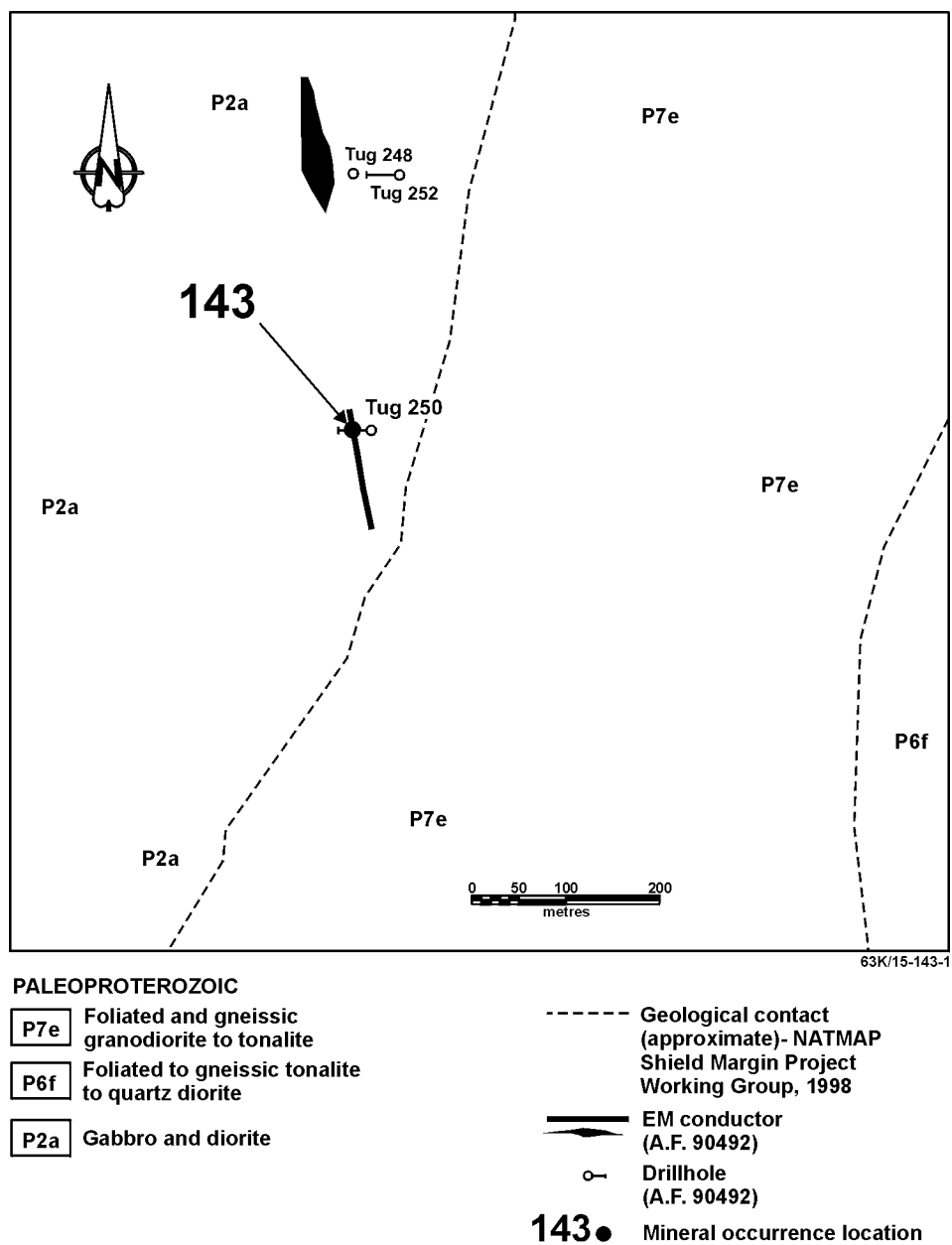


Figure 143-1: Geological setting of occurrence 143.

## LOCATION: 144

NAME: mineralization intersected by diamond drilling  
UTM: 401860E, 6088170N  
AREA: approximately 2.1 km SSW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-147

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 144-1) 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 derived amphibolite (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-13 intersected a sequence of amphibole-biotite±quartz±sericite±garnet schists and garnetiferous "andesite" (A.F. 90489).

## MINERALIZATION

Hole H-13 intersected an interval of solid pyrite with minor pyrrhotite from 39.8-40.7 m (130.5-133.4 ft.) (A.F. 90489). The units above and below the sulphides are quartz-amphibole-sericite schist and quartz-biotite schist respectively.

## GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, 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 GR78-1, 134 pp.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 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.

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.

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

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

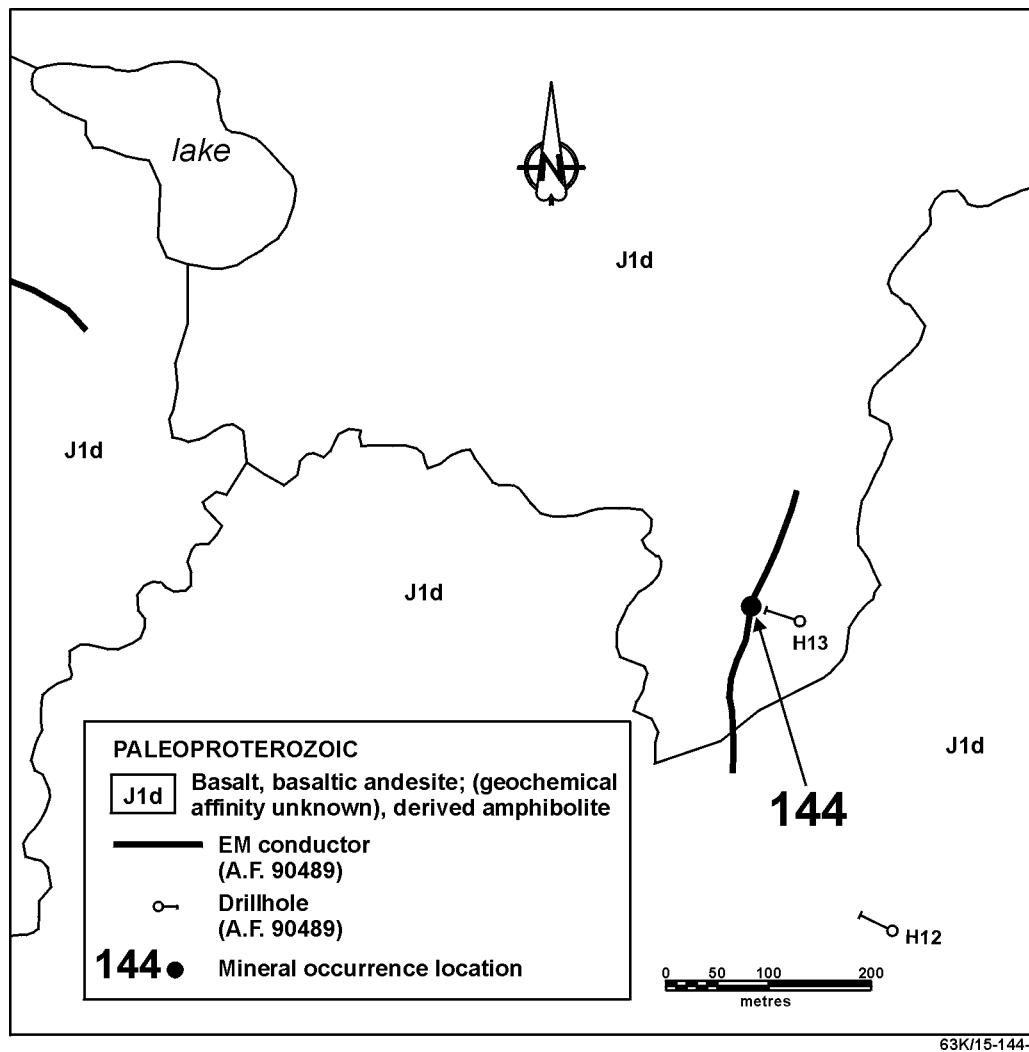


Figure 144-1: Geological setting of occurrence 144.

## LOCATION: 145

NAME: mineralization intersected by diamond drilling  
UTM: 402000E, 6087835N  
AREA: approximately 2.4 km SSW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-147

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 145-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic volcanic rocks (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-12 intersected a sequence consisting of massive, garnetiferous andesite, quartz-amphibole schist and granodiorite (A.F. 90489).

## MINERALIZATION

"Fair" to "near solid" pyrrhotite with minor pyrite was intersected between 52.8-54.3 m (173.2-178.2 ft.) in hole H-12 (A.F. 90489). It is hosted by quartz-amphibole schist.

## GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, 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 GR78-1, 134 pp.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 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.

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.

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

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

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

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

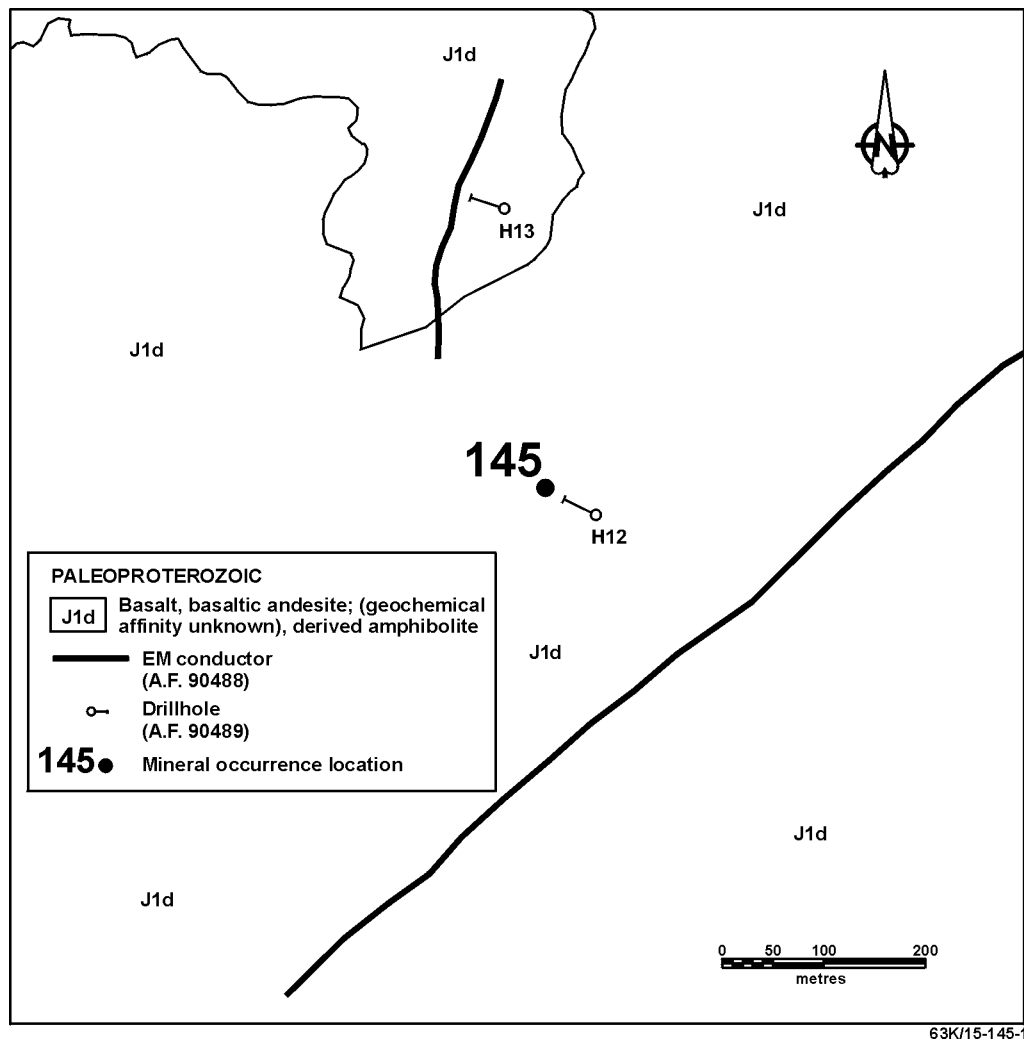


Figure 145-1: Geological setting of occurrence 145.

## LOCATION: 146

NAME: mineralization intersected by diamond drilling  
UTM: 402710E, 6088235N  
AREA: approximately 1.3 km SW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-147

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 146-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic volcanic rocks (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-20 intersected an interval consisting of chloritic diorite and amphibolitic "andesite", and amphibole-biotite gneiss. Garnets are a common minor constituent of all rock types (A.F. 90489).

## MINERALIZATION

Two intervals of "near solid" pyrrhotite and pyrite were intersected between 49.8-50.4 m (163.4-165.5 ft.) and 92.6-93.3 m (303.7-306.2 ft.) in hole H-20 (A.F. 90489). Both intervals are hosted by amphibolitic "andesite".

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

- A.F. 90488, 90489 and 92828; Cancelled Assessment Files, 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 GR78-1, 134 pp.
- McGlynn, J.C.  
1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 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.
- 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.  
1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.
- Zwanzig, H.V.  
1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.  
1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.  
1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.



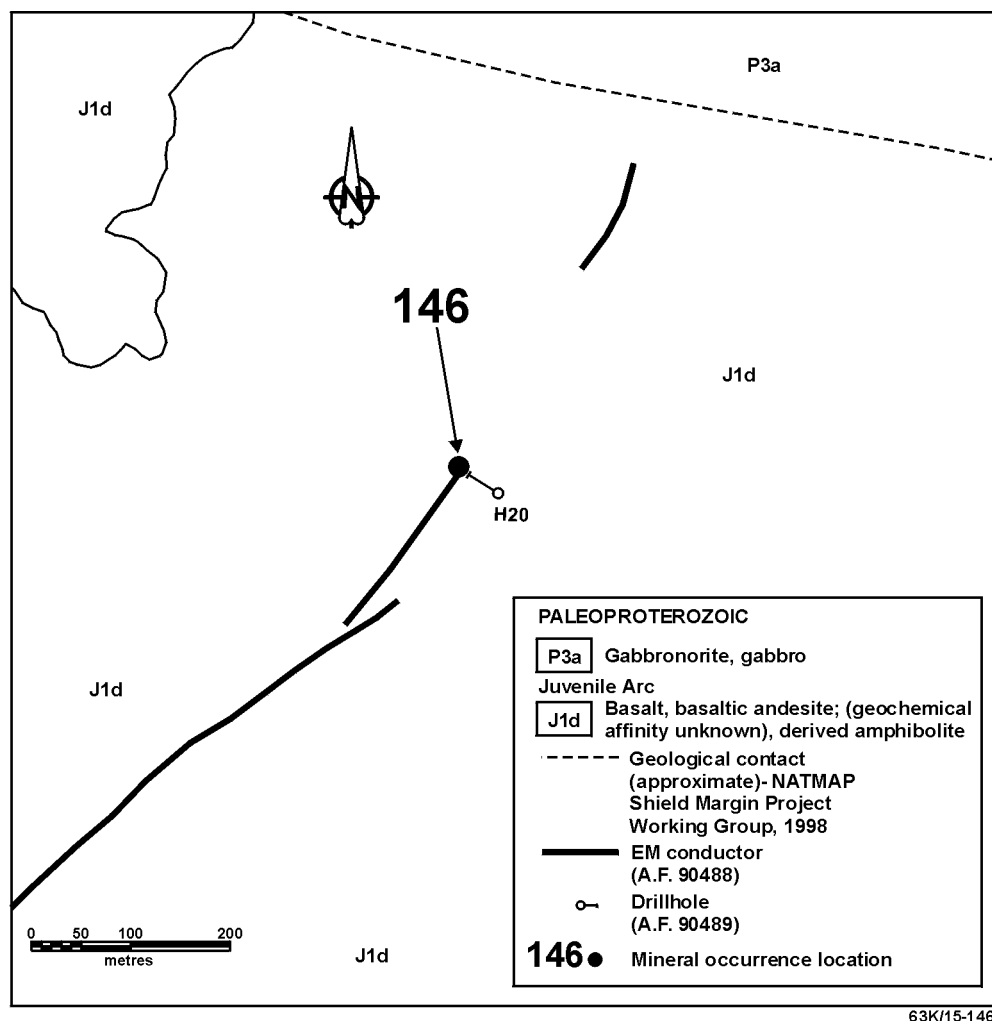


Figure 146-1: Geological setting of occurrence 146.

