120091

ASSESSMENT REPORT FOR THE GRADIOMETER GEOPHYSICAL SURVEY CONDUCTED ON THE UNNAMED GULCH, IN THE BOUCHER VALLEY BETWEEN JUNE 15th AND 17th, 1988

Placer Lease: PL-7554
Tag Holder: Joseph Vroom
Location: 53.5 Km southwest of Dawson, Yukon Territory
Latitude: 63 58'
Longitude: 140 32'

At the Request of

Mr. Lorne Mollot
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Author's Address:

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Toronto, Ontario
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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.

UKSBaye

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

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

ASSESSMENT REPORT ON
THE JUNE, 1988, GRADIOMETER SURVEY
OF THE UNNAMED GULCH, LEASE PL-7554

At the Request of

MR. LORNE MOLLOT

1. INTRODUCTION

Between June 15th and June 17th, 1988, a gradiometer survey was conducted at the request of Mr. Lorne Mollot on the behalf of the the property lease holder, Joseph Vroom. The survey was conducted on Lease PL-7554 in the Unnamed Gulch, 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 meters. The line separation, along the 1000 m baseline, was twenty-five meters and the total line coverage was approximately 1.4 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-7554 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 Unnamed Gulch lease, PL-7554, is located in the Boucher Creek valley, approximately 54 km west-south-west 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 to the survey grid was gained by helicopter, out of Dawson City.

2.1 Lease Information

Lease number: PL-7554
Tag holder: Joseph Vroom
Lease length: 1 mile
Claim sheet: 115-N-15

