3994

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3994 MAP

REPORT ON
MAGNETIC AND ELECTROMAGNETIC SURVEYS
ANYOX AREA, BRITISH COLUMBIA
ON BEHALF OF
BOW RIVER RESOURCES LTD.

103P/5W

by

Michael J. Lewis, M.Sc.

and

Peter J. Fominoff, B.A.Sc.

August 15, 1972

CLAIMS:

Name
CM 7 - 11 (inclusive)
CM 38

LOCATION:
About 3 miles southwest of Anyox, B. C.
Skeena Mining Division
129° 55° SW

DATES:
July 20 to July 26, 1972

CONTENTS

FIGURES AND PLATES

SUMMARY

Ground magnetic traverses were run over the Bonanza and Red Wing deposits. The former gave a prominent double-peaked anomaly; the results over the latter are indecisive.

Ground Magnetic and Turam electromagnetic surveying was carried out over the regional volcanic/sedimentary contact along which the Anyox deposits are located. A number of interesting anomalies were observed. To further evaluate these diamond drilling has been recommended.

REPORT ON MAGNETIC AND ELECTROMAGNETIC SURVEYS ANYOX AREA, BRITISH COLUMBIA ON BEHALF OF BOW RIVER RESOURCES LTD.

INTRODUCTION

During the period July 20th to July 26, 1972, ground magnetic and electromagnetic surveys were carried out in the Anyox area, British Columbia on behalf of Bow River Resources Limited. These surveys were part of a follow-up programme to investigate the results of an airborne geophysical survey carried out in 1971 on behalf of Hogan Mines Limited. The survey crew was under the direction of Mr. Peter Fominoff, Geophysicist.

The survey property lies about 95 miles NNE of Prince Rupert, British Columbia, as indicated in Figure 1. It is located between Bonanza and Tauw Creeks on the western side of Granby Bay. The area is accessible by aircraft to Granby Bay and by Helicopter from Granby Bay to the property.

The claims, covered in whole or in part, by the present follow-up programme are listed on the title page of this report. The property boundary is shown on Figure 1 (scale 1 inch = 1 mile).

DESCRIPTION OF METHOD AND INSTRUMENTATION

A Scintrex SE-71 system was employed for the electromagnetic survey. This system utilizes a Fixed Source and Moving Receiver configuration (Turam Method) - see Figure 2. The Source consists of a large rectangular loop energized by a current alternating at either 200, 400 or 800 Hz. The Receiver system consists of two coils; one of which incorporates a compensator. The latter measures the Ratio and Phase Difference between the fields received in the two coils. For the present survey the receiver coil separation was held at 200 feet; a transmitting loop of approximately 2000 feet by 2000 feet was employed. The configuration of the loop layout was very irregular

due to the extreme topographic conditions present within the survey area.

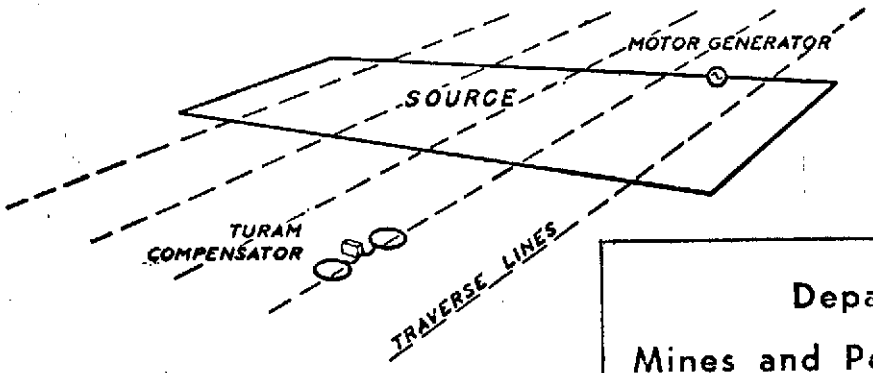


Fig. 2 The Turam method. General layout

Compared to other electromagnetic procedures the Turam Method has a number of specific advantages. These include a greater depth of exploration, more accurate and diagnostic data, and an absence of topographic distortion in the measurements. It is unique in performing successfully under conditions of heavy overburden and extremely rugged topography.

Electromagnetic methods detect conducting bodies by measuring the secondary fields produced by eddy currents induced in conductors by a primary electromagnetic field. Graphite, pyrrhotite, pyrite, chalcopyrite, galena and magnetite are good conductors of electricity; hematite, zinc blende and chromite are almost insulators. Ores containing the former minerals make excellent targets for electromagnetic prospecting. Faults, fractures, zones of crushed rock and fissures containing conductive water, thin conducting veins, etc. also cause electromagnetic disturbances. In addition artifical electromagnetic indications may be encountered (telephone lines, pipes, power lines, railways, etc.).

For the Turam Method the presence of a subsurface conductor is indicated by abnormal or "anomalous" field strength ratios and phase differences. The depth of burial of the current axis is reflected in the shape of "half-width" of the anomaly; the amplitude ratios are a measure of conductivity-thickness (σt) parameters.

A Scintrex MF-2 Fluxgate Magnetometer was utilized for the magnetometer survey. This unit measures the vertical component of the earth's magnetic field. It has a range of +80,000 to -20,000 gammas and a measuring resolution, on the 1000 gamma scale, of 5 gammas.

Magnetic methods are utilized for directly locating certain types of ore eg. magnetite, ilmenite and pyrrhotite bearing sulphide deposits. They also are used for tracing ore bearing formations and geological features like faults, contact zones, intrusives, etc.

Magnetometer traverses were carried out over the Red Wing and Bonanze adits. A magnetometer line was surveyed south of Showings Creek extending south to the cliffs overlooking Tauw Creek. Turam coverage was obtained over the volcanic/sedimentary contact between the Red Wing and Double Ed deposits.

