



Bergvesenet

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Tittel

Report on Protem Survey at Nikkel & Olivin A/S during May 2000

Forfatter

Pietilä, Risto

Dato År

07.08 2000

Bedrift (Oppdragsgiver og/eller oppdragstaker)

Outokumu Metals & Resources for Ni & OI

Kommune

Ørland

Fylke

Nordland

Bergdistrikt

1: 50 000 kartblad

13311

1: 250 000 kartblad

Narvik

Fagområde

Geofysikk

Dokument type

Forekomster (forekomst, gruvefelt, undersøkelsesfelt)

Bruvannsfeltet

Råna

Råstoffgruppe

Malm/metall

Råstofftype

Ni, Cu

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Protem måling benytter seg av "fixed loop". målingene var rettet mot de vestlige kontraktssområdene.

Det ble også målt i 3 borhull, nr 998/00, 1000/00 og 1001/00.

Det ble registrert 3 ledere: Nr. 1 og 2 faller sammen med tidligere slingramledere og er knyttet til hhv skifrig (rød) sone og i gneisene. Den tredje finnes på intrusjonskanten (grafittskifer, kalkskifer) under borhull 1001/00. Østenfor dette hullet ligger en indikasjon som anbefales undersøkes videre.

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REPORT ON PROTEM SURVEY AT NIKKEL og OLIVIN DURING MAY 2000.

Distribution: Lisbeth Storhaug, Nikkel og Olivin, Ballangen
Risto Pietilä, Outokumpu Mining Oy, Outokumpu

1. GENERAL

Fixed loop proton survey was carried out at Nikkel og Olivin mine site in order to "sterilize" certain part of the western contact area. Both down hole and ground surveys were implemented.

2. SURVEY PARAMETERS

Fig. 1 shows the loop layout and surface lines. Same transmitter loop was used for down hole survey as well. Surveyed holes are listed in Table 1.

Hole	Y	X	z	Dip	Azim	Length
998-00	2244	1521	8.5	25	235	105.5
1000-00	2274	1496	13	25	228	113.4
1001-00	2279	1493	13	25	205	110

Table.1.

Ground surveys were carried out according to Table 2.

Line	From	To
1300N	1700E	2500E
1400N	"	"
1850E	1000N	1600N
2200E	1100N	1700N

Table. 2.

Transmitter loop coordinates are 1700E-2100E and 1200N-1600N (400 by 400 m). Station interval used in ground survey was 25 m and in down hole survey 5 m/2.5 m respectively. Transmitter current was 14.9 A.

3. INTERPRETATION

3.1. Ground survey

Figure 2. shows the location of conductors plotted on the slingram map. Conductors 1 and 2 coincide with slingram data signifying that the conductors are close to the surface. Conductor number 3 is approx. at 100 m depth hence being beyond the detection depth of the Max-Min.

Conductor 1 is related to the regional, conductive zone known as "röd skiffer".

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Conductor 2 is in the gneiss area outside the surface boundary of the intrusion. This conductor has not been sampled or drilled during previous exploration projects. Hole P2 (drilled 1996) collared at 1875E, 1100N intersected some amphibolite layers embedded in gneiss but there is no data whether these rocks are conductive or not. Figure 3. Presents the ground magnetic map and the anomaly over the profile 1300N. It seems that there is no mag anomaly in coincidence.

Conductor 3 is located close to the contact area of the intrusion. This group of conductors can be explained by "svartskifer" or "kalksilikatba" referring the geological map from Bruvann area.

Figures 4-10. summarise the location of conductors detected by the fixed loop ground survey.

3.2. Down hole survey

The anomaly at **hole 998-00** is flat. No indication of conductors nearby (within 50-75 m) . **Hole 1000-00** is rather flat as well. However there is a weak trend towards the end of the hole which could be related to the same conductor as was picked up at **hole 1001-00**. Figure 11. Shows the location of the modeled conductor based on the Protem data at hole 1001-00 (Figure 12.)

4. CONCLUSIONS AND RECOMMENDATIONS

Surface Protem detected 3 different conductors which are either known or embedded in barren rocks. Conductor number 2, however, is the most "unknown".

Downhole survey detected the conductor which is located below and on the eastern side of the hole 1001-00. This conductor is highly recommended to be drill tested.

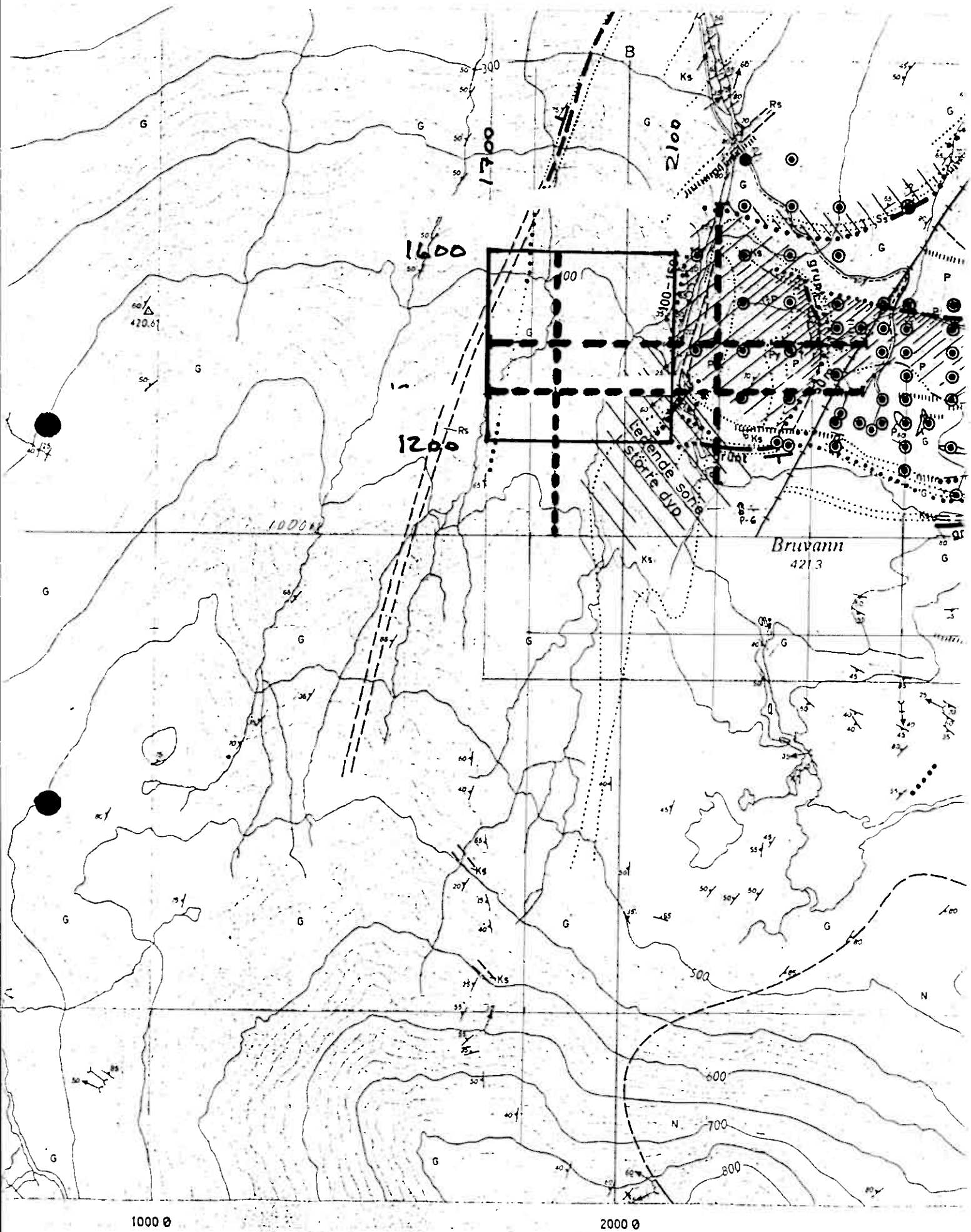


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5. LIST OF FIGURES

- Fig. 1. Location map for the Tx loop and surface lines
Fig. 2. Conductors based on Protem survey plotted on Max-Min map
Fig. 3. Ground magnetic map
Fig. 4. Interpreted conductors based on surface Protem, plan view
Fig. 5. Modeling of lines 1300 and 1400
Fig. 6. Modeling of line 1300N, Z-comp., closer look
Fig. 7. "- "- "- , X-comp, "-
Fig. 8. "- "- 1400N, Z-comp., "-
Fig. 9. "- "- "- , X-comp., "-
Fig. 10. Modeling of line 1800E, Z-comp.
Fig. 11. Modeling of down hole Protem, 3D perspective and plan view
Fig. 12. Field and modelled data on hole 1001
Fig. 13.-19. Field data on all surface profiles and drill holes

