120088

ASSESSMENT REPORT FOR THE GRADIOMETER GEOPHYSICAL SURVEY CONDUCTED ON QUIGLEY GULCH BETWEEN JULY 6th AND 11th, 1988

Placer Lease: PL-7773
Tag Holder: Roger Garneau
Location: 7.5 km southeast of Dawson City, Yukon Territory
Latitude: 64 02'
Longitude: 139 17'

120088

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DAWSON, Y.T.

On Behalf Of :

The property lease holder
Roger Garneau

Author's Address:
Mychelle Mollot
Apt.#2, 118 Brunswick Ave.,
Toronto, Ontario
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August, 1988

This ... has been examined by the ... Evaluation Unit under Sec... ...n Placer Mi... and ... ...nded as allowable repres... work in the amount of $ ....

Ch... ..., Exploration and Geo... ...ices Division, Northern ... ...m for Commissioner of ...

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 $ 2000.00.

W. LeBarge

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

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

**ASSESSMENT REPORT ON
THE JULY, 1988, GRADIOMETER SURVEY
OF QUIGLEY GULCH, LEASE PL-7773**

On Behalf Of

**THE PROPERTY LEASE HOLDER
ROGER GARNEAU**

1. INTRODUCTION

Between July 6th and July 11th, 1988, a gradiometer survey was conducted, by Mychelle Mollot and assistants, on behalf of the property lease holder, Roger Garneau, on Lease PL-7773 in Quigley Gulch.

The objective of the survey was to locate, on contour and profile maps, positive magnetic anomalies indicative of buried magnetite deposits.

The station and line spacings were 5 and 10 meters respectively. The baseline was 1000 meters long and the total line coverage was approximately 6.2 kilometers.

This report describes the survey logistics, theory, field procedures and office data processing. It also fulfills assessment requirements for lease PL-7773 under section 41 of the Placer Mining Act. The final presentation of the report includes contour and profile maps.

2. SURVEY LOCATION AND ACCESS

Quigley Gulch lease PL-7773, is located in the Klondike, approximately 7.5 km southeast 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 within 1 kilometre of the survey grid was gained by four wheel drive vehicle.

