BEAVER AND BONZA CLAIMS

115-K-2, Whitehorse M.D., Y.T.
62°14'N, 140°40'W, Elev. 2700'

GEOLOGICAL AND GEOPHYSICAL APPRAISAL

May 1967 and June 7, 1967

by

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SNAG AREA

115-K-2, Whitehorse M.D.

PART 1 - GEOLOGICAL APPRAISAL

1. SUMMARY AND RECOMMENDATIONS

A large East-West striking magnetic anomaly lies across the Alaska Highway near Mile 1190 in the Snag area. (Figures 1 and 2).

Nickel occurrences in this district are associated with anomalously magnetic East-West striking portions of generally NW-SE trending elongated peridotite bodies.

The Snag magnetic anomaly is of about the same intensity as those reflecting the peridotites near the Canalask and the Wellgreen nickel deposits, but of much larger size. It is located NE of the Shakwak fault, but in a belt of Palaeozoic-Mesozoic rocks similar to those enclosing the nickel deposits, whereas further to the SE, Yukon schists constitute the normal formation on the NE side of the Shakwak fault.

In view of these geological similarities, it is thought that the terrain immediately adjacent to the magnetic highs in this belt is an excellent exploration target for a nickel-copper deposit of significant size.

This situation can be tested at low cost by a deep penetration electromagnetic survey and soil sampling, followed by drilling of any conductive zone that is encountered, as the target zones lie within a few miles from the Alaska Highway and the magnetic highs have been located on the ground.

Total cost is estimated at $38,000.

2. PROPERTY

(See Figures 1, 2, 3 and 4)

Beaver 1 - 18	Grant Nos. Y8541 - Y8558
Bonza 1 - 16	Grant Nos. Y8559 - Y8574
Total 34 claims	Due date: June 10th, 1967

3. OWNERSHIP

P. Voruluce and Associates, P.O. Box 164, Whitehorse, Yukon.

The writer expects to obtain an interest in this property, which he has personally examined several times in 1965.

4. LOCATION

NTS 115-K-2

62°14'N, 140°32'W and 140°44'W

Elevation 2400 - 2600'

5. ACCESS

Mile 1190 Alaska Highway, i.e. about 20 miles North of White River Lodge and 12 miles South of Beaver Creek Lodge. The claims lie within 2 miles West and within 3 miles East of the Highway and about 10 miles SW of Snag Airport.

Road miles to Whitehorse are 270 and to Haines, Alaska, 325.

The area is swampy and there is only patchy timber in the immediate vicinity.

There is abundant water in the White River about 6 miles to the East.

6. HISTORY

An airborne magnetic survey was flown in 1953 by H. Lundberg for Canalask Mines and many blocks of claims were staked as a result in the Kluane Ranges, totalling 571 claims.

The Snag anomaly was at that time covered by the Mel, the Buck and the Snag Groups of respectively 24, 16 and 24 claims.

A base line was cut and minor ground follow-up was done, but subsequently the claims were dropped by Canalask, as all efforts were concentrated on the known nickel deposit on the White River.

The ground was restaked in March 1965 by the present owners and optioned to Cominco who conducted a ground magnetic survey but subsequently dropped the option.

7. GEOLOGY

The claims lie directly North of outcrops of a belt of volcanics very similar to the Permian and Triassic volcanics to the SW of the Shakwak fault.

There are some granodioritic intrusives of unknown extent in the area to the West and Southwest.

This belt of rocks terminates to the SE against Yukon schists, which extend for well over 100 miles to the SE, i.e. past Haines Junction.

The presence of E-W trending structures in the area is very unusual and suggests that the magnetic anomalies lie along some major structure mostly buried in the large low-lying swamp-covered Wellesley basin.

Both the Canalask and the Wellgreen nickel deposits (280,000 tons @ 1.65% Ni and 740,000 tons @ 2.04 Ni and 1.42% Cu) lie within a few hundred feet of anomalously magnetic and East-West trending portions of elongated peridotite bodies.

