

MAR 19890005: MAYBELLE RIVER

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19890005

**LOGISTICAL REPORT ON
TIME-DOMAIN EM SURVEYS
IN THE MAYBELLE RIVER AREA
OF NORTHERN ALBERTA**

On Behalf Of:

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**JVX Ref: 8903I
UEM Ref: 71-42
March 1989**

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**A REPORT ON GROUND GEOPHYSICAL SURVEYS
CONDUCTED IN THE MAYBELLE RIVER AREA
OF NORTHERN ALBERTA**

On Behalf Of

Uranerz Exploration and Mining Limited.

1. INTRODUCTION

From January 29th and February 23rd, 1988, Time Domain Electromagnetic (TDEM) surveys were conducted on behalf of Uranerz Exploration and Mining Limited (henceforth called UEM) on the Maybelle River Project 71-42 in northern Alberta, by JVX Ltd.

The survey employed fixed loops of 600m x 600m and 800m x 800m and moving loops of 100m x 100m, and 200m x 200m with a nominal station separation of 50 metres.

2. SURVEY LOCATION AND ACCESS

The survey area is located in the Maybelle River area of northern Alberta approximately 100km southeast of Fort Chipewyan.

Figure 1 shows the location of the survey area with respect to nearby population centres at a scale of 1:5,000,000.

3. SURVEY GRID AND COVERAGE

Survey locations are illustrated in figure 2 at scale of 1:125,000. Map 1 of appendix II illustrates the TDEM coverage at a scale of 1:10,000. A total of approximately 18.65 line-km of fixed loop coverage and approximately 2.55 line-km of moving loop coverage was achieved. Daily activity, applicable permit areas and daily production are detailed in table I below.

TABLE 1
PRODUCTION SUMMARY

<u>DATE</u>	<u>PERMIT</u>	<u>ACTIVITY</u>	<u>PRODUCTION (km)</u>
Jan. 29	6884100001	Lay 1A	
30	6884100001	Read 1A, Lay 1B	1.0
31	6884100001	Read 1B	1.0
Feb. 1	6884120001/6884100002	Lay 92A & 92B, Read L-92N	2.4
2	6886050005	Lay 50B	
3	6886050005	Read 50B, Lay 50A	1.4
4	6886050005	Read 50B	2.8
5	6884100001	M/L - 100x100, 11 Loops	0.55
6	6884100001	M/L - 100x100, 6 Loops	0.3
7	6886050003	Lay 10A, 800x800	
8	6886050003	Read 10A/L-10N, Lay 10B	1.7
9	6886050003	Read L-18N/10A	1.6
10	6886050003	Read L-10N/10B	1.4
11	6886050002	Lay 28A, 600x600	
12		Breakdown	
13		Breakdown	
14		Weather	
15		Weather	
16	6886050002	M/L - 200x200, 7 Loops	0.35
17	6886050002	M/L - 200x200, 10 Loops	0.50
18	6886050002	Read 28B, 600x600	1.55
19	6886050002	M/L - 200x200, 17 Loops	0.85
20	6886050002	Lay/Read 28C, 600x600	1.2
21	6886050006	Lay 68A(600x600),Sounding 28C	
22	6886050006	Read 68A, Lay 68B	1.3
23	6886050006	Lay/Read 68B	1.3

4. PERSONNEL

Mr. Howard Northfield - Geophysicist/Party Chief. Mr. Northfield operated the Geonics EM-37 TDEM system and compiled the data with the Compaq Portable II microcomputer and Geonics software. Mr. Northfield acted as party chief and was responsible for data quality and the day to day operation and direction of the survey.

Mr. A. Blais, Mr. G. Locke and Mr. E. Ocheewasawan - acted as field assistants.

Casual assistants were hired locally when necessary

Mr. Howard Northfield - Geophysicist. Mr. Northfield prepared this logistical report.

JVX

Mr. Phil Robertshaw - Senior Geophysicist, UEM Ltd. Mr. Robertshaw provided overall supervision of the survey and reporting from the Jas Lake camp.

Mr. Blaine Webster - President, JVX Ltd. Mr. Webster provided overall supervision of the survey and reporting from the Toronto office.

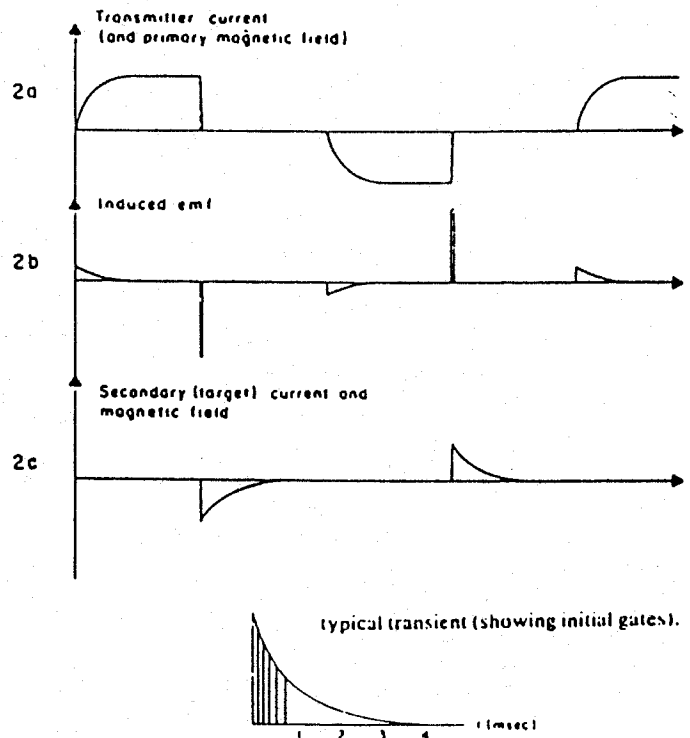
5. INSTRUMENTATION

5.1 Receiver See Appendix I

5.2 Transmitter See Appendix I

5.3 Data Processing

The TDEM survey data were archived, processed and plotted by a Compaq portable II microcomputer using an Epson FX-286 dot matrix printer. The system was configured to run the Geonics software package, a suite of programs that was written specifically to interface with the EM-37 receiver and data logger. At the conclusion of each day's data collection, data resident in the data logger's memory was transferred, via serial communication link, to the computer - thereby facilitating editing, processing and presentation operations. All data was archived on floppy disk.



TEM Waveforms
Figure 2

For a 30 Hz transmit and receive time the slices of integration for the Geonics EM-37 system are as follows:

<u>Channel</u>	<u>FROM</u> <u>msec</u>	<u>TO</u> <u>msec</u>	<u>MIDPOINT</u> <u>msec</u>
1	0.080	0.097	0.089
2	0.097	0.121	0.109
3	0.121	0.158	0.140
4	0.158	0.195	0.177
5	0.195	0.224	0.219
6	0.224	0.316	0.280
7	0.316	0.393	0.355
8	0.393	0.492	0.634
9	0.492	0.634	0.563
10	0.634	0.790	0.712
11	0.790	0.962	0.876
12	0.962	1.221	1.090
13	1.221	1.580	1.400
14	1.580	1.950	1.765
15	1.950	2.440	2.195
16	2.440	3.160	2.800
17	3.160	3.930	3.545
18	3.930	4.920	4.425
19	4.920	6.340	5.630
20	6.340	7.900	7.120

Table 2
EM-37 30Hz Channel Times

6. SUMMARY:

From January 29th to February 23rd, 1989, JVX Limited carried out TEM surveys on behalf of UEM on the Maybelle River Project 71-42 in northern Alberta.

The survey employed fixed loop and moving loop techniques using a 50 metre sampling interval. A total of approximately 18.65 line-km of fixed loop and approximately 2.55 line-km of moving loop coverage was achieved.


The digital data from this survey has been archived by JVX. One copy of the data on diskette was given to UEM at the conclusion of the survey.

The copy of all the data will be held by JVX on UEM's behalf for a period not less than five years. UEM may at any time within this period ask for copies of the raw data or derivative products.

If there are any questions with regard to the survey please do not hesitate to call the undersigned at JVX Ltd.

Respectfully submitted,

JVX Ltd.



Howard J. Northfield, B.Sc.
Geophysicist



Blaine Webster, B.Sc.
President

Appendix 1
Specification Sheets



GEONICS LIMITED

1745 Meyerside Dr. Unit 8 Mississauga, Ontario Canada L5T 1C5

Tel. (416) 676-9580

Telex 06-968688

Cables: Geonics

GEONICS EM37-3 DIGITAL DATA PAC DDP37

Geonics Limited is pleased to introduce a new data logger/receiver controller for their EM37-3; the DAS54-P now the standard logger component of Geonics Digital Data Pac DDP37.

Designed to assist in the editing and interpretation of the large volume of survey data which quickly results from surveys carried out with the EM37-3 Transient Electromagnetic System, DDP37 consists of the DAS54-P logger, and a set of software utilities for operation on IBM PC or compatible microcomputers.

The DAS54-P is tailored specifically for the EM37-3, providing digital storage for up to 370 sets of measurements and automatically controlling operation of the receiver so that measurements can be made without access to the EM37-3 front panel. Collection and averaging of two polarity measurements is automatic for each set, providing both high accuracy offset removal and maximum storage efficiency. The operator can easily review all 22 data channels or any of the digital or header data (survey line, station number, gain, etc.) for any recorded set. The unit is powered with its own re-chargeable battery for minimal drain on the EM37-3, and with additional power from the EM37-3 can be operated at temperatures down to -30°C .

Geonics Limited has standardized on the IBM PC family of microcomputers for handling and interpreting EM37 data. The more rugged clones, such as the Compaq portables, provide a relatively inexpensive, transportable, high-capability computing facility in a format that has become widely supported throughout the scientific, geophysics and computer communities.

Continued.....

Users of the EM37-3 Digital Data Pac are supplied with a suite of software facilities for acquisition, editing, and interpretation of EM37 survey data. Program POL37 provides the interface to the DAS54-P, transferring recorded data from the logger to the computer or loading programs into the logger using the standard RS232C protocol. Once in the computer, data can be readily edited and displayed using program DAT37, and different reduction procedures carried out to generate profiles or decay plots as raw field data, turnoff corrected impulse response, integrated step response, or late stage apparent resistivity or conductivity. Outputs are available for line printer and HP 7470 plotter.

Interpretation is aided by several forward modelling facilities specially written for rectangular transmitter geometries. MOD37 allows the operator to model and combine the instrument responses for geological structures including:

- (i) Uniform halfspace;
- (ii) Infinite horizontal thin conductive sheet at depth;
- (iii) Finite rectangular thin conductive plates.

Program RECTAN models the response for arbitrary horizontal conductivity layering. By comparing actual field data with the results of forward modelling, the interpreter can quickly identify likely candidates for the sub-surface structure.

Also available as an additional option is TEMIX, a program for the automatic inversion of EM37 soundings to a horizontally layered model.

Geonics Limited is continuing to develop additional techniques for the interpretation of EM37 survey data, and as new programs are developed they will be available to users of the EM37-3.

MAY 1987

2. INPUT AND OUTPUT CONNECTIONS

Input Data Via

- Keyboards and 50 pin "D"
subminiature connector -
Cannon P/N DD50P

Pin assignments for the connector are as follows:

<u>PIN</u>	<u>DESCRIPTION</u>	<u>PIN</u>	<u>DESCRIPTION</u>
1	Ch 1	5	Ch 5
2	Ch 2	6	Ch 6
3	Ch 3	7	Ch 7
4	Ch 4	8	Ch 8
9	Ch 9	30	N/C
10	Ch 10	31	Ready
11	Ch 11	32	+ 12V Power (Battery)
12	Ch 12	33	N/C
13	Ch 13	34	Digital Ground
14	Ch 14	35	N/C
15	N/C	36	Freq (LSB)
16	+ 12V Regulated	37	N/C
17	- 12V Regulated	38	Ch 15
18	Ch 18	39	Ch 16
19	Ch 19	40	Ch 17
20	Ch 20	41	Gain 0 (LSB)
21	Ch 0 (Primary Field)	42	Gain 1
22	T/O Time	43	Gain 2
23	Freq (MSB)	44	Gain 3 (MSB)
24	N/C	45	N/C
25	N/C	46	Signal Ground (analog)
26	N/C	47	Heater Ground
27	N/C	48	Polarity Input
28	N/C	49	Start Integration
29	N/C	50	Polarity Output

DAS54-P TECHNICAL SPECIFICATIONS

1. GENERAL CHARACTERISTICS

Number of Analog Channels	:	22
Number of Records	:	370 (4 digit recording) 260 (5 digit recording)
Analog Inputs	:	± 5 Volts Max.
Recording Resolution	:	0.1 mV
Analog Input Impedance	:	100 kΩ
Display	:	2 Line by 16 character alphanumeric LCD.
Keyboard	:	Hermetically sealed membrane keyboard with 21 keys.
Number of Digital I/O	:	9
Output Communication	:	Serial RS-232C
Output Baud Rate	:	300 to 19200 BPS
Programming Language	:	Polycode
Internal Power		
Back-up Battery	:	Alkaline 9-V / 40 hours
Main Battery	:	6 Size "AA" - Rechargeable
External Power Requirements		
(From EM37-3)		
Normal Mode	:	± 10 mA at ± 12 volts
Display	:	600 mA at 12 volts (only when it turns on)
Temperature Range	:	-30°C to 50°C
Dimensions	:	22 x 11.5 x 6.5 cm
Weight	:	1.8 kg

MSB	LSB	FREQ.
0	0	LOW
0	1	MED
1	0	HIGH

Pin 50	POLARITY
1	Positive
0	Negative

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

Output Data Via : Standard RS-232C port a 25 pin "D" subminiature connector
ITT CANNON P/N DB-258P

3. FEATURES

Storage Medium : CMOS STATIC RAM with Battery back-up

Recording Time : One record of 22 analog channels (two polarity averaged), 7 digital channels, and the header, takes about 28 seconds, for integration n=8

Analog Channels : 22 which consist of:
1 Primary field channel;
1 Turn-off (T/O) channel;
20 Output channels.

- Digital Channels : 9 lines which consist of the Freq.; Gain; Ready; and Polarity.
- Header : User inputs which consist of the: Date; Line; Station; Component; Tx Size; Tx Position; Tx Turn-off; Tx Current; Rx Coil Area; Synch. Mode and Comment.
- Display : 32 Character alphanumeric LCD with heater for low temperature capability. Heater switches on and off automatically as necessary when the temperature drops to about 3°C.
- Data Recall : Data can easily be recalled to the display.

GEONICS LIMITED

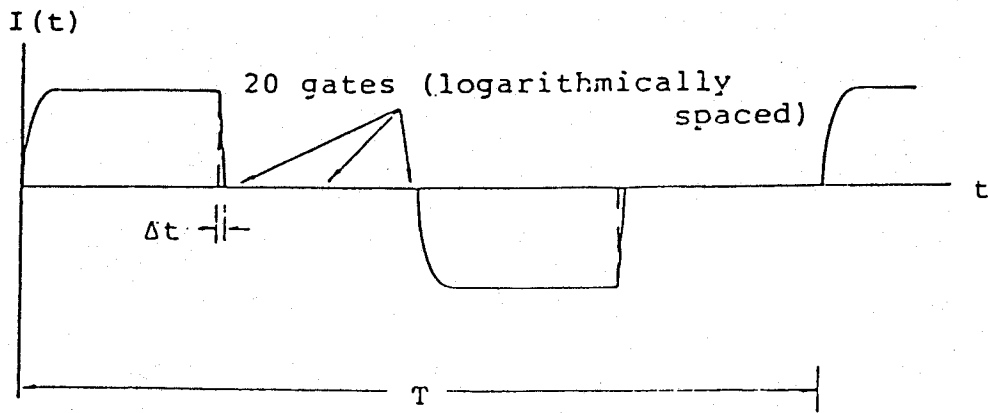
EM37-3 Ground Transient Electromagnetic System
Technical Specifications

Transmitter

- Current Waveform - See Fig. 1
- Repetition rate - 3Hz, 7.5Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz, 6.25Hz or 25Hz in countries using 50Hz power line frequency; all six base frequencies are switch selectable.
- Turn-off time (Δt) - fast linear turn-off of maximum 450 μ sec. at 30 amps into 300x600m loop. Decreases proportionally with current and (loop area)^{1/2} to minimum of 20 μ sec. Actual value of Δt read on front panel meter.
- Transmitter loop - any dimensions from 40x40m to 300x600m maximum at 30 amps. Larger dimensions at reduced current
Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest voltage setting to prevent overload.
- Transmitter protection - circuit breaker protection against input over-voltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage output voltage and current indicated on front panel meter.
- Transmitter output voltage - 150 volts (zero to peak) maximum;
20 volts (zero to peak) minimum
- Transmitter output power - 2.8 kw maximum
- Transmitter wire supplied - Option (A) - 1800m #10 copper wire on 6 reels
Option (B) - 1800m #4 aluminum wire on 12 reels
2 reel winders supplied
- Transmitter motor generator - 5 HP Honda gasoline engine coupled to 120 volt, 3 phase, 400Hz alternator. Approximately 8 hours continuous operation from full (built-in) fuel tank.

Receiver

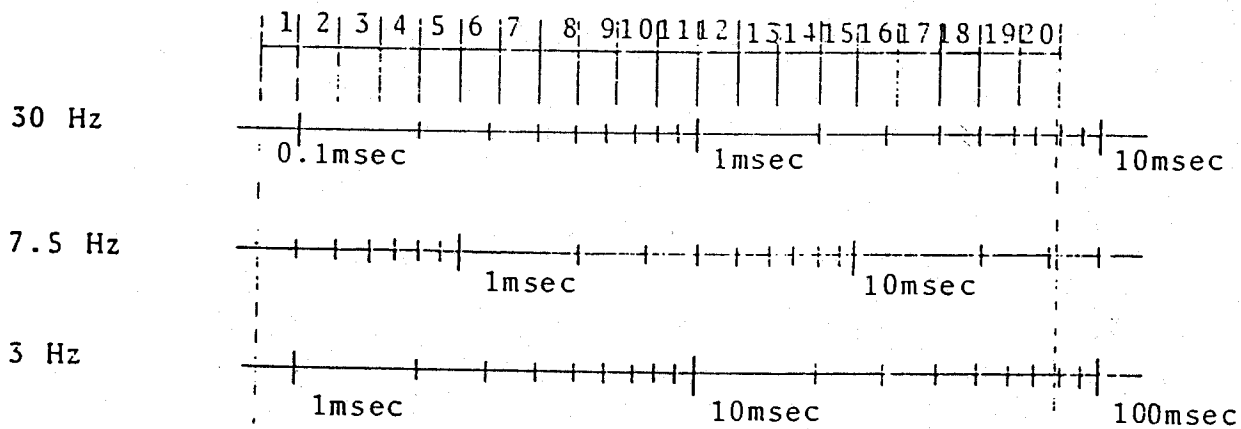
- Measured quantity
Sensor
- time rate of decay of magnetic flux along 3 axes
 - air-cored coil of bandwidth 40 kHz; 100cm dia. by 7x5cm cross-section. Coil holder supplied to facilitate measurement along 3 axes.
- Time channels
- 20 time channels with locations and widths as shown in Fig. 2. Successive operation at 30Hz, then 3Hz, effectively gives 30 channels covering range from 80 μ sec. to 80 msec.
- Output display
- 4 digit plus sign LED display; display also shows channel number and gain.
- Integration time
- 2^n cycles at 30Hz; n=4,6,8,10,12,14 (switch selectable); similar integration times at other base frequencies.
- Receiver output noise referred to input
- typically 1.5×10^{-10} volt/m² at last gate at 30Hz with integration time of 34 seconds. Noise will be higher during intense local spherics activity.
- Output connector
- all 20 channels in analogue format and house-keeping functions in digital format available from output connector.
- Synchronization to Tx
- any of the following (switch selectable)
 - (1) reference cable
 - (2) primary pulse
 - (3) 27 MHz radio link (40 channels)
 - (4) high stability (oven controlled) quartz crystals.
- Noise rejection circuitry
- Selective clipping of atmospheric noise pulses at all times. Audio output of Rx coil (transmitter pulse blanked out) is available on built-in loud speaker for ready identification of interference.
- Receiver batteries
- 12 volt rechargeable Gel-cell; 9 hours continuous operating time at 17°C. Two batteries and a battery charger supplied to permit charging of second battery from transmitter motor-generator during survey.



Transmitter Current Waveform

FIG. 1

Gate Number



Gate Location and Widths (30Hz, 7.5Hz and 3Hz)

FIG. 2.

Delivered Items

EM37-3 Ground Transient System consists of the following delivered items:

- 1 Transmitter console
- 1 Transmitter ground power unit (GPU) consisting of motor and alternator
- 1 Receiver console including battery
- 1 Receiver coil
- 1 Receiver coil holder
- 1 Spare receiver battery
- 1 Battery charger
- 1 Set interconnecting cables
- 1 Set shipping boxes
- 2 Instruction manuals
- 1 Set of data reduction programs (written in Basic)

EM37-3 Transmitter Loop Option:

- 6 (or 12) reels transmitter wire (depending on Aluminum or Copper wire option)
- 2 Reel winders

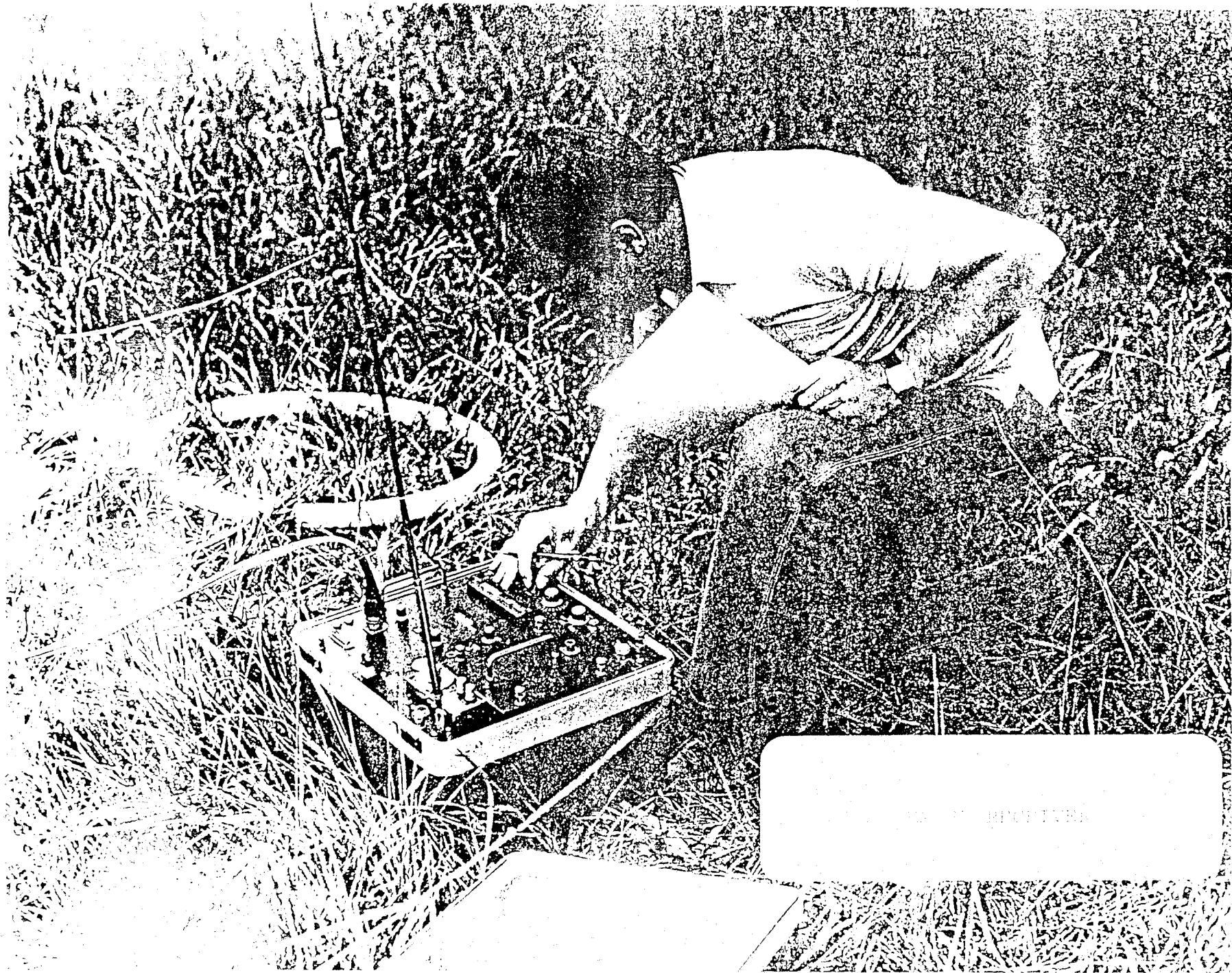
July 23, 1984.

