Geological, Geochemical and Magnetometer Surveys
Mary and Argo Claim Groups
133°56' W, 62°23' N
Claim Sheets 105K-5, 105K-12, 105L-8, 105L-9

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May 15, 1966 - September 8, 1966

GEOLOGICAL SURVEY
MAY 12 1967
Resident Geologist
Whitehorse, Y. T.

This report has been examined by the Geological Evaluation Unit.
Approved as to technical worth by:
RESIDENT GEOLOGIST
Approved as to cost in the amount of: $ 33 00
for RESIDENT MINING ENGINEER
Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.
COMMISSIONER OF YUKON

Toronto, Ontario
November 10, 1966

Watts, Griffis and McOuat Limited
Robert E. Hindson, B. Sc.

TABLE OF CONTENTS

MAP CASE

1. Airborne Magnetometer Survey - Mary Group - scale 1" = 1/4 mile
2. Geological Map - Mary and Argo Groups - scale 1" = 1/4 mile
3. Geochemical Survey - Mary and Argo Groups - scale 1" = 1/4 mile
4. Magnetometer Profiles
5. Magnetometer and Geological Survey - Anomaly "M"-scale 1" = 100'
6. Geochemical Survey Sample Locations - Anomaly "M"-scale 1" = 100'
7. Geochemical Survey - Anomaly "M" - scale 1" = 100'
8. Magnetometer and Geochemical Survey - Anomaly "B" - scale 1" = 100'

SUMMARY AND CONCLUSIONS

On April 1, 1966, United States Smelting, Refining and Mining Company, Canadian Superior Exploration Limited and P C E Explorations Limited entered into an agreement to jointly acquire and explore a block of 304 claims, known as the Mary Group, in the Vangorda Creek area of the Yukon Territory.

P C E Explorations Limited, the managing member of the Syndicate, appointed their consultants, Watts, Griffis and McOuat Limited, to plan and supervise the exploration program.

In May, 1966, an airborne magnetometer survey was flown over the Group by Canadian Aero Service Limited.

A follow-up program, consisting of geological mapping and geochemical and magnetometer reconnaissance, was conducted by a four-man party from June 19 to September 8, 1966, with special attention being directed to the magnetically interesting areas outlined by the airborne survey.

Sixteen claims (the Argo claims), adjoining the Mary claims, were staked during the summer.

During the field season, 16 airborne magnetic anomalies were investigated. Six of these were not located and are believed to be non-existent. The majority of the anomalies found were of low to medium intensity.

Two interesting areas were outlined by geochemical methods, and were found to have associated magnetic anomalies. These areas are hereafter referred to as "M" and "B". The best one gave zinc values up to six times background, copper values up to three times background, with only insignificant lead values.

The geology in the area of the property consists of a series of sediments and volcanics underlain by an intrusive granite batholith. The volcanics are generally younger and overlie the sediments which, through metamorphism, have been converted to schist.

Rock types in the schist belt include quartz-sericite, quartz-sericite-biotite, graphitic and chloritic schists, hornfels, quartzite, argillite, limestone and rarely andesite. The schists appear similar in every aspect to those found in the vicinity of the Vangorda Creek deposit.

No significant mineralization was observed during the course of the field program.

RECOMMENDATIONS

Area "M", on the northeastern boundary of the Mary Claim Group, gave interesting geochemical values with an associated magnetic anomaly.

If at sometime in the future a bulldozer is working in the general vicinity, it is recommended that it be employed at a minimum expenditure to trench area "M" in an attempt to reveal the cause of the magnetic and geochemical anomalies.

Respectfully submitted,

WATTS, GRIFFIS AND McOUAT LIMITED

Robert E. Hindson

Toronto, Ontario
November 10, 1966

Robert E. Hindson, B.Sc.

INTRODUCTION

This report briefly describes an exploration program, for the SUP Vangorda Syndicate, on their Mary and Argo claims in the Vangorda Creek area of the Yukon Territory.

The Syndicate is composed of P C E Explorations Limited, Canadian Superior Exploration Limited and the United States Smelting, Refining and Mining Company.

P C E Explorations Limited, the managing member of the Syndicate, appointed Watts, Griffis and McOuat Limited to conduct and supervise the field program.

A total of 304 contiguous claims were originally staked on contract for the Syndicate. As a result of the summer's work, an additional 16 claims, adjoining the original claims, were staked by the field crew.

The writer was in charge of the field work and was personally present on the property during the exploration program.

PROPERTY

The property of the Syndicate now consists of 320 contiguous unpatented mineral claims known as the Mary and Argo claims, numbered 1 to 304 and 1 to 16 respectively, in the Whitehorse Mining District, Yukon Territory.

The original Mary claims were staked in February and March, 1966 and the Argo claims were staked in August, 1966.

A full description of the Mary claims accompanies the Syndicate Agreement dated April 1, 1966.

The Argo claims, 1 to 16 inclusive, located on Claim Sheet 105 K-12, have grant numbers Y10388 to Y10403 respectively.

LOCATION AND ACCESS

The Mary and Argo claim group is located approximately 133° 56' W, 62° 23' N, about 130 miles northeast of Whitehorse, Yukon Territory, on Claim Sheets 105 K-5, 105 K-12, 105 L-8 and 105 L-9.

Access to the property may be gained by helicopter from Ross River, 60 miles to the southeast, or Glenlyon Lake, 10 miles to the southwest. Both Ross River and Glenlyon Lake are serviceable by fixed-wing aircraft from Whitehorse.

TOPOGRAPHY, CLIMATE AND VEGETATION

The Vangorda Creek area lies in the region of the Yukon Territory known as the Yukon Plateau.

The Tintina fault, a major lineament approximately four miles southwest of the property, marks the Pelly River Valley.

The Mary and Argo claims lie within a system of mountains, known as the Anvil Range, which parallel the Pelly River on the northeast side near the mouth of Anvil Creek. Relief of up to 4,500 feet exists on the property with all drainage eventually flowing into Anvil Creek.

