



LEGEND

PRECAMBRIAN

Late Proterozoic

Diabase dyke - Mackenzie swarm; magnetic linear (possible diabase dyke)

Early Proterozoic

Younger Plutonic Rocks

- Zh Hornblende-bearing monzogranite
- Z Hornblende syenite
- G Granite; Gp - megacrystic granite; Gr - seriate-porphyrific granite; BLGr - seriate-porphyrific granite; BLGp - megacrystic granite (BL - Baldock granite)
- G Granodiorite; Gl - leucocratic granodiorite; IG - granodiorite, tonalite, granite (IGv-muscovite-bearing granodiorite-granite (IG and IGv - Livingston granodiorite)
- BTD Diorite, quartz diorite - Black Trout diorite
- B Gabbro

Plutonic Rocks of Uncertain Age

- G Granite
- G Granodiorite, granite; Gn - gneissic granodiorite
- T Tonalite, quartz diorite, granodiorite; Tn - gneissic tonalite; RGT - Ridge tonalite
- D Quartz diorite, diorite, amphibolite; Dx - pyroxene diorite
- Ultramafic rocks (exposed; submerged or encountered in diamond drill holes)
- B Gabbro

LYNN LAKE DOMAIN

Metamorphic Rocks of Uncertain Age

- C Polymictic conglomerate, minor greywacke

Older Plutonic Rocks

- PT Tonalite - Poole Lake intrusive suite 1878 ± 3 Ma

Wasekwan Group (medium to high metamorphic grade)

- WWn Paragneiss, metagreywacke, amphibolite
- WA Amphibolite (derived from mafic volcanic rocks)
- WVr Aphyritic and porphyritic basalt, related volcaniclastic rocks

LEAF RAPIDS DOMAIN

Sickle Group

- SC Polymictic metaconglomerate, metasandstone

Older Plutonic Rocks

- B Gabbro

Unnamed Metasedimentary and Metavolcanic Rocks

- W Greywacke, calc-silicate rock, iron formation (mainly sulphide facies)(dotted lines)
- C Polymictic conglomerate and interbedded sandstone
- V Aphyric pillow basalt

Ruttan Group (low to high metamorphic grade)

- RV Redeposited pyroclastic rocks (including debris flows); RVf - volcaniclastic rocks (interbedded conglomerate, sandstone and siltstone); RVs schist derived from RVf
- RV Rhyolite (including pyroclastic rocks)
- RA Mafic volcaniclastic rock, flows; RA - amphibolite derived from RVf, minor quartz diorite
- RVr Basalt (aphyritic and porphyritic)
- RW Volcaniclastic greywacke, conglomerate and siltstone
- RVH Basalt (with pyroxene phenocrysts altered to hornblende)

KISSEYNEW DOMAIN

Sickle Metamorphic Suite (migmatite)

- SMS Quartzofeldspathic gneiss derived from sandstone (undivided) SMSb- feldspar-rich biotite gneiss
- SMSH Hornblende-bearing quartzofeldspathic gneiss ± diopside

Metamorphic Rocks of Uncertain Age

- Nd Cordierite-sillimanite-anthophyllite gneiss
- Wq Quartzofeldspathic biotite paragneiss
- A Amphibolite, calc-silicate rock, hornblende-biotite gneiss

Burntwood River Metamorphic Suite

- BW Greywacke-mudstone-derived gneiss, migmatite

SOUTHERN INDIAN DOMAIN

Metamorphic Rocks of Uncertain Age

- N Quartzofeldspathic gneiss ± hornblende, may include metasandstone; CWN - quartzofeldspathic gneiss, migmatite (derived from sandstone), amphibolite - Campbell-Waskaiowaka gneisses
- Sn Quartzofeldspathic gneiss, migmatite derived from sandstone
- A Amphibolite
- Kc Calc-silicate rock
- W Quartz-biotite gneiss (greywacke-derived), migmatite, amphibolite

Symbols

Contact (approximate)

Fault

Domain boundary

Syncline (overtuned)

M64B01-001 Mineral occurrence

Flooded area

Powerline

Gravel road

Paved road

Winter road

Trail

STRATIGRAPHIC NOTE

The lithologies within the major stratigraphic divisions are not in stratigraphic order.

Synoptic geology by D.A. Baldwin, M.T. Corkery, H.P. Gilbert, P.G. Lenton, W.D. McRitchie, D.C.P. Schledewitz and H.V. Zwanzig

Deposits and important mineral occurrences compiled by D.A. Baldwin and K. Ferreira

Compilation by J.S.D. Parker

Digital compilation by P.G. Lenton

This compilation is based on Manitoba Energy and Mines, 1986; Bedrock Geology Compilation Map Series, 1:250 000, NTS 64B - Uhlman Lake.

Scale 1:250 000

10 0 10 20 Kilometres

5 0 5 10 15 Miles

UHLMAN LAKE

NTS Area 64B

NTS: 64B01

MDS_No.: M64B01-001

LOCATION: 1

NAME: Harding Lake

EASTING: 535107

NORTHING: 6230118

AREA: NTS 64B/1; Harding Lake, north shore.

AIR PHOTO: MB89026-145

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1.

GEOLOGICAL SETTING

The area is underlain by a well exposed, high ridge of Sickle Metamorphic Suite psammitic and pelitic, hornblende- and magnetite-bearing greywacke and psammitic magnetite-bearing feldspathic greywacke (Corkery and Lenton, 1990; Lenton and Corkery, 1981; McRitchie, 1976). The greywacke is crosscut by 1 to 3 m brecciated pegmatite dykes; feldspar crystals in the pegmatites are intensely sericitized (P. Lenton, field notes).

MINERALIZATION

A pegmatite dyke contains "narrow seams of chalcopyrite and bornite accompanied by moderate malachite staining" (Lenton and Corkery, 1981).

GEOCHEMISTRY

None.

CLASSIFICATION

Pegmatite type deposit.

REFERENCES

Assessment Files 91627, 91634, 91658, 91660; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Lenton, P.G. and Corkery, M.T. 1981: The Lower Churchill River Project (Interim report); Manitoba Energy and Mines, Open File Report OF81-3, 23p.
McRitchie, W.D. 1976: Paskwachi-Waskaiowaka regional compilation; in Manitoba Mines, Resources and Environmental Management, Mineral Resources Division, Report of Field Activities, 1976, p. 13-23.

NTS: 64B01

MDS_No.: M64B01-002

LOCATION: 2

NAME: Mineralization intersected by diamond drilling)

EASTING: 535172

NORTHING: 6206614

AREA: NTS 64B/1; 2 km southwest of Kapuscocopak Lake.

AIR PHOTO: MB91024-120

ACCESS: Helicopter.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Hudson Bay Exploration and Development Co. Ltd. conducted an HLEM survey and drilled DDH Tel-10 (52.4 m) on the Tel claims in 1966 (A.F. 91863, 90772). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) that covered NTS 64B/1.

GEOLOGICAL SETTING

The area is underlain by layered hornblende-diopside amphibolite with minor local greywacke beds. Coarse grained to pegmatitic anatectic granodiorite with numerous inclusions of amphibolite and Burntwood River Metamorphic Suite greywacke-derived gneiss occur to the west. To the north and east, Burntwood River Metamorphic Suite garnet-biotite-graphite-bearing metatectic greywacke-derived gneiss is interlayered with psammitic and pelitic greywacke (Corkery and Lenton, 1990). DDH Tel-10 intersected biotite schist with a quartzofeldspathic matrix and narrow sections with minor chlorite or amphibole, biotite gneiss and pegmatite (A.F. 90772).

MINERALIZATION

DDH Tel-10 intersected three mineralized sections of biotite schist:

- (1) 18 cm with 4% graphite and 1% pyrite;
- (2) 37 cm with 35% graphite and 5% pyrite; and
- (3) 2.2 m with 10 to 50% graphite and 1 to 5% pyrite (A.F. 90772).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Although moderate to near solid graphite with only minor pyrite is recorded in the drill logs for DDH Tel-10, Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 90772, 91627, 91634, 91658, 91660, 91863; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B01

MDS_No.: M64B01-003

LOCATION: 3

NAME: (Mineralization intersected by diamond drilling)

EASTING: 538584

NORTHING: 6207180

AREA: NTS 64B/1; 2 km southeast of Kapuscocopak Lake.

AIR PHOTO: MB91024-90

ACCESS: Helicopter.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634), and drilled two x-ray holes, DDH 22566 (abandoned at 12.5 m) and 22567 (34.8 m), on claim Pup 29 in 1962 (A.F. 90940). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1.

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite greywacke-derived gneiss. Coarse grained to pegmatitic anatectic granodiorite with numerous inclusions of amphibolite and layered hornblende-diopside amphibolite with minor local greywacke beds occur to the west (Corkery and Lenton, 1990). DDH 22567 intersected unspecified sedimentary rocks (A.F. 90940).

MINERALIZATION

Core from DDH 22567 contained "sulphide streaks" (A.F. 90940).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 90940, 91627, 91634, 91658, 91660; Manitoba Energy and Mines, Mines Branch
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.

NTS: 64B01

MDS_No.: M64B01-004

LOCATION: 4

NAME: (Mineralization intersected by diamond drilling)

EASTING: 559565

NORTHING: 6215444

AREA: NTS 64B/1; Eluke Lake.

AIR PHOTO: MB89015-68

ACCESS: Winter road.

EXPLORATION SUMMARY

International Nickel Co. of Canada, Limited drilled six holes totalling 885.5 m on the Pup claims in 1962 (A.F. 90940, 92237). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1.

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite garnet-biotite-graphite-bearing metatectic greywacke-derived gneiss interlayered with psammitic and pelitic greywacke. Coarse grained to pegmatitic anatectic granodiorite with numerous inclusions of amphibolite occurs to the north (Corkery and Lenton, 1990). DDH 20785 intersected biotite schist, skarn, iron formation and biotite gneiss (A.F. 90940). DDH 20786 through 20790 intersected biotite \pm graphite schist, biotite gneiss, amphibole gneiss and pegmatites (A.F. 92237).

MINERALIZATION

Biotite \pm graphite schist from DDH 20785 through 20790 contained "sulphide streaks" (A.F. 90940, 92237).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 90940, 91658, 91660, 92237; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.

NTS: 64B01

MDS_No.: M64B01-005

LOCATION: 5

NAME: (Mineralization intersected by diamond drilling)

EASTING: 538146

NORTHING: 6221751

AREA: NTS 64B/1; 5.5 km south of Harding Lake.

AIR PHOTO: MB91024-41

ACCESS: Float plane or winter roads.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1. Selco Inc. carried out an airborne INPUT and magnetic survey in 1981 over the area of Permit 47 (A.F. 93334). File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., mapped shoreline exposures, carried out a VLF-EM survey over selected INPUT anomalies (A.F. 93333), conducted a ground EM and magnetic survey, and drilled DDH LE-1B-1 (66.14 m) and LE-1B-2 (78.33 m) to test HLEM conductors (A.F. 93335) in 1982-83.

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite metatectic greywacke-derived gneiss and interlayered psammitic and pelitic metagreywacke. The greywacke gneisses are separated from Sickle Metamorphic Suite metagreywacke and meta-arkose to the north by amphibolite of unknown affinity (Corkery and Lenton, 1990). DDH LE-1B-1 intersected partly graphitic biotite paragneiss, amphibolite and diopside paragneiss, and diopside-biotite \pm garnet paragneiss. DDH LE-1B-2 intersected graphitic garnet-biotite-, graphitic biotite-, siliceous biotite-, and biotite-hornblende paragneisses, and minor quartz monzonite (A.F. 93335).

MINERALIZATION

A 7.67 m section of graphitic biotite \pm garnet paragneiss from DDH LE-1B-1 locally contained minor pyrite and traces of chalcopyrite and included two solid graphite sections. DDH LE-1B-2 intersected a 0.94 m section of garnet-biotite paragneiss with disseminated graphite, 4 to 6% pyrite and traces of sphalerite, a 9.68 m section of graphitic biotite paragneiss with multiple solid graphite layers up to 22 cm thick, and other sections of graphitic biotite paragneiss with 2 to 4% pyrrhotite and pyrite. Less than 5% pyrite, pyrrhotite, magnetite and graphite were disseminated throughout other lithologies in core from both drill holes (A.F. 93335).

GEOCHEMISTRY

Drill core samples from DDH LE-1B-1 contained 12-196 ppm Cu, 36-150 ppm Zn, 0.1-0.3 ppm Ag and <5 ppb Au. Samples from DDH LE-1B-2 contained 4 to 136 ppm Cu, 15 to 1270 ppm Zn, 0.1 to 0.7 ppm Ag, and <5 to 10 ppb Au (A.F. 93335).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Although solid graphite with only minor pyrite is recorded in the drill logs for DDH LE-1B-1 and LE-1B-2, Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91627, 91634, 91658, 91660, 93333, 93334, 93335; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B01

MDS_No.: M64B01-006

LOCATION: 6

NAME: (Mineralization intersected by diamond drilling)

EASTING: 542582

NORTHING: 6223105

AREA: NTS 64B/1; 3 km south of Harding Lake.

AIR PHOTO: MB89026-62

ACCESS: Float plane or winter roads.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1. Selco Inc. carried out an airborne INPUT and magnetic survey in 1981 over the area of Permit 47 (A.F. 93334). File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., mapped shoreline exposures, carried out a VLF-EM survey over selected INPUT anomalies (A.F. 93333), conducted a ground EM and magnetic survey, and drilled DDH LE-2B-1 (62.79 m) and LE-2B-2 (68.88 m) to test HLEM conductors (A.F. 93335) in 1982-83.

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite sillimanite-bearing meta-arkose and pebbly meta-arkose. Amphibolite of unknown affinity and Burntwood River Metamorphic Suite greywacke gneiss occur to the south (Corkery and Lenton, 1990). DDH LE-2B-1 intersected garnet-biotite-hornblende-, biotite-hornblende-, siliceous biotite-, and garnetiferous biotite paragneisses. DDH LE-2B-2 intersected garnet-biotite-, diopside-hornblende-, and diopside-biotite paragneisses (A.F. 93335).

MINERALIZATION

In drill core from DDH LE-2B-1, a 0.45 m section with 50% graphite and 5% pyrite occurred at a transition from garnet-biotite paragneiss to amphibole paragneiss. A 6.75 m section of altered diopside-biotite paragneiss from DDH LE-2B-2 included 2.14 m of solid graphite with 10% pyrite and pyrrhotite. The altered diopside-biotite paragneiss contained K-feldspar and a light green, anhedral, unidentified mineral (10%). Most of the remaining lithologies in core from both drill holes contained <5% pyrrhotite, pyrite, and in places, graphite, magnetite and traces of chalcopyrite (A.F. 93335).

GEOCHEMISTRY

Drill core samples from DDH LE-2B-1 contained 23 to 124 ppm Cu, 30 to 524 ppm Zn, 0.1 to 0.4 ppm Ag and <5 to 5 ppb Au. Samples from DDH LE-2B-2 contained 35 to 570 ppm Cu, 41 to 641 ppm Zn, 0.1 to 0.8 ppm Ag and <5 to 5 ppb Au (A.F. 93335).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Although near solid and solid graphite with only minor pyrite is recorded in the drill logs for DDH LE-2B-1 and LE-2B-2, Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91627, 91634, 91658, 91660, 93333, 93334, 93335; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B01

MDS_No.: M64B01-007

LOCATION: 7

NAME: (Mineralization intersected by diamond drilling)

EASTING: 535514

NORTHING: 6222962

AREA: NTS 64B/1; Harding Lake, southeast shore.

AIR PHOTO: MB89026-140

ACCESS: Float plane or winter roads.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). In 1967, Canadian Nickel Co. Ltd. carried out an airborne EM survey (A.F. 91658) and Amax Exploration Inc. conducted an airborne magnetic survey (A.F. 91660) over NTS 64B/1. Selco Inc. carried out an airborne INPUT and magnetic survey in 1981 over the area of Permit 47 (A.F. 93334). File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., mapped shoreline exposures, carried out a VLF-EM survey over selected INPUT anomalies (A.F. 93333), conducted a ground EM and magnetic survey, and drilled DDH LE-3B-1 (69.19 m) to test an HLEM conductor in 1982-83.

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite sillimanite-bearing meta-arkose and pebbly meta-arkose. Amphibolite of unknown affinity and Burntwood River Metamorphic Suite greywacke gneiss occur to the south (Corkery and Lenton, 1990). DDH LE-3B-1 intersected garnet-biotite-, biotite-hornblende ± garnet-, garnet-hornblende-, and graphitic biotite ± garnet paragneisses, and a quartz monzonite dyke (A.F. 93335).

MINERALIZATION

Local sections in graphitic biotite paragneiss from DDH LE-3B-1 contained up to 4% pyrite, disseminated and in thin bands, and scattered thin graphitic layers. Garnet-biotite paragneiss also contained disseminated graphite and 2% pyrite and pyrrhotite. The quartz monzonite dyke locally contained <5% disseminated pyrite (A.F. 93335). Minor chalcocite and malachite occur in outcrops of quartz monzonite sills/dykes; File Explorco Limited interpreted a fold closure near these outcrops (A.F. 93333).

GEOCHEMISTRY

Drill core samples from DDH LE-3B-1 contained 26 to 120 ppm Cu, 46 to 420 ppm Zn, 0.1 to 0.6 ppm Ag and <5 to 10 ppb Au (A.F. 93335). Seven rock samples taken from the outcrops along the southeast side of the south arm of Harding Lake contained 3 to 65 ppm Cu, 7 to 91 ppm Zn, 10 to 23 ppm Pb, nil to 0.5 ppm Ag, and nil to 5 ppm Au (A.F. 93333).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91627, 91634, 91658, 91660, 93333, 93334, 93335; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.

NTS: 64B02

MDS_No.: M64B02-001

LOCATION: 1

NAME: Leftrook Lake

EASTING: 526088

NORTHING: 6212782

AREA: NTS 64B/2; Leftrook Lake, southeast shore.

AIR PHOTO: MB91025-141

ACCESS: Float plane or winter roads to Leftrook Lake.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd., in joint venture with File Explorco Limited, carried out an airborne INPUT EM and magnetic survey (A.F. 93334); VLF-EM, linecutting, and follow-up ground HLEM and magnetic surveys over INPUT anomalies; and mapped along the shorelines in the Leftrook Lake area in 1982 (A.F. 92643). File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., drilled DDH LE-4A-1 (69.19 m), LE-4A-2 (107.71 m), LE-5A-1 (89.00 m) and LE-6A-1 (96.62 m) to test HLEM conductors on Permit 47 in 1983 (A.F. 93335).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite garnet-biotite-graphite-bearing, metatectic, greywacke-derived gneiss and by massive amphibolite. Varieties of amphibolite include a salt-and-pepper textured variety with quartzite and greywacke beds, a mesocratic clotted variety, and a garnet-hornblende-bearing variety. Amphibolite is overlain to the west by Sickie Metamorphic Suite sedimentary rocks and hornblende tonalite (Corkery and Lenton, 1990). DDH LE-4A-1 intersected garnet-biotite-, biotite-hornblende, and graphitic pyritic calc-silicate paragneisses; foliated granodiorite dykes and cordierite-porphyroblastic quartz monzonite dykes/sills. DDH LE-4A-2 intersected garnet-biotite paragneiss and a pegmatite dyke. DDH LE-5A-1 intersected siliceous garnet-biotite paragneiss with calc-silicate layers, siliceous biotite \pm garnet paragneiss, amphibolite and granodiorite. DDH LE-6A-1 intersected numerous thin units of hornblende paragneiss and amphibolite; garnet-biotite-, biotite-, siliceous biotite-, biotite-hornblende-, and chlorite-biotite-hornblende paragneisses; garnet-biotite calc-silicate; and granitic pegmatite (A.F. 93335).

MINERALIZATION

A 50 cm thick zone of solid pyrrhotite with minor pyrite, trace chalcopyrite and magnetite, and 40% disseminated angular aggregates of quartz is hosted by amphibolite (McRitchie, 1976; Lenton and Corkery, 1981). The solid sulphide zone is underlain by a 20 m thick diopside gneiss and amphibolite unit that contains minor disseminated sulphides, garnets and carbonate veins (McRitchie, 1976). The sulphides display a tectonically brecciated (Durchbewegt) texture in outcrop (W.D. McRitchie, pers. comm., 1993).

DDH LE-4A-1 intersected 4.28 m of biotite paragneiss with numerous sections of solid graphite with up to 20% pyrite. Specks of molybdenite(?) were noted at one place. Garnet-biotite paragneiss and graphitic calc-silicate paragneiss contained minor pyrite and disseminated graphite. A 3.49 m section in garnet-biotite paragneiss from DDH LE-4A-2 changed from 30% chlorite, 50% graphite and 20% pyrite at the top of the intersection to 80% graphite and 20% pyrite and the base of the intersection. Garnet-biotite paragneiss included minor cordierite, graphite, chlorite and pyrite (A.F. 93335).

DDH LE-5A-1 intersected a 4.96 m section of granodiorite with graphite- and carbonate-filled fractures, two solid bands of graphite, 0.08 and 2.60 m in core length, and numerous other thin bands of graphite. Siliceous garnet-biotite paragneiss with calc-silicate layers locally contained 2 to 4% disseminated pyrrhotite and a 9 cm section with 20 to 30% pyrite, chlorite, garnet, quartz and feldspar (A.F. 93335).

DDH LE-6A-1. Numerous thin discontinuous graphite-pyrite layers, up to 24 cm thick, occurred in hornblende paragneiss and garnet-biotite paragneiss from DDH LE-6A-1. Minor graphite, pyrrhotite and pyrite, and traces of chalcopyrite were disseminated throughout most of the rock types intersected by DDH LE-6A-1 (A.F. 93335).

GEOCHEMISTRY

Assays of samples from the solid sulphide zone included 0.2% Ni (W.D. McRitchie, pers. comm., 1993). Drill core samples from DDH LE-4A-1, LE-4A-2, LE-5A-1 and LE-6A-1 contained 12 to 270 ppm Cu, 19 to 967 ppm Zn, 0.1 to 3.6 ppm Ag, and <5 to 5 ppb Au (A.F. 93335). Rock geochemical samples had ranges of 3 to 589 ppm Cu, 1 to 2600 ppm Zn, 2 to 121 ppm Pb, nil to 130 ppb Au and nil to 0.7 ppm Ag (A.F. 92643).

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. The garnet-carbonate-sulphide-bearing diopside gneiss and amphibolite unit that underlies the solid sulphide zone is suggestive of an massive sulphide-type alteration zone.

REFERENCES

Assessment Files 91627, 91634, 92643, 93334, 93335; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Lenton, P.G. and Corkery, M.T. 1981: The Lower Churchill River Project (Interim report); Manitoba Energy and Mines, Open File Report OF81-3, 23p.

McRitchie, W.D. 1976: Paskwachi-Waskaiowaka regional compilation; in Manitoba Mines, Resources and Environmental Management, Mineral Resources Division, Report of Field Activities, 1976, p. 13-23.

NTS: 64B02

MDS_No.: M64B02-002

LOCATION: 2

NAME: (Mineralization intersected by diamond drilling)

EASTING: 524893

NORTHING: 6207464

AREA: NTS 64B/2; approximately 5 km southeast of Leftrook Lake.

AIR PHOTO: MB91025-210

ACCESS: Float plane to unnamed lake 7 km east-southeast of Leftrook Lake.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634), and drilled four holes totalling 500.3 m on the Peg claims to test airborne EM conductors in 1962 (A.F. 90941). Selco Inc. carried out an airborne INPUT and magnetic survey over the area of Permit 47 in 1981 (A.F. 93334). Manitoba Mineral Resources Ltd., in joint venture with File Explorco Limited, carried out an airborne INPUT EM and magnetic survey (A.F. 93334), and VLF-EM, linecutting, and follow-up ground HLEM and magnetic surveys over INPUT anomalies in 1982 (A.F. 92643). In 1983, File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., drilled DDH LE-2-1 (78.33 m), LE-2-2 (114.91 m), LE-2-3 (111.86 m) and LE-2-4 (72.24 m) to test HLEM conductors on Permit 47 (A.F. 93335).

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite rocks, separated by massive amphibolite from Burntwood River Metamorphic Suite metatectic greywacke-derived gneiss (Corkery and Lenton, 1990). DDH LE-2-1 intersected garnet-biotite \pm graphite paragneiss, siliceous garnet-biotite paragneiss, siliceous paragneiss, banded amphibolite and calc-silicate, and quartz monzonite dykes. Banded amphibolite and calc-silicate, siliceous biotite paragneiss, and siliceous garnet-diopside calc-silicate rocks were intersected by DDH LE-2-2. DDH LE-2-3 intersected garnet-biotite paragneiss with lesser cordierite-bearing quartz monzonite, and chlorite-graphite-biotite-, siliceous biotite-, and biotite- paragneisses. Garnet-biotite paragneiss, banded amphibolite and calc-silicate, and siliceous biotite paragneiss with calc-silicate were intersected by DDH LE-2-4 (A.F. 93335). Drill holes 22587, 22588, 22589 and 22590 intersected biotite schist. In addition, DDH 22587 ended in quartzite, DDH 22588 also intersected biotite-quartz-garnet schist, DDH 22589 ended in skarn, and DDH 22590 also intersected biotite-quartz schist (A.F. 90941).

MINERALIZATION

DDH LE-2-1 intersected a 4.93 m section of siliceous biotite paragneiss with near solid- to solid-sulphide layers that consisted of 50 to 80% pyrrhotite, minor pyrite, minor disseminated graphite, and numerous rounded domains of siliceous paragneiss, 0.5 to 0.8 cm across. Siliceous garnet-biotite paragneiss contained up to 10% disseminated pyrrhotite and pyrite. Other rock types commonly contained trace to minor pyrrhotite, pyrite, graphite and chalcopryite; magnetite occurs in places (A.F. 93335). DDH LE-2-2. A 4.5 m portion of a 16.68 m section of siliceous biotite paragneiss from DDH LE-2-2 contained an average 30 to 70% sulphide in near solid to solid pyrrhotite bands with lesser graphite and pyrite. Locally, trace to minor pyrrhotite and chalcopryite were intersected in other lithologies from this drill hole (A.F. 93335). DDH LE-2-3. Chlorite-graphite-biotite paragneiss from DDH LE-2-3 varied from 10% pyrite at the top of the unit to 50% pyrrhotite at the bottom of the unit, with sulphides and graphite concentrated in bands. Four near solid sulphide sections, 2.0 to 4.8 m, consisted of angular plagioclase fragments in an aphanitic groundmass of 10 to 90% pyrrhotite. This unit was followed down the hole by siliceous biotite paragneiss with up to 40% pyrrhotite in sections, then by biotite γ graphite paragneiss with up to 5% pyrrhotite. At the top and bottom of the drill hole, garnet-biotite paragneiss with cordierite-bearing quartz monzonite sections contained minor disseminated pyrrhotite. Gahnite was reported at 108.00 m in the drill log (A.F. 93335). DDH LE-2-4. A 12.34 m intersection of siliceous biotite paragneiss and siliceous calc-silicate from DDH LE-2-4 contained two solid sulphide layers, 0.22 and 0.05 m in core length, and numerous other 1 to 3 mm solid sulphide layers that consisted of 50 to 80% pyrrhotite, trace pyrite and chalcopryite. Minor pyrrhotite or graphite or magnetite were disseminated in other lithologies in core from this drill hole (A.F. 93335). Biotite schist intersected in drill core contained unspecified sulphide streaks; quartzite from DDH 22587 also contained sulphide streaks (A.F. 90941).

GEOCHEMISTRY

Geochemical analyses of drill core samples from DDH LE-2-1 through LE-2-4 are summarized in Table 2.

Ranges of geochemical analyses for drill core samples from DDH LE-2-1 through LE-2-4 (A.F. 93335)				
DDH	Cu ppm	Zn ppm	Ag ppm	Au ppb
LE-2-1	10-435	148-548	0.2-0.6	<5
LE-2-2	133-556	85-604	0.2-0.3	<5-10
LE-2-3	181-2325	284-2325	0.7-1.5	<5-5
LE-2-4	133-266	178-289	0.2-0.6	<5-5

CLASSIFICATION

Stratabound massive sulphide type deposit; sedimentary rock associated.

REFERENCES

Assessment Files 90941, 91627, 91634, 92643, 93334, 93335; Manitoba Energy and Mines, Mines Branch.

Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.

NTS: 64B02

MDS_No.: M64B02-003

LOCATION: 3

NAME: (Mineralization intersected by diamond drilling)

EASTING: 507711

NORTHING: 6208538

AREA: NTS 64B/2; Macheewin Lake.

AIR PHOTO: MB91025-26

ACCESS: Float plane to Macheewin Lake.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-22 (60.1 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss with interlayered Burntwood River Metamorphic Suite psammitic and pelitic metagreywacke. Sickle Metamorphic Suite hornblende-magnetite-bearing psammitic and pelitic metagreywacke, locally with layers of polymictic conglomerate, occurs to the northeast and northwest (Corkery and Lenton, 1990). DDH 202-22 intersected garnetiferous metagreywacke with minor sections of quartzofeldspathic gneiss and siliceous amphibolite with minor impure quartzite interbeds (A.F. 92812).

MINERALIZATION

A 2.0 m intersection of quartzofeldspathic gneiss in metagreywacke contained 20 to 40% graphite and 3 to 4% pyrite; the drill log notes that the zone is possibly mylonitized. Further down the hole, similar rocks hosted 1 to 3% graphite and 1 to 2% pyrite over 3.6 m, and a 0.7 m quartz vein with 1% pyrite, and accessory feldspar, epidote and saussurite (A.F. 92812).

GEOCHEMISTRY

Drill core samples contained 14 to 306 ppm Cu, 8 to 649 ppm Zn, 9 to 25 ppm Pb, 10 to 146 ppm Ni, 0.1 to 0.8 ppm Ag, <5 ppb Au, and 1 to 5 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; other chemical sediment. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02

MDS_No.: M64B02-004

LOCATION: 4

NAME: (Mineralization intersected by diamond drilling)

EASTING: 503706

NORTHING: 6208643

AREA: NTS 64B/2; Macheewin Lake.

AIR PHOTO: MB91025-61

ACCESS: Float plane to Macheewin Lake.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-21 (102.7 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss with interlayered psammitic and pelitic metagreywacke. Sickie Metamorphic Suite magnetiferous feldspathic greywacke and psammitic gneiss with local pebbly layers occurs to the northeast (Corkery and Lenton, 1990). DDH 202-21 intersected metagreywacke, interbedded impure quartzite, and fine- to medium-grained biotitic amphibolite. The metagreywacke contained biotite, hornblende and siliceous bands, and was garnetiferous in places. Some of the interbedded impure quartzite contained biotite ± amphibole, and some contained K-feldspar (A.F. 92812).

MINERALIZATION

A 4.8 m intersection of interbedded amphibolite and quartzite contained 3 to 15% pyrrhotite and 1 to 15% pyrite. Five other sections, each <1 m in core length, contained 2 to 15% pyrrhotite, 1 to 5% pyrite, up to 10% graphite, and locally, traces of chalcopyrite. Pyrrhotite and graphite, 1 to 2%, occurred locally throughout the drill core (A.F. 92812).

GEOCHEMISTRY

A 1.1 m sample, taken from the 4.8 m conductive mineralized intersection described in 'Mineralization', contained 208 ppm Cu, 0.73% Zn, 257 ppm Pb, 131 ppm Ni, 1.3 ppm Ag, <5 ppb Au and <1 ppm As. A contiguous 1.4 m sample contained 182 ppm Cu, 0.79% Zn, 97 ppm Pb, 46 ppm Ni, 2.5 ppm Ag, <5ppb Au and <1 ppm As (A.F. 91812). Twenty-nine additional drill core samples contained 11 to 326 ppm Cu, 8 to 718 ppm Zn, 3 to 257 ppm Pb, 30 to 190 ppm Ni, 0.3 to 2.5 ppm Ag, <5 ppb Au and <1 to 2 ppm As (A.F. 91812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Division.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02**MDS_No.: M64B02-005****LOCATION: 5****NAME: (Mineralization intersected by diamond drilling)****EASTING: 501445****NORTHING: 6208483****AREA: NTS 64B/2; Nile Lake.****AIR PHOTO: MB91025-66****ACCESS: Float plane.****EXPLORATION SUMMARY**

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-20 (119.9 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss with interlayered Burntwood River Metamorphic Suite psammitic and pelitic metagreywacke (Corkery and Lenton, 1990). DDH 202-20 intersected garnetiferous metagreywacke; locally garnetiferous impure quartzite, which locally grades to siliceous greywacke; and interbedded fine grained amphibolite (A.F. 92812).

MINERALIZATION

Two mineralized intersections of quartzite and argillite, 1.2 m and 0.7 m in core length, contained 10 to 15% pyrrhotite, 10 to 15% pyrite, and 1 to 3% graphite. Further down the hole, 0.6 m of quartzite/argillite contained 3 to 5% pyrite, 2 to 3% pyrrhotite and 10 to 15% graphite. Two other intersections, 0.6 to 1.1 m, contained up to 5% pyrite, 7% pyrrhotite, and 2% graphite in chlorite schist and amphibolite. Locally, 1 to 2% pyrrhotite, pyrite and/or graphite, and traces of chalcopyrite occurred throughout the quartzitic rocks (A.F. 92812).

GEOCHEMISTRY

Geochemical analyses for drill core samples from DDH 202-20 are summarized in Table 3.

Geochemical analyses for drill core samples from DDH 202-20 (A.F. 92812).									
Interval:From/To (m)	Core Length (m)	Rock Type and; Mineralization	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Ag ppm	Au ppb	As ppm
79.55-80.31	0.76 Quartzite;	1-2% po, minor graphite	212	0.12% 19	152	1.7	<5	<1	
80.31-81.53	1.22 Quartzite/argillite;	10-15% po, 10-15% py, 2-3% graphite	296	670	21	196	2.1	<5	<1
81.53-82.75	1.22 Quartzite/argillite;	10% po, 10% py, 1-2% graphite	361	0.12%	24	203	1.8	<5	<1

Ranges for other drill core samples from DDH 202-20							
No. Samples	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Ag ppm	Au ppb	As ppm
22	64-586	35-670	14-70	38-203	0.5-2.1	<5-10	<1-6

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Division.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.

NTS: 64B02

MDS_No.: M64B02-006

LOCATION: 6

NAME: (Mineralization intersected by diamond drilling)

EASTING: 504310

NORTHING: 6215296

AREA: NTS 64B/2; approximately 4 km northwest of Macheewin Lake.

AIR PHOTO: MB91025-69

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-18 and 202-19 (total 138.4 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Sickle Metamorphic Suite magnetiferous feldspathic greywacke and psammitic gneiss. Burntwood River Metamorphic Suite metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss occurs to the northeast and southwest (Corkery and Lenton, 1990). DDH 202-18 intersected garnetiferous metagreywacke with feldspar \pm quartz knots, and local anthophyllite or cummingtonite, sillimanite, and graphite. Metagreywacke intersected in the upper part of the drill hole contained purple garnets up to 1 cm. The hole ended in granite, and intersected granite dykes within metagreywacke. DDH 202-19 intersected locally garnetiferous amphibolite, quartzite and partly garnetiferous metagreywacke (A.F. 92812).

MINERALIZATION

In core from DDH 202-18, a 0.8 m zone within garnetiferous metagreywacke contained 20% graphite and 1 to 3% pyrite. Four zones from DDH 202-19, 0.3 to 2.2 m in core length, contained pyrite (1 to 3%) and graphite (5 to 7%, locally 10 to 15%) within interbedded amphibolite and quartzite (A.F. 92812).

GEOCHEMISTRY

Five drill core samples from DDH 202-18 contained 21 to 356 ppm Cu, 53 to 475 ppm Zn, 10 to 22 ppm Pb, 33 to 58 ppm Ni, 0.4 to 0.6 ppm Ag, <5 to 25 ppb Au and 1 to 110 ppm As. Seven drill core samples from DDH 202-19 contained 64 to 346 ppm Cu, 45 to 233 ppm Zn, 7 to 44 ppm Pb, 33 to 109 ppm Ni, 0.4 to 1.3 ppm Ag and <5 to 15 ppb Au. Arsenic contents in samples from DDH 202-19 ranged from <1 to 10 ppm, except for one anomalous analysis of 0.11% As from a 0.5 m quartz vein with 1 to 2% pyrrhotite (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; other chemical sediments. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide. The lithologic assemblage and characteristics of the associated EM conductor suggest that this occurrence may be part of a sulphide facies iron formation, but the amount of total sulphides is relatively low at this location.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02

MDS_No.: M64B02-007

LOCATION: 7

NAME: (Mineralization intersected by diamond drilling)

EASTING: 508990

NORTHING: 6220850

AREA: NTS 64B/2; approximately 300 m south of the Reading River, 4.5 km east of Mynarski Lakes.

AIR PHOTO: MB91025-17

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-27 (61.9 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Sickle Metamorphic Suite magnetiferous feldspathic greywacke and psammitic gneiss with local pebbly layers. Burntwood River Metamorphic Suite metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss with interlayered psammitic and pelitic metagreywacke occurs further to the south (Corkery and Lenton, 1990). DDH 202-27 intersected garnetiferous, locally migmatitic metagreywacke, with relatively narrow, interlayered amphibolite and quartzite sections. Some of the amphibolite/quartzite sections contained garnet \pm biotite (A.F. 92812).

MINERALIZATION

Six zones, 0.1 to 1.2 m in core length, from DDH 202-27 contained 5 to 7% pyrite, 2 to 10% graphite, and nil to 1% pyrrhotite; three of these zones were hosted by metagreywacke, two by quartzite, and one by interlayered amphibolite and quartzite (A.F. 92812).

GEOCHEMISTRY

Six drill core samples contained 45 to 247 ppm Cu, 31 to 800 ppm Zn, 18 to 64 ppm Pb, 35 to 180 ppm Ni, 0.5 to 1.4 ppm Ag, <6 to 20 ppb Au and 2 to 20 ppm As. An additional drill core sample of pegmatite with rare pyrite and local minor chalcopyrite contained 0.14% Cu, 31 ppm Zn, 6 ppm Pb, 12 ppm Ni, 1.9 ppm Ag, 20 ppb Au and 1 ppm As over 1.5 m (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; other chemical sediments. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide. This occurrence may be part of a sulphide facies iron formation, but the amount of total sulphides is relatively low at this location.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02

MDS_No.: M64B02-008

LOCATION: 8

NAME: (Mineralization intersected by diamond drilling)

EASTING: 505215

NORTHING: 6220301

AREA: NTS 64B/2; southwest shore of unnamed lake 2 km east of Mynarski Lakes.

AIR PHOTO: MB91026-199

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected, sampled, conducted a follow-up HLEM survey, and drilled DDH 202-17 (34.3 m) over the area of Permit 52 in 1985-86 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite metatectic, garnet-biotite-graphite-bearing, greywacke-derived gneiss with interlayered psammitic and pelitic metagreywacke. This unit is bounded to the north by Sickle Metamorphic Suite magnetiferous feldspathic greywacke and psammitic gneiss (Corkery and Lenton, 1990). DDH 202-17 intersected locally garnetiferous metagreywacke, minor interlayered amphibolite and quartzite, and pegmatite (A.F. 92812).

