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2006 Summer geophysical surveys on the Bamble and Ertelien Projects in the Telemark and Buskerud Norway. Appendix D: Logistics Report 2006 UTEM Survey Bamble/ Seljeaasen (Seljeåsen) Projects. Med CD

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-Logistics Report-
2006 UTEM Survey
Bamble/Seljaasen Projects
Norway
for
A/S Sulfidmalm

BV 4856

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

September, 2006

Rob Langridge, M.Sc.

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Appendices

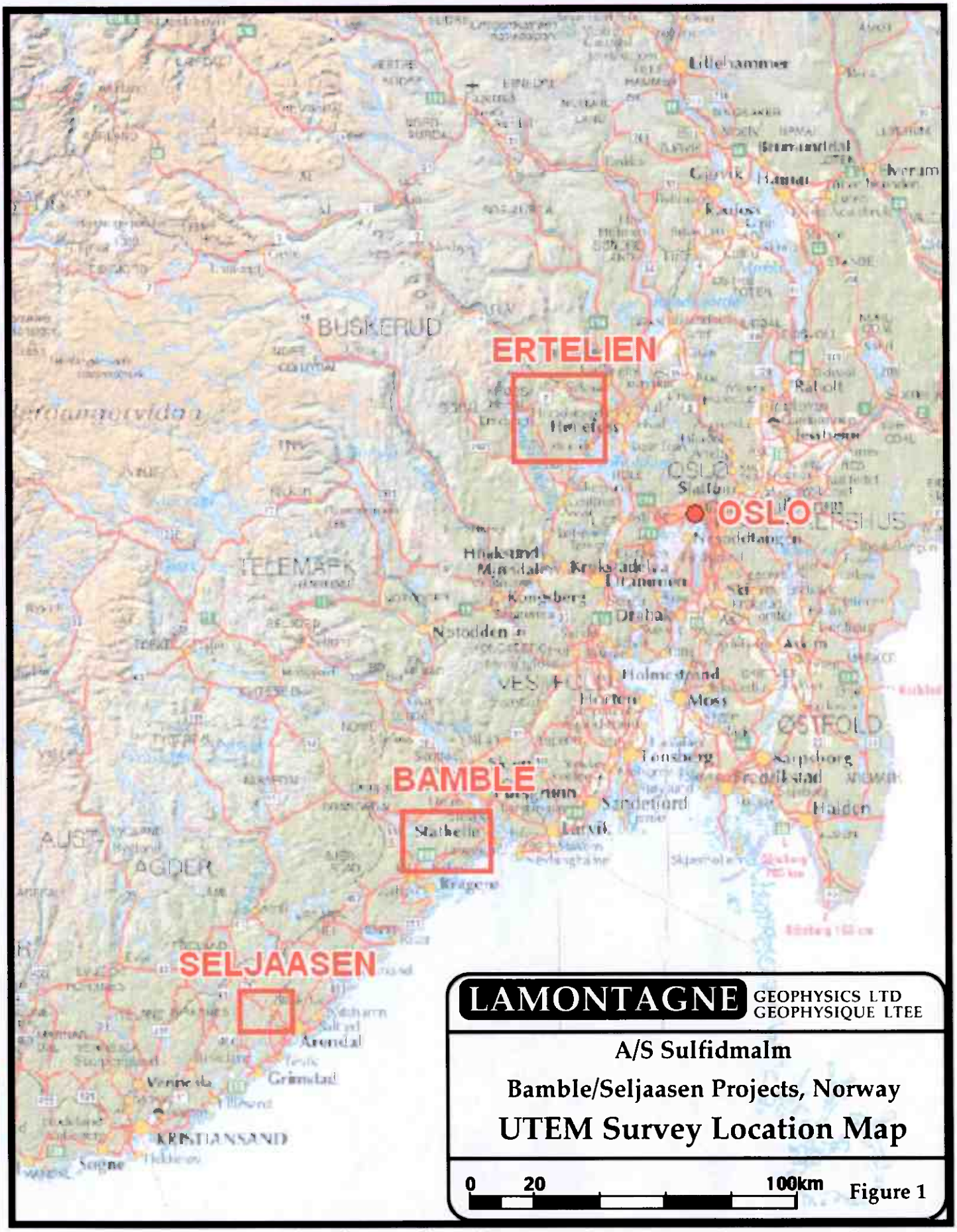
INTRODUCTION

During the period of June 13th 2006 through July 8th 2006 a UTEM survey was carried out by Lamontagne Geophysics Limited personnel for A/S Sulfidmalm in the Bamble/Seljaasen Project areas, Norway (Figure 1). The location of the various grids on the property are shown in Figures 2 through 4. Areas of interest were identified from the results of an airborne survey and previous work. The survey was carried out to locate conductors in the immediate grid areas with the intention of outlining targets for future work.

A total of 62.525km of surface UTEM data was collected using 7 transmitter loops (Loops 4, 9 and 9B). All lines were surveyed measuring the vertical component, Hz. A station spacing of 25m or 50m and a line spacing of 50m, 100m or 200m was employed. For all loops the receiver operated in 10-channel mode at a transmitter frequency of 3.25 1Hz.

This report documents the UTEM survey in terms of logistics, survey parameters and field personnel. Appendix A contains the data presented in profile form. Other appendices contain:

- List of Personnel / Production Log (Appendix B)
- an outline of the UTEM System (Appendix C)
- Note on sources of anomalous Ch1 (Appendix D)
- Note on 4Hz UTEM Data (Appendix E)
- Discussion of noise issue (Appendix F)



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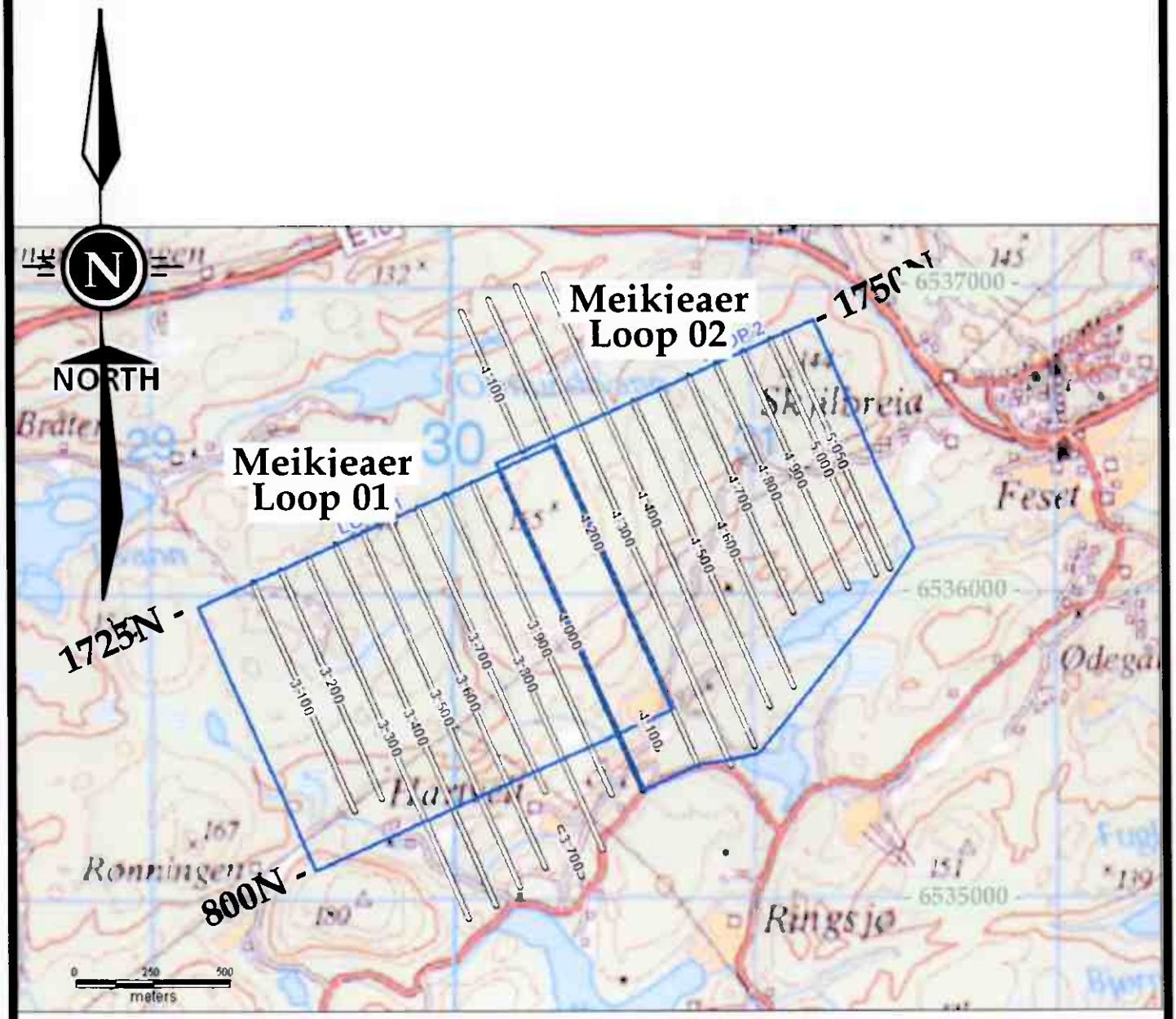
A/S Sulfidmalm

Bamble/Seljaasen Projects, Norway

UTEM Survey Location Map

0 20 100km

Figure 1



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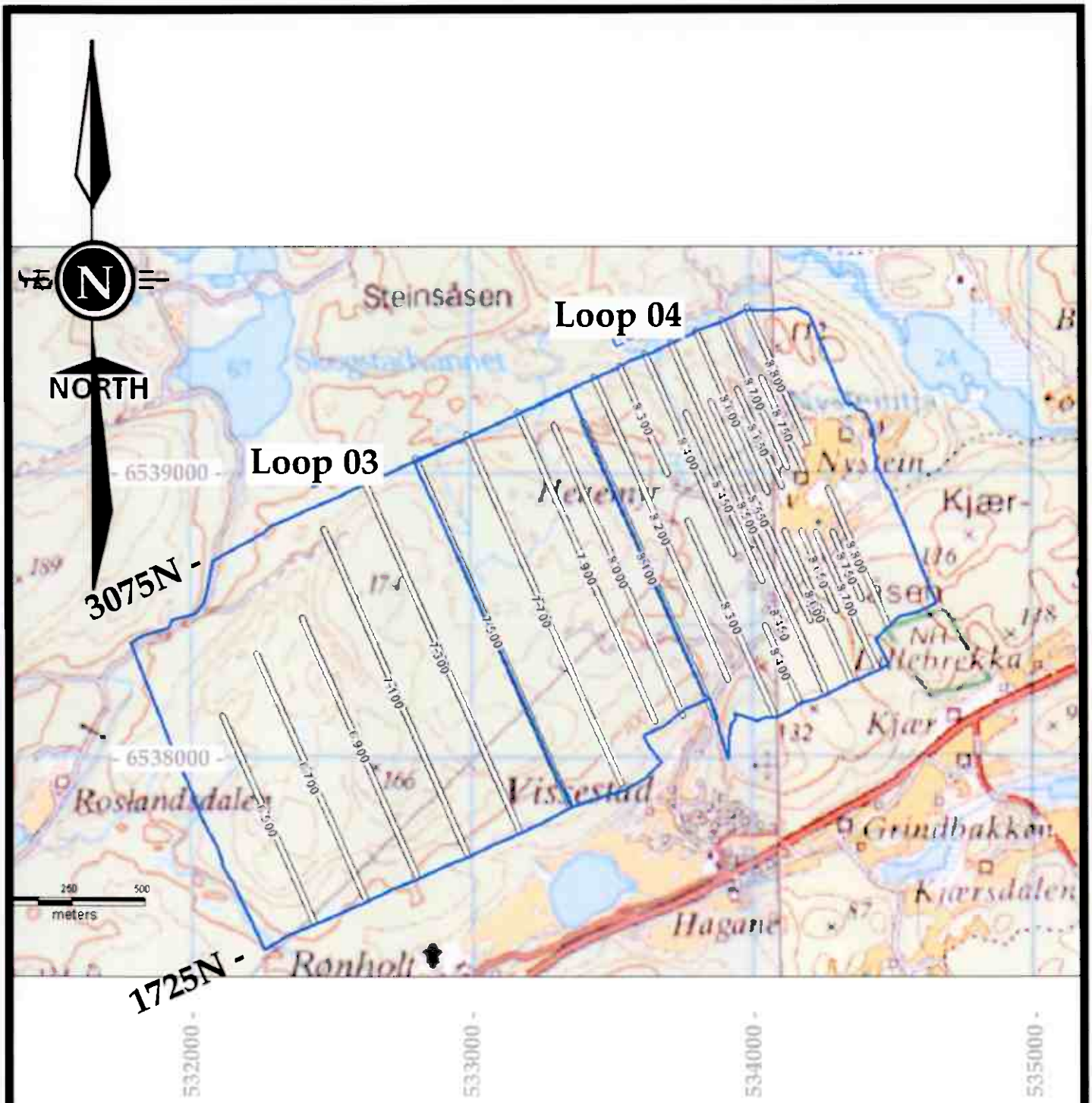
Meikjeaer Loops 01/02
UTEM Survey Location Map

0 200 1000m

Figure 2

Notes:
- full UTM coordinates shown - WGS84 Zone 32V



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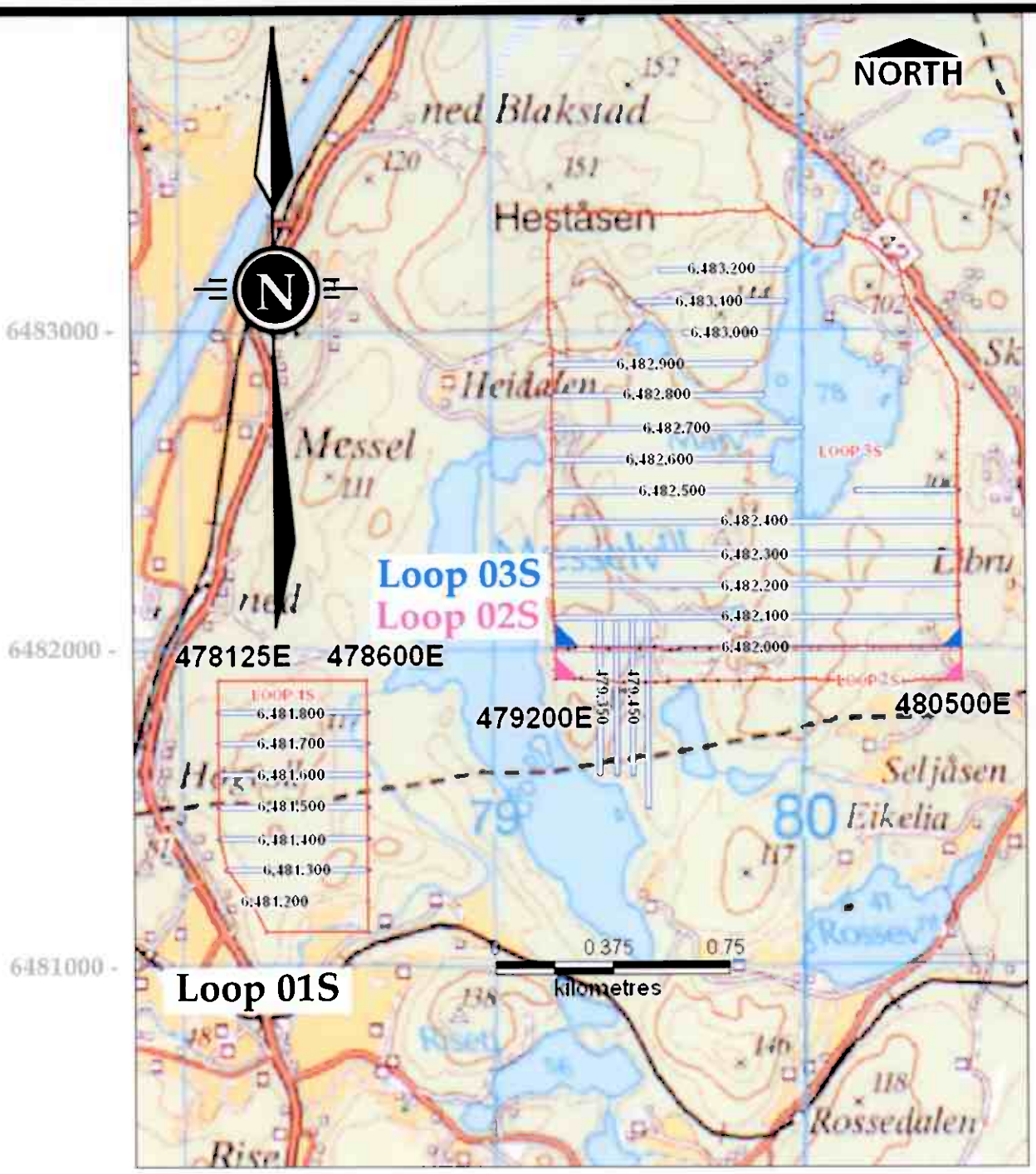
A/S Sulfidmalm

Nystein-Vissestad Loops 03/04 UTEM Survey Location Map

0 200 1000m

Figure 3

Notes:
- full UTM coordinates shown - WGS84 Zone 32V



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A/S Sulfidmalm

Seljaasen Loops 01S/02S/03S
UTEM Survey Location Map

0 200 1000m

Figure 4

Notes:
- full UTM coordinates shown - WGS84 Zone 32V

SURVEY DESIGN

This UTEM survey is part of a nickel exploration program in the Bamble/ Seljaasen Project areas. Historically, mining of Ni-bearing massive sulfide deposits has been carried out in the area. The UTEM survey was planned and carried out to outline and allow better definition of known conductors, to detect/outline new conductors and to detect/outline deeper features and depth continuations of known features.

The grid and loop layout was designed by A/S Sulfidmalm/Falconbridge Ltd. personnel to allow efficient coverage of the project area. Loop size and locations were selected to provide good coupling with the expected targets, to enhance the signal to noise, and to allow efficient coverage of the grid area. The base frequency was lowered from the international standard ~26Hz to 3.251Hz to eliminate the response of many "moderate" conductors - these responses will have decayed away by Ch1 time. Any remaining Ch1 responses are then considered to be representative of conductors of an appreciably higher conductivity.

The survey parameters employed:

- both in-loop and outside-the-loop coverage with 2 receivers
- 1.70mm diameter (~2mm² ~14-gauge) copper wire - DAMID PE GR 2
- variable transmitter loop size - to fit the area to be covered and the relief
- line spacing of 200m, 100m or 50m intervals as required
- station interval of 25m or 50m with detailing at 12.5m as required.
- Hz (vertical component measurements)
- 10-channel data at a frequency of 3.251Hz
- minimum 256 stacking (512 half-cycles) increased where noise levels dictate

In nickel exploration non-decaying Channel 1 (Ch1) conductors are indicative of highly conductive mineralization. Any non-decaying anomalous Ch1 features are therefore of interest. Non-decaying channel UTEM anomalies can reflect:

i) the presence of conductive mineralization
ii) the presence of a magnetic anomaly
iii) poor geometric control - either station location or loop location

These are outlined in more detail in Appendix D. From an interpretation standpoint magnetic anomalies and geometric control should be considered and evaluated as a mandatory part of any interpretation. From a field standpoint precise geometric control should be part of any UTEM survey where the target is non-decaying. Poor geometric control has the potential to both mask and invent Ch1 conductors.

For this survey GPS data was made available by the client for use in reducing the UTEM data. Note: elevations at a small number of stations were erroneous by ~30m and have been corrected GPS data was collected for all survey points and at intervals around all transmitter loops. Note that due to time and logistical constraints the Lamontagne crew collected the GPS data (Garmin eTrex handhelds) for Loops 3/4. GPS data collection for UTEM reduction should be most detailed along loop fronts - the most important portion of the loop from a UTEM reduction perspective. The goal along the loop front - and for in-loop surveying the loop sides/back - is to recover the topographic shape of the loop as well as the loop/line intersection points.

SURVEY LOGISTICS

A Lamontagne Geophysics crew mobilized from Canada on June 11th and arrived in Oslo on June 12th. The crew consisted of Rob Langridge (crew chief) , John Frost (operator), Kevin Arsenault (looper/operator) and Patrick Foley (looper). The crew collected the surface equipment at the field house near Tyristrand on June 12th and headed to a rented field house at Stavnes to the east of Kragerø. The following morning - June 13th - the crew toured the survey area with Falconbridge Geologist Trevor Blair and then laid out Loop 02 at Meikjeaer in the afternoon. Surveying began the following morning - June 14th.

Seven transmitter loops were used during the surface UTEM survey for a total surface survey coverage of 62.525km. Figures 2 through 4 show the loop locations and grid layouts. Access to the Bamble/Seljaasen Project areas was by pick-up truck and then on foot. The grid/loop positions had been established by GPS and were demarcated by flagging. The flagging was removed by the UTEM crew as the stations were surveyed unless otherwise indicated.

Loop numbering began at Loop 1 and the loops were numbered as follows:

Meikjeaer Loops 1 and 2
Nystein-Vissestad Loops 3 and 4
Seljaasen Loops 1S, 2S and 3S

Surveying in the Bamble area (Meikjeaer and Nystein-Vissestad Grids) was completed on June 29th and packing began for the move to rental accommodation on Tromøy southeast of Arendal. Over the next two days we packed/cleaned/moved and unpacked and laid out Loop 01S on the Seljaasen Grid. Surveying at Seljaasen began the following day - July 2nd. We completed work at Seljaasen on July 7th and packed for the move to Tyristrand to work on another project. The move to Tyristrand was completed in two vehicles on July 8th. Details of the daily production and personnel are included in the Production Log (Appendix B) along with a summary of production.

Electrical connection to the generator was made through an LGL isolation-transformer and a Variac which was rewired to conform with the sockets (standard 2-pin/side-clip ground european) on the generator. This worked well for the duration of the survey. The generator was left in the field during most nights.

In general, surface surveying for all loops went well, although at times - due to noise levels - slowly . Noise levels proved to be high and in places, along certain geologic structures and proximal to powerlines, extremely high. Higher noise levels in the vertical component are typical of very resistive areas. Locally, noisy areas indicate some channeling of telluric currents along features in the very-resistive country rock. The noise levels encountered in the project area are discussed further in Appendix F.

The survey equipment consisted of two UTEM 3 receivers and one UTEM 3 transmitter as well as all necessary accessories, support equipment and backup equipment. Data was reduced on a field computer (Macintosh) and UTEM profiles and digital data were made available/emailed to the client's personnel on a daily basis.

The weather during the survey was good. In terms of surveying we found that constantly scanning for flagging on uncut lines - in the middle distance - resulted in a number of stick-in-the-eye incidents. Safety glasses were obtained and the problem was lessened considerably. It is highly recommended that in this type of surveying - working in brush in summer on uncut lines - glasses be worn. Note that this may require the use of prescription safety glasses by some crew members.

Ticks also proved to be a concern and a considerable effort was made to "groom" after/during a days work and to use insect repellent. It should be noted that one crew member tested positive for Lyme disease after the work and received treatment. If further work is planned in this area the possibility of a vaccine being available should be investigated.

SURVEY RESULTS

The results of the survey are summarized and presented as UTEM profiles in Appendix A. The survey Grids and Loop Locations are presented in Figures 2 through 4. Overall the data quality is good - though in places it is noisy. Evidence of conductors and/or conductive features (many cultural) are evident in the profiles, particularly the profiles near the old mine workings. Although every effort was taken to shelter the receiver coil, minor wind noise may be evident in some profiles. Note the elevations at a small number of stations were erroneous by ~30m. These have been corrected.

Surface profiles are listed by Grid and Loop number and presented as 3-axis profiles in the following order:

Hz continuous norm *Ch1 reduced* **(blue separator)**
Hz point normalized *Ch1 reduced* **(pink separator)**

A description of the standard plotting formats used and of the UTEM System is presented in Appendix C.

Outline of surface profile types

Hz continuous norm *Ch1 reduced* **(blue separator)**

Continuous normalization is useful for detection of the presence of anomalies at any position on a profile. The anomaly shape is distorted by the normalization to the local field. As the field gets very big near the wire the continuously normalized Ch1 tends towards zero.

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

Hz **point normalized** *Ch1 reduced* **(pink separator)**

normalization point: all loops all lines ~centre of the loop

Point normalized data is useful for interpretation purposes. Anomaly shape is preserved as is the amplitude if the normalization point is local to the anomaly.

All the data collected have been normalized to a point at the centre of the loop. This field value is the smallest field value inside the loop and is a standard field value used for plotting, when surveying from inside the loop.
Note: Typically the normalization point for off-loop profiles is 4-500m out from the centre of the loop front and for inside-the-loop profiles it is the loop centre.

The disadvantage of point normalization is that small errors in location near the wire and in current tend to appear as large errors in Ch1. If the loop/station locations and the current are accurately known then point normalized Ch1 (in the absence of a local conductor) will tend to be continuous approaching the wire - unlike the continuously normalized Ch1 which, as described above, will dip to zero.

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

Discussion of the Grids

The profiles presented in Appendix A have been reduced with a grid produced from the GPS data collected by the client (Note: the exception being locations for Loops 3 and 4 at Nystein-Vissestad which were collected by the Lamontagne crew). The overall results are quite good (Appendix A). Some of the character in Ch1 profiles is due to remaining errors in loop/line location - this is particularly true near the loop wire where errors in station/loop location/elevation have a larger effect (Appendix D). Aside from survey accuracy and day-to-day variation sources of error in location include "adjustments" of the loop to topography and wind. Note the elevations at a small number of stations were erroneous by ~30m. These have been corrected.

The GPS data for Loops 01, 02 and some lines of Loops 03 and 04 was provided by the usual source - Rob McKeown. Additional GPS data for Loops 03 and 04 as well as the Seljaasen Grid data was provided by a new source (Scandicraft). Scandicraft was unfamiliar with this style of surveying and there were some teething problems - mainly to do with grid labeling. In addition the data was only provided in full UTM coordinates - Rob McKeown provides both full UTM coordinates and local grid coordinates. Note that this means that the full UTM coordinates provided with this UTEM data set should be used in preference to the local grid coordinates which have been calculated by the author of this report. For reference the transformation from UTM to grid coordinates used by the author follow.
Note that due to time and logistical constraints the Lamontagne crew collected the GPS data (Garmin eTrex handhelds) for Loops 3 and 4 at Nystein-Vissestad.

For the Meikjeaer (Loops 1 and 2) and Nystein-Vissestad (Loops 3 and 4) Grids

a) translation:
UTM WGS84 Zone 32V (UTMeasting, UTMnorthing) (527200mE, 6533200 mN)
becomes
Local Meikjeaer and Nystein-Vissestad Grids (gridEast, gridNorth) (0,0)

b) rotation: Local Meikjeaer and Nystein-Vissestad gridNorth is @ azimuth 336.

For the Seljaasen Grid (Loops 1S, 2S and 3S)

a) translation:
UTM WGS84 Zone 32V (UTMeasting, UTMnorthing) (470000mE, 6480000mN)
becomes
Local Seljaasen Grid (gridEast, gridNorth) (0,0)

b) rotation: Local Seljaasen Grid gridNorth is @ azimuth 360.

Discussion of the Results

The Bamble/Seljaasen Project areas are very resistive, and the noise levels proved to be high and in places, along certain geologic structures, extremely high. Higher noise levels in the vertical component are typical of very resistive areas. Local noisy areas can indicate some channeling of telluric currents along features in the very-resistive country rock. Further discussion of the noise levels encountered in the project area is presented in Appendix F.

The in-loop configuration (Loop 09B) provides better quality data at considerably reduced stacking levels. The in-loop configuration has been the choice for most of the grids surveyed on this project. Note that in-loop surveying is less sensitive to small, steeply-dipping conductors

CONCLUSIONS AND RECOMMENDATIONS

The results of the survey are summarized and presented as UTEM profiles in Appendix A. The final Grid and Loop Locations are presented in Figures 2 through 4. Overall the data quality is good - though in places it is noisy. The area surveyed is very resistive and cultural noise was present on many of the grids. This contributed to the elevated noise levels seen in the profiles, and is discussed further in Appendix F.

The profiles presented in Appendix A have been reduced with the grids corrected as well as possible using available information. The location of all survey points and loop locations were collected using a GPS system. The accuracy of the GPS system was quite high, however small errors may remain in loop locations and station/coil locations. Some GPS data for this survey was provided by a new source (Scandicraft) and was only provided in full UTM coordinates. In addition, due to time and logistical constraints, the Lamontagne crew collected the GPS data (Garmin eTrex handhelds) for Loops 3 and 4 at Nystein-Vissestad. Note that this means that the full UTM coordinates provided with this UTEM data set should be used in preference to the local grid coordinates which have been calculated by the author of this report. For reference the transformation from UTM to grid coordinates used by the author are listed above.

Two considerations when planning future summer field work in the area:

- It is highly recommended that in this type of surveying - working in brush in summer on uncut lines - glasses be worn. Note that this may require the use of prescription safety glasses by some crew members.
- Ticks also proved to be a concern and crews should be informed to be watchful and to use insect repellent. It should be noted that one crew member tested positive for Lyme disease after the work and received treatment. If further work is planned in this area the possibility of a vaccine being available should be investigated. Post-field testing for exposure to Lyme disease is recommended

Otherwise, in terms of logistics, the survey ran quite smoothly. The Falconbridge Ltd. employees were extremely helpful and their hard work is greatly appreciated.

Appendix A

0616 UTEM Profiles

UTEM 3 Survey

Bamble/Seljaasen Projects
Norway

for

A/S Sulfidmalm

Presentation

The results of the survey are summarized and presented as UTEM profiles in Appendix A. The survey Grids and Loop Locations are presented in Figures 2 and 3. Overall the data quality is good - though in places it is noisy. Evidence of conductors and/or conductive features are evident in the profiles, particularly the profiles near the old mine workings. Although every effort was taken to shelter the receiver coil, minor wind noise may be evident in some profiles. Note the elevations at a small number of stations were erroneous by ~30m. These have been corrected. A description of the standard plotting formats used and of the UTEM System is presented in Appendix C.

The profiles are listed by Loop number and presented as 3-axis profiles in the order:

Hz continuous norm *Ch1 reduced* **(blue separator)**
Hz point normalized *Ch1 reduced* **(pink separator)**

Outline of surface profile types

Hz continuous norm *Ch1 reduced* **(blue separator)**

Continuous normalization is useful for detection of the presence anomalies at any position on a profile. The anomaly shape is distorted by the normalization to the local field. As the field gets very big near the wire the continuously normalized Ch1 tends towards zero.

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

Hz point normalized *Ch1 reduced* **(pink separator)**

normalization point: all data ~300m out from the loop-front centre

Point normalized data is useful for interpretation of responses. Anomaly shape is preserved as is the amplitude if the normalization point is local to the anomaly.

All the data collected have been normalized to a point at the centre of the loop. This field value is the smallest field value inside the loop and is a standard field value used for plotting, when surveying from inside the loop.
Note: Typically the normalization point for off-loop profiles is 4-500m out from the centre of the loop front and for inside-the-loop profiles it is the loop centre.

The disadvantage of point normalization is that small errors in location near the wire and in current tend to appear as large errors in Ch1. If the loop/station locations and the current are accurately known then point normalized Ch1 (in the absence of a local conductor) will tend to be continuous approaching the wire - unlike the continuously normalized Ch1 which, as described above, will dip to zero.

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

List of Data Collected and Plotted

Bamble/Seljaasen - summer - 2006

Surface coverage - @ 3.251 Hertz

	Line	coverage	
Loop 01	Line 3100E	875N - 1725N	850m
	Line 3200E	875N - 1725N	850m
	Line 3300E	825N - 1725N	900m
	Line 3400E	450N - 1725N	1275m
	Line 3500E	450N - 1725N	1275m
	Line 3600E	475N - 1725N	1250m
	Line 3700E	400N - 550N	150m
		700N - 1725N	1025m
	Line 3800E	475N - 1725N	1250m
	Line 3900E	600N - 1725N	1125m
	Line 4000E	575N - 1725N	1150m
	Meikjeaer	Loop 01 Total	**11100m**
Loop 02	Line 4100E	650N - 800N	150m
in-loop	Line 4200E	575N - 1750N	1175m
	Line 4300E	525N - 1750N	1225m
	Line 4400E	525N - 1750N	1225m
	Line 4500E	625N - 1750N	1125m
	Line 4600E	700N - 1750N	1050m
	Line 4700E	875N - 1750N	875m
	Line 4800E	900N - 1750N	850m
	Line 4900E	925N - 1750N	825m
	Line 5000E	900N - 1750N	850m
	Line 5050E	900N - 1750N	850m
Loop 02N	Line 4100E	650N - 800N	500m
off-loop	Line 4200E	1750N - 2250N	500m
	Line 4300E	1750N - 2250N	500m
	Line 4400E	1750N - 2250N	500m
	Meikjeaer	Loop 02 Total	**12200m**
Loop 03	Line 6500E	1725N - 2525N	800m
	Line 6700E	1725N - 2675N	950m
	Line 6900E	1725N - 2725N	1000m
	Line 7100E	1725N - 2975N	1250m
	Line 7300E	1725N - 3075N	1350m
	Line 7500E	1725N - 3075N	1350m
	Nystein-Vissestad	Loop 03 Total	**6700m**

	Line	coverage	
Loop 04	Line 7700E	1725N - 3075N	1350m
	Line 7900E	1850N - 3075N	1225m
	Line 8000E	1875N - 2950N	1075m
	Line 8100E	1825N - 2950N	1125m
	Line 8200E	1725N - 3075N	1350m
	Line 8300E	1725N - 2475N	750m
		2650N - 3075N	425m
	Line 8400E	1725N - 2025N	300m
		2175N - 3075N	900m
	Line 8450E	1975N - 2825N	850m
	Line 8500E	1725N - 2250N	525m
		2350N - 3075N	725m
	Line 8550E	1975N - 2350N	375m
		2400N - 2825N	425m
	Line 8600E	1725N - 2300N	575m
		2425N - 3075N	650m
	Line 8650E	1975N - 2275N	300m
		2450N - 2825N	375m
	Line 8700E	1725N - 2250N	525m
		2500N - 3075N	575m
	Line 8750E	1975N - 2225N	250m
		2475N - 2825N	350m
		1850N - 2175N	325m
	Line 8800E	2550N - 3075N	525m
	Nystein-Vissestad	Loop 04 Total	**15850m**
	Bamble 2006	**Total**	**45.850km**

	Line	coverage	
Loop 01S	Line 1200N	225E - 375E	150m
	Line 1300N	150E - 600E	450m
	Line 1400N	125E - 600E	475m
	Line 1500N	125E - 600E	475m
	Line 1600N	125E - 600E	475m
	Line 1700N	125E - 600E	475m
	Line 1800N	125E - 600E	475m
	Seljaasen	Loop 01S Total	**2975m**
Loop 02S	Line 2000N	9200E - 10500E	1300m
	Line 2100N	9200E - 10500E	1300m
	Line 2200N	9200E - 10500E	1300m
	Line 2300N	9200E - 10500E	1300m
	Line 2400N	9200E - 10500E	1300m
	Line 2500N	9200E - 9975E	775m
		10175E - 10500E	325m
	Line 2600N	9200E - 9900E	700m
	Line 2700N	9200E - 10000E	800m
	Line 2800N	9200E - 9850E	650m
	Line 2900N	9200E - 9850E	650m
	Line 3000N	9575E - 9900E	325m
	Line 3100N	9475E - 9950E	475m
	Line 3200N	9550E - 9950E	400m
	Seljaasen	Loop 02S Total	**11600m**
Loop 03S	Line 9350E	1600N - 2100N	500m
	Line 9400E	1600N - 2100N	500m
	Line 9450E	1600N - 2100N	500m
	Line 9500E	1500N - 2100N	600m
	Seljaasen	Loop 03S Total	**2100m**
	Seljaasen 2006	**Total**	**16.675km**
	Bamble/Seljaasen 2006	**Total**	**62.525km**

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Surface UTEM Profiles

Bamble

Meikjeaer Loops 01/02

Nystein-Vissestad Loops 03/04

Seljaasen Loops 01S/02S/03S

Meikjeaer

Loop 01

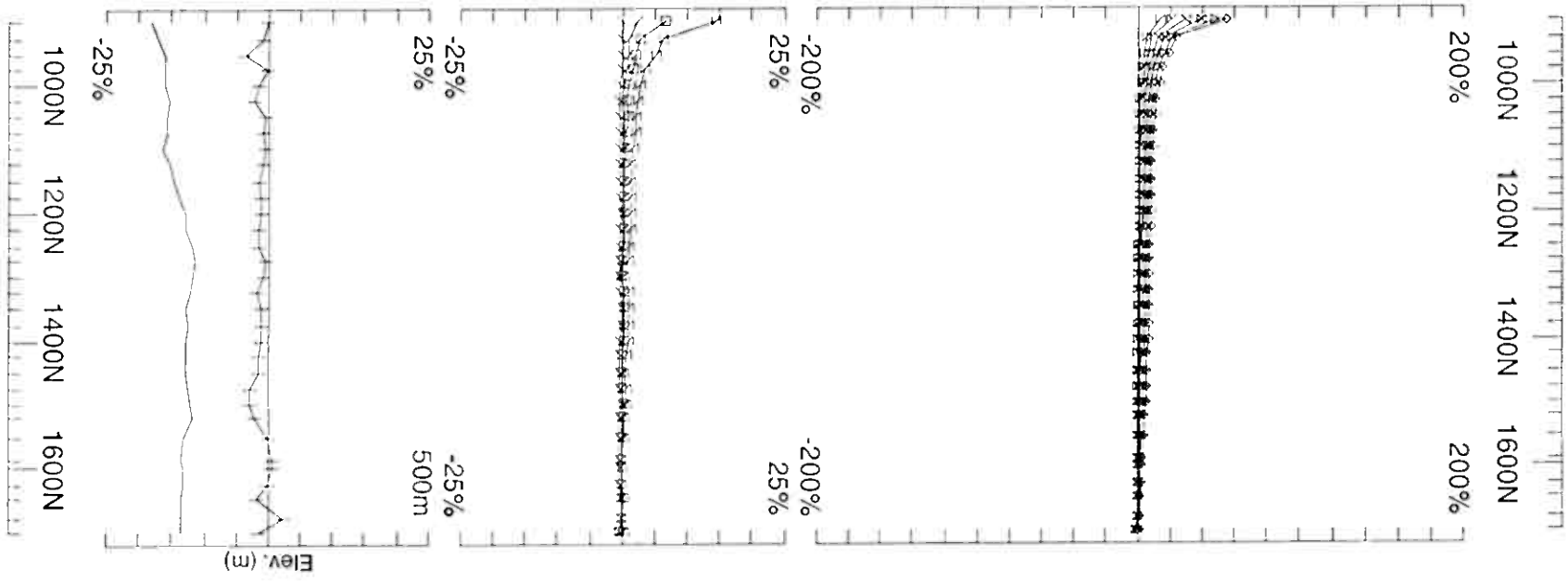
Hz
@3.251 Hz frequency

continuous norm

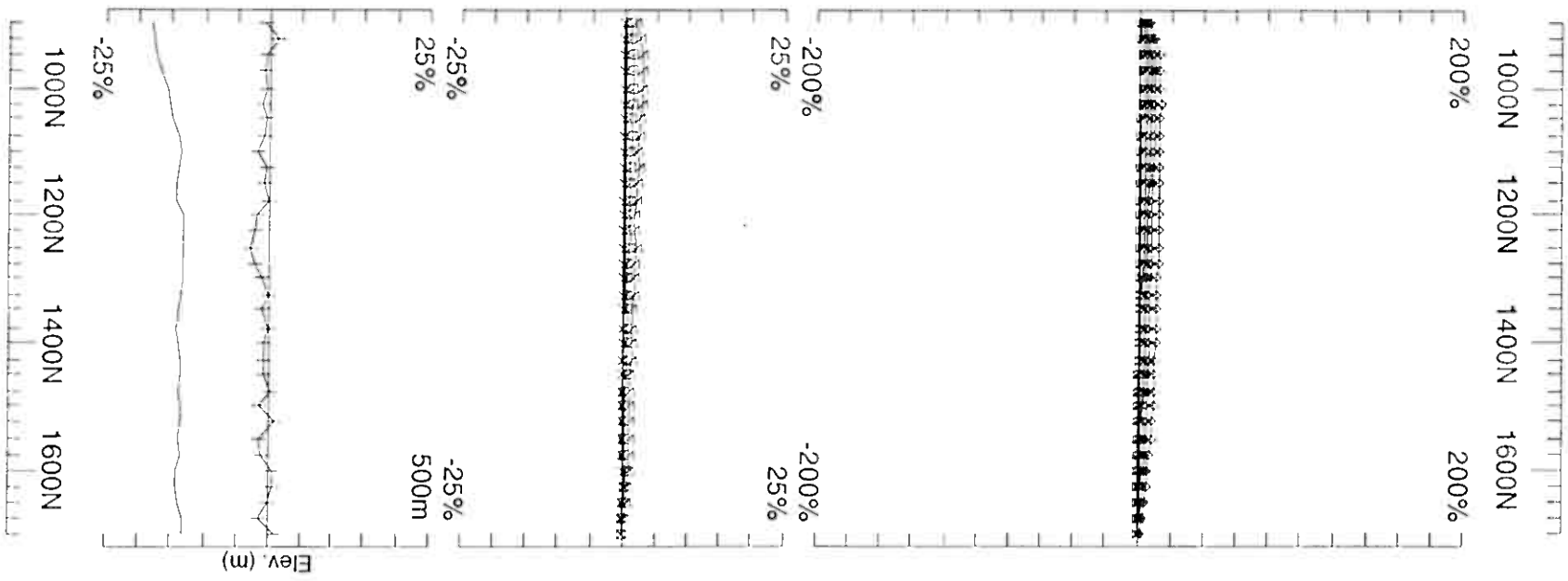
Ch1 reduced

Loop 01	Line 3100E	875N - 1725N	850m
	Line 3200E	875N - 1725N	850m
	Line 3300E	825N - 1725N	900m
	Line 3400E	450N - 1725N	1275m
	Line 3500E	450N - 1725N	1275m
	Line 3600E	475N - 1725N	1250m
	Line 3700E	400N - 550N	150m
		700N - 1725N	1025m
	Line 3800E	475N - 1725N	1250m
	Line 3900E	600N - 1725N	1125m
	Line 4000E	575N - 1725N	1150m
	Meikjeaer	Loop 01 Total	**11100m**

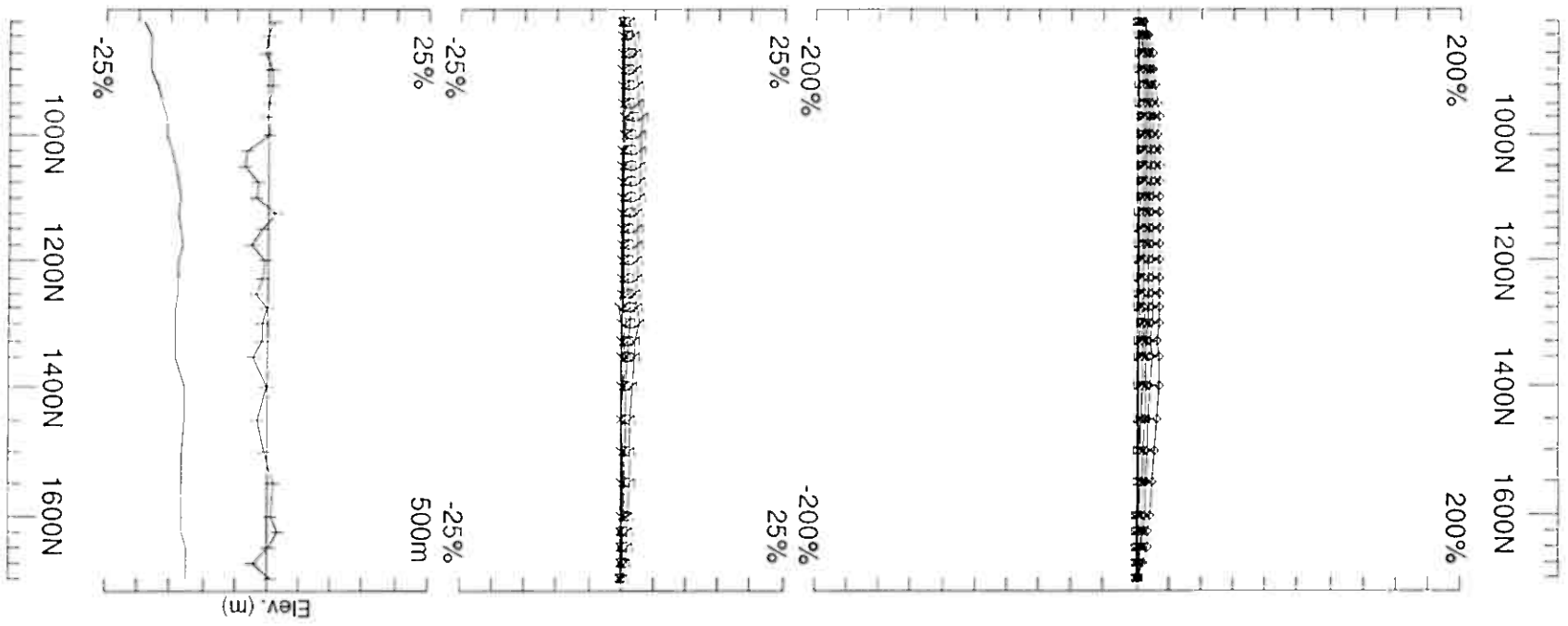
Loop 01 - continuous norm



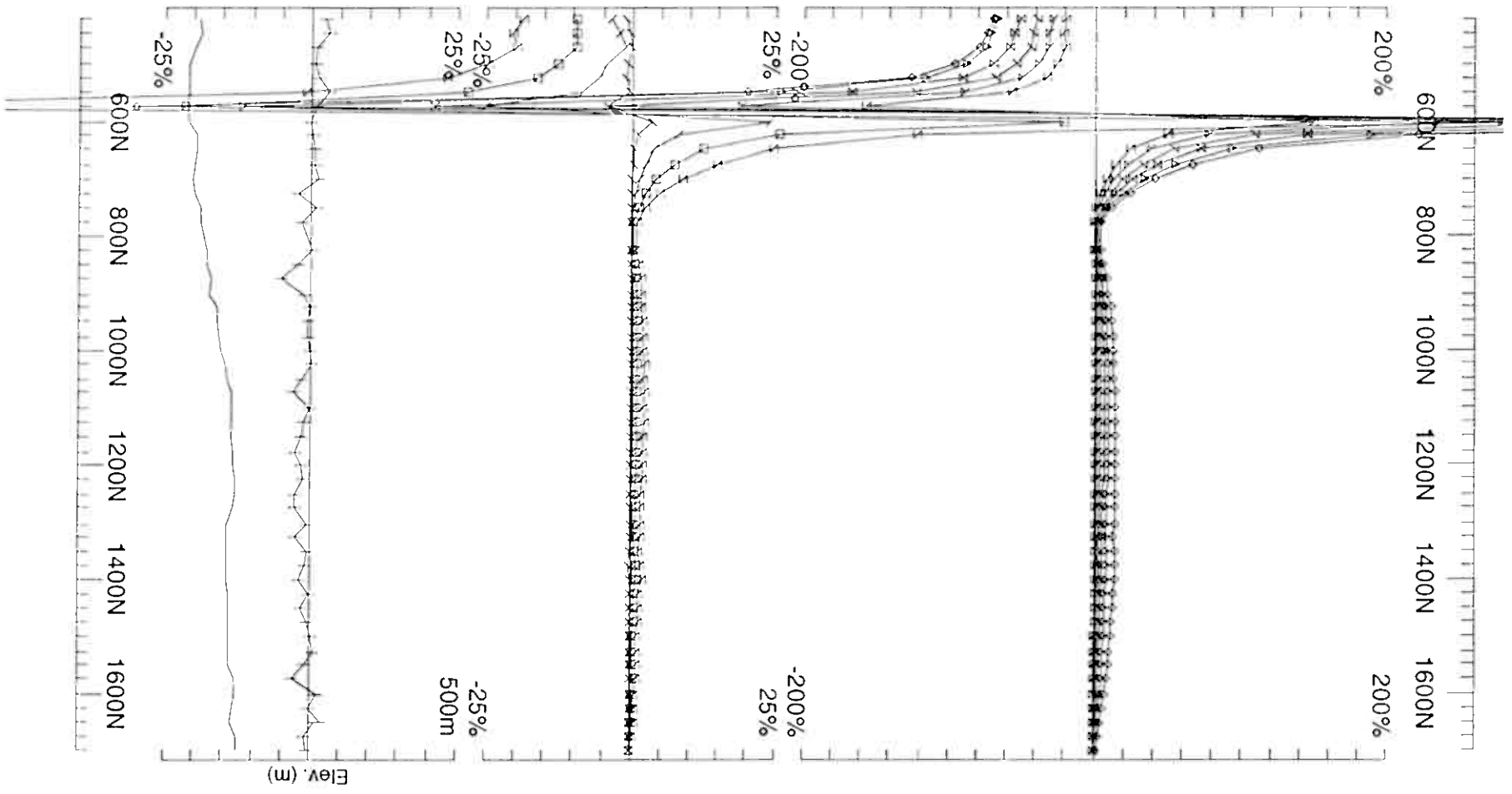
Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 3100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 20/6/6 Reduced : 5/9/6 Plotted : 5/9/6



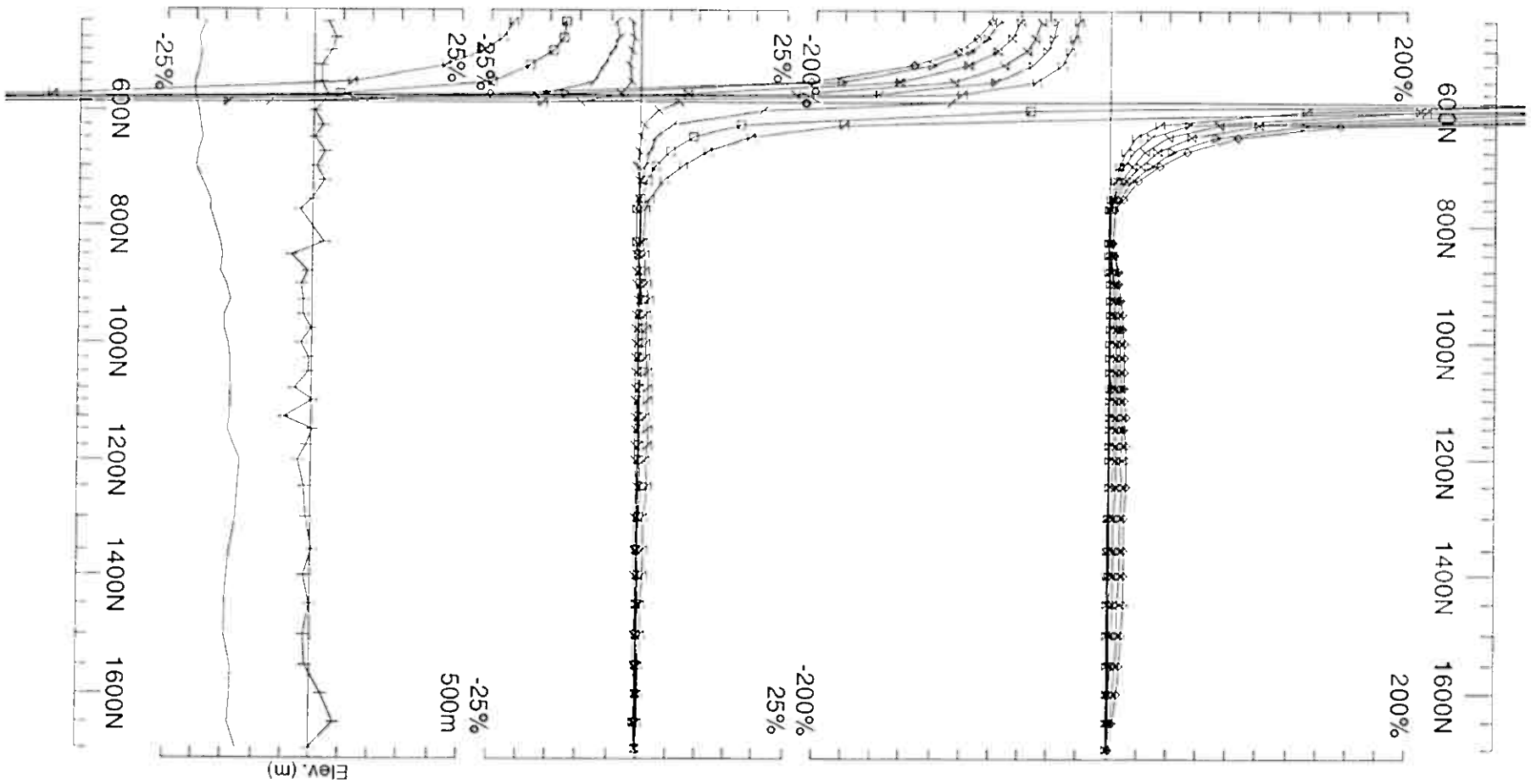
Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 3200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 20/6/6 Reduced 5/9/6 Plotted 5/9/6



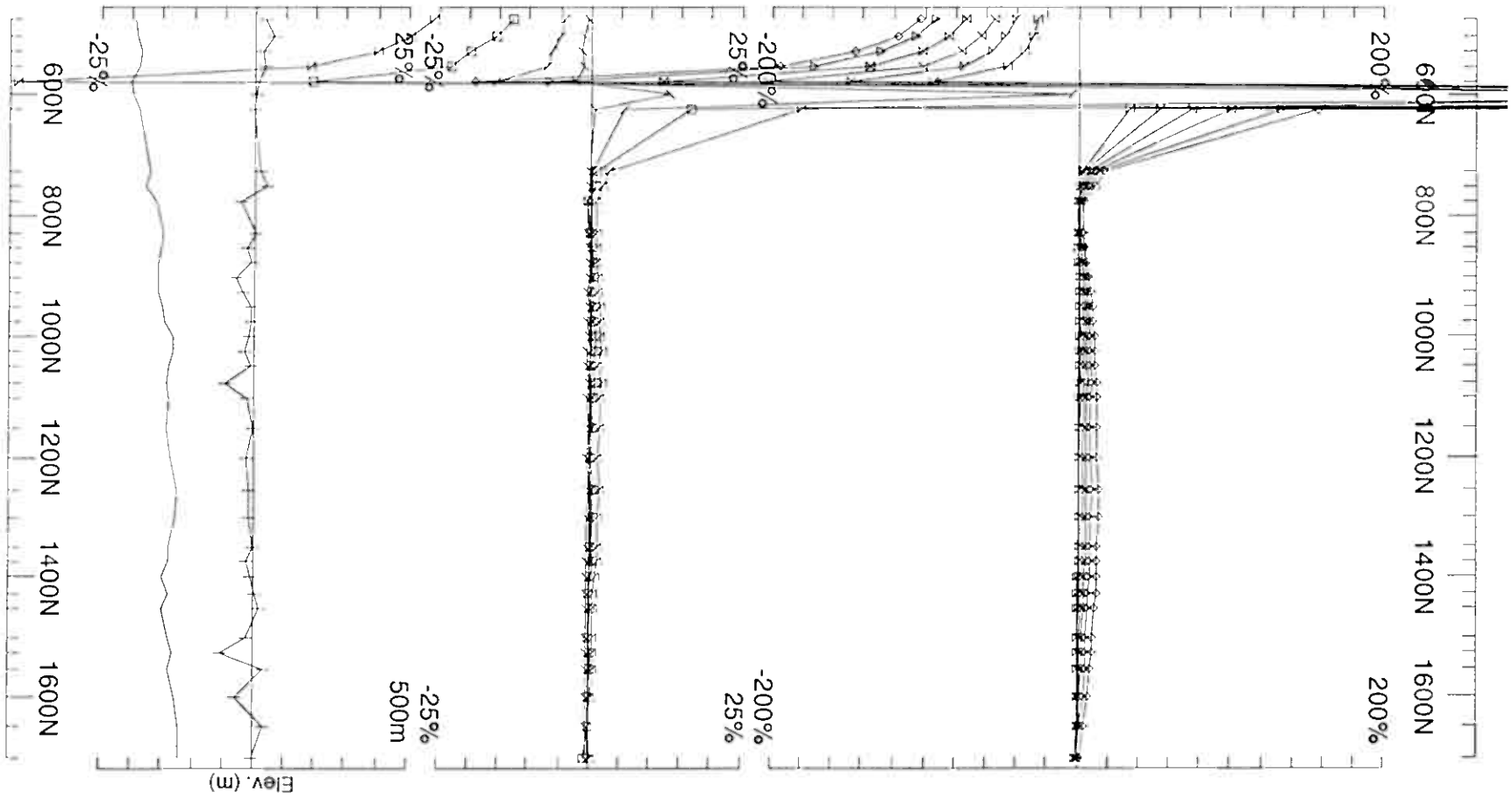
Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 3300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed: 19/6/6 Reduced: 5/9/6 Plotted: 5/9/6



