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Quantec Geoscience

Geophysical Survey Logistics Report

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GEOSCIENCE ASSESSMENT OFFICE

TITAN-24 MT and DC/IP Surveys over the Mirage Property, River Valley, Ontario for Vismand Exploration Inc., Toronto Ontario

N. Faucher
K. Kwan
R. Hearst
Project CA00602T
October, 2008

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1. INTRODUCTION

- **Quantec Project No:** CA00602T
- **Project Name:** Mirage
- **Client:** Vismand Exploration Inc.
- **Client Address:** One First Canadian Place, Suite 2810 Box 129, Toronto, Ontario M5X 1A4
- **Client Representative:** Stuart Angus (416) 307-3273
- **Grid Names:** Sudnip, Patrick, ML, Duck, Zit, Fishhook
- **Survey Type:** Tensor Magnetotelluric (MT), DC Resistivity and Induced Polarization (DCIP).
- **Survey Period:** August 16, 2008 to September 30, 2008
- **Objectives:**

  The exploration objective of the Titan 24 DCIP & MT survey over the Mirage property is to map and detect potential mineralization to depth for drill targeting, delineation and ground concentration. Goals of the survey phase are to evaluate Titan 24 as an exploration tool for providing deep vectoring tools, and test and characterize the known mineralized zones within the Mirage Project (map known structure and mineralization with multiple parameters for interpretative application elsewhere in the region).

  - Determine the best and most appropriate deep imaging vectoring tools within other regions of the exploration tenements
  - Provide ground condemnation in the immediate areas near the most prospective mining zones within the property
  - Test depth extents and deeper extensions of known zones where possible

  The DC/IP component of the survey should provide an excellent means of delineating target mineralization within the top 500 to 750 meters pending geologic and cultural environment. MT resistivity provides additional resistivity information from surface to depths beyond one kilometer. The MT resistivity is useful for mapping geological contacts with resistivity contrasts and deep conductors that may potentially represent alteration or mineralization.

  The Titan 24 **D**istributed **A**cquisition **S**ystem (**DAS**[1]) employs a combination of multiplicity of sensors, 24-bit digital sampling, and advanced signal processing. It provides three independent datasets capable of measuring subsurface resistivities (structure, alteration & lithology) and chargeability (mineralization) to depth.

- **Report Type:**

  Survey logistics, describing the survey parameters and methodology, as well as presenting the survey results in digital/plot forms.

[1] *Ref., Sheard, N. (1998). MIMDAS: A new direction in geophysics. Proceedings of the ASEG 13th International Conference, Hobart, Tasmania.*

2. GENERAL SURVEY DETAILS

2.1 LOCATION

- **General Location:** Temagami area (see Figure 1)
- **Province:** Ontario
- **District:** Nipissing
- **Nearest Settlements:** River Valley
- **UTM Zone:** NAD83, Zone 17T
- **Latitude / Longitude:** approx.: N46°56'29.30" /W80°17'49.40"
- **UTM position[2]:** approx.: 553500E/5198900N

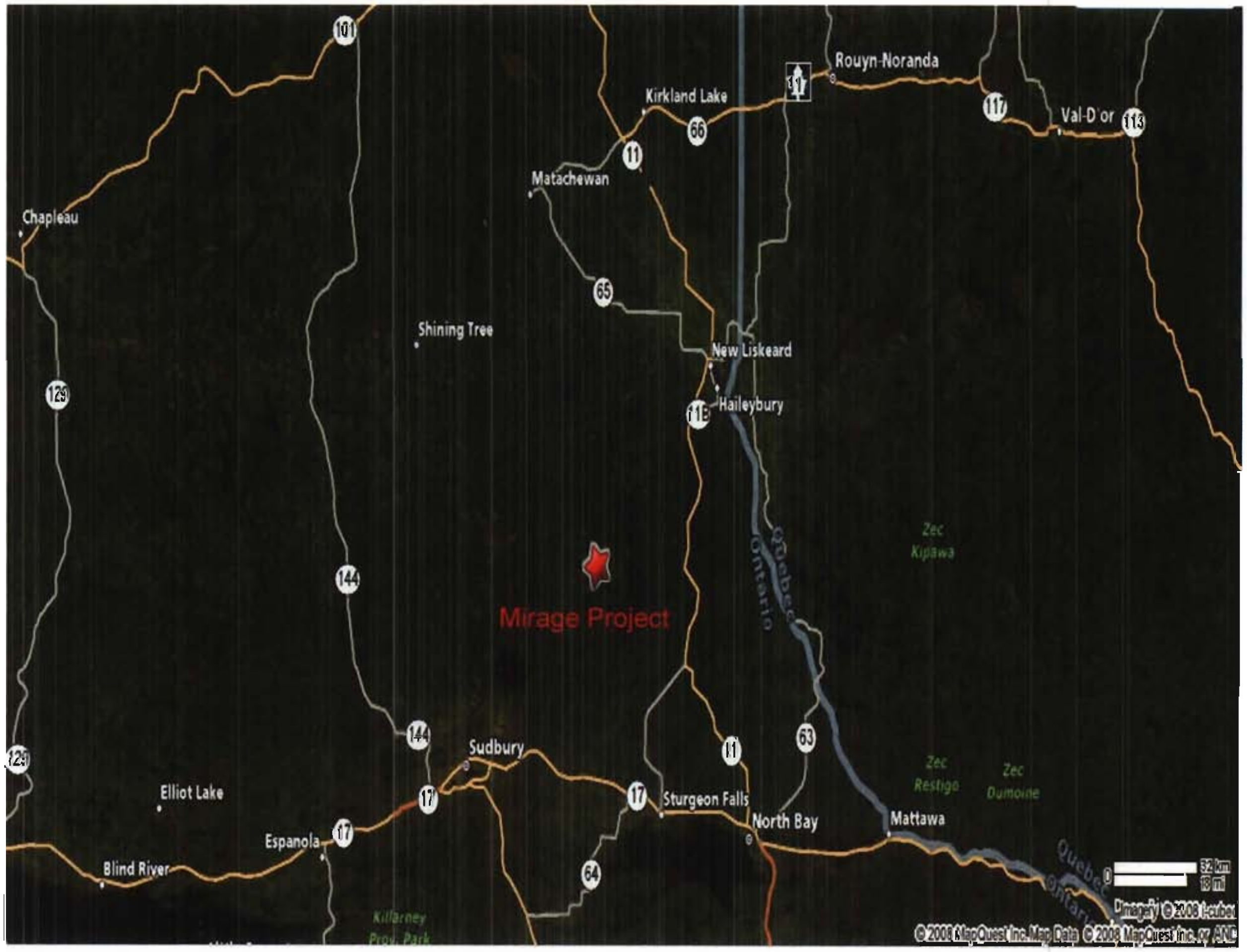


Figure 1: Mirage Project General Location Map[3]

[2] *UTM coordinates (NAD 83, Zone17T) supplied by Vismand Exploration Inc.*
[3] *Mirage Project General Location Map obtained from www.mapquest.com, 2008.*

2.2 ACCESS

- **Base of Operations:** Emerald Lake Camp
- **Mode of Access to Grid:** Trucks, ATVs, foot
- **Mode of Access to Lines:** ATVs, foot

2.3 SURVEY AREA

- **Established by:** Vismand Exploration Inc.
- **Coordinate Reference System:** Survey Grid referenced to UTM Coordinates, (see Figure 2 and Table 1)
- **Datum & Projection:** NAD83, Zone 17T
- **Station Interval:** 100m
- **Grid Azimuth:** Patrick Grid: 0° (True)
  Sudnip Grid: 110° (True)
  ML Grid: 155° (True)
  Duck Grid: 180° (True)
  Fishhook Grid: 240° (True)
  Zit Grid: 40° (True)
- **Declination:** 1°E
- **Method of Chaining:** Metric

Grid	Line	Array Coord. Start	Array Coord. End	UTM Coord. Start		UTM Coord. End	
				Easting	Northing	Easting	Northing
Duck	0E	1200N	1200S	506866	5205880	561487	5203562
	4E	1200N	1200S	561252	5205983	561873	5203665
	8E	1200N	1200S	561638	5206087	562260	5203769
Fishhook	0N	1200E	1200W	538873	5195099	540711	5196641
	4N	1200E	1200W	538616	5195405	540454	5196948
	8N	1200E	1200W	538359	5195711	540197	5197254
	12N	1200E	1200W	538178	5196082	540017	5197625
ML	0E	1000N	1400S	557648	5198802	559024	5196836
	4E	800N	1600S	558033	5198950	559409	5196984
	8E	1200N	1200S	558016	5199670	559393	5197704
	12E	1200N	1200S	558516	5199654	559892	5197688
	16E	1200N	1200S	558901	5199802	560277	5197836
Patrick	0E	1200N	1200S	550624	5201934	551445	5199678
	4E	1200N	1200S	551000	5202070	551821	5199815
	8E	1200N	1200S	551376	5202207	552196	5199952
Sudnip	0N	1200E	1200W	552400	5198900	554800	5198900
	4N	1200E	1200W	552400	5199300	554800	5199300
	8N	1400E	1000W	552700	5199700	555100	5199700
Zit	0E	1200N	1200S	549273	5188910	550287	5191085
	375E	1400N	1000S	549740	5189024	550756	5191198
	925E	1800N	600S	550277	5188994	551292	5191169

Table 1: Mirage Project Survey Lines (UTM Referenced NAD 83, Zone 17T)

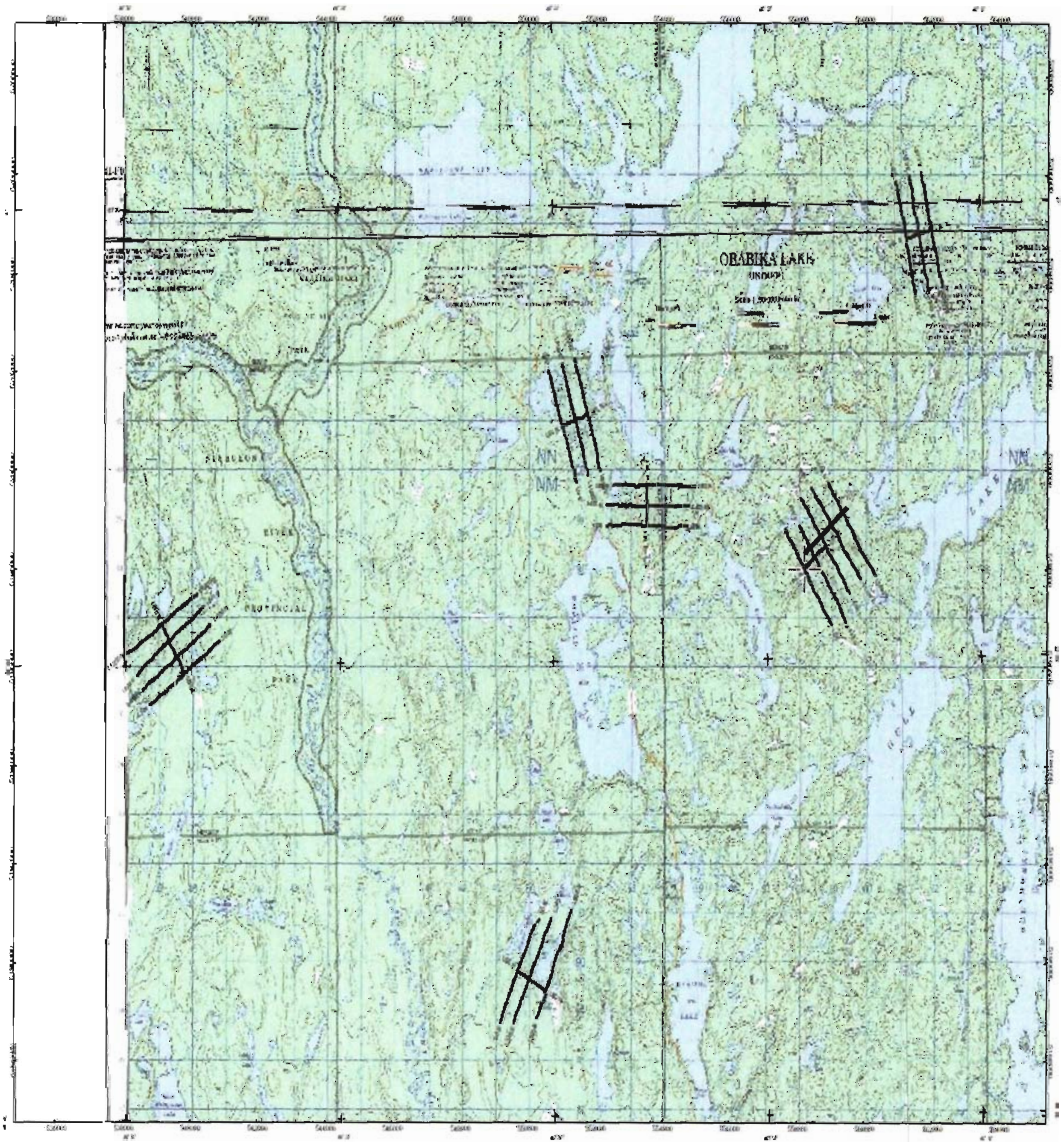


Figure 2: Mirage Project Line Location Map [4]

4 *Mirage Project Line Location Map supplied by Quantec Geoscience Ltd., 2008.*

3. SURVEY WORK UNDERTAKEN

3.1 Generalities

- **Survey Days (read time):** 34
- **Mob/Demob:** 3
- **Line Setup/Pickup:** 7
- **Parallel Sensor Test:** 1
- **Weather/Down Days:** 1
- **Number of Lines Surveyed:** 21 lines (see Figure 2 and Table 1)
- **Survey Coverage:** DCIP survey: 50.4 km (see Table 2)
  MT survey: 50.4 km (see Table 3)

3.2 Personnel

- **Project Manager:** Kevin Blackshaw
- **Responsible Geophysicist:** Karl Kwan
- **Data Processing (in field):** Natasha Faucher
- **Crew Chief:** Badden Leuszler
- **IP Operator:** Joshua McLaren
- **MT Operators:** Nick Hnotchuk
  Jeremie Chaput
- **Remote Operators:** Joey Plouffe
- **Field Technicians:** Don McLaren
  Steve Mitchell
  Steve Cunningham
  Danny Hannan
  Jacques Frenette
  Greg Commanda
  Eric Hotvedt
  Dustin Kirk
  Danny Chan
  Shawn Macpherson
  Evan Davies
  Erik Lott
  Adam Vautour
  Mike Lessard
  Scott O'Connor

3.3 SURVEY SPECIFICATIONS

3.3.1 DCIP Surveys

- **Survey Array:** Dipole-Pole-Dipole Array (combined PDR & PDL, see Figure 3)
- **Receiver Configuration**: 26-28 Ex = Continuous In-line voltages (see Figure 4)
  13-14 Ey = Alternating (2-station) cross-line voltages[5]
- **Array Length:** 2.4km
- **Number of Arrays/line:** 1
- **Dipole spacing:** 100 meters
- **Sampling Interval:** Ex = 100 meters
  Ey = 200 meters
- **Rx-Tx Separation:** N-spacing (Pn-Cn min) = 0.5 to 22.5
  Current electrodes at midpoints between potential electrodes (see Figure 4).
- **Infinite Pole Location:** See table below

Grid	UTM Easting	UTM Northing	Grid Easting	Grid Northing
Duck	555334	5199198	-5579	-5391
Fishhook	544941	5203196	3277	-8610
ML	554529	5191647	-6640	-4382
Patrick	552957	5195459	1987	5435
	553921	5194001	2951	-6893
Sudnip	553921	5194001	4350	2150
Zit	554329	5181855	8561	-3371

Table 2: Mirage Project – Infinite Pole Locations (UTM Referenced NAD 83, Zone 17T)

- **Spectral Domain:** Tx = Frequency-domain square-wave current
  Rx = Full waveform time-series acquisition
  Data processing/output in frequency-domain

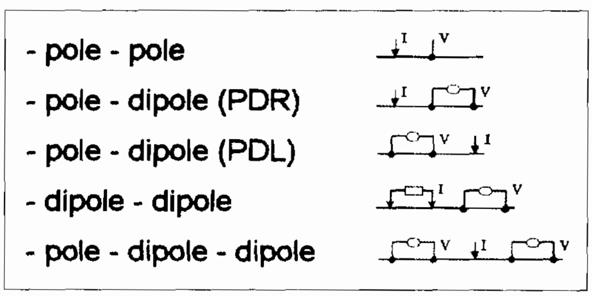


Figure 3: Common DCIP Survey Layouts

[5] *Note: Cross-Line Ey voltages obtained for future reference purposes – not presented in cross-sectional plots.*

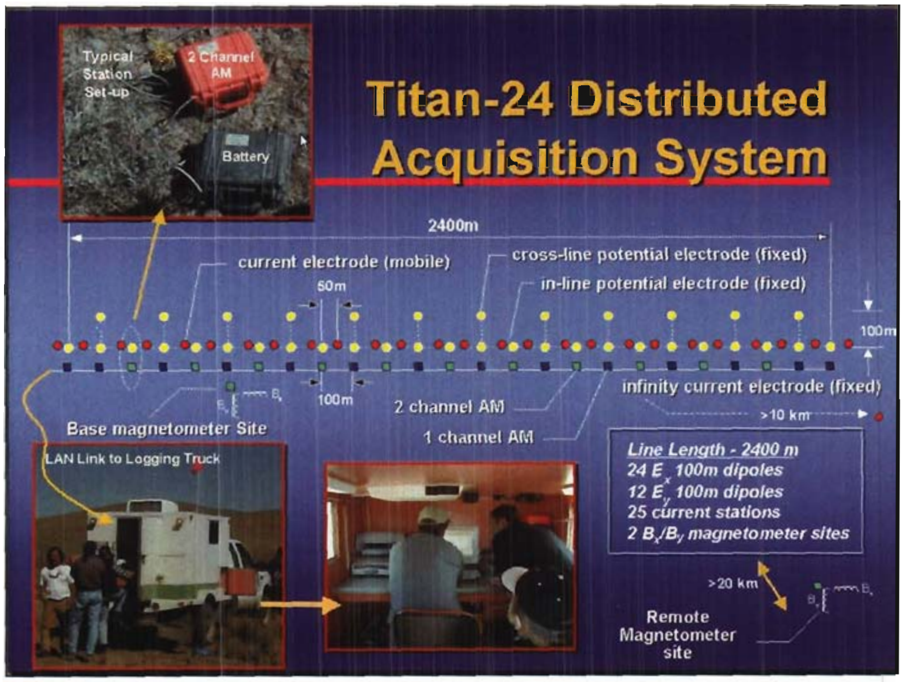


Figure 4: Titan Tensor MT and DCIP Schematic Survey Layout.

3.3.2 MT Surveys

• **Technique:**	Tensor soundings, remote-referenced
• **Base Configuration:**	26-28 Ex = Continuous In-line E-fields 13-14 Ey = Alternating (2-station) cross-line E-fields 1 pair LF coils 1 pair HF coils
• **Remote Configuration**	1 Ex = in line E-fields 1 Ey = cross-line E fields 1 pair LF coils 1 pair HF coils
• **Array Length:**	2.4km
• **Number of Arrays/line:**	1
• **Dipole Spacing:**	100 meters
• **Sampling Interval:**	Ex = 100 meters Ey = 200 meters
• **Ex/Ey Sampling Ratio:**	2:1
• **E/H Sampling Ratio:**	Ex = 24:1 Ey = 13:1
• **Remote-reference Measurements:**	1 Hx/Hy set (1 Ey/Ex set for verification/monitoring)
• **Remote Reference Position:**	553420E, 5179267N (NAD83, Zone 17T)
• **Frequency bandwidth:**	0.1 to 10000 Hz.
• **Data Acquisition:**	Full-waveform time-series acquisition Data processing/output in frequency-domain.

3.4 Survey Coverage

3.4.1 DCIP Survey

Grid	LINE	Min P1	Max P2	Min Tx	Max Tx	Coverage (km)
Duck	0E	1200S	1200N	1150S	1150N	2.4
	8E	1200S	1200N	1150S	1150N	2.4
	12E	1200S	1200N	1150S	1150N	2.4
Fishhook	0N	1200E	1200W	1150E	1150W	2.4
	4N	1200E	1200W	1150E	1150W	2.4
	8N	1200E	1200W	1150E	1150W	2.4
ML	0E	1400S	1000N	950S	1350N	2.4
	4E	1600S	800N	1550S	750N	2.4
	8E	1200S	1200N	1150S	1150N	2.4
	12E	1200S	1200N	1150S	1150N	2.4
	16E	1200S	1200N	1150S	1150N	2.4
Patrick	0E	1200S	1200N	1150S	1150N	2.4
	4E	1200S	1200N	1150S	1150N	2.4
	8E	1200S	1200N	1150S	1150N	2.4
Sudnip	0E	1200S	1200N	1150S	1150N	2.4
	4E	1200S	1200N	1150S	1150N	2.4
	8N	1000W	1400E	950W	1350E	2.4
Zit	0E	1200S	1200N	1150S	1150N	2.4
	375E	1000S	1400N	950S	1350N	2.4
	925E	600S	1800N	550S	1750N	2.4
TOTAL						50.4

Table 2: Mirage Project - Max and Min Pole-Dipole Electrode Position

3.4.2 MT Survey

GRID	LINE	Min EXTENT (m)	Max EXTENT (m)	Coverage (km)
Duck	0E	1200S	1400N	2.4
	4E	1200S	1400N	2.4
	8E	1200S	1400N	2.4
Fishhook	0N	1200W	1200E	2.4
	4N	1200W	1200E	2.4
	8N	1200W	1200E	2.4
ML	0E	1400S	1000N	2.4
	4E	1600S	800N	2.4
	8E	1200S	1200N	2.4
	12E	1200S	1200N	2.4
	16E	1200S	1200N	2.4
Patrick	0E	1200S	1200N	2.4
	4E	1200S	1200N	2.4
	8E	1200S	1200N	2.4
Sudnip	0E	1200S	1200N	2.4
	4E	1200S	1200N	2.4
	8N	1000W	1400E	2.4
Zit	0E	1200S	1200N	2.4
	375E	1000S	1400N	2.4
	925E	600S	1800N	2.4
Note: values in brackets include overlap stations			TOTAL	**50.4**

Table 3: Mirage Project - MT Survey Coverage (Electrode to Electrode)

3.5 INSTRUMENTATION

• **Receiver System:**	Quantec Distributed Array Acquisition System comprising: - 60channels max. per system (55ch operationally with internal A/D conversion (24bit @120db / dual speed @120-48kHz), and buffer memory (6Mb). 22 x 2-channel Acquisition Modules (AMs) 16 x 1-channel Acquisition Modules (Ams) AM data transmission using LAN cabling - 2 Central Recording Units (CRU), at base & remote (MT surveys) reference sites (140Gb data storage) - 2 GPS synchronization clocks (10nsec precision /12.3MHz clock-speed), at base & remote (MT surveys) CPU's - 2 PC-based Central Processing Units (base & remote)
• **Transmitter (DCIP Surveys):**	GDD Tx II (3.6kW) with frequency/waveform control, using CPU and Current Monitor (CM)
• **Power Supply (DCIP Surveys):**	Honda generator 6500, 220V, 60 Hz, single phase
• **Receiver Electrodes**:	Ground contacts using stainless steel rods
• **Transmit electrodes**	4 x 1.2cm diameter 1 meter long stainless steel rods
• **Receiver Coils (MT Surveys):**	4 Phoenix magnetometers "P50 model" (0.0001Hz to1kHz) 2 at base & 2 at remote 4 EMI magnetometers "BF-6 model" (1Hz to 25kHz) 2 at base & 2 at remote

3.6 PARAMETERS

3.6.1 DCIP Survey

• **Transmitter Waveform:**	30/256 Hz square waves at 100% duty cycle (~4sec Pos./Neg.)
• **Transmitter Output Current:**	min ~0.3 amperes to max ~3.0 amperes
• **Receiver Sampling Speed:**	240 samples/second (24 bit A/D @ 120 db dynamic range)
• **Tx-Rx Synchronization:**	using current monitor (10 μsec time-accuracy)
• **Time-Series Stacking:**	20 cycles (full-waveform)
• **Read Time:**	approx 3.0 minutes per event
• **Integration Start Time:**	T_O = 0.8 seconds
• **Post-Processing:**	using QGL QuickLay™ v.2.30.14 1) Time-series stacking 2) Robust statistics 3) Current waveform deconvolution 4) Digital filtering (60Hz + harmonics) 5) Spectral model decay-curve fitting (see Figure 5)
• **Time-Domain Decay Window:**	T_O to T_F= 0.80 to 2 seconds
• **Final Data Output:**	1) Normalized voltage (volts/ampere) 2) Voltage error (percent)

3) Phase (milliradians)
4) Phase error (milliradians)
5) Apparent Resistivity (Ωm).

- **Spectral Chargeability Model[6]:** Halverson-Wait (see)

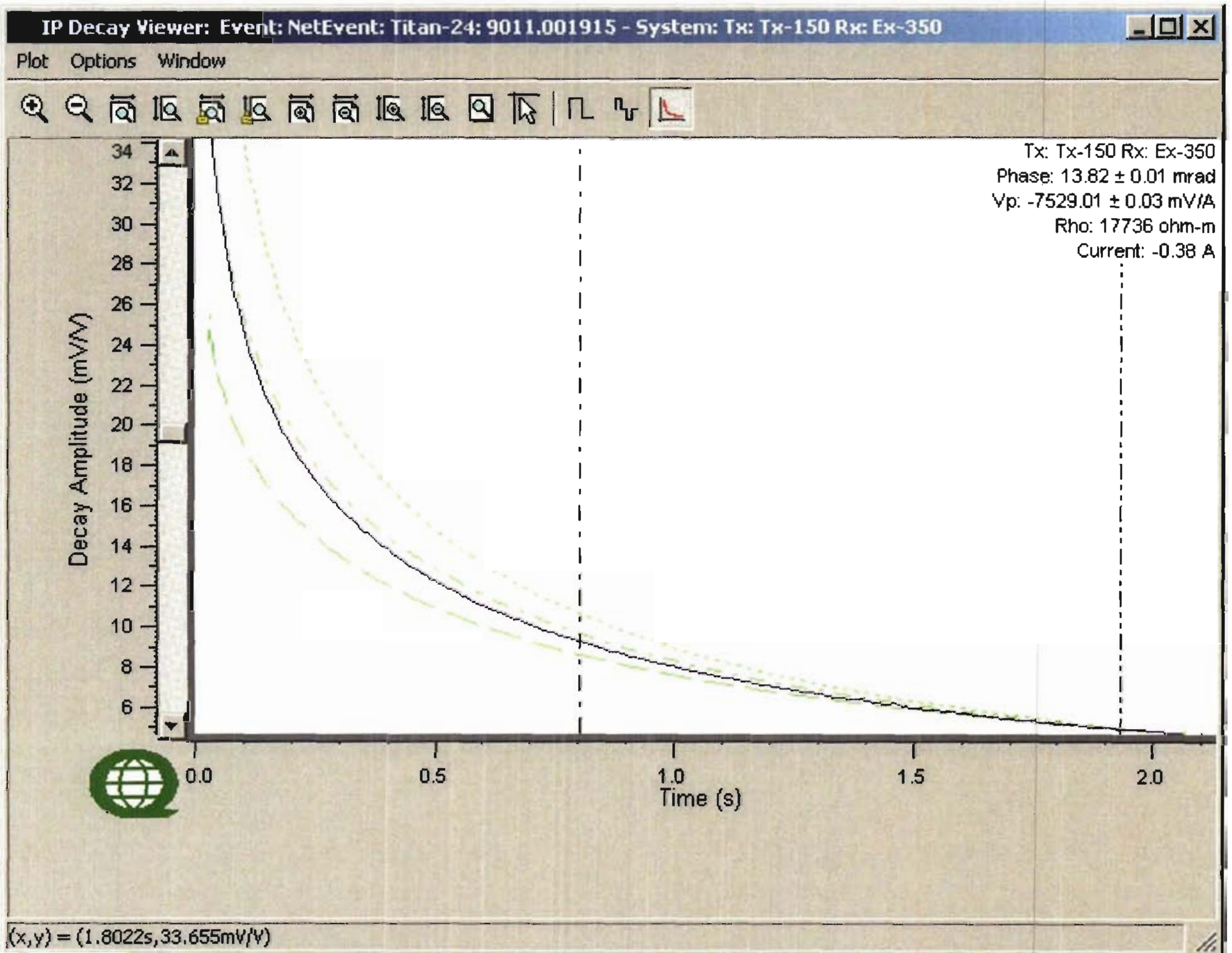


Figure 5: Spectral Chargeability Model and Calculated Halverson-Wait Decays[7]

3.6.2 MT Survey

- **Frequency Bandwidth:** Operating: 0.01 to 48000 Hz; Effective: 0.1 to 20000 Hz
- **Time-series Sampling:** High Range: 48000 samples/sec; Mid-Range: 9600 samples/sec; Low Range: 240 samples/sec.
- **Remote-Base Synchronization**: GPS clocks (10μsec time-accuracy)

[6] *The Halverson-Wait model chargeability (Halverson et al., 1981) is similar to and improves upon the frequency-domain Cole-Cole model (Pelton et el., 1978) described in the time-domain by Johnson (1984).*

[7] *HW model parameters calculated in frequency domain, with hatched green lines corresponding to theoretical HW decay with spectral r-factors of 0.1, 1.0 (default) & 10, k-factor of 0.2 (default).*

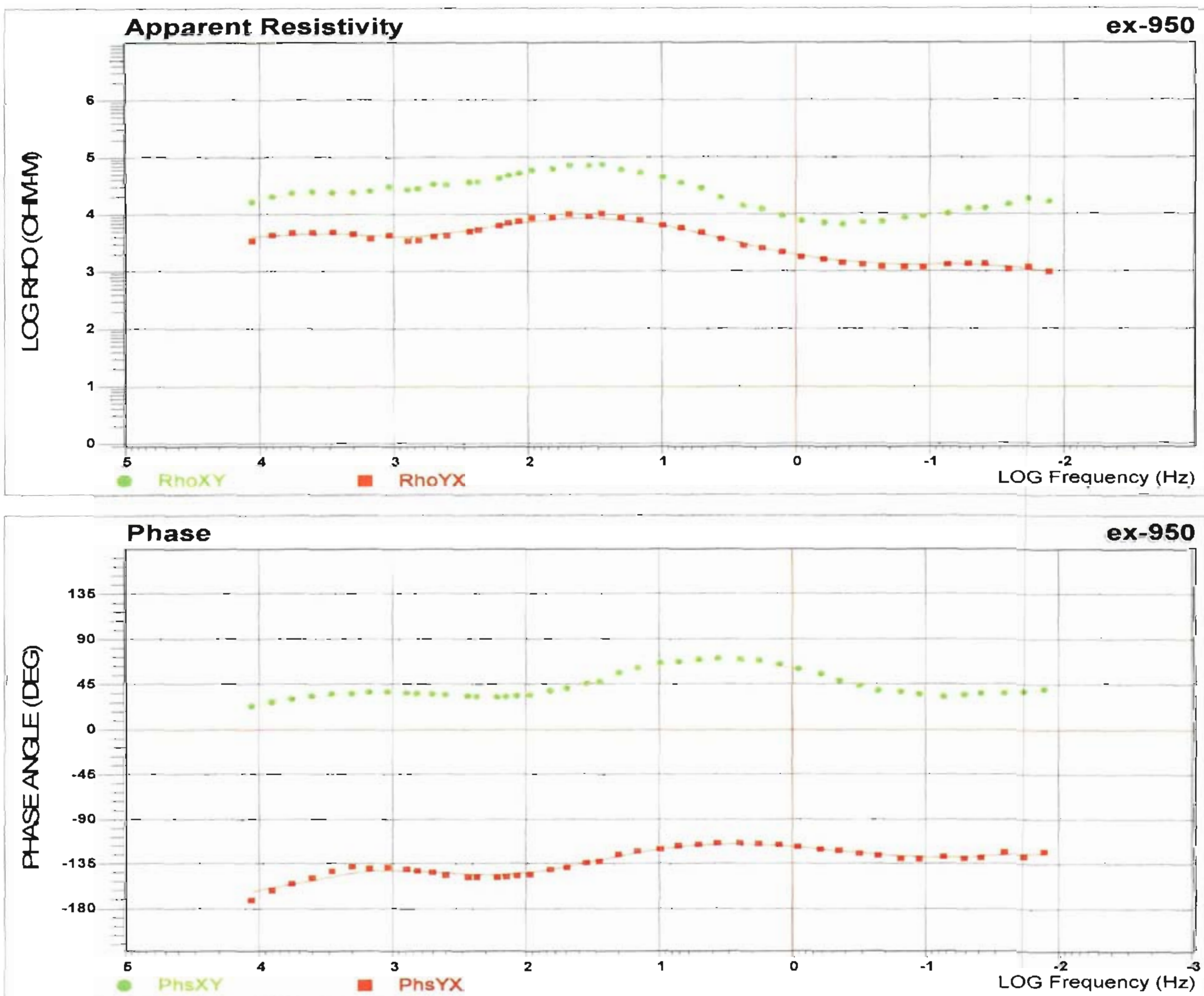
- **Time-Series Stacking:** <u>High Range:</u> 1,534,999 samples
  <u>Mid-Range:</u> 20^{20} (1,048,576) samples
  <u>Low Range:</u> 2^{19} (524,288) samples

- **Sample/Record Time:** <u>High Range:</u> min. 4 events @ 30 seconds per event
  <u>Mid Range:</u> min. 2 events @ 2.5 minutes per event
  <u>Low Range:</u> 1.5 - 3 events @ 80 minutes for a full event (total recording and retrieving time approx. 7 hrs)

- **Post-Processing:** using QGL QuickLay™ v.2.30.14
  1) Coherent noise rejection using remote-reference
  2) Proprietary digital filtering (scrubbing)
  3) Coherency sorting
  4) Impedance estimate stacking

- **Final Data Output:** 1) Auto and cross-power spectral estimates
  2) Unrotated (XY & YX) Tensor impedances + errors (apparent resistivities and E/H phase – see Figure 6).

- **Final Data Processing:** Edited and un-edited phase & resistivity sounding curves (0.1-10000 Hz @ 8 pts/decade) using Geotools™.



<u>Figure 6: Apparent Resistivity and Phase (XY and YX) Sounding Curves</u>

3.7 Data Accuracy and Repeatability

3.7.1 DCIP Survey

ERROR TYPE	PHASE ERRORS	VOLTAGE ERRORS
1. **Measured Data** average error (from csv files) using Halverson-Wait model calculation.	0.90 mrad avg	0.00088 mV/A avg

Table 4: Minimum Errors for DCIP Measurements

3.7.2 MT Survey

- **Parallel Sensor Test:** Test for BF-6 (High to Mid Frequency Range) see Figure 7. Test for P50 (Low Frequency Range) see Figure 8.
- **Data Error:** Apparent Resistivity = <1/20TH decade average. Phase = <3 degrees average.
- **Inversion Error:** 1/20TH decade, minimum acceptable.

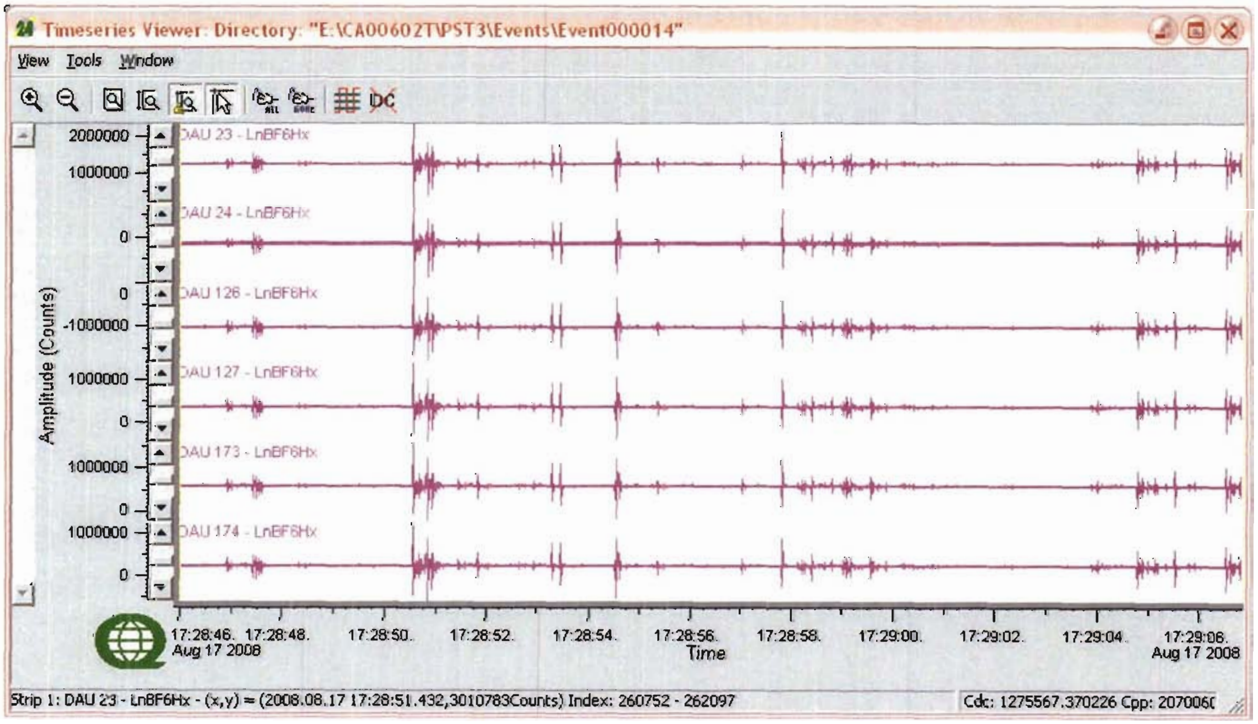


Figure 7: Time Series from Parallel Sensor Test (BF-6 coils)

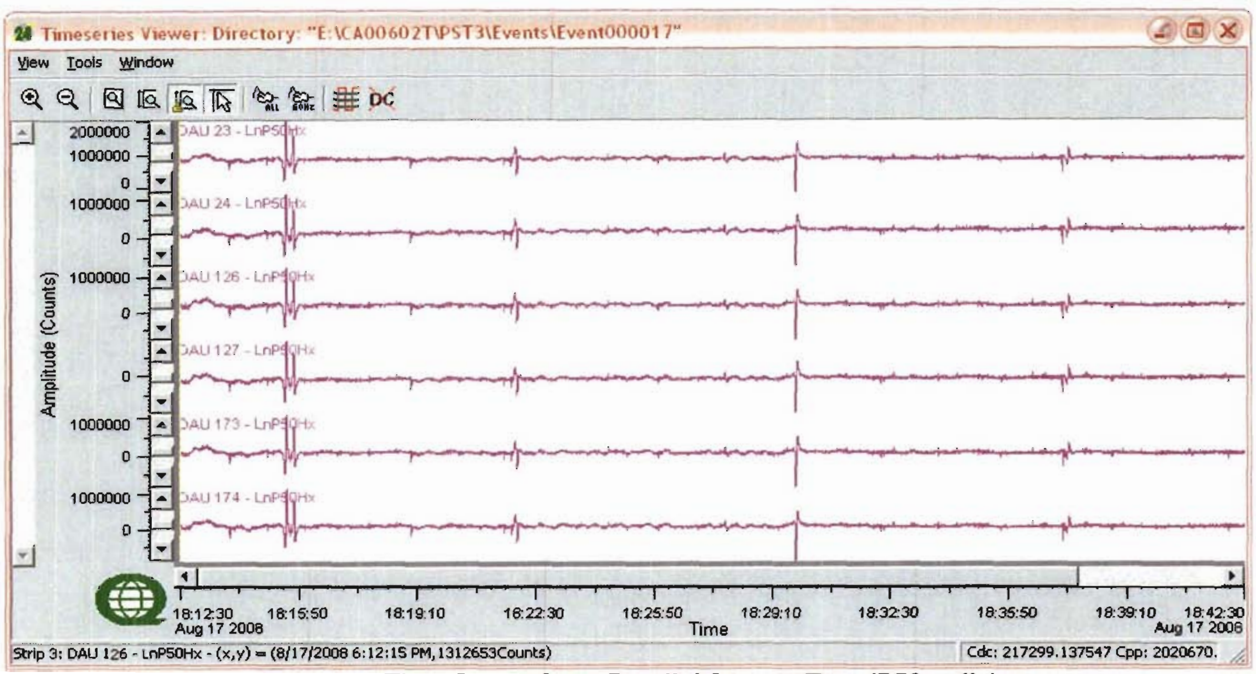


Figure 8: Time Series from Parallel Sensor Test (P50 coils)

3.8 DATA PRESENTATION

3.8.1 DCIP Survey

- **Pseudosection Plots:** In-line[8] DC/IP Resistivity and Chargeability Pseudo sections, posted, contoured (equal area zoning) and plotted in ground units using Quantec's QuickLay viewer (Appendix D).

- **Digital** Raw Data: Raw Event Log File Folders (eg. Eventxxxx.dat). Also contains AU.txt and Event.log files, which contain information on the location and time of the event in QuickLay propriety digital format (output to Matlab format upon request).

  Processed data: DCIP ASCII DATA, in *.CSV (comma delimited) file format, from QuickLay, containing final processed voltage and phase data (Ex)

Line 1:	Column headings
Column 1:	Event name/number (e.g., Event100020)
Column 2:	Transmitter site ID (e.g., Tx150)
Column 3:	Receiver site ID (e.g., Rx150)
Column 4-11:	C1-C2/P1-P2 positions in X and Y meters)
Column 12:	Current (amperes)
Column 13:	Current error (amperes)
Column 14:	Normalized voltage (volts/ampere)
Column 15:	Voltage error (volts/ampere)
Column 16:	Phase (milliradians)
Column 17:	Phase error (milliradians)
Column 18:	Apparent resistivity (ohm-meters)[9].

[8] *Note: Cross-line (YX) values not shown for presentation purposes.*
[9] *Note: Apparent resistivities calculated in 2d space using 4-electrode general array configuration (as per XY electrode positioning in columns 4-11 of csv file) – not based on pole-dipole calculations (K. Nurse, QGL, pers. comm., 07-2004).*

3.8.2 MT Survey

- **Sounding Curves:** MT Apparent Resistivity and Phase (XY and YX) (Appendix E) in log frequency format, using Geotools™ viewer.
- **Pseudosection Plots:** MT Apparent Resistivity and Phase Pseudosections (XY, and YX), posted, contoured (equal area zoning) and plotted, in grid units using Geotools™ viewer (Appendix F).
- **Digital:** Raw data: Base and Remote Raw Event Log File Folders (i.e. Base - Eventxxxxx.dat; Remote Eventxxxxxx.dat). Also contains AU.txt and Event.log files, which contain information on the location and time of the event in QuickLay propriety digital format.

  Processed data: MT DATA, in .EDI (electronic data interchange) file, created in Geotools™ containing tensor-sounding data (XY & YX)[10], for individual stations (sites) and profiles (site-sets), in a format conforming to SEG standard for the storage MT data.

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[10] *XY denotes in-line electrical (E) field and orthogonal magnetic (H) field (Ex/Hy). YX denotes in-line H field and orthogonal E-field (Ey/Hx).*

4. REFERENCES

1. Halverson, M.O., Zinn, W.G., McAlister, E.O., Ellis, R., and Yates, W.C. (1981). Assessment of results of broad-band spectral IP field test. In: Advances in Induced Polarization and Complex Resistivity, pp.295-346, University of Arizona.
2. Johnson, I.M (1984). Spectral induced polarization parameters as determined through time-domain measurements Geophysics, v. 49, pp. 1993-2003.
3. Pelton, W.H., Ward, S.H., Hallof, P.G., Sill, W.R. and Nelson, P.H (1978). Mineral discrimination and removal of inductive coupling with multi-frequency IP. Geophysics, v.43, pp.588-609.

RESPECTFULLY SUBMITTED
QUANTEC GEOSCIENCE LTD.

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October, 2008
Toronto, ON

APPENDIX A: STATEMENT OF QUALIFICATIONS

I, Natasha Faucher, declare that:

1 I am a data processor and am presently employed in this capacity with Quantec Geoscience Ltd., Toronto, Ontario.

2. I obtained a Bachelor of Science degree in Environmental Sciences from the University of Ottawa in October of 2005.

3. I have practiced my profession continuously since May, 2007 in Canada.

4. I have no interest, nor do I expect to receive any interest in the properties or securities of **Vismand Exploration,** its subsidiaries or its joint-venture partners.

5. I was the data processor on site, responsible for the quality control of data acquired for the Titan 24 Tensor MT and DCIP surveys. I compiled the logistics report. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Toronto, Ontario

October 2008

Natasha Faucher, B.Sc.,

Quantec Geoscience Ltd.

APPENDIX A: STATEMENT OF QUALIFICATIONS

I, Karl Kwan, declare that:

- I am a consultant with residence in Scarborough, Ontario and am presently employed with Quantec Geoscience Ltd., Toronto, Ontario;

- I obtained a Bachelor's Degree (Honors) in Mathematics and Physics Co-op from University of Victoria in Victoria, B.C. in 1987, and a Masters Degree in Geophysics (M.Sc.) at University of Toronto in Toronto, Ontario in 1989;

- I have practiced my profession continuously since May 1989 in Canada;

- I am a member of Canadian Exploration Geophysicists Society (KEGS);

- I have no interest, nor do I expect to receive any interest in the properties or securities of **Vismand Exploration**, its subsidiaries or its joint-venture partners

- I am the project supervisor, in charge of data acquisition, quality control and the 2D inversions. I have undertaken the 2D inversions and can attest that these accurately and faithfully reflect the data acquired on site. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report

Toronto, Ontario

October, 2008

Karl Kwan, B.Sc.,

Quantec Geoscience Ltd

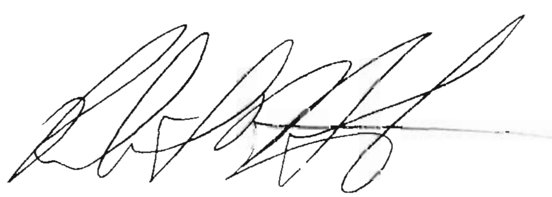
APPENDIX A: STATEMENT OF QUALIFICATIONS

I, Robert Hearst, declare that

- I am a Geophysicist with residence in Toronto, Ontario and am presently employed in this capacity with Quantec Geoscience Ltd., Toronto, Ontario.
- I obtained a Bachelor of Science Degree with Honours (H.B.Sc.), Geophysics and Geology, from the University of Western Ontario in London, Ontario in 1983, and a Master of Science Degree (M.Sc.), Geophysics and Geology, from McMaster University in Hamilton, Ontario in 1996.
- I am a registered geophysicist, since 1992, with license to practice in the Northwest Territories and Nunavut (NAPEGG Licensee L935); a registered geophysicist, since 2006 with license to practice in the Province of Alberta (APEGGA member # M89621); a registered geoscientist, since 2006 with license to practice in the Province of Ontario (APGO member # 1415); and a registered geoscientist, since 2006 with a limited license to practice in the Province of Quebec (OGQ Special Authorisation #69); and I have applied for professional licensing in Labrador.
- I am a member of the Society of Exploration Geophysicists (SEG); the Canadian Exploration Geophysical Society (KEGS); Prospectors and Developers Association of Canada (PDAC); Canadian Institute of Mining and Metallurgy (CIMM, National Branch); and the Environmental and Engineering Geophysicists Society (EEGS).
- I have practiced my profession continuously since June 1983, in North America, South America, Africa, Asia, the Middle East, South East Asia, and Europe.
- I have no interest, nor do I expect to receive any interest in the properties or securities of **Vismand Exploration,** its subsidiaries or its joint-venture partners.
- I am the Professional Geophysicist responsible for this project. I have reviewed the survey results and oversaw the preparation and reviewed this logistics report and can attest that these accurately and faithfully reflect the data acquired on site. The statements made in this report represent my professional opinion based on my consideration of the information available to me at the time of writing this report.