Fig. 1



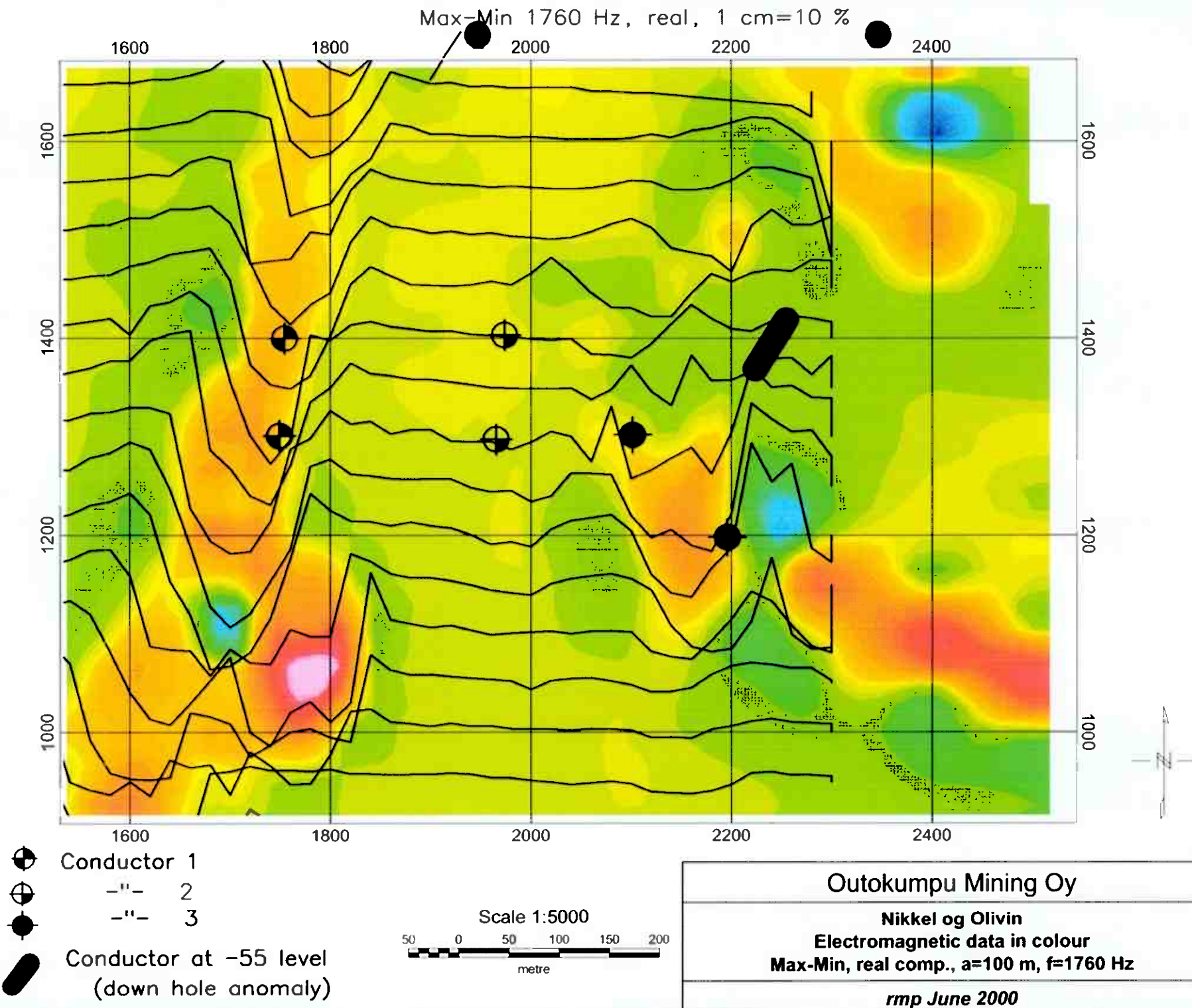


Fig. 2

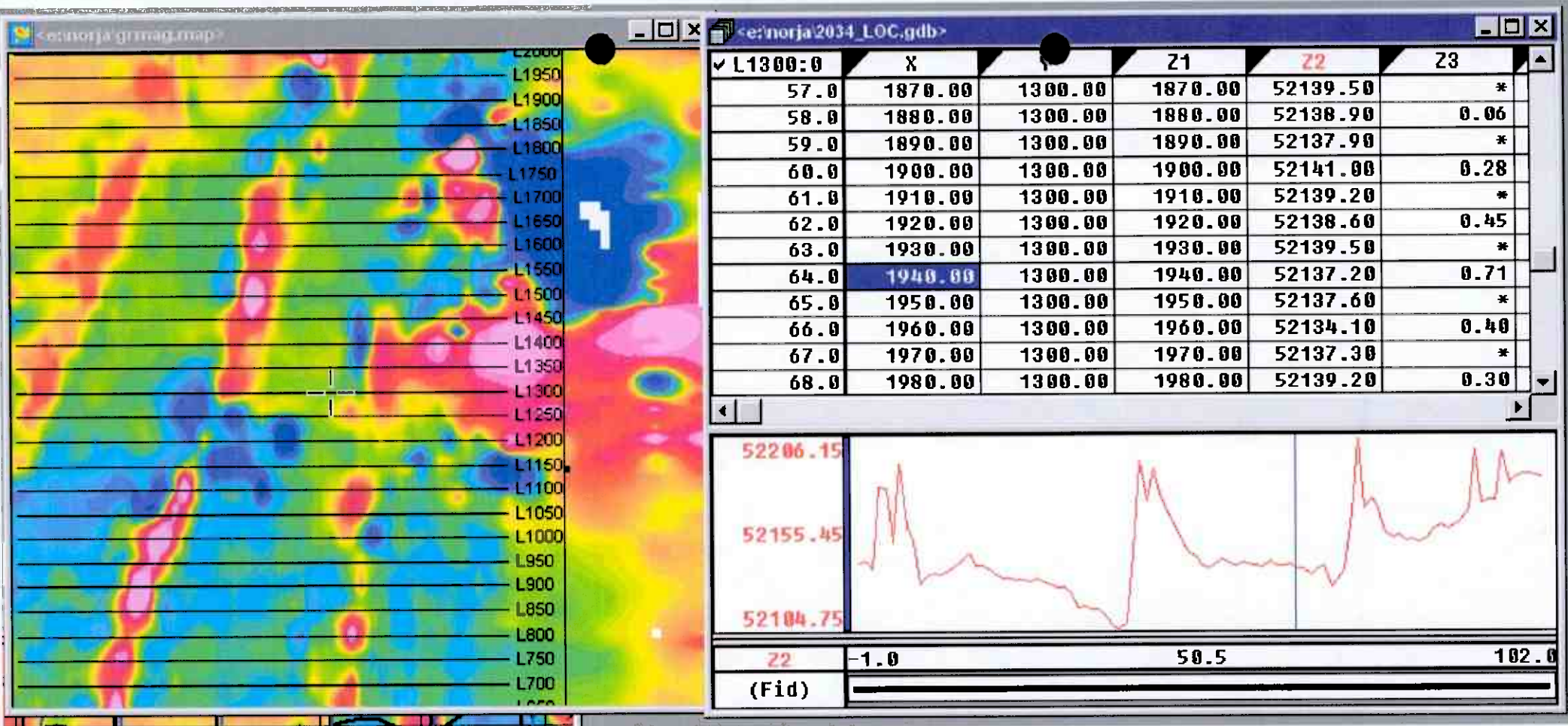


Fig. 3

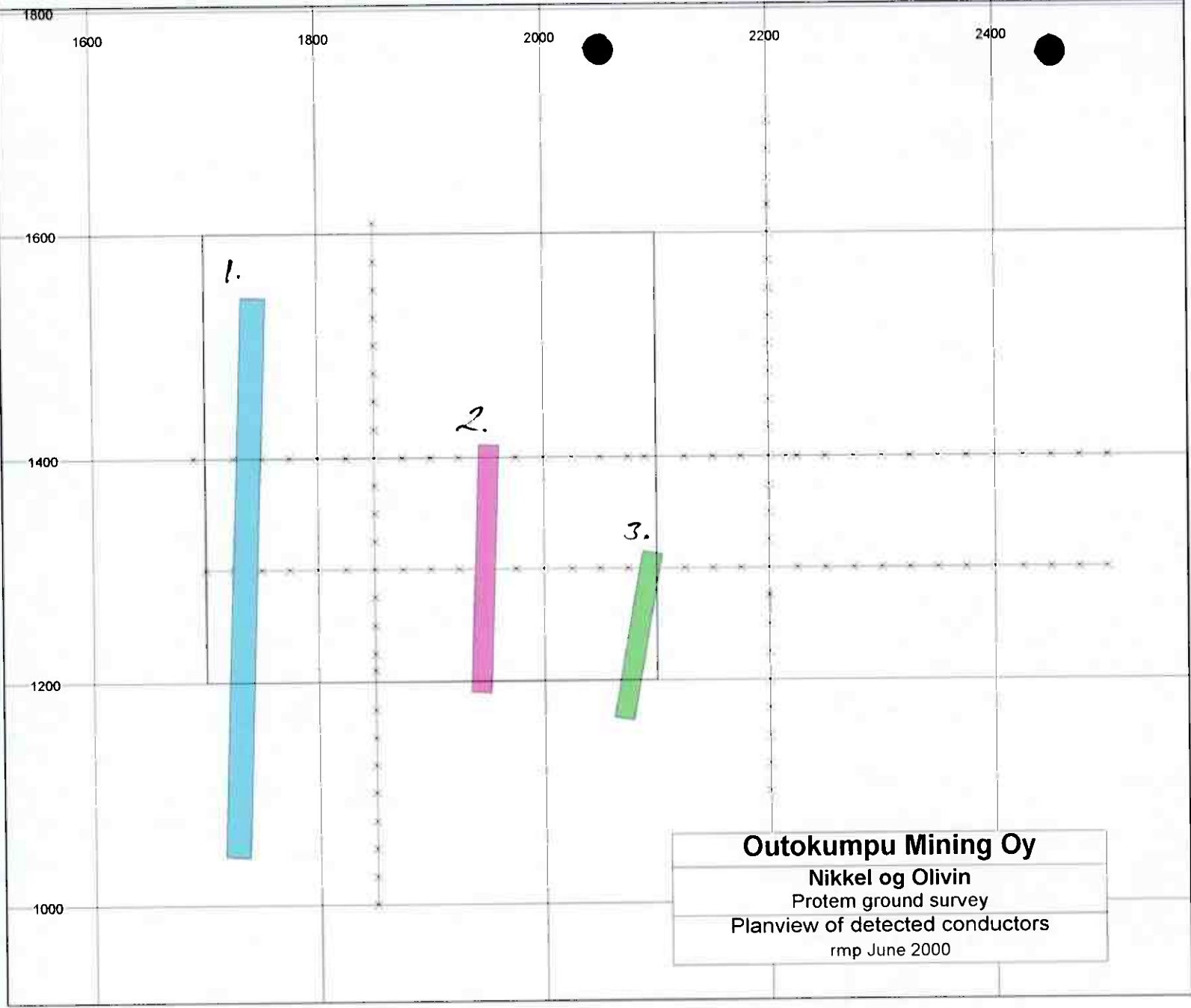


Fig. 4

