2889

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2889 MAP

104I/4W

REPORT ON AN AIRBORNE GEOPHYSICAL SURVEY BELL CLAIM GROUP DEASE LAKE AREA, BRITISH COLUMBIA ON BEHALF OF CHAPPARAL MINES LTD.

by

Richard O. Crosby, B.Sc., P.Eng.

March 2, 1971

CLAIMS:

Name	
BELL	1 - 50 inclusive

LOCATION:

About 120 miles south of Watson Lake, Yukon
Liard Mining Division
58° 129° SW

DATES:

February 26 to February 28, 1971

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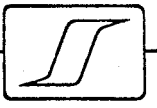
SUMMARY

A helicopter-borne magnetometer survey was executed over approximately 24 square miles in the Dease Lake area. The survey has revealed serveral magnetic features which warrant further investigation. Geochemical and ground magnetometer surveys have been recommend as a ground follow-up to investigate these features.



REPORT ON
AN AIRBORNE GEOPHYSICAL SURVEY
BELL CLAIM GROUP
DEASE LAKE AREA, BRITISH COLUMBIA
ON BEHALF OF
CHAPPARAL MINES LTD.

INTRODUCTION

During the period February 26 to February 28, 1971, an airborne geophysical survey was executed on behalf of Chapparal Mines Ltd. in the Dease Lake area, British Columbia covering approximately 24 square miles (see Plate 1). Centre of the area is located 58°13'N, 129°52'W. Basic compilation of the data was carried out between February and March 1971.

The airborne survey included magnetometer measurements using a Scintrex NPM-1 nuclear resonance, total intensity, magnetometer.

Appendix 'A', attached, gives full details of the airborne geophysical equipment and the ancillary equipment employed, as well as the treatment of data resulting from these surveys. In the case of the present survey a Bell Jet Ranger helicopter, on charter from Frontier Helicopters, Watson Lake, Yukon Territory, was employed as the basic transport vehicle.

The survey traverses were flown at a nominal 1000' line interval along lines oriented east-west at a mean terrain clearance of 300'. Flight navigation and flight path recovery have been based upon photomosaics on the scale of approximately 1" = 2000'.

The magnetometer sensor was flown 60' below the helicopter.

The purpose of the present programme is to map the earth's total magnetic field in the survey area. The anomalies recorded on the survey flights are due primarily to the distribution of magnetic material in the underlying rocks. By means of these anomalies various rock type

and/or strucutral features may be revealed.

The value of the earth's total magnetic field in the survey area is approximately 58,800 gammas. The inclination is 77°.

GEOLOGY

A description of the geology of the area is given in the Minister of Mines and Petroleum Resources Annual Report 1966.

Much of the property is covered by Upper Triassic or earlier volcanic andesite and basalt flows, tuffs and breccias. However extensive overburden cover and surface alteration makes detailed geology difficult to obtain.

The southern portion of the property is adjacent to or on the quartz monzonite of the Hotailuh batholith.

The volcanic rocks are intruded in many places by irregular masses of feldspar porphory. Several major north trending faults are evident on the property. Magnetite is present in all the volcanics and in places is together with strong concentrations of chalcopyrite. All sulphides that have been located on the property are disseminated.

PRESENTATION OF DATA

The results of the geophysical survey are presented on Plate 2 on the scale of 1" = 1000'. Some topographic features and flight lines are shown on the plate. Plate 2 shows the magnetic contours at an interval of 100 gammas or less, according to magnetic relief.

The magnetometer data are presented together with altimeter and fiducial recording on analog recorder traces.

The original geophysical traces are on a scale of 1" = 100 gammas with automatic steps of 500 gammas.

DISCUSSION OF RESULTS

The observed magnetic relief is a total of about 1500 gammas and occurs primarily in the central and west central portions of the survey area. The magnetic relief over the remainder of the survey grid is of the order of a few hundreds of gammas.

