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Sammendrag This report presents results from a detailed ground VLF and magnetic survey at the Gjedde Lake in Pasvik. This years survey extends the IP, magnetic, and VLF survey from 1995 (Lauritsen 1995). The purpose of the geophysical survey was primarily to detect possible faults in order to gain knowledge about the structural control of the mineralization, secondarily the lithological control. The strongest and most elongate VLF anomalies are centered along the Gjedde Lake and its prolongation in the strike direction. The strong anomalies that define the south and north edge of this anomaly band are considered to represent current concentration in graphitic schists. Breaks in these VLF anomalies indicate some transverse faults or flexures. Two parallel magnetic highs east of the Gjedde Lake continues along the Lake and its prolongation in the strike direction towards the west. These magnetic highs may represent the magnetite-bearing cherty quartzite. Discontinuities in these magnetic highs may to some extent confirm the transverse faults and flexures suggested by the VLF measurements. Negative magnetic total field anomalies parallel to these magnetic highs may indicate faults in the strike direction as well. The presence of weak VLF anomalies over moderately positive magnetic anomalies may suggest the presence of pyrrhotite-bearing quartzites. The combination of strong VLF anomalies and magnetic highs may indicate alternating graphitic schists and magnetite-bearing quartzites.				



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County: Finnmark		Commune: Sør-Varanger	
Map-sheet name (M=1:250,000) Kirkenes		Map-sheet no. og -name (M=1:50,000) 2333 I Vaggatem	
Deposit name and grid-reference: Gjedde Lake 35W 59230 769780		Number of pages: 7 Map enclosures: 4	Price (NOK):
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Summary: This report presents results from a detailed ground VLF and magnetic survey at the Gjedde Lake in Pasvik. This years survey extends the IP, magnetic, and VLF survey from 1995 (Lauritsen 1995). The purpose of the geophysical survey was primarily to detect possible faults in order to gain knowledge about the structural control of the mineralization, secondarily the lithological control. The strongest and most elongate VLF anomalies are centered along the Gjedde Lake and its prolongation in the strike direction. The strong anomalies that define the south and north edge of this anomaly band are considered to represent current concentration in graphitic schists. Breaks in these VLF anomalies indicate some transverse faults or flexures. Two parallel magnetic highs east of the Gjedde Lake continues along the Lake and its prolongation in the strike direction towards the west. These magnetic highs may represent the magnetite-bearing cherty quartzite. Discontinuities in these magnetic highs may to some extent confirm the transverse faults and flexures suggested by the VLF measurements. Negative magnetic total field anomalies parallel to these magnetic highs may indicate faults in the strike direction as well. The presence of weak VLF anomalies over moderately positive magnetic anomalies may suggest the presence of pyrrhotite-bearing quartzites. The combination of strong VLF anomalies and magnetic highs may indicate alternating graphitic schists and magnetite-bearing quartzites.			
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1 INTRODUCTION

In connection with mapping of the Gjedde Lake gold mineralization in Pasvik in Finnmark, a ground geophysical survey was carried out along some chosen profiles in the summer of 1995 (Lauritsen 1995). The survey was carried out using IP (Induced Polarisation), RP (Resistivity Potential), SP (Self Potential), magnetic (Total Field), and VLF (Very Low Frequency) methods. The geophysical results indicated a complex geology because of the discontinuous nature of the anomalies. It was suggested that northeast trending faults could explain the complex geophysical picture.

This years detailed survey (VLF and magnetic) extends the IP, magnetic, and VLF survey from 1995 (Lauritsen 1995). The purpose of the survey was primarily to detect faults which may represent one of the factors controlling the localization of the mineralization.

Heavy snow conditions put obstacles in the way of carrying out a quick investigation.

2 MEASUREMENTS

The profiles, orientated 351° to magnetic north, were marked out in the snow using compass and measuring wire. The distance between measuring points were 12.5 m and 6.25 m for the VLF method, and 5 m for the magnetic method.

The VLF survey was carried out using NGU's self produced VLF instrument, while the magnetic survey was carried out using the ENVI-MAG proton precession magnetometer from SCINTREX Ltd. A MP-3 proton magnetometer from SCINTREX Ltd. served as base station for monitoring of diurnal variations. The magnetic conditions were very stable during the days of surveying, and it was not necessary to make corrections.

3 RESULTS AND COMMENTS

The results from the VLF measurements are presented in figures 1- 8. Based on these results a VLF-interpretation map was made (map no. 96.085- 05). The contours of lakes and brooks are digitalized from a map with scale 1 : 50 000. On that account details in the outline of the lakes will not show on these maps.

The strongest and most elongate VLF anomalies are centered along the Gjedde Lake and its prolongation in the strike direction. The strong anomalies that define the south and north edge of this anomaly band are considered to represent current concentration in graphitic schists. Between these two anomalies there may be alternating graphitic schists and magnetite-bearing cherty quartzite. The southernmost anomaly zone is interpreted to have a shallow rock dip towards the south/southwest. This corresponds with observations made by V. A. Melezhik (Melezhik 1995). A discontinuous nature of the zones may indicate transverse faults or duplex structures along the strike. The current is normally concentrated a bit below the outcropping of the graphitic schist. Because of the shallow dip of the assumed graphitic schist the anomaly is present just south of the assumed contact as indicated by the RP measurements from 1995 (Lauritsen, 1995).

The results from total magnetic field surveying are shown in maps no. 96.085- 03 and - 04. Magnetic interpretations of these maps are presented together with the VLF interpretations in map no. -05. Map no.- 03 shows the total magnetic field as a shaded relief grid, based on the investigations carried out in 1996. A magnetic high east of the Gjedde Lake continues along the Lake and its prolongation in the strike direction towards the west. The magnetic high might represent a magnetite-bearing part of the cherty quartzite. The above-mentioned VLF-anomalies seem to lie within both magnetic highs and lows, which indicates the presence of alternating graphitic schist and magnetite-bearing quartzite. Another magnetic high is seen in the northwest (profiles 1400 E and 1500 E) which also suggests the presence of magnetite-bearing quartzites (Ettner, 1995).

Map no.- 04 is based on both the 1995 and the 1996 surveys. It shows a shaded relief grid for highpass filtered total magnetic field (residual magnetic field). Each profile is independently filtered to remove wavelengths longer than approximately 300-500 meters. This map emphasizes local anomalies and trends. A drawback with the particular method used here is that the magnetic values at the end of each profile are forced to 0. This means that single magnetic lows and highs at the end of each profile may not be real. In the east it seems that the magnetic highs are caused by two parallel zones that go from profile 1950 E to profile 1725 E. At profile 1725 E a possible transverse dislocation or flexured bedding seems to displace the two zones towards the south. The discontinuous nature of the VLF zones in this area may support this. Two other possible transverse structures are indicated by breaks in the magnetic anomalies at the central part of the Gjedde Lake. One is possibly displaced/offset from coordinates 1525 E/ 900 N to 1625 E/ 1000 N and the other from co-ordinates 1425 E/ 975 N to 1550 E/ 1065 N. These two structures are also «confirmed» by disturbances of the VLF anomaly pattern.

The magnetic low between and parallel to the two magnetic highs along the Gjedde Lake may indicate possible shear zones/duplexes in the strike direction as well. In this case the breaks in VLF anomalies might be explained as folds.

4 CONCLUSION

The strongest and most continuous VLF anomalies are found along the Gjedde Lake and further east and west in the strike direction. The strong anomalies that define the south and north edge of this zone of anomalies are considered to represent current concentration in graphitic schists. Breaks in the VLF anomalies indicate the presence of transverse faults or flexures. The two parallel magnetic highs east of the Gjedde Lake continues along the lake and further towards the west along the strike. These magnetic highs may represent the magnetite-bearing cherty quartzites. Discontinuities in the magnetic anomalies may to some extent confirm the presence of transverse faults and flexures suggested by the VLF measurements. Negative magnetic total field anomalies parallel to the magnetic highs may indicate shear zones/duplexes in the strike direction as well.

The presence of weak VLF anomalies over moderately positive magnetic anomalies may suggest the presence of pyrrhotite-bearing quartzites. The combination of strong VLF anomalies and magnetic highs may indicate alternating graphitic schists and magnetite-bearing quartzites.