## LOCATION: 147

NAME: mineralization intersected by diamond drilling  
UTM: 403010E, 6087505N  
AREA: approximately 1.8 km SSW of Loonhead Lake  
ACCESS: via bush aircraft to Loonhead Lake, then traverse  
AIRPHOTO: MB90024-147

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 147-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by gneissic hornblende-biotite-quartz diorite to granodiorite (unit P5a) of the Norris Lake pluton. Mafic volcanic rocks with thin bands of garnet-hornblende-plagioclase gneiss (unit J1d) occur to the north (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994).

Hole H-9 intersected gabbro and diorite to granodiorite of the Norris Lake pluton (A.F. 90489). Thin intervals of amphibole-quartz-chlorite schist occur throughout the core.

## MINERALIZATION

Magnetite with minor pyrrhotite and pyrite are closely associated with amphibole-quartz-chlorite±biotite schist between 23.7-33.1 m (77.7-108.7 ft.) in hole H-9 (A.F. 90489). The quantity and character of the mineralization were not described.

## GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

## CLASSIFICATION

Chemical-sediment type deposit; oxide facies iron formation.

## REFERENCES

- A.F. 90488, 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.
- McGlynn, J.C.  
1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 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.
- 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.  
1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

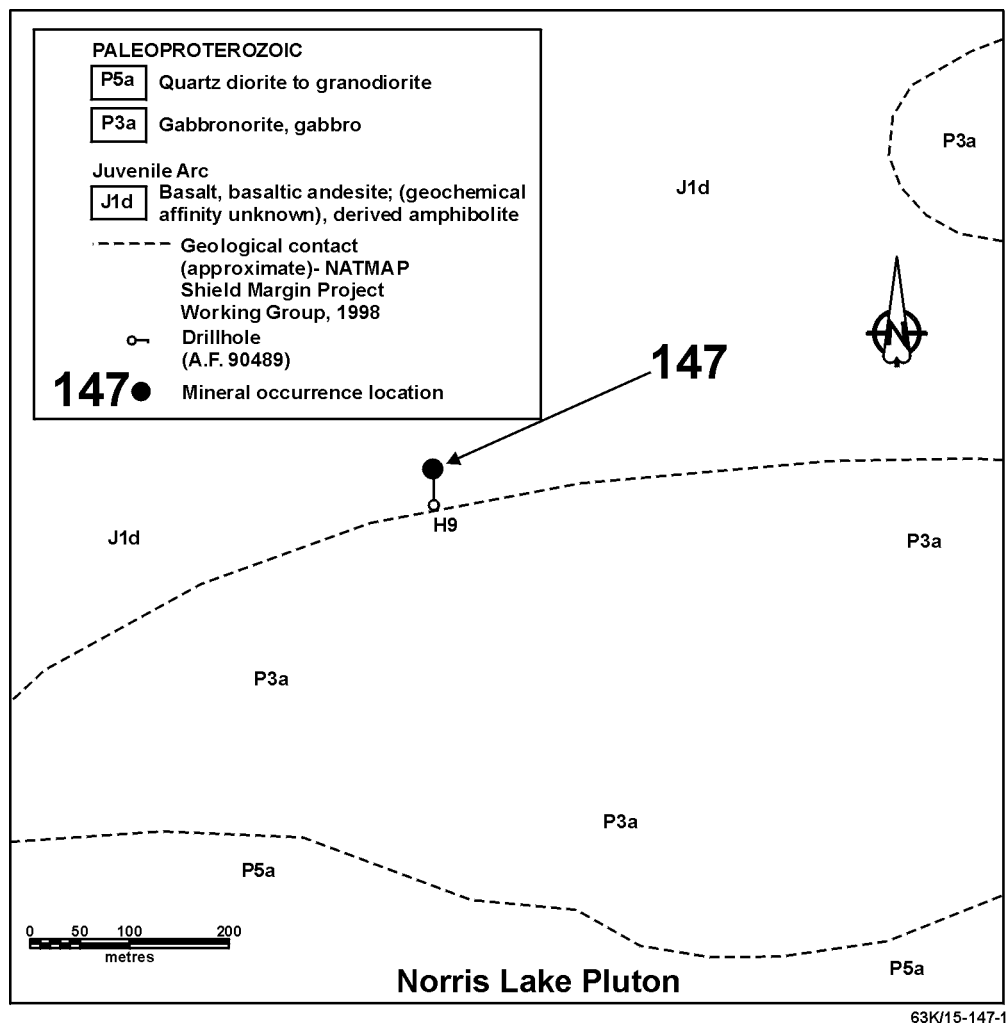


Figure 147-1: Geological setting of occurrence 147.

## LOCATION: 148

NAME: mineralization intersected by diamond drilling  
UTM: 399770E, 6088145N  
AREA: approximately 5.8 km N of North Star Lake  
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
AIRPHOTO: MB90024-165

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 166-1) and their descriptions are from the compilation maps of the NATMAP Shield

Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to 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 and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The rocks at the occurrence consist of mafic and felsic conglomerate.

Hole EFF-26 intersected a sequence of fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite" (A.F. 90488). A rhyolite fragment breccia with a mafic matrix was intersected at the bottom of the hole.

## MINERALIZATION

Several mineralized intervals were intersected in hole EFF-26 as follows (A.F. 90488) (see table below).

Interval	Mineralization
41.6-42.0 m (136.5-137.9 ft.)	"well mineralized" pyrite, pyrrhotite, in fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite"
46.2-46.3 m (151.5-151.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments
46.7-48.2 m (153.2-158.2 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments
49.7-49.9 m (163.2-163.8 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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.

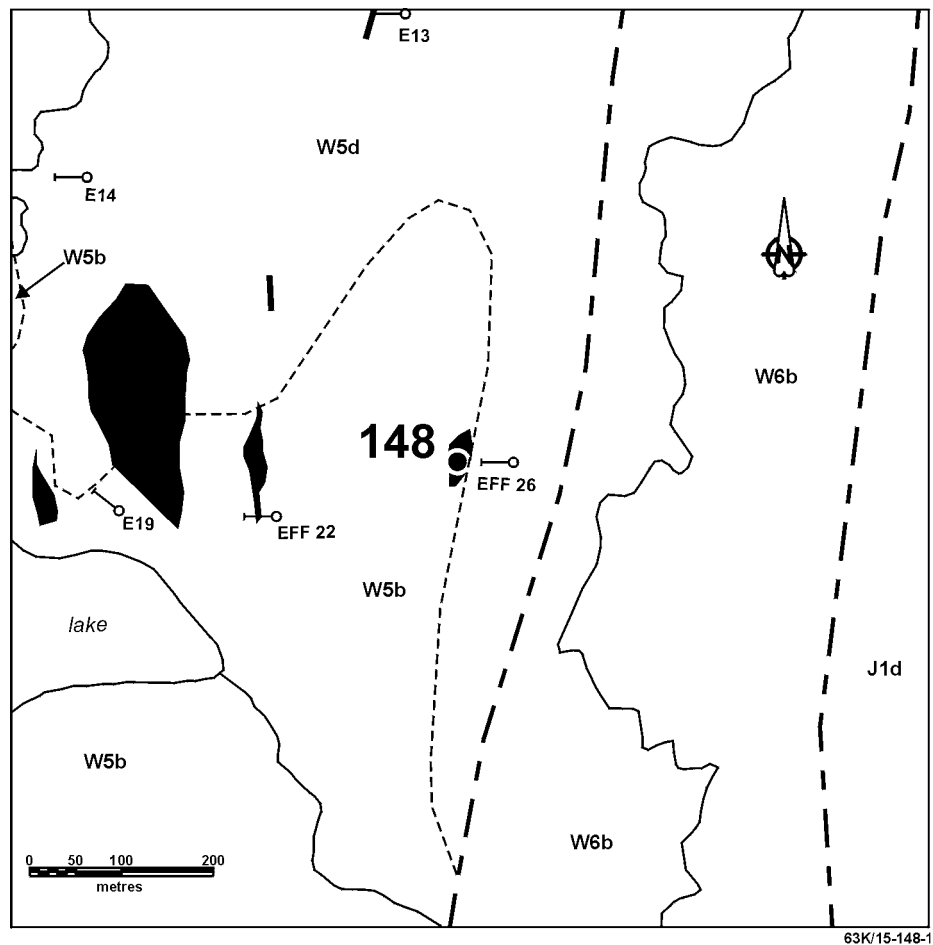
1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

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., Bales, 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
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss
- J1d** Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite

Juvenile Arc

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- Fault(approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90488)
- Drillhole (A.F. 90488)
- 148.** Mineral occurrence location

Figure 148-1: Geological setting of occurrence 148.

## LOCATION: 149

NAME: mineralization intersected by diamond drilling  
UTM: 399760E, 6087435N  
AREA: approximately 3.6 km SW of Loonhead Lake  
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
AIRPHOTO: MB90024-163

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 149-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). It is bounded to the east and west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area

have undergone, Norquay *et al.* (1992; 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) and silicate facies (garnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Holes H-29, -30, -31, -32, -33, -34, -35, -40, and -45 intersected a series of biotite-quartz±amphibole±plagioclase±sericite±chlorite±garnet±staurolite “gneisses” with minor magnetite-bearing intervals, biotitic “quartzite” and feldspar-amphibole porphyry dykes (A.F. 90489). The “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 the units exposed in outcrop. It appears likely the “quartzite” units described in some of the holes represent rhyolitic flows.

## MINERALIZATION

Mineralized intervals were intersected as follows (A.F. 90489) (see table below).

Hole No.	Interval	Mineralization
H-29	50.4-51.4 m (165.2-168.5 ft.)	to “near solid sulphides”, pyrrhotite and pyrite, sphalerite, minor chalcopyrite, in quartz-garnet-biotite “gneiss”
	53.6-53.7 m (175.8-176.2 ft.)	sphalerite and chalcopyrite, in fine-grained, foliated quartz-biotite±garnet “gneiss”
H-30	80.0-80.4 m (262.5-263.8 ft.)	“well mineralized” to “near solid” pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in amphibole-biotite-garnet±feldspar “gneiss”
	82.0-82.3 m (269.0-270.0 ft.)	“well mineralized” pyrrhotite, trace chalcopyrite, sphalerite, in amphibole-biotite-garnet±feldspar “gneiss”
	98.8-98.9 m (324.0-324.6 ft.)	“well mineralized” pyrrhotite, trace chalcopyrite, in amphibole-biotite-garnet±feldspar “gneiss”
H-31	104.2-104.6 m (341.8-343.1 ft.)	“well mineralized” pyrrhotite, trace chalcopyrite, sphalerite, in quartz-biotite±sericite±garnet “gneiss”
H-32	85.8-91.4 m (281.4-300.0 ft.)	“slight” to “near solid” pyrite, arsenopyrite, pyrrhotite, trace sphalerite and chalcopyrite, in biotite-amphibole-garnet-plagioclase “gneiss”
	106.9-110.4 m (350.8-362.3 ft.)	“well mineralized” to “near solid” pyrrhotite, minor chalcopyrite and sphalerite, in quartz-biotite± amphibole±garnet “gneiss”
H-33	83.7-84.1 m (274.5-275.8 ft.)	“mineralized to well mineralized” pyrrhotite, trace chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase±garnet “gneiss”
	118.7-119.1 m (389.4-390.7 ft.)	“well mineralized” to “solid” pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase±garnet “gneiss”
	121.3-121.8 m (397.9-399.6 ft.)	“near solid” pyrrhotite, trace chalcopyrite, sphalerite, in fine grained amphibole-biotite-plagioclase±garnet “gneiss”
	128.0-128.6 m (420.0-421.9 ft.)	“mineralized to well mineralized” pyrite, pyrrhotite, trace chalcopyrite, sphalerite, in fine-grained quartz-biotite±amphibole±garnet “gneiss”

Hole No.	Interval	Mineralization
H-34	109.7-110.0 m (360.0-360.8 ft.)	"solid" chalcopyrite, trace sphalerite, in fine-grained amphibole-plagioclase "gneiss"
H-35	22.0-22.3 m (72.2-73.2 ft.)	"well mineralized" pyrite, in amphibole-biotite-plagioclase±quartz±garnet±sericite "gneiss"
	84.7-84.8 m (277.9-278.1 ft.)	"near solid" pyrite, trace chalcopyrite, sphalerite, in amphibole-biotite-plagioclase±quartz±garnet±sericite±magnetite "gneiss"
	117.8-118.0 m (386.6-387.0 ft.)	"mineralized" pyrite, pyrrhotite, trace sphalerite, arsenopyrite, in biotite-quartz±garnet±sericite±chlorite±staurolite "gneiss"
	119.0-119.1 m (390.6-390.9 ft.)	"near solid" pyrite, pyrrhotite, trace chalcopyrite, sphalerite, in biotite-quartz±garnet±sericite±chlorite±staurolite "gneiss"
H-40	84.8-85.1 m (278.2-279.2 ft.)	"well mineralized" pyrrhotite, trace chalcopyrite, in fine-grained biotite-quartz-plagioclase±garnet "gneiss"
	123.3-123.4 m (404.6-405.0 ft.)	"mineralized to well mineralized" pyrite, pyrrhotite, in quartz-biotite±amphibole±garnet±sericite "gneiss"
	195.6-195.7 m (641.8-642.1 ft.)	pyrite as solid bands, in quartz-biotite±garnet±sericite "gneiss"
	223.6-224.4 m (733.5-736.1 ft.)	"well mineralized to near solid" pyrrhotite, chalcopyrite and sphalerite, in quartz and sericitic matrix
H-45	34.3-34.4 m (112.7-112.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, in fine grained foliated quartz-plagioclase-amphibole±biotite±garnet "gneiss"
	45.6-45.7 m (149.8-149.9 ft.)	"near solid" pyrite, in fine-grained foliated quartz-plagioclase-amphibole±biotite±garnet "gneiss"
	125.1-128.3 m (410.5-420.8 ft.)	"slightly" to "well mineralized" with pyrite, minor pyrrhotite, in quartz-biotite±garnet±sericite±chlorite "gneiss"
	179.2-179.3 m (588.0-588.4 ft.)	"well mineralized" with pyrite, trace chalcopyrite, sphalerite, in fine grained amphibole-biotite-plagioclase-quartz±garnet "gneiss"
	189.0-189.9 m (620.0-622.9 ft.)	"near solid" pyrrhotite, chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase-quartz±garnet "gneiss"

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone.

## REFERENCES

A.F. 90489 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., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.

