

Appendix 3  
CSAMT Reports  
Flagstaff GeoConsultants

Report 0508/1  
Reinterpretation of CSAMT data – Mt Jukes Area, W Tasmania

Report 0601/1  
Reinterpretation of CSAMT data – Line 41, Garfield Area, W Tasmania

(See Digital File EL20\_2005\_200605\_06\_Appendix4.pdf)

<b>Hugh Rutter</b>	Geophysicist
<b>Geof Fethers</b>	Geologist
<b>Paul Hamlyn</b>	Geologist
<b>Michael Asten</b>	Geophysicist
<b>Ross Caughey</b>	Geologist
<b>Jovan Silic</b>	Geophysicist
<b>Gary Hooper</b>	Project Manager

## Report 0508/1 for Newcrest Mining Ltd

### Reinterpretation of CSAMT data Mt Jukes area, W. Tas.

Michael W. Asten  
Flagstaff GeoConsultants Pty Ltd  
21-Aug-2005  
Revised 18-Oct-2005

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## DATA SUPPLIED

At request of Mr Campbell Mackey, CSAMT data for the Mt Jukes-Mt Darwin area was supplied to Flagstaff Geoconsultants Pty Ltd by the contractor Zonge Engineering and Research Organisation (Australia). The CSAMT data includes 1D smooth-model inversions of the CSAMT data. In addition, surface geological data and borehole plots for holes NC1, NC2 and NC4 was supplied by Mr Ian Tedder.

The data consists of 16 lines (Line 1 to 16) in the Jukes-Darwin area (Job 602-Nov03), plus 7 lines (lines 20 to 27) to the north, in the Huxley (Whipspur) area (Job 661-Apr05). This report considers lines 1 to 16 of the Jukes Darwin area only.

Appendix A contains the discussion and quote for this initial review.

## TARGET CHARACTERISTICS

The Mr Read volcanics in the area of interest are highly resistive. Inspection of 1D smooth-model inversions supplied by the Contractor shows resistivities of order 4000 ohm.m for large volumes of bedrock, while a thin (variable) surficial layer of order 1000 ohm.m can be identified. The set of 1D inversion images is included in this report as Appendix B (a powerpoint file). As a basic model environment I have used 25 m of 1000 ohm.m material over a 4000 ohm.m half space.

Resistivities of target zones (altered and mineralised Cambrian volcanics) is not known for this locality. Some guide may be obtained by performing rock property measurements on mineralised samples from surface prospects and diggings in the survey area. In the absence of quantitative information I have used a value of 500 ohm.m for altered volcanics; more conductive material is quite likely, but CSAMT responses are not expected to be greatly different for conductors in the range 50 to 500 ohm.m due to current-saturation phenomena controlled by the very resistive halfspace.

An alternative alteration model is included at the Client's request. This model considers the situation where an alteration zone to be highly siliceous and hence more resistive than unaltered rock. For his model I have kept the half-space resistivity unchanged at 4000 ohm.m and increased the resistivity of the altered zone to 8000 ohm.m.

Two alternative models for conductive alteration zones are shown at the start of Appendix C. The first is a thick vertical conductive zone of width 200 m, top at depth 100 m or 200 m, vertical extent 300 m. The second is a thin zone of width 50 m, depth to top 25 m, 50 m, or 100 m, and vertical extent 300 m.

Two models of similar geometry but containing resistive alteration zones are shown at the start of Appendix D. The first is a thick vertical conductive zone of width 200 m,

top at depth 100 m or 200 m, vertical extent 300 m. The second is a thin zone of width 50 m, depth to top 25 m or 50 m, and vertical extent 300 m.

The CSAMT response of these models was computed with program MARCO using methods outlined in the paper Asten et al (2005). The responses have been processed with the same sequence of all-frequency apparent resistivity calculation, static removal and transformation to Bostick resistivity-depth parasections as outlined in that paper, and as applied in this report to field data.

There are five useful presentations of CSAMT field data which are best discussed as applied to the model data.

- a) The Bostick resistivity-depth parasection is the nearest to a “2D section” although it must be emphasised that it is generated using 1D mathematics and approximations and contains artefacts which are not genuine representations of 2D geology.
- b) Posted Bostick resistivity solutions provide a good indication of which frequencies of CSAMT data are providing information at what depths. We see immediately from these plots that in this resistive environment the minimum depth of sensitivity at the highest frequency of 8192 Hz is of order 200 m. In other words, we cannot differentiate depth to top of any target to better than 200 m.
- c) The smoothed resistivity-frequency pseudosection is free of static effects and gives a useful depiction of lateral resolution, and of which frequencies are resolving upper and lower boundaries of conductors.
- d) The raw apparent resistivity-frequency pseudosection is useful for delineating near-surface resistivity variations (ie contacts between differing rock units. This representation will always contain strong static effects (showing as strong vertical striping) and **MUST NOT** be considered a representation of geology at depth, and **MUST NOT** be used to attempt to deduce geological dip or verticality. See the paper by Asten et al (2005) for further discussion of static effects.
- e) The CSAMT phase-frequency pseudosection (showing the phase difference between measured E and H fields) is a useful and sensitive indicator of existence of conductors, of lateral resolution, and of the onset of the CSAMT transition zone (in this case around 256 Hz). A particular advantage of the phase plots is that they are free of static effects. However a disadvantage is that they are highly sensitive to noise in field data and in consequence are often not as useful as we might wish.

## REVIEW OF FIELD DATA

The field data for these surveys is in a format I have not used previously, where the line coordinates are local rather than AMG. This has added complications to reprocessing; I have done the minimum in terms of software adjustments at this time

in order to concentrate on the content of the data rather than conversion of output into AMG coordinates.

All the field data shows a very strong low-resistivity “notch” around frequency 1024 Hz for lines 1-4, shifting to centre 512 Hz or 256 Hz for lines 5-16. I do not believe this effect is the classic “transition zone notch” characteristic of CSAMT data, since it is much more severe than theoretically possible for a relatively uniform earth as used here, and it occurs at a higher frequency than expected (should be order 256 Hz for lines 1-4, as seen in phase models). I surmise it may be electromagnetic noise effects in the field. High tension power lines in Western Tasmania are known to carry audio-frequency signals (especially 1000-1500 Hz range) and this may be a contributory factor (as it certainly is in CSAMT data acquired north of Queenstown), although I understand there are not power lines in the locality on these prospects.

Appendix C shows field data for Lines 1 to 9 (labelled in the plots as lines 100 to 900), reprocessed and plotted in the five formats as discussed for the model data above. The low-resistivity notch at around 1024 Hz is very strongly evident on all lines, and any attempt to interpret resistivities at depths below 400 m will be in error because of this apparent noise effect (source unknown).

## **DISCUSSION ON CONDUCTIVE TARGETS, LINES 1-9**

Plots of model and field data for these lines are included in Appendix C.

### **LINES 1 TO 3: TARGET A**

Hole NCT001 has previously been drilled at the western end of Line 2. The target for this hole may have been the apparent anomaly at a depth of 400 m shown on the smooth-model CSAMT inversion (Appendix B). The reprocessed data shows that this previous anomaly appears to be associated with the resistivity notch, probably associated with noise as discussed above. In addition, the thick conductor model discussed above (together with additional models not shown here) shows that such a conductor (i) will not be detectable by CSAMT at such depth, and (ii) even if at a shallower depth, the top cannot be resolved in the manner of the smooth model inversion output due to the limited frequency range of data used in this high resistivity environment.

An interesting anomaly can be identified on Line 2, local coordinate -550 to -450, labelled Target A. It is strongest on Line 2, but shows continuity both north and south to Lines 1 and 3. Comparing the parassections with the model of a near-surface thin conductor it appears that Target A is a thin conductor (width not larger than 50 m), and shallow (depth to top not more than 50 m). The raw resistivity parassections show strong static anomalies over this target, indicating a near-surface origin. Of particular interest is that this target shows distinct phase anomalies on lines 2 and 1 which compare with the thin conductor model.

**Target A: recommended drill zone Line 2, local coordinate -500, AMG coordinates 383300E, 5328206N. Target depth is 100 m. Dip of target not resolved.** Further modelling prior to drilling recommended, using any additional geological constraints available.

A similar anomaly on Line 2 exists further west at local coordinate -800, but the phase anomaly is weaker and line to line continuity is poorer (partly due to it being at the extreme western end of the lines).

## **LINES 4 TO 6: TARGET B**

An interesting anomaly can be identified on Line 5, local coordinate 100, labelled Target B. It is strongest on Line 5, but shows continuity north to Line 4 and possibly south to Lines 6. Comparing the parasections with the two models discussed above, this may be a thicker conductor than Target A, although probably not as wide as the 200 m width model. The raw resistivity parasections show strong static anomalies over this target, indicating a near-surface origin. Of particular interest is that this target shows distinct phase anomalies on Line 5 which has a character somewhere between the thin and thick conductor models.

**Target B: recommended drill zone Line 5, local coordinate 100, AMG coordinates 383316E, 5326495N. Target depth is 100 m. Dip of target not resolved.** Further modelling prior to drilling recommended, using any additional geological constraints available.

Two further anomalies exist on Line 600, at local coordinate 525 and 1125, but the conductor lacks depth extent on parasections, and lacks clear phase response, hence I do not propose these anomalies as targets at this time.

## **LINES 7 TO 9: ANOMALY C AND TARGET D**

Line 7 shows an anomaly at local coordinate 1650 which has depth extent in the parasection, and an associated phase anomaly (although east-shifted by about 100 m). Some continuity south to Line 8 and Line 9 is seen on the parasections but not on the phase pseudosections. There is significant missing data on Line 9 as seen on the raw resistivity and phase plots (missing data is assumed to be due to noise problems as assessed by the Contractor). This anomaly is also poorly defined due to it being at the extreme eastern edge of the profile, and hence I note this anomaly for further discussion, labelled as Anomaly C.

Line 7 also shows surficial anomalies at local coordinates 650 and 1250, but the lack of depth extent in the parasection and lack of clear phase anomalies downgrade these anomalies.

Line 9 shows an anomaly at local coordinate -700 which has width 400 m, significant depth extent, and some evidence of a phase anomaly. Its size in the parasection

representation is similar to the modelled thick conductor at 100 m depth so it may be due to a zone of alteration which is thick (eg 200 m width) and having significant depth extent. Continuity north to line 8 is apparent, although on Line 8 the characteristic may be more similar to that of a near-surface conductive feature. As with Anomaly C, we see significant data loss on the Line 9 raw resistivity and phase plots which makes for some uncertainty in any interpretation. With some reservations I pick this as Target D.

**Target D: recommended drill zone Line 9, local coordinate -700, AMG coordinates 384130E, 5324510N. Target depth 200 m. Dip of target not resolved.** Further modelling prior to drilling recommended, using any additional geological constraints available. In particular the comparative phase responses of near-surface and deep thick conductors should be modelled.

## **DISCUSSION ON CONDUCTIVE AND RESISTIVE TARGETS, LINES 10-16**

Plots of model and field data for these lines are included in Appendix D. Note that these lines are shifted east relative to lines 1-9. (Tick marks for AMG Easting coordinates shown on the plots are shifted 1000 m east compared with tick marks on plots for lines 1-9).

Plots for these lines also use a shifted colour scale. Due to the presence of an apparent conductive zone in the east of the plots, the colour bar commences at 500 ohm.m rather than 1000 ohm.m.

The lines 10-16 show an apparent conductive zone in the east, on the topographic slope and valley east of Mt Darwin. However the conductive zone is poorly defined by the CSAMT data, with many data points missing, presumably deleted due to noise (see especially the raw resistivity-frequency and phase frequency pseudosections for lines 14-16).

The resistive-zone models in Appendix D show that a zone 200 m wide with depth to top 100 m is near the limit of detection; CSAMT in this configuration is unlikely to reveal such a resistive zone at deeper depths.

Similarly, a resistive zone of width 50 m is close to the limit of detection when the depth to top exceeds 50 m.

## **LINES 12 TO 15: CONDUCTIVE ANOMALY E**

Despite the noise problem, one conductive target in the eastern area can be identified. It is clearest on line 13 and is designated anomaly E. By analogy with conductive alteration models previously discussed (Appendix C), the signature of a thin conductive zone of order 50 m wide, with top at or within 25 m of surface is

identifiable. This zone may be indicative of a fault zone or contact separating the valley from Mt Darwin.

**Target E: recommended drill zone Line 13, local coordinate -225, AMG coordinates 385150E, 5323010N. Target depth 100 m. Dip of target not resolved.** Further modelling prior to drilling recommended, using any additional geological constraints available.

## **LINES 11 TO 15: RESISTIVE ZONE F**

Lines 11 to 15 show a resistive zone of width up to 600 m, at the western end of the lines, on the slopes of Mt Darwin. Hole NCT002 was drilled near the western end of line 15, probably targetted at a resistive anomaly visible in the smooth 1D inversion of line 15 (Appendix B). Although the original target was accentuated by a static anomaly, it appears that the broad resistive zone outlined in parasections of the reprocessed data has been tested by hole NCT002.

The broad resistive zone has a width exceeding 600 m. By analogy with the models in Appendix D, this broad resistive zone as seen in parasections and pseudosections could be associated with a thick resistive zone with width order 200 m, at depth 100 m. Within this resistive zone it is possible to identify a smaller superimposed feature labelled as anomaly F, which may represent a thin resistive zone extending close to the surface. The shape and strike of the resistive zone designated anomaly F shows a consistent character from line 12 to 14, and drill testing on line 13 is recommended. From the static anomalies which reach the surface on lines 13 and 14, I deduce the target resistive zone is narrow, of order 50 m wide, and extends to or near the surface. The nature of this resistive target can be assessed by firstly reviewing surface geology (any evidence for silica alteration?) and secondly by drilling a relatively short hole of length 200 m.

**Target F: recommended drill zone Line 13, local coordinate -975, AMG coordinates 384450E, 5323010N. Target depth 100 m. Dip of target not resolved.** Further modelling prior to drilling recommended, using any additional geological constraints available.

## **REFERENCE**

- . Asten, M.W., Vicary, M., Rutter, H., and Cull, J.P., 2004, An all-frequency resistivity-depth and static-correction technique for CSAMT data, with applications to mineralised targets under glacial cover (Western Tasmania) and basalt cover (Victorian goldfields): *Exploration Geophysics* v.36, in press.

## APPENDIX A

### Initial discussion and quote

**Subject:**CSAMT review

**Date:**Fri, 24 Jun 2005 23:44:40 +1000

**From:**Michael Asten <michaelasten@flagstaff-geoconsultants.com.au>

**Organization:**Flagstaff GeoConsultants Pty Ltd

**To:**Campbell Mackey <mackeyc@newcrest.com.au>

**CC:**John Holliday <hollidayj@newcrest.com.au>

Campbell,

Thank you for your inquiry re review of CSAMT data in Tasmania. Attached is a paper on the subject which will appear in the September issue of Exploration Geophysics; this paper summarises some methods I have found to be useful in this environment.

One processing item I have found to be critical is correct use of a data-adaptive static removal filter. The filter used by Zonge in routine processing is not of this type and a common feature of pseudosections and 1D inversions is "vertical striping" which can be highly misleading; there are plenty of cases in Australia where "vertical" CSAMT structures have been drilled in vain. The paper gives examples on this point.

The approximate 1D modified Bostick transform (when applied after static correction) is useful for giving a parasection (or CDI) in quick time. This allows interactive removal of suspect data points which may lead to cleaner parasections. The ability to perform 3D computer modelling and display field data and model data in the same parasection form allows model and hypothesis testing on the data. With noisy data the Bostick transform may perform poorly relative to Zonge's smooth model inversions, but on good data it has the advantage of interactivity, and seems superior in resolving dipping structures where the smooth model approach may blur the edges of interest. As with any suite of processing methods, no one technique is the magic bullet, and combination of multiple tools may resolve targets where one tool only fails to give a conclusive result.

I have not sighted the two surveys you have in Tasmania, and hence the data quality, the likelihood of finding targets, and the need for 3D modelling is unknown. I recommend allowing a week to work on the data (including geological sections and existing drill hole data which you

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may have) and review with you. Serious modelling is likely to require further time, but this can be a matter for in-progress discussion.

The initial week will cost \$5000 plus GST, plus costs and time if I need to travel to meet you.

Regards,

Michael Asten

## APPENDIX B

### **1D Smooth model inversions of Lines 1-16 supplied by the Contractor**

See First Annual Report for EL20/2003 for the Period 27<sup>th</sup> June 2003 to 26 May 2004.

See Digital Files:

EL202003\_200405\_02\_Figures 3a-9b.pdf &

EL202003\_200405\_02\_Figures 10a-18b.pdf

## APPENDIX C

### Reprocessing and plotting of conductive-alteration model data, and of field data Lines 1-9

#### RELATIVE LOCAL COORDINATES AND AMG EASTINGS AND NORTHINGS FOR LINES 1-16

##### CSAMT Job 602 Jukes Darwin area

Line	Local Start Local End	Local coord corresponding to AMG E of 382900	AMG E	AMG N	Elev
line1	0		383817	5328505	710
line1	-1000	-1055	382955	5328500	845
line2	0		383757	5328190	663
line2	-950	-951	382901	5328213	826
line3	0		384057	5327840	592
line3	-800	-1211	383311	5327923	797
line4	0		382921	5326944	740
line4	600	36	383464	5326871	790
line5	0	-318	383218	5326481	680
line5	600		383769	5326452	620
line6	0	-175	383075	5325972	650
line6	1300		384309	5325940	485
line7	0	-188	383088	5325498	595
line7	1750		384732	5325456	390
line8	0	-497	383397	5324995	510
line8	1600		384910	5325035	310
line9	0		384812	5324477	320
line9	-1400	-1971	383471	5324541	465
line10	0		384908	5323990	285
line10	-950	-2080	384030	5324010	485
line11	0		385188	5323730	250
line11	-1300	-2400	384000	5323772	520
line12	0		385368	5323301	220
line12	-1250	-2535	384185	5323306	460
line13	0		385374	5323013	200
line13	-1200	-2544	384244	5322999	490
line14	0		385554	5322659	190
line14	-1200	-2745	384445	5322699	390
line15	0		385635	5322145	194
line15	-1450	-2805	384255	5322182	562
line16	0		385892	5321510	189
line16	-2050	-3150	384000	5321517	700

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Plots are included in digital file EL20\_2003\_200605\_Appendix3.pdf on the CD at the back of this report.

Note that plot labels 100N to 1600N correspond with CSAMT Line numbers 1 to 16.

# APPENDIX C

Report 0508/1 for  
**Newcrest Mining Ltd**

Reinterpretation of CSAMT data Mt Jukes area, W. Tas.  
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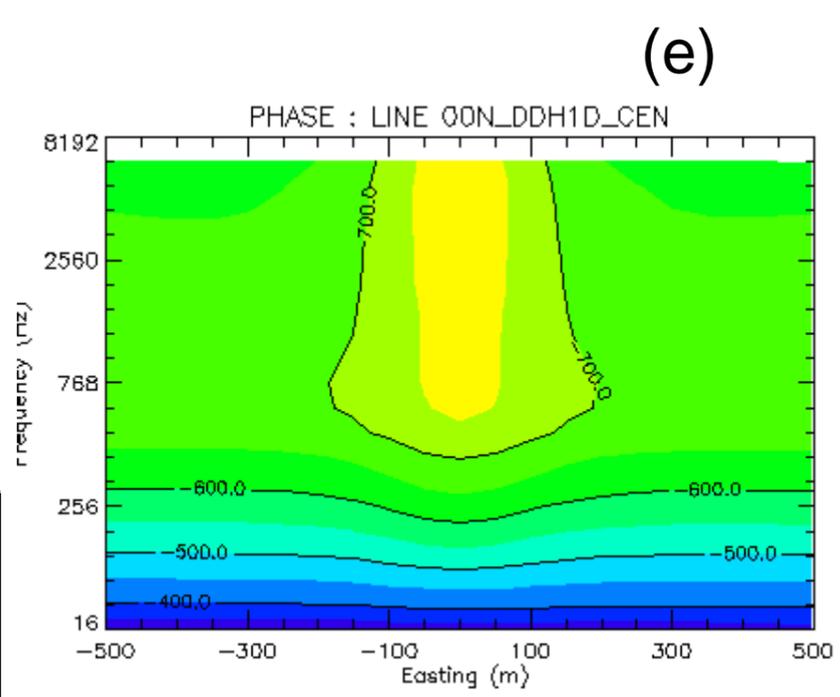
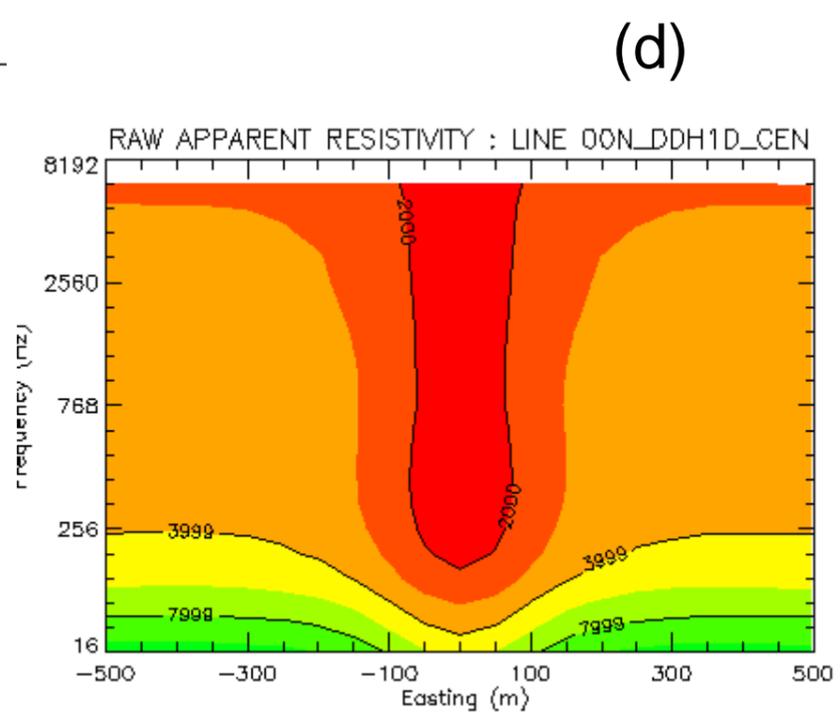
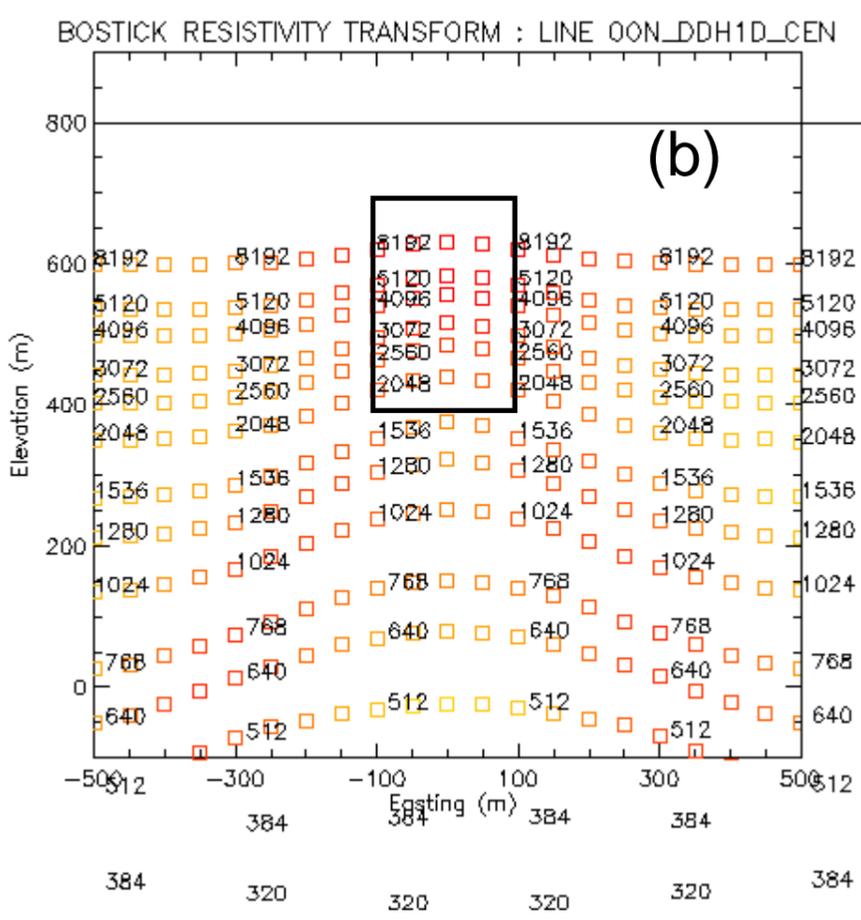
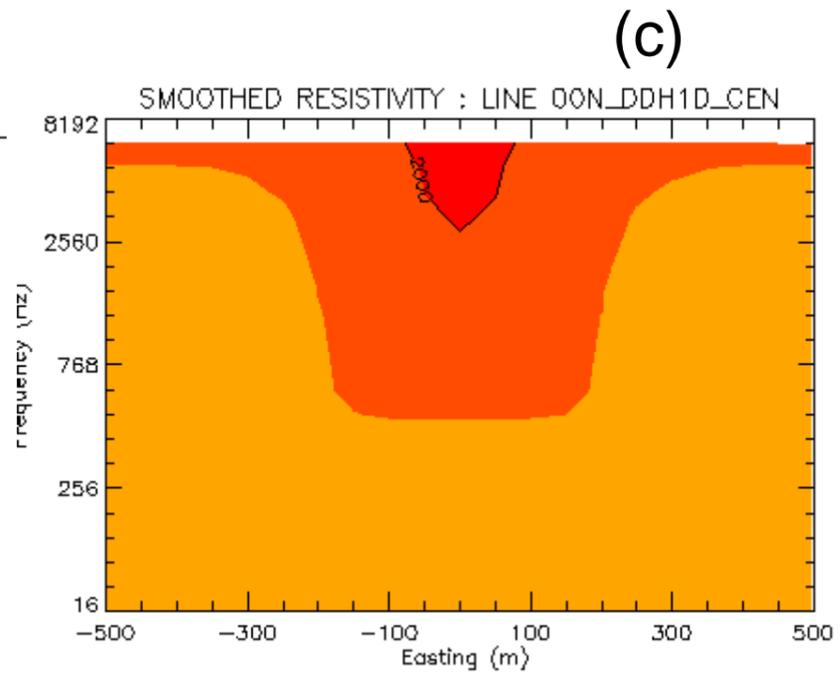
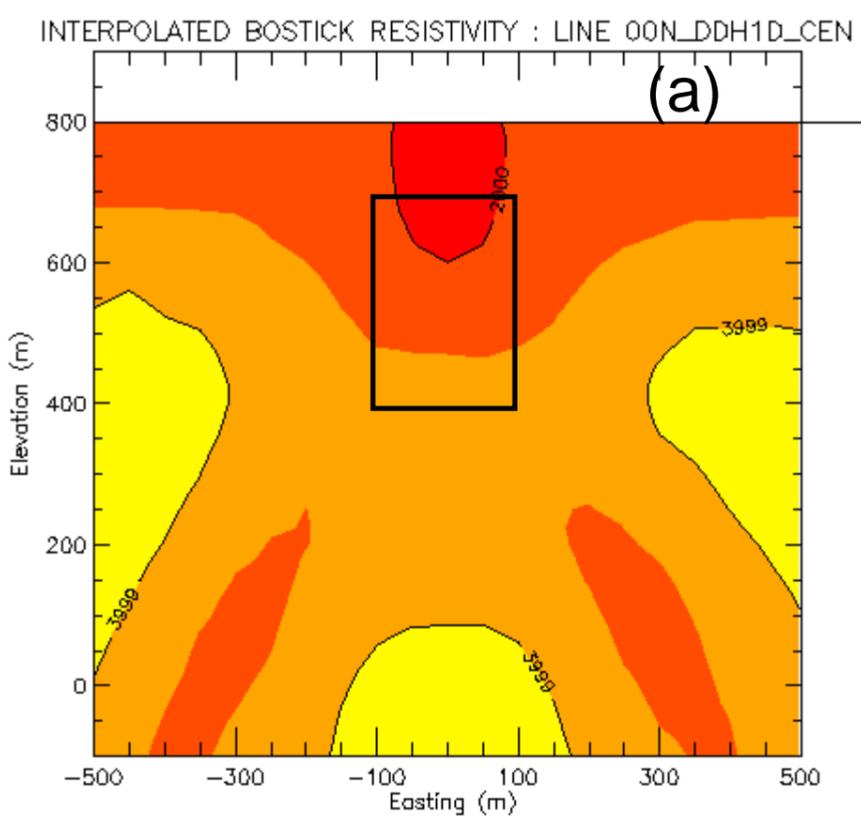
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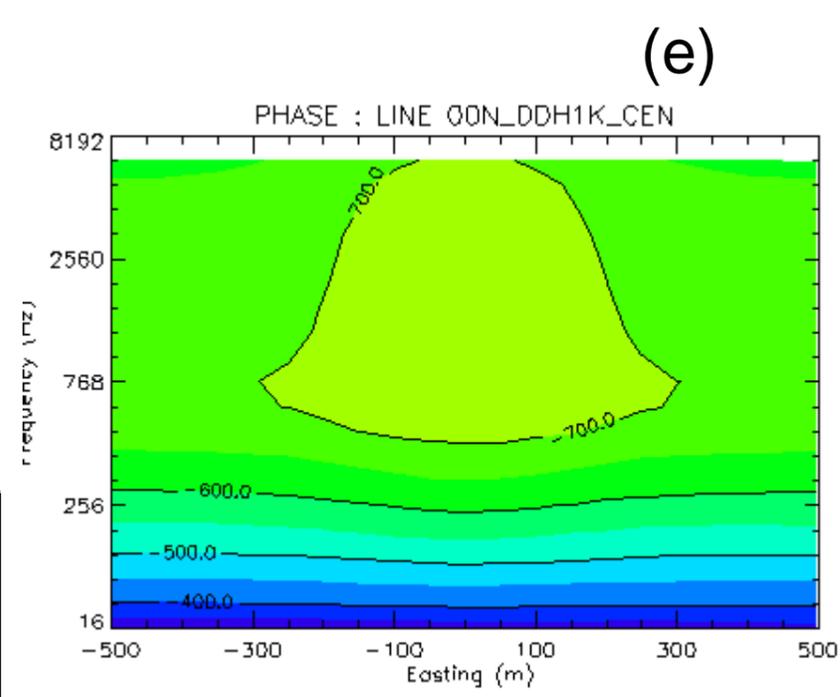
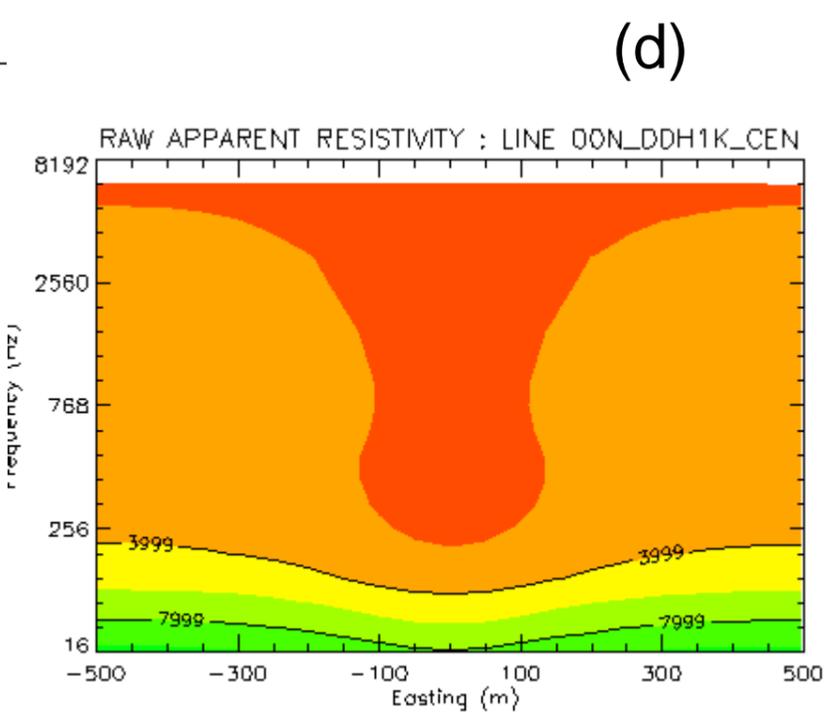
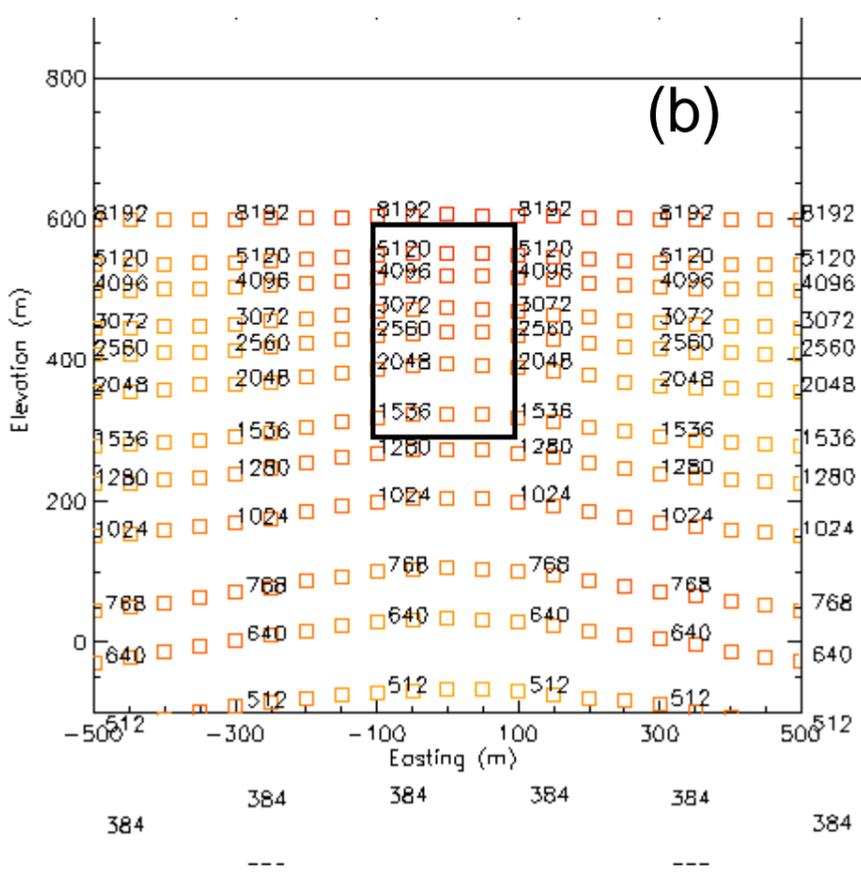
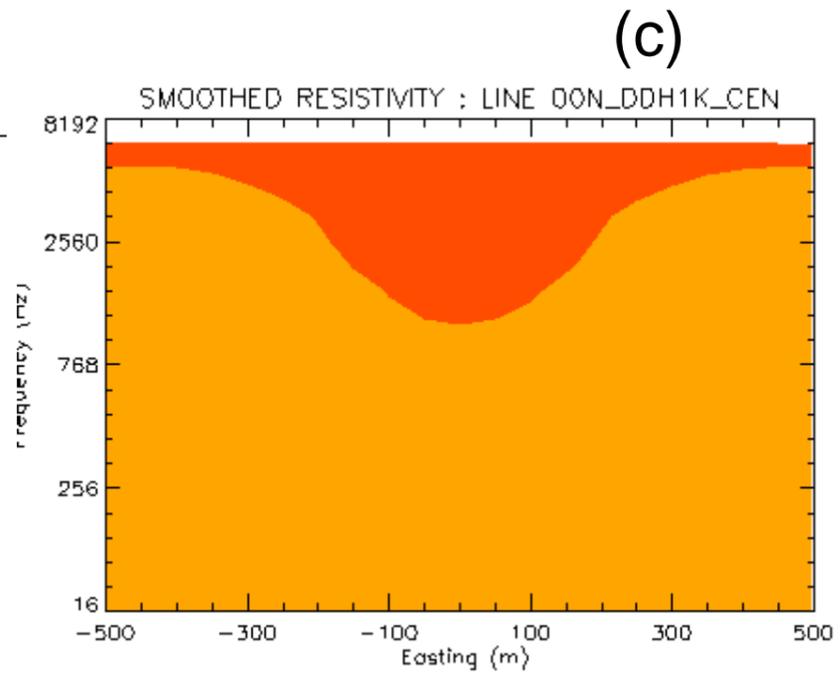
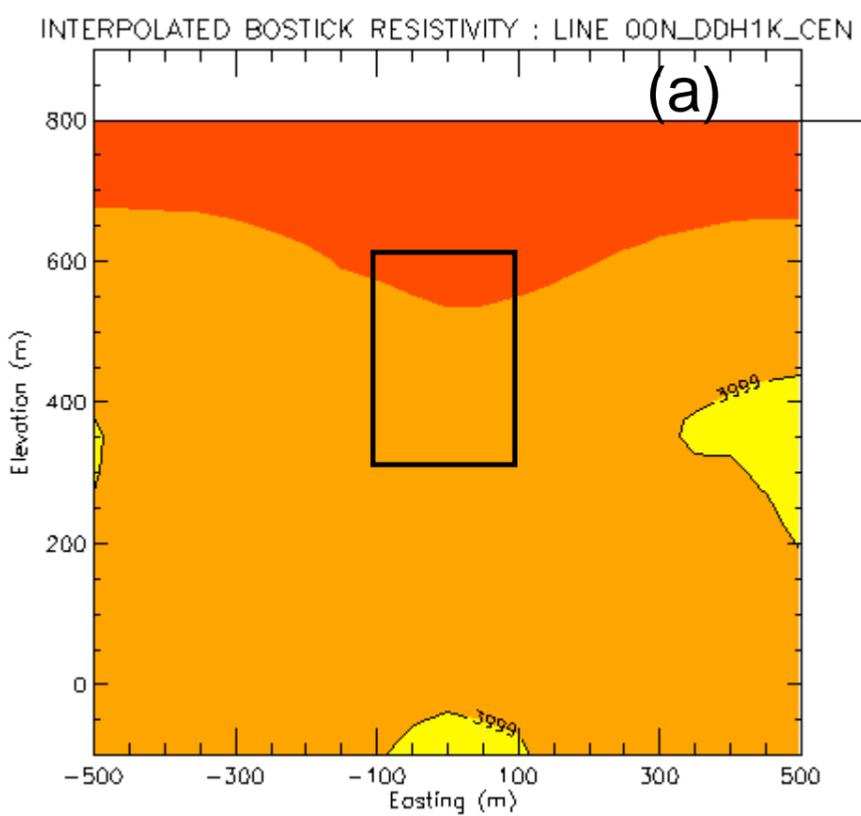
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CSAMT model for a wide (200m) zone of alteration with top at depth **100 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **conductive** alteration is 500 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
- (c) Smoothed frequency pseudosection
- (d) Unsmoothed pseudosection with static effects
- (e) Phase pseudosection