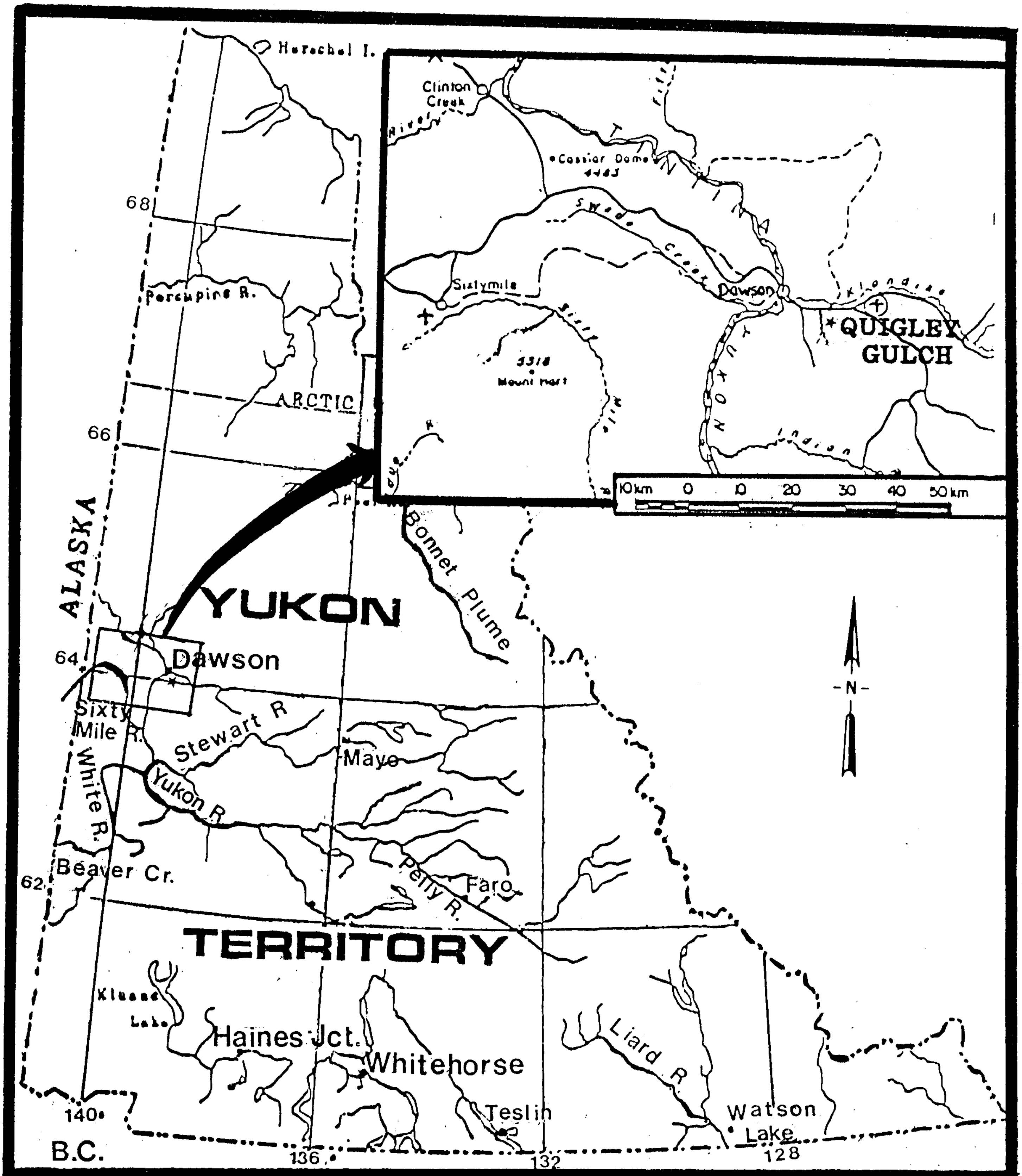
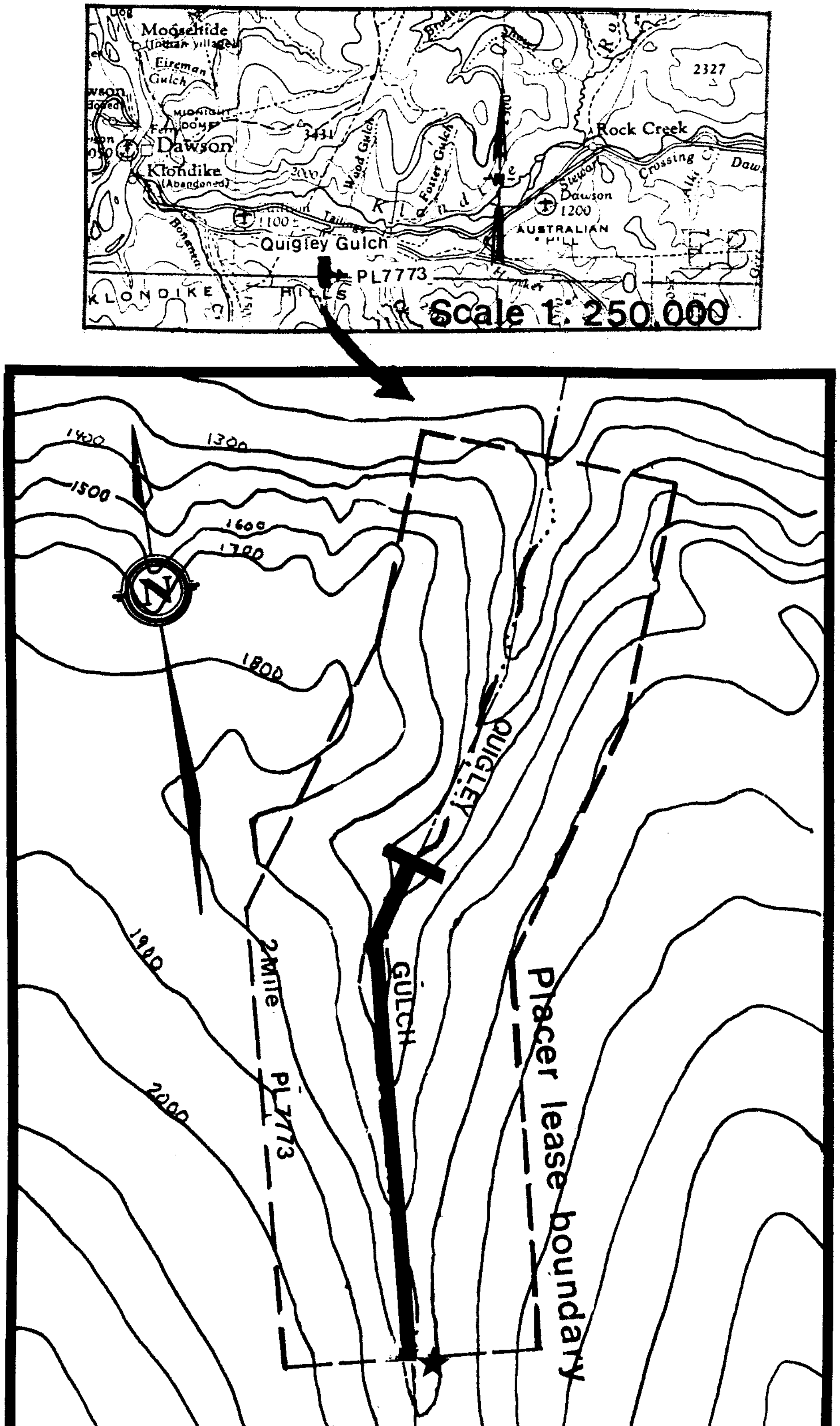


