



Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr BV 1213	Intern Journal nr	Internt arkiv nr	Rapport lokalisering Trondheim	Gradering Åpen
Kommer fra ..arkiv Falconbridge	Ekstern rapport nr Sul 142-71-7	Oversendt fra Sulfidmalm a.s.	Fortrolig pga	Fortrolig fra dato:
Tittel Report on a geophysical survey at Orreknappen grid, Iveland, Norway, 1971				
Forfatter F.Nixon		Dato 1972	Bedrift Sulfidmalm A/S	
Kommune Iveland	Fylke Aust-Agder	Bergdistrikt Østlandske	1: 50 000 kartblad 15123	1: 250 000 kartblad Mandal
Fagområde Geofysikk	Dokument type Notat Rapport	Forekomster Orreknappen, Birkeland grid		
Råstofftype Malm/metall	Emneord Cu Ni			
Sammendrag Rapporten mangler tekstdelen men har alle bilagene intakt. Vedlagt notater som omtaler dette prosjektet				

FALCONBRIDGE NICKEL MINES LIMITED**INTER-OFFICE MEMORANDUM**

DATE: May 5th, 1972

TO: J.B. Gammon

COPIES TO: F. Nixon, R. Jahnsen, D.R. Lochhead

FROM: D.B. Sutherland

SUBJECT: Orreknappen Geophysics, Iveland

Nixon's report is quite completed and detailed. It is indeed fortunate that he decided to detail the two weak anomalies near Orreknappen and Bekken. The detail EM is much more definitive and supports his conclusion that there is no direct association between these two deposits. However, both anomalies have short strike length and strike obliquely to the lines. If these are of economic interest then intermediate E-W lines at 50 m interval, or perhaps N-S lines at 50 m spacing should be considered.

The detail on the two areas is discussed separately below.

Orreknappen

The detailing was carried out on a NW-SE grid and appears to have outlined a NE trending zone about 70 m long. It can be tested with present data with a short hole located about 10 m west of the 0,0 co-ordinate oriented in a SE direction.

One or two Crone profiles (using 50 m separation) would be of interest for Case History purposes.

Bekken

The results on the 25 m detail grid (which is oriented roughly E-W) suggest a strike or trend to the anomaly that is virtually parallel to the traverses and may be the cause of the usual data obtained. It is suggested that N-S lines 0, 50W, 100W and 150W be surveyed with either ABEM or Crone prior to drilling.

Comments on the detail traverses is as follows:

Line 375N (1A & 1B)

No strong evidence of conductivity but a weak positive on the ABEM data at 40W.

Line 400N (2A & 2B)

ABEM response of 5% at 20W and 60W - 2 conductors or flat sheet? note real component shows small neg's at 80W and 20W with pos. in between that is typical of a weak horizontal cond. Crone data not quite complete but suggest source dipping flatly west. Note: R/I ratio shows high conductivity.

142-71-7

Line 425N (3A & 3B)

AHEM - either two sources flatly dipping or one broad horizontal source with edges at 0 and 80W.

Crone - Extreme asymmetry shows source flatly dipping to west. Sub outcrop near 0? 0 curve incomplete to west. High amplitude indicate shallow source of high conductivity.

Line 450N (4A & 4B)

AHEM - probably shallow zone dipping flatly west from 60W, high conductivity.

Crone - Asymmetry interpreted as flatter dip than Nixon shows (i.e. 0 to 30°) from near 100W. Depth 10 m or less agrees with Nixon.

N.B. Data points at $\frac{1}{4}$ spacing (here 12.5 m) are preferred for detailed analysis.

Line 475N (5A & 5B)

AHEM - unusual real curve - possibly flat westerly dip from 100W but data incomplete. No imaginary response - could be cable length effect.

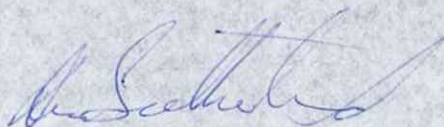
Crone - Usual positive curve perhaps due to side effects from conductor.

Additional Comments

As suggested by Nixon, the unusual detail data may be due to oblique line direction to apparent strike or possibly flat dip.

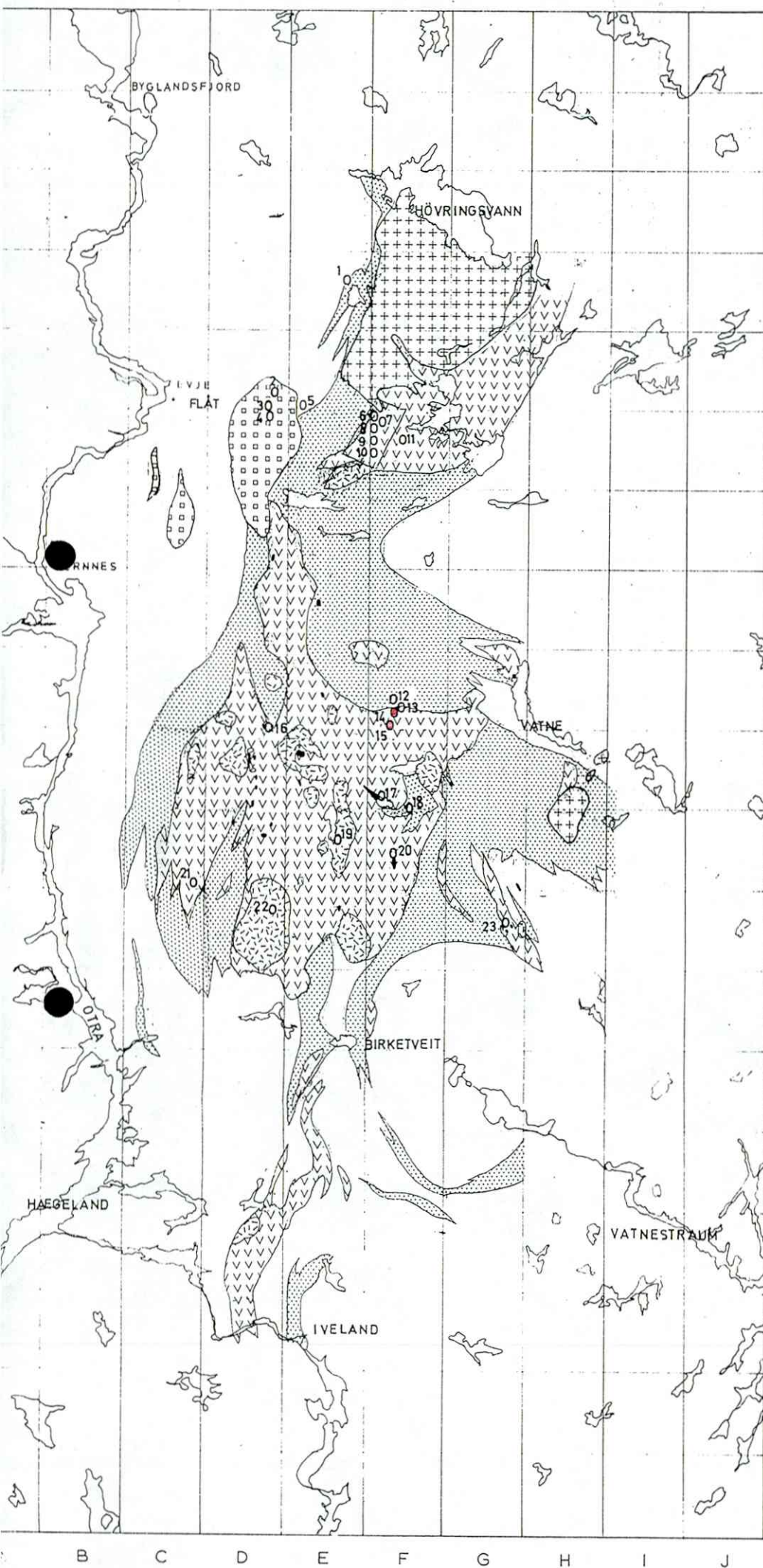
Best solution would be to run N-S lines and take readings at $\frac{1}{4}$ intervals if detailed analysis is to be made of curves.

Conductivity looks high and source shallow - could probably be tested by Winkie.



D.B. Sutherland

DBS:ols



- GRANITIC AND DIORITIC GNEISS
- AMPHIBOLITE FOLIATED AND MASSIVE
- HORNBLENDE GNEISS
- GABBRO
- HORNBLENDE DIORITE
- ULTRABASIC
- GRANITE

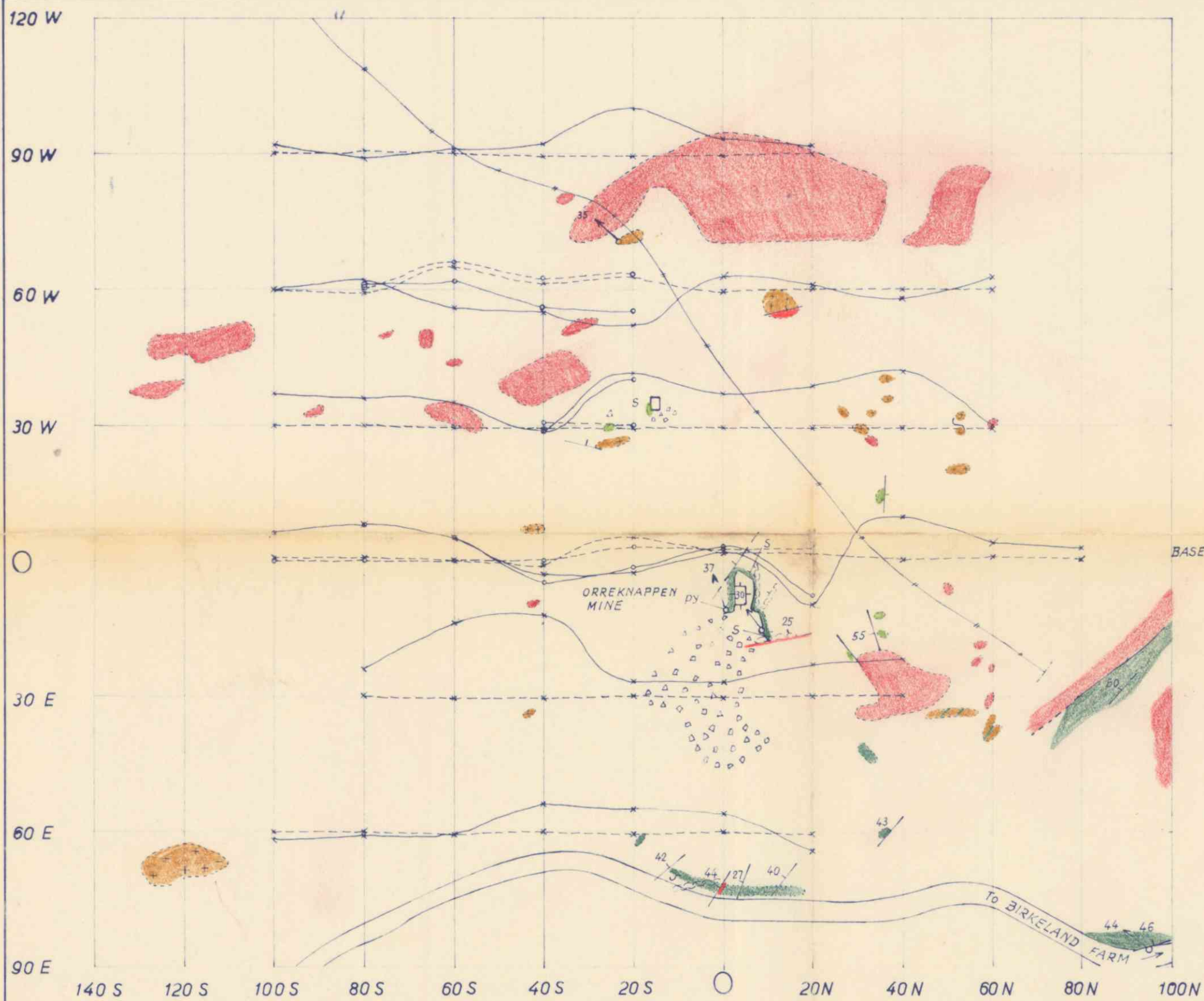
- | | | |
|----|-------------|----------------|
| 1 | st. AAFLOU | PROSPECT |
| 2 | FLATERYGD | " |
| 3 | FLÅT | MINE |
| 4 | MYKLEÅSEN | PROSPECT |
| 5 | STABBESTEN | " |
| 6 | HESTÅSEN | " |
| 7 | LANGTJERN | " |
| 8 | LOMTJERN | " |
| 9 | GULREGN | " |
| 10 | BYTTINGSMYR | " |
| 11 | VIKSTØL | " |
| 12 | N. PAASCHE | " |
| 13 | S. PAASCHE | " |
| 14 | BEKKEN | " |
| 15 | ORREKNAPPEN | " } Birkelands |
| 16 | LITJERN | " |
| 17 | KLEPTJERN | " |
| 18 | EPTVASSMYR | " |
| 19 | MÖLLAND | (høytligg.) |
| 20 | HAALAND | " |
| 21 | LANDAAS | " |
| 22 | SKRIPELAND | " |
| 23 | ELSHAUGEN | " |