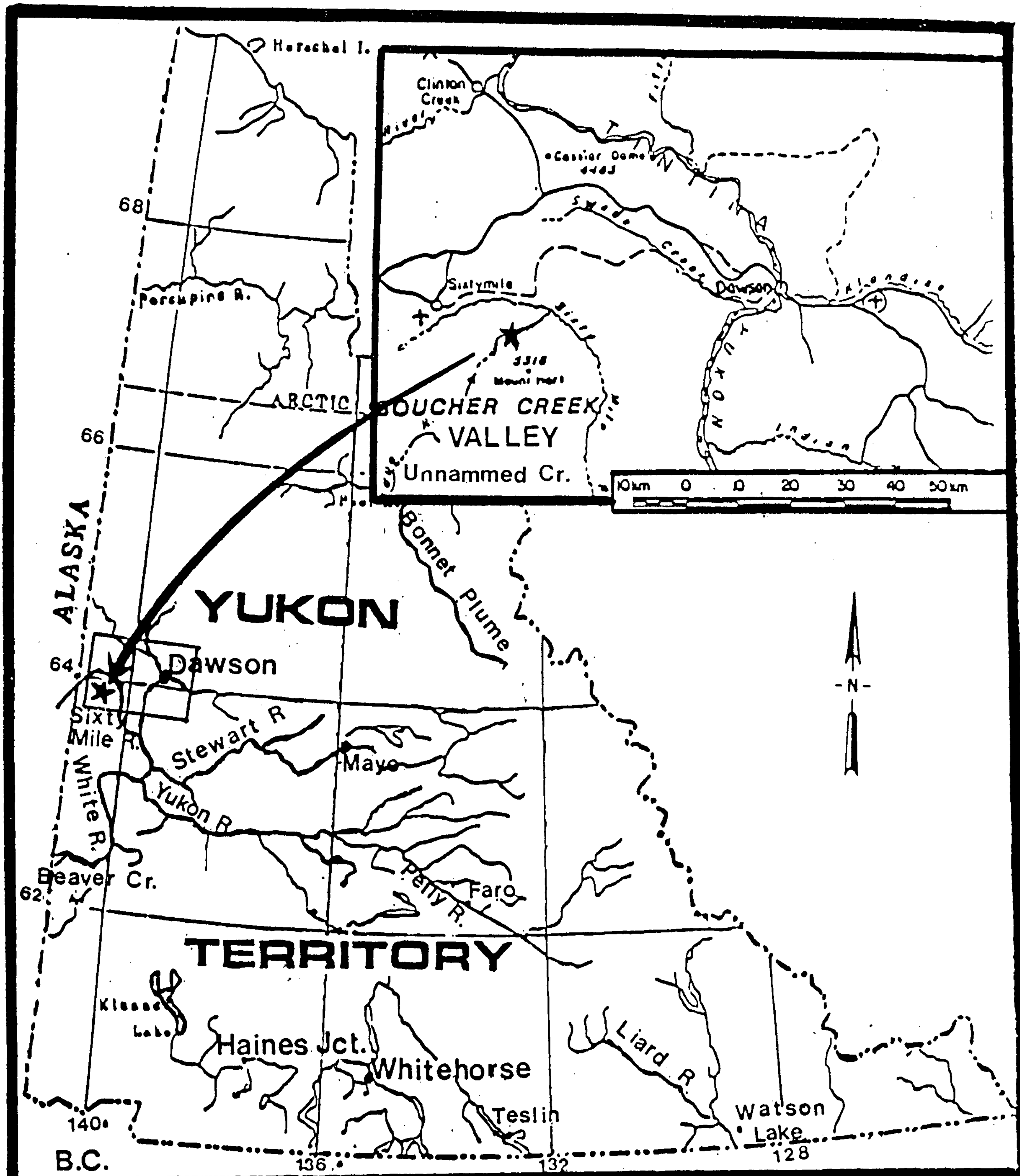
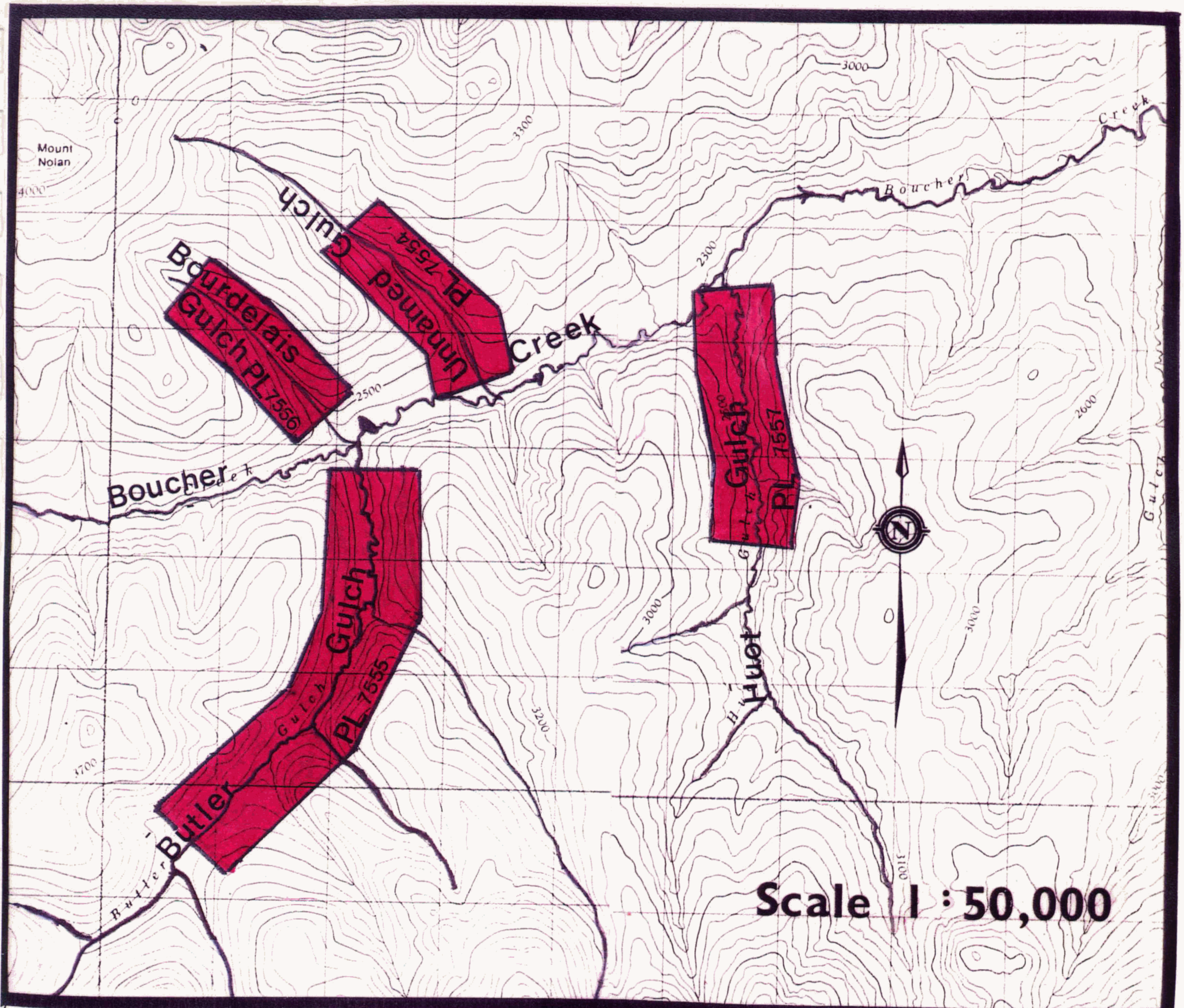