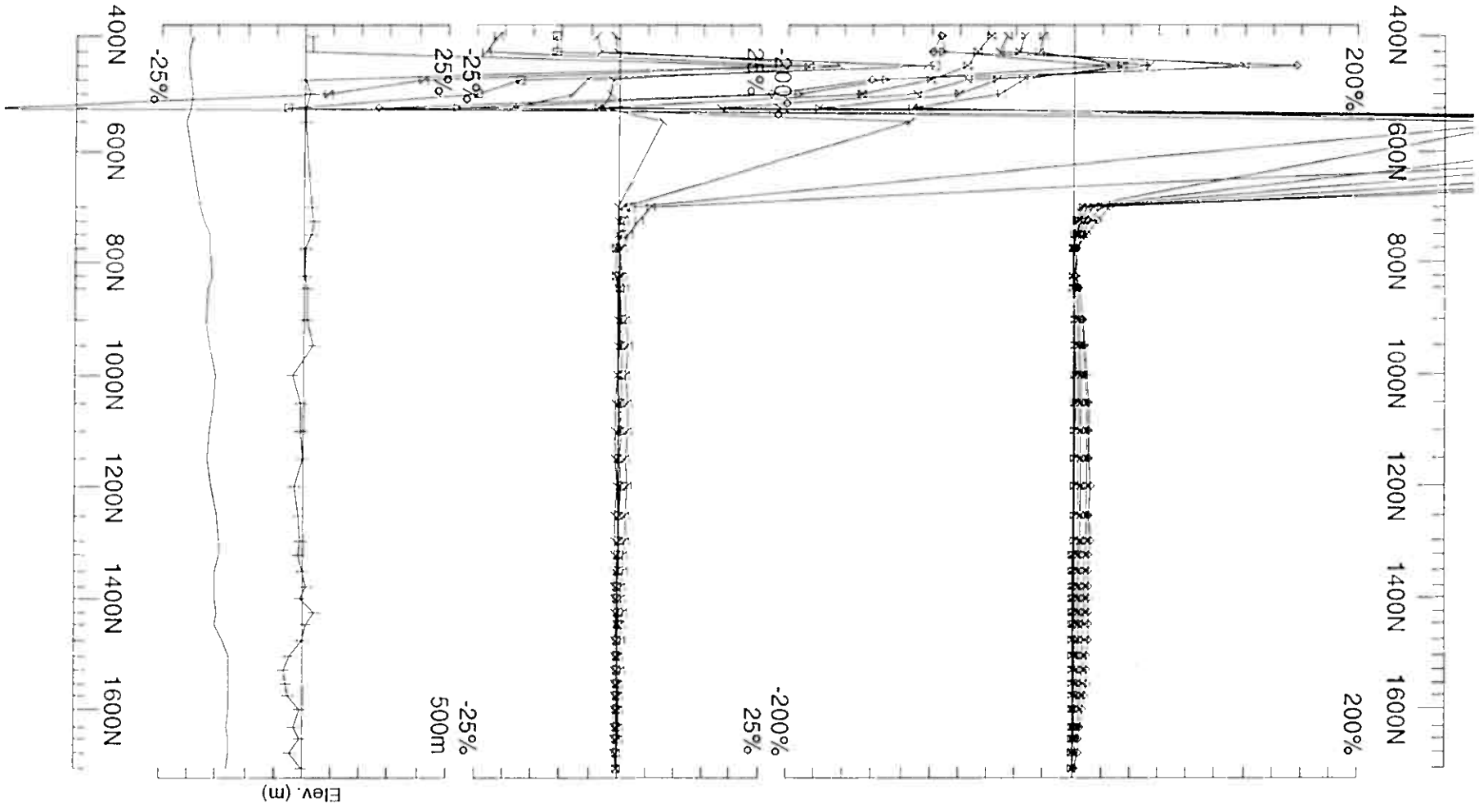
Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 3400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 19/6/6, Reduced : 19/6/6, Plotted : 5/9/6



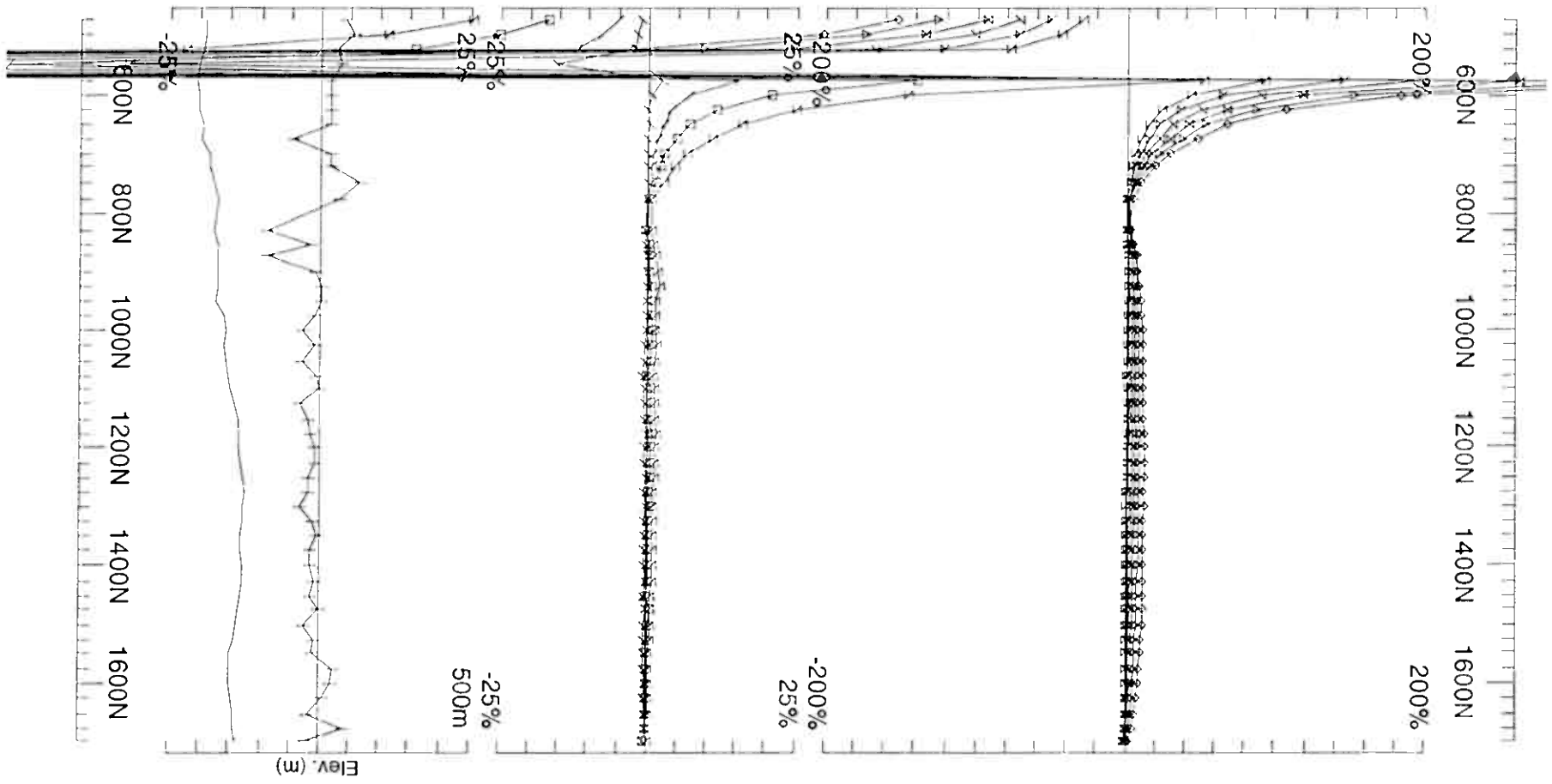
Loop: 01	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 3500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 19/6/6, Reduced : 19/6/6, Plotted : 5/9/6



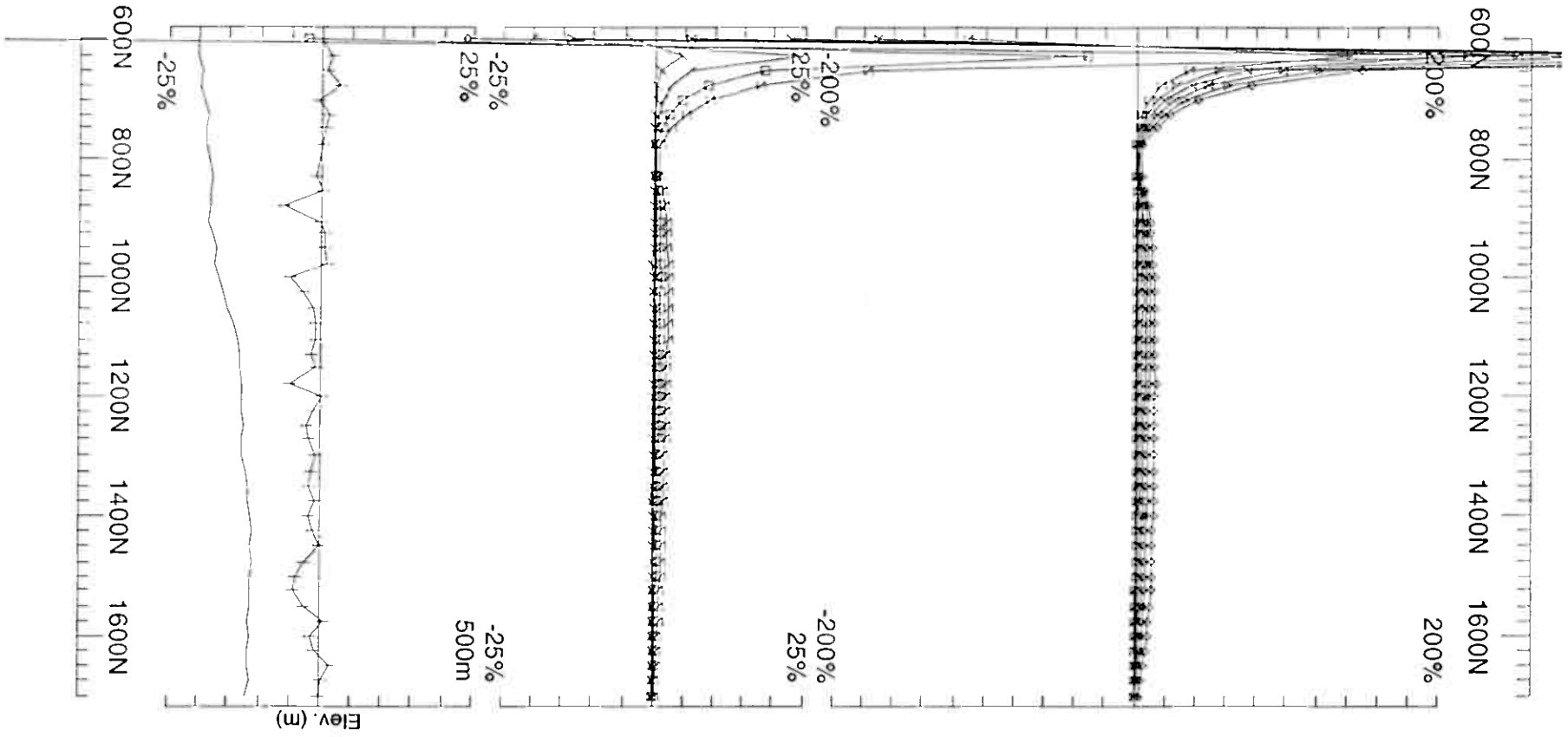
Loop: 01	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 3600E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 19/6/6, Reduced : 5/9/6, Plotted : 5/9/6



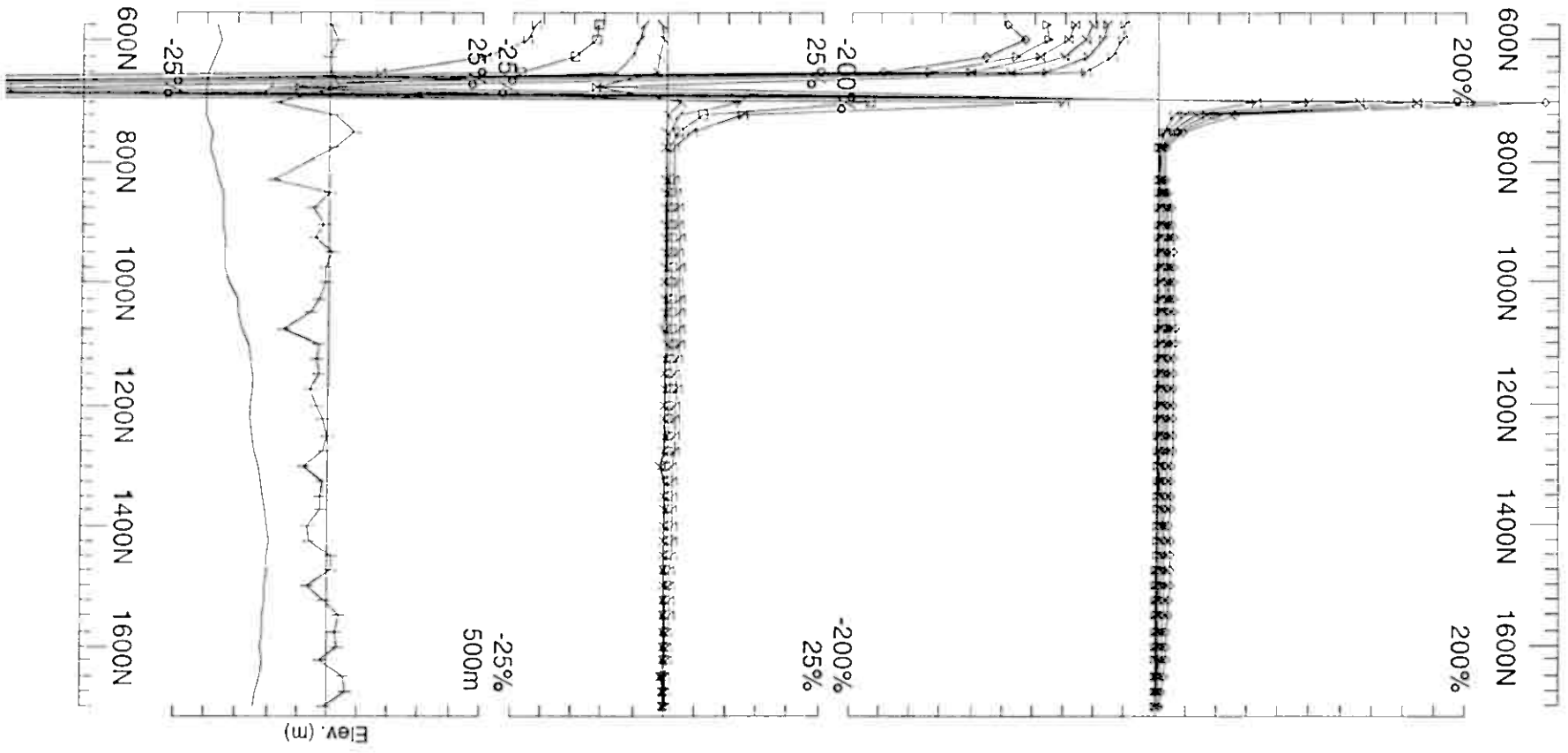
Loop: 01	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 3700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted 5/9/6



Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 3800E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 18/6/6, Reduced : 5/9/6, Plotted : 5/9/6



Loop: 01	Secondary, (Chn - Ch1)/Hpl	UTEM Survey at: Meikjaer Grid
Line: 3900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 18/6/6 Reduced 5/9/6 Plotted 5/9/6



Loop: 01	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 18/6/6, Reduced : 5/9/6, Plotted : 5/9/6

Meikjeaer

Loop 02

Hz

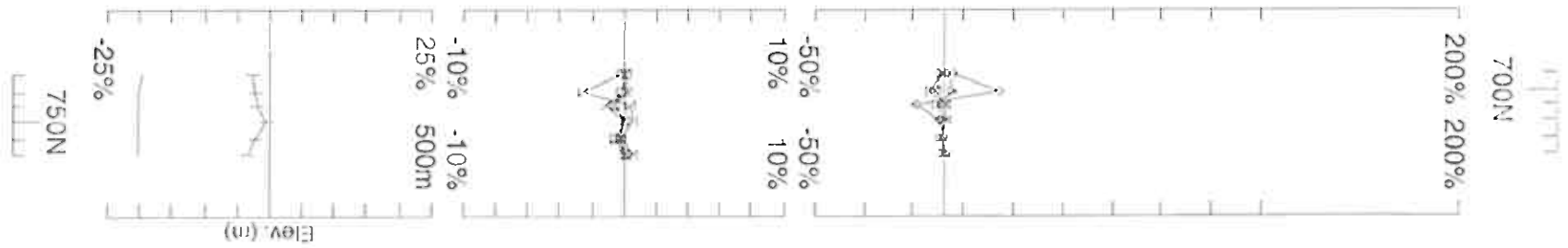
@3.251 Hz frequency

continuous norm

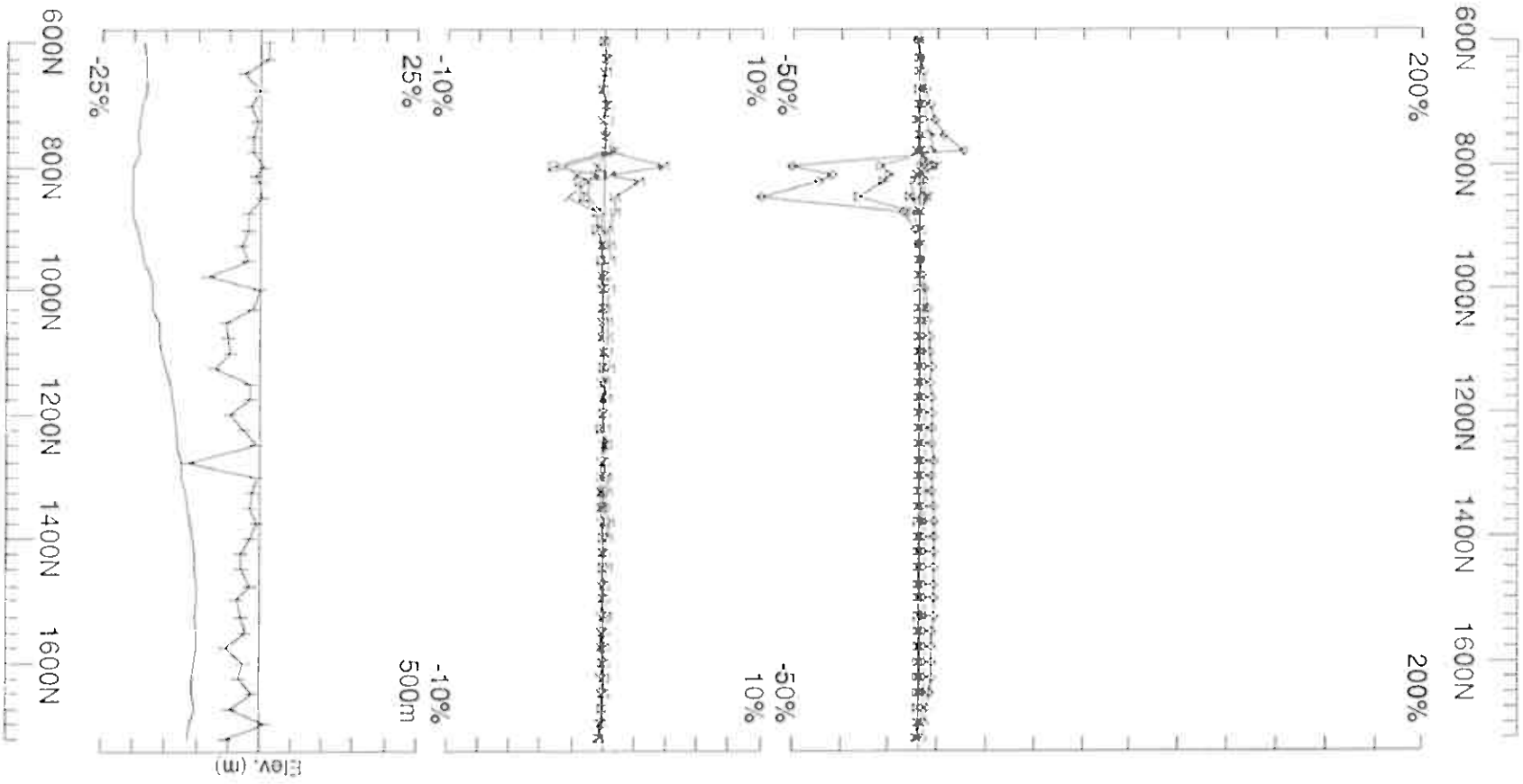
Ch1 reduced

Loop 02 in-loop	Line 4100E	650N - 800N	150m
	Line 4200E	575N - 1750N	1175m
	Line 4300E	525N - 1750N	1225m
	Line 4400E	525N - 1750N	1225m
	Line 4500E	625N - 1750N	1125m
	Line 4600E	700N - 1750N	1050m
	Line 4700E	875N - 1750N	875m
	Line 4800E	900N - 1750N	850m
	Line 4900E	925N - 1750N	825m
	Line 5000E	900N - 1750N	850m
	Line 5050E	900N - 1750N	850m
Loop 02N off-loop	Line 4100E	650N - 800N	500m
	Line 4200E	1750N - 2250N	500m
	Line 4300E	1750N - 2250N	500m
	Line 4400E	1750N - 2250N	500m
	Meikjeaer	Loop 02 Total	12200m

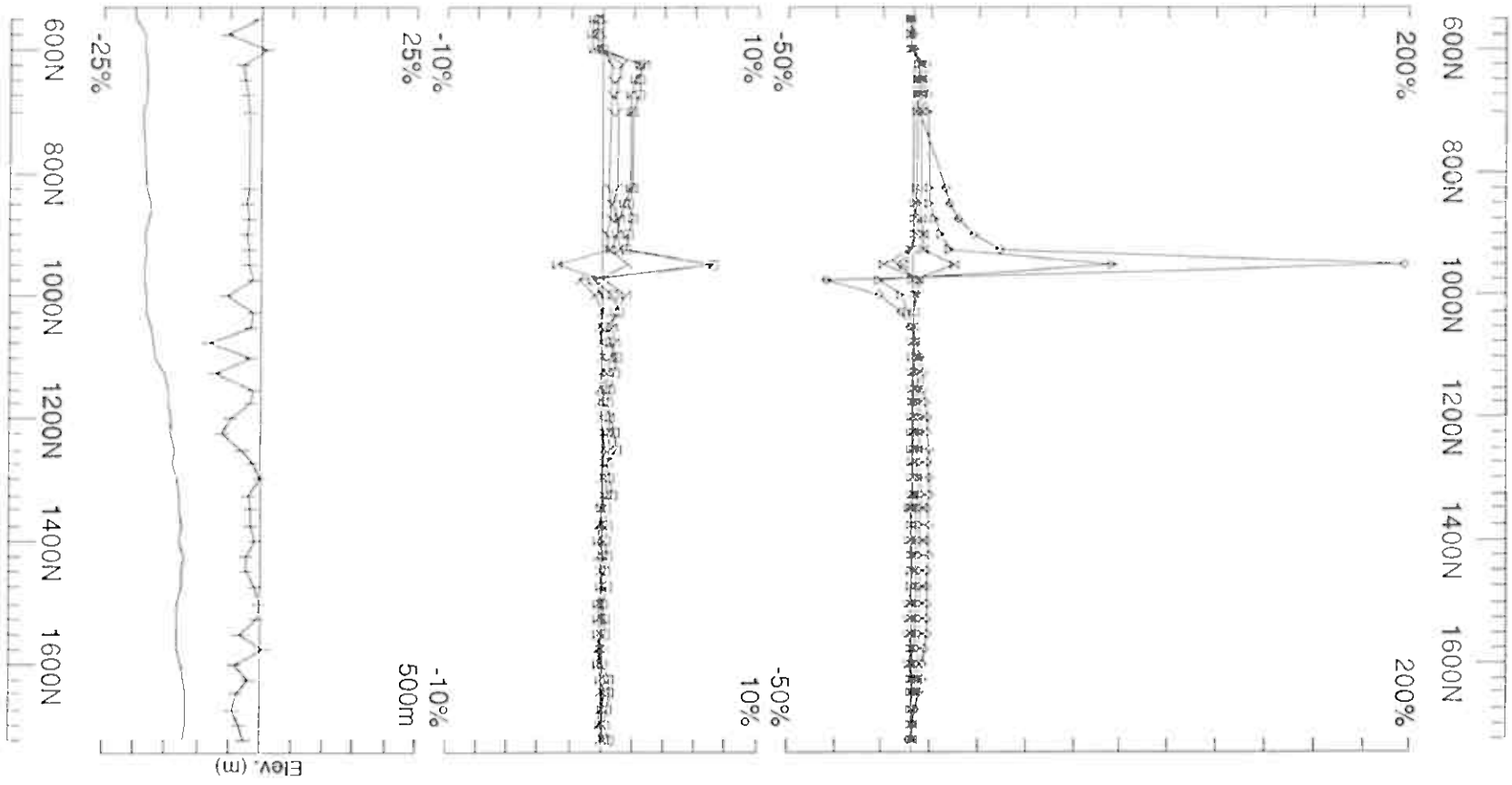
Loop 02 - continuous norm



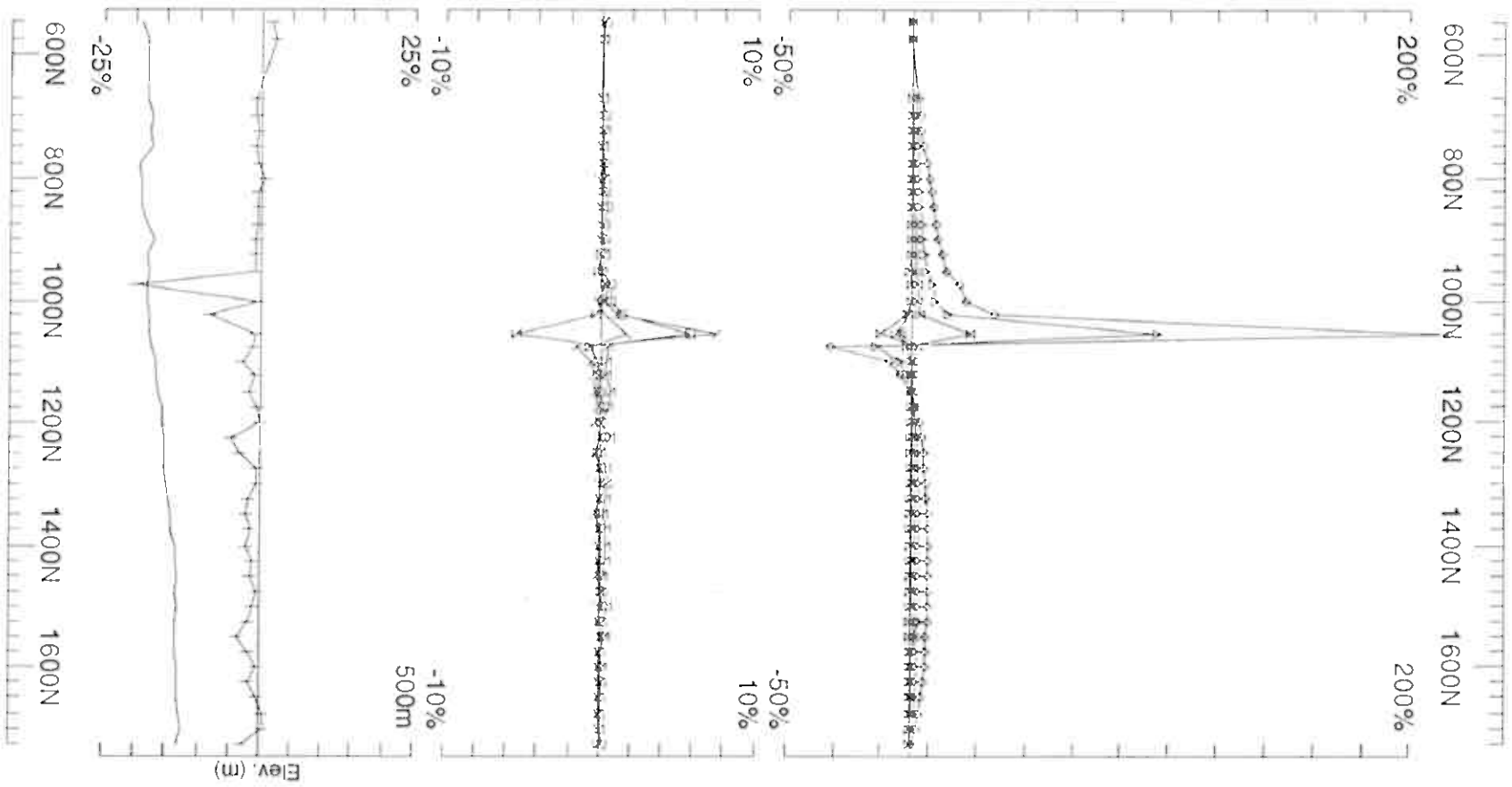
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14.6.96 Reduced : 6/9/6 Plotted : 6/9/6



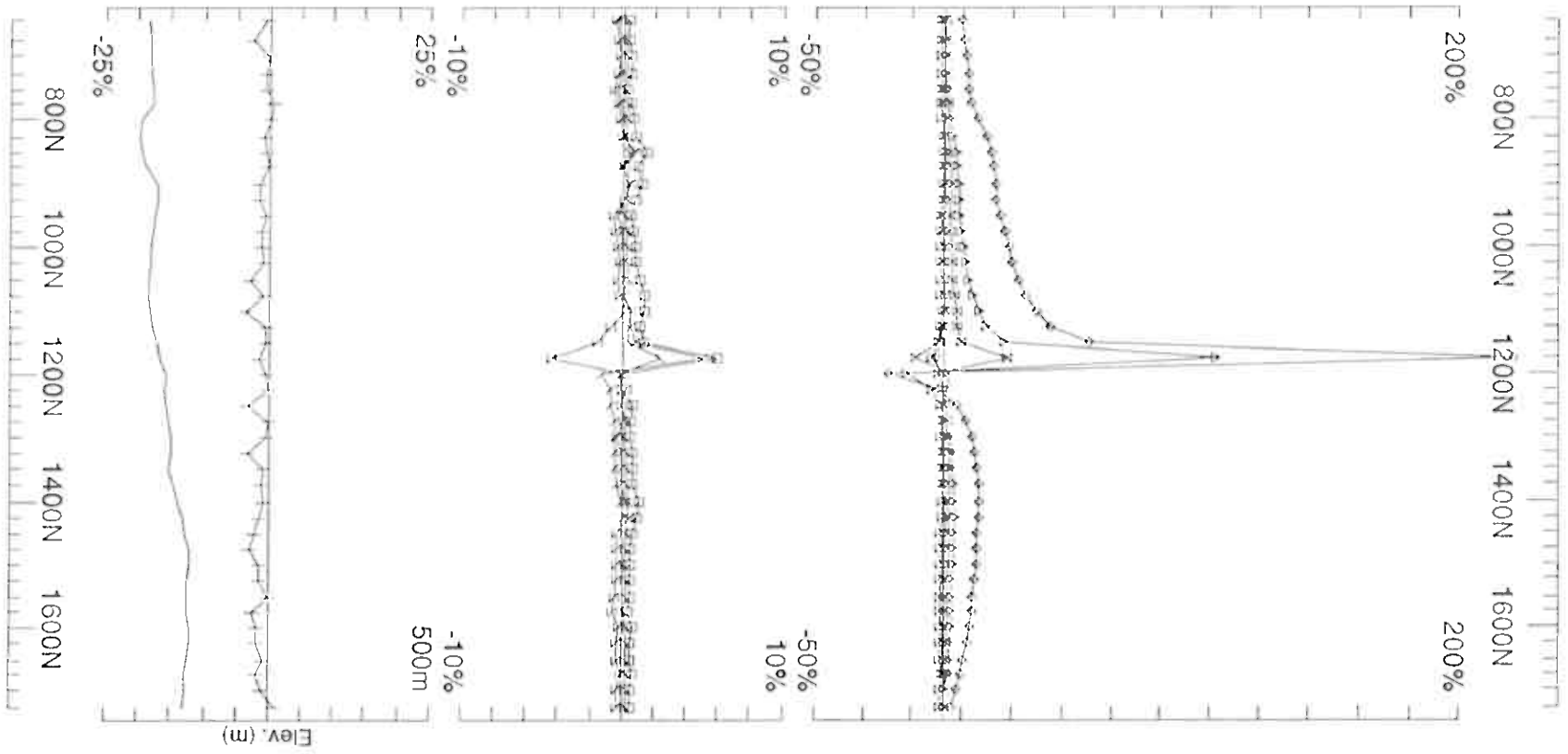
Loop: 02	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 4200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



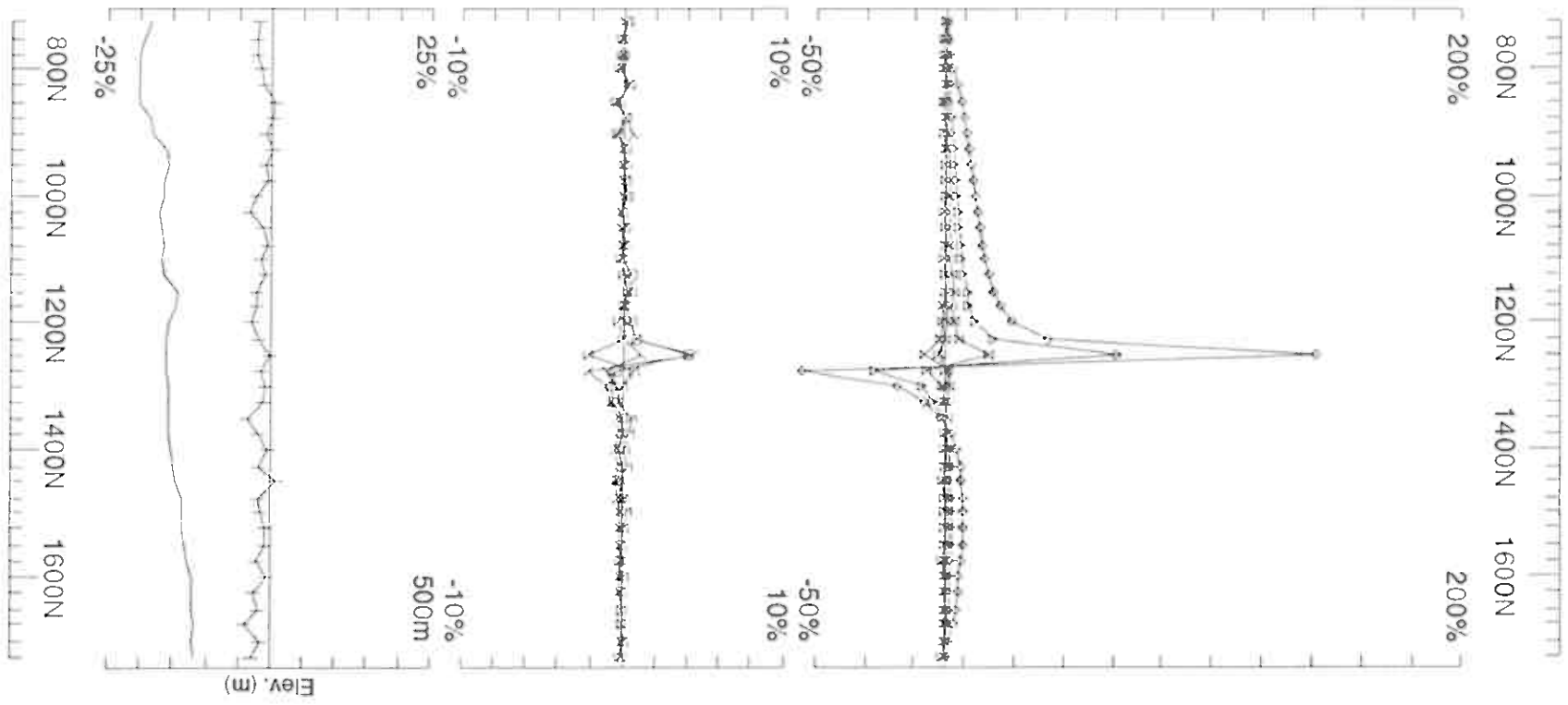
Loop: 02	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 4300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



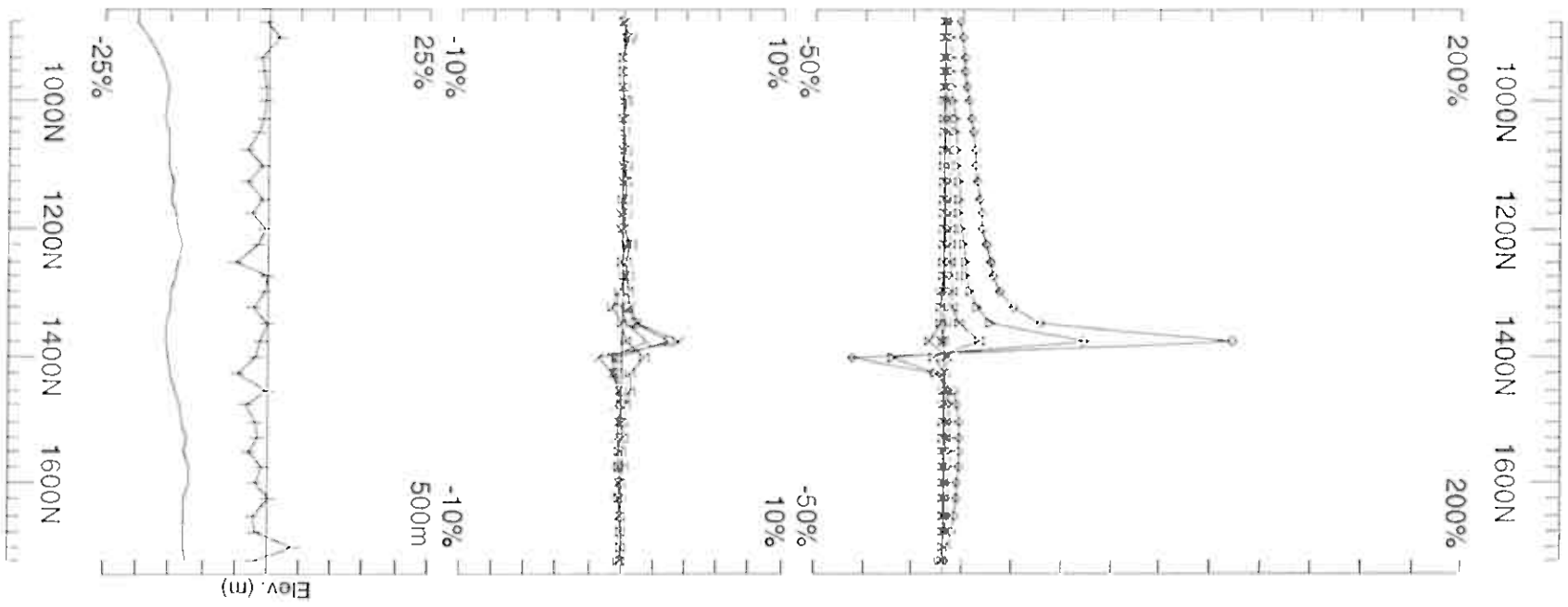
Loop: 02	Secondary, (Chn - Ch1)/Hpl	UTEM Survey at: Meikjaer Grid
Line: 4400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



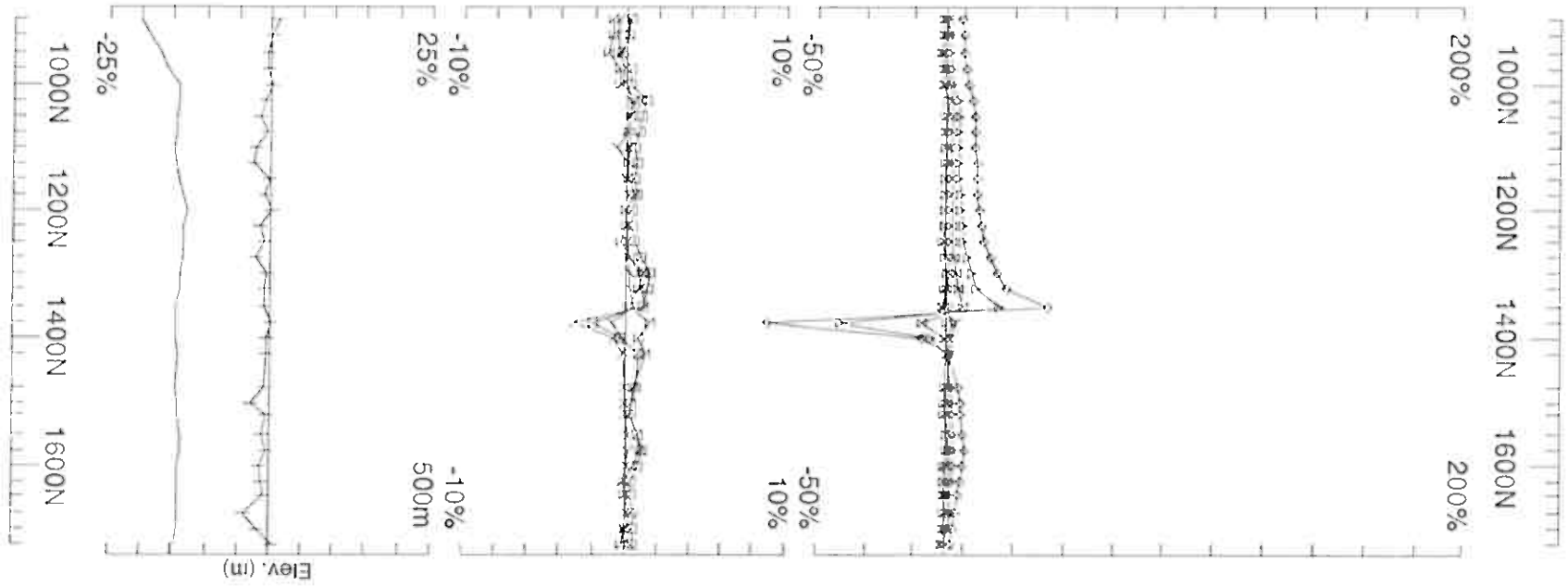
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



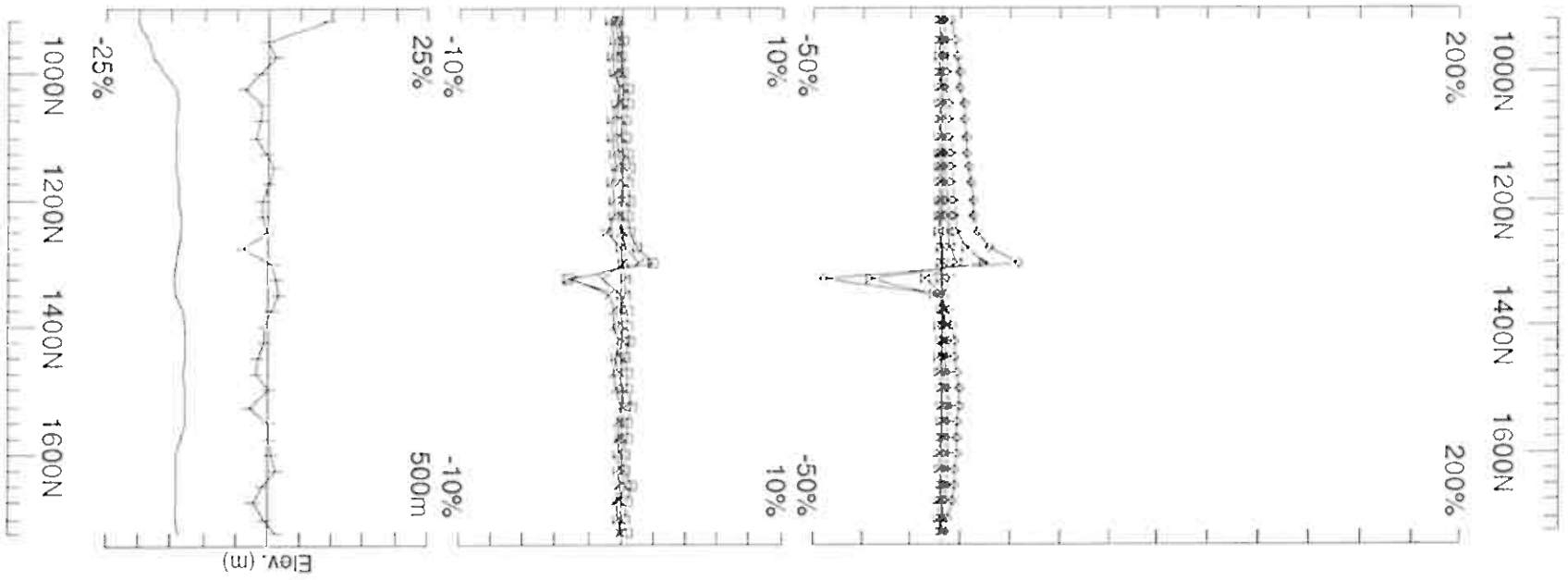
Loop: 02	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 4600E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6 Reduced 6/9/6 Plotted 6/9/6



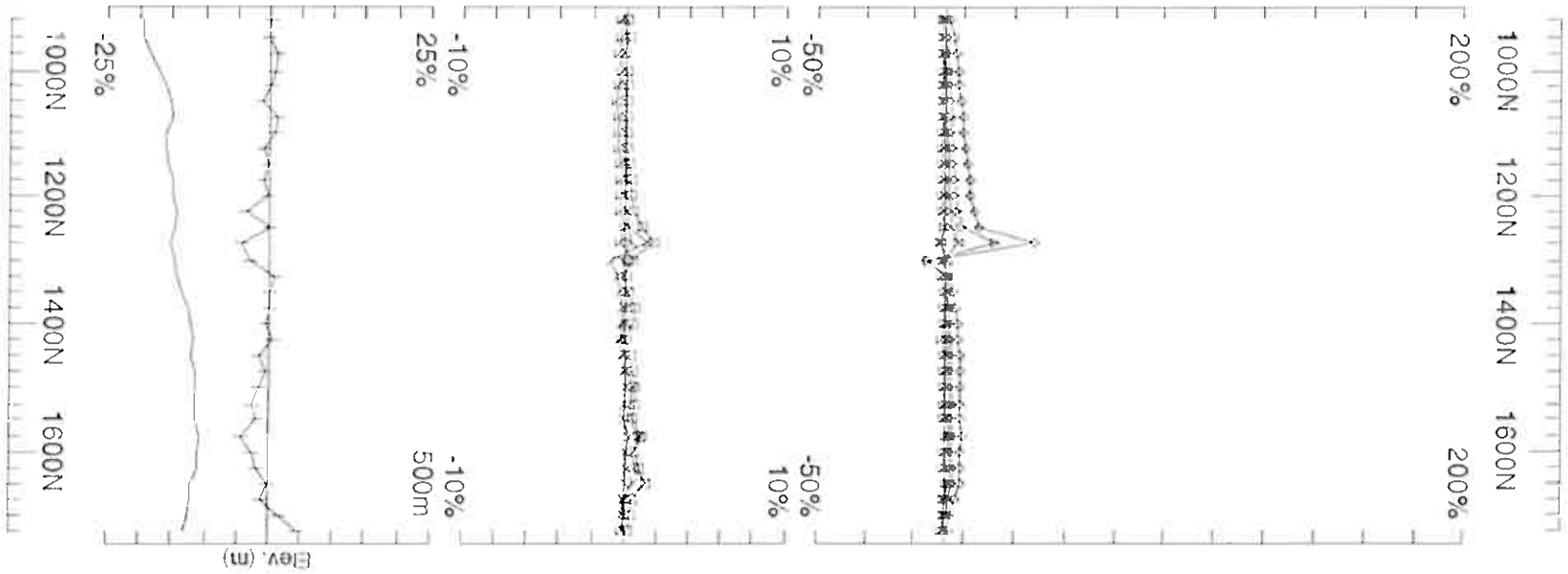
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



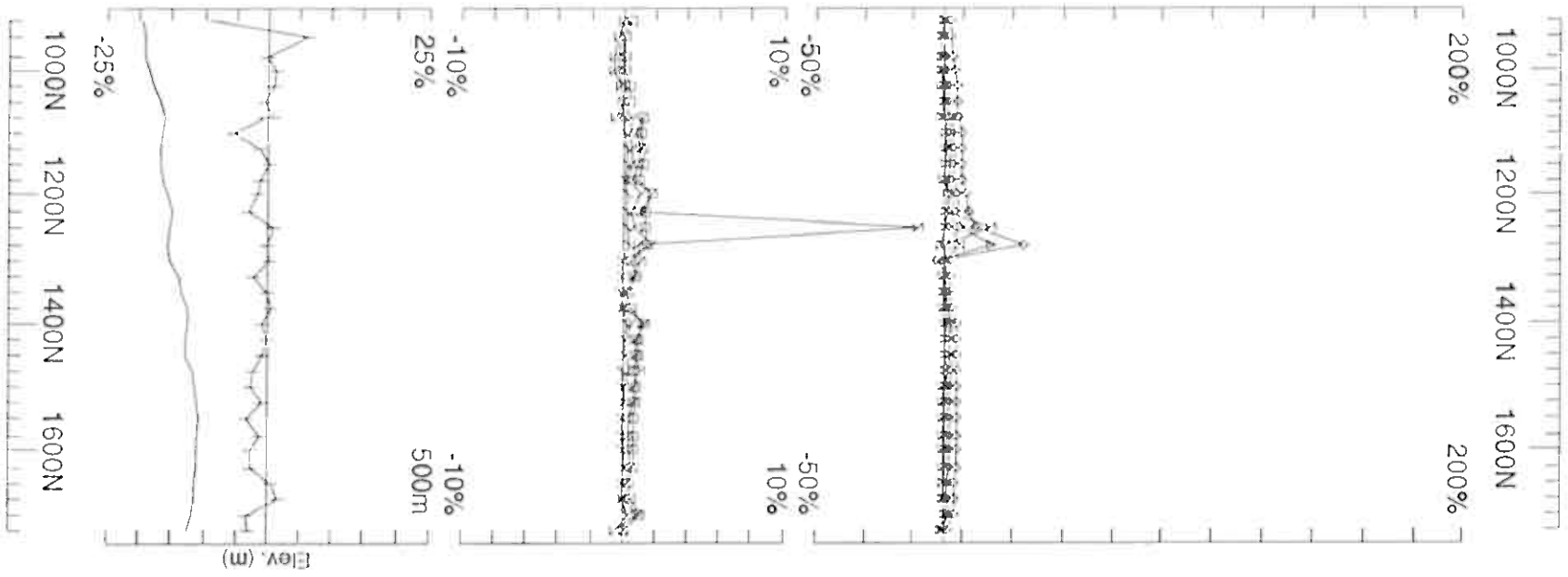
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4800E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 16/6/6 Reduced 6/9/6 Plotted 6/9/6



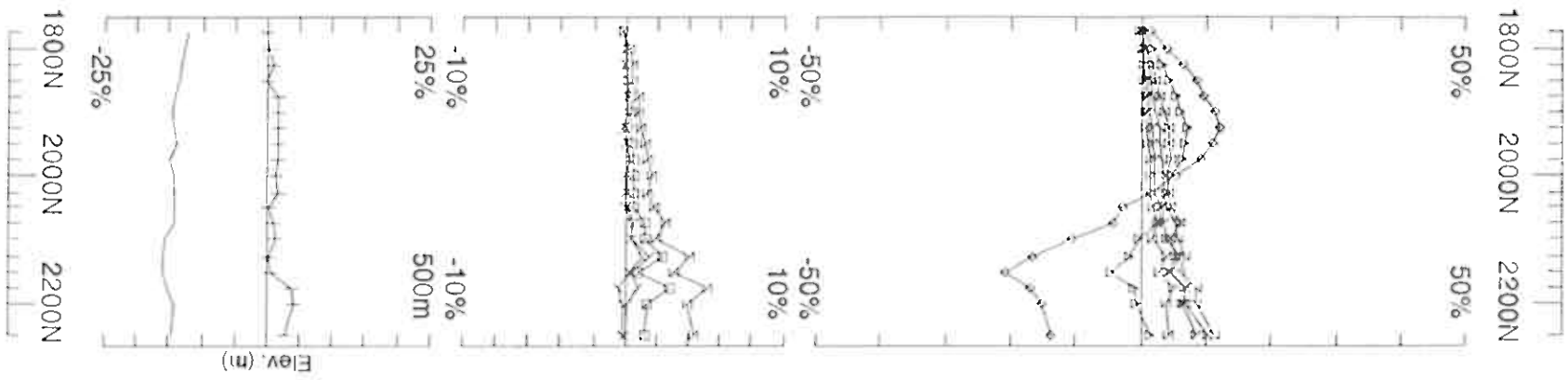
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



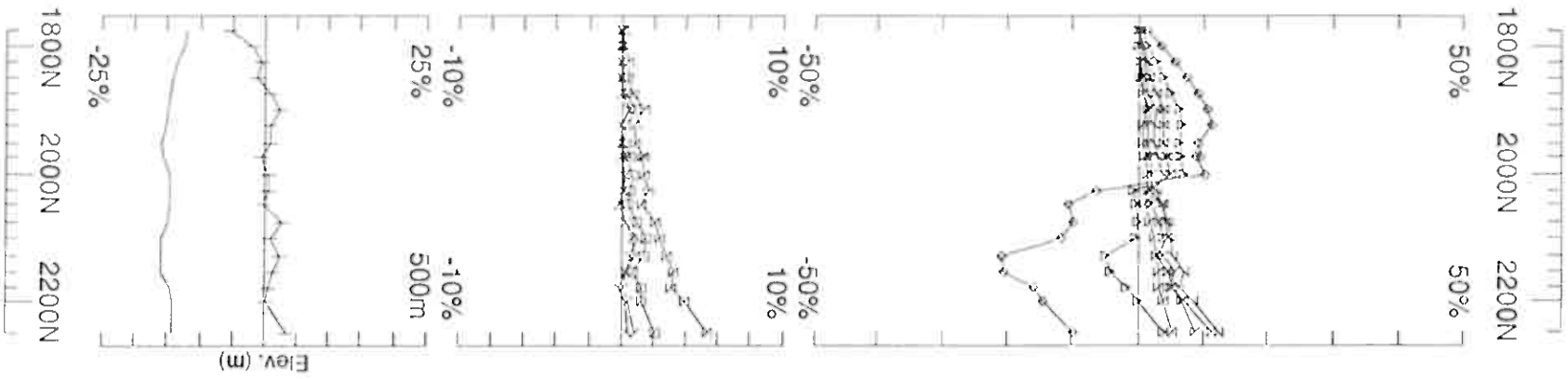
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 5000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



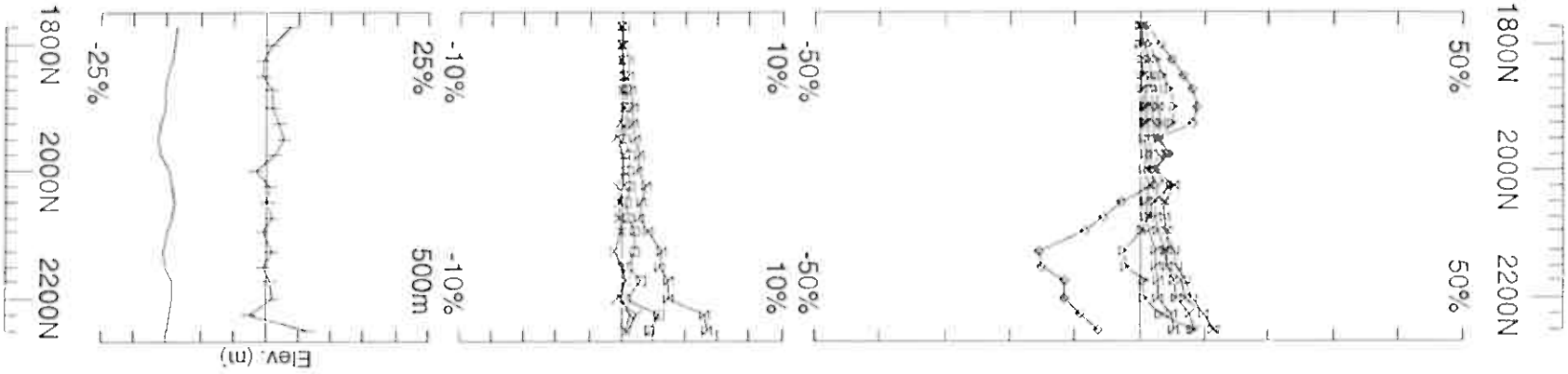
Loop: 02	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 5050E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 15/6/6, Reduced : 6/9/6, Plotted : 6/9/6



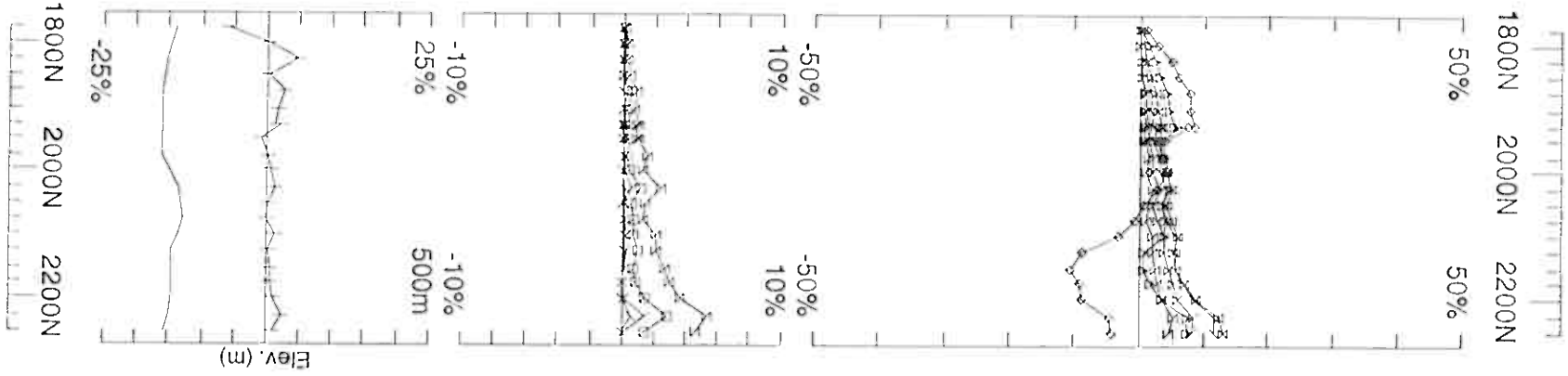
Loop: 02N	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 4100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02N	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 15/6/6, Reduced : 6/9/6, Plotted : 6/9/6



Loop: 02N	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Meikjaer Grid
Line: 4300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02N	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Meikjaer Grid
Line: 4400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed 15/6/6, Reduced 6/9/6, Plotted 6/9/6