Approximately five line miles of profile were surveyed utilizing the magnetometer and about half a mile of profile was covered using the Turam method. Readings were taken at about 100 foot intervals along each traverse. Line locations were plotted on an air photo on the scale of 1 inch = 1/4 mile; subsequently they were transferred to a topographic contour plan on the scale of 1 inch = 400 feet. Station intervals were established by pacing. The line locations are shown on Plate 1.

GEOLOGY

The Anyox District includes the Hidden Creek and Bonanza Mines, (now worked out); the Red Wing and Double Ed bodies, (not yet mined); and several smaller deposits. All are similar and are of the massive sulphide type, consisting of massive pyrite and pyrrhotite, with copper, gold and some zinc.

The main ore bodies are localized along a regional contact between volcanic rocks (mainly pillow lavas) above, and sedimentary rocks (argillites and greywackes) below - see Figure 1. These rocks have been intruded by irregular masses of granitic rock - the ore bodies are not related to these granites.

The zone of transition from volcanic to sedimentary rock where several hidden ore bodies may yet await discovery is the main target area for prospecting.

Seigel Associates Limited carried out an airborne reconnaissance survey over the property in 1971, the results of which are described in "Report on an Airborne Geophysical Survey, Anyox Area, British Columbia on behalf of Hogan Mines Limited" by R. O. Crosby, B.Sc., P.Eng. dated August 31, 1971.

The purpose of the present work was to examine three small localized magnetic anomalies outlined by the airborne survey. These anomalies are designated 1, 2 and 3 on Plate 1. Anomalies 1 and 2, in particular, appear to be prime targets for exploratory attention in view of their magnetic signature, their location near the volcanic/sedimentary contact and their setting on strike - with the Red Wing and Double Ed deposits.

PRESENTATION OF RESULTS

The approximate locations of the survey lines, along with the locations of anomalous magnetic and electromagnetic responses are shown on Plate 1, on the scale of 1 inch= 400 feet.

Figure 3, on the scale of 1 inch = 100 feet shows the magnetometer values observed near the Bonanza and Red Wing adits.

Plate 2, on the (approximate) scale of 1 inch = 200 feet, contains profiles of the Magnetic and Electromagnetic data observed along the survey traverses. The former have a vertical scale of 1 inch = 500 gammas; the latter 1 inch = 20% for the Field Strength Ratio and 1 inch = 10° for the Phase Difference.

DISCUSSION OF RESULTS

Bonanza Traverse

A prominent double-peaked magnetic anomaly was observed over the Bonanza Deposit - see Figure 3. It is characterized by a central "low" (at station 250 feet) flanked by 1000 gamma and 1250 gamma peaks at station 200 feet and 300 feet (coincident with the Bonanza adits). The background relief is approximately 500 gammas; the anomaly width about 200 feet.

Red Wing Traverse

No anomalous magnetic response was observed near the Red Wing Deposit - see Figure 3. The traverse was of necessity, positioned between the Red Wing adits and may not have given a representative magnetic cross-section of the body.

Anomaly #1

The results of the magnetic and electromagnetic surveys over Anomaly #1 are displayed on Plate 2 (Lines 5 and 6).

The magnetic response is quite strong - note the 1140 gamma peaks at stations 186 and 181 on Line 6, the 1750 and 1460 gamma peaks at stations 160 and 157 on Line 5 and their intermediary "lows". Background values approximate to about 650 gammas. Note the similarity in amplitude and profile-form between this and the Bonanza indication (Figure 3).

Very conspicuous electromagnetic responses were observed over Anomaly #1. The Field Strength Ratios reach a maximum of 153%, the corresponding Phase Difference displacements are weak. Current axis locations are indicated (two on Line 6, four on Line 5).

Anomaly #1, on the basis of magnetic and electromagnetic data, appears to reflect several near surface magnetic conductors. Current axis depths, though not very reliable in the present instance, vary from about 75 feet to 150 feet.

Anomaly #2

Plate 2 also contains the Anomaly #2 data (Lines 1 and 2).

Magnetic disturbances peaking to as much as 1850 gammas (station 28 Line 1) were observed - the background is about 300 gammas. Note that the Line 2 anomaly is double peaked around a central depression reminiscent of the Bonanza indication. The depth to the source appears to be less than 100 feet.

Strong electromagnetic anomalies were observed (grid) west of the magnetic responses - note the 116% and 119% Field Strength Ratio amplitudes with their corresponding positive phase differences, at stations 23 and 56

on Lines 1 and 2 respectively. These responses are interpreted to reflect at least two magnetic conductors coming to within less than about 100 feet of the ground surface in the vicinity of the indicated conductor axes (see Plate 2).

In addition to the Anomaly #1 and Anomaly #2 magnetic responses the following indications of interest were also revealed by the survey:

LINE	STATION	PEAK	COMMENTS
1	41	-1070 gammas)	There is a line-to-line correlation between these anomalies suggesting a continuous north-south striking near-surface magnetic horizon.
2	97	+1950 Gammas)	
3	103	+1000 gammas)	
3	78	+1750 gammas)	These appear to be on strike with Anomalies #1 and #2 suggesting a continuous north-south trending zone.
3	81	+1400 gammas)	
4	128	-750 gammas)	
5	142-145	+1450 gammas	
5	170-174	+1760 gammas	

Anomaly #3

The orientation and extent of the magnetic traverse run over Anomaly #3 is indicated on Plate 1. Only one traverse was attempted in this area because of the extreme ruggedness and harshness of the terrain.

The expected magnetic "high" (65 gammas above background and outlined by the airborne survey) was not located. The ground magnetic profile, displayed on Plate 2 (Line 7), is relatively smooth.

CONCLUSIONS AND RECOMMENDATIONS

1. A prominent double-peaked magnetic anomaly was observed over the Bonanza Deposit.

2. No magnetic response was obtained over Red Wing Deposit. It is likely however that the traverse line selected by the survey crew did not cross directly over the sulphide body.