Figure 1

LOCATION MAP

Scale 1: 5,000,000



GRID LOCATION MAP

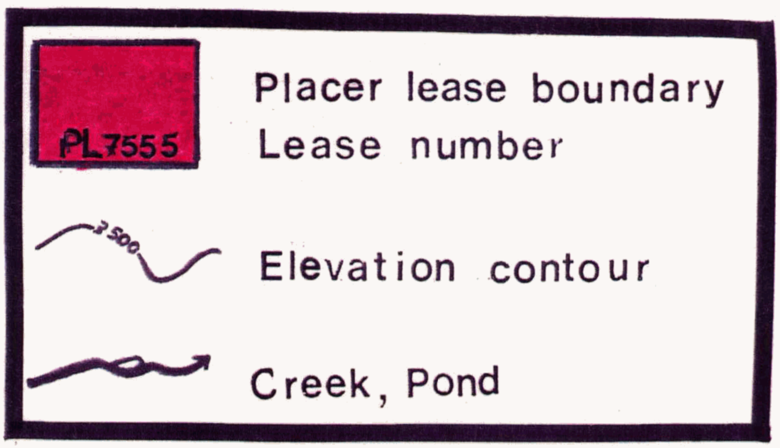


Figure 2

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

LINE	COVERAGE FROM	TO	LINE LENGTH (METERS)
L-1000S	35.0W	0.0	35.0
L-975S	30.0W	0.0	30.0
L-950S	35.0W	0.0	35.0
L-925S	35.0W	0.0	35.0
L-900S	35.0W	0.0	35.0
L-875S	35.0W	0.0	35.0
L-850S	35.0W	0.0	35.0
L-825S	40.0W	0.0	40.0
L-800S	40.0W	0.0	40.0
L-775S	35.0W	0.0	35.0
L-750S	30.0W	0.0	30.0
L-725S	35.0W	0.0	35.0
L-700S	35.0W	0.0	35.0
L-675S	45.0W	0.0	45.0
L-650S	40.0W	0.0	40.0
L-625S	45.0W	0.0	45.0
L-600S	35.0W	0.0	35.0
L-575S	35.0W	0.0	35.0
L-550S	25.0W	0.0	25.0
L-525S	30.0W	0.0	30.0
L-500S	35.0W	0.0	35.0
L-475S	25.0W	0.0	25.0
L-450S	25.0W	0.0	25.0
L-425S	25.0W	0.0	25.0
L-400S	25.0W	0.0	25.0
L-375S	30.0W	0.0	30.0
L-350S	30.0W	0.0	30.0
L-325S	30.0W	0.0	30.0
L-300S	30.0W	0.0	30.0
L-275S	35.0W	0.0	35.0
L-250S	40.0W	0.0	40.0
L-225S	50.0W	0.0	50.0
L-200S	40.0W	0.0	40.0
L-175S	35.0W	0.0	35.0
L-150S	35.0W	0.0	35.0
L-125S	30.0W	0.0	30.0
Subtotal 1:			1185.0 m

