



Bergvesenet

Postboks 3021, N-7441 Trondheim

Rapportarkivet

Bergvesenet rapport nr 4628	Intern Journal nr 1949/98	Internt arkiv nr	Rapport lokalisering	Gradering Apen
Kommer fra ..arkiv	Ekstern rapport nr NGU 98.135	Oversendt fra NGU	Fortrolig pga	Fortrolig fra dato:
Tittel EM-Slingram and Magnetic measurement in the Oгна and Evje areas, Southern Norway 1998				
Forfatter Dalsegg, Einar		Dato År 26.10 1998	Bedrift (Oppdragsgiver og/eller oppdragstaker) Amerikan Mineral Fields Inc Geologiske Tjenester AS Norges Geologiske Undersøkelse	
Kommune Hå Evje	Fylke Rogaland Vest-Agder	Bergdistrikt	1: 50 000 kartblad 12123 12122 15123	1: 250 000 kartblad Stavanger Mandal
Fagområde Geofysikk	Dokument type		Forekomster (forekomst, gruvefelt, undersøkelsesfelt) Bjørndalsnipa Høgevarden Hauge	
Råstoffgruppe Malm/metall	Råstofftype Ni Cu Ti			
Sammendrag, innholdsfortegnelse eller innholdsbeskrivelse The slingram measurement indicates at Bjørndalsnipa a small area where it seems to be two separate zones with good conductivity. No anomalies were indicated at Høgevarden and Hauge, despite of helicopter anomalies.				

Bergvesenet
v/ Per Zakken Brekke
her
TRONDHEIM

1949/98 nei
PR 1998 BL
923
P

Deres ref.:
Vår ref.: 98/00413-010 MALM JSS/gsa
Arkiv: 2725.02

Trondheim, 10. november 1998

BAKKEGEOFYSISKE MÅLINGER, OGNA OG EVJE, NORGE

I følge avtale med Boye Flood, Geologiske Tjenester a.s. oversendes på vegne av America Mineral Fields Inc. ved Tom Robyn 1 eksemplar av NGU Report 98.135 *EM-Slingram and Magnetic measurements in the Oyna and Evje areas, Southern Norway, 1998.*

Vennlig hilsen

sign.

Jan Sverre Sandstad
hovedprosjektleder
Malmgeologi

BV 4628

Vedlegg



NGU Report 98.135

EM-Slingram and Magnetic measurements in the
Ogna and Evje areas, Southern Norway, 1998

Report no.: 98.135		ISSN 0800-3416	Grading: Confidential until July 2005
Title: EM-Slingram and Magnetic measurements in the Oyna and Evje areas, Southern Norway, 1998			
Authors: Einar Dalsegg		Client: America Mineral Field	
County: Rogaland and Vest-Agder		Commune: Hå and Evje og Hornes	
Map-sheet name (M=1:250.000) Stavanger and Mandal		Map-sheet no. and -name (M=1:50.000) 1212 II Bjerkreim, 1212 III Nærbo and 1512 III Evje	
Deposit name and grid-reference: Bjørndalsnipa 32V 31830 64945 Høgevarden 32V 31400 64958 Hauge 32V 43680 64958		Number of pages: 37 Price (NOK): Map enclosures: 5	
Fieldwork carried out: 01.07 - 15.07 1998	Date of report: 26.10 1998	Project no.: 2725.02	Person responsible: <i>Trond Rønning</i>
Summary: On behalf of America Mineral Field the Geological Survey of Norway have executed EM Slingram and Magnetic survey over two areas in Oyna and one area in Evje. Oyna are located in Rogaland county and Evje are located in Vest-Agder county in the southern part of Norway. The purpose of the survey was as a follow-up work of the Helicopter EM survey over the same areas. The Slingram measurements indicates at Bjørndalsnipa a small area where it seems to be two separate zones with good conductivity. No anomalies were indicated at Høgevarden and Hauge despite of helicopter anomalies.			
Keywords: Geofysikk	Elektromagnetisk måling	Magnetometri	
Sulfid			
		Fagrapport	

CONTENTS

1	INTRODUCTION.....	4
2	MEASUREMENTS.....	4
3	RESULTS AND COMMENTS.....	4
4	CONCLUSION.....	5

FIGURES

Figure 1 - 6:	Slingram Bjørndalsnipa
Figure 7 - 9:	Slingram Høgevarde
Figure 10 - 11:	Slingram Hauge
Figure 12 - 23:	Magnetic total field Bjørndalsnipa
Figure 24 - 28:	Magnetic total field Høgevarde
Figure 29 - 32:	Magnetic total field Hauge

MAPS

98.135 -01	Investigated areas Bjørndalsnipa and Høgevarde
-02	Investigated area Hauge
-03	Slingram and Magnetic ground survey Bjørndalsnipa
-04	Slingram and Magnetic ground survey Høgevarde
-05	Slingram and Magnetic ground survey Hauge

1. INTRODUCTION

On behalf of America Mineral Field the Geological Survey of Norway have executed EM Slingram and Magnetic survey over two areas in Ognå and one area in Evje. Ognå are located in Rogaland county and Evje are located in Vest-Agder county in the southern part of Norway. The location of the areas are shown in the maps -01 og -02.

The purpose of the survey was as a follow-up work of the Helicopter EM survey over the same areas.

The survey was executed from 01.07 - 15.07 1998. According to the agreements no qualitative interpretation should be done within the project.

2. MEASUREMENTS

The Slingram-measurements was carried out using Scintrex SE-88 «Genie». The measurement is based on the simultaneous transmission of two preselected, well separated frequencies and the comparison of the amplitudes of the two signals at the receiver. The Frequency pairs used in the measurements was :

Bjørndalsnipa 112 Hz as reference, measurements at 337, 1012 and 3037 Hz (most of the area).

Høgevarden 112 Hz as reference, measurements at 3037 Hz.

Hauge 112 Hz as reference, measurements at 1012 and 3037 Hz.

The magnetic survey was carried out using the Scintrex ENVI-MAG proton precession magnetometer (accuracy 1nT). No base station magnetometer in the area was available, but the measurements are checked against diurnal variations at other locations in Norway.

3. RESULTS

The results of the Slingram measurements from Bjørndalsnipa are presented in figures 1 - 6, from Høgevarden in figures 7 - 9 and from Hauge in figures 10 - 11.

The results of the Magnetic measurements (total field) from Bjørndalsnipa are presented in figures 12 - 23, from Høgevarden in figures 24 - 28 and from Hauge in figures 29 - 32.

Map -03 shows the measuring grid of Bjørndalsnipa and the Slingram-anomalies. In the map the anomalies are graded as follow:

Anomaly	Ratio 3037/112 Hz
Very strong	>50%
Strong	30-50%
Weak	15-30%
Very weak	5-15%

As shown in Map -03 the measurements indicate an anomaly area between profile 950Y and 1000Y. The most shallow anomalies are indicated at profile 1000Y- 1012X, and at line 975X - 975Y. The measurements with coil separation 50 and 100m indicate two separate conductors. This is best indicated at line 975X. Both zones indicate good electric conductivity.

In the area Høgevar den (map -04) and in the area Hauge (map -05) some anomalies at the helicopter EM appeared, but none slingram anomalies was detected on ground. For some of the profiles at Høgevar den, the measurements was disturbed by noise from powerlines.

4. CONCLUSION

The Slingram measurements indicates at Bjørndalsnipa a small area where it seems to be two separate zones with good conductivity.

No anomalies were indicated at Høgevar den and Hauge despite of helicopteranomalies.

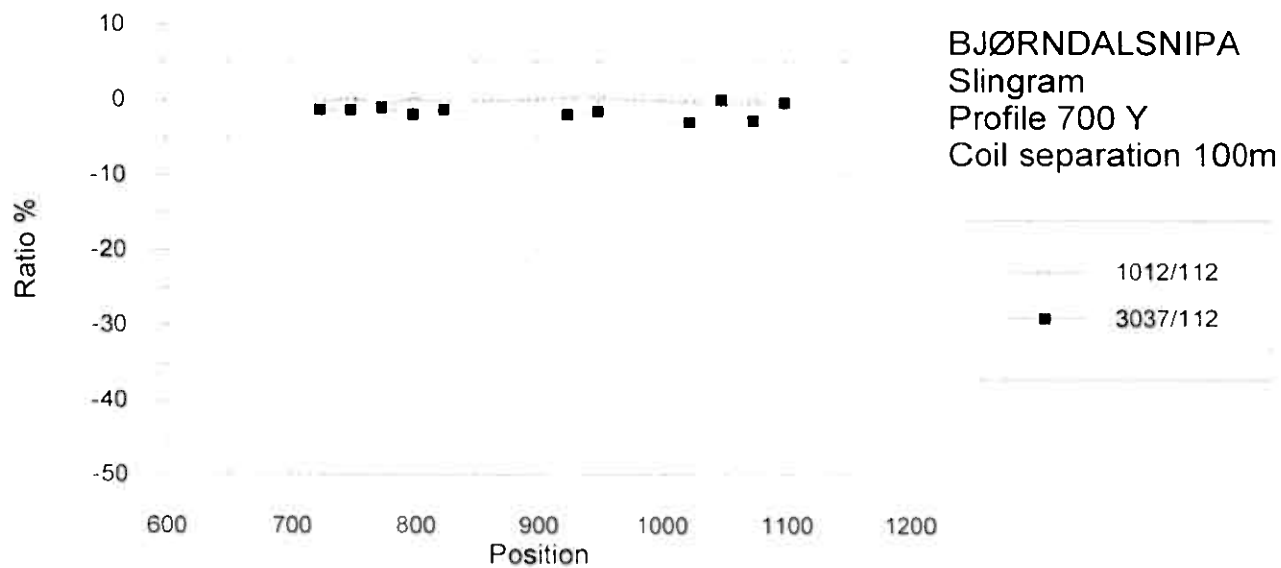
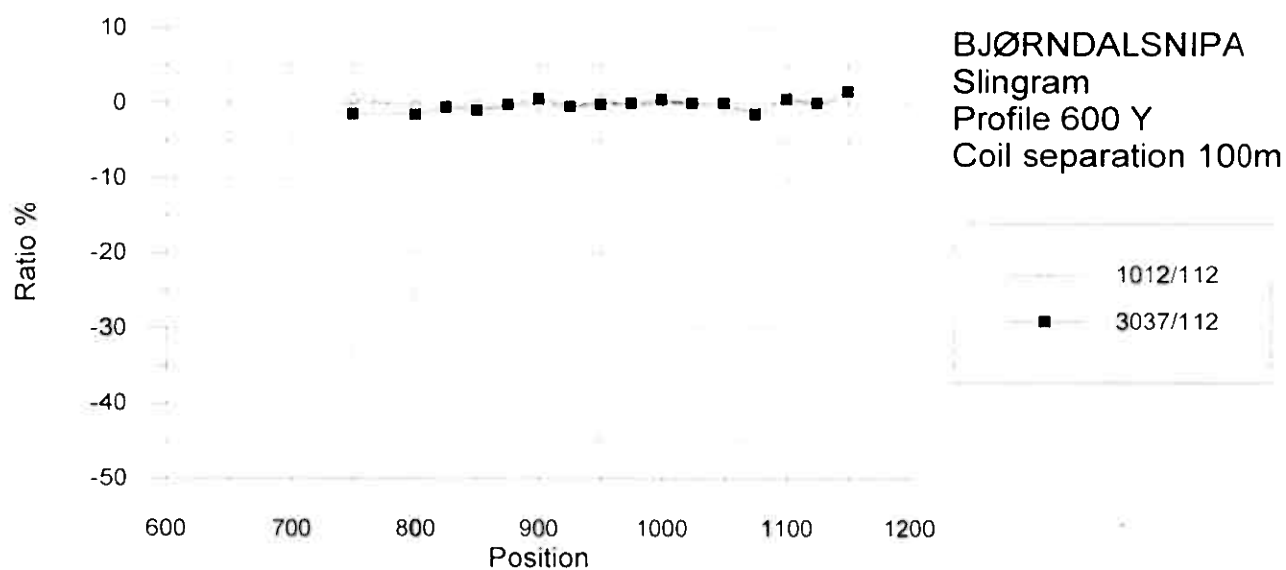
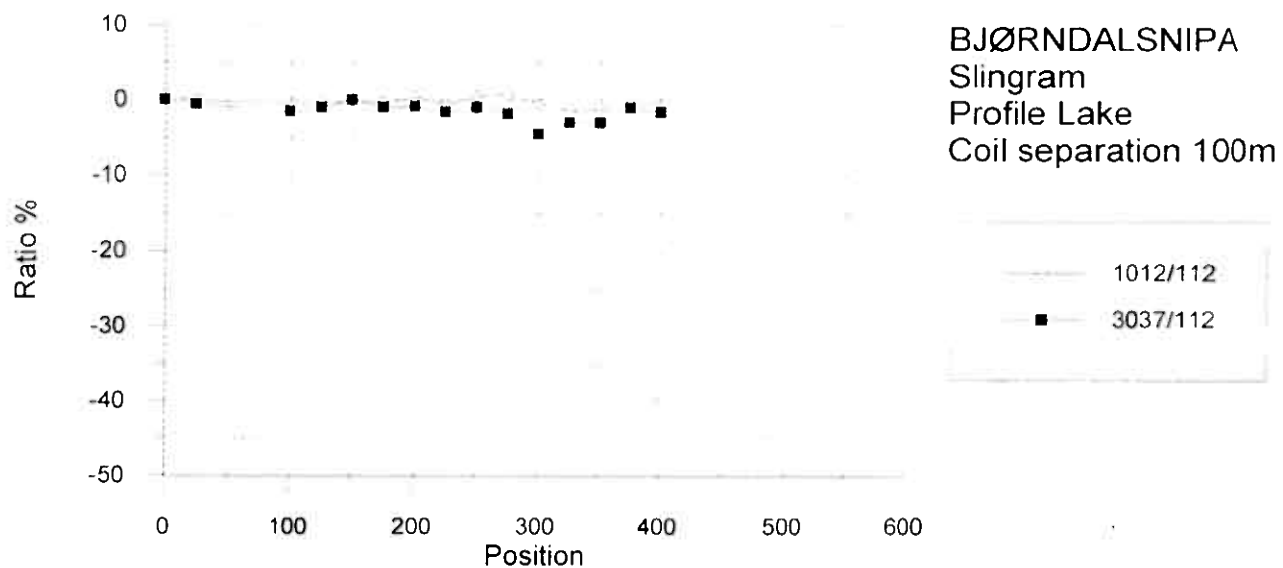


Figure 1. Slingram Bjorndalsnipa profile Lake, 600Y and 700Y.

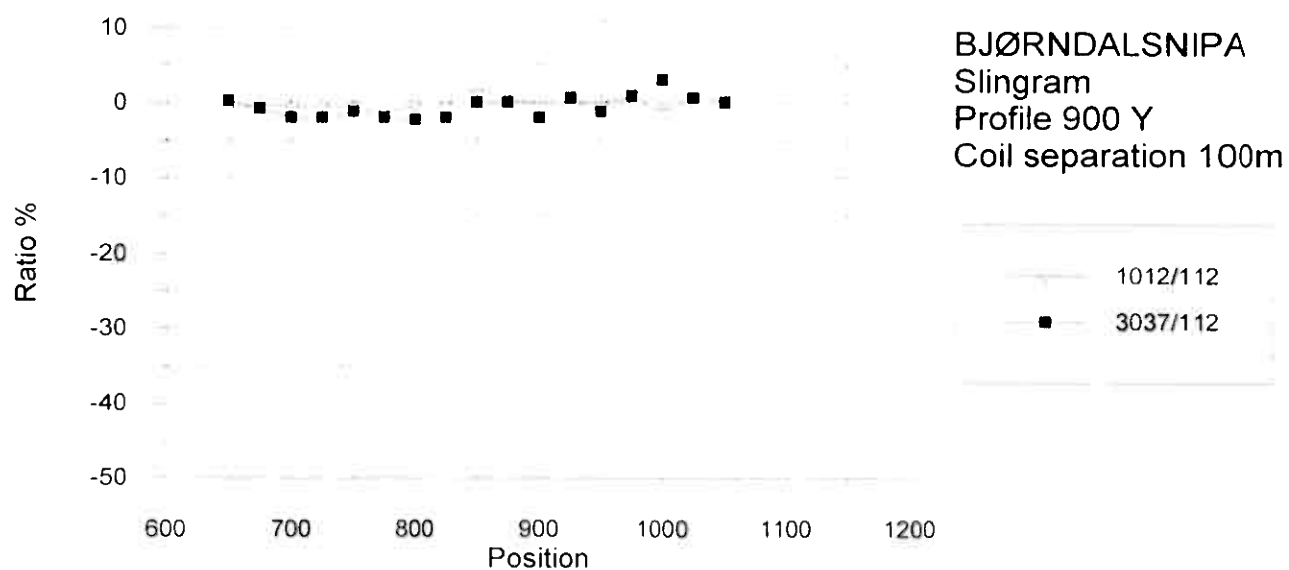
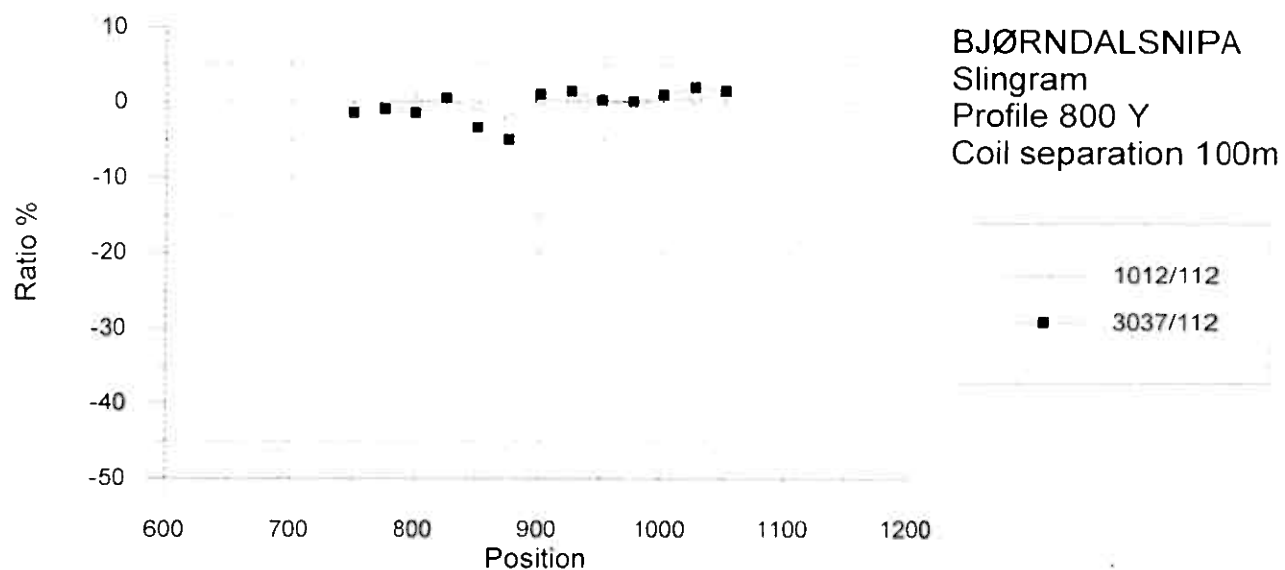


Figure 2. Slingram Bjørndalsnipa profile 800Y and 900Y.