3. Strong magnetic and Turam electromagnetic responses were noted over airborne Anomalies #1 and #2 (see Plate 1) confirming the presence of good magnetic conductors on or close to the sedimentary/volcanic contact. Along this same contact and on strike with Anomalies #1 and #2 are located the Hidden Creek and Red Wing Deposits. The magnetic responses observed over Anomalies #1 and #2 appear in some instances, as double-peaked anomalies similar to the Bonanza anomaly and possibly characteristic of the Anyox Deposits.

4. In addition to the Anomaly #1 and #2 responses at least eight (8) other magnetic indications of interest were observed along or close to the sedimentary/volcanic contact.

5. Only one magnetic traverse was attempted over Anomaly #3. No anomalous response was observed.

Anomalies #1 and #2 are prime targets for further exploratory attention in view of their geophysical characteristics and their very favourable geological location. It is recommended that they be subjected to an initial programme of geological surveying and X-Ray drilling. The following holes are tentaively recommended:

COLLAR	DIP	DIRECTION	MINIMUM DEPTH
L2; Station 55	-60°	West	150 feet
L2; Station 56	-60°	West	150 feet

COLLAR	DIP	DIRECTION	MINIMUM DEPTH
L5; Station 159	-60°	West	150 feet
L5; Station 161	-60°	West	150 feet
L6; Station 176	-60°	West	150 feet

Should the above drilling investigations indicate economic sulphides, it is recommended that a regular survey grid, consisting of east-west trending lines spaced 200 feet apart and picketed every 100 feet, be established across the volcanic/sedimentary contact. Detail investigations should then proceed utilizing magnetic and Turam electromagnetic surveying prior to a full-scale exploratory drilling programme.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

Peter J. Fominoff, B.A.Sc.
Geophysicist

Michael J. Lewis, M.Sc.
Geophysicist

Vancouver, B. C.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of a geophysical survey on behalf of Bow River Resources Ltd.

I. L. A. Merrifield for Scintrex Surveys Limited (formerly Seigel Associates Limited)

of 750 - 890 West Pender Street, Vancouver,

in the Province of British Columbia, do solemnly declare that magnetometer and turam electromagnetic surveys have been executed on some CM claims in the Anyox area, British Columbia between July 20 to July 26, 1972. The following expenses were incurred:

(1)	Wages:			
	P. Fominoff	6 days @ $75.00/day	$450.00	
	M. Vallee	6 days @ $40.00/day	240.00	
				$690.00
(2)	Transportation & shipping to the job			179.14
(3)	Use of geophysical equipment 6 days @ $47.00/day			282.00
(4)	Paid to Scintrex Surveys Limited to cover geophysicist's supervision, calculating, plotting and fairdrawing data and preparation of final reports			828.00
				$1,979.14

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City of Vancouver, in the Province of British Columbia, this 6th day of December, 1972, A.D.

L. A. Merrifield

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub - mining Recorder

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of an magnetometer and turam eletro magnetic survey.

I, D.A. McLeod
333-885 Dunsmuir St.,
Vancouver 1, B.C.

of

in the Province of British Columbia, do solemnly declare that the following expenditures were incurred in completing a magnetometer and turam electro magnetic survey on certain CM mineral claims located west of Granby Bay, Anyox, B.C. The survey was conducted from July 20-26, 1972 for Bow River Resources Ltd. by Seigel & Associates and Chamoux Resources Ltd.

1/ Chamoux Recources line cutting & geophysical assisstance:	$ 960.00
Leo Verstraete - 8 days @$60.00	
Steve Sutton - 8 days @$60.00	
2/ Transporation and shipping	746.30
3/ Transporation on job (helicopter)	839.55
4/ Food and lodging	320.00
	$2,865.85

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

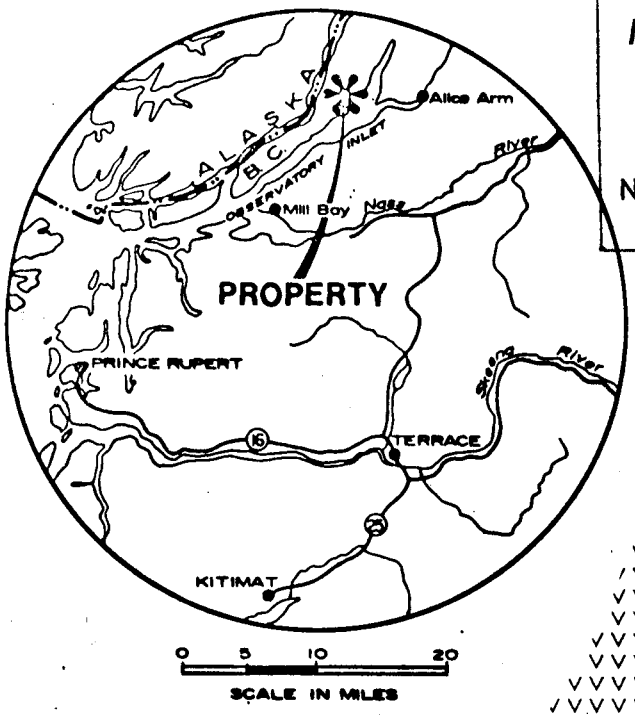
Declared before me at the city of Vancouver, in the Province of British Columbia, this 7th day of December 1972, A.D.