LINE	COVERAGE FROM	TO	LINE LENGTH (METERS)
L-100S	35.0W	0.0	35.0
L-75S	40.0W	0.0	40.0
L-50S	40.0W	0.0	40.0
L-50S	40.0W	0.0	40.0
L-25S	40.0W	0.0	40.0
L-00S	40.0W	0.0	40.0
Subtotal 2:			235.0m
Subtotal 1:			1185.0m
Total :			1420. m

4. PERSONNEL

	FROM	TO
Ms. Mychelle Mollot	June 17, 1988	June 17, 1988
Mr. Dave Mollot	June 15, 1988	June 16, 1988
Mr. Cor Guimond	June 15, 1988	June 16, 1988
Mr. Mark Bergeron	June 15, 1988	June 16, 1988

Ms. Mychelle Mollot - Geophysicist, B.Sc.(Eng), Queen's University, April, 1987. 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. Mark 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 and vertical gradient modes. 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 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 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 (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

Unnamed Gulch 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.

The Klondike Plateau, unglaciated subdivision of the Yukon Plateau Division, extends southeast from Alaska. It is bound in the northeast by the Tintina Trench and by glaciated plateau terrain in the south and east. In the north the upland surface is presumed to be defined by nearly horizontal accordant ridges; in the south remnants of it surround the Dawson Range which stands about 1000 feet higher. (Milner, 1980)

6.2 Regional Geology

Unnamed Gulch 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 quartenary sedimentary rocks. (Milner, 1980)

6.3 Local Geology

The majority of Unnamed Gulch, is located within the Nasina Quartzite geological unit, as defined on Geological Survey of Canada Map 18-1973 (See Figure 3).

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.

