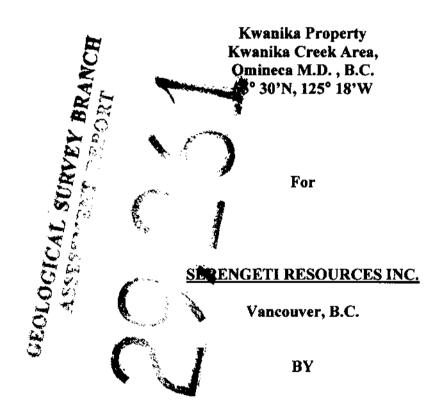


# AN ASSESSMENT REPORT

<u>on</u>

# **MAGNETIC & INDUCED POLARIZATION SURVEYING**



# PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, B.C.

AUGUST 2007

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IP Pseudo Sections with magnetic profiles 1:5,000

Lines 1830S, 500S, 0N, 250N, 500N, 750N, 1000N, 1250N, 1500N, 1750N, 2000N, 2500N & 2900N

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Peter E. Walcott & Associates Limited Geophysical Services

# **INTRODUCTION.**

In early June 2006, Peter E. Walcott & Associates Limited undertook magnetic and induced polarization (I.P.) surveying over parts of the Kwanika property, located some 140 kilometres northwest of the settlement of Fort St. James, British Columbia, for Serengeti Resources.

The survey was carried out over nine east-west oriented lines established by linecutters contracted by Serengeti.

Readings of the earth's total magnetic field were recorded using a GSM 19 proton magnetometer on the magnetic survey, while measurements – first to sixth separation – of apparent chargeability – the I.P. response parameter – and resistivity were made on each of the line traverses using the pole – dipole technique with a 50 metre dipole.

In addition the elevations and horizontal locations of the line stations were measured using a Brunton altimeter and an LI survey grade GPS unit respectively.

The I.P. data are presented as individual pseudo sections at a scale of 1:5,000, while the magnetic data is shown as profiles on these pseudo sections.

Additional work using the same technique was carried out between October  $2^{nd}$  and  $8^{th}$ , 2006 except that a 100 metre dipole was used, along seven previously read or newly established lines.

Again the I.P. data and magnetic data were presented in the same way at a scale of 1:5,000.

#### PURPOSE.

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The purpose of the survey was to explore for porphyry gold-copper mineralization of similar type to the Kwanika deposit that occurs on the southern extent of the grid, along a 3.5 kilometre north northwest trending vertical gradient anomaly encompassing a K/Th high obtained on the previously flown heliborne survey – the deposit occurs within a similar trending but smaller in strike length anomaly.

# SURVEY SPECIFICATIONS.

#### Magnetic Survey.

The magnetic survey was carried out using a GSM 19 proton precession magnetometer manufactured by GEM Instruments of Richmond Hill, Ontario. This instrument measures variations in the total intensity of the earth's magnetic field to an accuracy of plus or minus one nanotesla. Corrections for daily variations in the earth's field – the diurnal – were made by comparison with a similar instrument set up at a fixed location – the base – where recordings were made at 10 second intervals.

#### The Induced Polarization Survey.

The induced polarization (I.P.) survey was conducted using a pulse type system, the principal components of which were manufactured by Huntec Limited of Metropolitan Toronto, Canada and Iris Instruments of Orleans, France.

The system consists basically of three units, a receiver (Iris), transmitter (Huntec) and a motor generator (Huntec). The transmitter, which provides a maximum of 7.5 kw d.c. to the ground, obtains its power from a 7.5 kw 400 c.p.s. three phase alternator driven by a Honda 20 h.p. gasoline engine. The cycling rate of the transmitter is 2 seconds "current-on" and 2 seconds "current-off" with the pulses reversing continuously in polarity. The data recorded in the field consists of careful measurements of the current (I) in amperes flowing through the current electrodes  $C_1$  and  $C_2$ , the primary voltages (V) appearing between any two potential electrodes,  $P_1$  through  $P_7$ , during the "current-on" part of the cycle, and the apparent chargeability, (M<sub>a</sub>) presented as a direct readout in millivolts per volt using a 200 millisecond delay and a 1000 millisecond sample window by the receiver, a digital receiver controlled by a micro-processor – the sample window is actually the total of ten individual windows of 100 millisecond widths.

The apparent resistivity  $(\int_a)$  in ohm metres is proportional to the ratio of the primary voltage and the measured current, the proportionality factor depending on the geometry

# SURVEY SPECIFICATIONS cont'd

of the array used. The chargeability and resistivity are called apparent as they are values which that portion of the earth sampled would have if it were homogeneous. As the earth sampled is usually inhomogeneous the calculated apparent chargeability and resistivity are functions of the actual chargeability and resistivity of the rocks.

The survey was carried out using the "pole-dipole" method of surveying. In this method the current electrode,  $C_1$ , and the potential electrodes,  $P_1$  through  $P_7$ , are moved in unison along the survey lines at a spacing of "a" (the dipole) apart, while the second current electrode,  $C_2$ , is kept constant at "infinity". The distance, "na" between  $C_1$  and the nearest potential electrode generally controls the depth to be explored by the particular separation, "n", traverse.

On this survey both 50 and 100 metre dipoles were employed and first to sixth separation readings were obtained. In all some 26.9 kilometres of I.P. and magnetic traversing were completed.

#### Vertical control.

The elevations of the stations were recorded using an ADC Summit altimeter manufactured by Brunton of Wyoming, USA. This instrument measures elevations using barometric pressures to an accuracy of plus or minus 3 metres. Corrections for errors due to variations in atmospheric pressure were made by comparison to readings obtained on a similar instrument, held stationary at one location – the base -, at 10 minute intervals.

#### Horizontal control.

The horizontal position of the stations were recorded using an Allstar L-1 phase GP receiver. These were post processed against base station data obtained from a similar unit set up as a base using Waypoint software.

# SURVEY SPECIFICATIONS cont'd

#### Data Presentation.

The I.P. data are presented as individual pseudo section plots of apparent chargeability and resistivity at a scale of 1:5,000. Plots of the 21 point moving filter – illustrated on the pseudo section – for the above are also displayed in the top window to better show the location of the anomalous zones.

The anomalous chargeability zones are outlined on the respective pseudo sections.

# **DISCUSSION OF RESULTS.**

These should be studied in conjunction with the contents of the 2006 geological report on the property by Myron Osatenko, P.Geo. and the summary report on the airborne geophysics by J. Klein, P.Geo. which show the previous ground and airborne geophysics respectively.

The writer has included the compilation map showing the previous IP coverage and anomalous zones, and the airborne contoured VG data in this report.

The IP coverage extended from Line 18+30S – roughly equivalent to Line 6000S on the old grid – to Line 2900N, a line along the northern extent of the claim block.

Background chargeabilities of 4 to 6 millivolts/volt were observed on all of the lines above which one or more zones of anomalous chargeabilities were discernible.

The stronger of these on Line 0+00N to 17+50N define a north northwesterly trending zone that is coincident and extends off the western flank of a similar trending vertical gradient anomaly calculated from the total magnetic field obtained on the heliborne survey.

The central portions of the lines surveyed generally exhibited resistivities in the hundreds of ohm-metres reflecting intrusive rocks, flanked on the west and sometimes on the east by resistivities in the tens of ohm-metres attributable to underlying sedimentary strata.

Further discussion will be on a line by line basis.

<u>Line 18 + 30S</u>. A strong chargeability response is observed between 1400E and 1900E as shown on the pseudo section. This response corresponds well with that obtained on the previously done survey on Line 6000S over the centre of the Kwanika deposit. It is associated with higher resistivities. Lower resistivities and chargeabilities were observed at the western extremity of the line suggesting the presence of sediments there.

## DISCUSSION OF RESULTS cont'd

<u>Line5+00S</u> A strong chargeability response can be seen from 12+50 to 14+50E corresponding well with the results from the old survey and encompassing DDH 72-P3. A weaker response is observed between 6+00 and 8+00E associated with slightly higher magnetics respresenting the toe of the aforementioned north northwesterly trending zone. The intrusive-sedimentary contact is clearly discernible around 3 + 50E.

<u>Line 0</u> A complex zone of higher chargeability response is observed between 3+50E and 9+00E with a weaker zone circa 11+00 to 12+00E. These again show good correlation with the results of the previous IP survey – Line 0S, the most northerly line of the coverage. The intrusive-sedimentary contact is seen circa 2+00E. Higher magnetic responses can be seen associated with the eastern portion of the zone.

<u>Line 2+50N.</u> The coverage here is with a 100 metre dipole as opposed to the previous three which were read with a 50 metre dipole. Here the zone is observed between 3+50 and 8+00E with stronger response at depth on the western flank. Higher magnetics are observed over the central – eastern portion while the sedimentary-intrusive contact is clearly discernible circa 1+00E.

<u>Line 5+00N.</u> The coverage on this line was with both 50 and 100 metre dipoles. The strongest zone with its tell tale magnetic signature stretches between 3+50E and 8+00E with strong responses all the way to depth. A weaker zone with increasing response at depth is seen between 10+50 and 13+50E. This has no magnetic signature. The sedimentary-intrusive contact is again observed circa 2+00E, while a second such contact is suggested at 19+00E.

<u>Line 7+50N.</u> A strong typical pole-dipole shallow response is observed between 2+00 and 6+50E on the 100 metre dipole work here. The higher magnetic response is observed on the eastern flank, while the sedimentary contact is indicated on the resistivity at 1+00E.

<u>Line 10+00N</u>. Here the zone showed better response at depth on the 50 metre survey and was undefined to the west. It is better defined on the later 100 metre work

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# **DISCUSSION OF RESULTS cont'd**

between 0 and 7+00E. The anomalous magnetic readings are again seen over the centraleastern portion of the chargeability anomaly. The sedimentary-intrusive contact is seen around 1+00W on the 100 metre work, while a second contact is observed circa 18+00E on the 50 metre traverse. A single dipole chargeability high associated with a narrow magnetic anomaly is seen circa 13+50E.

<u>Line 12+50N</u>. The strong chargeability response was observed between 2+00W and 5+00E on the 100 metre dipole work. The sedimentary-intrusive contact was pegged at circa 2+00W although lower resistivities appear to be associated with the western part of the anomaly. The stronger magnetic response is again associated with the central-eastern portion.

<u>Line 15+00N.</u> The zone is observed from 4+00E and extending westwards on the deeper separations on the 50 metre work. A strong one dipole high is observed between 13+00 and 13+50E associated with magnetic feature to the west of a possible sedimentary-intrusive contact as suggested by the resistivity. The 100 metre work defined the chargeability zone to lie between 3+00W and 5+00E. The sedimentary-intrusive contact is indicated circa 2+50W with lower resistivities associated with lower chargeabilities at depth on the western portions. Higher magnetics are seen across most of the chargeability zones.

<u>Line 17+50N.</u> The main anomaly is seen at depth on the 100 metre work between 1+00 and 4+00E associated with a smoother less intense magnetic signature. Lower resistivities are seen to the west and above the chargeability response. A weaker chargeability response is observed around 2+00W near the sedimentary-intrusive contact at 4+00W.

<u>LINE 20+00N.</u> Only very weak responses at depth with no magnetic association were observed at the western extremity of the line. A weak chargeability response is discernible extending from 10+00E to the end of the line.

# **DISCUSSION OF RESULTS cont'd**

<u>Line 25+00N</u>. A weak chargeability response is observed between 4+00 and 1+00W associated with a strong magnetic high. Higher chargeability backgrounds are noted across most of the line.

<u>Line 29+00N</u>. A strong chargeability response is observed between 5+00W and 2+00E associated with a strong magnetic anomaly. Higher backgrounds are noted across this line as was the case on Line 25N.

As can be seen from the contoured VG map the magnetic responses on Lines 25 and 29N are associated with a different magnetic feature than those obtained on Lines 0 through 17+50N.

Furthermore as the chargeability zone generally encompasses the magnetic feature and extends off it to the west this would suggest that the mineralization is associated with altered rocks – magnetite depletion – along the west side of the linear magnetic feature.

# SUMMARY, CONCLUSIONS & RECOMMENDATIONS

Between June  $12^{th} - 21^{st}$ , 2006, and October  $2^{nd}$  and  $8^{th}$ , 2006, Peter E. Walcott and Associates Limited undertook magnetic and induced polarization traversing over parts of the Kwanika property for Serengeti Resources Inc.

The property is located straddling Kwanika Creek some 140 kilometres northwest of Fort St. James, British Columbia.

The survey was carried out over thirteen east-west trending lines with 50 and 100 metre dipoles employed on the IP portion.

The IP survey gave a significant chargeability signature over the Kwanika deposit on Line 1830S, and outlined a zone of strong chargeability trending north northwest from Line 0 to Line 1750N, partially coincident with a similar trending zone of higher magnetic intensity.

As this latter zone was the subject of diamond drilling with considerable success the writer recommends that similar magnetic features should be subjected to induced polarization traversing.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED

Peter E. Walcott, P.Eng.

Peter E. Walcott, P.Eng. Geophysicist

Vancouver, B.C. August 2007

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# <u>APPENDIX</u>

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# COST OF SURVEY.

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Peter E. Walcott & Associates Limited undertook the survey on a daily basis. Mobilization and reporting were extra so that the total cost of services provided was \$68,577.41.

# PERSONNEL EMPLOYED ON SURVEY.

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<u>Name</u>	Occupation	Address	Dates
Peter E. Walcott	Geophysicist	Peter E. Walcott & . Associates Limited 506-1529 W, 6 <sup>th</sup> Ave. Vancouver, B.C.	July 2nd, Nov. 12 <sup>th</sup> ,06 Aug 8 <sup>th</sup> ,2007
Alexander Walcott	Geophysicist	"	Jul 3 <sup>rd</sup> –6 <sup>th,</sup> Nov. 14 <sup>th-</sup> 18 <sup>th</sup> , 2006, Jan 4 <sup>th</sup> – 10 <sup>th</sup> , 2007
Andrea Cochrane	"	"	Jun $12^{th} - 21^{st}$ 2006
S. Phillips	Geophysical Operator	**	÷5
R. Hutton	"	**	"
P. Charlie	"	"	Oct. 2 <sup>nd</sup> 8 <sup>th</sup> 06
A. Stegner	Geophysical Assistant		Jun 12 <sup>th</sup> -21 <sup>st</sup> 06
M. Magee	<u>44</u>	66	<del>66</del>
M. Henderson	44	66	54
R. Henderson	"	**	"
Phil Carter	44	**	64
Matt Russell	66	**	66
B. Lajeunesse	"	**	Oct 2 <sup>nd</sup> -8 <sup>th</sup> 06
S. Cruikshank	44	<u>.</u> .	<b>6</b> 2
T. Scott	46	**	<b>66</b>
E. Barnett	"	٠٠	66
J. Walcott	Report Prep.	"	Aug 8 <sup>th</sup> , 2007

Peter E. Walcott & Associates Limited Geophysical Services

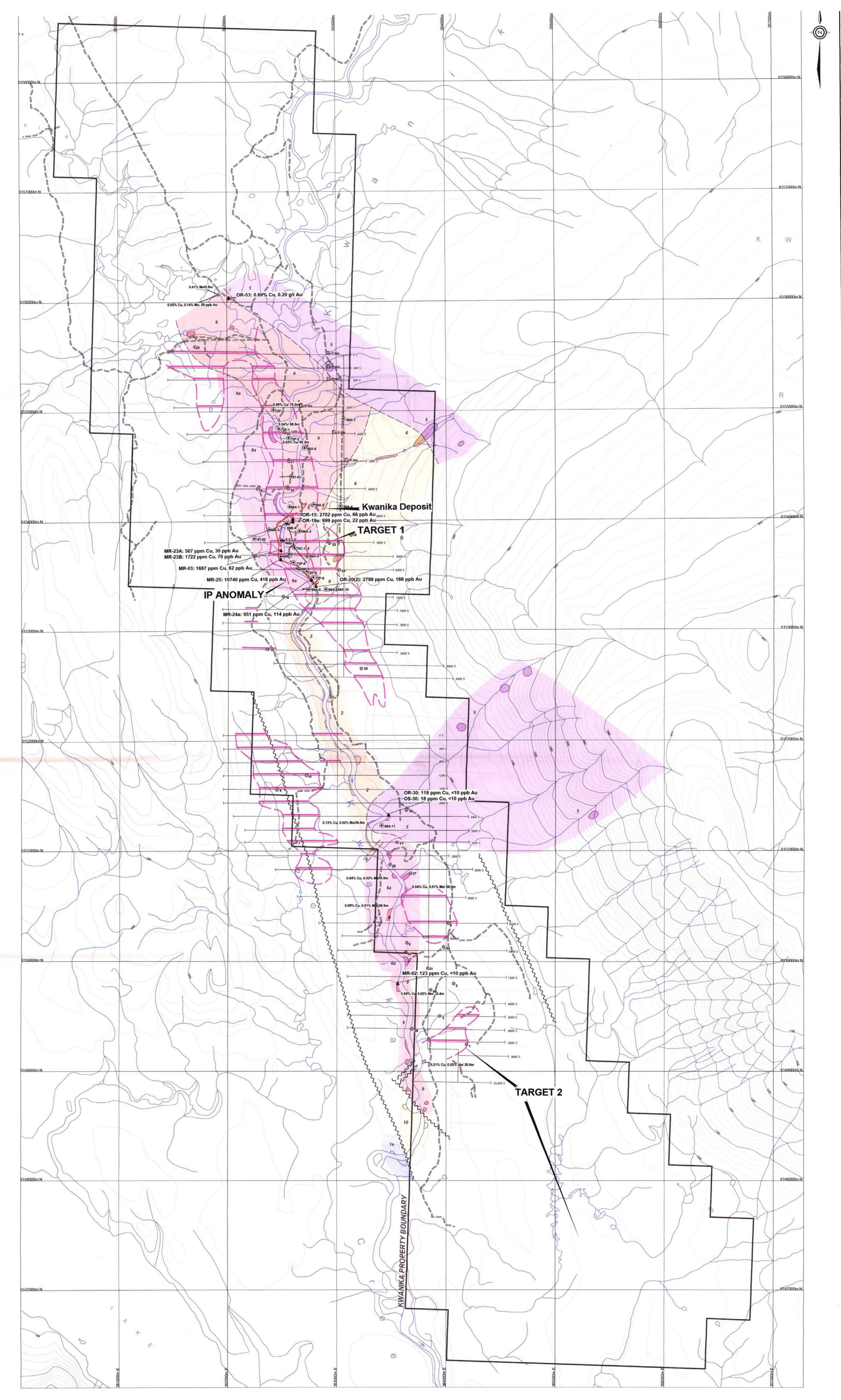
## **CERTIFICATION.**

I, Peter E. Walcott of 605 Rutland Court, Coquitlam, British Columbia, hereby certify that:

- 1. I am a graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.
- 2. I have been practicing my profession for the last forty five years.
- 3. I am a member of the Association of Professional Engineers of British Columbia and Ontario.
- 4. I hold no interest, direct or indirect in Serengeti Resources Inc., nor do I expect to receive any.