AAVITSLANDSHEIA GRID AREA

Saltfjellet 142-71-7

0 1 2 3 4 5 KM

BV



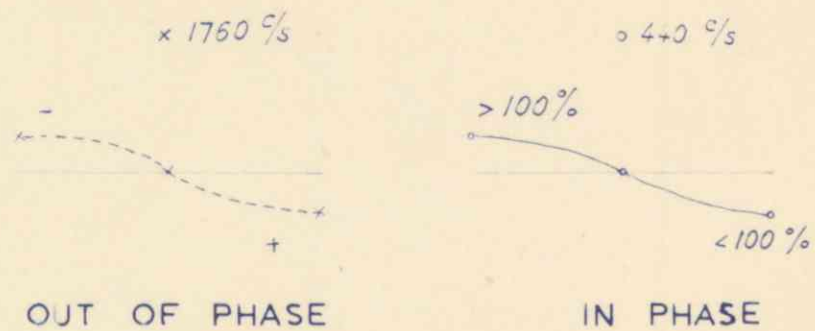
Leif.

LEGEND

- PEGMATITE
- GRANITIC DYKE
- HORNBLLENDE DIORITE /massive H.D. (coarsegrained)
- HORNBLLENDE GNEISS
- AMPHIBOLITE
- S sulphides
- py pyrite
- old mine working
- prospect pit
- dumps
- road
- wire fence
- foliation
- lineation
- shear
- migmatitic structure

angles recorded in 400° system

E.M. ANOMALIES



40m cable
1mm = 1%

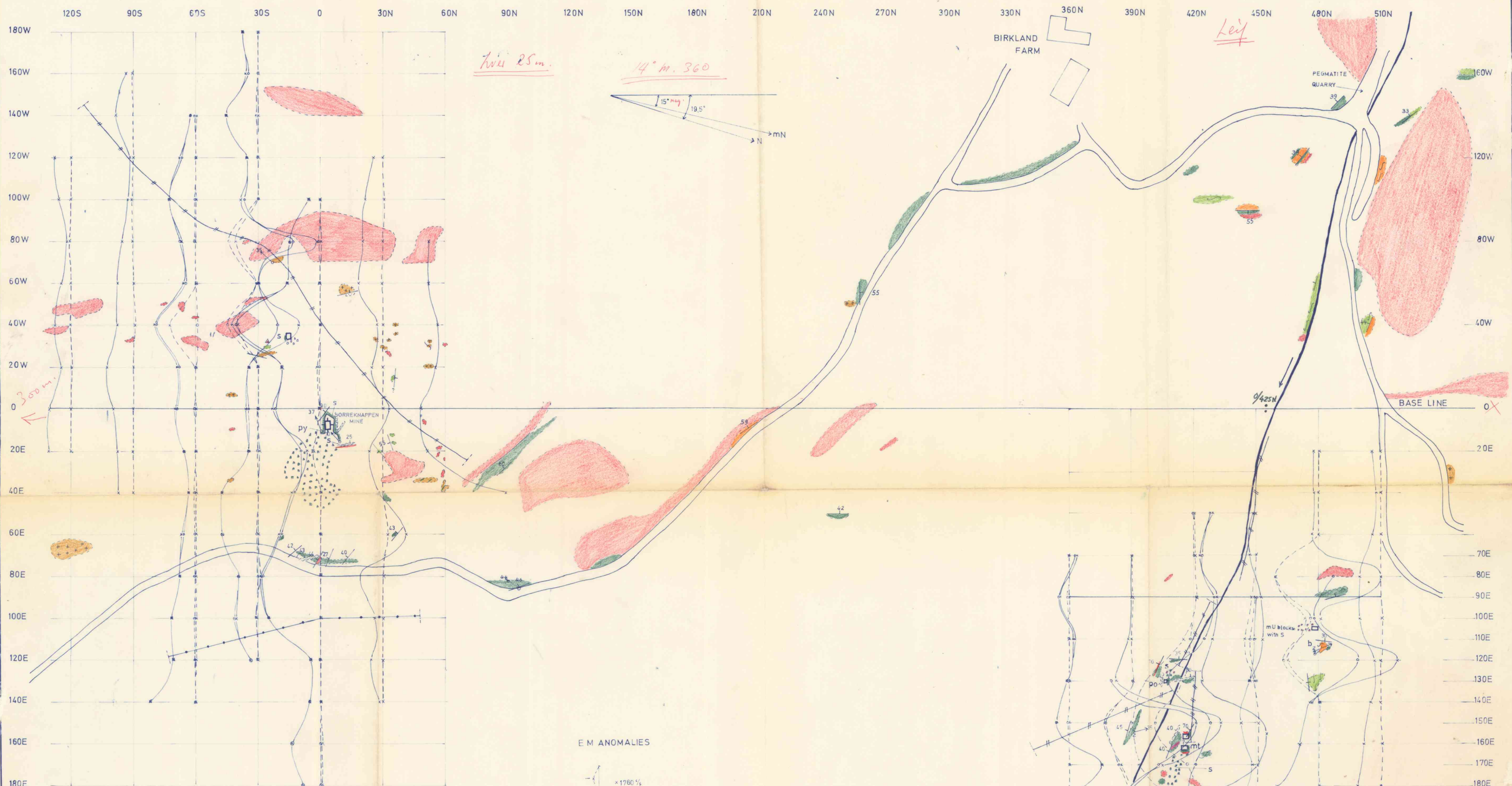
ELECTROMAGNETIC MAP FROM
ORREKNAPPEN MINE NEAR
BIRKELAND - AUKLAND, IVELAND
AUST - AGDER, NORWAY

A/S SULFIDMALM
KRISTIANSAND S

SCALE
1:1000

OBS ^{EEH} _{EO} AUG. 1967
DRAW _{EO} OCT. 1968
TRAC G.A. NOV. 1968

MAP SHEET
1512 III

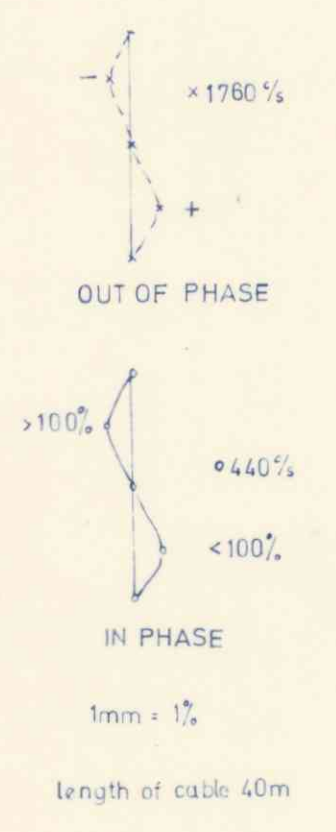


LEGEND

- PEGMATITE
- GRANITIC DYKE
- GRANITE
- HORNBLLENDE DIORITE / massive coarse hb dioritic rock
- ULTRABASIC ROCKS
- DIORITIC GNEISS
- HORNBLLENDE GNEISS
- AMPHIBOLITE

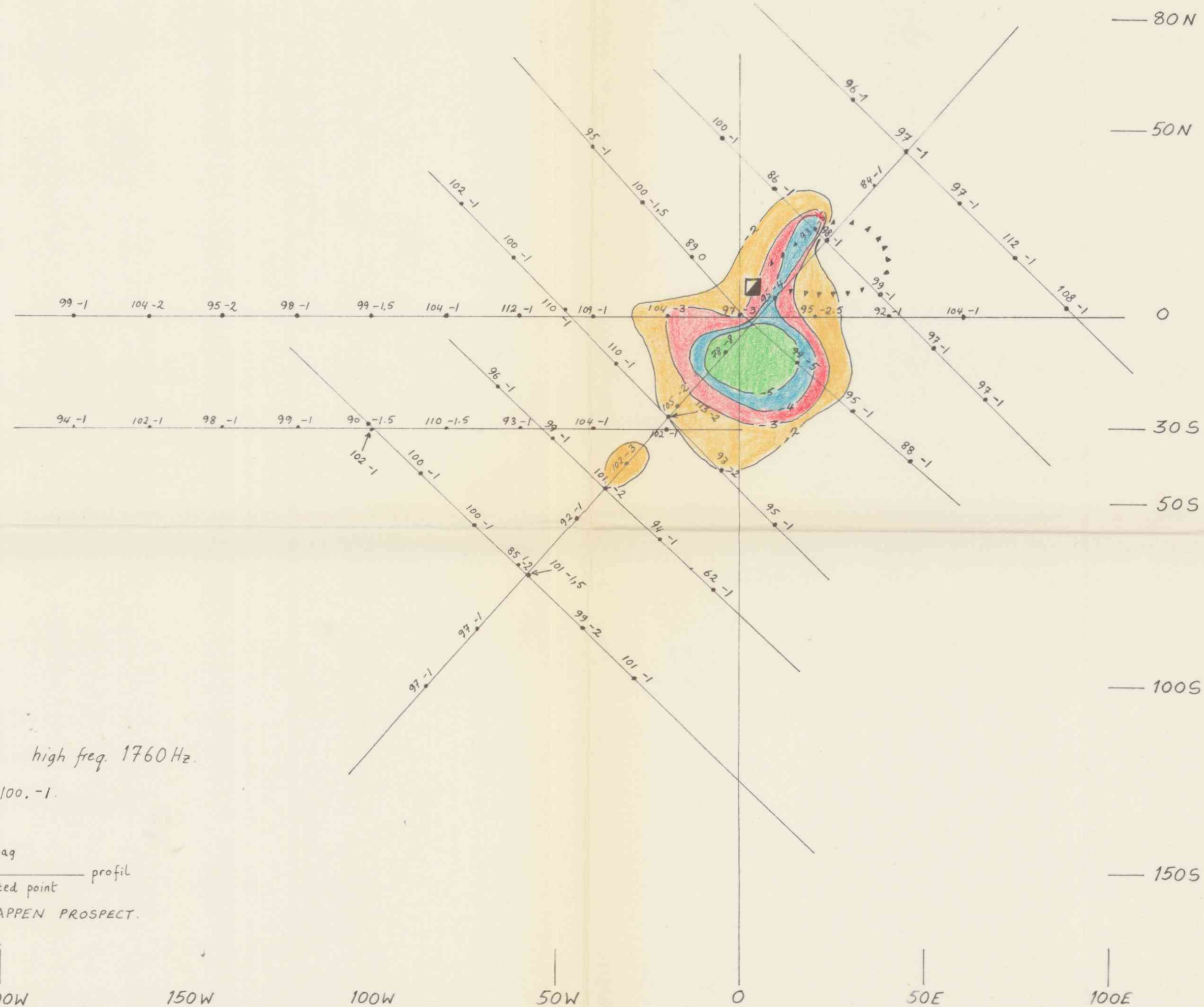
- b biotite
- mu meta ultrabasic
- s sulphides
- po pyrrhotite
- py pyrite
- mt magnetite
- foliation
- lineation
- fold axis
- shear
- migmatitic structure
- old mine working
- prospect pit
- dumps
- road
- stream
- telephone wire
- wire fence