Toronto, Ontario

October 2008



Robert Hearst, M.Sc., P.Geo., P.Geoph.,

Quantec Geoscience Ltd.

APPENDIX B - PRODUCTION SUMMARY

MIRAGE PROJECT

DATE	DESCRIPTION	LINE	START	END	READ (m)		TOTAL (Km)	
					MT	IP	MT	IP
August 16/08	MOB to River Valley	****	****	****	****	****	****	****
August 17/08	Parallel sensor test Remote site chosen	****	****	****	****	****	****	****
August 18/08	Weather day (Thunderstorm)	****	****	****	****	****	****	****
August 19/08	Line set-up (Sudnip Grid) Read MT Read IP	L0N	1200W	1200E	2400	2400	2.4	2.4
August 20/08	Repeat MT on L0N (Additional 120Hz event) Move Line Read MT	L0N L4N	1200W 1200W	1200E 1200E	(2400) 2400	****	4.8 (7.2)	2.4
August 21/08	Repeat MT (additional 120Hz event) Read IP Move line	L4N	1200W	1200E	(2400)	2400	4.8 (9.6)	4.8
August 22/08	Read IP Read MT	L8N	1000W	1400E	2400	2400	7.2	7.2
August 23/08	Move to Patrick Grid	****	****	****	****	****	7.2	7.2
August 24/08	Read IP Read MT	L0E	1200S	1200N	2400	2400	9.6	9.6
August 25/08	Read MT	L4E	1200S	1200N	2400	****	12.0	9.6
August 26/08	Read IP Pick up Line	L4E	1200S	1200N	****	2400	12.0	12.0
August 27/08	Move Line Read IP Read MT	L8E	1200S	1200N	2400	2400	14.4	14.4
August 28/08	Acquire add'l events for IP (Tx150N) Move to ML Grid	****	****	****	****	****	14.4	14.4
August 29/08	Move Line Read MT	L8E	1200S	1200N	2400	****	16.8	14.4
August 30/08	Read IP Move Line Read MT	L8E L4E	1200S 1600S	1200N 800N	2400 2400	2400 2400	19.2	16.8
August 31/08	Read IP Prep Line	L4E	1600S	800N	****	2400	19.2	19.2
September 1/08	Move Line Read IP Read MT	L0E	1400S	1000N	****	2400	19.2	21.6
September 2/08	Reacquire MT (Line coils Hx and Hy reversed; line coils located at base of fault)	L0E	1400S	1000N	2400	****	21.6	21.6

September 3/08	Move to Duck Grid	****	****	****	****	****	21.6	21.6
September 4/08	Read MT (only 700S to 1200N is cut)	L0E	700S	1200N	1900	****	23.5	21.6
September 5/08	Line cutters finished cutting L0E Set up line	****	****	****	****	****	23.5	21.6
September 6/08	Read IP Read MT (full line)	L0E	1200S	1200N	500 (2400)	2400	24.0 (25.9)	24.0
September 7/08	Start IP Read MT	L4E	1200S	1200N	2400	****	26.4 (28.3)	****
September 8/08	Read IP	L4E	1200S	1200N	****	2400	26.4 (28.3)	26.4
September 9/08	Move Line Read MT	L8E	1200S	1200N	2400	****	28.8 (30.7)	26.4
September 10/08	Start IP	L8E	1200S	1200N	****	****	28.8 (30.7)	26.4
September11/08	Finish IP. Pick up gear	L8E	1200S	1200N	****	2400	28.8 (30.7)	28.8
September 12/08	Move equipment back to ML grid	****	****	****	****	****	28.8 (30.7)	28.8
September 13/08	Set-up Line Start MT (Read a few HF events)	L12E	****	****	****	****	28.8 (30.7)	28.8
September 14/08	Start IP Finish MT	L12E	1200S	1200N	2400	****	31.2 (33.1)	28.8
September 15/08	Finish IP Prep Line	L12E	1200S	1200N	****	2400	31.2 (33.1)	31.2
September 16/08	Move Line Start IP Start MT	L16E	****	****	****	****	31.2 (33.1)	31.2
September 17/08	Finish IP Finish MT	L16E	1400S	1000N	2400	2400	33.6 (35.5)	33.6
September 18/08	Move gear to Fishhook grid	****	****	****	****	****	33.6 (35.5)	33.6
September 19/08	Prep Line (Started MT but campers were set-up over coils)	L0N	****	****	****	****	33.6 (35.5)	33.6
September 20/08	Read MT (No IP due to lightning)	L0N	1200W	1200E	2400	****	36.0 (37.9)	33.6
September 21/08	Read IP Move Line Read MT	L0N L4N	1200W 1200W	1200E 1200E	**** 2400	2400 ****	38.4 (40.3)	36.0
September 22/08	Read IP Move Line Read MT	L4N L8N	1200W 1200W	1200E 1200E	**** 2400	2400 ****	40.8 (42.7)	38.4
September 23/08	Read IP Move Line Read MT	L8N L12N	1200W 1200W	1200E 1200E	**** 2400	2400 ****	43.2 (45.1)	40.8
September 24/08	Read IP Pick-up gear and move to Zit grid	L12N	1200W	1200E	****	2400	43.2 (45.1)	43.2
September 25/08	Setup Line Read MT	L925E	600S	1800N	2400	****	45.6 (47.5)	43.2

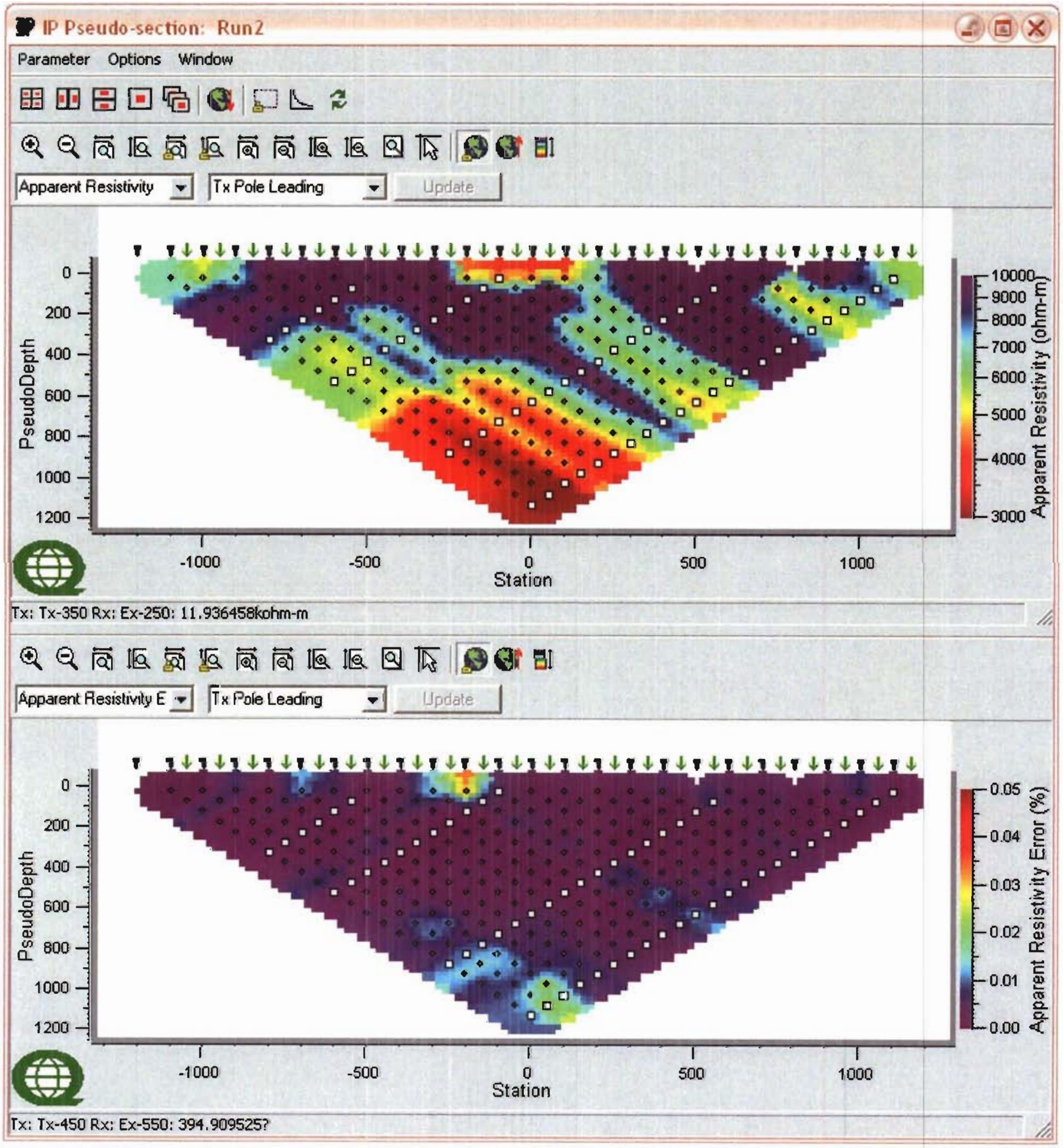
September 26/08	Read IP Move Line Read MT	L925E L375E	600S 1000S	1800N 1400N	**** 2400	2400 ****	48.0 (49.9)	45.6
September 27/08	Read IP	L375E	1000S	1400N	****	2400	48.0 (49.9)	48.0
September 28/08	Read IP Read MT	L0E	1200S	1200N	2400	2400	50.4 (52.3)	50.4
September 29/08	Start Demob	****	****	****	****	****	50.4 (52.3)	50.4
September 30/08	Finish Demob	****	****	****	****	****	50.4 (52.3)	50.4

TOTAL SURVEY DAYS	**46**	**TOTAL PRODUCTION: MT: 50.4 (52.3) km** **IP: 50.4 km**
READ TIME	**34**	
PARALLEL SENSOR TEST	**1**	
SET UP DAYS	**7**	
MOBILIZATION DAYS	**3**	
WEATHER DAYS	**1**	

APPENDIX C – IP PSEUDOSECTIONS

LINE 0N – SUDNIP GRID

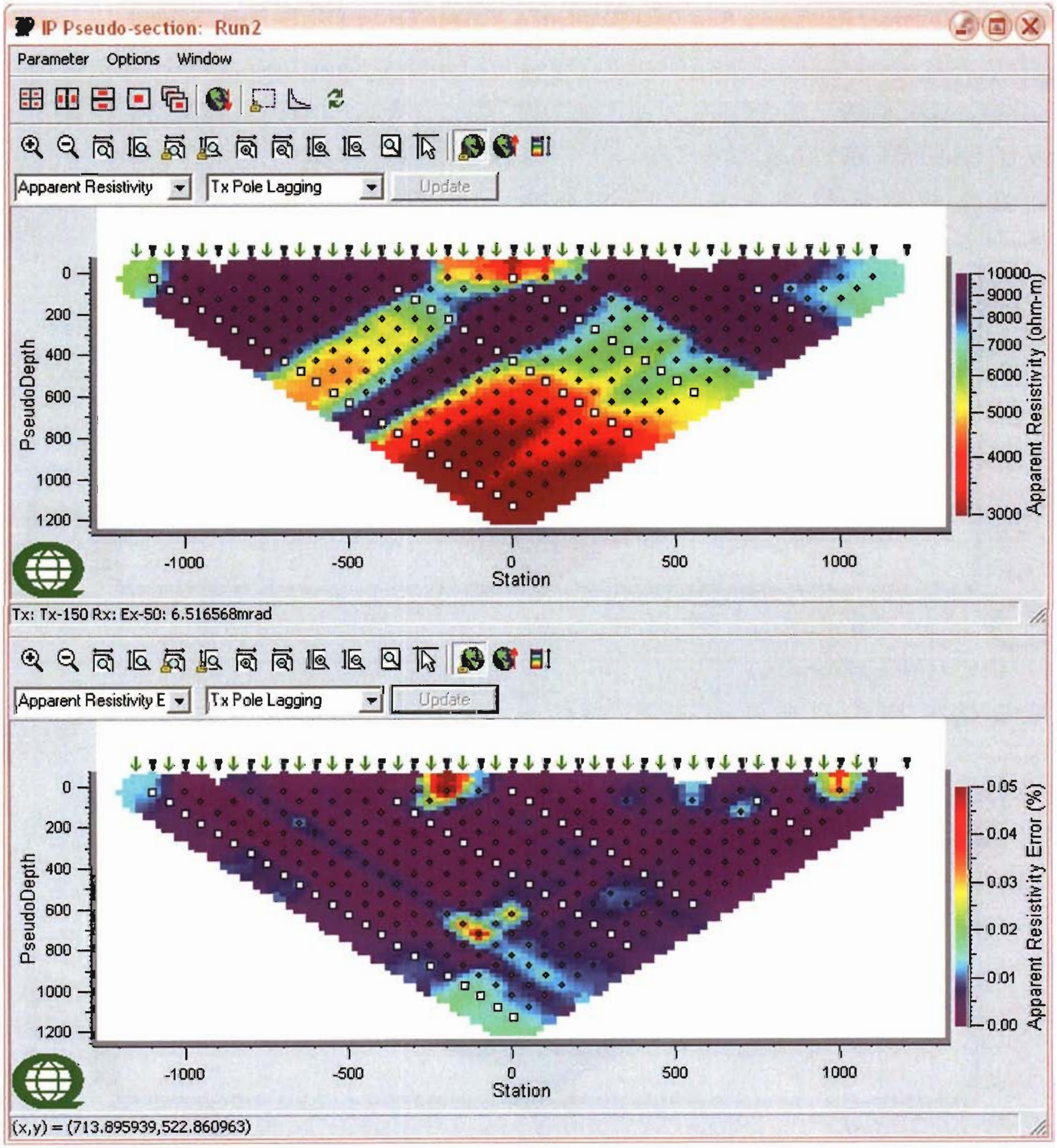
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

Line 0N

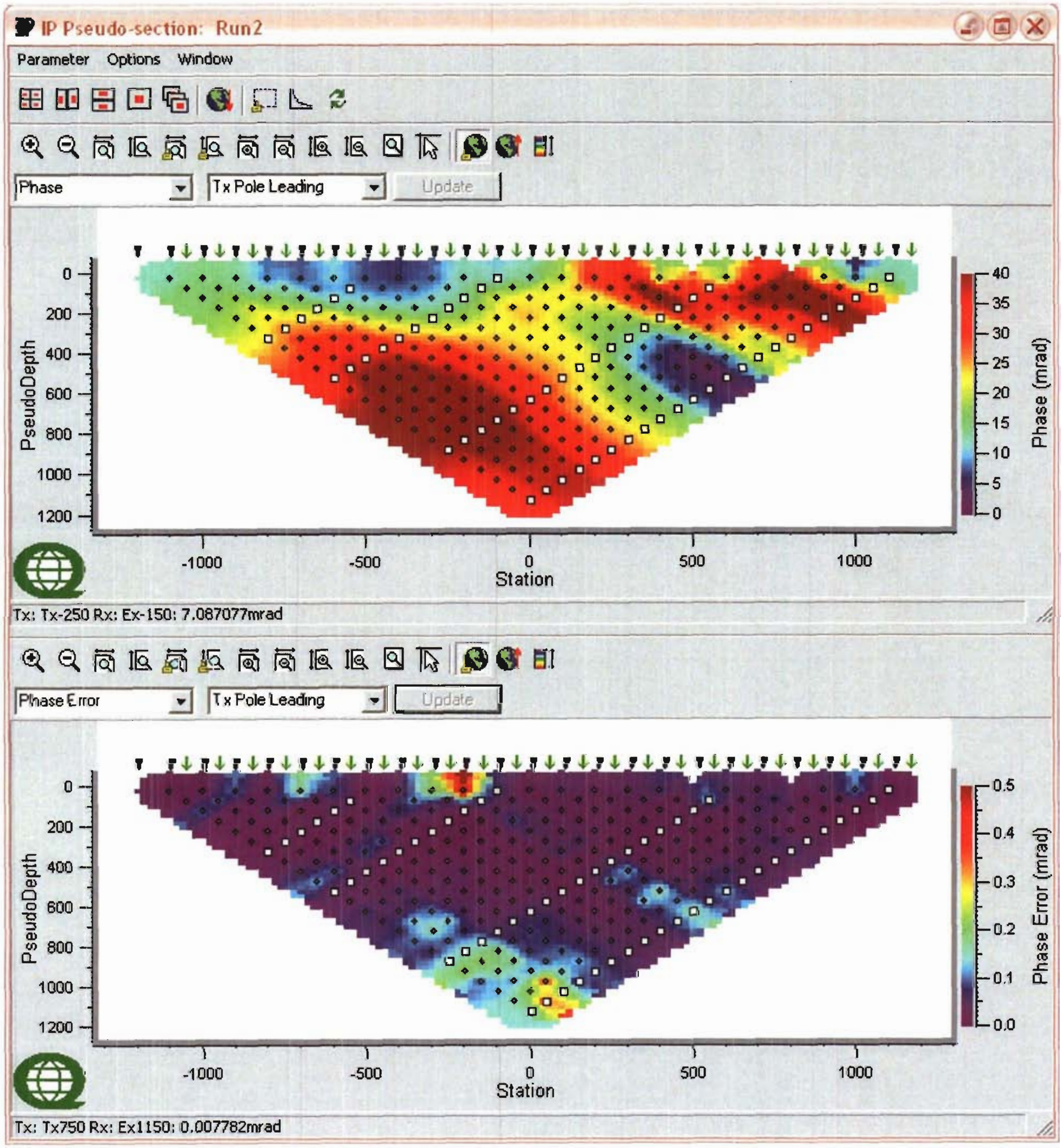
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 0N

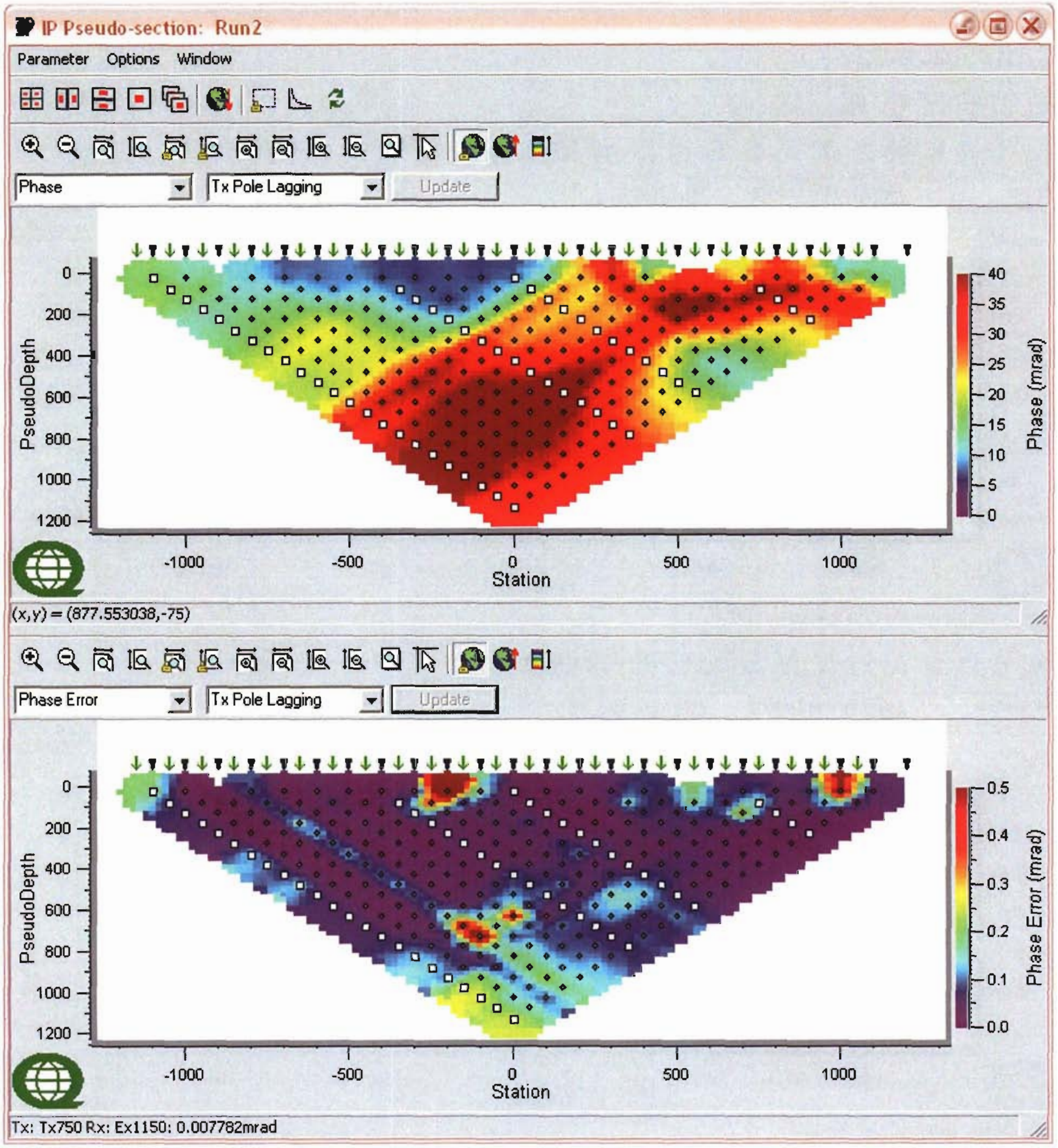
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 0N

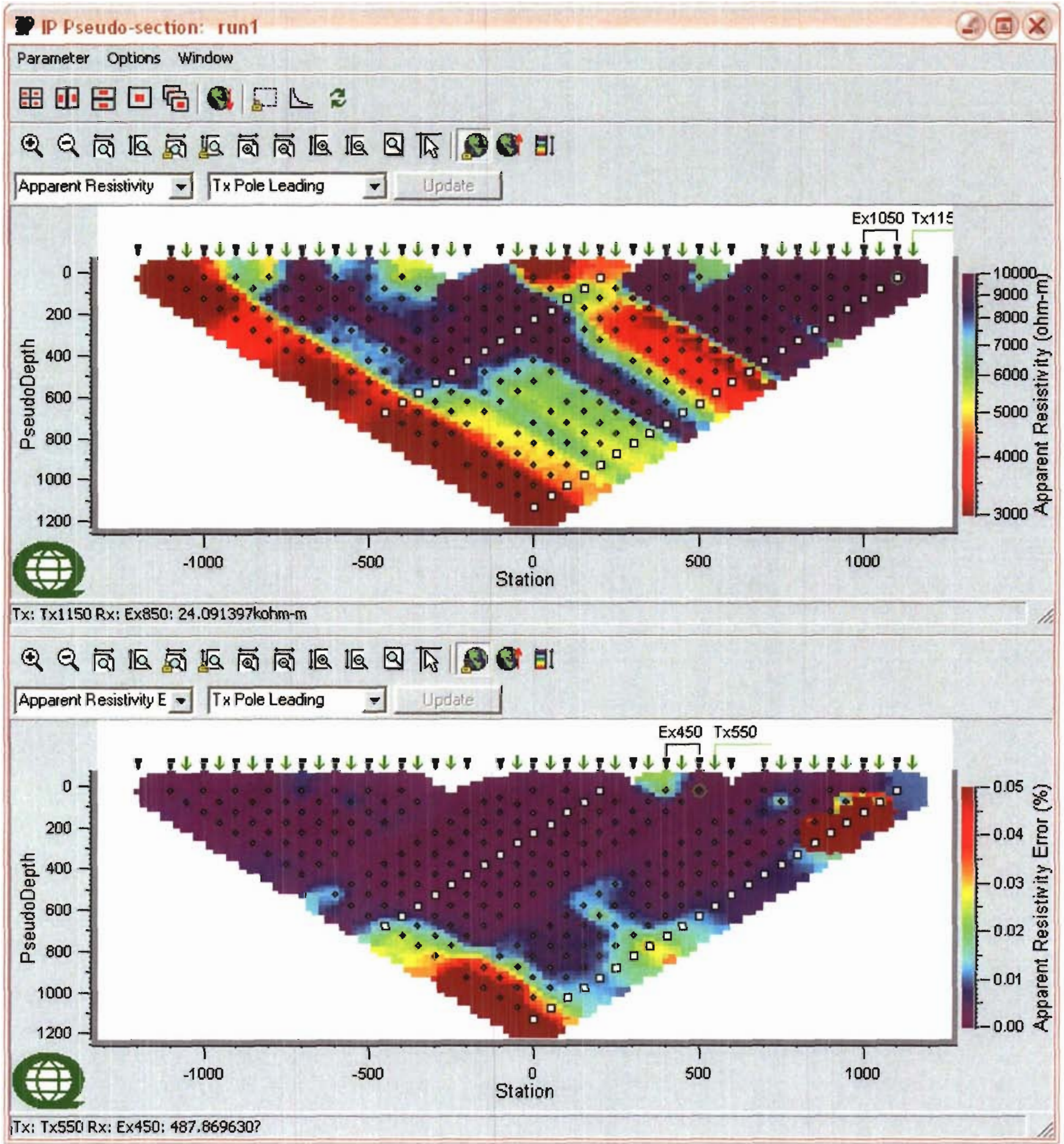
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 4N – SUDNIP GRID

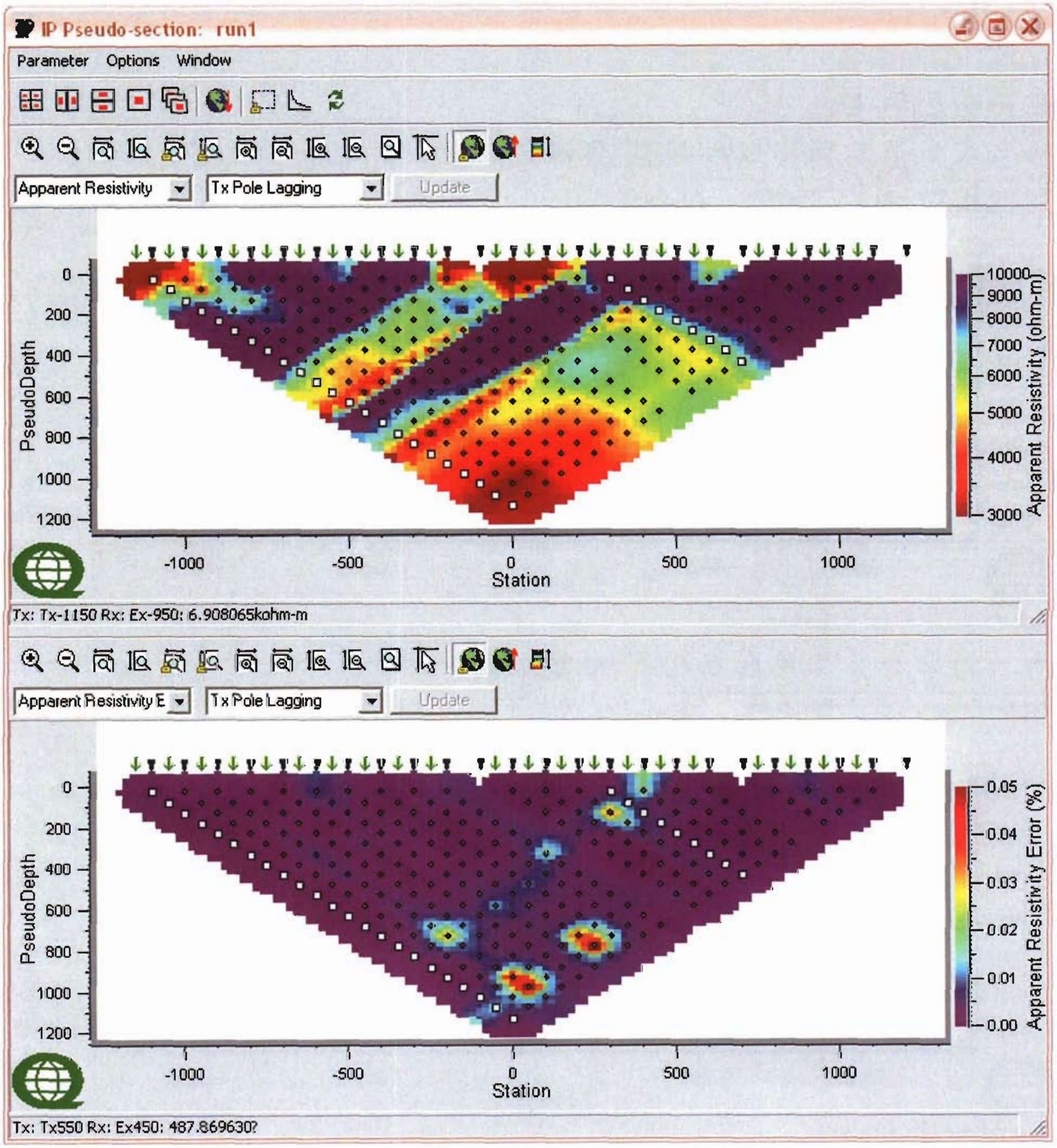
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

<u>LINE 4N</u>

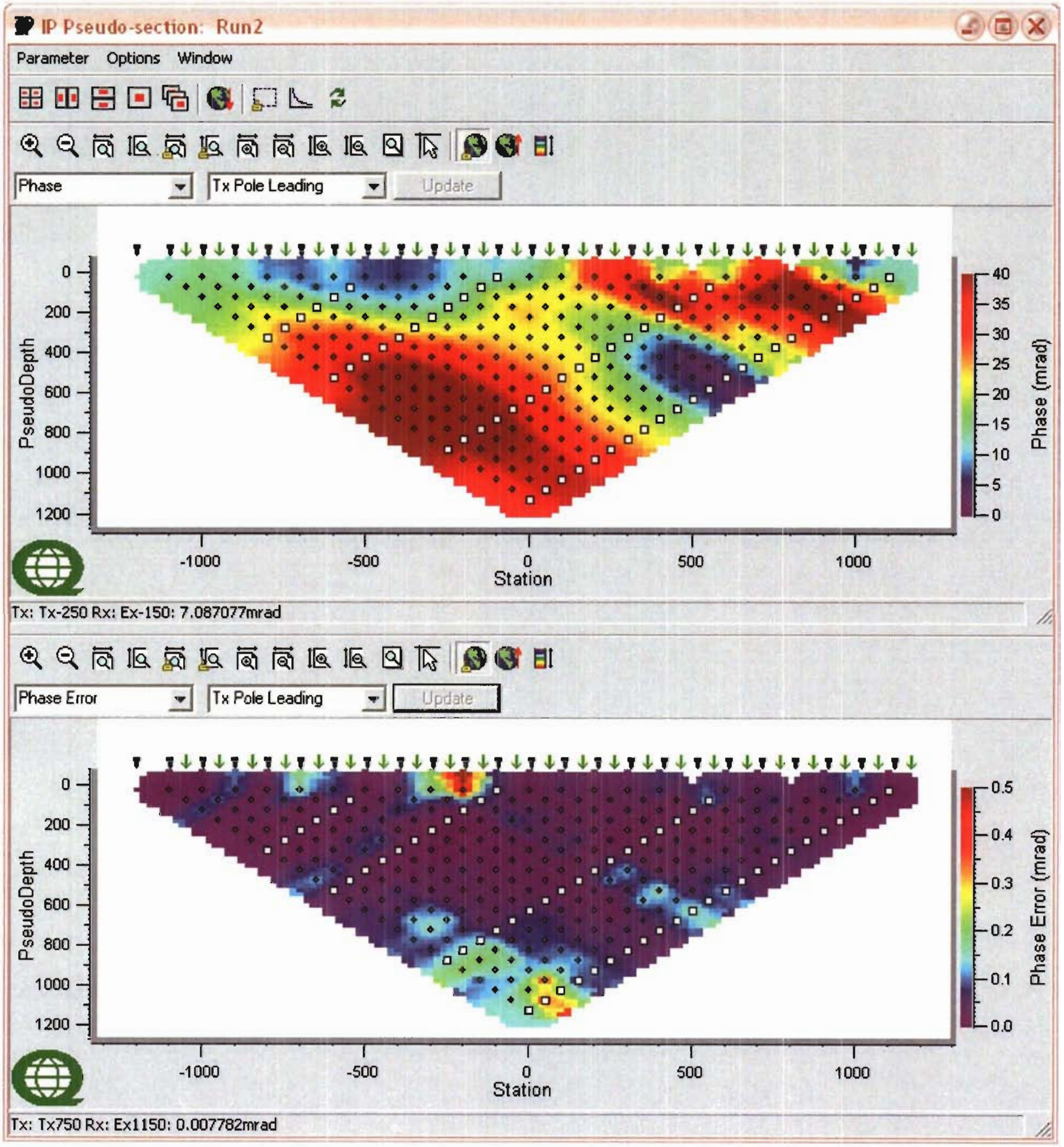
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



Tx with more than one event

LINE 4N

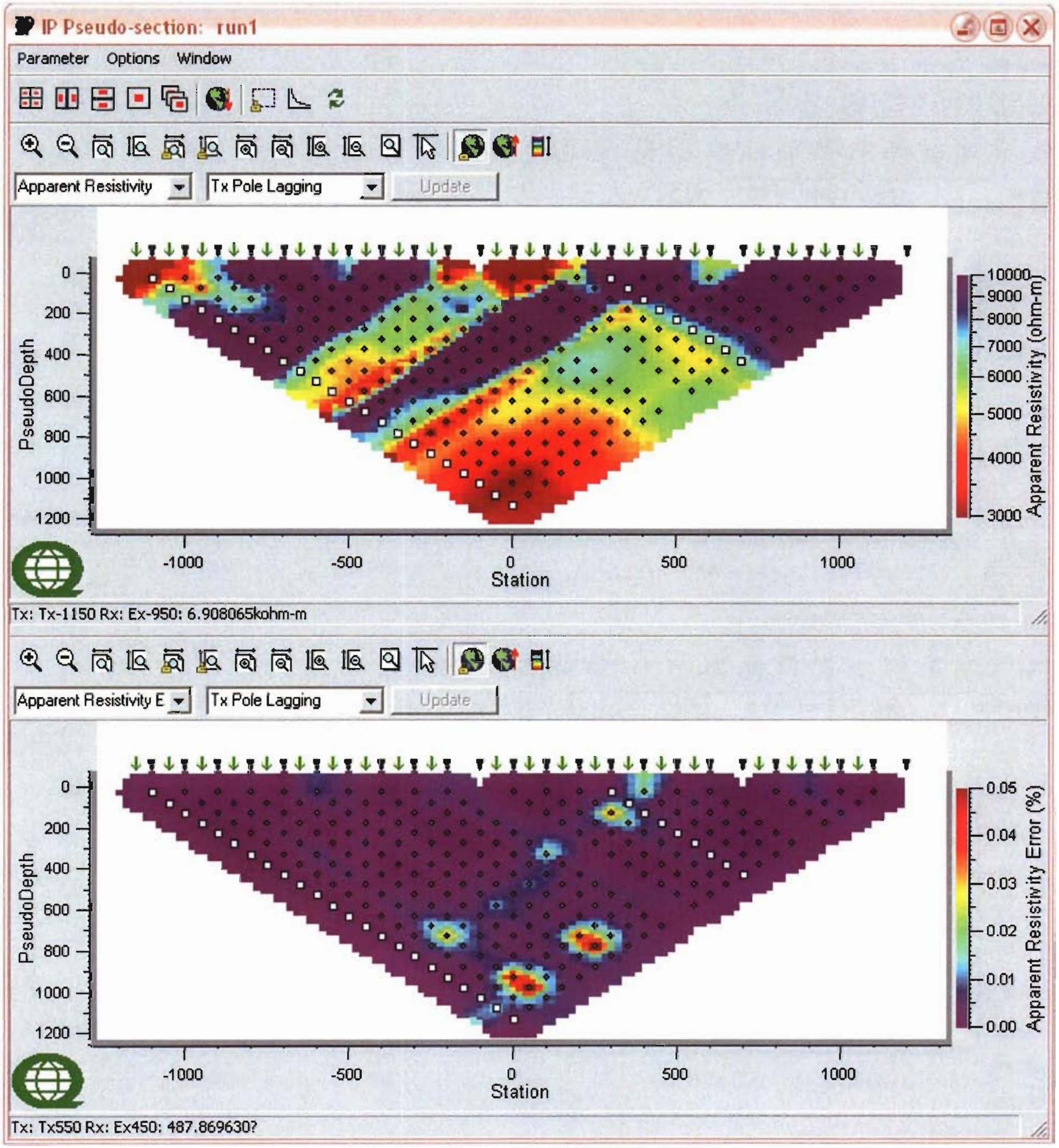
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

Line 4N

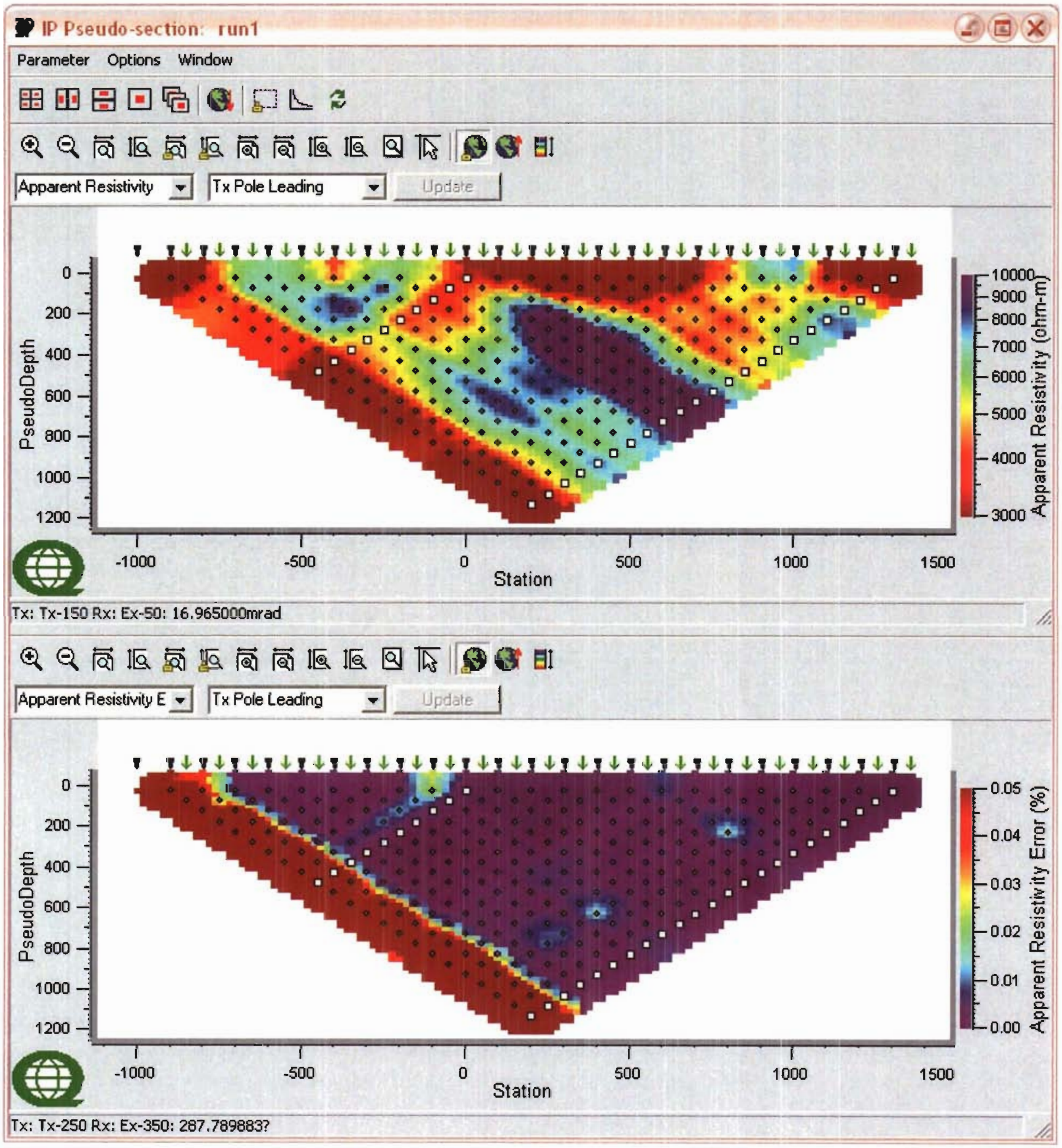
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 8N – SUDNIP GRID

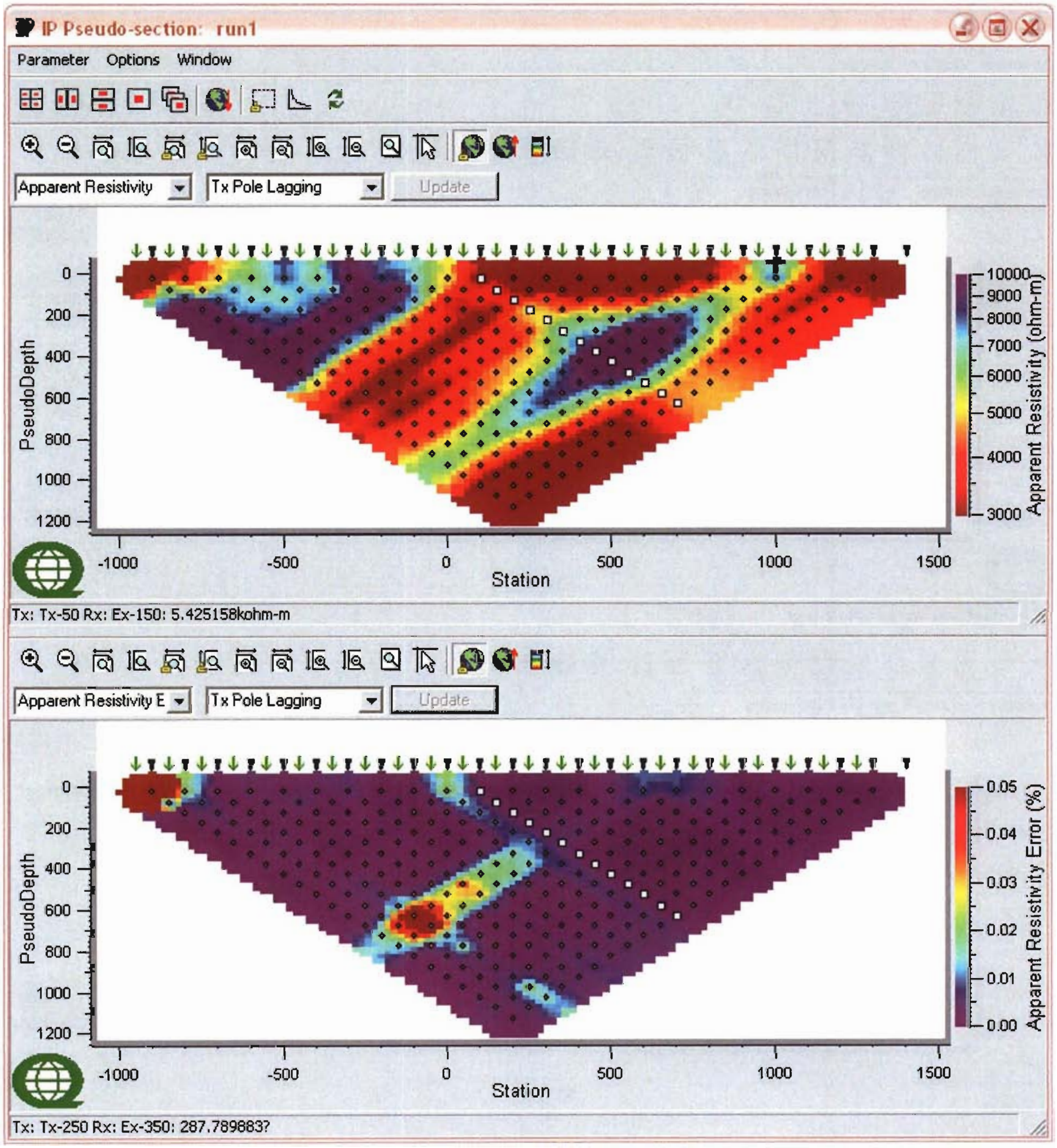
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 8N

