120096

ASSESSMENT REPORT FOR THE GRADIOMETER GEOPHYSICAL SURVEY CONDUCTED ON ENCHANTMENT CREEK, ON JUNE 31ST, 1988 Try July 1/88

Placer Lease: PL-7573
Author: Mychelle Mollot
Location: 55 Km southwest of Dawson, Yukon Territory
Latitude: 63 54'
Longitude: 140 19'

At the Request of

Mr. Lorne Mollot
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August, 1988

This report has been examined by the Geological Evaluation Unit under Section 41 Yukon Placer Mining Act and is recommended as allowable representation work in the amount of $ 3000.00.

W.H. LeBarge

for Chief Geologist, Exploration and Geological Services Division, Northern Affairs Program for Commissioner of Yukon Territory.

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ASSESSMENT REPORT ON THE JULY, 1988, GRADIOMETER SURVEY OF ENCHANTMENT CREEK, LEASE PL-7573

1. INTRODUCTION

On June 31st a gradiometer survey was conducted on behalf of the property lease holder, Arnold Perrin, on Lease PL-7573 in Enchantment Creek.

Lease PL-7573 was surveyed by Mychelle Mollot and assistants. The objective of the survey was to locate, on contour and profile maps, positive magnetic anomalies indicative of buried magnetite deposits.

The survey was conducted with a sampling interval of five metres. The line separation, along the 1000 m baseline, was fifty metres and the total line coverage was approximately 880 meters.

Due to the large area to be covered by the present and future surveys of the fifty mile valley it was decided to experiment with how far survey lines could be spaced and still achieve meaningful results.

This survey was consequently designed with a grid spacing of 50m, a distance, which was felt, might be the maximum allowable to permit the gathering of significant data.

This report describes the survey logistics, theory, field procedures, regional and local geology, and office data processing. It also fulfills assessment requirements for lease PL-7573 under section 41 of the Placer Mining Act. The final presentation of the report includes contour and profile maps.

2. SURVEY LOCATION AND ACCESS

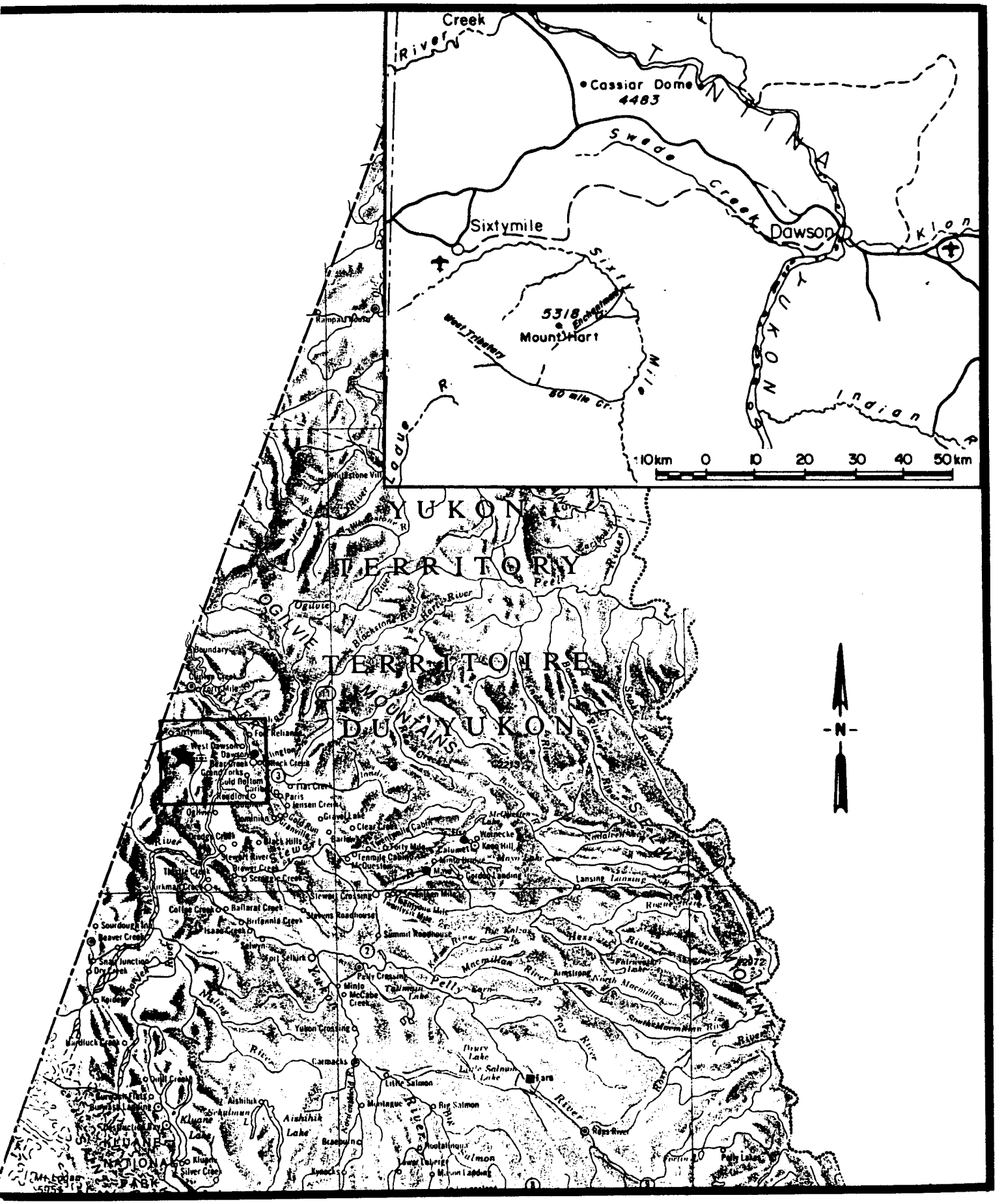
Enchantment Creek lease PL-7573, is located in the 60 Mile Valley, approximately 45.5 km southwest of Dawson city, Yukon Territory.

