



BOSWELL RIVER MINES LTD.

Fox Group Mineral Claims

105-C-13 60° 59'N 133° 45'W
Whitehorse M.D., Y.T.

REPORT ON

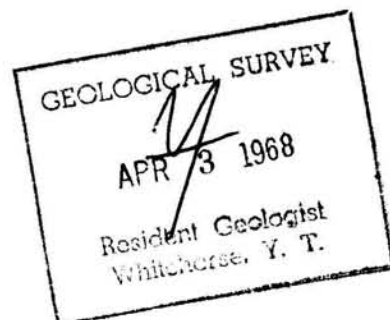
Airborne Geophysical Survey

(Survey flown January 25, 1968)

Prepared by

H. S. Aikins

Under the direction of



P. H. Sevensma, Ph.D., P. Eng.

- and -

R. G. Gifford, P. Eng.

January 27, 1968.

This report has been examined by
the Geological Evaluation Unit.
Approved as to technical worth by:

D. C. Gifford
RESIDENT GEOLOGIST

Approved as to cost in the a. amount
of: \$ *1,500.00*

R. G. Gifford
RESIDENT MINING ENGINEER

Accepted as representation work
under Section 33(4) Yukon Quartz
Mining Act.

[Signature]
COMMISSIONER OF YUKON

018620

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Boswell River Mines Ltd.
 Fox Group Mineral Claims
Whitehorse M.D. Y.T.

1. INTRODUCTION

The Fox group of claims is located on the south slope of Red Mountain at a distance of some two miles from the Boswell River. The area is drained by Red Mountain Creek on the east and Slate Creek to the west. The general area has been prospected intermittently since the turn of the century with numerous reports of high-grade argentiferous galena having been located. Boswell River Mines has employed prospectors in the area for part of the past two seasons.

2. PROPERTY

The Fox group is comprised of twenty-six mineral claims. Fox 1 and Fox 2 have not as yet been transferred to Boswell River Mines and are therefore excluded from the following list although it is understood such a transfer is pending.

<u>Claims</u>	<u>Grant Numbers</u>	<u>Date of Record</u>
Fox 3 to 26 incl.	Y 11814 to Y 11837	January 28, 1967

Fig. 1 shows the approximate location of the claims in relation to topographic features. No survey has been conducted to confirm the location as shown.

3. HISTORY

Prospecting on Red Mountain during the summer of 1966 confirmed the presence of extensive sulphide mineralization associated with a large porphyry mass. Samples taken at this time revealed significant silver values in the galena obtained from an exposure along a small creek bed and from float located elsewhere in the area.

History Cont'd

The mineral claims which are the subject of this report were acquired by staking during the following winter. Surface prospecting carried out in the summer of 1967 was hampered by the extensive talus slopes, the south flank of Red Mountain and the general lack of outcrop along the divide between Slate Creek and the east flowing tributary of Red Mountain creek.

4. GEOLOGY

The 1" = 4 mile map of the area by E. J. Lees, 1935, G.S.C. map 350A shows a porphyry body about 3½ miles long and almost ½ mile wide trending NW-SE along the summit of Red Mountain. The porphyry is a light-coloured quartz-feldspar carrying up to 5% pyrite and is highly oxidized on the weathered surface. The area is underlain by schists, quartzites and limestones. More recent work by R. Mulligan, issued as G.S.C. Memoir 326 groups the metamorphic sequence in this area as part of the Big Salmon Complex. Figure 2 adapted from the forgoing sources provides a general picture of the regional geology. The creek exposures are shown in the insert on this map and character samples taken from veins and float in this location returned the following values.

<u>Sample No.</u>	<u>Location</u>	<u>Ag.</u>	<u>Pb.</u>	<u>Zn.</u>
1	float	98.5	66.5	N.A.*
8100	float	84.2	64.6	2.1
8101	24" vein	36.9	31.5	6.6
8102	12" vein	14.9	13.3	5.2

*N.A.- Not Assayed

All samples were taken by the prospectors with the last three being submitted to the writer who had them assayed at the Whitehorse Assay Office.

