FAIRFIELD MINERALS LTD.

TOTAL MAGNETIC FIELD AND VLF SURVEYS AT THE WR PROPERTY, TESLIN AREA, YUKON TERRITORY (1998 ASSESSMENT REPORT)

M.A. Power
AMEROK GEOSCIENCES LTD.

CLAIMS

WR1-6	YB89637-YB89642
WR7-8	YB89991-YB89992

Location: 60° 18' N 132° 17' W
NTS: 105 C / 8
Mining District: Watson Lake, YT
Date: December 8, 1998

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 $ 1600.00.

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

SUMMARY

Total magnetic field and very low frequency electromagnetic (VLF-EM) surveys were conducted on the WR Property held by Fairfield Minerals Ltd. The WR Property is approximately 30 km northeast of Teslin and lies in the Watson Lake Mining District. Mineralization identified to date on the property consists of disseminated Fe / Cu / Pb / Zn sulphides in quartz masses and clastic metasediments, and auriferous semi-massive pyrite and chalcopyrite within deformed marble. The geophysical surveys were conducted over a soil geochemical grid on the west side of the Wolf River. A total of 11.6 line-km were surveyed at a 12.5 m station spacing. The VLF-EM survey was conducted using Seattle as the primary and Hawaii as the secondary transmitters. The VLF-EM survey identified 3 weak to moderate conductors. The strongest conductor on the western portion of the grid is coincident with the main mineral showing on the property in the southern corner of the grid and extends for 1100 m to the northwest. The other two conductors occur in an area of till cover and are not associated with mineralization or strong geochemical response. None of the VLF anomalies have strong magnetic anomalies directly associated with them but the VLF anomalies are conformable with a large magnetic low trending across the property.

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1.0 INTRODUCTION

This report describes total magnetic field and very low frequency electromagnetic (VLF-EM) surveys conducted on the WR Property in the Watson Lake Mining District, Yukon Territory. The surveys were conducted to delineate the sources of base metal soil geochemical anomalies on the property.

2.0 LOCATION AND ACCESS

The WR Property is located at 60° 18' N 132° 17' W in the southern Yukon Territory (Figure 1). The property is approximately 30 km northeast of Teslin, YT and is accessible by helicopter. The nearest permanent helicopter bases are in Whitehorse, YT and Atlin, B.C. The closest staging point on the Alaska Highway is Hays Creek, 21 km northwest of the lodge at Morley River on the Alaska Highway. An abandoned winter CAT trail passes near of the southeast corner of the property. This trail follows the east side of the Wolf River.

3.0 PROPERTY

The WR Property consists of the following Quartz Claims staked under the Yukon Quartz Mining Act in the Watson Lake Mining District:

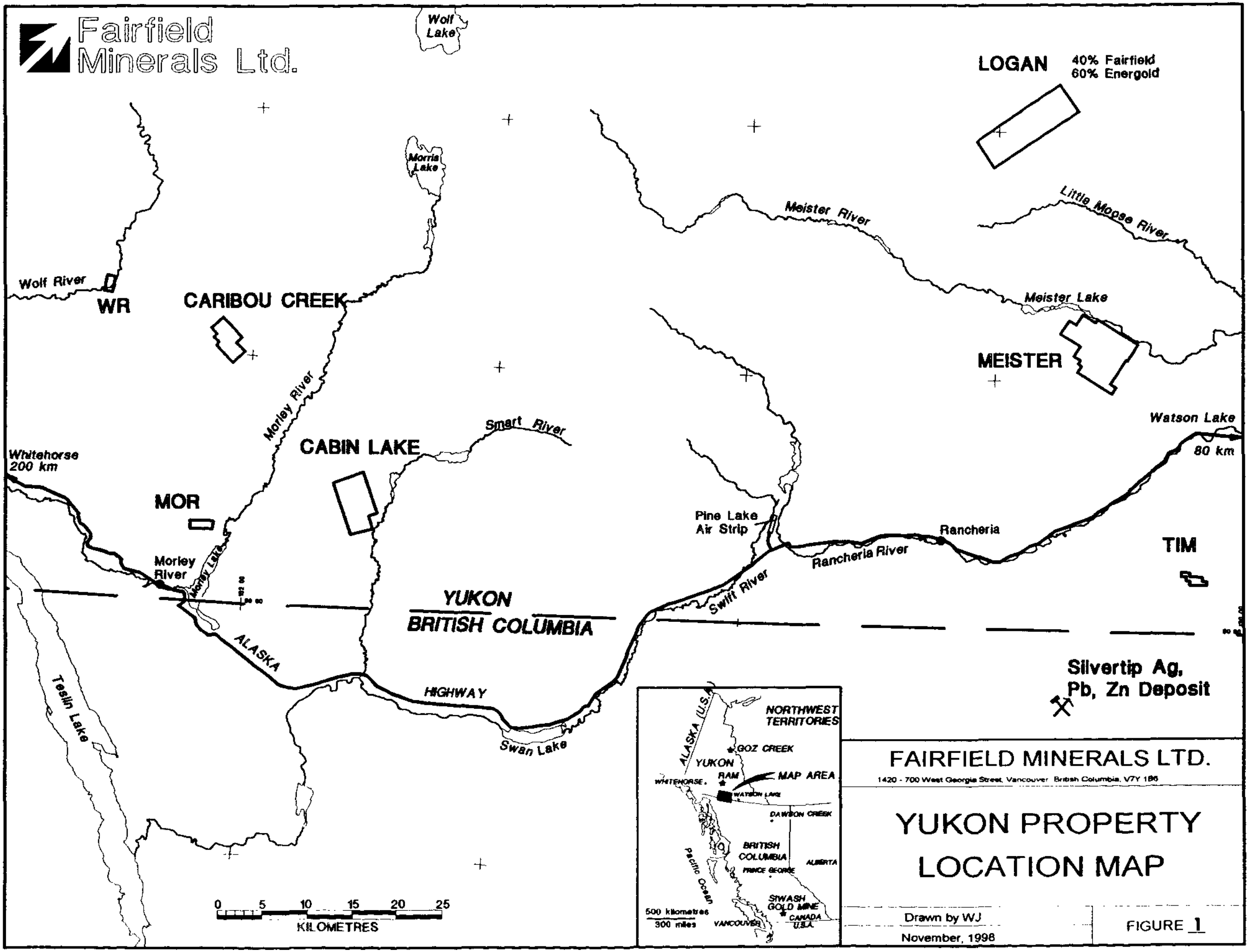
Claim	Record Number	Expiry Date[1]
WR1-6	YB89637-YB89642	August 11, 2000
WR 7-8	YB89991-YB89992	August 11, 2000