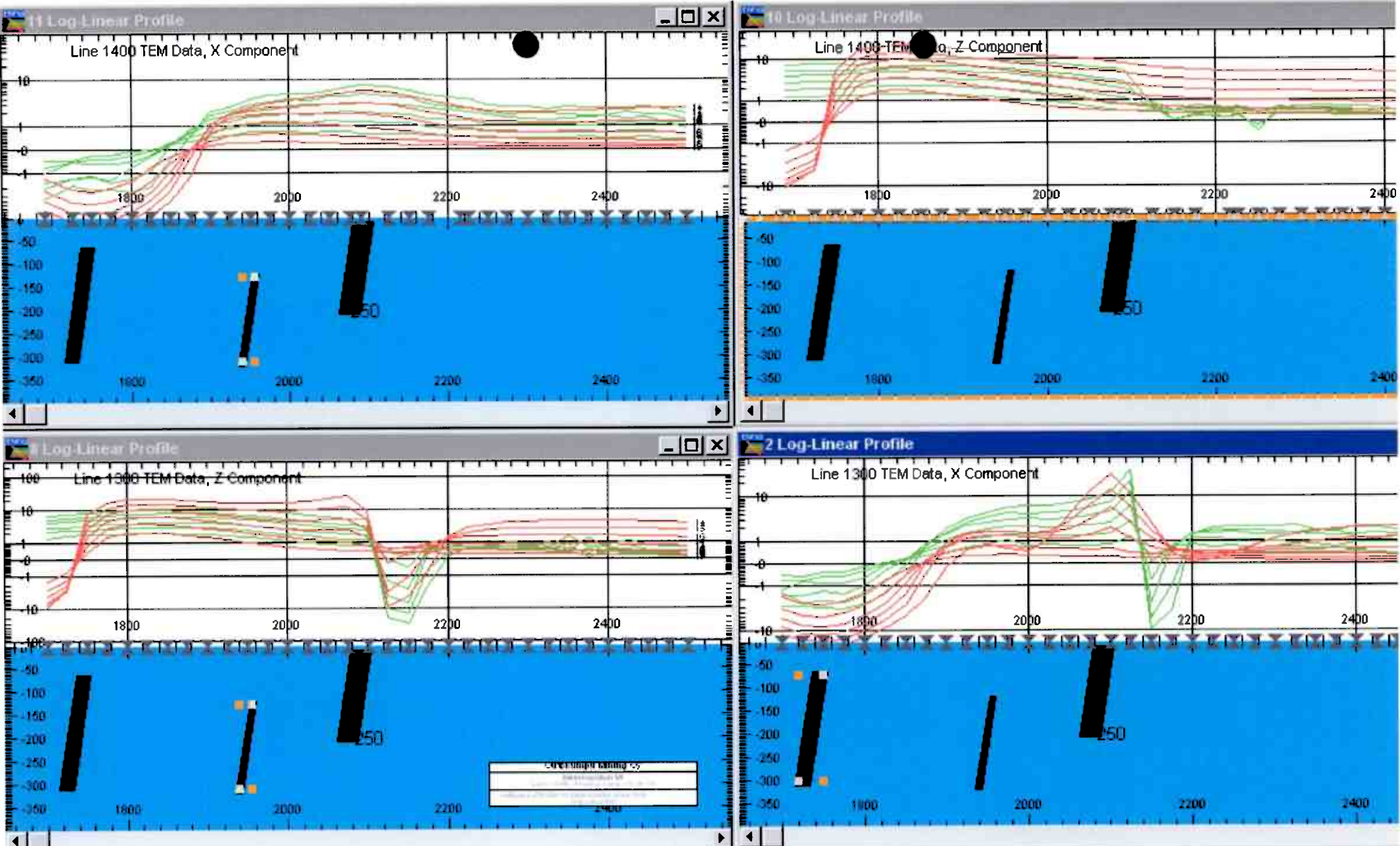


Fig. 5

Line 1300 TEM Data, Z Component

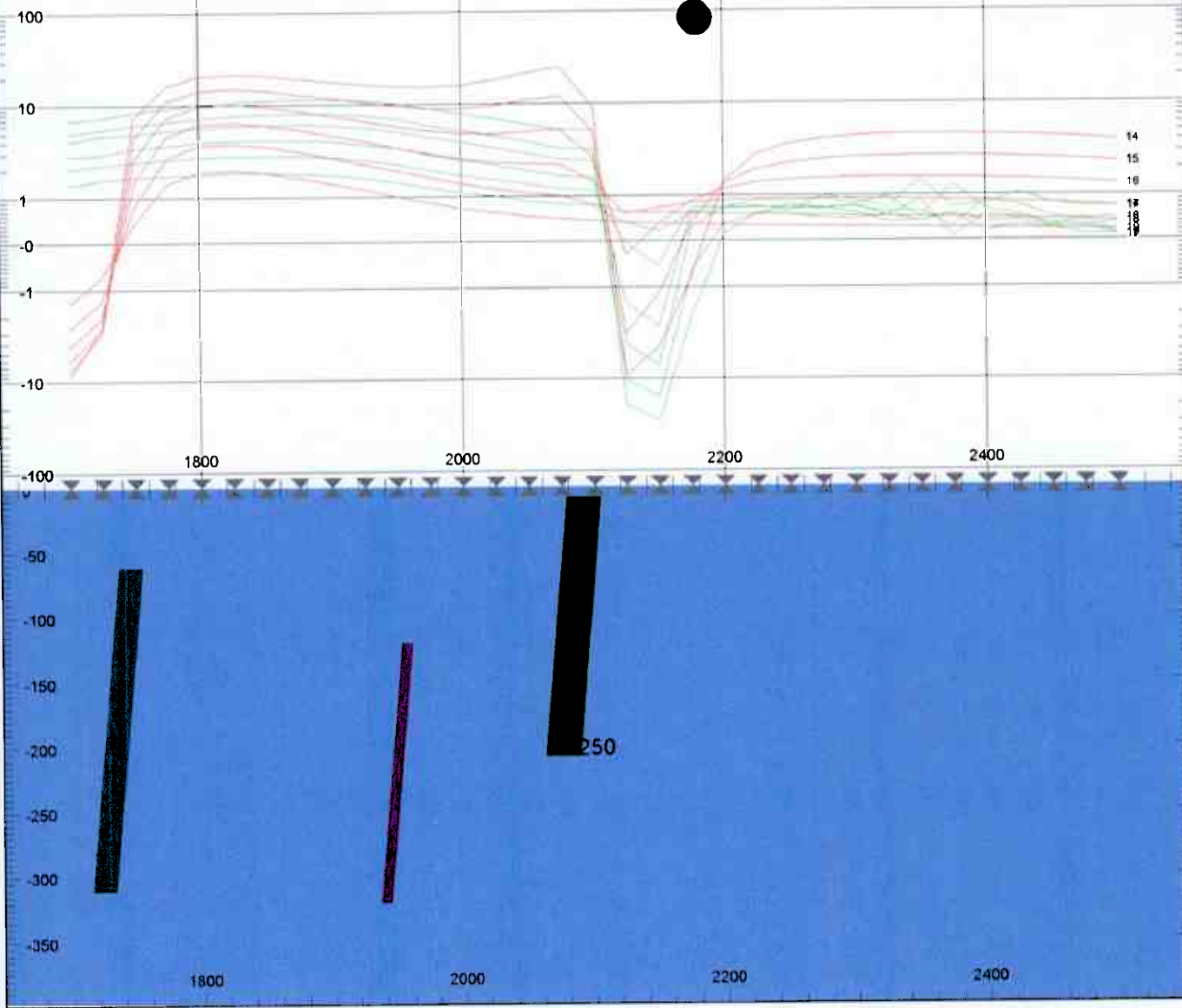


Fig. 6

Line 1300 TEM Data, X Component

