KIM FERGUSON

TOTAL MAGNETIC FIELD SURVEY OF THE SCROGGIE CREEK PROPERTY, STEWART RIVER AREA, YUKON TERRITORY

Mike Power
AMEROK GEOSCIENCES LTD.

PLACER LEASES
1D00150
1D00151

Location: 63° 09'N, 138° 45'W
NTS: 115 O/2
Mining District: Dawson, YT
Date: July 29, 1999

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 $ 6170.00

W P LeBarge

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

SUMMARY

Total magnetic field surveys were conducted on the Scroggie Creek Property (Placer Leases ID00150 / ID00151) to determine the location of potential auriferous paystreaks in the creek channel. The surveys were conducted by a two-man crew from July 4 to 11, 1999 with helicopter support from Dawson City. A grid consisting of 10.0 line-km turned from a 1.15 line-km base line was installed on the creek. The base line of the survey grid is coincident with the placer lease location line and the survey lines were turned at 50 m intervals along the base line. The magnetic field survey was conducted using a 5 m station spacing along the survey lines. The survey identified two strong anomalies striking roughly E-W, oblique to the trend of the creek. One of the anomalies is coincident with magnetite rich metamorphic bedrock exposures and both anomalies trend subparallel with the mean trend of foliation in the area. A third, weaker anomaly trends parallel with the creek drainage and has an upstream terminus at one of the magnetic field anomalies ascribed to bedrock sources. This anomaly may be caused by placer magnetite.

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1.0 INTRODUCTION

Amerok Geosciences Ltd. was retained by Kim Ferguson to conduct ground total magnetic field surveys on the Scroggie Creek Property. A total of 11 line-km of grid was put in on the property and 10 line-km were surveyed between July 8 to 11, 1999. The survey was conducted to locate magnetite bearing pay streaks along the creek. This report describes the surveys performed, data, results and an interpretation.

2.0 LOCATION AND ACCESS

The Scroggie Creek Property is centred at 63° 09'N, 138° 45'W in the central Yukon Territory on NTS 115 O/2. The property is located 120 km SSE of Dawson City, Yukon (Figure 1) and is accessible by helicopter from Dawson and by winter road from Pelly Crossing. The winter road route to the property is as follows:

Section	Distance
Pelly Crossing to Fort Selkirk branch	44 km
Fort Selkirk branch to Scroggie Creek via Walhalla Creek	72 km

