EXPLORATION REPORT NO. 3

GEOLOGY, GEOPHYSICS, DRILLING

MARN 1-108 CLAIMS

GRANT NUMBERS: YA 31491-98, 47156-77, 47265-80, 47575-78,
47600-03, 50041-86

NTS 116/B7, 116/B10

64°29'N, 138°48'W

DAWSON MINING DISTRICT

AUTHORS: J. BICZOK, R. KEMP

OWNER: MATTAGAMI LAKE EXPLORATION LIMITED

DATE: DECEMBER, 1980

WORK DATES: MAY 30 to SEPTEMBER 3, 1980

090847

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $ 26,400.00

R. Dubicki for
Resident Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

R. Dubicki for
Commissioner of Yukon Territory

INDIAN and NORTHERN AFFAIRS

TRANSMITTAL FORM

M R File No. ______

S.M.R. File No ______

Date Fwd. ______

FROM. Mining Recorder at ....Dawson........

TO Supervising Mining Recorder at Whitehorse, Y.T.

FOR ACTION ARE:

Office of the Supervising Mining Recorder
JUL 17 1981
WHITEHORSE
Yukon Territory

[ ] NEW APPL'N for PLACER LEASE to PROSPECT: Name:

[ ] RENEWAL APPL'N PLACER LEASE to PROSPECT: Name: Lease No. ....

[ ] AFFIDAVIT of EXPENDITURE on PLACER LEASE. Name: Lease No. ....

[ ] ASSIGNMENT of PLACER LEASE No. ....
From: To:

[ ] GROUPING APPL'N UNDER SEC. 52(2) PLACER MINING ACT.
Owner:

[ ] DIAMOND DRILL LOGS:
Claims: Claim sheet no:

[XX] QUARTZ ASSESSMENT REPORT:
Claims: FIONA 1-47 + 69 and MARN GROUP Claim sheet no. 116-B-7 410
Type of report: Geology, Geophysics, Drilling Submitted by: Mattagami

Cls. work performed on: All $ Req. for ren. application 19,200 + 7,200

Signature

REPLY ACTION Date Ret.

090841

Signature

Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215 - 112 St. Edmonton, Alta.

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

FIONA 1-47, 69 YA 57749 - YA 57796

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVESARY DATES

situated at 137°15'W, 63°56'N; Syenite Mts. Claim Sheet No. 115 P/4

in the Dawson Mining District, to the value of at least $7500

dollars, since the 20th day of May 19 81.

to represent the following mineral claims under the authority of Grouping Certificate No. —.
(Here list claims to be renewed by number and name in numerical order)

FIONA 1-47, 69 YA 57749 - YA 57796

Renewal Period 1½ yrs

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Work on the claims was conducted from May 20th, 1981 to June 18th, 1981. As this was our initial exploration program, the work consisted of 70 man days of geological mapping, prospecting and a minor amount of stream sampling

Sworn before me at Dawson City Yukon

this 24th day of June 19 81

U Oltman

A Commissioner for Oaths for Yukon Territory.

John Biczok

Applicant.

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

OFFICE DATE STAMP

(This form required in duplicate with sketch showing location of work.)

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St., Edmonton, Alberta

MAKE OATH AND SAY, THAT:

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
2. I have done, or caused to be done, work on the following mineral claim(s):

(Here list claims on which work was actually done by number and name)

MARN 8 YA 31498

situated at Fireweed Creek, Tombstone Mt. Claim Sheet No. 116 B/7

in the Dawson Mining District, to the value of at least $27,000

dollars, since the 30th day of May 1981,

to represent the following mineral claims under the authority of Grouping Certificate No. Q1006

(Here list claims to be renewed in numerical order, by grant number and claim name, showing renewal period requested).

			Renewal Period
MARN	5-8	YA 31495-98	3½ yrs.
MARN	9-13	YA 47156-60	3½
MARN	15	YA 47162	3½
MARN	33-36	YA 47174-77	3½
MARN	107-108	YA 50085-86	3¾

Renewal by common dating requested to Jan. 4th, 1991 for MARN 5-8; Jan 4th, 1987 for MARN 9-13, 15 and 33-36; Jan 4th 1985 for MARN 107-108.

3. The following is a detailed statement of such work: (Set out full particulars of the work done indicating dates work commenced and ended in the twelve months in which such work is required to be done as shown by Section 53.)

The work program was conducted from May 30th to June 11, 1981 and consisted of the blast levelling of one drill site and 461 ft of BQ diamond drilling.

Sworn before me at Dawson City, Yukon

this 24th day of June 1981.

U Altman

Notary Public

John Biczok

Applicant

Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

OFFICE DATE STAMP

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St, Edmonton, Alberta

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

MARN 63-74 YA 50041-52
MARN 97-100 YA 50075-78

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVESARY DATES

situated at Fireweed Creek, Tombstone Mountains Claim Sheet No. 116 B7

in the Dawson Mining District, to the value of at least $3500

dollars, since the Both 15th 5B day of June 19 80,

to represent the following mineral claims under the authority of Grouping Certificate No. Q 1009.

(Here list claims to be renewed by number and name in numerical order)

Renewal Period

MARN 63-74 YA 50041-52 12x5x 13/4 yrs = 105.00
MARN 97-100 YA 50075-78 4x5x 13/4 yrs. = 35.00

140.00

Renewal to January 4th, 1983 by common dating requested.

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Work on these claims was conducted from June 15th to Aug. 27th, 1980 and consisted of geological mapping, prospecting plus a minor amount of surveying.

Sworn before me at Dawson City Yukon

this 24th day of June 1981

[signature]

A Commissioner for Oaths for Yukon Territory.

John Biczok

Applicant.

Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

OFFICE DATE STAMP

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St., Edmonton, Alberta

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

MARN 75-80 YA 50053-58

MARN 87-96 YA 50065-74

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVESARY DATES

situated at Tombstone River valley area Claim Sheet No. 116 B/7

in the Dawson Mining District, to the value of at least $3500

dollars, since the 15th day of June 1980.

to represent the following mineral claims under the authority of Grouping Certificate No. Q 1010.
(Here list claims to be renewed by number and name in numerical order)

			Renewal Period
MARN	75-80	YA 50053-58	1 3/4
MARN	87-96	YA 50065-74	1 3/4

Renewal to January 4th, 1983 requested by common dating

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Sworn before me at Dawson City, Yukon

this 24th day of June 1981

[signature] Applicant.

[signature]

A Commissioner for Oaths for Yukon Territory.

Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St., Edmonton, Alberta

OFFICE DATE STAMP

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s):
(Here list claims on which work was actually done by number and name)

MARN 101-104 YA 50079-82

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVESARY DATES

situated at Fireweed Creek, Tombstone Mt. Claim Sheet No. 116 B7

in the Dawson Mining District, to the value of at least $2,000

dollars, since the 30th day of May 19 80

to represent the following mineral claims under the authority of Grouping Certificate No. 1008

(Here list claims to be renewed by number and name in numerical order)

Renewal Period

MARN 101-106 YA 50079-84 1 3/4 yrs.

Renewal to January 4th, 1983 by common dating requested.

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

The work was carried out from June 15th to Sept. 3, 1980 and consisted of geological mapping and prospecting.

Sworn before me at Dawson City, Yukon

this 24th day of June 19 81

[signature]

A Commissioner for Oaths for Yukon Territory.

John Biczok

Applicant.

Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

OFFICE DATE STAMP

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St., Edmonton, Alberta.

MAKE OATH AND SAY, THAT :-

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.

2. I have done, or caused to be done, work on the following mineral claim(s): (Here list claims on which work was actually done by number and name)

MARN 81-86 YA 50059-64

SHOW DATES WORK COMMENCED AND ENDED ON CLAIMS HAVING DIFFERENT ANNIVESARY DATES

situated at Tombstone River valley Claim Sheet No. 116 B7

in the Dawson Mining District, to the value of at least $1200

dollars, since the 15th day of June 19 80

to represent the following mineral claims under the authority of Grouping Certificate No. Q1011

(Here list claims to be renewed by number and name in numerical order)

MARN 81-86 YA 50059-64

Renewal Period

1 3/4 yrs

Renewal to January 4th, 1983 by common dating requested.

3. The following is a detailed statement of such work: (Set out full particulars of the work done in the twelve months in which such work is required to be done, as shown by Section 53.)

Work was conducted from June 15th to Aug. 27th, 1980 and consisted primarily of a topographical survey with a minor amount of prospecting and mapping

Sworn before me at Dawson City, Yukon

this 24th day of June 19 81

[signature]

A Commissioner for Oaths for Yukon Territory.

John Biczok

Applicant

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)

RECEIVED JUN 24 1981 MINING RECORDER DAWSON, Y.T. I.A. & N.D.

OFFICE DATE STAMP

I (Name) John Biczok Occupation Geologist

(Postal Address) #502, 8215-112 St., Edmonton, Alberta

MAKE OATH AND SAY, THAT:

1. I am the owner, or agent of the owner, of the mineral claim(s) to which reference is made herein.
2. I have done, or caused to be done, work on the following mineral claim(s):

(Here list claims on which work was actually done by number and name)

MARN 1-4 YA 31491-94
MARN 17-20 YA 47164-67
MARN 25-28 YA 47168-71
MARN 29-30 YA 50039-40
MARN 31-32 YA 47172-73

situated at Fireweed Creek, Tombstone Mountains Claim Sheet No. 116 B7 & B10

in the Dawson Mining District, to the value of at least $10,000

dollars, since the 30th day of May 1981.

to represent the following mineral claims under the authority of Grouping Certificate No. Q1005

(Here list claims to be renewed in numerical order, by grant number and claim name, showing renewal period requested).

			Renewal Period
MARN	1-4	YA 31491-94	3½
MARN	17-20	YA 47164-67	3½
MARN	25-28	YA 47168-71	3½
MARN	29-30	YA 50039-40	4¾
MARN	31-32	YA 47172-73	3½

Common Dating

Renewal to January 4th, 1986 requested for MARN 29 + 30, Jan. 4th, 1992 for MARN 1-4, and Jan 4th, 1987 for the remainder

3. The following is a detailed statement of such work: (Set out full particulars of the work done indicating dates work commenced and ended in the twelve months in which such work is required to be done as shown by Section 53.)

The work program was conducted from May 30 to June 11, 1981 and consisted of blast levelling of four drill sites, 200 ft. of BQ diamond drilling and minor mapping, prospecting and surveying

Sworn before me at Dawson City, Yukon

this 24th day of June 1981

[signature]

Notary Public

John Biczok

Applicant

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LIST OF MAPS

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CHAPTER ONE: INTRODUCTION

1-1: Location and Access

The MARN claims are located 55km NNE of Dawson City, Yukon, in the Tombstone Mountains, part of the Ogilvie Range (Fig. 1). They are located at the head of Fireweed Creek, a tributary of the Chandindu River (Fig. 2).

During the past, access has been by helicopter from Dawson City or from a debarkation point on the Dempster Highway, 29km to the east (Fig. 3). In the future, if the property warrants it, equipment could be hauled to the property by one of two routes:

1) Along the Tombstone River valley, from the Dempster Highway to the Chandindu River Valley (35km), and then up the Chandindu and Fireweed valleys (10km) to the property.
2) Along the Chandindu River road, a dirt track that crosses relatively flat terrain from Dawson City to the Chandindu River, roughly 15km south of the property (Fig. 3). Equipment could then be hauled up the Chandindu and Fireweed valleys approximately 16km to the property.

Both routes should be relatively problem free. However, there may be some official objections to constructing a road along the Tombstone River valley. In the past this area has been considered as a potential site for a national park and disturbances such as road construction may be frowned upon.

1-2: History of the Claims

The original MARN 1-8 claims were staked by Mattagami Lake Mines Ltd. July 29, 1978. Only a brief period of exploration was carried out in 1978.

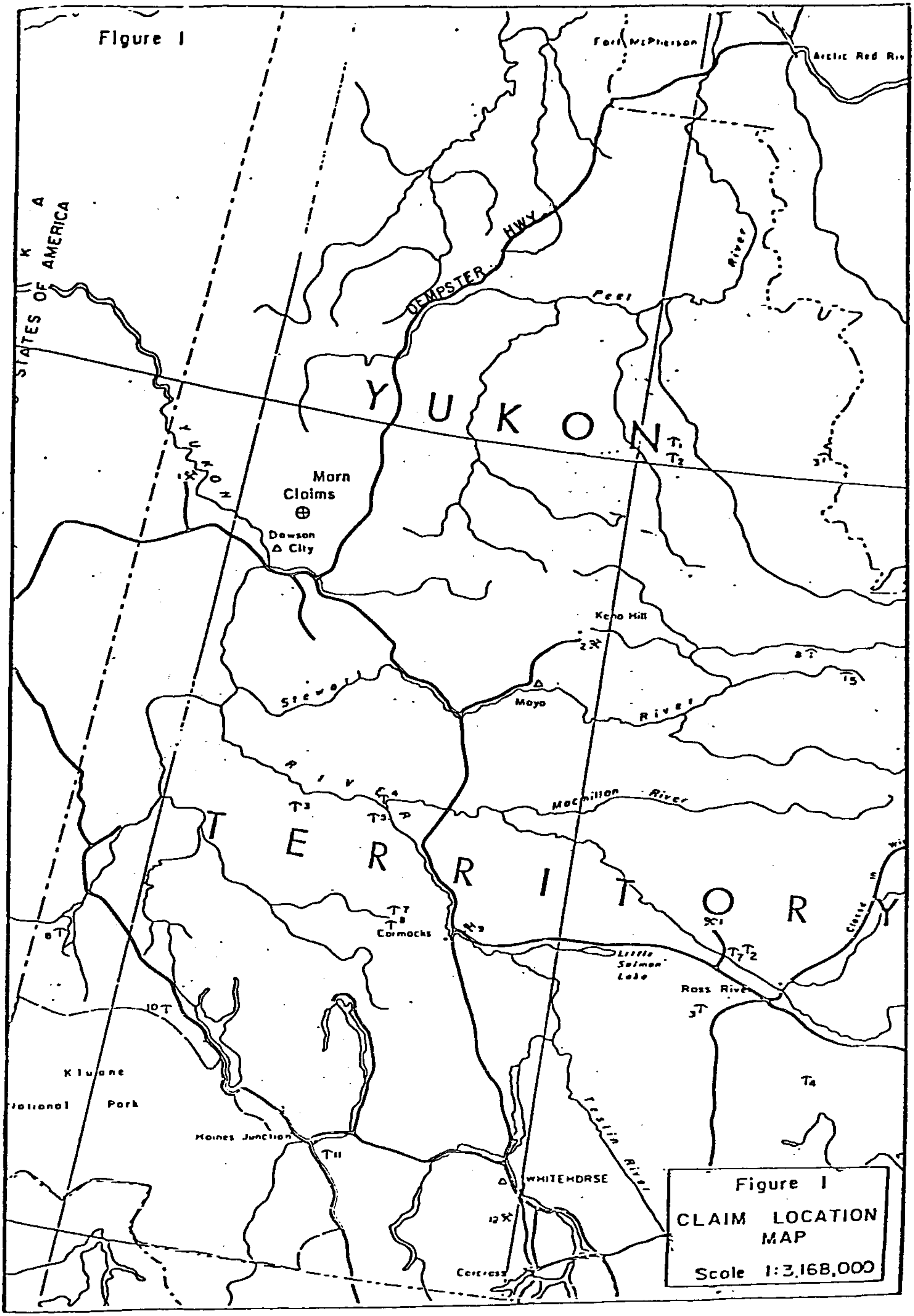
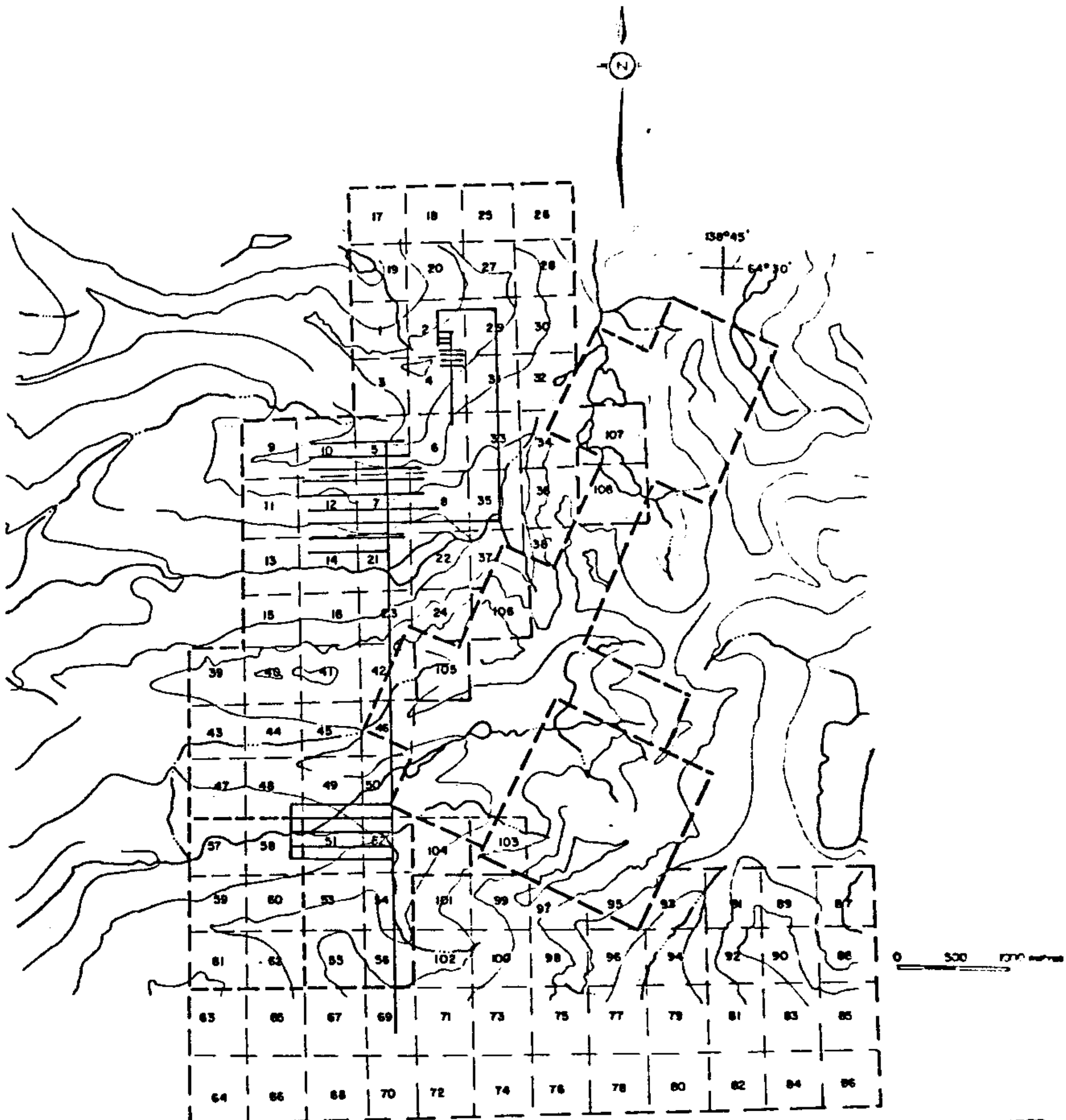


Figure 1
Fort McPherson
Arctic Red River
STATES OF AMERICA
DEMPSTER HWY
Peel River
YUKON TERRITORY
Morn Claims
Dawson City
Yukon
Keno Hill
Stewart River
Mayo
Macmillan River
Carmacks
Little Salmon Lake
Ross River
Kluane National Park
Haines Junction
WHITEHORSE
Teslin River
Carcross
Figure 1
CLAIM LOCATION MAP
Scale 1:3,168,000

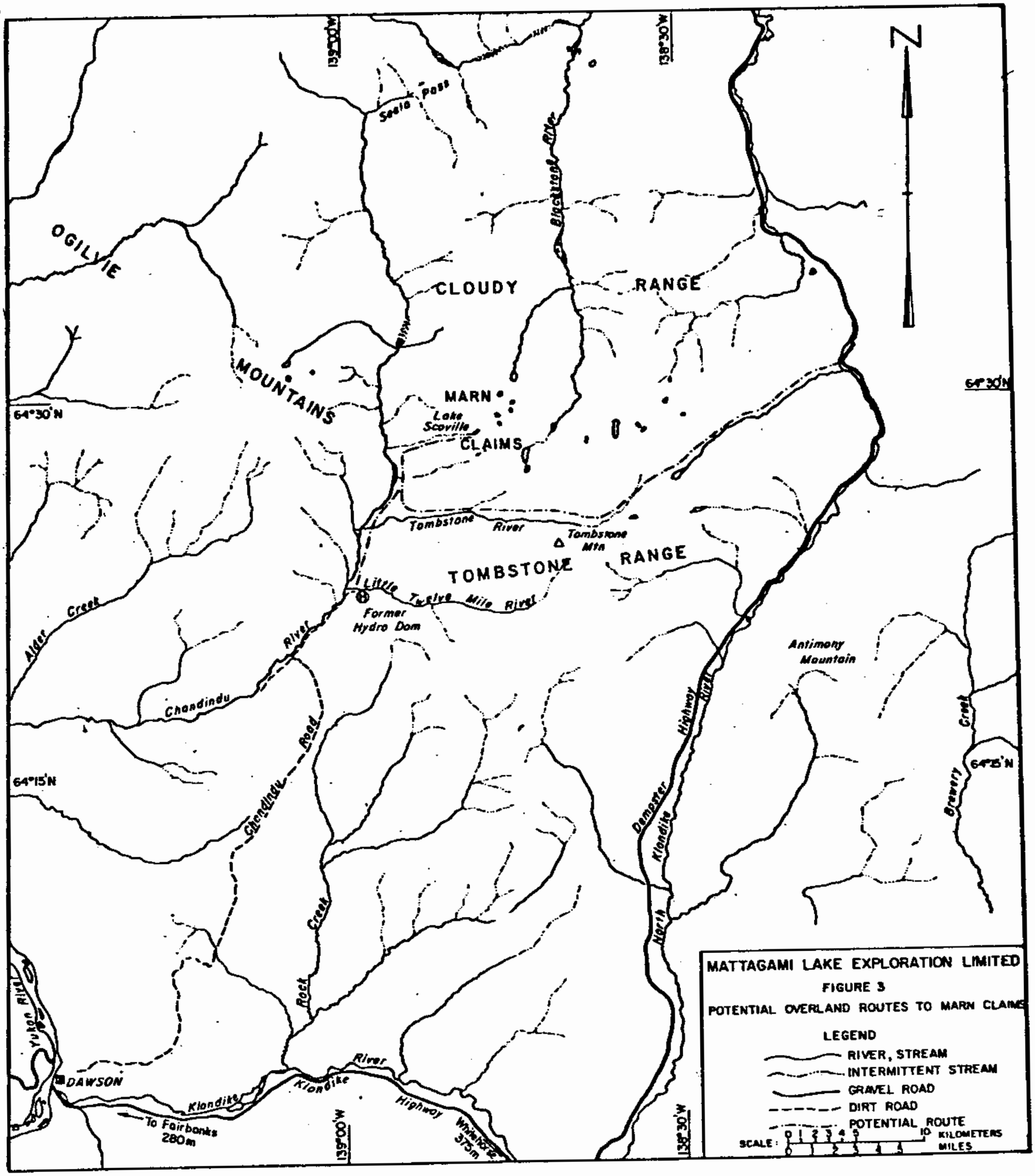


MATTAGAMI LAKE EXPLORATION LIMITED

Morn Project

FIGURE 2

CLAIM MAP



MATTAGAMI LAKE EXPLORATION LIMITED
FIGURE 3
POTENTIAL OVERLAND ROUTES TO MARN CLAIMS
LEGEND
RIVER, STREAM
INTERMITTENT STREAM
GRAVEL ROAD
DIRT ROAD
POTENTIAL ROUTE
SCALE: 0 1 2 3 4 5 10 KILOMETERS
0 1 2 3 4 5 MILES
OGILVIE MOUNTAINS
CLOUDY RANGE
TOMBSTONE RANGE
MARN CLAIMS
Lake Scoville
Seela Pass
Blackstone River
Tombstone River
Tombstone Mtn
Little Twelve Mile River
Former Hydro Dam
Chandindu River
Chandindu Road
Alder Creek
Rock Creek
Antimony Mountain
Brewery Creek
Dempster Highway
North Klondike River
Yukon River
DAWSON
Klondike River
Klondike Highway
To Fairbanks 280m
Whitehorse 375m
139°00'W
138°30'W
64°30'N
64°15'N

Following the initial work on the claims in 1979 (June) an additional 54 claims were staked in July-September.

On June 2nd, 1980 an additional 46 claims, MARN 63 to 108, were staked. As well, MARN 29 and 30 were restaked. The relevant data is summarized in Table One.

1-3: Physiography

"This rock is strongly jointed vertically and weathers into ruinous wedge-shaped ridges, surmounted by lines of sharp pinnacles and lofty tower-shaped peaks." (McConnell, 1903, p.63)

The Tombstone Mountains are truly one of the most remarkable areas of the Cordillera. Areas underlain by intrusive rocks feature extremely steep relief averaging 3,000 ft. (900 metres) with a maximum of 5,500 ft. (1,700 metres). Shear cliffs, 2,000 ft. (600 metres) high, are not uncommon in this area. The vertical jointing in the rock has led to the development of branching, razorback ridges, large pinnacles resembling hoodoos and large peaks towering above the ridges. Cirques and hanging valleys are common in this terrain. Fortunately, the MARN claims lie along the contact of the syenite with the Paleozoic sediments and here the terrain is not as rough, featuring broader valleys with gentler slopes and in some areas, a plateau type topography.

This area was not affected by continental glaciation but was subjected to local alpine glaciation. Glaciers emanating from the Tombstone Mountains travelled down the Chandindu River valley but apparently did not reach the Tintina Trench. Glacial drift mantles the lower slopes in the area up to 3,500 ft. (1,070 metres), however all of the MARN claims are above this elevation, ranging from 4,100 ft. to 6,600 ft. (1,250 metres to 2,000 metres).