The western section of the group is quite rugged, with Mount Tay (6,990 feet above sea level) located in part on the northwest corner of the property.

Slopes are steep to precipitous and climbing is often hazardous.

The topography in the eastern section of the group is more mature with flat-topped rolling hills at elevations above 4,000 feet.

Temperatures during the summer months were often in the 60° to 70° range, with extremes of 20° and 100° being recorded.

Rainfall was light to moderate and snow fell at elevations above 4,500 feet in late August.

Vegetation consists of Labrador tea and lichens at elevations above 5,000 feet. Spruce, pine, cedar, poplar and birch are found at lower elevations, with alders and buck brush concentrated in creek beds and burnt out areas.

MAGNETOMETER SURVEY

In May 1966 an airborne magnetometer survey was conducted over the Mary claims by Canadian Aero Service Limited. The reader is referred to reports by A. E. Storey, Canadian Aero Service Limited; John D. Filo, Filo Geophysics Limited; and a memo by Cliff Mark, United States Smelting, Refining and Mining Company, for their interpretation of the airborne magnetometer results.

The anomalies outlined by the airborne survey were assigned numbers or letters for identification and became targets for ground follow-up.

Two Sharpe MF-1 Fluxgate magnetometers were used in the field.

The anomalies were investigated extensively. Five magnetometer traverses were run over magnetically interesting areas and profiles were drawn. Two grids with 100-foot line separation were established over anomalies "M" and "B" and readings were taken at 50 or 100-foot intervals.

An airborne magnetometer map, showing the location of all anomalies and traverses and detailed magnetometer maps of areas "B" and "M", is included with this report.

Anomalies

1. Anomalies 1 and 11 lie in areas where the topography is sharply undulating. The inability of the helicopter to maintain constant ground clearance may have caused the anomalous readings. The areas were traversed extensively with a magnetometer, but the anomalies were not located.

2. Anomaly 2 gave a maximum intensity of 2,300 gammas above background with a maximum dimension of 125 feet.

3. Anomaly 3 gave a maximum intensity of 7,000 gammas above background. It was located on a 50° to 60° slope and its maximum dimension was approximately 100 feet. A gossan downslope carried up to 3% pyrrhotite.

4. Anomalies 4, 7, 9 and "C" could not be located, and there is no apparent explanation.

5. Anomalies 5, 6, 8, "D" and "E" were crossed by magnetometer traverses c-d, i-j, g-h and e-f respectively. (See magnetometer profiles)

6. Anomaly 8b gave a magnetic low, 6,000 gammas below background. It was a pin point anomaly surrounded by highs and lows of lesser intensity, located on the crest of a high ridge. Pyrrhotite was observed in the andesite and banded quartzite nearby.

7. Anomaly 10 had a maximum intensity of 300 gammas above background. Its maximum dimension was approximately 200 feet and it appears to be controlled by a structure at right angles to the regional strike.

8. Anomaly "A" gave a maximum intensity of 2,000 gammas above background. It is a pin point anomaly.

9. Anomaly "B" is an irregular magnetic anomaly of low intensity. The strike of the anomaly appears to agree with that of the regional strike.

10. Anomaly "M" is a small magnetic anomaly of medium intensity. It parallels the strike of several local outcrops which strike at right angles to the regional strike.

In most of the magnetically anomalous areas, especially in the western and northern sections of the property, pyrrhotite was observed in the neighbouring rocks in concentrations estimated up to 5%. This probably best explains the cause of the anomalies. However, this is not the case in the areas of "M" and "B" and these anomalies have yet to be explained.

GEOCHEMICAL SURVEY

Reconnaissance and detailed geochemical surveying was conducted throughout the field season. Silt and soil samples were analysed in the field for cold extractable "total heavy metal" content. The procedure was in accordance with that outlined in G.S.C. Paper 63-49 by A. Y. Smith. Most samples were then shipped to Barringer Research Limited in Rexdale, Ontario and analysed for total copper, lead and zinc.

Altogether 640 samples were collected during the field season of which 495 were analysed for copper, lead and zinc, and 112 for lead and zinc only.

Silt samples were collected where possible at 1,000-foot to 1,500-foot intervals. In some areas, particularly south of Anvil Creek, streams percolated through rubble at depth and surfaced only occasionally providing sample material. In areas where terrain was steep, streams flowed too rapidly to permit the deposition of silt.

Soil sampling was restricted to areas that were magnetically and/or geochemically interesting. Generally the soil was composed of a 1 to 2-inch organic layer underlain by a mantle of grey volcanic ash 4 to 6 inches thick. Below this lies a zone of iron enriched volcanic ash up to 4 inches thick followed by a residual clay-like soil containing numerous small schistose rock fragments. It was from this latter residual horizon that the samples were taken.

Soil samples were collected with the aid of grub hoes and augers. The maximum sampling depth obtained using a grub hoe was three feet with the average depth being 1.5 feet. Up to 25 samples could be collected and tested per man-day using a grub hoe. Most soil samples were collected with augers consisting of a 1-inch wood bit welded to a 5-foot T-shaped steel rod. A maximum sampling depth of five feet could be reached. The average depth of samples taken was 3 1/2 feet. Up to 50 samples could be collected and tested per man-day using the auger method.

Geochemical maps accompanying this report include:

(a) A property map showing all analysed samples except for two anomalous areas designated "M" and "B".

(b) Two maps of area "M", one showing locations of samples analysed, and the other contoured for copper and zinc.

(c) A combined geochemical-magnetometer map of area "B".

Two geochemically anomalous areas were outlined:

1. Area "B" located on Mary claim 126 near the eastern border of Mary claim group.

2. Area "M" located 1,500 feet due north of "B" on Mary claim 145.

A large rusty spring was found in area "B", 20 feet east of the main creek bed. Several silt and soil samples taken around the spring gave anomalous results. A detailed soil sampling survey was not conducted in the drainage basin since the soils are probably contaminated by the spring and by the drainage from the anomalous area "M" upstream to the north. Random soil sampling on the steep sides of the valley yielded no anomalous values.