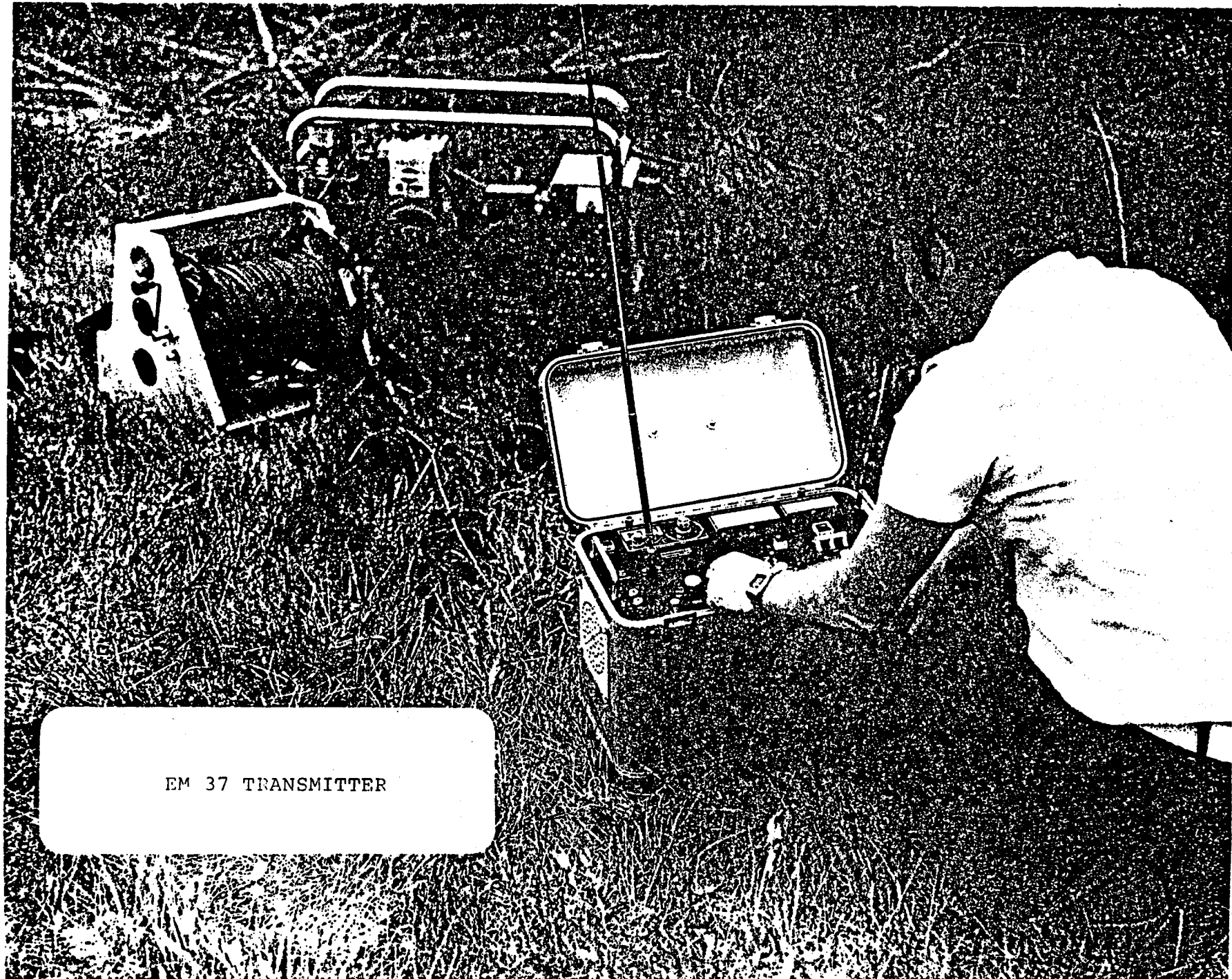
Component Dimensions

Transmitter console	25x42x36 cm
GPU	35x74x48 cm
Wirewinder	42x38x35 cm each (2 off)
Wire reels: Option A	33x31 (dia.)cm each 6 off
Option B	33x31 (dia.)cm each 12 off
Receiver console	38x37x27 cm
Receiver coil	100 cm dia. 7x5 cm cross-section

Component Weights

Transmitter console	20 kg
GPU	60 kg
Wirewinders and loaded reels (30 amp)	130 kg (total)
Receiver console (incl. 20 amp-hour battery)	21.8 kg
Receiver Coil	8.0 kg





EM 37 TRANSMITTER



Appendix 2

**Map 1
1989 TEM Coverage**

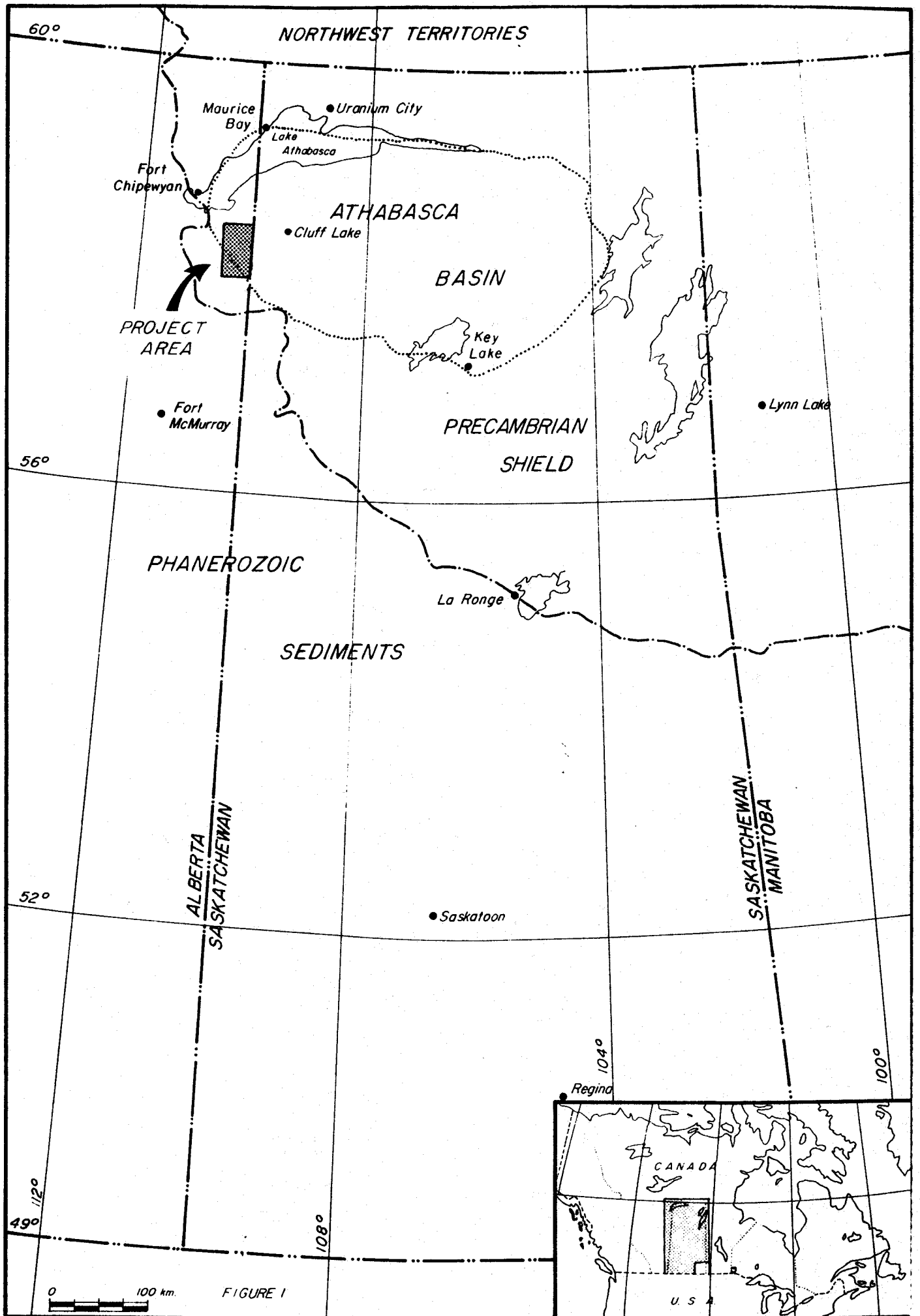
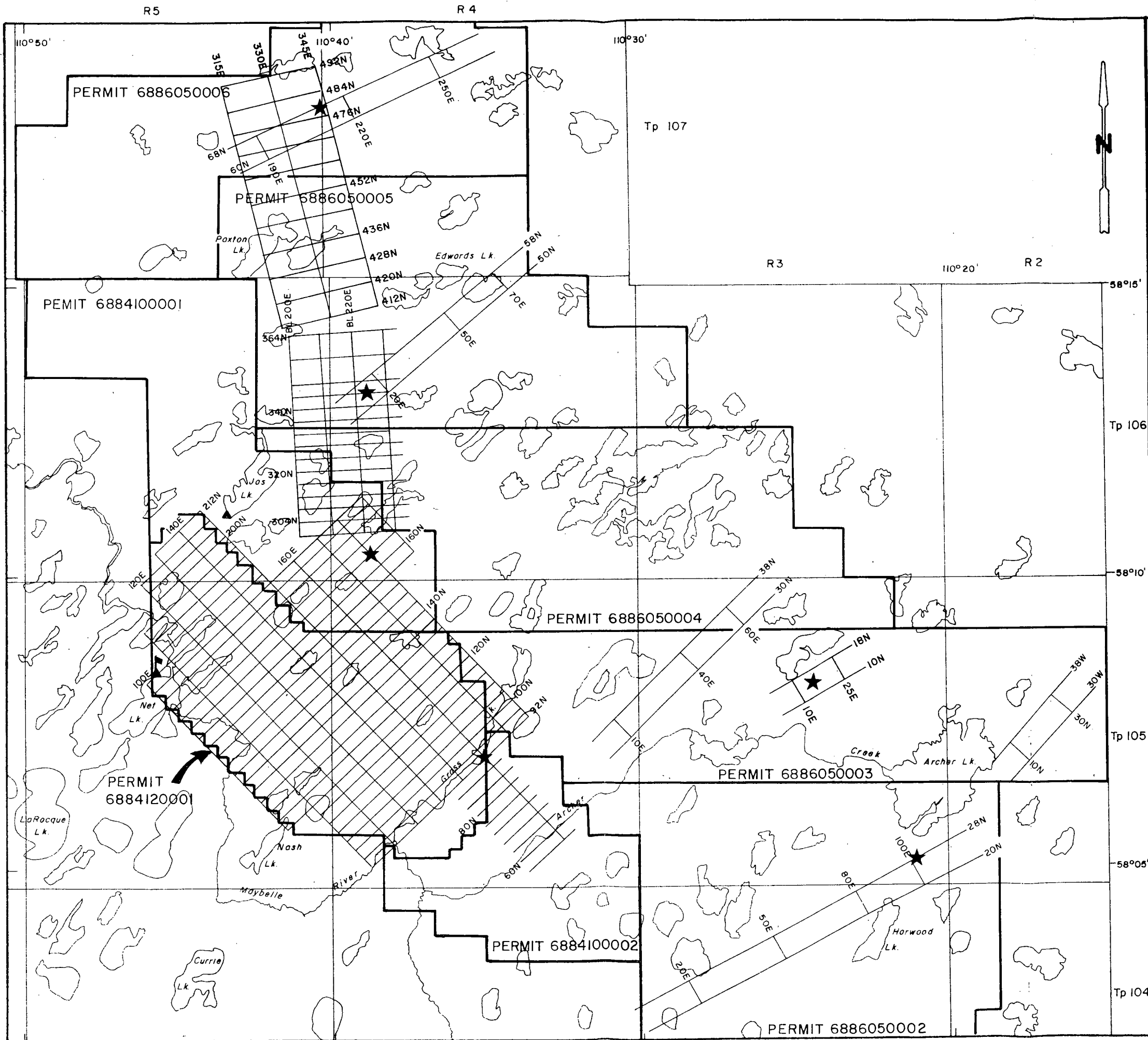


FIGURE 1

42



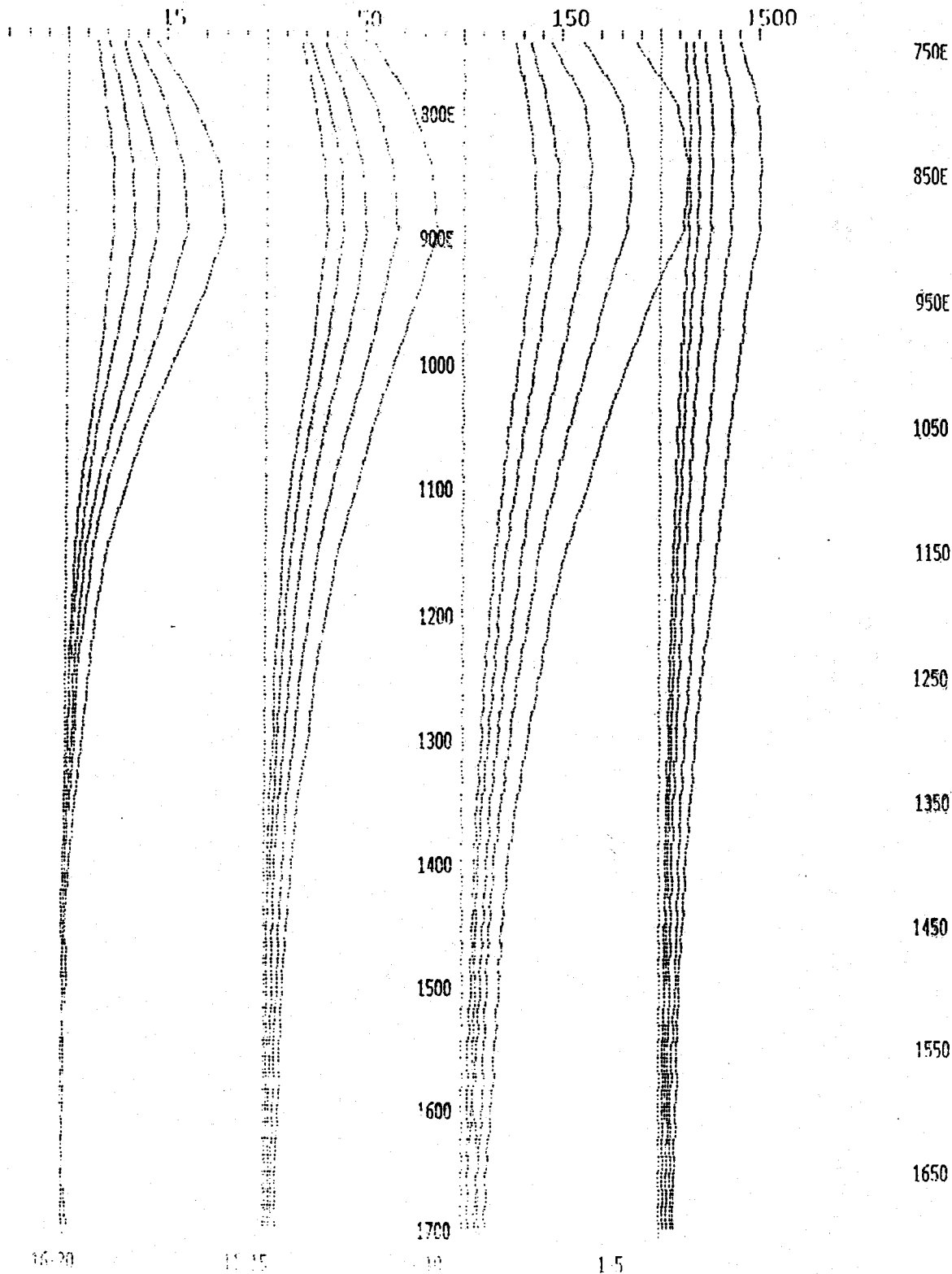
Uranerz Exploration and Mining Limited
 Maybelle River Project
 71-42
 LOCATION OF TEM SURVEY
 FEBRUARY 1989
 Scale 1:25,000

Figure 2

Appendix 3

Data Profiles

EXC-16



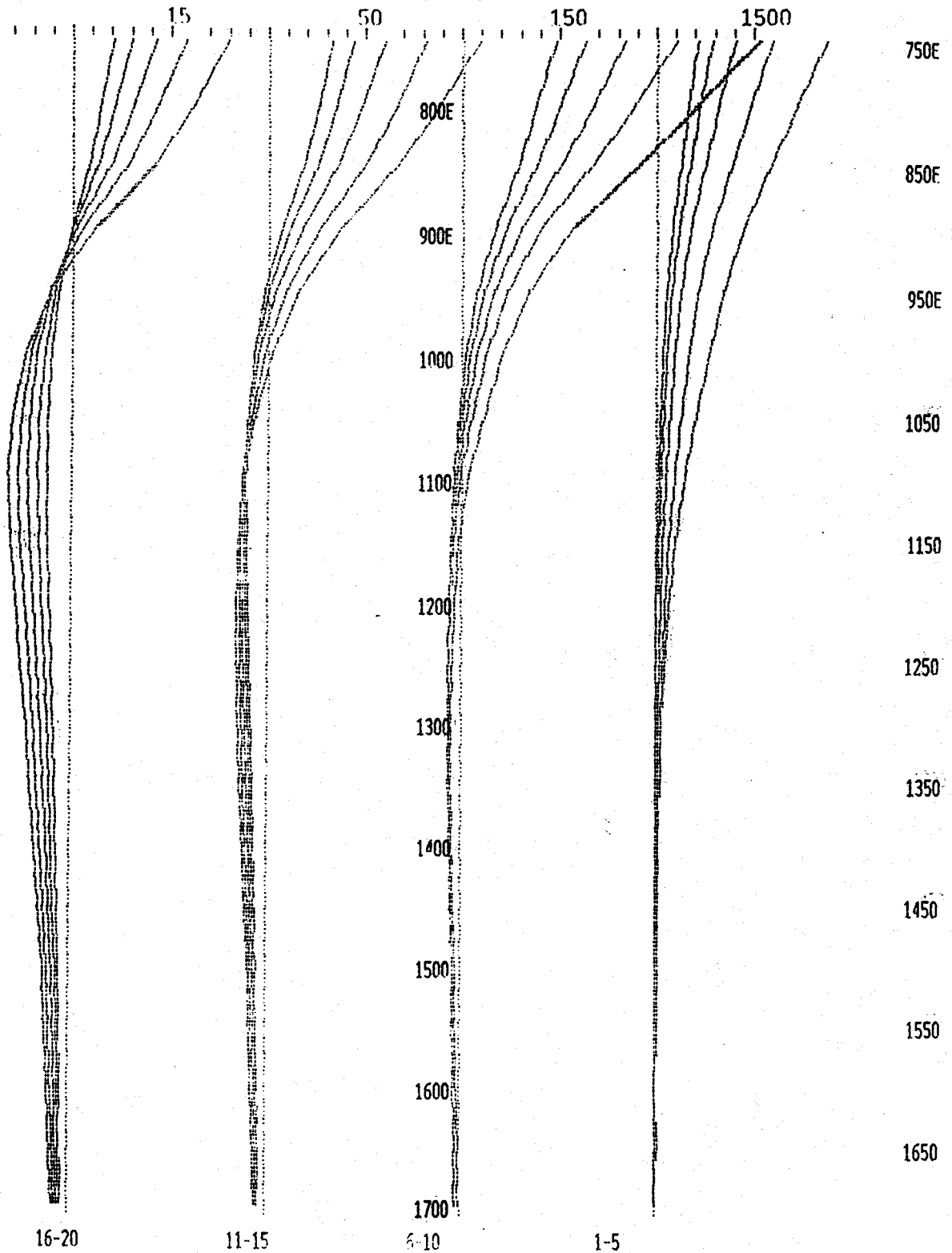
Line 1

X component

Geonics EM37

File 1-1AX.RFD

1x087/225us nV/m²; FXC=16



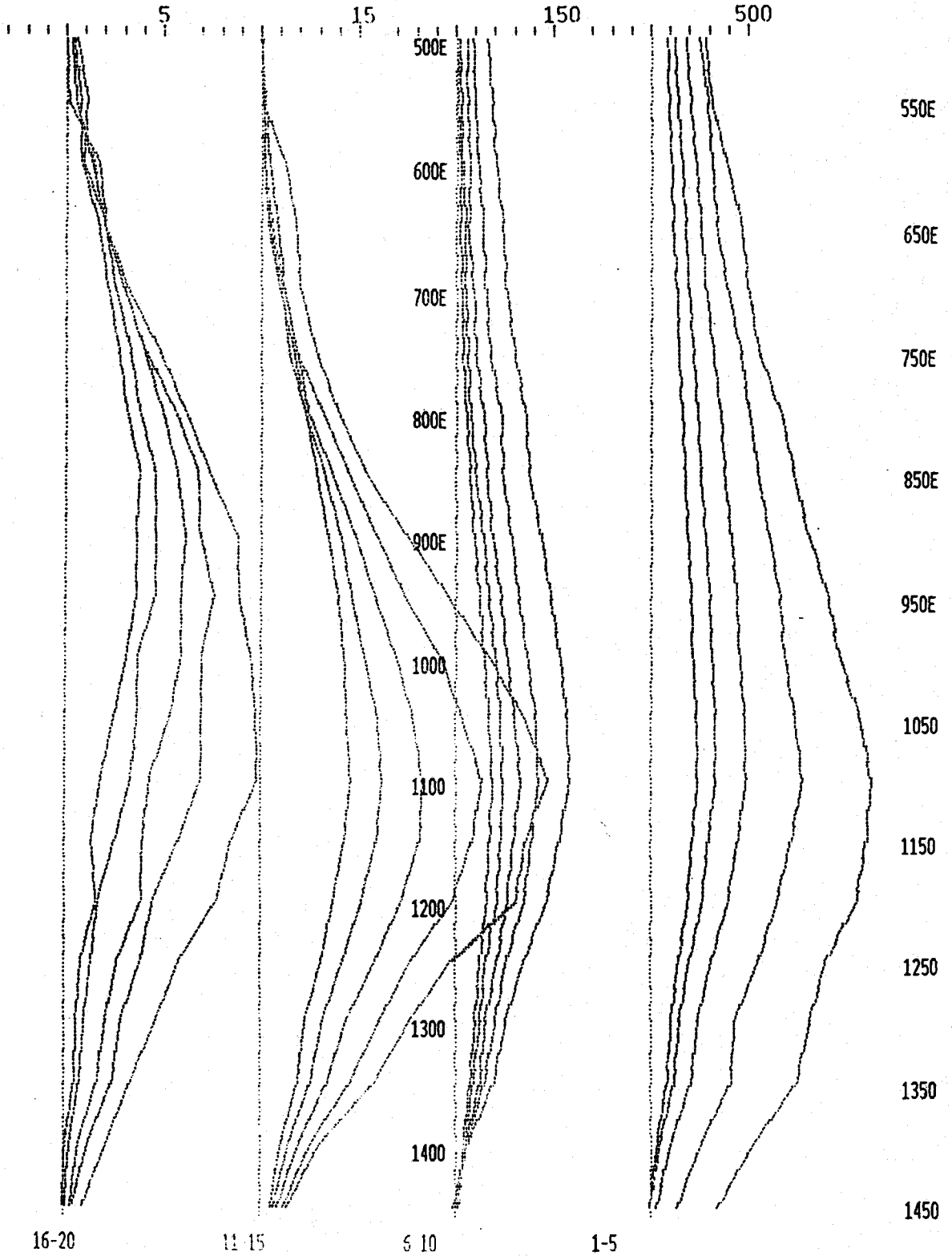
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Z component