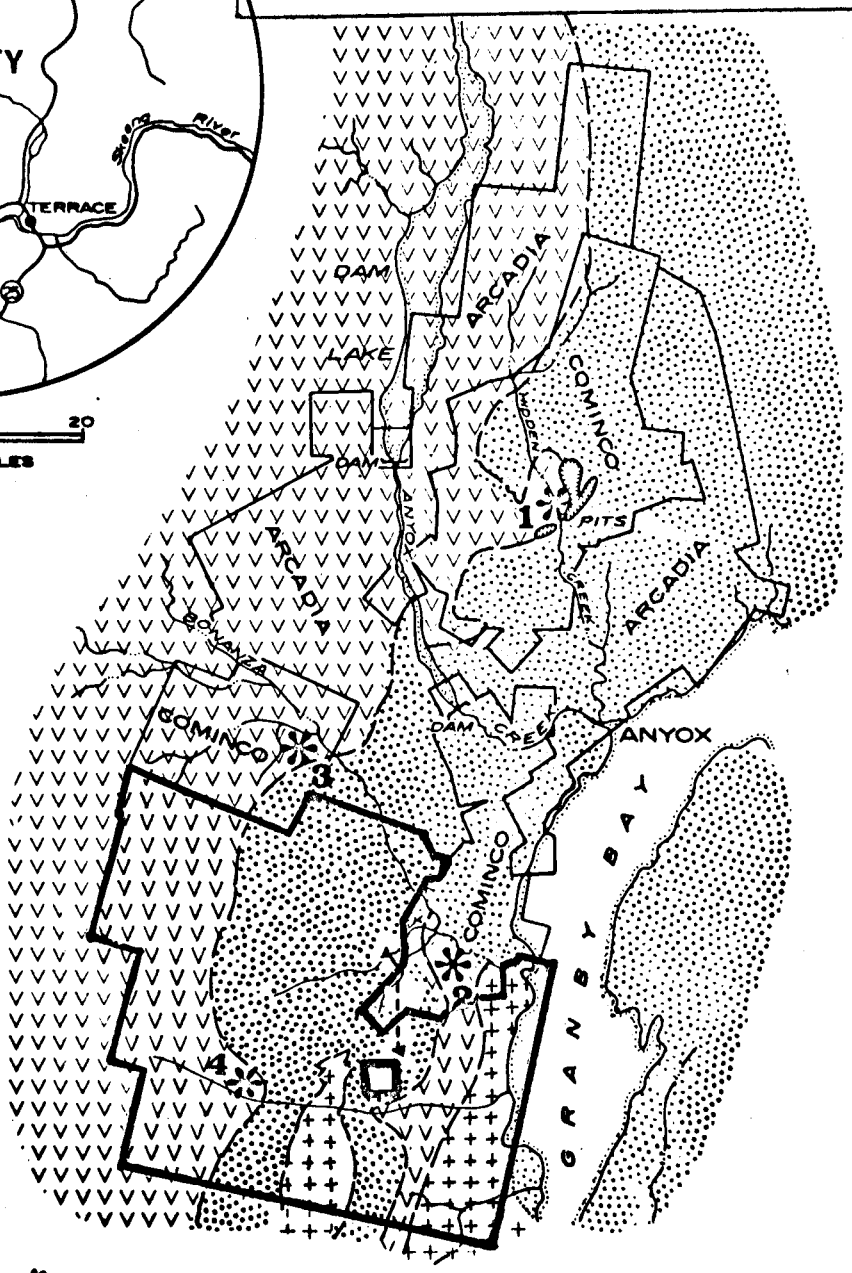
D. A. McLeod

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

Sub Mining Recorder

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3994 MAP #1





MINERAL DEPOSITS

1 HIDDEN CREEK

2 BONANZA

3 DOUBLE ED

4 RED WING (HOGAN)

GEOLOGY

COAST INTRUSIONS

SEDIMENTS

VOLCANICS

LINE 7, N-S

M-1

3994

FIG. 1

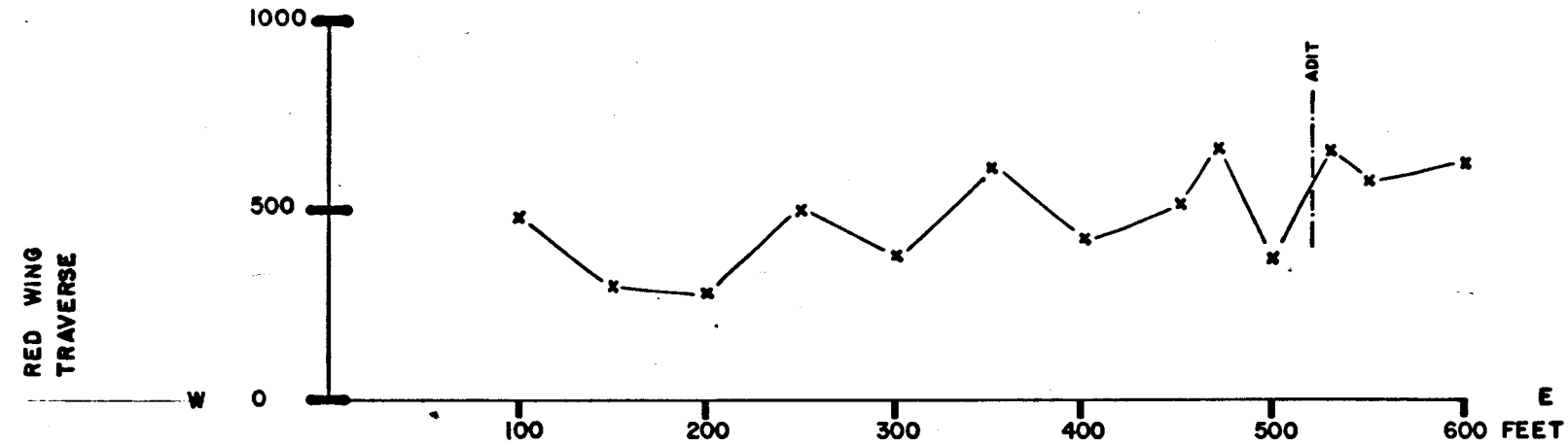
Property Map Showing Geology

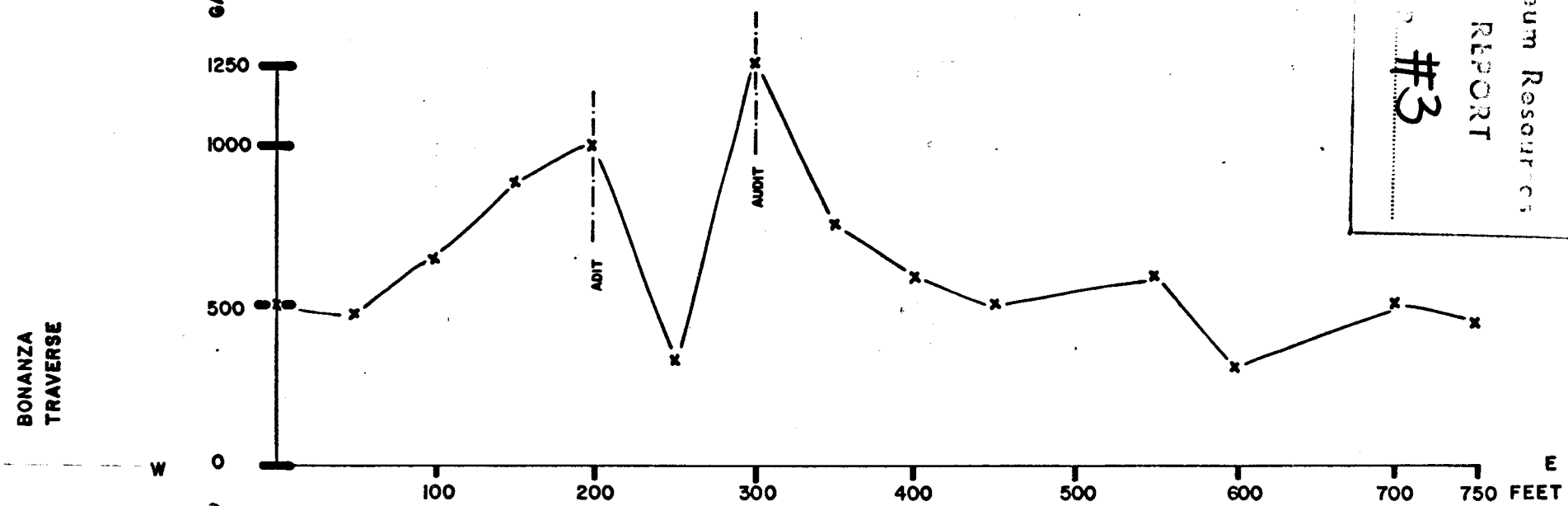
ANYOX AREA, B.C.