Figure 1 shows the location of the survey area with respect to nearby population centers at a scale of 1:5,000,000.

Access to the grid was gained by helicopter.

2.1 Lease Information

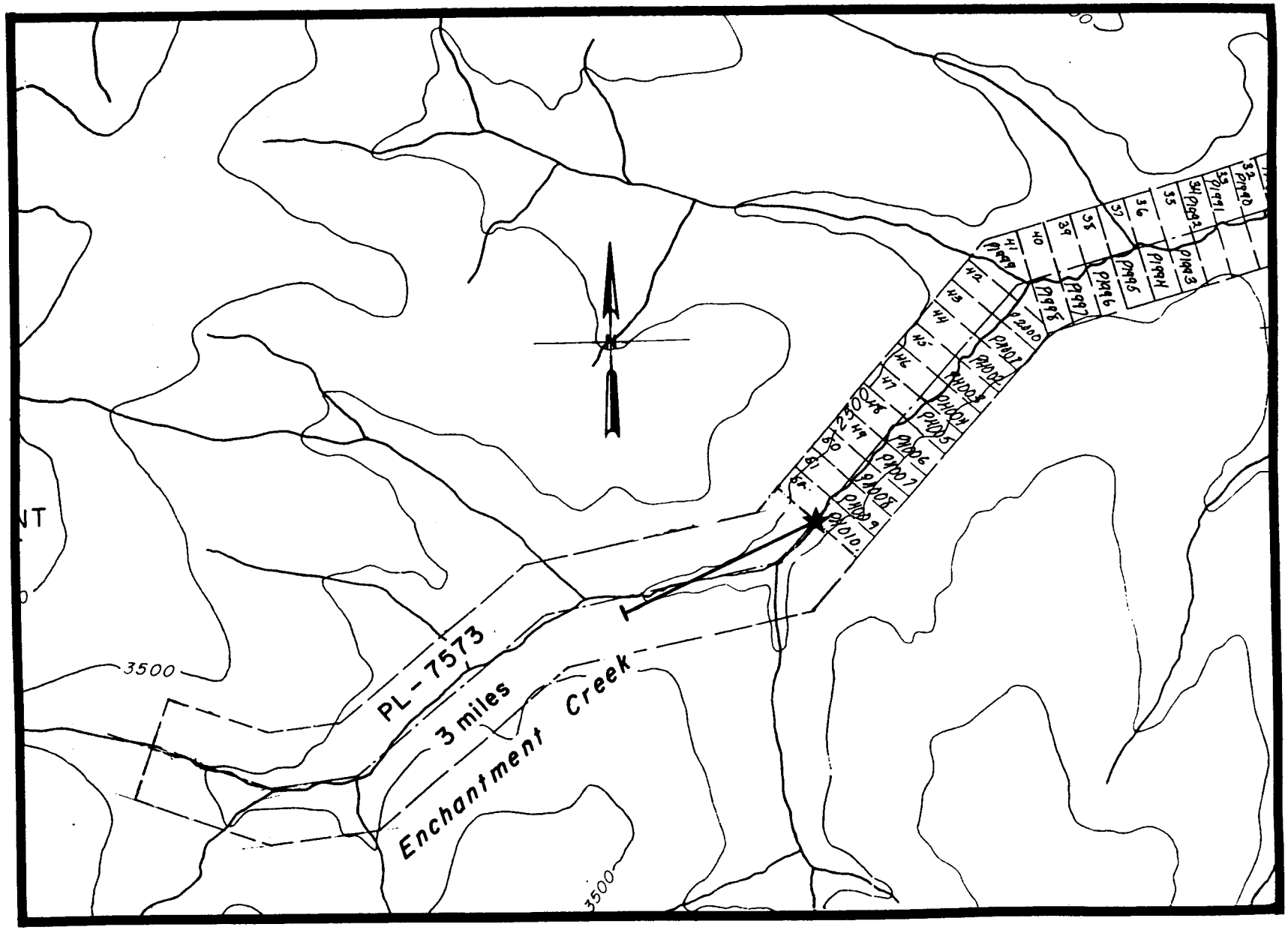
Lease Number: PL-7573
Tag Holder: Arnold Perrin
Lease Length: 3 miles
Claim Sheet: 115-N-16