Figure 1

LOCATION MAP

Scale 1: 5,000,000



★ Placer Lease Post

GRID LOCATION MAP

Figure 2

3. SURVEY GRID AND COVERAGE

The survey grid was constructed as follows:

A 1000 m baseline was measured, using a hip chain, and cut to a width of approximately 2 feet. The direction of the baseline changed often according to the general direction of the creek. These changes were measured with a Brunton compass and noted for map compilation. The baseline was flagged every 10 meters and survey lines were cut, with a few exceptions, at ninety degree angles from the baseline (the exceptions are indicated on the profile maps). The survey lines were flagged every five meters.

A property lease map and an outline of the survey grid baseline may be found in Figure 2. The baseline is oriented north-south and the survey lines run approximately east-west. The grid has a total of 100 survey lines.

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

TABLE 1

PRODUCTION SUMMARY: GRADIOMETER SURVEY

LINE	COVERAGE FROM	TO	LINE LENGTH (METRES)
L-1000N	40.0W	20.0E	60.0
L-990N	40.0W	20.0E	60.0
L-980N	45.0W	15.0E	60.0
L-970N	40.0W	20.0E	60.0
L-960N	55.0W	15.0E	70.0
L-950N	40.0W	15.0E	55.0
L-940N	45.0W	10.0E	55.0
L-930N	40.0W	15.0E	55.0
L-920N	40.0W	15.0E	55.0
L-910N	40.0W	15.0E	55.0
L-900N	40.0W	15.0E	55.0
L-890N	40.0W	15.0E	55.0
L-880N	40.0W	15.0E	55.0
L-870N	40.0W	20.0E	60.0
L-860N	40.0W	20.0E	60.0
L-850N	40.0W	15.0E	55.0
L-840N	40.0W	20.0E	60.0
L-830N	45.0W	25.0E	65.0
L-820N	40.0W	15.0E	55.0
Subtotall:			1105.0m

