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Tittel

Charged potential in Bleikvassli in spring 1975

Forfatter	Dato År	Bedrift (Oppdragsgiver og/eller oppdragstaker)
Mikkola Pekka	10.10 1975	A/S Bleikvassli Gruber

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Hemnes	Nordland		19261	Mosjøen

Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geofysikk		Bleikvassli gruber

Råstoffgruppe	Råstofftype
Malm/metall	Zn, Pb

Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse

CP-målinger utført på 5870 meter borhull og 540 meter profiler på bakken. det ble benyttet 6 separate jordinger. Målingene møtte på vanskeligheter i 2 borhull (Bh 19 og Bh 3/75). Dårlig ledningsevne i Malm II gjorde tolkningene kompliserte. Men Malm II har en klar utstrekning nordover og forbi profilet som er definert av Bh 22, 23 og 30A. En mineralisering på vestsiden har dårlig ledningsevne og er ikke i kontakt med Malm I eller Malm II.

CHARGED POTENTIAL MEASUREMENTS IN BLEIKVASSLI IN SPRING 1975

SUOMEN MALMI OY

1975-10-10

PEKKA MIKKOLA

Charged Potential Measurements in Bleikvassli in Spring 1975

Appendices

Charged Potential Measurements in Bleikvassli in Spring 1975

1. INTRODUCTION

According to the contract between Bleikvassli Gruber A/S and Geobor A/S, Suomen Malmi Oy carried out charged potential (mise-a-la-masse) measurements in the neighbourhood of the Bleikvassli Mine during the period 1975-04-10...26. Altogether 5870 metres of drillholes and 540 metres of ground profiles were measured. Six separate active groundings were used. The measurements continued the CP-survey done by Suomen Malmi Oy in Bleikvassli in 1974 (Report 23-59, 1974-08-07).

The purpose of the measurements was to investigate the extensions of the Ore II in the holes drilled after 1974 and, on the other hand, connections between the mineralizations encountered in these holes. An especially interesting target was BH19, but the hole was blocked and could not be measured.

The results of the measurements are portrayed in the appendices in the form of drillhole profiles. The observed potentials have been normalized to correspond an input current of 0.5 A (in other words the same current as in 1974) with the exception of the graphite schist grounding. The values obtained in this exceptional case must be multiplied by 2.5 before they can be directly compared to the other results.

The field crew consisted of a geophysicist, a foreman and three observers. The interval between observation points was in the case of drillhole measurements 2.5 - 20 m and in the case on ground measurements 20 m.

2. MEASUREMENTS

A Geoscience frequency-domain IP-apparatus equipped with a phase indicator was used in the measurements. The frequency of the input current was 1.0 Hz and the magnitude between 0.1 - 0.3 A depending on the grounding. The accuracy of the measured potentials was better than 0.1 mV in all cases. The remote grounding was placed about 4 km to the southeast of the measured area (K = 10.300, L = 34.800 as in 1974). The fixed reference potential electrode was placed at the point K = 10.300 and L = 31.100 as in 1974. Consequently the results of the different measurements are comparable.

The most important active groundings were placed in the following conductors (the symbols used in the graphic representation are in the parenthesis):

(X) Bh 15 - 167.5 m , Ore I
(O) Bh 5 - 98.0 m , Ore II
(H) K = 9.76 , L = 30.83 , Graphite schist

Three extra active groundings were used mainly in control measurements:

(N) Bh 7 - 87.5 m , Ore II
(E) Bh 29 - 70.0 m , Ore II
(S) Bh 1/75 - 252.5 m , New mineralization.

Measurements were carried out in the following drillholes: Bh 1/74, Bh 7, Bh 13, Bh 14, Bh 22, Bh 23, Bh 29, Bh 30A, Bh 1/75, Bh 2/75 and Bh 3/75 and along the profile K = 10.100. The results that have been normalized to correspond the same current (0.5 A) as in the previous years. However, in the case of the grounding (H) the appended

results have been normalized to correspond a current of 0.2 A because of scaling. If these results are multiplied by 2.5 they are directly comparable to the other results. Without any exception the depths have been measured from the top of the drillhole casing to the center of the 80 cm long measuring electrode.

3. RESULTS

The most important aim was to investigate the extensions of the Ore II. From this point of view Bh 19 bore crucial importance. However, it remained blocked and could not be measured. Moreover, the measurements of the drillholes Bh 2 and 3/75 were disturbed by concurrent drilling.

3.1 Active Grounding in Ore I (X)

A grounding was made in the old ore (Ore I) in the drillhole Bh 15 at the depth of 167.5 m. Previously the drillhole Bh 1/70 was used, but this time it was not found. The measurements in 1974 pointed out that Bh 13 penetrates the Ore I. Bh 13 was, however, blocked at the depth of 156 m. Hence the grounding was made in Bh 15. The connection between the grounding and the penetrated ore in Bh 13 was ascertained by a trial survey, the results of which are given in the appendix 4. The appendices 6, 7 and 9 point out the same things about the northern part of the area as the measurements in 1974. The potential peaks of the Ore I and the Ore II are nearly coincident, but the potentials of the Ore II are somewhat higher indicating better galvanic contacts with the grounding point.

The drillhole Bh 29 (Appendix 8) points out that the Ore I is penetrated nearest to the surface at the depth of about

35 meters. The measurements in the drillholes on the western side of the bay indicate that the Ore I does not make any distinct galvanic contact with the holes Bh 1, 2, 3/75. The measurements in Bh 1/75 point out that in front of the granite there is a conducting zone where the potential of the Ore I reaches its peak value. The potential differences are, however, so small that a good galvanic contact is out of question. The peak potential just has to be somewhere.

3.2 Active Grounding in Ore II (O,N,E)

The extensions of the new ore (Ore II) were investigated chiefly by means of the grounding Bh 5 - 98.0 m (O) as in 1974. Groundings Bh 7 - 87.5 m (N) and Bh 29 - 70.0 m (E) were used mainly to test the effects of the moderate conductivity of the Ore II.

The results obtained in the holes Bh 22, 23 and 30A in the northern part of the area are quite unambiguous (Appendices 6, 7 and 9). The holes penetrate clearly the extensions of the Ore II at the depths of the peak potentials. The fact that the potential reaches its highest value in the hole Bh 30A is due to the closeness of the grounding in Bh 5 and to the direction of the lineation.

The measurements on the western side of the bay point out the same things as in the previous case where the active groundings were in the Ore I: the conducting zone in front of the granite and small potential differences. In the drillhole Bh 1/75 the potential of the grounding N reaches higher values than potential of any other grounding in the Ore II. This fact is due to the closeness of the drillhole Bh 7.

3.3 Active Grounding in Graphite Schist (H)

The grounding in the graphite schist No. 19 was made on an outcrop in the same place as in 1974 (K = 9.76 and L = 30.83). The graphite schist is believed to reflect the general geological features of the area.

The drillholes in the northern part of the area (Appendices 6, 7 and 9) yielded results that confirm well the information obtained through other measurements. The potentials decrease smoothly as the depth increases indicating that the distance to the graphite schist is getting greater. The even portions at the bottom of the holes are caused by conductivity of the ore mineralizations.

The measurements in Bh 29 (Appendix 8) indicate a wide conducting zone built up of several separate conductors at the interval 35 - 190 m.

