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Postboks 3021, N-7441 Trondheim

Rapportarkivet

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		Tverrfjellet		

Tittel

Comparison of data processing.

Forfatter	Dato	Bedrift
	1983	Dighem Limited Folldal Verk A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
	Hedmark	Østlandske		

Fagområde	Dokument type	Forekomster
Geofysikk	Rapport	
Råstofftype	**Emneord**	

Sammendrag

for Processing EM, Resistivity, Enhanced mag
$11 to $12.50 / km

Comparison of HEM Results and Data Presentation

System X Survey - Presentation and Processing not by Dighem Ltd.

Fig. 1 EM - Inphase Component
2 EM - Out-of-Phase Component
3 Magnetics - Total Field
4 Magnetics - Total Field Profiles

System X Survey - Presentation and Processing by Dighem Ltd.

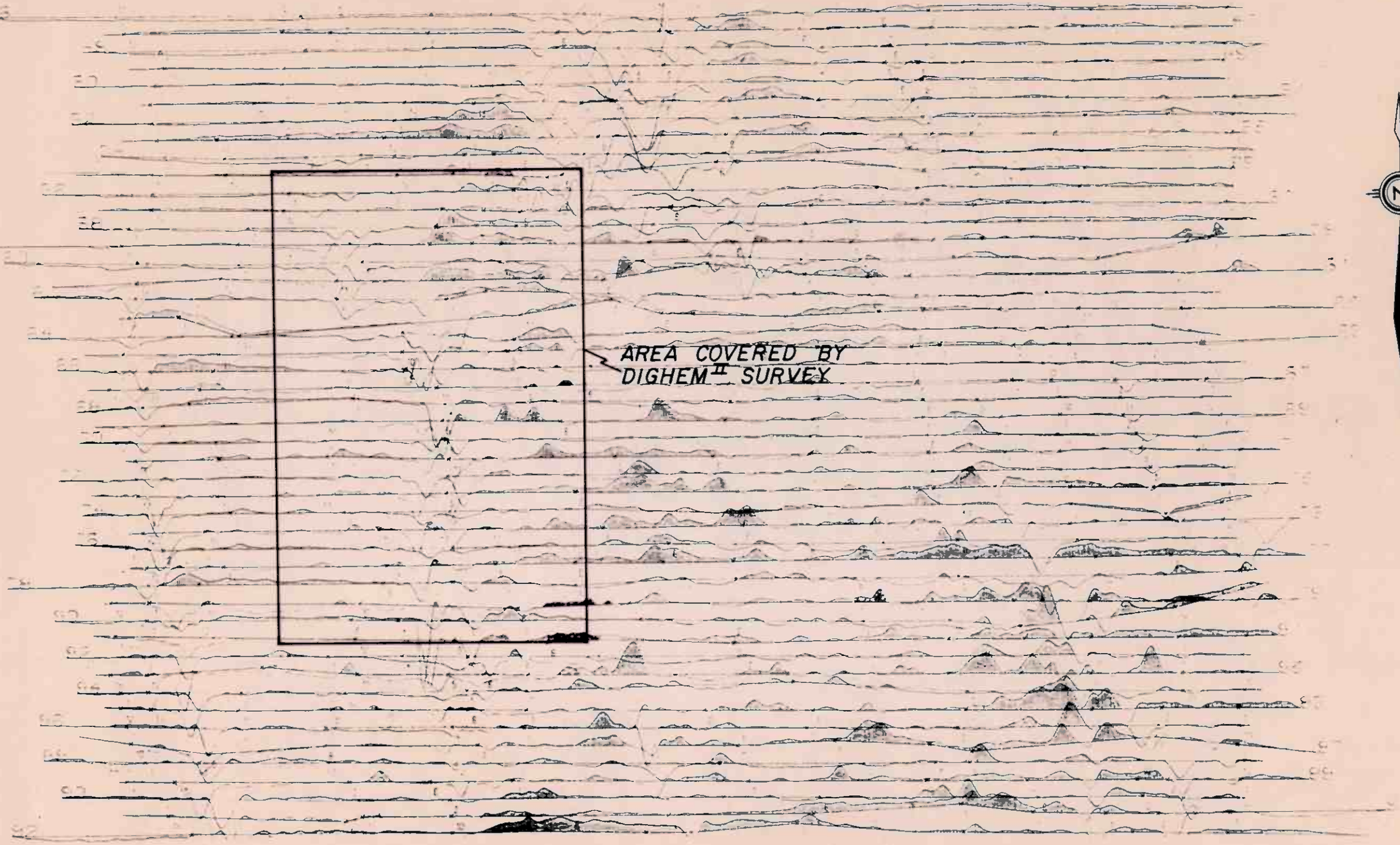
Fig. 5 Electromagnetics
6 Resistivity
7 Magnetics
8 Enhanced Magnetics

DIGHEM^{II} Survey - Presentation and Processing by Dighem Ltd.

Fig. 9 Electromagnetics
10 Resistivity
11 Filtered Total VLF-EM Field
12 Magnetics
13 Enhanced Magnetics

Profiles

Fig. 14 System X; Original Traces
15 System X; Dighem Processed, unlevelled
16 System X; Dighem Processed, levelled
17 DIGHEM^{II}; Dighem Processed



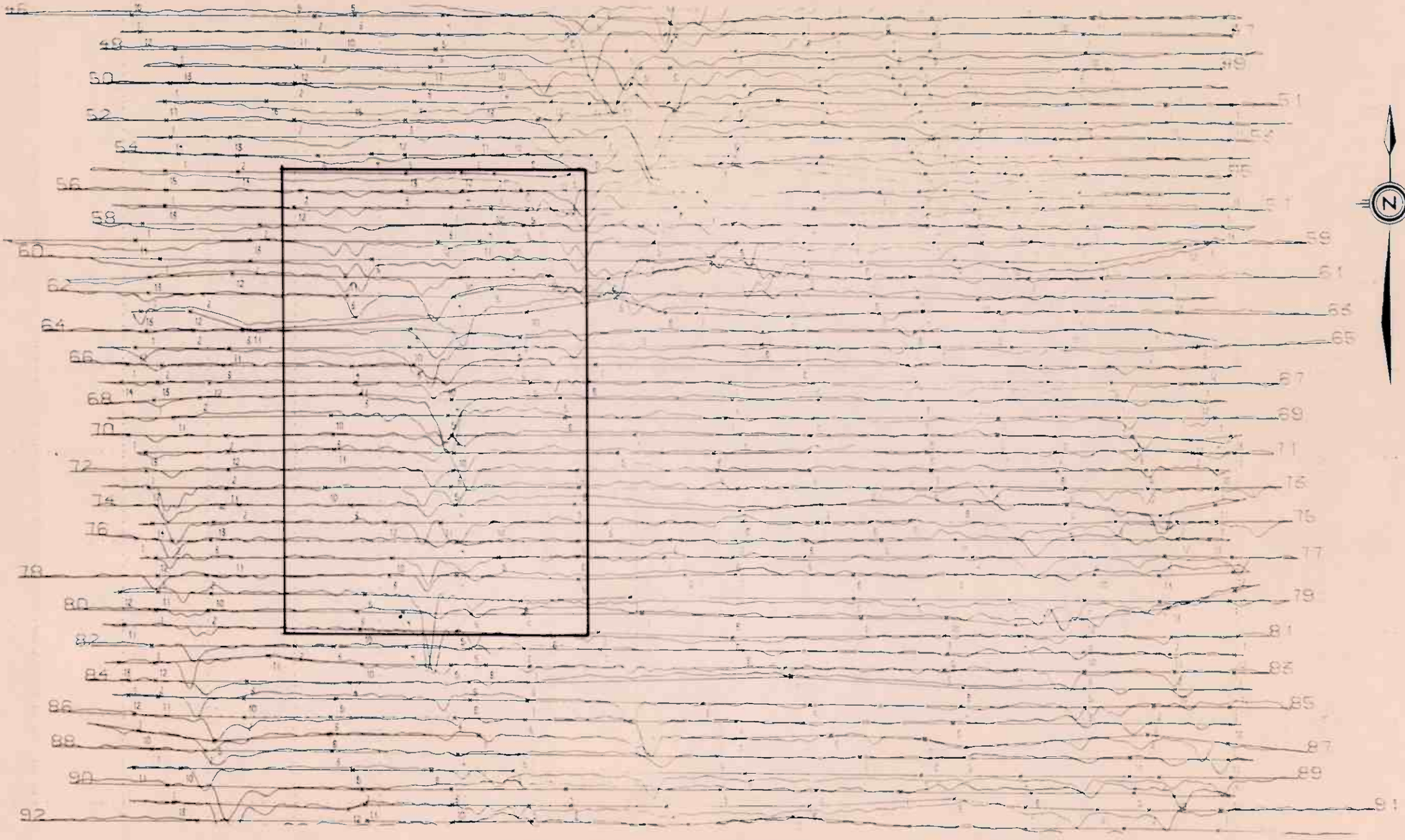
SYSTEM - X SURVEY

PRESENTATION AND PROCESSING NOT BY DIGHEM LTD.

VERTICAL SCALE 1cm = 60 ppm
HORIZONTAL SCALE 1:50000

EM – In Phase Component

Fig. 1



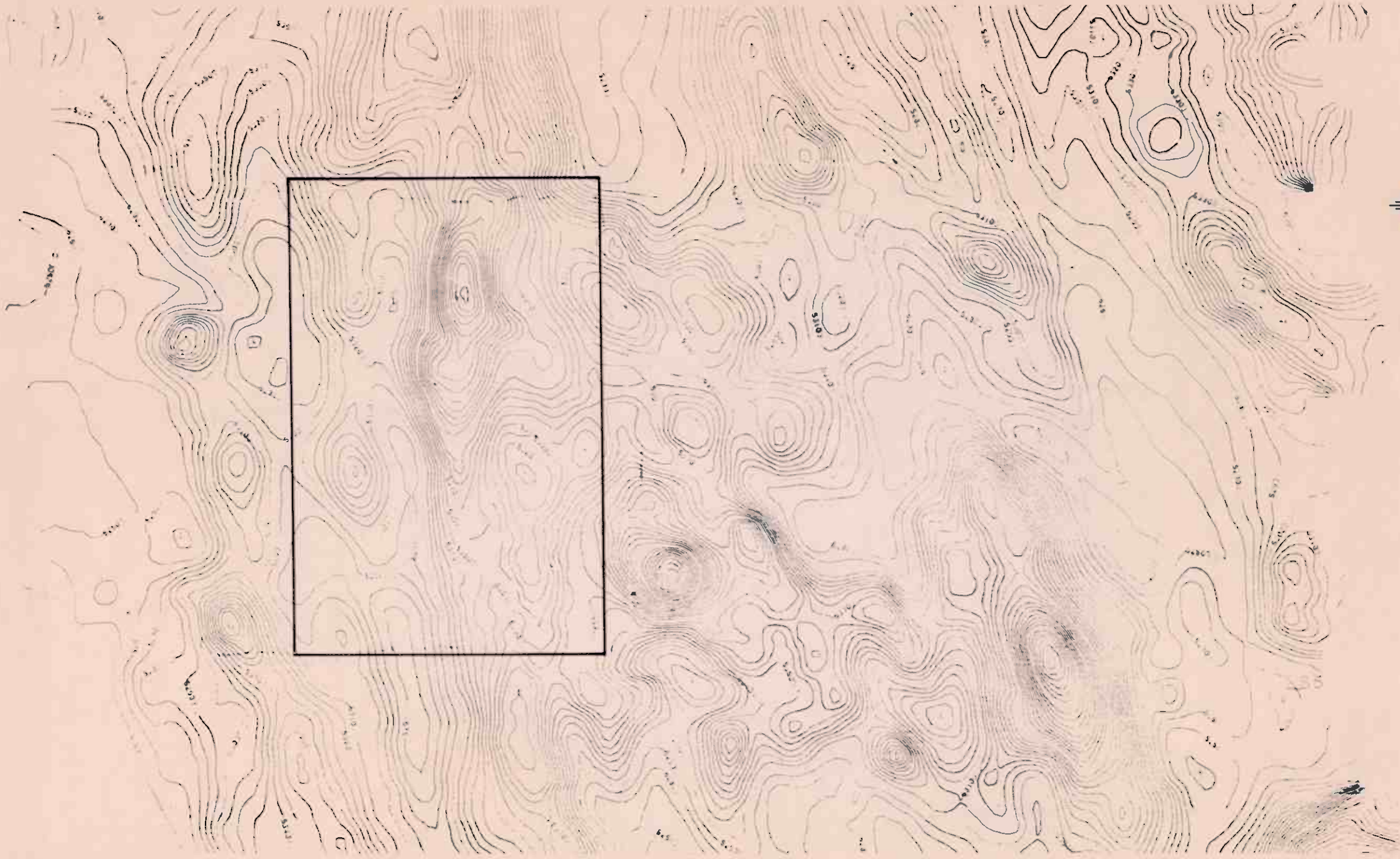
SYSTEM - X SURVEY

PRESENTATION AND PROCESSING NOT BY DIGHEM LTD.