Scale 1 : 5,000,000

LOCATION MAP

Figure 1



GRID LOCATION MAP

Scale 1: 34,680

PL-7573 — Placer lease boundary, Lease number

3000 — Elevation contour

Creek, pond

★ Placer lease post

Figure 2

4. PERSONNEL

Ms. Mychelle Mollot	June 31, 1988
Mr. Andrew Robinson	June 31, 1988
Mr. Wayne Froughton	June 31, 1988
Mr. Claude Turcotte	June 31, 1988
Mr. Mark Bergeron	June 31, 1988

Ms. Mychelle Mollot - Geophysicist. Ms. Mollot operated the EDA Omni IV Magnetometer and was responsible for data quality and the operation and direction of the survey as well as the data processing and preparation of this report.

Mr. Robinson, Froughton, and Turcotte - Assistants. They cut and flagged the survey lines.

Mr. Carson Austin - Consulting Engineer, JVX Ltd., Mr. Austin produced the profile and contour maps from the office of JVX Ltd, Toronto, Ontario.

5. INSTRUMENTATION

An EDA OMNI IV proton precession magnetometer, with a sensitivity of 0.1 gamma, was selected for the survey. It was used in the total field and gradient modes.

The instrument records: total field and gradient readings, time of reading and station locality as programmed prior to the survey.

Changes in the ambient magnetic field with time were monitored and recorded by a second fixed EDA OMNI IV. The base station took measurements at 30 second intervals. The base station magnetic data was used to automatically correct the survey magnetic data for diurnal variations to a datum of 57000 gammas.

The magnetometer (gradiometer and total field) survey data were archived in the field on a Cordata microcomputer. At the conclusion of each day's data collection, data resident in the OMNI IV memory was transferred, via serial communication link, to the computer - thereby facilitating editing, processing and presentation.

6.0 GEOLOGY

6.1 Geomorphic Setting

Enchantment Creek is located in the Yukon Plateau Division of the Cordilleran Region. The region is characterized by drainage divides at about 3300 ft locally and rising to about 4500 ft. These divides are formed of crooked ridges separated by dendritic valleys and are drained by master streams from 1000 to 1500 feet above sea level. A few summits, locally called domes, with altitudes of about 5000 ft occupy ridge intersections.

The Yukon Plateau geomorphic province occupies the central or interior Yukon Territory, on both sides of the Tintina Trench (see Figure 1). Ridge and upland altitudes from 3000 to 5000 feet are common in the Yukon Plateau Division. The Division is bound on the north by the Olgivie Mountains where numerous summits are as high as 7000 feet.

6.2 Regional Geology

Enchantment Creek is situated within the Yukon Crystalline Terrane which is the result of Triassic regional metamorphism, southwest of the Tintina Trench. The Tintina Trench is the topographic expression of a Mesozoic right lateral fault of some 250 miles displacement. (Milner, 1980)

6.2.1. Bedrock Geology

The premesozoic basement rocks of the region consist of the Klondike and Nasina series as well as ultramafic rocks.

The Klondike series consists of the Klondike Schists and the Pelly Gneisses. The Klondike Schists are: quartz-sericite schist, quartz-eye schist, chlorite schist phase, quartz carbonate-chlorite schist, amphibole-quartz schist, and amphibolite rock

The Pelly Gneisses are gneissic granite and mylonite.

The Nasina series consists of graphitic phyllite, black quartzite, black carbonate phyllite, white marble, and banded quartz rock.

The ultramafic rocks are peridotite serpentite and steatite.