Peter E. Walcott, P.Eng.

Vancouver, B.C. August 2007



# LEGEND

GEOLOGY

9\_ granite

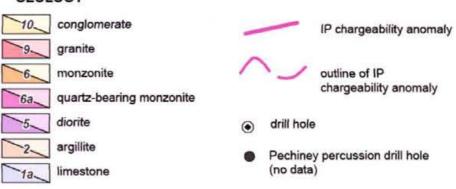
5\_ diorite

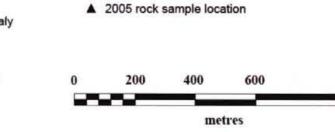
2\_ argillite

1a\_ limestone

6 monzonite

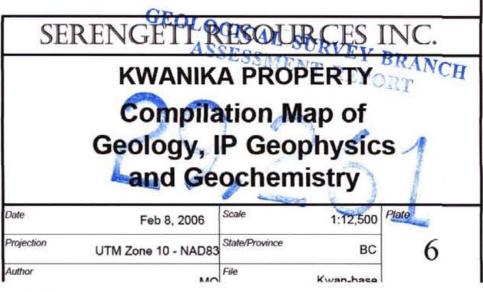
10\_ conglomerate

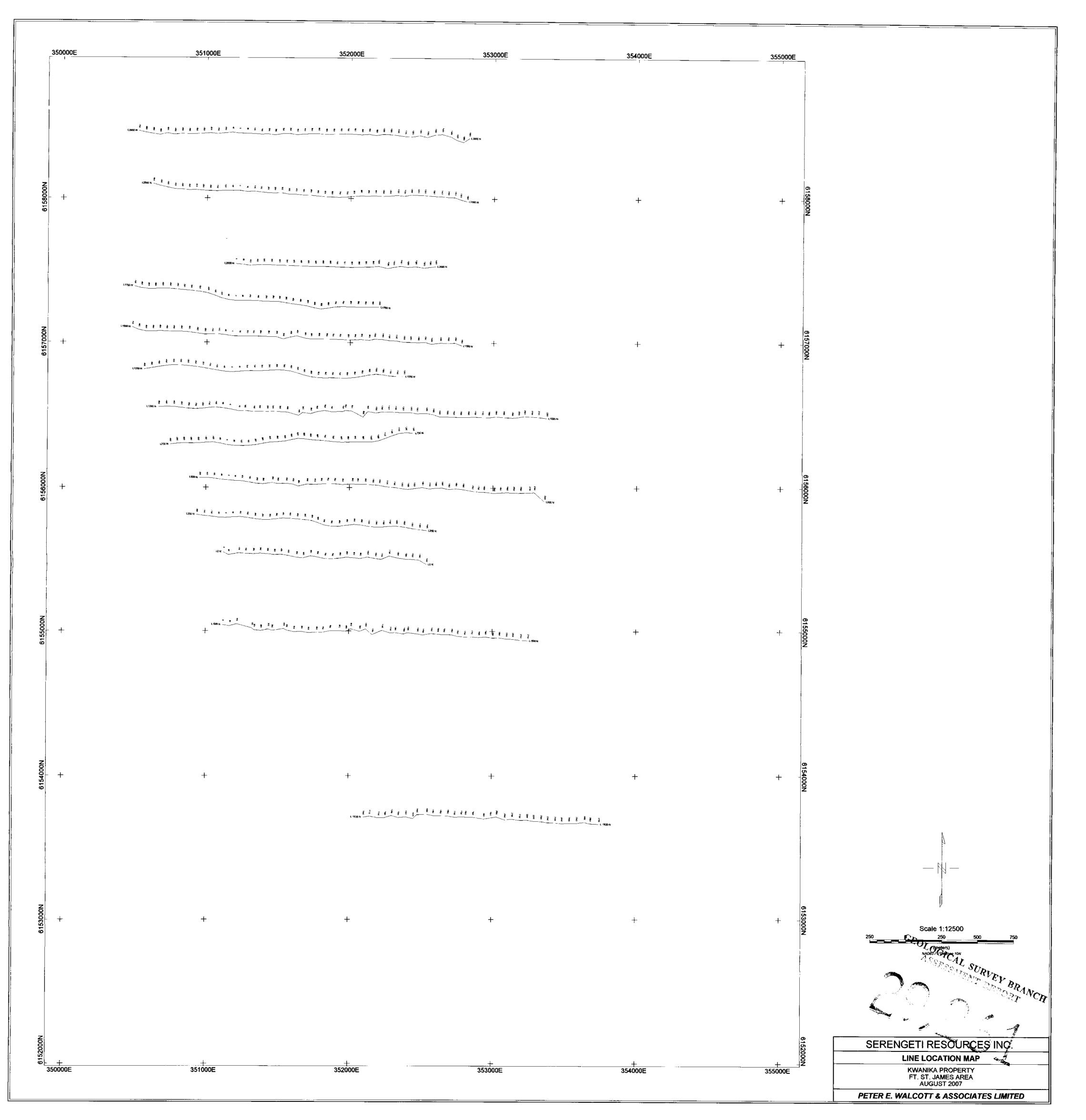


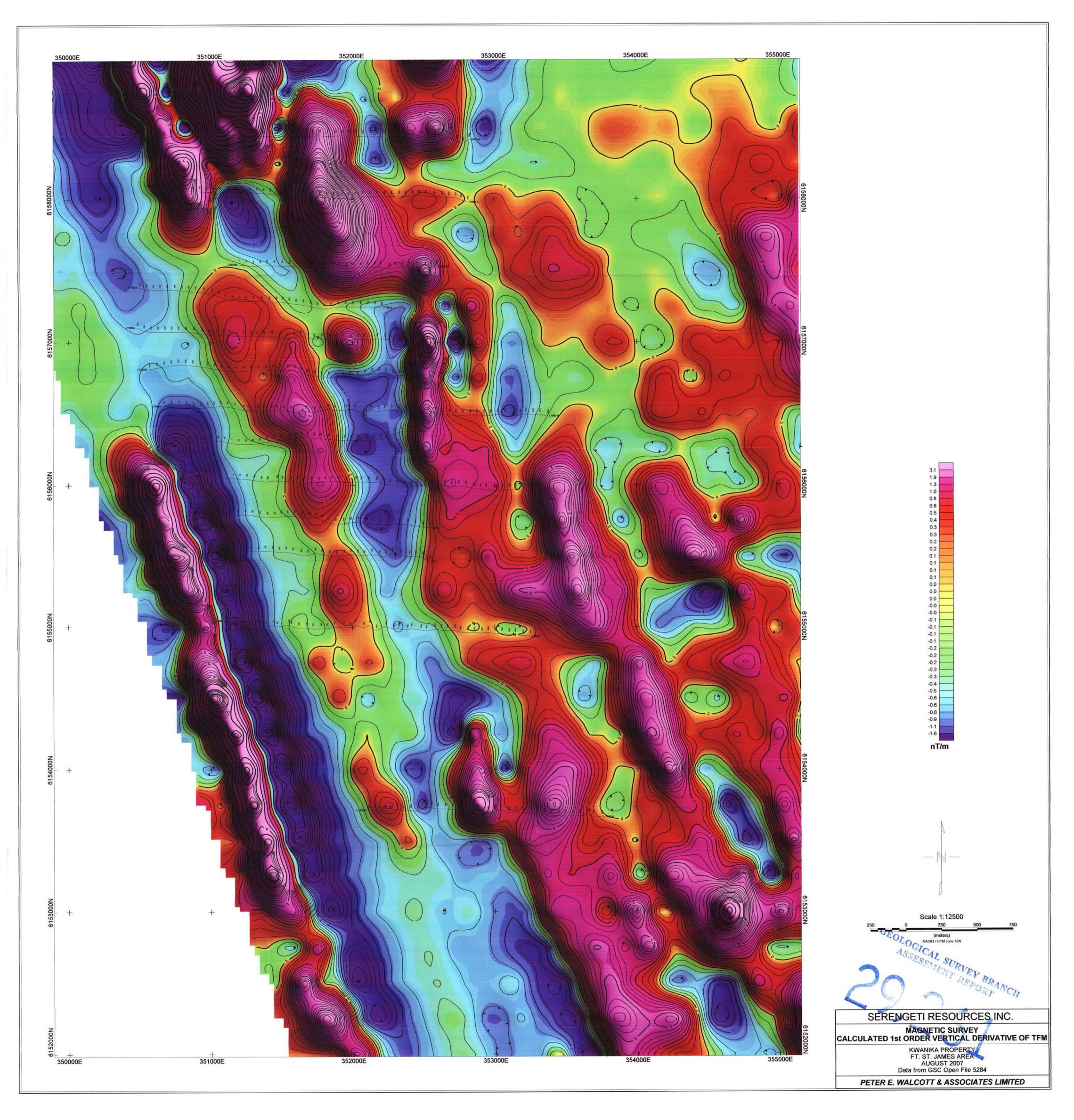


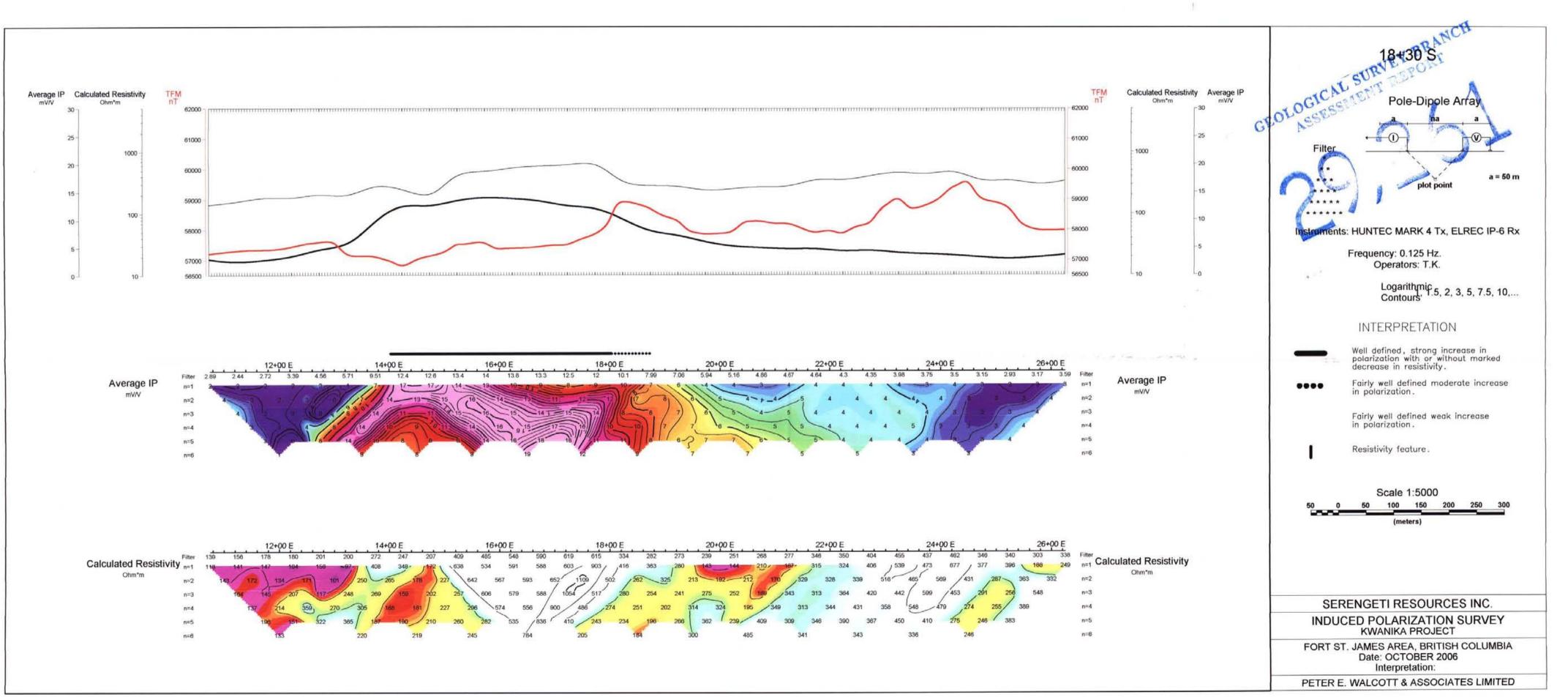
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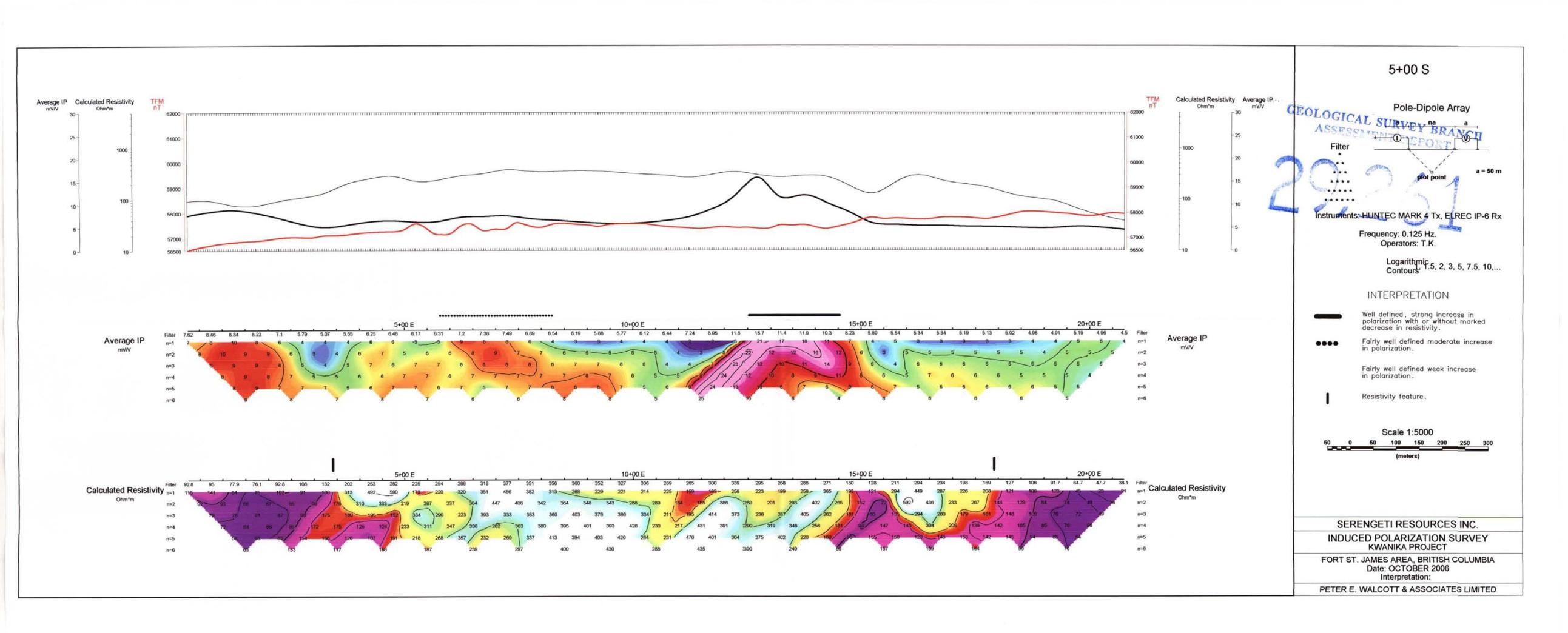
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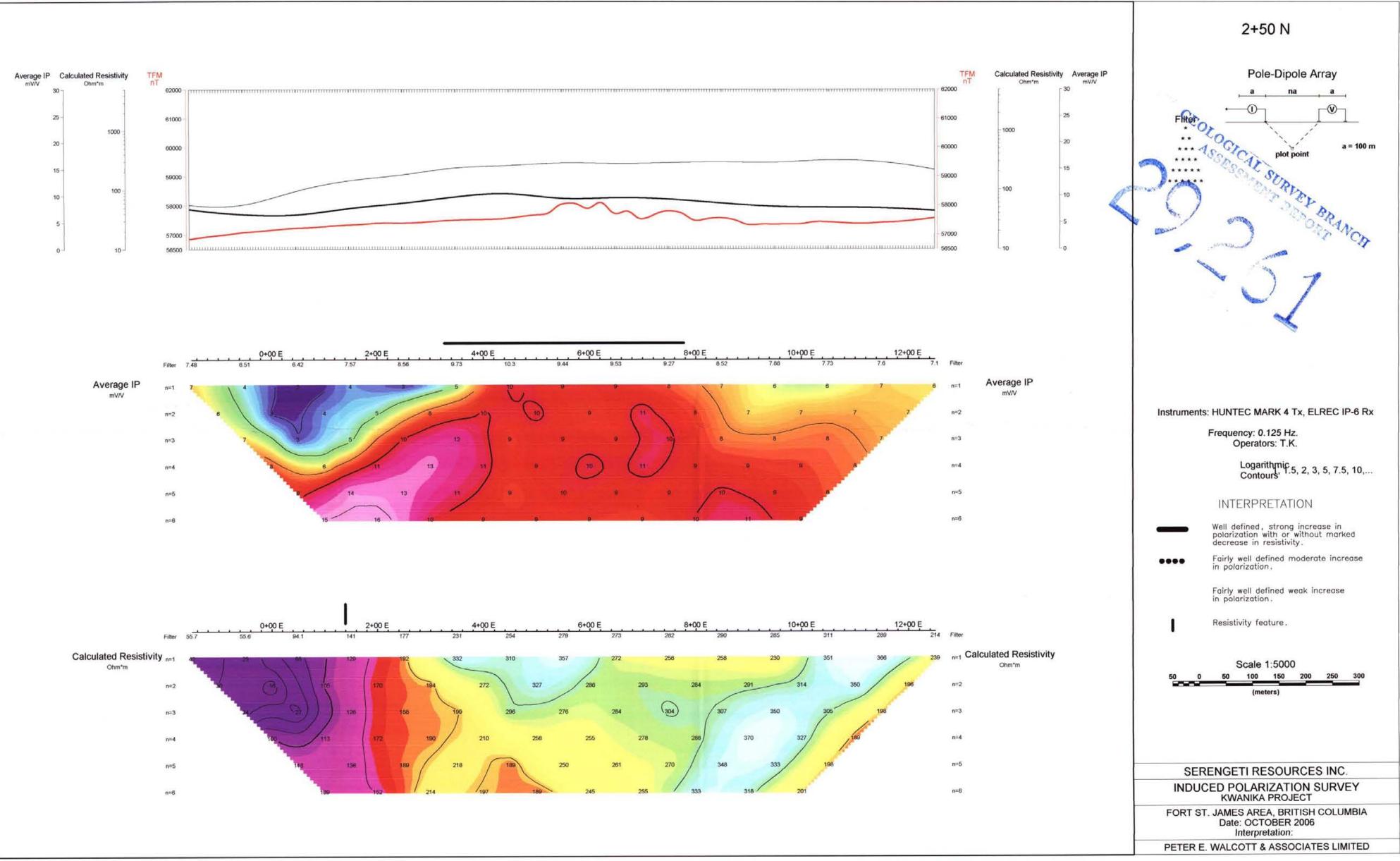