VERTICAL SCALE 1cm = 30 ppm
HORIZ. SCALE 1:50000

EM - Out of Phase Component

Fig. 2

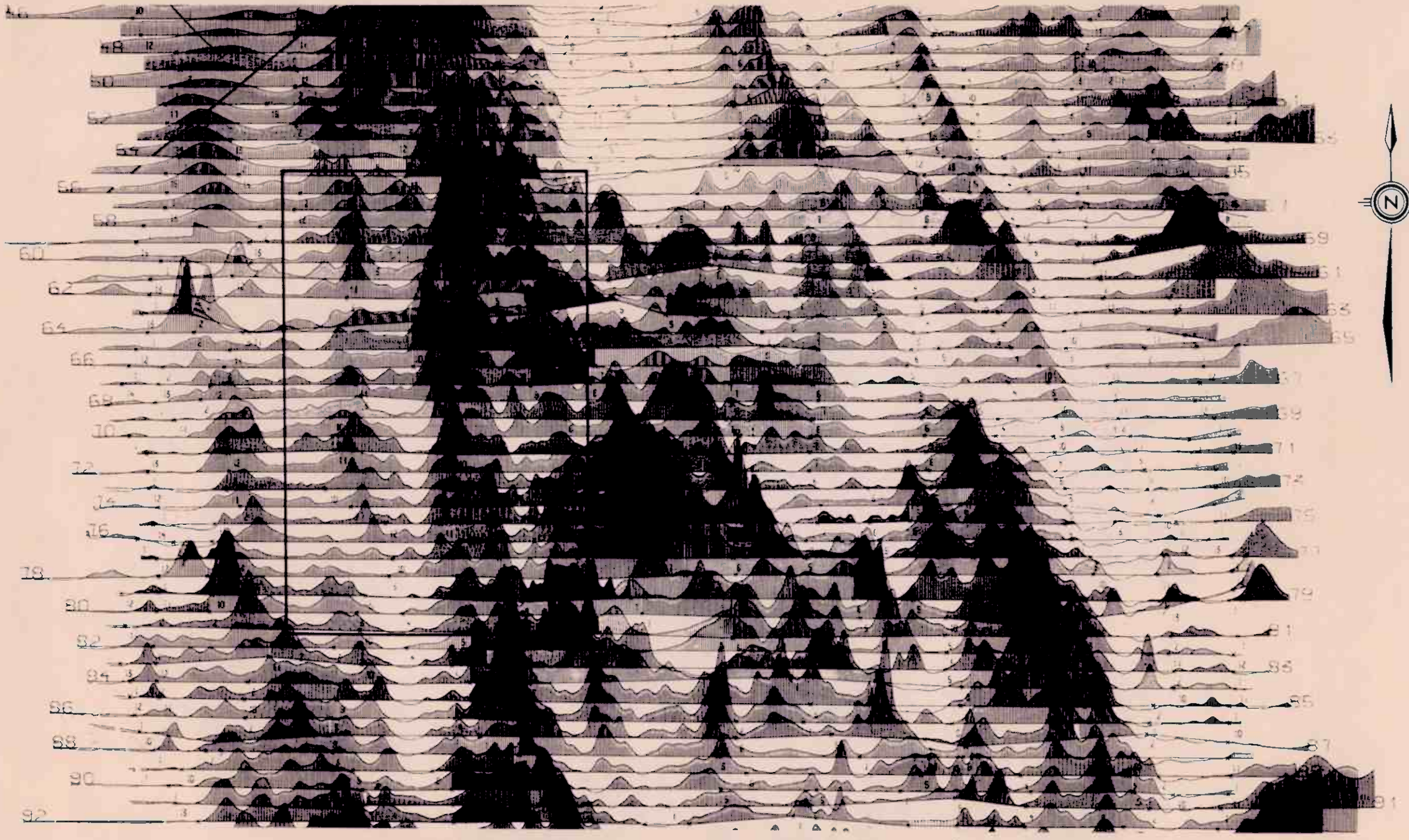


SYSTEM - X SURVEY
PRESENTATION AND PROCESSING NOT BY DIGHEM LTD.

CONTOUR INTERVAL = 100 gammas
SCALE 1:50 000

MAGNETICS (TOTAL FIELD)

Fig. 3



SYSTEM - X SURVEY

PRESENTATION AND PROCESSING NOT BY DIGHEM LTD.

VERTICAL SCALE 1 cm = 2000 gammas
HORIZONTAL SCALE 1:50 000

MAGNETICS (TOTAL FIELD PROFILES)

Fig. 4

AREA COVERED BY DIGHEM II SURVEY

SYSTEM-X SURVEY
PRESENTATION AND PROCESSING BY DIGHEM LTD.

ELECTROMAGNETICS

Flight Line
5 ← Fiducial
4 ← Fiducial
44 Line Number

SCALE 1:20,000
1 0 1 2 Kilometres

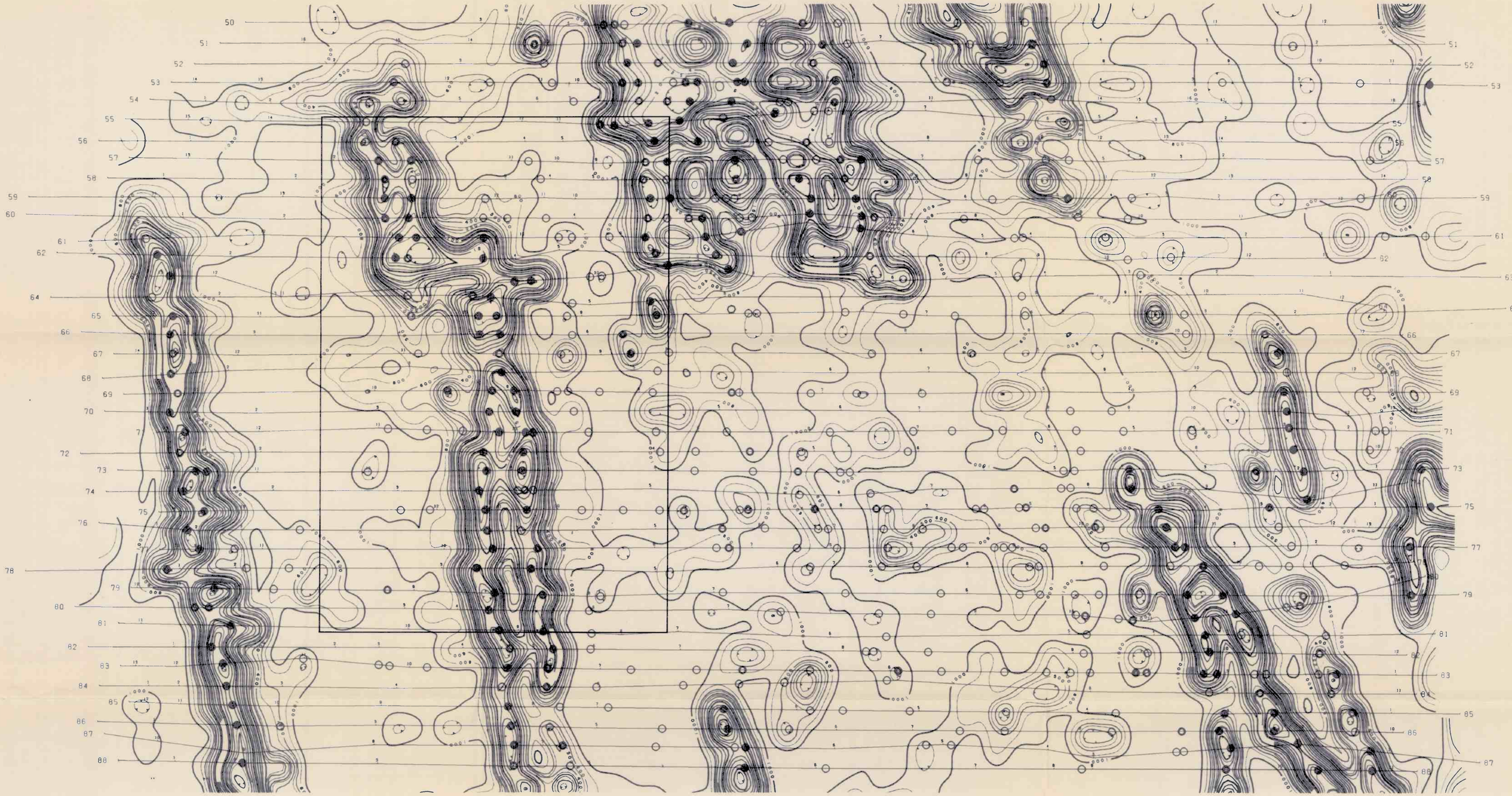
LEGEND

EM anomalies are graded as to the probability that they reflect bedrock conductors. There are four grades as follows:

Symbol	Probability Grade	Probability Rating
●	4	> 90%
◉	3	75–90%
◎	2	60–75%
○	1	40–60%

Vertical coaxial coils	
Coil seperation	6.7m
Frequency	1000 Hz

Fig. 5



SYSTEM - X SURVEY
PRESENTATION AND PROCESSING BY DIGHEM LTD.

RESISTIVITY

Flight Line
5 ← Fiducial
4 ← Fiducial
44 Line Number

SCALE 1:20,000
1 0 1 2 Kilometres

LEGEND

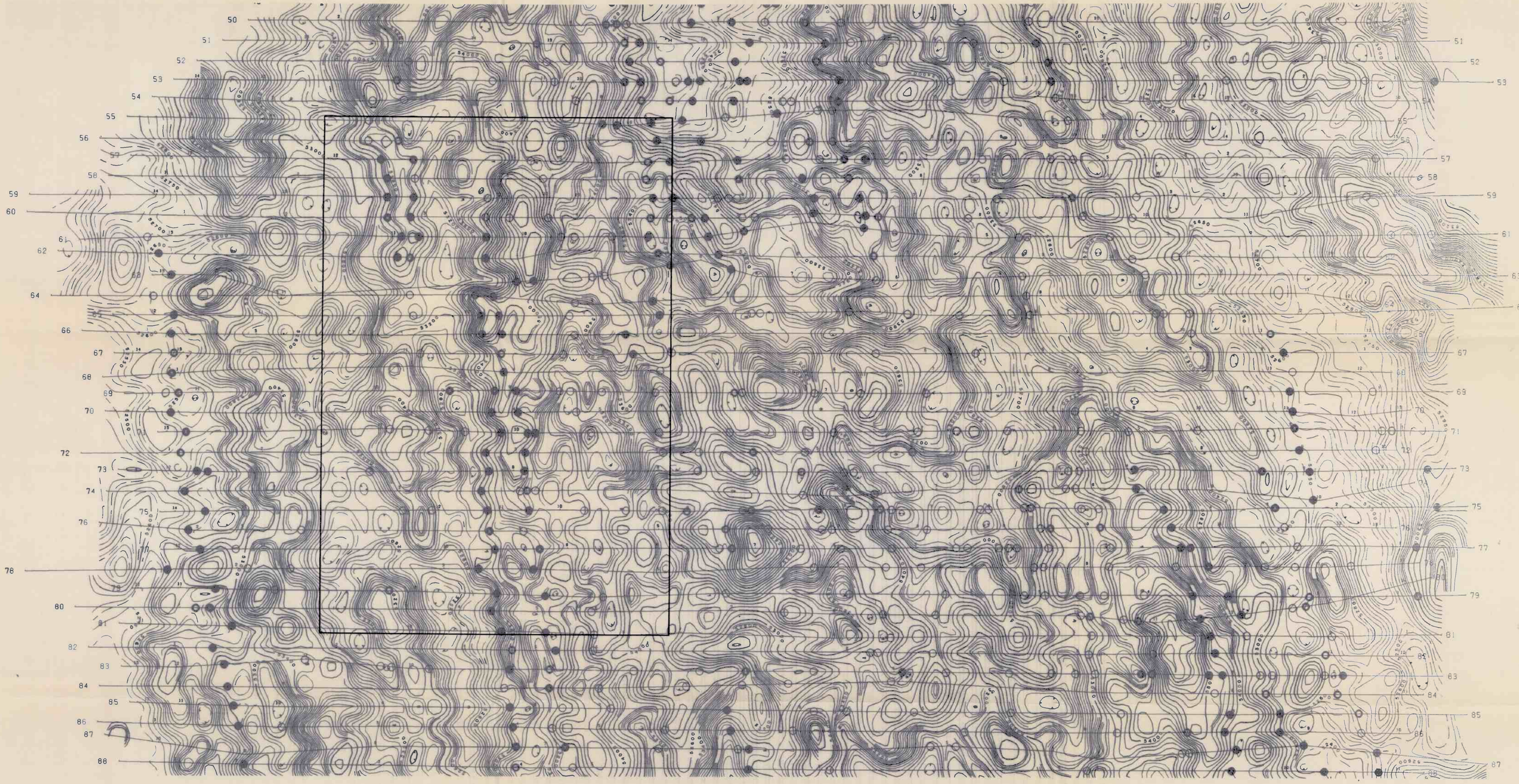
Contours in ohm – m
at ten intervals per decade

1000
800
600
500
400
300
250
200
150
125
100

Note
The numbers face in the direction of increasing value

Vertical coaxial coils
Coil seperation 6.7m
Frequency 1000 Hz

Fig. 6



SYSTEM-X SURVEY
PRESENTATION AND PROCESSING BY DIGHEM LTD.

Flight Line
5 — Fiducial
4 — Fiducial
44 Line Number

MAGNETICS

ISOMAGNETIC LINES
(total field)

1000 — 1 000 nT
200 — 200 nT
50 — 50 nT
25 nT
magnetic depression

SCALE 1:20,000
1 0 1 2 Kilometres

Fig. 7

SYSTEM - X SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

ENHANCED MAGNETICS

Flight Line

5 ← Fiducial

4 ← Fiducial

44 Line Number

SCALE 1 : 20,000

1 0 1 2 Kilometres

ISOMAGNETIC LINES
(enhanced field)