The AM maps recently published by the G.S.C. show the following anomaly intensities at a mean terrain clearance of 1000';

Canalask	1000 gammas
Beaver	700 gammas
Bonus	2200 gammas

This similarity is sufficient to postulate that the cause of the Snag airborne magnetic anomalies may be peridotite bodies.

8. GROUND GEOPHYSICS

A ground magnetic survey was conducted by Cominco in early 1965, using a Sharp MF-1, on lines spaced from 400' to 1200' apart.

The results of this survey, shown on figures 3 and 4, suggest overburden depths of from 75' to 500' plus or minus about 15%, with a range of 125' to 150' being the most common.

A Minigun survey was run concurrently over some of the magnetic highs, but this survey failed to locate any conductors, as

the depth of overburden is too large for this type of instrument, which has a maximum penetration of from 50' to 80'.

In addition, possible nickel occurrences may be of the disseminated type, as at Canalask and would then only give a weak Minigun response even at a shallow depth.

Cominco decided however, not to proceed any further by using IP or Turam equipment.

9. FURTHER EXPLORATION

It is recommended that a deep penetration electromagnetic survey be run over the areas of interest, using either a Ronka EM 16 or an IP instrument.

At the same time, where possible, soil samples should be taken across the magnetic anomalies, even if it is not certain what may be expected in the presence of the deep overburden and the swampy ground.

If conductive zones are found, drilling will be justified. A minimum of 2000' is envisaged, in four or five holes from 400' to 500' deep, to be drilled in early spring. Drill water is expected to be available from the numerous ponds on the claims.

10. COST ESTIMATE

EM survey	$ 1,200
Soil samples, 200 @ $5.00	1,000
Transportation, subsistence	800
Engineering, contingency	800
	$ 3,800
Core drilling, 2000' @ $15.00	30,000
Engineering, contingency 15%	4,200
Total	$38,000

May 3, 1967

PART 2 - ELECTROMAGNETIC SURVEY

1. INTRODUCTION

A Ronka EM-16 unit was chosen as the most convenient instrument to locate conductive zones in this area of deep overburden.

This instrument is a sensitive VLF receiver, which can be tuned in selectively on several VLF-transmitting stations located in the Northern hemisphere which emit concentric horizontal electromagnetic fields from vertical antennas. These fields are normally used for the detection of submarine vessels.

If subsurface conductors are located with these fields local secondary fields are created. The Ronka EM-16 measures the vertical components of these fields.

The instrument has two receiving coils, one with a vertical axis and one with a horizontal one.

In operation, the signal received in the coil with the vertical axis is minimumed by tilting the instrument. The tilt-angle, measured in percentages, indicates the dip angle of the field, corresponding to the vertical in-phase, or real component, of the field. Subsequently, the remaining signal in the coil with the axis parallel to the primary field is balanced out by compensation after a 90° shift; the compensation is measured in a percentage of the original signal and this is a measure of the out-of-phase, or quadrature component.

Both the strength of the in-phase tilt and the ratio of the in-phase to the quadrature measured in percentage are a measure of the conductivity. I.e., a good conductor gives a strong in-phase reading and a weak quadrature response.

Conductive overburden gives a reverse quadrature reading; multiple conductors are revealed by a wavy curve.

Depths to the current concentration on the conductive body can be estimated where the conductor is a spherical body or a near-vertical plate-like body, the depth being about equal to the distance between the maximum positive and negative in-phase readings.

In practice, the complexity of many geological conductors interferes, producing wavy resultant curves, rendering depth estimates approximate only.

The instrument has been found to operate very satisfactorily in the Yukon, where the following transmitting stations may be used:

NAA,	Cutler, Maine	17.8 kHz
NPG,	Seattle, Washington	18.6 kHz
NPM,	Hawaii	23.4 kHz

The best results are obtained where the conductor points towards the transmitting station. Where the conductor is at right angles to the direction to the transmitter the secondary field may be very weak.

2. FIELD WORK

The survey was conducted over a total of 2 line miles by H.S. Aikins on June 7th, 1967 assisted by Mr. C. Gibbons.