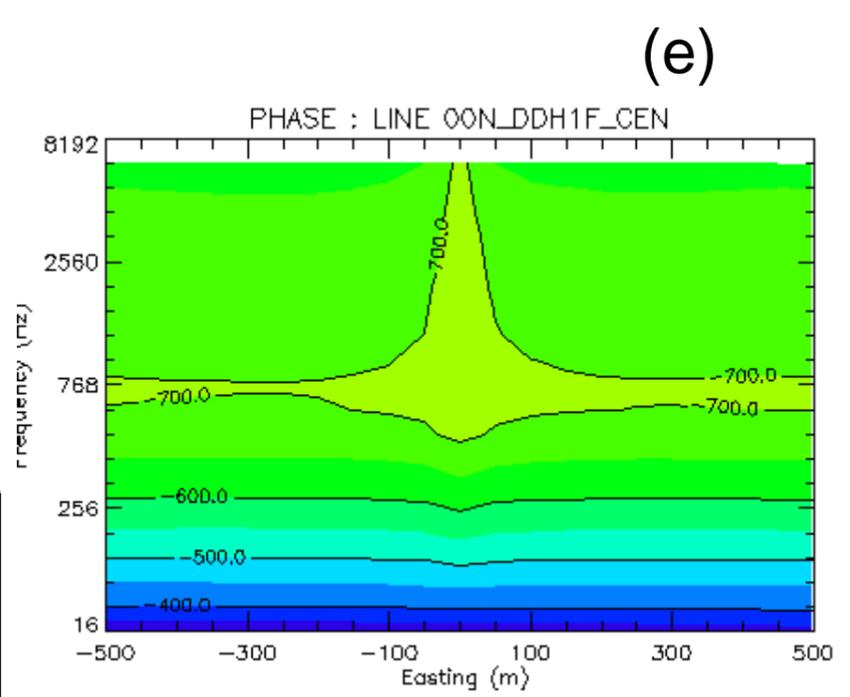
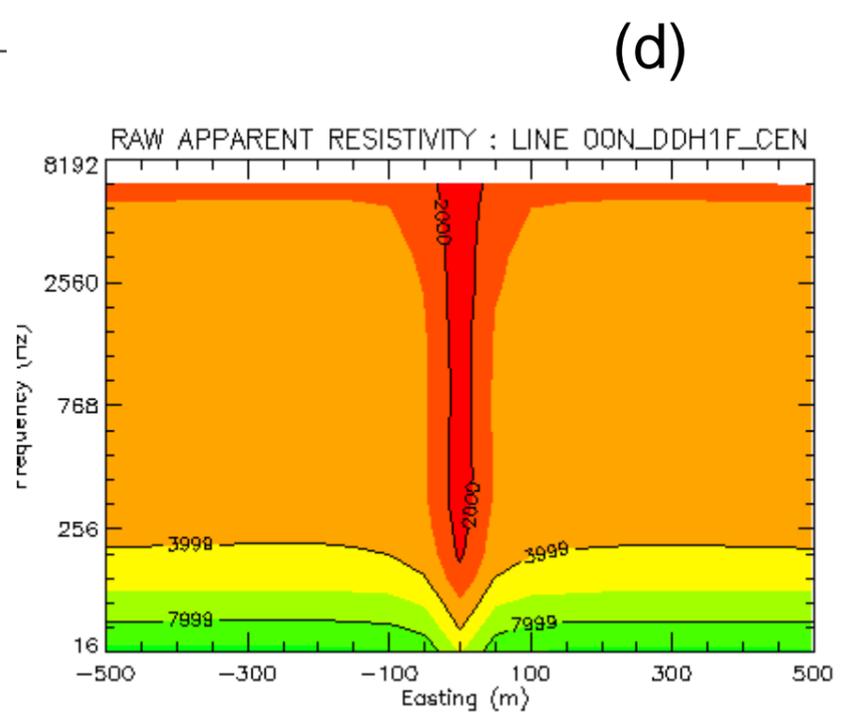
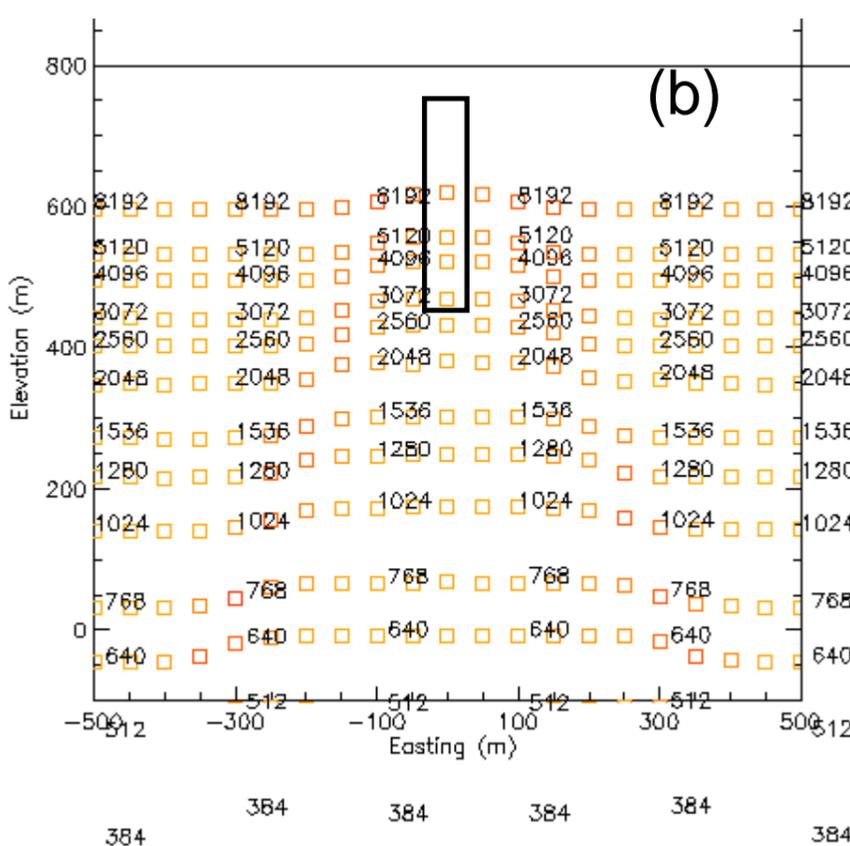
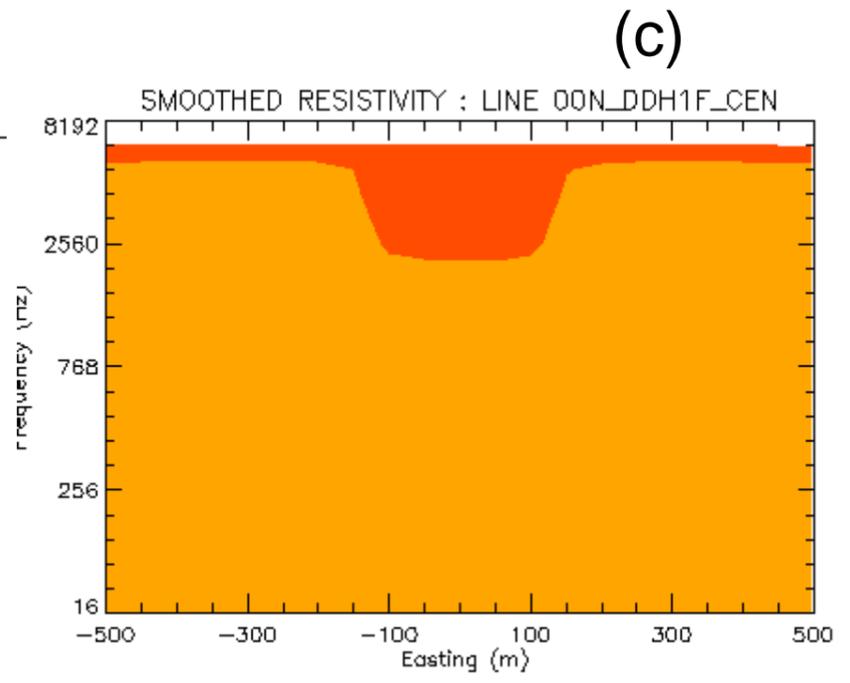
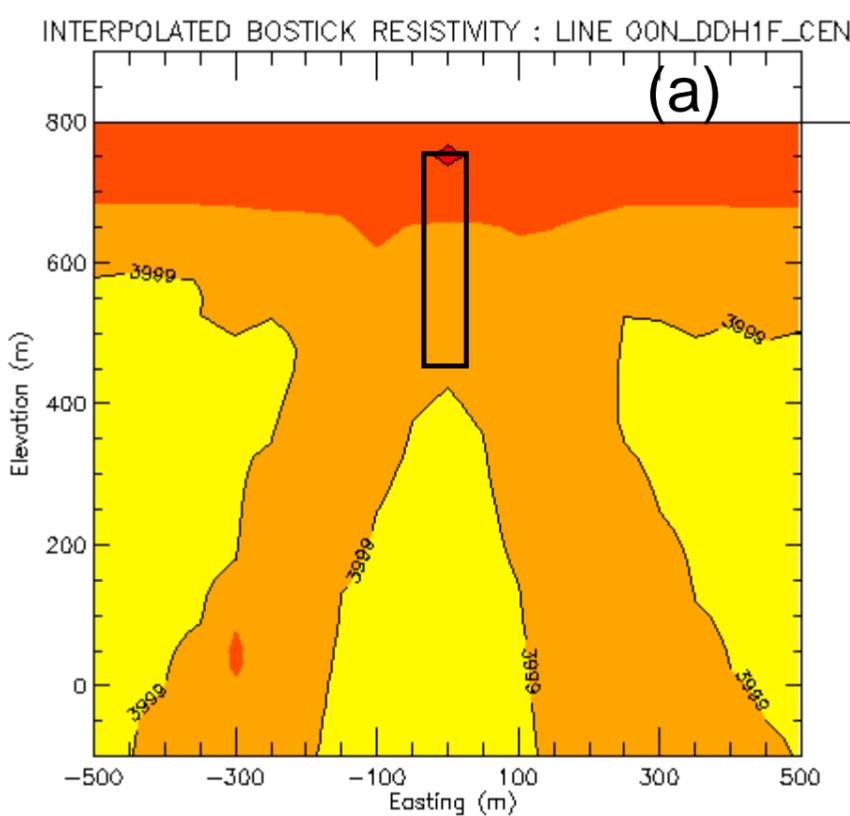
Client:	<b>Newcrest Mining Ltd</b>	
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten                      Aug-05	



CSAMT model for a wide (200m) zone of alteration with top at depth **200 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **conductive** alteration is 500 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
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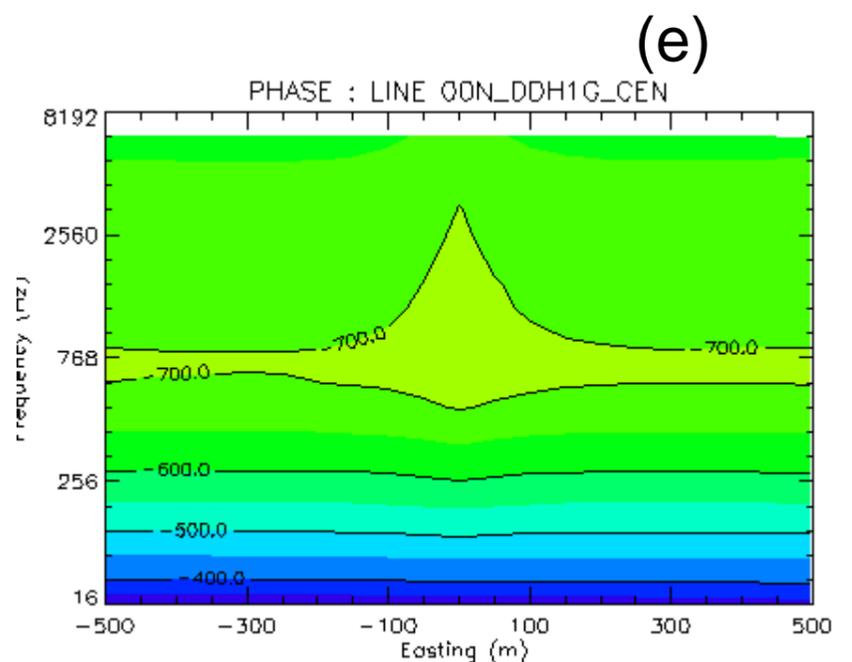
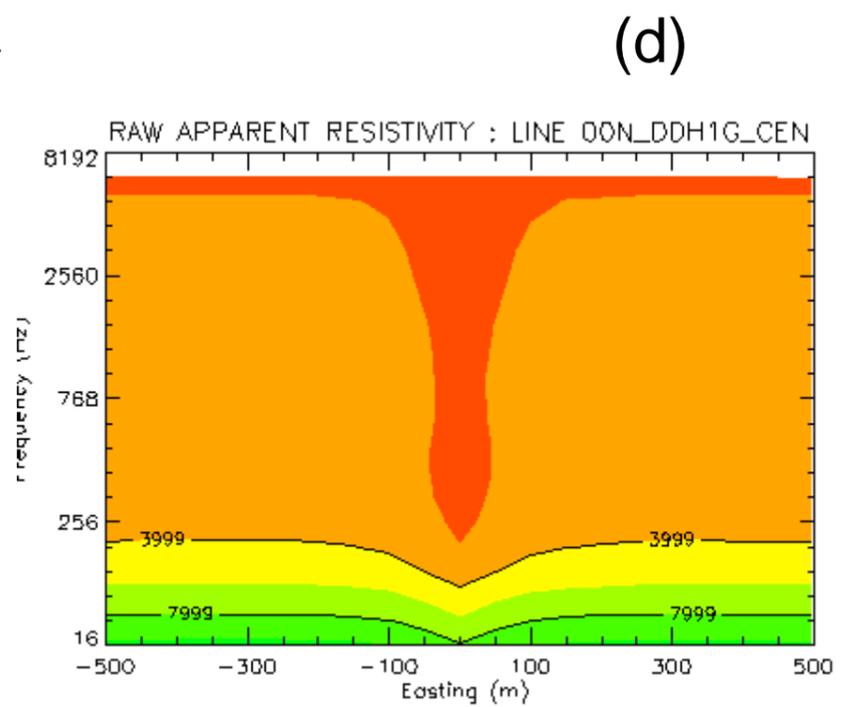
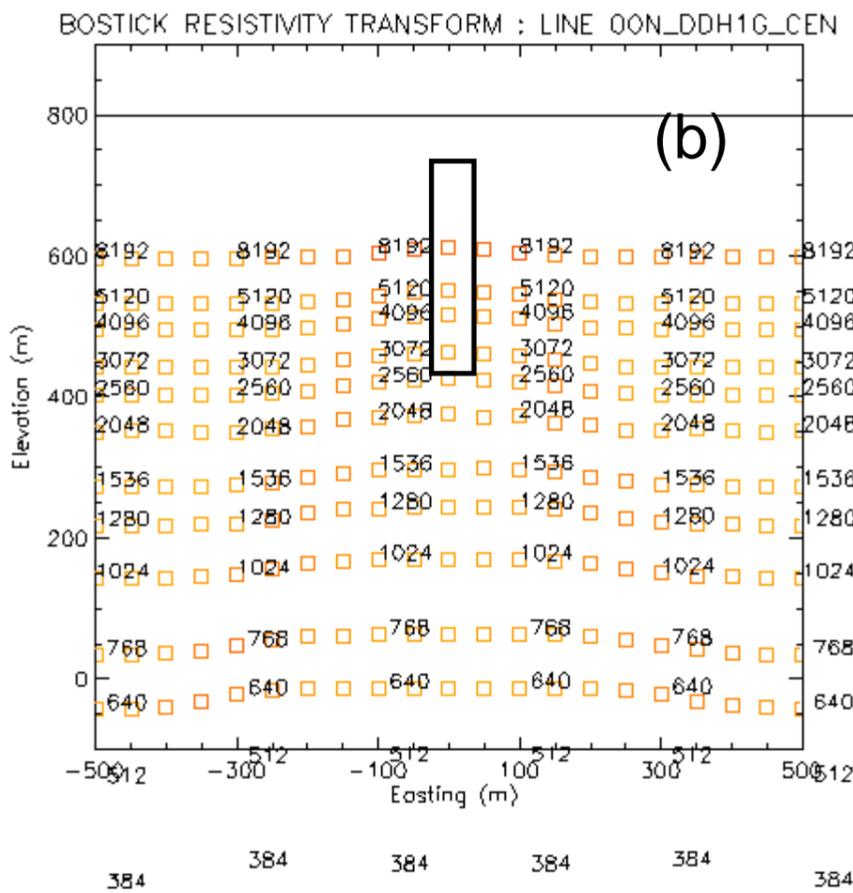
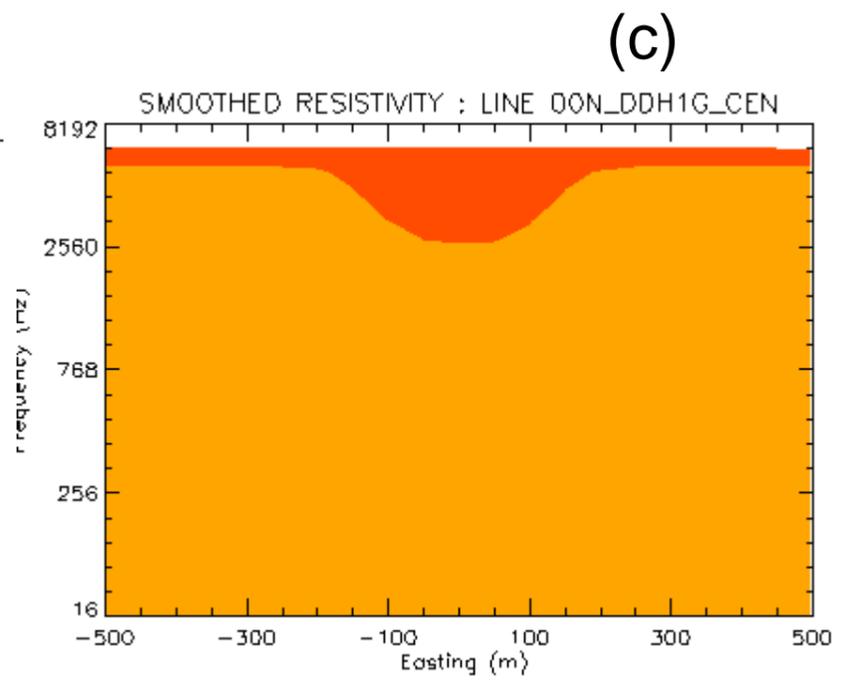
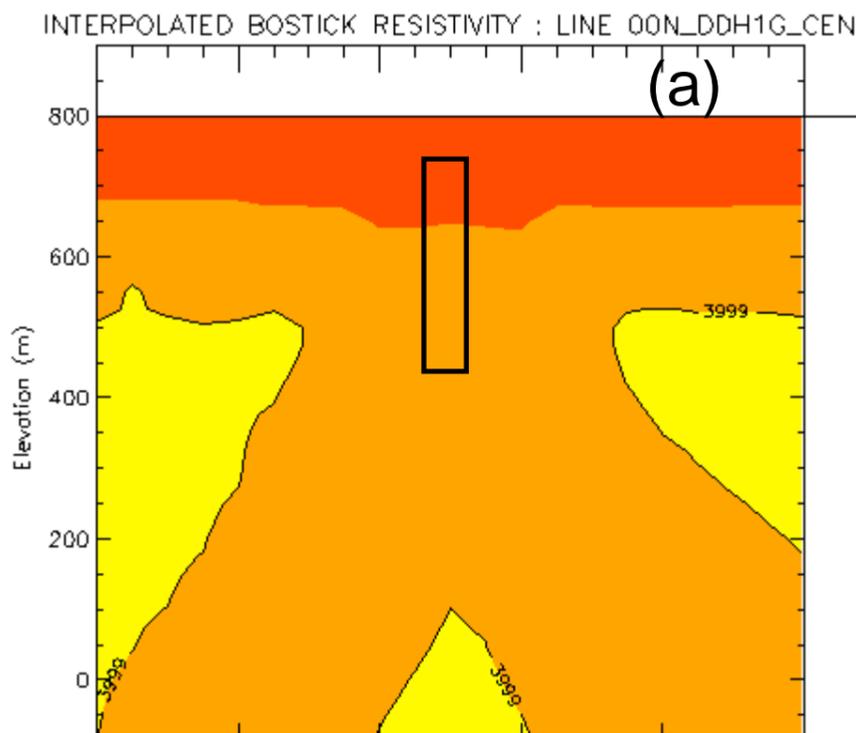
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CSAMT model for a narrow (50m) zone of alteration with top at depth **25 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **conductive** alteration is 500 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
- (c) Smoothed frequency pseudosection
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- (e) Phase pseudosection

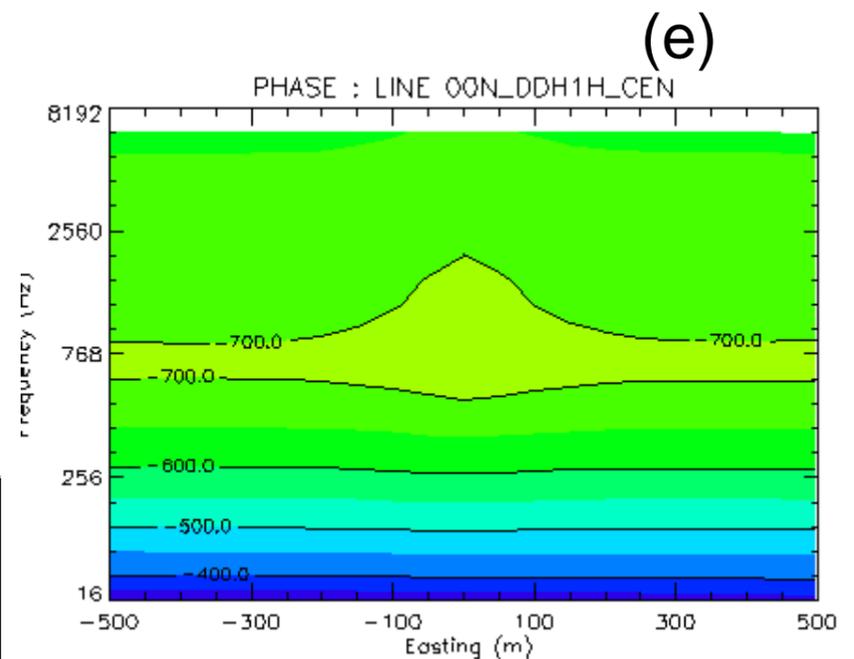
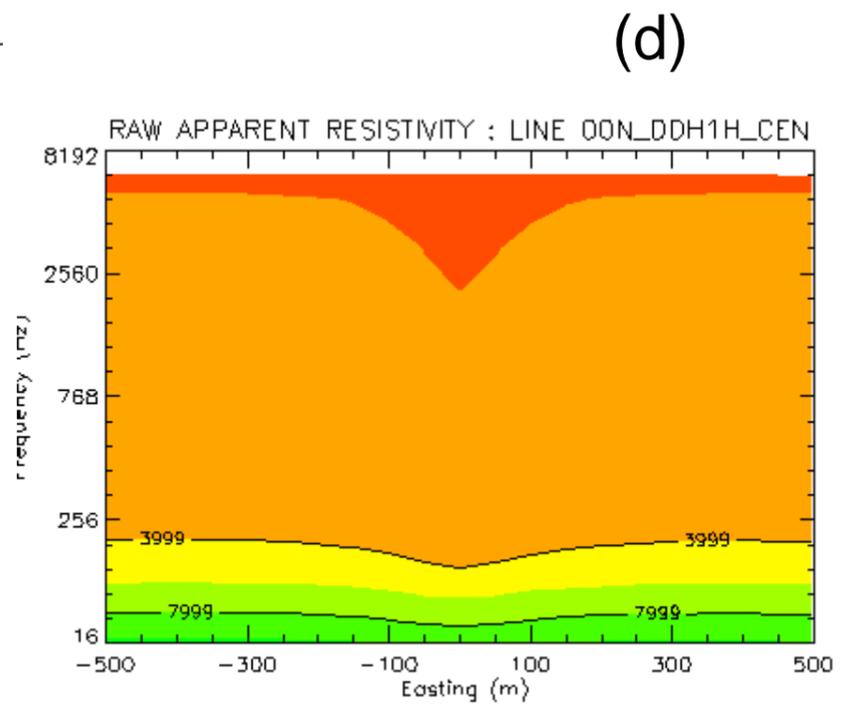
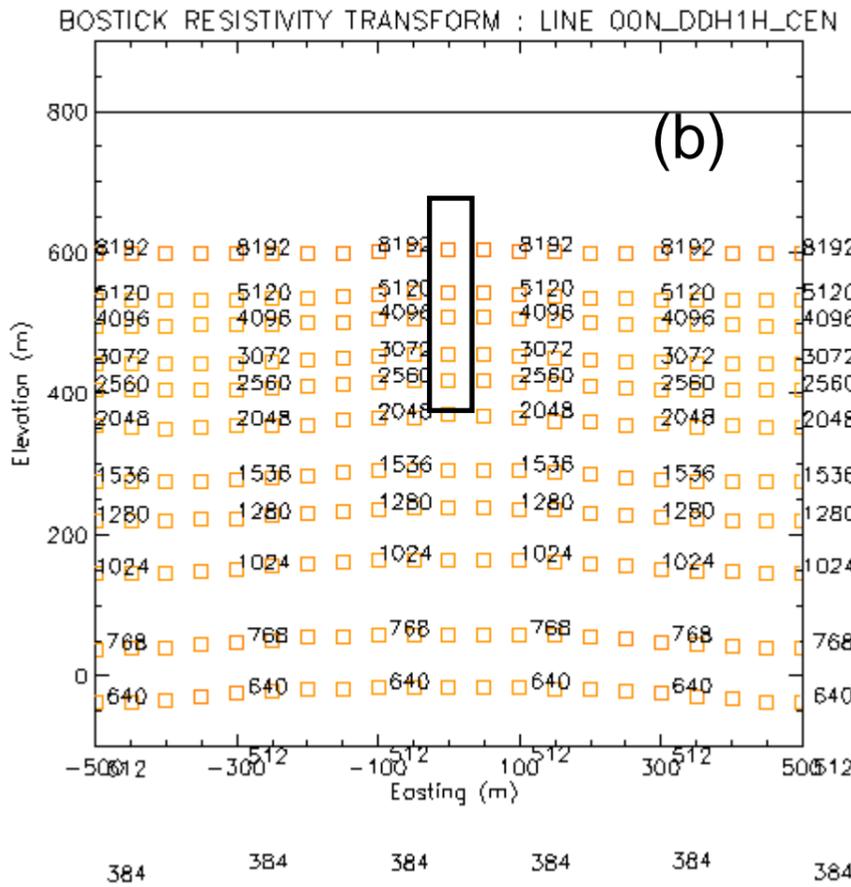
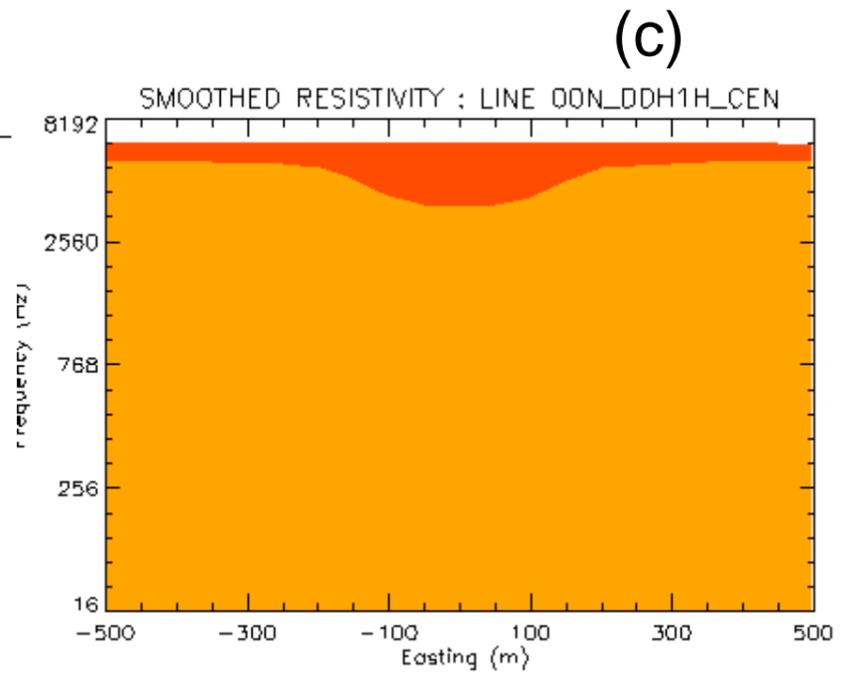
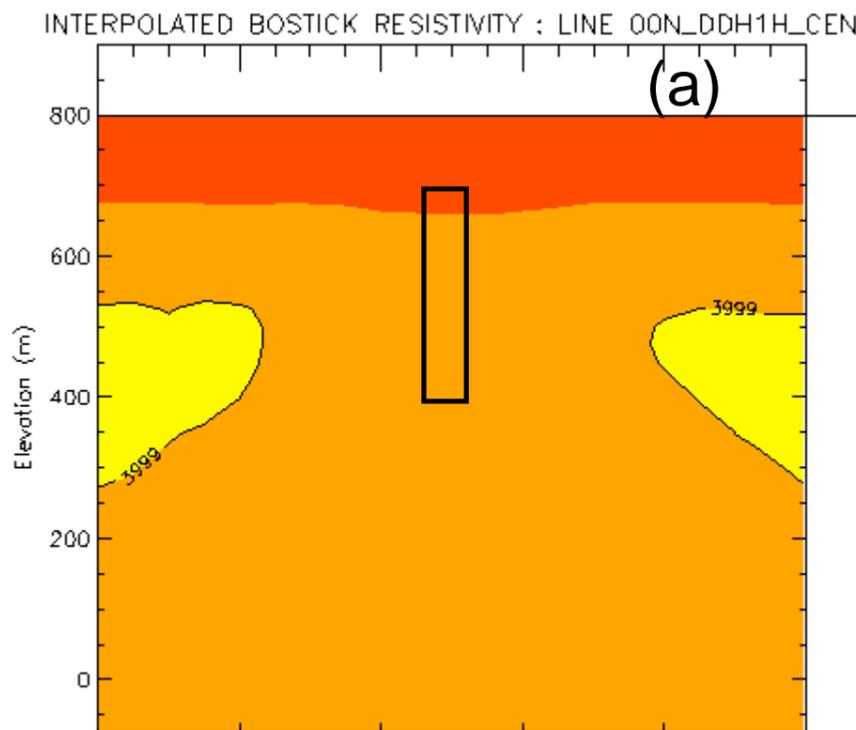
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Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten                      Aug-05	



CSAMT model for a narrow (50m) zone of alteration with top at depth **50 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **conductive** alteration is 500 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
- (c) Smoothed frequency pseudosection
- (d) Unsmoothed pseudosection with static effects
- (e) Phase pseudosection

Client:	<b>Newcrest Mining Ltd</b>	
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Job 0508/1	Michael Asten Aug-05	

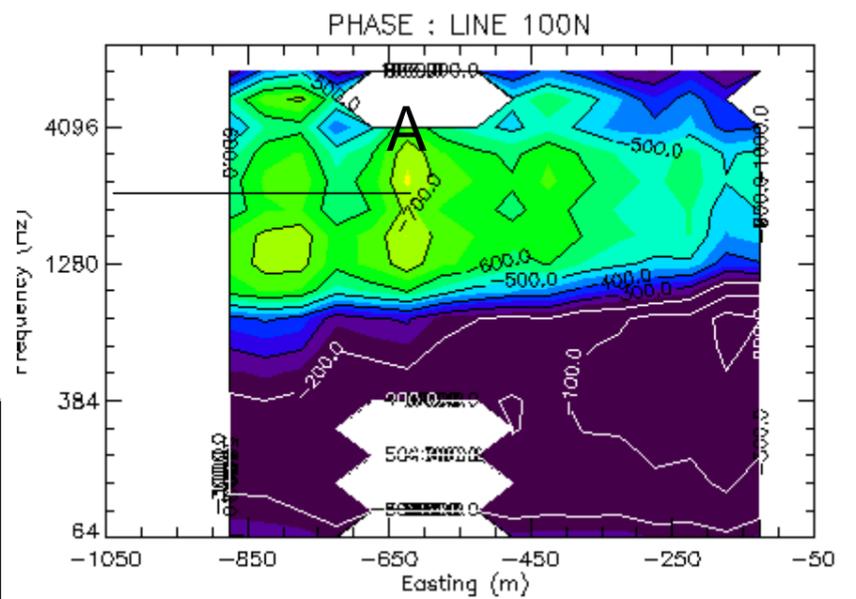
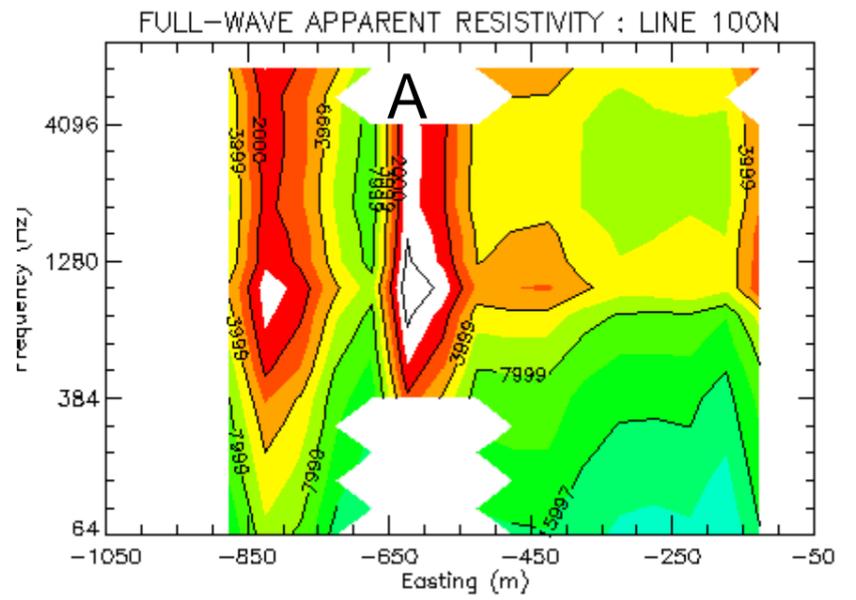
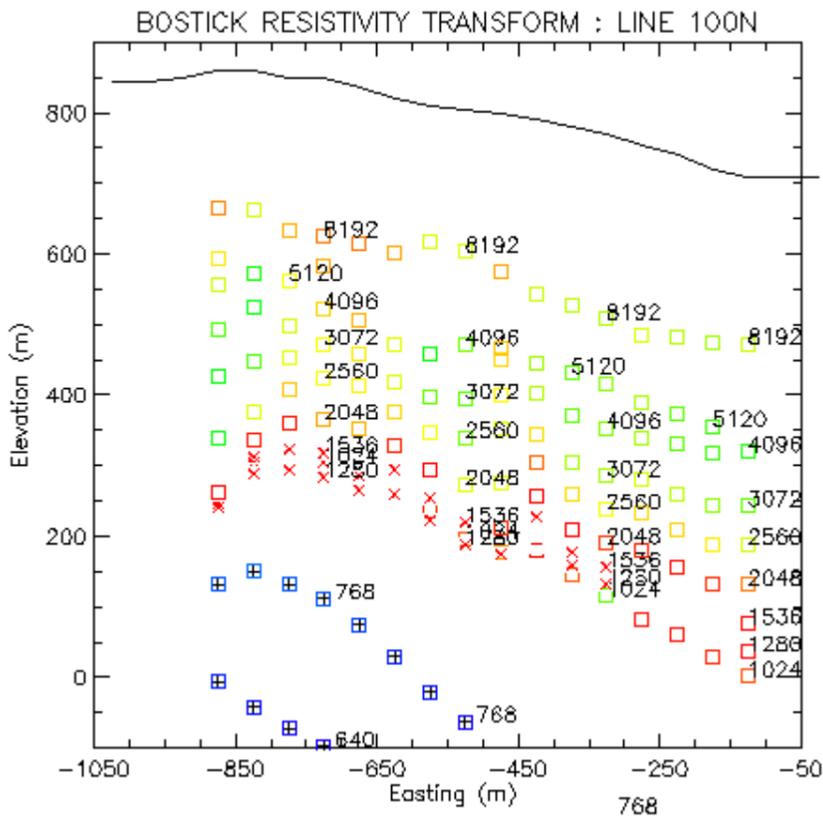
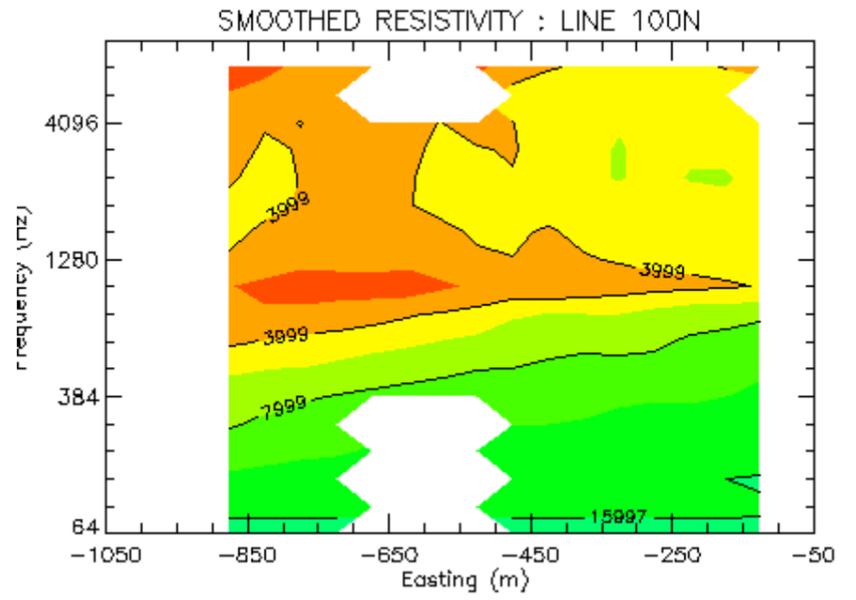
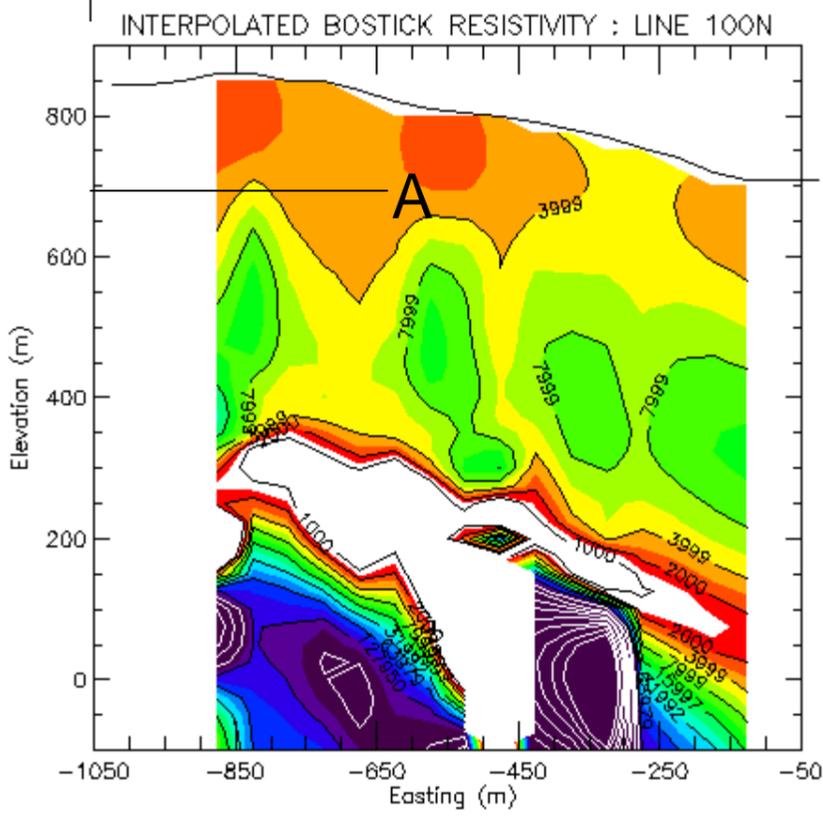


CSAMT model for a narrow (50m) zone of alteration with top at depth **100 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **conductive** alteration is 500 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
- (c) Smoothed frequency pseudosection
- (d) Unsmoothed pseudosection with static effects
- (e) Phase pseudosection