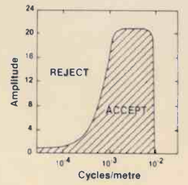
5000 5 000 nT

1000 1 000 nT

200 200 nT

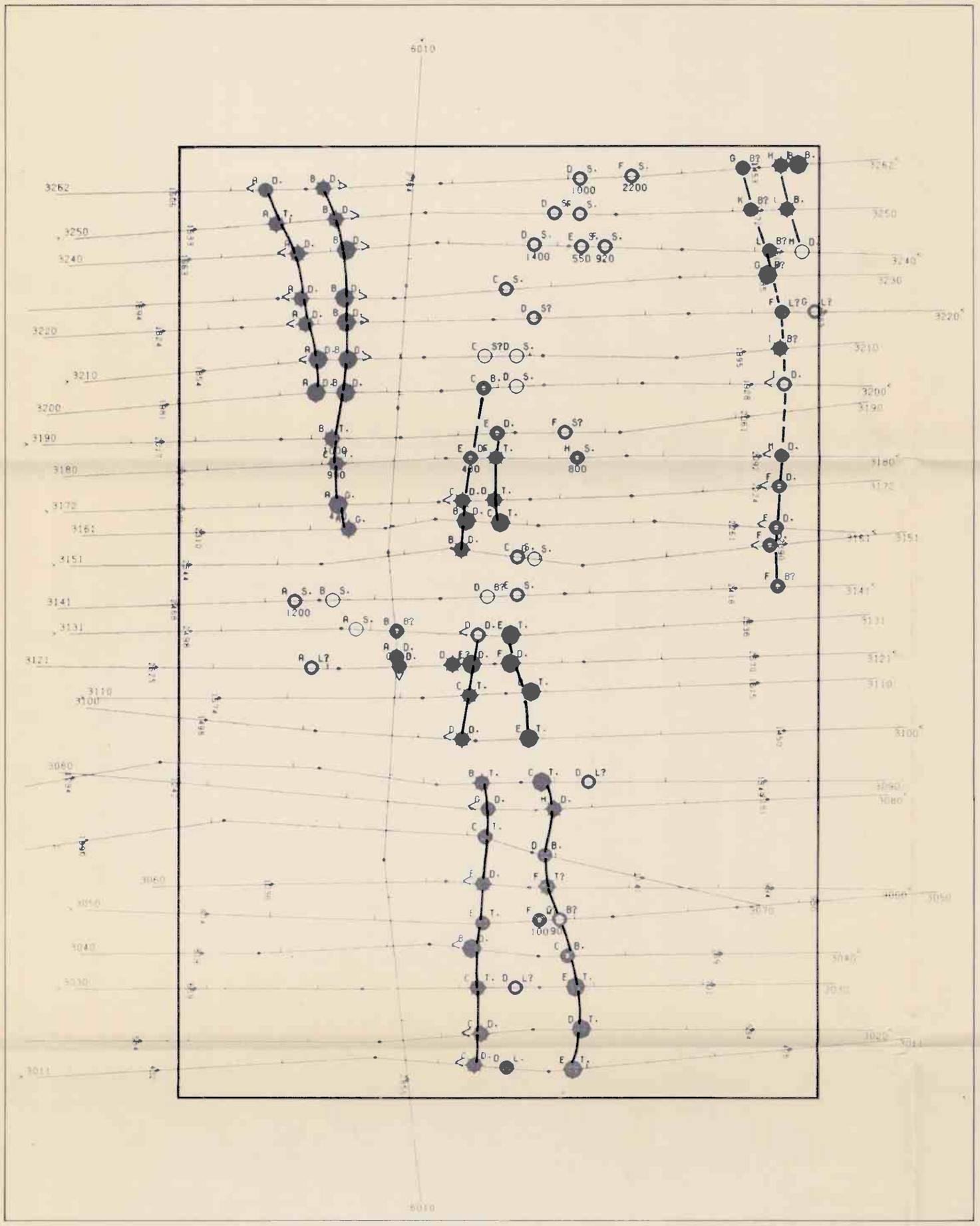
100 nT

magnetic depression

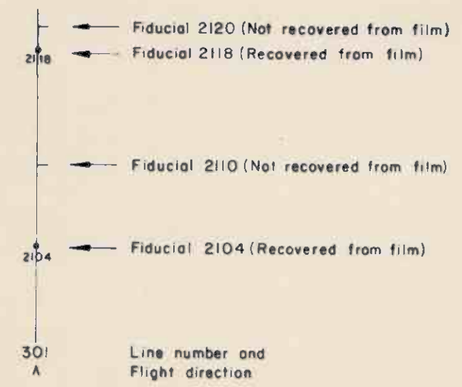


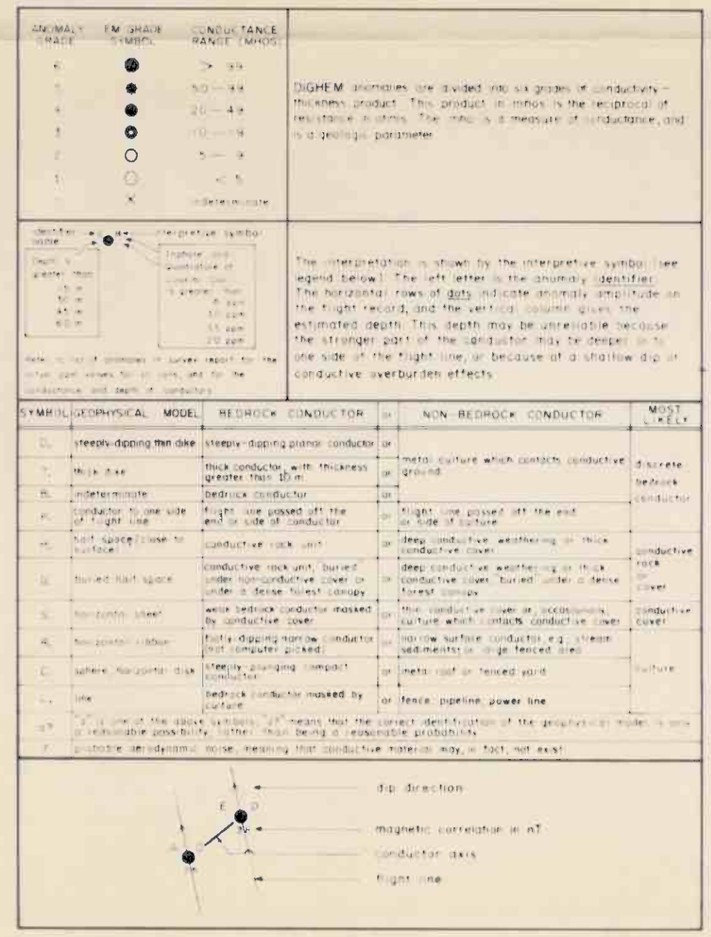
Frequency response of magnetic operator

Fig. 8



Flight Line





DIGHEM^{II} SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

ELECTROMAGNETICS

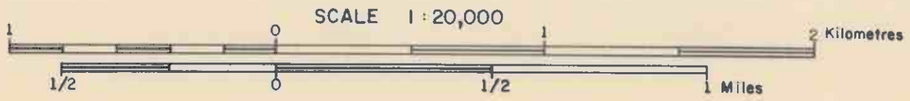
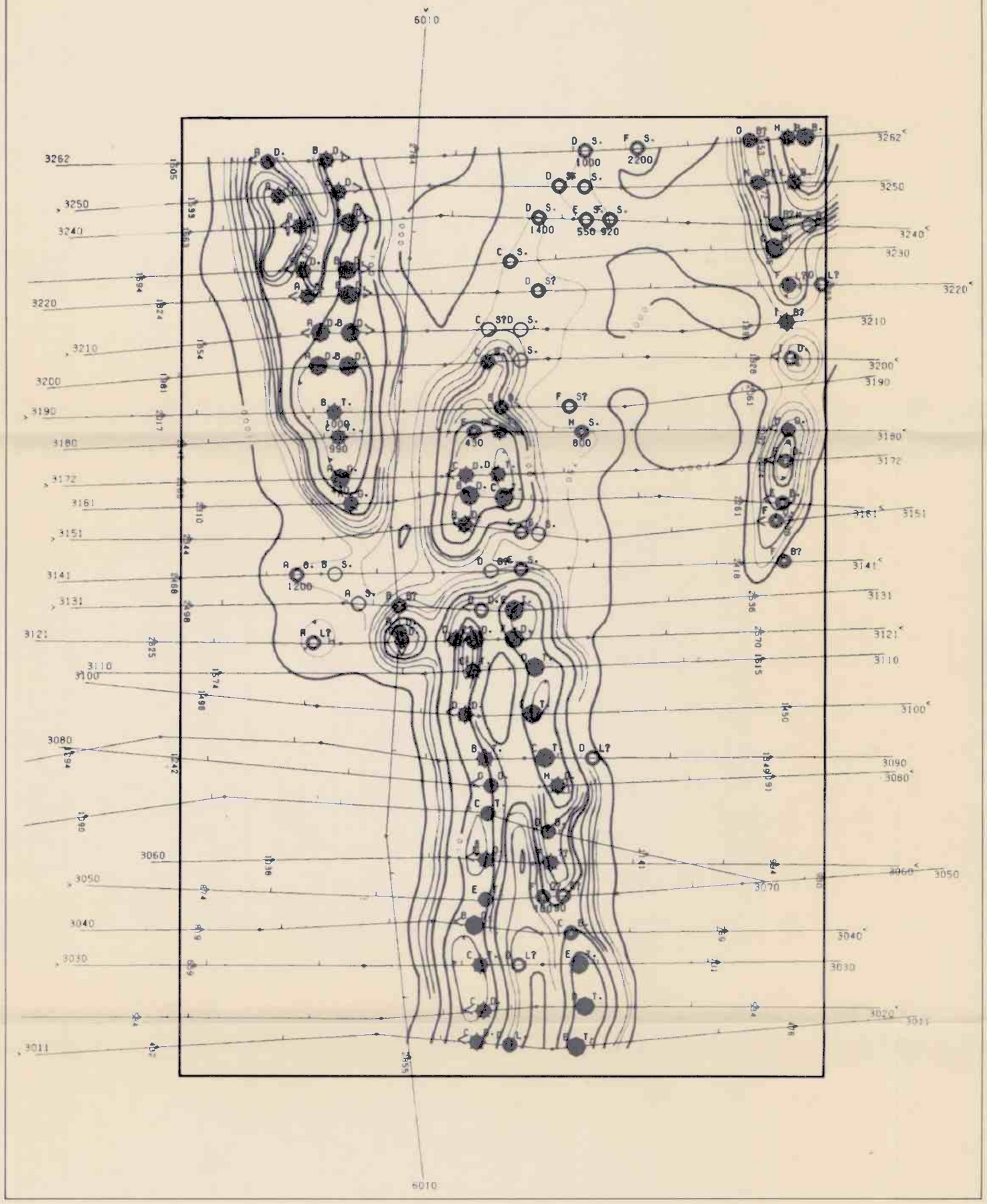
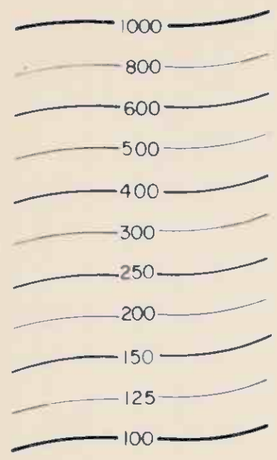


Fig. 9



LEGEND

Contours in ohm – m
at ten intervals per decade



Note

The numbers face in the direction of increasing value

DIGHEM^{II} SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

RESISTIVITY

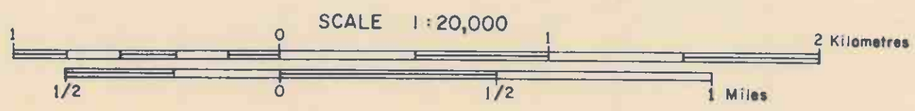
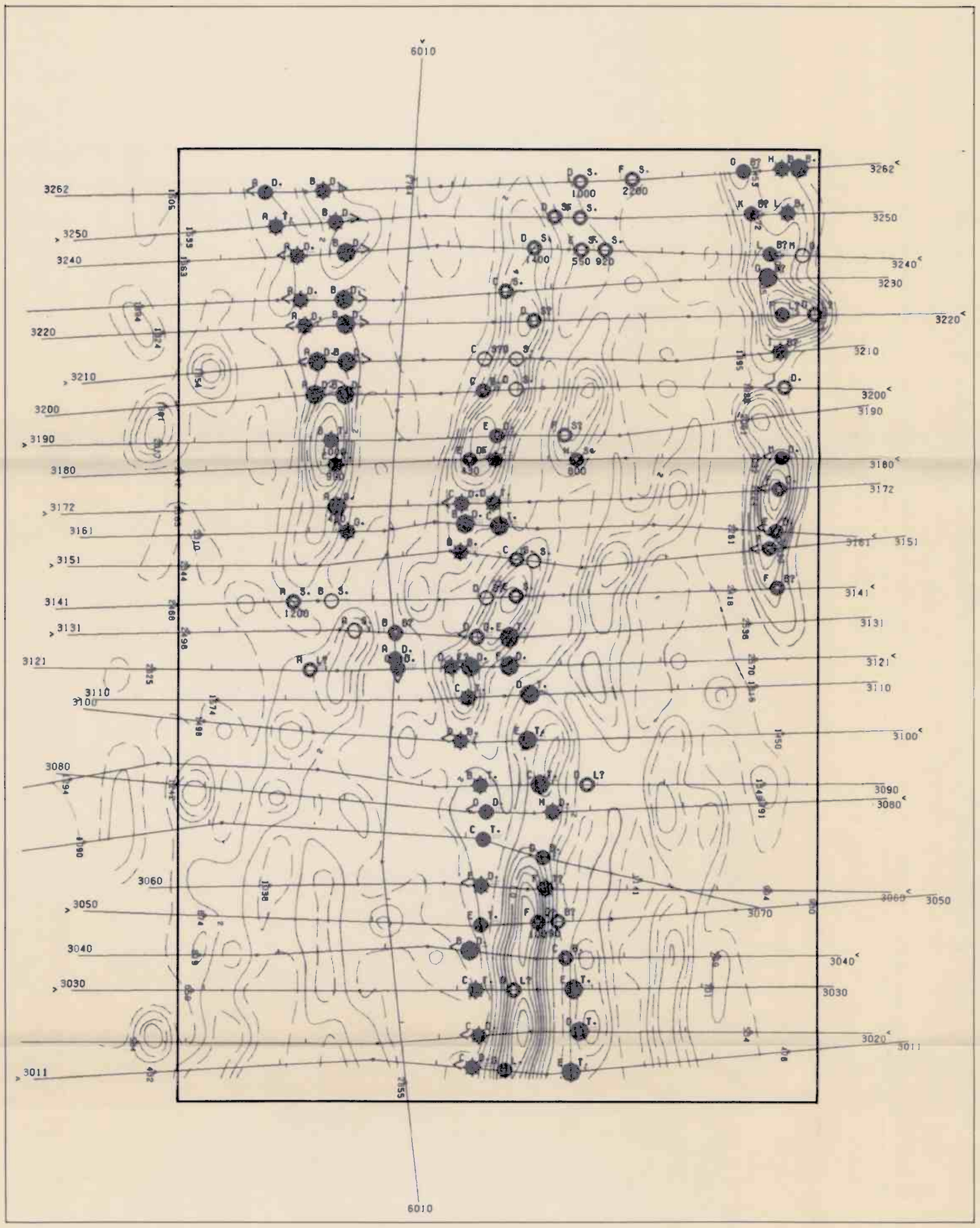