TABLE ONE: MARN CLAIMS HISTORY

Claim No.	Grant Number	Date of Staking	Recording Date	Transfer State	Work Expiry Date
1- 4	YA 31491-94	July 29, 1978	August 4, 1978	Complete to Noranda	August 4, 1987
5- 8	YA 31495-98	July 29, 1978	August 4, 1978	Complete to Noranda	August 4, 1988
9- 16	YA 47156-63	August 1, 1979	August 14, 1979	Complete to Mattagami	August 1, 1987
17- 20	YA 47164-67	August 1, 1979	August 14, 1979	Complete to Mattagami	August 1, 1987
21- 24	YA 47600-03	September 7, 1979	September 10, 1979	Complete to Noranda	September 10, 1987
25- 28	YA 47168-71	August 1, 1979	August 14, 1979	Complete to Mattagami	August 1, 1987
29- 30	YA 50039-40	June 2, 1980	June 11, 1980	Complete to Mattagami	June 11, 1985
31- 36	YA 47172-77	July 31, 1979	August 14, 1979	Complete to Noranda	August 14, 1987
37- 38	YA 47575-76	September 7, 1979	September 10, 1979	Complete to Noranda	September 10, 1987
39- 46	YA 47265-72	August 17, 1979	N/A	Complete to Noranda	September 4, 1987
47- 48	YA 47577-78	September 7, 1979	September 10, 1979	Complete to Noranda	September 10, 1987
49- 56	YA 47273-80	August 24, 1979	N/A	Complete to Noranda	September 4, 1987
57- 62	YA 47643-48	September 16, 1979	September 18, 1979	Lapsed	Lapsed
63-108	YA 50041-86	June 2, 1980	June 11, 1980	Complete to Mattagami	June 11, 1981

1-4: Procedure

Exploration on the MARN claims in 1980 was conducted from May 30 until September 5, 1980. A crew of five geologists was employed to conduct geological mapping and geophysical surveys and diamond drilling was conducted on the property, from July 9th until September 5th, by a crew from Drilcor Industries Ltd. The senior author (J.L.B.) also spent much of July and August on the property supervising the work.

A base camp was established on the north shore of Lake Scoville (Map 1). The geological crew utilized this camp until mid-July and then moved camp onto MARN 51 to conduct work on the southern claims. The drill crew was quartered in the base camp throughout their stay on the property.

Detailed geological mapping, grid layout, geophysical (Crone Shootback, RADEM and magnetometer) surveys were conducted from both camps. Some trenching was also carried out on MARN 31 from the Lake Scoville camp. In addition, an I.P. survey was conducted by Phoenix Geophysics Ltd., and a topographic survey of the property was undertaken by Hosford, Impey & Welter Ltd. Both these crews utilized the Lake Scoville camp during their stay.

The geological crew consisted of the following personnel:

Rick Kemp	Party Chief
Larry Kovac	Senior Assistant
Burns Cheadle	Junior Assistant
Steve Wiecek	Junior Assistant
Lorne Leclerc	Junior Assistant

The address of all personnel and companies involved in the program are listed in Appendix Two.

CHAPTER TWO: GENERAL GEOLOGY

The MARN claims cover the contact between a Cretaceous, monzonite pluton and three, east-dipping, sedimentary units: The Ordovician-Silurian, Road River Formation; the Permian, Tahkandit Limestone and a "Jurassic Schist" unit (Table 2). The units have been previously described (Biczok, 1980), therefore, this chapter offers only some new observations.

2-1: Sedimentary Units

2-1-1: The Road River Formation

The Ordovician-Silurian, Road River Formation, is the oldest unit found on the claim group and underlies much of the western claims. Generally, it consists of 150 metres of chert and argillaceous members, represented by a lower 60 metre member of chert and interbedded black slate, overlain by 90 metres of predominantly argillite (Tempelman-Kluit, 1970). The entire formation is generally considered to be fairly cherty (Tempelman-Kluit, pers. comm., 1980) however, on the MARN claims, this appears to be the case only in the lower section.

In the vicinity of Lake Scoville, R. Kemp has identified at least four members of the Road River Formation (Map 1, Table 2). The lowest identified member is a chert pebble conglomerate/breccia bed, which is the only predominantly cherty member found to date. The fragments consist entirely of chert, are subrounded to subangular and range up to 10cm x 8cm in size. The matrix is also quite cherty, with a minor argillaceous component, and is very fine grained. Relative percentages of matrix and fragments are quite variable, but the unit averages roughly 30-40% fragments. Overlying

TABLE TWO: TABLE OF FORMATIONS

Era	Period	Formation	Lithology
MESOZOIC	Mid Cretaceous	*Tombstone and Brenner* Batholiths	Diorite, Syenite and Monzonite
	Lower Cretaceous	Keno Hill Quartzite	Orthoquartzite
	Jurassic	"Lower Jurassic Schist"	Black graphitic slates
PALEOZOIC	Permian	Tahkandit Formation	Limestone
	Ordovician and Silurian	Road River Formation	Chert and argillite

this member are three,more argillaceous,members which presumably belong to Tempelman-Kluit's upper division. The lowest of the three is a thinly laminated schistose to slaty argillite unit. It is easily weathered and seldom forms competent outcrops. The uppermost two units are both fairly siliceous, however, they appear to be clastic rather than chemical in origin (i.e. not cherts). Overlying the schistose member is a fairly massive, siliceous unit which forms numerous blocky outcrops due to its resistant nature. The uppermost member consists of thinly bedded (½cm average), siliceous and argillaceous layers, which probably represent original sandstone and shale beds. The bedding is fairly well preserved although pinch and swell structures are commonly developed and, in one location, tops were determined to be to the southeast. This unit was partially penetrated in one drill hole (M-80-4) and good samples obtained. They consist largely of coarse grained, gritty sandstone (quartzite) with 20-30% interbedded shale as thin (L10cm) beds. Rip-up clasts of shale in the sandstone are quite common.

On the southern claims, only one outcrop of the Road River Formation was observed (Map 1). It consists of a fairly massive, black shale with numerous white chert lenses and lenticular chert bands. With increasing stratigraphic height, the beds become more massive and the chert bands more laminated.

Within the claim area, no fossils were found within this formation and no calcareous units were observed. This suggests that any future drilling need not penetrate this unit for any significant distance. (This had been considered since the LENID skarn deposit is in a calcareous member of the Road River Formation) Only minor mineralization, as fine grained, disseminated pyrite was observed in outcrop.

2-1-2: The Tahkandit Limestone

This Permian unit consists predominantly of white, fine grained, crystalline limestone with lesser amounts of calcareous quartzite and chert pebble conglomerate. On the southern claims it reaches a maximum thickness of 25-30m, but thins to roughly 10m at its northern limit. The formation has been divided into three members by Tempelman-Kluit (1970) and we are in basic agreement with his divisions:

1) a lower limestone member with abundant detrital chert,
2) a middle limestone with interbedded chert, and
3) an upper member of massive, thick bedded limestone.

On the south side of Fireweed Creek, and in drill holes M-80-1 and M-80-4, the lowest member consists largely of chert pebble conglomerate/ breccia. It contains roughly 80%, well rounded to sub-rounded pebbles, 1mm to 7.5cm in length, in a calcareous cement.

In the Fireweed Creek exposures, there are several relatively thin (15cm) conglomerate beds, while in drill hole no. 4, 1,700m to the northwest, the lower 3 metres consists entirely of chert pebble conglomerate. On the southern claims, the basal conglomerate was not observed, it is replaced by a white, crystalline limestone with frequent chert nodules.

The middle unit on the southern claims appears to fit the description of Tempelman-Kluit fairly well. It consists of white, crystalline, frequently bioclastic, limestone, with numerous chert lenses and bands. Kemp describes a cherty grainstone/packstone (i.e. a grain supported, chert clastic, with mud and without mud) in the upper portion of this member (Fig. 4). The senior author has not observed this unit anywhere else on the property or in the drill holes. In the drill holes, the middle and upper sections are

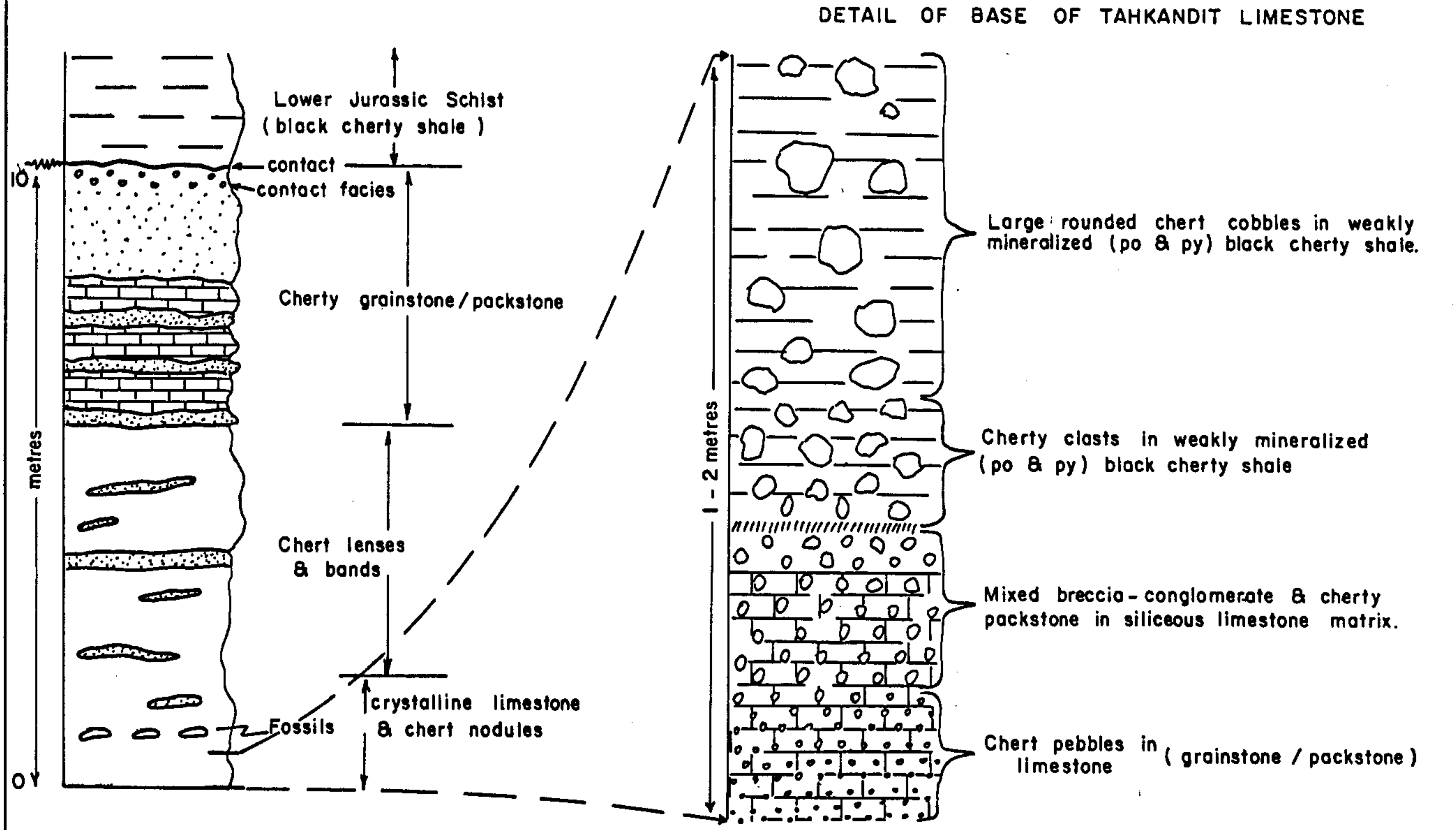


FIGURE 4: STRATIGRAPHY OF THE TAHKANDIT LIMESTONE

D.R.B. 1/81

not significantly different. Both contain occasional, thin quartzite (chert?) bands and rare, thin, chert pebble conglomerate beds. This similarity may be partially due to the effects of contact metamorphism, which has led to the recrystallization of the limestone in all drill holes. This, of course, makes it difficult to distinguish between the calcareous cherts and the limestone/marble, especially in drill core.

On the southern claims, the upper member of the limestone also consists of a fairly massive, crystalline limestone, frequently bioclastic. However, there is also a chert pebble conglomerate unit along its upper contact with the Jurassic Schist (Fig. 4). The chert fragments are rounded to subangular, up to 8cm in length, and are frequently rimmed with pyrrhotite.

The contact between the Tahkandit Limestone and the Jurassic Schist strikes 45° and dips 10°SE, while the limestone strikes 18° and dips 18°E. Although this is based on only one measurement, it does illustrate the locally pronounced unconformity between the two units.

2-1-3: Jurassic Schist

Al least two, and possibly three, members of this formation have been observed on the claims.

In the vicinity of Lake Scoville, the lowest member (the only member present in this area) consists of light to dark grey, fine to very fine grained quartzite and argillaceous quartzite. The quartzites generally weather to a rusty, red colour due to their high disseminated pyrite content. Occasionally there are medium grained, "gritty" quartzites present and, rarely, biotite porphyroblastic, calcareous(?) quartzite. This member has been observed in all drill holes (except, of course, no. 7) and is found in outcrop, overlying the Tahkandit limestone, in the Lake Scoville area.

Apparently this member undergoes a slight facies change to the south. On the southern claims, Kemp describes the Jurassic Schist overlying the limestone as a thinly laminated, black, cherty shale or slate. No cherty units of any kind have been observed by this author (J.L.B.) anywhere on the northern claims, including in the drill holes. The quartzites on these claims are almost certainly clastic sedimentary in origin (i.e. sandstone, minor shale).

Overlying the black shale member on the southern claims is a more massive, siliceous unit. The unit is however still somewhat banded with alternating dark grey, siliceous shales/slates and siliceous, quartzite bands. It closely resembles the basal member found in the Lake Scoville area.

2-1-4: *Intrusive Phases*

The main body of the Mt. Brenner stock has previously been described by Lambert (1964) and Biczok (1980). It consists of a marginal biotite monzonite/diorite phase which has differentiated inwards to a quartz monzonite porphyry centre with a large aplite core. Therefore the only new descriptions will be of dykes encountered during drilling and on the southern claims.

A total of eight dykes were encounted in the drill holes. They range from 0.2 to 5.7m in apparent thickness. Most exhibited narrow chill margins and several were bordered by well developed hybrid zones, containing varying proportions of magmatic material and partially assimilated country rock. Five of the dykes are medium grained biotite diorite or monzonite and are presumably related to the outer phase of the intrusion. Three dykes with more felsic compositions were found in hole M-80-1. A 1m wide granite dyke, containing 10-20% orthoclase phenocrysts, 10% quartz and 5% biotite, was encountered, along with two biotite syenite sykes. These contained 10-15% biotite and only trace amounts of quartz. One is 0.5m in apparent width, the other is 5.7m. The fact that these three felsic dykes occur in hole M-80-1, the furthest hole from the stock, suggests that there may be a felsic plug at depth in this area.

On the southern claims, a large porphyritic monzonite dyke was observed (Map 1). It features tabular orthoclase phenocrysts up to 5cm long and 1cm wide, strongly flow aligned at 126°.

2-2: Structural Geology

The sedimentary strata on the MARN claims generally dip to the east at a relatively shallow angle. The dip is fairly constant at approx. 10-20° until the margin of the Mt. Brenner Stock is approached. Several hundred metres from the margin, the dip of the strata appears to become steeper towards the margin. Lambert (1964) suggests that in fact the strata were upturned and then overturned adjacent to the contact. However some complicating factors came to light during our mapping. It appears on the southern claims, that the Jurassic Schist is isoclinally folded as a unit, and overlies the relatively constant dippling Tahkandit Limestone along a possible thrust contact. The Jurassic Schist is complexly folded and frequently, very steeply dipping (Map 1). At one location in Mt. Brenner valley, it does appear to be upturned against the contact of the stock. However, there is no evidence of any folding in the underlying limestone, or, any evidence of upturning in this unit adjacent to the stock. The only perturbations in the orientation of the limestone occurs north of Lake Scoville, where the unit has been tilted into a steeper orientation and disected by a number of faults. In Fireweed Creek valley, the limestone is, in fact, down-dropped along several normal faults as the stock is approached. The visible displacement is relatively minor, 5-10 metres, however it is still the reverse of the expected situation, i.e. an upturn in the strata near the margins of the stock. Drill hole M-80-3 was spotted in Fireweed Creek valley, in the hope of intersecting the limestone adjacent to the stock. However, as seen in Fig.14, the hole encountered only Jurassic Schist throughout its 259m length and was finally terminated due to a lack of rods. Assuming a 15° apparent dip for the limestone, it should have been intersected at a depth of roughly 150m. The unit is quite probably downfaulted at depth and is almost certainly not upturned to any great degree.

North of Lake Scoville, the limestone has been cut by two major, normal faults, one trending NW-SE, the other NE-SW. This has, in effect, divided the unit into 4 quarters, each of which has been vertically displaced relative to the other three (Map 1). The resultant level of each quadrant, from highest to lowest is now NW, NE, SW, SE. The NW quadrant has been largely stripped of limestone by erosion, the only remaining limestone occurs along the NW-SE fault and beneath the northernmost portion of the monzonite sill. The SE quadrant has been lowered to such a degree that the limestone is presently buried beneath several hundred feet of Jurassic Schist. Most of the limestone in the remaining quadrants, the NE and SW, is still intact and exposed.

CHAPTER THREE: GEOPHYSICS

3-1: Introduction

During the exploration program, a variety of geophysical techniques were used in an effort to determine if mineralized skarn zones extended to depth. The techniques included I.P., Magnetometer, RADEM and CRŌNE Shoot-back surveys. Results of all techniques were not overly useful as we were hampered by a number of problems including conductive overburden, permafrost and poor electrode contacts during the I.P. survey.

The geophysical surveys were conducted over three grids (Fig. 5): 1) The Lake Scoville grid, which covers the mineralized limestone exposures north of Lake Scoville; 2) the "Mini-Grid", covering an area of 250m x 250m along the northern, gossanous, contact of the monzonite sill/dyke with the Tahkandit Limestone; 3) the Mt. Brenner Valley Grid, which was located in the central portion of the claim group in an effort to locate skarn zones at depth. The grid is underlain predominantly by Jurassic Schist in the west and monzonite/diorite in the east.

3-2: I.P. Survey

In an attempt to locate sulphide skarn mineralization at depth, three east-west lines were surveyed on the MARN claims by Phoenix Geophysics Ltd. (Fig. 6). Their report is presented under separate cover and summarized in the following section.

Numerous problems were encountered during the I.P. survey which reduced the signal strength and consequently the acquisition of readings from the deep levels. Much of the area is underlain by sem-continuous permafrost, which increases the resistivity of the ground and therefore lowers the signal strength. On two of the lines, electrode contacts were relatively poor due to the rocky nature of the terrain. In addition, much of the lines are underlain by conductive overburden (pyritiferous Jurassic Schist) which generated spurious results. The following is a brief description of the results as interpreted by Phoenix Geophysics Ltd.

Line 12,278N: 9,000E to 10,500E

The apparent resistivities decrease to the west on this line. Much of the data could not be measured, but the lowest resistivities and the strongest I.P. effects seem to be well away from the contact, within the Jurassic Schist.

Line 13,100N: 8,625E to 10,000E

On this line there is a strong, shallow, relatively narrow I.P. anomaly centered at about 9,400E. This is located exactly at the contact between the schist and the monzonite. To the west, another shallow I.P. anomaly is indicated at the end of the data. Since these anomalous effects are all detected for the X = 125 metres, n = 1 measurement, the source is indicated to be relatively shallow. Therefore, the source could be better located, and evaluated, by measurement with shorter electrode intervals.

Line BLC: 8,375E to 10,000E

On this line, there is a very strong, narrow resistivity low centered at 9,375E to 9,500E, just to the west of the high resistivity monzonite. There is also a shallow resistivity low at the western end of the line. These anomalies appear to lie to the west of the limestone formation in the Road River Formation. The source of these anomalies could be better located and evaluated using shorter electrode intervals.

Undoubtedly the I.P. anomalies are related to graphite, pyrite and pyrrhotite concentrations in the Jurassic Schist and perhaps the Road River Formation. Geological mapping and drill core examinations indicate that pyrite and pyrrhotite are both recrystallizaed and concentrated within the Jurassic Schist adjacent to the contacts of the stock. The Road River Formation is frequently pyritiferous and locally is somewhat graphitic. Therefore it is quite capable of producing an I.P. anomaly. It appears that an I.P. survey is not capable of detecting skarn mineralization beneath the pyritiferous schist, especially in this rocky terrain with its widespread permafrost.

3-3: The Lake Scoville Grid

The Lake Scoville grid was laid out along a 925m base line trending 047°, which roughly parallels the strike of the Tahkandit Limestone. Seven cross-lines, totalling over 3,100m, were established and surveyed with a magnetometer and Crone Shootback.

3-3-1: Magnetometer Survey

The results of this survey exhibit a general NE-SW trend in both the background data and the predominantly oval anomalies (Fig. 7). This trend parallels the regional bedding and is therefore presumed to be largely the result of differing lithologies. However, there are a number of strong spot anomalies which deserve closer examination. The strongest ones are centered at L275NE, 325NW and L200SW, 212NW. Both consist of strong positive highs (up to 1149 γ) which cross over into relatively negative lows (down to 113 γ, versus the background level of 500 γ). The first anomaly is located near the contact of the Tahkandit Limestone with the Jurassic Schist, in the vicinity of serveral N-S monzonite dykes. There is no reported mineralization in this area therefore a detailed examination of the area is required to explain this anomaly. Similarily, there is no known mineralization in the vicinity of the second anomaly, L200SW, 212NW. This anomaly is quite intense but fairly localized and will require further mapping to determine its origin.

The broad magnetic high in the east corner of the grid does not have a corresponding C.E.M. anomaly and is probably generated by the large volume of monzonite talus in this area. The local monzonite is relatively magnetic and may also account for the spot anomalies on L200Sw at 25 and 50SE and L500SW at 100NW. In past surveys, monzonite boulders have been observed to generate spot anomalies. The relative low on the Baseline at 275SW is probably due to sedimentary cover in the stream valley. This is the only survey line which crosses the stream and a significant magnetic low is apparent where it does.

3-3-2: Crone Shootback (C.E.M.) Survey

During this survey, a coil spacing of 150m was used to achieve maximum depth penetration. The survey produced only two significant anomalies, the rest of the lines are relatively flat (Fig. 8). Both anomalies are evident only in the high frequency data (5,010 Hz), suggesting that they represent weak conductors.

The anomaly on L200SW at 160NW, exhibits a peak amplitude of 35° and is centered 45m southeast of a strong magnetic anomaly. Since the C.E.M. system "sees" deeper than the magnetometer survey, this suggests that the anomaly source dips to the southeast. It may be a conductive bed or perhaps a sill within the Road River Formation.

Detailed mapping and extension of the grid to the SW are recommended to determine the source of the anomaly and to trace its extent.

The second anomaly, L275NE, 310NW occurs in a very rugged area and unfortunately the line was not surveyed far enough to close off the anomaly. However, it does correspond with a well developed, linear, magnetic anomaly in this area. As stated previously, there is no known mineralization in this location and further detailed mapping is required to determine the source of this anomaly. If the source proves to be of economic interest, geophysical surveys along lines L425NE, 275NE and 150NE should be extended to the NW to delineate its extent.

On the whole, geophysical surveys, especially EM surveys, are of very limited use over the area of this grid. Previous test lines over mineralized outcrops have not produced anomalies and this year's C.E.M. survey produced data of little use. Since exposure is excellent in this area, detailed geologic mapping, perhaps with the aid of a magnetometer, is our most useful exploration technique.

3-4: The Mini-Grid

The "Mini-Grid" was laid out along the northern contact of the monzonite sill with the Tahkandit Limestone. The contact is generally gossanous, where exposed, and numerous mineralized boulders are scattered along it. This grid was designed to aid in locating the source and extent of the mineralization and to delineate the strong geophysical anomalies discovered on several reconnaissance lines in 1979.

3-4-1: Magnetometer Survey

This survey proved to be the most useful and conclusive geophysical survey conducted on the claims to date. The magnetic data reveals a strong linear anomaly, with crossovers from -306γ to +2,080γ, which roughly parallels the monzonite-limestone contact (Fig. 9).

Away from this major anomaly, the rest of the grid area is relatively uniform, however there are several spot anomalies on line 15,850N. One anomaly at 10,456E may represent mineralization since it has both strong negative and positive anomalies developed. The spot anomaly at 10,500E is somewhat enigmatic - it may represent magnetic float or perhaps a dyke.

3-4-2: Crone Shootback Survey

As was the case with the Lake Scoville grid, the Shootback survey on the "Mini-Grid" proved to be of little use. There is no correlation with the magnetic survey and no anomalies were generated over the mineralized outcrops (Fig. 10). The coil separation may have been too wide to detect the relatively shallow mineralization.

One persistant linear anomaly trends N-S across the grid between 10,475E and 10,500E. It is evident only in the high frequency (5,010 Hz) results suggesting that it represents a weak conductor, probably a relatively graphitic bed within the quartzites of the Jurassic Schist unit.

3-5: Mt. Brenner Valley Grid

The "Mt. Brenner Valley" trends east-west across the southern claims. It is known that the Tahkandit Limestone dips gently towards the Mt. Brenner stock in this area and presumably intersects it at some depth. In an effort to detect possible skarn mineralization in this formation, a grid was laid out along Mt. Brenner valley - the lowest point in the area - and several geophysical surveys conducted. Five lines, trending E-W and totalling 4km, were surveyed.

3-5-1: Magnetometer Survey

The magnetometer survey produced a somewhat erratic pattern (Fig. 11) with very few strong anomalies present. The data seems to represent a combination of broad N-S trends, related to units within the Jurassic Schist, and broad E-W trends, probably related to overburden patterns on the valley floor. The N-S trends are evident along the western and eastern margins of the grid, the latter is a magnetic low which may be related to the contact of the Mt. Brenner stock. The grid should be extended several hundred metres to the east to determine if this magnetic low crosses over into a high above the stock.

As well as the broad magnetic trends, there are a number of spot anomalies which deserve consideration. On line 12,300N at 9,450E a positive high of +839 γ is surrounded by a relative low of +300 γ. This appears to be a shallow, surface feature since there is no corresponding C.E.M. or RADEM anomaly. The series of N-S linear anomalies in the NE corner of the grid are difficult to interpret. They may be a product of incorrect plotting - fill-in lines at 12,350N and 12,450N are required to ascertain their true form. Detailed mapping in this area, and in the vicinity of the spot anomaly on 12,300N, should be undertaken to locate the sources of these anomalies.

3-5-2: Crone Shootback Survey

Much of the C.E.M. data is negative due to the extent of conductive overburden. Only when the lines approach the stock to the values become positive (Fig. 12).