Covering the basement rocks are the post mesozoic covering rocks. These consist of the lower Tertiary sedimentary rocks, lower Tertiary igneous rocks (basic dikes, basic to intermediate flows and pyroclastics, acidic igneous rocks and quartz veins) and upper, tertiary and quartenary sedimentary rocks. (Milner, 1980)

6.3 Local Geology

All of Enchantment Creek, is located within the Pelly Gneiss geological unit as defined on Geological Survey of Canada Map 18-1973. (See Figure 3).

The Pelly Gneiss geological unit is defined as follows:
Pelly Gneiss: strongly foliated to gneissic muscovite chlorite biotite granodiorite; minor augen gneiss; includes some undifferentiated foliated muscovite quartz monzonite.

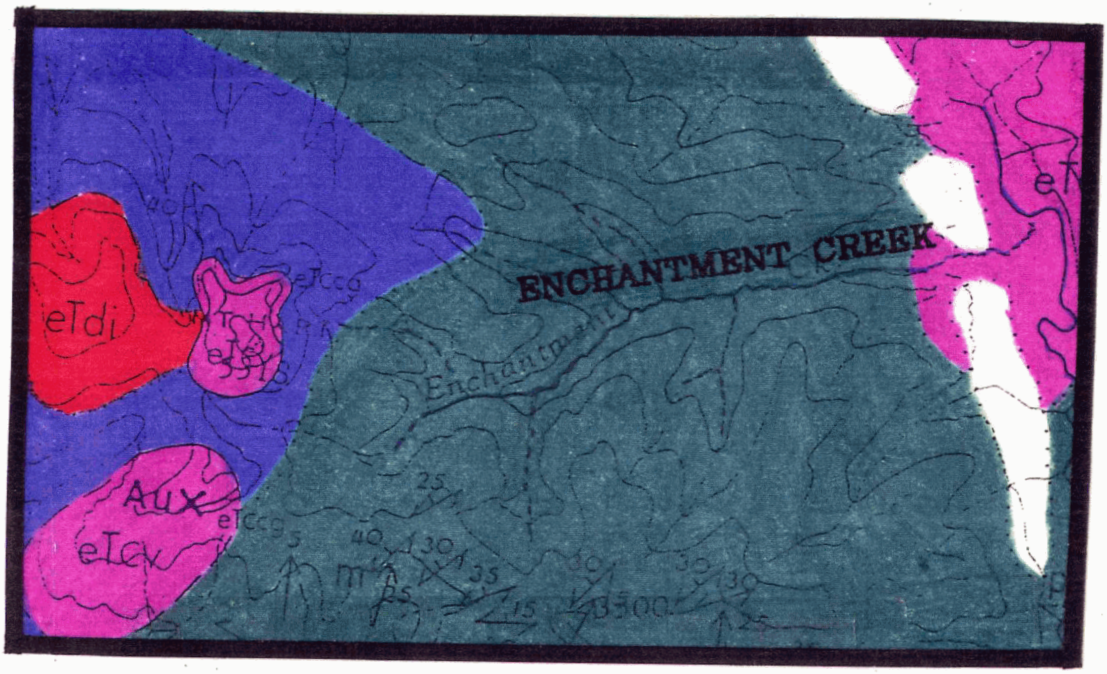
7. THEORY

7.1 Earth's Magnetic Field

The earth's magnetic field is similar in form to that of a bar magnet (see Figure 4). The origin of the field is not well understood, but thought to be due to currents in a fluid conductive core. The flux lines of the geomagnetic field are vertical at the north and south magnetic poles where the strength is approximately 60,000 gammas. In the equatorial region, the field is horizontal and its strength is approximately 30,000 gammas (see Figure 5).

7.2 Time variations

The primary geomagnetic field is, for the purposes of normal mineral exploration surveys, constant in space and time. Magnetic field measurements may, however, vary considerably due to short term external magnetic influences. The magnitude of these variations is unpredictable. In the case of sudden magnetic storms, it may reach several hundred gammas over a few minutes. It is therefore necessary to take continuous readings of the geomagnetic field with a base station magnetometer for the duration of the survey.



Geology map Scale 1 : 50,000

LEGEND:

Chert and Metachert: grey weathering pale green and purplish brown horfelsed argillaceous chert with lesser interbedded chloritic phyllite and marble

Pelly Gneiss: strongly foliated to gneissic muscovite chlorite biotite granodiorite; minor augen gneiss; includes some undifferentiated foliated muscovite quartz monzonite

Hornblende Monzonite: medium-grained equigranular hornblende monzonite

Carmacks Group: brown weathering, green and red andesite, basalt and flow breccia