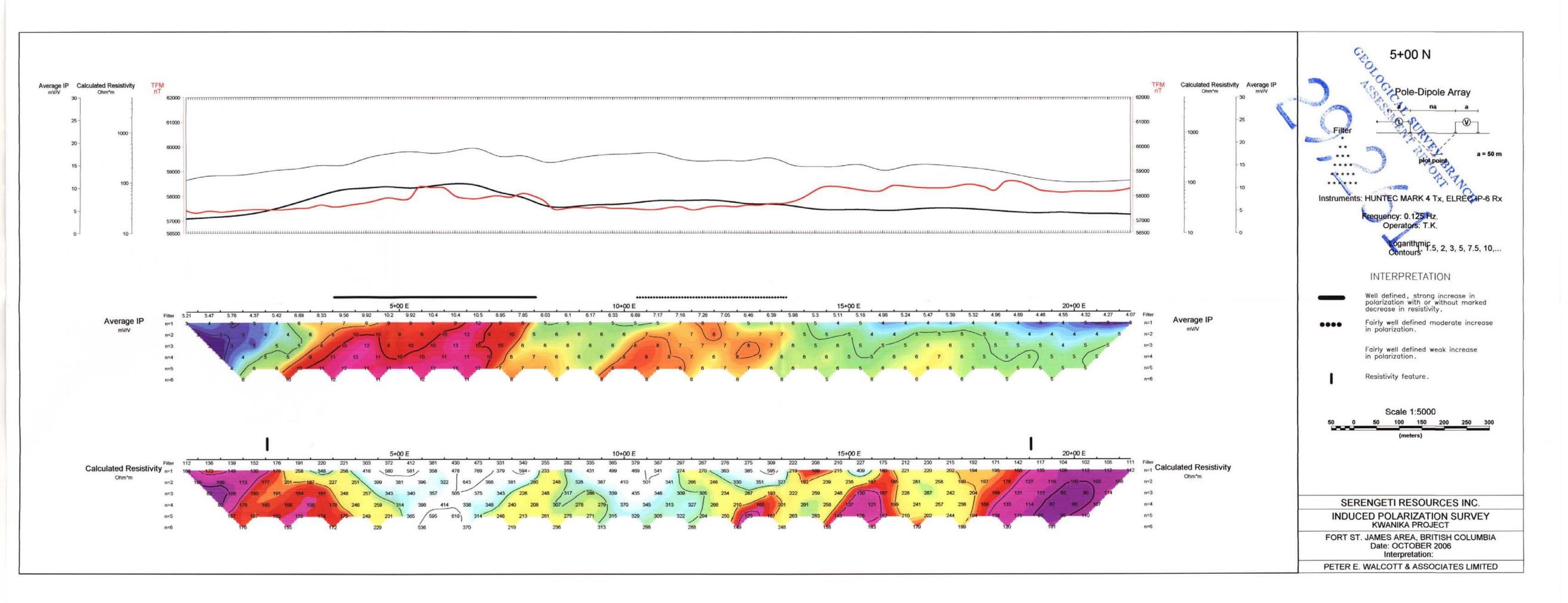


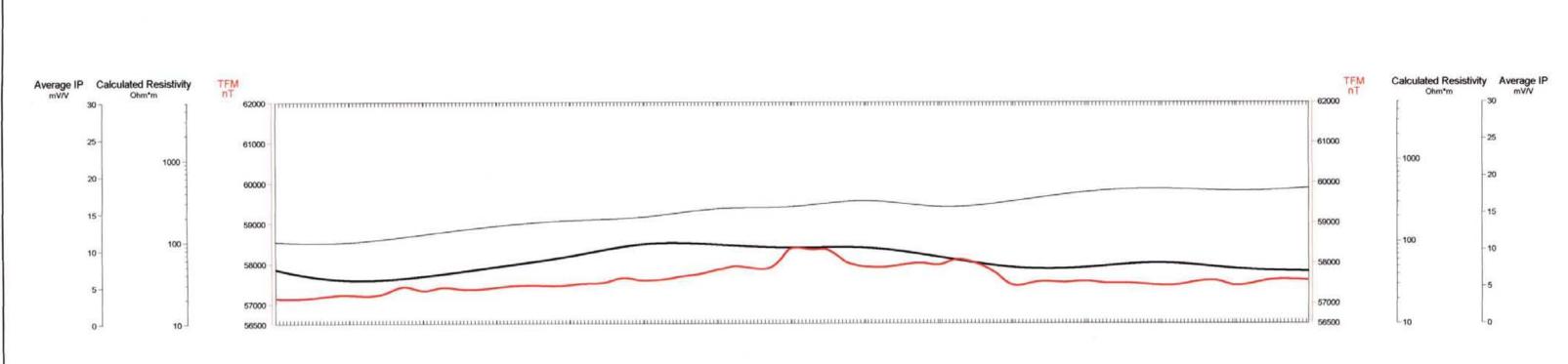


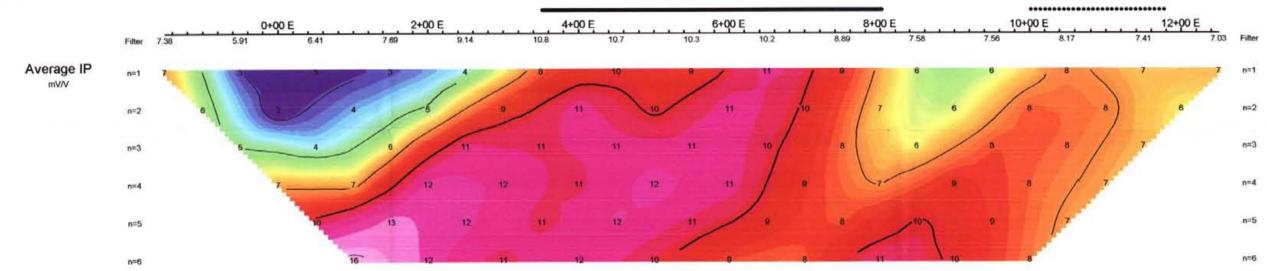


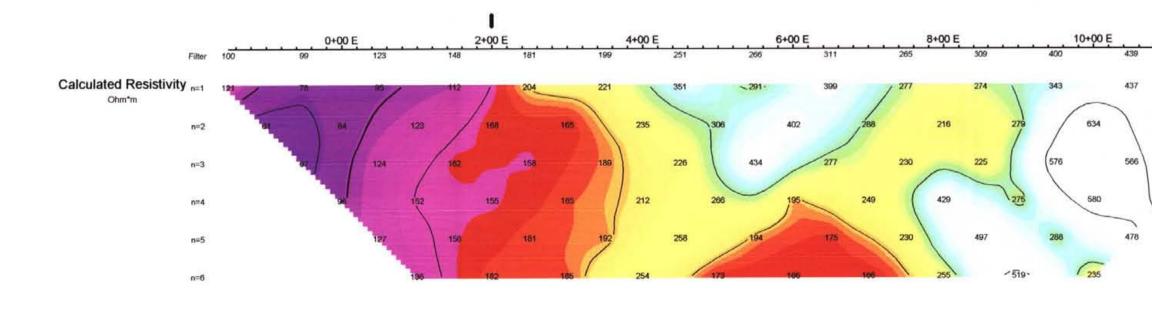


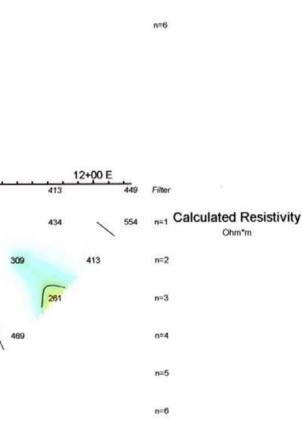






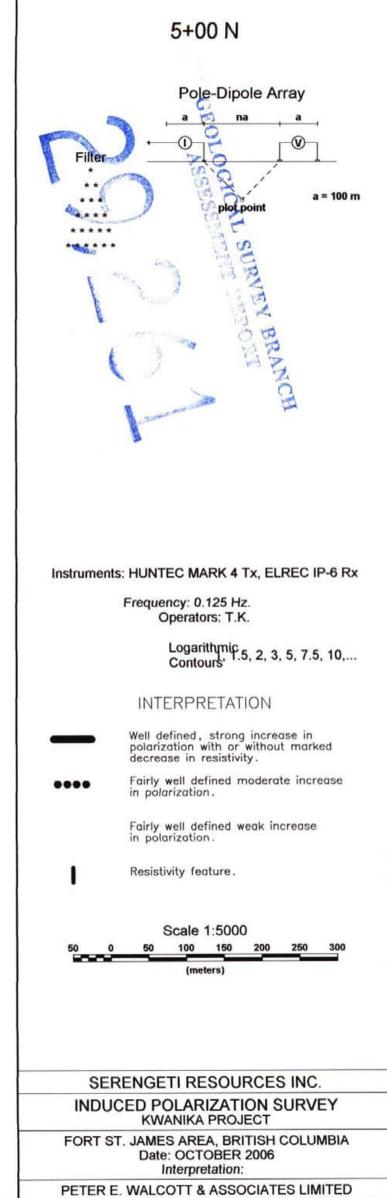


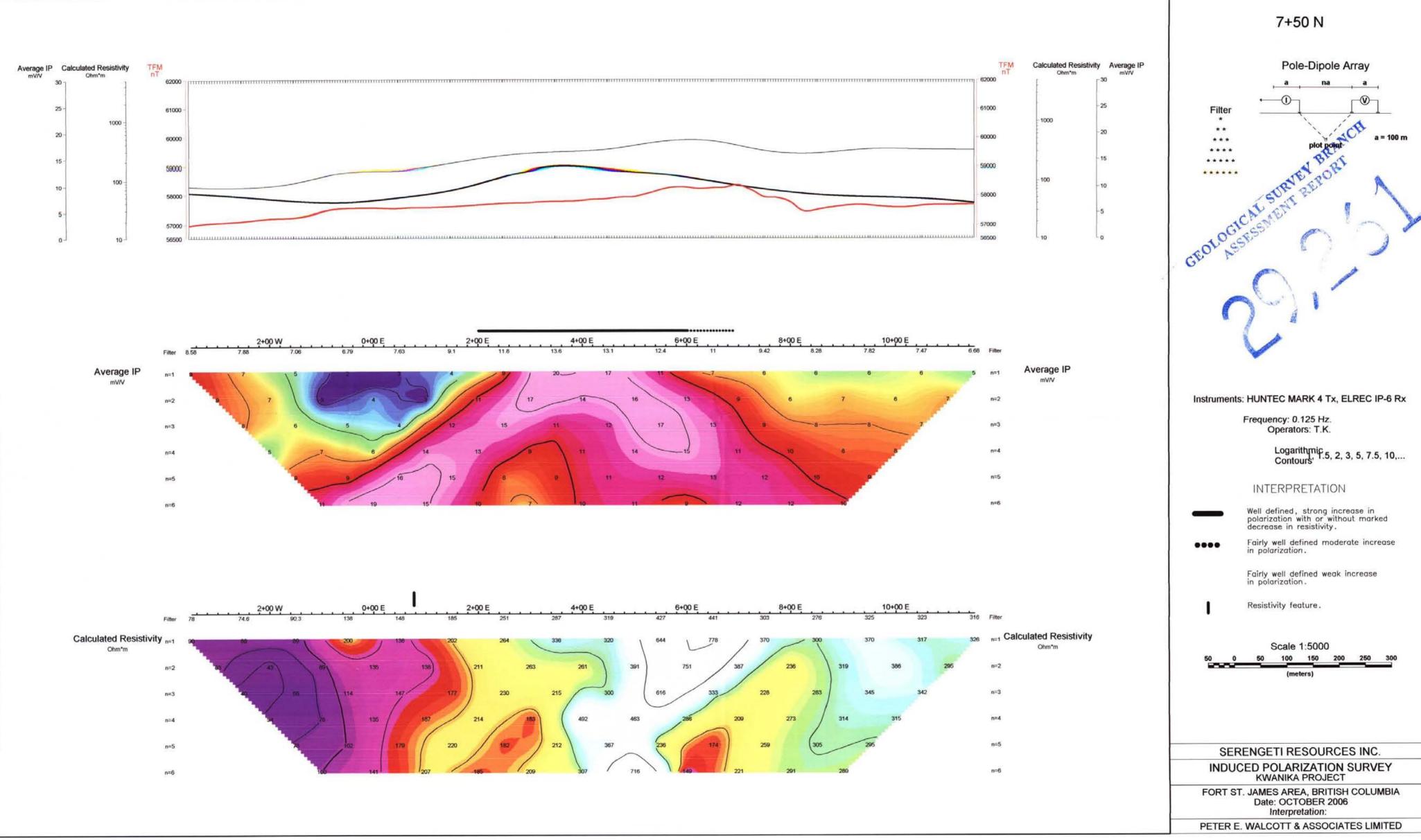


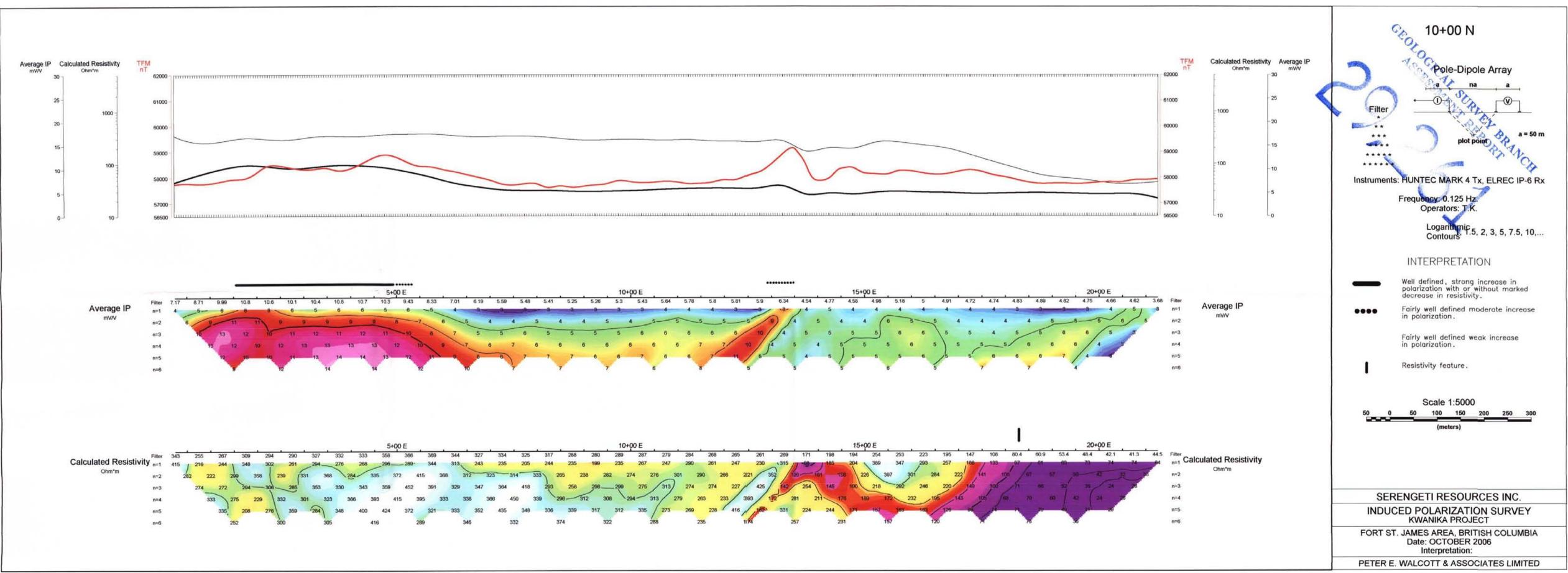


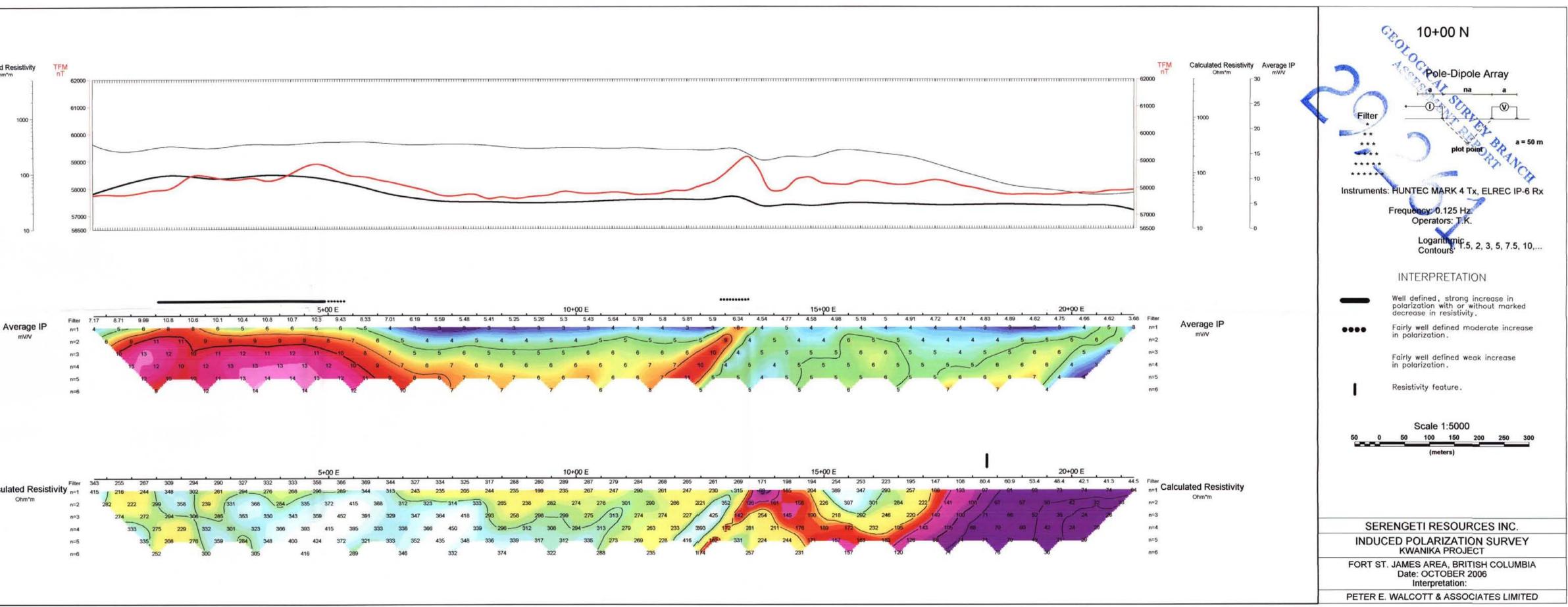
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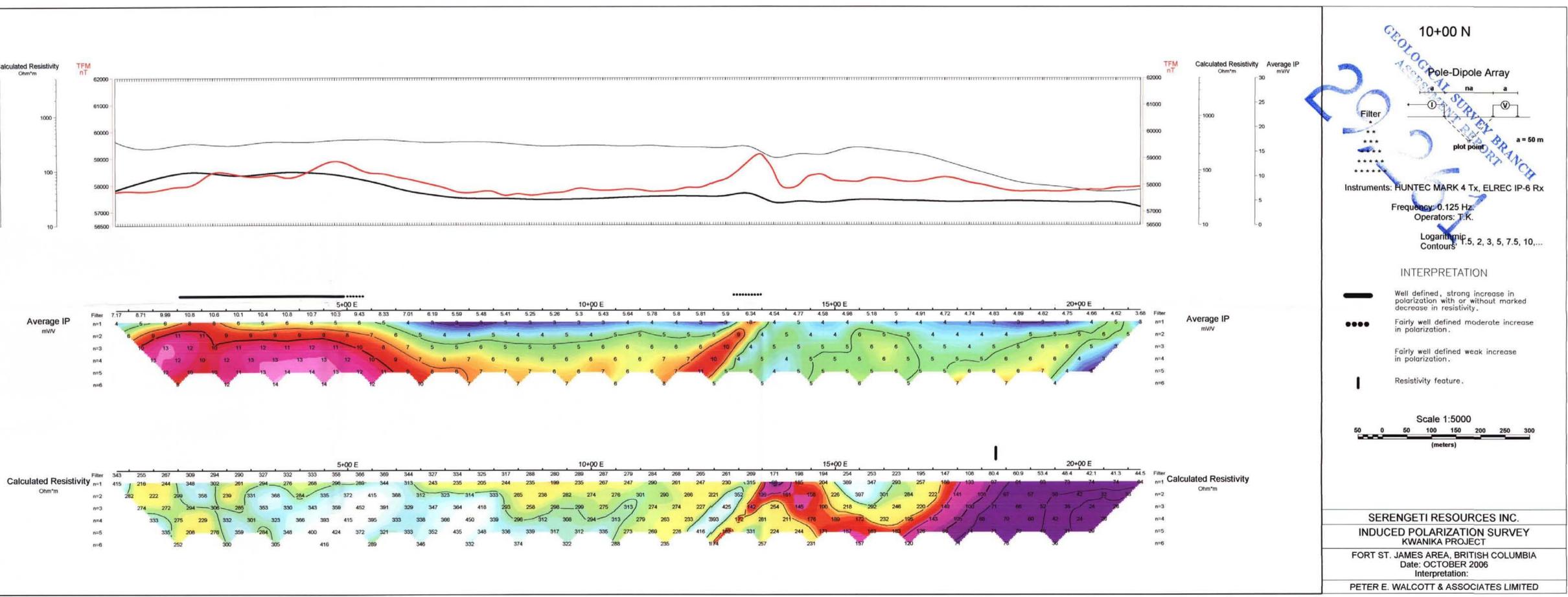
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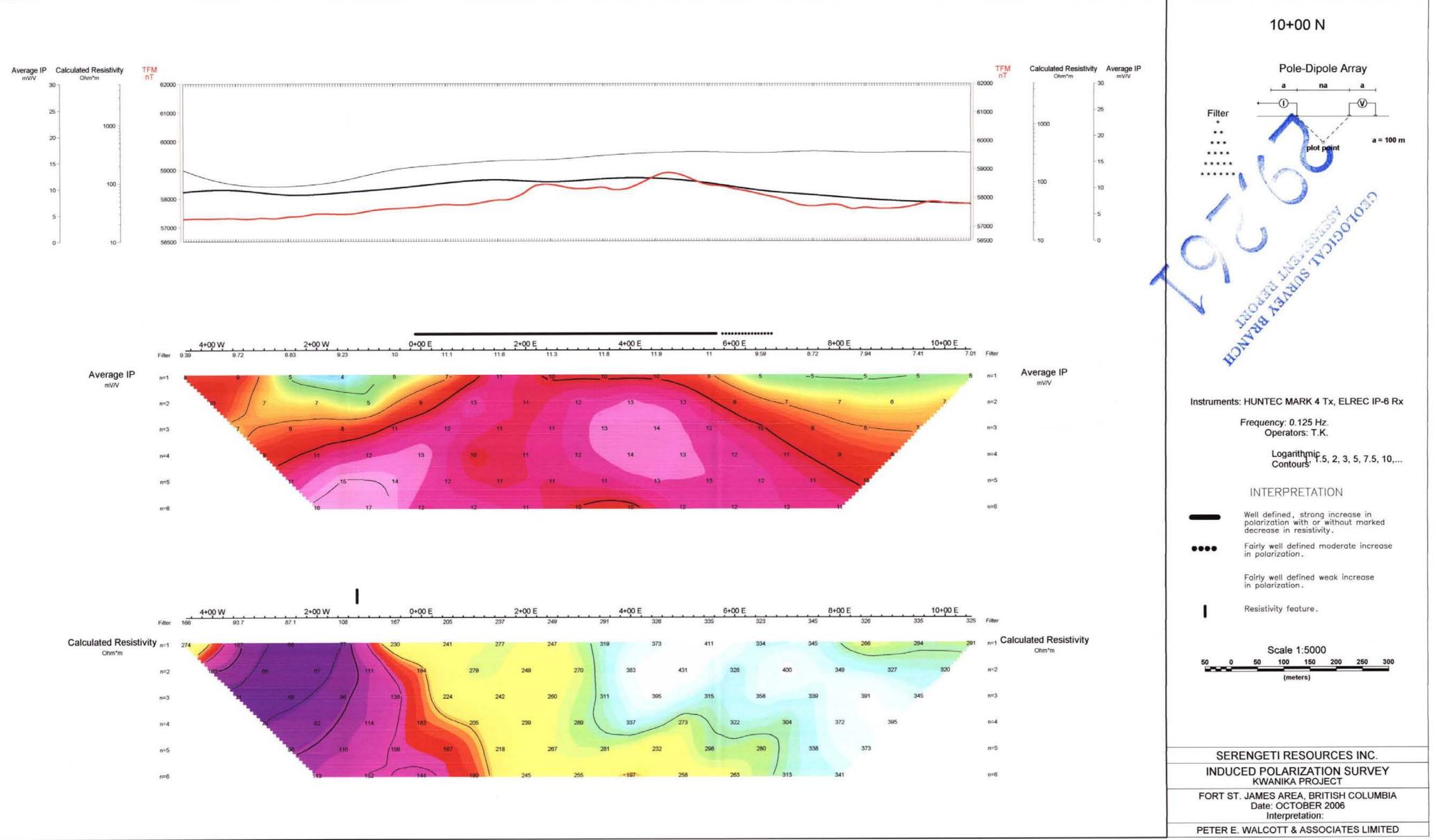