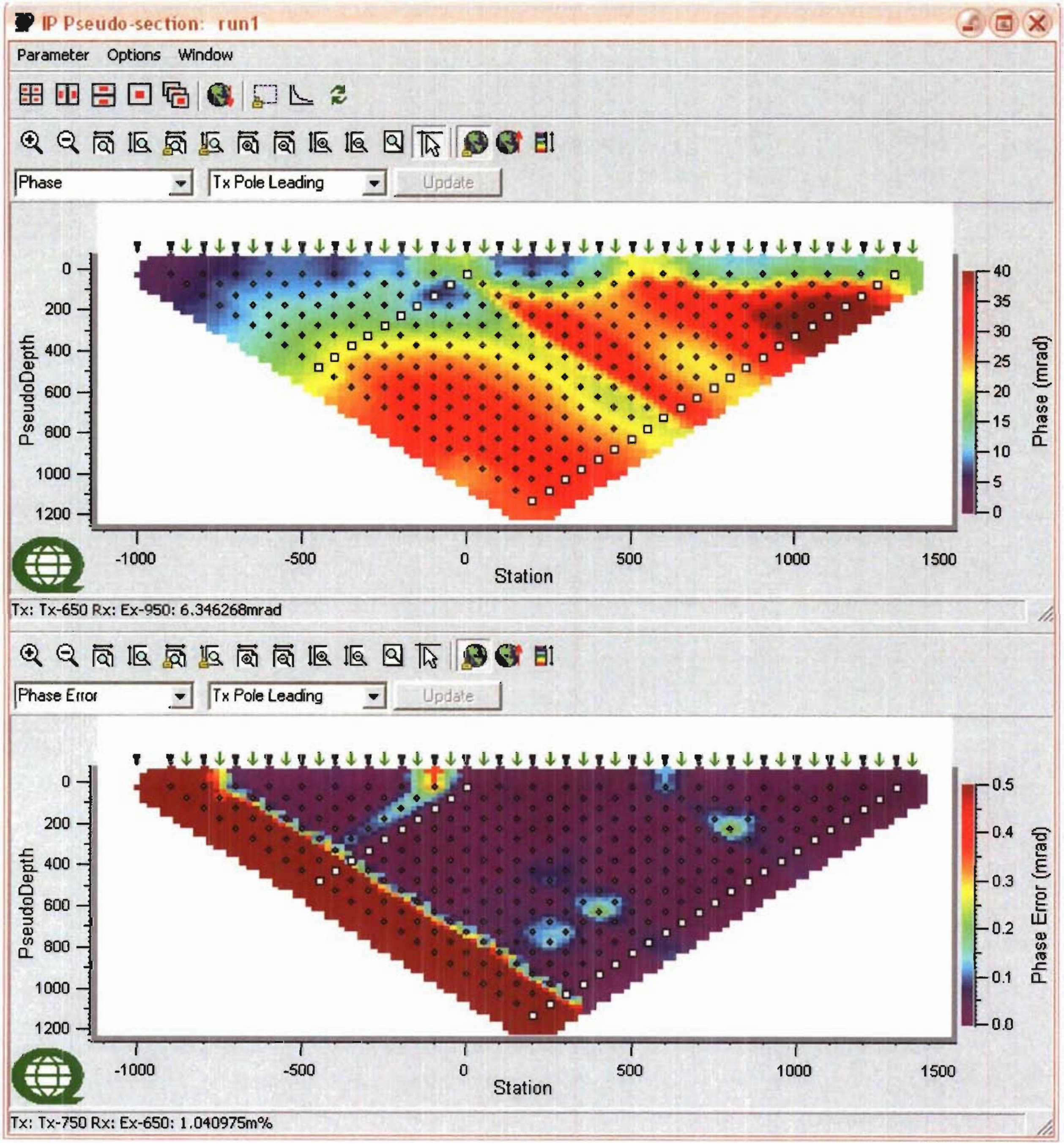
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 8N

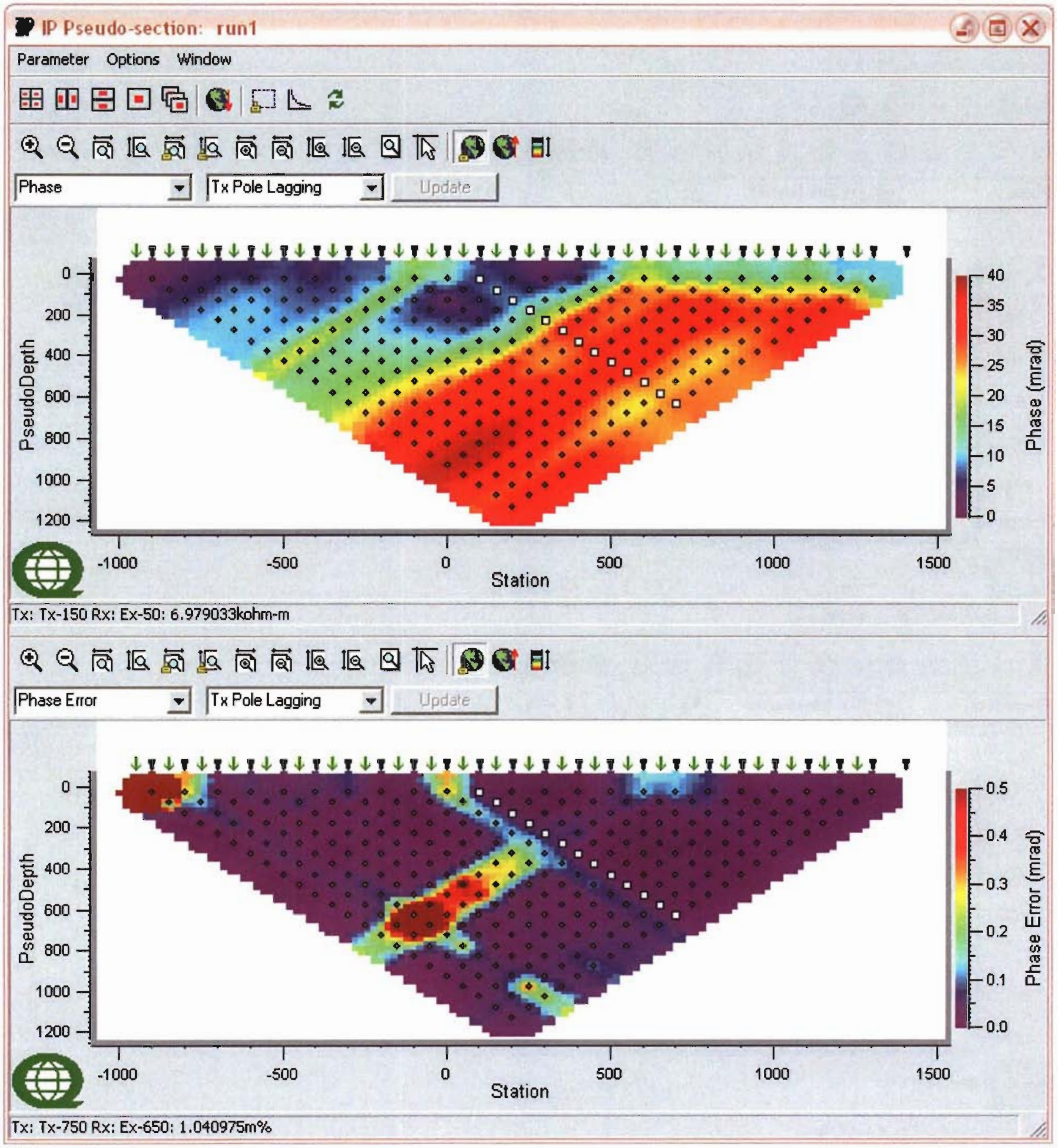
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

<u>LINE 8N</u>

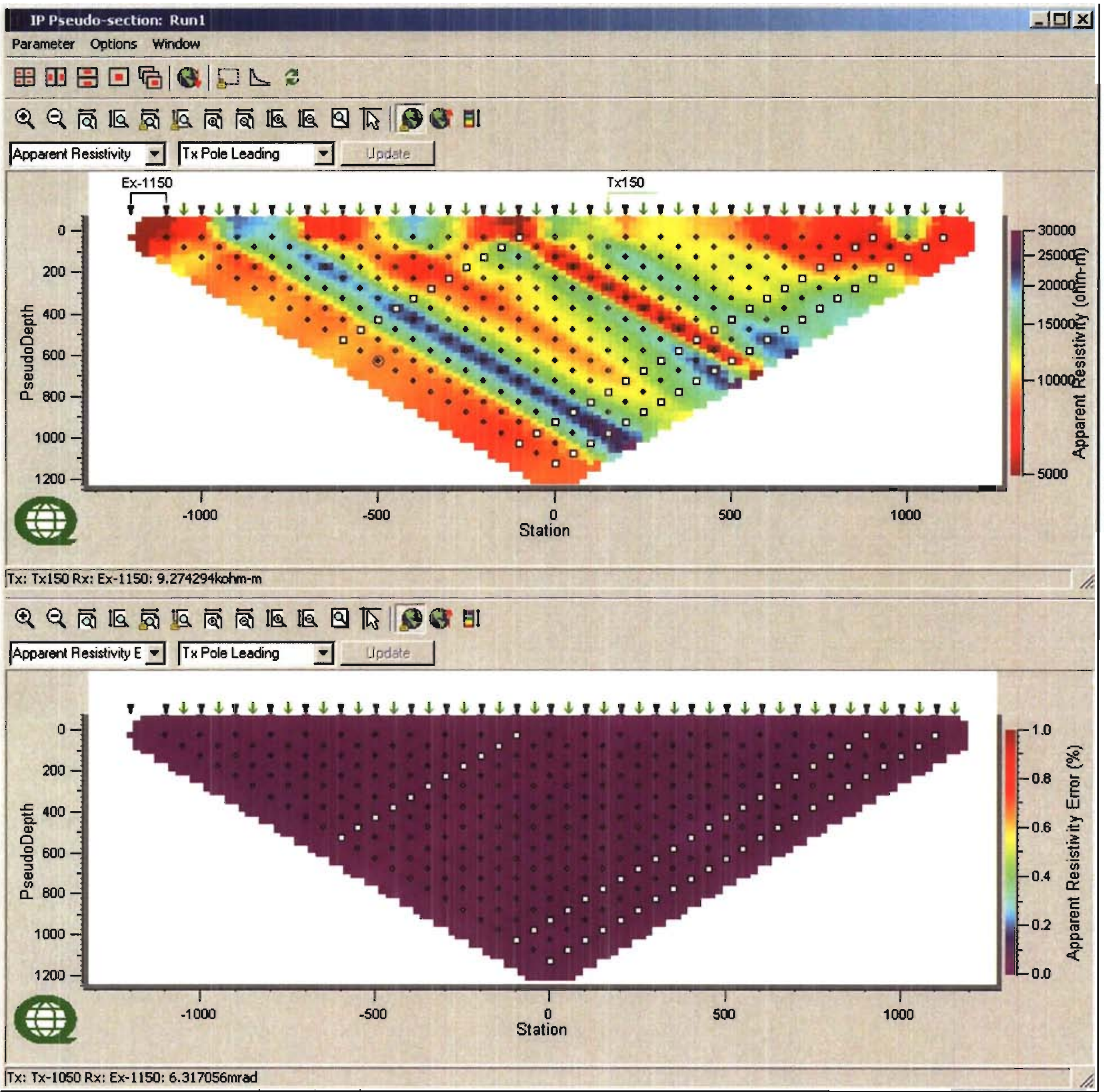
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E – PATRICK GRID

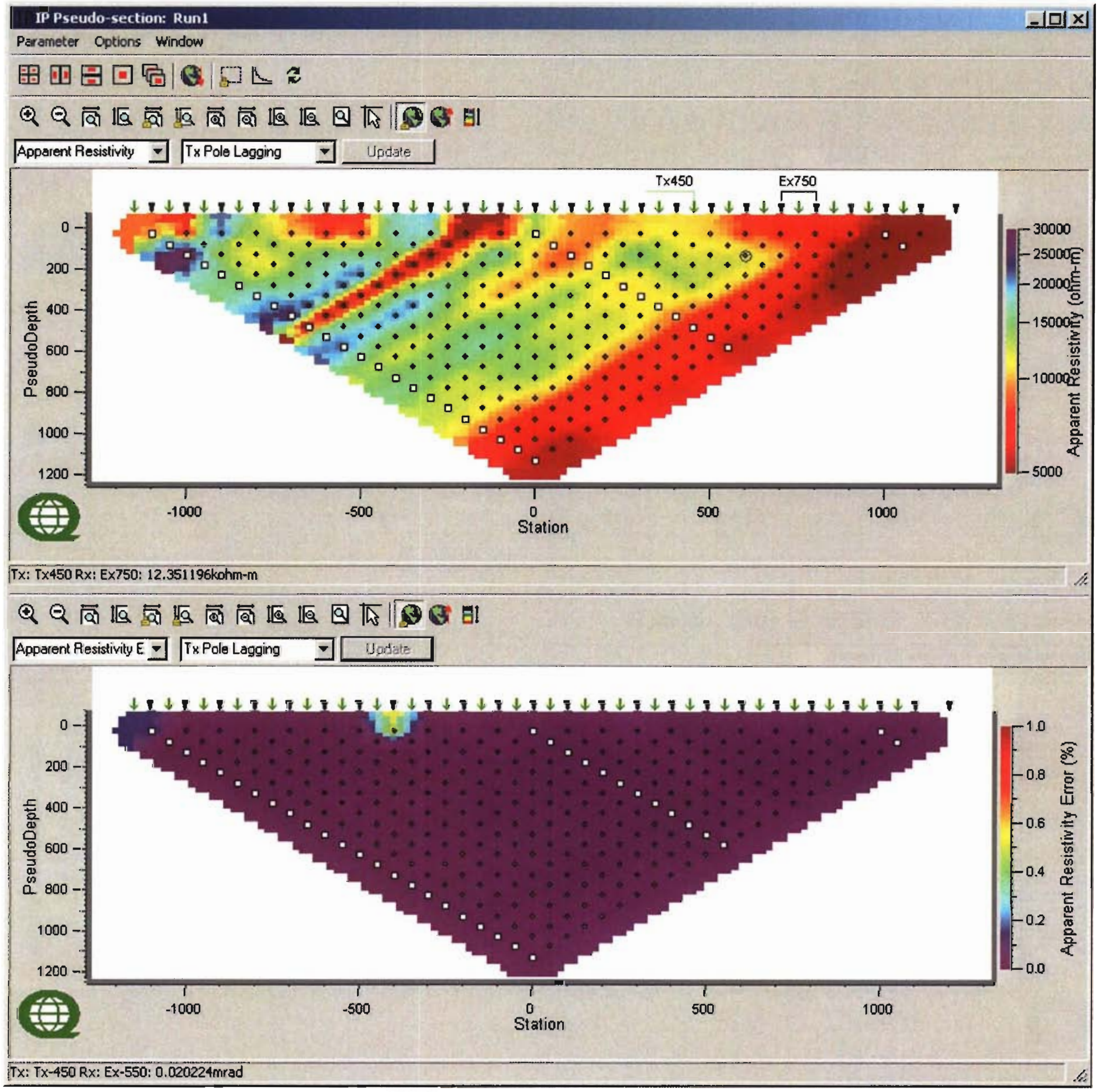
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

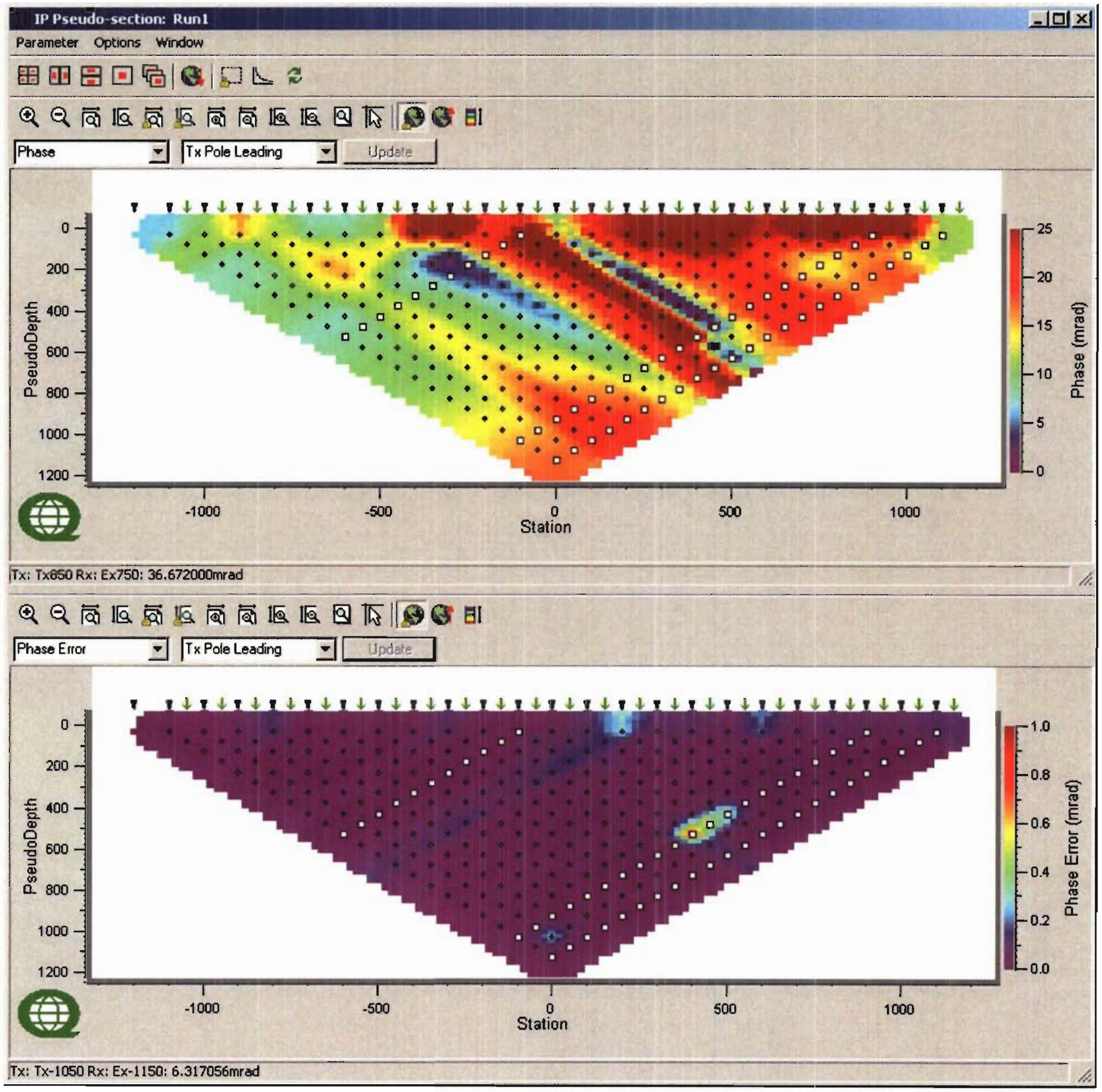
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E

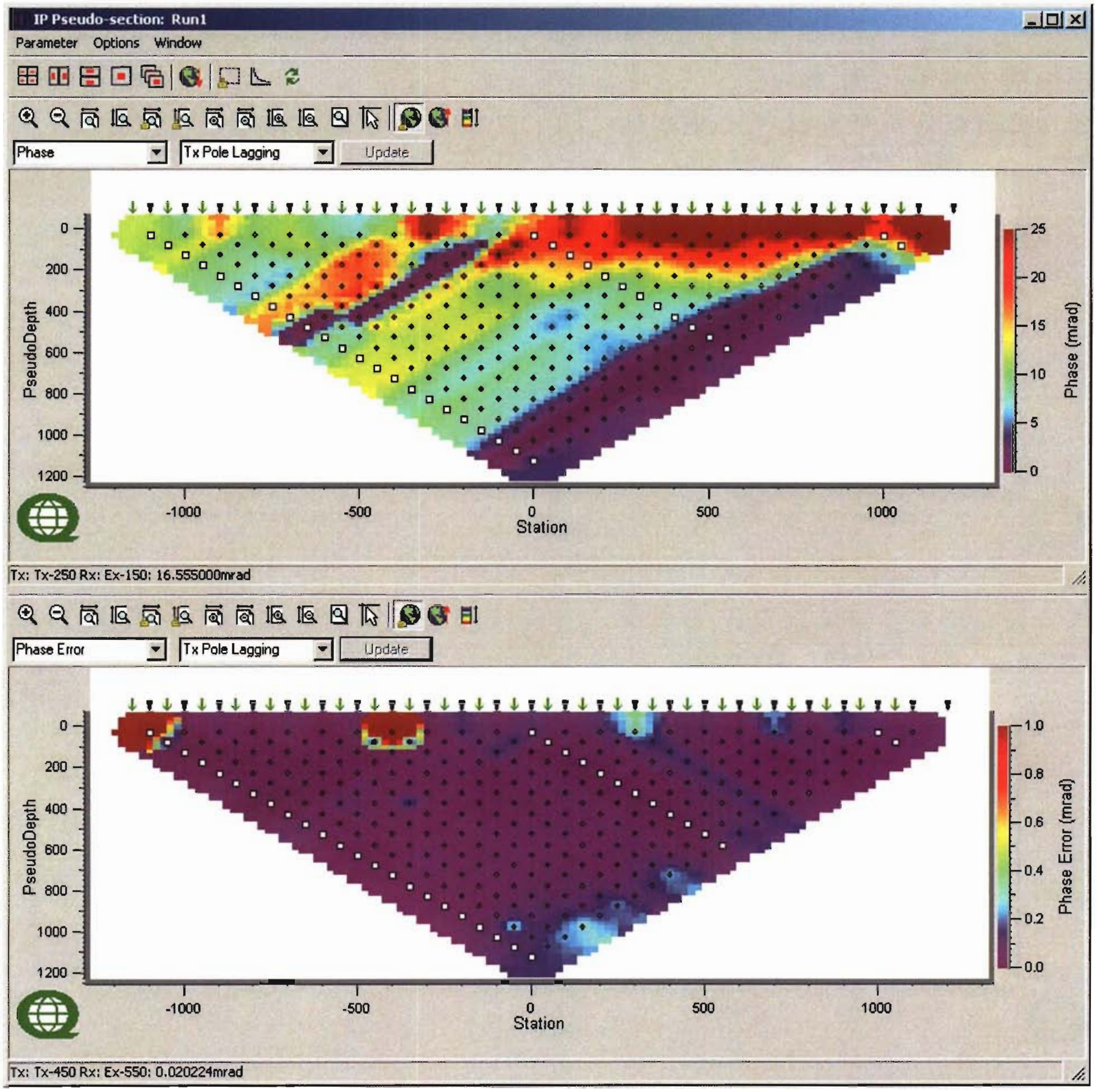
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

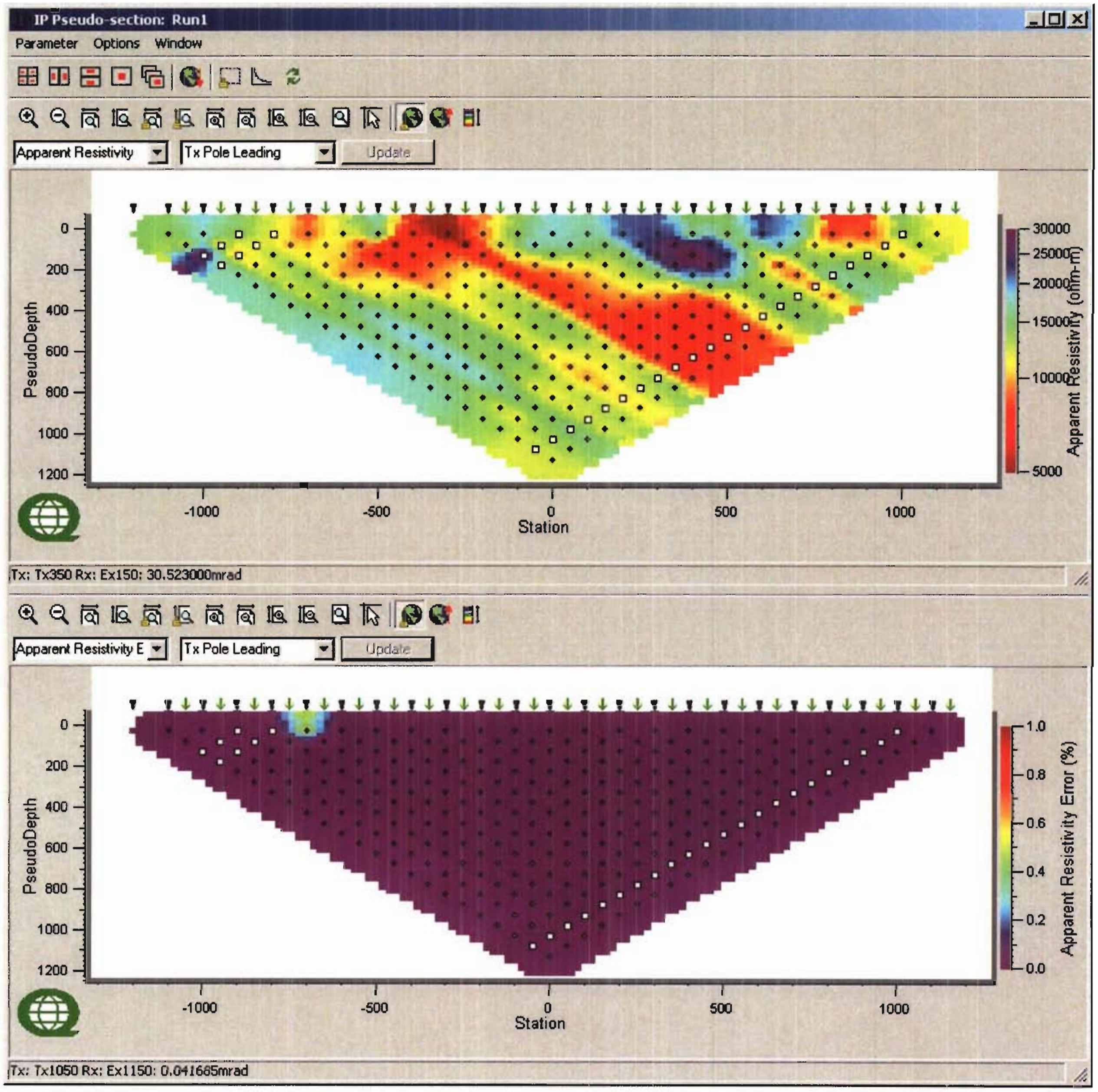
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 4E – PATRICK GRID

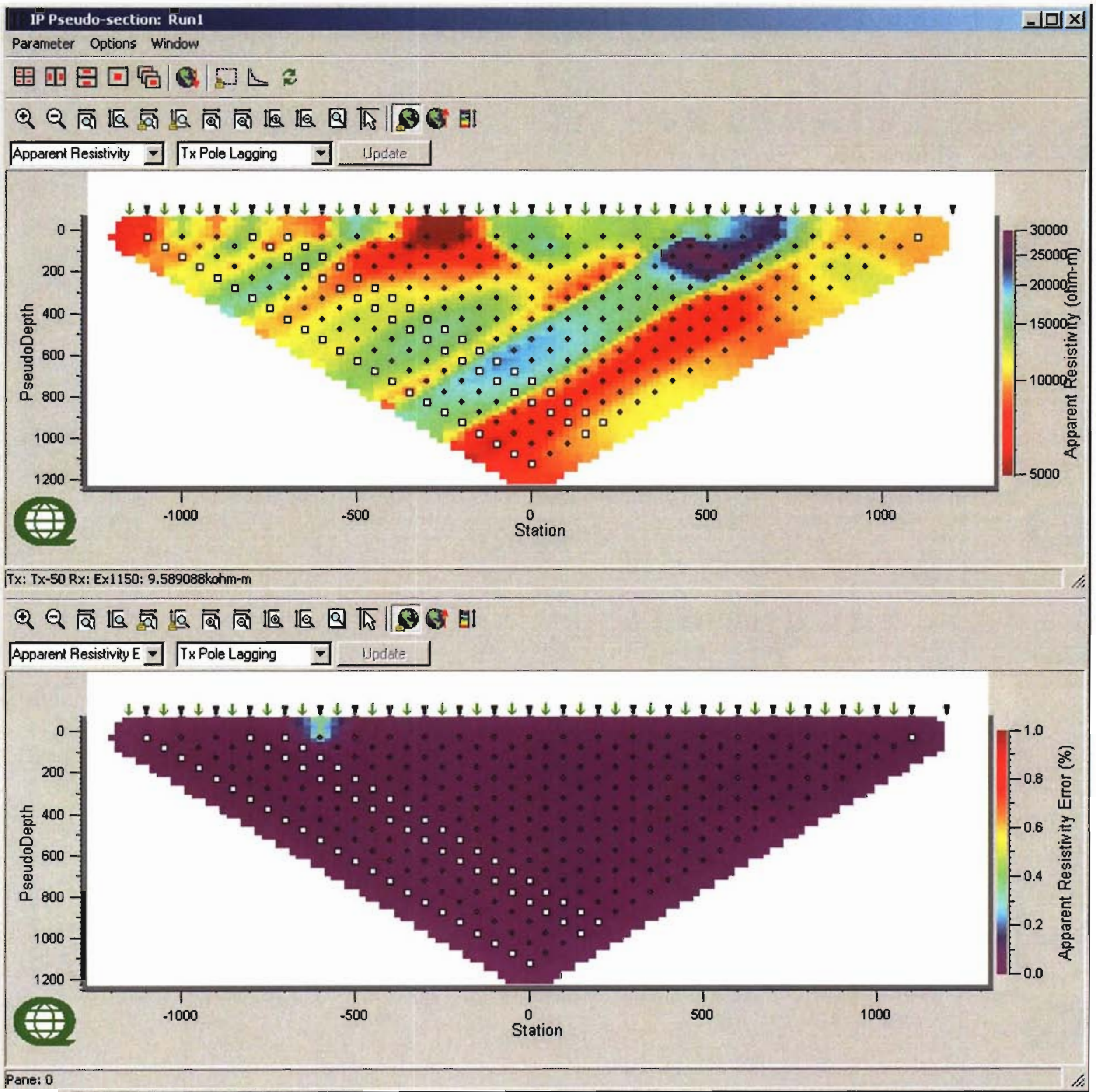
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 4E

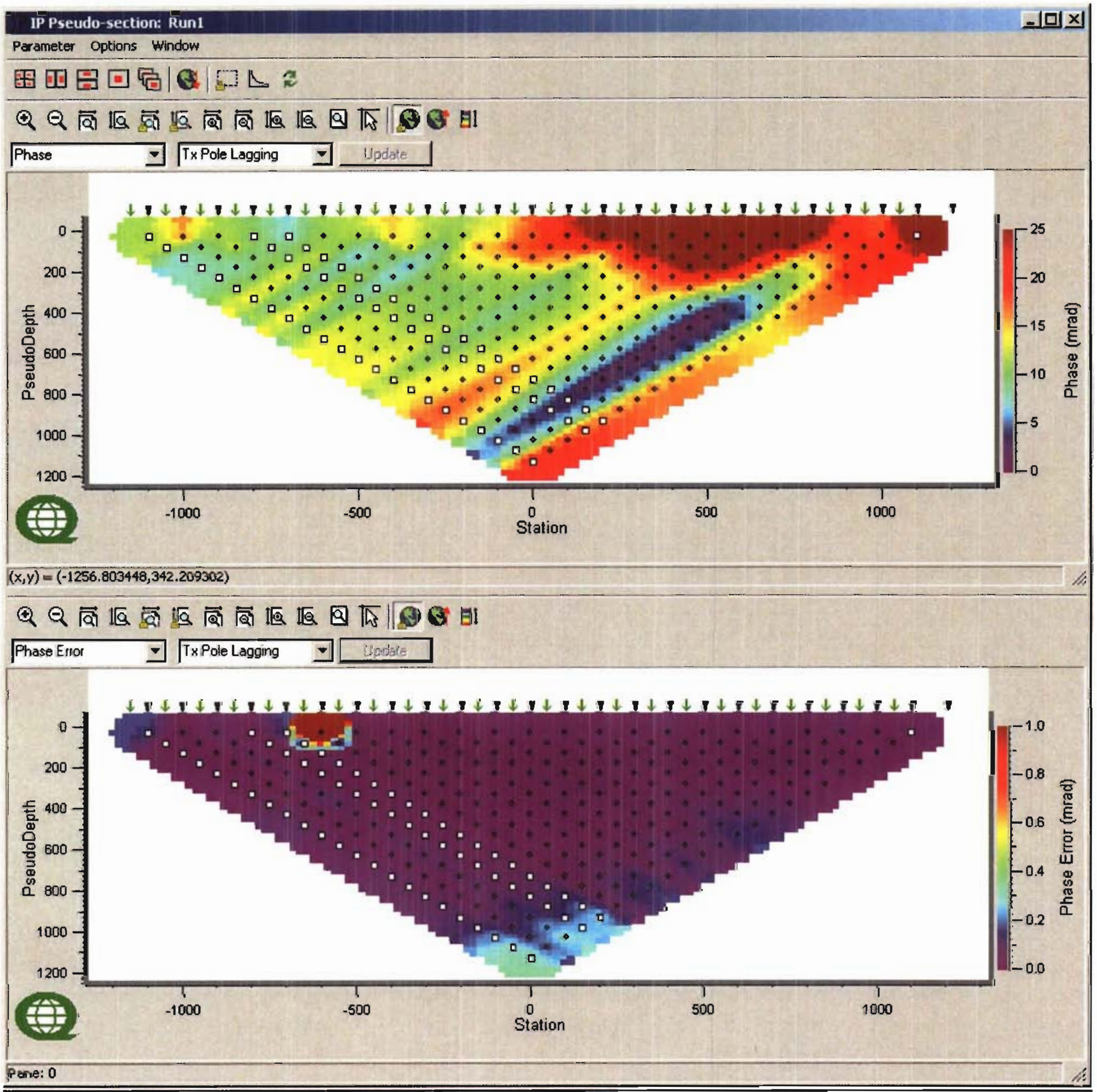
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 4E

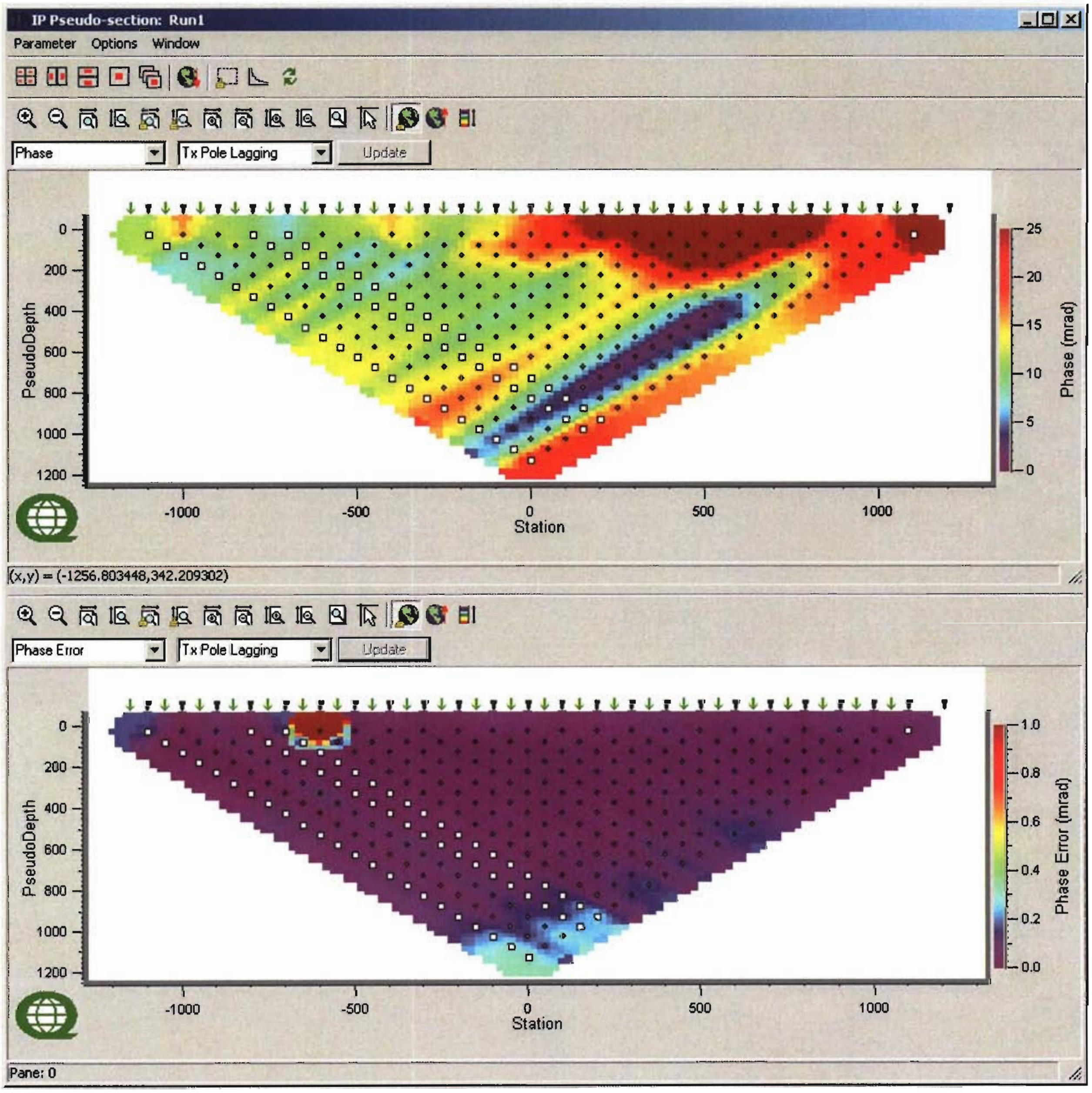
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 4E

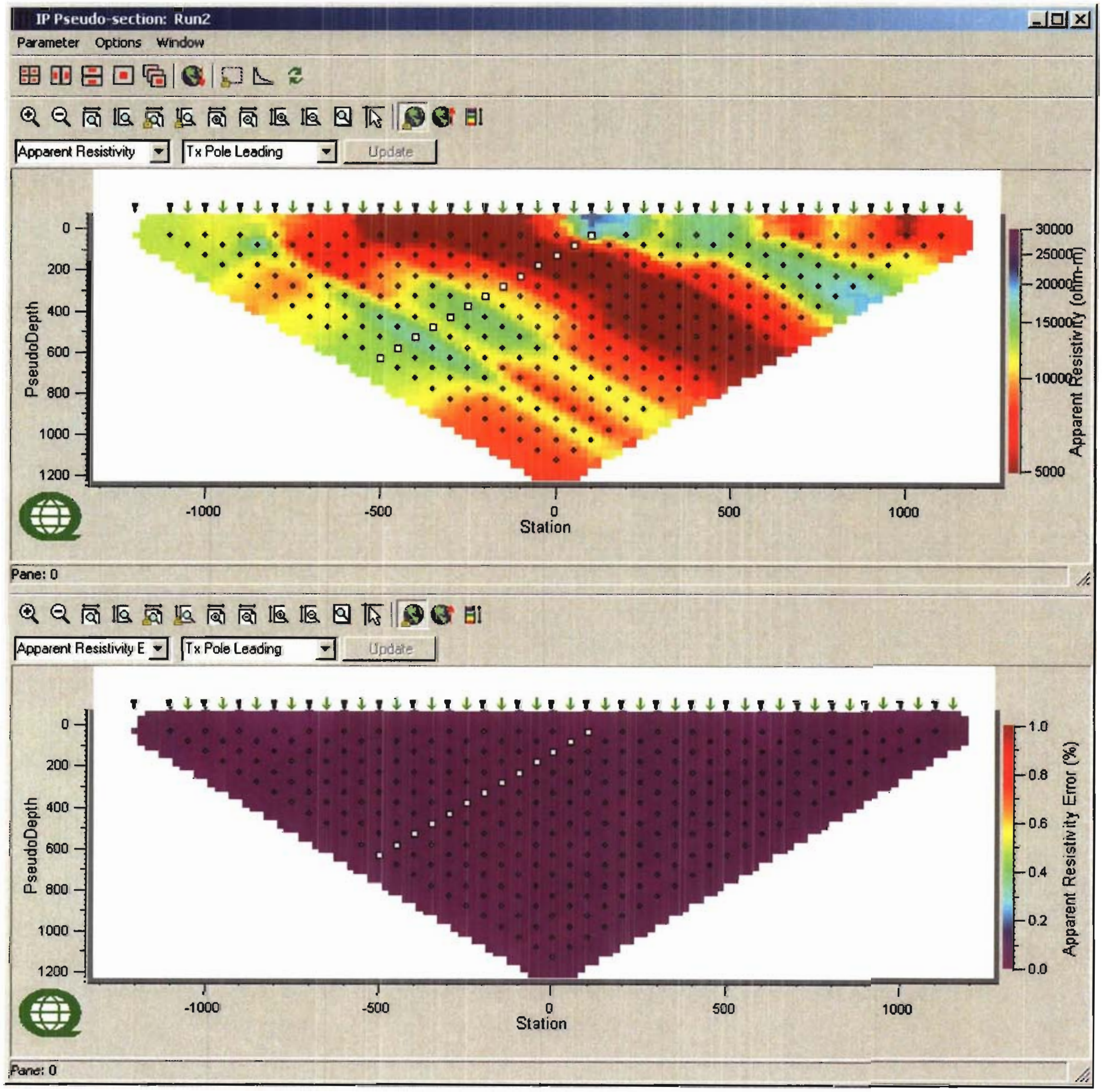
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 8E – PATRICK GRID

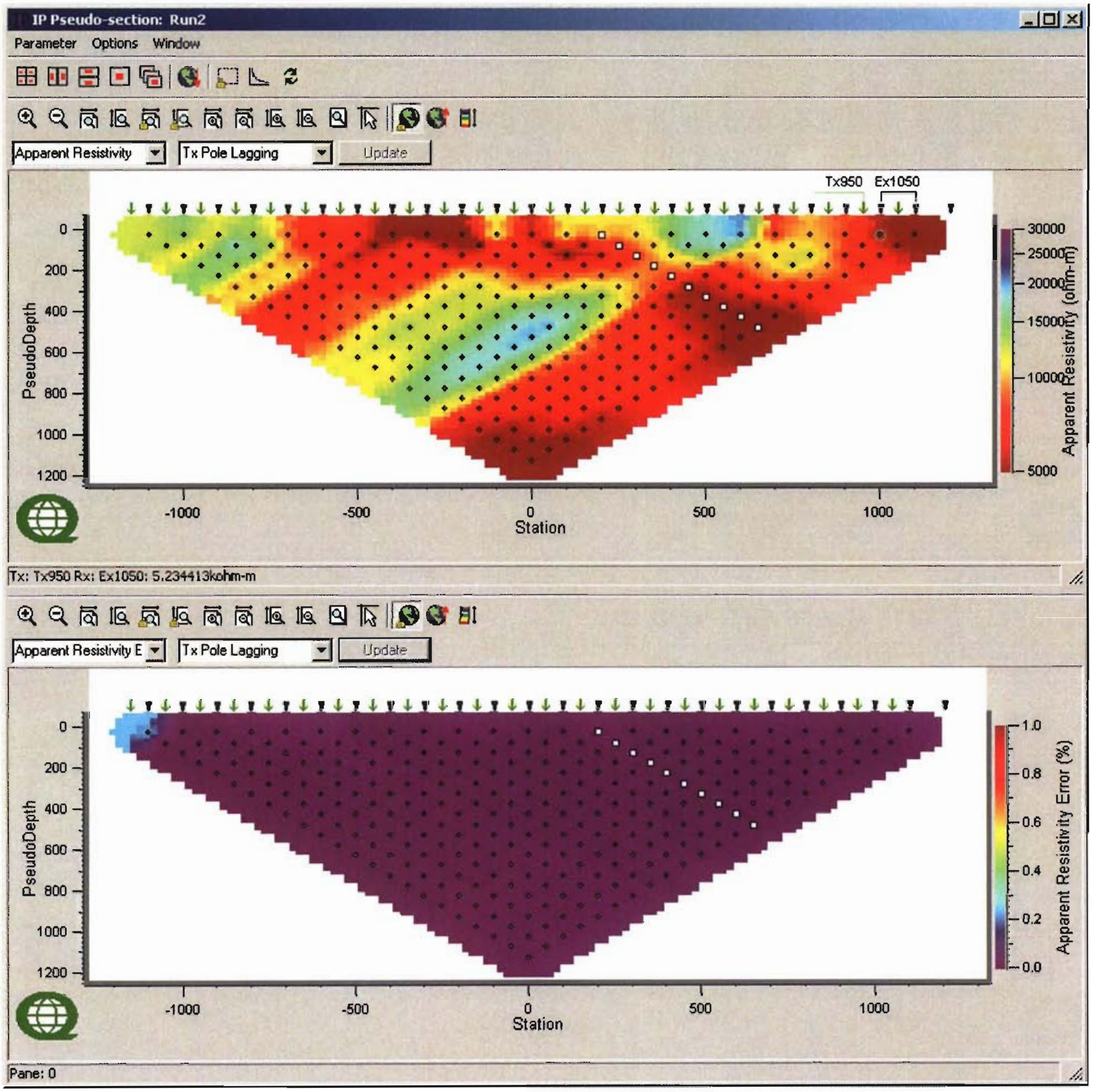
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 8E

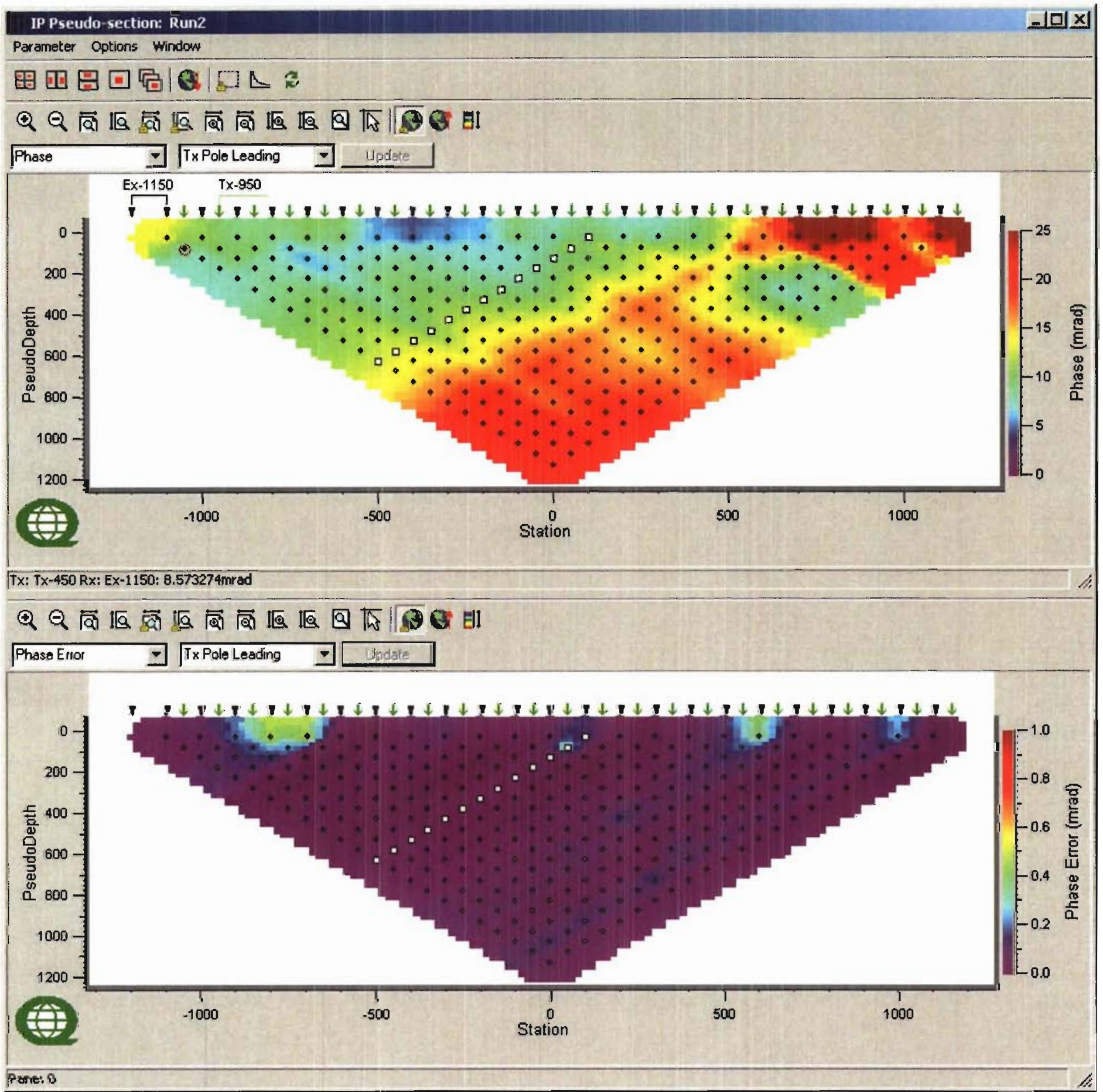
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