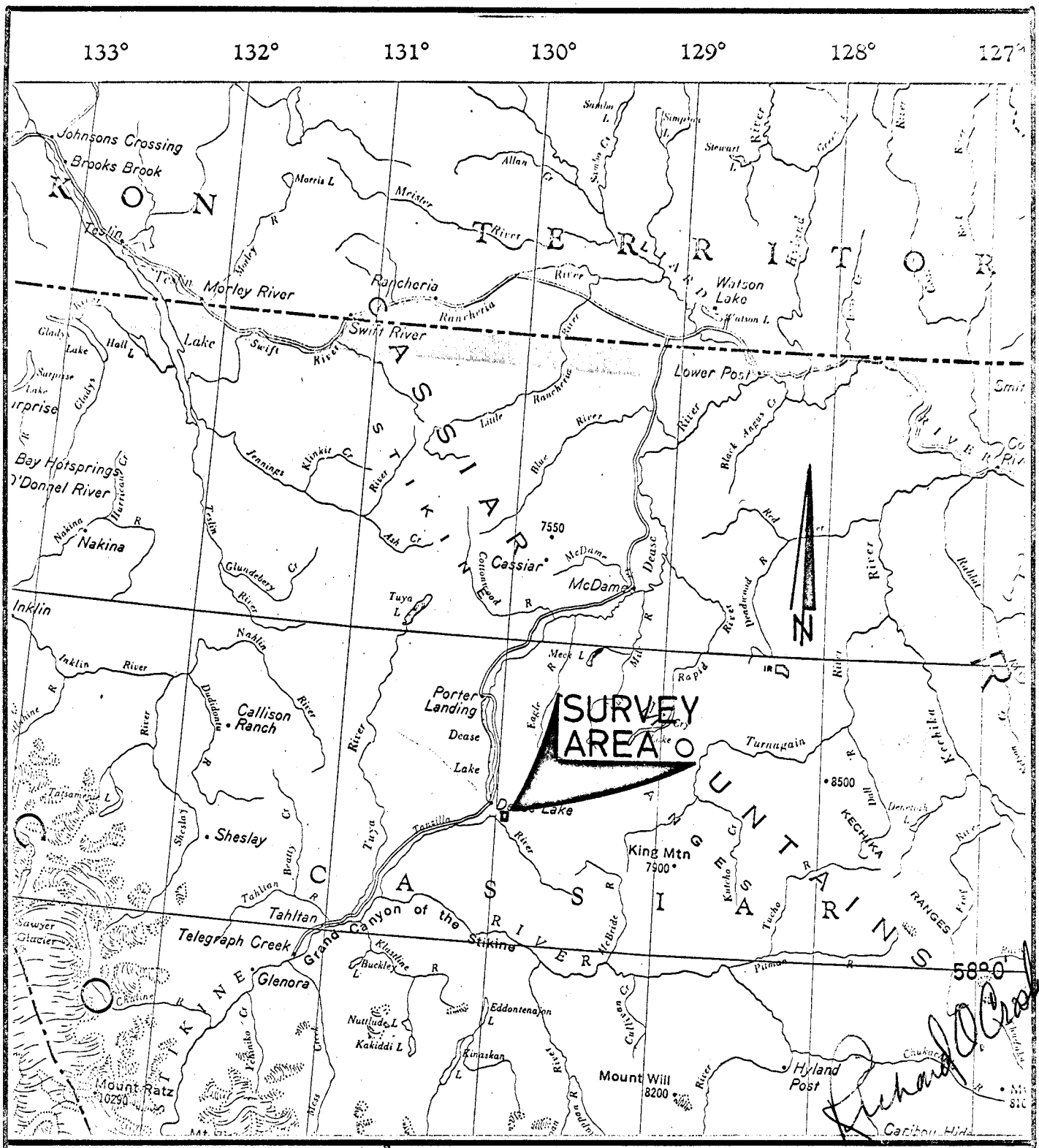
The most prominent feature of the aeromagnetic results is the persistent gradient extending generally northward along the eastern part of the area. This gradient is interpreted as arising from the contact of high and low magnetic susceptibility rocks. Low grade copper mineralization occurs along such a contact in the area underlying the central parts of flight lines 3, 4 and 5.