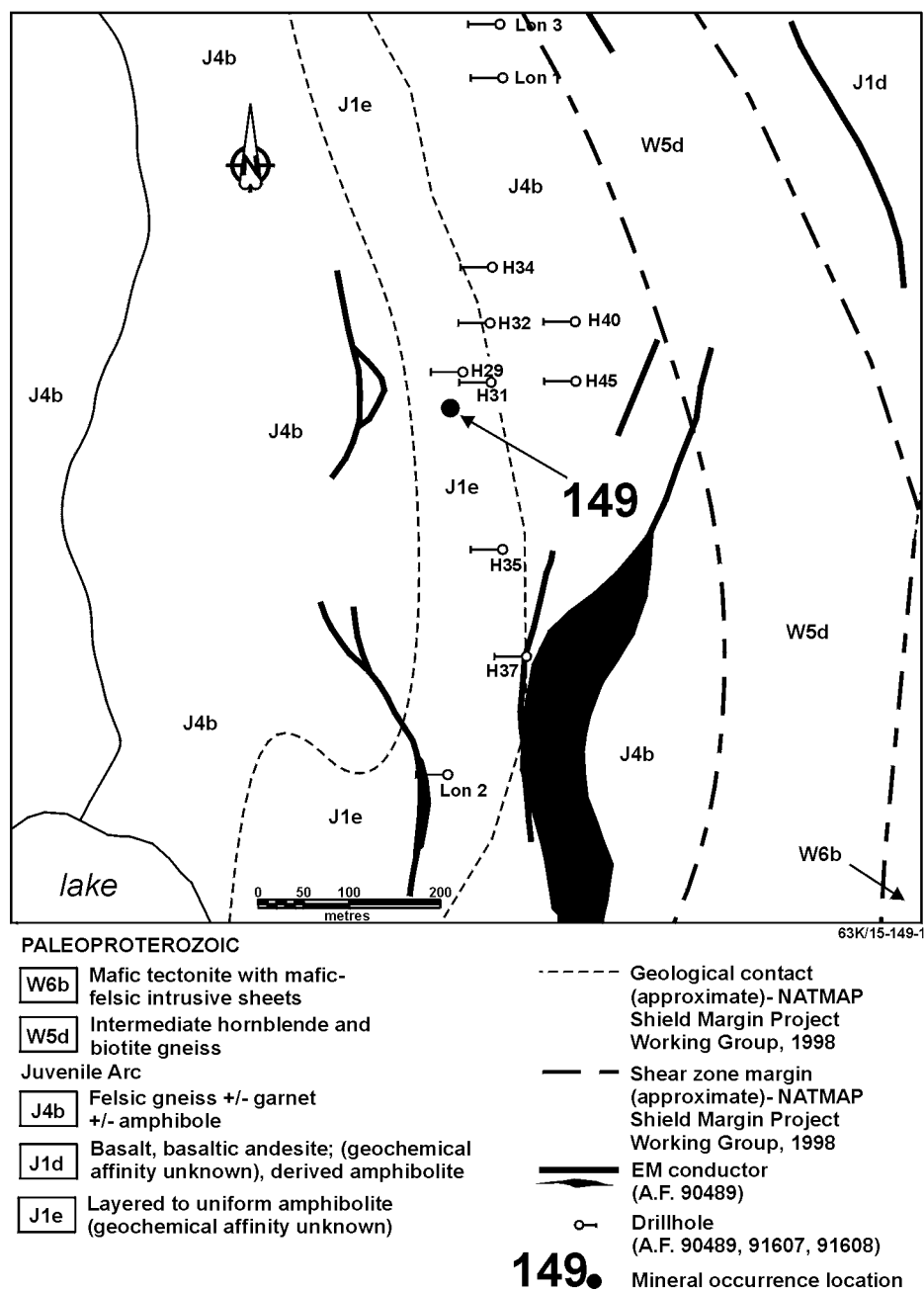


Figure 149-1: Geological setting of occurrence 149.



## LOCATION: 150

NAME: mineralization intersected by diamond drilling  
UTM: 399680E, 6087305N

AREA: approximately 3.3 km SW of Loonhead Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90489). 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. 150-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). It is bounded to the east and

west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992; 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole H-37 consists of a variable assemblage of quartz-biotite-amphibole±garnet±magnetite±chlorite±sericite "gneisses" and a feldspar-amphibole-phyric dyke (A.F. 90489). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area, but the detail of the lithologic descriptions for the drill hole is not sufficient to allow direct correlation with the sequence exposed in outcrop.

## MINERALIZATION

Mineralized intervals were intersected in hole H-37 as follows (A.F. 90489) (see table below).

Interval	Mineralization
41.8-42.0 m (137.3-137.7 ft.)	"near solid" pyrrhotite, minor pyrite, in foliated "andesite" and biotite-amphibole-garnet and amphibole-magnetite-quartz-chlorite schist
64.0-65.8 m (210.0-216.0 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, in foliated "andesite" and biotite-amphibole-garnet and amphibole-magnetite-quartz-chlorite schist
91.0-91.1 m (298.5-298.9 ft.)	"well mineralized" pyrite, in quartz-biotite-sericite±garnet±chlorite "gneiss"
103.9-104.2 m (340.9-341.8 ft.)	to "well mineralized" pyrrhotite, trace chalcopyrite, in foliated biotite-garnet "andesite", foliated amphibole-magnetite-quartz-chlorite "gneiss"

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone.

## REFERENCES

A.F. 90489 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., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.

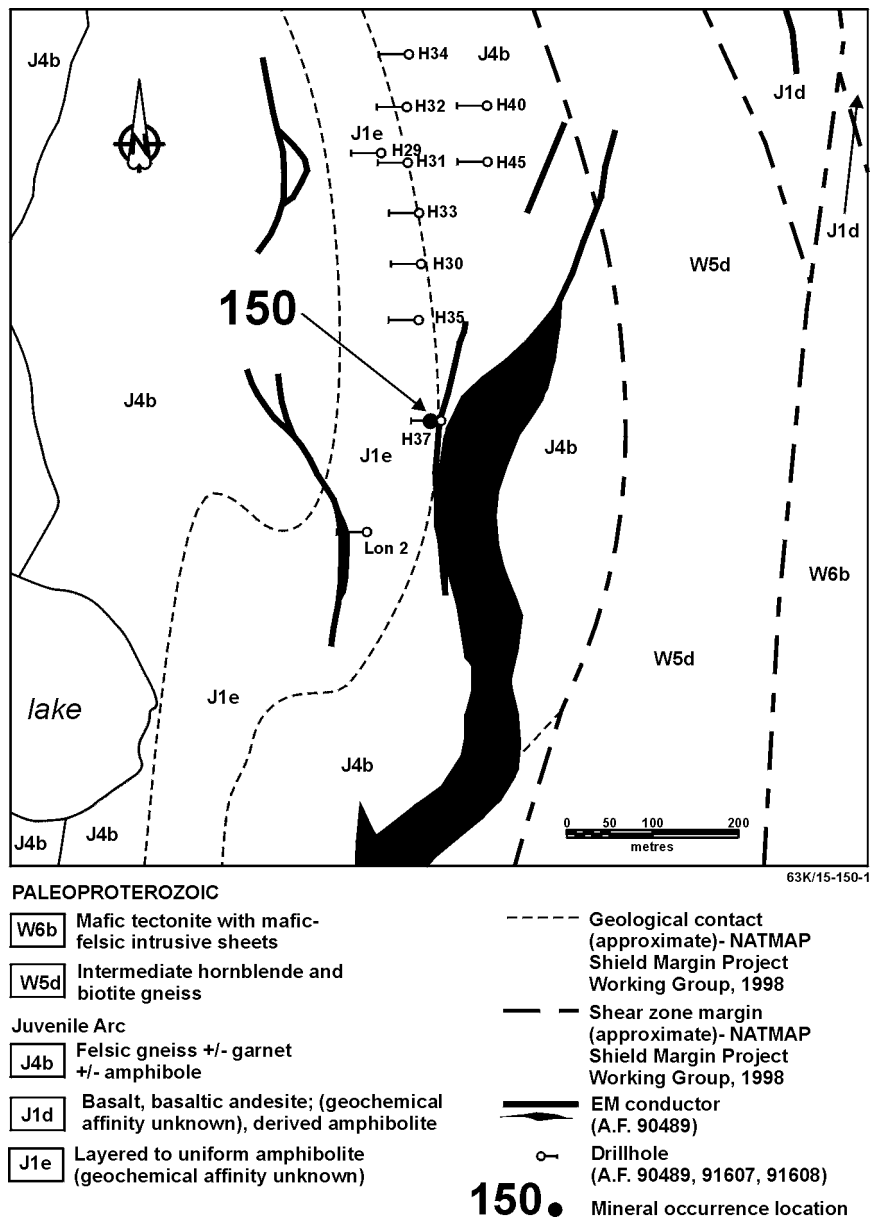


Figure 150-1: Geological setting of occurrence 150.

**LOCATION: 151**

NAME:

UTM: 379725E, 6077935N

AREA: along east side of Smith Island, Elbow Lake

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

AIRPHOTO: MB90025-120

**EXPLORATION SUMMARY**

No work has been recorded for this occurrence. A trench has been excavated into the side of the ridge close at the shoreline.

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 151-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area (Syme and Whalen, 1992).

The rocks on Smith Island consist of chlorite and carbonate schists of the Elbow Lake shear zone. The shear zone is crosscut by NNE-trending quartz- and/or feldspar-phyric dykes. Several dioritic sills and/or dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner feldspar porphyry dykes have been boudinaged. Several areas of carbonate alteration host deformed quartz-carbonate veins.

**MINERALIZATION**

Stockwell (1935) indicates that quartz veins occur in a quartz porphyry dyke that has been exposed at intervals for approximately 140 m (450 feet) from the north shore of the island. The porphyry is sparsely mineralized with disseminated arsenopyrite and pyrite. Quartz stringers within the porphyry carry minor sphalerite. Galley (field notes, 1987) indicates that the mineralization is associated with strongly hematitic alteration halos around a series of quartz-feldspar veins. The host schist to the porphyry contains deformed quartz veins and disseminated pyrite.

**GEOCHEMICAL DATA**

None

**CLASSIFICATION**

Vein type deposit; multiple veins or lenses. Associated with quartz porphyry dyke hosted by schists of the Elbow Lake shear zone.

**REFERENCES**

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.

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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.

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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.

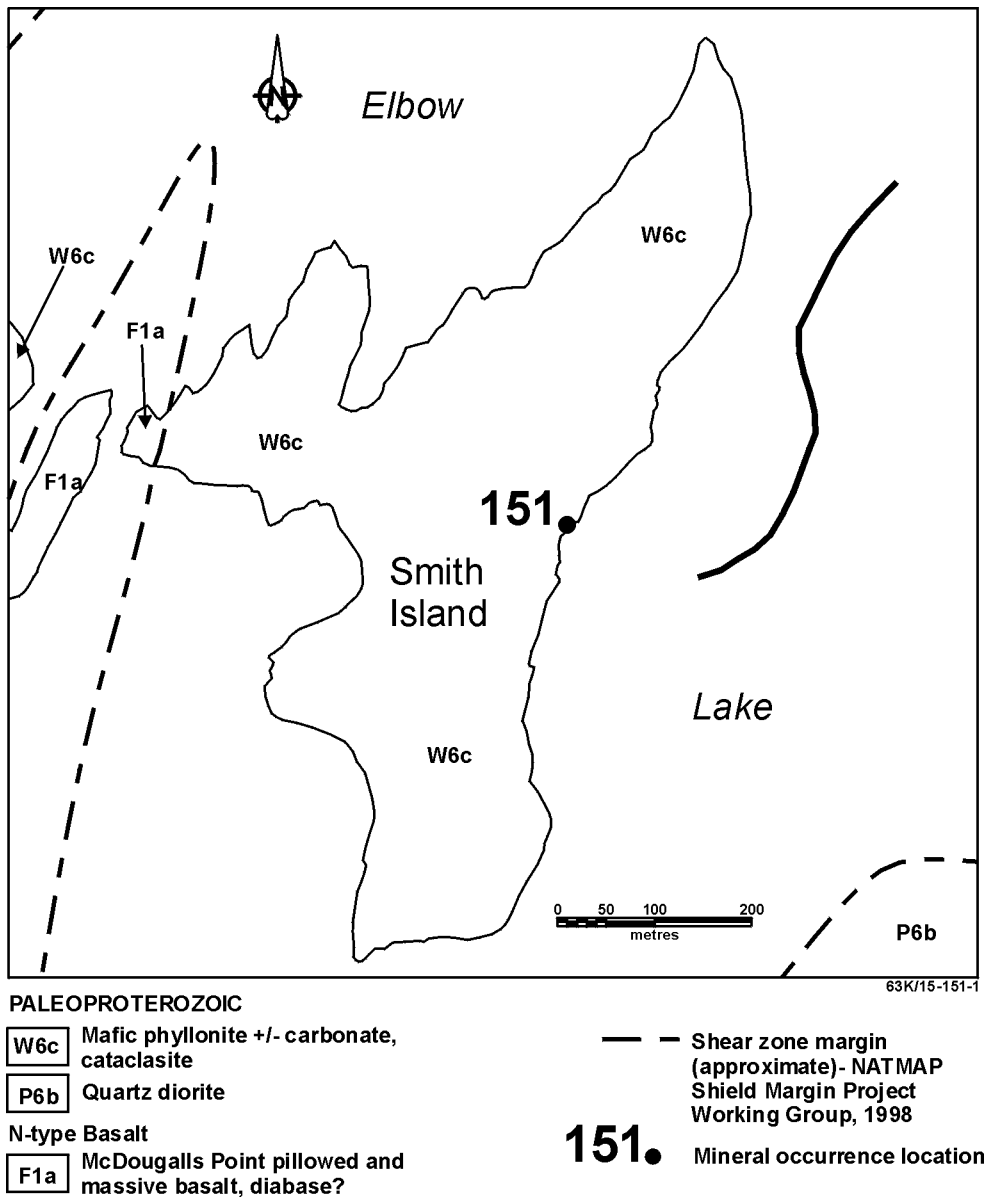


Figure 151-1: Geological setting of occurrence 151.

**LOCATION: 152**

NAME: mineralization intersected by diamond drilling  
UTM: 399550E, 6086835N

AREA: approximately 4.4 km SW of Loonhead Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

**EXPLORATION SUMMARY**

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 152-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). It is bounded to the east and west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Hole E-3 intersected a sequence comprised of amphibole-phyric "andesite" with occasional garnetiferous and chloritic intervals, banded oxide (magnetite) facies iron formation, amphibole-biotite± garnet "gneiss" and quartz diorite (A.F. 90488). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at

surface in the occurrence area. Bands of iron formation have been noted in outcrop. The detail of the lithologic descriptions for the drill hole is not sufficient to allow confident correlation of individual units with those exposed in outcrop.

**MINERALIZATION**

"Near solid" pyrrhotite with minor pyrite were intersected between 26.8-27.0 m (87.9-88.7 ft.) in hole E-3 (A.F. 90488). The sulphide mineralization is hosted by garnetiferous, banded, oxide (magnetite) facies iron formation.

**GEOCHEMICAL DATA**

No assays were reported in the assessment file for this mineralized interval.

**CLASSIFICATION**

Chemical sediment type deposit; oxide (magnetite) facies iron formation.

**REFERENCES**

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

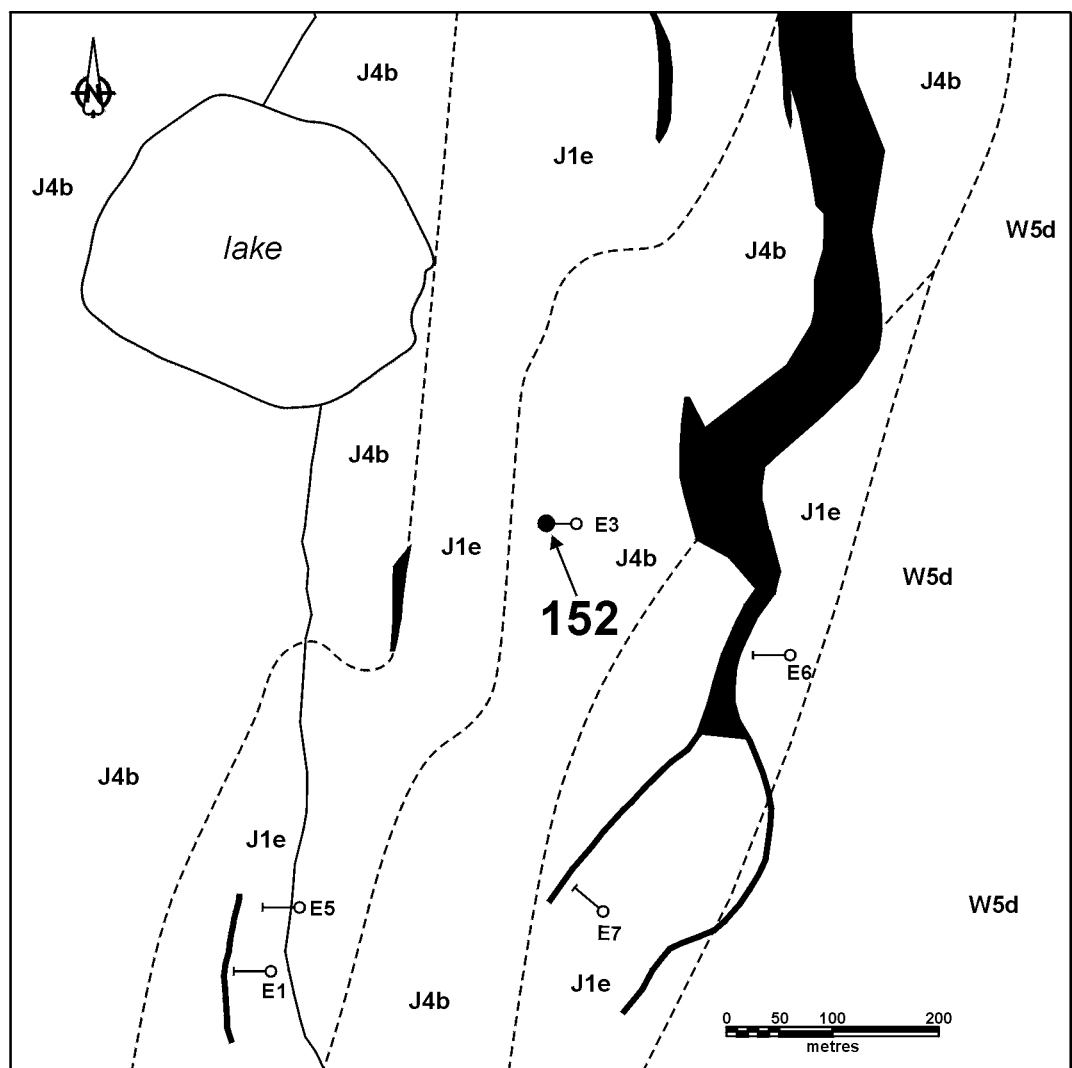
NATMAP Shield Margin Project Working Group

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.