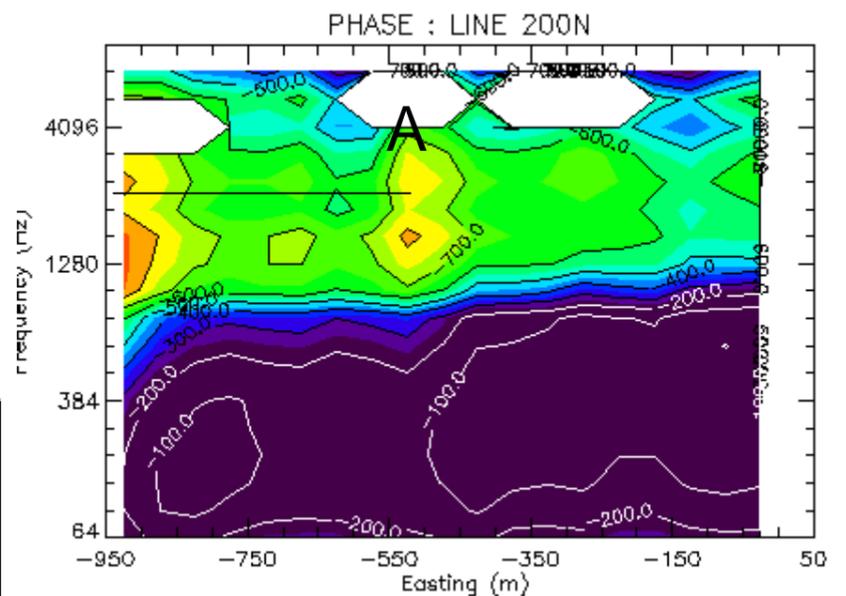
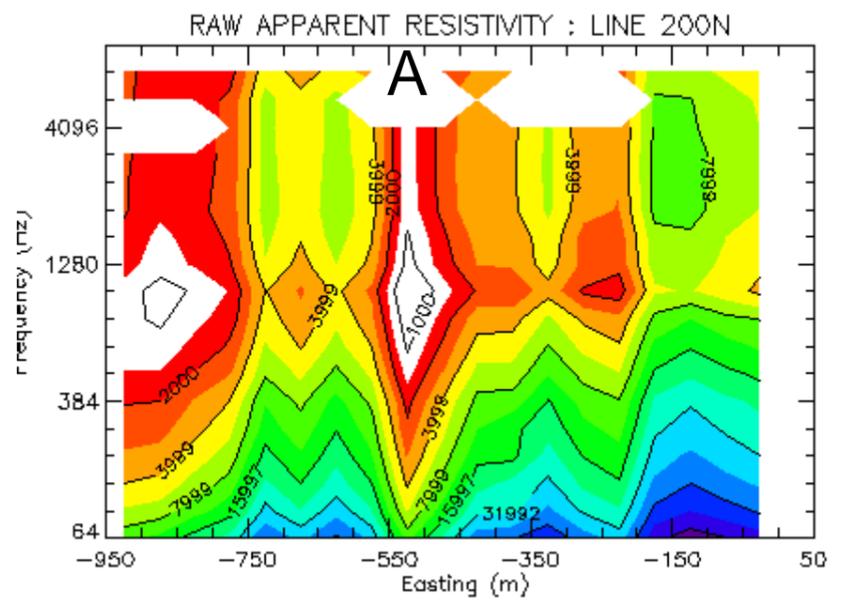
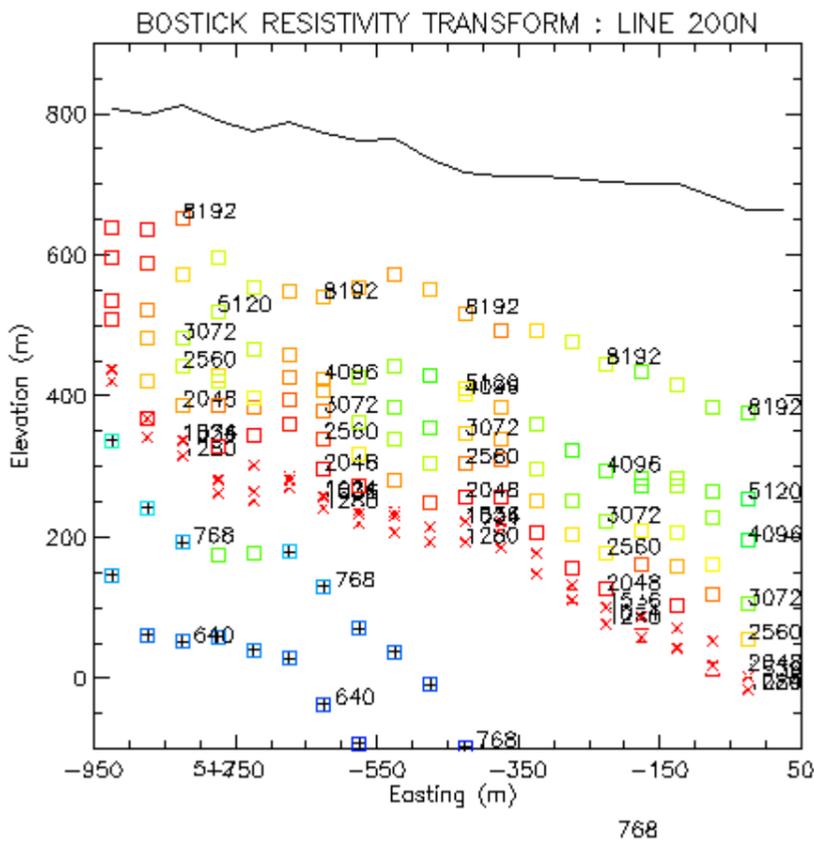
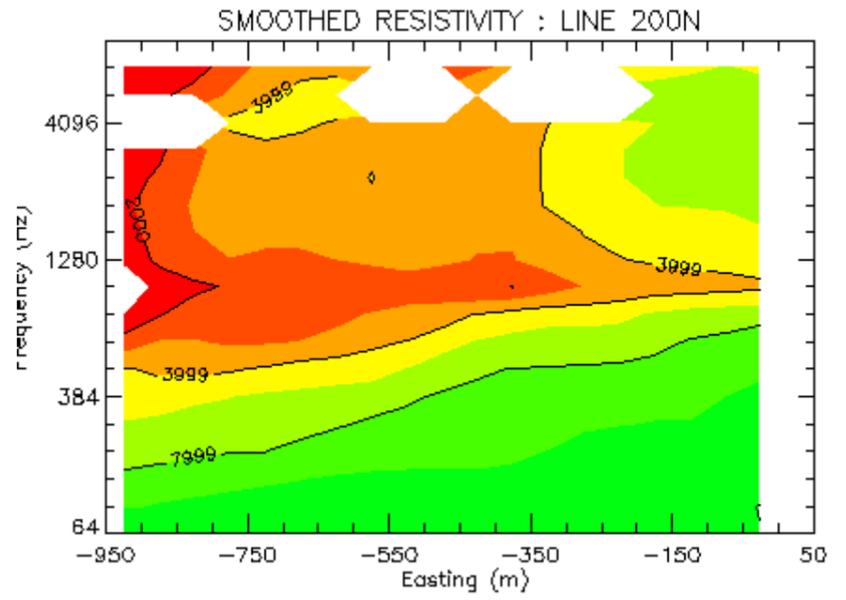
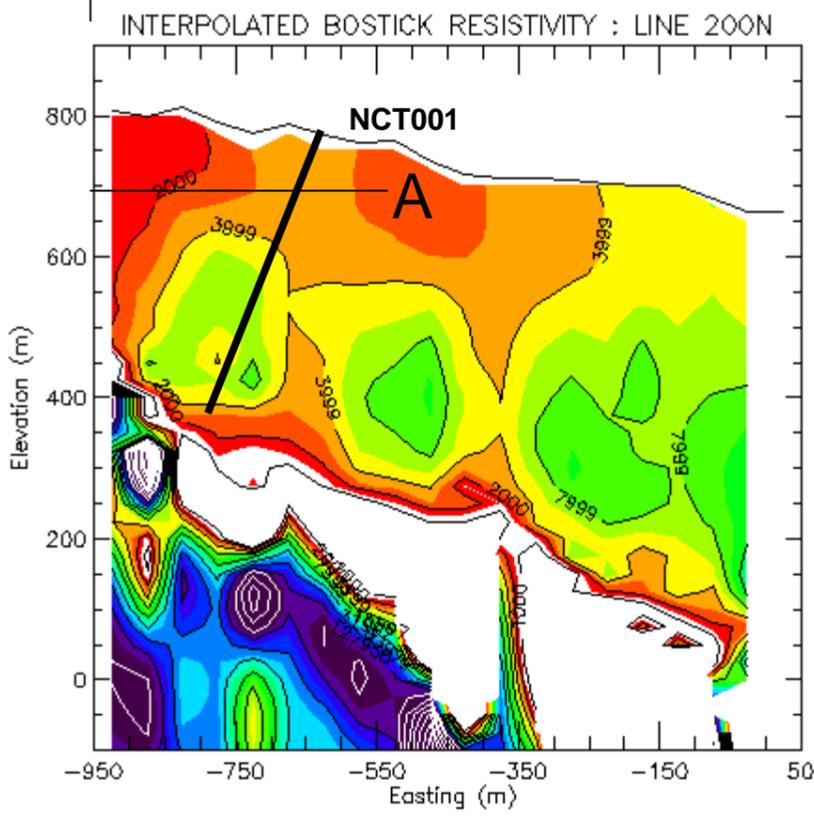
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	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten Aug-05	

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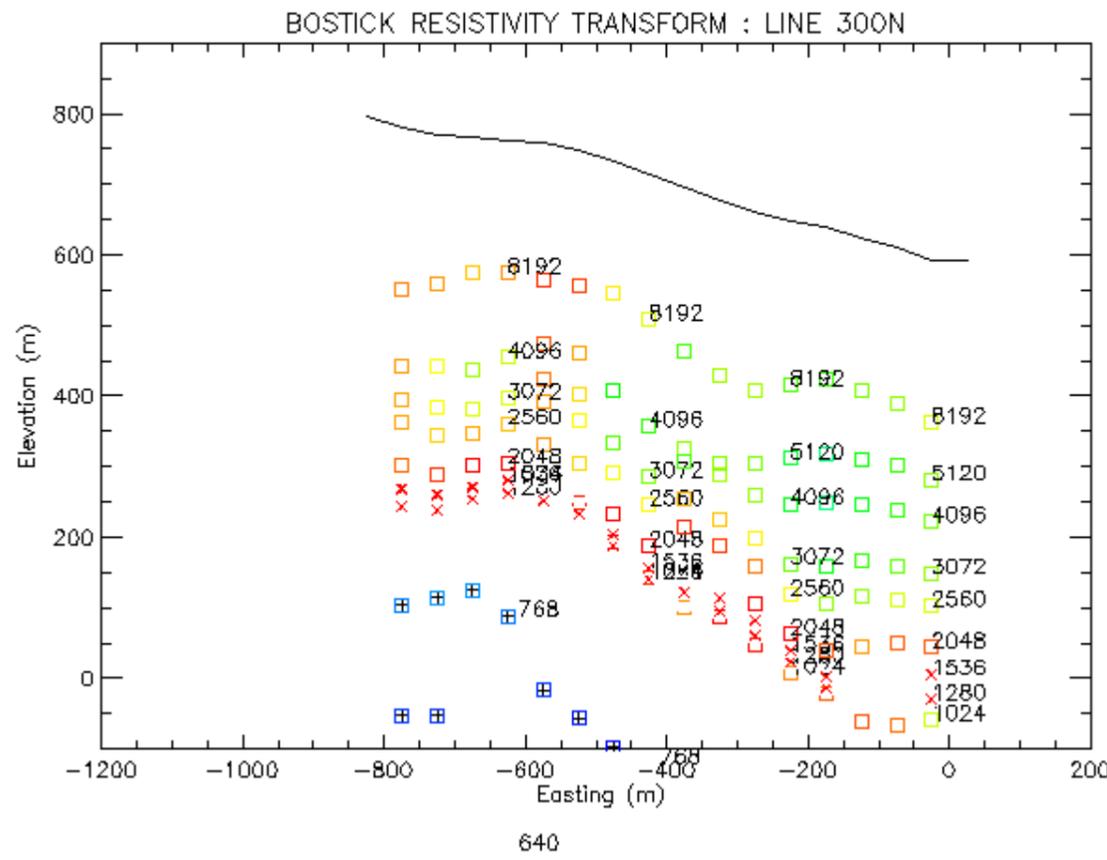
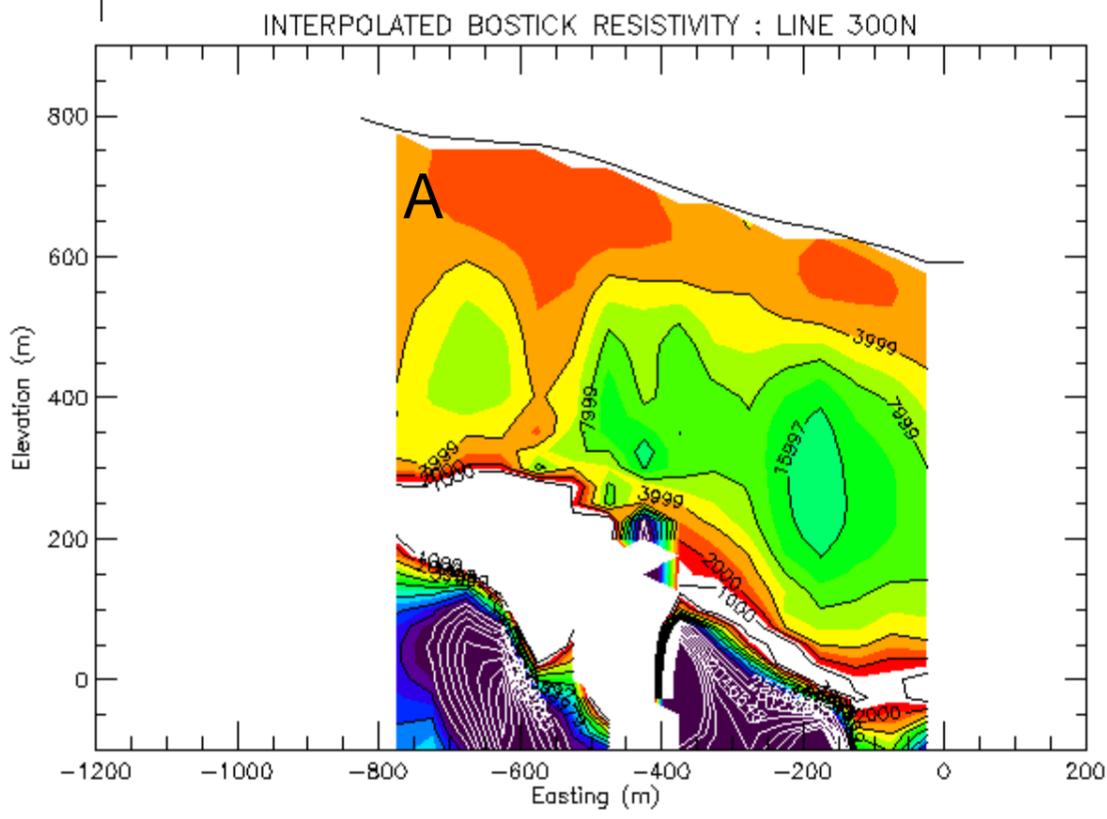
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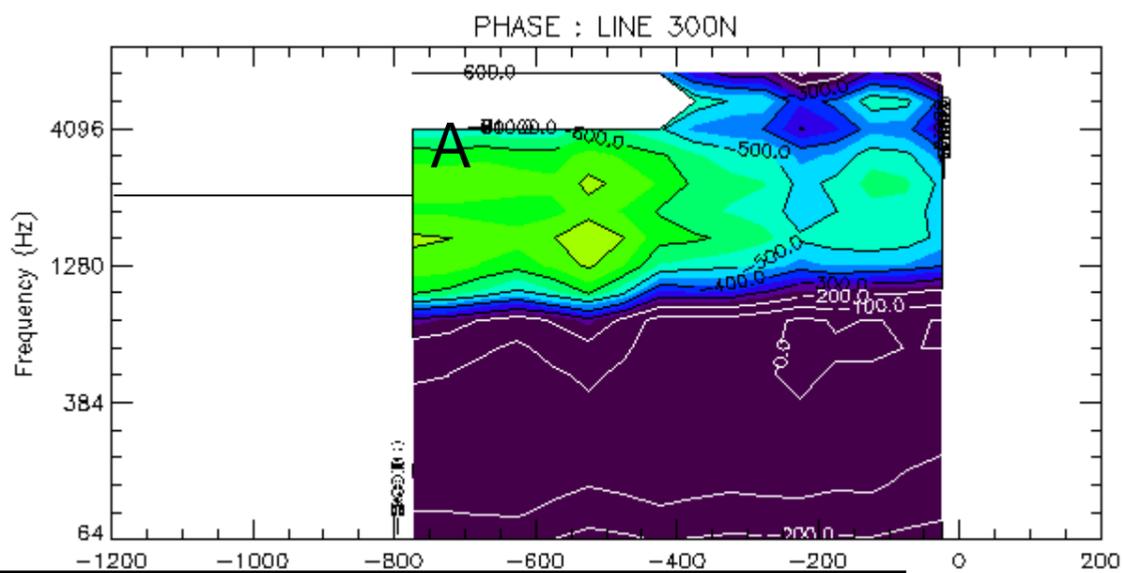
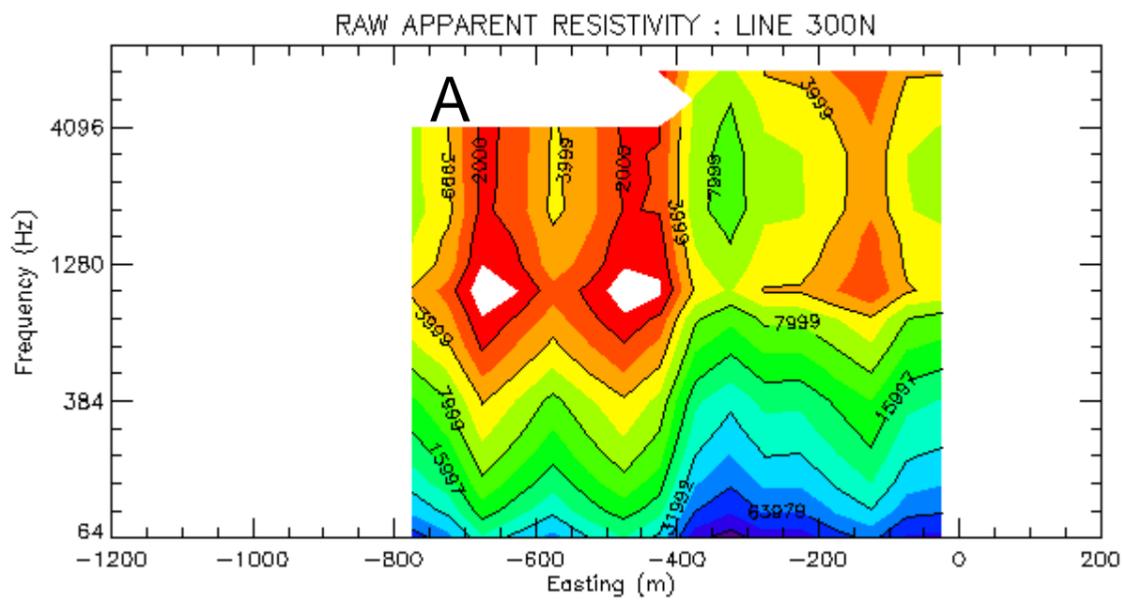
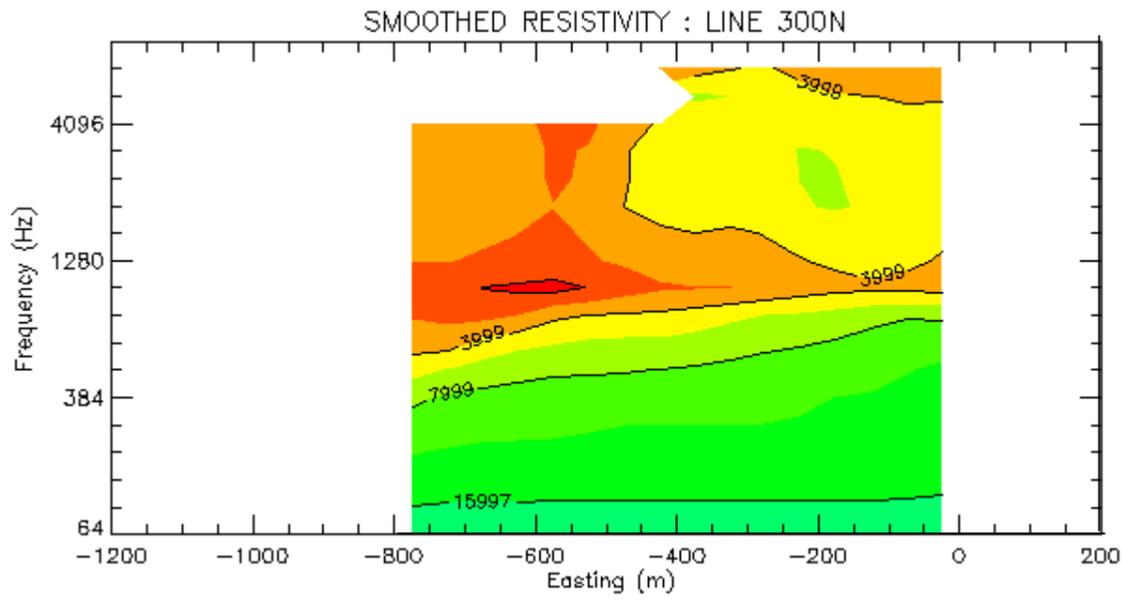
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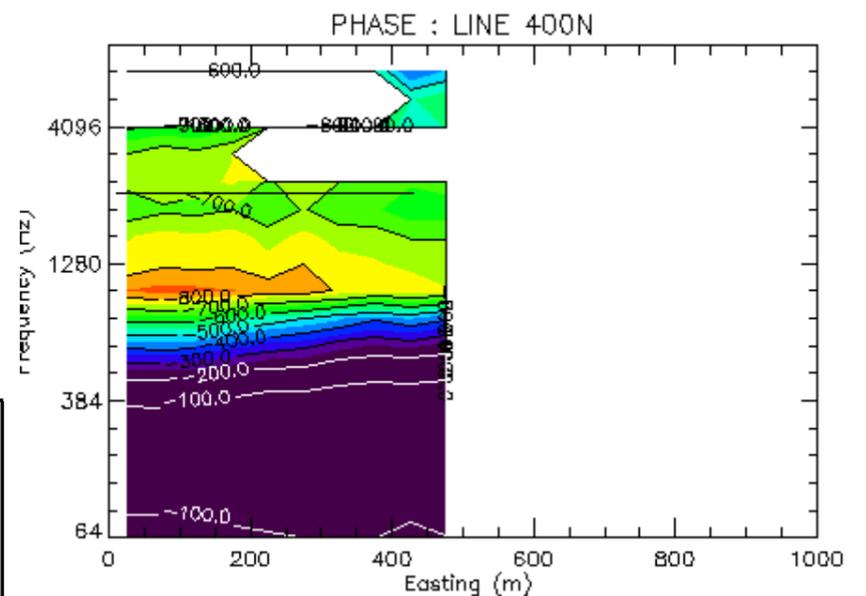
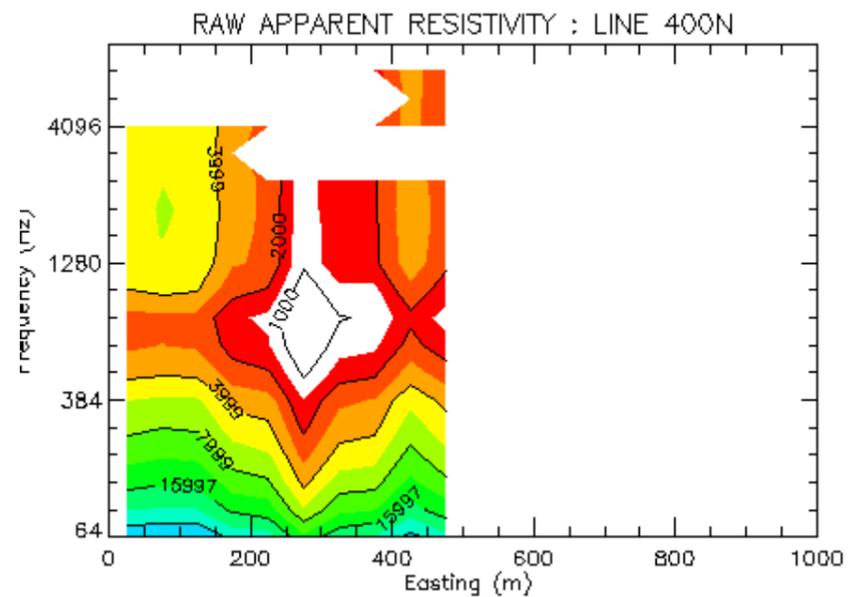
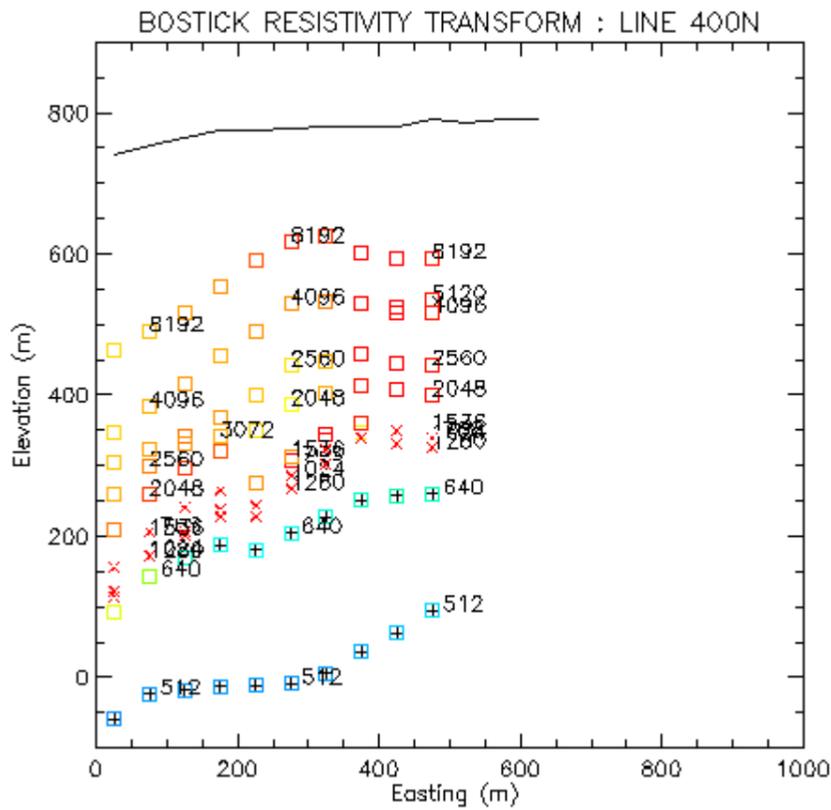
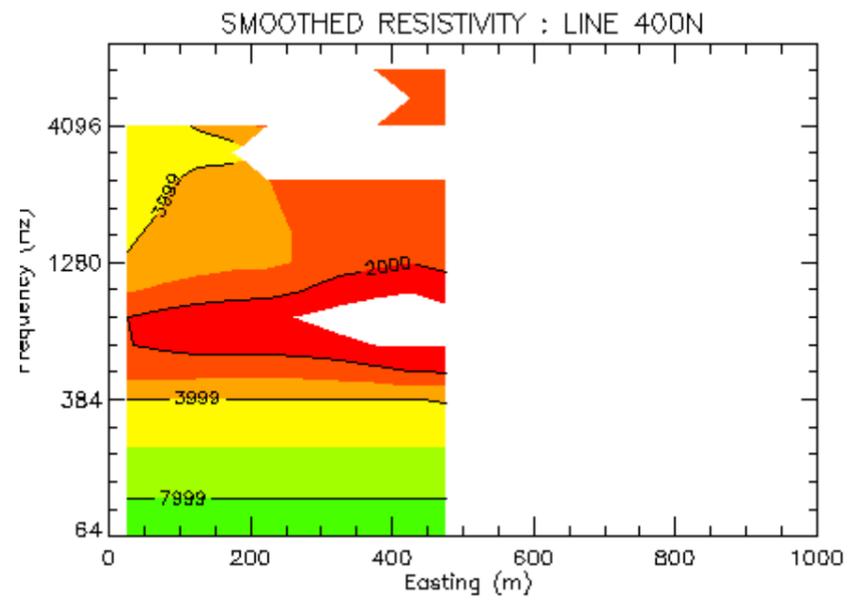
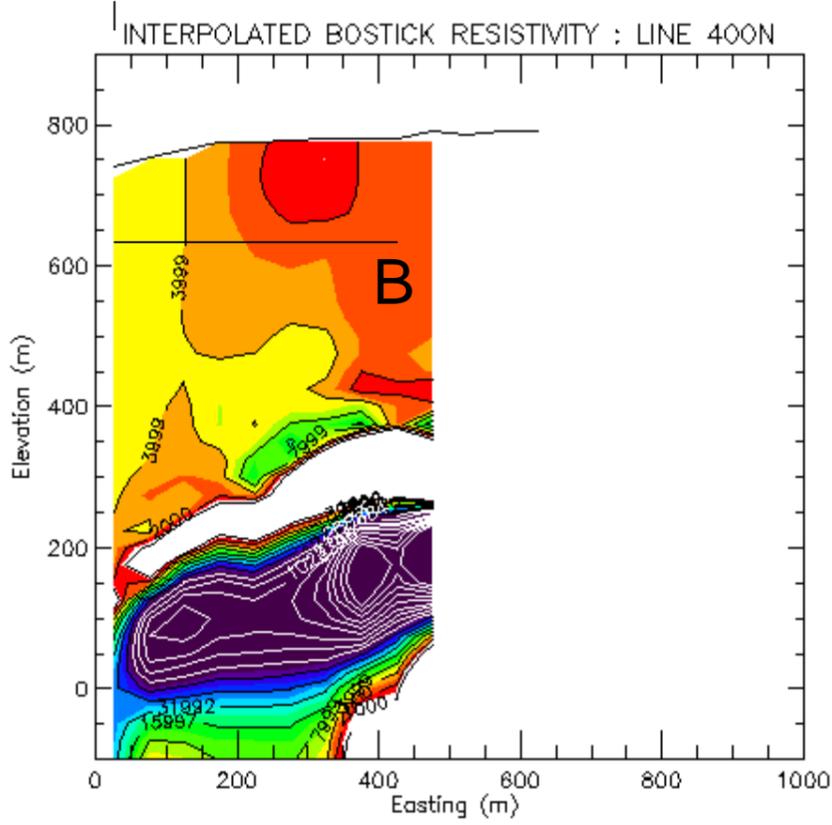
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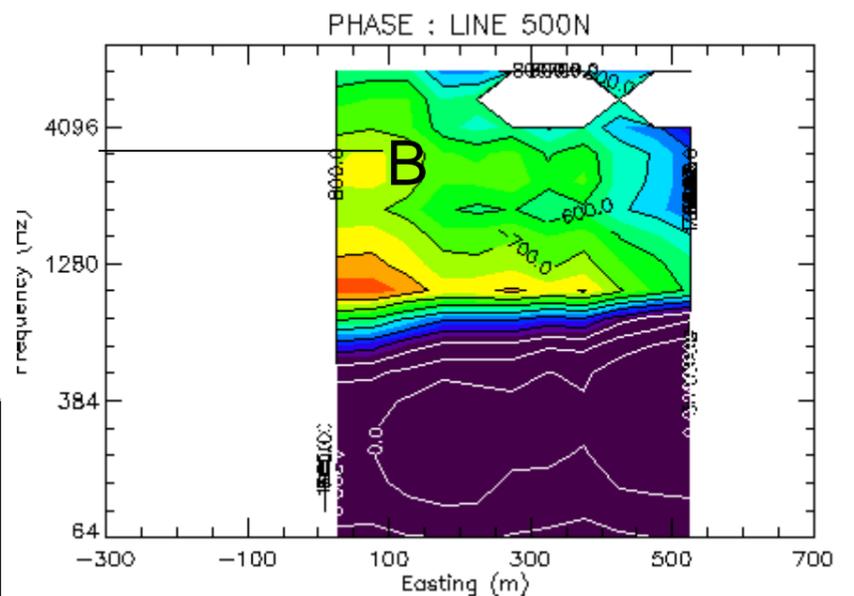
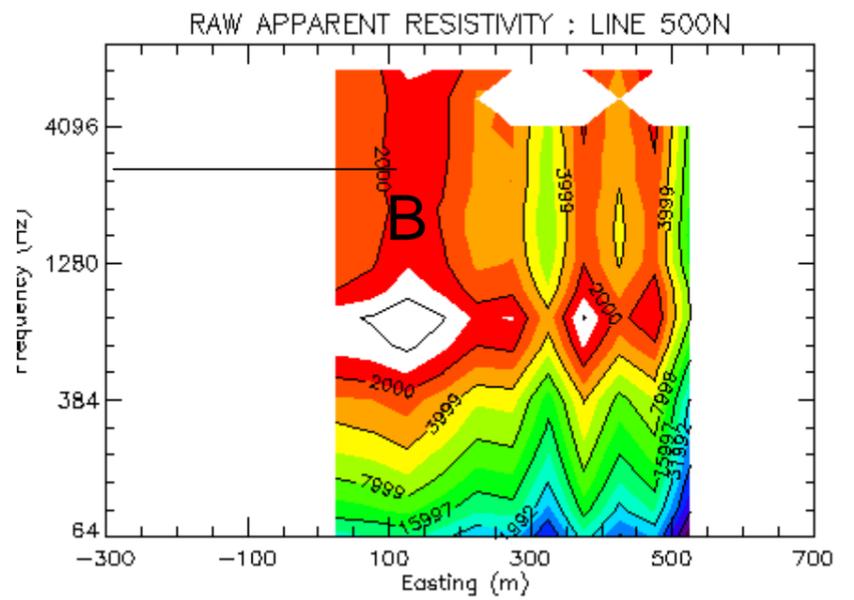
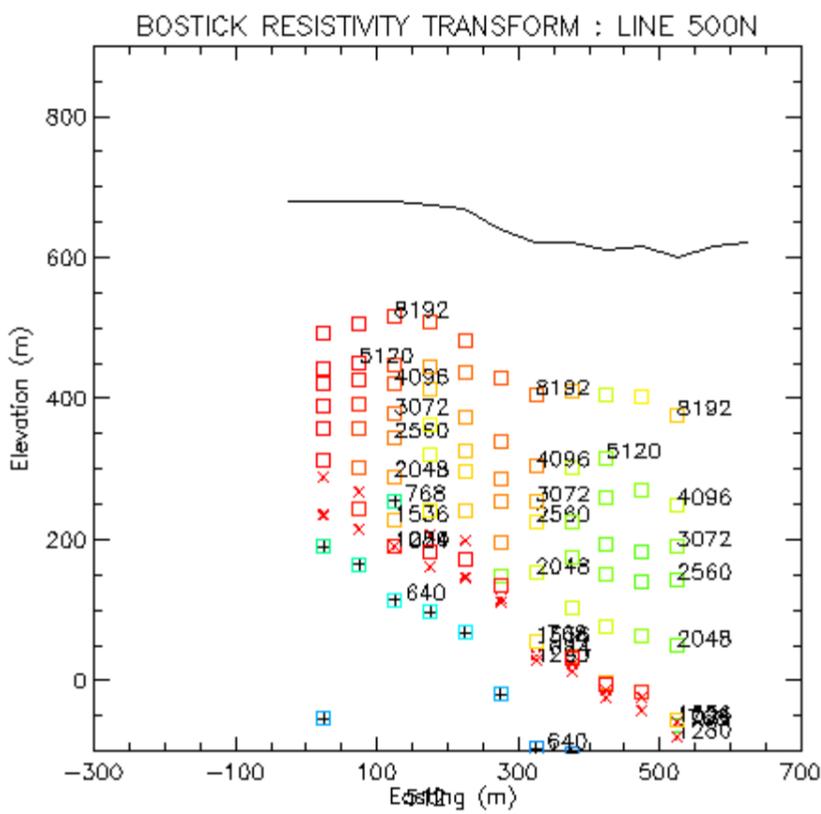
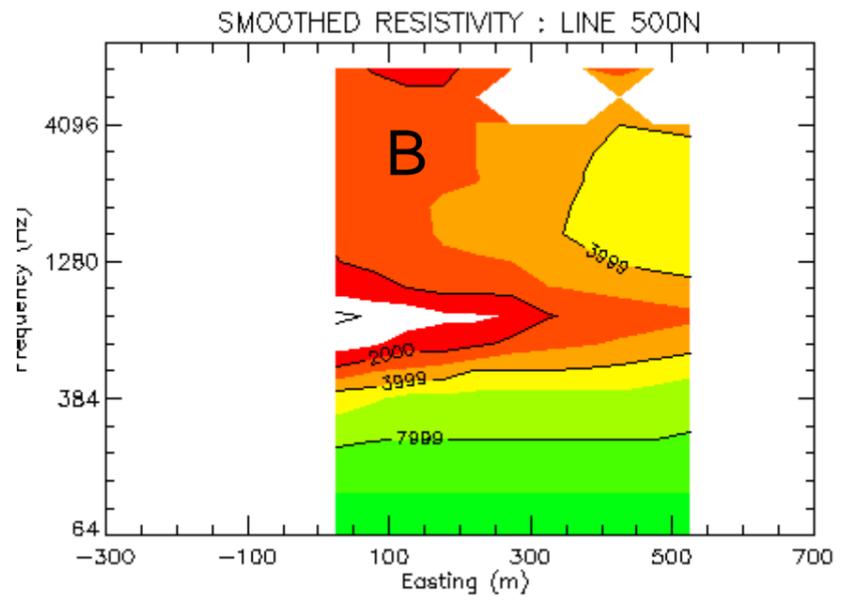
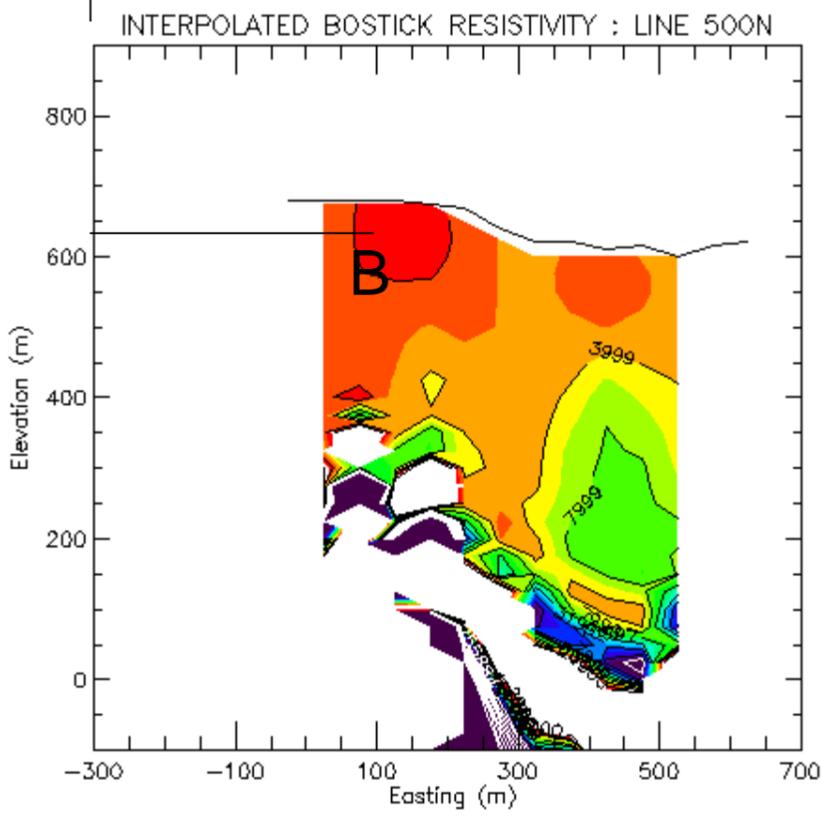
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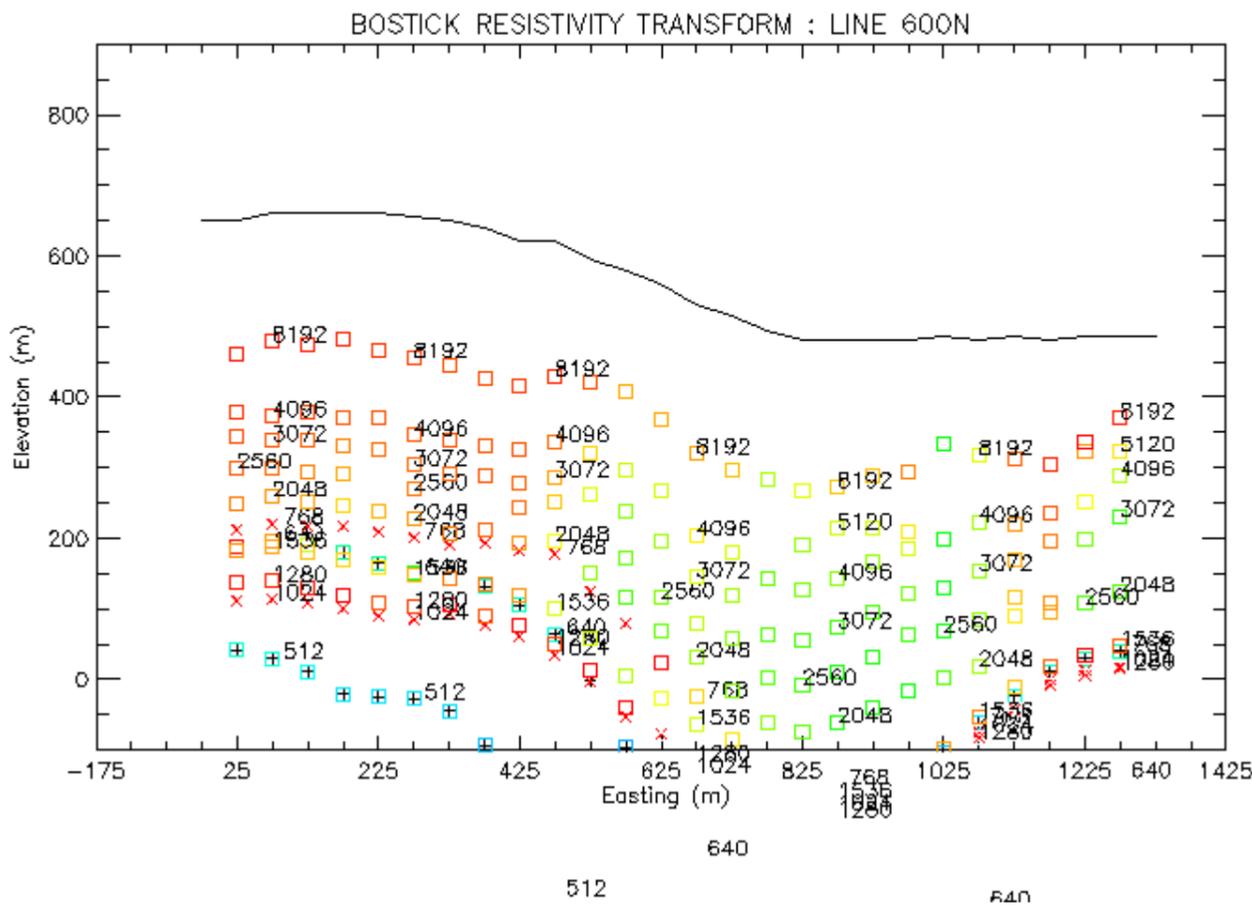
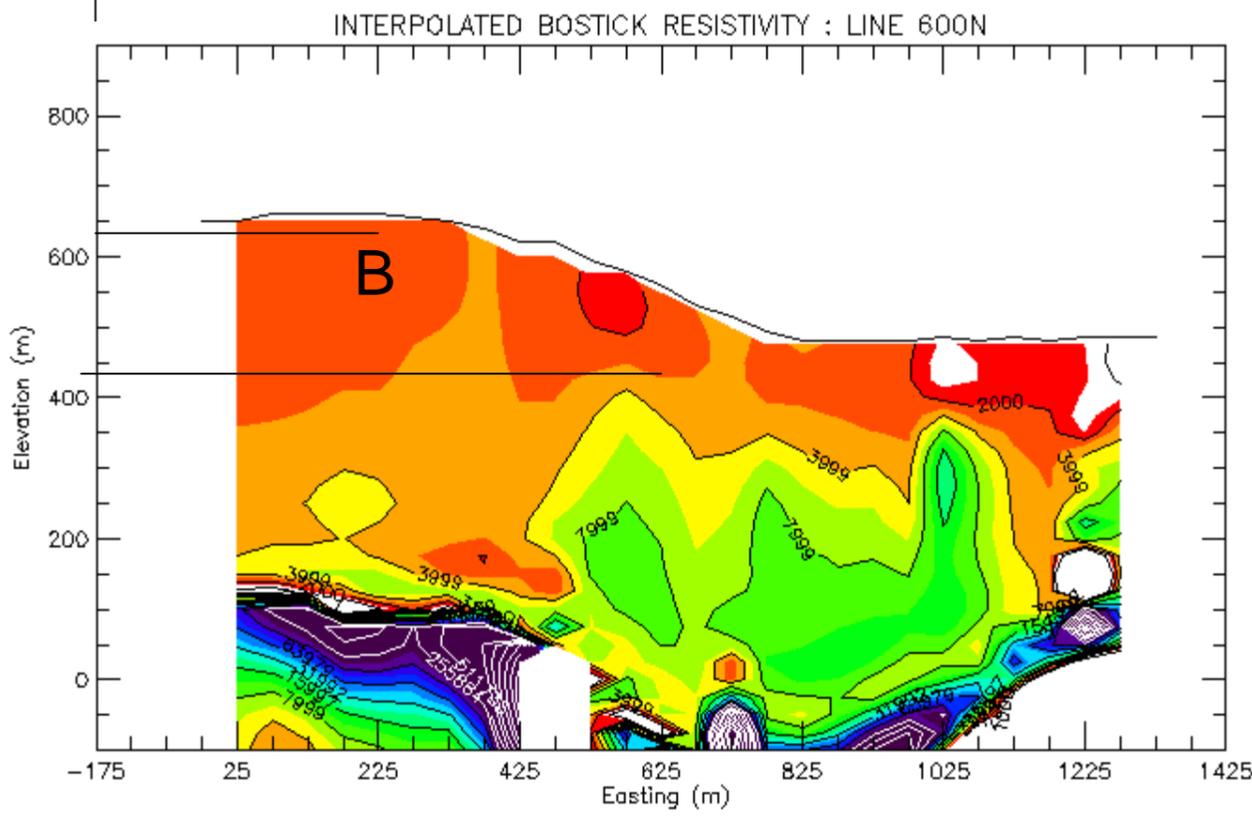
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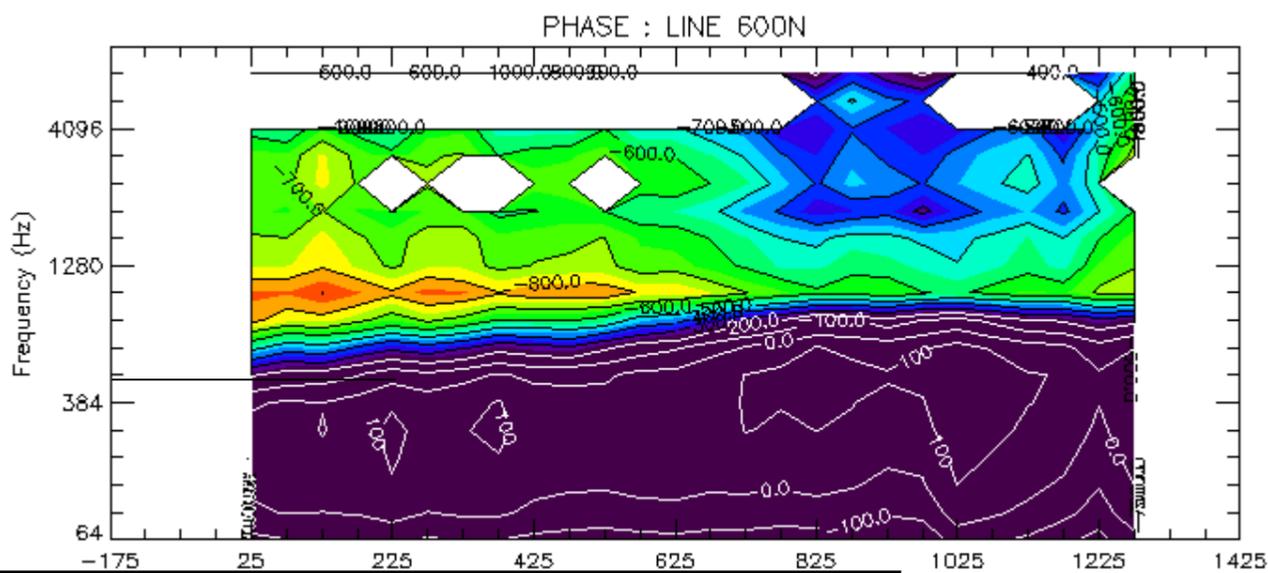
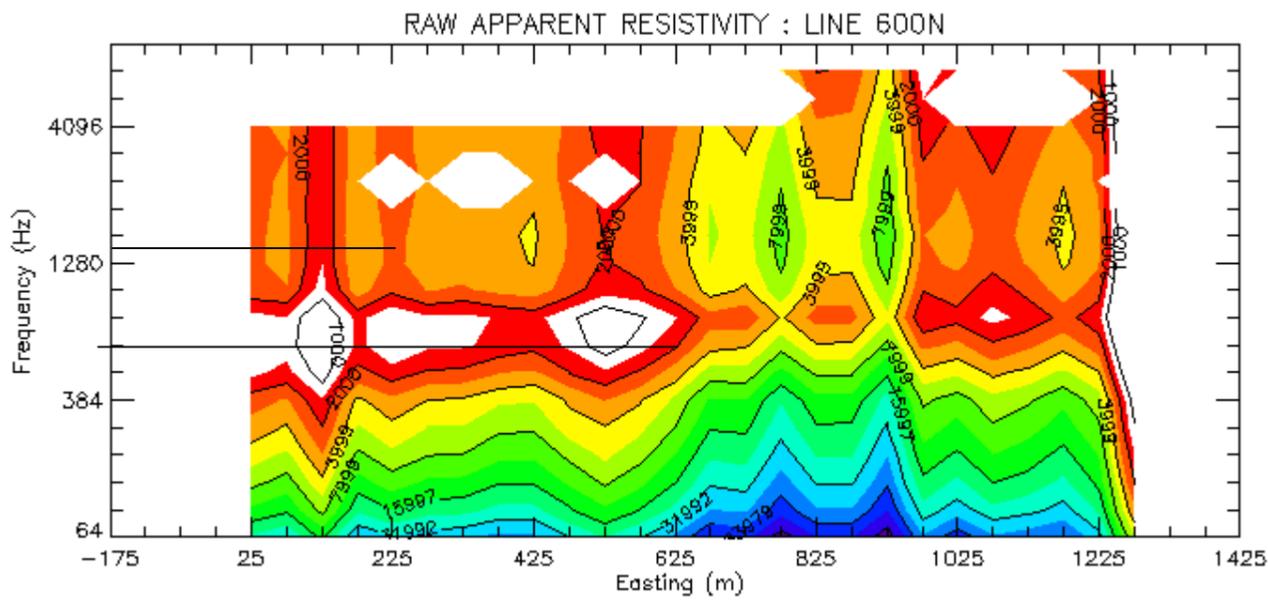
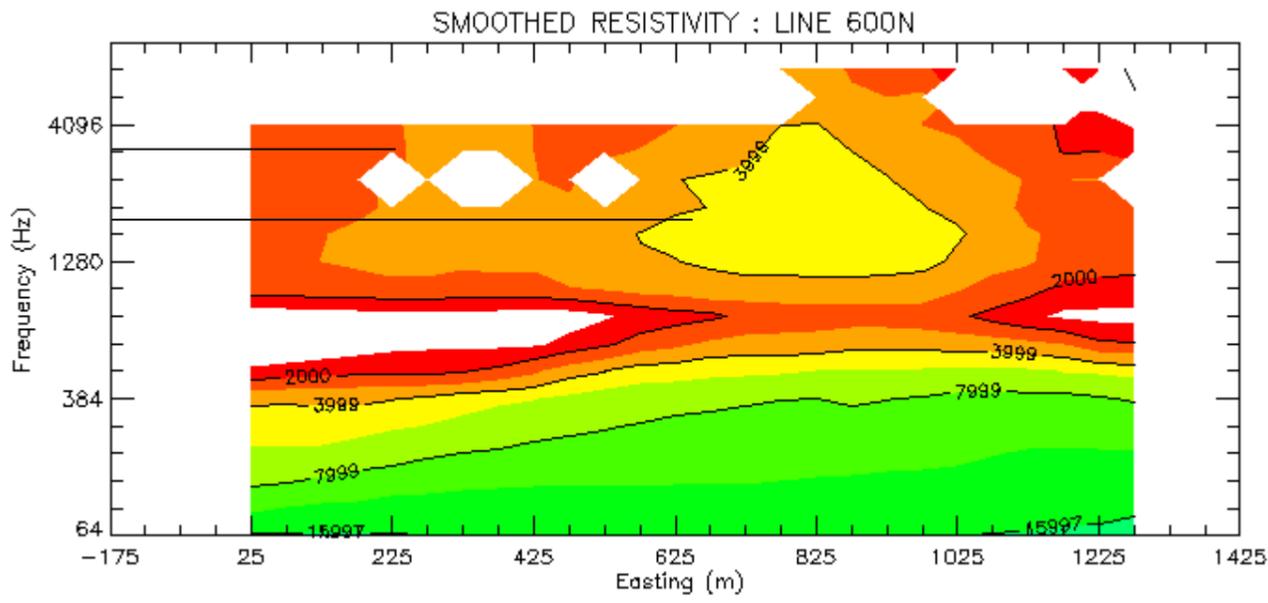
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Job 0508/1	Michael Asten                      Aug-05	