LINE	COVERAGE FROM	TO	LINE LENGTH (METRES)
L-810N	40.0W	10.0E	50.0
L-800N	35.0W	20.0E	55.0
L-790N	40.0W	20.0E	60.0
L-780N	00.0W	15.0E	15.0
L-770N	15.0W	15.0E	30.0
L-760N	20.0W	00.0E	20.0
L-750S	40.0W	20.0E	60.0
L-740S	40.0W	20.0E	60.0
L-730S	40.0W	20.0E	60.0
L-720S	40.0W	20.0E	60.0
L-710S	40.0W	20.0E	60.0
L-700S	40.0W	15.0E	55.0
L-690S	40.0W	20.0E	60.0
L-680S	55.0W	20.0E	75.0
L-670S	40.0W	20.0E	60.0
L-660S	50.0W	20.0E	70.0
L-650S	40.0W	15.0E	55.0
L-640S	65.0W	10.0E	75.0
L-630S	40.0W	15.0E	55.0
L-620S	45.0W	15.0E	60.0
L-610S	40.0W	15.0E	55.0
L-600S	55.0W	15.0E	70.0
L-590S	45.0W	15.0E	60.0
L-580S	65.0W	10.0E	75.0
L-570S	40.0W	15.0E	55.0
L-560S	60.0W	20.0E	80.0
L-550N	40.0W	20.0E	60.0
L-540N	65.0W	15.0E	80.0
L-530N	65.0W	15.0E	80.0
L-520N	65.0W	15.0E	80.0
L-510N	60.0W	15.0E	75.0
L-500N	50.0W	65.0E	115.0
L-490N	35.0W	15.0E	50.0
L-480N	65.0W	10.0E	75.0
L-470N	60.0W	10.0E	70.0
L-460N	65.0W	20.0E	85.0
L-450N	50.0W	30.0E	80.0
L-440N	40.0W	30.0E	70.0
L-430N	35.0W	35.0E	70.0
L-420N	25.0W	40.0E	65.0
L-410N	30.0W	30.0E	60.0
L-400N	35.0W	35.0E	70.0

Subtotal2: 2675.0m

LINE	COVERAGE FROM	TO	LINE LENGTH (METRES)
L-390N	40.0W	30.0E	70.0
L-380N	45.0W	35.0E	80.0
L-370N	45.0W	30.0E	75.0
L-360N	45.0W	30.0E	75.0
L-350N	45.0W	30.0E	75.0
L-340N	35.0W	30.0E	65.0
L-330N	35.0W	30.0E	65.0
L-320N	35.0W	30.0E	65.0
L-310N	35.0W	30.0E	65.0
L-300N	40.0W	30.0E	70.0
L-290N	30.0W	20.0E	50.0
L-280N	30.0W	30.0E	60.0
L-270N	40.0W	30.0E	70.0
L-260N	35.0W	25.0E	60.0
L-250N	30.0W	25.0E	55.0
L-240N	40.0W	40.0E	80.0
L-230N	25.0W	45.0E	70.0
L-220N	20.0W	25.0E	45.0
L-210N	25.0W	25.0E	50.0
L-200N	25.0W	20.0E	45.0
L-190N	35.0W	20.0E	55.0
L-180N	35.0W	20.0E	55.0
L-170N	35.0W	20.0E	55.0
L-160N	30.0W	25.0E	55.0
L-150N	35.0W	25.0E	60.0
L-140N	35.0W	30.0E	65.0
L-130N	30.0W	30.0E	60.0
L-120N	25.0W	60.0E	85.0
L-110N	25.0W	20.0E	45.0
L-100N	25.0W	25.0E	50.0
L-090N	25.0W	25.0E	50.0
L-080N	25.0W	25.0E	50.0
L-070N	30.0W	25.0E	55.0
L-060N	35.0W	40.0E	75.0
L-050N	30.0W	25.0E	55.0
L-040N	30.0W	25.0E	55.0
L-030N	30.0W	15.0E	45.0
L-020N	30.0W	30.0E	60.0
L-010N	25.0W	25.0E	50.0
L-000N	25.0W	25.0E	50.0