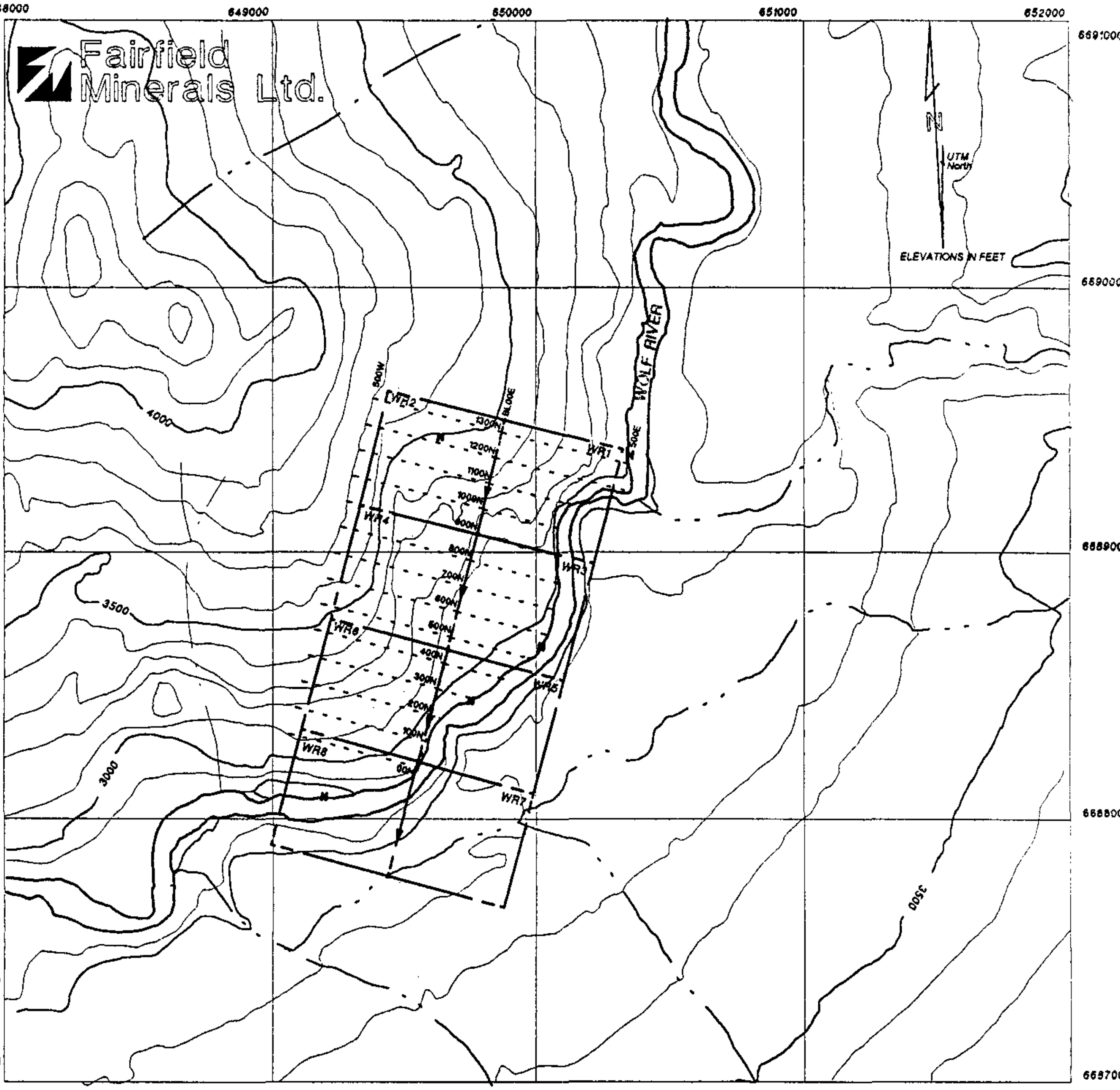
The claims are owned by Fairfield Minerals Ltd. of Vancouver, B.C. and surface rights on the property are held by the Teslin Tlingit Council who issued a letter permitting Fairfield Minerals Ltd. to perform the work described in this report.

4.0 PHYSIOGRAPHY

The WR Property is located in the Cassiar Mountains of the southern Yukon Territory. The claims are shown in relation to surrounding topography in Figure 2. Elevations in the vicinity of the property range from 800 m in broad valleys to 1900 m on nearby

[1]Expiry date of record as of December 8, 1998.


Fairfield Minerals Ltd.
Wolf Lake
LOGAN
40% Fairfield
60% Energold
Morris Lake
Meister River
Little Moose River
Wolf River
WR
CARIBOU CREEK
Meister Lake
MEISTER
Morley River
Smart River
Watson Lake
80 km
CABIN LAKE
Whitehorse
200 km
MOR
Pine Lake
Air Strip
Rancheria
TIM
Morley
River
Morley Lake
Rancheria River
Swift River
YUKON
BRITISH COLUMBIA
ALASKA
HIGHWAY
Swan Lake
Teslin Lake
Silvertip Ag,
Pb, Zn Deposit
NORTHWEST
TERRITORIES
ALASKA (U.S.A.)
GOZ CREEK
YUKON
RAM
MAP AREA
WHITEHORSE
WATSON LAKE
DAWSON CREEK
BRITISH
COLUMBIA
ALBERTA
Pacific Ocean
PRINCE GEORGE
SIWASH
GOLD MINE
CANADA
U.S.A.
VANCOUVER
500 kilometres
300 miles
0 5 10 15 20 25
KILOMETRES
FAIRFIELD MINERALS LTD.
1420 - 700 West Georgia Street, Vancouver, British Columbia, V7Y 1B6
YUKON PROPERTY
LOCATION MAP
Drawn by WJ
November, 1998
FIGURE 1



CLAIM	GRANT NO.
WR1	YB89637
WR2	YB89638
WR3	YB89639
WR4	YB89640
WR5	YB89641
WR6	YB89642
WR7	YB89991
WR8	YB89992

EXPLANATION

JULY 1998 GEOPHYSICAL SURVEY AREA - WR1 TO WR6 CLAIMS
Grid Lines 00N to 1300N from 500W to a maximum of 500E, bounded by the Wolf River

0 250 500 750 1000
Metres

FAIRFIELD MINERALS LTD.
1420 - 700 West Georgia Street, Vancouver, British Columbia, V7Y 1B6

WR PROPERTY

WASTON LAKE MINING DISTRICT, Y.T. NTS 105C-8

CLAIM AND GRID LOCATION MAP

Drawn by WJ
November, 1998

FIGURE 2

mountain peaks. The WR Property lies in the valley of the Wolf River and elevations range from 835 to 1130 m. The property is below tree line and is covered with spruce and locally thick willows. Most of the property is covered by thin till and gravel although overburden thickens in the area near the Wolf River. Steep bluffs have developed on the west side of the Wolf River on the property.

5.0 GEOLOGY, GEOCHEMISTRY AND ECONOMIC MINERALIZATION

Regional geology in the area of the WOLF Property has been mapped by Mulligan (1963) and by Gordey and Stevens (1994) and preliminary geological investigations have been conducted by Balon *et. al.* (1998, pers. comm.). The WR Property is underlain by rocks of the Proterozoic to Devonian Big Salmon Complex comprising various deformed metasediments and metavolcanics. This package of rocks resembles the lowermost of the Yukon Tanana Terrane (Nisling Assemblage) (Balon 1998, pers. comm.). Rocks on the property are folded about north-trending axes (340^0 - 020^0).

In 1980, Regional Resources Ltd. noted prominent gossans on the west bank of the Wolf River and reconnaissance soil lines above the showings returned high values in Zn, Cu and Pb with isolated anomalous Au. In 1996, Fairfield Minerals Ltd. re-examined an occurrence of semi-massive pyrite and chalcopyrite in siliceous pods and lenses within a tightly folded marble bed. A grab sample of this mineralization returned assays of 1.7% Cu, 1.03 OPT Ag and 0.013 OPT (0.45 g/t) Au. Competitor activity during 1997 caused Fairfield to stake the WR claims to cover this showing as well as the area of (1980) anomalous soil geochemistry. Subsequent grid soil sampling outlined widespread elevated barium values and scattered clusters of base metal ± gold / silver anomalies. Prospecting around some of these anomalies has revealed local occurrences of disseminated Fe, Cu, Pb and Zn sulphides in quartz veins and masses, and in quartzite and graphitic argillite / phyllite units. The geologic setting and current exploration results at the WR Property indicate potential for discovery of multiple deposit types including sedimentary exhalative (SEDEX) and /or volcanogenic massive sulphides, and polymetallic quartz veins.

6.0 GRID

Geophysical surveys were conducted over a soil geochemistry grid shown in Figure 2. The grid base line is oriented at 20° and is parallel to the claim location line. A total of 11.65 line-km of survey lines were turned from the base line and all lines are on the west side of the Wolf River. Stations consisting of flagged soil sample sites were put in every 25 m.