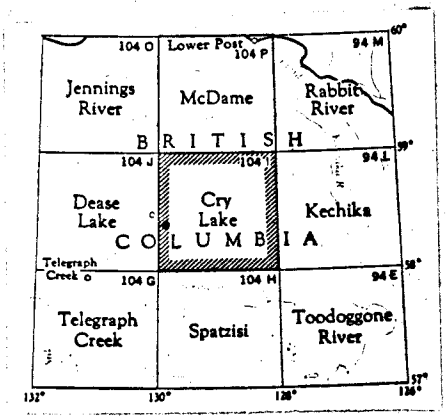
Another prominent feature of the map is a north trending positive anomaly extending northward from the southwest corner of the survey grid. The source of the anomaly is unknown however it should be checked for evidence of skarn type mineralization. Offsets in magnetic gradients and anomalous patterns are probably due to regional shearing and faulting.

CONCLUSIONS AND RECOMMENDATIONS

The airborne geophysical survey has revealed magnetic features which warrant further investigations.

It is recommended that a geochemical survey for copper and molybdenum be completed over the mineral claim group and that ground magnetometer traverses be carried out over anomalous magnetic features in order to locate their ground position.





CHAPPARAL MINES LTD.

LOCATION MAP

AIRBORNE GEOPHYSICAL SURVEY

0 32 64 96 MILES

SURVEY BY
SEIGEL ASSOCIATES LIMITED
FEB.- MARCH 1971.

PLATE 1

Additional ground geophysical surveying and/or drilling will be determined by the results of recommended ground follow-up programmes.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

Richard O. Crosby

Richard O. Crosby, B.Sc., P.Eng.
Geophysicist

Vancouver, B. C.
March 2, 1971

MAGNETOMETER - SCINTREX NPM-1

The Scintrex NPM-1 nuclear resonance airborne magnetometer is based on a Newmont modification of a Varian Associates magnetometer and is produced under license to both companies. It is a very light weight, solid state unit, especially designed for use in a helicopter or light fixed-wing aircraft where weight is an important consideration.

Its cycle period is 1.1 seconds. Each cycle it measures the total intensity of the earth's magnetic field and this quantity, in gammas, is recorded, in analogue form, on a suitable graphic recorder. The full scale sensitivity is usually 1000 gammas and the recorder automatically steps each 500 gammas. In very active areas a full scale sensitivity of 5000 gammas with steps of 2,500 gammas may be employed. Only the magnetic variations are actually recorded although the absolute base level may be established from the NPM-1 as well.

The magnetic sensing head may be on a cable as much as 100 ft. below the aircraft or, in some installations, may be rigidly attached to the aircraft on a suitable boom.

The intrinsic noise level of each reading is about 5 gammas.

Where it is intended to contour the NPM-1 information it is customary to fly tie lines across the survey grid. A fixed magnetic field monitor is often used as well, on the ground, primarily to indicate periods of magnetic storms during which the aeromagnetic data should be considered as unreliable.

The aeromagnetic data may be contoured if desired, using a contour interval of 25 gammas or up, depending on the amount of magnetic relief. Alternatively they may be used simply for purposes of correlation with simultaneously obtained electromagnetic data to determine which conductor zones are appreciably magnetic.

ANCILLARY EQUIPMENT

1. Altimeter

A Bonzer, high frequency solid state radioaltimeter is employed to continuously indicate the mean terrain clearance of the helicopter or other transporting aircraft. The altimeter is installed in the aircraft (unless otherwise indicated) so that the elevation of the sensing birds (electromagnetic or magnetic) will be less by the usual vertical displacement of these birds below the aircraft.

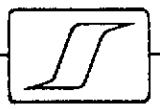
The output of the Bonzer may be expressed in analogue form on a suitable graphic recorder, or may be, for convenience, converted to a semi-digital form on a recorder side pen. In the latter event the altimeter record is a series of spaced pulses whose separation is proportional to the mean terrain clearance.

2. Positioning Camera

A Vinten Mark 3 16 mm positioning camera is employed with a wide angle lens. Photographs of the ground are taken with sufficient frequency to give a complete record of the flight path of the aircraft or helicopter. The frequency of exposure is controlled by the intervalometer referred to below.