Geonics EM37

File L-1AZ.REB

1xDBX/312us nV/m²; TXC=23.5



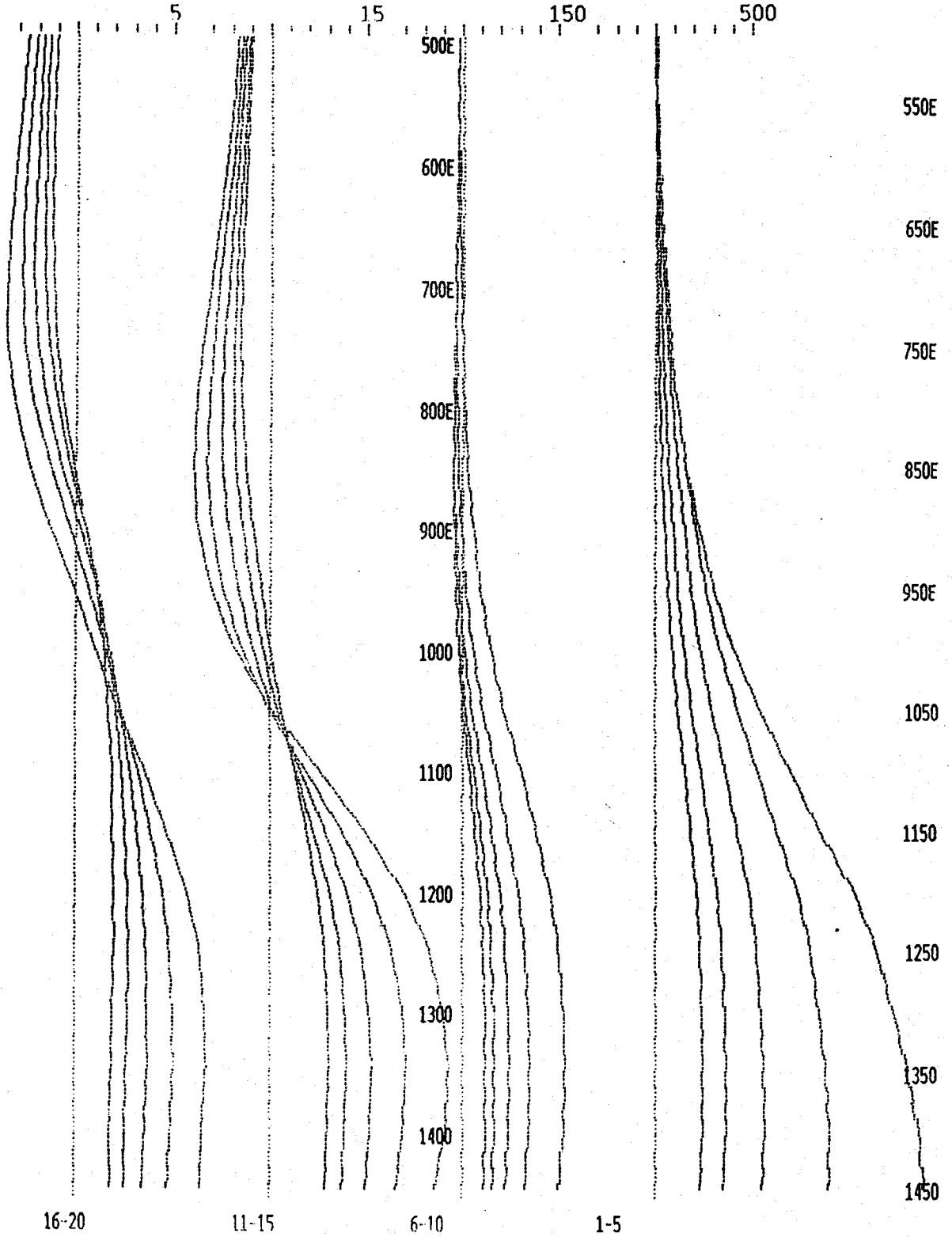
Line 18

X component

Geonics EM37

File L-18X.RED

1x08Z/312us nV/m²; TXC=23.5



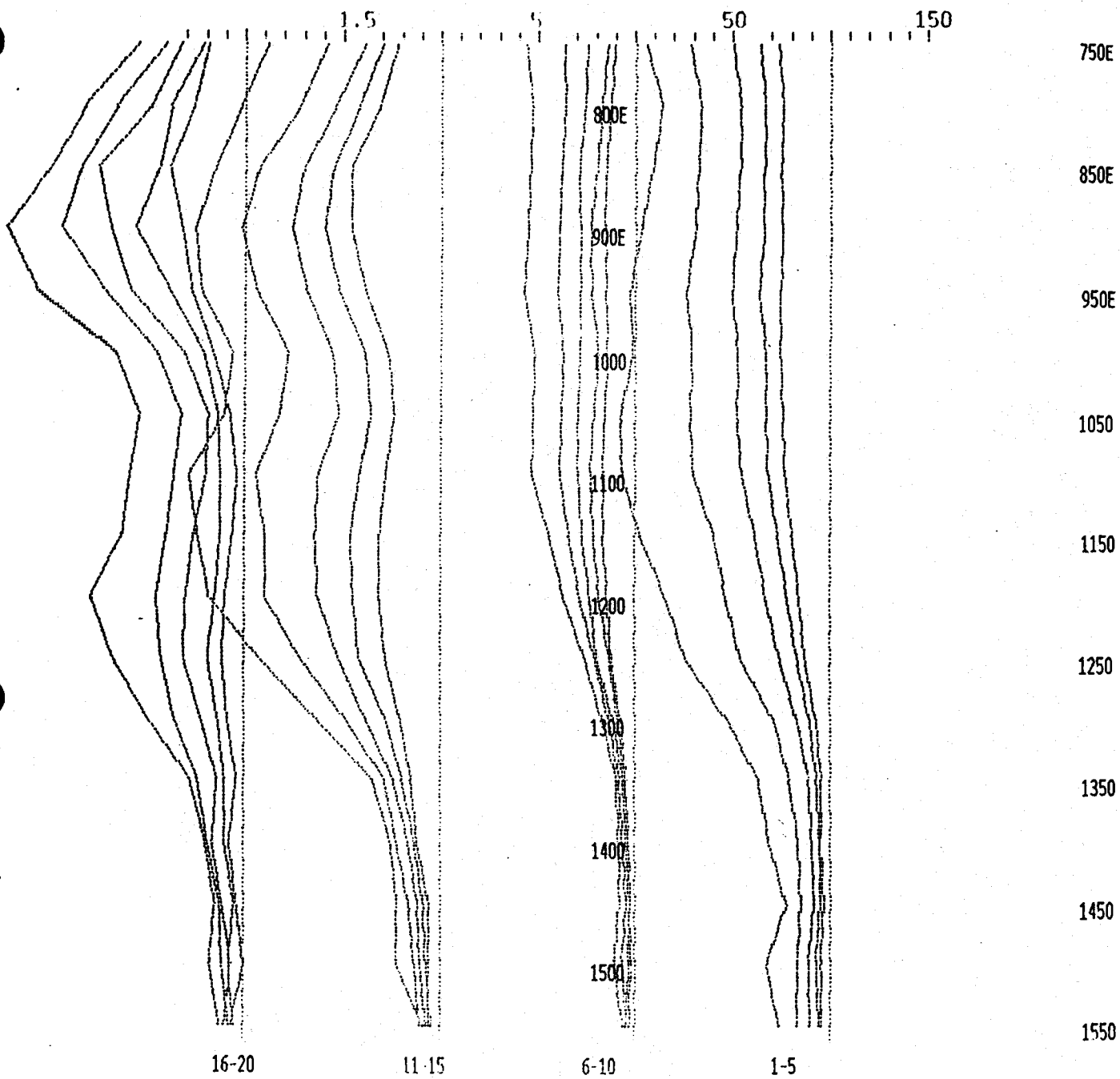
Line 18

Z component

Geonics EM37

File L-18Z.REC

1x08X/72us nV/m²; TXC=16



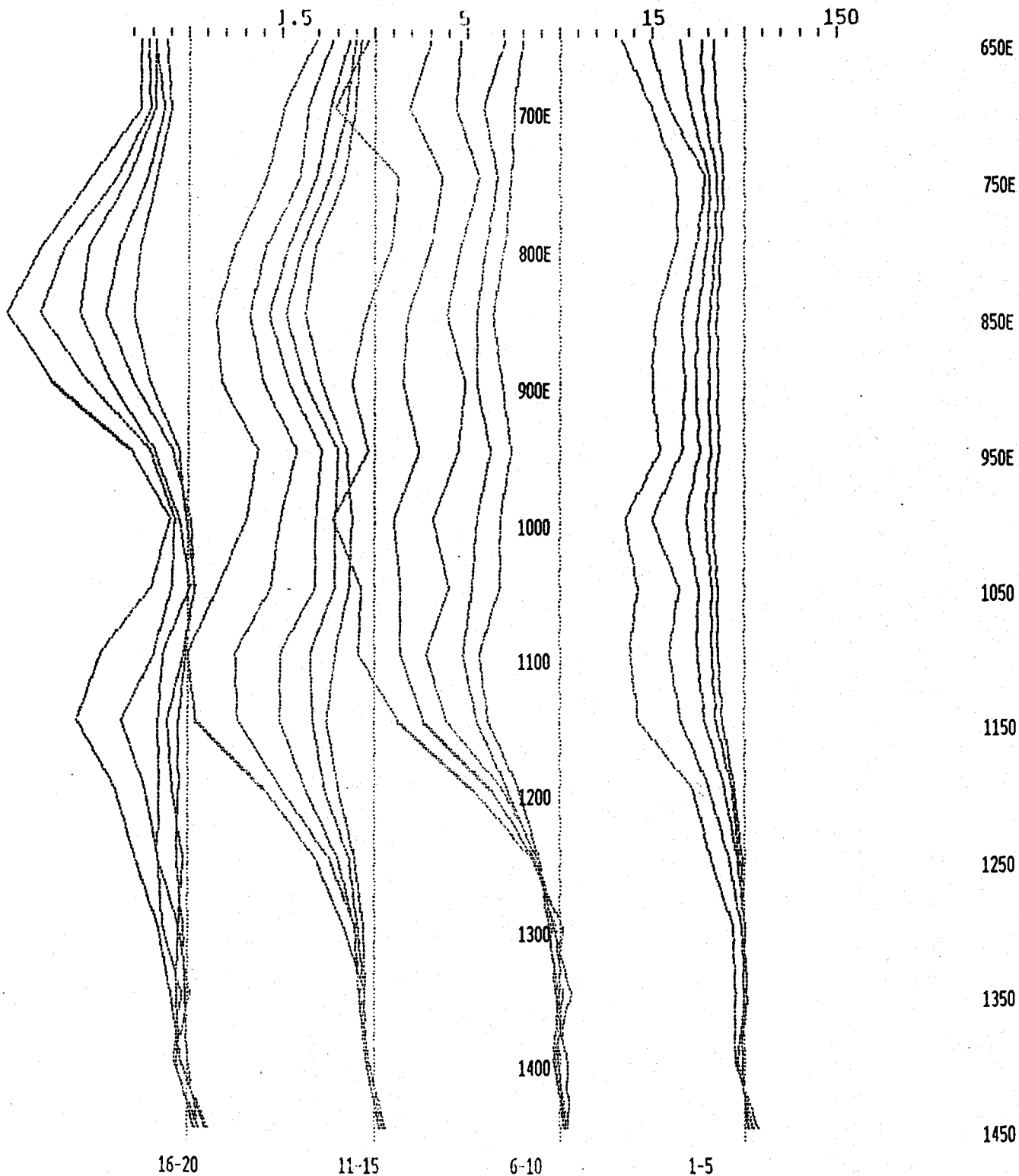
Line 1NB

Geonics EM37

File 1NN-200X.RED

X component

1x08X/72us nV/m^2; TXC=16



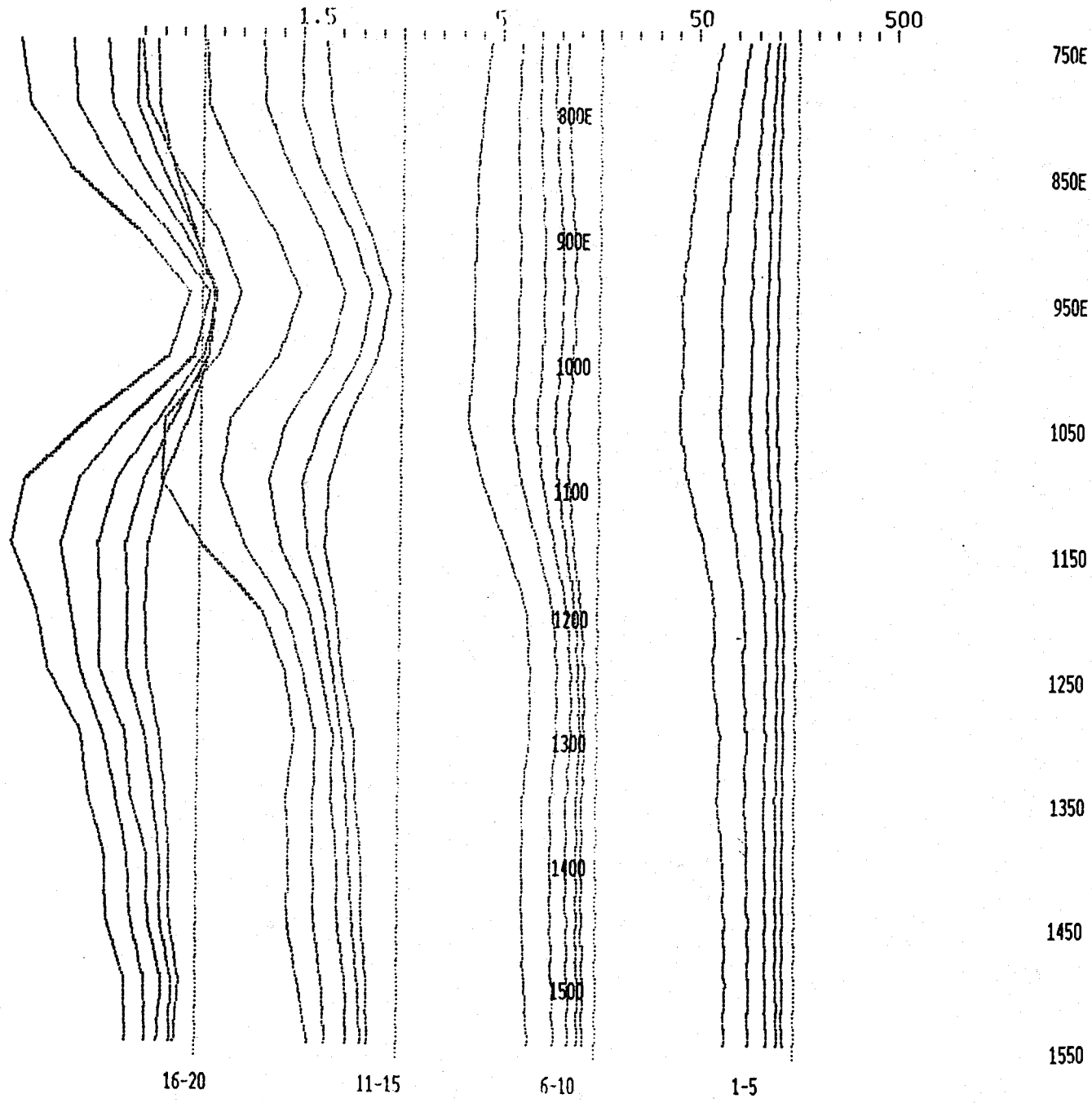
Line 1NA

Geonics EM37

File 1NM-100X.RED

X component

1x082/72us nV/m²; TXC=16



Line 1NB

Z component

Geonics EM37

File 1NN-200Z-RED

1xDBZ/72us nV/m²; TXC=16

1.5

15

50

500

650E

750E

850E

950E

1050

1150

1250

1350

1450

700E

800E

900E

1000

1100

1200

1300

1400

16-20

11-15

6-10

1-5

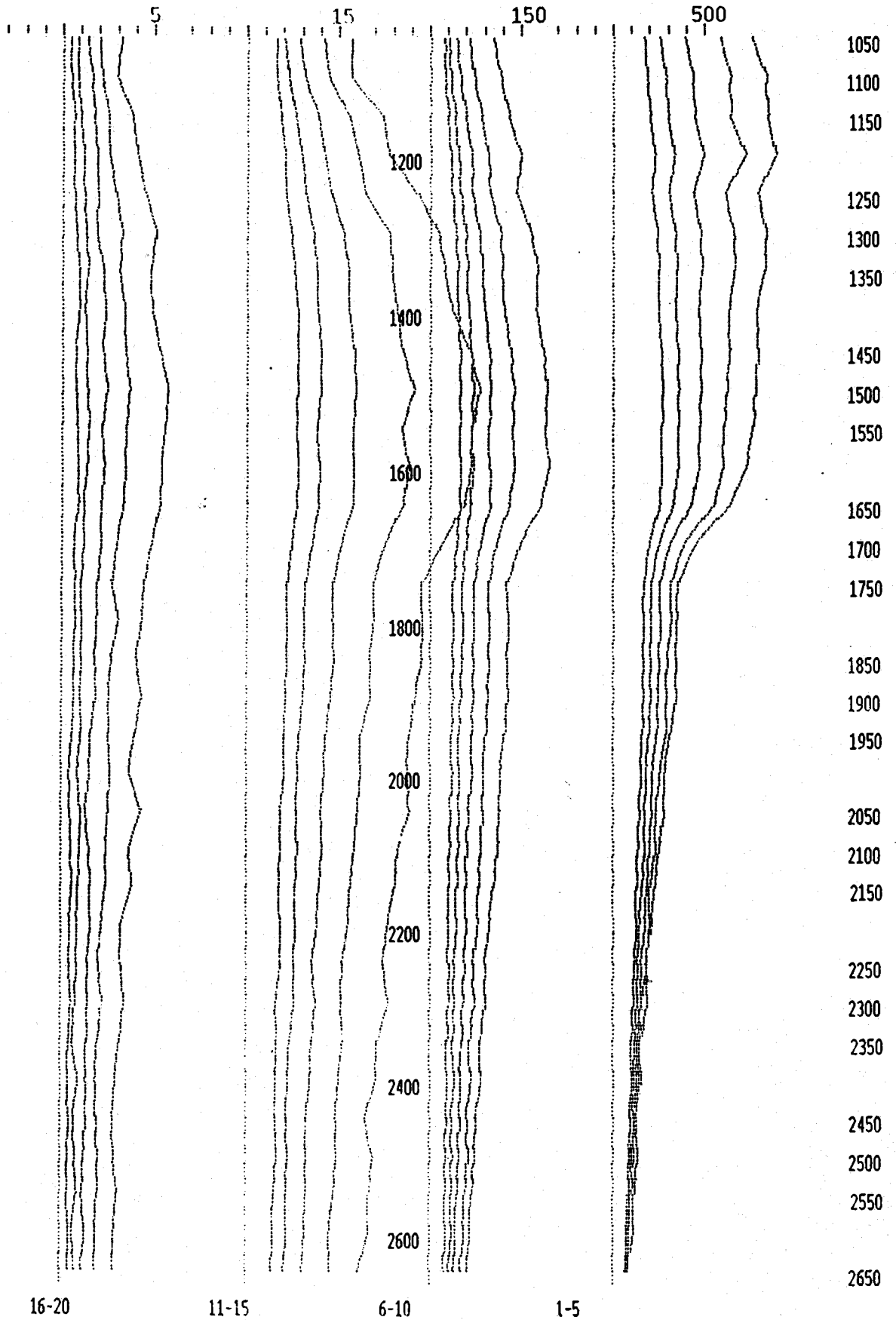
Line 1NA

Z component

Geonics EM37

File 1NH-100Z.REB

1xDBX/482us nV/m²; TXC=15.5



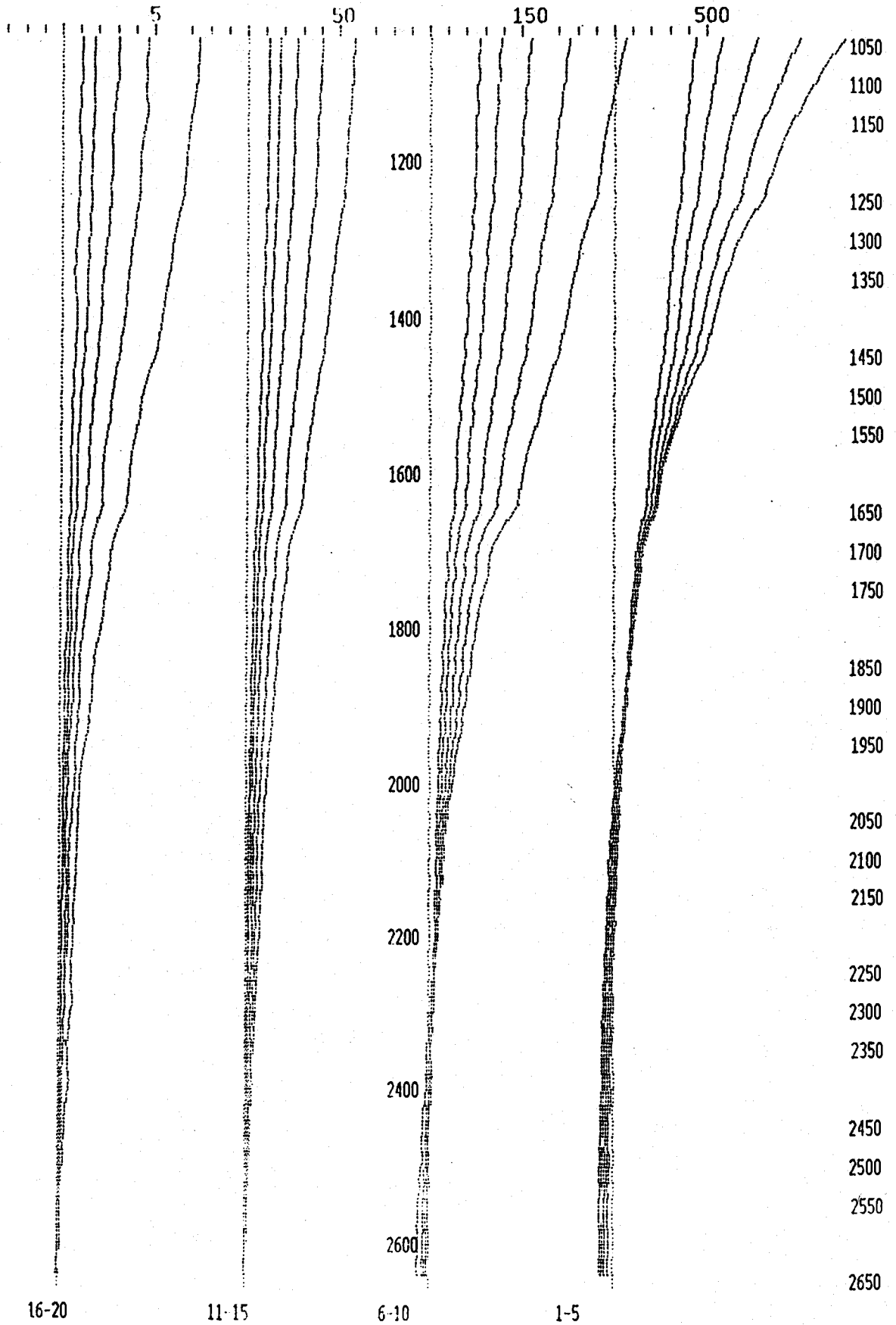
Line 10N

Geonics EN37

File L-10MAX.RED

X component