E M ANOMALIES



ELECTROMAGNETIC MAP FROM OLD WORKINGS NEAR BIRKELAND - AUKLAND IN IVELAND NORWAY	SCALE 1:1000	OBS: EEH EQ AUG 67 DRAW: EEH EQ DEC 67 TRAC: FN. DEC 67 ADDITIONAL GEOLOGY BY FN JULY 68
A/S SULFIDMALM KRISTIANSAND S		MAP SHEET 1512 III

angles recorded in 400° system



Real Imag

100 -1

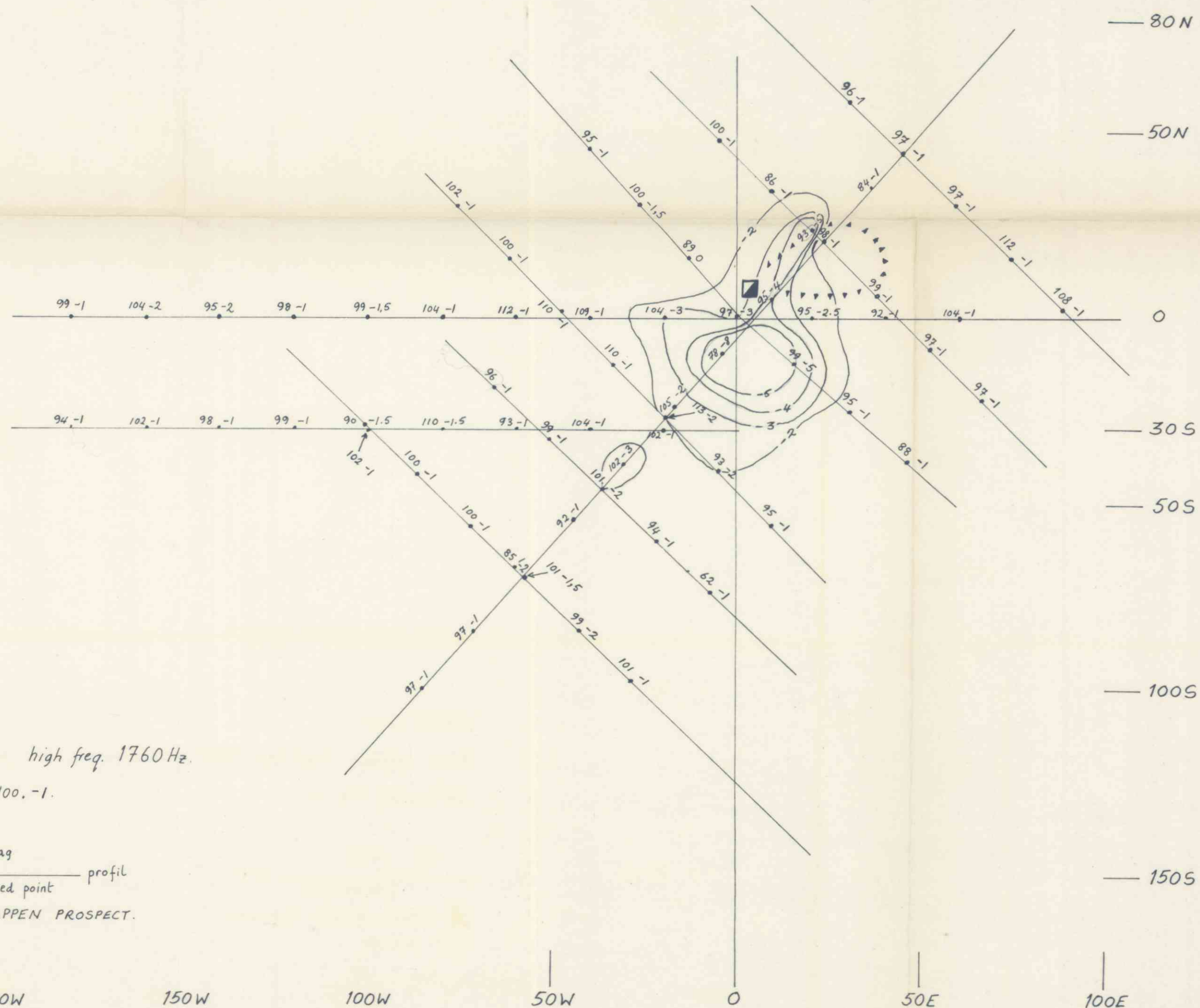
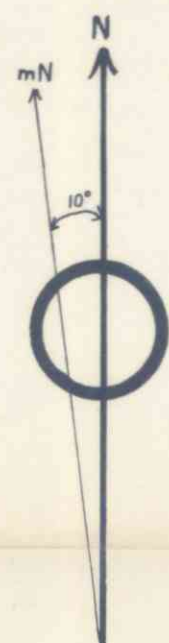
plotted point

profil

ORREKNAPPEN PROSPECT.

DUMPS.

A.s Tørrkopi, 2000. A 2. E 9 gl. 10-71. Sentrum Trykkeri.



ABEM GUN
40m cable high freq. 1760 Hz.
cal. value 100. -1.

Real Imag
100 -1
plotted point
ORREKNAPPEN PROSPECT.
DUMPS.

Imaginary values contoured.
Contour values $\pm 1\%$.

0 10 20 30 40 50 m.

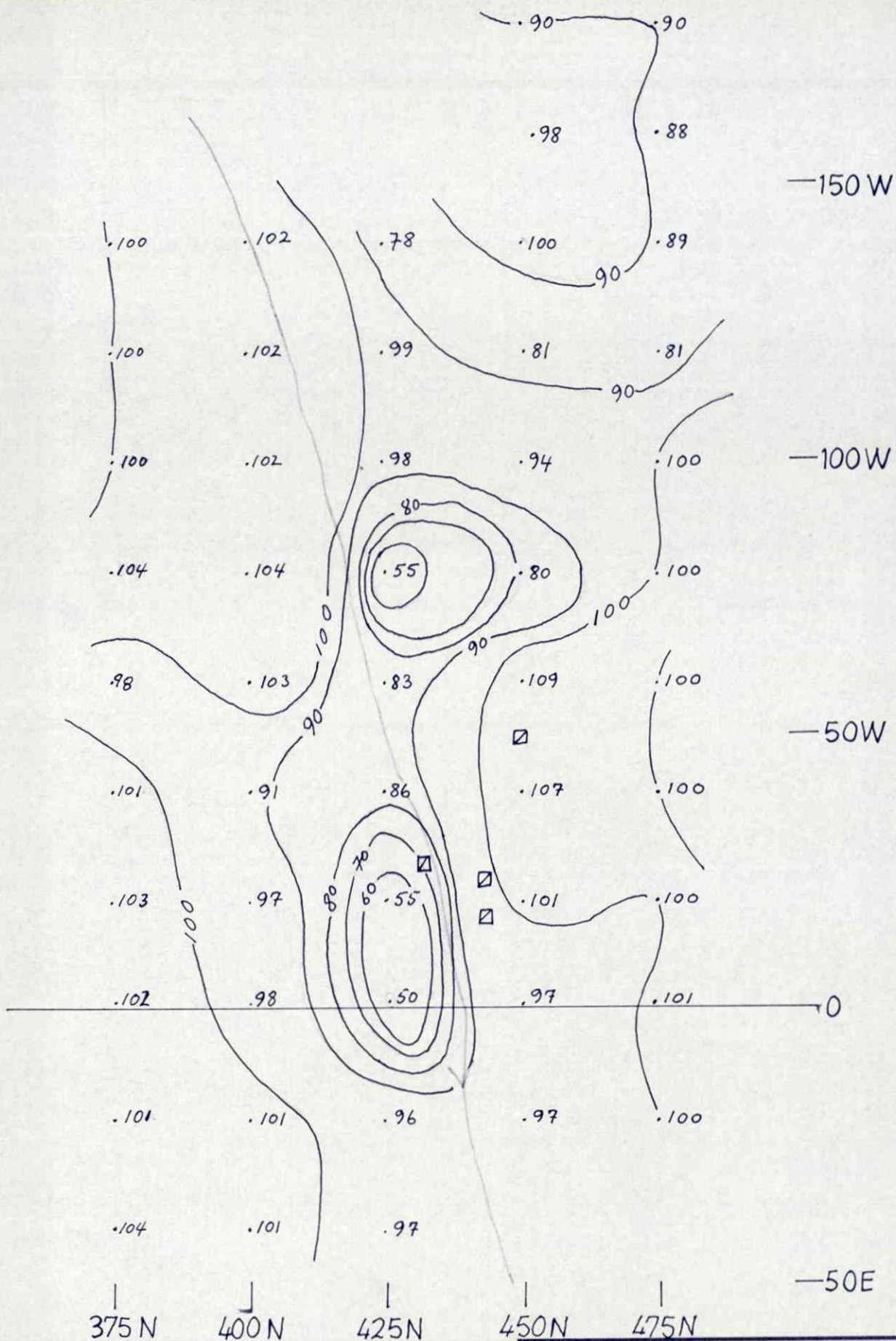
ELECTROMAGNETIC SURVEY
ORREKNAPPEN GRID, IVELAND.
AUST-AGDER NORWAY.

