

A3 BIDJØVAGGE GRUBER

## REMARKS ON THE EM-37 DATA OF BIDJØVAGGE NORTH

Five profiles measured by EM-37 in 1983 and 1984 in Bidjovagge North area have been reviewed by Outokumpu Oy Exploration in 1986.

Profiles N = 1.4, 1.5, 1.6, 1.7 and 1.8 are plotted in appendices 1 to 5, all channels in logarithmic scale and their corresponding DIT-plots (depth inversion) were also calculated and plotted, shown below the data. Two transient decay curves and time constants are shown in appendix 6, and for comparison two decay curves from Area 43 (below). A detailed explanation of the used method and its interpretation are described in the report of Area 43 survey in 1986.

It is clearly noticed from the data of P 1.4 that there are two conductors, at points c.  $E = 0.47$  and c.  $E = 0.62$ . The left one is a better conductor, when regarding that later channels are not affected by the right one, though the transmitter loop has been just over it. There can be some difference at the depth of the upper surfaces of the two conductors, but it cannot be reliably interpreted, because they are so close together. By having one of the later channels it is possible to fit a plate, whose upper surface is 100 or even 200 m down, but as good fit is found by a plate close to surface. DIT-plot shows also one good conductor and a weak one more to east. Sharp changes in the middle of the left conductor evidence its shallowness, and though the depth scale shows 200 m, it is due to vertical dip and superposition of the two conductors. This was also seen in Area 43, e.g. P300S, 600S and 400N.

In the profile N = 1.5 the picture is different, anomaly is broadened, turnover is 100 m more to west and the eastern anomaly is smaller. DIT-plot shows also that the conductivities of the both conductors have decreased. Now interpretation with a vertical plate constrains the western conductor 100 m more to west, but if a dip is less or more than  $90^\circ$  it is possible to put the plate  $\pm 100$  m by varying the dip, depth and conductance. Satisfactory interpretation is, however, difficult to catch by a thin plate model. There should be a thick plate model or many thin plates together, and such modeling possibilities are not available to us. Then looking at the decay curves one from P1.4 and the other P1.5 it is seen, how in the first one time constant is increasing toward later channels, but reaches maximum earlier in the second one. Values are quite low compared to Area 43.

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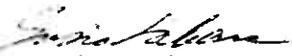


In the next profiles to north widening of the anomaly and change of turnover continues; turnover is also more dispersed. But the turnover is still quite sharp except at later channels. DIT-plots are very similar to each others and the depth estimates do not increase. The second conductor, however, seems to vanish step by step.

All facts are suggesting that the conductivity of the both conductors are decreasing, and the most radical change happens between profiles 1.4 and 1.5. It is also evident that a thin plate model is not convenient or does not give a unique solution in this case.