1xDRZ/482us nV/m²; TXC=15.5



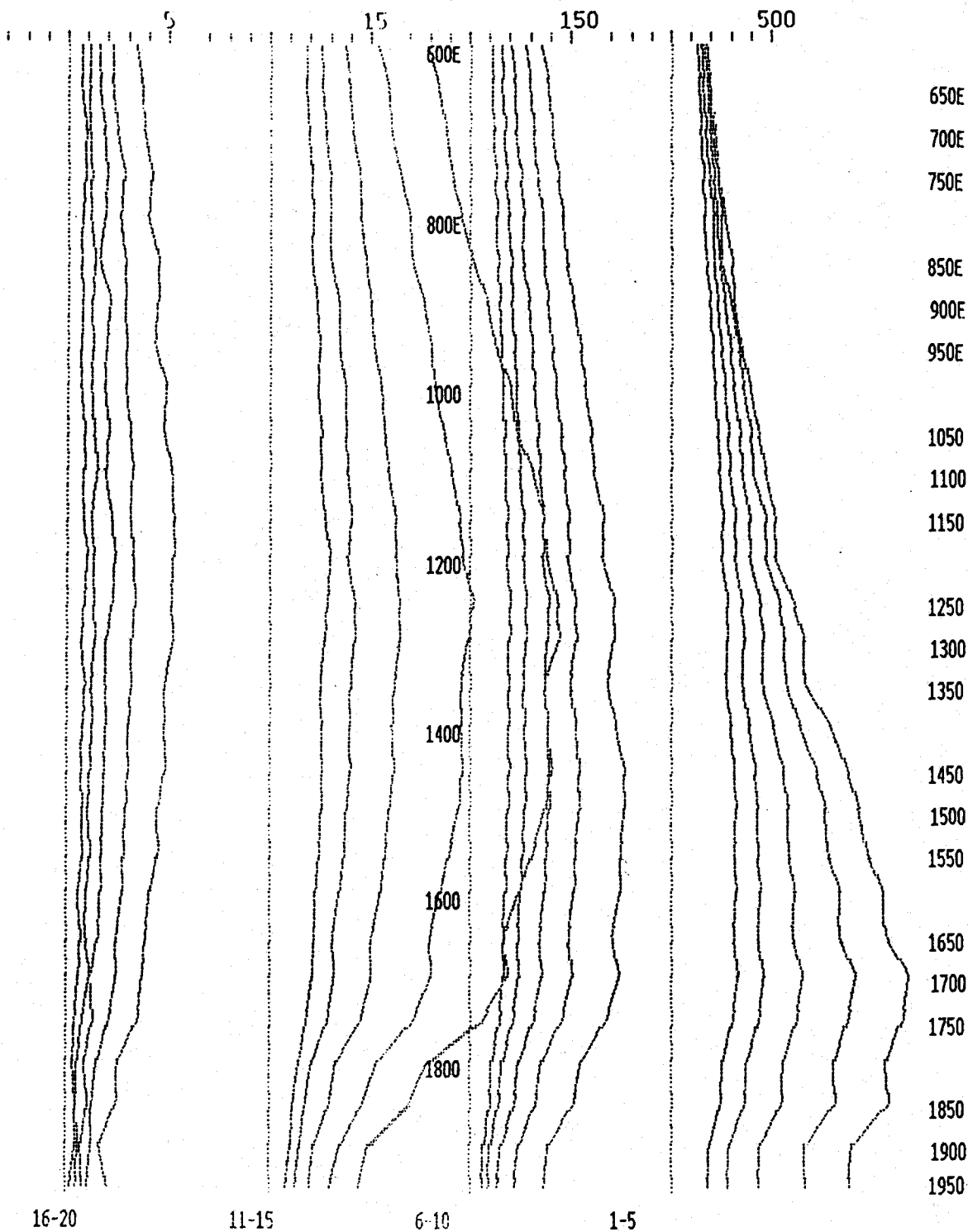
Line 10N

Geonics EM37

File L-10NAZ.RED

Z component

1x08X/472us nV/m²; TXC=19



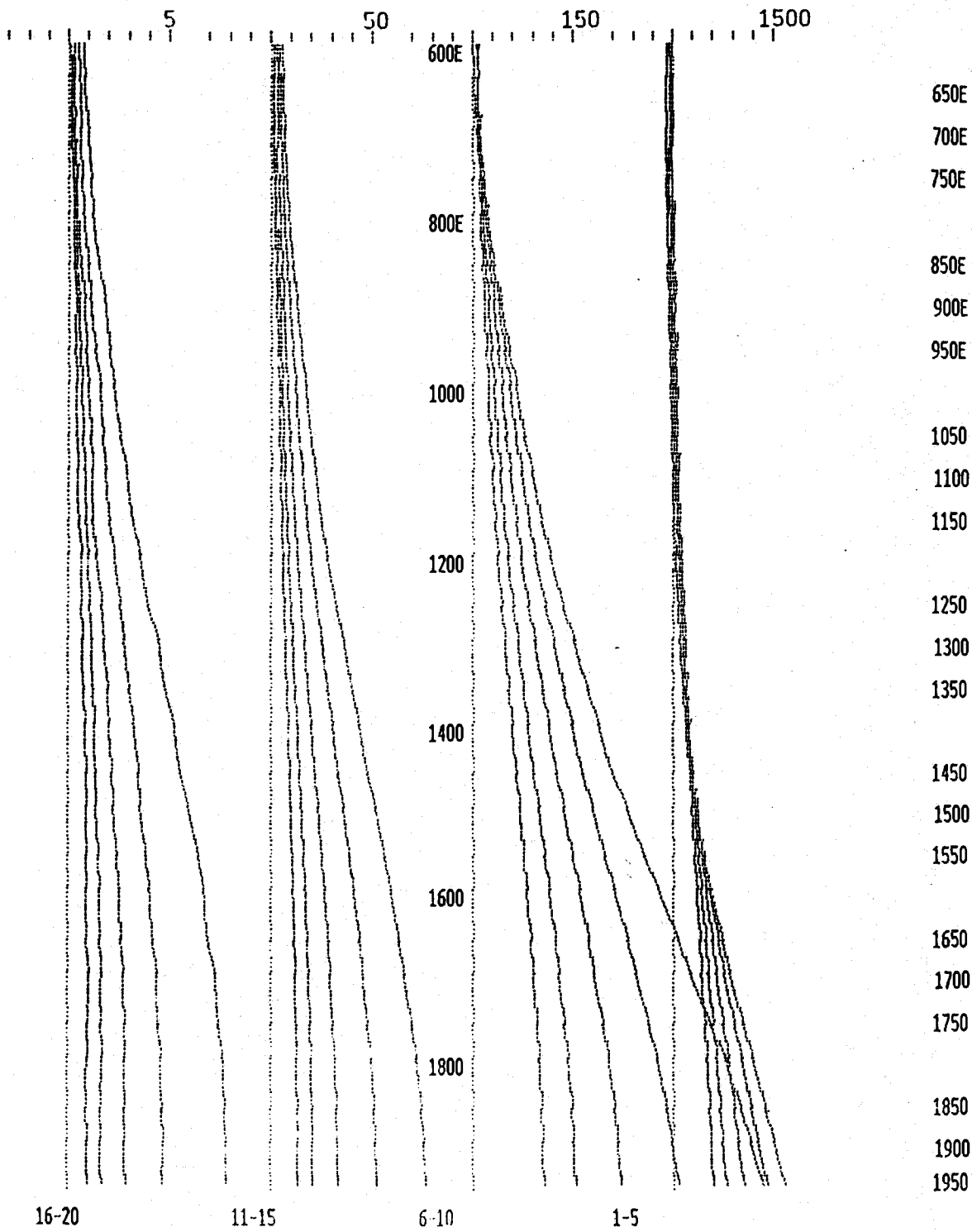
Line 10N

Geonics EM37

File L-10N8X.REX

X component

1xDBZ/472us nV/m²; TXC=19



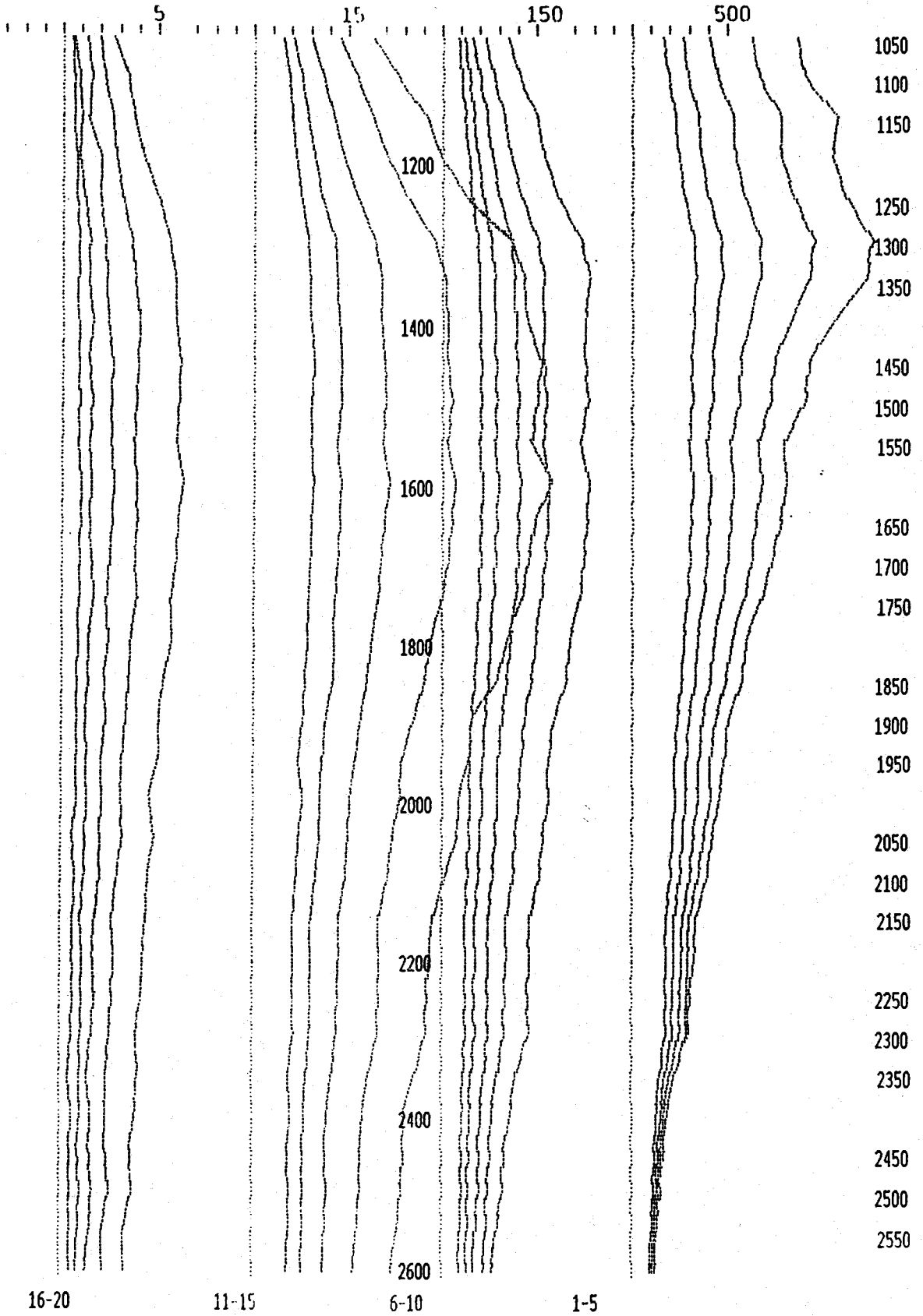
Line 10N

Z component

Geonics EM37

File L-10NBZ.REB

1xDBX/487us nV/m²; TXC=15



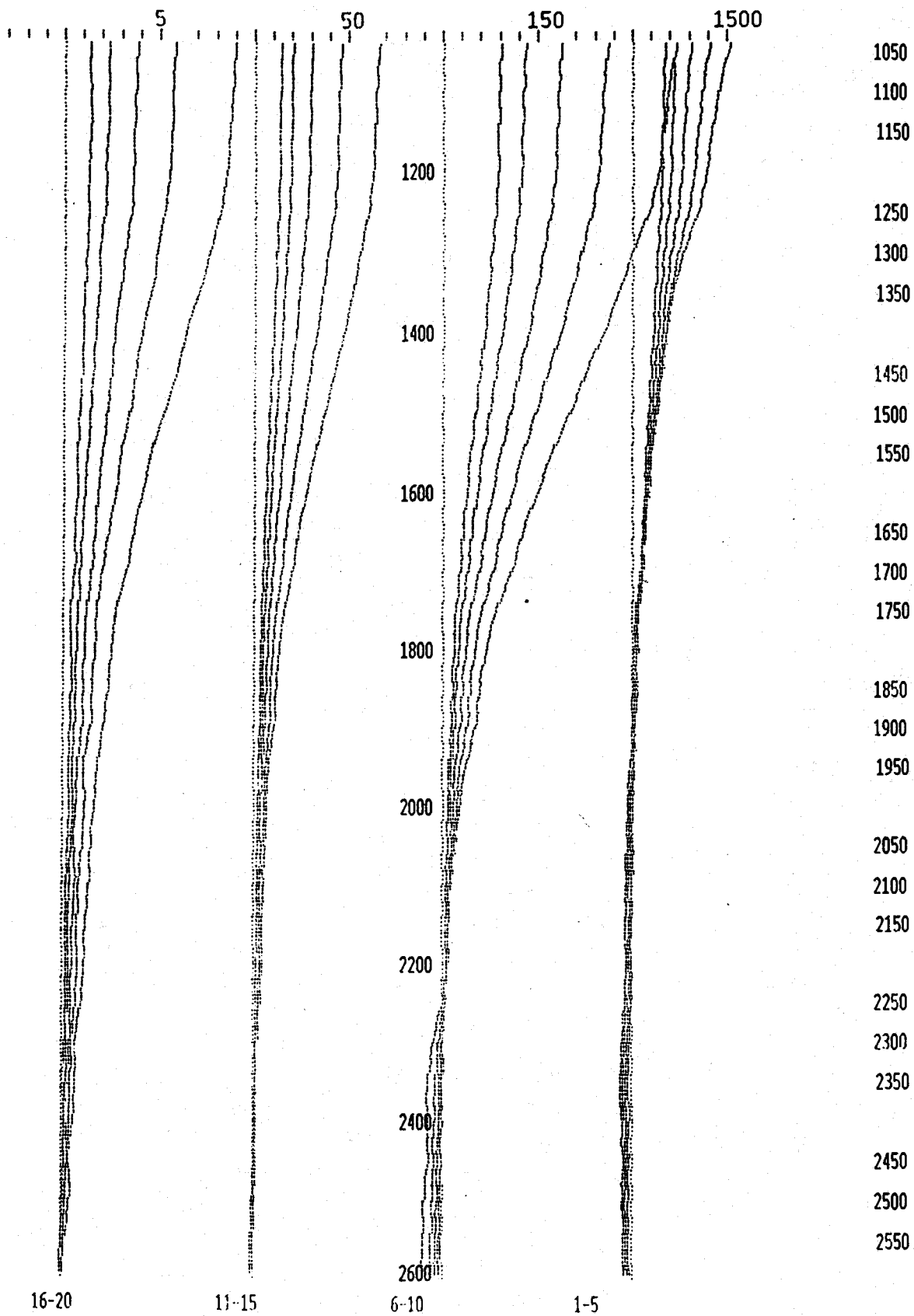
Line 18N

X component

Geonics EM37

File L-18NAX.RED

1xDBZ/487us nV/m²; TXC=15



16-20

11-15

6-10

1-5

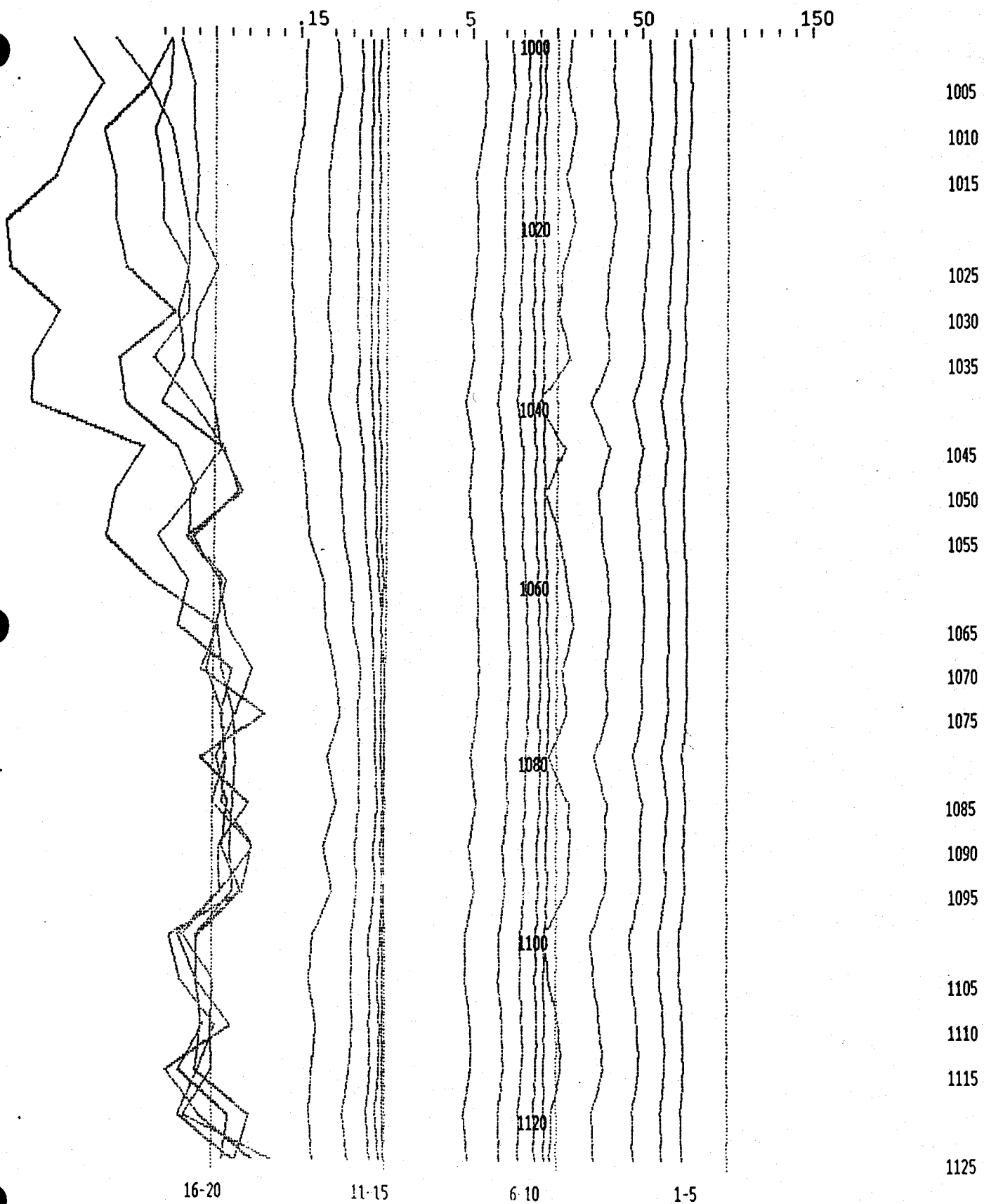
Line 18N

Z component

Geonics EM37

File L-18NAZ.RED

1xDBX/200us nV/m²; TXC=22



1005
1010
1015
1025
1030
1035
1045
1050
1055
1065
1070
1075
1085
1090
1095
1105
1110
1115
1125

Line 28N

Geonics EM37

File L-28NMX.RED

X component

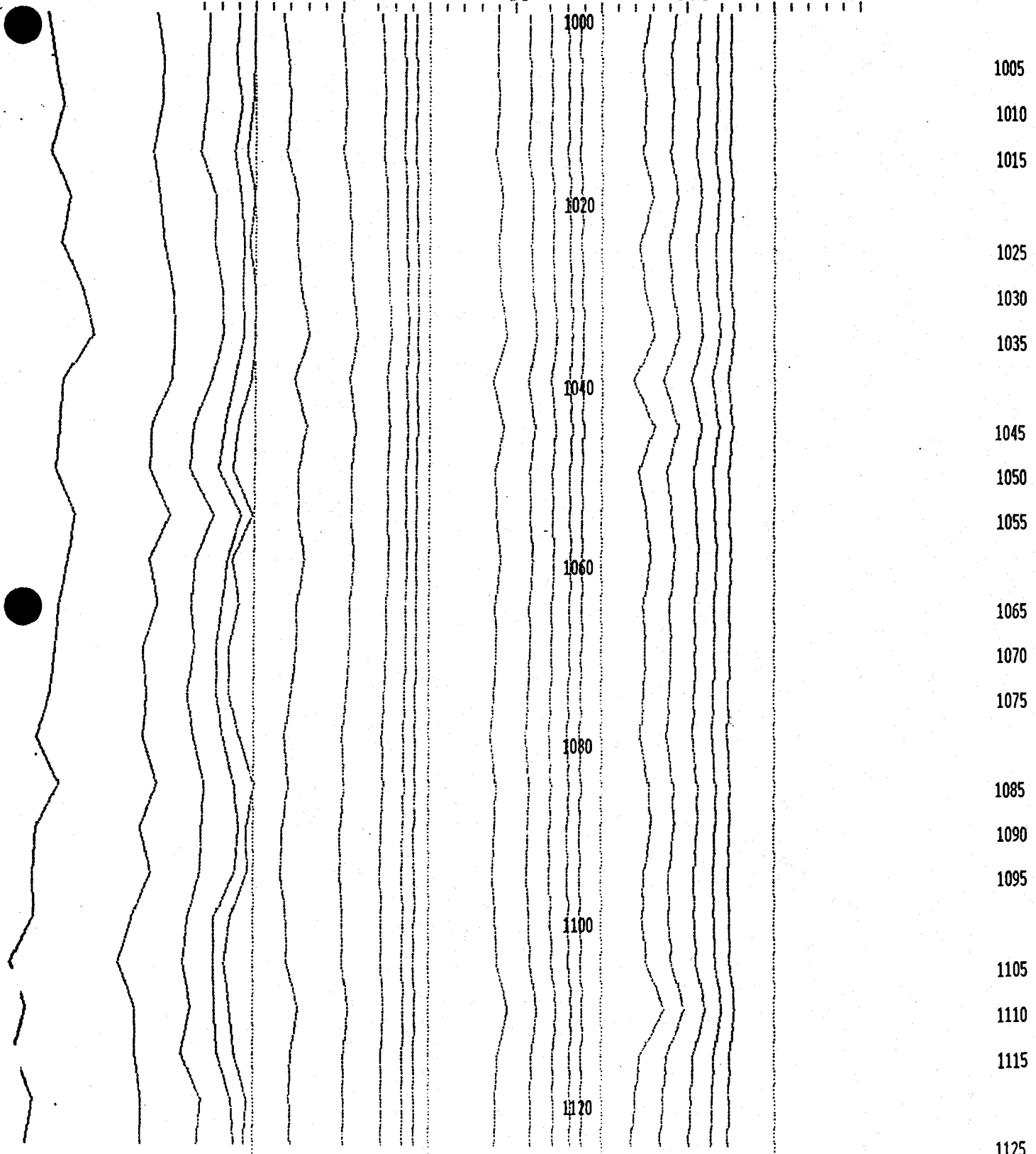
1xDBZ/200us nV/m²; TXC=22

5

15

150

500



1005
1010
1015
1025
1030
1035
1045
1050
1055
1065
1070
1075
1085
1090
1095
1105
1110
1115
1125