Fig. 10



LEGEND

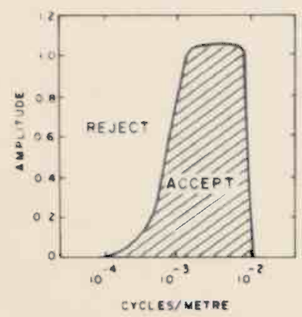
Contours in percent

10

4

2

The numbers face in the direction of increasing value



Frequency response of VLF – EM filter

DIGHEM^{II} SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

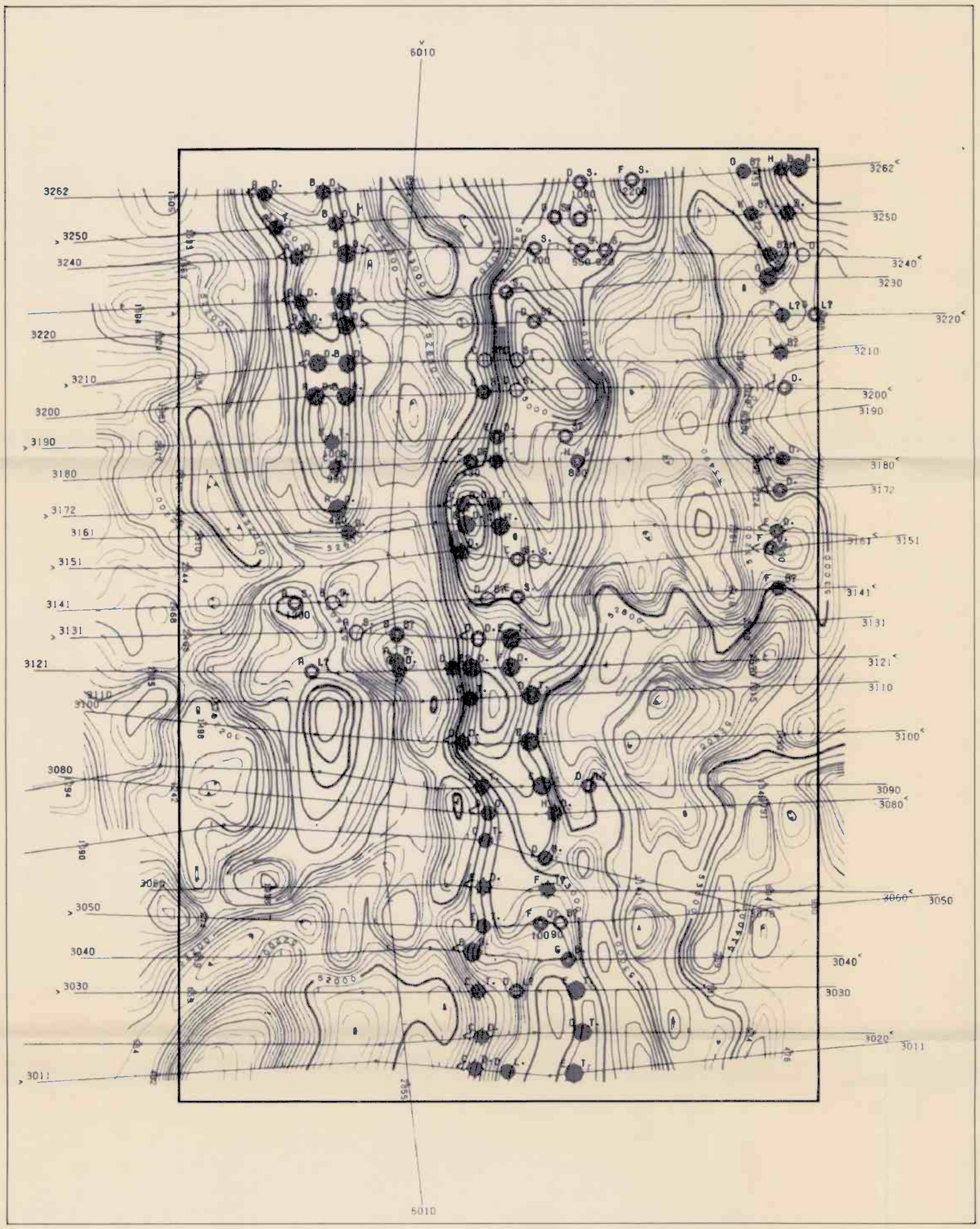
FILTERED TOTAL VLF-EM FIELD

SCALE 1:20,000

1 0 1 2 Kilometres

1/2 0 1/2 1 Miles

Fig. 11



DIGHEM^{II} SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

MAGNETICS (Total Field-IGRF + 52 400) nT

SCALE 1 : 20,000

1 0 1 2 Kilometres

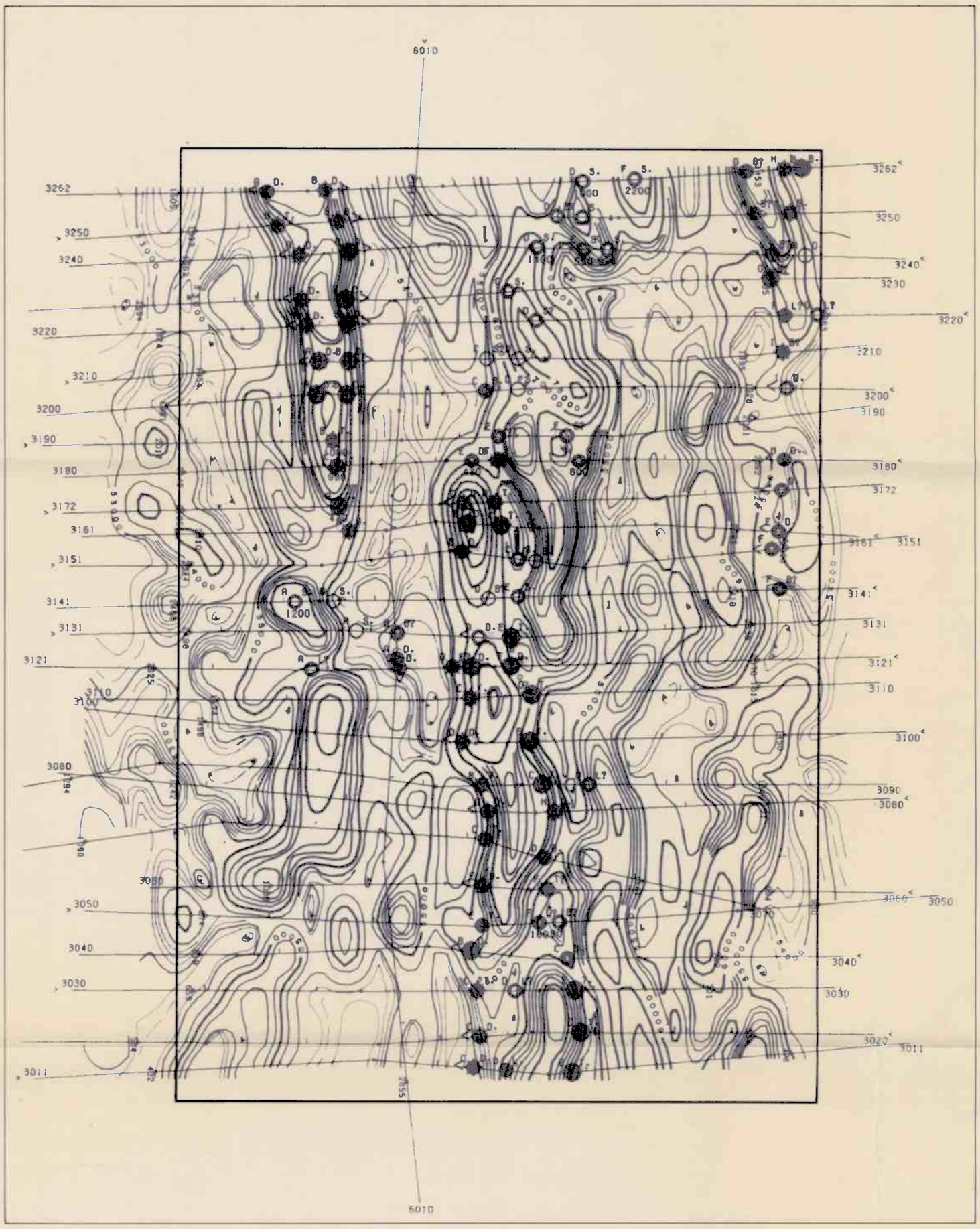
1/2 0 1/2 1 Miles

ISOMAGNETIC LINES
(total field)

1000	1 000 nT
200	200 nT
50	50 nT
	25 nT
	magnetic depression

Magnetic inclination within the survey area: 78°

Fig. 12



ISOMAGNETIC LINES
(enhanced field)

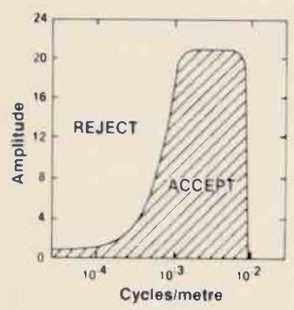
5000 — 5 000 nT

1000 — 1 000 nT

200 — 200 nT

100 nT

magnetic depression



Frequency response of magnetic operator

DIGHEM^{II} SURVEY

PRESENTATION AND PROCESSING BY DIGHEM LTD.

