

120092

ASSESSMENT REPORT FOR THE
MAGNETOMETER GEOPHYSICAL SURVEY
CONDUCTED ON BOURDELAIS CREEK,
BETWEEN JUNE 13th AND 15th, 1988
Placer Lease: PL-7556
Tag Holder: Mr. Anthony Vroom
Location: 55 Km southwest of
Dawson, Yukon Territory
Latitude: 63 58'
Longitude: 140 34'

At the Request of

Mr. Lorne Mollot
Tel.: (819) 684-2946



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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 \$ 1000.00 . . .

W. B. Bunge

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

TABLE OF CONTENTS

	<u>Page No.</u>
1. INTRODUCTION	1
2. SURVEY LOCATION AND ACCESS	1
2.1 Lease Information	1
3. SURVEY GRID AND COVERAGE	4
4. PERSONNEL	5
5. INSTRUMENTATION	6
6. GEOLOGY	6
6.1 Geomorphic Setting	6
6.2 Regional Geology	7
6.2.1	7
6.3 Local Geology	7
7. THEORY	8
7.1. Earth's Magnetic Field	8
7.2. Time Variation	8
7.3. Magnetometer Method	8
7.4. Measured Field	8
7.5. Proton Magnetometer	11
8. DATA PROCESSING AND PRESENTATION	12
8.1. Data Processing	12
8.2. Data Presentation	12
9. INTERPRETATION	12
9.1. Introduction	12
9.2 Interpretation	13
10. CONCLUSION AND RECOMMENDATIONS	14
11. STATEMENT OF COSTS	15
12. REFERENCES	16

FIGURES

- Figure 1: Location Map, scale 1:5,000,000
- Figure 2: Grid Location Map, scale 1:10,000
- Figure 3: Map of Local Geology, scale 1:50,000
- Figure 4: Earth as a Bar Magnet
- Figure 5: Earth's Magnetic Field Strength

TABLES

- Table 1: Magnetism Production Summary,
- Table 2: Presentation Plate Index

APPENDICES

- Appendix 1: Plate 1 (Located in the plastic pouch)
- Plate 1: Total Field Magnetism Contour Map, scale 1:1000
- plate 2: Total Field Magnetism Offset Profiles, scale 1:1000

ASSESSMENT REPORT ON
THE JUNE, 1988, MAGNETOMETER SURVEY
OF BOURDELAIS CREEK, LEASE PL-7556

At the Request of

MR. LORNE MOLLOT

1. INTRODUCTION

Between June 13th and June 15th, 1988, a magnetometer survey was conducted on lease PL-7556 located in Bourdelais Gulch, at the request of Mr. Lorne Molloy on the behalf of the the property lease holder, Anthony Vroom.

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 meters. The line separation, along the 1000 m baseline, was twenty-five meters and the total line coverage was approximately 1.2 kilometers.

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-7556 under section 41 of the Placer Mining Act. The final presentation of the report includes contour, profile and plan maps.

2. SURVEY LOCATION AND ACCESS

The Bourdelais Creek lease, PL-7556, is located in the Boucher Creek Valley, approximately 55 km west-southwest of Dawson city, Yukon Territory.

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

In some seasons access to the survey grid may be gained via a bush road from the Sixty Mile mining area. However, this season, culverts along the road were washed out prohibiting access by four-wheel drive. Therefore access was gained by helicopter out of Dawson City.

2.1 Lease Information

<u>Lease number:</u>	PL-7556
<u>Tag Holder:</u>	Mr. Anthony Vroom
<u>Lease Length:</u>	2 Miles
<u>Claim Sheet Number:</u>	115-N-15