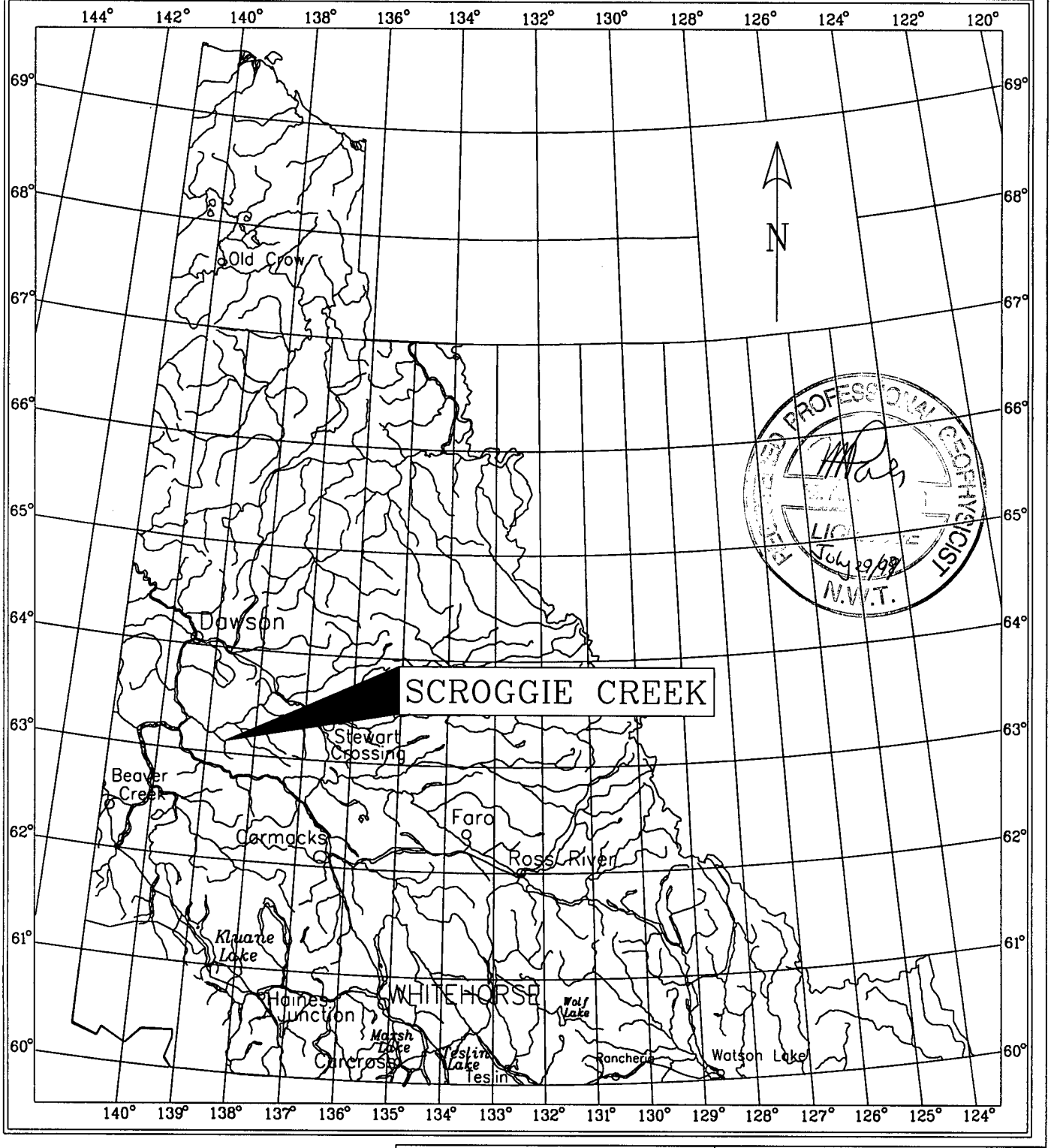
3.0 PROPERTY

The Scroggie Creek Property consists of 2 unsurveyed leases staked under the Yukon Placer Mining Act in the Dawson Mining District. Lease information[1] is summarized below:

Lease No.	Owner	Expiry date
1D00150	Kim Ferguson (100%)	August 19, 1999
1D00151	Kirsty Ferguson (100%)	August 19, 1999

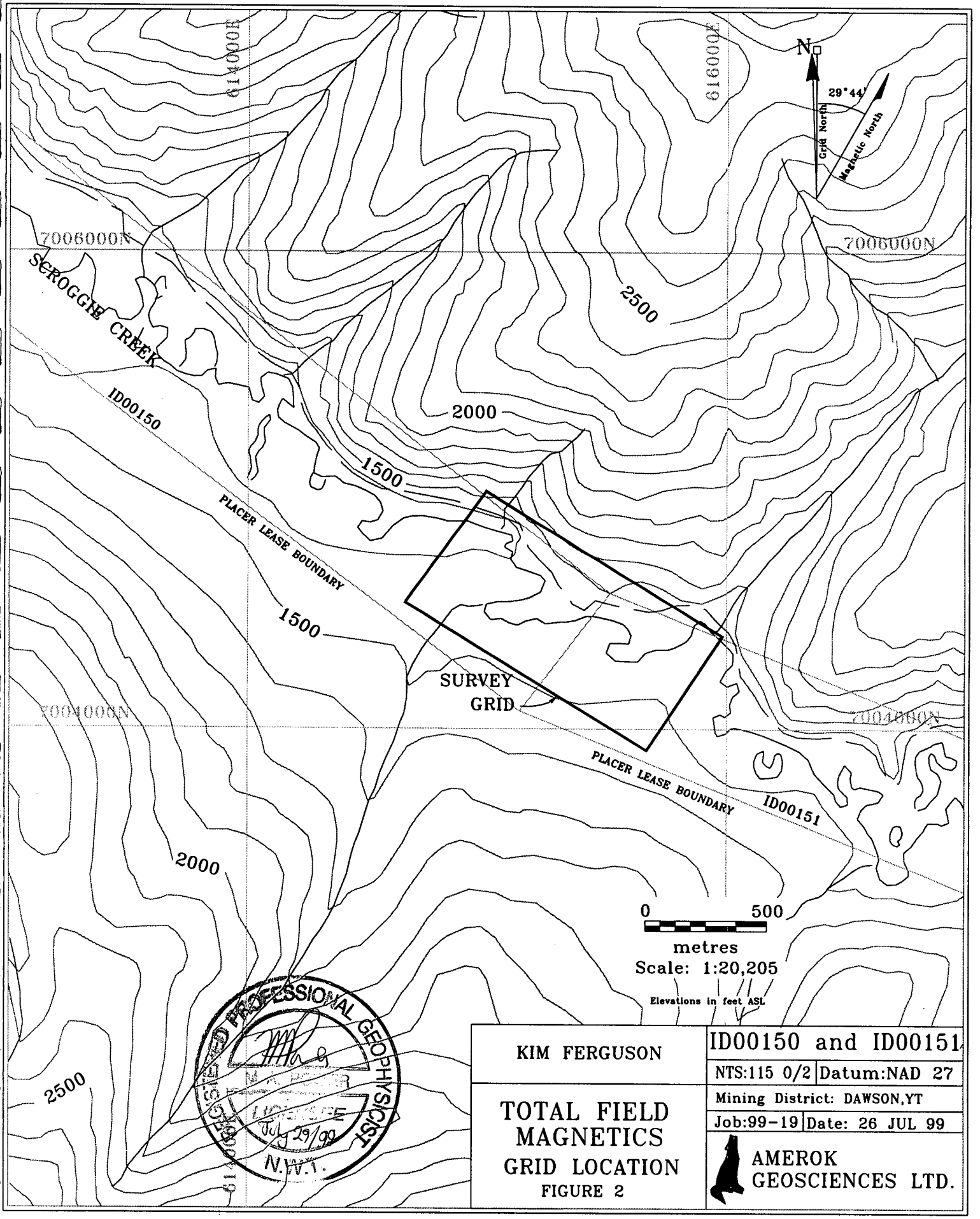
The location of the work area relative to the common lease boundary is shown in Figure 2.