Area "M" is located on a 30° slope in a cirque-shaped valley approximately 1,500 feet due north of "B". One of the streamlets draining the slope was found to be anomalous and follow-up work consisting of silt and soil sampling gave encouraging results. The airborne magnetometer survey map showed a corresponding anomaly. A grid was established for detailed geochemical and magnetometer surveys. Soil samples were collected using augers at 100-foot intervals, and at 50-foot intervals when anomalous values were obtained using the cold test. The gap in the grid, shown on the sample location map, in the area of lines 7 and 8 + 00 N on the west side, is due to the fact that only sample sites in which samples have undergone hot analysis are recorded. No anomalous values were obtained in this area using the cold test and none of the sample material was retained for hot analysis.

Anomaly "M" was contoured for copper and zinc. Background values of 35 ppm copper, 22 ppm lead and 160 ppm zinc were obtained by averaging the hot acid results of all samples analysed. The anomaly correlates closely with a drainage trough downslope from the associated magnetic anomaly.

The geochemical results are encouraging, but not exceptional. Copper values are seldom greater than three times background, lead values are very close to background and the best zinc value recorded over "M" was 800 ppm. The highest zinc value recorded on the property was 1,000 ppm.

The anomalous values may be caused by one of the following:

- the halo zone of a deep-seated orebody,
- a seam in the bedding containing copper, lead and zinc values,
- sulphides associated with the magnetic anomaly.

GEOLOGY

The general geology in the area of the Mary and Argo claims consists of a series of sediments and volcanics, tentatively considered Mississippian, underlain by an intrusive granite batholith of Cretaceous age.

The sediments, through weak to strong metamorphism, have been converted to schists. The volcanics generally overlie the schist, but some interbedding has been noted.

Rock types found in the schist belt include quartz-sericite, quartz-sericite-biotite, graphitic and chloritic schists, hornfels, quartzite, argillite, limestone and rarely, andesite.

A geological map of the property and a magnetometer map of area "M" with superimposed geology is included in this report.

The medium to dark grey argillites are fine grained. South of Anvil Creek they are tightly folded and contain minor amounts of pyrrhotite. In the Mount Tay area, pyrrhotite was observed in concentrations up to 5%. Argillite and argillaceous rocks are common near granite exposures.

Quartzite is usually banded and dirty. A few small outcrops of clean quartzite were found interbedded with quartz-sericite schist.

The largest exposure of chlorite and chlorite schists was located south of Anvil Creek. A narrow band was also located near the eastern border of the Mary claims, north of area "M". In most instances, the chlorite was not strongly foliated.

Two narrow, highly graphitic schist outcrops were located southwest of areas "M" and "B". Graphitic slips are common in the more argillaceous schists.

Generally quartz-sericite schist becomes increasingly phyllitic towards the centre of the claim group. Most of the true phyllite on the property lies in the centre of the claim group. Small lenticular quartz lenses up to six inches in length and quartz seams up to 35 feet long and one-foot thick are commonly found in the quartz-sericite schist parallel to the bedding. Occasional carbonate seams up to one-inch thick were commonly weathered out on the exposed surface.

The major outcrop of quartz-sericite-biotite schist occurs between the granite and the argillite on the southern col of Mount Tay. Biotite content increases progressively towards the granite contact.

The andesite in the western section of the property is younger than the sediments it overlies. It is fine grained and, in part, vesicular.

Hornfels was found almost exclusively adjacent to, or in contact with altered andesite.

Granite, as exposed along the northwest and east sides of the property, is medium to coarse grained and often porphyritic. The porphyritic granite contains feldspar lathes up to 4 inches long and 1/2 inch wide. The granite was frequently gneissic near the borders in contact with the overlying schist.

The general strike of the bedding north of Anvil Creek is N 27° W, with the average dip being 30° northeast. South of Anvil Creek the general strike is N 60° W with the dip of the bedding variable due to isoclinal folding.

In area "M", a number of small outcrops strike at right angles to the regional strike.

134°00'

62°30'

ANVIL CREEK

PELLY RIVER

134°00'

True North

Magnetic North

340

64

16

168

72

Mary & Argo Groups

Carmacks

Vangorda Creek Area

Ross River

Whitehorse

Yukon R.

Pelly River

Canol Road

Teslin R.

Lobergo L.

ALASKA HWY

YUKON

KEY MAP

Scale 1 inch = 45 miles

WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

MARY & ARGO CLAIM GROUPS

VANGORDA CREEK AREA

Whitehorse Mining District

— YUKON TERRITORY —

Scale 1" = 1/2 mile

November 1966

SYMBOLS

a ——— b Magnetometer traverse (ground) see profile

#10, B Anomaly identification

APPROXIMATE

HORIZONTAL CONTROL..... BASED ON PHOTO LAYDOWN

AIRBORNE MAGNETOMETER SURVEY

S.U.P. VANGORDA SYNDICATE

Mary Group

YUKON TERRITORY

WATTS, GRIFFIS AND McOUAT LIMITED

SCALE 1 INCH TO 1320 FEET (APPROXIMATELY)

MEAN TERRAIN CLEARANCE.....100 FEET
TRAVERSE INTERVAL.....1000 FEET
CONTOUR INTERVAL.....25 GAMMAS
BASE INTENSITY.....ARBITRARY

CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

CAS 56-103

MARY GROUP

ARGO GROUP

'M'

'B'

ARGO CREEK

BOOTH CREEK

WALTHALL CREEK

ANVIL CREEK

SOUTH ARGO LAKE

NORTH ARGO LAKE

134° 06' W

134° 00' W

62° 30' N

62° 30' N

LEGEND

13 Granite, granite porphyry, granite gneiss
12 Andesite (altered)
11 Limestone (cherty)
10 Hornfels
9 Quartz sericite schist
8 Quartz sericite biotite schist
7 Quartz sericite schist (Phyllitic)
6 Phyllite
5 Graphitic schist
4 Chlorite and chlorite schist
3 Quartzite (banded)
2 Quartzite (banded and argillaceous)
1 Argillite