SCALE IN MILES

1/2 0 2

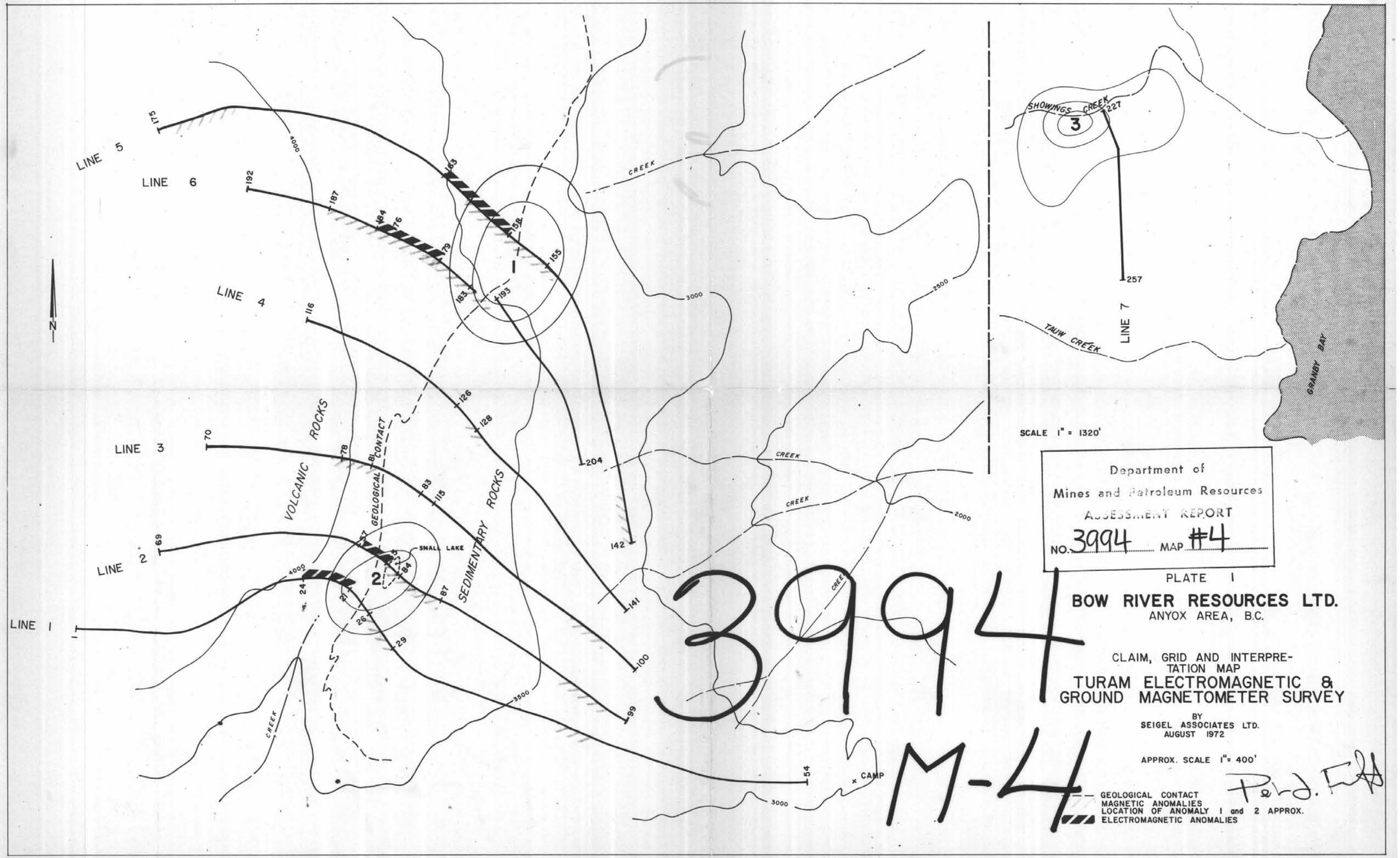
Altair May-1971

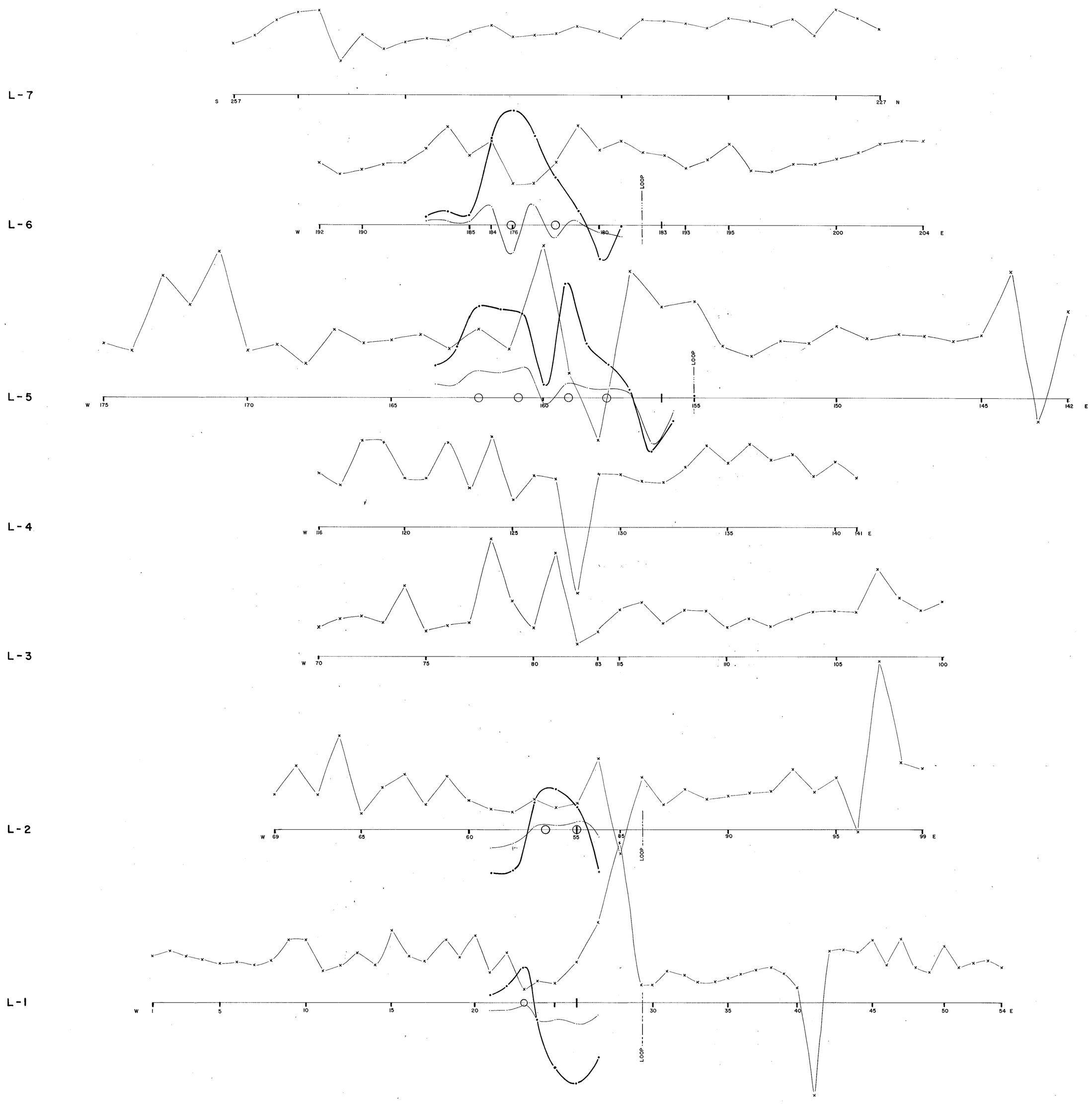




BOW RIVER RESOURCES LIMITED
GROUND MAGNETOMETER
SURVEY
BY
SEIGEL ASSOCIATES LTD.
AUGUST 1972

FIG. 3


LINE 5
LINE 6
LINE 4
LINE 3
LINE 2
LINE 1
LINE 7
N
VOLCANIC ROCKS
GEOLOGICAL CONTACT
SEDIMENTARY ROCKS
SMALL LAKE
CAMP
CREEK
SHOWINGS CREEK
TAUW CREEK
GRANBY BAY
SCALE 1" = 1320'
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3994 MAP #4
PLATE I
BOW RIVER RESOURCES LTD.
ANYOX AREA, B.C.
CLAIM, GRID AND INTERPRETATION MAP
TURAM ELECTROMAGNETIC & GROUND MAGNETOMETER SURVEY
BY
SEIGEL ASSOCIATES LTD.
AUGUST 1972
APPROX. SCALE 1"= 400'
GEOLOGICAL CONTACT
MAGNETIC ANOMALIES
LOCATION OF ANOMALY 1 and 2 APPROX.
ELECTROMAGNETIC ANOMALIES
3994
M-4



LEGEND

- RATIO
- PHASE

READINGS TAKEN 400 Hz, UNLESS INDICATED OTHERWISE.

- LEADING EDGE OF TRANSMITTING LOOP
- MAGNETIC FIELD STRENGHT RATIO IN GAMMAS
- CURRENT AXIS INTERSECTION

100' RECEIVING COIL SEPARATION

INTERLINE SPACING NOT TO SCALE.