16-20

11-15

6-10

1-5

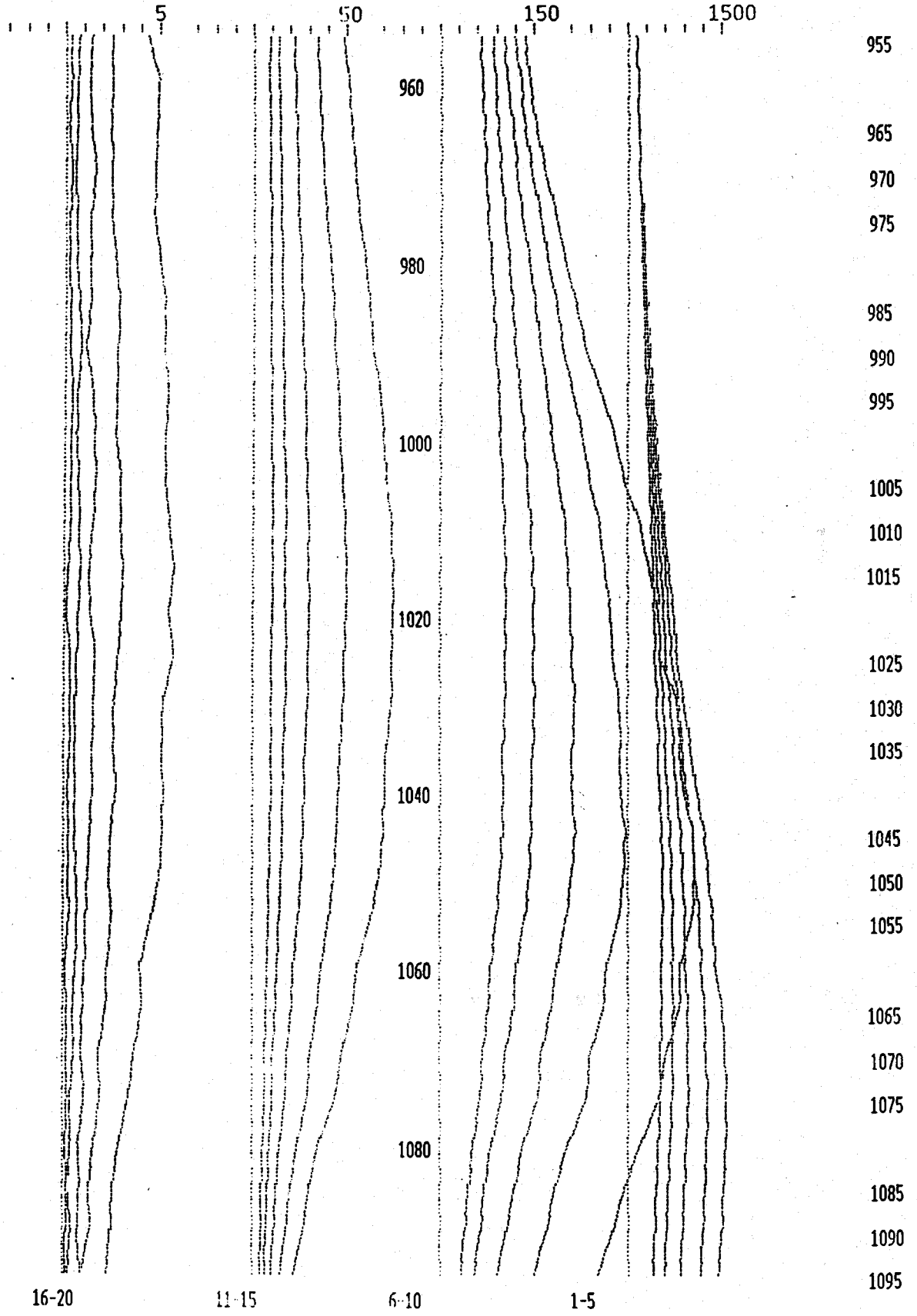
Line 28N

Z component

Geonics EN37

File L-28NMZ.REC

LXDBX/480us nV/m²; TXC=18.2



16-20

11-15

6-10

1-5

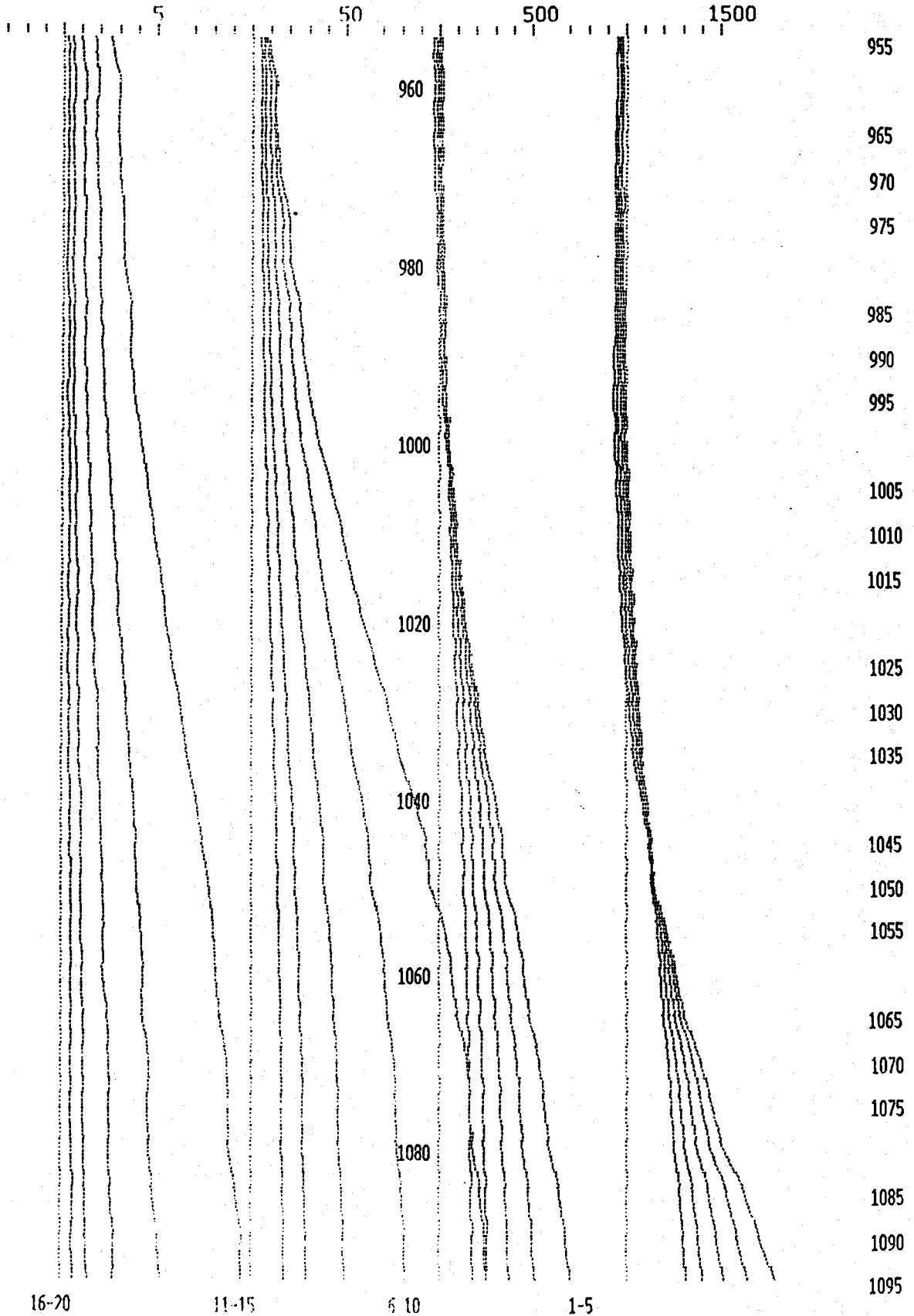
Line 28N

X component

Geonics EM37

File L-28N8X.REB

1x08Z/480us nV/m²; TXC=18.2



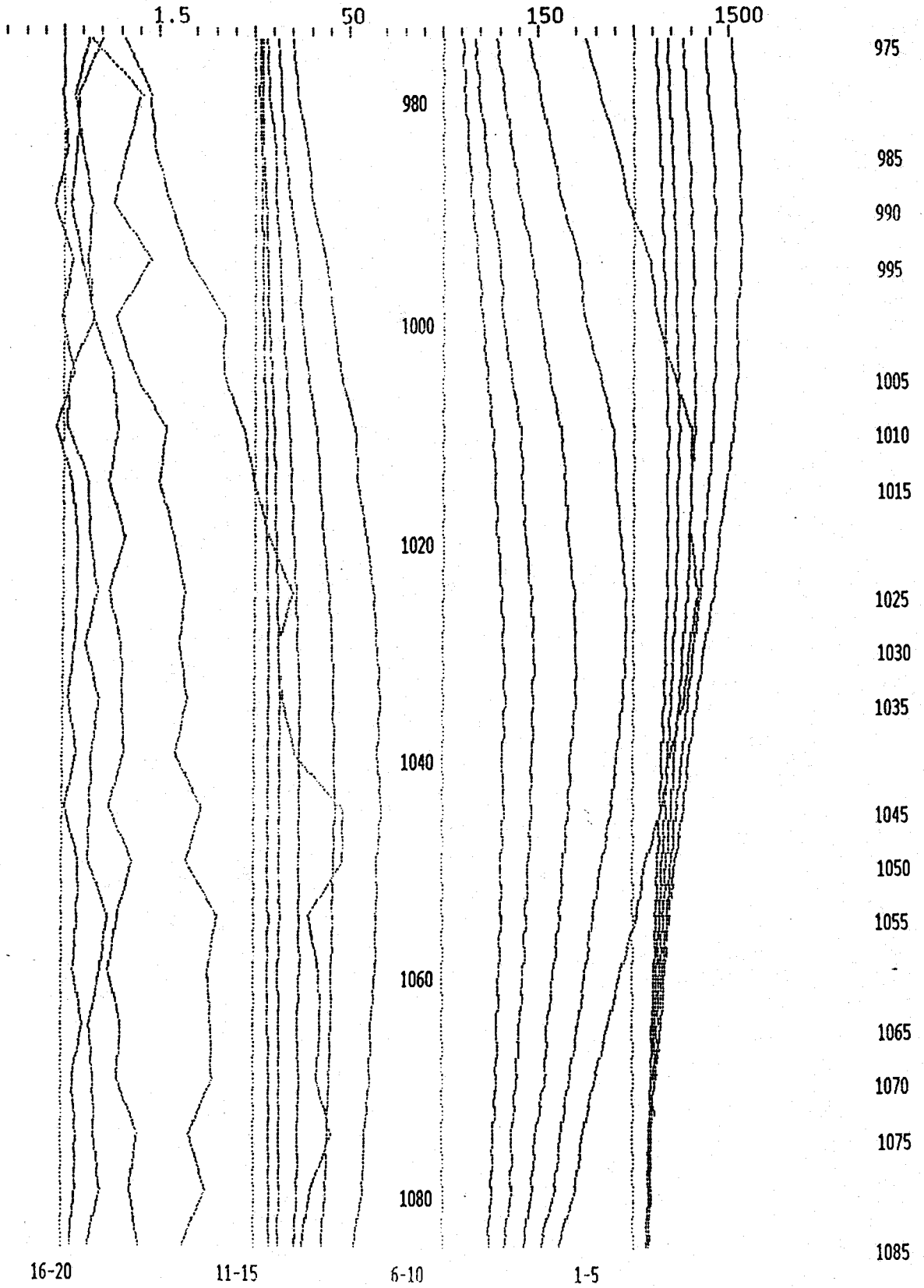
Line 28N

Z component

Geonics EM37

File L-28NBZ.RED

1xDBX/380us nV/m²; TXC=17



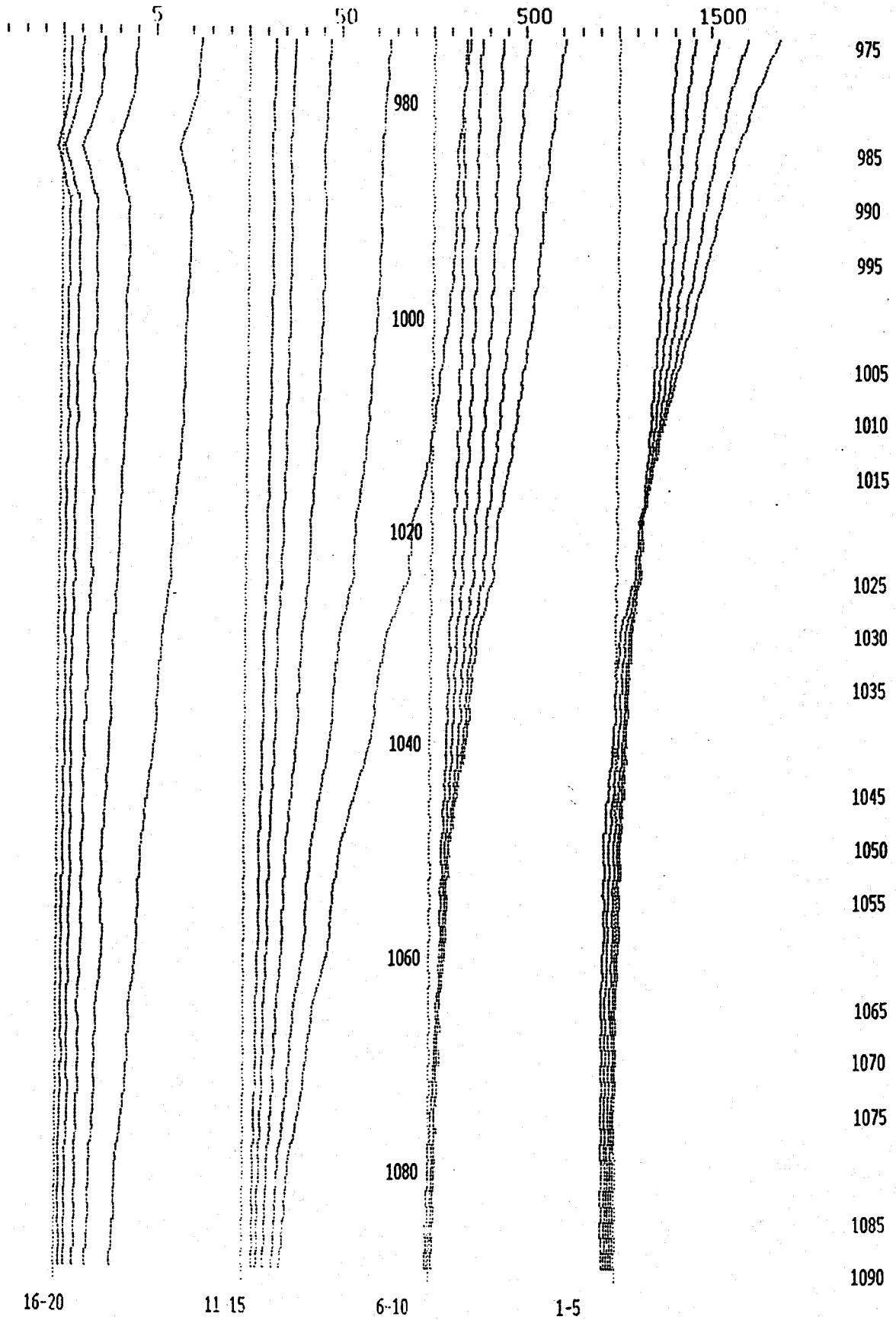
ine 28NC

X component

Geonics EN37

File L-28NCX.REX

1x087/380us nV/m²; TXC=17



Line 28NC

Geonics EM37

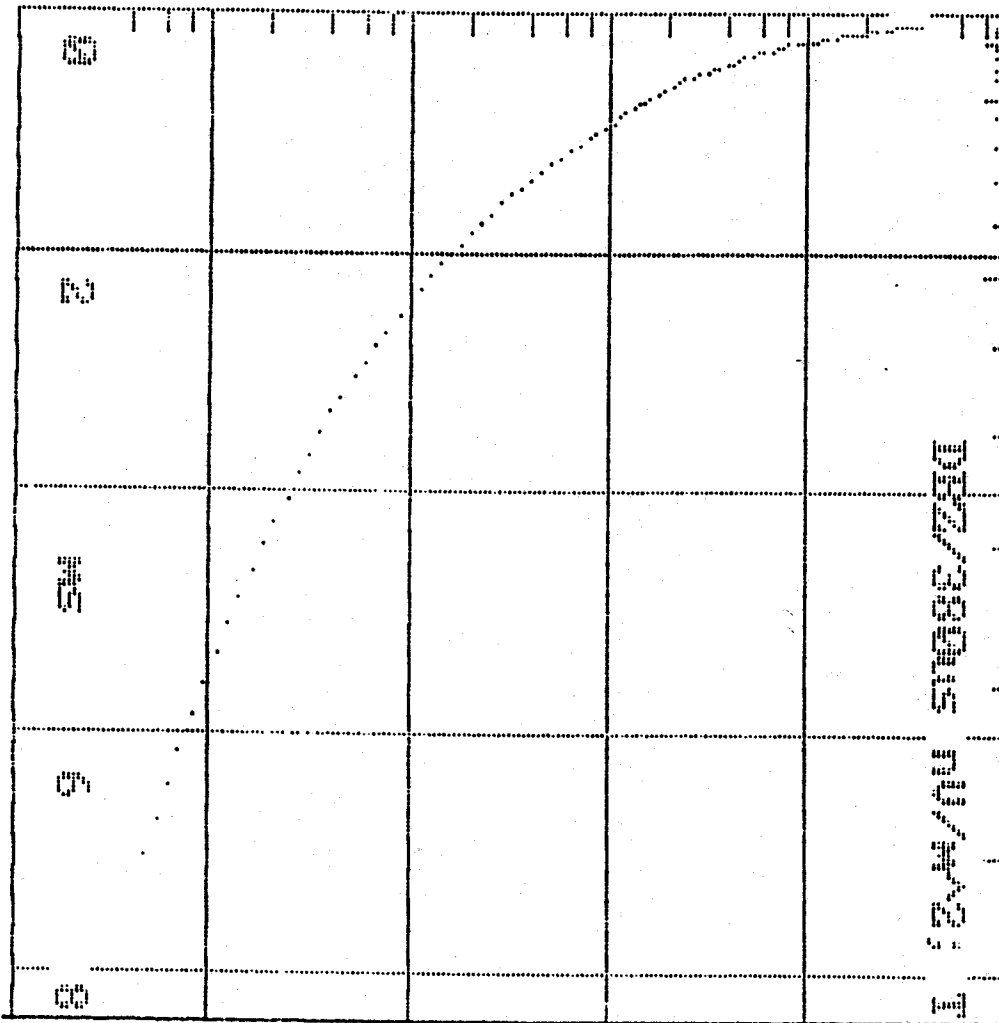
File L-28NCZ.REO

Z component

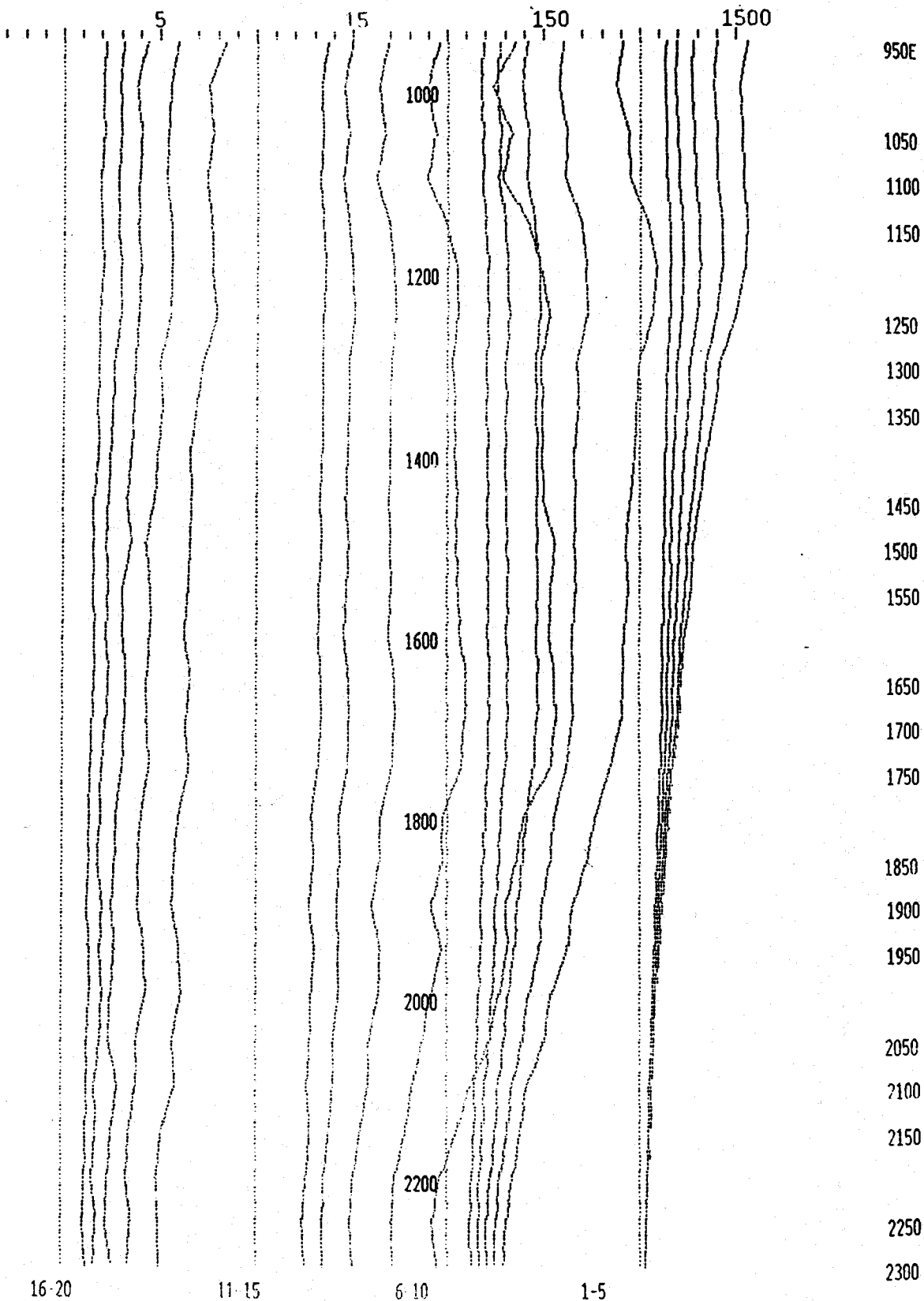
Line 28NC

Z component

0
10
20
30



1x08X/485ms nV/m²: IXC=17



16-20

11-15

6-10

1-5

950E
1050
1100
1150
1250
1300
1350
1450
1500
1550
1650
1700
1750
1850
1900
1950
2050
2100
2150
2250
2300

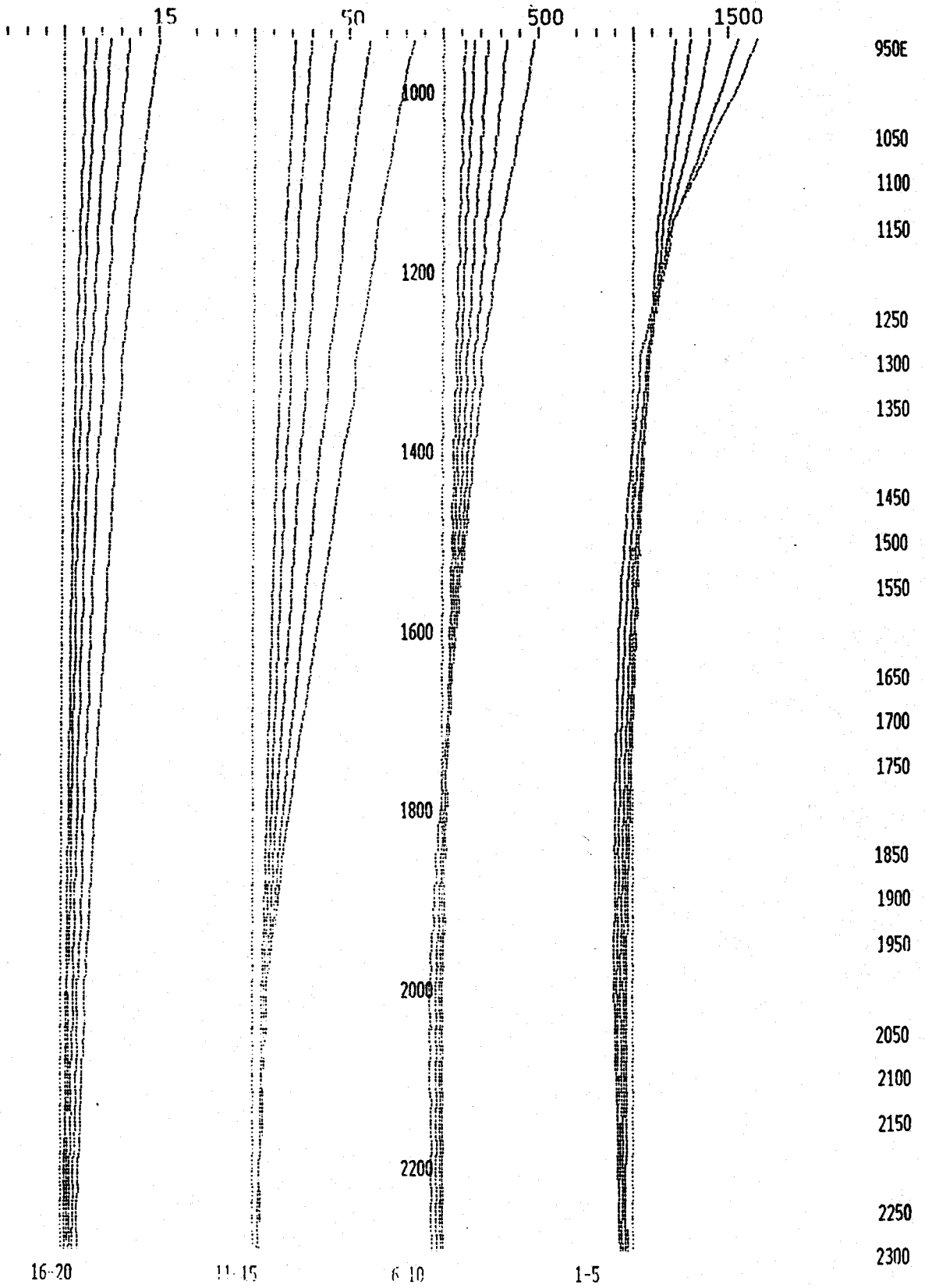
Line 50NA