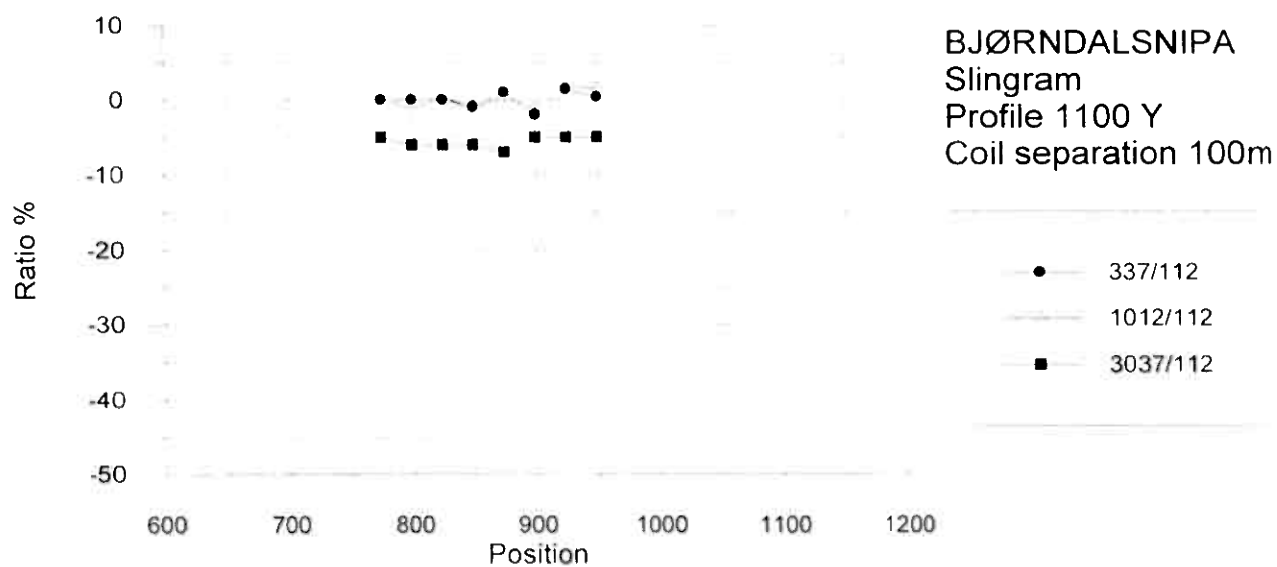
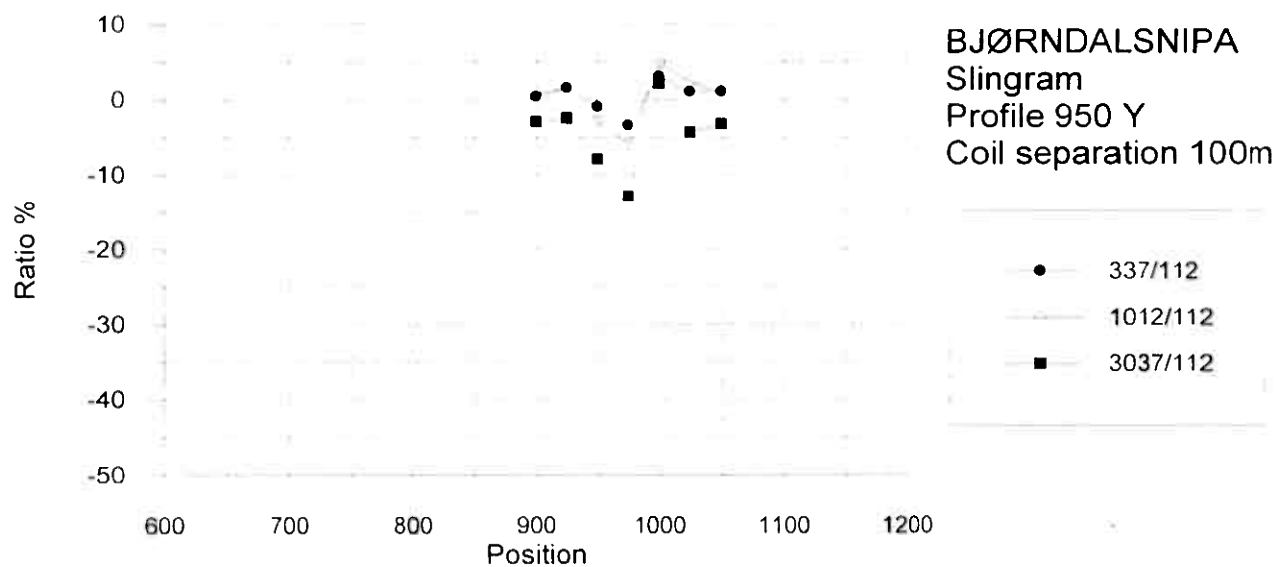
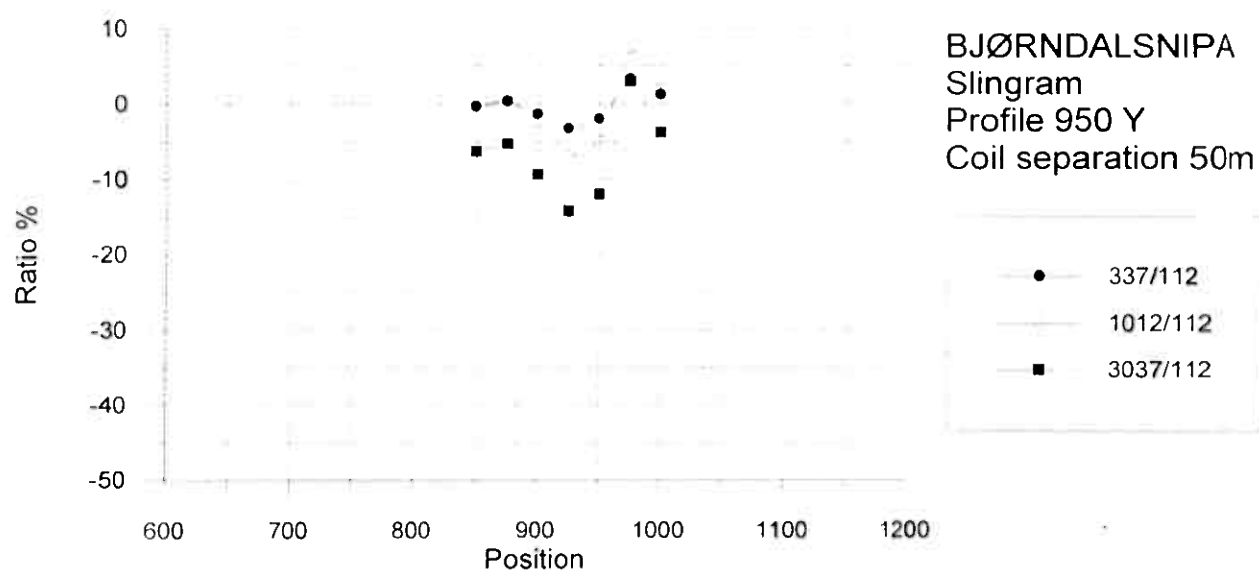


Figure 3. Slingram Bjørndalsnipa profile 950 Y and 1100 Y.

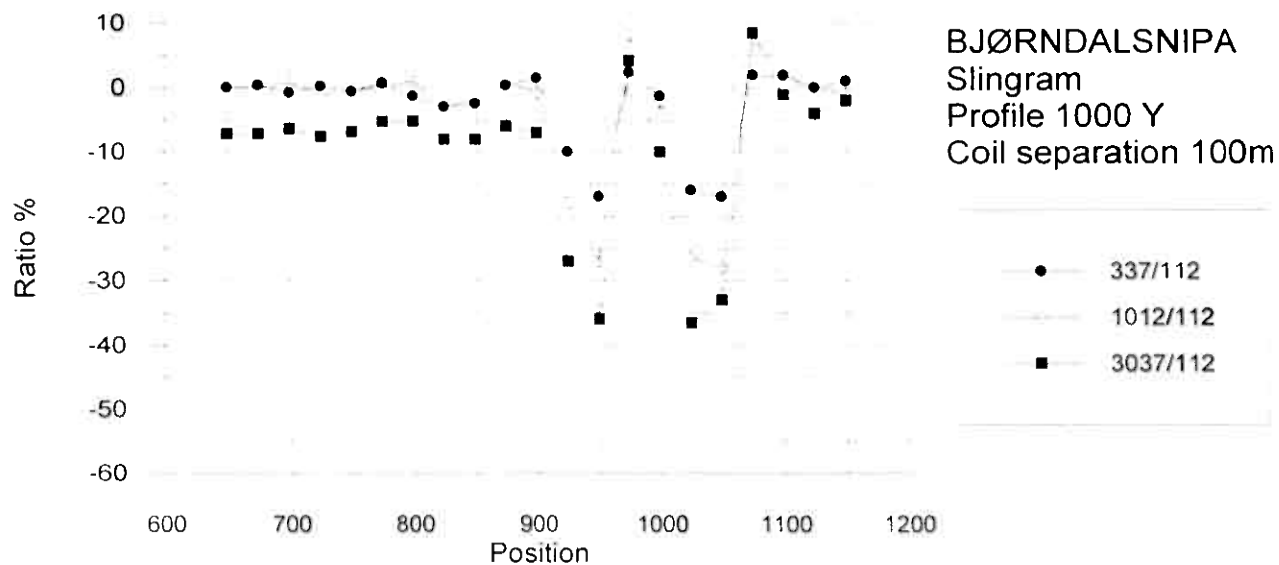
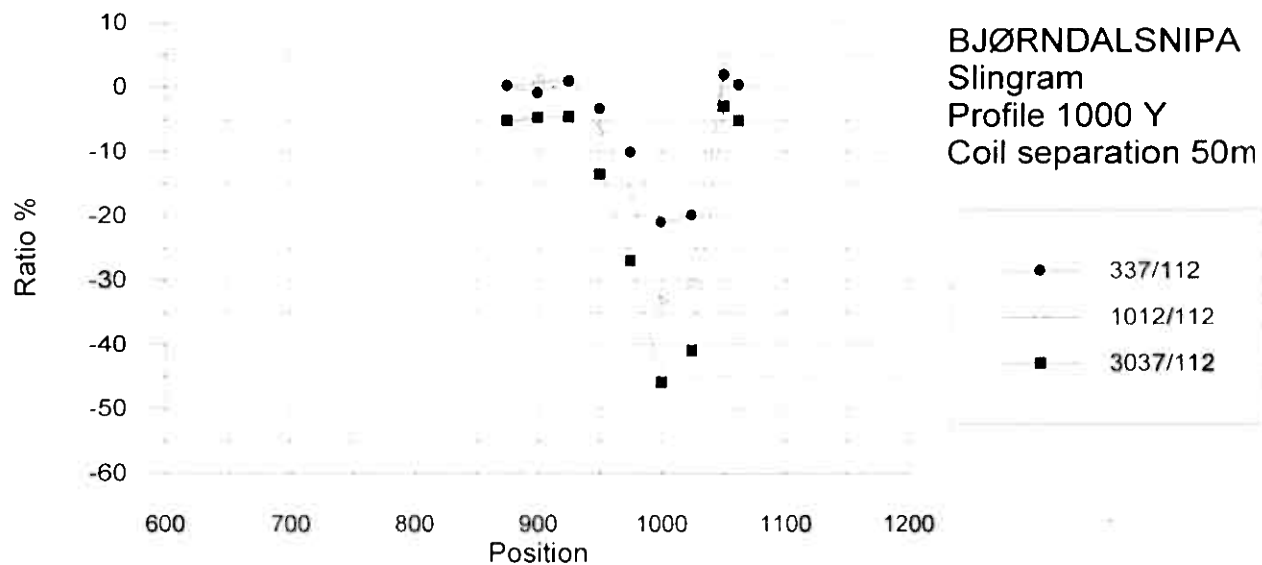
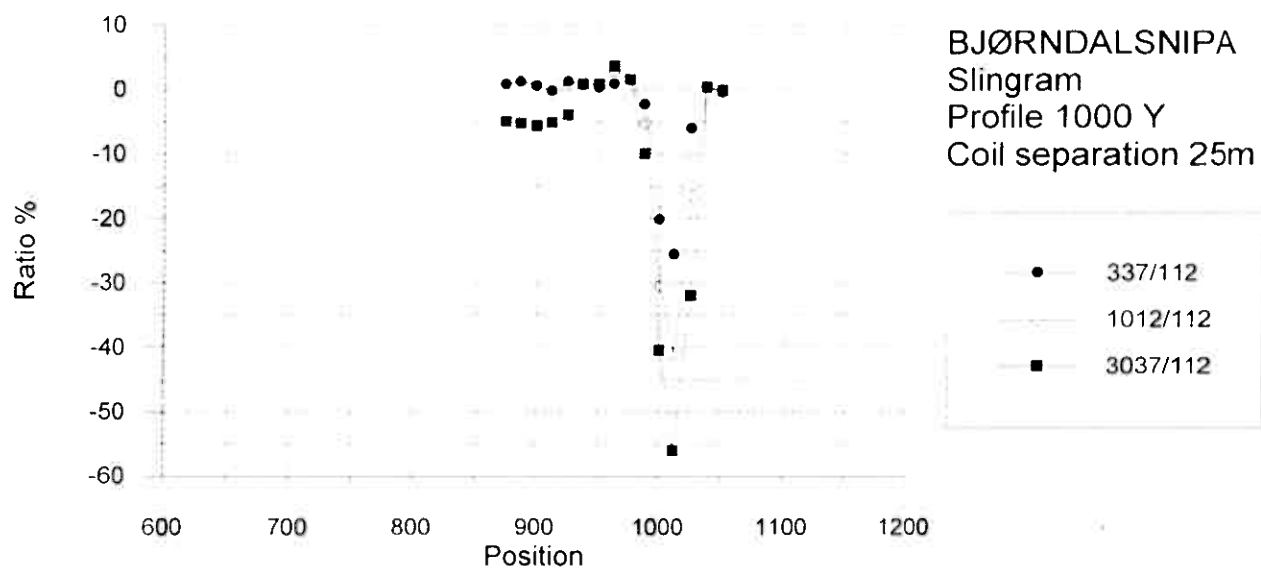


Figure 4. Slingram Bjørndalsnipa profile 1000 Y.

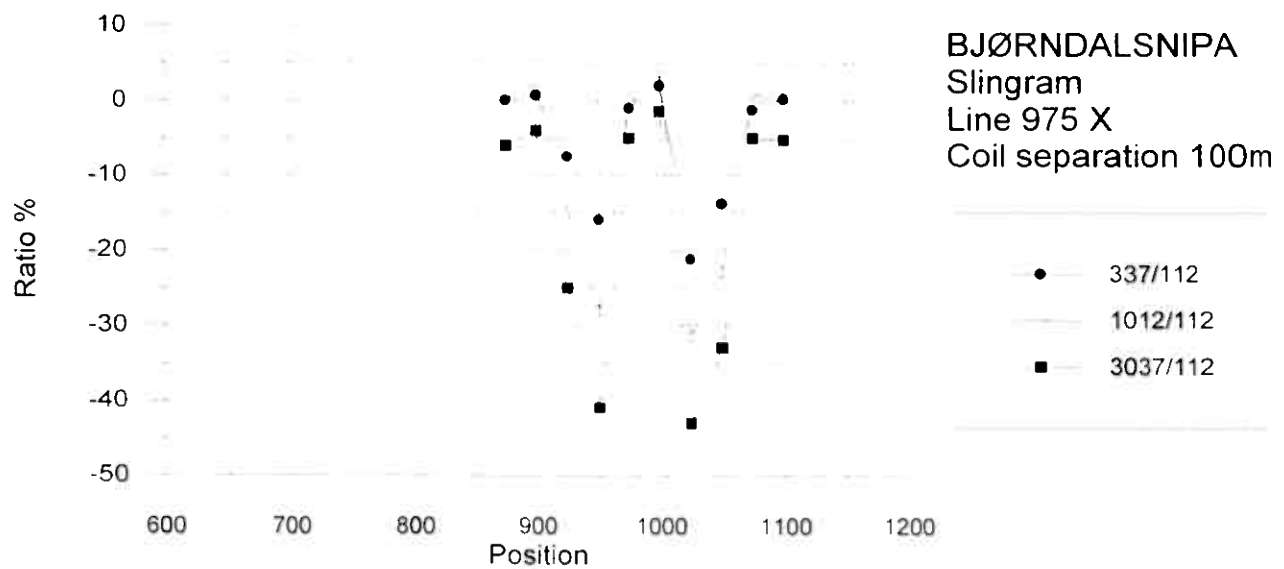
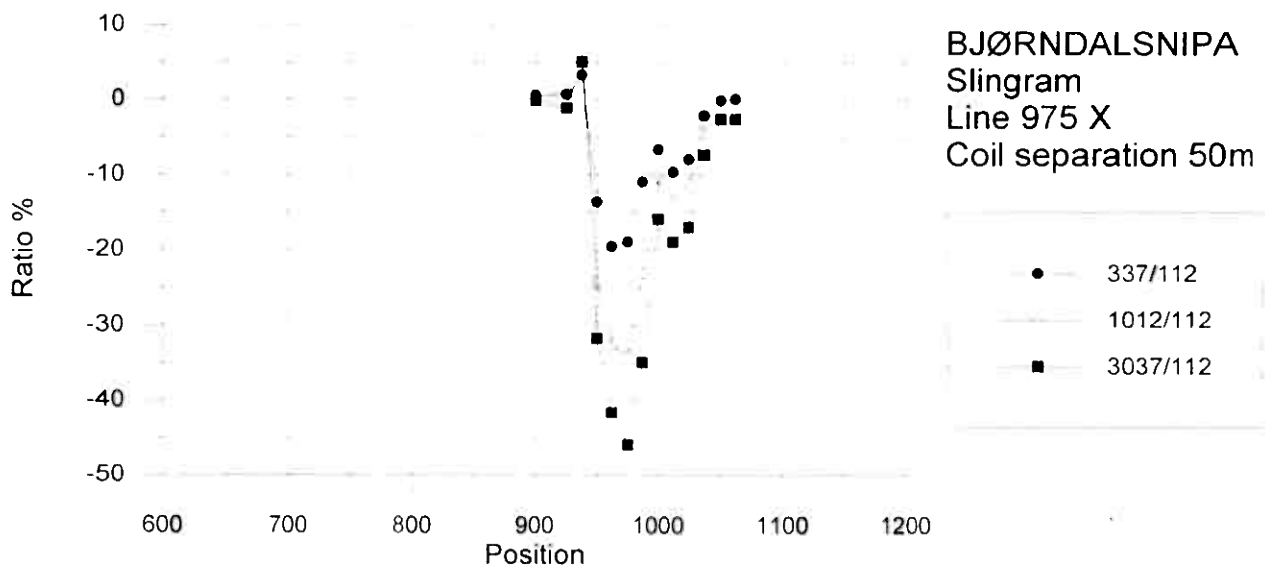
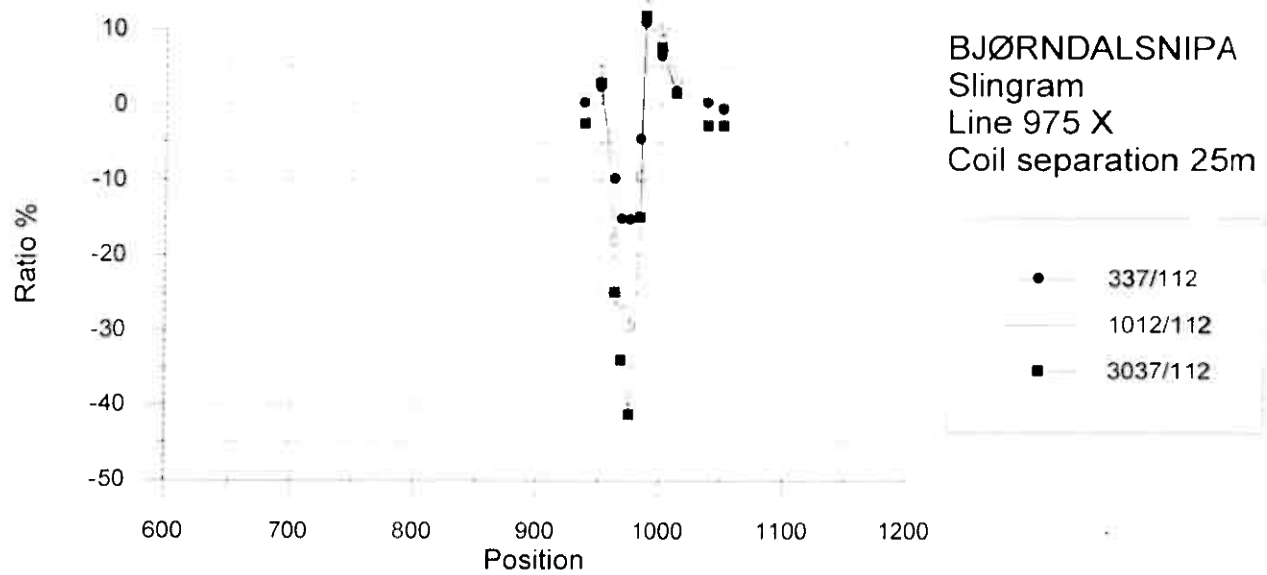


Figure 5. Slingram Bjørndalsnipa line 975 X.