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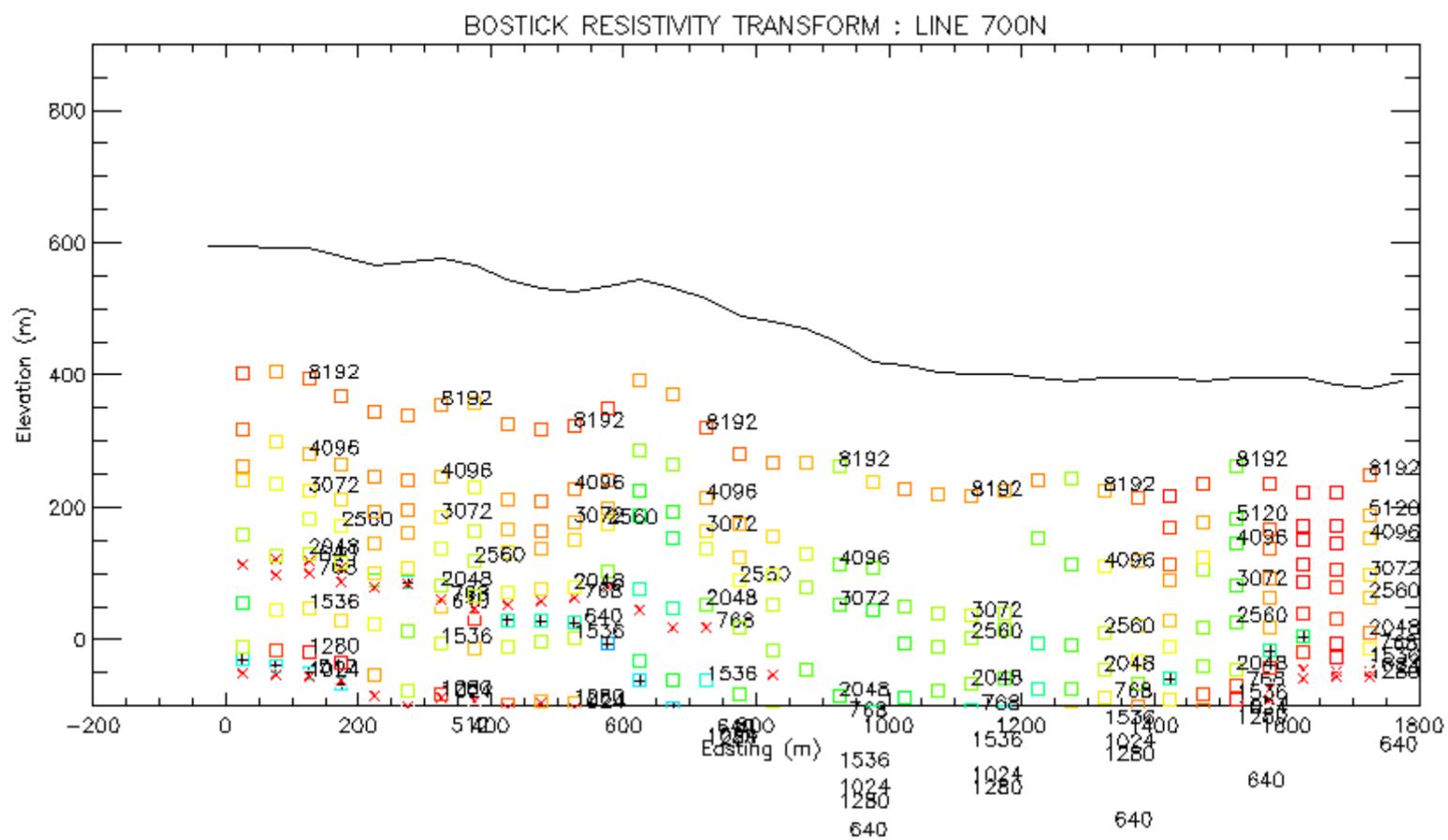
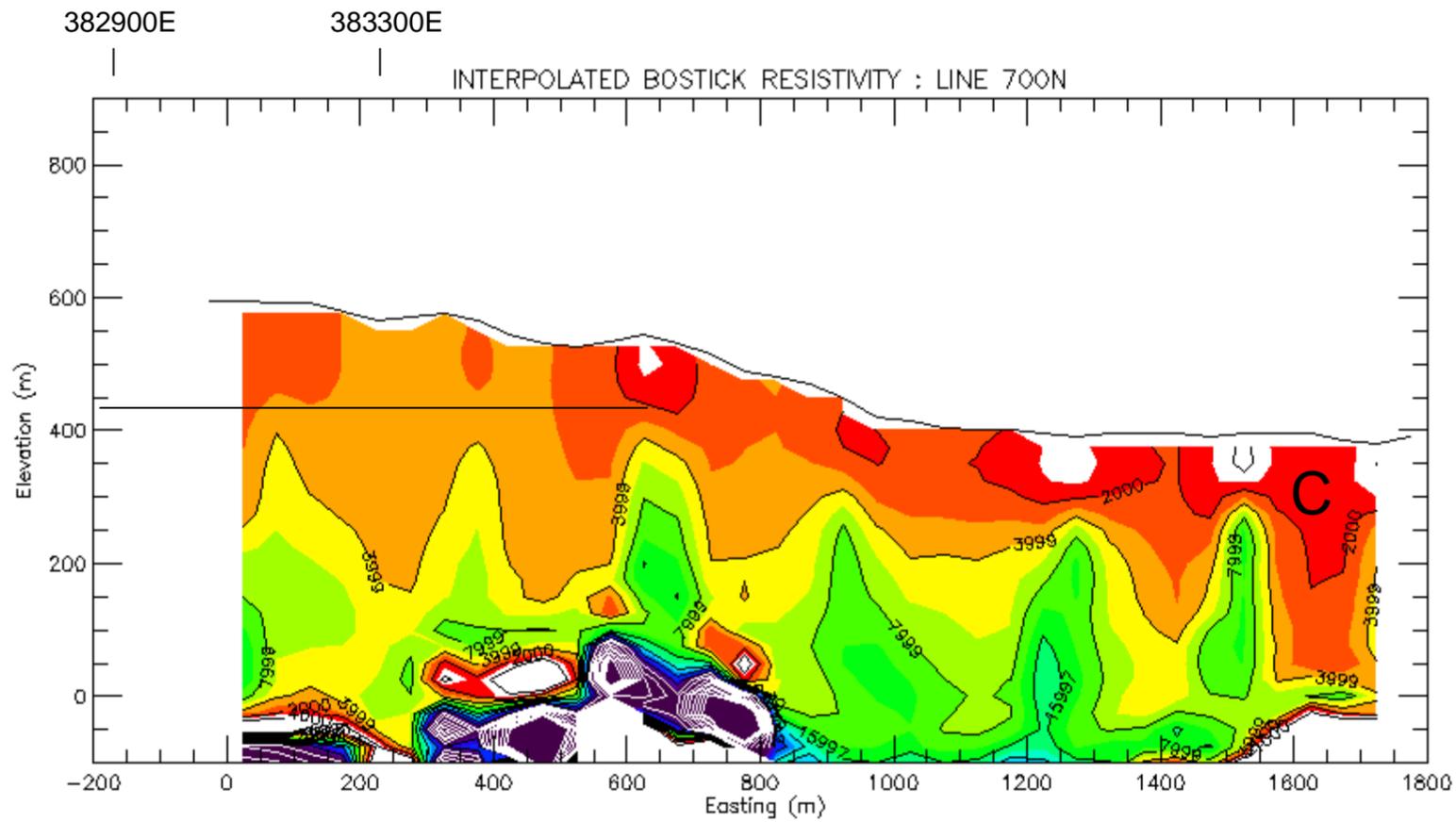


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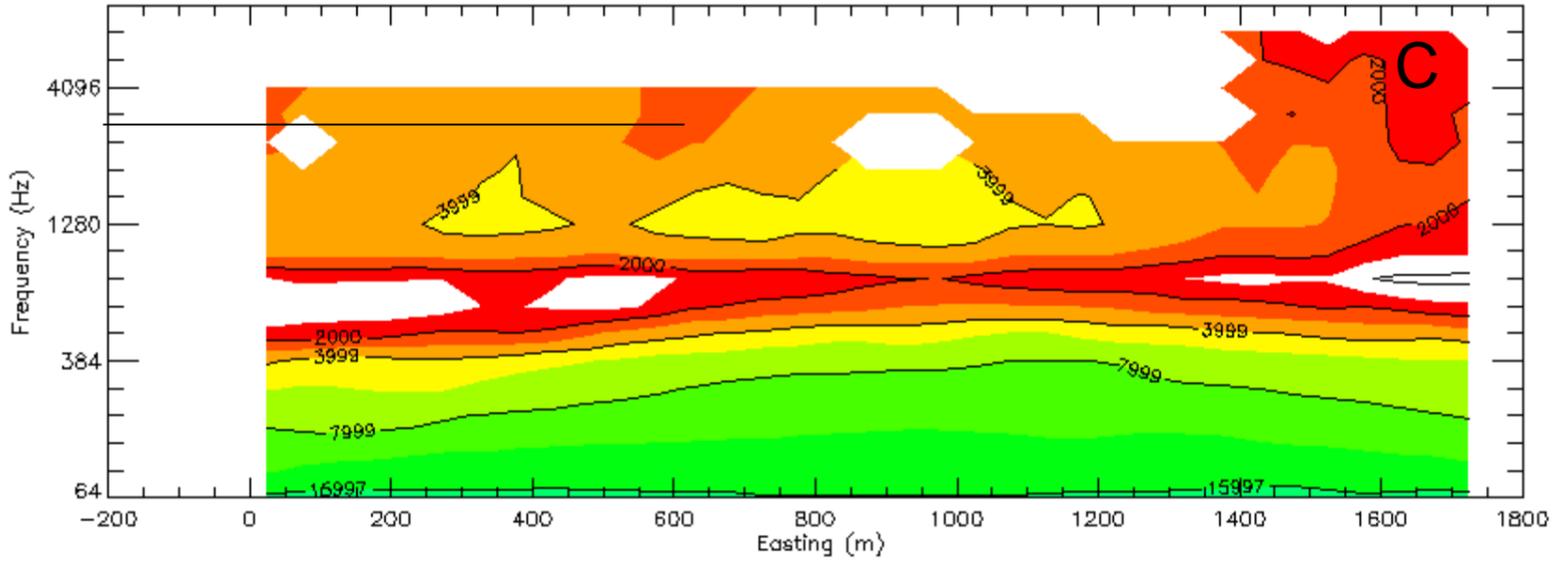


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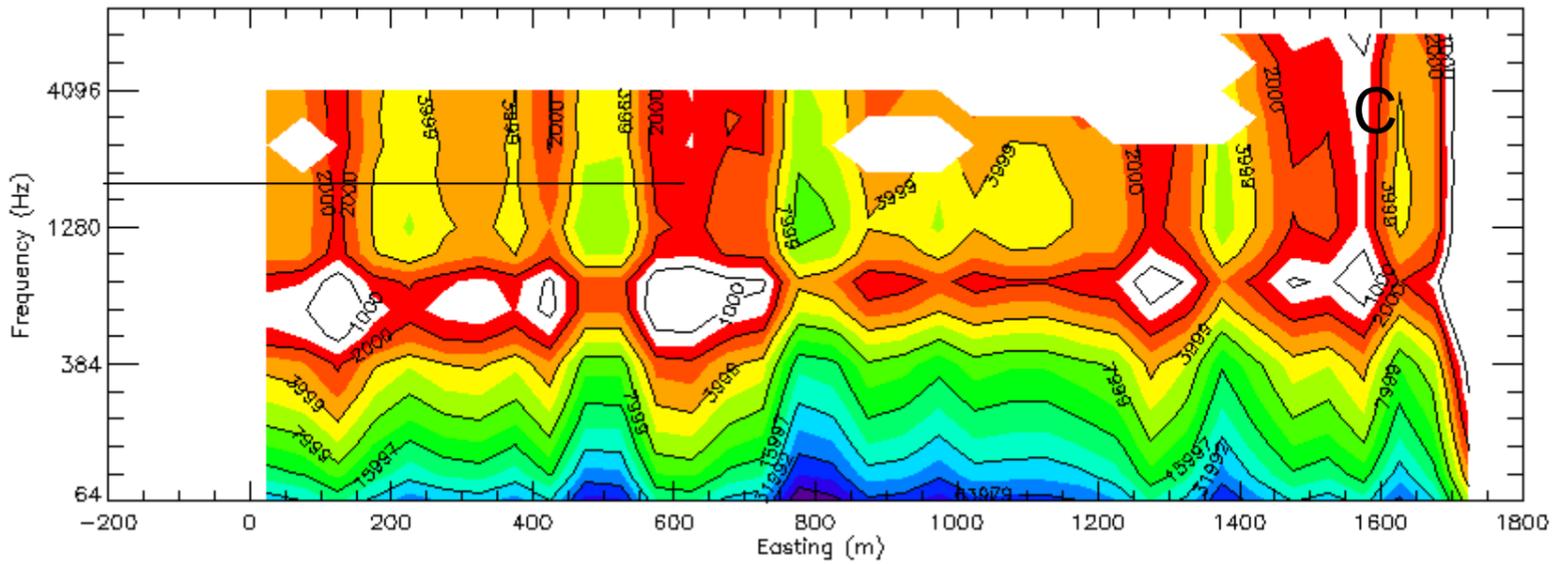
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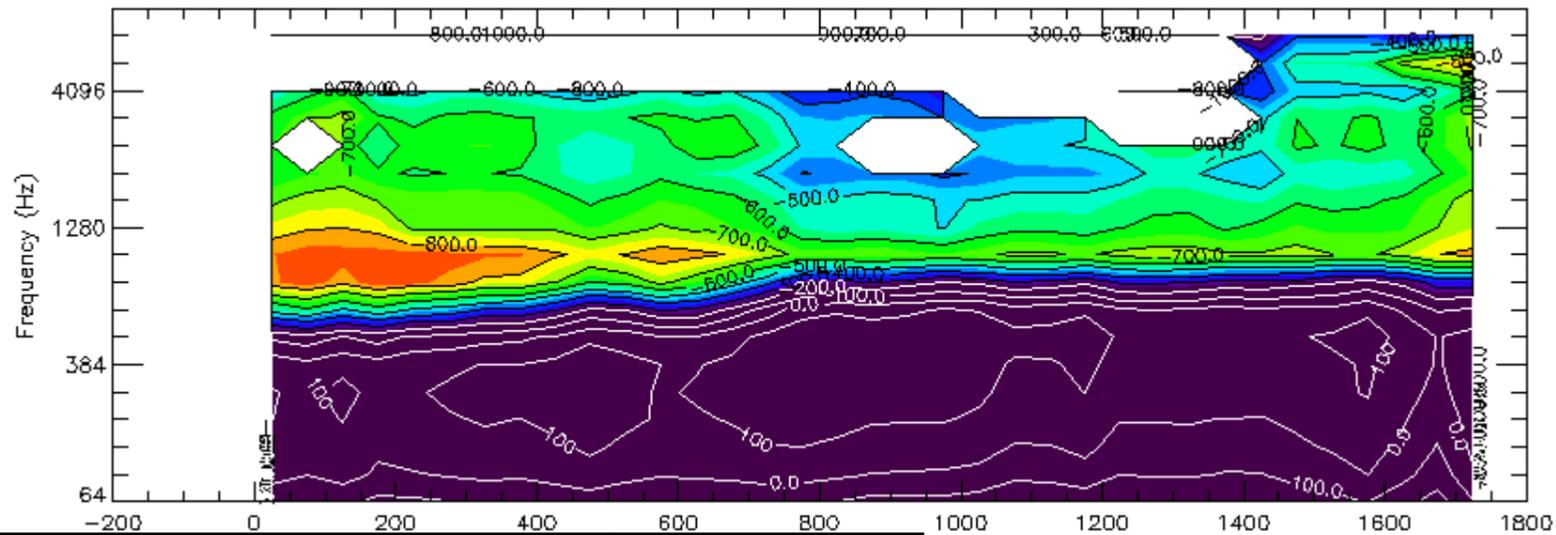
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RAW APPARENT RESISTIVITY : LINE 700N



PHASE : LINE 700N

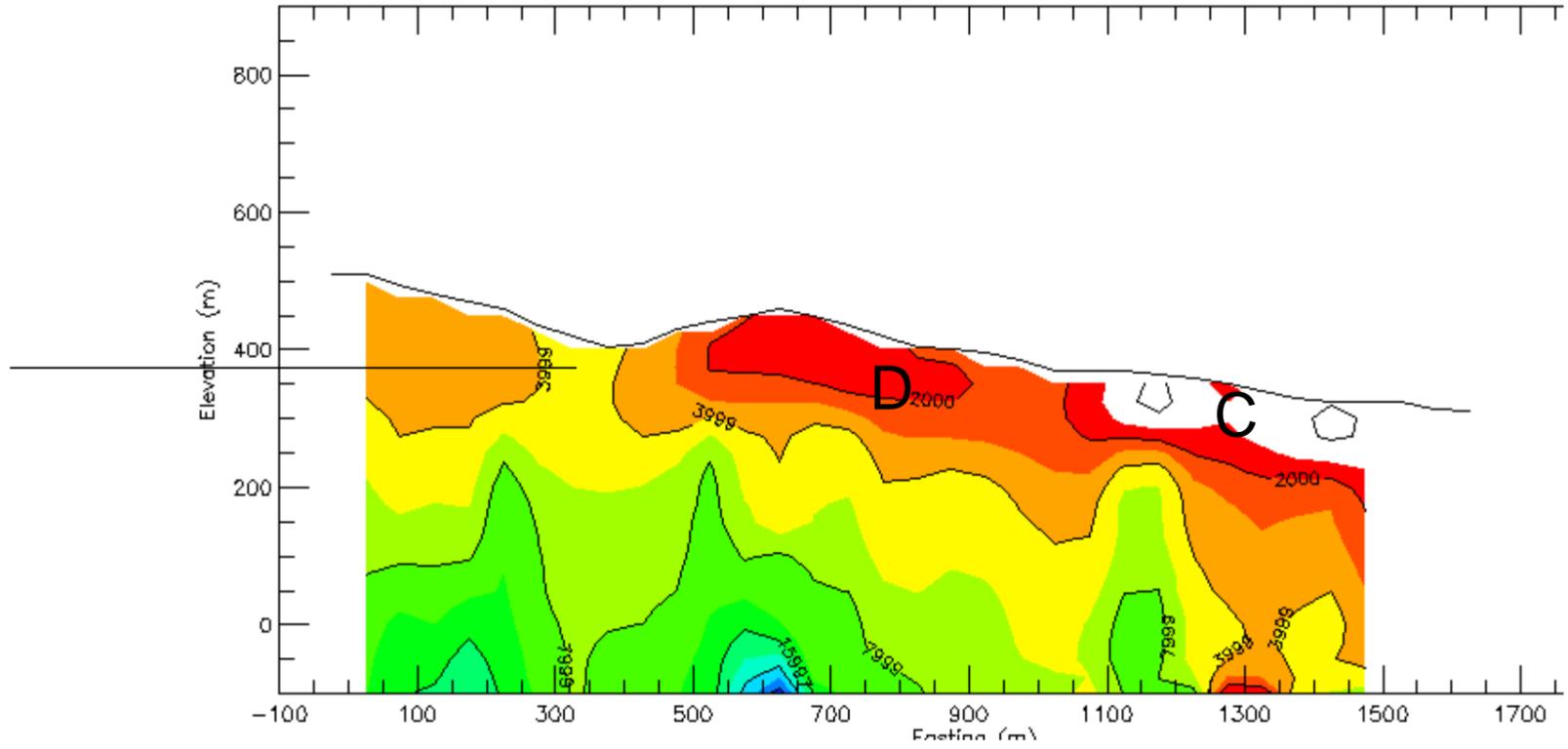


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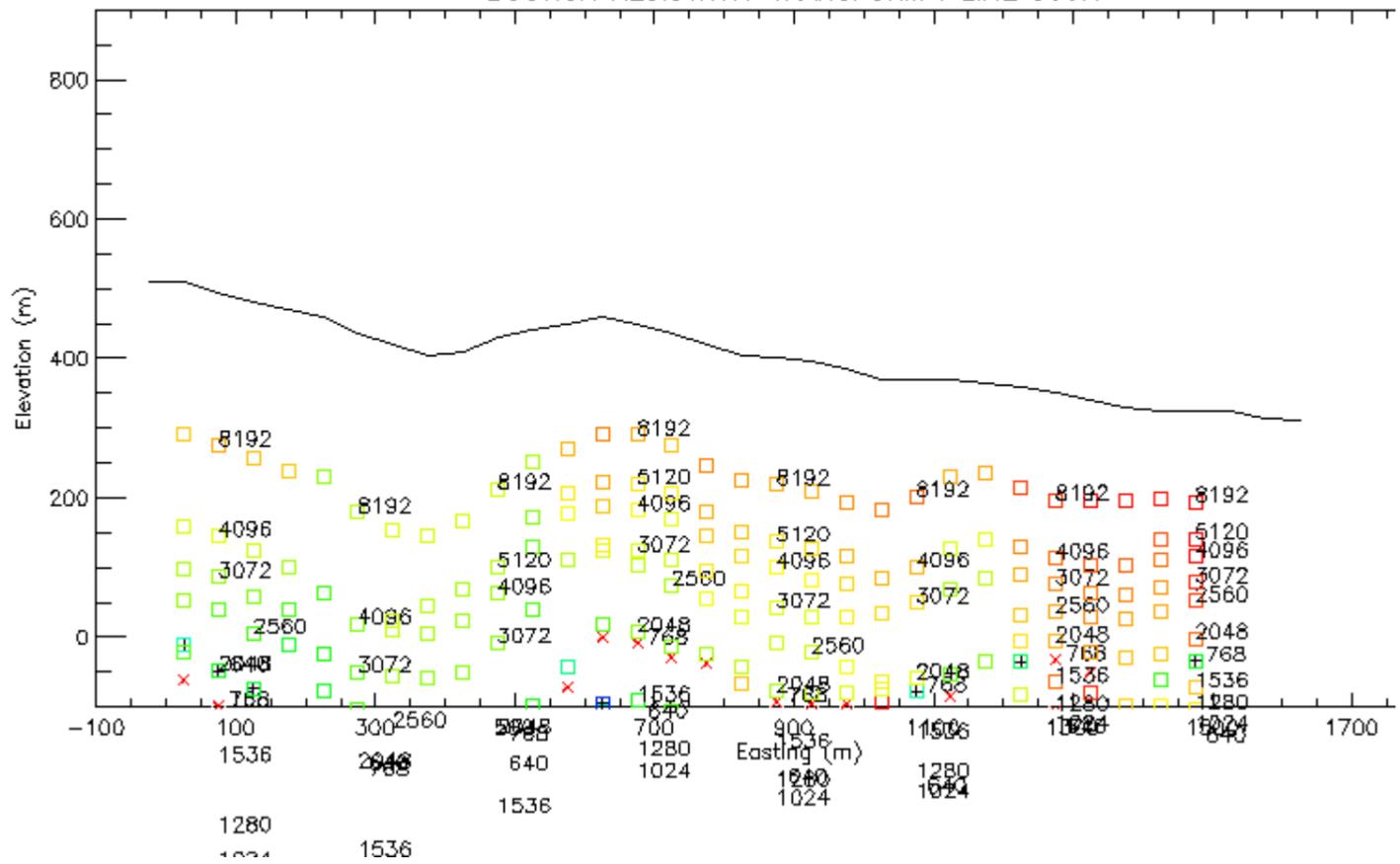
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INTERPOLATED BOSTICK RESISTIVITY : LINE 800N