ENHANCED MAGNETICS

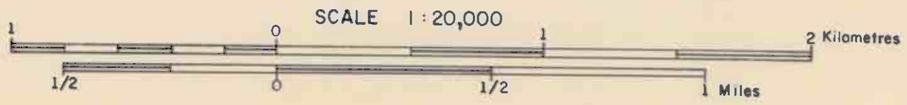


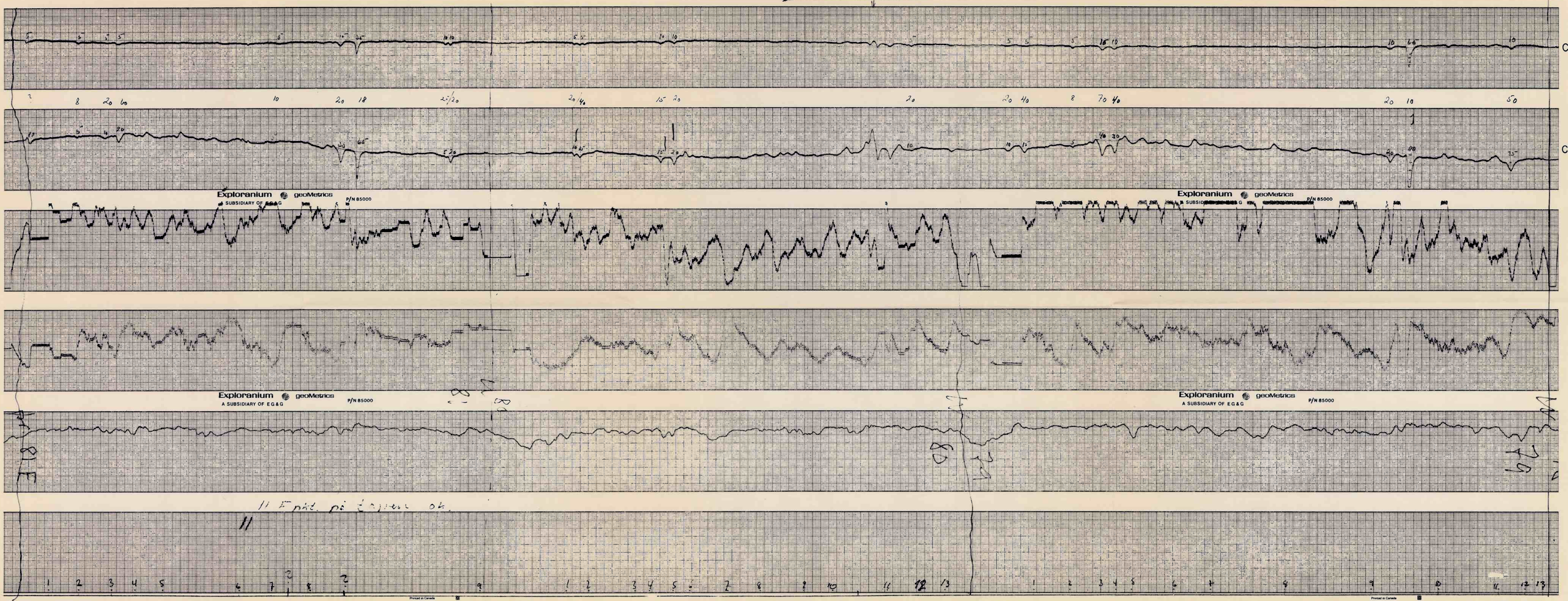
Fig. 13

CXQ

CXI

LINE 70

Fig. 14 a



LINE 81 LINE 80 LINE 79

Fig. 14 b

CXQ

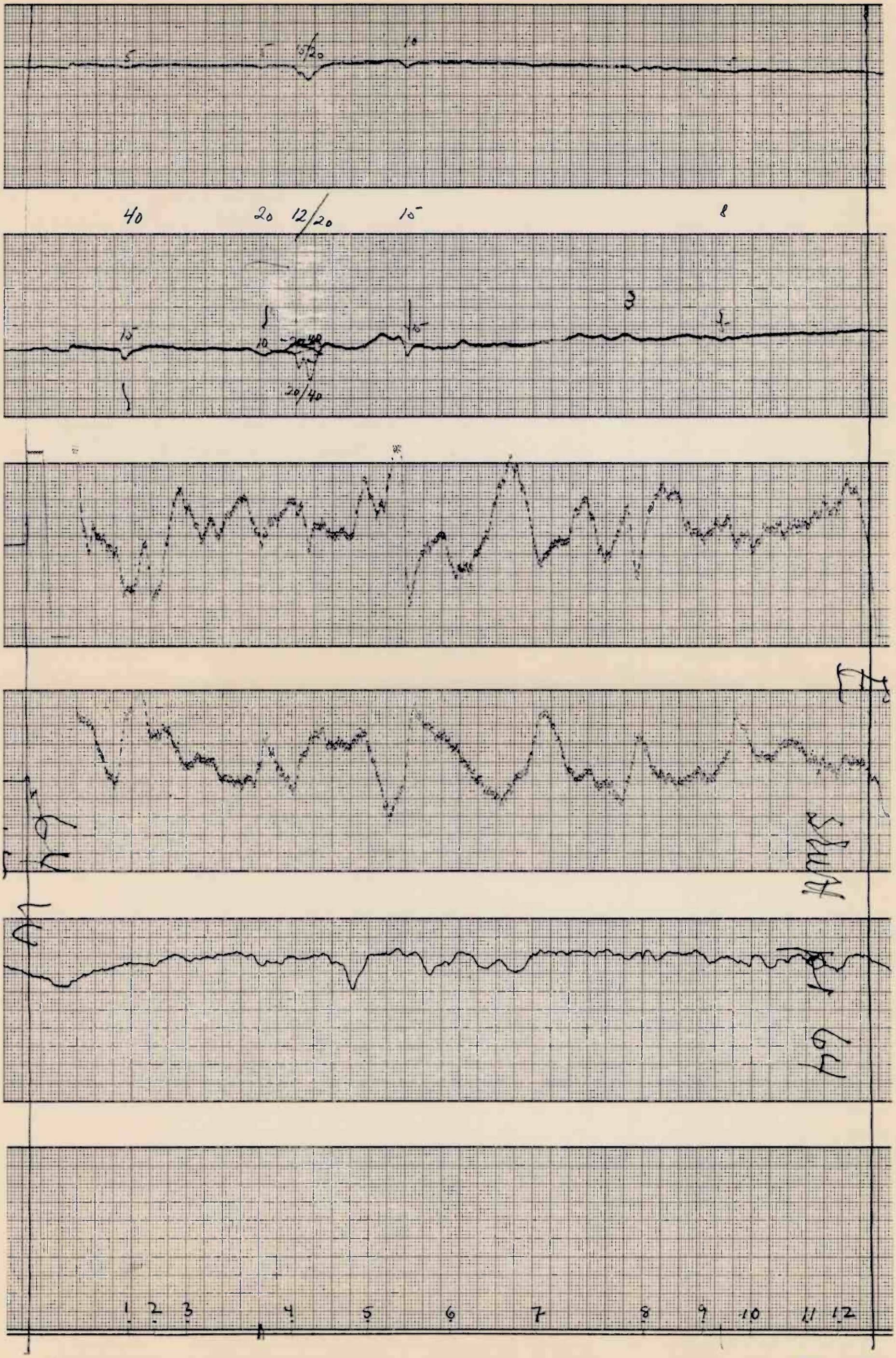
CXI

Exploranium geoMetrics
A SUBSIDIARY OF EG&G
P/N 85000

Exploranium geoMetrics
A SUBSIDIARY OF EG&G
P/N 85000

LINE 63

Fig. 14c



LINE 64

Fig. 14 d

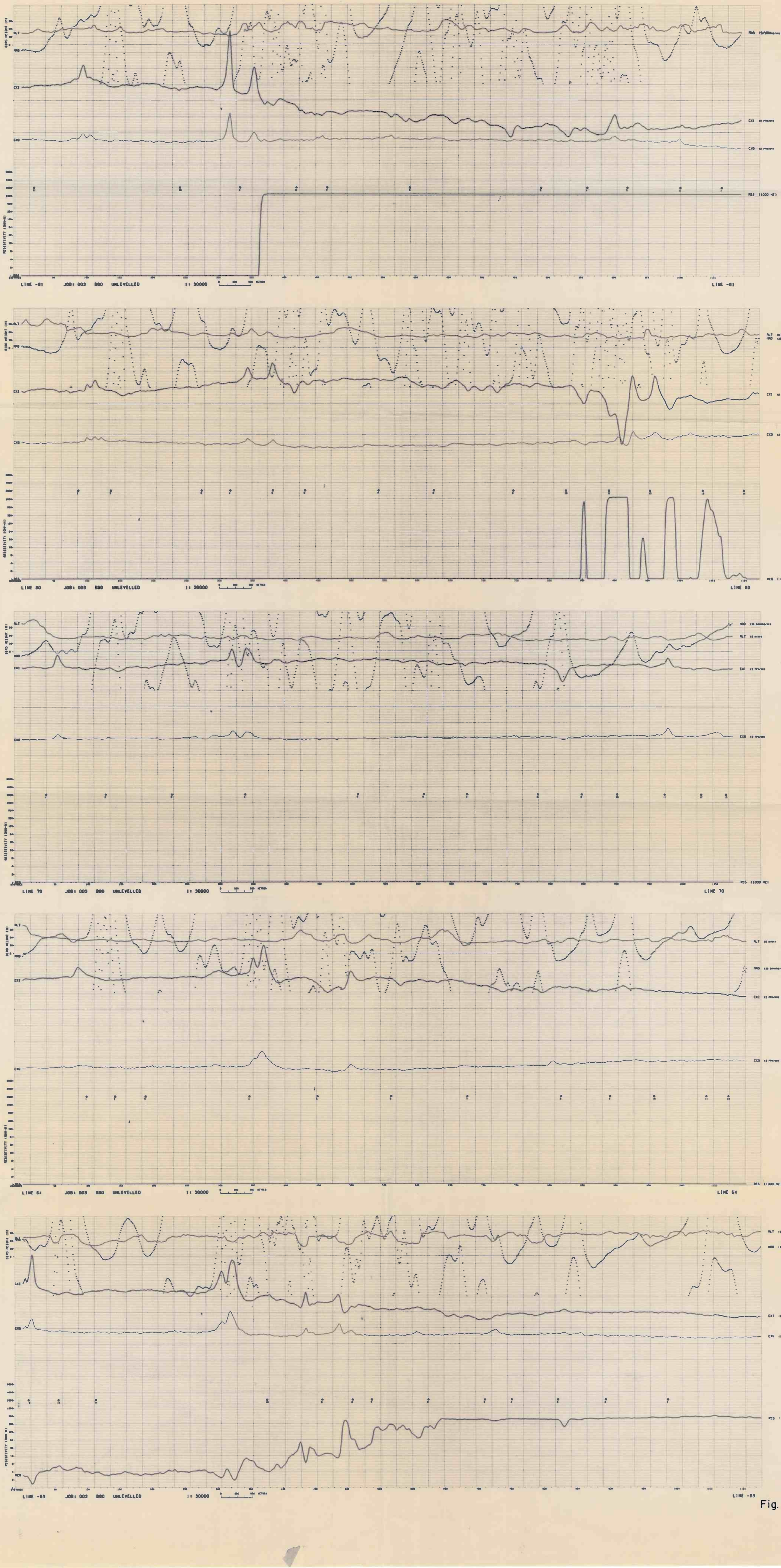

BIRD HEIGHT (M)
RLT
RRD
CXI
CXD
RES (1000 HZ)
RESISTIVITY (OHM-M)
LINE -81
JOB: 003 B80 UNLEVELLED
1: 30000
LINE -81
LINE 80
JOB: 003 B80 UNLEVELLED
1: 30000
LINE 80
LINE 70
JOB: 003 B80 UNLEVELLED
1: 30000
LINE 70
LINE 64
JOB: 003 B80 UNLEVELLED
1: 30000
LINE 64
LINE -63
JOB: 003 B80 UNLEVELLED
1: 30000
LINE -63

Fig. 15

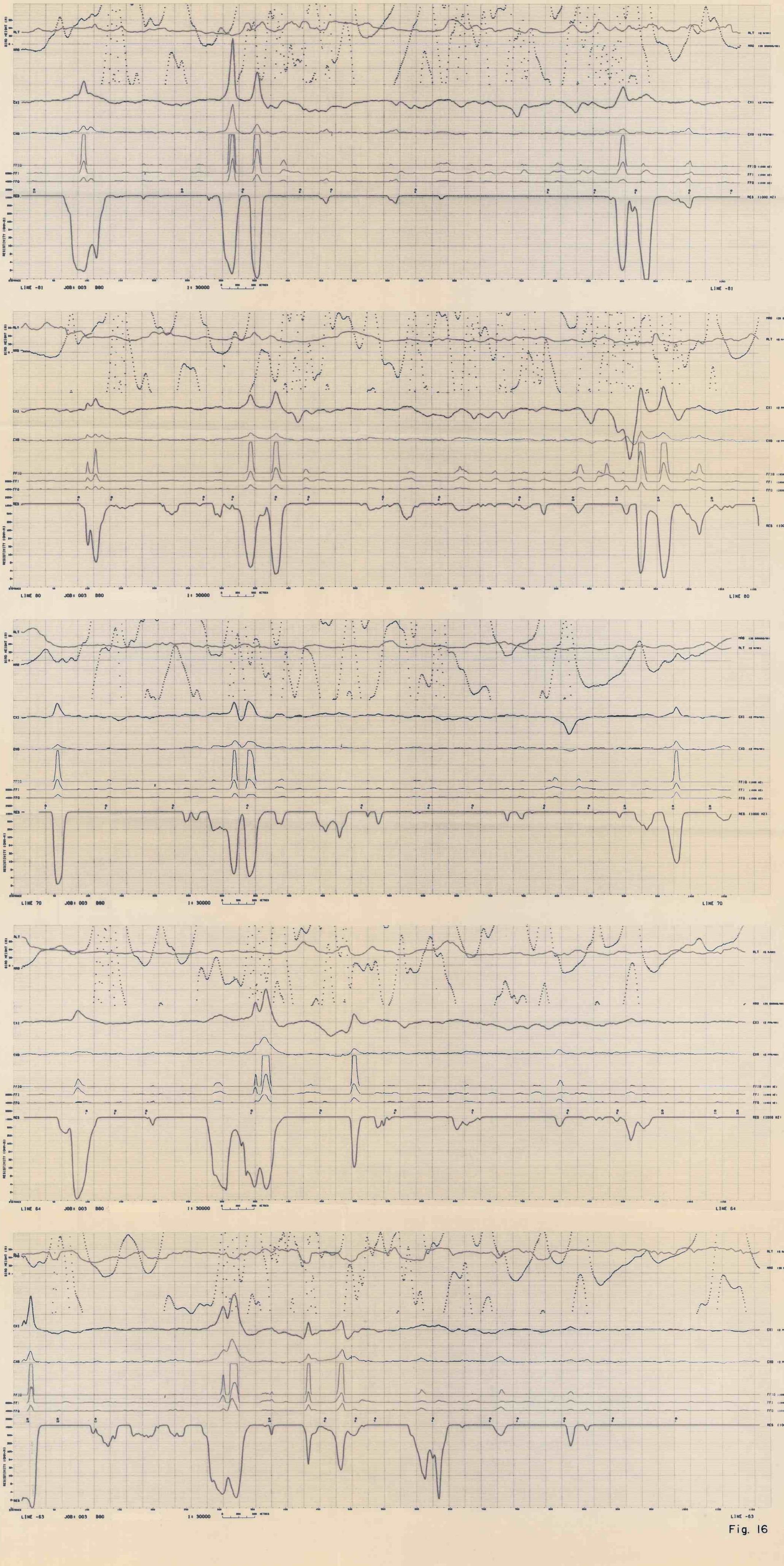
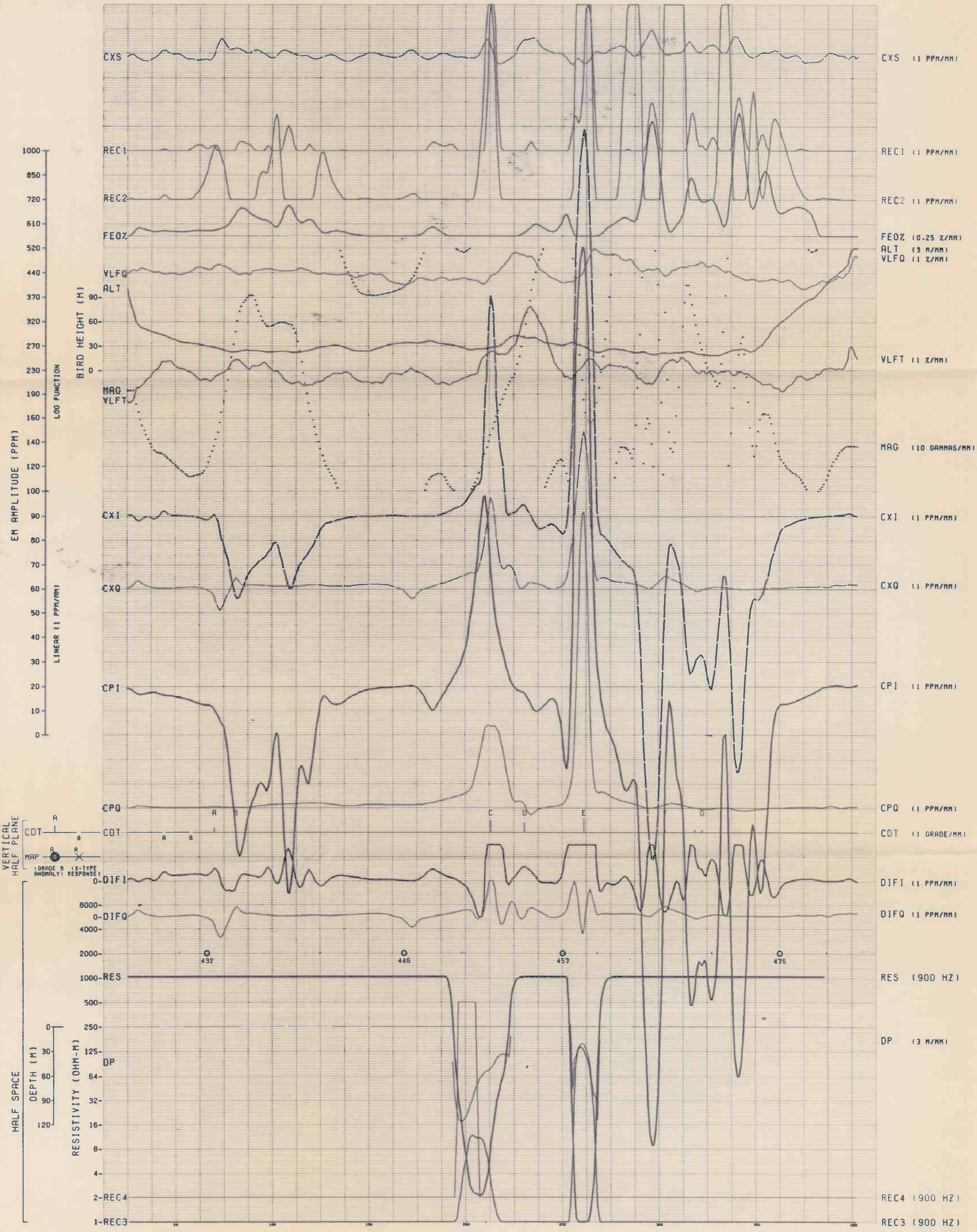
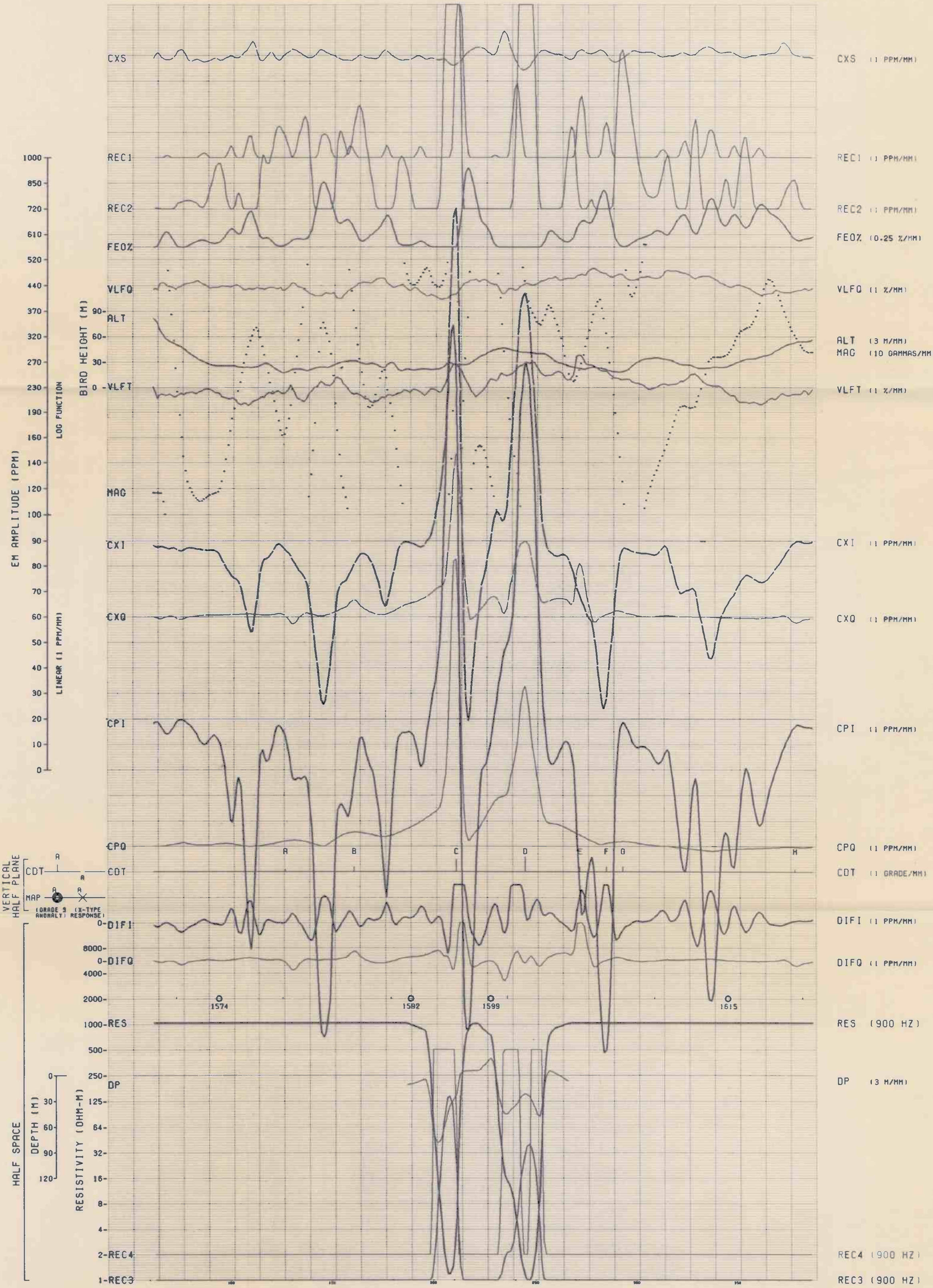