PLATE 2

BOW RIVER RESOURCES LIMITED

ANYOX AREA, B.C.

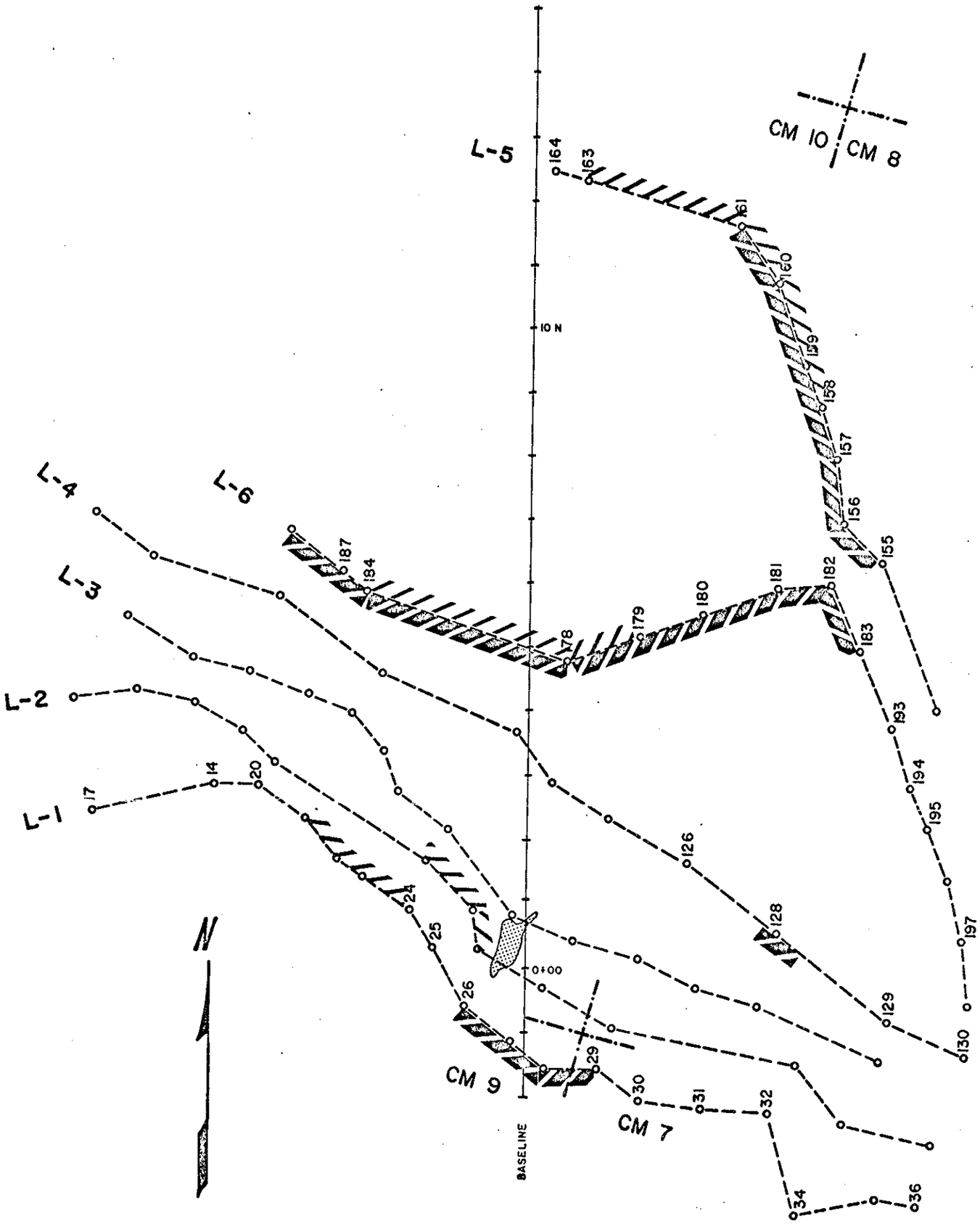
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3994 MAP #5

PROFILES OF

TURAM ELECTROMAGNETIC SURVEY

APPROX.
SCALE 1" = 200'
BY
SEIGEL ASSOCIATES LIMITED
VANCOUVER B.C.

TO ACCOMPANY A GEOPHYSICAL REPORT BY M.J. LEWIS AND P.J. FOMINOFF DATED: 15. AUGUST 1972	WORK COMPLETED: DRAFTED: 8.8. 1972 at REV.:	JOB NUMBER 884	SHEET NUMBER 1 OF 1



