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SUMMARY REPORT

FOR

MARSHALL BOSTON IRON MINES LIMITED

ON

THEIR BOSTON TOWNSHIP HOLDINGS

BY

A. C. A. HOWE INTERNATIONAL LTD.

N. E. BREWSTER, B.Sc., F.G.A.C.

REPORT NO. 417  
September 29, 1980

TORONTO, ONTARIO

## SUMMARY

Marshall Boston Iron Mines Limited holds a group of contiguous unpatented and 9 patented claims in Boston Township, Larder Lake Mining Division, Ontario. The 9 patented claims are held under option. The unpatented mining claims referred to as the North Group can be reached by walking the Ontario Northland Spur line servicing the Adams Mine. The 9 patented claims and unpatented mining claims referred to as the South Group can be most readily reached from the village of Boston Creek. From Boston Creek a bush road leads north approximately 1.5 miles to the Adams Mine Spur line. Approximately 0.75 miles from this point the spur line (paralleled by a tractor road) enters claim 26692, on which two extensive trenches have been excavated by previous operations.

On the South claim group gold values were obtained in two parallel irregular quartz veins. An average assay based on previous sampling efforts yielded 0.23 oz. gold across an average width of 1.63 feet through a length of 440' on the No. 1 (easternmost) vein. Check sampling (4 samples) of this same vein by the writer during August, 1972 yielded an average assay of 0.541 oz. gold across an average width of 1.32' through a distance of 106 feet.

An average assay of the No. 2. (westernmost) vein calculated from old sampling data in company yielded an average assay of 0.559 oz. gold across an average width of 1.45' through a distance of 188 feet. Check sampling (18 samples) of this vein by the writer during August of 1972 yielded an average assay of 0.623 oz. gold across an average width of 0.80' through 131 feet.

Following surface sampling of the veins two diamond drill holes were spotted to test underground continuation. Core from the first hole 72-G-1 returned an average assay of 0.070 oz. Au and 0.130 oz. Ag across a 5'1" core distance from 104'4.5" to 109'5.5", the highest value in this section occurred across a one foot width from 106' to 107' which assayed 0.22 oz. gold and 0.13 oz. silver. A second section in the same hole 72-G-1 yielded average assays of 0.011 oz. gold and 0.022 oz. silver across a 5'3" distance from 188'10" to 194'1".

A second hole 72-G-2 intersected the quartzose sections, however negligible gold values were returned upon assaying.

On the north claim group free gold is reported to have been obtained in a quartz replacement zone located on claims 72595 and 72600. Scattered patches of pyrite and molybdenite mineralization were also found which gave erratic gold values. During March and April of 1972 geophysical surveys (electromagnetometer and magnetometer) were conducted over the claim group in an attempt to delineate zones of mineralization. A northwesterly trending zone of high magnetic intensity crosses the southwestern portion of the claim group the outside boundaries being 8W and 18W on the baseline. This feature is flanked on the northeast by a magnetic low in the south central portions of claims 72595 and 72596. This anomaly runs for 1100' from station 10 south on line 2E to station 3 south on line 6W. These areas have not been further investigated.

A program of work consisting of surface geological mapping, prospecting, rock sampling and geophysical surveying is recommended for the south claims and a program of surface geological mapping, prospecting and rock sampling is recommended for the north claims, with particular attention paid to areas of previous trenching activities.

The recommended program is estimated to cost \$24, 720.00.

PROPERTY

Marshall Boston Iron Mines Limited holds a group of contiguous mining claims totalling 9 patented 8 leased, 1 gravel file and 7 staked claims in Boston Township, Larder Lake Mining Div. Ontario. The 9 patented claims are held under option. The claims may be more particularly described as follows:

<u>STAKED CLAIMS</u>	<u>DATE RECORDED</u>
L550001	Jan.22/80
L550002	"
L550004	Jan.31/80
L550005	Jan.22/80
L548998	"
L548999	"
L549000	"

LEASED CLAIMS

L72596  
L72597  
L72598  
L72599  
L72600  
L72601  
L72602  
L72603

GRAVEL FILE

L72595

PATENTED CLAIMS

L26690  
L26691  
L26692  
L26552  
L26553  
L26554  
L26555  
L26556  
L26557

LOCATION AND ACCESS

Eight miles south of Kirkland Lake on Highway 11, at Dane Settlement an all-weather paved road leads to the Adams Mine, a distance of approximately 5 miles. Approximately 4.5 miles from Dane the Ontario Northland Spur servicing the Adams Mine crosses the above road. One quarter mile south of this crossing the railway enters the Marshall claims, traversing them in a south-south-westerly direction. Access to the northern section of the claim group is most easily attained by walking the spur line.

The more southerly optioned claims can be readily reached from the village of Boston Creek. From Boston Creek a bush road leads northerly for approximately 1.5 miles where it intersects the Adams Mine Spur line. The spur line, paralleled by a newly broken tractor trail, enters claim 26692 approximately 3/4 of a mile to the north. From this point a trail 100' long leads to the trenches on claim 26692.

Three small lakes are located within the Marshall property, one is called Hildas, the other two are unnamed.

One irregular patented claim 6638½ lies within the Marshall property boundary but does not form part of the holdings of Marshall Boston Iron Mines Limited.

HISTORY OF THE PROPERTY

1908: The original work on claims 72595 and 72600 (in the North Group) was performed by Jack Miller. A syenite porphyry dyke largely replaced by quartz has been trenched and stripped for a length of 1200 feet. Scattered patches of pyrite and molybdenite mineralization give erratic values in gold.

1937: Extensive work on the south group showed the presence of gold in two veins. An average assay value calculated from previous sampling data in company files showed 0.23 oz/Au per ton over 1.63' through a length of 440' on the No. 1 vein and an average value of 0.559 oz./Au per ton across 1.42 through a length of 188' on the No.2 vein.

Old reports also describe a strong shear lying 18 feet east and parallel to the No.1 vein from which a value of 0.14 oz./Au was reported over 2.3'; additionally a vein is reported 150' west of the No.2 vein on which some work was reportedly completed but for which no records are available.

1954: Shunsby Gold Mines Limited owned part of what now forms the Marshall claims. This company carried out trenching, test-pitting, and diamond drilling on claims 72600 and 72595, revealing minor amounts of gold mineralization.

1964: Charles Marshall acquired 9 claims around Hildas Lake covering the old showings. The original trenches were cleaned out and additional sections blasted along the quartz replacement zone discovered by Miller in 1908. Patches of pyrite and molybdenite with some coarse free gold were revealed by this work. This activity was followed by a limited drilling program, the core from which has since been discarded.

1972: Marshall Boston Iron Mines Limited carried out limited surface sampling of the old trenches, followed by the drilling of two shallow holes. The results of that work are described elsewhere in this report.

#### GENERAL GEOLOGY

The geology of Boston Township and part of Pacaud Township has been described in a report by K.D.Lawton, Ontario Department of Mines Vol. LXVI, Part V, 1957. The following is an abstract from this report.

"The consolidated rocks of the area are Pre-Cambrian in age, consisting mainly of Archean volcanics, sediments and intrusives, Late diabase dykes intrude the Archean rocks and are the sole representatives of the Proterozoic era in the area.

"Members of the Keewatin series of early Pre-Cambrian rocks are the dominant formations outcropping in Boston Township. They consist of lava flows, volcanic fragmented rocks and sedimentary rocks. A small area of Timiskaming clastic sedimentary rocks outcrops in the northeast corner of Boston Township. Here the Keewatin and Timiskaming series are in faulted contact. Field relationships in nearby townships, however, indicate that the rocks of Timiskaming age stratigraphically overlie the Keewatin series. In the Kirkland Lake area Thomson<sup>1</sup> has shown that a great structural unconformity separates the Timiskaming series from the underlying Keewatin rocks.

"There are two groups of basic intrusives of post-Keewatin age. The older of the two is composed of diorite and metadiorite, whereas the younger includes serpentinite, hornblendite, diorite and minor diorite porphyry.

"The Keewatin, Timiskaming and post-Keewatin rocks are folded and faulted, and intruded by a variety of igneous rocks classified as Algoman in age. The Algoman series includes rocks of the following composition: granite, syenite, porphyries, diorite and lamprophyre.

"Much of the bedrock is covered by a mantle of unconsolidated clay, sand and gravel, laid down during the period of Pleistocene glaciation that affected this area.

"The rock classification used in this report conforms generally but with some revision to that adopted by Abraham<sup>2</sup> for McElroy Township and the eastern part of Boston Township. In the following table of formations, the members range from oldest at the bottom of the list to youngest at the top, through the rocks within a given group are not necessarily arranged in chronological order."

- 1 J.E.Thomson "The Keewatin Timiskaming Unconformity in the Kirkland District", Transaction, Royal Soc. Can., Section IV, Third Series Vol. XL 1946, pp 113-122.
- 2 E.M.Abraham "Geology of McElroy and Part of Boston Townships", Ontario Department of Mines, Vol. LIX 1950, Part 6, p.8.

TABLE OF FORMATIONS

CENOZOIC

RECENT AND

PLEISTOCENE: Clay, sand, gravel, and boulders.

Great Unconformity

PRECAMBRIAN

KEWEENAWAN OR

MATACHEWAN: Diabase.

Intrusive Contact

ALGOMAN:

Basic syenite; syenite and porphyritic syenite; syenite porphyry; quartz porphyry; granite (dikes and small stocks); lamprophyre; diorite and metadiorite; quartz-feldspar porphyry; felsite.  
Batholithic granite (Round Lake batholith).

Intrusive Contact

HAILEYBURIAN:  
(?)

Diorite; gabbro; hornblendite; serpentinite; diorite porphyry.

Intrusive Contact

TIMISKAMING:

Fine-grained sedimentary rocks; greywacke; arkose; quartzite; slate.  
Conglomerate; conglomerate with some interbedded arkose, slate, and greywacke.

Great Unconformity

POST-  
KEEWATIN (?):

Diorite and metadiorite.

Intrusive Contact

KEEWATIN:

Basic and Intermediate Volcanics: Greenstone; brecciated and carbonate-veined greenstone; andesite, basalt, and pillow lava; dioritic, diabasic, and gabbroic lava; amphibolite; sheared basic lava; fragmental lava; basic lava containing horizons of tuff; injection gneisses, and metamorphosed basic lava and tuff adjacent to the Lebel and Otto syenite stocks; variolitic lava.



KEEWATIN:

Intermediate and Acid Volcanics: Fragmental volcanics, generally porphyritic; porphyritic andesite, dacite, and rhyolite, containing horizons of acid and cherty tuff; dacite; andesite, occasionally fragmental.

Iron formation, including banded silica rock ("lean iron formation").

Acid volcanics, Tuff, Quartzite, etc.: Rhyolite; acid tuff and cherty tuff; agglomerate conglomerate; tuffs, and sediments interbedded with volcanic rocks; tuff and iron formation; tuff, tuffaceous sediments, and their altered equivalents; cherty quartzite.

### GEOLOGY OF THE PROPERTY

The property is predominantly underlain by Keewatin volcanics of Precambrian time. The rocks consist of basic and intermediate volcanics consisting of andesitic, basaltic, pillow, dioritic, gabbroic, and diabasic lavas. Also present on the property are intermediate to siliceous rocks consisting of porphyritic andesite, dacite, and rhyolitic lavas containing horizons of acid and cherty tuffs.

In the northwestern portion of the property two diabase dykes of Keweenawan age intrude the Keewatin rocks. They are dark greenish grey massive rocks which weather to a rich brown colour. They show diabasic textures with chilled edges and coarse grained central portions<sup>3</sup>. Small stocks of Algoman porphyritic syenite and syenite porphyry are also present in this portion of the property.

Trenching on claim 26692 has exposed two narrow irregular parallel auriferous quartz veins in basic volcanics striking N 005 E and dipping 63° to the east. The veins are separated by approximately 80 feet which widens to 93 feet at the northern extremities. At the north end of the No. 1 vein (easternmost) a feldspar porphyry dyke cuts across the vein. This dyke appears to strike 330° and exhibits an apparent dip of 75° - 85° to the east.

Early trenching, stripping and diamond drilling of quartz sulphide mineralization on claims 72595 and 72600 disclosed the presence of gold and molybdenite mineralization.

<sup>3</sup> K.D.Lawton, Ontario Department of Mines Vol. LXVI, Part V, 1957

## STRUCTURAL GEOLOGY

Aside from late Precambrian diabase dykes, Archean bedrock underlies the Boston Township map area. These rocks have been affected by various orogenic episodes which have left them tilted at steep angles, folded, faulted and cut by magmatic intrusion.

The most salient structural feature on the Marshall Boston Iron Mines Limited property is the Boston Fault. Beyond the property boundary to the northeast of Hildas Lake the Boston Fault has an average strike of S45<sup>OW</sup>. Southwest of Hildas Lake the Boston Fault splits into two branches which cross the property in a southwesterly direction. Shearing adjacent to the fault dips vertically or at steep angles.

Many of the formations in the area are quite massive. However, a regional schistosity, which strikes northwest, about parallel to the rock formations is recognized. Wherever recognized the schistosity dips at steep angles.

Locally schistosity is developed in Keewatin country rocks adjacent to large Algoman intrusive masses. In these cases the schistosity is nearly vertical in attitude and strikes parallel to the contact of the intrusive.