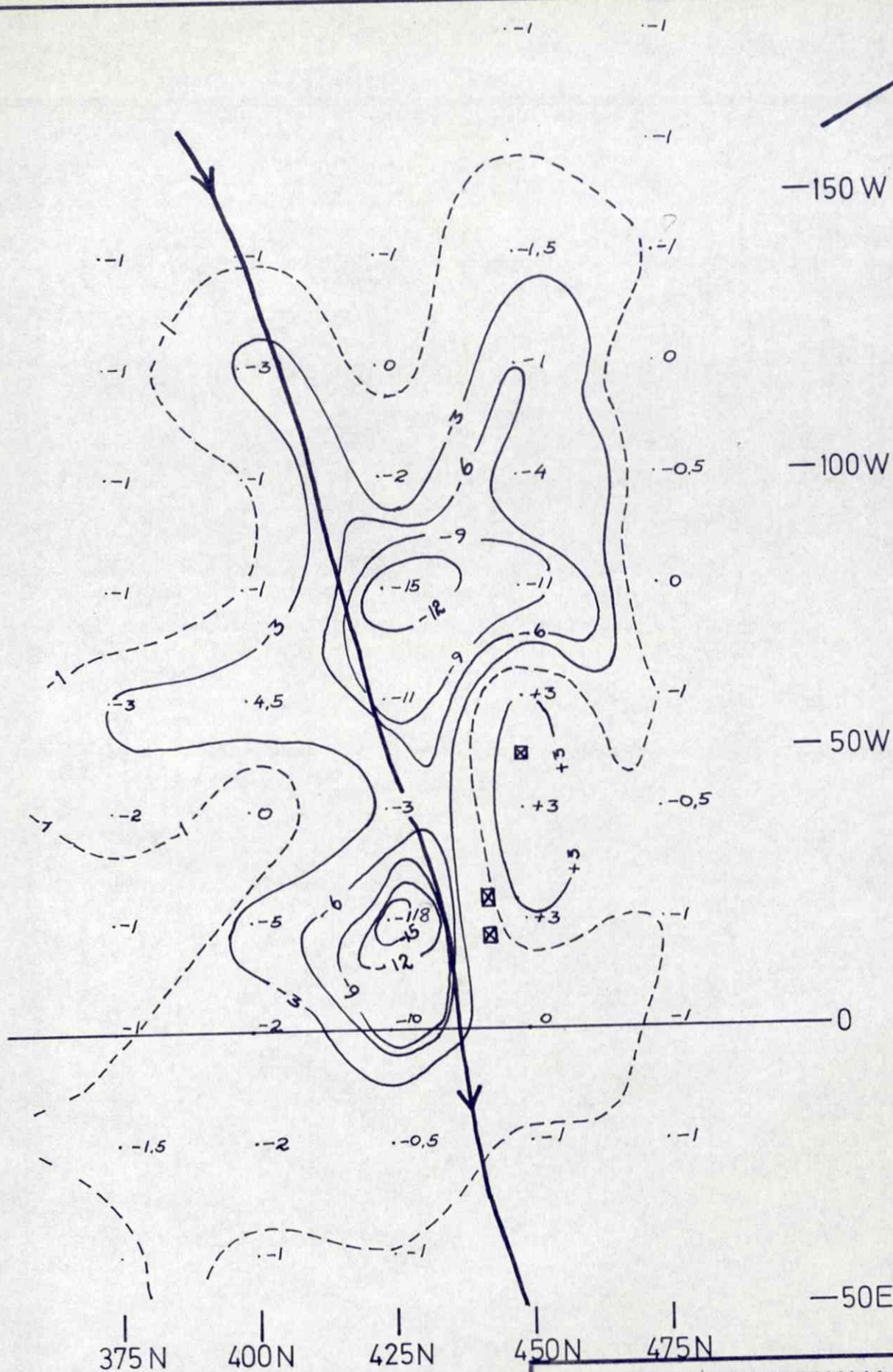
SCALE	OBS. F.H.	2.72
1:1000	DRAW. F.H.F.W.	2.72.
	TRAC. F.W.	3.72.
	CHK. F.W.	3.72.

$\frac{1}{2}$ SULFIDMALM

MAP NO.
07.6.72.

MAP SHEET





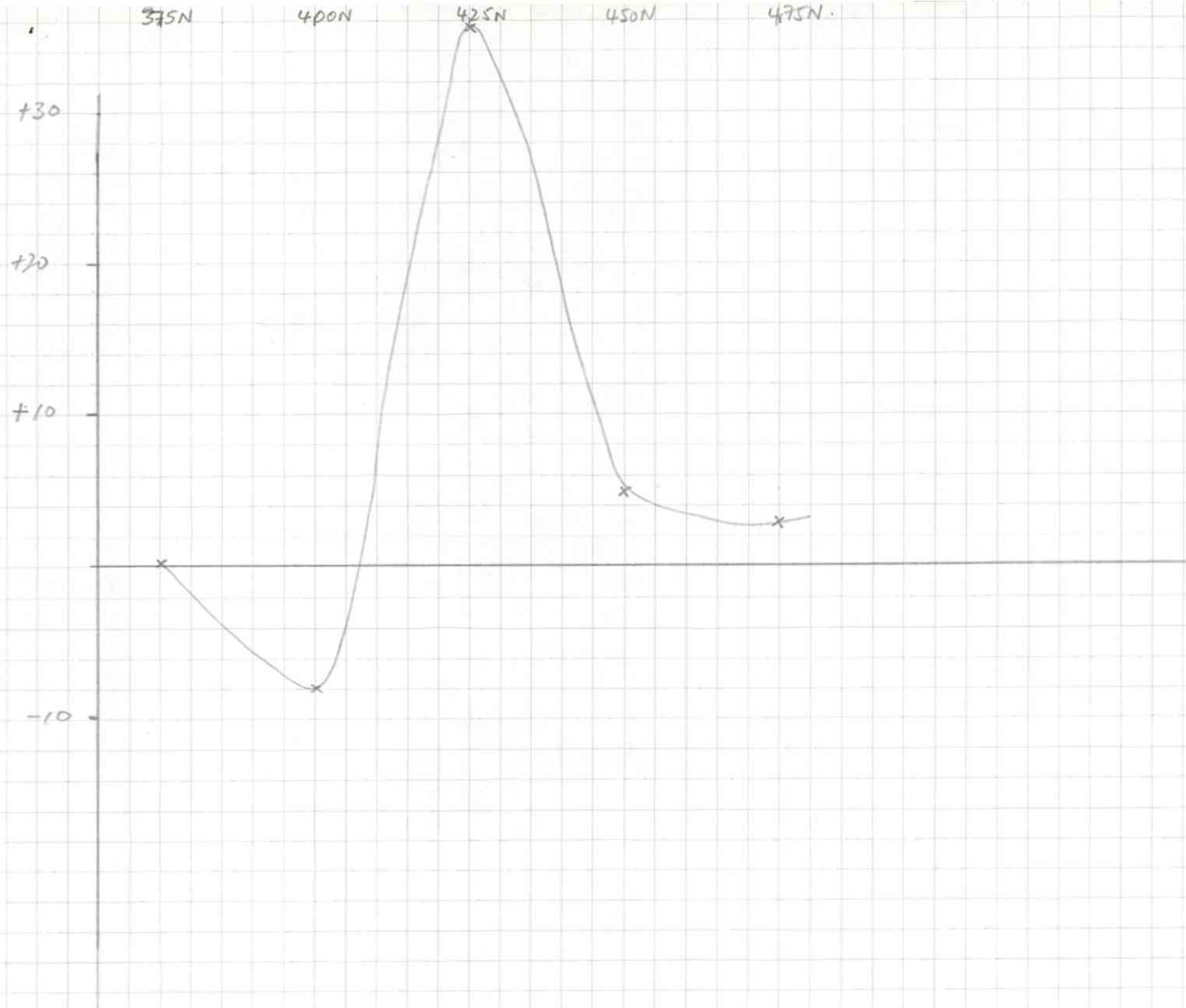
RBEM GUN
 High frequency (1760 Hz)
 40 meter cable
 Imaginary component contoured
 Calibr. value = -1%