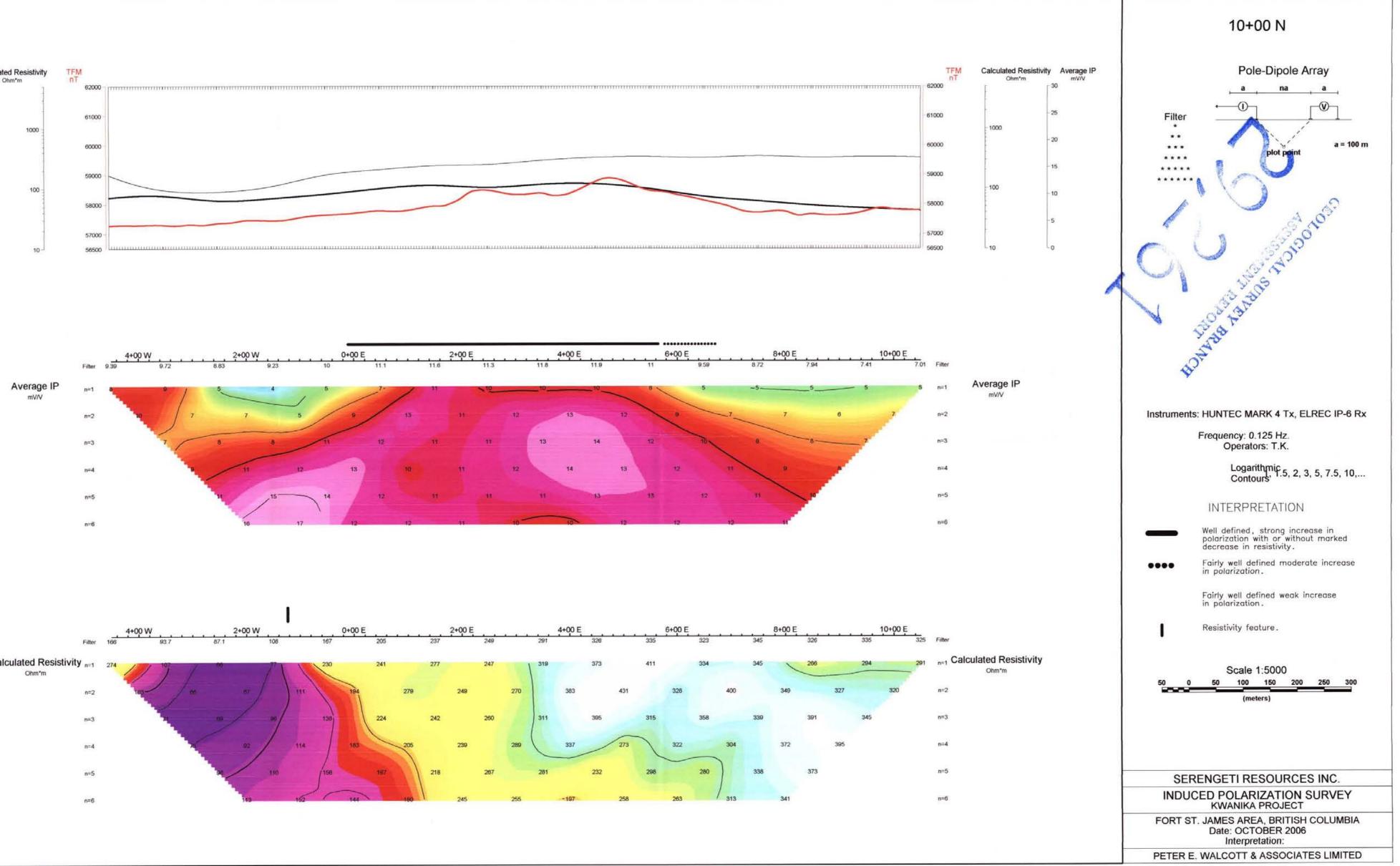


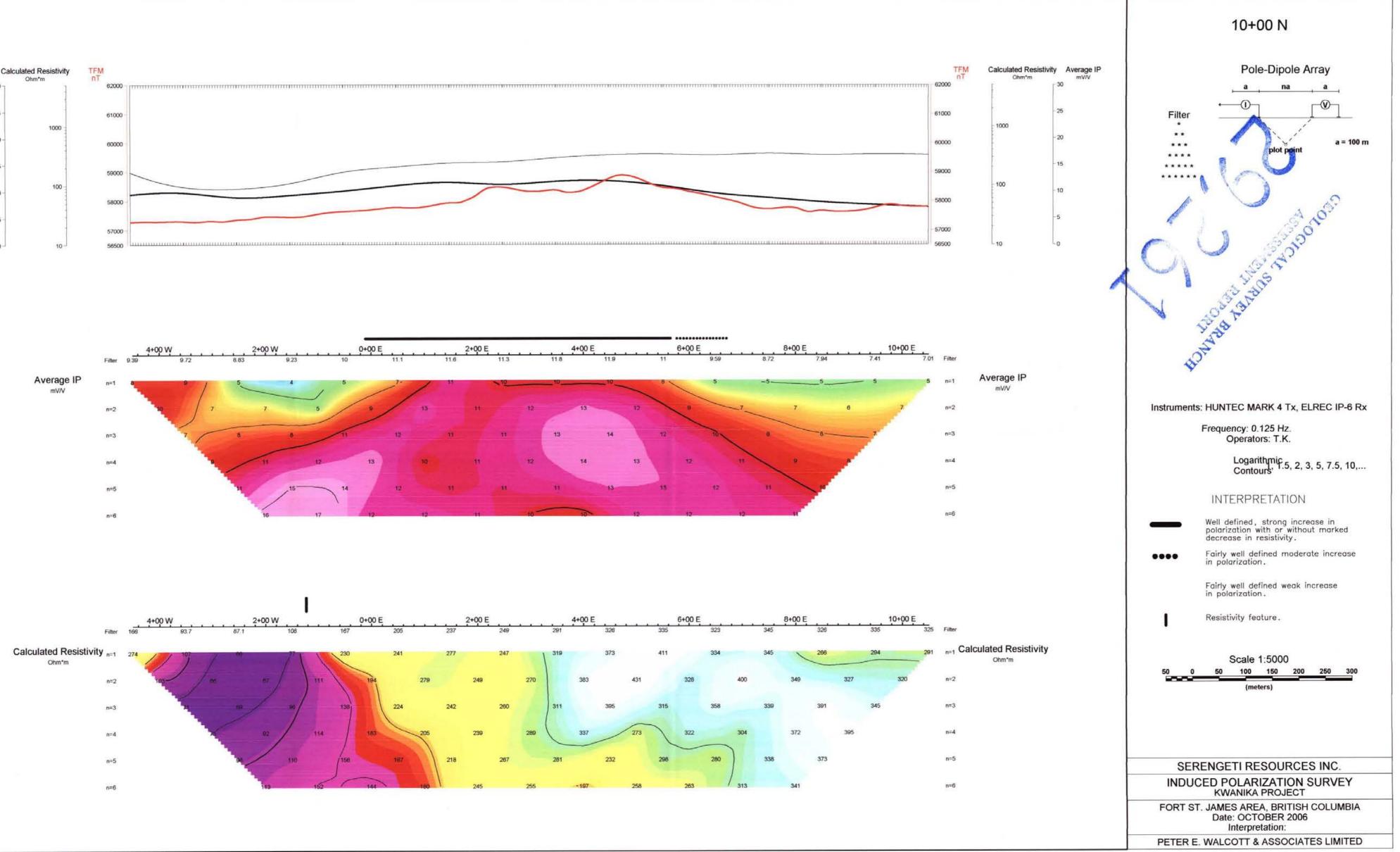


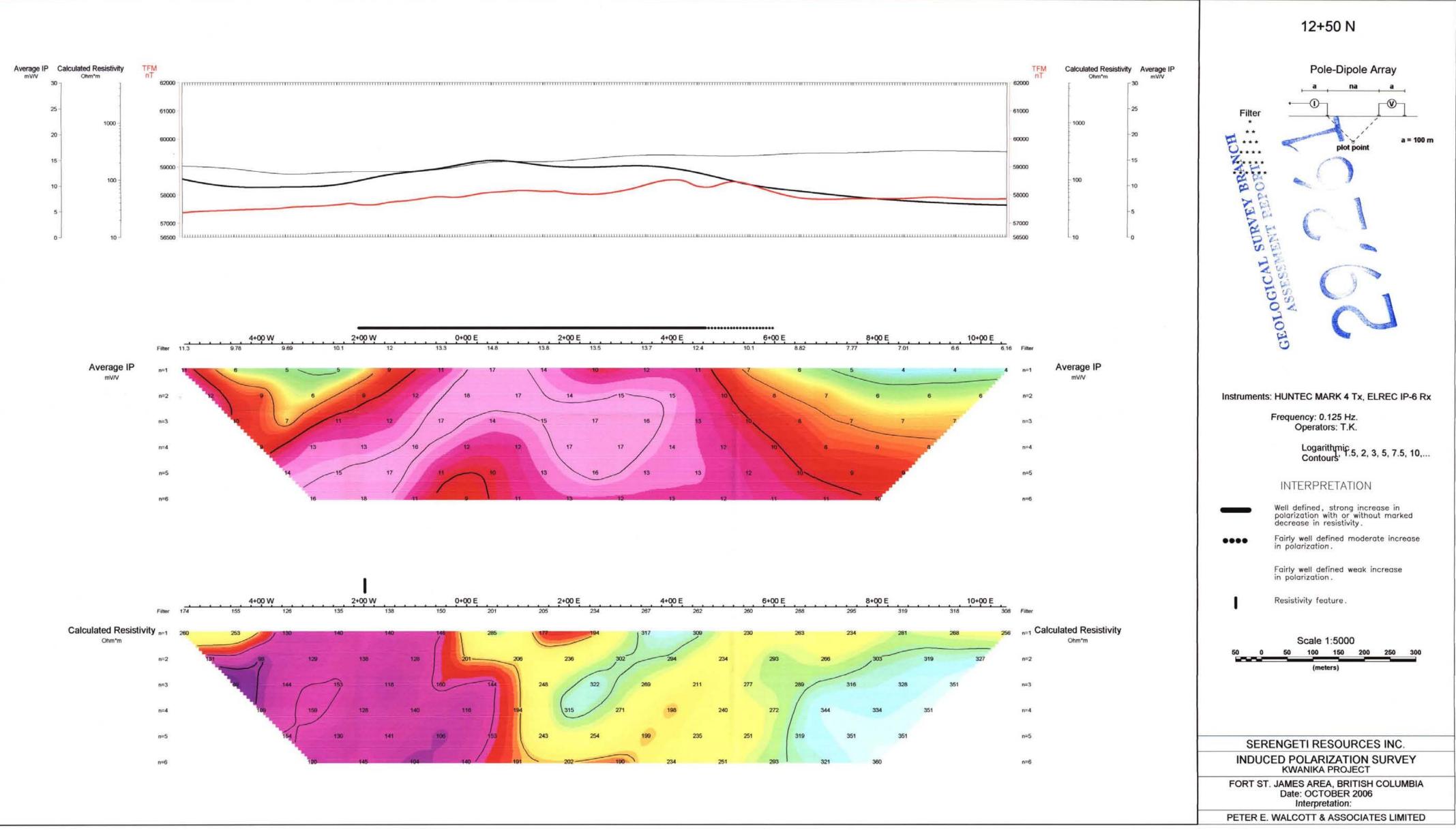


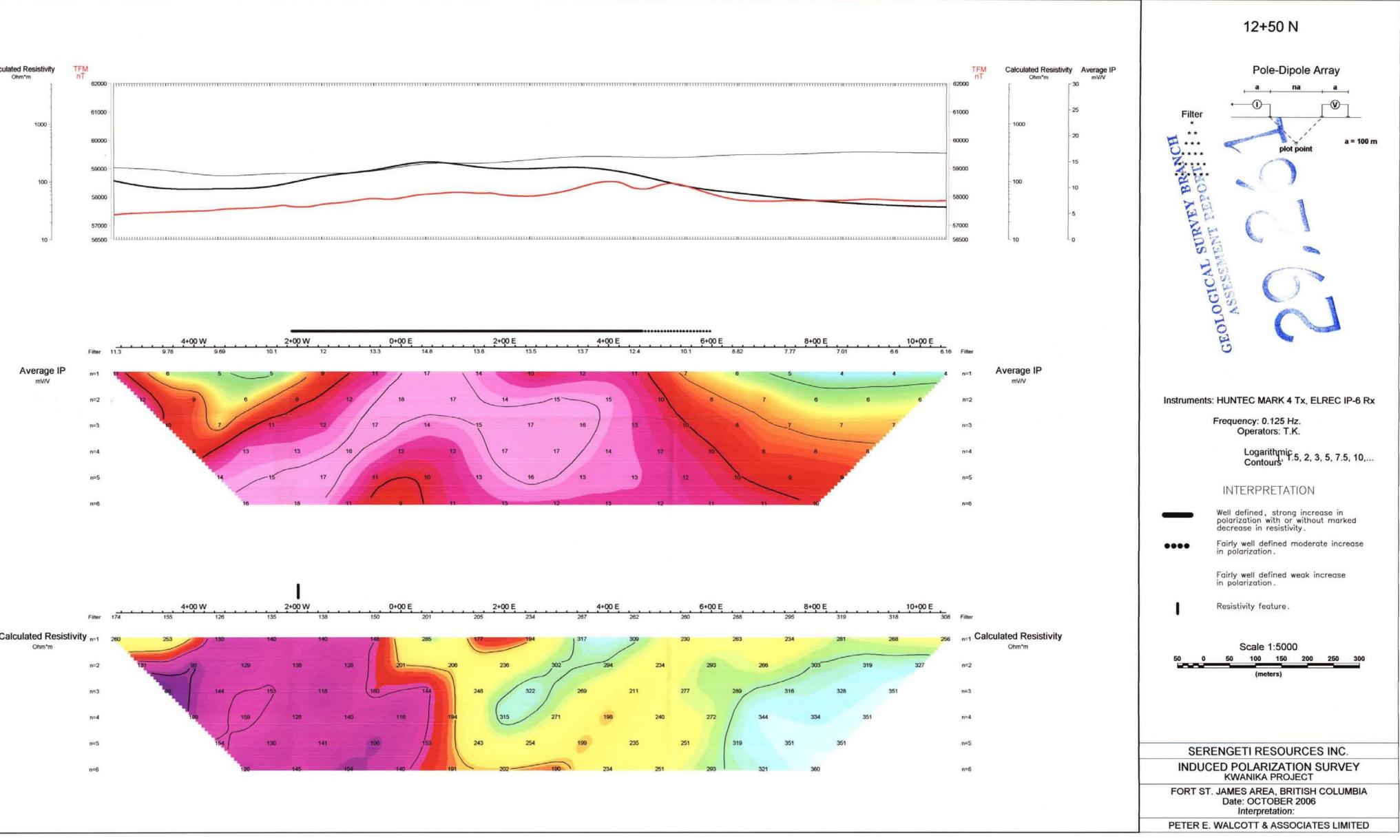


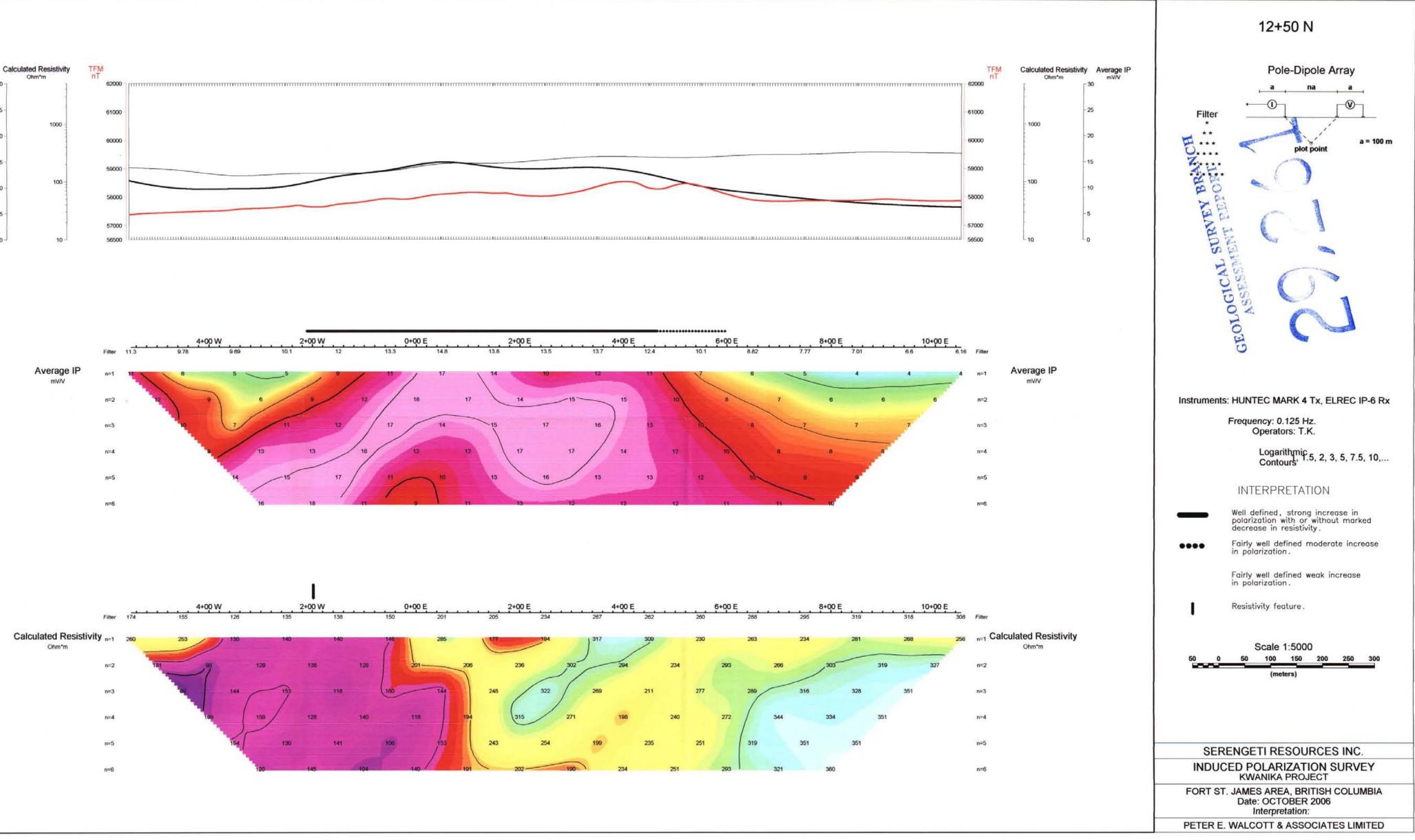