Intermediate to acid volcanics may be quite schistose noticeably in the area west of Hildas Lake, and are traversed by a number of narrow shear zones. Extensive fracturing also characterizes these rocks in this area. Schistosity is locally developed in all rock types where they are traversed by or lie adjacent to faults and sheared zones.

## MINERALIZATION

Gold mineralization was reported on the Kenzie vein during 1914. A. G. Burrows and P. E. Hopkins<sup>4</sup> who mapped the area classified the gold as occurring as native gold occasionally associated with tellurium, in quartz and veinlets in the Keewatin greenstones and later intrusions of granite and porphyry.

<sup>4</sup> A.G. Burrows and P.E.Hopkins, Boston-Skead Gold Area, Ontario Department of Mines Vo. XXX 1921, Part 6, pp. 9-10.

The quartz veins are also well mineralized with pyrite, chalcopyrite and molybdenum.

Within quartz veins gold mineralization frequently occurs with the sulphides and with ehlorite streaks.

Certain areas of country rock consisting of greenstones and poyrhyry have been brecciated and partly replaced by quartz and carbonates forming replacement veins.

#### WORK PROGRAM, 1972

During the months of January, February and March of 1972, lines were cut at 200 foot intervals on the north claim group consisting of contiguous claims. Geophysical surveys (electromagnetometer and magnetometer) were carried out in an attempt to pick up quartz zones and associated sulphides. As a result of this work an area of high magnetic susceptibility was picked up trending in a northwesterly direction across the claim group. This zone is approximately 1000 feet wide stretching from 8W to 18W on the baseline and entering the claims on the southern boundary. Parallel to this trend to the northeast a magnetic low crosses the central portion of claims and stretches for 1000 feet from station 10 south on line 2E to station 3 south on line 6W.

Extensive work was performed on the nine optioned claims during the months of July and August. Preliminary work consisted of locating the existing trenches and subsequent removal of accumulated rubble and debris. The trenches were then check sampled (total of 22 samples) to test the reliability of previous sampling. An average assay based on previous sampling results of the No. 1 (easternmost) vein gave 0.23 oz. of gold over an average width of 1.63 feet through a length of 440 feet. Check sampling of this vein (4 samples) yielded an average assay of 0.541 oz. gold across an average width of 1.32 feet through a length of 106 feet.

An average assay of previous sampling on the No. 2 (western-most) vein yielded 0.559 oz. of gold across an average width of 1.45 feet, through a distance of 188 feet. A weighted assay based on check sampling (18 samples) of this vein yielded an average assay of 0.623 oz. gold across an average width of 0.80 feet through a distance of 131 feet.

Following completion of the check sampling two diamond drill holes were spotted to test the underground continuation of the two auriferous veins. The first hole 72-G-1 was spotted 100 feet east of the No. 1 vein approximately 170 feet north of the south claim line (26692) inclined at  $-60^{\circ}$  with an azimuth of  $282^{\circ}$ . This hole picked up the two veins at vertical depths of 95 feet and 171 feet across true widths of 4.2 feet in each vein. The intersection on the No. 1 vein yielded an average assay of 0.070 oz. Au and 0.130 oz. of Ag across a core length of 5'1" from 104'4.5" to 109'5.5", the highest value in this section was across a core distance of one foot from 106' to 107' which assayed 0.22 oz. Au and 0.13 oz. Ag. The second intersection in the same hole (vein No. 2) yielded average assays of 0.011 oz. Au and 0.022 oz. Ag across a core length of 5'3" from 188'10" to 194'1".

A second hold 72-G-2 was spotted 199' east of the No. 1 vein approximately 325 feet north of the south claim line (claim 26692) and 155 feet north of 72-G-1, inclined at  $-50^{\circ}$  with an azimuth of  $282^{\circ}$ . The No. 1 vein appears to have been incorporated in a contact zone between a feldspar porphyry and mafic volcanic rock, however a siliceous section picked up at a vertical depth of 85 feet corresponds with the projected position of the No. 1 vein. The No. 2 vein was intersected at a vertical depth of 153 feet across a true width of 1.6 feet. Negligible values in gold and silver were returned upon assaying of this intersection.

Other pits occurring on the presently designated claim group were not investigated during the above work program, however these represent areas of potential parallel veins.

## CONCLUSIONS

Previous surface work along with that performed confirm the presence of gold mineralization on the southern claim group locally known as the McCrea property. Surface results show gold mineralization in narrow quartz veins which have been extensively sampled plus there is evidence of additional parallel veins which have not been tested.

Diamond drilling conducted during the month of August 1972 confirmed the presence of the two quartz veins at depth. Assay values returned on the core sections were low grade, however due to the nature of the mineralization this does not dismiss the mineral possibilities.

Geophysical investigation of the north claims indicated a lack of significant electrically conductive bodies in the area, however, a zone of high magnetic susceptibility was located and a distinct magnetic low crosses the south central portion of claims 72595 and 72596. The area of low magnetic susceptibility should be examined for the possibility of quartz veins.

## RECOMMENDATIONS

- (A) Surface mapping prospecting, and geophysical surveying of the south claims. No distinct geologic map of the property has yet been produced, thus little is known of geologic environment. The location of additional parallel veins mentioned in old reports is a priority item. The quartz feldspar porphyry lying to the north of vein No. 1 should be examined and sampled along with any additional veins encountered.
- (B) Geological mapping of the quartz zone located on claims 72595 and 72600. This vein zone requires careful sampling.
- (C) The remainder of the north claim group should be geologically mapped and prospected with any new vein zones being carefully sampled.

The estimate costs of the above programs are as follows:

1.	Geologist (2 months) Geological mapping, sampling, prospecting and geophysical survey	\$ 8,000.00
2.	Local labor	2,100.00
3.	Geophysical Interpretation	1,500.00
4.	Assay allowance	2,000.00
5.	Room and Board - 90 man days @ \$40./man day	3,600.00
6.	Vehicle plus gas	1,500.00
7.	Mobilization, demobilization	400.00
8.	Drafting allowance	<u>1,500.00</u>
		\$20,600.00
	Contingencies @ 20%	<u>4,120.00</u>
		<u><u>\$24,720.00</u></u>

Respectfully submitted,

A. C. A. HOWE INTERNATIONAL LTD.



N. E. Brewster, B.Sc., F.G.A.C.

DATED AT TORONTO, ONTARIO THIS 29th DAY OF SEPTEMBER, 1980


R E F E R E N C E S

1. CUNNINGHAM, L.T., "Report on the Hildas Lake Gold Property, Marshall Boston Iron Mines Limited, Boston Township", June 23, 1965.
  
2. LAWTON, K. D., "Geology of Boston Township and Part of Pacaud Township", Sixty-sixth Annual Report O.D.M., Volume LXVI, Part 5, 1957.

CERTIFICATE

I, Norman E. Brewster, of 1870 Bowler Drive, Pickering, Province of Ontario, hereby certify that:

1. I am and have been employed since 1971 as a geologist by A. C. A. Howe International Limited, Mining and Geological Consultants with offices at Suite 826, 159 Bay Street, Toronto, Ontario, M5J 1J7.
2. I am a graduate of Acadia University, Wolfville, N.S., and hold a Bachelor of Science (1969) and Bachelor of Education (1971) degrees. In addition, I have completed one year of post graduate study in geology at the same university. Subsequent to receiving the degree of B.Sc. in 1969 I have practiced my profession in excess of ten years.
3. I am a Fellow of the Geological Association of Canada.
4. I have no interest in Marshall Boston Iron Mines Limited or in the property discussed in this report, nor do I anticipate such interest.
5. This report is based on a knowledge of the Boston Township property in northern Ontario gained from familiarization visits to the area, examination of background information from government files, material obtained from company files and supervision of work carried out during the month of August 1972.

  
N. E. Brewster, B.Sc., F.G.A.C.

DATED AT TORONTO, ONTARIO, THIS 29th DAY OF SEPTEMBER, 1980



A.C.A. HOWE INTERNATIONAL LIMITED

MINING & GEOLOGICAL CONSULTANTS

SAMPLING REPORT

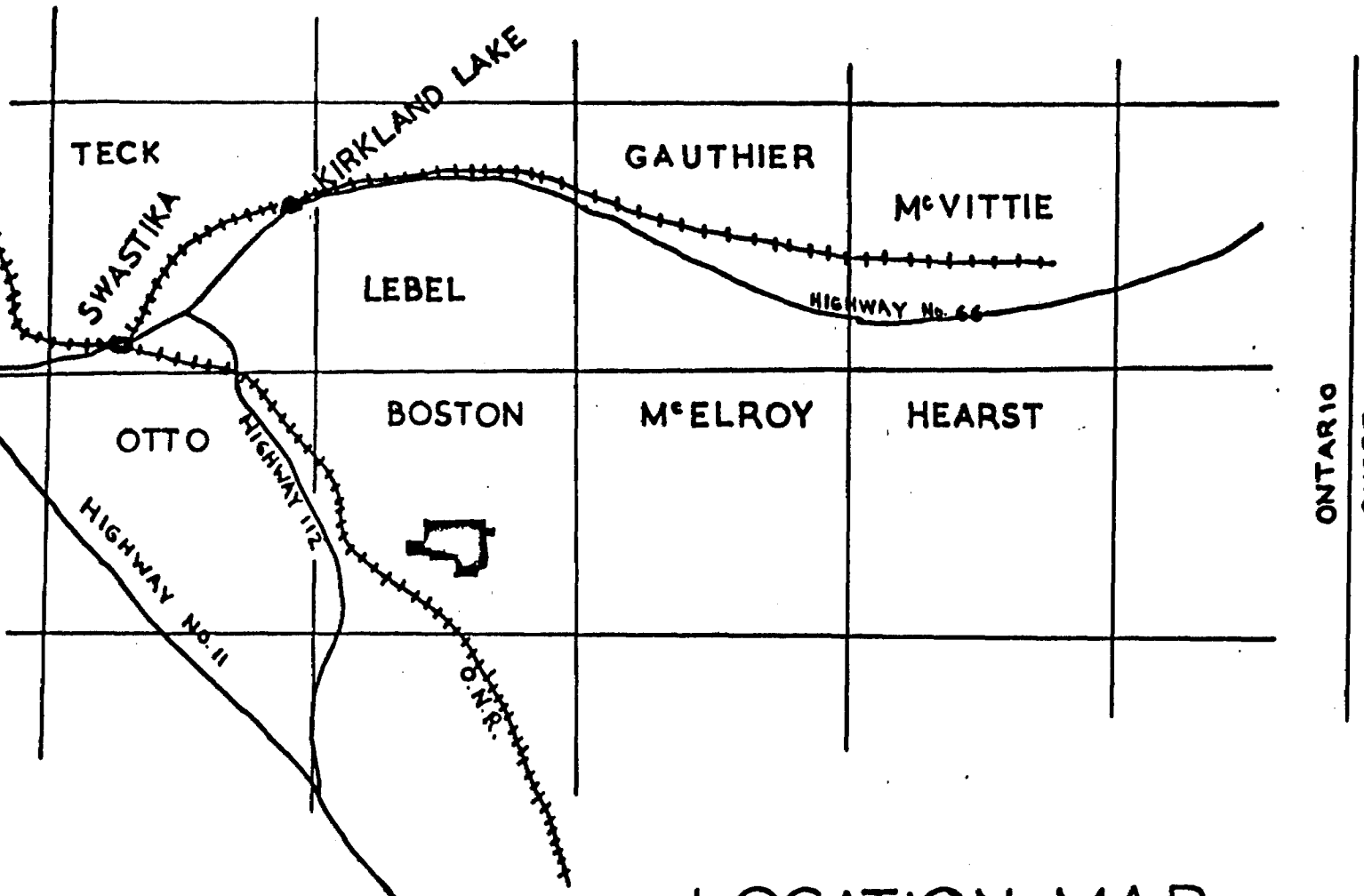
Project.....MARSHALL BOSTON IRON MINES LIMITED.....

Samples Sent To.....SWASTIKA.....Via.....CAR.....Date.....

HOLE 72-G-1

Sample No.	Location	Type	Length	Assay		Remarks			
				Oz Au	Oz Ag				
4492	104'4.5" 105'4" 105'4"	Split Core	11.5"	0.13	0.40				
4493	106'	"	8"	0.005	0.04				
4494	106' 107'	"	1'	0.22	0.13				
4495	107' 108'	"	1'	0.005	0.06				
4496	108' 108'9"	"	9"	0.005	0.03				
4497	108'9" 109'5.5"	"	8.5"	Nil	0.06				
4498	188'10" 189'7"	"	9"	0.005	Tr				
4499	189'7" 190'	"	5"	0.005	0.06				
4500	190' 191'1"	"	1'1"	0.05	0.04				
202E	191'1" 192'1"	"	1'	Nil	Nil				
203E	192'1" 193'1"	"	1'	Nil	0.03				
204E	193'1" 194'1"	"	1'	Nil	0.02				
AVERAGE ASSAY : 104'4.5" - 109'5.5" =				Au .070 oz.					
				Ag .013 oz.					
188'10" - 194'1" =				Au .011 oz.					
				Ag .022 oz.					
						A. C. A. HOWE INTERNATIONAL LIMITED			
						FILE COPY			
						Date: 2/11/66			





LOCATION MAP  
MARSHALL BOSTON IRON MINES LTD  
A.C.A. HOWE INTERNATIONAL LTD.