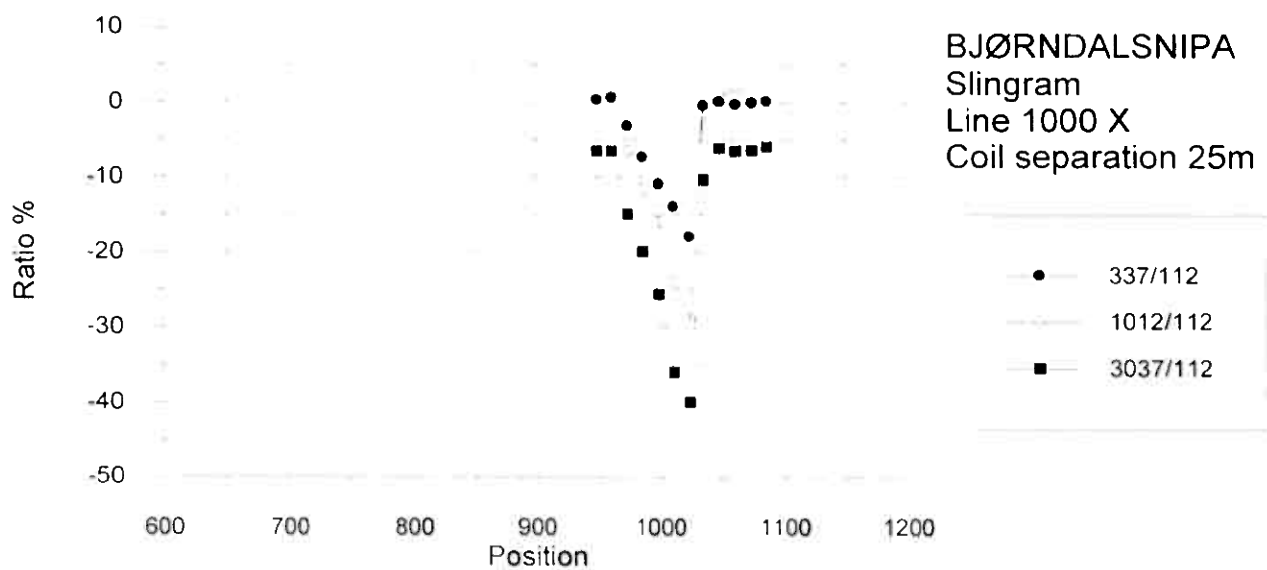
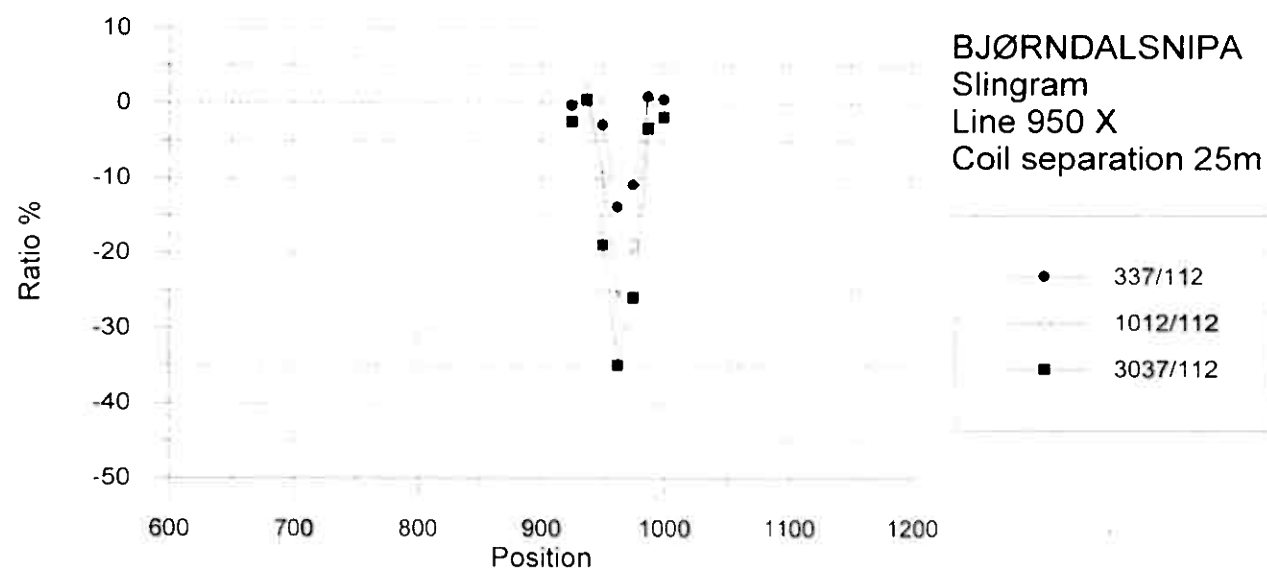
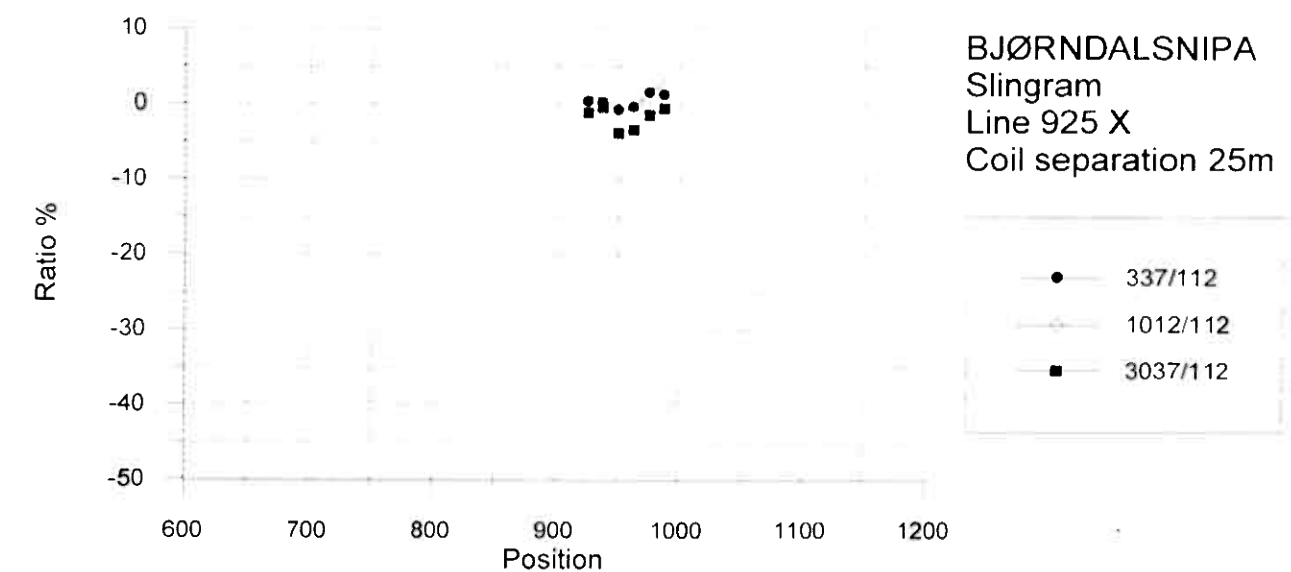


Figure 6. Slingram Bjørndalsnipa line 925 X, 950 X and 1000 X

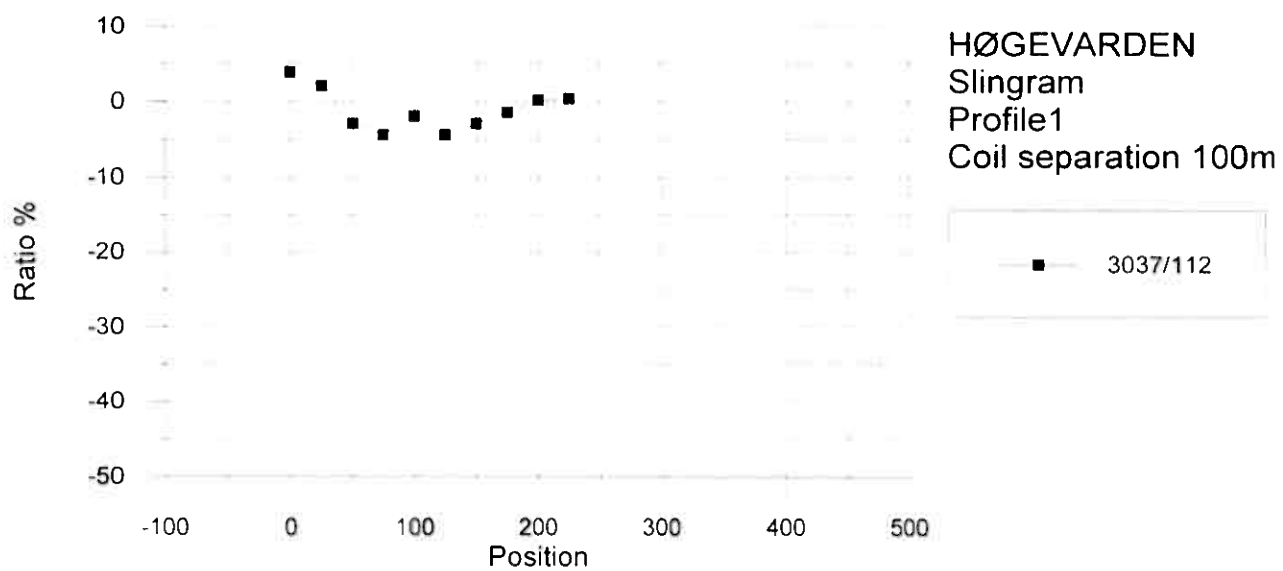
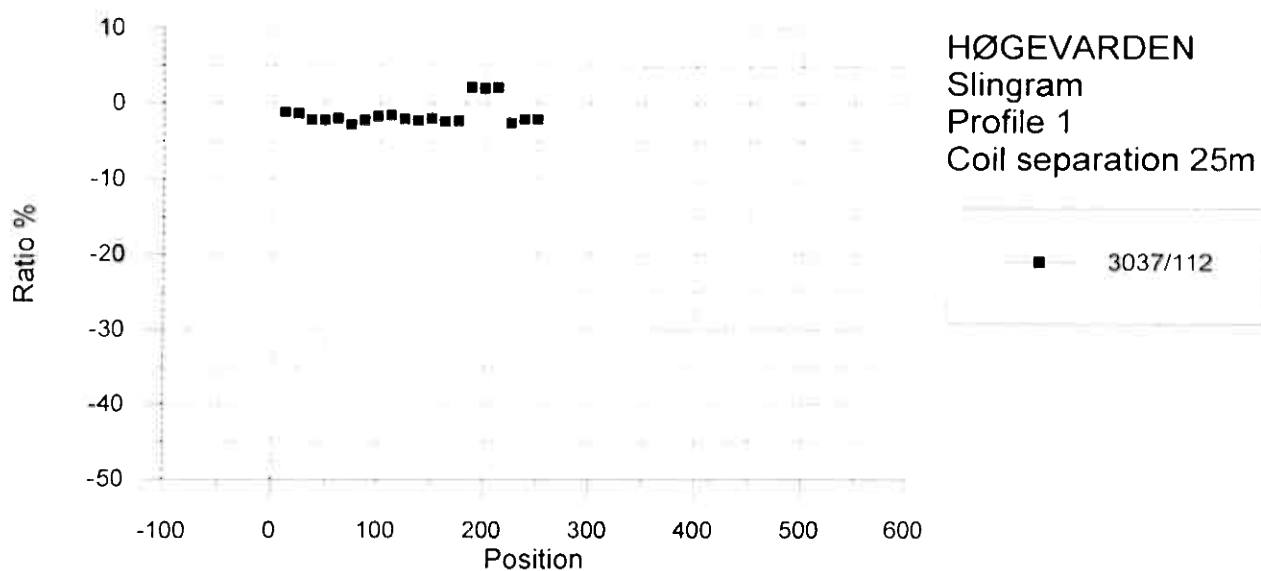


Figure 7. Slingram Høgevarde profile 1.

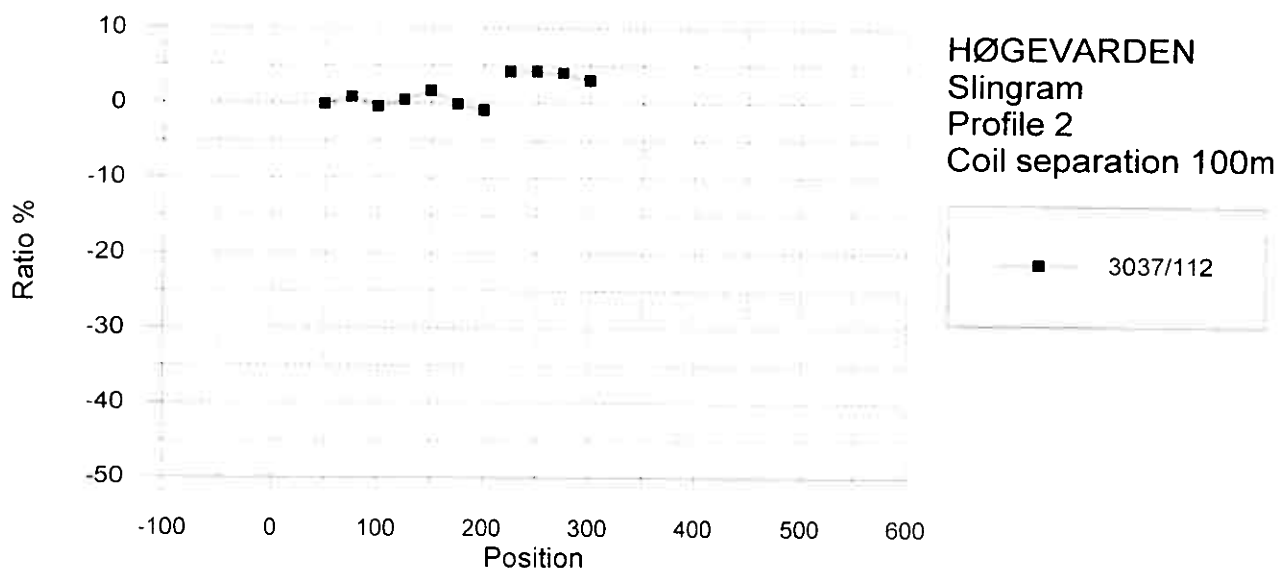
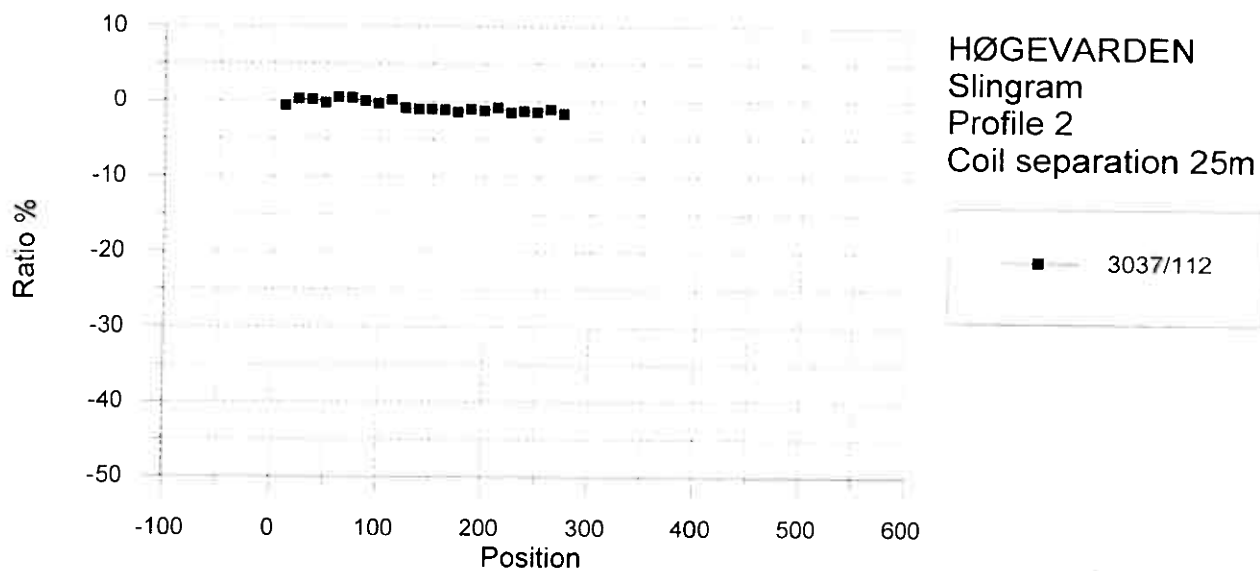


Figure 8. Slingram Høgevarde profile 2.

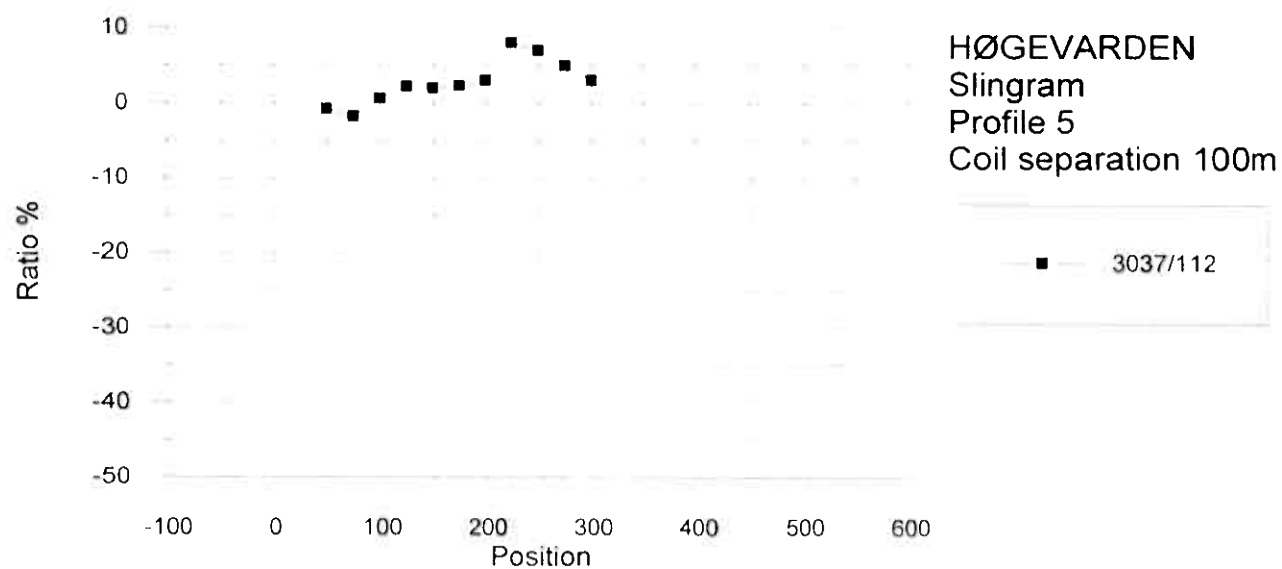
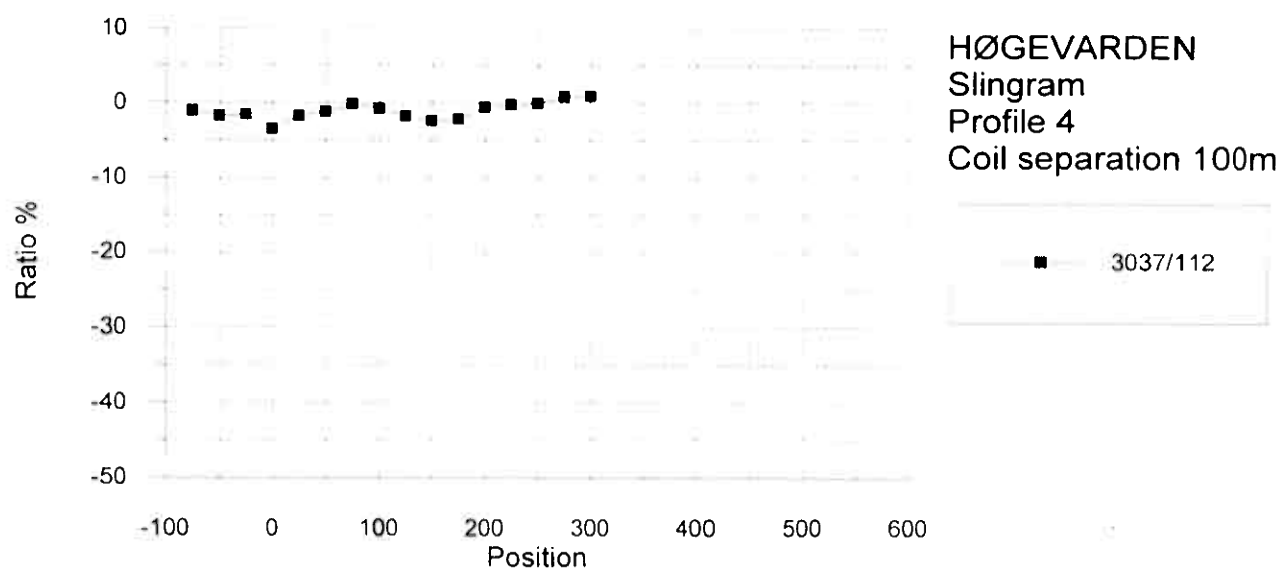
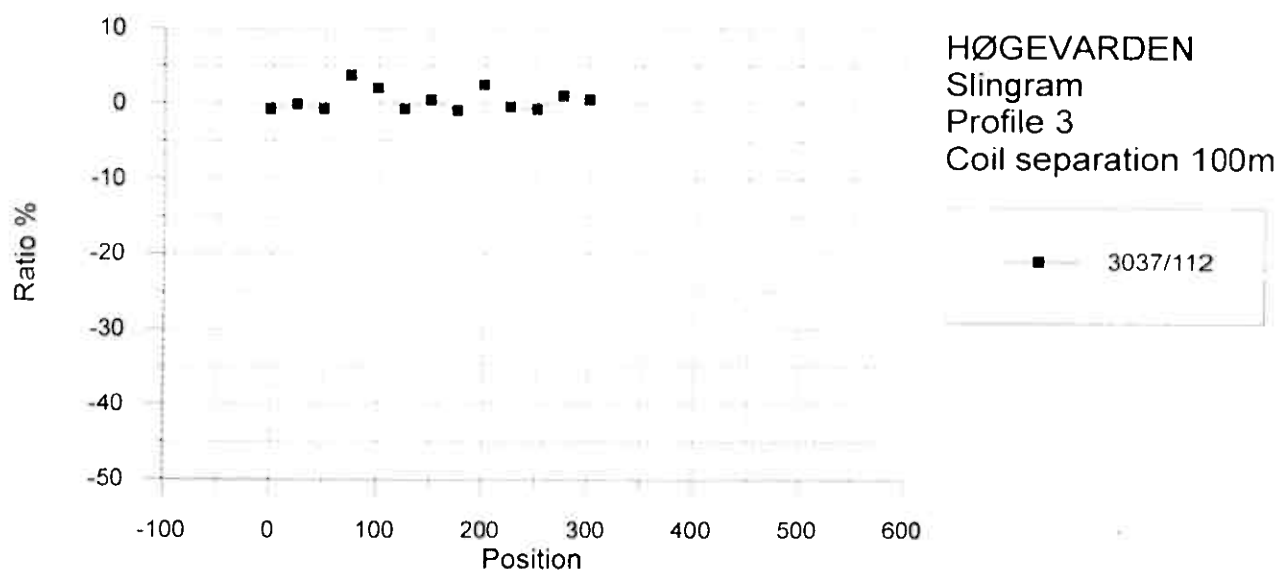


Figure 9. Slingram Høgevarde profile 3, 4 and 5.