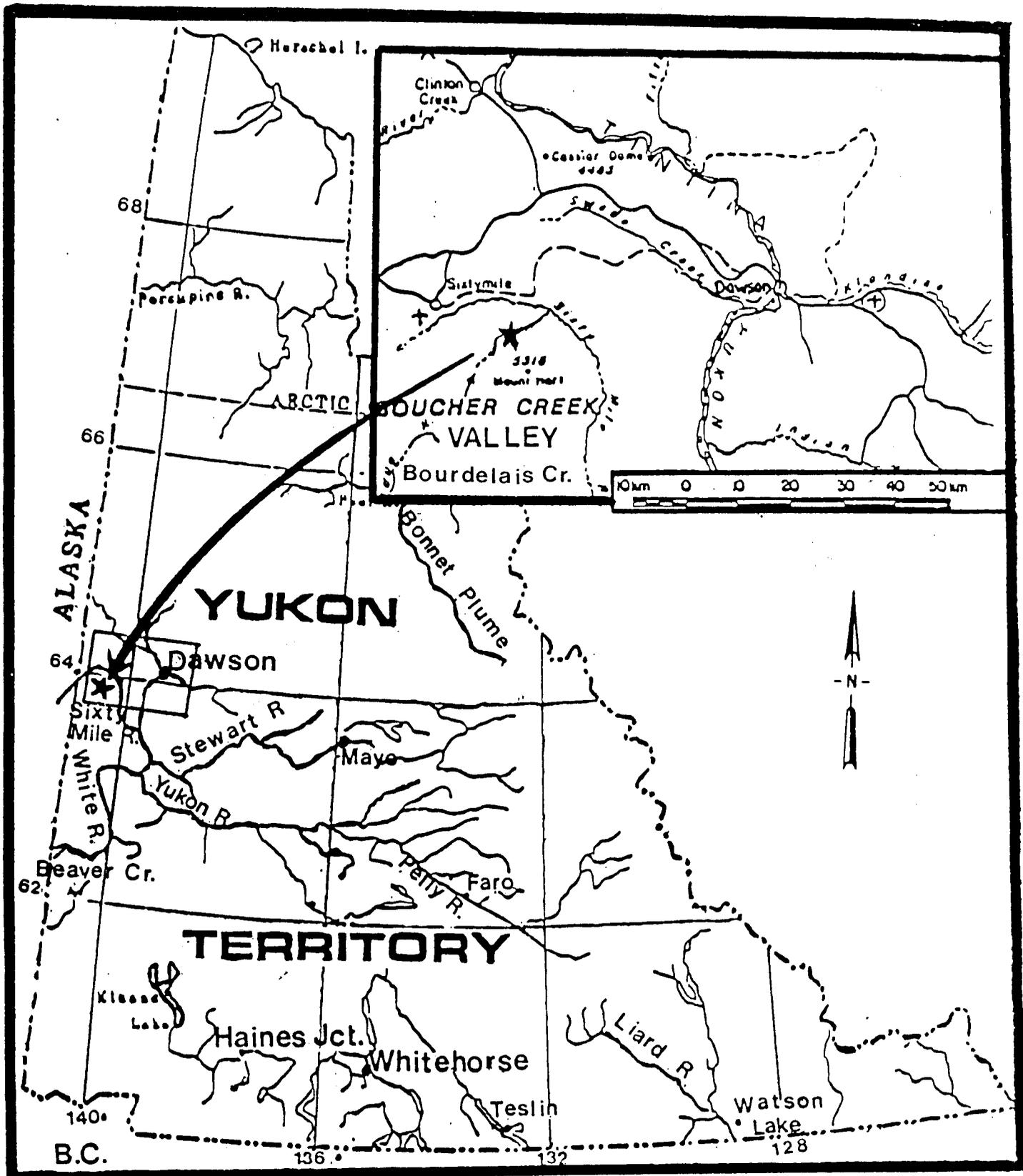
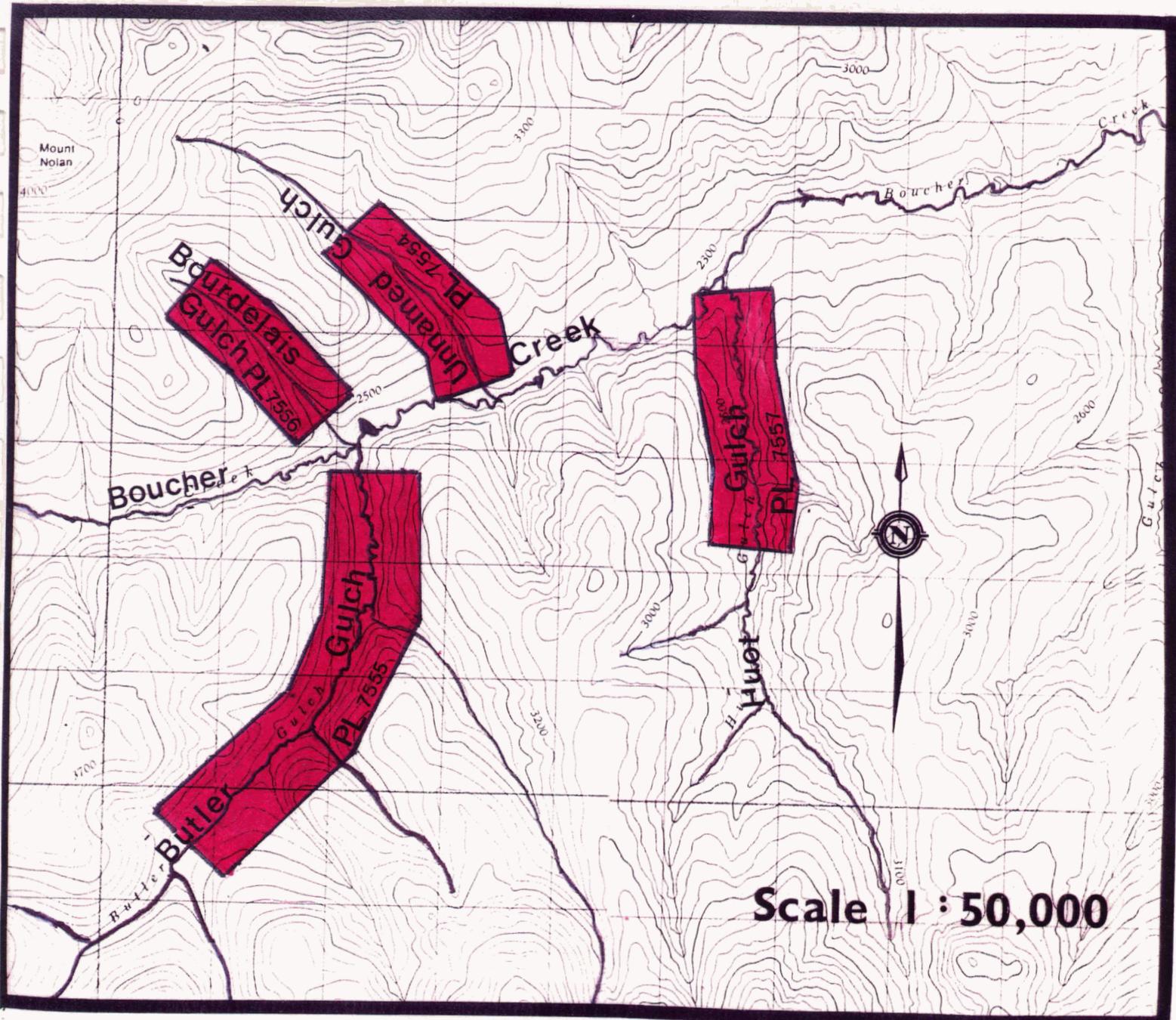