The showing described in the previous section is at 134N 52E on the bank of the Wolf River. Soil geochemical surveys identified a Cu-Ag-Au anomaly near the main showing and a Zn-Pb-Ba anomaly from 900-1100N and from 150-250E. Scattered spot Ba and Ag anomalies were detected elsewhere on the grid.

7.0 PERSONNEL AND EQUIPMENT

The total magnetic field and VLF-EM surveys were conducted by Dan Hall (Technician). He was equipped with the following instruments and equipment:

Field unit: Scintrex EDA Omni Plus proton precession magnetometer and VLF-EM receiver.

Base magnetometer: EDA Omni IV proton precession magnetometer

Data processing: P-100 laptop and HP-680C colour printer. Data processing with Geopak software.

Other equipment: Light camp, 4X4 truck, VHF radio

8.0 SURVEY SPECIFICATIONS AND PRODUCTS

The surveys were performed according to the following specifications:

Station spacing: 12.5 m

Base station magnetometer: Installed on the grid and cycled at 15 s throughout the survey

VLF transmitters: Station NLK at Jim Creek Wa. (24.8 KHz) was used as the primary station and was at an apparent azimuth of 160°. Station NPM (23.4 KHz) at Lualualei, Ha. was used as the secondary and was at an apparent azimuth of 240° .

VLF parameters: VLF in-phase and quadrature in percent, VLF total field strength in nominal units and terrain slope in percent were recorded.

Data is appended to this report in ASCII XYZ files in the following format:

Magnetic data files

Line	Station	X	Y	Corr-Mag

where X and Y are grid coordinates and Corr-Mag is the corrected total magnetic field.

VLF-EM data files

Line	Station	X	Y	IP	Q	Slope

where IP is the in-phase and Q is the quadrature component, both of the vertical field referenced to the horizontal field and expressed in percent slope. Slope is terrain slope expressed in percent.

The following plots at 1:2,500 are appended to this report in the back pockets:

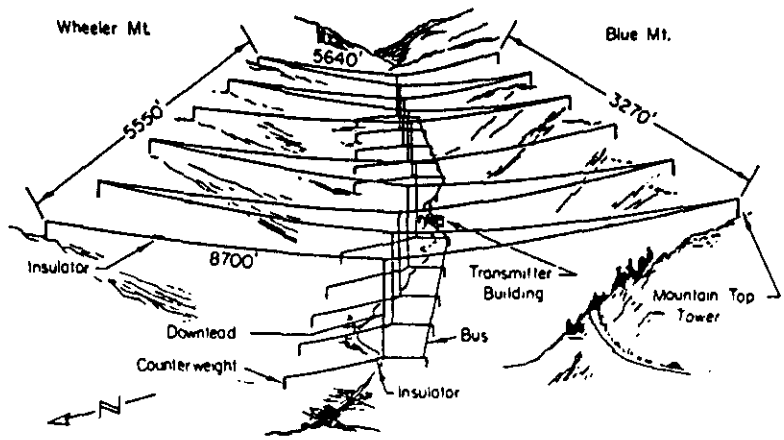
Figure 3.	Total magnetic field contour map
Figure 4.	Stacked profiles - Seattle
Figure 5.	Fraser filtered VLF - Seattle
Figure 6.	Stacked profiles - Hawaii
Figure 7.	Fraser filtered VLF - Hawaii

The stacked profiles show the in-phase (solid) and quadrature (dashed) components together with the grid lines. The Fraser filtered plots show the Fraser-filtered in-phase component, colour contoured for values above zero. The Fraser filter converts a normal crossover (positive to negative from grid west to east) to a single peak centred at the cross-over. Thus the peak values in the Fraser filter plots indicate the location of conductor axes.

9.0 VLF-EM THEORY

The VLF-EM method is well described in standard texts (eg. Telford *et. al.* 1990) and by McNeill and Labson (1990). Modulated radio waves in the range of 15.0 to 25.0 KHz are used to communicate with submerged submarines and are useful in mineral exploration. The antennas from which the signals are radiated are vertical wires, commonly located in valleys or craters to permit longer wire length (Figure VLF-1(a)). This antenna configuration generates a wave with a vertical electrical field and a

(a)



(b)

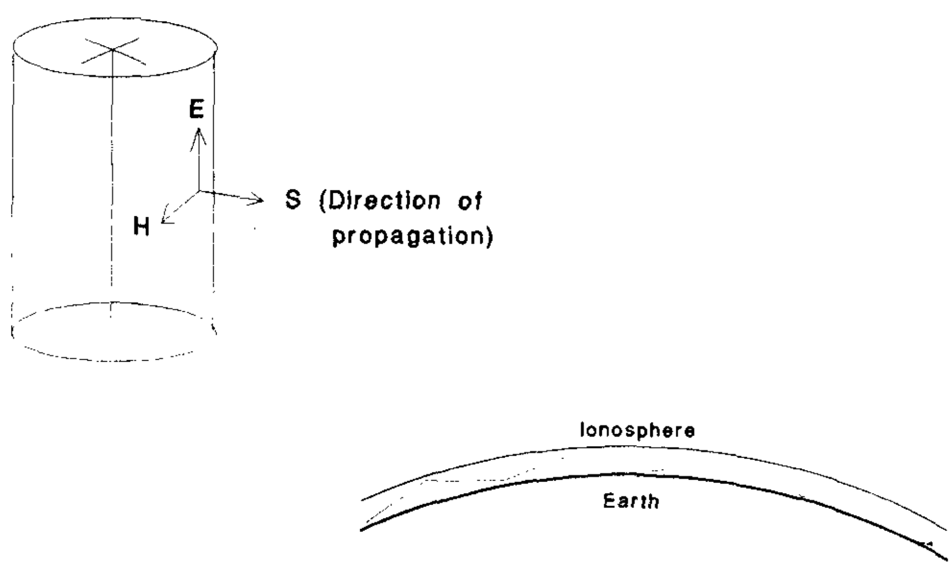


Figure VLF-1. VLF source fields and propagation. (a) Diagram showing Jim Creek, WA VLF transmitter (McNeill and Labson 1990). (b) Propagation of VLF field at a distance from the antenna. The VLF wave propagates between the earth's ionosphere and the surface with a vertical electrical field and horizontal magnetic field. At great distances the signal forms a plane wave.