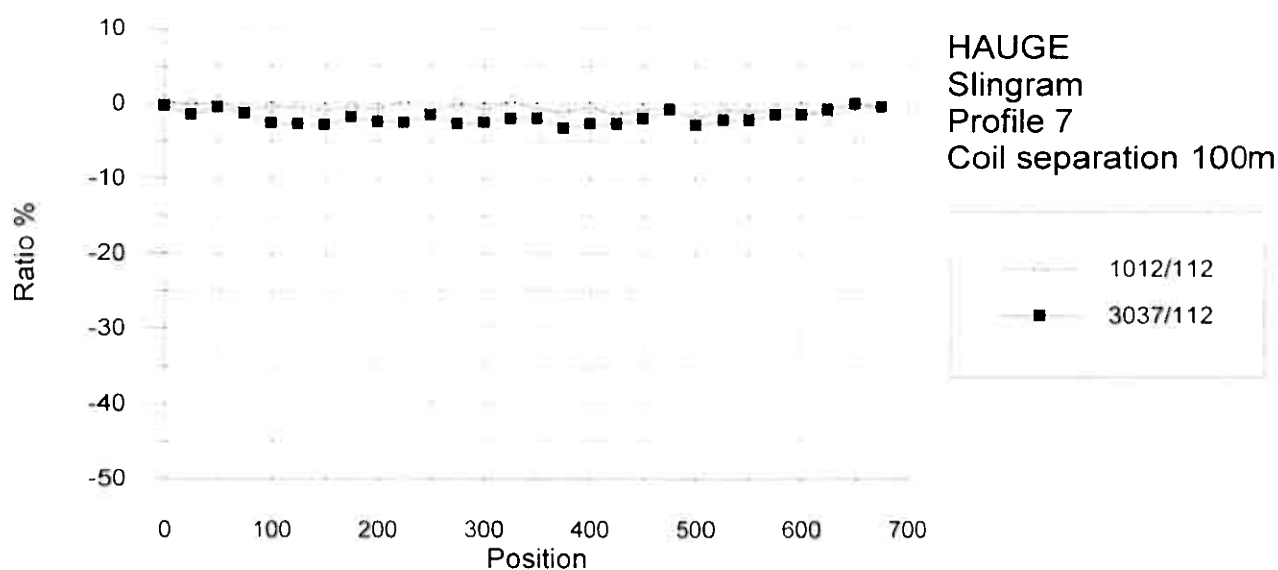
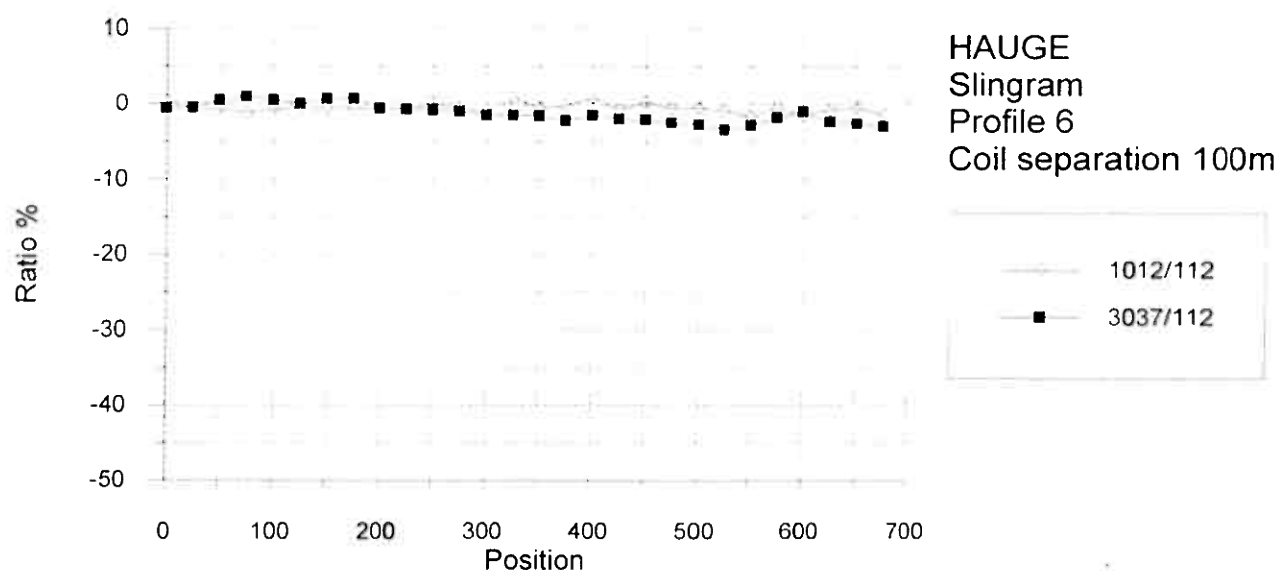


Figure 10. Slingram Hauge profile 6 and 7.

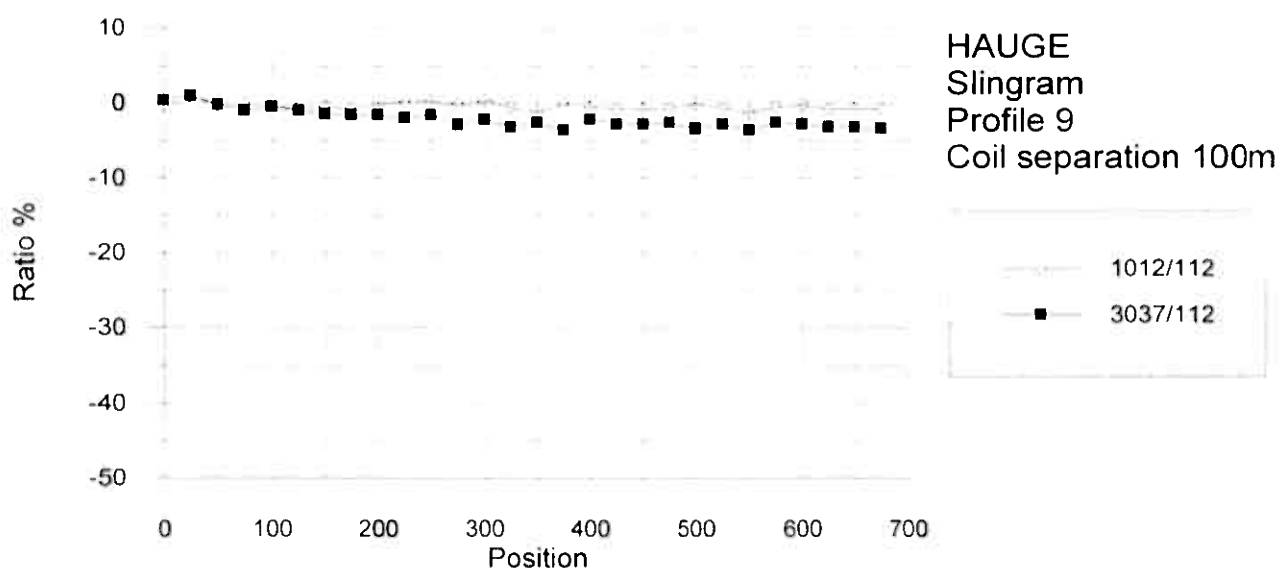
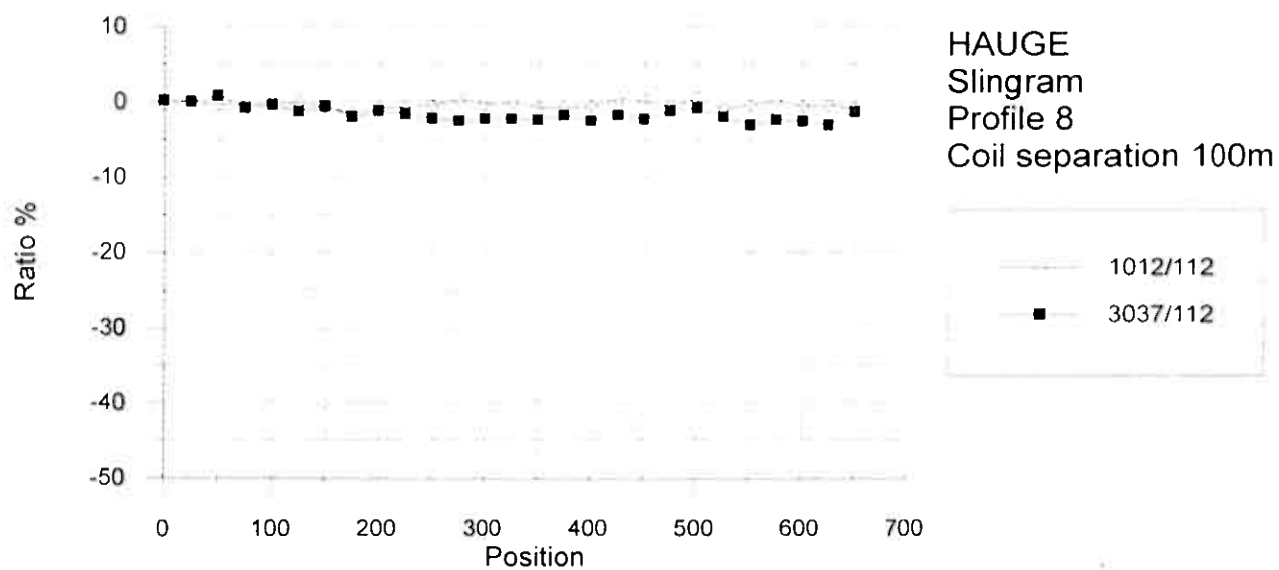


Figure 11. Slingram Hauge profile 8 and 9.

BJØRNDALSNIPA
Magnetic total field
Profile 600 Y

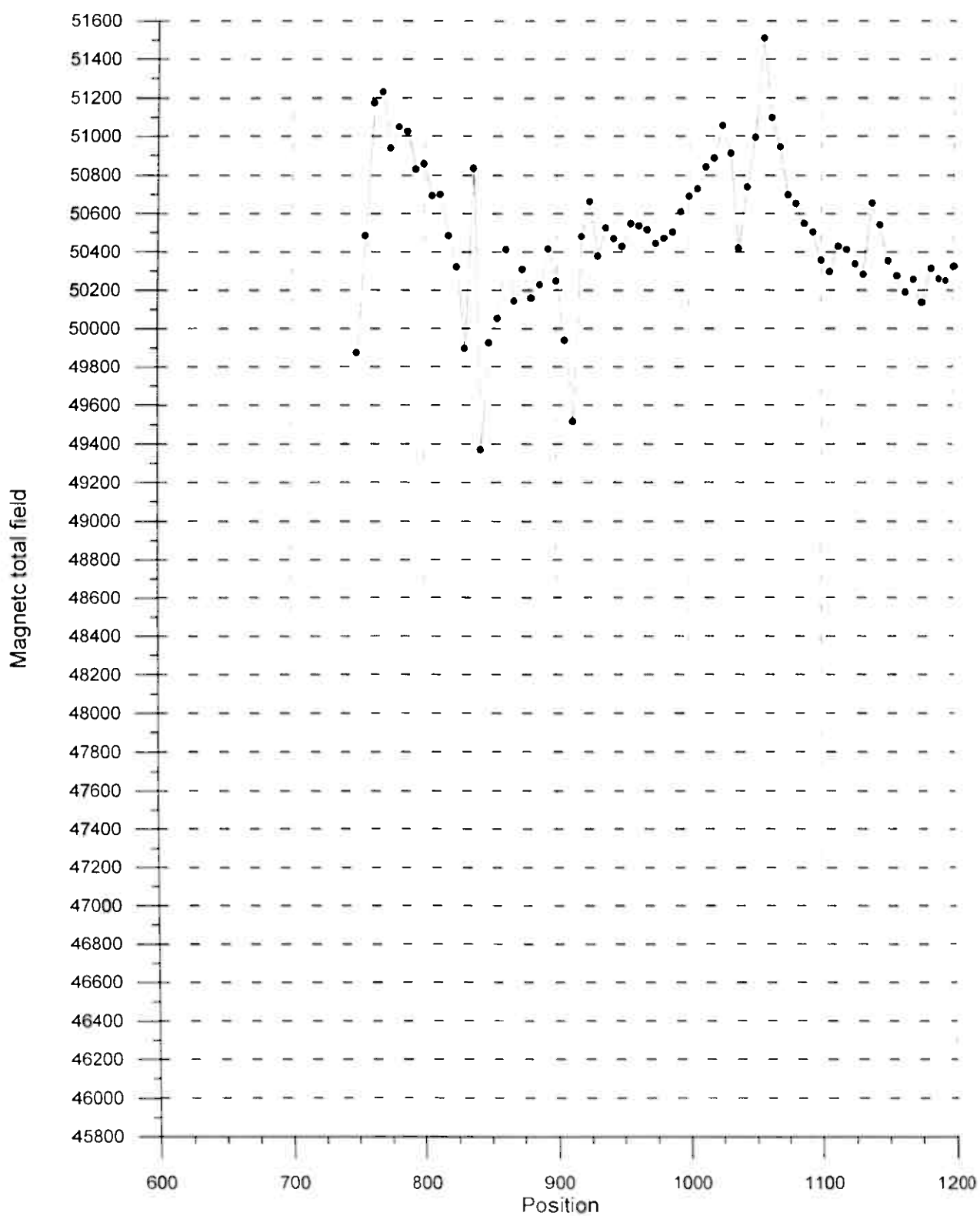


Figure 12. Magnetic total field profile 600 Y.

BJØRNDALSNIPA
Magnetic total field
Profile 700 Y

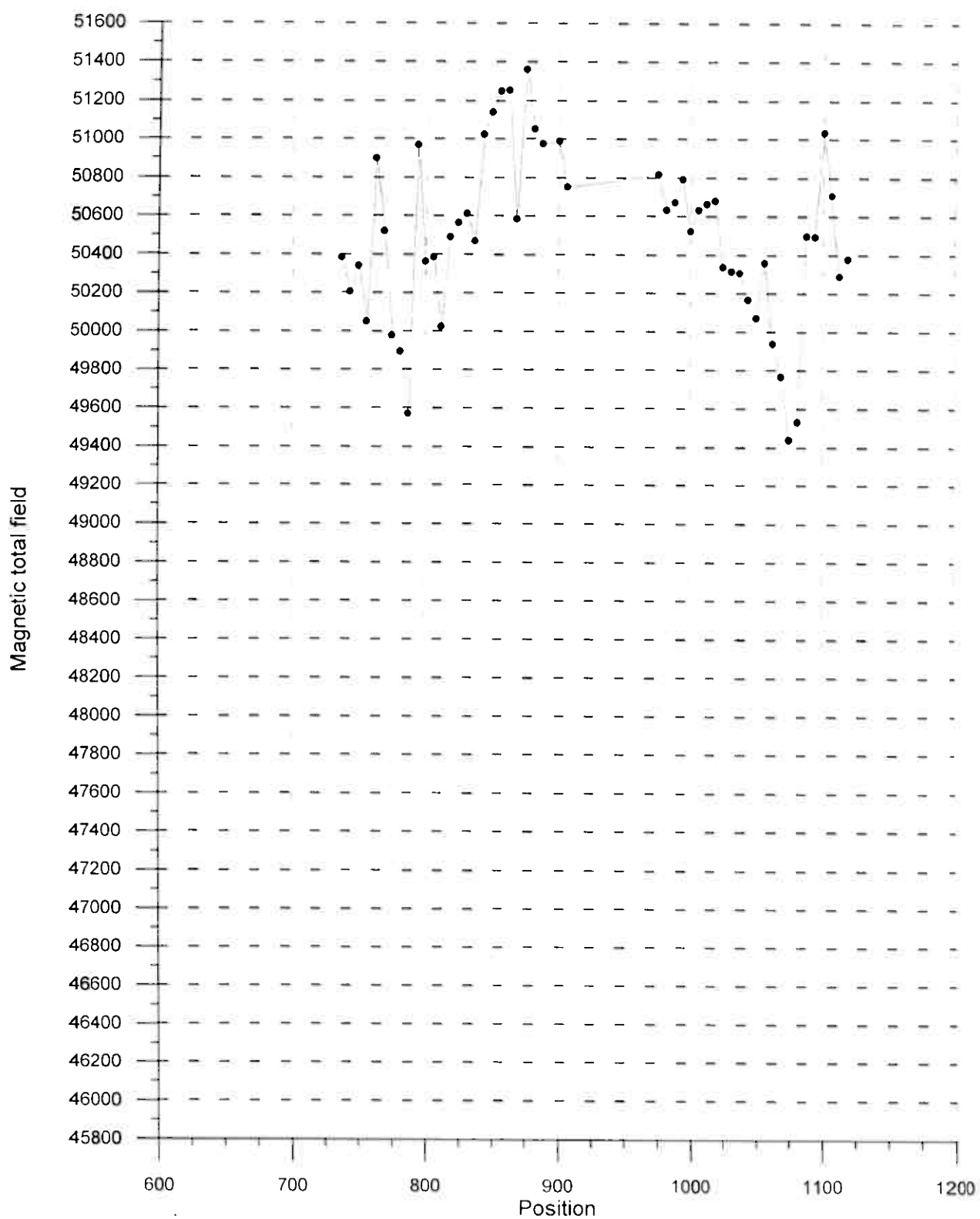


Figure 13. Magnetic total field profile 700 Y.

BJØRNDALSNIPA
Magnetic total field
Profile 800 Y

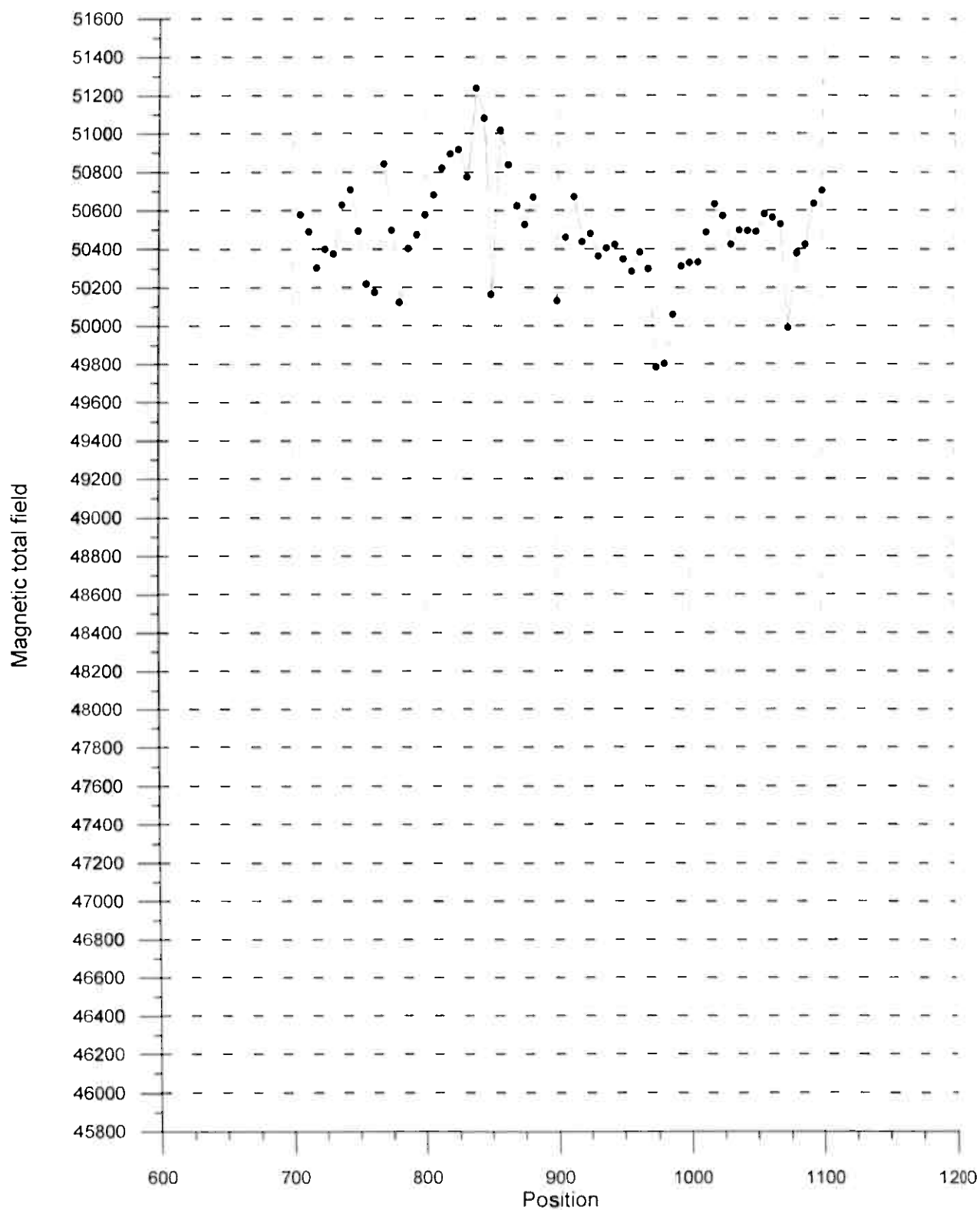


Figure 14. Magnetic total field profile 800 Y.