X component

Geonics EM37

File L-50NAX.RED

1xDBZ/485u; nV/m²; TXC=17



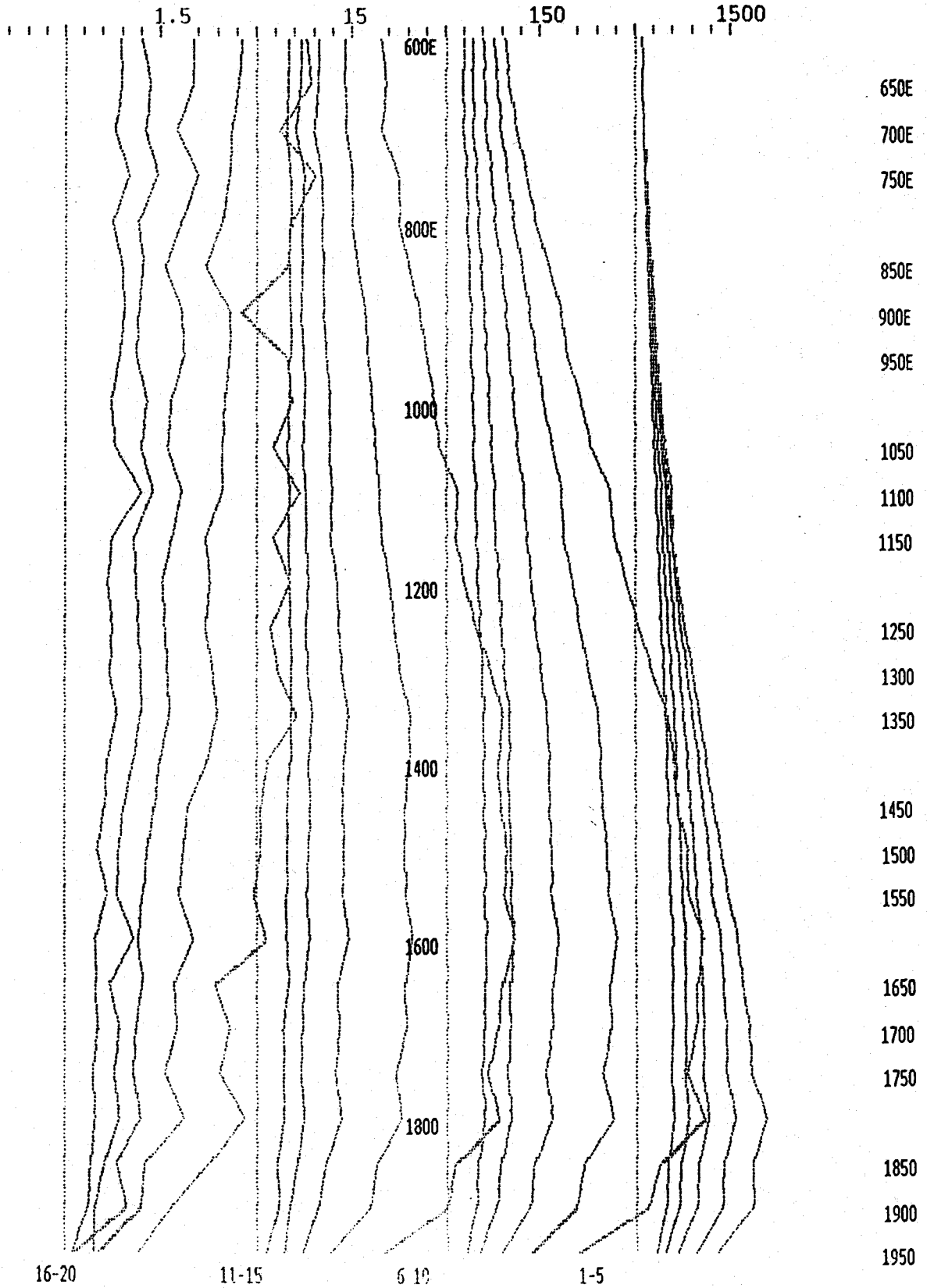
Line 50NA

Geonics EM37

File L-50NAZ.RED

Z component

1x08X/482us nV/m²; TXC=18



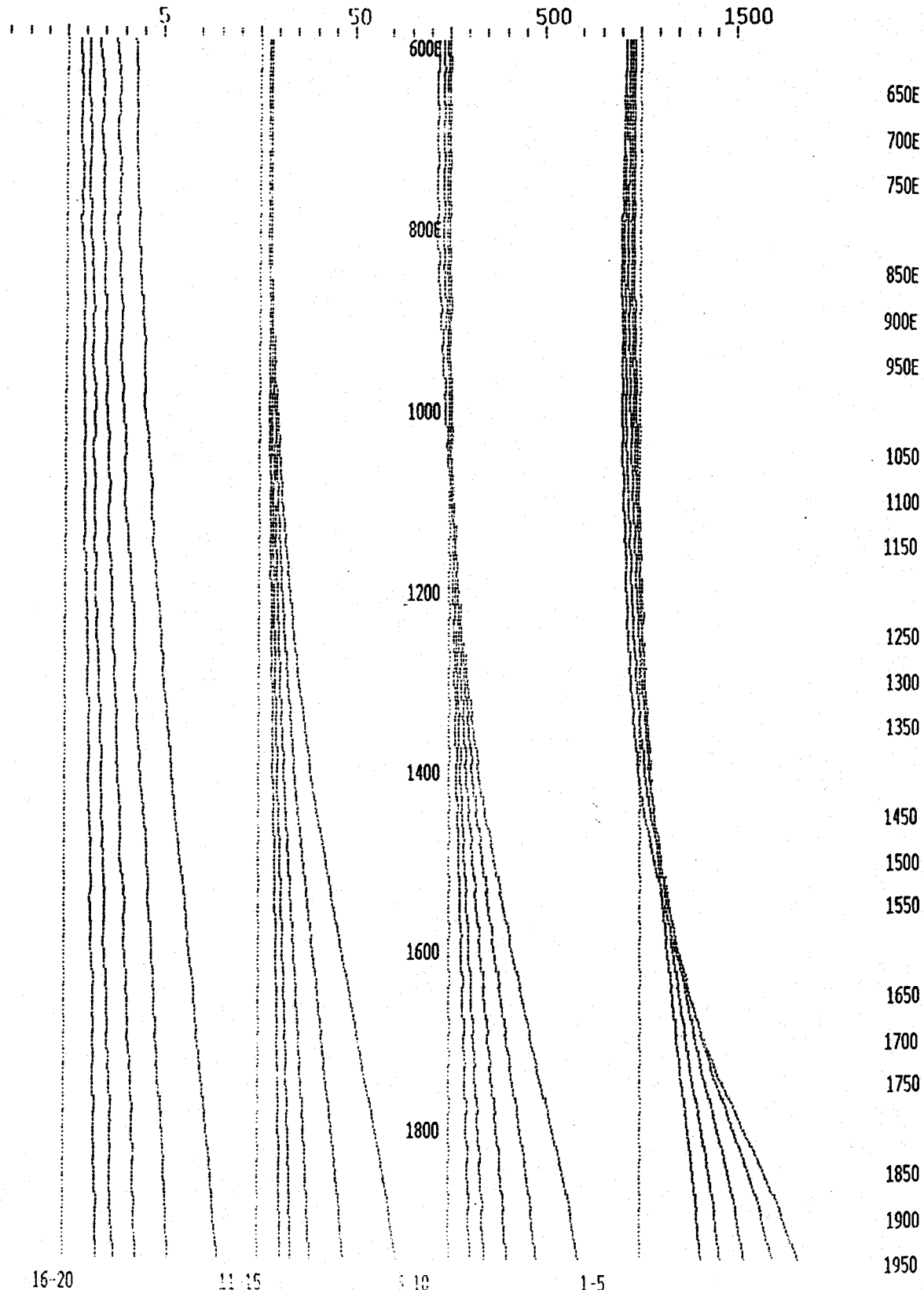
ine 50N

X component

Geonics EM37

File L-50NBX.RED

1xDBZ/482us nV/m²; TXC=18



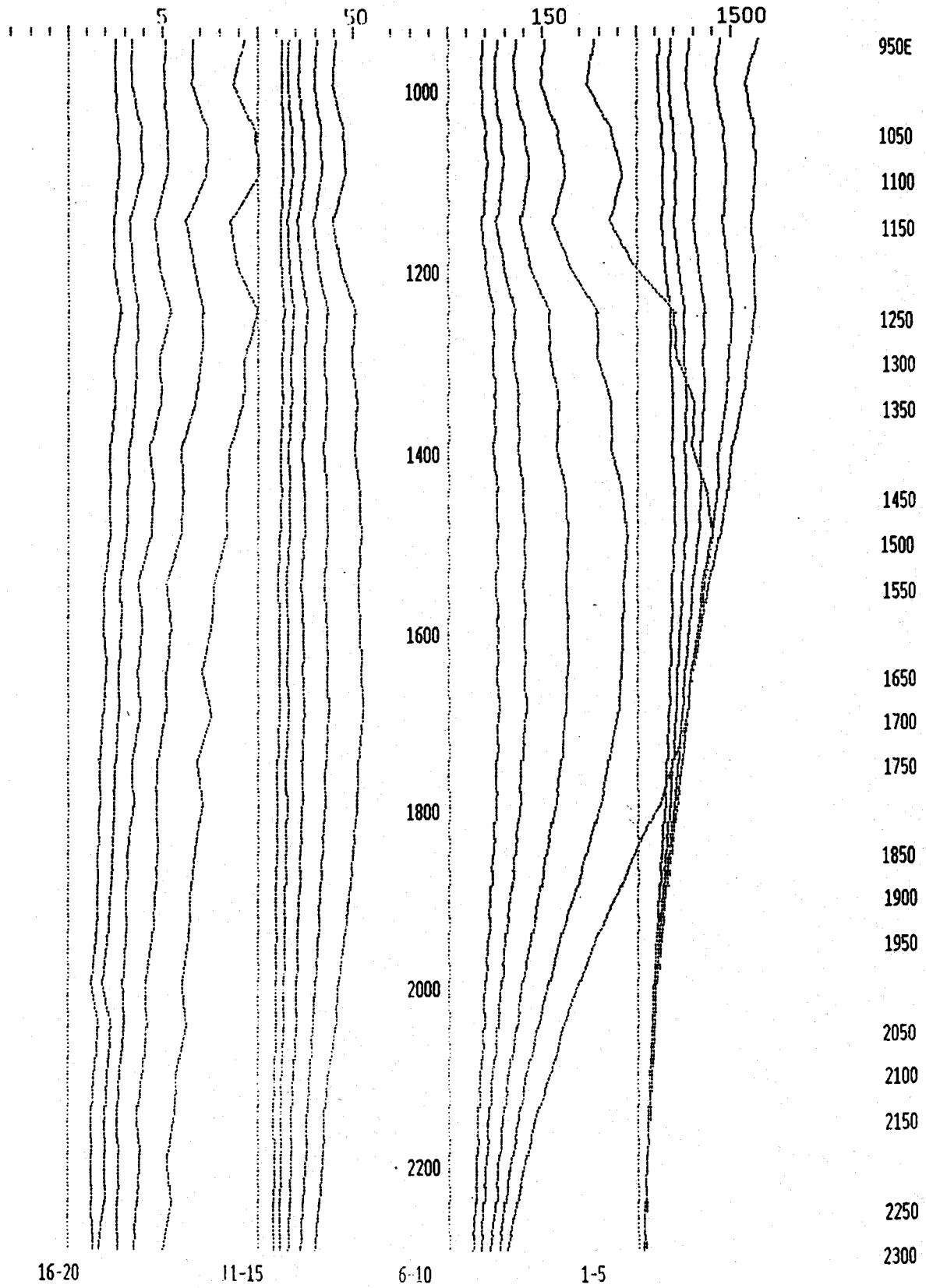
Line 50N

Z component

Geonics EM37

File L-50N8Z.REB

1xDBX/475us nV/m²; TXC=17



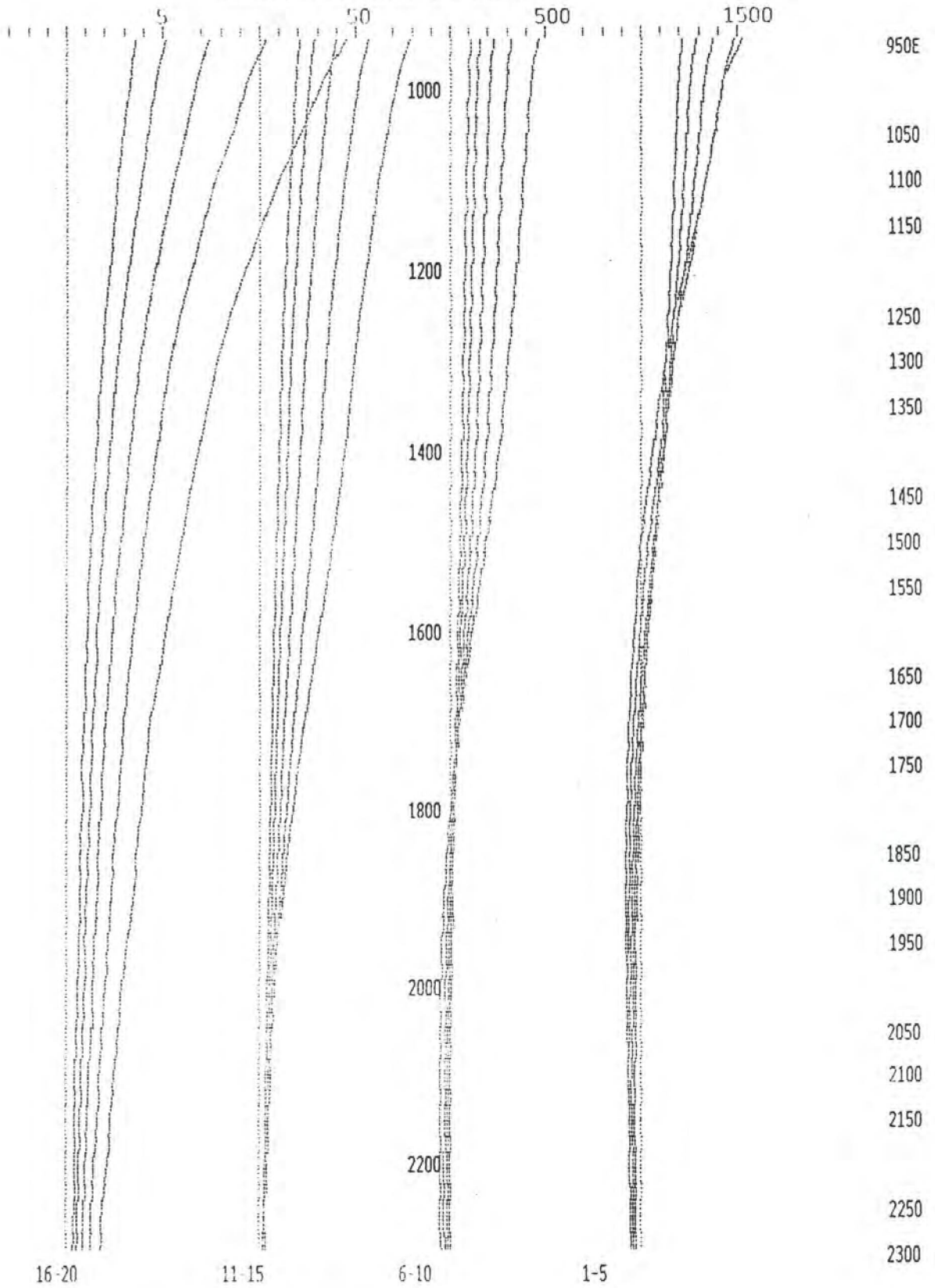
58NA

Geonics EM37

File L-58NAX.RED

X component

1x08Z/475us nV/m²: TXC-17



16-20

11-15

6-10

1-5

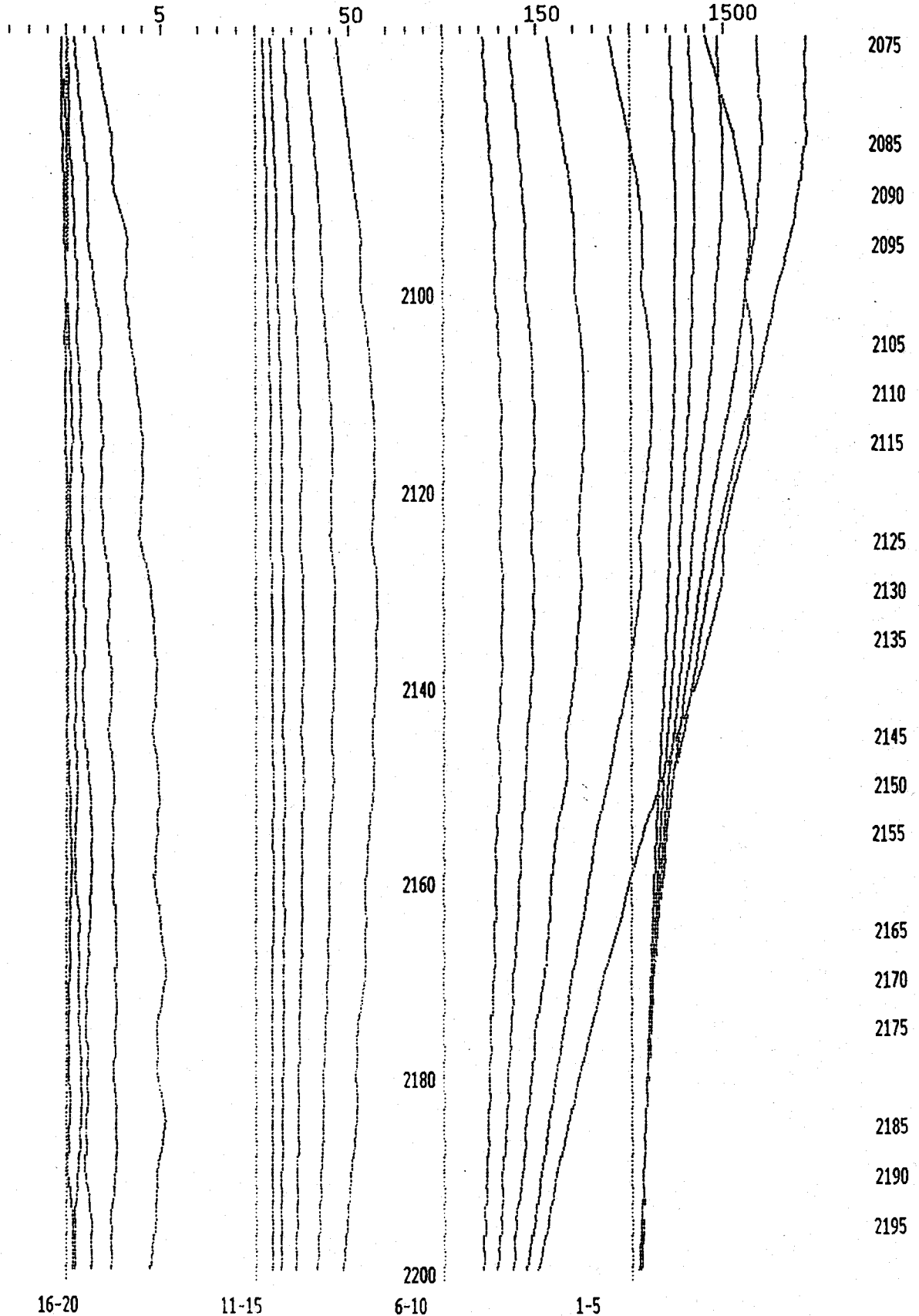
56NA

Geonics EM37

File L-58NAZ.RED

Z component

1x08X/473us nV/m²; rXC=16



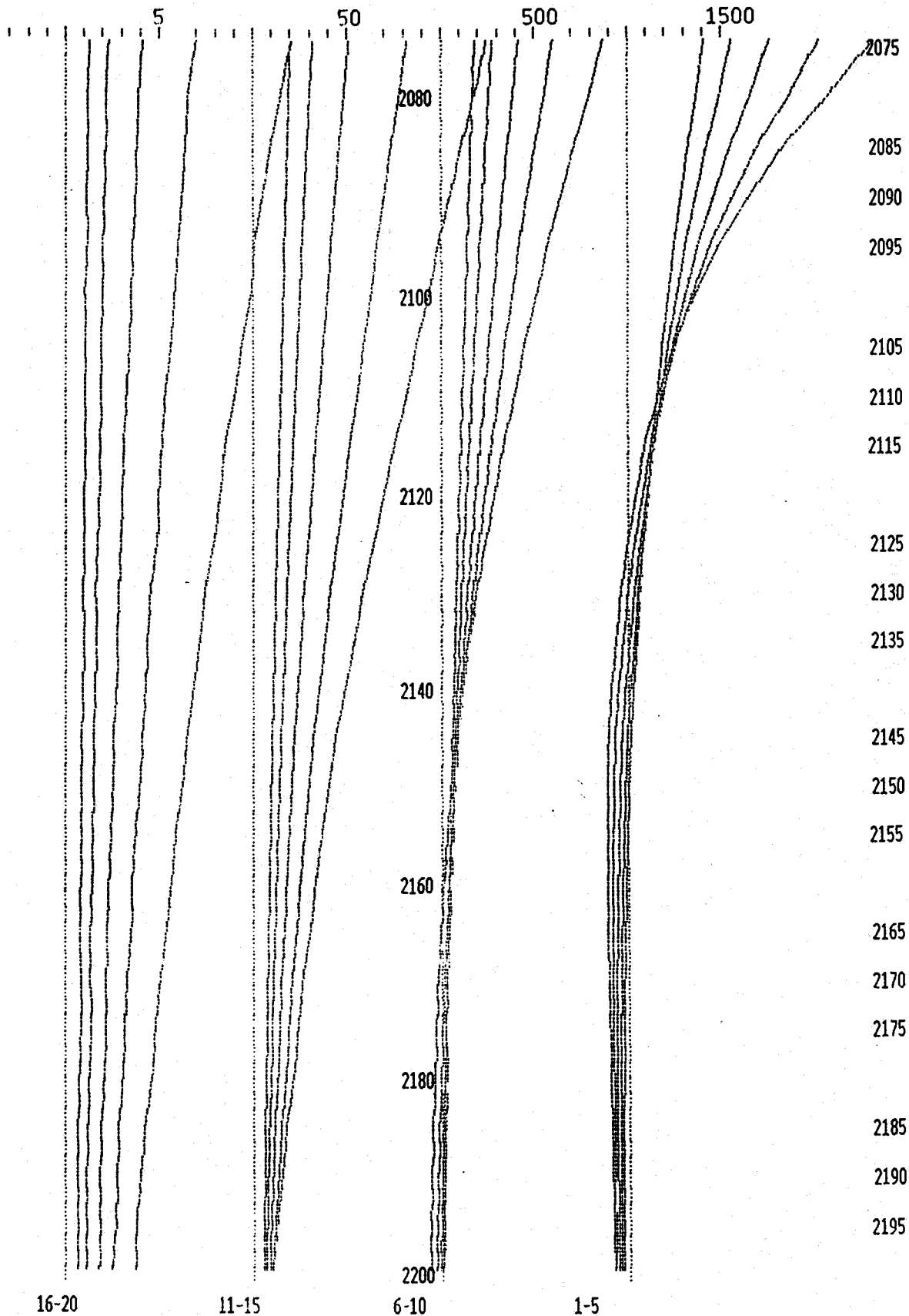
Line 68NA

Geonics EN37

File L-68NAX.RED

X component

1xDRZ/473us nV/m²; TXC=16



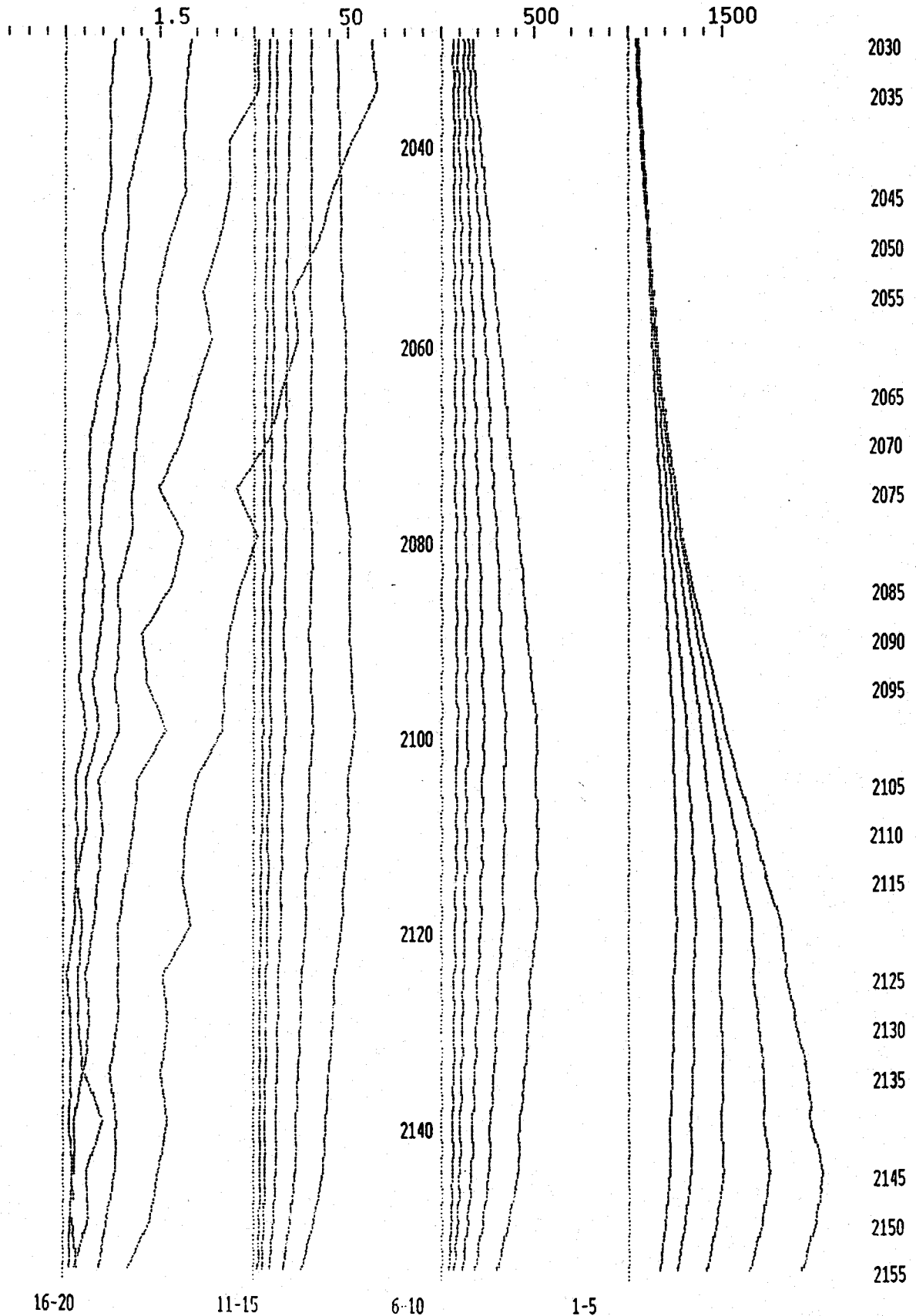
Line 68NA

Geonics EM37

File L-68NAZ.RED

Z component