3. Intervalometer

A Scintrex IA-2 intervalometer provides regularly spaced timing pulses which drive the positioning camera exposure mechanism and produces synchronous "fiducial marks" on the side pen of the geophysical graphic recorder or recorders. Because of the synchronization of the geophysical traces and the positioning camera it is then possible to relate the geophysical events of interest to their proper ground location. The timing pulse frequency may be adjusted in accordance with the ground speed of the aircraft so that an adequate flight path record is obtained.



DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of a geophysical survey on behalf of Chapparal Mines Ltd.

I, **L. A. Merrifield for Seigel Associates Limited**

of **750 - 890 West Pender Street, Vancouver**

in the Province of British Columbia, do solemnly declare that **an airborne magnetometer survey has been executed on some BELL claims, Dease Lake area, British Columbia between February 26, 1971 to February 28, 1971. The following expenses were incurred:**

(1)	**Wages:** C. Mohagen - 3 days @ $40.00/day	$120.00
(2)	**Transportation & shipping to the job**	565.09
(3)	**Food and living expenses**	66.53
(4)	**Use of geophysical equipment 3 days @ $150.00/day**	450.00
(5)	**Paid to Seigel Associates Limited to cover geophysicist's supervision, calculating, plotting and fairdrawing data and preparation of final reports.**	501.51
	90 line miles flown- helicopter charter, total 32.56 per mile	2,930.00
		$4,633.13

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 **8th** day of **March, 1971**, A.D.