Espoo 6.6.1986

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Exploration

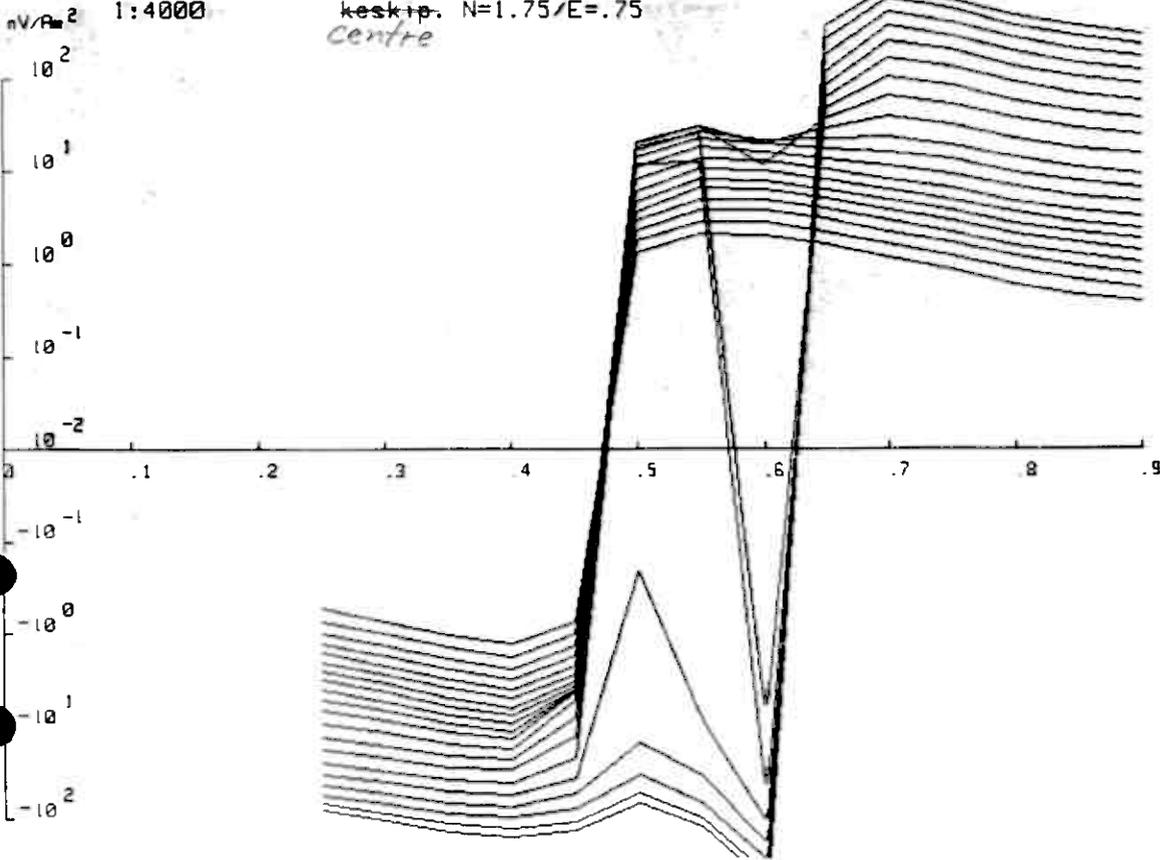
  
Ensio Lakanen  
Research geophysicist

BIDJOVAGGE N=1.4

432 EM37 HI/Z TR-loop 300\*600m

1:4000 keskip. N=1.75/E=.75