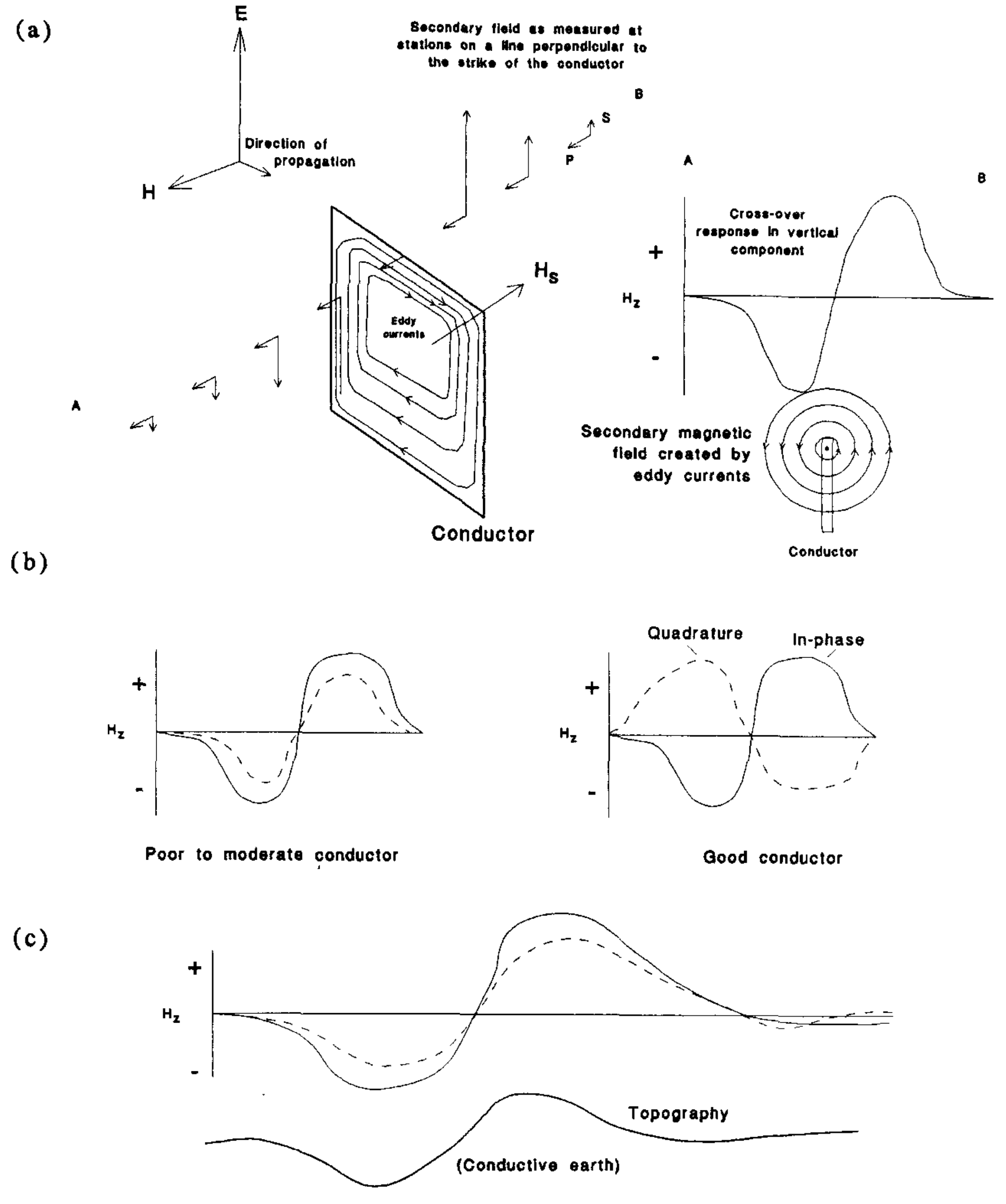


Figure VLF-2. VLF responses. (a) The horizontal magnetic flux from a VLF signal induces a secondary field in a conductor. This, together with the primary field, produces a cross-over response. (b) Quadrature sign can be determined by target conductance. (c) If the ground is conductive, topography can induce VLF responses similar to those expected from bedrock conductors.

horizontal magnetic field propagating away from the source. The wave propagates between the ionosphere and the earth's surface, reflecting off both at a shallow angle (Figure VLF-1(b)). At a great distance, the radius of curvature is so large that it is effectively a plane wave.

A steeply-dipping conductor with a strike in the direction of the transmitter will be optimally coupled to the horizontal magnetic flux. This magnetic flux will induce a secondary field in the conductor (H_s) which opposes the primary or source field. This is generated by circulating eddy currents which tend to concentrate at the top of the conductor (Figure VLF-2(a)). The current distribution can be considered to be a linear source located at the top of the conductor and consequently, the anomaly shape is relatively insensitive to the dip of conductor. The current at the top of the conductor produces a cylindrical magnetic field centred on the current axis. The primary horizontal magnetic field and the secondary field induced in the conductor add vectorially to produce a resultant magnetic field whose attitude traces out a sine wave or cross-over as shown in Figure VLF-2(a). The wavelength of the response in a general sense is proportional to the depth of the target. Deep targets tend to produce longer wavelength anomalies while shallow anomalies have a shorter wavelength. The distance between the peak and trough of the response is roughly equal to the depth to the current source.

Using the horizontal component as a phase reference, it is possible to partition the secondary vertical field into in-phase and quadrature components. If the conductor is a poor to moderate conductor, the sign of the quadrature will follow that of the in-phase component. If the target conductance is high, the quadrature will display a sign opposite that of the in-phase component (Figure VLF-2(b)). The Omni Plus VLF-EM receiver used in this survey records the signal so that a normal in-phase component cross-over consists of a positive to negative response moving from grid west to east or grid south to north.

Cross-over responses may also be induced by interfering responses from nearby conductors, sometimes producing false-crossovers with senses opposite to that normally occurring over a discrete conductor. In addition, topography can generate false cross-over responses. VLF-EM waves follow the surface topography to some extent with the degree of correlation determined by the conductivity of the local earth. In very conductive ground, the VLF wave follows topography quite closely and cross-over responses similar to those expected from a bedrock conductor can be generated by undulating topography with suitable spatial wavelengths (Figure VLF-2(c)). In poorly conductive ground, the wavelength of the topographic effect is much longer, reflecting the greater depth of penetration by the VLF-EM wave. In this situation, it is relatively easy to discriminate between bedrock conductors and topographic anomalies.

10.0 RESULTS

The VLF-EM survey identified three discrete conductors, labelled **A-1** to **A-3** in Figures 3 to 7. Although the Seattle transmitter is best coupled with these conductors, more detail is apparent in the Hawaii response and consequently the conductor axes shown are derived from the Hawaii data.

Anomaly **A-1** extends from L0N 50W to L1100N 225W and consists of a variable strength in-phase anomaly with a weak quadrature response, opposite in polarity to that of the in-phase anomaly. The peak-to-peak response wavelength varies from 100 m in the south to 50 m in the northern portion of the grid. These response characteristics suggest that the target is relatively deep (50 to 100 m) and has a moderate conductance. This conductor is coincident with the main showing.

Anomaly **A-2** extends from L 300N 25E to L 1100N 150W and consists of a low amplitude in-phase response with a very low amplitude quadrature response of the same polarity. The peak-to-peak response wavelength varies from 50 to 100 m from south to north suggesting that the conductor plunges to the north. The conductor appears to be very weak and is not associated with any strong geochemical response.

Anomaly **A-3** extends from L 500N 100E to L1300N 75W and consists of a moderate to high amplitude in-phase response moving from south to north with a low amplitude quadrature response of the same polarity. The peak-to-peak response wavelength is approximately 100 m and the conductor may be at this depth. The conductor appears to be very weak and is not associated with any strong geochemical response.

In a general sense, anomalies **A-1** and **A-3** form the west and east boundaries of a magnetic low extending from L0N 0E to L1300N 500W. Anomaly **A-2** follows the centre of this magnetic field low. There is no obvious correlation between magnetic anomalies, in detail, and the VLF-EM responses however.

11.0 CONCLUSIONS

The results of the geophysical surveys lead to the following conclusions:

a. Three VLF anomalies were detected on the WR Property grid. The western most anomaly **A-1** is coincident with the mineralization in the main showing and merits additional investigation. The other anomalies are not coincident with geochemical anomalies or showings but they occur in an area of poor outcrop where geochemical response may be obscured by glacial drift.

b. None of the anomalies have coincident magnetic responses and anomalies **A-2** and **A-3** appear to be weaker conductors than **A-1**.

12.0 RECOMMENDATIONS

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

a. Anomaly **A-1** merits further investigation by trenching to determine if economic mineralization is present along strike.

b. If additional mineralization is encountered, induced polarization surveys could be conducted to more accurately delineate and quantify the extent of sulphide mineralization on the property. Alternatively, a high frequency HLEM survey could be conducted to further investigate the conductors identified to date.

Respectfully submitted,
AMEROK GEOSCIENCES LTD.

M.A. Power M.Sc.
Geophysicist

REFERENCES CITED

Balon, E.A. (1998) pers. comm. Preliminary results of Wolf Property mapping and sampling for Fairfield Minerals Ltd. Unpublished company report.

McNeill, J.D. and V.F. Labson (1990) Geological Mapping Using VLF Radio Fields. in: Nabighian, M.N. (ed.) Investigations in Geophysics No. 3. Electromagnetic Methods in Applied Geophysics. Volume 2, Application , Part B. Tulsa: Society of Exploration Geophysics.