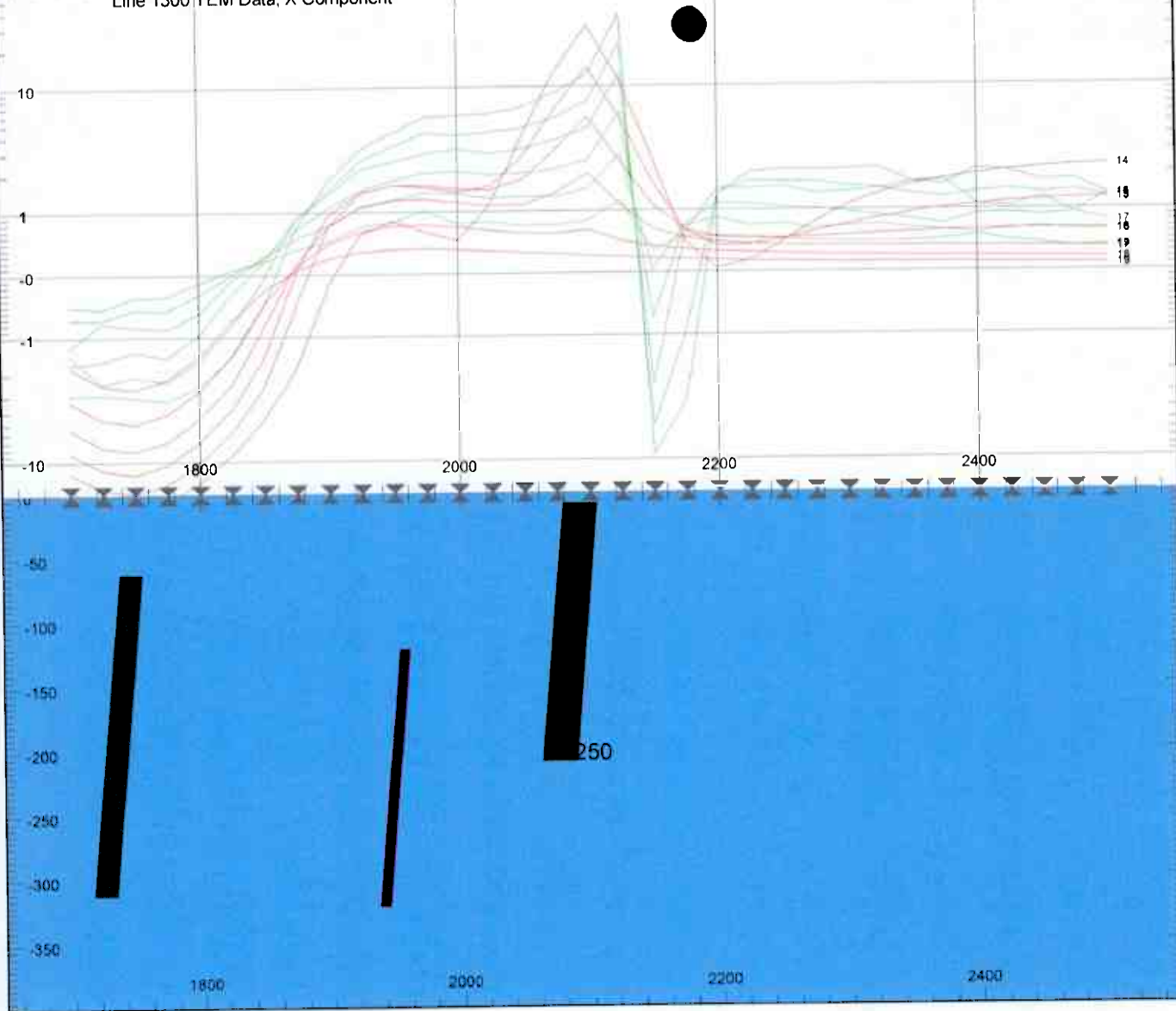


Fig. 7

Line 1400 TEM Data, Z Component

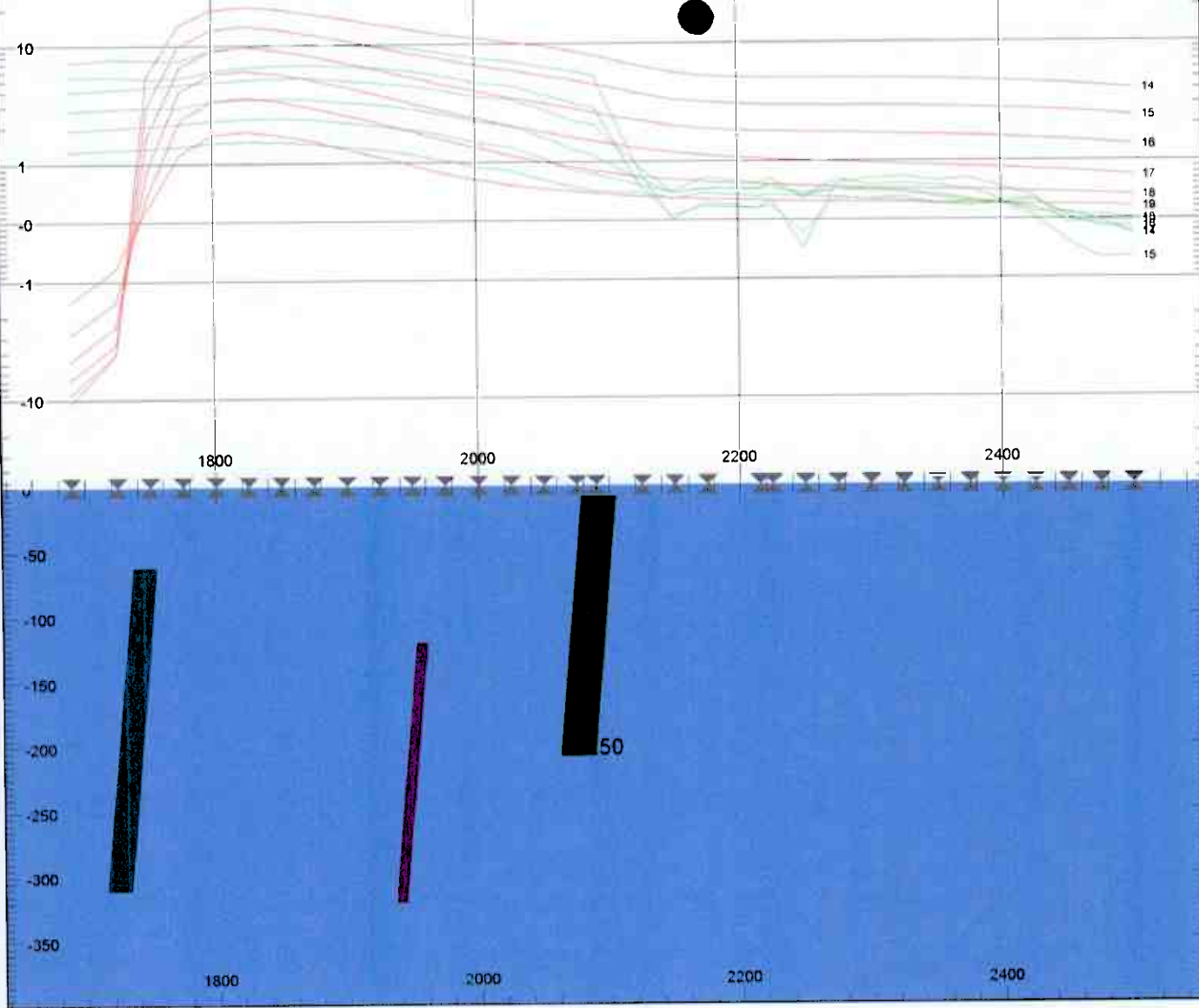


Fig. 8

Line 1400 TEM Data, X Component