3.4 Active Grounding in New Mineralization (S)

The highest potential due to the groundings in the Ore II was obtained in Bh 1/75 at the depth of 252.5 m. The drillholes on the western side of the bay and the profile K = 10.100 were measured using this point as an active grounding (S).

The results point out that the dimensions of the grounded body are great (the peak potential in Bh 1/75 is only about + 8 mV) and that the results due to the grounding S and the graphite schist grounding correlate with each other in the drillholes Bh 1, 2 and 3/75. However, the galvanic contact between the grounding S and the penetrated mineralizations of the same horizons at depths of 235 - 243

and 227 - 233 m in the holes 2 and 3 is weak on the basis of the great potential drop (from about + 8.0 mV to about - 30 mV).

The results of the profile K = 10.100, along which the maximum potential was encountered near the outcrop of the graphite schist, point out again the contact of the grounding S with the graphite schist.

4. SUMMARY

Technical difficulties were caused by the obstruction in Bh 19 and by the drilling at Bh 3/75. The rather poor conductivitys of the Ore II made the interpretations of the results somewhat complicated. However, the results point out distinctly that the Ore II extends to the north beyond the profile defined by the drillholes Bh 22, 23 and 30A. The mineralizations penetrated by the drill-holes on the western side of the bay are poor conductors, which are not in contact with the Ore I or the Ore II.

Espoo 1975-10-10

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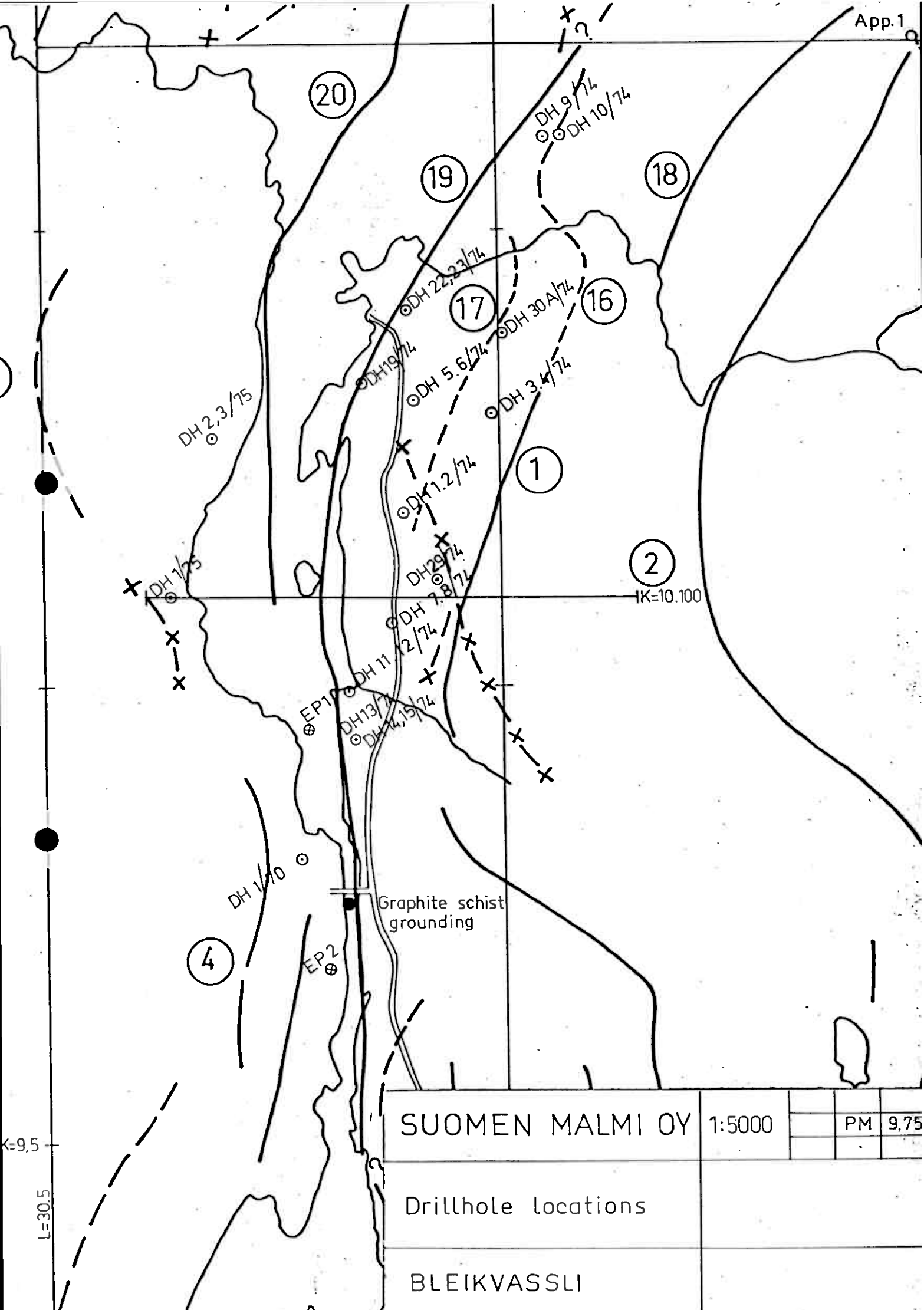
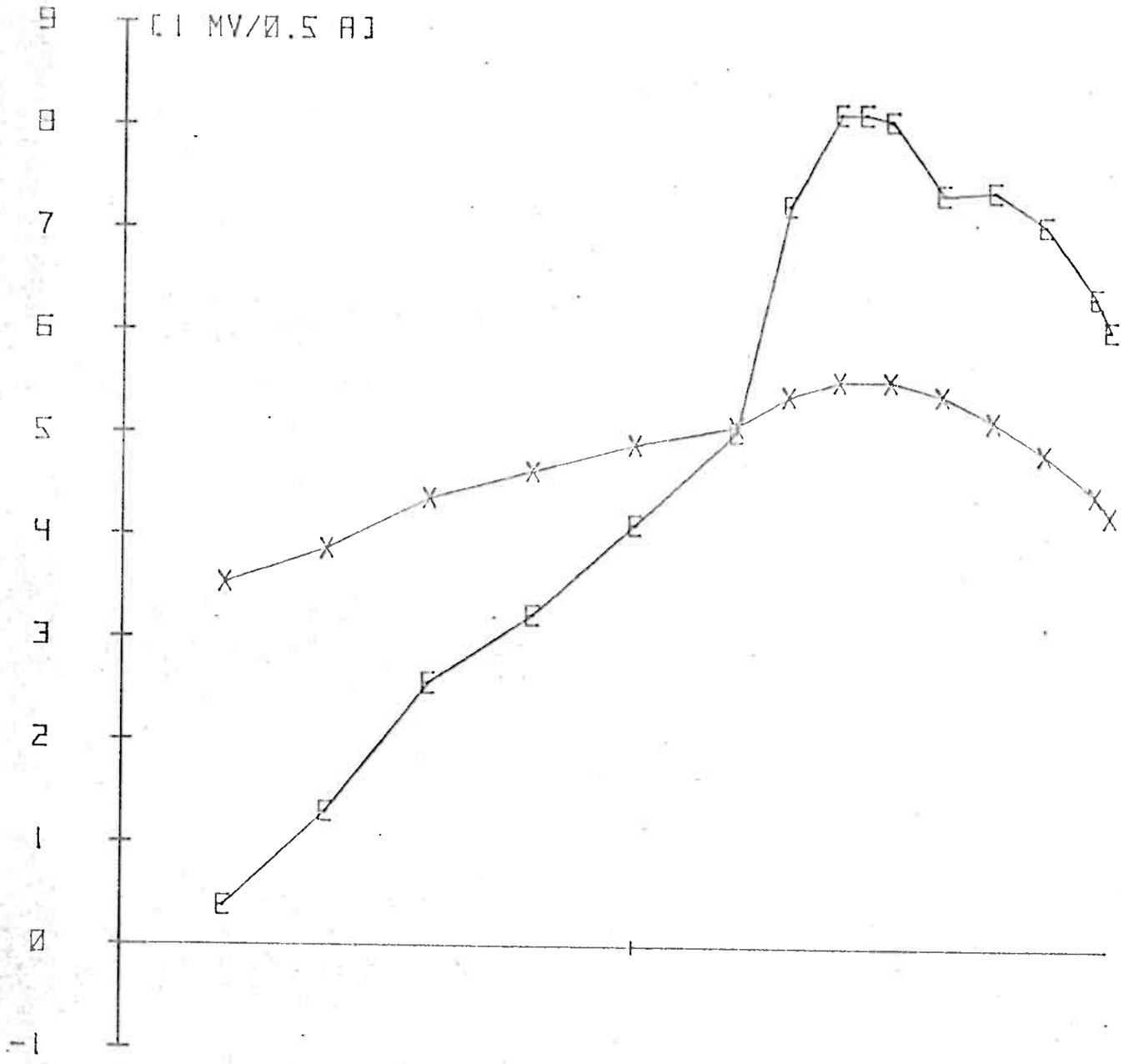