BIRD HEIGHT (M)
ALT
MAG
CX1
CX0
FF10
FF1
FFQ
RES
RESISTIVITY (OHM-M)
LINE -81
JOB: 003 880
1: 30000
LINE -81
LINE 80
JOB: 003 880
1: 30000
LINE 80
LINE 70
JOB: 003 880
1: 30000
LINE 70
LINE 64
JOB: 003 880
1: 30000
LINE 64
LINE -63
JOB: 003 880
1: 30000
LINE -63

Fig. 16



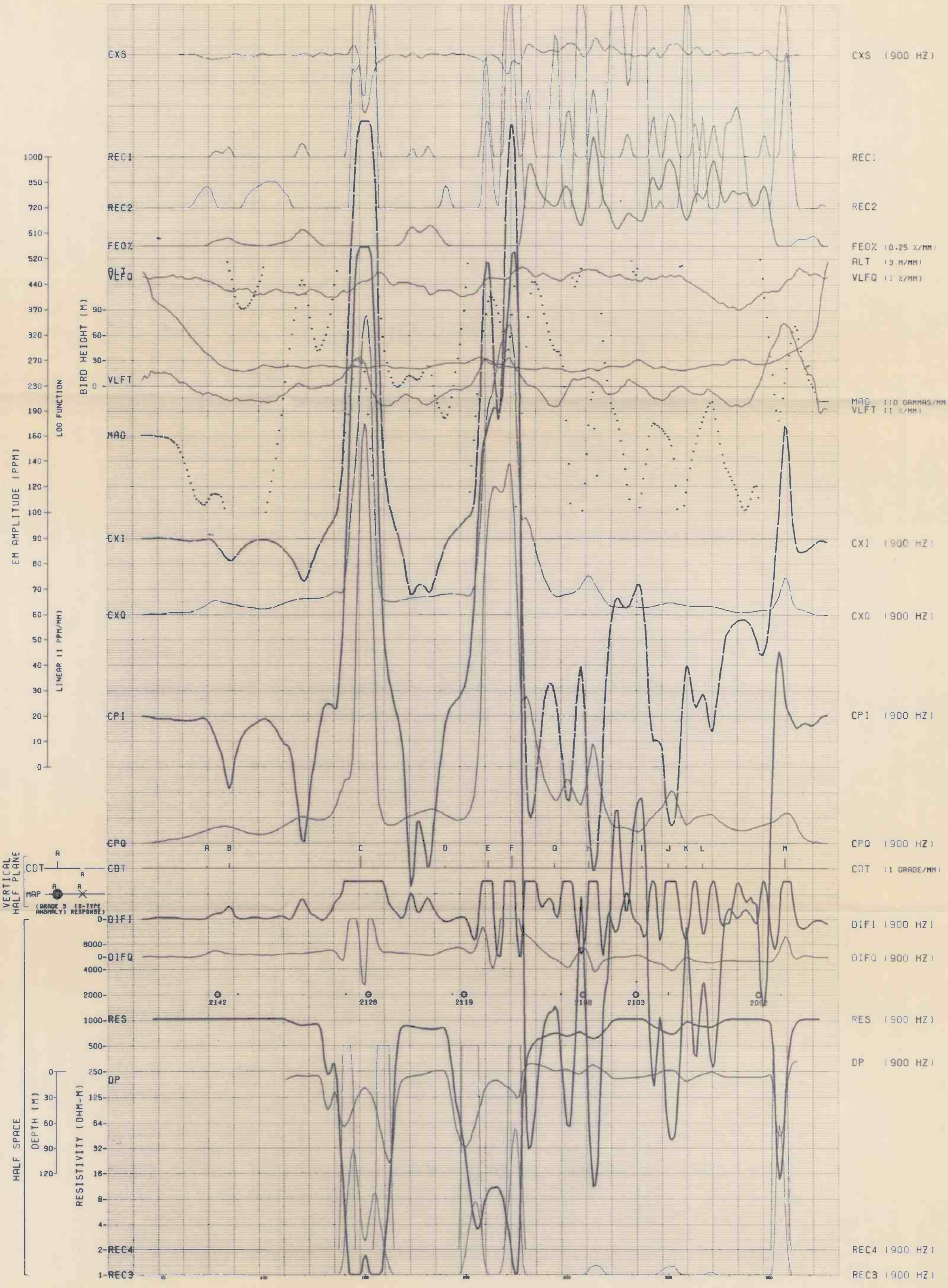
LINE 3011 JOB: 706 SH3 1: 15000
(FLIGHT 15)

Fig. 17a



LINE 3110 (FLIGHT 15) JOB: 706 SH3 1: 15000

Fig. 17 b



LINE -3180 JOB: 706 SH3 1: 15000

(FLIGHT 27)

Fig. 17c

PROCESSING

OF AIRBORNE ELECTROMAGNETIC DATA

FROM

FINNISH TWIN OTTER SYSTEM

Dighem Limited

June 9, 1983

S DCF-295/cs

SUMMARY

The Geological Survey of Finland carries out airborne electromagnetic surveys using a Twin Otter aircraft. Examples of their survey data were processed by Dighem Limited to yield:

1. Resistivity contour map
2. EM anomaly map
3. Magnetite EM map

The electromagnetic data were used to produce a resistivity contour map and a magnetite contour map. This involved relevelling of the EM data to yield maps of acceptable quality. The resistivity and magnetite maps are useful as an aid to geologic mapping. They also can help in the evaluation of the probable cause of EM anomalies.

EM anomalies were identified automatically using a novel digital filtering and correlation technique. The technique categorized EM responses on the basis of the computed conductance (i.e., conductivity-thickness product) assuming a vertical half-plane model.

CONTENTS

MAPS ACCOMPANYING THIS REPORT

Three map sheets accompany this report:

- Electromagnetics
- Resistivity
- EM Magnetite

INTRODUCTION

The Geological Survey of Finland performs airborne electromagnetic surveys using a Twin Otter aircraft. The vertical coplanar coils are attached to the wingtips and operate at approximately 3200 Hz. Dighem Limited has used data from this system to demonstrate its data processing capabilities.

The EM data typically are displayed in two formats by the Geological Survey of Finland: (1) as inphase profiles and quadrature profiles stacked on flight line maps, and (2) as contours of inphase and of quadrature. This method of display presents the data on four maps. In contrast, Dighem presents the data on three maps, as follows: (1) an EM anomaly map showing conductors graded by conductance, (2) a resistivity contour map, and (3) an EM "magnetite" contour map.

When prospecting for massive sulfide ore deposits, Dighem's EM anomaly map and resistivity contour map can be of direct use. For magnetic skarn deposits, Dighem's EM magnetite contour map can be important. For geologic mapping purposes, the resistivity and magnetite maps can provide definitive information.

ELECTROMAGNETICS

Preprocessing Procedures

The EM input was obtained by digitizing the stacked profile maps produced by the Geological Survey of Finland. The data were used to define the x-y coordinate locations and the EM ppm for each data point. This was done for both the inphase and quadrature profile maps. The data then were merged to provide sample points for every 12.5 m on the ground. Each point was defined by the x coordinate, y coordinate, inphase ppm, and quadrature ppm.

Lines 386 and 387 are missing from the Dighem maps. This is a result of the input data being missing on the Finnish quadrature profile map.

Resistivity Mapping

The Finnnish electromagnetic survey data were used to produce Dighem-style resistivity maps according to the buried (or pseudo-layer) half space model[1]. This required moderate manual relevelling of the EM data. Three computer

---

[1] Fraser, D.C., 1978, Geophysics, v. 43, p. 144-172.

processing runs were required, with iterative relevelling, to eliminate herringbone due to levelling problems. The procedure yielded a resistivity contour map of fairly good quality. The advantage of the resistivity parameter is that it is independent of altitude changes. The resistivity analysis also helps the interpreter to differentiate between conductive trends in the bedrock and those patterns typical of conductive overburden. For example, discrete conductors will generally appear as narrow lows on the contour map and broad conductors (e.g., overburden) will appear as wide lows.

The resistivity map often yields more useful information on conductivity distributions than the EM map. In comparing the EM and resistivity maps, keep in mind the following:

(a) The resistivity map portrays the absolute value of the earth's resistivity.

(b) The EM map portrays anomalies in the earth's resistivity. An anomaly by definition is a change from the norm and so the EM map displays anomalies, (i) over narrow, conductive bodies and (ii) over the boundary zone between two wide formations of differing conductivity.

The resistivity map might be likened to a total field map and the EM map to a horizontal gradient in the direction of flight[2]. Because gradient maps are usually more sensitive than total field maps, the EM map therefore is to be preferred in resistive areas. However, in conductive areas, the absolute character of the resistivity map usually causes it to be more useful than the EM map. In all cases, the resistivity map is more useful for geologic mapping.

EM Anomaly Recognition

The Finnish Twin Otter EM data are quite active due to the relatively large values for frequency and coil separation. An EM anomaly selection procedure was designed, modified from Dighem anomaly selection algorithms.

The extraction of anomalies down to the noise level was accomplished by a digital filtering and correlation technique. Digital filtering works well if there is minimal spectral overlap between anomalies and noise. However, the Finnish data contains spectral overlap, particularly in areas of negative inphase response due to magnetite. The

---

[2] The gradient analogy is only valid with regard to the identification of anomalous locations.

method yields anomalies which are calibrated in units of conductance (= conductivity-thickness product in mhos). The anomaly selection technique is designed to be overly sensitive. An interpreter is required to remove those "anomalies" which represent noise. The attached map shows examples of the deletion of spurious anomalies. Most of these "anomalies" result from the presence of magnetite.

EM Magnetite Mapping

The information content of the Twin Otter data consists of a combination of conductive eddy current response and magnetic permeability response. The secondary field resulting from conductive eddy current flow is frequency-dependent and consists of both inphase and quadrature components, which are positive in sign. On the other hand, the secondary field resulting from magnetic permeability is independent of frequency and consists of only an inphase component which is negative in sign. When magnetic permeability manifests itself by decreasing the measured amount of positive inphase, its presence may be difficult to recognize. However, when it manifests itself by yielding a negative inphase anomaly (e.g., in the absence of eddy current flow), its presence is assured. In this latter case, the negative component can be used to estimate the percent magnetite content.

A magnetite mapping technique was developed for the coplanar coil-pair of DIGHEM, and modified for the Twin Otter system. The technique yields apparent weight percent magnetite according to a homogeneous half space model.[3] The method can be complementary to magnetometer mapping in certain cases. Compared to magnetometry, it is far less sensitive but is more able to resolve closely spaced magnetite zones, as well as providing an estimate of the amount of magnetite in the rock. The method is sensitive to 1/4% magnetite by weight. It can individually resolve steeply dipping narrow magnetite-rich bands which are separated by 100 m.

The EM magnetite mapping technique provides estimates of magnetite content which are usually correct within a factor of 2 when the magnetite is fairly uniformly distributed.

Like magnetometry, the EM magnetite method maps only bedrock features, provided that the overburden is characterized by a general lack of magnetite. This contrasts with resistivity mapping which portrays the combined effect of bedrock and overburden.

---

[3] Refer to Fraser, 1981, Magnetite mapping with a multi-coil airborne electromagnetic system: Geophysics, v. 46, p. 1579-1594.

The attached EM magnetite map is not as valid as it should be. This is because altimeter data were not available to correct the magnetite analysis for variations in flying height.