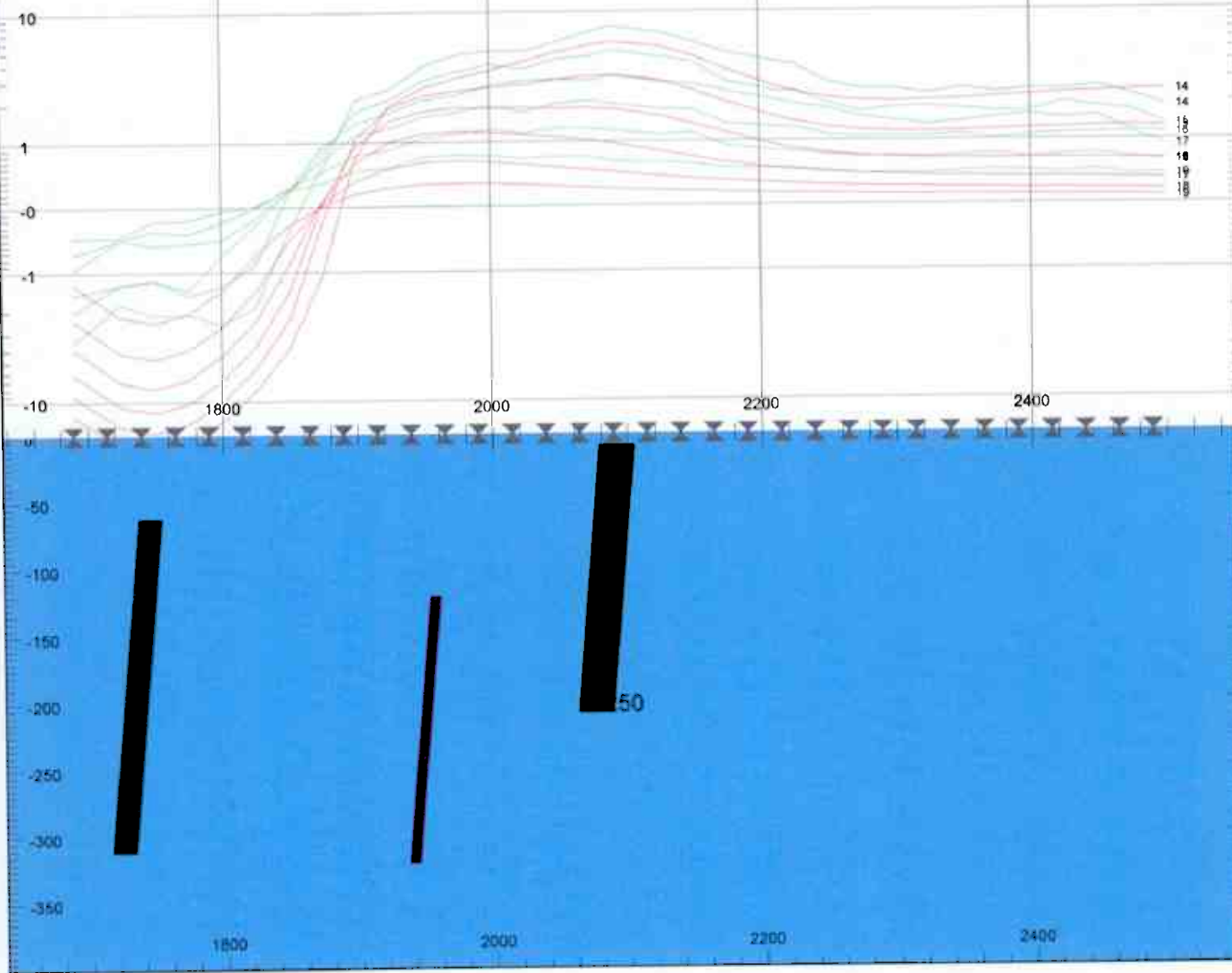


Fig. 9

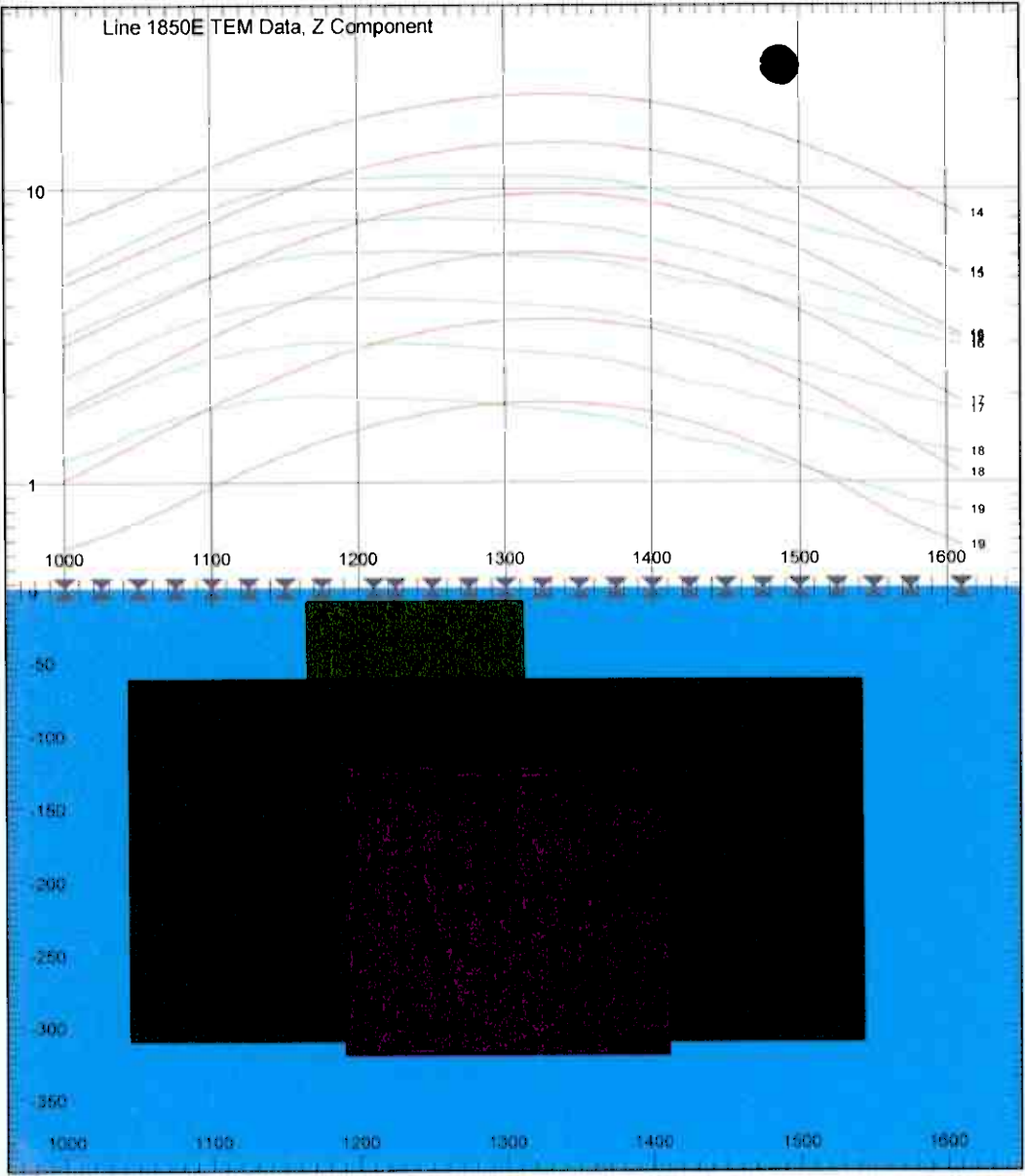


Fig. 10

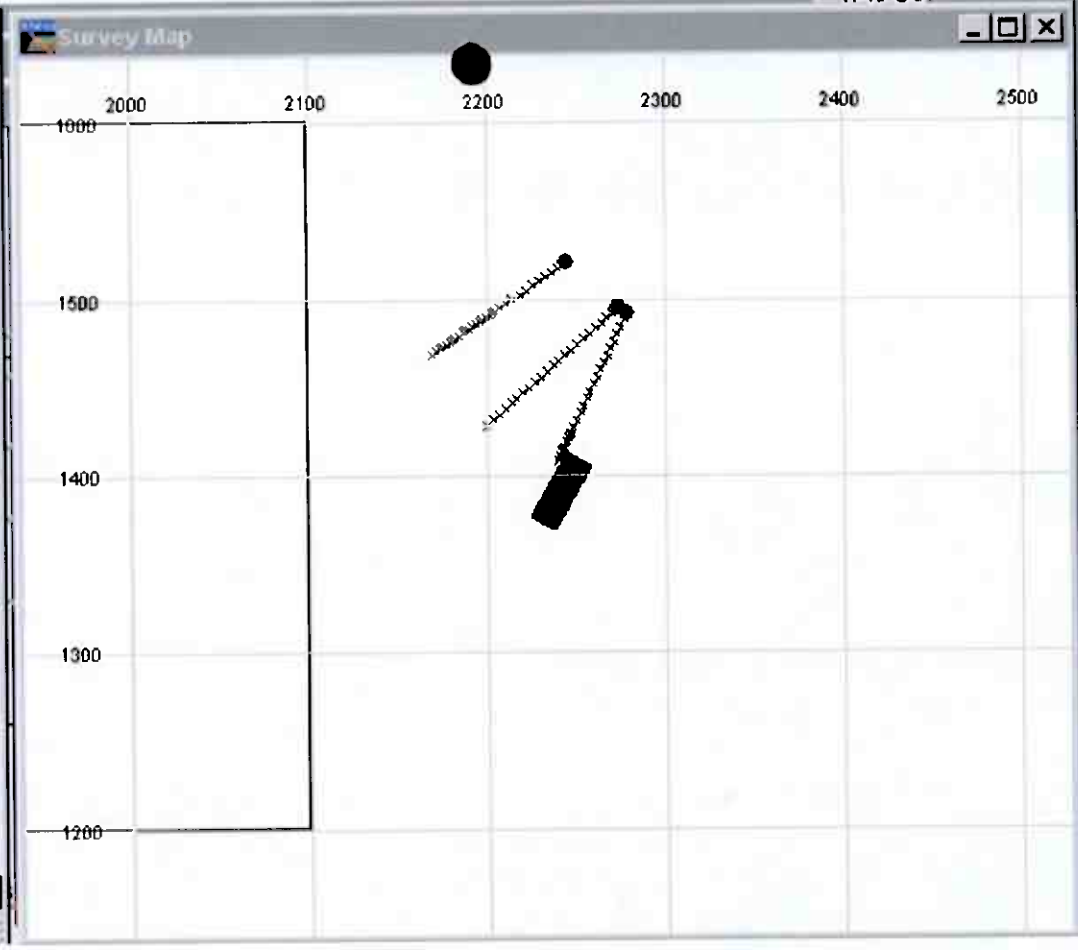
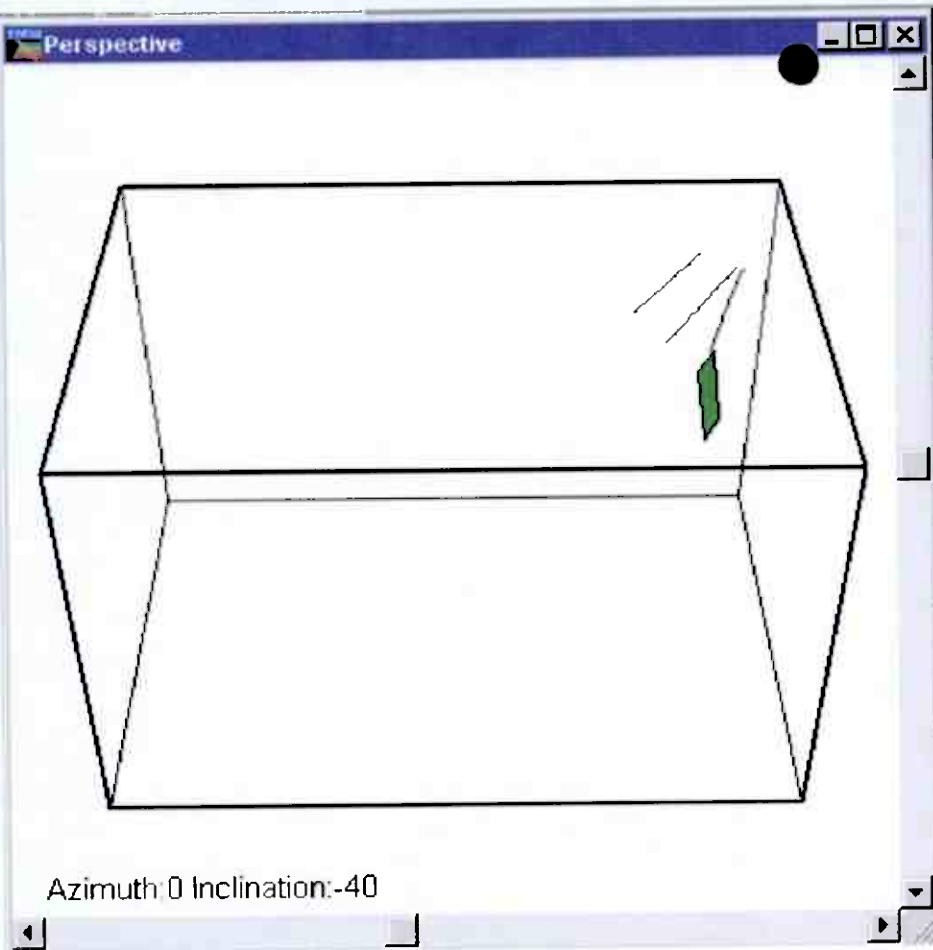