Nystein-Vissestad

Loop 03

Hz

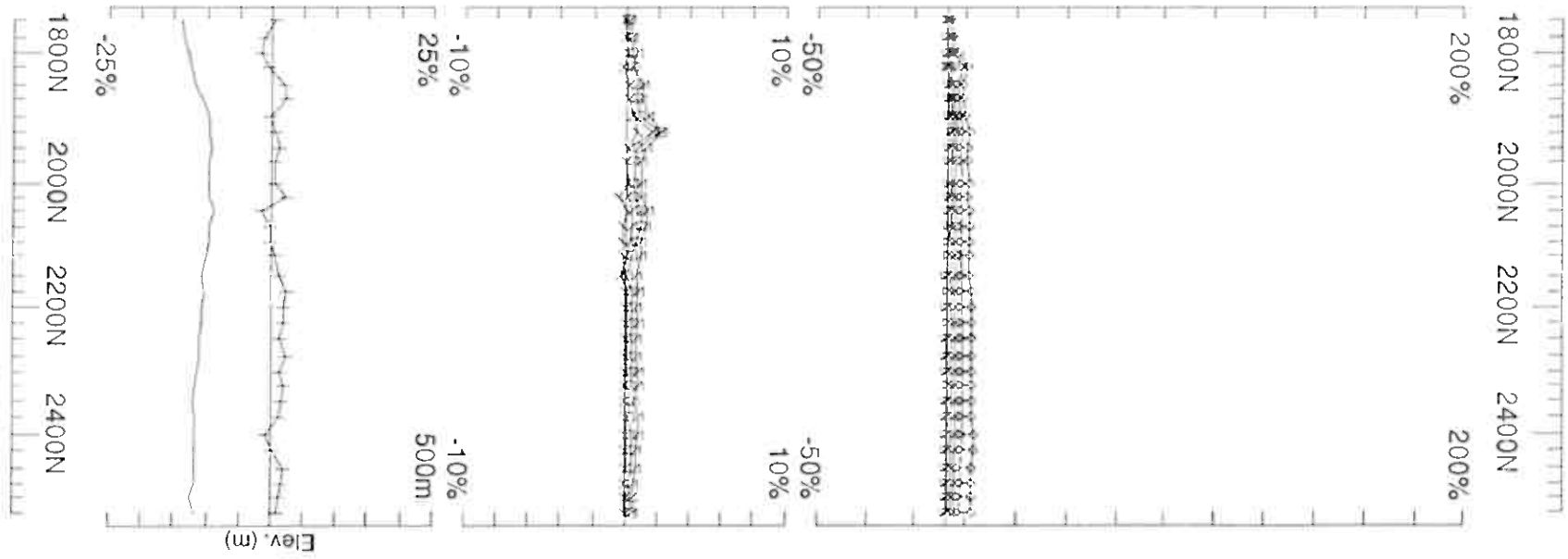
@3.251 Hz frequency

continuous norm

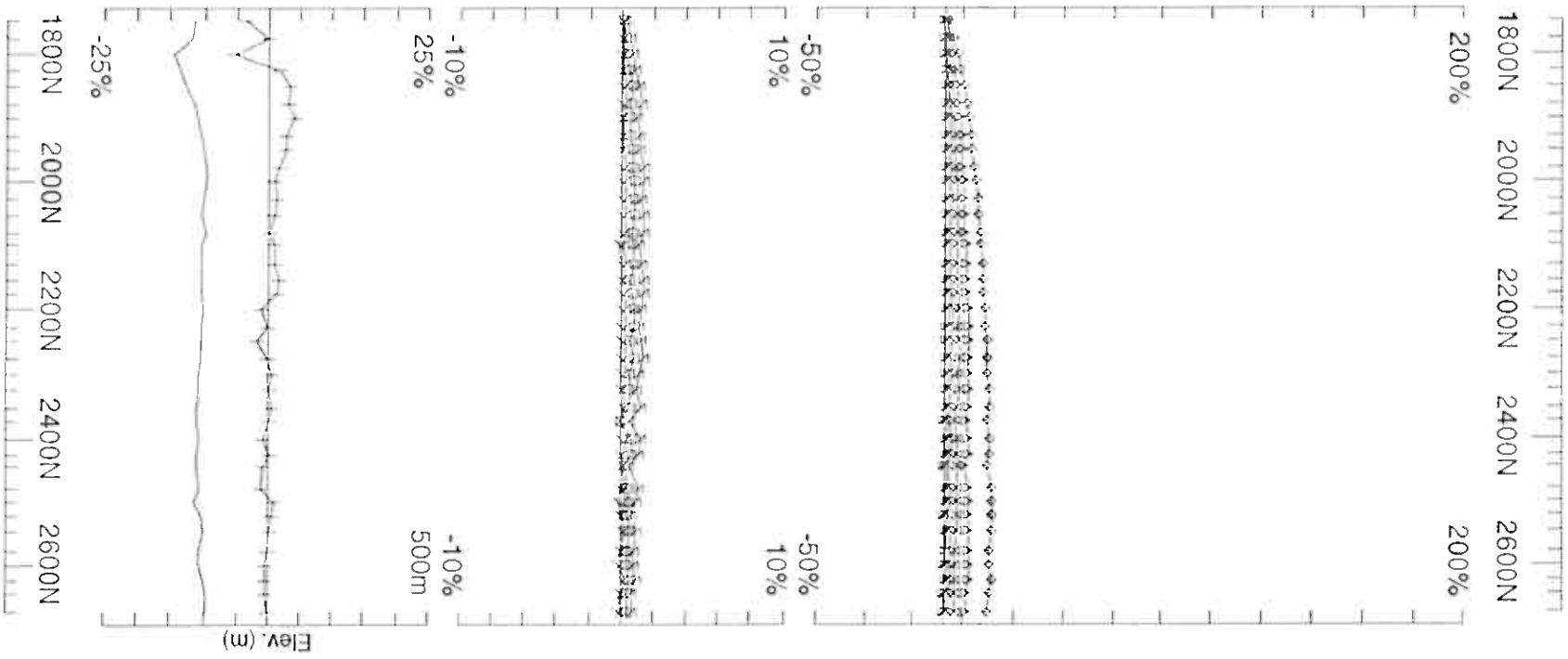
Ch1 reduced

Loop 03	Line 6500E	1725N - 2525N	800m
	Line 6700E	1725N - 2675N	950m
	Line 6900E	1725N - 2725N	1000m
	Line 7100E	1725N - 2975N	1250m
	Line 7300E	1725N - 3075N	1350m
	Line 7500E	1725N - 3075N	1350m
	Nystein-Vissestad	Loop 03 Total	6700m

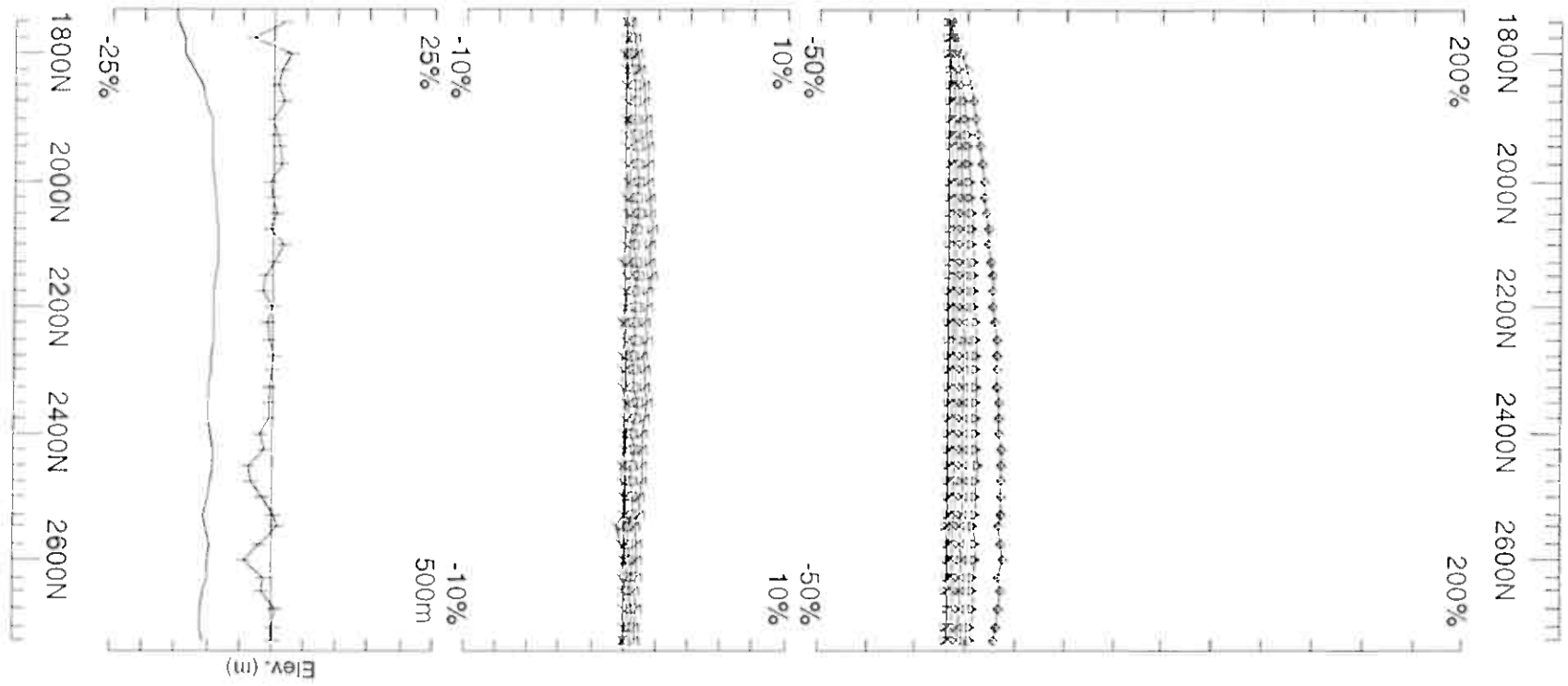
Loop 03 - continuous norm



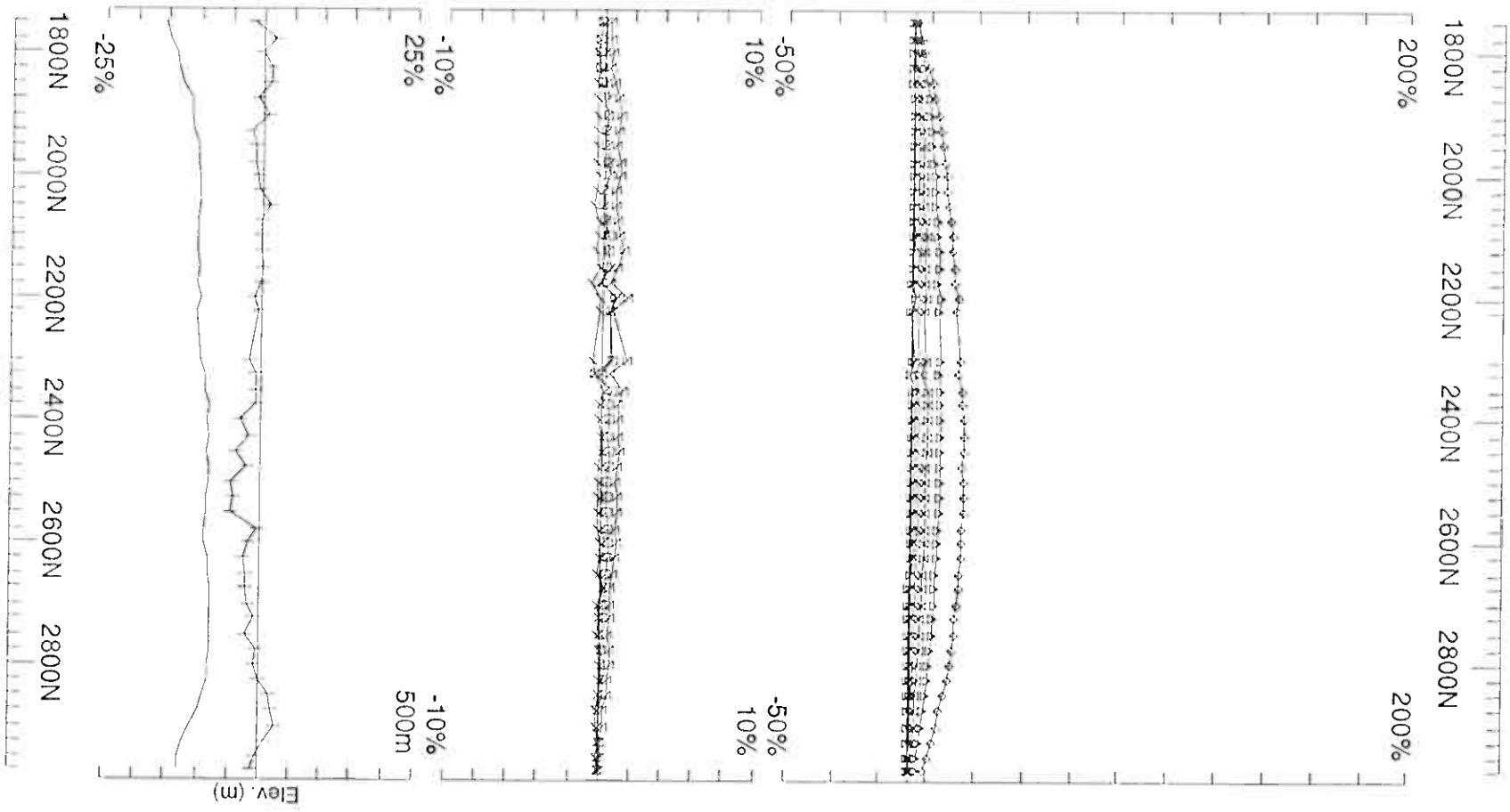
Loop: 03	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Nystein- Vissestad Grid
Line: 6500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29.6.6 Plotted : 6/9/6



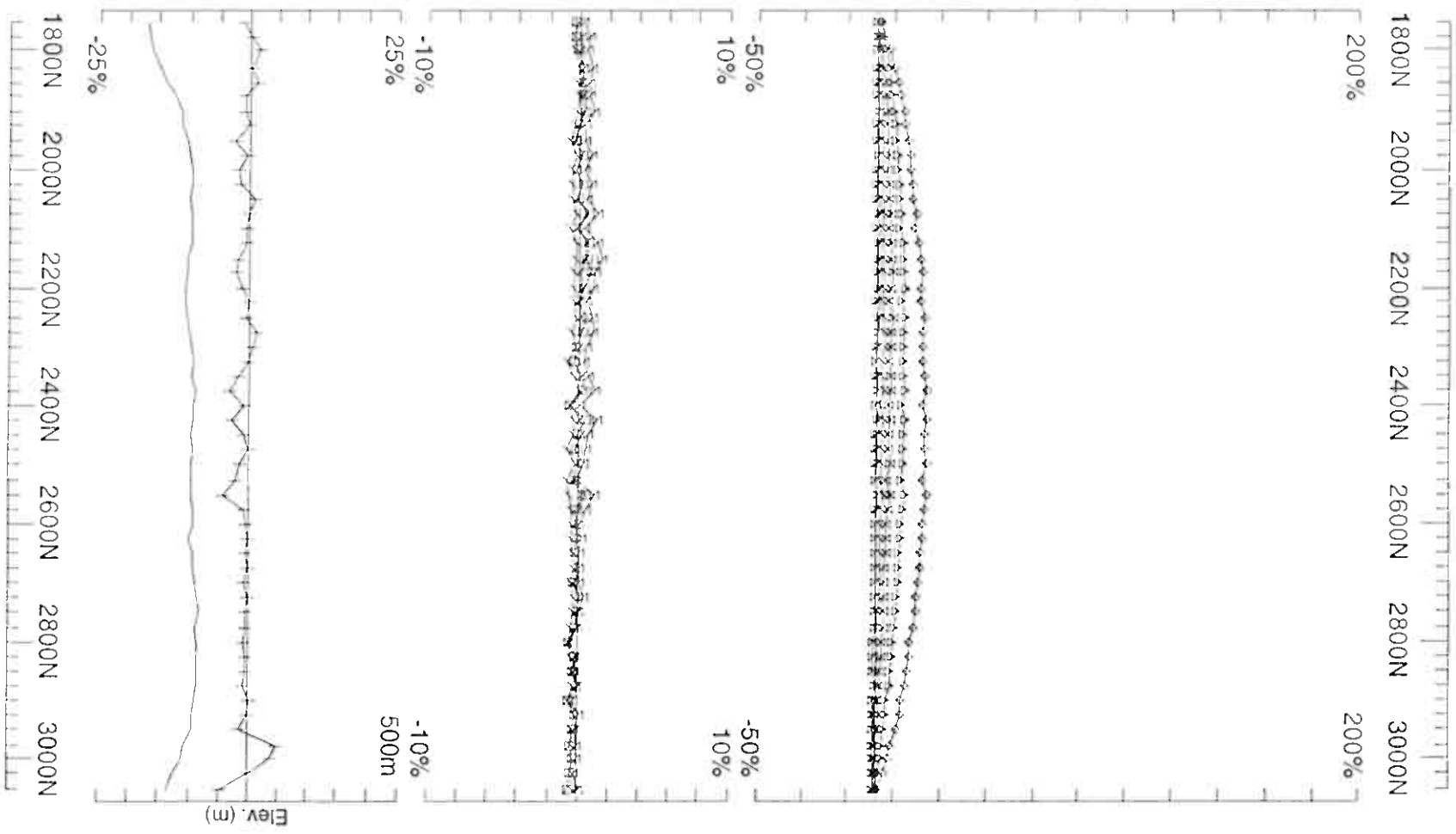
Loop: 03	Secondary, (Chn - Ch1)/Hpl	UTEM Survey at: Nystein- Vissestad Grid
Line: 6700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 28/6/6 Reduced 29/6/6 Plotted 6/9/6



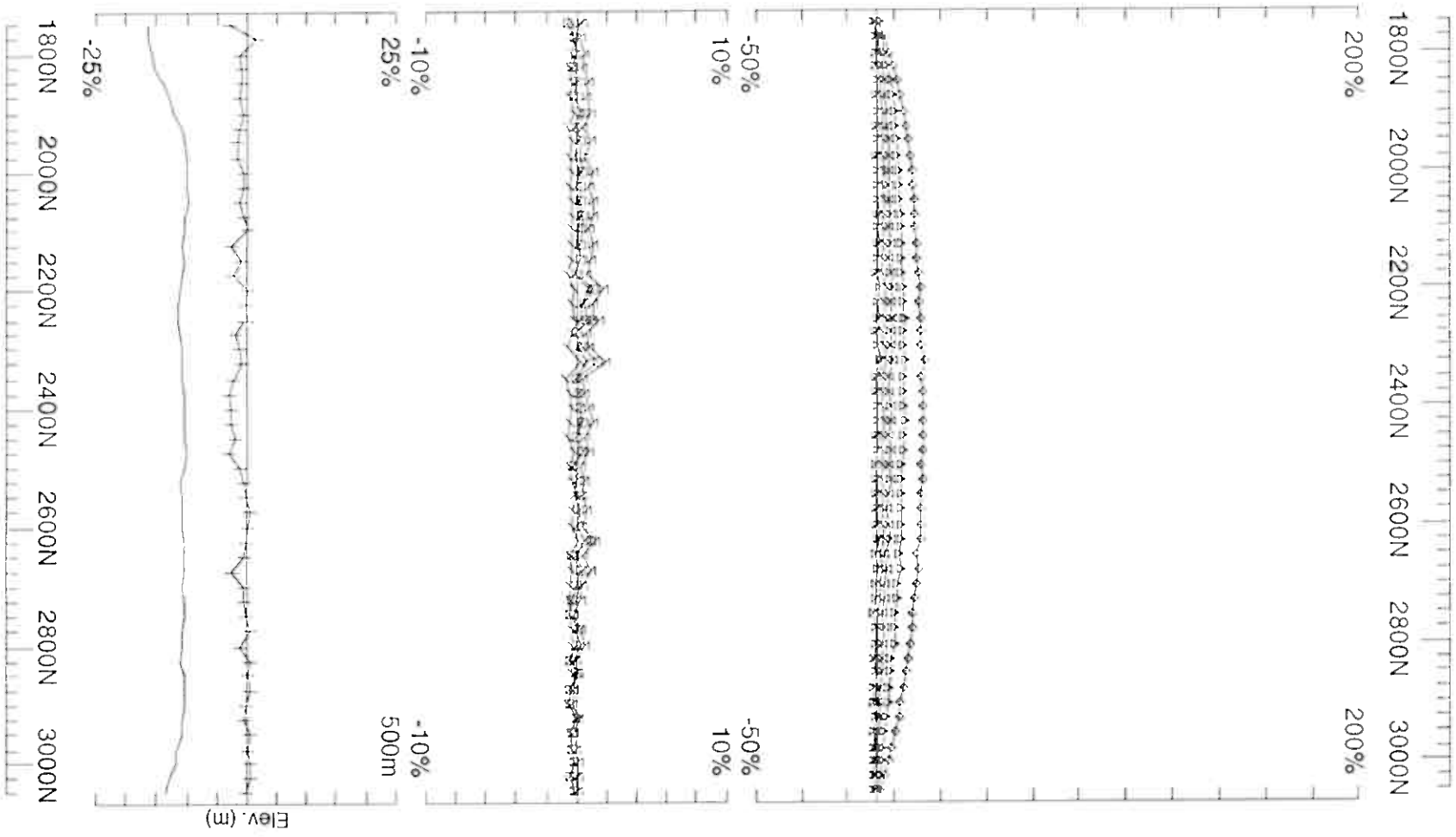
Loop: 03	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Nystein- Vissestad Grid
Line: 6900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



Loop: 03	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Nystein- Vissestad Grid
Line: 7100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



Loop: 03	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Nystein- Vissestad Grid
Line: 7300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



Loop: 03	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Nystein- Vissestad Grid
Line: 7500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6

Nystein-Vissestad

Loop 04

Hz

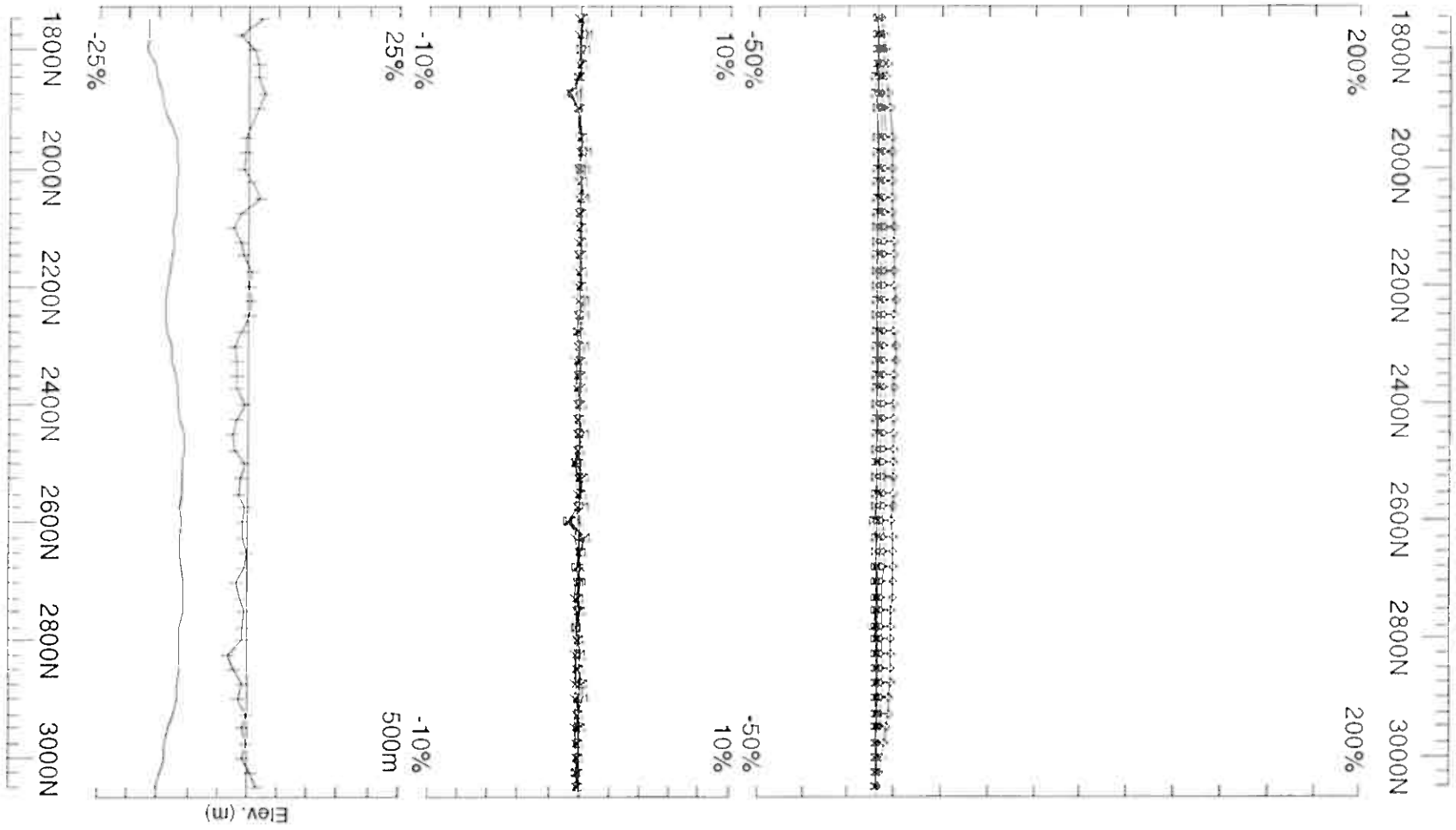
@3.251 Hz frequency

continuous norm

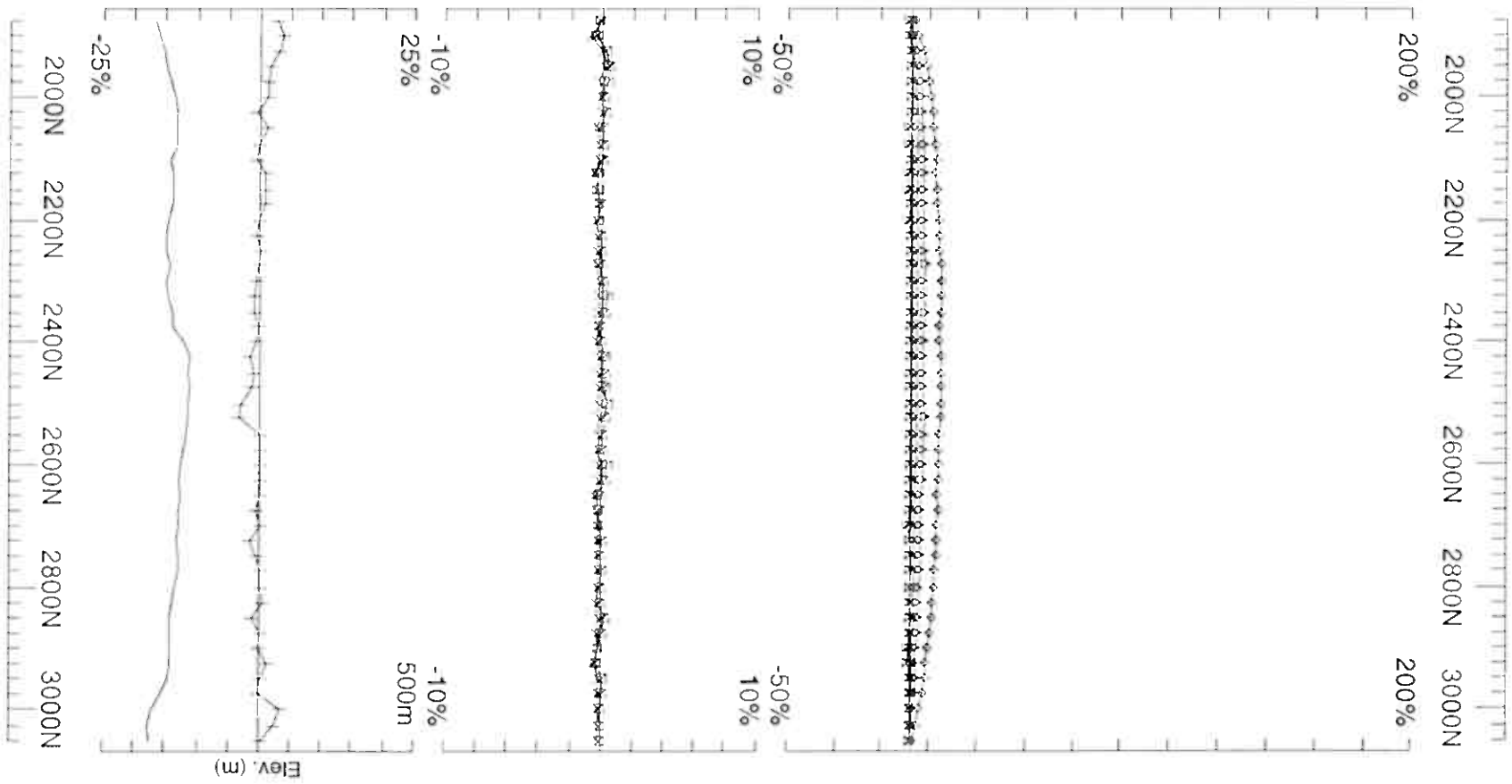
Ch1 reduced

Loop 04	Line 7700E	1725N - 3075N	1350m
	Line 7900E	1850N - 3075N	1225m
	Line 8000E	1875N - 2950N	1075m
	Line 8100E	1825N - 2950N	1125m
	Line 8200E	1725N - 3075N	1350m
	Line 8300E	1725N - 3075N	1175m
	Line 8400E	1725N - 3075N	1200m
	Line 8450E	1975N - 2825N	850m
	Line 8500E	1725N - 3075N	1250m
	Line 8550E	1975N - 2825N	1200m
	Line 8600E	1725N - 3075N	1225m
	Line 8650E	1975N - 2825N	675m
	Line 8700E	1725N - 3075N	1100m
	Line 8750E	1975N - 2825N	600m
	Line 8800E	1850N - 3075N	850m
	Nystein-Vissestad	Loop 04 Total	15850m

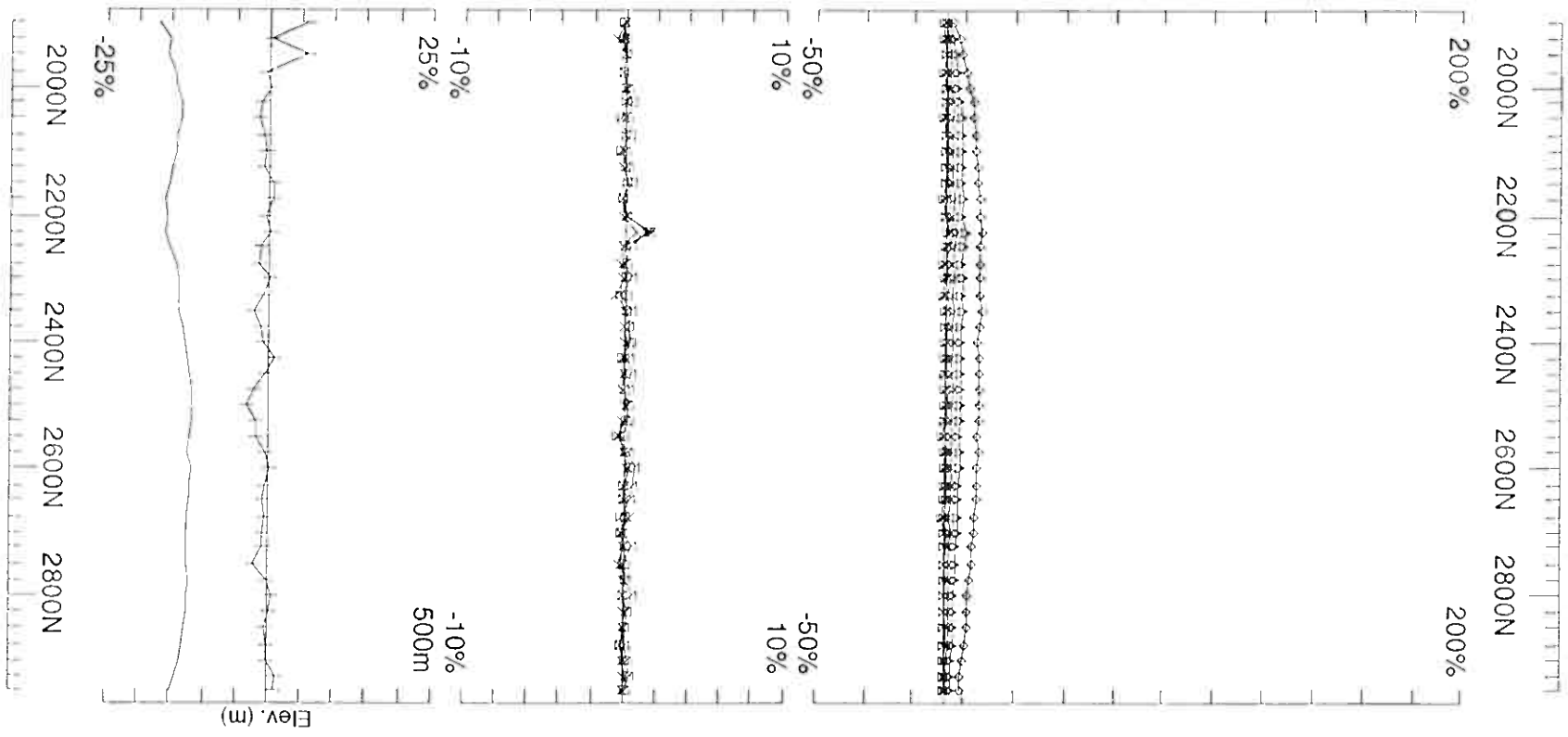
Loop 04 - continuous norm



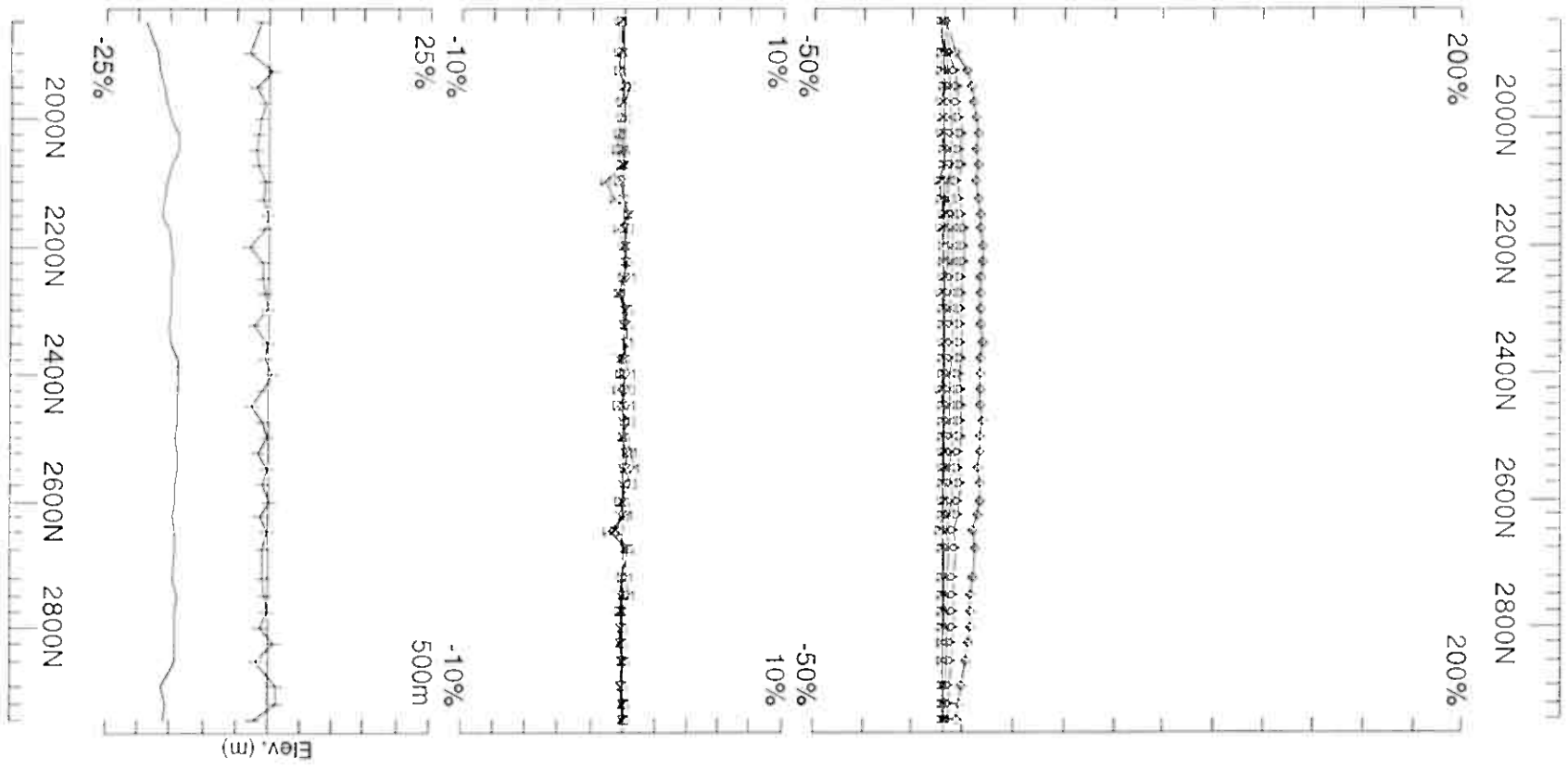
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 7700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed: 23/5/6 Reduced: 6/9/6 Plotted: 6/9/6



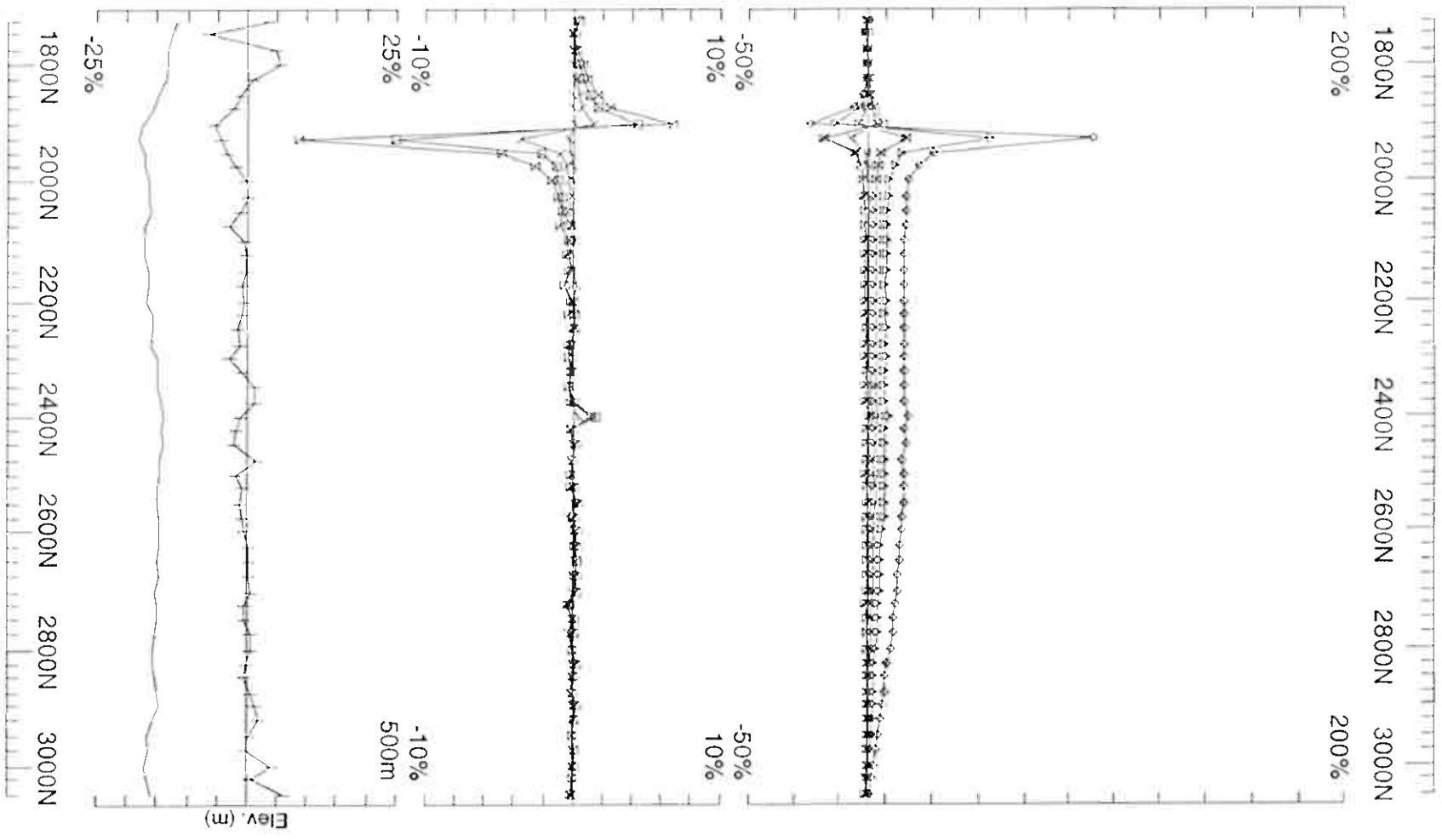
Loop: 04 Line: 7900E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 23/6/6 Reduced 6/9/6 Plotted 6/9/6



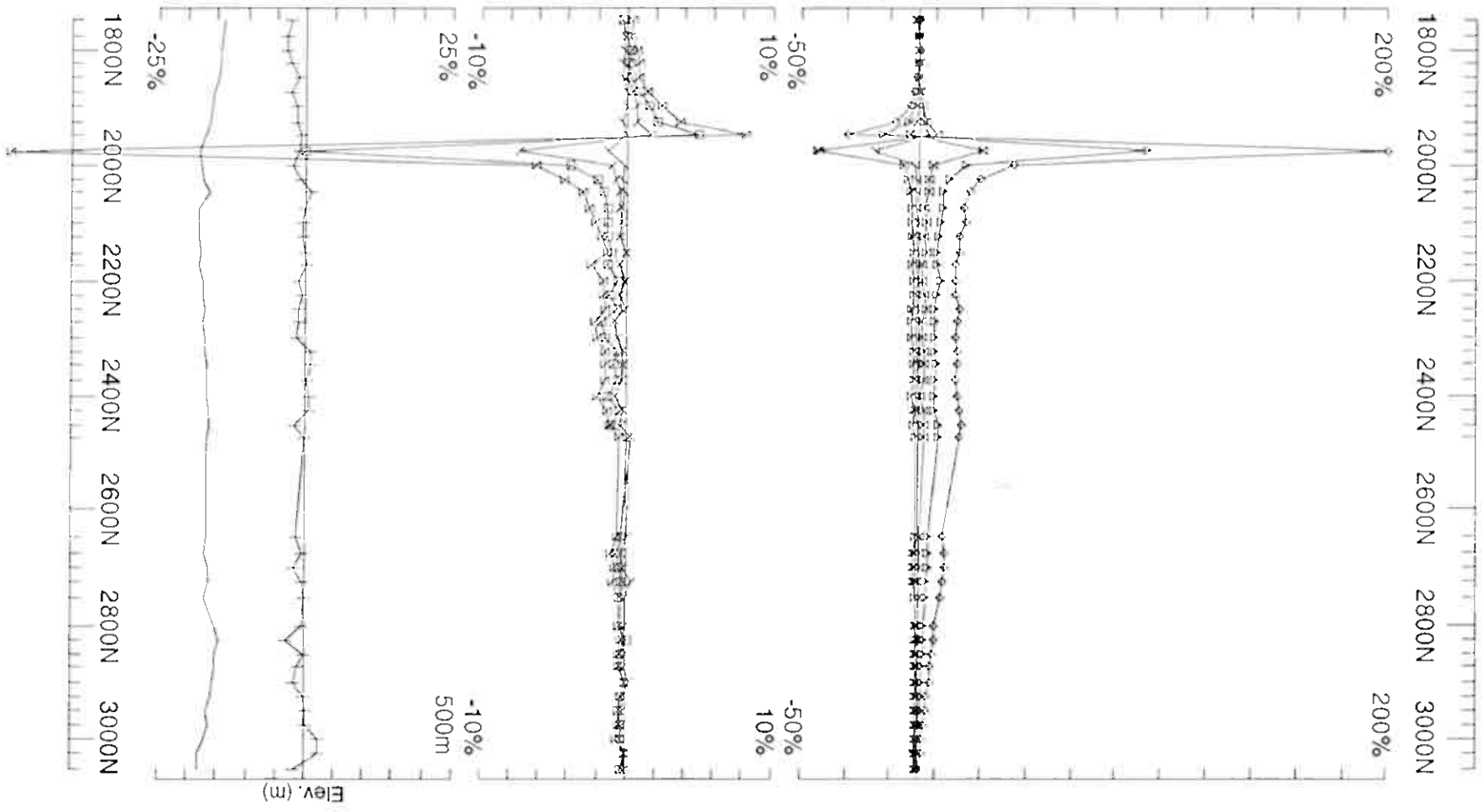
Loop: 04	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Vissestad-Nystein Grid
Line: 8000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed: 25/6/6 Reduced: 6/9/6 Plotted: 6/9/6



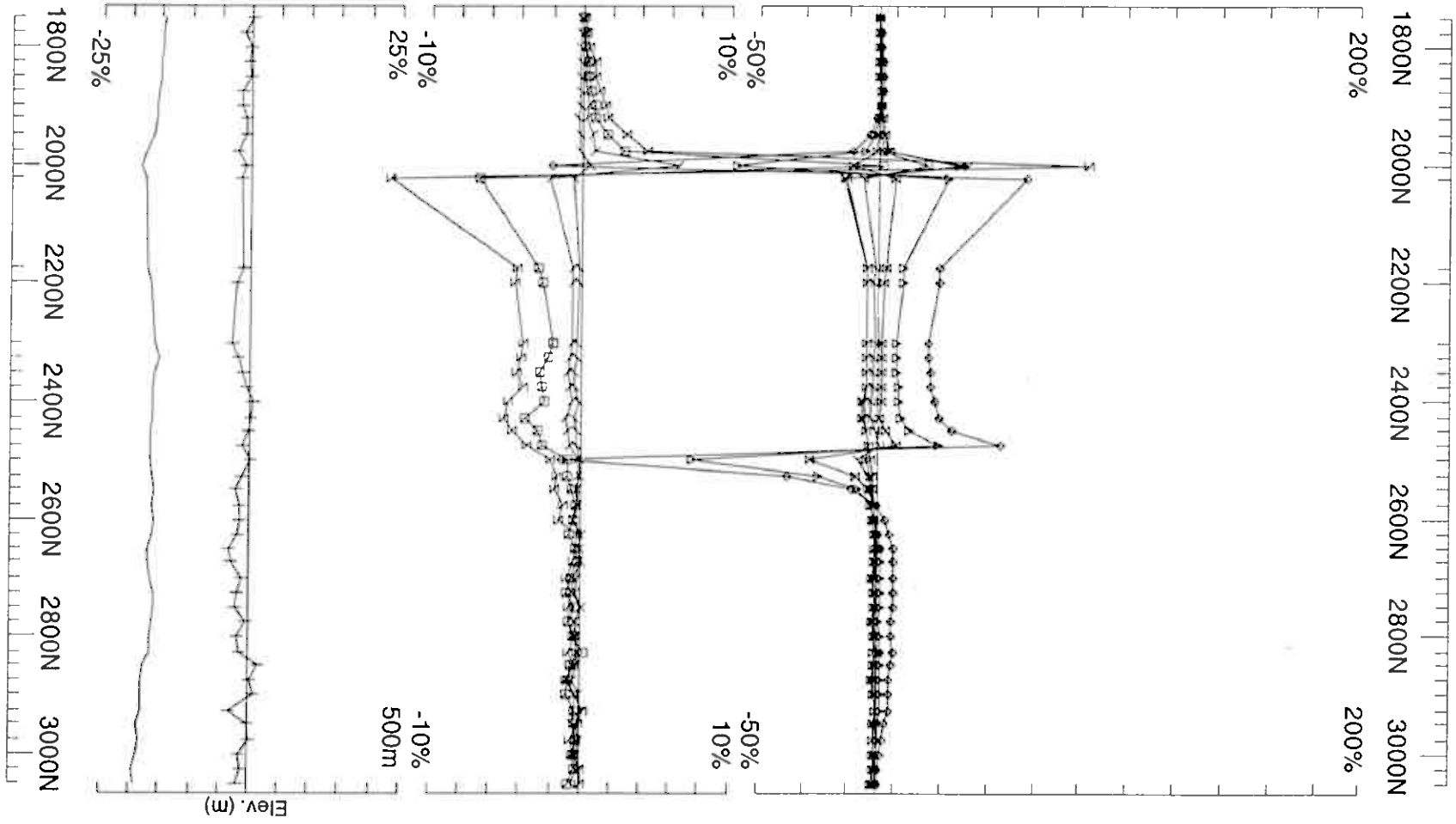
Loop: 04	Secondary, (Chn - Ch1)/Hpl	UTEM Survey at: Vissestad-Nystein Grid
Line: 8100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 25/6/6 Reduced 6/9/6 Plotted 6/9/6



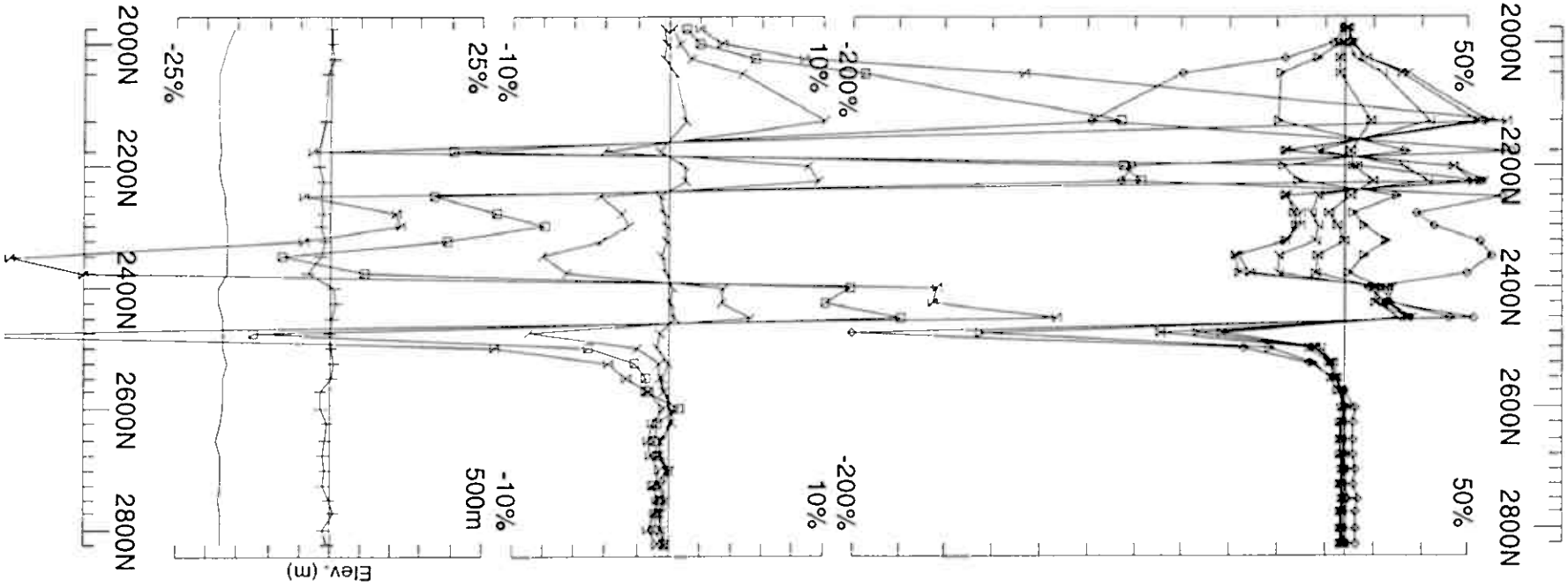
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed: 24/6/6 Reduced: 6/9/6 Plotted: 6/9/6



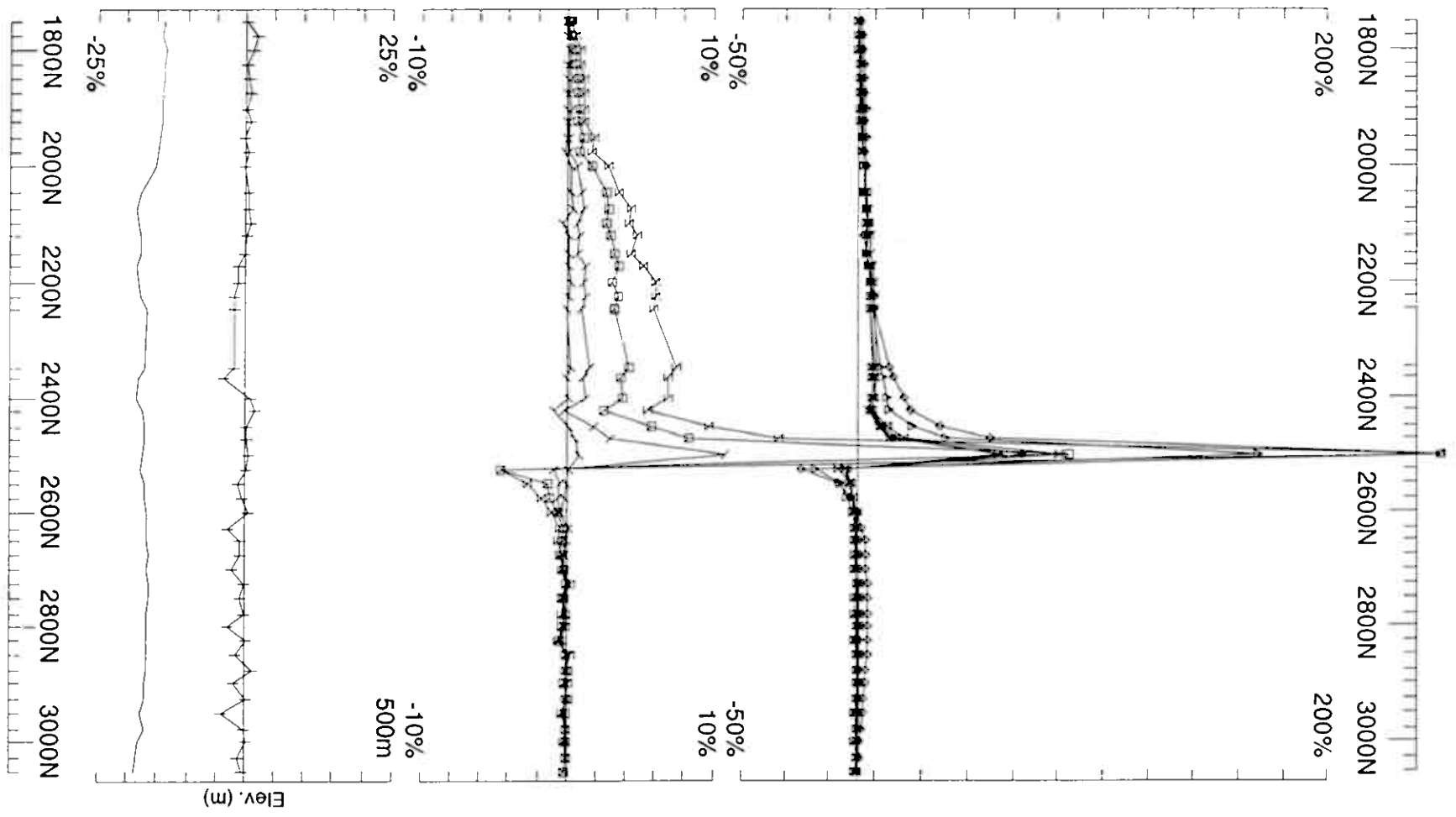
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed: 24/6/6, Reduced: 6/9/6, Plotted: 6/9/6



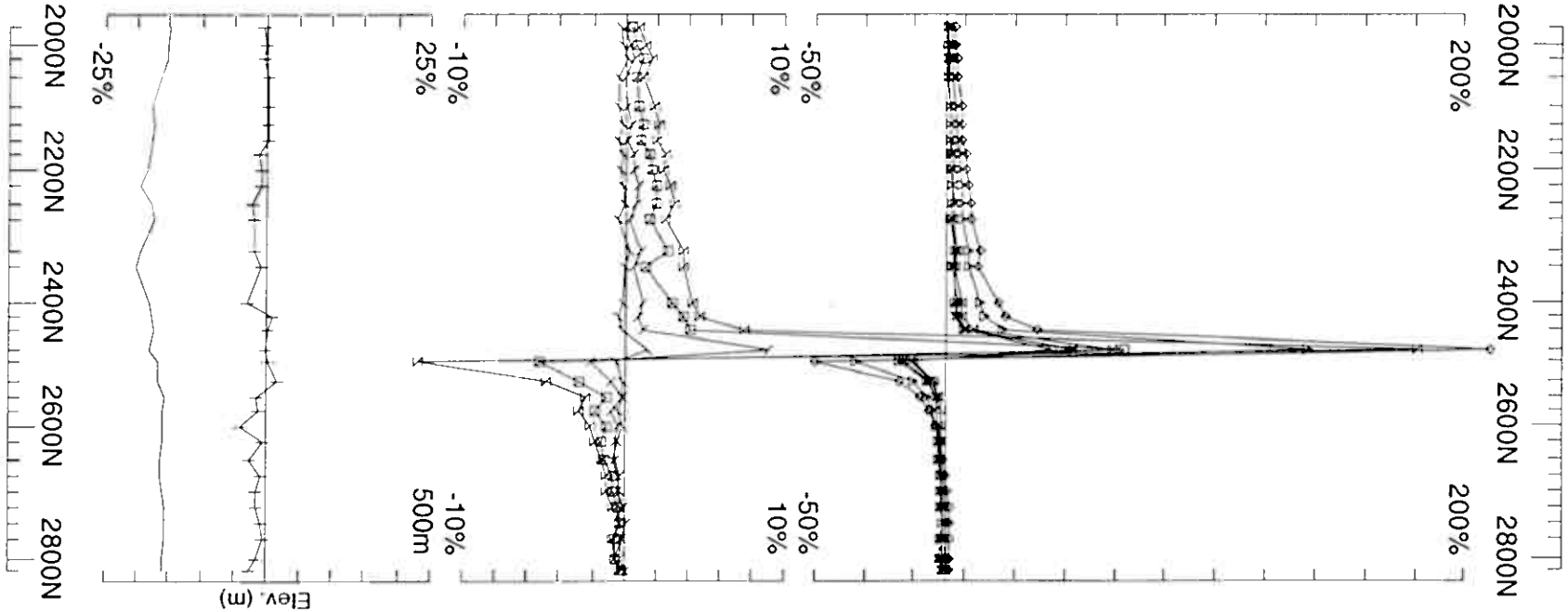
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