Scale 1" = 4 miles

August, 1972

*A. C. A. Howe*

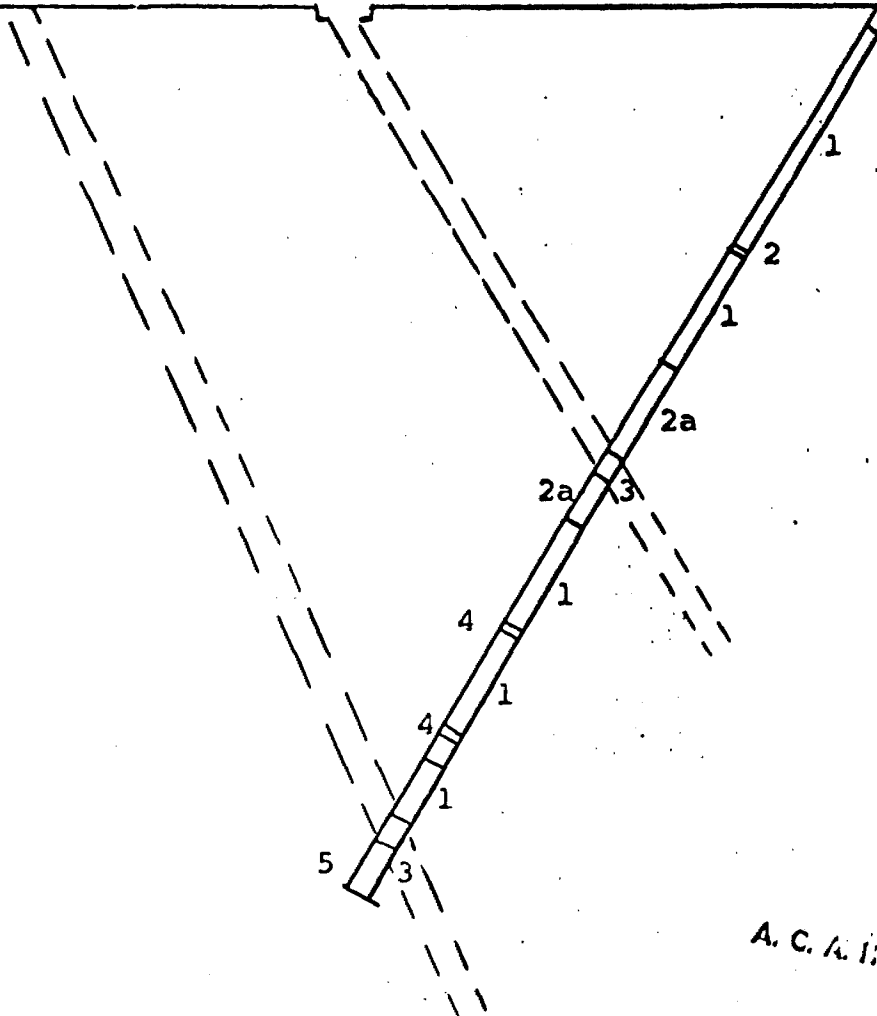
A. C. A. HOWE INTERNATIONAL LIMITED  
FILE COPY

LOOKING NORTH

quartz zone  
Trench 1

DDH 72-G-1

E



LEGEND

- 1 Dark green mafic volcanic
- 2 Carbonated section
- 2a Carbonated (shearing) mafic volcanic
- 3 Quartzose section
- 4 Biotitic section
- 5 Siliceous rock

DDH 72-G-1

Location: Medina Group, claim 26692  
 N of S claim line  
 100' E of trench 1  
 Azimuth: 232°. Dip: -60°, Length: 206'

A. C. A. HOWE INTERNATIONAL LIMITED  
FILE COPY

MARSHALL BOSTON IRON MINES LTD.

SECTION 72-G-1

by

A.C.A. HOWE INTERNATIONAL LTD

Scale: 1"=40'

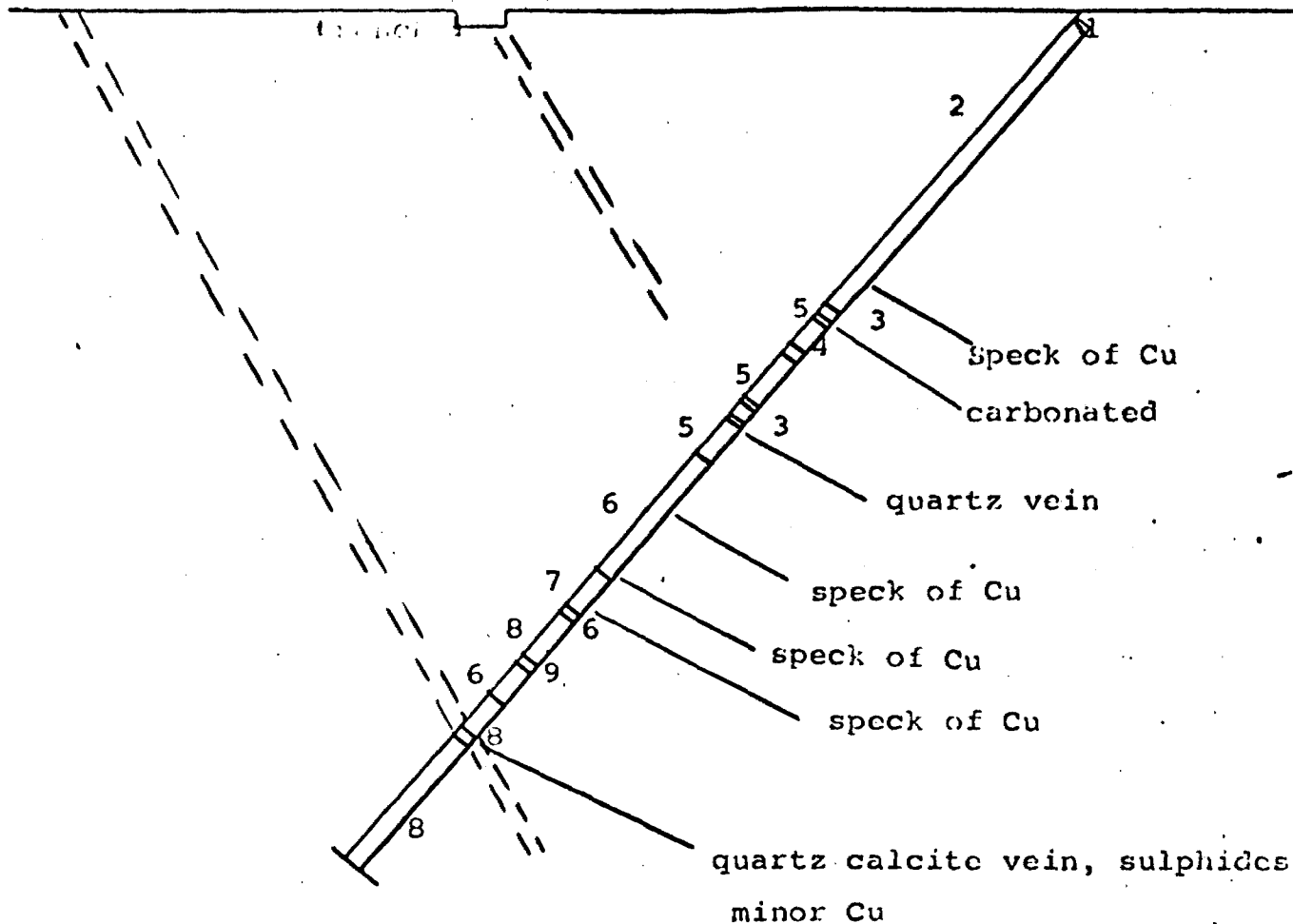
*9/13 Brewster*

N. Brewster

August '72

LOOKING NORTH

DDH 72-G-2



- 1 dark green mafic volcanic
- 2 feldspar porphyry
- 3 Talcose section
- 4 Carbonated section
- 5 Transition zone
- 6 Basic volcanic
- 7 Epidotized section
- 8 Carbonated section
- 9 Lamprophyre (biotite)

DDH 72-G-2

Location: McCrea Group, claim 26692  
 N of S claim line  
 119'E of trench 1  
 Az.: 282° dip: -50°, Length: 236'

A. C. A. HOWE INTERNATIONAL LIMITED  
 MARSHALL BOSTON IRON MINES LIMITED

SECTION 72-G-2

by

A. C. A. HOWE INTERNATIONAL LIMITED

Scale: 1"-40'

*N. Brewster*

N. Brewster

August, 1972



32D04SW0320 63.3938 BOSTON

020

**A. C. A. HOWE INTERNATIONAL LTD.**

*Mining and Geological Consultants*

December 2, 1980.

Marshall Boston Iron Mines Ltd.,  
137 Huron Heights Drive,  
Newmarket, Ontario.

Attention: Gerry Hedican, President

Gentlemen:

Progress Report  
Gold Claims  
Boston Township

The following progress report is an outline of activities during the period October 20 to November 27, 1980 on your company's claim group in Boston Township performed by A. C. A. Howe International Ltd., consulting geologist Terry MacMichael. Geophysical and sample location maps are presently being drafted and the qualifying report will be written by Mr. Norman Brewster.

The exploration program consisted of sampling and geophysics. Seventy-nine samples were taken to extend known gold zones and to locate new ones. Sampling procedure was one of continuous rock chips supported by a number of grab samples. A geophysical survey utilizing the Radem VLF-EM receiver was conducted over the south claim group which includes the McCrae Group.

Sampling was aimed at extending veins 1 and 2 and substantiating reports of gold values from the north vein on the Hildas Lake property. Numerous trenches are found on the property. Most are over 40 years old and except on the aforementioned veins are overgrown, and full of rubble ranging from one to over three feet deep. These trenches were located and sampling was attempted however because of accumulated rubble, sampling in most of these trenches was not feasible at that time. Samples that were taken may not be representative as they were obtained where ground cover was not excessive. Certain areas were drilled and blasted to obtain fresh material for assay.

Marshall Boston

December 2, 1980

North and south extensions of veins 1 and 2 were not found due to soil cover and trenches were generally filled in. One quartz vein sample taken from a trench on strike with veins 1 and 2 800 feet to the south assayed .002 Au oz./ton. This vein is highly contorted and it is not known for certain whether it is part of the same zone. A program of surface stripping and diamond drilling is recommended to trace and extend veins 1 and 2.

No sampling was conducted on veins 1 and 2 because sufficient surface sampling has previously been done to outline this gold-bearing zone. (See A. C. A. Howe International Reports 326 and 417.) Fifteen samples taken from other trenches in the south claim group ranged from Nil to .005 Au oz./ton. These samples are hardly representative of the area as numerous trenches remain to be sampled. A program of reopening these trenches with a backhoe and channel sampling is recommended. This program would be beneficial in locating new gold zones and aid in forming a regional picture of shearing, quartz veining and gold mineralization on the property.

Twenty-six samples were taken of the feldspar porphyry dikes cutting the north end of vein 1 and south of the Hildas Lake vein on claim 72595. Values ranged from Nil to .005 Au oz./ton and Nil to Trace Ag oz./ton.

Reports by Shunsby Gold Mines Ltd., 1954, and Charles Marshall, 1964, on the north vein on the Hildas Lake Gold property indicate gold values ranging up to .13 Au oz./ton with some coarse free gold noted. Diamond drilling by Shunsby Gold Mines have intersected the vein with the following results:

<u>DDH</u>	<u>Interval</u>	<u>Assay</u>
#11	2'6"	.147 Au oz./ton
#12	2'6"	.147 Au oz./ton
#13	2'6"	.037 Au oz./ton

Twenty-six samples were collected from the north vein. Sample values ranged from Nil to .05 Au oz./ton and Nil to .08 Ag oz./ton. Sample numbers 825-827 and 880-896 were taken up dip from the gold intersection in drill hole #11 (See appendix - assays). The highest assay was .05 Au oz./ton over 2 feet. Gold values from the milky quartz which replaces the sheared feldspar porphyry dike are low whereas where shearing is prominent with abundant sulfides with or without quartz veining gold values are much higher (see attached maps). Further work is warranted on this vein. Surface stripping and diamond drilling is recommended.