Overall, there is very little correlation between the C.E.M. and magnetometer data. There is one persistent, N-S anomaly in both the high and low frequency data which crosses all five lines at 9,625E to 9,660E. Since the coil spacing was 125m, the anomaly source must be relatively shallow, suggesting that is is a lithological unit. A graphitic schist unit crops out on line 12,000N within the anomaly margins and is almost certainly the source of the entire N-S anomaly.

There is no pronounced anomaly in the eastern portion of the grid along the margin of the stock, however there is a gradual eastward increase in the values until they average zero over the stock. This is due to the diminishing amount of conductive overburden (Jurassic Schist) towards the east.

3-5-3: RADEM Survey

The RADEM survey seems to have been less influenced by the extensive amounts of conductive overburden. The prominent N-S anomaly evident in the C.E.M. data appears only on lines 12,400N and 12,000N in the RADEM data (Fig. 13). On line 12,400N the anomaly appears only in the field strength and not the dip angle. On line 12,000N, where the graphitic schist unit crops out, the anomaly is well developed in both sets of data. As was the case with the C.E.M. survey, the RADEM values increase gradually to the east as the stock is approached. This is interpreted to be solely as a result of the change in lithologies rather than the presence of mineralization.

3-6: Conclusions

In summary, it seems that the geophysical techniques utilized are of little use in our efforts to locate skarn mineralization at depth. The CRONE Shootback, RADEM and magnetometer surveys are capable of detecting only relatively shallow features such as near surface lithological units. The I.P. survey appears to have delineated the monzonite-schist contact to a depth of roughly 200m, however, due to the previously mentioned problems, resolution along the entire line is relatively poor and there is no indication of massive skarn mineralization. It is doubtful that an I.P. system is capable of penetrating through the pyritiferous Jurassic Schist to reach the underlying limestone.

CHAPTER FOUR: DRILL PROGRAM

4-1: Introduction

During the drilling program, nine BQ holes, totalling 1,003.65m, were completed. The work was undertaken for Mattagami by Drilcor Industries Ltd. using a HydraWink II Drill. One hole, M-80-2, was terminated when shifting overburden prevented further dilling and another hole, M-80-5A, was abandoned when the rods were dropped and the hole subsequently froze. Hole M-80-5B was completed 0.3m from hole 5A to a depth of 198.7m, with the same dip and bearing, therefore hole 5A was not logged or sampled. Detailed descriptions of the core are given for each hole on the appropriate record sheets. The relevant data for each hole is summarized in Table 3 and plotted on Figure 6.

4-2: Description of Diamond Drill Holes

Hole M-80-1

This hole was collared on July 12, north of Lake Scoville at 15,025N, 10,300E. It was spotted with a view towards penetrating the Jurassic Schist and intersecting the Tahkandit Limestone beneath the overlying monzodiorite sill. As indicated in the record sheet, we were successful, intersecting the limestone at 109.11m and passing into the sill at 121.0m. It appears that the lower portion of the limestone has been cut off by the sill/dyke, since the basal chert conglomerate was not present in its entirety.

The upper portion of the limestone (109.11-117.34m) is largely a white, crystalline marble with only a few minor diopside-actinolite bands. Skarnification has been much more intense in the lower section, adjacent to the sill/dyke, with the development of numerous, friable, diopside-actinolite zones and veinlets.

TABLE 3: 1980 DIAMOND DRILL SUMMARY

Hole No.	Co-ordinates	Bearing	Dip	Casing Depth (m)	Rock Drilled (m)	Total Drilled (m)	Remarks
M-80-1	15,025N 10,300E	010°	-45°	1.22	144.16	145.38	
M-80-2	14,307N 9,973E		-90°	23.32	3.20 (Ovbd)	26.52	Overburden too deep. Hole abadoned.
M-80-3	13,973N 9,781E		-90°	24.87	234.50	259.37	
M-80-4	14,714N 10,406E	010°	-45°	10.67	166.71	177.38	
M-80-5A	15,550N 10,385E	316°	-80°	(6.70)	(22.86)	(29.56)	Hole abandoned due to Drilcor error. Footage not included in totals.
M-80-5B	15,550N 10,385E	316°	-80°	8.23	190.49	198.72	
M-80-6	15,880N 10,383E		-90°	3.66	50.29	53.95	
M-80-7	15,880N 10,383E	213°	-45°	3.05	91.43	94.48	
M-80-8	15,880N 10,383E	213°	-70°	3.04	44.80	47.85	Terminated due to freeze-up.
TOTALS				78.07	925.58	1,003.65	

Hole M-80-2

In spotting this hole we hoped to intersect the Tahkandit Limestone at depth, adjacent to the contact of the stock. It was collared at the end of Lake Scoville (14,307N, 9,973E), the lowest point in the valley, where the expected limestone depth was 175-200m. Unfortunately at a depth of 80 feet a zone of large, unstable talus blocks was encountered. The constant shifting of these blocks caused the rods to sieze and the hole was abandoned.

Hole M-80-3

This hole was drilled as a replacement for M-80-2, in an attempt to intersect the limestone adjacent to the contact of the stock at depth. It was in a less facourable position than that hole, in terms of expected target depth, however there was less overburden and bedrock was hit without delay. It was still expected that the limestone would be intersected at a depth of less than 200m (Fig. 14) however the hole was drilled to 259m without hitting this formation. At that point we ran out of rods and since this depth was close to the limit of the drill, the hole was terminated. There was no sign of any calcite or skarn veins which may have been derived from the limestone bed at depth. With the exception of several minor monzonite dykes, the hole remained in the Jurassic Schist throughout its entire length.

Assuming a 15° apparent dip (true dip approx. 25°) for the Tahkandit Limestone, in the valley of Fireweed Creek, the formation should have been intersected at a depth of 175-200m, even with several normal faults downfaulting the limestone towards the pluton (Fig. 14). Even if some of the parameters (eg. dip, elevation, etc.) of the cross-section are slightly incorrect, any appreciable upturning of the beds adjacent to the contact, should have counteracted this. Apparently, there is no significant upturning

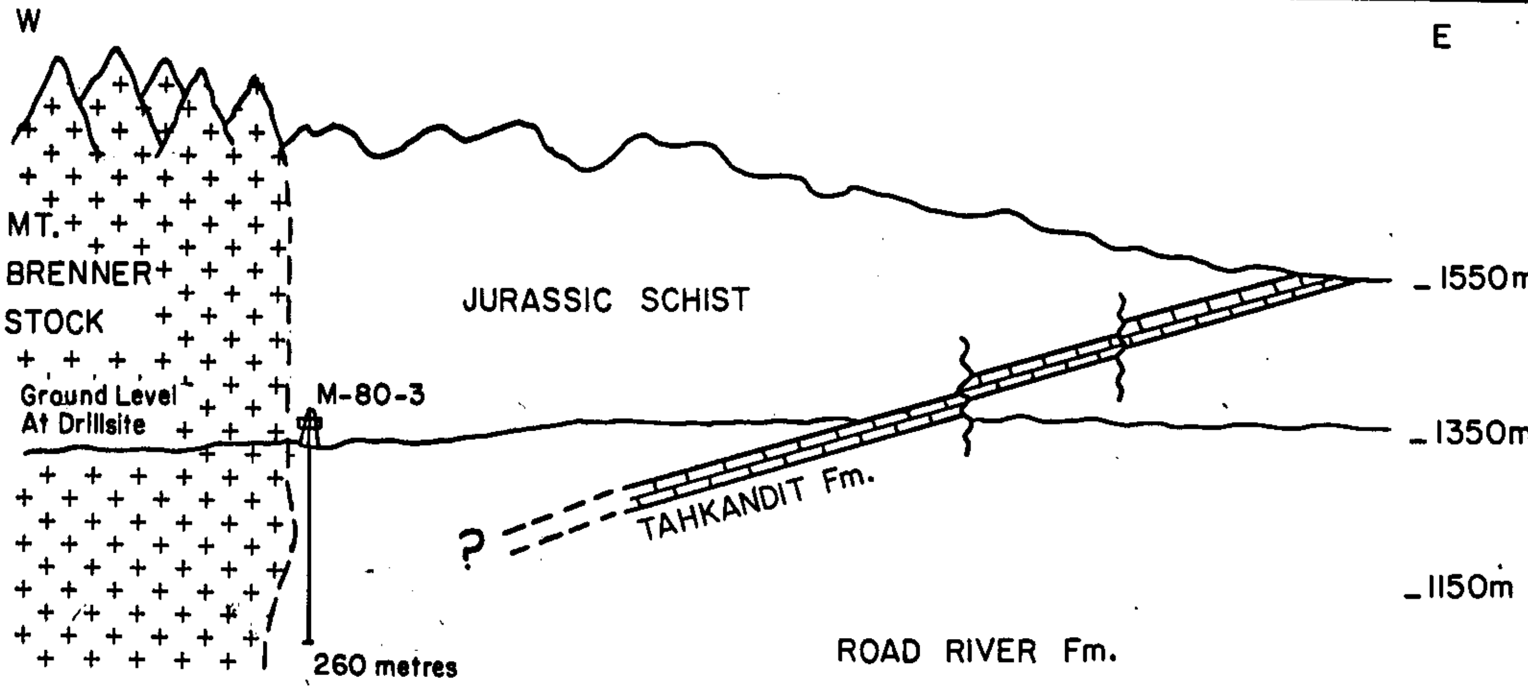


FIGURE 14
Idealized East - West section of Fireweed Creek Valley, assuming a 15° apparent dip for the Tahkandit Limestone

of the beds, and in fact, there may be a downturning near the pluton. There is no explanation for such a phenomenon known to the authors. Strata adjacent to an intrusive contact are almost universally upturned or maintain a constant dip.

The Jurassic Schist intersected in this hole consists of clean to argillaceous quartzites, which are relatively massive to thinly bedded and generally fine grained. Roughly 35% of the core is gneissic or even migmatitic. This is especially true in the lower 95m of the hole where 75% of the strata are gneissic or migmatitic. In the uppermost 144m, only 7% of the strata have been so metamorphosed. This suggests that the lower strata are closer to the margin of the stock, which consequently implies that the stock bulges out at this depth. The relation between the intrusion, and the formation of gneiss or migmatite, is evident at 144m and 154 to 156m, where the intrusion of diorite dykes has clearly produced well developed migmatite zones along their margins.

No economic mineralization was encountered in this hole. There is evidence of extensive recrystallization of pyrite and pyrrhotite within the schist, however, this did not produce any enrichment in the base or precious metals.

Hole M-80-4

This hole was spotted NE of Lake Scoville at 14,714N; 10,406E, several 100m from hole M-80-1, in an attempt to intersect the limestone beneath the sill and close to the stock. As is evident in the record sheet and Fig. 15, we were successful in this endeavour. The drill penetrated the monzodiorite sill to a depth of 105.7m, passed through Jurassic Schist to 142.8m and then intersected the Tahkandit Limestone. The limestone appears to have been cut by a major reverse fault(s) since an intense shear zone was encountered in the limestone at 151-153m, the Road River Formation at 155.9 to 161.8m, the Tahkandit Limestone from 161.8 to 166.3m and finally the Road River Formation again from 166.3 to the end of the hole at 177.4m. The shearing is at an angle of 42° to the core axis (approx. 36° at this depth) and is therefore close to being either vertical or horizontal. Since there is a strong vertical shear zone approximately above this zone, and the vertical alignment produces the most logical arrangement of the beds, the fault (s) has been presumed to be vertical. The faulting has produced major shearing at the bottom of the first limestone section but not the appreciable shearing expected at the top of the displaced second section. Therefore the exact structure of this area is still enigmatic.

Combining the limestone intersections from holes no. 1 and 4 produces an apparent dip of 33° south, along a 160°-340° section. Assuming a strike of 70°, from the closest exposures, this produces a true dip of approximately 35° south, which is slightly shallower than the average dip evident at surface. This apparent upturning at depth may be a result of reverse faulting or perhaps a local up-warping of the strata adjacent to the contact of the stock.

In spite of the almost ideal structural and stratigraphic setting of this intersection, virtually no skarn mineralization was encountered. The hole penetrated the Tahkandit Limestone below the monzonite/diorite sill, relatively close to the margin of the stock and in an area dissected by faults. If the faults were pre-ore, they could be expected to act as pathways for ore-forming solutions. Unfortunately, there is no indication of any solution activity in the fault zones, and, only one short interval of mineralization was encountered in the hole. From 162.75m to 162.90m, a length of 0.15m, the core assayed 0.79% W.

Holes M-80-5A and 5B

Both holes were drilled from the same location, 15,500N; 10,385E, in the approximate centre of the monzodiorite sill. This was an attempt to intersect the presumed extension of the large limestone "windows" (Map 1) at a greater depth (Fig. 16). We were forced to set-up considerably higher, and farther, from the limestone than desired due to the precipitous terrain in this area.

Hole 5A was drilled at a bearing of 316° and a dip of -80°. The hole was angled slightly into the mountain, primarily to prevent water loss in the highly fractured bedrock. At a depth of 29.56m the drill crew dropped the rods and the hole froze before they could be recovered but, in the meantime, the set-up was moved over 0.3m and another hole, M-80-5B, started. It was drilled at the same bearing and dip as hole 5A, to a depth of 198.72m.

Although this hole remained in biotite diorite throughout its length, it appears that the remnants of the partially digested limestone were present from a depth of 41 to 152m. These remnants are present as areas of intense (30-40%) calcite veining and frequent thick skarn veins. Calcite veinlets are generally less than 1cm wide, while the skarn veins are up to 0.75m wide. The skarn veins generally consist of alternating bands or patches of pink, green and white calcite, occasionally with minor quartz and/or actinolite. Scattered calcite veinlets and skarnified xenoliths are found throughout the remainder of the core. However, these are thought to be of little significance, other than indicating that the diorite has disrupted the limestone bed. The major remains of the limestone are thought to lie between 100 and 152m. Calcite and skarn veining above this interval is probably the result of rising volatiles given off

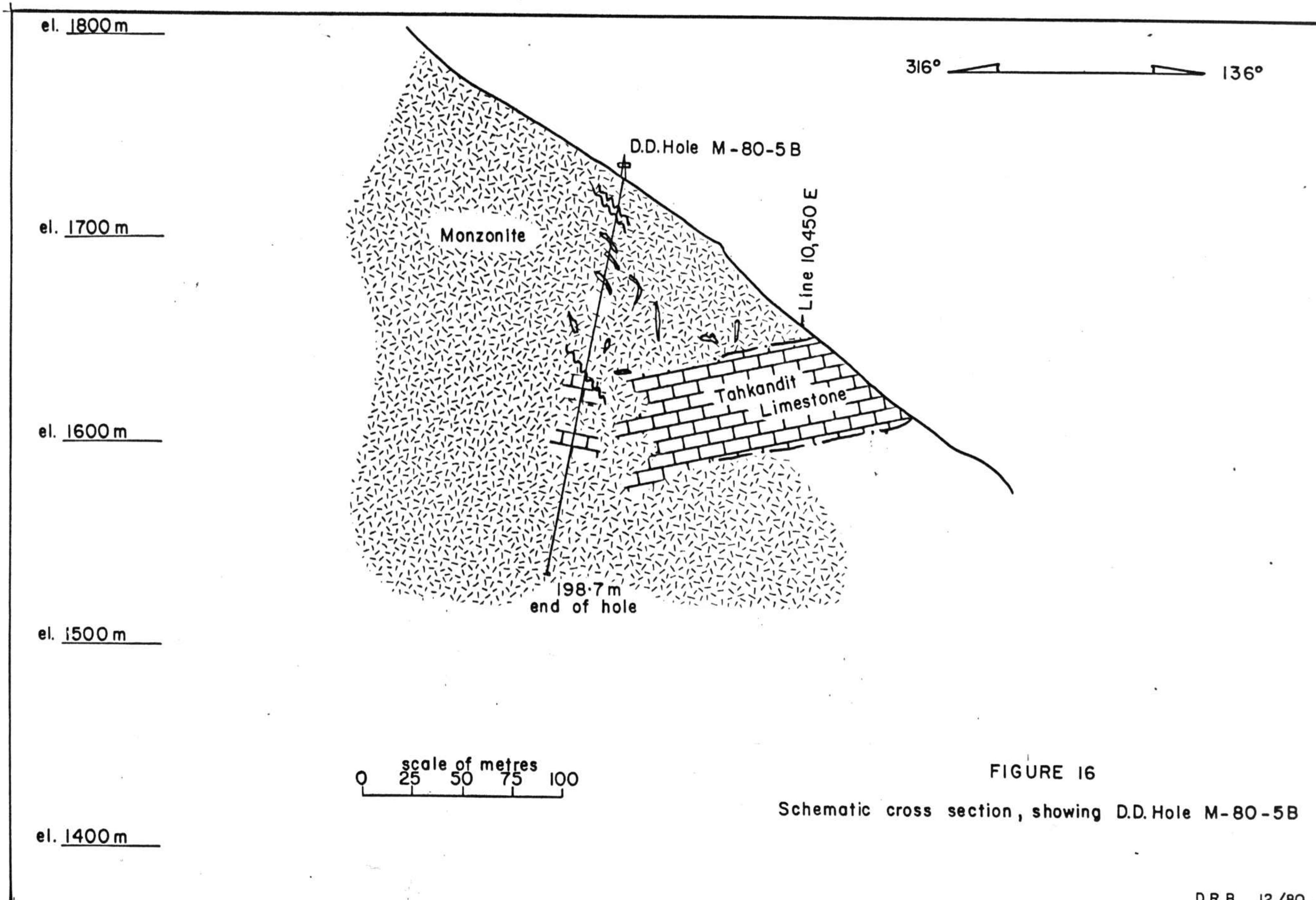


FIGURE 16

Schematic cross section, showing D.D. Hole M-80-5B

Holes M-80-6, 7 and 8

These three holes were drilled from the same location, 15,880N; 10,383E, with the aim of intersecting the Tahkandit Limestone below the monzodiorite sill. The limestone is exposed roughly 100m SE of the drill site in two trenches (Fig. 17). Most of the mountainside in this area is covered with large, unstable, talus blocks and the selected location was the only potential site which was relatively close to the trenches, and still moderately safe. Even with extensive preparations, the site was only marginally safe to operate from.

Hole M-80-6 intersected biotite diorite to a depth of 13.4m, Jurassic Schist from 13.4 to 35.7m, Tahkandit Limestone from 35.7 to 46.2m, a diorite dyke from 46.2 to 53.0m and the Road River Formation from 53.0 to 53.95m (Fig. 17, Record Sheet M-80-6). We had hoped to drill for an additional 5-7m into the Road River Formation. Unfortunately, we were forced to terminate drilling when the rods were dropped and the hole froze before they could be recovered.

Hole M-80-7 was drilled at a bearing of 213° and a -45° dip, to a depth of 94.48m. We expected to intersect the limestone unit roughly 50m from the intersection in hole M-80-6. However, as is evident in Fig. 18, the hole encountered only diorite with relatively rare intervals of calcite veining. This suggests that the limestone has been cut-off completely by the intrusion and there is little hope of finding partially assimilated limestone blocks in this area.

Hole M-80-8 was drilled at the same angle as hole M-80-7, 213°, but at a steeper dip, -70°. It intersected diorite to a depth of 20.1m, Jurassic Schist from 20.1 to 43.1m and Tahkandit Limestone from 43.1 to 49.7m, the end of the hole. We were forced to terminate this hole before passing through the limestone due to the severe weather conditions.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

During the 1980 exploration program on the MARN claims, a variety of techniques were employed in an effort to locate skarn mineralization at depth.

Geophysical techniques utilized were Radem, Crone Shootback, I.P. and magnetometer surveys. Most of these methods proved to be of little use, especially in the rugged terrain of the Lake Scoville Grid and the Mini-Grid. Over the relatively flat Mt. Brenner Valley Grid, all techniques were somewhat successful in delineating various lithologies but did not indicate the presence of any mineralization. The most successful technique proved to be the magnetometer survey. Over the Mini-Grid area it was successful in delineating a large anomaly coincident with known skarnification. It is the only geophysical technique recommended for further use in the 1981 program.

Geologic mapping of the original 62 claims is now virtually complete. There are several areas where detailed mapping is required however. These are lcoated north of Lake Scoville along the margins of the monzonite sill. Due to the extremely rugged terrain in this area, mapping has proceeded slowly in the past. Geologic mapping has been our most useful tool in locating skarn mineralization at surface and in predicting its location at depth.

The 1980 drilling program was fairly successful in locating the Tahkandit limestone, the target host for potential skarn mineralization, beneath the monzonite sill. It has enabled us to draw some conclusions regarding the location of mineralization and these will serve as a guide for future work. Due to the encouraging results obtained during the 1980 exploration program, additional drilling is recommended for 1981. Roughly 8-10 holes, totalling 3,000 feet will be required to delineate mineralization north of Lake Scoville.

CERTIFICATE

I, John Biczok, of Edmonton, Province of Alberta, do hereby certify that:

1. I am a geologist residing at #5, 10556 - 80 Avenue, Edmonton, Province of Alberta.
2. I am a graduate of Lakehead University, Ontario with a H. B.Sc. (1976) in geology and am presently completing an M.Sc. at the University of Manitoba, Winnipeg.
3. I have been practising my profession since 1973 and am at present Exploration Geologist with Mattagami Lake Exploration Limited in Edmonton.
4. I was party chief for the crew that conducted the work in this report and the report is correct to the best of my knowledge and ability.

Dated: March 16, 1981

John Biczok

John Biczok, H. B.Sc.

CERTIFICATE

I, R.T. Kemp, of the City of Thunder Bay, in the Province of Ontario, hereby certify that:

1.) I am a 4th year undergraduate geology student at Lakehead University, Thunder Bay, Ontario.

2.) I am a member of the Geological Association of Canada.

3.) I am a graduate of Haileybury School of Mines with a Mining Technician Diploma in the year 1976.

4.) I hold no interest whatsoever, directly or indirectly, in the securities or properties of Mattagami Lake Exploration Limited and I do not expect to receive any.

5.) The data herein contained were obtained during personal examination of the mineral occurrence during the 1980 summer field season.

DATED at Thunder Bay, Ontario, this 29th day of January, 1981.

Richard T. Kemp

Richard T. Kemp

REFERENCES

BICZOK, J.L., 1980, Exploration Report No. 2, MARN 1-62 Claims, Mattagami Lake Exploration Limited Limited, Assessment Report.

TEMPELMAN-KLUIT, D.J., 1970, Stratigraphy and Structure of the "Keno Hill Quartzite" in Tombstone River - Upper Klondike River Map Areas, Yukon Territory (166B/7, B/8), Geological Survey of Canada, Bulletin 180..

APPENDIX ONE

DIAMOND DRILL LOGS

PROPERTY	MARN	LATITUDE	15,025N; 10,300E	STARTED	July 12, 1980
HOLE NO.	M-80-1	DEPARTURE		FINISHED	July 15, 1980
BEARING	010°	ELEVATION	1,552m	LENGTH	145.38 metres
DIP-COLLAR	-45°	SECTION		LOGGED BY	John Biczok

DIP TEST					
Footage	Corrected	Footage	Corrected	Footage	Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS
0	0.61	OVERBURDEN: Casing to 1.22m.						
0.61	109.11	JURASSIC SCHIST: Grey to dark grey, fine to very fine grained quartzite and and argillaceous quartzite. Generally equigranular and fairly homogenous, frequently hornfelsed. Occasionally medium grained "gritty" quartzites, biotite porphyroblastic calcareous(?) quartzites and biotite diorite dykes. Weak to moderate foliation pervasively developed, thin bedding commonly present, numerous shear zones with abundant blue serpentine/talc/chlorite development. Fine grained disseminated pyrite (2-4%) is fairly pervasive.						
		2.43- 4.27m: Biotite porphyroblastic, calcareous(?), argillaceous quartzite. 10-15% biotite porphyroblasts, 1-5 mm well foliated, 5-7% fine grained pyrite throughout.	5-7% fine grained dis. pyrite.					
		7.62- 10.97m: Biotite porphyroblastic, calareous, argillaceous quartzite. 10% biotite porphyroblasts, 1-3 mm long, moderately well foliated. Abundant pyrite fracture coatings.	Abundant pyrite as fracture coatings.					
		8.23m: 8 cm wide biotite granite byke with coarse grained tosudite(?) alteration.						
		10.97- 16.46m: Very fine grained, grey argillaceous quartzite. Thinly (¼cm) bedded with calcite±quartz±hematite veinlets.						
		12.80m: 6 cm biotite granite/syenite(?) dykelet, coarse grained with some clay alteration.						
		15.54m: 20 cm thick bed of calcareous(?) quartzite, now skarnified to fine grained diopside.						
		16.46- 18.90m: Medium grained, relatively thickly and irregularly bedded (G2 cm) argillaceous quartzite, some green beds, probably chloritized biotite rich beds.	Pyrite on some fractures.					
		18.90- 20.42m: Biotite porphyroblastic quartzite, approx. 5% biotite porphyroblasts; extensive, thick pyrite fracture coatings.	Thick pyrite fracture coatings.					
		20.42- 41.76m: Medium to dark grey, very fine grained argillaceous quartzite	Tr. dis. pyrite					
		41.76- 42.67m: Medium grained biotite granite dyke. 10% quartz, 5% fine grained biotite, 10-20% orthoclase phenocrysts. 10 cm wide chilled margin on both sides.						
		42.67- 43.28m: Grey, fine grained, hornfelsic, argillaceous quartzite.						
		43.28- 49.07m: Medium to coarse grained, biotite syenite dyke. Relatively equigranular; 10-15% biotite, seriate porphyritic to 7 mm, averaging 1-3 mm, trace quartz; predominantly K-feldspar. Hybrid zone for 5-6 cm on each side with weak foliation, some xenoliths, intermediate composition and texture.	Tr. fine grained dis. pyrite, some blebs to 7 mm.					
		49.07- 56.69m: Very fine grained quartzite, minor alteration along fractures (clay, serpentine, etc.), "Xenolithic" fragment at 50.59m with a 1 cm wide biotite rim.	Tr. dis. pyrite					
		56.69- 57.30m: Biotite syenite dyke. Medium grained, grey in colour. 15% biotite, 80-85% feldspar, predominantly K-feldspar. Trace pyrite.	Tr. dis. pyrite					

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	Cu (%)	W (%)	Ag OPT	Au OPT		
		57.30- 68.58m: Grey, argillaceous quartzite, generally hornfelsed, variable blue-green serpentine-talc(?) alteration along fractures.											
		63.09-64.6m: Shear zone											
		66.44m: Narrow Shear zone.											
		68.58- 68.88m: Biotite diorite dyke, medium grained, 15% biotite.	Tr. pyrite.										
		68.88- 76.35m: Light grey, fine to medium grained, argillaceous quartzite. Hornfelsed but distinctly coarser grained than previous section. Frequent 1-2mm quartz veinlets or fracture coatings.	Tr. dis. pyrite plus some blebs 1½ cm.										
		76.35- 77.11m: Biotite diorite dyke, medium grained.	5% dis. pyrite.										
		77.11- 78.63m: Hybrid zone of fine grained biotite diorite, coarse grained biotite, white granite, numerous biotite rich xenoliths (or possibly "apophyses" of country rock).	G5% pyrite in xenoliths, G1% py in white granite										
		78.63- 93.42m: Very fine grained, light grey quartzite. Generally 15% biotite but locally argillaceous.	5-10% pyrite. dis. and as blebs.										
		81.99m: 1-2 cm wide vein of long prismatic garnets(?) up to 3 mm long.											
		82.90-89.0m: G5% disseminated pyrite plus well developed pyrite fracture coatings.											
		93.42- 96.01m: Biotite-Idocrase(?) porphyroblastic, calcareous quartzite very well foliated, 10-15% biotite to 5 mm, averaging 1 mm: 5% white, elongate prismatic porphyroblasts, possibly idocrase.											
		99.66-102.71m: Biotite-Idocrase(?) porphyroblastic calcareous quartzite.											
		102.71-109.11m: Fine to very fine grained quartzite and argilleous quartzite occasionally biotite porphyroblastic.											
109.11	121.00	TAHKANDIT LIMESTONE: Generally a fine grained, white to grey, crystalline bioclastic limestone with frequent thin quartzite beds throughout and well developed chert pebble conglomerate beds in the basal section. Locally heavily skarnified to fine grained diopside-actinolite marble and mineralized with up to 10% chalcopyrite.											
		109.11-109.42m: White, fine grained crystalline limestone (marble).											
		109.42-110.48m: Soft, friable, granular limestone; few minor diopsidic sections.											
		110.48-110.94m: Two, fine grained, friable and granular actinolite bands 10-12 cm wide separated and bounded by relatively clean quartzite beds, 6-8 cm wide.											
		110.94-112.77m: Medium grained biotite porphyroblastic, calcareous quartzite 10% biotite porphyroblasts to 1 cm.	Minor dis. pyrite & extensive fracture coatings.										
		112.77-117.34m: Medium to coarse grained, crystalline, white to grey limestone. Several coarse grained actinolite-tremolite(?)-calcite veinlets throughout.											
		115.51m: 10 cm thick chert pebble conglomerate bed.											
		115.82-116.58m: Fine grained, grey quartzite bed.											
		117.34-118.41m: Fine grained, granular, chalcopyrite-actinolite skarn. Rock is largely fine grained actinolite with 1-10% chalcopyrite, averaging 5%. Chalcopyrite generally forms 1 mm grains, often concentrated in aggregates and zones.	1-10% chalcopyrite Avg. approx. 5% Minor pyrite as fracture coatings.										
		118.41-120.23m: Chert pebble conglomerate. Contains approximately 80% well rounded chert pebbles, 1 mm to 1.5 cm, in a skarnified formerly calcareous cement, now containing minor actino-diopside.											