Subtotal3	2520.0 m
+ Subtotal2	2675.0 m
+ Subtotal1	1205.0 m
Total	**6200.0 m**

4. PERSONNEL

	FROM	TO
Ms. Mychelle Mollot	July 6, 1988	July 11, 1988
Mr. Andrew Robinson	July 6, 1988	July 7, 1988
Mr. Doug Plant	July 6, 1988	July 11, 1988
Mr. Craig Dunham	July 8, 1988	July 11, 1988
Mr. Claude Turcotte	July 8, 1988	July 11, 1988
Mr. Doug Middleton	July 8, 1988	July 11, 1988
Mr. Mark Bergeron	July 6, 1988	July 9, 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.

Andrew Robinson, Doug Plant, Mark Bergeron, Craig Dunham, Doug Middleton, Claude 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

Quigley 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 (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.

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

Quigley Gulch is situated within the Yukon Crystalline Teheran 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

The majority of Quigley Gulch, is located within the QSd geological unit, which is a division of the quartzfeldspathic schistose rocks, as defined on the 1984, open file, Indian and Northern Affairs Map, Bedrock Geology and Mineralization of the Klondike Area (West) (See Figure 3). The remainder is located within the CSa geological unit, a division of the carbonaceous rocks.

The geological units are defined as follows:

QSd - buff weathering, well foliated, muscovite-feldspar-quartz schist.

CSa - massive to foliated dark grey to black carbonaceous quartzite and muscovite-quartz schist.