ORREKNAPPEN GRID
 EVJE NORWAY

Nr. 07/72/4

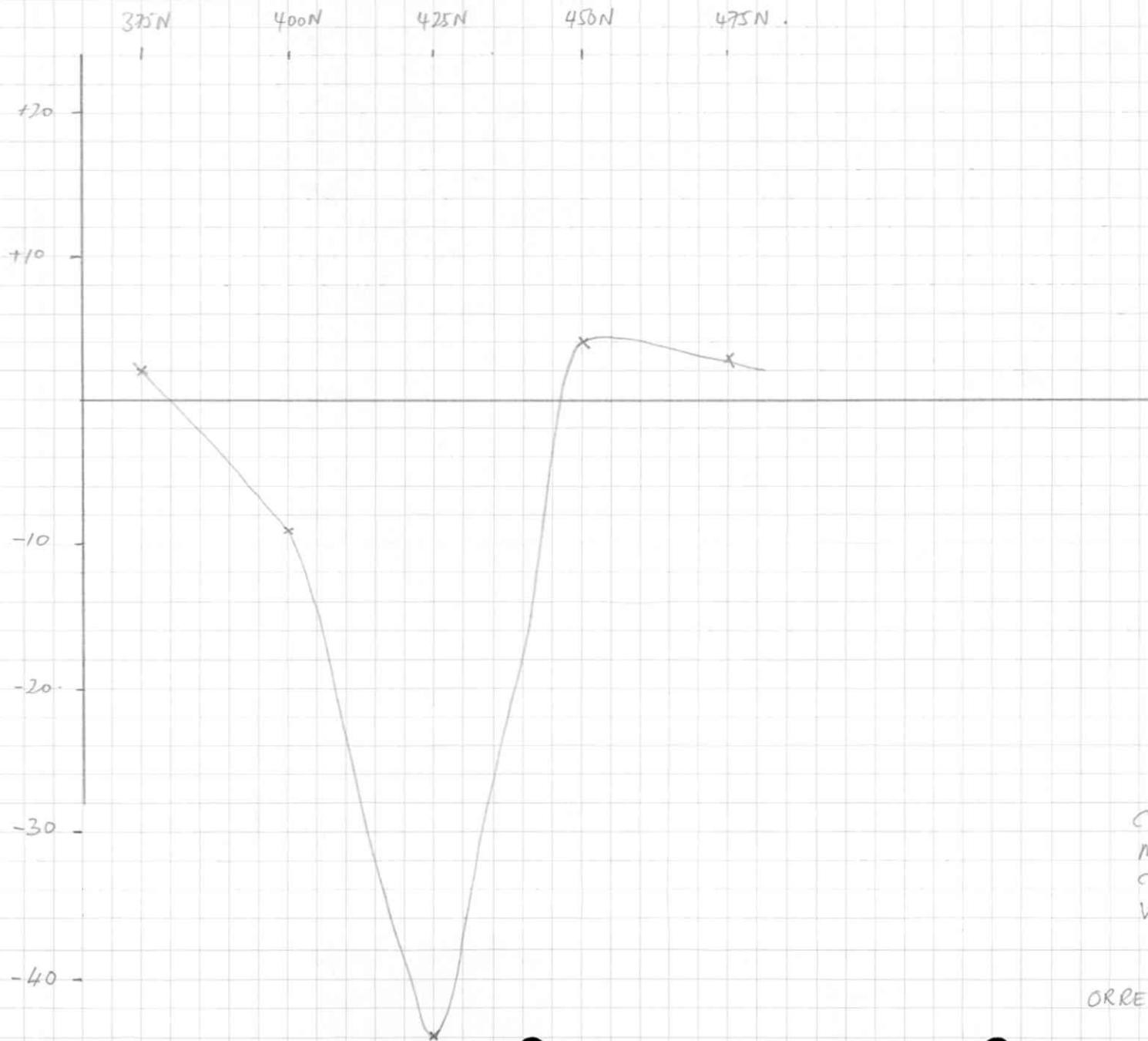
SCALE 1:1000
 DATE 17-2-72

DRAWN F. H. 2-72
 TRACED U. T. 2-72



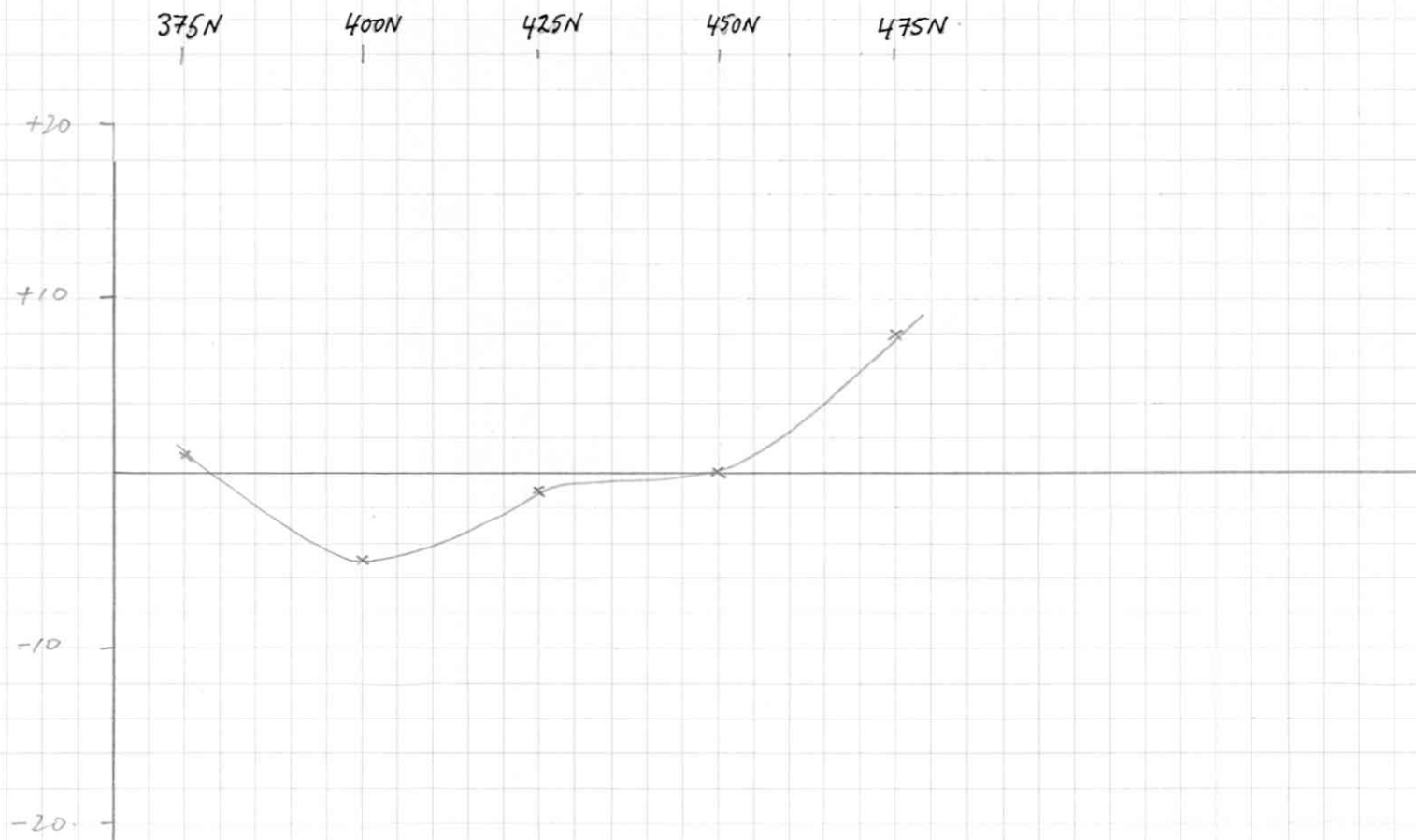
CRONE HORIZONTAL SHOOTBACK
MED FREQ. 1830 Hz.
COIL SEP. 50m
VOLTAGE ~~18~~ 18V

ORREKNAPPEN LINE 25W.



CRONE HORIZONTAL SHOOTBACK
MED. FREQ 1830 Hz
COIL SEP. 50m
VOLTAGE 18V

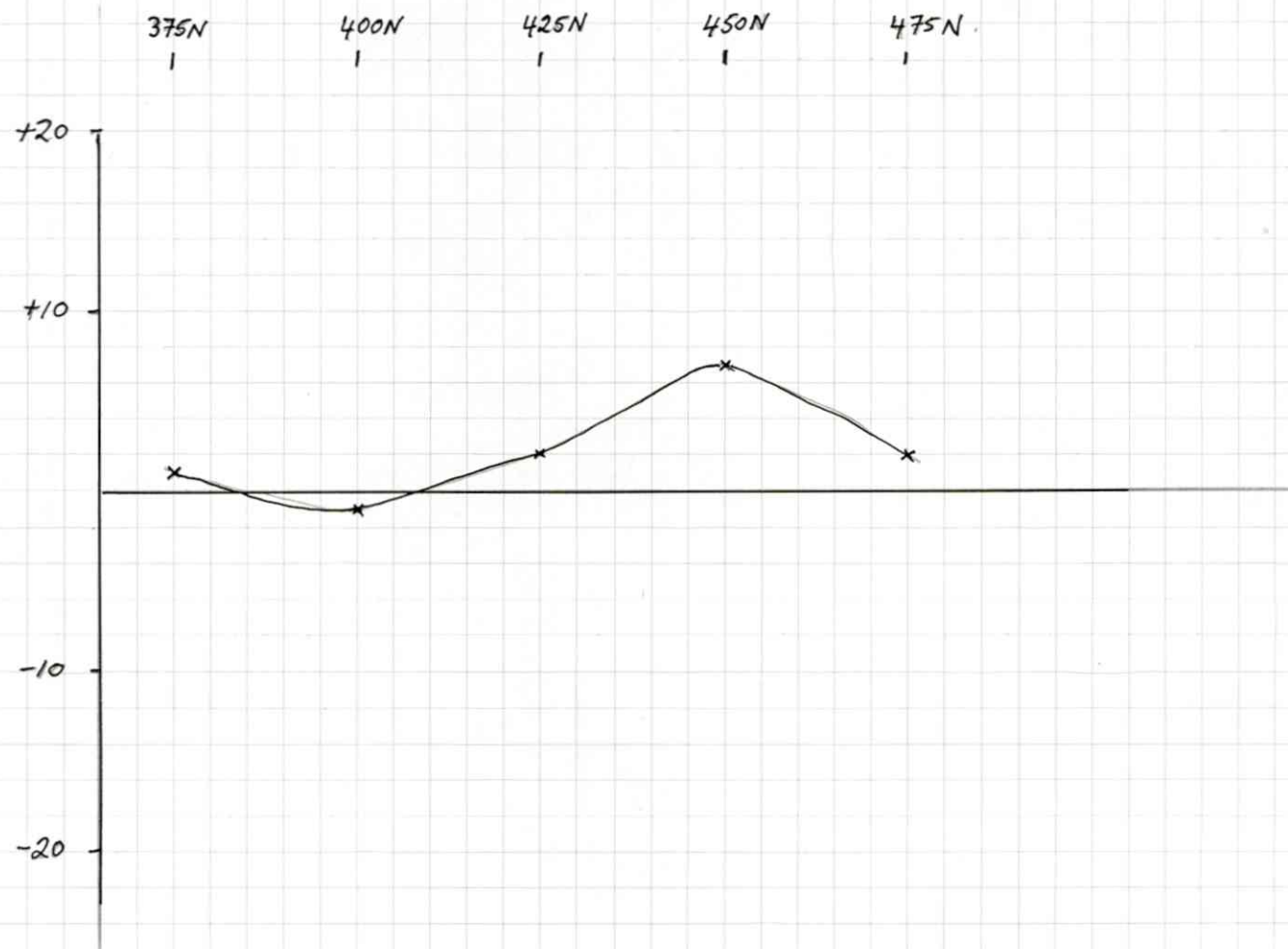
ORREKNAPPEN LINE 50W.



CRONE HORIZONTAL SHOOTBACK
MED. FREQ. 1830 Hz
COIL SEP. 50m
VOLTAGE 18V

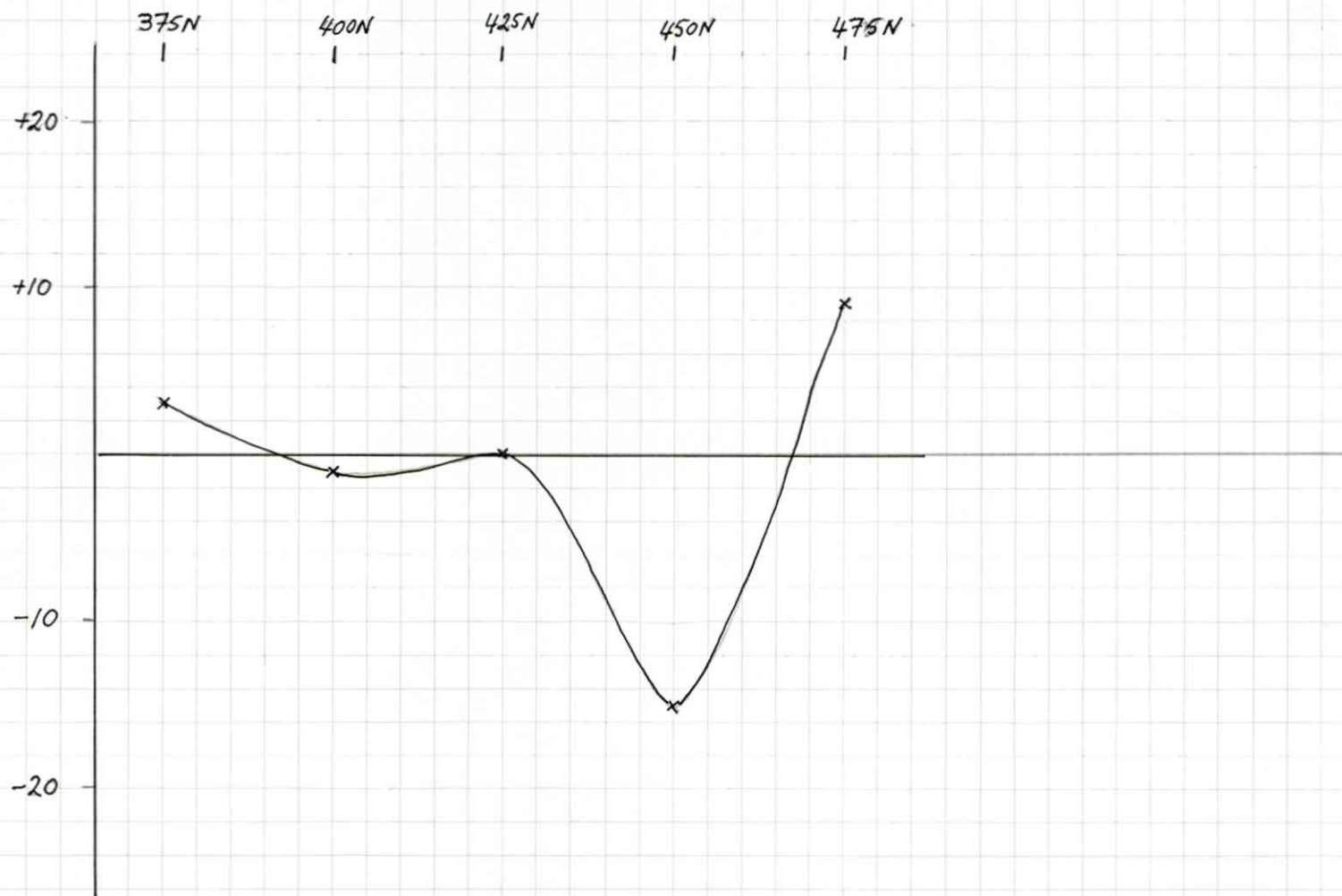
ORREKNAPPEN GRID. LINE 75W.