*Centre*



BIDJOVAGGE N=1.4

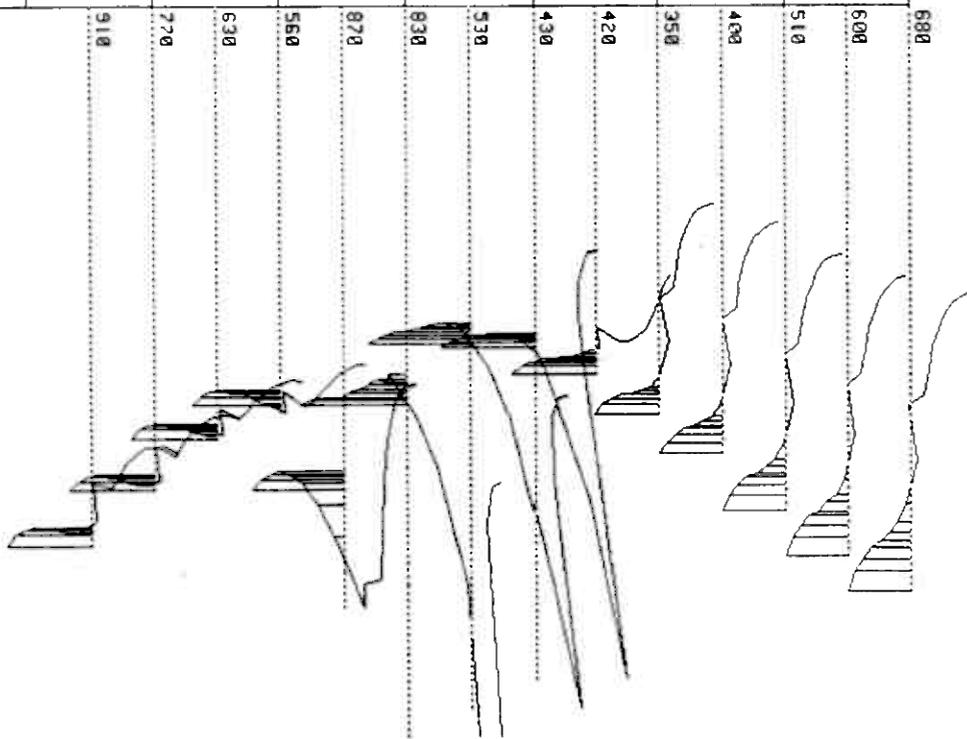
433 EM37 HI/Z 300m \* 600m

1:4000

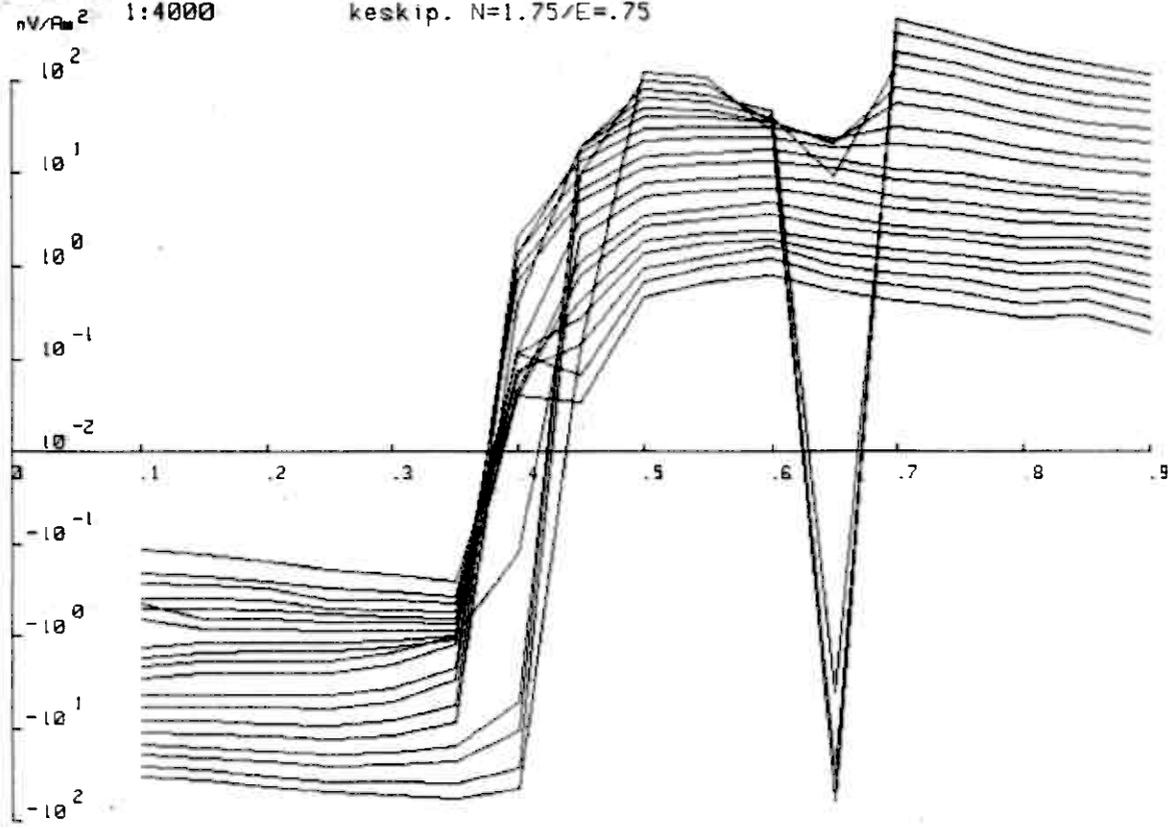
U-dek.  
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 C-dek.