#### PALEOPROTEROZOIC

- W5d** Intermediate hornblende and biotite gneiss
- Juvenile Arc**
- J4b** Felsic gneiss +/- garnet +/- amphibole
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

- Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90488)
- Drillhole (A.F. 90488)

**152.** Mineral occurrence location

Figure 152-1: Geological setting of occurrence 152.

## LOCATION: 153

NAME: mineralization intersected by diamond drilling  
UTM: 399690E, 6086615N

AREA: approximately 4.6 km SW of Loonhead Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 153-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by layered to uniform amphibolite (unit J1e). It is bounded to the west by a felsic metavolcanic

garnet+amphibole gneiss sequence (unit J4b). Rocks of the West Reed-North Star shear zone (unit W5d) occur to the east of the occurrence. Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole E-6 consists of a series of fine-grained amphibole-biotite-garnet±chlorite "gneisses" with minor "quartzite" and "andesite" (A.F. 90488). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail in the lithologic description for the drill core is not sufficient to allow correlation with units exposed in outcrop.

## MINERALIZATION

Mineralized intervals were intersected in hole E-6 as follows (A.F. 90488) (see table below).

Interval	Mineralization
17.7-18.4 m (58.0-60.5 ft.)	"slight to near solid" pyrite, minor pyrrhotite in siliceous, fine grained amphibole-biotite-garnet "gneiss"
38.7-51.9 m (127.0-170.4 ft.)	"near solid to solid" pyrrhotite, minor pyrite, trace sphalerite, chalcopryite, arsenopyrite, minor graphite, in fine-grained amphibole-biotite-garnet "gneiss"
55.0-60.0 m (180.4-196.9 ft.)	"slight" to "solid" pyrrhotite, trace sphalerite, chalcopryite, in siliceous, fine-grained amphibole-biotite-garnet±chlorite "gneiss"
78.8-79.5 m (258.6-260.9 ft.)	"slight" to "near solid" pyrrhotite, trace sphalerite, chalcopryite, in fine-grained amphibole-biotite-garnet±chlorite "gneiss"

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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.

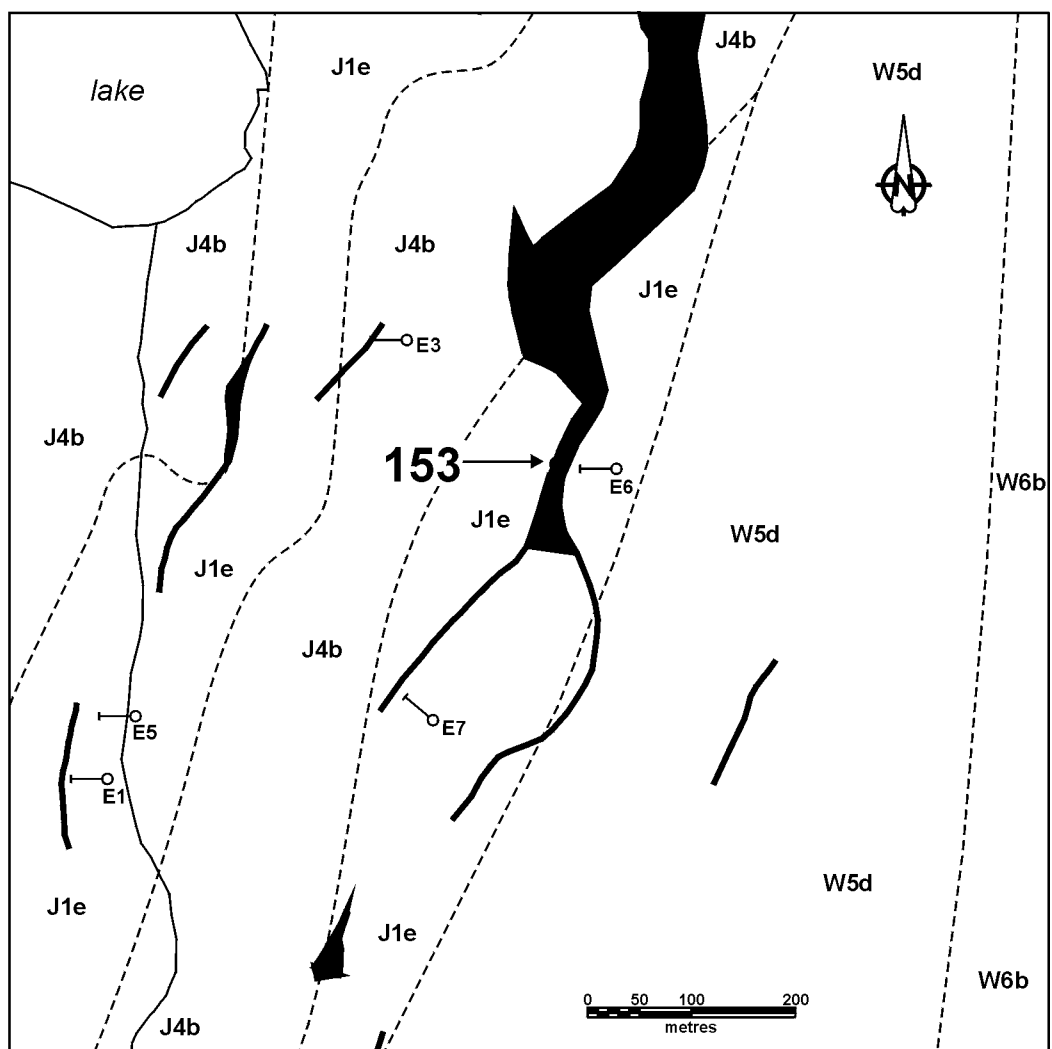
Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.



#### PALEOPROTEROZOIC

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

**W5d** Intermediate hornblende and biotite gneiss

#### Juvenile Arc

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

**J1e** Layered to uniform amphibolite (geochemical affinity unknown)

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

===== EM conductor (A.F. 90488)

○ Drillhole (A.F. 90488)

**153.** Mineral occurrence location

Figure 153-1: Geological setting of occurrence 153.



## LOCATION: 154

NAME: mineralization intersected by diamond drilling  
UTM: 399280E, 6086455N  
AREA: approximately 7.4 km north of North Star Lake  
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 154-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by layered to uniform amphibolite (unit J1e). This assemblage is bounded by two rhyolitic units (unit J4b),

the Lower and Upper rhyolite to the west and east, respectively (Norquay *et al.*, 1994a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Holes E-1 and -5 intersected a sequence of amphibole-biotite-garnet±chlorite±quartz “gneisses” and schistose units, with lesser “quartzite”, quartz diorite and amphibole-phyric “andesite” intervals. (A.F. 90488). The “gneissic” assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail in the lithologic description for the drill core is not sufficient to allow correlation with units exposed in outcrop.

## MINERALIZATION

Mineralized intervals were intersected in holes E-1 and -5 as follows (A.F. 90488) (see table below).

Hole No.	Interval	Mineralization
E-1	52.1-58.9 m (171.0-193.3 ft.)	“well mineralized to near solid” pyrrhotite, slight pyrite, trace sphalerite, chalcopyrite, in schistose, siliceous amphibole-biotite-garnet-chlorite “gneiss”
E-5	75.9-80.9 m (248.9-265.4 ft.)	“slight” to “near solid” pyrite, pyrrhotite, trace sphalerite, chalcopyrite, in chlorite-amphibole-biotite-garnet schist to “gneiss”

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone, suggested by the presence of chloritic rock types.

## REFERENCES

A.F. 90488 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.

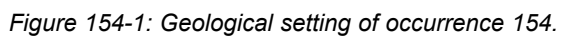
Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.



## LOCATION: 155

NAME: mineralization intersected by diamond drilling  
UTM: 398755E, 6085290N

AREA: approximately 5.9 km SW of Loonhead Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 155-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998).

The area is underlain by intermediate to mafic metavolcanic and metasedimentary rocks (grouped under unit J1e). This assemblage is bounded by two rhyolitic units (unit J4b), the Lower and Upper rhyolite to the west and east, respectively (Norquay *et al.*, 1994a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole EFF-20 consists of siliceous garnetiferous "andesite" with some chloritic and magnetite-bearing intervals, amphibole-biotite-garnet±quartz±chlorite±magnetite±feldspar "gneisses" and schistose equivalents (A.F. 90488).

## MINERALIZATION

An interval containing up to "near solid" pyrrhotite with lesser pyrite and traces of sphalerite and chalcopyrite was intersected between 49.1-50.6 m (161.0-166.0 ft.) in hole EFF 20 (A.F. 90488). Minor graphite is also present in this interval. The host rock for the mineralization is amphibole-biotite-garnet± quartz±chlorite schist.

## GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.

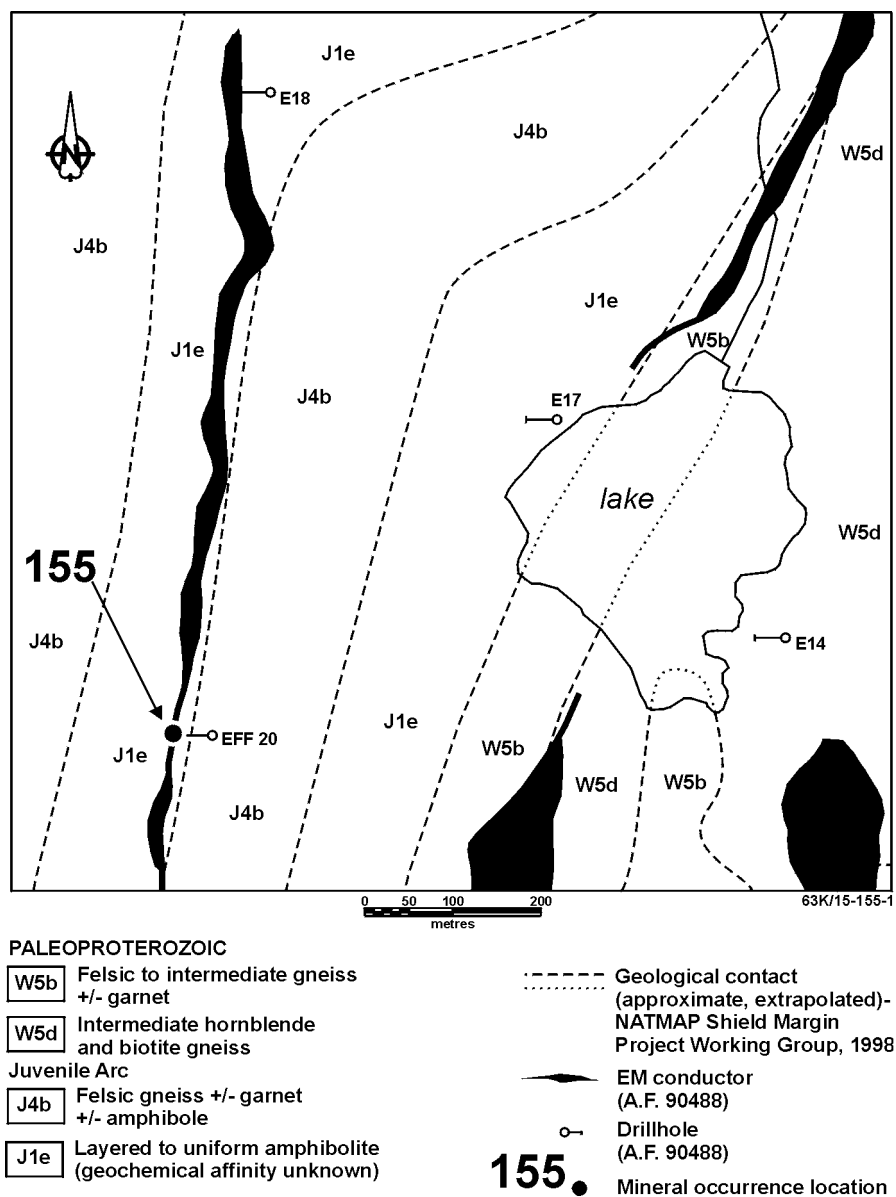


Figure 155-1: Geological setting of occurrence 155.

**LOCATION: 156**

NAME:

UTM: 379585E, 6077880N

AREA: Smith Island, Elbow Lake

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

AIRPHOTO: MB90025-120

**EXPLORATION SUMMARY**

This occurrence was staked in 1933 by Mr James A. Smith (Stockwell, 1935). Several pits were excavated, but no work has been recorded since that time.

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 156-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area (Syme and Whalen, 1994).

The rocks on Smith Island consist of chlorite and carbonate schists of the Elbow Lake shear zone. The shear zone is crosscut by NNE-trending quartz- and/or feldspar-phyric dykes. Several dioritic sills and/or dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner porphyry dykes have been boudinaged. Several areas of carbonate-altered mafic schist host deformed quartz-carbonate veins.

**MINERALIZATION**

A discontinuous quartz vein is exposed in a trench along the west shore of the island. The host schist contains deformed quartz veins and disseminated pyrite.

**GEOCHEMICAL DATA**

None

**CLASSIFICATION**

Vein type deposit; multiple veins or lenses. Associated with schists of the Elbow Lake shear zone.

**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.

Stockwell, C.H.

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

Syme, E.C.

