093974

COMINCO LTD.

EXPLORATION

CANADA

NTS 105G8

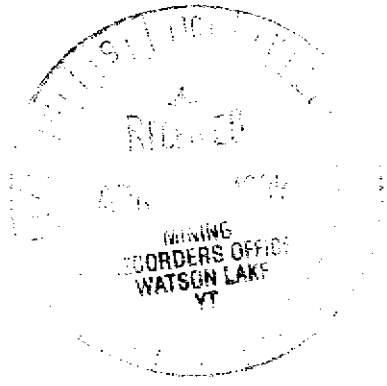
1999 ASSESSMENT REPORT

ANG PROPERTY

GROUND GEOPHYSICAL SURVEYS (HLEM/MAG)

WATSON LAKE M.D., YUKON

WOLVERINE LAKE AREA



WORK PERIOD

MARCH 1-12, 1999

LATITUDE: 61°24'

LONGITUDE: 130°17'

2 of 2

APRIL 1999

PAUL A. MacROBBIE
ROBERT W. HOLROYD

This report has been examined by
the Geological Evaluation Unit
under Section 53 (4) Yukon Quartz
Mining Act and is allowed as
representation work in the amount
of $ 12,100 .

M. B.

for Regional Manager, Exploration and
Geological Services for Commissioner
of Yukon Territory.

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Cominco Ltd.
Exploration
NTS: 105 G 80

Canada
April, 1999

1999 ASSESSMENT REPORT
ANG PROPERTY, YUKON TERRITORY

1.0 SUMMARY

The rocks underlying this part of the southeastern Yukon have been assigned to two terranes: the Yukon Tanana Terrane (YTT) and the Slide Mountain Terrane (SMT). Recent geological mapping by Murphy (1997, 1998), Hunt and Murphy (1998) and Murphy and Piercey (1998) in the Grass Lakes, Fire Lake and Wolverine Lake areas has subdivided the YTT into 7 units. Two significant, felsic hosted VMS deposits have been discovered in this belt in recent years. The ABM VMS Deposit is hosted in a thick accumulation of Unit 3 felsic metavolcanics. Unit 3 comprises a mixed sequence of felsic metavolcanic schist (meta-tuff) and feldspar±quartz augened schist (meta-porphyry) with lesser calcareous psammite, mafic metavolcanic schists and black, carbonaceous phyllite. Mortensen (1983a) has reported Lower Mississippian U-Pb ages from Unit 3 felsic metavolcanic rocks. The Wolverine/Lynx VMS Deposit is hosted in Unit 6 which comprises thinly bedded, pale coloured siliceous rocks (meta-exhalite) with associated barite-magnetite Fe-formations and light coloured phyllite with intercalated dark grey to black phyllite. Unit 6 is thought to be Mississippian to Pennsylvanian in age.

The ANG Property is underlain by a sequence of favourable, felsic metavolcanic quartz±feldspar and feldspar phyric schists (QFP/FP intrusives) and fine granular quartz-sercite±biotite-chlorite schists (tuffs and lesser flow/sills) and lesser mafic metavolcanic schists and phyllites. This sequence is equivalent to that hosting the ABM Deposit.

The 1999 field program was conducted in early March and involved ground geophysical surveys (HLEM/MAG) on 2 grids. These 2 identical grids totalled 7.6 lkms and were established with hard chain and compass. A total of 6.4 lkms of HLEM and 7.6 lkms of MAG were completed on both grids.

The surveys on the ANG1 grid identified two sub-parallel, narrow, weak conductors which flank magnetic horizons. On the ANG2 grid, HLEM and magnetics surveys identified a weak conductor with a moderate magnetic signature.

The conductors on both grids, ANG1 and ANG2, do not represent significant massive sulphide targets. No additional work is required at this time.

2.0 LOCATION AND ACCESS

The ANG Property is located on the northern flank of the Pelly Mountain range, 150 km south of Ross River, Yukon (Figure 1). The area is accessed by the gravel, all-weather Robert Campbell Highway which links the towns of Watson Lake and Ross River. The property is situated 5 kms southwest of Wolverine Lake, 15 kms southeast of the ABM VMS Deposit and 9 kms west-southwest of the Wolverine/Lynx VHMS Deposit (Figure 2). In 1999, access was via a 18 km snowmobile trail established from Cominco's KZK camp.

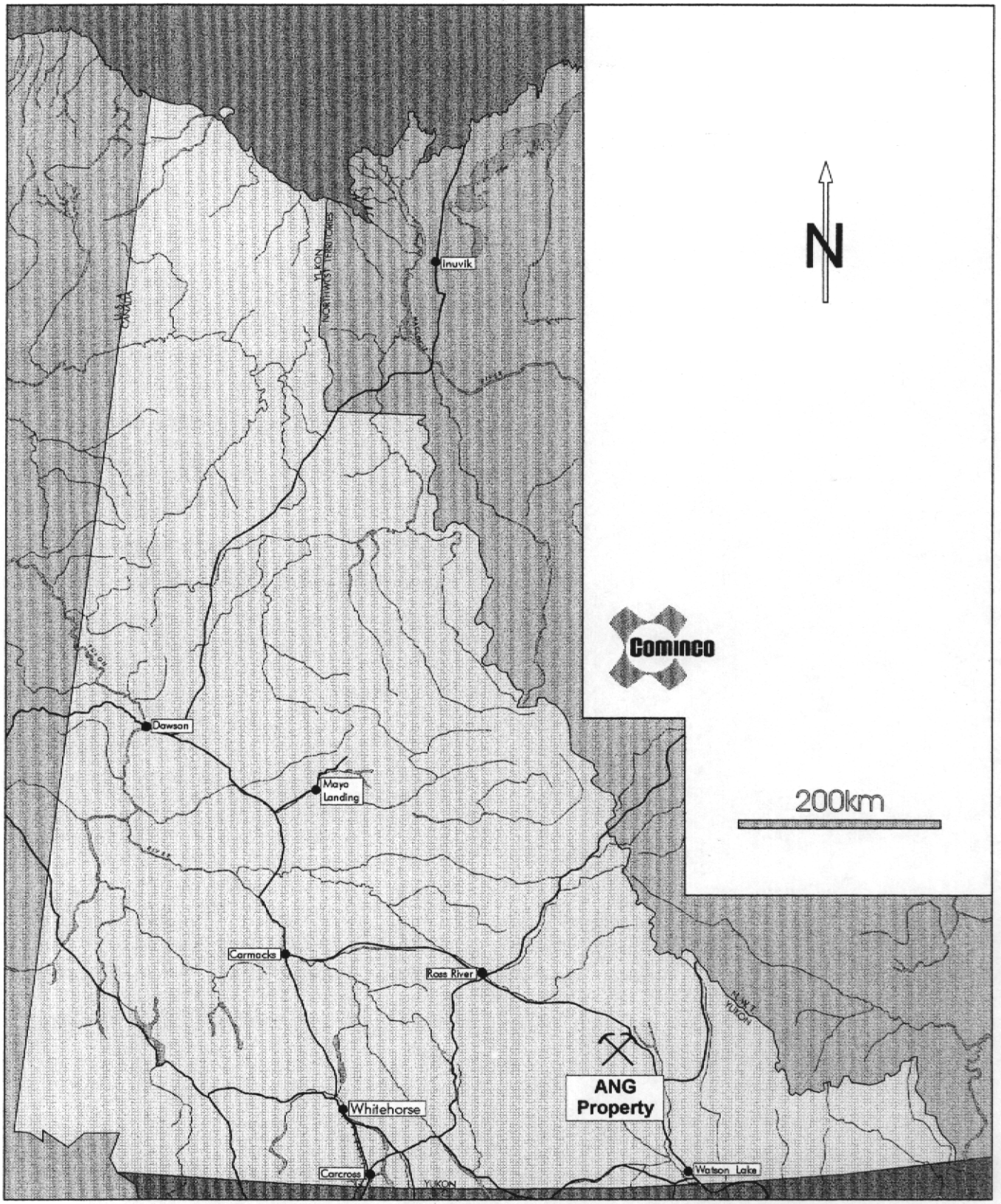
3.0 PROPERTIES AND OWNERSHIP

The ANG Property comprises 39 mineral claims owned 100% by Cominco and listed as follows:

NAME	UNITS	CLAIM NO.	DUE DATES
ANG 1-39	39	YB71309-347	April 2, 1999

4.0 PREVIOUS WORK

Cominco's interest in the area peaked in 1995/96 with the discovery of the ABM VMS Deposit (mineable reserve of 11.3 Mt grading 0.9% Cu, 1.5% Pb, 5.9% Zn, 133g/t Ag and 1.3g/t Au) in 1994 and the subsequent discovery of the



ANG
PROPERTY LOCATION

105 H/5

	Scale: As Shown	Date: March 1999	Plate: 1

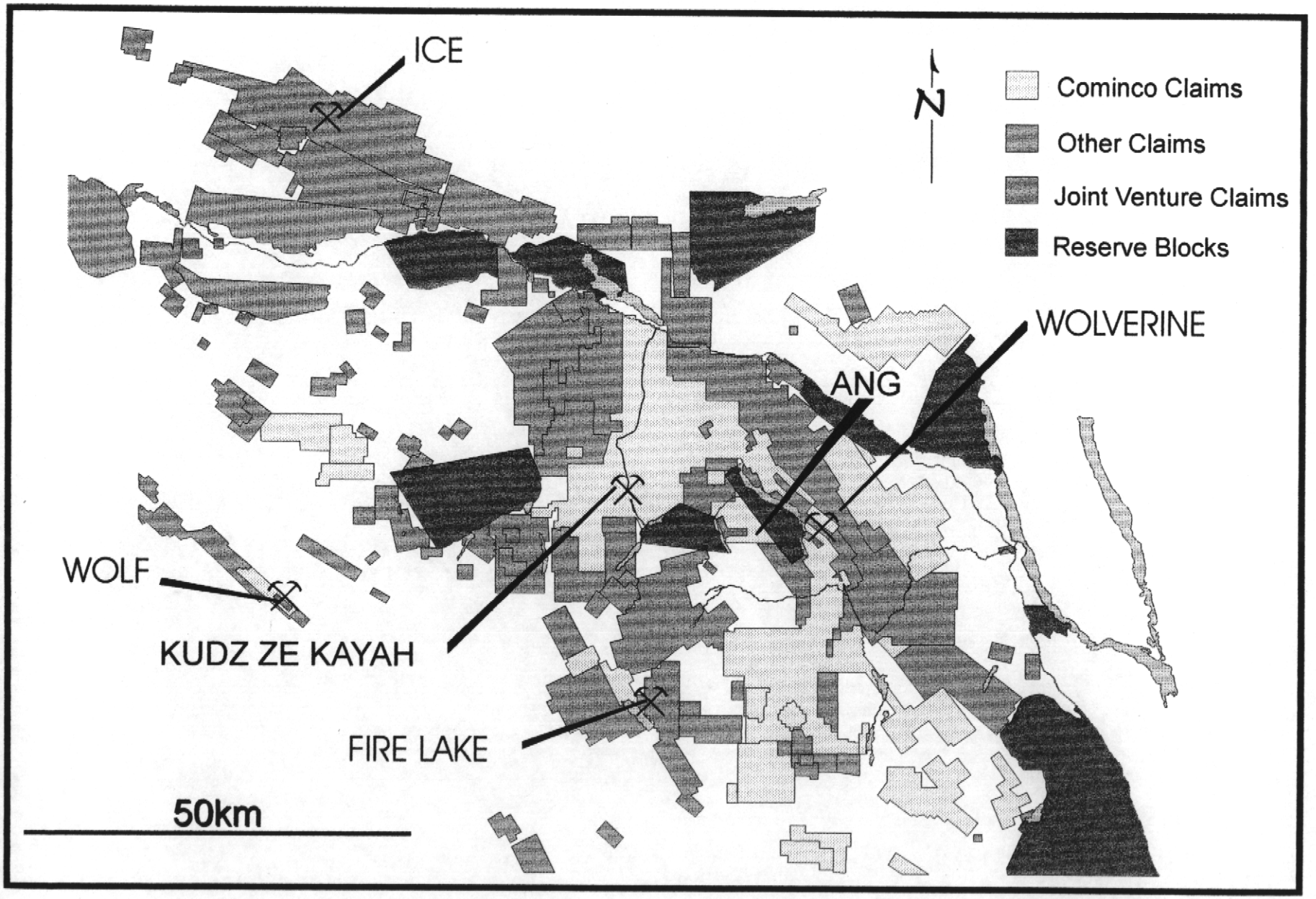

ICE
N
Cominco Claims
Other Claims
Joint Venture Claims
Reserve Blocks
WOLVERINE
ANG
WOLF
KUDZ ZE KAYAH
FIRE LAKE
50km

figure 2

Wolverine/Lynx VMS Deposit (insitu resource of >6.2 Mt grading 1.3% Cu, 1.6% Pb, 12.7% Zn, 371g/t Ag and 1.8g/t Au) in 1995.

The ANG Property was staked by Cominco in 1995 to cover areas of favourable geology with good VMS potential, stratigically located between the 2 newly discovered deposits and on strike with a mineral showing on the adjacent REDLINE Property.

With the exception of an AEM/AMAG survey flown in 1995 and recce scale geological mapping, Cominco has not conducted any ground exploration program on the property. The AEM/AMAG survey identified 2 weak EM conductors on the property which are the subject of the 1999 exploration program.

Other properties in the immediate ANG area include the adjacent REDLINE Property (Expatriate; drilled 6 DDHs in 1996 targetting a multi-element soil anomaly in felsic metavolcanics with no significant results) to the west and the adjoining ON Property (Cominco and Cominco/Expatriate/Atna JV; drilled 1 DDH targetting a UTEM anomaly with a supporting, multi-element soil anomaly with no significant results) to the north.

5.0 REGIONAL GEOLOGY

The rocks underlying this part of the southeastern Yukon have been assigned to two terranes: the Yukon Tanana *Terrane (YTT) and the Slide Mountain Terrane* (SMT) (Figure 4) (Mortensen, 1983a; Mortensen and Jilson, 1985).

Recent geological mapping by Murphy (1997, 1998), Hunt and Murphy (1998) and Murphy and Piercey (1998) in the Grass Lakes, Fire Lake and Wolverine Lake areas has subdivided the YTT into 7 units.