Fig. 11

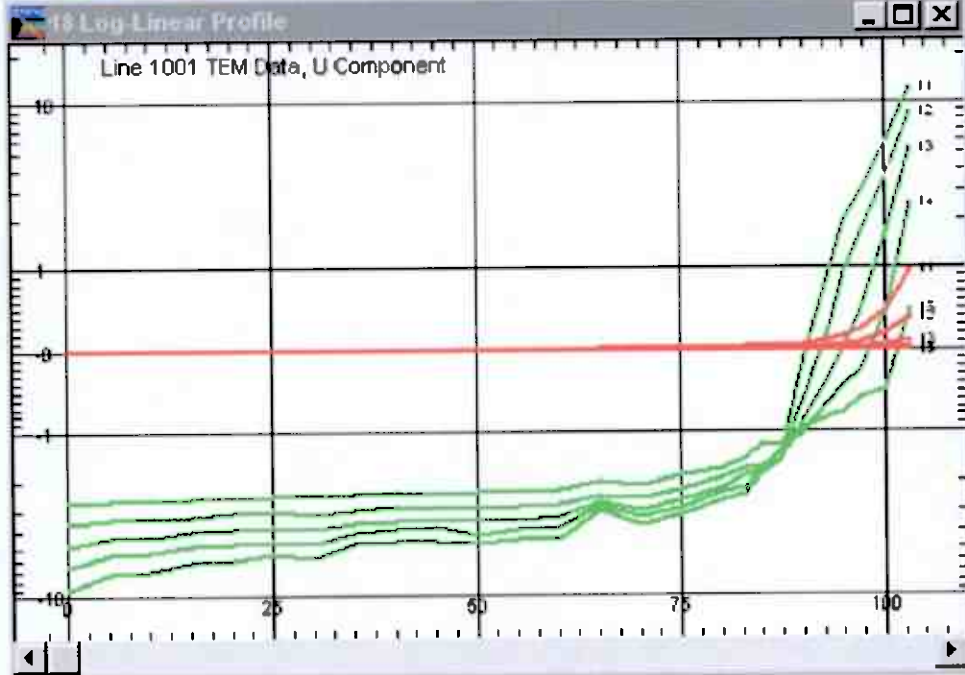
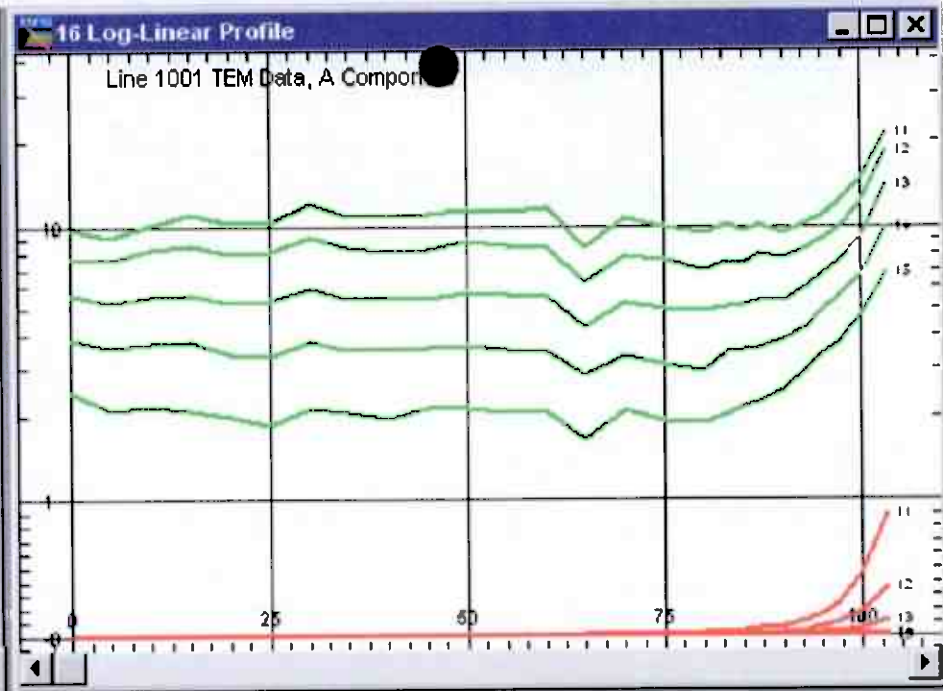
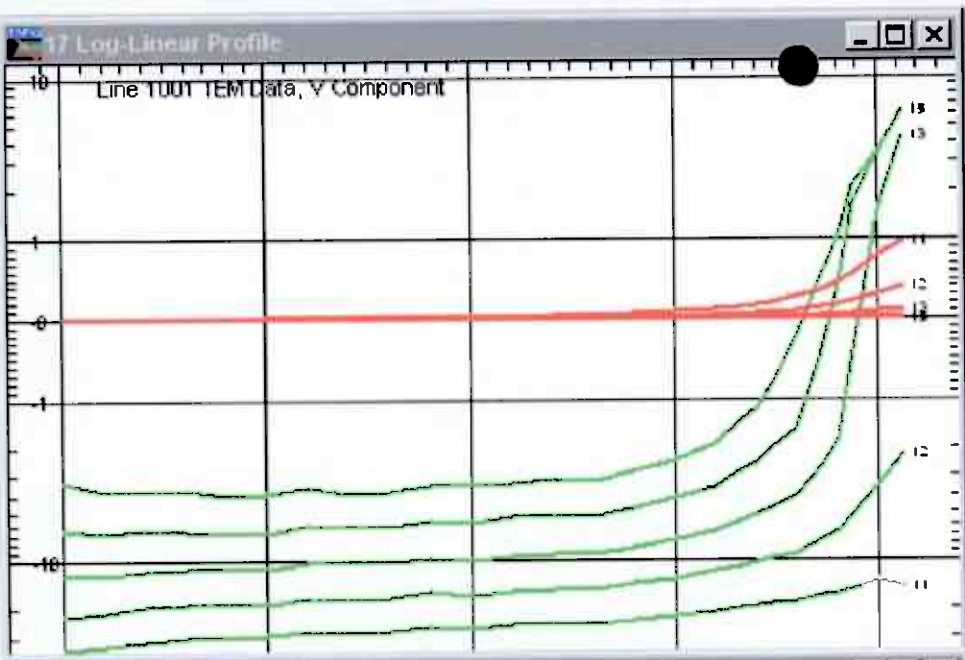