5 REFERENCES

- Melezhik, Victor A. 1995: The Gjedde Lake gold occurrence in Pasvik, *NGU Report 95.079*, 25 pp.
- Lauritsen, Torleif 1995: Geofysiske bakkemålinger ved Gjeddevann i Pasvik, Sør-Varanger Kommune, Finnmark, 1995. *NGU Rapport 95.119*, 10 pp.
- Ettner, David 1995: Preliminary geological investigation of the Gjedde Lake Gold Prospect, Pasvik Norway. *GEOCARE Report*, 12 pp.

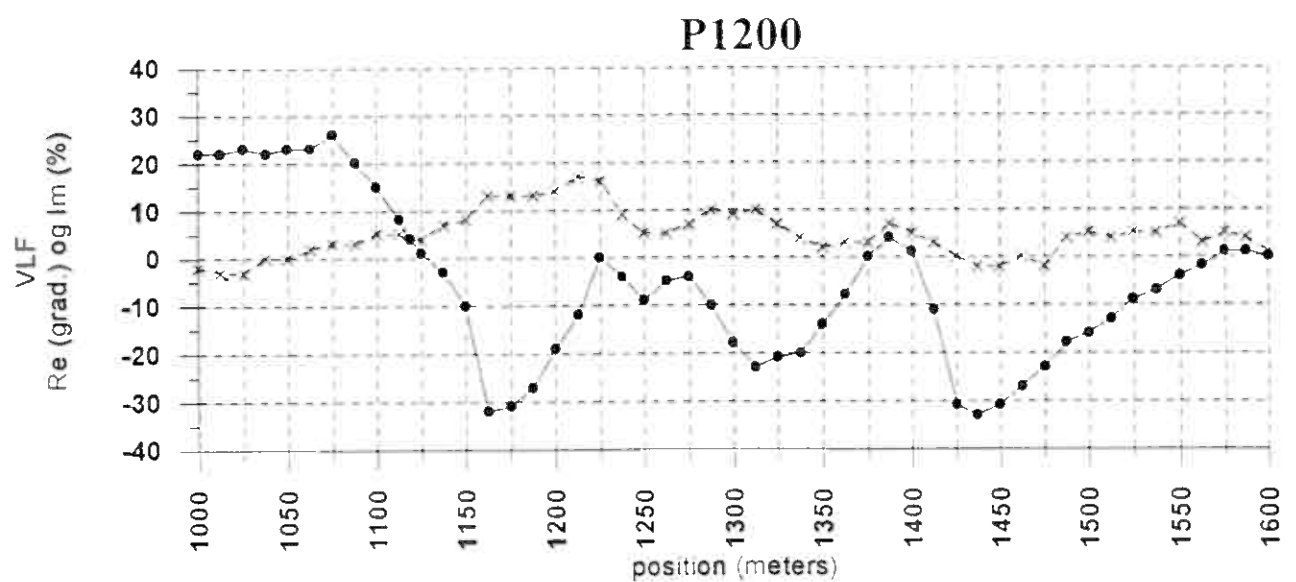
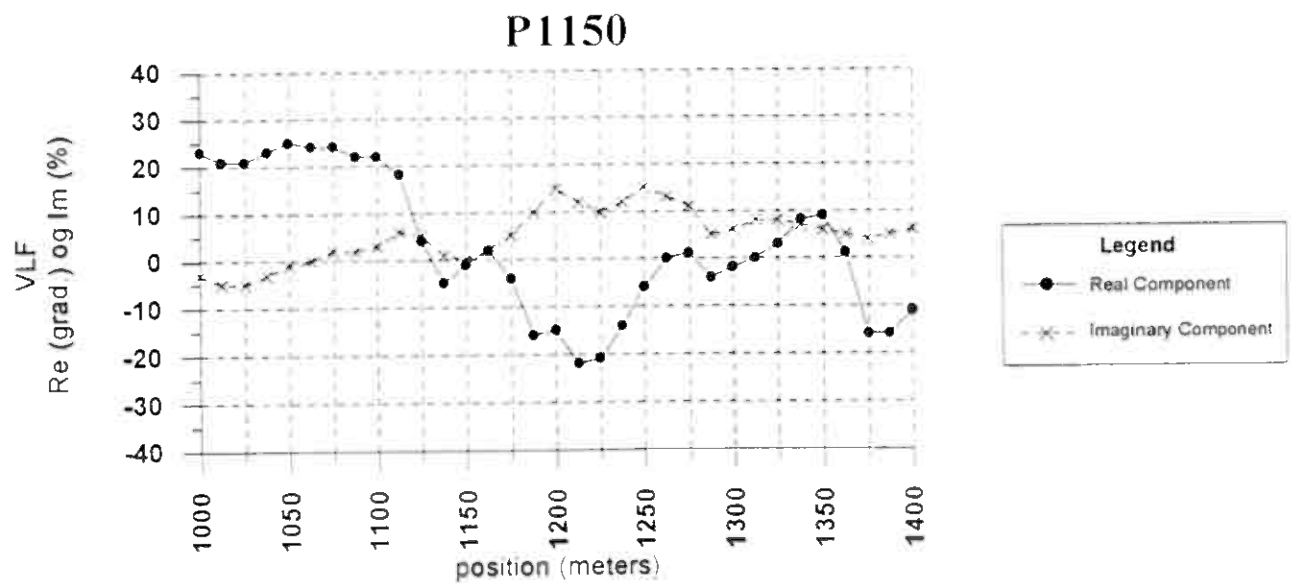
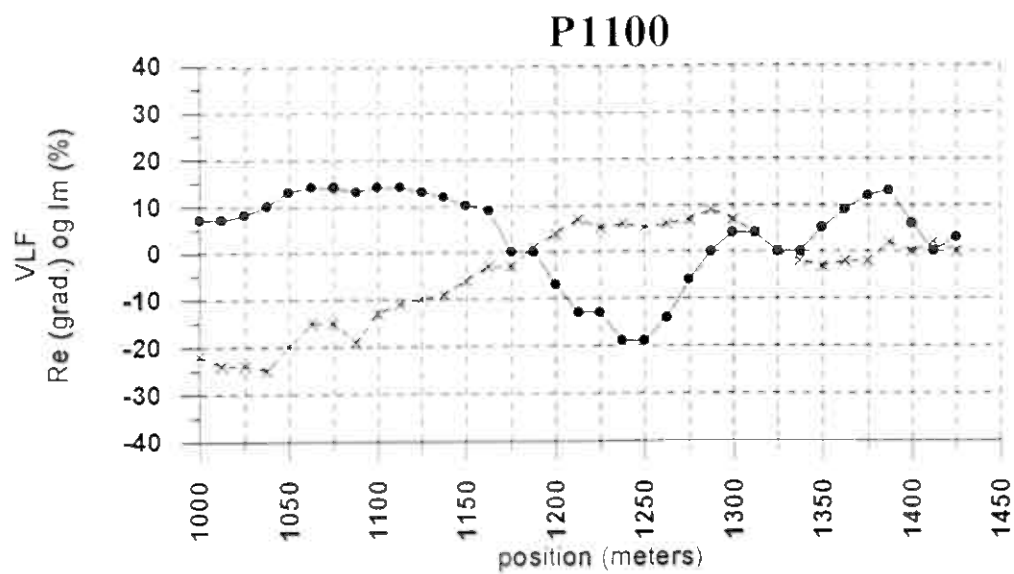


Figure 1: VLF profiling curves; P1100, P1150 and P1200.

Figure 2: VLF profiling curves, P1250 and P1300.