Respectfully submitted,

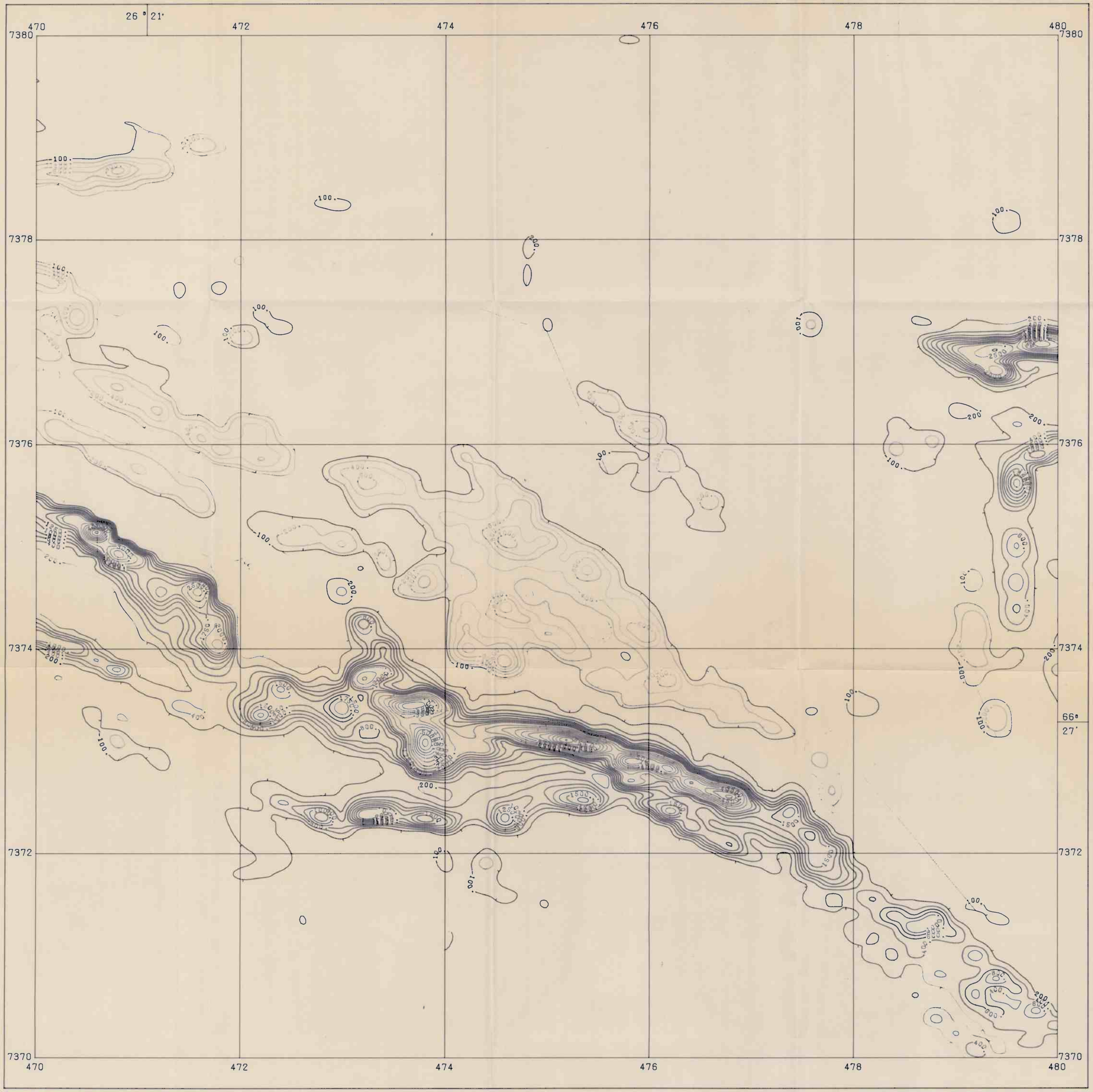
DIGHEM LIMITED

D.C. Fraser
President

S DCF-295/cs June 9/83

LEHTI 3614 04 KULUSSELKÄ

SHEET 3614 04 KULUSSELKÄ



AEROSÄHKÖINEN KARTTA

SÄHKÖMAGNEETTISEN KENTÄN REAALIKOMPONENTTI

LAITETIEDOT

KOPLANAARINEN KELAJÄRJESTELMÄ
KELAVÄLI 21.44 M
LÄHETINKELAN MAGNEETTINEN MOMENTTI 105 AM ^{2}
TAAJUUS 3222 HZ
ILMAISIMEN HERKKYYS 1 PPM.
DIGITAALIREKISTERÖINTI 0.25 S VÄLEIN

LENTOTIEDOT

LENTOKONE DHC-6 TWIN OTTER
KESKIMÄÄRÄINEN LENTONOPEUS 50 M/S
KESKIMÄÄRÄINEN LENTOKORKEUS 36 M
LENTOSUUNTA N-S
LINJAVÄLI 200 M
SUUNNISTUS 1:10000 ILMAKUVAKARTAN AVULLA

MITTAUSLENNOT ON GEOLOGINEN TUTKIMUSLAITOS SUORITTANUT YHTEISTYÖSSÄ KAR-AIR OY:N KANSSA KESÄ-HEINÄKUUSSA 1982

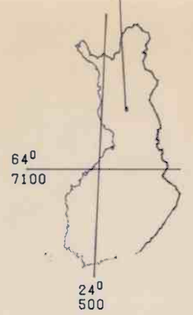
TULOSKÄSITTELYTIEDOT

LENTOLINJAT VANTTAUS 349-401
TASOKORJAUS SUORITETTU
LINEAARINEN KÄYNTIKORJAUS SUORITETTU
SUURET UKKOSHÄIRIÖT POISTETTU
TASOITUS BINOMIKERTOIMIN 3 PISTEEN YLI
PAIKANNUS FILMIN JA KIINTOPISTEIDEN AVULLA
KESKIARVO 121.0
KESKIHAJONTA 541.00
KARTTA JULKISTETTU 1983

SAMA-ARVOKÄYRÄT CONTOURS

<-200.0
-100.0- 200.0
> 400.0

3614 02	3614 05	3614 08
3614 01	3614 04	3614 07
3613 03	3613 06	3613 09



AIRBORNE ELECTROMAGNETIC MAP

IN-PHASE COMPONENT

COPLANAR COIL CONFIGURATION
COIL SEPARATION 21.44 M
FREQUENCY 3222 HZ

SENSITIVITY 1 PPM
DIGITAL RECORDING FOUR TIMES PER SECOND
LEVEL AND LINEAR DRIFT CORRECTIONS APPLIED
MEAN 121.0
STANDARD DEVIATION 541.00
AVERAGE SPEED 50 M/S
AVERAGE ALTITUDE 36 M
TRAVEPSE SEPARATION 200 M
FLIGHT DIRECTION N-S

MITTAKAAVA 1:20000 SCALE

0 0.5 1 KM

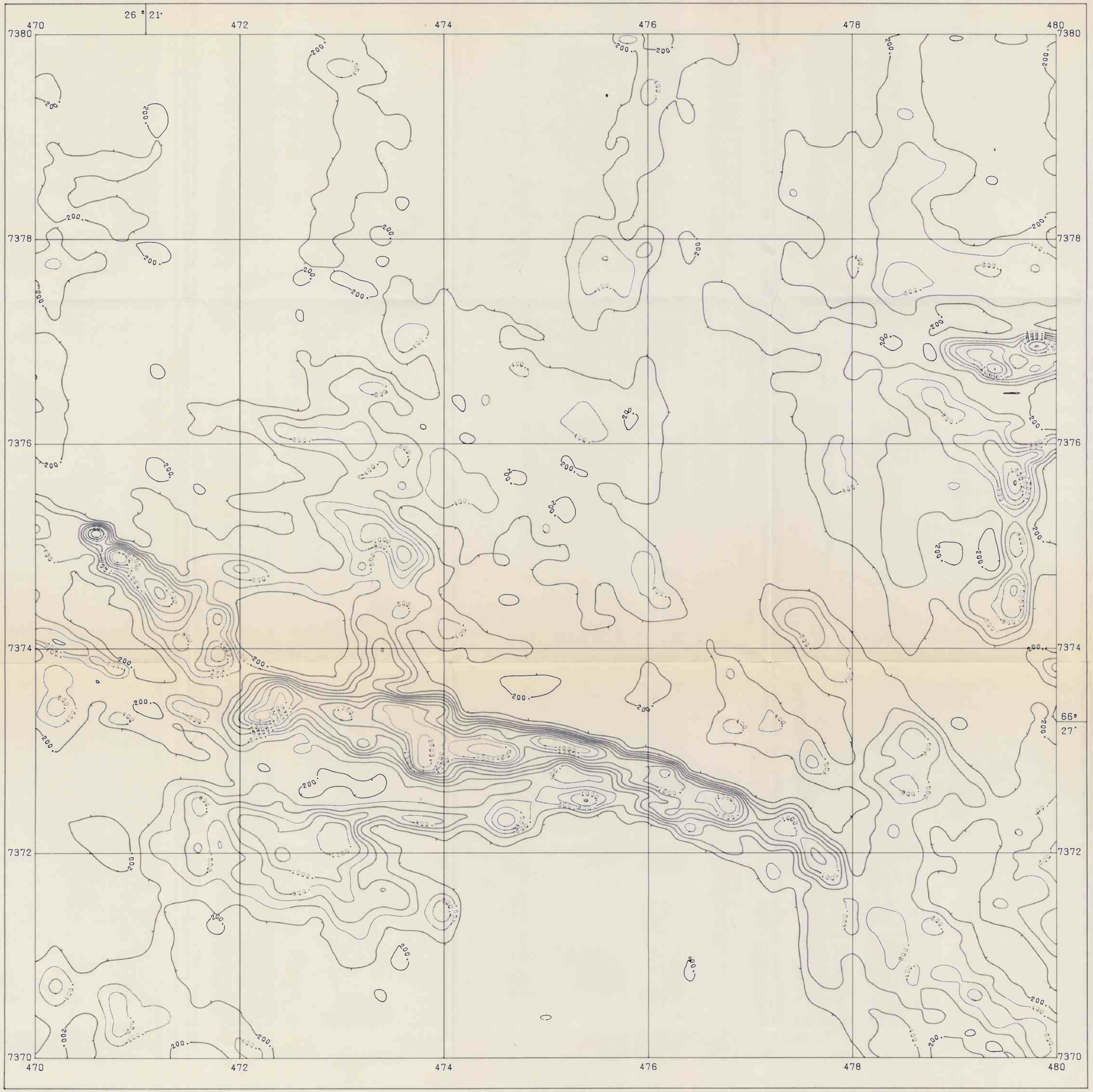
GEOLOGINEN TUTKIMUSLAITOS

GEOLOGICAL SURVEY OF FINLAND

Q 24.822/3614 04/1

LEHTI 3614 04 KULUSSELKÄ

SHEET 3614 04 KULUSSELKÄ



Q 24.812/3614 04/1

AEROSÄHKÖINEN KARTTA

SÄHKÖMAGNEETTISEN KENTÄN IMAGINAARIKOMPONENTTI

LAITETIEDOT

KOPLANAARINEN KELAJÄRJESTELMÄ
KELAVÄLI 21.44 M
LÄHETINKELAN MAGNEETTINEN MOMENTTI 105 AM ^{2}
TAAJUUS 3222 HZ
ILMAISIMEN HERKKYYS 1 PPM.
DIGITAALIREKISTERÖINTI 0.25 S VÄLEIN

LENTOTIEDOT

LENTOKONE DHC-6 TWIN OTTER
KESKIMÄÄRÄINEN LENTONOPEUS 50 M/S
KESKIMÄÄRÄINEN LENTOKORKEUS 36 M
LENTOSUUNTA N-S
LINJAVÄLI 200 M
SUUNNISTUS 1:10000 ILMAKUVAKARTAN AVULLA

MITTAUSLENNOT ON GEOLOGINEN TUTKIMUSLAITOS SUORITTANUT YHTEISTYÖSSÄ KAR-AIR OY:N KANSSA KESÄ-HEINÄKUUSSA 1982

TULOSKÄSITTELYTIEDOT

LENTOLINJAT VANTTAUS 349-401
TASOKORJAUS SUORITETTU
LINEAARINEN KÄYNTIKORJAUS SUORITETTU
SUURET UKKOSHÄIRIÖT POISTETTU
TASOITUS BINOMIKERTOIMIN 3 PISTEEN YLI
PAIKANNUS FILMIN JA KIINTOPISTEIDEN AVULLA
KESKIARVO 351.0
KESKIHAJONTA 726.00
KARTTA JULKISTETTU 1983

SAMA-ARVOKÄYRÄT CONTOURS

<-200.0
-100.0- 200.0
> 400.0

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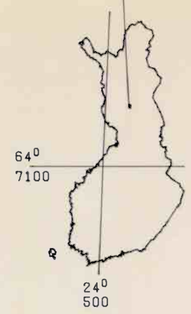
3614 01	3614 04	3614 07
3613 03	3613 06	3613 09



AIRBORNE ELECTROMAGNETIC MAP

QUADRATURE COMPONENT

COPLANAR COIL CONFIGURATION
COIL SEPARATION 21.44 M
FREQUENCY 3222 HZ

SENSITIVITY 1 PPM
DIGITAL RECORDING FOUR TIMES PER SECOND
LEVEL AND LINEAR DRIFT CORRECTIONS APPLIED
MEAN 351.0
STANDARD DEVIATION 726.00
AVERAGE SPEED 50 M/S
AVERAGE ALTITUDE 36 M
TRAVERSE SEPARATION 200 M
FLIGHT DIRECTION N-S