MINERALIZATION

Two mineralized zones, 0.3 and 1.8 m in core length, contained 20 to 30% graphite and 5 to 10% pyrite hosted by metagreywacke. A third zone, 2.1 m in core length, consisted of K-feldspar-enriched, mylonitic metagreywacke with local concentrations of graphite (15 to 20%) and pyrite (4 to 7%) (A.F. 92812).

GEOCHEMISTRY

Five drill core samples contained 49 to 361 ppm Cu, 25 to 58 ppm Zn, 17 to 59 ppm Pb, 34 to 141 ppm Ni, 0.5 to 1.3 ppm Ag, <5 to 20 ppb Au and 5 to 80 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02

MDS_No.: M64B02-009

LOCATION: 9

NAME: (Mineralization intersected by diamond drilling)

EASTING: 500906

NORTHING: 6220375

AREA: NTS 64B/2; approximately 500 m south of Mynarski Lakes.

AIR PHOTO: MB91026-254

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816). Manitoba Mineral Resources Ltd. mapped, prospected and sampled over the area of Permit 52 in 1985, cut grids, conducted a follow-up HLEM survey, and drilled DDH 202-16 (130.2 m) in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite metatectic, garnet-biotite-graphite-bearing, greywacke gneiss with interlayered psammitic and pelitic metagreywacke. This unit is bounded to the north by Sickle Metamorphic Suite magnetiferous feldspathic greywacke and psammitic gneiss (Corkery and Lenton, 1990). DDH 202-16 intersected garnetiferous, biotitic metagreywacke, and interlayered garnetiferous, biotitic metagreywacke and amphibolite with minor layers of quartzite. Minor pegmatite, granitic dykes, quartz-garnet-saussurite hornfels, and migmatite were intersected in the upper half of the drill hole (A.F. 92812).

MINERALIZATION

DDH 202-16 intersected three mineralized zones:

- (1) 2.0 m of quartzite containing 2 to 3% pyrrhotite, 3 to 4% graphite and 3 to 4% pyrite. The adjoining 4.3 m down the hole of "altered metagreywacke/mylonite" and locally interbedded quartzite with minor sillimanite hosted 3 to 5% pyrite (locally 10 to 15%), 1 to 3% pyrrhotite and 3 to 5% graphite (locally 10 to 15%);
- (2) 5.4 m with 10 to 15% graphite, 1 to 2% pyrite and 1 to 3% pyrrhotite, and the adjoining 0.4 m down the hole with 7 to 10% graphite, 3 to 5% pyrite and 3 to 4% pyrrhotite, both hosted by interlayered garnetiferous metagreywacke and quartzite; and
- (3) 15 to 20% graphite, 10% pyrrhotite and 3 to 5% pyrite over 0.8 m in interlayered garnetiferous metagreywacke and amphibolite with minor interbeds of quartzite. Additionally, numerous sections throughout the drill core contained up to 5% pyrite and up to 1% pyrrhotite (A.F. 92812).

GEOCHEMISTRY

Seven drill core samples had ranges of 75 to 157 ppm Cu, 0.11 to 0.36% Zn, 17 to 27 ppm Pb, 119 to 180 ppm Ni, 0.6 to 1.4 ppm Ag, 10 to 20 ppb Au and 1 to 40 ppm As. Twelve additional samples contained 6 to 252 ppm Cu, 9 to 790 ppm Zn, 5 to 37 ppm Pb, 13 to 188 ppm Ni, 0.1 to 1.6 ppm Ag, 5 to 35 ppb Au and 1 to 20 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

- Assessment Files 91627, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
- Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
- Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B02

MDS_No.: M64B02-010

LOCATION: 10

NAME: (Mineralization intersected by diamond drilling)

EASTING: 520278

NORTHING: 6210292

AREA: NTS 64B/2; southwestern Leftrook Lake.

AIR PHOTO: MB91026-12

ACCESS: Float plane or winter roads.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out airborne EM surveys over the area in 1960 and 1961 (A.F. 91627, 91634). Manitoba Mineral Resources Ltd., in joint venture with File Explorco Limited, carried out an airborne INPUT EM and magnetic survey (A.F. 93334); VLF-EM, linecutting, and follow-up ground HLEM and magnetic surveys over INPUT anomalies; and mapped along the shorelines in the Leftrook Lake area in 1982 (A.F. 92643). File Explorco Limited, in joint venture with Manitoba Mineral Resources Ltd., drilled DDH LE-1-1 (160.63 m), LE-7A-1 (62.17 m), LE-8A-1 (46.62 m) and LE-8A-2 (56.99 m) to test HLEM conductors on Permit 47 in 1983 (A.F. 93335).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite garnet-biotite-graphite-bearing, metatectic, greywacke-derived gneiss and by Sickle Metamorphic Suite meta-arenite, quartzite and metagreywacke (Corkery and Lenton, 1990). DDH LE-1-1 intersected graphitic biotite paragneiss with lesser calc-silicate sections, biotite \pm garnet paragneiss, and quartz monzonite dykes. DDH LE-7A-1 intersected garnet-biotite paragneiss with calc-silicate bands, graphite-biotite paragneiss, siliceous biotite paragneiss, and quartz monzonite. Garnet-biotite \pm graphite paragneiss and carbonate-rich chlorite-biotite-hornblende paragneiss were intersected by DDH LE-8A-1. Hornblende paragneiss with calc-silicate bands, biotite-hornblende paragneiss, garnet-biotite paragneiss and granite dykes were intersected by DDH LE-8A-2 (A.F. 93335).

MINERALIZATION

DDH LE-1-1. An 18.67 m intersection of graphitic biotite-chlorite paragneiss from DDH LE-1-1 contained two 1.5 cm thick solid pyrrhotite-pyrite bands, as well as minor disseminated pyrrhotite and traces of pyrite. Two, thin, fine grained, quartzofeldspathic "intrusive veins" within the graphitic biotite-chlorite paragneiss unit contained traces of sphalerite crystals up to 5 mm. Biotite \pm garnet paragneiss contained 4% disseminated graphite and 1% pyrrhotite (A.F. 93335).

DDH LE-7A-1. A 1.2 m section of graphite-biotite paragneiss from DDH LE-7A-1 contained fine bands of mineralization, including a 25 cm thick band of graphite; 15% pyrite and pyrrhotite; and traces of chlorite and chalcopyrite. Siliceous biotite paragneiss contained 20% pyrrhotite (A.F. 93335).

DDH LE-8A-1. <D> Garnet-biotite \pm graphite paragneiss from DDH LE-8A-1 contained 5% disseminated graphite and several graphite-pyrrhotite-pyrite-bearing sections up to 20 cm thick (A.F. 93335).

DDH LE-8A-2. Biotite-hornblende paragneiss from DDH LE-8A-2 contained a 1.6 m solid graphite-chlorite layer, as well as minor disseminated graphite, pyrrhotite, pyrite, and chalcopyrite(?). Hornblende paragneiss contained 5% disseminated pyrrhotite and pyrite (A.F. 93335).

GEOCHEMISTRY

Geochemical analyses of drill core samples are summarized in Table 4. In addition to these analyses, one sample from DDH LE-1-1 of the sphalerite-bearing quartzofeldspathic intrusive rock contained 557 ppm Cu, 10580 ppm Zn, 0.8 ppm Ag, and <5 ppb Au (A.F. 93335).

Ranges of geochemical analyses for drill core samples from DDH LE-1-1, LE-7A-1 and LE-8A-1 (A.F. 93335)				
DDH	Cu ppm	Zn ppm	Ag ppm	Au ppm
LE-1-1*	62-453	181-1095	0.2-3.1	<5-5
LE-7A-1	5-361	38-516	0.2-0.6	<5
LE-8A-1	123-459	57-942	0.2-2.5	<5-5

* Results from one additional anomalous sample from DDH LE-1-1 are presented separately in 'Geochemical Data'.

CLASSIFICATION

Stratabound massive sulphide-type deposit; sedimentary rock associated. Thin bands of solid sulphide mineralization from DDH LE-1-1 are hosted by graphitic biotite-chlorite paragneiss. Mineralization intersected by DDH LE-7A-1 and LE-8A-1 represents a sulphide facies iron formation chemical sediment type deposit. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide. Disseminated mineralization intersected by DDH LE-8A-2 is not classified.

REFERENCES

Assessment Files 91627, 91634, 92643, 93334, 93335; Manitoba Energy and Mines, Mines Branch.
Corkery, M.T. and Lenton, P.G. 1990: Geology of the Lower Churchill River region; Manitoba Energy and Mines, Geological Report GR85-1, Map GR85-1-7, 1:100 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B03

MDS_No.: M64B03-001

LOCATION: 1

NAME: (Mineralization intersected by diamond drilling)

EASTING: 497795

NORTHING: 6220215

AREA: NTS 64B/3; approximately 3 km south of central Mynarski Lakes.

AIR PHOTO: MB88016-250

ACCESS: Float plane to central Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling of DDH 202-13, -14, -15, and -25, which totalled 306.6 m, in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by pelitic gneiss of the Burntwood River Metamorphic Suite and amphibolite (Elphick and Schledewitz, 1972). Drill holes intersected garnetiferous metagreywacke, impure quartzite, interbedded amphibolite (partly garnetiferous and/or biotitic) and quartzite, and minor granitic dykes and pegmatites (A.F. 92812).

MINERALIZATION

DDH 202-25 intersected three continuous mineralized sections in impure micaceous quartzite:

(1) 5% pyrrhotite, 3 to 4% graphite, 1 to 3% pyrite over 3.0 m core length;

(2) 30 to 40% (locally 50 to 60%) pyrrhotite, 5 to 10% pyrite, 3 to 5% graphite over 1.7 m core length; and

(3) 5 to 10% pyrrhotite, 5 to 10% (locally 10 to 15%) graphite, and 3 to 5% pyrite over 1.8 m core length (A.F. 92812).

DDH 202-15 intersected six sections, 0.3 to 7.6 m, with minor pyrrhotite (locally up to 15%), pyrite, and graphite (locally up to 20%). Five of the mineralized intersections were hosted by interbedded impure quartzite, siliceous metagreywacke, and/or biotitic amphibolite, and one by a section of migmatitic intrusive rocks in a unit of interlayered amphibolite and quartzite. Locally, 1 to 2% pyrrhotite and pyrite occurred throughout the unit of amphibolite and quartzite. Three additional sections, 0.5 to 0.9 m, with 2 to 4%, 20 to 30% and 30 to 40% graphite in interlayered amphibolite and quartzite were intersected by DDH 202-15 (A.F. 92812).

DDH 202-13 intersected six intervals, <0.1 to 1.7 m, and DDH 202-14 intersected five sections, 0.2 to 1.6 m, with ranges of minor pyrite (locally up to 15%), pyrrhotite (locally up to 20%), and graphite (locally up to 15%). The mineralized intersections were hosted predominantly by garnetiferous amphibolite and metagreywacke, some of which was migmatitic, and some of which was interlayered with impure quartzite (A.F. 92812).

GEOCHEMISTRY

A sample of the second part of the mineralized intersection from DDH 202-25 with 30 to 40% pyrrhotite, 5 to 10% pyrite and 3 to 5% graphite contained 345 ppm Cu, 0.18% Zn, 30 ppm Pb, 208 ppm Ni, 2.7 ppm Ag, 5 ppb Au and 2 ppm As (A.F. 92812).

Results of other drill core analyses are given in Table 5.

Ranges of drill core analyses from DDH 202-13, 202-14, 202-15, and 202-25 (A.F. 92812)								
DDH	No. Samples	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Ag ppm	Au ppb	As ppm
202-13	21	32-329	45-484	12-78	39-210	0.6-2.1	<5-30	<1-3
202-14	5	31-166	39 ppm-(0.11%)	16-48	21-122	0.5-1.3	<5-20	<1-2
202-15	15	21-340	18-490	10-39	10-236	0.5-1.8	<5-45	<1-110
202-25*	3	101-168	360-620	22-26	64-79	0.8-0.9	<5-10	1-2

* - Results of fourth drill core analysis from DDH 202-25 are given in 'Geochemical Data'.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-002

LOCATION: 2

NAME: (Mineralization intersected by diamond drilling)

EASTING: 498469

NORTHING: 6218172

AREA: NTS 64B/3; approximately 5 km south of central Mynarski Lakes.

AIR PHOTO: MB88016-158

ACCESS: Float plane to southern arm of central Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling of DDH 202-9, -11 and -12, which totalled 280.4 m, in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by amphibolite of unknown affinity and Burntwood River Metamorphic Suite pelitic gneiss (Elphick and Schledewitz, 1972). DDH 202-9 intersected garnetiferous metagreywacke with local sections of interlayered quartzite and amphibolite, argillite, graphitic paraconglomerate, greywacke with penninite, quartz-biotite-cordierite hornfels, and granite and pegmatite dykes. DDH 202-11 intersected interlayered amphibolite and quartzite, metagreywacke, and minor granitic dykes. DDH 202-12 intersected interlayered amphibolite and quartzite with minor graphitic argillite and granitic dykes (A.F. 92812).

MINERALIZATION

DDH 202-12 intersected three mineralized sections:

- (1) 3.2 m of siliceous graphitic argillite with 1 to 3% (locally 5 to 7%) pyrite, 10 to 20% graphite, and trace chalcopyrite;
- (2) 4.9 m of graphitic argillite with 1 to 3% pyrite, <1% pyrrhotite, and 20 to 30% graphite; and
- (3) 1.2 m of quartzite with 2 to 3% pyrrhotite and 1 to 2% pyrite, including a 0.2 m section of near solid to solid pyrrhotite and 10 to 15% pyrite.

Three other sections of quartzite, 0.21 to 0.7 m in core length, with 5 to 25% pyrite and 0 to 20% pyrrhotite are described in the drill log; locally, <1% pyrrhotite and pyrite occur throughout the drill core (A.F. 92812).

DDH 202-9 intersected four mineralized sections, 1.4 to 7.0 m in core length, with 1 to 3% pyrite, 1 to 5% graphite, and in places, local traces of chalcopyrite. DDH 202-11 intersected numerous intervals up to 5.1 m in core length, generally with <5%, but up to 15%, pyrite and graphite (A.F. 92812).

GEOCHEMISTRY

The 3.2 m intersection of siliceous graphitic argillite from DDH 202-12 with 1 to 3% (locally 5 to 7%) pyrite, 10 to 20% graphite, and trace chalcopyrite contained 213 to 262 ppm Cu, 860 ppm to 0.13% Zn, 29 to 39 ppm Pb, 96 to 124 ppm Ni, 1.3 to 1.8 ppm Ag, <5 to 20 ppb Au, and <1 to 1 ppm As in three samples. The 4.9 m intersection of graphitic argillite from DDH 202-12 with 1 to 3% pyrite, <1% pyrrhotite, and 20 to 30% graphite contained 229 to 358 ppm Cu, 0.12 to 0.13% Zn, 20 to 58 ppm Pb, 125 to 173 ppm Ni, 1.4 to 1.7 ppm Ag, <5 to 15 ppb Au, and <1 ppm As (A.F. 92812). Other drill core analyses from DDH 202-9, 202-11, and 202-12 are summarized in Table 6.

Ranges of drill core analyses from DDH 202-9, 202-11 and 202-12 (A.F. 92812)								
DDH	No. Samples	Cu ppm	Zn ppm	Pb ppm	Ni ppm	Ag ppm	Au ppb	As ppm
202-9	13	16-336	27-606	9-46	22-132	0.3-1.4	<5	2-5
202-11	42	16-431	8 ppm-(0.18%)	9-52	7-208	0.4-2.4	<30	<4
202-12*	8	77-275	38-248	13-30	36-181	0.5-1.7	<20	<3

* - Results of fourth drill core analysis from DDH 202-12 are given in 'Geochemical Data'.

CLASSIFICATION

Chemical sediment type deposit, sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-003

LOCATION: 3

NAME: (Mineralization intersected by diamond drilling)

EASTING: 494893

NORTHING: 6219141

AREA: NTS 64B/3; approximately 2 km east of southern arm of central Mynarski Lakes.

AIR PHOTO: MB88023-18

ACCESS: Float plane to southern arm of central Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Four drill holes totalling 422 m were drilled on the Peg claims by Canadian Nickel Co. Ltd. in 1962 to test airborne EM conductors (A.F. 90941). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling of DDH 202-7 and -8, which totalled 114.0 m, in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss and amphibolite of unknown affinity (Elphick and Schledewitz, 1972). DDH 202-7 and -8 intersected locally garnetiferous or chloritized metagreywacke; DDH 202-8 also intersected minor granitic dykes (A.F. 92812). DDH 10780 intersected biotite schist, iron formation, quartzite, and quartz-biotite gneiss. DDH 22525 and 22526 intersected hornblende-quartz gneiss, amphibole-quartz gneiss, biotite \pm graphite \pm quartz schists; DDH 22526 also intersected quartz-feldspar-hornblende gneiss, quartz-biotite gneiss, and pegmatite. DDH 10779 intersected granite gneiss and amphibole-quartz gneiss (A.F. 90941).

MINERALIZATION

DDH 202-7 intersected a 1.8 m section of graphitic metagreywacke with 30 to 50% graphite and 5% pyrite, and a 0.2 m mylonitized section of metagreywacke with 5 to 10% pyrite. DDH 202-8 intersected a 0.5 m quartz vein with 1 to 3% pyrite in metagreywacke, and a 0.6 m section of hornblende- and biotite-bearing quartzite with 5 to 10% pyrrhotite (A.F. 92812). Streaks of graphite and sulphide (type and amount unspecified) in some of the biotite \pm graphite \pm quartz schists, amphibole-quartz gneiss, quartzite, granite gneiss, and iron formation were noted in drill logs for DDH 10779, 10780, 22525, and 22526 (A.F. 90941).

GEOCHEMISTRY

Four drill core samples from DDH 202-7 and two drill core samples from DDH 202-8 contained 42 to 906 ppm Cu, 28 to 174 ppm Zn, 11 to 51 ppm Pb, 8 to 209 ppm Ni, 0.1 to 2.7 ppm Ag, <5 to 75 ppb Au and <1 to 2 ppm As (A.F. 92812). Assays were not included with logs for DDH 10779, 10780, 22525 and 22526 (A.F. 90941).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 90941, 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B03

MDS_No.: M64B03-004

LOCATION: 4

NAME: (Mineralization intersected by diamond drilling)

EASTING: 496278

NORTHING: 6215241

AREA: NTS 64B/3; approximately 6 km northwest of Nile Lake.

AIR PHOTO: MB88016-246

ACCESS: Float plane to unnamed lake south of central Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over its Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling of DDH 202-10 (41.8 m) in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss. Sickie Metamorphic Suite biotite-magnetite gneiss, hornblende-biotite-magnetite gneiss, and hornblende-diopside gneiss occur to the northeast. Amphibolite and quartzofeldspathic gneiss of unknown affinity separate rocks of the Burntwood River and Sickie suites (Elphick and Schledewitz, 1972). DDH 202-10 intersected interlayered quartzite and amphibolite and garnetiferous greywacke (A.F. 92812).

MINERALIZATION

DDH 202-10 intersected three mineralized sections:

- (1) 1.5 m of quartzite with 10% (locally 20 to 30%) pyrrhotite and 5 to 10% graphite, including a 6 cm layer of solid pyrrhotite;
 - (2) 2.9 m of interlayered quartzite and amphibolite with biotitic bands with 3 to 7% pyrrhotite, 2 to 3% graphite and 1 to 3% pyrite; and
 - (3) a 15 cm fracture with 15% pyrite within the interlayered quartzite and amphibolite.
- Pyrrhotite, 2 to 3%, and pyrite, 1%, occurred locally throughout the interlayered quartzite and amphibolite. Chalcopyrite and bornite were noted along a fracture at one place in the core (A.F. 92812).

GEOCHEMISTRY

Twelve drill core samples from DDH 202-10 contained 49 to 301 ppm Cu, 94 to 304 ppm Zn, 8 to 27 ppm Pb, 42 to 174 ppm Ni, 0.3 to 1.7 ppm Ag, <5 to 35 ppb Au and <1 to 7 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-005

LOCATION: 5

NAME: (Mineralization intersected by diamond drilling)

EASTING: 489080

NORTHING: 6217580

AREA: NTS 64B/3; approximately 1 km southeast of western Mynarski Lakes.

AIR PHOTO: MB88016-120

ACCESS: Float plane to western Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling DDH 202-1, -2, -3 and -6, which totalled 308.2 m, in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from altered ultramafic rock and Sickie Metamorphic Suite hornblende-biotite-magnetite gneiss by amphibolite of unknown affinity. Southeast-trending and northeast-trending faults offset lithologic units in the area (Elphick and Schledewitz, 1972). Drill holes intersected locally garnetiferous metagreywacke, quartzite, and interlayered amphibolite and quartzite (A.F. 92812).

MINERALIZATION

The drill log for DDH 202-3 specifies two mineralized zones:

- (1) 3.6 m of metagreywacke, starting with 1.3 m core length containing 5 to 12% pyrrhotite and <3% pyrite veinlets, and ending with 2.3 m of near solid (up to 60%) pyrrhotite and 5% graphite with siliceous bands; and
- (2) 1.5 m with 2 to 3% graphite, 2 to 7% pyrite, and 5 to 20% pyrrhotite veinlets between amphibolite and metagreywacke units. Elsewhere in the core, a metagreywacke unit included a 1.1 m section with 5 to 15% pyrrhotite veinlets, 1% graphite and <5% pyrite (A.F. 92812). The drill logs for DDH 202-1, -2 and -6 list numerous mineralized intersections, 8 cm to 4.4 m in core length, hosted by metagreywacke, impure quartzite and interlayered quartzite and amphibolite that generally contained <5% pyrite, <10% (up to 30%) pyrrhotite and <10% (up to 15%) graphite. (A.F. 92812).

GEOCHEMISTRY

Twenty-one drill core samples from DDH 202-1, six from DDH 202-3, and ten from DDH 202-6 contained 20 to 309 ppm Cu, 35 to 804 ppm Zn, 3 to 51 ppm Pb, 30 to 207 ppm Ni, <0.1 to 2.8 ppm Ag, <5 to 10 ppb Au and <1 to 6 ppm As. No samples were collected for geochemical analysis from DDH 202-2 (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-006

LOCATION: 6

NAME: (Mineralization intersected by diamond drilling)

EASTING: 489160

NORTHING: 6215341

AREA: NTS 64B/3; approximately 2 km south of western Mynarski Lakes.

AIR PHOTO: MB88026-103

ACCESS: Float plane to western Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM and magnetic survey over the area in 1983 (A.F. 92816); follow-up work included geological mapping, prospecting and sampling in 1985, linecutting and HLEM surveys, and drilling DDH 202-23, -23A and -24, which totalled 228.9 m, in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by quartzofeldspathic gneiss of unknown affinity, which is overlain to the north by Sickle Metamorphic Suite biotite-magnetite gneiss and hornblende-biotite-magnetite gneiss. These rocks are separated from Burntwood River Metamorphic Suite pelitic gneiss to the south by amphibolite of unknown affinity (Elphick and Schledewitz, 1972). Drill holes intersected locally garnetiferous and/or chloritized metagreywacke; DDH 202-23A also intersected quartzite and interbanded amphibolite and quartzite (A.F. 92812).

MINERALIZATION

DDH 202-23A intersected four mineralized intersections:

- (1) 0.4 m with 10 to 15% pyrrhotite, 1 to 2% graphite, and locally, 3 to 4% pyrite in quartzite;
- (2) 5.6 m with 5 to 10% (locally 15 to 20%) pyrrhotite, 1 to 2% (locally 10 to 15%) graphite, and locally, 5% pyrite in saccharoidal quartzite;
- (3) a 1.1 m pegmatite dyke with 10 to 15% pyrite; and
- (4) 0.7 m with 7 to 10% (locally 20 to 30%) pyrite and 5 to 10% graphite in saccharoidal quartzite.

DDH 202-24. The drill log for DDH 202-24 notes twelve mineralized intersections, 0.2 to 2.4 m in core length, that generally contained 1 to 7% pyrite, 2 to 10% (in places, up to 30%) pyrrhotite and up to 5% graphite within quartzite. Locally, <3% pyrrhotite and <2% pyrite occurred throughout the amphibolitic and quartzitic rocks in core from both drill holes (A.F. 92812). Sulphide mineralization was not intersected in DDH 202-23 (A.F. 92812).

GEOCHEMISTRY

Four drill core samples from the 5.6 m intersection of mineralized saccharoidal quartzite from DDH 202-23A (see 'Mineralization') contained 84 to 201 ppm Cu, 367 ppm Zn to 0.22% Zn, 28 to 34 ppm Pb, 106 to 185 ppm Ni, 0.8 to 1.9 ppm Ag, <5 to 15 ppb Au and <1 ppm As. Ten additional core samples from DDH 202-23A, twenty-six from DDH 202-24, and one from DDH 202-23 contained 50 to 416 ppm Cu, 23 to 920 ppm Zn, 11 to 52 ppm Pb, 25 to 185 ppm Ni, 0.2 to 1.3 ppm Ag, <5 to 40 ppb Au and <1 to 2 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812, 92816; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-007

LOCATION: 7

NAME: (Mineralization intersected by diamond drilling)

EASTING: 488978

NORTHING: 6212700

AREA: NTS 64B/3; approximately 6 km northwest of Fold Lake.

AIR PHOTO: MB88016-116

ACCESS: Float plane to western Mynarski Lakes and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over its Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Manitoba Mineral Resources Ltd. conducted a geological mapping, prospecting and sampling survey in 1985, and linecutting and HLEM surveys, and drilled DDH 202-4, -5 and -26 totalling 202.3 m in 1986 (A.F. 92812).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss (Elphick and Schledewitz, 1972). DDH 202-4 intersected quartzite, garnetiferous metagreywacke and minor granite. DDH 2062 5 and 202-26 intersected metagreywacke and interlayered quartzite and amphibolite (A.F. 92812).

MINERALIZATION

DDH 202-26. The drill log for DDH 202-26 describes eight mineralized intersections, 0.2 to 2.3 m in core length, generally with 1 to 5% (locally up to 10%) graphite, 1 to 5% (locally, 10 to 15%) pyrite, 1 to 3% (locally 10 to 15%) pyrrhotite in places, and locally, trace chalcopyrite. Mineralization was hosted by impure quartzite, metagreywacke, or interlayered amphibolite and quartzite (A.F. 92812).

DDH 202-5. Interlayered quartzite and amphibolite from DDH 202-5 contained several mineralized intersections that range from 3 cm of solid pyrrhotite to 1.9 m of quartzite with 15 to 20% pyrrhotite, 1 to 3% graphite and locally, 1 to 2% pyrite, including a 16 cm section with 50% pyrrhotite (A.F. 92812).

DDH 202-4 intersected three sections, 1.5 to 2.3 m in core length, with <10% pyrrhotite in banded quartzite and biotite quartzite. A 20.2 m intersection of metagreywacke from DDH 202-4 contained 1 to 2% pyrrhotite, 1% pyrite and 10 to 12% graphite. Less than 3% pyrrhotite and/or pyrite, was disseminated throughout the remainder of the drill core from DDH 202-4; <5% graphite also occurred in much of the metagreywacke (A.F. 92812).

GEOCHEMISTRY

Two drill core samples from a 1.7 m intersection in DDH 202-26 with <7% graphite, 2 to 3% pyrite, and locally, 2 to 3% pyrrhotite, contained 212 and 248 ppm Cu, 0.11 and 0.12% Zn, 21 and 37 ppm Pb, 104 and 147 ppm Ni, 0.9 and 1.5 ppm Ag, 10 and 25 ppb Au and 1 ppm As (A.F. 92812). Thirteen additional drill core samples from DDH 202-26, nine from DDH 202-5, and twenty-nine from DDH 202-4 contained 18 to 506 ppm Cu, 54 to 911 ppm Zn, 10 to 62 ppm Pb, 21 to 193 ppm Ni, 0.2 to 1.7 ppm Ag, <5 to 25 ppb Au and <1 to 4 ppm As (A.F. 92812).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92812; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-008

LOCATION: 8

NAME: (Mineralization intersected by diamond drilling)

EASTING: 489188

NORTHING: 6211919

AREA: NTS 64B/3; approximately 4 km northwest of Fold Lake.

AIR PHOTO: MB88026-106

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). In 1980, Manitoba Mineral Resources Ltd. carried out an airborne INPUT EM survey over the area (A.F. 92526). Manitoba Mineral Resources, in joint venture with AM&S Canada Minerals Limited, conducted a ground reconnaissance survey in 1980 that consisted of a ground EM survey to verify airborne INPUT conductors, and geological mapping and prospecting in the areas of the geophysical conductors (A.F. 92525). Manitoba Mineral Resources Ltd., in joint venture with Enterprise Exploration Limited, conducted a reconnaissance geological mapping, prospecting and sampling survey in 1980; linecutting and an HLEM and magnetic survey in 1981 (A.F. 92527); and drilled DDH 187-1, -2, -3, -3A and -4, which totalled 338.8 m, in 1981 (A.F. 92519).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from an enclave of Sickie Metamorphic Suite quartzofeldspathic and biotite-magnetite gneiss to the south by amphibolite of unknown affinity (Elphick and Schledewitz, 1972; MDS Map 64B Southwest). DDH 187-1 intersected banded garnetiferous metagreywacke with minor local graphite and granitic bands/dykes. DDH 187-2 intersected a unit that represents a transition zone between meta-arkose and garnetiferous metagreywacke, amphibolite, quartzite. Core from DDH 187-3 consisted of garnetiferous metagreywacke. Core from DDH 187-3A and -4 also consisted of garnetiferous metagreywacke, as well as minor amphibolite and granite (A.F. 92519).

MINERALIZATION

DDH 187-3 intersected 4.4 m of metagreywacke with local concentrations of up to 20% graphite, minor to locally near solid pyrite and pyrrhotite, and locally, traces of chalcopyrite. A 1.2 m (core length) quartz vein in metagreywacke, also from DDH 187-3, contained trace pyrite.

DDH 187-1. Core from DDH 187-1 included a 16.8 m section of highly garnetiferous greywacke with 10 to 15% (up to 50%) graphite and trace pyrite along fracture planes. DDH 187-2 intersected two sections of mineralization: 1.2 m of quartzite with 10 to 15% graphite bands and 5% pyrite and pyrrhotite stringers, and 4.4 m of metagreywacke with 5 to 60% graphite bands, 2 to 10% pyrite and trace pyrrhotite.

DDH 187-3A. Core from DDH 187-3A included a 15.5 m section of slightly garnetiferous metagreywacke with disseminated to solid bands of graphite and trace to minor pyrite blebs and stringers.

DDH 187-4. Two mineralized intersections, 7.1 and 4.6 m in core length, from DDH 187-4 consisted of metagreywacke with minor to near solid bands of graphite and trace to minor disseminated pyrite; other short intersections with minor to near solid graphite and trace to moderate pyrite occurred in amphibolite (A.F. 92519).

GEOCHEMISTRY

Ten drill core samples from DDH 187-1, -2, -3A and -4 contained 0.01 to 0.07% Zn. Two samples from DDH 187-3 contained 0.06% Cu, 0.02 and 0.06% Zn, nil and 1.4 g/t Ag, and nil Au. One sample from DDH 187-3 and one from DDH 187-3A contained nil to trace Ag and nil Au (A.F. 92519).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92519, 92525, 92526, 92527; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-009

LOCATION: 9

NAME: (Mineralization intersected by diamond drilling)

EASTING: 491816

NORTHING: 6210422

AREA: NTS 64B/3; 1.5 km northwest of Fold Lake.

AIR PHOTO: MB88029-24

ACCESS: Float plane to Fold Lake and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). In 1980, Manitoba Mineral Resources Ltd. carried out an airborne INPUT EM survey over the area (A.F. 92526). Manitoba Mineral Resources, in joint venture with AM&S Canada Minerals Limited, conducted a ground EM survey to verify airborne INPUT conductors, and geological mapping and prospecting in the areas of the geophysical conductors in 1980 (A.F. 92525). Manitoba Mineral Resources Ltd., in joint venture with Enterprise Exploration Limited, conducted a reconnaissance geological mapping, prospecting and sampling survey in 1980; linecutting and an HLEM and magnetic survey in 1981 (A.F. 92527); and drilled DDH 187-27 (51.8 m) in 1981 (A.F. 92519).

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite quartzofeldspathic and biotite-magnetite gneiss, separated from Burntwood River Metamorphic Suite pelitic gneiss to the southeast by amphibolite of unknown affinity (Elphick and Schledewitz, 1972). DDH 187-27 intersected metagreywacke with minor graphite gneiss and granite (A.F. 92519).

MINERALIZATION

A 2.1 m intersection of graphite gneiss from DDH 187-27 contained trace disseminated pyrite or minor pyrite stringers (A.F. 92519).

GEOCHEMISTRY

One drill core sample from DDH 187-27 contained 0.02% Zn (A.F. 92519).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 92519, 92525, 92526, 92527; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-010

LOCATION: 10

NAME: (Mineralization intersected by diamond drilling)

EASTING: 486843

NORTHING: 6209294

AREA: NTS 64B/3; 5.25 km west-northwest of Fold Lake.

AIR PHOTO: MB88016-114

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). In 1980, Manitoba Mineral Resources Ltd. carried out an airborne INPUT EM survey over the area (A.F. 92526). Manitoba Mineral Resources, in joint venture with AM&S Canada Minerals Limited, conducted a ground EM survey to verify airborne INPUT conductors, and geological mapping and prospecting in the areas of the geophysical conductors in 1980 (A.F. 92525). Manitoba Mineral Resources Ltd., in joint venture with Enterprise Exploration Limited, conducted a reconnaissance geological mapping, prospecting and sampling survey in 1980; linecutting and an HLEM and magnetic survey in 1981 (A.F. 92527); and drilled DDH 187-5 (57.0 m) in 1981 (A.F. 92519).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from Sickle Metamorphic Suite biotite-magnetite gneiss to the east by quartzofeldspathic gneiss and amphibolite of unknown affinity (Elphick and Schledewitz, 1972; MDS Map 64B Southwest). DDH 187-5 intersected meta-arkose, metagreywacke, amphibolite, and minor graphite gneiss and pegmatites, some of which are magnetiferous (A.F. 92519).

MINERALIZATION

A 3.2 m intersection of graphite gneiss at the contact between metagreywacke and amphibolite units contained up to 2% pyrite. The amphibolite was garnetiferous and contained traces of pyrite and pyrrhotite (A.F. 92519).

GEOCHEMISTRY

Two drill core samples from DDH 187-5 contained 0.04 and 0.07% Zn, respectively (A.F. 92519).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 92519, 92525, 92526, 92527; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-011

LOCATION: 11

NAME: (Mineralization intersected by diamond drilling)

EASTING: 488570

NORTHING: 6207558

AREA: NTS 64B/3; 3.25 km west of Fold Lake.

AIR PHOTO: MB88026-109

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). In 1980, Manitoba Mineral Resources Ltd. carried out an airborne INPUT EM survey over the area (A.F. 92526). Manitoba Mineral Resources, in joint venture with AM&S Canada Minerals Limited, conducted a ground EM survey to verify airborne INPUT conductors, and geological mapping and prospecting in the areas of the geophysical conductors in 1980 (A.F. 92525). Manitoba Mineral Resources Ltd., in joint venture with Enterprise Exploration Limited, conducted a reconnaissance geological mapping, prospecting and sampling survey in 1980; linecutting and an HLEM and magnetic survey in 1981 (A.F. 92527); and drilled DDH 187-6 (160.6 m) in 1981 (A.F. 92519).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from Sickle Metamorphic Suite biotite-magnetite gneiss to the east by quartzofeldspathic gneiss and amphibolite of unknown affinity. White pegmatitic granodiorite occurs to the southwest (Elphick and Schledewitz, 1972; MDS Map 64B Southwest). DDH 187-6 intersected metagreywacke, quartzite and biotitic quartzite, graphite gneiss, and ended in granite (A.F. 92519).

MINERALIZATION

The first 145.1 m of rock intersected by DDH 187-6 consisted of mineralized metagreywacke, quartzite and biotitic quartzite and graphite gneiss. Within the mineralized interval, near solid- to solid-sections of pyrrhotite and/or graphite were common; these are separated by rock with minor to moderate amounts of pyrrhotite ÿ pyrite ÿ graphite (A.F. 92519).

GEOCHEMISTRY

Forty-five drill core samples from DDH 187-6 were analyzed for Zn, Au, Ag, Cu and Ni: ranges of trace to 0.34% Zn, 0.03 to 0.06% Cu, 0.01 to 0.04% Ni, nil to 8.2 g/t Ag and nil Au were obtained (A.F. 92519).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 92519, 92525, 92526, 92527; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-012

LOCATION: 12

NAME: (Mineralization intersected by diamond drilling)

EASTING: 484218

NORTHING: 6206057

AREA: NTS 64B/3; 4.5 km east of Misinagu Lake.

AIR PHOTO: MB88016-62

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). In 1980, Manitoba Mineral Resources Ltd. carried out an airborne INPUT EM survey over the area (A.F. 92526). Manitoba Mineral Resources, in joint venture with AM&S Canada Minerals Limited, conducted a ground EM survey to verify airborne INPUT conductors, and geological mapping and prospecting in the areas of the geophysical conductors in 1980 (A.F. 92525). Manitoba Mineral Resources Ltd., in joint venture with Enterprise Exploration Limited, conducted a reconnaissance geological mapping, prospecting and sampling survey in 1980; linecutting and an HLEM and magnetic survey in 1981 (A.F. 92527); and drilled DDH 187-9 (84.4 m) in 1981 (A.F. 92519).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss (Elphick and Schledewitz, 1972). DDH 187-9 intersected garnetiferous metagreywacke with graphitic bands and interlayered impure quartzite (A.F. 92519).

MINERALIZATION

DDH 187-9 intersected a 21.1 m zone of greywacke and minor interbedded quartzite with 10 to 75% graphite in discontinuous layers, 5 to 25% pyrite, a trace of chalcopyrite, and near the bottom of the zone, 40% pyrrhotite. An 8.8 m zone of quartzite contained moderate to near solid amounts of graphite, up to 30% pyrite in sections, and locally, traces of chalcopyrite. Two other zones, 1.4 and 2.6 m in core length, and a minor 12 cm section, contained minor to moderate amounts of pyrite and moderate to near solid amounts of graphite in metagreywacke (A.F. 92812).

GEOCHEMISTRY

Five drill core samples were analyzed for Zn; two were also analyzed for Ag, Au and Cu; one was also analyzed for Au and Ag: analyses of 0.01 to 0.09% Zn, 0.03 and 0.11% Cu, trace Ag and trace Au were obtained (A.F. 92519).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 91988, 92519, 92525, 92526, 92527; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-013

LOCATION: 13

NAME: (Mineralization intersected by diamond drilling)

EASTING: 479679

NORTHING: 6217096

AREA: NTS 64B/3; east of the Rat River between the Rat River and western Mynarski Lakes.