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3994 MAP #6

MAGNETIC ANOMALY
ELECTROMAGNETIC ANOMALY

PLATE I

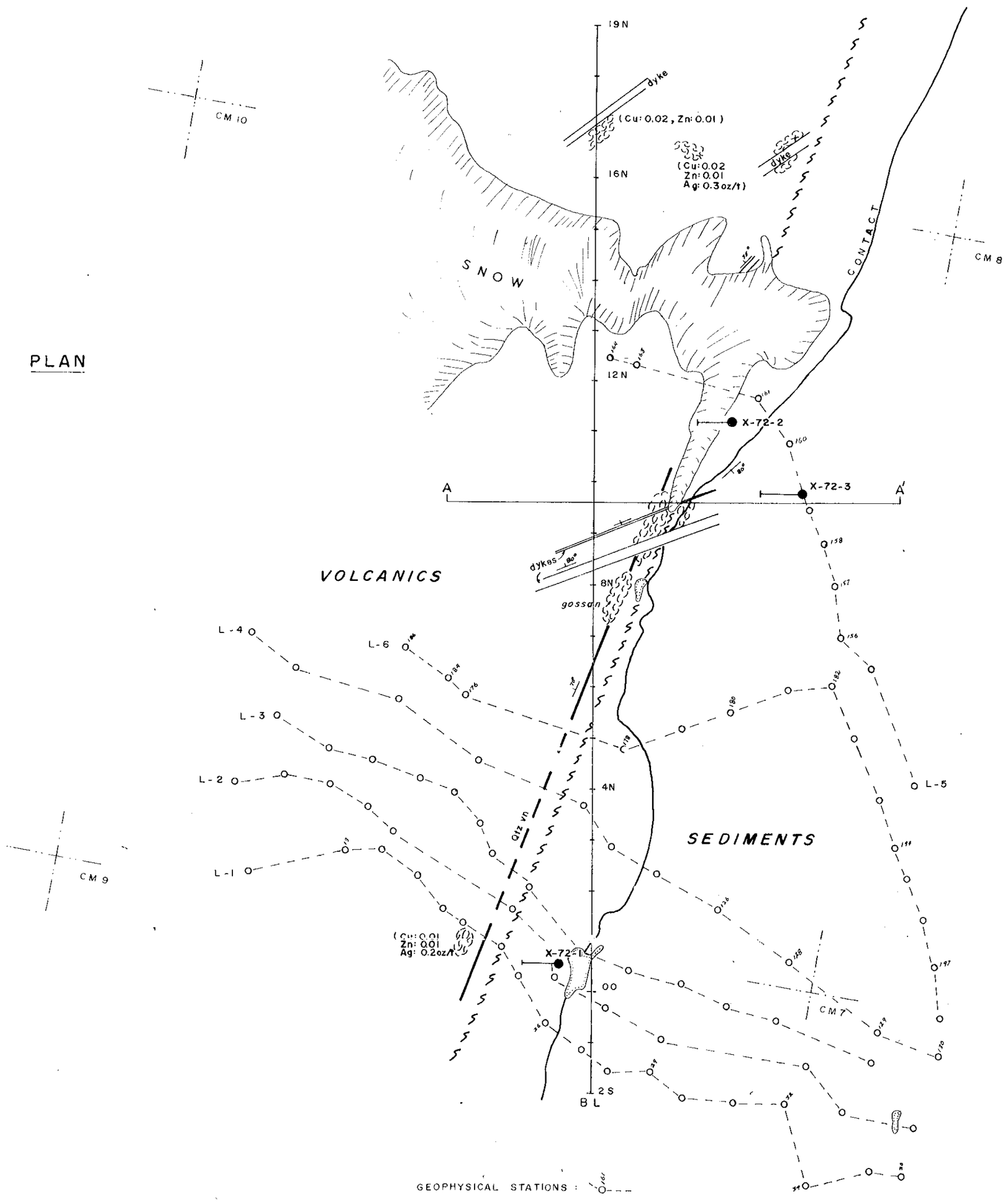
BOW RIVER RESOURCES LTD.
ANOX AREA, B.C.

TURAM ELECTROMAGNETIC & GROUND MAGNETOMETER SURVEY

SEIGEL ASSOCIATES LTD.
AUGUST 1972

APPROX. SCALE 1" = 200'

PLAN

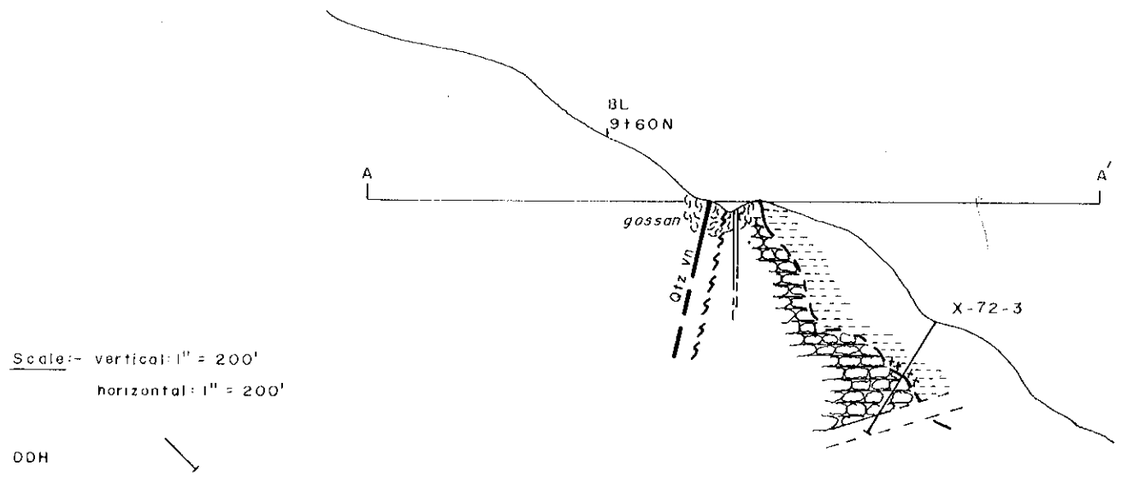


geotec CONSULTANTS LTD.

Scale: 1" = 200'

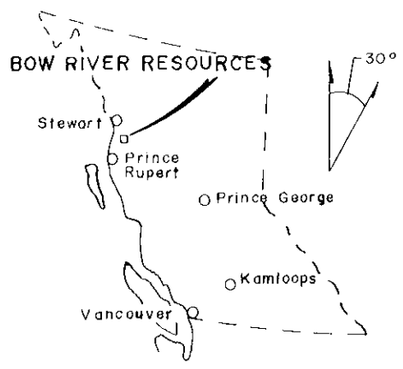
F2

SECTION



Scale:- vertical: 1" = 200'
horizontal: 1" = 200'

DDH
Breccia
Volcanics
Sediments



BOW RIVER RESOURCES LTD.

ANYOX CLAIMS
SKEENA M.D., B. C.

GEOLOGY & DRILL HOLE LOCATIONS

GEOLOGY BY: L.W. Saleken, B.Sc.	SCALE: 1" = 200'	December 6, 1972