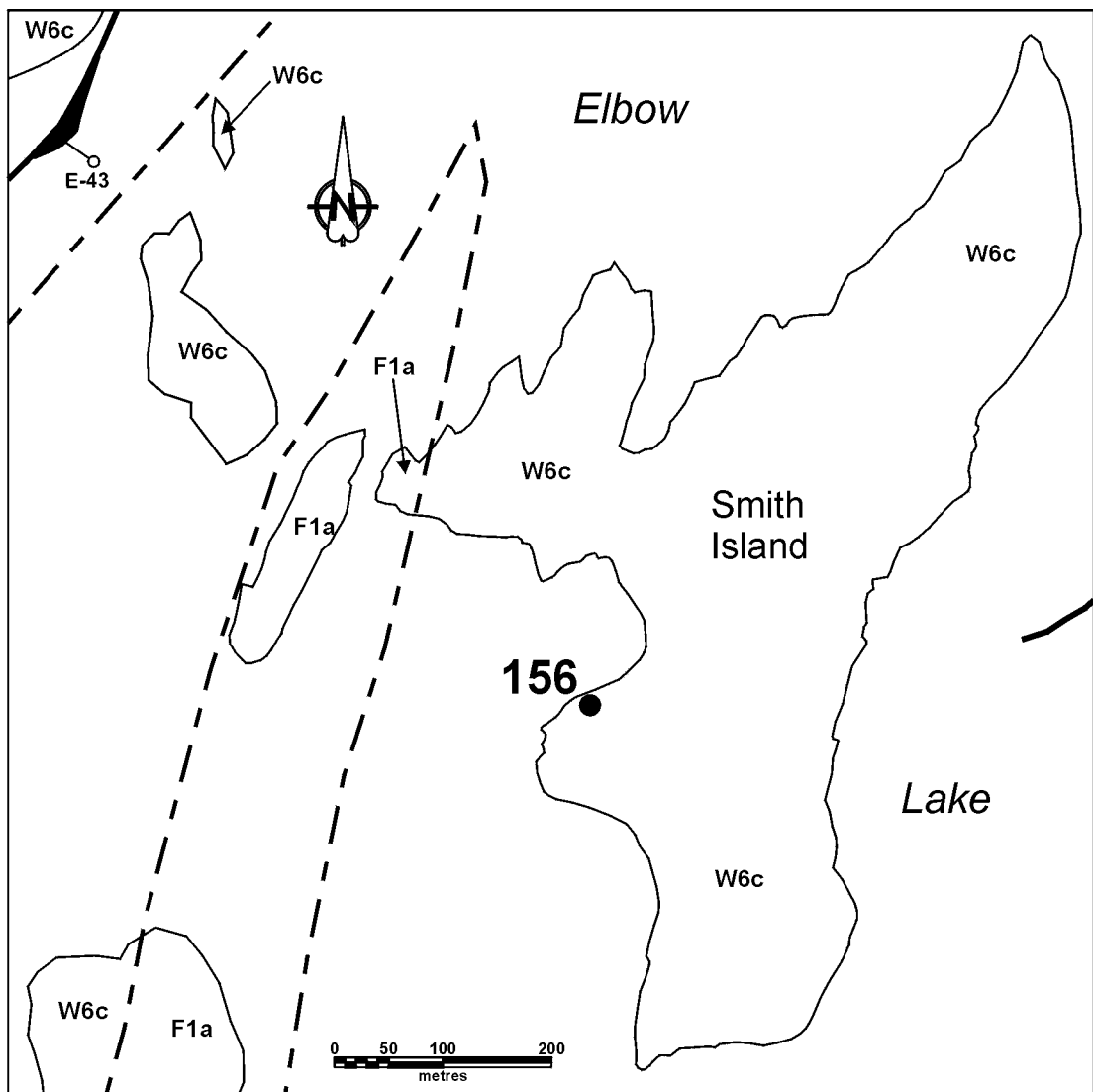
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

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.

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/15-156-1

#### PALEOPROTEROZOIC

**W6c** Mafic phyllonite +/- carbonate, cataclasite

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. 91487, 92654)

○ Drillhole (A.F. 91487, 92654)

**156.** Mineral occurrence location

Figure 156-1: Geological setting of occurrence 156.

## LOCATION: 157

NAME: mineralization intersected by diamond drilling  
UTM: 399575E, 6086225N

AREA: approximately 6.8 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by  
boat along stream north of North Star Lake, then  
traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 157-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate to mafic metavolcanic and

metasedimentary rocks (grouped under unit J1e). This assemblage is bounded to the west by a rhyolitic unit (unit J4b), the Upper rhyolite (Norquay *et al.*, 1994a, b), and to the east by rocks associated with the West Reed-North Star shear zone (unit W5d). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded metamorphosed sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole E-12 consists of fine-grained quartz-amphibole-biotite-garnet±sericite "gneisses" (A.F. 90488).

## MINERALIZATION

Mineralized intervals were intersected in hole E-12 as follows (A.F. 90488) (see table below).

Interval	Mineralization
9.6-10.2 m (31.6-33.4 ft.)	"mineralized to well mineralized" with pyrite, possibly graphitic, in fine-grained quartz-amphibole-biotite-garnet "gneiss"
34.1-36.2 m (111.8-118.7 ft.)	"near solid" pyrite, trace sphalerite, chalcopyrite, in siliceous, fine grained quartz-amphibole-biotite-garnet±sericite "gneiss"
104.0-111.9 m (341.2-367.1 ft.)	to "near solid" pyrrhotite, minor pyrite, trace sphalerite, chalcopyrite, poorly graphitic, in fine-grained quartz-amphibole-biotite-garnet "gneiss"
147.4-147.5 m (483.5-484.0 ft.)	"near solid" pyrrhotite, at contact fine-grained amphibolite "gneiss" with quartz-amphibole-biotite-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.

## REFERENCES

A.F. 90488 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.

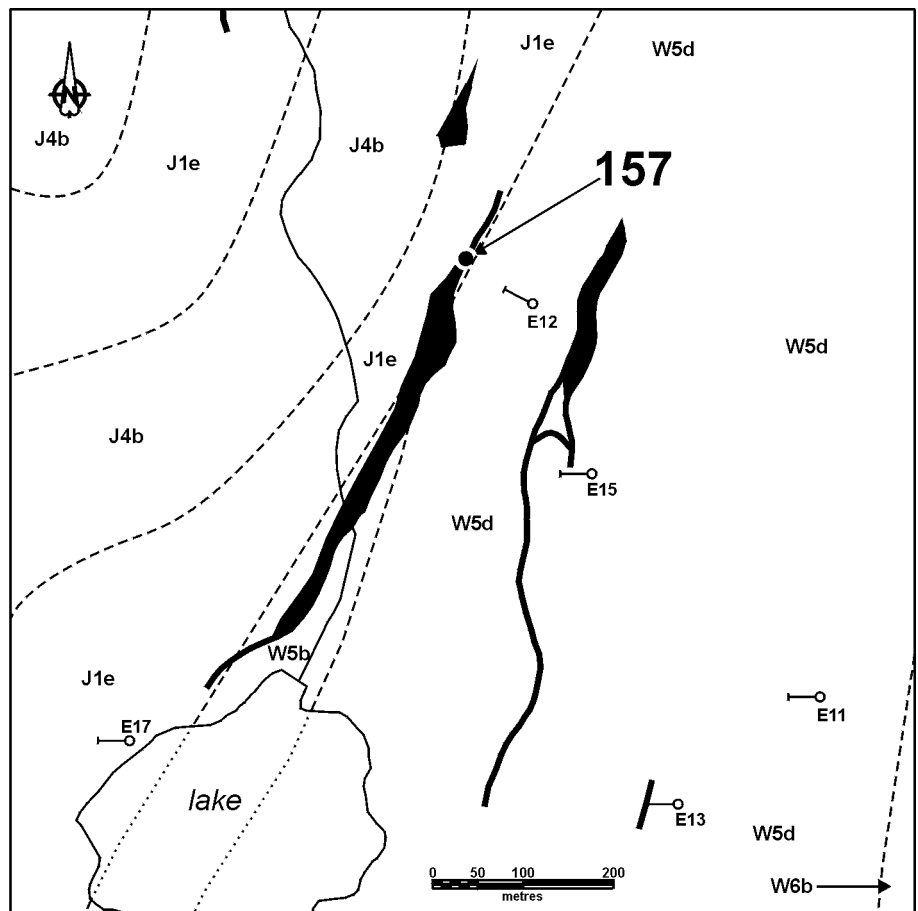
Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.



#### PALEOPROTEROZOIC

- W6b** Mafic tectonite with mafic-felsic intrusive sheets
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss
- Juvenile Arc
- J4b** Felsic gneiss +/- garnet +/- amphibole
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- ===== EM conductor (A.F. 90488)
- Drillhole (A.F. 90488)
- 157.** Mineral occurrence location

Figure 157-1: Geological setting of occurrence 157.



## LOCATION: 158

NAME: mineralization intersected by diamond drilling  
UTM: 399630E, 6085885N

AREA: approximately 6.6 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 158-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by felsic to intermediate gneisses±garnet (unit W5d) associated with the West Reed-North Star (WRNS) shear zone. This assemblage is bounded to the west by a rhyolitic unit (unit J4b), the Upper rhyolite (Norquay *et al.*, 1994a, b), and to the east by a mafic tectonite (unit W6b), also related to the WRNS shear zone. Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded metamorphosed sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Hole E-15 intersected a sequence of quartz-biotite-amphibole-garnet±feldspar "gneisses", "andesite" and garnetiferous mafic dykes (A.F. 90488). Graphite may be a minor constituent in one of the units.

## MINERALIZATION

Two intervals of "near solid" pyrrhotite were intersected in hole E-15 between 80.6-80.8 m (264.5-265.2 ft.) and 98.1-98.4 m (321.8-322.8 ft.) (A.F. 90488). The host rock is quartz-amphibole-biotite-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.

## REFERENCES

A.F. 90488 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.

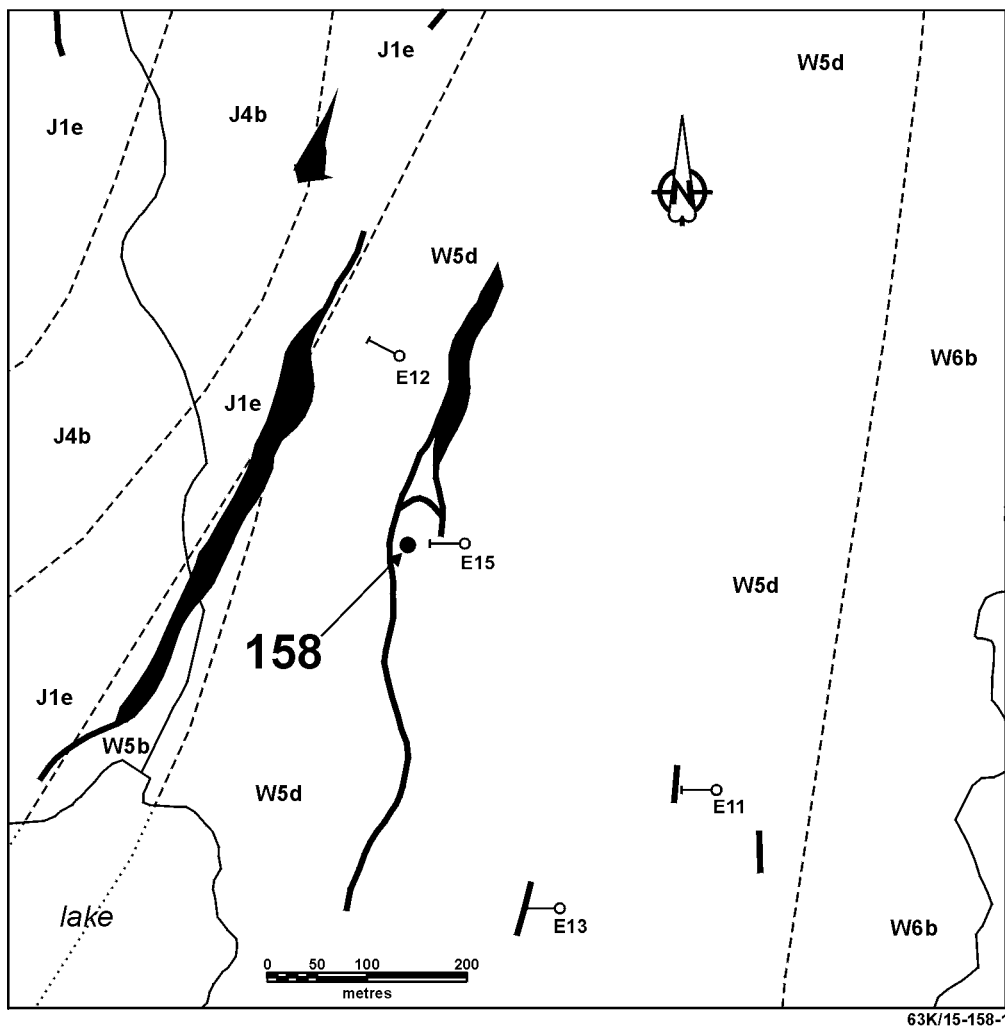
Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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.



#### PALEOPROTEROZOIC

- W6b** Mafic tectonite with mafic-felsic intrusive sheets
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss
- Juvenile Arc**
- J4b** Felsic gneiss +/- garnet +/- amphibole
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

- Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
- EM conductor (A.F. 90488)
- Drillhole (A.F. 90488)
- 158.** Mineral occurrence location

Figure 158-1: Geological setting of occurrence 158.

## LOCATION: 159

NAME: mineralization intersected by diamond drilling  
UTM: 399890E, 6085635N

AREA: approximately 6.4 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 159-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate hornblende and biotite gneiss (unit W5d). Mafic tectonite (unit W6b) containing mafic to felsic intrusive sheets occurs to the east. These rocks are associated with the West Reed-North Star shear zone (unit W5d) (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by amphibolite with abundant epidote±quartz lenses. A quartz-rich amphibolite occurs to the east. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-11 intersected foliated amphibole-plagioclase±biotite±garnet "gneiss" (A.F. 90488), similar to the unit exposed at surface.

## MINERALIZATION

A single "near solid" pyrrhotite layer with minor pyrite was intersected in hole E-11 between 42.4-42.9 m (139.0-140.8 ft.) (A.F. 90488). It is hosted by fine-grained, siliceous amphibole-feldspar-biotite "gneiss".

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

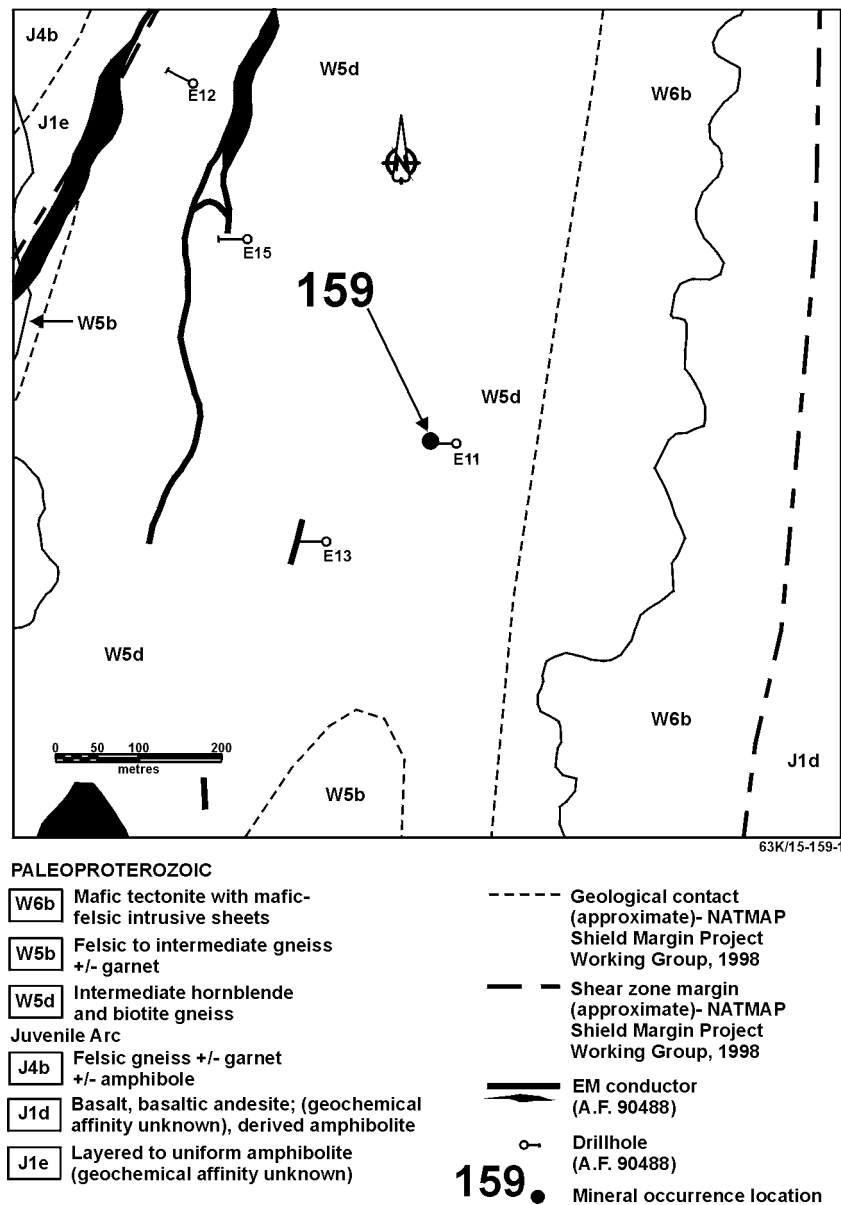


Figure 159-1: Geological setting of occurrence 159.