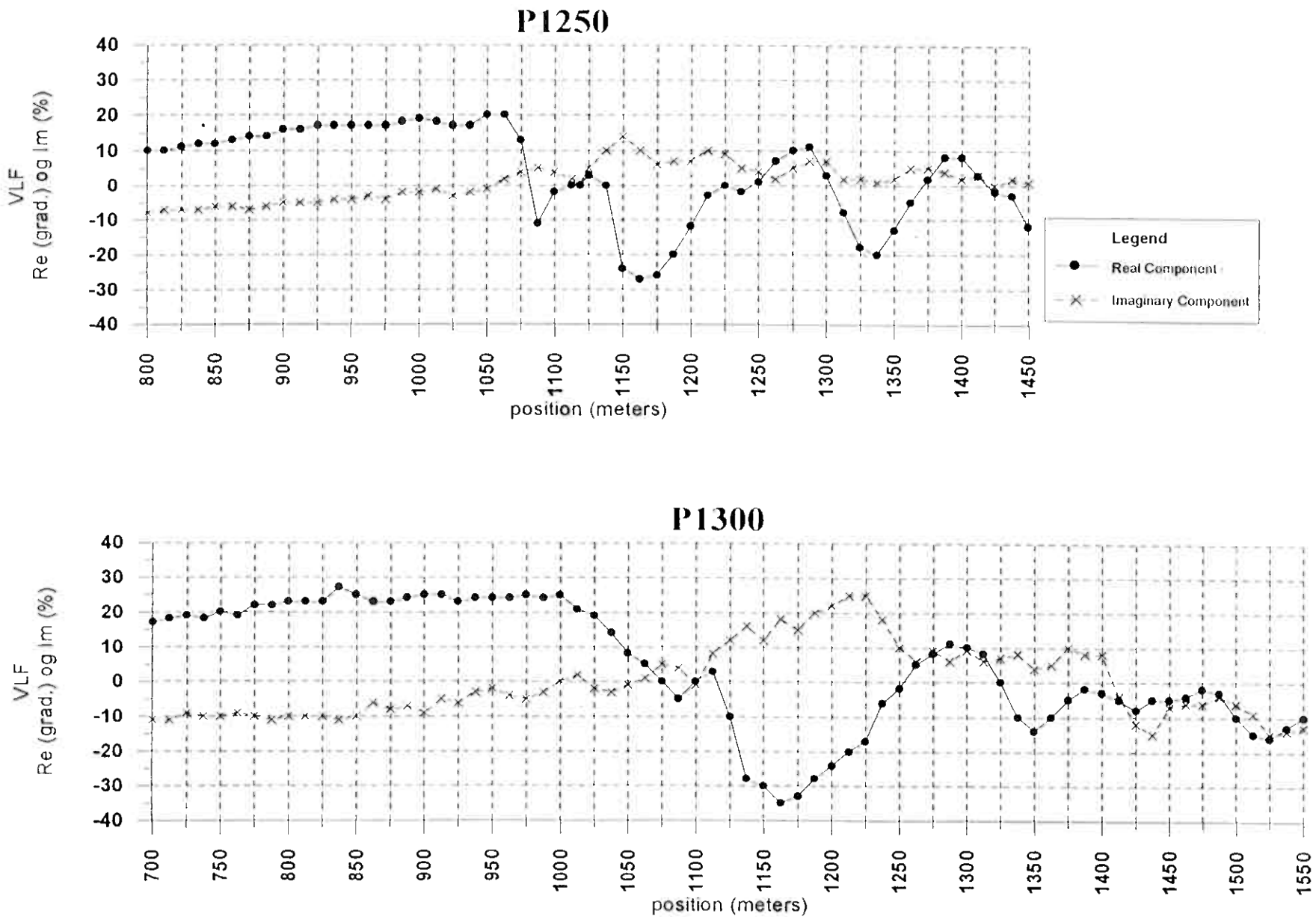
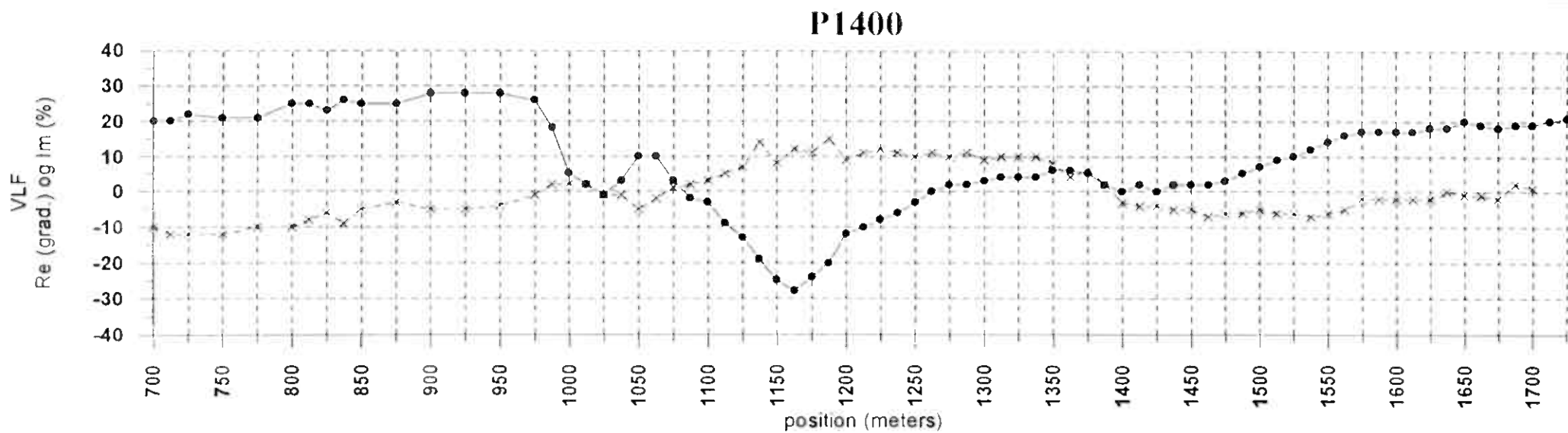
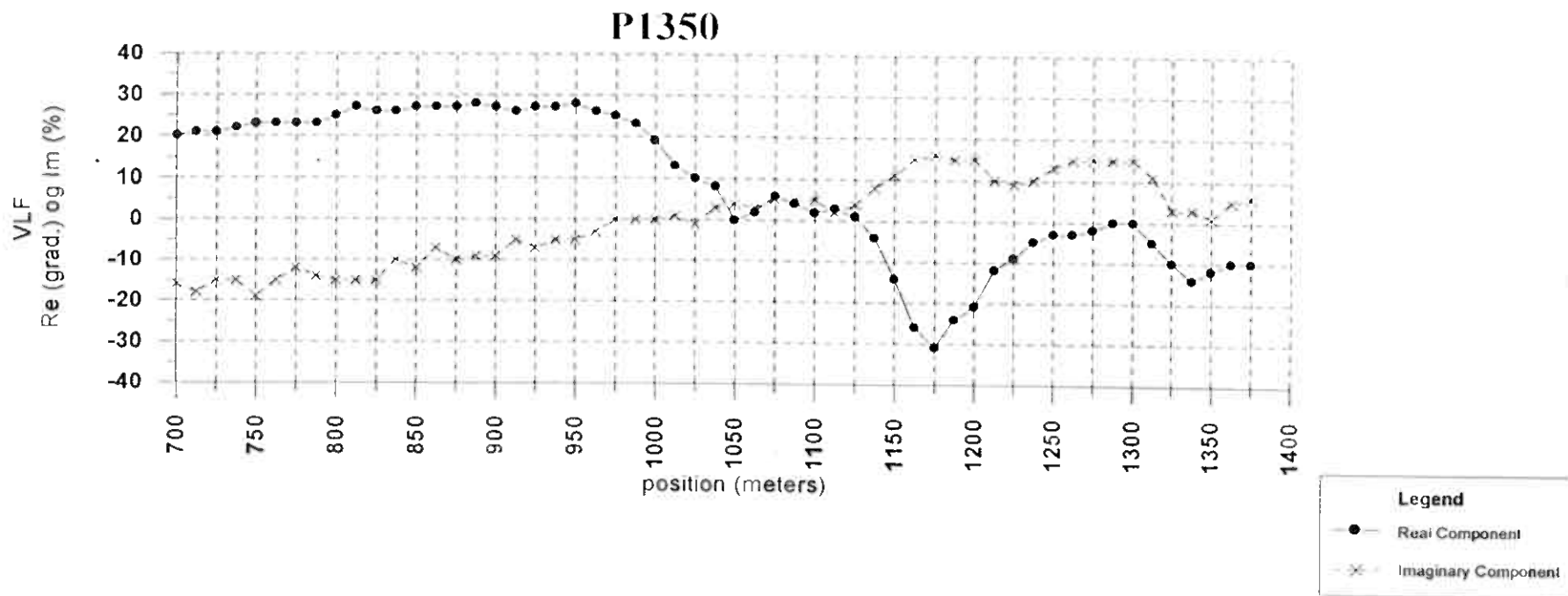


Figure 3: VLF profiling curves: P1350 and P1400.