The lower most unit (**Unit 1**) comprises a mixed sequence dominated by quartzose psammite and metapelite with minor felsic metavolcanic schist, calcareous schist/metapelite and marble members. Felsic metavolcanic members locally host minor sulphide (py±sp-ga-cpy) occurrences. The age of this unit is uncertain, but presumed to be pre-Mississippian. This unit would correlate with the pre-Devonian (?) "*lower unit*" as described by Mortensen (1983a).

The overlying 6 units, described below, would correlate to the Devono-Mississippian "*middle unit*" as described by Mortensen (1983a).

Unit 2 consists of mafic metavolcanic schist and phyllites with very minor carbonaceous phyllite, quartzite and rare marble. Locally significant meta-gabbro, meta-pyroxenite and meta-ultramafic bodies are present representing comagmatic intrusions. Columbia Gold's Fyre Lake Deposit is a significant besshi-type, Cu-Co-Au VMS deposit *hosted by mafic metavolcanics at the top of* Unit 2.

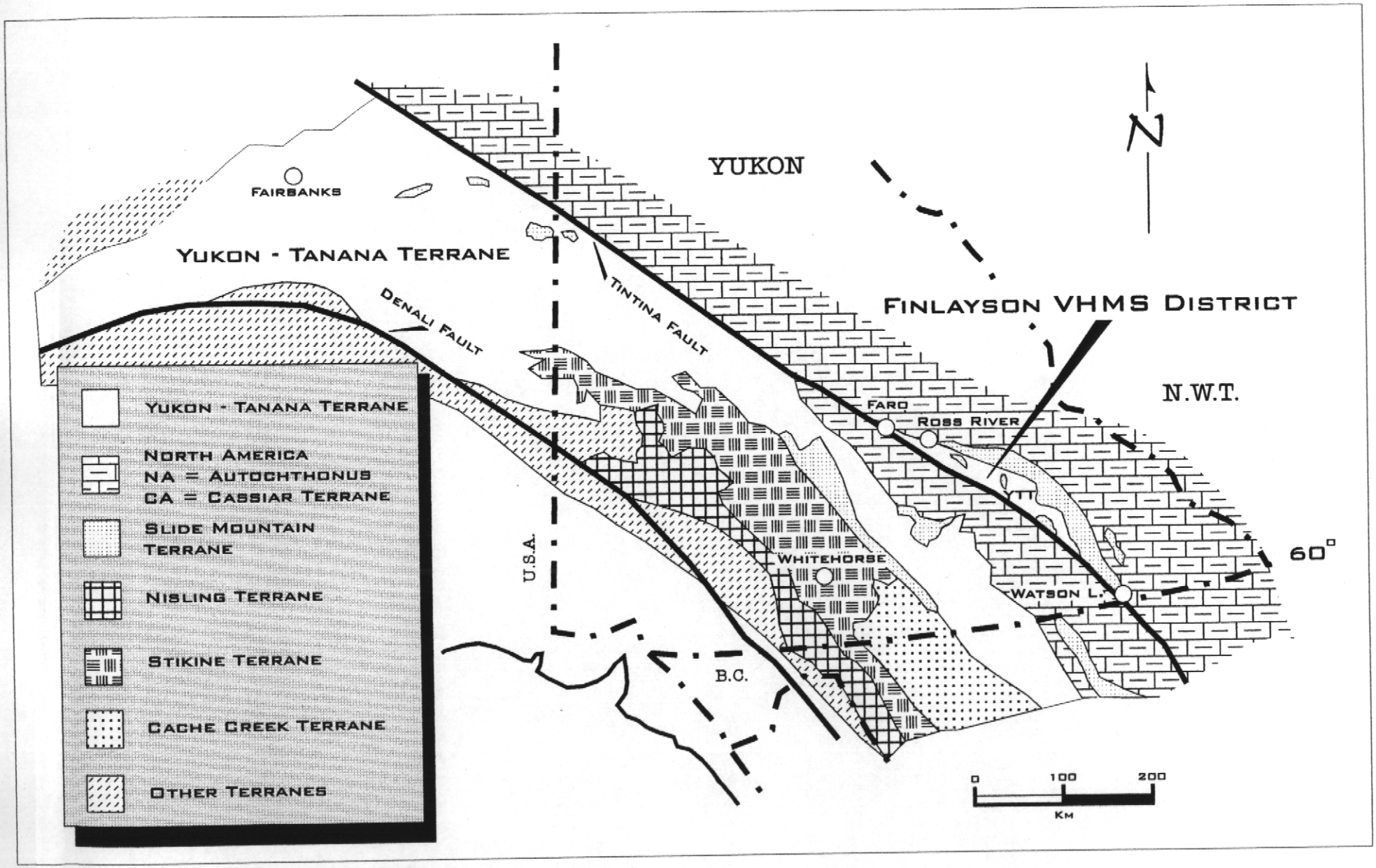
Unit 3 comprises a mixed sequence of felsic metavolcanic schist (meta-tuff) and feldspar±quartz augened schist (meta-porphyry) with lesser calcareous psammite, mafic metavolcanic schists and black, carbonaceous phyllite. The thickest accumulation of felsic metavolcanics occurs in the area of Cominco's ABM Deposit. Mortensen (1983a) reports Lower Mississippian U-Pb ages from these metavolcanics. The ANG Property is underlain by stratigraphy belonging to Unit 3 (Figure 5).

Unit 4 consists of grey to black, carbonaceous phyllite and mafic metavolcanic phyllite/schist with minor psammite and quartzite which forms a very thick sequence extending north of the ABM Deposit.

Units 1-4 are intruded by two to three Lower Mississippian, mafic to felsic meta-plutonic suites (Simpson Range Suite and granitic to monzonitic, augen orthogneisses).

Murphy and Piercey (1998) suggests that Units 1-4, and the intrusive suites mentioned above, have undergone a Lower to Middle Mississippian (?) deformation event which resulted in uplift and erosion to produce an unconformity, separating this sequence from the overlying Units 5-7. *This controversial suggestion is based on the* interpretation of a coarse feldspathic sandstone (containing eroded detrital feldspars) in Unit 5 and the belief that Units 1-4 have undergone 2 phases of deformation while Units 5-7 have been deformed by only 1 phase of deformation.

Murphy and Piercey (1998) have described Units 5-7 only in the Wolverine Lake area.



Yukon Regional Terranes

figure 4

Unit 5 comprises a mixed package of carbonaceous phyllite, with coarse feldspathic sandstone and grits forming lower members, and felsic metavolcanic, locally porphyritic, phyllite (meta-tuff) intruded by locally significant felsic quartz-feldspar meta-porphyry.

Unit 6 consists of thinly bedded, pale coloured siliceous rocks (exhalite) with associated barite-magnetite Fe-formations and light coloured phyllite grading up section into pale siliceous rocks with intercalated dark grey to black phyllite. Expatriate/Atna's Wolverine/Lynx VMS Deposit is positioned at the base of Unit 6.

The overlying Unit 7 comprises carbonaceous phyllite/argillite, sandstone with minor mafic metavolcanic flows and locally developed diamictites containing both mafic and felsic fragments.