Figure 1
 LOCATION MAP

Scale 1:5,000,000



GRID LOCATION MAP

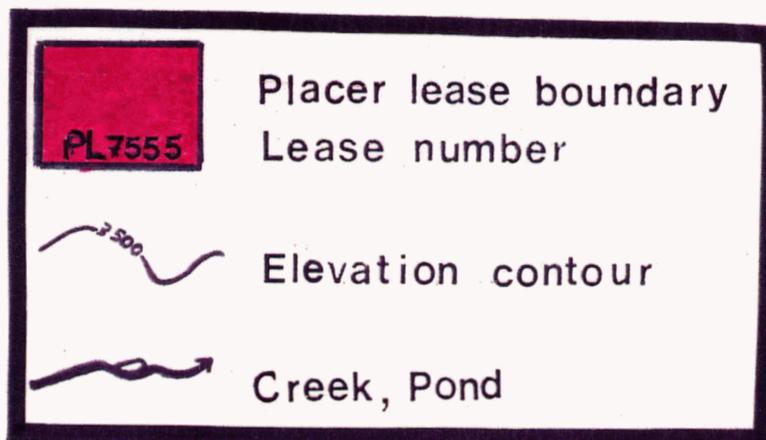


Figure 2

3. SURVEY GRID AND COVERAGE

A property claim map and an outline of the survey grid may be found in Figure 2. The baseline of the grid is oriented north-south and the survey lines running east-west are 25 meters apart. The grid has a total of 40 survey lines.