SUOMEN MALMI OY	1:5000		PM	9.75
Drillhole locations				
BLEIKVASSLI				

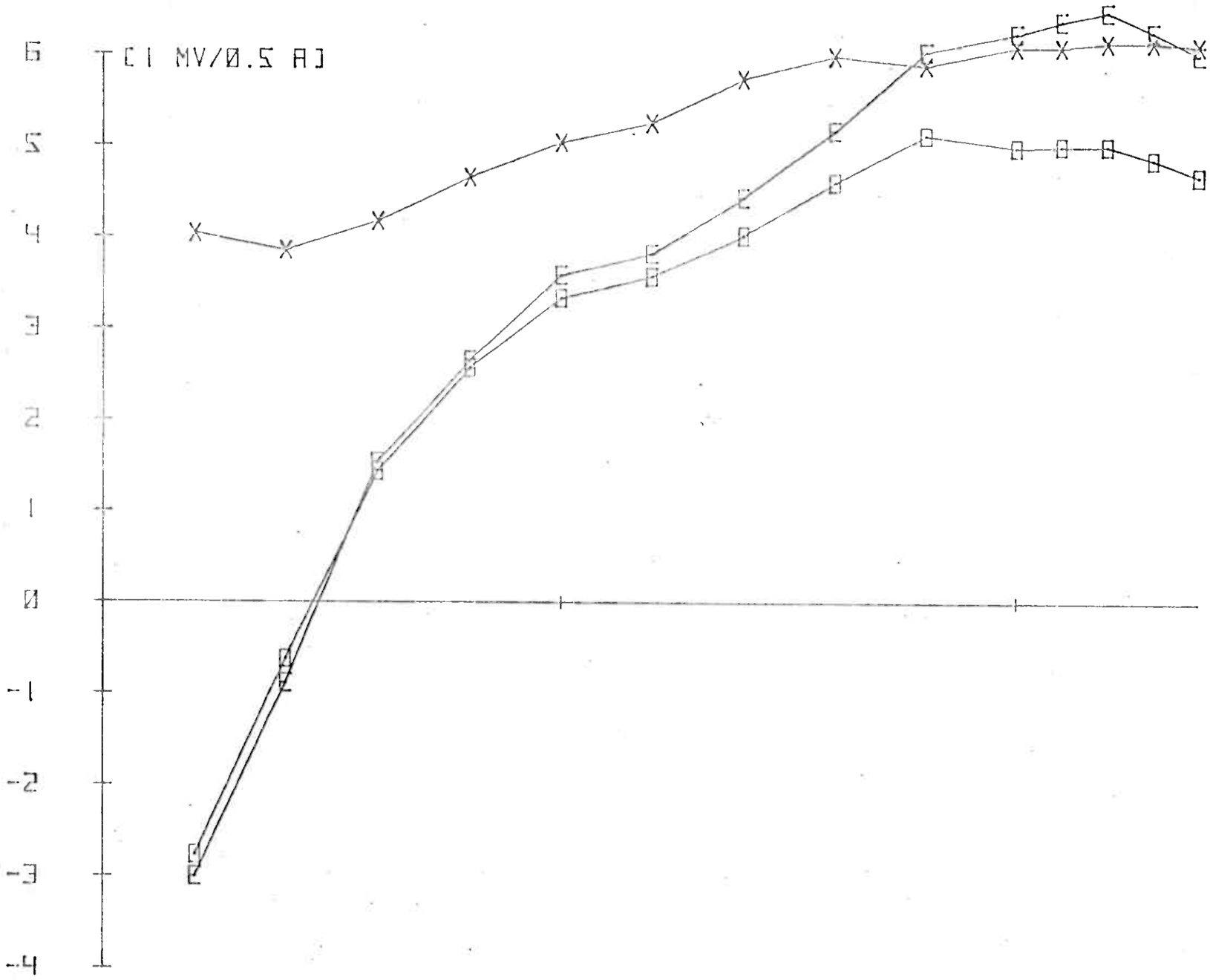
CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 1/74