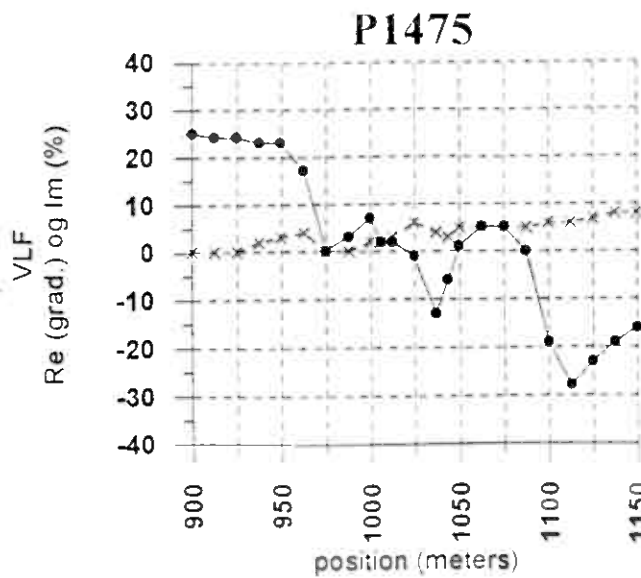
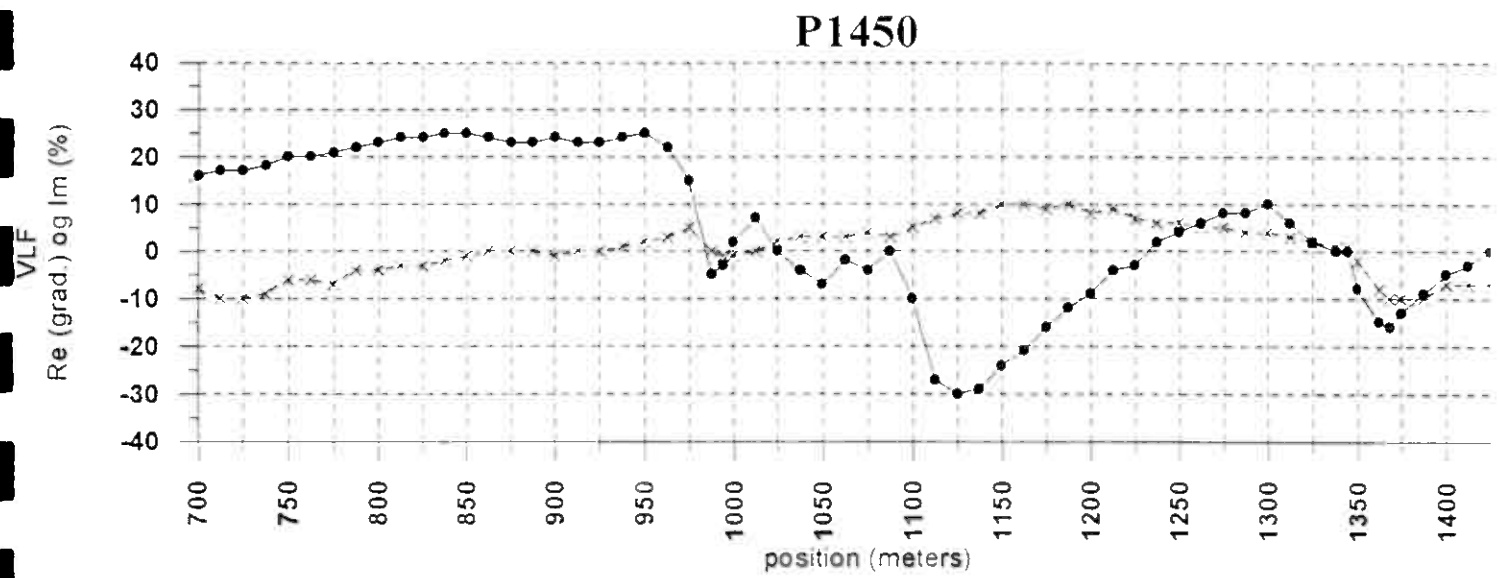
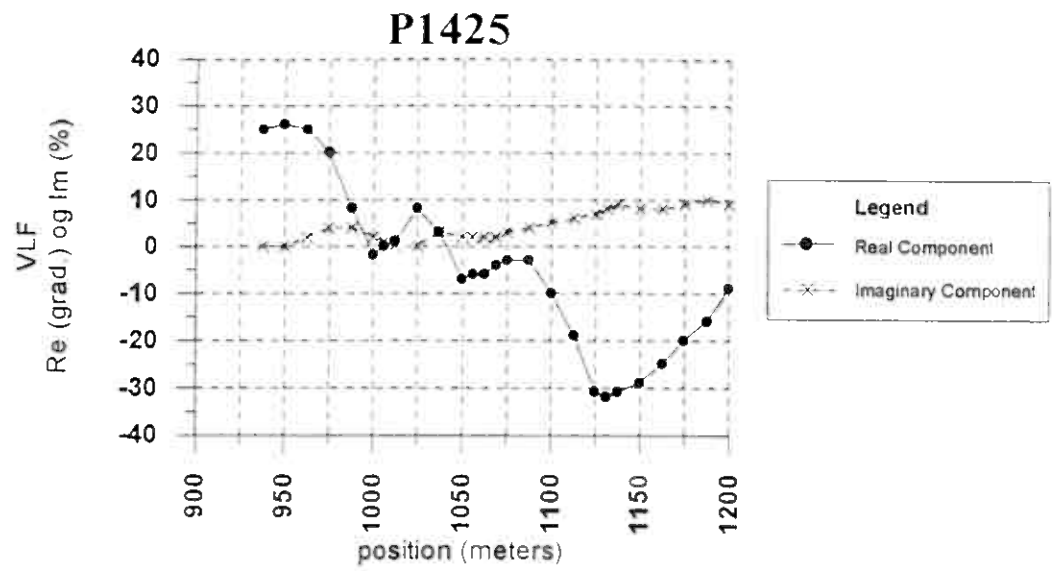
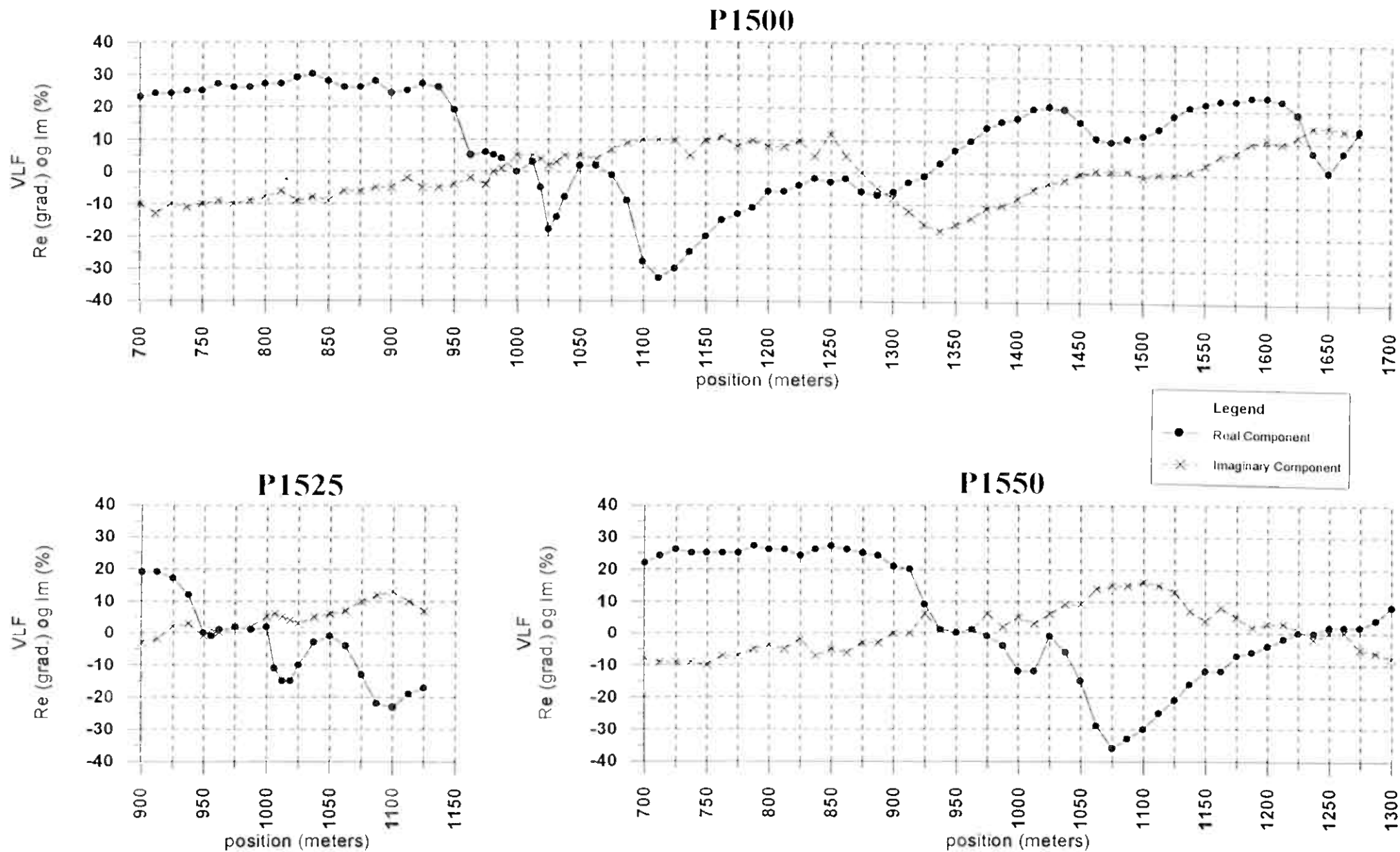