Mulligan, R. (1963) Geology of Teslin Map Area, Y.T. (105C) GSC Memoir 326. *Ottawa: Geological Survey of Canada.*

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

APPENDIX A. STATEMENT OF QUALIFICATIONS

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

a. I hold a Bachelor of Science degree with First Class Honours in Geology obtained from the University of Alberta in 1986. I also hold a Master of Science degree in Geophysics obtained from the University of Alberta in 1988.

b. I am a Professional Geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia (Registration number 21131) and I am a Professional Geophysicist registered with the Northwest Territories Association of Professional Engineers, Geologists and Geophysicists (License L942).

c. I have been engaged in mineral exploration and geophysical research in the Cordillera and Northwest Territories since 1986.

d. I supervised the work described in this report and prepared this report submission.

e. I authorize Fairfield Minerals Ltd. to publish extracts from this report in connection with an filing to a securities regulatory authority as required in the ordinary course of business.

Dated this eighth day of December, 1998 in Whitehorse, Yukon Territory.

Michael A. Power, M.Sc.
Geophysicist

APPENDIX B. SURVEY LOG

SURVEY LOG
FAIRFIELD MINERALS LTD. MOR / WOLF PROPERTIES
MAG / VLF SURVEYS - JOB 98-20
JULY 25 - 29, 1998

Personnel: Dan Hall - technician (DH)

Sat 25 July 98 — Mobe day. Fly in to Cabin Lake Line cutters camp with IP crew. Set-up camp for entire crew.

Sun 26 July 98 — Clear, warm & buggy. Survey Wolf grid with Seattle & Hawaii. Grizzly bear on grid. DH cut open left wrist slipping on rocks; 1st-aid applied in field and in camp.

Production:	L 0 N	500W-0
	L 100N	500W-25E
	L 200N	500W-25E
	L 300N	500W-75E
	L 400N	500W-175E
	L 500N	500W-225E
	L 600N	500W-300E

Total Production: 5.3 line-km Mag/VLF

Mon 27 July 98 — Clear, hot. Completed survey of Wolf grid.

Production:	L 700N	500W-325E
	L 800N	500W-325E
	L 900N	500W-300E
	L 1000N	500W-250E
	L 1100N	500W-225E
	L 1200N	500W-0E
	L 1300N	500W-450E

Total Production: 6.3 line-km Mag/VLF

Production Summary: 20.60 line-km

Addresses: Dan Hall
Box 5808
Whitehorse YT Y1A 5L6

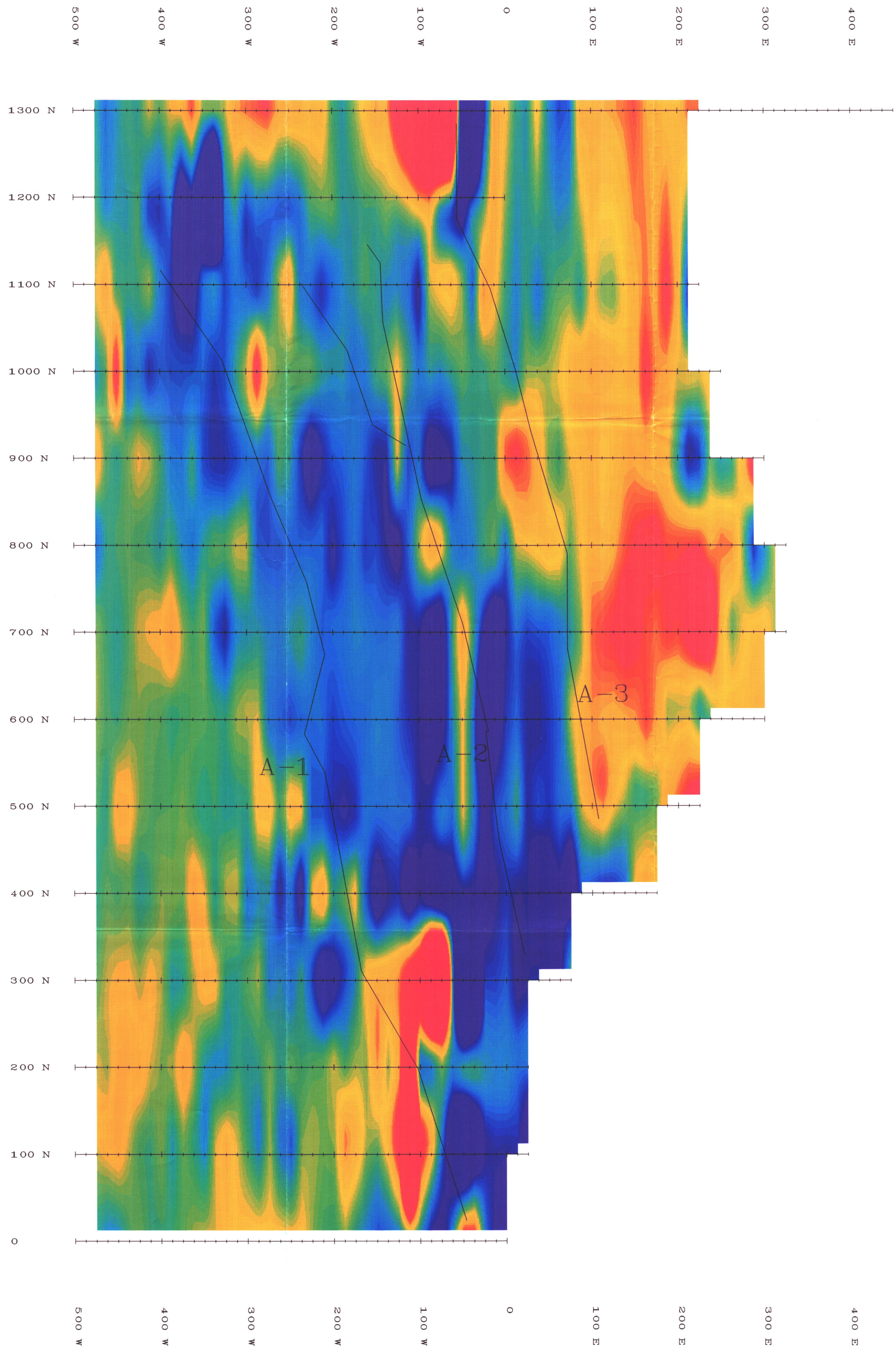
APPENDIX C. STATEMENT OF COSTS

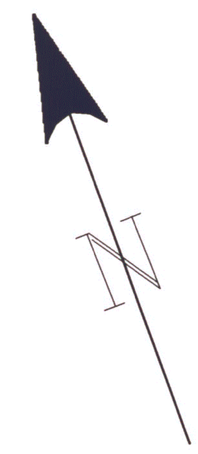
Mobilization / demobilization	$425
Geophysical surveys: 2.0 days @ $625	$1,250
Helicopter support: 2.0 hrs @ $850	$1,700
Report	$450
Total project costs	***$3,825***

I certify that these costs are true and correct to the best of my knowledge.

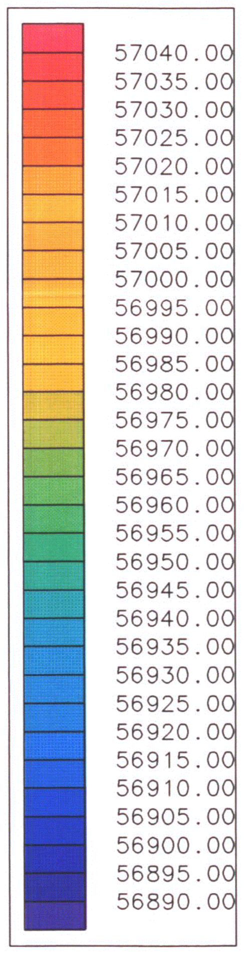
M.A. Power, M.Sc.
Geophysicist

December 8, 1998





Base Line Azimuth - 020



Total Field in nT

Contour Intervals - 10, 50, 500 nT

0 150
metres

Scale 1: 2500

Grid (0E, 0N) = UTM 649549E 6688216N

UTM DATUM: NAD 1927

FAIRFIELD MINERALS LTD.