M.L.M. EXPLORATION DIVISION, D.D.H. RECORD

PROPERTY MARN HOLE NO. M-80-1 Page 3/3

METERS From	METERS To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS Cu (%)	ASSAYS W (%)	ASSAYS Ag OPT	ASSAYS Au OPT
		120.23-120.85m: Fine to medium grained, banded actinolite skarn. Upper section is generally a fine grained actinolite with medium grained actinolite-calcite veinlets; followed by a spotted zone of ½ cm wide ovoid grains of granular quartz and calcite (probably replaced chert pebbles).									
		120.85-121.00m: Zone of numerous, parallel, medium grained actinolite veinlets									
121.00	145.38	BIOTITE DIORITE: Medium grained biotite diorite and hornblende-biotite diorite. Approximately 15% subhedral, biotite 2-3 mm, locally up to 10-15% hornblende, now somewhat chloritized. 70-80% plagioclase, perhaps trace K-feldspar, no visible quartz. Several narrow skarn veinlets (calcite, minor actinolite) 2 mm wide with a 2 cm wide alteration zone, spaced roughly 2½ m apart.									
		126.49-126.79m: Coarse grained calcite-actinolite veins with minor disseminated chalcopyrite.	minor dis. cp.								
		142.33m: 1 cm wide calcite veinlet									
	145.38	END OF HOLE									

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MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	14,307N; 9,973E	STARTED	July 15, 1980
HOLE NO.	M-80-2	DEPARTURE		FINISHED	July 17, 1980
BEARING	Vertical	ELEVATION	1,279m	LENGTH	26.52m
DIP-COLLAR	-90°	SECTION		LOGGED BY	J. Biczok

DIP TEST					
Footage	Corrected	Footage	Corrected	Footage	Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS
0	26.52	OVERBURDEN: Large Diorite boulders. Cased to 23.32m. Hole abandonded due to caving.						

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MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	13,973N; 9,781E	STARTED	July 17, 1980
HOLE NO.	M-80-3	DEPARTURE		FINISHED	July 27, 1980
BEARING	Vertical	ELEVATION	1,330m	LENGTH	259.37m
DIP-COLLAR	-90°	SECTION		LOGGED BY	J. Biczok

DIP TEST

Meters	Corrected	Footage	Corrected	Footage	Corrected
129.5m	90°				
251.4m	90°				

METRES From	METRES To	DESCRIPTION	% Mineralization
0	24.38	OVERBURDEN: Monzonite-Diorite boulders. Cased to 24.7m.	
24.38	259.37	JURASSIC SCHIST: Very fine grained Argillaceous Quartzite. Massive to thinly bedded, slightly to moderately argillaceous, light to dark grey or brown in colour. Frequent migmate development, locally gneissic. 24.38- 33.83m: Slightly Argillaceous Quartzite, 5% fine grained biotite, well foliated at 19° to core axis, bedding at 12°. 24.99-28.04: 2 sets of well developed joints at 10° and 72° to the core. 29.56-30.17: Shear zone at 5° to core, which is largely slickensided rubble. Extensive black serpentine-talc-chlorite coatings on fractures. 33.83- 34.44m: Thinly bedded clean and Argillaceous Quartzite. Alternating ½-1 cm thick brown-grey argillite beds and white-grey clean quartzite bedding at 0-12° to the core. 34.44- 48.76m: Homogenous, massive, grey Quartzite, very fine grained. 35.35-40.54: Numberous shear fractures with extensive pyrite (as coatings and 2-5 mm crystals) and serp-talc-chl. coatings. Shearing at 4-12° to core but best developed fractures are at 90°. 43.89-48.76: Sheared rubble. Poor serp-chl. development but several ½ cm wide pyrite veins. 48.76- 59.13m: Thinly bedded (½-1 cm), grey to dark grey argillaceous quartzite. Bedding at 12-15° to core, shearing at 53.9 and 56.4. 59.13- 79.24m: Homogenous, fine grained grey Quartzite. Intermittent, narrow, thin bedded sections. 62.48-76.20: Sheared rubble was grey, fairly massive quartzite, now largely rubble with some ½ cm pyrite veins, locally good serp-talc development. 78.02-79.24: Homogenous, massive grey Argillaceous Quartzite. 79.24- 85.95m: Gneissic Argillaceous Quartzite. Alternating white, quartzose, mobilizate bands, averaging 1 mm wide, and brown to grey argillaceous resistate bands. Some minor remnant, massive quartzite sections, some areas are strongly migmatitic. 85.95-100.88m: Relatively homogenous to thinly bedded, grey Argillaceous Quartzite. Locally recrystallized to produce gneissic or mottled textures. 95.09-95.40: More gneissic section. Fine grained pyrite, disseminated and, as blebs to 3 mm, in the resistate, minor chalcopyrite in the mobilizate. 99.05: 10 cm section of gneiss/migmatite. High % disseminated pyrite and pyrrhotite.	Minor dis. Py and Po throughout. 95.09-95.40: Py-dis.&blebs. Cp ≤1%, in mobilicate 99.05: 5-10% dis. Py&Po

SAMPLE NO.	METRES From	METRES To	Length	Cu (%)	Pb (%)	Zn (%)	Ag OPT		

M.L.M. EXPLORATION DIVISION, D.D.H. RECORD

PROPERTY MARN HOLE NO. M-80-3

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	Cu (%)	Pb (%)	Zn (%)	Ag OPT		
		100.88-102.41m: Thinly bedded Quartzite. Alternating ½ cm wide beds of quartz (minor feldspar) and 2-3 cm biotite rich, schistose beds.											
		102.41-108.50m: Dark grey-black Argillaceous Quartzite. Well developed thin bedding, approximately 5% disseminated pyrite.	5% dis. pyrite										
		108.50-110.33m: Brown to white gneissic Jurassic schist.											
		110.33-115.51m: Thinly bedded, grey-brown Quartzite, 1-10 mm beds, few gneissic and black argillite sections.											
		115.51-143.25m: Fairly homogenous dark grey Quartzite. Poorly developed bedding, occasional ½ cm wide Quartz-Feldspar veinlet. Abundant jointing, 57-59° to core, with serp-talc±py developed. 116.12-117.04: Sheared rubble 134.10: Bedding at 37° to core.											
		143.25-144.47m: Well banded, slightly gneissic, grey-brown Quartzite.											
		144.47-144.62m: Porphyritic Biotite Diorite Dyke. Medium grained, approx. 5% biotite, 5-10%(?) Feldspar phenocrysts 3-4 mm long, little visible quartz. Sharp, cross-cutting contacts at 30-40° to core axis.											
		144.62-153.92m: Grey, moderately well banded, Argillaceous Quartzite with frequent gneissic/migmatitic sections. From 149.6 to 153.0m migmatite patches are more developed.											
		153.92-156.05m: Biotite Diorite Dyke. Equigranular, fine to medium grained, 5-7% biotite, 1 mm across, in a groundmass composed largely of plagioclase with minor disseminated pyrite. Few schistose quartzite xenoliths up to 3 cm wide. Contact at 38° to core, foliation is parallel to the contact in adjacent zones. Hanging wall foliated at 27° to core.											
		156.05-163.36m: Brown-grey Gneissic Quartzite. Frequent migmatitic patches with 5% pyrite and trace chalcopyrite.	5% py., Tr. chalco										
		163.36-163.67m: Fairly homogenous, poorly bedded grey Quartzite.											
		163.67-199.94m: Grey Quartzite, frequently Gneissic/Migmatitic. Abundant pyrite and pyrrhotite in most migmatitic sections both as fine grained disseminated grains in the schistose resistate and as medium grained (1-2mm) grains in the mobilizate. Non-migmatitic sections are "wispy" grey quartzite with wispy, irregular recrystallizaed zones. Through this section, up to 198m, the migmatitic texture becomes more pronounced and continuous, many very contorted sections with high % of Py&Po.											
		199.94-202.38m: Very fine grained light grey Quartzite.											
		201.38-204.51m: Brown-grey Migmatite. 30% mobilizate.											
		204.51-231.64m: Massive, very fine grained, light grey Quartzite. Short migmatitic sections at 208.8 and 226.8m. Local weak bedding at 18° to core. 222-231m: Numerous, well developed joint planes coated with black serp/chl at 52°, 33° and 23° to the core axis.											
		231.64-246.57m: Brown-grey Migmatitic Schist. 10-50% mobilizate, averaging 20%. Only minor non-migmatitic zones.											
		246.57-249.92m: Light grey Quartzite. Homogenous, very fine grained, locally very weak bedding.											
		249.92-254.80m: Dark grey-black and white Migmatite. Minor brown and white migmatite. 20-30% mobilizate veins to 2 cm. Abundant shear fractures with serp-chl-py coatings.											

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	Cu (%)	Pb (%)	Zn (%)	Ag OPT		
		254.80-257.85m: Light grey Quartzite. Weakly bedded at 11° to core axis.											
		257.85-259.37m: Brown-grey Migmatite. 20-30% mobilizate, generally wispy but there are a few quartz veins up to 2 cm wide.											
	259.37	END OF HOLE											

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MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	14,714N; 10,406E	STARTED	July 31, 1980
HOLE NO.	M-80-4	DEPARTURE		FINISHED	August 4, 1980
BEARING	010°	ELEVATION	1,370m	LENGTH	177.38m
DIP-COLLAR	-45°	SECTION		LOGGED BY	J. Biczok

DIP TEST	Corrected		Corrected		Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	ASSAYS
0	9.75	OVERBURDEN: Mainly large diorite boulders						
9.75	105.76	BIOTITE DIORITE: Medium grained equigranular, Biotite Diorite. 15-20% euhedral-subhedral biotite, rest is predominantly anhedral plagiclase with minor K-feldspar and quartz. Moderately well developed biotite foliation at 70° to the core.						
		10.67m: Several 2-3mm wide irregular calcite veinlets.						
		19.20- 19.35m: Coarse grained Porphyritic Monzonite(?). 30% euhedral K-feldspar phenocrysts up to 2 cm long, strongly aligned in a diorite rock.						
		21.94m: 3-4 mm wide, irregular quartz veinlets.						
		30.94- 31.39m: Shear Zone. Sheared rubble, numerous slickensides with chl-hem-serp(?) coatings. Foliation at 35° to core.						
		34.90- 46.94m: Shear Zone. Largely just sheared rubble with a few 1/3-1/2 meter long intact sections of well folitated diorite with numerous calcite veinlets. Extensive slickensides with chl-serp±calc coatings.						
		46.32- 63.09m: Frequent 2-7 mm wide calcite veinlets rarely to 3 cm, probably following a joint set at 40° and 52° to the core. Moderate shearing still fairly pervasive, intense at 54 m, 59m, 64m. Last movement was at 60° to the core axis in the shear plane.						
		50.29-50.44m: Fine grained Quartz-Biotite Monzonite Dyke.						
		54.25-54.56m: 2-3 cm wide coarse grained calcite veins.						
		71.93- 73.76m: Fine to medium grained Quartz-Feldspar vein, minor biotite. Roughly parallel to the core axis.						
		74.98m: Strong foliation for 15m each way at 35° to the core.						
		78.02- 78.63m: Porphyritic Monzonite dyke at 30° to the core.						
		88.99- 98.14m: Well developed shearing over 1m sections separated by 1 m competent intervals. Sheared zones are largely rubble, some tosudite development.						
		105.76-106.98m: Chilled margin. Distinctly finer grained diorite, darker grey in colour and well foliated at 50° to the core. Diorite is still medium grained, feldspar crystals are euhedral up to 5 mm long, and appear to be poikilitic.						
		106.98-108.50m: Hybrid Zone. Begins with a fairly magmatic zone containing numerous schistose xenoliths up to 5 cm long and several remnant layers. High pyrite and pyrrhotite, magmatic component decreases with depth as the schist is approached.	Abundant Py & Po					
108.50	142.79	JURASSIC SCHIST: Thinly bedded to massive, light grey Quartzite and Argillaceous Quartzite. Bedding is fairly well developed at 28-35° to core. Contains several arkosic sections and a few calcareous units(?) which are now biotite porphyroblastic.						

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	ASSAYS
		108.50-110.64m: Massive, very fine grained Hornfelsed Quartzite, slightly argillaceous.						
		109.7-110.2m: Intense shearing, high percentage of hematite along fractures.						
		110.64-117.95m: Gneissic Argillaceous Quartzite. Formerly a relatively argillaceous quartzite, thinly bedded, now largely remobilized. Frequent broken argillaceous beds caught up in the Quartz-Feldspar mobilizate. Remnant bedding at 28° to core.						
		117.95-124.05m: Massive to weakly bedded grey Argillaceous Quartzite.						
		124.05-131.67m: Brown-grey Argillaceous Quartzite with interbedded thin white silty beds.						
		131.67-133.50m: Massive, light grey, clean Quartzite.						
		133.50-134.71m: Well developed thin argillaceous bedding.						
		134.71-137.15m: Biotite Porphyroblastic Calcareous Quartzite. 10-15% elongated biotite porphyroblasts, 2-5mm, well foliated at 45° to the core, in a fine grained quartzite.						
		135.93m: Numerous white, euhedral porphyroblasts up to 1.5 cm, possibly idocrase.						
		137.15-137.76m: Shear Zone. Largely sheared rubble with extensive serp/chl/talc on the slickensides. Locally medium grained pyrite crystals.	Pyrite crystals on slickensides.					
		137.76-140.20m: Thinly bedded Argillaceous Quartzite, bedding at 35° to core.						
		140.20-141.11m: Fault Zone. Well developed fault breccia. Roughly ½ is sheared and slickensided fragments containing serp, chl, and pyrite, other half is a well formed breccia with 30-40% schist fragments in both black serp/chl/pyrite matrix and a calcite vein matrix.						
		141.11-142.33m: Medium grained gritty sandstone/quartzite, occassional rip up of clasts of argillaceous quartzite. Frequent 3-5mm wide calcite veinlets.						
		142.33-142.79m: Fine grained, dark grey, fairly gritty sandstone/quartzite. Moderately sheared, some black serpentine/chlorite coatings.						
142.79	155.74	TAHKANDIT LIMESTONE: Permian. Generally white to grey limestone, locally bioclastic, frequently pelletal. Several chert pebble conglomerate beds in the basal section. Frequent green diopside skarn zones, several calcareous quartzite beds.						
		142.79-143.55m: Slightly diopsidic, Calcareous Quartzite(?) very fine grained hornfelsed; extensive, friable diopside "powder" on fractures						
		143.55-143.86m: Very fine grained, grey Calcareous Quartzite.						
		143.86-148.73m: Skarnified Limestone. White to grey and green in colour, very fine grained and hard--probably silicified.						
		144.7m: 2-3mm wide veinlets of a hard (approx. 7) brown, resinous mineral, composition unknown.						
		148.12-148.33m: Bioclastic, Diopsidic Limestone 5-10% brachiopod fragments, replaced by calcite, in a diopsidic limestone.						
		148.73-150.26m: Diopsidic, skarnified Limestone. Generally fine grained, granular, green in colour.						
		149.04-149.35m: Numerous brown, resinous veinlets, several mm side, one narrow (1-2mm) galena veinlet.	Brown, resinous veins, 1-2mm galena vein.					
		150.26-150.87m: Grey and white Skarnified Limestone.						

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	ASSAYS
		150.87-153.31m: Chert Pebble Conglomerate. Generally 70% pebbles, 1-5mm long, elongate due to shearing at 42° to core, in a matrix of skarnified limestone, frequently diopsidic. Shearing is especially intense in the lower ½m.						
		151.6m: 10cm wide zone of Bioclastic Limestone. Several brach. fragments up to 1cm long.						
		151.78-153.61m: Intense Shear Zone with more intense diopside development.						
		153.31-155.74m: Fractured and Sheared Limestone. Possibly was a chert pebble conglomerate but difficult to tell. Probably was largely pelletal with a few chert pebbles.						
155.90	161.84	ROAD RIVER FORMATION: Ordovician-Silurian. Largely a gritty sandstone with a few interbedded argillaceous/shaley beds up to a few cm thick, and fine grained argillaceous sandstones and siltstones. Bedding at 35° to the core. Locally highly sheared and slickensided. Pyrite veinlets (1-3mm) are common.	Numerous irregular 1-3mm. py veinlets					
		160.32-161.84m: Very Argillaceous section. G60-70% red-brown argillaceous beds, frequently broken up with lighter grey coloured quartz-feldspar rich beds intercalated. Argillaceous beds contain high percentage disseminated pyrite and pyrite as fracture coatings.	High % dis. py. Some pyrite on fractures.					
161.84	166.26	TAHKANDIT LIMESTONE: Permian.						
		161.84-162.29m: Crystalline, massive grey limestone. First 6cm is light green in colour and friable.						
		162.29-162.75m: "Vuggy", weathered out calcite rich section. Highly pitted and altered to diopside/actinolite.						
		162.75-162.91m: Massive, green crystalline Limestone. Some pyrite veining.	Py veining.					
		162.91-163.36m: Biotite Porphyroblastic Calcareous Quartzite. ½cm wide clean quartzite beds alternating with G1cm wide argillaceous, red-brown biotite rich beds. 10-30% biotite, 1-3mm across, well foliated.						
		163.36-166.26m: Chert Pebble Conglomerate/Breccia. Rounded to angular chert fragments, 50-70%, 1-15mm long, in a calcite (skarnified) matrix, medium to highly foliated.						
		164.28-164.58m: Abundant pyrite in the matrix.	High % py in matrix					
166.26	177.38	ROAD RIVER FORMATION: Ordovician-Silurian. Thinly bedded shale, grit, sandstone and siltstone.						
		166.26-167.63m: High percentage of shaley beds now recrystallized to red-brown biotite rich beds and grey argillaceous beds with 30% argillaceous gritty sandstone. Bedding at 38° to the core.						
		167.63-169.46m: Medium grained, Argillaceous Quartzite. Frequent rip-up clasts(?) of shales and quartzite.						
		169.46-169.76m: Very argillaceous section. 40% red-brown biotite in fine grained, schistose beds with some sheared quartzofeldspathic beds. Abundant py on fractures.	High py on fractures.					
		169.76-170.98m: Gritty Quartzite with frequent clasts of argillite, shale and quartzite, occasional fine grained siltstone beds up to 20cm thick.						
		170.98-174.03m: Thin bedded meta-shales, siltstones; grey to red-brown in colour with minor gritty sandstone interbeds.						

M.L.M. EXPLORATION DIVISION, D.D.H. RECORD

PROPERTY MARN

METRES		DESCRIPTION	% Mineralization	SAMPLE NO.	METRES			ASSAYS					
From	To				From	To	Length						
		174.03-177.38m: Gritty sandstone Breccia. Large number of shale and quartzite fragments, 1-10cm long, in a gritty sandstone matrix. Rare siltsone and shale interbeds, L15cm thick. Bedding at 44-50° to core.											
	177.38	END OF HOLE											

MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

						DIP TEST					
PROPERTY	MARN	LATITUDE	15,550N; 10,385E	STARTED	August 9, 1980		Corrected		Corrected		Corrected
HOLE NO.	M-80-5B	DEPARTURE		FINISHED	August 23, 1980						
BEARING	316°	ELEVATION	1,730m	LENGTH	198.72						
DIP-COLLAR	-80°	SECTION		LOGGED BY	J. Biczok						

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	ASSAYS
0	2.13	OVERBURDEN: Boulders of Biotite Diorite. CASED to 8.23m						
2.13	198.72	BIOTITE DIORITE: Medium grained, generally equigranular Biotite Diorite. Predominantly massive but often foliated. 10-20% biotite, 60-70% plagioclase minor quartz and K-feldspar. Locally 10-15% subhedral hornblende, generally heavily chloritized.						
		0- 7.92m: Largely fractured rubble (Biotite Diorite) and mud.						
		7.92- 8.84m: 30-40% Calcite veinlets up to 2cm thick, subparallel to core.						
		8.84- 9.75m: Mud.						
		9.75- 13.41m: Fairly competent, massive Biotite Diorite. Equigranular, medium grained, 15% biotite.						
		13.41- 14.02m: Skarn vein. Fine grained, granular, very friable, diopside-actinolite-calcite. No visible sulphides.						
		14.02- 14.33m: Massive Biotite Diorite.						
		14.33- 19.51m: Shear Zone. ½-2m long sheared rubble sections separated by 1/3-1m long intervals of competent Biotite Diorite, only weakly foliated, shear zones have extensive, thin (L½cm) calcite veining, abundant clay alteration and numerous slickensides, (these are much less developed than in the quartzites)						
		19.51- 20.12m: Relatively competent, slightly foliated Biotite Diorite.						
		20.12- 23.77m: Shear Zone. Friable, sheared rubble. Extensive clay alteration and slickensides, rare calcite veining, some hematite coatings, shearing is irregular, 23° to 60° to the core.						
		23.77- 26.82m: Massive, grey, Biotite Diorite.						
		26.82- 29.87m: Fine grained Diorite Dyke. Equigranular, massive, only 3-4% biotite.						
		29.87- 32.46m: Relatively homogenous, medium grained Biotite Diorite.						
		32.46- 32.76m: Skarnified Biotitite Xenolith(?), Central 6cm is 100% biotite, rimmed by a diopsidic alteration zone with feldspar porphyroblasts.						
		32.76- 41.15m: Homogenous Biotite Diorite.						
		41.15- 41.68m: Skarn vein. Top 30cm is 50%, 2-4cm wide skarn veins cutting biotite diorite. With depth this grades into a large skarn vein 25 cm wide trending at 75° to the core. The large vein consists of alternating 1-4cm wide zones of red, green and white calcite. Minor chalcopyrite and pyrite on fractures.	Minor cp and py on fractures.					
		41.68- 93.57m: Relatively homogenous, massive, Biotite Diorite. Numerous skarn veins throughout.						
		51.66-52.42m: Skarn vein. Irregular, patchy distribution of pink, green and white calcite. Some 3 cm wide quartz veinlets. Roughly ½ is a hybrid zone of intermixed skarn vein material and biotite diorite.						
		60.50-60.96m: Skarn vein, well banded calcite at 75° to the core.						