Figure 4: VLF profiling curves: P1425, P1450 and P1475.

Figure 5: VLF profiling curves: P1500, P1525 and P1550.



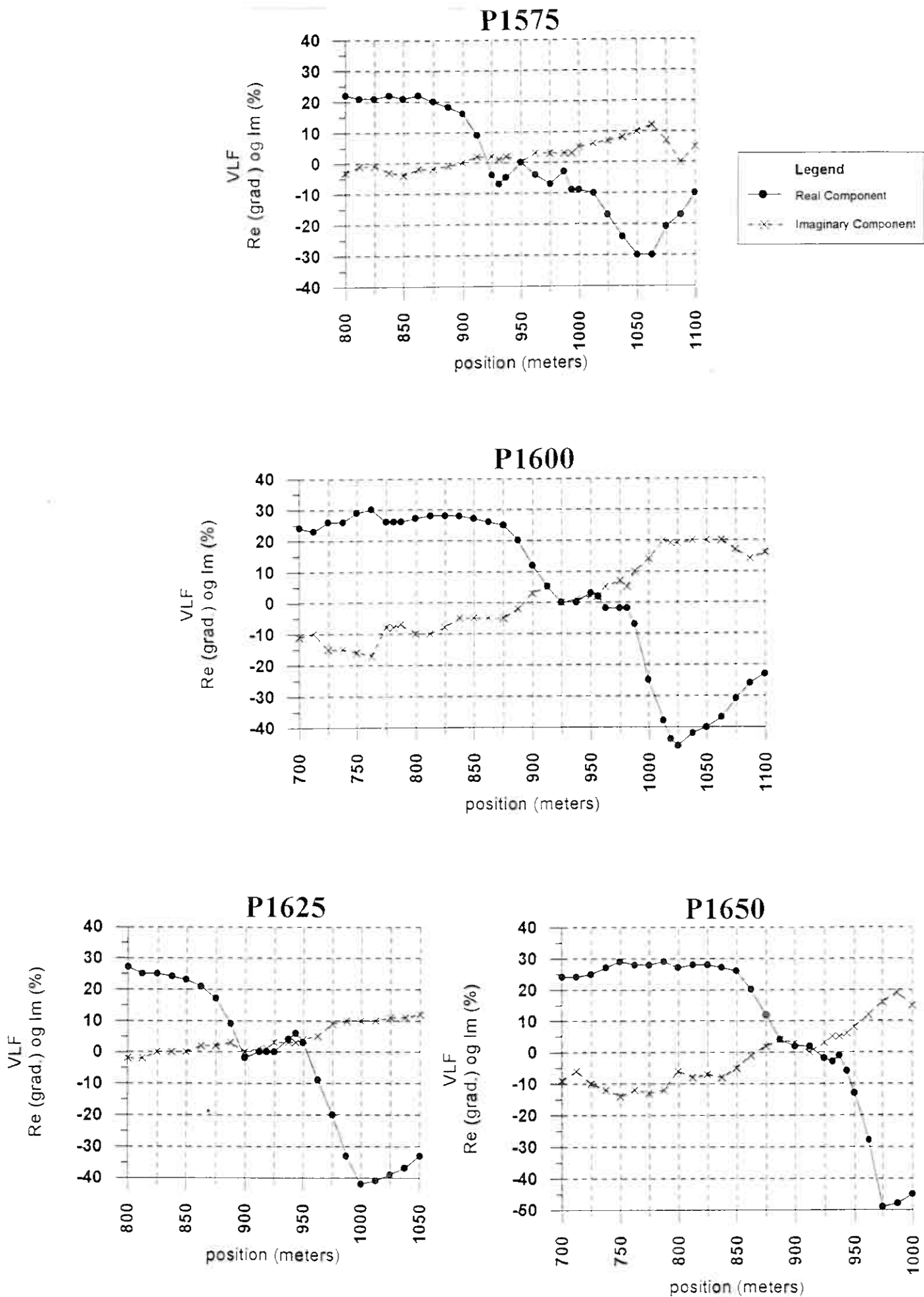


Figure 6: VLF profiling curves; P1575, P1600, P1625 and P1650.

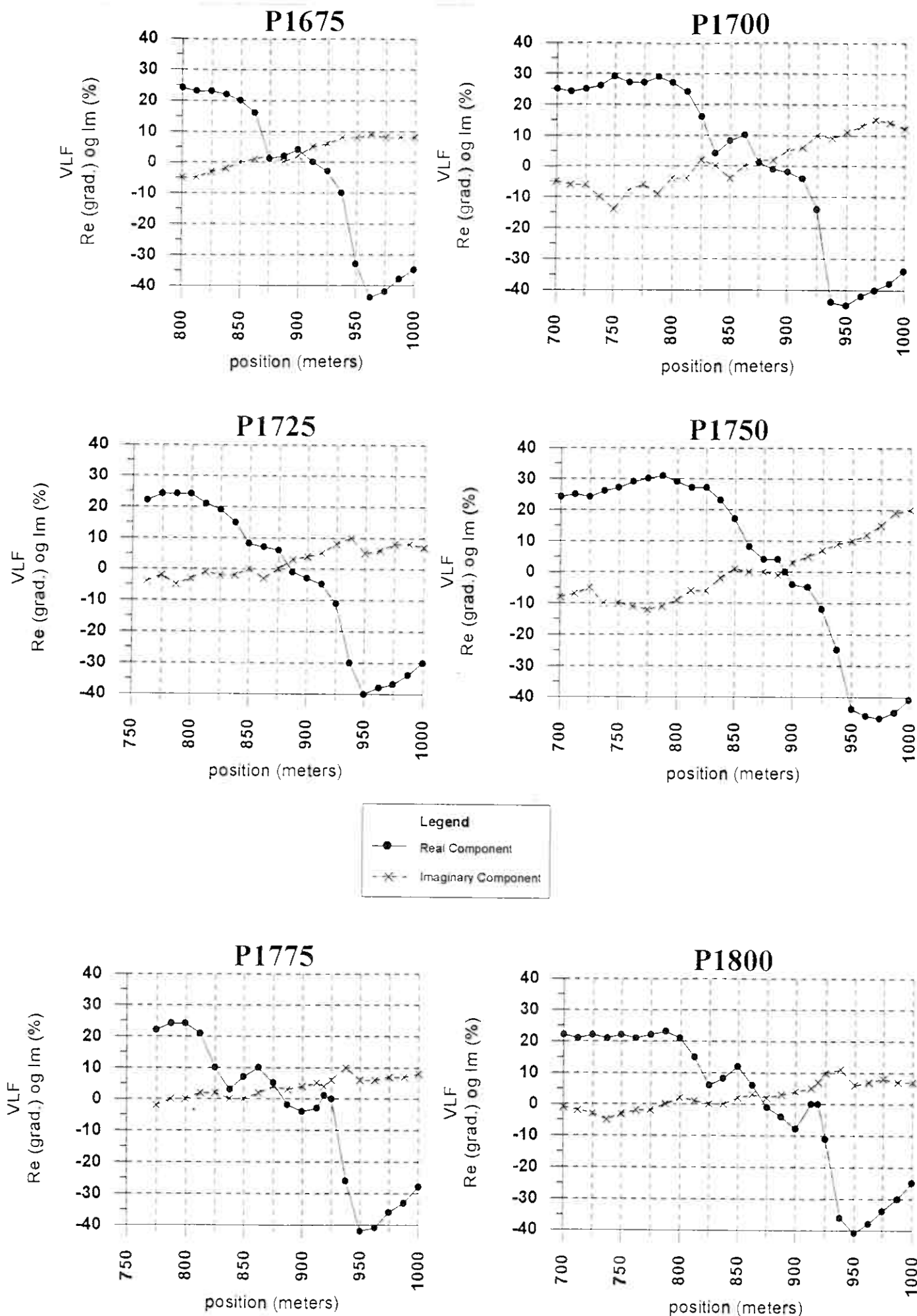


Figure 7: VLF profiling curves; P1675, P1700, P1725, P1750, P1775 and P1800.