AIR PHOTO: MB88026-189

ACCESS: Float plane to the Rat River and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey and followed up with ground reconnaissance in the area of the conductors in 1981 (A.F. 92813), a ground HLEM and magnetic survey and 1:2500 geological mapping in the areas of the conductors in 1982 (A.F. 92814), and drilled DDH 188-5, -6, -7 and -8 totalling 206.1 m in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss and Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss, separated by amphibolite of unknown affinity (Elphick and Schledewitz, 1972). Detailed mapping in the western part of the area delineated interlayered greywacke gneiss, amphibolite gneiss, quartzite, arkosic gneiss and pegmatites (A.F. 92814). DDH 188-5 intersected quartz-biotite gneiss, quartz-biotite-sillimanite gneiss, hornblende-sillimanite gneiss, quartzite and minor diorite. DDH 188-6 intersected metagreywacke, amphibolite, and minor interlayered quartzite and pegmatite mobilizate. DDH 188-7 intersected amphibolite and metagreywacke, separated by a minor section of mineralized quartzite and a mylonitized zone. DDH 188-8 intersected interlayered amphibolite, quartzite and metagreywacke (A.F. 92815).

MINERALIZATION

DDH 188-8. A 2.3 m intersection of amphibolite with siliceous bands from DDH 188-8 contained 5 to 40% pyrrhotite and <1% pyrite. Three other zones, 0.4 and 1.7 m in core length, contained <10% graphite and <5% pyrite and/or pyrrhotite in quartzite. Graphite-biotite schist, 0.5 m in core length, contained 50% graphite and 1% pyrite. Trace to 1% pyrrhotite and/or pyrite were disseminated throughout most of the remainder of the drill core (A.F. 92815). DDH 188-5 intersected minor graphite and <1% pyrite in several lithologies; a 3.7 m conductive intersection contains 30% graphite in a quartzofeldspathic matrix and quartz-biotite gneiss. DDH 188-6 intersected seven sections up to 2.0 m in core length, with pyrite contents ranging from 2 to 15%, graphite ranging from 0 to 50%, and pyrrhotite, where present, in amounts up to 10%. Mineralization in a 25 cm section of quartzite from DDH 188-7 consisted of 10% graphite and 2% pyrite (A.F. 92815). Outcrops contain minor localized pyrite, pyrrhotite, or graphite; chalcopyrite, azurite and malachite were noted at one location (A.F. 92814).

GEOCHEMISTRY

Three outcrop samples of arkosic gneiss with minor disseminated pyrite, chalcopyrite, azurite and bornite contained 0.19 to 0.72% Cu, nil to 0.02% Zn, nil to 1.0 g/t Ag, and nil to trace Au (Fig. 26; A.F. 92814). Eleven drill core samples from DDH 188-5, -6, -7 and -8 were analyzed for Zn, Ag and Au; an additional four samples were analyzed for Cu, Zn, Ag and Au. The analyses had ranges of trace to 0.05% Cu, 0.01 to 0.16% Zn, nil to 2.1 g/t Ag, and nil to trace Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814, 92815; Manitoba Energy and Mines, Mines Branch
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-014

LOCATION: 14

NAME: (Mineralization intersected by diamond drilling)

EASTING: 483560

NORTHING: 6221046

AREA: NTS 64B/3; northwest Mynarski Lakes.

AIR PHOTO: MB88016-72, -73

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted a ground HLEM and magnetic survey and geological mapping in the areas of the conductors in 1982 (A.F. 92814), and drilled DDH 188-1 (49.4 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, overlain to the south by Sickle Metamorphic Suite biotite-magnetite gneiss and hornblende-biotite-magnetite gneiss. A thin unit of amphibolite of unknown affinity separates rocks of the two metamorphic suites (Elphick and Schledewitz, 1972). DDH 188-1 intersected metagreywacke with local interlayered quartzite and minor amphibolite (A.F. 92815).

MINERALIZATION

DDH 188-1 intersected 1.7 m of 30% graphite and 2% pyrite in a quartz-plagioclase matrix that contains 5% chlorite and amphibole hosted by metagreywacke. Less than 1% pyrite was disseminated in amphibolite and metagreywacke elsewhere in the drill core (A.F. 92815).

GEOCHEMISTRY

One drill core sample contained 0.01% Zn, nil Ag and nil Au (A.F. 92815).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-015

LOCATION: 15

NAME: (Mineralization intersected by diamond drilling)

EASTING: 483815

NORTHING: 6219364

AREA: NTS 64B/3; western Mynarski Lakes.

AIR PHOTO: MB88016-72

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted a ground HLEM and magnetic survey and geological mapping in the areas of the conductors in 1982 (A.F. 92814), and drilled DDH 188-2 (47.8 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from Sickle Metamorphic Suite biotite-magnetite gneiss and hornblende-biotite-magnetite gneiss by a thin discontinuous amphibolite layer of unknown affinity (Elphick and Schledewitz, 1972). DDH 188-2 intersected quartzofeldspathic gneiss with minor garnet \pm sillimanite \pm biotite, sillimanite-cordierite gneiss and quartzite (A.F. 92815).

MINERALIZATION

A 5.3 m mineralized zone in quartzite from DDH 188-2 contained 5 to 15% disseminated pyrite, 2 to 25% graphite, and <1% pyrrhotite. The sillimanite-cordierite gneiss consisted of sillimanite faserkiesel in a medium grained feldspar-quartz-cordierite-biotite \pm garnet matrix with traces of graphite and pyrite. Traces of pyrite also occurred locally in quartzofeldspathic gneiss and sillimanite-cordierite gneiss (A.F. 92815).

GEOCHEMISTRY

Three drill core samples from DDH 188-2 contained 0.01% Zn, nil Ag and nil Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The sillimanite-cordierite gneiss may represent either a metamorphosed hydrothermal alteration zone or an aluminum-rich metasediment; if it is a metamorphosed alteration zone, this location could be considered as having potential for stratabound massive sulphide type deposits.

REFERENCES

Assessment Files 91634, 91988, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. 1972: Geology of the Mynarski-Notigi lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2C, 48p.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-016

LOCATION: 16

NAME: (Mineralization intersected by diamond drilling)

EASTING: 481889

NORTHING: 6220534

AREA: NTS 64B/3; western Mynarski Lakes.

AIR PHOTO: MB88026-151, -152

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted a ground HLEM and magnetic survey and geological mapping in the areas of the conductors in 1982 (A.F. 92814), and drilled DDH 188-3 (69.2 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite biotite-magnetite gneiss and hornblende-biotite-magnetite gneiss, separated from Burntwood River Metamorphic Suite pelitic gneiss by a thin discontinuous amphibolite layer of unknown affinity (Elphick and Schledewitz, 1972). DDH 188-3 intersected amphibolite and minor quartzite (A.F. 92815).

MINERALIZATION

A 13.9 m zone between amphibolite and quartzite units, from DDH 188-3, consisted of quartz-biotite gneiss with quartzite and pegmatitic mobilizate that contain from <1 to 25% coarse grained graphite and up to 2% pyrrhotite in sections (A.F. 92815).

GEOCHEMISTRY

Five drill core samples contained 0.01 to 0.02% Zn, nil to trace Ag, and nil to trace Au (A.F. 92815).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-017

LOCATION: 17

NAME:

EASTING: 479906

NORTHING: 6220151

AREA: NTS 64B/3; between the Rat River and western Mynarski Lakes.

AIR PHOTO: MB88026-187

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey and followed up with ground reconnaissance in the area of the conductors in 1981 (A.F. 92813), a ground HLEM and magnetic survey and geological mapping in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss. Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss and migmatite occurs to the north, separated from the pelitic gneiss by a thin discontinuous amphibolite layer of unknown affinity. A north-northwest-trending fault of limited strike length occurs in the area (Elphick and Schledewitz, 1972).

MINERALIZATION

Disseminated pyrrhotite is hosted by lenses of amphibolite within pelitic gneiss that are intersected by a fault zone (Schledewitz, 1972). Schledewitz (1972) notes that a large cluster of 3-channel INPUT EM anomalies occurs east and south of this outcropping mineralization.

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814; Manitoba Energy and Mines, Mines Branch.

Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B03

MDS_No.: M64B03-018

LOCATION: 18

NAME: (Mineralization intersected by diamond drilling)

EASTING: 479837

NORTHING: 6218836

AREA: NTS 64B/3; 2 km east of the Rat River.

AIR PHOTO: MB88026-188

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92812); follow-up work included: (1) ground reconnaissance in the area of the conductors in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey and geological mapping in the areas of the conductors in 1982 (A.F. 92814), and (3) drilling of DDH 188-4 (72.2 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Sickie Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss; Burntwood River Metamorphic Suite pelitic gneiss and a thin layer of amphibolite occur to the north (Elphick and Schledewitz, 1972). DDH 188-4 intersected meta-arkose; metagreywacke (quartz-biotite gneiss) with accessory magnetite, sillimanite and garnet; amphibolite and minor pegmatitic mobilizate (A.F. 92815).

MINERALIZATION

In drill core from DDH 188-4, a 3.1 m mineralized zone between amphibolite and metagreywacke units consisted of a section of near solid (50%) graphite layers with pyrite blebs (2%) interlayered with impure quartzite and a section of quartz, plagioclase, chlorite and hornblende crystals in a matrix of coarse grained graphite (15%) and biotite with pyrite blebs (3%). Trace to minor pyrite occurred locally elsewhere in the remainder of the drill core (A.F. 92815).

GEOCHEMISTRY

Two drill core samples from DDH 188-4 contained 0.02% Zn, nil Ag and nil Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; other chemical sediments.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.

NTS: 64B03

MDS_No.: M64B03-019

LOCATION: 19

NAME:

EASTING: 470535

NORTHING: 6219377

AREA: NTS 64B/3; western part of the Rat River near the boundary with NTS 64B/4.

AIR PHOTO: MB88017-243

ACCESS: Float plane.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. conducted an airborne EM survey over Airborne Permit 37, which includes NTS 64B/3, in 1961 (A.F. 91634). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813); follow-up work included: (1) with ground reconnaissance in the area of the conductors in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey, and geological mapping in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss. A thin discontinuous amphibolite layer of unknown affinity and Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss occur to the south (Elphick and Schledewitz, 1972).

MINERALIZATION

Disseminated pyrrhotite occurs in sheared amphibolite and pelitic gneiss with corresponding 2-channel INPUT EM anomalies at this location (Schledewitz, 1972). Flooding of the Rat River for hydroelectric development occurred subsequent to Schledewitz's (1972) investigation, and mineralization at the western location is probably now underwater.

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814; Manitoba Energy and Mines, Mines Branch.
Elphick, S.C. and Schledewitz, D.C.P. 1972: Mynarski Lakes; Manitoba Mines, Resources and Environmental Management, Mines Branch, Map 71-2-3; 1:50 000.
Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-001

LOCATION: 1

NAME:

EASTING: 465406

NORTHING: 6227040

AREA: NTS 64B/4; island in northeastern Rat Lake.

AIR PHOTO: MB88021-14

ACCESS: Boat on Rat Lake.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out an airborne EM survey over Airborne Permit 37 in 1961 (A.F. 91634). Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area, which includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by a quartz monzonite to granodiorite pluton. Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss occurs to the east, and a smaller quartz diorite intrusion to the west (Schledewitz, 1972).

MINERALIZATION

"Sphalerite occurs on the northeast arm of Rat Lake...as clots and veins in steeply dipping joints, oriented at 240° and 290°, in a leucocratic quartz diorite. The leuco-quartz diorite, which forms a narrow contact phase between the quartz diorite and quartz monzonite, is altered adjacent to the sphalerite veins and clots. Plagioclase is altered to epidote and calcite, and chlorite forms veinlets which are most pronounced close to the sphalerite-quartz diorite contact, but become thinner and die out within a distance of a few centimetres. An INPUT electromagnetic anomaly (5-channel) and corresponding magnetic anomaly, were recorded off-shore from this occurrence of sphalerite" (Schledewitz, 1972, p. 48).

GEOCHEMISTRY

None.

CLASSIFICATION

Vein type deposit; multiple veins. Speculatively, the sphalerite mineralization might represent mobilize from another source of mineralization, possibly indicated by the nearby 5-channel INPUT and coincident magnetic anomalies

REFERENCES

Assessment Files 91634, 91988, 92814; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-002

LOCATION: 2

NAME: (Mineralization intersected by diamond drilling)

EASTING: 464364

NORTHING: 6218474

AREA: NTS 64B/4; southern Rat River/Rat Lake.

AIR PHOTO: MB88021-19

ACCESS: Boat on Rat Lake and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out an airborne EM survey over part of the area of this location in 1961 (A.F. 91634). Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area, which includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813); follow-up work included: (1) ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey, and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814), and (3) drilling of DDH 188-10 (57.0 m) and 188-10A (abandoned at 8.5 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

DDH 188-10 was drilled in a low-lying area with no exposure. Outcrops that surround this area consist of Burntwood River Metamorphic Suite pelitic gneiss and Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss, separated by a thin discontinuous amphibolite layer of unknown affinity; a quartz monzonite to granodiorite pluton; and microcline pegmatite (Schledewitz, 1972). DDH 188-10 intersected metagreywacke, amphibolite, meta-arkose and quartzite (A.F. 92815).

MINERALIZATION

DDH 188-10 intersected 8.9 m of partly sheared graphite schist with 10% pyrite stringers. The mineralized graphite schist occurred between units of metagreywacke and amphibolite. Minor sections of pink pegmatite occurred within the zone of pyritic graphite schist (A.F. 92815).

GEOCHEMISTRY

Three drill core samples from DDH 188-10 contained 0.03 to 0.04% Cu, 0.02 to 0.07% Zn, trace Ag and nil Au (A.F. 92815).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814, 92815; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-003

LOCATION: 3

NAME:

EASTING: 468703

NORTHING: 6219695

AREA: NTS 64B/4; Rat River, near border with NTS area 64B/3.

AIR PHOTO: MB88028-194

ACCESS: Boat.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out an airborne EM survey over Airborne Permit 37 in 1961 (A.F. 91634). Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey and followed up with ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by amphibolite of unknown affinity that separates Burntwood River Metamorphic Suite pelitic gneiss from Sickie Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss (Schledewitz, 1972).

MINERALIZATION

Disseminated pyrrhotite and graphite occur in sheared amphibolite and pelitic gneiss. Minor pyrrhotite and chalcopyrite are widespread in amphibolite throughout the map area, concentrated in areas that are intersected by shears (Schledewitz, 1972, p. 48, 50-51).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-004

LOCATION: 4

NAME:

EASTING: 466849

NORTHING: 6216549

AREA: NTS 64B/4; small unnamed lake south of the Rat River/Rat Lake.

AIR PHOTO: MB88021-21

ACCESS: Boat on Rat Lake and traverse.

EXPLORATION SUMMARY

Canadian Nickel Co. Ltd. carried out an airborne EM survey over Airborne Permit 37 in 1961 (A.F. 91634). Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813); follow-up work included: (1) ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey, and (3) a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, separated from Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss by amphibolite of unknown affinity (Schledewitz, 1972).

MINERALIZATION

Pyrrhotite is disseminated in quartz-microcline layers in pelitic gneiss (Schledewitz, 1972, p. 50-51).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91634, 91988, 92813, 92814; Manitoba Energy and Mines, Mines Branch.
Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-005

LOCATION: 5

NAME: (Mineralization intersected by diamond drilling)

EASTING: 458942

NORTHING: 6213899

AREA: NTS 64B/4; approximately 1.5 km south of flooded Rat Lake.

AIR PHOTO: MB88028-155

ACCESS: Boat on Rat Lake and traverse.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813); follow-up work included: (1) ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814), and (3) drilling of DDH 188-11 (47.8 m), 188-12 (57.0 m) and 188-12A (abandoned at 5.5 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by enclaves of Burntwood River Metamorphic Suite pelitic gneiss, circular to elliptical in plan, and Sickle Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss and hornblende-biotite-magnetite gneiss. Rocks of these two suites are separated by amphibolite of unknown affinity (Schledewitz, 1972). DDH 188-11 and 188-12 intersected interlayered amphibolite and metagreywacke; core from DDH 188-12 also included minor sections of granodiorite and pink pegmatite (A.F. 92815).

MINERALIZATION

DDH 188-11 intersected two mineralized zones, 0.95 and 2.4 m in core length, that consist of 20 to 25% graphite and 2 to 5% pyrite disseminated in amphibolite. DDH 188-12 intersected two mineralized zones, 1.3 and 3.6 m in core length, that consist of 20 to 25% graphite and 4 to 5% pyrite in banded amphibolite, and one 2.2 m zone of 25% graphite and 1% pyrite in a quartz-feldspar-hornblende (greywacke) matrix (A.F. 92815).

GEOCHEMISTRY

Three drill core samples from DDH 188-11 contained 0.02 to 0.03% Cu, 0.02 to 0.03% Zn, nil Ag and nil Au. Four drill core samples from DDH 188-12 contained 0.02 to 0.05% Zn, nil to trace Ag, and nil Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91988, 92813, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.

NTS: 64B04

MDS_No.: M64B04-006

LOCATION: 6

NAME:

EASTING: 447601

NORTHING: 6215058

AREA: NTS 64B/4; southwestern Rat Lake.

AIR PHOTO: MB88027-119, -120, -121, -77, -78

ACCESS: Boat on Rat Lake, or by trails leading from Provincial Road 391.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Ruttan Lake Explorations Limited drilled three holes (DDH RR-1-72, RR-2-72 and RR-3-72) totalling 322 m on CB 3554 in 1972 (A.F. 92305). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813); follow-up work included: (1) ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813), (2) a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814), and (3) drilling of DDH 188-13 and -14 (total 95.7 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, Sickle Metamorphic Suite biotite-magnetite gneiss and hornblende-biotite-magnetite gneiss, minor amphibolite of unknown affinity, and minor magnetiferous quartz diorite and microcline pegmatite (Schledewitz, 1972). DDH 188-13 and -14 intersected garnetiferous metagreywacke; pink pegmatites were also intersected in DDH 188-14 (A.F. 92815). Logs for DDH RR-1-72, RR-2-72 and RR-3-72 describe granite gneiss, pegmatite and granite, biotite gneiss and biotite schist (A.F. 92305).

MINERALIZATION

DDH 188-13 intersected a 8.3 m zone that comprises five sections, 0.3 to 1.1 m, with 20 to 40% graphite, separated by metagreywacke with 0 to 10% graphite. Graphite, 5 to 10%, was disseminated in metagreywacke throughout the remainder of the drill core from DDH 188-13; 1% pyrite was disseminated in metagreywacke up the hole from the graphitic zone. DDH 188-14 intersected 1.8 m of metagreywacke with 40% graphite and accessory biotite, feldspar and chlorite. Metagreywacke locally contained traces of pyrite in other sections of the drill core (A.F. 92815). A 6.1 m section of gneiss with 2 to 5% pyrrhotite and pyrite was intersected by DDH RR-1-72. DDH RR-2-72 intersected 8.8 m of highly fractured granite with graphite along the fractures, and DDH RR-3-72 intersected 9.8 m of solid graphite (A.F. 92305). Schledewitz (1972, p. 48) noted that minor pyrrhotite and chalcopyrite are widespread in amphibolite throughout the map area, especially concentrated in areas that are intersected by shears. Schledewitz (1972, p. 50-51) noted minor small blebs of chalcopyrite associated with sheared, silicified pelitic gneiss in the northeast, however, hydroelectric development in 1976 has caused flooding to occur in this area.

GEOCHEMISTRY

Five drill core samples from DDH 188-13 and one from DDH 188-14 contained 0.02 to 0.05% Zn, nil Ag and nil Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Although near solid graphite with only minor pyrite are recorded in the drill logs for DDH 188-13 and 188-14, Gale et al. (1980) note that microscopic investigation of this type of mineralization commonly reveals small amounts of graphite coating a preponderance of fine grained iron sulphide.

REFERENCES

Assessment Files 91988, 92305, 92813, 92814, 92815; Manitoba Energy and Mines, Mines Branch.
Gale, G.H., Baldwin, D.A. and Koo, J. 1980: A geological evaluation of Precambrian massive sulphide deposit potential in Manitoba; Manitoba Energy and Mines, Economic Geology Report ER79-1, 137p.
Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-007

LOCATION: 7

NAME:

EASTING: 444996

NORTHING: 6213401

AREA: NTS 64B/4; 2 km northeast of Provincial Road 391 at its intersection with a power line.

AIR PHOTO: MB88011-111

ACCESS: Trail leading from Provincial Road 391 and traverse.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey and followed up with ground reconnaissance over the areas of the conductor axes in 1981 (A.F. 92813). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by amphibolite, bordered by Burntwood River Metamorphic Suite pelitic gneiss (Schledewitz, 1972).

MINERALIZATION

Minor disseminated pyrrhotite occurs in folded and sheared amphibolite. Minor pyrrhotite and chalcopyrite are widespread in amphibolite throughout NTS 64B/4, especially concentrated in areas that are intersected by shears (Schledewitz, 1972, p. 48, 50-51).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91988, 92813, 92814; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-008

LOCATION: 8

NAME: (Mineralization intersected by diamond drilling)

EASTING: 443603

NORTHING: 6215371

AREA: NTS 64B/4; 1 km southwest of the Suwannee River.

AIR PHOTO: MB88011-110

ACCESS: Boat on the Suwannee River and traverse, or by traverse from along a power line leading from Provincial Road 396.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814), and drilled DDH 188-15 (50.9 m) in 1983 (A.F. 92815).

GEOLOGICAL SETTING

The area is underlain by Burntwood River Metamorphic Suite pelitic gneiss, and overlain by Sickle Metamorphic Suite hornblende-biotite-magnetite gneiss to the north (Schledewitz, 1972). DDH 188-15 intersected amphibolite (A.F. 92815).

MINERALIZATION

DDH 188-15 intersected 3.8 m of siliceous, partly chloritic amphibolite with disseminated (20%) to near solid (50%) bands of pyrrhotite and <5% pyrite. Further down the hole, a 0.5 m section contained 80 to 90% pyrrhotite and 5% pyrite in a quartz-chlorite matrix (A.F. 92815).

GEOCHEMISTRY

Four drill core samples from DDH 188-15 contained 0.01% Zn, nil Ag and nil Au (A.F. 92815).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Near solid sections of pyrrhotite and minor pyrite occur in siliceous chloritic amphibolite.

REFERENCES

Assessment Files 91988, 92814, 92815; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-009

LOCATION: 9

NAME:

EASTING: 448582

NORTHING: 6219170

AREA: NTS 64B/4; southwestern Rat Lake.

AIR PHOTO: MB88027-74

ACCESS: Boat on Rat Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by a microcline granite pluton, cored by a stock of quartz diorite. The pluton intrudes and contains abundant inclusions of Sickie Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss (Schledewitz, 1972).

MINERALIZATION

Molybdenite occurs as "large spectacular clots of very limited extent" within quartz veins in a zone of silicification in microcline granite. Evidence of local retrograde metamorphism is present along the quartz veins (Schledewitz, 1972, p. 48).

GEOCHEMISTRY

None.

CLASSIFICATION

Vein type deposit; multiple veins.

REFERENCES

Assessment Files 91988, 92814; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04

MDS_No.: M64B04-010

LOCATION: 10

NAME:

EASTING: 451085

NORTHING: 6231732

AREA: NTS 64B/4; northwestern Rat Lake.

AIR PHOTO: MB88027-131

ACCESS: Boat on Rat Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). Manitoba Mineral Resources Ltd. carried out a ground HLEM and magnetic survey over part of the area and a reconnaissance geological survey in the areas of the conductors in 1982 (A.F. 92814).

GEOLOGICAL SETTING

The area is underlain by quartzofeldspathic gneiss and migmatite, cordierite-sillimanite-anthophyllite-biotite gneiss of unknown affinity; Sickie Metamorphic Suite weakly magnetiferous quartzofeldspathic gneiss and hornblende-biotite-magnetite gneiss; magnetiferous quartz diorite; quartz monzonite to granodiorite; and microcline granite (Schledewitz, 1972).

MINERALIZATION

Clots of coarse grained molybdenite occur within quartz veins in hornblende-biotite-magnetite gneiss and in quartzofeldspathic gneiss and migmatite. Evidence of local retrograde metamorphism is present along the quartz veins (Schledewitz, 1972, p. 48).

GEOCHEMISTRY

None.

CLASSIFICATION

Vein type deposit; multiple veins.

REFERENCES

Assessment Files 91988, 92814; Manitoba Energy and Mines, Mines Branch.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B04**MDS_No.: M64B04-011****LOCATION: 11****NAME:****EASTING: 451468****NORTHING: 6213425****AREA: NTS 64B/4; northwestern Rat Lake.****AIR PHOTO: MB88027-124****ACCESS: Boat on Rat Lake.****EXPLORATION SUMMARY**

Questor Surveys Ltd. conducted an airborne INPUT EM and magnetic survey over an area that includes NTS 64B/4, for Manitoba's Department of Mines and Natural Resources in 1968 (A.F. 91988). The Manitoba Mines Branch carried out an EM-16 survey of the area in 1975 (Baldwin, 1976). Manitoba Mineral Resources Ltd. conducted an airborne INPUT EM survey in 1981 (A.F. 92813).

GEOLOGICAL SETTING

The area is underlain by cordierite-sillimanite-anthophyllite-biotite gneiss of unknown affinity (Schledewitz, 1972). Baldwin (1971, 1976) further divided these rocks into various quartzites, schists, porphyroblastites and granoblastites. 5 Units may be classed broadly as quartz bearing, and the remaining units may be considered quartz free and hercynite bearing. The cordierite-anthophyllite rocks outcrop over a 60 x 27 m area, and crosscut lithologic layering (Baldwin, 1976).

MINERALIZATION

A magnetite granoblastite unit, 5 m thick, comprises solid magnetite with <2% hercynite. Spheroidal magnetite-garnet-anthophyllite porphyroblastite contains spheroidal magnetite porphyroblasts rimmed by garnet; magnetite-biotite-anthophyllite granoblastite is similar, but the magnetite porphyroblasts lack the garnet rims. Fine grained disseminated magnetite is ubiquitous throughout all lithologies (Baldwin, 1976). Quartz-free rocks contain pyrrhotite with minor pyrite and chalcopyrite, and traces of molybdenite. Sulphides occur as fine grained disseminations and along fractures within the cordierite-anthophyllite rocks, and along cleavage cracks in amphiboles, particularly in radiating anthophyllite. Very minor amounts of late hematite and siderite are present. Quartz-bearing rocks contain minor pyrite (Baldwin, 1976). Baldwin (1976) interprets the cordierite-anthophyllite rocks at this location as a metamorphosed equivalent of a massive sulphide type chloritic alteration zone.

GEOCHEMISTRY

A major element composition for cordierite-anthophyllite rocks at location 11, averaged from nine analyses, is presented in Table 7.

Average major element analysis of nine samples of cordierite-anthophyllite rocks from location 11 (Baldwin, 1976)	
	Wt. %
SiO ₂	40.51
TiO ₂	0.26
Al ₂ O ₃	20.39
Fe ₂ O ₃	5.66
FeO	14.02
MnO	0.09
MgO	14.98
CaO	0.31
Na ₂ O	1.15
K ₂ O	0.46
Total	98.73

CLASSIFICATION

Stratabound massive sulphide type deposit; alteration associated with sedimentary rocks. Baldwin (1976) notes similarities in chemistry and mineralogy between magnetite-bearing cordierite-anthophyllite rocks at this location and altered host rocks at the Coronation Mine (Saskatchewan) and Sherridon Mine (Manitoba).

REFERENCES

Assessment Files 91988, 92813; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1971: Garnet-cordierite-anthophyllite rocks at Rat Lake, Manitoba; University of Manitoba, M.Sc. Thesis (unpublished), 53p. 1976: Cordierite-anthophyllite rocks at Rat Lake, Manitoba - A metamorphosed alteration zone; Manitoba Mines, Resources and Environmental Management, Mineral Resources Division, Open File Report OF76-1, 30p.

Schledewitz, D.C.P. 1972: Geology of the Rat Lake area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2B, 57p.

NTS: 64B05

MDS_No.: M64B05-001

LOCATION: 1

NAME: Ruttan

EASTING: 460763

NORTHING: 6259107

AREA: NTS 64B/5; Ruttan Lake.

AIR PHOTO: A25474-115

ACCESS: Gravel all-weather road from the town of Leaf Rapids.

EXPLORATION SUMMARY

The exploration history of the Ruttan deposit is summarized from Mineral Inventory Card 64B/5 Cu1 and from "The Ruttan Mine Story" (SGM, 1984). SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). SGM conducted follow-up ground EM and magnetic surveys in 1968, and drilled numerous holes totalling 21 030 m in 1969. Ore reserves of 46 300 000 t grading 1.47% Cu and 1.61% Zn to the 600 m level were calculated in 1969. Exploration and development continued, including a total of 61 570 m of drilling, bulk sampling and test milling, and construction of the town of Leaf Rapids 24 km to the west. Production from an open pit commenced in 1973 at a rate of 9000 t per day and ceased in 1980; production from underground operations at rates up to 5500 t per day began in 1979 and is ongoing. In 1987, Hudson Bay Mining & Smelting Co., Limited purchased 100% interest in the Ruttan Mine. A 50% net profit interest was purchased by the Government of Manitoba for a price equivalent to an outstanding loan repayment (Hudson Bay Mining and Smelting Co., Limited, 1987 Annual Report). Production commenced from the Ruttan West Anomaly in 1991. As of June 30, 1992, proven and probable reserves for the combined Ruttan and Ruttan West Anomaly deposits were 8 276 000 t averaging 1.37% Cu and 1.75% Zn (Minorco, 1992 Annual Report).

GEOLOGICAL SETTING

The area is underlain by Ruttan Group (Ruttan Block) greywacke and felsic siltstone. The sedimentary succession also includes heterolithic volcanic breccia, polymictic conglomerate and basalt flows, and is surrounded by mafic intrusive rocks and intrusion breccia (Baldwin, 1988). Strata are truncated to the west by post-Sickle granodiorite (Steeves and Lamb, 1972), and partly truncated to the northeast by the Vol Fault (Baldwin, 1988; Ames and Scoates, 1992). Various aspects of the geology of the Ruttan area have been investigated in detail by Haverslew (1976), Baldwin (1978), Jackson (1979), Jackson and Turnock (1979), Baldwin (1982), Speakman et al. (1982), and by Ames and Scoates (1992), which includes work reported earlier by Ames et al. (1990, 1991) and Ames (1991). Various field trip summaries are given by Gale et al. (1982) and Gilbert et al. (1982). Forthcoming papers will describe the results of detailed mapping near the Ruttan deposit (Ames, in prep.), the geology of the West Anomaly (Ames and Taylor, in prep.), and the geology and geochemistry of rhyolite flows from the Karsakuwigamak Block compared to those of the Ruttan area (Ames and Baldwin, in prep.). The detailed geology described here is summarized primarily from Ames and Scoates (1992). A sequence of basalt flows (800 m thick) with subordinate breccia and sulphidic interflow tuff ('Mine Basalt') constitutes the lowermost part of the exposed stratigraphy. A 250 m thick unit of pyroxene phyric basalt overlies the Mine Basalt to the east of the minesite. The pyroxene phyric basalt is overlain variously by intermediate volcanoclastic rocks; microcline-rich rhyolite; plagioclase phyric andesite tuff, lapilli tuff and tuff-breccia. Microcline rhyolite (<10 to 100 m thick) is overlain by aphyric andesite (up to 120 m thick) or the plagioclase phyric andesite. The 'Mine Sequence' consists of solid sulphide, rhyolite tuff and quartzofeldspathic rocks. It overlies, variously, feldspar porphyry, microcline rhyolite, aphyric andesite and plagioclase phyric andesite. The solid sulphides occur within the rhyolite tuff and/or quartzofeldspathic rocks, collectively 'Mine Rhyolite', a name given by Speakman et al. (1982)(Speakman et al. (1982) postulated that the Mine Rhyolite was composed of silicified volcanoclastic rocks) and retained in Ames and Scoates's (1992) nomenclature. A thick (1000 m) sequence of greywacke turbidites and debris flows ('Powder Magazine' or 'P.M.' Unit; nomenclature by Speakman et al., 1982 and retained by Ames and Scoates, 1992) constitutes the hanging wall stratigraphy. The P.M. Unit has been traced 10 km to the northeast of the deposit and 2 km southwest of the deposit (Baldwin, 1982). The sedimentary sequence youngs to the south; sediments were transported from the northeast (Baldwin, 1978; Speakman et al., 1982; Ames and Scoates, 1992). Minor felsic and mafic rocks of unknown origin occur near the southern limits of the tailings pond (Ames and Scoates, 1992). Ames and Scoates (1992) interpret footwall rocks at the deposit as a unit of variably silicified basalt. Aphyric, quartz amygdaloidal, pillowed basalt with chlorite-quartz-sulphide interpillow material and epidote alteration are transected by northeast-trending silicification domains. Alteration intensity ranges from fracture-controlled to pervasive silicification zones. Ames et al. (1990) identified "relict amygdaloidal basalt flows, black 'clast-like' pods and amphibole-chlorite-garnet fractures" within the zones of silicification. Further to the northeast, Ames and Scoates (1992) note pillowed basalt overlain by hornblende phyric, matrix supported heterolithic basalt breccia, tuff breccia and aphyric massive flows. Mafic feldspar- and feldspar-hornblende phyric fragments are most common; other mafic and felsic clasts are present. In contrast, Baldwin (1982) and Speakman et al. (1982) describe felsic and intermediate volcanoclastic rocks near the minesite as fine- to medium-grained, massive, and equigranular with a uniform appearance and composition. Primary structures are obliterated, but Baldwin (1982) recognizes felsic to intermediate fragments, and Speakman et al. (1982) note "indistinct banding and vague curved lamellae". Away from the deposit, elliptical, subangular to subrounded, <1 mm to 40 cm, equidistributed, felsic and intermediate fragments are supported in a greywacke matrix. Rarely, fragments are graded. The matrix is more biotitic and more coarsely crystalline than the fragments. A few heterolithic members, some of which are clast supported, were noted within this unit. Thinly bedded intermediate to felsic sedimentary rocks, 1 to 2 m thick, are interbedded with the volcanoclastic rocks. According to the interpretation of Speakman et al. (1982), the upper 100 m (near the deposit) to 400 m (northeast of the deposit) of this unit are altered, and they designate a dome-shaped unit of 'Altered Footwall Volcanoclastic

Rocks'. The rhyolite tuff that is part of the Mine Sequence and hosts the solid sulphide lenses at the Ruttan deposit was traced 2200 to 3500 m along strike to the northeast of the open pit, where it comprises three members: (1) quartz phyrlic rhyolite tuff, 3 to 4 m wide, with 10 to 15% quartz phenocrysts and 5 to 10% garnet, interlayered with minor laminated mafic sedimentary rocks; (2) massive, rusty white weathering, quartz phyrlic and aphyrlic rhyolite tuff, 3 to 4 m wide, with 5% combined magnetite, pyrite, pyrrhotite, barite, sphalerite and chalcopyrite; and (3) 1.6 m of normally graded quartz- and feldspar-phyric rhyolite. The quartzofeldspathic rocks in the Mine Sequence are quartz-feldspar-biotite schists with 30% sericite and 20% amphibole in patches (Ames and Scoates, 1992). Speakman et al. (1982) and Baldwin (1982) also identify a 50 to 100 m thick 'Exhalite Horizon' separate from the Mine Rhyolite composed of mixed chemical and detrital sediments with 10 to 15% pyrite overlying and flanking the Mine Rhyolite at the base of the P.M. Unit. Ames et al. (1990) apparently describe these rocks as <30 m of mixed chert and felsic tuff more than 2200 m northeast of the deposit, the extension of the Ruttan horizon, part of the Mine Sequence, and place the location of the extension approximately 400 m northwest of the position shown by Jackson (1979), Baldwin (1982) and Speakman et al. (1982). Pre-Sickle mafic stocks intrude the P.M. Unit, and other pre-Sickle sills and dykes of various compositions intrude throughout the stratigraphic succession (Steeves and Lamb, 1972; Ames and Scoates, 1992). A 500 m thick plagioclase porphyry occurs in the immediate footwall to the deposit and further to the northeast (Ames et al. (1990) suggests, instead, that Speakman et al.'s (1982) Footwall Volcaniclastic Rocks are equivalent to feldspar porphyry dykes/sills), and is notable for its visible lack of alteration. A quartz-plagioclase porphyry intrudes the base of the P.M. Unit near the deposit (Ames and Scoates, 1992). A penetrative foliation (S1) subparallel to bedding is oriented 060°/85°S (Ames and Scoates, 1992). The stratigraphic sequence including the deposit sits upright and tops to the south (Speakman et al., 1982; Baldwin, 1982; Ames and Scoates, 1992). Minor F1 folds are Z-shaped and trend and plunge parallel to the ore lenses underground (130°/60°SE). A secondary penetrative foliation (S2) with an average orientation of 053°/77°SE is visible in Mine Basalt in the northeastern part of the area. F1 folds are gently folded into an asymmetric map-scale pattern by F3 folds that plunge 60° to 80°SE (Ames and Scoates, 1992). A shear zone ('North Wall Shear') up to 30 m wide, oriented slightly discordant to the ore lenses (Speakman et al., 1982) at 070°/80°S, is a post-F1 high-angle reverse fault with south side up (Ames and Scoates, 1992); it has been identified along the north side of the open pit and underground, and bifurcates into three main and many minor splays (Speakman et al., 1982). A series of northeasterly trending shear zones crosscut the Ruttan Group. South of the tailings pond, schistosity and shear zones in supracrustal rocks are parallel (030°/75°SE) (Ames and Scoates, 1992).

MINERALIZATION

Mineralization

Multiple en echelon lenses of solid pyrite, pyrrhotite, chalcopyrite and sphalerite occur in a quartz-feldspar-chlorite-biotite-sericite-staurolite-garnet gangue with minor gypsum, anhydrite and calcite (Speakman et al., 1982; Staff, SGM, 1984). Veinlets or vug fillings of galena are rare (Haverslew, 1976). The lenses collectively have a strike length of 825 m and an average width of 35 m, strike approximately 070°, dip 67°SE and plunge 45°E (Staff, SGM, 1984). The lenses are recrystallized and display medium- to coarse-grained granoblastic to augen gneissic textures; most pre-existing textures are obliterated (Speakman et al., 1982). The lenses are hosted by the Mine Sequence, and mineralization is zoned with the more Zn-rich lenses being stratigraphically higher (toward the south) than the stratigraphically lower Cu-rich lenses to the north. Mineralization is also hosted by crosscutting chlorite-biotite schist with cordierite, quartz, and locally, garnet or talc and tremolite (Speakman et al., 1982). A solid sulphide vein of arsenopyrite, scorodite and visible gold cuts a microcline-quartz alteration vein system northeast of the minesite (Ames, 1991). However, Ames and Scoates (1992) specifically note that the microcline-quartz alteration itself is not auriferous.