Much of the swampy area was inaccessible and in particular the interesting magnetic high could not be traversed due to swamp.

The results are shown on figures 5 and 6.

Two soil samples were taken on line 36+00W, at 9+00N and at 15+00N; the results of these samples are not yet available at the time of writing.

3. SUMMARY AND CONCLUSIONS

None of the readings are suggestive of anything else but overburden in the area surveyed. Weak conductivity in the 12 - 15% in-phase range occurs North of the pond on line 36+00W. This is an area where magnetics suggest a depth of overburden of about 350' and there is no reason to believe that this is due to any other cause than overburden effect.

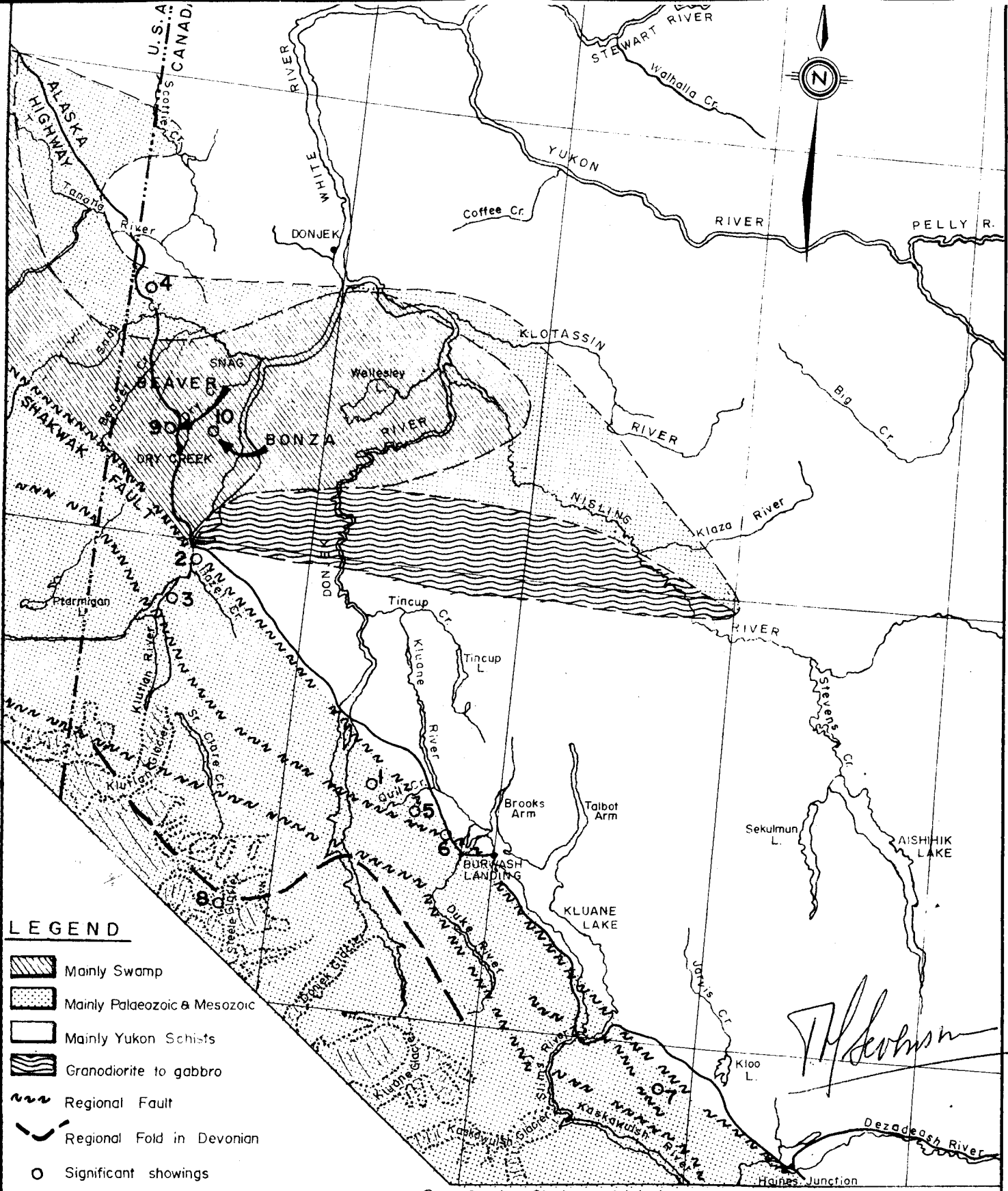
It is therefore recommended to maintain in good standing only those claims overlying the high ground magnetics, and to drop those where only broader and weaker magnetics without associated conductivity are present.