Tx with more than one event

LINE 8E

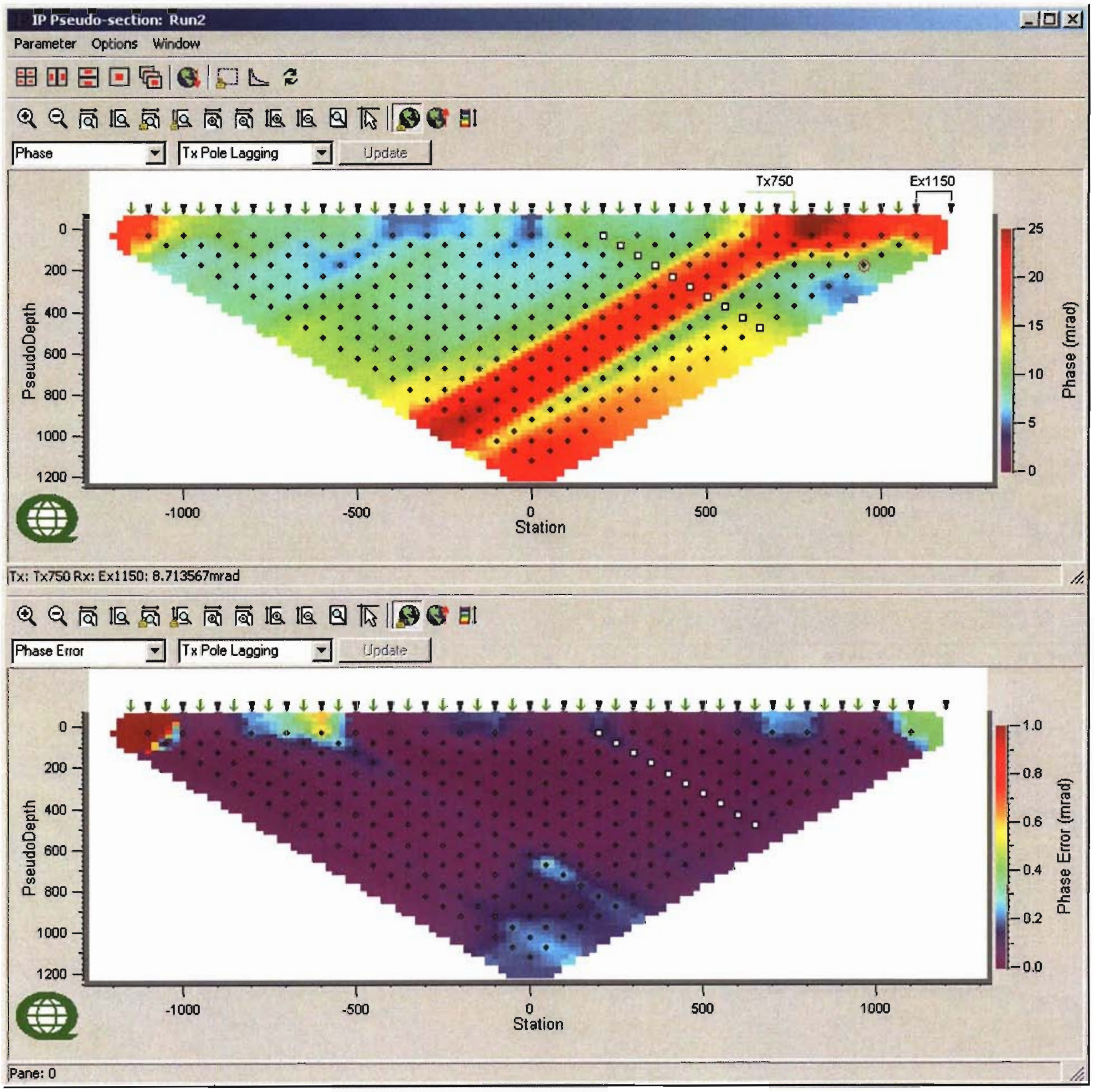
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 8E

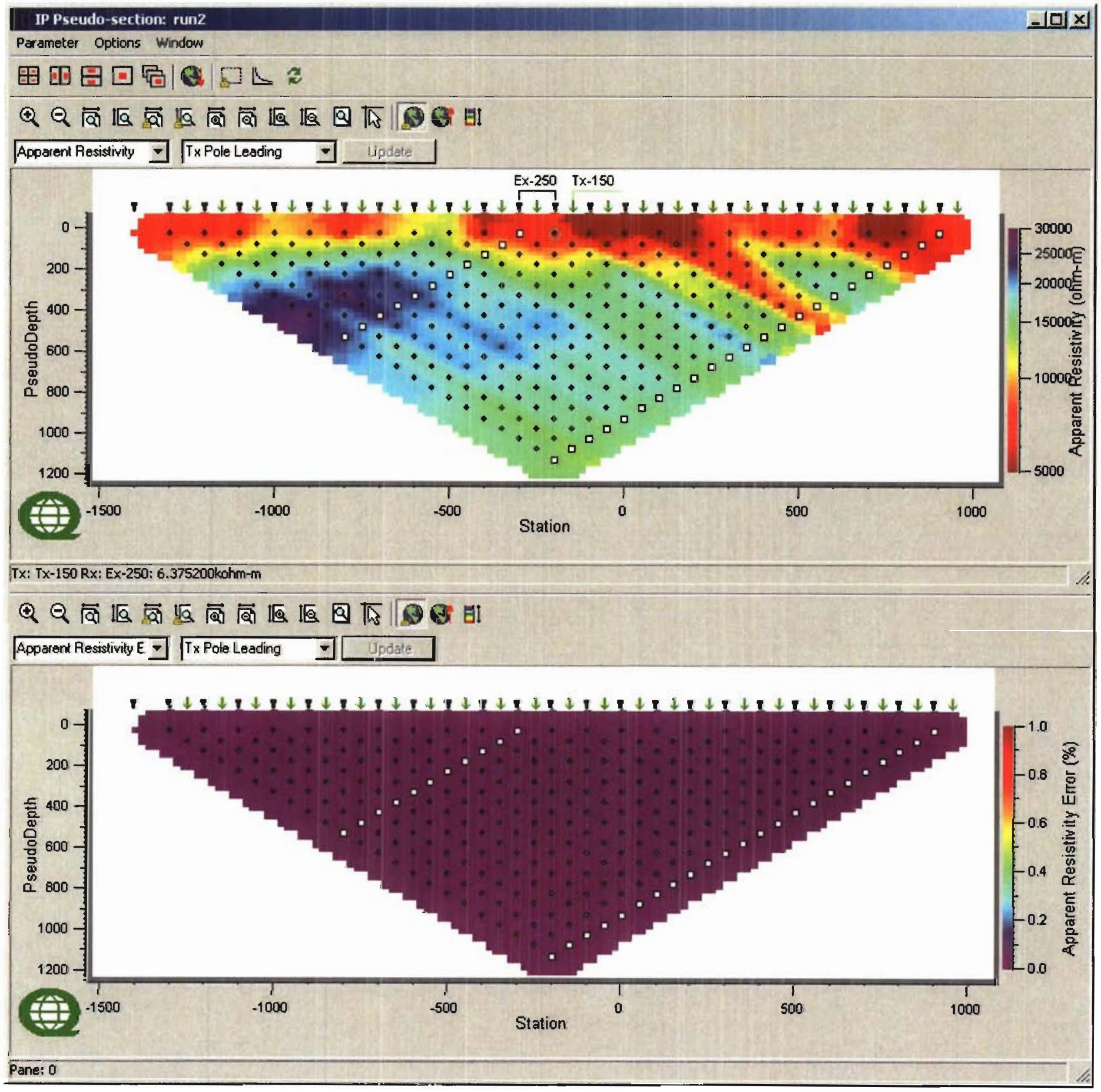
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E – ML GRID

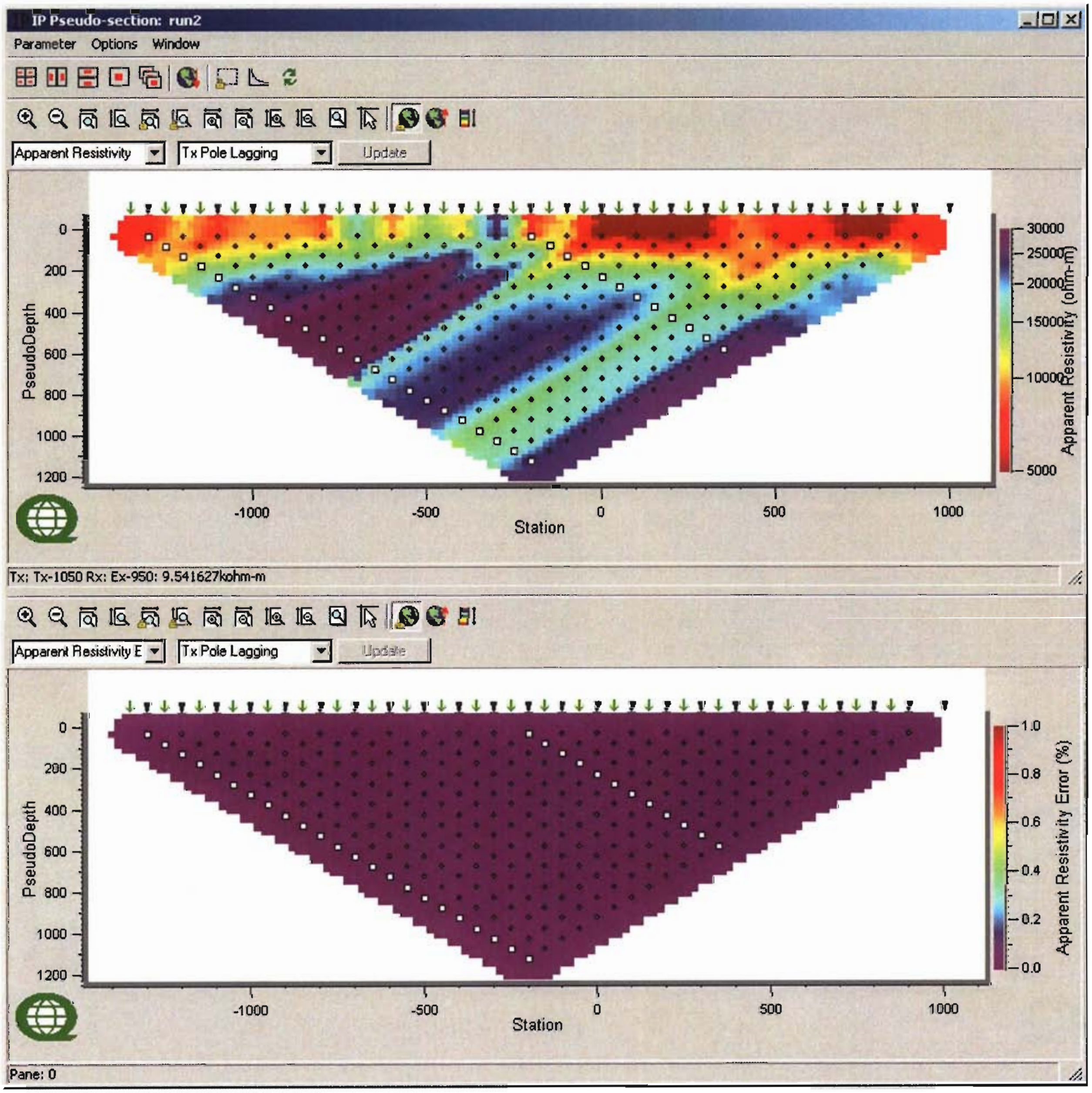
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



Tx with more than one event

Line 0E

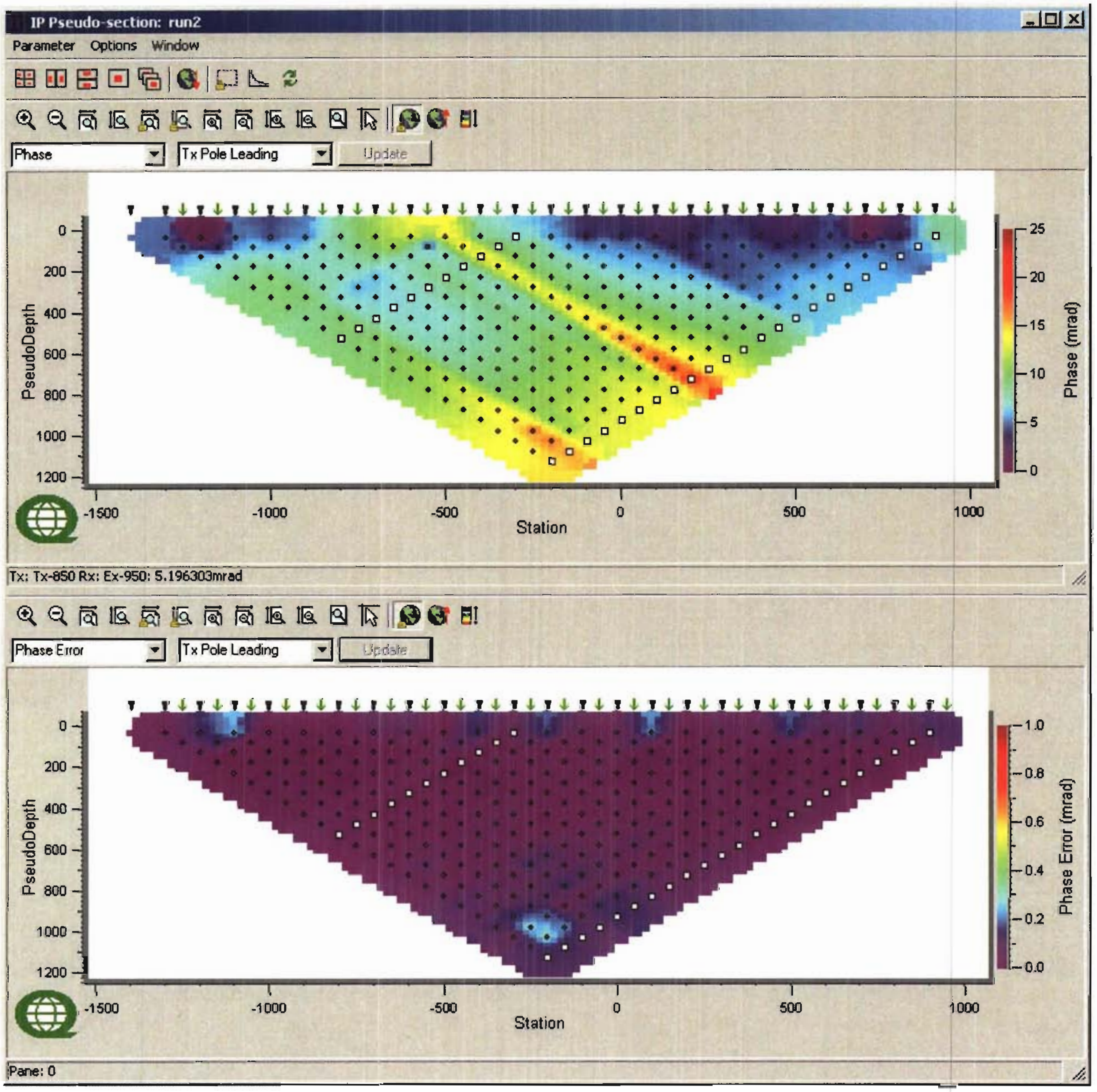
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



Tx with more than one event

Line 0E

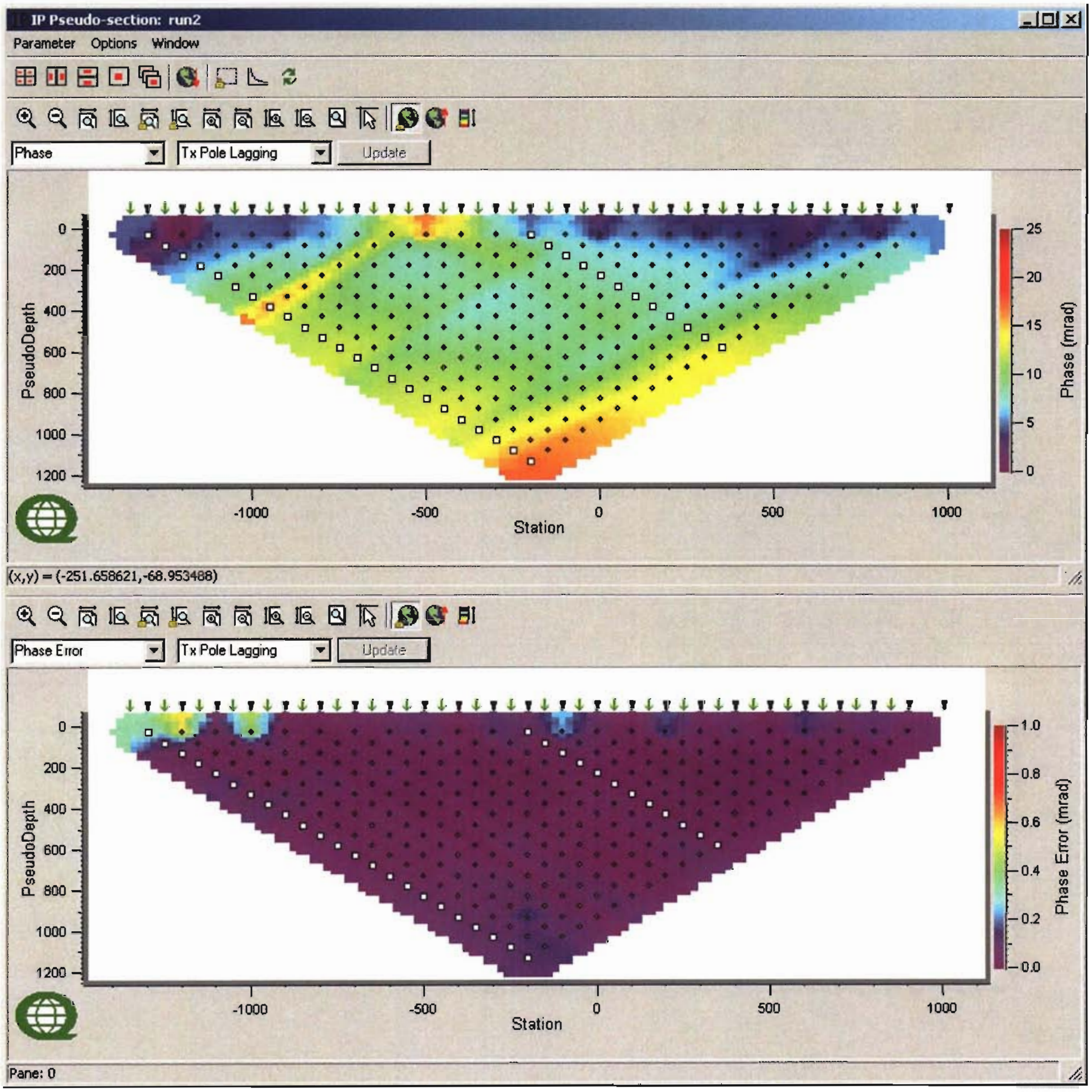
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

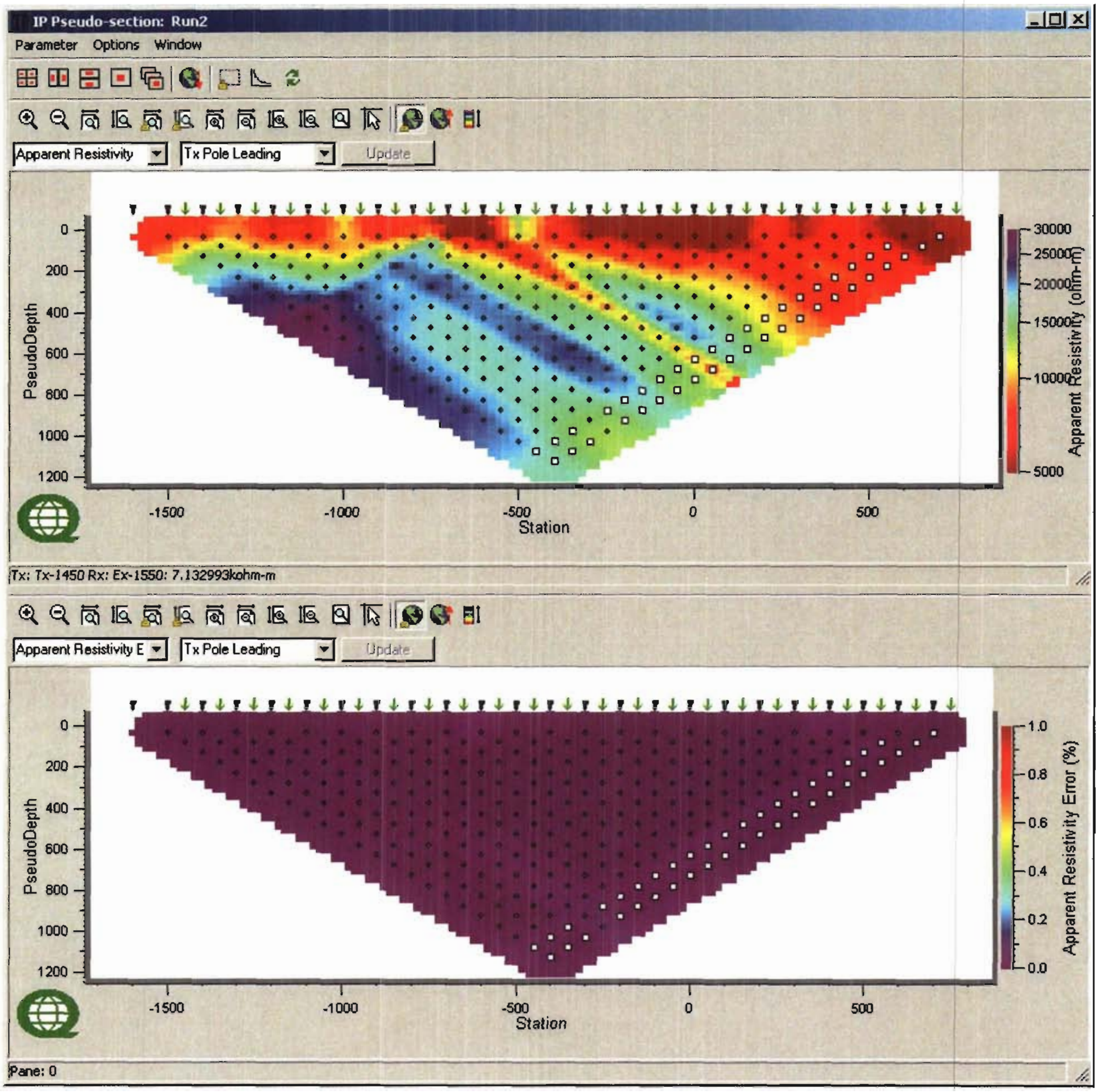
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 4E – ML GRID

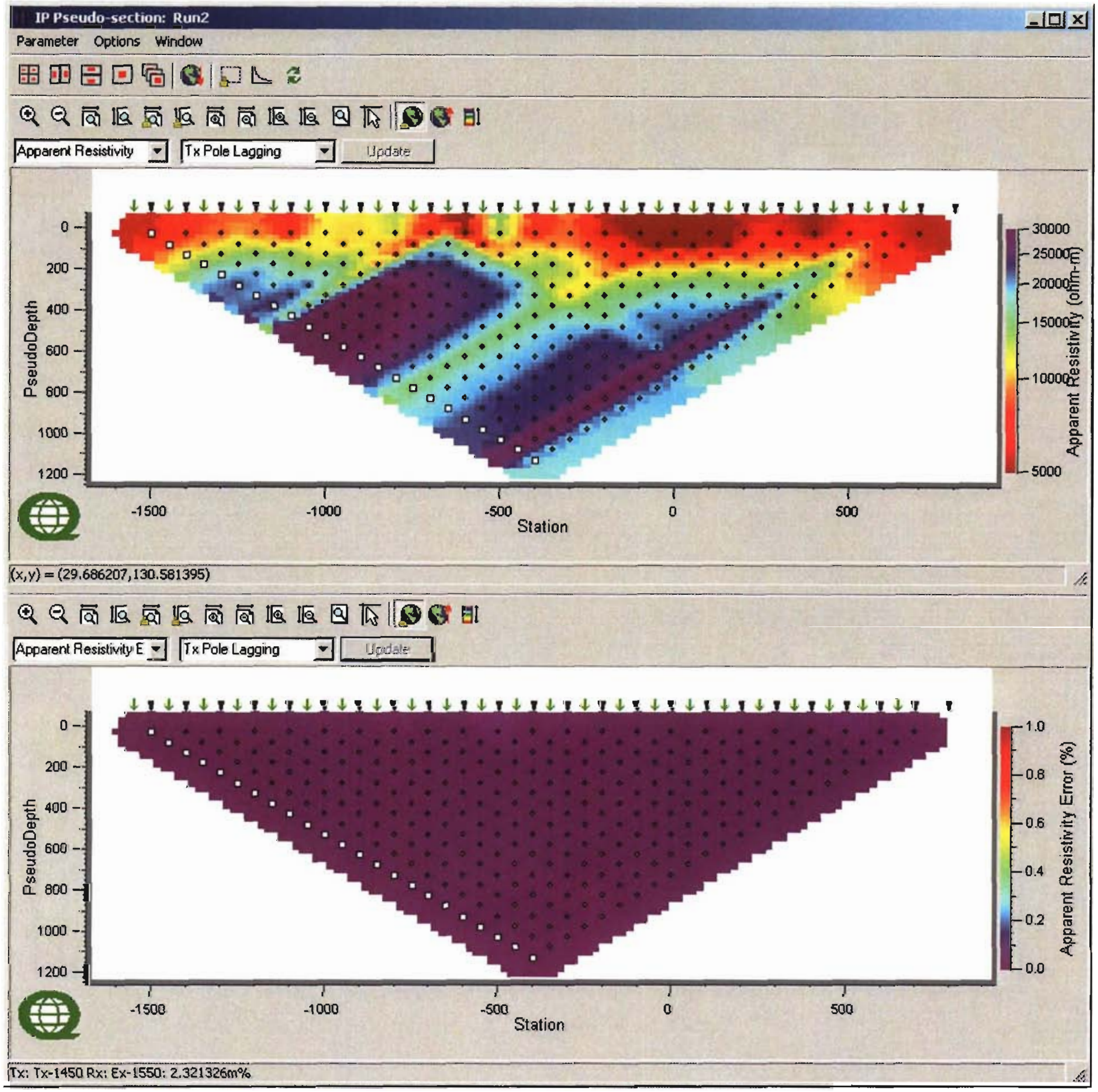
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 4E

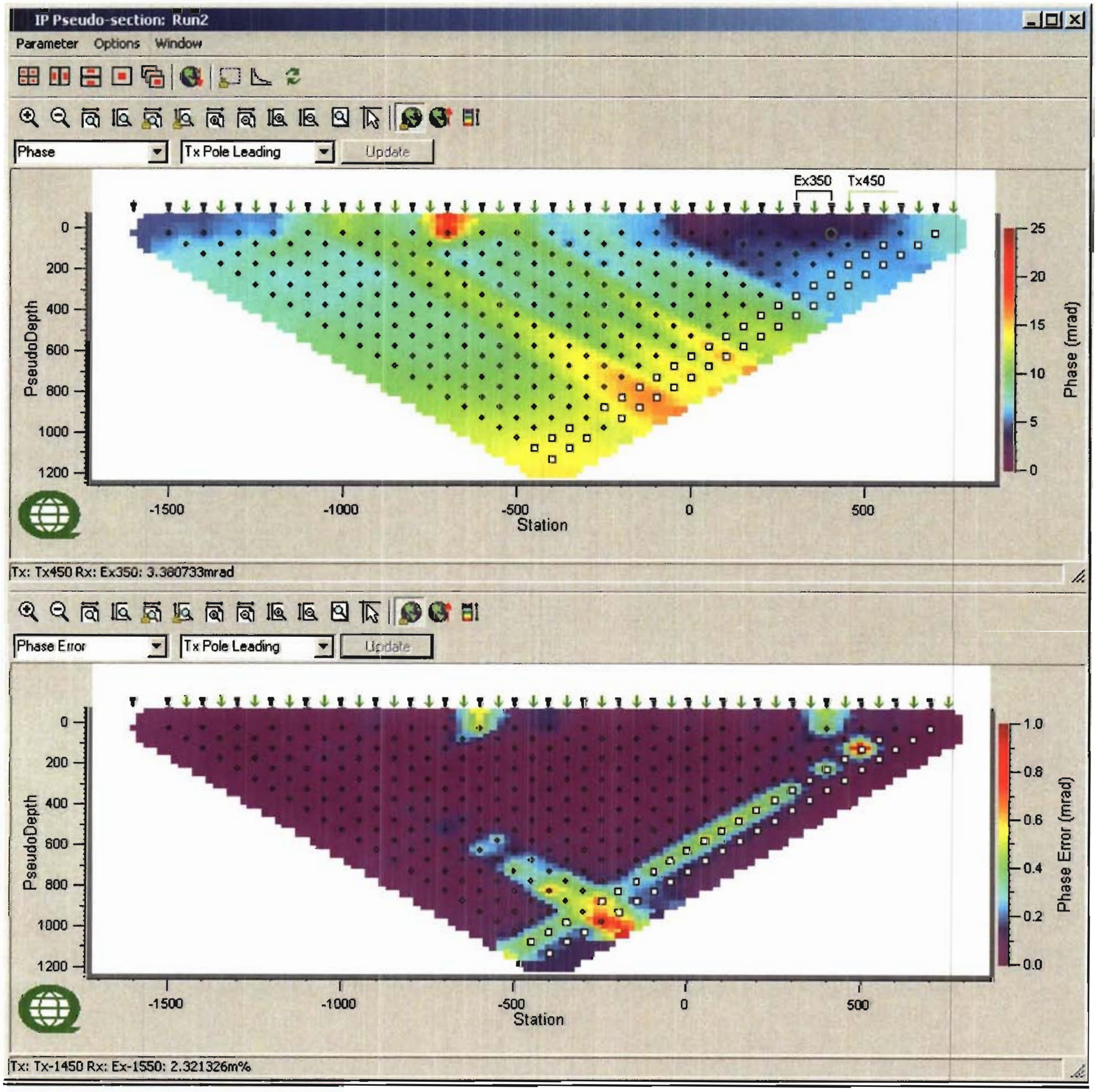
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 4E

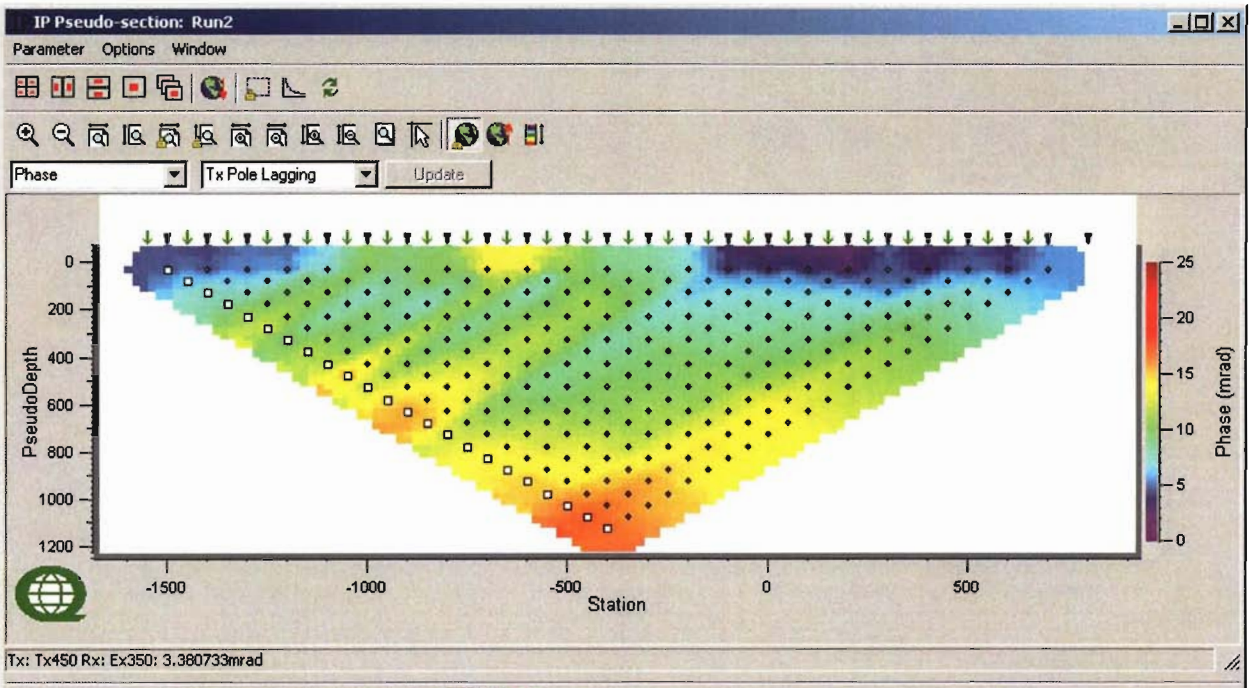
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading

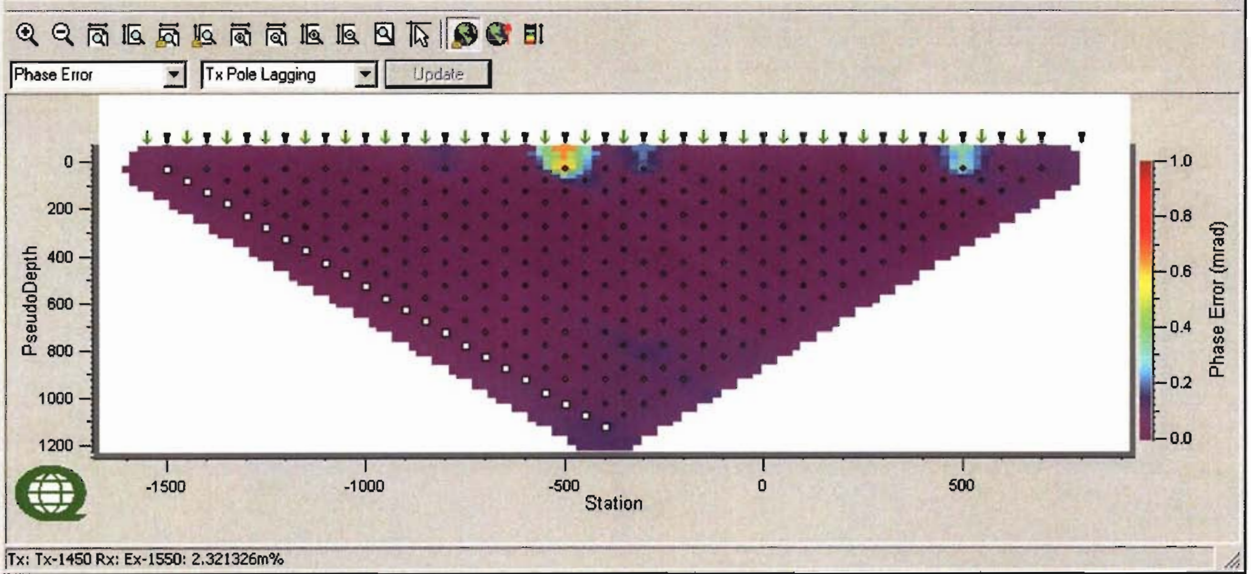


□ Tx with more than one event

LINE 4E

Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging

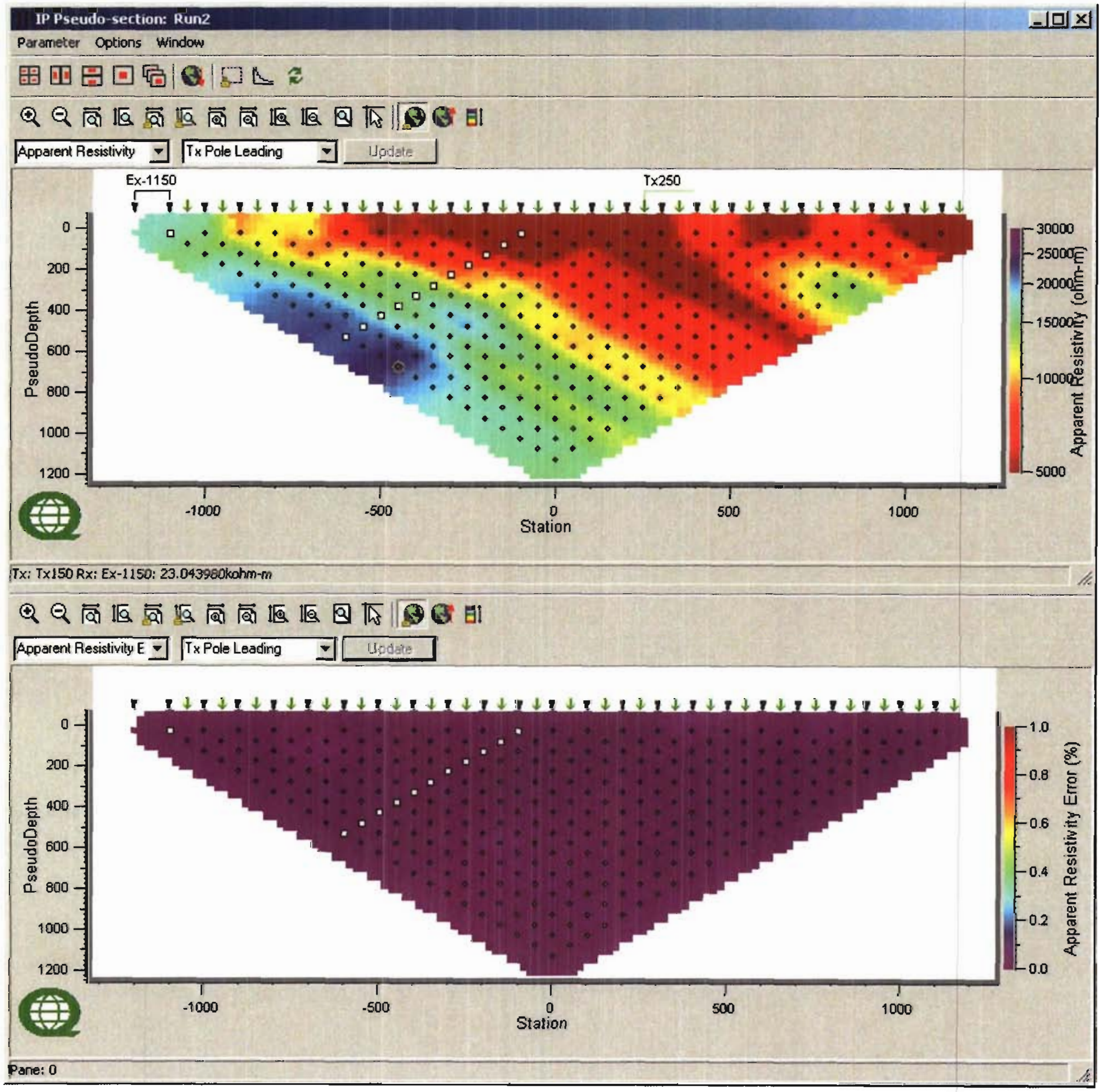




□ Tx with more than one event

LINE 8E – ML GRID

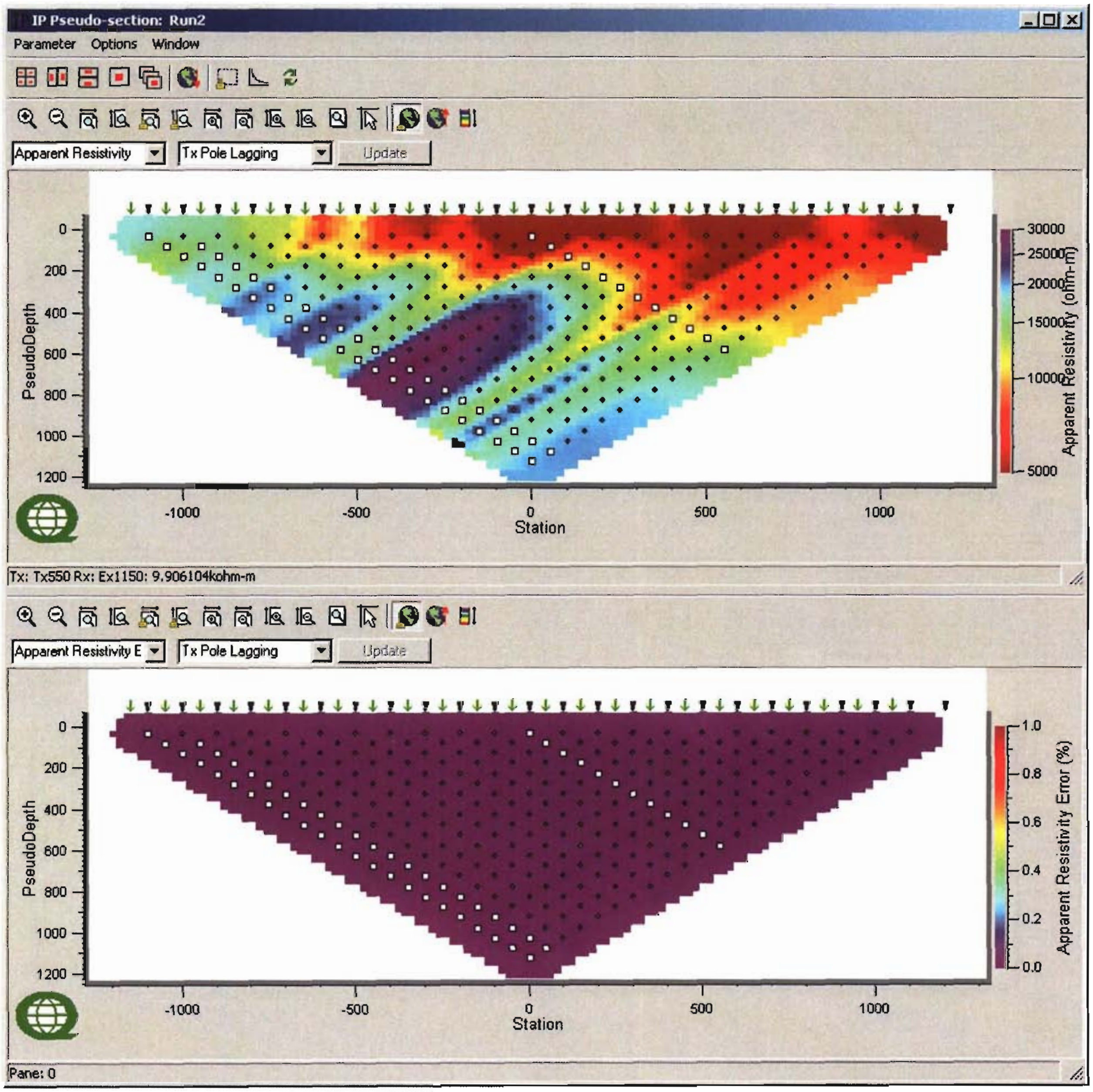
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 8E

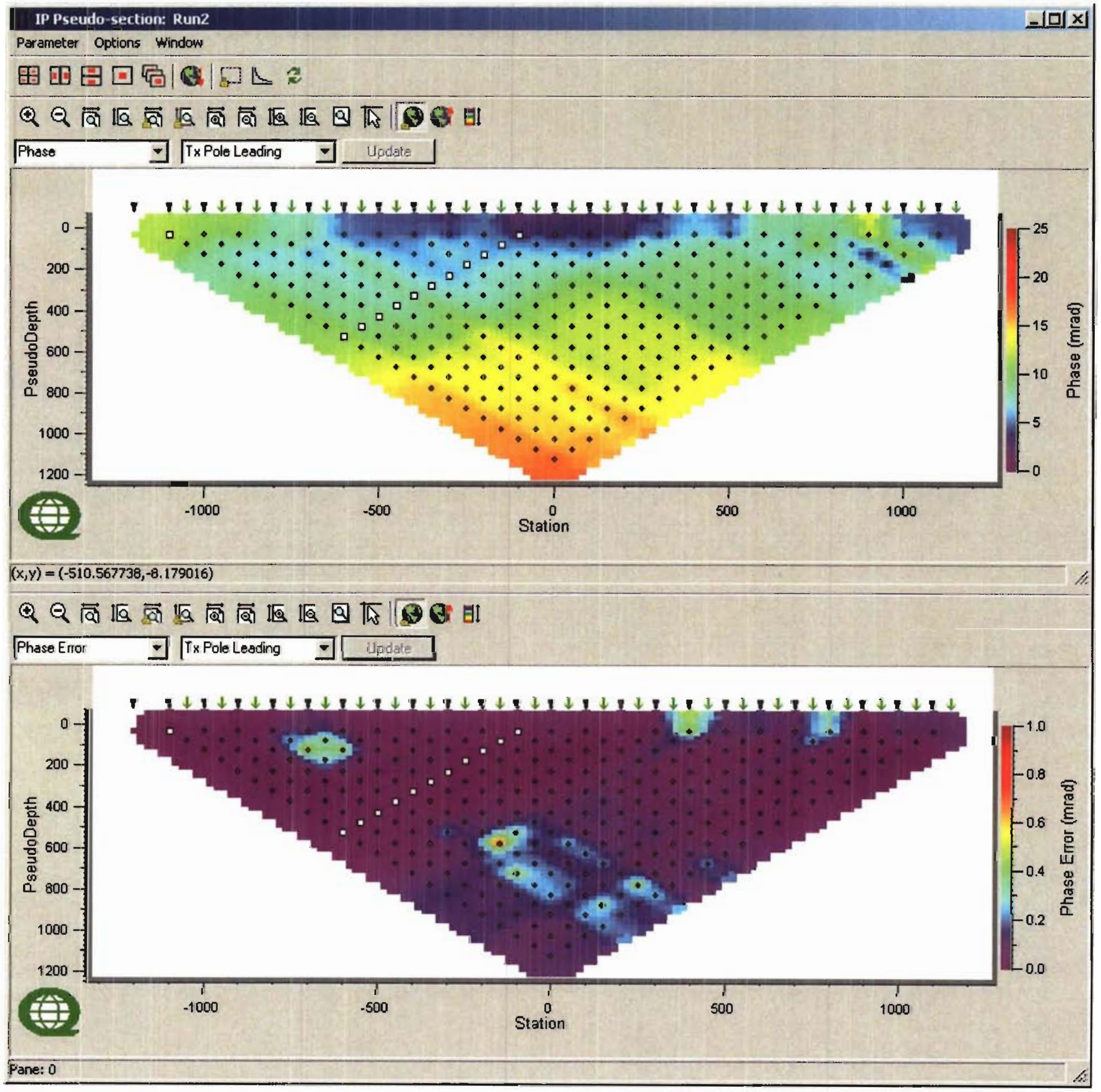
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 8E