Alteration

Alteration in the area of the Ruttan deposit has been noted by previous workers, including Gale and Koo (1977), Jackson (1979), Speakman et al. (1982), Ames et al. (1990, 1991), Ames (1991) and Ames and Scoates (1992). This summary is derived from Ames and Scoates (1992). A semi-conformable zone of epidotization, silicification, amphibole blastesis and quartz-microcline alteration affects the Mine Basalt unit and plagioclase phyrlic andesite and diorite sills, 1500 m below the mine horizon in the footwall. It is also associated with silicification zones in the hanging wall. A discordant zone of ferromagnesian alteration, sericitization and microcline-quartz alteration occurs in the immediate footwall to the Ruttan deposit (Ames and Scoates, 1992). Epidotization is patchy in Mine Basalts, most common as amoeboid domains in pyroxene phyrlic basalt, and also as pods in diorite sills. Silicification zones occur at various levels throughout the stratigraphy, and range from fracture controlled to patchy to pervasively altered domains. Amphibole blastesis occurs in parallel ribbons, along fractures oblique to bedding, as rims on epidote pods and as irregular clots in the P.M. Unit adjacent to diorite sills. Ferromagnesian alteration assemblages are extensive, spectacular and diverse, and have been subdivided into six types: talc-chlorite-biotite; anthophyllite-garnet-chlorite ± cordierite, magnetite, pyrite and pyrrhotite; cordierite-chlorite ± andalusite, biotite, garnet, staurolite, magnetite; garnet-chlorite ± biotite and amphibole; staurolite-biotite-andalusite ± chlorite and plagioclase; and magnetite blastesis. In general, the cordierite-anthophyllite rocks dominate in the West Anomaly, and in the lenses to the east, cordierite-chlorite-biotite rocks dominate. The fringes of the ferromagnesian-altered rocks are sericitized; cordierite is associated with sericitized zones in the footwall to the deposit. Microcline-quartz alteration occurs as microcline veins and as a quartz stockwork with amoeboid microcline patches (Ames and Scoates, 1992).

GEOCHEMISTRY

Combined past production and reserves from the Ruttan deposit total 39 985 000 tonnes grading 1.30% Cu and 1.36% Zn (Bamburak, 1990). As of June 30, 1992, proven and probable reserves for the combined Ruttan and Ruttan West Anomaly deposits were 8 276 000 t [9 124 000 short tons] averaging 1.37% Cu and 1.75% Zn (Minorco Annual Report, 1992). Results of 200 whole rock analyses, summarized by Speakman et al. (1982), demonstrated that a pervasive alteration zone extends stratigraphically below and laterally away from the deposit. More specifically, the Footwall Volcaniclastic Rocks are depleted in Na₂O, K₂O and CaO, and enriched in FeO and, to a lesser extent, MgO toward the deposit; within 200 m of the deposit, there is a sharp increase in MgO and decreases in CaO and Na₂O. The Mine Rhyolite contains high SiO₂ and low CaO, K₂O and Na₂O.

The Ruttan deposit and its host rocks have minor enrichments in Pb, Au, Ag, Hg, As, Co, Cd, Ba and Mn. The lenses of the deposit are classified as parts of the west and east zones, based largely on the distribution of Hg and Au, as well as being sheared (west zone) or unsheared (east zone); trace element distributions are generally erratic throughout the west zone, but show more distinguishable patterns in the east zone. Copper/zinc ratios increase stratigraphically downward in both the west and east zones (Haverslew, 1976; Jackson, 1979; Speakman et al., 1982; Ames and Scoates, 1992). Based on whole rock major and trace element analyses, the mafic flow rocks in the footwall are interpreted as subalkaline tholeiitic basalt flows deposited in a island arc regime (Steeves and Lamb, 1972; Haverslew, 1976; Pearce and Gale, 1977 (Analyses from the Ruttan deposit are listed as "Lynn Lake, Manitoba" in this paper (G.H. Gale, pers. comm., 1993)); Jackson, 1979; Speakman et al., 1982; Gale, 1990; Ames and Scoates, 1992). Sulphur isotope analyses, measurements of Fe contents in sphalerite, Pb isotope analyses, and measurements of Fe, Ba and Mn in host and mineralized rocks are given in Haverslew (1976). Sulphur isotope analyses indicated a magmatic source for sulphur. Iron contents in sphalerite indicate that pyrite, pyrrhotite and sphalerite crystallized in equilibrium at pressures of 6 Kb and temperatures between 200° and 250°C. Lead isotope data indicate that mineralization occurred between 1140 and 1900 Ma, and suggest that the lead was derived from a well-mixed, deep-seated Archean source. Fe/Mn ratios and the amounts of Ba and sphalerite increase toward the stratigraphic hanging wall (Haverslew, 1976). Bristol (1979) used ore samples from Ruttan to study variability in sphalerite geobarometry determinations. The Ruttan deposit was subjected to maximum regional metamorphic pressures of 5 to 6 kbars and temperatures of 475° to 650°C, based on the types of coexistent metamorphic mineral assemblages and compositional characteristics of chlorite. These samples were also used to test various assumptions regarding equilibrium conditions for sphalerite, pyrrhotite and pyrite. A till geochemical survey conducted 1 to 2 km northeast of the minesite demonstrated anomalous gold and arsenic concentrations in heavy mineral concentrates and the <2 micron fraction (Nielsen, 1986). Ames (1991) suggests that the gold-arsenopyrite-scorodite vein northeast of the minesite may be the source of these anomalies.

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated.

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NTS: 64B05

MDS_No.: M64B05-002

LOCATION: 2

NAME: (Mineralization intersected by diamond drilling)

EASTING: 460595

NORTHING: 6255738

AREA: NTS 64B/5; 1.7 km south of Ruttan minesite.

AIR PHOTO: A25474-116

ACCESS: Traverse from the Ruttan minesite.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Janus Explorations Limited conducted a VLEM and magnetic survey (A.F. 91546), and drilled DDH J-1, J-2 and J-3 totalling 345 m (A.F. 91547) on CB 842 in 1970. A magnetic survey in 1971 (A.F. 91500) and a VLEM survey in 1973 (A.F. 91941), both carried out by R. Kidd, covered the southwestern portion of location 2.

GEOLOGICAL SETTING

The area is underlain by diorite and gabbro (Baldwin, 1988). Near the drill holes, Baldwin (1982) mapped synvolcanic quartz diorite with numerous xenoliths of dioritic amphibolite and schists (probably metamorphosed equivalents of mafic and intermediate volcanic rocks), felsic volcanic rocks, and conglomerate with interbedded sandstone and siltstone. The xenoliths appear brecciated due to penetration by stringers of quartz diorite, and exhibit epidote, amphibole and/or biotite alteration near the stringers. To the northwest, the Ruttan Block volcanic-sedimentary succession includes greywacke and polymictic conglomerate; and to the southeast, basalt flows, felsic siltstone, heterolithic volcanic breccia, rhyolite and dacite flows and lapilli tuff (Baldwin, 1988).

MINERALIZATION

Baldwin (1982, p. 24-26) summarizes the drill log reports of mineralization from DDH J-1, J-2 and J-3 (A.F. 91547) and results of his field work: DDH J-1. "The mineralization comprises disseminated sulphide (py, cp) occurring as specks and sparse blebs in 1 to 2 m thick zones in quartz diorite, amphibolite and dioritic schist...Mineralization was not observed in outcrop." DDH J-2 and J-3. "The mineralization is disseminated sulphide (py, cp) and rarely as stringers in quartz diorite and hybrid rocks."

GEOCHEMISTRY

Copper and Zn assays of drill core samples had ranges of tr. to 0.12% Cu and tr. to 0.01% Zn (A.F. 91547).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91500, 91546, 91547, 91664, 91941, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-003

LOCATION: 3

NAME: (Mineralization intersected by diamond drilling)

EASTING: 464165

NORTHING: 6256096

AREA: NTS 64B/5; Esker Lake.

AIR PHOTO: A24996-115

ACCESS: Float plane.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Obaska Lake Mines Limited conducted a VLEM and magnetic survey (A.F. 90943), and drilled five holes totalling 674 m (A.F. 90944) on the Top claim in 1970. The southeastern part of location 3 was also covered by a VLEM and magnetic survey and a reconnaissance geological survey by Canex Aerial Exploration Ltd. in 1970 (A.F. 90953).

GEOLOGICAL SETTING

The area is underlain by Ruttan Group (Ruttan Block) basalt flows; lesser rhyolite and dacite flows occur to the northeast. Diorite and gabbro, including a zone of intrusion breccia, and granite and quartz monzonite intrusions occur to the north. The fault that separates the Ruttan and Karsakuwigamak blocks is towards the southeasternmost part of location 3 (Baldwin, 1988). Nearby outcrops consist of hornblende phyrlic, massive, medium- to fine-grained mafic rocks. Drill logs note intermediate to mafic metavolcanic rocks, parts of which are sheared or fault zones with epidote-rich sections, calcite lined vugs and calcite veinlets, biotite-rich zones, and chlorite-rich zones (Baldwin, 1982; A.F. 90944).

MINERALIZATION

Minor magnetite, chalcopyrite, bornite, azurite, malachite and native copper occur in quartz stringers or disseminated in shear zones and fault zones in core from DDH 1, 2 and 3 (Baldwin, 1982, p. 23-24; A.F. 90944). Core from DDH 4 and 5 was not mineralized (A.F. 90944).

GEOCHEMISTRY

Copper assays of drill core samples ranged from 0.02 to 0.08% (A.F. 90944).

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

Assessment Files 90943, 90944, 90953, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-004

LOCATION: 4

NAME: (Mineralization intersected by diamond drilling)

EASTING: 464656

NORTHING: 6251138

AREA: NTS 64B/5; 2.5 km south of Esker Lake.

AIR PHOTO: A24996-114

ACCESS: Float plane to Esker Lake and traverse.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration & Development Co. Ltd. drilled DDH Jit 20 (110 m) and Jit 21 (95 m) on CB 727 in 1970 (A.F. 90942). Ruttan Lake Explorations Limited conducted an HLEM and magnetic survey over CB 771, which covered the southern part of the area in 1971 (A.F. 90947).

GEOLOGICAL SETTING

The area near the drill holes is covered by surficial deposits and swamp. A granite and quartz monzonite intrusion with small enclaves of Ruttan Group (Ruttan Block) basalt flows occurs nearby. The fault that separates the Ruttan and Karsakuwigamak blocks trends northerly through the area near the drill holes (Baldwin, 1988). DDH Jit 20 and Jit 21 intersected quartz-hornblende-feldspar gneiss, hornblende-biotite gneiss, quartz-hornblende gneiss, chlorite-biotite schist, granite and quartz-feldspar gneiss (A.F. 90942).

MINERALIZATION

Three zones from DDH Jit 20, 2.6 m, 1.0 m and 1.3 m thick separated by 15 to 33 m of barren rock, contained mostly minor pyrrhotite, pyrite and trace chalcopyrite. The 2.6 m thick zone was hosted by fine- to medium-grained quartz-hornblende-feldspar gneiss. The upper 2.3 m contained 1 to 4% pyrrhotite and pyrite with trace chalcopyrite in contact with a 30 cm section with 40% pyrrhotite, 10% pyrite and trace chalcopyrite. The 1.0 m thick zone was hosted by fine grained hornblende-biotite gneiss and consists of 1 to 10% pyrite and pyrrhotite, in which there is a 30 cm section that contained trace to 1% chalcopyrite. The 1.3 m thick zone occurred in quartz-hornblende-biotite gneiss with 2% pyrrhotite and pyrite. Negligible sulphide was reported from DDH Jit 21 (Baldwin, 1982, p. 22-23; A.F. 90942).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90942, 90947, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-005

LOCATION: 5

NAME: (Mineralization intersected by diamond drilling)

EASTING: 468324

NORTHING: 6250544

AREA: NTS 64B/5; northwest shore of Karsakuwigamak Lake, approximately 5 km southeast of Esker Lake.

AIR PHOTO: A24996-114

ACCESS: Float plane on Karsakuwigamak Lake, or by boat from Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

The history of exploration at this location is detailed in Mineral Inventory Card 64B/5 Cu2. SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). P. Allan staked the area as CB 1001 and assigned it to W. Bruce Dunlop in 1969. Ryanor Mining Company Limited conducted an HLEM and magnetic survey by Ryanor Mining Company Limited in 1970 (A.F. 91940), and drilled DDH 1 to 8 totalling 998 m in 1972 (A.F. 91938). In addition, parts of the area were covered by a VLEM and magnetic survey and a reconnaissance geological survey by Canex Aerial Exploration Ltd. in 1970 (A.F. 90953); by a ground magnetic survey by Canadian Nickel Co. Ltd. in 1971 (A.F. 91528); and by an HLEM and magnetic survey by Noranda Exploration Co. Ltd. in 1981 (A.F. 92462).

GEOLOGICAL SETTING

The area is underlain by granite and quartz monzonite. A northeasterly trending fault within the Karsakuwigamak Block separates the intrusions from Ruttan Group rhyolite and dacite flows, and arkosic conglomerate, sandstone and siltstone (Baldwin, 1988). An interlayered sequence of bedded and laminated siltstone and volcanoclastic rocks occurs to the northwest. Pink to red, euhedral garnets, <1 mm, are present in the siltstone and in the fine grained laminated fraction of the volcanoclastic rocks. Layering strikes approximately 290° and dips steeply to the southwest. Unit thicknesses range from 30 to 100 m. The facing and stratigraphic tops directions are unknown (Baldwin, 1982, p. 20-21). Drill logs describe meta-argillite with variable amounts of garnet, quartz-mica schist and mica-quartz-garnet schist (A.F. 91938). Rocks intersected in the drill holes are interpreted to be equivalent to these siltstones/volcanoclastic rocks (Baldwin, 1982, p. 20-21).

MINERALIZATION

DDH 3, 4, 5, 6 and 7 intersected an approximately 12 m thick unit of mica-quartz-garnet schist, parts of which contained 7 to 10% pyrrhotite, pyrite, chalcopyrite and sphalerite. In addition, mineralization from DDH 4 included solid sulphide bands, <2.5 cm wide. The mica-quartz-garnet schist was more extensive in core from DDH 6, chloritized in part, and constituted most of the drill core. DDH 1, 2 and 3 intersected minor disseminated and stringer pyrite hosted by partly graphitic argillite and quartz-chlorite-biotite schist (A.F. 91938). Only traces of pyrite in andesite are noted in logs from DDH 8 (A.F. 91938).

GEOCHEMISTRY

Two drill core samples contained notable amounts of Cu and Zn: (1) 0.22% Cu, 1.56% Zn, nil Ni, 0.1 g/t Ag and trace Au over 1.5 m from DDH 2; (2) 2.26% Cu, 1.40% Zn, 4.5 g/t Ag and 0.2 g/t Au over 5 cm from DDH 6. Other drill core samples had ranges of 0.08 to 0.22% Cu, trace to 0.88% Zn, nil Ni, nil to 0.7 g/t Ag, and nil to trace Au (A.F. 91938).

CLASSIFICATION

Stratabound massive sulphide type deposit; alteration zone associated with sedimentary rocks.

REFERENCES

Assessment Files 90953, 91528, 91664, 91938, 91940, 91988, 92462; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.
Mineral Inventory Card 64B/5 Cu2; Manitoba Energy and Mines, Geological Services Branch.

NTS: 64B05

MDS_No.: M64B05-006

LOCATION: 6

NAME: Karsakuwigamak Lake Northwest

EASTING: 468314

NORTHING: 6249958

AREA: NTS 64B/5; Karsakuwigamak Lake, approximately 5.5 km southeast of Esker Lake.

AIR PHOTO: A24996-114

ACCESS: Float plane on Karsakuwigamak Lake, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. drilled DDH 35346 (43 m) on CB 719 in 1970 (A.F. 90945), DDH 38801 (251 m), 38802 (abandoned at 15 m), 38803 (154 m), 38804 (abandoned at 43 m), 38805 (52 m), and 38806 (124 m) on CB 710 in 1971 and 1972 (A.F. 91939). A ground magnetic survey by Canadian Nickel Co. Ltd. in 1971 (A.F. 91528) covered all but the southwesternmost part of the area. Mineral Inventory Card 64B/5 Fe1 gives an exploration history for a pyrite occurrence ("Karsakuwigamak Lake Northwest") noted by Steeves and Lamb (1972) that is now flooded. Noranda Exploration Company Limited conducted an HLEM and magnetic survey over the northeastern part of the area in 1981 (A.F. 92462).

GEOLOGICAL SETTING

West of location 6, granite, quartz monzonite, diorite and gabbro contain enclaves of Ruttan Group (Karsakuwigamak Block) basalt flows, and conglomerate, sandstone and siltstone (Baldwin, 1988). The drill holes intersected amphibole-plagioclase-biotite-quartz gneisses and schists (A.F. 90945, 91939), interpreted as interlayered sedimentary rocks by Baldwin (1982, p. 19-20). Pearse (1964, p. 6) noted a silicate-oxide facies iron formation that consists of alternating actinolite and magnetite layers with an average thickness of approximately 2 cm on the northwest shore of Karsakuwigamak Lake (now underwater).

MINERALIZATION

Quartz-amphibole-magnetite iron formation with associated quartzite (probably recrystallized chert) was intersected in core from DDH 38801 (3.6 m thick) and DDH 35346 (13 m thick). Pyrrhotite and pyrite occurred as minor disseminations and stringers in the iron formation, including numerous local <0.5 m intersections with 15 to 40% pyrrhotite and pyrite. Similarly, DDH 38802 and 38803 intersected garnet-quartz-magnetite iron formation, sericite-biotite-quartz schist, sericite-quartz schist and amphibole-biotite-chlorite schist, all with up to 12% disseminated and stringer pyrrhotite and pyrite. Pyrrhotite and pyrite, 1 to 2%, were disseminated throughout the remaining lithologies in these four drill holes (Baldwin, 1982, p. 19-20; A.F. 91939, 90945). Core from DDH 38804, 38805, 38806 was not mineralized (A.F. 91939). Steeves and Lamb (1972) mark the location of a pyrite-bearing iron formation that corresponds with a five-channel INPUT conductor on the northwest shore of Karsakuwigamak Lake; however, this area is now underwater.

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; oxide facies iron formation. The existence of short intersections of more voluminous sulphide minerals suggests that portions of the oxide facies iron formation have been sulphidized. Sericite-biotite-quartz schist, sericite-quartz schist and amphibole-chlorite schist, all with minor pyrrhotite and pyrite, were intersected down the hole in DDH 38802 and 38803.

REFERENCES

Assessment Files 90945, 91528, 91664, 91939, 91988, 92462; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.
Mineral Inventory Card 64B/5 Fe1; Manitoba Energy and Mines, Geological Services Branch.
Pearse, G. 1964: Geology of the Pemichigamau Lake area (east half); Manitoba Mines and Natural Resources, Mines Branch, Publication 61-3, 16p.
Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B05

MDS_No.: M64B05-007

LOCATION: 7

NAME: (Mineralization intersected by diamond drilling)

EASTING: 467663

NORTHING: 6248031

AREA: NTS 64B/5; Karsakuwigamak Lake, approximately 6.3 km southeast of Esker Lake.

AIR PHOTO: A24996-113

ACCESS: Float plane on Karsakuwigamak Lake, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey, and drilled DDH RL-5 (96 m) in 1971 (A.F. 91498). A ground magnetic survey by Canadian Nickel Co. Ltd. in 1971 (A.F. 91528) covered all but the southwesternmost part of the area.

GEOLOGICAL SETTING

Granite, quartz monzonite, diorite and gabbro with enclaves of Ruttan Group (Karsakuwigamak Block) basalt flows, and conglomerate, sandstone and siltstone underlie the west shore of Karsakuwigamak Lake (Baldwin, 1988). DDH RL-5 intersected dark greyish green, talcose, weakly magnetic pyroxenite that contained patches of biotite (Baldwin, 1982, p. 16-17; A.F. 91498).

MINERALIZATION

DDH RL-5 intersected sulphide veins, 1.25 cm wide, filled with talc-carbonate and 1 to 2% pyrite and pyrrhotite. The veins were intersected in three sections, 1.6 m, 1 m and 1.6 m in core length, separated by massive pyroxenite (Baldwin, 1982, p. 16; A.F. 91498).

GEOCHEMISTRY

Two drill core samples contained trace Cu, trace Zn, trace and 0.06% Ni, 0.7 g/t Ag and trace Au (A.F. 91498).

CLASSIFICATION

Vein type deposit, multiple sulphide veins. The talcose biotitic pyroxenite with sulphide mineralization suggests an environment that may have been favourable for the concentration of platinum group elements.

REFERENCES

Assessment Files 91498, 91528, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-008

LOCATION: 8

NAME: (Mineralization intersected by diamond drilling)

EASTING: 463838

NORTHING: 6248256

AREA: NTS 64B/5; 5.5 km west of Karsakuwigamak Lake, 6.5 km south-southwest of Esker Lake.

AIR PHOTO: A24996-113

ACCESS: Traverse from Karsakuwigamak Lake, which is accessed by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey, and drilled DDH RL-6 (76 m) in 1971 (A.F. 91498). SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area near DDH RL-6 is covered by surficial deposits and swamp. Ruttan Group (Ruttan Block) basalt flows, greywacke, felsic and intermediate siltstone, and intermediate to mafic intrusions occur to the west. A northerly trending fault to the east separates the Ruttan and Karsakuwigamak blocks (Baldwin, 1988). DDH RL6 intersected (sequentially) sheared andesite with quartz-carbonate stringers, biotite-quartz gneiss and quartz-biotite-garnet gneiss, banded iron formation in a 25 m thick unit of metagreywacke (quartz-biotite gneiss), and white to dark grey quartz-hornblende gneiss (Baldwin, 1982, p. 15; A.F. 91498).

MINERALIZATION

DDH RL-6 intersected two banded oxide facies iron formations, 0.2 and 5.3 m in core length. The iron formations contained 1 to 10% pyrite, pyrrhotite and sphalerite grains with magnetite, and rare bands with moderate to near solid amounts of sulphide, 5 cm thick (Baldwin, 1982, p. 15; A.F. 91498).

GEOCHEMISTRY

Four drill core samples from DDH RL-6 contained trace to 0.03% Cu, trace to 0.02% Zn, nil to trace Ni, trace Au, and (in one sample) 0.7 g/t Ag (A.F. 91498).

CLASSIFICATION

Chemical sediment type deposit; oxide facies iron formation. Rare narrow bands with moderate to near solid amounts of sulphide suggest sulphidization of part of the oxide facies assemblage.

REFERENCES

Assessment Files 91498, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-009

LOCATION: 9

NAME: Darrol Lake

EASTING: 458869

NORTHING: 6247073

AREA: NTS 64B/5; approximately 12 km south-southwest of Ruttan minesite and 10.5 km north of Pemichigamau Lake.

AIR PHOTO: A25474-118

ACCESS: Float plane to Darrol Lake or by drill road from the Ruttan minesite.

EXPLORATION SUMMARY

Two pits pre-dating SGM's initial staking of the area attest to earlier exploration, but details are not known (SGM, unpublished data, 1978). SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). SGM staked the Dar claim group in 1968 to cover airborne geophysical conductors, cut a grid, and conducted HLEM and magnetometer surveys. SGM drilled thirty-two holes totalling 4123 m southeast of Darrol Lake from 1969 to 1973. SGM, in joint venture with the Manitoba Government, conducted another EM and magnetic survey to provide more continuous coverage of the area, mapped the area at 1:4800, and drilled an additional five holes totalling 449 m in 1977 and 1978 further to the east (SGM, unpublished data, 1978). Mineral Inventory Card 64B/5 Zn1 ("Karsakuwigamak Lake West") gives a history of exploration and development western edge of the area and Pearse (1964, p. 15) notes the presence of an old trench in the same area.

GEOLOGICAL SETTING

The area is underlain by iron formation within a sequence of Ruttan Group (Ruttan Block) differentiated basalt flows that are also interlayered with felsic and intermediate siltstone, comparatively minor greywacke, rhyolite and dacite flows, and polymictic conglomerate. The volcanic-sedimentary sequence is surrounded by intrusive rocks that include granite, quartz monzonite, diorite and gabbro (Baldwin, 1988). A more detailed description of the iron formation unit is given in 'Mineralization' below. The degree of deformation in the Darrol Lake area is greater than elsewhere in the southern part of the Rusty Lake greenstone belt (Baldwin, 1980). A northeast- to east-striking, vertically to steeply northwest-dipping foliation is persistent, except for northeast-striking southeast-dipping foliation in the northwest part of the area. Core from DDH Dar-29 in the western part of the area shows tight folds in mafic tuff. Nearby outcrops exhibit diverging foliation orientations that suggest folds plunge to the east. In the western part of the area, northeast-, northwest-, and east-striking faults are indicated by disruption of lithologic units in outcrop. Structural interpretation is limited by the paucity of outcrop (SGM, unpublished data, 1977).

MINERALIZATION

The iron formation is characterized by interlayered solid magnetite, tremolite schist and tremolite-garnet schist locally interlayered with quartzite (possibly recrystallized chert). Less commonly, the iron formation is characterized by interlayered solid pyrite, solid magnetite and tremolite schist (Baldwin, 1982). Magnetite and pyrite layers range in thickness from 0.1 to 1.5 cm and layers of tremolite schist, tremolite-garnet schist and quartzite are 0.1 to 20 cm thick. The thickness of the iron formation ranges from 3 to 16 m (Baldwin, 1987). Drill holes intersected iron formation that varied from banded magnetite to solid pyrrhotite and pyrite with lesser sphalerite, chalcopyrite and galena; graphite was absent (SGM, unpublished data, 1978). "The change from pyrite to magnetite is gradational and generally pyrite veinlets occur in the tremolite schist adjacent to the massive sulphide layers" (Baldwin, 1987). The iron formation is bounded by, and is in sharp contact with, variably altered metasedimentary rocks (Baldwin, 1987); quartz-plagioclase, biotite and garnet with variable amounts of sillimanite + staurolite, or tremolite + anthophyllite, or staurolite + muscovite, or anthophyllite or chlorite make up the mineral assemblage. Differentiated mafic flows underlie and overlie the metagreywacke; alteration was not observed in the mafic flows (Baldwin, 1982). Meta-argillite commonly contains 1 to 2 m thick zones with 2 to 3% finely disseminated pyrite, pyrrhotite and sphalerite (Baldwin, 1982, 1987). The western edge of the area consists of solid pyrrhotite associated with a sugary quartz vein hosted by a tuffaceous layer within a sequence of flows. Minor marcasite and chalcopyrite were identified; sphalerite, although not noted in field descriptions, is probably present (see 'Geochemical Data'). Mineralization is exposed in a zone 0.6 to 1.5 m wide and 30 m long, flanked by an additional 15 m width of rusty weathered rocks (Pearse, 1964). Baldwin (1982, p. 27) interpreted rocks in this area (presumably the host rocks) as felsic to intermediate, interlayered, laminated fine grained rocks, which include a few beds that consist of heterolithic clastic deposits.

GEOCHEMISTRY

A sample of brown staurolite contained highly anomalous Zn concentrations (Table 8; E. Nielsen and G. Trembath, unpublished data). Twenty-three littoral sand and till samples were collected for heavy mineral analysis, gold grain counts, and trace element geochemistry in the <2 micron fraction (Nielsen, 1987). Pearse (1964) lists a grab sample assay of 2.5% Zn, nil Cu and nil Pb from the western edge of the area.

Analysis of brown staurolite from Darrol Lake. The sample (90-DL-1) represents a quartz "sweat" in metasedimentary rocks, and contained minor biotite and quartz inclusions

SiO ₂	35.4%
Al ₂ O ₃	49.1
FeO	2.30
Fe ₂ O ₃	8.18
CaO	0.11

MgO	1.55
Na ₂ O	0.12
K ₂ O	0.15
TiO ₂	0.25
P ₂ O ₅	0.02
MnO	0.18
H ₂ O	1.32
Other	2.53
Total	101.21%
Ni, ppm	6
Cr, ppm	<8
Cu, ppm	13
Zn, ppm	20000
Co, ppm	215
Li, ppm	41

CLASSIFICATION

Chemical sediment type deposit; sulphidized oxide facies iron formation. The western edge of the area represents a vein type deposit; single vein.

REFERENCES

Assessment Files 91664, 91988; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1980: Ruttan Lake, Karsakuwigamak Lake, Eagle Lake project; in Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities, p. 14-18. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1987: Mineral deposit investigations in the Ruttan Lake area; Manitoba Energy and Mines, Minerals Division, Report of Field Activities 1987, p. 25-26. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

Mineral Inventory Card 64B/5 Zn1; Manitoba Energy and Mines, Geological Services Branch.

Nielsen, E. 1987: Till geochemistry in selected areas of northern Manitoba; Manitoba Energy and Mines, Minerals Division, Report of Field Activities 1987, p. 27-29.

Pearse, G. 1964: Geology of the Pemichigamau Lake area (east half); Manitoba Mines and Natural Resources, Mines Branch, Publication 61-3, 16p.

NTS: 64B05

MDS_No.: M64B05-010

LOCATION: 10

NAME: (Mineralization intersected by diamond drilling)

EASTING: 466954

NORTHING: 6243509

AREA: NTS 64B/5; Karsakuwigamak Lake, near the Twenty-second Base Line (see MDS Map 64B/SW).

AIR PHOTO: MB88021-2; A24996-112, -113

ACCESS: Float plane, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey, and drilled DDH RL-4 (122 m) in 1971 (A.F. 91498).

GEOLOGICAL SETTING

The area is underlain by Ruttan Group basalt flows and intrusive rocks, including granodiorite, diorite and gabbro (Baldwin, 1988) DDH RL-4 intersected metaquartzite, hornblende-biotite gneiss, quartz-hornblende gneiss, chlorite-biotite-sericite schist with narrow layers of hornblende gneiss and medium- to fine-grained massive andesite (A.F. 91498). These gneisses and schists probably represent a metamorphosed sedimentary succession that is intruded by mafic to intermediate sills (Baldwin, 1982, p. 17).

MINERALIZATION

DDH RL-4 intersected four banded oxide facies iron formations, 0.3 m, 0.3 m, 1.3 m and 2.3 m thick, that are hosted by a 20 m thick unit of quartz-hornblende gneiss. Most of the the iron formations contained 20 to 40% magnetite; however, the 1.3 m thick iron formation consisted mostly of garnet and a few magnetite layers with traces of pyrrhotite and pyrite. A 2 cm thick, near solid pyrite band occurred in a 13 m thick unit of hornblende-biotite gneiss, up the hole from the iron formations (A.F. 91498; Baldwin, 1982, p. 17).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; oxide facies iron formation.

REFERENCES

Assessment Files 91498, 91664, 91988; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B05

MDS_No.: M64B05-011

LOCATION: 11

NAME: Parres-Baker

EASTING: 467275

NORTHING: 6242930

AREA: NTS 64B/5; southeast shore of Karsakuwigamak Lake, near the Twenty-second Base Line.

AIR PHOTO: MB88021-2; A24996-112, -113

ACCESS: Float plane, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

The exploration history of this occurrence is detailed in Mineral Inventory Card 64B/5 Au1. Hudson Bay Exploration and Development Co. Ltd. trenched the gold showing in 1947-48. A. McVeigh prospected for SGM in the Karsakuwigamak Lake area in 1948 (Quinn, 1956). SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Western Nuclear Mines Ltd. drilled DDH Kar 1, Kar 2 and Kar 3 totalling 76 m in 1968 (A.F. 90948). Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey in 1971 (A.F. 91498).

GEOLOGICAL SETTING

The area is underlain by granodiorite (Fig. 54; Baldwin, 1988). An earlier map of the area (Steeves and Lamb, 1972) shows a unit of felsic and intermediate pyroclastic rocks, volcaniclastic rocks, argillite and amphibolite along the southeast shore of Karsakuwigamak Lake; the contact of this unit with the granodiorite coincides approximately with the current shoreline. Drill logs indicate that DDH Kar 1, Kar 2 and Kar 3 intersected tuff, rhyolite, and chloritic schist; quartz veins and conformable "seams" were abundant (A.F. 90948). Baldwin (1982, p. 18-19) reinterprets these rocks as metagreywacke, meta-argillite and quartz-sericite schist.

MINERALIZATION

"A quartz vein exposed on the shore of the lake can be traced southeasterly along its strike for 110 ft. [34 m]. The vein dips steeply, is 1 to 3$\frac{1}{2}>$ ft. [0.3 to 1.1 m] wide, occurs in hybrid gneiss and carries erratic gold values" (Quinn, 1956, p. 8). This outcrop is probably now underwater. DDH Kar 1 to Kar 3 intersected minor disseminated pyrite and chalcopyrite in a quartz vein; rare solid pyrite filled narrow fractures (Baldwin, 1982, p. 18-19).

GEOCHEMISTRY

Quinn (1956, p. 8, 9) lists results of channel samples taken by Hudson Bay Exploration and Development Co. Ltd. in 1947. Twelve samples were collected, of which three contained gold:

Analysis of brown staurolite from Darrol Lake. The sample (90-DL-1) represents a quartz "sweat" in metasedimentary rocks, and contained minor biotite and quartz inclusions			
No.	Width (cm)	Au (g/t)	Ag (g/t)
1	51	71.3	8.9
2	30	36.3	tr.
3	86	8.9	tr.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

Assessment Files 90948, 91498, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.
Mineral Inventory Card 64B/5 Au1; Manitoba Energy and Mines, Geological Services Branch.
Quinn, H.A. 1956: Mineral occurrences between Chipewyan and Herb Lakes, Manitoba; Precambrian; v.29(10), Part 1, p. 6-14.; v. 29(11), Part 2, p. 6-12.
Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B05

MDS_No.: M64B05-012

LOCATION: 12

NAME: Pemichigamau Lake West

EASTING: 457119

NORTHING: 6238081

AREA: NTS 64B/5; 3.2 km west of Pemichigamau Lake.

AIR PHOTO: MB88028-7; A25474-120

ACCESS: Float plane, or by boat from the Suwannee River landing near Provincial Road 391, and traverse.

EXPLORATION SUMMARY

The exploration history of this occurrence is detailed in Mineral Inventory Card 64B/5 Mo1. SGM carried out an airborne EM and magnetic survey in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by a granodiorite batholith (Pearse, 1964; Steeves and Lamb, 1972). Pearse (1964) delineates an area of hornblende-biotite-quartz schist, interpreted as a roof pendant, with pegmatite/aplite within the intrusive rocks.

MINERALIZATION

Minor molybdenite is disseminated in granite and aplite dykes that cut hornblende-feldspar schist (Pearse, 1964, p. 15).

GEOCHEMISTRY

None.

CLASSIFICATION

Deposit with porphyry affinities.

REFERENCES

Assessment Files 91664, 91988; Manitoba Energy and Mines, Mines Branch

Mineral Inventory Card 64B/5 Mo1; Manitoba Energy and Mines, Geological Services Branch.

Pearse, G. 1964: Geology of the Pemichigamau Lake area (east half); Manitoba Mines and Natural Resources, Mines Branch, Publication 61-3, 16p.

Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B06

MDS_No.: M64B06-001

LOCATION: 1

NAME: (Mineralization intersected by diamond drilling)

EASTING: 470611

NORTHING: 6251166

AREA: Karsakuwigamak Lake, near western limit of NTS 64B/6.

AIR PHOTO: A24996-114

ACCESS: Float plane on Karsakuwigamak Lake, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Parts of the area were covered by an HLEM and magnetic survey by Ryanor Mining Company Limited in 1970 (A.F. 91940), and a VLEM and magnetic survey and a reconnaissance geological survey by Canex Aerial Exploration Ltd. in 1970 (A.F. 90953). Canadian Nickel Co. Ltd. carried out a magnetic survey over part of the area in 1971 (A.F. 91528), and drilled DDH 38807 (abandoned at 72 m), 38808 (abandoned at 63 m), 38809 (171 m), 35399 (abandoned at 24 m), and 35400 (134 m) on CB 710 in 1971-72 (A.F. 91939), and DDH 38810 (166 m) on CB 710 in 1972 (A.F. 91529). Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey over part of the area in 1971 (A.F. 91498), and carried out an HLEM and magnetic survey and drilled DDH RL-3 (also named DDH RU-3 in some of the sections and part of A.F. 90956) (109 m) on CB 772 in 1972 (A.F. 90956). Noranda Exploration Company Limited conducted an HLEM and magnetic survey in 1981 (A.F. 92462).

GEOLOGICAL SETTING

Most of the area is covered by Karsakuwigamak Lake and its flood plain; post-Sickle granodiorite constitutes the nearby exposures (Baldwin, 1988). Pre-flooding maps show basalt and andesite with lesser felsic volcanic rocks exposed north and west of Karsakuwigamak Lake (Steeves and Lamb, 1972). DDH RL-3 intersected andesite, quartz-hornblende gneiss, sheared dacite and andesite, and a 5.2 m section of hornblende-garnet-biotite-sericite schist (A.F. 90956). DDH 38809 intersected biotite-amphibole-garnet schist, biotite schist, iron formation, micaceous quartz-feldspar-biotite gneiss, minor aplite and pegmatite. DDH 35400 intersected altered, sheared, fine- to medium-grained, biotite-chlorite-bearing amphibolite with local mylonitic zones, amphibole-biotite-chlorite schist, biotite schist, biotite gneiss, quartzite and a minor pegmatite dyke (A.F. 91939).

MINERALIZATION

DDH RL-3 intersected:

- (1) several 1.5 m thick sections of disseminated or thinly banded pyrrhotite and pyrite;
- (2) 1.5 m of near solid pyrrhotite, pyrite and chalcopyrite;
- (3) 1.2 cm of solid pyrrhotite;
- (4) an unspecified width of 10 to 15% banded magnetite, 6 to 8% pyrrhotite, 1% pyrite; and
- (5) 30 cm of 20% banded magnetite, all in massive to sheared andesite (Baldwin, 1982; A.F. 90956).

DDH 38809 intersected three sections, 6, 4 and 3.2 m in core length, of banded iron formation with minor pyrrhotite and pyrite in layered biotite-amphibole-garnet schists (Baldwin, 1982; A.F. 91939). DDH 35400 intersected <5% pyrite in blebs and streaks in a 1.5 m section of biotite schist and in a pegmatite (A.F. 91939).

GEOCHEMISTRY

Drill core samples from DDH RL-3 assayed 0.01 to 0.25% Cu, nil Ni, trace to 0.7 g/t Ag, and trace Au (A.F. 90956).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90953, 90956, 91498, 91528, 91529, 91664, 91939, 91940, 91988, 92462; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B06

MDS_No.: M64B06-002

LOCATION: 2

NAME: Karsakuwigamak Lake

EASTING: 472871

NORTHING: 6250145

AREA: NTS 64B/6; south shore of Karsakuwigamak Lake, southwest of Einarsson Island.

AIR PHOTO: A24996-114

ACCESS: Float plane on Karsakuwigamak Lake, or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

The exploration history of this occurrence is detailed in Mineral Inventory Card 64B/6 Cu1. SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Co. Ltd. carried out an airborne radiometric and EM survey, an HLEM survey, and drilled DDH Jit 22, -23, -24, -25 (abandoned), -25A, and -26 totalling 393 m on CB 727 in 1970 (A.F. 90942). Parts of the area were covered by various surveys: a VLEM and magnetic survey and a reconnaissance geological survey by Canex Aerial Exploration Ltd. in 1970 (A.F. 90953); an HLEM and magnetic survey and reconnaissance geological survey by Semiahmoo Petro-Mines Ltd. in 1970 (A.F. 91507); a magnetic survey by Canadian Nickel Co. Ltd. in 1971 (A.F. 91528); an airborne EM and magnetic survey by Argem Exploration Ltd. in 1972 (A.F. 91377); and a ground EM survey by Phelps Dodge Corporation in 1972 (A.F. 90946). Ruttan Lake Explorations Limited carried out an HLEM and magnetic survey and drilled DDH RL-1 and RL-2 (also called DDH RU-1 and RU-2 in some of parts of A.F. 90956) (total 300 m) on CB 772 in 1972 (A.F. 90956). Canadian Nickel Co. Ltd. drilled DDH 35347, 35348, 35349, 35350, 35377, 35378 and 35379 totalling 514 m on CB 780 in 1972; only DDH 35378 and 35379 intersected bedrock (A.F. 91530).