## LOCATION: 160

NAME: mineralization intersected by diamond drilling  
UTM: 399740E, 6085515N

AREA: approximately 6.3 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 160-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by intermediate hornblende and biotite gneiss (unit W5d). Mafic tectonite (unit W6b) containing mafic to felsic intrusive sheets occurs to the east. These rocks are associated with the West Reed-North Star shear zone (unit W5d) (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by amphibolite with abundant epidote±quartz lenses. A quartz-rich amphibolite occurs to the east. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-13 intersected a sequence of amphibole-plagioclase±sericite±biotite±graphite "gneisses" with massive, unfoliated intervals (A.F. 90488), similar to the rocks exposed in outcrop.

## MINERALIZATION

Mineralized intervals were intersected in hole E-13 as follows (A.F. 90488) (see table below).

Interval	Mineralization
30.2-30.9 m (99.0-101.4 ft.)	"mineralized to well mineralized" pyrite, pyrrhotite, in siliceous amphibole-plagioclase-sericite "gneiss"
40.3-41.2 m (132.2-135.2 ft.)	"well mineralized" pyrite, possibly graphitic, in fine-grained amphibole-plagioclase-biotite-sericite "gneiss"
46.0-46.2 m (151.0-151.6 ft.)	"near solid" pyrite, in fine-grained amphibole-plagioclase-sericite-biotite "gneiss"
47.2-47.7 m (155.0-156.4 ft.)	"well mineralized" pyrite, in amphibole-plagioclase "gneiss"

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

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

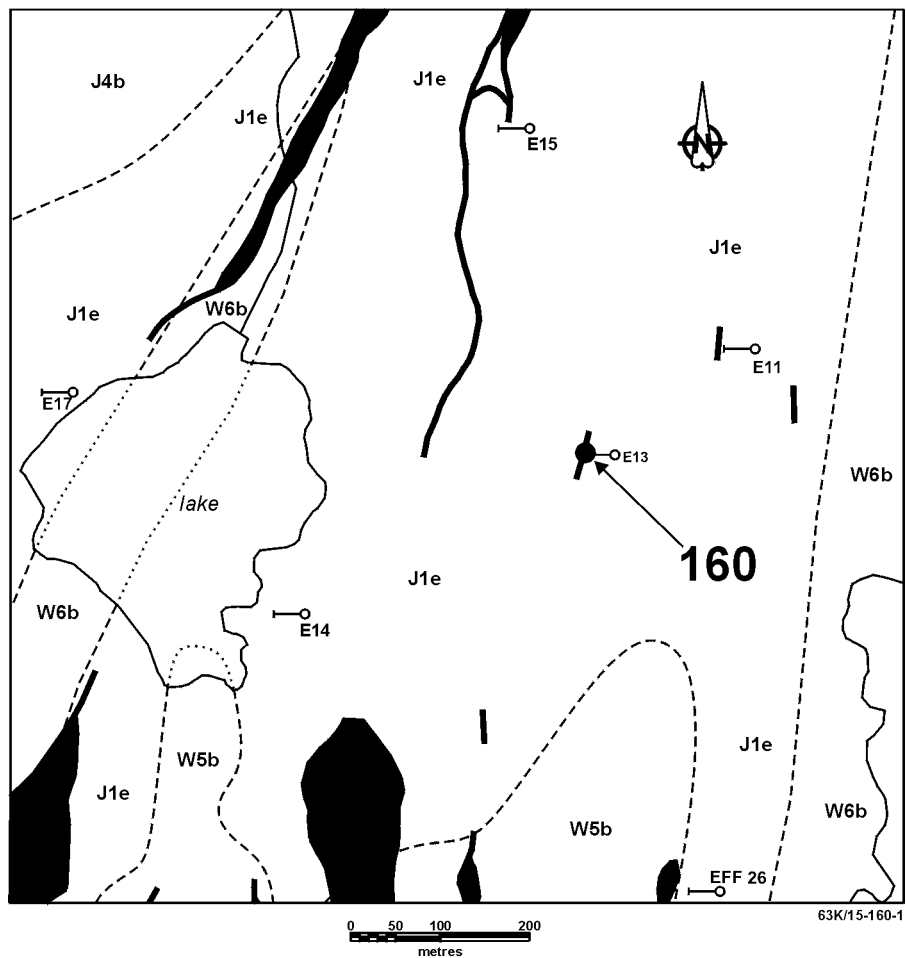
1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

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); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.



#### PALEOPROTEROZOIC

- W6b** Mafic tectonite with mafic-felsic intrusive sheets
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss  
Juvenile Arc
- J4b** Felsic gneiss +/- garnet +/- amphibole
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

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

- ===== EM conductor  
(A.F. 90488)

- Drillhole  
(A.F. 90488)

- 160.** Mineral occurrence location

Figure 160-1: Geological setting of occurrence 160.

**LOCATION: 161**

NAME: mineralization intersected by diamond drilling  
UTM: 399390E, 6085335N  
AREA: approximately 6.1 km N of North Star Lake  
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
AIRPHOTO: MB90024-165

**EXPLORATION SUMMARY**

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 161-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate hornblende and biotite gneiss (unit W5d). These rocks are associated with the West Reed-North Star shear zone (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by feldspar-porphyroblastic amphibolite. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-14 intersected amphibole-plagioclase±quartz ±garnet±biotite "gneisses", parts of which are siliceous (A.F. 90488).

**MINERALIZATION**

Several thin intervals containing "near solid" pyrrhotite and pyrite with trace quantities of sphalerite

were intersected between 47.5-52.5 m (155.9-172.3 ft.) in hole E-14 (A.F. 90488). The total thickness of the sulphide-rich intervals is 1.2 m (4.1 ft.). The host rock is fine-grained, siliceous garnet-amphibole-quartz-biotite "gneiss".

**GEOCHEMICAL DATA**

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

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

- A.F. 90488 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); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

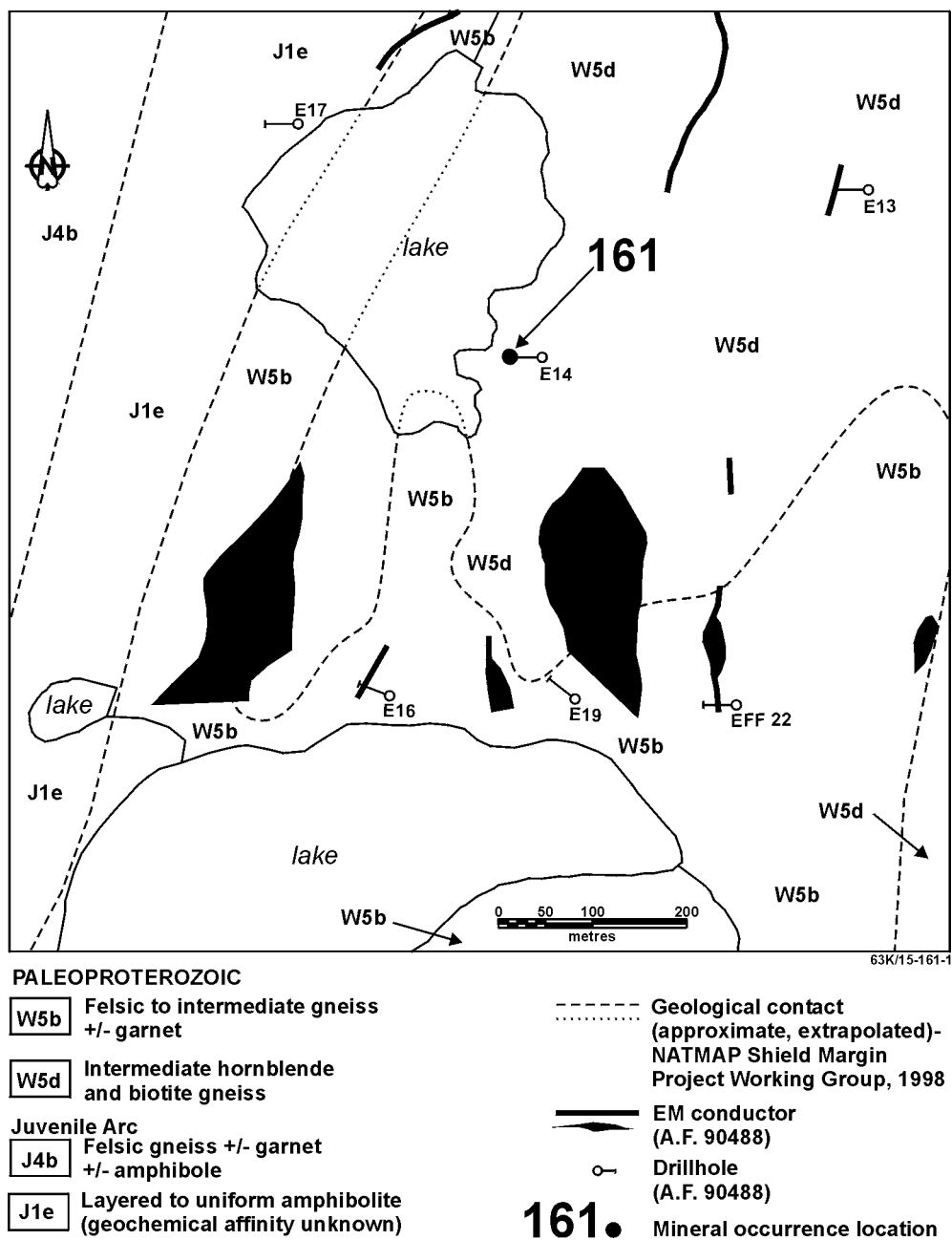


Figure 161-1: Geological setting of occurrence 161.



**LOCATION: 162**

NAME: mineralization intersected by diamond drilling  
UTM: 398600E, 6084685N  
AREA: approximately 5.9 km N of North Star Lake  
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
AIRPHOTO: MB90024-165

**EXPLORATION SUMMARY**

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an air-borne 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. 162-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by an assemblage of intermediate to mafic metavolcanic and metasedimentary rocks. Quartz-rich amphibolite with epidote lenses is a common constituent. This unit is bounded to the west and east by felsic flows (unit J4b) of the Lower and Upper rhyolite, respectively (Norquay *et al.*, 1994a, b).

Hole EFF-23 intersected garnetiferous "andesite" and amphibole-plagioclase-garnet $\pm$ biotite $\pm$ chlorite $\pm$ magnetite schistose "gneisses" (A.F. 90488).

**MINERALIZATION**

An interval that is "mineralized to well mineralized" with pyrrhotite and containing minor quantities of

chalcopyrite and sphalerite was intersected in hole EFF-23 between 45.3-55.5 m (148.6-182.1 ft.) (A.F. 90488). Individual mineralized areas are less than 1 m thick. The host rocks are a mixed sequence of amphibole-garnet-biotite-chlorite schist and biotite-chlorite schist with garnet-amphibole-quartz-chlorite $\pm$ magnetite schist intervals.

**GEOCHEMICAL DATA**

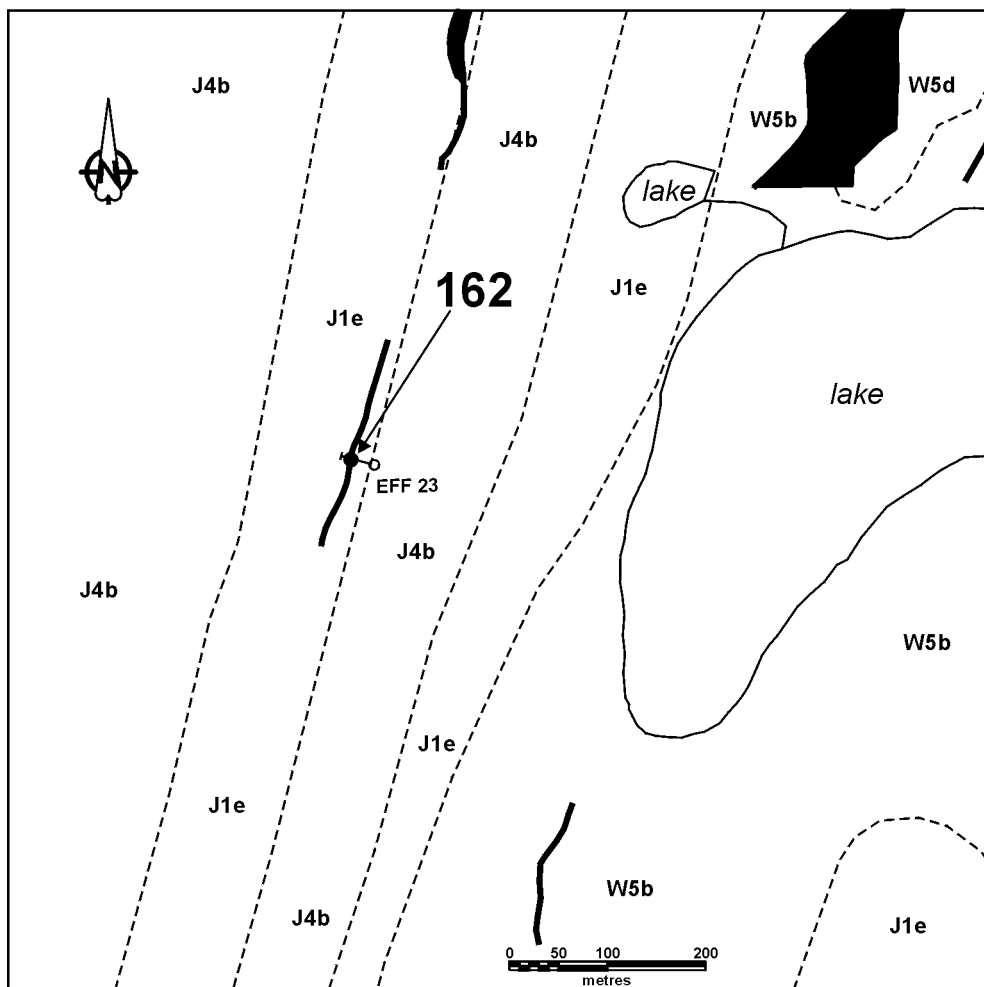
One sample collected between 52.2-52.4 m (171.1-171.9 ft.) returned 0.26% Cu, 0.5% Zn, tr Au and nil Ag (A.F. 90488).

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.

**REFERENCES**

- A.F. 90488 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.



#### PALEOPROTEROZOIC

- W5b** Felsic to intermediate gneiss  
+/- garnet
- W5d** Intermediate hornblende  
and biotite gneiss
- Juvenile Arc**
- J4b** Felsic gneiss +/- garnet  
+/- amphibole
- J1e** Layered to uniform amphibolite  
(geochemical affinity unknown)

- Geological contact  
(approximate)- NATMAP  
Shield Margin Project  
Working Group, 1998
- ===== EM conductor  
(A.F. 90488)
- Drillhole  
(A.F. 90488)
- 162.** Mineral occurrence location

Figure 162-1: Geological setting of occurrence 162.

**LOCATION: 163**

NAME: mineralization intersected by diamond drilling  
 UTM: 399230E, 6084985N

AREA: approximately 5.7 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-165

**EXPLORATION SUMMARY**

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 163-1) and their descriptions

are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to 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 and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The occurrence area is underlain by felsic sandstone that is conglomeratic in part.

The sequence intersected by hole E-16 consists of fine-grained garnet-amphibole-plagioclase±sericite±graphite "gneisses", garnetiferous "andesite" and diorite (A.F. 90488).