1-1000



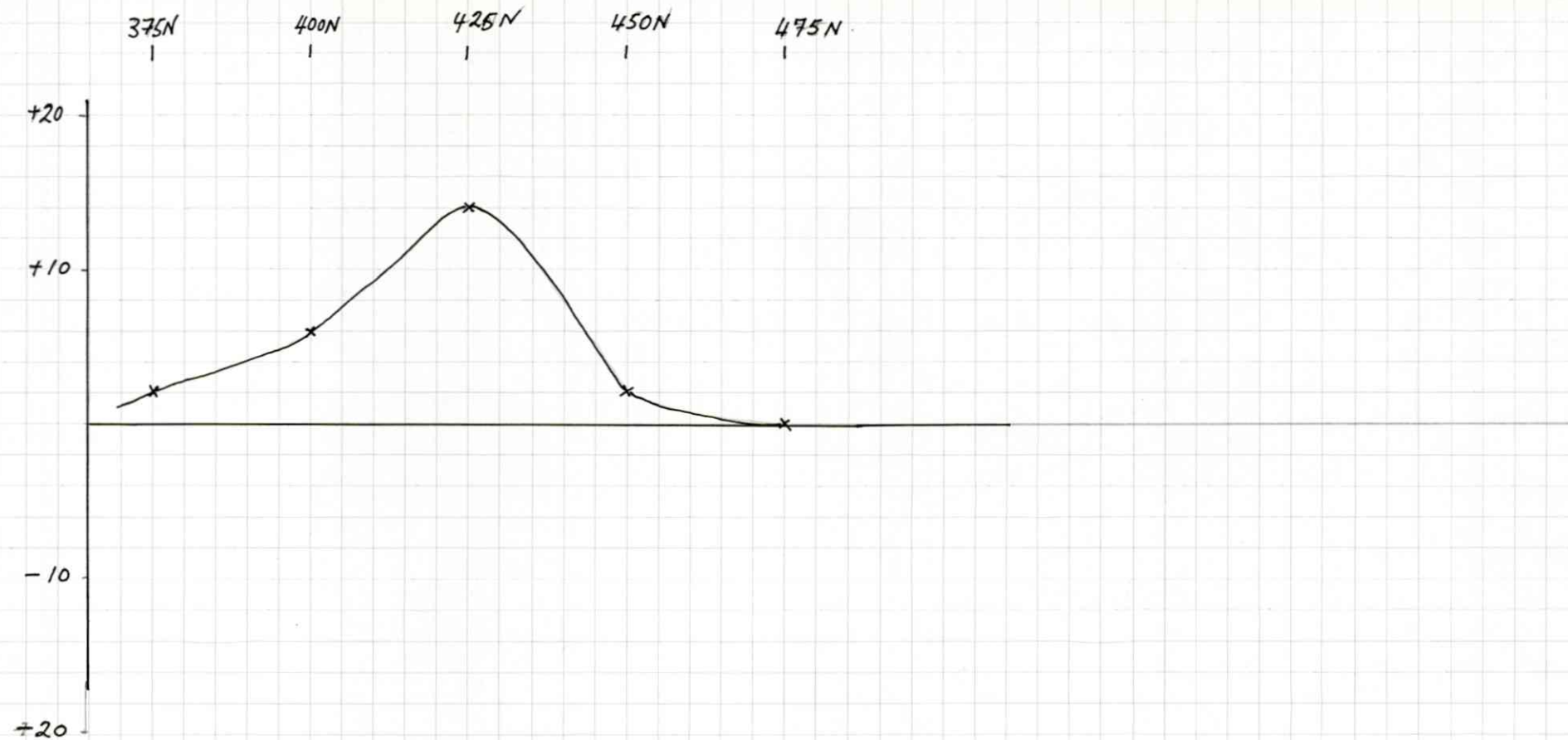
CRONE HORIZONTAL SHOOTBACK.
MED FREQ. 1830 HZ
COIL SEP. 50m.
VOLTAGE = 18V

ORREKNAPPEN GRID. LINE 100W



CRONE HORIZONTAL SHOOTBACK.
MED. FREQ. 1830 Hz
COIL SEP. 50m
VOLTAGE 18V

ORREKNAPPEN GRID LINE 125W



CRONE HORIZONTAL SHOOTBACK
MED FREQ. 1830 HZ.
COIL SEP. 50 m.
VOLTAGE 18V.

ORREKNAPPEN GRID. LINE 150W.

140W 120W 100W 80W 60W 40W 20W 0 20E 40E

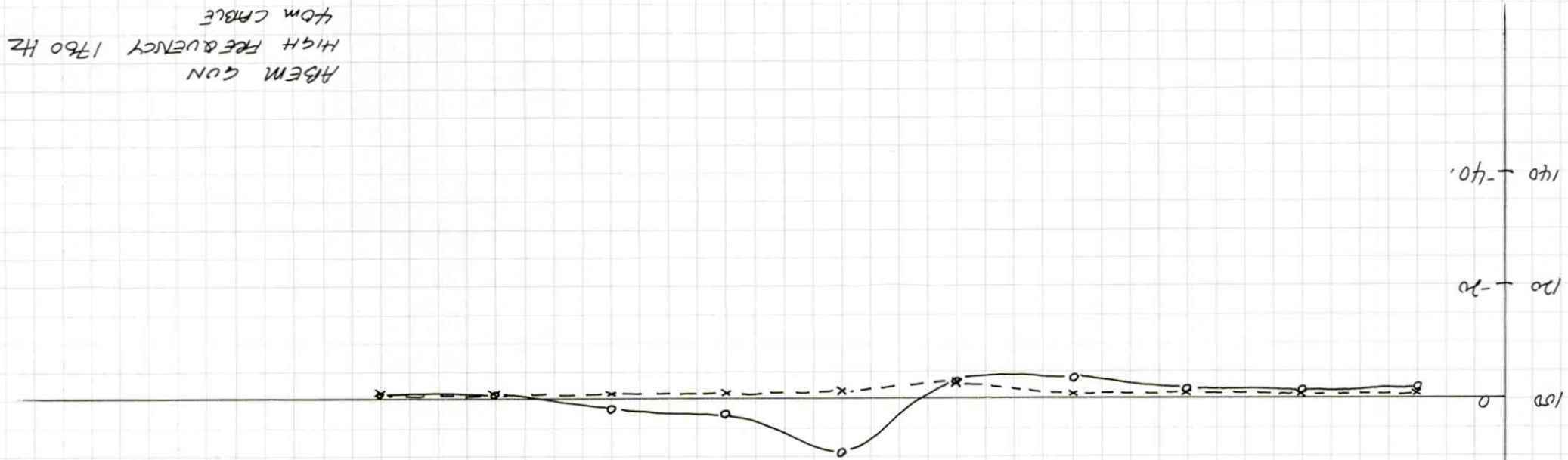
R I.

60 +40

80 +20

120 -20

140 -40



ABEM GUN
HIGH FREQUENCY 1760 HZ
40m CABLE
CHARIS VALUE 100.-1.
O REAL COMPONENT
X---X IMAG COMPONENT

ORREKNAPPEN GRID, LINE 375N.

fw.

150W

125W

100W

75W

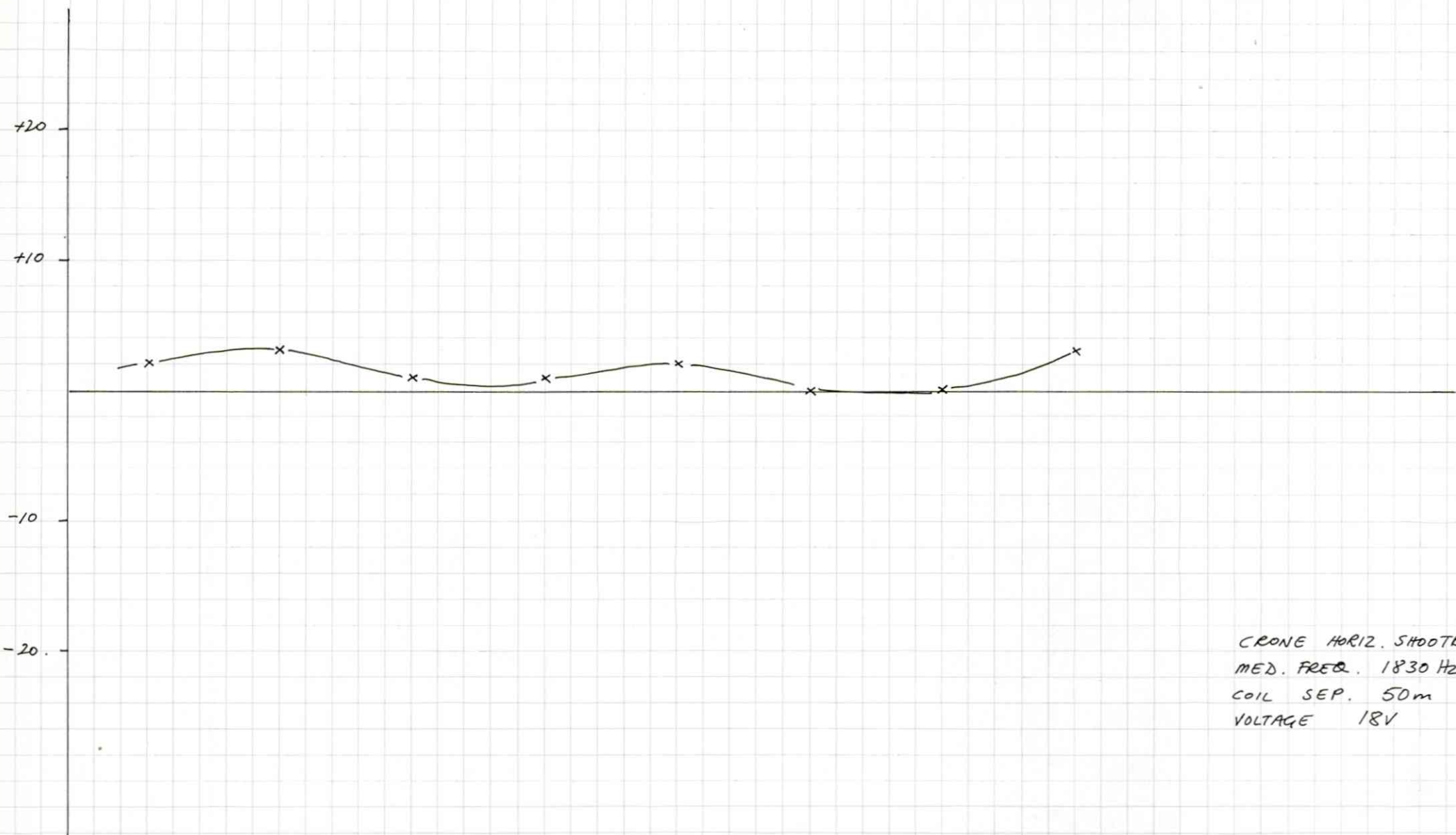
50W

25W

0

25E

ENCLOSURE 1B.



CRONE HORIZ. SHOOTBACK
MED. FREQ. 1830 Hz.
COIL SEP. 50m
VOLTAGE 18V

ORREKNAPPEN. 375N.

FN.

150W

12SW

100W

75W

50W

25W

25E.