A detailed breakdown of the survey coverage follows in Table 1.

TABLE 1
PRODUCTION SUMMARY: MAGNETIC SURVEY

<u>LINE</u>	<u>COVERAGE</u>		<u>LINE LENGTH (METERS)</u>
	<u>FROM</u>	<u>TO</u>	
L-1000N	25.0W	00.0	25.0
L-975N	25.0W	00.0	25.0
L-950N	25.0W	00.0	25.0
L-925N	25.0W	00.0	25.0
L-900N	20.0W	00.0	20.0
L-875N	30.0W	00.0	30.0
L-850N	30.0W	00.0	30.0
L-825N	30.0W	00.0	30.0
L-800N	30.0W	00.0	30.0
L-775N	25.0W	00.0	25.0
L-750N	25.0W	00.0	25.0
L-725N	25.0W	00.0	25.0
L-700N	30.0W	00.0	30.0
L-675N	25.0W	00.0	25.0
L-650N	20.0W	00.0	20.0
L-625N	20.0W	00.0	20.0
L-600N	20.0W	00.0	20.0
L-575N	25.0W	00.0	25.0
L-550N	30.0W	00.0	30.0
L-525N	25.0W	00.0	25.0
L-500N	30.0W	00.0	30.0
L-475N	30.0W	00.0	30.0
L-450N	30.0W	00.0	30.0
L-425N	30.0W	00.0	30.0
L-400N	30.0W	00.0	30.0
L-375N	30.0W	5.0E	35.0
L-350N	30.0W	00.0	30.0
L-325N	30.0W	00.0	30.0
L-300N	30.0W	5.0W	25.0
L-275N	25.0W	00.0	25.0
L-250N	25.0W	00.0	25.0
L-225N	25.0W	00.0	25.0
L-200N	30.0W	00.0	30.0
Subtotal 1:			885.0

<u>LINE</u>	<u>COVERAGE</u>		<u>LINE LENGTH (METERS)</u>
	<u>FROM</u>	<u>TO</u>	
L-175N	35.0W	00.0	35.0
L-150N	30.0W	00.0	30.0
L-125N	30.0W	00.0	30.0
L-100N	35.0W	00.0	35.0
L-75N	30.0W	00.0	30.0
L-50N	30.0W	00.0	30.0
L-25N	30.0W	00.0	30.0
L-00N	30.0W	00.0	30.0
Subtotal 2:			255.0
+			
Subtotal 1:			<u>885.0</u>
=			
Total :			1140.0 m

4. PERSONNEL

	<u>FROM</u>	<u>TO</u>
Ms. Mychelle Mollot	June 15, 1988	June 15, 1988
Mr. Dave Mollot	June 13, 1988	June 14, 1988
Mr. Cor Guimond	June 13, 1988	June 14, 1988
Mr. Marc Bergeron	June 13, 1988	June 14, 1988

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

Mr. Dave Mollot - Assistant. Mr. Mollot assisted in the operation of the EDA Omni IV Magnetometer and cut and flagged the survey lines.

Mr. Cor Guimond - Assistant. Mr. Guimond cut and flagged the survey lines.

Mr. Marc Bergeron - Assistant. Mr. Bergeron 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 gammas was selected for the survey. It was used in the total field mode. The vertical gradient reading was taken automatically by the instrument by computation of the difference in the total field reading of a sensor placed at 2 m above the ground and another at 2.5 m above the ground.

The instrument records: total field 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 5 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 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

Bourdelaish 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. Ridge and upland altitudes from 3000 to 5000 feet are common in the Yukon Plateau Division. The Division is bounded on the north by the Olgivie Mountains where numerous summits are as high as 7000 feet. (Milner, 1980)

6.2 Regional Geology

Bourdelaais Creek is situated within the Yukon Crystalline Terrane which is the result of Triassic regional metamorphism (Green 1972), southwest of the Tintina Trench. The Tintina Trench is the topographic expression of a Mesozoic right lateral fault of some 250 miles displacement.