Figure 3

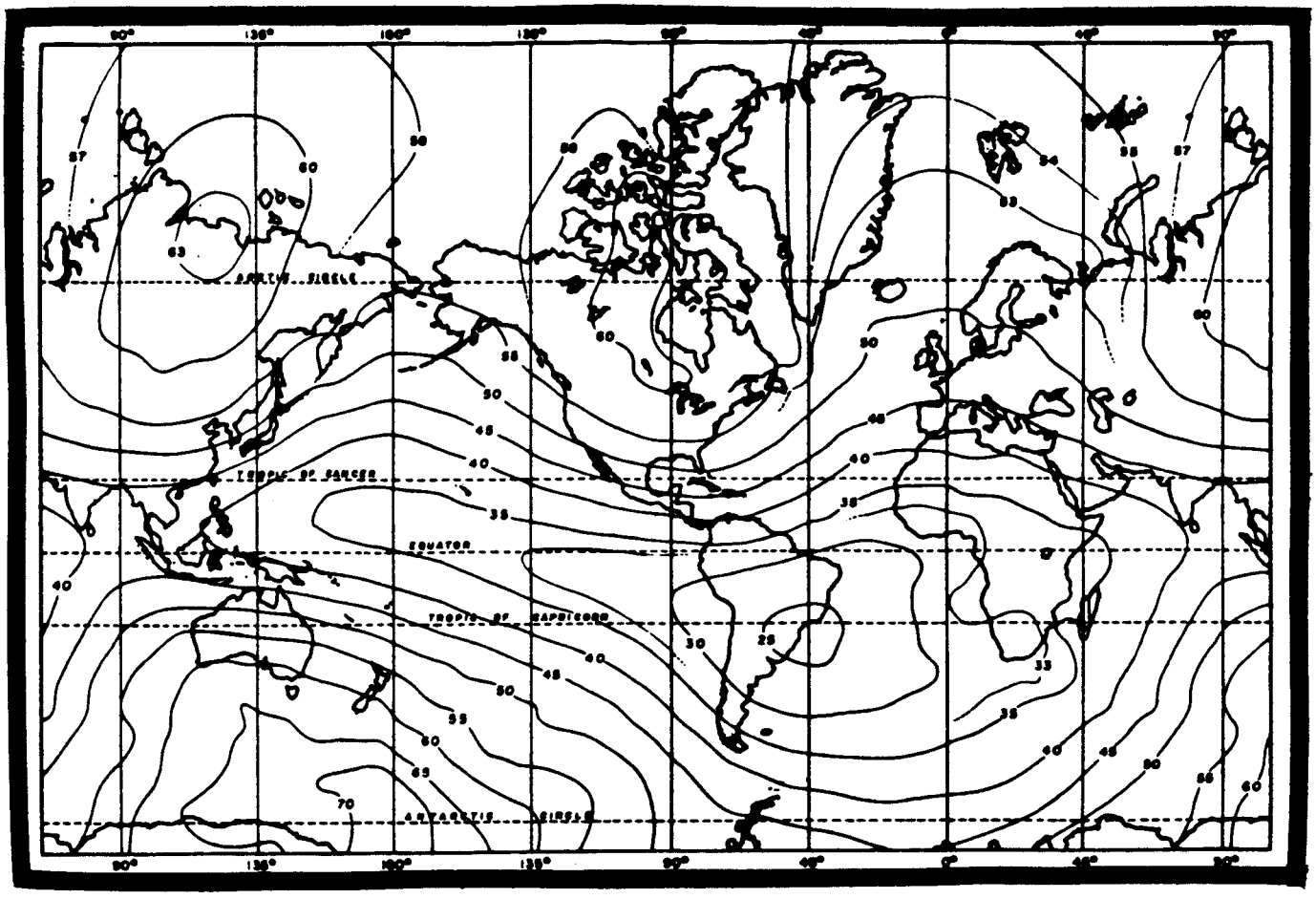


Figure 5

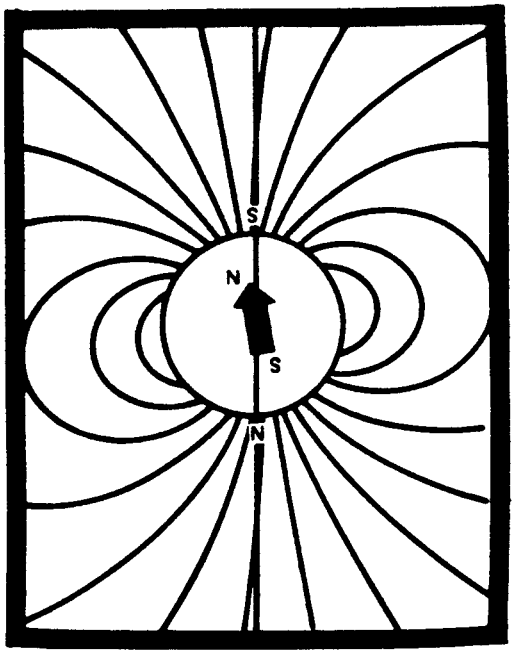


Figure 4

7.3 Magnetometer Method

The magnetometer method of exploration consists of measuring the magnetic field of the earth as influenced by rock formations having different magnetic properties and configurations (Schultz, 1987).