Geology Cont'd

One other claim group two miles to the north, has been under investigation by this company. Showings on this group have been examined by the writer and a number of samples were taken. Mineralization occurs in a number of moderate to steeply dipping quartz veins which in general have a N-W bearing and average 2 to 3 feet in width. Silver:Lead ratios are in a range of from 1:1 to 2.5:1 with the highest assay showing a silver content of 157.4 ounces per ton. This sample was from a fissure vein in the enclosing dolomite.

Both groups are located in a belt of steeply dipping chlorite schists, argillaceous slates and dolomites intruded by a series of tabular porphyritic plutons. Two small serpentized ultramafic stocks occur near the east edge of the map area. This belt of metamorphosed sediments and volcanics is bounded on the north by the margin of a granodiorite mass believed to be an off-shoot of the Cassiar batholith.

Fig. 3, derived from G.S.C. aeromagnetic maps 1344G & 1367G shows the gross magnetic pattern of the area and the low magnetic relief over most of the map area. The 58,400 gamma contour outlines the serpentized stocks and the somewhat linear lows may be interpreted as a reflection of dolomitic sections within the Big Salmon Complex. The 58,360 gamma contour shows a marked ≈ 60 gamma anomaly over the Fox group claims. No lithologic explanation is apparent but it may be noted that a close coincidence between this anomaly and known sulphide mineralization exists.

5. AIRBORNE GEOPHYSICAL SURVEY

(a) General

Surface exploration by visual and hand methods during the relatively short field seasons of 1966 and 1967 had succeeded in locating float and two small exposures of argentiferous galena. Exposures were however, too limited to permit a satisfactory assessment of the mineral potential in what is regarded as a highly favourable geological environment. A reconnaissance geophysical survey was therefore recommended to delineate aeromagnetic and electromagnetic characteristics which could serve as a guide for future field work. Waterton Aeronautics and Aviation of Vancouver were contacted in November of 1967 and a survey by this firm employing the method described below was arranged. An initial attempt in early December was abandoned when cold weather and icing conditions proved too great a handicap. Following modification required, to winterize the aircraft and electronic gear, the machine was taken to Whitehorse and the survey was completed the following day under good winter weather conditions.

(b) Method

This method incorporates the combined readings from a fluxgate magnetometer, a nucliometer and an electromagnetic unit recorded on 8 mm. film and timed electrically to enable the readings to be entered on a grid of a chosen scale.

To give the most accurate forms to the anomalies, level lines are flown over the area, and a fixed-wing aircraft is chosen as the most suitable vehicle for this purpose.

Airborne Geophysical Survey Method Cont'd

Any inaccuracy in the timed readings due to airspeed error is calculated out before the readings are entered on the grid.

All the instruments are set on "0" over a predetermined spot near the survey area and this adjustment is made after each 1½ hours of survey.

Station-keeping is accomplished by flying between two lines drawn on a map with a scale of 1:50,000 and referring to land features. A directional gyro is also used, set to true heading by astro compass. Altitude of the level line is usually 500 ft. over the highest point of ground along the line.

Ground checks from over twenty areas have found the accuracy of the method to be between 250 and 500 ft. on a 500 ft. grid.

Fluxgate magnetometer: PMF-3 Sharpe, adjusted to return to "0" fast enough for the movement of the aircraft. Readings are in units of 100 gammas.

Nucliometer: Detectron - DR229, 24 tubes, which is more suitable for airborne work. Readings are in units of .005 MT/HR.

Electromagnetic: 55 ft. cable attached to the bottom of the aircraft. A small 10 oz. bird is drawn behind the aircraft as a receiver, powered by its own mercury cell. A magnetic field is transmitted through the cable at a thousand cps. and the receiver is tuned to "0". The receiver coil is set at 90° to the transmitted field, and, being very sensitive, only 30% of its receiving power is used. This indicates electromagnetic activity in the area, such as disseminated sulphides, which usually read 3 to 6; heavy sulphides 10 to 15. It also picks up other electrical fields besides those produced by the transmitted field.

(c) Results and Interpretation

(i) Magnetic

Fig. 4 shows the magnetic response recorded at each station and the grid has been contoured at 500 gamma intervals, indicated as 0 to 20 on the isomagnetic contours.