**MINERALIZATION**

Mineralized intervals were intersected in hole E-16 as follows (A.F. 90488) (see table below).

Interval	Mineralization
29.9-70.4 m (98.0-231.1 ft.)	mostly "near solid" pyrrhotite, pyrite, minor graphite, minor chalcopyrite, sphalerite, in fine-grained plagioclase-amphibole "gneiss"
91.5-94.7 m (300.1-310.6 ft.)	"well mineralized" pyrrhotite, in slightly chloritic diorite
105.1-114.3 m (344.7-375.0 ft.)	several intervals "near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous, sericitic diorite with graphite laminae
118.7-121.6 m (389.5-399.1 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
125.6-128.8 m (412.0-422.5 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
148.3-148.5 m (486.4-487.2 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
151.5-172.5 m (497.0-565.8 ft.)	"near solid" pyrite, pyrrhotite, with graphitic laminae in fine-grained "quartz gangue" (rhyolite?)
176.4-177.2 m (578.6-581.3 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
183.2-185.2 m (601.0-607.5 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
189.6-190.2 m (622.2-623.9 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
192.1-192.7 m (630.2-632.2 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
192.9-193.1 m (632.9-633.4 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
193.4-195.0 m (634.6-639.6 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
196.0-196.4 m (643.0-644.3 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite ±graphite(?) "gneiss"
198.2-199.0 m (650.3-652.8 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
248.1-248.7 m (813.9-815.9 ft.)	"mineralized" with pyrite, pyrrhotite, in amphibole-plagioclase-garnet "gneiss"
250.4-250.6 m (821.6-822.2 ft.)	"mineralized" with pyrite, pyrrhotite, in amphibole-plagioclase-garnet "gneiss"
266.6-267.1 m (874.6-876.3 ft.)	"near solid" pyrrhotite, minor sphalerite, in fine-grained amphibole-plagioclase-garnet "gneiss"
270.0-277.7 m (885.8-911.1 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphite, minor sphalerite, chalcopyrite, in fine-grained quartz (rhyolite?), amphibolitic intervals

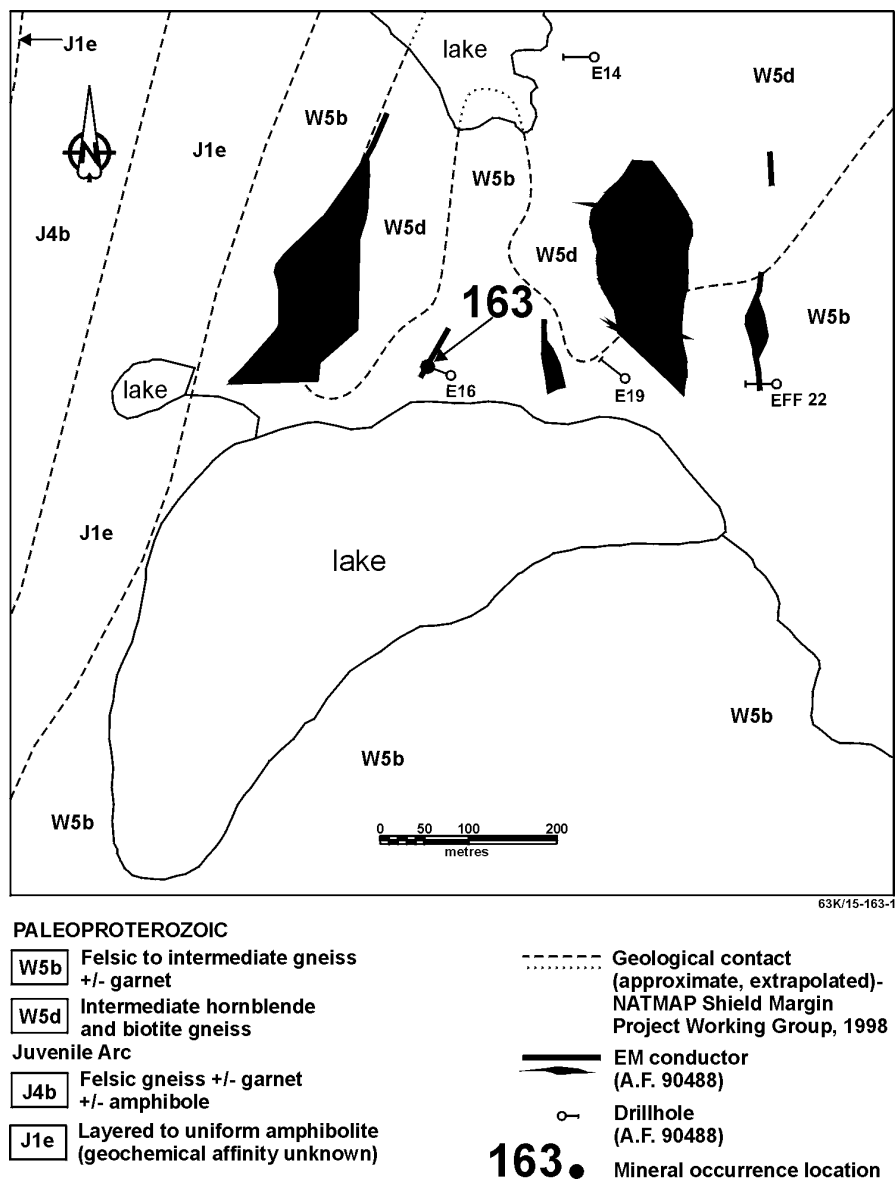


Figure 163-1: Geological setting of occurrence 163.

## GEOCHEMICAL DATA

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

## CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

## REFERENCES

A.F. 90488 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.

**LOCATION: 164**

NAME: mineralization intersected by diamond drilling  
 UTM: 399430E, 6084975N  
 AREA: approximately 5.7 km N of North Star Lake  
 ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse  
 AIRPHOTO: MB90024-165

**EXPLORATION SUMMARY**

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 164-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to 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 and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The occurrence area is underlain by felsic sandstone with conglomeratic intervals. This sequence has been intruded (?) by a fine-grained mafic rock that is garnetiferous in part.

Hole E-19 intersected a sequence of "andesites" with fine-grained amphibole-garnet "gneiss" equivalents, intercalated with quartz-phyric rhyolitic flows and fragmental units (A.F. 90488).

**MINERALIZATION**

Mineralized intervals were intersected in hole E-19 as follows (A.F. 90488) (see table below).

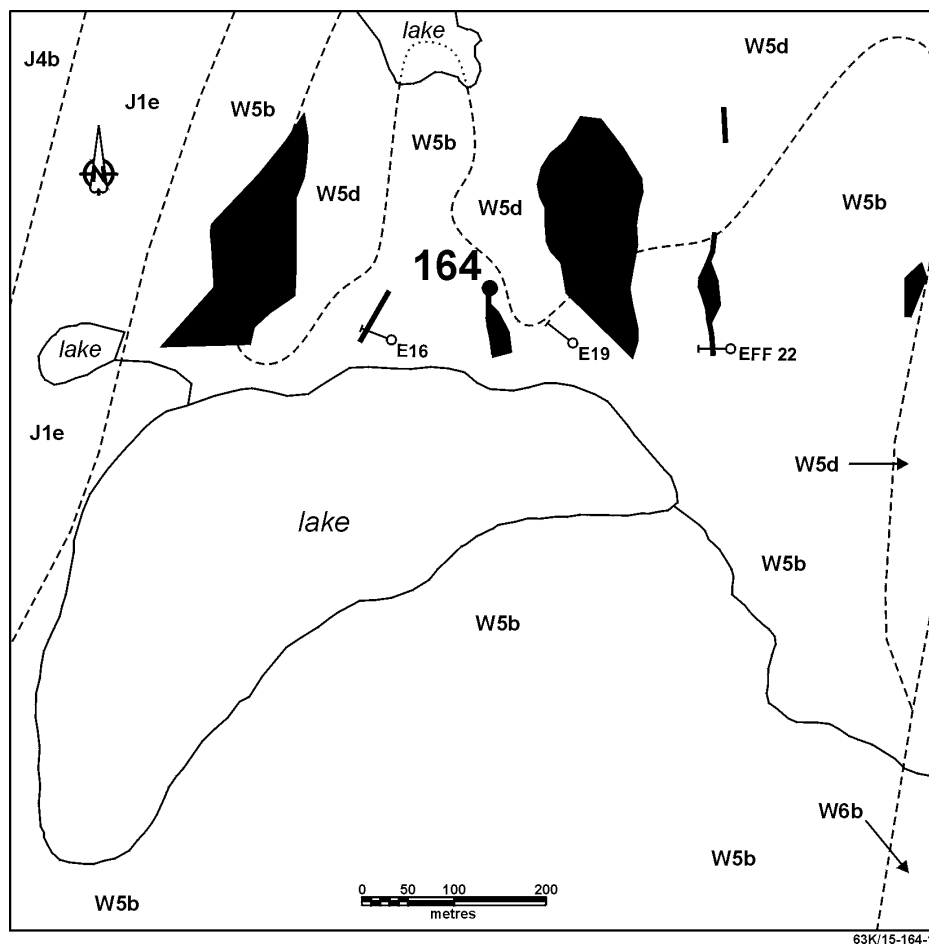
Interval	Mineralization
4.1-5.1 m (13.3-16.8 ft.)	"well mineralized" to "near solid" pyrite, graphitic, slight pyrrhotite, in rhyolite porphyry
6.0-6.7 m (19.6-22.0 ft.)	"well mineralized" to "near solid" pyrite, graphitic, slight pyrrhotite, in rhyolite porphyry
37.2-37.6 m (122.1-123.3 ft.)	"well mineralized" pyrrhotite, graphitic, minor pyrite, in quartz- and fragmental rhyolite
39.5-39.7 m (129.5-130.4 ft.)	"well mineralized" pyrrhotite, graphitic, minor pyrite, in quartz-phyric and fragmental rhyolite
51.7-64.7 m (169.7-212.2 ft.)	"near solid" intervals pyrrhotite, pyrite, graphitic, trace chalcopyrite, sphalerite, in quartz-phyric rhyolite
72.8-73.5 m (238.8-241.3 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, sphalerite, in rhyolite porphyry
74.3-76.8 m (243.7-252.0 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, sphalerite, in rhyolite porphyry
102.9-103.2 m (337.5-338.7 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
117.6-118.2 m (385.7-387.8 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
118.6-119.2 m (389.0-391.1 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
122.5-122.7 m (401.9-402.7 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
127.9-128.1 m (419.5-420.4 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
132.4-134.2 m (434.3-440.3 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite

**GEOCHEMICAL DATA**

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

**CLASSIFICATION**

Chemical-sediment type deposit; sulphide facies iron formation.



#### PALEOPROTEROZOIC

- W6b** Mafic tectonite with mafic-felsic intrusive sheets
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss
- Juvenile Arc**
- J4b** Felsic gneiss +/- garnet +/- amphibole
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

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

— EM conductor  
(A.F. 90488)

○ Drillhole  
(A.F. 90488)

**164.** Mineral occurrence location

Figure 164-1: Geological setting of occurrence 164.

#### REFERENCES

A.F. 90488 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., Baines, 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.

## LOCATION: 165

NAME: mineralization intersected by diamond drilling  
UTM: 399600E, 6084975N

AREA: approximately 5.7 km N of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by  
boat along stream north of North Star Lake, then  
traverse

AIRPHOTO: MB90024-165

## EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). 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. 165-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is

underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to 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 and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The rocks at the occurrence consist of mafic and felsic conglomerate.

The sequence intersected by hole EFF-22 is dominated by quartz-phyric rhyolite, parts of which are fragmental (A.F. 90488). Diorite and amphibole-plagioclase-phyric dykes, and fine-grained quartz-biotite-garnet±amphibole "gneiss" are minor constituents of the assemblage.

## MINERALIZATION

All the sulphide mineralization intersected by hole EFF-22 at this occurrence is closely associated with felsic volcanic units, and occurs over the following intervals (A.F. 90488) (see table below).

Interval	Mineralization
17.3-151.9 m (56.7-498.4 ft.)	many sections "well mineralized" to "near solid" pyrrhotite, pyrite, graphitic, trace chalcopryite, sphalerite, in porphyritic, partly sericitic massive and fragmental rhyolite
151.9-181.2 m (498.4-594.4 ft.)	mostly "near solid" pyrrhotite, pyrite, graphitic, trace chalcopryite, sphalerite, in banded fragmental rhyolite
193.7-211.5 m (635.4-694.0 ft.)	many sections "near solid" pyrrhotite, pyrite, graphitic, trace chalcopryite, sphalerite, in massive and fragmental rhyolite

## GEOCHEMICAL DATA

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

## CLASSIFICATION

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

## REFERENCES

A.F. 90488 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.

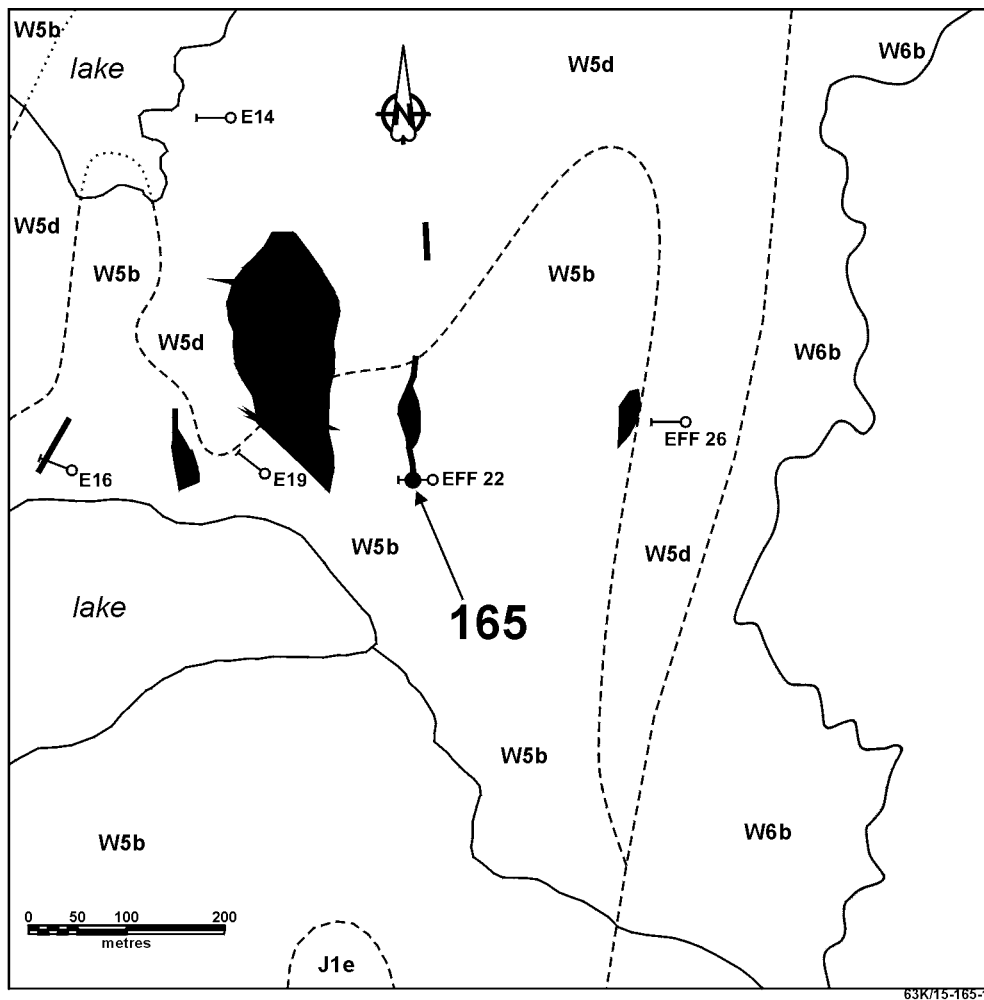
1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

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
- W5b** Felsic to intermediate gneiss +/- garnet
- W5d** Intermediate hornblende and biotite gneiss
- Juvenile Arc**
- J1e** Layered to uniform amphibolite (geochemical affinity unknown)

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

== EM conductor (A.F. 90488)

○ Drillhole (A.F. 90488)

**165•** Mineral occurrence location

Figure 165-1: Geological setting of occurrence 165.