Units 5-7 are thought to be Mississippian to Pennsylvanian in age (Murphy, 1998).

Unit 7 is thought to pass conformably into a thick sequence of mafic breccias and pillowed and massive mafic flows with minor intrusive gabbro/diabase and maroon chert and argillite. This sequence is thought to be Pennsylvanian to Permian in age (Murphy and Piercey, 1998) and is equivalent to the Campbell Range Belt. Others (Plint, 1994; Mortensen and Jilson, 1985; Mortensen, 1983a) have described the Campbell Range Belt as the allochthonous SMT. The significant question of whether allochthonous SMT exists in this area, or not, requires further work. Mafic volcanics of the Campbell Range Belt are host to a significant mafic-type (Cyprus-type) VMS deposit on Expatriate's ICE property and to mineralization at the Julia showing on Atna Resources' MONEY property.

The YTT stratigraphic sequence appears to reflect stable, continental platformal/shelf sedimentation with intervening periods of rifting/extension and mafic to felsic arc volcanism developed within more reduced basinal settings.

A sub-horizontal to moderately steep north to northeast dipping, penetrative ductile deformation fabric and locally preserved isoclinal folding with associated middle greenschist facies (chlorite-biotite grade) metamorphism affects all YTT rocks, but is particularly well developed in Units 1-4 and less prominent moving up section into Unit 7. These fabrics and metamorphism may reflect 2 phases of deformation; an early Mississippian event and a event related to a continent-arc collision during the Late Permian to early Triassic time.

As mentioned above, others have described the Campbell Range Belt as belonging to the allochthonous, Devonian to Permian aged, SMT and is described as a heterogeneous package of mafic to ultramafic plutonic rocks, mafic volcanics, massive carbonates and cherts. The SMT is thought to represent a disrupted oceanic and volcanic arc assemblage once located between the YTT and the North American craton (Mortensen, 1983a; Mortensen and Jilson, 1985).

Late Triassic (?) immature clastics, comprising micaceous argillites, siltstones and sandstones, unconformably (?) overlie the deformed and metamorphosed YTT rocks. These sediments are often closely associated with "SMT" mafic metavolcanics and are invariably in fault contact with YTT rocks.

The YTT, "SMT", late Triassic sediments, and late Triassic to Middle Jurassic plutons are all affected by a period of Middle Jurassic to late Cretaceous thrust faulting and felsic plutonism, during which the Finlayson Lake Fault Zone was formed. This complex fault zone contains both thrust and steep, transcurrent (?) faults and separates the YTT from autochthonous North America (Mortensen, 1983a; Mortensen and Jilson, 1985). Thrust faulting continued after the formation of the Finlayson Lake Fault Zone as indicated by the presence of over thrust sheets of SMT rocks (Campbell Range Belt) above the fault zone (Plint, 1994). Murphy and Piercey (1998) suggest that the Finlayson lake Fault Zone, as described, does not exist. Further mapping, geochemistry and geochronology studies are obviously required.

6.0 1999 FIELD WORK

The 1999 field program was a winter (early March), snowmobile supported program, based out of the Cominco KZK camp, and involved establishing 2 grids totalling 7.6 lkms (3.8 lkms each) with hard chain and compass and subsequently conducting ground geophysical surveys (6.4 lkms of HLEM and 7.6 lkms of MAG).

The grids were positioned to cover 2 weak airborne EM conductors (ANG1 and ANG2) in areas of high AMAG. The anomalies are hosted within a sequence of favourable, felsic metavolcanic quartz±feldspar and feldspar phyric

schists (QFP/FP intrusives) and fine granular quartz-sercite±biotite-chlorite schists (tuffs and lesser flow/sills) and lesser mafic metavolcanic schists and phyllites. This sequence is equivalent to that hosting the ABM Deposit.

6.1 ESTABLISHING THE GRIDS

The 2 grids each comprise 3.8 lkms for a total of 7.6 lkms. The grids were established using a hard chain and compass by Cominco personel. The grids were positioned with a differential GPS instrument using a base station at the KZK camp. Location of the ANG1 and ANG2 grids are shown on Figure 5.

6.2 GROUND GEOPHYSICAL SURVEYS

The 2 grids were surveyed for a total of 6.4 lkms of HLEM and 7.6 lkms of MAG by a Cominco geophysical crew. The HLEM survey was carried out using an Apex MaxMin I-10 system, with a 100 m coil separation. The HLEM readings were taken at 25 m intervals along the lines and three frequencies (440, 1760 and 3520 Hz) were recorded. The magnetics survey was carred out using GEM GSM-19 magnetometers. A base station was established at the KZK camp and the total field magnetic readings were corrected for diurnal variations. The base and field magnetometers were synchronized to record simultaneously, eliminating inaccuracies due to interpolation between base readings. Total field magnetic readings were taken at 12.5 m intervals along the grid lines. Data for the ANG1 and ANG2 surveys is presented as 6 attached Figures.

ANG1 Grid

The HLEM and magnetics surveys on the ANG1 grid outlined two conductors flanking the 8900N base line. The northern conductor weakens on the easternmost line, and the southern conductor is weak on the western margin of the grid. Both conductors are low conductivity, as indicated by the fact that there is little response on low frequencies, and mainly quadrature responses at higher frequencies. Conductor axes are interpreted on the highest frequency (3520 Hz) plots. Conductivity*thickness values are interpreted to be than 1S, and there are no measurable apparent thicknesses evident in the HLEM interpretation. Due to interference between conductors, the dips are difficult to interpret without modelling, though it is anticipated that the attitude of the conductors is similar to the local geology, which has dips to the north. The magnetic responses do not correlate directly with the conductors, since, though closely related, the magnetic features do not consistently follow the conductor axes. These magnetic trends show magnetic relief of 250-300 nT.

ANG2 Grid

Geophysical surveys on the ANG2 grid identified a single weak conductor extending across and beyond this small grid. Like the conductors on the ANG1 grid, this conductor is narrow (<5 m), shallow (<5 m), and has low conductivity*thickness (<1 S). The conductor dips moderately to the north. The magnetics survey shows the ANG2 conductor to have a direct magnetic expression of 50-100 nT. However, even with a direct magnetic signature, the low conductivity*thickness product and narrow thicknesses indicate that this is not a massive sulphide target.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The conductors defined by the 1999 HLEM/MAG surveys on the ANG1 and ANG2 grids are too narrow and of too low conductances to be of interest as massive sulphide targets. No further work is recommended on theses targets.

Report by:

P. A. MacRobbie
Project Geologist

R.W. Holroyd
Senior Geologist

Approved for Release by:

W. J. Wolfe
General Manager, Canadian Exploration

8.0 REFERENCES

Hunt, J. A.. and Murphy, D. C., 1998. A note on preliminary bedrock mapping in the Fire Lake area. In: Yukon Exploration and Geology 1997, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 59-68.

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Plint, H. E. and Gordon, T.M., 1996. Structural evolution and rock types of the Slide Mountain and Yukon Tanana Terranes in the Campbell Range, Southeastern Yukon.

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Murphy, D. C., 1998. Stratigraphic framework for syngenetic mineral occurrences, Yukon Tanana Terrane south of Finlayson Lake: A Progress Report. In: Yukon Exploration and Geology 1997, Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, p. 51-58.