[1]Claim information as provided by the Dawson Mining Recorder on July 27, 1999.



0 200
kilometres

KIM FERGUSON	SCROGGIE CREEK PLACER LEASES: ID00150 + ID00151
PROPERTY LOCATION	MINING DISTRICT: DAWSON,YT
	NTS: 115 O/2 | SCALE 1: 6 000 000
	DRAWN BY GG
AMEROK GEOSCIENCES LTD.	DATE: 27 JUL 1999 | FIGURE: 1



KIM FERGUSON	ID00150 and ID00151
	NTS:115 0/2 | Datum:NAD 27
TOTAL FIELD MAGNETICS GRID LOCATION FIGURE 2	Mining District: DAWSON,YT
	Job:99-19 | Date: 26 JUL 99
	AMEROK GEOSCIENCES LTD.

4.0 PHYSIOLOGY AND GEOLOGY

The geology and physiology of the area containing the property has been described by Carnes (1915). The property is in the Klondike Plateau at elevations ranging from 460 m to 860 m. The area is subject to continental climatic conditions with short, hot, generally dry summers and cold winters. Temperatures range from -20 to -55° C during the winter and from 10 to 30° C in the summer.

The Scroggie Creek Property is located in the Yukon Tanana Terrane of the northern Cordillera. It is underlain Klondike Schist of amphibolite grade and the property area has not been mapped in detail. The survey crew noted magnetite bearing quartz schist with foliation and compositional banding oriented 90° 24° S at one location on the grid. The placer geology of the Scroggie Creek area is briefly summarized by Carne (1915) in a report on a visit to the creek. Tertiary placer gravels occur in both the creek bottom and in benches although mining at the time was confined to the creek bottom. Both open cut and underground drifting were used to mine the creek gravels. The area is unglaciated and both types of placer gravels are not covered by extensive overburden. The creek has seen extensive production since the discovery of gold on the creek in 1898 with most activity concentrated upstream of the lease locations.

5.0 SURVEY GRID

The geophysical surveys were conducted on a flagged grid centred roughly on the common boundary between the two leases (Figure 2). The grid consists of 10.0 line-km of survey lines turned from a 1.150 km base line oriented at 304°. The base line is parallel to the mean trend of Scroggie Creek in the local area. Lines were straight chained and flagged at 20 m intervals. The were put in by looping from the base line and are shown in their nominal locations on the data plots. The grid was registered to UTM coordinates by taking repeated measurements at one location and by fitting the map to the topography as indicated on NTS map 115 O/2.

6.0 PERSONNEL AND EQUIPMENT

The surveys were conducted by Gary Lee P. Eng. (Crew chief) and Dan Hall (Technician). They were equipped with the following instruments and equipment:

Field unit: 2 - GEM Overhauser effect proton magnetometers.

Base magnetometer: 1 - GEM proton precession magnetometer

Data processing: 486 laptop and HP 340C colour printer. Data

processing with Geopak software and proprietary data conversion software.

Other equipment: 4WD truck, camp and line cutting equipment.

The geophysical crew spent a total of 4 days on the property. The geophysical survey log is attached as Appendix B.

7.0 SURVEY SPECIFICATIONS

The magnetometer surveys were conducted according to the following specifications:

Station spacing: 5 m

Base station magnetometer: installed on the survey grid and cycled at maximum 15 s throughout the survey.

Levelling: the same operator collected the magnetic field data and no levelling was consequently necessary.

8.0 MAGNETIC FIELD THEORY

Magnetic field theory is well described in standard texts (eg. Telford *et. al.* 1990). In a placer setting, magnetite derived from bedrock weathering is concentrated in the main channel of a creek or river (thalweg) where the water flow has the highest velocity and greatest turbulence. As a result, minerals with high specific gravity (magnetite, ilmenite, gold, etc.) are preferentially concentrated in this region of the stream bed as material with lower specific gravity is winnowed from the sediment. High concentrations of "black sand" (magnetite, ilmenite, chromite) are often recorded in auriferous pay streaks where the stream bed has remained relatively immobile for some period, permitting hydraulic concentration to build up a significant volume of these minerals.

The materials comprising black sand are magnetically susceptible. Magnetite has a very high magnetic susceptibility of 1200-19200x10^{-3} SI units, ilmenite ranges from 300-3500x10^{-3} SI units, and chromite from 3-110x10^{-3} SI units. Average magnetic susceptibilities for sedimentary, igneous (excluding ultramafic) and metamorphic rocks are 0-18, 3-160 and 0-70 x10^{-3} SI units and the magnetic susceptibility of fluvial sediments is in the range 0-2x10^{-3} SI units. There is consequently a significant susceptibility contrast between gravels with elevated concentrations of black sand and both bedrock and average gravels.