*S.P. MacMichael*

APPENDIX I

ASSAYS





# SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0

TELEPHONE: (705) 642-3244

ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

## Certificate of Analysis

Certificate No. 50537

Date: November 17 1980

Received Nov. 10/80 35 Samples of Ore

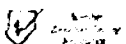
Submitted by A.C.A. Howe International, Toronto, Ontario Per: T. McMichael

SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton	SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton
818	Nil	Nil	836	Nil	Nil
819	Nil	Nil	837	0.002	Nil
820	Nil	Nil	838	Nil	Nil
821	Nil	Nil	839	Nil	Nil
822	Nil	Nil	840	Nil	Nil
823	0.01	Trace	841	Nil	Nil
824	Nil	Nil	842	Nil	Nil
825	0.01	Trace	843	0.005	Nil
826	0.03	0.08	844	Nil	Nil
827	0.005	0.005	845	Nil	0.03
828	0.002	Trace	846	0.002	Nil
829	0.002	Nil	847	Nil	Nil
830	Nil	Nil	848	Nil	Nil
831	0.002	Trace	849	Nil	0.01
832	Nil	Nil	850	Nil	Nil
833	Nil	Nil	851	Nil	0.02
834	Nil	Nil	852	Nil	0.01
835	0.005	Trace			

Per

G. Lebel - Manager

ESTABLISHED 1928





# SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO POK 1T0  
TELEPHONE: (705) 642-3244  
ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

## Certificate of Analysis

Certificate No. 50590

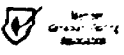
Date: Nov. 25, 1980

Received Nov. 19, 1980 10 Samples of ore

Submitted by A.C.A. Howe International, Toronto, Ontario

	SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton	
<i>feldspar porphyry south east of vein on north claims 72600 72505</i>	853	NIL	NIL	
	854	NIL	NIL	
	855	0.002	NIL	<i>Grab with more pyrite (stringers &amp; aggregates)</i>
	856	NIL	NIL	
	857	NIL	NIL	
	858	NIL	NIL	
	859	NIL	NIL	
<i>quartz shear trending 7260 vertical on north claim 72595</i>	860	NIL	NIL	
	861	NIL	NIL	
	862	NIL	NIL	

Per *G. Lebel*  
G. Lebel, manager





# SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0

TELEPHONE: (705) 642-3244

ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

## Certificate of Analysis

Certificate No. 50605

Date: Nov. 26, 1980

Received Nov. 21, 1980 17 Samples of ore

Submitted by A.C.A. Howe International, Toronto, Ont. Per: Terry McMichael

SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton
------------	-----------------	-------------------

*Reg's new claim  
56690*

863

NIL

Trace

864

0.002

NIL

*Grab s. sheared with qtz, pyrite, ep. and calcite*

865

0.002

NIL sheared

866

0.002

NIL irregular qtz veining

867

NIL

NIL

868

NIL

NIL

869

NIL

NIL

870

NIL

NIL

871

NIL

NIL

872

NIL

NIL

873

0.005

Trace - 1" qtz

874

NIL

NIL

875

NIL

NIL

876

NIL

NIL

877

NIL

NIL

878

0.002

NIL fold per

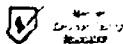
879

NIL

NIL

*samples taken from  
- banded trenches of  
fold, per porphyry  
north end of vein  
#1*

Per G. Label  
G. Label, Manager





# SWASTIKA LABORATORIES LIMITED

P.O. BOX 10, SWASTIKA, ONTARIO P0K 1T0  
TELEPHONE: (705) 642-3244  
ANALYTICAL CHEMISTS • ASSAYERS • CONSULTANTS

## Certificate of Analysis

RECEIVED DEC - 4 1980

Certificate No. 50625

Date: Nov. 28, 1980

Received Nov. 25, 1980 17 Samples of ore

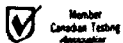
Submitted by A.C.A. Howe International, Toronto, Ontario

Per: T. McMichael

SAMPLE NO.	GOLD Oz./ton	SILVER Oz./ton
880	0.05	0.07
881	0.002	NIL
882	0.005	Trace
883	NIL	NIL
884	NIL	NIL
885	NIL	NIL
886	NIL	NIL
887	0.002	NIL
888	0.002	NIL
889	NIL	NIL
890	0.002	NIL
891	NIL	NIL
892	NIL	NIL
893	NIL	NIL
894	0.01	0.01
895	NIL	NIL
896	0.005	Trace

Per G. Lebel  
G. Lebel, Manager

ESTABLISHED 1928

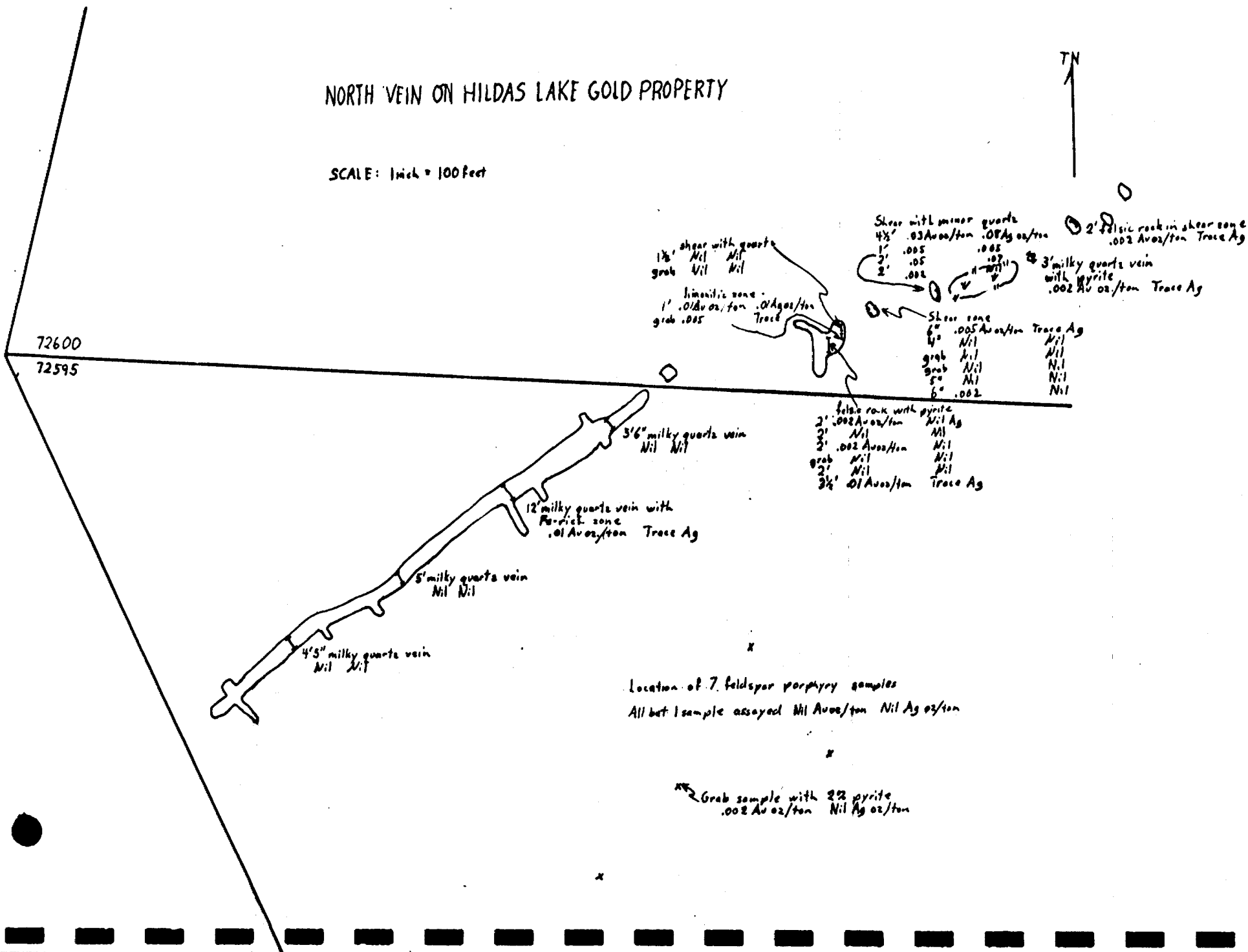


APPENDIX II

HILDAS LAKE GOLD PROPERTY

# NORTH VEIN ON HILDAS LAKE GOLD PROPERTY

SCALE: 1 inch = 100 feet





32D04SW0320 63.3938 BOSTON

030

REPORT ON THE  
VLF-EM SURVEY  
CONDUCTED ON THE SOUTH CLAIM GROUP  
IN BOSTON TOWNSHIP  
FOR  
MARSHALL BOSTON IRON MINES LIMITED

137 Huron Heights Drive  
Newmarket, Ontario  
L3Y 4Z6

BY

A. C. A. HOWE INTERNATIONAL LTD.  
Suite 826, 159 Bay Street  
Toronto, Ontario  
M5J 1J7

T. P. MACMICHAEL, B.Sc.

Report No. 423  
February 26, 1981

Toronto, Ontario

TABLE OF CON



32004SW0320 63.3938 BOSTON

030C

	<u>PAGE</u>
1.0 INTRODUCTION	1
2.0 PROPERTY	2
3.0 LOCATION AND ACCESS	3
4.0 HISTORY OF PROPERTY	3
5.0 GENERAL GEOLOGY	6
6.0 TABLE OF FORMATIONS	7
7.0 GEOLOGY OF THE PROPERTY	8
8.0 STRUCTURAL GEOLOGY	9
9.0 MINERALIZATION	10
10.0 VLF-EM GEOPHYSICAL SURVEY	10
11.0 DISCUSSION OF RECOMMENDED ANOMALIES	13
12.0 DISCUSSION AND RECOMMENDATIONS	15
CERTIFICATE	17

APPENDIX

MAPS



1.0 INTRODUCTION

Marshall Boston Iron Mines Limited holds a group of contiguous patented and staked claims in their south claim group for precious metals. This report is for assessment work on the four staked claims. A. C. A. Howe International conducted an electromagnetic survey over the claim block to locate shear and fracture zones which may contain mineralized quartz veins.

The property is located in Boston Township directly ten miles south-southeast of the town of Kirkland Lake. Easy access is obtained along the Adams Mine Spur Line.

Previous work on the property has delineated two gold bearing veins. The electromagnetometer survey was employed to locate additional zones.

The VLF-EM survey delineated four first priority anomalies and three second priority anomalies which warrant further investigation.

This report is based on work performed from October 20 to November 27, 1980.

2.0 PROPERTY

Marshall Boston Iron Mines Limited holds a group of twelve patented claims held under option and four staked claims in Boston Township, Larder Lake Mining Division, Ontario. Although Marshall Boston possess a number of properties in Boston Township, it was the south claim group over which the geophysical survey was conducted. A block of nine patented claims adjoins this group on the north. Assessment work is being filed for the four staked claims. The claims may be more particularly described as follows:

STAKED CLAIMSDATE RECORDED

L550004	January 31, 1980
L550005	January 22, 1980
L548998	January 22, 1980
L548999	January 22, 1980

PATENTED CLAIMSPATENTED CLAIMS

L26690	L26555
L26691	L26556
L26692	L26557
L26552	L5340
L26553	L5341
L26554	L5378

3.0 LOCATION AND ACCESS

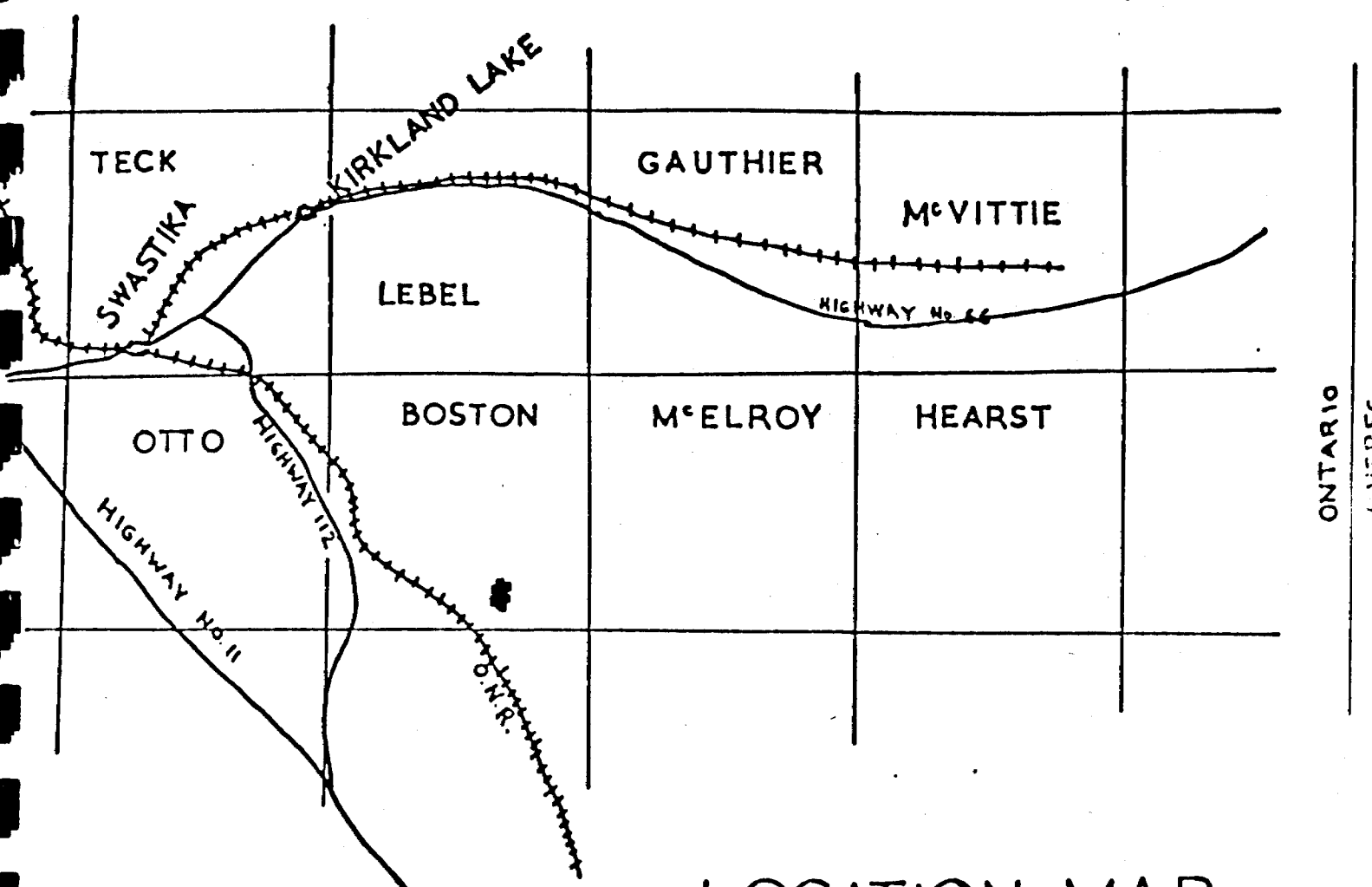
The south claim group is directly ten miles south-southeast of the town of Kirkland Lake in the township of Boston. The claims are bisected by the Adams Spur line.