1xDBX/450us nV/m²; TXC=20.2



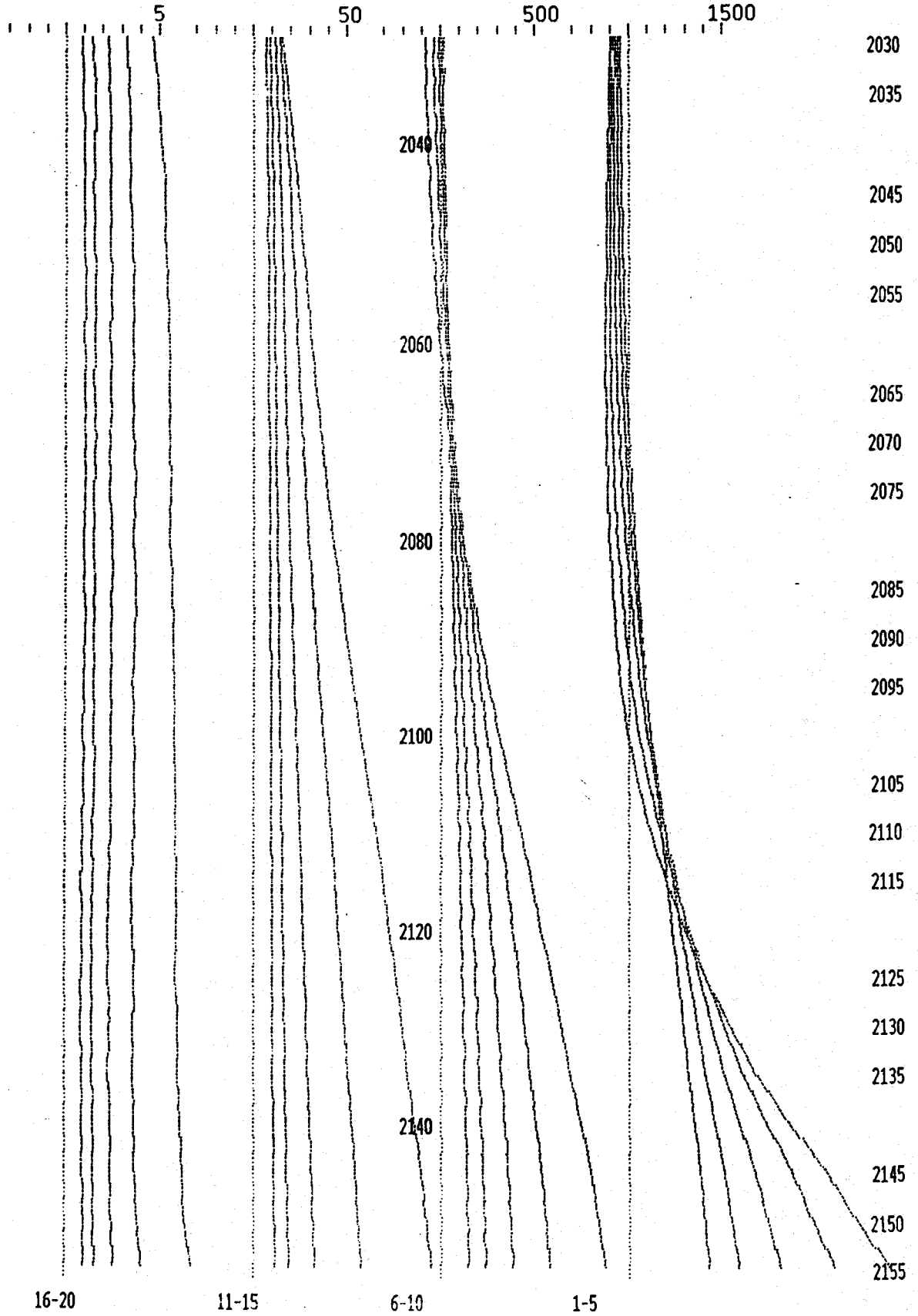
Line 68NB

Geonics EM37

File L-68NBX.REX

X component

1x08Z/450us nV/m^2; TXC=20.2



Line 68NB

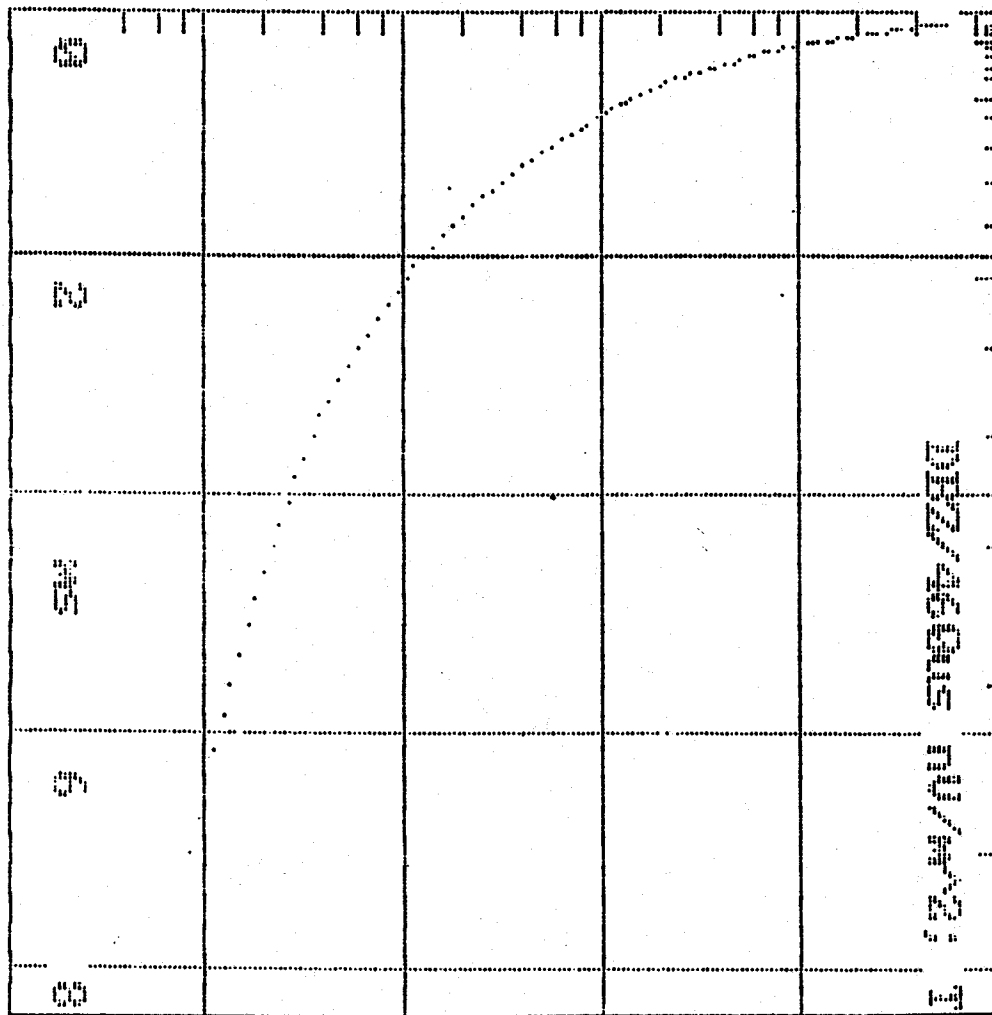
Geonics EM37

File L-68NBZ.RED

Z component

Line 68NBS

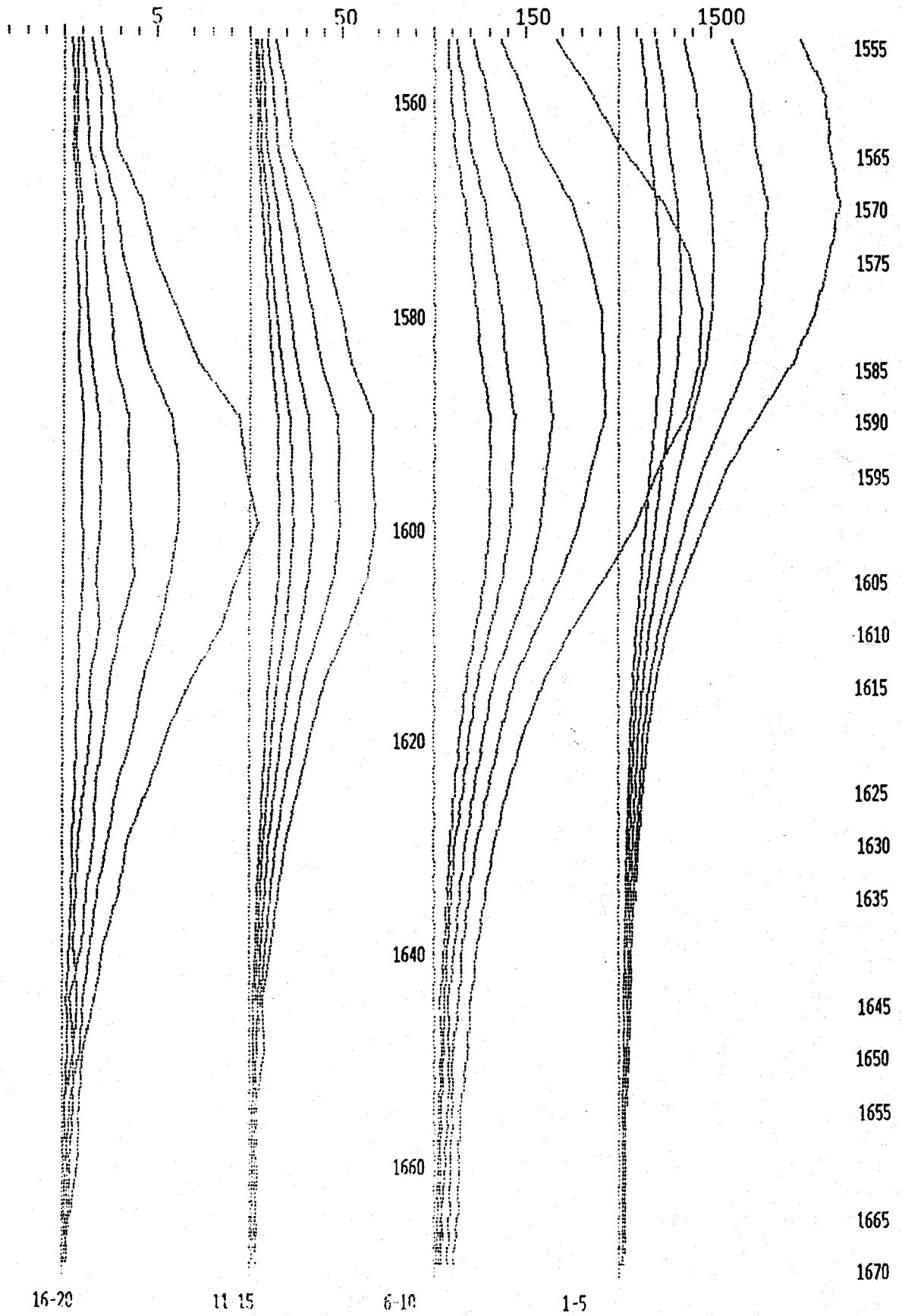
Z component



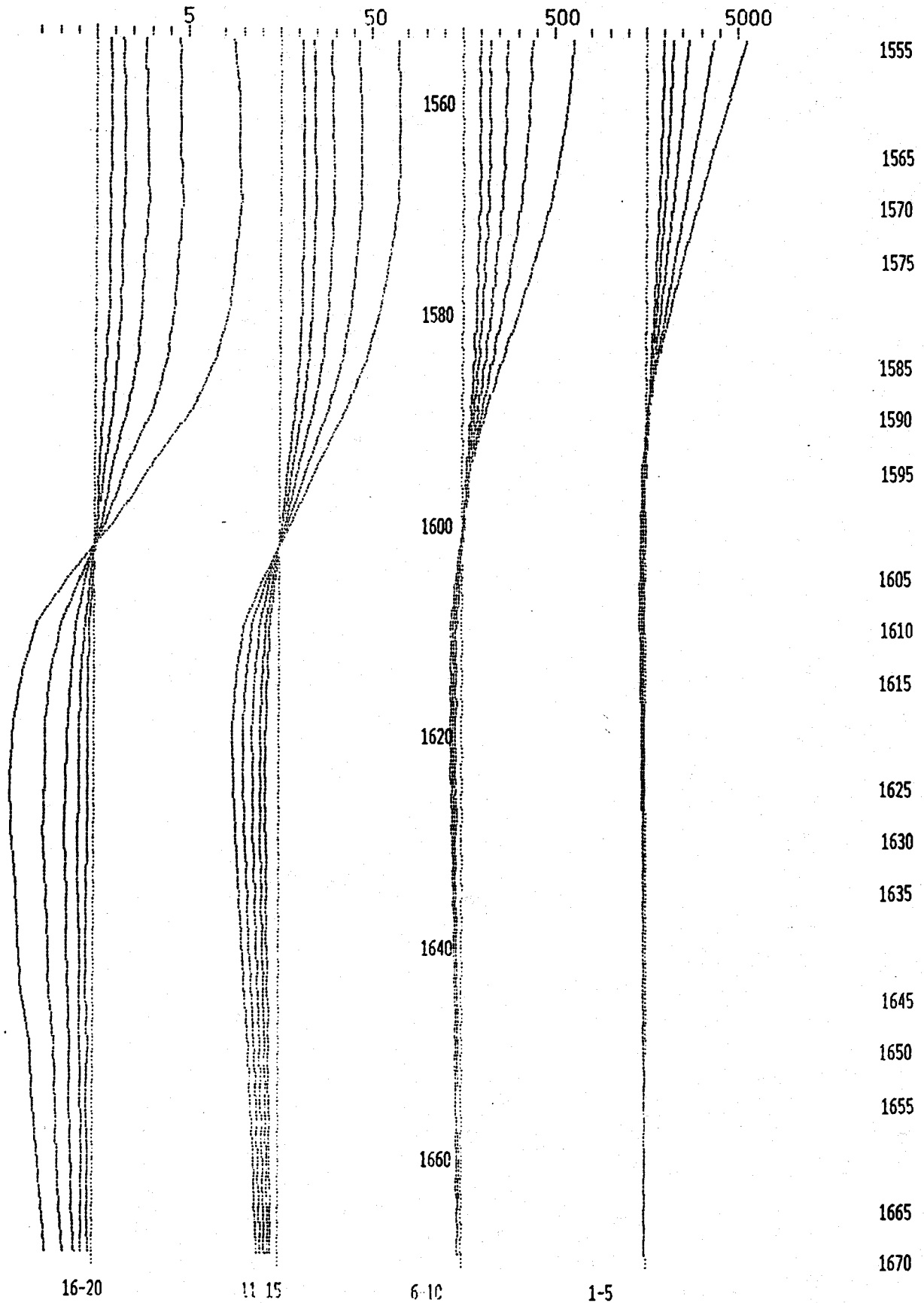
2198

202/46015 10/1/12

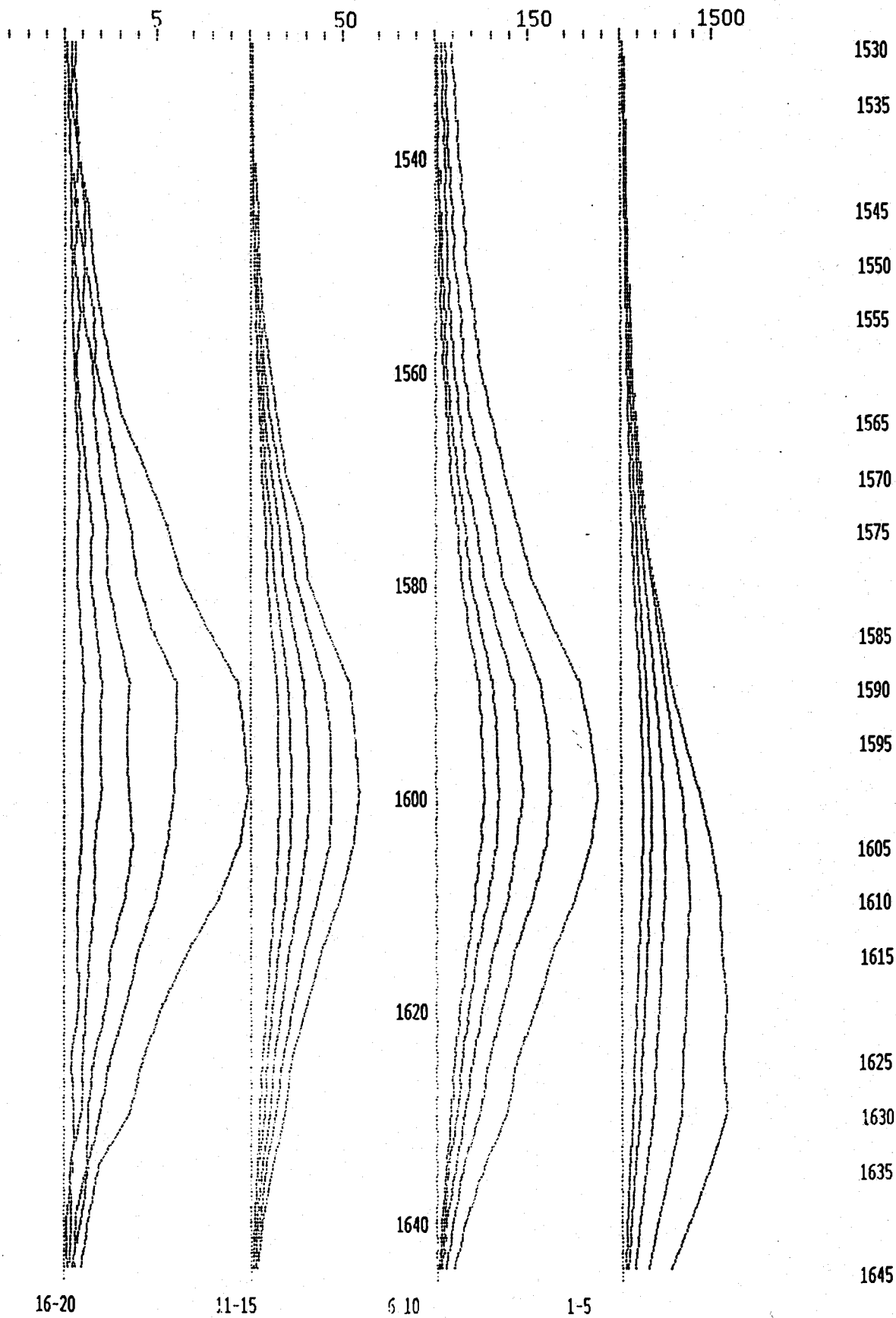
1xDBX/220 μ s nV/m²; TXC=17



1x08Z/220us nV/m²; TXC=17



1x08X/220us nV/m²; TXC=16



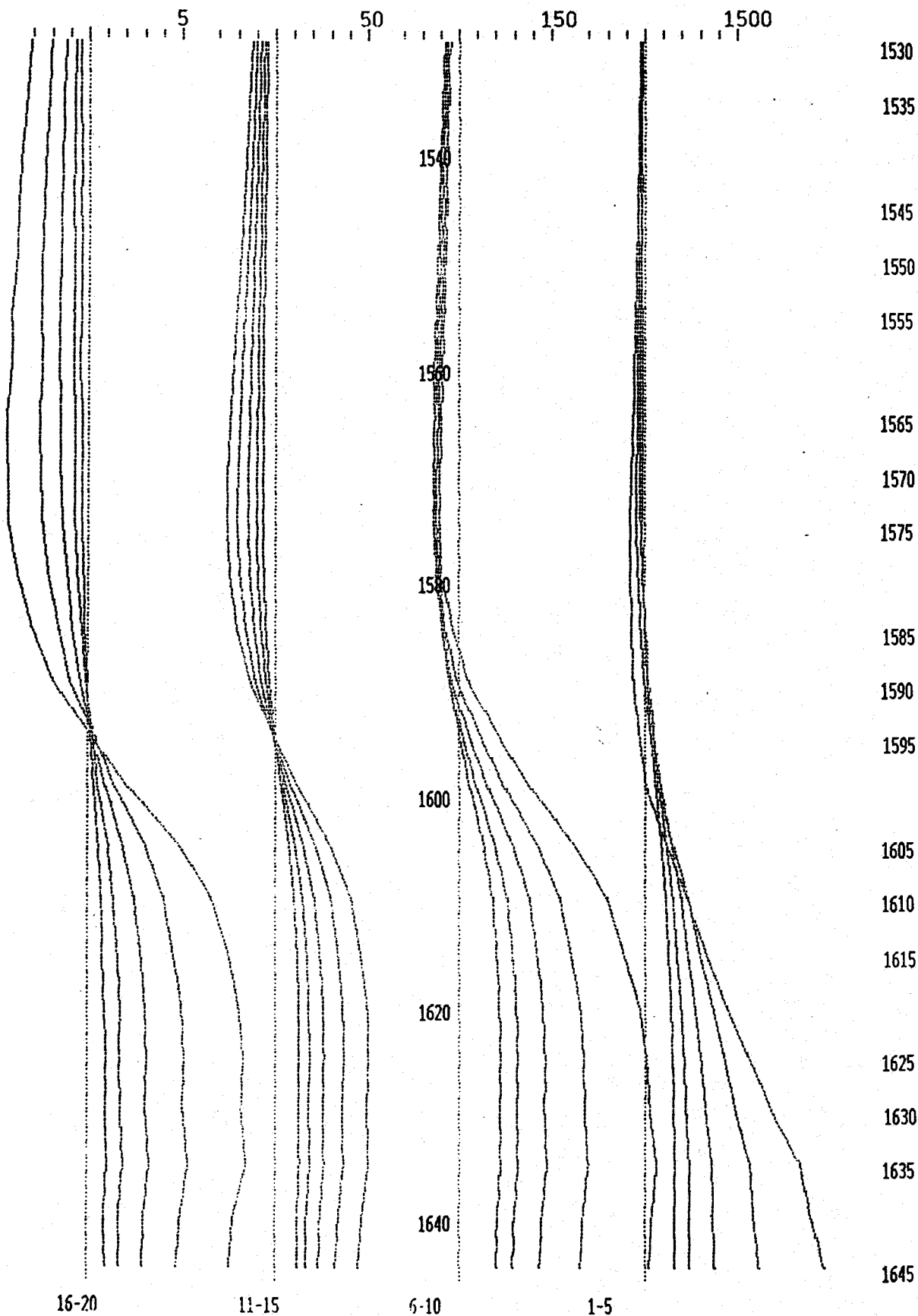
Line 92NB

Geonics EM37

File L-92NBX.REX

X component

1xDBZ/220us nV/m^2; TXC=16



Line 92NB

Geonics EM37

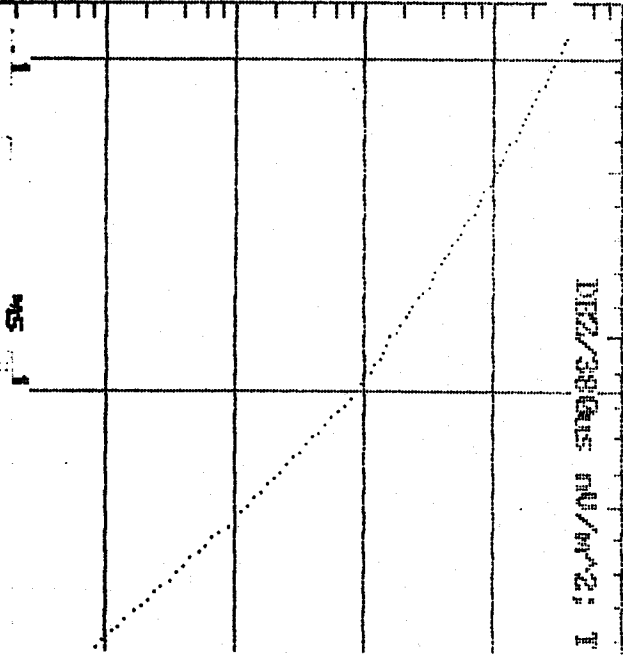
File L-92NBZ.RED

Z component

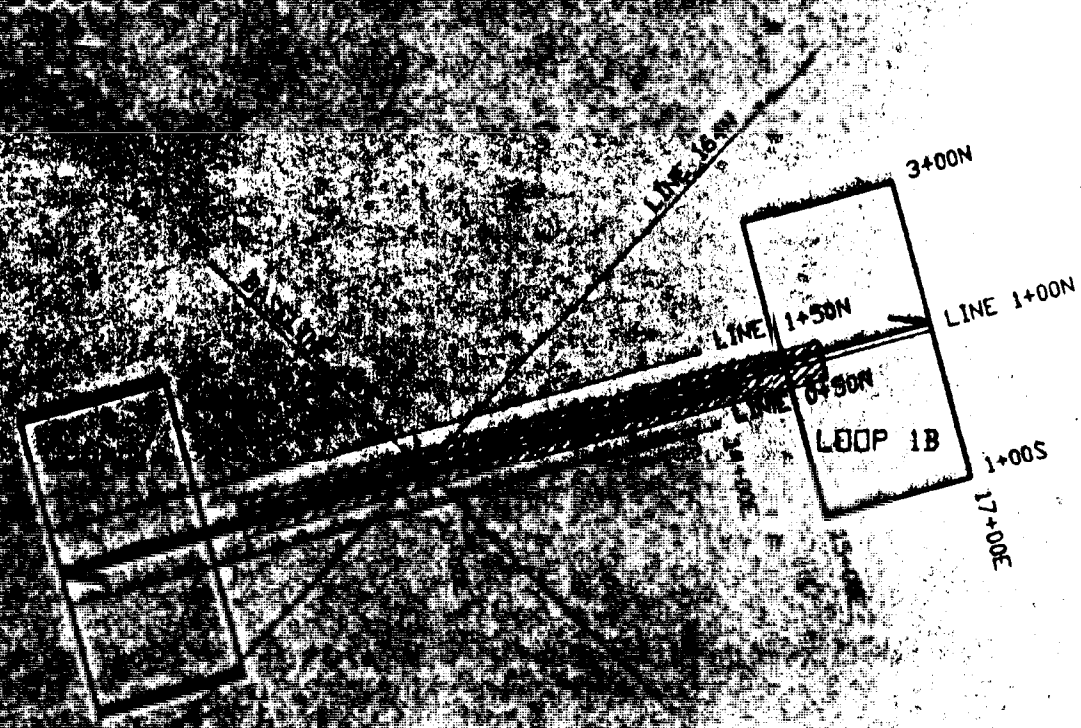
28NC

Z component

9402E

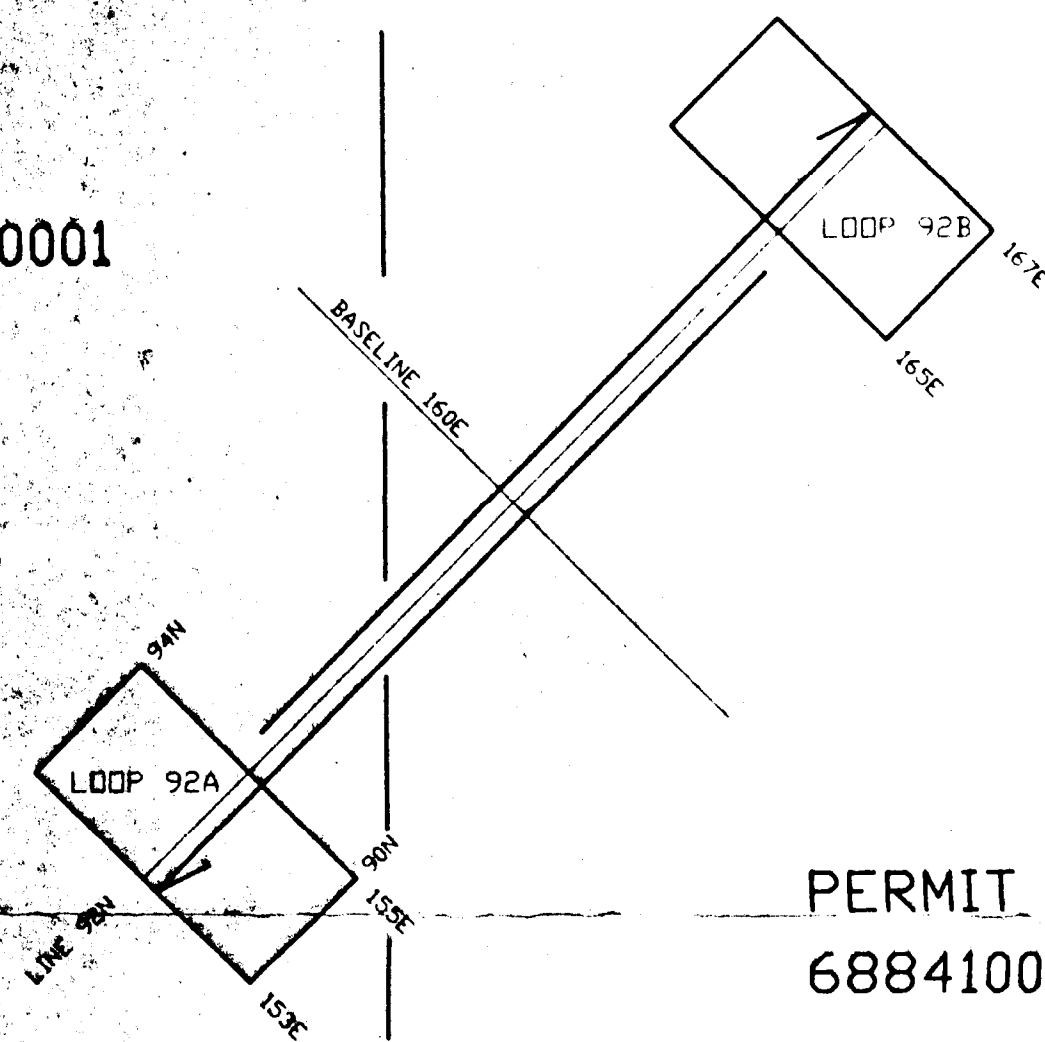


PERMIT
6884100001



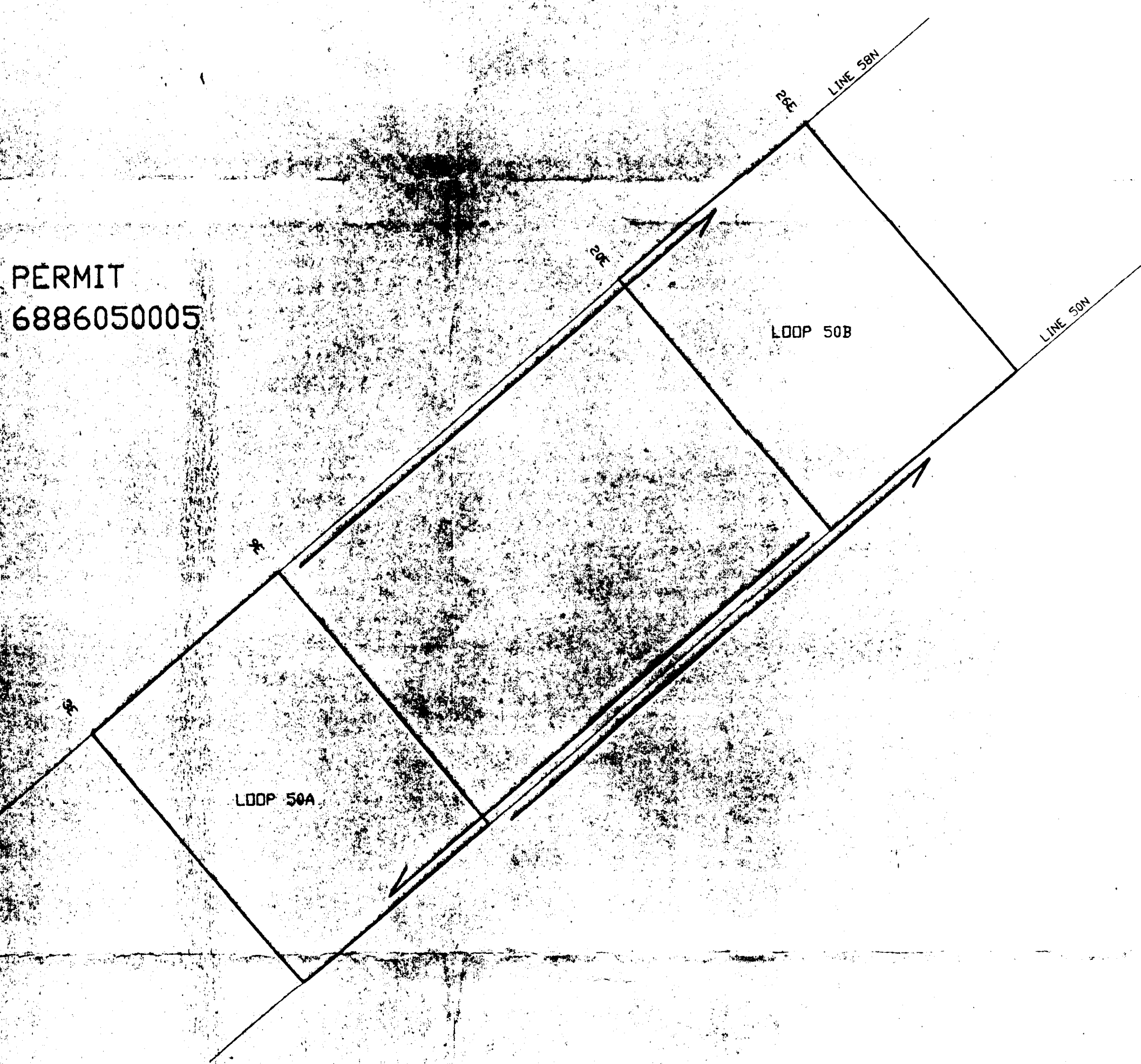
Moving Loop Survey