9.0 RESULTS

Digital data is appended to this report on disk. The magnetic field data is in the following format:

Line Station UTM_E UTM_N Corr_field

where Corr_field is the corrected magnetic field. The following plots at 1:5,000 are included:

Figure 3. Total magnetic field stacked profiles

Figure 4. Total magnetic field contour map

The total magnetic field identified several significant features. These are discussed in turn.

Anomaly **A** extends from L7350E 100S to L7550E 30S with a possible extension to the northeast. The response consists of an asymmetric rounded high with a subsidiary trough on the north side of the peak positive response. The half-width of the high is in the order of 50 m.

Anomaly **B** extends from L7900E 250S to L8100E 275S. The response consists of a rounded high with a half-width in the order of 75 to 100 m. There is little or no north side negative response, suggesting that the feature may be limited in depth extent.

Anomaly **C** extends from L8200E 150S to L8500E 15S. The response consists of a sharp high with a pronounced north-side trough. There is a 30 to 40 m separation between the peak and trough and additional subsidiary peaks to the south of the main response. At L8450E 50S, magnetite bearing schist occurs in bedrock with compositional banding and foliation oriented at 90° 24° S. Both anomalies **A** and **C** tend to follow the same general trend oblique to the creek valley (100^0) whereas the trend of anomaly **B** is roughly parallel to the creek axis.

Anomaly **A** appears to be caused by bedrock. The anomaly is coincident with a bedrock outcrop containing magnetite, has a strike parallel to foliation and has a response which could be caused by this rock unit. Figure 5 illustrates the response of a bedrock feature with orientation and magnetic properties similar to that of the bed observed in outcrop. The local magnetic field properties were calculated using the USGS IGRFPT program to calculate the International Geomagnetic Reference Field and the model response was calculated using Geopak Revs. The magnetic field response is reasonably approximated by the model response suggesting that the source of the anomaly is bedrock. Anomaly **C** is ascribed to a similar source based on the similar strike and shape of the anomaly.

31° 44

Total field

57,300 57,600

Total magnetic field (nT)

500,000E UTM Registration Point
6,600,000N

0 200

metres

Scale: 1:5,000

KIM FERGUSON

ID00150 - ID00151

TOTAL MAGNETIC FIELD
STACKED PROFILES
FIGURE 3.

NTS: 1150/2 | Datum: NAD27

Mining District: Dawson, YT

Job: 99-19 | Date: 23 JUL 99

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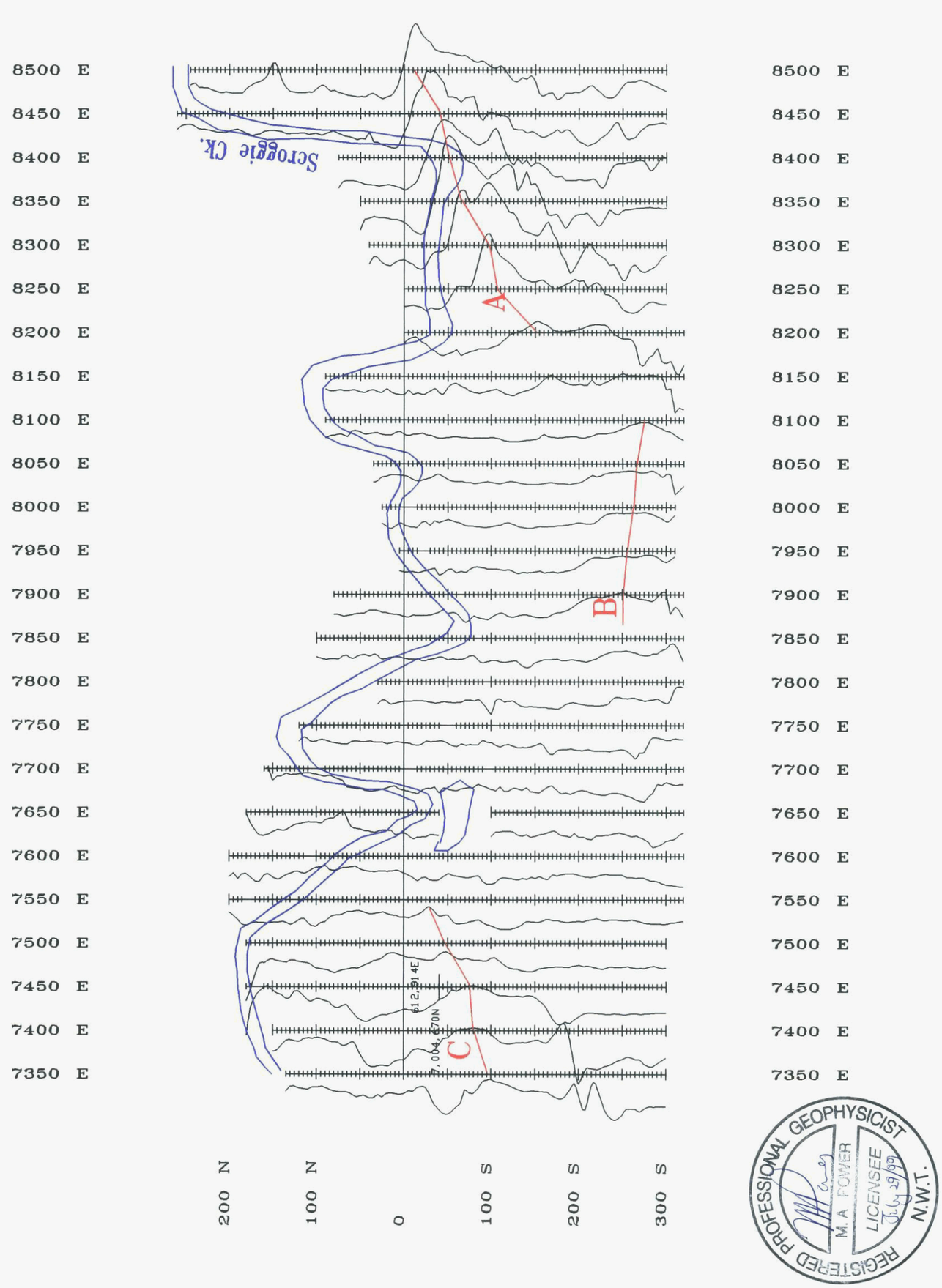