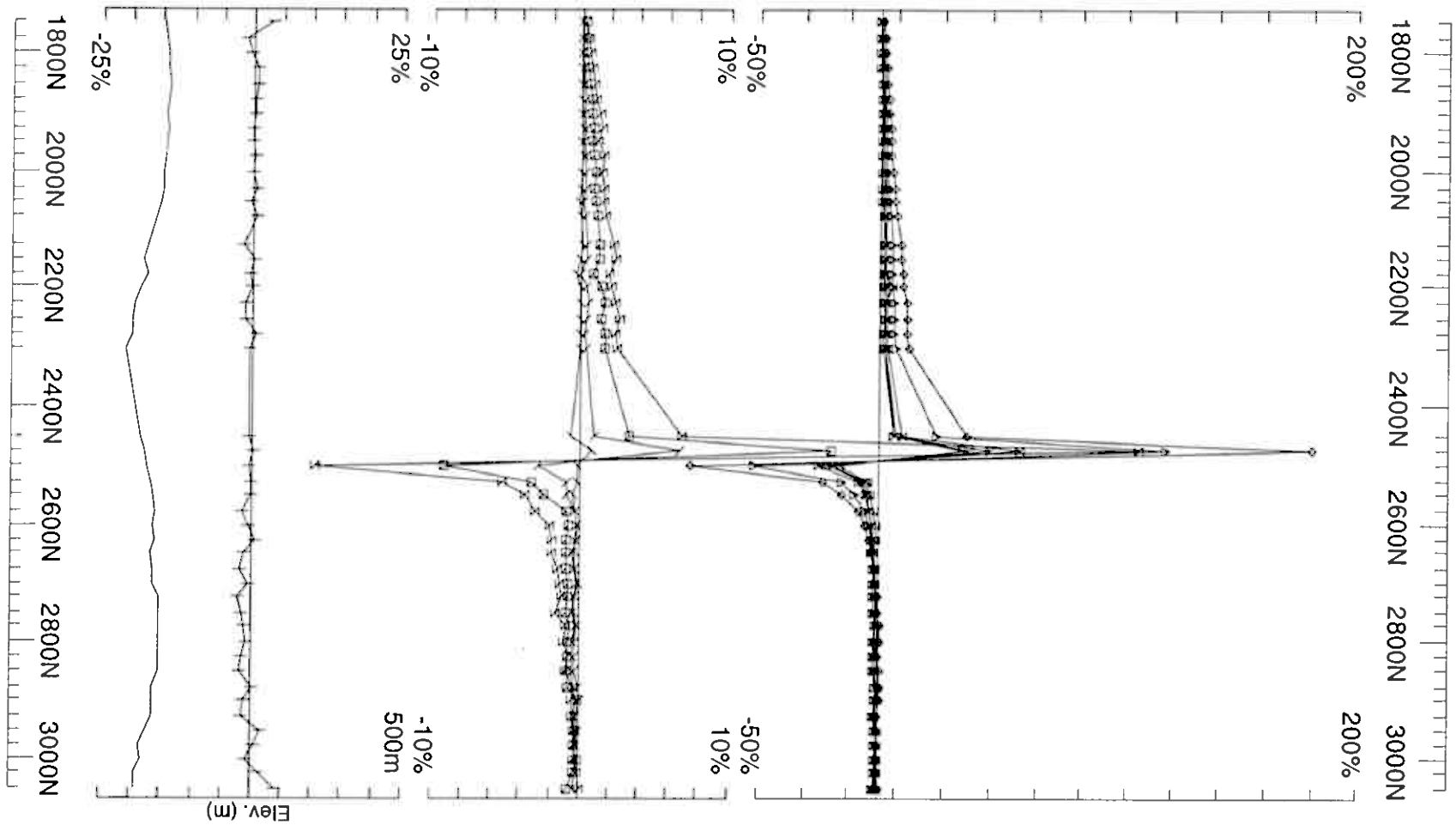
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8450E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 25/6/6, Reduced : 6/9/6, Plotted : 6/9/6



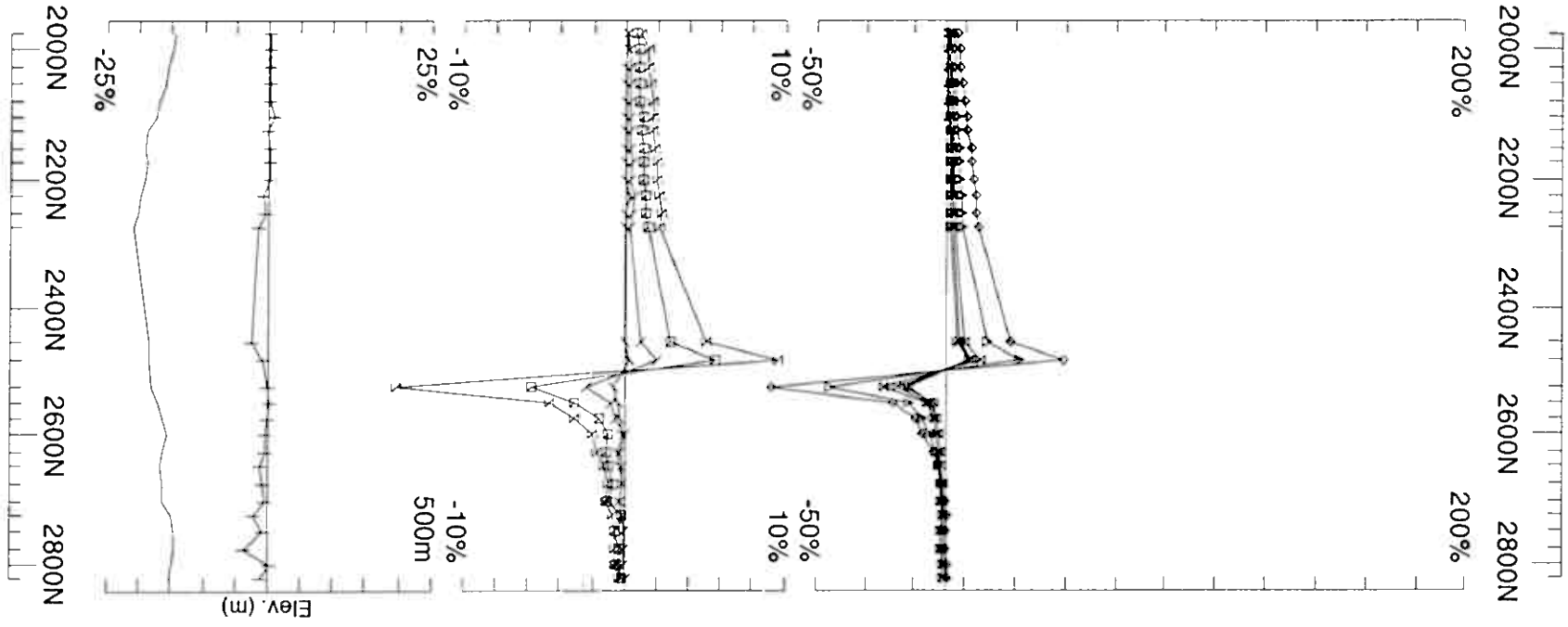
Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 25/6/6, Reduced : 25/6/6, Plotted : 6/9/6



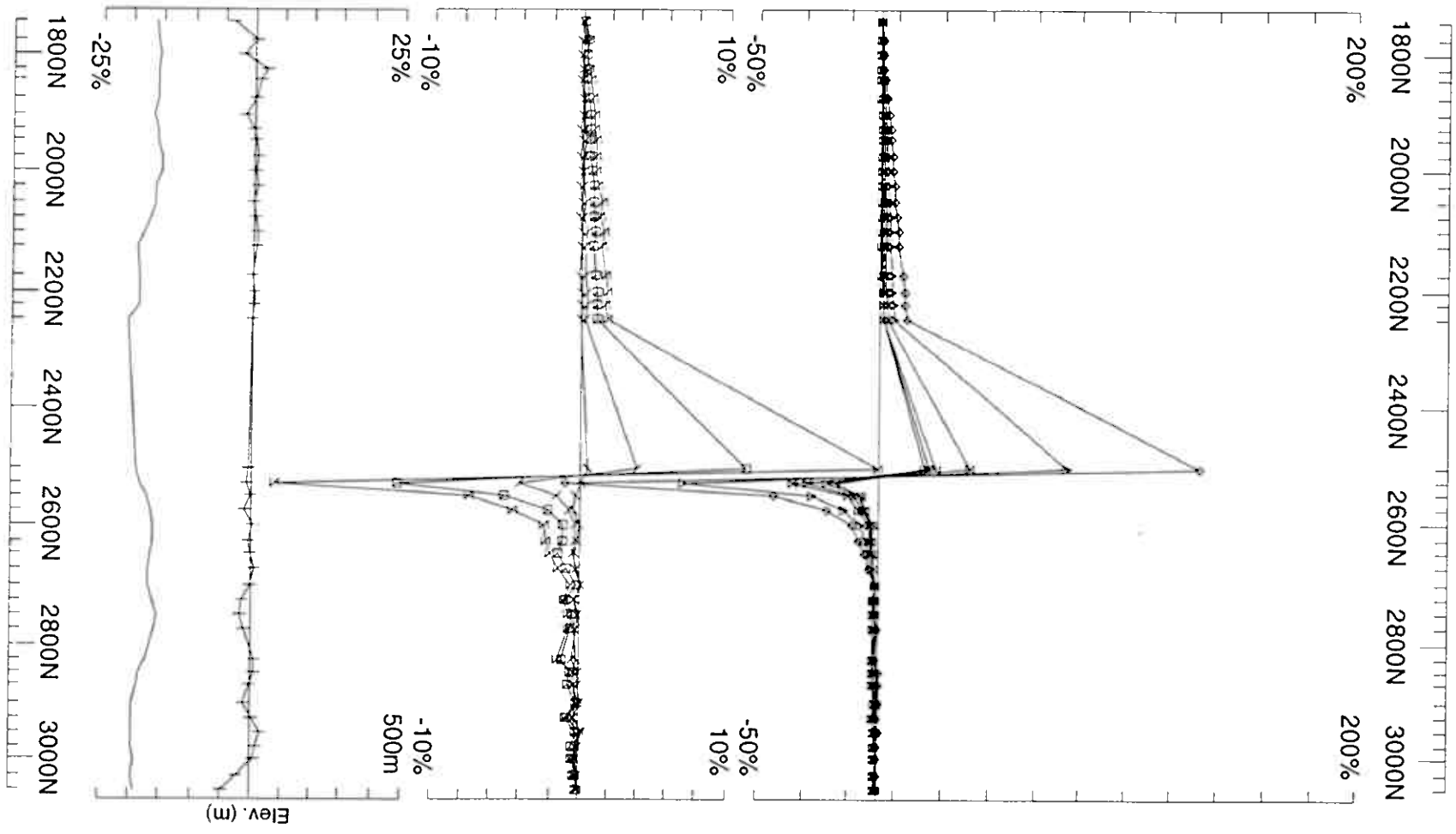
Loop: 04	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Vissestad-Nystein Grid
Line: 8550E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



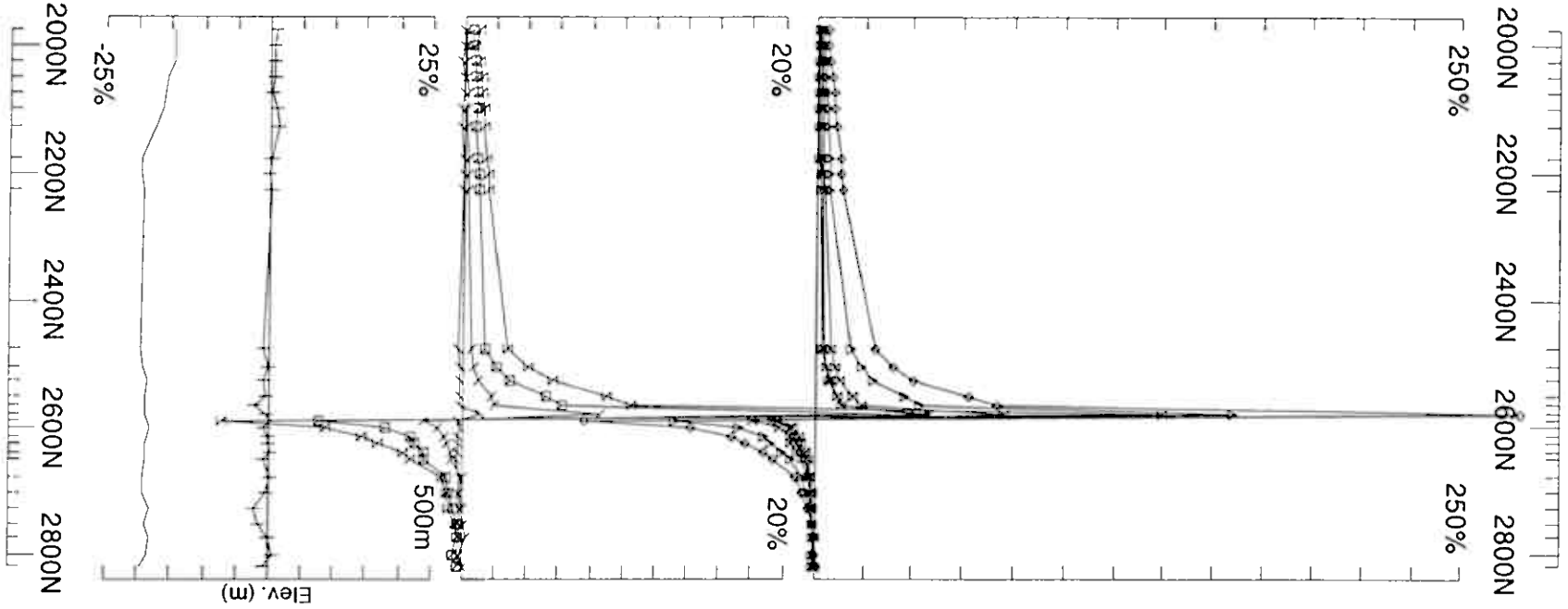
Loop: 04	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Vissestad-Nystein Grid
Line: 8600E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



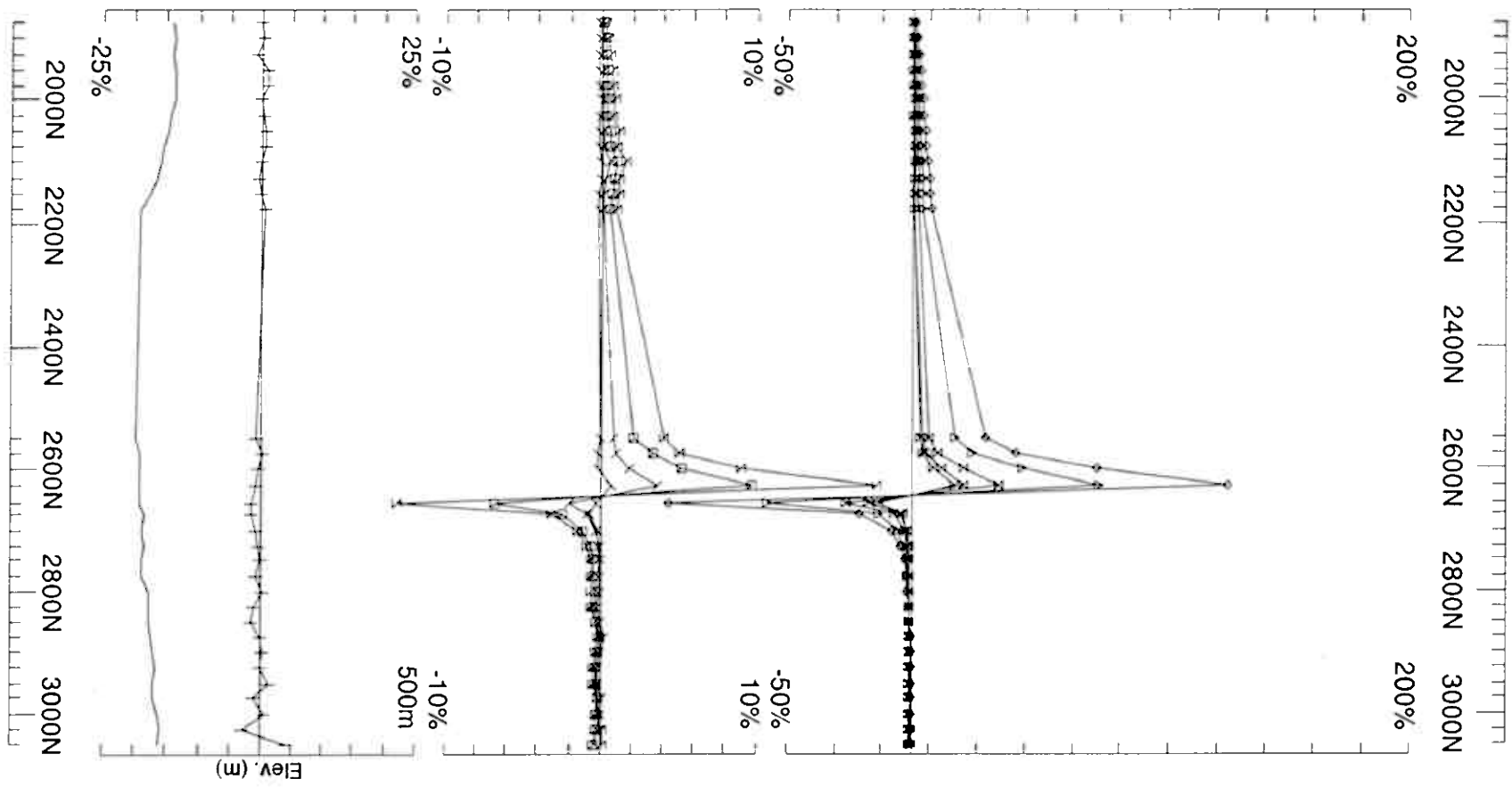
Loop: 04	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Vissestad-Nystein Grid
Line: 8650E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



Loop: 04	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Vissestad-Nystein Grid
Line: 8750E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



Loop: 04	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Vissestad-Nystein Grid
Line: 8800E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6

Seljaasen

Loop 01S

Hz

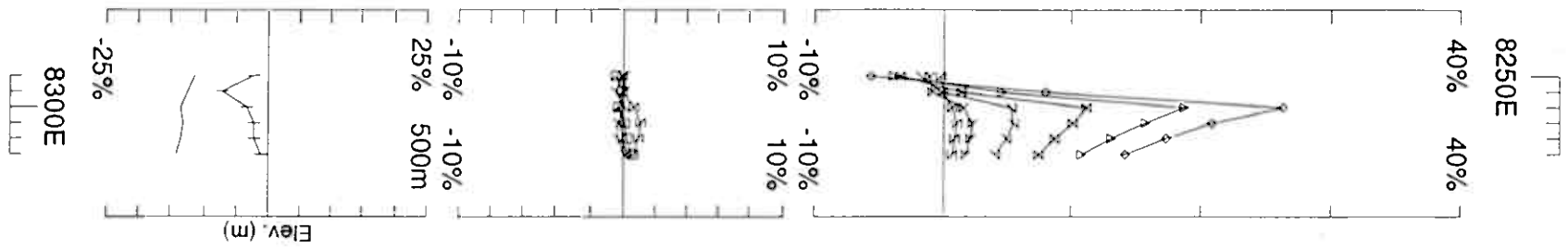
@3.251 Hz frequency

continuous norm

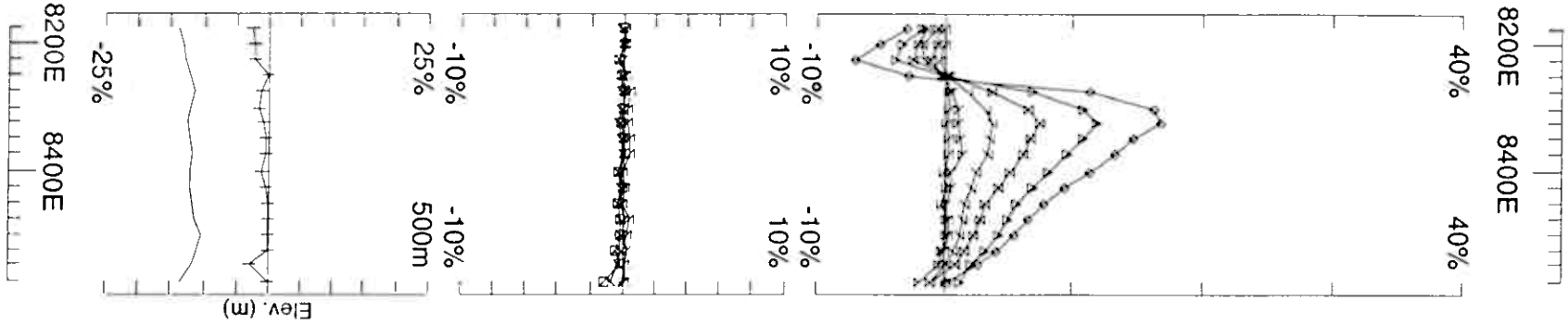
Ch1 reduced

Loop 01S	Line 1200N	225E - 375E	150m
	Line 1300N	150E - 600E	450m
	Line 1400N	125E - 600E	475m
	Line 1500N	125E - 600E	475m
	Line 1600N	125E - 600E	475m
	Line 1700N	125E - 600E	475m
	Line 1800N	125E - 600E	475m
	Seljaasen	Loop 01S Total	2975m

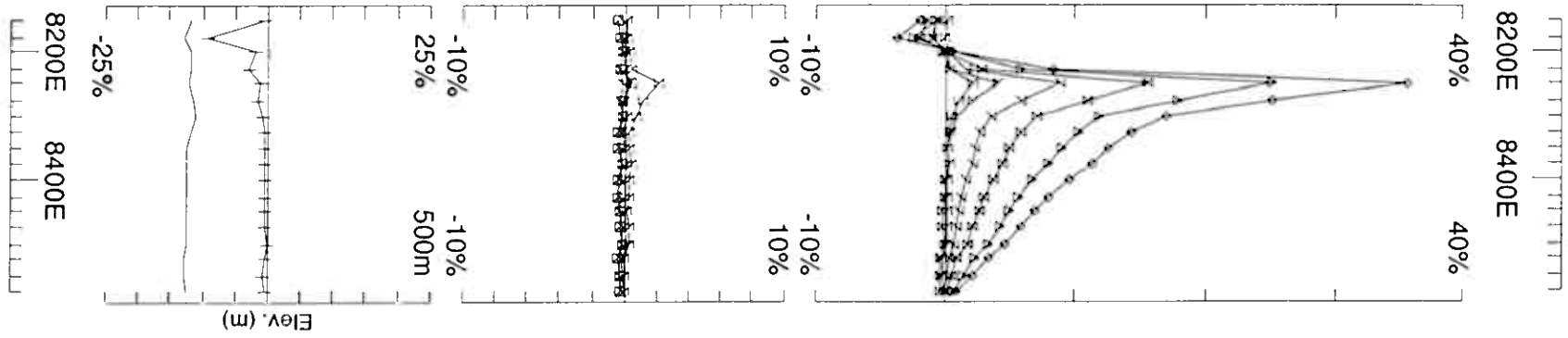
Loop 01S - continuous norm



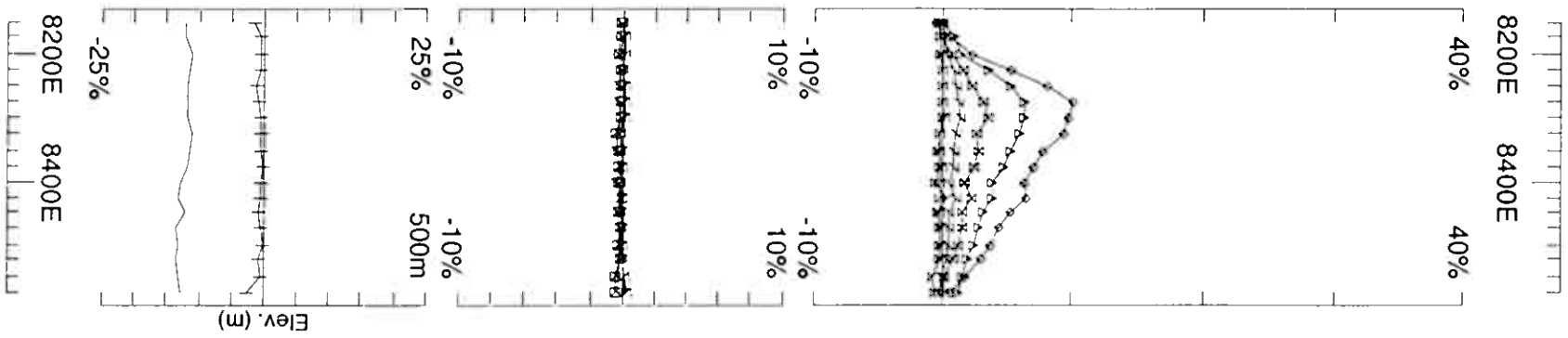
Loop: 01S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 1200N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



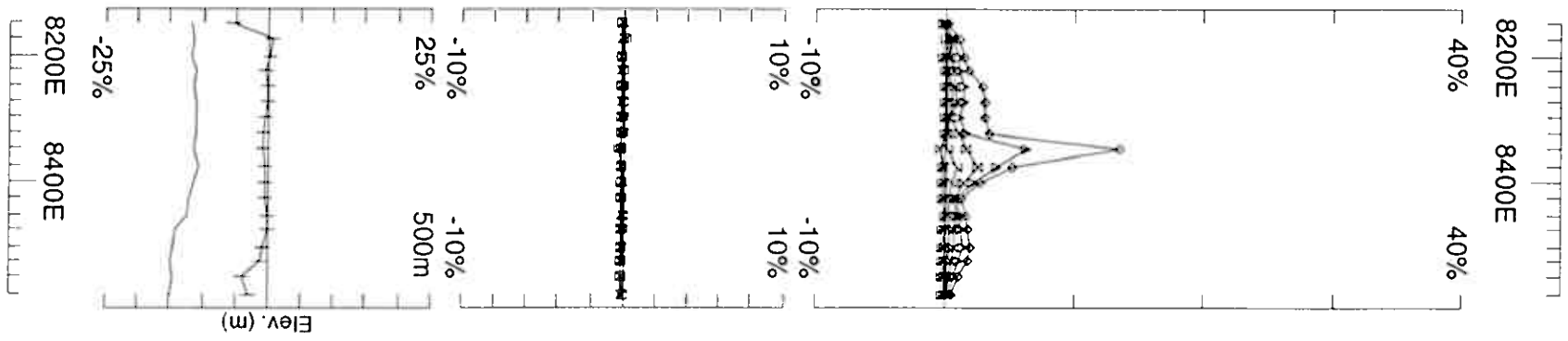
Loop: 01S	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Seljassen Grid
Line: 1300N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed: 7/2/6, Reduced: 7/7/6, Plotted: 6/9/6



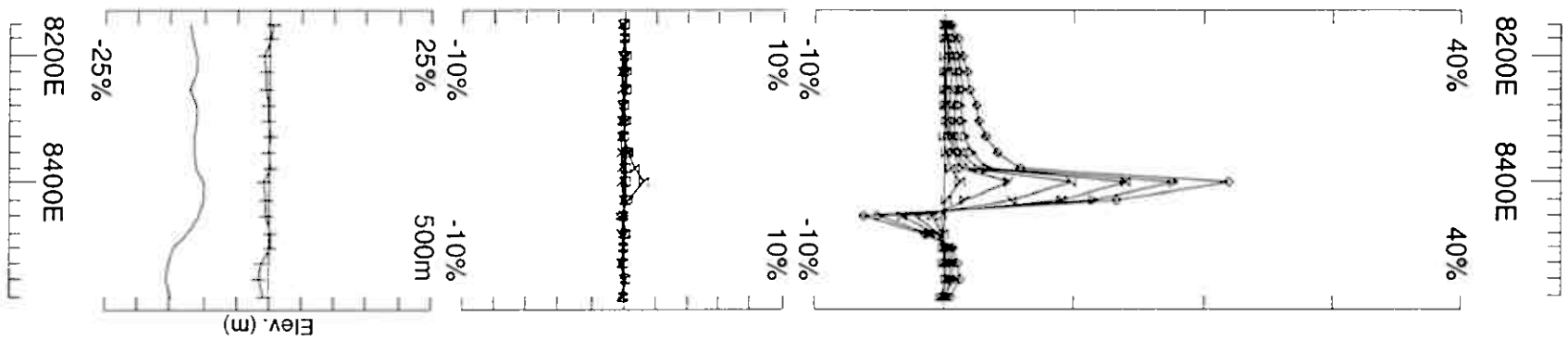
Loop: 01S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 1400N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



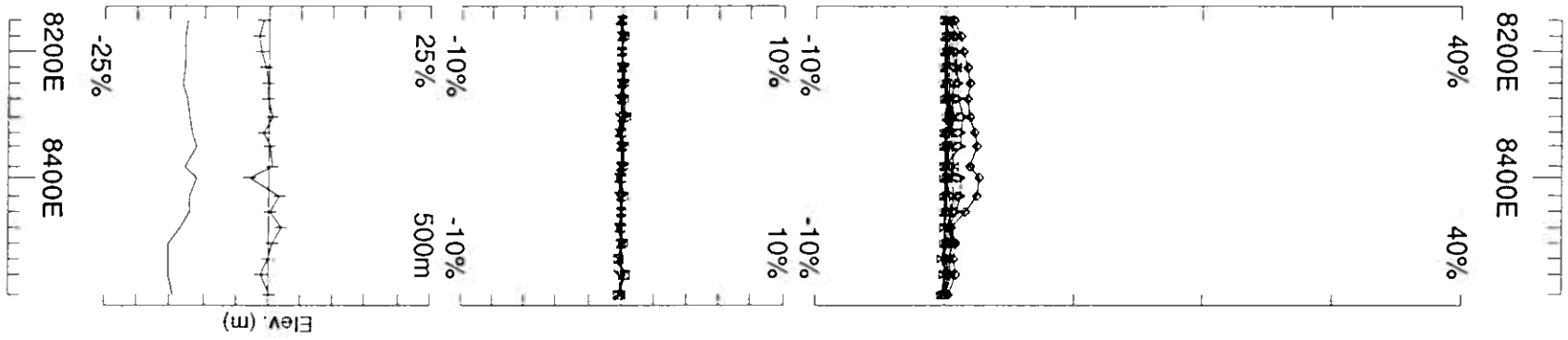
Loop: 01S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 1500N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



Loop: 01S Line: 1600N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 2/7/6 Reduced 7/7/6 Plotted 6/9/6



Loop: 01S Line: 1700N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 2/7/6 Reduced : 7/7/6 Plotted : 6/9/6



Loop: 01S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 1800N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE — Job 0616 — Surveyed : 2/7/6, Reduced : 7/7/6, Plotted : 6/9/6

Seljaasen

Loop 02S

Hz

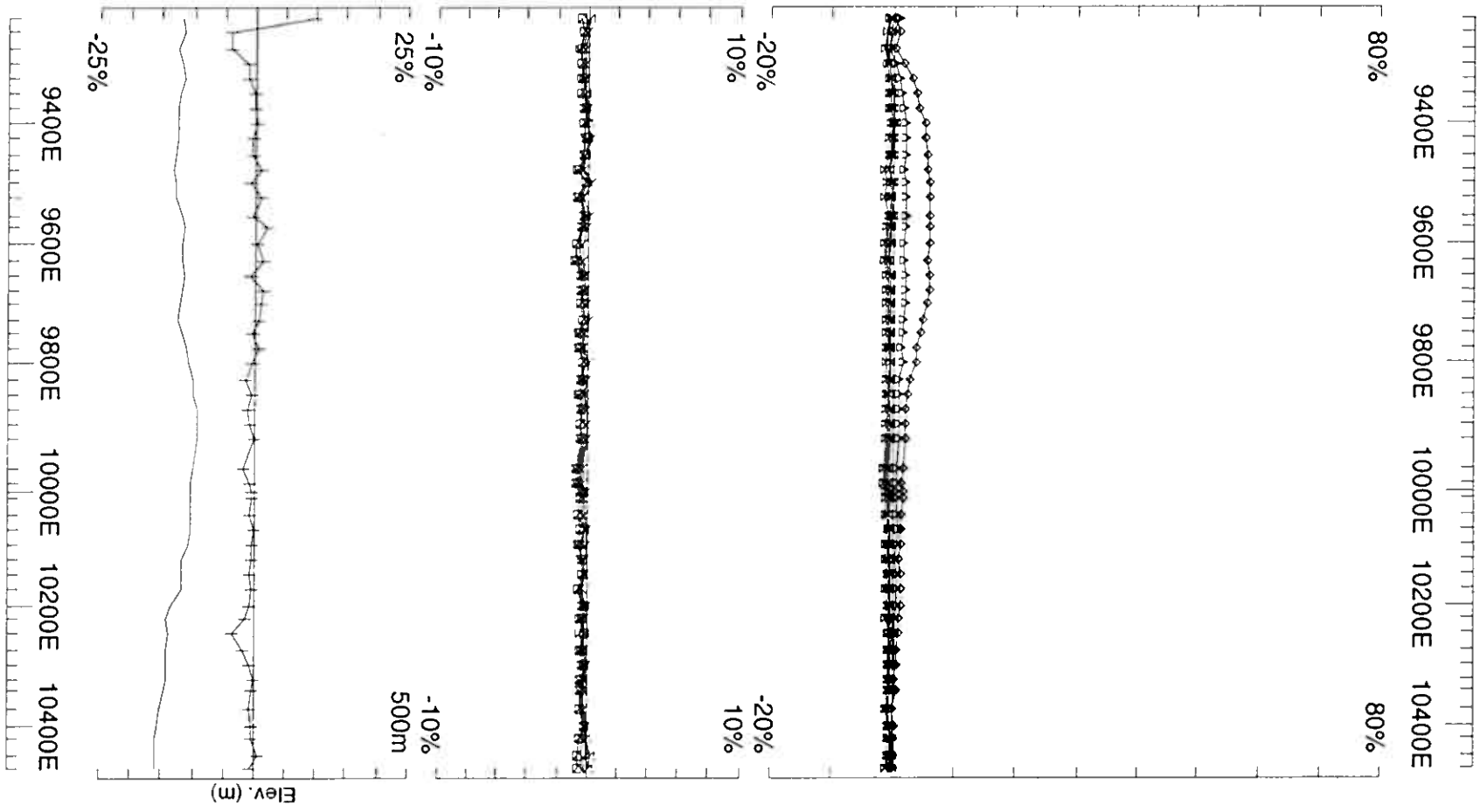
@3.251 Hz frequency

continuous norm

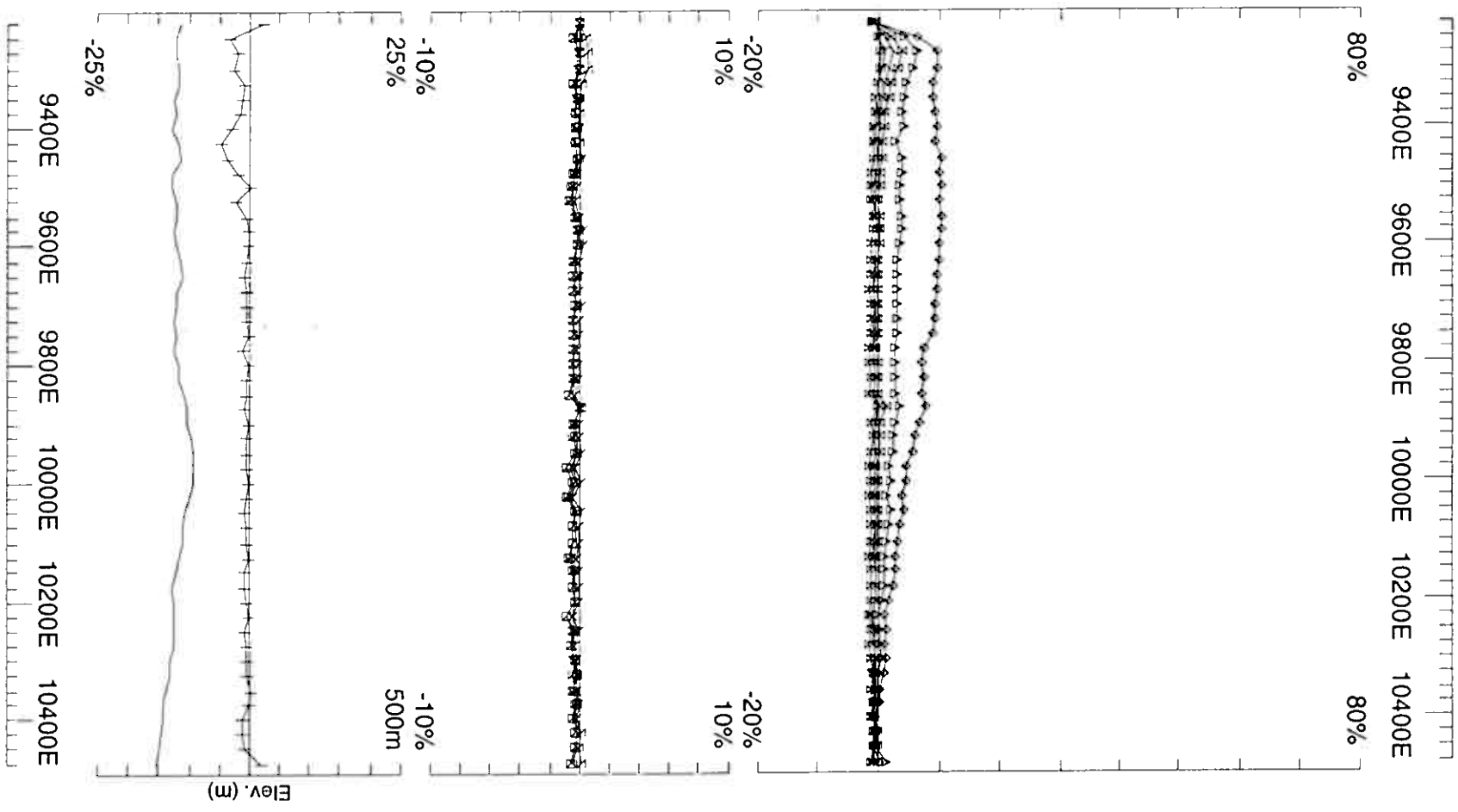
Ch1 reduced

Loop 02S	Line 2000N	9200E - 10500E	1300m
	Line 2100N	9200E - 10500E	1300m
	Line 2200N	9200E - 10500E	1300m
	Line 2300N	9200E - 10500E	1300m
	Line 2400N	9200E - 10500E	1300m
	Line 2500N	9200E - 9975E	775m
		10175E - 10500E	325m
	Line 2600N	9200E - 9900E	700m
	Line 2700N	9200E - 10000E	800m
	Line 2800N	9200E - 9850E	650m
	Line 2900N	9200E - 9850E	650m
	Line 3000N	9575E - 9900E	325m
	Line 3100N	9475E - 9950E	475m
	Line 3200N	9550E - 9950E	400m
	Seljaasen	Loop 02S Total	11600m

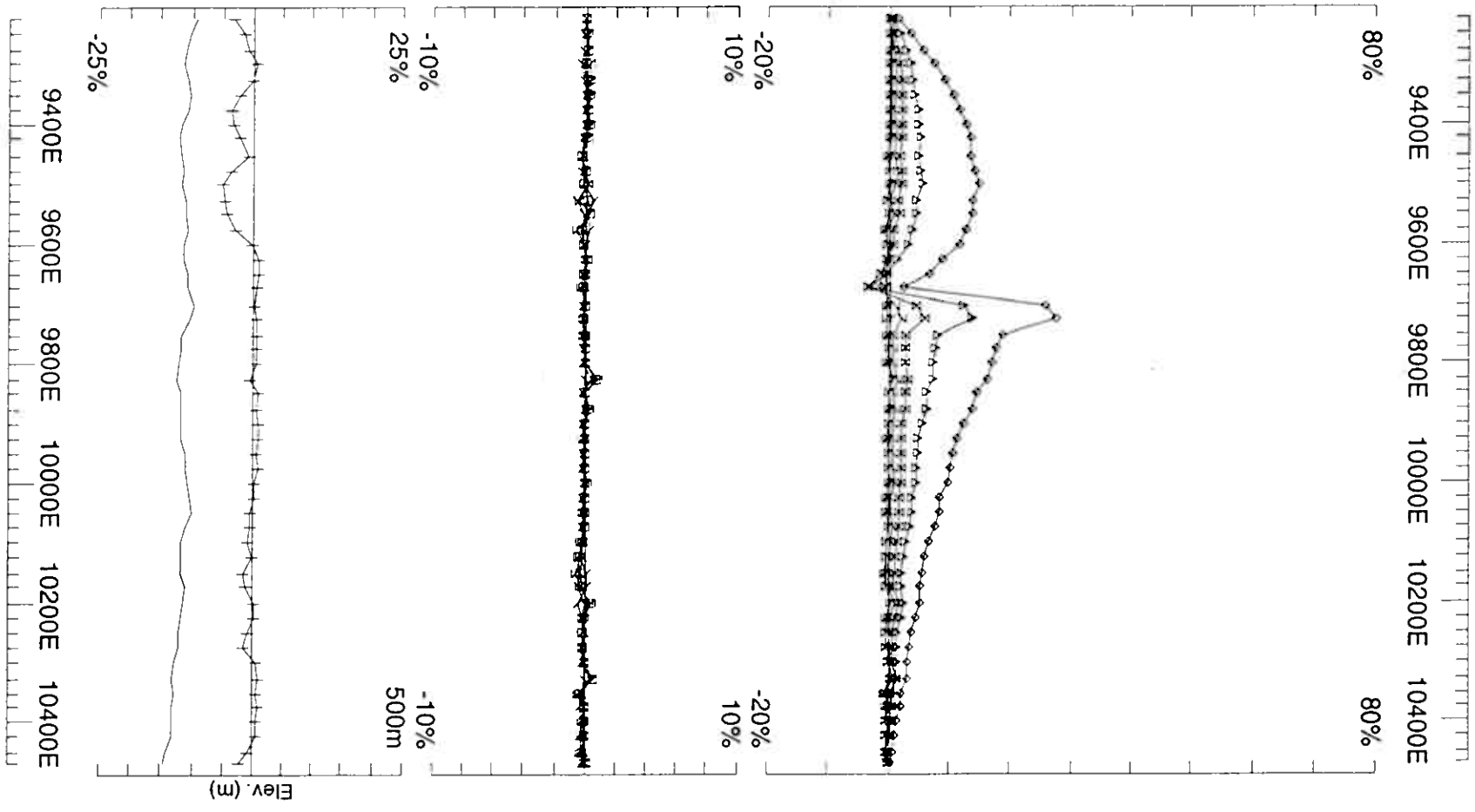
Loop 02S - continuous norm



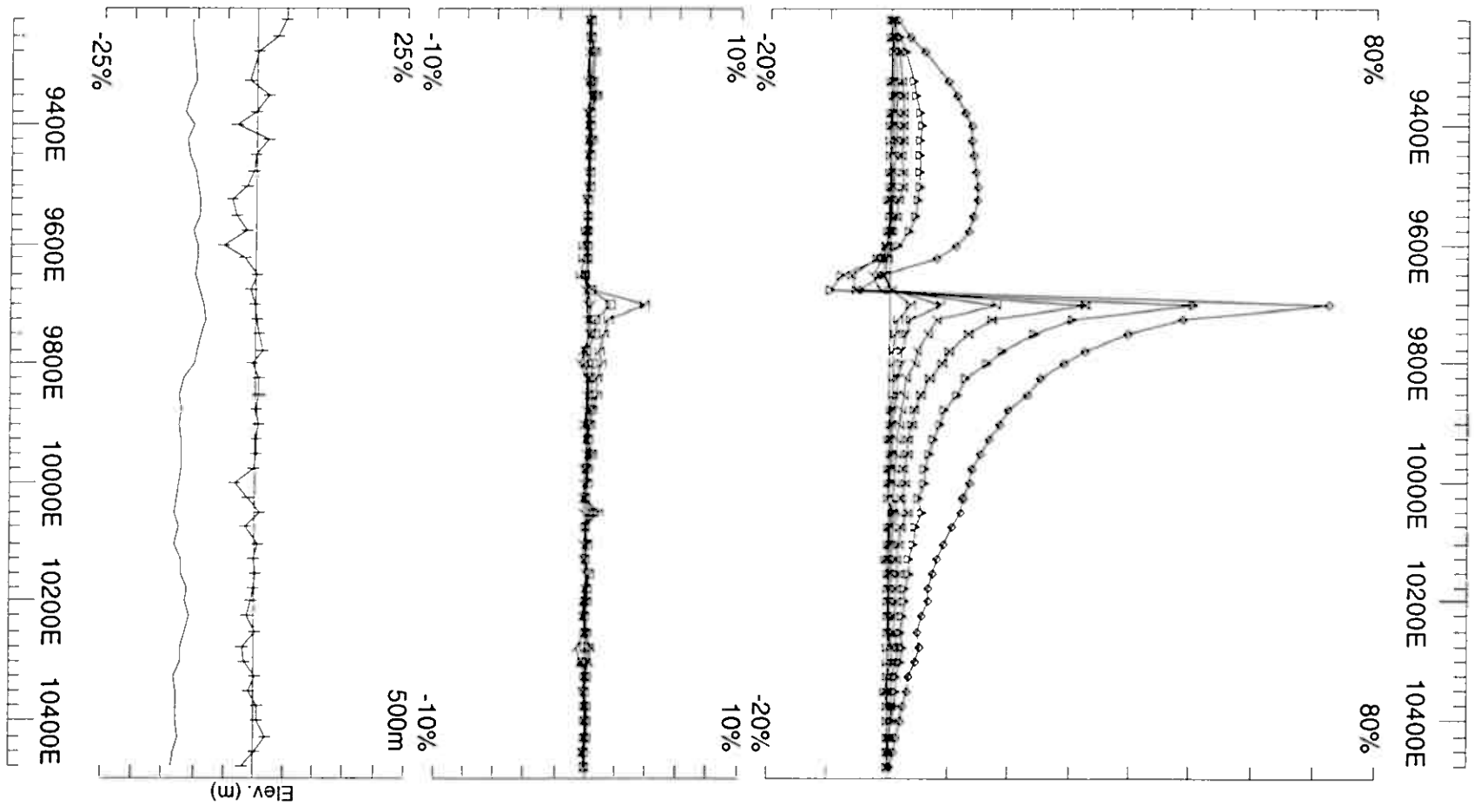
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2000N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



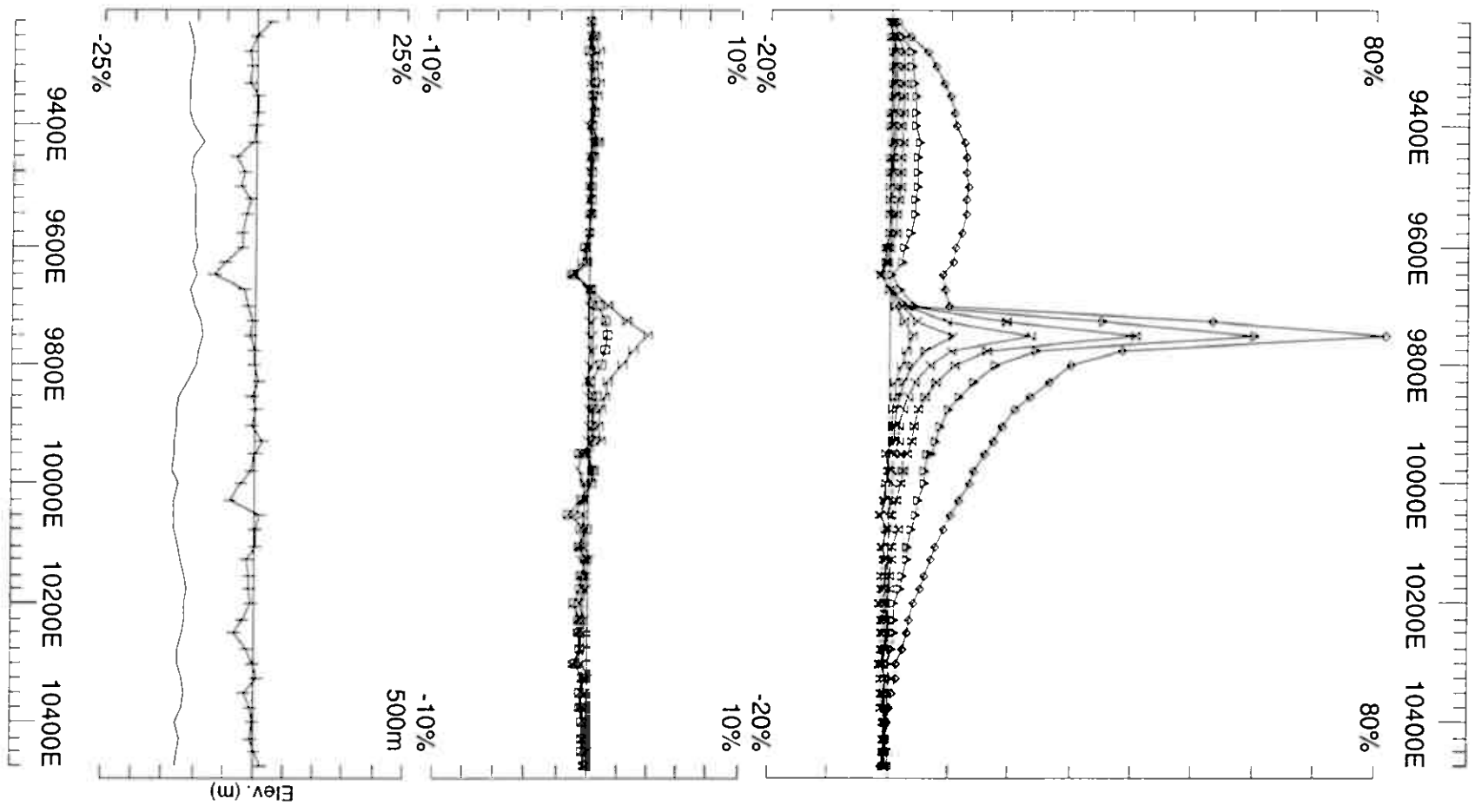
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2100N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



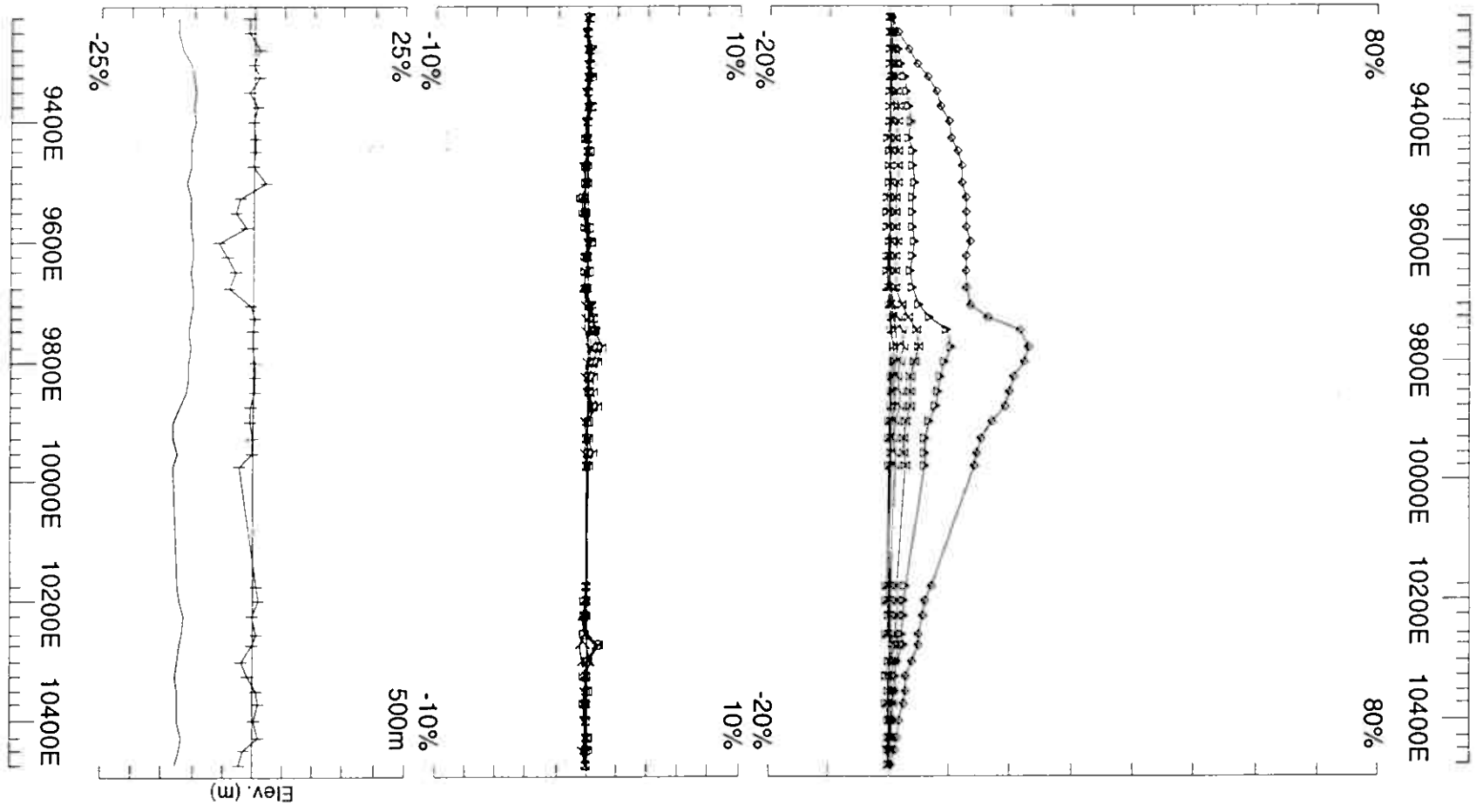
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2200N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



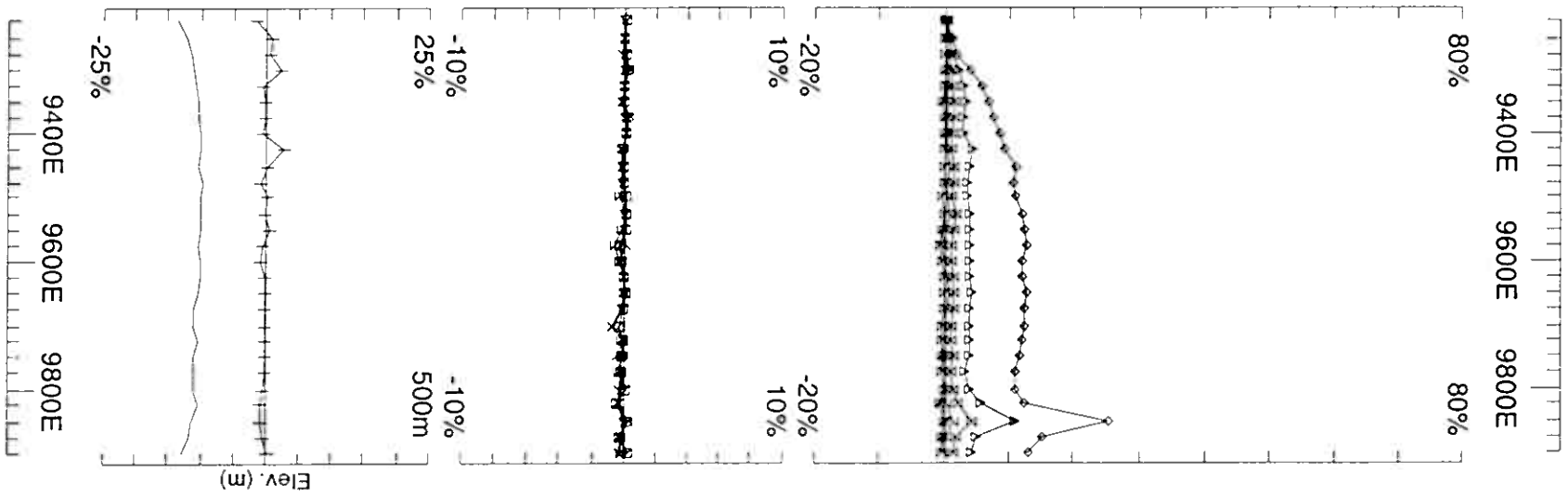
Loop: 02S	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Seljassen Grid
Line: 2300N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



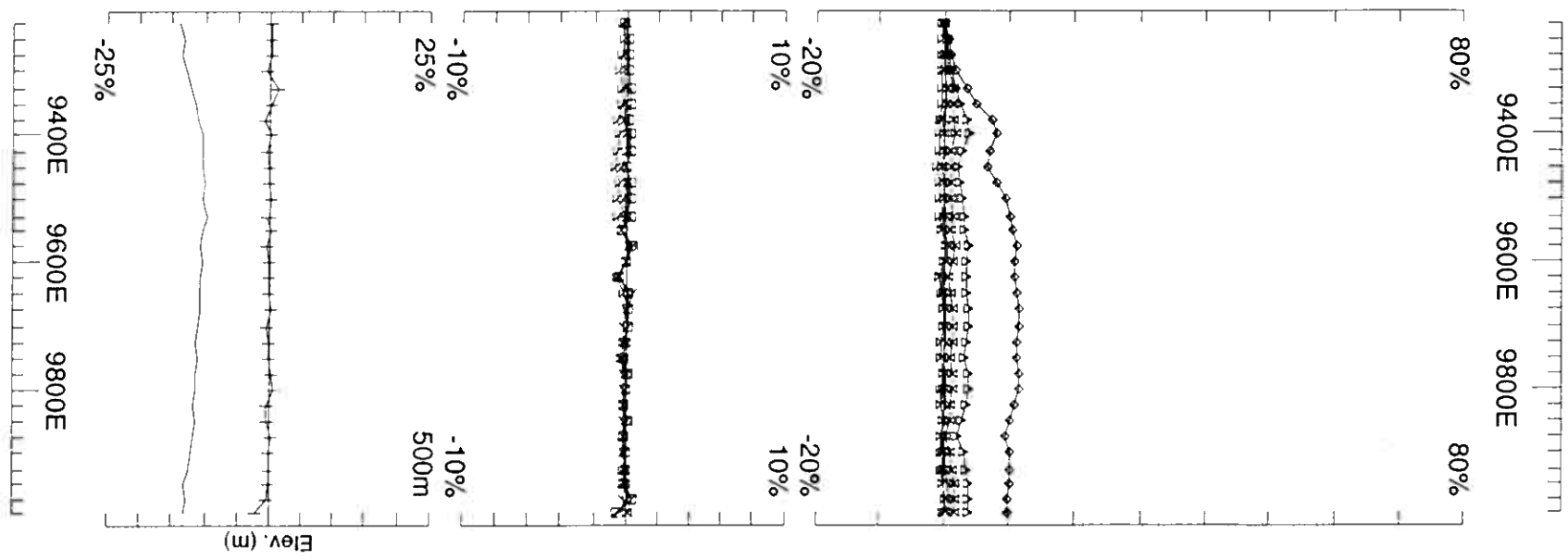
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2400N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted: 6/9/6