A well defined low between flight lines 2 and 4 confirms evidence of faulting as noted by Lees during his mapping in the area. The peak value of 20 (2000 gammas) shown N-E of the small lake is an expression of the larger 1500 gamma anomaly which crosses the structural trend and outlines in detail the magnetic high shown on Fig. 3. South-West of the inferred fault between stations 8 and 25 the higher magnetic background is suggestive of a more basic rock unit such as the pseudoforitic gneisses described by Mulligan. A number of linear trends are noted which may be in part or wholly attributed to contrasting susceptibilities in the meta sedimentary sequence and across the porphyry contrasts.

The steep gradient and the amplitude of the anomalies adjacent to the magnetic low shown at Station 13 on line 6 would however, appear to warrant a more detailed investigation.

(ii) Electromagnetic

A complex pattern of moderate conductivity characterizes much of the map area. It is noted that the porphyry, known to contain up to 5% disseminated pyrite over much of the area covered by this survey, has an average background of greater than 3 on the scale used. In the area underlain by the Big Salmon Complex the anomalies tend to occur as discreet conductors. The long axis of most of these conductors tends to

parallel the flight path and if a steep dip is assumed this may have resulted in a weak inductive coupling. The possibility of any response from horizontal conductive layers such as lakes and swamps may be largely discounted as there are no known drift deposits and only an immature residual soil profile.

Four areas, as outlined in red on Fig. 5, are rated as targets for further geophysical work. One area, as outlined in green, should have sufficient outcrop to allow for detailed mapping and prospecting, prior to a ground geophysical survey if this should be warranted.

(d) Conclusion

The airborne survey which is the subject of this report is regarded as highly satisfactory in that it provided magnetic data corroborating the results of the high-level G.S.C. survey and also responded to the moderate conductivity expected over the pyritic section of the porphyry dyke. In addition, an EM conductor South-west of the small lake coincides with a partially exposed galena vein.

The EM anomalies located within area 1 on Fig. 5, bear a marked relationship to a pattern of sharp magnetic relief. This is best illustrated by the EM anomaly superimposed on the aeromagnetic map, Fig. 4. The possibility of this zone representing a substantial sulphide mass may be regarded as good.

Area 2, on Fig. 5 is not adequately covered by the survey but would appear to warrant further work.

Areas 3 and 4 are designated as secondary targets where ground geophysical methods, combined with geochemical reconnaissance would provide an assessment of the conductors at this end of the belt.

6. SUMMARY

The high silver content of all samples taken in the general area, together with favourable lithology lends significance to the evidence of conductivity. A modest program of ground work with emphasis on soil and silt sampling over the designated areas should be regarded as a logical follow-up. The probability of this latter work defining drill targets is considered sufficiently high as to require a provision for drilling in the recommended program.

The only adverse factor and one which of necessity influences the nature of further work is the difficulty of access. Men and supplies must be transported by helicopter from Whitehorse, a distance of some forty-five miles.

No meaningful results were recorded on the nucliometer. The highest reading recorded was .002 millirontgens per hour.

7. RECOMMENDATIONS

The following program of work should be initiated as soon as weather conditions permit, with the first four phases being carried out concurrently to minimize mobilization and camp costs.

<u>Type of Work</u>	<u>Cost Estimate</u>
(a) Prospecting, Line-cutting, Trenching	\$ 3,000.00
(b) Geological Mapping, Sampling	2,500.00
(c) Geochemical Survey	1,500.00
(d) Geophysical Survey	2,000.00
(e) Diamond Drilling	<u>15,000.00</u>
Sub-Total	\$24,000.00
15% Contingency Allowance	<u>3,500.00</u>
Recommended Budget	<u>\$27,500.00</u>

Respectfully submitted,

H. S. Aikins
H. S. Aikins

CERTIFICATE

I, Robert G. Gifford, of Vancouver, B. C., do hereby certify that:

1. I am a graduate of the University of British Columbia where I obtained my Bachelor of Applied Science, Geology in 1962.
2. I am a Geological Engineer in the employ of P. H. Sevensma Consultants Ltd., Vancouver, B. C., and a registered member in good standing of the Association of Professional Engineers of British Columbia.
3. From May 1958 to until July 1967, I have been engaged continuously in mining and exploration geology in the employ of Cominco Ltd.
4. I have not personally examined the claims which are the subject of this report and therefore do not represent the positions of any boundaries as being other than approximate.
5. I, together with P. H. Sevensma, P. Eng., supervised the preparation of this report.
6. I have not received, nor do I expect to receive or acquire, directly or indirectly, any interest in any of the properties or securities of Boswell River Mines Ltd.