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, amphibolite, granite 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 quaternary sedimentary rocks. (Milner, 1980)

6.3 Local Geology

The majority of Bourdelaais Creek, is located within the Nasina Quartzite geological unit, as defined on Geological Survey of Canada Map 18-1973 (See Figure 4).

The mouth is located within the same geological boundary as Boucher creek, which is the Klondike Schist unit. The definitions of the geological units are as follows:

Nasina Quartzite- black weathering, massive, dark grey to black graphitic quartzite with lesser grey micaceous quartzite and quartz mica schist.

Klondike Schist- black and orange weathering, well foliated pale green chlorite, muscovite, quartz schist.

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.

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.



Scale 1:50,000

Geology map

LEGEND



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

Klondike Schists: black and orange-weathering well foliated pale green chlorite muscovite quartz schist; includes augen gneiss and amphibolite

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

Nasina Quartzite: black weathering, massive dark grey to black graphitic quartzite with lesser grey micaceous quartzite and quartz mica schist

Diorite: dark brown, fine-grained diorite and gabbro

Hornblende Monzonite: medium-grained equigranular hornblende

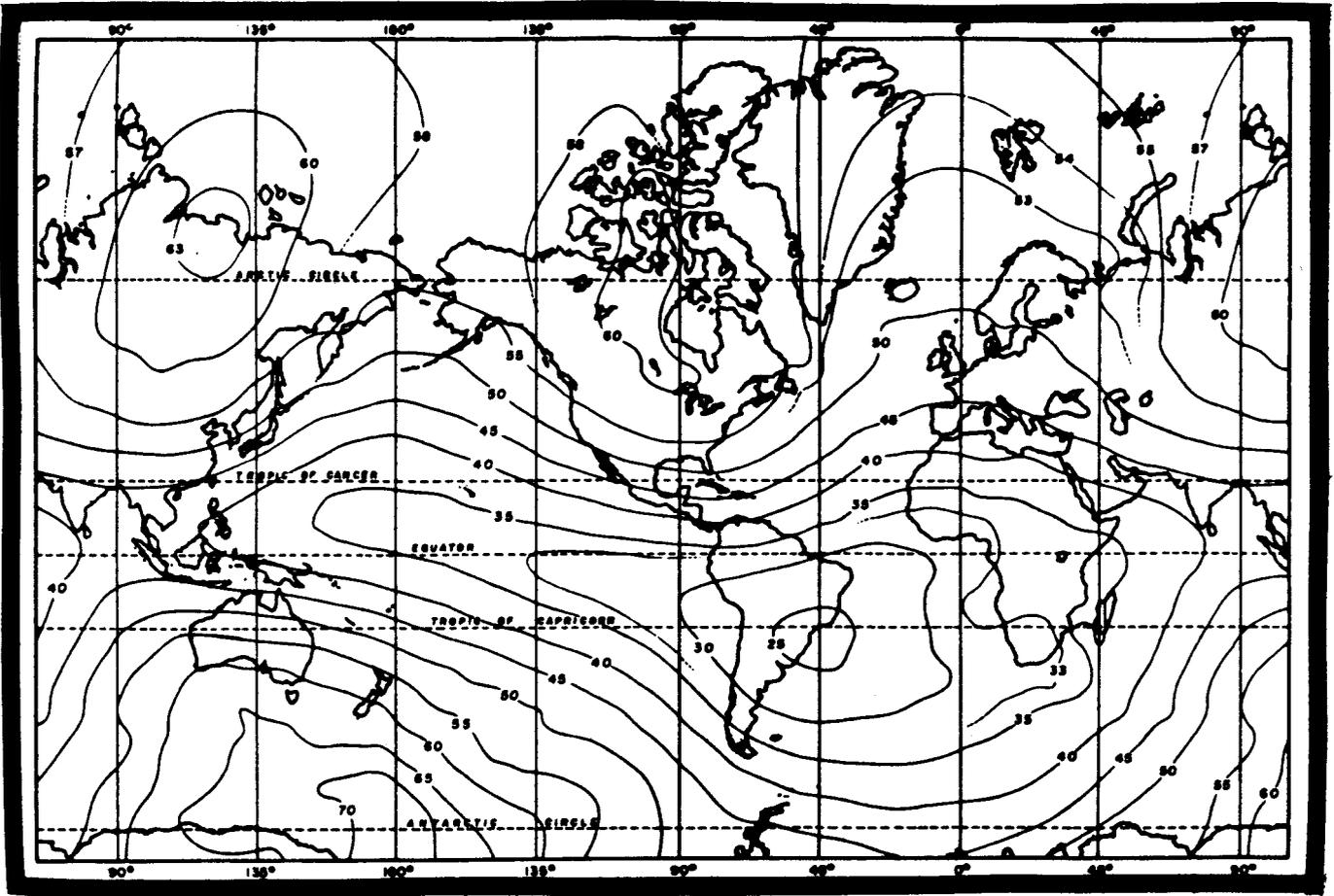


Figure 5

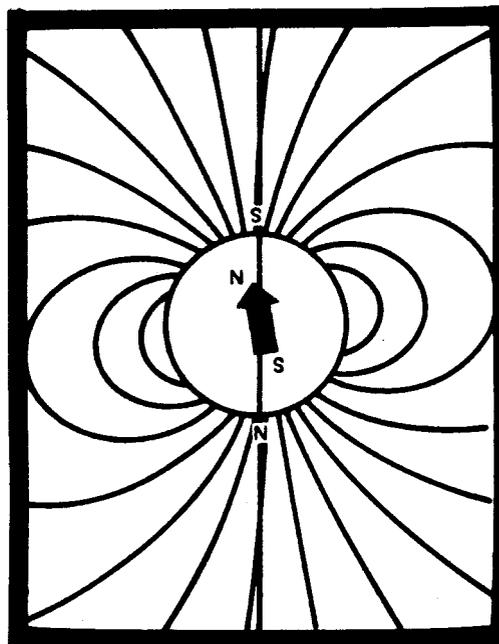


Figure 4

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 Contour Maps, scale 1:1000
Plate 2:	Total Field Magnetics, 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 occurs. Line to line correlations of these 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 the profile maps. Recommendations, as to the most promising targets for further exploration by shafting or drilling, is given.

High Priority Zone: Anomalies in high priority zones are well defined, with short wave lengths. They correlate over four 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 two or three lines.