The south claim group can be readily reached from the village of Boston Creek. From Boston Creek a bush road leads northerly for approximately 1.5 miles where it intersects the Adams Mine Spur line. The spur line enters claim 26692 approximately 3/4 of a mile to the north. From this point a trail 100' long leads to the trenches on claim 26692.

4.0 HISTORY OF THE PROPERTY

1937 - Extensive work on the south group showed the presence of gold in two veins. An average assay value calculated from previous sampling data in company files showed 0.23 oz/Au per ton over 1.63' through a length of 440' on the No. 1 vein and an average value of 0.559 oz/Au per ton across 1.42 through a length of 188' on the No. 2 vein.

- Old reports also describe a strong shear lying 18' east and parallel to the No. 1 vein from which a value of 0.14 oz/Au was reported over 2.3'; additionally a vein is reported 150' west of the No. 2 vein on which some work was reportedly completed but for which no records are available.



LOCATION MAP  
MARSHALL BOSTON IRON MINES LTD.  
A.C.A. HOWE INTERNATIONAL LTD.  
Scale 1" = 4 miles

1972 - Marshall Boston Iron Mines Limited carried out limited surface sampling of the old trenches, followed by the drilling of two shallow holes.

- The trenches were check sampled (total of 22 samples) to test the reliability of previous sampling. An average assay based on previous sampling results of the No. 1 (easternmost) vein gave 0.23 oz. of gold over an average width of 1.63' through a length of 440'. Check sampling of this vein (four samples) yielded an average assay of 0.541 oz. gold across an average width of 1.32' through a length of 106'.
- An average assay of previous sampling on the No. 2 (westernmost) vein yielded 0.559 oz. of gold across an average width of 1.42', through a distance of 188'. A weighted assay based on check sampling (18 samples) of this vein yielded an average assay of 0.623 oz. gold across an average width of 0.80' through a distance of 131'.
- Following completion of the check sampling two diamond drill holes were spotted to test the underground continuation of the two auriferous veins. The first hole 72-G-1 was spotted 100' east of the No. 1 vein approximately 170' north of the south claim line (26692) inclined at  $-60^{\circ}$  with an azimuth of  $282^{\circ}$ . This hole picked up the

two veins at vertical depths of 95' and 171' across true widths of 4.2' in each vein. The intersection on the No. 1 vein yielded an average assay of 0.070 oz. Au and 0.130 oz. of Ag across a core length of 5'1" from 104'4.5" to 109'5.5", the highest value in this section was across a core distance of 1' from 106' to 107' which assayed 0.22 oz. Au and 0.13 oz. Ag. The second intersection in the same hole (vein No. 2) yielded average assays of 0.011 oz. Au and 0.022 oz. Ag across a core length of 5'3" from 188'10" to 194'1".

- A second hole 72-G-2 was spotted 199' east of the No. 1 vein approximately 325' north of the south claim line (claim 26692) and 155' north of 72-G-1, inclined at  $-50^{\circ}$  with an azimuth of  $282^{\circ}$ . The No. 1 vein appears to have been incorporated in a contact zone between a feldspar porphyry and mafic volcanic rock, however a siliceous section picked up at a vertical depth of 85' corresponds with the projected position of the No. 1 vein. The No. 2 vein was intersected at a vertical depth of 153' across a true width of 1.6'. Negligible values in gold and silver were returned upon assaying of this intersection.

5.0 GENERAL GEOLOGY

The geology of Boston Township and part of Pacaud Township has been described in a report by K. D. Lawton, Ontario Department of Mines Vol LXVI, Part V, 1957. The following is an abstract from this report:

"The consolidated rocks of the area are Pre-Cambrian in age, consisting mainly of Archean volcanics, sediments and intrusives. Late diabase dykes intrude the Archean rocks and are the sole representatives of the Proterozoic era in the area.

"Members of the Keewatin series of early Pre-Cambrian rocks are the dominant formations outcropping in Boston Township. They consist of lava flows, volcanic fragmented rocks and sedimentary rock. A small area of Timiskaming clastic sedimentary rocks outcrops in the northeast corner of Boston Township. Here the Keewatin and Timiskaming series are in faulted contact. Field relationships in nearby townships, however, indicate that the rocks of Timiskaming age stratigraphically overlie the Keewatin series. In the Kirkland Lake area Thomson<sup>(1)</sup> has shown that a great structural unconformity separates the Timiskaming series from the underlying Keewatin rocks.

"There are two groups of basic intrusives of post-Keewatin age. The older of the two is composed of diorite and meta-diorite, whereas the younger includes serpentinite, hornblendite, diorite and minor diorite porphyry.

"The Keewatin, Timiskaming and post-Keewatin rocks are folded and faulted, and intruded by a variety of igneous rocks classified as Algoman in age. The Algoman series includes rocks of the following composition: granite, syenite, porphyries, diorite and lamprophyre.

"Much of the bedrock is covered by a mantle of unconsolidated clay, sand and gravel, laid down during the period of Pleistocene glaciation that affected this area.

"The rock classification used in this report conforms generally but with some revision to that adopted by Abraham<sup>(2)</sup> for McElroy Township and the eastern part of Boston Township. In the following table of formations, the members range from oldest at the bottom of the list to youngest at the top, though the rocks within a given group are not necessarily arranged in chronological order."

(1) J. E. Thomson - "The Keewatin Timiskaming Unconformity in the Kirkland District", Transaction, Royal Soc. Can., Section IV, Third Series Vol. XL 1946, pp. 113-122.

(2) E. M. Abraham - "Geology of McElroy and Part of Boston Townships", Ontario Department of Mines, Vol. LIX 1950, Part 6, p. 8.

6.0 TABLE OF FORMATIONSCENOZOICRECENT AND  
PLEISTOCENE:

Clay, sand, gravel and boulders.

Great Unconformity

PRECAMBRIANKEWEENAWAN OR  
MATACHEWAN:

Diabase.

Intrusive Contact

ALGOMAN:

Basic syenite; syenite and porphyritic  
syenite; syenite porphyry; quartz  
porphyry; granite (dykes and small  
stocks); lamprophyre; diorite and  
metadiorite; quartz-feldspar  
porphyry; felsite.

Batholithic granite (Round Lake batholith).

Intrusive Contact

HAILEYBURIAN:  
(?)Diorite; gabbro; hornblendite; ser-  
pentinite; diorite porphyry.

Intrusive Contact

TIMISKAMING:

Fine-grained sedimentary rocks;  
greywacke; arkose; quartzite;  
slate.Conglomerate; conglomerate with some  
inter-bedded arkose, slate, and  
greywacke.

Great Unconformity

POST-KEEWATIN:  
(?)

Diorite and metadiorite

Intrusive Contact

KEEWATIN:

Basic and Intermediate Volcanics:  
Greenstone; brecciated and car-  
bonate-veined greenstone; andesite,  
basalt, and pillow lava; dioritic,  
diabasic, and gabbroic lava;  
amphibolite; sheared basic lava;  
fragmental lava; basic lava con-  
taining horizons of tuff; injection  
gneisses, and metamorphosed basic  
lava and tuff adjacent to the Lebel  
and Otto syenite stocks; variolitic  
lava.



KEEWATIN:

Intermediate and Acid Volcanics:

Fragmental volcanics, generally porphyritic; porphyritic andesite, dacite, and rhyolite, containing horizons of acid and cherty tuff; dacite, andesite, occasionally fragmental.

Iron formation, including banded silica rock ("lean iron formation").

Acid volcanics, Tuff, Quartzite, etc.: Rhyolite; acid tuff and cherty tuff; agglomerate conglomerate; tuffs, and sediments interbedded with volcanic rocks; tuff and iron formation; tuff, tuffaceous sediments, and their altered equivalents; cherty quartzite.

7.0 GEOLOGY OF THE PROPERTY

The property is predominantly underlain by Keewatin volcanics of Precambrian time. The rocks consist of basic and intermediate volcanics consisting of andesitic, basaltic, pillow, dioritic, gabbroic, and diabasic lavas. Also present on the property are intermediate to siliceous rocks consisting of porphyritic andesite, dacite, and rhyolitic lavas containing horizons of acid and cherty tuffs.

Trenching on claim 26692 has exposed two narrow irregular parallel auriferous quartz veins in basic volcanics striking N 005 E and dipping 63° to the east. The veins are separated by approximately 80' which widens to 93' at the northern extremities. At the north end of the No. 1 vein (easternmost) a feldspar porphyry dyke cuts across the vein. This dyke appears to strike 330° and exhibits an apparent dip of 75° - 85° to the east.

## 8.0 STRUCTURAL GEOLOGY

Aside from late Precambrian diabase dykes, Archean bedrock underlies the Boston Township map area. These rocks have been affected by various orogenic episodes which have left them tilted at steep angles, folded, faulted and cut by magmatic intrusion.

The most salient structural feature on the Marshall Boston Iron Mines Limited property is the Boston Fault. Beyond the property boundary to the northeast of Hildas Lake the Boston Fault has an average strike of S45°W. Southwest of Hildas Lake the Boston Fault splits into two branches which cross the property in a southwesterly direction. Shearing adjacent to the fault dips vertically or at steep angles.

Many of the formations in the area are quite massive. However, a regional schistosity, which strikes northwest, about parallel to the rock formations is recognized. Wherever recognized the schistosity dips at steep angles.

Locally schistosity is developed in Keewatin country rocks adjacent to large Algoman intrusive masses. In these cases the schistosity is nearly vertical in attitude and strikes parallel to the contact of the intrusive.

Intermediate to acid volcanics may be quite schistose noticeably in the area west of Hildas Lake, and are traversed by a number of narrow shear zones. Extensive fracturing also characterizes these rocks in this area.

Schistosity is locally developed in all rock types where they are traversed by or lie adjacent to faults and sheared zones.

9.0 MINERALIZATION

Gold mineralization was reported on the Kenzie vein during 1914. A. G. Burrows and P. E. Hopkins<sup>(1)</sup> who mapped the area classified the gold as occurring as native gold occasionally associated with tellurium, in quartz and veinlets in the Keewatin greenstones and later intrusions of granite and porphyry.

The quartz veins are also well mineralized with pyrite, chalcopyrite and molybdenum.

Within quartz veins gold mineralization frequently occurs with the sulphides and with chlorite streaks.

Certain areas of country rock consisting of greenstones and porphyry have been brecciated and partly replaced by quartz and carbonates forming replacement veins.

10.0 VLF-EM GEOPHYSICAL SURVEY

The reported nature of the targets indicates that little conductivity contrast between the veins and country rock could be expected, so the veins could only be sought indirectly by more conductive structures such as shear zones or water-bearing fractures which could host the veins. A Radem VLF-EM receiver was used to perform the survey utilizing the station, Annapolis Maryland. Dip angles and field strength in percent were recorded at

(1) A. G. Burrows and P. E. Hopkins, Boston-Skead Gold Area, Ontario Department of Mines Vol. XXX 1921, Part 6, pp.9-10.

each station. A north-south baseline was established with east-west lines every 400'. The stations were flagged every 100' by compass and pace. 11.2 miles of line were laid over the staked and patented claims. Line 12S was moved to 13S to avoid an extensive beaver dam and line 30S was included for fill-in.

Contouring of data is of necessity subjective, but bias due to survey layout was possibly avoided by comparison of Karous-Hjelt<sup>(1)</sup> filtered profiles to ensure that only those anomalies whose profiles can be correlated on adjacent lines are contoured together. Application of the Karous-Hjelt filtering method was used to indicate cause of anomaly and if a shear or fracture zone the depth and dip direction. Two areas require fill-in traverses to clarify the structure:

1. Lines 4N, 00, 4S

On 4N, elevated field strength values occur across the western part of the line. Possibly an area of swamp or conductive ground might explain these values. The zone of +ve Fraser Filter extending between 4S - 4N could also consist of a series of NNE trending features which terminate against a continuation of the strong NW trending feature which is seen on the eastern part of the three lines.

The NW trending feature could be a sinistral wrench fault which terminates the NNE structures; the weak NNE structure

(1) Karous, M. and Hjelt, S. - "Determination of Apparent Current Density from VLF Measurements" Dept. of Geophysics, University of Oulu, Contribution No. 89, 1977.

which extends along the base line north from 12N could possibly then be a continuation of the veins trenched on 4S and 8S immediately east of the railway, moved to the west by such a wrench fault. Fill-in check traverses would help to clarify the structure.

2. Lines 13S, -16S, -24S

The feature at 1400E, line 13S, which has been contoured with an anomaly at 800E on 16S and has biased the contouring to produce the very unlikely cross-shaped feature on 16S-24S may be related to an area of swamp. It coincides exactly in position with an embayment of swampy ground. It is possible however that the anomalies on 16S and 13S represent a fracture zone which terminates against a NW trending feature running from 1200E on 32S to 200E on 16S. The ENE direction of the anomaly is almost perpendicular to the direction of the VLF transmitter at Annapolis, so a minimum coupling situation with concomitant weakening and broadening of the anomaly would occur. Fill-in check traverses would help delineate this structure.