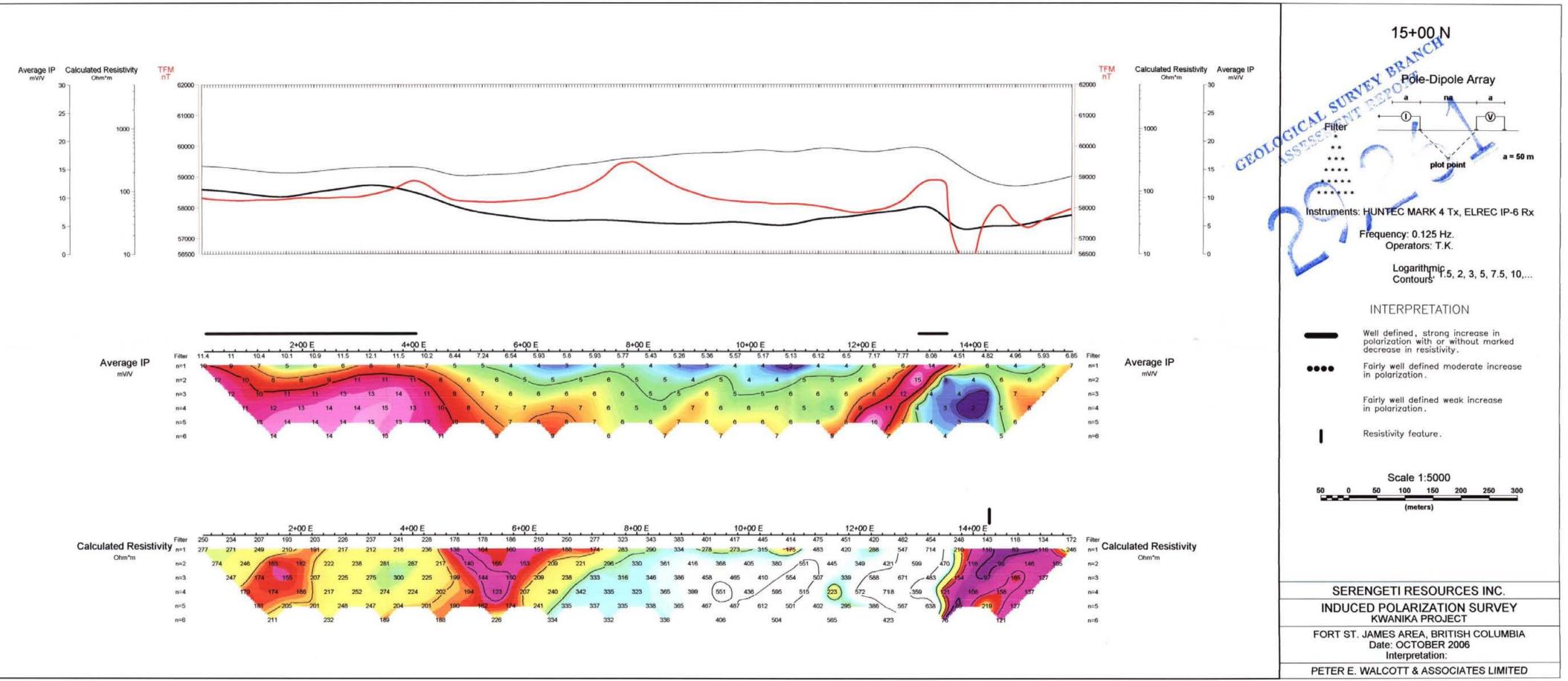


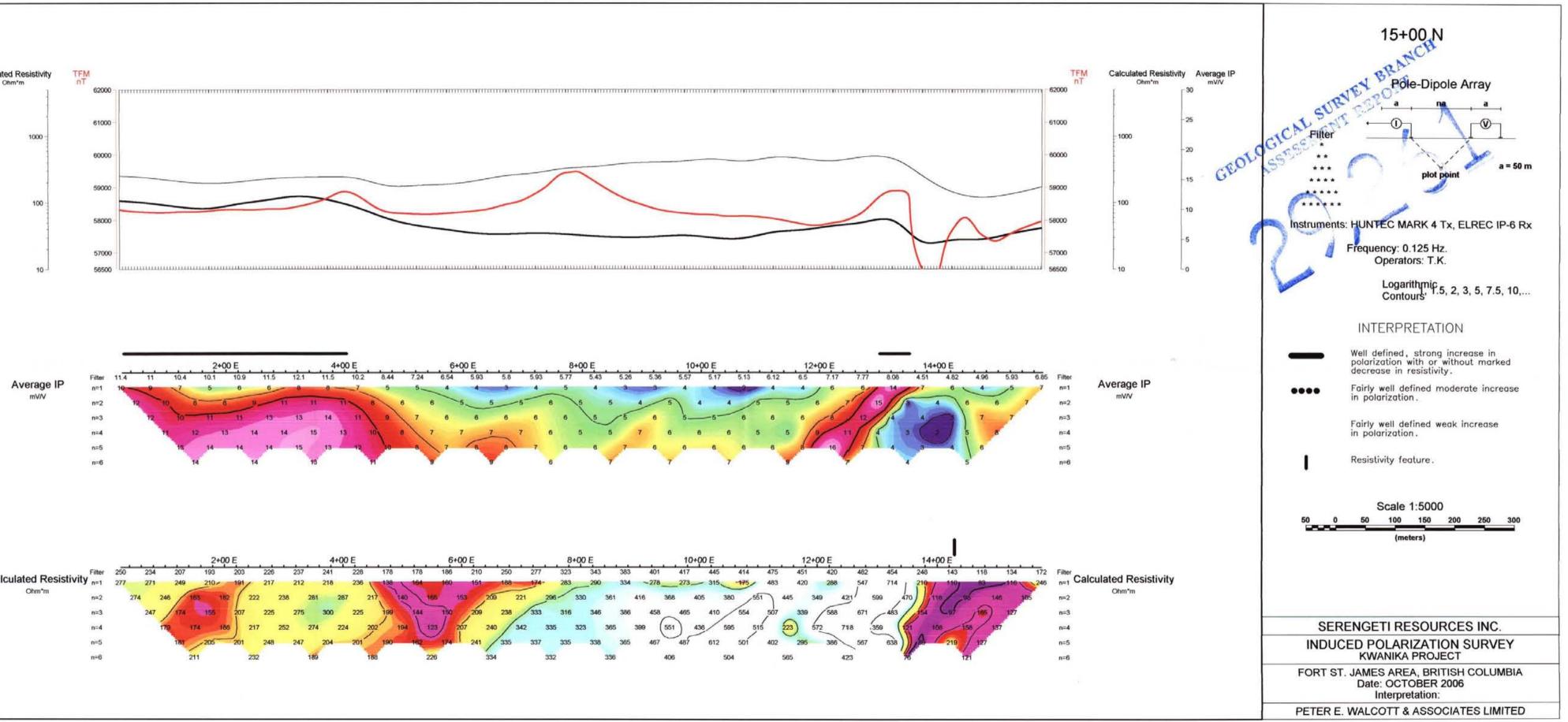


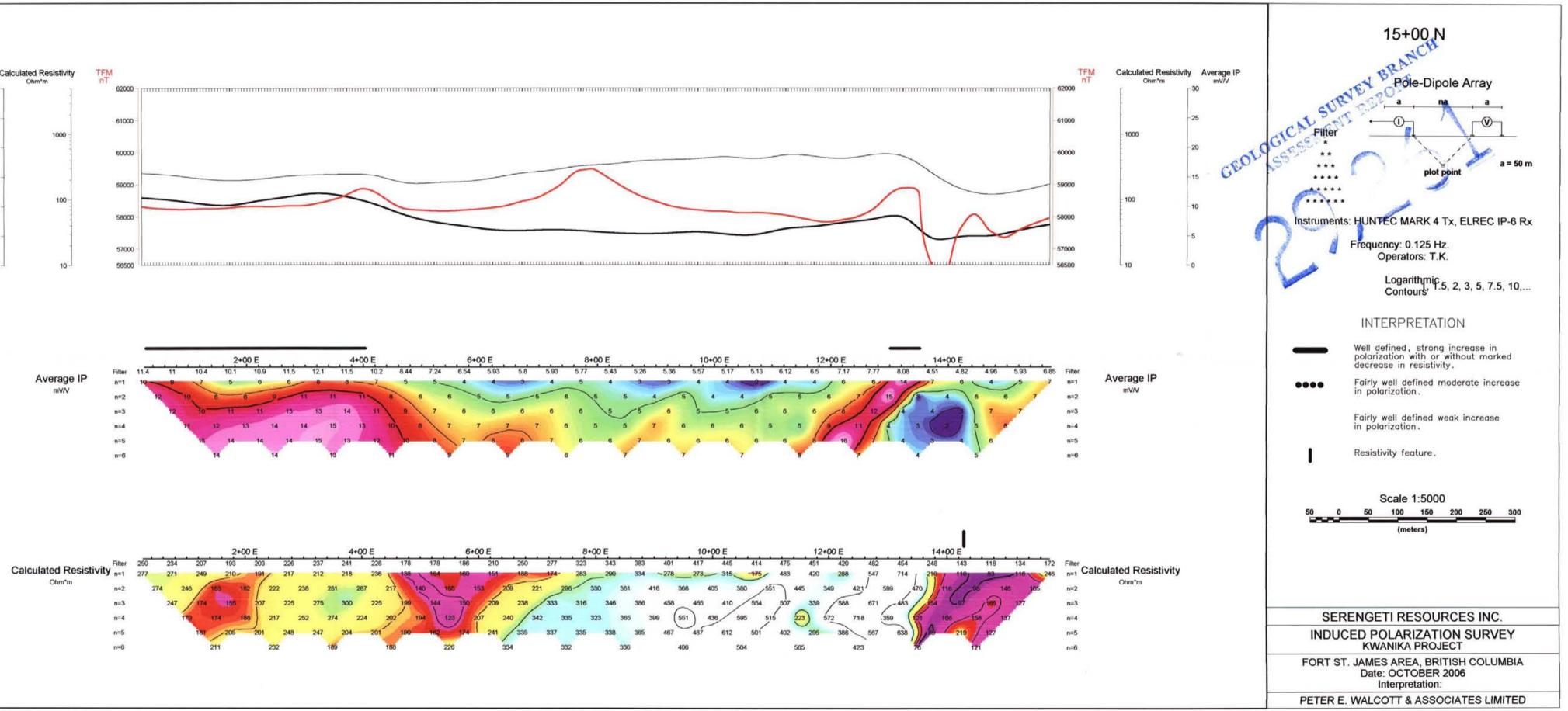


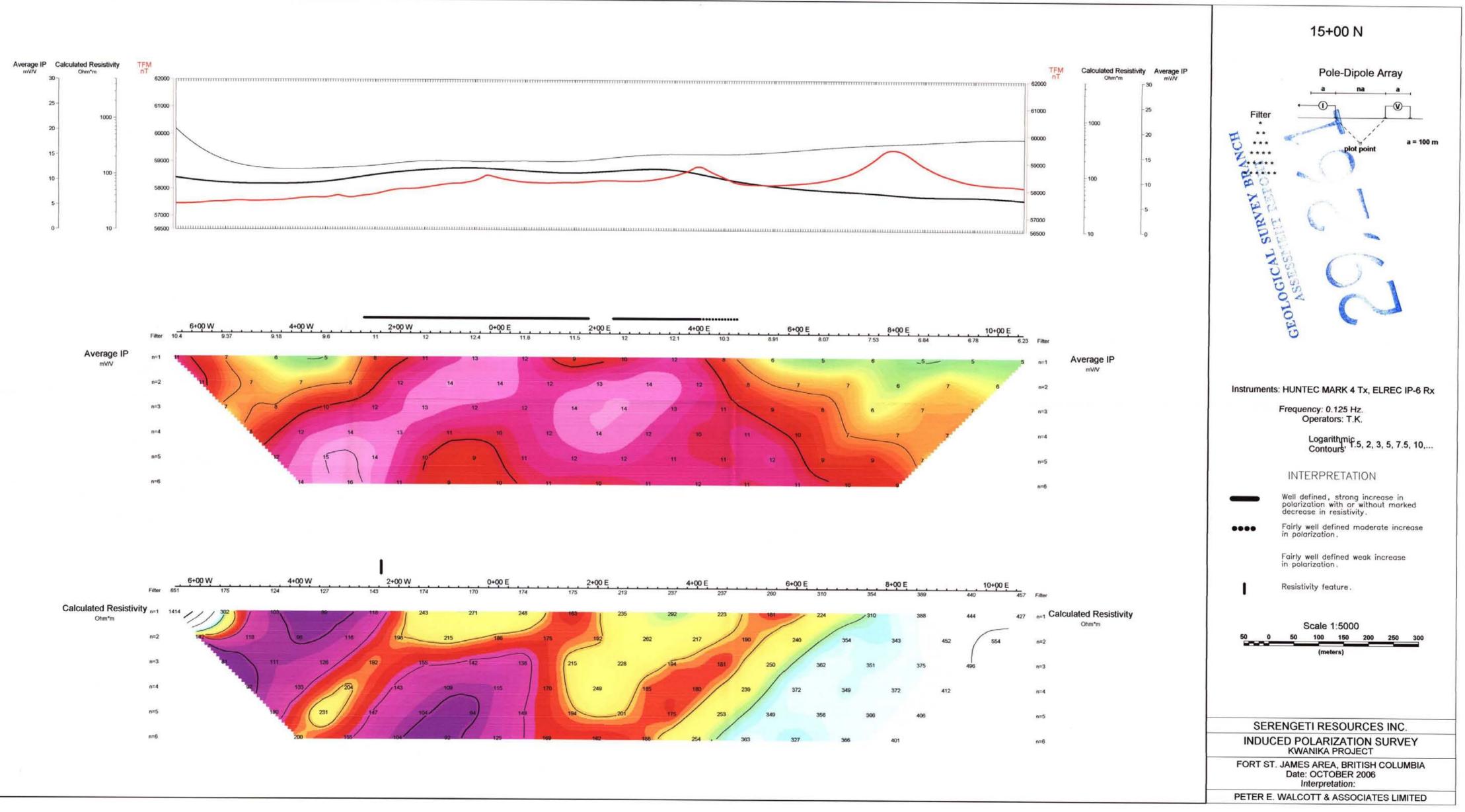


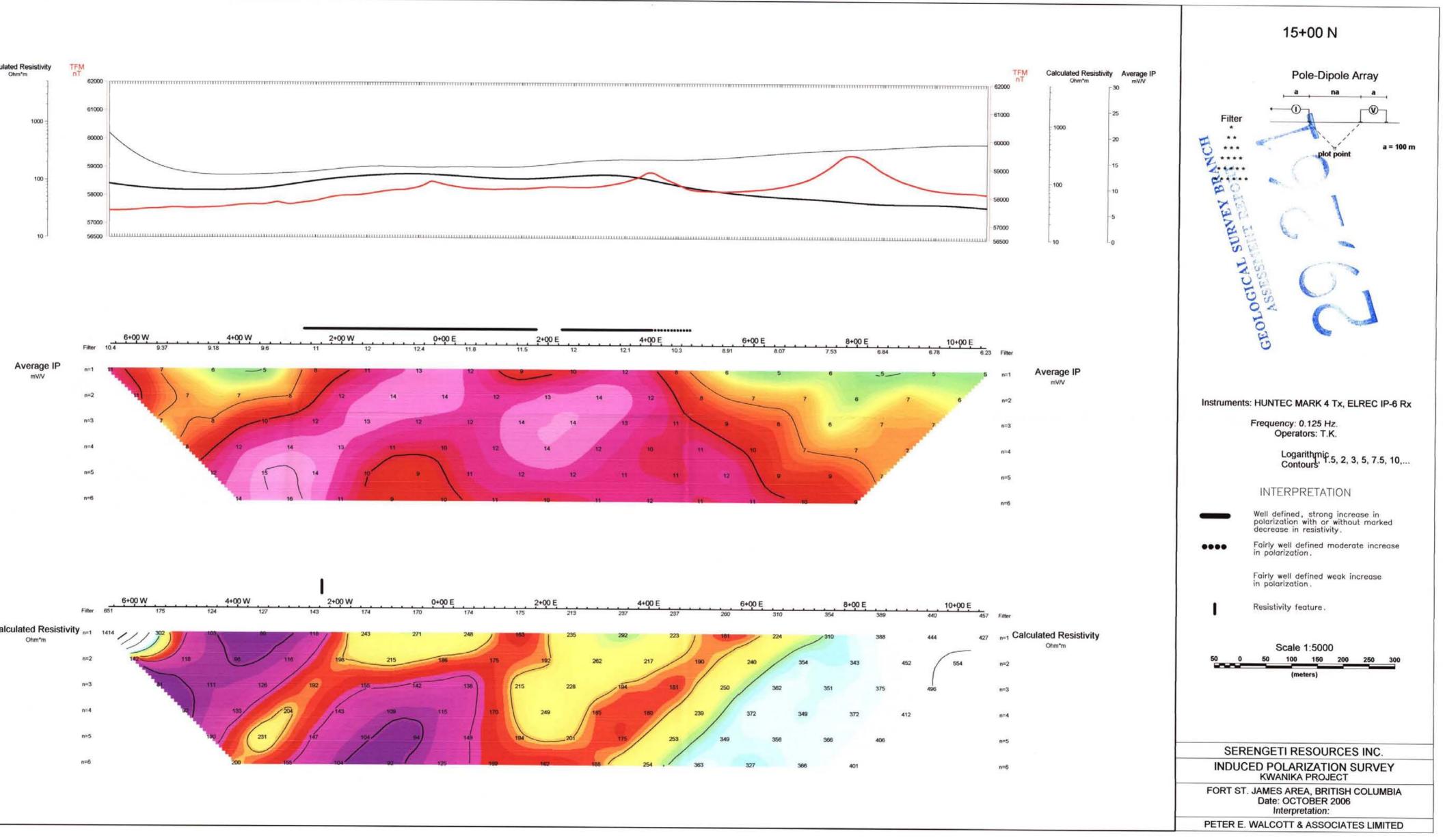


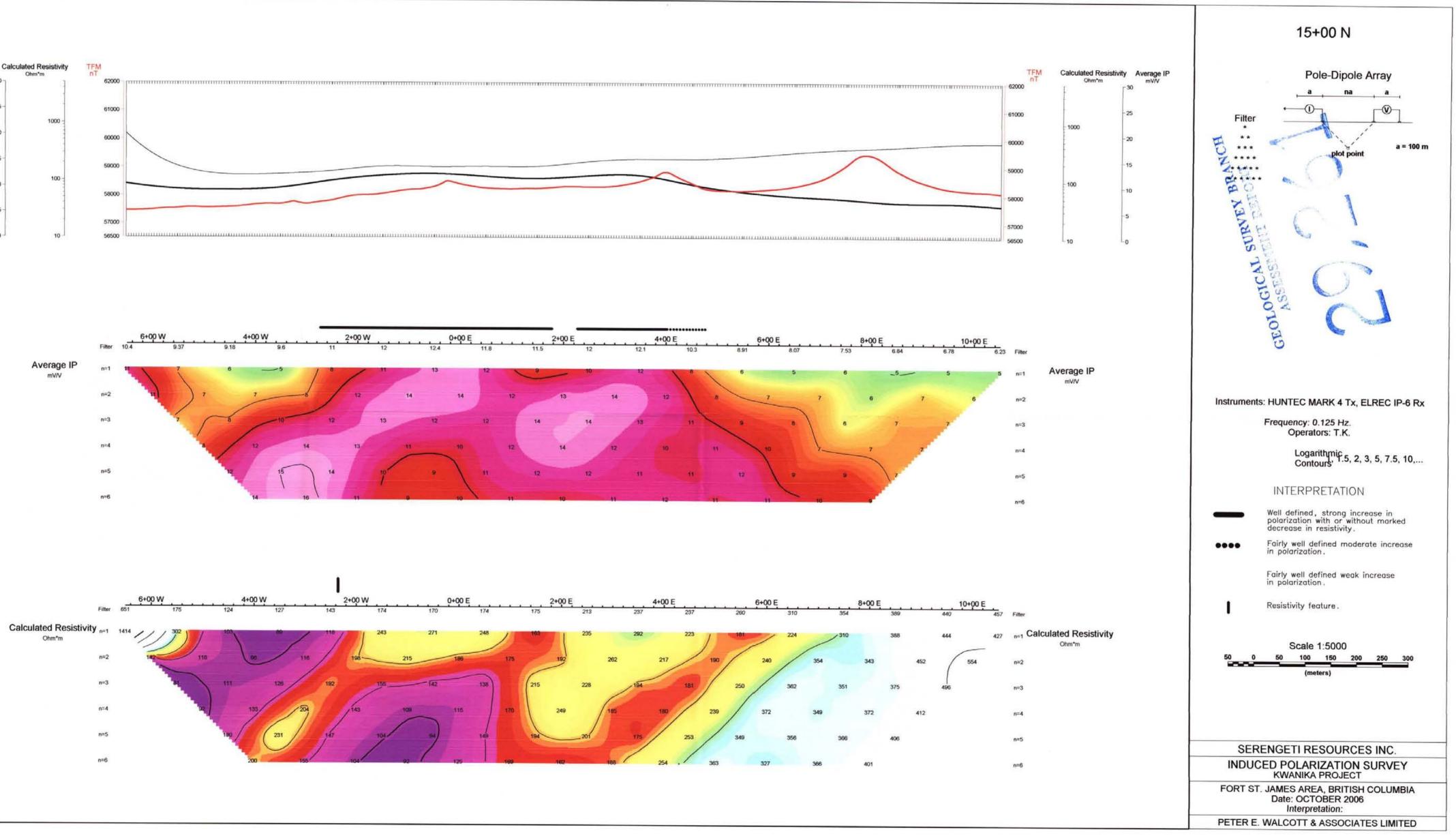