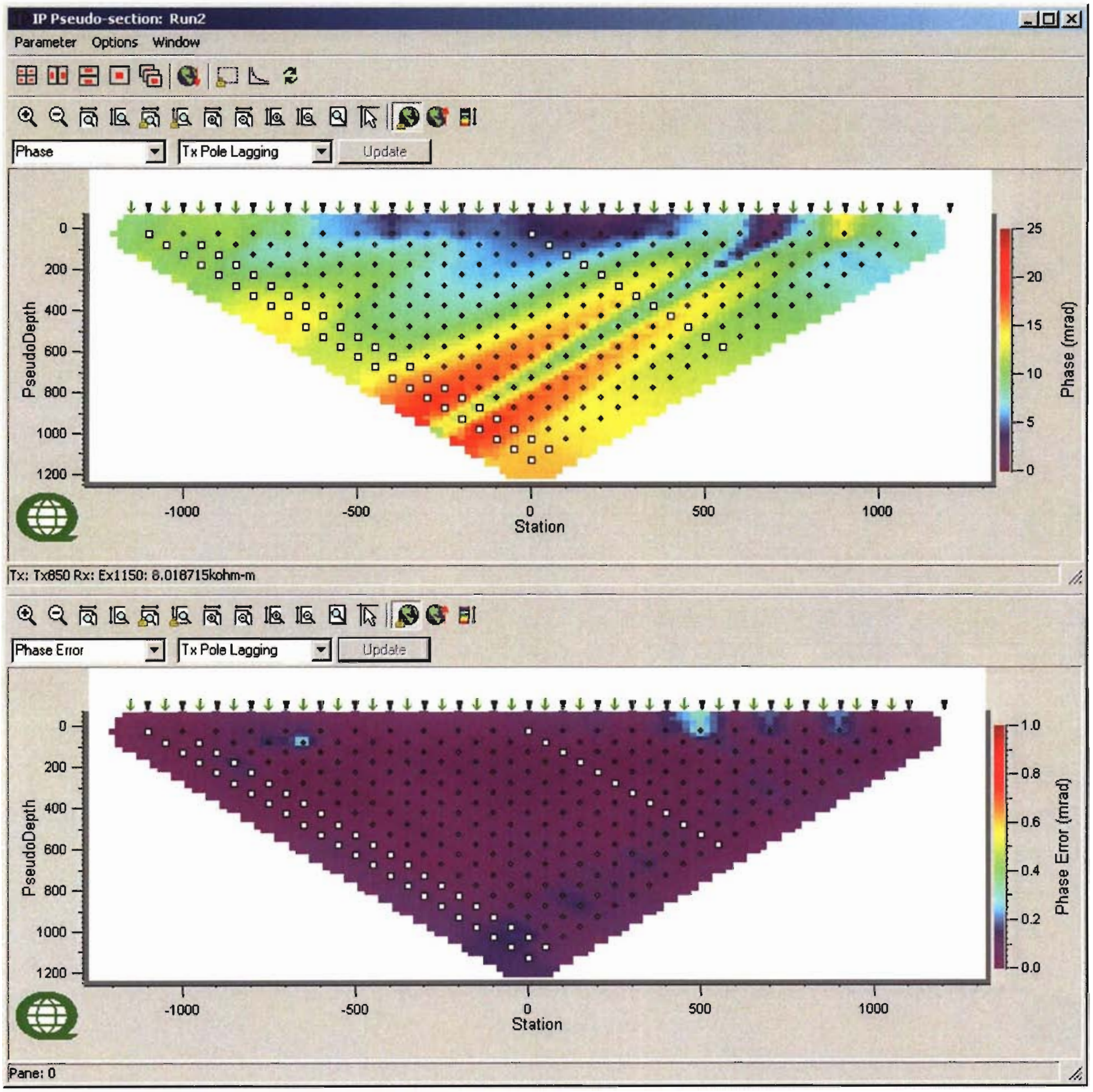
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 8E

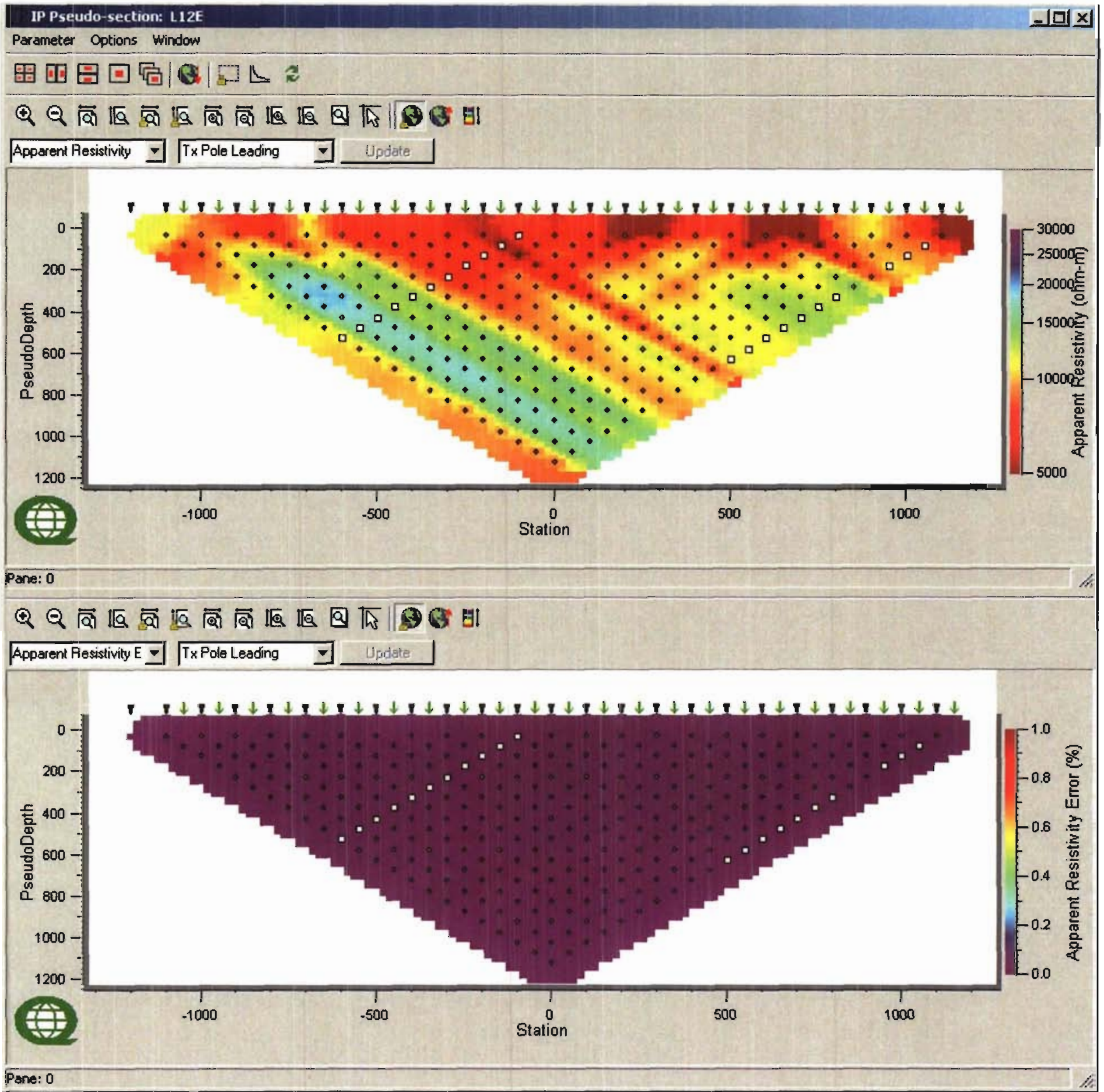
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 12E – ML GRID

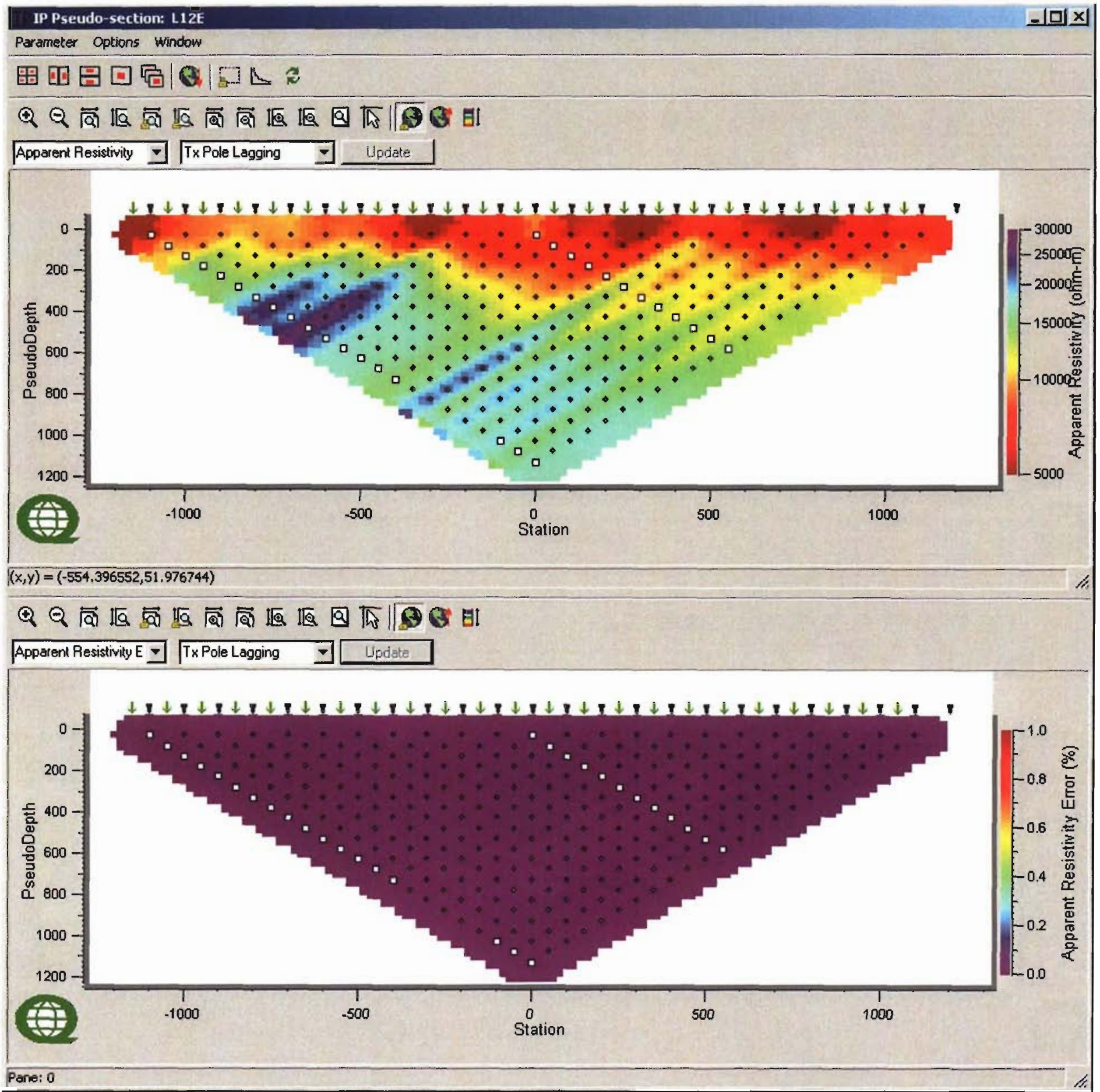
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 12E

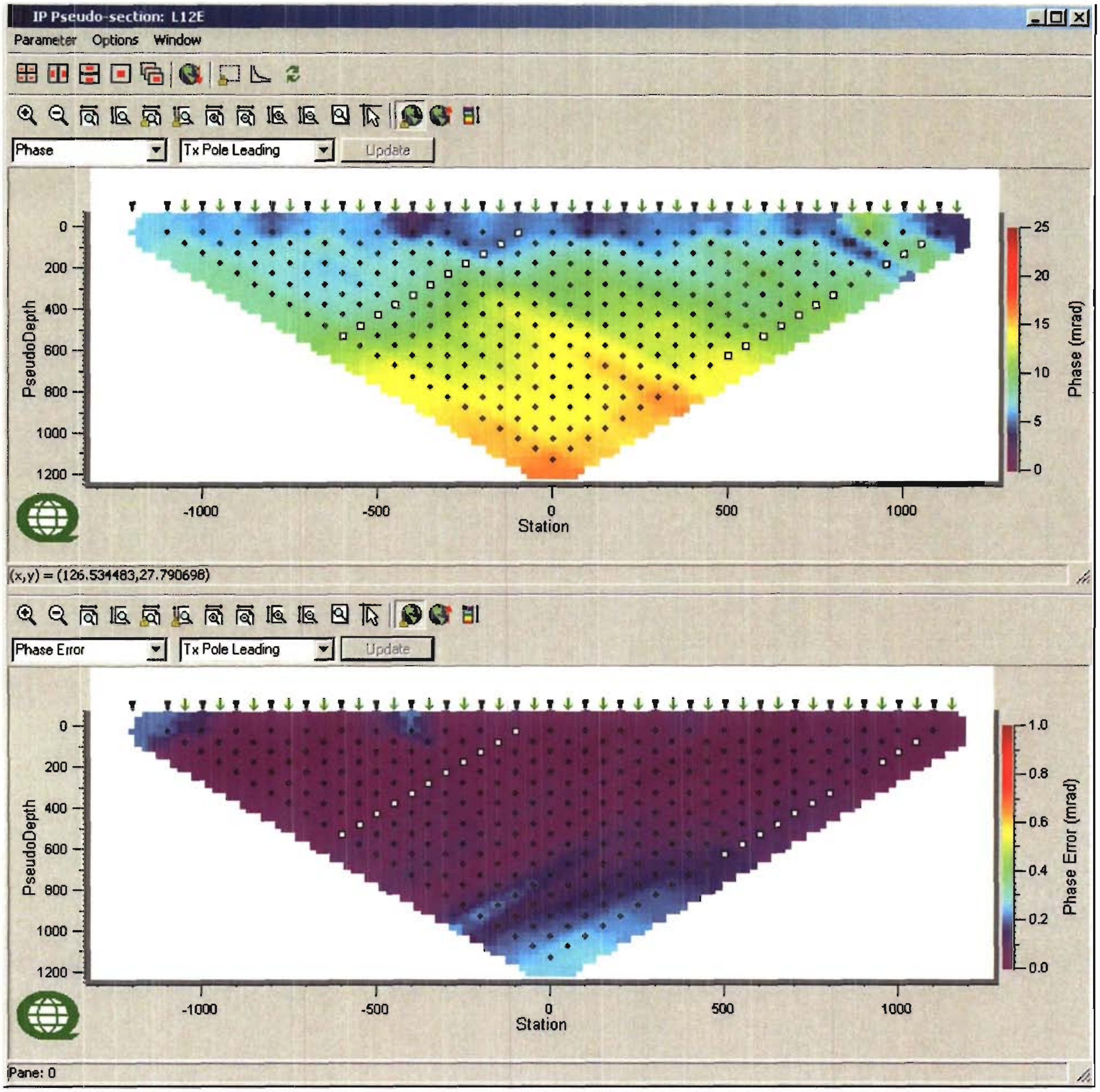
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 12E

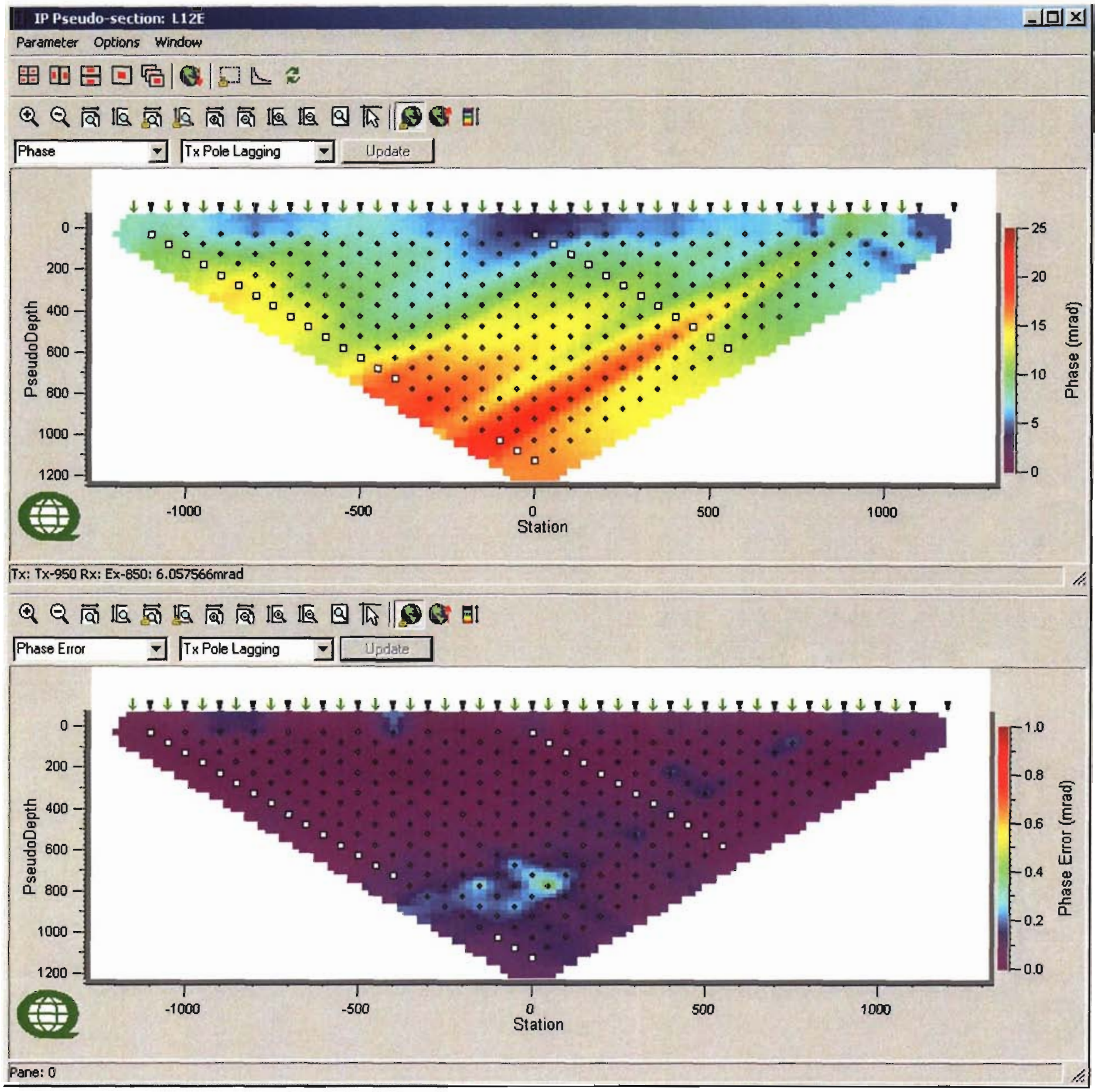
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 12E

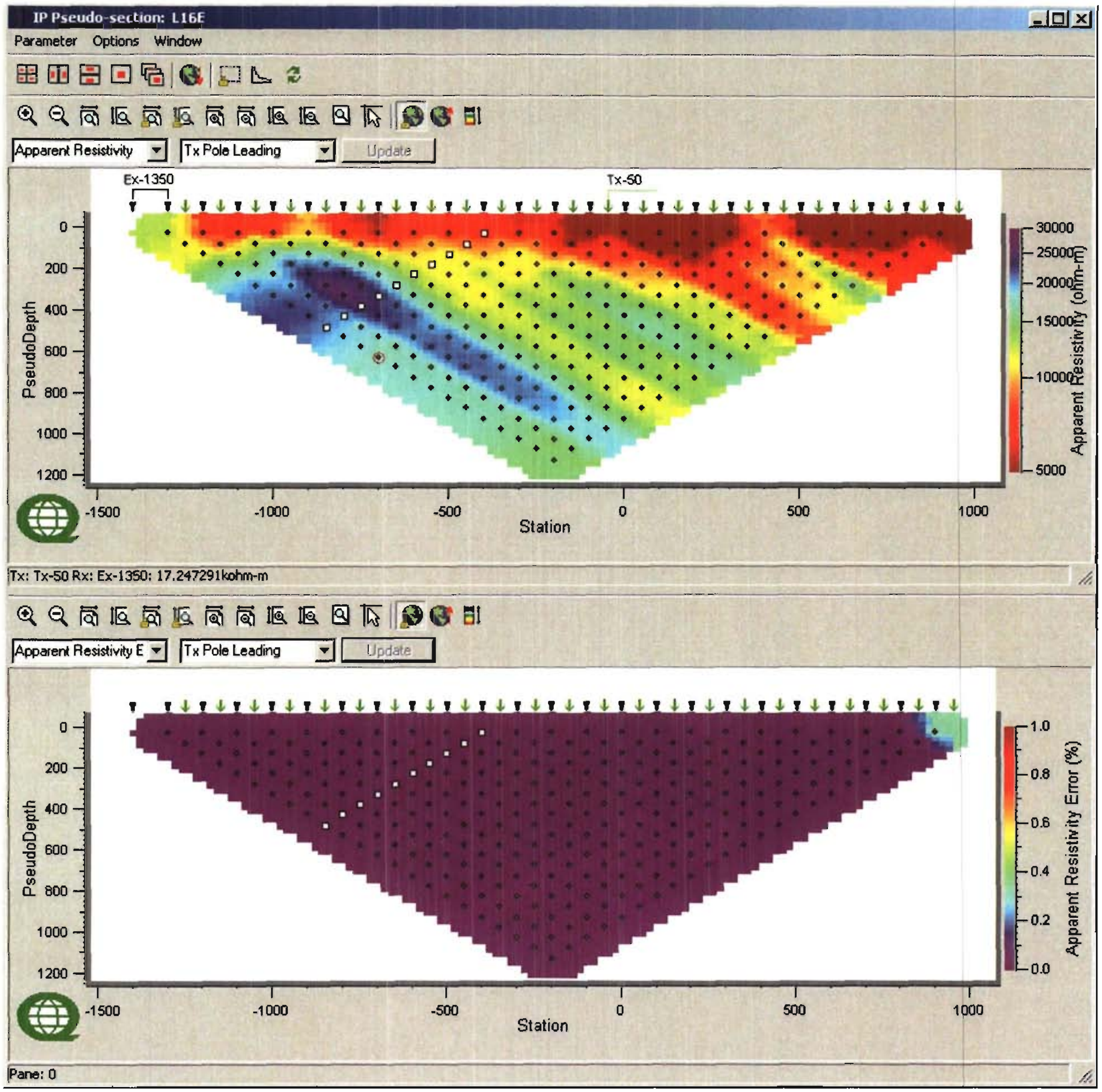
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 16E – ML GRID

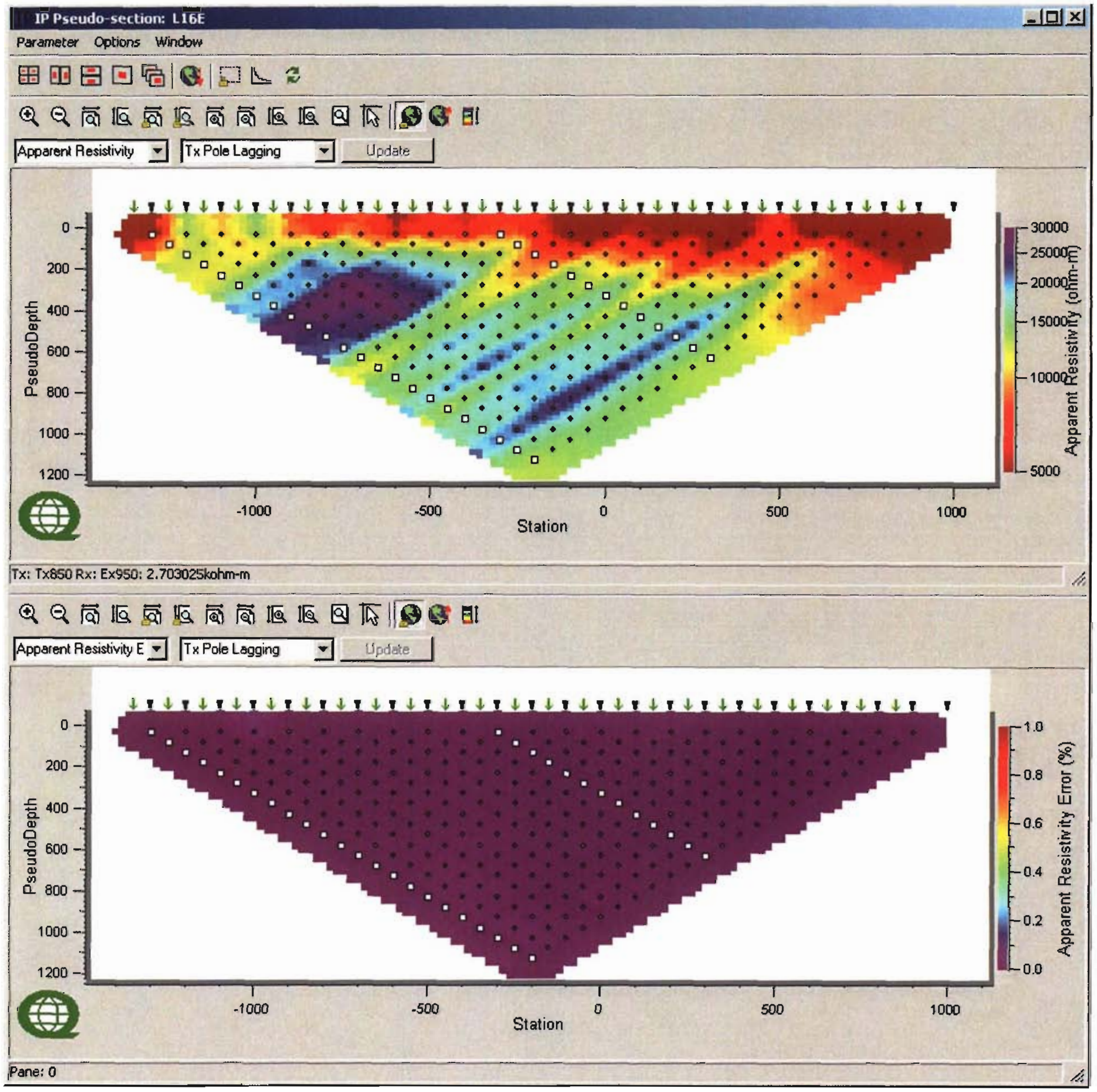
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 16E

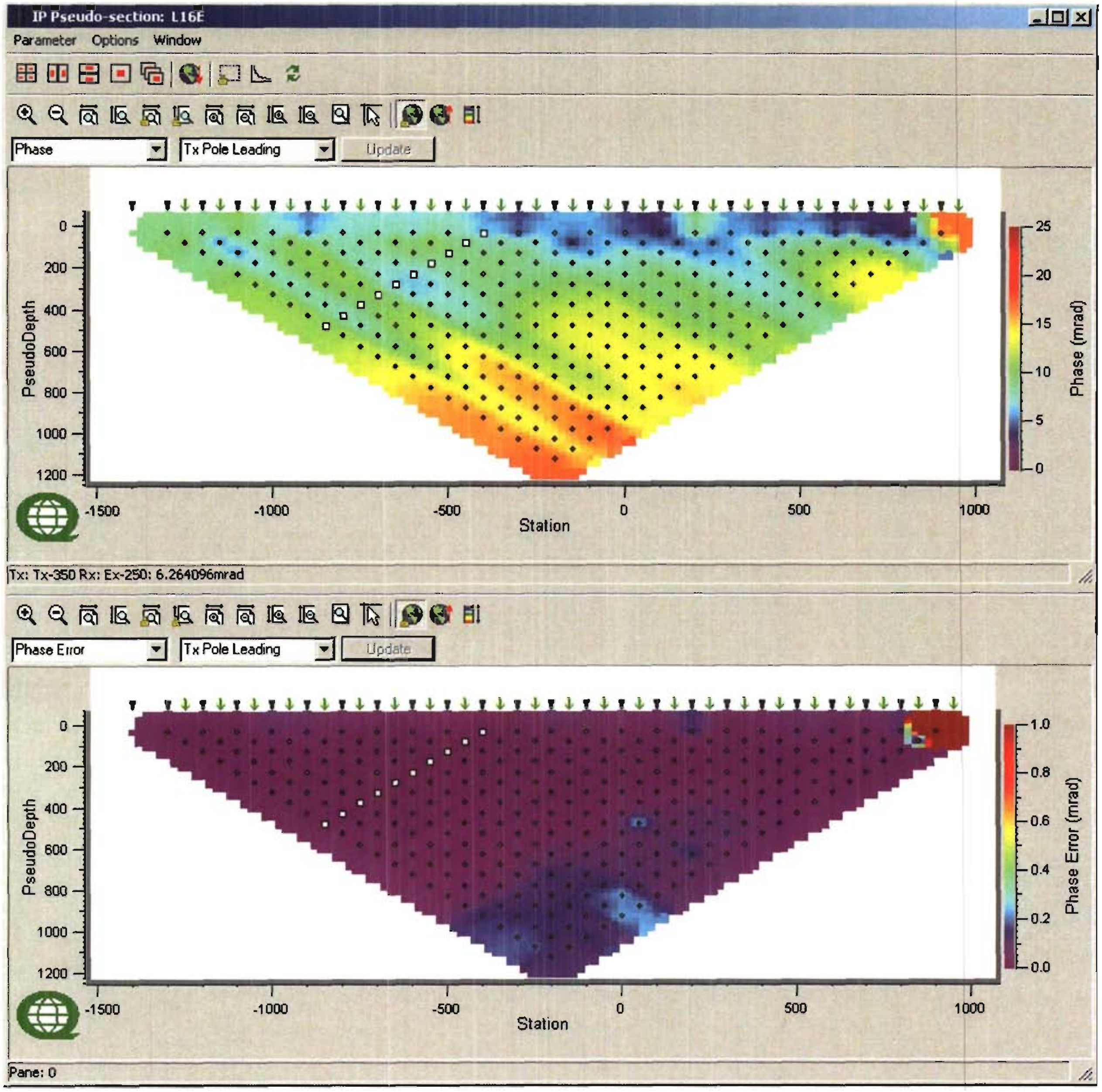
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 16E

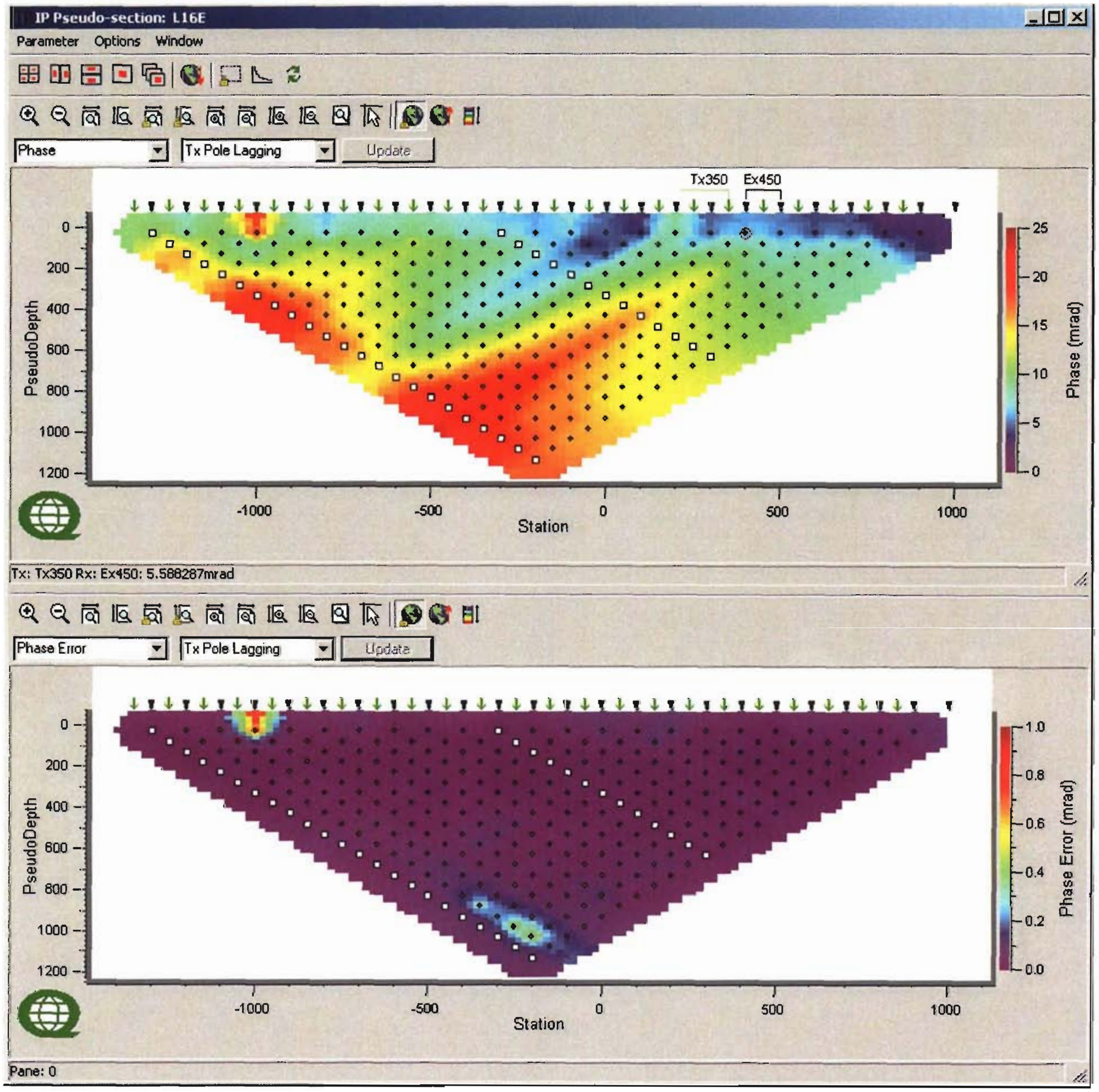
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 16E

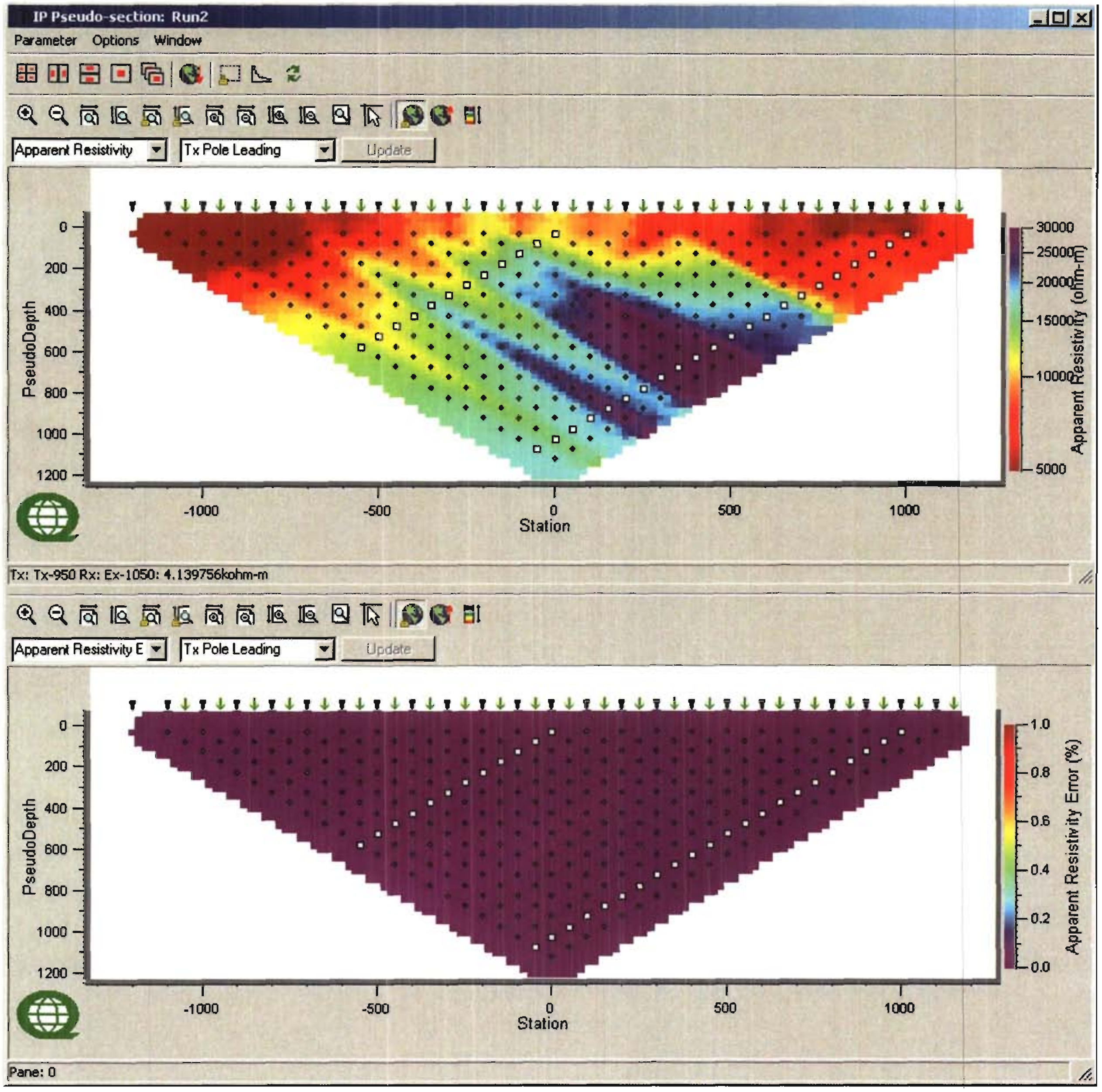
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E – DUCK GRID

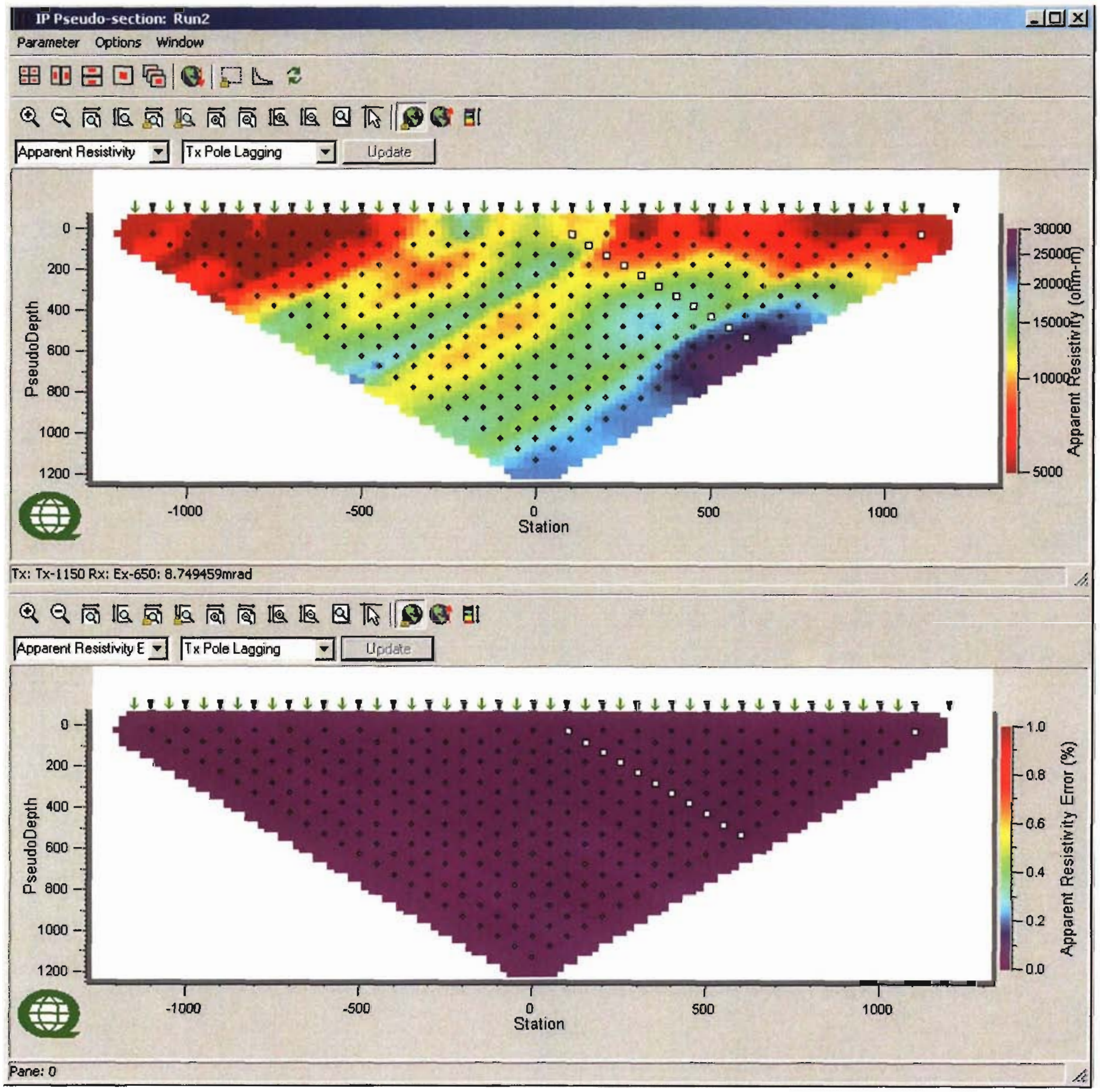
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

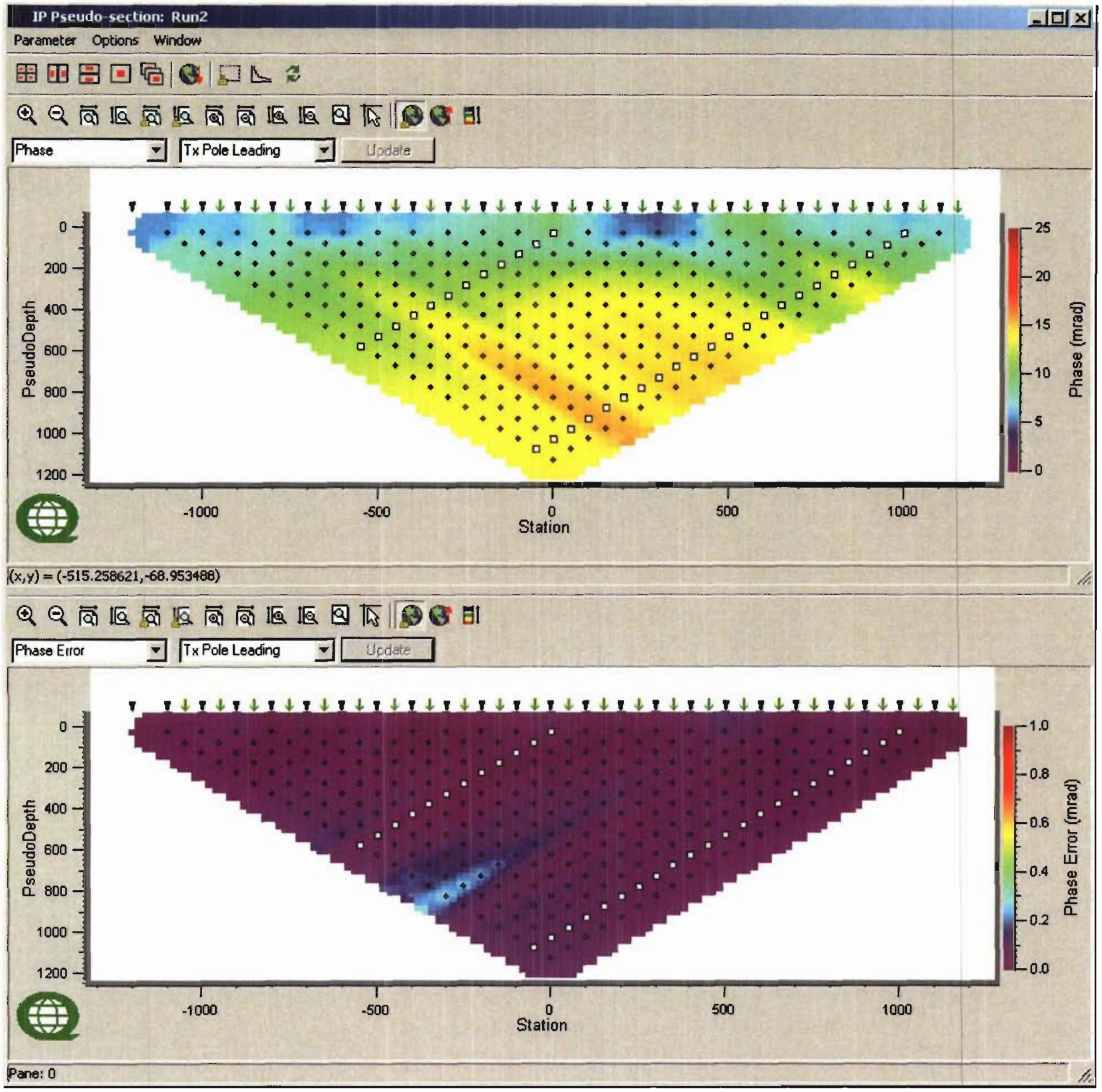
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E