X GROUNDING IN BH15-167.5

E GROUNDING IN BH29-70.0

SUOMEN MALMI OY



CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 7

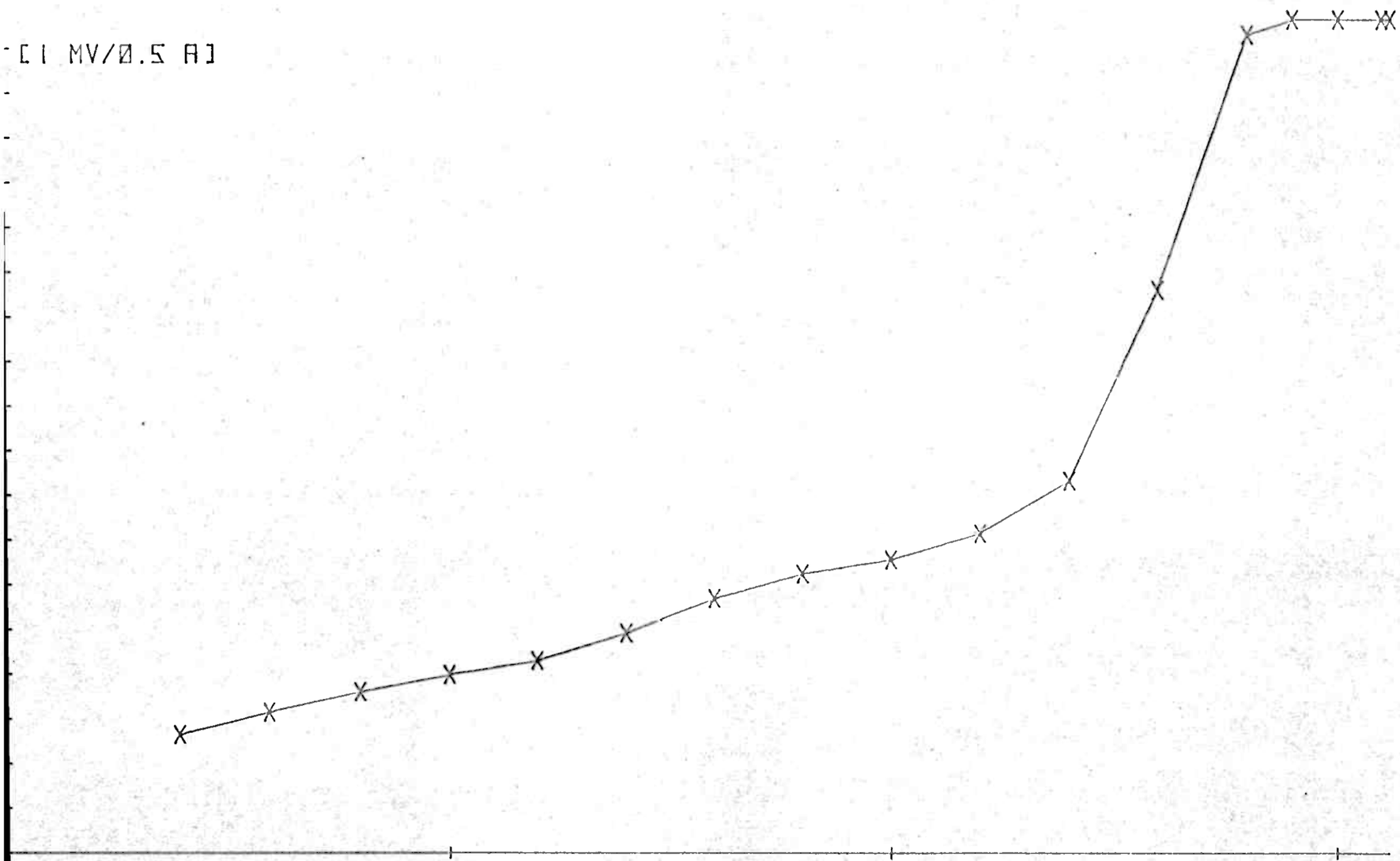
X GROUNDING IN BH15-167.5

O GROUNDING IN BH5-98.0

E GROUNDING IN BH29-70.0

SUOMEN MALMI OY

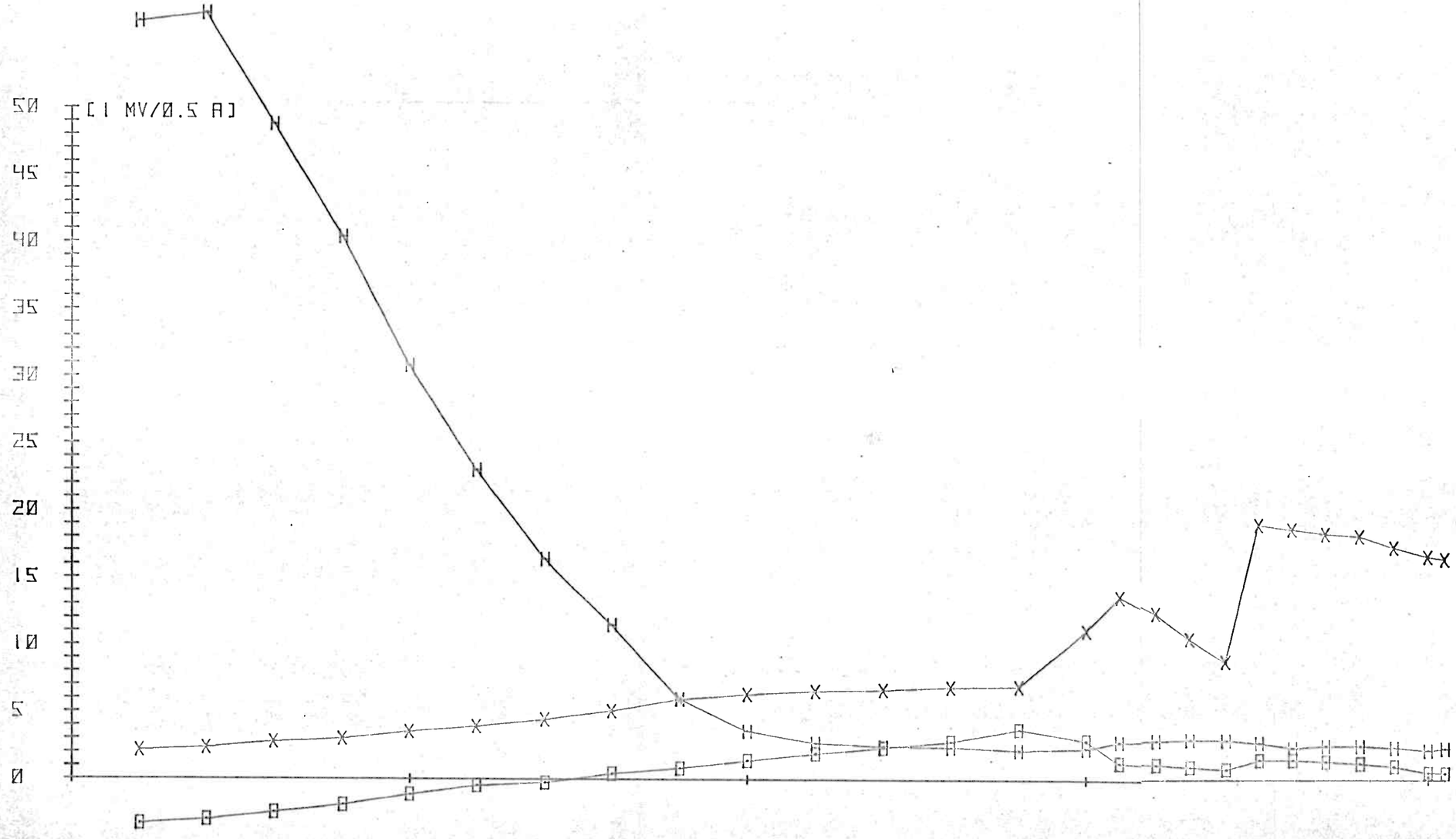
[1 MV/0.5 A]



CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 13

X GROUNDING IN BH15-167.5

SUOMEN MALMI OY



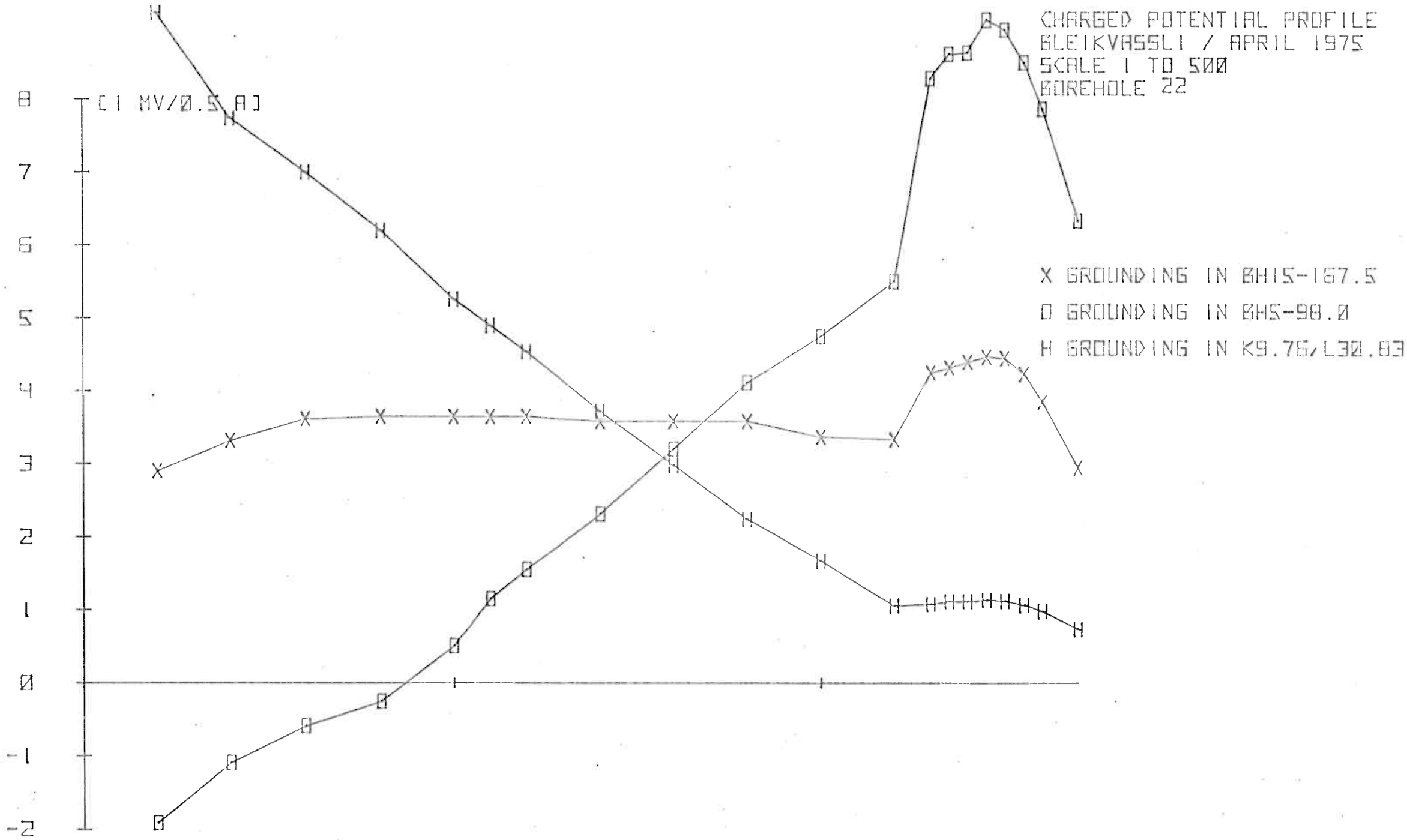
CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 14

X GROUNDING IN BH15-167.5

□ GROUNDING IN BH5-98.0

H GROUNDING IN K9.76/L30.83

SUOMEN MALMI OY



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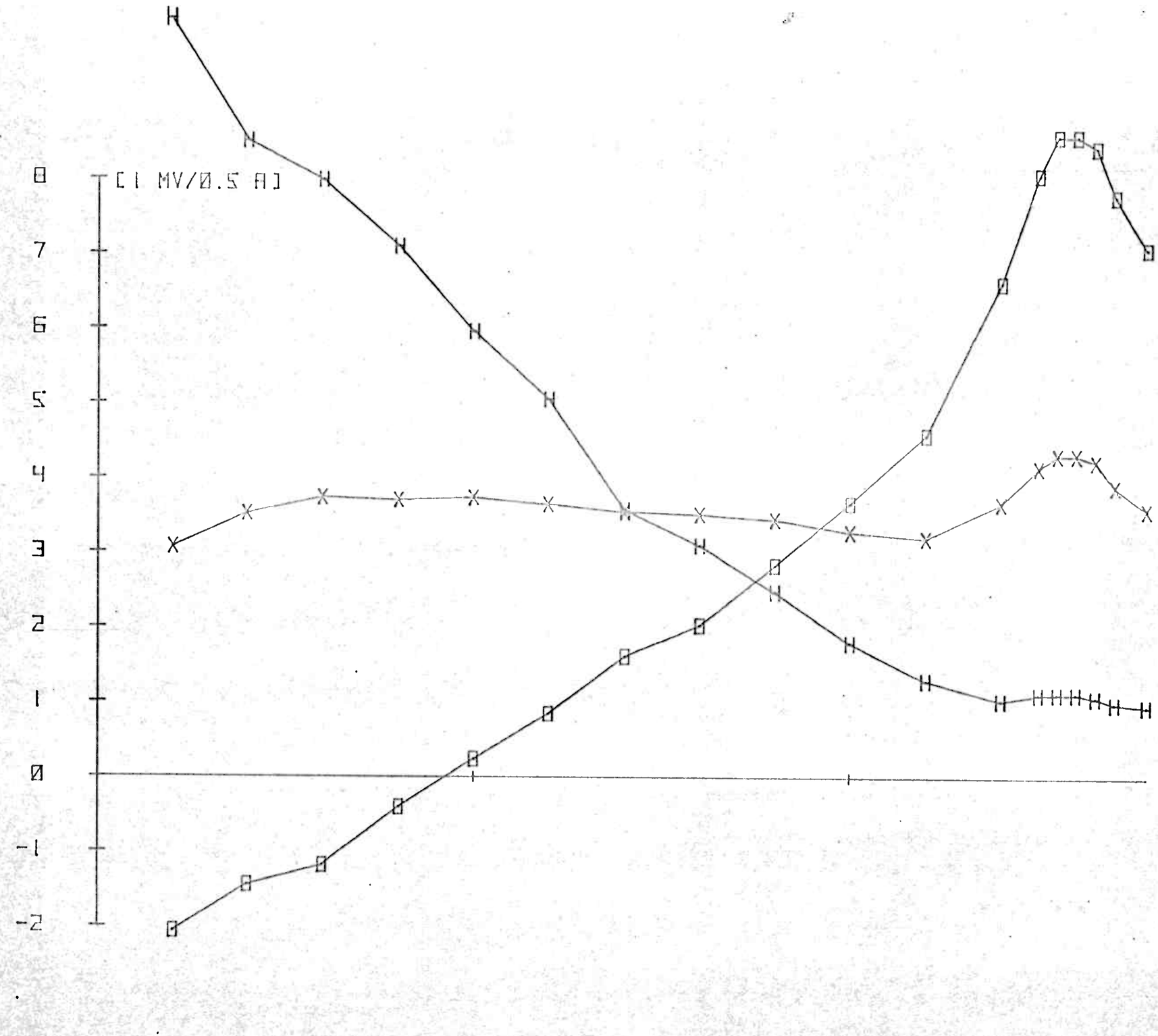