ENCLOSURE 2A

+20

+10

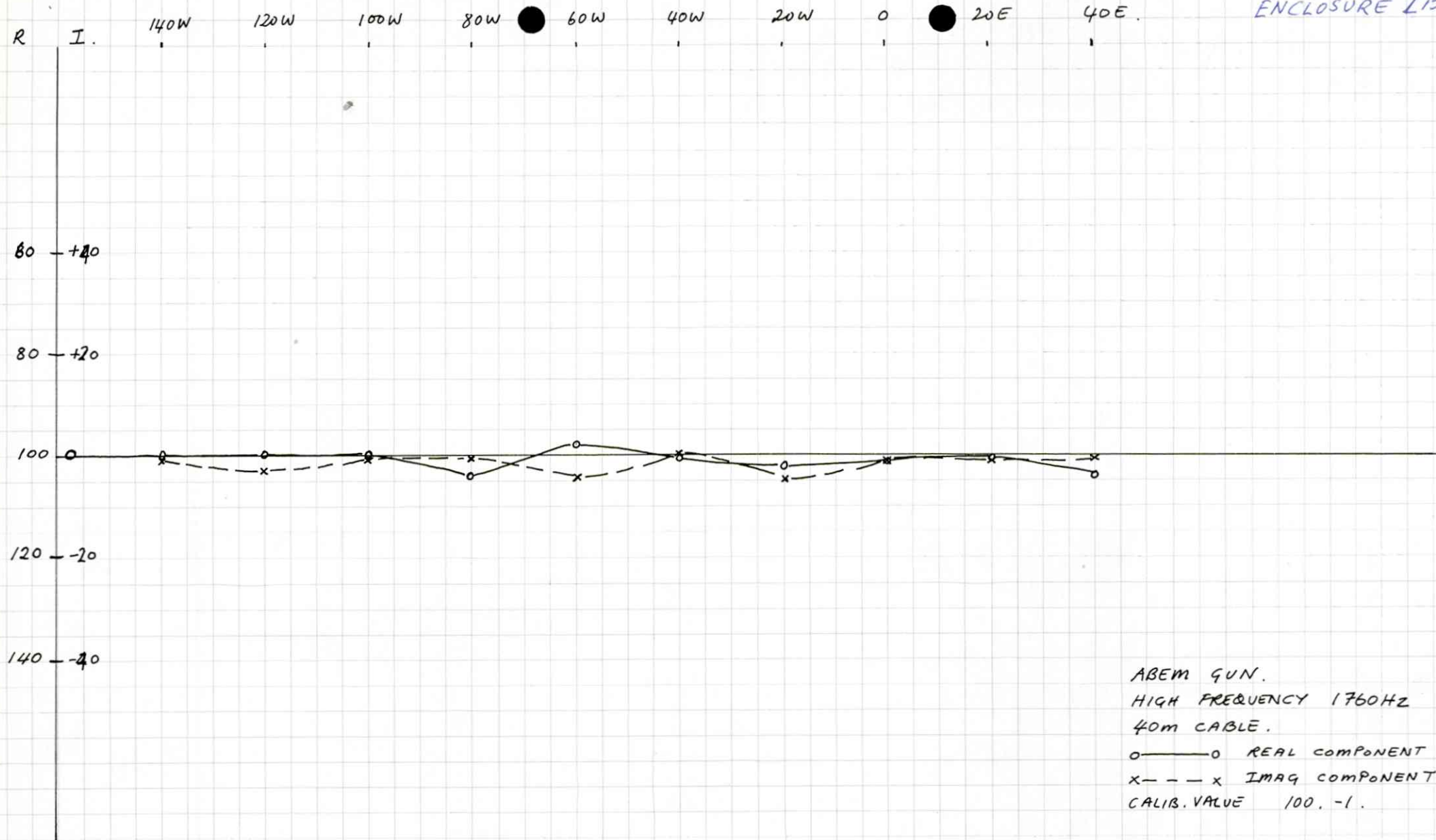
-10

-20

CRONE HORIZONTAL SHOOTBACK
MED FREQ. 1830 HZ
COIL SEP. 50m
VOLTAGE 18V.

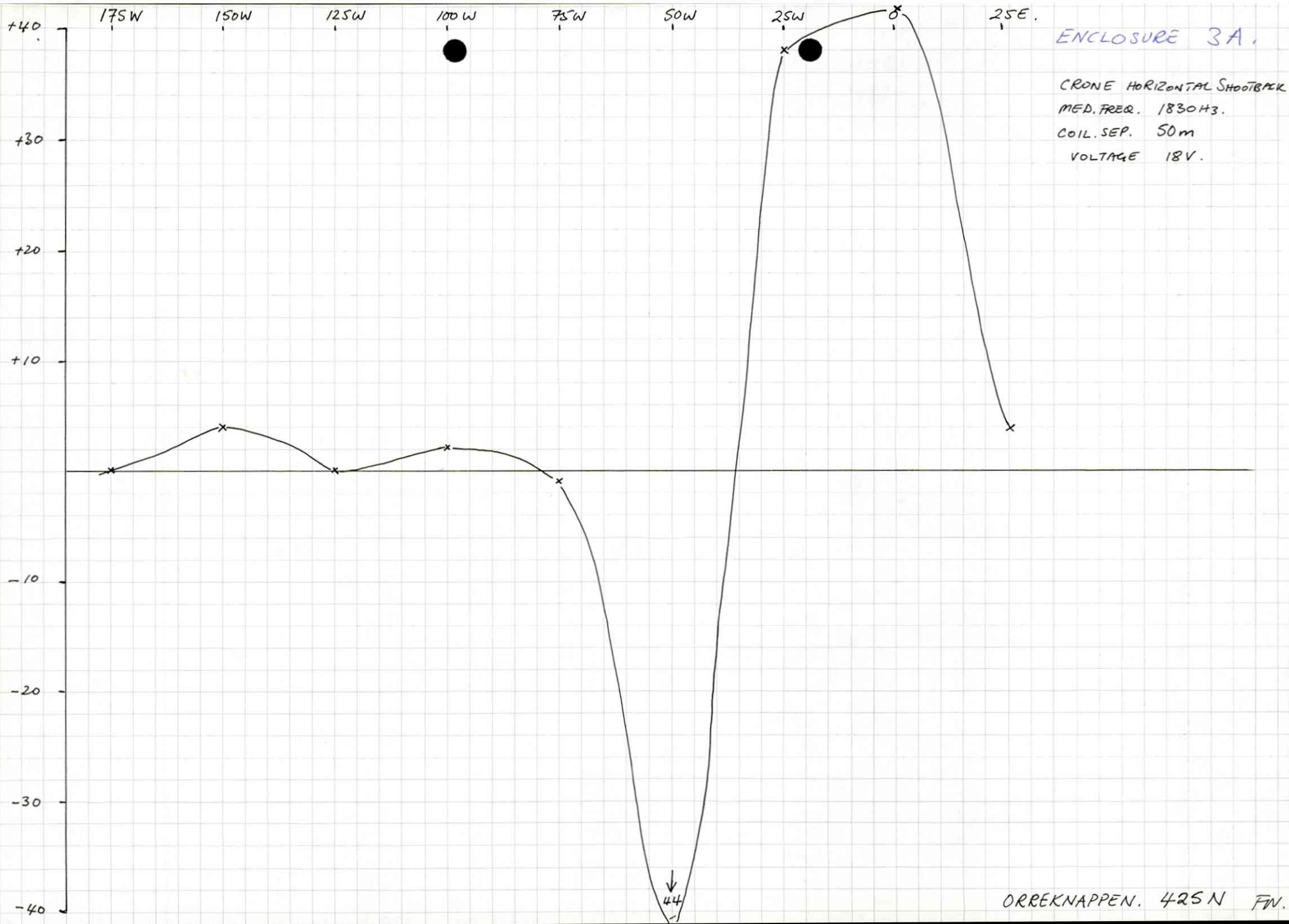
ORREKNAPPEN. 400N.

FN



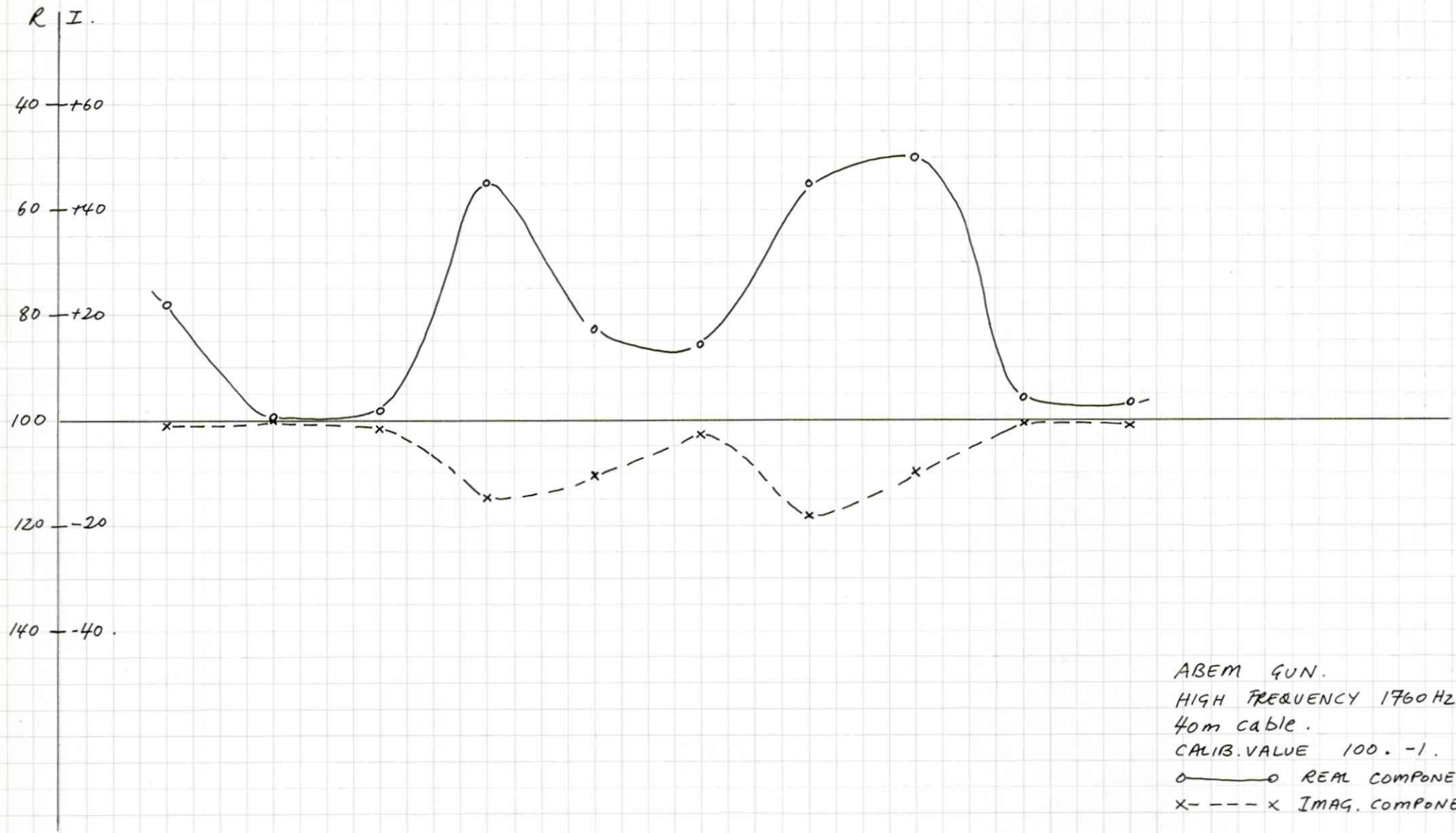
ORREKNAPPEN GRID LINE 400N.