For this survey the vertical magnetic gradient was measured, as well as the total field, to provide information on the depth of the source. This information arises from the observation that long wavelength variations in gradient profiles follow the total field most closely, and from noting that long wave variations are due to deeper sources.

7.4 Measured Field

The measured field is the vector sum of primary, induced and remnant magnetic effects. Thus, there are three factors, excluding geometric factors, which determine the magnetic field. These are the strength of the earth's magnetic field, the magnetic susceptibilities of the rocks and minerals present and their remnant magnetism.

The intensity of magnetization induced in rocks by the geomagnetic field F is given by:

$$I = kH$$

where:

I is the intensity of magnetization
k is the volume magnetic susceptibility
H is the magnetic field intensity

The susceptibilities of rocks are determined primarily by their magnetite content since it is strongly magnetic and widely distributed.

The remnant magnetization of rocks depend both on their composition and previous history. Whereas the induced magnetization is nearly always parallel to the direction of the geomagnetic field, the natural remnant magnetization may bear no relation to the present direction and intensity of the earth's field. The remnant magnetization is related to the direction of the earth's field at the time the rocks were last magnetized. Interpretation of most magnetometer surveys is normally done by assuming no remnant magnetic component.

7.5 Proton Magnetometer

The proton precession magnetometer is so named because it utilizes the precession of spinning protons or nuclei of the hydrogen atom in a sample of hydrocarbon rich fluid (Coleman fuel was used in this survey) to measure the total magnetic intensity. The spinning protons in the fluid behave as small, spinning magnetic dipoles, These magnets are temporarily aligned or polarized by application of a uniform magnetic field generated by a current in a coil of wire. When the current is removed, the spin of the protons causes them to precess about the direction of the ambient or earth's magnetic field, much as a spinning top precesses about the gravity field.

The precessing protons then generate a small signal in the same coil used to polarize them, a signal whose frequency is precisely proportional to the total magnetic field intensity and independent of the orientation of the coil, i.e., sensor of the magnetometer. The proportionality constant which relates frequency to field intensity is a well known atomic constant: the gyromagnetic ratio of the proton. The precession frequency, typically 2000 Hz, is measured by modern digital counters as the absolute value of the total magnetic field intensity with an accuracy of 0.1 gamma, in the earth's field of approximately 50,000 gammas.

8. DATA PROCESSING AND PRESENTATION

8.1 Data Processing

To allow for the computer processing of the magnetic data, the data resident in the OMNI IV's memory was transferred via a serial communication link to the Corona computer - thereby facilitating editing, processing and presentation operations. All the data was archived on floppy disk.

All data has been reviewed and the necessary editing has been performed. The corrected data have been ink-plotted in plan as contour and offset profiles on a Nicolet Zeta drum plotter, interfaced to an IBM PC/XT microcomputer.

8.2. Data Presentation

Contoured and offset profile plan maps of the corrected data were computer generated and fine-drafted on mylar, at a scale of 1:1000 with appropriate contour intervals.

The final presentation products are as follows:

Table 2: Presentation Plate Index

Plate 1: Total Field Magnetics and gradient Contour Maps, scale 1:1000
: Total Field Magnetics, and Gradient, Offset Profiles, scale 1:1000

9.0 INTERPRETATION AND RECOMMENDATIONS:

9.1 Introduction

Although placer gold deposits cannot be located by a magnetometer survey, the common accessory mineral, magnetite, can. Alder and Alder (1985) demonstrate the correlation between positive magnetic total field anomalies with gold content in pay channels in the Keithley Creek and other areas in British Columbia and Alaska. (Schultz, 1987)

The aim of the interpretation is to locate areas, on the profile and contour maps, which contain placer deposits of magnetite. These areas would be considered the most promising in terms of potential gold content.

The most promising areas of the survey grid are where a local total field high and a vertical gradient high occur together. Line to line correlations between simultaneously occurring highs were made and zones were defined depending on their strike extent.

These zones were classified, using the guidelines below, as either high or medium priority exploration zones and marked on both profile and contour maps. Recommendations, as to the most promising targets for further exploration by shafting or drilling, were given.

High Priority Zone: Anomalies in high priority zones are well defined, with short wave lengths. They correlate over two lines or more. The targets within these zones should be considered first for further exploration.