WOLF PROPERTY

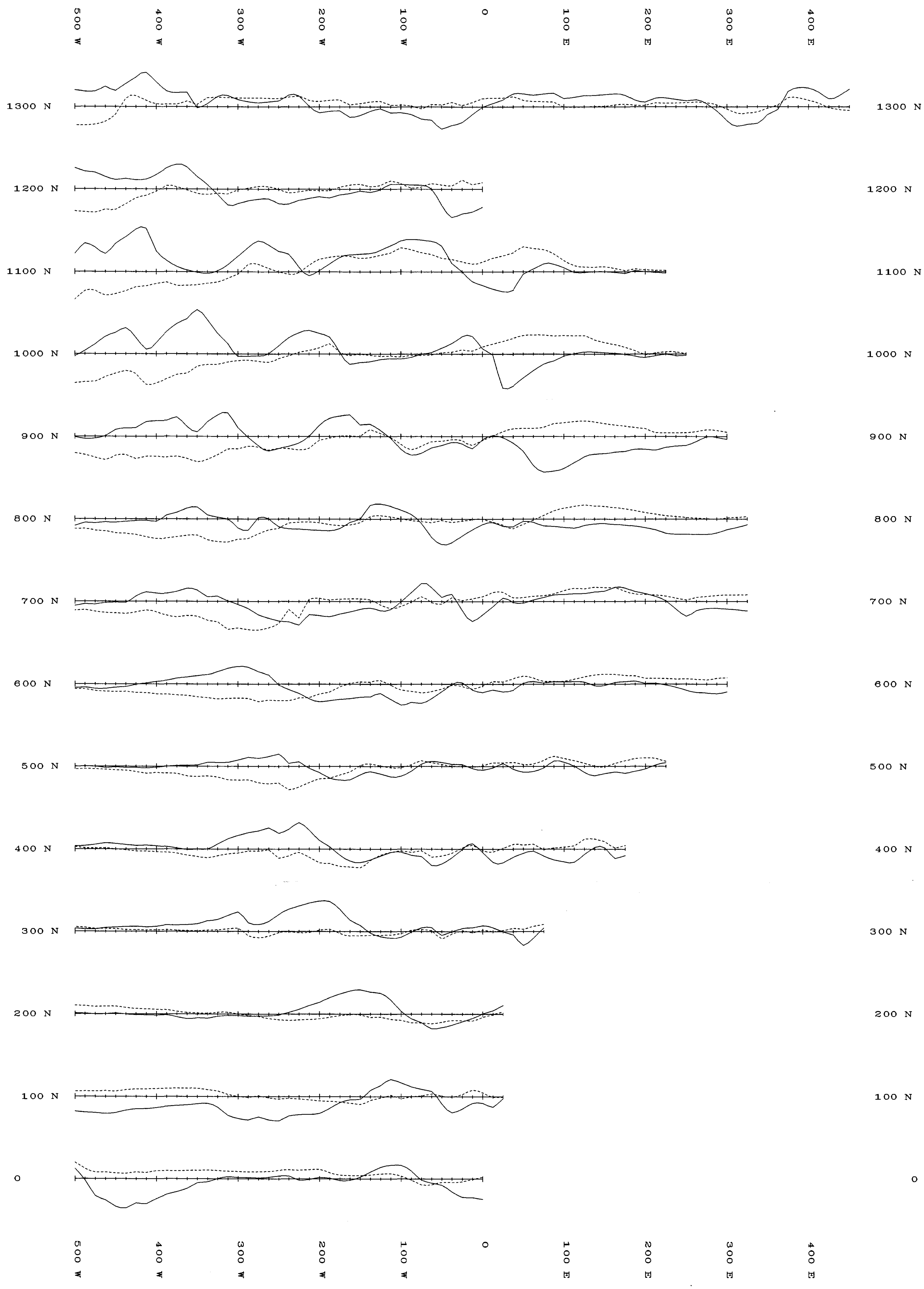
(NTS 105 C)

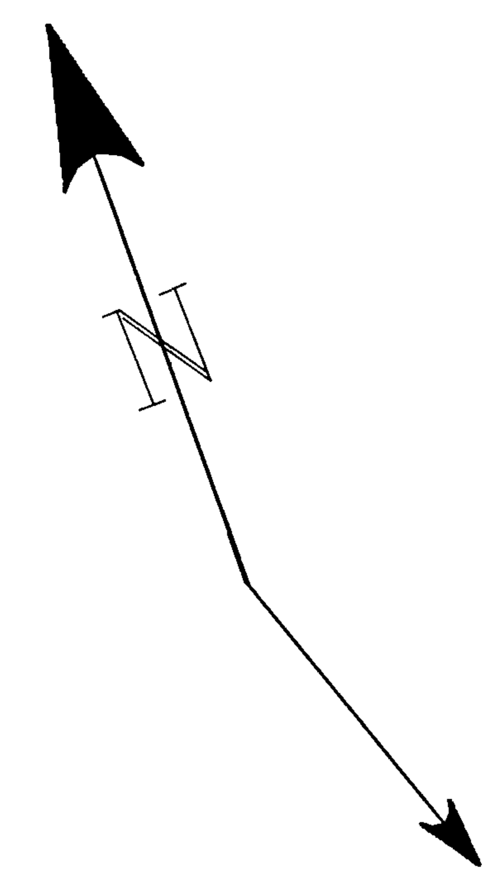
TOTAL MAGNETIC FIELD

CONTOUR MAP

Figure 3.

AMEROK GEOSCIENCES LTD.

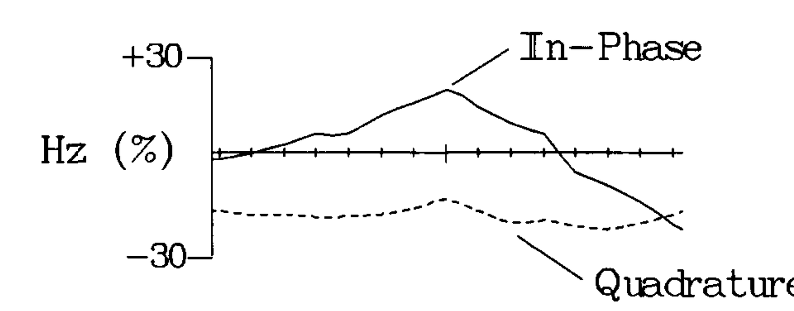




NLK (Seattle, WA)

Apparent Azimuth – 160

Baseline Azimuth – 020



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Grid (0E, 0N) = UTM 649549E 6688216N

UTM DATUM: NAD 1927

FAIRFIELD MINERALS LTD.