BJØRNDALSNIPA
Magnetic total field
Profile 900 Y

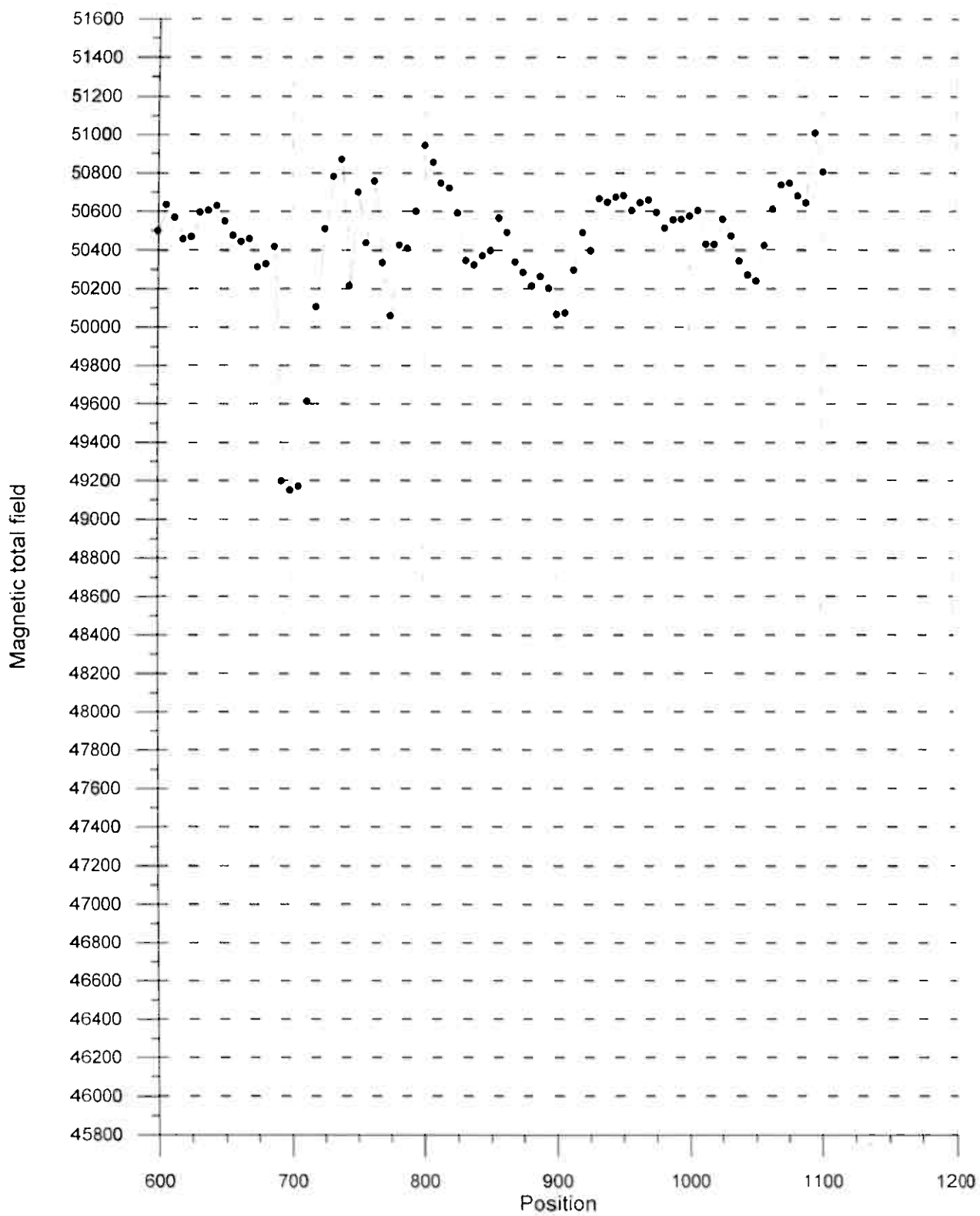


Figure 15. Magnetic total field profile 900 Y.

BJØRNDALSNIPA
Magnetic total field
Profile 1000 Y

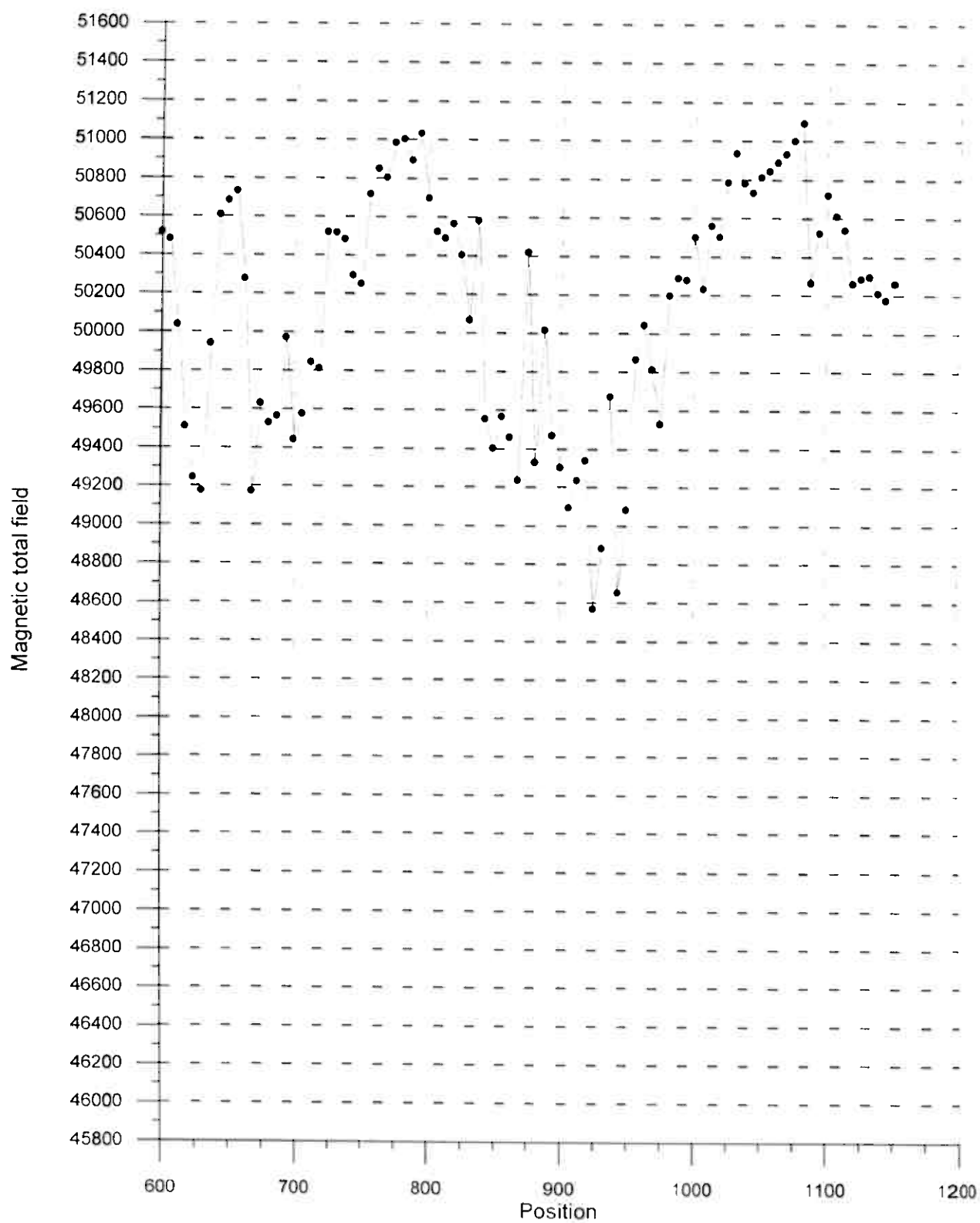


Figure 16. Magnetic total field profile 1000 Y

BJØRNDALSNIPA
Magnetic total field
Profile 1100 Y

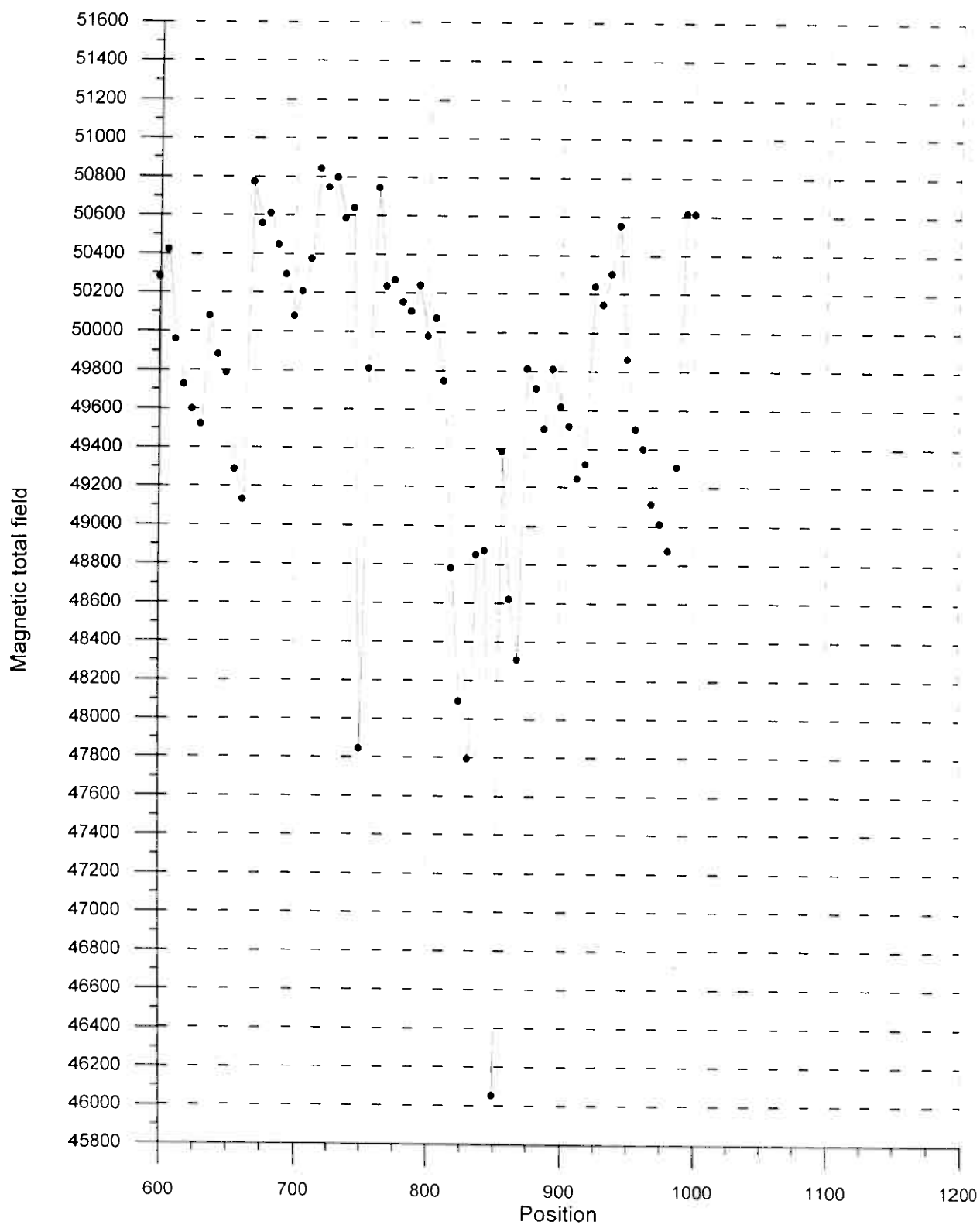


Figure 17. Magnetic total field profile 1100 Y.

BJØRNDALSNIPA
Magnetic total field
Line Lake

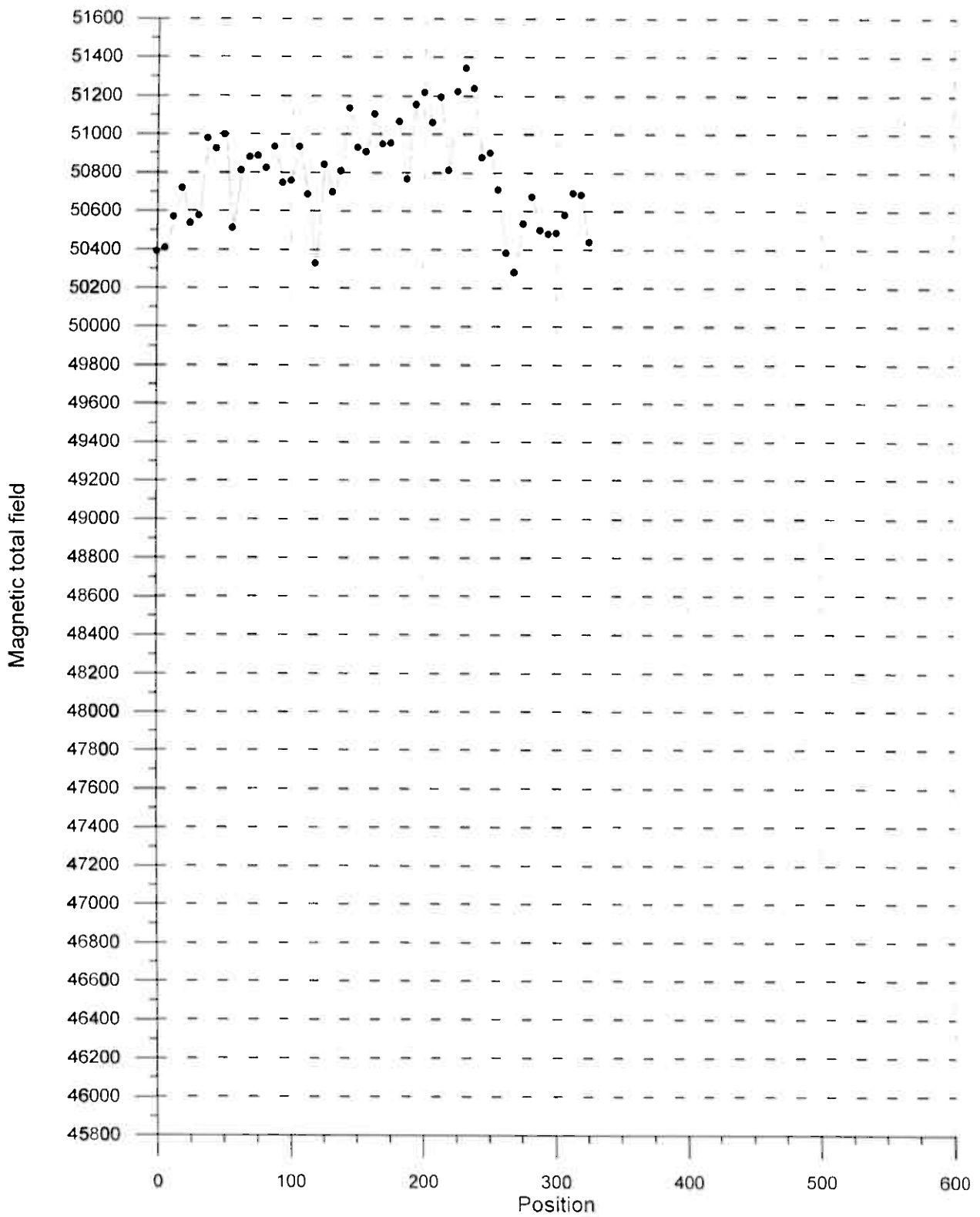


Figure 18. Magnetic total field line Lake

BJØRNDALSNIPA
Magnetic total field
Line 925 X

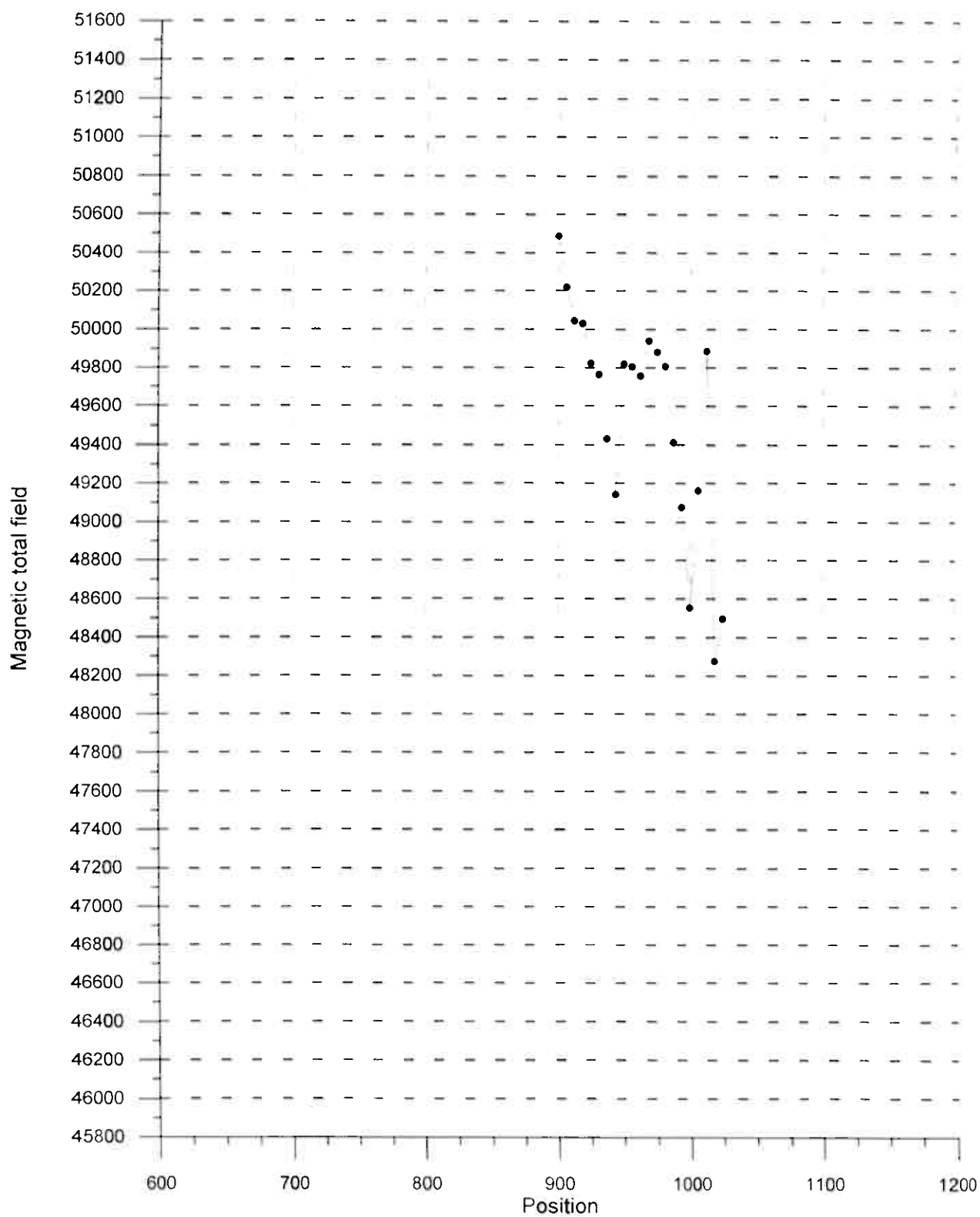


Figure 19. Magnetic total field line 925 X.

BJØRNDALSNIPA
Magnetic total field
Line 950 X

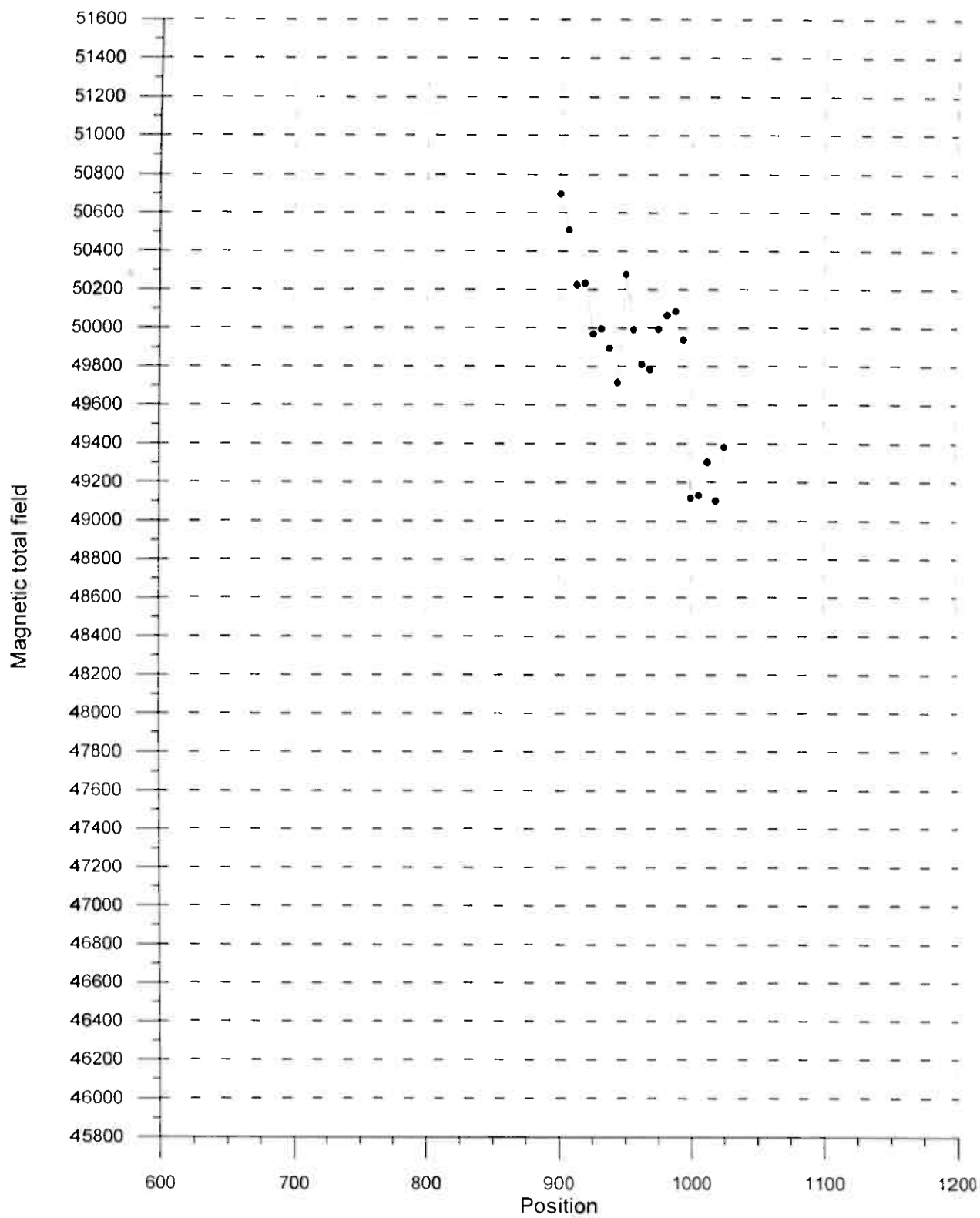


Figure 20. Magnetic total field line 950 X.