Fig. 12

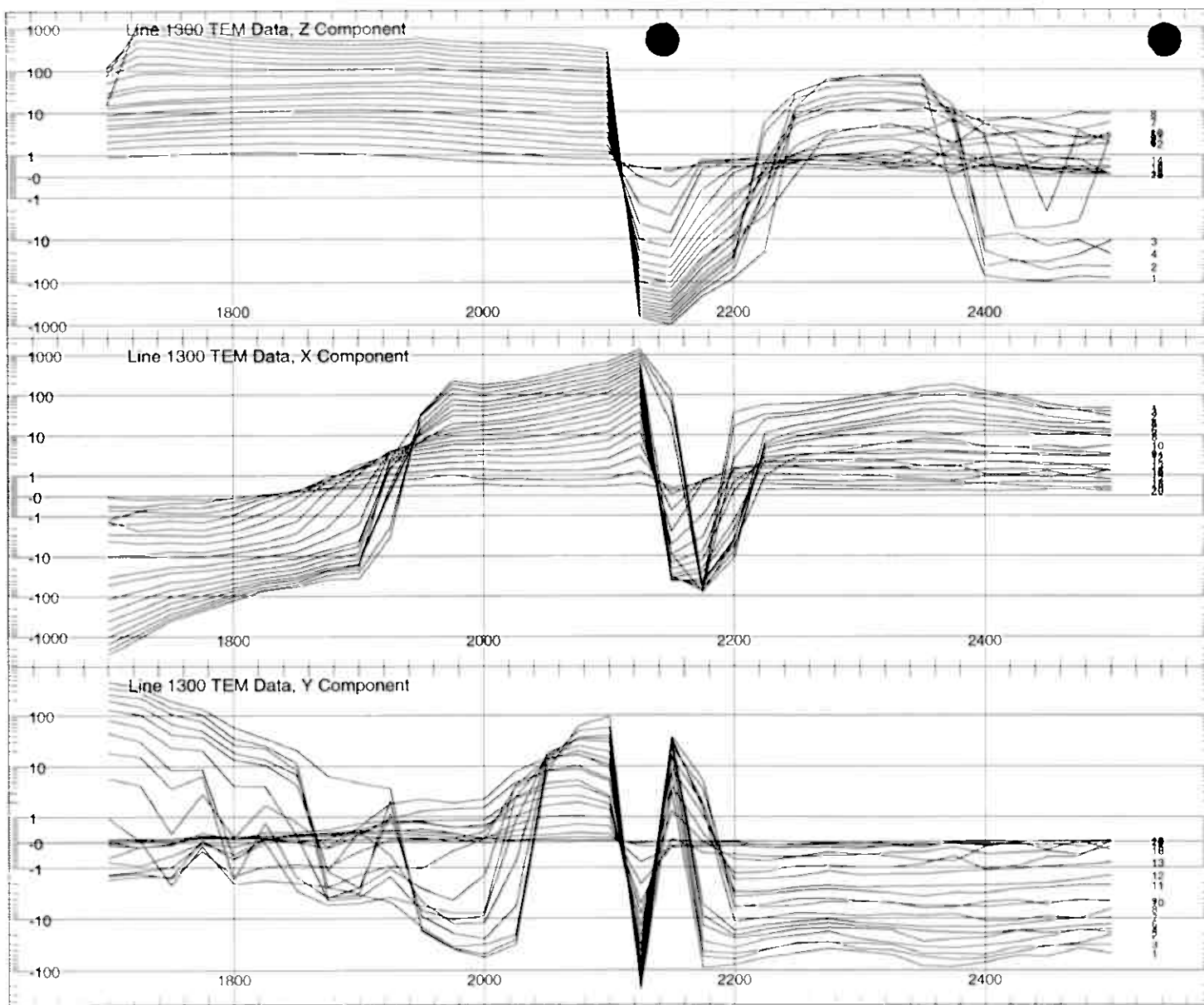


Fig. 13

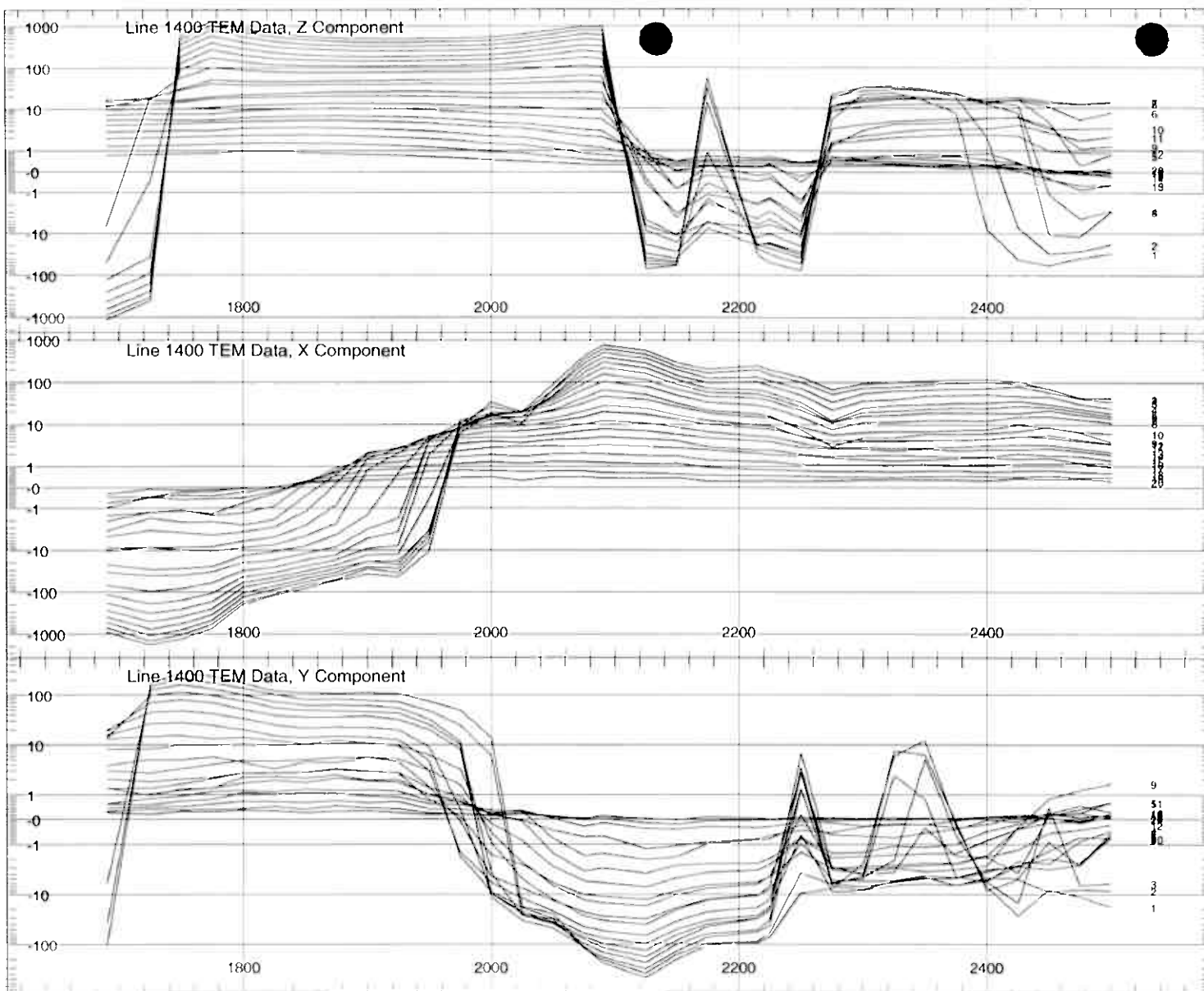


Fig. 14

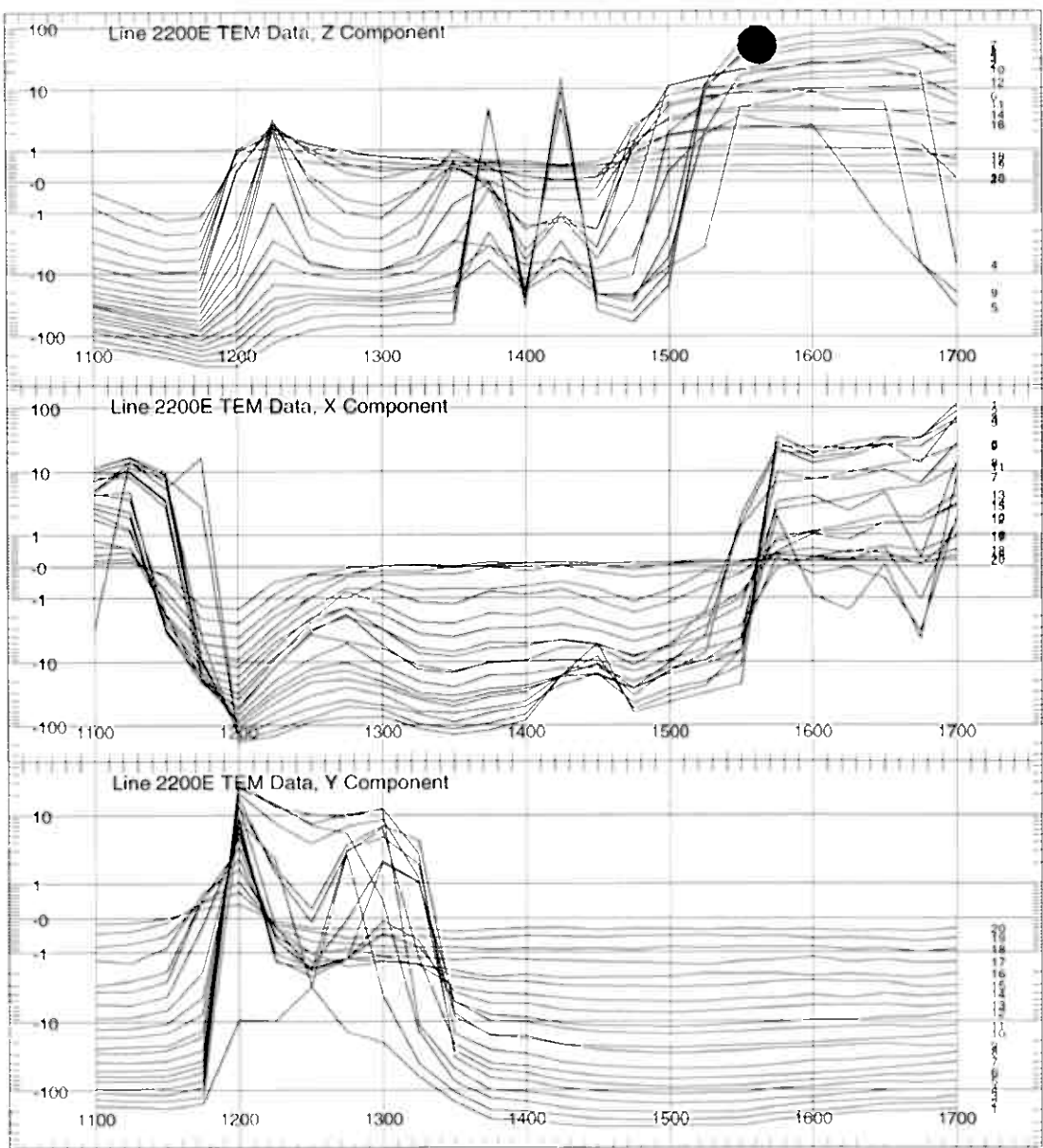


Fig. 15