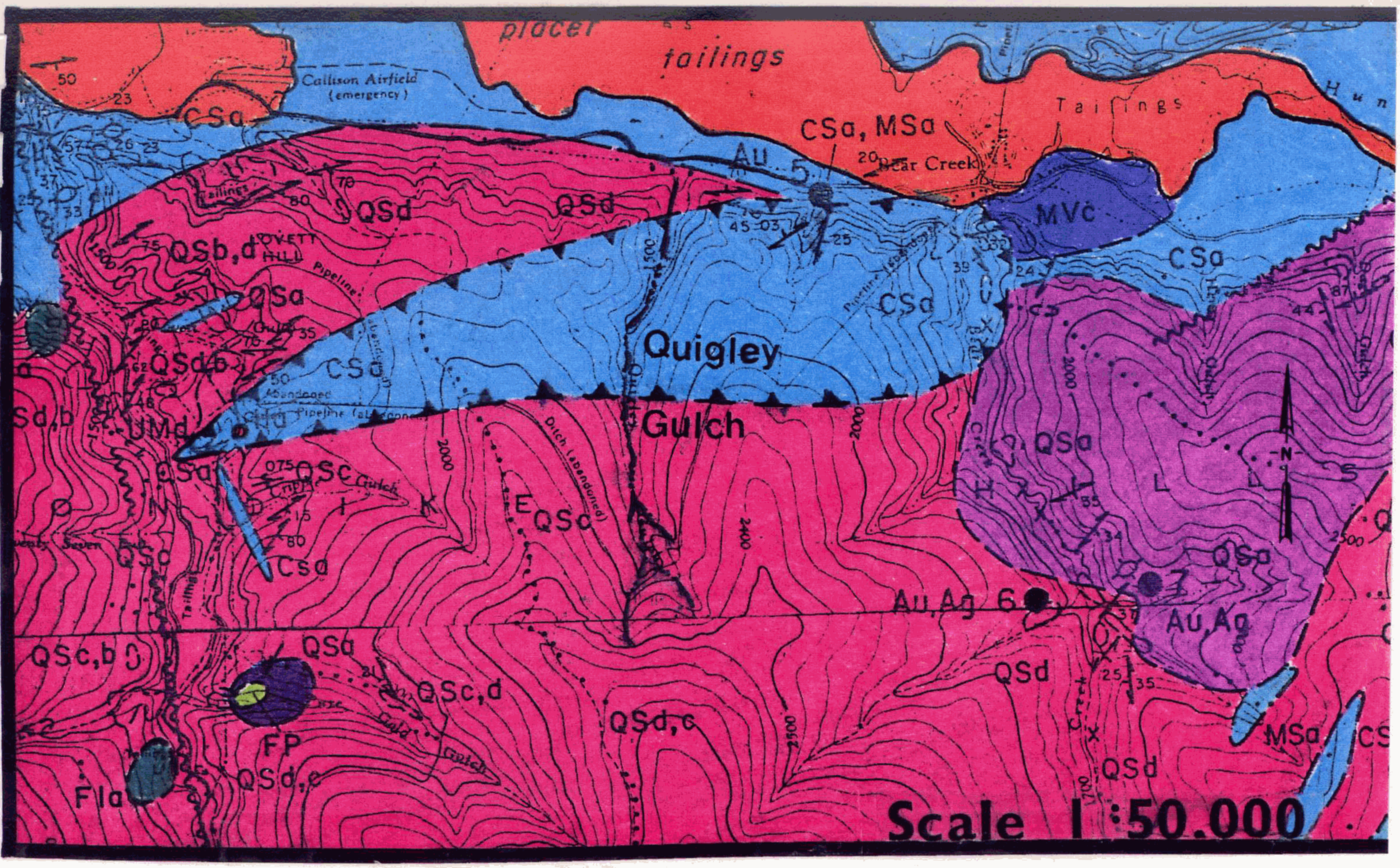
7. THEORY

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.



Geology map

LEGEND

QS QUARTZOFELDSPATHIC SCHISTOSE ROCKS

QSa blocky weathering light grey to pinkish grey feldspar–quartz schist.

QSd buff weathering well foliated muscovite–feldspar–quartz schist.

QSb buff weathering well foliated muscovite–feldspar– quartz schist with quartz and feldspar porphyroclasts, and lithic fragments.

QSc buff weathering well foliated muscovite–feldspar–quartz–schist with quartz porphyroclasts.

CS CARBONACEOUS ROCKS

CSa massive to foliated dark grey to black carbonaceous quartzite and muscovite–quartz schist