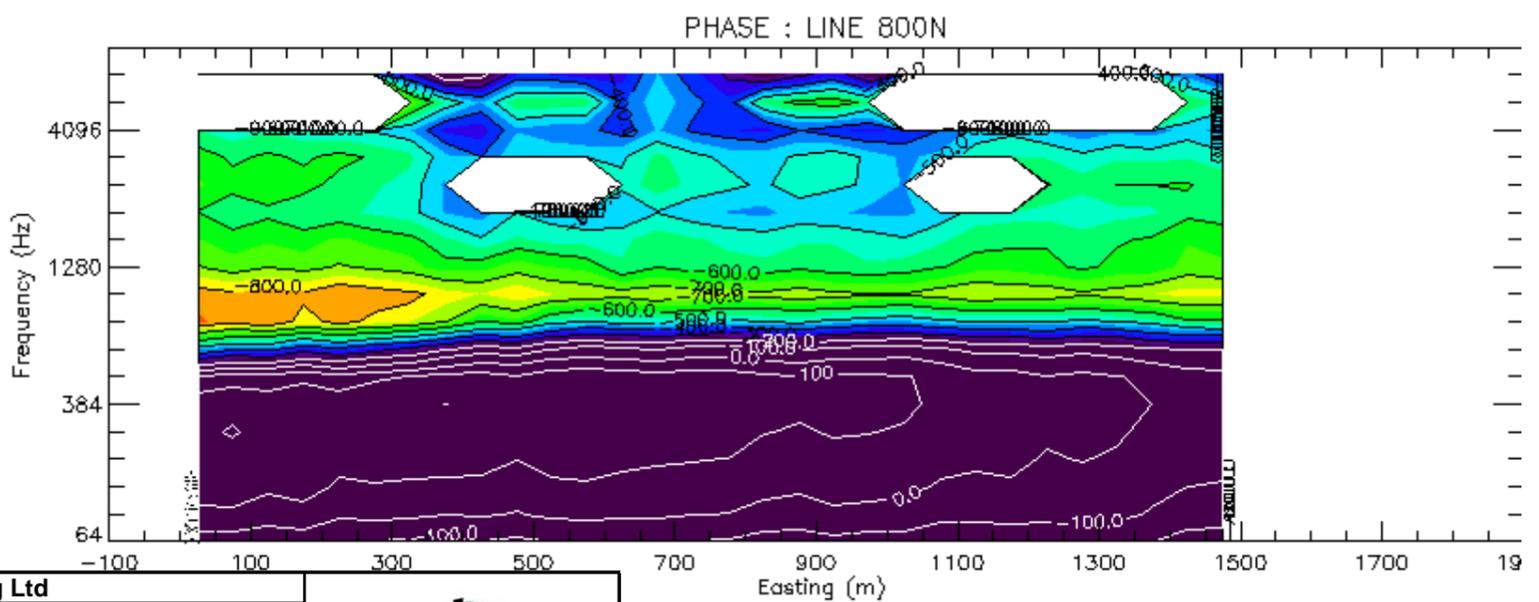
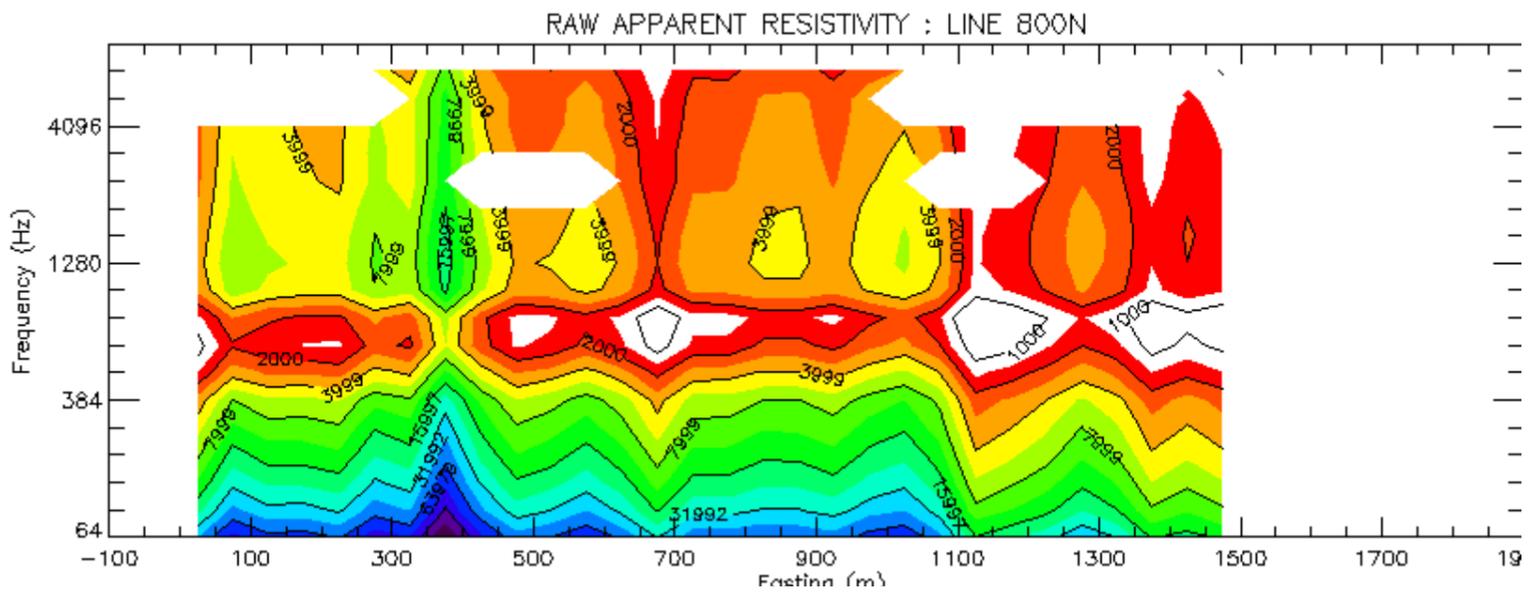
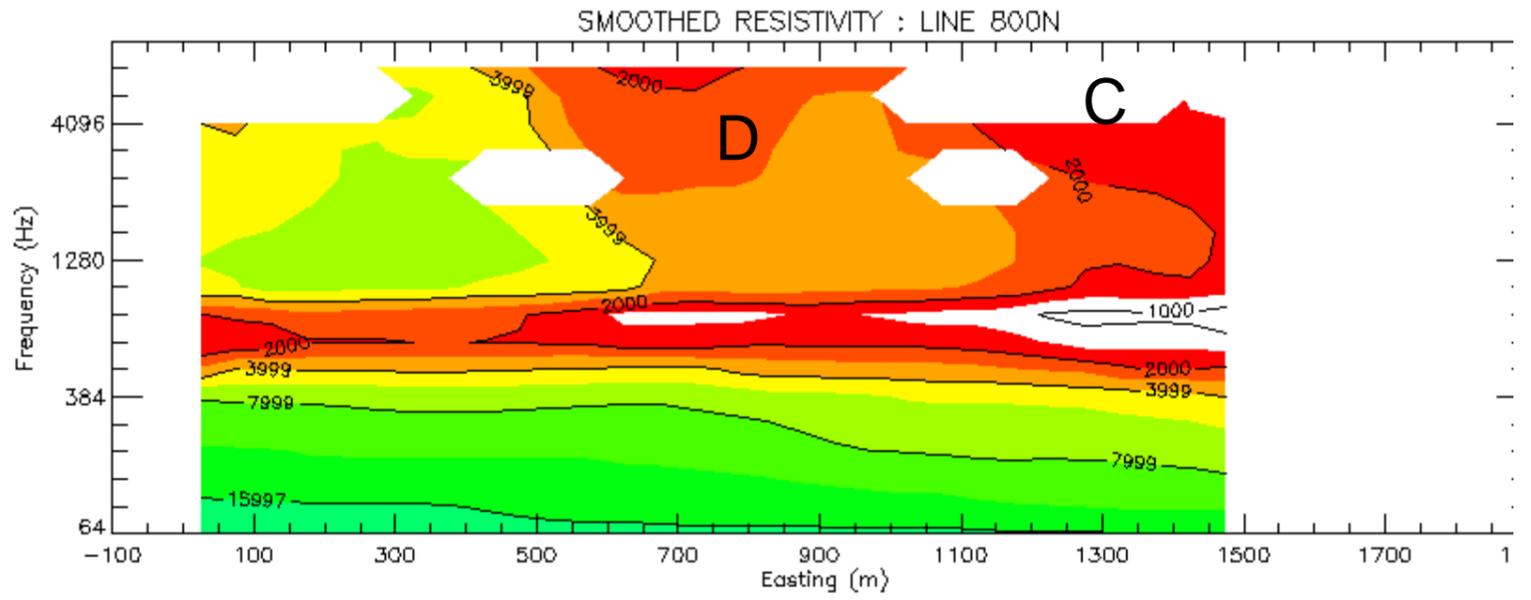
BOSTICK RESISTIVITY TRANSFORM : LINE 800N



Client:	<b>Newcrest Mining Ltd</b>	
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten                      Aug-05	

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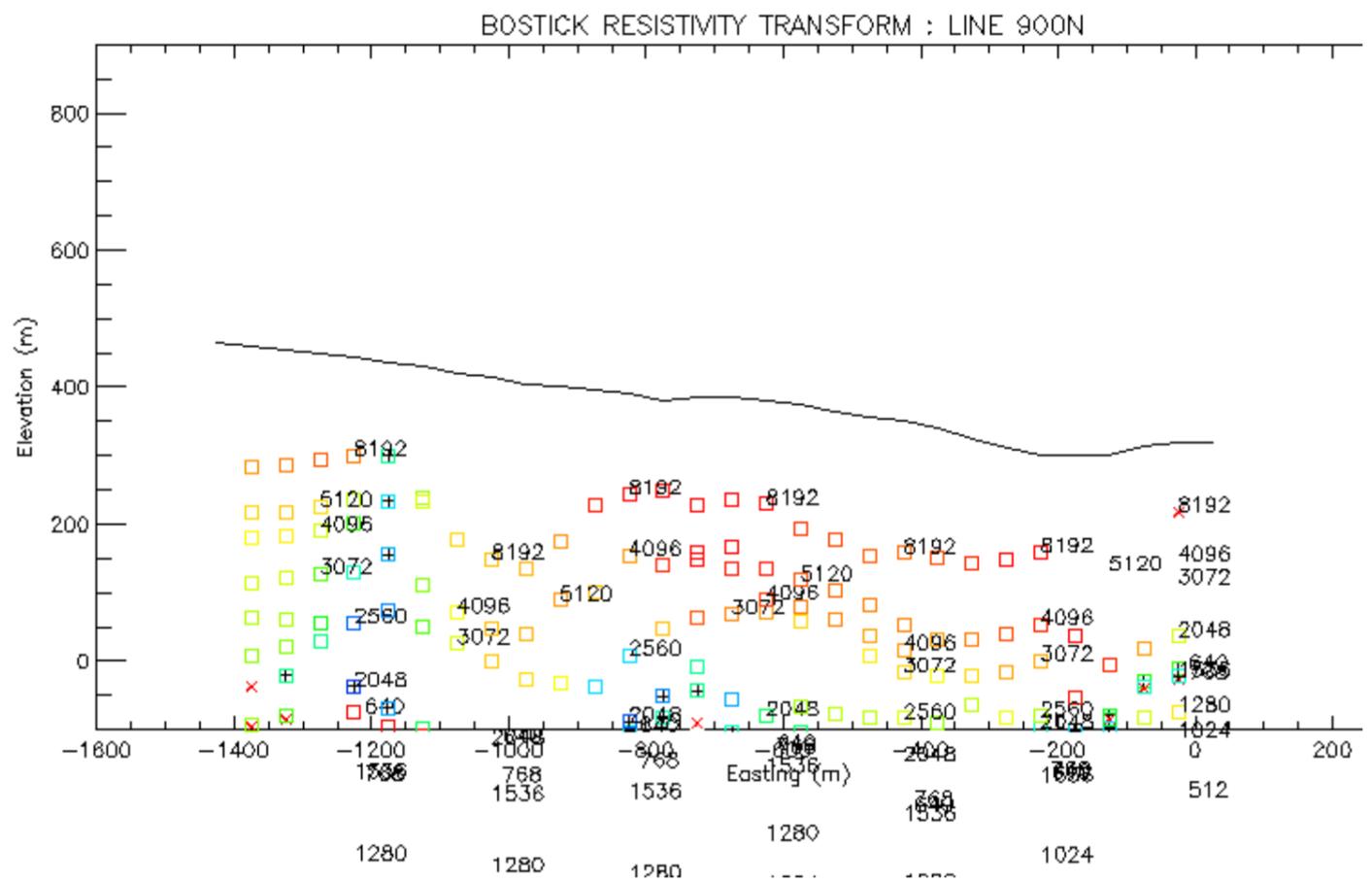
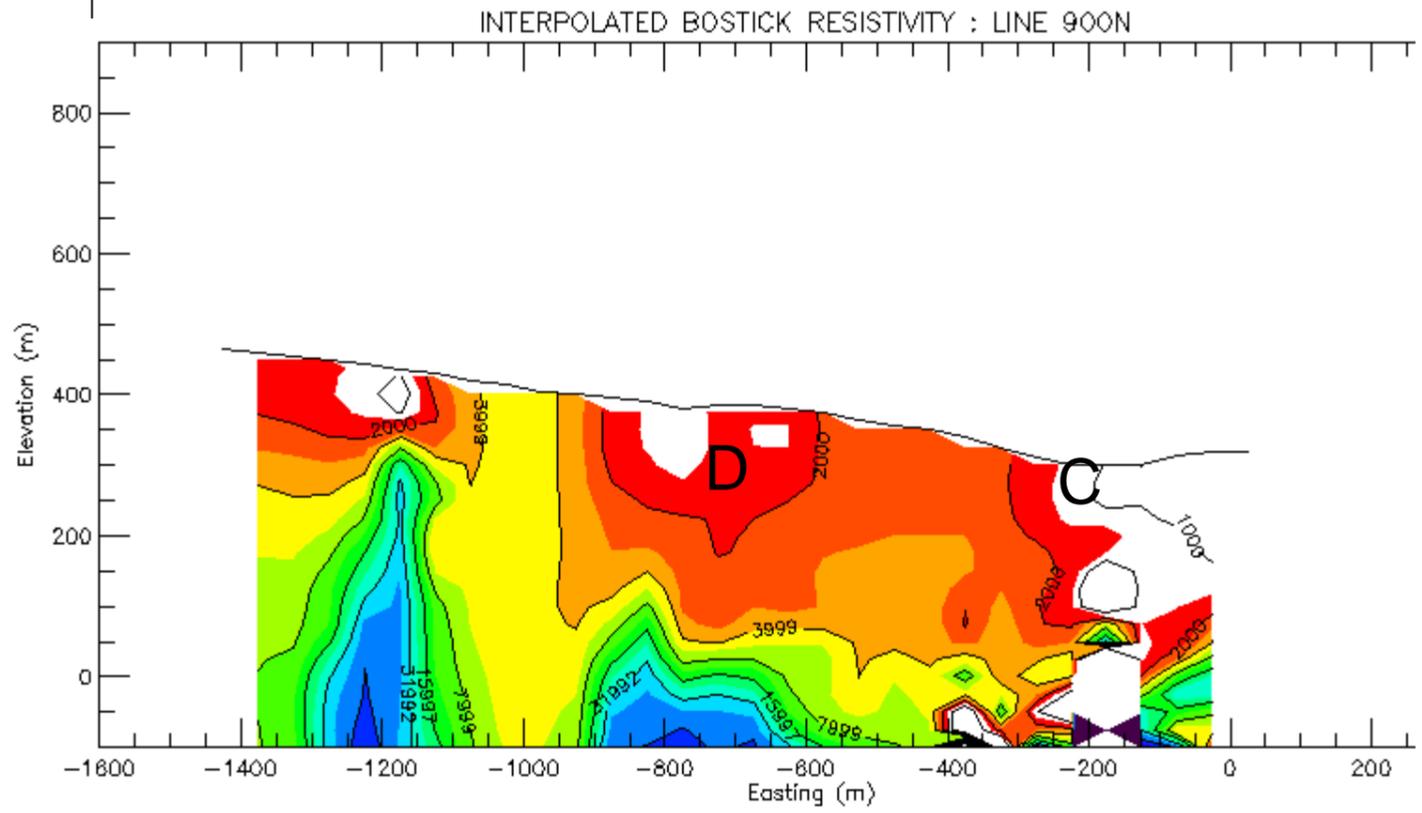


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Job 0508/1	Michael Asten Aug-05



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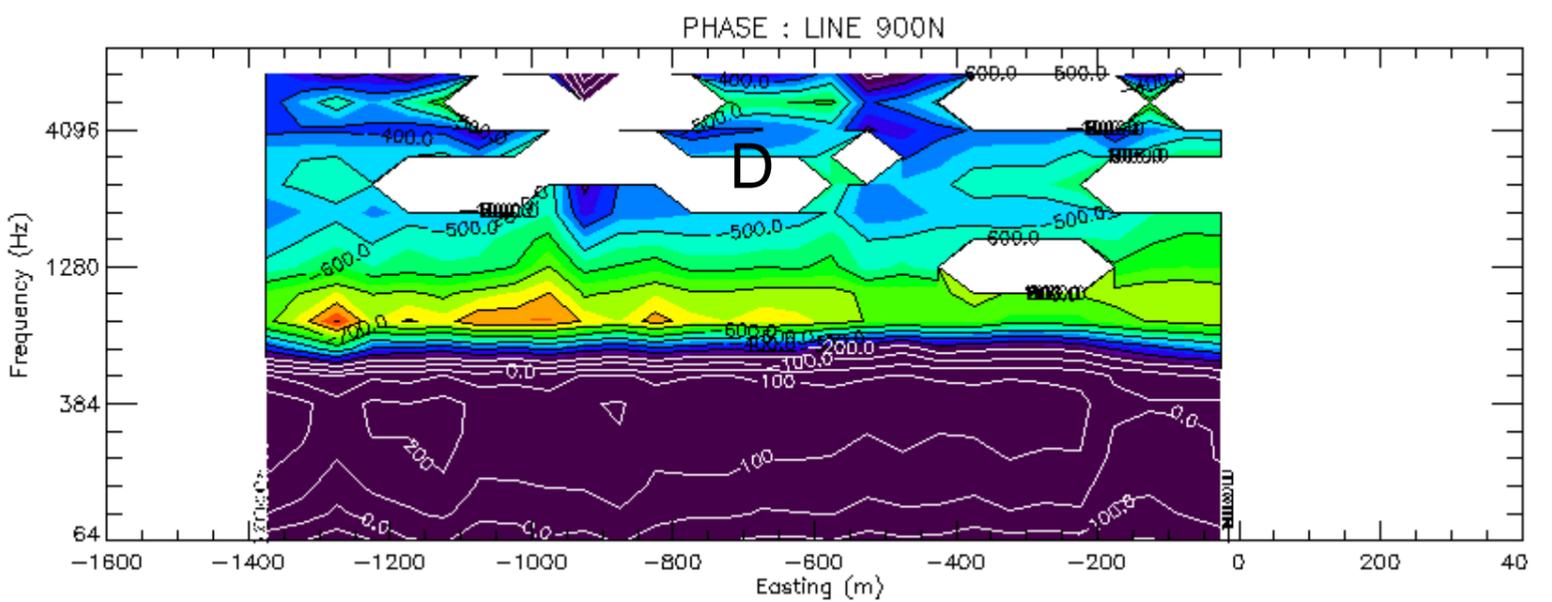
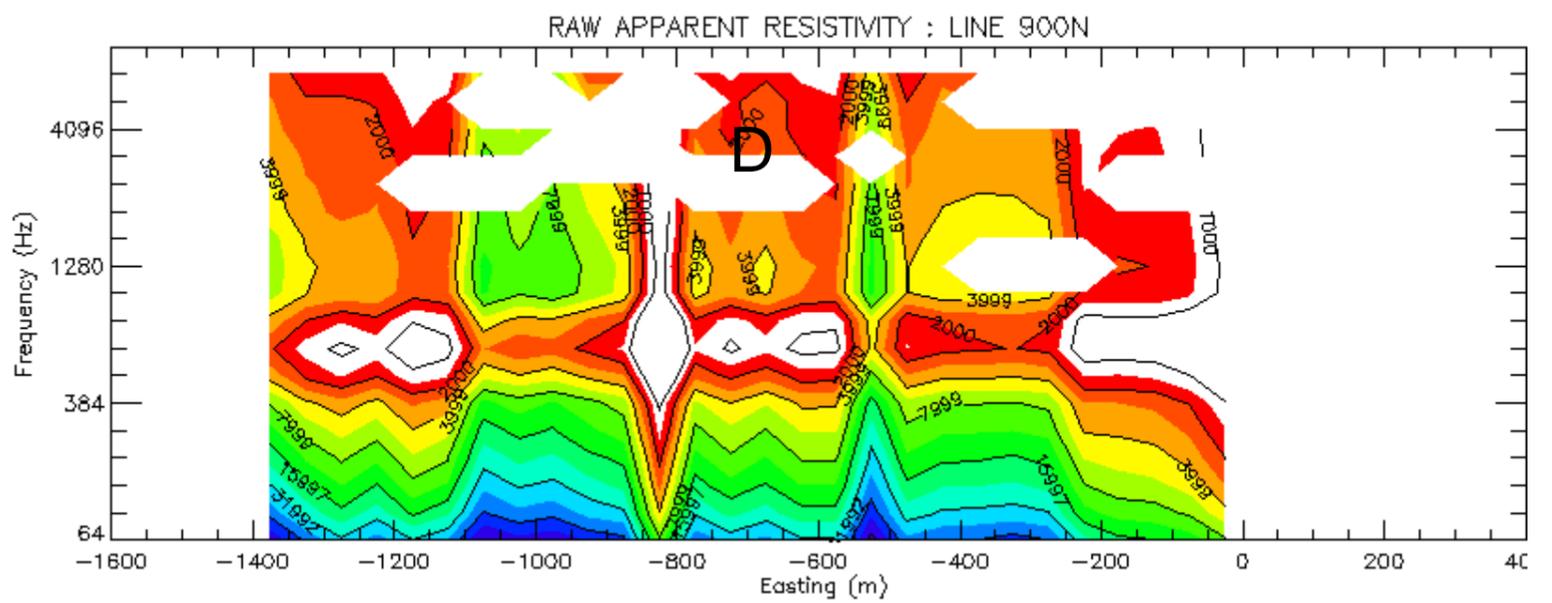
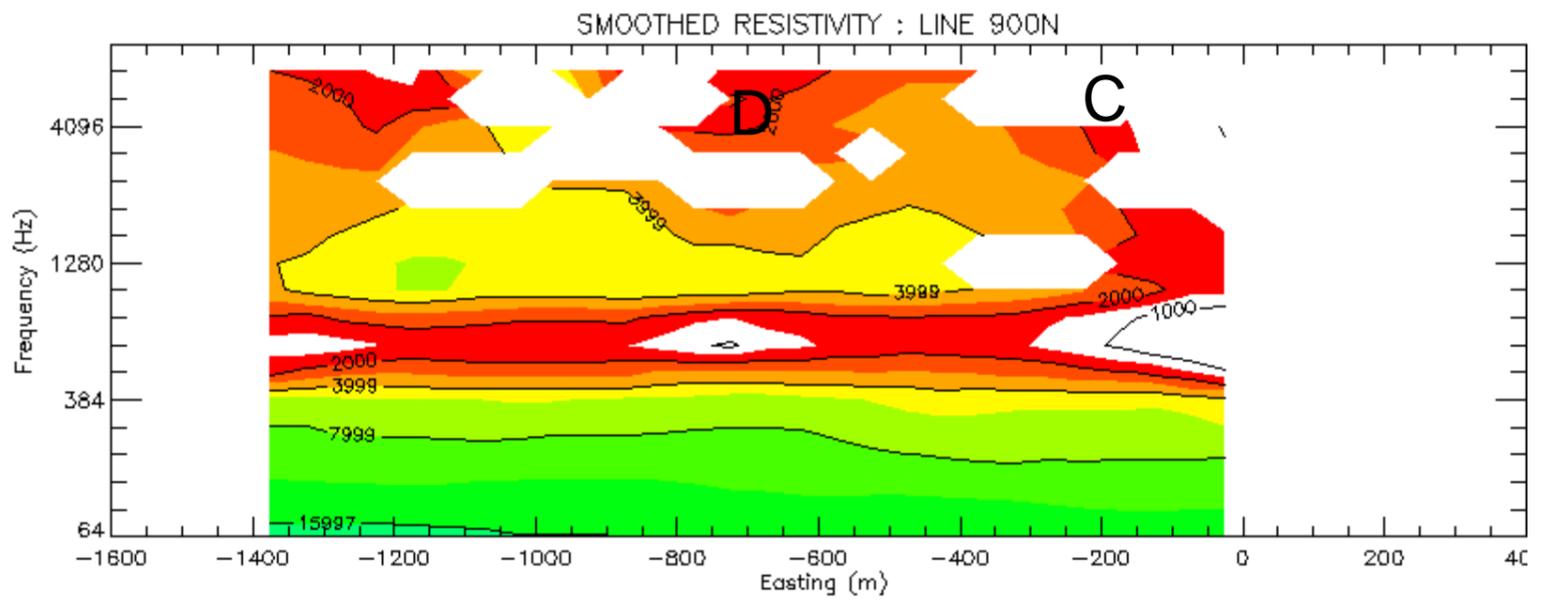
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Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten Aug-05	

382900E

383300E



## APPENDIX D

### Reprocessing and plotting of resistive-alteration model data, and of field data Lines 9-16

#### RELATIVE LOCAL COORDINATES AND AMG EASTINGS AND NORTHINGS FOR LINES 1-16

##### CSAMT Job 602 Jukes Darwin area

Line	Local Start Local End	Local coord corresponding to AMG E of 382900	AMG E	AMG N	Elev
line1	0		383817	5328505	710
line1	-1000	-1055	382955	5328500	845
line2	0		383757	5328190	663
line2	-950	-951	382901	5328213	826
line3	0		384057	5327840	592
line3	-800	-1211	383311	5327923	797
line4	0		382921	5326944	740
line4	600	36	383464	5326871	790
line5	0	-318	383218	5326481	680
line5	600		383769	5326452	620
line6	0	-175	383075	5325972	650
line6	1300		384309	5325940	485
line7	0	-188	383088	5325498	595
line7	1750		384732	5325456	390
line8	0	-497	383397	5324995	510
line8	1600		384910	5325035	310
line9	0		384812	5324477	320
line9	-1400	-1971	383471	5324541	465
line10	0		384908	5323990	285
line10	-950	-2080	384030	5324010	485
line11	0		385188	5323730	250
line11	-1300	-2400	384000	5323772	520
line12	0		385368	5323301	220
line12	-1250	-2535	384185	5323306	460
line13	0		385374	5323013	200
line13	-1200	-2544	384244	5322999	490
line14	0		385554	5322659	190
line14	-1200	-2745	384445	5322699	390
line15	0		385635	5322145	194
line15	-1450	-2805	384255	5322182	562
line16	0		385892	5321510	189
line16	-2050	-3150	384000	5321517	700

# Flagstaff GeoConsultants



Plots are included in digital file EL20\_2003\_200605\_Appendix3.pdf on the CD at the back of this report.

Note that plot labels 100N to 1600N correspond with CSAMT Line numbers 1 to 16.

# APPENDIX D

Report 0508/1 for  
**Newcrest Mining Ltd**

Reinterpretation of CSAMT data Mt Jukes area, W. Tas.  
Michael W. Asten  
Flagstaff GeoConsultants Pty Ltd  
18-Oct-2005

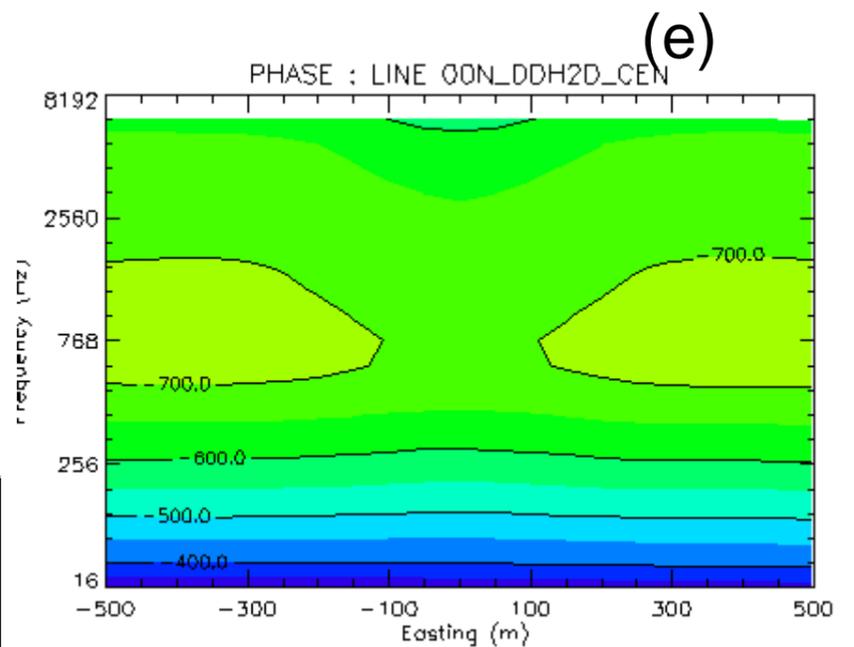
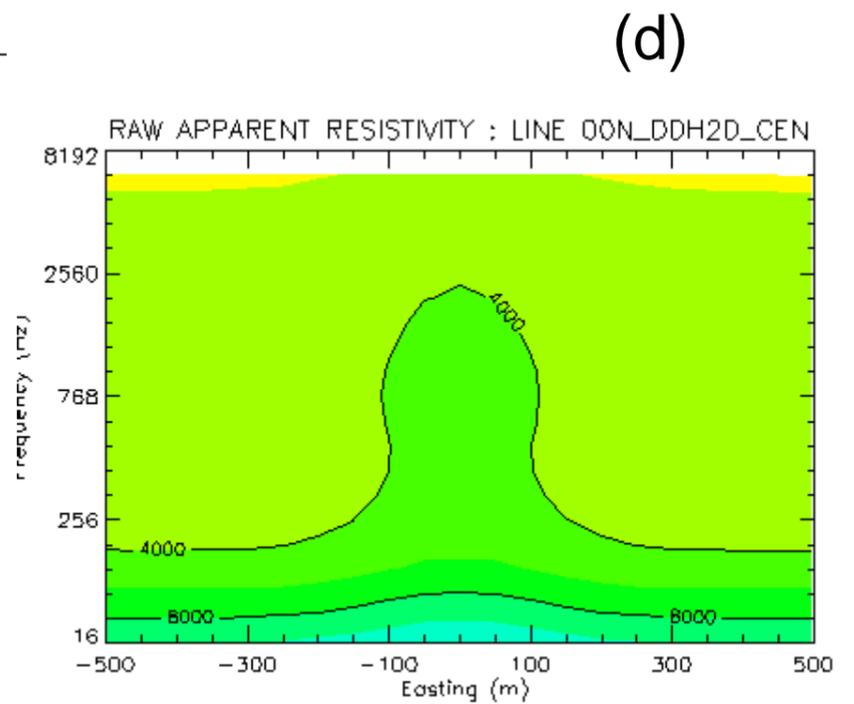
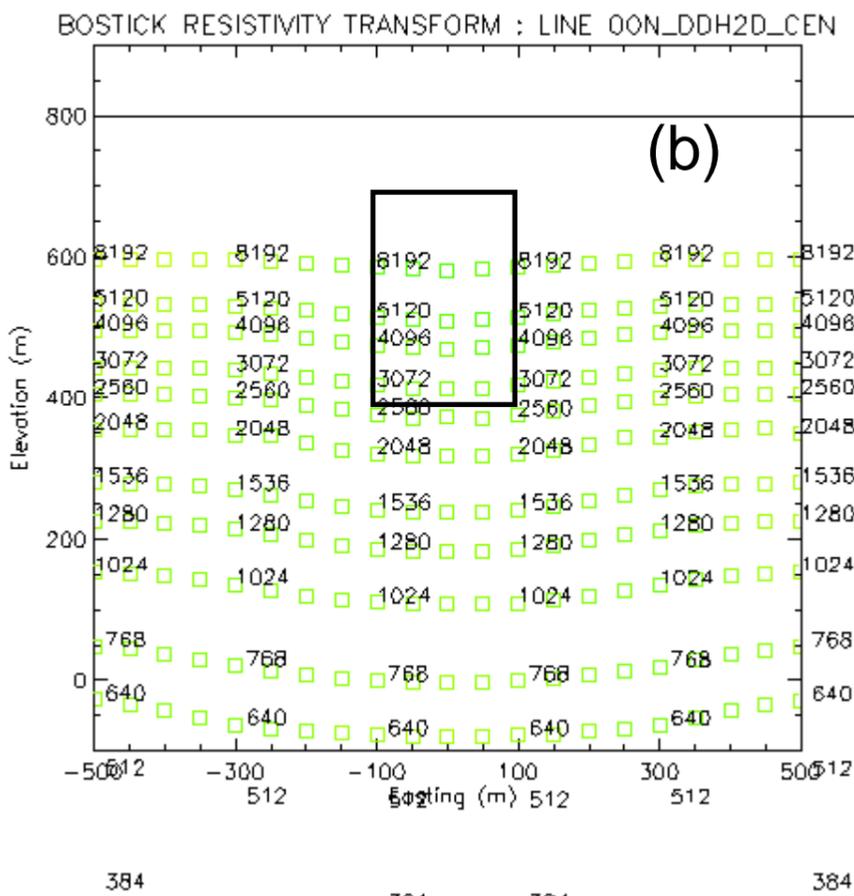
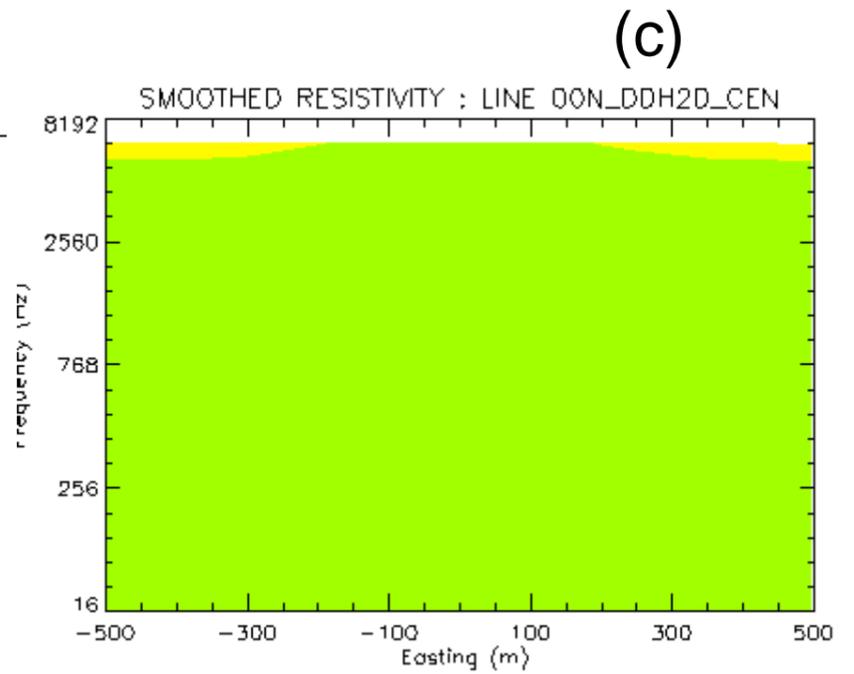
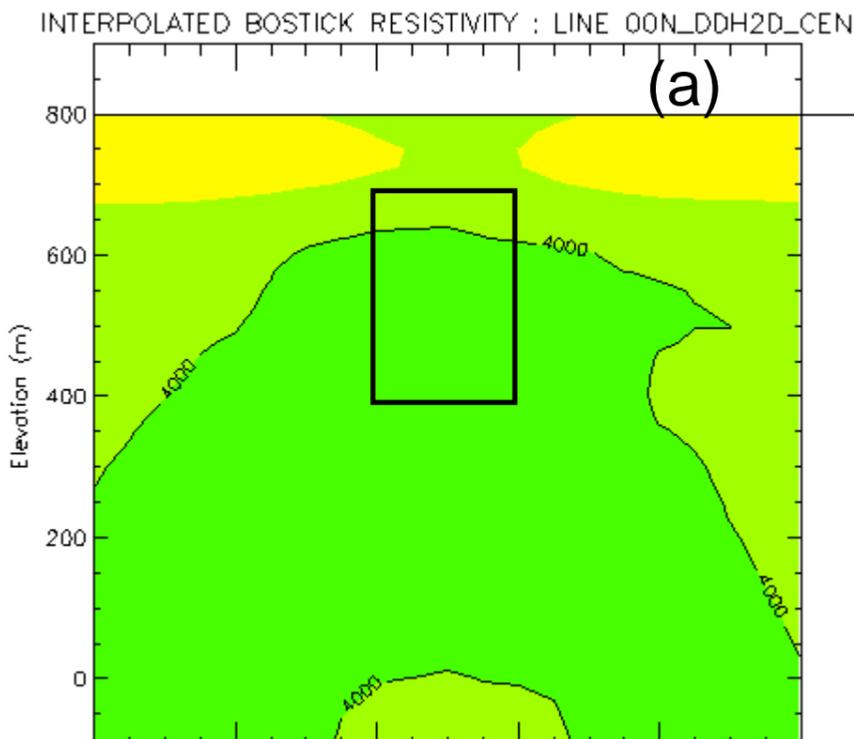
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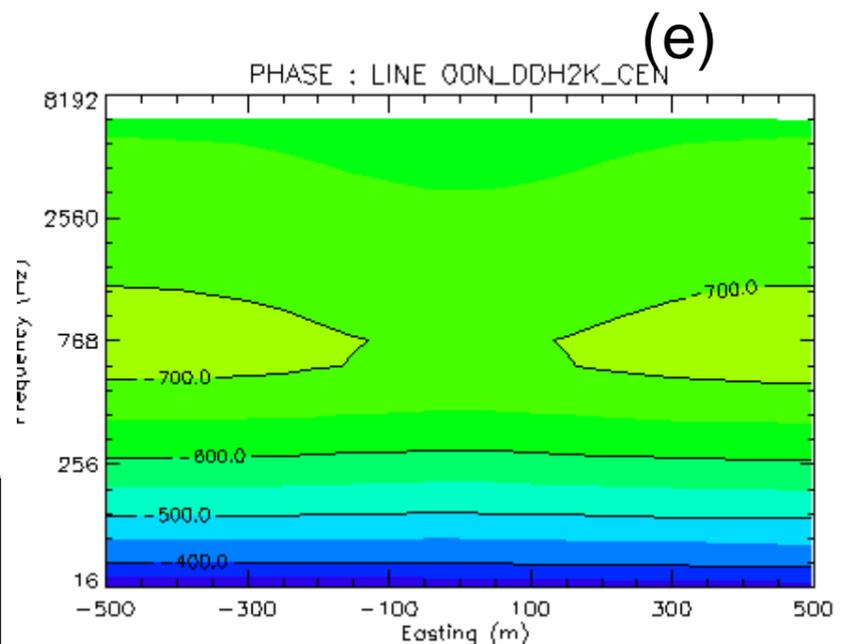
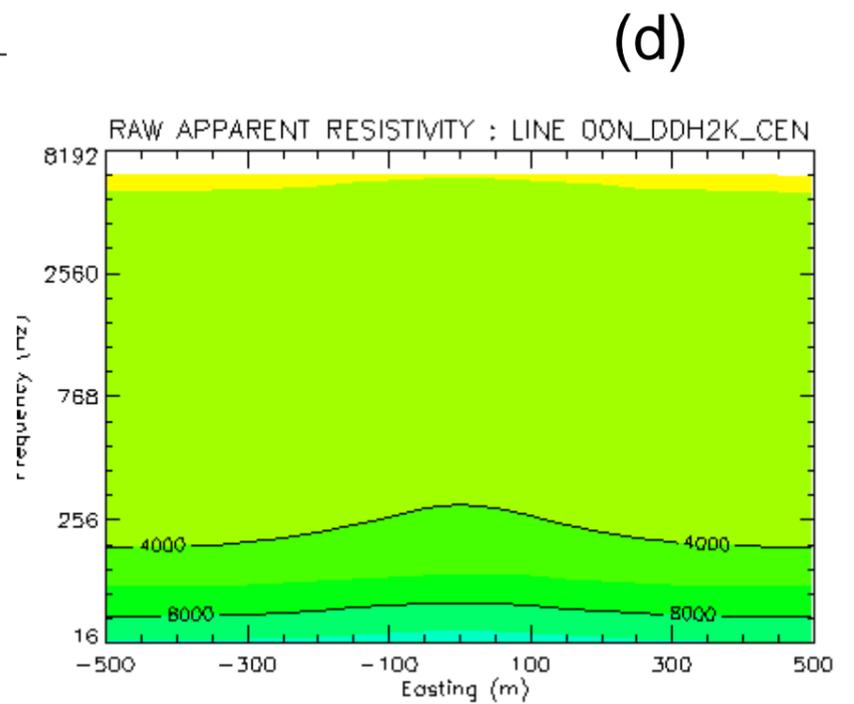
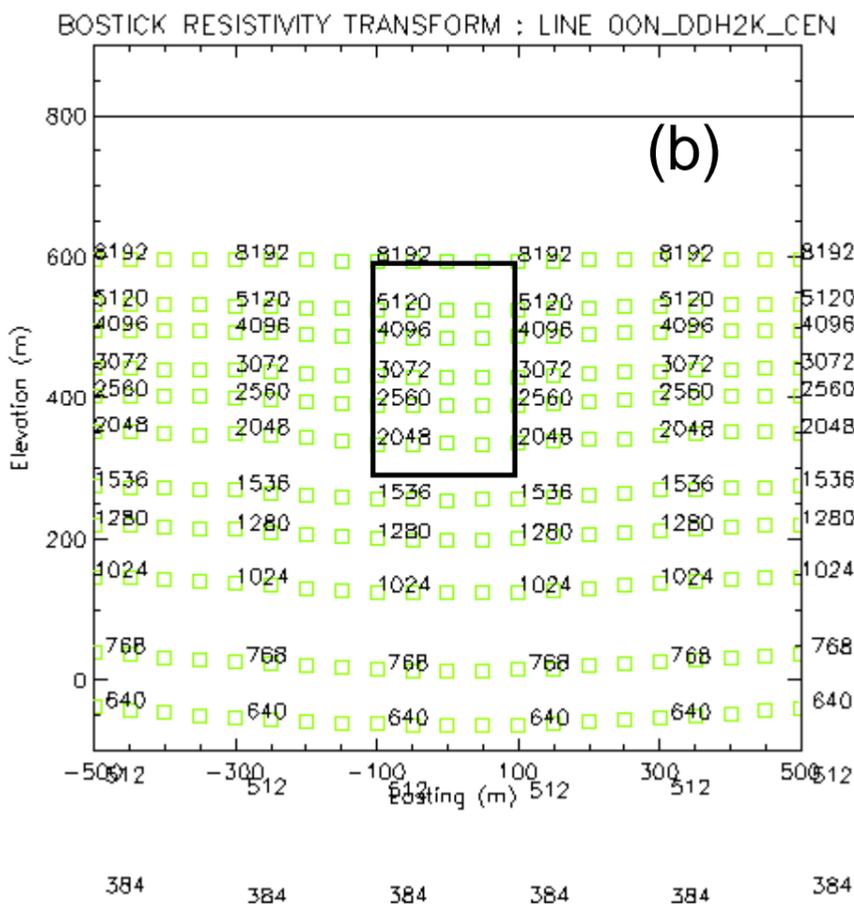
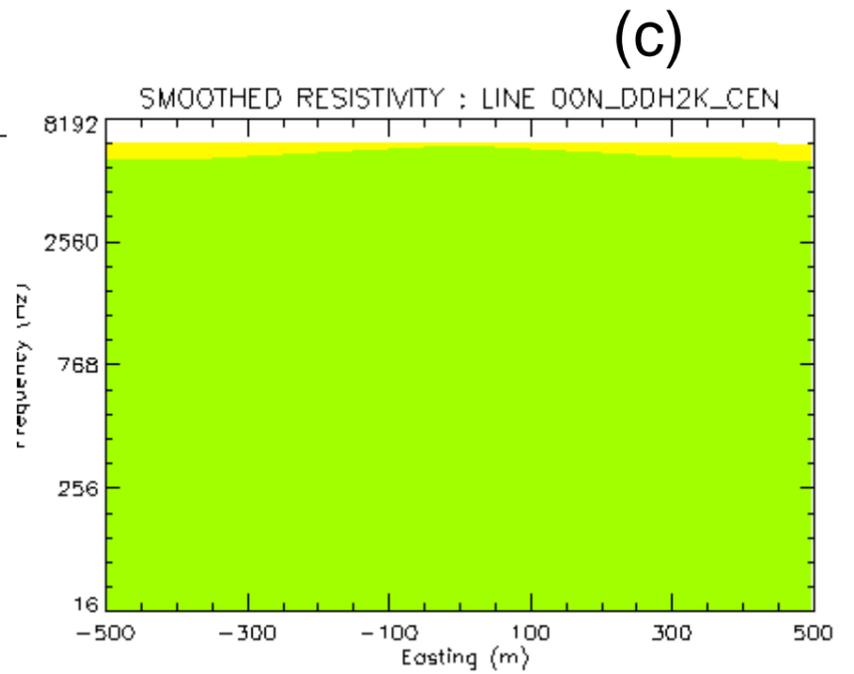
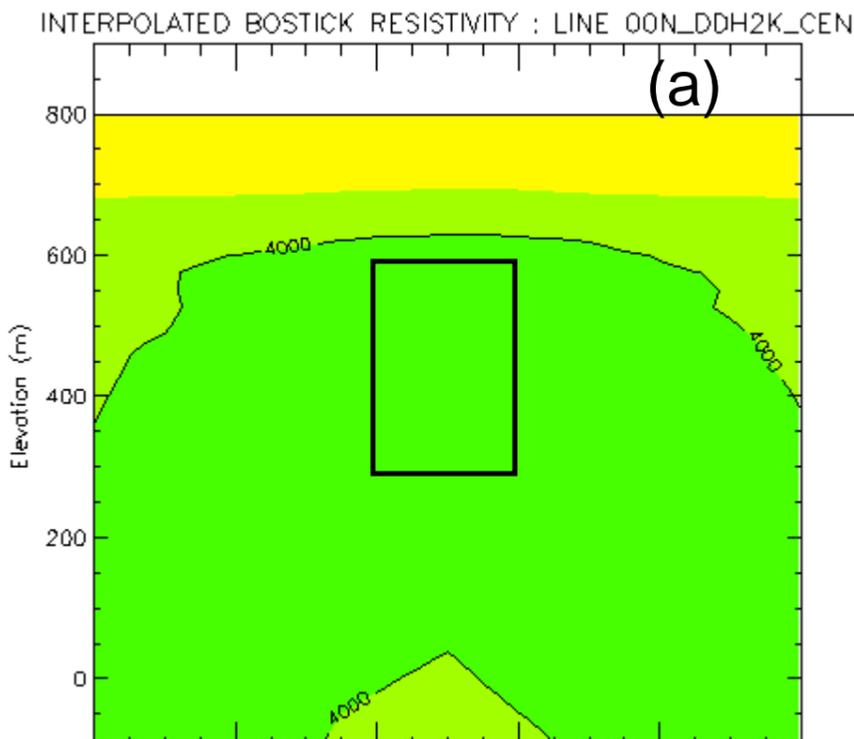
Flagstaff has prepared this report based upon information believed to be accurate at the time of completion, but which is not guaranteed. Flagstaff makes no representation or warranty as to the accuracy, reliability or completeness of the information contained in this report and will not accept liability to any person for any errors or omissions or for losses or damages claimed as a result, directly or indirectly, of items discussed, opinions rendered or recommendations made in this report, except for statutory liability which may not be excluded.