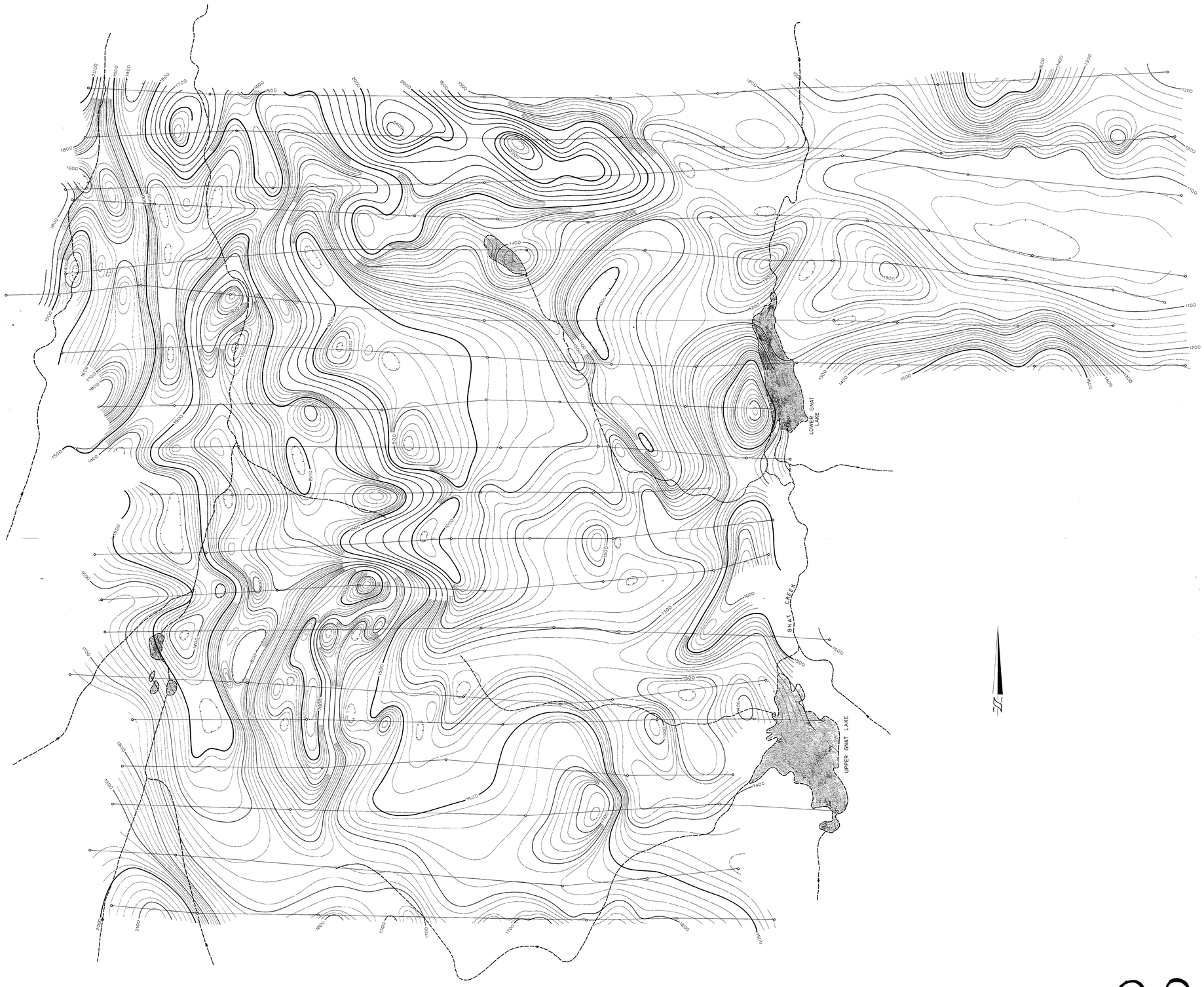
L. A. Merrifield

Joan Turner

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

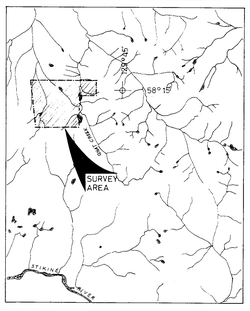
Sub-mining Recorder

★o



2889 M-2

LOCATION MAP



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TO ACCOMPANY A GEOPHYSICAL REPORT
BY RICHARD O. CROSBY DATED: 2 MARCH 1971

LEGEND

- L-2 — FLIGHT LINE, FLIGHT LINE NUMBER AND NUMBERED FIDUCIAL POINTS
- 500 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- 100 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- 20 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- MAGNETIC LOW
- AIRCRAFT TERRAIN CLEARANCE 300'
- FLIGHT LINE SPACING 1/4 MILE
- BASE INTENSITY ARBITRARY
- DRAINAGE

PLATE 2

CHAPPARAL MINES LTD.

DEASE LAKE AREA, LIARD M.D. B.C.