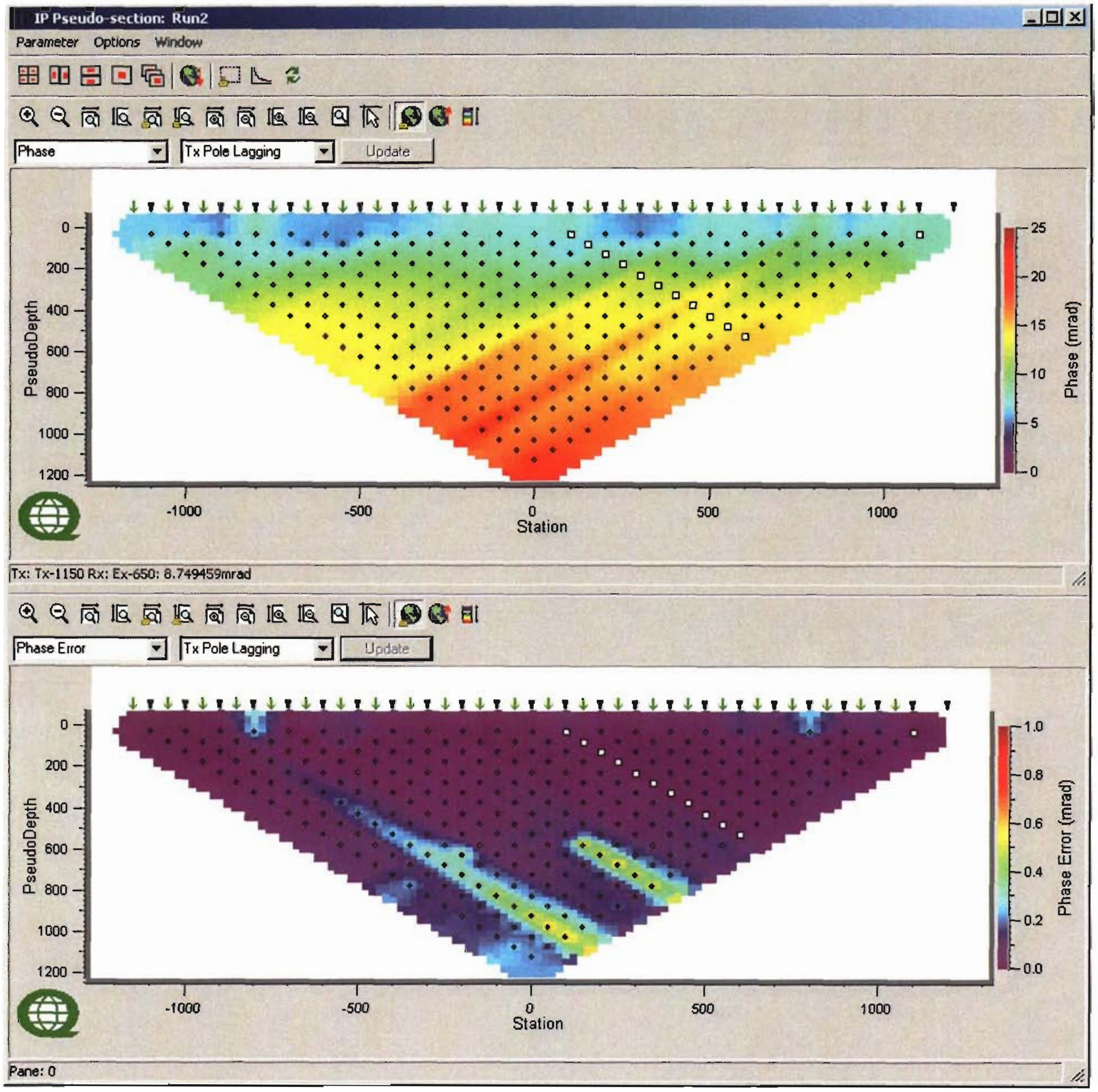
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

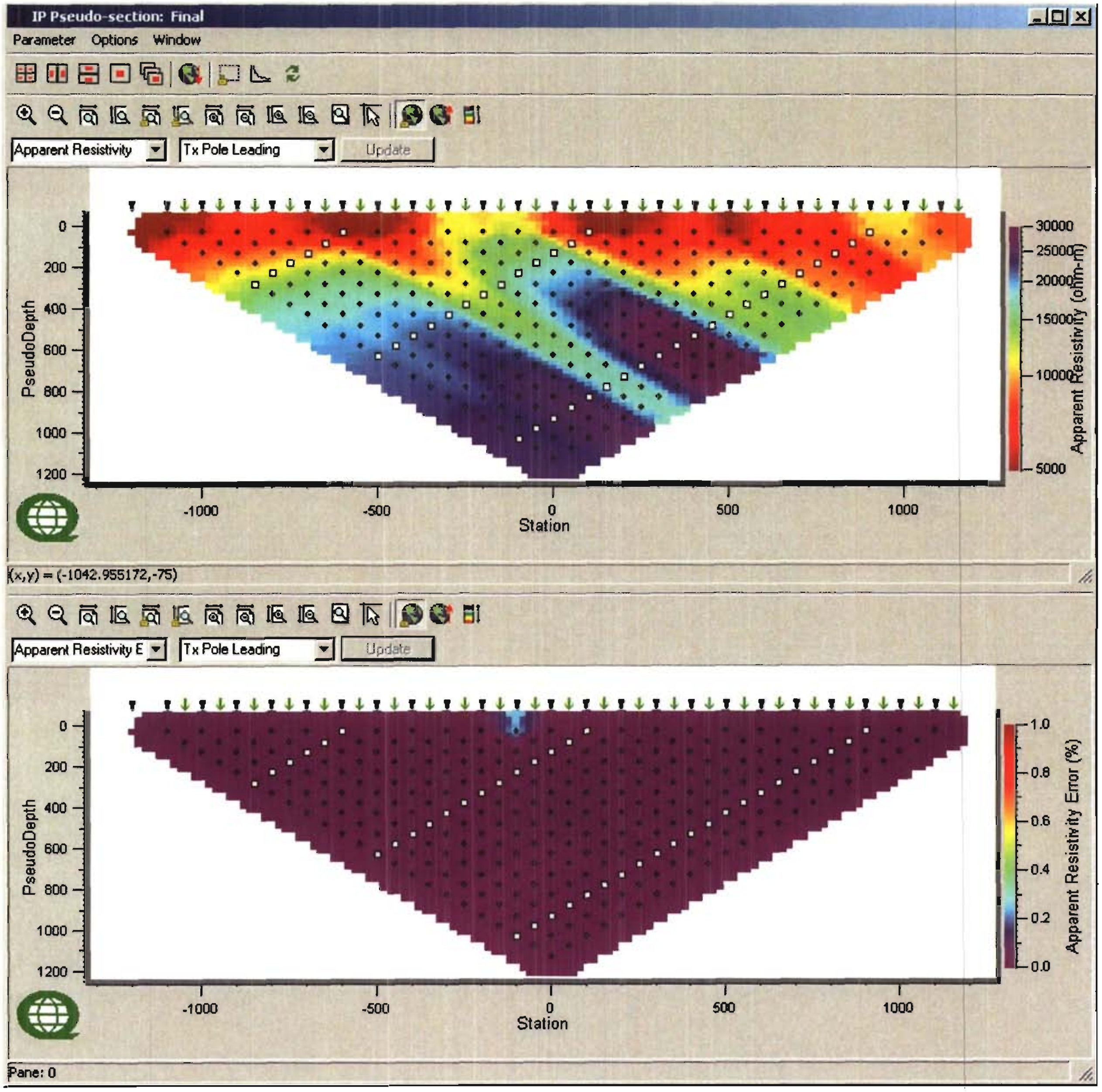
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 4E – DUCK GRID

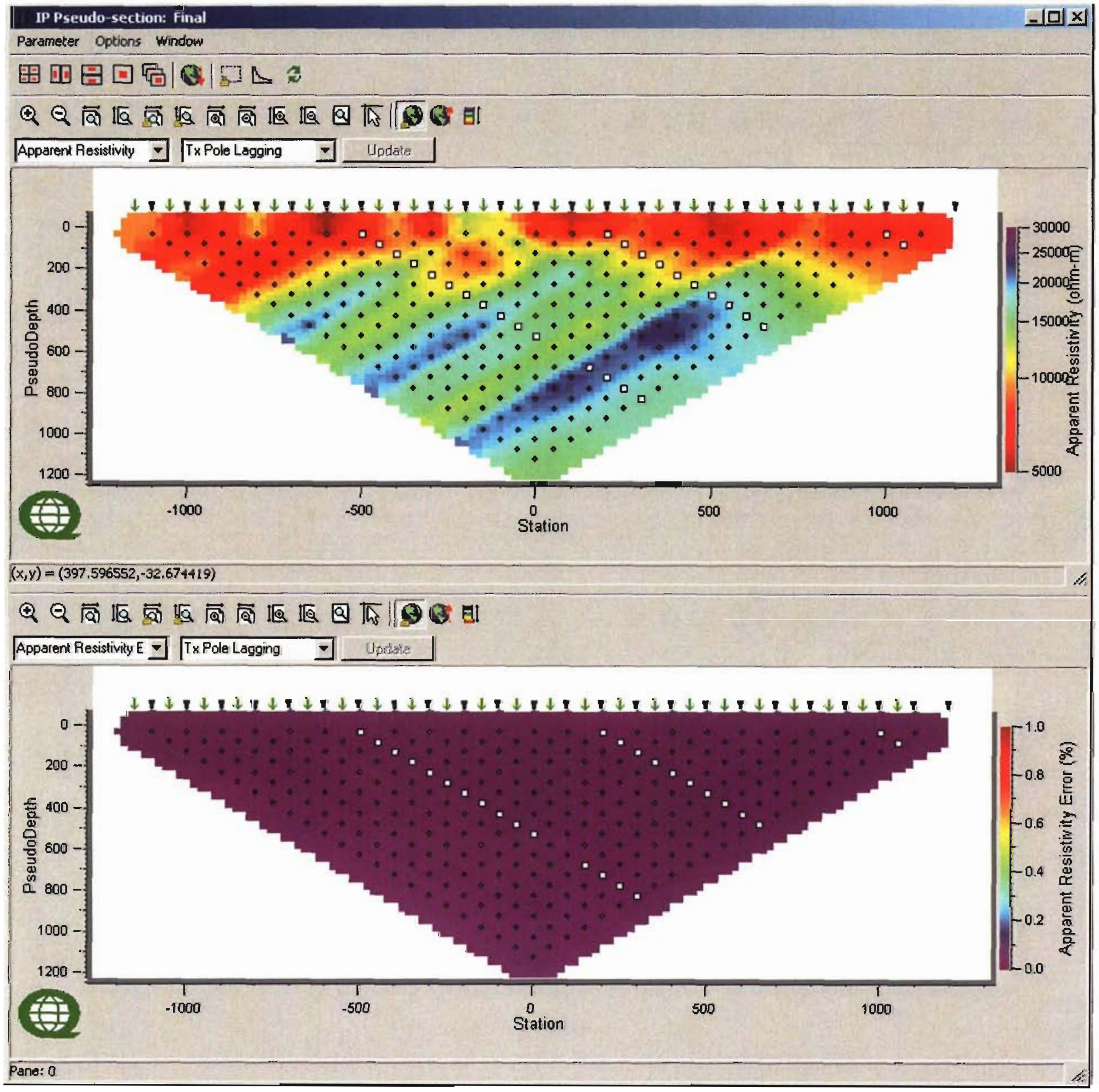
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



Tx with more than one event

LINE 4E

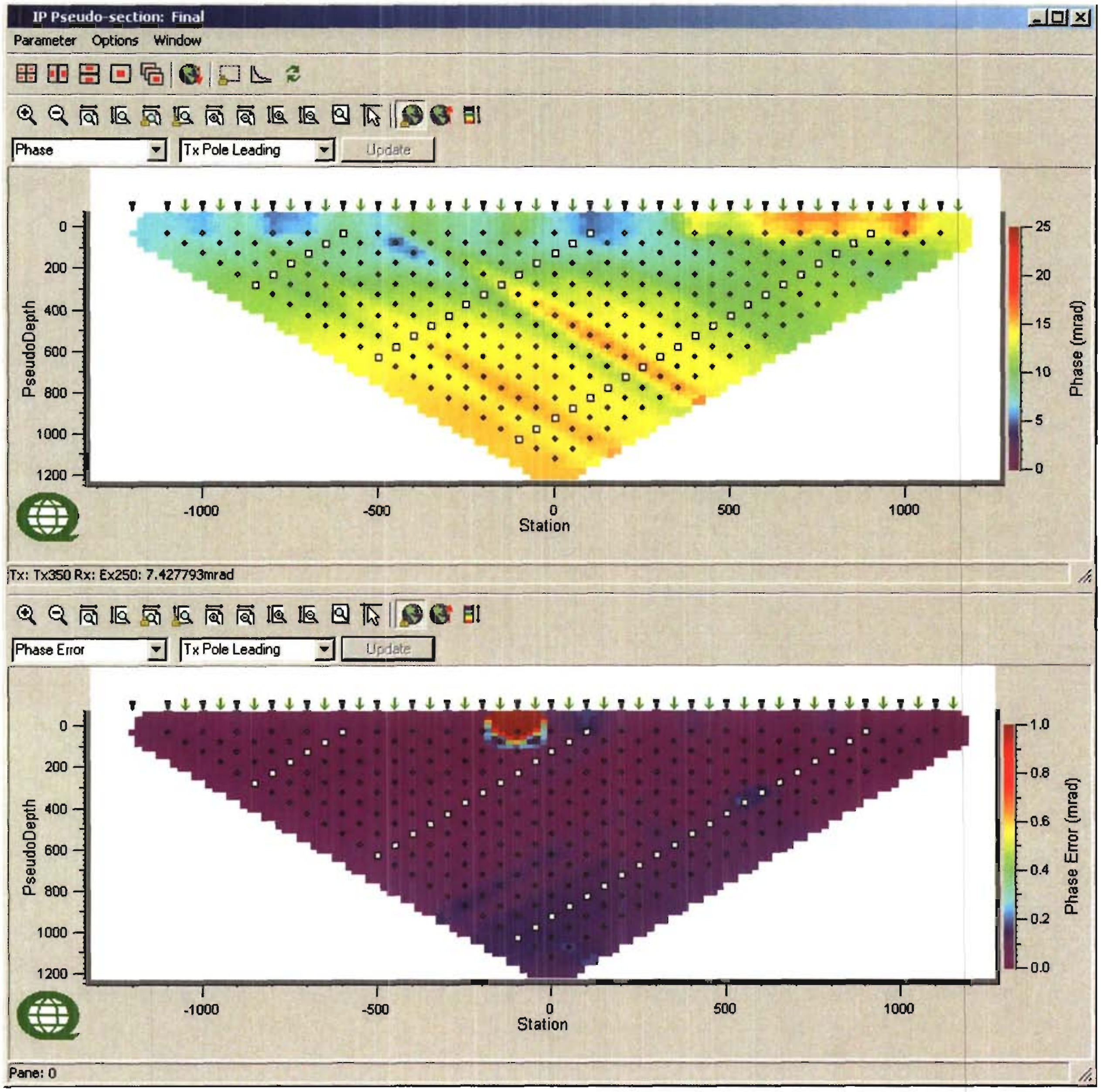
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

Line 4E

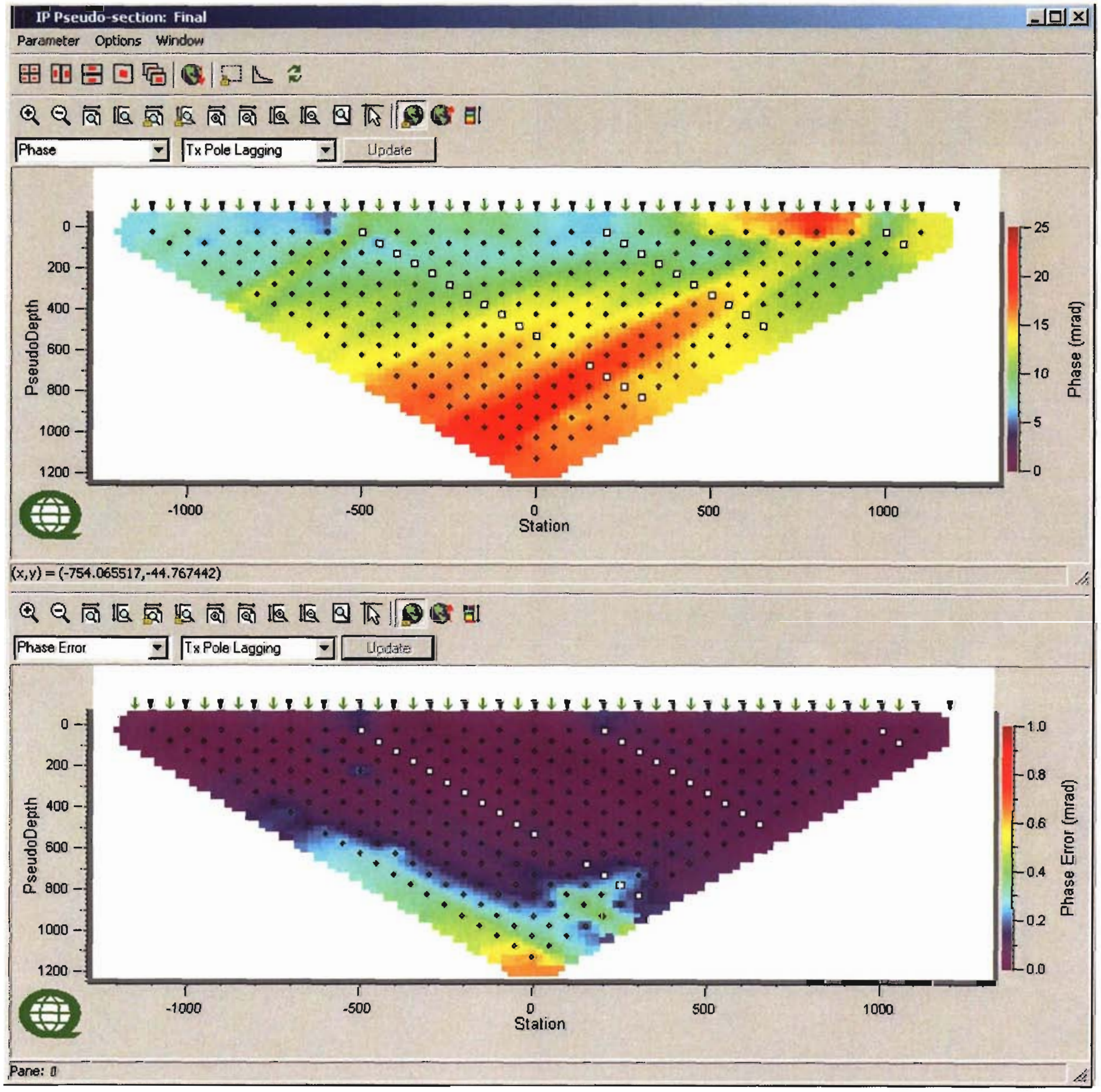
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 4E

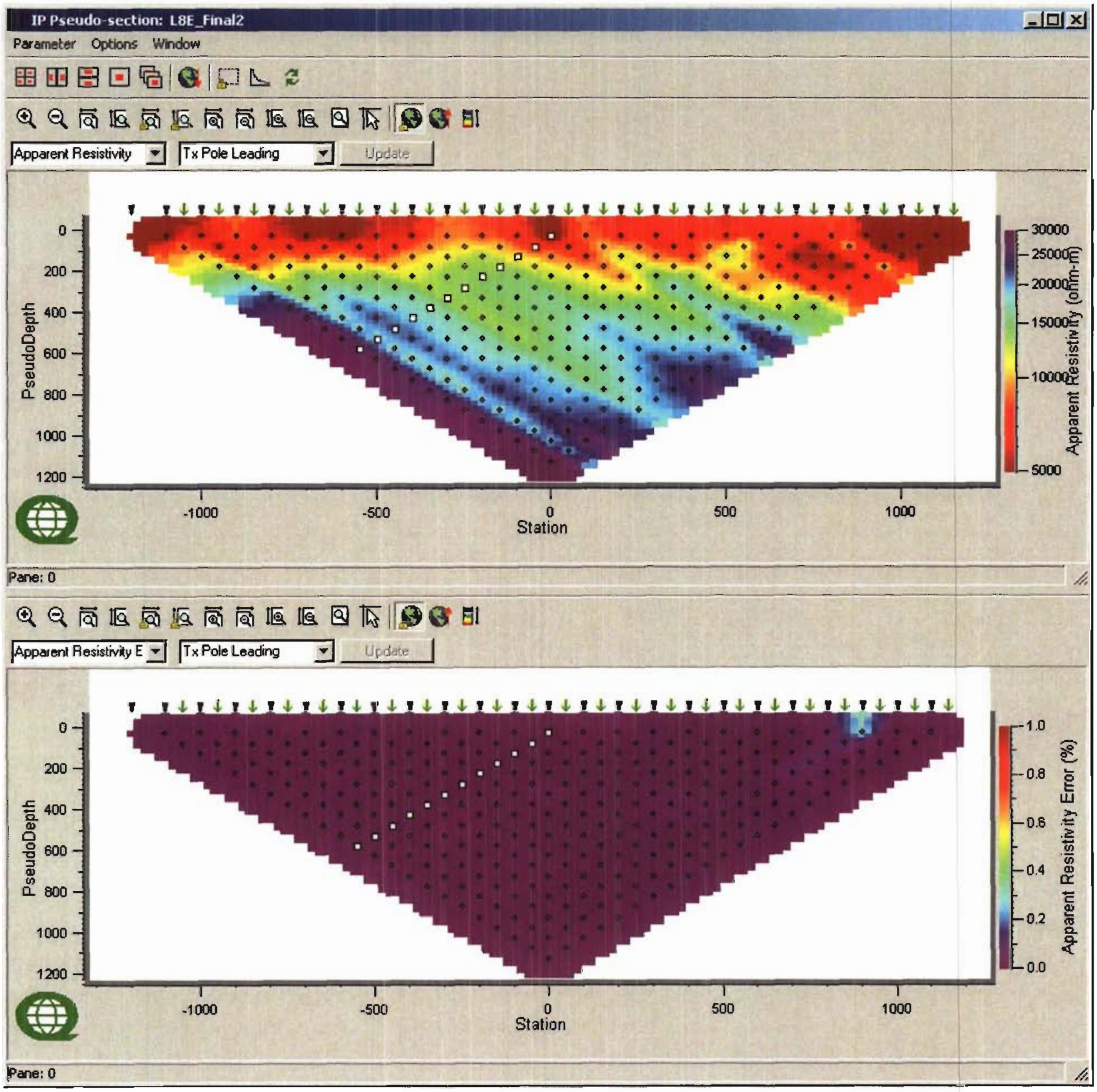
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 8E – DUCK GRID

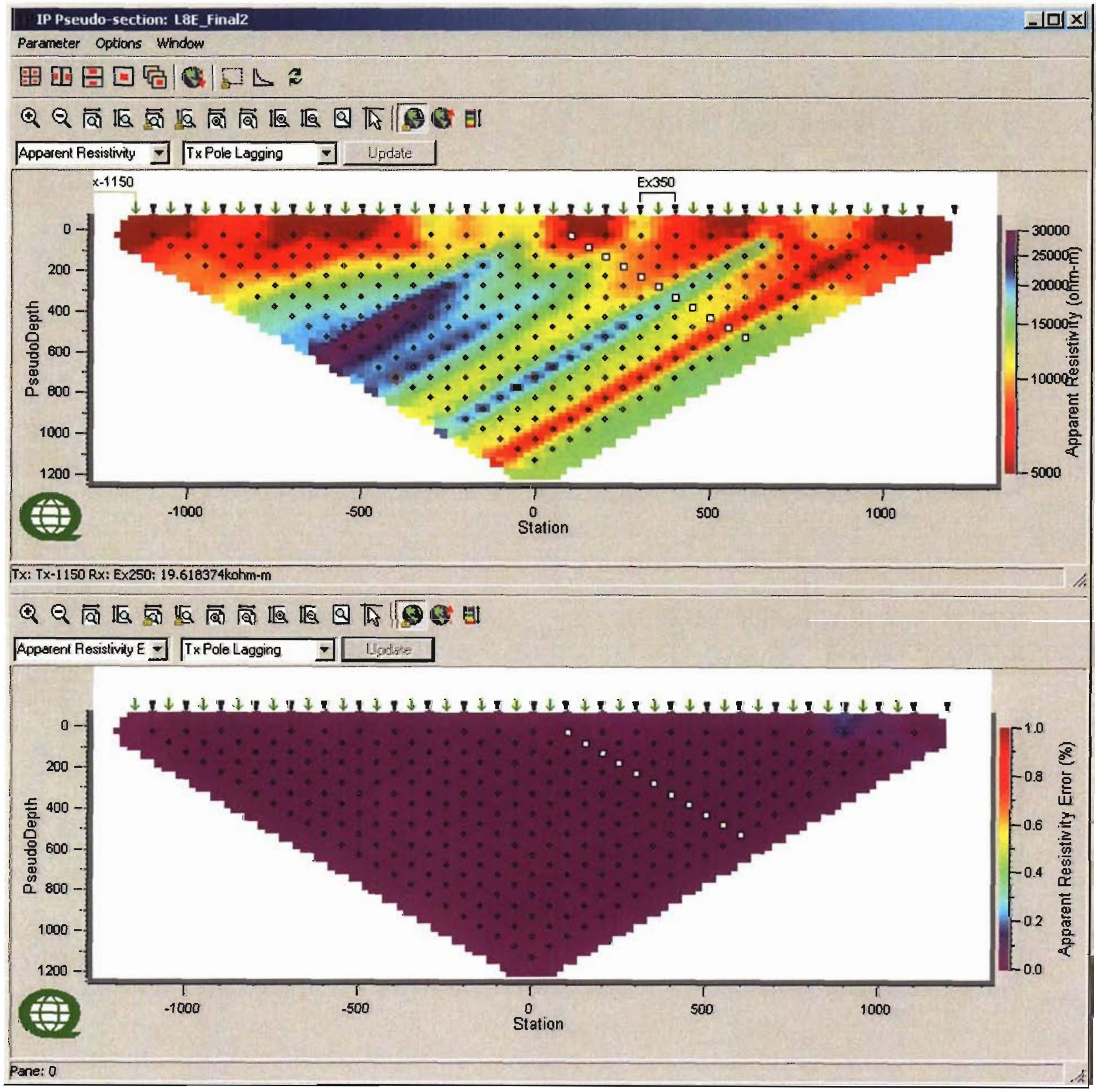
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



Tx with more than one event

LINE 8E

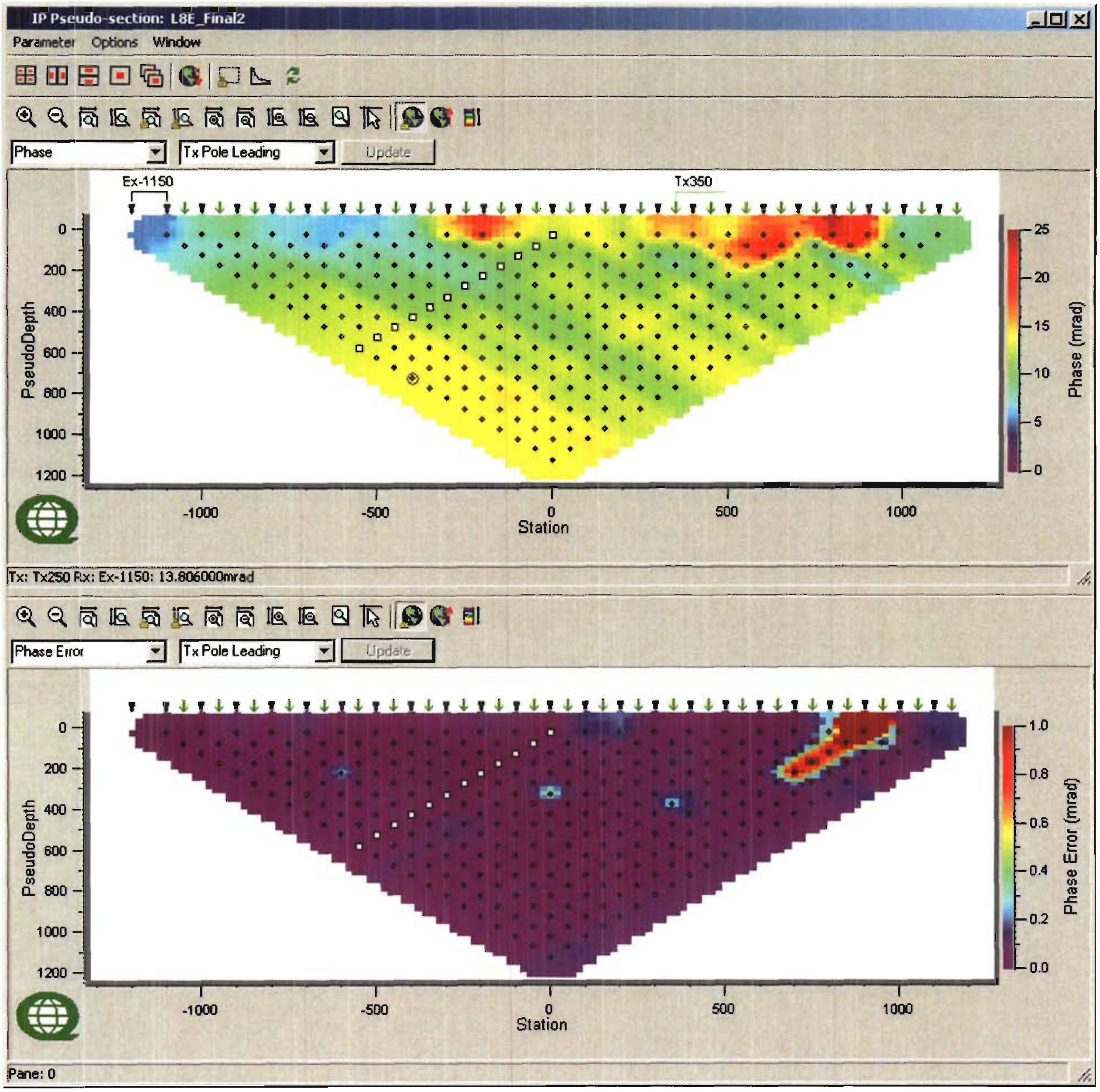
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 8E

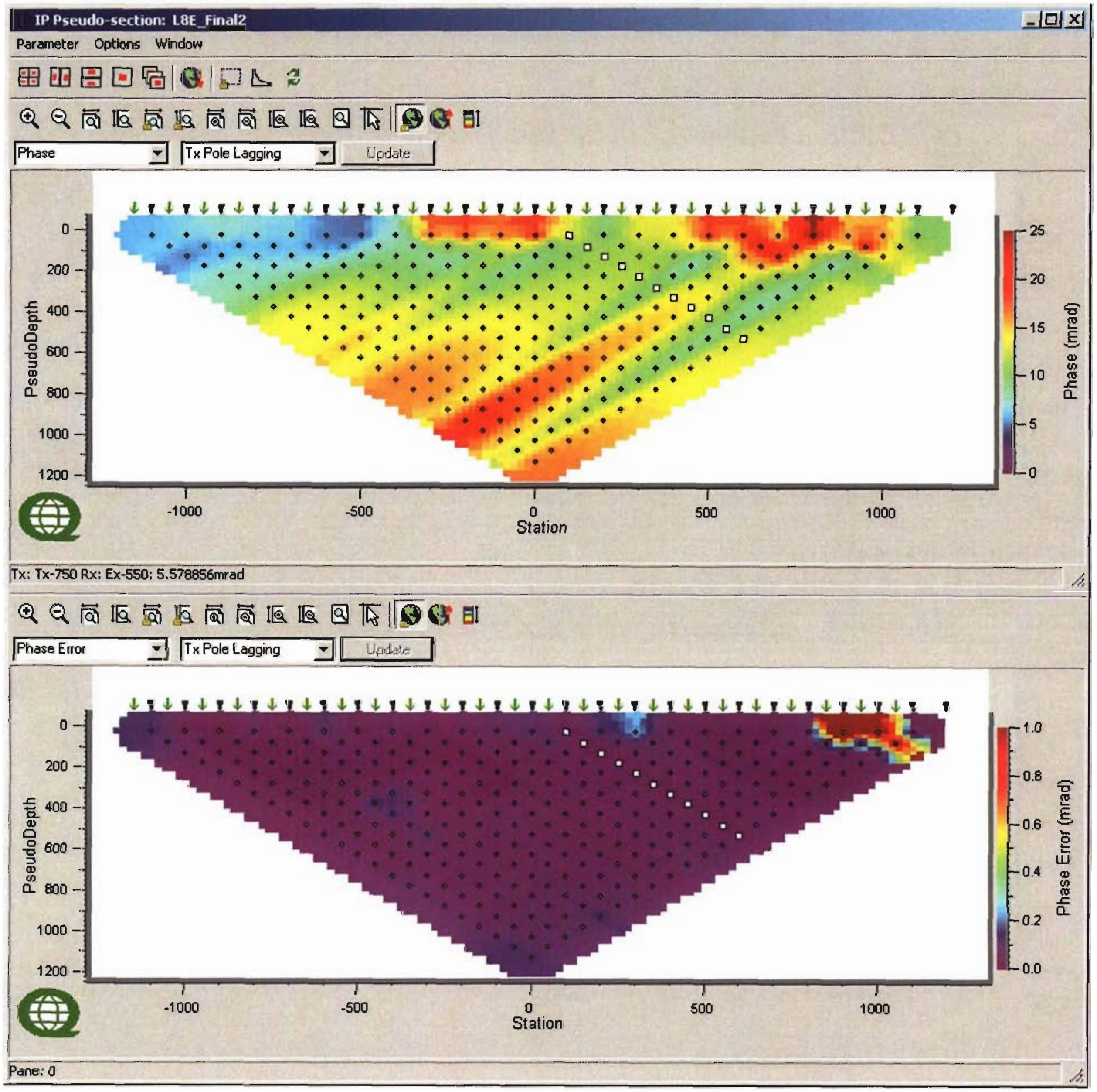
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 8E

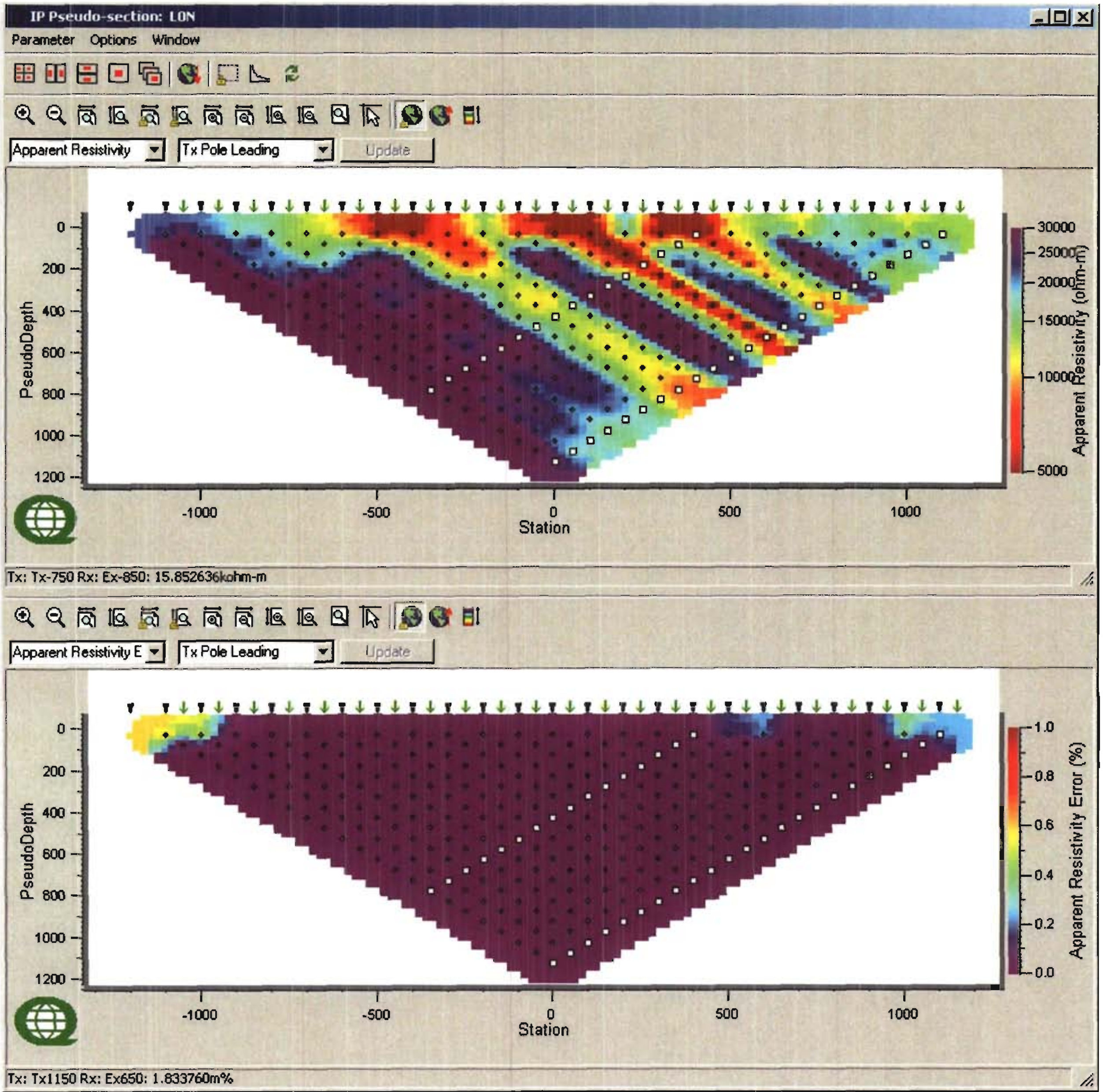
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

Line 0N – Fishhook Grid

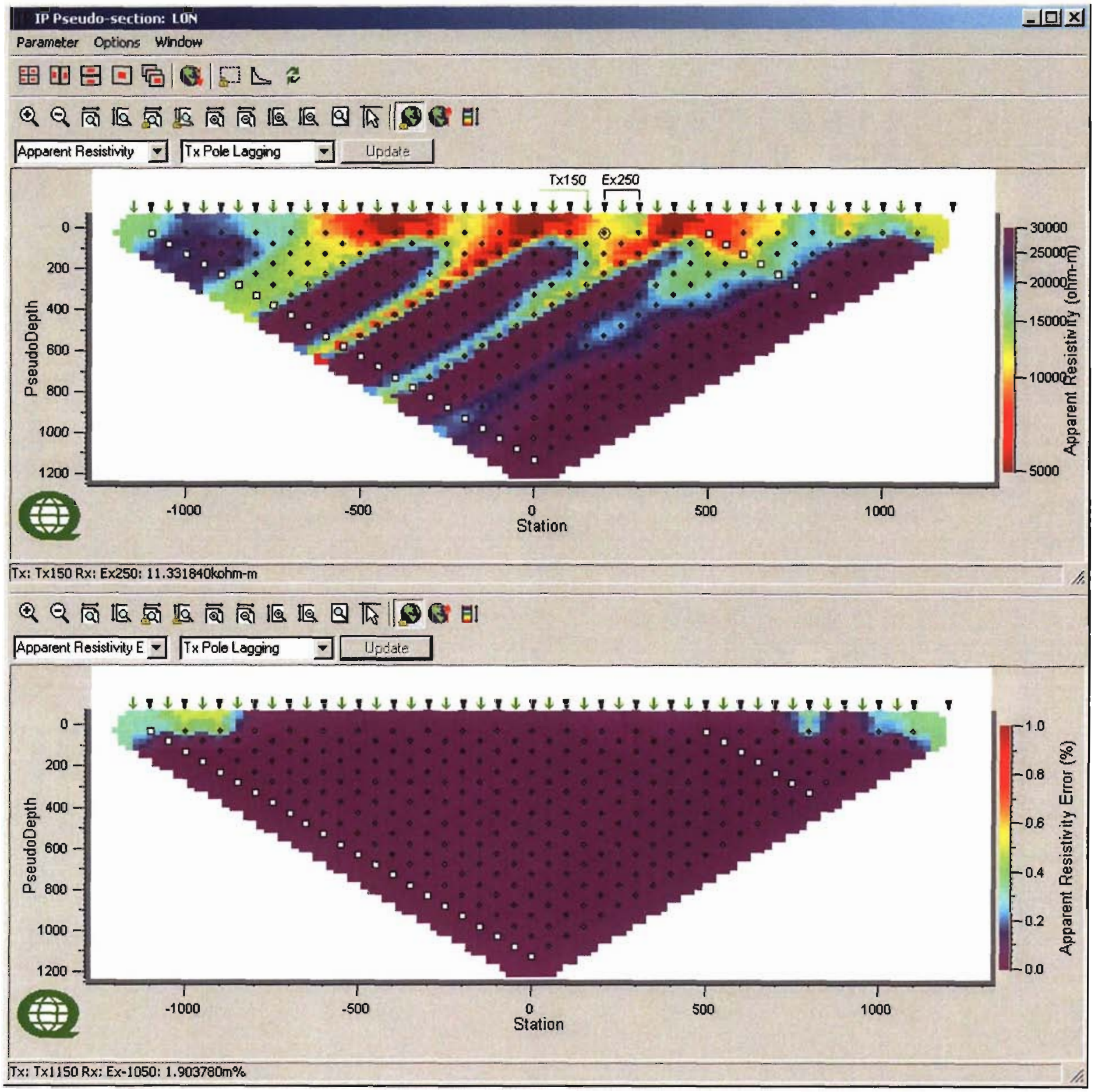
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 0N

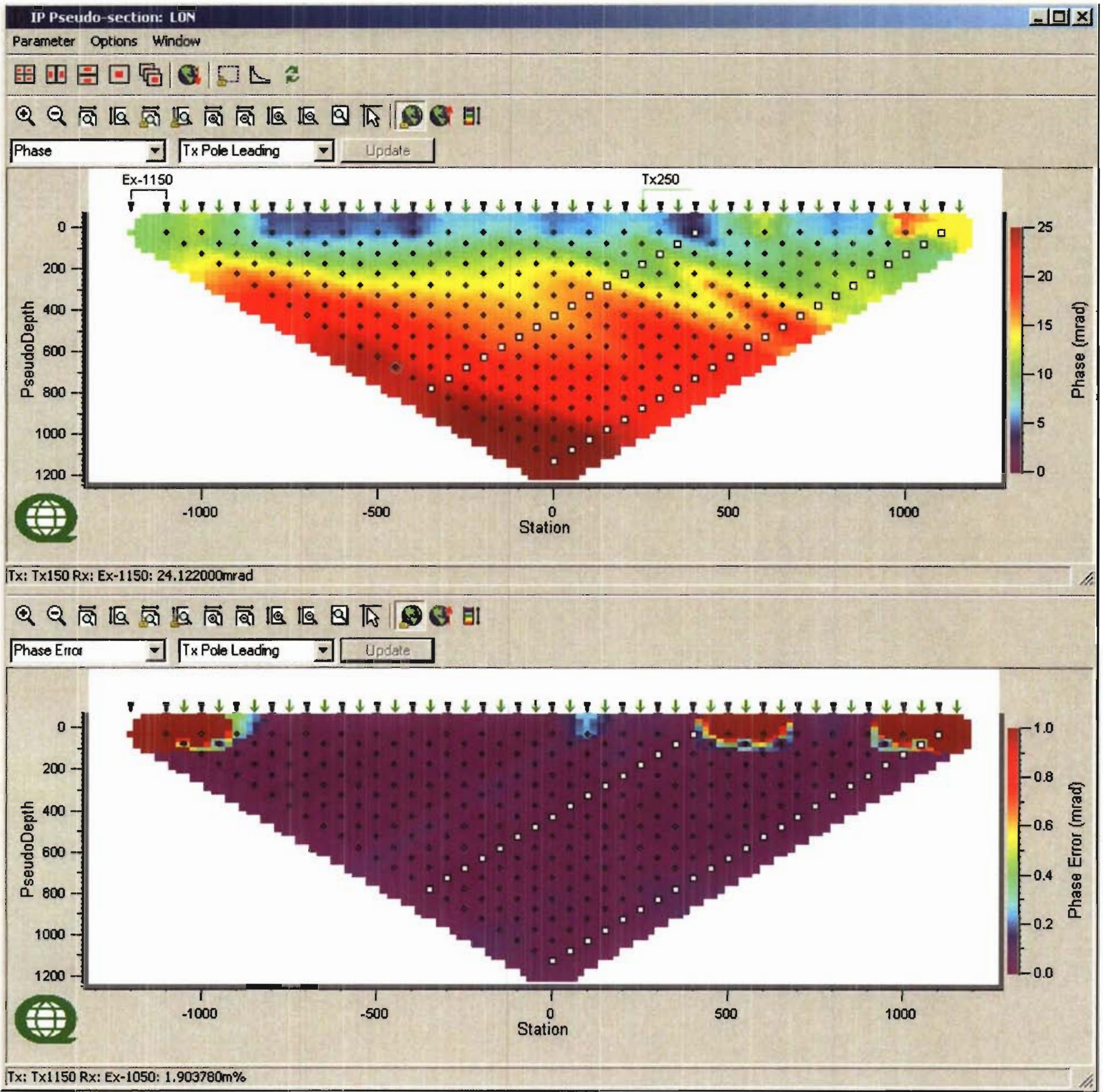
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 0N