Medium Priority Zone: Anomalies in medium priority zones are well defined, with short wave lengths. They correlate over one or two lines. The targets in these zones should be considered for further exploration after those in the high priority zones.

9.2 Interpretation

Please refer to Plate 1 (in the plastic pouch), which contains the contour and profile maps of the total field and vertical gradient data.

Two zones and three single line anomalies were delineated over the grid. A description of these zones and single line anomalies follow:

Zone A: Total field and gradient anomalies in zone A are very well defined with short wavelengths, and high amplitudes. The zone extends from line L-150W, station 45S to line L-200W, station 35S and strikes approximately east-west.

Recommendation: Medium priority, shaft or drill on line L-150W at station 35S.

Zone B: Extending from line L-900W to line L-950W zone B is medium sized. It is characterized by very high amplitude, medium wavelength, anomalies. Due to the amplitude of the anomalies within the zone it is very well defined on the total field and gradient contour maps.

Recommendation: High priority, shaft or drill on line L-900W at station 20S.

Anomaly C: Single line anomaly C is located at station 45S on line L-50W. The total field value does not represent a line high but the gradient value does.

Recommendation: Investigate this single line anomaly by hand mining techniques.

Anomalies D and E: These single line anomalies may represent a zone, but as the line between them did not exhibit an anomaly of similar characteristics it could not be correlated to a zone.

Anomaly D is located on line L-850W at station 5W. Both the total field and gradient anomalies represented by this single line anomaly are high amplitude and angularly shaped.

Anomaly E is located on line L-850W at station 5W. This single line anomaly is represented by a high amplitude vertical gradient anomaly and a medium amplitude total field anomaly.

Recommendation: Investigate these single line anomalies by hand mining techniques.

10.0 CONCLUSION

A Gradiometer survey was conducted on lease PL-7573 located in the Enchantment Creek. It was conducted at the request of Mr. Lorne Mollot, on June 31st, 1988.

The line and station spacings were fifty meters and five meters respectively. The line spacing was not sufficiently small to delineate small zones, but was more than large enough to delineate medium to large zones.

Line to line correlations of simultaneously occurring gradiometer and magnetometer high were made. Each correlation was called a zone and given a label. These zones are believed to be the magnetic response of placer deposits of magnetite. Since magnetite is a common accessory mineral of gold these zones may also contain placer deposits of gold.

Recommendations for drilling or shafting exploration were given as summarized below.

Summary of Recommendations:

Zone A: Medium priority, shaft or drill on line L-150W at station 35S.

Zone B: High priority, shaft or drill on line L-900W at station 20S.

Anomaly C: Investigate this single line anomaly by hand mining techniques.

Anomalies D and E: Investigate these single line anomalies by hand mining techniques.

Further gradiometer exploration of the survey grid, to delineate small zones, is recommended at a line spacing of 25 meters.

11.0 STATEMENT OF ASSESSMENT COSTS

For gradiometer survey conducted on Enchantment Creek, lease PL-7573

Line Cutters	
4 cutters, 1 day (Includes administrative overhead)	**600.0**
Geophysicist	
Mychelle Mollot, BSc.(Eng), 1 days @ $400/day:	**400.0**
Equipment Rental	
EDA Magnetometer plus base station	**93.0**
Computer, printer and radio	**39.0**
All Terrain Vehicles	**100.0**
Purchased Items	
Batteries, hip chain, hip chain thread, flagging tape	**25.0**
Transportation	
Helicopter Equipment Shuttle to and from Dawson	**1200.0**
Camp Costs	
Food 4 people, 1 day @ $25.0/day/person	**100.0**
Report Preparation	
Report writing, drafting, computer consultant, map and figure preparation, binding and photocopying	**1200.0**
TOTAL COST OF 1988 ASSESSMENT WORK:	**3757.0**

If there are any questions with regard to the survey please contact the undersigned.