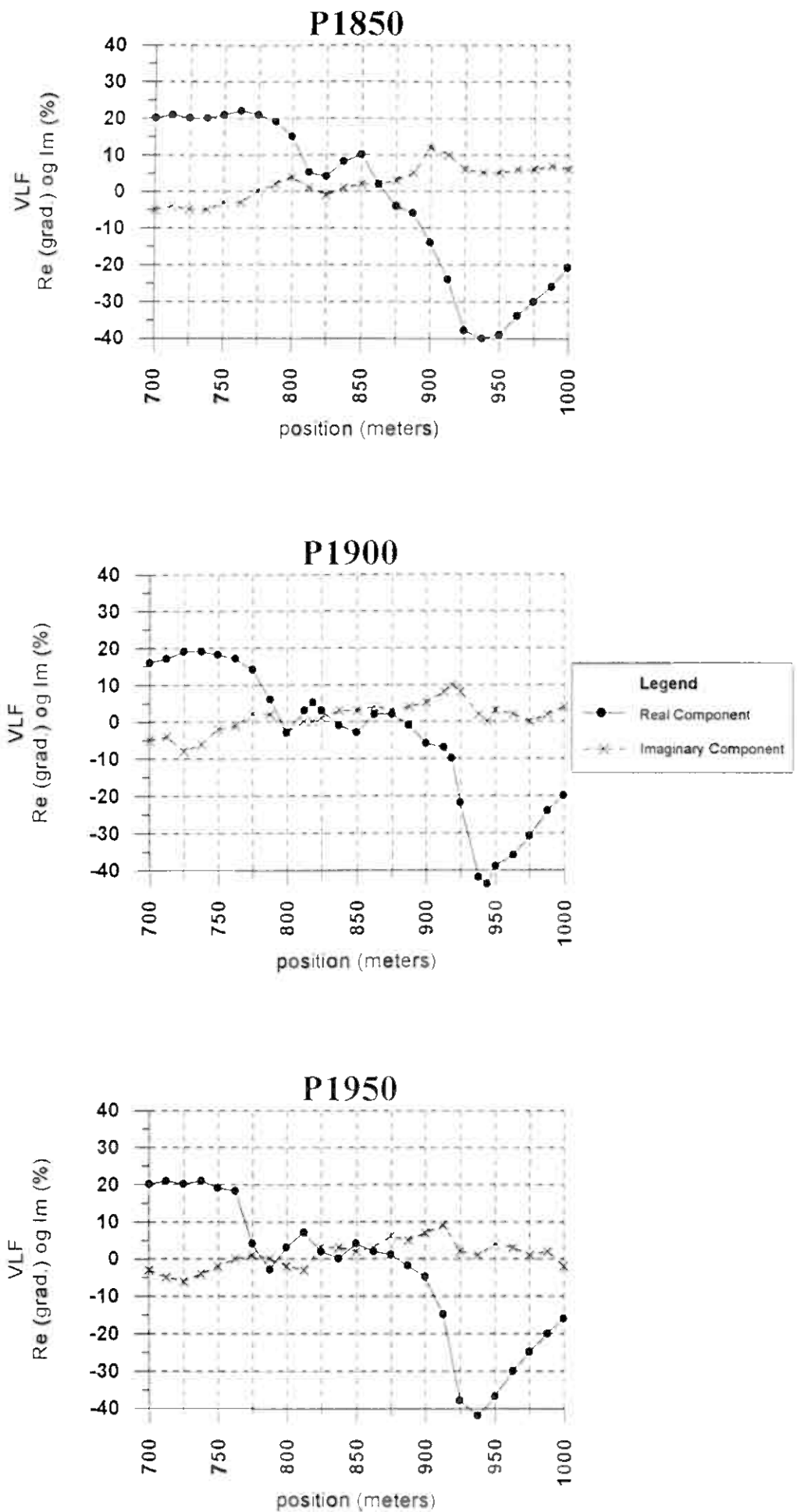
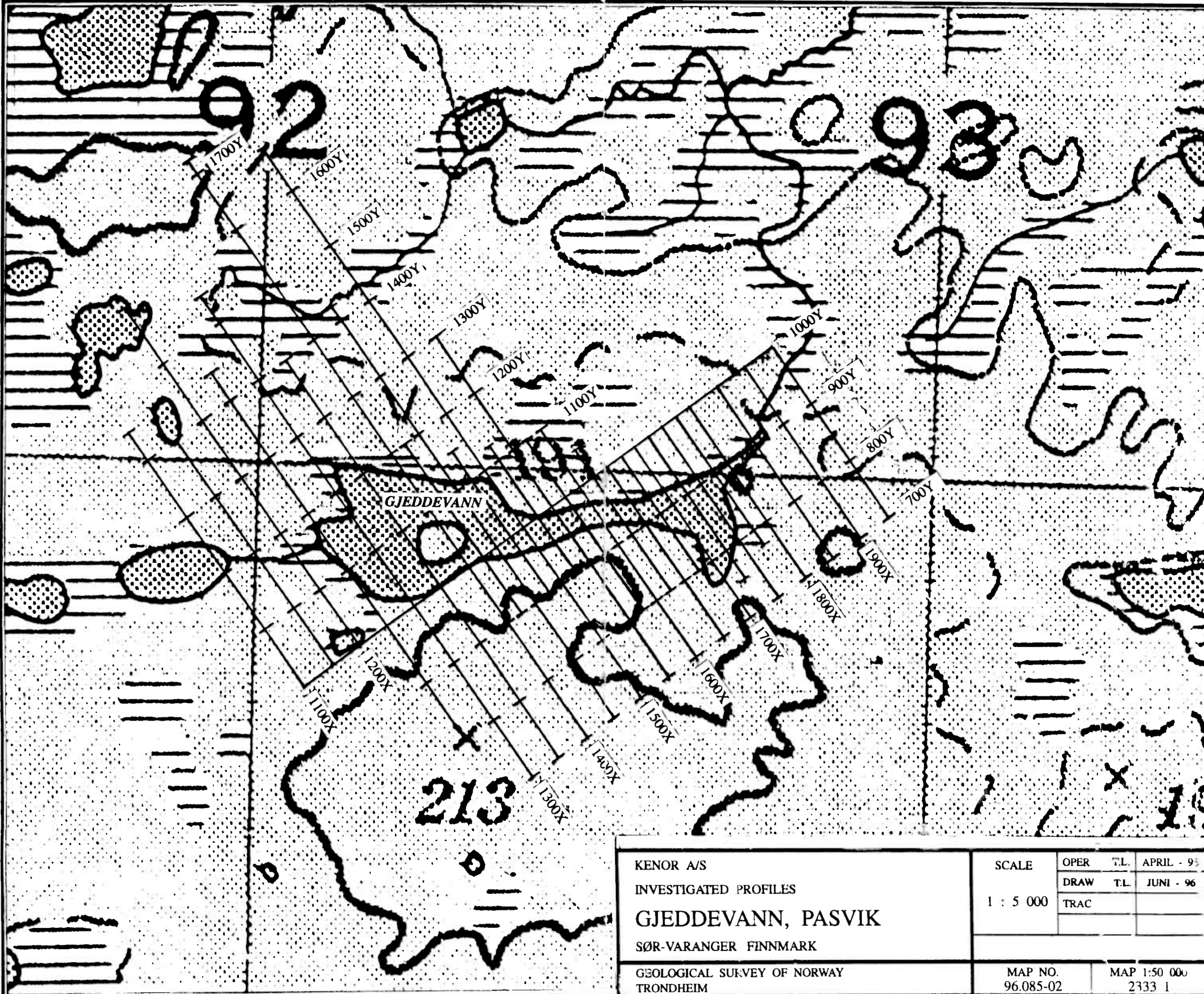
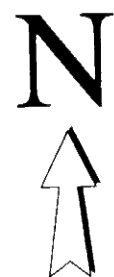


Figure 8: VLF profiling curves: P1850, P1900 and P1950.