SYMBOLS

..... Outcrop outline
——— Geological contact (defined)
—·—·— Geological contact (approximate)
- - - - - - - Geological contact (assumed)
/60° / Strike and dip of bedding (inclined and vertical)
~ ~ ~ Fault (assumed)
—— —— Claim boundary (assumed)
— — — Claim boundary (established)
'B' See detail map

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S.U.P. VANGORDA SYNDICATE
'Mary' & 'Argo' Groups
VANGORDA CREEK AREA
— YUKON TERRITORY —

GEOLOGICAL MAP

Mile 0 1/4 1/2 3/4 1 Mile
SCALE

TORONTO ONTARIO

SEPTEMBER 1966

MARY GROUP

ARGO GROUP

for results see below

'M'

'B'

ARGO CREEK

BOOTH CREEK

WALTHALL CREEK

ANVIL CREEK

134° 00' W

62° 30' N

No.	Cu, Pb, Zn
83	33, 20, 40
84	51, 20, 95
93	67, 30, 115
94	20, 25, 80
95	70, 125, 1000
96	20, 30, 115
97	32, 30, 125
98	57, 20, 200
99	48, 20, 110
100	41, 25, 110
101	38, 50, 325
102	31, 25, 300
103	45, 25, 300
104	45, 20, 325
105	57, 20, 200
106	38, 25, 115
107	35, 20, 65
233	57, 25, 120
234	38, 25, 130
235	20, 20, 135
236	23, 20, 135
566	N.R.
567	20, 25, 135
568	20, 21, 200
569	22, 11, 135
570	29, 25, 125
571	41, 10, 300
571a	41, 25, 250
572	73, 13, 110
573	28, 15, 90
602	27, 19, 188

N.R. - No Result.

Background Values

Cu - 35 ppm.
Pb - 22 ppm.
Zn - 160 ppm.