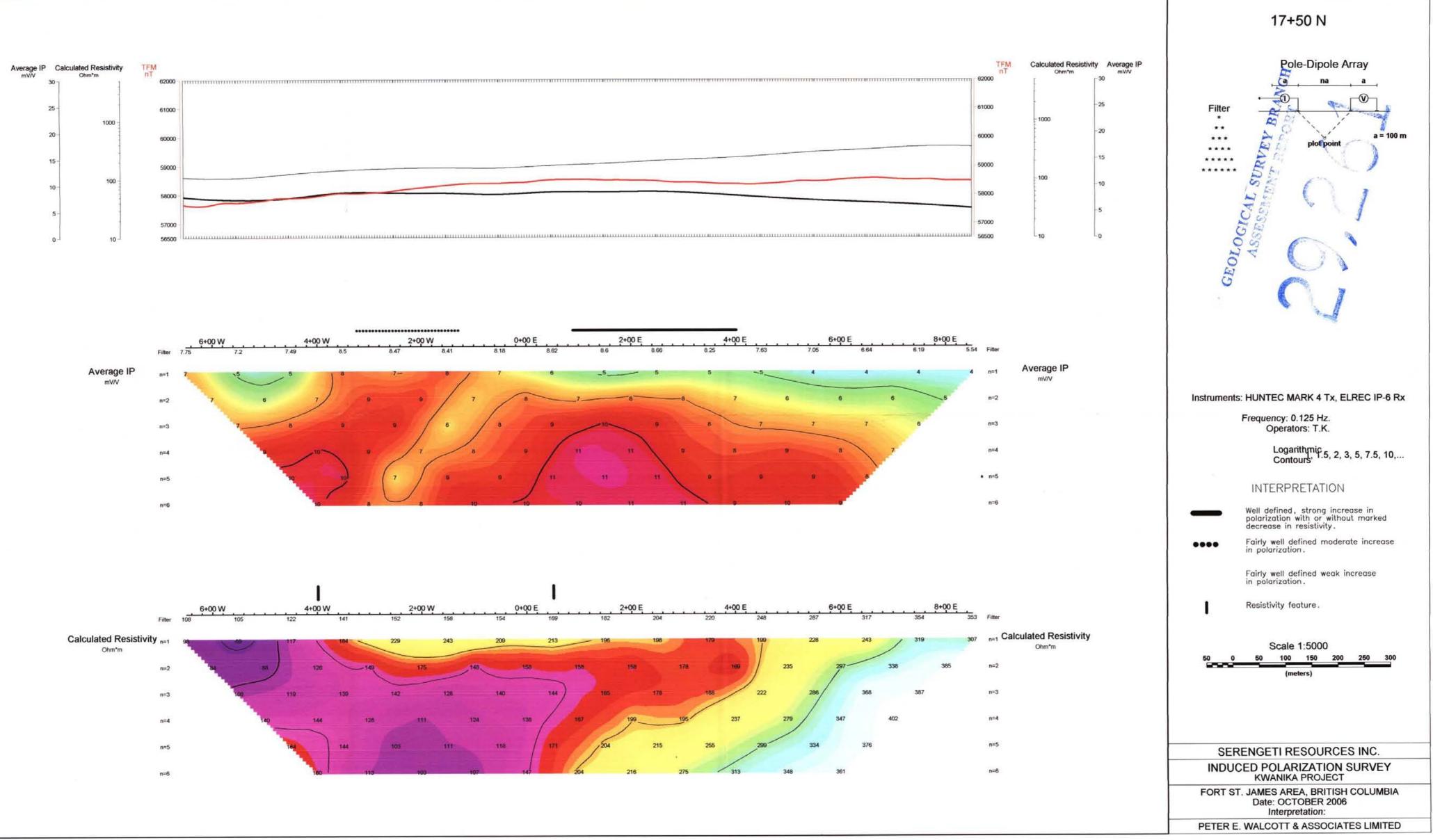


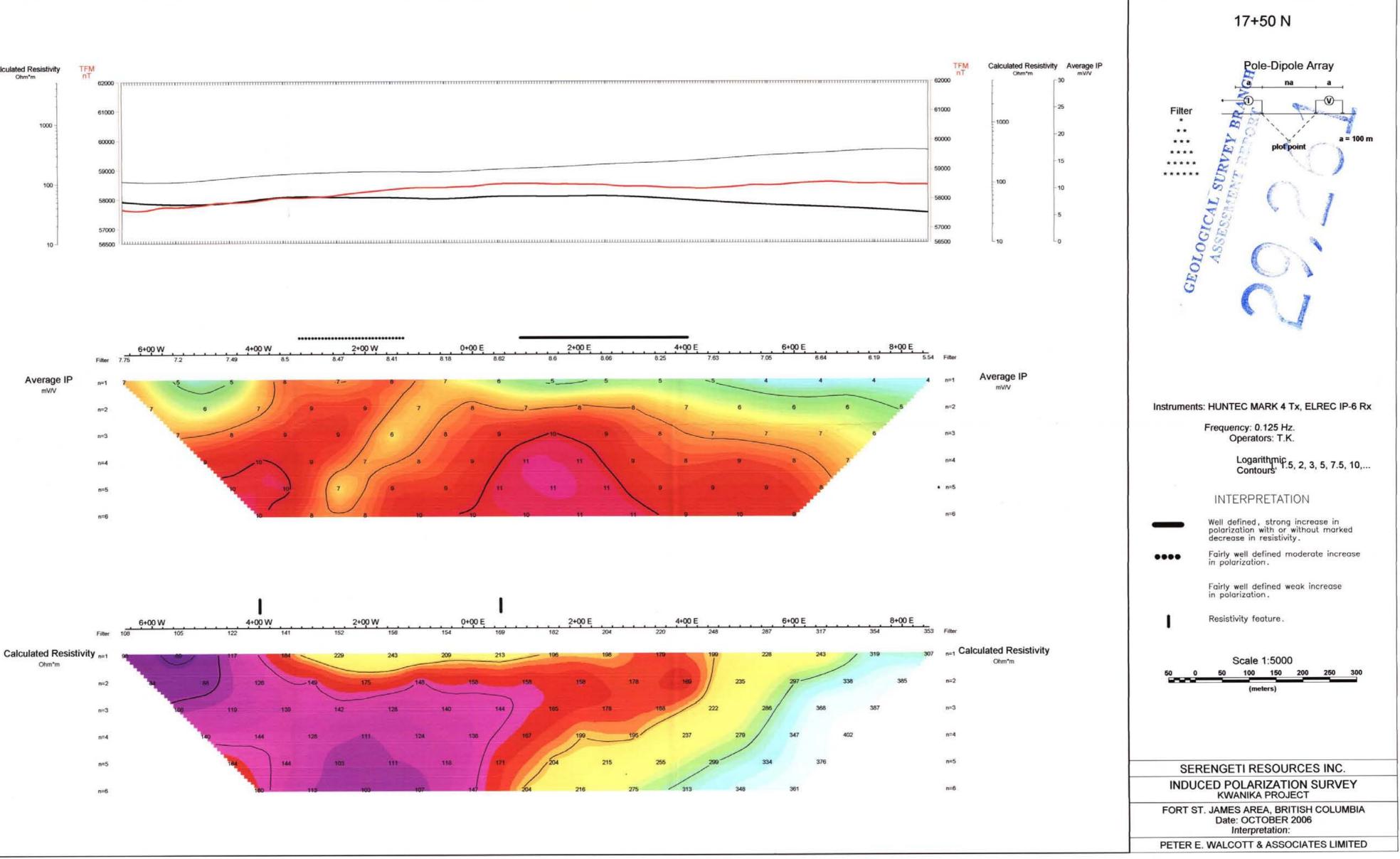


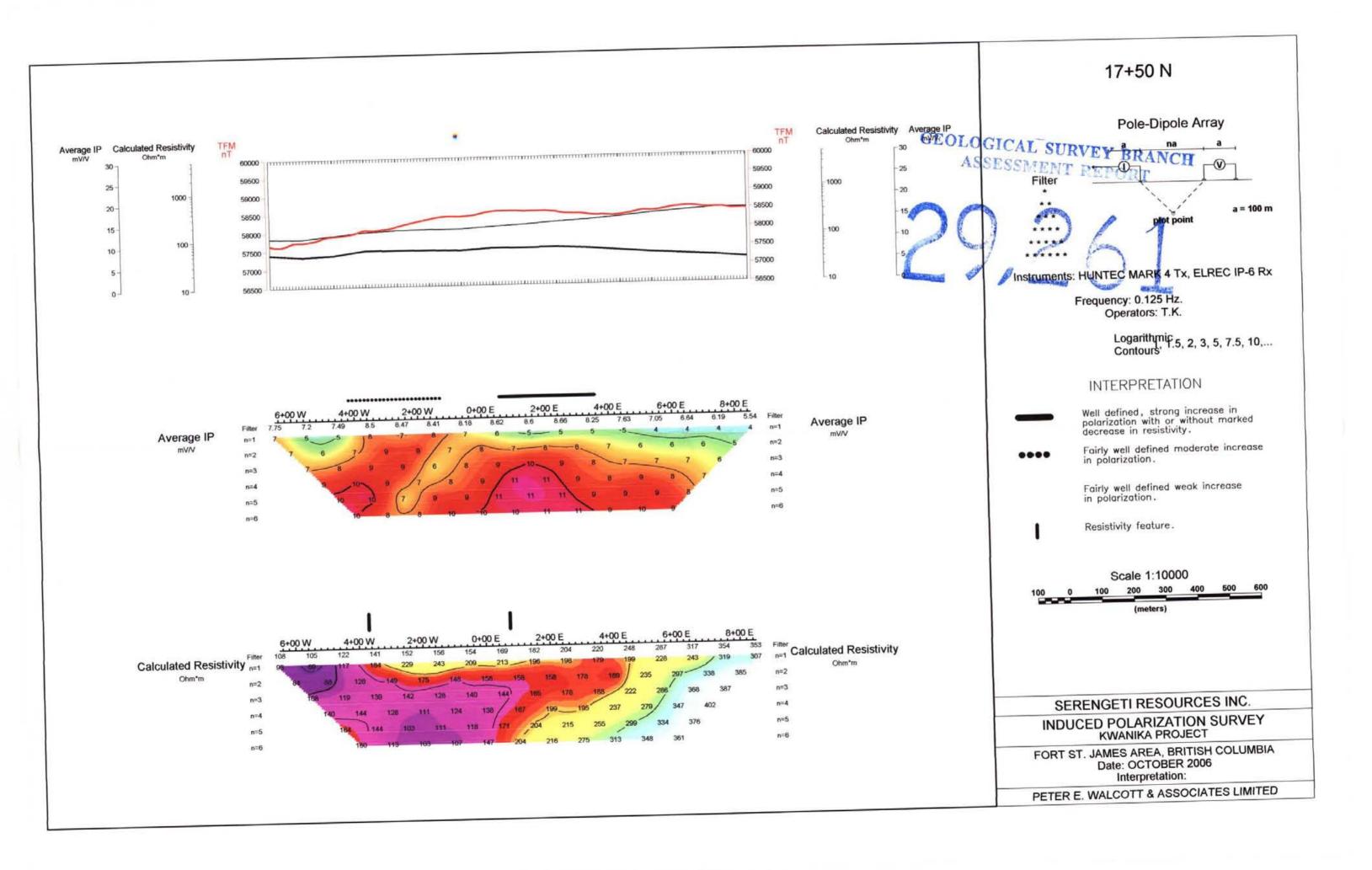


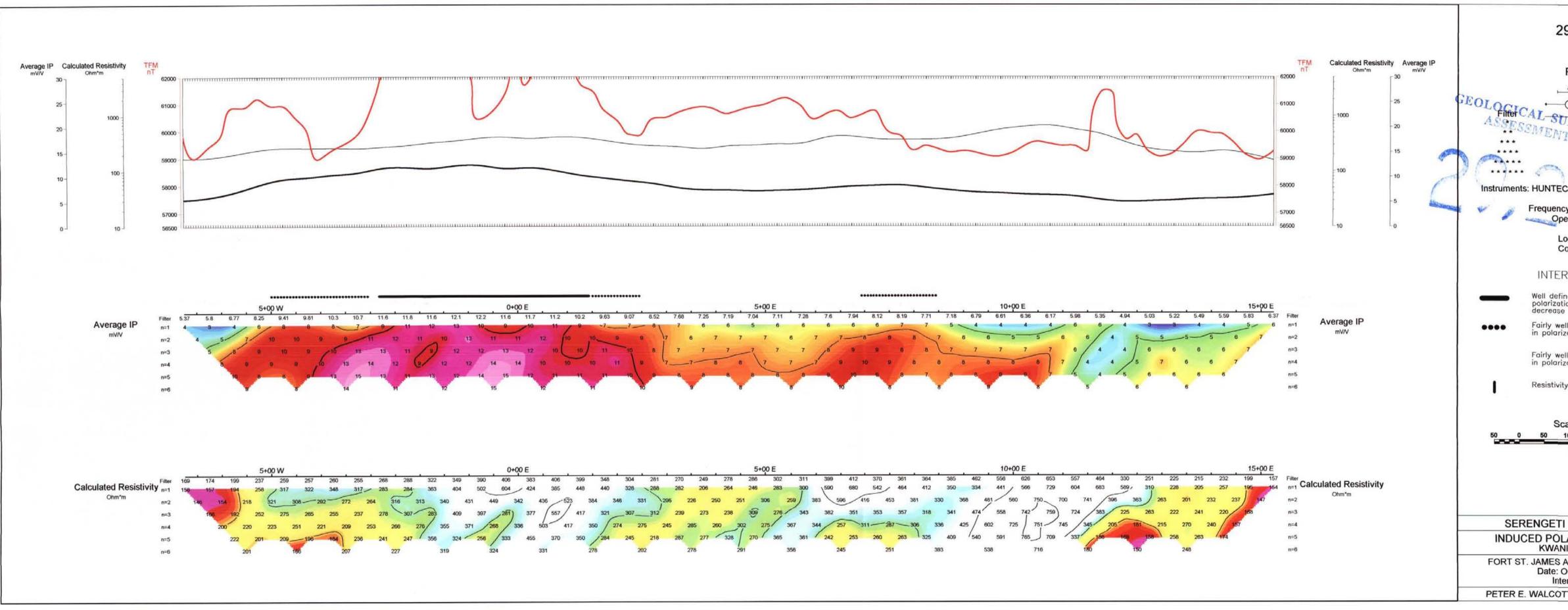


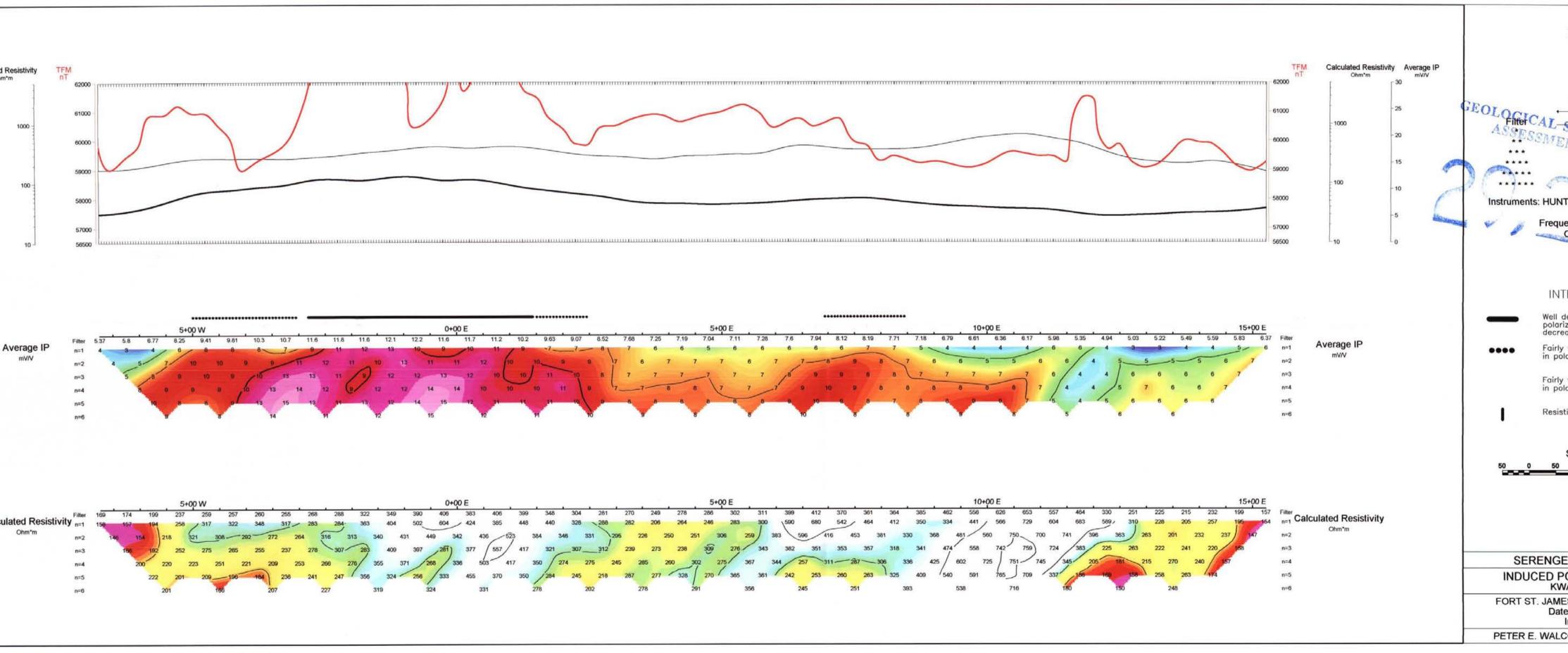