Respectfully submitted,



R. G. Gifford, P. Eng.

January 27, 1968.

APPENDIX A

List of Firms and individuals engaged in carrying out the work referred to in this report.

Geological Consultants:

P. H. Sevensma Consultants Ltd.
715-850 West Hastings Street,
Vancouver, 1, B. C.

P. H. Sevensma, Ph.D., P. Eng.
R. G. Gifford, P. Eng.
H. S. Aikins

Geophysical Contractor:

Waterton Aeronautics & Explorations Ltd.
500-905 West Pender Street,
Vancouver, 1, B. C.

C. Waterton - Operator

G. Pacey - Pilot

APPENDIX B - Statement of Costs

P. H. SEVENSMA CONSULTANTS LTD.

CONSULTING GEOLOGISTS
EXPLORATION & MINING

P.O. BOX 758
WHITEHORSE, Y. T.
PHONE: 667-2906

715-850 WEST HASTINGS ST.,
VANCOUVER 1, B.C.
PHONE 682-7155

INVOICE TO: **Bowwell River Mines Ltd.,**
P. O. Box 145,
Sunset Beach,
West Vancouver, B. C.

DATE: **February 1, 1968.**

Re: Airborne Survey of Fox Mineral Claims

Services and Disbursements as approved in our
Proposal of December 4, 1967.

Airborne Survey: 36.5 line miles

\$ 1500.00

Account Rendered

\$ 1500.00

As per attached Agreement

TERMS: 30 DAYS - 1% PER MONTH CHARGED ON OVERDUE ACCOUNTS

P. H. Sevensma Consultants Ltd.
715-850 West Hastings St.,
Vancouver, 1, B. C.

December 4, 1967.

Boswell River Mines Ltd.,
Box 145, Sunset Beach,
West Vancouver, B. C.

Dear Sir:

This will confirm our understanding that you have allocated the sum of \$1500.00 to be applied to an airborne geophysical survey of the Fox mineral claims located in the Whitehorse Mining District.

A minimum of 30 line miles will be flown by this survey on a line spacing of 500 feet. A report incorporating all data obtained together with a description of the methods and an interpretation of result obtained will be submitted on completion of the survey.

For these services, you will be invoiced the sum of \$1500.00 payable on receipt of the above mentioned report.

Would you kindly sign and return the attached copy of this proposal confirming your approval of the terms and conditions contained herein.