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 3

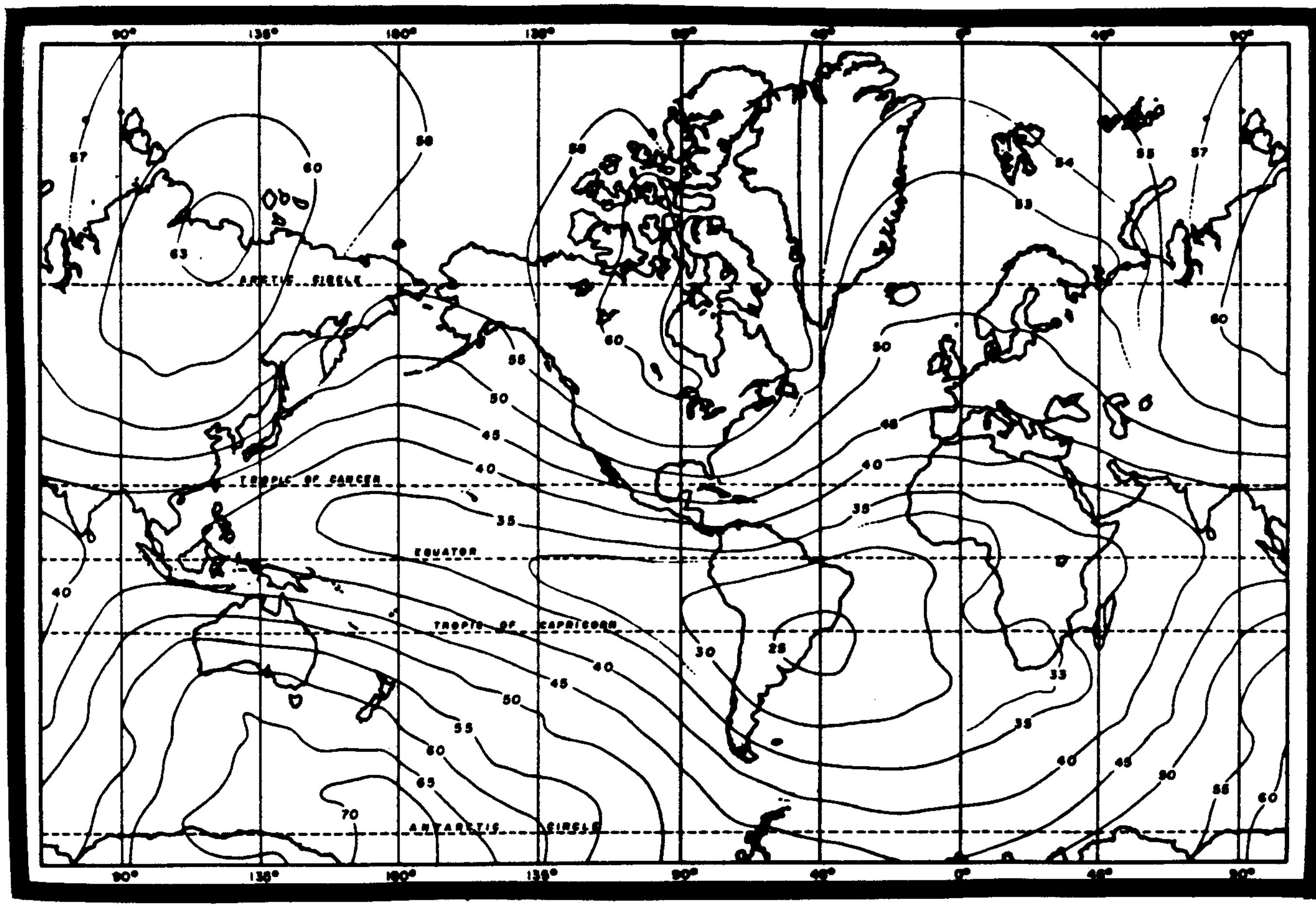


Figure 5

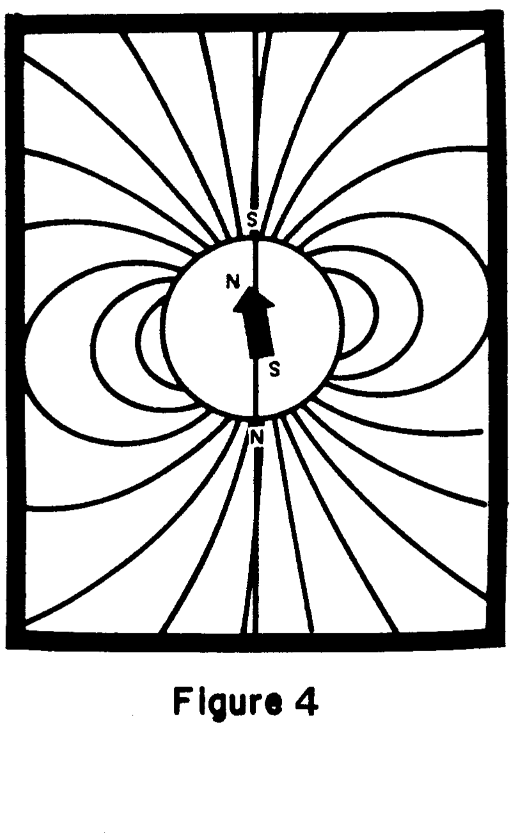


Figure 4

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.

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:

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 three 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. The targets in these zones should be considered for further exploration after those in the high priority zones.

9.2 Interpretation

Plate 1 contains the total field and vertical gradient contour and offset profile maps. The zones are marked on the plates with dashed lines at the peak of each anomaly.

The total field magnetic amplitude increases to the east on the majority of survey lines in this grid.