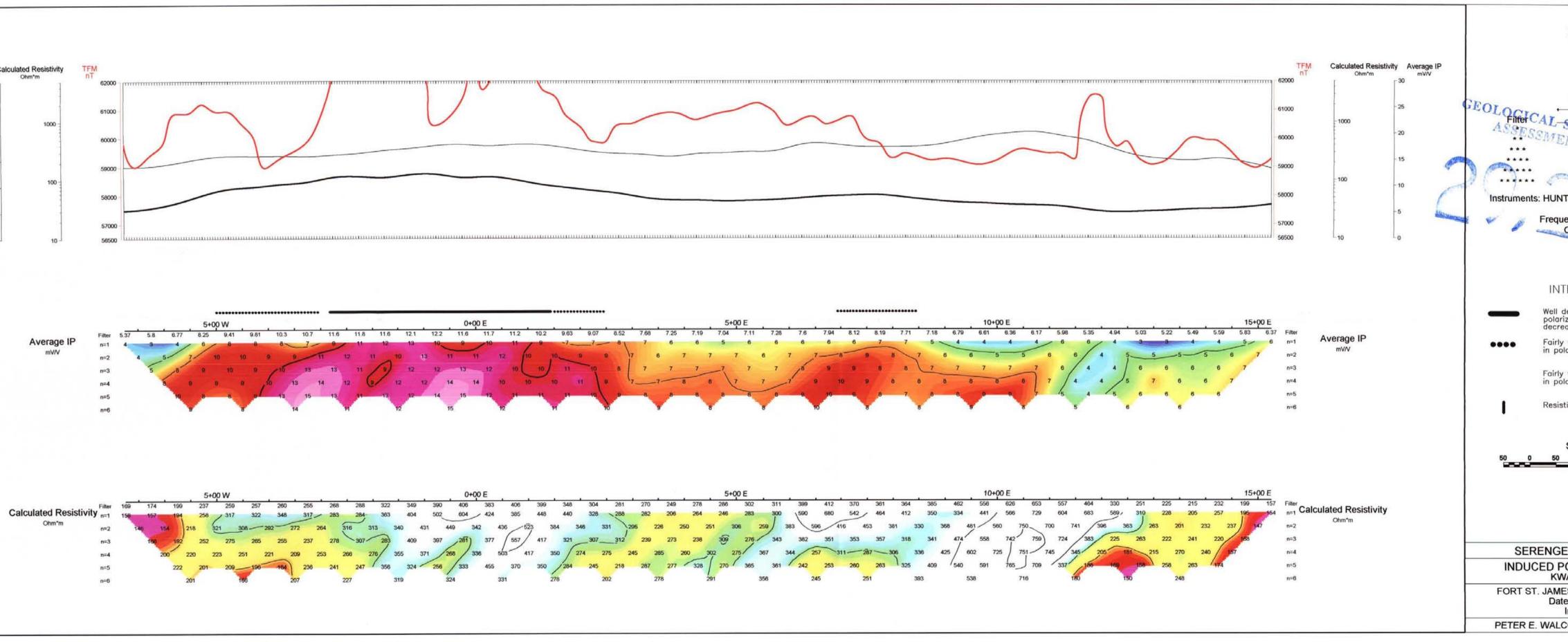




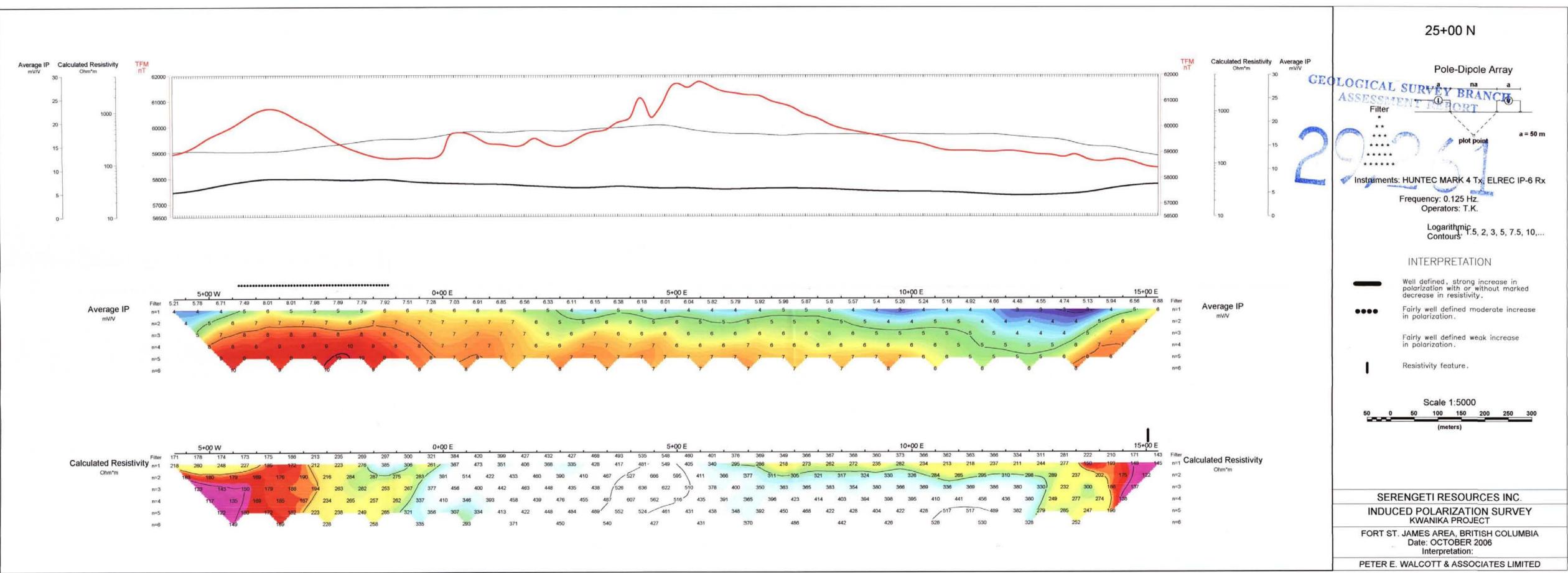


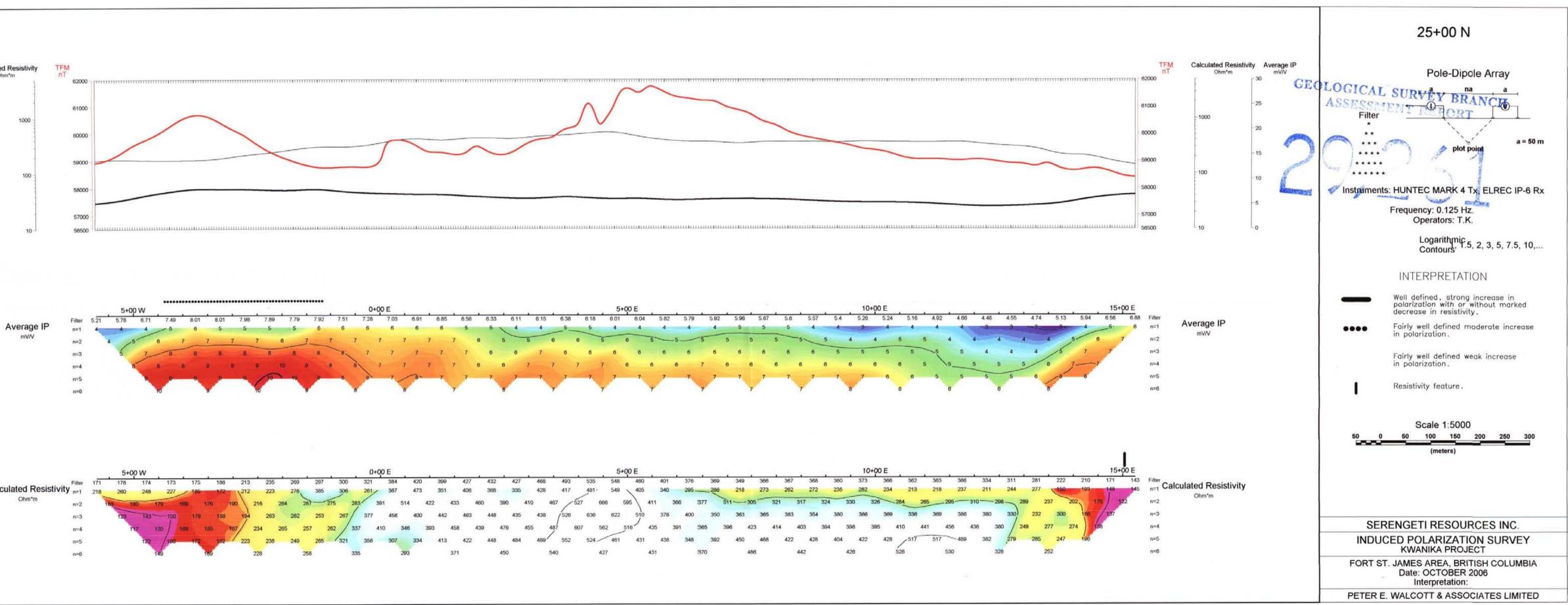


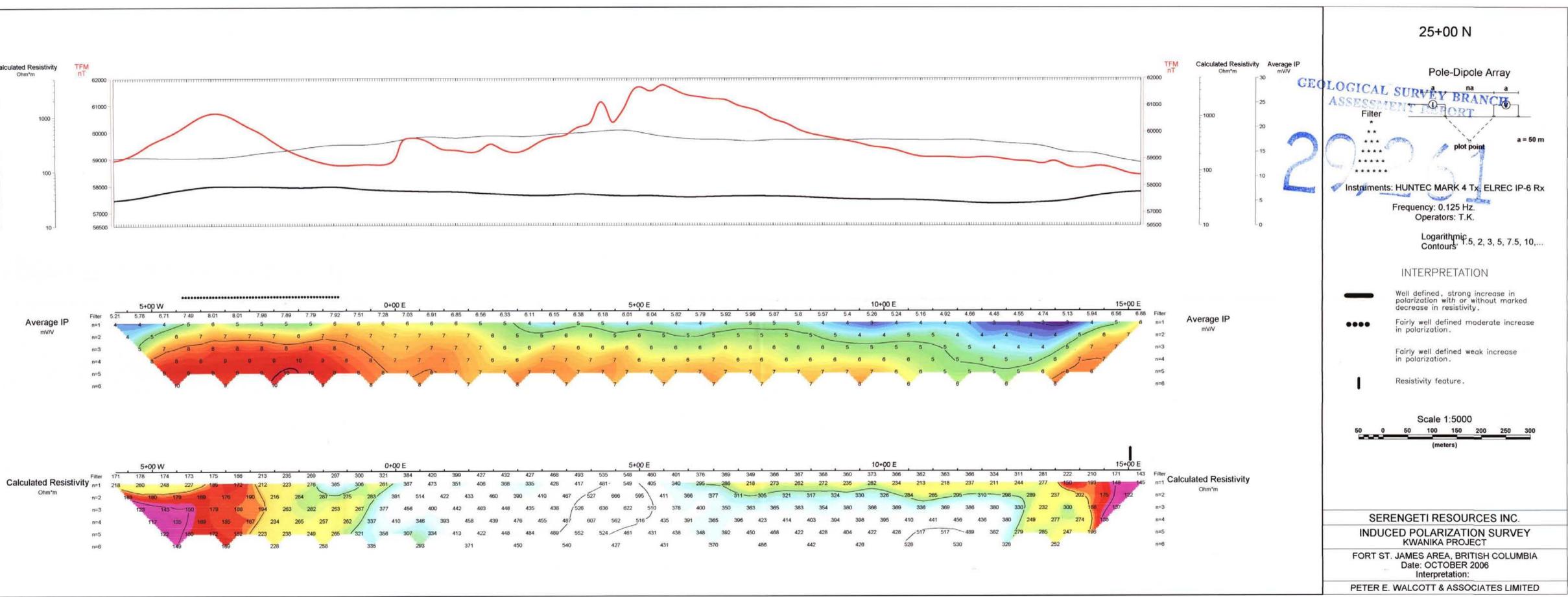




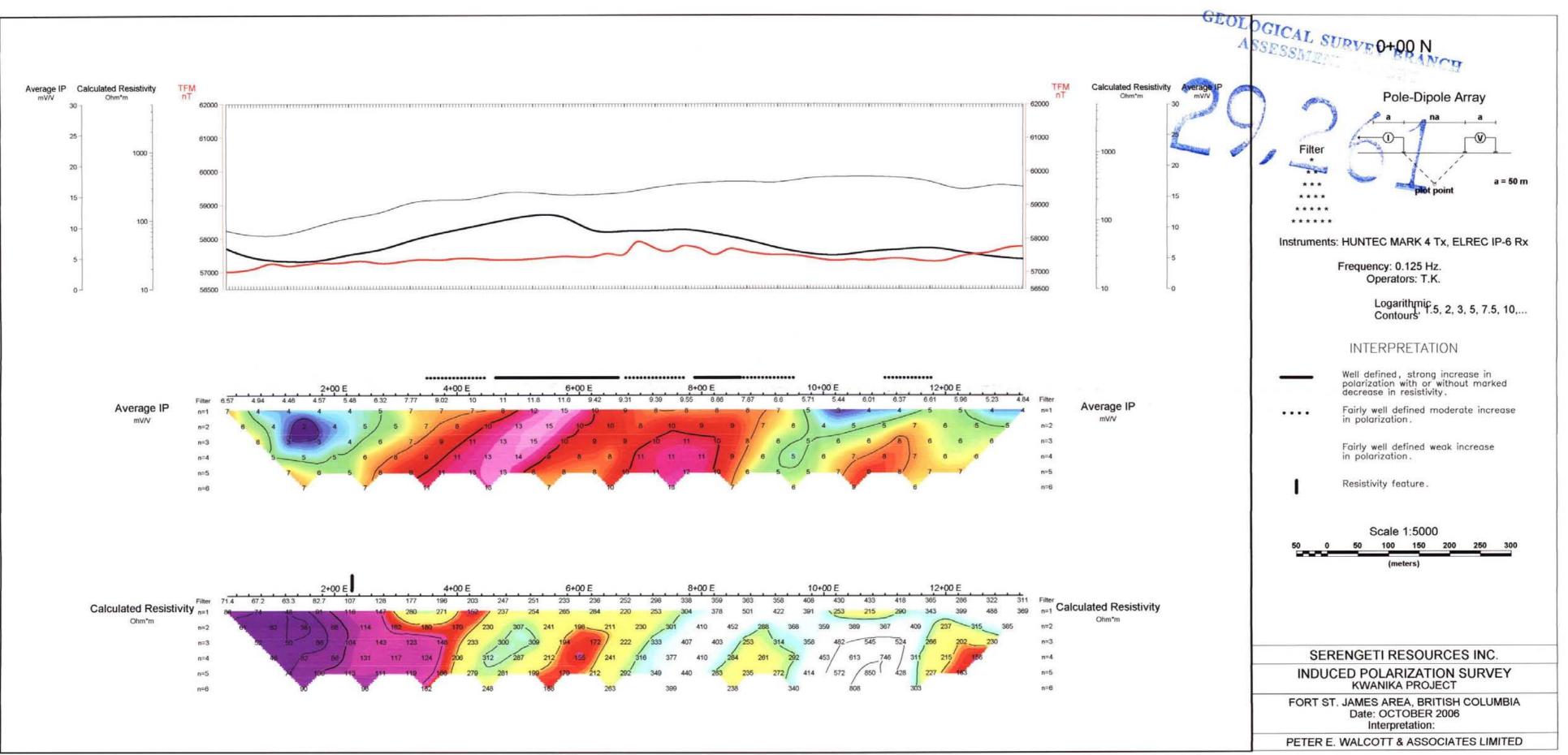
29+00 N
Pole-Dipole Array