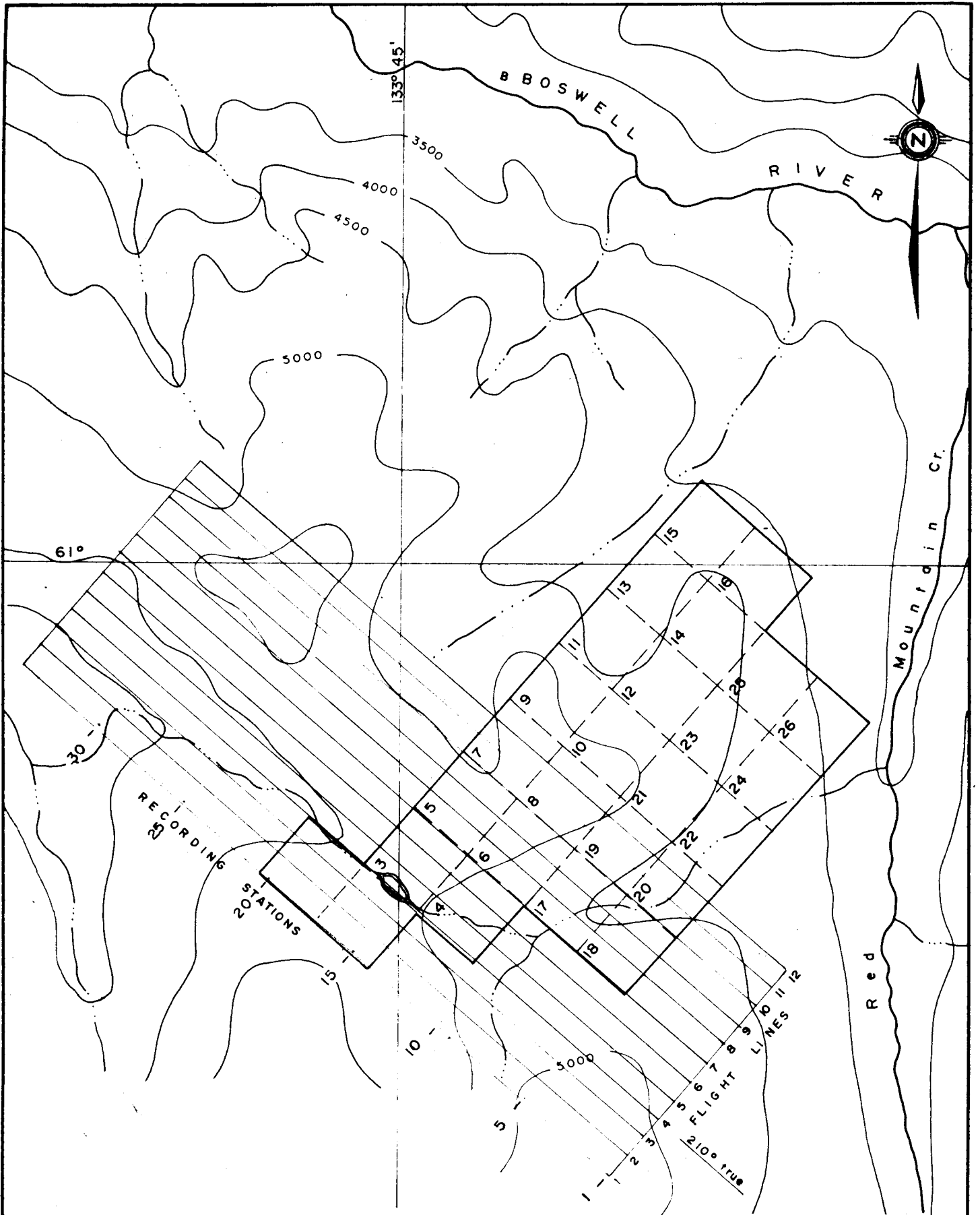
We look forward to the completion of this work on your behalf in the expectation that it will prove of substantial value in assessing this claim group.

Yours truly,


P. H. Sevensma

Approved: 

Date: January 11, 1968



CLAIM MAP
 &
 FLIGHT LINE GRID

BOSWELL RIVER MINES LTD.	
Airborne Survey - Fox Group	
Watson Lake M.D.	105-F-4, 105-C-13
P. H. Sevensma Consultants Ltd - Vancouver B.C.	
Jan. 16, 1968	Miles 0 1/2 1

FIG. 1

LEGEND

Intrusives (not differentiated)

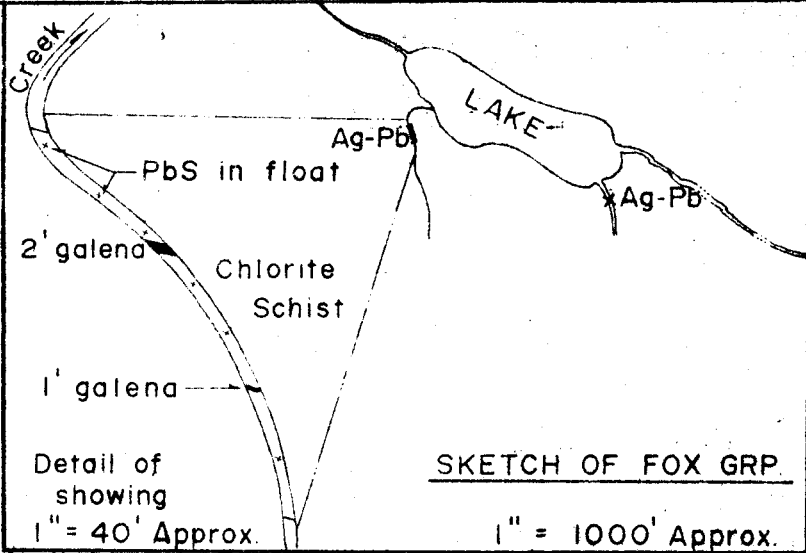


Palaeozoic meta sediments.