Transmitter Loop Sizes: 100 m x 100 m
Receiver Offsets: 100 m and 200 m to the East
of Transmitter Loop Center

PERMIT
6884120001

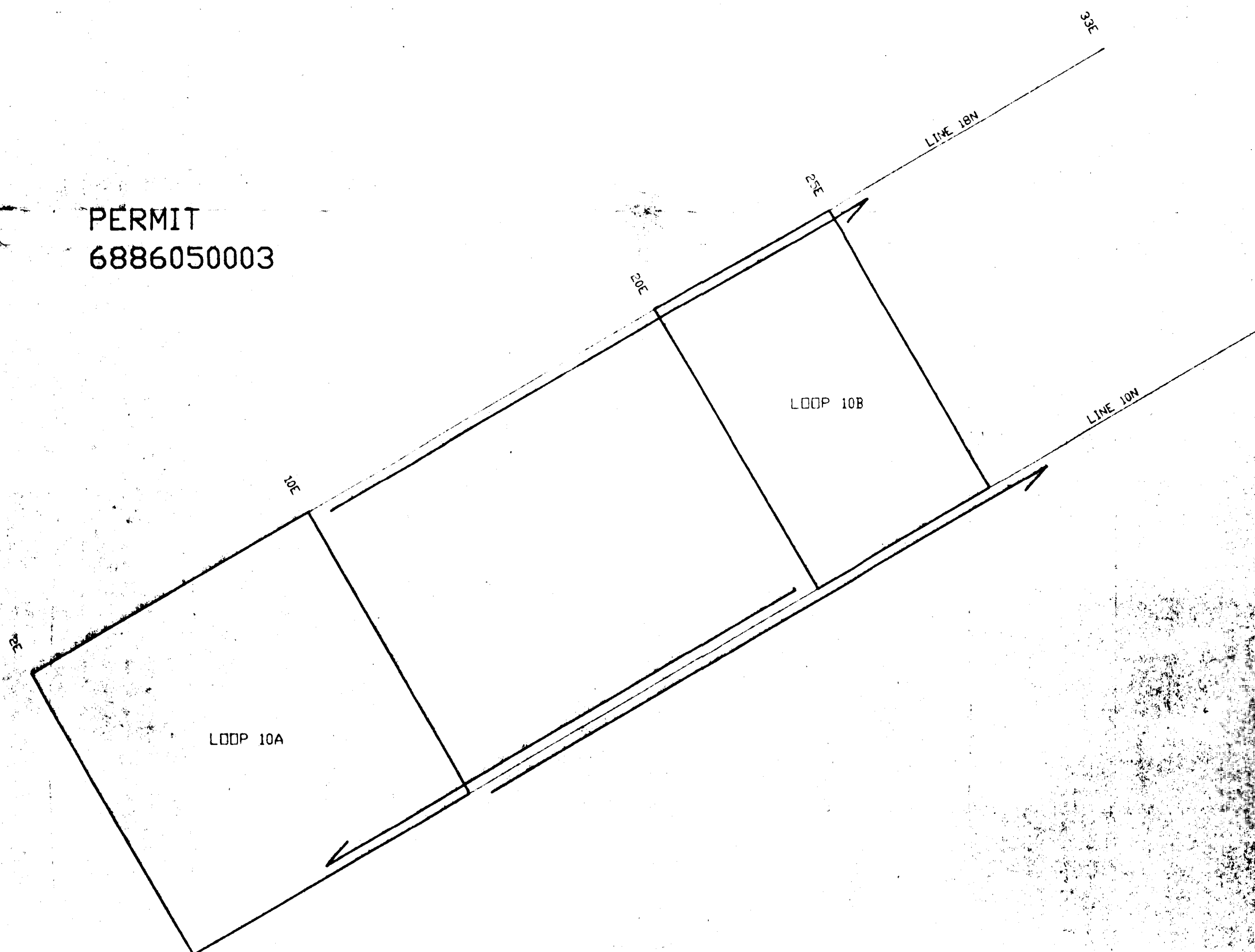


PERMIT
6884100002

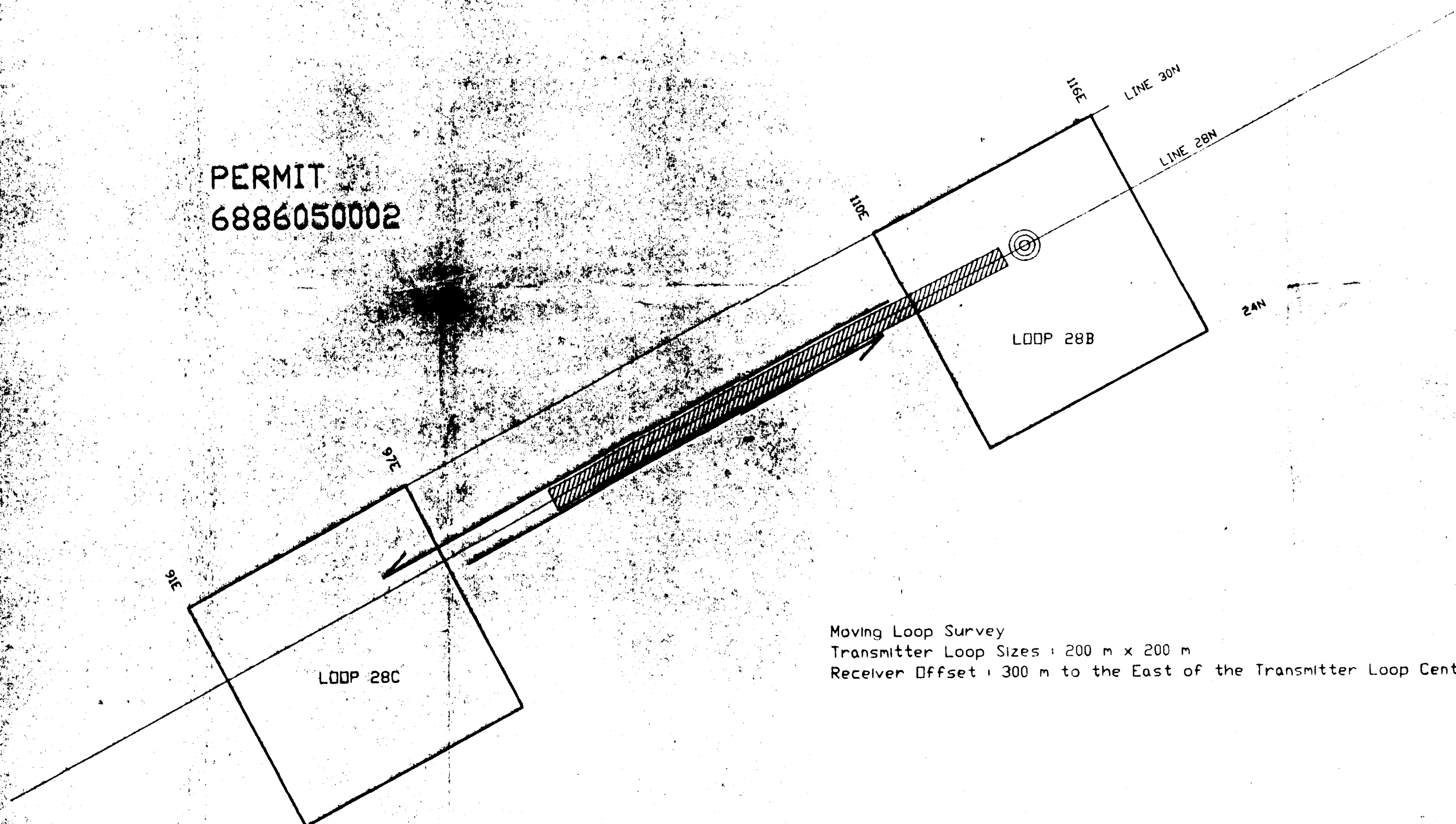
PERMIT
6886050005



PERMIT
6886050003

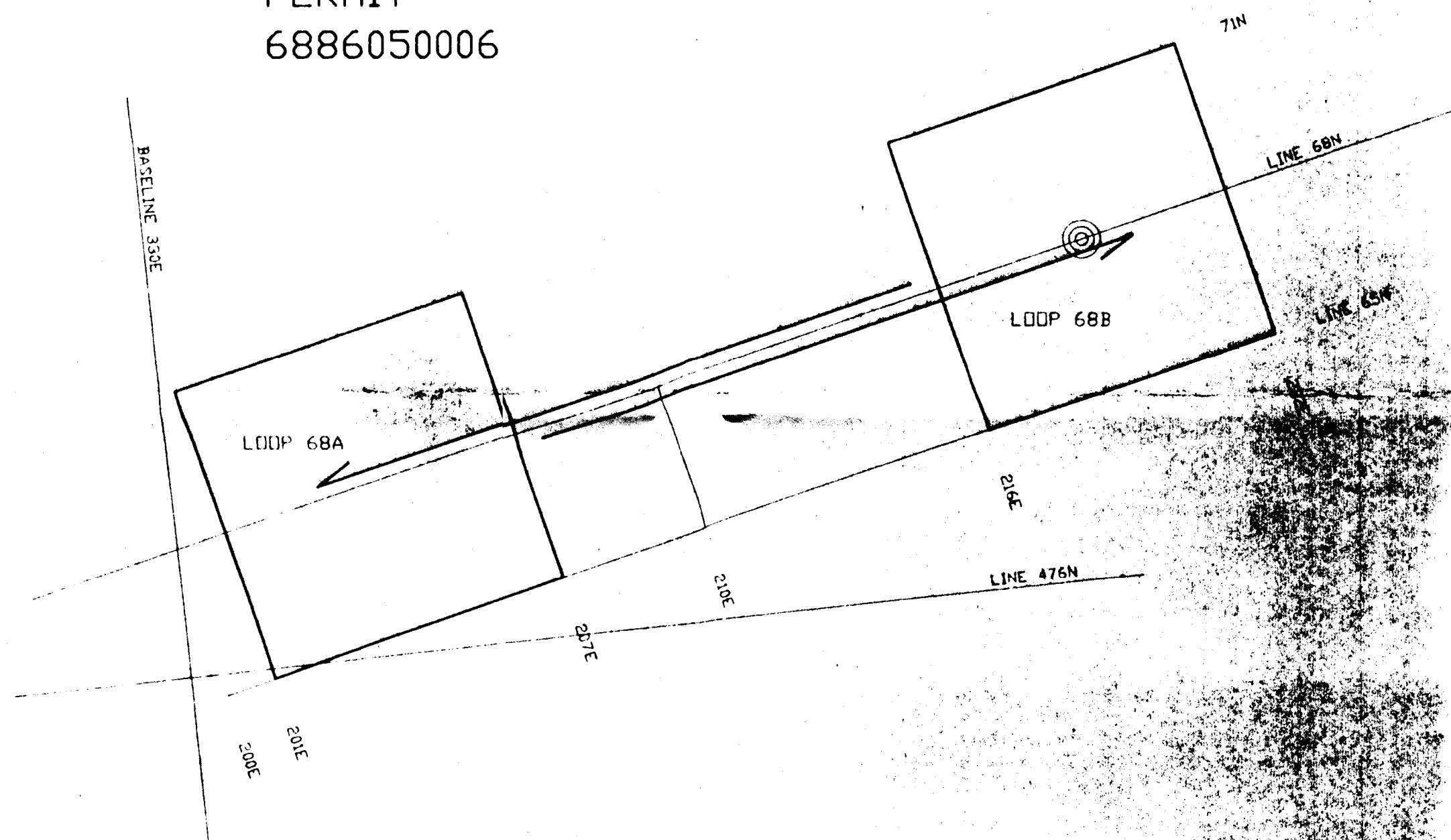


PERMIT
6886050002

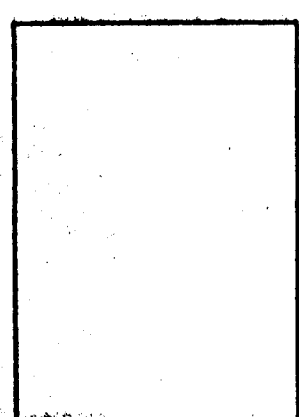


Moving Loop Survey
Transmitter Loop Sizes: 200 m x 200 m
Receiver Offset: 300 m to the East of the Transmitter Loop Center

PERMIT
6886050006



LEGEND



Fixed Transmitter Loop Location and Profile Coverage



Moving Loop Profile - Receiver Locations



Receiver Location for Center Loop Sounding

No.	Date	Revision	Compiled	Drawn	Checked

Uranerz Exploration and Mining Limited
 Scalefont, Saskatchewan Canada
 Maybelle River Project 71-42
 1989
 1989 SURVEILLANCE SURVEYS BY SVX LTD.
 Compiled: PR Date: 03/23/89 Map No.
 Drawn: PR Date: 03/23/89 ACB
 File No: 71-42-11