KENOR A/S INVESTIGATED PROFILES GJEDDEVANN, PASVIK SØR-VARANGER FINNMARK	SCALE 1 : 5 000	OPER	T.L.	APRIL - 95
		DRAW	T.L.	JUNI - 96
		TRAC		
GEOLOGICAL SURVEY OF NORWAY TRONDHEIM	MAP NO. 96.085-02	MAP 1:50 000 2333 I		



LEGEND

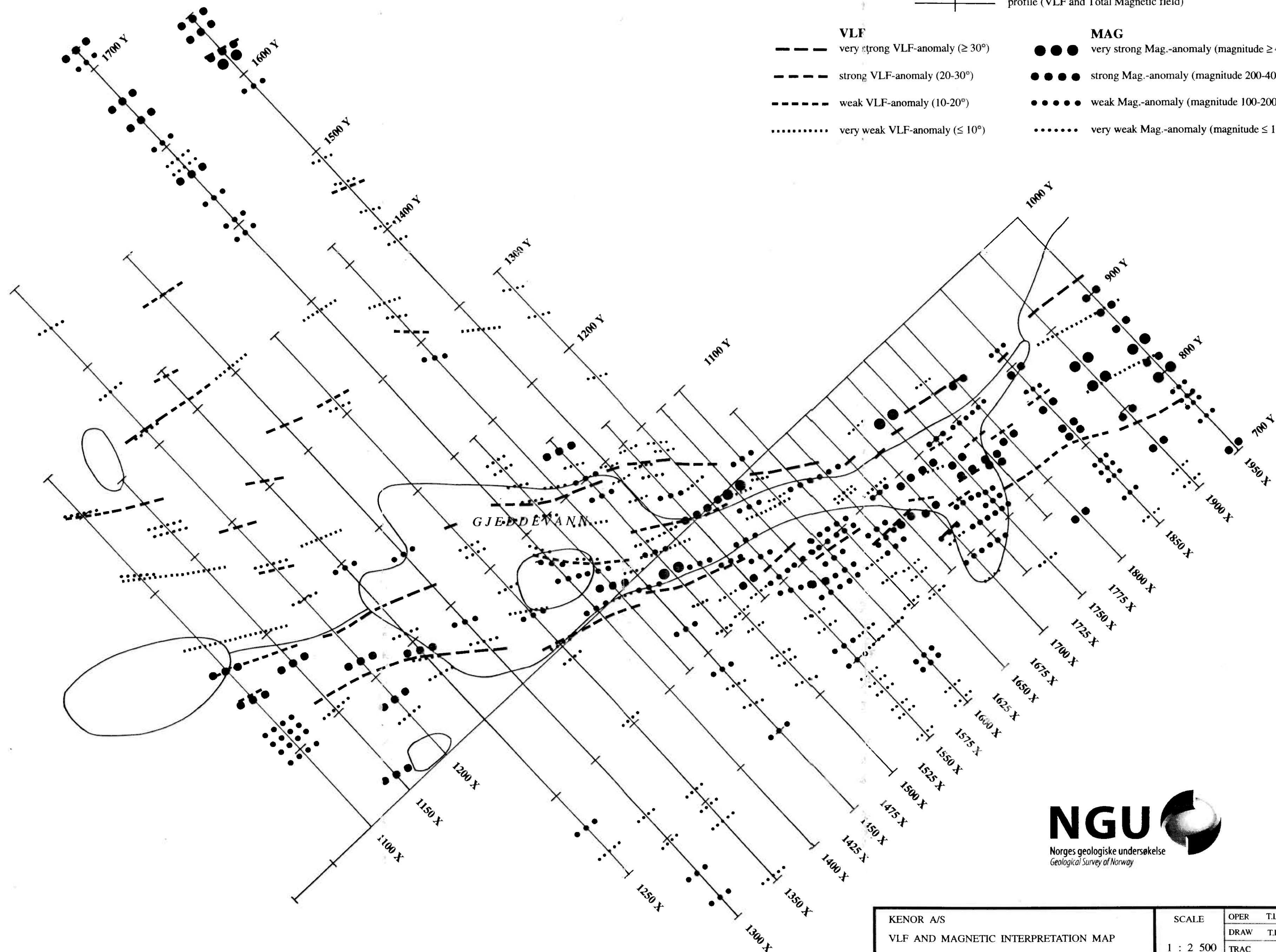
—+— profile (VLF and Total Magnetic field)

VLF

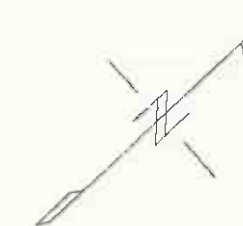
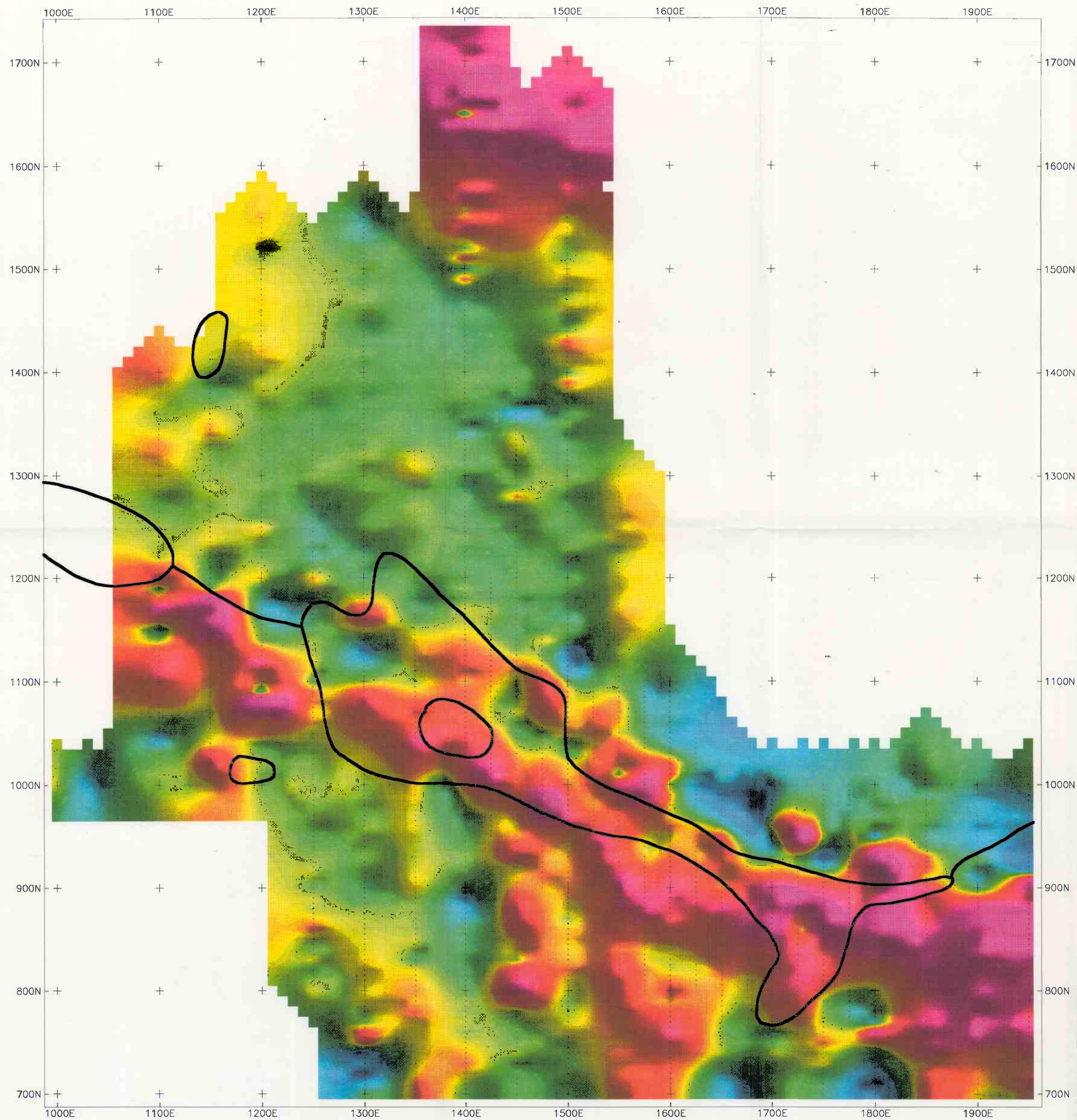
- very strong VLF-anomaly ($\geq 30^\circ$)
- - - strong VLF-anomaly ($20-30^\circ$)
- - - - weak VLF-anomaly ($10-20^\circ$)
- very weak VLF-anomaly ($\leq 10^\circ$)