BJØRNDALSNIPA
Magnetic total field
Line 975 X

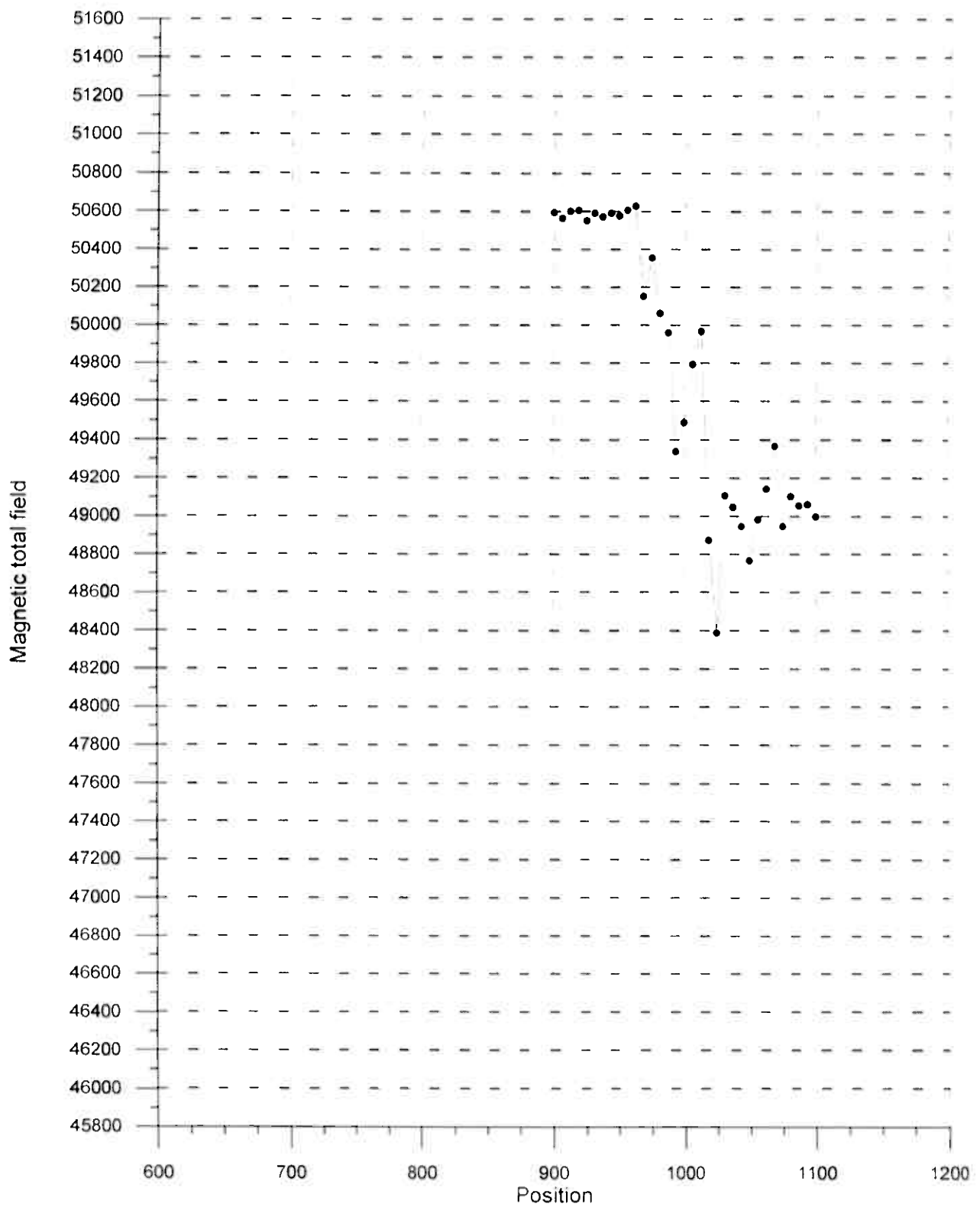


Figure 21. Magnetic total field line 975 X.

BJØRNDALSNIPA
Magnetic total field
Line 1000 X

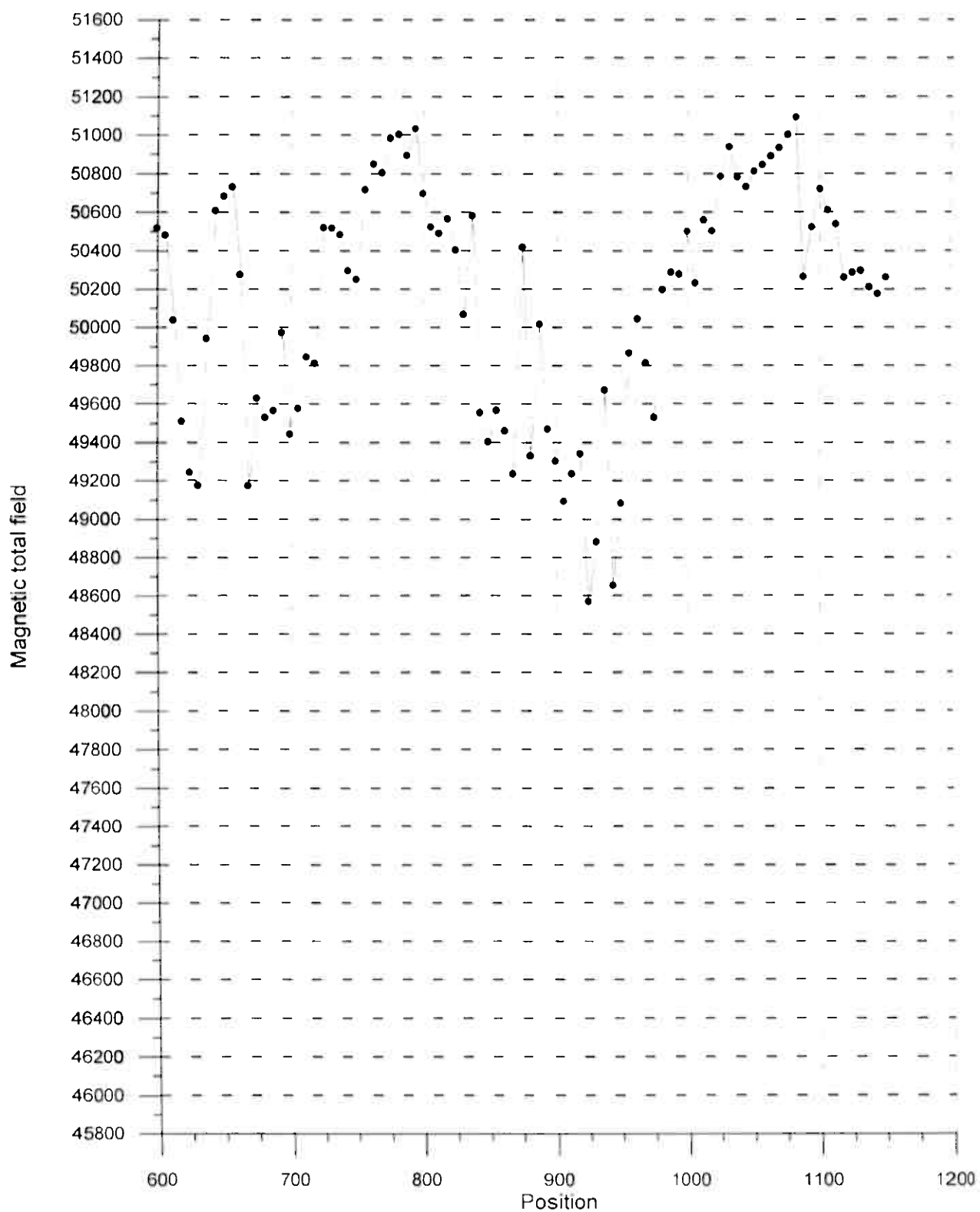


Figure 22. Magnetic total field line 1000 X.

BJØRNDALSNIPA
Magnetic total field
Line 1100 X

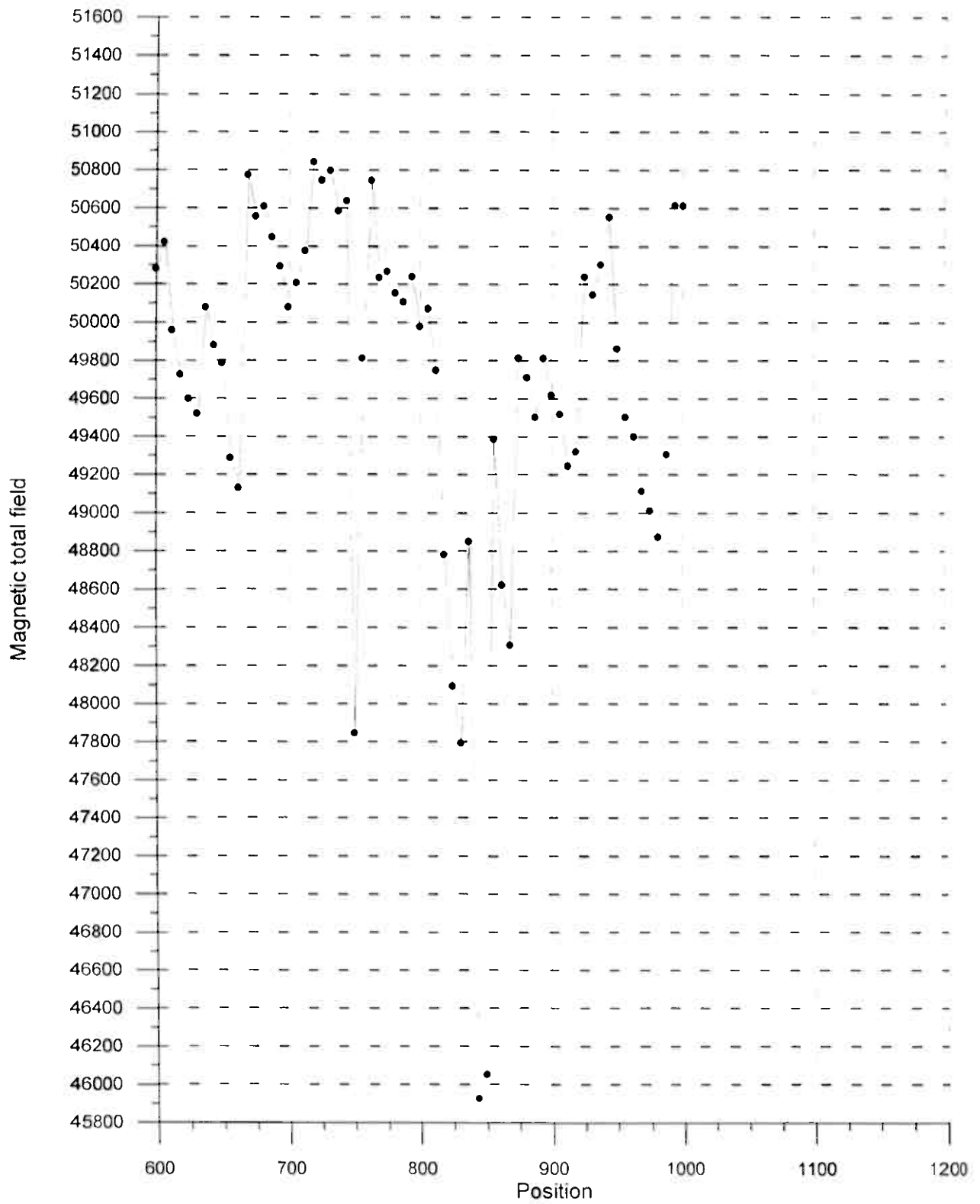


Figure 23. Magnetic total field line 1100 X.

HØGEVARDEN
Magnetic total field
Profile 1

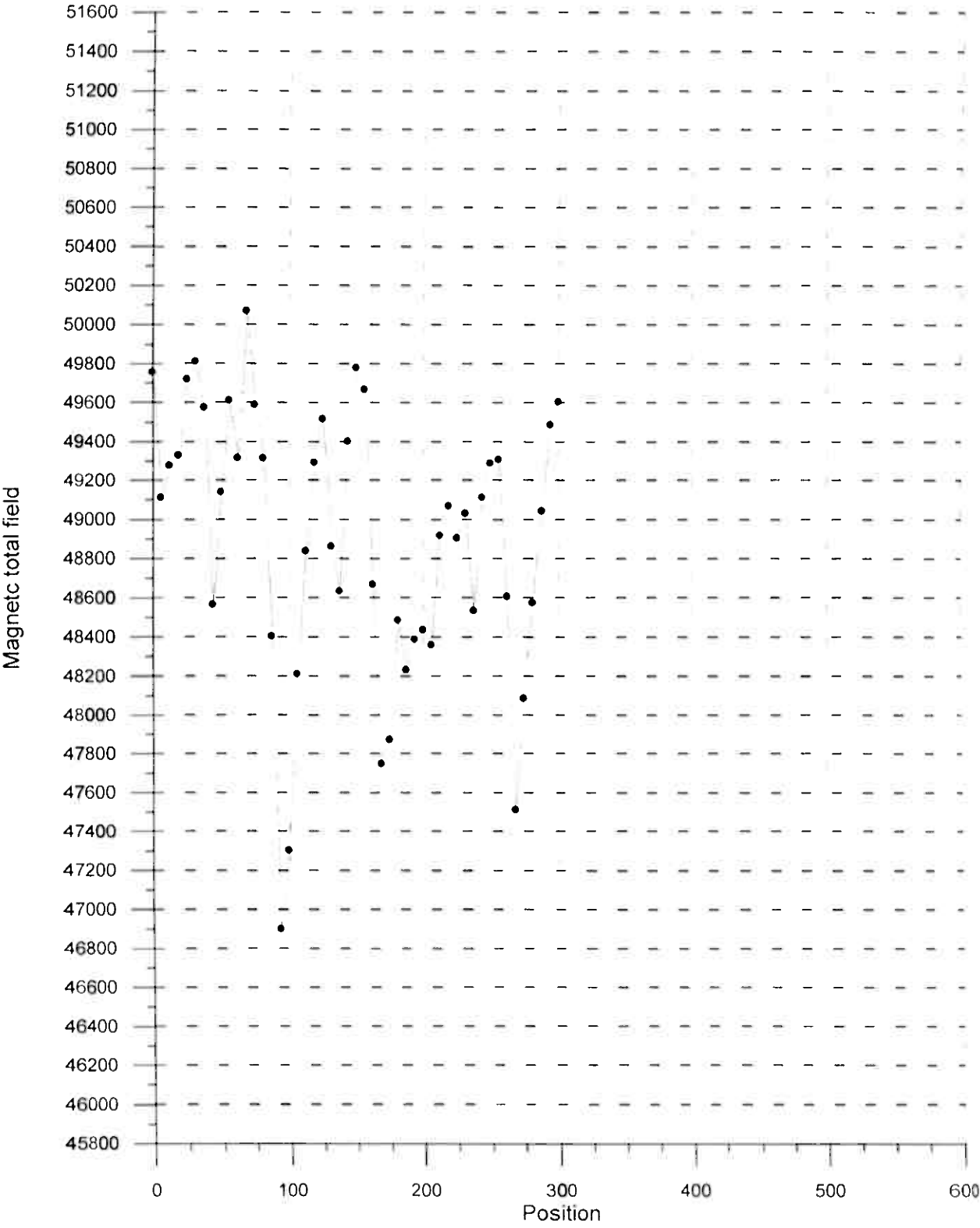


Figure 24. Magnetic total field profile 1.

HØGEVARDEN
Magnetic total field
Profile 2

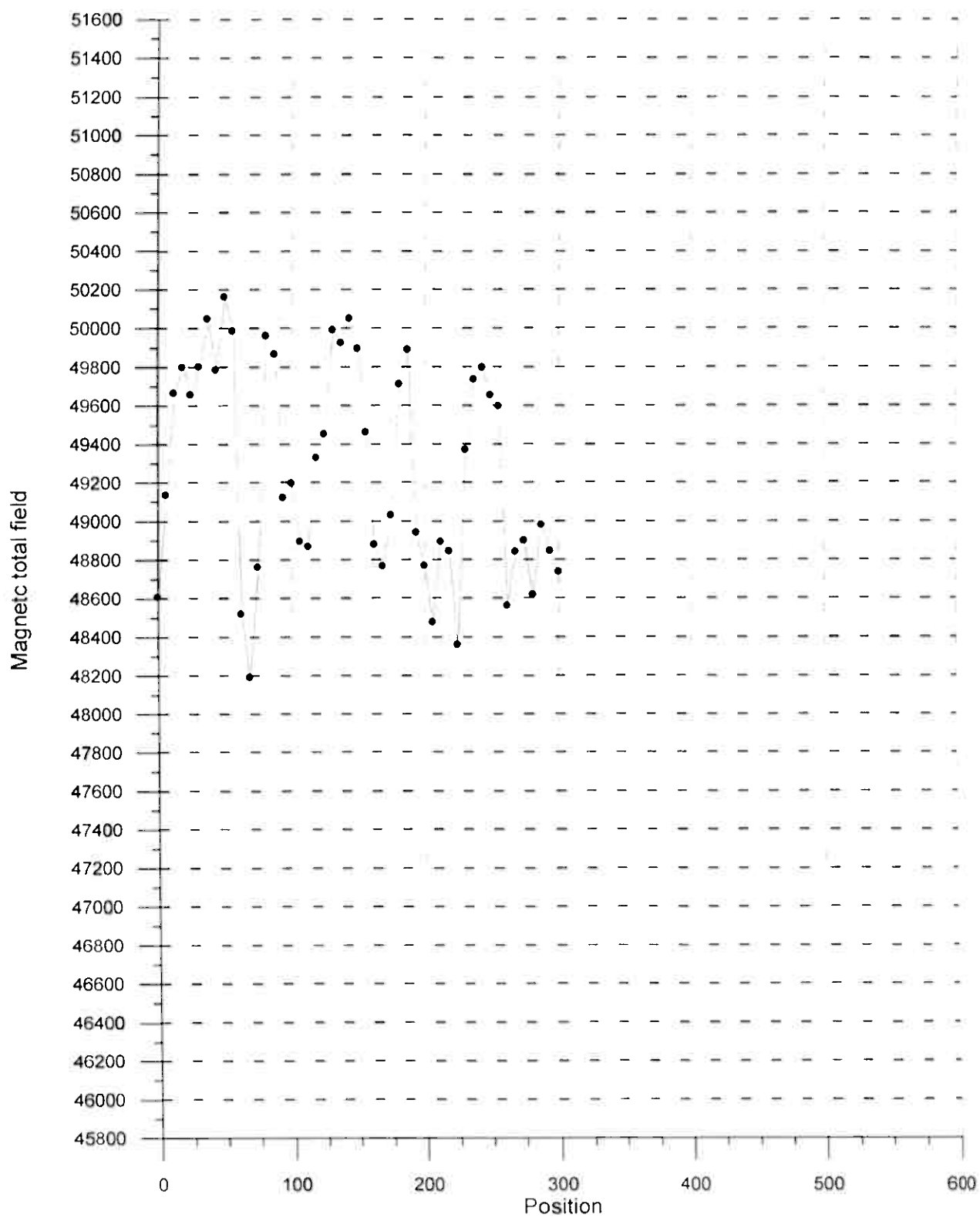


Figure 25. Magnetic total field profile 2.