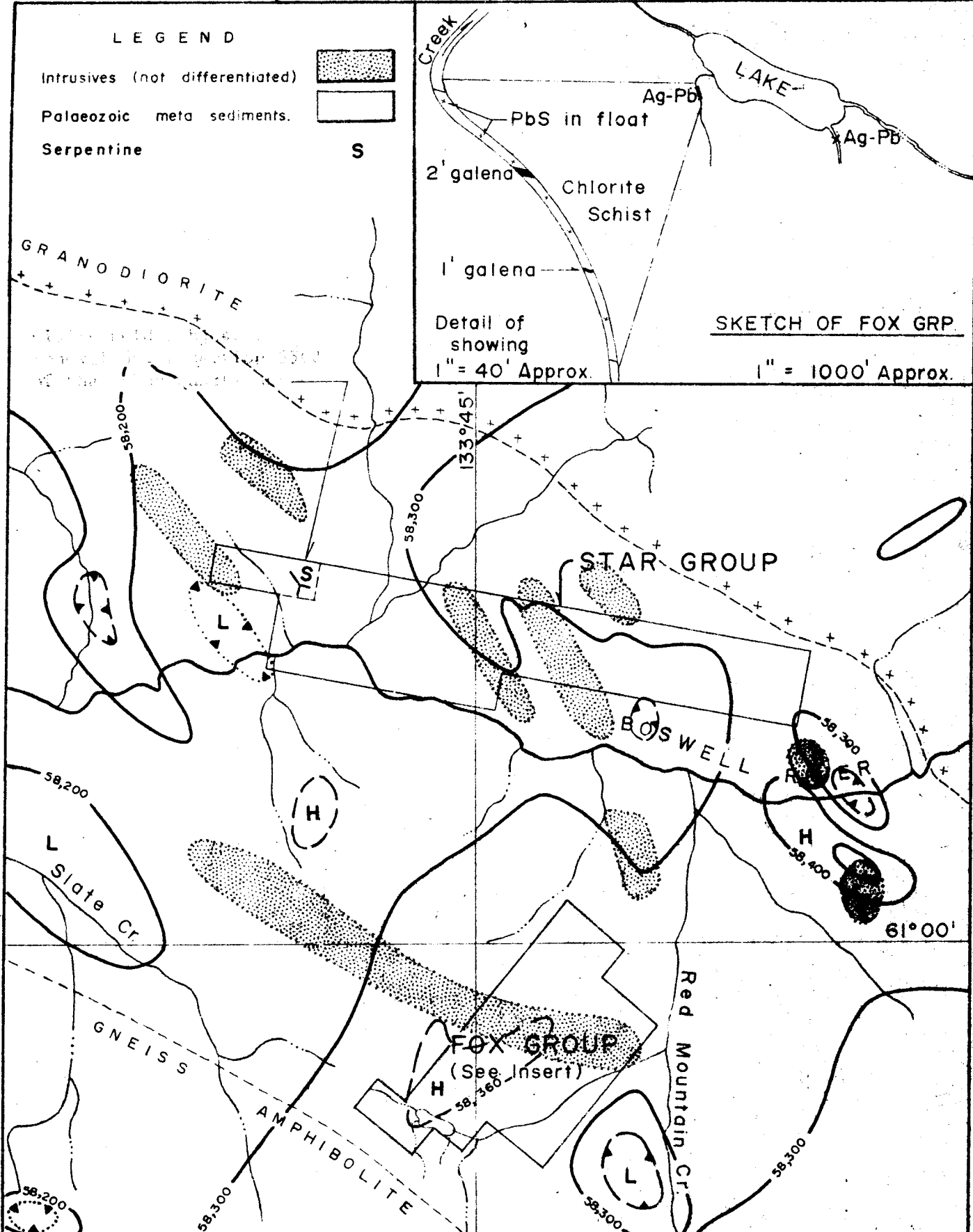
Serpentine

S



SKETCH OF FOX GRP

1" = 1000' Approx.



BOSWELL RIVER MINES LTD.

STAR GROUP 105 F/4; FOX GROUP 105 C/13

WHITEHORSE M.D.

P H SEVENSMA CONSULTANTS LTD.

VANCOUVER, B.C.