FW



140W 120W 100W 80W 60W 40W 20W 0 20E 40E

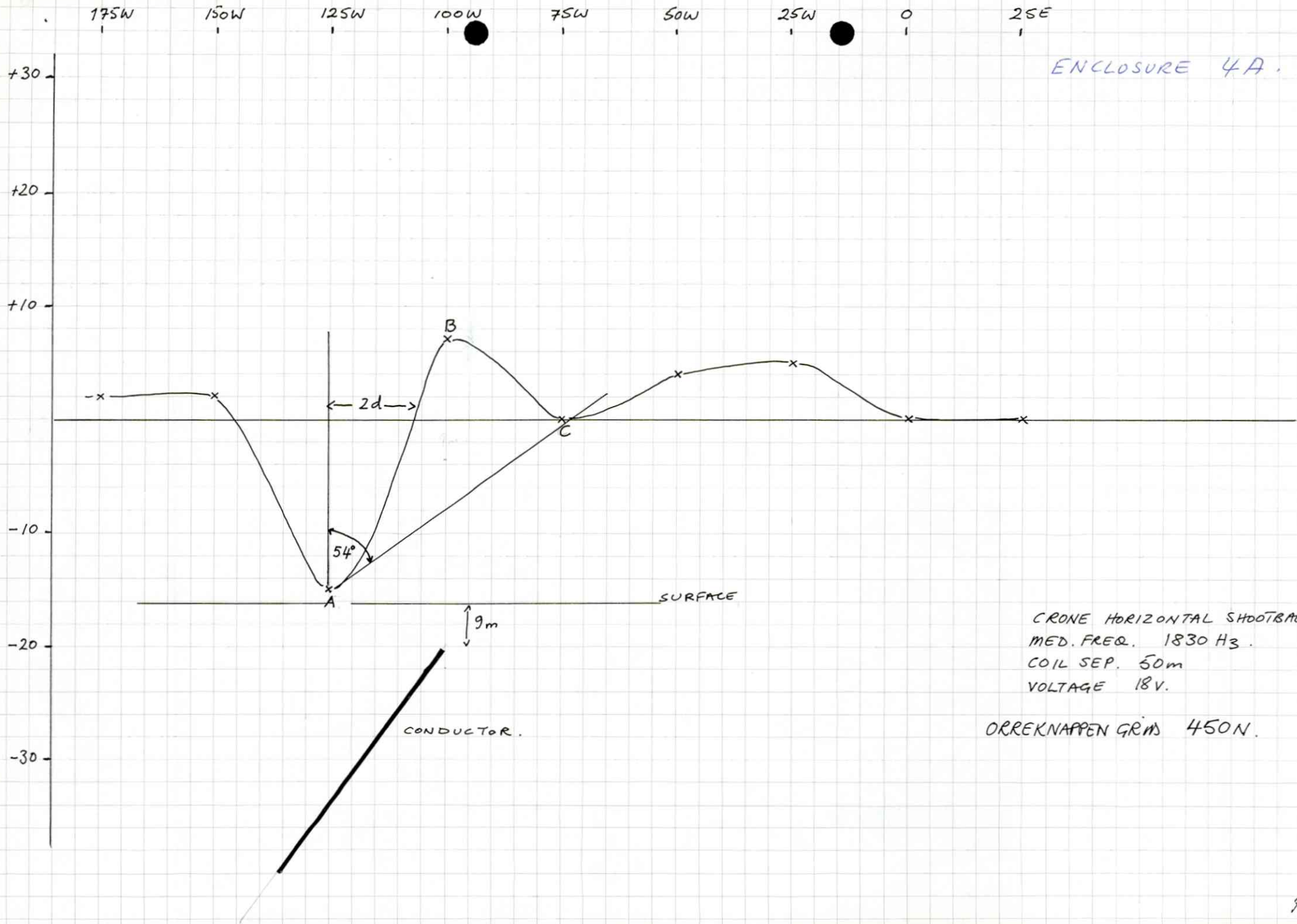
ENCLOSURE 3B.



ABEM GUN.
 HIGH FREQUENCY 1760 HZ
 40m cable.
 CALIB. VALUE 100. -1.

ORREKNAPPEN GRID 425N.

FN.



180W 160W 140W 120W 100W 80W 60W 40W 20W 0 20E.

ENCLOSURE 4B

R I.

60 +40

80 +20

100

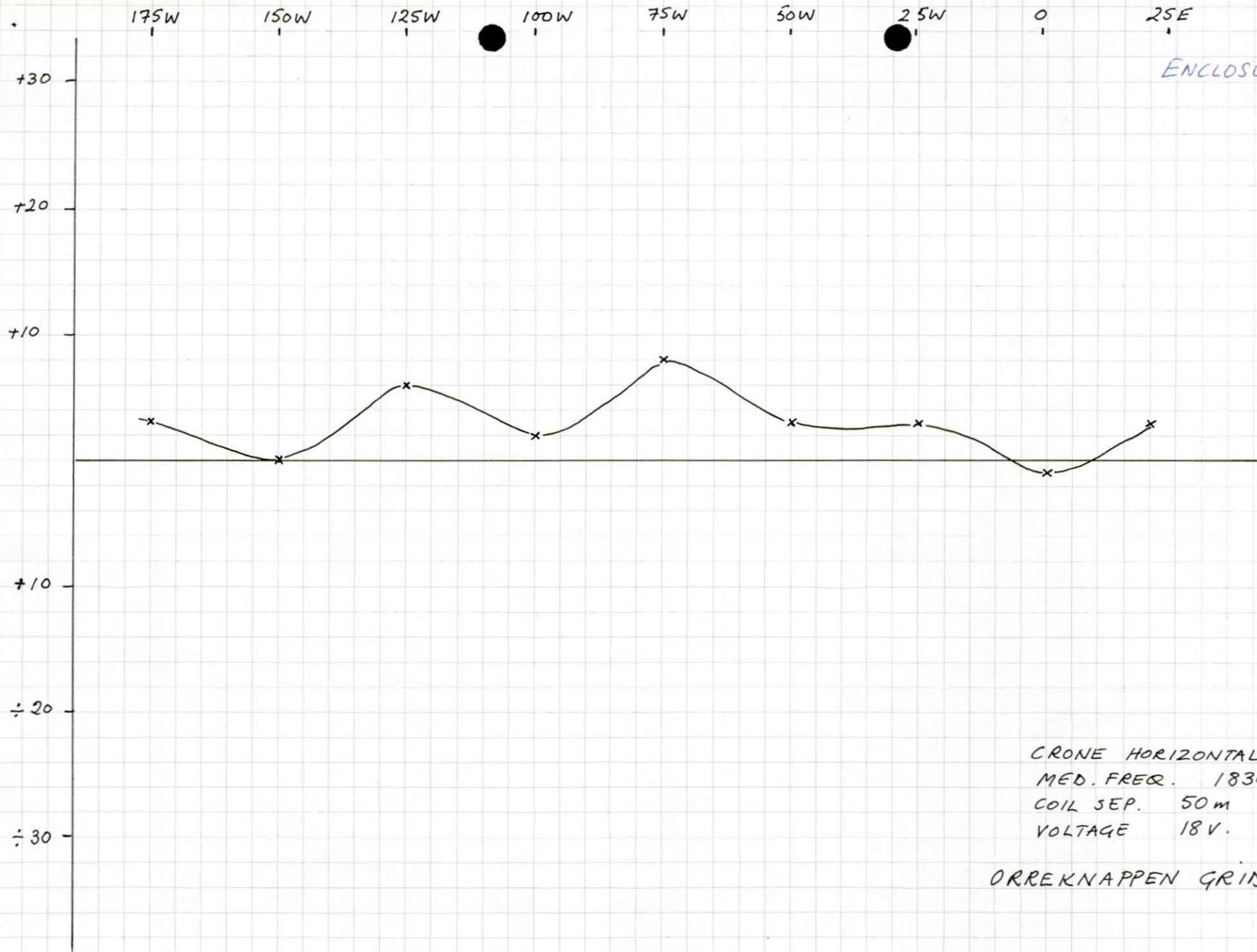
120 -20

140 -40

ABEM GUN
HIGH FREQUENCY 1760 Hz
40m CABLE
CALIB. VALUE 100. -1.
o ——— o REAL COMPONENT
x ——— x IMAG. COMPONENT

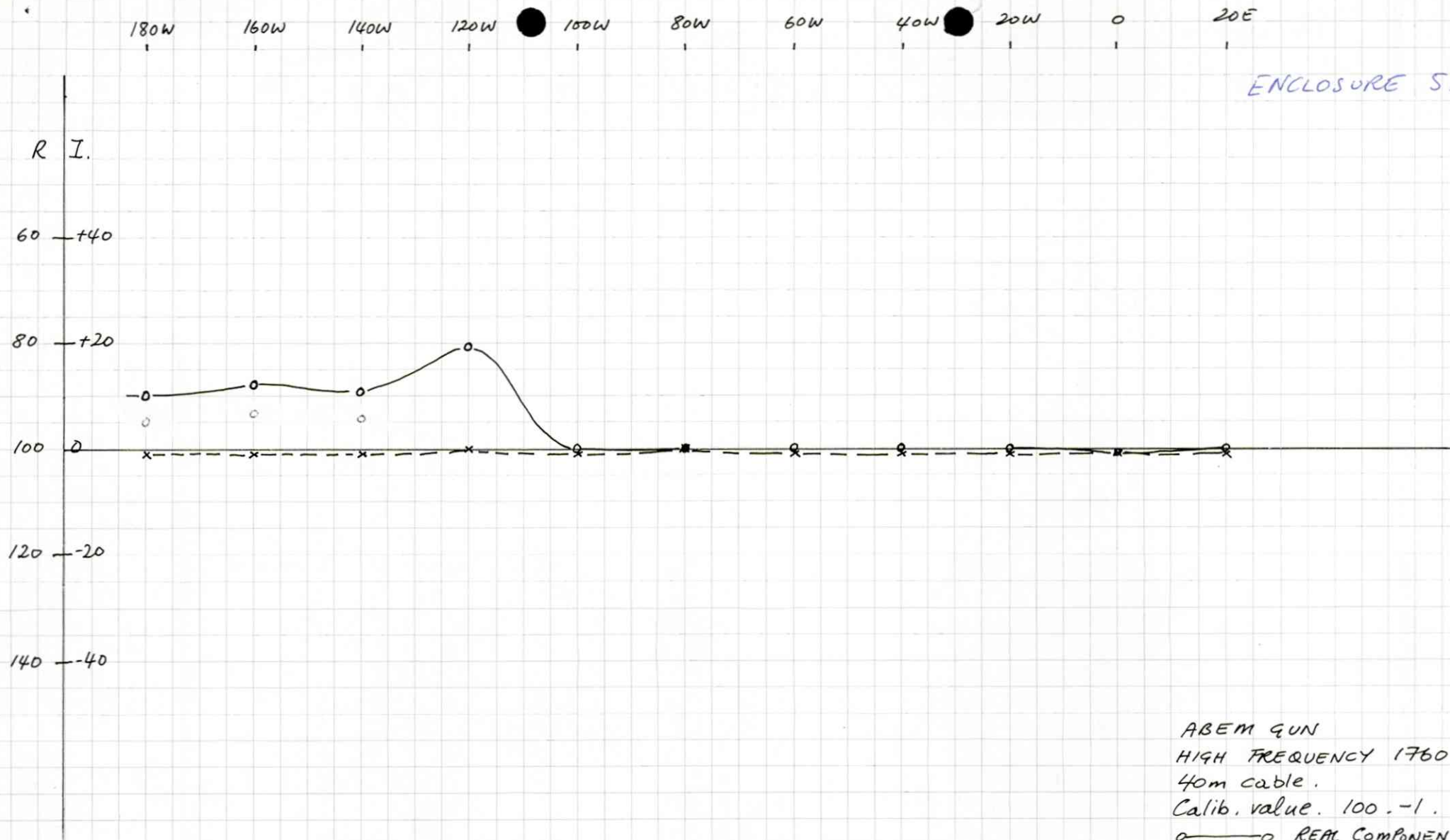
ORREKNAPPEN GRID. 450M

FN.



CRONE HORIZONTAL SHOOTBACK
MED. FREQ. 1830 HZ
COIL SEP. 50m
VOLTAGE 18V.

ORREKNAPPEN GRID 475N.



ORREKNAPPEN GRID. 475N

FN.