If further exploration of a recommended drill or shaft target proves successful in the detection of either magnetite or gold then the the remaining anomalies in the zone should be investigated.

9.2 Interpretation

Plate 2 contains the offset profiles of the total field magnetics. Plate 1 contains the total field magnetic contour map. The zones, lettered from A to C, are marked on the plates with dashed lines at the peak of each anomaly.

The total field contours extend the length of the grid suggesting the magnetic sources follow the general direction of the valley

Zone A: Is a small zone that is characterized by small and medium wavelength anomalies trending north-south. All three of the line profiles have low amplitudes on the edge rising to peaks near, or at the middle of the profile.

Recommendation: Medium Priority, drill or shaft at station 10W on line L-50N.

Zone B: Zone B extends from line L-375N to line L-425N, and it trends north-south. The anomalies are all medium in amplitude and wavelength. The anomalies on lines L-375N and L-400N are angular shaped and the anomaly on line L-425N is rounded.

Recommendation: Medium Priority, shaft or drill at station 20W on line L-425N

Zone C: Zone C is characterized by line profiles of similar shapes and amplitudes. It extends from line L-700N to line L-775N inclusively. The anomalies in the zone have small wavelengths, and high amplitudes.

Recommendation: High Priority, drill or shaft on line L-775N at station 20W.

10.0 CONCLUSION

A Magnetometer survey was conducted on Bourdelais Creek lease PL-7556 at the request of Mr. Lorne Molloy and on the behalf of the property lease holder Anthony Vroom, between June 13th and June 15th, 1988.

The line and station spacings were twenty-five meters and five meters respectively. These spacings were sufficiently small for accurate line to line correlations.

Line to line correlations of total field magnetic anomalies 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, drill or shaft at station 10W on line L-50N.

Zone B: Medium Priority, shaft or drill at station 20W on line L-425N

Zone C: High Priority, drill or shaft on line L-775N at station 20W.