Respectfully Submitted,

Mychelle A. Mollot, B.Sc.(Eng)
Consulting Geophysicist

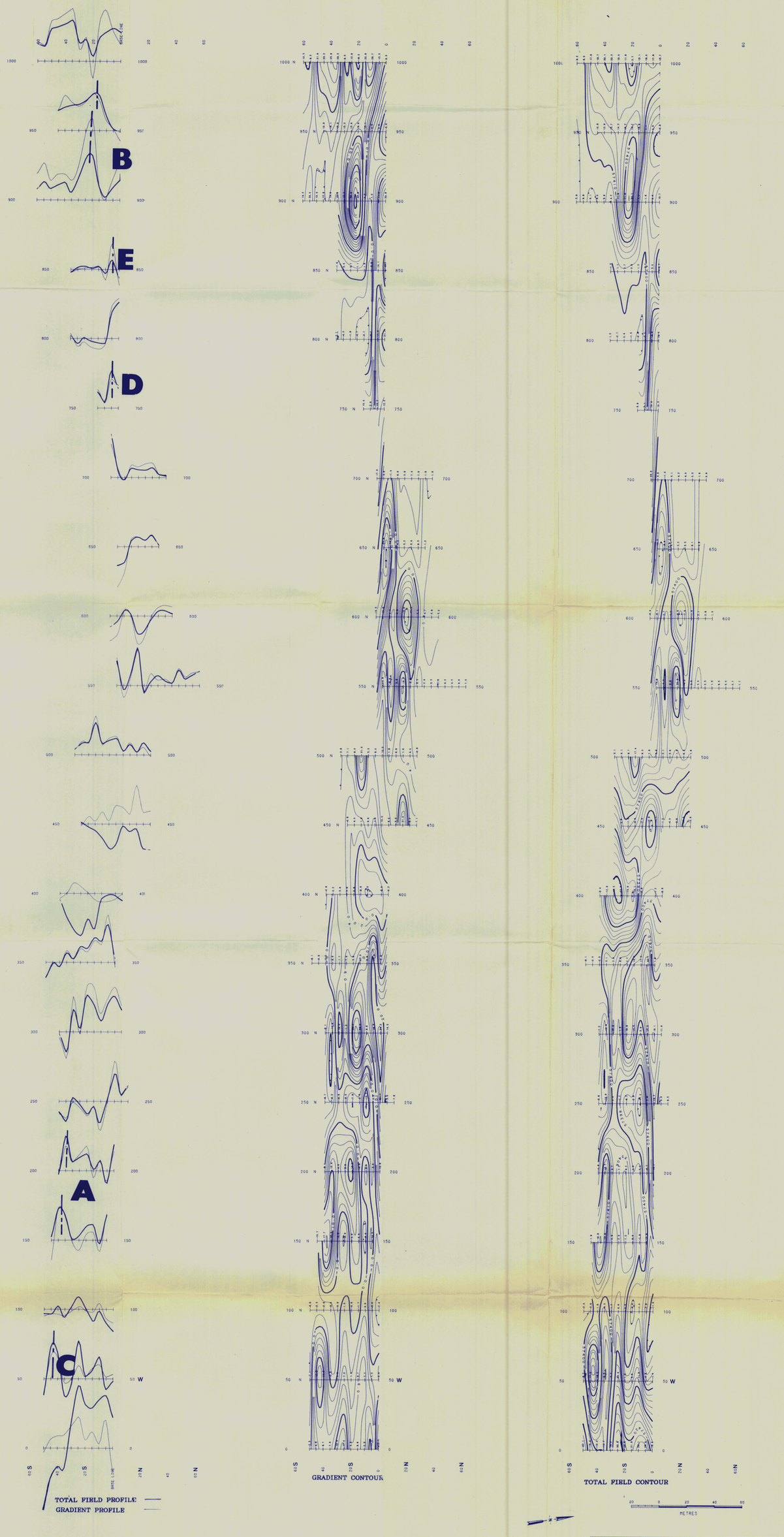
11. REFERENCES

Alder, K., and Alder, J., 1986, Placer Magnetics for the Large and Small Operator, in Proceeding of the Seventh Annual Conference on Alaska Placer Mining, J.A. Madonne, ed.

Debricki, R.L., 1984, Bedrock Geology and Mineralization of the Klondike Area (West), 115 0/14,15 and 116 B/2,3, Exploration and Geophysical Services Division, Yukon; Indian and Northern Affairs, Canada. open file 1:50,000 Scale Map.

Milner M.W., 1980, Geomorphology of the Klondike Placer Goldfields, Yukon Territory.

Swartz, E.J. and Wright, N., 1987, Buried Placers in Chaudiere River Sediments Indicated by Ground Magnetometer Survey, Eastern Townships, Quebec; in Current Research part A, G.S.C., Paper 87-1A p423-428



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ENCHANTMENT

PL-7573

TOTAL FIELD MAGNETIC SURVEY PLAN MAP

VERTICAL MAGNETIC GRADIENT PLAN MAP

MAG CONTOUR INTERVALS = 2 4 10 GAMMAS
MAG PINTED BASE VALUE = 57400 GAMMAS
GRADIENT CONTOUR INTERVALS = 2 4 10
EDA OMNI IV

SCALE 1 : 1000

SURVEY BY	COMPILATION BY	PLATE 1
MOLLOT LTD. JUNE 1988	JVX LTD. AUGUST 1988	