M.L.M. EXPLORATION DIVISION, D.D.H. RECORD

PROPERTY MARN HOLE NO. M-80-58 Page 2/2

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS					
		60.96-64.00m: Frequent thin (1-5mm) calcite veinlets.											
		93.57-103.63m: Shear Zone. Some sections of only sheared rubble, most is highly foliated biotite diorite with frequent thin calcite and quartz veinlets. Shearing at 41° to the core.											
		103.63-104.24m: Skarn Vein or Xenolith(?). Biotitite core rimmed by fine grained, granular diopside.											
		107.89-107.99m: Quartz-Calcite Skarn Vein, trace pyrite.	Tr. pyrite										
		108.98-109.06m: Coarse grained Calcite-Actinolite vein. 10-15% Pyrite and chalcopyrite, trace fine grained galena.	10-15% py & cp Tr. galena										
		112.03-112.26m: Quartz-Actinolite Skarn. Top 10 cm is a quartz vein with high chalcopyrite and pyrite on fractures, lower 13 cm is a fine grained friable actinolite skarn with high percentage of very fine grained dis. chalcopyrite, pyrite and moly.	High % of v.f.g. dis. cy, py, Mo										
		127.09-137.76m: Very extensive Calcite veining. Veins are 1-30mm thick, averaging 5mm, very irregular, generally trend 80-90° to core. 127.09-134.10m: Veining is especially intense. This zone probably represents the Digested Limestone.											
		150.87-151.47m: Biotite Diorite Breccia. 50-70% highly altered (clay, epidote, etc.) biotite diorite fragments in a calcite vein matrix. Fragments are angular, generally ½-1 cm long and quite granular in texture.											
		157.57-157.88m: Three narrow (2-4mm) Quartz stringers at 70-90° to core axis.											
		161.54-162.75m: Numerous Quartz stringers and some pervasive clay alteration.											
	198.72	END OF HOLE											

MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	15,880N; 10,383E	STARTED	August 24, 1980
HOLE NO.	M-80-6	DEPARTURE		FINISHED	August 26, 1980
BEARING	Vertical	ELEVATION	1,895m	LENGTH	53.95m
DIP-COLLAR	-90°	SECTION		LOGGED BY	J. Biczok

DIP TEST	Corrected		Corrected		Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	Length	ASSAYS
0	2.74	OVERBURDEN: Biotite Diorite Boulders. CASED to 3.66m.						
2.74	13.41	BIOTITE DIORITE: Cretaceous medium grained, equigranular, moderate foliation at 47° to core in lower 7m. 15% biotite, rest is mainly plagioclase, minor K-feldspar, little or no quartz.						
		12.80-13.41m: Chilled margin. Slightly finer grained biotite diorite, no xenoliths.						
13.41	35.66	JURASSIC SCHIST: Fairly homogenous fine grained, massive light grey quartzite. Locally a weak foliation at 47° to the core axis. Some recrystallization of pyrite into narrow veinlets. Well developed jointing at 30° and 45° to core axis, abundant hematite/specularite on fractures. Generally hornfelsed.	Narrow Py veinlets					
		20.42m: Abundant pyrite stringers, 2-4mm wide, parallel to foliation.						
		25.75-27.28m: Fine grained Biotite Monzonite/Diorite Dyke. 15% biotite, equigranular, high percentage of very fine grained dis. pyrite.	G5% dis. pyrite					
		27.28-35.66m: Fine grained, light grey, hornfelsed quartzite. Abundant fracturing and jointing with some hematite and pyrite coatings.						
35.66	46.17	TAHKANDIT LIMESTONE: Permian. White to grey, fine grained crystalline skarnified Limestone. Abundant zones of fine grained diopside skarn, some friable actinolite bands/veins. Minor chalcopyrite-pyrrhotite-pyrite veining.	Minor Cp-Po-Py veining.					
		35-66-36.12m: Fine grained, friable Actinolite Skarn. Actinolite is soft, granular, dark green in colour. Minor fine grained disseminated chalcopyrite, abundant hematite staining.	Minor (L2%) dis. Cp, abundant hem. staining.					
		36.12-36.57m: Fairly homogenous, very fine grained, green Diopside skarn. Very hard (G7) but fractured.						
		36.57-37.18m: White, fine grained crystalline Limestone. Minor green diopsidic patches, calcite veining, some actinolite on fractures. Minor disseminated chalcopyrite and pyrite.	Minor (L2%) Cp&Py					
		37.18-38.71m: 50/50 mottled green and white skarnified Limestone. No visible sulphides.						
		38.71-39.02m: Hard, fine grained, green Diopside skarn. 2% disseminated fine grained chalcopyrite, occasional blebs to ½cm, plus one chalcopyrite vein ½ cm wide.	2% dis. Cp, blebs and veins to ½cm.					
		39.02-39.47m: Homogenous, very fine grained, crystalline white Limestone (Marble). No visible sulphides.						
		39.47-39.62m: Fine grained, friable Actinolite skarn, possible minor dis. Chalcopyrite.						
		39.62-41.45m: Homogenous, white Limestone/Marble. No green skarn or sulphides.						
		41.45-42.82m: White, fine grained crystalline Limestone/Marble. One pyrite vein, 1 cm wide.	Pyrite vein 1 cm wide.					
		42.82-43.58m: Fine grained, green Diopsidic Skarn, minor white marble. Several Chalcopyrite veinlets up to 5 mm wide.	Some Cp veinlets to 5 mm wide.					

N.L.M. EXPLORATION DIVISION, D.D.H. RECORD

PROPERTY MARN HOLE NO. M-80-6 Page 2/2

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS					
		43.58-45.11m: Fine grained, white crystalline Limestone/Marble. Minor chalcopyrite veinlets.	Minor Cp veinlets.										
		45.11-45.56m: Mottled green and white marble skarn. Brecciated texture, possibly sheared to a semi-augen texture. Disseminated chalcopyrite and pyrite.	L5% dis. Cp & Py.										
46.17	53.03	BIOTITE DIORITE: Cretaceous											
		46.17-46.32m: Hybrid Zone. Chilled, medium grained Biotite Diorite. Grains are finer grained than rest of the dyke, and much less distinct. Probably some limestone contamination.											
		53.03-53.34m: Hybrid Biotite Diorite and Road River Quartzite. Approximately 70% magmatic Biotite Diorite and 30% remnant quartzite as "wispy" schlieren and xenoliths. Some coarse grained biotite books, ½cm x 1cm. Locally up to 10-15% pyrite, disseminated and as patches and veinlets.											
53.34	53.95	ROAD RIVER FORMATION: Ordovician-Silurian. Fine grained, generally clean Quartzite. Some actinolite-calcite veining, up to 8mm wide, crystals 3-4mm.											
	53.95	END OF HOLE											

MATTAGAMI LAKE MINES LIMITED - EXPLORATION DIVISION - DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	15,880; 10,383E	STARTED	August 27, 1980
HOLE NO.	M-80-7	DEPARTURE		FINISHED	August 31, 1980
BEARING	213°	ELEVATION	1,895m	LENGTH	94.48m
DIP-COLLAR	-45°	SECTION		LOGGED BY	J. Biczok

DIP TEST	Corrected		Corrected		Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS
0	3.28	OVERBURDEN: Biotite Diorite boulders. CASED to 3.28m.						
3.28	94.48	BIOTITE DIORITE: Cretaceous. Generally medium grained and equigranular. 15-20% biotite, no visible quartz, rest is mainly plagioclase. Some minor shearing but generally the unit is fairly massive.						
		24.69m: 8 cm wide xenolith of rusty quartzite.						
		43.58m: Minor Calcite veins, 1-2mm wide, trending 70° to the core over approximately 15 cm.						
		51.81-56.08m: Shear Zone. Well developed slickensides to 53.3 followed by sheared rubble up to 54.5 with relatively little alteration. Minor calcite veining in central portion. No real foliation present.						
		62.48-64.61m: Frequent Calcite Veinlets over 10-15cm intervals. Veins are 2-4mm wide, trend 28-35° to the core. 1cm thick veins at 67.3 74.9; fairly crystalline quartz veinlets at 70.7 and 73.8.						
		78.33-78.63m: Fine grained, granular, biotite poor (15%) Diorite Dykelet.						
		83.51-89.00m: Coarse grained Biotite Monzonite/Diorite Dykelet. Saccharoidal texture, abundant calcite-clay alteration producing a frequently friable rock. Several 2-3cm wide chalcedony veinlets at 60° to the core.						
		89.00-94.48m: Massive, medium grained Biotite Diorite. Thick (G4cm), open calcite veinlets at 90.8 and 91.4.						
	94.48	END OF HOLE						

MATTAGAMI LAKE MINES LIMITED – EXPLORATION DIVISION – DIAMOND DRILL HOLE RECORD

PROPERTY	MARN	LATITUDE	15,880N; 10,383E	STARTED	August 31, 1980
HOLE NO.	M-80-8	DEPARTURE		FINISHED	September 5, 1980
BEARING	213°	ELEVATION	1,895m	LENGTH	49.68m
DIP-COLLAR	-70°	SECTION		LOGGED BY	J. Biczok

DIP TEST	Corrected		Corrected		Corrected

METRES From	METRES To	DESCRIPTION	% Mineralization	SAMPLE NO.	METRES From	METRES To	METRES Length	ASSAYS
0	3.28	OVERBURDEN: Diorite Boulders. CASED to 3.28m.						
3.28	20.12	BIOTITE DIORITE: Cretaceous. Medium grained generally massive and equigranular, some alteration (hematite, clay, etc.) in 2m before lower contact. Calcite-Quartz veins, 1-2 cm wide at 15.2 and 17.4m, trending 47° to the core.						
20.12	43.12	JURASSIC SCHIST: Generally massive, very fine grained, light grey Quartzite. Hornfelsed, well developed fracturing at 43-63° to core, some hematite alteration along fractures.						
		42.67-43.12m: Fine grained Hornfelsed Quartzite, minor disseminated pyrite and chalcopyrite.	Min. dis. Py (5%) and Cp (L2%)					
43.12	49.68	TAHKANDIT LIMESTONE: Permian. White, brown and green Skarnified Limestone. Upper half is predominantly white marble and green diopsidic skarn, while the lower half is white marble and a friable brown skarn, significant Cp, Py, Po in upper 0.45m.						
		43.12-43.58m: Granular, green Actinolite-Diopside Skarn. High percentage of of Cp, Py, Po as veins to 4cm and as disseminated grains.	High percentage (G15-20%) Cp, Py, Po veins.					
		43.58-44.80m: Very fine grained, light grey-green marble. High percentage diopside, some disseminated chalcopyrite and pyrite.	Dis. Cp&Py (L2%)					
		44.80-46.48m: Approximately 60% white marble and 40% green Diopsidic marble. Both are very fine grained and contain only very minor sulphides.	Very minor sulphides					
		46.48-47.24m: Very fine grained, hard white Marble with a few sections (6cm) of friable calcite.						
		47.24-47.85m: Fine grained, granular Brown Skarn. Quite friable, probably high pyrite content, now altered to hematite.						
		47.85-48.92m: Medium grained, crystalline white Marble. Some biotite (L3%) minor diopside.						
		48.92-49.53m: Fine grained, light brown, friable skarn. High hematite percentage from altered Pyrite(?)						
	49.68	END OF HOLE						

APPENDIX TWO: Addresses of personnel involved in this program.

J. Biczok, Project Geologist:	#5 10556 - 80 Avenue Edmonton, Alberta
R. Kemp, Party Chief:	#207 South Vickers Thunder Bay, Ontario
L. Kovac, Senior Assistant:	547 Thorndale Crescent Thunder Bay, Ontario
B. Cheadle, Junior Assistant:	110 Sunset Bay Thunder Bay, Ontario
S. Wiecek, Junior Assistant:	336 Cathedral Avenue Winnipeg, Manitoba
L. Leclerc, Junior Assistant:	#7 1355 West 12th Avenue Vancouver, B.C.

Drilcor Industries, Drilling Contractor:	#18 12871 Bathgate Way Richmond, B.C.
Hosford, Impey, Welter & Associates Ltd., Legal Surveyors:	4th and Main Street Whitehorse, Yukon
Mattagami Lake Exploration Limited, Claim Owners:	#502 8215 - 112 Street Edmonton, Alberta
Phoenix Geophysics Ltd., I.P. Surveyors:	#214 744 West Hastings Street Vancouver, B.C.

STATEMENT OF COSTS

YUKON MARN CLAIMS, 1980

Salaries

J. Biczok	$ 1,750/month
B. Cheadle	1,110/month
R. Kemp	1,350/month
L. Kovac	1,180/month
L. Leclerc	1,040/month
S. Wiecek	880/month

All salaries are subject to vacation pay and bush bonus.

Field Costs	
Salaries	$ 32,892.72
Camp Costs	19,803.16
Vehicle Rental	5,312.43
Travel	11,194.70
Helicopter - Geophysics	34,959.62
- Diamond Drilling	65,211.21
Linecutting	
Contractor Fees	21,041.95
Magnetometer	
Consultant Fees	187.50
Equipment Rental	1,079.39
C.E.M.	
Equipment Rental	141.33
I.P.	
Contractor Fees	6,236.00
Radem	
Consultant Fees	187.50
Diamond Drilling	
Contractor Fees	122,641.94
Engineering	
Miscellaneous	715.47
Report Writing and Draughting	
Salaries	9,398.12
Travel	617.00
Consultant Fees	1,463.27
Miscellaneous	605.75
TOTAL COST, 1980	$ 333,689.06

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PHOENIX GEOPHYSICS LIMITED

NOTES ON THE THEORY, METHOD OF FIELD OPERATION, AND PRESENTATION OF DATA FOR THE INDUCED POLARIZATION METHOD

Induced Polarization as a geophysical measurement refers to the blocking action or polarization of metallic or electronic conductors in a medium of ionic solution conduction.

This electro-chemical phenomenon occurs wherever electrical current is passed through an area which contains metallic minerals such as base metal sulphides. Normally, when current is passed through the ground, as in resistivity measurements, all of the conduction takes place through ions present in the water content of the rock, or soil, i.e. by ionic conduction. This is because almost all minerals have a much higher specific resistivity than ground water, The group of minerals commonly described as "metallic", however, have specific resistivities much lower than ground waters. The induced polarization effect takes place at those interfaces where the mode of conduction changes from ionic in the solutions filling the interstices of the rock to electronic in the metallic minerals present in the rock.

The blocking action or induced polarization mentioned above, which depends upon the chemical energies necessary to allow the ions to give up or receive electrons from the metallic surface, increases with the time that a d.c. current is allowed to flow through the rock; i.e. as ions pile up against the metallic interface the resistance to current flow increases. Eventually, there is enough polarization in the form of excess ions at the interfaces, to appreciably reduce the amount of current flow through the metallic particle. This polarization takes place at each of the infinite number of solution-metal interfaces in a mineralized rock.

When the d.c. voltage used to create this d.c. current flow is cut off, the Coulomb forces between the charged ions forming the polarization cause them to return to their normal position. This movement of charge creates a small current flow which can be measured on the surface of the ground as a decaying potential difference.

From an alternate viewpoint it can be seen that if the direction of the current through the system is reversed repeatedly before the polarization occurs, the effective resistivity of the system as a whole will change as the frequency of the switching is changed. This is a consequence of the fact that the amount of current flowing through each metallic interface depends upon the length of time that current has been passing through it in one direction.

The values of the per cent frequency effect or F.E. are a measurement of the polarization in the rock mass. However, since the measurement of the degree of polarization is related to the apparent resistivity of the rock mass it is found that the metal factor values or M.F. are the most useful values in determining the amount of polarization present in the rock mass. The MF values are obtained by normalizing the F.E. values for varying resistivities.

The induced polarization measurement is perhaps the most powerful geophysical method for the direct detection of metallic sulphide mineralization, even when this mineralization is of very low concentration. The lower limit of volume per cent sulphide necessary to produce a recognizable IP anomaly will vary with the geometry and geologic environment of the source, and the method of executing the survey. However, sulphide mineralization of less than one per cent by volume has been detected by the IP method under proper geological conditions.

The greatest application of the IP method has been in the search for disseminated metallic sulphides of less than 20% by volume. However, it has also been used successfully in the search for massive sulphides in situations where, due to source geometry, depth of source, or low resistivity of surface layer, the EM method cannot be successfully applied. The ability to differentiate ionic conductors, such as water filled shear zones, makes the IP method a useful tool in checking EM anomalies which are suspected of being due to these causes.

In normal field applications the IP method does not differentiate between the economically important metallic minerals such as chalcopyrite, chalcocite, molybdenite, galena, etc., and the other metallic minerals such as pyrite. The induced polarization effect is due to the total of all electronic conducting minerals in the rock mass. Other electronic conducting materials which can produce an IP response are magnetite, pyrolusite, graphite, and some forms of hematite.

In the field procedure, measurements on the surface are made in a way that allows the effects of lateral changes in the properties of the ground to be separated from the effects of vertical changes in the properties. Current is applied to the ground at two points in distance (X) apart. The potentials are measured at two points (X) feet apart, in line with the current electrodes is an integer number (n) times the basic distance (X).

The measurements are made along a surveyed line, with a constant distance (nX) betwen the nearest current and potential electrodes. In most surveys, several traverses are made with various values of (n); i.e. (n) = 1,2,3,4, etc. The kind of survey required (detailed or reconnaissance) decides the number of values of (n) used.

In plotting the results, the values of apparent resistivity, apparent per cent frequency effect, and the apparent metal factor measured for each set of electrode positions are plotted at the intersection of grid lines, one from the center point of the current electrodes and the other from the center point of the potential electrodes. (See Figure A.) The resistivity values are plotted at the top of the data profile, above the metal factor values. On a third line, below the metal factor values, are plotted the values of the percent frequency effect. The lateral displacement of a given value is determined by the location along the survey line of the center point between the current and potential electrodes. The distance of the value from the line is determined by the distance (nX) between the current and potential electrodes when the measurement was made.

The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled in any particular measurement. The plots then, when contoured, are not section maps of the electrical properties of the ground under the survey line. The interpretation of the results from any given survey must be carried out using the combined experience gained from field results, model study results and the theoretical investigations. The position of the electrodes when anomalous values are measured is important in the interpretation.

In the field procedure, the interval over which the potential differences are measured is the same as the interval over which the electrodes are moved after a series of potential readings has been made.

One of the advantages of the induced polarization method is that the same equipment can be used for both detailed and reconnaissance surveys merely by changing the distance (X) over which the electrodes are moved each time. In the past, intervals have been used ranging from 25 feet to 2000 feet for (X). In each case, the decision as to the distance (X) and the values of (n) to be used is largely determined by the expected size of the mineral deposit being sought, the size of the expected anomaly and the speed with which it is desired to progress.

The diagram in Figure A demonstrates the method used in plotting the results. Each value of the apparent resistivity, apparent metal factor, and apparent per cent frequency effect is plotted and identified by the position of the four electrodes when the measurement was made. It can be seen that the values measured for the larger values of (n) are plotted farther from the line indicating that the thickness of the layer of the earth that is being tested is greater than for the smaller values of (n); i.e. the depth of the measurement is increased.

The IP measurement is basically obtained by measuring the difference in potential or voltage (ΔV)obtained at two operating frequencies. The voltage is the product of the current through the ground and the apparent resistivity of the ground. Therefore in field situations where the current is very low due to poor electrode contact, or the apparent resistivity is very low, or a combination of the two effects; the value of (ΔV) the change in potential will be too small to be measurable. The symbol "TL" on the data plots indicates this situation.

In some situations spurious noise, either man made or natural, will render it impossible to obtain a reading. The symbol "N" on the data plots indicates a station at which it is too noisy to record a reading. If a reading can be obtained, but for reasons of noise there is some doubt as to its accuracy, the reading is bracketed in the data plot ( ).

In certain situations negative values of Apparent Frequency Effect are recorded. This may be due to the geologic environment or spurious electrical effects. The actual negative frequency effect value recorded is indicated on the data plot, however, the symbol "NEG" is indicated for the corresponding value of Apparent Metal Factor. In contouring negative values the contour lines are indicated to the nearest positive value in the immediate vicinity of the negative value.

The symbol "NR" indicates that for some reason the operator did not attempt to record a reading although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular situation and is described within the body of the report.

PHOENIX GEOPHYSICS LIMITED.

METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS

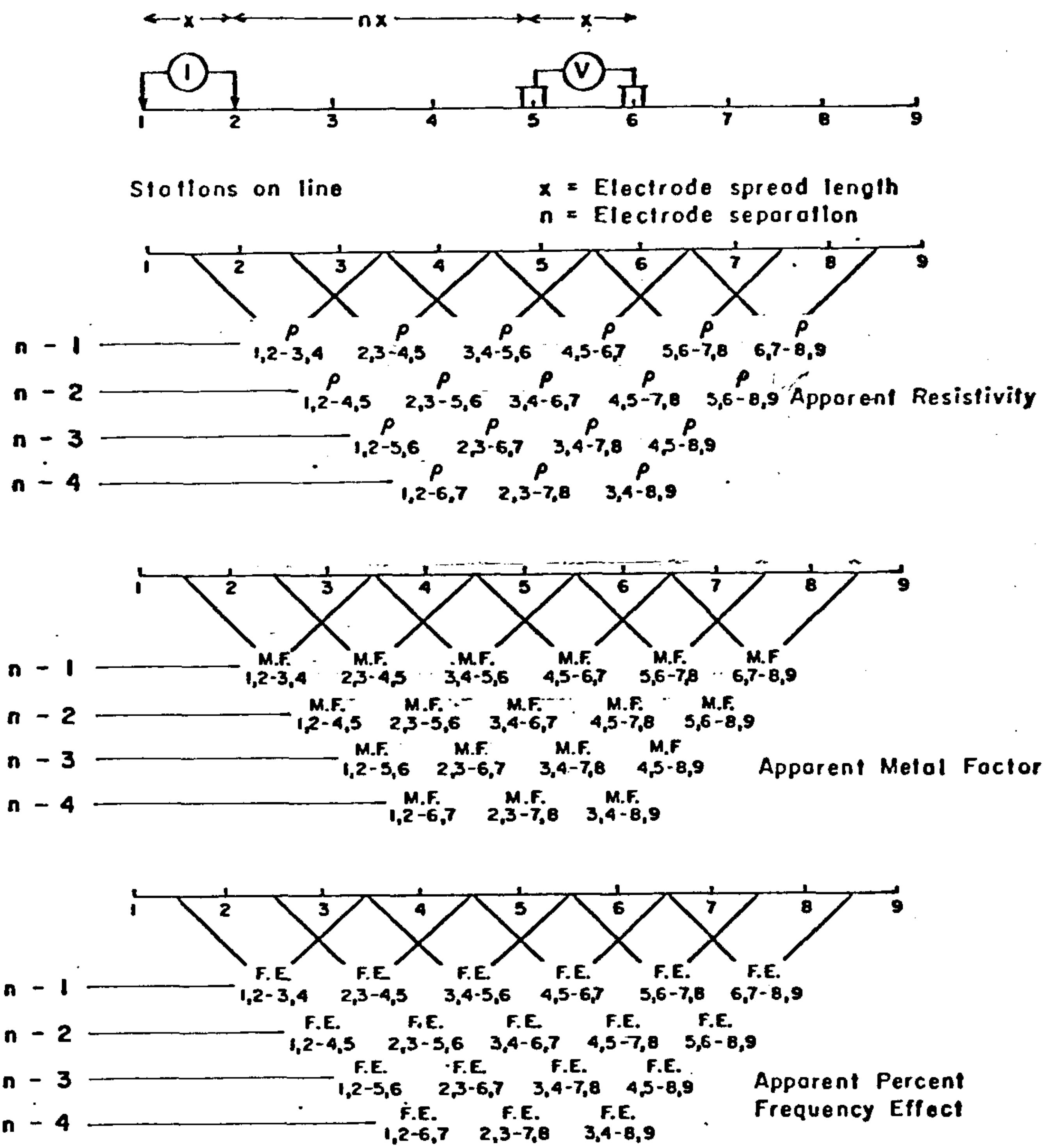

Fig. A

PHOENIX GEOPHYSICS LIMITED

REPORT ON THE INDUCED POLARIZATION AND RESISTIVITY TEST SURVEY AT THE MARN PROJECT DAWSON MINING DIVISION, YUKON TERRITORY FOR MATTAGAMI LAKE EXPLORATION LTD.

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1. INTRODUCTION

At the request of Dr. William Mercer, Regional Manager, we have completed a brief induced polarization and resistivity test survey at the Marn Project on behalf of Mattagami Lake Exploration Ltd.

The claim group is located in the Dawson Mining Division of the Yukon Territory. The area is reached by helicopter, fifty-five kilometers north-northeast from Dawson City. The center of the claim group is located approximately at 64°29'N latitude and 138°48'N longitude.

2. CLAIM INFORMATION

Claim	Grant Number	Date of Staking	Recording Date
1 - 8	YA 31491-98	July 29, 1978	August 4, 1978
9 - 16	YA 47156-63	August 1, 1979	August 14, 1979
17 - 20	YA 47164-67	August 1, 1979	August 14, 1979
21 - 24	YA 47600-63	September 7/79	September 10/79
25 - 28	YA 47168-71	August 1, 1979	August 14, 1979
31 - 36	YA 47172-77	July 31, 1979	August 14, 1979
37 - 38	YA 47575-76	September 7/79	September 10/79
39 - 46	YA 47265-72	August 17, 1979	N/A
47 - 48	YA 47577-78	September 7/79	September 10/79
49 - 56	YA 47273-80	August 24, 1979	N/A
57 - 62	YA 47643-48	September 16/79	September 18/79

3. GEOLOGY

The rocks exposed on the Marn Project are tabulated below:

Cretaceous

Mt. Brenner Stock: equivalent to porphyritic, hornblende-augite-biotite monzonites, quartz monzonites, aplite, minor pyroxenite.

"Keno Hill Quartzite": thick bedded, massive orthoquartzite with lesser, interbedded slates.

Jurassic

Jurassic Schist: hornfelsic siltstone, quartzite, shaly phyllite, pyritiferous shale.

Permian

Tahkandit Formation: grey to white, crystalline, bioclastic limestone, minor chert pebble conglomerate and thinly bedded chert.