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OTT & ASSOCIATES LIMITED

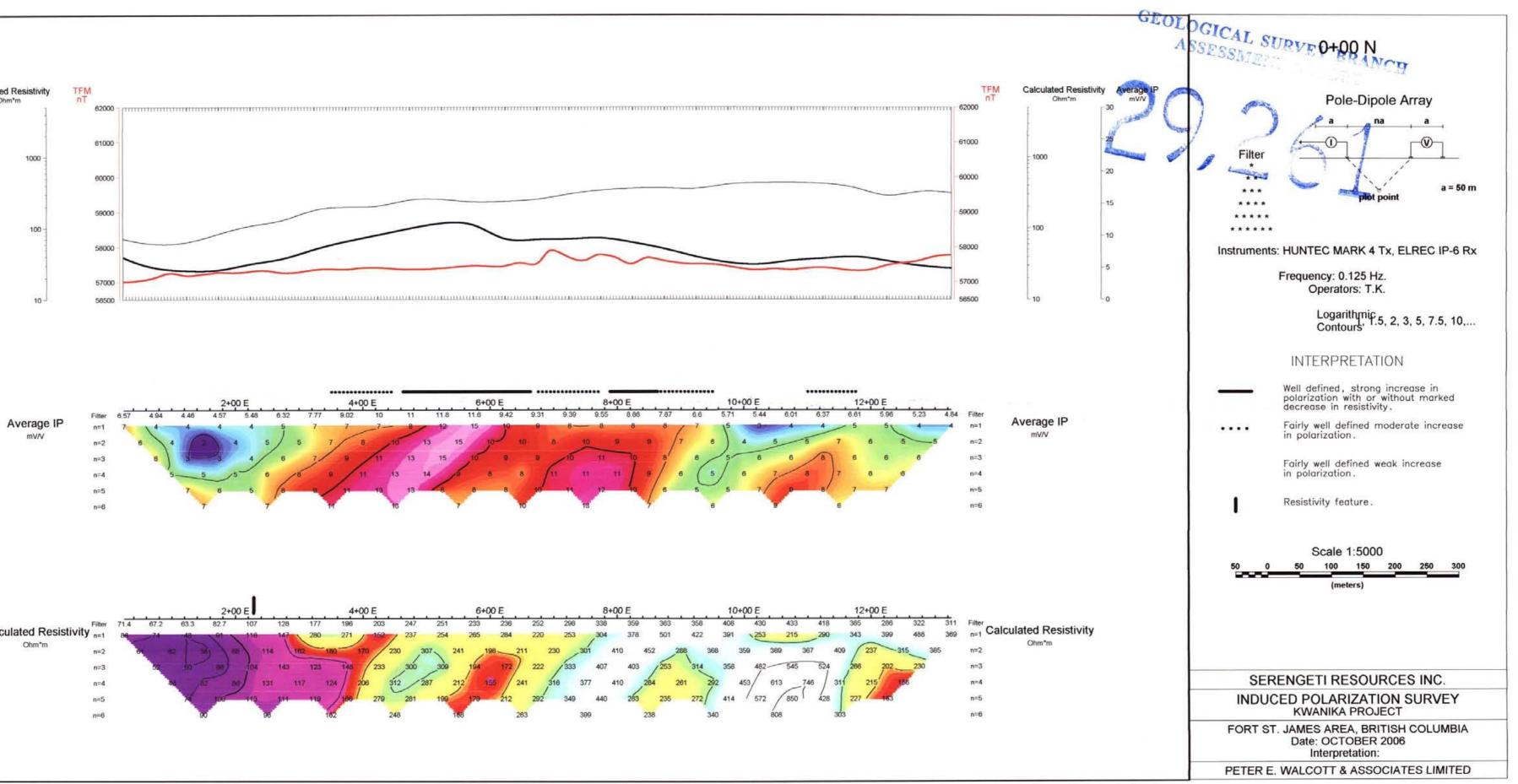


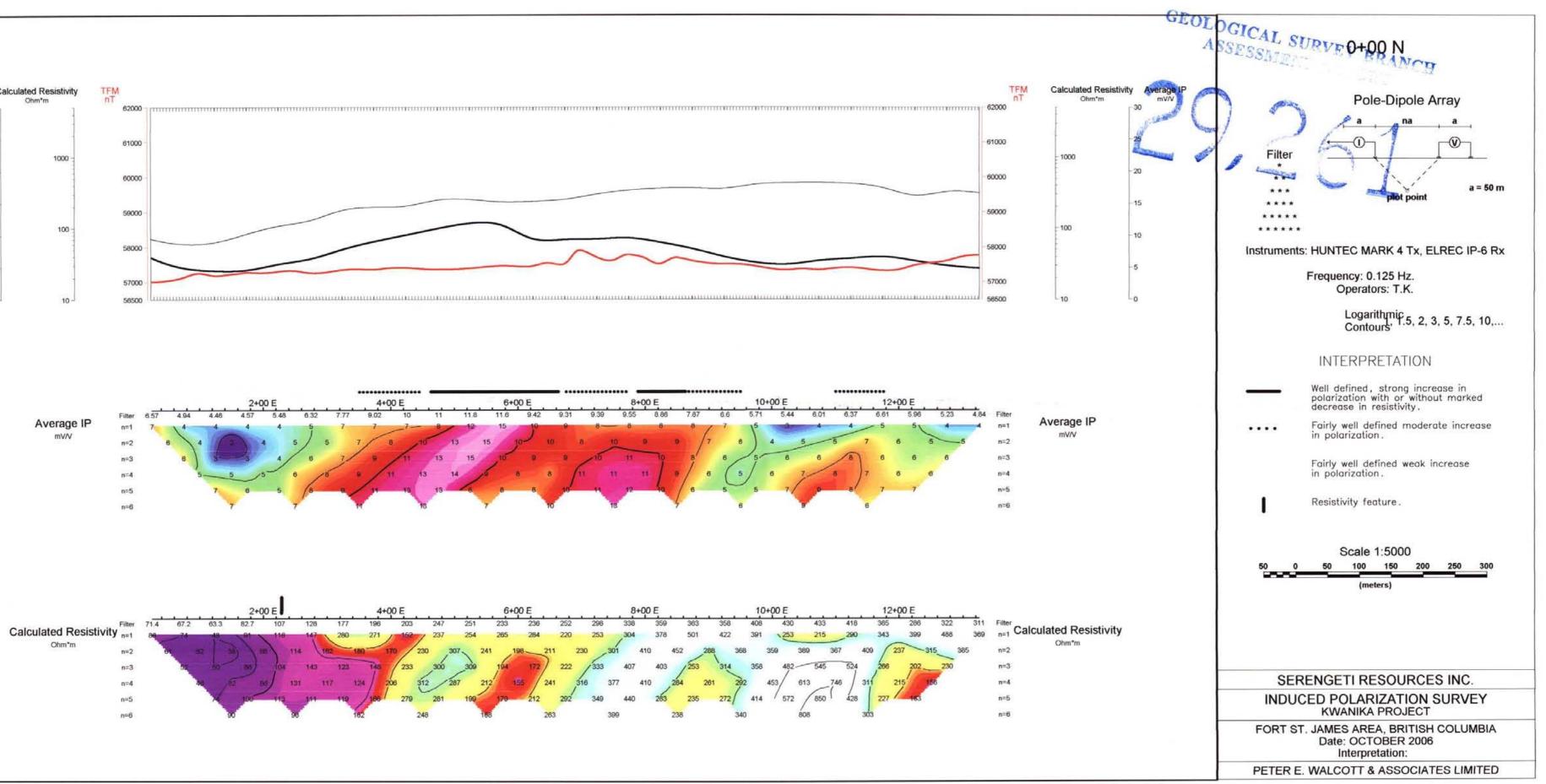












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