A general rise in background from west to east is evident on most lines; this suggests one of four situations namely;

- (i) a zone of strong surficial conductivity occurs to the east of the survey area, e.g. marshland
- (ii) an upper conductive rock layer is thickening to the east

(iii) an upper resistive rock layer is thinning to the east

(iv) a topographic effect due to gradually changing elevation

Most of the in-phase profiles are relatively smooth suggesting good data. The dominant feature is the anomaly due to the railway. The very strong anomalies over the railway line are often asymmetric due to a constant station spacing being maintained over the anomaly and true maximum and/or minimum not being measured. Anomalies are recommended for stripping or trenching, however, prior to this it is advisable that anomalies be accurately located by actual measurement of the VLF response on a much closer spacing of say, 10'; also, closely-spaced parallel short traverses would give a more accurate strike direction. The known veins are reported as having 80-90' separation; so if it was hoped to follow these as individual structures, a station spacing of much less than the vein separation would be necessary.

#### 11.0 DISCUSSION OF RECOMMENDED ANOMALIES

The Fraser Filter technique of filtering the dip angles requires four adjacent data points to generate one point so two extra readings are necessary at the end of each line. The Karous-Hjelt filter however requires seven adjacent data points to generate one point on the first level, 13 for the second level etc., therefore anomalies at the ends of traverse lines are not well interpreted and the Fraser Filter results provide more information.

The following anomalies for further investigation are recommended due to the Fraser Filter, Field Strength contour maps and comparison with the Karous-Hjelt profiles:

1. The anomaly occurring around the baseline from line 12N to 28N.

The anomaly is delineated by both Fraser Filter and Field Strength contours. The Karous-Hjelt filter indicates two easterly dipping conductors with a near surface separation of 200' which converge at depth. This relatively shallow feature may represent surface drainage dictated by fracturing. This anomaly could possibly be a continuation of veins 1 and 2 which have been moved to the west by a wrench fault discussed earlier on lines 4N,00 and 4S.

2. The anomalies occurring immediately east of the railway from 13S + 7W to 24S + 10W.

Appearing south along strike with the above anomaly is a near surface east dipping single linear feature.

3. Anomaly on the western end of lines 4N to 20N.

A moderate conductor is indicated by both Fraser Filter and Field Strength contours. Little information is gleaned from the Karous-Hjelt filter on the characteristics of the conductor due to insufficient data points on the western end of the lines.

4. Anomaly on the western end of lines 4S to 13S.

As above, the anomaly at the western end of the line is seen in the Fraser Filter and Field Strength contours, however no dip information extracted from the Karous-Hjelt filter profiles.

In addition, three second priority anomalies are present. One strong anomaly occurs at the eastern end of lines 20N to 28N and also another strong relatively shallow feature at 16N + 18E occurs with a westerly dip. Thirdly, at 13S + 13E a broad relatively strong conductor is not clearly defined due to lack of data to the east. This has a likely cause in a swamp. If the contouring of the Fraser Filter data is correct, the slight asymmetry is probably due to the obliquity of the intersection with the traverse line. The equivalent feature on 16S is much weaker and shallower. A number of northwest trending conductors are also noted from the contoured data.

#### 12.0 DISCUSSION AND RECOMMENDATIONS

It is postulated that two dominant fracture directions intersect in the area, namely one set with a NNE to NE trend and one with a NW to NNW trend. A possible sinistral wrench fault is suggested with a NW trend from line 00 to line 12N; this could move the mineralization west. The shallow features delineated by the Karous-Hjelt filter on lines 20N and 16N which appear to contain



two easterly dipping conductors which converge at depth may represent the northern continuation of the mineralization on claim 26692. To remove ambiguity, intermediate traverses ought to be measured. It would be worth conducting a very closely spaced traverse across the trenched area of known mineralization to see if any response occurs.

The VLF survey has outlined a number of possible linear features warranting further investigation. Four first priority and three second priority conductors have been picked which are worth surface stripping, if not diamond drilling.

Dips obtained from the IGH filter process, while not accurate in absolute terms could suggest drill placings. It must be stressed that considerable ambiguity exists with regard to the strike directions of features described. Intermediate check traverses with closely spaced stations must be carried out to define their locations and directions accurately before the recommended surface stripping and/or diamond drilling is carried out.

dlh

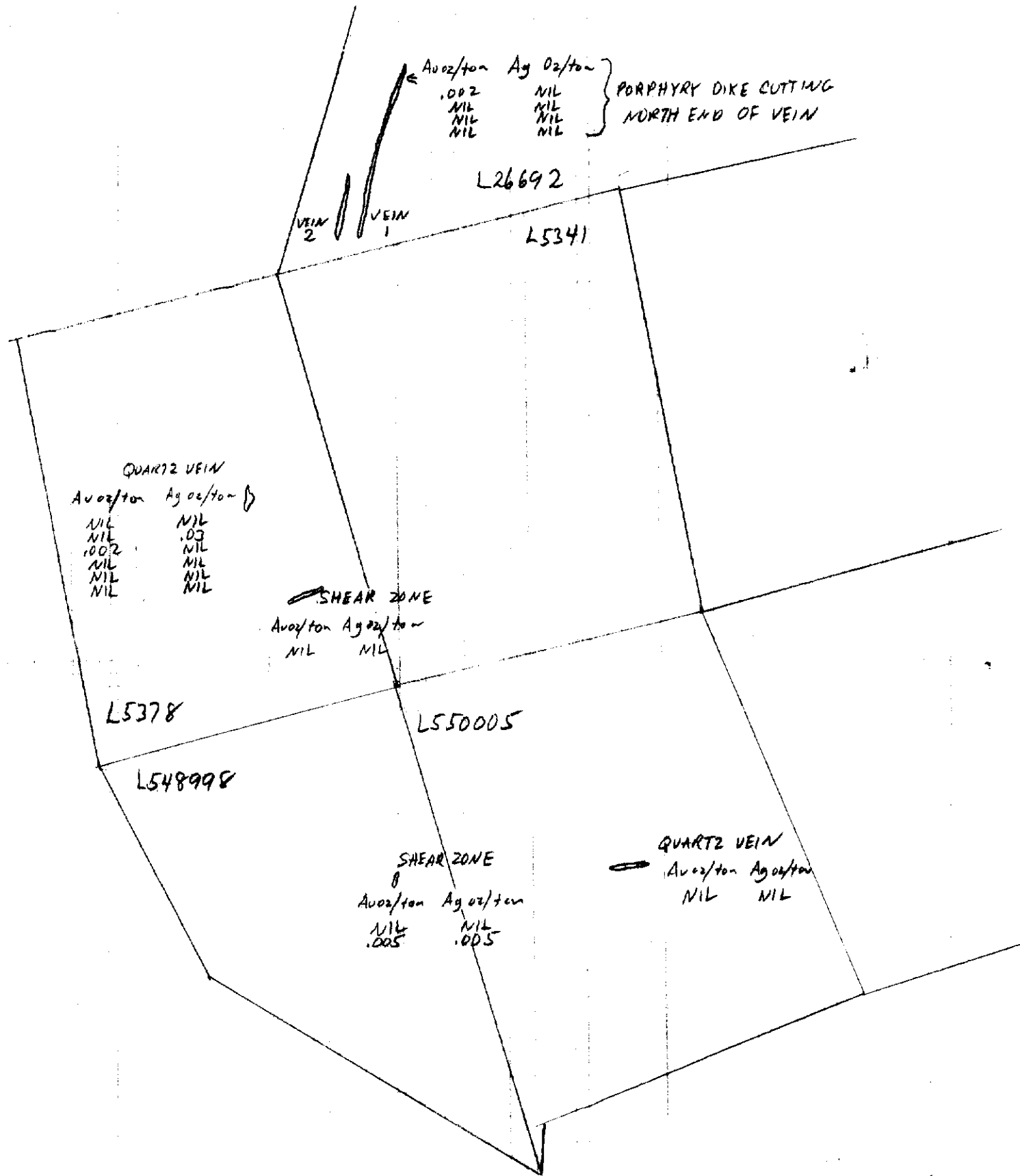
CERTIFICATE

I, Terence P. MacMichael, of 19-1975 Memory Lane, Pickering, Ontario, hereby certify that:

1. I am and have been employed since 1979 as a geologist by A. C. A. Howe International Ltd. Mining and Geological Consultants with offices at Suite 826, 159 Bay Street, Toronto, Ontario M5J 1J7.
2. I am a graduate of Dalhousie University, Halifax, Nova Scotia with a Bachelor of Science (1975) Honours degree in geology.
3. I have practiced my profession in excess of five years.
4. I have no interest in Marshall Boston Iron Mines Limited or in the property discussed in this report, nor do I anticipate such interest.
5. This report is based on a property examination I conducted during October 20 to November 27, 1980.

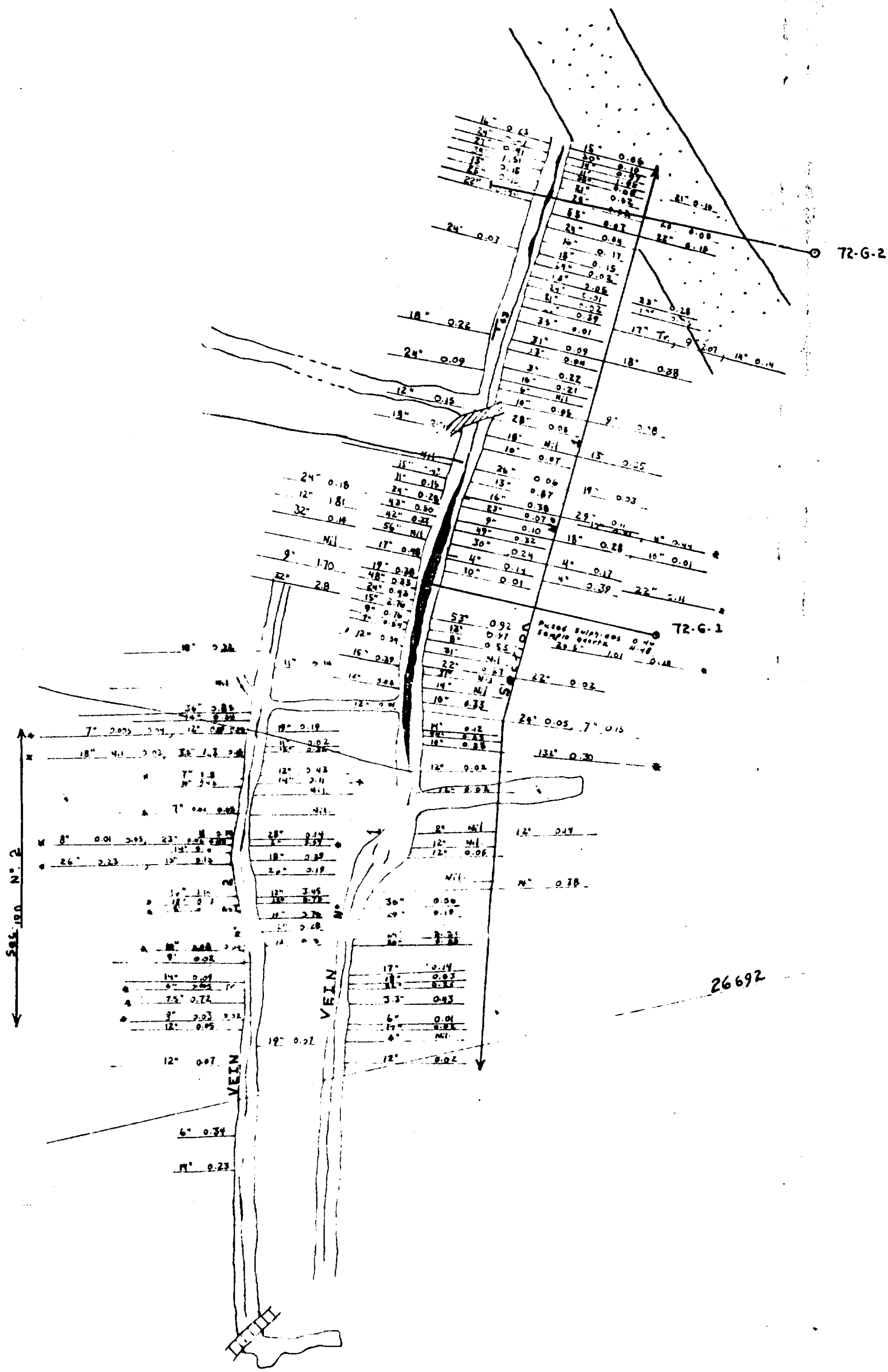


T. P. MacMichael, B.Sc.






SKETCH MAP OF GRAB  
 SAMPLE LOCATIONS  
 SCALE 1"=400'





Symbols:

-  Porphyry
-  Syenite
-  Lamprophyre

Width in inches, gold, silver, and values quoted in ounces.