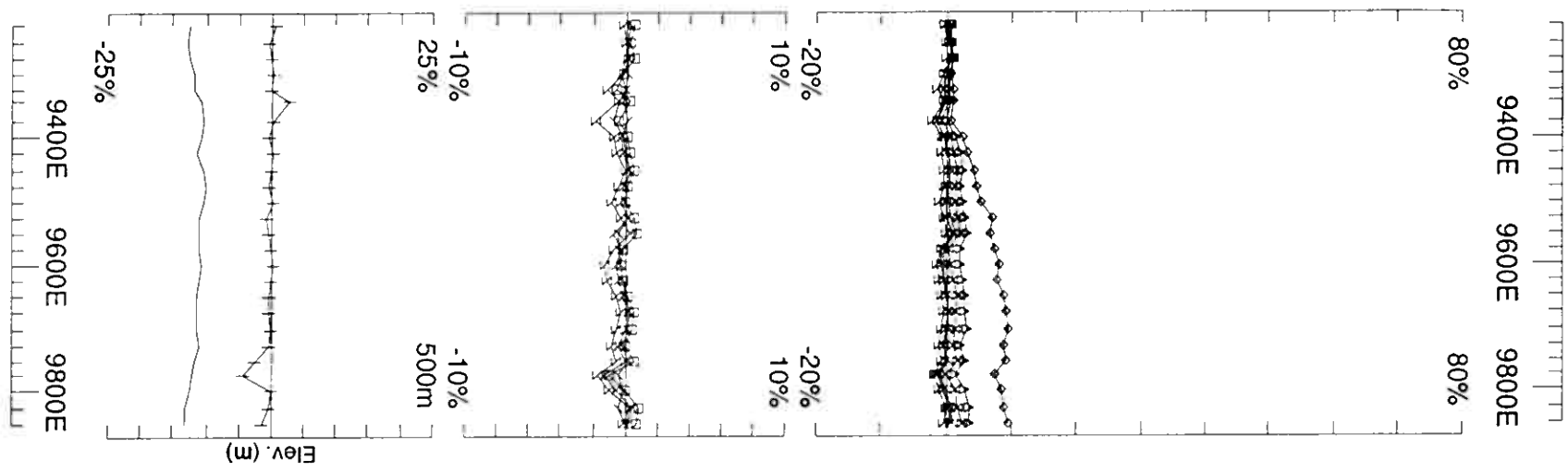
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2500N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted: 6/9/6



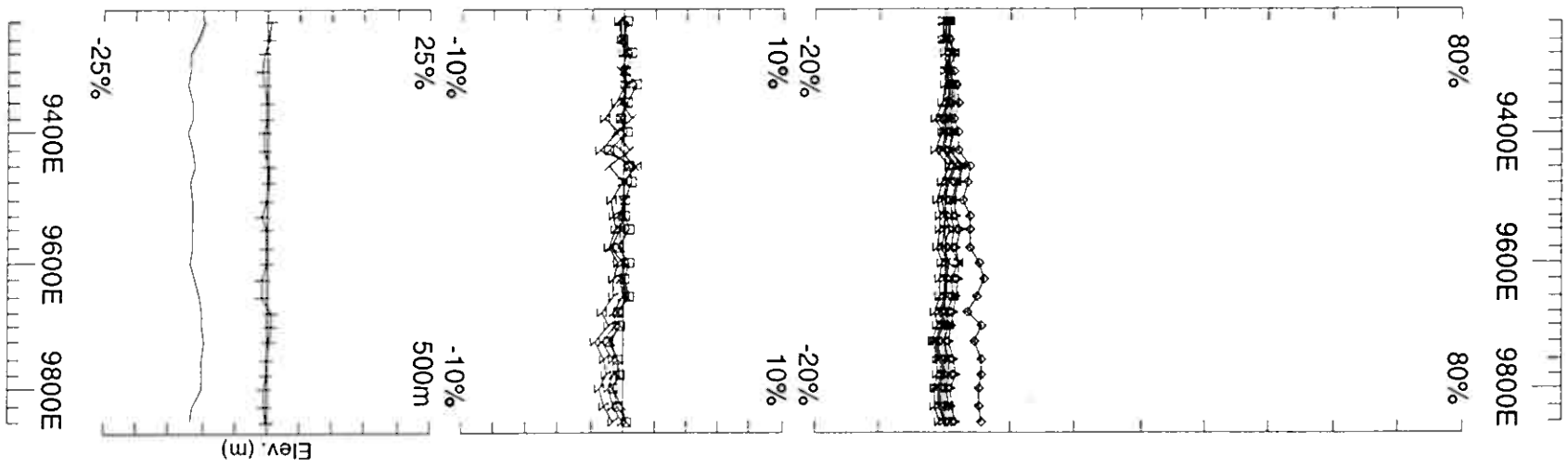
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2600N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Surveyed : 5/7/6 Reduced : 6/9/6 Plotted : 6/9/6



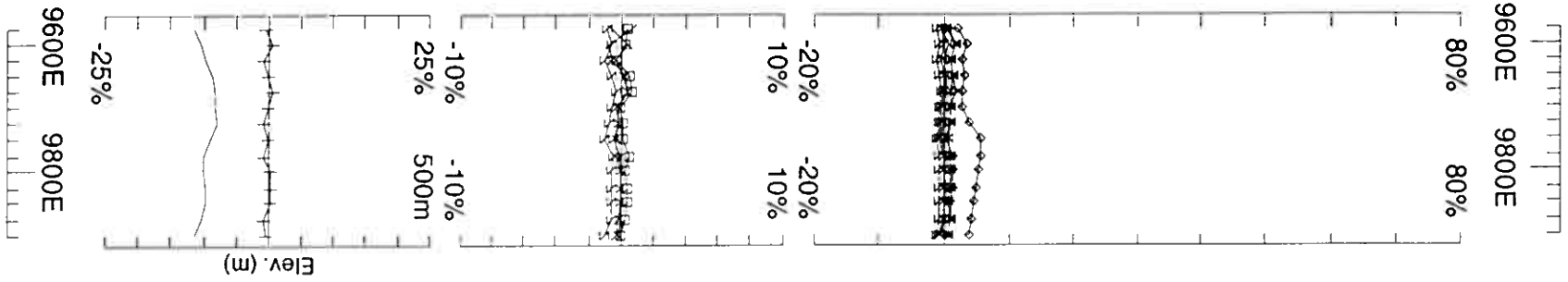
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2700N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted: 6/9/6



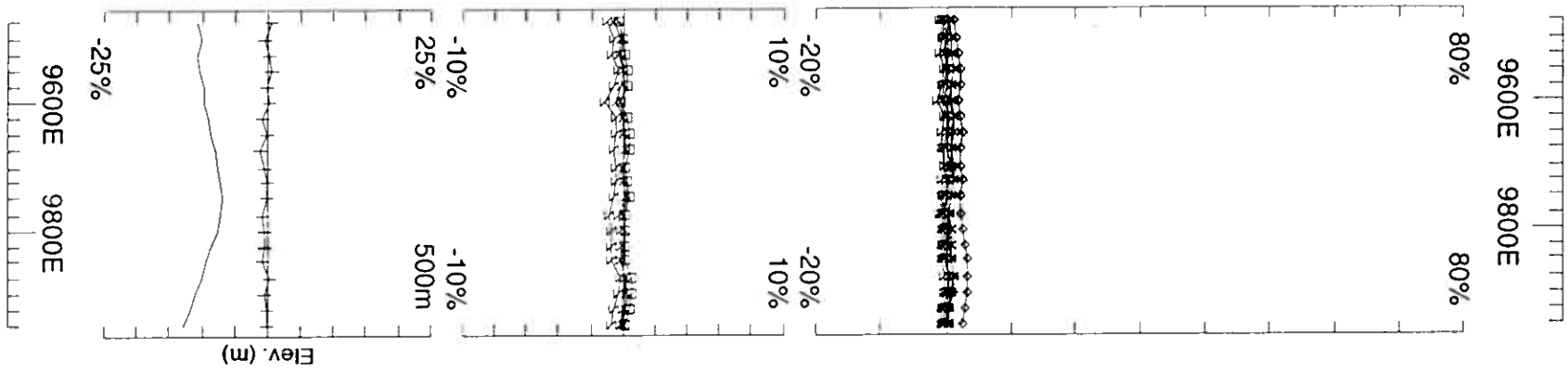
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2800N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



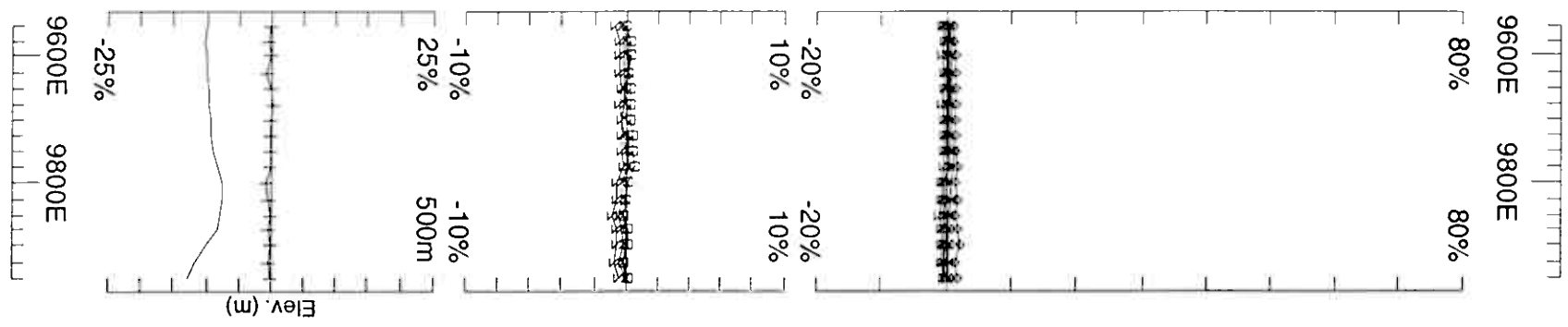
Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 2900N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 3000N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02S	Secondary, (Chn - Ch1)/|Hp|	UTEM Survey at: Seljassen Grid
Line: 3100N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 7/5/6 Reduced 6/9/6 Plotted 6/9/6



Loop: 02S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 3200N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6

Seljaasen

Loop 03S

Hz

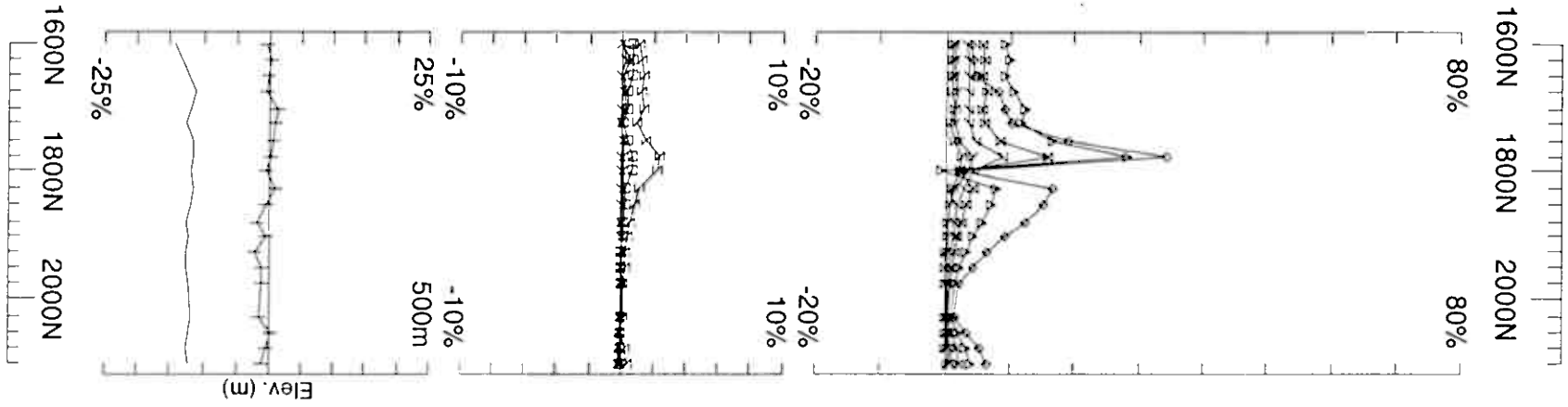
@3.251 Hz frequency

continuous norm

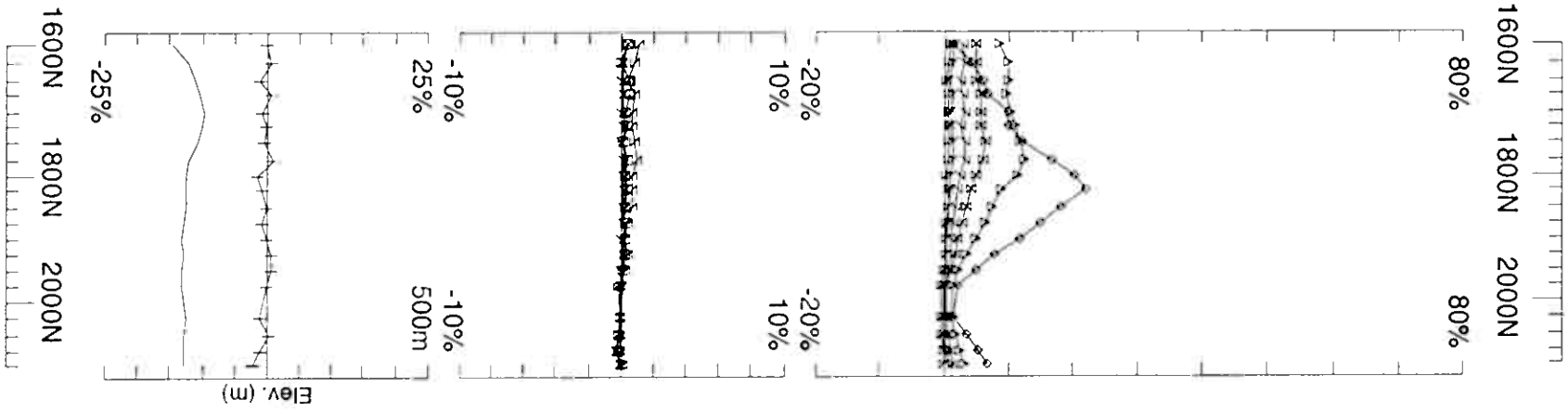
Ch1 reduced

Loop 03S	Line 9350E	1600N - 2100N	500m
	Line 9400E	1600N - 2100N	500m
	Line 9450E	1600N - 2100N	500m
	Line 9500E	1500N - 2100N	600m
	Seljaasen	Loop 03S Total	**2100m**

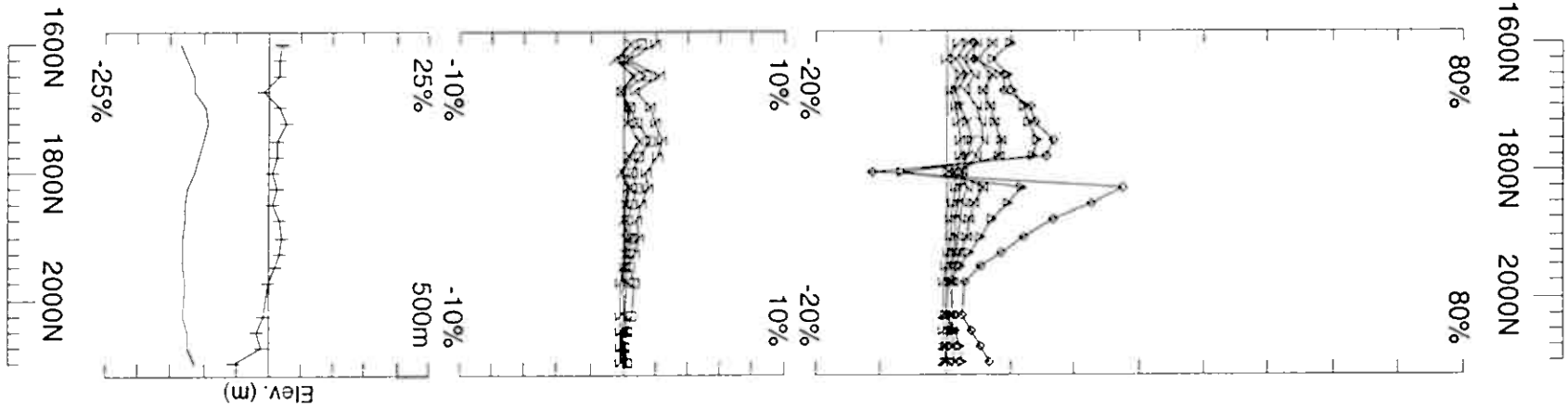
Loop 03S - continuous norm



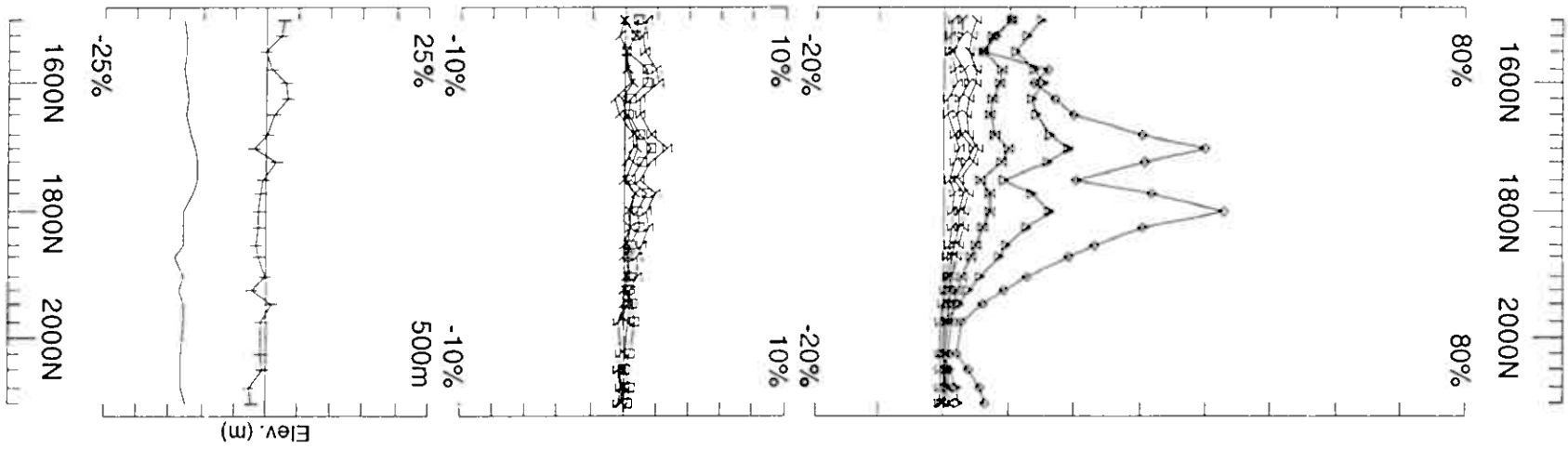
Loop: 03S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 9350N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 9400N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 9450N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Seljassen Grid
Line: 9500N	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6

Meikjeaer

Loop 01

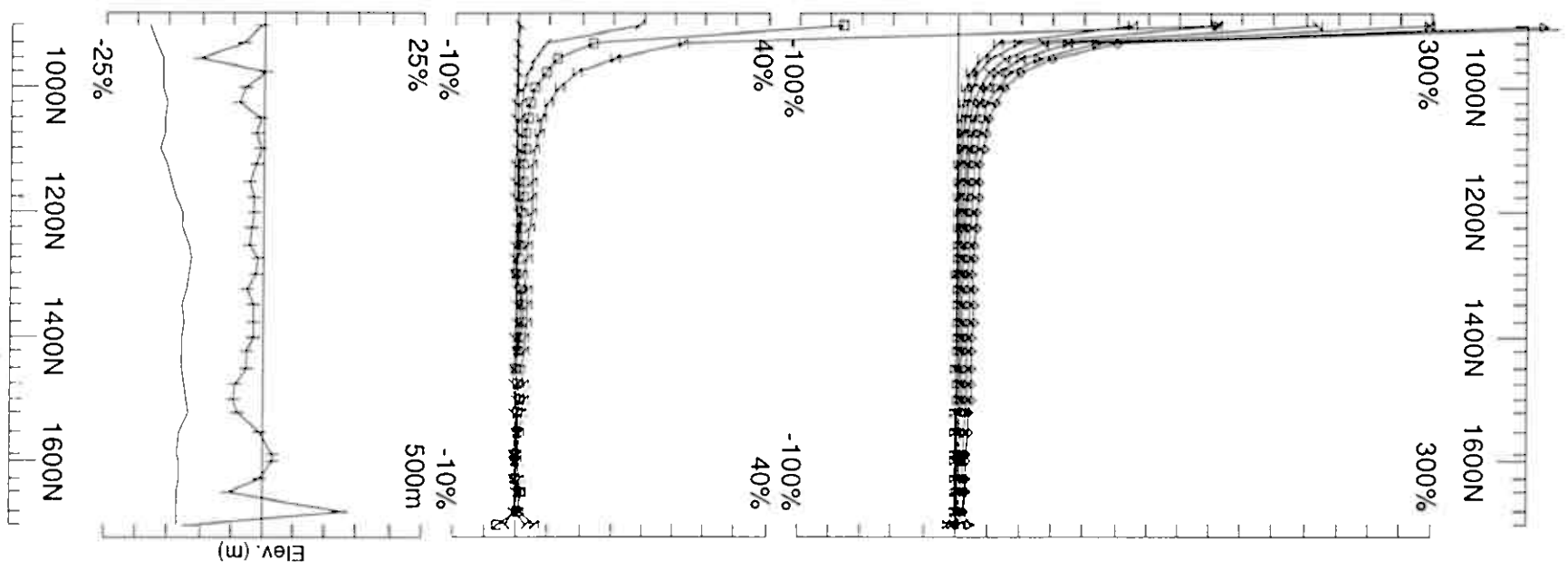
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (529925, 6535850, 100 m.a.s.l.)

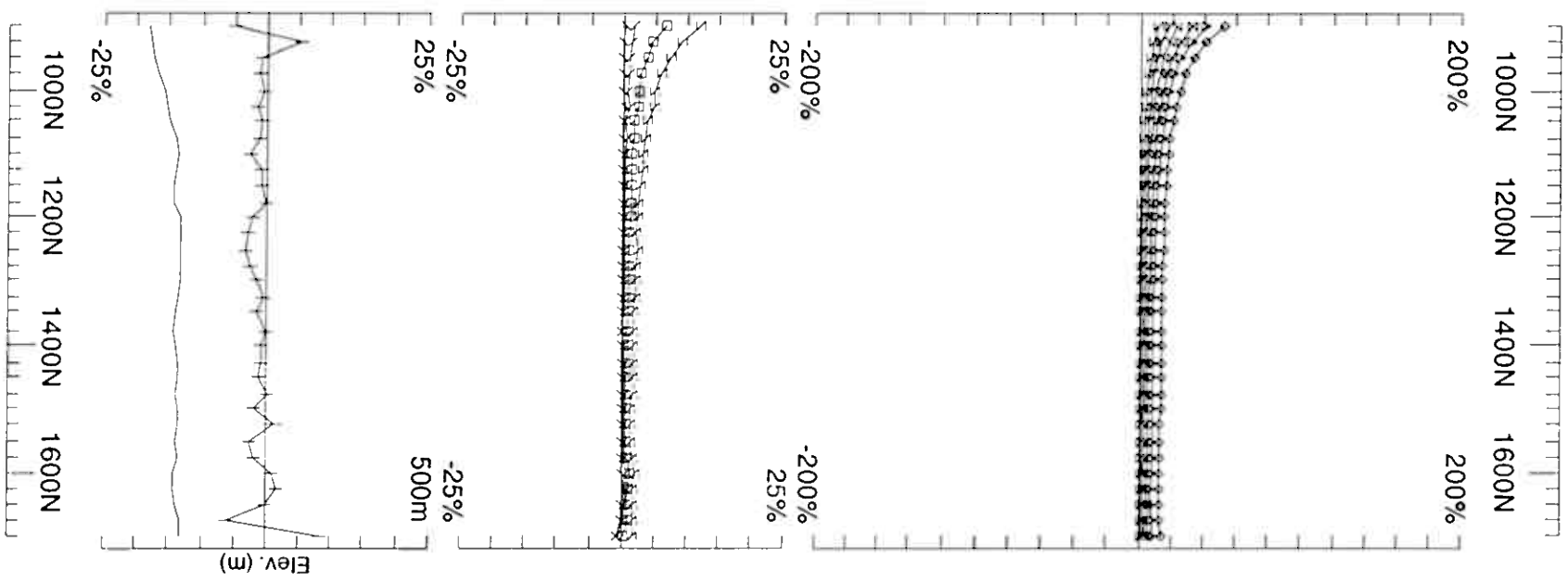
Ch1 reduced

Loop 01	Line 3100E	875N - 1725N	850m
	Line 3200E	875N - 1725N	850m
	Line 3300E	825N - 1725N	900m
	Line 3400E	450N - 1725N	1275m
	Line 3500E	450N - 1725N	1275m
	Line 3600E	475N - 1725N	1250m
	Line 3700E	400N - 550N	150m
		700N - 1725N	1025m
	Line 3800E	475N - 1725N	1250m
	Line 3900E	600N - 1725N	1125m
	Line 4000E	575N - 1725N	1150m
	Meikjeaer	Loop 01 Total	11100m

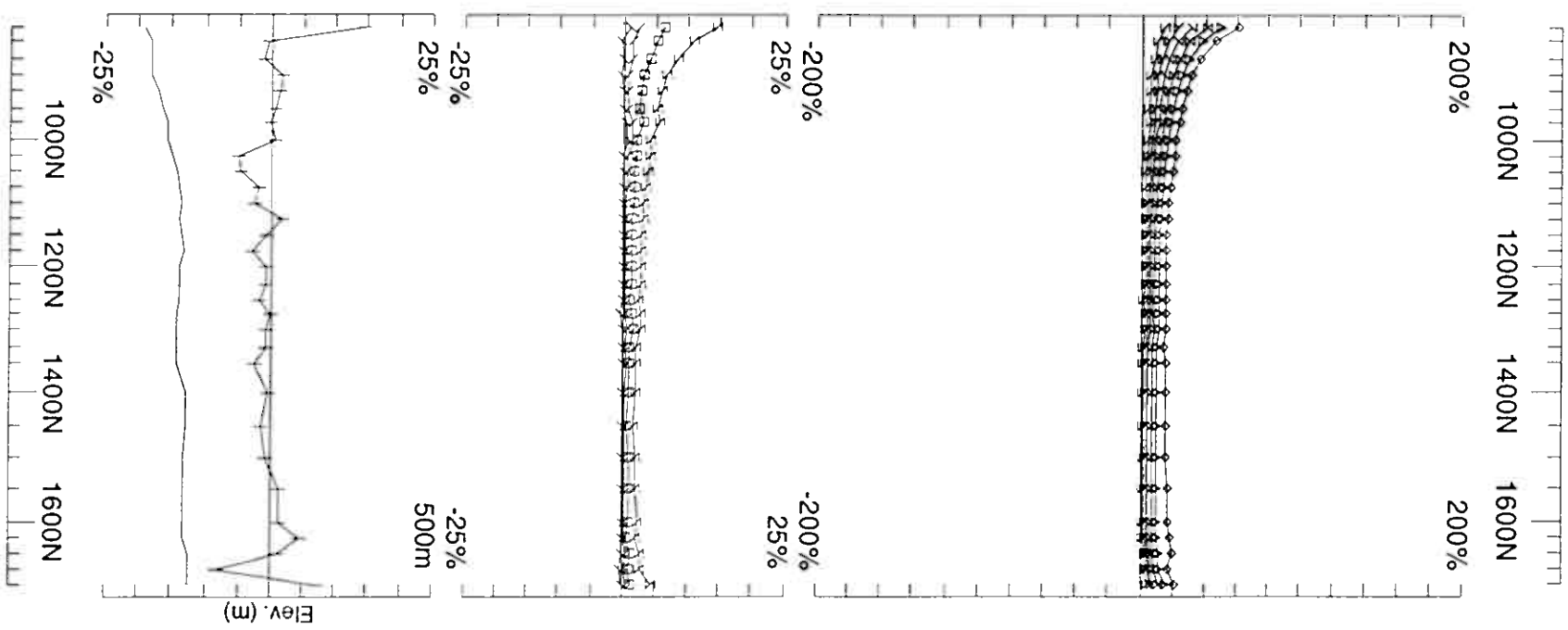
Loop 01 - point norm



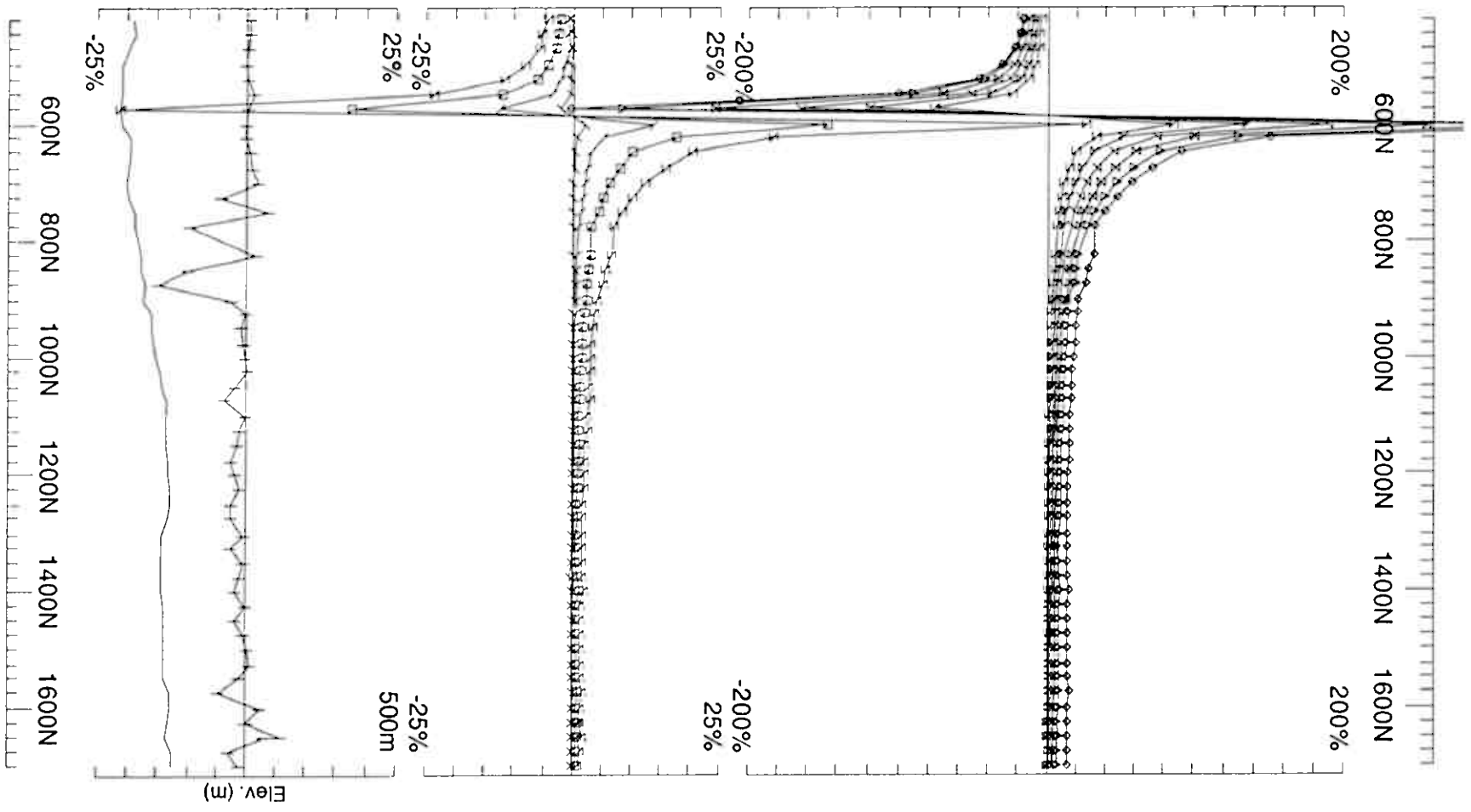
Loop: 01 Line: 3100E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 20/6/6 Reduced : 5/9/6 Plotted : 5/9/6



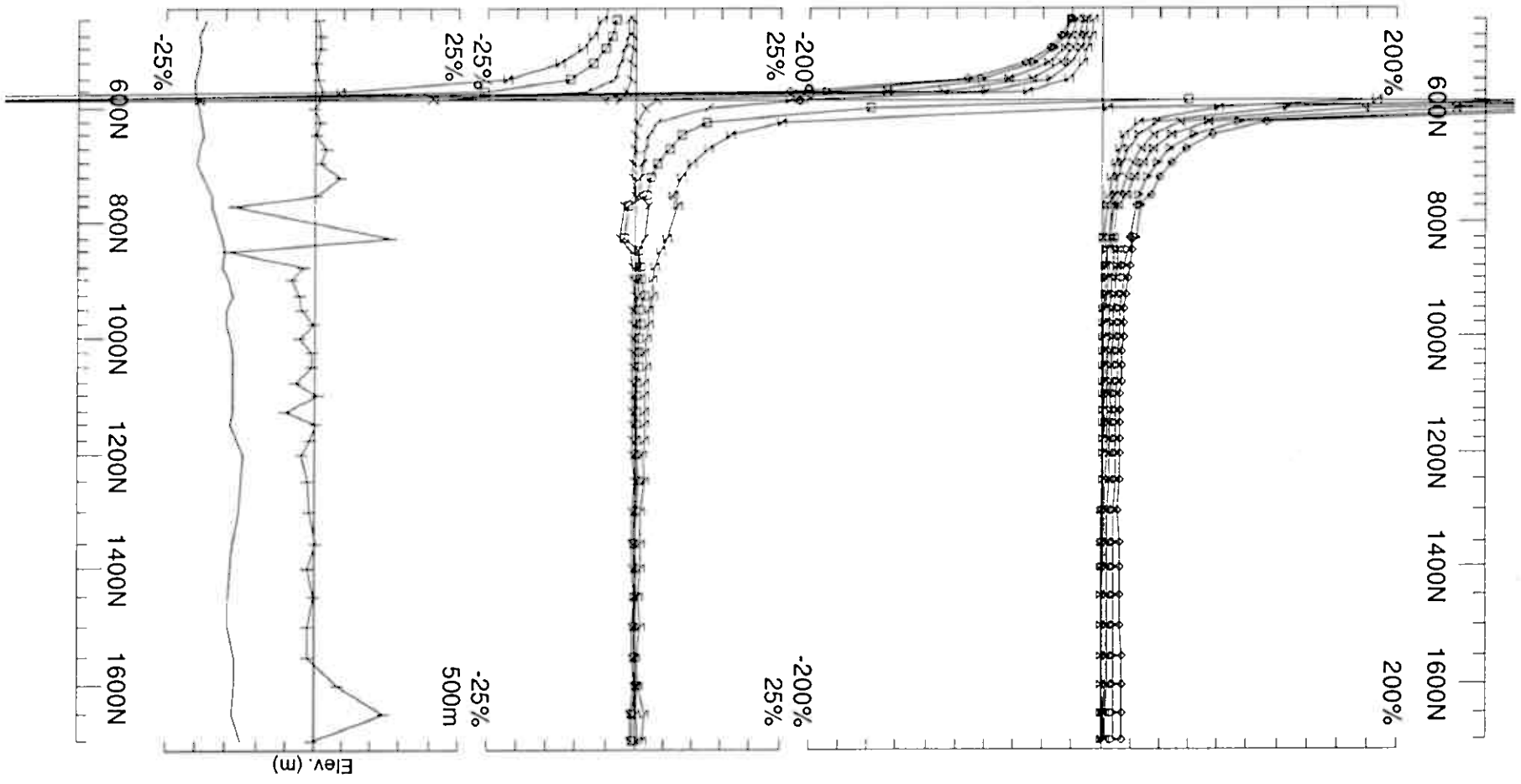
Loop: 01 Line: 3200E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 20/6/6 Reduced : 5/9/6 Plotted : 5/9/6



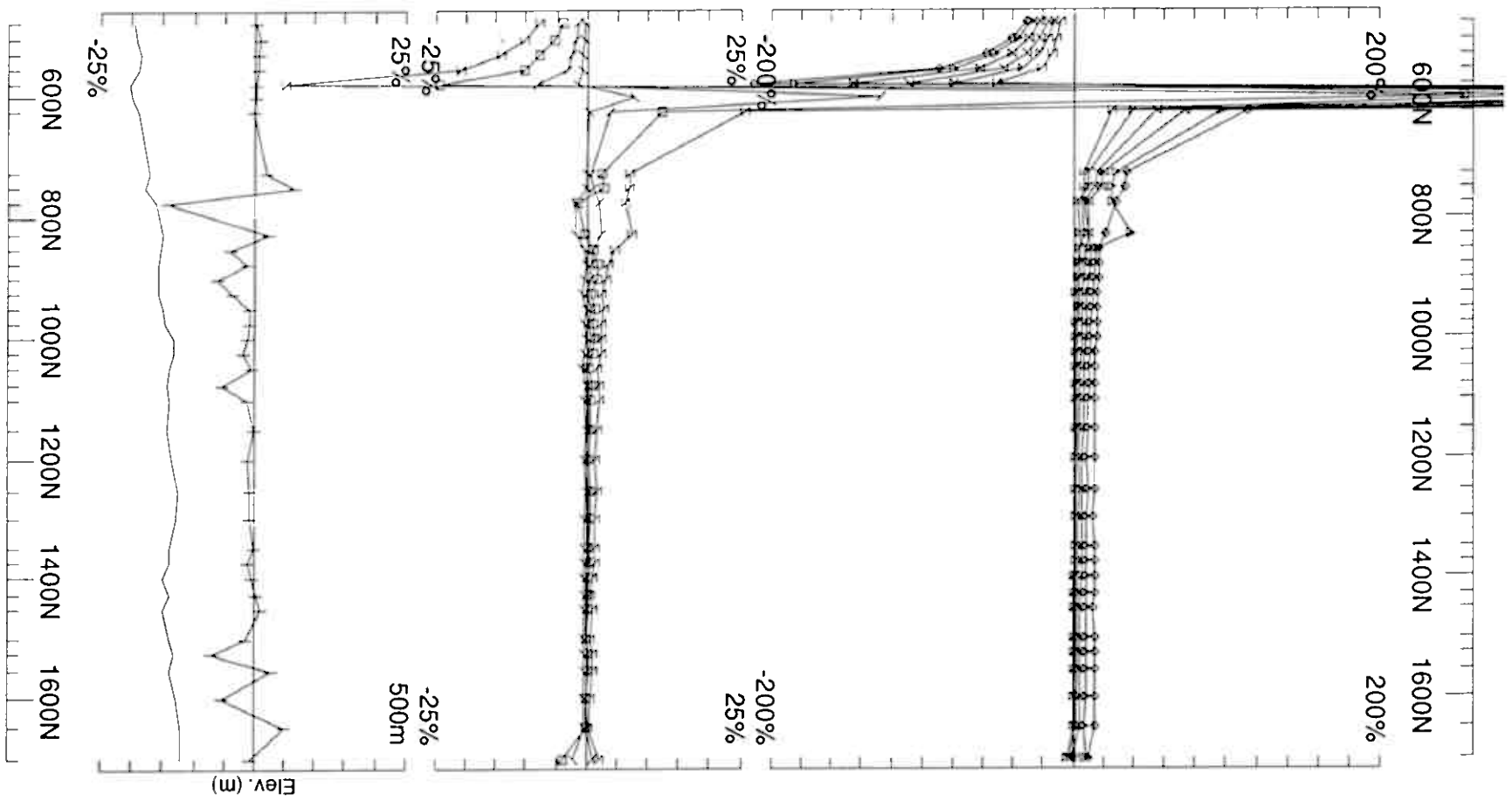
Loop: 01 Line: 3300E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed: 19/6/6 Reduced: 5/9/6 Plotted: 5/9/6



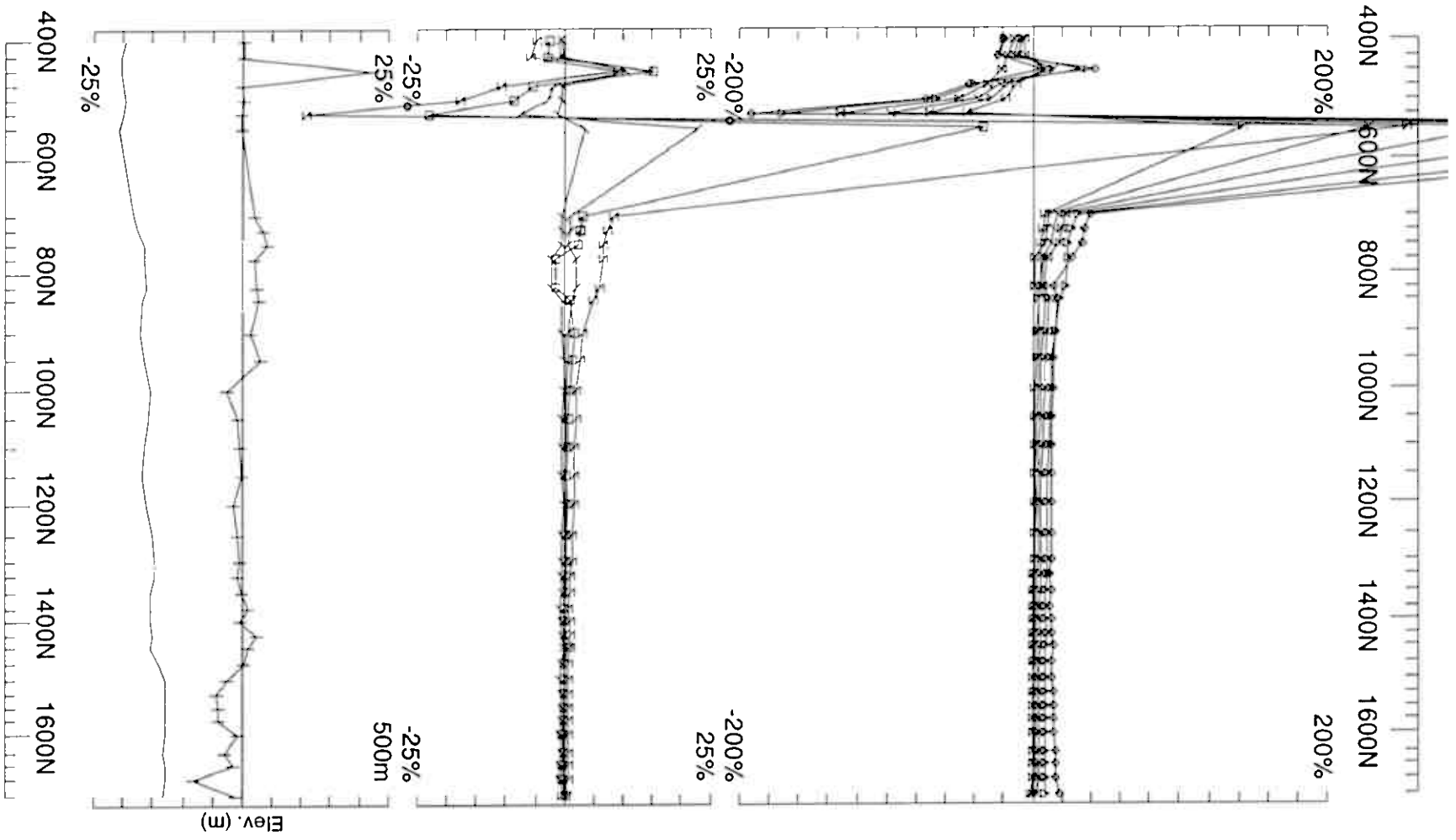
Loop: 01 Line: 3400E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 19/6/6 Reduced : 19/6/6 Plotted : 5/9/6



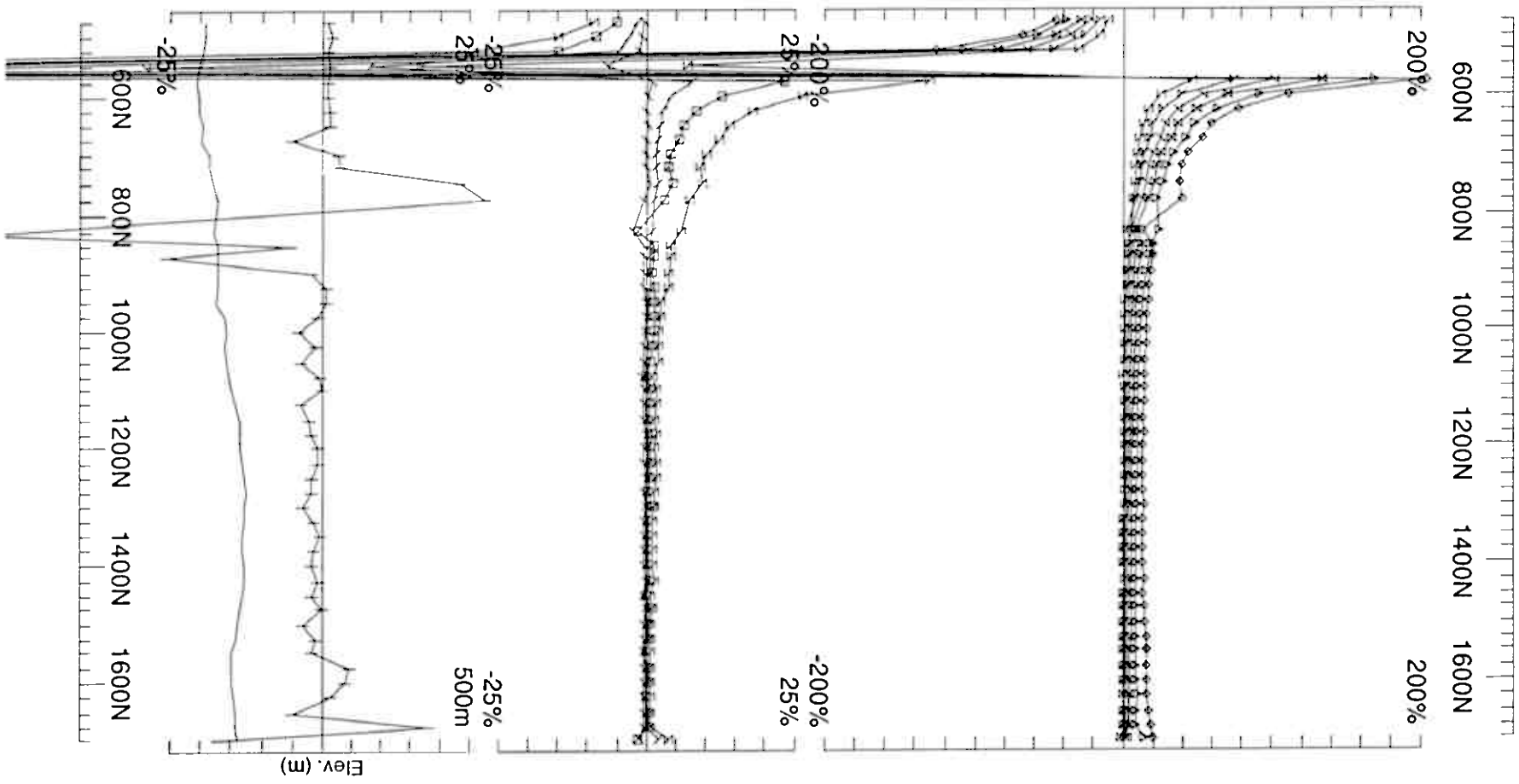
Loop: 01 Line: 3500E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 19/6/6 Reduced : 19/6/6 Plotted : 5/9/6



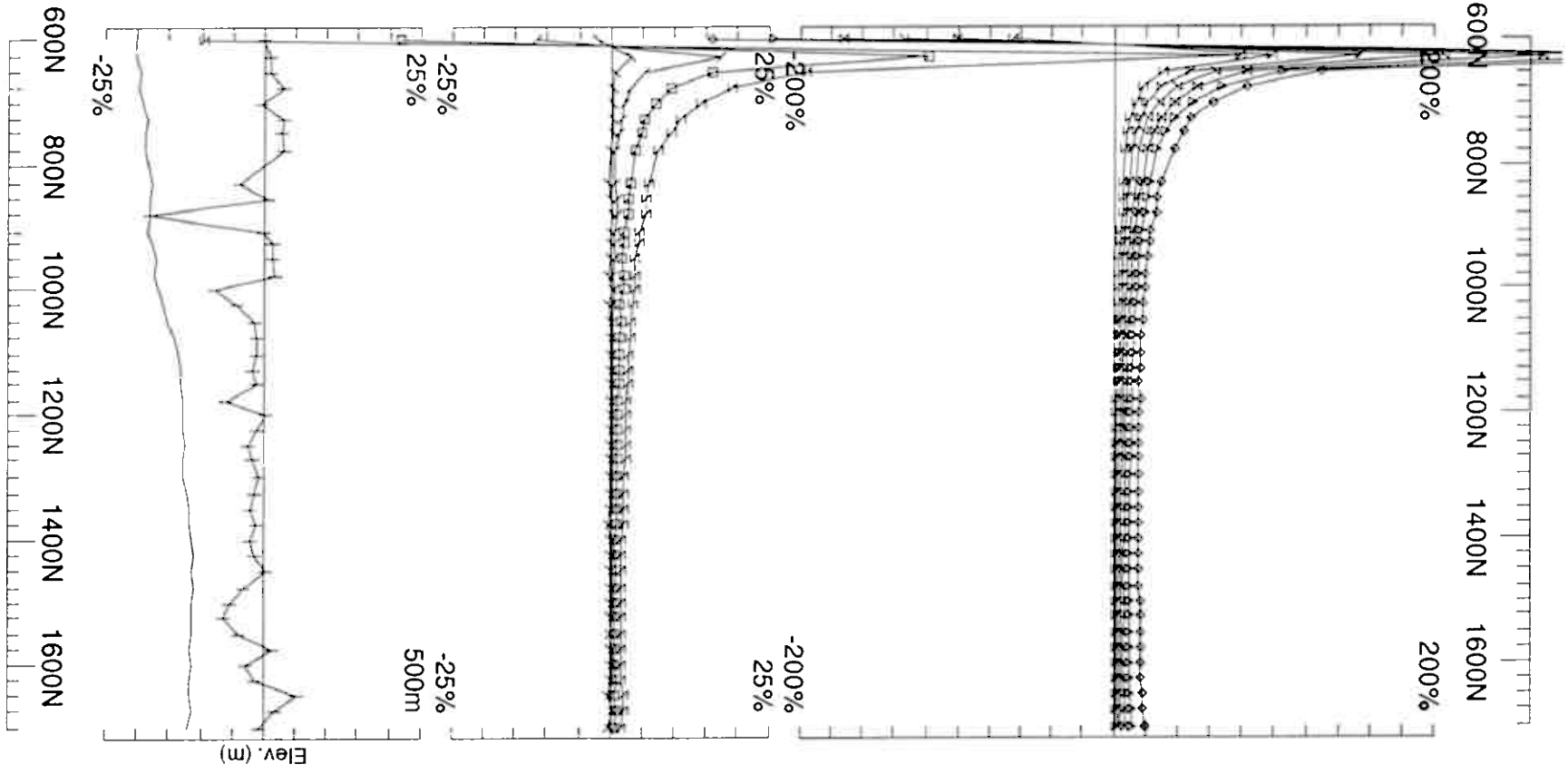
Loop: 01 Line: 3600E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 19/6/6 Reduced : 5/9/6 Plotted : 5/9/6



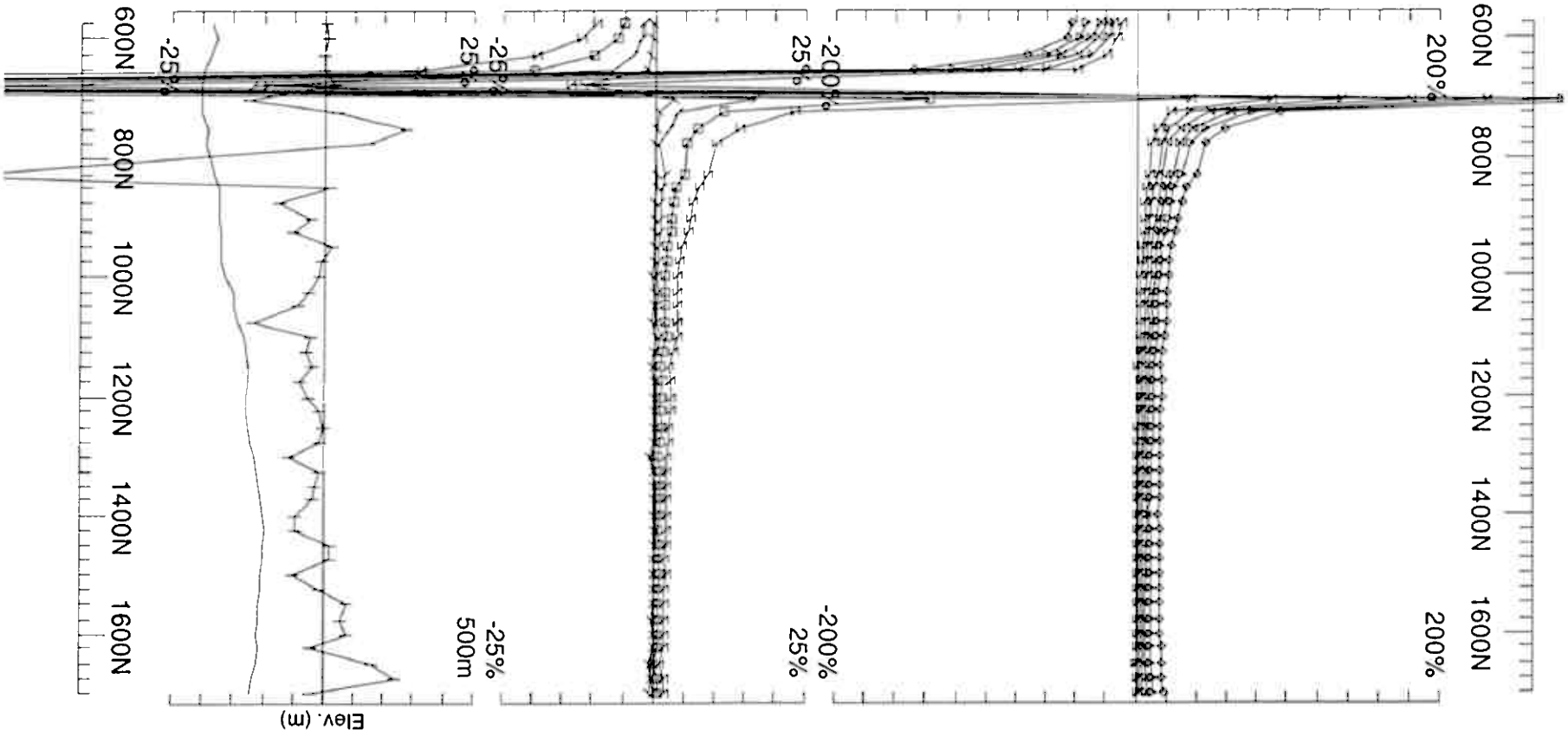
Loop: 01 Line: 3700E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 5/9/6



Loop: 01 Line: 3800E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 18/6/6 Reduced : 5/9/6 Plotted : 5/9/6



Loop: 01 Line: 3900E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 18/6/6 Reduced : 5/9/6 Plotted : 5/9/6



Loop: 01 Line: 4000E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (2725,2650,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 18/6/6 Reduced : 5/9/6 Plotted : 5/9/6

Meikjeaer

Loop 02

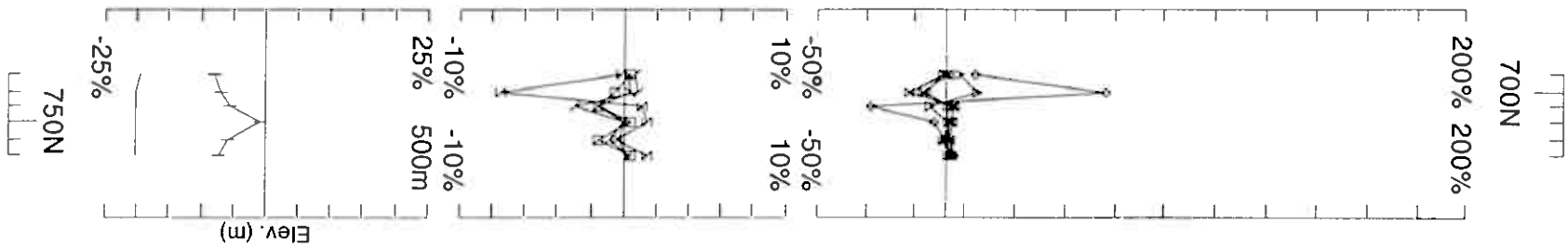
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (530825, 6536125, 100 m.a.s.l.)