The claims recommended for retention are Beaver 6, 8, 11, 12, 14 and 16.

Respectfully submitted,

P.H. Sevenema, Ph.D., P. Eng.

PHS/lz
June 22, 1967



LEGEND

- Mainly Swamp
- Mainly Palaeozoic & Mesozoic
- Mainly Yukon Schists
- Granodiorite to gabbro
- Regional Fault
- Regional Fold in Devonian
- o Significant showings

1. Wellgreen (740,000t @ 2.01 Ni, 1.43 Cu)
2. Micro (282,000t @ 1.64 Ni, 04 Cu)
3. Canyon City Copper
4. Mile 1212 Manganese
5. Linda, Fossil, Ram Creeks Copper
6. Burwash Creek Copper
7. Cub Creek Copper Zinc
8. Steele Glacier molybdenite
9. 10. Beaver and Bonza

FIG. 1

BEAVER—BONZA

KLUANE RANGE LOCATION MAP

P. H. SEVENSMA CONSULTANTS LTD— Vancouver B. C.

May 1967 115—G—F & K

SCALE 0 20 Miles

ALASKA
YUKON TERRITORY

62°15'

BEAVER

NIGGERHEAD LAKES

NIGGERHEAD

BONZA

Dry Creek

B.L.M.

10'

UNITED STATES OF AMERICA
CANADA

MAP 4261 G

DRY CREEK

YUKON TERRITORY

Scale: One Inch to One Mile = $\frac{1}{63,360}$

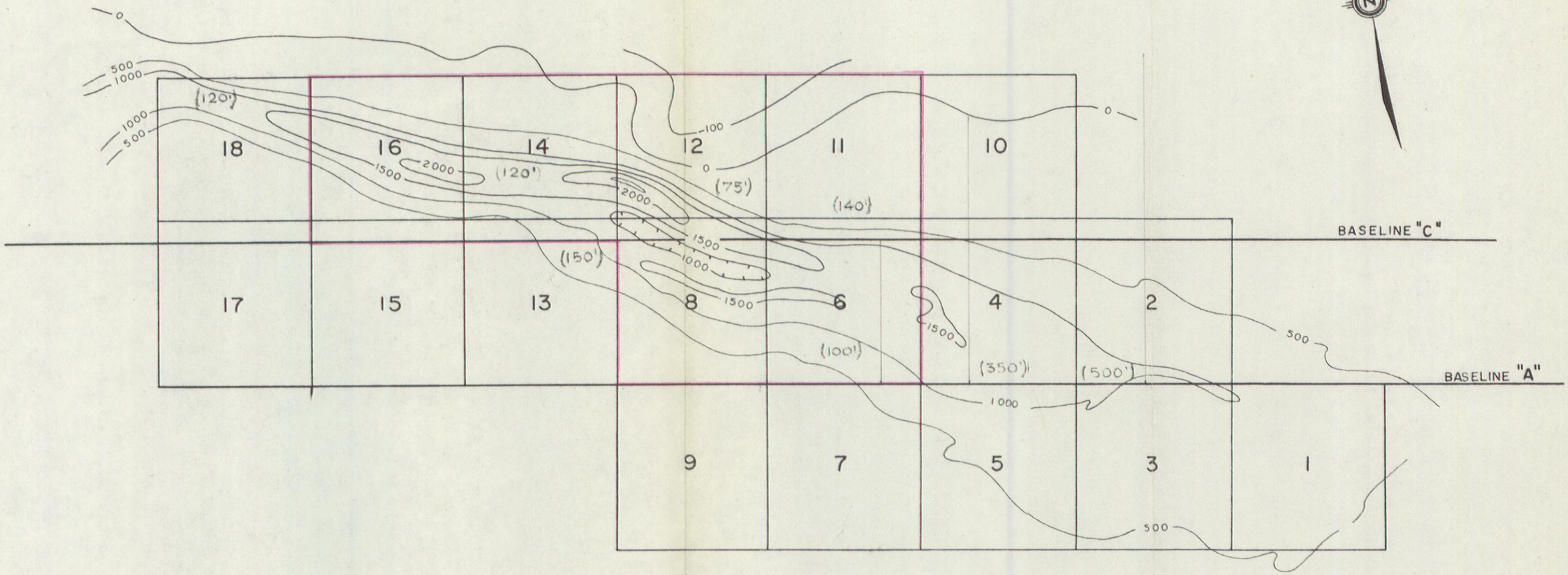
Miles

1 1/2 0 1 2 3

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

FIG 2

SNAG AREA — WHITEHORSE M.D — Y.T.		
BEAVER — BONZA		
P. H. SEVENSMA CONSULTANTS LTD. 715 - 850 WEST HASTINGS VANCOUVER, B.C.		
REF.: N.T.S. 115 — K — 2	DATE: APRIL 1967	SCALE: 1" = 1 mi.



T. H. Sevensma

(150') Estimated Overburden Depth

BEAVER GROUP
GROUND MAGNETICS, SHARP MF—1 WHITEHORSE M.D.
P. H. SEVENSMA CONSULTANTS LTD—VANCOUVER B.C.
MAY 1967 115—K—2 SCALE 0 1000 2000