REGISTERED PROFESSIONAL GEOPHYSICIST
M.A. POWER
LICENSEE
N.W.T.

12018!

31°44

57550.00
57540.00
57530.00
57520.00
57510.00
57500.00
57490.00
57480.00
57470.00
57460.00
57450.00
57440.00
57430.00
57420.00
57410.00
57400.00
57390.00
57380.00
57370.00
57360.00
57350.00

Total Magnetic Field (nT)
GRID CELL SIZE: 5 m

500,000E UTM
6,600,000N Registration Point

0 200
metres
Scale: 1:5,000

KIM FERGUSON

ID00150 - ID00151

TOTAL MAGNETIC FIELD
CONTOUR MAP
FIGURE 4.

NTS: 1150/2 | Datum: NAD27
Mining District: Dawson, YT
Job: 99-19 | Date: 23 JUL 99

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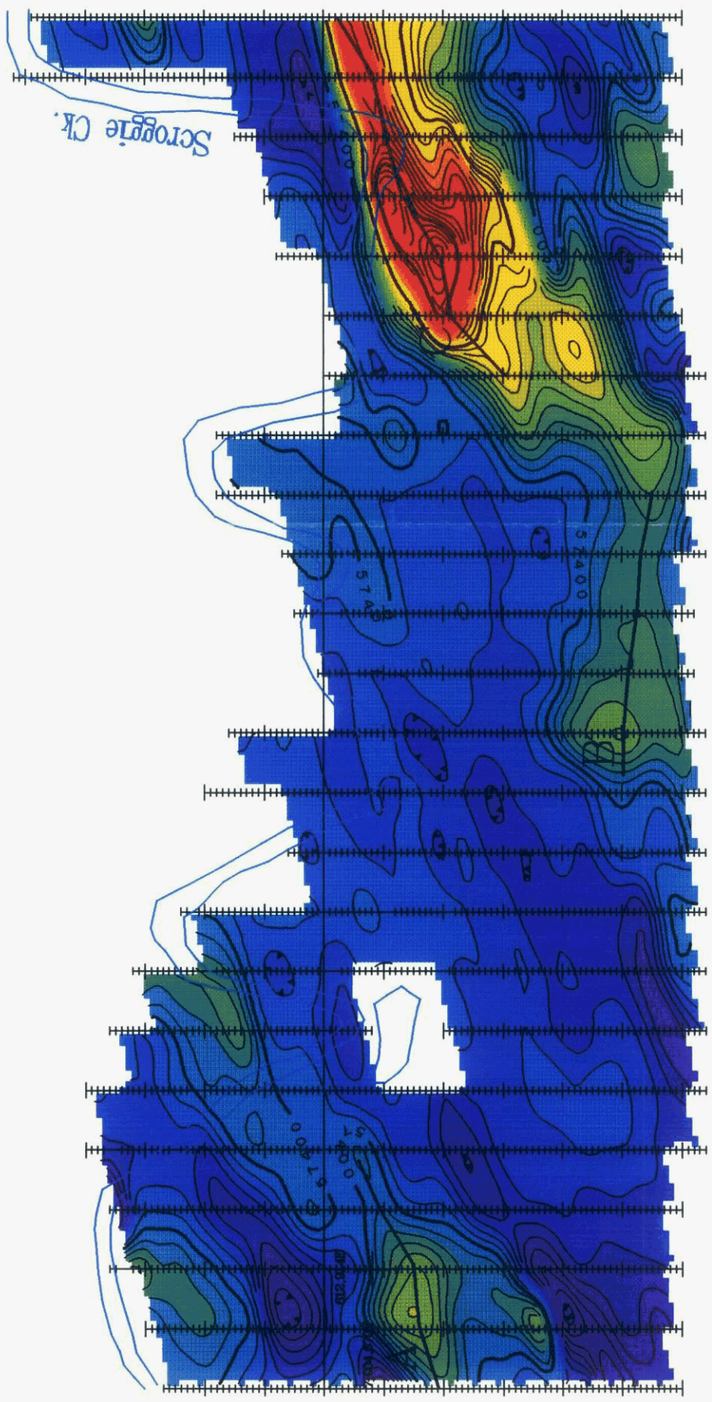
200 N 100 N 0 100 S 200 S 300 S