A gradiometer survey is recommended for further geophysics exploration.

11.0 STATEMENT OF ASSESSMENT COSTS

For gradiometer survey conducted on Bourdelais Gulch, placer lease
PL-7556

Line Cutters

3 cutters, 2 days @ \$150/day/cutter: \$900.00
(Includes administrative overhead)

Geophysicist

Mychelle Mollot, BSc.(Eng), 1 day @ \$400/day: 400.0

Equipment Rental

EDA Magnetometer plus base station 186.0
Computer, printer and radio 117.0
All Terrain Vehicles 200.0

Purchased Items

Batteries, hip chain, hip chain thread, 75.0
flagging tape

Transportation

Trans North Air Helicopter* 900.0
Equipment Shuttle from the 60 Mile Valley

Camp Costs

Food 4 people, 2 days @ \$25.0/day/person 200.0
Camp gear, 300.0
Prospector tents, stove, cooking utensils, etc.

Report Preparation

Report writing, drafting, computer consultant, map
and figure preparation, binding and photocopying 900.0

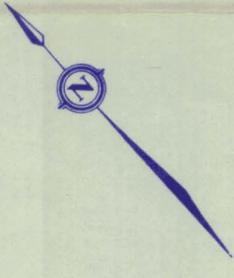
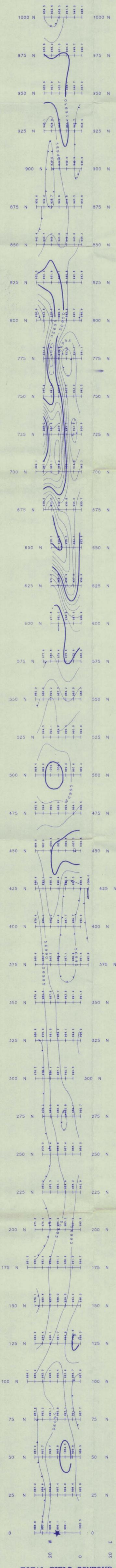
TOTAL COST OF 1988 ASSESSMENT WORK: \$4178.0

* Because a helicopter was used to access all 4 leases, surveyed at the request of Mr. Lorne Mollot, in the Boucher valley during June, the cost of the return trip from Dawson City by helicopter has been divided equally between the four leases.

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

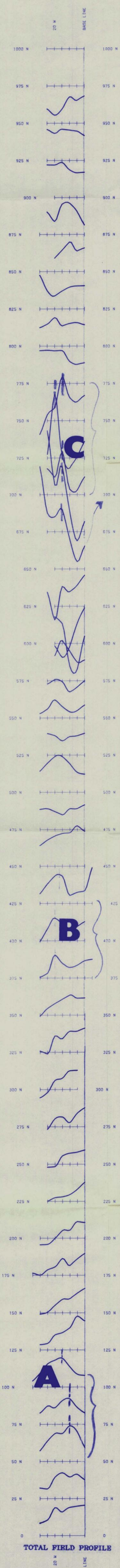
Respectfully Submitted,

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

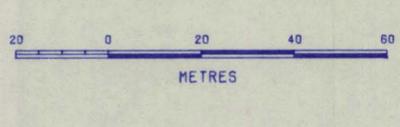


TOTAL FIELD CONTOUR

120092 45		
BOURDELAIS CREEK PL-7556		
TOTAL FIELD MAGNETIC SURVEY		
CONTOUR INTERVALS = 5 & 25 GAMMAS POSTED BASE VALUE = 56000 GAMMAS EDR OMNI IV		
SCALE 1 : 1000		
SURVEY BY MOLLOT LTD. JULY 1988	COMPILATION BY JVX LTD. AUGUST 1988	PLATE 1



TOTAL FIELD PROFILE



VROOM CORPORATION LTD. 120092		
BOURDELAIS CREEK PL-7556		
OFFSET PROFILES OF TOTAL FIELD MAGNETICS		
MAG SCALE = 10 GAMMAS / CM MAG BASE VALUE = 56980 GAMMAS EDA OMNI IV		
X-ZONE		
SCALE 1 : 1000		
SURVEY BY MOLLOT LTD. JUNE 1988	COMPILATION BY JVX LTD. AUGUST 1988	PLATE 2

44