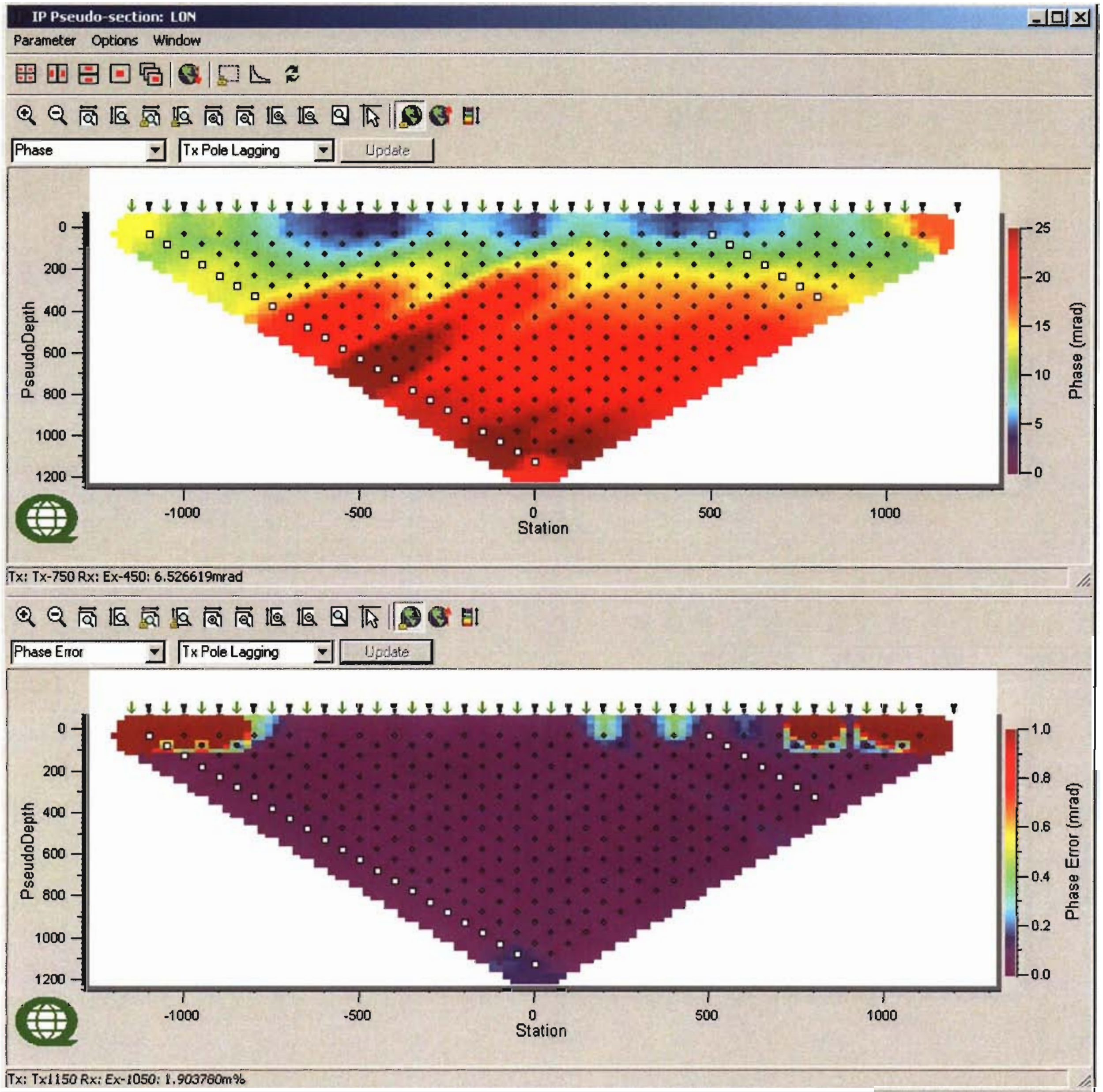
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

Line 0N

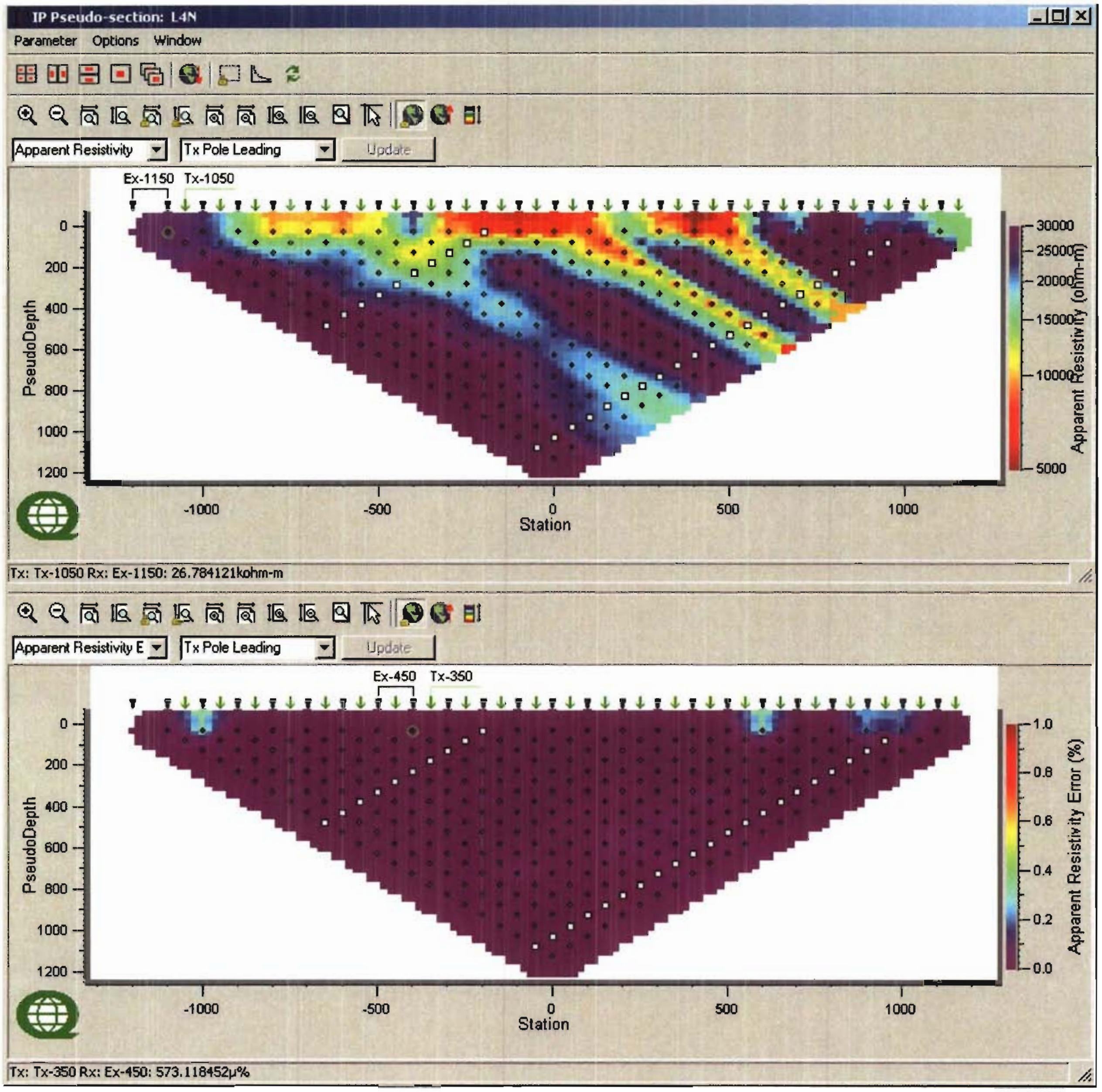
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 4N – FISHHOOK GRID

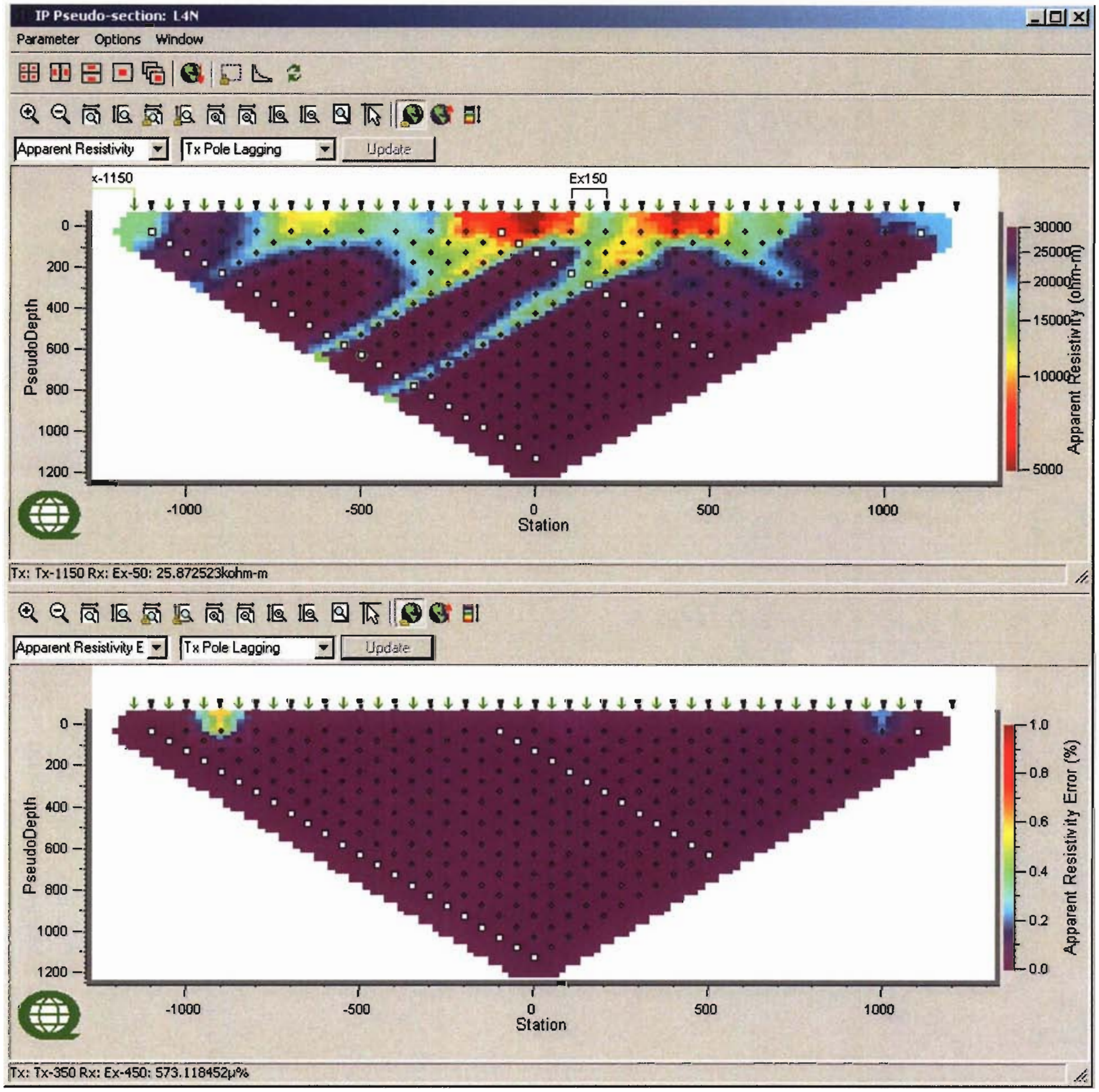
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 4N

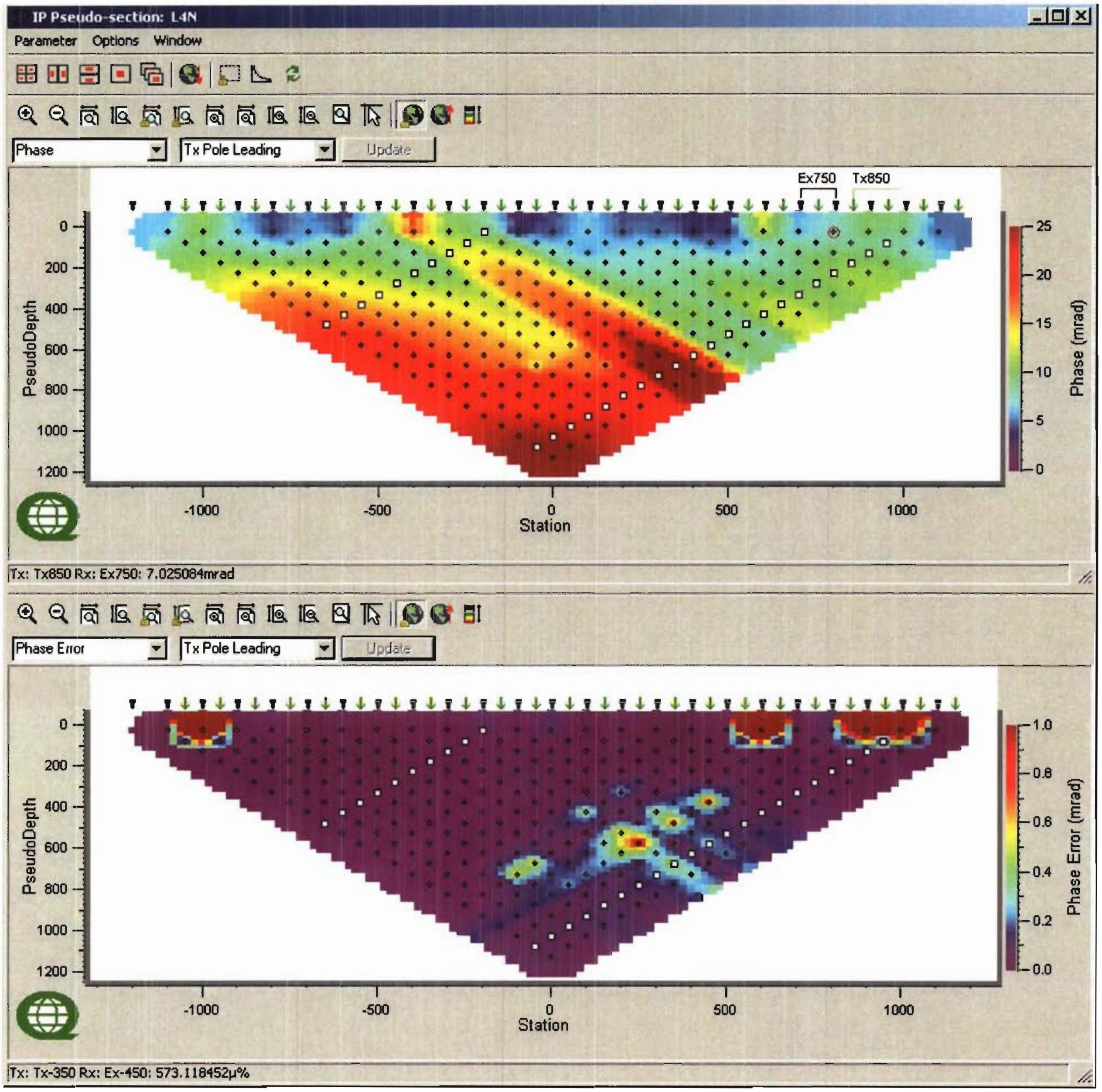
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 4N

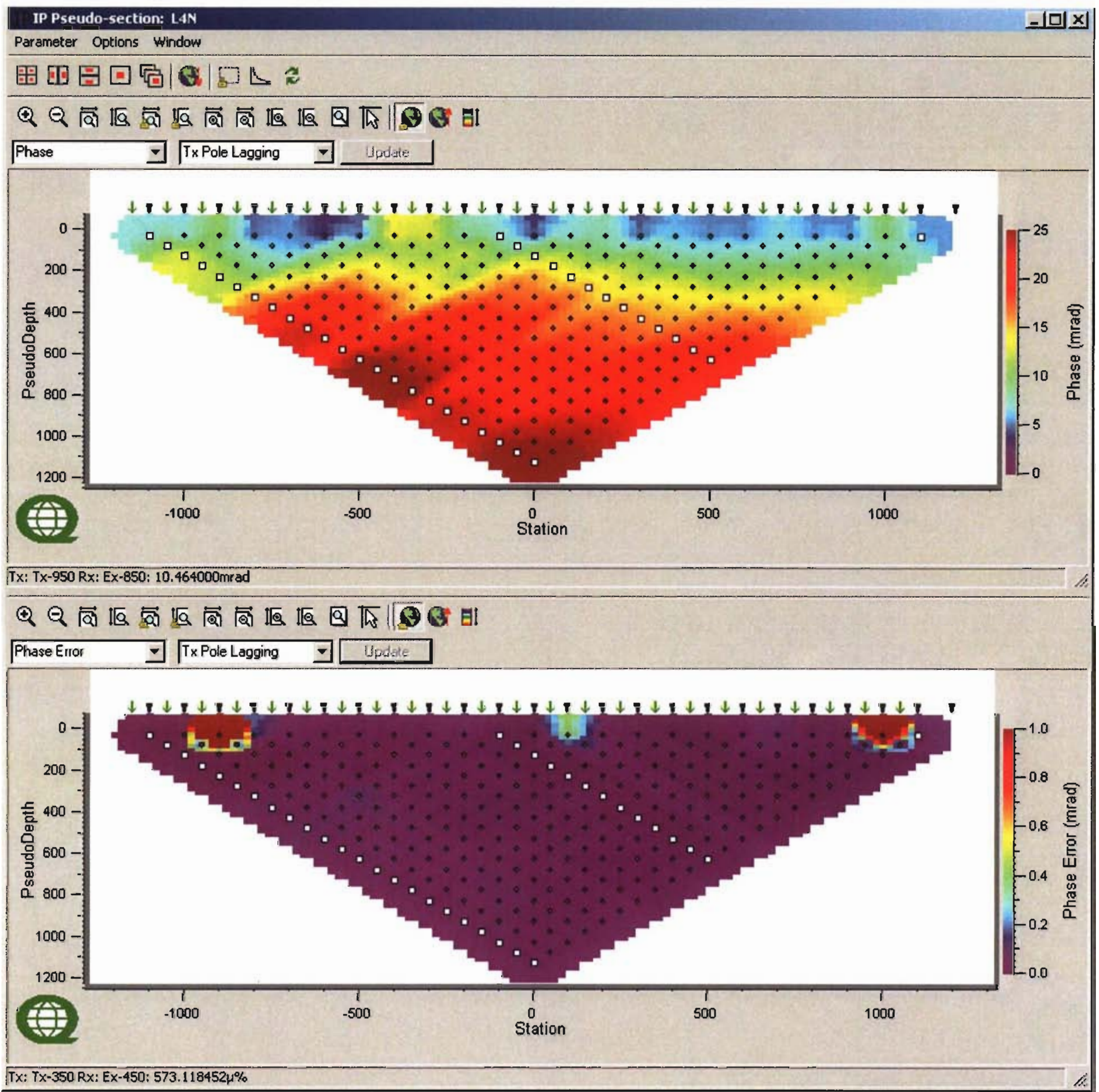
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 4N

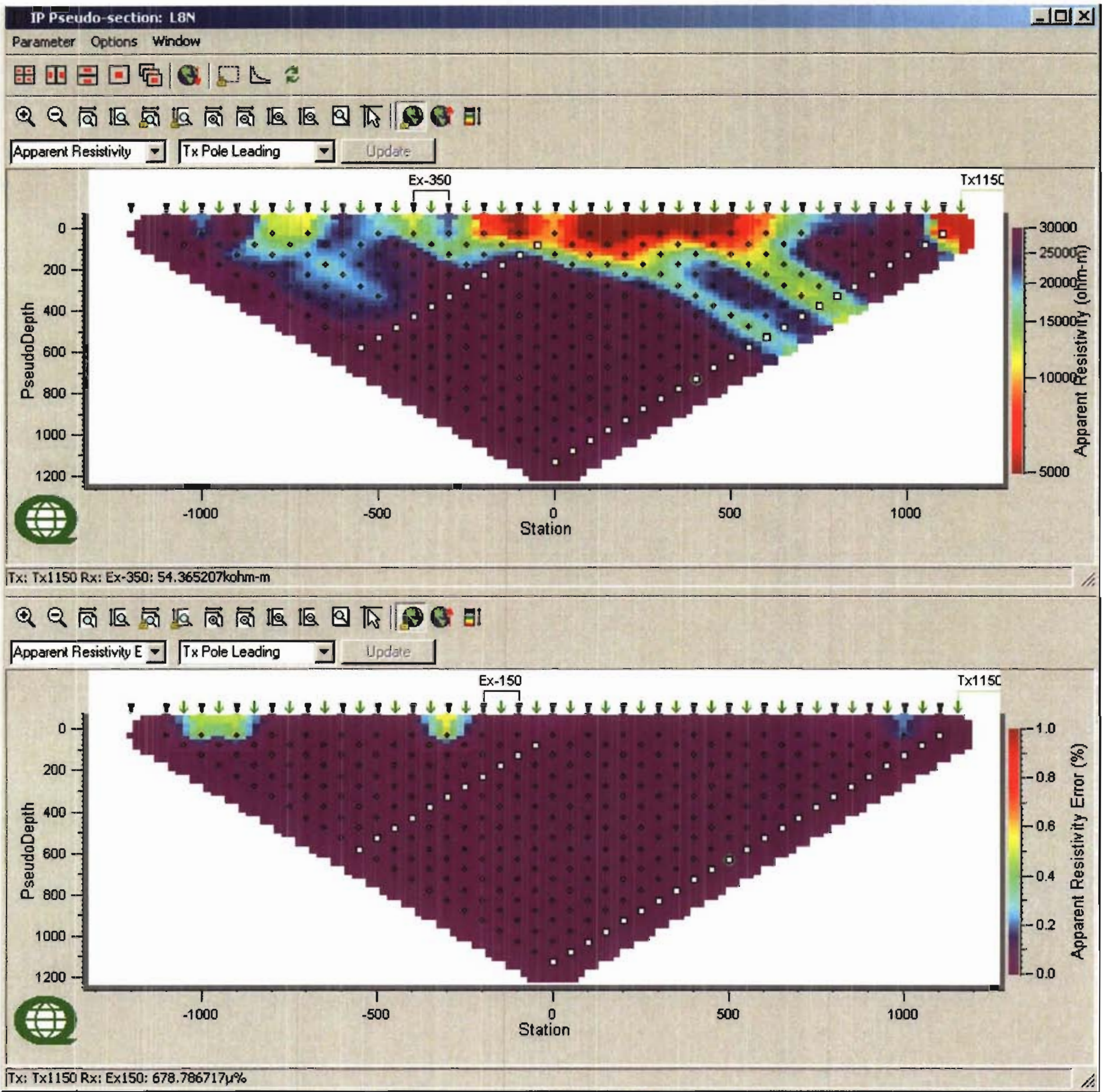
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 8N – FISHHOOK GRID

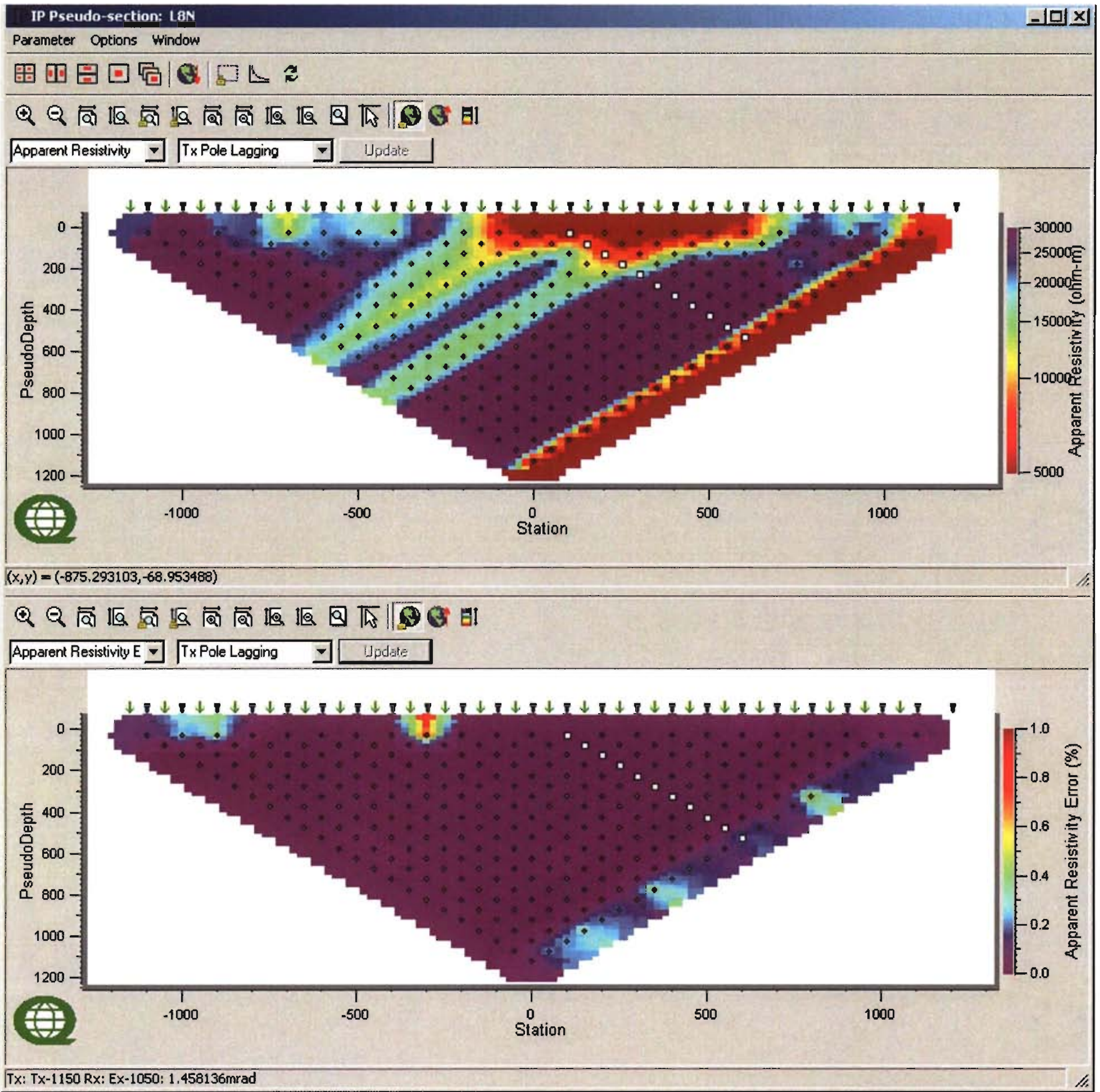
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 8N

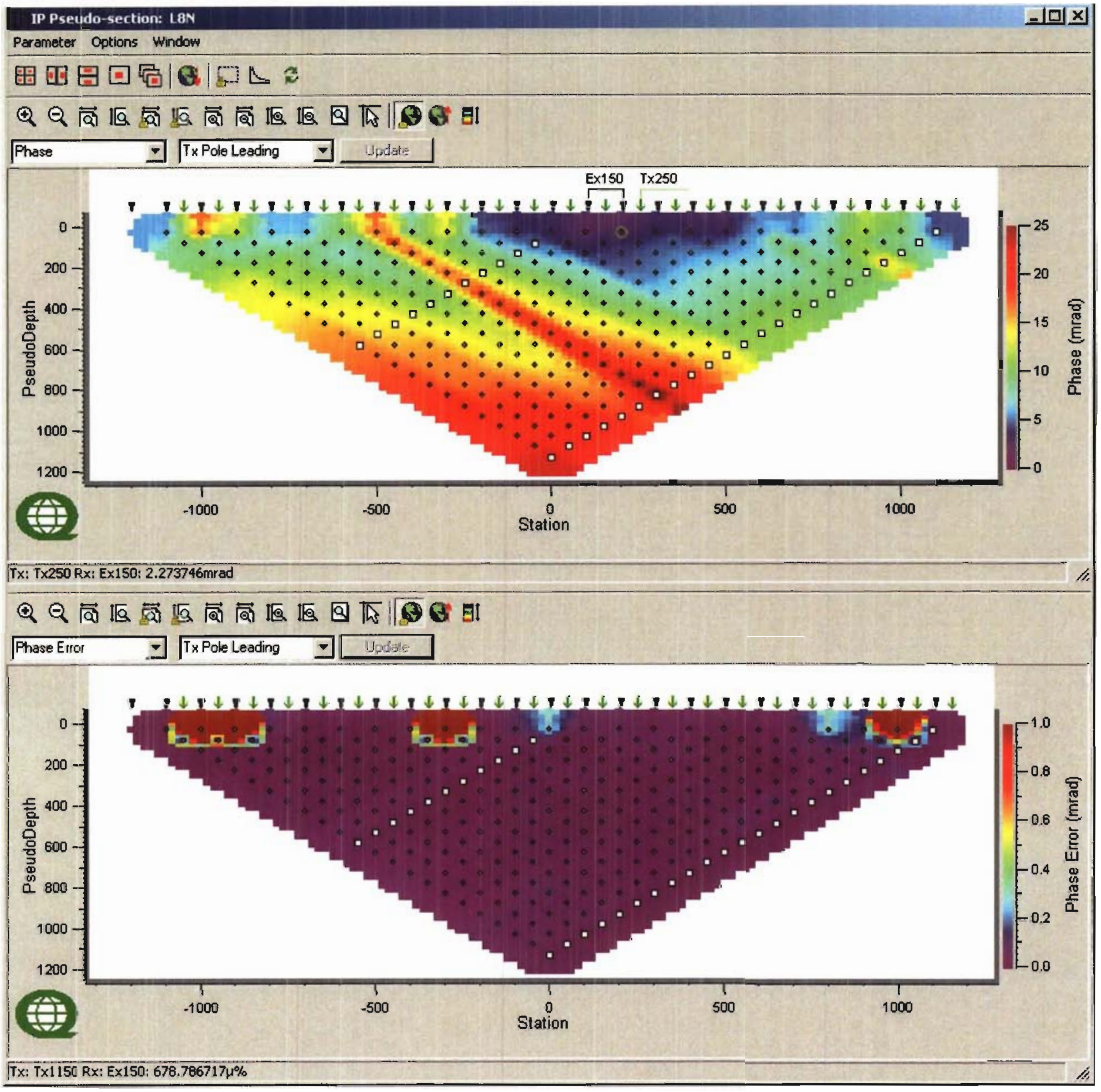
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 8N

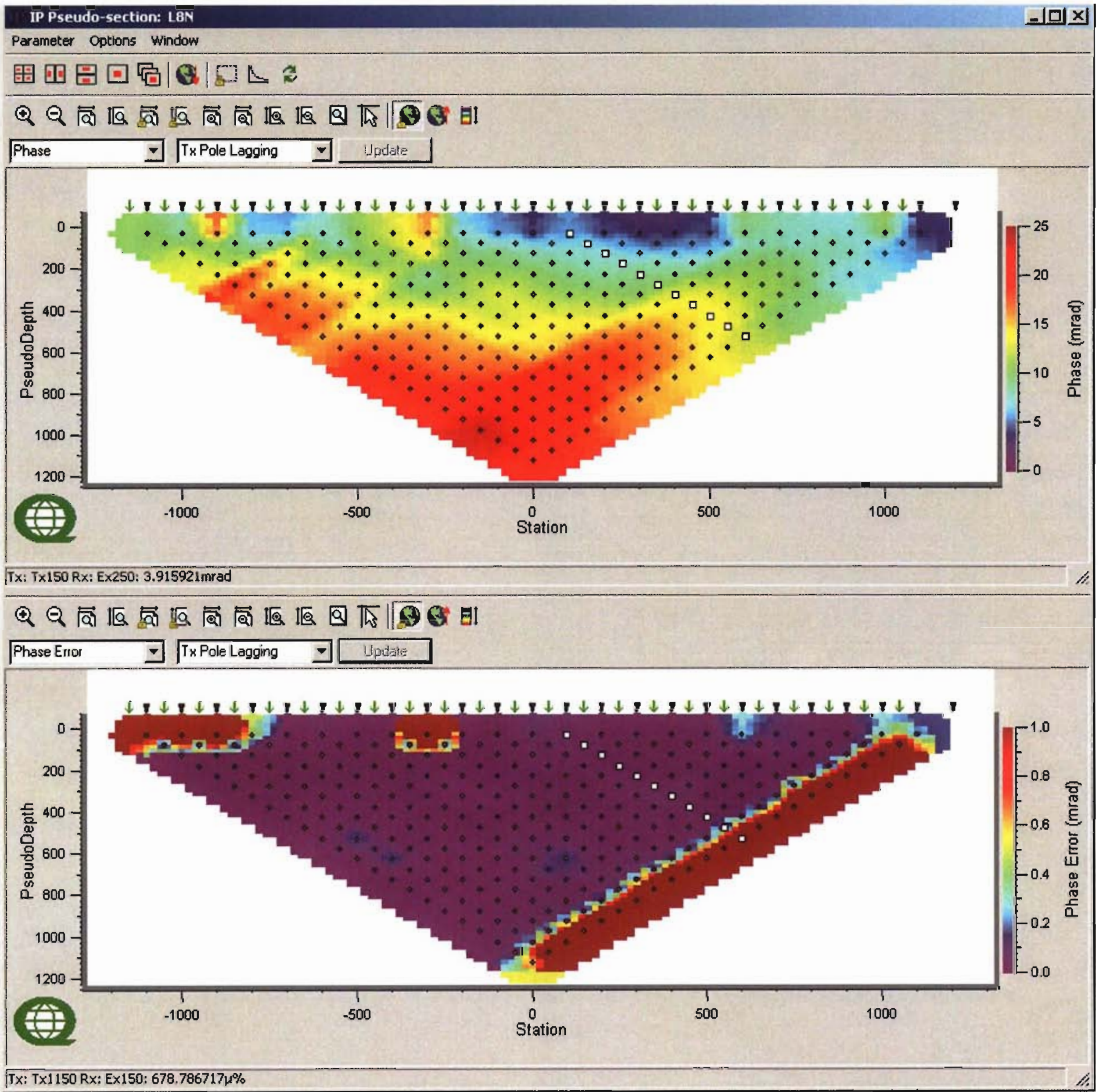
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 8N

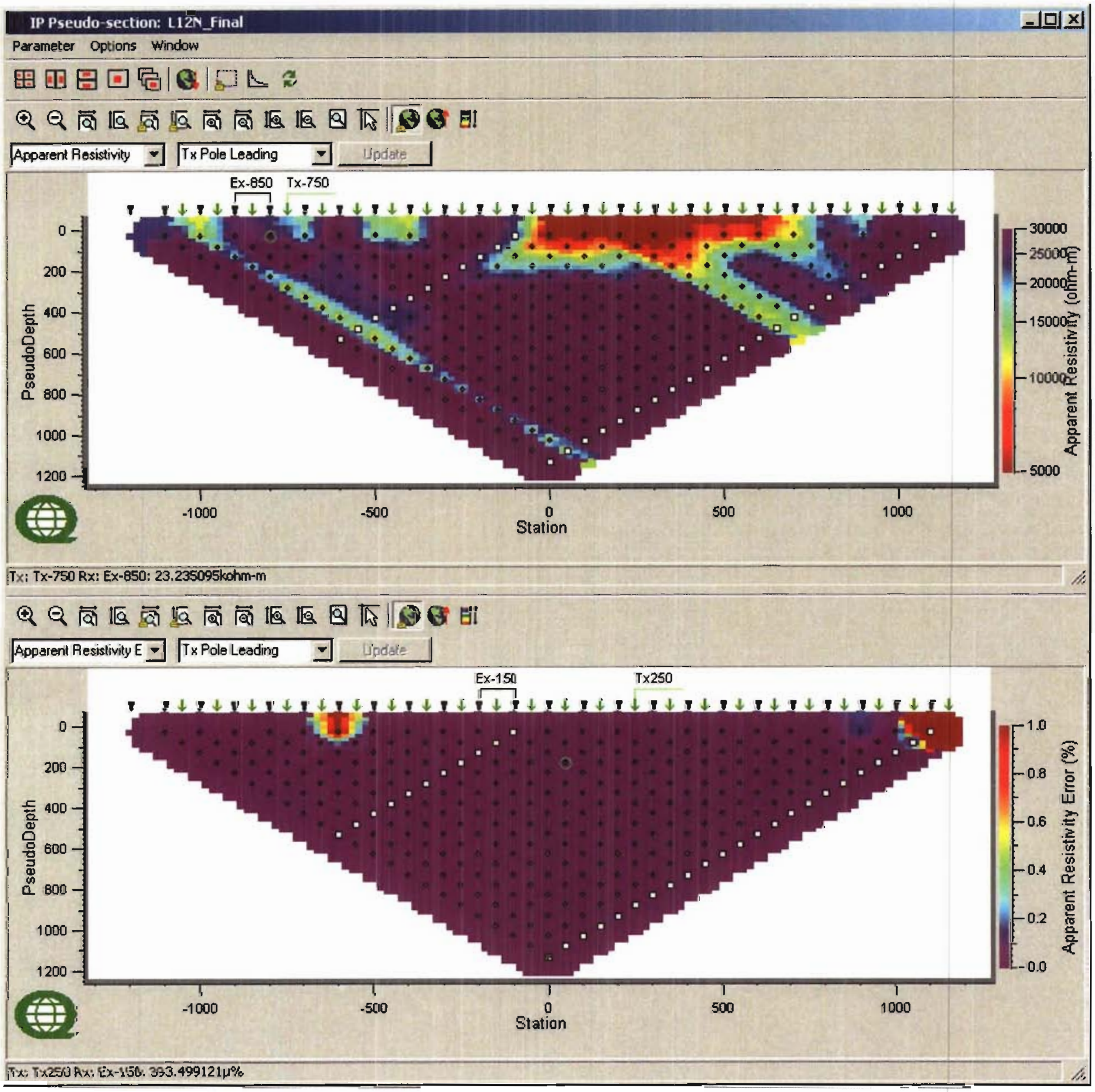
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 12N – FISHHOOK GRID

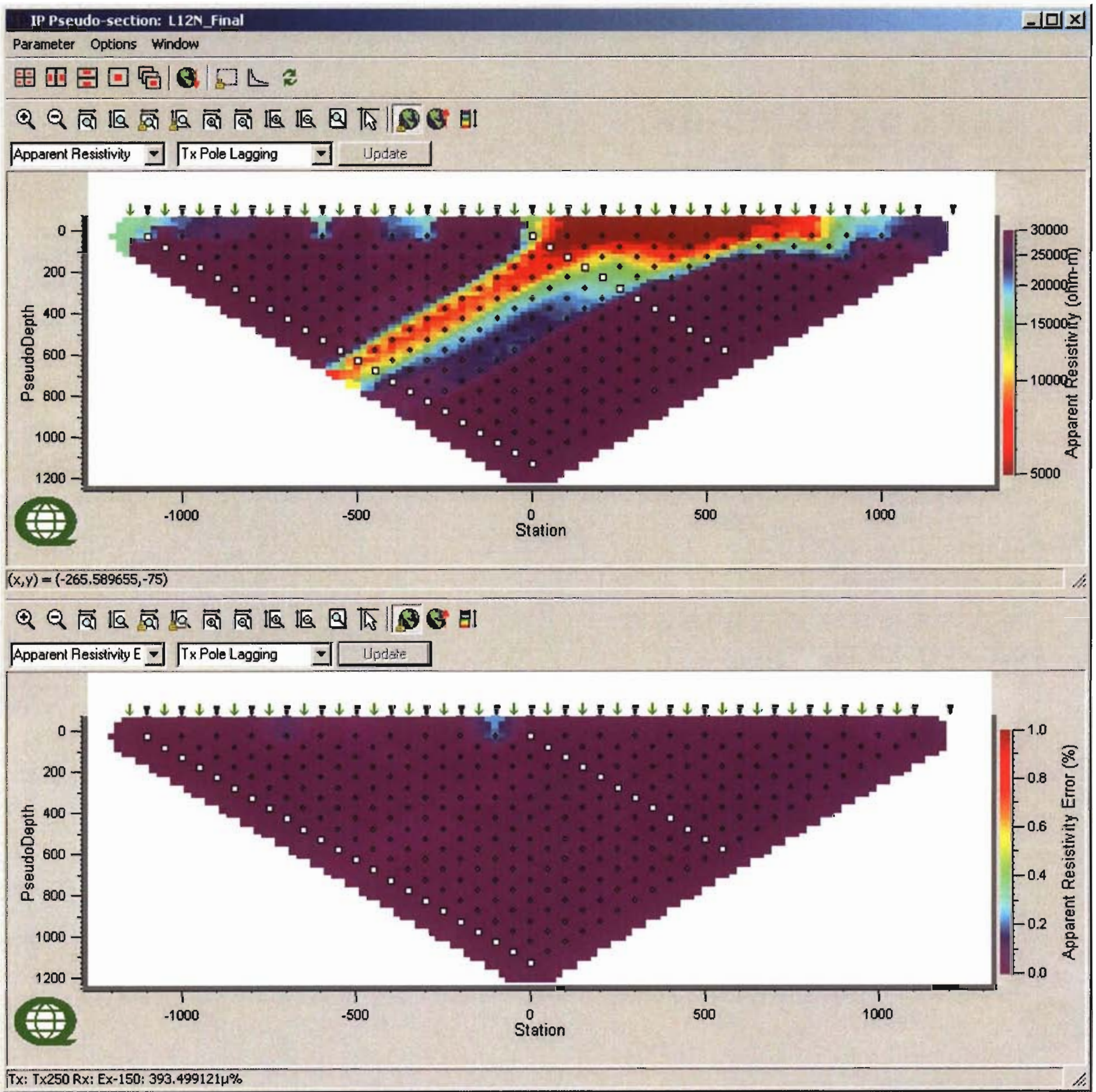
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 12N

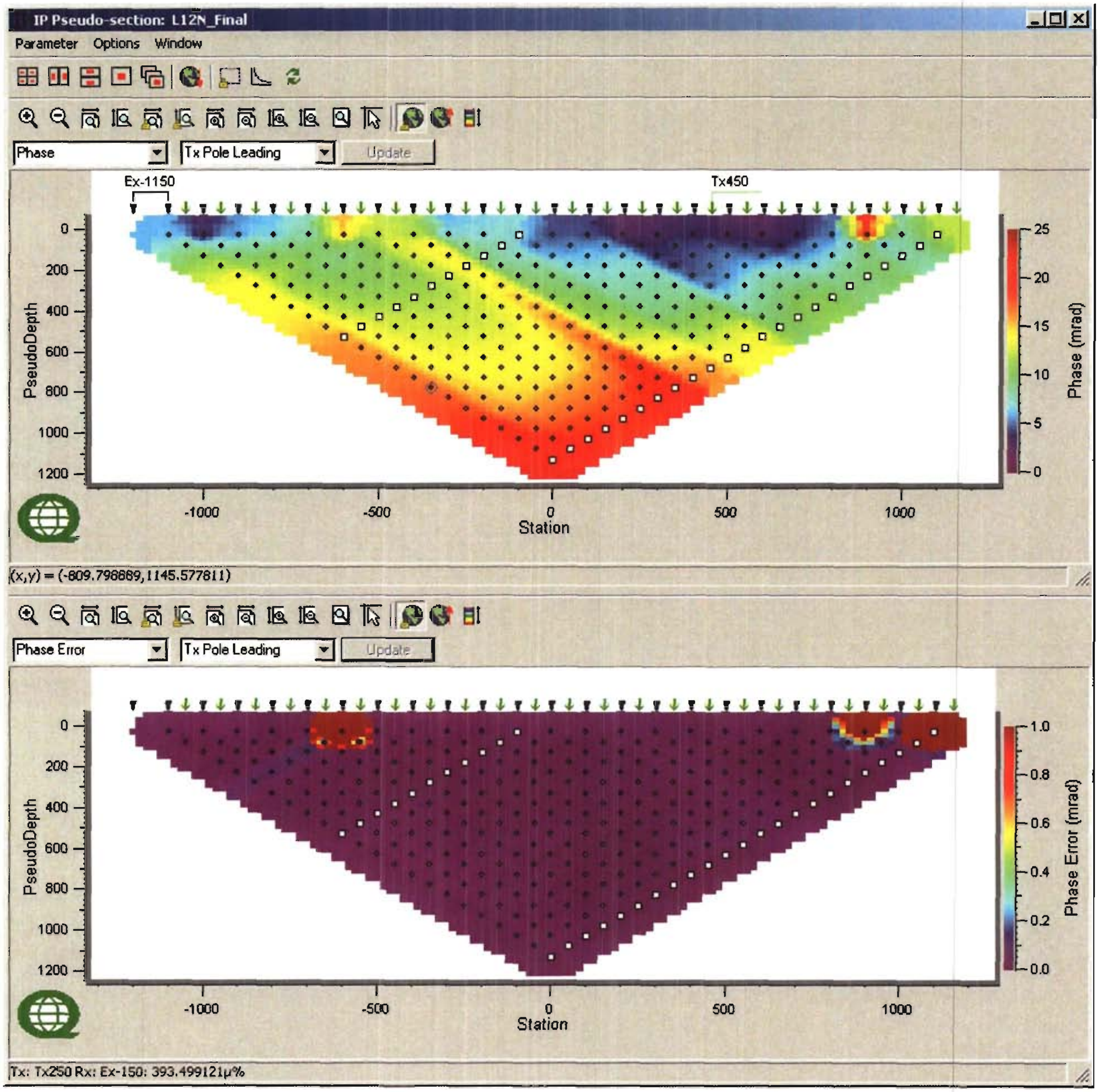
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 12N

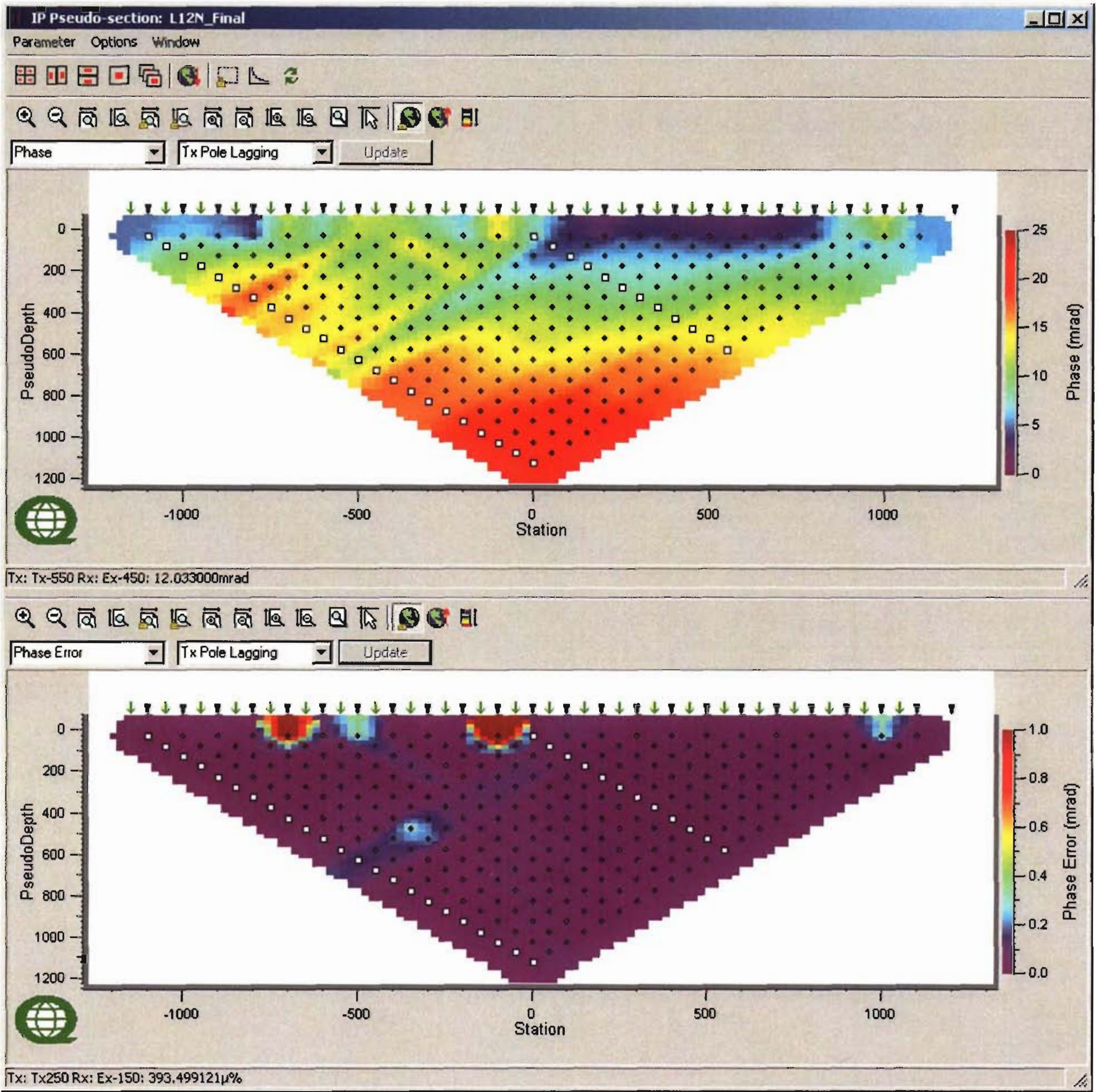
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