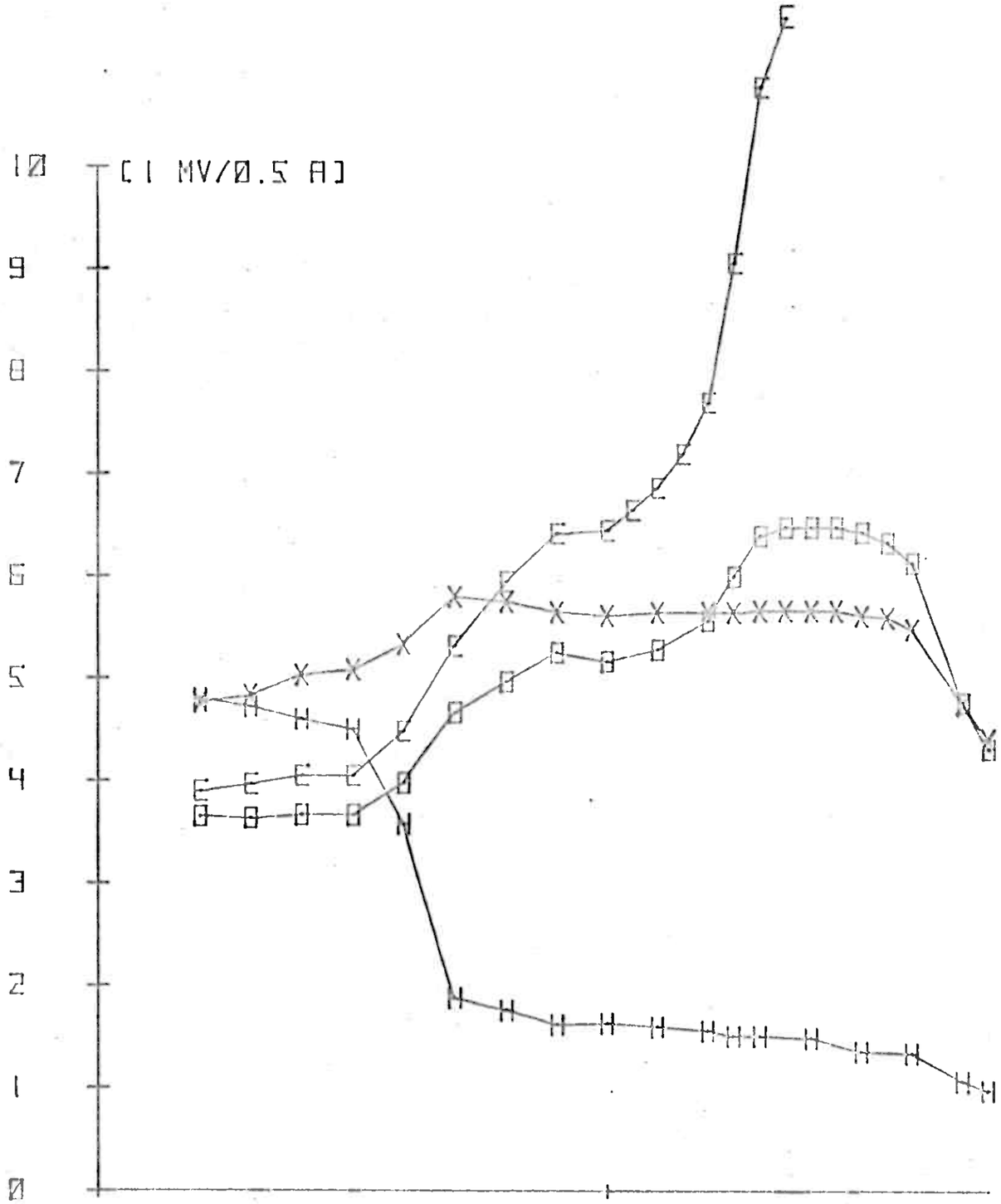
CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 23