*DIT*

0 .1 .2 .3 .4 .5 .6 .7 .8 .9

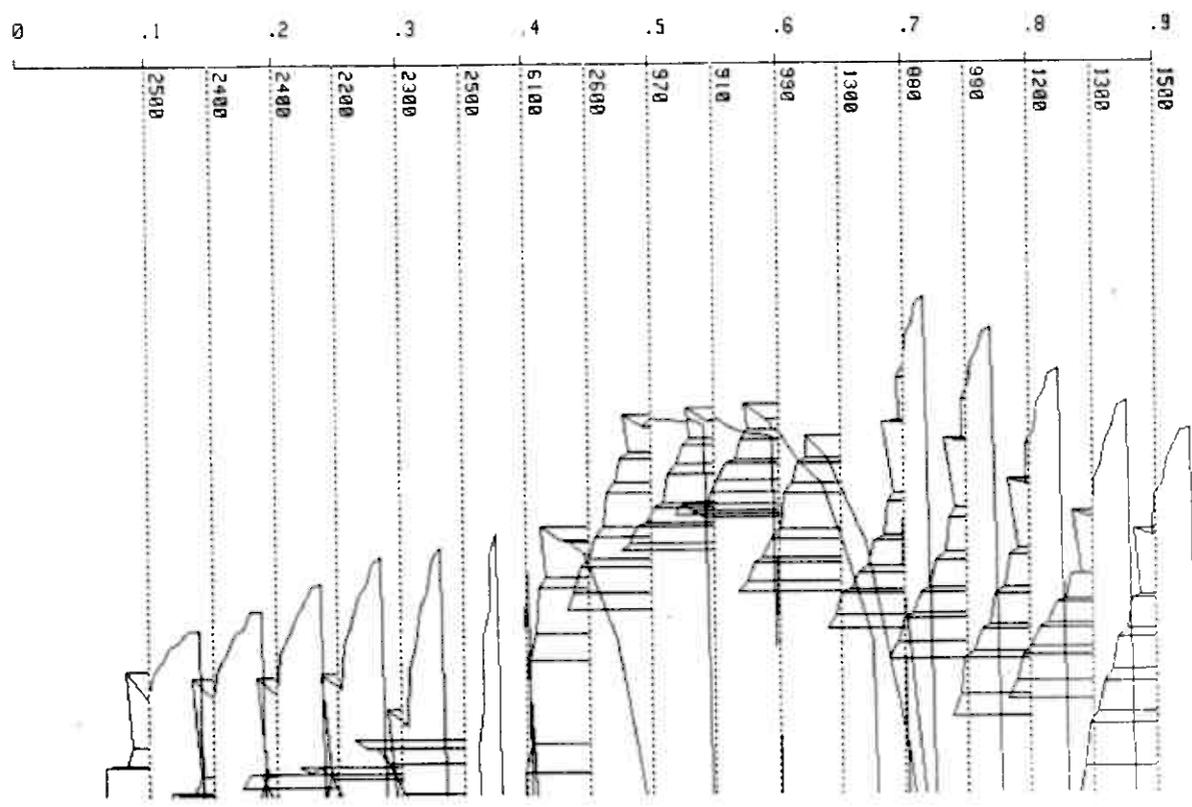


BIDJOVAGGE N=1.5  
 432 EM37 HI/Z TR-loop 300\*600m  
 nV/A<sup>2</sup> 1:4000 keskip. N=1.75/E=.75