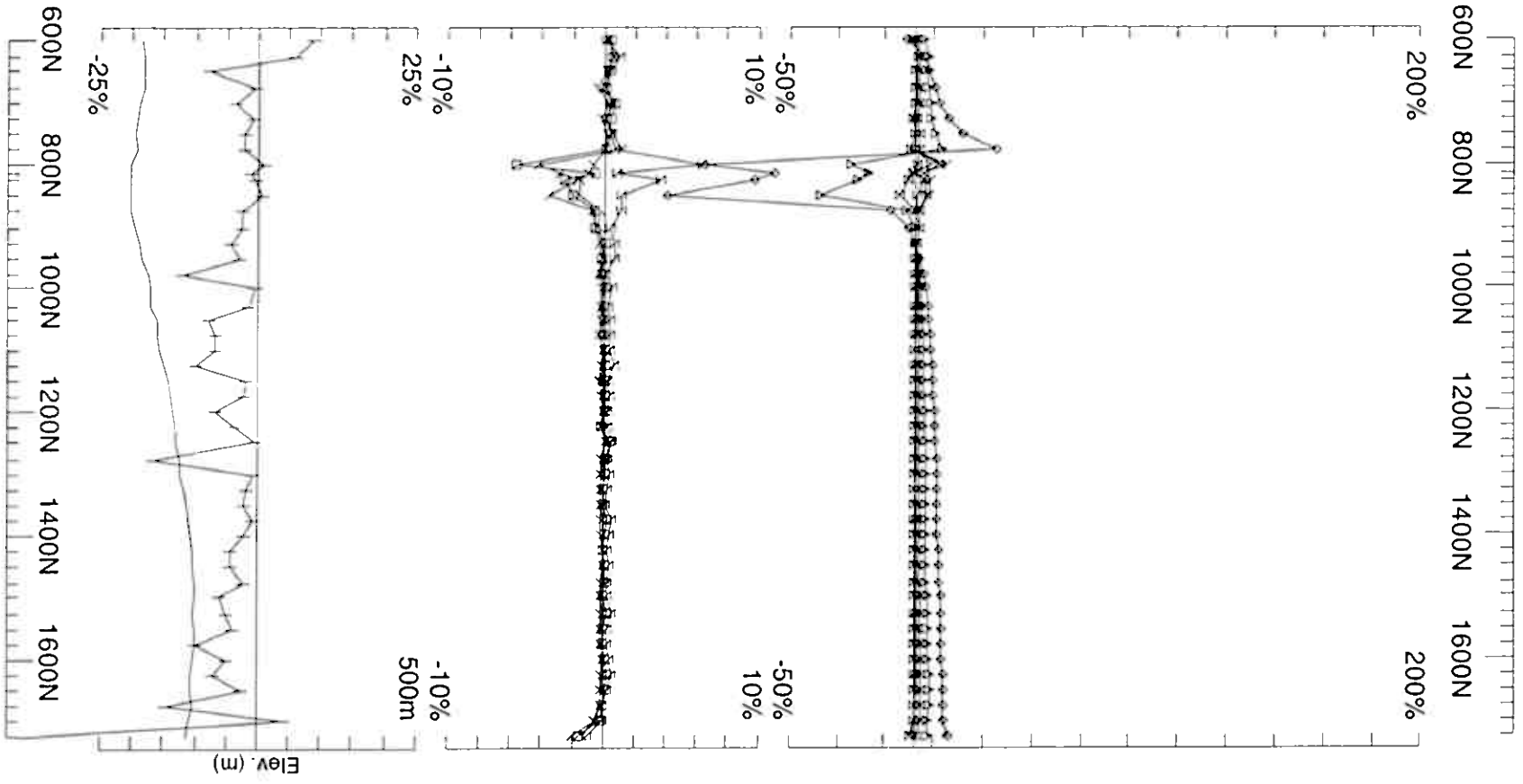
Ch1 reduced

Loop 02	Line 4100E	650N - 800N	150m
in-loop	Line 4200E	575N - 1750N	1175m
	Line 4300E	525N - 1750N	1225m
	Line 4400E	525N - 1750N	1225m
	Line 4500E	625N - 1750N	1125m
	Line 4600E	700N - 1750N	1050m
	Line 4700E	875N - 1750N	875m
	Line 4800E	900N - 1750N	850m
	Line 4900E	925N - 1750N	825m
	Line 5000E	900N - 1750N	850m
	Line 5050E	900N - 1750N	850m
Loop 02N	Line 4100E	650N - 800N	500m
off-loop	Line 4200E	1750N - 2250N	500m
	Line 4300E	1750N - 2250N	500m
	Line 4400E	1750N - 2250N	500m
	Meikjeaer	Loop 02 Total	12200m

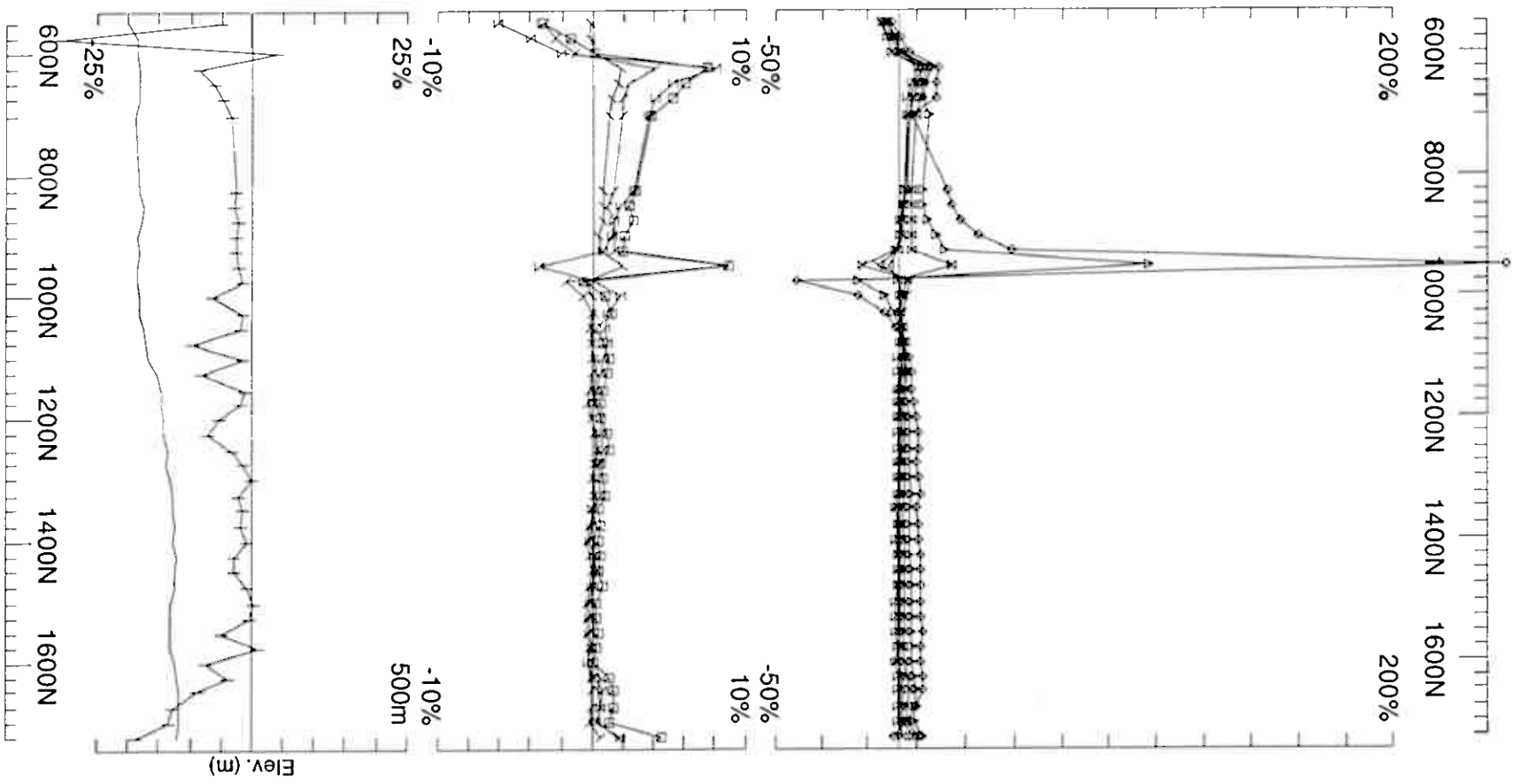
Loop 02 - point norm



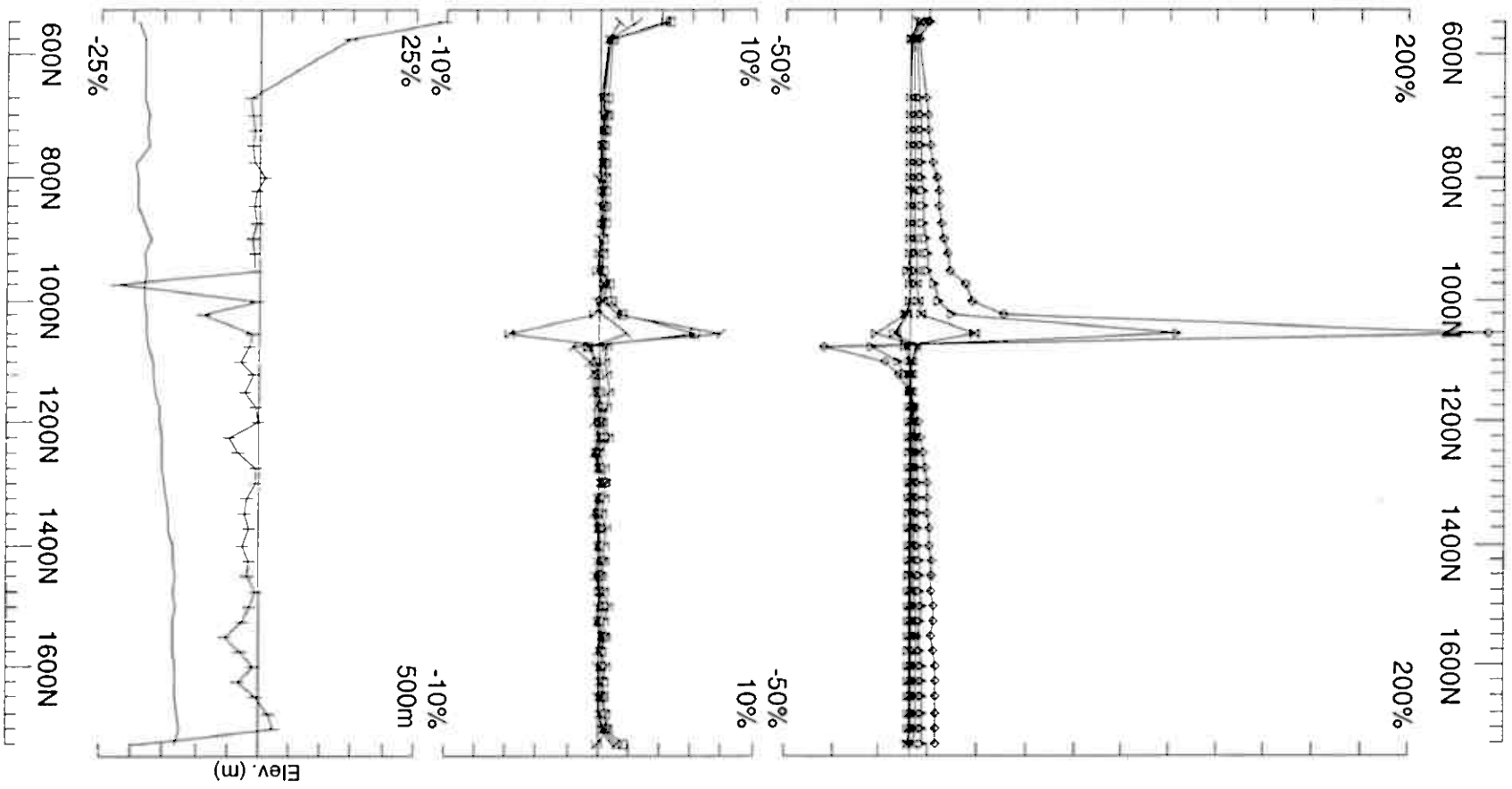
Loop: 02 Line: 4100E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



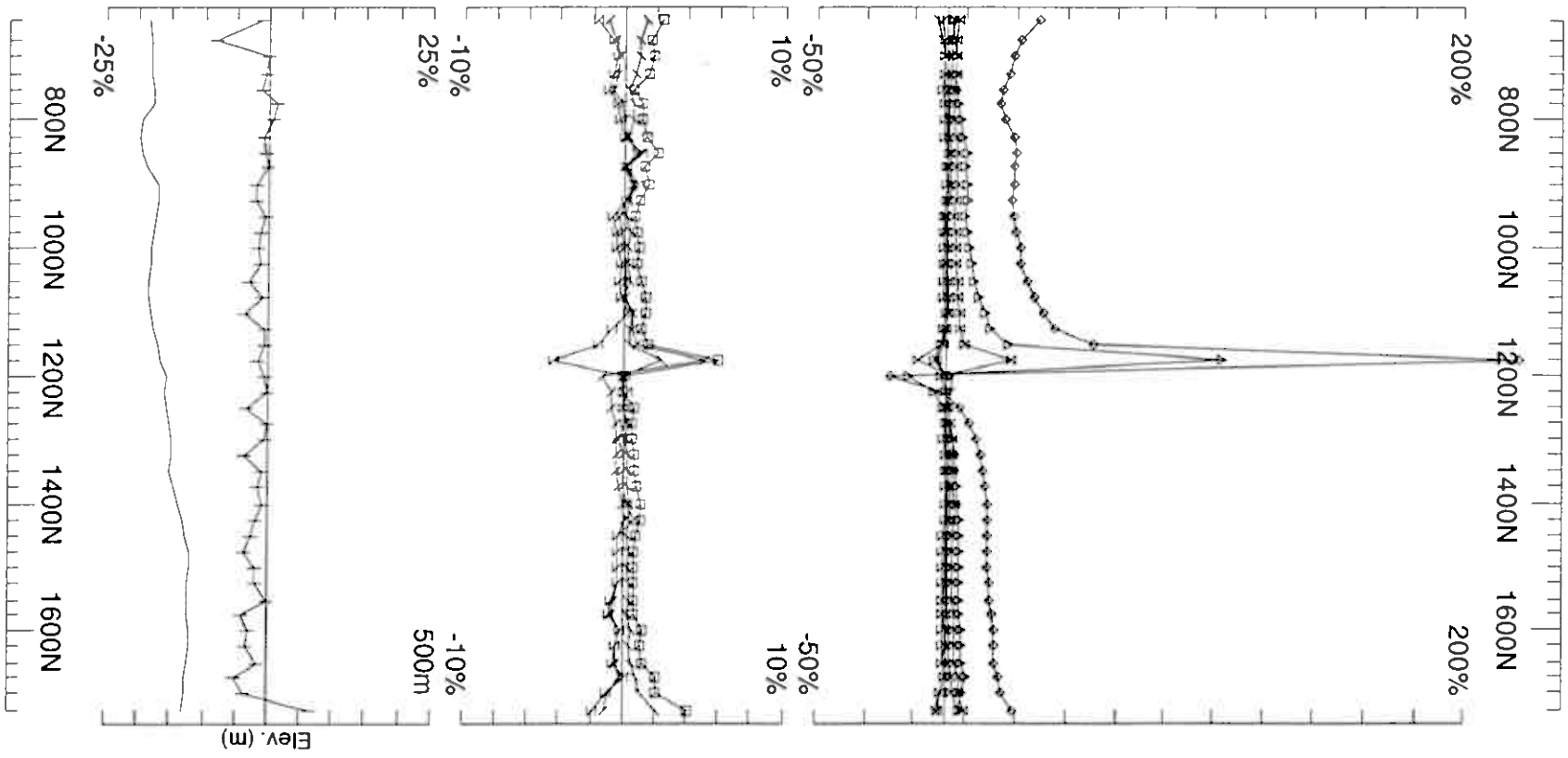
Loop: 02 Line: 4200E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



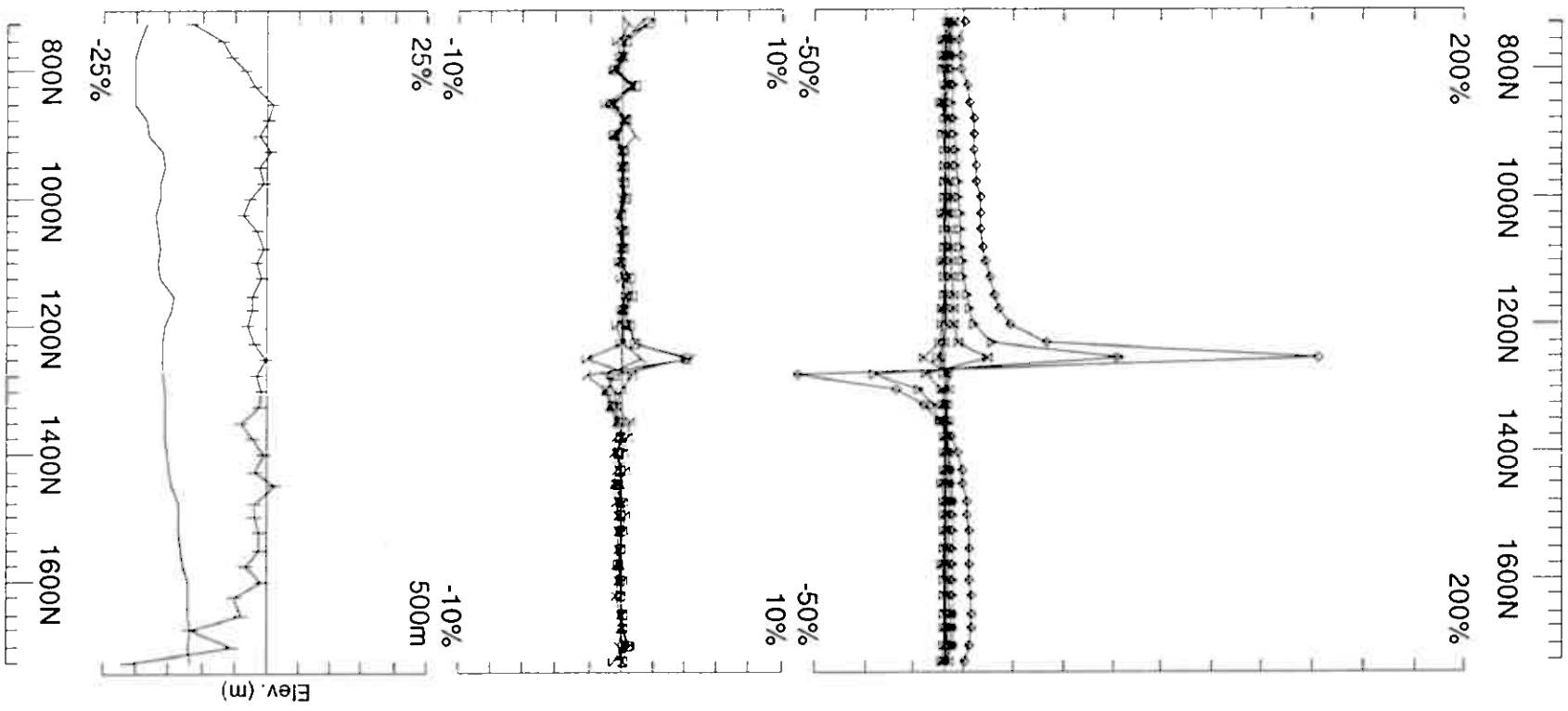
Loop: 02 Line: 4300E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



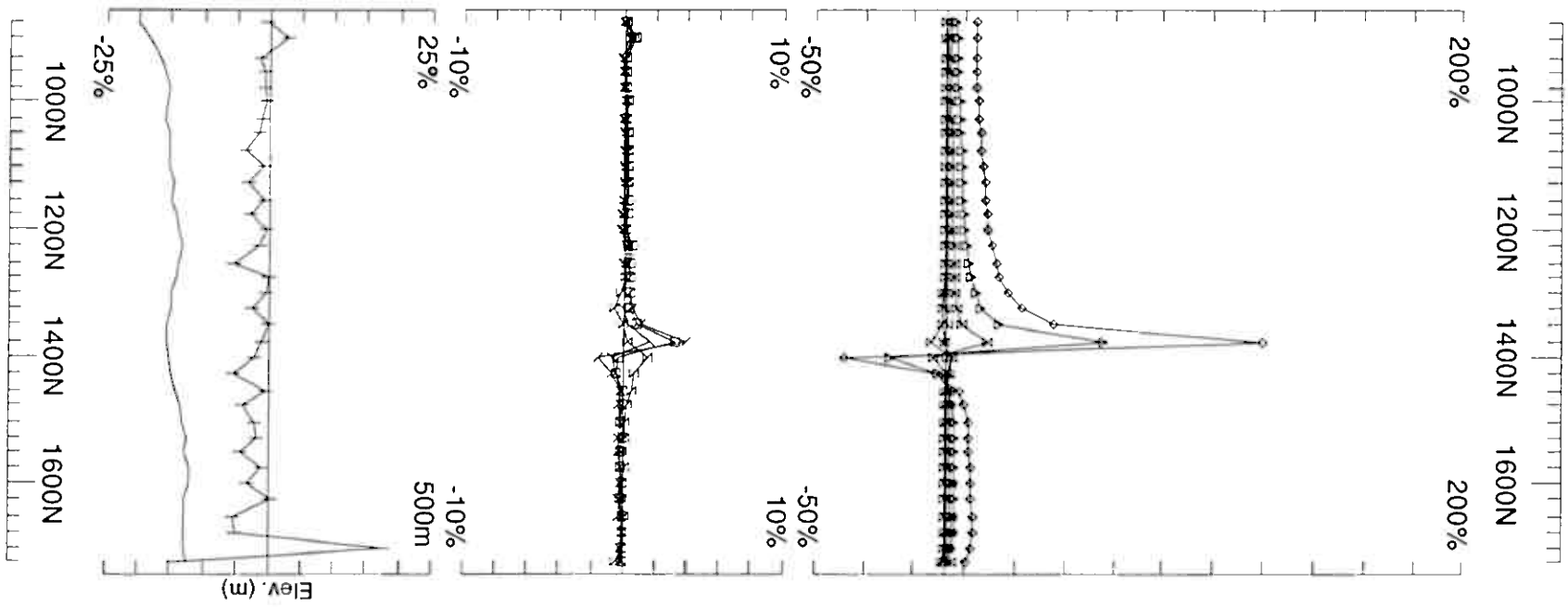
Loop: 02 Line: 4400E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



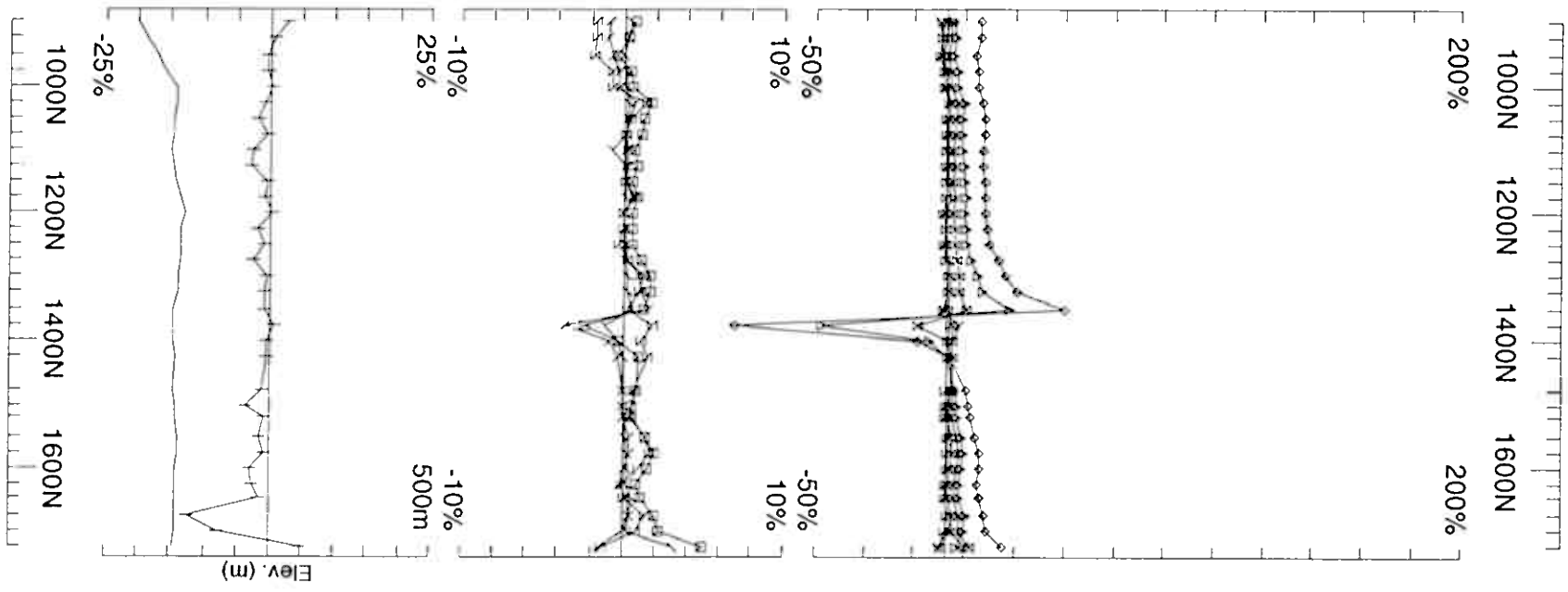
Loop: 02 Line: 4500E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Surveyed : 14/6/6 Reduced : 6/9/6 Plotted : 6/9/6



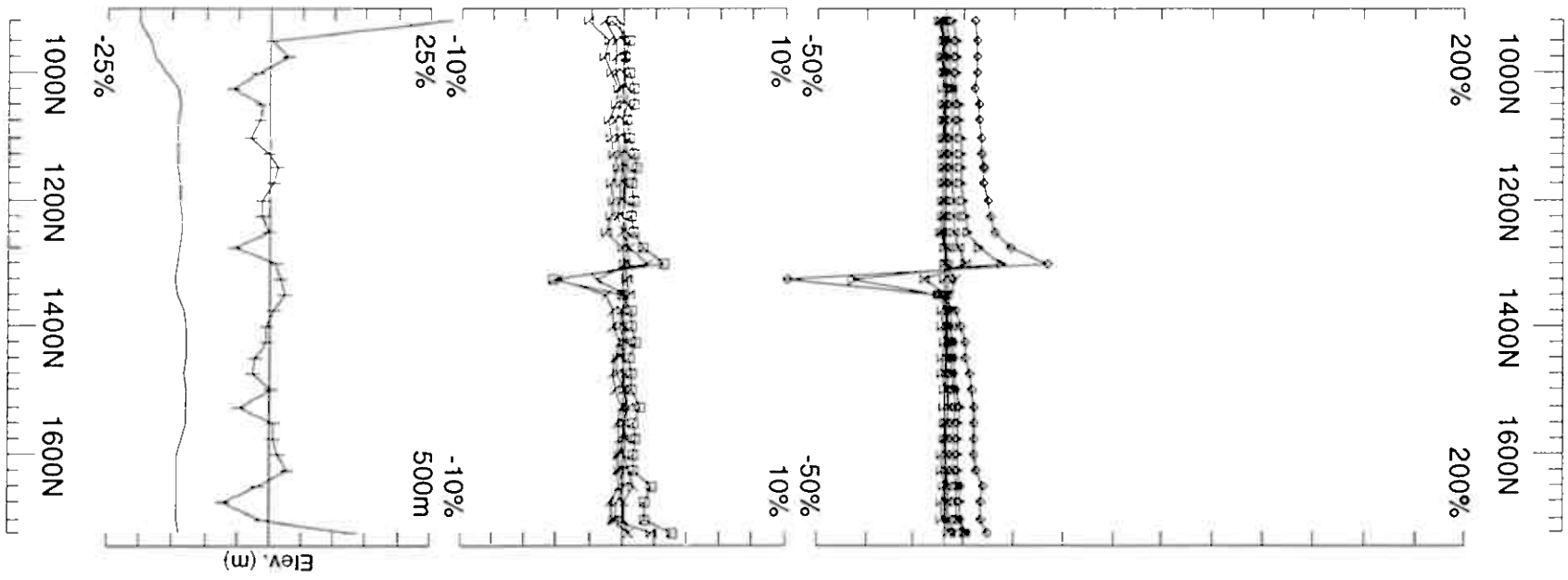
Loop: 02 Line: 4600E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



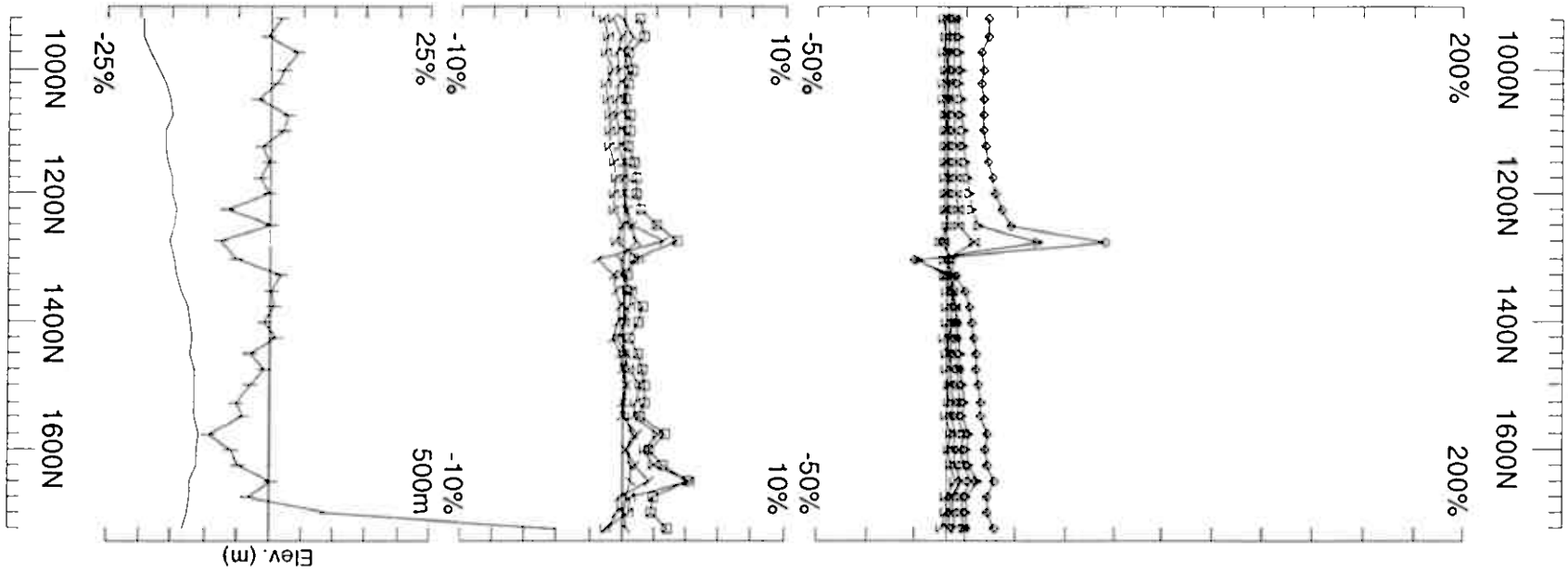
Loop: 02 Line: 4700E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



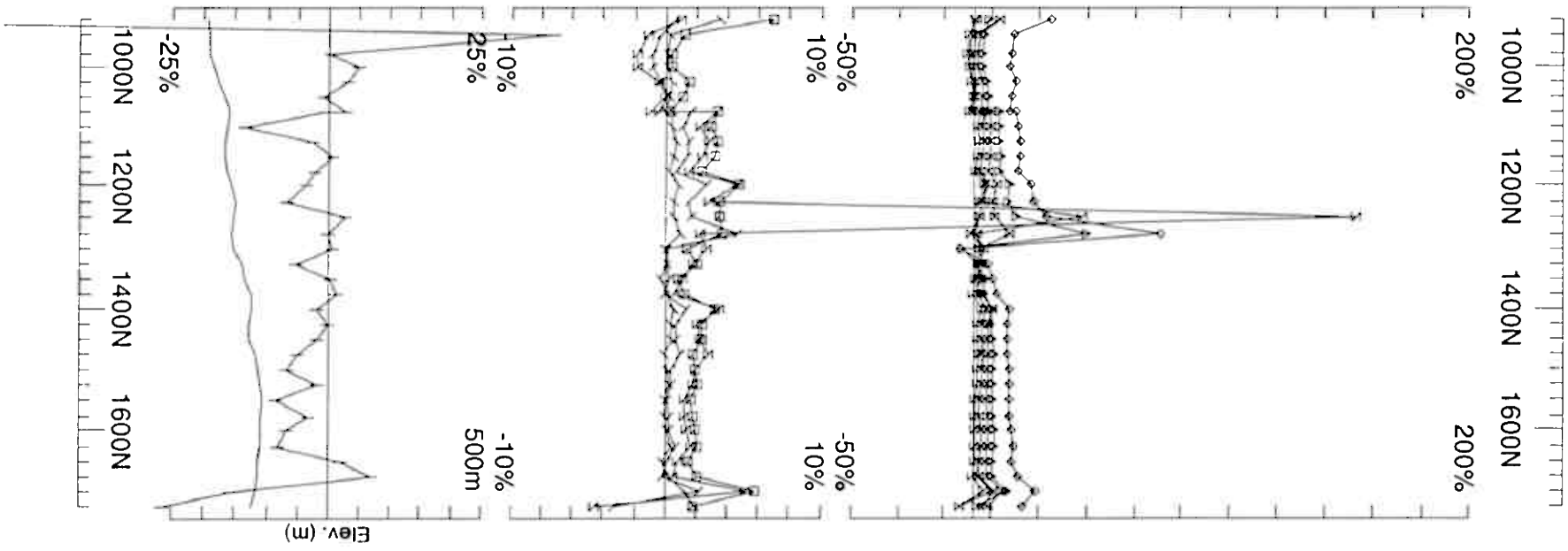
Loop: 02 Line: 4800E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



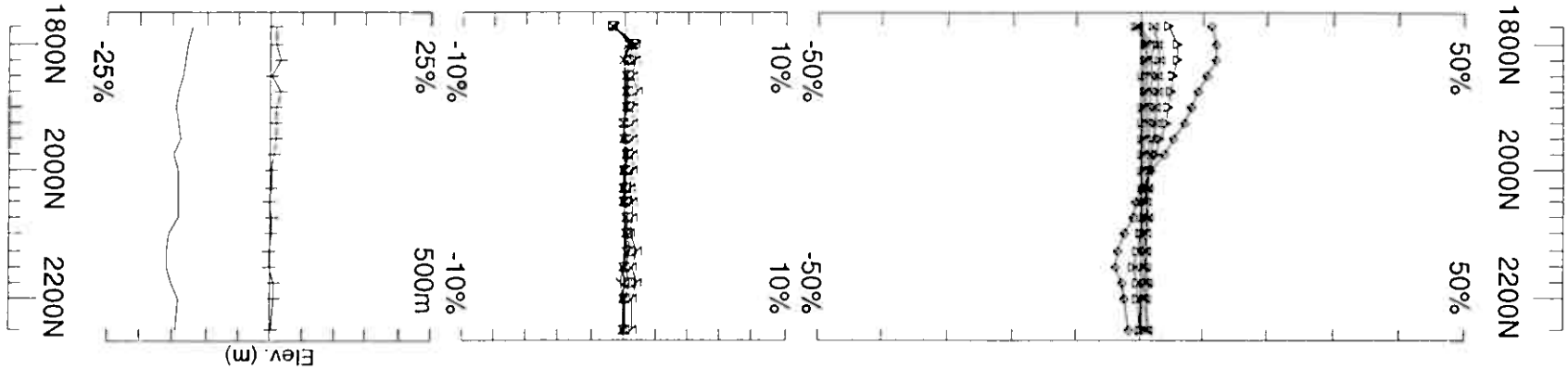
Loop: 02 Line: 4900E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 16/6/6 Reduced : 6/9/6 Plotted : 6/9/6



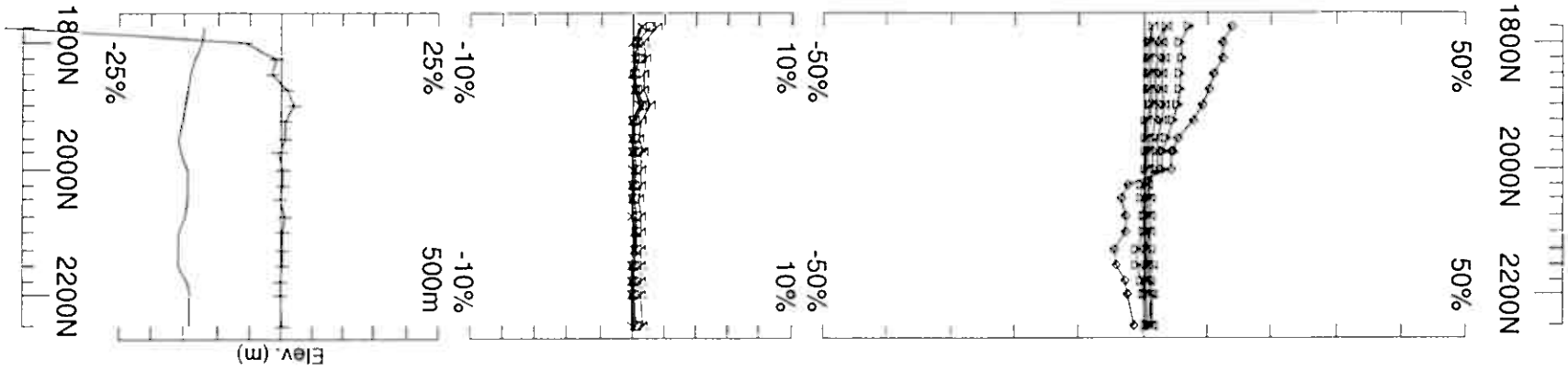
Loop: 02 Line: 5000E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



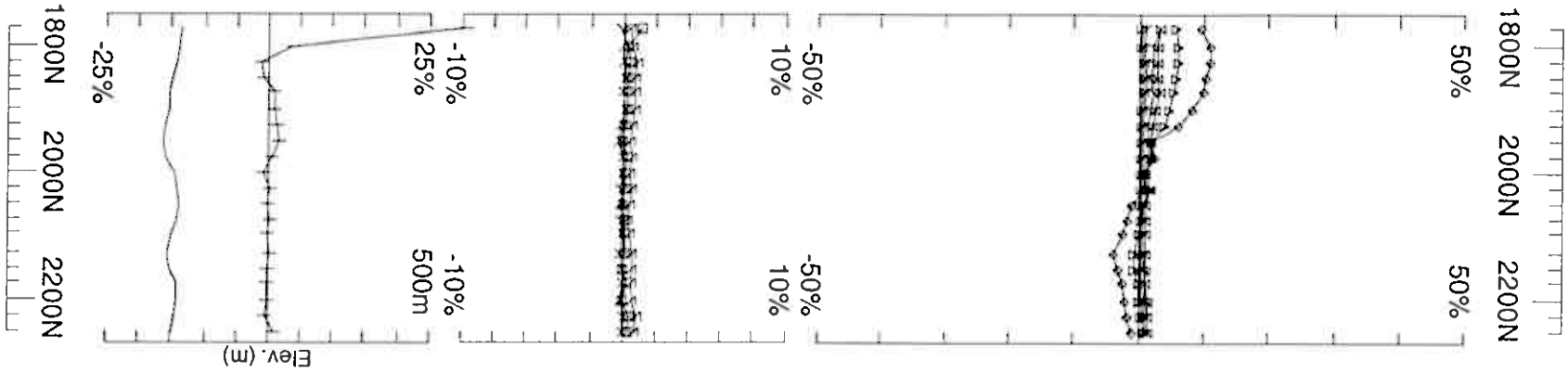
Loop: 02 Line: 5050E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



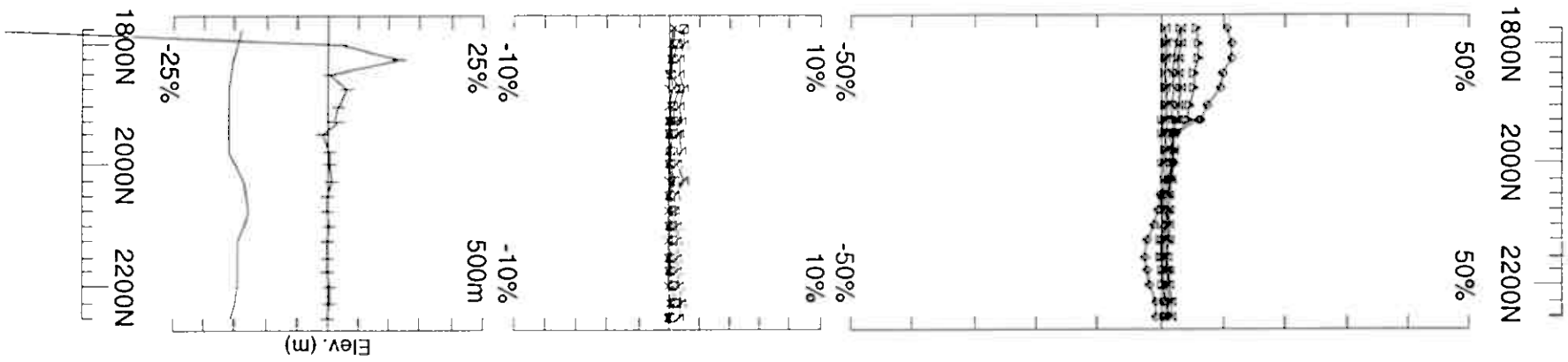
Loop: 02N Line: 4100E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02N Line: 4200E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02N Line: 4300E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02N Line: 4400E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (3625,2925,100) Base Freq. 3.251 Hz	UTEM Survey at: Meikjaer Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 15/6/6 Reduced : 6/9/6 Plotted : 6/9/6

Nystein-Vissestad

Loop 03

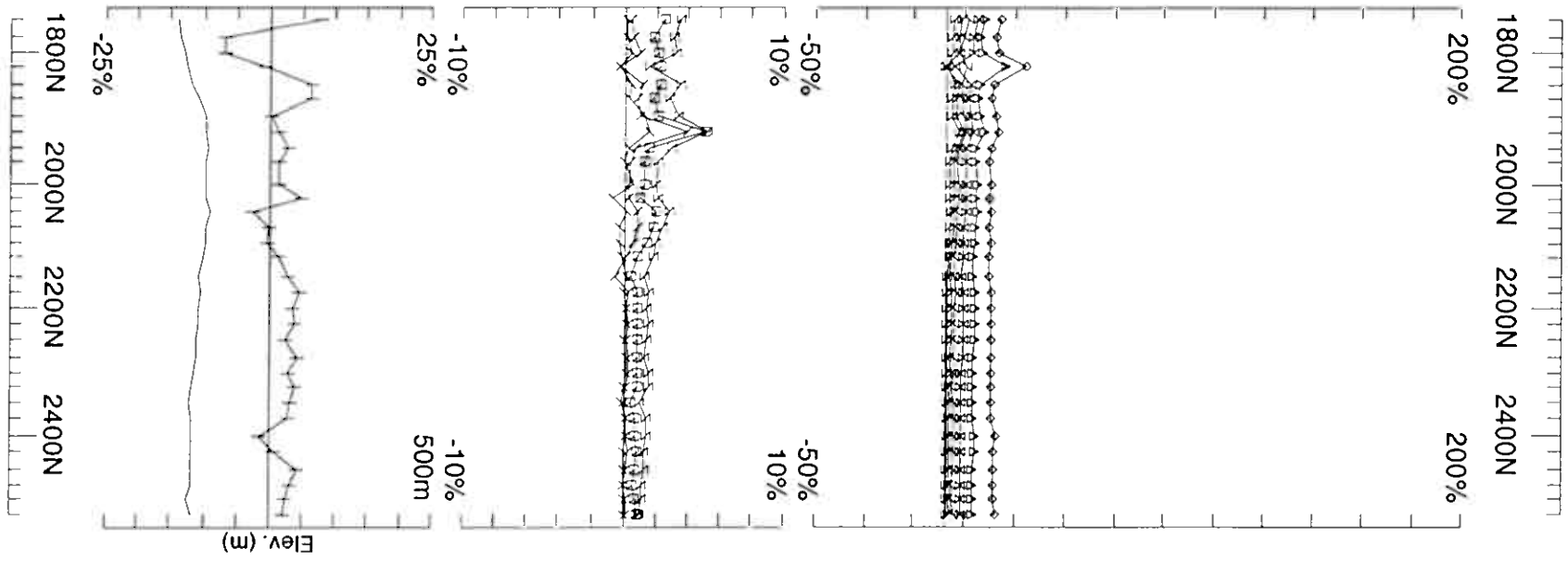
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (532800, 6538325, 100 m.a.s.l.)

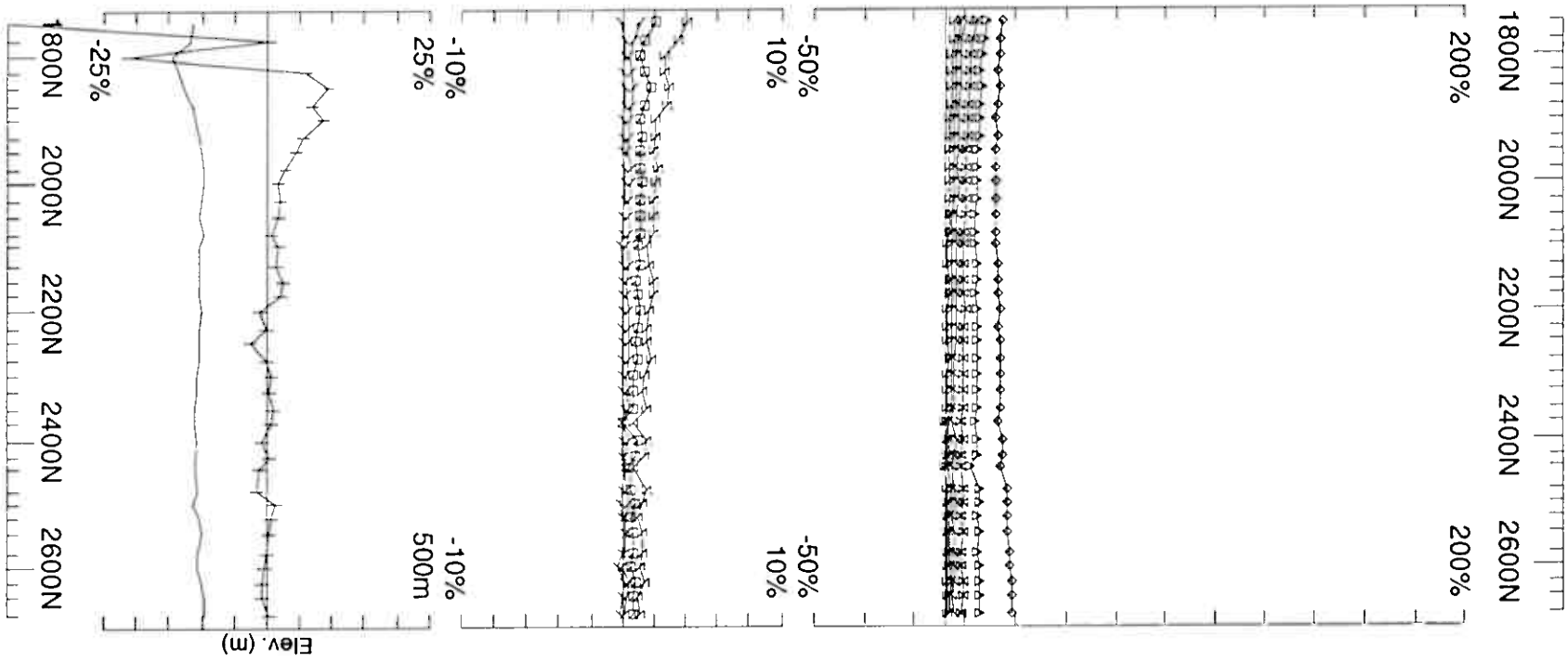
Ch1 reduced

Loop 03	Line 6500E	1725N - 2525N	800m
	Line 6700E	1725N - 2675N	950m
	Line 6900E	1725N - 2725N	1000m
	Line 7100E	1725N - 2975N	1250m
	Line 7300E	1725N - 3075N	1350m
	Line 7500E	1725N - 3075N	1350m
	Nystein-Vissestad	Loop 03 Total	6700m

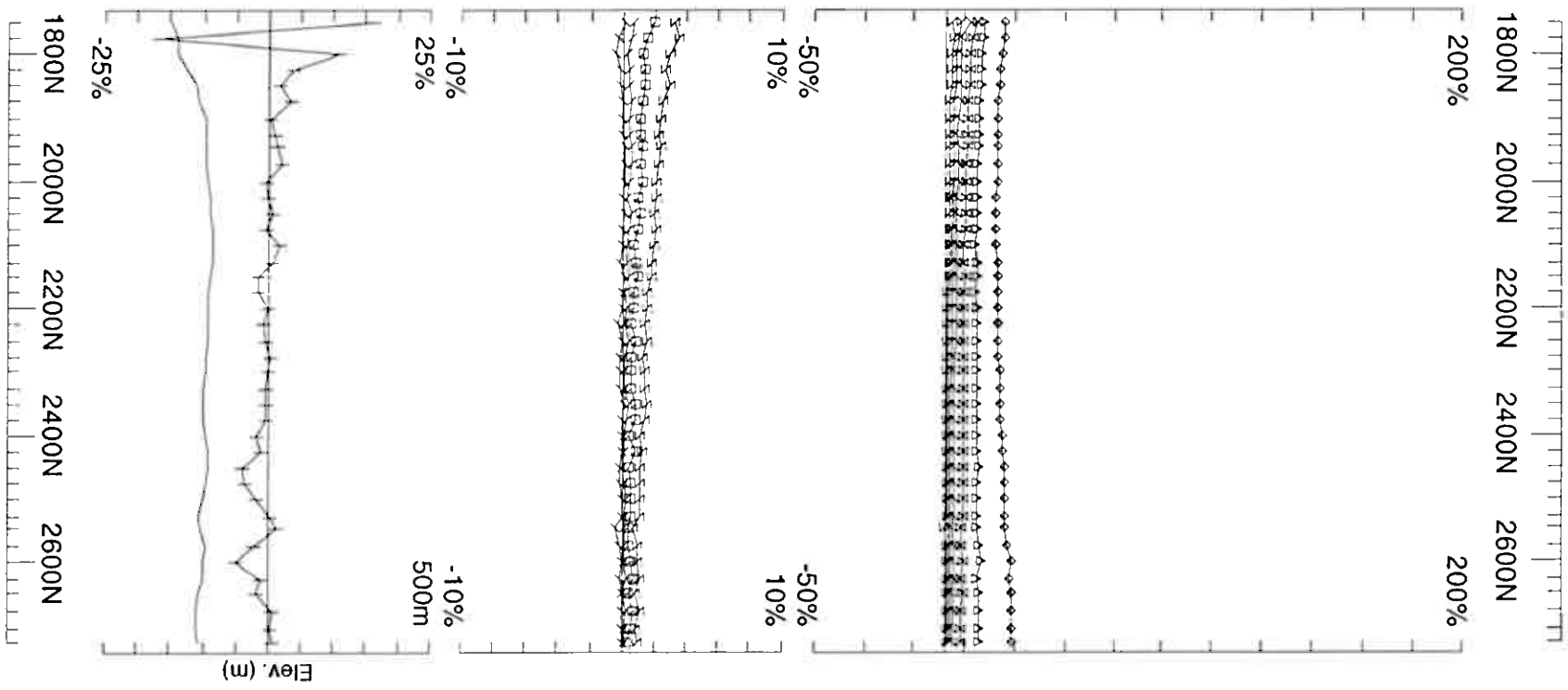
Loop 03 - point norm



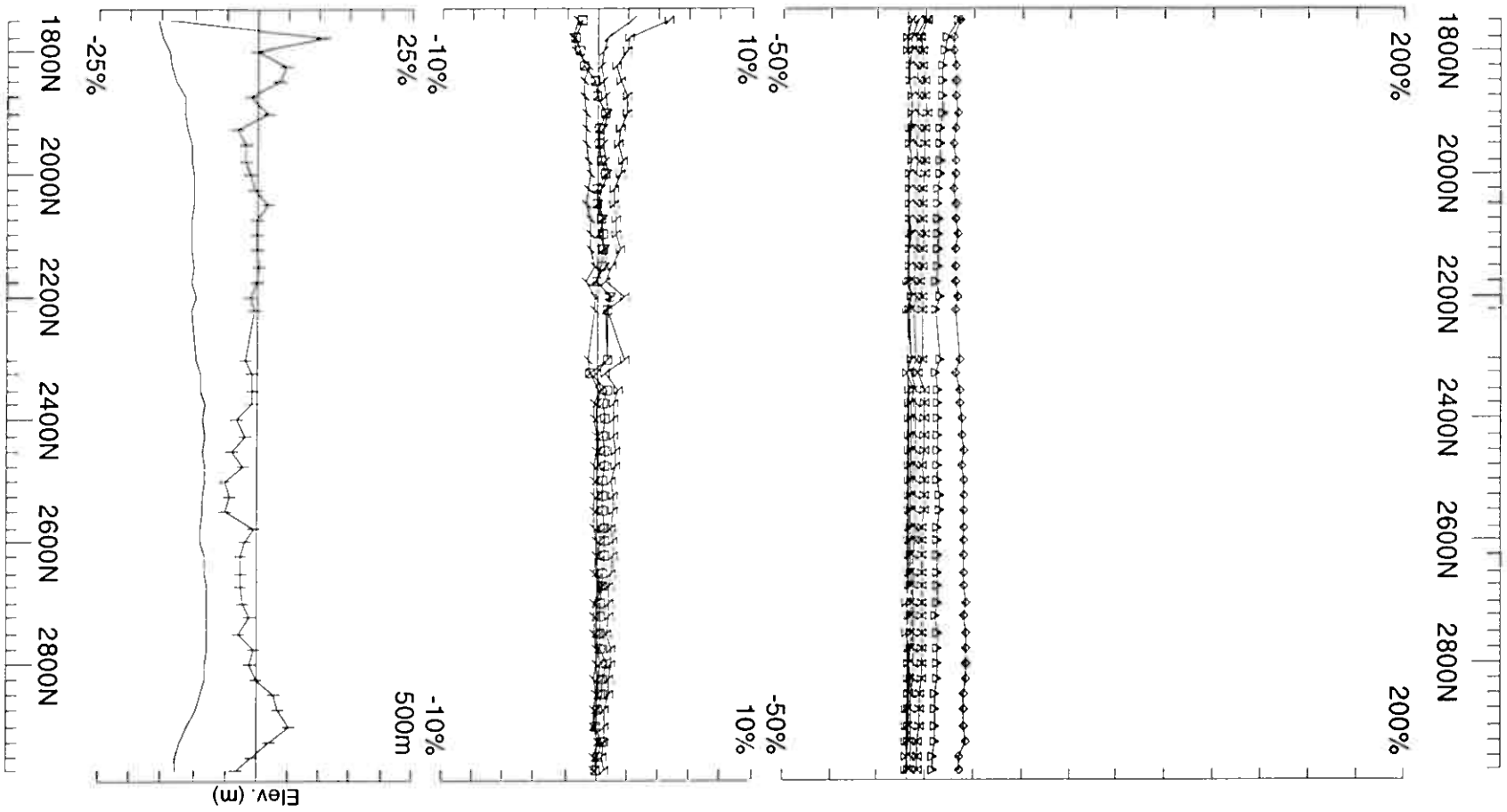
Loop: 03 Line: 6500E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



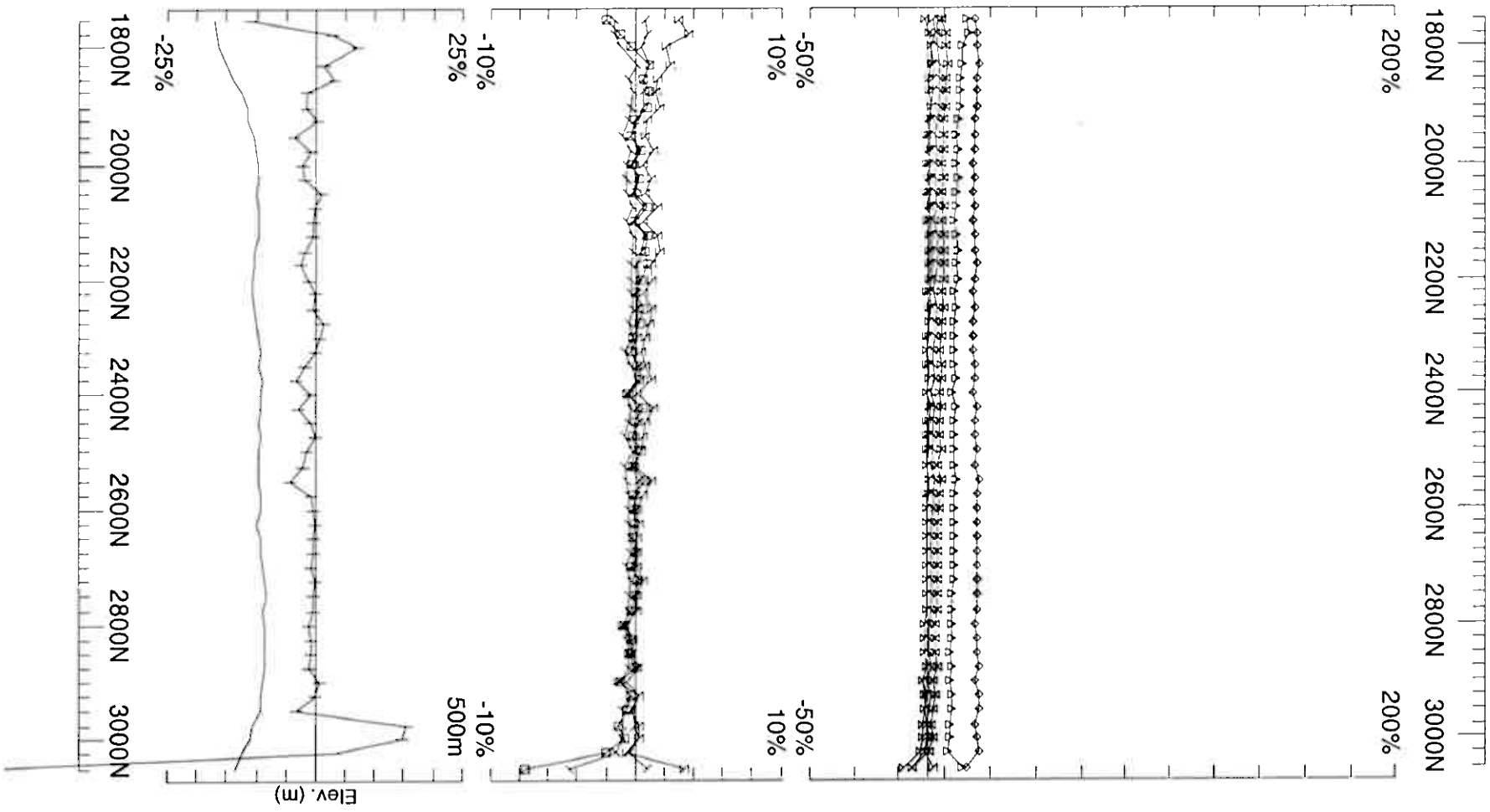
Loop: 03 Line: 6700E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



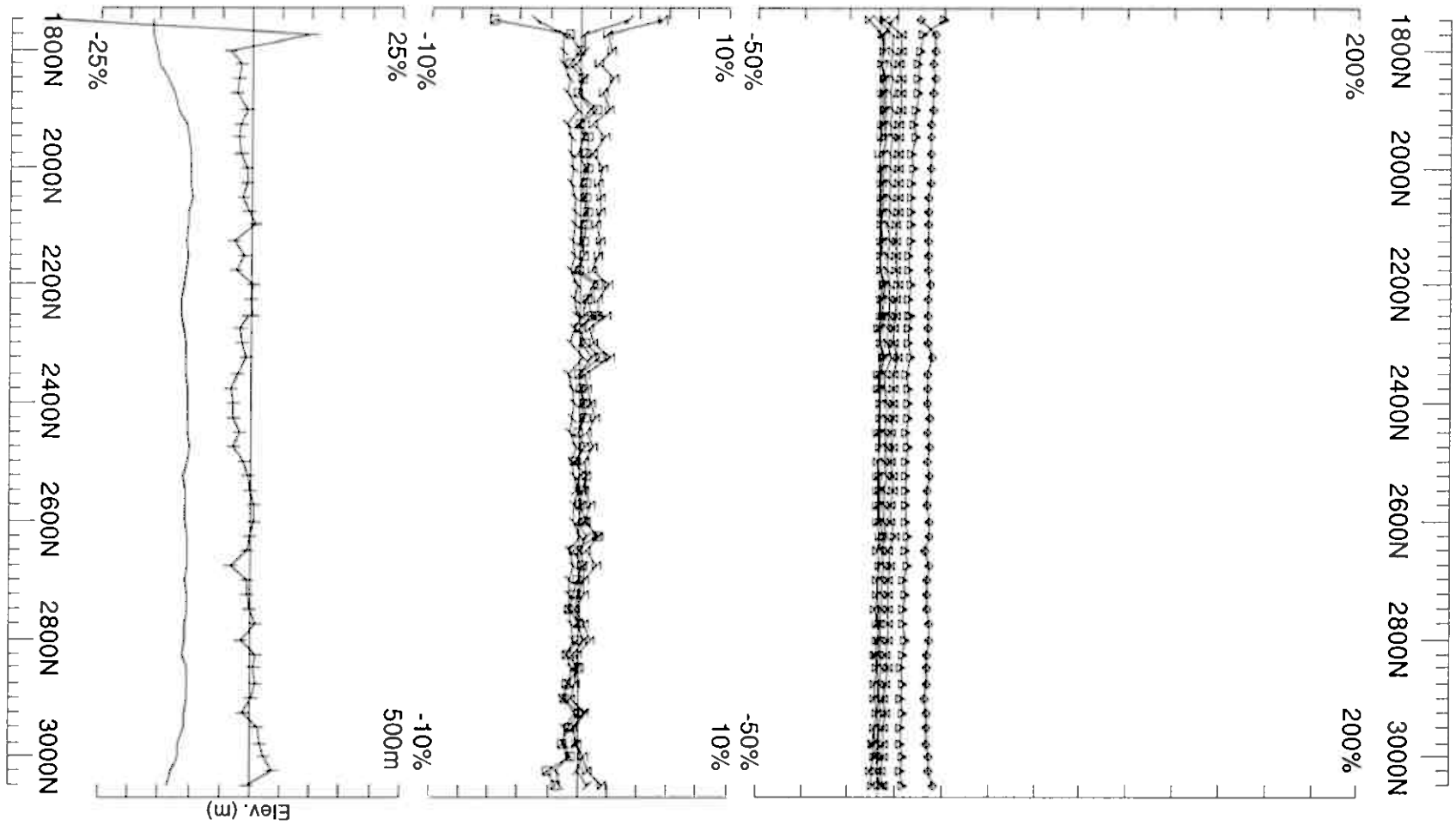
Loop: 03 Line: 6900E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



Loop: 03 Line: 7100E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Plotted: 6/9/6



Loop: 03 Line: 7300E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 28/6/6 Reduced : 29/6/6 Plotted : 6/9/6



Loop: 03 Line: 7500E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (5600,5125,120) Base Freq. 3.251 Hz	UTEM Survey at: Nystein- Vissestad Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 29/6/6 Reduced : 29/6/6 Plotted : 6/9/6

Nystein-Vissestad

Loop 04

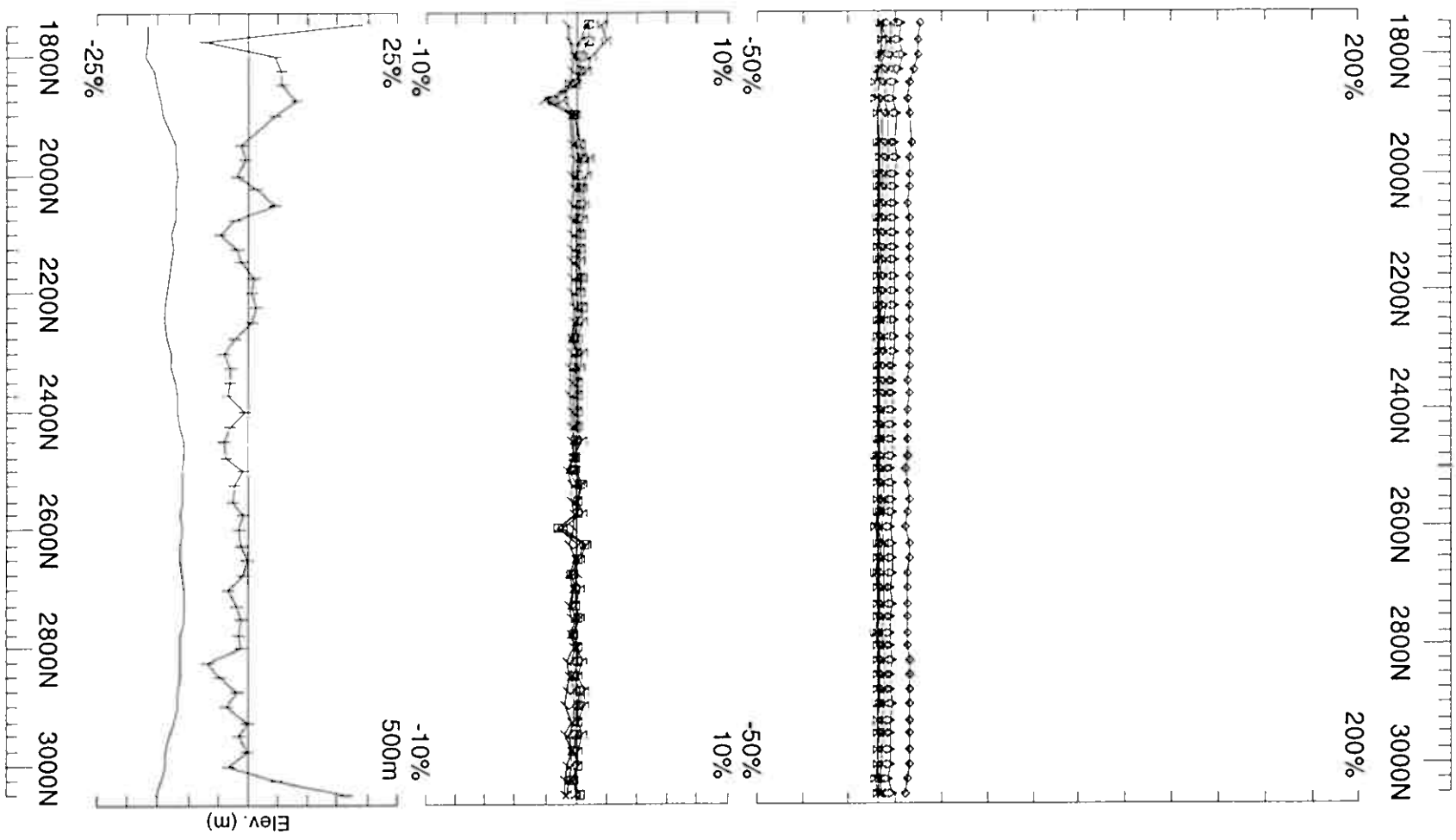
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (533725, 6538700, 100 m.a.s.l.)