GEOLOGICAL SETTING

Post-Sickle granodiorite is exposed to the south of the area of this occurrence (Baldwin, 1988). Pre-flooding maps show Ruttan Group basalt, andesite and picrite with lesser felsic volcanic rocks exposed north and slightly south of the Rat River; most of the area south of the Rat River is underlain by a granodiorite batholith (Steeves and Lamb, 1972). Lithologies intersected in DDH Jit-22 through Jit-26 probably represent a metasedimentary succession, and include various biotite-hornblende-quartz gneisses and schists, hornblende-biotite gneiss and hornblende-biotite-chlorite gneiss. In addition, (1) DDH Jit-23 intersected quartz-hornblende-sericite gneiss, (2) DDH Jit-22 intersected quartzite and biotite granite, (3) DDH Jit-24 intersected chlorite-biotite schist and quartz-biotite gneiss, and (4) DDH Jit-25A intersected granite gneiss, quartz-biotite-hornblende gneiss with local garnets and chlorite, and quartz-hornblende gneiss (A.F. 90942). DDH RL-1 intersected andesite, quartz-hornblende gneiss, hornblende-biotite gneiss and schist, chlorite-epidote-biotite schist, minor granitic and aplitic dykes. DDH RL-2 intersected quartz-hornblende gneiss and hornblende gneiss including a 2.0 m silicified (cherty) zone; 1.5 m of chloritized, magnetite (10%)-bearing iron formation; and gabbro (A.F. 90956). DDH 35378 and 35379 intersected volcanic-derived amphibolite, amphibole-biotite-garnet schist, biotite-garnet schist, amphibole gneiss, biotite gneiss, muscovite-biotite-feldspar schist and gneiss, and granite and pegmatite dykes (A.F. 91530).

MINERALIZATION

DDH Jit-22 intersected solid pyrrhotite, pyrite and chalcopyrite in a 2.0 m thick zone hosted by biotite-hornblende-quartz gneiss and a 15 cm thick zone hosted by biotite-quartz-hornblende-quartz gneiss. The 2.0 m thick zone consisted of 80 to 95% pyrrhotite and pyrite and up to 2% chalcopyrite; the biotite-hornblende-quartz gneiss host rock was 15.5 m thick. A 30 cm zone with 40% pyrrhotite and pyrite occurred 1.3 m from the 2.0 m solid sulphide zone. The 15 cm zone in biotite-quartz-hornblende-quartz gneiss contained 60% pyrrhotite (Baldwin, 1982; A.F. 90942). DDH Jit-23 intersected 3.2 m of near solid- to solid sulphide with 5 to 10% sphalerite and 1 to 10% chalcopyrite in four sections that were <35 cm thick. This mineralization is hosted by quartz-hornblende-sericite gneiss. DDH Jit-24 intersected 1 m of solid sulphide with 60% sphalerite, 10% pyrrhotite, trace chalcopyrite, trace to 1% sphalerite, and 1 to 2% magnetite in biotite-quartz-hornblende gneiss. DDH Jit-25A intersected three zones with <10% pyrrhotite and pyrite and 3% magnetite in quartz-biotite-hornblende gneiss with minor garnet and chlorite. A fourth zone, 2.1 m thick and containing 5 to 20% pyrite and 5 to 35% pyrrhotite, is hosted by similar rocks (Baldwin, 1982; A.F. 90942). DDH Jit-26 intersected a 1.9 m section with trace to 15% pyrrhotite and 1% pyrite and a 0.9 m section with 10% magnetite and 3% pyrite, both hosted by quartz-biotite-hornblende gneiss (A.F. 90942). DDH RL-1 intersected 1.2 m of 80 to 90% pyrrhotite and trace chalcopyrite in hornblende-epidote gneiss and 60 cm of quartz-hornblende gneiss with disseminated pyrrhotite and pyrite. These two mineralized zones are separated by 10 m of chlorite-epidote schist that contained magnetite bands up to 2 or 3 cm thick. Minor pyrrhotite and pyrite occur with magnetite, and drill logs report one band with 1% arsenopyrite. Directly up the hole from the 60 cm section with disseminated pyrrhotite and pyrite, a 2 m thick section, reported as very strongly altered, contains garnets, magnetite and trace pyrrhotite in chlorite-epidote schist. Magnetite bands with 1 to 2% pyrrhotite constitute a 1.5 m thick section of chloritized epidote-bearing banded iron formation in hornblende gneiss. Pyrrhotite (1 to 2%) is present in the magnetite bands intersected in core from DDH RL-2 (Baldwin, 1982; A.F. 90956). Core from DDH 35378 and 35379 was not mineralized (A.F. 91530).

GEOCHEMISTRY

Drill core samples from DDH RL-1 contained 0.02 to 0.05% Cu, nil Ni, 3.4 to 8.6 g/t Ag, and nil to trace Au. Samples from DDH RL-2 were not assayed (A.F. 90956).

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated.

REFERENCES

Assessment Files 90942, 90946, 90953, 90956, 91377, 91507, 91528, 91530, 91664, 91988; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

Mineral Inventory Card 64B/6 Cu1; Manitoba Energy and Mines, Geological Services Branch.

Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B06

MDS_No.: M64B06-003

LOCATION: 3

NAME: (Mineralization intersected by diamond drilling)

EASTING: 482049

NORTHING: 6261370

AREA: 3.5 km west of the Rat River, near the northern limit of NTS 64B/6.

AIR PHOTO: A25474-149

ACCESS: Traverse from the Rat River, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. conducted a helicopter EM and radiometric survey in 1960 (A.F. 90958), and an HLEM survey in 1961 (A.F. 90950) on the Tam claims. DDH Tam 11 and Tam 12 (total 257 m) were drilled in 1963 to test EM conductors from the latter survey (A.F. 90957). SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Most of the area was covered by an HLEM and magnetic survey and reconnaissance geological survey by Semiahmoo Petro-Mines Ltd. in 1970 (A.F. 91507), and by an airborne EM and magnetic survey by Argem Exploration Limited in 1972 (A.F. 91377). Falconbridge Nickel Mines Ltd. conducted a ground EM and magnetic survey (A.F. 92496), mapped the area at 1:4800 and collected rock geochemical samples at 61 m (200 ft.) grid stations (A.F. 92497) over the western part of area in 1980.

GEOLOGICAL SETTING

The area is mostly covered by surficial deposits and swamp, but some Ruttan Group (Northern Block) polymictic conglomerate with interbedded arkosic sandstone and siltstone is exposed (Baldwin, 1988, 1982). Drill logs in A.F. 90957 note that DDH Tam 11 intersected sheared basalt with some sections of altered sediments and minor conglomerate, and DDH Tam 12 intersected granite, a "green breccia", and 0.2 m of basalt. Baldwin (1982) re-interpreted sheared graphitic basalt at this location as sheared, mafic to intermediate graphitic siltstone with minor disseminated pyrite, and the breccia as conglomerate with abundant mafic clasts.

MINERALIZATION

Logs for DDH Tam 11 note four sections of "sheared basalts" with minor pyrrhotite, two of which also contained graphite. A 0.2 m "basalt" intersection contained minor pyrite and graphite (A.F. 90957) (see 'Geological Setting' above). Baldwin (1982) notes that outcrops with local interbedded siltstones west of the drill holes contain "variable amounts of graphite and very minor disseminated sulphide". Falconbridge Nickel Mines Ltd. did not identify any alteration or mineralization in its mapping and rock geochemical survey over the western part of the area (A.F. 92497).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 90950, 90957, 90958, 91377, 91507, 91664, 91988, 92496, 92497; Manitoba Energy and Mines, Mines Branch. Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B06

MDS_No.: M64B06-004

LOCATION: 4

NAME: (Mineralization intersected by diamond drilling)

EASTING: 469867

NORTHING: 6253630

AREA: 1.5 km north of Karsakuwigamak Lake, near western limit of NTS 64B/6.

AIR PHOTO: A24996-114

ACCESS: Traverse from Karsakuwigamak Lake, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). The area was covered by an HLEM and magnetic survey by Ryanor Mining Company Limited in 1970 (A.F. 91940). Canex Aerial Exploration Ltd. conducted a VLEM and magnetic survey, a reconnaissance geological survey, and drilled DDH 124-1 and 124-2 (total 243 m) in 1970 (A.F. 90953).

GEOLOGICAL SETTING

The area is underlain by post-Sickle diorite and gabbro intrusions. Rhyolite and dacite flows, lapilli tuff and tuff occur to the northwest. A northeast-trending fault offsets lithologic units in the area (Baldwin, 1988). DDH 124-1 intersected intermediate to mafic volcanic rocks and a siliceous biotitic sedimentary rock; DDH 124-2 intersected mafic, intermediate and felsic volcanic rocks and minor gabbro (A.F. 90953).

MINERALIZATION

Traces of pyrite occurred locally in intermediate to mafic volcanic rocks from DDH 124-1 (A.F. 90953). DDH 124-2 intersected traces of pyrrhotite, pyrite and chalcopyrite in mafic, intermediate and felsic volcanic rocks (Baldwin, 1982; A.F. 90953).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 90953, 91664, 91940, 91988; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B06

MDS_No.: M64B06-005

LOCATION: 5

NAME: (Mineralization intersected by diamond drilling)

EASTING: 471507

NORTHING: 6255936

AREA: NTS 64B/6; 3.75 km west of Phillips Bay (Karsakuwigamak Lake).

AIR PHOTO: A24996-115

ACCESS: Traverse from Karsakuwigamak Lake, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canex Aerial Exploration Ltd. conducted a VLEM and magnetic survey, a reconnaissance geological survey, and drilled DDH 124-3 (198 m) in 1970 (A.F. 90953).

GEOLOGICAL SETTING

The area is underlain by post-Sickle diorite and gabbro intrusions and a layered assemblage of Ruttan Group (Karsakuwigamak Block) rhyolite and dacite flows, lapilli tuff and tuff, heterolithic volcanic breccia and polymictic conglomerate (Baldwin, 1988). DDH 124-3 intersected intermediate to mafic volcanic rocks, and sedimentary rocks including greywacke, quartzite, conglomerate, phyllite, arkose, and interlayered felsic volcanic rocks (A.F. 90953).

MINERALIZATION

Pyrite, 5%, occurred over a 36 m section of quartzite and greywacke, conglomerate, quartzite, and phyllite from DDH 124-3. Mineralization included numerous 15 cm thick sections that contain up to 30% pyrite parallel to bedding (A.F. 90953).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90953, 91664, 91988; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B06

MDS_No.: M64B06-006

LOCATION: 6

NAME: (Mineralization intersected by diamond drilling)

EASTING: 477382

NORTHING: 6261181

AREA: NTS 64B/6; 5 km north-northeast of Phillips Bay (Karsakuwigamak Lake).

AIR PHOTO: A24996-99

ACCESS: Traverse from Karsakuwigamak Lake, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. conducted a helicopter EM and radiometric survey in 1960 (A.F. 90958), and an HLEM survey on the Tam claims in 1961 (A.F. 90950). DDH Tam 8 and Tam 10 (total 180 m) were drilled in 1963 to test EM conductors from the latter survey (A.F. 90957). SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canex Aerial Exploration Ltd. conducted a VLEM and magnetic survey and a reconnaissance geological survey over part of the area in 1970 (A.F. 90953). The area was covered by an HLEM and magnetic survey and reconnaissance geological survey by Semiahmoo Petro-Mines Ltd. in 1970 (A.F. 91507), an airborne EM and magnetic survey by Argem Exploration Limited in 1972 (A.F. 91377), and part of the area was covered by a ground EM survey by Phelps Dodge Corporation in 1972 (A.F. 90946). Canadian Nickel Co. Ltd. carried out a magnetic survey over the western part of the area in 1972 (A.F. 92213).

GEOLOGICAL SETTING

Ruttan Group (Northern Block) polymictic conglomerate and arkose is exposed to the east of the occurrence (Baldwin, 1988). Drill logs for DDH Tam 8 and Tam 10 note "greenstone with biotite and quartz stringers", sheared basalt with quartz stringers, some of which was interbedded with tuff and breccia, and minor biotite quartzite (A.F. 90957). Baldwin (1982) re-interpreted the sheared basalt as sheared, mafic to intermediate siltstone, and the breccia as conglomerate with abundant mafic clasts.

MINERALIZATION

DDH Tam 8 and Tam 10 intersected two mineralized zones, 5.5 m and 12.4 m true thickness, in sheared basalt. The 5.5 m thick zone consisted of three graphitic intervals up to 2 m thick with minor pyrite separated by 1 m thick graphitic nonsulphidic intervals. The 12.4 m thick zone consisted of nongraphitic intervals with minor pyrrhotite up to 3.3 m thick separated by nonmineralized intervals (Baldwin, 1982; A.F. 90957).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; other chemical sediments.

REFERENCES

Assessment Files 90946, 90950, 90953, 90957, 90958, 91377, 91507, 91664, 91988, 92213; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B06

MDS_No.: M64B06-007

LOCATION: 7

NAME: Karsakuwigamak Lake North

EASTING: 473351

NORTHING: 6258911

AREA: NTS 64B/6; 3.5 km northwest of Phillips Bay (Karsakuwigamak Lake).

AIR PHOTO: A24996-99

ACCESS: Traverse from Karsakuwigamak Lake, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

The exploration history of this occurrence is detailed in Mineral Inventory Card 64B/6 Cu2. SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canex Aerial Exploration Ltd. conducted a VLEM and magnetic survey, a reconnaissance geological survey, and drilled DDH 124-5 (119 m) in 1970 (A.F. 90953). Phelps Dodge Corporation conducted a ground EM survey on CB 255 (A.F. 90946) and CB 257 (A.F. 90955) in 1972, and drilled DDH 128-1 and 128-2 totalling 242 m in 1973 on CB 257 (A.F. 90955). Falconbridge Nickel Mines Ltd. conducted a magnetic survey (A.F. 92557), mapped the area at 1:4800 and conducted a rock geochemical survey at 61 m (200 ft.) grid stations on CB 8592 in 1980 (A.F. 92559). Falconbridge carried out an IP survey in 1981 (A.F. 92561), and an HLEM survey in 1983 (A.F. 92572).

GEOLOGICAL SETTING

Ruttan Group rhyolite and dacite flows and tuff, heterolithic tuff breccia, polymictic conglomerate, arkose, felsic siltstone, and post-Sickle diorite and gabbro are exposed in the area. Strata are disrupted by block-bounding faults; parts of the Ruttan, Northern and Karsakuwigamak blocks are represented in the area (Baldwin, 1988). DDH 124-4, 128-1 and 128-2 intersected an interbedded sequence of conglomerate, greywacke, quartzite, siliceous greywacke and hard black argillaceous greywacke (A.F. 90953, 90955). In outcrop, the rocks are volcanic-derived sandstone, massive chert, conglomerate (debris flow) and black siltstones (Baldwin, 1982). The north-younging succession overlies a thick sequence of volcanic-derived epiclastic rocks with subordinate felsic flow rocks (Baldwin, 1982).

MINERALIZATION

DDH 124-5, 128-1 and 128-2 intersected disseminated pyrrhotite and pyrite in quartzite and argillaceous greywacke. Based on drill log and outcrop data, the impure quartzite is 18 m in true thickness and contains 3% pyrrhotite and traces of pyrite. The argillaceous greywacke is 3 to 3.5 m in true thickness, generally graphitic and contains up to 10% pyrrhotite and 3% pyrite (Baldwin, 1982; A.F. 90953, 90955). Falconbridge Nickel Mines Ltd. identified a unit of "pyritic cherty tuff" in its mapping program of the area (A.F. 92559).

GEOCHEMISTRY

Drill core samples from DDH 124-5 contained trace to 0.01% Cu, trace to 0.01% Zn, and nil Ag and Au (A.F. 90953). Drill core samples from DDH 128-1 and 128-2 contained 0.02 to 0.04% Cu, 0.01 to 0.02% Zn, 0.01 to 0.02% Ni, 1.4 to 9.6 g/t Ag and 0.3 to 0.7 g/t Au (A.F. 90955).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Baldwin (1982) notes: "Similarities of rock descriptions and stratigraphic succession in outcrop at one (drill hole location) and to the west...suggest that the mineralization is stratiform."

REFERENCES

Assessment Files 90946, 90953, 90955, 91664, 91988, 92557, 92559, 92561, 92572; Manitoba Energy and Mines, Mines Branch. Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p. Mineral Inventory Card 64B/6 Cu2; Manitoba Energy and Mines, Geological Services Branch.

NTS: 64B06

MDS_No.: M64B06-008

LOCATION: 8

NAME: (Mineralization intersected by diamond drilling)

EASTING: 473605

NORTHING: 6260542

AREA: NTS 64B/6; 4 km north of Phillips Bay (Karsakuwigamak Lake)

AIR PHOTO: A24996-99

ACCESS: Traverse from Karsakuwigamak Lake, which is accessible by float plane or by boat from the Suwannee River landing near Provincial Road 391.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. conducted an EM survey on the Tam claims in 1961 (A.F. 90950). SGM conducted an airborne EM and magnetometer survey over the area in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canex Aerial Exploration Ltd. conducted a VLEM and magnetic survey and a reconnaissance geological survey over part of the area in 1970 (A.F. 90953). Canadian Nickel Co. Ltd. drilled DDH 35316 and 35314 totalling 334 m on CB 964 in 1970 (A.F. 90967), and carried out a magnetic survey on the Tar claims in 1972 (A.F. 92213). Phelps Dodge Corporation carried out an HLEM survey over CB 257 (A.F. 90955) and CB 255 (A.F. 90946) in 1972. SGM carried out an HLEM and magnetic survey over CB 8969 in 1980 (A.F. 92542).

GEOLOGICAL SETTING

The area is covered by overburden (Baldwin, 1988; Steeves and Lamb, 1972). DDH 35314 intersected quartzite, biotite gneiss, amphibole gneiss, metasedimentary rocks, sericite schist, and minor quartz veins. DDH 35316 intersected quartzite, including some sections that are cherty, micaceous, impure, or sheared; biotite-quartz schist; quartz-muscovite schist; sheared graphitic biotite-quartz schist; and tremolite schist (A.F. 90967). The micaceous quartzite is at least 30 m thick. Graphite schist, quartz-graphitic schist, muscovite-quartz schist and biotite-quartz schist constitute an interbedded succession; individual rock types range from 0.3 to 6.5 m in thickness (Baldwin, 1982; A.F. 90967).

MINERALIZATION

Baldwin (1982) summarizes the drill log reports of mineralization from DDH 35314 and 35316 (A.F. 90967): DDH 35314 intersected: (1) <15% disseminated pyrrhotite and pyrite in impure quartzite, (2) up to 8% disseminated pyrrhotite and pyrite and trace chalcopyrite in metasedimentary rocks, and (3) 60% pyrrhotite and pyrite in a 6 cm quartz vein hosted by impure quartzite. The impure quartzite was at least 100 m thick, banded, locally sheared and locally graphitic. The metasedimentary rocks comprised an approximately 25 m thick banded (bedded) unit that includes argillite beds. DDH 35316 intersected 3 to 20% pyrrhotite and pyrite, disseminated and streaks, in 15 to 76 m thick sections hosted by micaceous quartzite, graphite schist, quartz-graphite schist, muscovite-quartz schist and biotite-quartz schist.

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment File 90946, 90950, 90953, 90955, 90967, 91664, 91988, 92213, 92542; Manitoba Energy and Mines, Mines Branch. Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p. Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B11

MDS_No.: M64B11-001

LOCATION: 1

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

EASTING: 493536

NORTHING: 6276776

AREA: NTS 64B/11; northeast of Issett Island (Issett Lake) and west of South Bay Diversion Channel (Rat River).

AIR PHOTO: A24936-4

ACCESS: Road to Southern Indian Lake from Leaf Rapids.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Company Limited drilled eight holes totalling 320 m in 1970 (A.F. 90960).

GEOLOGICAL SETTING

The area is underlain by greywacke-derived biotite-quartz-feldspar gneiss with thin amphibolite layers (McRitchie, 1981). Drillholes intersected biotite gneiss or schist, quartzite, quartz-amphibole-biotite-garnet iron formation. In addition, DDH 35235 intersected minor dykes near and at the end of the hole. DDH 35239 and 35240 also intersected minor graphitic mylonite and quartz veins (A.F. 90960).

MINERALIZATION

DDH 35234 intersected 65% pyrrhotite in a 15 cm section of brecciated gneiss. Trace to minor pyrrhotite and/or pyrite occurs in gneiss throughout much of the remainder of the drill core (A.F. 90960). DDH 35236. A 0.3 m intersection of sulphide breccia between biotite schist and quartzite consists of fine grained pyrrhotite with local blebs of pyrite and traces of chalcopyrite. Most of the remainder of the drill core contains minor to moderate amounts of pyrrhotite and pyrite, in quartzite and biotite schist (A.F. 90960). Most of the core from the other drillholes contains trace to minor amounts of pyrrhotite and pyrite (A.F. 90960).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90960, 91988; Manitoba Energy and Mines, Mines Branch.

McRitchie, W.D. 1981: Issett Channel - Rat River area; in Manitoba Energy and Mines, Report of Field Activities, 1981, p. 24-26; 1:100 000.

NTS: 64B11

MDS_No.: M64B11-002

LOCATION: 2

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

EASTING: 498697

NORTHING: 6268519

AREA: NTS 64B/11; along an eastern branch of the Rat River.

AIR PHOTO: A24935-213

ACCESS: Float plane or boat along Rat River.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. conducted an airborne radiometric and EM survey in 1961 (A.F. 90951). HBED carried out an HLEM survey in 1962, and drilled DDH Cat 74, Cat 75, Cat 76 and Cat 77 totalling 278 m to test EM conductors on the Cat claims in 1963 (A.F. 90949). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain predominantly by granodiorite and biotite-hornblende tonalite (McRitchie, 1981). Drillholes intersected white felsic intrusive rocks, sections of quartz-biotite gneiss and "altered" (unspecified) sedimentary rocks and siliceous sedimentary rocks (A.F. 90949).

MINERALIZATION

Drill core from DDH Cat 76 included a 78.9 m (core length) zone of "altered sediments with quartz eyes and pegmatite stringers" with trace to minor pyrrhotite throughout, including moderate pyrrhotite in four 0.3 to 3.0 m long intersections, and a separate 1.1 m zone of "altered sediments" with moderate pyrrhotite (A.F. 90949). Minor to moderate pyrrhotite and lesser pyrite are hosted by "altered sediments" and siliceous sedimentary rocks in 9.4 and 22.6 m zones from DDH Cat 74. Core from DDH Cat 75 contained trace to minor pyrrhotite over parts of a 9.1 m section of quartz-biotite gneiss. Core from DDH Cat 77 included a 1.7 m zone of "altered sediments" with minor pyrrhotite and a 0.5 m zone of quartzite with minor to moderate pyrrhotite and trace to minor pyrite (A.F. 90949). Minor pyrite in outcrop is indicated at two sites by Lamb et al. (1972) within the area of occurrence 2. Pyrite is disseminated in thin tuffaceous or sedimentary layers (Steeves and Lamb, 1972).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90949, 90951, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.
McRitchie, W.D. 1981:Issett Channel - Rat River area; in Manitoba Energy and Mines, Report of Field Activities, 1981, p. 24-26; 1:100 000.
Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B11

MDS_No.: M64B11-003

LOCATION: 3

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

EASTING: 493634

NORTHING: 6263694

AREA: NTS 64B/11; east of the Rat River, near the southern border of NTS 64B/11.

AIR PHOTO: A24996-127

ACCESS: Float plane or boat along Rat River.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. conducted an airborne radiometric and EM survey in 1961 (A.F. 90951), an HLEM survey in 1962, and drilled DDH Cat 69, Cat 70, Cat 71, Cat 72 and Cat 73 totalling 278 m to test EM conductors on the Cat claims in 1963 (A.F. 90949). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is predominantly underlain by metavolcanic rocks, including basalt, intermediate tuff and fragmental rocks, dacite and minor rhyolite (McRitchie, 1981). Drillholes intersected altered (unspecified) quartz-biotite gneiss with schistose sections. Part of the core from DDH Cat 70 included quartz-biotite-hornblende gneiss with schistose sections, and part of the core from DDH Cat 73 was siliceous hornblende-biotite gneiss with garnetiferous sections, quartz stringers and minor pegmatites (A.F. 90949).

MINERALIZATION

DDH Cat 69 intersected a 37.0 m (core length) zone of "altered" quartz-biotite gneiss that includes, consecutively, 22.1 m of near solid graphite schist with minor pyrrhotite and local minor pyrite, 0.2 m with moderate pyrite and pyrrhotite, 1.6 m of near solid graphite schist with minor(?) pyrrhotite, 8.7 m of near solid graphite schist with minor pyrrhotite and local minor pyrite, 4.2 m of barren "altered" quartz-biotite gneiss, and 0.2 m with minor(?) pyrrhotite (A.F. 90949). Core from DDH Cat 70 included three zones, 7.2 m, 2.2 m and 1.6 m, with minor to moderate pyrrhotite and local minor pyrite in "altered" quartz-biotite gneiss; parts of these zones include near solid graphite. DDH Cat 71 intersected a similar zone of mineralization, 3.7 m in core length, with trace to minor pyrrhotite in near solid graphite; DDH Cat 72 intersected 1.6 m of near solid graphite in "altered quartz-biotite gneiss with quartz eyes" and trace to minor pyrrhotite. DDH Cat 73 intersected 1.1 m of "altered" quartz-biotite gneiss with trace to minor pyrite, traces of pyrrhotite, and minor to moderate(?) graphite and a separate 6.6 m zone of siliceous biotite gneiss with minor pyrrhotite in sections (A.F. 90949). Minor pyrite and/or pyrrhotite in outcrop is indicated at three sites by Lamb et al. (1972) within the area of occurrence 3. Iron sulphides are disseminated in thin tuffaceous or sedimentary layers (Steeves and Lamb, 1972).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

- Assessment Files 90949, 90951, 91664, 91988; Manitoba Energy and Mines, Mines Branch.
- Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.
- McRitchie, W.D. 1981:Issett Channel - Rat River area; in Manitoba Energy and Mines, Report of Field Activities, 1981, p. 24-26; 1:100 000.
- Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B11

MDS_No.: M64B11-004

LOCATION: 4

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

EASTING: 474147

NORTHING: 6268553

AREA: NTS 64B/11; Nisku Bay (Issett Lake).

AIR PHOTO: A24996-97

ACCESS: Boat on Issett Lake, which is accessible by the road from Leaf Rapids to Southern Indian Lake.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. conducted an HLEM survey over the Cat claims in 1960-61 (A.F. 90963), and drilled DDH Cat 23 (133.8 m) on claim Cat 22 in 1961 (A.F. 90964). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Canadian Nickel Co. Ltd. drilled seven holes (DDH 35301, 35302, 35303, 35304, 35307, 35308, 35309) totalling 788 m on CB 963 and CB 964 in 1969-70 (A.F. 90966). Canadian Nickel Co. Ltd. drilled five holes (DDH 35305, 35306, 35310, 35311, 35312) totalling 693 m on CB 964 and CB 968 in 1970 (A.F. 90967). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. carried out a magnetic survey over the area in 1972 (A.F. 92213).

GEOLOGICAL SETTING

The area is mostly covered by overburden or flooded; the eastern part of the area is underlain by tonalite and diorite (Lamb et al., 1972). Drillholes intersected mostly biotite schist, in parts graphitic or siliceous or pegmatitic, and lesser grey micaceous quartzite. Minor mylonitic ± graphitic sections, amphibole gneiss or schist were logged in core from several holes. DDH 35309, 35310, 35311 and 35312 additionally intersected stringers and zones of skarn (A.F. 90966, 90967). DDH 35310 also intersected minor granite gneiss (A.F. 90967).

MINERALIZATION

DDH 35301. Separate 0.6 and 0.7 m sections of brecciated biotite schist contained 35% and 60%, respectively, pyrrhotite and pyrite. In addition, from 17.1 to 47.9 m, the drill core contained trace to 20% pyrrhotite and pyrite, generally approximately 10% sulphides (A.F. 90966).

DDH 35302. Notable mineralized intersections included (a) 1.7 m with 45% pyrrhotite and pyrite bands, (b) 1.3 m with 50% pyrrhotite and pyrite, brecciated in places, (c) 0.2 m of sulphide breccia with 80% pyrrhotite and pyrite, (d) 1.3 m of sulphide breccia with 75% pyrrhotite and pyrite, (e) 1.4 m of sulphide breccia with 75% pyrrhotite and pyrite, and (f) 0.2 m of sulphide breccia with 60% pyrrhotite and pyrite. All of these intersections were hosted by biotite schist. In addition, most of the remainder of the drill core contained trace to 20% pyrrhotite and pyrite (A.F. 90966).

DDH 35303. Separate 6 and 50 cm sections of sulphide-quartz-schist breccia contained 60% pyrrhotite. In addition, from 27.7 to 53.1 m, biotite schist contained trace to 22% pyrrhotite and pyrite (A.F. 90966).

DDH 35304. A 0.3 m section of quartzite-sulphide-schist breccia contained 35% pyrrhotite surrounding quartzite fragments; a 0.1 m section of schist-sulphide-quartzite breccia contained 40% pyrrhotite and pyrite. In addition, core from 23.4 to 46.6 m contained trace to 15% pyrrhotite and pyrite (A.F. 90966).

DDH 35305. A 0.3 m section of biotite schist contained 30% pyrrhotite stringers and disseminations, a 0.4 m section of schist-sulphide breccia contained 40% pyrrhotite and pyrite, and a 0.3 m section of biotite schist contained 30% pyrrhotite stringers. In addition, core from 13.1 to 46.1 m contained trace to 12% pyrite (A.F. 90967).

DDH 35306. Two sections, 0.5 and 0.3 m, of biotite schist contained 30% pyrrhotite and pyrite. In addition, core from 28.2 to 56.4 m and from 76.4 to 83.6 m contained trace to 20% pyrrhotite and pyrite (A.F. 90967).

DDH 35307. Trace to 15% pyrrhotite and pyrite occurred in biotite schist throughout most of the drill core (A.F. 90966).

DDH 35308. A 0.7 m section of brecciated graphitic biotite schist with local bands of quartzite contained 30% pyrrhotite and pyrite; a 0.8 m section of brecciated schist and quartzite contained 30% pyrrhotite. Most of the remainder of the core contained trace to 15% pyrrhotite and pyrite (A.F. 90966).

DDH 35309. A 0.2 m section of brecciated biotite-chlorite-quartz schist contained 45% pyrrhotite and pyrite. Trace to minor pyrrhotite and pyrite were present throughout most of the rest of the drill core (A.F. 90966).

DDH 35310. Trace to minor pyrite and pyrrhotite were disseminated from 13.7 to 26.3 m, from 77.0 to 81.0 m, and from 102.0 to 111.2 m (A.F. 90967).

DDH 35311. A 0.2 m section of sulphide breccia consisted of 80% fine grained pyrrhotite with fragments of schist and quartz. Most of the rest of the core contained trace to moderate pyrrhotite and pyrite (A.F. 90967).

DDH 35312. Nine intersections, 0.15 to 2.7 m, contained 30 to 50% pyrrhotite and pyrite stringers, veins and blebs, and were hosted by biotite schist, some of which is siliceous or graphitic, "micaceous schist", and quartzite, some of which is micaceous and graphitic. A 9 cm solid pyrrhotite-pyrite vein was hosted by biotite schist. Eleven intersections of sulphide breccia, 0.1 to 1.9 m, consisted of 60 to 95% pyrrhotite and pyrite (and in one intersection, possible pentlandite) with schist and/or quartz fragments. In addition, the remainder of the drill core contained trace to moderate amounts of pyrrhotite and pyrite (A.F. 90967).

DDH Cat 23. A 59.1 m zone of mineralization contained minor to moderate amounts of pyrrhotite, graphite, and pyrite, and narrow zones of near solid to solid pyrrhotite. Mineralization occurred within a larger unit of quartz-mica gneiss and schist. Included in this zone were a 1.3 m section with moderate amounts to solid pyrite and a separate 1.2 m section with traces of sphalerite (A.F. 90964).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90963, 90964, 90966, 90967, 91664, 91988, 92213; Manitoba Energy and Mines, Mines Branch.

Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. Figure 8: Drillhole locations at occurrences 4 and 5 (NTS 64B/11). 1972: Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.

NTS: 64B11

MDS_No.: M64B11-005

LOCATION: 5

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

EASTING: 469649

NORTHING: 6266926

AREA: NTS 64B/11; Nisku Bay (Issett Lake).

AIR PHOTO: A24996-116

ACCESS: Boat on Issett Lake, which is accessible by the road from Leaf Rapids to Southern Indian Lake.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. conducted an HLEM survey on the Cat claims in 1960-61 (A.F. 90963). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Canadian Nickel Co. Ltd. drilled DDH 35313 (113 m) on CB 1293 in 1970 (A.F. 90967). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. carried out a magnetic survey over the area in 1972 (A.F. 92213). Sherritt Gordon Mines Limited drilled DDH Rus-81-7 (128 m) to test an EM conductor on CB 8962 in 1981 (A.F. 92562).

GEOLOGICAL SETTING

The area is covered by overburden and water; Lamb et al. (1972) mapped tonalite and diorite to the east of the area. Baldwin (1988) mapped volcanic and sedimentary rocks to the west of this occurrence. DDH 35313 intersected granite gneiss, hornblende gneiss, biotite gneiss and biotite schist (A.F. 90967). DDH Rus-81-7 intersected fine grained gneissic to laminated metasedimentary rocks with abundant felsic to intermediate dykes and sills; a highly chloritized, pale to dark green, fine grained, friable schist with variable amounts of biotite, carbonate, and minor quartz veinlets; cherty rocks; and massive, pale green, chloritic andesite (A.F. 92562).

MINERALIZATION

DDH 35313 intersected trace to minor amounts of pyrite and lesser pyrrhotite stringers and disseminations throughout virtually all of the drill core (A.F. 90967).

DDH Rus-81-7 intersected 5 cm of near solid pyrite crystals in laminated metasedimentary rocks that contains pyrrhotite and pyrite disseminations and laminae. A description of a 21 m (core length) section of cherty sedimentary rocks mentions traces of graphite, disseminated pyrrhotite and pyrite, and locally, near solid pyrrhotite and pyrite. Trace to minor pyrite and pyrrhotite occur as disseminations, blebs, and vug- and fracture-fillings throughout most of the core (A.F. 92562).

GEOCHEMISTRY

Analyses of 53 drill core samples ranged from nil to 0.05% Cu, nil to 0.07% Zn, 1.6 to 14.0% Fe, nil to 0.02% Pb, trace to 0.3 g/t Au and 0.3 to 4.8 g/t Ag (A.F. 92562).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90963, 90967, 91664, 91988, 92213, 92562; Manitoba Energy and Mines, Mines Branch.
Baldwin, D.A. 1988:Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.
Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.

NTS: 64B11

MDS_No.: M64B11-006

LOCATION: 6

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

EASTING: 469581

NORTHING: 6263010

AREA: NTS 64B/11; south shore of Nisku Bay (Issett Lake).

AIR PHOTO: A24996-117

ACCESS: Road from Leaf Rapids to Southern Indian Lake.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. conducted an airborne EM and radiometric survey in 1959 (A.F. 90968). HBED carried out a follow-up ground EM survey, and drilled six holes totalling 402 m in 1960 on the Roc claims (A.F. 90968). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. carried out a magnetic survey over the area in 1972 (A.F. 92213). Sherritt Gordon Mines Limited carried out a ground HLEM and magnetic survey on CB 8969 in 1980 (A.F. 92542).

GEOLOGICAL SETTING

The area is covered by overburden and water. Drillholes intersected quartz \pm plagioclase \pm biotite gneiss and schist, locally with minor garnets; "altered" (unspecified) mafic to intermediate metavolcanic rocks, some of which are banded or contain siliceous and tuffaceous sections; and minor banded metasedimentary rocks (A.F. 90968). Baldwin (1982) interprets the host rocks as high grade metamorphic equivalents of Ruttan Group polymictic conglomerate with volcanic- and plutonic-derived clasts. In addition, minor rhyolite was intersected by DDH Roc 2 and Roc 6. DDH Roc 2 also intersected amphibolite with quartz stringers and minor quartz diorite porphyry (A.F. 90968).

MINERALIZATION

DDH Roc 1. Three mineralized zones were intersected: (a) 0.6 m with moderate pyrrhotite and traces of disseminated chalcopyrite in "altered" mafic to intermediate volcanic rocks, (b) 0.8 m with minor to near solid pyrrhotite and trace to minor chalcopyrite, between "altered" mafic to intermediate volcanic rocks with siliceous and tuffaceous sections and banded sedimentary rocks, and (c) 1.0 m with graphite and minor to moderate pyrrhotite, between "altered" mafic to intermediate volcanic rocks and quartz-plagioclase-mica gneiss with local minor garnets (A.F. 90968).

DDH Roc 2. Two zones, 1.6 and 16.3 m, of graphite and minor to moderate pyrrhotite \pm pyrite are separated by 2.6 m of rhyolite. "Highly altered" quartz-feldspar gneiss occurs up the hole from the first zone, and quartz-plagioclase-biotite gneiss occurs down the hole from the second zone (A.F. 90968).

DDH Roc 3. A 3.3 m zone with graphite and minor to moderate pyrrhotite is hosted by banded mafic to intermediate volcanic rocks (A.F. 90968).

DDH Roc 5. A 19.3 m zone with graphite and minor to moderate pyrrhotite and local traces of disseminated chalcopyrite occurs between quartz-plagioclase-biotite gneiss and "altered" andesite (A.F. 90968).

DDH Roc 6. A 1.0 m zone with minor graphite and moderate pyrrhotite occurs down the hole from "altered" rhyolite with minor disseminated pyrrhotite and pyrite, and up the hole from quartz-plagioclase-biotite gneiss with local garnets and minor local pyrrhotite stringers. A second zone, 13.3 m in core length, with graphite, minor to moderate pyrrhotite, and traces of disseminated chalcopyrite is hosted by quartz-plagioclase-biotite gneiss (A.F. 90968).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. References to altered mafic and felsic volcanic rocks in drill logs may be indicative of the type of alteration generally associated with massive sulphide type deposits.

REFERENCES

Assessment Files 90968, 91664, 91988, 92213, 92542; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1982: Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p.

NTS: 64B11

MDS_No.: M64B11-007

LOCATION: 7

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

EASTING: 476679

NORTHING: 6261731

AREA: NTS 64B/11; approximately 3 km southwest of Muskayk Lake.

AIR PHOTO: A24996-99

ACCESS: Float plane and traverse from Muskayk Lake or the Rat River north of Karsakuwigamak Lake.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. carried out a helicopter-borne EM and radiometric survey on the Tam claims in 1960 (A.F. 90958), and a follow-up HLEM survey in 1961 (A.F. 90950). Part of the area was covered by an airborne EM and Turam survey conducted by Argem Exploration Limited in 1962 (A.F. 91377). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. drilled DDH 35315 (137 m) on CB 1060 in 1970 (A.F. 90967). Canadian Nickel Co. Ltd. carried out a magnetic survey over the area in 1972 (A.F. 92213). Sherritt Gordon Mines Limited carried out an HLEM survey over CB 8969 in 1980 (A.F. 92542).