AIRBORNE GEOPHYSICAL SURVEY

MAGNETOMETER CONTOUR PLAN

APPROX. SCALE 1" = 1000 FEET

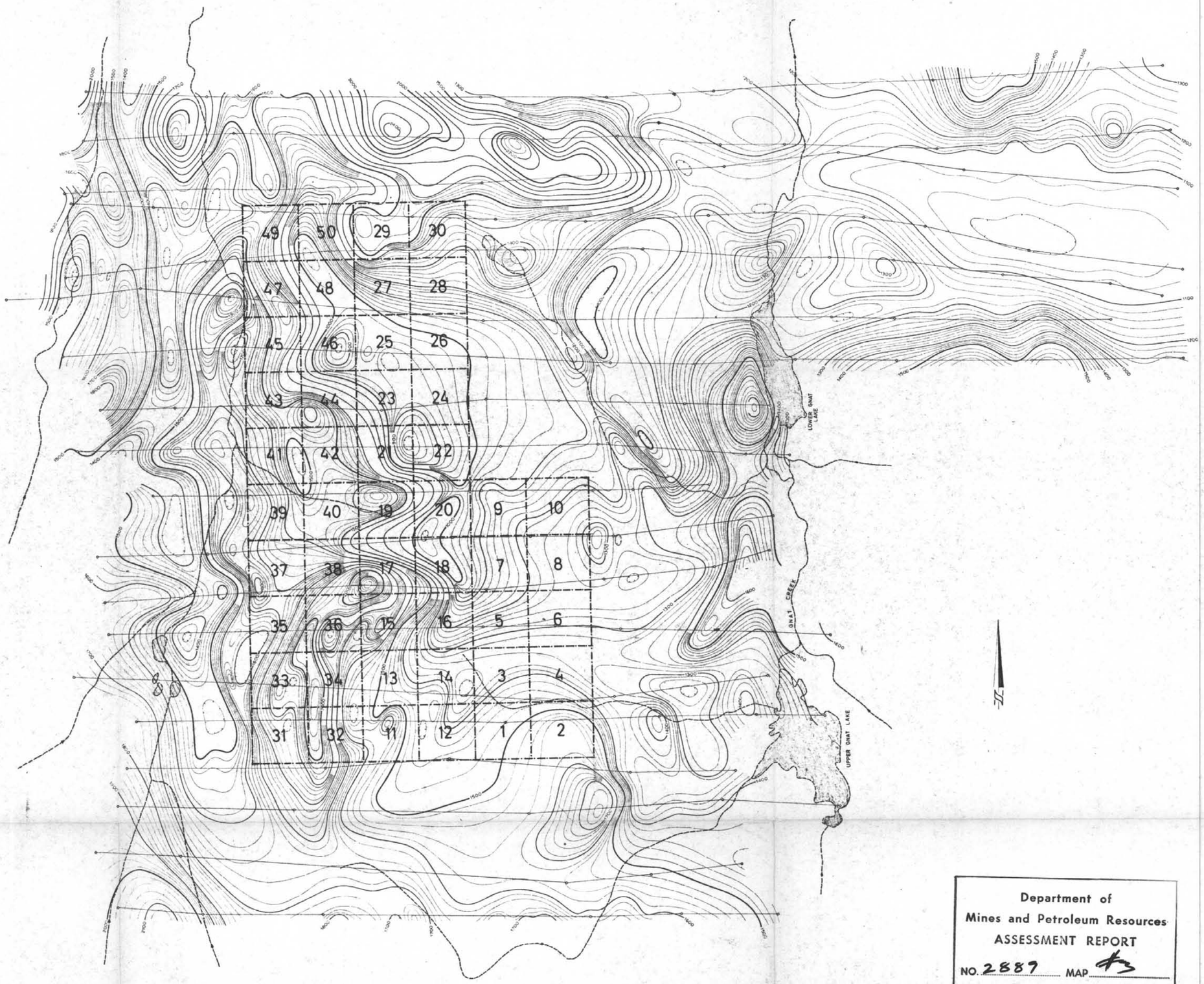
0 4000'

SURVEY BY SEIGEL ASSOCIATES LIMITED

FLOWN AND COMPILED FEB. - MARCH 1971

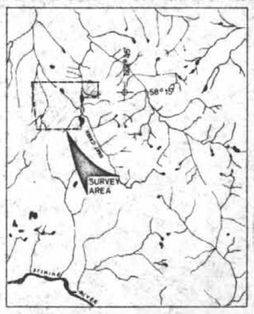
Richard O. Crosby

SHEET 1 OF 1



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2887 MAP #3

LOCATION MAP



TO ACCOMPANY A GEOPHYSICAL REPORT
BY RICHARD D. CROSBY DATED 2 MARCH 1971

LEGEND

- L-2 — FLIGHT LINE, FLIGHT LINE NUMBER AND NUMBERED FIDUCIAL POINTS
- 500 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- 100 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- 20 GAMMA ISOMAGNETIC CONTOUR INTERVAL
- MAGNETIC LOW
- AIRCRAFT TERRAIN CLEARANCE 300'
- FLIGHT LINE SPACING ¼ MILE
- BASE INTENSITY ARBITRARY
- DRAINAGE
- BELL CLAIMS

PLATE 3

CHAPPARAL MINES LTD.

DEASE LAKE AREA, LIARD M.D. B.C.

AIRBORNE GEOPHYSICAL SURVEY

MAGNETOMETER CONTOUR PLAN
CLAIM LOCATION

APPROX. SCALE 1"= 2000 FEET
0 8000'

SURVEY BY SEIGEL ASSOCIATES LIMITED
FLOWN AND COMPILED FEB.- MARCH 1971

SHEET 1 OF 1