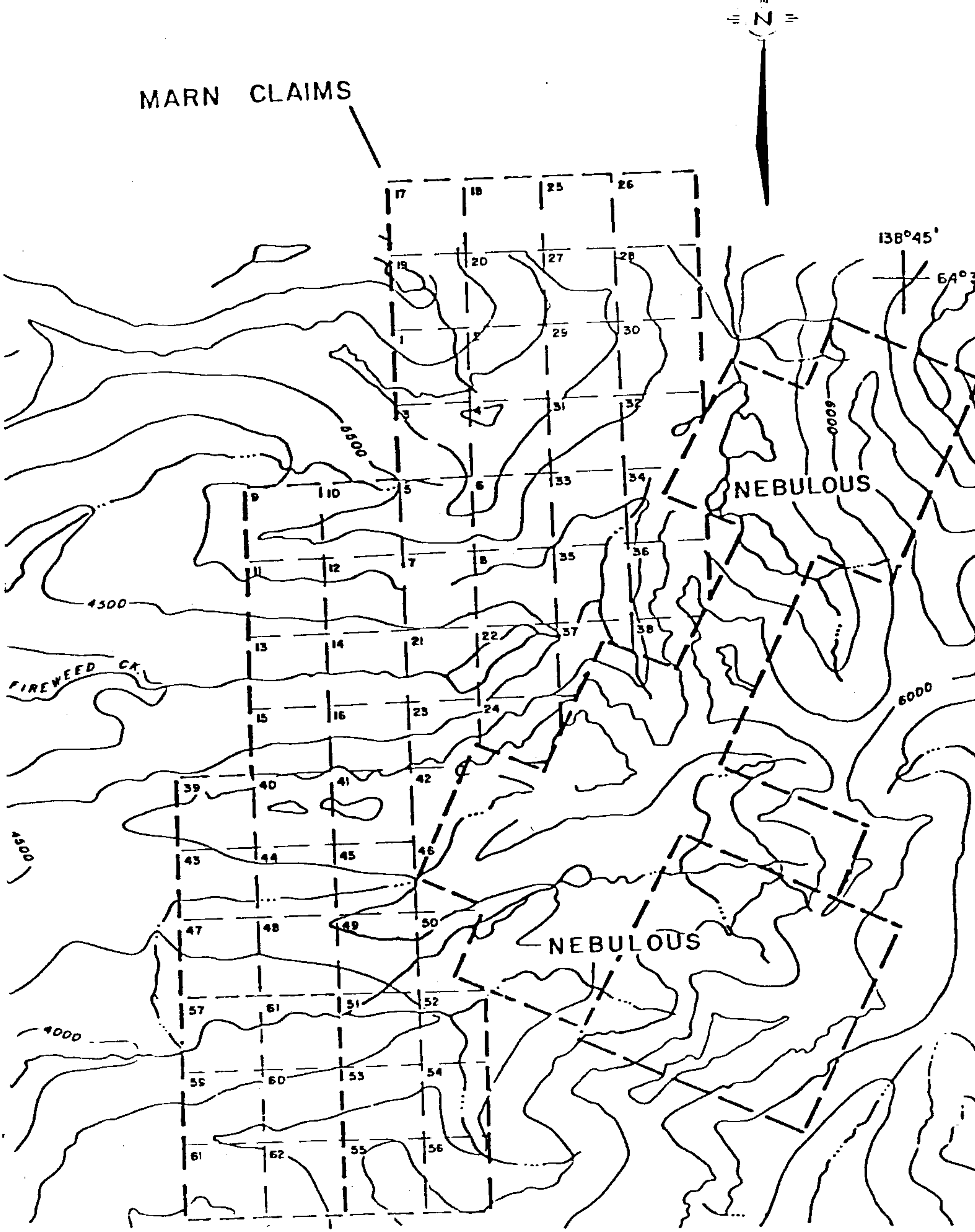

Fig. 2: Location of
MARN 1-62 claims

0 500 1000 metres

SCALE 1 35,700

Road River Formation: grey to black argillite and shale, with minor quartzite, siltstone, chert, chert pebble breccia with shaly matrix.

The sedimentary beds generally strike NNE and dip moderately (55^{o} to 90^{o}) to the east. Along the contact with the Mt. Brenner monzonite stock, a considerable zone of contact metamorphism has been mapped. All of the rocks in this area belong to the hornblende-hornfels facies of contact metamorphism.

Widespread metallic mineralization has been mapped within the skarnified limestones along portions of the contact. The induced polarization and resistivity test survey was planned to determine the type of IP anomaly to be expected along the edge of the intrusives. It was hoped that IP measurements could be used to determine metallic mineralization within the skarnified limestones at considerable depth.

4. PRESENTATION OF RESULTS

The results of the induced polarization and resistivity test survey are shown on the following enclosed data plots.

Line	Electrode Intervals	Dwg. No.
22+78N	125M	IP 5224-1
31+00N	125M	IP 5224-2
BLC	125M	IP 5224-3

Also enclosed with this report is Dwg. I.P.P. 2093, a plan map of the Marn Claim Group Grid at a scale of 1:10,000. The definite, probable, and possible Induced Polarization anomalies are indicated by bars, in the manner shown on the legend, on this plan map as well as on the data plots.

These bars represent the surface projection of the anomalous zones as interpreted from the location of the transmitter and receiver electrodes when the anomalous values were measured.

Since the Induced Polarization measurement is essentially an averaging process, as are all potential methods, it is frequently difficult to exactly pinpoint the source of an anomaly. Certainly, no anomaly can be located with more accuracy than the electrode interval length; i.e. when using 125 meter electrode intervals the position of a narrow sulphide body can only be determined to lie between two stations 125 meters apart. In order to definitely locate, and fully evaluate, a narrow, shallow source it is necessary to use shorter electrode intervals. In order to locate sources at some depth, larger electrode intervals must be used, with a corresponding increase in the uncertainties of location. Therefore, while the center of the indicated anomaly probably corresponds fairly well with source, the length of the indicated anomaly along the line should not be taken to represent the exact edges of the anomalous material.

The topographic and geologic information shown on Dwg. I.P.P. 2093 has been taken from maps made available by the staff of Mattagami Lake Exploration Ltd.

5. <u>DISCUSSION OF RESULTS</u>

Three lines, at wide intervals were surveyed across the metamorphosed sediments at the Marn Project. The results are much the same on all three lines. In all cases, the apparent resistivities within the fresh magnetite to the east are moderately high.

Line 22+78N

The apparent resistivities decrease to the west on this line. Much of the data could not be measured, but the lowest resistivities and the strongest IP effects seem to be well away from the contact, within the Jurassic schist.

Line 31N

On this line there is a strong, shallow, relatively narrow IP anomaly centered at about 94+00E. This is located exactly at the contact between the schist and the monzonite. To the west, another shallow IP anomaly is indicated at the end of the data.

Since these anomalous effects are all detected for the X = 125 meters, n = 1 measurement, the source is indicated to be relatively shallow. Therefore, the source could be better located, and evaluated, by measurements with shorter electrode intervals.

Line BLC

On this line, there is a very strong, narrow resistivity low centered at 93+75E to 95+00E, just to the west of the high resistivity monzonite. There is also a shallow resistivity low at the western end of the line. These anomalies appear to lie to the west of the limestone formation in the Road River Formation.

The source of these anomalies could be better located and evaluated using shorter electrode intervals.

6. CONCLUSIONS

Definite resistivity lows and IP highs were located on each of the three lines surveyed during the brief test survey at the Marn Claim

Group. The sources of these IP anomalies could be within any of the three rock units that outcrop in the area.

The most obvious source would be the pyrite and/or graphite that has been reported in portions of the Jurassic Schist. However, metallic sulphide minerals within the metamorphosed limestone or the schist could also be the source. More detailed IP surveys and geologic mapping would help to give a better picture of the possible importance of the anomalies.

If the very strong IP and resistivity anomalies are due to pyrite and/or graphite in the schists, it will not be possible to search beneath this unit for sulphide mineralization within the skarnified limestone at depth.

PHOENIX GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
P. G. HALLOF

Philip G. Hallof, Ph.D., P.Eng.
Geophysicist

Expiry Date: February 25, 1981

Dated: November 28, 1980

ASSESSMENT DETAILS

PROPERTY: Marn Project		MINING DIVISION: Dawson	
SPONSOR: Mattagami Lake Expl.Ltd.		PROVINCE: Yukon Territory	
LOCATION: Dawson City			
TYPE OF SURVEY: Induced Polarization And Resistivity			
OPERATING MAN DAYS:	6.0	DATE STARTED:	June 1, 1980
EQUIVALENT 8 HR. MAN DAYS:	9.0	DATE FINISHED:	June 7, 1980
CONSULTING MAN DAYS:	2.0	NUMBER OF STATIONS:	39
DRAFTING MAN DAYS:	4.5	NUMBER OF READINGS:	369
TOTAL MAN DAYS:	15.5	KM. OF LINE SURVEYED:	4.4

CONSULTANT:

Philip G. Hallof, Suite 3505, 2045 Lake Shore Blvd. West, Toronto, Ontario.

FIELD TECHNICIANS:

J. Marsh, c/o 200 Yorkland Blvd., Willowdale, Ontario.
G. Ouellette, 502 Taschereau Est., Rouyn, Quebec.

CARTOGRAPHERS:

R.J. Pryde, R.R. #1, Sharon, Ontario.
M.W. Reh, 58 Crossbow Crescent, Willowdale, Ontario.

PHOENIX GEOPHYSICS LIMITED

PROFESSIONAL ENGINEER
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STATEMENT OF COST

Mattagami Lake Mines Ltd. - IP Survey
Dawson City Area - Yukon Territory

CREW:	J. Marsh - G. Ouellette		
PERIOD:	June 1 - 7, 1980		
Mobilization			$2,200.00
Survey:	4.4 km	@ $415.00 per line km	1,826.00
	1 day standby	@ $210.00	210.00
			$4,236.00

PHOENIX GEOPHYSICS LIMITED

Philip G. Hallof, Ph.D., P.Eng.
Geophysicist

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA P. G. HALLOF

Expiry Date: February 25, 1981

Dated: November 28, 1980

CERTIFICATE

I, Philip George Hallof, of the City of Toronto, Province of Ontario, do hereby certify that:

1. I am a geophysicist residing at Suite 3505, 2045 Lake Shore Blvd.W., Toronto, Ontario.

2. I am a graduate of the Massachusetts Institute of Technology with a B.Sc. Degree (1952) in Geology and Geophysics, and a Ph.D. Degree (1957) in Geophysics.

3. I am a member of the Society of Exploration Geophysicists and the European Association of the Exploration Geophysicists.

4. I am a Professional Geophysicist, registered in the Province of Ontario, the Province of British Columbia and the State of Arizona.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of Mattagami Lake Exploration Ltd., or any affiliate.

6. The statements made in this report are based on a study of published geological literature and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

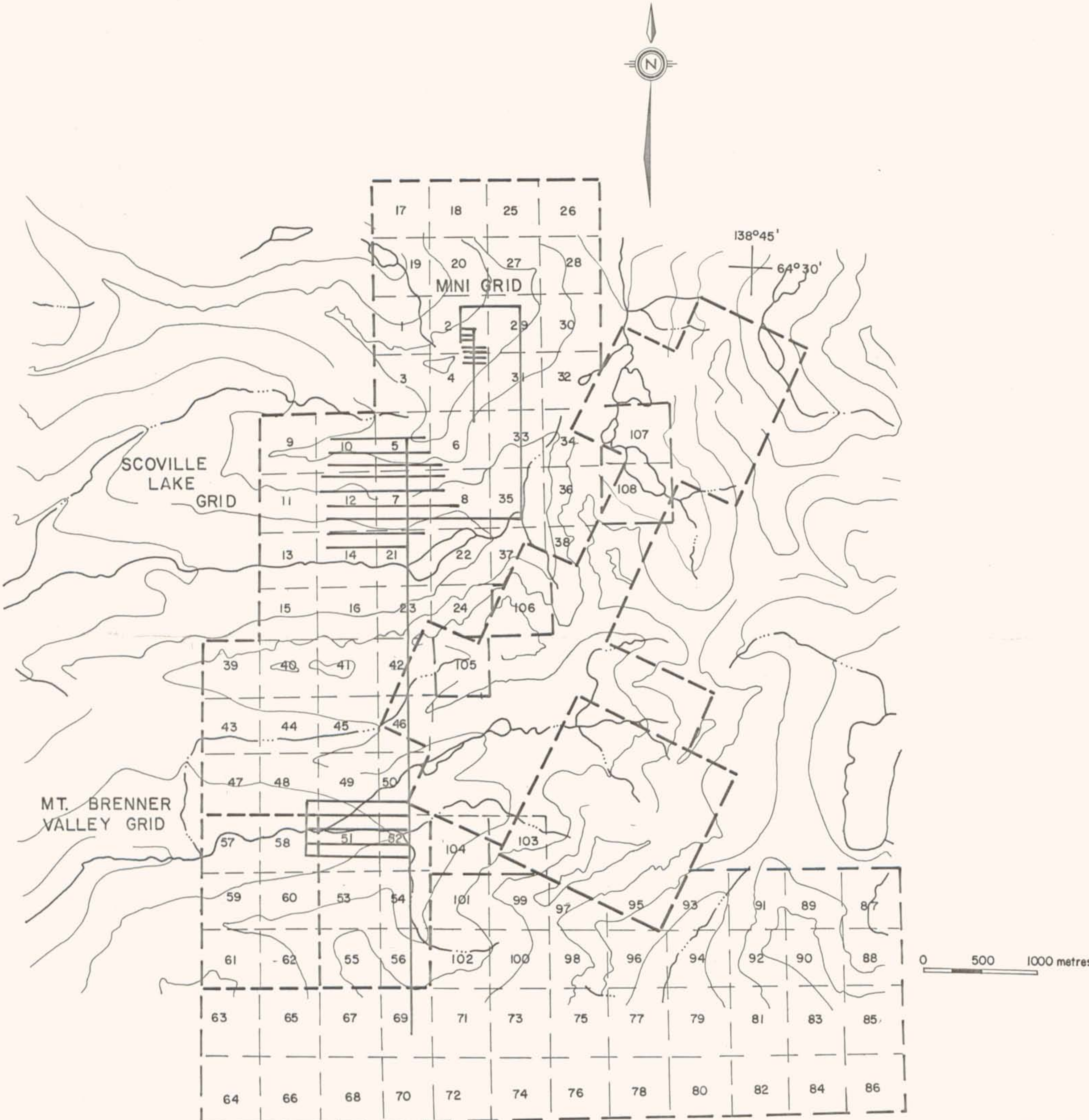
Dated at Toronto

This 28th day of November, 1980

Philip G. Hallof, Ph.D. P.Eng

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA P. G. HALLOF

Expiry Date: February 25, 1981



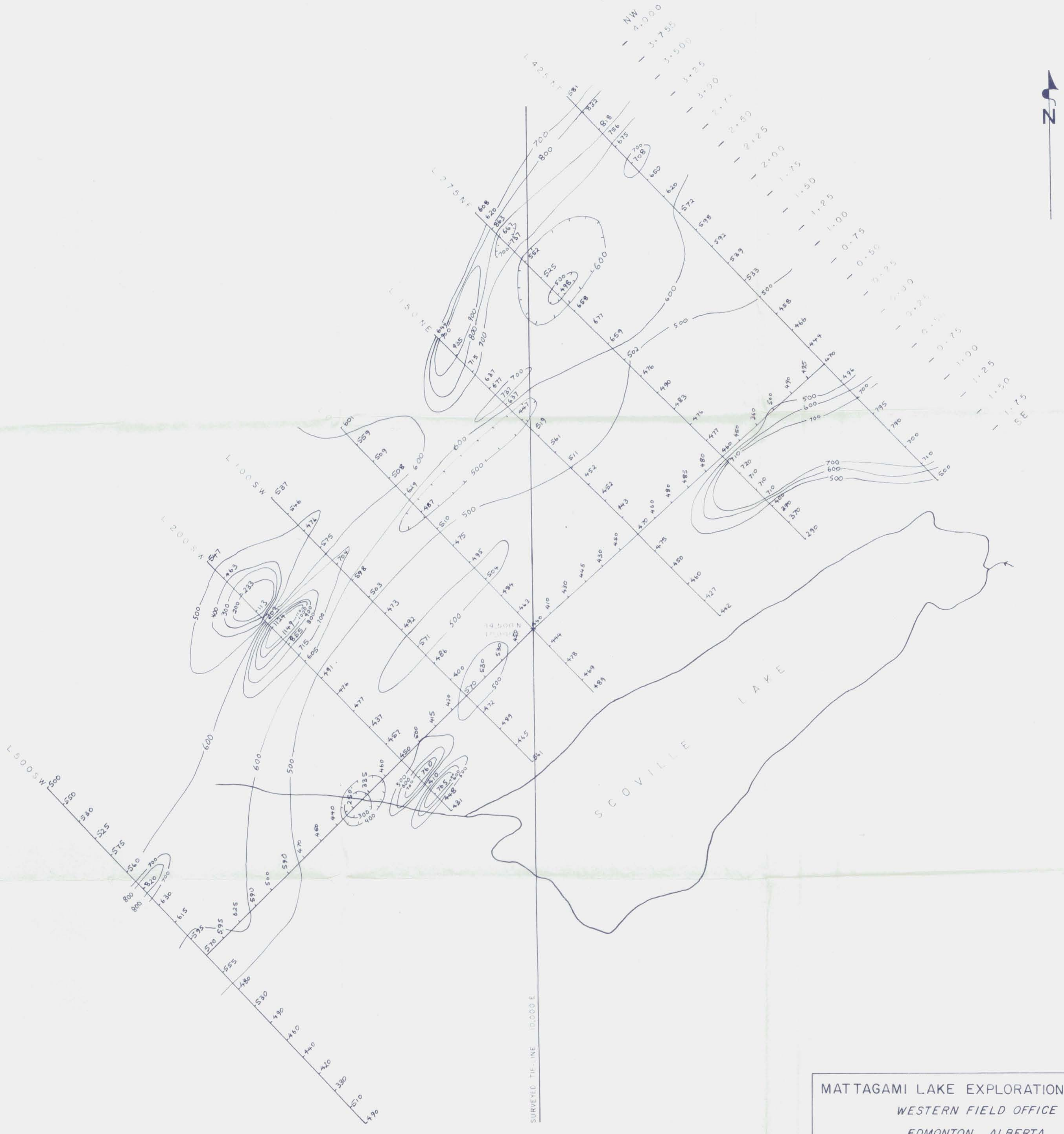
MATTAGAMI LAKE EXPLORATION LIMITED

Marn Project

Figure 5

Grid Location Map

N
L 10,250 E
16,150 N
L 16,050 N
L 15,950 N
L 15,900 N
L 15,850 N
L 15,800 N
D.D. Holes
MINI-GRID
L 10,450 E
LAKE SCOVILLE GEOLOGY GRID
L 10,500 E
D.D. Hole M-80-1
D.D. Hole M-80-4
L 15,200 N
L 15,100 N
L 15,000 N
L 14,900 N
L 14,800 N
L 14,700 N
L 14,600 N
L 14,500 N
L 14,400 N
14,800 N
L 10,600 E
LAKE SCOVILLE
D.D. Hole M-80-2
D.D. Hole M-80-3
14,000 N
13,000 N
12,400 N
12,000 N
11,000 N
L 10,000 E
MT. BREWER GRID
As
LEGEND
Diamond Drill Hole
1 Intrusive Syenite ; Trachytic texture , coarse - med - fine grained
2 Jurrasic Schist
As : Arsenopyrite
: Geological contact : defined; assumed.
: Outcrop
: Induced Polarization Survey Line.
Definite; Probable; Possible.
7 148 500 N
606 000 E
606 500 E
607 500 E
MATTAGAMI LAKE EXPLORATION LIMITED.
WESTERN FIELD OFFICE
EDMONTON, ALBERTA.
MARN PROJECT.
FIGURE : 6
INDUCED POLARIZATION SURVEY LINES
& DIAMOND DRILL HOLE LOCATIONS
SCALE OF METRES
0 50 100 150 200 300 400 metres



MATTAGAMI LAKE EXPLORATION LIMITED.

WESTERN FIELD OFFICE

EDMONTON, ALBERTA

MARN PROJECT.

DAWSON MINING DISTRICT. YUKON TERRITORY

FIGURE 7

SCOVILLE LAKE GRID

MAGNETOMETER SURVEY

McPhar 700

L. Kovac, 1980

DRAWN BY: J. BICZOK.

DATE : NOVEMBER 1980

SCALE OF METRES

0 25 50 100 200 metres

COIL SPACING = 150m

MATTAGAMI LAKE EXPLORATION LIMITED.

WESTERN FIELD OFFICE

EDMONTON, ALBERTA

MARN PROJECT.

DAWSON MINING DISTRICT. YUKON TERRITORY

FIGURE 8

SCOVILLE LAKE GRID

C.E.M SHOOTBACK SURVEY

----- LOW FREQ. (390 Hz)

—·— HIGH FREQ. (5010 Hz)

| ANOMALY AXIS

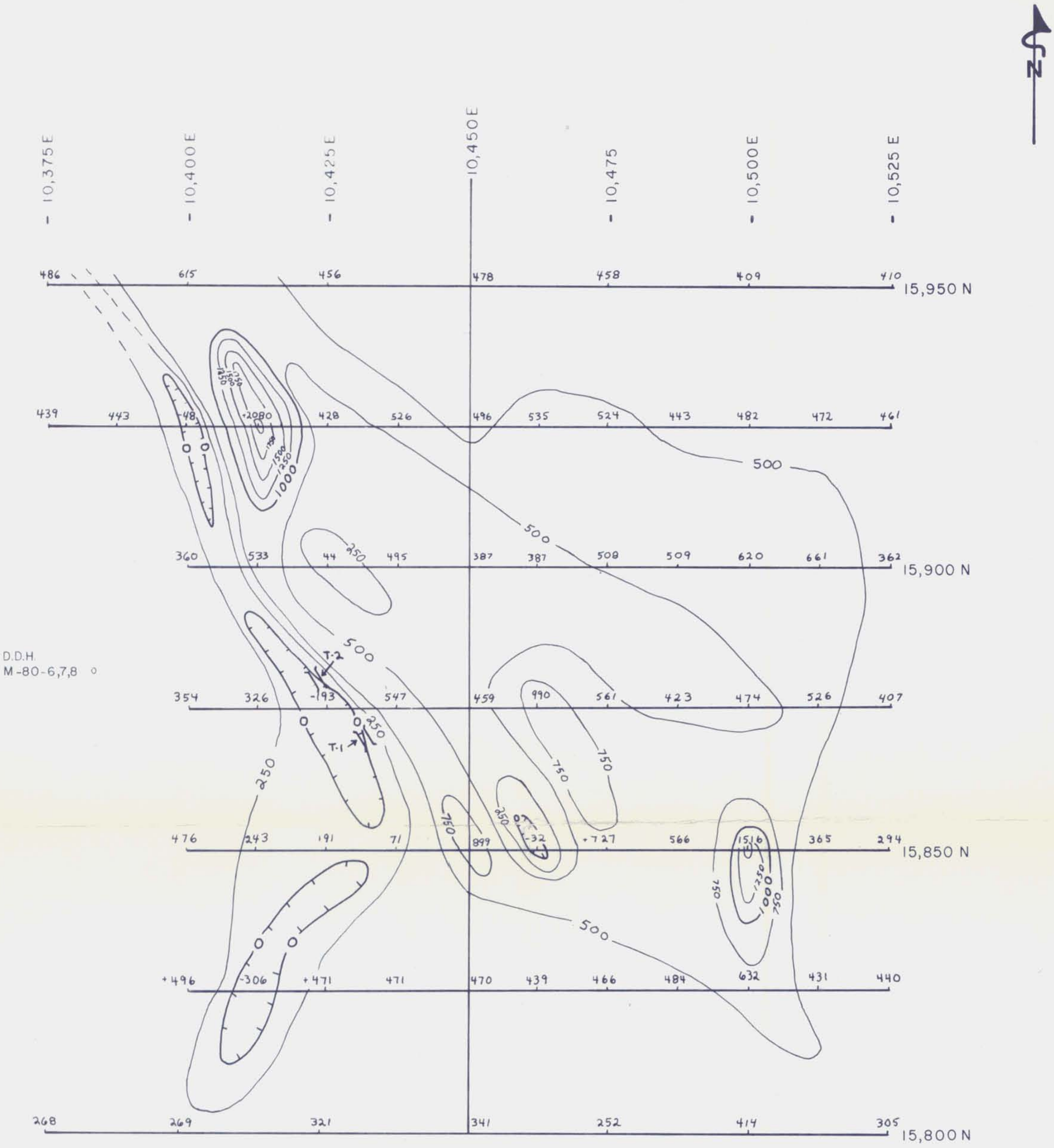
ONE Cm. = 10°

DRAWN BY: J. BICZOK.

DATE: NOVEMBER 1980

SCALE OF METRES

0 25 50 100 200 metres



T-1 TRENCH

MATTAGAMI LAKE EXPLORATION LIMITED

MARN PROJECT.
"MINI-GRID"
FIGURE 9
MAGNETOMETER SURVEY

McPHAR 700 | BASE γ = 500 γ

METRES
0 25

NOV., 1980

JLB.

MATTAGAMI LAKE EXPLORATION LIMITED

MARN PROJECT.

"MINI-GRID"

FIGURE 10

SHOOTBACK SURVEY

- - - - HIGH FREQUENCY (5010 Hz)

— — LOW FREQUENCY (390 Hz)

▬ ▬ ANOMALY AXIS

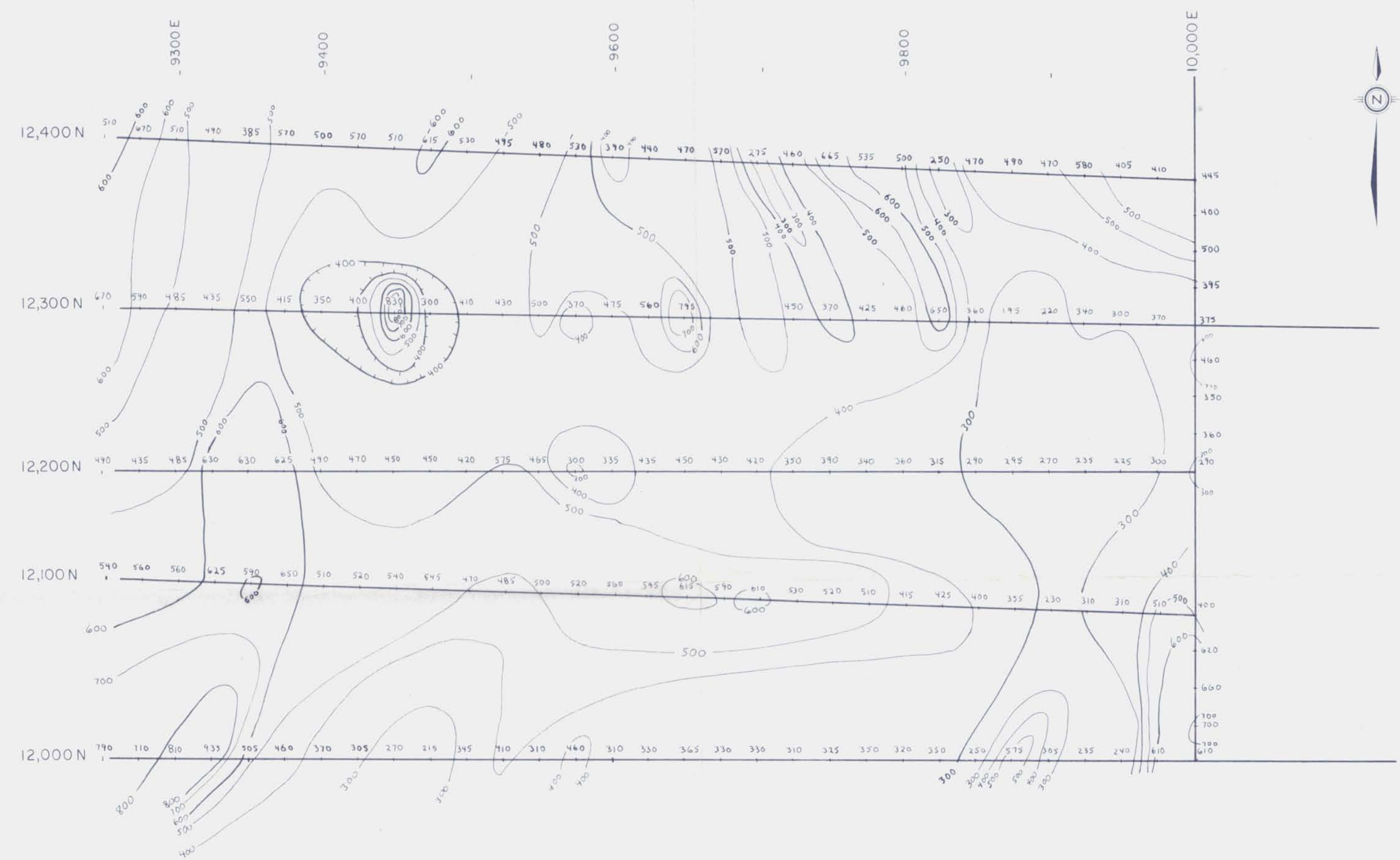
1 Cm. = 10°

METRES

0 25

NOV., 1980

JLB.