GEOLOGICAL SETTING

The area is underlain by Ruttan Group greywacke, polymictic conglomerate and arkose (Baldwin, 1988). DDH 35315 intersected impure and feldspathic quartzites; sericite, biotite and graphite schists; and minor amphibole gneiss (A.F. 90967).

MINERALIZATION

DDH 35315 intersected two sections of sulphide breccia, 40 and 6 cm, with 50 to 60% pyrrhotite and pyrite and fragments and bands of schist. The sections are separated by 0.4 m of graphite schist with 3 to 4% disseminated pyrite. Up to 25%, usually <10%, pyrite and pyrrhotite are disseminated from 56.4 to 89.4 m (A.F. 90967).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 90950, 90958, 90967, 91377, 91664, 91988, 92213, 92542; Manitoba Energy and Mines, Mines Branch. Baldwin, D.A. 1988:Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

NTS: 64B11

MDS_No.: M64B11-008

LOCATION: 8

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

EASTING: 486455

NORTHING: 6264799

AREA: NTS 64B/11; Muskayk Lake (formerly named Eagle Lake) - Rat River.

AIR PHOTO: A24936-1

ACCESS: Float plane to Muskayk Lake or the Rat River or by lengthy traverse from the road from Leaf Rapids to South Bay (Southern Indian Lake).

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Co. Ltd. carried out a helicopter-borne EM and radiometric survey on the Tam claims in 1960 (A.F. 90958) and on the Cat claims in 1961 (A.F. 90951). They followed up with an HLEM survey and drilled twenty-two holes totalling 2387.3 m to test EM conductors on the Tam and Cat claims in 1961 (A.F. 90950), and drilled DDH Cat 37 and Cat 38 totalling 271.0 m on the Cat claims in 1961 (A.F. 90964). In 1963, Hudson Bay Exploration & Development Co. Ltd. conducted an HLEM survey in 1963 on the Cat claims (A.F. 90949) and drilled five holes (DDH Tam 6, -7, -9, -13 and -14) totalling 756.5 m on the Tam claims (A.F. 90957). Part of the area was covered by an airborne EM and Turam survey conducted by Argem Exploration Limited in 1962 (A.F. 91377). Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. drilled DDH 35232 (32.0 m) on claim Tar 4 in 1969 (A.F. 90962). More Mines, Ltd. conducted an EM and magnetic survey over the area in 1971 (A.F. 91942). Manitoba Mineral Resources Ltd. drilled six holes (DDH R.R. 2, -3, -7, -8, -9, -10) totalling 985.7 m on CB 2478, 2486, and 2487 in 1972 (A.F. 90961). Falconbridge Nickel Mines Limited conducted a ground magnetic survey on CB 6200 (A.F. 92457), and 1:4800 geological mapping and rock geochemical survey over CB 6200 and 6201 (A.F. 92456) in 1980. Noranda Exploration Company, Limited carried out 1:15840 scale geological mapping on CB 9979 to check an INPUT anomaly in 1980 (A.F. 92388). They also mapped claims CB 9980 to 9985 and conducted HLEM and magnetic surveys over parts of these claims (A.F. 92560).

GEOLOGICAL SETTING

The area is predominantly underlain by Ruttan Group polymictic conglomerate, greywacke and arkose. Granodiorite and tonalite, greywacke, diorite, and mafic to intermediate volcanic rocks also are present in the area (Baldwin, 1988; McRitchie, 1981). Noranda Exploration Co., Ltd. mapped granodiorite, amphibolite and minor "possible iron formation" (see 'Mineralization') northeast of Muskayk Lake (A.F. 92388). Falconbridge Nickel Mines Ltd. mapped metavolcanic and metasedimentary rocks, and granodiorite to tonalite north of Muskayk Lake. Argillaceous rocks and muscovite-quartz-graphite schist are common. Two units of graphitic sulphidic argillaceous to cherty sedimentary rocks are loosely termed "iron formation". Metavolcanic rocks include a single thin basalt flow, as well as bands of felsic tuff and agglomerate up to 305 m wide (Fig. 13; A.F. 92456).

MINERALIZATION

Table 2 summarizes mineralized intersections as described in drill logs from A.F. 90950, 90957, 90961, 90962 and 90964. Minor to moderate pyrite and pyrrhotite with sections of near solid pyrrhotite are common throughout these sedimentary rocks. Graphite is present in places; only local traces of sphalerite and chalcopyrite were intersected. In outcrops north of Muskayk Lake, muscovite ± biotite-quartz-graphite schist contains up to 25% pyrrhotite and lesser pyrite (rarely, 50-60% sulphides). Two "iron formation" units contain 2 to 15% pyrrhotite and are rusty weathered. Volcanic rocks are not mineralized (A.F. 92456). Noranda Exploration Co., Ltd. mapped two zones of "possible iron formation" trending 325°, 0.6 to 6.0 m wide, with up to 20% disseminated pyrite, pyrrhotite and magnetite. The zones are hosted by amphibolite, which is bleached white, variably silicified and rusty weathered near the zones (A.F. 92388). In outcrops south and east of Muskayk Lake, minor mafic flows that are intercalated with graphitic greywacke, greywacke conglomerate and impure quartzite are locally siliceous and chloritic, and commonly contain up to 10% pyrite and pyrrhotite seams and disseminations (A.F. 92560). Minor pyrite and/or pyrrhotite in outcrop is indicated at several additional sites within the area of occurrence 8 by Lamb et al. (1972). Iron sulphides are disseminated in thin tuffaceous or sedimentary layers (Steeves and Lamb, 1972). The pyrite and pyrrhotite noted north of Muskayk Lake by Lamb et al. (1972) corresponds with sulphidic iron formation mapped by Falconbridge (A.F. 92456).

Description of mineralization summarized from drill logs for occurrence 8 (NTS 64B/11).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments(Reference)	DDH Length(m)
Cat37	63.8	"Graphitic zone" with minor po, py, rare sp includes two sections, 0.3 m each, with mod. to NS po	Quartz-mica schist	Additional minor po-py throughout core. (A.F. 90964; Baldwin (1982, p. 48-49))	162.5
	14.6	"Graphitic zone" with minor po, py; includes 0.85 m section with mod. po, tr. sp	Quartz-mica schist		
	7.7	"Graphitic zone" with mod. po, tr. py; includes 1.9 m section with mod. to NS po and 2.5 cm SS py	Quartz-mica schist		
Cat38	43.6	"Graphitic zone", mod. to solid gf, mod. po, minor py, tr. sp; includes 1.3 cm and 0.3 m section with SS pyor po	Quartz-sericite schist	(A.F. 90964; Baldwin (1982, p. 50))	108.5

	35.5	"Graphitic zone" with minor to mod. po, tr. sp	Rhyolite up hole; quartz-plagioclase-mica schist down hole; host not specified		
Cat47	6.0	Minor to mod. po, minor py; tr. sp locally	Banded graphitic tuff	Minor po, py in other lithologies (A.F. 90950; Baldwin (1982, p. 54))	152.4
Cat48	2.6	Minor to SS po, tr. sp	Not specified	Diorite, hornblende diorite on either side of mineralized zone and elsewhere in core; rhyolite, andesite, dacite, greywacke elsewhere in core. (A.F. 90950; Baldwin (1982, p. 54))	167.3
Cat49	1.4	Minor po; includes 0.03 m SS po, rare sp	"Quartz-rich zone", quartz-mica schist	Minor po, rare sp in other lithologies (A.F. 90950; Baldwin (1982, p. 53))	189.6
Cat50	1.5	Mod. po; gf	Quartz-mica schist	(A.F. 90950)	80.5
Cat 51	26.0	Mod. po; gf, minor py	Banded sedimentary rocks and tuff	Includes quartz-rich zones and minor quartz vein (A.F. 90950)	83.2
	5.7	Mod. po; gf	Banded sedimentary rocks and tuff	Tr. to minor po, sp in other sections of core	
Cat52	17.8	Minor po, tr. to minor py	Banded sedimentary rocks	DDH also intersected py, po, rare sp in other sections of core including 6 cm SS py in quartz-mica schist and 1.7 m rhyolite with tr. to minor po. (A.F. 90950)	86.0
	4.9	Minor po, py	Banded sedimentary rocks(?)		
	8.0	Minor po	Banded sedimentary rocks(?)		
Cat54	0.4	Mod. po	Dacite-rhyolite	Numerous other sections with tr. to minor po, gf, tr. cp	83.2
	4.1	Mod. po, minor gf, tr. cp	Biotite-dacite porphyry		
	1.9	Mod. po, tr. cp	Quartz-biotite dacite porphyry(?)		
	0.12	SS py, po	Quartz-mica schist(?); tuff sections		
Cat55	3.1	Minor po	Quartz-plagioclase-mica	Tr. to minor po, py in other sections of core. Some garnetiferous sections in quartz-plagioclase-mica gneiss (A.F. 90950)	54.9
	0.12	SS po	gneiss(?), quartz-rich sections Dacite		
Cat59	16.2	Tr. to minor po, py	Mafic tuff	(A.F. 90950)	162.5
	4.9	Tr. to minor po, py	Mafic tuff		
Cat60	4.4	Tr. to minor po, py	Mafic tuff quartzite(?) and rhyolite	(A.F. 90950)	95.7
Cat61	0.5	Mod. po	Quartz-biotite gneiss	(A.F. 90950)	77.7
	0.8	Mod. po	Quartz-biotite gneiss		
	1.5	Mod. po	Quartz-biotite gneiss		
Cat62	0.9	Mod. po, minor py	Mafic volcanic rock(?) Quartzitic gneiss(?)	Tr. to minor po, py in other lithologies/sections (A.F. 90950)	81.7
	1.2	Mod. po	Mafic tuff		
	1.5	Mod. po	Mafic tuff		
Cat63				Abandoned; minor py, po in mafic tuff (A.F. 90950)	24.4
Cat64	2.3	Mod. po, py	Quartz-amphibole-mica gneiss(?)	Minor po, py in other lithologies (A.F. 90950)	168.6
	9.5	Minor po, py	Mafic tuff		
	9.4	Minor py, po	Mafic tuff		
	7.2	Minor po, py; tr. sp	Mafic tuff, partly gneissic and/or schistose		
Cat65	1.2	NS po, minor py	Mafic tuff	(A.F. 90950)	168.2
	1.8	NS po	Quartz-mica gneiss/Rhyolite		
Cat66	1.5	Minor po, py	Quartz-biotite schist	(A.F. 90950)	114.3
	2.0	Mod. po, py	Mafic tuff		
	0.8	NS py	Mafic tuff		
Cat 67				Abandoned; minor po, py in mafic schist (A.F. 90950)	25.3
Cat68	1.7	Minor po, py, gf	Schistose metasedimentary rocks	(A.F. 90950)	61.0
R.R.2	2.4	Minor to NS gf, tr. to NS po, tr. py	Calcic biotite gneiss, minor hornblende	Parts with minor. sericiteTr. to minor po, py, tr. to NS gf throughout calcic biotite gneiss, chloritic m.g. biotite gneiss (A.F. 90961)	161.8
	0.9	Minor to mod. po, crystalline & earthy; mod. gf	Calcic biotite gneiss, f.g., chloritic, sericitic		
	0.8	Minor to mod. po, crystalline & earthy; mod. gf	Calcic biotite gneiss, f.g., chloritic, sericitic		
R.R.3	4.3	Tr. to mod. po; mod. gf	Graphitic chloritic biotite gneiss	Tr. to minor po, py, gf throughout core (A.F. 90961)	161.2
	2.9	Tr. to mod. po, py stringers; mod. gf	Graphitic chloritic biotite gneiss		
R.R.7	1.9	Mod. po, f.g.; minor py stringers, tr. to mod. gf	Chloritic calcic biotite gneiss, garnetiferous	Tr. to minor po, py, tr. to NS gf throughout core (A.F. 90961)	162.2
	0.1	Mod. po, v.f.g., minor py stringers, minor gf	Chloritic calcic biotite gneiss, garnetiferous		
	0.3	Minor to SS py, po in graphitic fracture	Chloritic calcic biotite gneiss, garnetiferous		
	0.3	Minor to mod. py, po, gf	Chloritic calcic biotite gneiss, garnetiferous		
	3.3	Minor to mod. po, gf; minor py stringers & fracture fillings	Chloritic calcic biotite gneiss		
	4.9	Minor to mod. po, gf; py blebs & stringers	Chloritic calcic biotite gneiss		
	6 cm	SS po, minor gf	Quartz vein in chloritic calcic biotite gneiss		
	3.5	Tr. to minor po; tr. to mod gf; includes SS py, po in quartz-rich gneiss and quartz	Chloritic calcic biotite gneiss		
	0.7	Minor to mod. po, gf; tr. gf	Chloritic calcic biotite gneiss		
	0.8	Mod. to NS po; minor gf	Chloritic calcic biotite gneiss		

	1.0	Minor to mod. po; tr. to minor py; tr. bornite, cp	Chloritic calcic biotite gneiss, slightly granitized		
	0.9	Minor to mod. po; tr. py; tr. to mod. gf	Chloritic calcic biotite gneiss		
R.R.8	5.4	Tr. to mod. po	Chloritic calcic biotite gneiss	Tr. to minor po, py, tr. to mod gf throughout biotite gneiss. Granite intersected from 65.4 m to bottom of hole. (A.F. 90961)	146.0
	0.7	Tr. to mod. po, minor py	Chloritic calcic biotite gneiss		
	12 cm	SS po fracture filling	Siliceous gneiss		
	0.4	Mod. po	Chloritic calcic biotite gneiss		
	0.3	Mod. po	Chloritic calcic biotite gneiss		
	0.8	Mod. po, tr. to mod. gf; includes two small areas with SS po	Chloritic calcic biotite gneiss		
R.R.9	0.3	Mod. po	Biotite gneiss, siliceous, sericitic, chloritic	Tr. to minor po, py, gf variably throughout biotite gneiss; variably garnetiferous. Granitic sections. (A.F. 90961)	151.2
	0.8	Mod. po, minor gf	Biotite gneiss, siliceous, sericitic, chloritic		
	0.6	Mod. po	Siliceous biotite gneiss		
	18.8	Tr. to mod. gf, po, including bands up to 5 cm wide	sericitic		
R.R.10	1.1	Mod. po	Quartz-rich biotite gneiss, chloritic	Tr. to minor gf, po variably throughout biotite gneiss. Granitic sections throughout core.(A.F. 90961)	203.3
	1.6	Tr. to mod. po, tr. to minor gf, minor py	Siliceous biotite gneiss, chloritic		
	0.8	Tr. to mod. po	Calcic siliceous biotite - hornblende gneiss, chloritic		
	0.7	Mod. to NS po	Highly siliceous calcic biotite-hornblende gneiss, chloritic, folded		
	1.1	Minor to NS po	Quartz-rich biotite phase of chloritic calc-silicate gneiss		
	0.3	Tr. to mod. po	Chloritized biotite gneiss, pink tinge		
			Phase of chloritic calc-silicate gneiss with abundant quartz dykes and stringers		
Tam1	1.3	Minor po	Graphitic slate	A.F. 90950	139.0
	6.1	Minor po	Graphitic slate		
	1.8	NS po, gf	Diorite up hole; graphitic greywacke and slate down hole		
	3.9	NS po, gf	Diorite on both sides of zone		
	3.1	NS po, gf	Graphitic slate up hole; greywacke/slate down hole		
	1.4	Mod. py, po; minor gf	Greywacke/slate		
Tam2	4 sections, 0.3-0.5 m	Mod. po, minor py	Mafic tuff, partly graphitic; gneissic sections	A.F. 90950	101.2
Tam3	2.2	Mod. po, py	Quartz-mica-amphibole gneiss, mica schist, tuffaceous sections up hole; slate down hole	A.F. 90950	112.2
Tam4	-	Local tr. py, po, gf	Mafic tuff and "partly altered" basalt	A.F. 90950	144.8
Tam5	1.8	NS po, minor gf	Mafic tuff	A.F. 90950	180.4
Tam6	159.7	30-60 cm thick, minor diss. to NS popy ± gf layers alternating with nonmineralized sections, generally 60-90 cm thick	"Altered" sediments, basalt flows with interbedded breccia and tuff(1)	A.F. 90957; Baldwin, 1982, p. 50	182.9
Tam7	79.9	30 cm-3 m thick, minor diss. to NS popy ± gf layers alternating with nonmineralized sections, generally 30 cm-6 m thick	"Altered" sediments, basalt flows with interbedded breccia, tuff and section of altered gabbro(?) (1)	A.F. 90957; Baldwin, 1982, p. 52	109.7
Tam9	38.6	Numerous <2 m thick sections of minor po-py in NS gf are separated by 1-1.5 m nonmineralized sections; tr. cp in 2 NS gf sections	Sheared basalt with quartz stringers(2)	A.F. 90957; Baldwin, 1982, p. 52-53	71.6
Tam13	12.5	Minor py, po; minor to NS gf	Sheared basalt and sedimentary rocks(2) "Green tuff and breccia", includes quartz vein	Similar lithologies from other drill holes have been reinterpreted by Baldwin (1982); see footnotes (1) and (2) (A.F. 90957)	239.3
	1.5	Minor py, po			
	1.7	Minor to mod. po-py			
	63.6	Minor to mod. py, po in minor to NS gf with nonmineralized sections of unspecified length	Sedimentary rocks and breccia Sheared basalt, tuff and breccia, "altered sedimentary rocks"		
Tam14	114.1	Minor py-po in minor to NS gf; some unspecified sections NS py-po; some unspecified sections nonmineralized	Sheared basalt interbedded with tuff and breccia, sections with quartz stringers, altered sedimentary rocks	Similar lithologies from other drill holes have been reinterpreted by Baldwin (1982); see footnotes (1) and (2) A.F. 90957	153.0
35232	20.9	Tr. to mod. po-py; mostly tr. to minor po-py; includes six sections, 0.2-4.7 m, with 12-20% po-py	Biotite schist	A.F. 90962	32.0

Drill logs for DDH Cat 35, Cat 36, Cat 39, Cat 40, Cat 46 and Tam 15 are not available. Locations of these holes are plotted in A.F. 90950 and 90957. DDH Cat 58 was abandoned at 33.2 m (A.F. 90950).

1 Baldwin (1982), based on outcrops mapped near the drilled area, interprets the basalt flows as mafic sills, the tuff as argillite and fine grained greywacke, and the breccia as conglomerate beds.

2 Baldwin (1982), based on outcrops mapped near the drilled area, interprets the sheared basalt as fine grained laminated siltstone.

GEOCHEMISTRY

Falconbridge Nickel Mines Limited collected 114 rock samples for major element, Rb, Sr, Cu and Zn analysis at 200' (60 m) stations with 400' (120 m) line spacings. The maximum Cu analysis was 180 ppm and the maximum for Zn was 170 ppm. The report notes <2.0% Na₂O and high (some 3.0%) K₂O in some samples, but attributes these low values to the original composition of marine sediments, not to Na depletion by hydrothermal alteration (A.F. 92456). Four samples collected by Noranda Exploration Co., Ltd. northeast of Muskayk Lake assayed 0.01 to 0.02% Cu, nil to 0.02% Zn, and nil to trace Pb (A.F. 92388). Eleven samples collected from boulders and outcrops east and south of Muskayk Lake assayed trace to 0.02% Cu, nil to 0.01% Zn, and nil to trace Pb (A.F. 92560).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

- Assessment Files 90949, 90950, 90951, 90957, 90958, 90961, 90962, 90964, 91377, 91664, 91942, 91988, 92388, 92456, 92457, 92560; Manitoba Energy and Mines, Mines Branch.
- Baldwin, D.A. 1982:Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p. 1988:Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.
- Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.
- McRitchie, W.D. 1981:Issett Channel - Rat River area; in Manitoba Energy and Mines, Report of Field Activities, 1981, p. 24-26; 1:100 000.
- Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B11

MDS_No.: M64B11-009

LOCATION: 9

NAME: MIRROR CLAIM

EASTING: 495640

NORTHING: 6287964

AREA: NTS 64B/11; South Bay (Southern Indian Lake).

AIR PHOTO: A24935-209

ACCESS: Boat from the end of the road from Leaf Rapids at Southern Indian Lake, or by float plane.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). The area was first staked as the Mirror claim by D. Baker in 1971; minor trenching was done before 1973 (Mineral Inventory Card 64B/11 Mo1).

GEOLOGICAL SETTING

The area is underlain by granite and tonalite (Lamb et al., 1972; Manitoba Energy and Mines, 1986).

MINERALIZATION

Discontinuous rusty weathered zones in the tonalite contain minor disseminated and solid pyrite and minor pyrrhotite. Crosscutting pegmatites contain small flakes and rosettes (up to 5 mm) of molybdenite (Frohlinger, 1972, p. 75, 81). Sites A and B represent outcrops with minor pyrite in granite and tonalite (Frohlinger, 1972, p. 74, 75). Frohlinger (1972) and Lamb et al. (1972) describe the host rocks to the iron sulphides as interlayered plagioclase diatexite and paragneiss. These rocks are considered to be tonalite (Manitoba Energy and Mines, 1986; H.V. Zwanzig, pers. comm., 1994).

GEOCHEMISTRY

A sample from this occurrence assayed 0.04% Cu, 0.02% Ni and 0.56% Mo. Samples were not assayed from sites A and B (Frohlinger, 1972, p. 81).

CLASSIFICATION

Pegmatite-type deposit. In addition, sites A and B contain unclassified disseminated mineralization.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Frohlinger, T.G. 1972:Geology of the Southern Indian Lake area, central portion; Manitoba Energy and Mines, Mines Branch Publication 71-2I, 91p.

Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p. Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Mineral Inventory Card 64B/11 Mo1; Manitoba Energy and Mines, Geological Services Branch.

NTS: 64B11

MDS_No.: M64B11-010

LOCATION: 10

NAME:

EASTING: 498476

NORTHING: 6282532

AREA: NTS 64B/11; South Bay (Southern Indian Lake).

AIR PHOTO: A24935-210

ACCESS: Road from Leaf Rapids to Southern Indian Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by tonalite and by greywacke-derived gneiss and migmatite of the Burntwood River Metamorphic Suite (Manitoba Energy and Mines, 1986; Lamb et al., 1972).

MINERALIZATION

Minor fine grained pyrite is disseminated in greywacke gneiss at location 10, and in tonalite at site A (Frohlinger, 1972, p. 75, 81). Details are not specified for a minor pyrrhotite-pyrite site shown by Lamb et al. (1972) along the inlet to South Bay; this mineralization may now be flooded by the South Bay Diversion Channel.

GEOCHEMISTRY

A sample from location 10 assayed 0.05% Cu and 0.01% Ni. A sample from site A assayed 0.06% Cu and 0.03% Ni (Frohlinger, 1972, p. 81).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Frohlinger, T.G. 1972:Geology of the Southern Indian Lake area, central portion; Manitoba Energy and Mines, Mines Branch Publication 71-2I, 91p.

Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p. Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

NTS: 64B11

MDS_No.: M64B11-011

LOCATION: 11

NAME:

EASTING: 483638

NORTHING: 6286352

AREA: NTS 64B/11; southern shore of Southern Indian Lake, north of Figure Lake.

AIR PHOTO: A24936-37

ACCESS: Float plane or boat on Southern Indian Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hinds (1972, p. 41) noted cut lines over the northern part of this area and evidence of diamond drilling.

GEOLOGICAL SETTING

The area is underlain by a unit of ultramafic amphibolite (Hinds, 1972, p. 41; Lamb et al., 1972), which is bordered by granite and tonalite (Manitoba Energy and Mines, 1986).

MINERALIZATION

A rusty weathered zone with up to 10% pyrite and pyrrhotite with traces of chalcopyrite occurs at the northeastern contact of the ultramafic amphibolite with quartz monzonite. It is approximately 1 m wide and is exposed for 60 m along the south shore of Southern Indian Lake. The mineralized zone corresponds to a 3-channel INPUT anomaly, part of a series of six northwest-trending 3- to 6-channel INPUT anomalies. Up to 1% sulphides are disseminated in the surrounding ultramafic amphibolite (Hinds, 1972, p. 41, 48).

GEOCHEMISTRY

Assays of rock samples from outcrops contained traces of Cu. A sample of deformed, siliceous, ultramafic amphibolite with olivine remnants contained 0.05% Ni, and traces of Cu and Cr (Hinds, 1972, p. 48).

CLASSIFICATION

Magmatogenic type deposit associated with ultramafic rocks; disseminated.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Hinds, R.W. 1972:Geology of the Opachuanau Lake-Fraser Lake-Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.

Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p. Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

NTS: 64B11

MDS_No.: M64B11-012

LOCATION: 12

NAME:

EASTING: 487184

NORTHING: 6288151

AREA: NTS 64B/11; south shore of Southern Indian Lake north of Figure Lake.

AIR PHOTO: A24936-37

ACCESS: Float plane or boat on Southern Indian Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by ultramafic amphibolite with quartzofeldspathic bands that are probably related to nearby felsic intrusions (Hinds, 1972; Lamb et al., 1972; Manitoba Energy and Mines, 1986).

MINERALIZATION

Hinds (1972, p. 41, 48) notes two rusty weathered areas in quartzofeldspathic bands within ultramafic amphibolite. These zones contain up to 20% pyrrhotite and pyrite, <1% chalcopyrite, and <1% graphite. The southern mineralized zone corresponds to two 2-channel INPUT anomalies, and the northern zone to a 4-channel anomaly. Ultramafic amphibolite contains <2% fine grained disseminated sulphides. A small rusty weathered area that does not coincide with the identified INPUT anomalies contains up to 10% small pyrrhotite blebs, <1% chalcopyrite and pyrite hosted by fine grained siliceous gneiss (Hinds, 1972, p. 48).

GEOCHEMISTRY

A sample from occurrence 12 assayed 0.02% Ni, 0.03% Cu; a sample from site A assayed 0.02% Ni and 0.04% Cu. A sample of siliceous ultramafic rock with olivine remnants and <2% sulphides contained 0.08% Ni, 0.03% Cu and 0.05 Cr₂O₃ (Hinds, 1972, p. 48).

CLASSIFICATION

Magmatogenic type deposit associated with ultramafic rock; disseminated.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Hinds, R.W. 1972:Geology of the Opachuanau Lake - Fraser Lake - Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.

Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p. Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

NTS: 64B11

MDS_No.: M64B11-013

LOCATION: 13

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

EASTING: 471397

NORTHING: 6272074

AREA: NTS 64B/11; approximately 4 km north of Nisku Bay (Issett Lake).

AIR PHOTO: A24996-118

ACCESS: By traverse from Issett Lake, which is accessible by the road from Leaf Rapids to Southern Indian Lake or by float plane.

EXPLORATION SUMMARY

Sherritt Gordon Mines Limited conducted an airborne EM and magnetic survey over Airborne Permit 71 in 1968 (A.F. 91664). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Sherritt Gordon Mines Limited conducted an airborne EM survey in 1977 (A.F. 93187), followed by linecutting (A.F. 93193), magnetic and HLEM surveys in 1981 (A.F. 93187) and 1982 (A.F. 93192). Hudson Bay Exploration & Development Co. Ltd. carried out an EM and magnetic survey in 1989 and drilled DDH Rut-1, Rut-2 and Rut-3 totalling 273 m in 1990 on CB 9498, CB 9499 and CB 11421 (A.F. 93186).

GEOLOGICAL SETTING

The area is underlain by tonalite (Lamb et al., 1972). DDH Rut-1, Rut-2 and Rut-3 intersected hornblende granodiorite and greywacke, silicified in parts (A.F. 93186).

MINERALIZATION

DDH Rut-3 intersected a 12 cm section with 20% pyrrhotite and 10% sphalerite hosted by silicified greywacke. Layering in the remainder of the core was oriented 55° to 65° to the core axis, but this section was intersected downdip (30° to the core axis), indicating it is a veinlet or mobilize stringer. In addition, DDH Rut-3 intersected several sections, up to 5.5 m in core length, with (5% pyrrhotite, (2% pyrite, and up to 3% graphite. DDH Rut-1 intersected 5% pyrrhotite and trace to 1% pyrite in 7.8 and 4.1 m sections hosted by silicified greywacke. DDH Rut-2 intersected a 7.2 m section and eight other <1.5 m sections with minor pyrite and/or pyrrhotite, up to 5% graphite, and in one <1 m section, 1% arsenopyrite hosted by silicified greywacke with 30% biotite and chlorite (A.F. 93186).

GEOCHEMISTRY

The section from DDH Rut-3 with 20% pyrrhotite and 10% sphalerite assayed 4.6% Zn, nil Cu, nil Ag and nil Au. Other samples from drillholes yielded nil or trace Cu, Zn, Au and Ag (A.F. 93186).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The narrow sphalerite-rich section is probably a veinlet or stringer of mobilize

REFERENCES

Assessment Files 91664, 91988, 93186, 93187, 93192, 93193; Manitoba Energy and Mines, Mines Branch.
Lamb, C.F., Steeves, M.A., Hinds, R.W. and Frohlinger, T.G. 1972:Issett Lake, Map 71-2-9; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.

NTS: 64B12

MDS_No.: M64B12-001

LOCATION: 1

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

EASTING: 441410

NORTHING: 6276250

AREA: NTS 64B/12; Scotland Lake.

AIR PHOTO: A25313-126; A21123-157

ACCESS: Provincial Road 391.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey in 1969 (A.F. 91673). Hudson Bay Exploration and Development Company Limited conducted an EM survey and drilled ten holes totalling 1138 m on the Jit claims in 1970-71 (A.F. 90977), drilled seven holes totalling 533 m to test EM conductors on CB 1121 in 1971 (A.F. 90976), and drilled DDH Jit 108 (100.3 m) to test an EM conductor on CB 1118 in 1971 (A.F. 90990).

GEOLOGICAL SETTING

The area is underlain by megacrystic granite and tonalite (Manitoba Energy and Mines, 1986; Steeves and Hinds, 1972). Drillholes intersected mostly quartz-biotite gneiss and schist, interlayered with narrow sections of pegmatite and metasedimentary rocks (A.F. 90976, 90977, 90990; Table 3).

MINERALIZATION

Mineralized intersections described in drill logs from A.F. 90976, 90977 and 90990 are summarized in Table 3. Generally, the 'Jit' drillholes intersected numerous sections with minor to solid pyrrhotite and pyrite, minor to moderate graphite, and local traces of chalcopyrite in quartz-biotite gneiss with local sections of chlorite-biotite schist (A.F. 90976, 90977, 90990). Length(m)

Description of mineralization summarized from drill logs for occurrence 1 (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments(Reference)	DDH Length (m)
Jit 97	0.4	15% po, 10% py	Quartz-biotite gneiss	Tr. to minor po, py, gf in other sections of quartz-biotite gneiss and granite gneiss (A.F. 90977)	202.4
	3.9	25-45% po, 10-20% py, tr. gf	Quartz-biotite gneiss		
	6.3	1-10% po, 10-20% py, nil to tr. gf	Quartz-biotite gneiss		
	0.4	20-40% po, 15% py, 35-50% gf	Granite gneiss with pegmatite and metasedimentary sections	Tr. garnets in pegmatite and metasedimentary sections	
	4.1	tr. to 45% po, 1-35% py, tr. to 20% gf	Granite gneiss with pegmatite and metasedimentary sections	Tr. garnets in pegmatite and metasedimentary sections	
	0.3	10% po, 20% py, 3% gf	Quartz-biotite gneiss	Narrow pegmatite and metasedimentary sections	
	1.5	15-30% po, 10-25% py, tr. to 5% gf	Quartz-biotite gneiss	Narrow pegmatite and metasedimentary sections	
	3.7	10-60% po, 5-50% py, tr. to 5% gf	Quartz-biotite gneiss	Includes feldspathic sections	
Jit 98	4.9	tr. to 40% po, tr. to 25% py, tr. to 10% gf	Biotite-quartz gneiss with small sections of partly altered biotite schist	Tr. to minor po, py, gf in other sections of quartz-biotite gneiss and granite gneiss (A.F. 90977)	186.8
	0.2	25% po, tr. py, tr. gf	Same		
	1.1	55% po, 5% py, 15% gf	Quartz-biotite gneiss, minor garnets		
	0.6	25% po, 5% py, tr. gf	Quartz-biotite gneiss		
	0.3	30% po, tr. py, 5% gf	Quartz-biotite gneiss		
Jit 99	0.4	20% po, tr. py, tr. gf	Quartz-biotite gneiss with siliceous bands	Tr. to minor po, py, gf in other sections of biotite-quartz gneiss with siliceous and schistose sections (A.F. 90977)	67.4
	0.4	20% po, 10% py, 5% gf	Quartz-biotite gneiss with siliceous bands		
	2.5	10-50% po, tr. to 15% py, tr. to 20% gf	Quartz-biotite gneiss with siliceous bands		
	0.3	20% po, 5% py, 5% gf	Biotite-quartz gneiss with siliceous and schistose sections		
	0.5	tr. po, 20% gf	Biotite-quartz gneiss		
	0.5	tr. py, 60% gf	Biotite-quartz gneiss		
	0.8	25% po, 10% py, 15% gf	Biotite-quartz gneiss		
Jit 100	0.4	20% po, 25% py, 15% gf	Biotite-quartz gneiss	Tr. to minor po, py, gf in other sections of biotite-quartz gneiss with siliceous and schistose sections (A.F. 90977)	92.4
	1.0	10% po, 5% py, 5% gf			
	1.4	15% po, 5% py, 35% gf			
	0.4	20% po, 5% py, 20% gf			
	0.7	10% po, 5% py, 5% gf			
	0.2	75% po, 5% py, 10% gf			
Jit 101	0.6	25% po, 5% py, 5% gf	Biotite-quartz gneiss with numerous narrow sections biotite schist, biotite-chlorite schist, pegmatite	(A.F. 90977)	106.4
	0.3	10% po, 25% py, tr. gf			
	0.3	60% po, 20% py, 25% gf			
	0.3	10% po, 5% py, tr. gf			

	10.1	tr. to 10% po, 2-15% py, tr. to 5% gf			
	4.3	tr. to 25% po, 3-5% py, tr. to 5% gf			
	0.5	20% po, 5% py, tr. gf			
	1.1	10% po, 5% py, tr. gf			
	0.4	10% po, 5% py, tr. gf			
	0.3	25% po, 10% py, 5% gf			
	1.2	10% po, tr. py, 10% gf			
	0.3	10% po, 5% py, tr. gf			
Jit 102	0.6	25% po, 20% py, 5% gf	Biotite-quartz gneiss	Includes sections of biotite-chlorite schist and pegmatite (A.F. 90977)	106.7
	0.5	5% po, 25% py, tr. gf			
	0.5	25% po, 5% py, 25% gf			
	0.4	20% po, 5% py, 10% gf		Tr. to minor po, py, gf in other sections of biotite-quartz gneiss	
	1.1	15% po, 5% py, 10% gf			
	6.2	5-20% po, tr. py, tr. to 5% gf; includes 1.0 m section of SS po, tr. py, tr. to 5% gf			
Jit 103	0.2	60% po, tr. py, 10% gf	Biotite-quartz gneiss, with narrow layers of biotite schist, biotite-chlorite schist, pegmatite	Tr. to minor po, py, gf in other sections of biotite-quartz gneiss and pegmatite with meta-sedimentary sections (A.F. 90977)	96.3
	0.1	40% po, tr. py, 10% gf			
	0.3	20% po, 5% py, 5% gf			
	0.1	70% po, 5% py	Quartz-biotite gneiss, minor garnets, pegmatite bands, and biotite-chlorite schist		
	0.2	10% po, 5% py			
	0.3	50% po, 5% py, 5% gf			
Jit 104	1.1	15% po, 5% py, 5% gf	Quartz-biotite gneiss	Tr. to minor po, py, gf in other sections of biotite-quartz gneiss and pegmatite with meta-sedimentary sections (A.F. 90977)	94.2
	0.8	15-50% po, 5-10% py, 5% gf			
	1.3	5-10% po, 10-15% py, tr. to 5% gf	Biotite-quartz gneiss, with narrow layers of biotite schist, biotite-chlorite schist, pegmatite		
Jit 105	0.2	30% po, 5% py, tr. gf	Quartz-biotite gneiss, with narrow layers of quartz- biotite-hornblende gneiss	Tr. to minor po, py, gf in other sections of epidotic quartz-biotite (A.F. 90977)	88.7
Jit 106	0.4	20% po, 2% py, 2% gf	Biotite-quartz gneiss	Tr. to minor po, py, gf in other sections of biotite-quartz gneiss (A.F. 90977)	96.3
	0.3	15% po, 5% py, tr. gf			
	3.0	5-20% po, 2-15% py, tr. to 5% gf			
	0.3	75% po, 5% py, 10% gf			
	0.2	30% po, 5% py, 5% gf			
	1.0	15% po, 5% py, 5% gf			
	0.5	25% po, tr. py, 5% gf			
	1.6	5-40% po, 5% py, 5% gf			
Jit 108	3.4	2-20% po, tr. to 20% py, tr. gf	Biotite-quartz gneiss, with narrow layers of biotite-chlorite schist, pegmatite, metasedimentary rocks	Tr. to minor po, py, gf in other sections of drill core (A.F. 90990)	100.3
	15.8	tr. to 25% po, tr. to 15% py, tr. to 5% gf			
	9.1	tr. po, tr. to 25% py, tr. to 5% gf			
	8.9	tr. to 45% po, tr. to 5% py, tr. to 25% gf			
	0.8	10% po, tr. py, 5% gf			
Jit 120	0.8	5-15% po, tr. to 5% py, tr. gf	Biotite-quartz gneiss	Tr. to minor po, py, gf in other sections of drill core (A.F. 90976)	71.9
	7.1	tr. to 15% po, tr. to 2% py, tr. gf	Quartz-biotite gneiss, with sections of biotite-chlorite schist and pegmatite		
	11.8	tr. to 20% po, tr. to 10% py, tr. to 10% gf			
	0.3	35% po, 25% py, 15% gf			
	9.7	5-25% po, 5-10% py, 5-15% gf			
Jit 121	0.4	25% po, 5% py, 10% gf	Biotite-quartz gneiss, with sections of biotite-chlorite schist, metasedimentary rocks, and biotite-hornblende gneiss, garnetiferous	Tr. to minor po, py, gf in other sections of drill core (A.F. 90976)	110.6
	2.3	15% po, tr. py, 10% gf			
	1.1	20% po, tr. py, 15% gf	Biotite-quartz gneiss, with sections of pegmatite		
	0.4	25% po, tr. py, 5% gf			
Jit 122	0.6	5% po, 5% py, 5% gf	Pegmatite with minor bands of biotite-quartz gneiss	(A.F. 90976)	77.7
	3.1	5-25% po, 5-30% py, 5-60% gf	Biotite-quartz gneiss		
	1.0	10% po, 5% py, 5% gf	Biotite-hornblende gneiss		
	0.4	15% po, 5% py, 40% gf	Biotite-quartz gneiss		
Jit 123	0.7	tr. po, 20% py, 25% gf	Biotite-quartz gneiss, with narrow sections of biotite schist and metasedimentary rocks	Last two intersections are continuous (A.F. 90976)	40.8
	0.8	tr. po, 25% py, 50% pf			
	0.8	tr. po, 10% py, tr. gf			
Jit 124 (none)				(A.F. 90976)	79.2
Jit 125	10.0	5-10% po, tr. to 15% py, tr. to 5% gf	Biotite-quartz gneiss with narrow sections of biotite-chlorite schist, metasedimentary rocks, and biotite-hornblende gneiss	Last two intersections are continuous (A.F. 90976)	91.4
	0.7	tr. po, 20% py, tr. gf			
	0.7	5% po, 10% py, tr. gf			
	0.2	60% po, 5% py, 15% gf			
Jit 126	0.2	10% po, 5% py, tr. cp	Quartz-biotite gneiss, numerous siliceous bands	(A.F. 90976)	61.0

	21.3	tr. to 30% po, tr. to 15% ; py, tr. to 25% gf includes four sections, 0.1-0.9 m, with NSS to SS po or py, and minor gf		
	0.9	15% po, 5% py, 5% gf		

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The presence of chlorite-biotite schist, although only in local sections, may be indicative of the type of alteration commonly associated with massive sulphide type deposits.