MAG

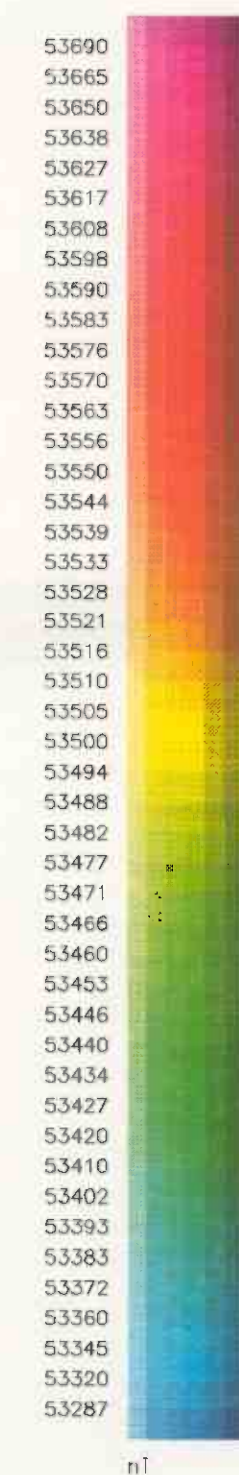
- very strong Mag.-anomaly (magnitude ≥ 400 nT)
- strong Mag.-anomaly (magnitude 200-400 nT)
- weak Mag.-anomaly (magnitude 100-200 nT)
- very weak Mag.-anomaly (magnitude ≤ 100 nT)



KENOR A/S VLF AND MAGNETIC INTERPRETATION MAP GJEDDEVANN, PASVIK SØR-VARANGER, FINNMARK GEOLOGICAL SURVEY OF NORWAY TRONDHEIM	SCALE 1 : 2 500	OPER	T.L.	APRIL - 96
		DRAW	T.L.	JUNI - 96
		TRAC		
	MAP NO. 96.085-05	MAP 1:50 000 2333 I		



SHADED RELIEF GRID
Shaded relief with illumination from north east.



KENOR A/S

MAGNETIC TOTAL FIELD
Based on ground survey 1996

GJEDDEVANN, PASVIK
FINNMARK

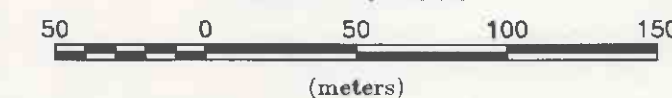
Draw: Lauritsen, T.

Date: JUNE 1996

Oper: Lauritsen, T.

Scale 1: 2500

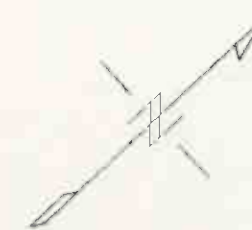
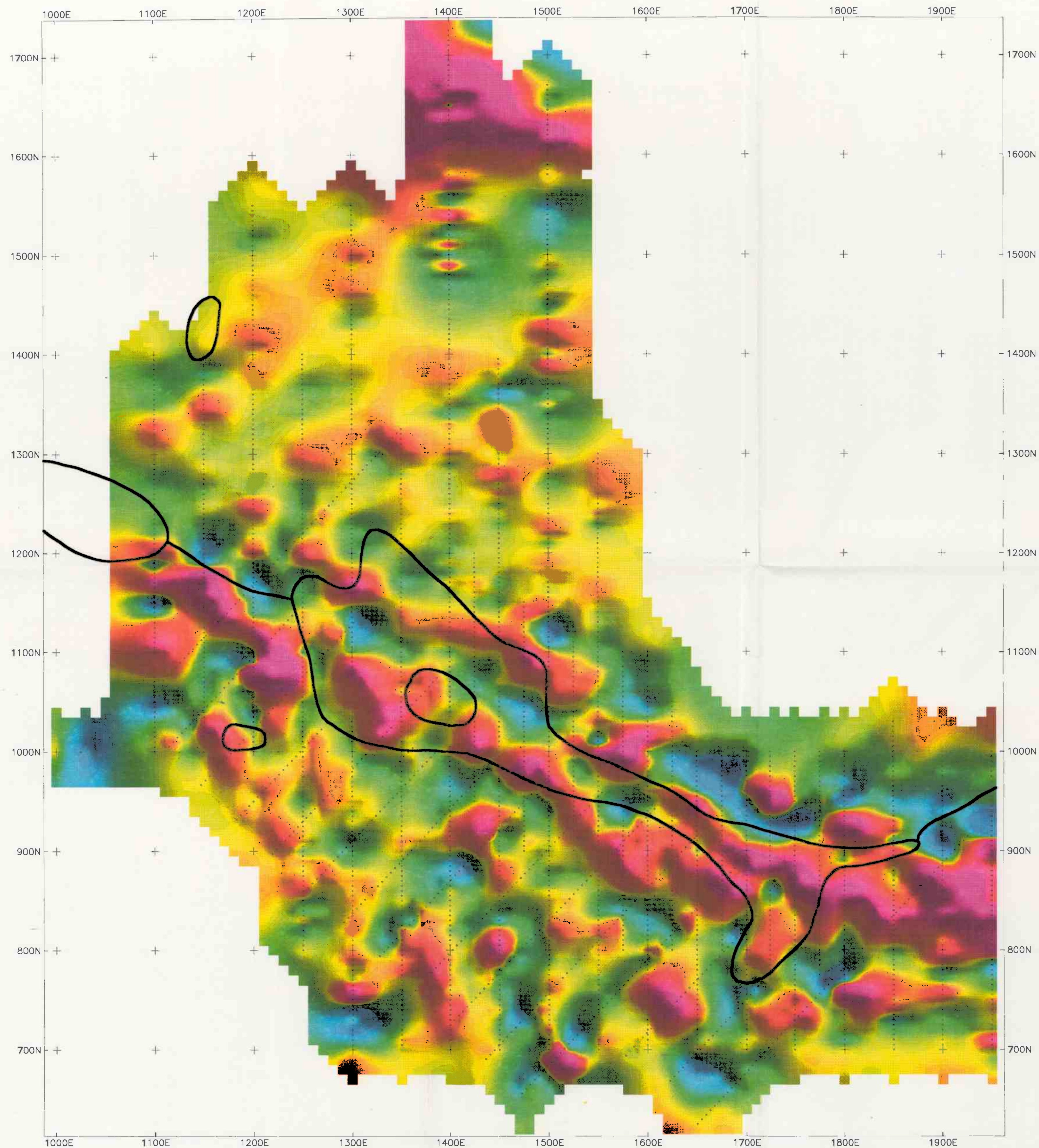
Mapsheet (1:50 000):



2333 I Vaggatam

GEOLOGICAL SURVEY OF NORWAY
Leiv Eirikssons vei 39
N-7040 TRONDHEIM
Tel 73 90 40 11, Fax 73 92 16 20

MAP NO:
96.085-03



SHADED RELIEF GRID
Shaded relief with illumination from north east.



KENOR A/S		
RESIDUAL MAGNETIC FIELD Highpass filtered magnetic total field Based on ground survey 1995/96 GJEDDEVANN, PASVIK FINNMARK		
Draw: Lauritsen, T.	Date: JUNE 1996	Oper: Lauritsen, T.
Scale 1:2500 		Mapsheet (1:50 000): 2333 I Vaggatun
GEOLOGICAL SURVEY OF NORWAY Leiv Eirikssons vei 39 N-7040 TRONDHEIM Tel 73 90 40 11, Fax 73 92 16 20		MAP NO: 96.085-04



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