Murphy, D. C., 1997. Preliminary geological map of Grass Lakes area, Pelly Mountains, southeastern Yukon (NTS 105G/7). Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1997-3, scale 1:50,000.

Murphy, D. C. and Piercey, S. J., 1998. Preliminary geological map of northern Wolverine Lake area, Pelly Mountains, southeastern Yukon (NTS 105G/8 north half). Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1998-4, scale 1:50,000.

Schultze, H. C. and Hall, D. C., 1997. 1996 Assessment Report - Kudz Ze Kayah Property: Linecutting, Soil geochemistry, Geological mapping, Geophysical surveys and Diamond drilling; 1996 Cominco Assessment Report.

APPENDIX 1

STATEMENT OF EXPENDITURES

Statement of Expenditures

Ang Property

1) PROGRAM/GEOPHYSICS
HLEM/MAG

#days	cost/employee	employee		subtotal
5	$410.00	PAM	$	2,050.00
8.5	$220.00	SHB	$	1,870.00
6	$235.00	KB	$	1,410.00
2	$300.00	GKG	$	600.00
3	$200.00	JA	$	600.00
10.5	$270.00	JE	$	2,835.00
3	$350.00	DH	$	1,050.00
3	$240.00	DLT	$	720.00
2	$476.00	RWH	$	952.00
			$	12,087.00

dates worked-field
March 1-12, 1999

2) Airfare and expenses $ 2,395.00

3) Food, Expediting, Freight $ 5,046.00

4) Truck and equipment rental, fuel $ 2,550.00

$ 19,562.00 Grand total

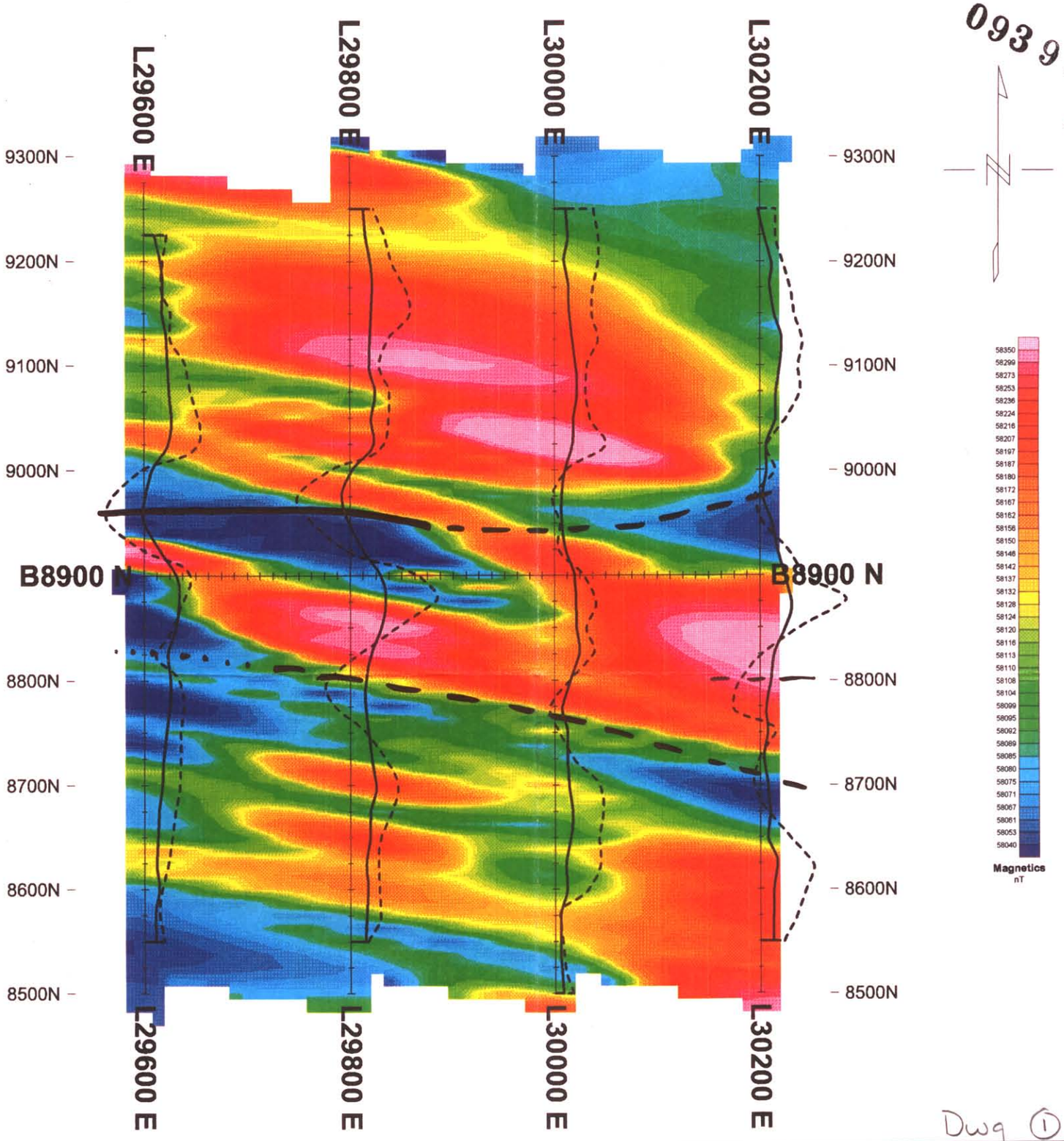
Credit split evenly between 2 grids.

ANG1 Grid - 60% Cominco ground	$ 9,781.00	$ 5,868.60	
ANG2 Grid - 75 % Cominco ground	$ 9,781.00	$ 7,335.75	
		$ 13,204.35	**Grand total**

Ground distribution credit coverage
Ang 10 $4401.45
Ang 12 $1467.15

Ang 19 $366.78
Ang 21 $733.57
Ang 23 $366.78
Ang 20 $1467.15
Ang 22 $2934.3
Ang 24 1467.15