8500 E 8450 E 8400 E 8350 E 8300 E 8250 E 8200 E 8150 E 8100 E 8050 E 8000 E 7950 E 7900 E 7850 E 7800 E 7750 E 7700 E 7650 E 7600 E 7550 E 7500 E 7450 E 7400 E 7350 E



200 N 100 N 0 100 S 200 S 300 S

REGISTERED PROFESSIONAL GEOPHYSICIST
M.A.P.
LICENCE
July 29/99
N.W.T.

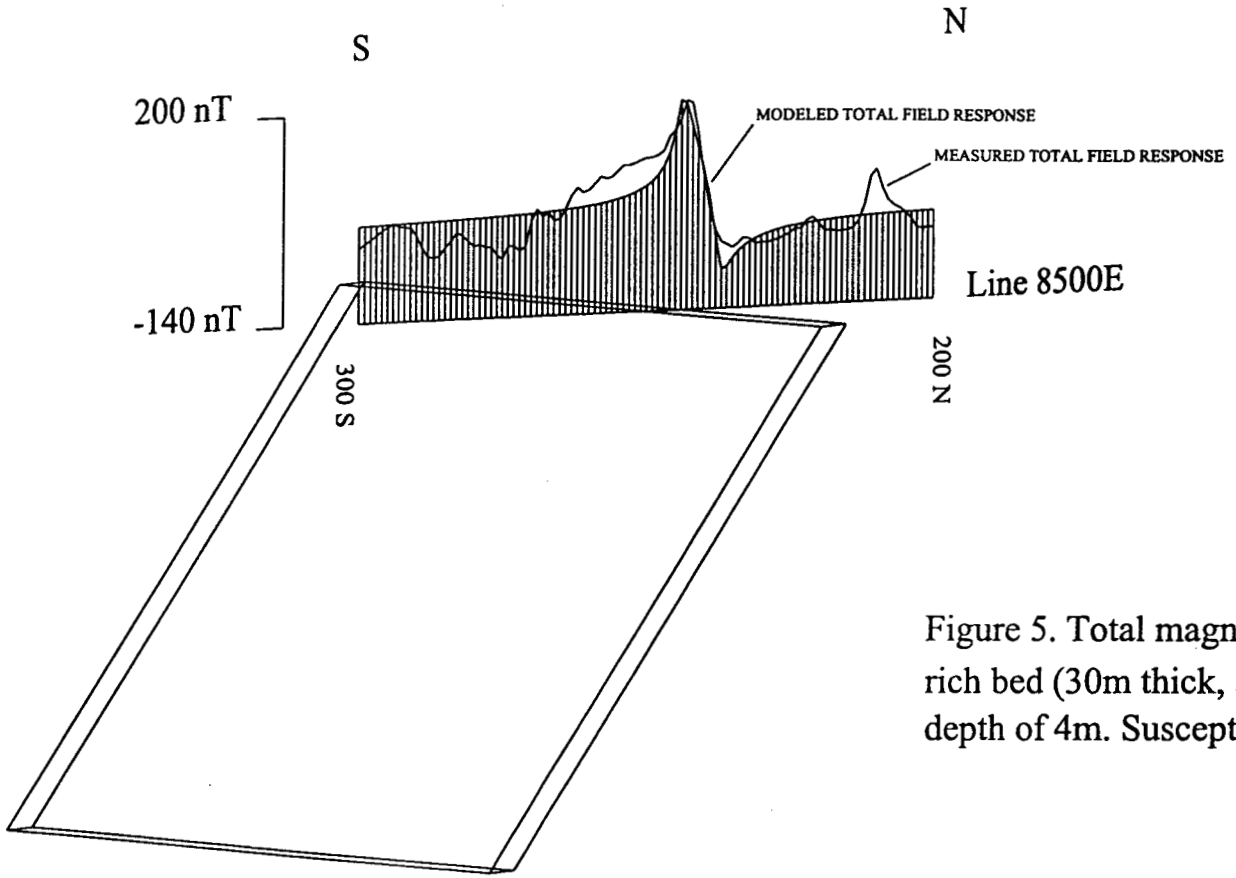


Figure 5. Total magnetic field response of a magnetite rich bed (30m thick, striking 100°,dipping 45°) at a depth of 4m. Susceptibility contrast at 0.001 SI