WOLF PROPERTY

(NTS 105 C)

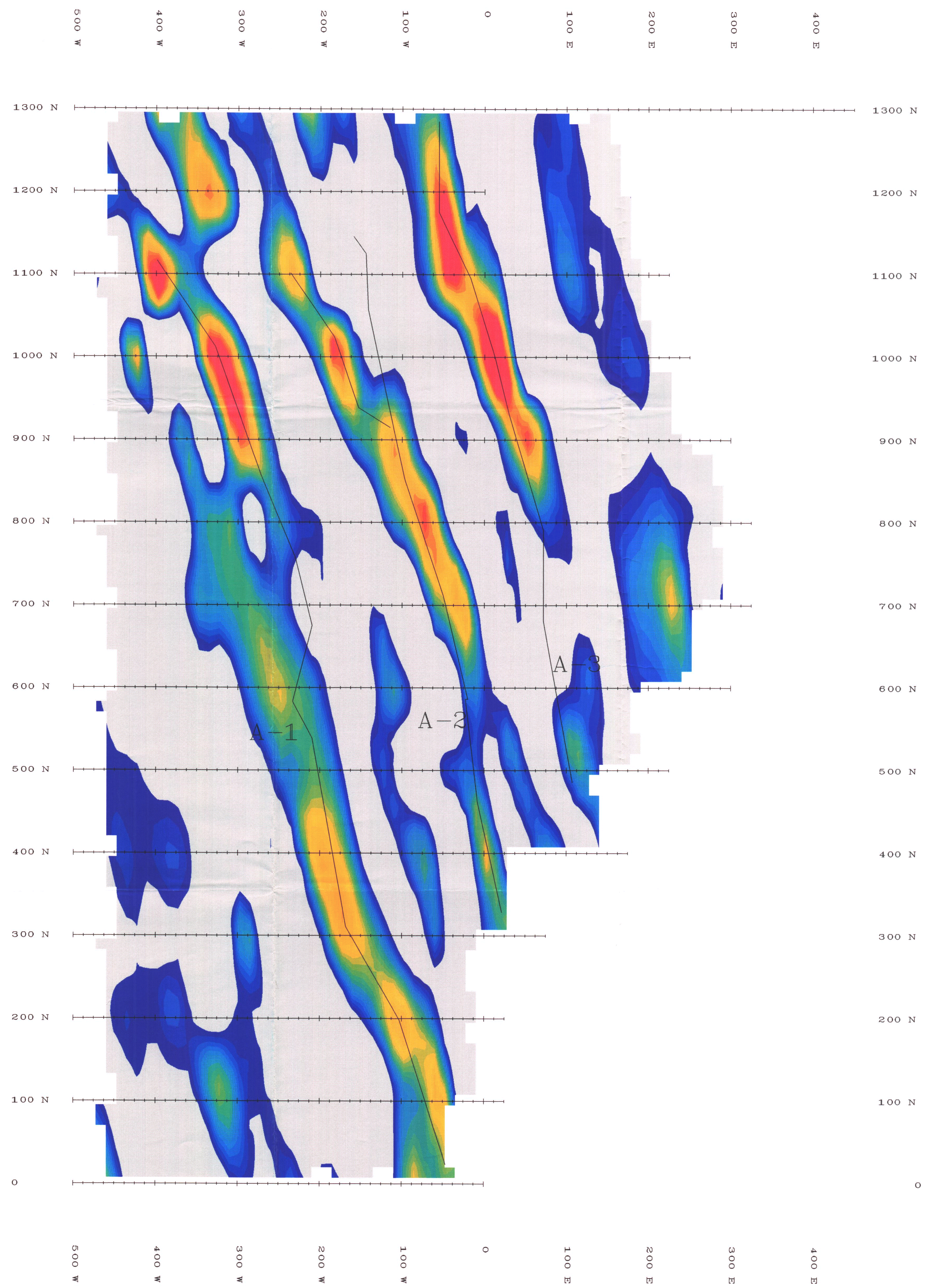
VLF–EM SURVEY

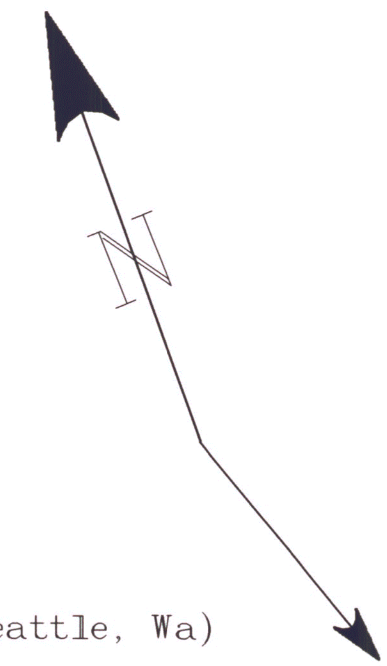
SEATTLE

STACKED PROFILES

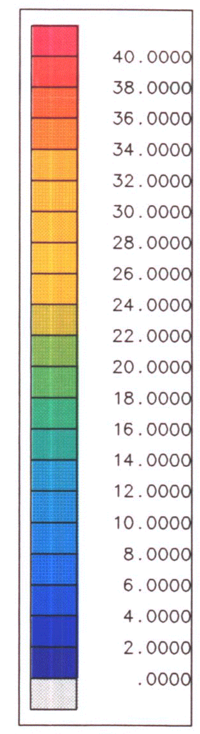
Figure 4.

AMEROK GEOSCIENCES LTD.





NLK (Seattle, Wa)
Apparent Azimuth - 160
Base Line Azimuth - 020



Filtered In-Phase
(% Hz)

0 150
metres

Scale 1: 2500

Grid (0E, 0N) = UTM 649549E 6688216N

UTM DATUM: NAD 1927

093942

FAIRFIELD MINERALS LTD.

DWG (3)

WOLF PROPERTY

(NTS 105 C)