093 974
2/2



Dwg (1)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

Scale 1:5000

50 0 50 100 150

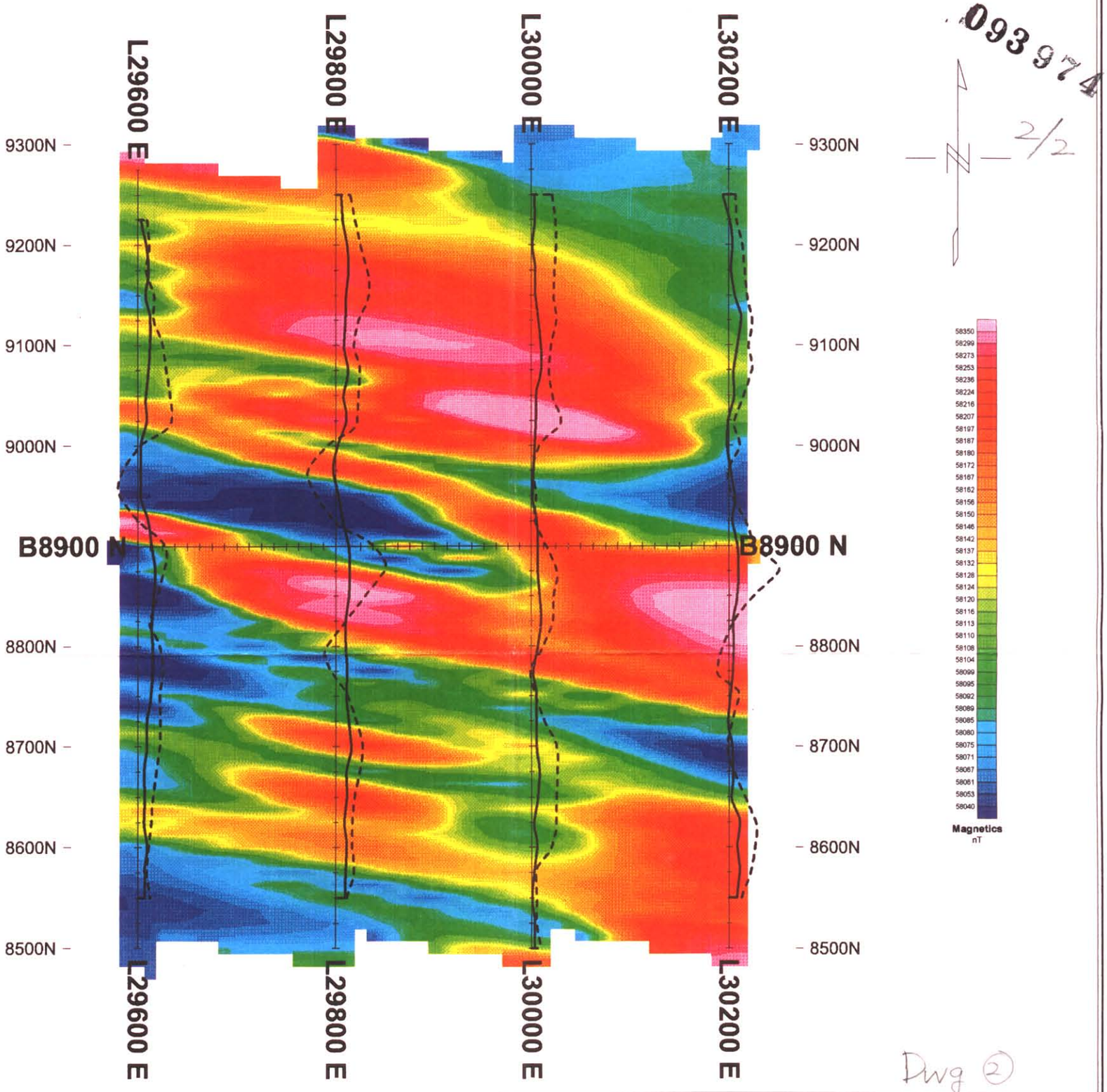
metre

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG1 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 3520 Hz
MAGNETICS - Total Field
Survey Date: March 1999

RWH



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2/2

Dwg (2)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

Scale 1:5000

50 0 50 100 150

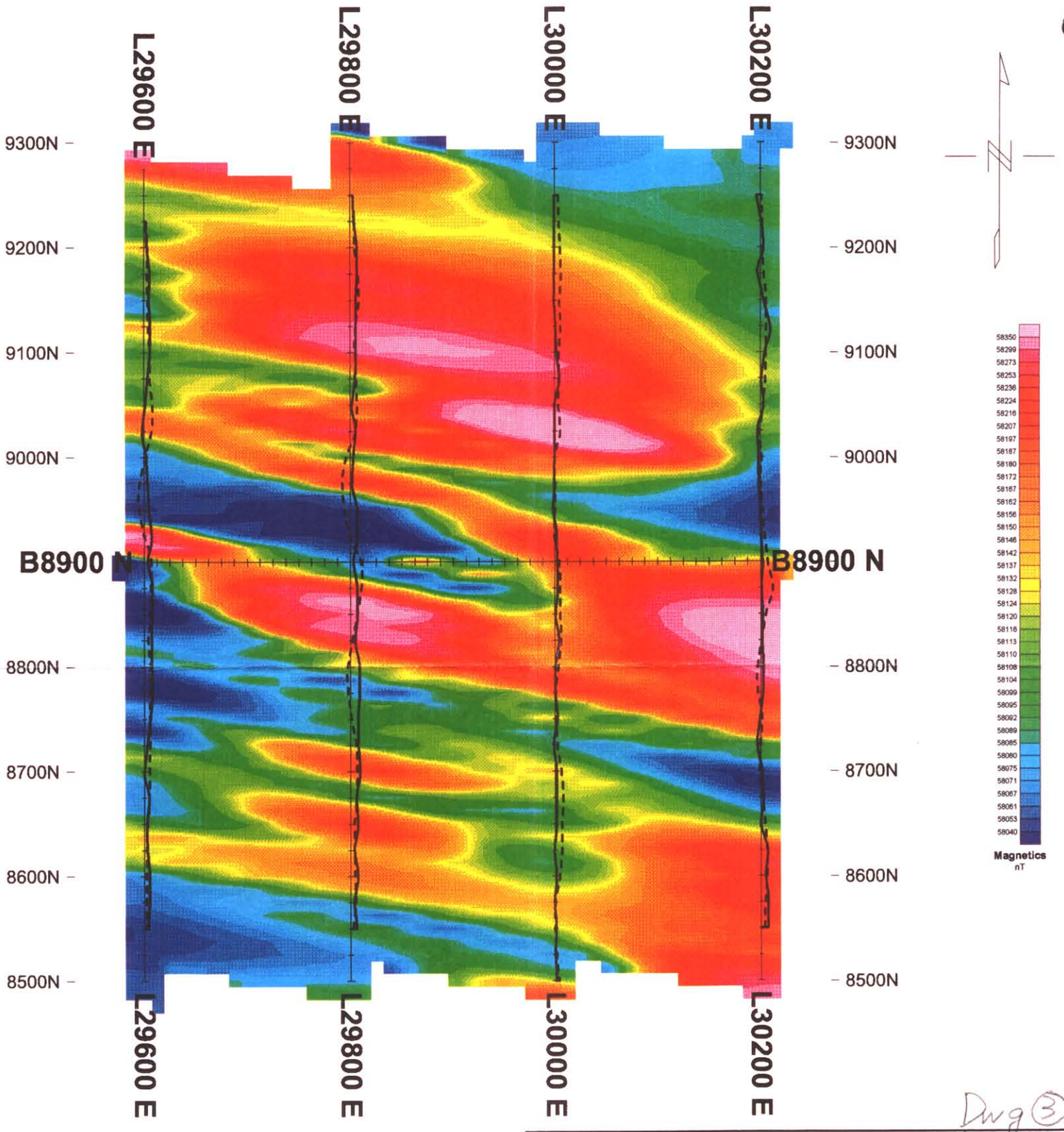
metre

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG1 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 1760 Hz
MAGNETICS - Total Field
Survey Date: March 1999