MATTAGAMI LAKE EXPLORATION LIMITED.

WESTERN FIELD OFFICE

EDMONTON, ALBERTA

MARN PROJECT

MT. BRENNER VALLEY GRID

FIGURE II

MAGNETOMETER SURVEY

McPhar 700 Fluxgate

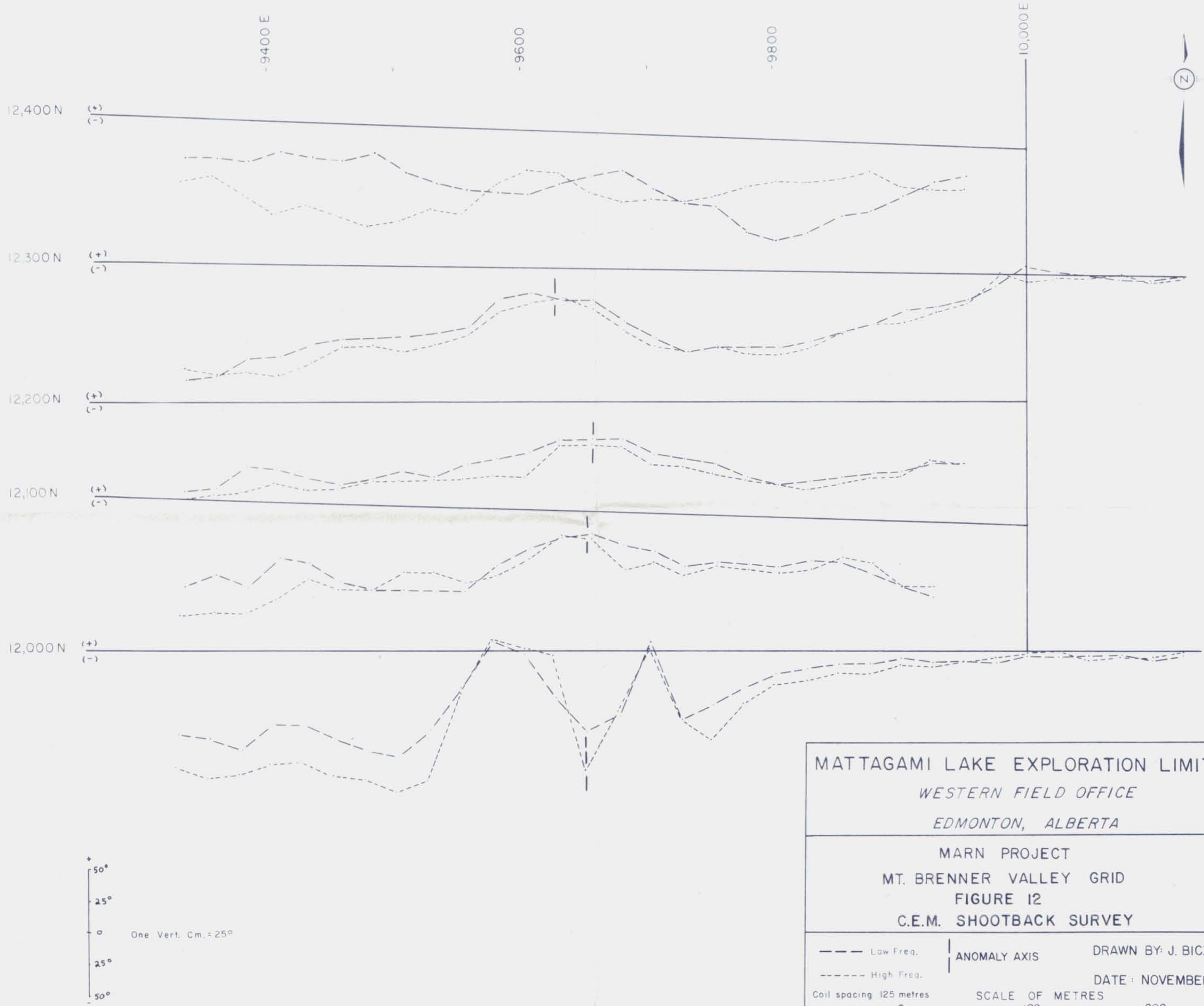
Contour Interval = 100 γ

DRAWN BY: J. BICZOK

DATE: NOVEMBER 1980

SCALE OF METRES

0 100 200



MATTAGAMI LAKE EXPLORATION LIMITED.

WESTERN FIELD OFFICE

EDMONTON, ALBERTA

MARN PROJECT

MT. BRENNER VALLEY GRID

FIGURE 12

C.E.M. SHOOTBACK SURVEY

Low Freq.

High Freq.

ANOMALY AXIS

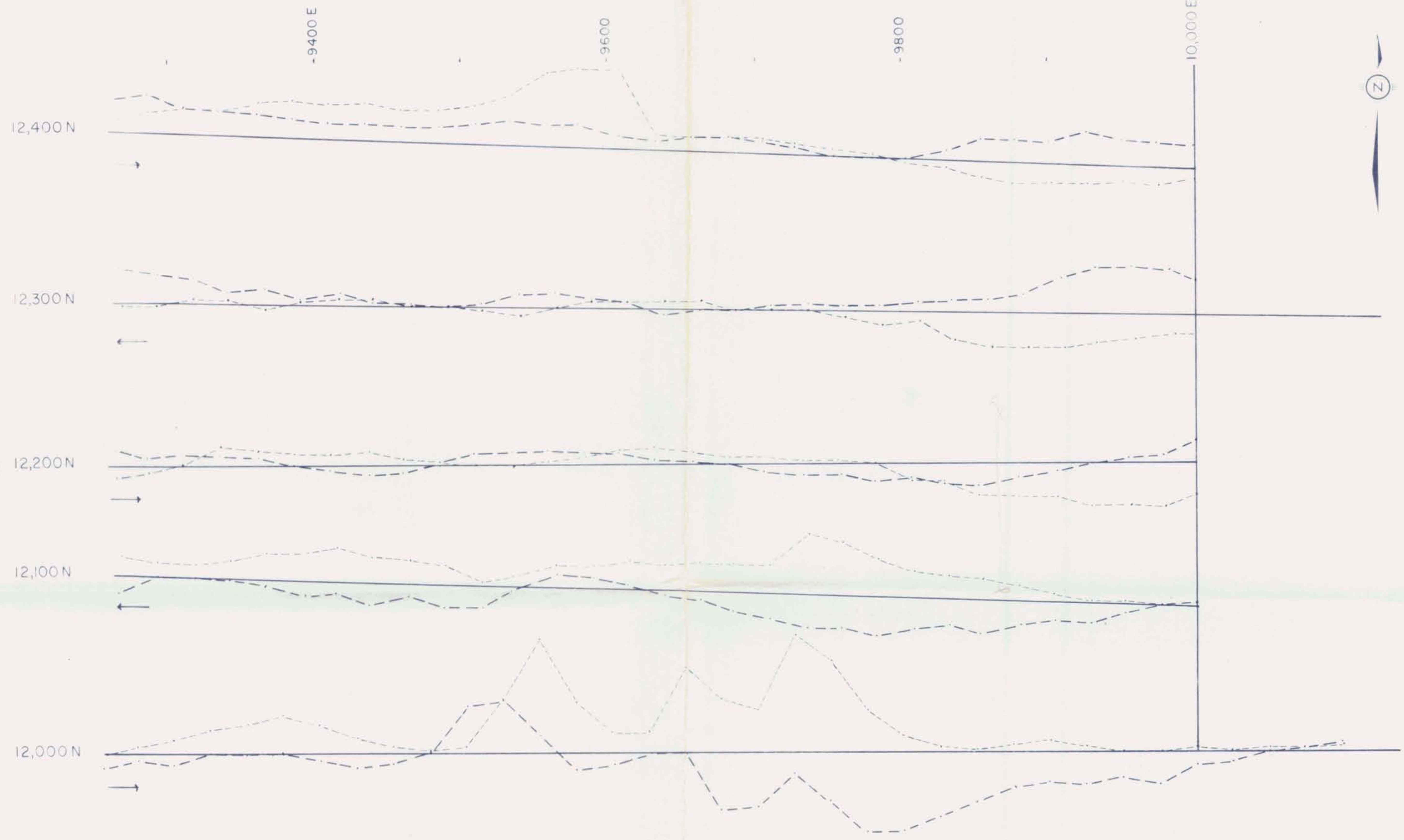
DRAWN BY: J. BICZOK

DATE: NOVEMBER 1980

Coil spacing 125 metres

SCALE OF METRES

0 100 200



Bearing To Transmitter (Seattle, Wash.)

Survey Path

Dip Angle (deg.) — Field Strength (%)

20 + 40
10 + 20
0 + 0
10 - 20
20 - 40

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WESTERN FIELD OFFICE

EDMONTON, ALBERTA

MARN PROJECT

MT. BRENNER VALLEY GRID
FIGURE 13
RADEM SURVEY

---- Field Strength

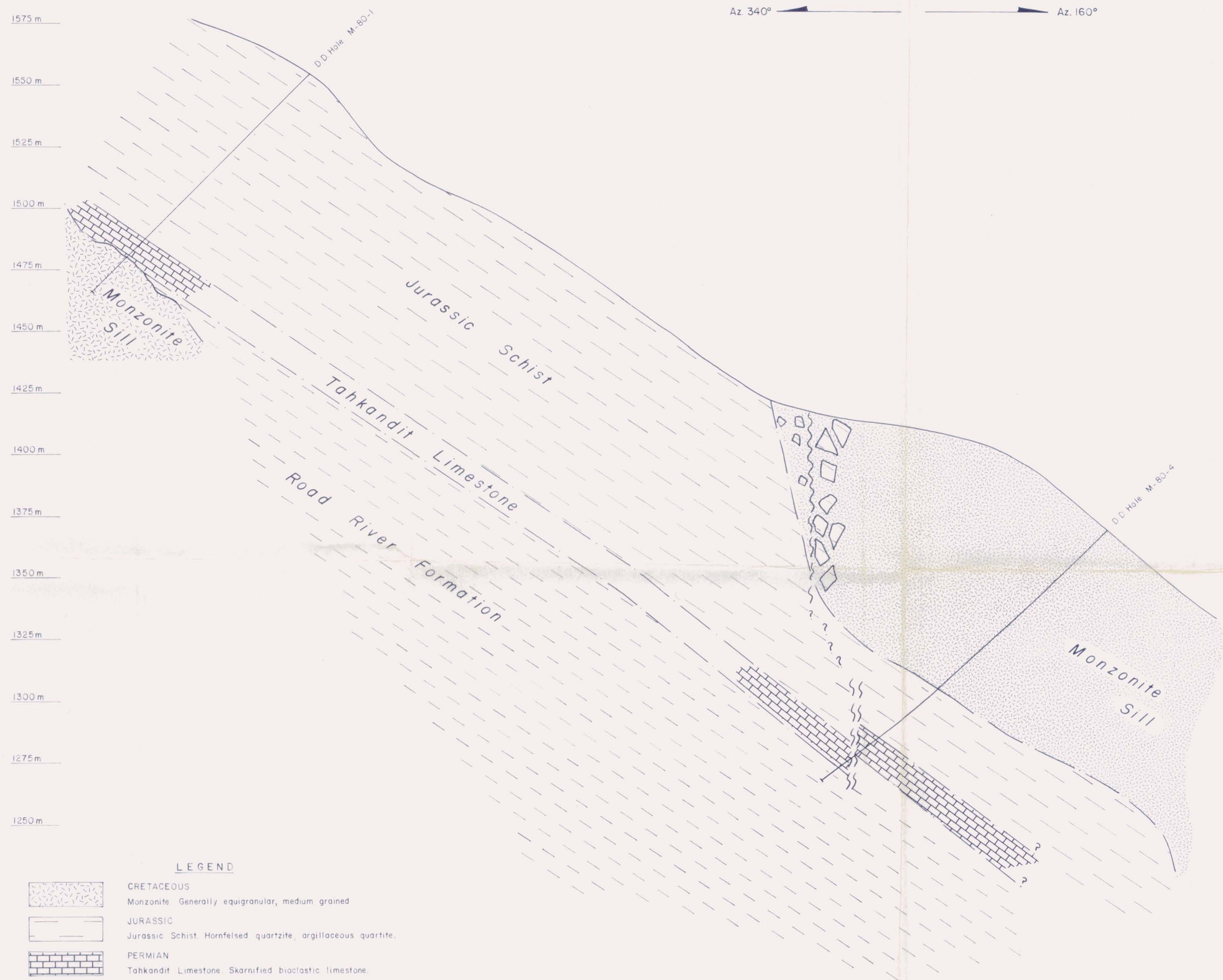
— — Dip Angle

DRAWN BY: J. BICZOK

DATE: NOVEMBER 1980

SCALE OF METRES

0 100 200



LEGEND

CRETACEOUS
Monzonite. Generally equigranular, medium grained.

JURASSIC
Jurassic Schist. Hornfelsed quartzite, argillaceous quartite.

PERMIAN
Tahkandit Limestone. Skarnified bioclastic limestone.

ORDOVICIAN - SILURIAN
Road River Formation. Quartzite, minor shale, chert.

Geological contact; defined, assumed

Fault; defined, assumed

MATTAGAMI LAKE EXPLORATION LIMITED.
WESTERN FIELD OFFICE
EDMONTON - ALBERTA

MARN PROJECT
FIGURE 15
CROSS SECTION FROM M-80-1 TO M-80-4

LOGGED BY: J. BICZOK.
DRAWN BY: D.R. BULL.
DATE: DECEMBER 1980

scale of metres
0 10 20 30 40 50 60 70 80 90 100 m.

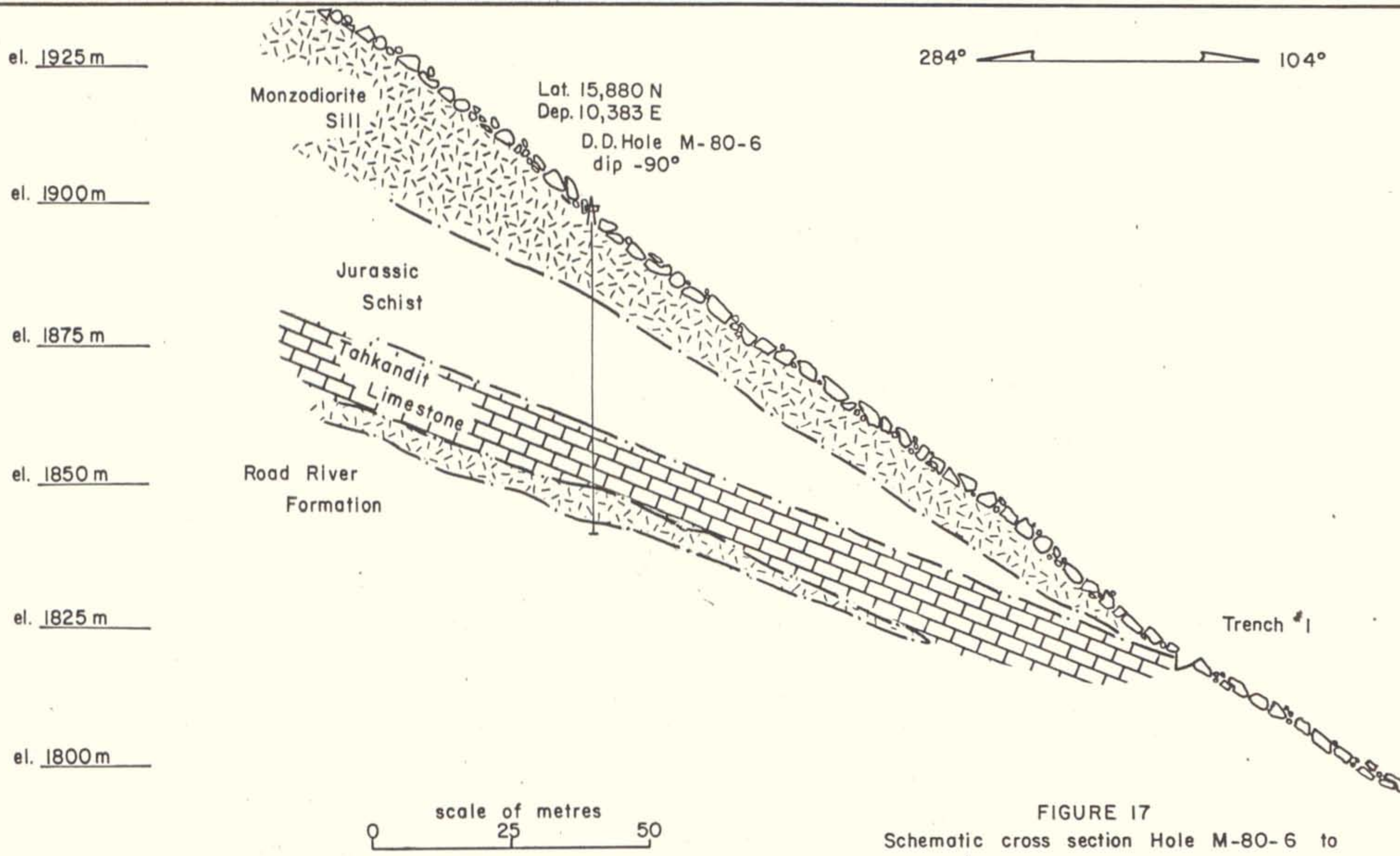


FIGURE 17

Schematic cross section Hole M-80-6 to Trench #1

FIGURE 18

MATTAGAMI LAKE EXPLORATION LIMITED.	
WESTERN FIELD OFFICE	
EDMONTON - ALBERTA	
PROJECT: MARN	LATITUDE: 15,880 N
ANOMALY:	DEPARTURE: 10,383 E
SECTION:	BEARING:
D.D. HOLE Nº: M-80-6, 7, 8,	DIP AT COLLAR:
LOGGED BY: J. BICZOK	DRAWN BY: D. R. BULL.
	DATE: DECEMBER 1980

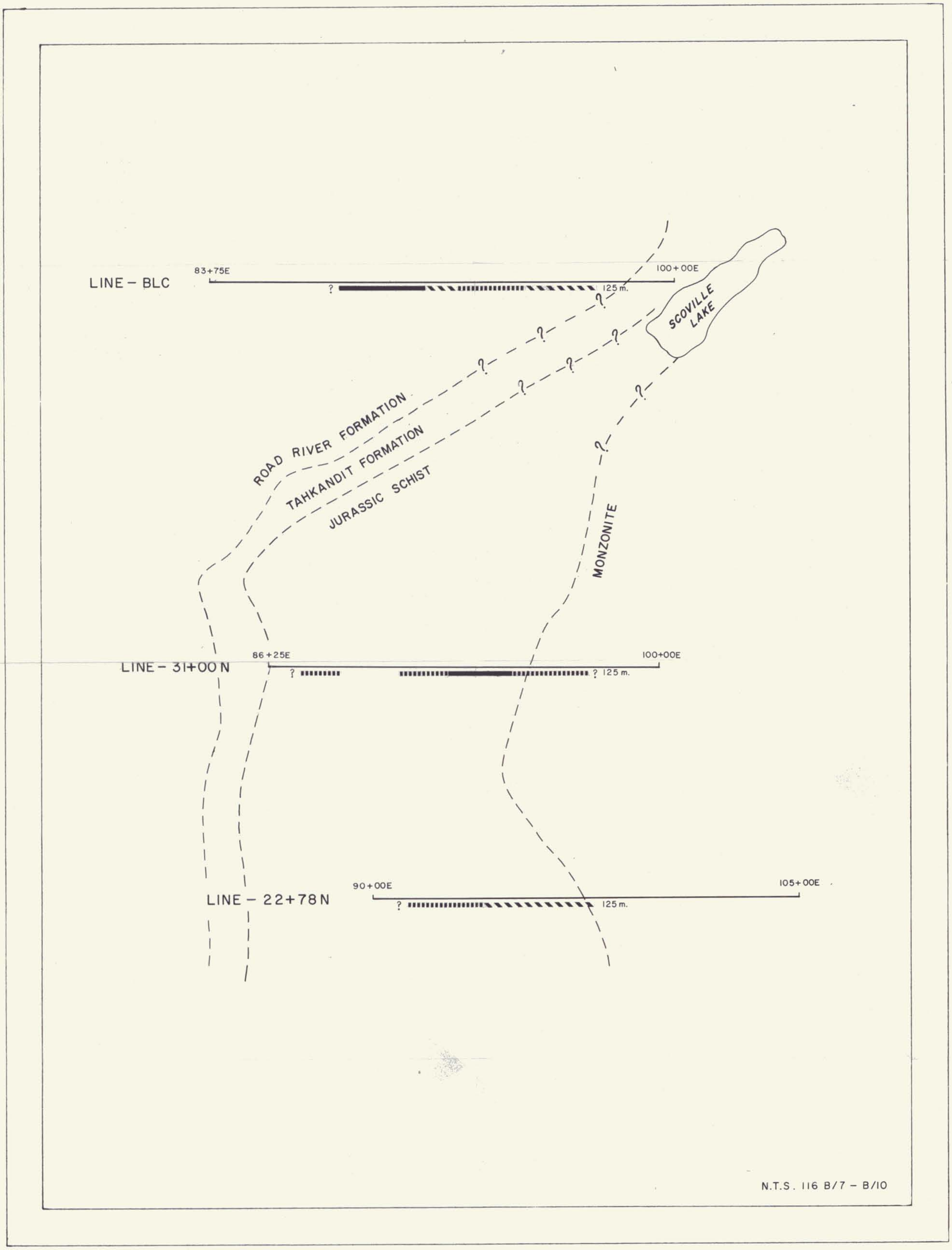
0 5 10 15 20 metres

DWG. NO. – I.P.P. – 2093

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY TEST SURVEY

PLAN MAP



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE

PROBABLE

POSSIBLE

NUMBER AT END OF ANOMALIES INDICATE SPREAD USED.

MATTAGAMI LAKE EXPL. LTD

MARN PROJECT, DAWSON M.D.

YUKON TERRITORY

SCALE

200 100 0 200 400 600 800 METRES

1:10,000

DRAWN: R.J.P.