FP FELSIC PLUTONIC ROCKS

MP foliated equigranular biotite granodiorite

MV MAFIC METAVOLCANIC ROCKS

MVc foliated andesitic greenstone

FL FELSIC INTRUSIVE AND VOLCANIC ROCKS

FLa light coloured quartz–feldspar rhyolite porphyry

Tailing Piles

Figure 3

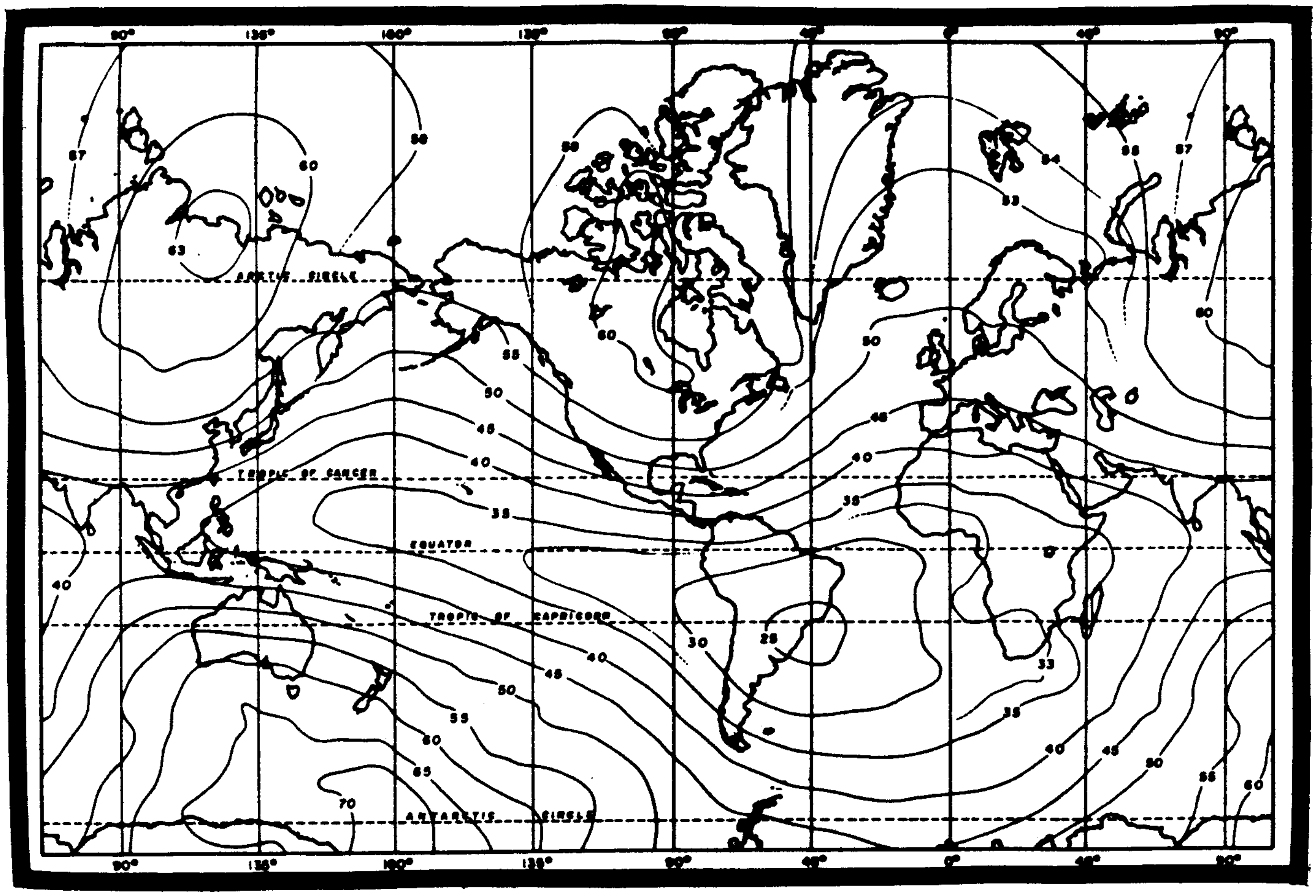


Figure 5

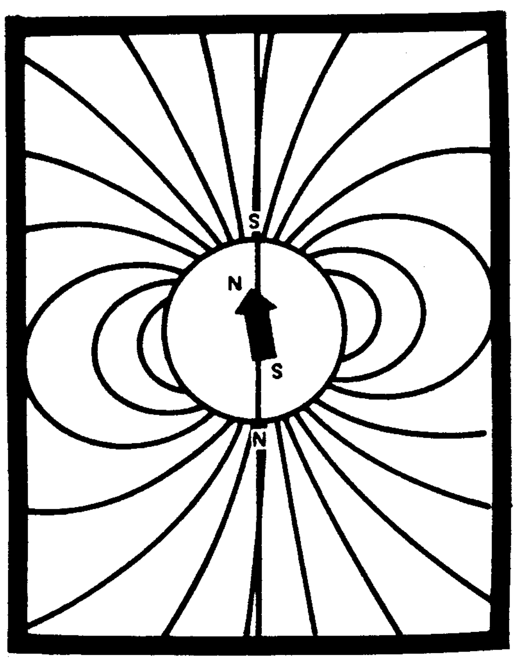


Figure 4

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 magnetite 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 four lines or more.

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

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

The mean total field values increase towards the north or the grid. The general trend of the anomalous zones is north-south while the trend of the regional magnetics is approximately east-west

Total field magnetic values range in amplitude from 56,931 gammas to a maximum value 56,993 gammas.