VLF-EM SURVEY

SEATTLE

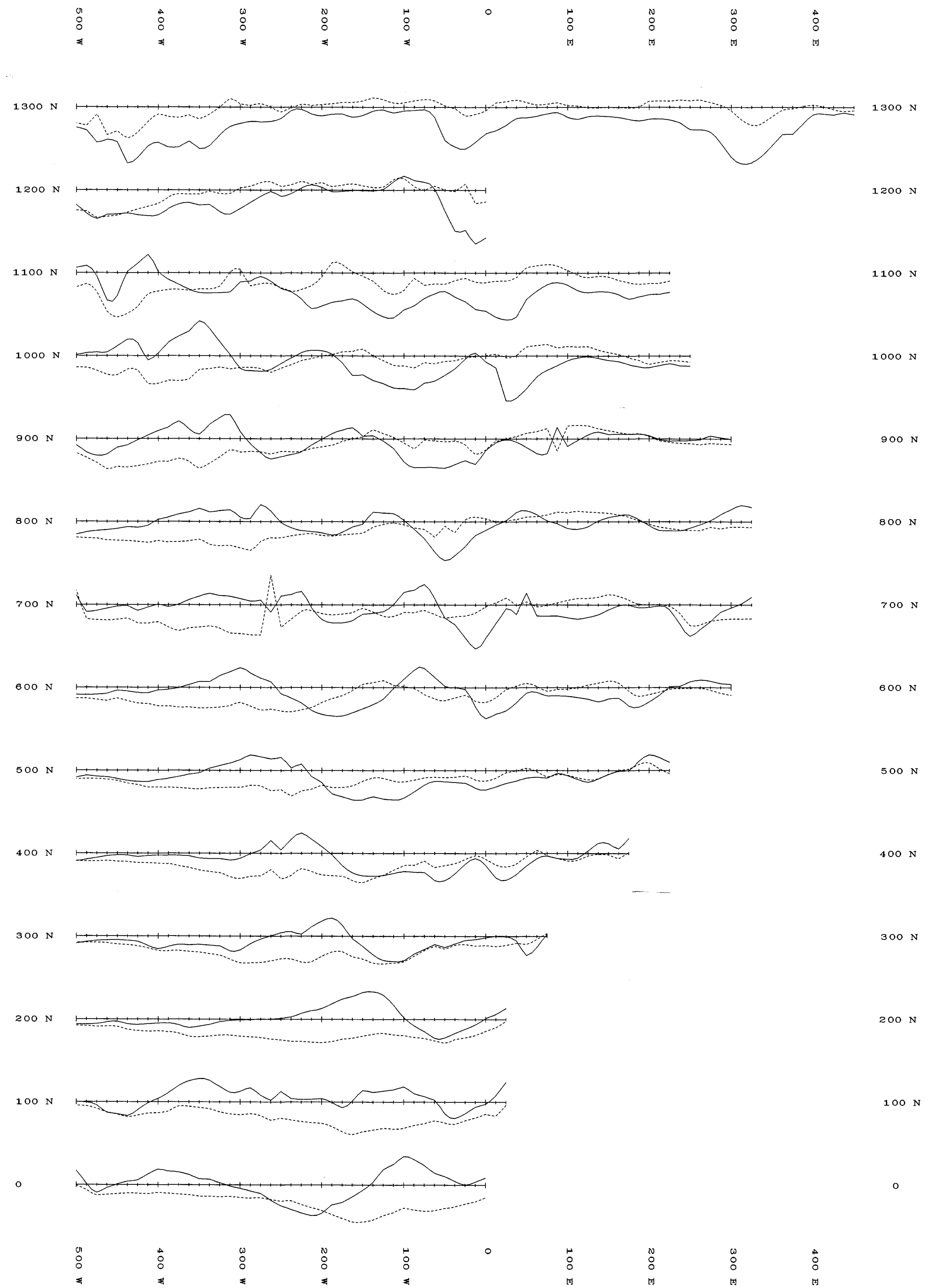
FRASER FILTERED

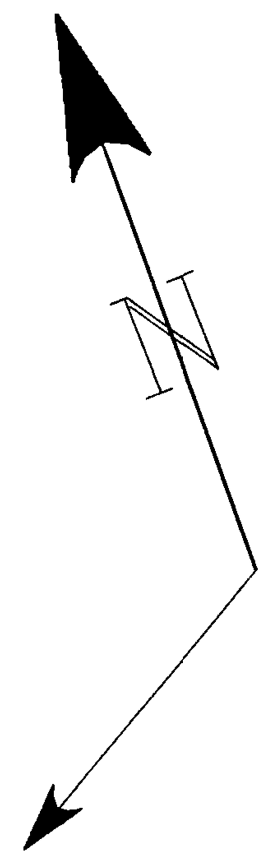
IN-PHASE

CONTOUR MAP

Figure 5.

AMEROK GEOSCIENCES LTD.

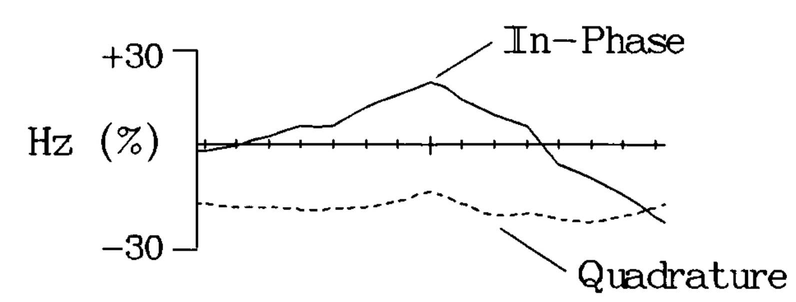




NPM (Lualualei, HA)

Apparent Station Azimuth – 240

Baseline Azimuth – 090



Scale 1: 2500

Grid (0E, 0N) = UTM 649549E 6688216N

UTM DATUM: NAD 1927

093942
DWG (4)

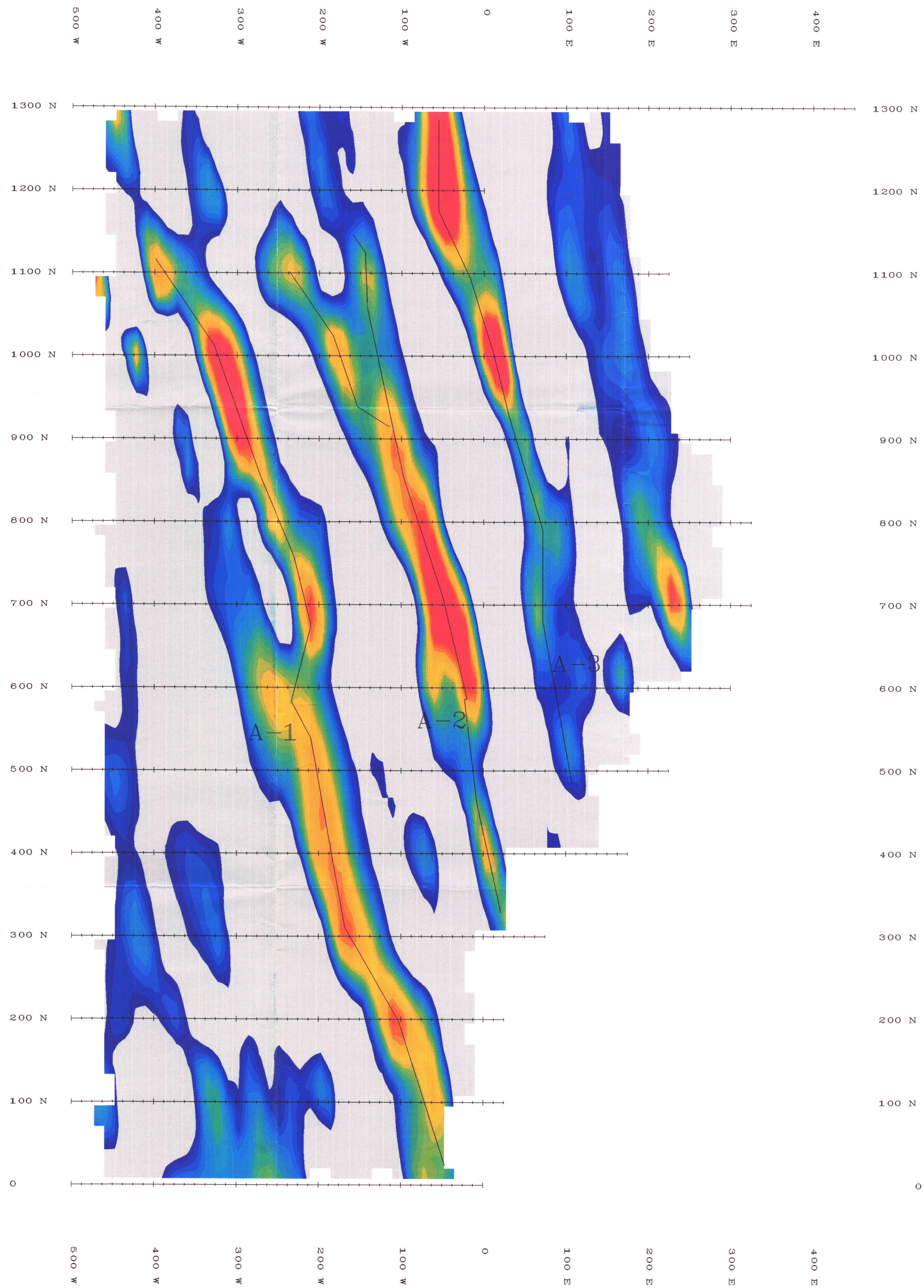
FAIRFIELD MINERALS LTD.

WOLF PROPERTY
(NTS 105 C)

VLF-EM SURVEY
HAWAII
STACKED PROFILES

Figure 6.

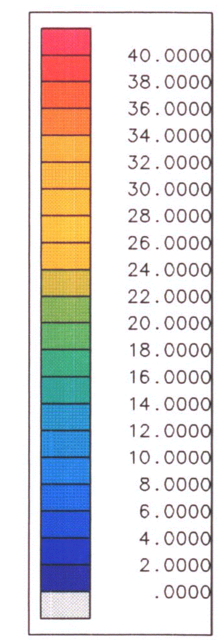
AMEROK GEOSCIENCES LTD.



NPM (Lualualei, Ha)

Apparent station azimuth - 240 °

Base Line Azimuth - 020 °



Filtered In-Phase
(% Hz)

0 150
metres

Scale 1: 2500

Grid (0E, 0N) = UTM 649549E 6688216N

UTM DATUM: NAD 1927

093942

FAIRFIELD MINERALS LTD.

WOLF PROPERTY

(NTS 105 C)

VLF-EM SURVEY

HAWAII

FRASER FILTERED
IN-PHASE
CONTOUR MAP

Figure 7.

AMEROK GEOSCIENCES LTD.