MITTAKAAVA 1:20000 SCALE

0 0.5 1 KM

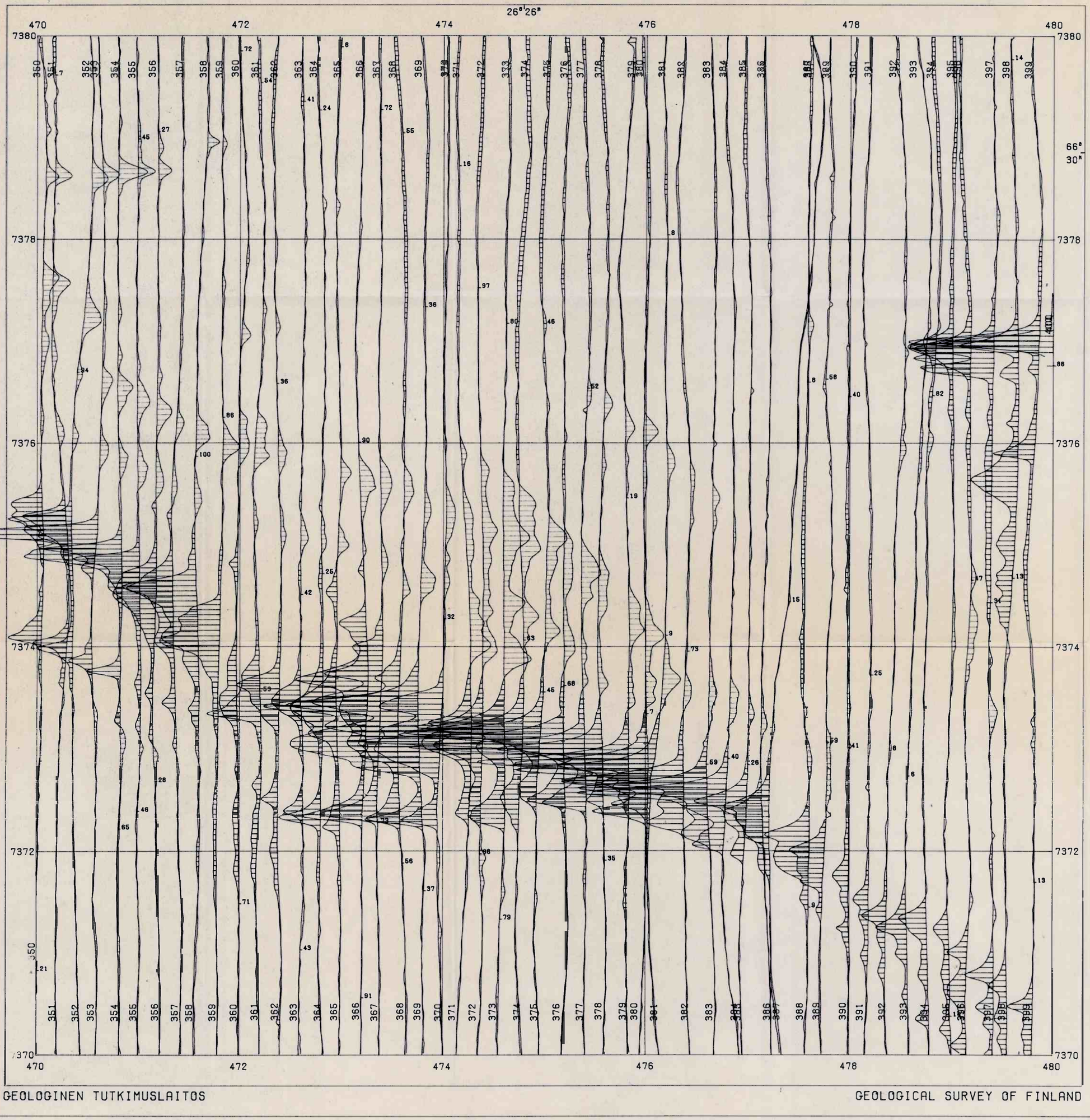
GEOLOGINEN TUTKIMUSLAITOS

GEOLOGICAL SURVEY OF FINLAND

LEHTI 3614 04 KULUSSELKÄ

SHEET 3614 04 KULUSSELKÄ

Q 24.821/3614 04/1



AEROGEOFYSIKAALINEN KARTTA

SÄHKÖMAGNEETTISEN KENTÄN REAALIKOMPONENTTI

MITTAUSLAITETIEDOT

PYSTY KOPLANAARINEN KELAJÄRJESTELMÄ
KELAVÄLI 21.36 M
LÄHETINKELAN MAGNEETTINEN MOMENTTI 105 AM^2
TAAJUUS 3113 HZ
ILMAISIMEN HERKKYYS 1 PPM
DIGITAALINEN REKISTERÖINTI 0.25 S VÄLEIN

LENTOTIEDOT

LENTOKONE DHC-6 TWIN OTTER
KESKIMÄÄRÄINEN LENTONOPEUS 50 M/S
KESKIMÄÄRÄINEN LENTOKORKEUS 36 M
LENTOKORKEUDEN KESKIHAJONTA 5.8 M
LINJAVÄLI 200 M LENTOSUUNTA N-S
SUUNNISTUS 1:10000 ILMAKUVAKARTAN AVULLA
MITTAUSLENNOT ON GEOLOGINEN TUTKIMUS-
LAITOS SUORITTANUT YHTEISTYÖSSÄ KAR-AIR
OY:N KANSSA KESÄ-HEINÄKUUSSA 1982

TULOSKÄSITTELYTIEDOT

TASOKORJAUS SUORITETTTU
LINEAARINEN KAYNTIKORJAUS SUORITETTU
SUURET UKKOSHÄIRIÖT POISTETTU
AIKAVAKIOSUODATUS TEHTY
TASOITUS 5 PISTEEN YLI
PAIKANNUS FILMIN JA KIINTOPISTEIDEN AVULLA
KOMPONENTIN KESKIARVO 122. PPM
KOMPONENTIN KESKIHAJONTA 485. PPM
KARTTA JULKISTETTU 1983

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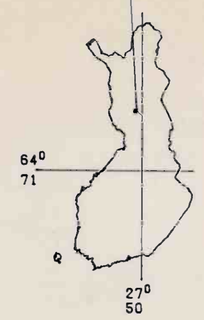
3614 01	3614 04	3614 07
3613 03	3613 08	3613 09



AEROGEOPHYSICAL MAP

ELECTROMAGNETIC FIELD REAL COMPONENT

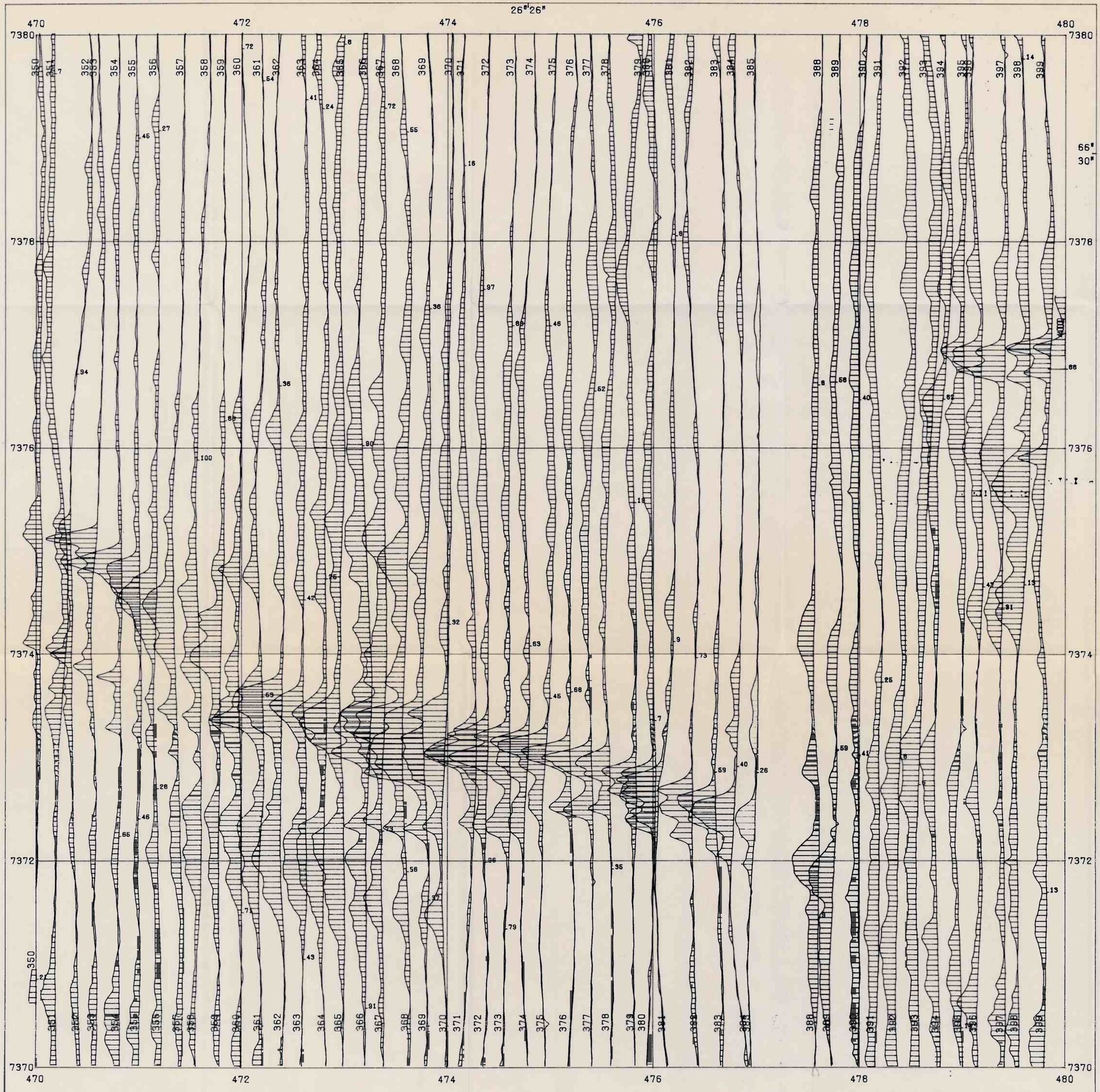
VERTICAL COPLANAR COIL CONFIGURATION
COIL SEPARATION 21.36 M
MAGNETIC MOMENT OF TRANSMITTER COIL 105 AM^2
FREQUENCY 3113 HZ
SENSITIVITY 1 PPM
DIGITAL RECORDING FOUR TIMES PER SECOND
LEVEL AND LINEAR DRIFT CORRECTIONS APPLIED
AVERAGE SPEED 50 M/S
AVERAGE ALTITUDE 36 M
LINE SEPARATION 200 M
FLIGHT DIRECTION N-S
MEAN VALUE OF COMPONENT 122. PPM
STANDARD DEVIATION OF COMPONENT 485. PPM

MITTAKAAVA 1:20000 SCALE

0 0.5 1 KM

GEOLOGINEN TUTKIMUSLAITOS

GEOLOGICAL SURVEY OF FINLAND



AEROGEOFYSIKAALINEN KARTTA

SÄHKÖMAGNEETTISEN KENTÄN IMAGINAARIKOMPONENTTI

MITTAUSLAITETIEDOT

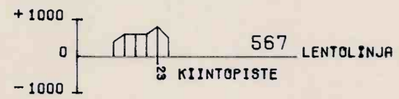
PYSTY KOPLANAARINEN KELAJÄRJESTELMÄ
KELAVÄLI 21.36 M
LÄHETINKELAN MAGNEETTINEN MOMENTTI 105 AM^2
TAAJUUS 3113 HZ
ILMAISIMEN HERKKYYS 1 PPM
DIGITAALINEN REKISTERÖINTI 0.25 S VÄLEIN

LENTOTIEDOT

LENTOKONE DHC-6 TWIN OTTER
KESKIMÄÄRÄINEN LENTONOPEUS 50 M/S
KESKIMÄÄRÄINEN LENTOKORKEUS 36 M
LENTOKORKEUDEN KESKIHAJONTA 5.8 M
LINJAVÄLI 200 M LENTOSUUNTA N-S
SUUNNISTUS 1:10000 ILMAKUVAKARTAN AVULLA
MITTAUSLENNOT ON GEOLOGINEN TUTKIMUS-
LAITOS SUORITTANUT YHTEISTYÖSSÄ KAR-AIR
OY:N KANSSA KESÄ-HEINÄKUUSSA 1982

TULOSKÄSITTELYTIEDOT

TASOKORJAUS SUORITETTTU
LINEAARINEN KÄYNTIKORJAUS SUORITETTU
SUURET UKKOSHÄIRIÖT POISTETTU
AIKAVAKIOSUODATUS TEHTY
TASOITUS 5 PISTEEN YLI
PAIKANNUS FILMIN JA KIINTOPISTEIDEN AVULLA
KOMPONENTIN KESKIARVO 258. PPM
KOMPONENTIN KESKIHAJONTA 292. PPM
KARTTA JULKISTETTU 1983



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3614 01	3614 04	3614 07
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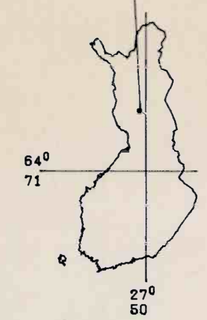

AEROGEOPHYSICAL MAP

ELECTROMAGNETIC FIELD IMAGINARY COMPONENT

VERTICAL COPLANAR COIL CONFIGURATION
COIL SEPARATION 21.36 M
MAGNETIC MOMENT OF TRANSMITTER COIL 105 AM^2
FREQUENCY 3113 HZ
SENSITIVITY 1 PPM
DIGITAL RECORDING FOUR TIMES PER SECOND
LEVEL AND LINEAR DRIFT CORRECTIONS APPLIED
AVERAGE SPEED 50 M/S
AVERAGE ALTITUDE 36 M
LINE SEPARATION 200 M
FLIGHT DIRECTION N-S
MEAN VALUE OF COMPONENT 258. PPM
STANDARD DEVIATION OF COMPONENT 292. PPM

MITTAKAAVA 1:20000 SCALE

0 0.5 1 KM

Q 24.811/3614 04/1

AEM SURVEY BY GEOLOGICAL SURVEY OF FINLAND

PRESENTATION AND PROCESSING BY DIGHEM LTD.

ELECTROMAGNETICS

Flight Line

5 ← Fiducial

4 ← Fiducial

44 Line Number

Scale 1:20,000

1 0 1 2 Kilometres

1/2 0 1/2 1 Miles

LEGEND

ANOMOLY GRADE	E M GRADE SYMBOL	CONDUCTANCE RANGE (MHOS)
6	●	> 99
5	✹	50–99
4	◉	20–49
3	◉	10–19
2	○	5–9
1	○	< 5
—	×	Indeterminate

AEM SURVEY BY GEOLOGICAL SURVEY OF FINLAND

PRESENTATION AND PROCESSING BY DIGHEM LTD.

RESISTIVITY

Flight Line

5 ← Fiducial

4 ← Fiducial

44 Line Number

Scale 1:20,000

1 0 1 2 Kilometres

1 2 0 1 2 1 Miles

LEGEND

Contours in ohm – m
at ten intervals per decade

1000
800
600
500
400
300
250
200
150
125
100

Note

The numbers face in the direction of increasing value

AEM SURVEY BY GEOLOGICAL SURVEY OF FINLAND

PRESENTATION AND PROCESSING BY DIGHEM LTD.

EM MAGNETITE

Flight Line

5 ← Fiducial

4 ← Fiducial

44 Line Number

LEGEND

CONTOURS	APPARENT WEIGHT % MAGNETITE
5	5.00
	4.75
4.5	4.50
	4.25
4	4.00

Scale 1:20,000

1 0 1 2 Kilometres

1/2 0 1/2 1 Miles