Following is a description of the high and medium priority zones.

Zone A:

Zone A is characterized, on the profile map, by well defined total field and vertical gradient anomalies which extend from line L-10N, Station 5W, to line L-40N, Station 5W.

The zone is striking approximately north-south as can be seen on the contour maps (Plate 1).

The most promising area of the zone is on line 20N between station 5W and 10W.

Recommendation: Medium Priority Zone, drill or shaft at Station 5W, line L-20N

Zone B:

This zone extends from line L-130N Station 5W to line L-200N station 10W. The first and last lines within the zone have the lowest amplitude anomalies.

The strike of the zone is, as Zone A, north-south. The most promising area within this High Priority zone is at station 10W on line L-190N where the total field and corresponding vertical gradient values are 56971.9 gammas, and 12.4 gammas/m, respectfully.

Recommendation: High Priority Zone, drill or shaft at station 10W line L-190N

Zone C:

This zone extends from line L-880N to line L-910N. The total field anomaly is not present on line L-900N, but as the vertical gradient anomaly is present, the line was included in the zone.

The most promising area of the zone is located on line L-880N at station 15W.

Recommendation: Medium Priority Zone, drill or shaft at station 25W on line L-580N.

Zone D:

Zone D begins at line L-560N and ends with line L-590N. The total field values range from 56970.5 to 56991.1 gammas. The vertical gradient values range from 1.5 gamma/m to 12.8 gamma/m.

The zone trends north-south. The most promising are in the zone is located at station 25W on line L-580N.

Recommendation: Medium Priority Zone, drill or shaft at station 25W on line L-580N.

Single Line Anomalies: Two single line anomalies worthy of mention are located on lines L-850N and L-580N at station 25W. Because no line to line correlation could be made from these anomalies they do not represent a drill or shaft target.

10.0 CONCLUSION

A Gradiometer survey was conducted on Quigley Gulch lease PL-7773 at the request of the property lease holder Roger Garneau between July 6th and July 11th, 1988.

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

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 Zone, drill or shaft at Station 5W, line L-20N

Zone B: High Priority Zone, drill or shaft at station 10W line L-190N

Zone C: Medium Priority Zone, drill or shaft at station 25W on line L-580N.

Zone D: Medium Priority, drill or shaft at Station 15W on line L-880N.

Further detailed gradiometer exploration of the survey grid area is not recommended as the line and station spacings were adequate to delineate anomalies of small amplitude.

A gradiometer survey, at this survey's specifications, of the remaining 2.3 Kilometers of the lease property is recommended.

11.0 **STATEMENT OF COSTS**

For gradiometer survey conducted on Quigley Gulch, placer lease PL-7773

Line Cutters	
4 men, 5 days @ $125/day:	$2500.00
Geophysicist	
Mychelle Mollot, BSc.(Eng), 5 days @ $350/day:	1750.00
Equipment Rental	
EDA Magnetometer plus base station	410.00
Computer, printer and power surge protector	100.00
Report Preparation	
Report writing, drafting, computer consultant, map and figure preparation, binding and photocopying	1200.00
TOTAL COST OF 1988 ASSESSMENT WORK:	**$5560.00**

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

Respectfully Submitted,

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

LEASE HOLDER ROGER GARNEAU		
QUIGLEY GULCH PL-7773		
TOTAL FIELD MAGNETIC SURVEY PLAN MAP AND VERTICAL MAGNETIC GRADIENT PLAN MAP MAG CONTOUR INTERVALS = 2 & 10 GAMMAS MAG POSTED BASE VALUE = 56970 GAMMAS GRADINT CONTOUR INTERVALS = 2 & 10 EDA OMNI IV		
SCALE 1 : 1000		120088 (35)
SURVEY BY MOLLOT LTD. JUNE 1988	COMPILATION BY JVX LTD. AUGUST 1988	PLATE 1

X-ZONE