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S.U.P. VANGORDA SYNDICATE

Mary & Argo Groups

VANGORDA CREEK AREA

— YUKON TERRITORY —

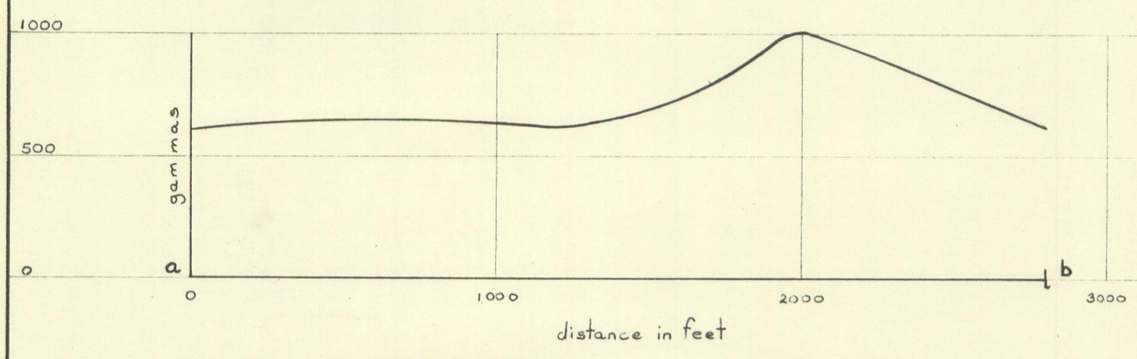
GEOCHEMICAL SURVEY

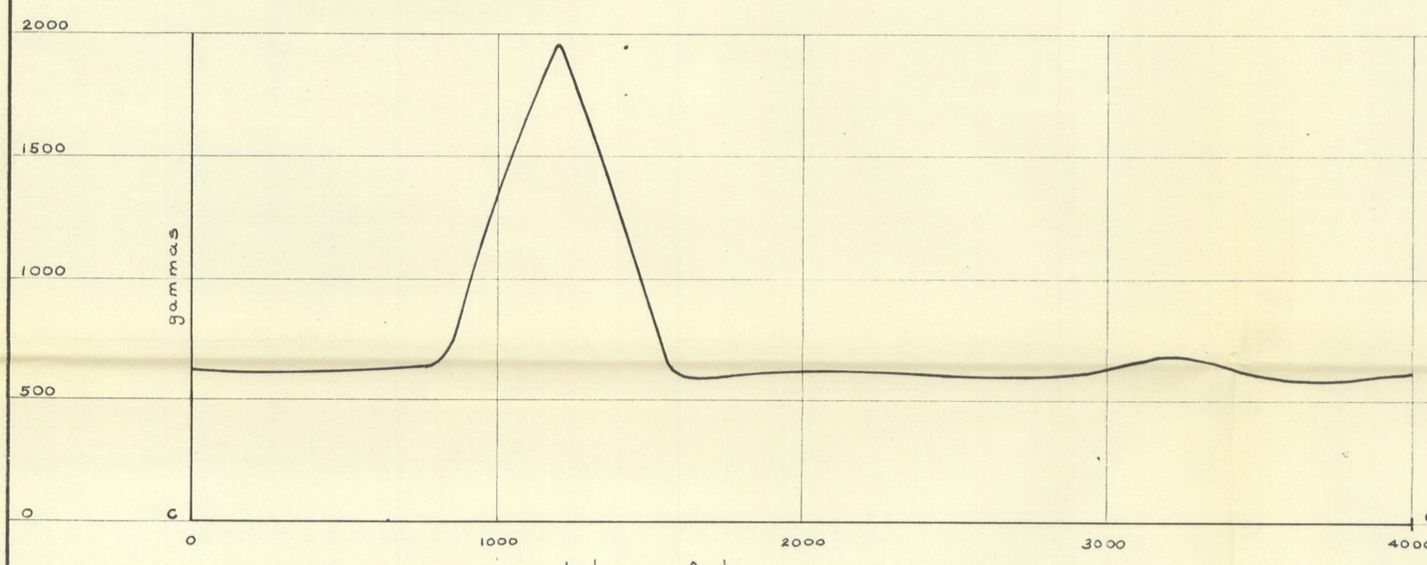
Mile 0 1/4 1/2 3/4 1 Mile

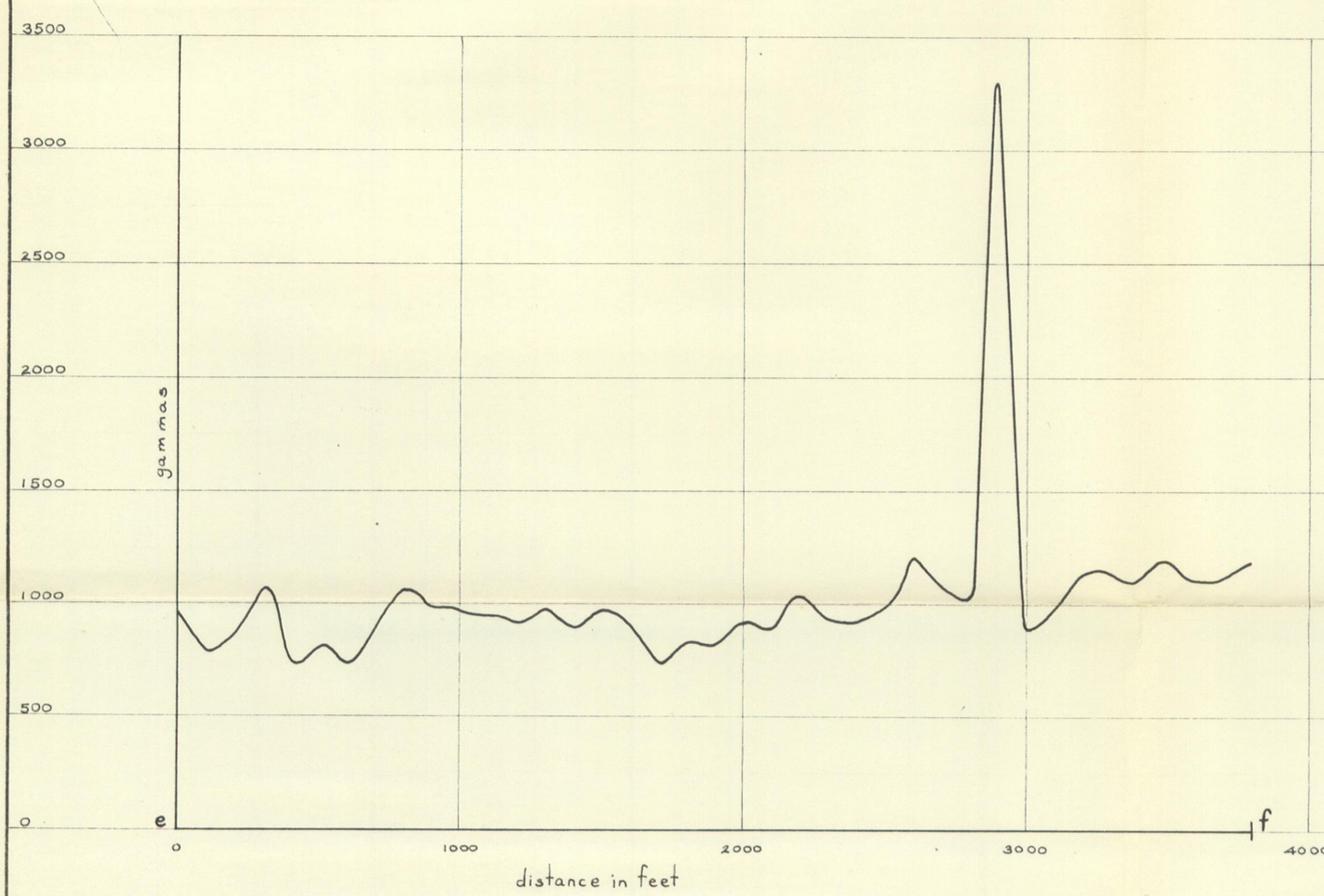
SCALE