X GROUNDING IN BH15-167.5

□ GROUNDING IN BH5-98.0

H GROUNDING IN K9.76/L30.83

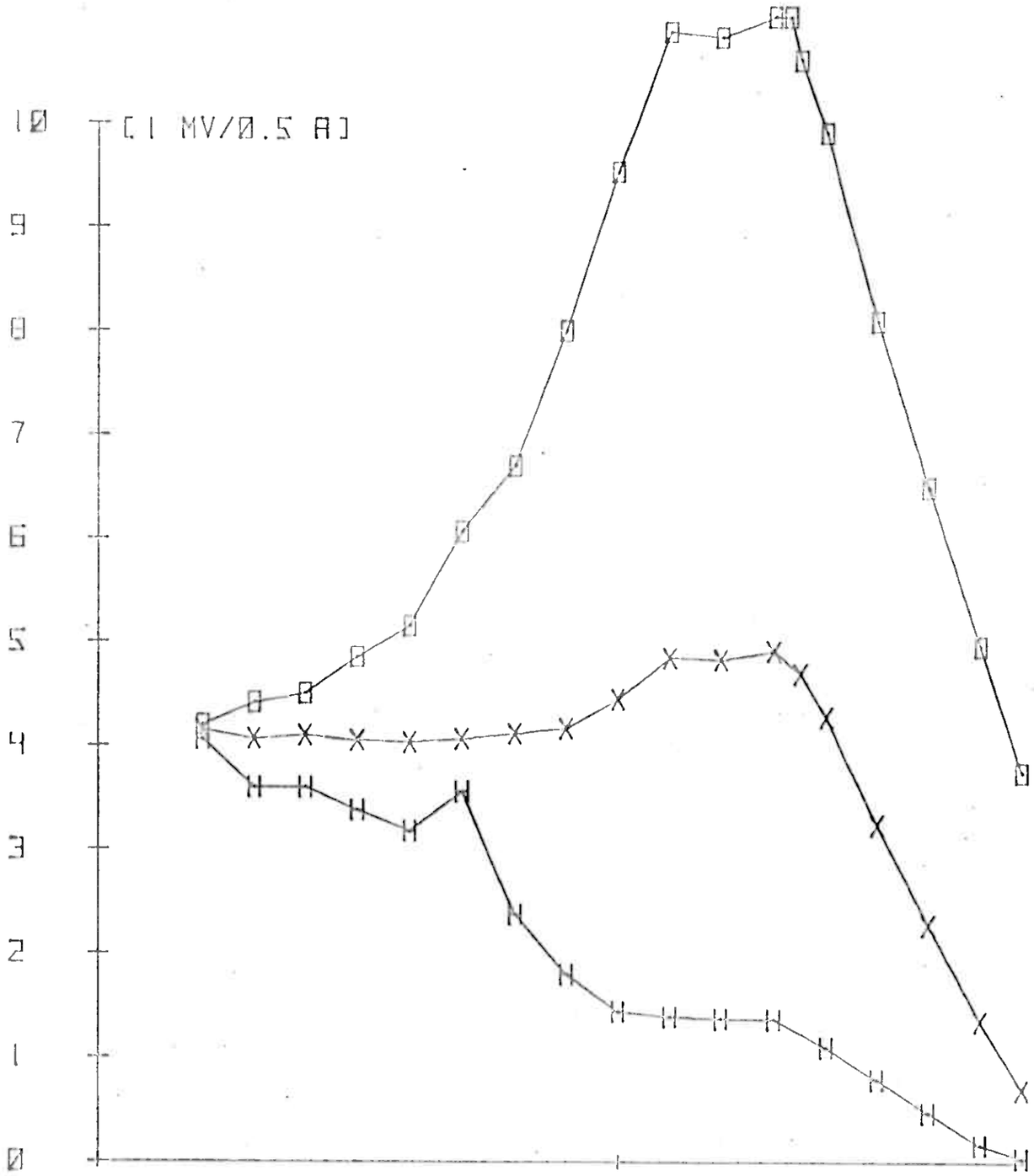
SUOMEN MALMI OY



CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 29

X GROUNDING IN BH15-167.5
O GROUNDING IN BH5-98.0
H GROUNDING IN K9.75, L30.83
E GROUNDING IN BH29-70.0

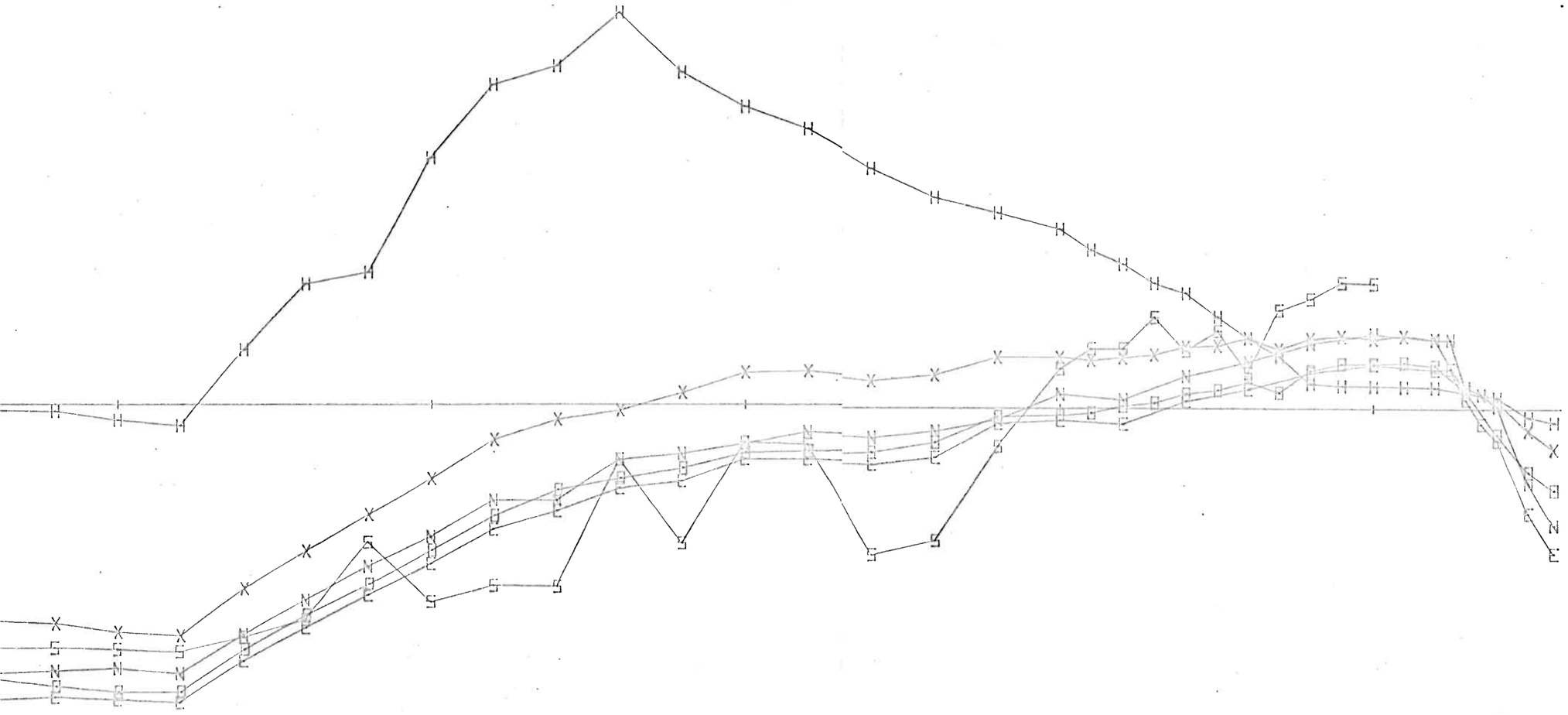
SUOMEN MALMI OY



CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 30A

X GROUNDING IN BH15-167.5
O GROUNDING IN BH5-98.0
H GROUNDING IN K9.76, L30.83

SUOMEN MALMI OY

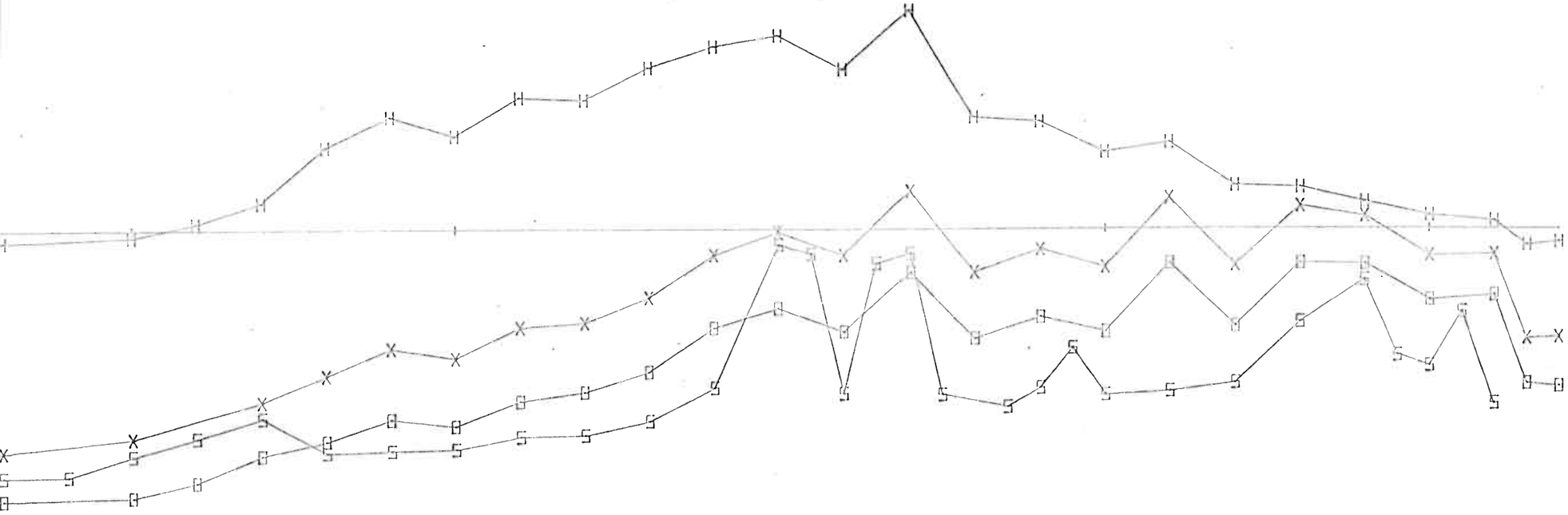


CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 1/75

X GROUNDING IN BH1S-167.5
O GROUNDING IN BHS-90.0
H GROUNDING IN K9.76/L30.83
N GROUNDING IN BH7-87.5
E GROUNDING IN BH29-70.0
S GROUNDING IN BH1/75-252.5