BIDJOVAGGE N=1.5  
 433 EM37 HI/Z 300m \* 600m  
 1:4000

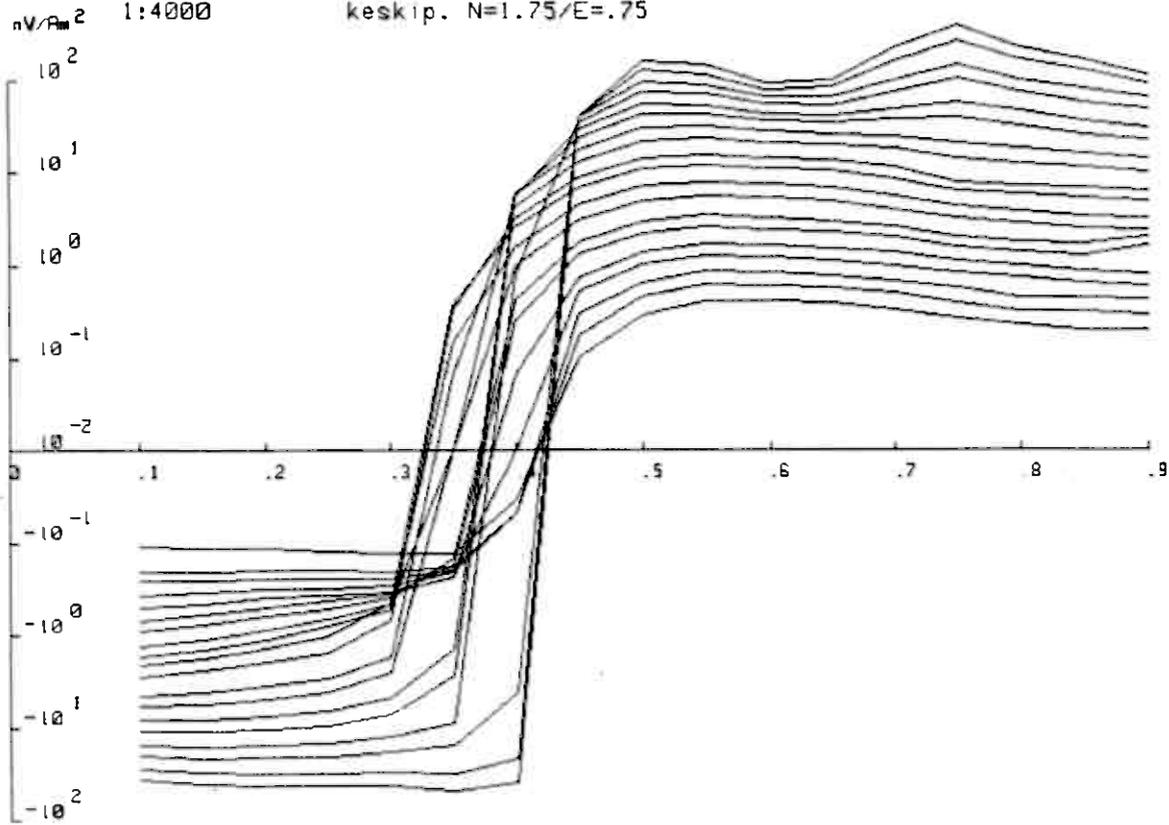
dek -  
 Ra  
 keskilmsak  
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BIDJOVAGGE N=1.6