RWH



093 97

2/2

Dwg (3)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

Scale 1:5000

50 0 50 100 150

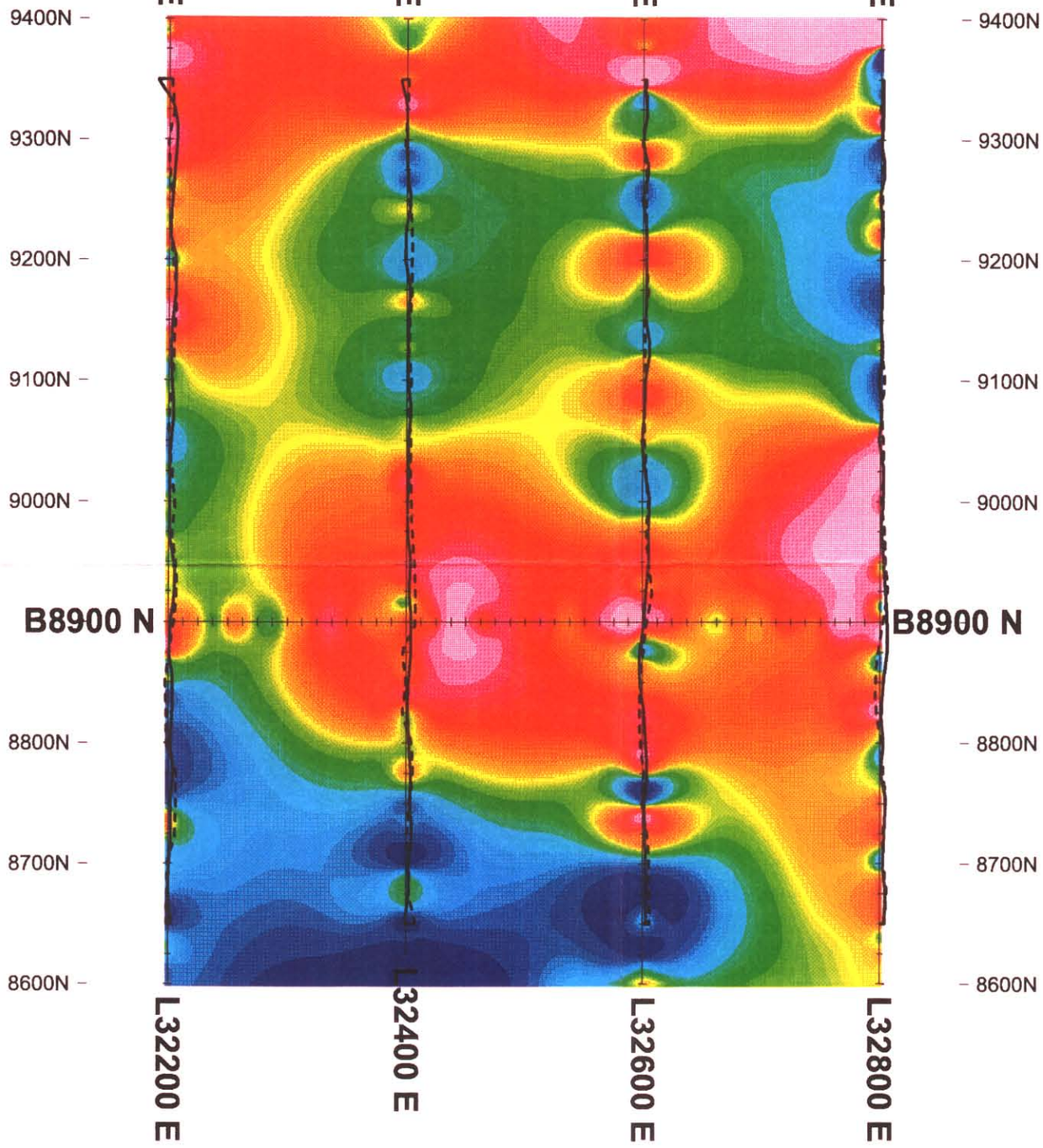
metre

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG1 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 440 Hz
MAGNETICS - Total Field
Survey Date: March 1999

RWH



093 97A

2/2

Dwg (4)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

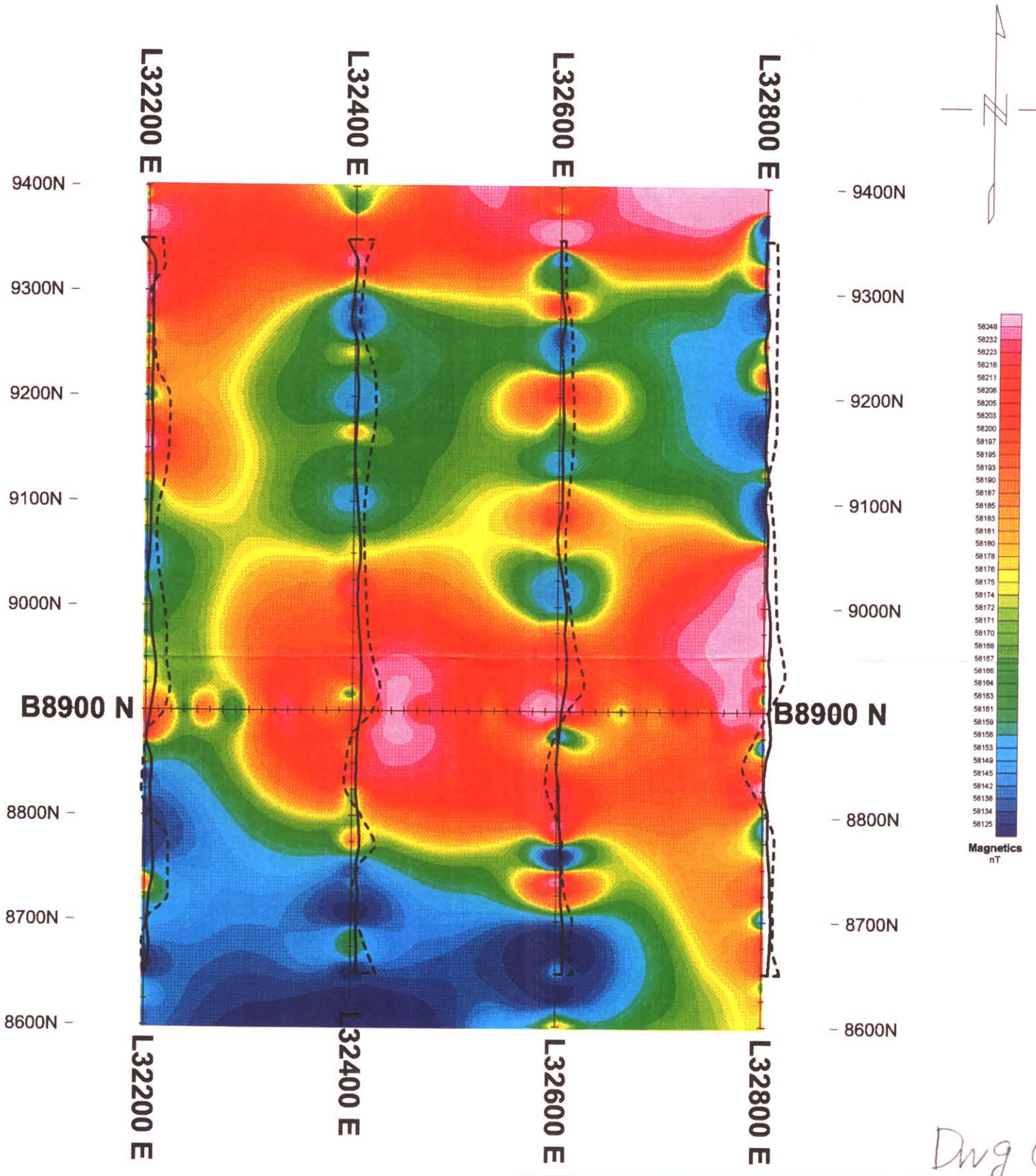
Scale 1:5000

50 0 50 100 150

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG2 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 440 Hz
MAGNETICS - Total Field
Survey Date: March 1999