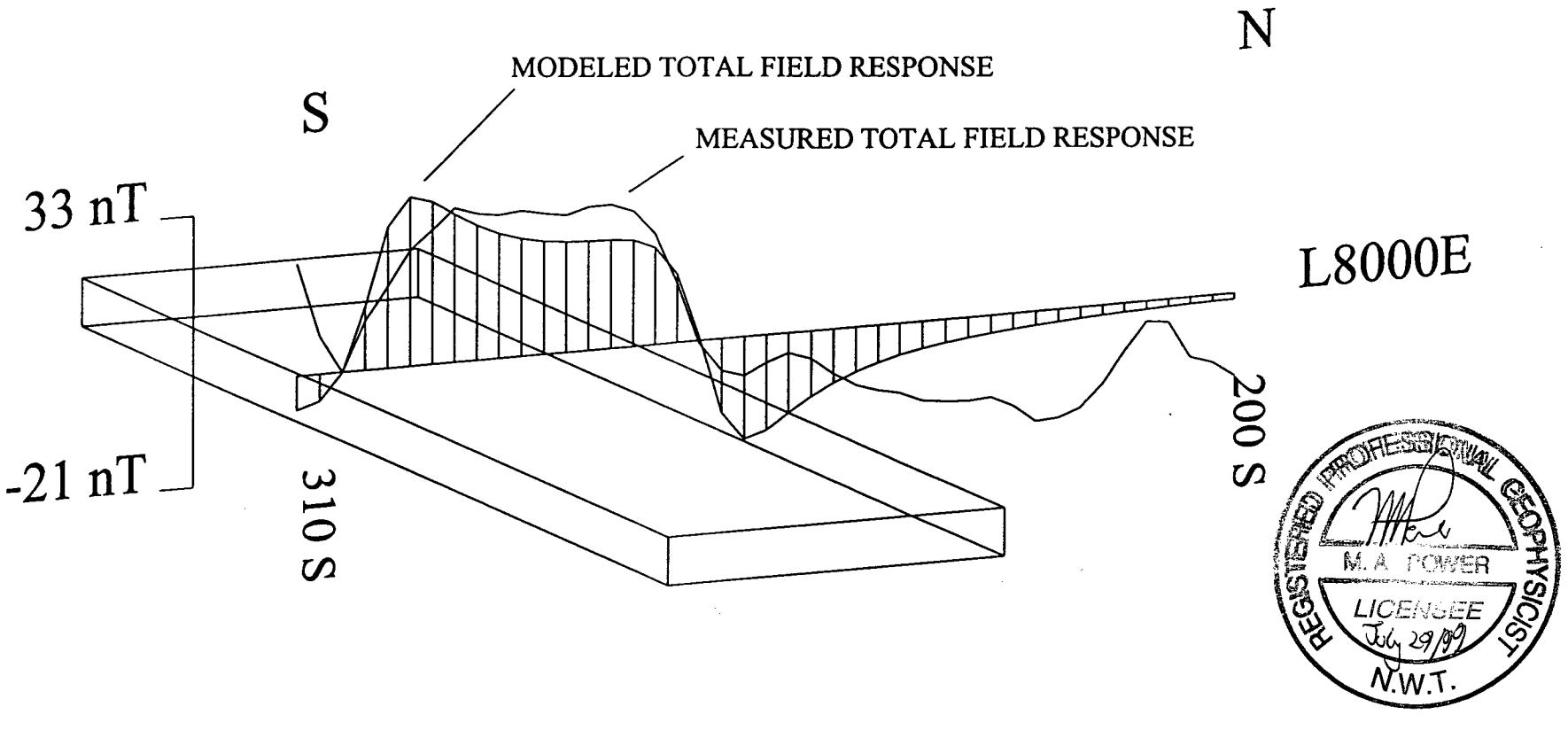


Figure 6. Total magnetic field response of a magnetite rich placer deposit (300m x 75m x 10m thick) at a depth of 8m. Strike is perpendicular to grid (124°). Susceptibility contrast is 0.00045.

Anomaly **B** could be caused by placer magnetite. The lack of a strong north-side low, the relatively weak response and the strike of the anomaly parallel to the creek suggest that it may be caused by placer magnetite. The response of a placer deposit in this setting was also modeled (Figure 6.). A placer deposit at a depth of approximately 8 m (6 m below ground level) produces a response which explains many of the features observed in the field response. More complex models incorporating a thickened central zone beneath the sheet improve the match between the field and model response. The modeling suggests that anomaly **B** may be caused by placer magnetite.

10.0 CONCLUSIONS

The results of the total magnetic field survey conducted on the Scroggie Creek Property indicate the following conclusions:

a. Three anomalies were detected during the survey. Anomalies **A** and **C** appear to be caused by bedrock. Anomaly **B**, extending from L7900E 250S to L8100E 275S may be caused by placer magnetite.

b. The source of anomaly **B** appears to be shallow (6 to 8 m) and could readily be tested by excavation.