CSAMT model for a wide (200m) zone of resistive siliceous alteration with top at depth **100 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **resistive** alteration is 8000 ohmm.

- (a) Interpolated Bostick parasection.
- (b) Bostick solutions
- (c) Smoothed frequency pseudosection
- (d) Unsmoothed pseudosection with static effects
- (e) Phase pseudosection

Client:	<b>Newcrest Mining Ltd</b>	
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten                      Aug-05	

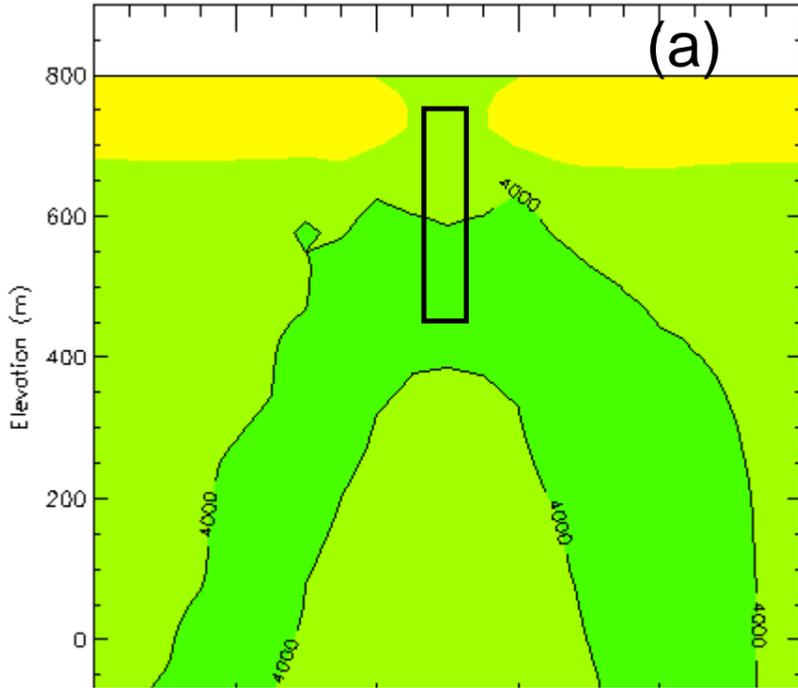


CSAMT model for a wide (200m) zone of resistive siliceous alteration with top at depth **200 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **resistive** alteration is 8000 ohmm.

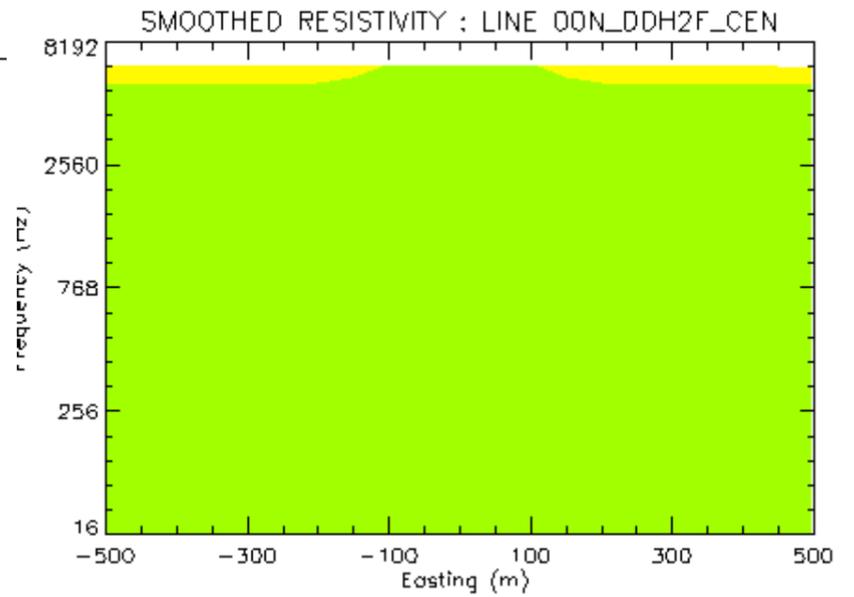
- (a) Interpolated Bostick parasection.
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Job 0508/1	Michael Asten Aug-05	

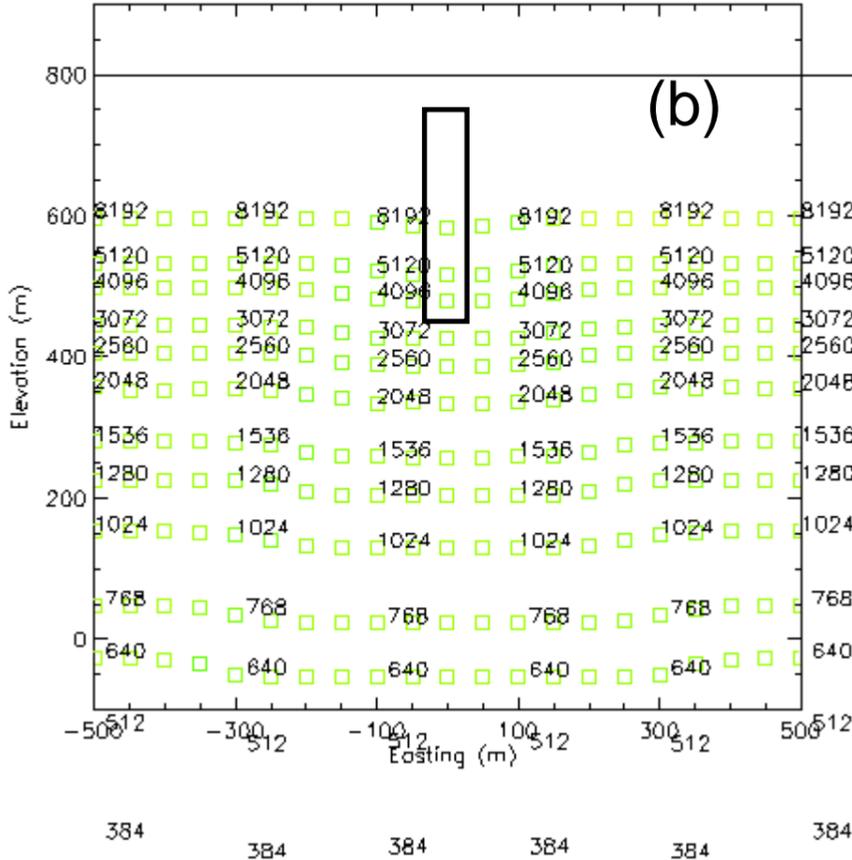
INTERPOLATED BOSTICK RESISTIVITY : LINE 00N\_DD2H2F\_CEN



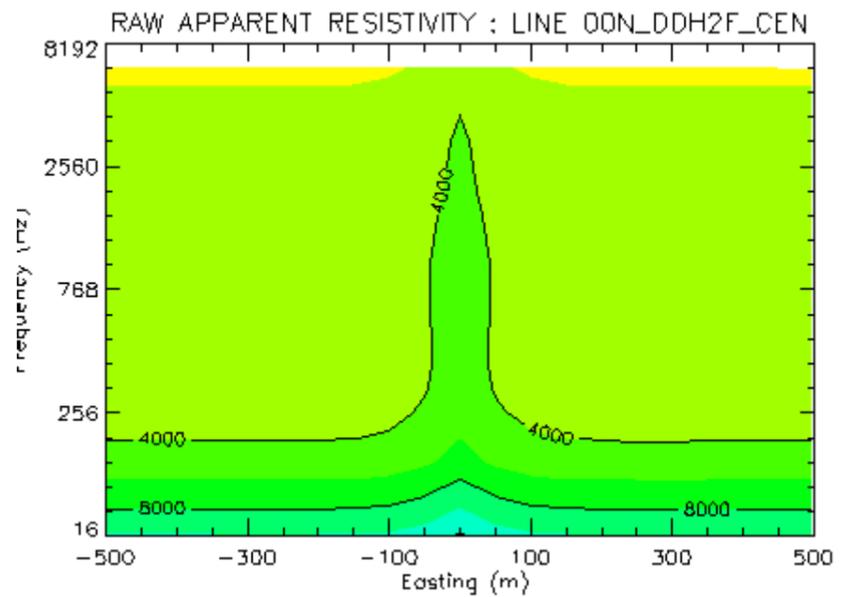
(c)



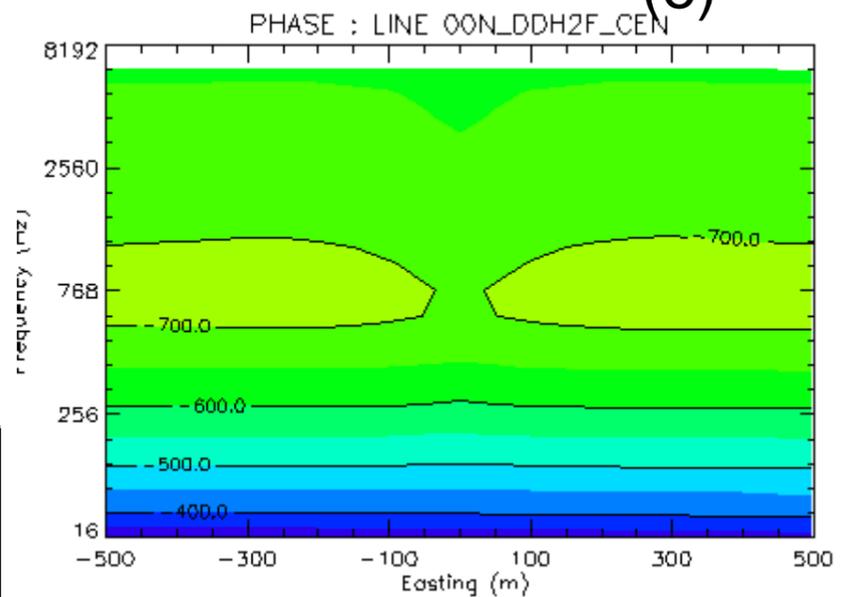
BOSTICK RESISTIVITY TRANSFORM : LINE 00N\_DD2H2F\_CEN



(d)



(e)

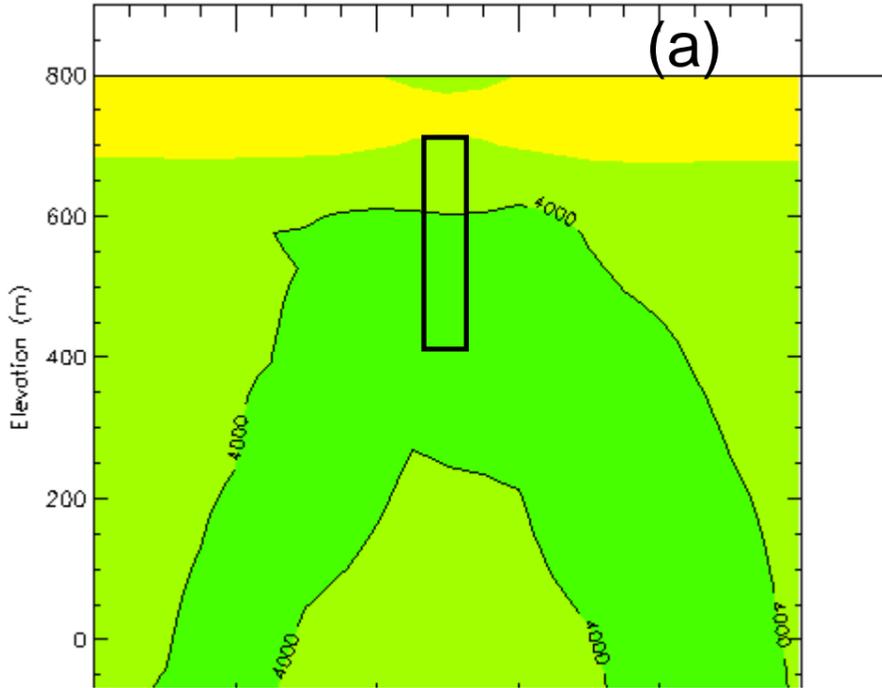


CSAMT model for a narrow (50m) zone of resistive alteration with top at depth **25 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **resistive** alteration is 8000 ohmm.

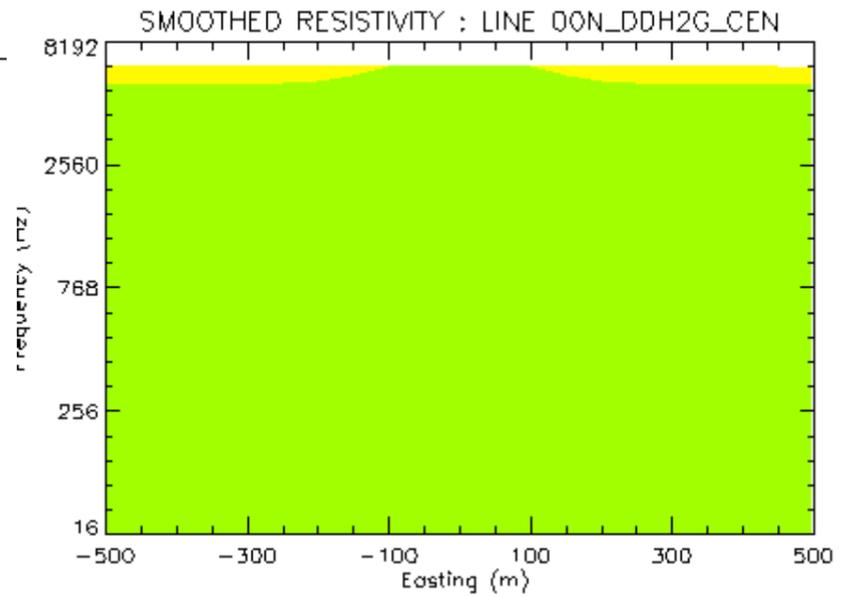
- (a) Interpolated Bostick parasection.
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Job 0508/1	Michael Asten Aug-05	

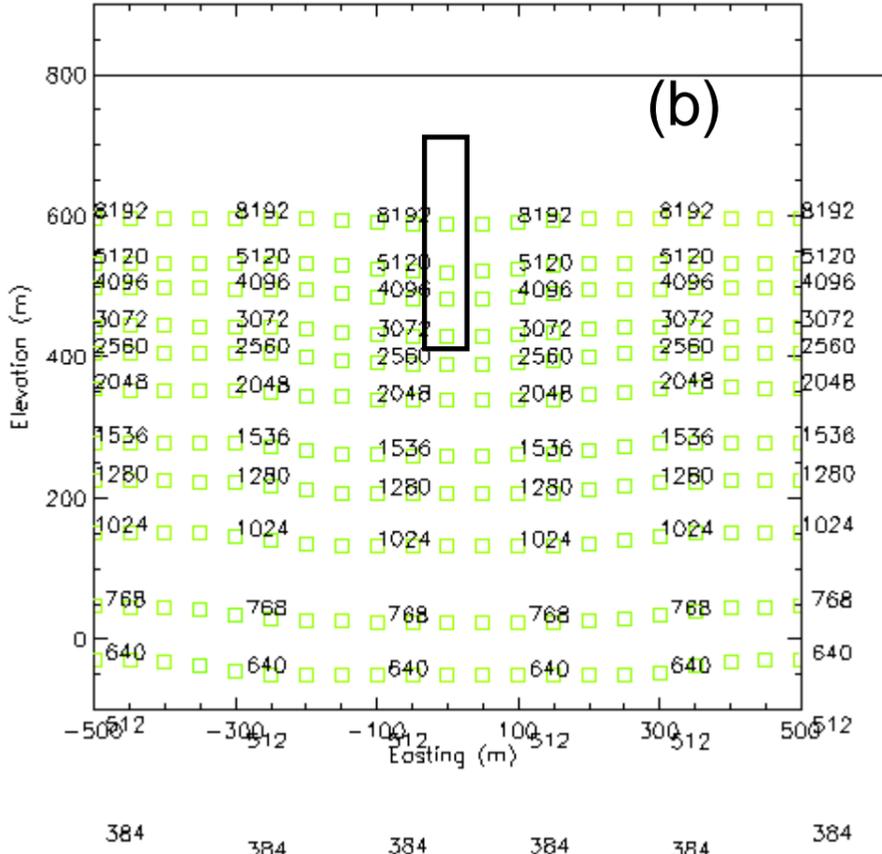
INTERPOLATED BOSTICK RESISTIVITY : LINE 00N\_DD2G\_CEN



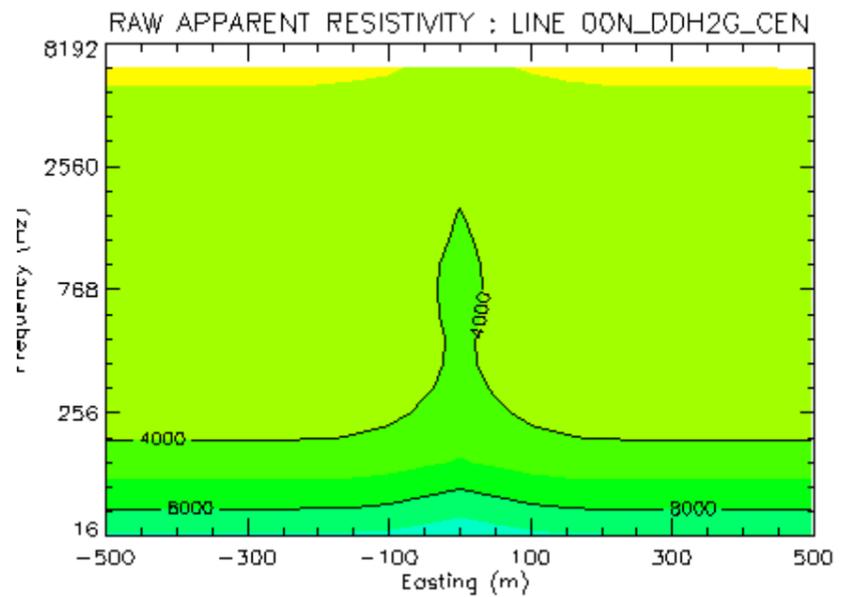
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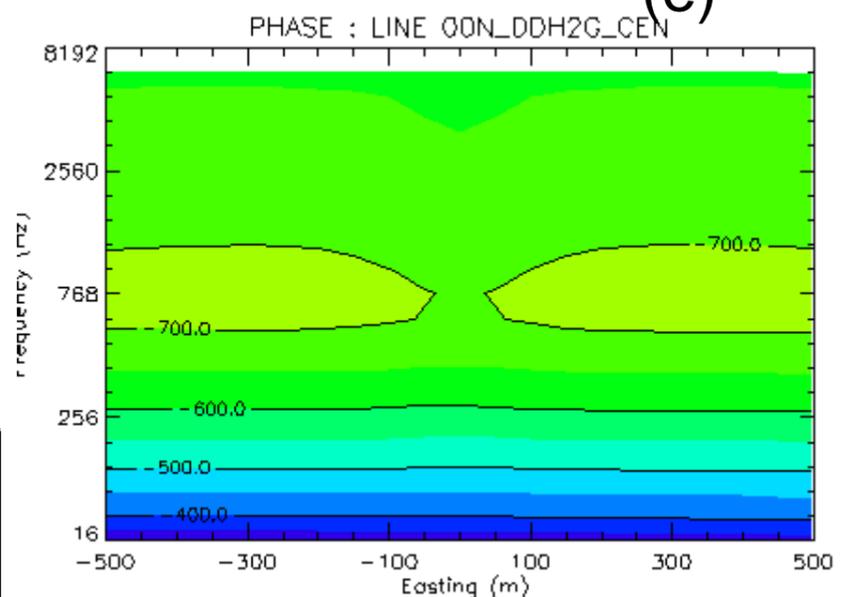
BOSTICK RESISTIVITY TRANSFORM : LINE 00N\_DD2G\_CEN



(d)



(e)



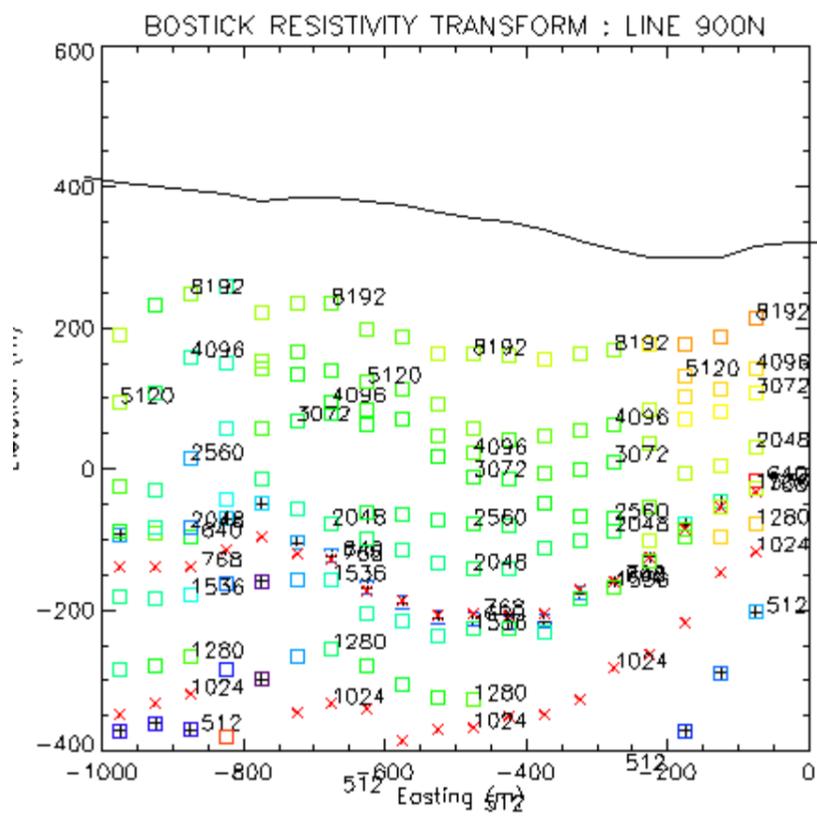
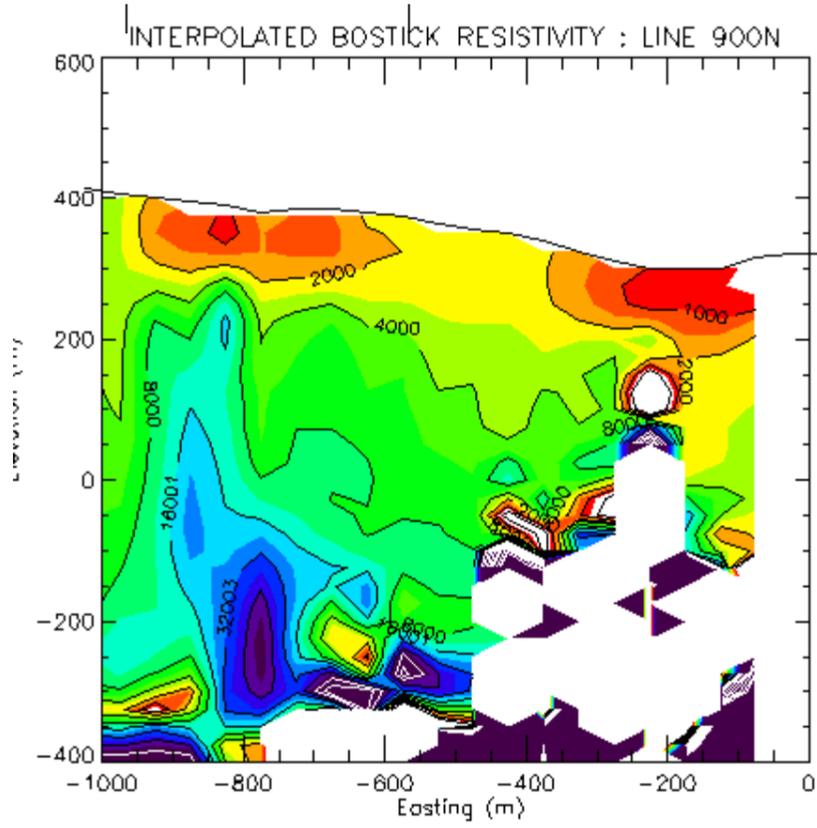
CSAMT model for a narrow (50m) zone of resistive alteration with top at depth **50 m**. Earth is 25m of 1000 ohmm over 4000 ohmm. Body of **resistive** alteration is 8000 ohmm.

- (a) Interpolated Bostick parasection.
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Job 0508/1	Michael Asten Aug-05	

383900E

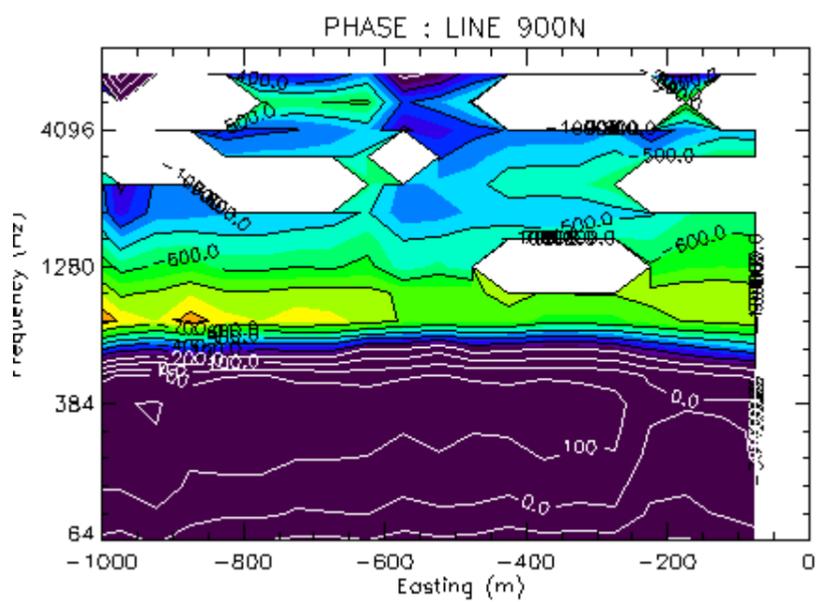
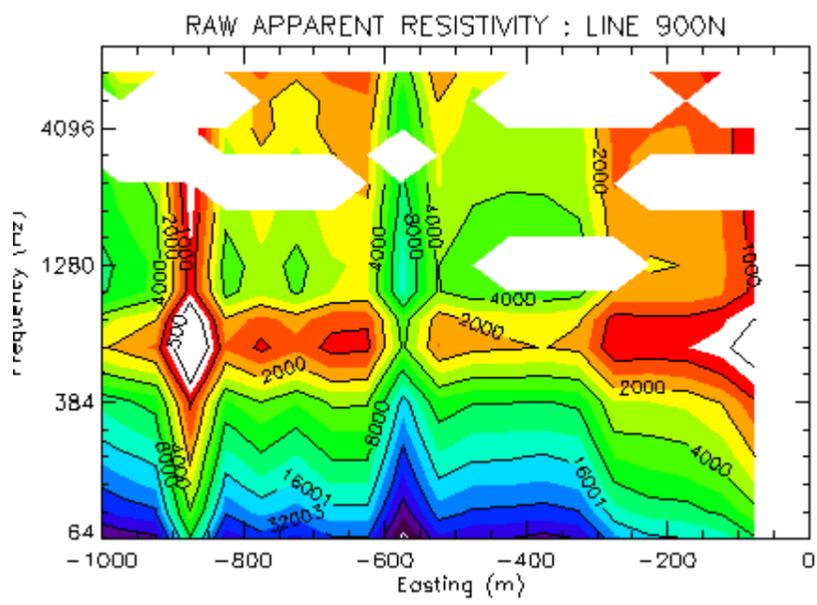
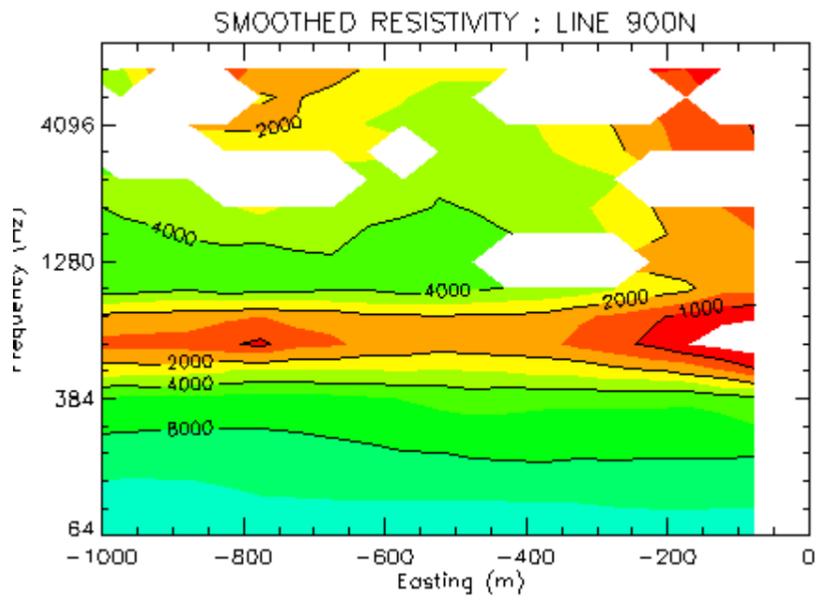
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Client:	<b>Newcrest Mining Ltd</b>	 <b>Flagstaff</b> GeoConsultants
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
	Flagstaff GeoConsultants Pty Ltd 2/337A Lennox St, Richmond Vic 3121	
Job 0508/1	Michael Asten                      Aug-05	

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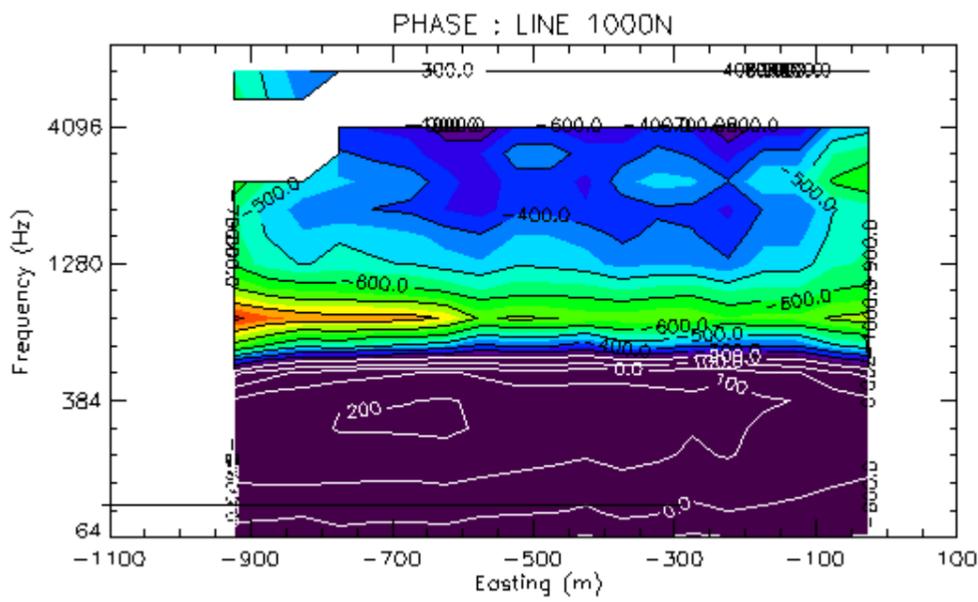
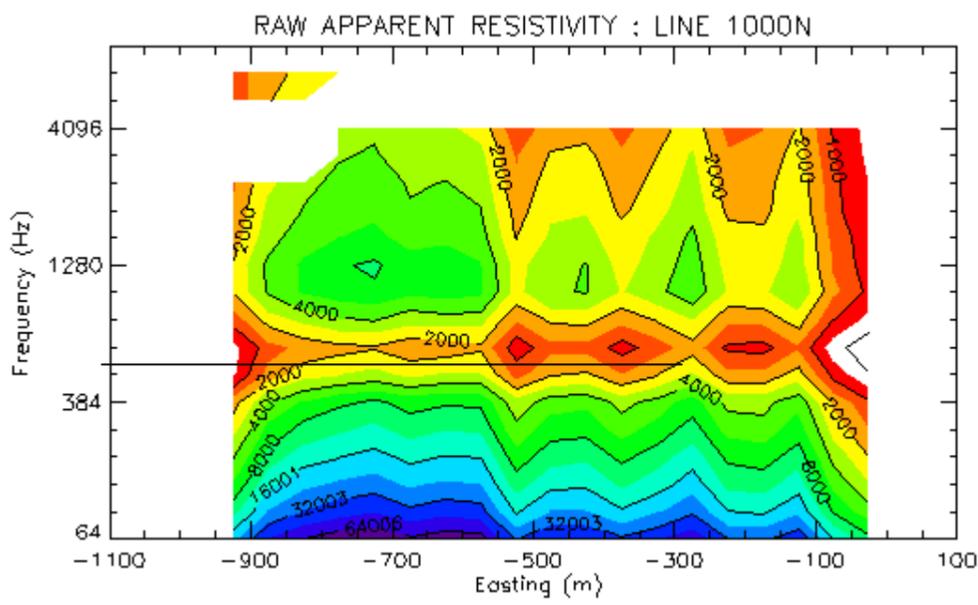
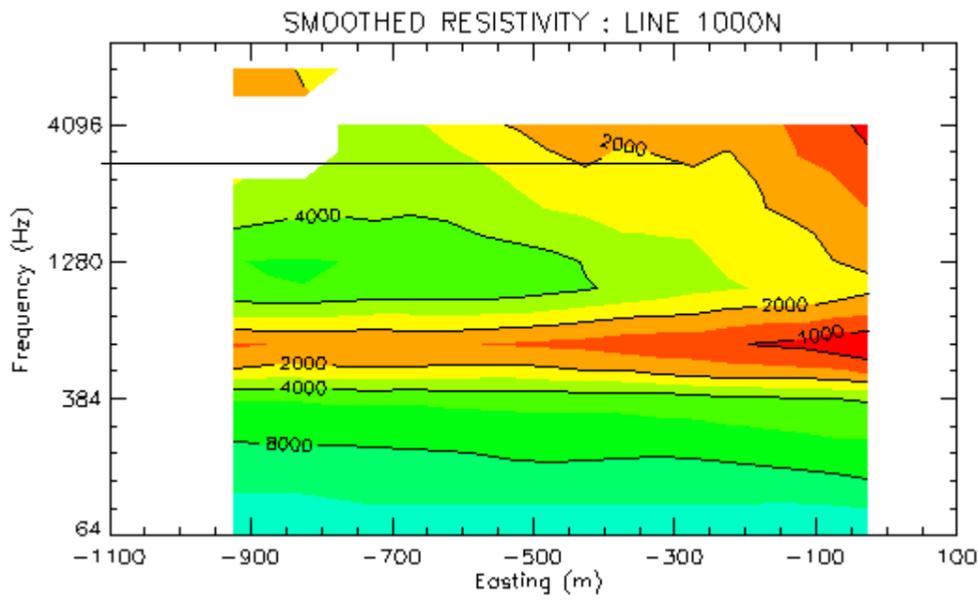
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Job 0508/1	Michael Asten                      Aug-05	