SUOMEN MALMI OY

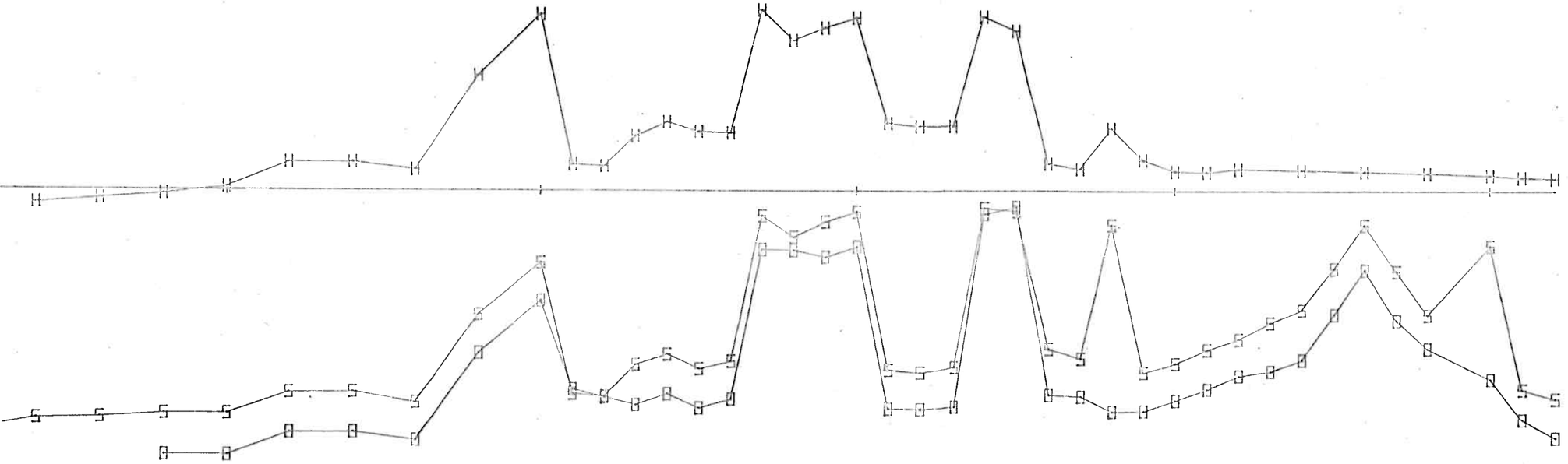
CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 2/75



X GROUNDING IN BH1S-167.5
O GROUNDING IN BHS-98.0
H GROUNDING IN K9.76/L30.83
S GROUNDING IN BH1/75-252.5

SUOMEN MALMI OY

1.5 A]



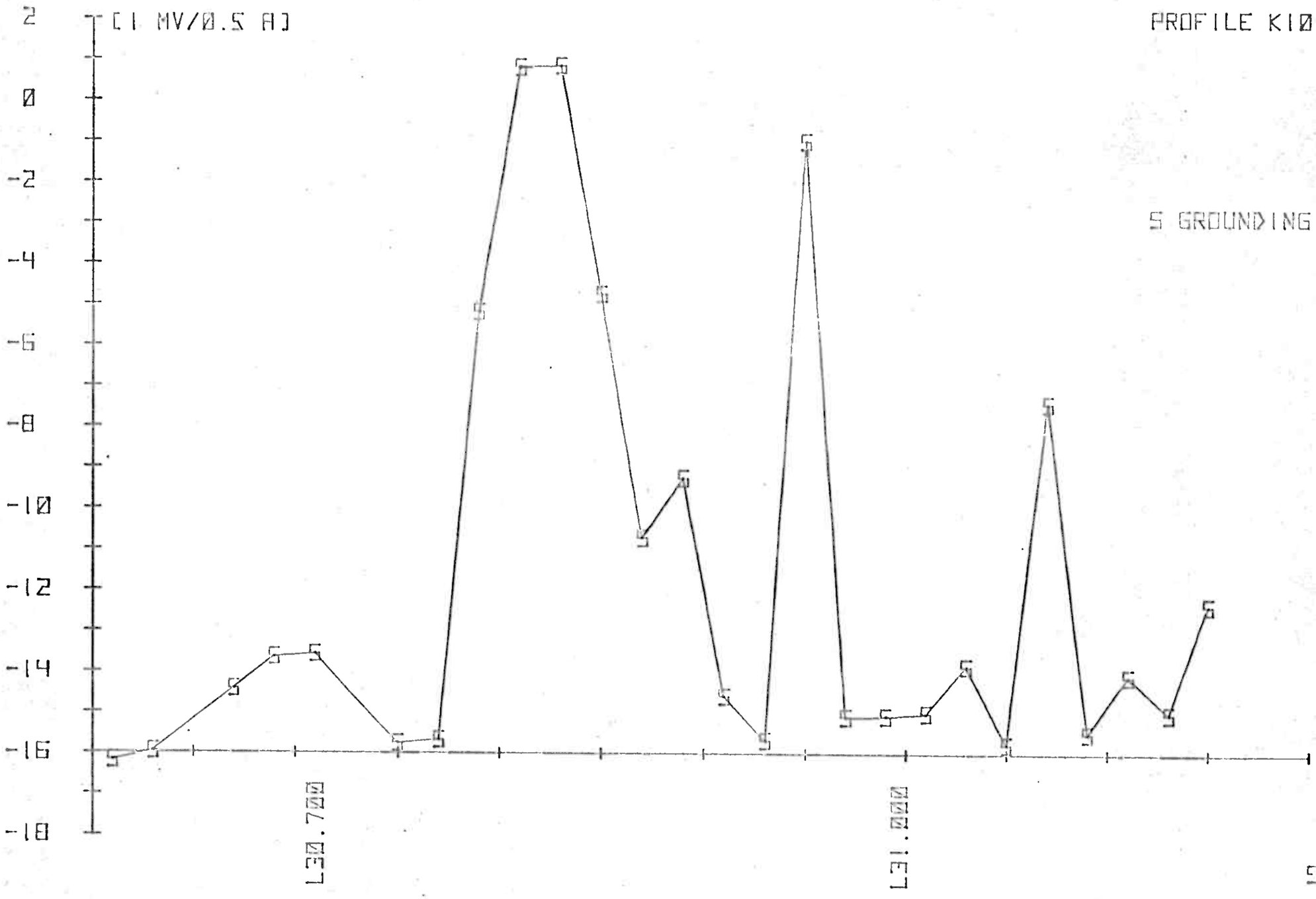
CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 500
BOREHOLE 3/75

O GROUNDING IN BH5-98.0
H GROUNDING IN K9.76/L30.03
S GROUNDING IN BH1/75-252.5

SUOMEN MALMI OY

CHARGED POTENTIAL PROFILE
BLEIKVASSLI / APRIL 1975
SCALE 1 TO 2000
PROFILE K10.100

S GROUNDING IN BH1/75-252.5I



SUOMEN MALMI OY