432 EM37 HI/Z TR-loop 300\*600m

1:4000 keskij. N=1.75/E=.75

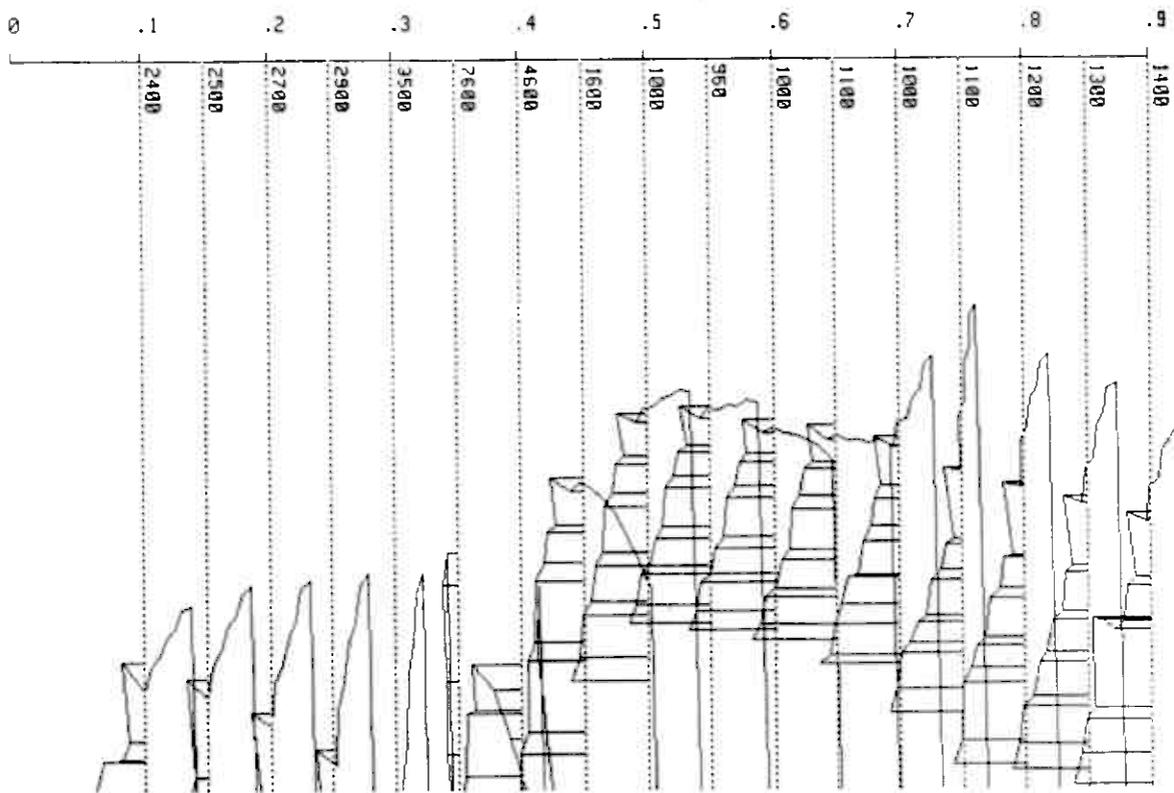


BIDJOVAGGE N=1.6

433 EM37 HI/Z 300m \* 600m

1:4000

-dek.  
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 Ra



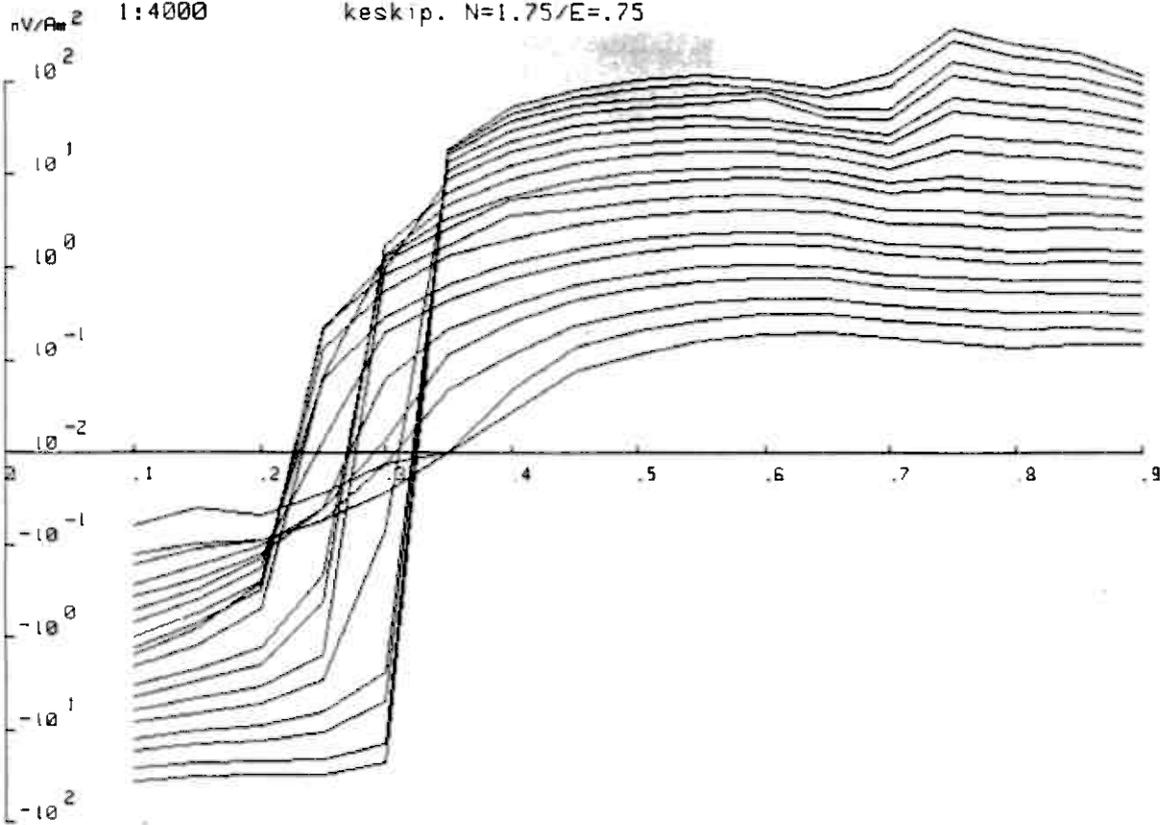


BIDJOVAGGE N=1.8

432 EM37 HI/Z TR-loop 300\*600m

1:4000

keskip. N=1.75/E=.75



BIDJOVAGGE N=1.8

433 EM37 HI/Z 300m \* 600m

1:4000

Ra      -dek.      keskiparvo      +dek.  
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