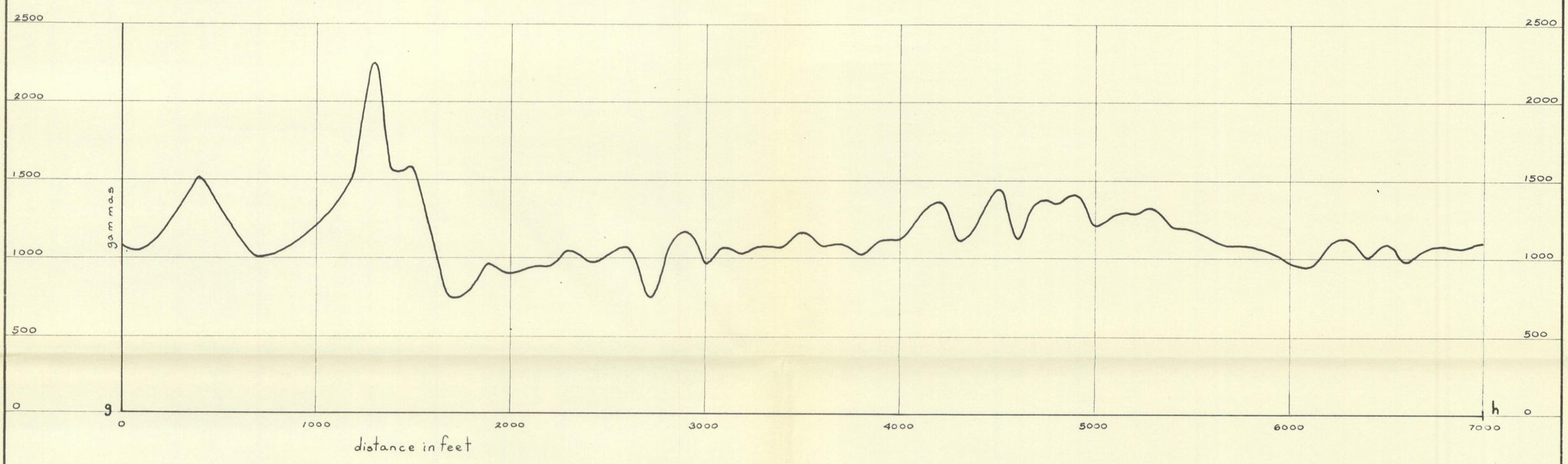
TORONTO ONTARIO

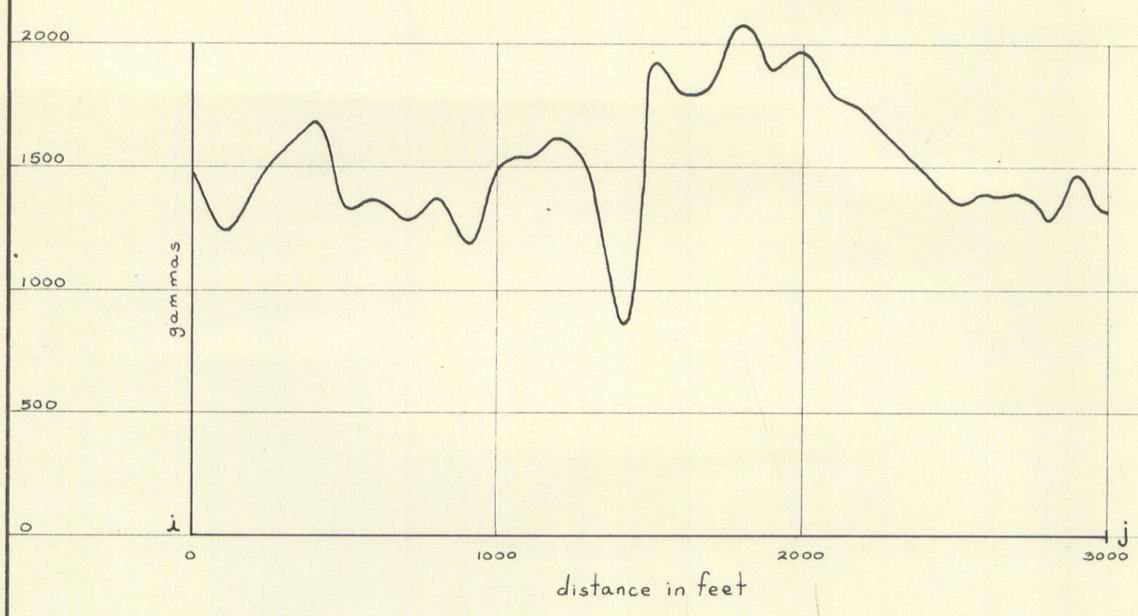
SEPTEMBER 1966











Instrument : Sharpe MF-1
sensitivity 20 gammas per scale division

Magnetometer set at 500 gammas at camps 'A' and 'B' for traverses ef, gh, ij and ab, cd, respectively.
(see airborne magnetometer map)

WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

· Mary Group ·

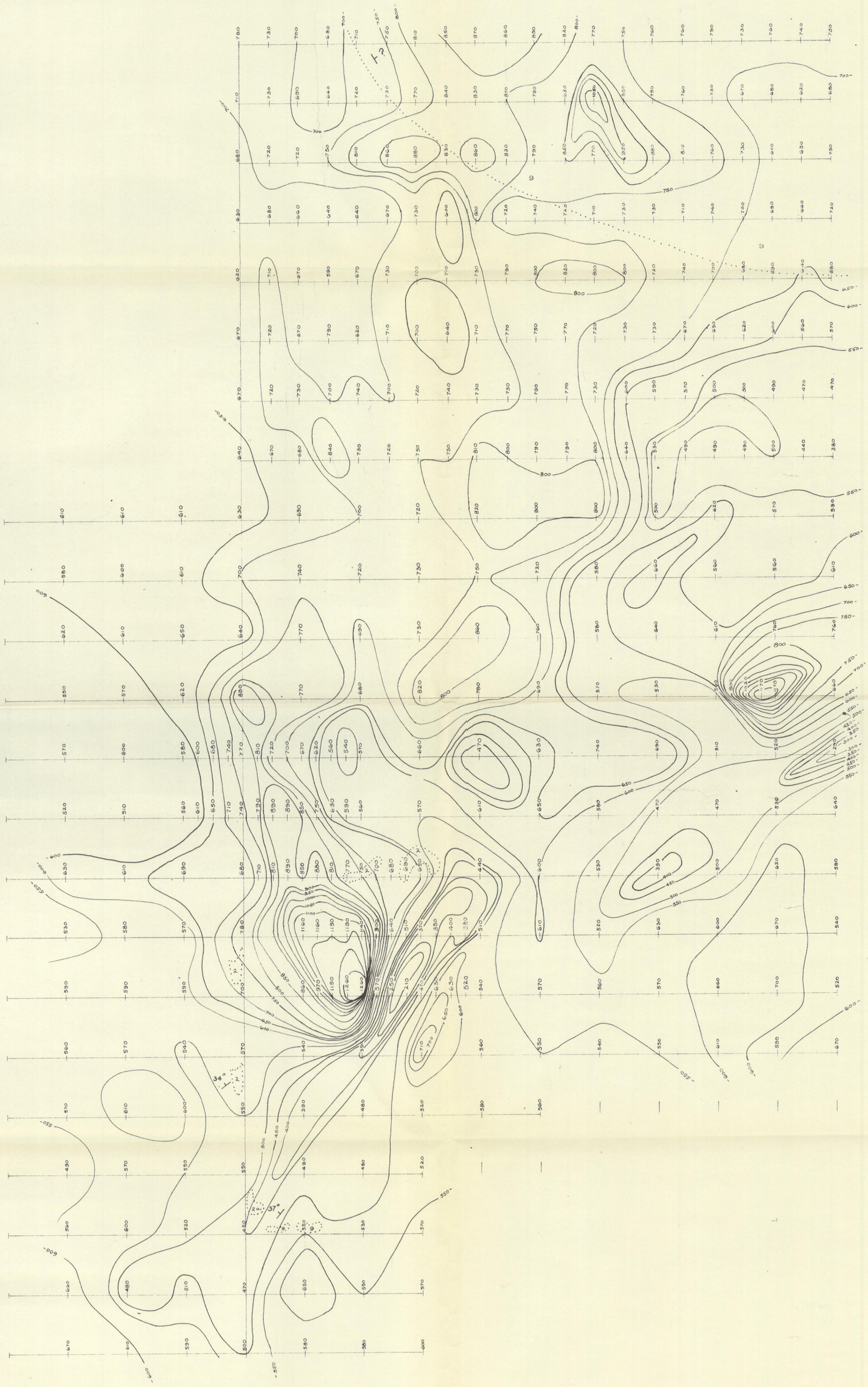
VANGORDA CREEK AREA

— YUKON TERRITORY —

MAGNETOMETER PROFILES

TORONTO, ONTARIO

SEPTEMBER 1966



LEGEND

- 9 — Quartz Sericite schist (argillaceous)
- 2a — Quartzite (sl. graphitic)
- 2 — Quartzite and quartz sericite schist

SYMBOLS

- ..... Outcrop outline
- ⁄ 30° Strike and dip of bedding
- Instrument: Sharpe MF-1 magnetometer
  sensitivity 20 gammas per scale division
- +550 Reading in gammas
- ⌣600⌣ Contour interval 50 gammas

WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

Mary Group

VANGORDA CREEK AREA

— YUKON TERRITORY —

ANOMALY "M"

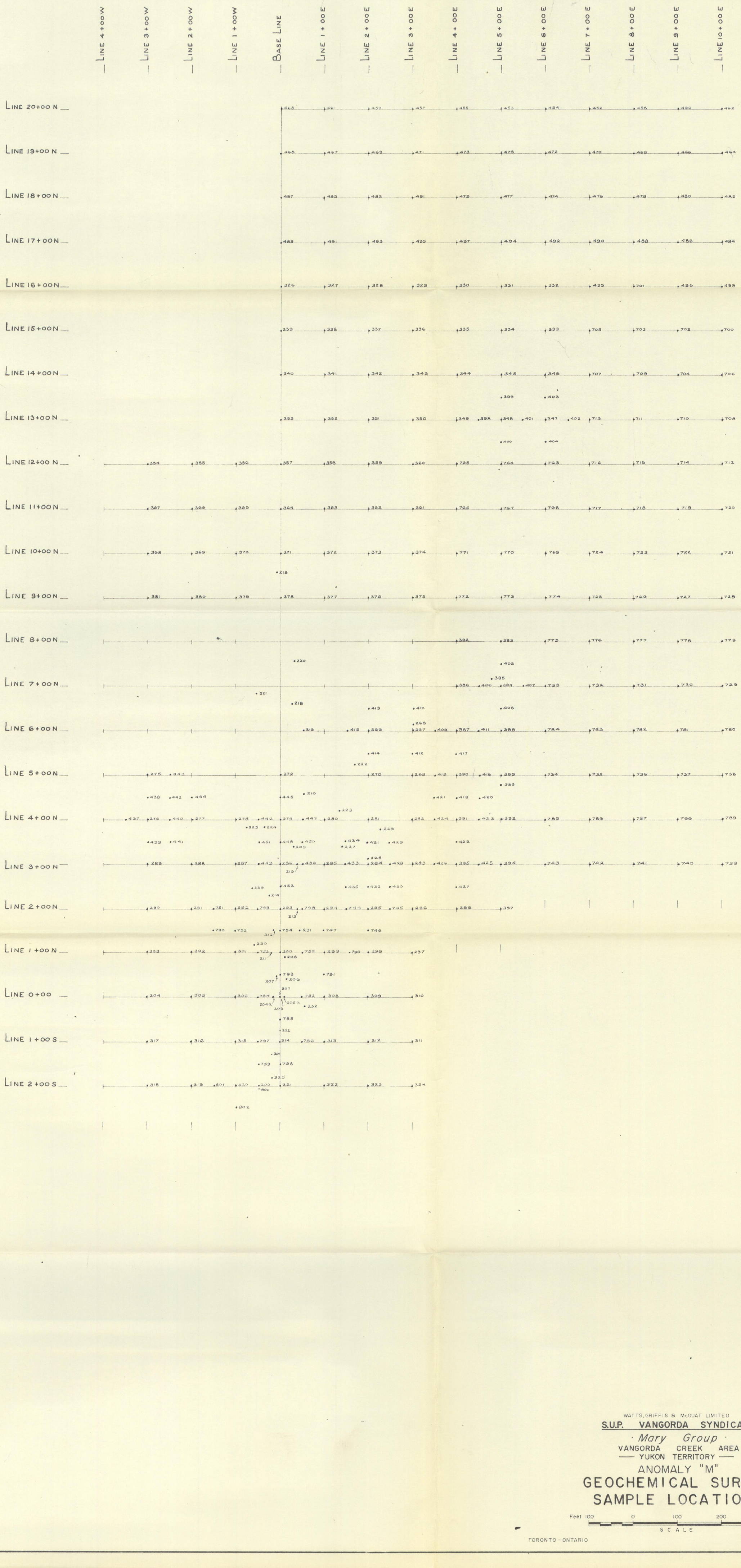
MAGNETOMETER & GEOLOGICAL SURVEY

Feet 100 0 100 200 300 Feet

SCALE

TORONTO - ONTARIO

SEPTEMBER 1966



WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

Mary Group

VANGORDA CREEK AREA

— YUKON TERRITORY —

ANOMALY "M"