\* Check samples taken in August, 1972

— Strike & Dip of vein

SURFACE ASSAY PLAN

for

MARSHALL BOSTON IRON MINES LTD.

by

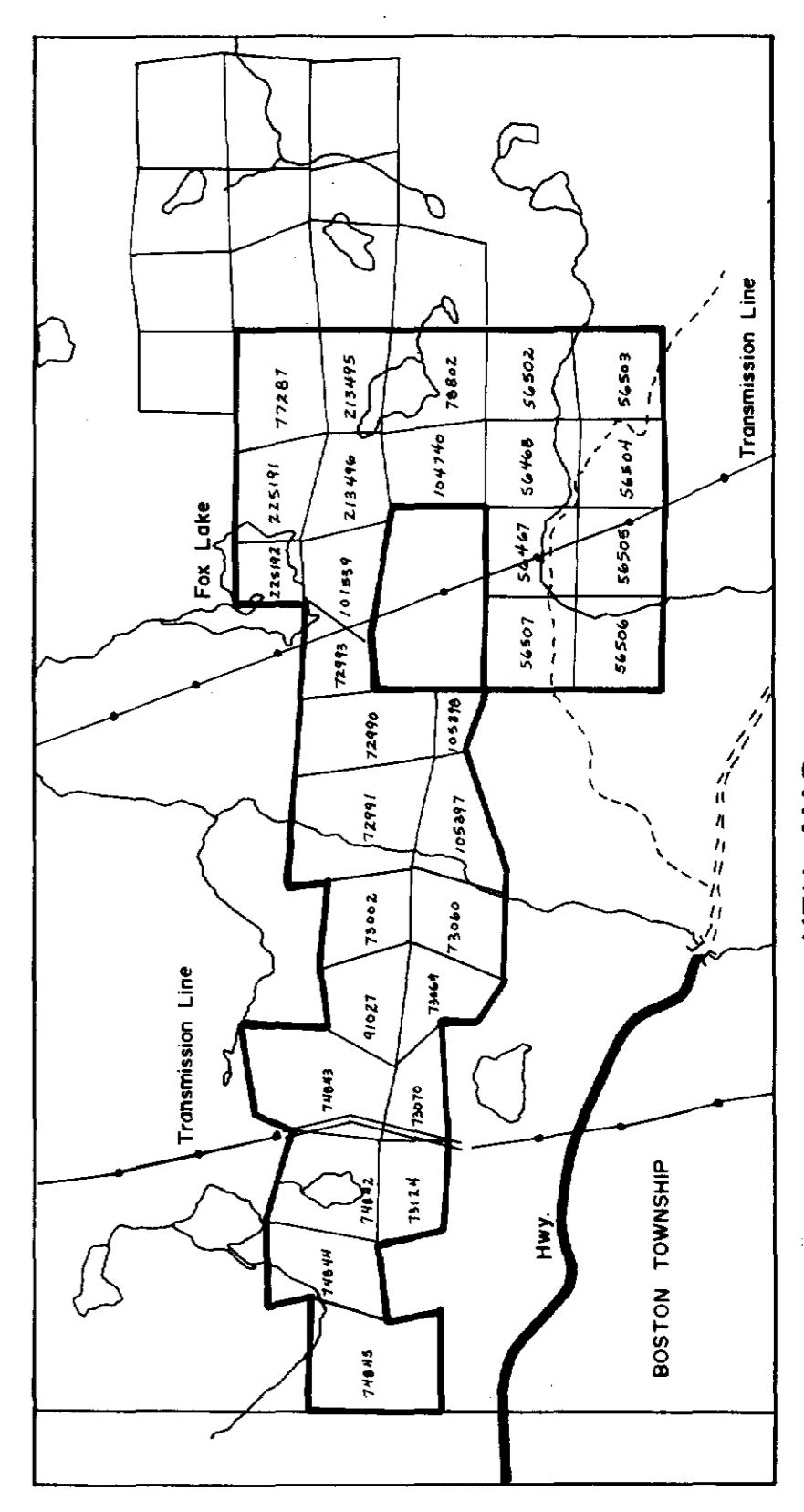
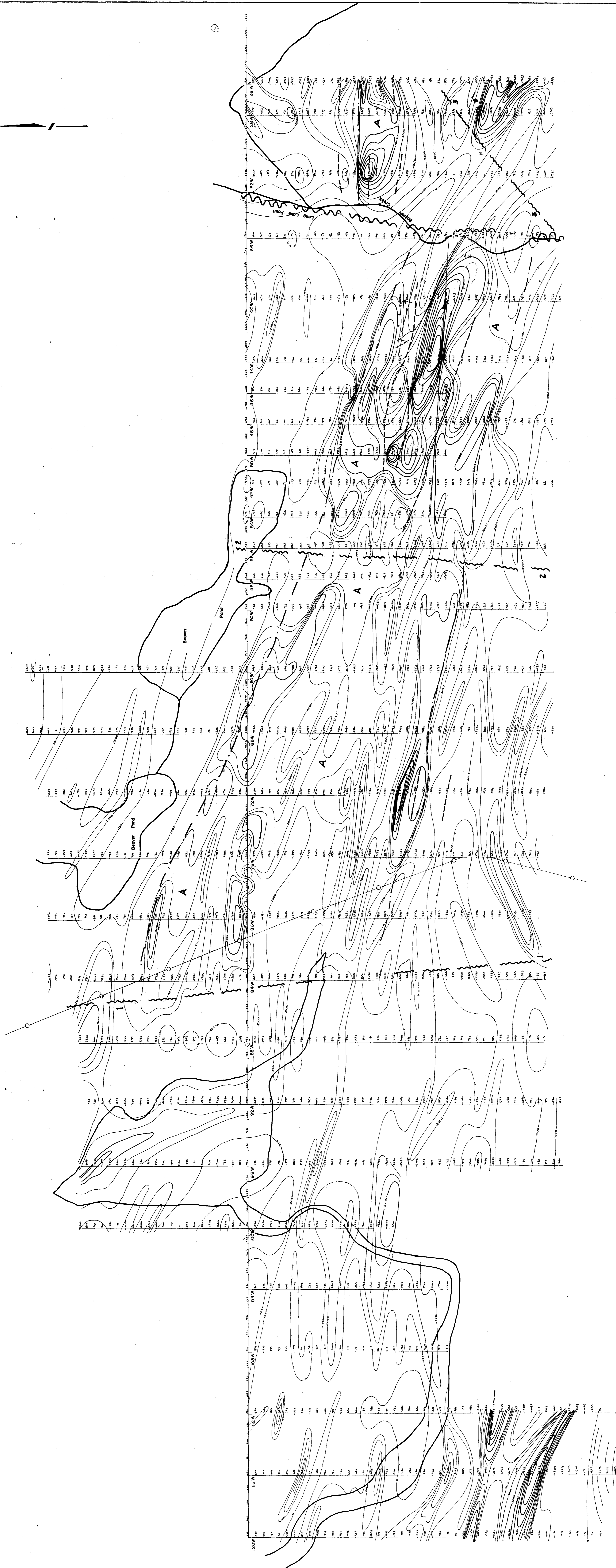
A.C.A. HOWE INTERNATIONAL LTD

Scale 1" = 40'

August, 1972

63.3938

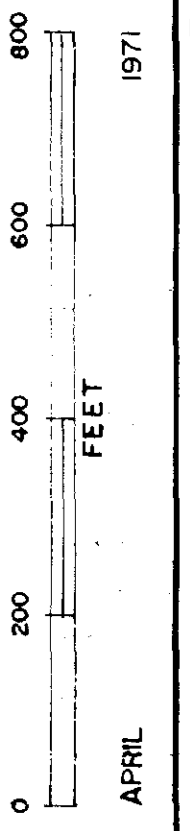




KEY MAP  
one inch to one half mile

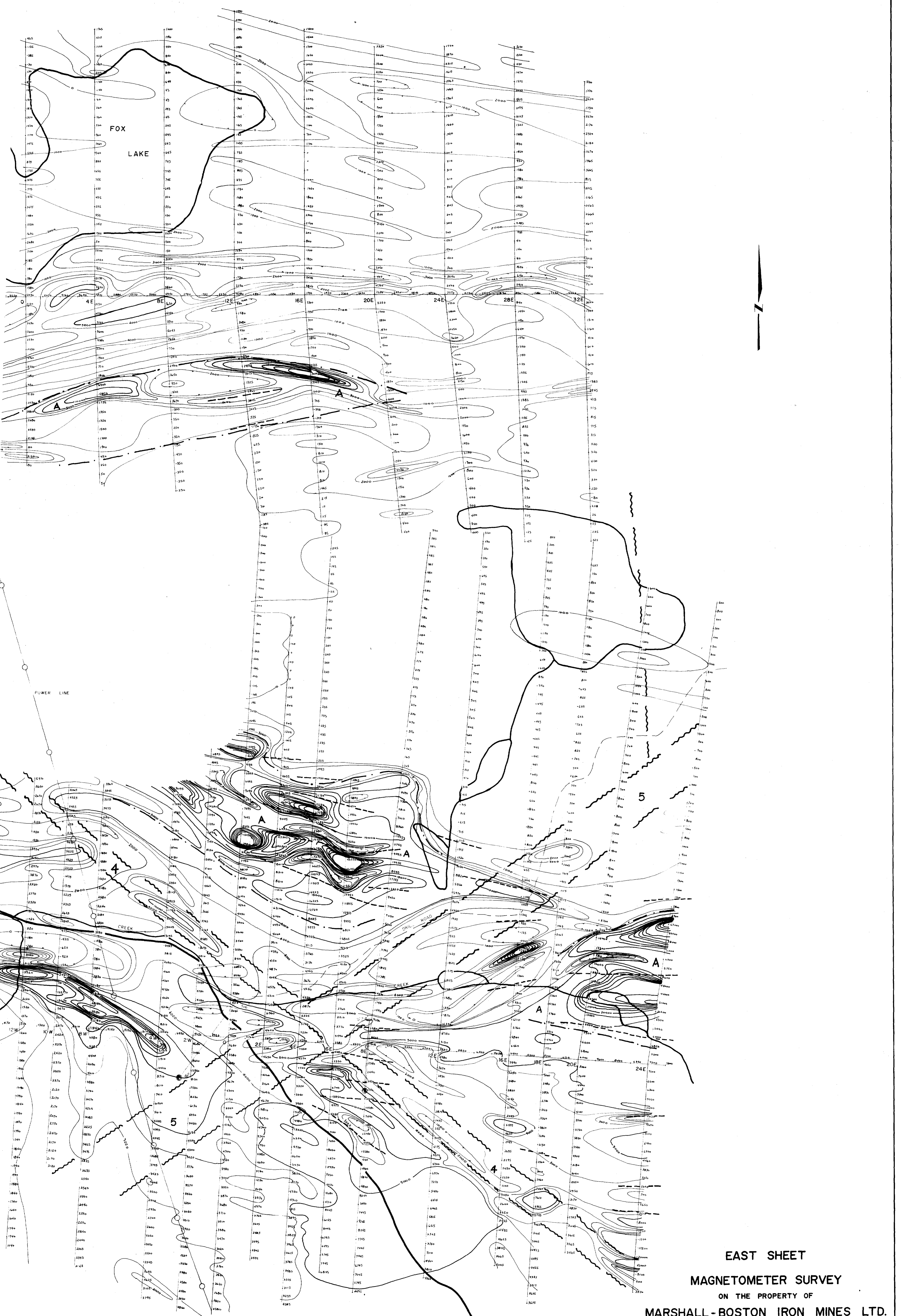
WEST SHEET  
MAGNETOMETER SURVEY  
ON THE PROPERTY OF  
MARSHALL-BOSTON IRON MINES LTD.  
BOSTON TOWNSHIP, ONTARIO

BY  
SHIELD GEOPHYSICS LIMITED  
63-3938



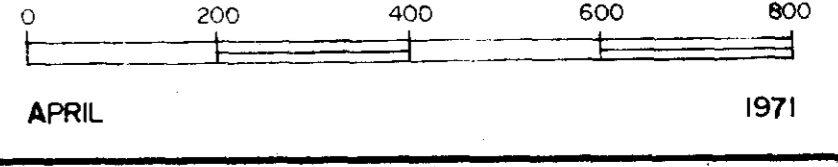
APRIL 1971  
OM 55 - PE 27 - C-60

**LEGEND**  
 Measurement station along grid line  
 Relative value of the vertical component of the earth's magnetic field at ground  
 Magnetic contour  
 Magnetic depression  
 INSTRUMENT: Searle MF-1 Flange magnetometer