Dwg (5)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

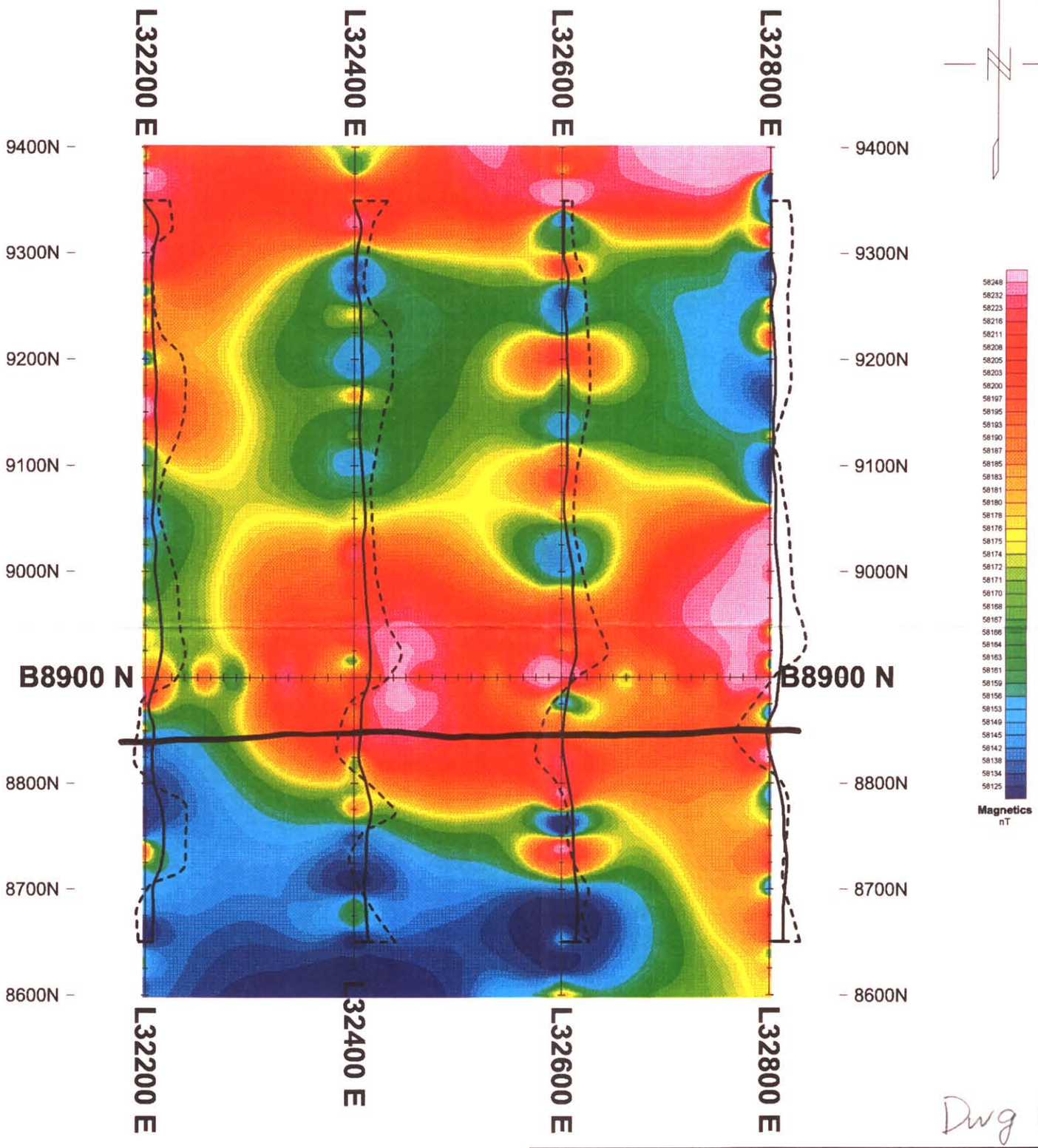
Scale 1:5000

50 0 50 100 150

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG2 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 1760 Hz
MAGNETICS - Total Field
Survey Date: March 1999



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Dwg (6)

HLEM LEGEND

In Phase
Quadrature

Vertical Scale: 1cm = 10%

Scale 1:5000

50 0 50 100 150

COMINCO LTD.

PELLY MOUNTAIN PROJECT
ANG2 GRID
HLEM AND MAGNETICS SURVEY

HLEM - 100m coil spacing, 3520 Hz
MAGNETICS - Total Field
Survey Date: March 1999

Feldspar - Quartz Porphyry

Quartz Feldspar Porphyry

Sa

Quartz Feldspar Porphyry

Mixed Fta, Sa

Sa

ON

REDLINE

Granular Quartz Sericite - Chlorite Schists

ANG

ANG 2

ANG 1

1600

1700

9300N

9000N

8900N

8500N

L-29600E

L-29800E

L-30000E

L-30200E

L-32200E

L-32400E

L-32600E

L-32800E

R-15

R-16

Feldspar Porphyry

Quartz Feldspar Porphyry

OFFSIDE

LEGEND

META-SEDIMENTS

Sa argillite/shale

Protolith uncertain

Sy bio-chi-ser schist

Sz bio-ser-qtz-chl schist

FELSIC METAVOLCANICS

Ft tuff

Fta ash

Ftc crystal

093974

2/2

META INTRUSIVES

lqfp qtz-feld porphyry

lfqp feld-qtz porphyry

CONTACT

OUTCROP

R-BLOCKS

CLAIM OUTLINES

GEOPHYSICAL GRIDS

Dwg (7)

Cominco Exploration

Date:13/4/1999	ON ANG PROPERTY ASSESSMENT -GEOLOGY
Author:	
Office: Canada	
Drawing:	
Scale: 1:15000	Projection: UTM Zone 9 (NAD 27 for Canada)

0 250 500 1000

metres

ON

REDLINE

REDLINE

REDLINE

ANG

ANG

ANG

ANG

ANG 1

ANG 2

OFFSIDE

R-15

R-16

1300

1600

1700

9300N

9000N

8900N

8500N

L-29600E

L-29800E

L-30000E

L-30200E

L-32200E

L-32400E

L-32600E

L-32800E

OFFSIDE

Cominco Exploration

093 974 2/2

ON ANG PROPERTY
ASSESSMENT
-TENURE

DWG (8)

Date:13/4/1999	
Author:	
Office: Canada	
Drawing:	
Scale: 1:15000	Projection: UTM Zone 9 (NAD 27 for Canada)

0 250 500 1000
metres