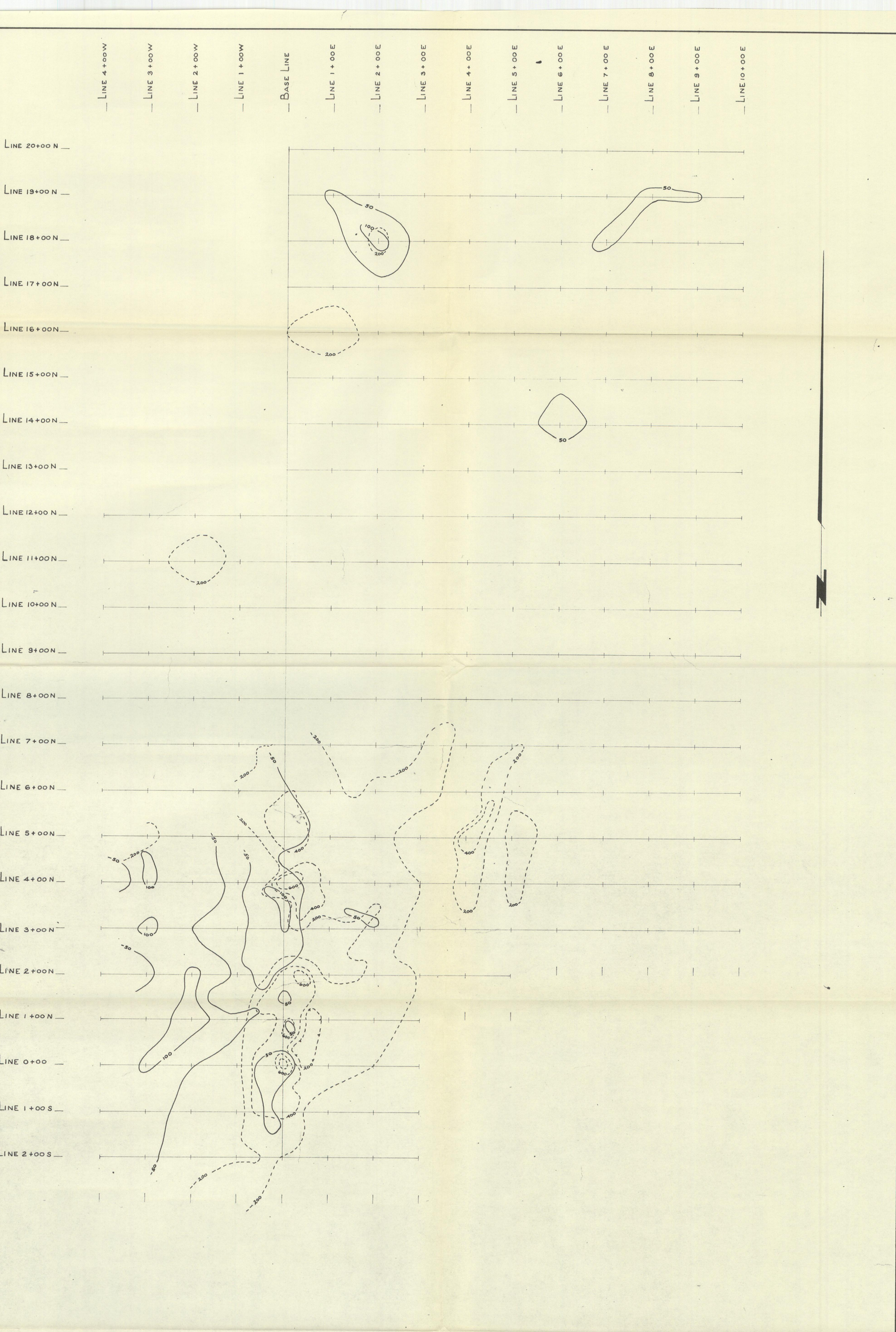
GEOCHEMICAL SURVEY SAMPLE LOCATIONS

Feet 100 0 100 200 300 Feet

SCALE

TORONTO - ONTARIO

SEPTEMBER 1966



Legend

—— 100 —— Copper in ppm.
contour interval 100 ppm.
background 35 ppm.

- - - 200 - - - Zinc in ppm.
contour interval 200 ppm.
background 160 ppm.

Lead not contoured
all values insignificant
background 22 ppm.

WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

· Mary Group ·

VANGORDA CREEK AREA

—— YUKON TERRITORY ——

ANOMALY "M"

GEOCHEMICAL SURVEY

Feet 100 0 100 200 300 Feet

SCALE

TORONTO - ONTARIO

SEPTEMBER 1966

Line 6+00 N

Line 5+00 N

Line 4+00 N

Line 3+00 N

Line 2+00 N

Line 1+00 N

Line 0+00

Line 1+00 S

Line 2+00 S

Line 3+00 S

Line 5+00 W | Line 4+00 W | Line 3+00 W | Line 2+00 W | Line 1+00 W | BASE LINE | Line 1+00 E | Line 2+00 E | Line 3+00 E | Line 4+00 E | Line 5+00 E

SYMBOLS

Instrument: Sharpe MF-1 magnetometer
sensitivity 20 gammas
per scale division

(Sample No.) - 375 • 18 (Cu ppm) / 100 (Pb ppm) / 670 (Zn ppm)

+550 Reading in gammas

~600~ Contour interval 50 gammas

Magnetic low

⊙ Spring

34°

True North

Magnetic North

WATTS, GRIFFIS & McOUAT LIMITED

S.U.P. VANGORDA SYNDICATE

Mary Group

VANGORDA CREEK AREA

— YUKON TERRITORY —

ANOMALY "B"

MAGNETOMETER & GEOCHEMICAL SURVEY

Feet 100 0 100 200 300 Feet

SCALE

TORONTO – ONTARIO

SEPTEMBER 1966