Line 12N

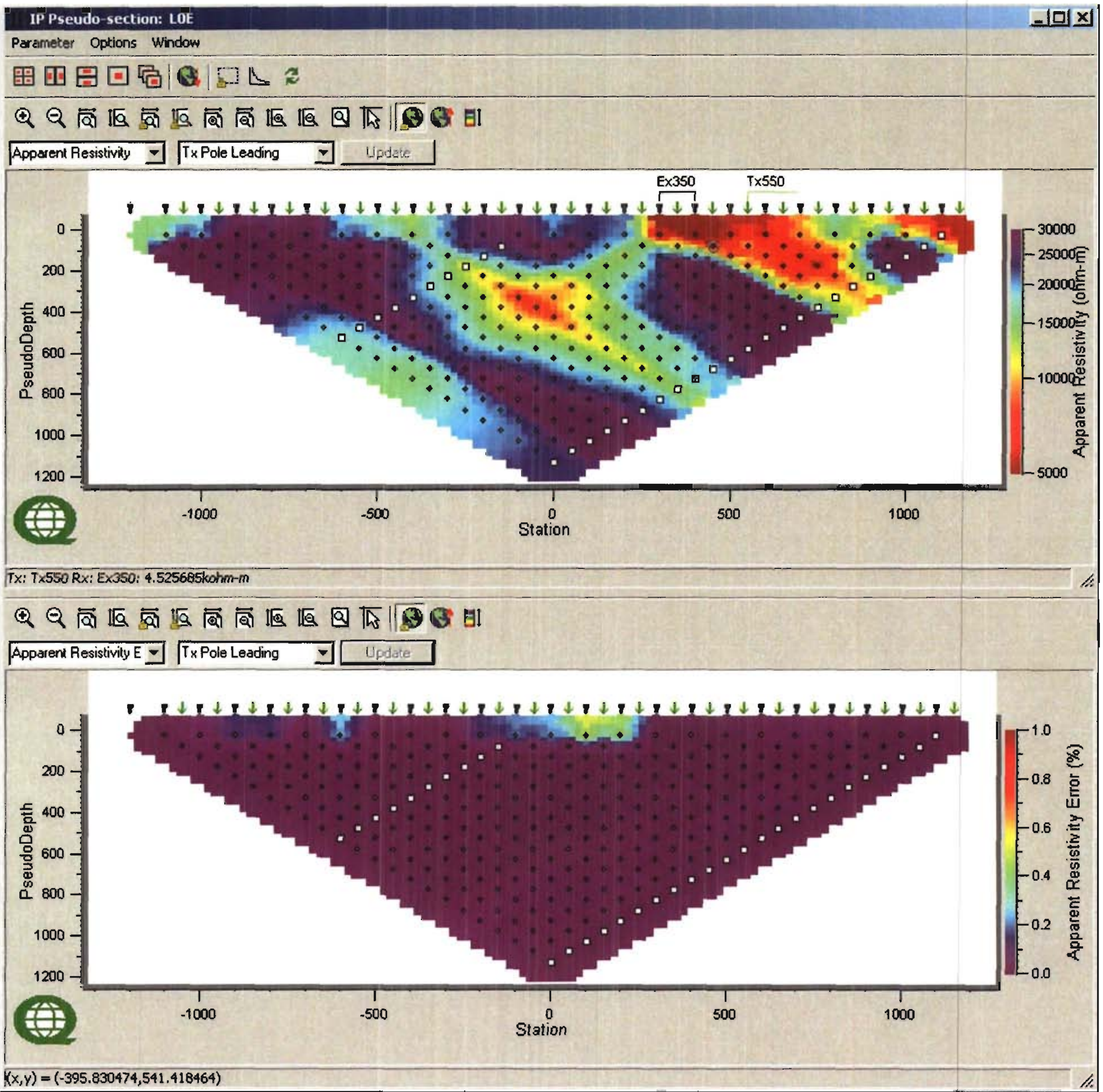
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E – ZIT GRID

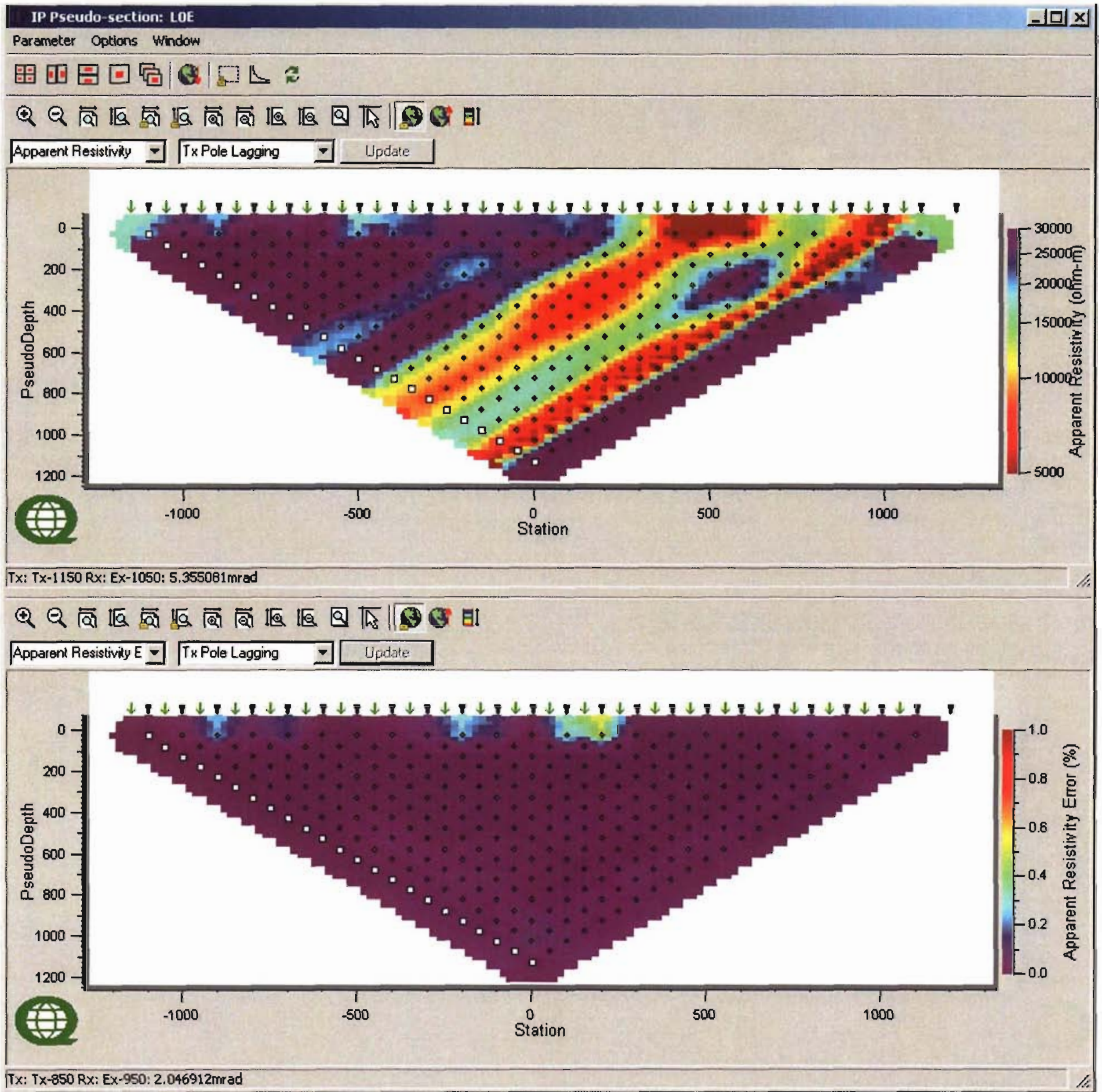
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

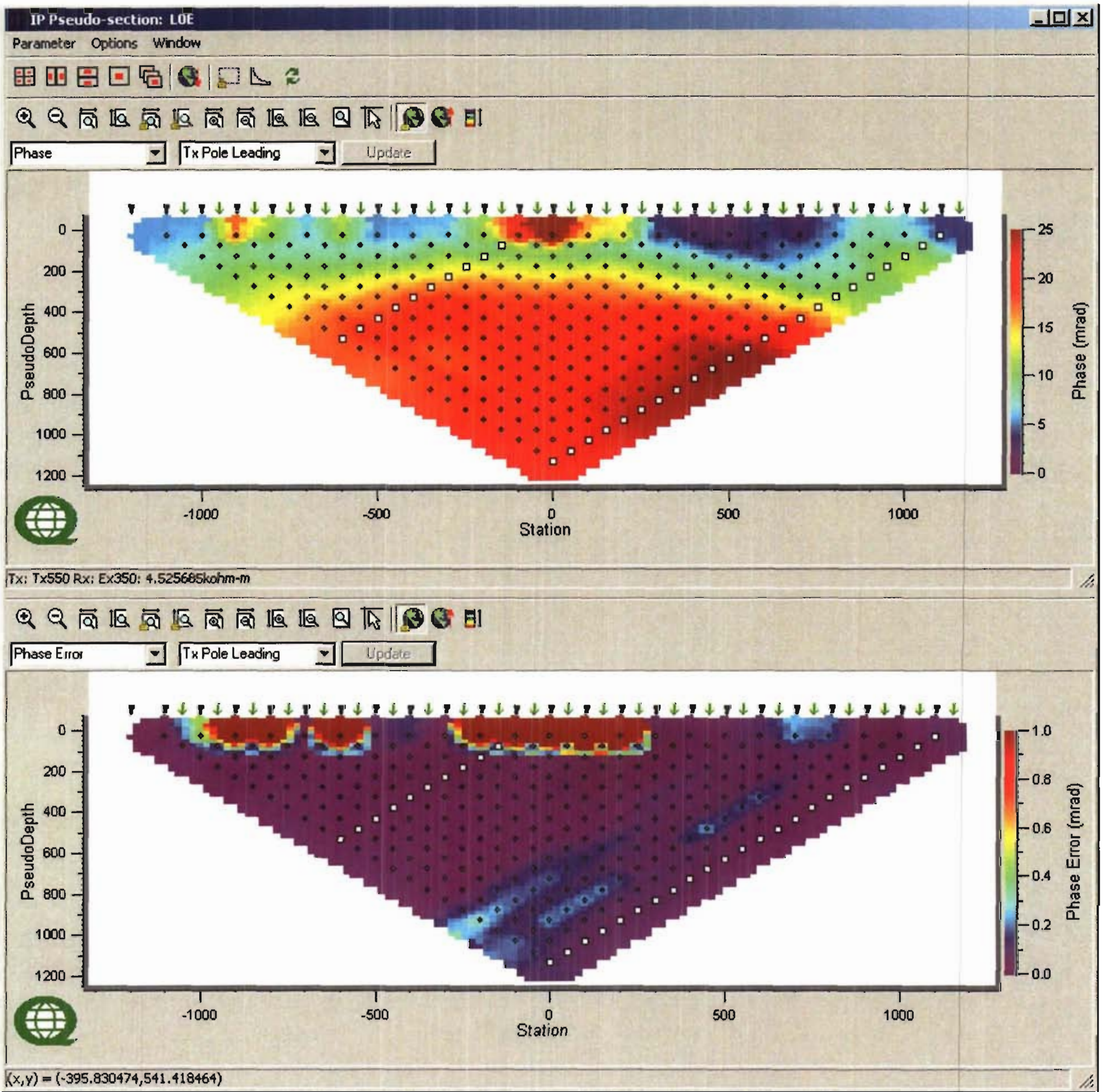
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 0E

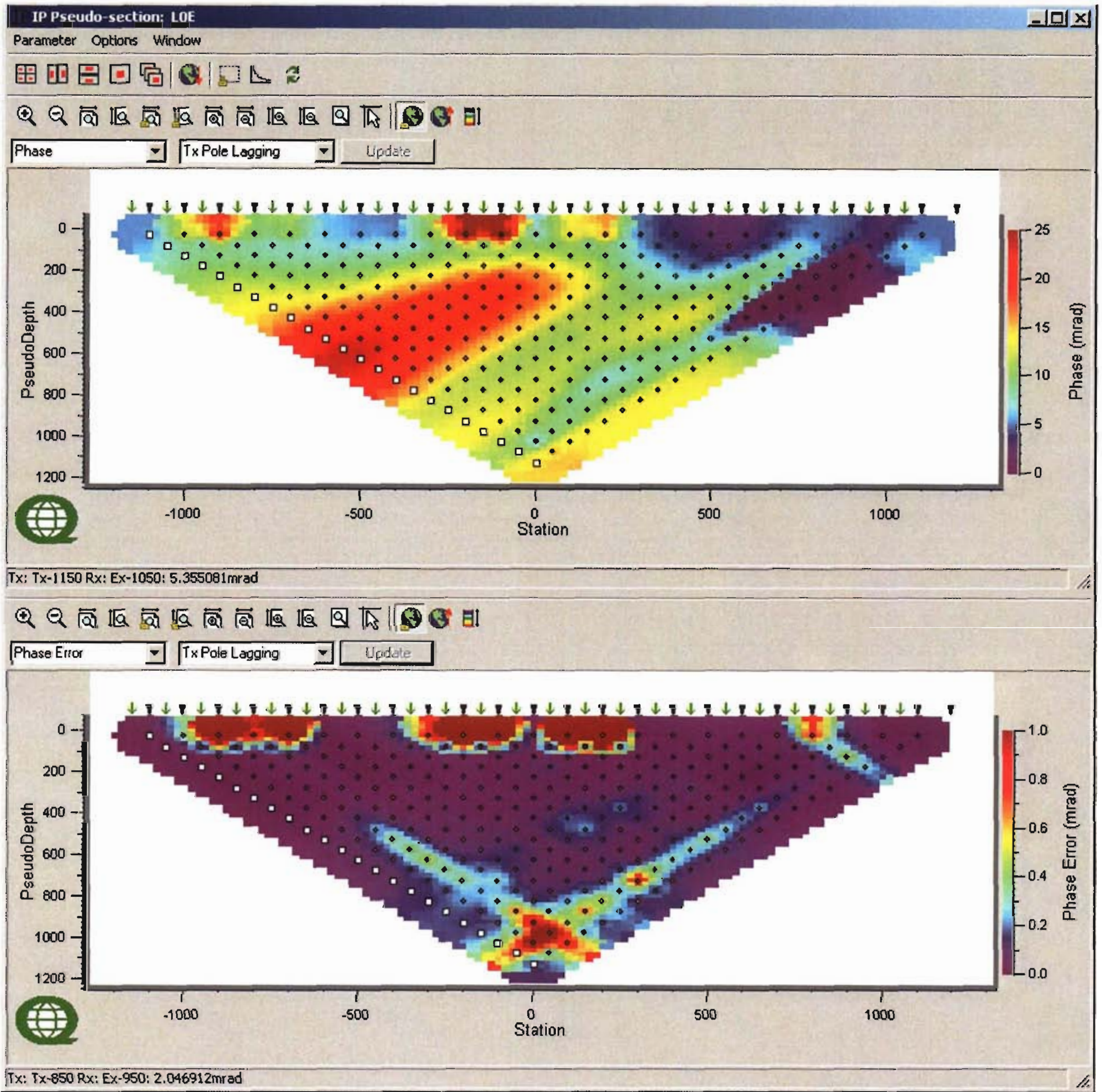
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 0E

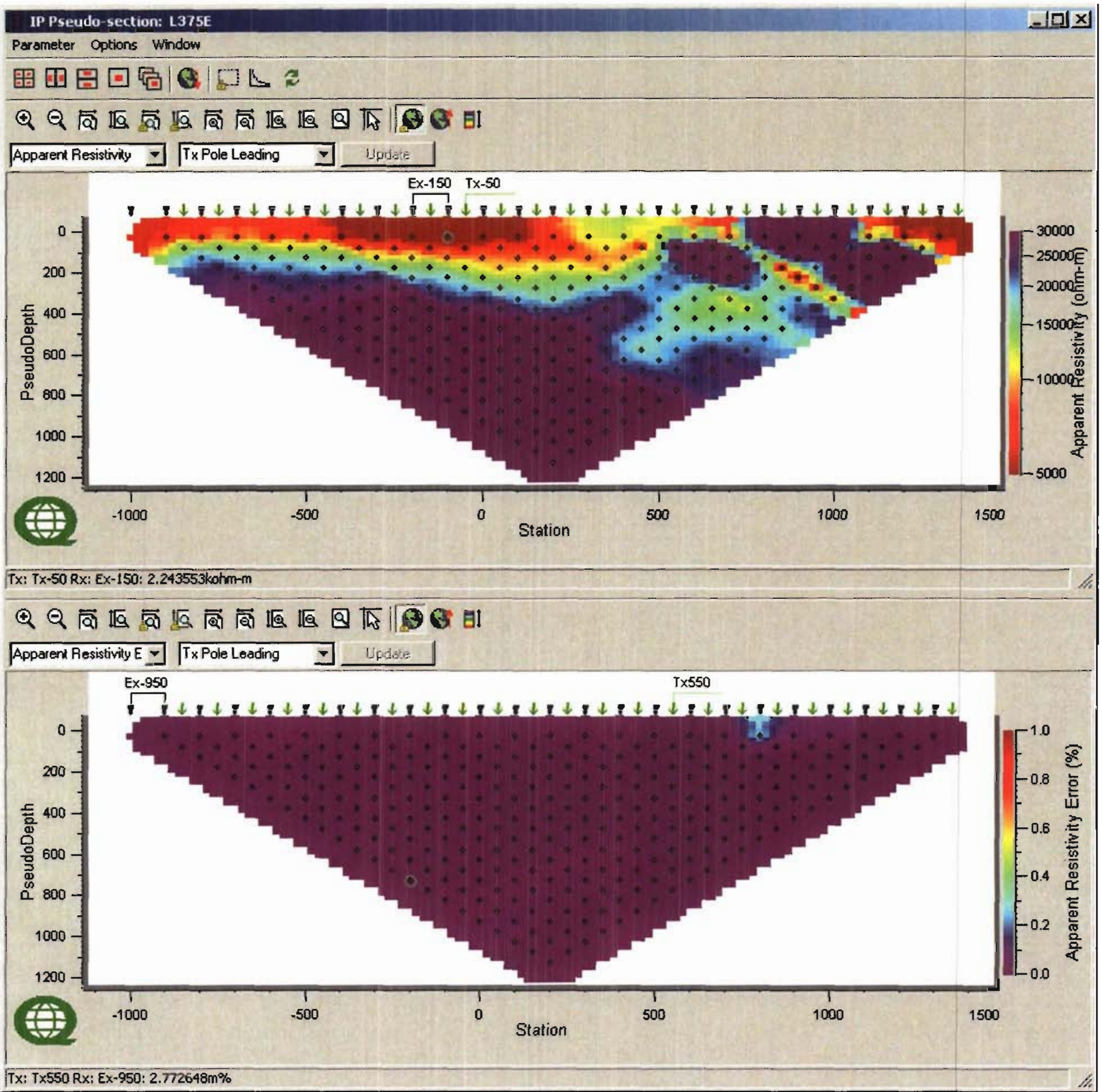
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 375E – ZIT GRID

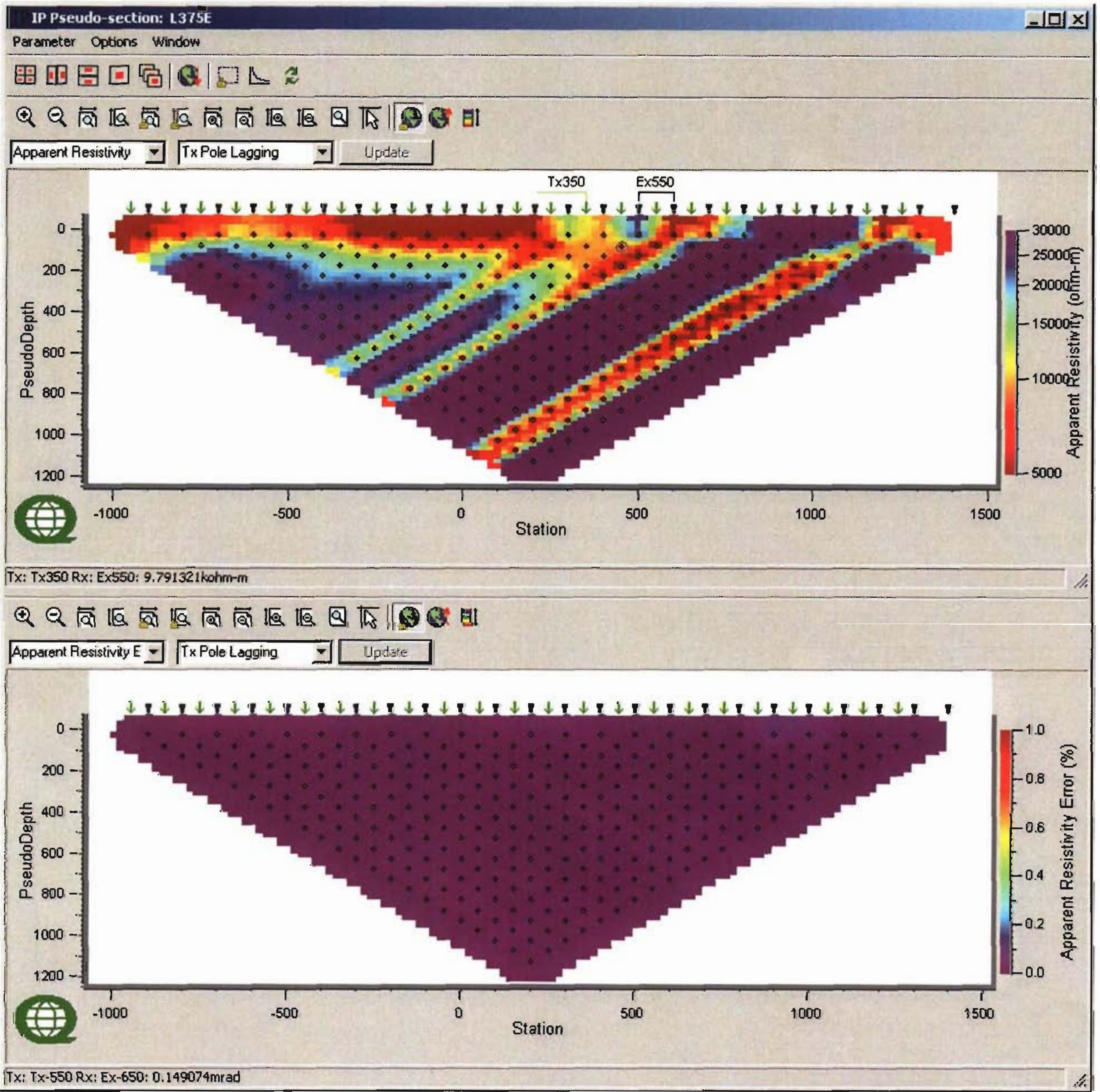
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 375E

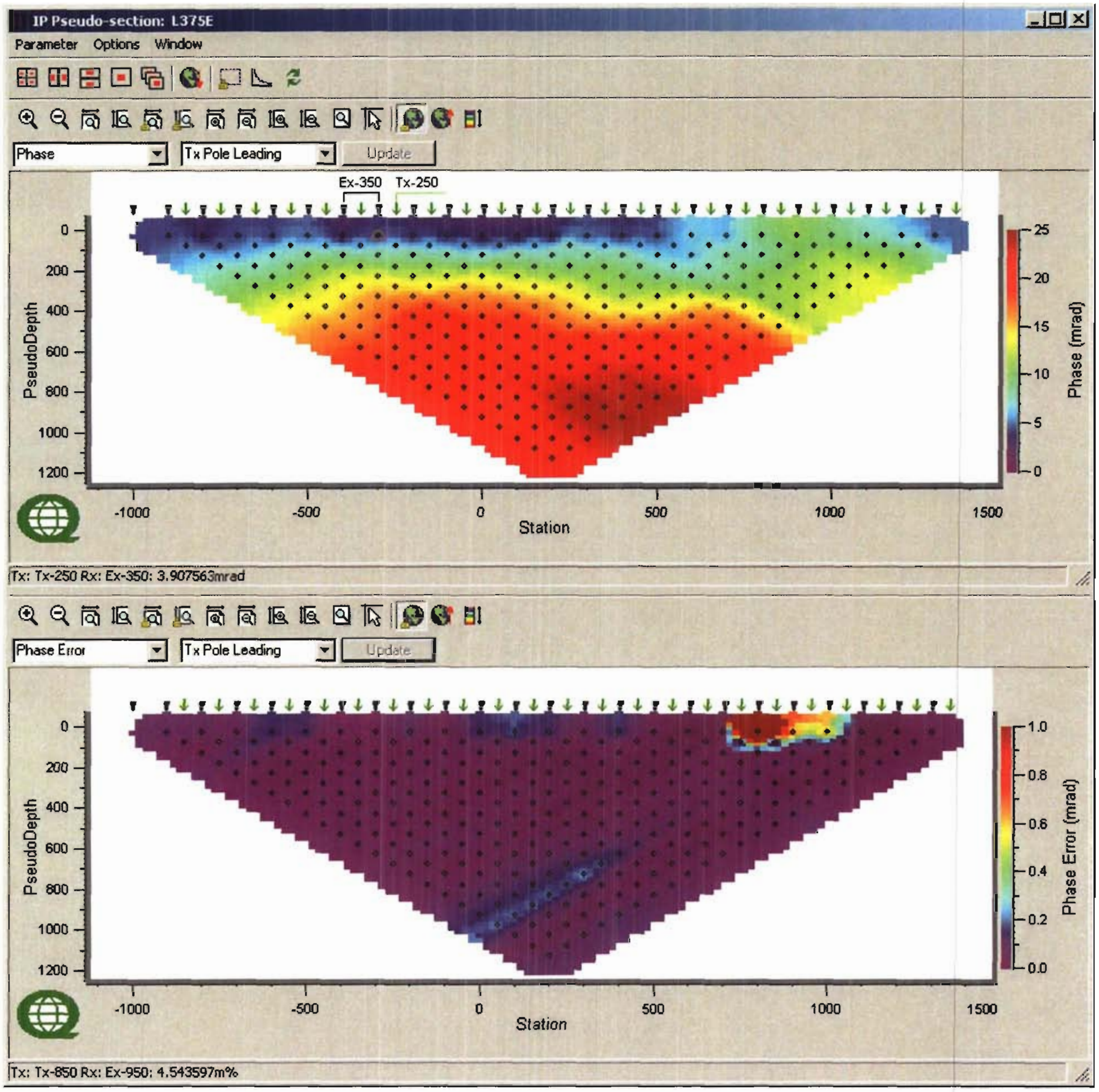
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 375E

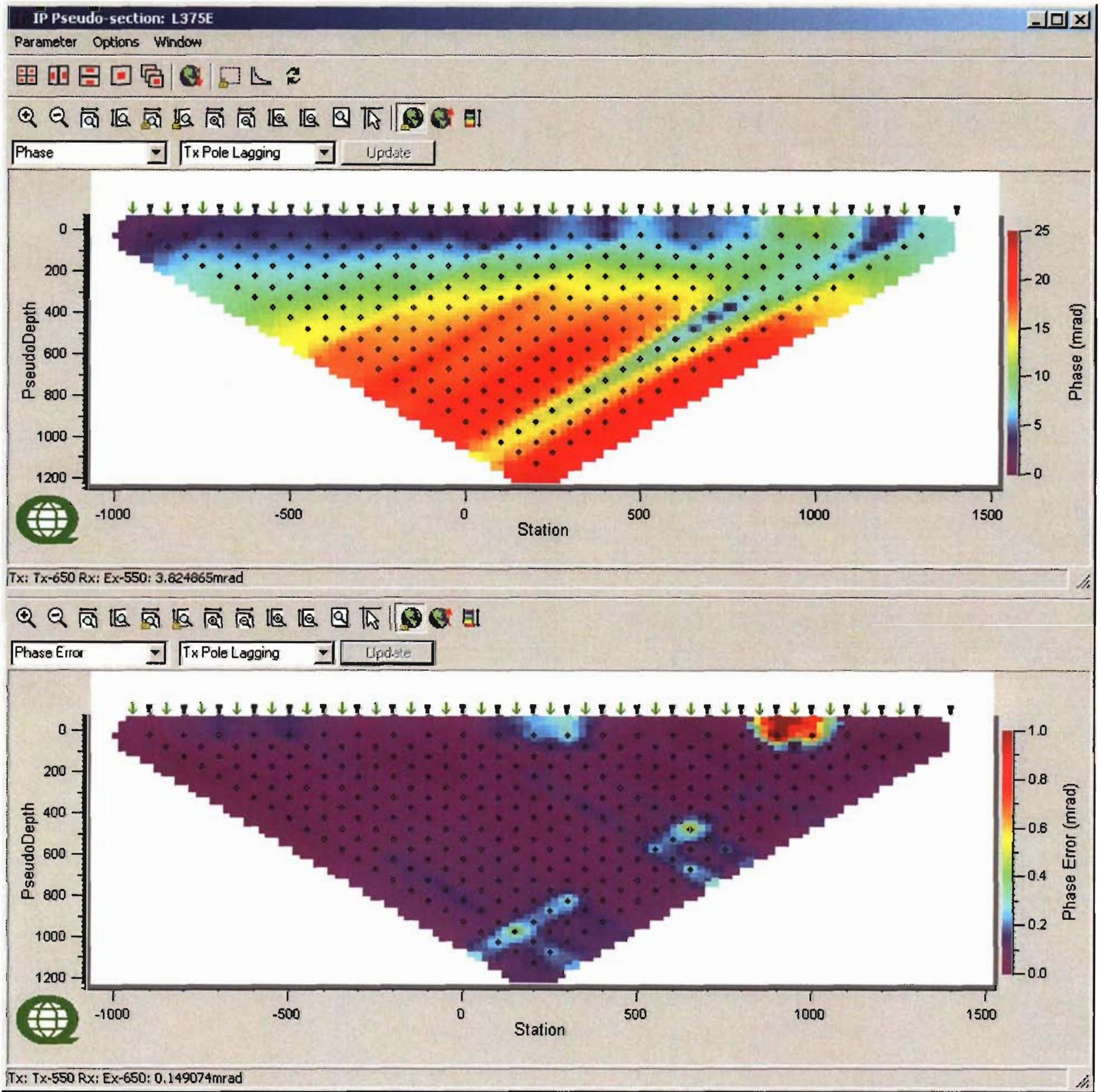
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 375E

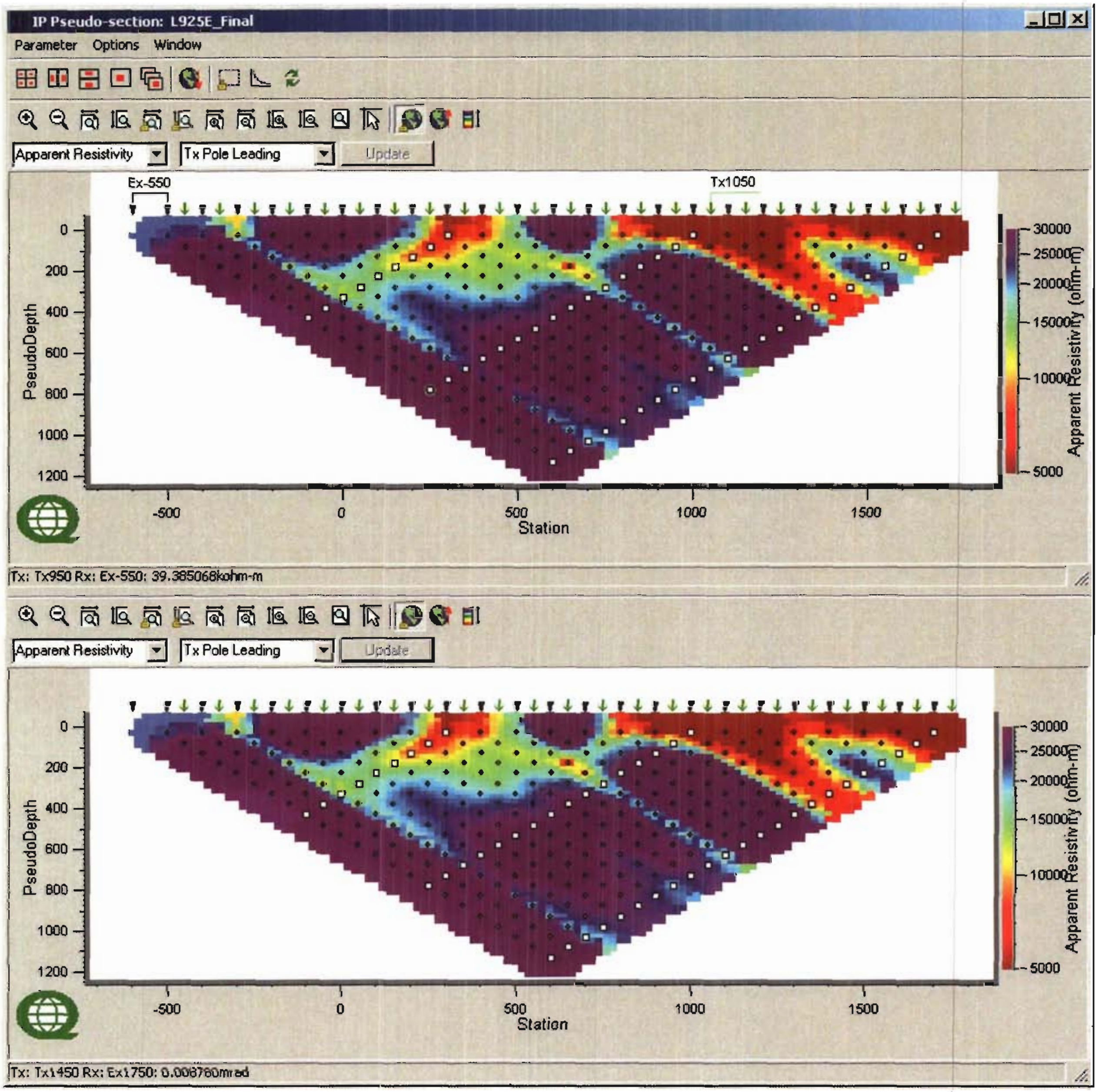
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event

LINE 925E – ZIT GRID

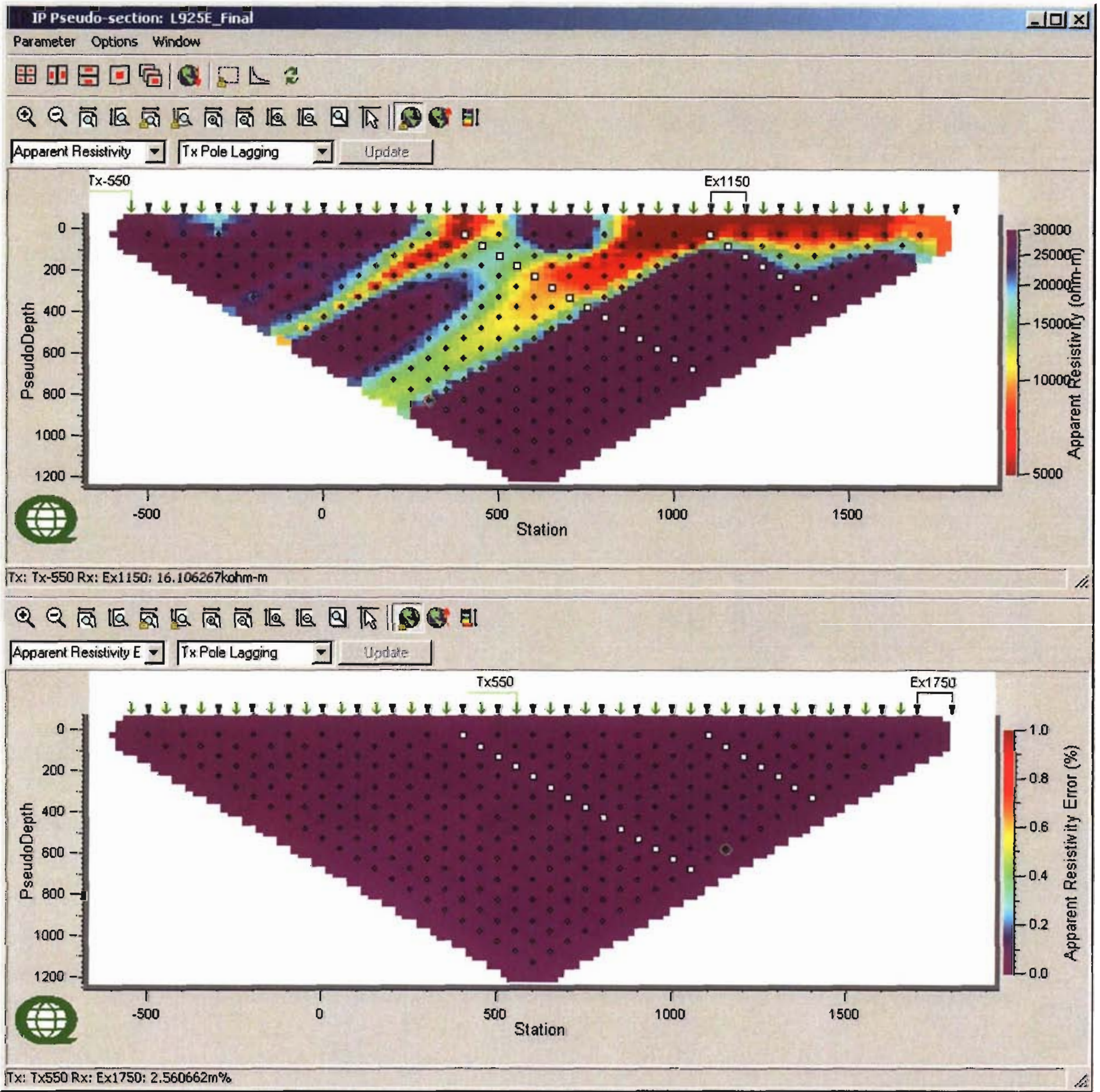
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Leading



□ Tx with more than one event

LINE 925E

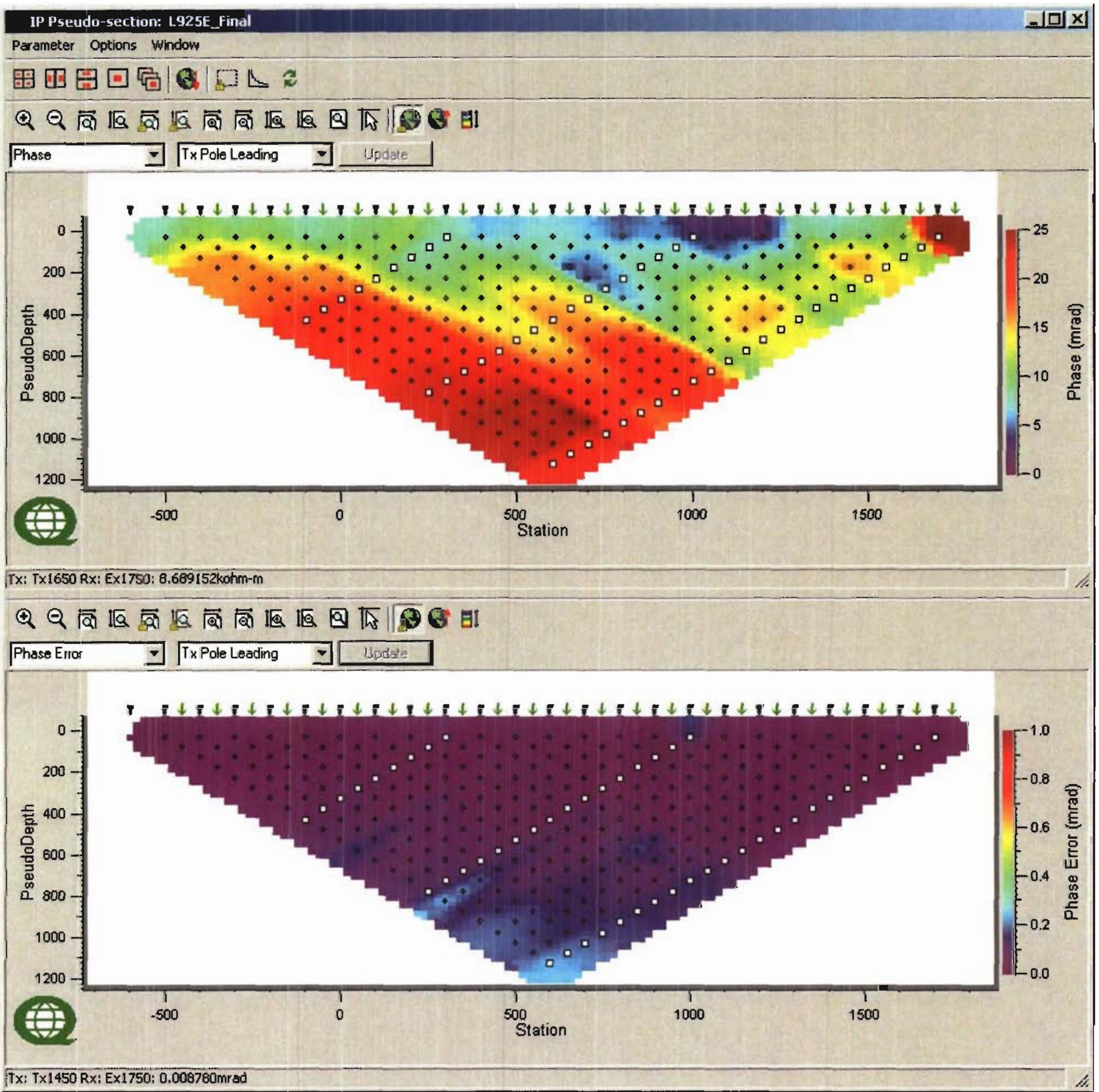
Observed Apparent Resistivity Raw Data (Ohm.m) & Voltage Errors (%)-Tx Pole Lagging



□ Tx with more than one event

LINE 925E

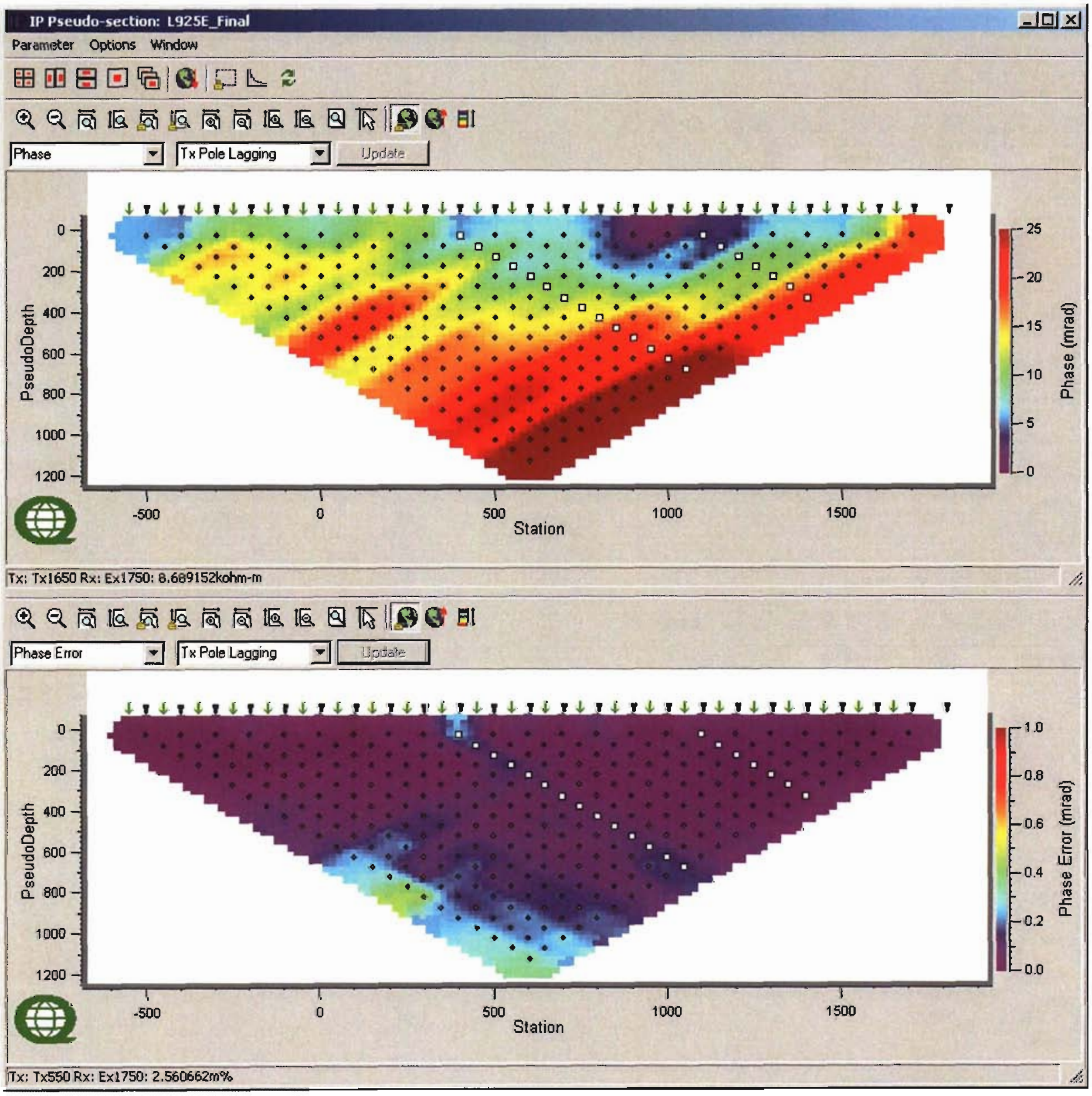
Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Leading



□ Tx with more than one event

LINE 925E

Observed IP Raw Data (mrad) & IP Errors (mrads)-Tx Pole Lagging



□ Tx with more than one event