Ref. G.S.C. Maps 1344G & 1367G

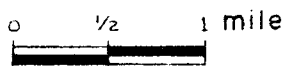
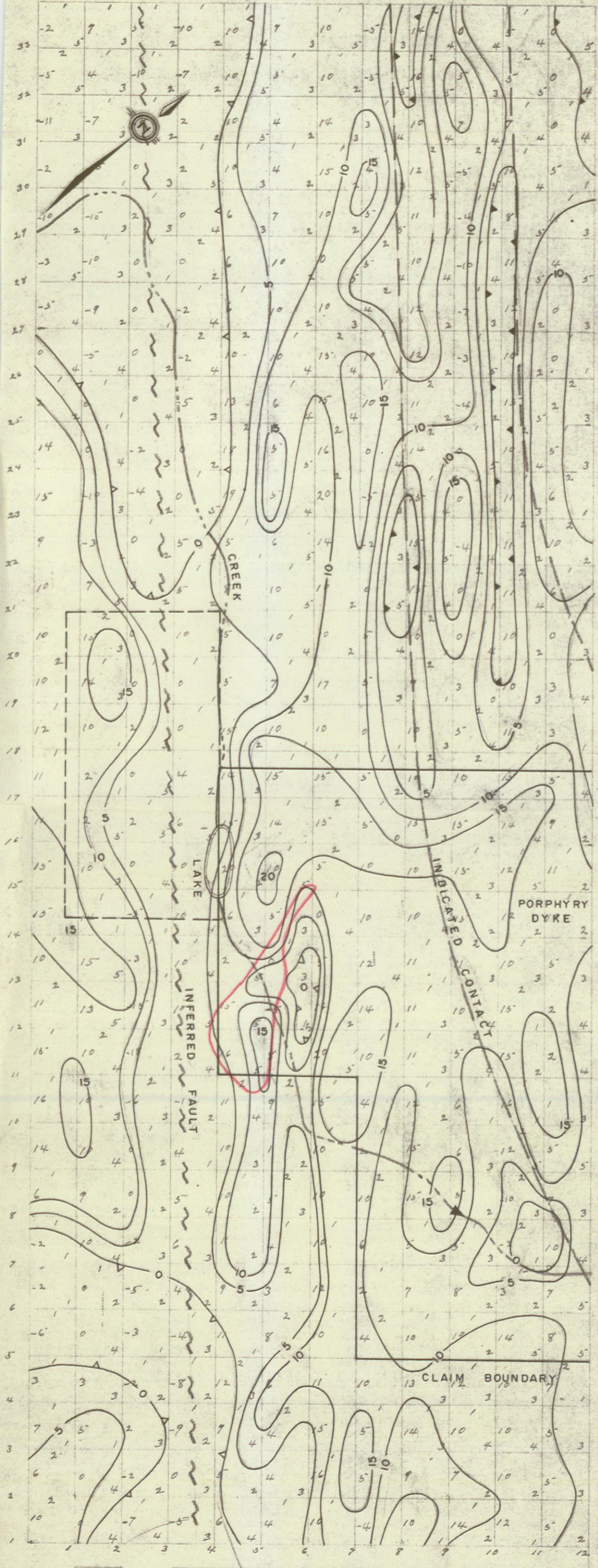


FIG. 3



AIRBORNE GEOPHYSICAL RECONNAISSANCE
 FOR GROUP - SAWTOOTH RANGE AREA YUKON
 GRID SCALE: 1000 FEET TO ONE INCH.
 REFERENCE POINT