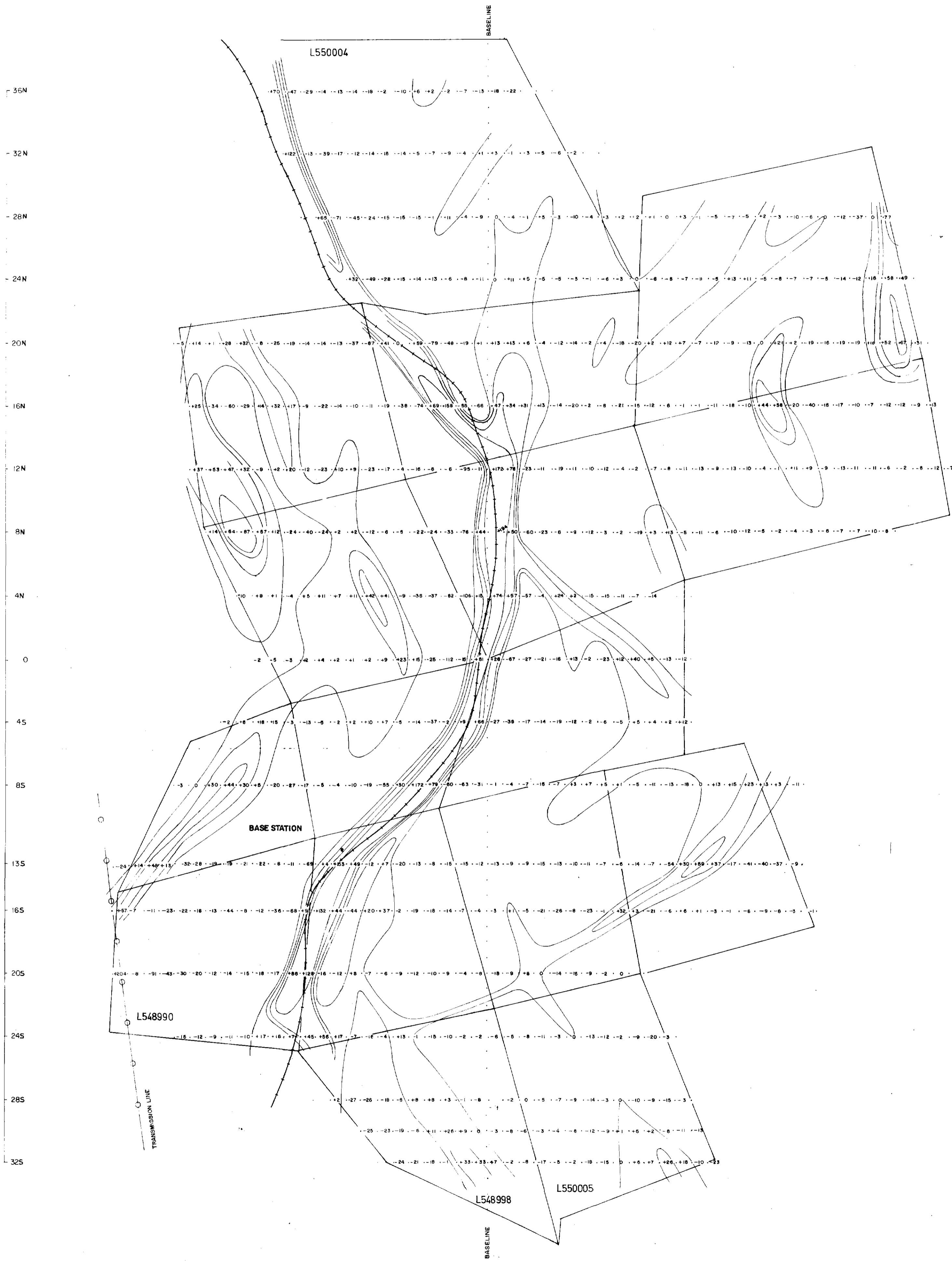
EAST SHEET  
 MAGNETOMETER SURVEY  
 ON THE PROPERTY OF  
 MARSHALL-BOSTON IRON MINES LTD.  
 BOSTON TOWNSHIP, ONTARIO

BY  
 SHIELD GEOPHYSICS LIMITED 63-3938  
 SCALE



See WEST SHEET for Legend

0M33-PE29-C-82



**EXPLANATION**

CONTOUR INTERVAL OF FRASER FILTER  
 DIP ANGLE VALUES 0-20  
 20-40  
 40-60  
 60+

STATION POINTS

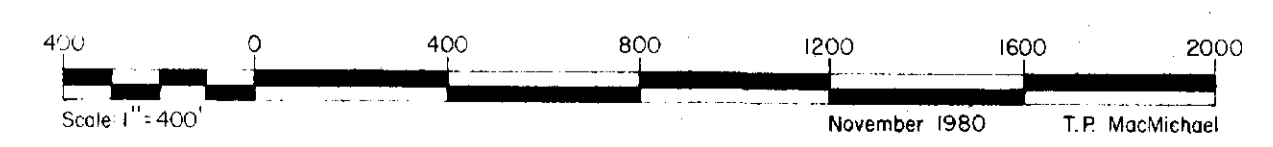
STATION: ANNAPOLIS MARYLAND

# RADEM VLF-EM FRASER FILTER CONTOUR MAP

for  
**MARSHALL BOSTON IRON MINES LTD.**  
 BOSTON TOWNSHIP - SOUTH GROUP

by  
 A.C.A. HOWE INTERNATIONAL LTD.

63-3938



*T.P. MacMichael*



**EXPLANATION**

FIELD STRENGTH VALUES IN PERCENT  
 CONTOUR INTERVAL 100 - 200  
 120 - 140  
 140 - 160  
 160 +

• STATION POINTS

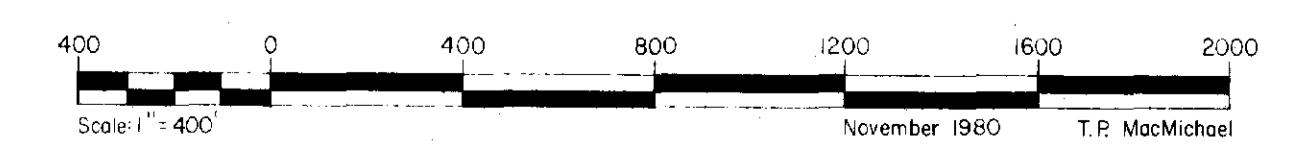
STATION: ANNAPOLIS MARYLAND

# RADEM VLF-EM FIELD STRENGTH SURVEY MAP

for  
**MARSHALL BOSTON IRON MINES LTD.**  
 BOSTON TOWNSHIP - SOUTH GROUP

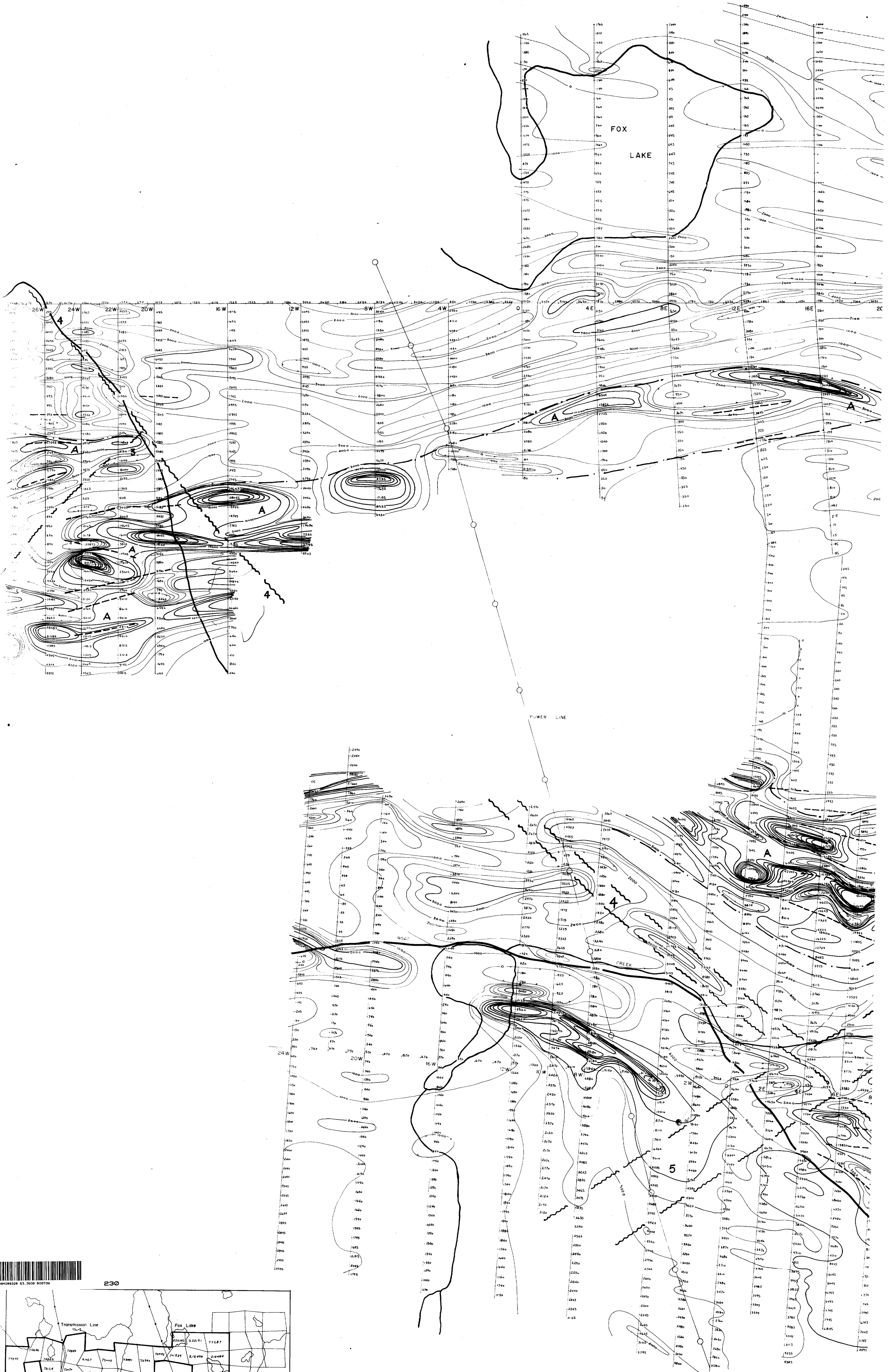
by  
**A.C.A. HOWE INTERNATIONAL LTD.**

63.3938

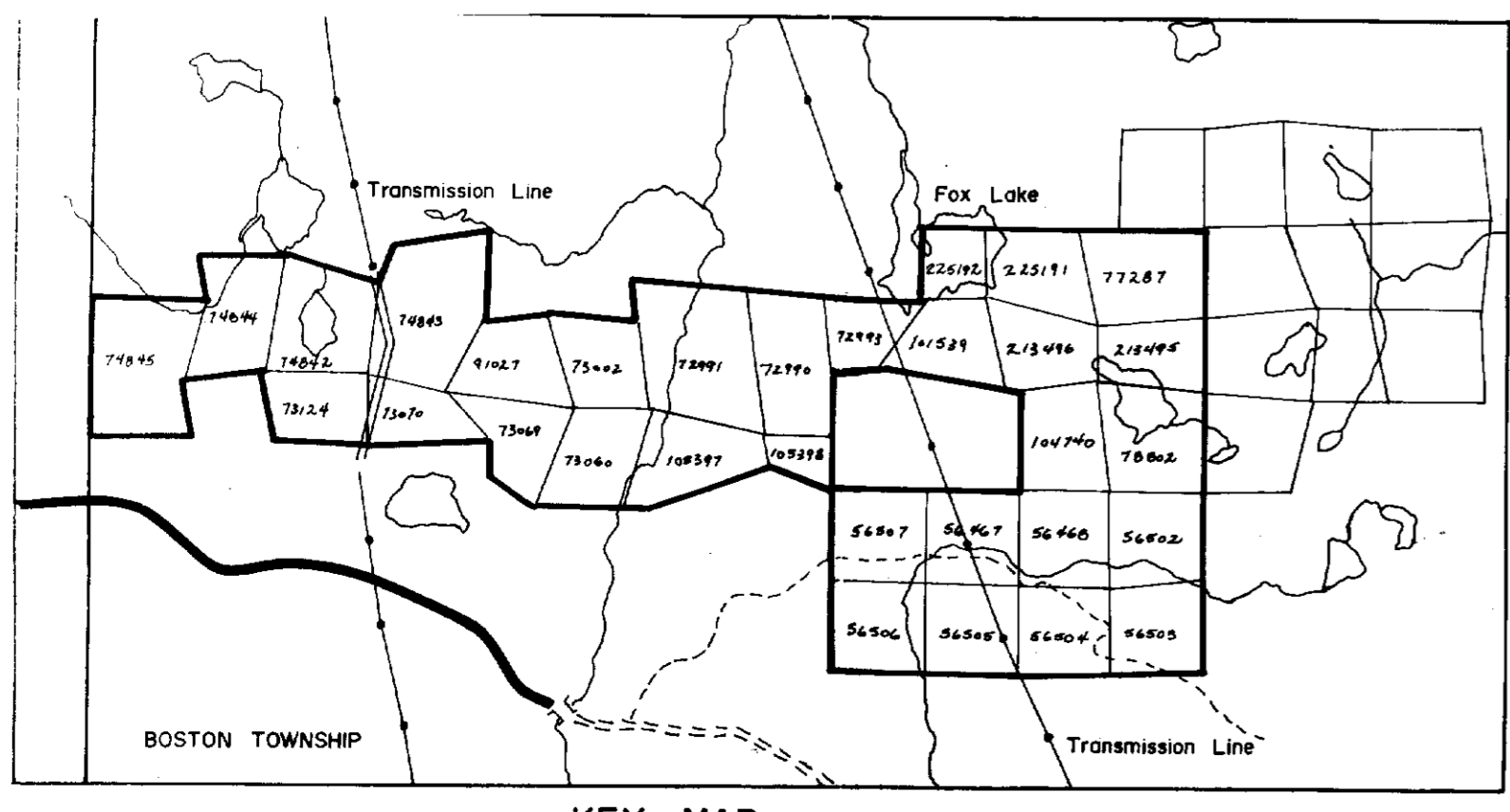


*S.P. MacMichael*





230



See WEST SHEET for Legend