DATE: SEPT. 1980

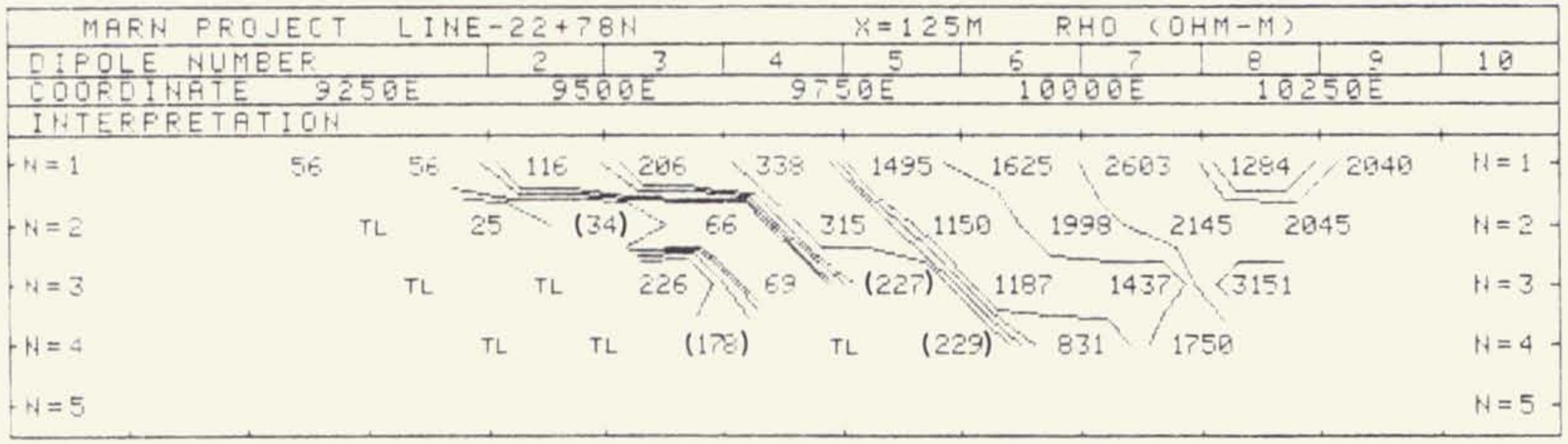
APPROVED:

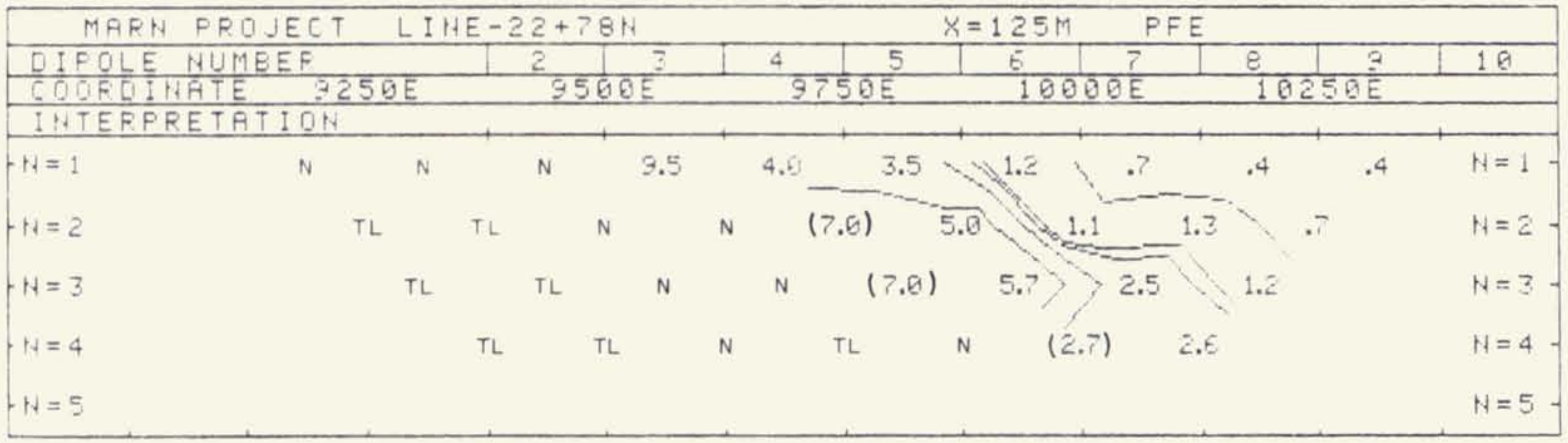
DATE: 11/28/80

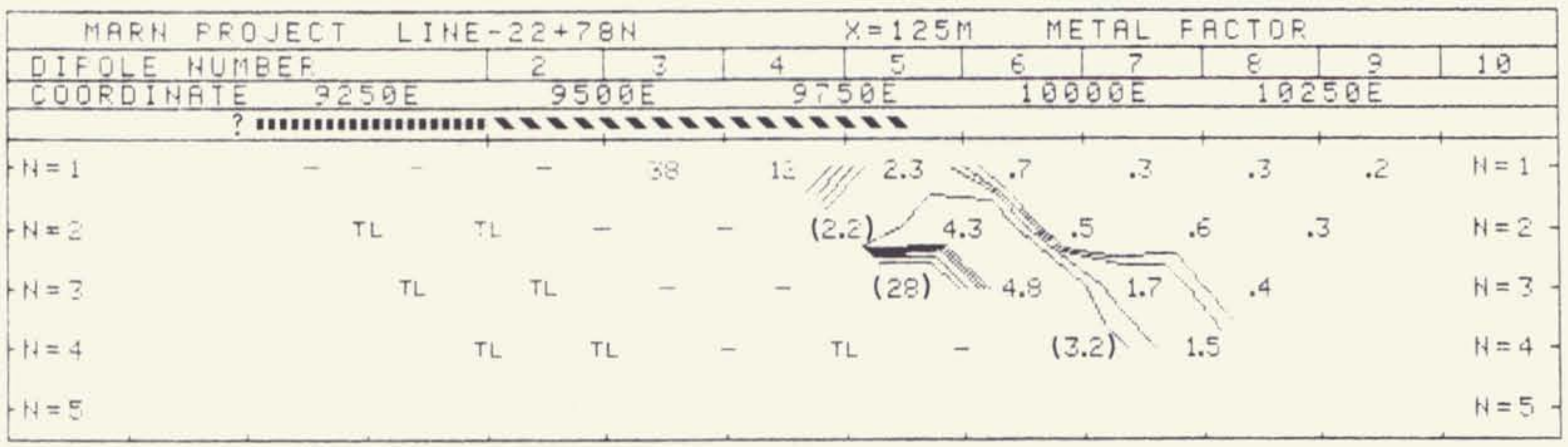
PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, P. G. HALLOF

Expiry Date: February 25, 1981

DWG. NO.- I.P.P. – 2093







DWG. NO. – I.P. – 5224-1

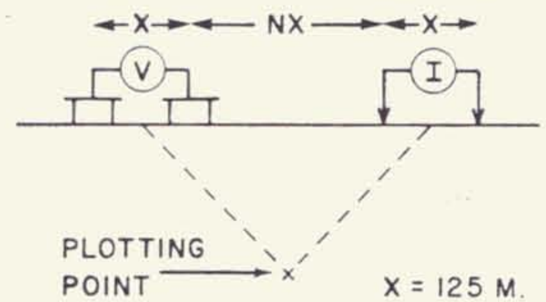
MATTAGAMI LAKE EXPL. LTD.

MARN PROJECT, DAWSON M.D.

YUKON TERRITORY

LINE NO. – 22+78N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES 0·3 – 5·0 HZ.

NOTE – CONTOURS AT LOGARITHMIC INTERVALS 1, – 1·5, – 2, – 3, – 5, – 7·5, – 10

DATE SURVEYED JUNE 1980

APPROVED

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA P.G. HALLOF

DATE 11/28/80

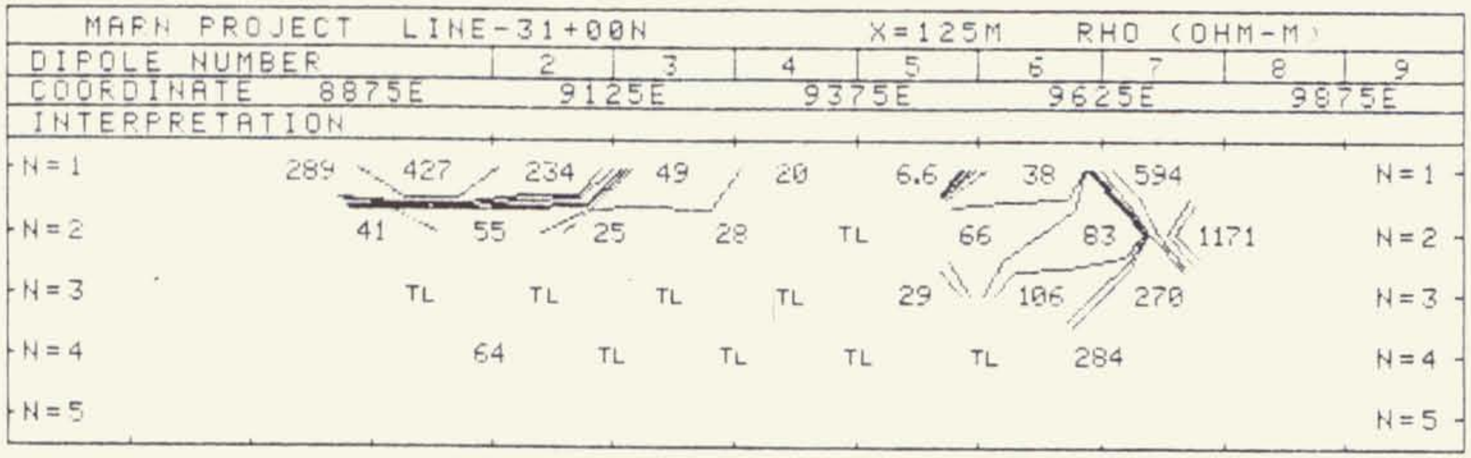
Expiry Date: February 25, 1981

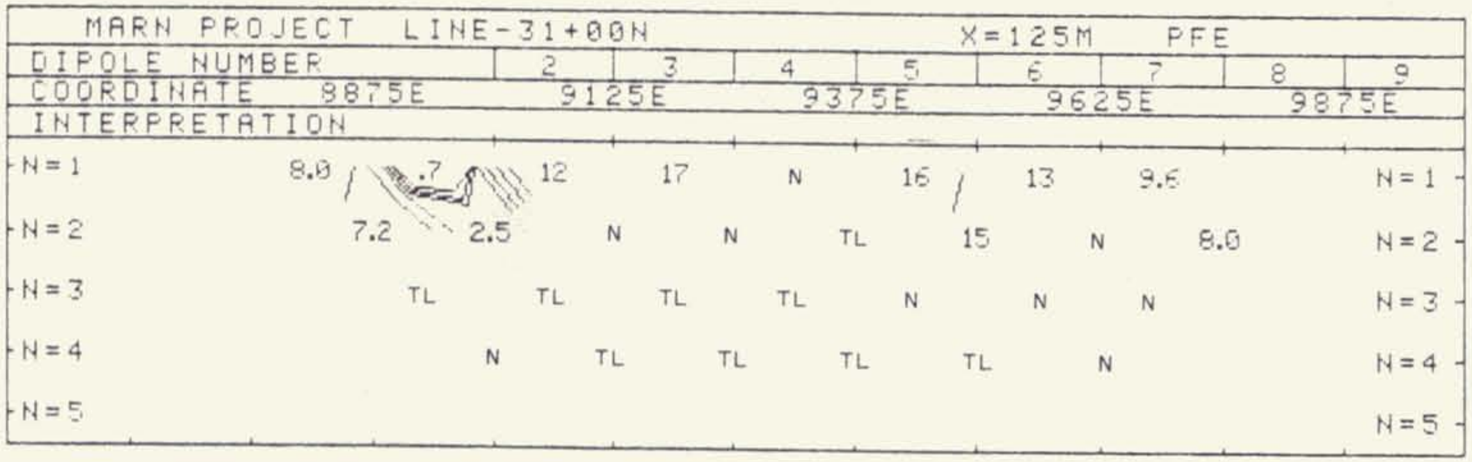
PHOENIX GEOPHYSICS LIMITED

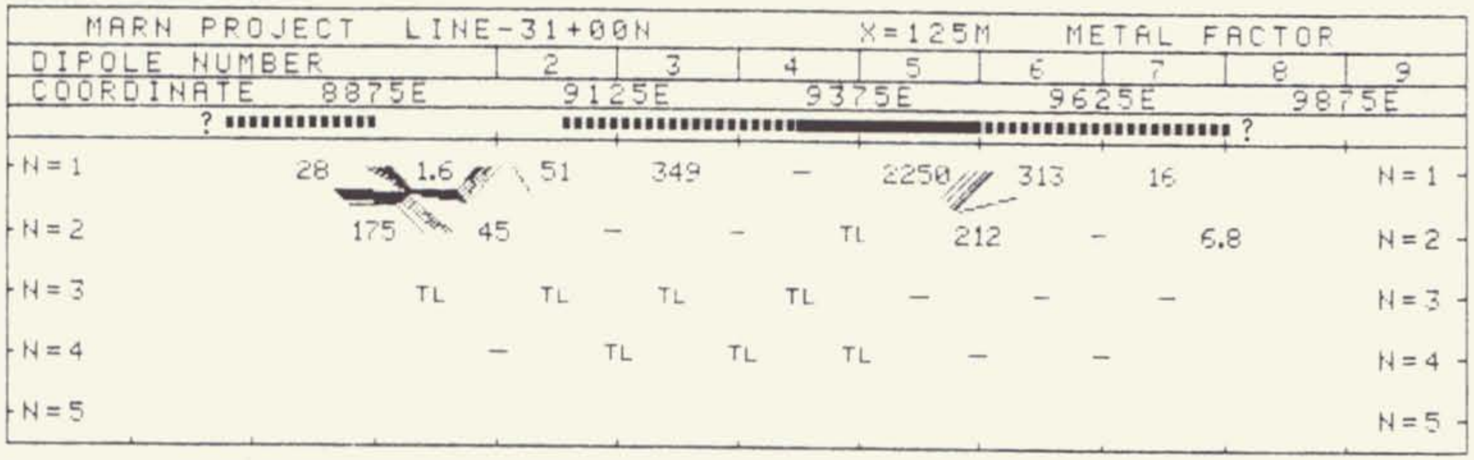
INDUCED POLARIZATION AND RESISTIVITY

TEST SURVEY

DWG. NO. – I.P. – 5224-2







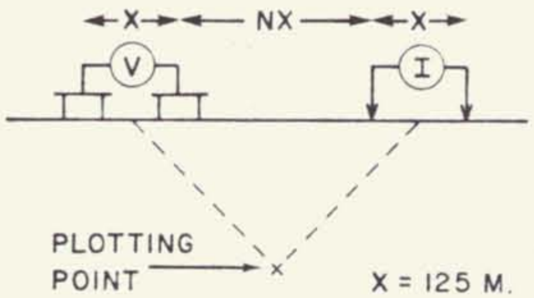
MATTAGAMI LAKE EXPL. LTD.

MARN PROJECT, DAWSON M.D.

YUKON TERRITORY

LINE NO. – 31+00N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONE

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES 0·3 – 5·0 HZ.

NOTE – CONTOURS AT LOGARITHMIC INTERVALS
1, –1·5, –2, –3, –5, –7·5, –10

DATE SURVEYED JUNE 1980

APPROVED

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, P. G. HALLOF

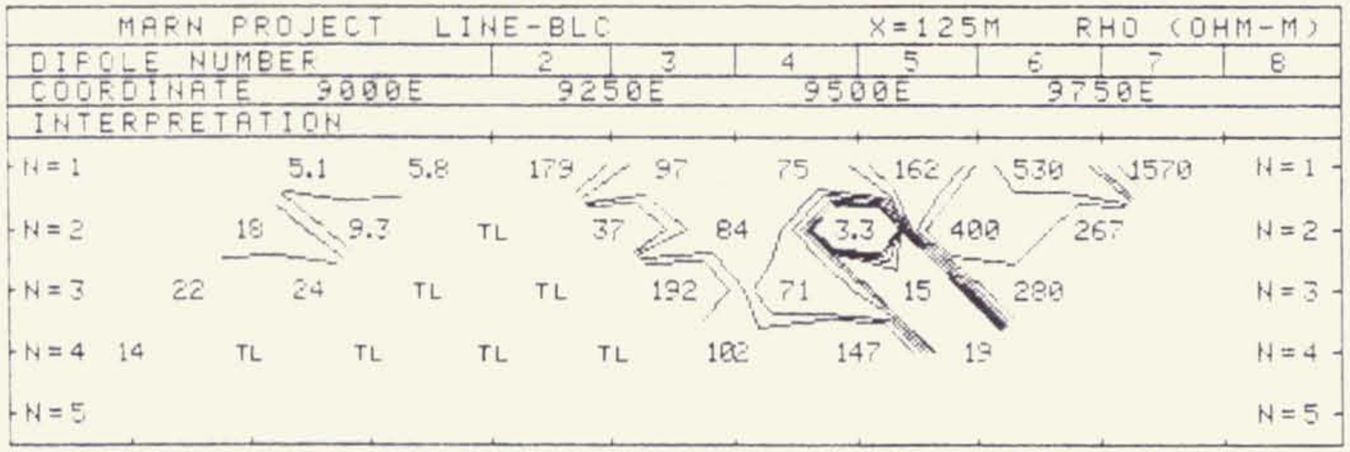
DATE 1/28/80

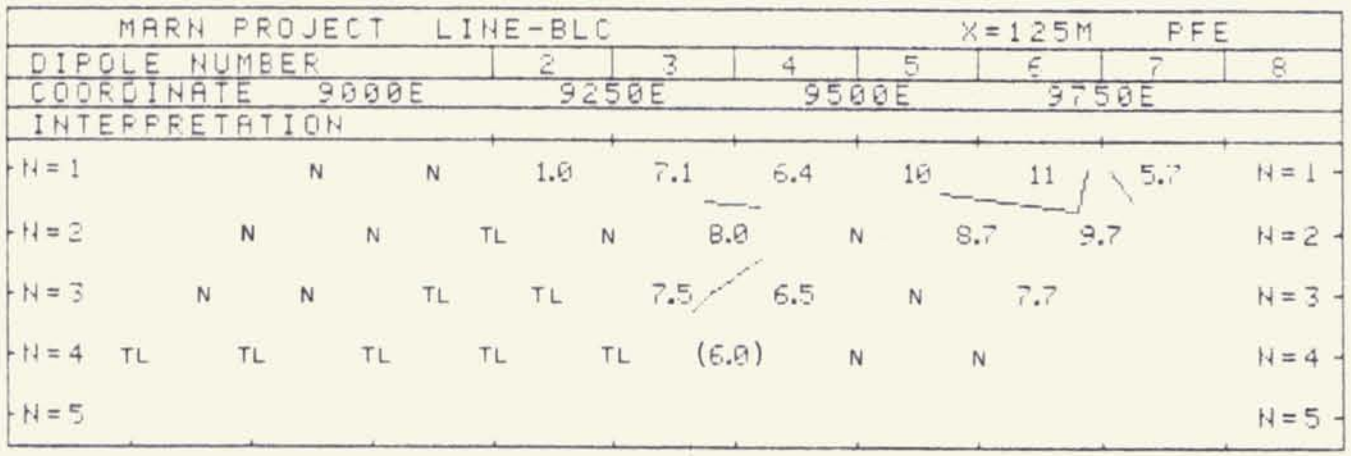
Expiry Date: February 25, 1981

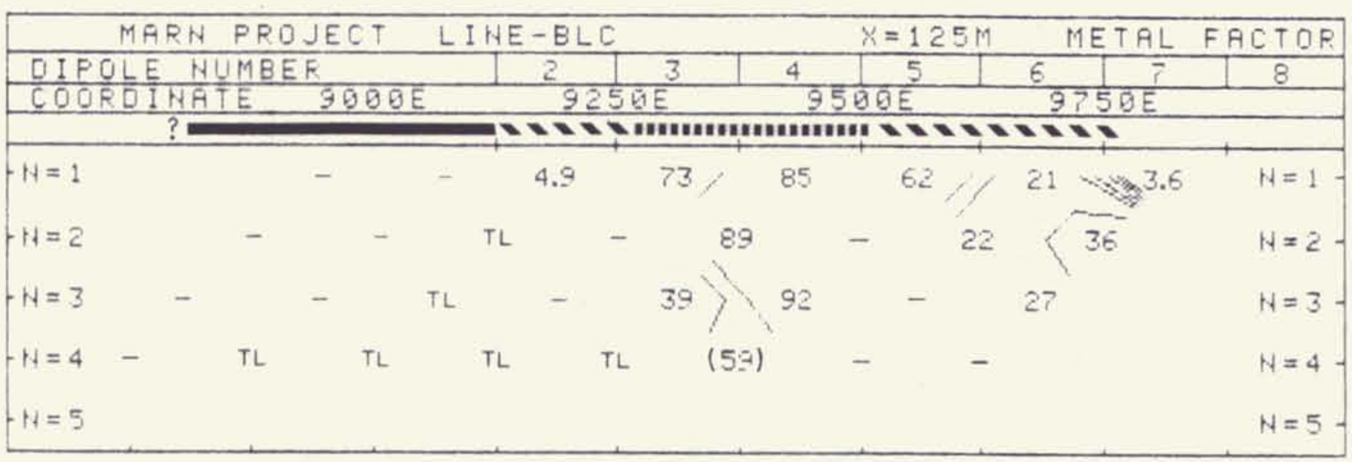
PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY

TEST SURVEY







DWG. NO. – I.P. – 5224-3

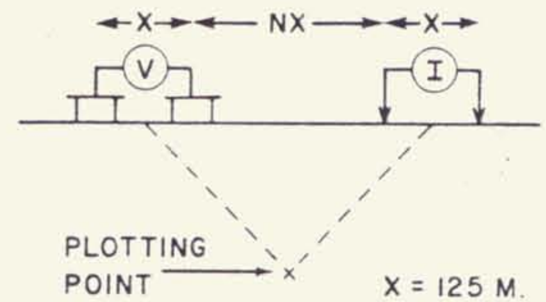
MATTAGAMI LAKE EXPL. LTD.

MARN PROJECT, DAWSON M.D.

YUKON TERRITORY

LINE NO. – BLC

ELECTRODE CONFIGURATION



SURFACE PROJECTION
OF ANOMALOUS ZONE

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES 0·3 – 5·0 HZ.

DATE SURVEYED JUNE 1980

APPROVED

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, P. G. HALLOF

DATE 11/23/80

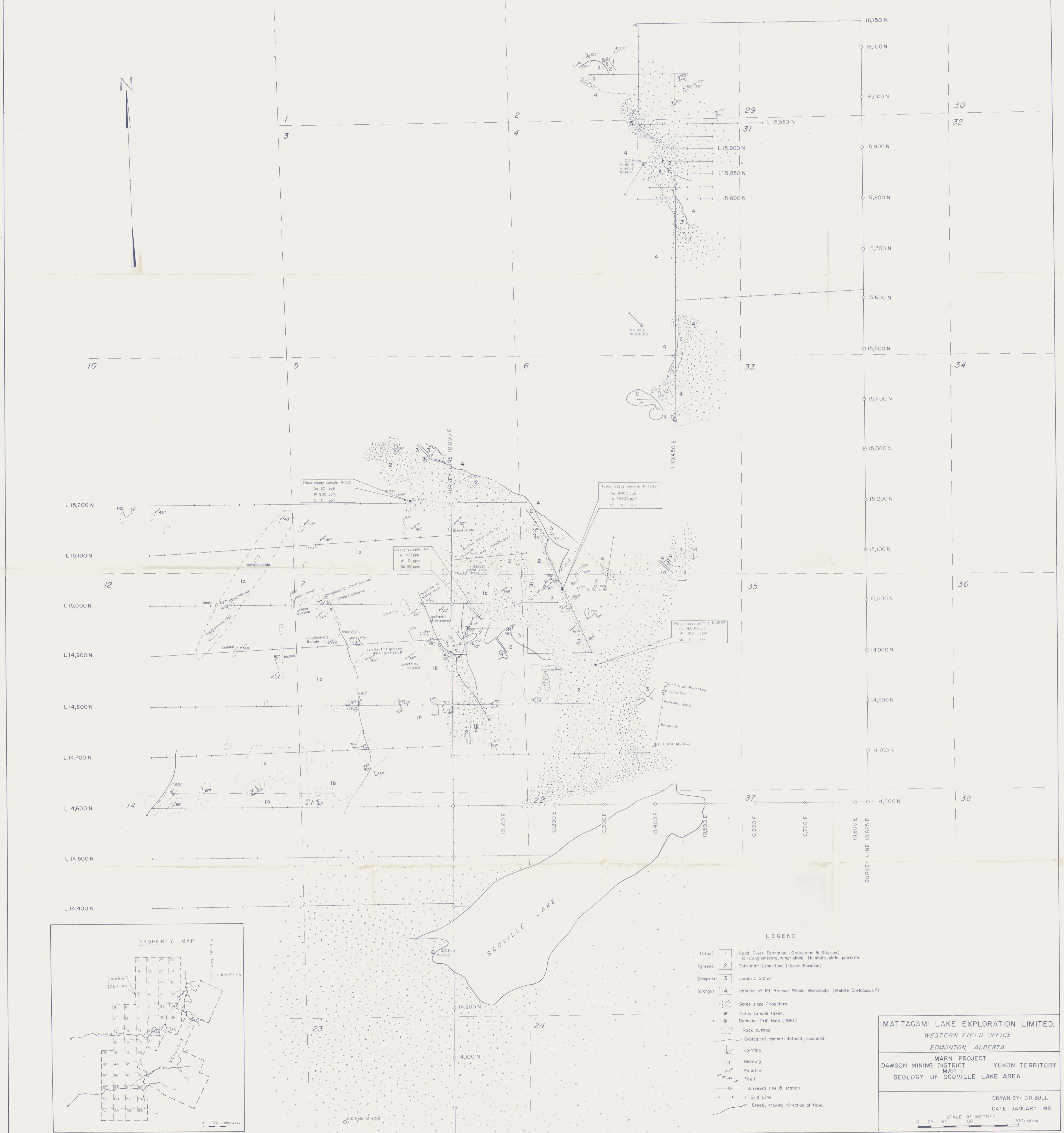
Expiry Date: February 25, 1981

NOTE – CONTOURS AT
LOGARITHMIC INTERVALS
1, – 1·5, – 2, – 3, – 5, – 7·5, – 10

PHOENIX GEOPHYSICS LIMITED

INDUCED POLARIZATION AND RESISTIVITY

TEST SURVEY


N
16,150 N
16,100 N
16,000 N
L 15,950 N
L 15,900 N
L 15,850 N
L 15,800 N
15,900 N
15,800 N
15,700 N
15,600 N
15,500 N
15,400 N
15,300 N
15,200 N
15,100 N
15,000 N
14,900 N
14,800 N
14,700 N
L 14,600 N
D.D. Holes M-80-6 M-80-7 M-80-8
D.D. Hole M-80-5B
L 10,450 E
SURVEY LINE 10,000 E
Talus assay sample R-1501 Au 20 ppb W 900 ppm Sn 0 ppm
Talus assay sample R-1502 Au 4400 ppb W 35000 ppm Sn 0 ppm
Talus assay sample R-1503 Au 14,000 ppb W 120 ppm Sn 0 ppm
Assay sample R-8 Au 120 ppb W 0 ppm Sn 30 ppm
L 15,200 N
L 15,100 N
L 15,000 N
L 14,900 N
L 14,800 N
L 14,700 N
L 14,600 N
L 14,500 N
L 14,400 N
conglomerate
shale
quartzite
schist-slate
Road River Formation
Limestone
Jurassic schist
Monzonite
D.D. Hole M-80-4
D.D. Hole M-80-1
10,100 E
10,200 E
10,300 E
10,400 E
10,500 E
10,600 E
10,700 E
10,800 E
SURVEY LINE 10,825 E
SCOVILLE LAKE
D.D. Hole M-80-2
D.D. Hole M-80-3
14,200 N
14,100 N
PROPERTY MAP
MARN CLAIMS
LEGEND
(blue) 1 Road River Formation (Ordovician & Silurian)
Ia: Conglomerate, minor shale. Ib: shale, slate, quartzite.
(green) 2 Tahkandit Limestone (Upper Permian)
(magenta) 3 Jurassic Schist
(orange) 4 Intrusive of Mt. Brenner Stock: Monzonite. (Middle Cretaceous ?)
Scree slope / boulders.
Talus sample taken.
Diamond Drill Hole (1980)
Rock outcrop
Geological contact: defined, assumed.
Jointing
Bedding
Foliation
Fault.
Surveyed line & station.
Grid Line
Creek, showing direction of flow.
MATTAGAMI LAKE EXPLORATION LIMITED.
WESTERN FIELD OFFICE
EDMONTON, ALBERTA
MARN PROJECT.
DAWSON MINING DISTRICT. YUKON TERRITORY
MAP I
GEOLOGY OF SCOVILLE LAKE AREA
DRAWN BY: D.R. BULL.
DATE: JANUARY 1981
SCALE OF METRES
0 25 50 100 200 metres