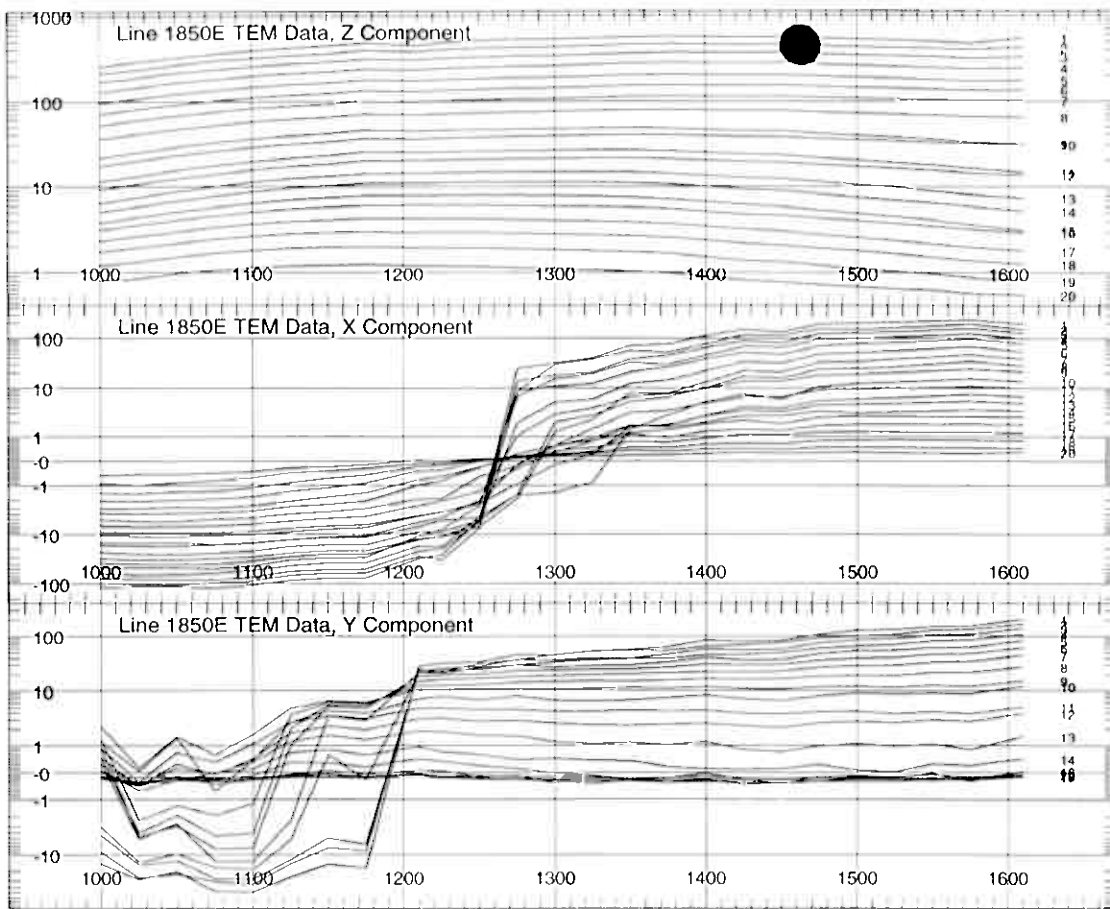


Fig. 16

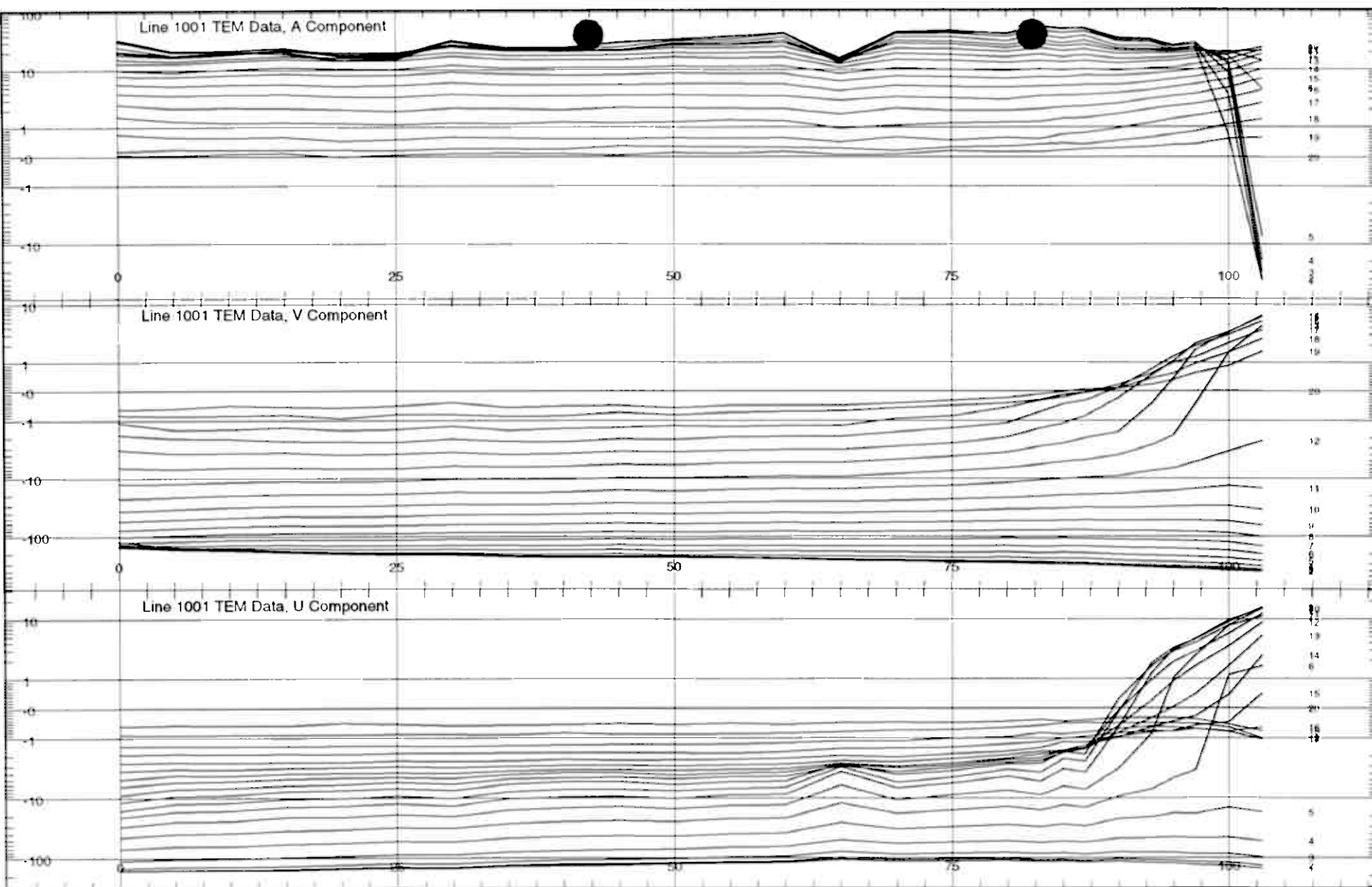


Fig. 17

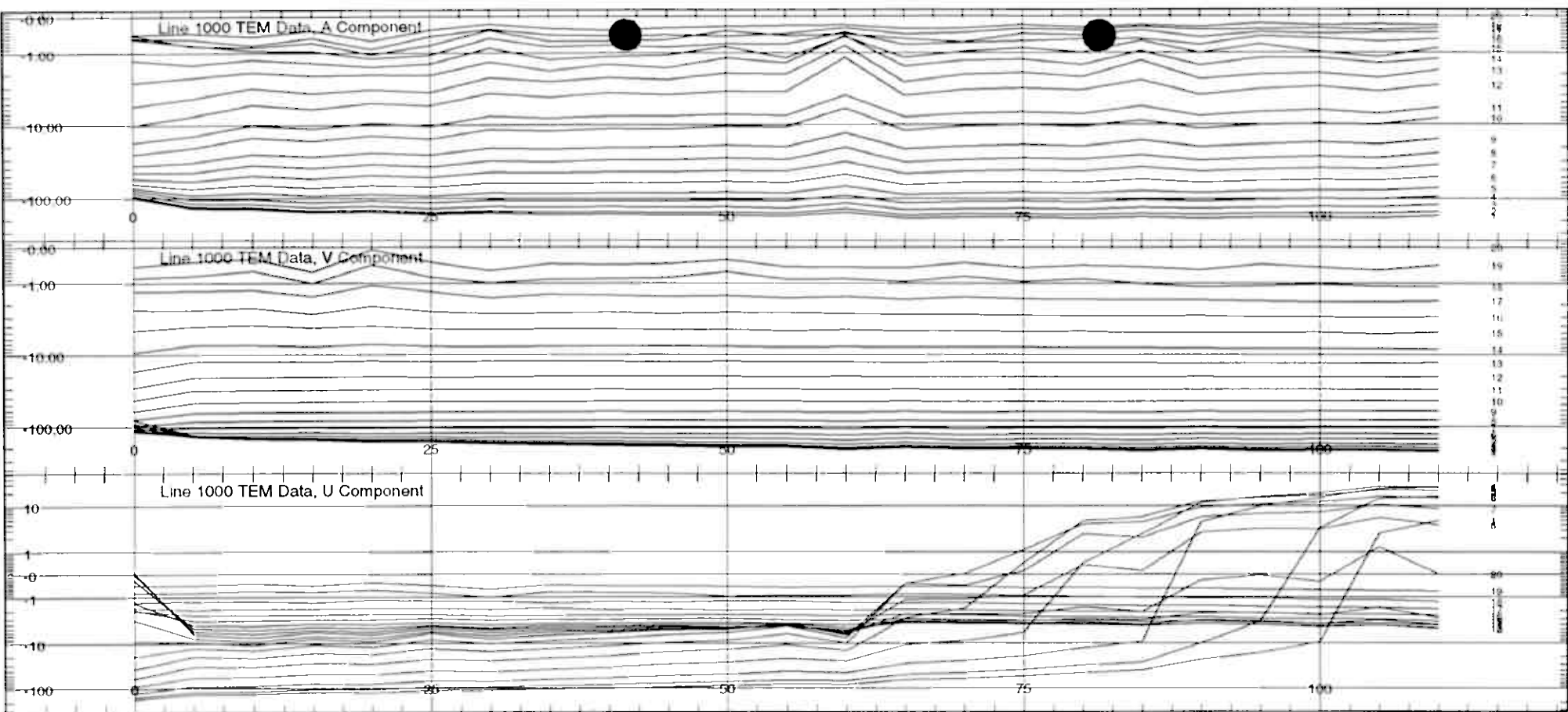


Fig. 18

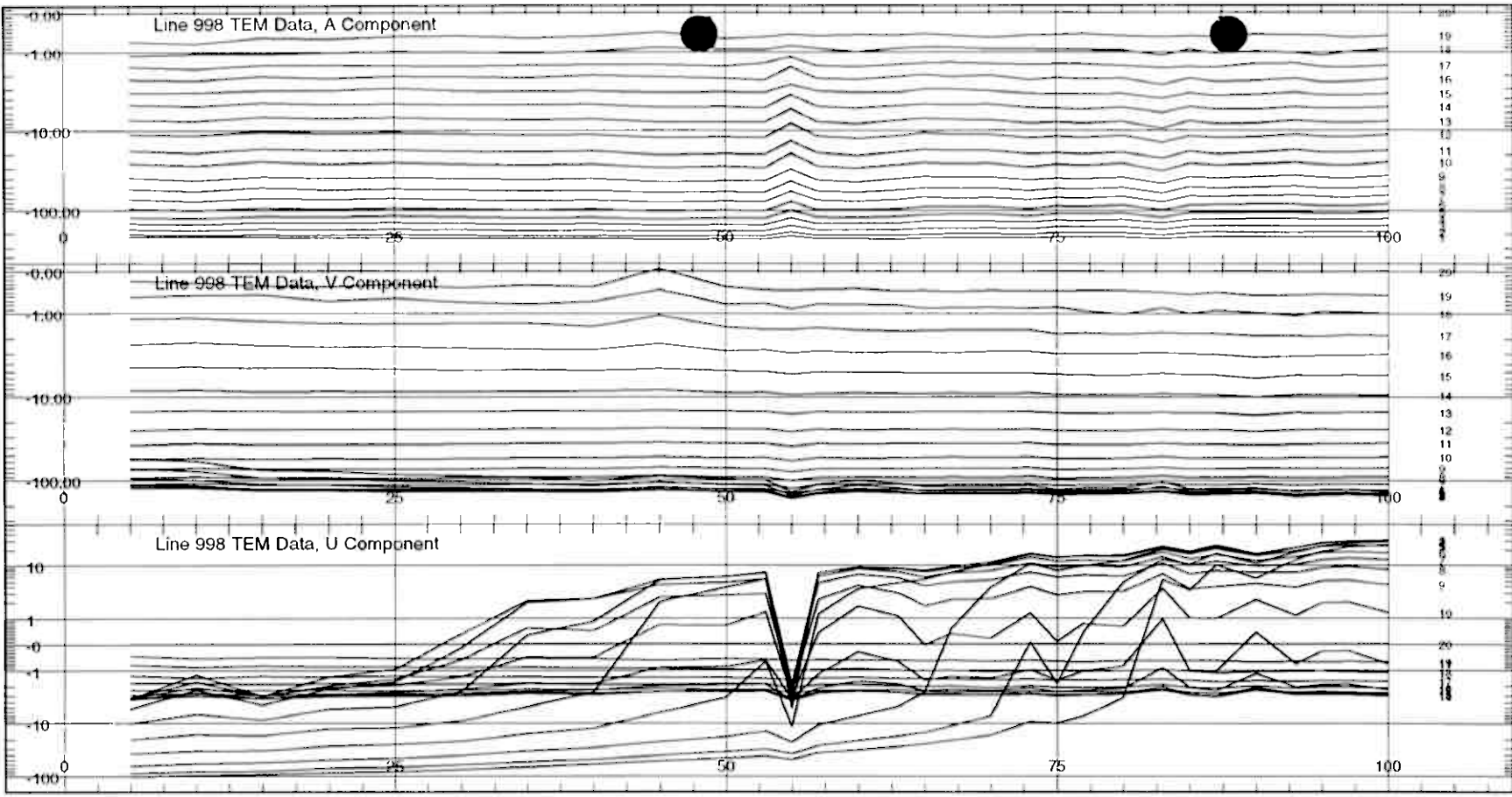


Fig. 19