REFERENCES

Assessment Files 90976, 90977, 90990, 91673, 91988; Manitoba Energy and Mines, Mines Branch.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Steeves, M.A. and Hinds, R.W. 1972:Opachuanau Lake, Map 71-2-8, 1:50 000; accompanies Steeves, M.A. and Lamb, C.F., 1972, Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-002

LOCATION: 2

NAME: OPACHUANAU LAKE GOLD PROSPECT

EASTING: 456939

NORTHING: 6275191

AREA: NTS 64B/12; Opachuanau Lake/Churchill River.

AIR PHOTO: A25474-112

ACCESS: Float plane or boat on Opachuanau Lake.

EXPLORATION SUMMARY

Five holes totalling 308 m were drilled on the Gaddis claims in 1955 for R. Gaddis (A.F. 90969). Gossan Resources Limited held the Hill 1, Hill 2 and Hill 3 claims in 1984 (Mineral Inventory Card 64B/12 Au1). International Nickel Co. Ltd. conducted an airborne EM survey over the "Moose '65 area" in 1965 (A.F. 91649). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey in 1969 (A.F. 91673).

GEOLOGICAL SETTING

The area is underlain by a wedge of Sickie Group polymictic conglomerate, underlain to the south by greywacke, lithic arenite and minor conglomerate of unnamed affinity, and bound to the north by granite and tonalite (Bailes and Syme, 1982; Manitoba Energy and Mines, 1986).

MINERALIZATION

A vertical shear zone 1.8 m wide with visible gold within the area of claim Hill 1 was examined by J. Campbell of Gossan Resources Ltd. (Mineral Inventory Card 64B/12 Au1). Steeves and Hinds (1972) mark a pyrite, chalcopyrite and galena occurrence that may be either equivalent to or near the gold-bearing shear zone described above. Steeves and Lamb (1972, p. 47) note that mineralization within Sickie Group rocks in this map sheet is typically restricted to quartz veins, but do not give details about this occurrence. Holes drilled by R. Gaddis on claims Gaddis 1 and Gaddis 6 intersected unspecified amounts pyrite in quartz (A.F. 90969).

GEOCHEMISTRY

A sample from the gold-bearing shear zone in polymictic conglomerate assayed 18.1 g/t Au (Mineral Inventory Card 64B/12 Au1).

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

Assessment Files 90969, 91649, 91673, 91988; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Mineral Inventory Card 64B/12 Au1; Manitoba Energy and Mines, Geological Services Branch.

Steeves, M.A. and Hinds, R.W. 1972:Opachuanau Lake, Map 71-2-8, 1:50 000; accompanies Steeves, M.A. and Lamb, C.F., 1972, Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-003

LOCATION: 3

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

EASTING: 463336

NORTHING: 6277211

AREA: NTS 64B/12; south of the Churchill River near Opachuanau Lake.

AIR PHOTO: A25474-111; A21124-67, -31

ACCESS: Boat on the Churchill River or by float plane to Opachuanau Lake, and traverse.

EXPLORATION SUMMARY

R.G. Crosby carried out an HLEM survey on the Sil claims in 1958 (A.F. 91834). Hudson Bay Exploration and Development Co. Ltd. drilled eight holes (DDH Sil 1 through Sil 7, Sil 9) totalling 598.5 m to test EM conductors on the Sil claims in 1959 (A.F. 90971). Hudson Bay Exploration and Development Co. Ltd. drilled DDH Dip 22 (240.8 m) and Dip 24 (233.5 m) to test EM conductors on the Dip claims in 1960 (A.F. 90972). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey over part of the area in 1969 (A.F. 91673).

GEOLOGICAL SETTING

The area is underlain by greywacke, lithic arenite, minor conglomerate with volcanic and plutonic clasts, and tonalite (Bailes and Syme, 1982). Drillholes intersected quartz-plagioclase-biotite gneiss, some parts of which are described as "altered". Minor granite porphyry, quartz-feldspar porphyry, pegmatites and amphibolite were also intersected (A.F. 90971, 90972). In addition, DDH Dip 22 intersected rhyolite, dacite to andesite, and quartzite (A.F. 90972).

MINERALIZATION

Mineralization intersected by drillholes is summarized in Table 4. The drillholes intersected minor to moderate pyrrhotite, minor pyrite, local minor graphite and traces of sphalerite with near solid to solid sections in the sedimentary sequence.

Description of mineralization summarized from drill logs for occurrence 3 (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments(Reference)	DDH Length (m)
Sil 2	0.5-6.7	Numerous intersections with mod. to solid po, py; local tr. cp, sp	Quartz-plagioclase-biotite gneiss	Minor to mod. py, po in other sections of qtz- plag-biot gneiss and a gf shear zone,with biotite granite dykes (A.F. 90971)	201.5
Sil 4	32.8	Minor diss. to mod. po	Quartz-plagioclase-biotite gneiss, parts with hornblende, chlorite	Section includes a 1.6 m nonmineralized granite porphyry dyke (A.F. 90971)	77.1
	1.2	Minor to mod. po	Amphibolite, hornblende-rich		
	0.1	NS po	Amphibolite, hornblende-rich		
	8.5	Minor to mod. Po	Amphibolite		
Sil 5	10.0	Minor to mod. diss. po, minor py	Quartz-plagioclase-biotite gneiss	"strongly altered in parts" (A.F. 90971)	82.9
	2.2	Minor to NS po	Quartz-plagioclase-biotite gneiss		
	3.7	Minor to NS po, minor py	Quartz-plagioclase-biotite gneiss		
Sil 6	9.9	Minor to mod. po, local tr. sp	Siliceous quartz-biotite gneiss	(A.F. 90971)	84.7
	7.1	Minor to mod. po	Quartz-biotite-hornblende gneiss		
	0.2	SS po	Quartz-biotite gneiss		
Sil 9	-	Minor py in places throughout core	Quartz-biotite gneiss, granite porphyry	(A.F. 90971)	90.8
Dip22	6.5	Mod. to SS po	Quartzite	Minor po in other sections of core (A.F. 90972)	240.8
	17.0	Mod. to SS po, tr. sp	Quartzite		
	0.7	SS po	Quartzite		
	0.4	NS-SS po	Quartz-feldspar porphyry		
	0.3	NS po	Quartzitic gneiss, slightly graphitic		
	39.9	SS po, tr. sp	Quartzite		
	4.6	Mod. po, minor gf	Quartzitic gneiss		
	1.3	SS po	Quartzitic gneiss		
	19.5	Mod. po	Graphitic siliceous gneiss		
Dip24	3.4	SS po, tr. cp	Quartzite	Minor to mod. po in other sections of core. Continuous with previous inter- section (A.F. 90972)	233.5
	2.5	Minor to NS po	Quartzite		
	0.3	Mod. to NS po	Quartz-rich granite porphyry		
	0.1	NS po	Quartz-rich granite porphyry		
	0.2	NS po, minor gf	Quartz-plagioclase-mica gneiss		
	2.7	Minor to NS po, minor cp	Quartzite gneiss		
Note:DDH Sil 1 abandoned at 21.6 m (A.F. 90971);					
DDH Sil 3 abandoned at 20.7 m (A.F. 90971);					
DDH Sil 7 abandoned at 19.2 m (A.F. 90971)					

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 4, 5, 6, 9, 11), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 90971, 90972, 91673, 91834, 91988; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12**MDS_No.: M64B12-004****LOCATION: 4****NAME: (A.F. - Mineralization intersected by diamond drilling)****EASTING: 460033****NORTHING: 6273753****AREA: NTS 64B/12; between Vermilion River and Churchill River, southwest of Opachuanau Lake.****AIR PHOTO: A25474-112; A21124-31****ACCESS: Boat on the Churchill River or by float plane to Opachuanau Lake, and traverse.****EXPLORATION SUMMARY**

R.G. Crosby carried out an HLEM survey on the Sil claims in 1958 (A.F. 91834). Hudson Bay Exploration and Development Co. Ltd. drilled seven holes (DDH Sil 8, Sil 10 through Sil 15) totalling 740.3 m to test EM conductors on the Sil claims in 1959 (A.F. 90971). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey over part of the area in 1969 (A.F. 91673).

GEOLOGICAL SETTING

The area is covered by overburden. Bailes and Syme (1982) mapped greywacke, lithic arenite, minor conglomerate with volcanic and plutonic clasts, and tonalite to the east of this area. Drillholes intersected quartz-plagioclase-biotite gneiss, parts of which are described as "altered". Minor granite porphyry, quartz-feldspar porphyry, pegmatites and amphibolite were also intersected (A.F. 90971).

MINERALIZATION

Mineralization intersected by drillholes is summarized in Table 5. In general, drillholes intersected several sections, some up to 40 m in core length, with minor to solid pyrrhotite, minor pyrite and graphite in places, and local traces of chalcopyrite or sphalerite (A.F. 90971).

Description of mineralization summarized from drill logs for occurrence 4 (A.F. 90971) (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments	DDH Length(m)
Sil 10	4 sections, 0.3-2.2 m	Mod. po, minor py	Quartz-biotite gneiss		129.5
Sil 11	0.9	Mod. po, gf	Quartz-mica gneiss	Minor py, po in other sections of core	69.8
	1.5	Minor to NS po, minor gf	Quartz-mica gneiss		
Sil 12	2.3	Tr. to mod. po	Quartz-biotite-hornblende gneiss	Parts garnetiferous; tr. to minor py in other sections	79.6
Sil 13	5 sections, <5 m each	Mod. po	Quartz-biotite ± hornblende gneiss	Tr. to minor py, po in other sections; Tr. mb at 140.6 m	204.5
Sil 14	0.7	Mod. po	Quartz-biotite-hornblende gneiss	Tr. to minor po, gf in other short sections	82.3
Sil 15	-	Minor local po			78.6
Core from DDH Sil 8 (96.0 m) not mineralized (A.F. 90971).					

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 3, 5, 6, 9, 11), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 90971, 91673, 91834, 91988; Manitoba Energy and Mines, Mines Branch.
 Bailes, A.H. and Syme, E.C. 1982: Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.
 Steeves, M.A. and Lamb, C.F. 1972: Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-005

LOCATION: 5

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

EASTING: 463460

NORTHING: 6276010

AREA: NTS 64B/12; between Opachuanau Lake and Vermilion River.

AIR PHOTO: A25474-12; A21124-67

ACCESS: Float plane to Opachuanau Lake and traverse.

EXPLORATION SUMMARY

R.G. Crosby carried out an HLEM survey on the Sil claims in 1958 (A.F. 91834). Hudson Bay Exploration and Development Co. Ltd. drilled DDH Sil 16, Sil 17 and Sil 18 (total 405.3 m) and Sil 19 (no log) to test EM conductors on the Sil claims in 1959 (A.F. 90971). Hudson Bay Exploration and Development Co. Ltd. drilled thirteen holes totalling 1070.9 m to test EM conductors on the Dip claims in 1960 (A.F. 90972). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by greywacke, lithic arenite, minor conglomerate with volcanic and plutonic clasts, and tonalite. Thin units of quartzite with disseminated pyrrhotite and pyrite and solid pyrrhotite are interbedded with the predominantly greywacke unit (Bailes and Syme, 1982).

MINERALIZATION

Mineralization is summarized from drill logs in Table 6. Sections up to 30.4 m (core length) of near solid to solid pyrrhotite with or without minor graphite and traces of chalcopyrite and sphalerite are hosted by quartzite, rhyolite and greywacke. In addition, minor to moderate iron sulphides are common throughout these cores.

Description of mineralization summarized from drill logs for occurrence 5 (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments(Reference)	DDH Length (m)
Sil 16	4.9	Mod. po	Quartz-mica gneiss	Tr. to minor po, gf, py in other short sections (A.F. 90971)	104.2
	18.7	Minor to mod. py, po	Quartz-mica gneiss		
	1.4	Mod. po	Quartz-mica gneiss		
	27.5	Minor to mod. po, gf; minor py includes 1.5 m NS-SS po	Graphitic shear zone(1)		
	13.0	Mod. po, gf; minor py includes 2.7 m NS po	Graphitic shear zone(1)		
	0.4	Mod. po, py, gf	Granite, part porphyritic, part gneissic		
	1.0	Mod. po, py, gf	Granite, part porphyritic, part gneissic		
Sil 18	7.6	Minor to mod. po, minor py	Quartz-mica gneiss	Tr. to minor py, po, gf in other sections (A.F. 90971)	192.3
	8.5	Minor to mod. po, minor py, gf	Quartz-mica gneiss		
	6.7	Mod. to NS po, minor py	Graphitic shear zone1		
	2.1	Mod. to NS po, minor py	Graphitic shear zone1		
	0.5	Mod. po	Quartz-mica gneiss, partly altered and graphitic		
	1.0	NS po	Quartz-mica gneiss, partly altered and graphitic		
	2.2	Mod. po, gf, py	Quartz-mica gneiss, partly altered and graphitic		
	3.0	Mod. to SS po, minor py	Graphitic shear zone1		
	3.5	Mod. to SS po, minor py	Graphitic shear zone1		
	37.6	Mod. po, minor py, tr. sp, tr. cp	Graphitic shear zone1		
	22.6	Mod. po, minor py	Graphitic shear zone1		
	2.1	Mod. to SS po	Quartz-plagioclase gneiss, siliceous (quartzite?)		
Dip 1	1.5	Mod. po, tr. to minor py	Quartz-plagioclase-biotite gneiss	Parts with minor gf (A.F. 90972)	88.1
	5.6	Minor(?) po, minor gf	Albite granite?		
Dip 2	2.7	NS-SS po; parts minor gf; local tr. cp	Rhyolite porphyry?	(A.F. 90972)	62.2
	0.3	Mod. po; local tr. cp	Rhyolite porphyry		
	4.4	NS-SS po; local tr. cp	Shear zone (in rhyolite?)		
	9.3	Minor to mod. po; includes 0.3 m section of NS-SS po	Quartzite gneiss (rhyolite/dacite?)		
	1.7	SS po; tr. cp	Quartzite gneiss/Rhyolite		
Dip 4	30.4	NS-SS po; minor gf, py; tr. cp, sp.	Quartzite?	(A.F. 90972)	156.7
	5.2	Parts minor to SS po; local tr. sp	Quartzite		
	3.9	SS po, tr. sp, minor gf	Quartzite?		
	11.8	SS po; tr. sp, cp; minor gf	Quartzite		
	20.3	Mod. po, tr. sp	Quartz-feldspar porphyry		
Dip 6	12.9	Scattered narrow zones mod.-NS po	Quartz-plagioclase gneiss	Biotitic in parts, graphitic in parts (A.F. 90972)	113.1

	23.5	Mod. po; parts minor py; includes 2.4 m SS po, tr. sp	Graphitic shear zone		
	4.7	SS po	Quartz-plagioclase-hornblende gneiss		
	0.9	Mod.-SS po	Quartz-feldspar porphyry		
	0.6	SS po	Quartz-feldspar porphyry		
	1.7	Mod. po	Quartz-feldspar porphyry		
	34.1	Mod.-SS po; minor py in parts; tr. sp, cp	Quartz porphyry		
Dip 8	1.1	Mod. po	"Graphitic zone"	(A.F. 90972)	121.0
	2.0	Mod. po	"Fine grained graphitic zone"		
	2.3	Mod. po	"Fine grained graphitic zone"		
	4.5	Parts with mod. gf, py	Quartz-plagioclase-biotite gneiss	Numerous pegmatite dykes	
	1.5	Mod. po	Pegmatite		
	5.5	Mod. po	Graphitic gneiss		
	1.1	Mod. po	"Fine grained graphitic zone"		
	3.1	Parts with mod. po	Quartz-plagioclase-mica gneiss	Fine grained graphitic parts	
	0.7	Mod. po	"Fine grained graphitic zone"	In quartz diorite porphyry	
	3.2	SS po	Quartz diorite porphyry?		
	11.4	Mod. po	"Fine grained graphitic zone"		
Dip 10	9.5	Mod. po	Graphitic shear zone	(A.F. 90972)	88.7
	4.9	Mod. po	"Graphitic zone"	Surrounded by and including pegmatites	
	12.9	Mod. po	"Graphitic zone"		
	11.3	Mod. po	"Fine grained graphitic zone"		
	2.1	Mod. po	"Graphitic zone" in quartzite		
Dip 12	2.0	Minor to NS po	"Fine grained graphitic zone"	Dacite up hole; felsic qtz- plag-biot gneiss downhole (A.F. 90972)	85.0
	0.2	Mod. po	Quartz-plagioclase-biotite gneiss	Other sections throughout core contain minor po to narrow (<10 cm) bands SS po	
	0.5	NS gf, parts minor po	Quartz-plagioclase-biotite gneiss		
	3.8	Minor to mod. po, gf; includes 0.4 m NS po	Quartz-plagioclase-biotite gneiss?		
	1.9	Minor to mod. po	Quartz porphyry		
	4.5	SS po; tr. sp	Qtz-plag-biot gneiss? Quartz porphyry?		
	5.7	Scattered parts minor to SS po	Quartz porphyry		
Dip 15	5.3	SS po; local tr. cp	Quartz porphyry	Minor to mod. po in sections throughout core (A.F. 90972)	107.6
	3.7	Mod.-SS po; local tr. cp	Quartz porphyry		
	3.4	Mod. po	Graphitic gneiss		
	0.5	NS po, minor gf	Quartz-biotite gneiss		
	0.5	Mod.-NS po, minor gf	Quartz-biotite gneiss		
	0.9	Mod.-NS po	Quartzite, massive		
Dip 16	3.9	Minor to mod. po	Graphitic zone in rhyolite -dacite	Minor py, po in other sections of core (A.F.90972)	58.2
Dip 18	6.7	Minor to mod. po, mod. gf; includes 0.6 m NS po	Fine grained graphitic zone	In quartz-plagioclase-biotite gneiss/schist (A.F. 90972)	48.8
Dip 20	-	Numerous <1 m sections with minor to mod. po \pm gf	Quartz-plagioclase-biotite gneiss	(A.F. 90972)	75.6
Dip 26	-	Seven sections, 0.06-0.9 m, with minor or minor to mod. po, py \pm gf	Quartz-plagioclase-biotite gneiss	Siliceous (A.F. 90972)	47.9
Core from DDH Sil 17 (108.8 m) not mineralized (A.F. 90971). DDH Dip 14 abandoned at 18.0 m (A.F. 90972).					
1 - Mineralized graphitic shear zones are interpreted here as sulphide facies iron formation in greywacke (see text).					

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 3, 4, 6, 9, 11), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 90971, 90972, 91834, 91988; Manitoba Energy and Mines, Mines Branch.
Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.
Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-006

LOCATION: 6

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

EASTING: 465884

NORTHING: 6271213

AREA: NTS 64B/12; between Opachuanau Lake and Rusty Lake.

AIR PHOTO: A24996-118; A21124-68, -69

ACCESS: Float plane to Opachuanau Lake or Rusty Lake and traverse.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. drilled 41 holes totalling 3258.1 m to test EM conductors on the Dip claims in 1960. In addition, locations are shown for three additional holes, but logs are not included (A.F. 90972). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by greywacke, lithic arenite, minor conglomerate with volcanic and plutonic clasts, and tonalite. Thin units of quartzite with disseminated pyrrhotite and pyrite and solid pyrrhotite are interbedded with the predominantly greywacke unit (Bailes and Syme, 1982).

MINERALIZATION

Table 7 summarizes mineralization described in drill logs. Sections up to 9.8 m (core length) of near solid to solid pyrrhotite mineralization with minor to moderate graphite, and locally, traces of chalcopyrite and/or sphalerite are hosted by greywacke, quartz porphyry and minor rhyolite.

Description of mineralization summarized from drill logs for occurrence 6 (A.F. 90972) (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments	DDH Length(m)
Dip 3	1.5	Mod. to NS po, minor gf	Quartz-plagioclase-biotite gneiss	Minor po in other areas	88.7
	1.4	Minor to mod. po, minor gf	Quartz-plagioclase-biotite gneiss		
	3.4	Parts SS po	Graphitic shear zone(1)		
	2.0	Minor to mod. po	Quartz-plagioclase-biotite gneiss	Slightly graphitic zone	
	1.1	Mod. po, py, gf	Quartz-plagioclase-biotite gneiss	Slightly graphitic zone	
	4.5	Minor to mod. po; parts with minor py	Quartz-plagioclase-biotite gneiss	Slightly graphitic zone	
	2.3	Parts minor to mod. po	Quartz-plagioclase-biotite gneiss	Slightly graphitic zone	
Dip 5	1.8	Mod. po, minor gf	Quartz-plagioclase-biotite gneiss	"Altered"	75.3
	5.6	Mod. po	Quartz-plagioclase-biotite gneiss	Slightly graphitic zone	
	1.7	Mod. po, minor gf	Quartz-plagioclase-biotite gneiss		
	0.8	Mod. po	Quartz-plagioclase-biotite gneiss		
Dip 7	38.1	Minor to mod. po, gf; includes 1.2 and 0.4 m sections of SS po, mod. gf;	Quartz-plagioclase-biotite gneiss	DDH also intersected several <1 m sections with minor to mod. po, py	173.4
	40.1	Mod.-SS po; mod. gf	Quartz-plagioclase-biotite gneiss	"Fine grained graphitic zone"(1)	
	3.4	Mod. po; includes 0.5 m SS po, local tr. sp	Quartz-plagioclase-biotite gneiss	"Fine grained graphitic zone"(1)	
	10.8	Mod.-SS po; mod. gf; local tr. sp, cp includes 4.6 m SS po	Quartz-plagioclase-biotite gneiss		
Dip 9	14.8	Minor to mod. po; parts minor gf	Quartz-plagioclase-biotite gneiss		61.3
	0.3	NS po, mod. py, minor gf	Quartz-plagioclase-biotite gneiss		
Dip 11	4.0	Mod. po	Quartz-plagioclase-biotite gneiss	"Weak graphitic zone"	143.6
	0.4	Mod. po	Quartz-plagioclase-biotite gneiss	Minor po, py elsewhere in drill core	
	4.2	Mod. po; mod. gf in parts	Graphitic shear zone(1)		
	5.9	Mod. po; includes 0.1 m SS po	Graphitic shear zone(1)		
	3.0	Mod. po; minor gf	Quartzite, massive, c.g.		
	19.0	Mod. po	Graphitic shear zone(1)		
	0.1	SS po	Banded rhyolite		
	4.5	Minor py; includes two 0.2 m sections SS po	Quartzite gneiss		
	3.3	SS po, minor gf	Quartz-plagioclase-biotite ± hornblende gneiss		
	3.7	Mod. po	Graphitic shear zone(1)	In quartz-plagioclase-biotite gneiss	
	1.0	Mod. po, gf	Quartz-plagioclase-biotite gneiss		
	2.2	Mod. po	Quartz-plagioclase-biotite gneiss		
	2.7	SS po; parts minor gf; local tr. cp	Quartzite? Pegmatite dyke? Qtz-plag-biot gneiss?		
Dip 13	4.8	NS-SS po; mod. gf; local tr. sp	Quartz-plagioclase-biotite gneiss	Scattered minor po, gf throughout core; several other <1 m sections mod. po	131.4
	0.3	NS po	Quartz-plagioclase-biotite gneiss		
	1.5	NS-SS po	Quartz-plagioclase-biotite gneiss		
	1.2	Parts mod.-NS po	Fine grained graphitic zone1	In quartz-plagioclase-biotite gneiss	
	5.2	NS-SS po, mod. gf	Quartz-plagioclase-biotite gneiss		
	0.8	NS po, mod. gf	Pegmatite		
	0.1	SS po	Pegmatite		

	8.6	SS po; tr. sp	Quartz-plagioclase-biotite gneiss/Quartzite		
	4.5	Mod.-NS po; local tr. sp	Quartzite, c.g.	Continuous with previous intersection	
Dip 17	2.3	Mod. po; includes 0.7 m SS po	Graphitic siliceous gneiss	Minor po, gf in other sections, and local <10 cm SS po	86.9
	3.2	Mod. po	Graphitic zone(1)		
	7.4	SS po; local tr. Sp	Quartz-mica gneiss	Minor hornblende and plagioclase	
Dip 21	0.15	NS po	Quartz-plagioclase-biotite gneiss	Graphitic parts	69.8
	0.7	Mod-NS po	Quartz-plagioclase-biotite gneiss		
	2.1	NS-SS po	Quartz-plag-biot gneiss? Quartzite?		
	2.6	Mod. po; parts minor py	Quartz-plagioclase-biotite gneiss		
	2.3	SS po	Quartz-plag-biot gneiss? Quartzite?		
	0.3	Mod.-NS po	Quartzite, quartz porphyry		
Dip 23	5.4	NS-SS po	Quartzite	DDH also intersected two <10 cm sections with mod.-SS po, minor py	89.0
	24.0	Mod. po	Graphitic siliceous gneiss		
Dip 27	2.5	Minor to mod. po, minor py	Graphitic shear zone1	Minor po intersected in other sections of core	53.9
Dip 28	9.0	Minor to mod. gf, po; local tr. sp	Graphitic siliceous gneiss	Minor po ± gf intersected in other sections of core A.F.90972	70.4
	2.6	Minor to mod. gf, po	Quartz-plagioclase-mica gneiss/schist		
Dip 29	3.8	Mod. to NS po; parts minor py	Quartzite	Tr. to minor po in other sections of core	85.3
	2.3	Mod. to NS po	"Graphitic zone"(1) (In dacite-rhyolite? or quartz-biotite gneiss?)		
	2.0	Mod. to NS po; local tr. cp	"Graphitic zone"(1) (In quartz-biotite gneiss?)		
	1.1	Mod. po	Quartzite gneiss		
	0.5	Mod.-NS po	Quartzite gneiss		
	0.2	Mod. po.	Quartzite gneiss		
Dip 30	1.1	Minor to SS po; includes 0.5 m SS po	"Quartzite porphyry"		63.7
Dip 31	6.1	Minor to mod. po; local tr. cp	Impure quartzite gneiss	Tr. to minor po, py in other sections of core	104.2
	0.2	SS po; tr. cp	Impure quartzite gneiss		
	2.8	Minor to mod. po; local tr. cp	Impure quartzite gneiss		
	1.2	NS py, minor po	Shear zone	In quartz-plagioclase-mica gneiss	
Dip 32	4.1	Mod. po, py; parts minor gf	Quartz-rich mica paragneiss	Minor py in other sections of core	50.3
	5.7	Mod. to NS po in parts	Quartz-mica paragneiss		
Dip 33	5.1	Mod. to NS po; parts minor gf	Granite porphyry?	Minor to mod. po, py, local tr. cp in other <1 m sections throughout core	51.5
Dip 34	0.2	Mod. po	Massive quartzite	Minor py, po locally in other sections of core	54.6
	1.4	SS po	Impure quartzite gneiss? Granite porphyry?		
Dip 35	0.4	SS po	Quartz-rich feldspathic paragneiss, f.g.	Minor to mod. po, py in other sections of core, also another 12 cm section of SS po	67.7
	0.8	SS po, local tr. cp	Quartz-rich feldspathic paragneiss, f.g.		
	3.7	Mod po	Graphitic paragneiss, f.g.		
	5.2	Mod. po, minor gf	Granite porphyry		
	2.7	Mod. po, local tr. cp	Granite porphyry		
	2.2	Mod. po	Impure quartzite gneiss		
	2.2	Mod. po, local tr. cp	Granite porphyry? Quartzite gneiss?		
Dip 36	0.3	Mod. gf, py	Shear zone in granite porphyry	Minor py or po ± gf in other sections of core	65.8
	1.9	Minor to NS py, po	Quartz vein in granite porphyry		
	4.1	Mod. to NS po	Quartz monzonite porphyry		
	6.2	Mod. po	Quartz-feldspar gneiss, m.g.-c.g.		
Dip 37	7.4	Mod. po	Graphitic gneiss, f.g.	Minor to mod. po or py in other <1 m sections	142.6
	1.9	SS po	Graphitic gneiss/Quartz- feldspar-mica paragneiss		
	5.5	Mod. po	Siliceous graphitic gneiss, f.g.		
	0.5	NS po, minor gf	Siliceous graphitic gneiss?		
	3.7	Mod. po, minor py	Siliceous graphitic gneiss, f.g.		
	2.1	Mod. po, minor py	Siliceous graphitic gneiss, f.g.		
Dip 38	18.1	Mod. po, local minor py, parts NS po, parts mod. gf	Siliceous gneiss, f.g.-m.g.	A.F. 90972	130.1
	3.9	Mod. py, po, minor gf	Shear zone in siliceous gneiss		
	4.1	Mod. po; parts minor py, gf	Siliceous gneiss		
	6.3	Mod. po	Quartz-rich feldspathic gneiss		
	7.9	NS po, parts gf	Quartz-feldspar gneiss		
	7.6	Mod. po	Quartz-rich feldspathic gneiss		
	14.9	Mod. po	Quartz-rich feldspathic gneiss		
	2.4	Mod. po	Siliceous gneiss, f.g.		
Dip 39	3.8	Mod. po, minor gf, py	Quartz-plagioclase-mica. gneiss, f.g.	Minor py in other sections of core	92.7
	6.7	Mod. po; includes 0.2 m SS po	Graphitic siliceous gneiss, f.g.		
	5.2	Mod. po, py; includes 0.3 m NS-SS po	Graphitic shear zone(1)		

Dip 40	2.7	SS po, local tr. cp	Quartz-biotite-hornblende schist/ Quartzite gneiss		50.6
	3.7	SS po, local tr. cp, sp	Quartzite gneiss/Granite porphyry		
	2.3	Parts mod. po	Granite porphyry		
	1.2	Mod.-NS po	Quartzite gneiss		
Dip 41	0.3	Mod. po	Impure quartzite	Minor py, po in other sections of core	76.5
	1.6	Mod.-NS po; parts minor py	Graphitic zone, f.g.		
	2.9	Mod. po, gf; parts minor py	Graphitic gneiss, f.g.		
	4.8	Mod. po, minor py	Graphitic shear zone1, f.g.		
	3.9	Mod. po	Siliceous graphitic gneiss, f.g.		
Dip 42	0.4	Mod.-NS po	Quartz-plagioclase gneiss, m.g., micaceous	Minor py in other sections of core	39.6
	1.5	NS-SS po, local tr. cp	Quartz-feldspar-biotite gneiss		
Dip 43	14.4	Mod. po	Siliceous graphitic gneiss, m.g.	Interlayered graphitic zones	57.0
	4.6	Mod. po	Quartz monzonite porphyry		
	2.0	Mod.-NS po, local tr. cp	Quartz porphyry		
Dip 44	6.2	Mod.-SS po; parts minor py	Altered quartz phyrlic felsic rock	(Rhyolite? granite?)	114.3
	26.7	Mod. po, gf, py	Granite porphyry		
	5.6	Mod. po	Graphitic gneiss		
	7.7	Mod. po	Siliceous gneiss		
	2.4	Mod. po, gf	Quartz-plagioclase porphyry		
	15.1	Mod po	Quartz-plagioclase gneiss		
Dip 45	2.5	Mod. po, minor to mod. py; includes 0.2 m SS po, tr. cp	Graphitic shear zone(1)		48.5
	2.7	Mod. py, po, gf, local tr. cp	Shear zone in granite porphyry		
	2.9	Parts mod. py, po	Shear zone in granite porphyry		
	2.0	Mod.-SS po, local tr. cp	Shear zone in quartz porphyry		
	1.2	Mod.-SS po	Quartzite gneiss? Quartz-rich granite porphyry?		
	2.8	Mod. po	Quartzite gneiss		
Dip46A	2.8	SS po, local tr. sp	Quartz-feldspar porphyry?		71.9
	0.8	Mod.-NS po	Quartzite gneiss		
	9 cm	NS po	Quartzite gneiss		
	2.2	Minor to mod. po	Quartzite gneiss		
Dip 47	0.9	Mod. po, gf	Granite gneiss		51.2
	7.8	Mod. po, gf	Granite gneiss?		
	3.8	Mod.-NS po	Granite porphyry		
Dip 48	7.3	Mod. po	Quartz-feldspar-biotite porphyry		57.0
	1.4	Mod. po	Graphitic siliceous gneiss		
	0.8	NS po	Quartz-plagioclase porphyry		
	3.9	Mod. po	Graphitic siliceous gneiss, f.g.		
	3.5	Mod. po	Graphitic siliceous gneiss, f.g.		
	2.9	Mod. po	Quartz-plagioclase porphyry		
	1.7	SS po; parts minor sp	Quartz-plagioclase porphyry? Qz- fs-biot-hbl gneiss?		
Dip 49	2.9	SS po; includes 6 cm with tr. to minor sp	Granite porphyry?	Minor po in other sections of core	49.1
Dip 50	0.7	SS po	Quartz-feldspar gneiss?	Minor to mod. po in other sections of core	153.3
	7.5	Mod.-SS po; parts gf	Granitoid/rhyolite porphyry? Qz-fs gneiss?		
	4.9	Mod. po, parts SS po	Quartz-feldspar porphyry		
	7.4	Mod. po	Quartz-feldspar gneiss		
	6 cm	SS po	Granite porphyry		
	7.0	Mod. po, parts gf	Quartz-feldspar gneiss		
	2.3	SS po; local tr. cp, sp	Quartz-feldspar gneiss		
	9.8	NS-SS po; tr. sp, cp	Massive quartz gangue		
	3.2	Mod. po	Quartz gneiss, c.g.		
	1.3	Mod.-NS po, tr. sp	Quartz porphyry		
	11.8	Mod. po, parts minor gf	Quartz-feldspar-mica gneiss		
	1.1	NS-SS po; tr. cp, sp	Qz-fs-mica gneiss? Siliceous graphitic gneiss?		
	5.6	Mod. po, gf	Siliceous graphitic gneiss		
	2.6	Mod. po	Siliceous graphitic gneiss		
	1.4	Mod. po	Siliceous graphitic gneiss		
	12 cm	Mod.-NS po	Quartz-feldspar-biotite gneiss		
	2.5	Mod. po, gf			
Dip 51	0.5	Mod. po, gf	Quartz-plagioclase-mica gneiss		45.7
Dip 52	14.2	Mod. po	Siliceous graphitic gneiss	Minor to mod. po in other sections of core	127.1
	8.9	Minor to mod. po, includes 18 cm NS po	Quartz-feldspar gneiss		
	1.5	Minor to mod. po	Quartz-feldspar-biotite gneiss		
	5.0	Mod. po	Granite porphyry		
	9.4	Mod.-SS po; parts gf	Granite porphyry? Qz-fs-biot gneiss?		
	11.5	Mod. po; parts gf; includes 0.2 and 0.4 m NS po	Quartz-feldspar-biotite gneiss		
	1.5	SS po	Quartz-feldspar-biotite gneiss?		
	4.0	Mod.-SS po	Massive quartz		
				Porphyritic and gneissic parts	

	1.7	SS po, tr. sp, cp	Quartz-feldspar-biotite gneiss?		
	2.1	SS po, tr. to minor sp	Granite porphyry?		
	0.3	SS po	Quartz-feldspar gneiss		
	0.8	SS po	Quartz-feldspar gneiss		
Dip 53	2.0	Mod.-SS po	Graphitic siliceous gneiss?		83.2
	5.6	Mod. po, tr. cp	Graphitic siliceous gneiss		
	3.8	Mod. po	Graphitic siliceous gneiss		
Dip 55	3.9	Mod. po; minor py, gf	Quartz-rich gneiss, porphyritic	Minor to mod. po in other sections of	89.6
	1.3	SS po	Gneissoid quartz porphyry?	core	
	2.1	Mod.-NS po	Quartz porphyry		
	1.1	Mod. po, minor gf	Siliceous gneiss, f.g.		
	0.3	Mod. po	Quartz-rich feldspathic gneiss	Porphyritic, c.g.	
	0.6	SS po, minor py	Quartz-rich feldspathic gneiss	Porphyritic, c.g.	
Dip 57	2.7	Minor to mod. po	Graphitic siliceous gneiss		44.2
Dip 59	2.0	Mod. py, gf	Quartz-feldspar porphyry		46.3
	1.3	Mod. po, minor gf	Quartz porphyry		
	4.3	Parts SS-mod. po, local tr. cp	Quartz porphyry		
Locations were shown, but drill logs were not included for DDH Dip 54, Dip 61, and Dip 63 in A.F. 90972.					
1- Mineralized graphitic shear zones might be interpreted as sulphide facies iron formation in greywacke.					
Core from DDH Dip 19 (66.4 m) and Dip 25 (34.4 m) not mineralized (A.F. 90972).					

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 3, 4, 5, 9, 11), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 90972, 91988; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-007

LOCATION: 7

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

EASTING: 460414

NORTHING: 6271803

AREA: NTS 64B/12; approximately 0.5 km northwest of Rusty Lake.

AIR PHOTO: A25474-113; A21124-30

ACCESS: Float plane to Rusty Lake and traverse.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey in 1969 (A.F. 91673). Sherritt Gordon Mines Limited drilled DDH Rus-81-1 (121.9 m) on CB 8666 in 1981. The report also cites an unpublished report of grid mapping by M.R. Jackson for Sherritt in 1979 (A.F. 92562).

GEOLOGICAL SETTING

The area of location 7 is covered by overburden. The nearest outcrops, south of the occurrence, consist of volcanic- and plutonic-derived sandstone and interbedded conglomerate and of greywacke, lithic arenite, and minor conglomerate (Bailes and Syme, 1982). DDH Rus-81-1 intersected intermediate massive to laminated sedimentary rocks (A.F. 92562).

MINERALIZATION

DDH Rus-81-1 intersected a 0.8 m (core length) fault zone that consists of 13 cm of solid pyrrhotite, a chloritic quartz vein and near solid pyrrhotite \pm chalcopyrite. A separate 2.9 m section contains minor pyrrhotite, pyrite and traces of chalcopyrite (A.F. 92562).

GEOCHEMISTRY

None.

CLASSIFICATION

Vein type deposit; single vein. The sulphides may have been mobilized from the enclosing sedimentary rocks into the fault zone. The restriction of sulphides to this fault zone and the paucity of sulphides, even in minor quantities, in the remainder of the core suggests the mineralization intersected by this drillhole is not a sulphide facies iron formation.

REFERENCES

Assessment Files 91673, 91988, 92562; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

NTS: 64B12

MDS_No.: M64B12-008

LOCATION: 8

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

EASTING: 463093

NORTHING: 6272428

AREA: NTS 64B/12; north shore of Rusty Lake.

AIR PHOTO: A25474-112; A21124-69

ACCESS: Float plane to Rusty Lake and traverse.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Sherritt Gordon Mines Limited drilled DDH Rus-81-3 (123.4 m) and Rus-81-4 (124.1 m) to test EM conductors on CB 8668 in 1981. The report also cites an unpublished report of grid mapping by M.R. Jackson for Sherritt in 1979 (A.F. 92562).