**LOCATION: 166**

NAME: North Claw; mineralization intersected by diamond drilling  
 UTM: 386790E, 6075165N  
 AREA: under west side of east channel, Claw Lake  
 ACCESS: via bush aircraft to Claw Lake  
 AIRPHOTO: MB90026-137

**EXPLORATION SUMMARY**

The following information was obtained from the WWW (2002). Aur Resources Inc. provided the information contained at this site. In 1975, Manitoba Mineral Resources completed HLEM surveys and two drill holes totaling 104.3 m. Airborne EM and magnetic surveys, followed by ground HLEM surveys were performed by Granges Inc. 1983-84. Drilling in the area commenced in 1985 and continued intermittently to 1994 with 37 holes completed totaling 5049.8 m. The North Claw occurrence (Claw Lake North Cu Zone) was discovered in 1985. Magnetic, HLEM and TEM surveys carried out in 1993 delineated numerous untested geophysical features. Aur Resources Inc. completed 8 holes (2095.6 m) in 1996, of which two targeted the North Claw occurrence. A parallel footwall (?) zone was discovered proximal to the North Claw mineralization. The geophysical target for the North Claw occurrence is a 500 m long HLEM/TEM anomaly.

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 166-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is under-

lain by Claw Bay pillowed and massive basalt and diabase (unit F1b). Tonalite (unit P6a) and xenolith-rich granodiorite (unit P7c), most likely related to the Elbow Lake Pluton, occur to the west of the occurrence. A mafic phyllonite (unit W6c), part of the Claw Lake shear zone, underlies Claw Lake to the east.

The rocks associated with the mineralization consist of fragmental rhyolitic units within the basalts. Geochemical investigations indicate that the basalts that underlie the occurrence area were erupted in an ocean floor/back arc environment (Syme, 1992). Geochemical work on the sequence intersected in drill holes indicates that the rocks associated with the occurrence consist of felsic to mafic volcanic rocks with back-arc to fore-arc characteristics (D. Dudek, pers. comm., 2001).

**MINERALIZATION**

The mineralization in hole R-97-3 consists of 1% pyrite, pyrrhotite and chalcopryite in chlorite schist. Hole R-97-5 intersected a chloritic amphibolite containing 12% pyrite and 2% chalcopryite. Hole R-97-6 intersected 2 mineralized intervals. They consist of chloritic amphibolite with 25% pyrrhotite, 15% pyrite and a trace of chalcopryite followed by a chlorite-garnet alteration zone (D. Dudek, pers. comm., 2002). The sulphide zone is open along strike and down dip.

**GEOCHEMICAL DATA**

The following assays were obtained from holes that intersected North Claw occurrence mineralization (WWW, 2002; D. Dudek, pers. comm., 2002) (see table below).

Hole No.	Zone	Core Length	%Cu	%Zn	g Ag/t	g Au/t
RAD-48	North Claw Cu zone	3.36 m	2.72	0.28	5.9	0.31
RAD-41	North Claw Cu zone	7.00 m	1.69	0.08	4.9	0.30
RAD-19	North Claw Cu zone	1.49 m	5.46	1.15	18.5	0.68
R-97-3	North Claw Cu zone (?)	2.00 m	0.17	0.22	5.6	<0.01
R-97-5	#2 zone	1.00 m	0.89	0.10	5.6	0.08
R-97-6	#2 zone	1.00 m	0.23	0.43	4.6	0.40

**CLASSIFICATION**

Stratabound massive sulphide type deposit; volcanic rock associated. Chalcopryite and sulphides occur as stringers within chloritic rock. This may represent an associated alteration zone.

**REFERENCES**

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.

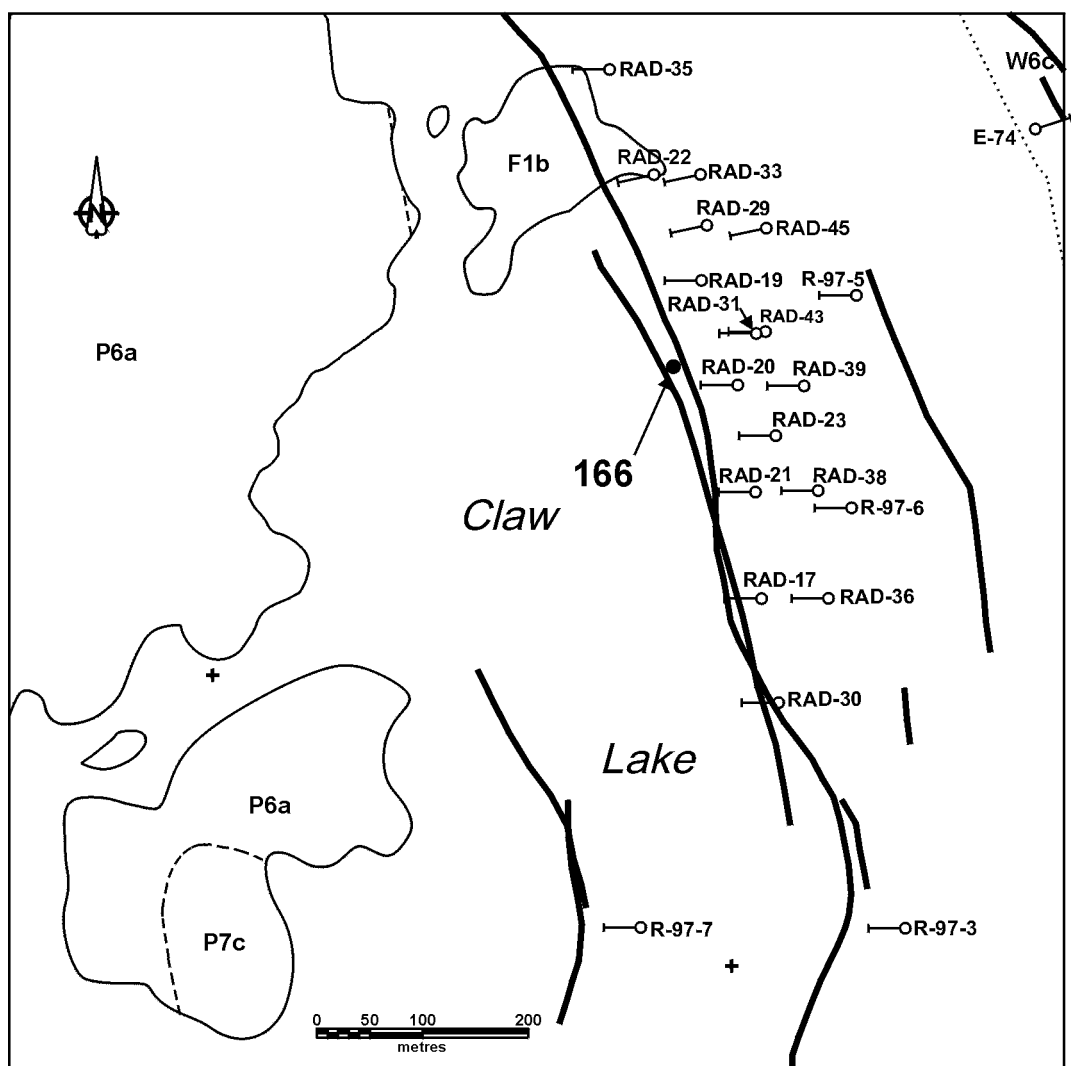
Syme, E.C.

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

WWW

2002: World Wide Web site

<http://www.gov.mb.ca/itm/mrd/busdev/properties/pdf/vms-properties.pdf>



63K/15-166-1

#### PALEOPROTEROZOIC

- W6c** Mafic phyllonite +/- carbonate, cataclasite
- P7c** Granodiorite to tonalite: xenolith-rich phase
- P6a** Tonalite
- N-type Basalts**
- F1b** Claw Bay pillowed and massive basalt, diabase, derived tectonite

- Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
- Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
- EM conductor (D. Dudek, pers. comm., 2002)
- Drillhole (D. Dudek, pers. comm., 2002)
- + Rocks
- 166●** Mineral occurrence location

Figure 166-1: Geological setting of North Claw occurrence.

**LOCATION: 167**

NAME: South Claw; mineralization intersected by diamond drilling  
 UTM: 386650E, 6072950N  
 AREA: under west side of east channel, Claw Lake  
 ACCESS: via bush aircraft to Claw Lake  
 AIRPHOTO: MB90026-136

**EXPLORATION SUMMARY**

The following information was obtained from the WWW (2002). Aur Resources Inc. provided the information contained at this site. In 1975, Manitoba Mineral Resources completed HLEM surveys and two drill holes totaling 104.3 m. Airborne EM and magnetic surveys, followed by ground HLEM surveys were performed by Granges Inc. 1983-84. Drilling in the area commenced in 1985 and continued intermittently to 1994 with 37 holes completed totaling 5049.8 m. The South Claw occurrence (Claw Lake South Cu Zone) was discovered in 1986. Magnetic, HLEM and TEM surveys carried out in 1993 delineated numerous untested geophysical features. Aur Resources Inc. completed 8 holes (2095.6 m) in 1996, of which one targeted the South Claw occurrence. This drilling extended the mineralization at this occurrence down-plunge.

**GEOLOGICAL SETTING**

The geological unit designations indicated on the geological setting map (Fig. 167-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by Claw Bay pillowed and massive basalt and diabase (unit F1b) and xenolith-rich granodiorite (unit P7c). Tonalite (unit P6a), most likely related to the Elbow Lake Pluton, occurs to the NW of the occurrence. Poorly- to well-layered gabbro, gabbro pegmatite, leucogabbro and anorthosite (units F6a and F6c) occur to the south and west of the occurrence. The gabbroic rocks are part of the Claw Lake gabbro complex (Syme, 1992). A mafic phyllonite (unit W6c), part of the Claw Lake shear zone, underlies Claw Lake to the east.

**MINERALIZATION**

The mineralization consists of stringer chalcopyrite in a chlorite matrix. This rock contains 2-4% magnetite crystals (D. Dudek, pers. comm., 2002). The sulphide zone is open along strike and down dip.

**GEOCHEMICAL DATA**

The following assays were obtained from holes that intersected North Claw occurrence mineralization (WWW, 2002) (see table below).

Hole No.	Zone	Core Length	%Cu	%Zn	g Ag/t	g Au/t
RAD-34	South Claw Cu zone	3.7 m	1.46	0.19	5.4	0.90
RAD-40	South Claw Cu zone	0.9 m	3.70	0.14	4.8	0.12
R-97-4	South Claw Cu zone	4.7 m	1.49	0.06	7.8	0.06

**CLASSIFICATION**

Stratabound massive sulphide type deposit; volcanic rock associated. Chalcopyrite occurs as stringers within chloritic rock. This may represent an associated alteration zone.

**REFERENCES**

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.

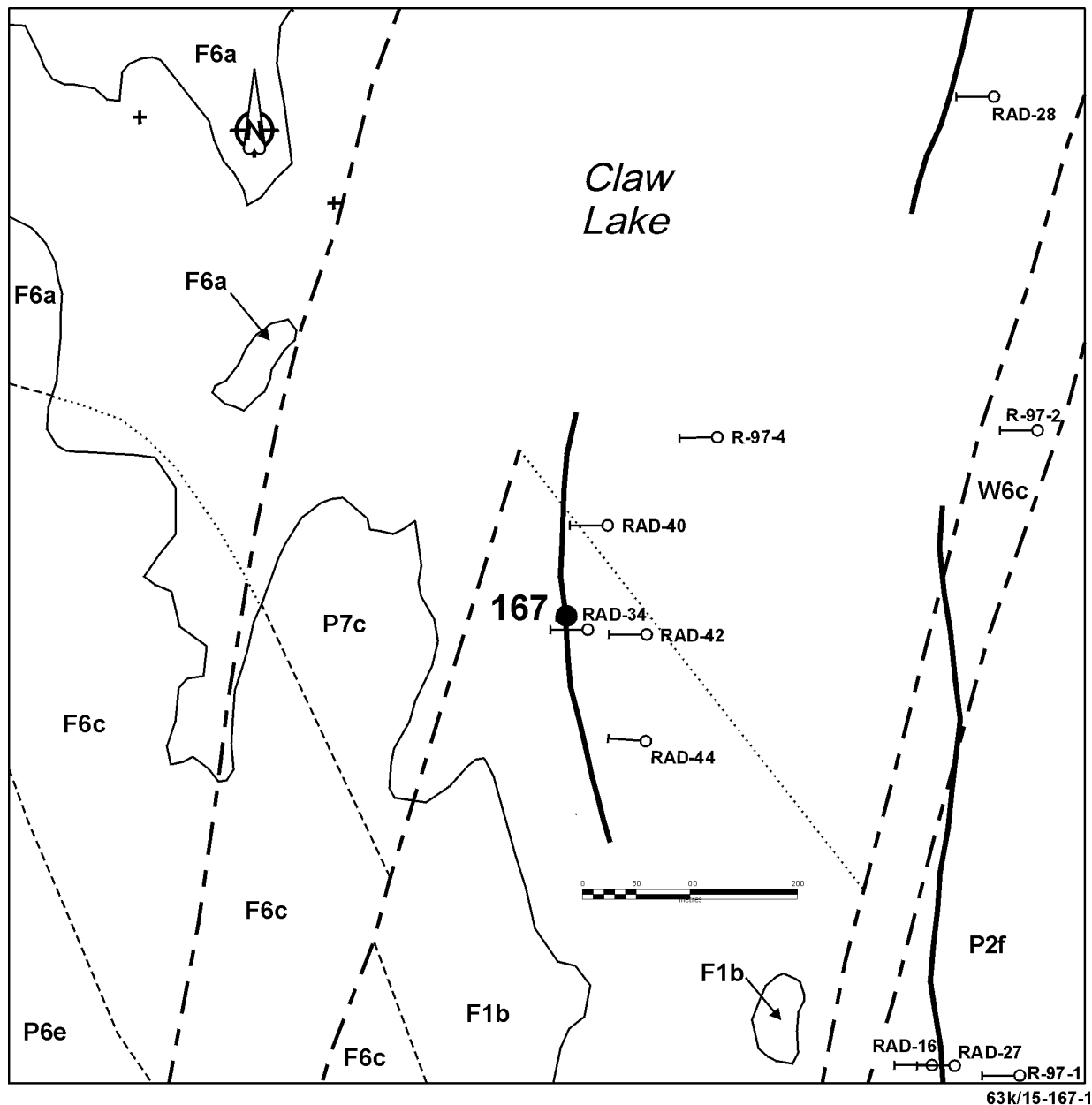
Syme, E.C.

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

WWW

2002: World Wide Web site

<http://www.gov.mb.ca/itm/mrd/busdev/properties/pdf/vms-properties.pdf>



#### PALEOPROTEROZOIC

- |            |  |
|------------|--|
| <b>W6c</b> | Mafic phyllonite ± carbonate, cataclasite                        |
| <b>P7c</b> | Xenolith-rich granodiorite                                       |
| <b>P6e</b> | Tonalite: xenolith-rich phase                                    |
| <b>P2f</b> | Diabase, diabase dyke complex                                    |
| <b>F6a</b> | Gabbro, gabbro pegmatite, leucogabbro, wispy-layered gabbro      |
| <b>F6c</b> | Layered gabbro, leucogabbro, anorthosite                         |
| <b>F1b</b> | Claw Bay pillowed and massive basalt, diabase, derived tectonite |

- |  |   |
|--|---|
| <p>-----</p> <p>---</p> <p>—</p> <p>○—</p> <p>+</p> <p><b>167</b>●</p> | <p>Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998</p> <p>Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998</p> <p>EM conductor (D. Dudek, pers. comm., 2002)</p> <p>Drillhole (D. Dudek, pers. comm., 2002)</p> <p>Rocks</p> <p>Mineral occurrence location</p> |
|--|---|

Figure 167-1: Geological setting of South Claw occurrence.