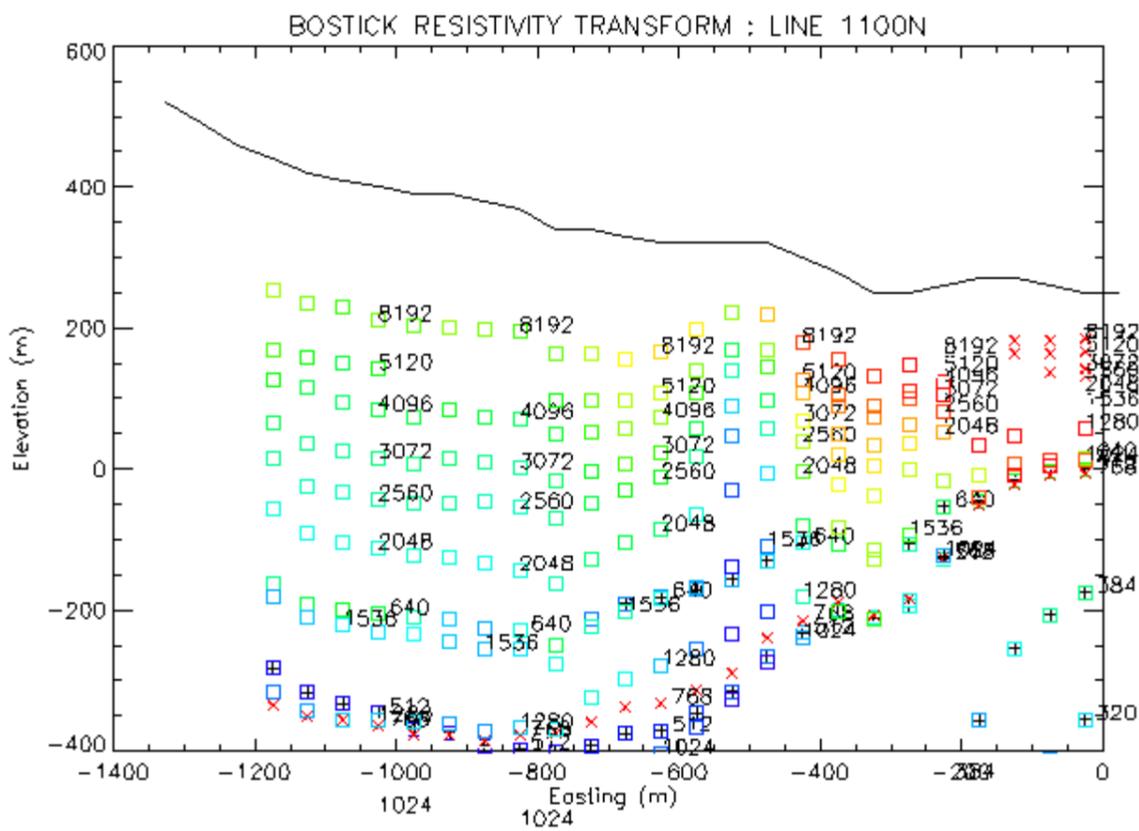
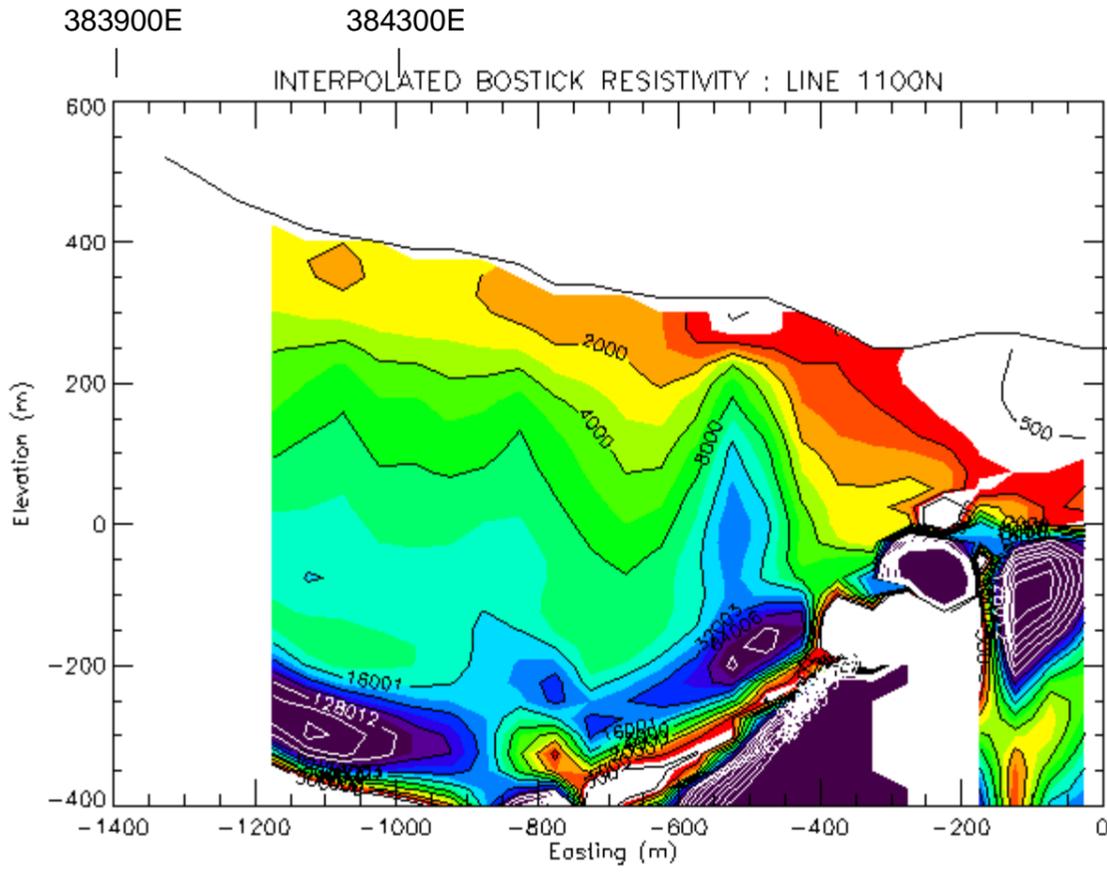


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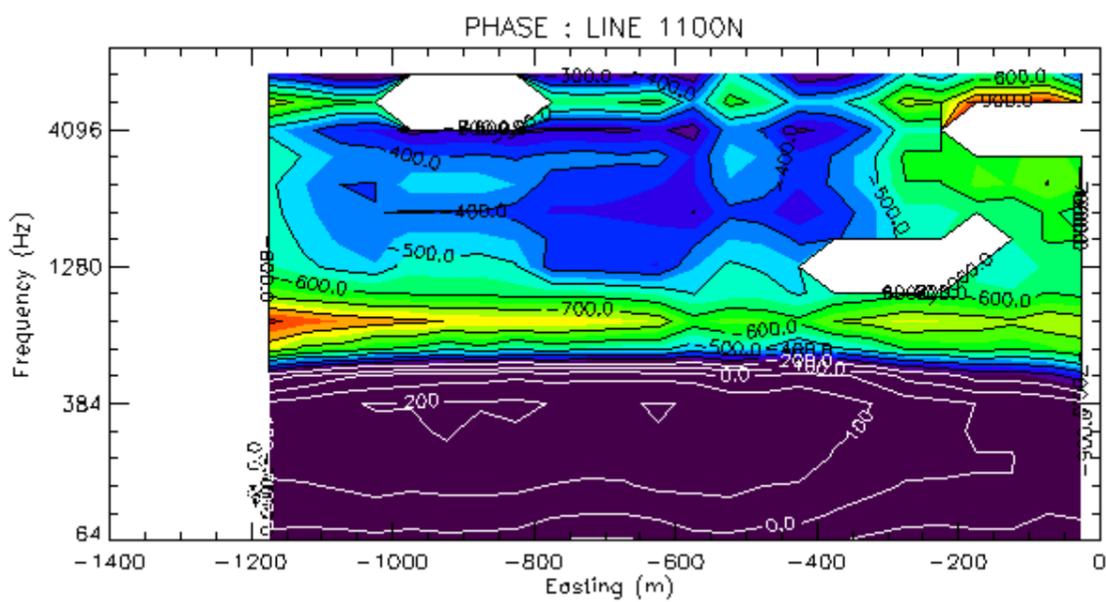
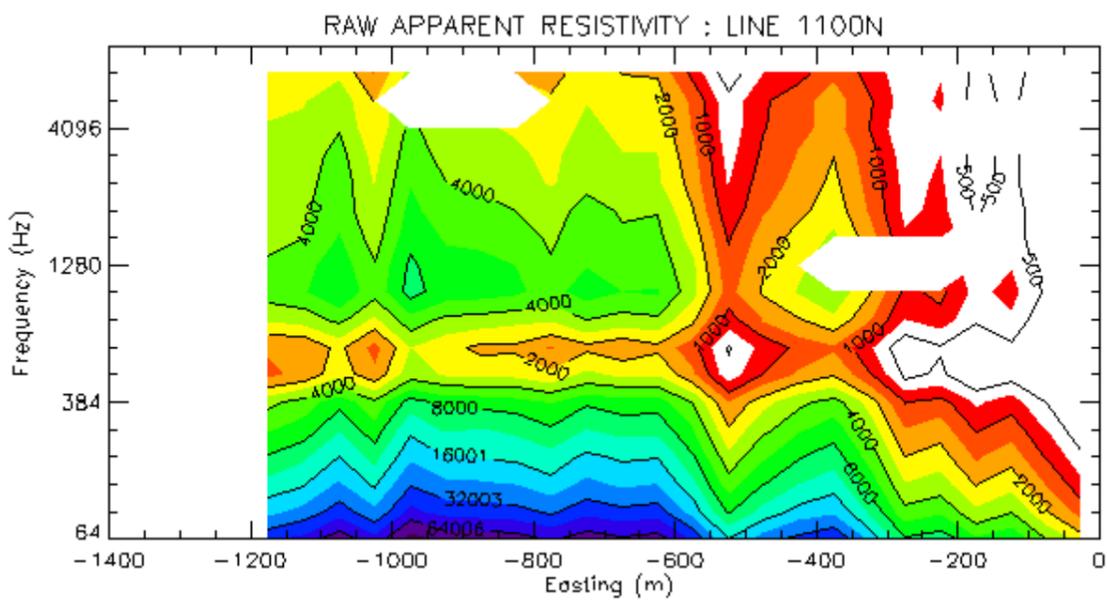
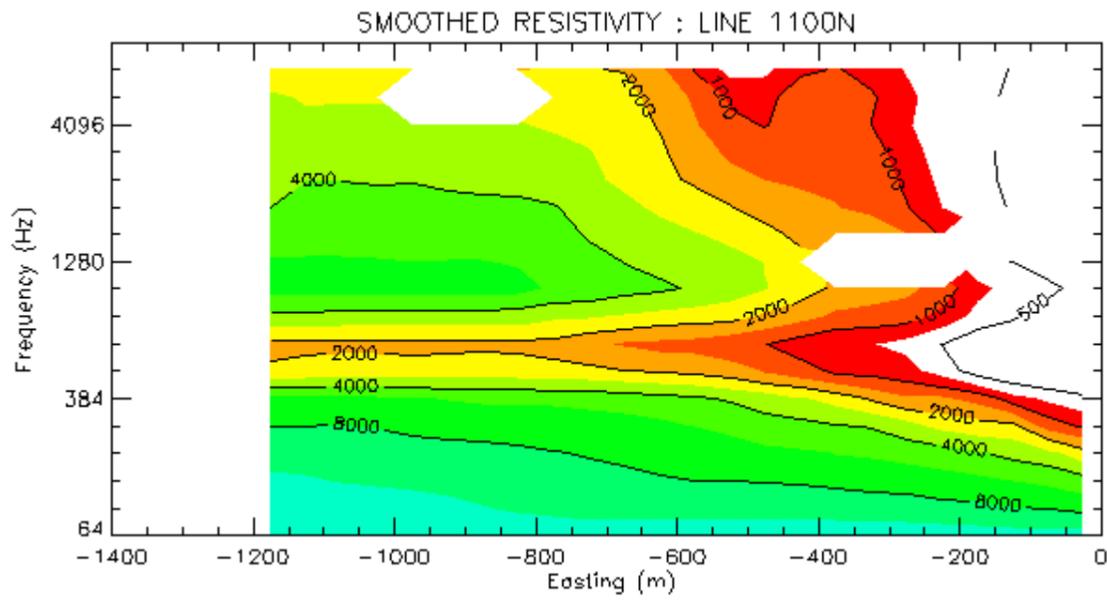
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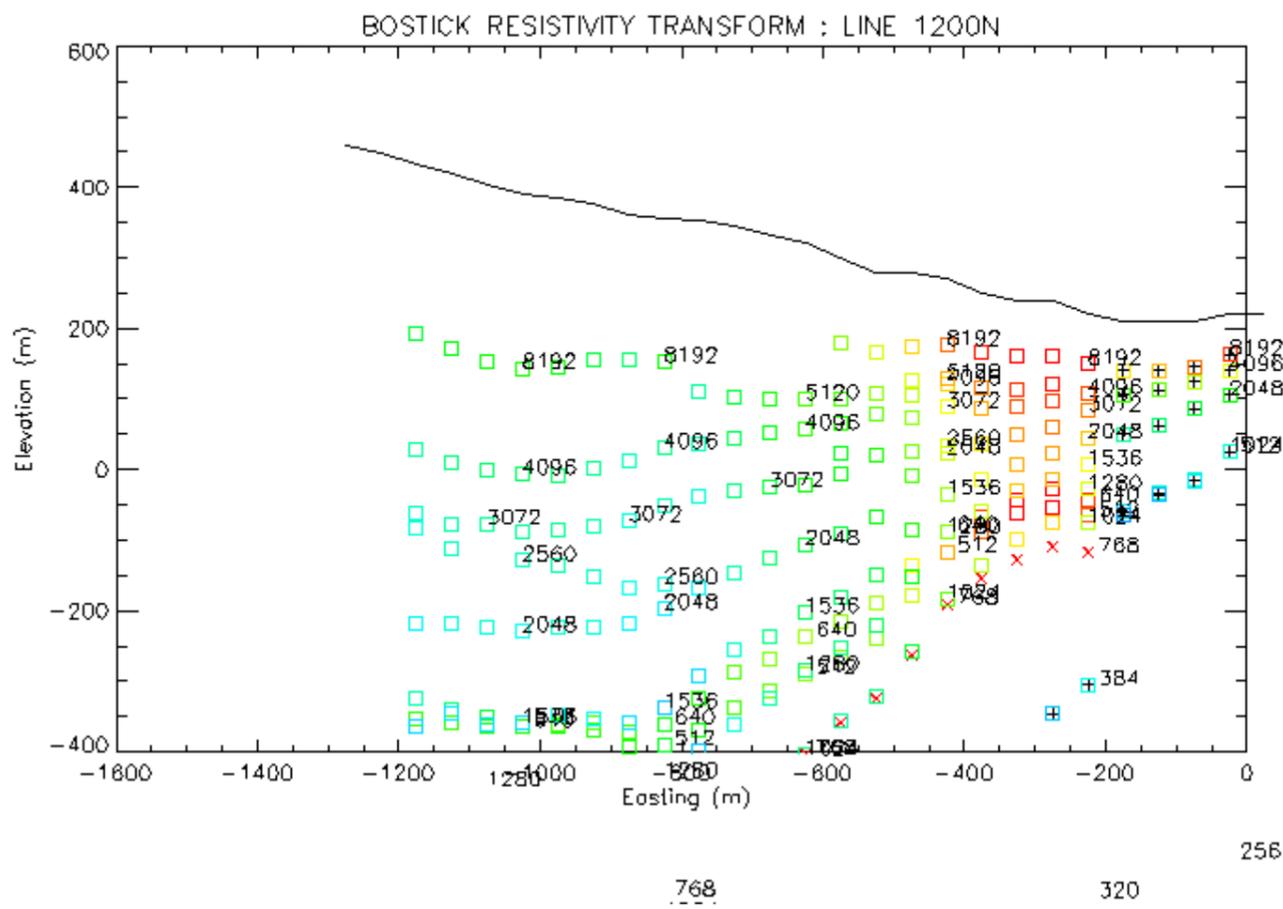
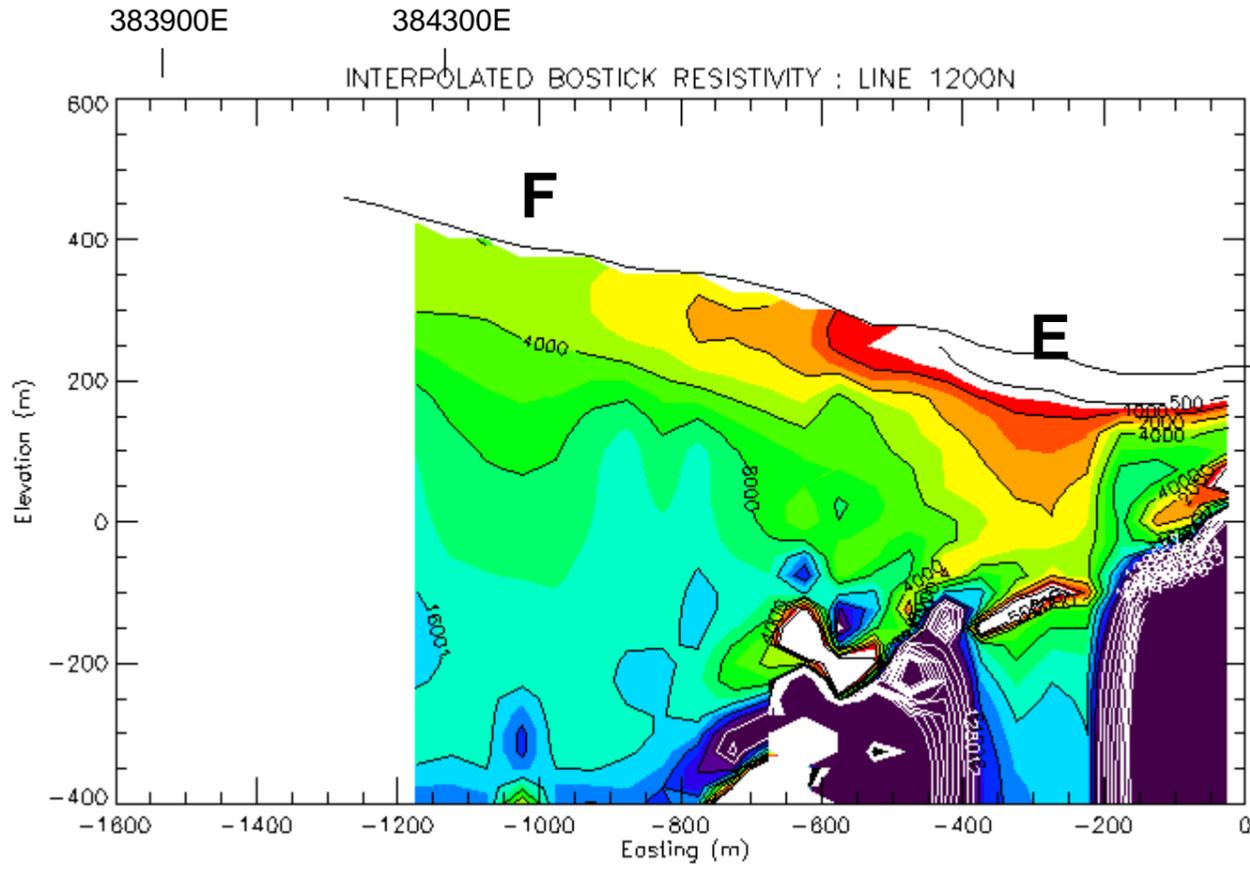
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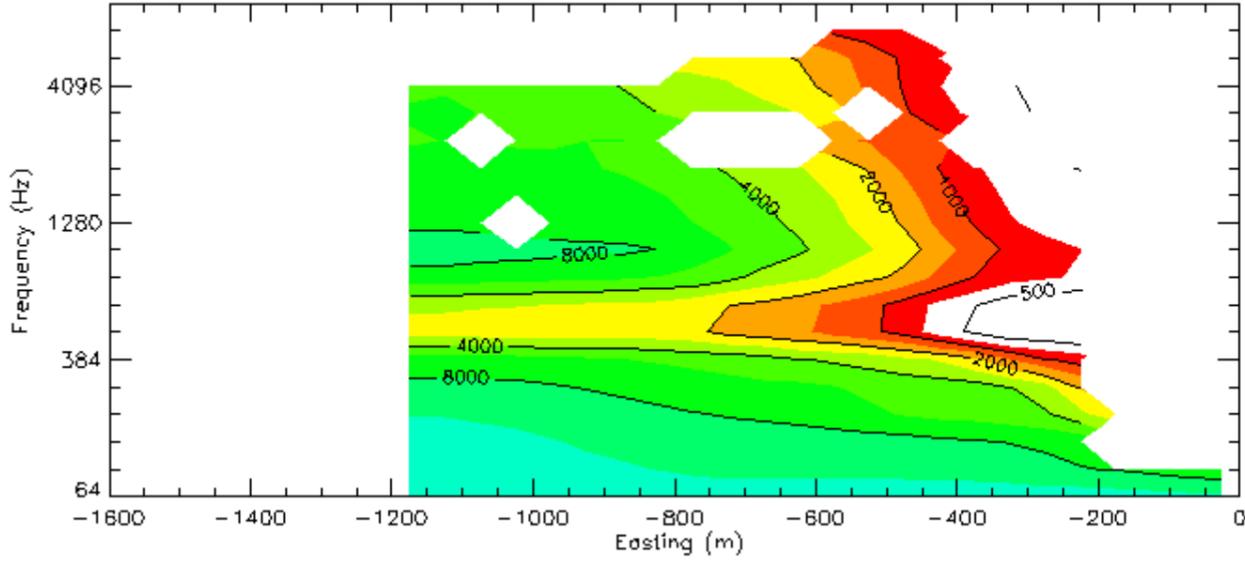


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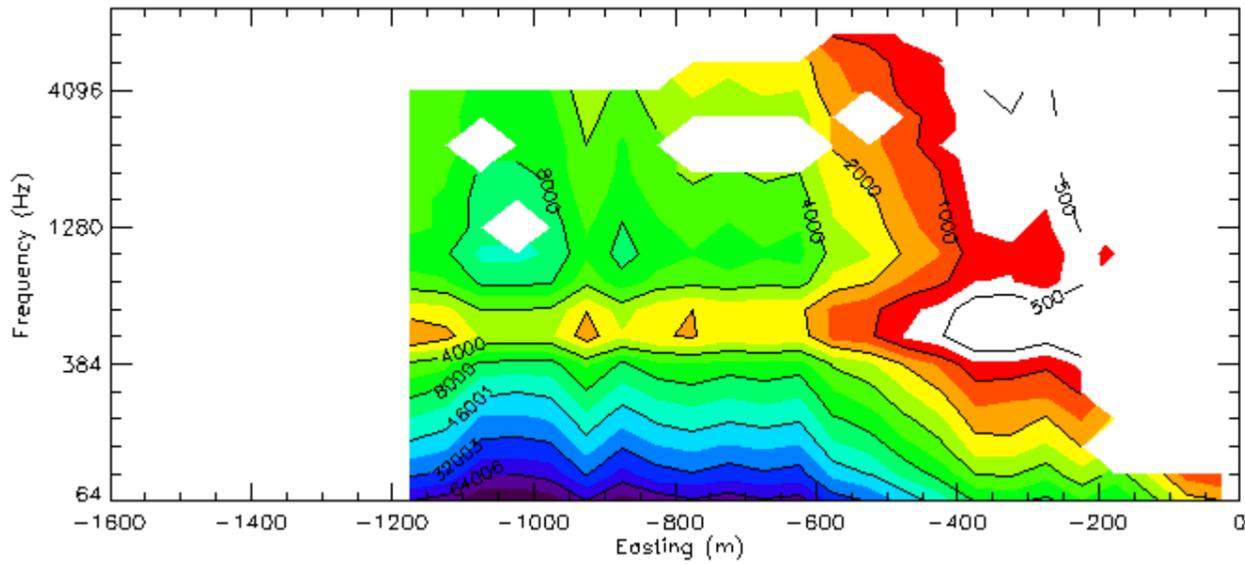
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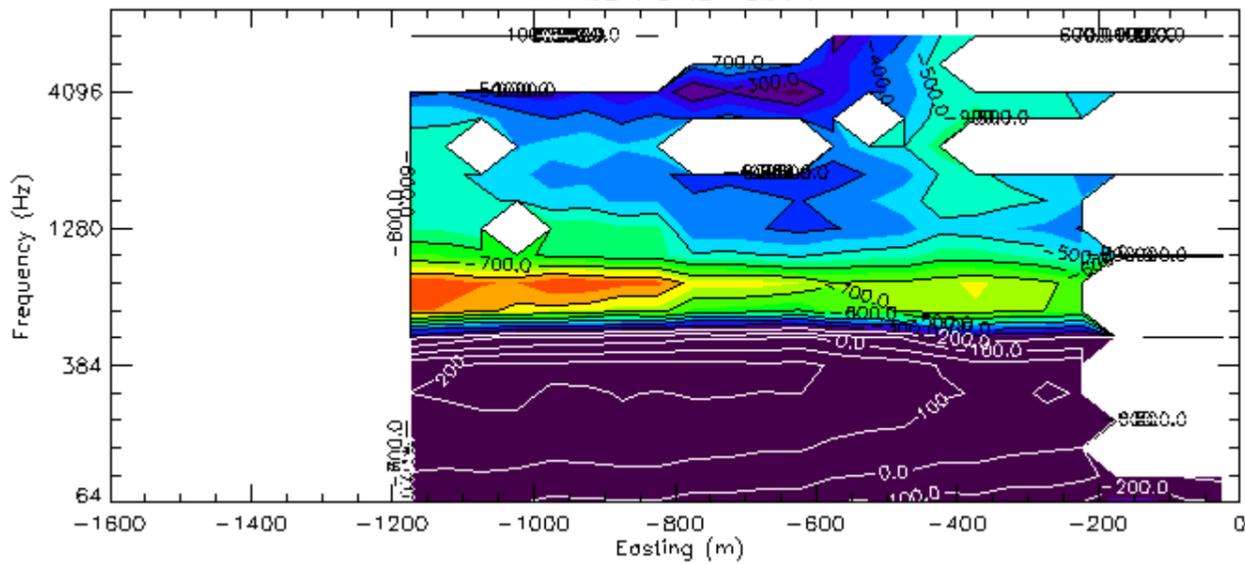
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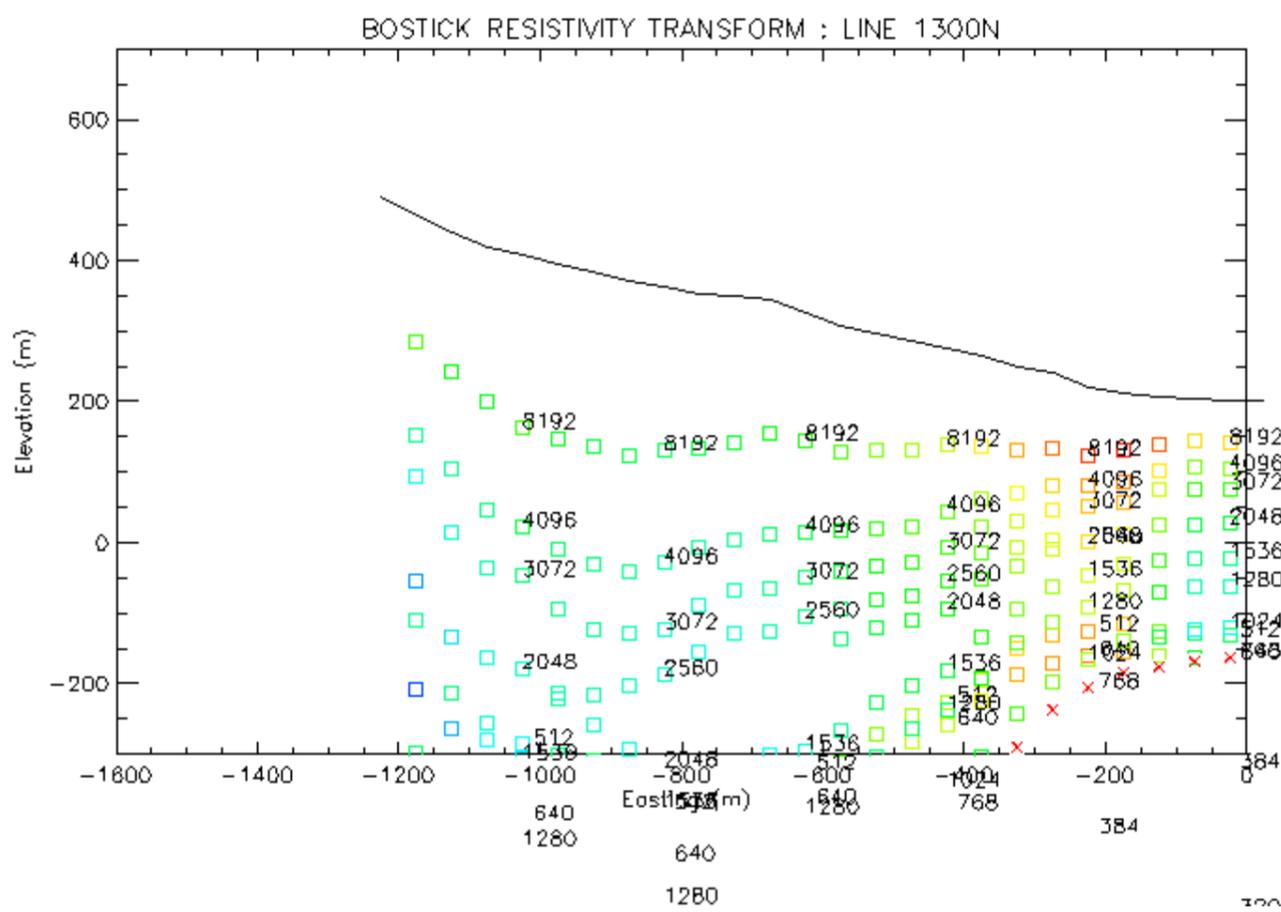
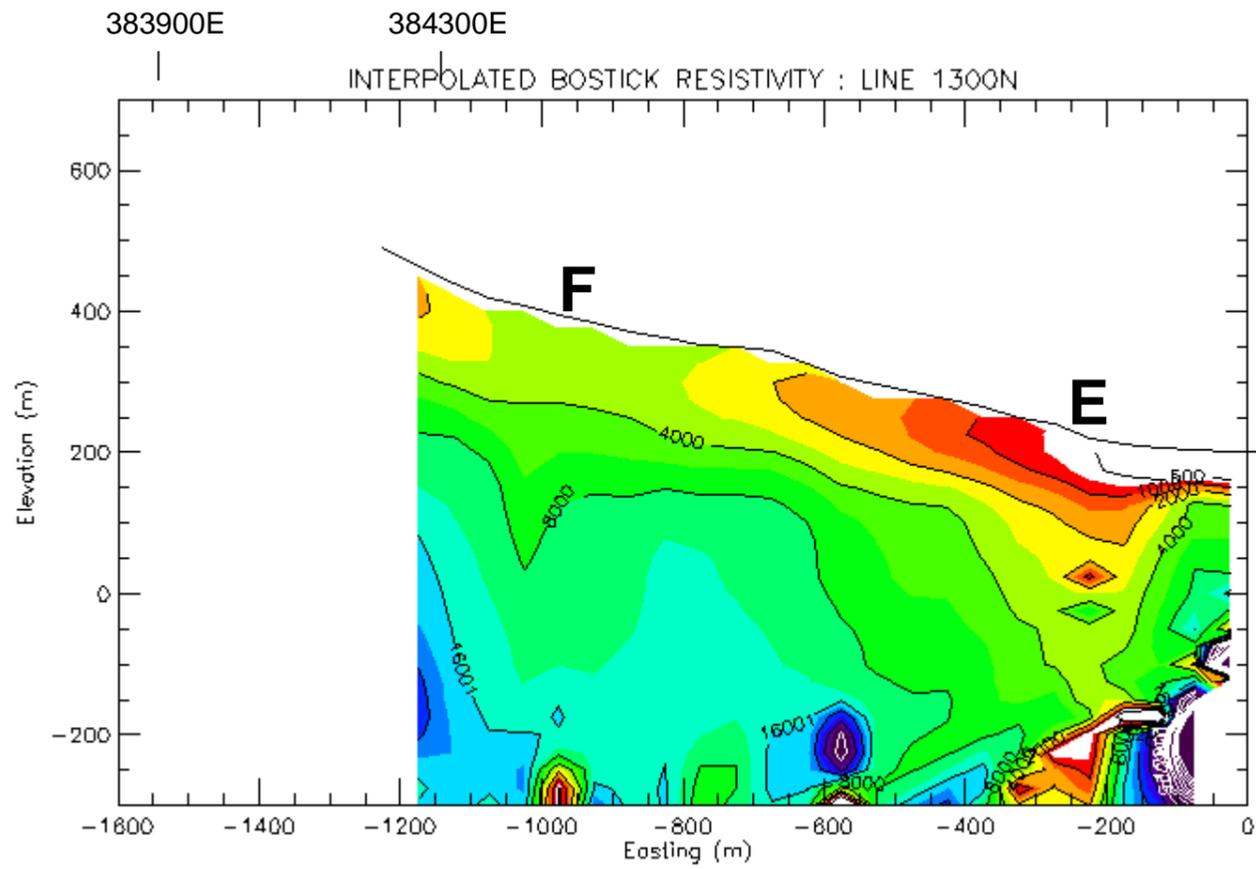
RAW APPARENT RESISTIVITY : LINE 1200N



PHASE : LINE 1200N



Client:	<b>Newcrest Mining Ltd</b>	 <b>Flagstaff</b> GeoConsultants
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
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Job 0508/1	Michael Asten                      Aug-05	