GEOLOGICAL SETTING

The area of location 8 is covered with overburden; the nearest outcrops consist of greywacke, lithic arenite, and minor conglomerate with volcanic and plutonic clasts (Bailes and Syme, 1982). DDH Rus-81-3 and Rus-81-4 intersected intermediate massive to laminated sedimentary rocks cut by minor tonalite and lesser mafic dykes (A.F. 92562).

MINERALIZATION

Moderate amounts of disseminated pyrrhotite were intersected in a 3.0 m section from DDH Rus-81-3 and a 21.8 m section from DDH Rus-81-4 of intermediate sedimentary rocks. Minor pyrrhotite is disseminated and in stringers in other local sections (A.F. 92562).

GEOCHEMISTRY

Two drill core samples from DDH Rus-81-3 assayed 0.03-0.04% Cu, nil Zn, nil Pb, nil to trace Au, and 1.0-1.4 g/t Ag. Seven drill core samples from DDH Rus-81-4 assayed nil to 0.02% Cu, nil Zn, nil Pb, nil Au and 0.3-1.7 g/t Ag (A.F. 92562).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91988, 92562; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

NTS: 64B12

MDS_No.: M64B12-009

LOCATION: 9

NAME: RUSTY LAKE

EASTING: 461622

NORTHING: 6268260

AREA: NTS 64B/12; south shore of Rusty Lake.

AIR PHOTO: A25474-113; A21124-70

ACCESS: Float plane. Winter access by snowmobile from the road between Ruttan Mine and Southern Indian Lake or by ski-equipped airplane.

EXPLORATION SUMMARY

The exploration history of this location is given in Mineral Inventory Card 64B/12 Cu1. R.G. Crosby conducted an HLEM survey on the Max claims in 1958 (A.F. 91359). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey over part of the area in 1969 (A.F. 91673). Chemalloy Minerals conducted a magnetic and EM survey and drilled DDH 1, 2, 3, 4 totalling 410.3 m on CB 849 in 1970 (A.F. 90975). Falconbridge Nickel Mines Limited conducted an HLEM and magnetic survey on CB 8011 in 1978-79 (A.F. 92676), mapped CB 8011 and CB 8012 at 1:4800, and completed a whole rock lithogeochemical survey over their grid in 1980 (A.F. 92677). Falconbridge drilled DDH RL-1 (96.6 m), RL-2 (abandoned at 72.5 m; hole drilled downdip), and RL-3 (74.4 m) on CB 8012 in 1983 (A.F. 92679).

GEOLOGICAL SETTING

The area is underlain by greywacke, lithic arenite, and minor conglomerate with volcanic and plutonic clasts; aphyric pillowed basalt; volcanic- and plutonic-derived sandstone and interbedded conglomerate; and volcanic-derived conglomerate with intermediate to mafic sandstone and siltstone. This sequence is folded into an overturned syncline (Bailes and Syme, 1982). DDH 1, 2, 3 and 4 intersected biotite schist (altered amphibolite), some of which is siliceous, chloritic, garnetiferous and/or banded; fine grained amphibolite; minor talc or serpentine schist; and hornblende gabbro and granodiorite (A.F. 90975). DDH RL-1 intersected metasedimentary rocks and intermediate to felsic tuff (possibly sheared), separated by a 1.5 m fault zone. DDH RL-2 intersected intermediate to mafic conglomerate. DDH RL-3 intersected volcanoclastic fragmental rocks, rhyolitic tuff and siliceous metapelite (A.F. 92679).

MINERALIZATION

Parts of a 7.6 m section of amphibolite and biotite schist from DDH 4 contained solid pyrrhotite and pyrite, including a 0.3 m section. A 3.9 m section of amphibolite with 5-10% pyrrhotite with some graphite. The remainder of the drill core contained trace to minor pyrrhotite, pyrite, and rare chalcopyrite (A.F. 90975). DDH 1 and 3 intersected only minor pyrrhotite and traces of chalcopyrite throughout the core, except for one 5 cm section of solid pyrrhotite with traces of chalcopyrite from each hole. From DDH 2, a 0.8 m section of fine grained siliceous rock contained 30-40% pyrrhotite. Amphibolite contained graphitic siliceous bands with minor pyrrhotite. Traces of malachite stain were associated with pyrrhotite at one place in core from DDH 3, and traces of native copper were noted at one place in core from DDH 4 (A.F. 90975). Mineralization was not intersected by DDH RL-1, RL-2 and RL-3; EM conductors were attributed to a fault/shear zone in DDH RL-1 and to conductive overburden in DDH RL-3 (A.F. 92679). Minor pyrite and pyrrhotite are common in outcrops in the area (Steeves and Lamb, 1972; A.F. 92677).

GEOCHEMISTRY

Thirteen drill core assays from DDH 1 to 4 assayed 0.007-0.08% Cu, 0.007-0.02% Ni, and nil to 0.01% Zn (A.F. 90975). A whole rock lithogeochemical survey of the area by Falconbridge Nickel Mines Limited in 1980 did not detect depletion of Na, Ca and Sr or enrichment of Mg, K, Cu (range = 11-180 ppm) or Zn (range = 7-94 ppm) in 28 samples. The report cautioned that sample coverage was sparse because of lack of bedrock in the area (A.F. 92677).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 3, 4, 5, 6, 11), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 90975, 91359, 91673, 91988, 92676, 92677, 92679; Manitoba Energy and Mines, Mines Branch.
Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.
Mineral Inventory Card 64B/12 Cu1; Manitoba Energy and Mines, Geological Services Branch.
Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-010

LOCATION: 10

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

EASTING: 462995

NORTHING: 6270273

AREA: NTS 64B/12; Rusty Lake.

AIR PHOTO: A25474-113; A21124-69

ACCESS: Float plane.

EXPLORATION SUMMARY

R.G. Crosby conducted an HLEM survey on the Max claims in 1958 (A.F. 91359). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Sherritt Gordon Mines Limited drilled DDH RL-2 (abandoned in overburden at 53.8 m), RL-4 (108.5 m) and RL-6 (abandoned in overburden at 48.2 m) on CB 8675 and CB 8676 in 1980. The report also cites an unpublished report of grid mapping by M.R. Jackson for Sherritt in 1979 (A.F. 92562).

GEOLOGICAL SETTING

The area is interpreted to be underlain by hornblende phyric tonalite (Bailes and Syme, 1982). DDH RL-4 intersected andesite flows and andesite porphyry, cut by granitic pegmatites (A.F. 92562).

MINERALIZATION

Minor (usually <1%) pyrite blebs, disseminations and rare apparently conformable bands (~1 mm) occurred throughout core from DDH RL-4 (A.F. 92562). The report for A.F. 92562 noted that the EM anomaly was not sufficiently explained by the amount of mineralization that was intersected by DDH RL-4.

GEOCHEMISTRY

Seven core samples from DDH RL-4 assayed nil to 0.2% Cu, nil Zn, nil Pb, nil to trace Au and nil to 1.0 g/t Ag (A.F. 92562).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91359, 91988, 92562; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

NTS: 64B12

MDS_No.: M64B12-011

LOCATION: 11

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

EASTING: 464160

NORTHING: 6270219

AREA: NTS 64B/12; east shore of Rusty Lake.

AIR PHOTO: A25474-113; A21124-69

ACCESS: Float plane.

EXPLORATION SUMMARY

R.G. Crosby conducted an HLEM survey on the Max claims in 1958 (A.F. 91359). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Sherritt Gordon Mines Limited drilled DDH Rus-81-2 (158.5 m), RL-1B (100.9 m) and RL-1A (abandoned at 16.8 m) on CB 8670 in 1980-81. The report also cites an unpublished report of grid mapping by M.R. Jackson for Sherritt in 1979 (A.F. 92562).

GEOLOGICAL SETTING

The area is underlain by greywacke, lithic arenite, and minor conglomerate with volcanic and plutonic clasts (Bailes and Syme, 1982). DDH Rus-81-2, RL-1A and RL-1B intersected mafic and intermediate sedimentary rocks that are chloritic in places, and minor aplite to granite to alaskite dykes that are epidotized in places (A.F. 92562).

MINERALIZATION

DDH Rus-81-2 intersected (1) a 1.2 m zone of intermediate sedimentary rocks with minor chlorite, garnet, quartz stringers, and (unspecified amount) disseminated pyrrhotite blebs and haloes surrounding garnet; (2) a 1.4 m zone of intermediate sedimentary rocks with moderate amounts of pyrrhotite \pm pyrite along bedding/layering planes. In addition, minor pyrrhotite occurs as disseminations and along bedding/layering planes throughout other sections of the core (A.F. 92562). DDH RL-1A and RL-1B intersected minor disseminated pyrite, locally up to 20%. The report noted that the EM anomaly was not sufficiently explained by the amount of mineralization that was intersected by DDH RL-1A and RL-1B (A.F. 92562).

GEOCHEMISTRY

Nineteen drill core samples from DDH Rus-81-2 assayed nil to 0.06% Cu, nil Zn, nil Pb, nil to 0.7 g/t Au and 0.3-2.1 g/t Ag. One core sample from DDH RL-1B assayed nil Cu, nil Zn, nil Pb, trace Au and 0.7 g/t Ag (A.F. 92562).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend throughout the Opachuanau - Rusty lakes area (see also locations 3, 4, 5, 6, 9), and are interpreted as folded sulphide facies iron formation (Steeves and Lamb, 1972).

REFERENCES

Assessment Files 91359, 91988, 92562; Manitoba Energy and Mines, Mines Branch.

Bailes, A.H. and Syme, E.C. 1982:Rusty Lake area; in Manitoba Energy and Mines, Report of Field Activities, 1982, p. 15; 1:125 000.

Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-012

LOCATION: 12

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

EASTING: 462710

NORTHING: 6266649

AREA: NTS 64B/12; between Rusty Lake and Nisku Bay (Issett Lake).

AIR PHOTO: A25474-114; A21124-71

ACCESS: Float plane to Rusty Lake. Access by snowmobile or ATV on trails from the road between the Ruttan Mine and Southern Indian Lake.

EXPLORATION SUMMARY

Hudson Bay Exploration and Development Co. Ltd. drilled DDH Gab 1 and Gab 3 to Gab 7 (total 655.2 m) to test EM conductors on the Gab claims in 1959. Locations for DDH Gab 2 and Gab 8 to Gab 14 are also shown, but logs are not included (A.F. 90974). Hudson Bay Exploration and Development Co. Ltd. conducted an EM survey in 1960-61 (A.F. 90963) and drilled DDH Cat 4 (147.7 m) to test a conductor in 1961 (A.F. 90964). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Chemalloy Minerals conducted a magnetic and EM survey on CB 849 in 1970 (A.F. 90975). Canadian Nickel Co. Ltd. conducted a magnetic survey on the Tar claims in 1971 (A.F. 92213). Sherritt Gordon Mines Limited drilled DDH Rus-81-6 (149.4 m) on CB 8962 in 1981. The report also cites an unpublished report of grid mapping by M.R. Jackson for Sherritt in 1979 (A.F. 92562). Homestake Mineral Development Company conducted a minor prospecting and lithogeochemical sampling program southeast of Rusty Lake on the Rust claims in 1989 (A.F. 93008). Richard D. Joy blasted and sampled four trenches and drilled two holes (DDH J1, J2; total 86.6 m) on the John claims further to the west in 1991 (A.F. 93304).

GEOLOGICAL SETTING

The area is underlain by various conglomerates, sandstone, siltstone, and minor iron formation and basalt flows (Baldwin, 1982, 1988). Sulphide facies iron formation interbedded with greywacke occurs in two units 15 to 20 m thick that can be traced intermittently for 1.5 km along strike. Massive to foliated siliceous rock with variable amounts of plagioclase and biotite contains 15 to 20% fine grained disseminated pyrrhotite, pyrite, and traces of chalcopyrite. The sulphidic beds are 1 to 2 m thick, are interbedded with 0.01-0.5 m thick greywacke sandstone and siltstone beds, and locally, with 0.02-5 m thick chert beds (Baldwin, 1982, p. 58). The 'Gab' drillholes intersected silicified andesite, dacite and rhyolite; fragmental rocks (details not specified); quartz-hornblende gneiss, quartz-biotite gneiss, biotite-plagioclase ± hornblende gneiss, quartz-feldspar gneiss, hornblende ± biotite gneiss (chloritic in places), and locally, minor pegmatite and granite dykes (A.F. 90974). Drill logs of DDH Cat 4 report metavolcanic mica schist and quartz-feldspar-biotite gneiss, partly schistose and garnetiferous (A.F. 90964). DDH Rus-81-6 intersected intermediate laminated sedimentary rocks (A.F. 92562).

MINERALIZATION

Mineralization intersected by drillholes is summarized in Table 8. In general, the 'Gab' drillholes intersected disseminated to near solid pyrrhotite and pyrite and local traces of chalcopyrite in quartz-plagioclase-biotite ± hornblende gneisses that are up to 14 m thick. Baldwin (1982, p. 57) notes that these gneisses are probably metasedimentary rocks, correlative with those to the south and east, and that the sulphides were deposited contemporaneously with the sediment. DDH Cat 4 intersected several short intersections of disseminated to solid pyrrhotite, traces of chalcopyrite, and locally, graphite in places. The host rocks are interpreted by Baldwin (1982, p. 57) as volcanic and plutonic derived polymictic conglomerate. DDH Rus-81-6 intersected only minor pyrite locally disseminated in intermediate metasedimentary rocks (A.F. 92562). Drillholes J1 and J2 intersected only traces of chalcopyrite or galena in narrow quartz veins hosted by sericitic siliceous siltstone. Rock in the trenches was not mineralized (A.F. 93304).

Description of mineralization summarized from drill logs for occurrence 12 (A.F. 90972) (NTS 64B/12).					
DDH	Intersection Length(m)	Mineralization	Host Rock	Comments(Reference)	DDH Length(m)
Rus-81-6		Only trace to minor py locally	Intermediate laminated metasedimentary rocks	(A.F. 92562)	149.4
Cat 4	1.5	Minor to mod. po, tr. cp	(Metavolcanic) mica schist(1)	Minor po ± gf in places throughout core (A.F. 90964; Baldwin, 1982, p. 57)	147.7
	2.1	Minor to NS po, tr. Cp	(Metavolcanic) mica schist(1)		
	1.5	Minor to mod. po	Quartz-feldspar-biotite gneiss	schistose, garnetiferous in parts	
	1.0	Minor to NS po; gf; tr. cp	Quartz-feldspar-biotite gneiss	schistose, garnetiferous in parts	
	6.1	Minor to NS po, gf; tr. cp	(Metavolcanic) mica schist1		
	1.2	Minor to NS po	(Metavolcanic) mica schist1	partly quartzose	
	1.2	Minor to mod. po; gf	(Metavolcanic) mica schist1		

	0.5	Minor to NS po; gf	(Metavolcanic) mica schist ¹		
	0.7	Mod. to SS po; tr. cp	(Metavolcanic) mica schist ¹		
Gab 1	13.7	NS po with sections of SS po	Fragmental rock(2)	Contains chlorite and quartz blebs; Minor po, py elsewhere in core. (A.F. 90974)	125.0
Gab 3	11.9	Scattered narrow zones & stringers minor to mod. po, tr. Py, tr. cp	Quartz-plagioclase-biotite gneiss(2), parts rhyolite	(A.F. 90974)	79.9
Gab 4	0.8	Minor to mod. po	Quartz-feldspar gneiss(2)	Minor local po elsewhere in core (A.F. 90974)	150.6
Gab 5	5.4	Scattered stringers and narrow zones with minor to mod. po	Quartz-plagioclase-biotite gneiss(2), parts fragmental	(A.F. 90974 Baldwin, 1982, p. 57)	81.1
	0.9	Same	Same		
	1.8	Same	Same		
Gab 6	0.2	Minor to mod. po, tr. cp	Quartz-feldspar ± biotite gneiss(2) with narrow zones of hornblende	Minor po ± gf locally elsewhere in core (A.F. 90974)	100.6
	0.8	Minor to mod. po, tr. cp			
	0.1	NS po	Biotite-plagioclase gneiss	Volcanic-derived	
	2.7	Parts have mod. po	"Altered zone"	Volcanic or gabbroic intrusive origin	
Gab 7	1.2	Py, po stringers	Quartz-biotite gneiss(2)	(A.F. 90974 Baldwin, 1982, p. 57)	118.0
¹ Baldwin (1982), based on outcrops mapped near the drilled area, interprets the metavolcanic mica schist with gneissic, granitic, amphibolitic, quartzose and pegmatitic sections from drill core as volcanic and plutonic derived polymictic conglomerate.					
² Baldwin (1982), based on outcrops mapped near the drilled area, interprets these gneisses as metasedimentary rocks.					

GEOCHEMISTRY

Five rock samples collected by Homestake Mineral Development Co. contained 16-84 ppm Cu, 5-98 ppm Zn, 5-50 ppb Au; results for 28 other elements also given in this report are generally not significant (A.F. 93008). Samples from drill core from DDH J1 and J2 and nearby trenches contained only nil to trace Au and Cu (A.F. 93304).

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. The EM trends that these drillholes tested extend through the Rusty Lake area eastward to Nisku Bay (Issett Lake) (see also NTS 64B/11 locations 4 and 5). Steeves and Lamb (1972) note that these trends are parallel to layering and foliation.

REFERENCES

Assessment Files 90963, 90964, 90974, 90975, 91988, 92213, 92562, 93008, 93304; Manitoba Energy and Mines, Mines Branch. Baldwin, D.A. 1982:Mineral deposits in the Ruttan Lake, Karsakuwigamak Lake, Muskayk Lake areas, Manitoba; Manitoba Energy and Mines, Mineral Resources Division, Open File Report OF81-4, 59p.
Steeves, M.A. and Lamb, C.F. 1972:Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-013

LOCATION: 13

NAME: VOL

EASTING: 462317

NORTHING: 6262322

AREA: NTS 64B/12; approximately 1.5 km east of Brehaut Lake.

AIR PHOTO: A25474-115; A21124-72

ACCESS: Road from Ruttan Mine to Southern Indian Lake.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Ruttan Lake Explorations conducted a magnetic and EM survey on CB 823 in 1971 (A.F. 90973). In addition, Sherritt Gordon Mines Limited drilled DDH R-395, R-396, R-397 to the east on CB 809 in 1977 (A.F. 92458).

GEOLOGICAL SETTING

The area occurs near the margin of a granodiorite pluton within a sequence of intermediate to mafic volcanic-derived conglomerate, sandstone and siltstone and plagioclase phyric basalt (Baldwin, 1988).

MINERALIZATION

Baldwin (1987, p. 26) describes the Vol Deposit: "The Vol deposit consists of three en echelon disseminated sulphide zones in an intrusion breccia that consists of angular to subangular blocks of mafic to felsic, phyric and aphyric volcanic rocks, metasedimentary rocks and mafic plutonic rocks in a granodiorite matrix. The sulphide zones are 1-2 m thick and are exposed for 10-20 m along strike. They consist of sulphide in quartz-sericite schist, silicified fault gouge and boudinaged quartz veins. The sulphide minerals are pyrite, pyrrhotite, sphalerite, galena and chalcopyrite. "The sulphide zones are spatially associated with, and occur a few tens of metres south of, a major east-trending fault that transects the Rusty Lake metavolcanic belt. The absence of outcrop in critical areas precludes the establishment of the relationships between the sulphide zones and the major fault. However, it is possible that the sulphide zones are in fault splays associated with the major east-trending fault." This fault with the associated sulphide zones is locally known as the Vol fault. Mineralization was not reported in drill core from DDH R-395, R-396 and R-397 (A.F. 92458).

GEOCHEMISTRY

"Geochemical analyses of drill core indicate that gold values are generally less than 100 ppb. However, values of 500 to 9000 ppb over sample intervals of 0.3 to 0.75 m have been reported" (Baldwin, 1987, p. 26). Till geochemical surveys (Nielsen, 1985, 1986, 1987) identified anomalous arsenic concentrations in the <2ppm fraction and gold in the heavy mineral fraction in samples from this area. Three east-southeast-trending bands of arsenic anomalies are perpendicular to ice flow; the northernmost anomaly coincides approximately with the Vol fault. Visible gold grain samples contain up to 540 ppb, and include delicate grains adjacent to the fault and irregular and abraded grains down ice from the fault. The Vol fault is interpreted as the major source of these anomalies (Nielsen, 1986).

CLASSIFICATION

Vein type deposit; multiple veins.

REFERENCES

Assessment Files 90973, 91988, 92458; Manitoba Energy and Mines, Mines Branch.

Baldwin, D.A. 1987: Mineral deposits in the Ruttan Lake; Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, p. 25-26. 1988: Geology of the southern part of the Rusty Lake volcanic belt; Manitoba Energy and Mines, Geological Services, Geological Report GR86-1, 90p.

Nielsen, E. 1985: Till geochemical investigations in northwestern Manitoba; in Manitoba Energy and Mines, Report of Field Activities 1985, p. 14-19. 1986: Till geochemistry east of the Ruttan mine; in Manitoba Energy and Mines, Report of Field Activities 1986, p. 26-31. 1987: Till geochemistry in selected areas of northern Manitoba; in Manitoba Energy and Mines, Report of Field Activities 1987, p. 27-29.

NTS: 64B12

MDS_No.: M64B12-014

LOCATION: 14

NAME:

EASTING: 468340

NORTHING: 6281822

AREA: NTS 64B/12; approximately 3 km south of Italy Bay (Opachuanau Lake).

AIR PHOTO: A24996-120; A21124-95

ACCESS: Float plane and traverse.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Canadian Nickel Co. Ltd. drilled DDH 35242 and 35243 totalling 95 m on CB 1901 in 1969 (A.F. 90959).

GEOLOGICAL SETTING

The area is underlain by tonalite and quartzofeldspathic gneiss of the Southern Indian domain (Manitoba Energy and Mines, 1986; Steeves and Hinds, 1972). DDH 35242 intersected biotite schist; DDH 35243 intersected granite gneiss and biotite gneiss (A.F. 90959).

MINERALIZATION

DDH 35242 intersected two sections, 20 and 6 cm, with 30% pyrrhotite and pyrite; minor pyrrhotite and/or pyrite are present throughout most of the rest of the core. DDH 35243 intersected only trace to minor pyrite and local traces of chalcopyrite (A.F. 90959).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 90959, 91988; Manitoba Energy and Mines, Mines Branch.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Steeves, M.A. and Hinds, R.W. 1972:Opachuanau Lake, Map 71-2-8, 1:50 000; accompanies Steeves, M.A. and Lamb, C.F., 1972, Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B12

MDS_No.: M64B12-015

LOCATION: 15

NAME:

EASTING: 462983

NORTHING: 6283595

AREA: NTS 64B/12; Opachuanau Lake, near Swampy Bay.

AIR PHOTO: A25474-110; A21124-66

ACCESS: Float plane.

EXPLORATION SUMMARY

International Nickel Co. Ltd. conducted an airborne EM survey over the "Moose '65 area" in 1965 (A.F. 91649). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by Wasekwan Group amphibolite, tonalite and granite (Manitoba Energy and Mines, 1986).

MINERALIZATION

Hinds (1972, p. 40-41, "Mineral Occurrence 10") notes <1% sphalerite in a hybrid tonalite-amphibolite zone, and <1% pyrite in the Wasekwan Group banded gneisses to the south.

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment Files 91649, 91988; Manitoba Energy and Mines, Mines Branch.

Hinds, R.W. 1972:Geology of the Opachuanau Lake - Fraser Lake - Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Steeves, M.A. and Hinds, R.W. 1972:Opachuanau Lake, Map 71-2-8, 1:50 000; accompanies Steeves, M.A. and Lamb, C.F., 1972, Geology of the Issett - Opachuanau - Pemichigamau - Earp lakes area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2F, 56p.

NTS: 64B13

MDS_No.: M64B13-001

LOCATION: 1

NAME: MACBRIDE LAKE DEPOSIT; KNOBBY LAKE DEPOSIT

EASTING: 444609

NORTHING: 6304728

AREA: NTS 64B/13; north side of MacBride Lake, west of North MacBride River.

AIR PHOTO: MB88016-250

ACCESS: Trails from MacBride Lake, which is accessed by float plane.

EXPLORATION SUMMARY

Sherritt Gordon Mines Limited drilled nine holes (DDH Cr 10, Cr 11, Cr 12, Cr 13, Cr 14, Cr 15, Cr 16, Cr 17 and Cr 18) totalling 673.8 m on claims Sand 2 and Sand 4 in 1958 (A.F. 91293). Hudson Bay Exploration & Development Company Limited conducted an HLEM survey on the Sand claims in 1960 (A.F. 91296), and drilled holes Sand 1, Sand 2 and Sand 3 totalling 819 m to test a northerly trending EM conductor with a 183 m strike length in 1961 (A.F. 91294). Knobby Lake Mines Limited staked CB 1533 in 1969 and outlined a deposit with proven, drill indicated, probable and possible reserves of 1 819 700 tonnes grading 8.77% Zn, 0.35% Cu, 11.65 g/t Ag and 0.14 g/t Au ('Consolidated Knobby Lake Mines Limited', Canadian Mines Handbook 1985-86, p. 114; Bamburak, 1990). Canadian Nickel Company Limited conducted an airborne EM survey over the area in 1965 (A.F. 91649). Dome Exploration (Canada) Limited carried out an airborne radiometric survey in 1969 (A.F. 91674). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey (Southern Indian project) for Manitoba Mines and Natural Resources in 1968 (A.F. 91988), but the conductors that were tested by the 'Cr' and 'Sand' holes were not identified in this survey (Hinds, 1972). Questor Surveys Ltd. (1977) carried out an airborne INPUT and magnetic survey (Lynn Lake project) on behalf of the Manitoba Government. Sherritt Gordon Mines Limited carried out geological mapping at 1:4800 in 1981 and at 1:2400 in 1984 (SGM, unpublished data). The exploration history of the MacBride Lake deposit is given in Mineral Inventory Card 64B/13 Zn1.

GEOLOGICAL SETTING

The area is underlain by Wasekwan Group mafic to intermediate volcanic flow and fragmental rocks and lesser amphibolitic schist and gneiss (Gilbert, 1993). Various mafic flows, volcanoclastic rocks, fine grained volcanoclastic sedimentary rocks, garnet-chlorite-biotite schist, and minor granodiorite and diorite were mapped near the deposit (SGM, unpublished data, 1981, 1984). Logs from the 'Cr' and 'Sand' drillholes describe partly garnetiferous, fine grained, hornblende-biotite gneiss; partly garnetiferous quartz-biotite ± hornblende gneiss; minor hornblende gneiss, hornblende-biotite-chlorite schist, biotite quartzite, tuffaceous rocks, and granitic dykes. DDH Cr 13 also intersected "altered greenstone" (chlorite-mica-talc alteration), and DDH Cr 17 also intersected fine grained, blue-grey, slightly biotitic quartzitic rocks (A.F. 91293, 92194).

MINERALIZATION

The mineralized zone trends north and dips nearly vertical to steeply east. It consists of near solid to solid pyrite, pyrrhotite, sphalerite, chalcopyrite, and local traces of galena. Drill logs for the 'Cr' and 'Sand' drill core show the zone up to 9.1 m thick, and describe host rocks to the mineralized zone as various fine grained quartz-biotite-, quartz-hornblende-biotite-, hornblende gneisses, and biotite-chlorite schist; parts are garnetiferous or staurolitic (A.F. 91293, A.F. 91294). The host rocks are interpreted as intermediate to felsic volcanoclastic siltstone by Sherritt Gordon Mines Limited (unpublished data). Kilburn (1956) describes a rusty weathered zone in the area of the deposit, 12 m wide and 61 m long, of sericite-muscovite schist in a shear zone with disseminated magnetite, pyrite and traces of pyrrhotite and chalcopyrite. Sherritt Gordon Mines Limited (unpublished data, 1981, 1984) notes several areas of sulphidic rocks near the deposit.

GEOCHEMISTRY

Proven, drill indicated, probable and possible reserves are 1 819 700 tonnes grading 8.77% Zn, 0.35% Cu, 11.65 g/t Ag and 0.14 g/t Au ('Consolidated Knobby Lake Mines Limited', Canadian Mines Handbook 1985-86, p. 114; Bamburak, 1990).

CLASSIFICATION

Massive sulphide type deposit; volcanic rock associated.

REFERENCES

- Assessment Files 91293, 91294, 91296, 91649, 91674, 91988; Manitoba Energy and Mines, Mines Branch.
- Bamburak, J.D. 1990: Metallic mines and mineral deposits of Manitoba; Manitoba Energy and Mines, Open File Report OF90-2, 105p.
- Canadian Mines Handbook 1985-86; Northern Miner Press Ltd., Toronto.
- Gilbert, H.P. 1993: Geology of the Barrington Lake - Melvin Lake - Fraser Lake area; Manitoba Energy and Mines, Geological Report GR87-3, 97p.
- Hinds, R.W. 1972: Geology of the Opachuanau Lake - Fraser Lake - Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.
- Kilburn, L.C. 1956: Geology of the MacBride Lake area; Manitoba Mines and Natural Resources, Mines Branch, Publication 55-2, 24p.
- Mineral Inventory Card 64B/13 Zn1; Manitoba Energy and Mines, Geological Services Branch.
- Questor Surveys Ltd. 1977: Airborne INPUT survey, Lynn Lake area (Phase II); Manitoba Energy and Mines, Mineral Resources Division, Miscellaneous Publication.

NTS: 64B13

MDS_No.: M64B13-002

LOCATION: 2

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

EASTING: 441554

NORTHING: 6304419

AREA: NTS 64B/13; 0.5 km south of central MacBride Lake.

AIR PHOTO: MB88016-250

ACCESS: Trails from MacBride Lake, which is accessed by float plane.

EXPLORATION SUMMARY

Hudson Bay Exploration & Development Company Limited drilled DDH Bid 1 (89.6 m) and Bid 2 (62.5 m) to test EM conductors on claims Bid 119 and Bid 122, respectively, in 1970 (A.F. 91295). Canadian Nickel Company Limited conducted an airborne EM survey over the area in 1965 (A.F. 91649). Hudson Bay Exploration and Development Company Limited carried out an airborne EM and radiometric survey in 1969 (A.F. 91673). Dome Exploration (Canada) Limited carried out an airborne radiometric survey in 1969 (A.F. 91674). Questor Surveys Ltd. (1977) carried out an airborne INPUT and magnetic survey (Lynn Lake project) on behalf of the Manitoba Government. Mattagami Lake Mines Ltd. conducted a vertical hoop EM survey in 1973 to follow up an INPUT anomaly in an area south of MacBride Lake (A.F. 91943).

GEOLOGICAL SETTING

The area is underlain by Wasekwan Group mafic to intermediate fragmental rocks, amphibolitic schist and gneiss (Gilbert, 1993). DDH Bid 1 and Bid 2 intersected interlayered partly garnetiferous mafic to intermediate volcanic rocks and fine grained quartz-biotite \pm hornblende gneiss (A.F. 91295).

MINERALIZATION

DDH Bid 1 intersected a mineralized zone, 5.9 m in core length, with pyrrhotite (amount unspecified), minor pyrite and traces of chalcopyrite. DDH Bid 2 intersected three zones, 0.8, 0.5 and 1.1 m in core length, with similar mineralization. The host rocks to these zones are not specified (A.F. 91295).

GEOCHEMISTRY

None.

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation.

REFERENCES

Assessment Files 91295, 91649, 91673, 91674, 91943; Manitoba Energy and Mines, Mines Branch.

Gilbert, H.P. 1993:Geology of the Barrington Lake - Melvin Lake - Fraser Lake area; Manitoba Energy and Mines, Geological Report GR87-3, 97p.

Questor Surveys Ltd. 1977:Airborne INPUT survey, Lynn Lake area (Phase II); Manitoba Energy and Mines, Mineral Resources Division, Miscellaneous Publication.

NTS: 64B13

MDS_No.: M64B13-003

LOCATION: 3

NAME: FRASER LAKE

EASTING: 458434

NORTHING: 6308705

AREA: NTS 64B/13; east end of Fraser Lake.

AIR PHOTO: A25148-11; A21124-43

ACCESS: Float plane.

EXPLORATION SUMMARY

International Nickel Co. Ltd. conducted an airborne EM survey over the "Moose '65 area" in 1965 (A.F. 91649). Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988). Dome Exploration (Canada) Limited carried out an airborne radiometric survey in 1969 (A.F. 91674). No other exploration work is reported (Mineral Inventory Card 64B/13 Mo1, Manitoba Energy and Mines).

GEOLOGICAL SETTING

The area is underlain by intermediate to felsic intrusive rocks (Hinds and Thomas, 1972; Gilbert, 1993).

MINERALIZATION

Minor pyrite and traces of molybdenite occur in a limonite-stained quartz vein that is oriented 075°/90° (Tedlie, 1958) and is 2 to 2.5 cm wide (Thomas, 1972, p. 19). In addition, Tedlie (1958) described two parallel limonite-stained quartz veins with minor pyrite and traces of molybdenite near the southeast corner of Fraser Lake; the veins are approximately 0.3 m wide, 15 m apart, with unknown strike lengths.

GEOCHEMISTRY

A grab sample with the highest visible amount of sulphides returned an assay of trace Cu, nil Ni and nil Zn (Thomas, 1972, p. 19).

CLASSIFICATION

Vein type deposit, single vein.

REFERENCES

Assessment Files 91649, 91674, 91988; Manitoba Energy and Mines, Mines Branch.

Gilbert, H.P. 1993:Geology of the Barrington Lake - Melvin Lake - Fraser Lake area; Manitoba Energy and Mines, Geological Report GR87-3, 97p.

Hinds, R.W. and Thomas, K.A. 1972:Fraser Lake, Map 71-2-11; in Thomas, K.A., 1972, Geology of the Southern Indian Lake area, southwestern portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2H, 20p. Mineral Inventory Card 64B/13 Mo1; Manitoba Energy and Mines, Geological Services Branch.

Tedlie, W.D. 1958:Geology of the Barlow Lake area; Manitoba Mines and Natural Resources, Mines Branch, Publication 57-2, 23p.

Thomas, K.A. 1972:Geology of the Southern Indian Lake area, southwestern portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2H, 20p.

NTS: 64B14

MDS_No.: M64B14-001

LOCATION: 1

NAME:

EASTING: 472894

NORTHING: 6306921

AREA: NTS 64B/14; approximately 4 km east of Barlow Lake, along shore of Southern Indian Lake.

AIR PHOTO: A25148-37; A21124-124

ACCESS: Float plane.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by calc-silicate rocks, surrounded by felsic intrusive rocks (Thomas et al., 1972).

MINERALIZATION

Minor pyrite is disseminated in amphibolite (Thomas, 1972, p. 19).

GEOCHEMISTRY

A sample containing the highest visible sulphide concentration returned an assay of trace Cu, nil Ni and nil Zn (Thomas, 1972, p. 19).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Thomas, K.A., Hinds, R.W. and Frohlinger, T.G. 1972:Lemay Island, Map 71-2-12; in Thomas, K.A., 1972, Geology of the Southern Indian Lake area, southwestern portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2H, 20p.

Thomas, K.A. 1972:Geology of the Southern Indian Lake area, southwestern portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2H, 20p.

NTS: 64B14

MDS_No.: M64B14-002

LOCATION: 2

NAME:

EASTING: 486985

NORTHING: 6291575

AREA: NTS 64B/14; approximately 3.75 km south of Lemay Island, Southern Indian Lake.

AIR PHOTO: A24936-37; A21124-180

ACCESS: Float plane.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by a small unit of ultramafic rocks, bounded by felsic intrusions (Thomas et al., 1972).

MINERALIZATION

Quartzofeldspathic bands in ultramafic amphibolite host two rusty weathered zones with up to 20% pyrrhotite and pyrite and <1% chalcopyrite. Less than 2% sulphides occur in the ultramafic amphibolite (Hinds, 1972, p. 40, 41).

GEOCHEMISTRY

None.

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Hinds, R.W. 1972:Geology of the Opachuanau Lake - Fraser Lake - Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.

Thomas, K.A., Hinds, R.W. and Frohlinger, T.G. 1972:Lemay Island, Map 71-2-12; in Hinds, R.W., 1972, Geology of the Opachuanau Lake - Fraser Lake - Lemay Island area; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2G, 54p.

NTS: 64B14

MDS_No.: M64B14-003

LOCATION: 3

NAME:

EASTING: 496102

NORTHING: 6305071

AREA: NTS 64B/14; approximately 6 km west of Wupaw Bay (Southern Indian Lake).

AIR PHOTO: A24935-205; A21124-222; A21357-50

ACCESS: Float plane.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain by a small unit of amphibolite, bounded by megacrystic granite (Thomas et al., 1972; Manitoba Energy and Mines, 1986). Frohlinger (1972) interprets the amphibolite as a large xenolith or isolated roof pendant.

MINERALIZATION

Minor pyrite and pyrrhotite are disseminated in contorted sheared amphibolite (Frohlinger, 1972, p. 75, 80). In the northeast corner of this location minor pyrite is disseminated in greywacke gneiss (Frohlinger, 1972, p. 74, 75).

GEOCHEMISTRY

A sample from location 3 returned an assay of 0.02% Cu and 0.01% Ni (Frohlinger, 1972, p. 80).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Frohlinger, T.G. 1972:Geology of the Southern Indian Lake area, central portion; Manitoba Energy and Mines, Mines Branch Publication 71-2I, 91p.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Thomas, K.A., Hinds, R.W. and Frohlinger, T.G. 1972:Lemay Island, Map 71-2-12; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.

NTS: 64B14

MDS_No.: M64B14-004

LOCATION: 4

NAME:

EASTING: 482651

NORTHING: 6303278

AREA: NTS 64B/14; approximately 4 km northwest of Lemay Island (Southern Indian Lake).

AIR PHOTO: A24936-34; A21124-176

ACCESS: Float plane.

EXPLORATION SUMMARY

Questor Surveys Ltd. carried out an airborne INPUT EM and magnetic survey for Manitoba Mines and Natural Resources in 1968 (A.F. 91988).

GEOLOGICAL SETTING

The area is underlain predominantly by felsic intrusive rocks with minor greywacke gneiss (Thomas et al., 1972).

MINERALIZATION

Minor pyrrhotite and chalcopyrite are disseminated in plagioclase-quartz-biotite gneiss that is interlayered with granodiorite (Thomas, 1972, p. 18, 19).

GEOCHEMISTRY

A grab sample returned an assay of 0.02% Cu, 0.01% Ni and 0.04% Zn (Thomas, 1972, p. 18, 19).

CLASSIFICATION

Disseminated mineralization - not classified.

REFERENCES

Assessment File 91988; Manitoba Energy and Mines, Mines Branch.

Manitoba Energy and Mines 1986:Uhlman Lake NTS 64B; Manitoba Energy and Mines, Bedrock Geology Compilation Map Series, 1:250 000.

Thomas, K.A. 1972:Geology of the Southern Indian Lake area, southwestern portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2H, 20p.

Thomas, K.A., Hinds, R.W. and Frohlinger, T.G. 1972:Lemay Island, Map 71-2-12; in Frohlinger, T.G., 1972, Geology of the Southern Indian Lake area, central portion; Manitoba Mines, Resources and Environmental Management, Mines Branch, Publication 71-2I, 91p.