Only one zone and three single line anomalies were delineated.

Zone A: Zone A extends from line L-200N to line L-250N. It is characterized by a curvilinear shape in plan and by its rounded total field anomalies. The amplitudes range from very small on line 200N to large on line 250N.

Recommendation: High Priority, drill or shaft at station 20W on line L-225N.

Anomaly B: This single line anomaly occurs on line L-450N at station 15W. Both the total field and vertical gradient anomalies are medium in amplitude and wavelength.

Recommendation: Explore this line anomaly by hand mining techniques at station 15W on line L-450N.

Anomaly C: Occurring on line L-625N this single line anomaly is defined by a large amplitude gradient anomaly and a local total field magnetics high.

Recommendation: Explore by hand mining techniques on line L-625N at station 20W

Anomaly D: This single line anomaly is represented by a well defined gradient anomaly and a well defined total field anomaly occurring on line L-950N at station 5W.

Recommendation: Explore by hand mining techniques on line L-950N at station 5W.

10. <u>CONCLUSION:</u>

A Gradiometer survey was conducted on Unnamed Gulch lease PL-7554 at the request of Mr. Lorne Mollot between June 15th and June 17th, 1988.

The line and station spacings were twenty-five meters and five meters respectively. Line to line correlations were difficult and only one zone was delineated. Three single line anomalies worthy of further exploration were delineated, indicating that the line spacing may be too large for this gulch.

Line to line correlations of simultaneously occurring gradiometer and magnetometer high were made. The single correlation for this survey was labelled zone A. These simultaneously occurring highs 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.

Further detailed gradiometer exploration at ten meter line spacing is recommended for twenty meters on both sides of each single line anomaly.

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

<u>Summary of Recommendations</u>

<u>Zone A</u>: High Priority, drill or shaft at station 20W on line L-225N.

<u>Anomaly B</u>: Explore this line anomaly by hand mining technics at station 15W on line L-450N.

<u>Anomaly C</u>: Explore by hand mining techniques on line L-625N at station 20W

<u>Anomaly D</u>: Explore by hand mining techniques on line L-950N at station 5W.

11.0 STATEMENT OF ASSESSMENT COSTS

For gradiometer survey conducted on the Unnamed Gulch, placer lease PL-7554

Line Cutters	
3 cutters, 2 days @ $150/day/cutter: (Includes administrative overhead)	$900.00
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, flagging tape	75.0
Transportation	
Trans North Air Helicopter* Equipment Shuttle from the 60 Mile Valley	900.0
Camp Costs	
Food 4 people, 2 days @ $25.0/day/person	200.0
Camp gear, Prospector tents, stove, cooking utensils, etc.	300.0
Report Preparation	
Report writing, drafting, computer consultant, map and figure preparation, binding and photocopying	900.0
TOTAL COST OF 1988 ASSESSMENT WORK:	$4178.00

* 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

120091 (42)

UNNAMED CREEK

PL-7554

TOTAL FIELD MAGNETIC SURVEY PLAN MAP AND VERTICAL MAGNETIC GRADIENT PLAN MAP

MAG CONTOUR INTERVALS = 5 & 25 GAMMAS
MAG POSTED BASE VALUE = 56000 GAMMAS
GRADINT CONTOUR INTERVALS = .2 & 10
EDA OMNI IV

SCALE 1 : 1000

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

20 0 20 40 60

METRES

120091. 43

VROOM CORPORATION LTD.

UNNAMED CREEK

PL-7554

OFFSET PROFILES OF TOTAL FIELD MAGNETICS AND OFFSET PROFILES OF VERT. MAG. GRADIENT

MAG SCALE = 20 GAMMAS / CM
MAG BASE VALUE = 57000 GAMMAS
GRADIENT SCALE = 10 GAMMAS / CM
EDA OMNI IV

SCALE 1 : 1000

SURVEY BY	COMPILATION BY	
MOLLOT LTD. JUNE 1988	JVX LTD. AUGUST 1988	**PLATE 2**