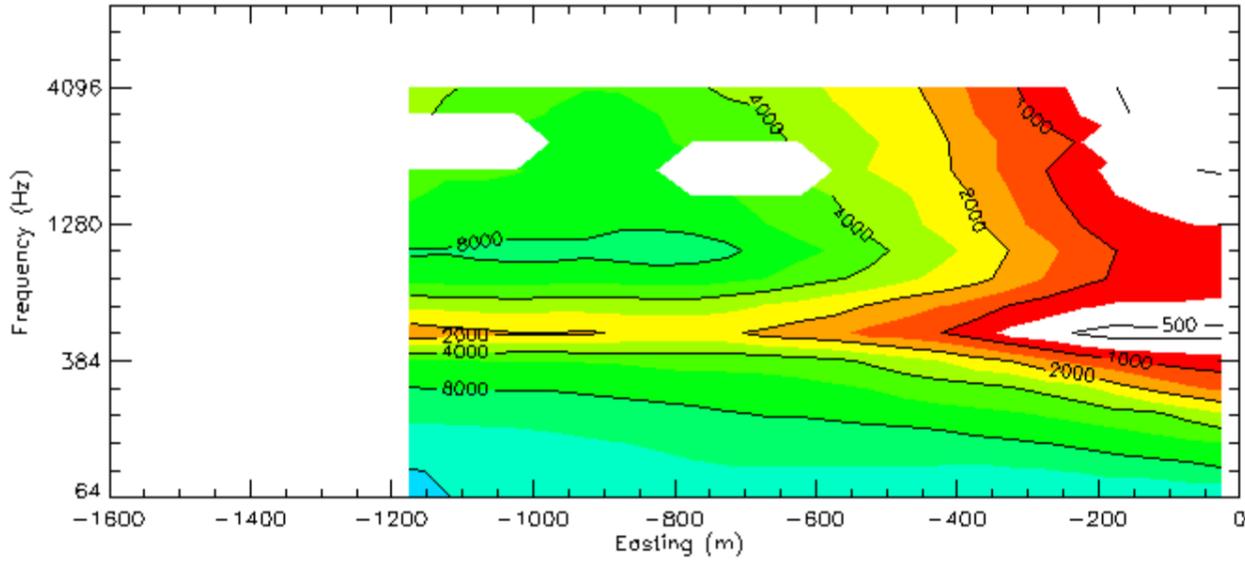


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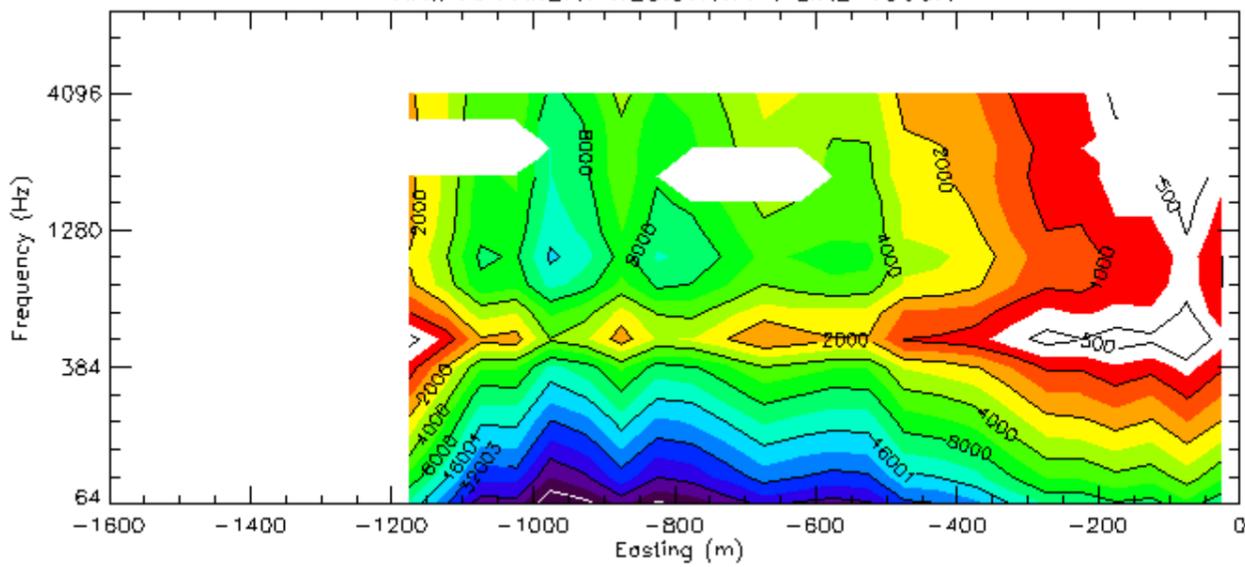
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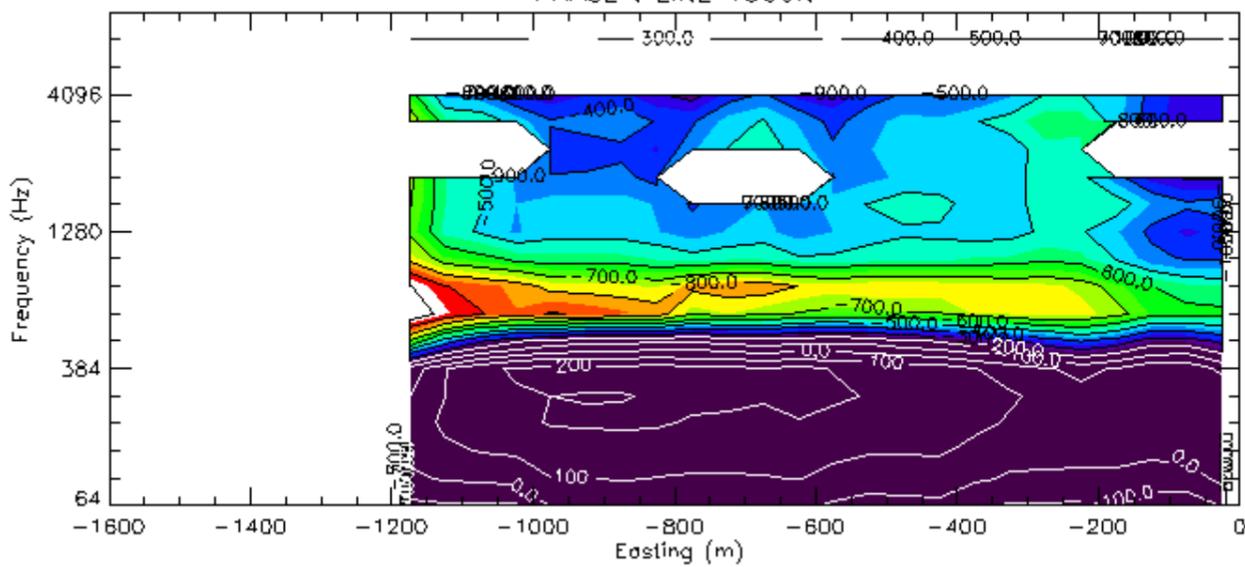
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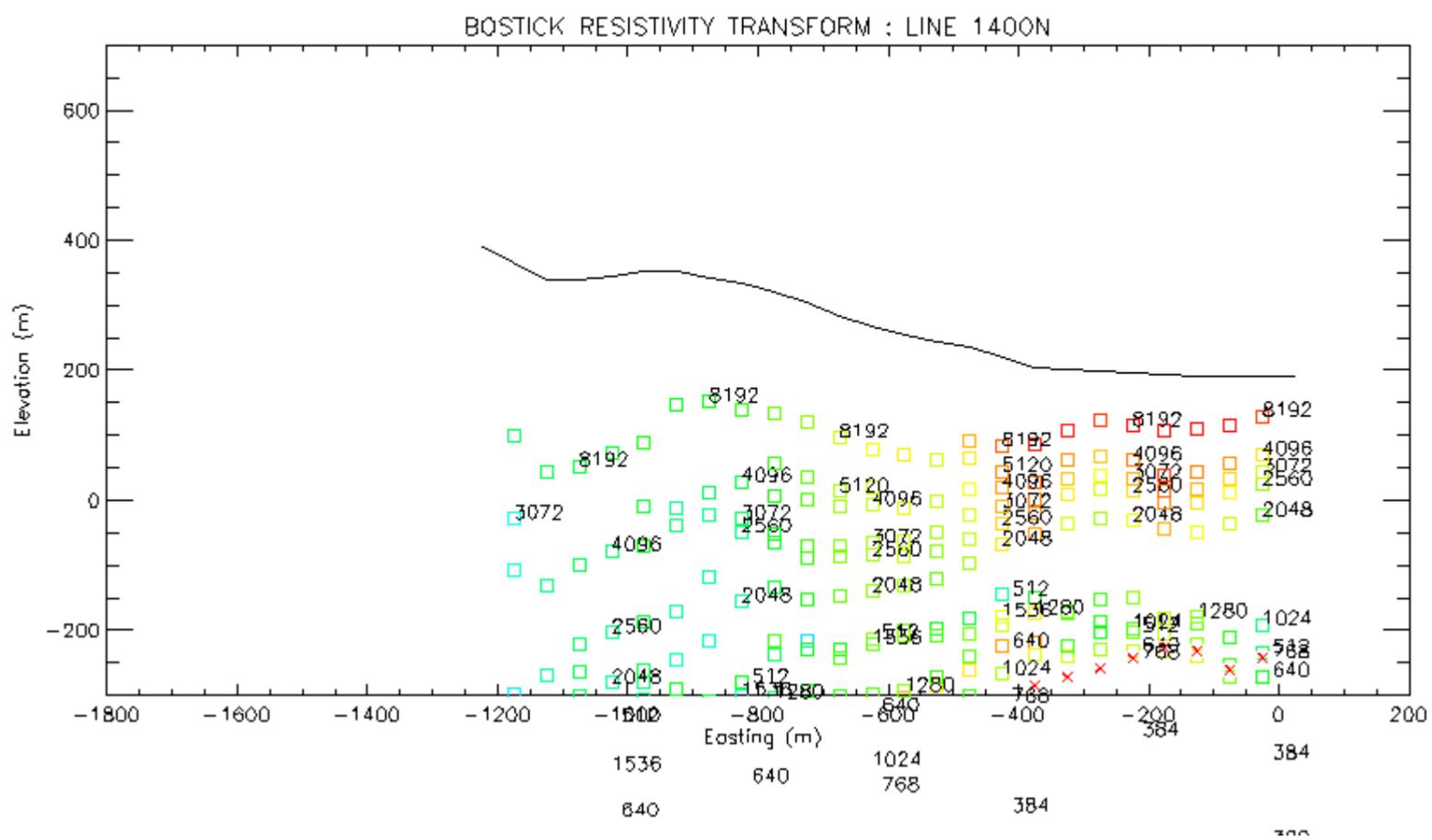
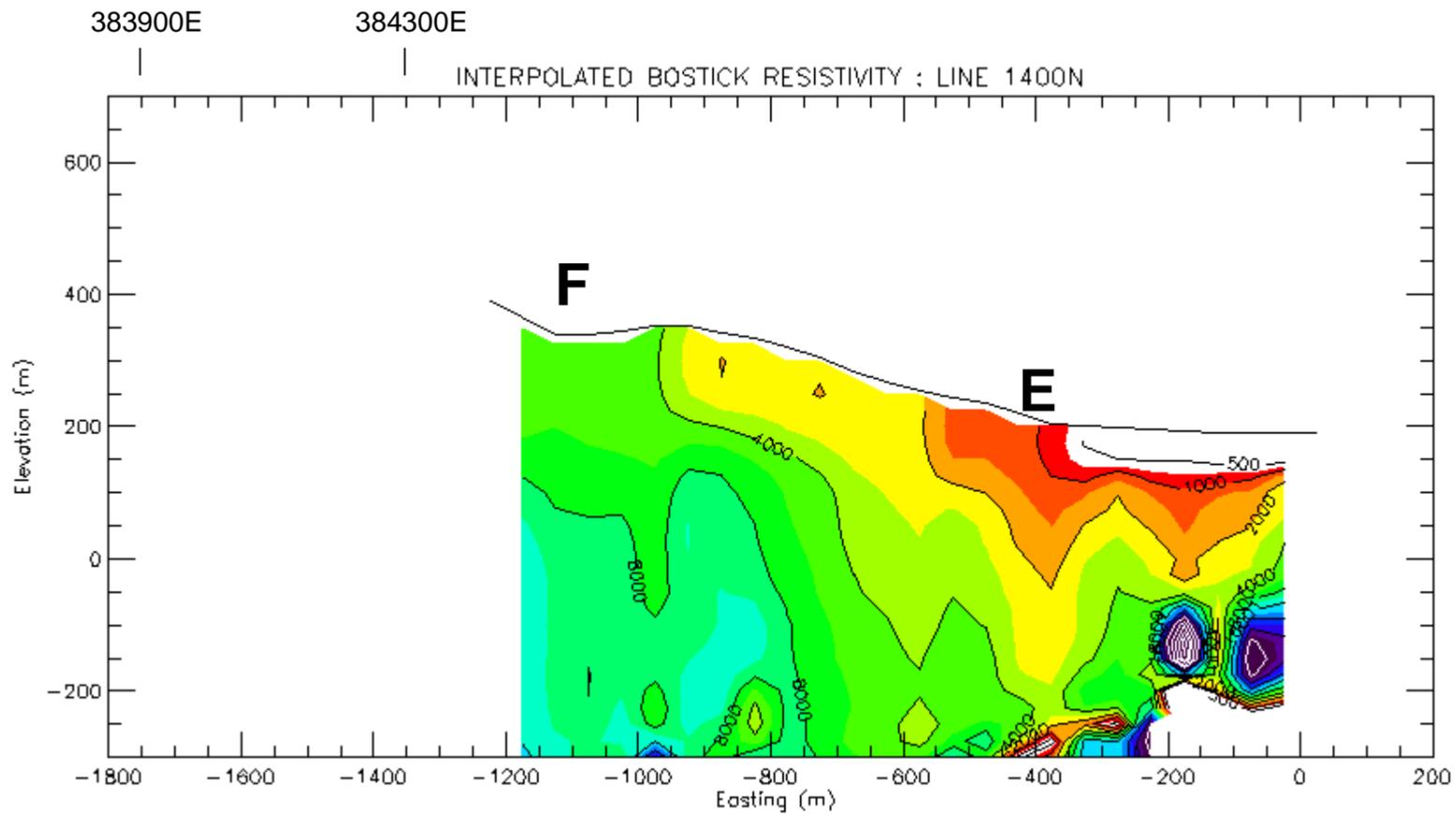
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PHASE : LINE 1300N



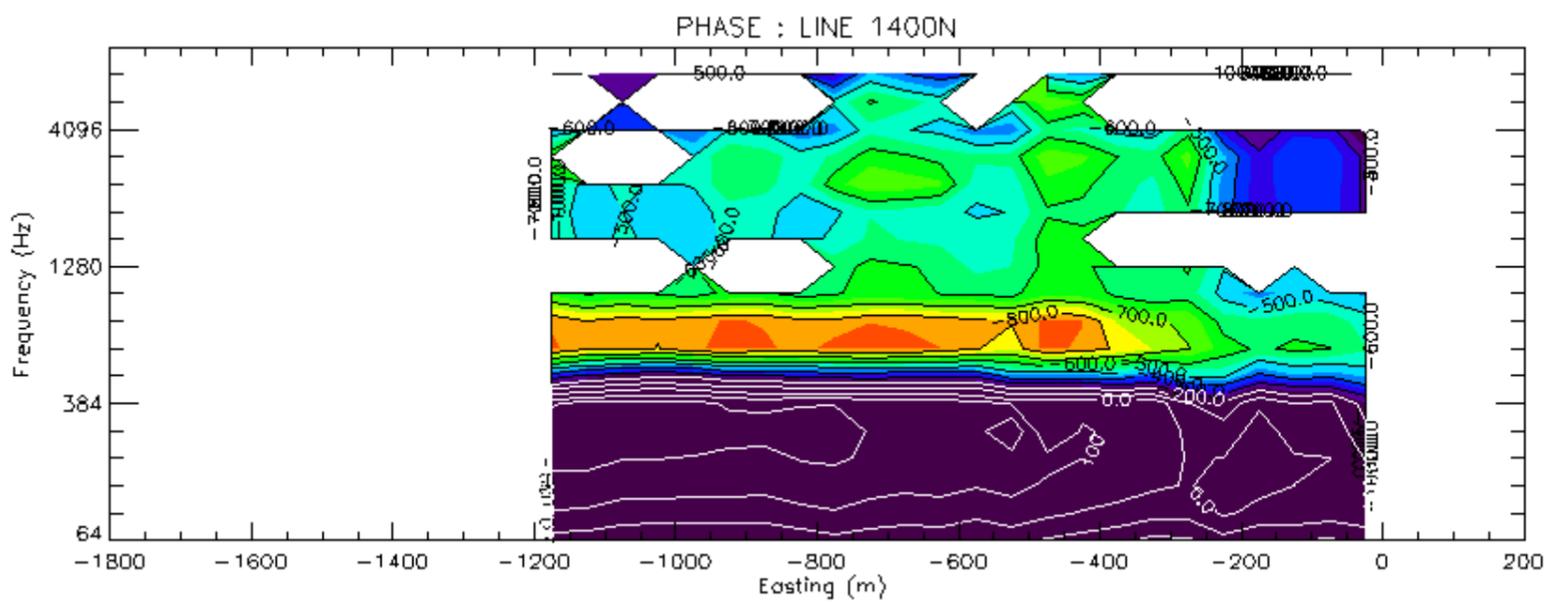
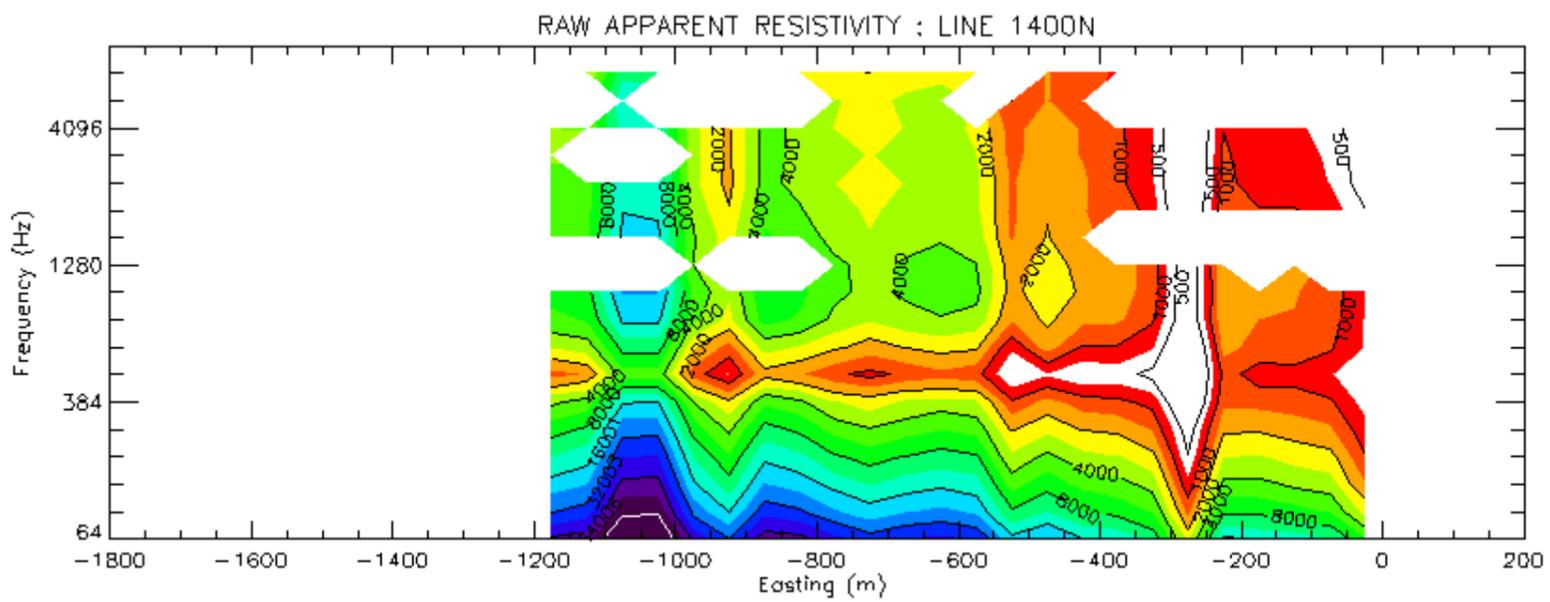
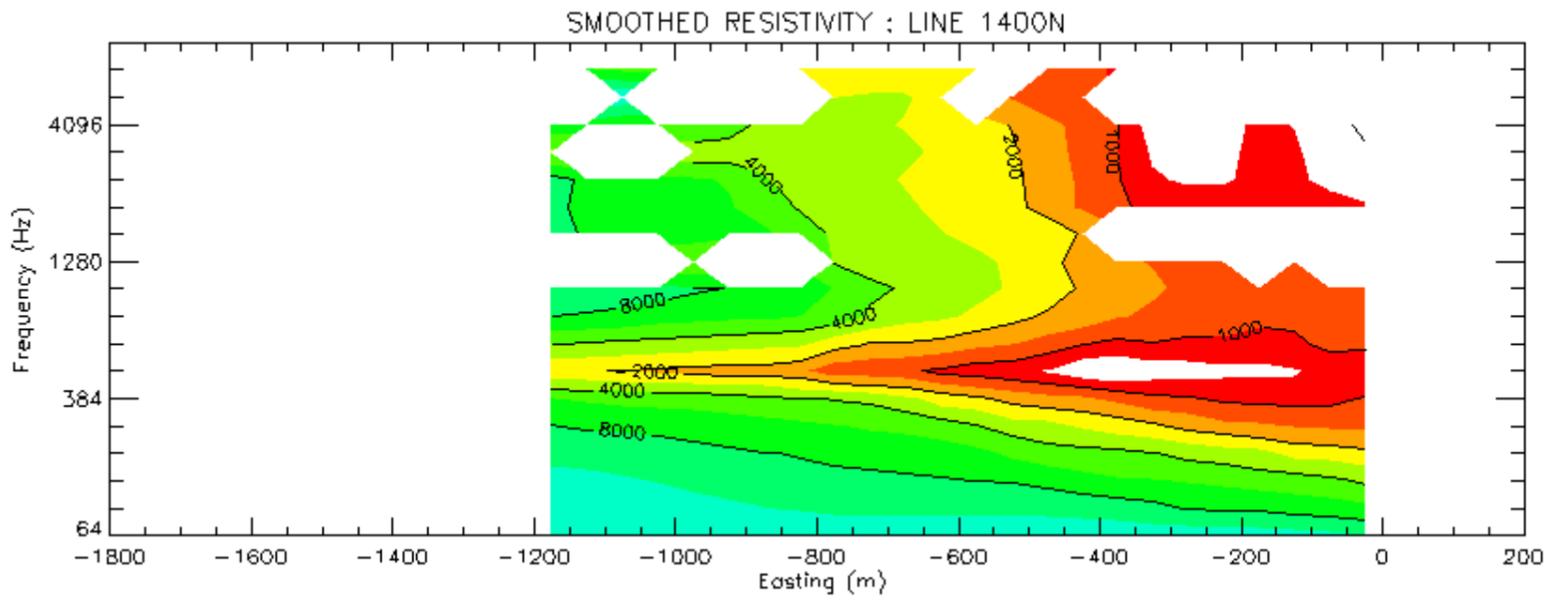
Client:	<b>Newcrest Mining Ltd</b>	 <b>Flagstaff</b> GeoConsultants
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383900E

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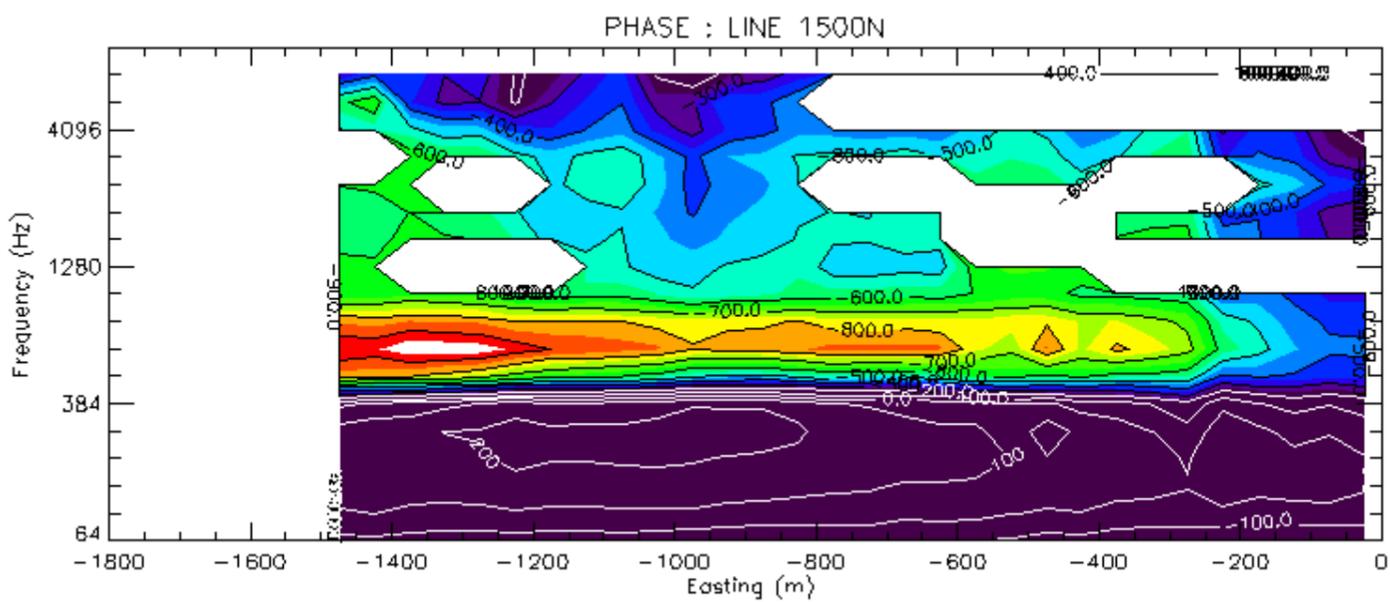
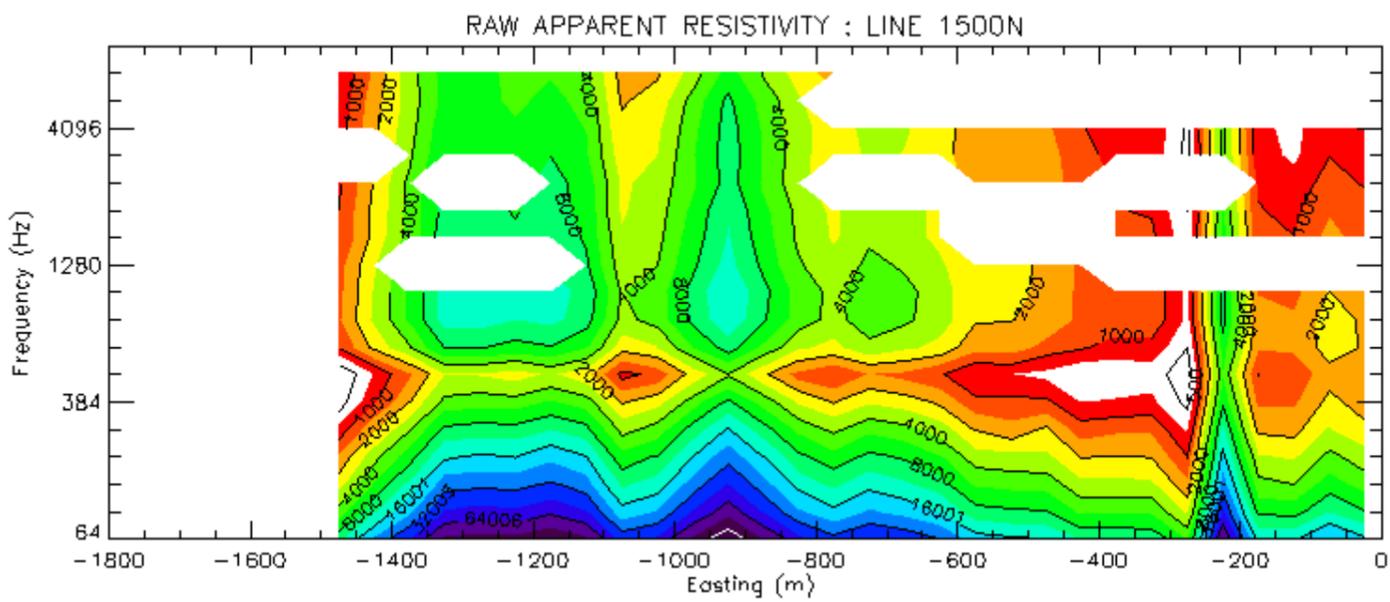
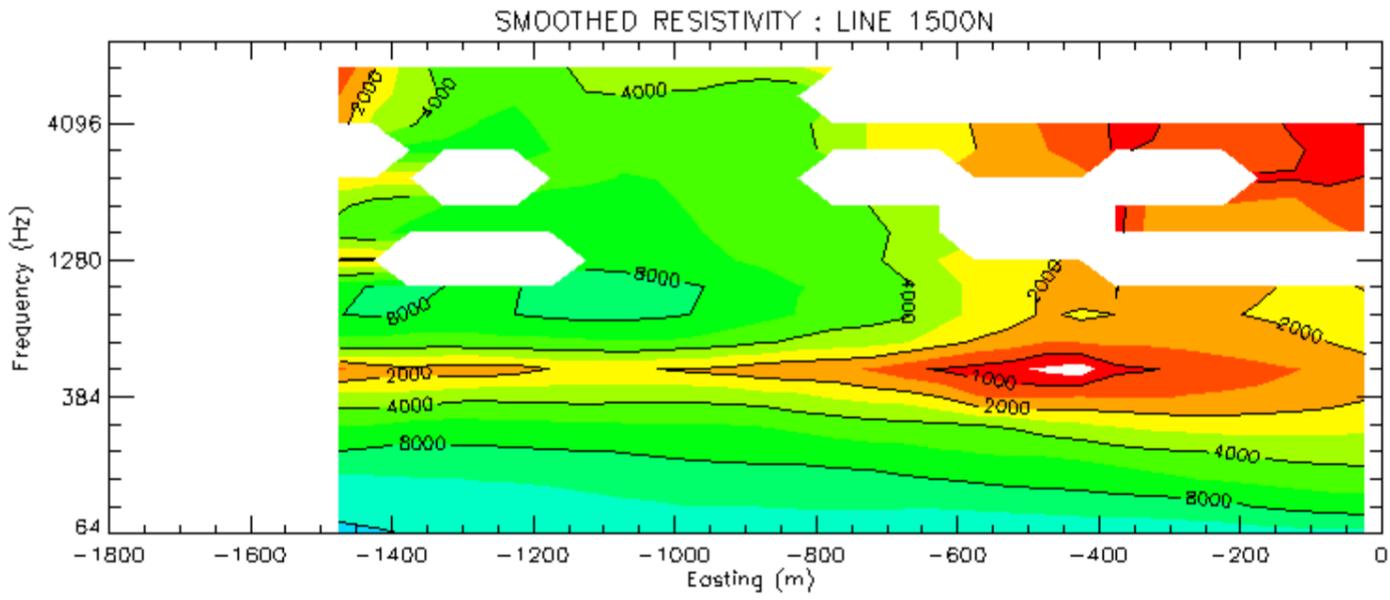


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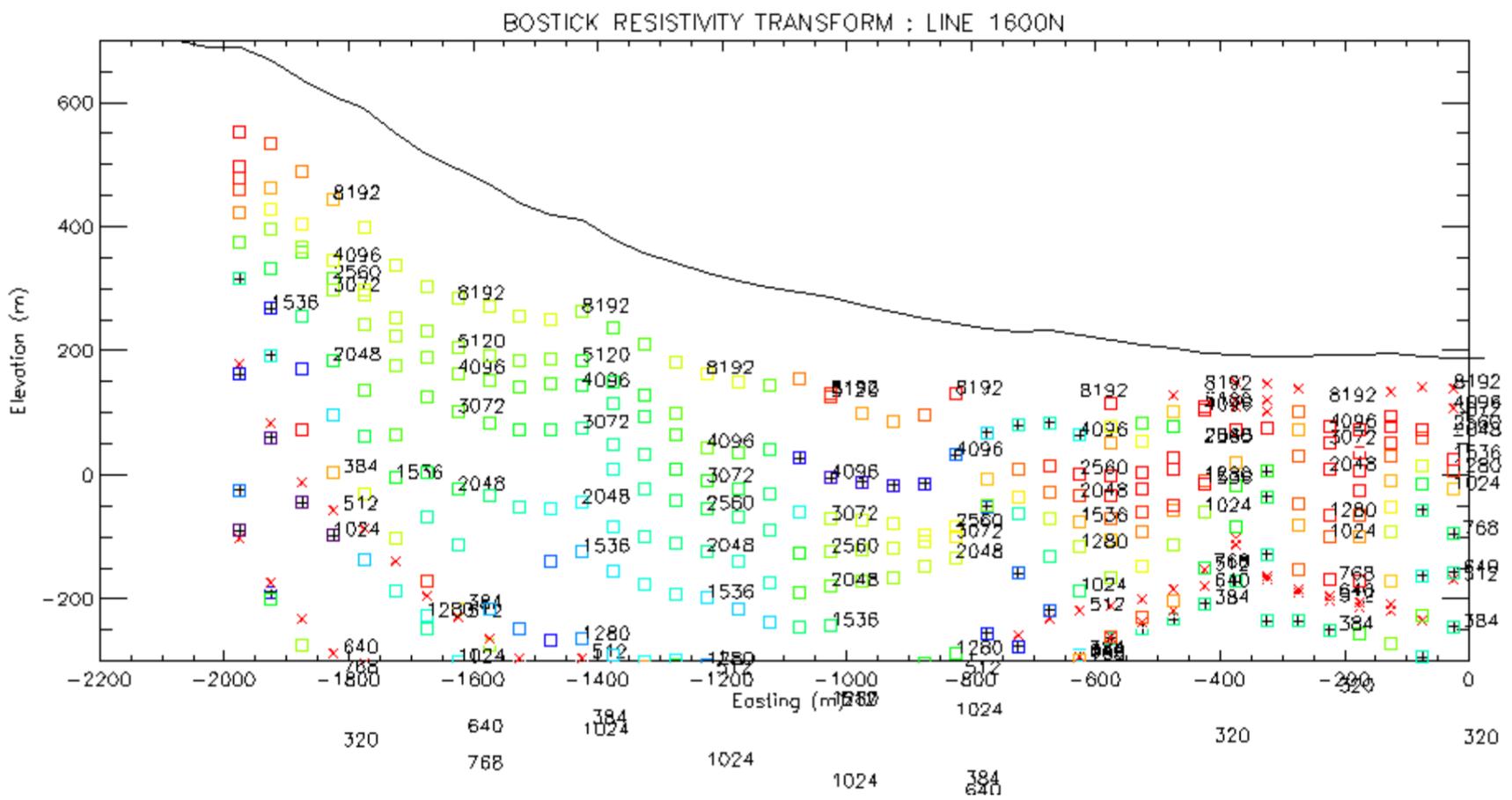
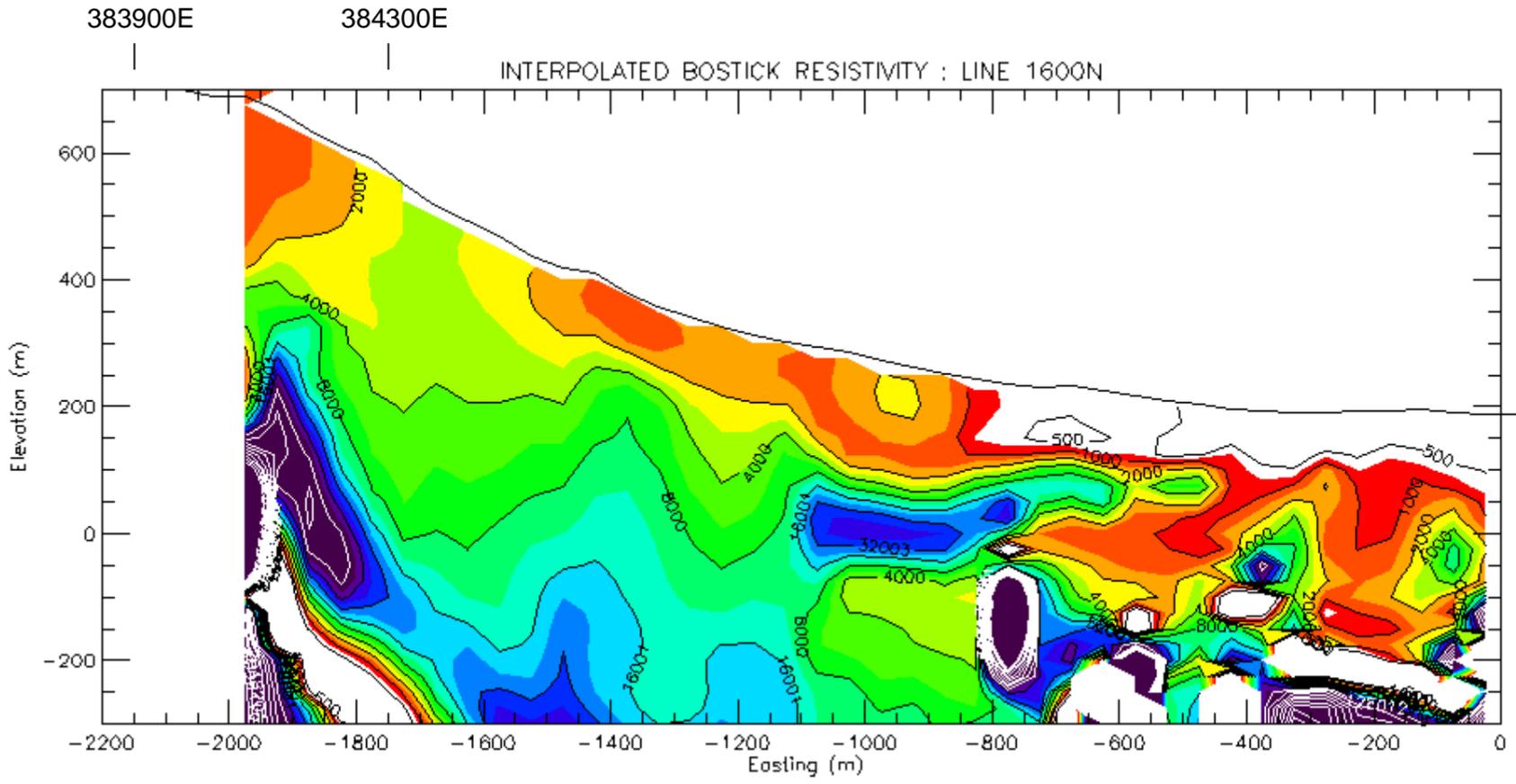


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Client:	<b>Newcrest Mining Ltd</b>	 <p><b>Flagstaff</b> GeoConsultants</p>
Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
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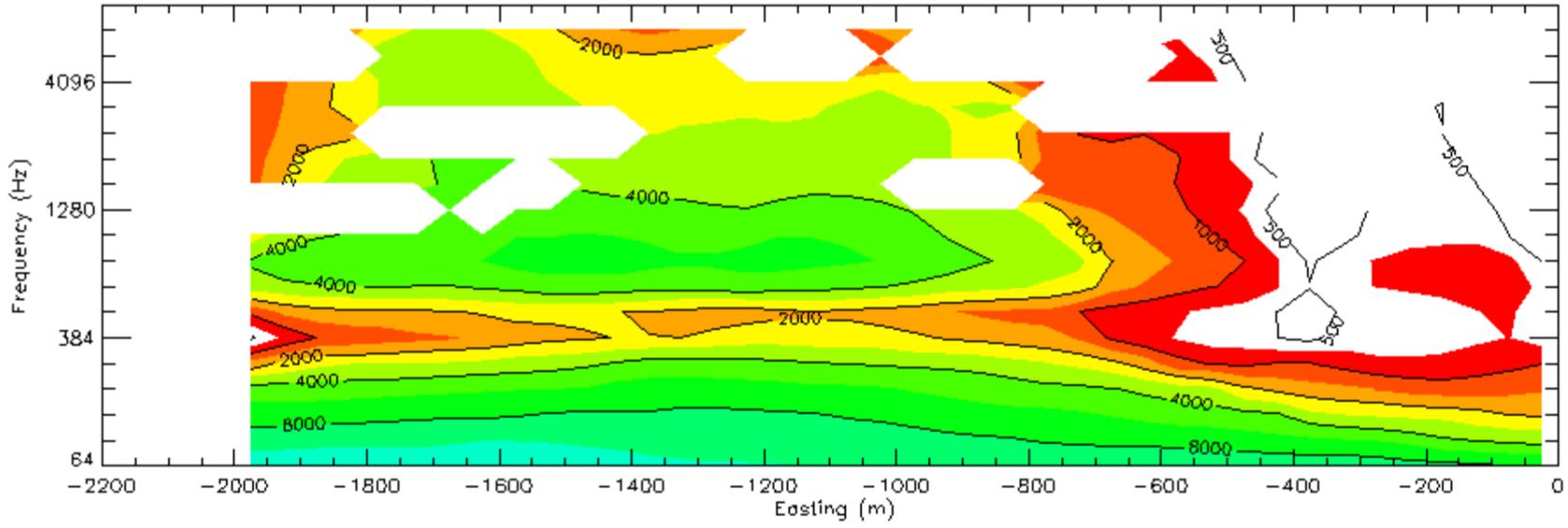


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Prospect:	Mt Jukes - Mt Darwin area Western Tasmania CSAMT data, reinterpretation	
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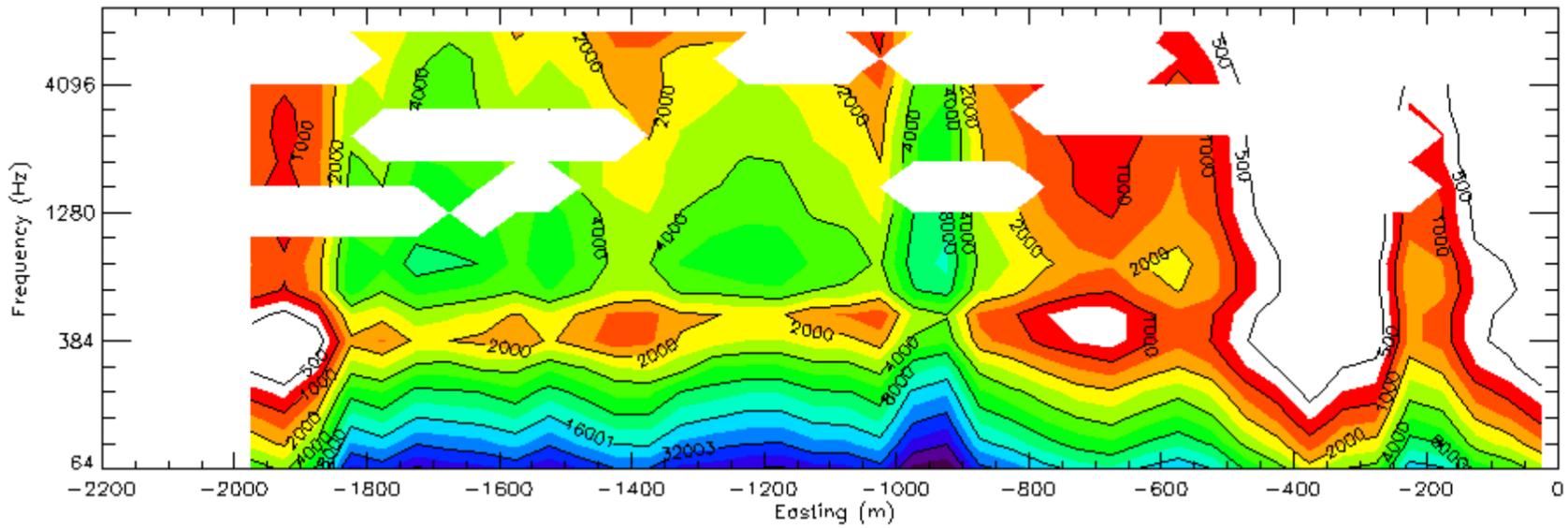
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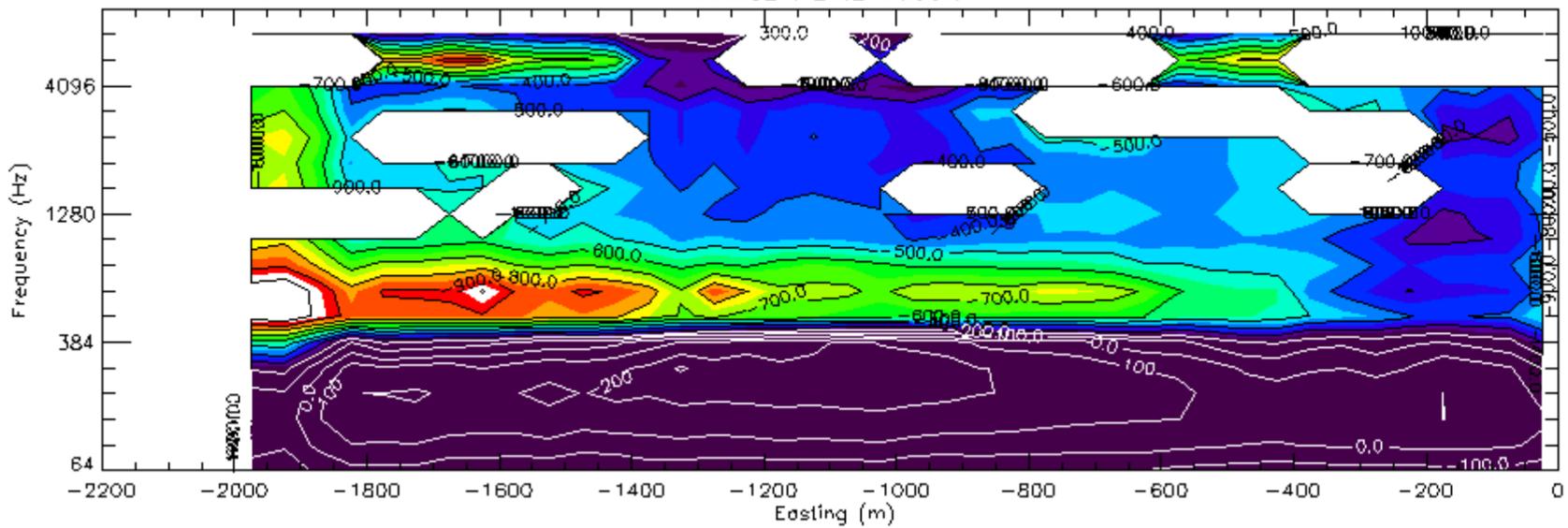
SMOOTHED RESISTIVITY : LINE 1600N



RAW APPARENT RESISTIVITY : LINE 1600N



PHASE : LINE 1600N



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