HØGEVARDEN
Magnetic total field
Profile 3

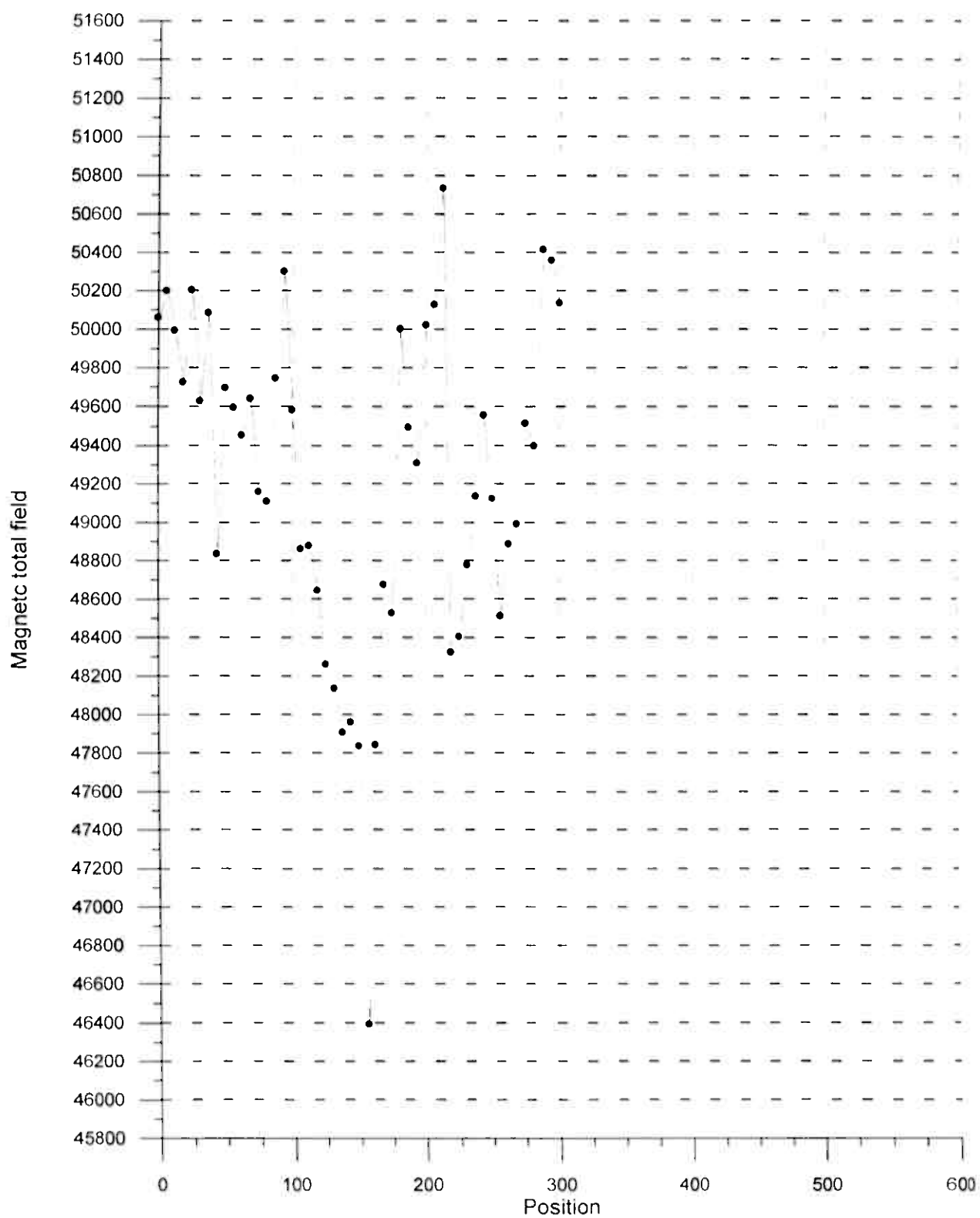


Figure 26. Magnetic total field profile 3.

HØGEVARDEN
Magnetic total field
Profile 4

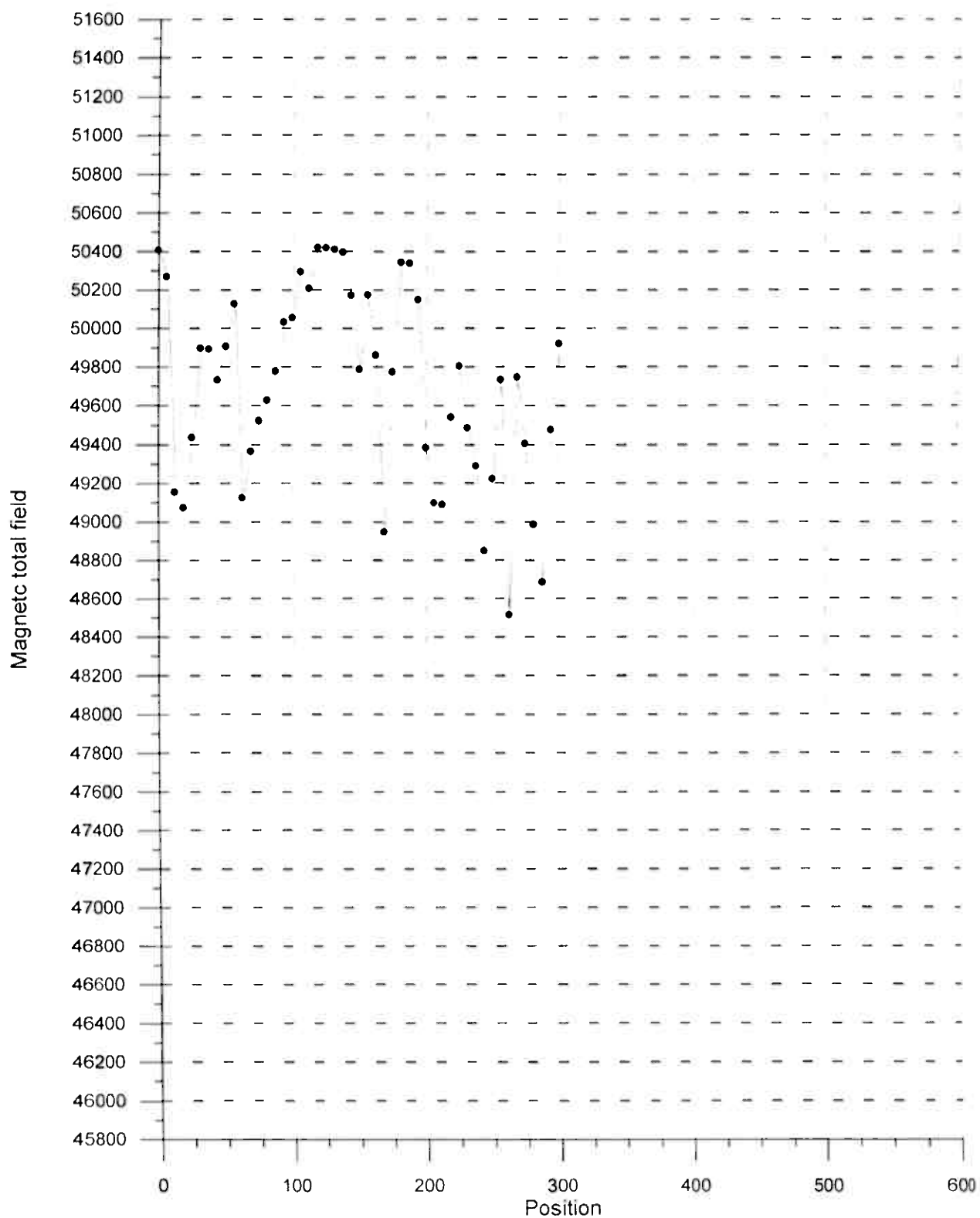


Figure 27. Magnetic total field profile 4.

HØGEVARDEN
Magnetic total field
Profile 5

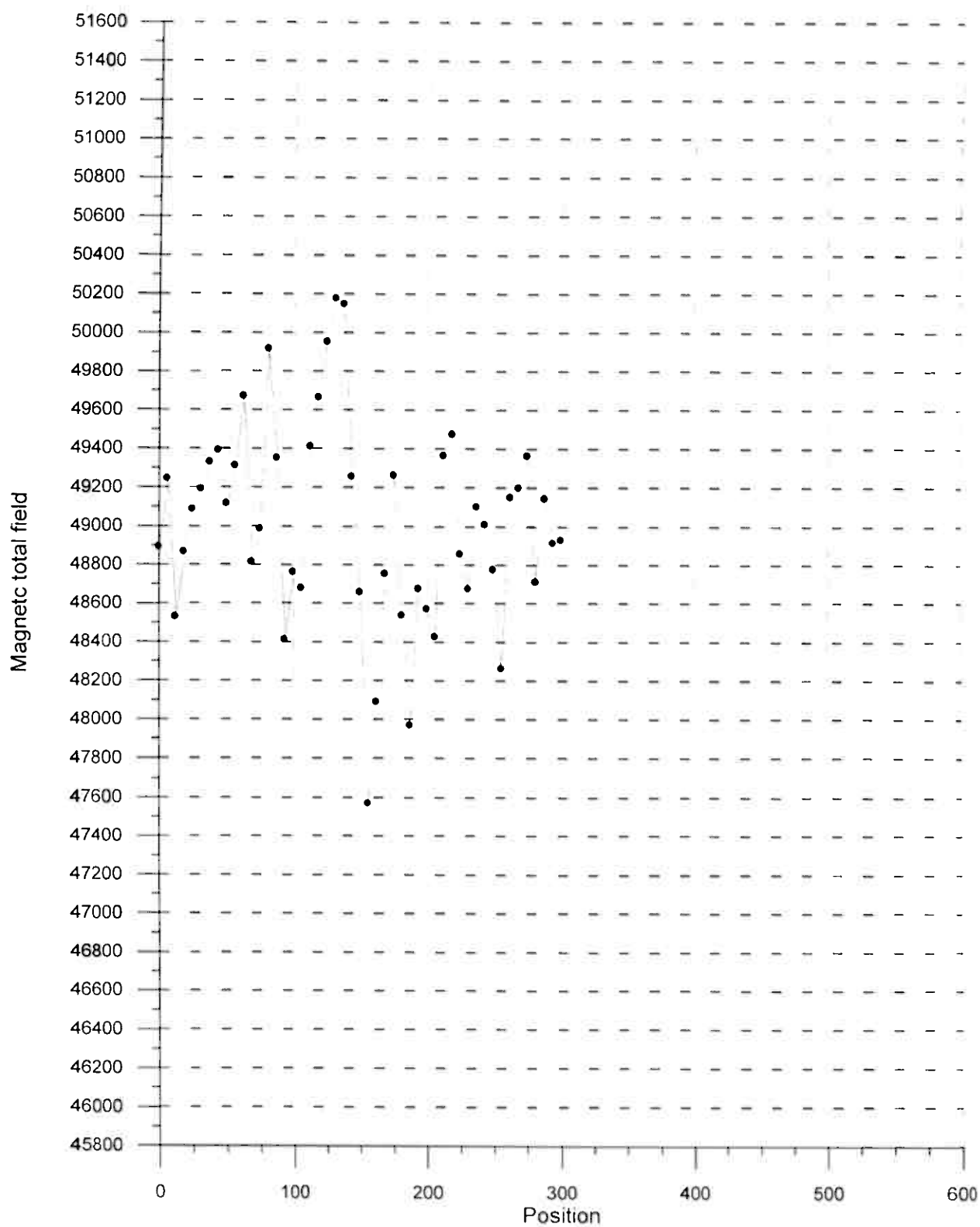


Figure 28. Magnetic total field profile 5.

HAUGE
Magnetic total field
Profile 6

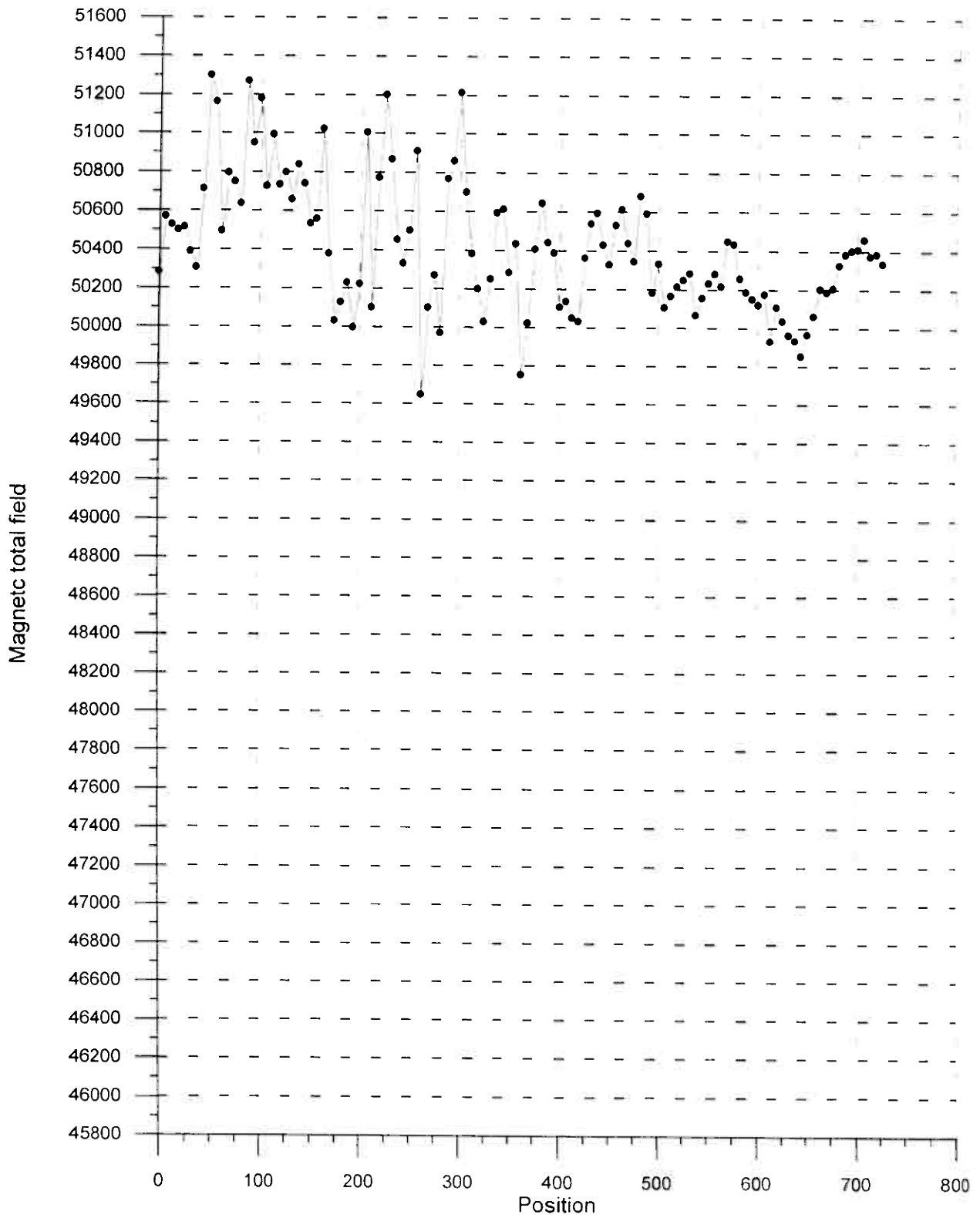


Figure 29. Magnetic total field profile 6.

HAUGE
Magnetic total field
Profile 7

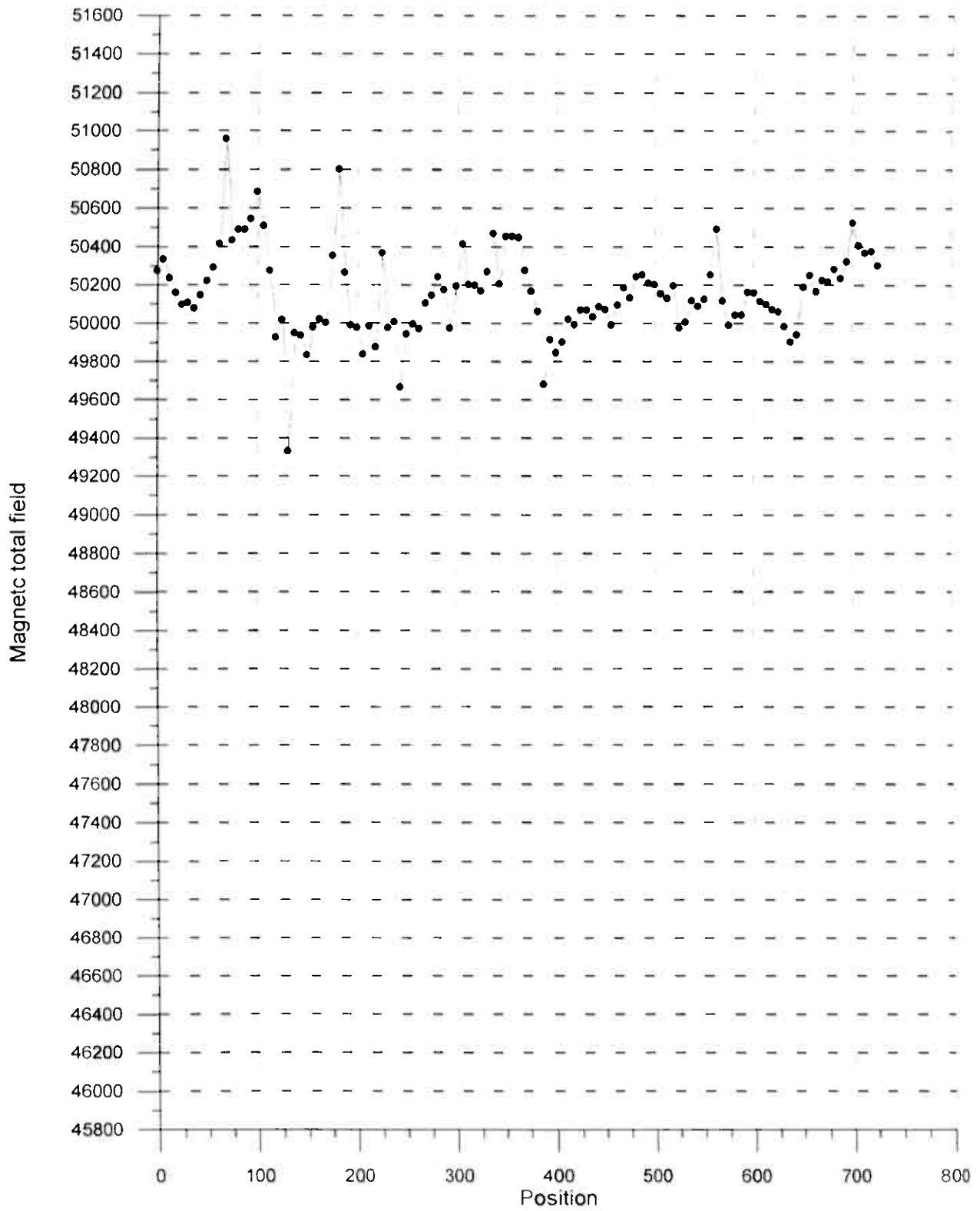


Figure 30. Magnetic total field profile 7.

HAUGE
Magnetic total field
Profile 8

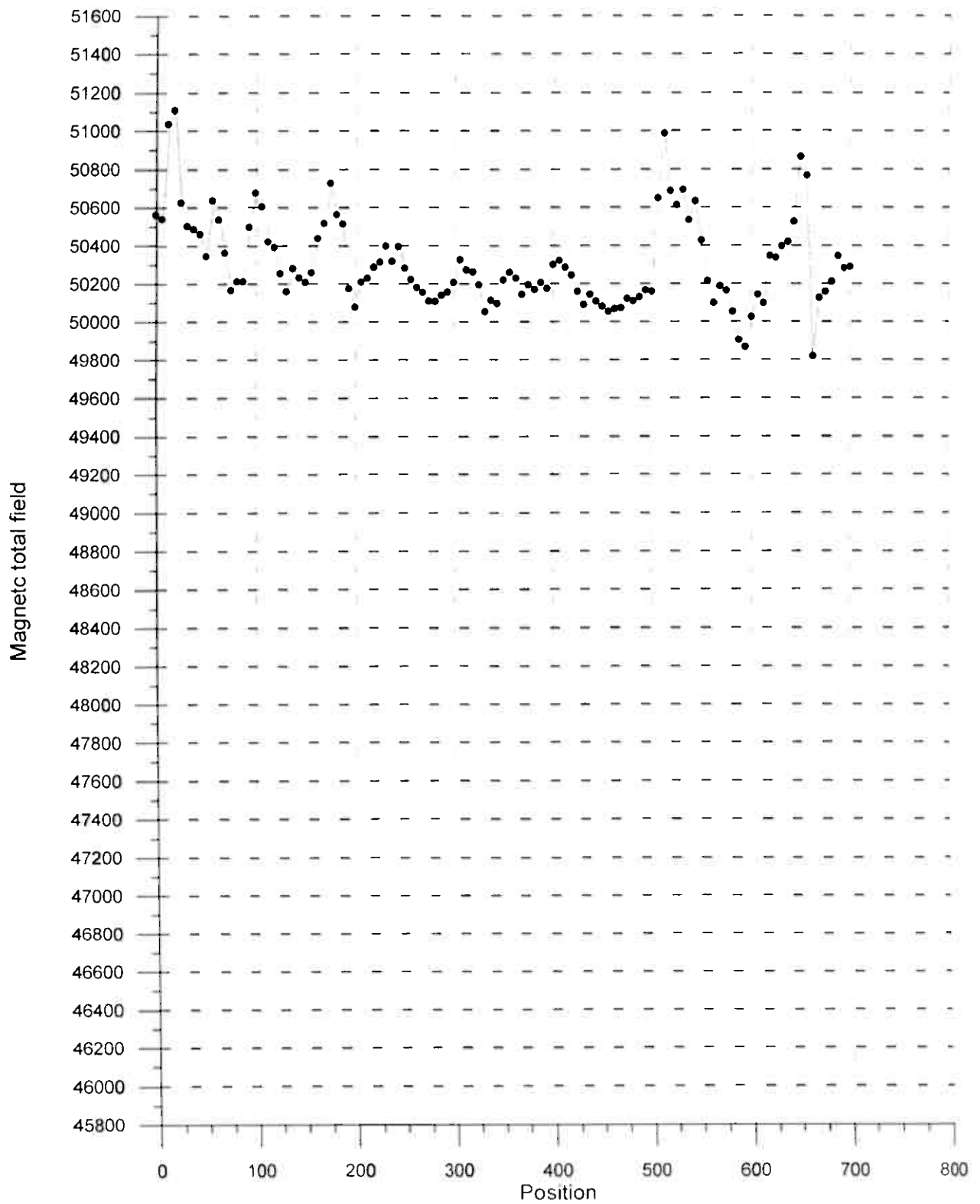


Figure 31. Magnetic total field profile 8.