11.0 RECOMMENDATIONS

The following recommendations are made based on the conclusions of this work:

a. Anomaly **B** should be tested by excavation or shafting to determine the source of the anomaly.

b. If anomaly **B** is caused by placer magnetite, additional magnetic field surveys should be conducted to locate additional paystreaks.

Respectfully submitted,
AMEROK GEOSCIENCES LTD.

REGISTERED PROFESSIONAL GEOPHYSICIST
M.A. POWER
LICENSED
July 29/93

Michael A. Power, M.Sc. P.Geo.
Geophysicist

References Cited

Carnes, D.D. (1915). Scroggie, Barker, Thistle and Kirkman Creeks, Yukon Territory. in: Bostock, H.S. (ed.) Selected field reports of the Geological Survey of Canada 1898 - 1933. Ottawa: GSC Memoir 284.

Telford, W.M., L.P. Geldart and R.E. Sheriff (1990) Applied Geophysics (2nd Edition) New York: Cambridge University Press.

APPENDIX A. CERTIFICATE

I, Michael Allan Power, with residence and business address in Whitehorse, Yukon Territory do hereby certify that:

1. I hold a B.Sc. (Honours) in Geology granted in 1986 and M.Sc. in Geophysics granted in 1988, both from the University of Alberta.

2. I have been actively involved in mineral exploration in the northern Cordillera and in the Northwest Territories since 1988. I am a professional geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia (Registration number 21131) and licensed by the Northwest Territories Association of Engineers, Geologists and Geophysicists (Licence L942).

3. I supervised the geophysical surveys described in this report, interpreted the data collected and prepared this report.

4. I have no interest, direct or indirect, nor do I hope to receive any interest, direct or indirect, in the property of Kim Ferguson.

Dated this 29th day of July in Whitehorse, Yukon Territory.

REGISTERED PROFESSIONAL GEOPHYSICIST
M. A. POWER
LICENSEE
July 29/99

THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF THE NORTHWEST TERRITORIES
PERMIT HOLDER
July 29/99
AMEROK GEOSCIENCES LTD.

Michael A. Power, M.Sc. P.Geo.
Geophysicist

APPENDIX B. SURVEY LOG

Sun 04 JUL 99	Mob Whitehorse to Dawson. Attempted to fly to Scroggie, turned back due to heavy smoke. Overnight in Dawson.
Mon 05 JUL 99	Waiting for chopper until mid-morning when finally cancelled. Mobe to Wounded Moose Drove to wash-out, 2.5 kms from grid, set-up camp. Extended grid to south by 500m. Production : 3.4 line-km (grid)
Tue 06 JUL 99	Finished grid extensions and surveyed entire extension. Overnight at camp, as chopper unavailable. Production : 1.7 line-km (grid) 5.3 line-km (mag)
Wed 07 JUL 99	Drove to Dawson; tried to arrange chopper but fire flap was on. Mobe to Scroggie in the evening at 2000 hrs with first available chopper. Set-up camp until 23:00 hrs.
Thu 08 JUL 99	Reconnoitred property, located posts and old baseline. Flagged baseline and grid (1D00150 / 1D00151). Production : 2.0 line-km (grid)
Fri 09 JUL 99	Flagged grid and ran mag survey on 1D00150. Production: 3 line-km (grid) 3.6 line-km (mag)
Sat 10 JUL 99	Gridded and surveyed on 1D00151. Fresh kill with wolves and ravens in the vicinity on the grid. Production : 4.0 line-km (grid) 4.0 line-km (mag)

Sun 11 JUL 99 Grid and mag survey on 1D00150. Break camp; demobe to Dawson late evening. Overnight in Dawson.

Production : 2.0 line-km (grid)
3.0 line-km (mag)

Personnel:

Gary Lee
Box 5348
Whitehorse YT
Y1A 4Z2

Dan Hall
1 Bates Cresc.
Whitehorse, YT
Y1A 2T8

Summary:

Property	Crew-days
Scroggie Creek (1D00150)	2.5
Scroggie Creek (1D00151)	1.5
Standby (Scroggie)	1.0
Wounded Moose / Australia	2.0

APPENDIX C. STATEMENT OF EXPENDITURES

Mobe / demobe	
Crew charges	$2,033
Helicopter	$3,332
Geophysical surveys	
Scroggie Creek - 4 days @ $990	$4,237
Scroggie Creek - Standby	$428
Wounded Moose / Australia Creeks	$2,119
Reports & expenses	
Scroggie Creek	$963
Wounded Moose / Australia Creeks	$375
Room & Board - Dawson (Scroggie demobe)	$214
Total project expenses	***$13,701***

Expenses, apportioned to each property on the basis of time spent on each, are summarized below:

Property	Amount
Scroggie 5 Mile lease (1D00150)	$6,170
Scroggie 4 Mile lease (1D00151)	$4,446
Wounded Moose / Australia Creeks	$3,085

I certify that these expenses are correct to the best of my knowledge.

REGISTERED PROFESSIONAL GEOPHYSICIST LICENSEE July 29/99 N.W.T.

Michael A. Power, M.Sc., P.Geo.
Geophysicist