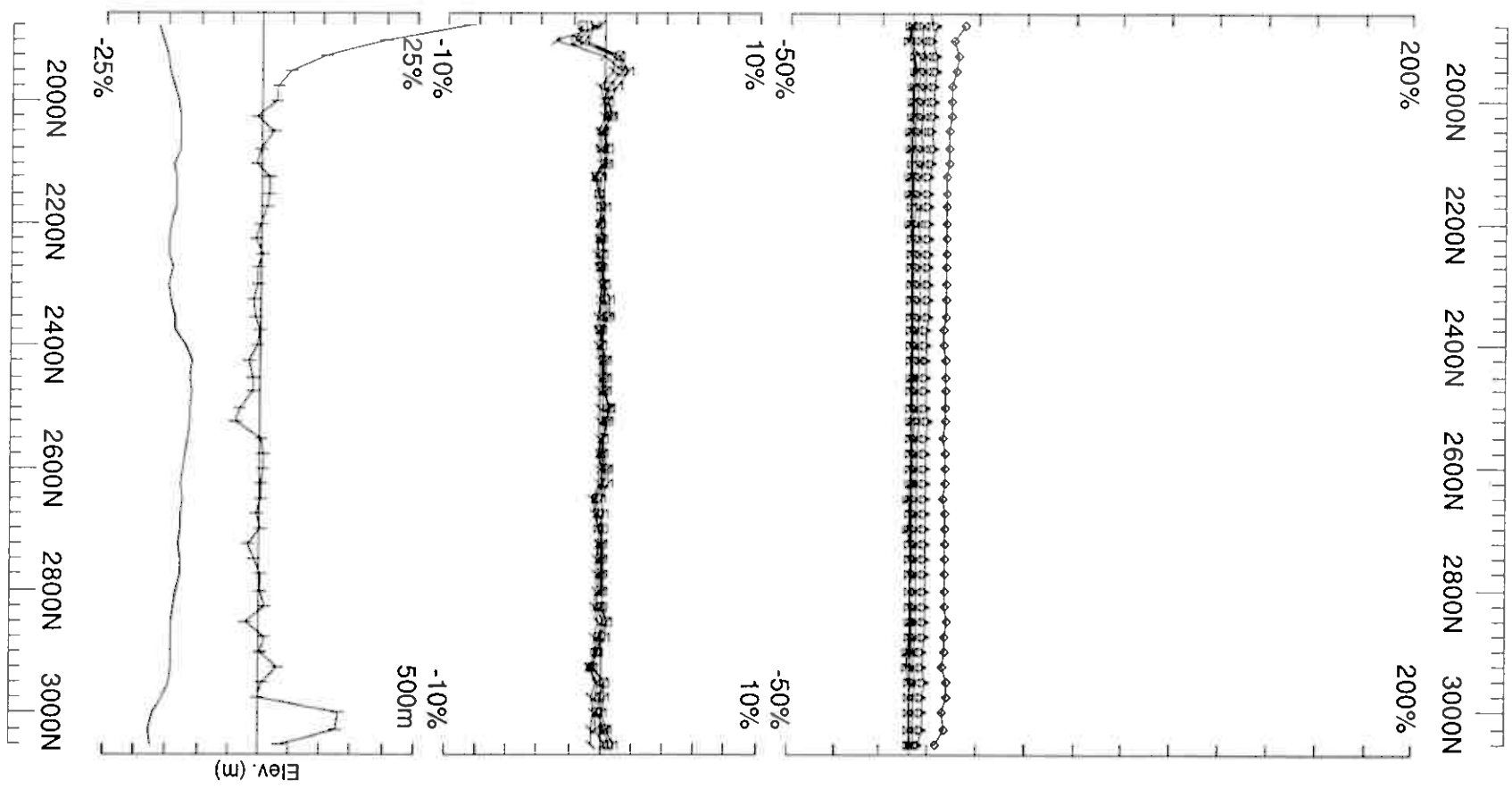
Ch1 reduced

Loop 04	Line 7700E	1725N - 3075N	1350m
	Line 7900E	1850N - 3075N	1225m
	Line 8000E	1875N - 2950N	1075m
	Line 8100E	1825N - 2950N	1125m
	Line 8200E	1725N - 3075N	1350m
	Line 8300E	1725N - 3075N	1175m
	Line 8400E	1725N - 3075N	1200m
	Line 8450E	1975N - 2825N	850m
	Line 8500E	1725N - 3075N	1250m
	Line 8550E	1975N - 2825N	1200m
	Line 8600E	1725N - 3075N	1225m
	Line 8650E	1975N - 2825N	675m
	Line 8700E	1725N - 3075N	1100m
	Line 8750E	1975N - 2825N	600m
	Line 8800E	1850N - 3075N	850m
	Nystein-Vissestad	Loop 04 Total	15850m

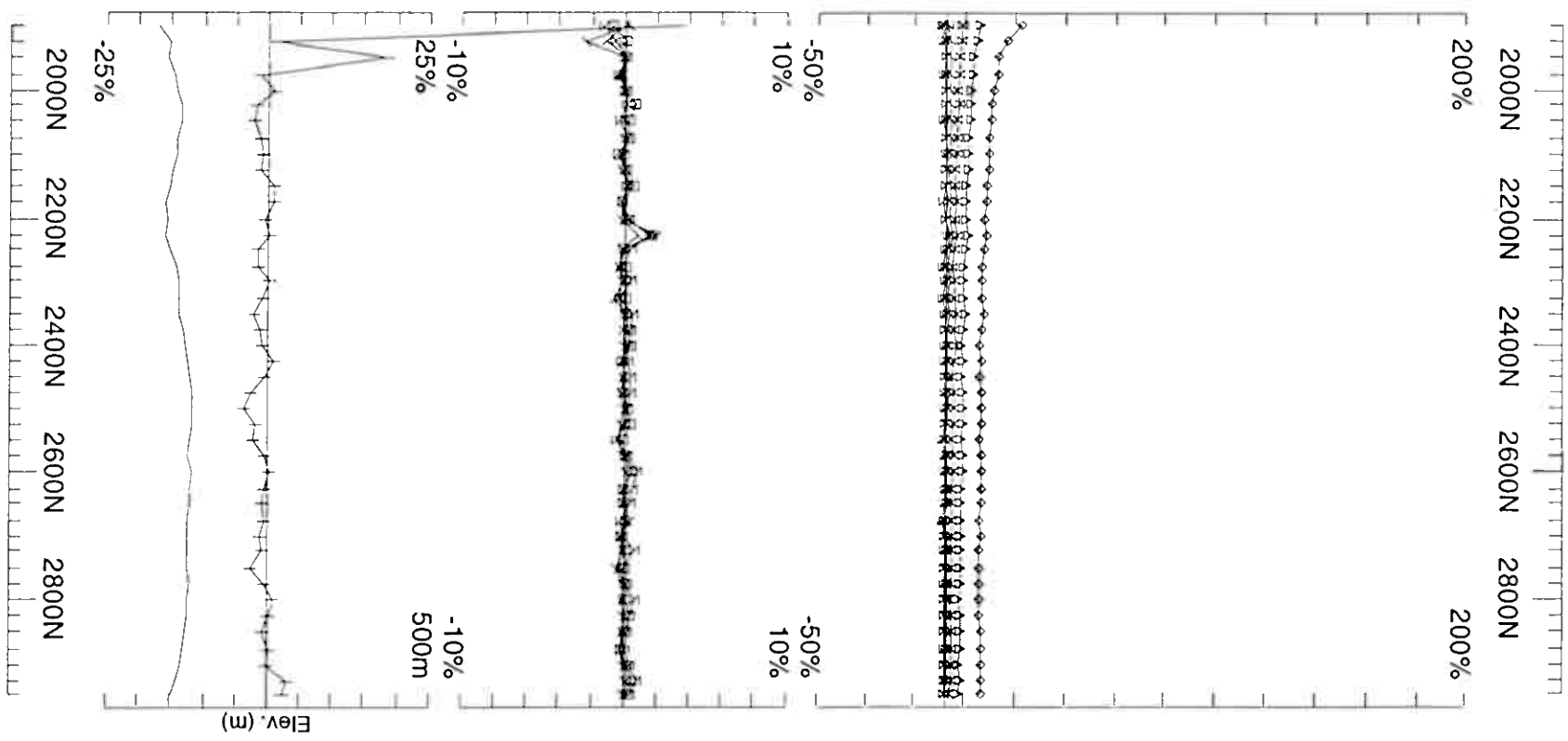
Loop 04 - point norm



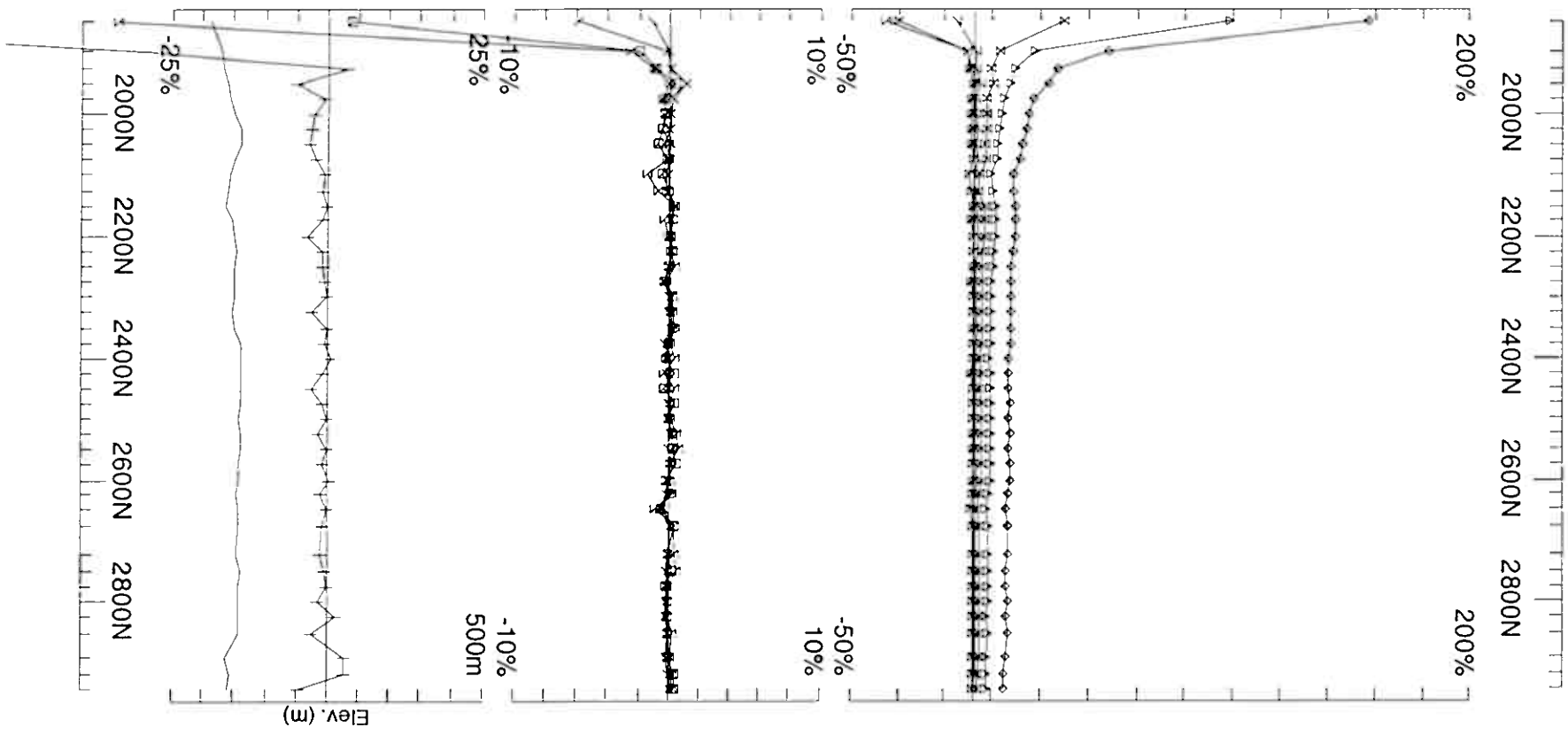
Loop: 04 Line: 7700E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 23/6/6 Reduced : 6/9/6 Plotted : 6/9/6



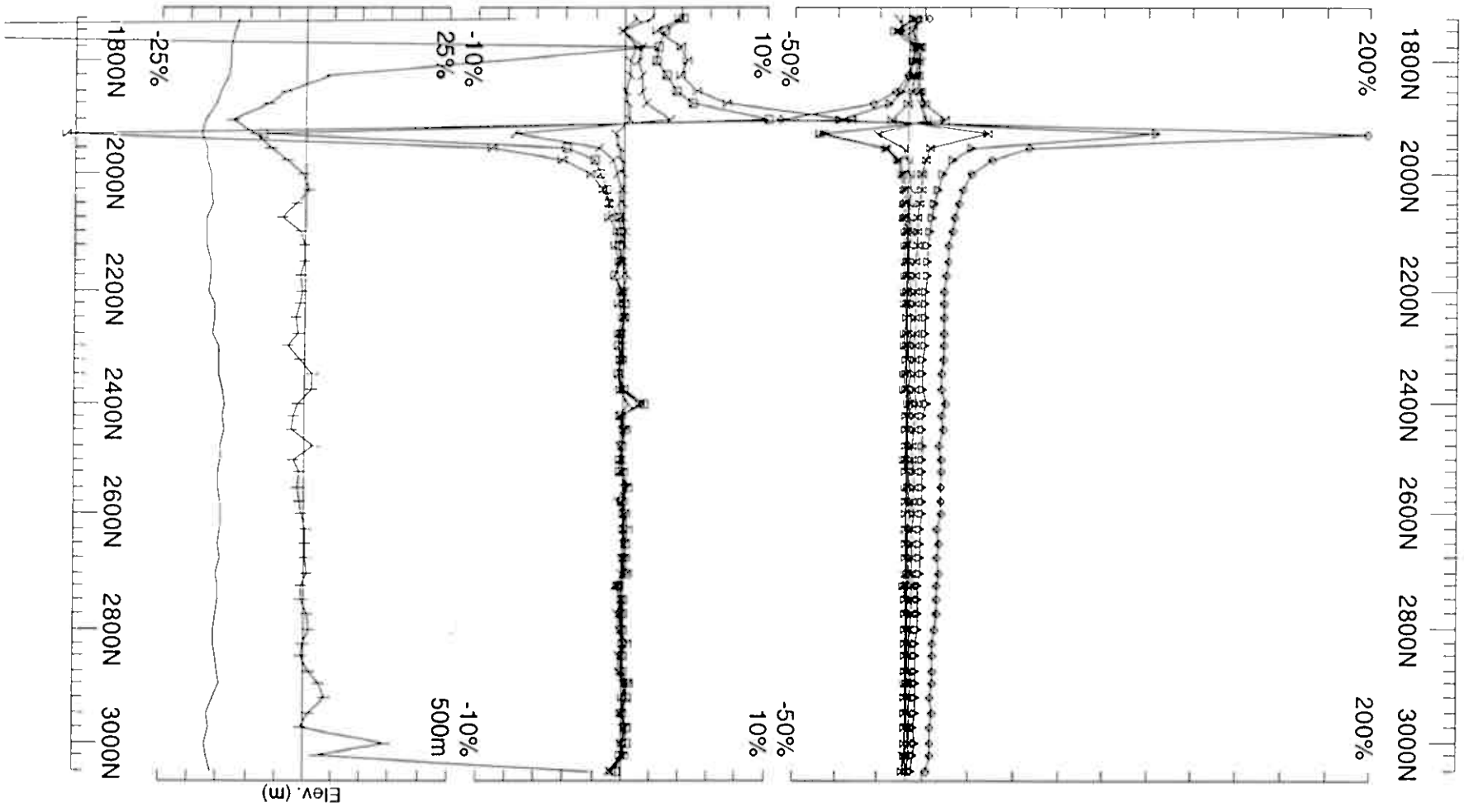
Loop: 04 Line: 7900E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 23/6/6 Reduced : 6/9/6 Plotted : 6/9/6



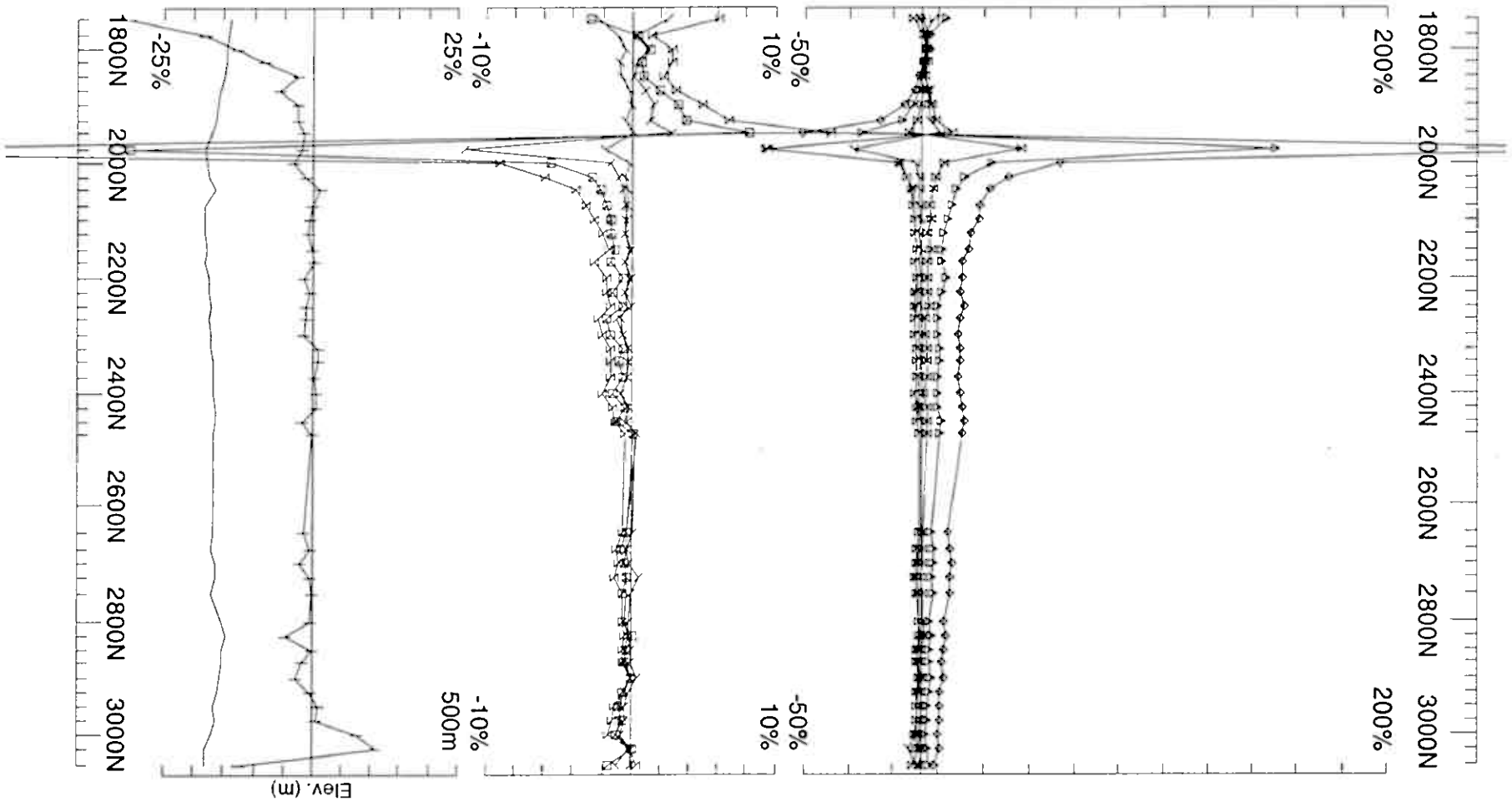
Loop: 04 Line: 8000E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 25/6/6 Reduced : 6/9/6 Plotted : 6/9/6



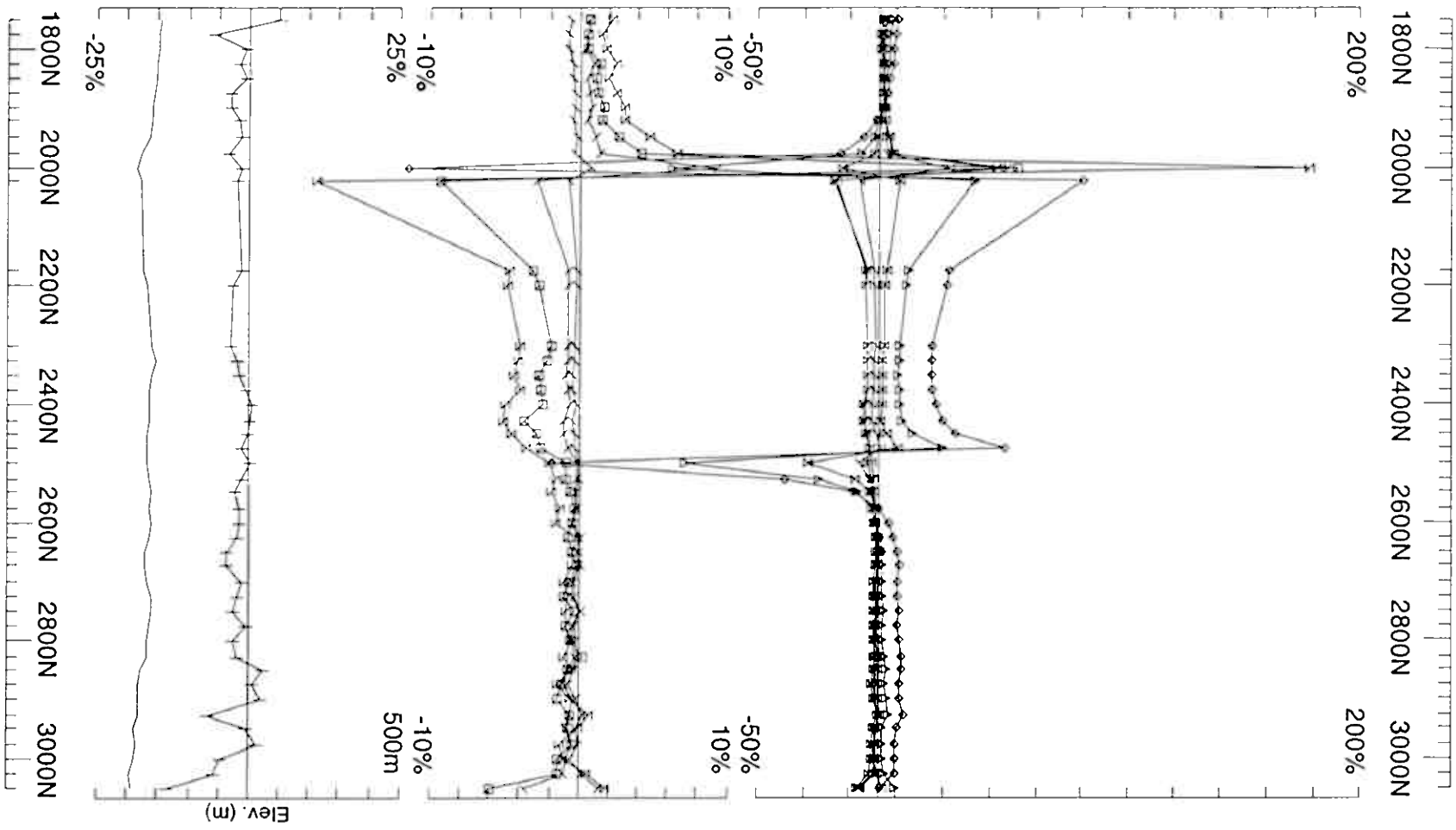
Loop: 04 Line: 8100E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 25/6/6 Reduced : 6/9/6 Plotted : 6/9/6



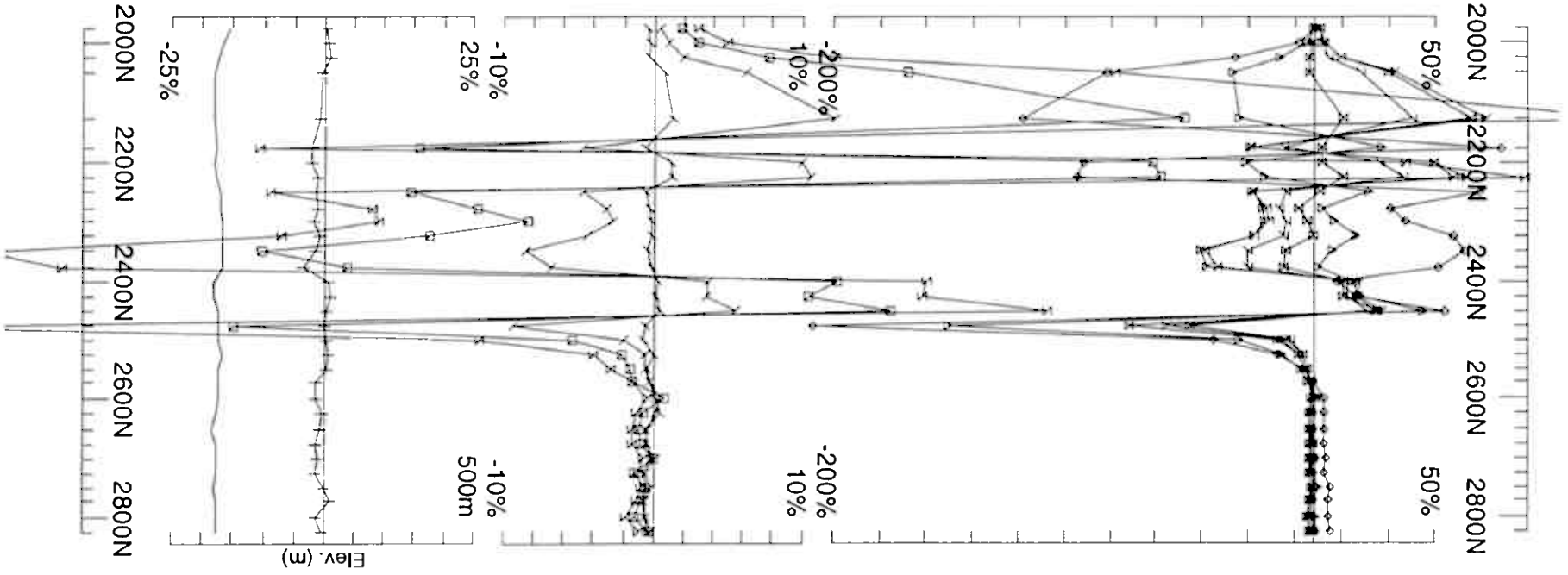
Loop: 04 Line: 8200E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 24/6/6 Reduced : 6/9/6 Plotted : 6/9/6



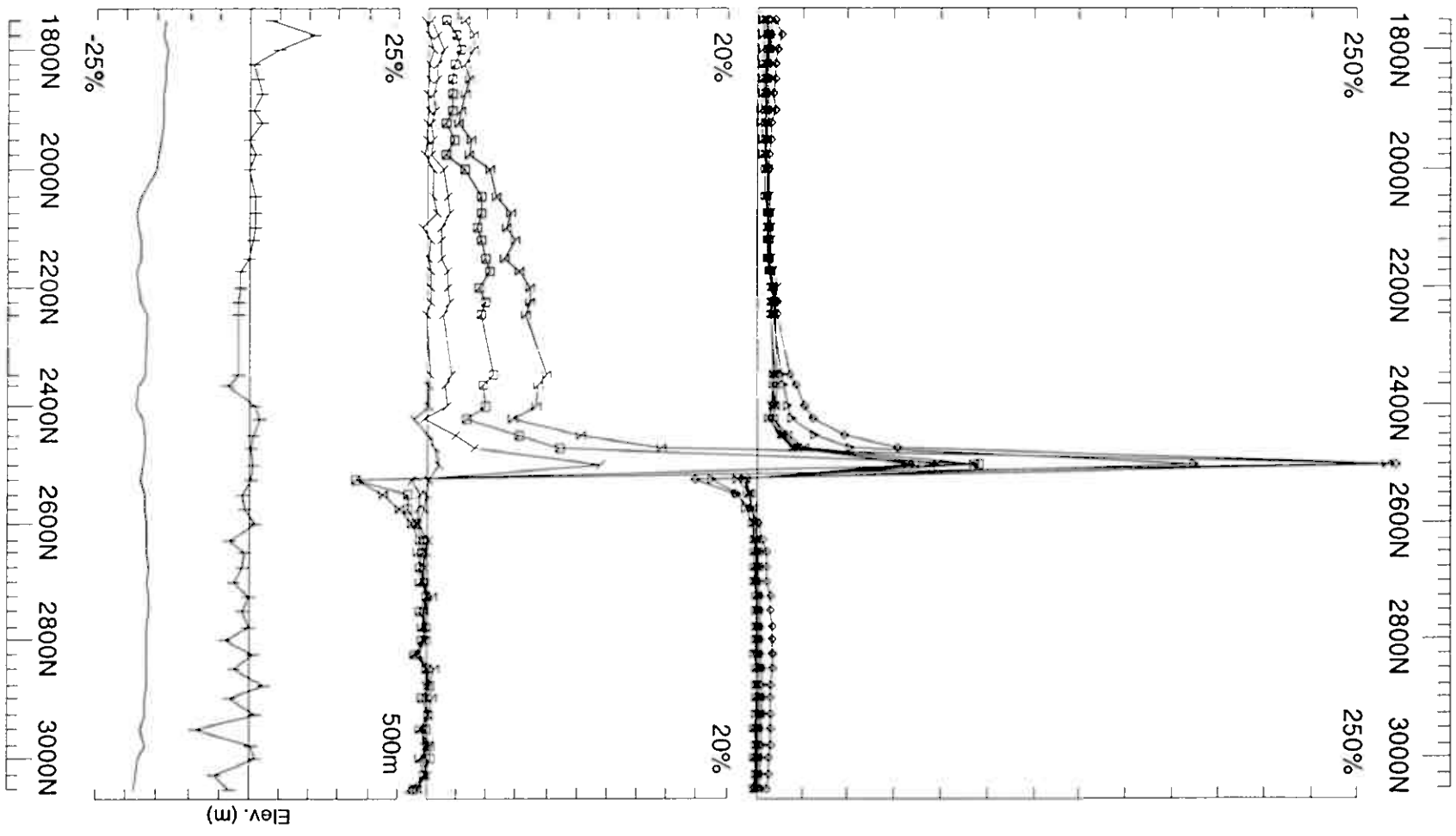
Loop: 04 Line: 8300E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 24/6/6 Reduced : 6/9/6 Plotted : 6/9/6



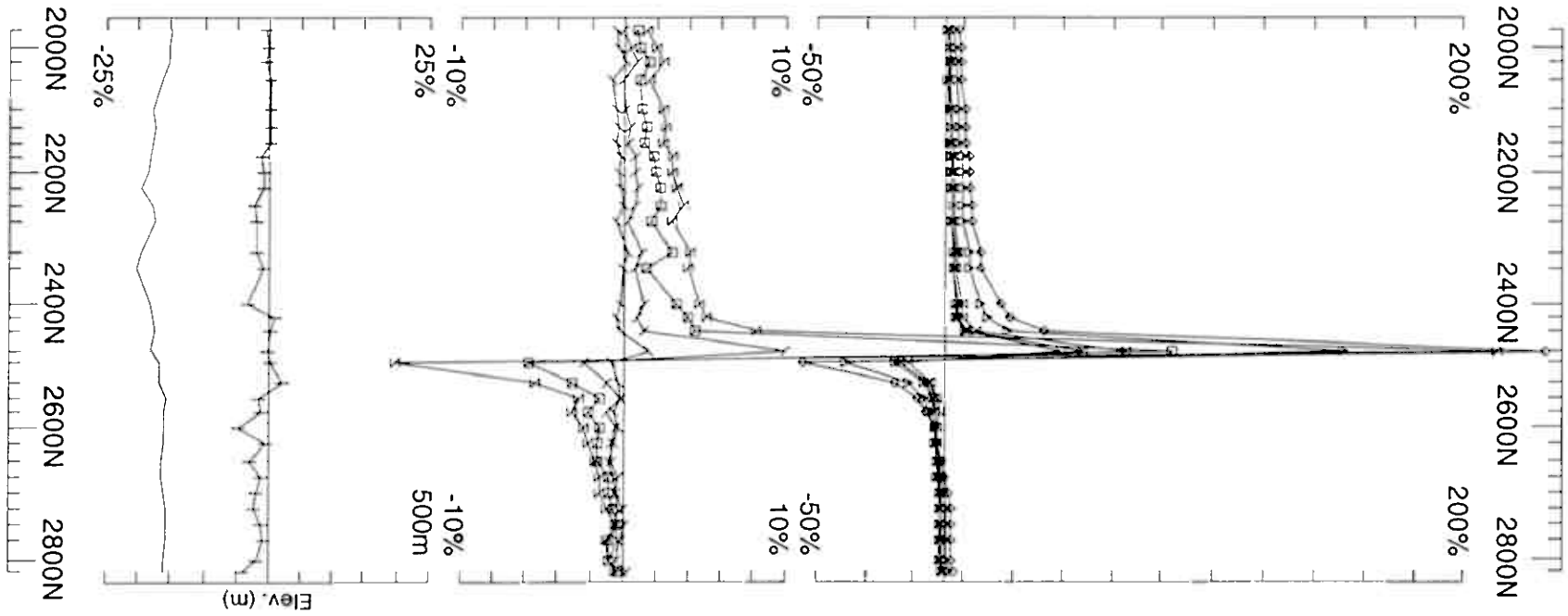
Loop: 04 Line: 8400E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



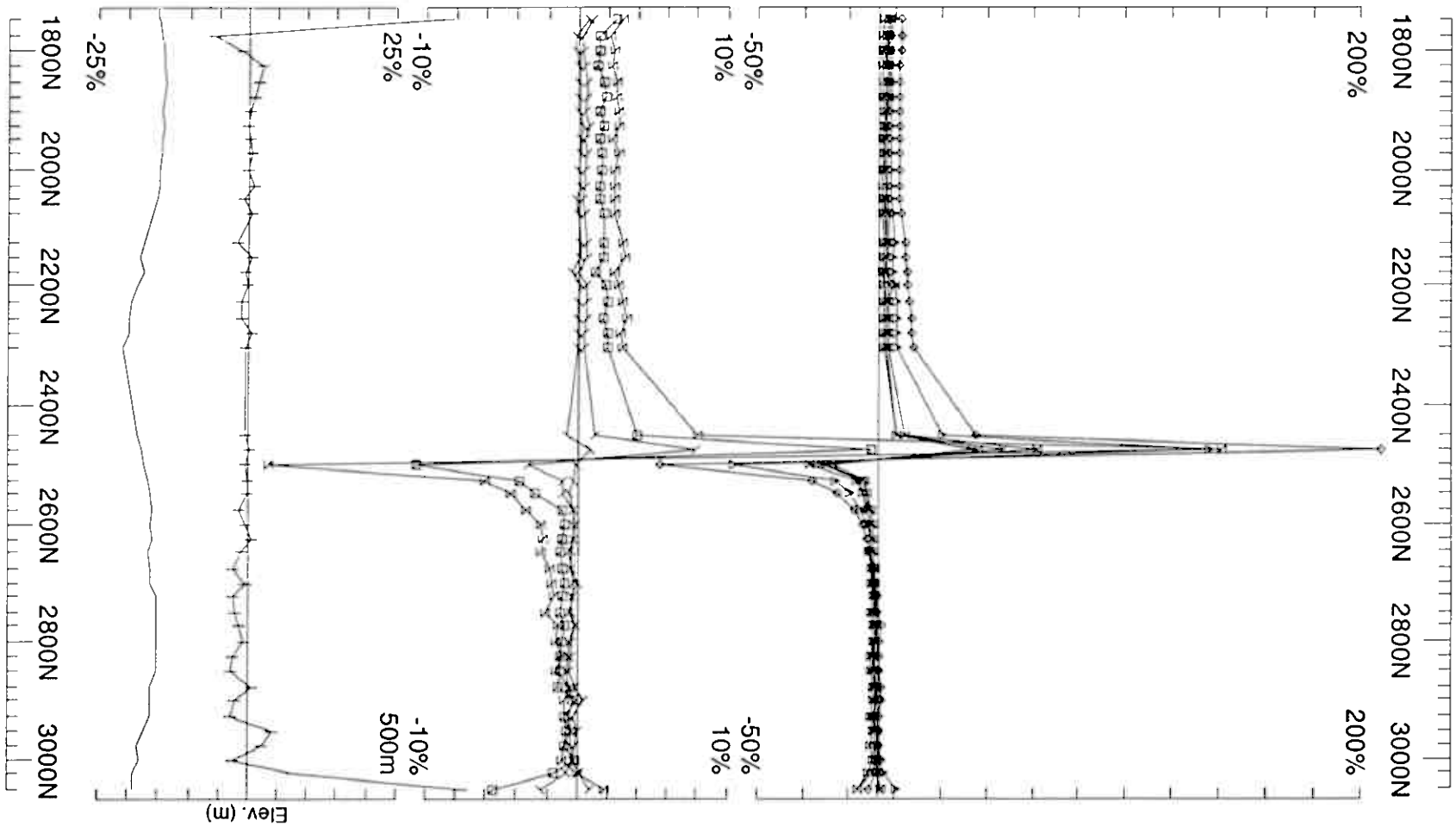
Loop: 04 Line: 8450E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 25/6/6 Reduced 6/9/6 Plotted 6/9/6



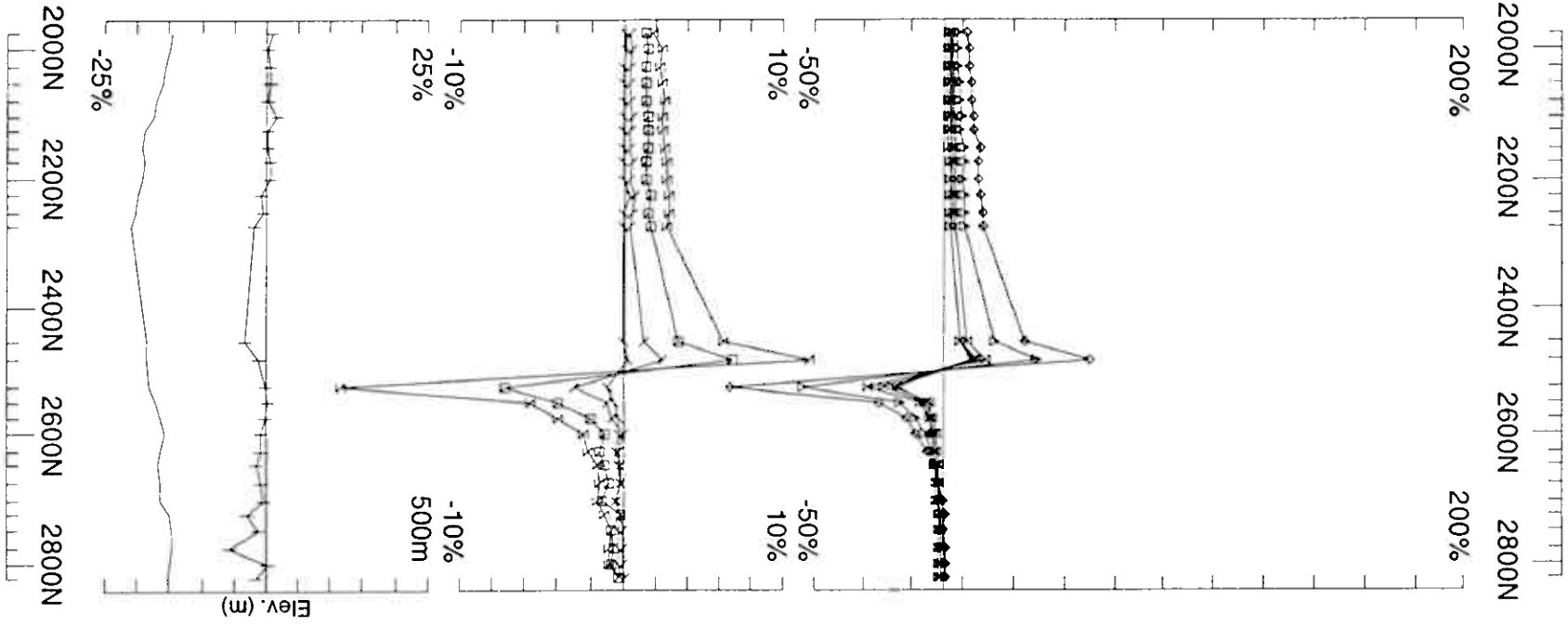
Loop: 04 Line: 8500E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 25/6/6 Reduced : 25/6/6 Plotted : 6/9/6



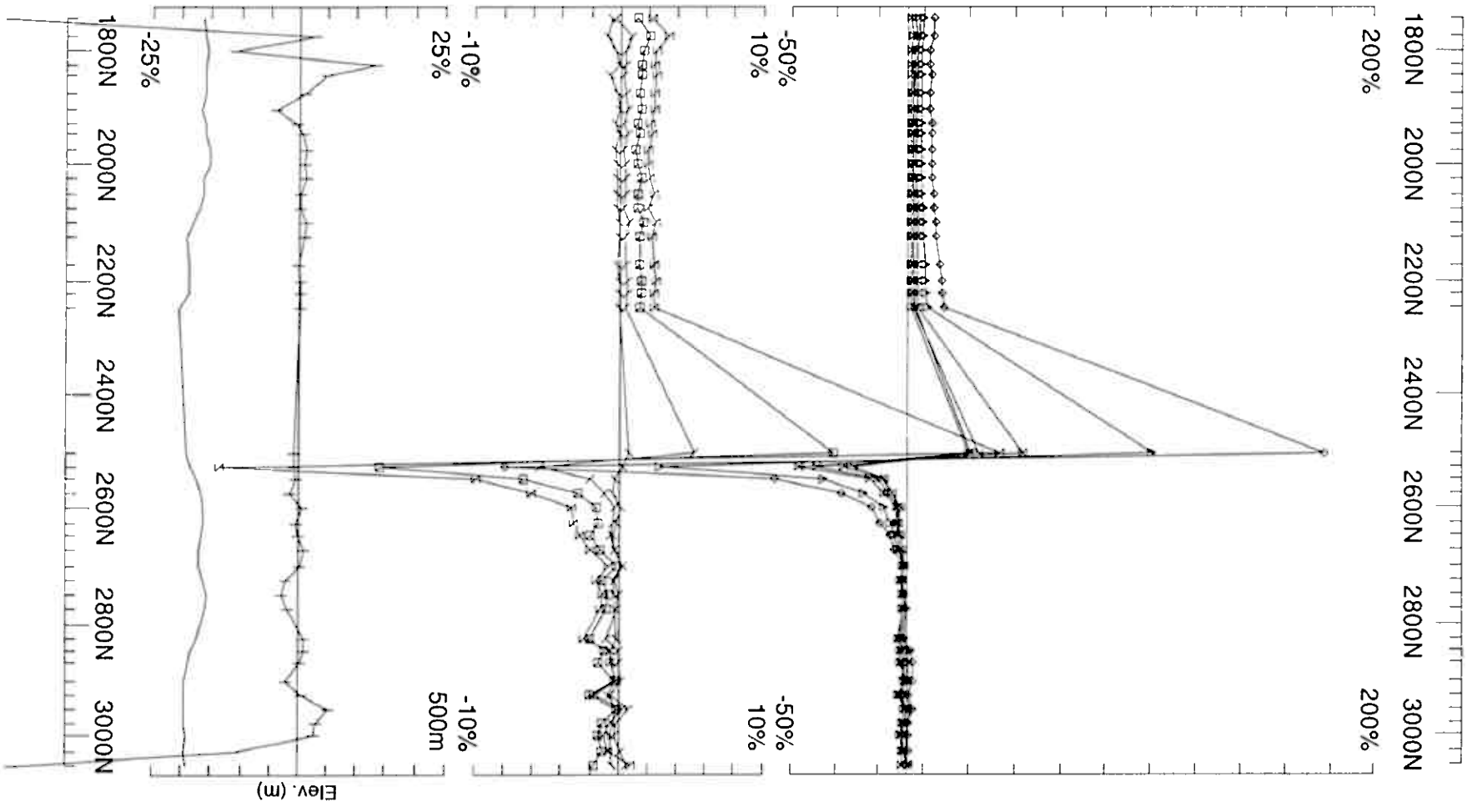
Loop: 04 Line: 8550E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



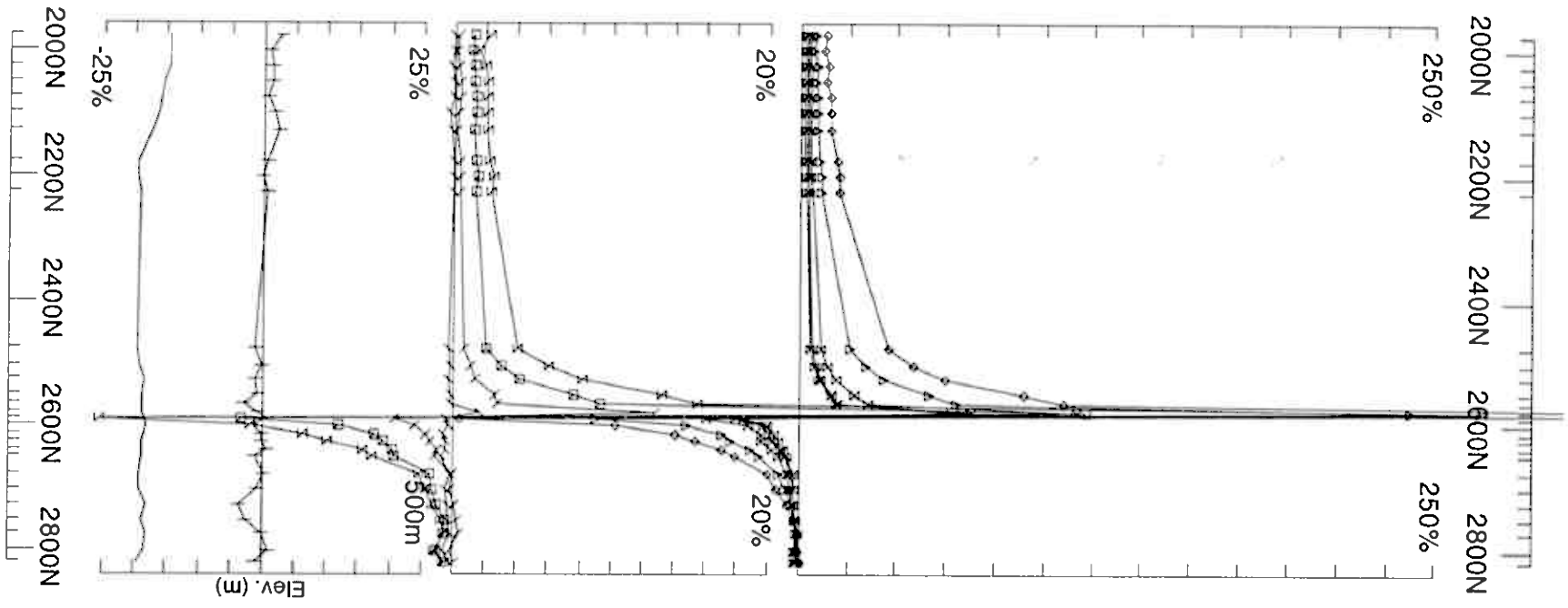
Loop: 04 Line: 8600E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



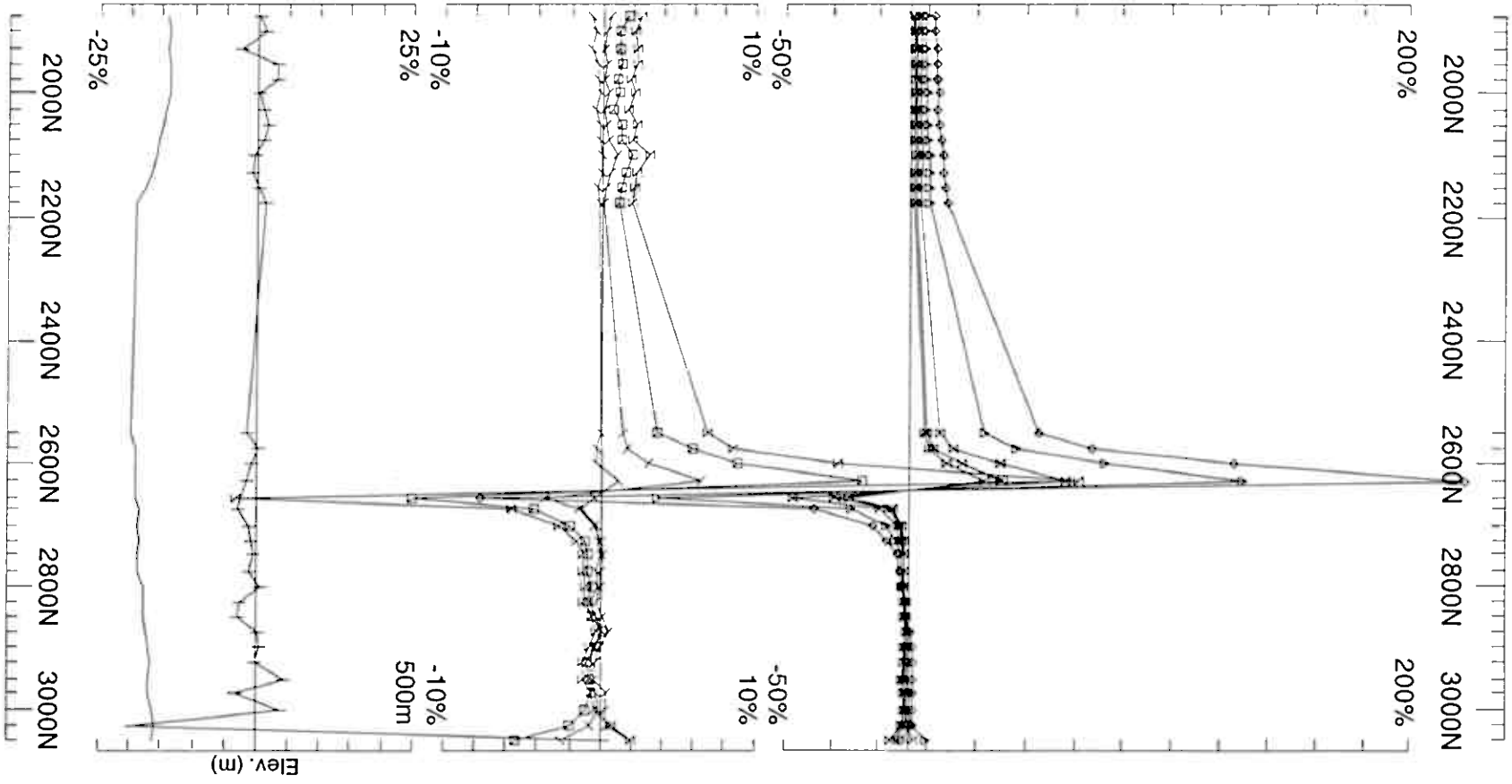
Loop: 04 Line: 8650E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



Loop: 04 Line: 8700E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



Loop: 04 Line: 8750E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



Loop: 04 Line: 8800E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (6525,5500,100) Base Freq. 3.251 Hz	UTEM Survey at: Vissestad-Nystein Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted: 6/9/6

Seljaasen

Loop 01S

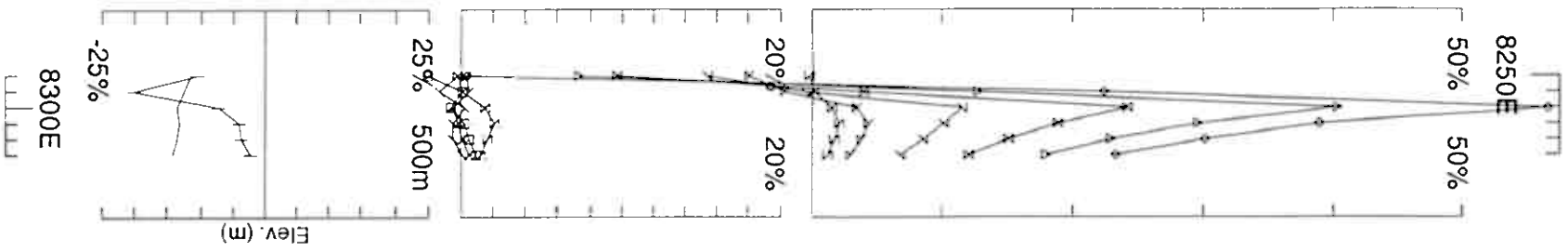
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (478350E, 6481500N, 100 m.a.s.l.)