HAUGE
Magnetic total field
Profile 9

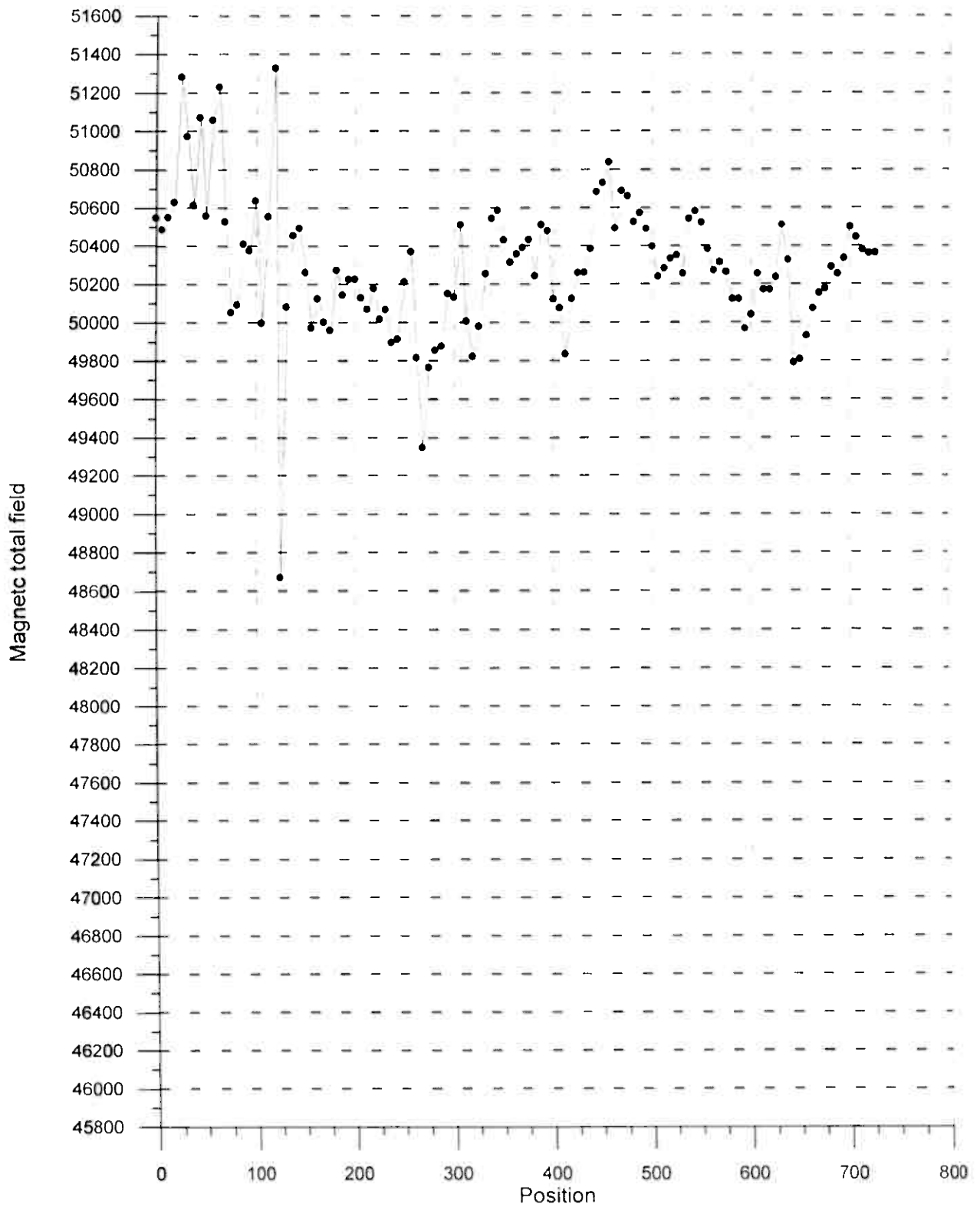
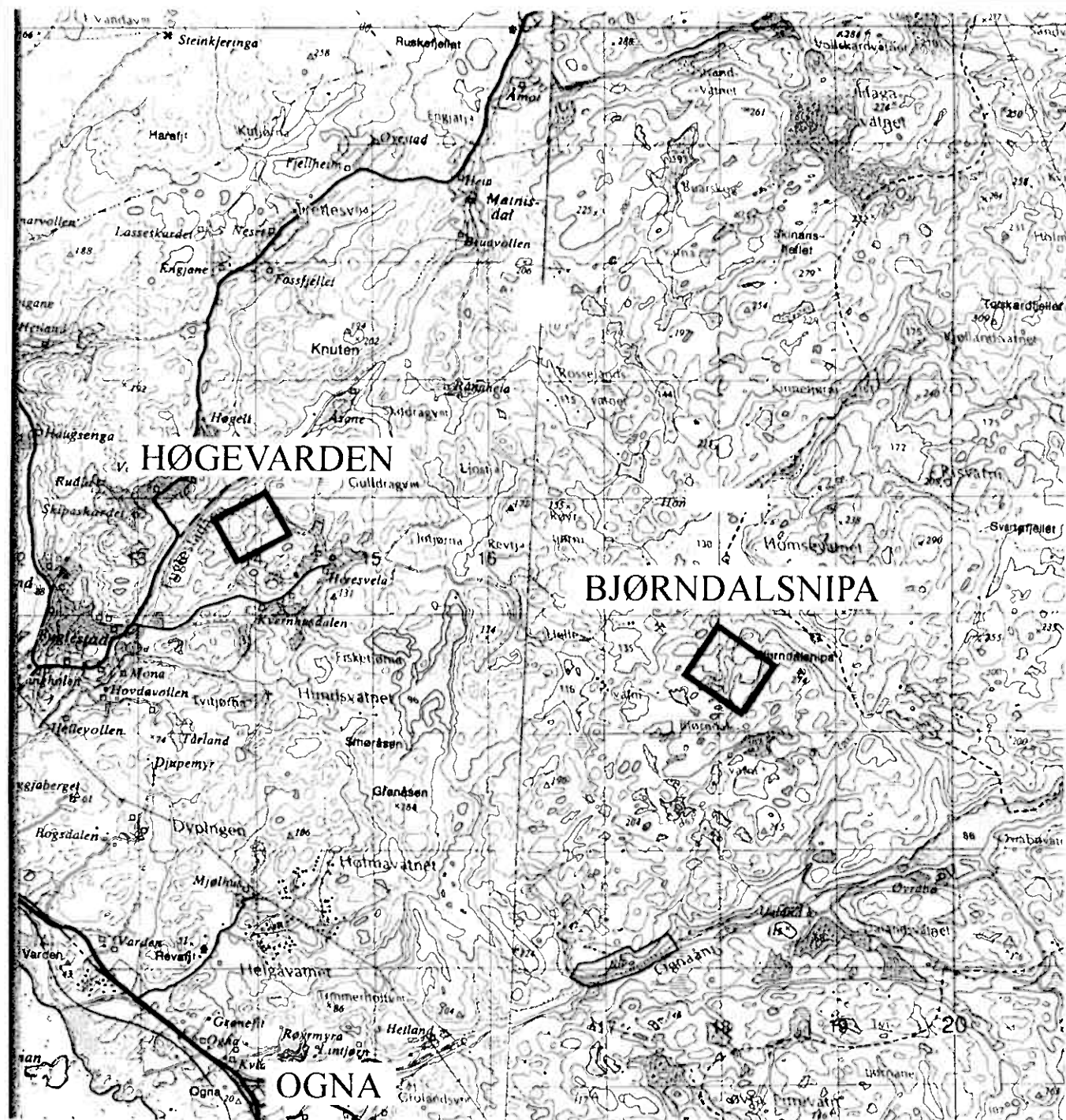


Figure 32. Magnetic total field profile 9.



INVESTIGATED AREAS

AMERICA MINERAL FIELDS

INVESTIGATED AREAS

BJØRNDALSNIPA AND HØGEVARDEN

HA. ROGALAND

SCALE

1:50 000

OPER. E.D.

DRAW E.D.

TRAC

JULY -98

OCT. -98

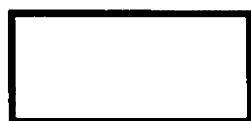
GEOLOGICAL SURVEY OF NORWAY
TRONDHEIM

MAP NO.

98.135-01

MAP 1:50 000

1212 II - 1212 III



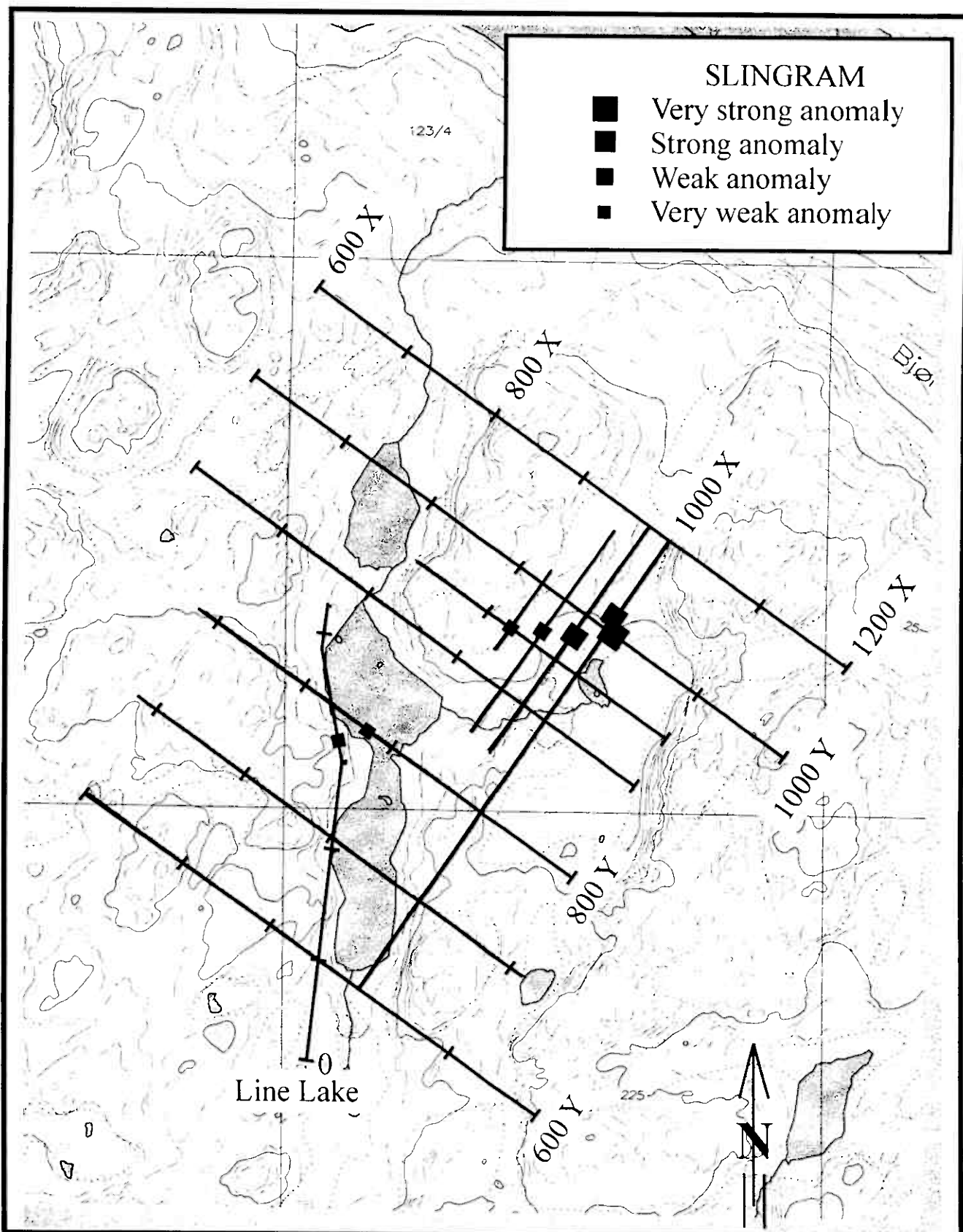
INVESTIGATED AREA

AMERICA MINERAL FIELDS
INVESTIGATED AREA
HAUGE
EVJE OG HORNES, VEST-AGDER

GEOLOGICAL SURVEY OF NORWAY
TRONDHEIM

SCALE 1:50 000	OPER.	E.D.	JULY -98
	DRAW	E.D.	OCT. -98
	TRAC		

MAP NO. 98.135-02	MAP 1:50 000 1512 III
----------------------	--------------------------



AMERICA MINERAL FIELDS
SLINGRAM AND MAGNETIC GROUND SURVEY

BJØRNDALSNIPA

HÅ, ROGALAND

GEOLOGICAL SURVEY OF NORWAY
TRONDHEIM

SCALE
1:5 000

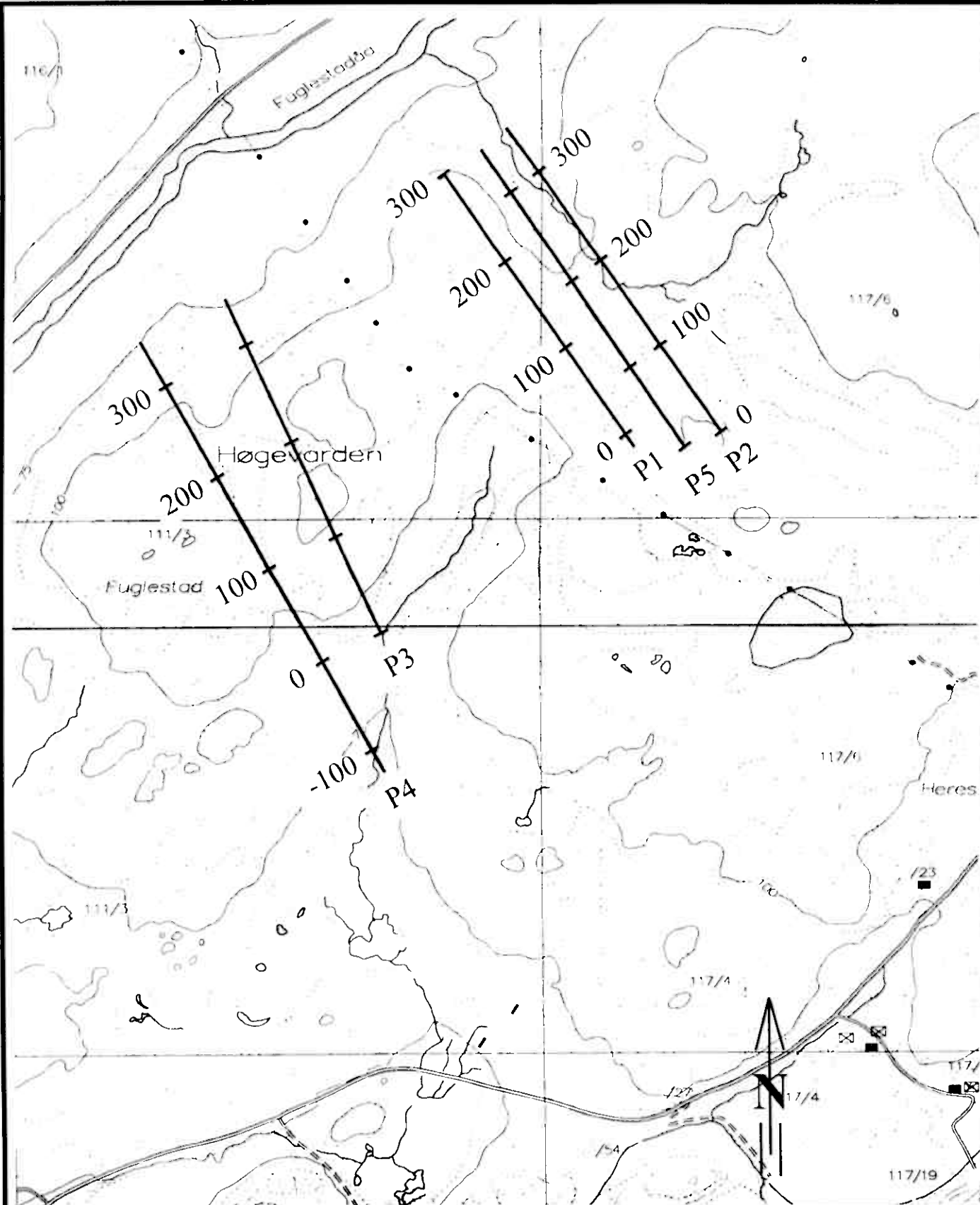
OPER. E.D. July -98

DRAW E.D. Oct. -98

TRAC

MAP NO.
98.135-03

MAP 1:50 000
1212 II



AMERICA MINERAL FIELDS
SLINGRAM AND MAGNETIC GROUND SURVEY
HØGEVARDEN
EVJE OG HORNES, AUST-AGDER

SCALE

1:5 000

OPER. E.D. JULY -98

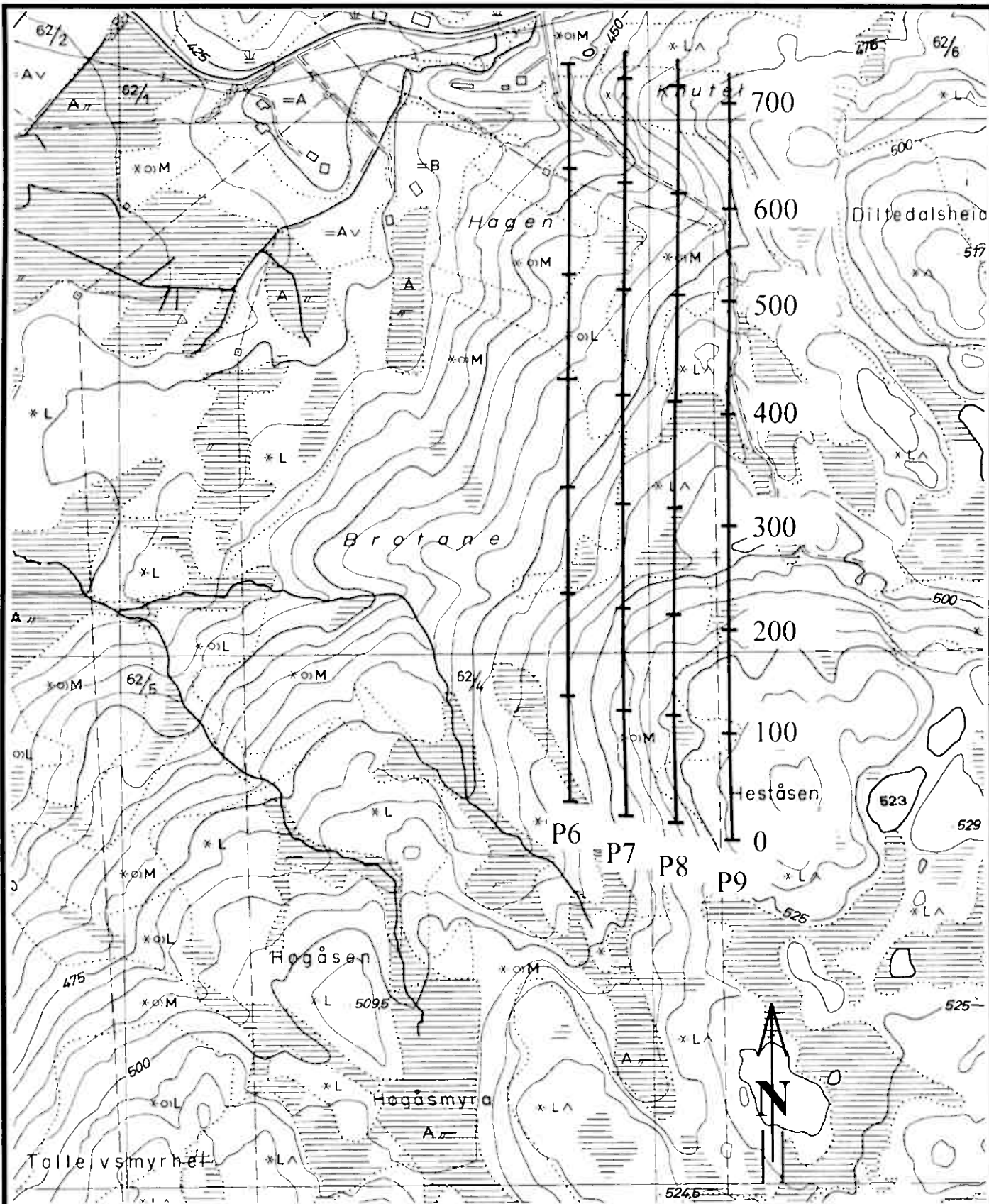
DRAW E.D. OCT. -98

TRAC

GEOLOGICAL SURVEY OF NORWAY
TRONDHEIM

MAP NO.
98.135-04

MAP 1:50 000
1212 III



AMERICA MINERAL FIELDS

SLINGRAM AND MAGNETIC GROUND SURVEY

HAUGE

EVJE OG HORNES, AUST-AGDER

SCALE

1:5 000

OPER. E.D. JULY -98

DRAW E.D. OCT. -98

TRAC

GEOLOGICAL SURVEY OF NORWAY
TRONDHEIM

MAP NO.
98.135-05

MAP 1:50 000
1512 III