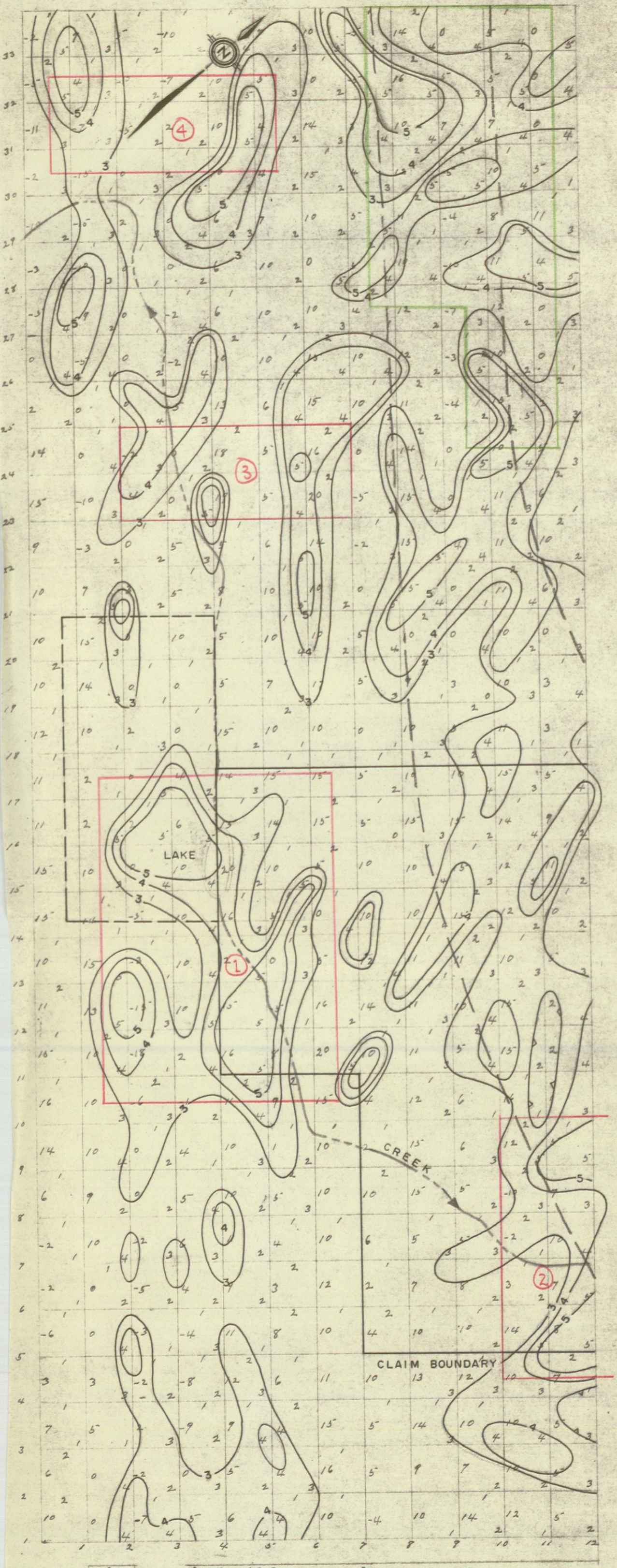
ELECTROMAGNETIC
 RADIOACTIVITY UNITS OF .001 MR/HR
 MAGNETOMETER UNITS OF 100 GAMMAS

LOW LEVEL AEROMAGNETICS
 WATERTON AERONAUTICS & EXPLORATIONS LTD

CANADA PAT. No. 758 308 / 1967

FIG 4.

310° T.
 Flight path.



AIRBORNE GEOPHYSICAL RECONNAISSANCE
 FOX GROUP - SAWTOOTH RANGE AREA YUKON
 GRID SCALE: 1000 FEET TO ONE INCH.
 Reference point

ELECTROMAGNETIC Primary field 1000 c.p.
 RADIOACTIVITY UNITS OF .001 MA/HR
 MAGNETOMETER UNITS OF 100 GAMMAS

AEM SURVEY

WATERTON AERONAUTICS & EXPLORATIONS LTD.

CANADA PAT. No. 758 308 / 1967

FIG 5

310° T.
Flight path.

IN THE MATTER OF BOSWELL RIVER MINES LTD. AND A PROGRAM
OF GEOPHYSICAL WORK ON THE FOX GROUP OF MINERAL CLAIMS.

AFFIDAVIT

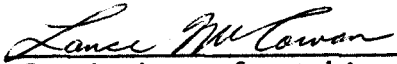
I, R. E. DAVIS, of Sunset Beach, West Vancouver, Province of British Columbia, HEREBY MAKE OATH AND SAY AS FOLLOWS: -

That attached hereto, this my affidavit, marked Appendix A and Appendix B respectively, is a list of firms and individuals engaged in work for the above, as well as a statement of the cost which I certify to be accurate to the best of my knowledge and belief.

Sworn before me in the
City of Whitehorse,
Yukon Territory, this
6th day of February, 1968.



R. E. Davis



A Commissioner for taking
Oaths in and for the Yukon
Territory