FIG 3

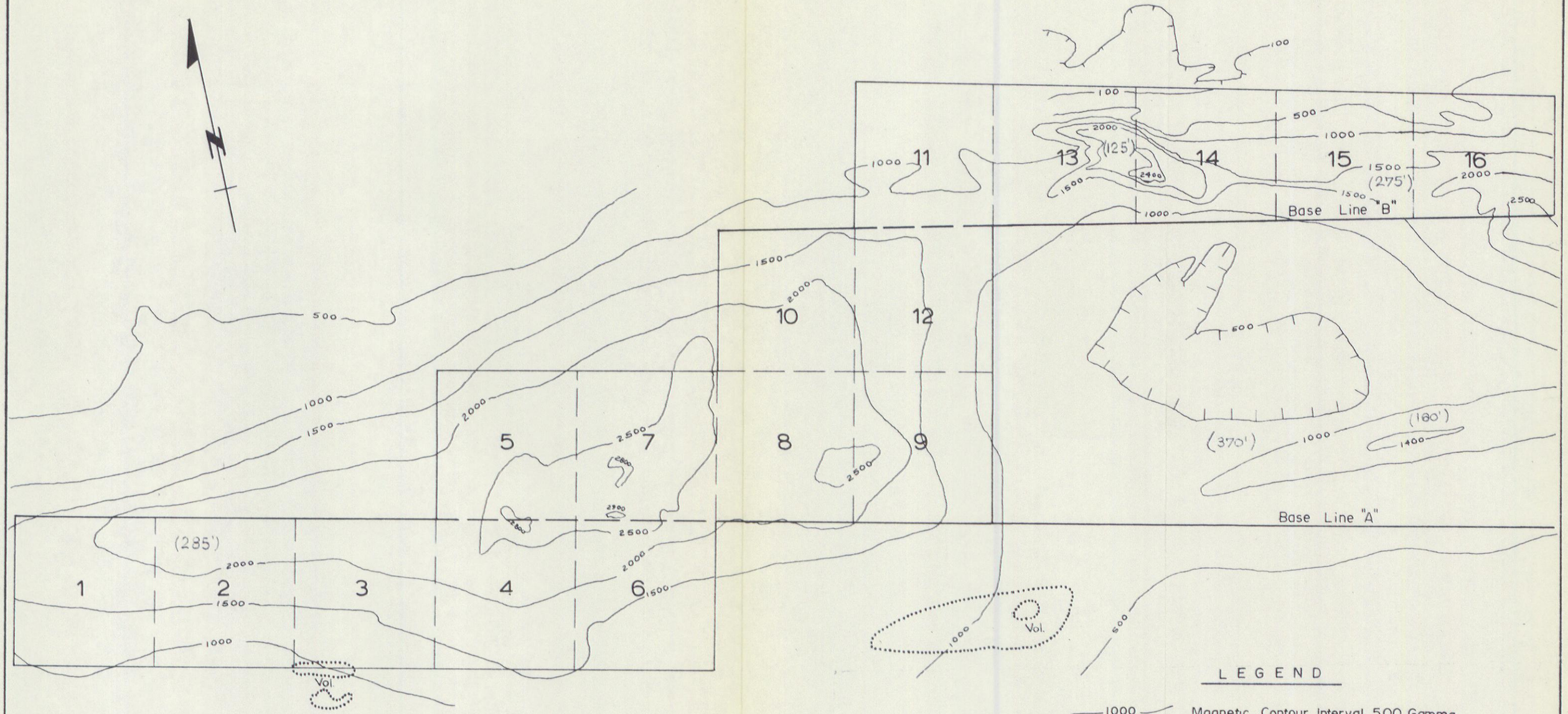


FIG 4

BONZA GROUP

GROUND MAGNETICS, SHARP MF - I
WHITEHORSE M.D. 115 - K - 2

P.H. SEVENSMA CONSULTANTS LTD.

VANCOUVER, B.C.
APRIL, 1967

SCALE 0 1000 2000

73+00W
68+00W
63+00W
60+00W
58+00W
53+00W
52+00W
48+00W
43+00W
36+00W
29+00W
24+00W
19+00W
14+00W

30N
25N
20N
15N
10N
5N

No 1 post Snaggy 14

Soil Sample taken from base of small knol
"T" deep in sandy clay.

Base Line "C"

Line not flogged

Silt Sample (grey over=flow)

LOW SWAMP AND MUSKEG AREA | GENTLE RISE

KAME RIDGE

Approx. direction of greatest response NPG.

No 1 posts Snaggy 11 & 12
2 new posts

4 unmarked claim posts

No 1 posts Beaver 2 & 3

No 1 Posts of Snaggy 3 & 4
(two new posts start of Beaver2)

LOW HILL

HILL

L A K E

SLOUGH

Base Line "A"

T. H. Sevensma

BEAVER GROUP CLAIMS

RONKA EM-16 SURVEY

P. H. Sevensma Consultants Ltd. — Vancouver B.C.

June 1967

SCALE: 0 400ft.

FIG. 5

BEAVER 12

BEAVER 11

BEAVER 10

73+00W

68+00W

63+00W

60+00W

58+00W

53+00W

52+00W

48+00W

43+00W

36+00W

29+00W

24+00W

19+00W

14+00W

Line not flogged

No 1 post Snaggy 14

Base Line "C"

Soil Sample taken from base of small knol "7" deep in sandy clay.

30N

25N

20N

15N

10N

5N

Silt Sample (grey over-flow)

SWAMP AND MUSKEG AREA | GENTLE RISE

KAME RIDGE LOW

BEAVER 8

BEAVER 6

BEAVER 4

BEAVER 2

HILL

No 1 posts Snaggy 11 & 12
2 new posts

4 unmarked claim posts

No 1 posts Beaver 2 & 3

No 1 Posts of Snaggy 3 & 4
(two new posts start of Beaver?)

SLOUGH

LAKE

Base Line "A"

In Phase

Quad.

Approx. direction of greatest response NPG

N

P.H. Sevensma

BEAVER GROUP CLAIMS

RONKA EM-16 SURVEY

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June 1967

SCALE: 0 400ft

FIG. 6