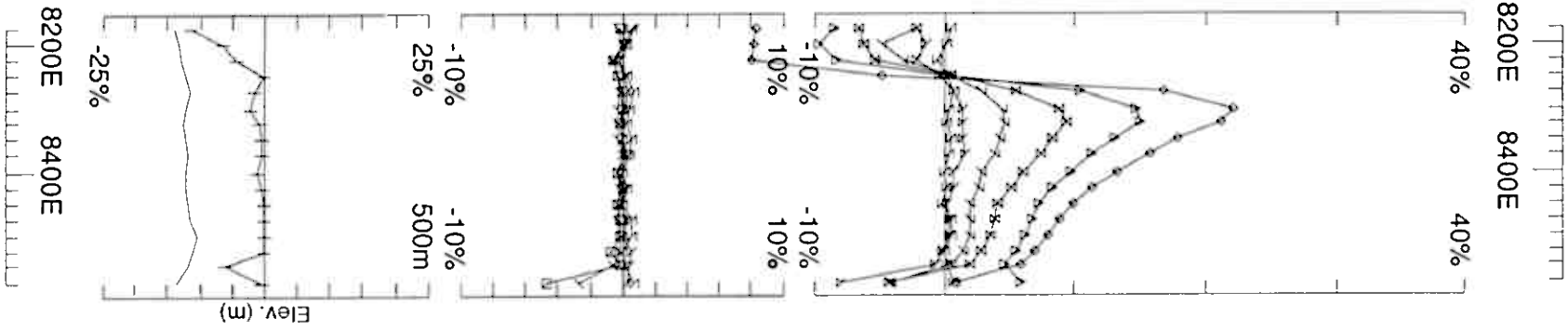
Ch1 reduced

Loop 01S	Line 1200N	225E - 375E	150m
	Line 1300N	150E - 600E	450m
	Line 1400N	125E - 600E	475m
	Line 1500N	125E - 600E	475m
	Line 1600N	125E - 600E	475m
	Line 1700N	125E - 600E	475m
	Line 1800N	125E - 600E	475m
	Seljaasen	Loop 01S Total	2975m

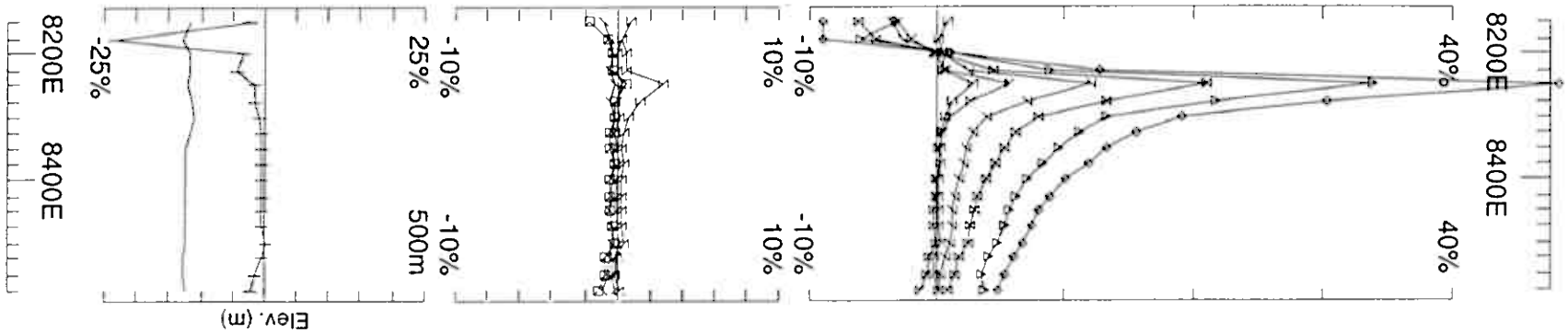
Loop 01S - point norm



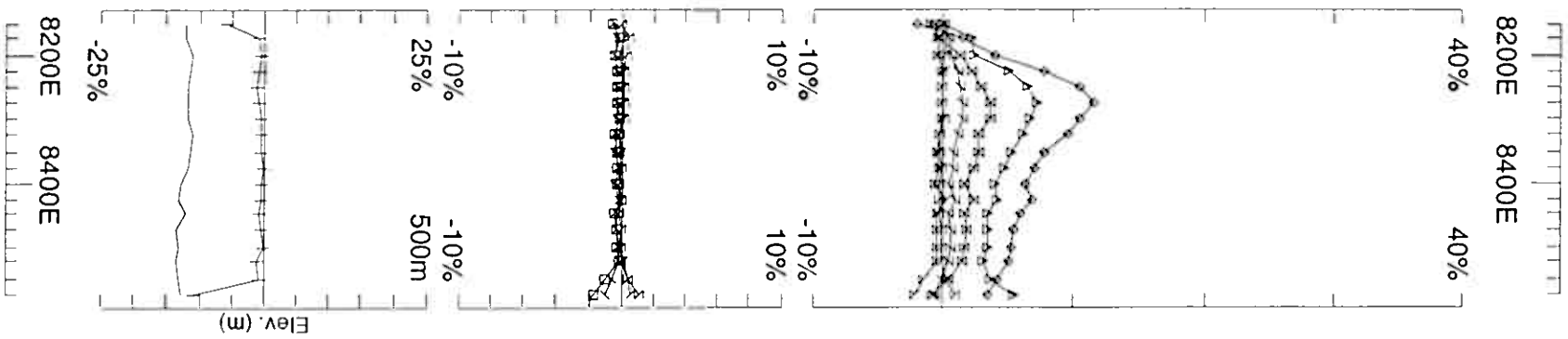
Loop: 01S Line: 1200N Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 7/2/6 Reduced 7/7/6 Plotted 6/9/6



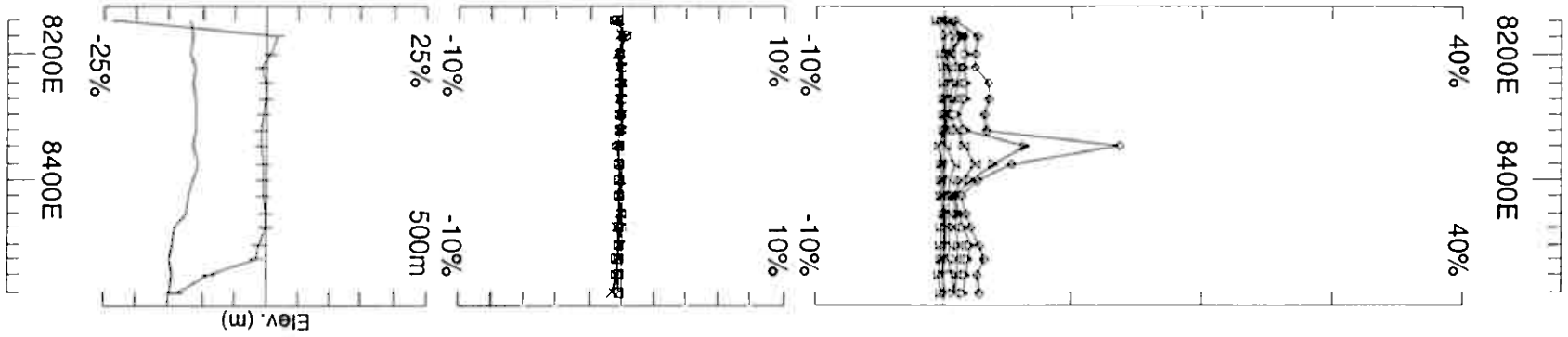
Loop: 01S Line: 1300N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



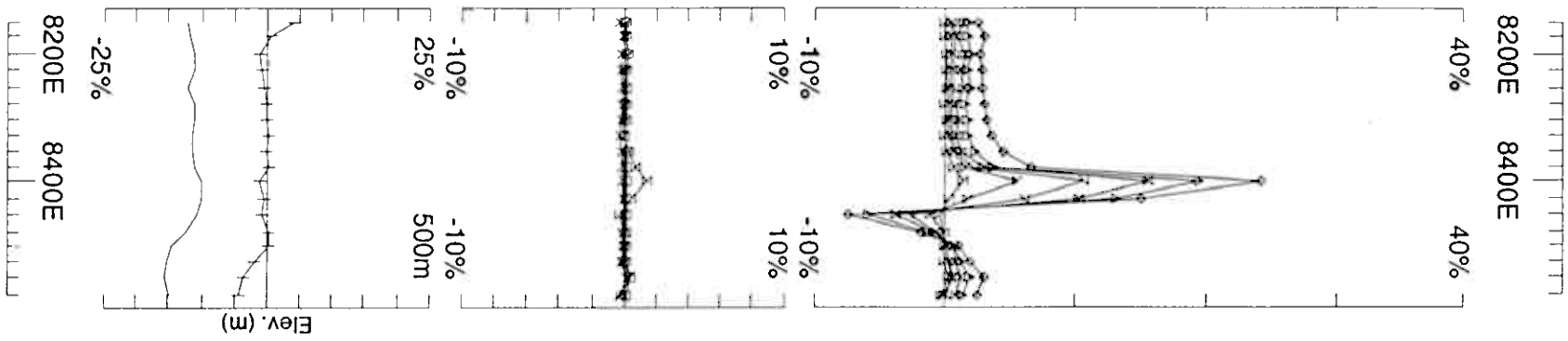
Loop: 01S Line: 1400N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



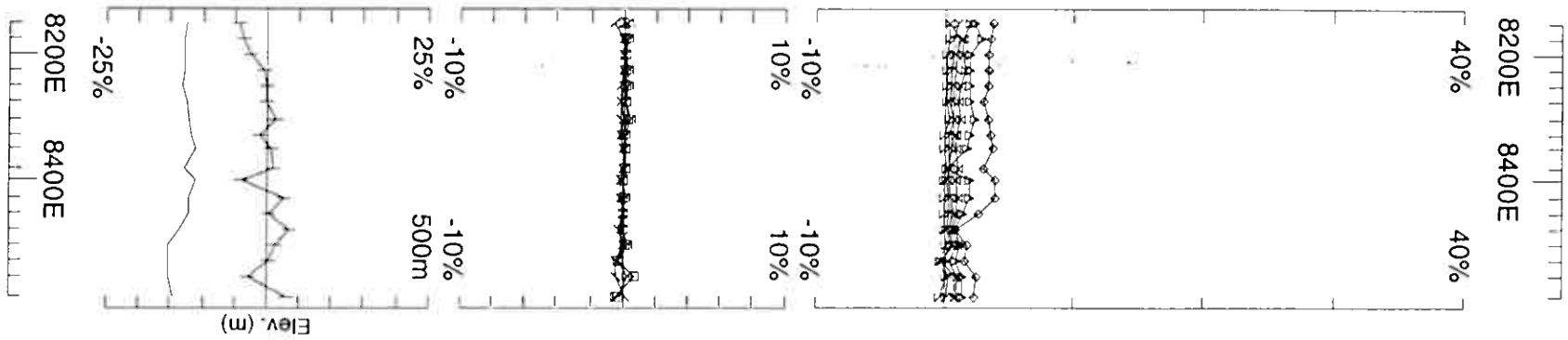
Loop: 01S Line: 1500N Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/2/6 Reduced : 7/7/6 Plotted : 6/9/6



Loop: 01S Line: 1600N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 2/7/6 Reduced : 7/7/6 Plotted : 6/9/6



Loop: 01S Line: 1700N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 2/7/6 Reduced : 7/7/6 Plotted : 6/9/6



Loop: 01S Line: 1800N Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (8350,1500,100) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 2/7/6 Reduced : 7/7/6 Plotted : 6/9/6

Seljaasen

Loop 02S

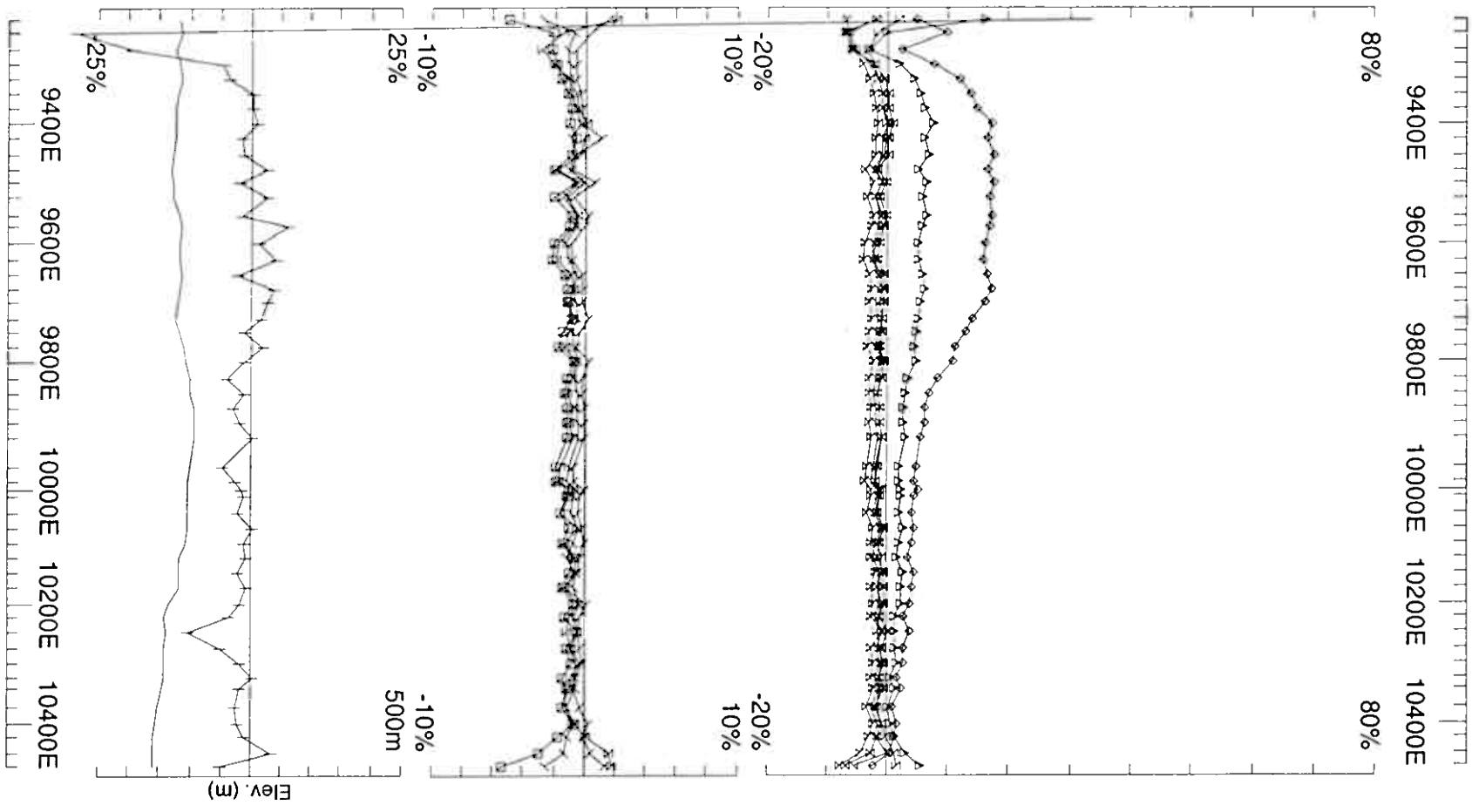
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (479850E, 6482650N, 150 m.a.s.l.)

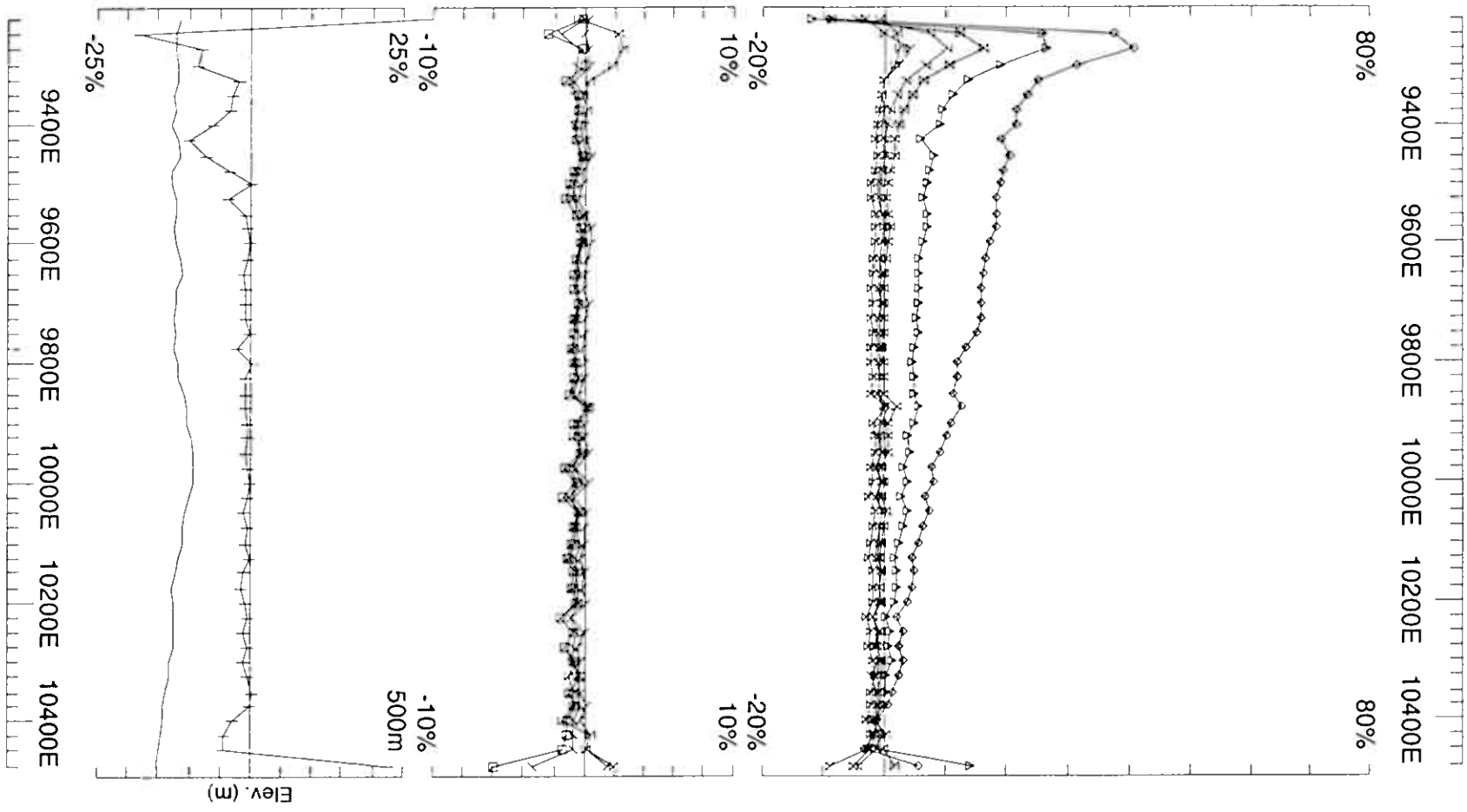
Ch1 reduced

Loop 02S	Line 2000N	9200E - 10500E	1300m
	Line 2100N	9200E - 10500E	1300m
	Line 2200N	9200E - 10500E	1300m
	Line 2300N	9200E - 10500E	1300m
	Line 2400N	9200E - 10500E	1300m
	Line 2500N	9200E - 9975E	775m
		10175E - 10500E	325m
	Line 2600N	9200E - 9900E	700m
	Line 2700N	9200E - 10000E	800m
	Line 2800N	9200E - 9850E	650m
	Line 2900N	9200E - 9850E	650m
	Line 3000N	9575E - 9900E	325m
	Line 3100N	9475E - 9950E	475m
	Line 3200N	9550E - 9950E	400m
	Seljaasen	Loop 02S Total	11600m

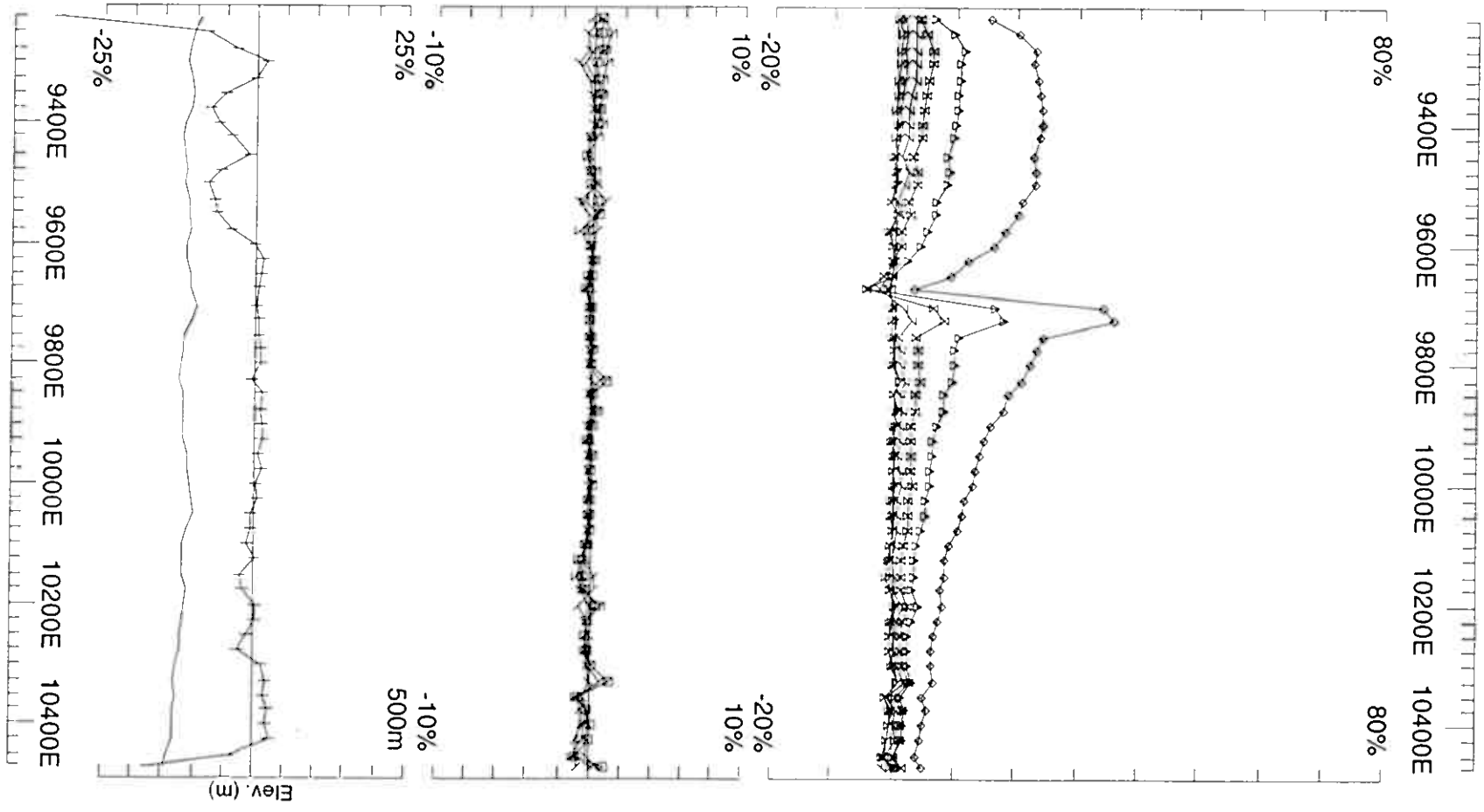
Loop 02S - point norm



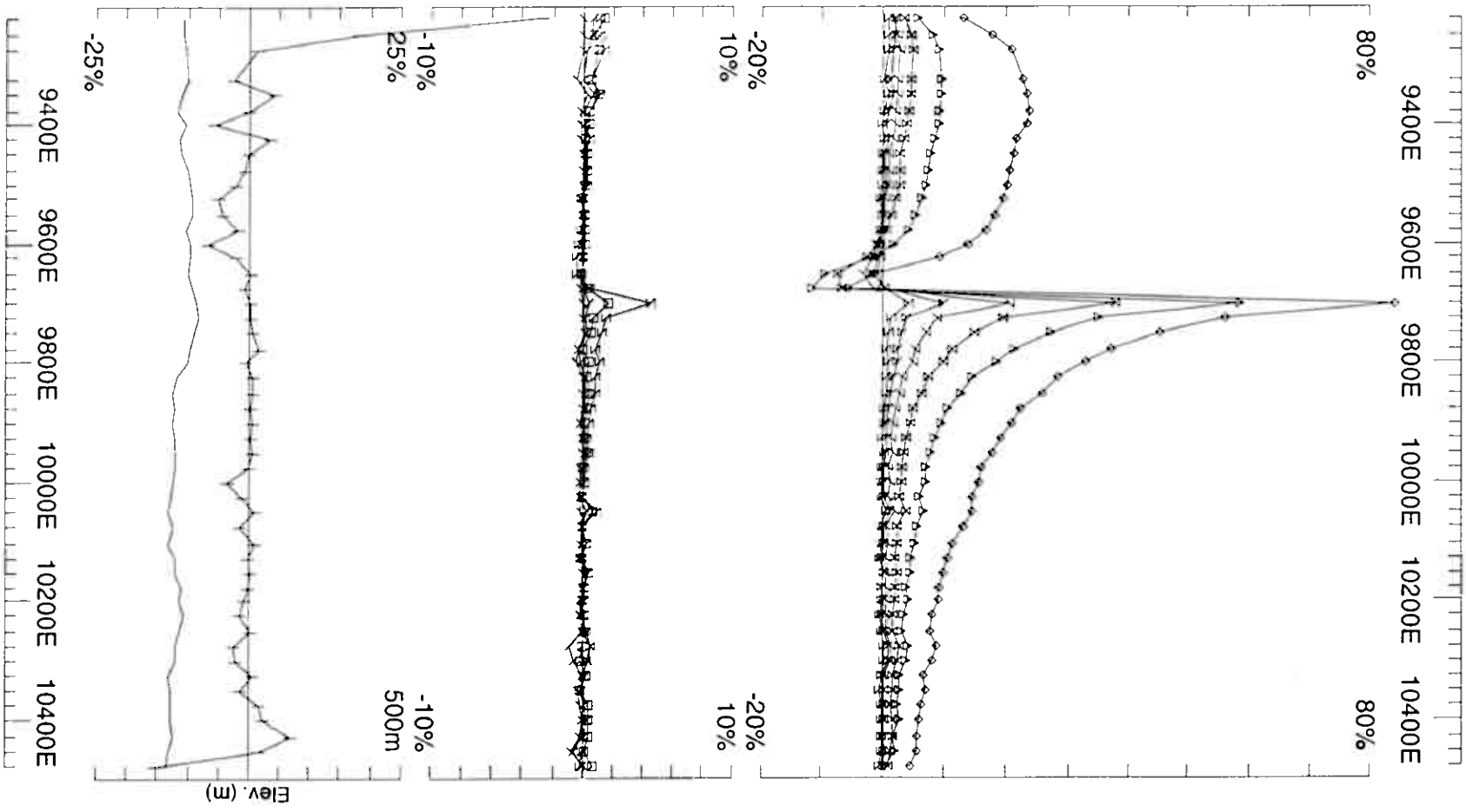
Loop: 02S Line: 2000N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



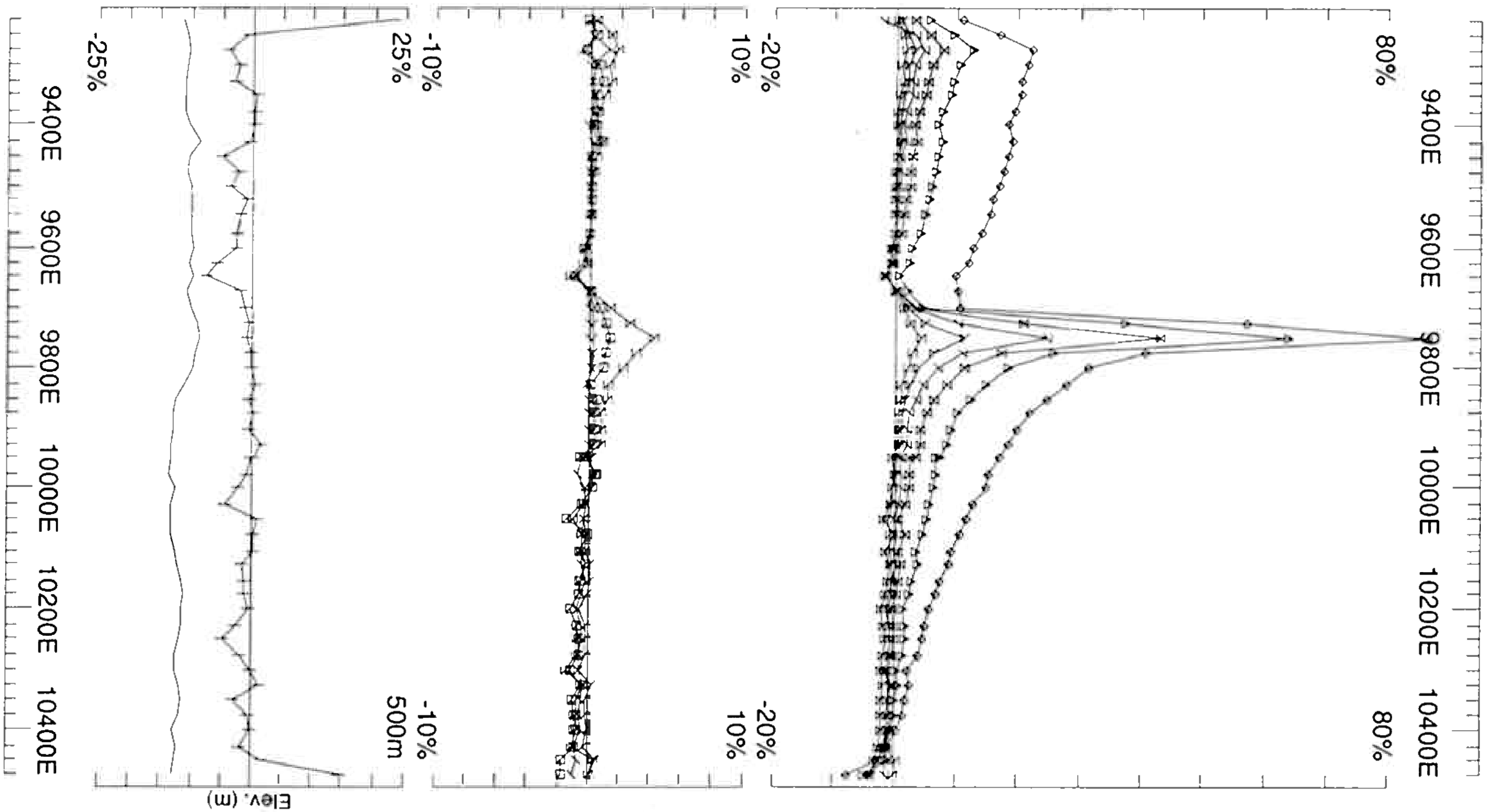
Loop: 02S Line: 2100N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed 4/7/6 Reduced 6/9/6 Plotted 6/9/6



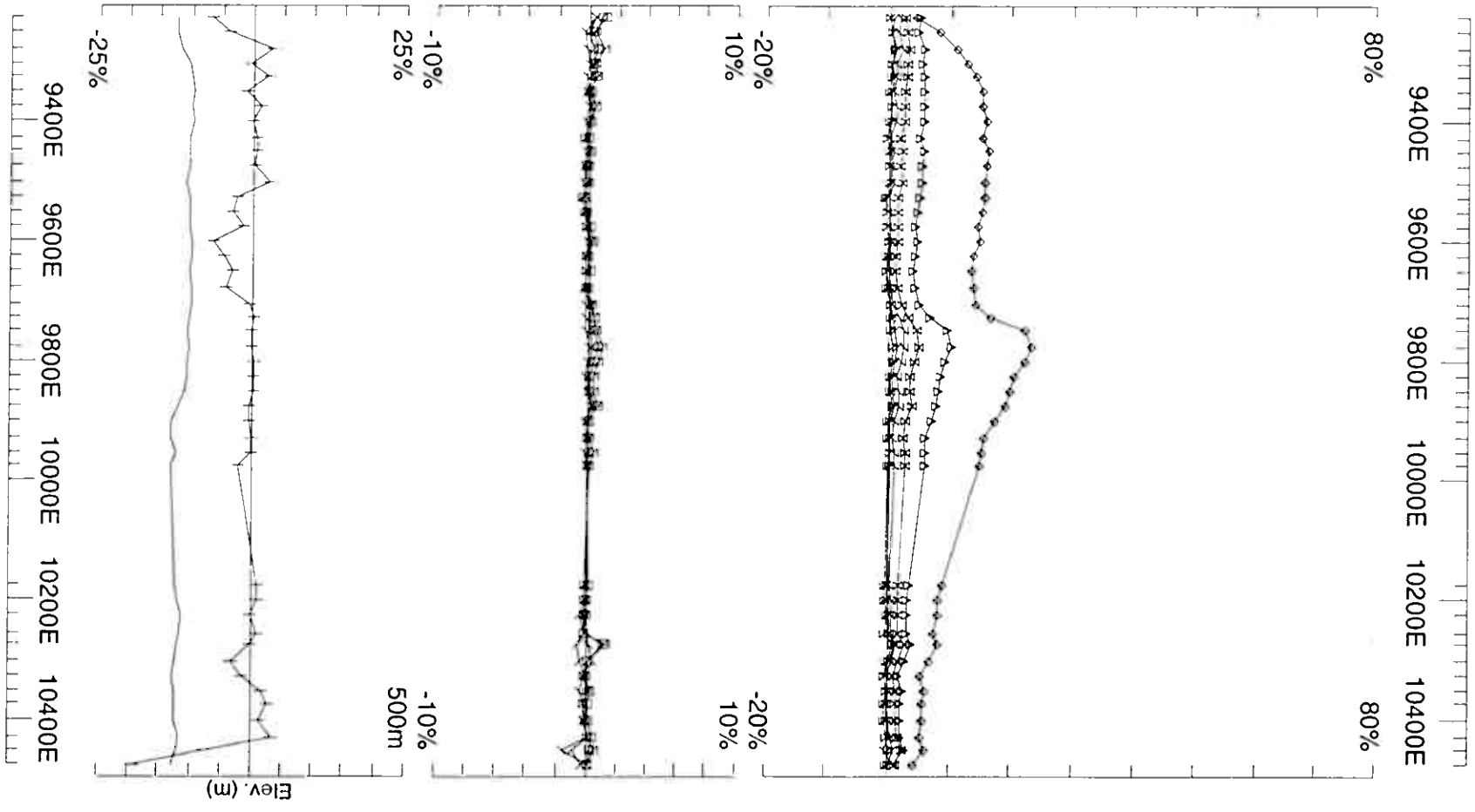
Loop: 02S Line: 2200N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



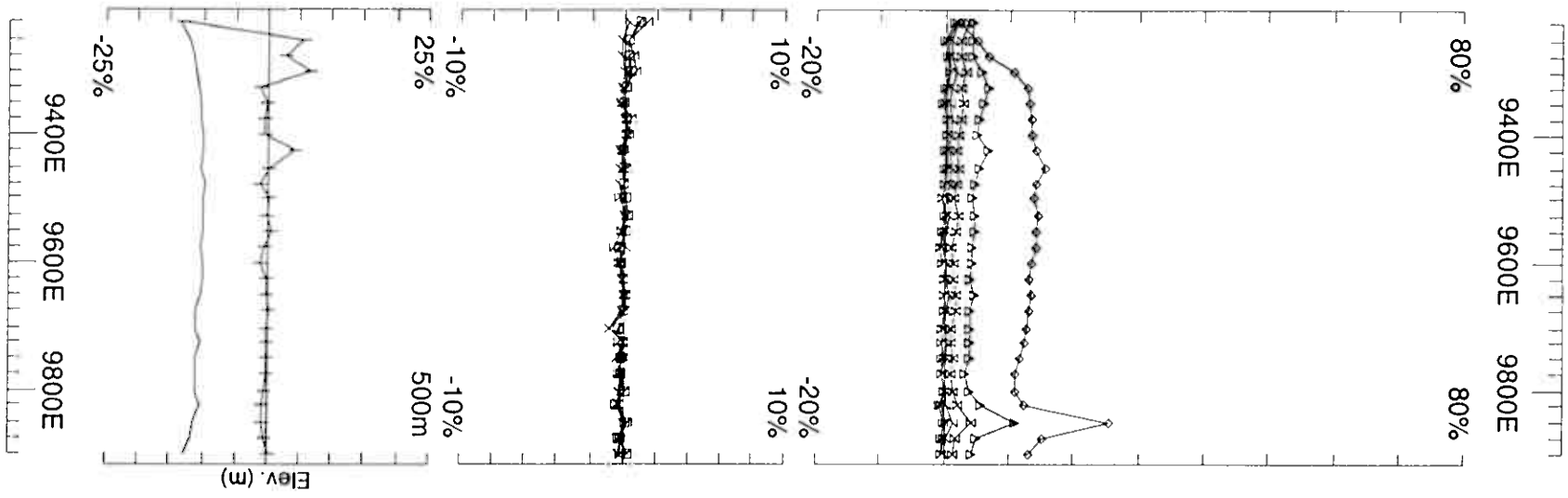
Loop: 02S Line: 2300N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 4/7/6 Reduced : 6/9/6 Plotted : 6/9/6



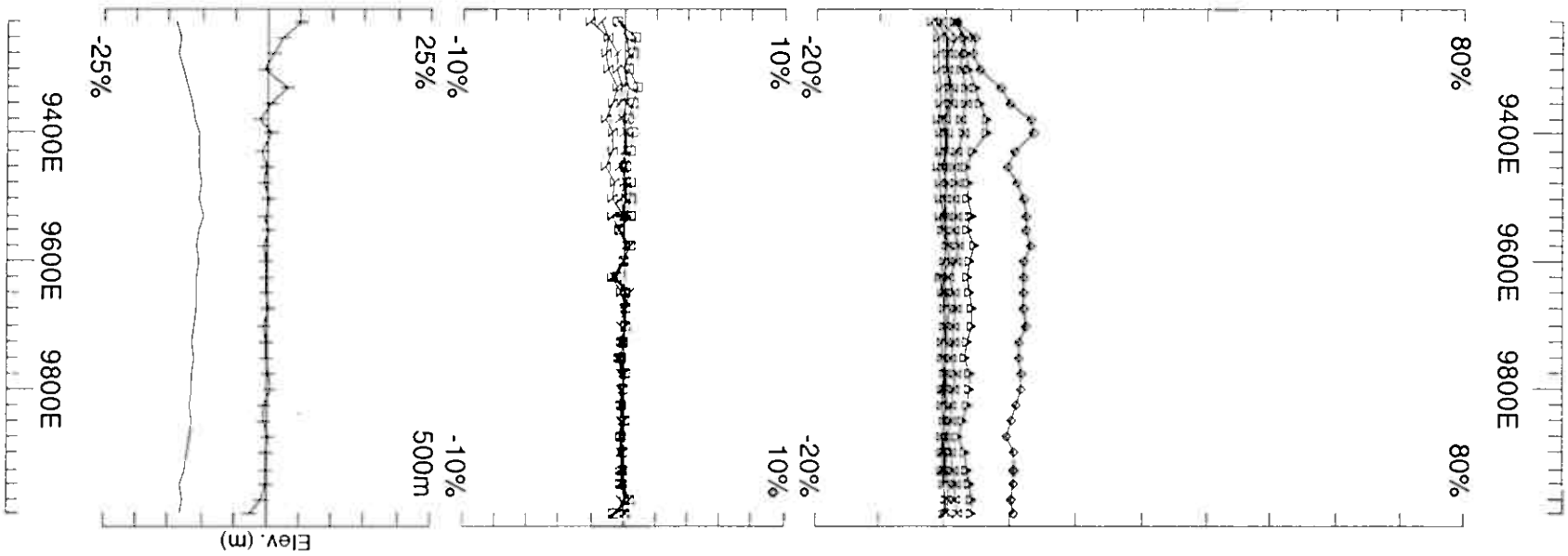
Loop: 02S Line: 2400N Compt: Hz	Secondary, (Chn - Ch1)/IHpl Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



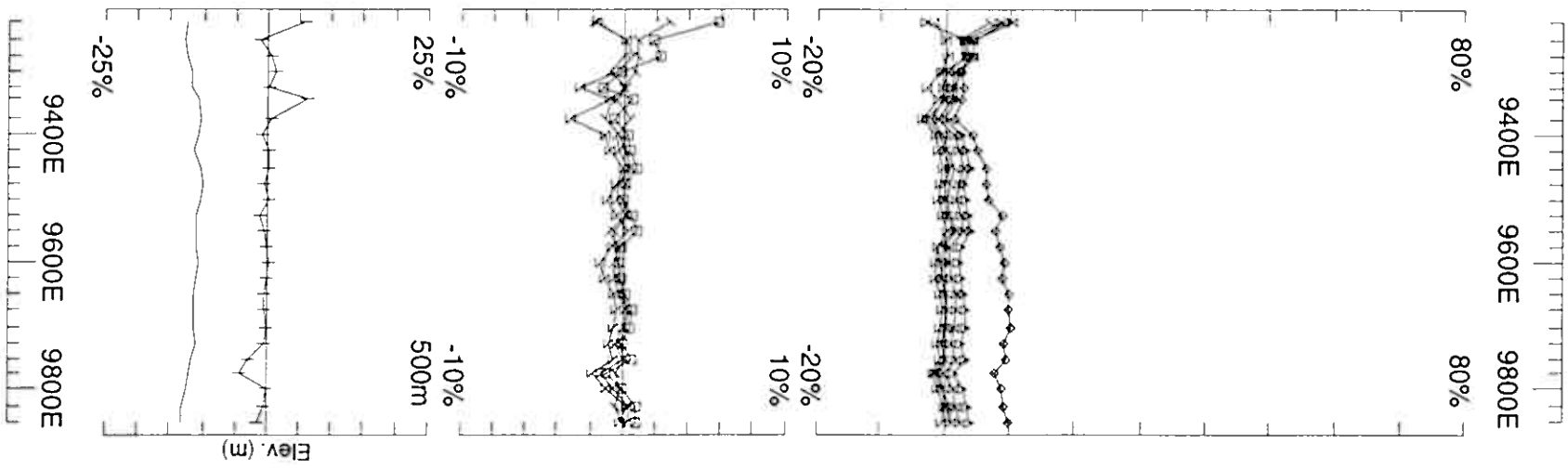
Loop: 02S Line: 2500N Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted : 6/9/6



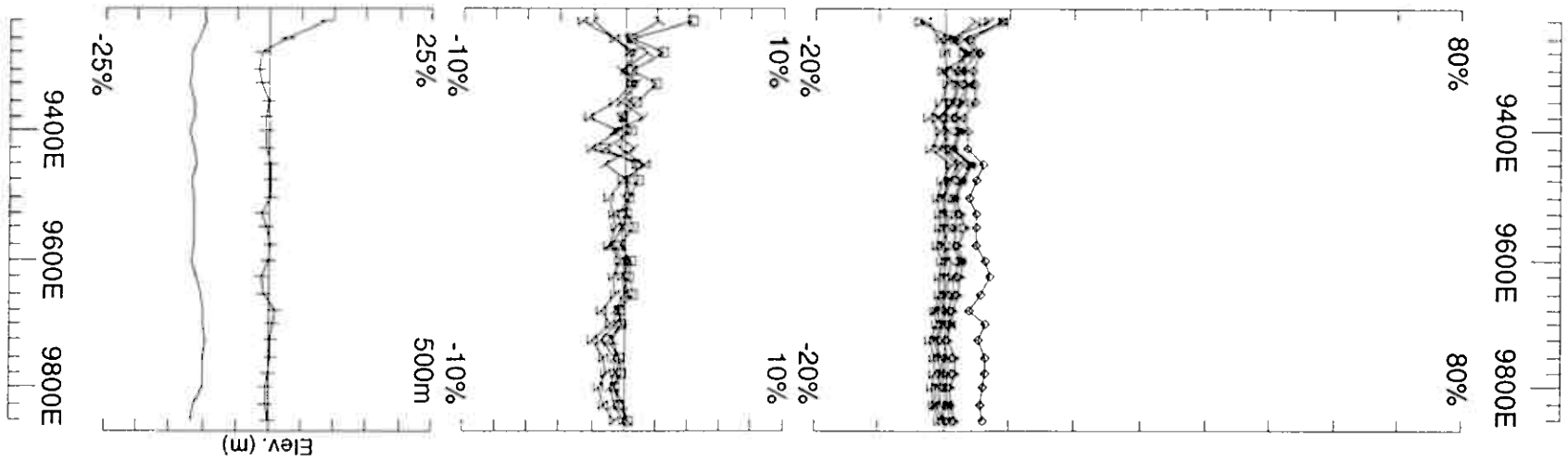
Loop: 02S Line: 2600N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 5/7/6 Reduced : 6/9/6 Plotted : 6/9/6



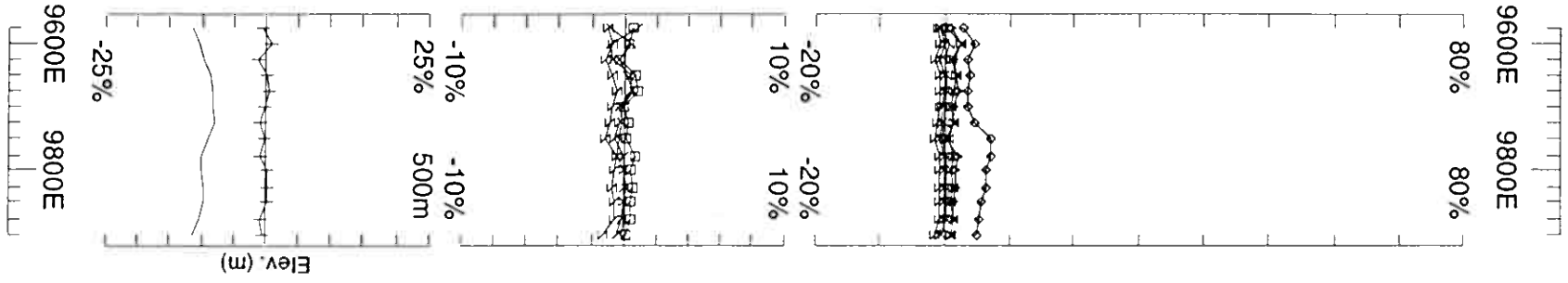
Loop: 02S Line: 2700N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Plotted 6/9/6



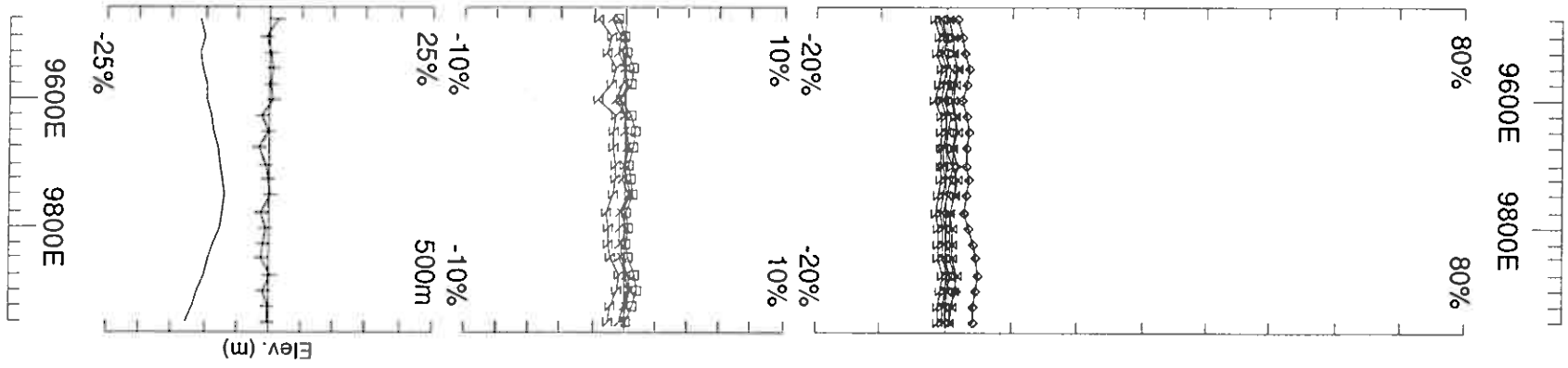
Loop: 02S Line: 2800N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



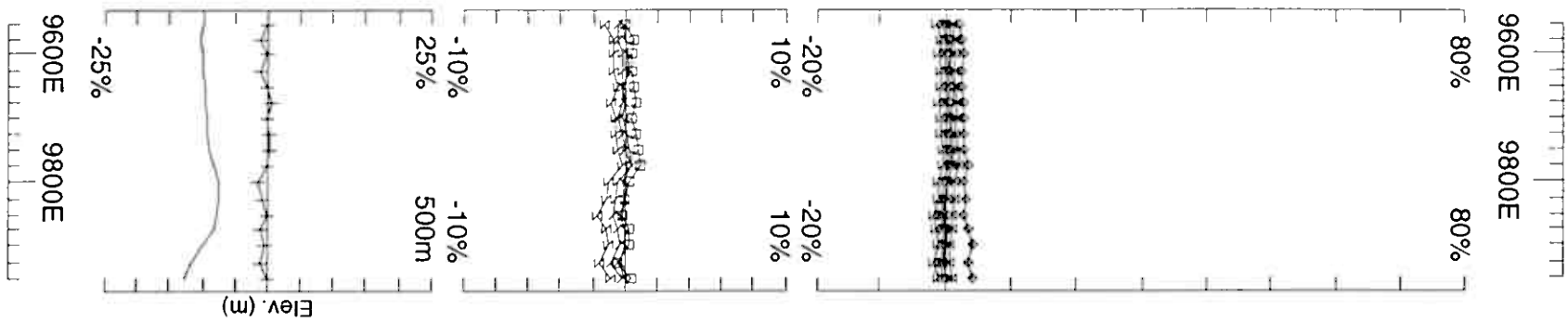
Loop: 02S Line: 2900N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02S Line: 3000N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02S Line: 3100N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 02S Line: 3200N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2650,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 7/5/6 Reduced : 6/9/6 Plotted : 6/9/6

Seljaasen

Loop 03S

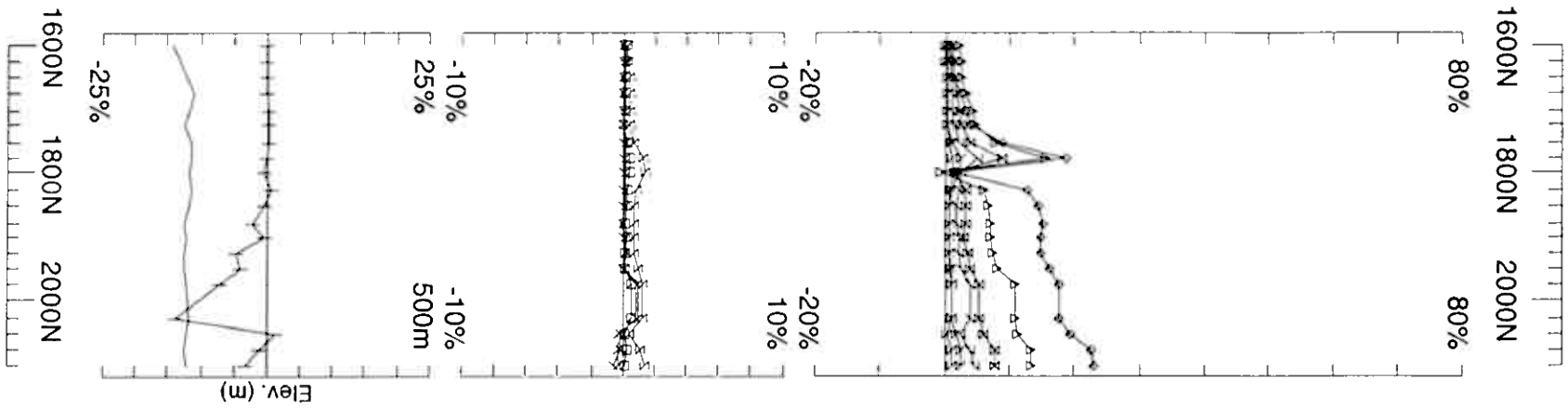
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (478350E, 6482700N, 150 m.a.s.l.)

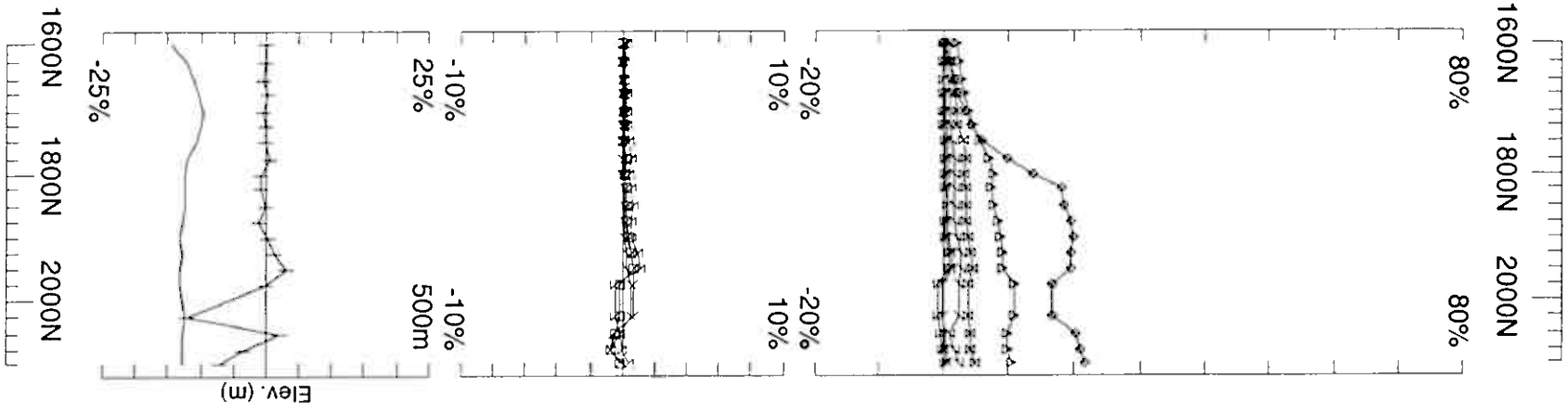
Ch1 reduced

Loop 03S	Line 9350E	1600N - 2100N	500m
	Line 9400E	1600N - 2100N	500m
	Line 9450E	1600N - 2100N	500m
	Line 9500E	1500N - 2100N	600m
	Seljaasen	Loop 03S Total	2100m

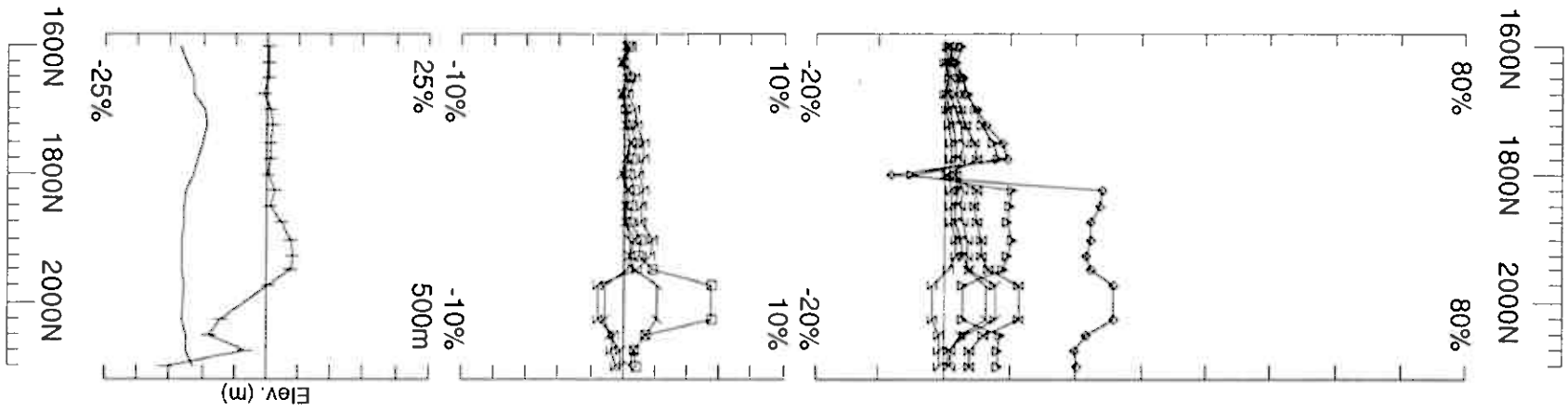
Loop 03S - point norm



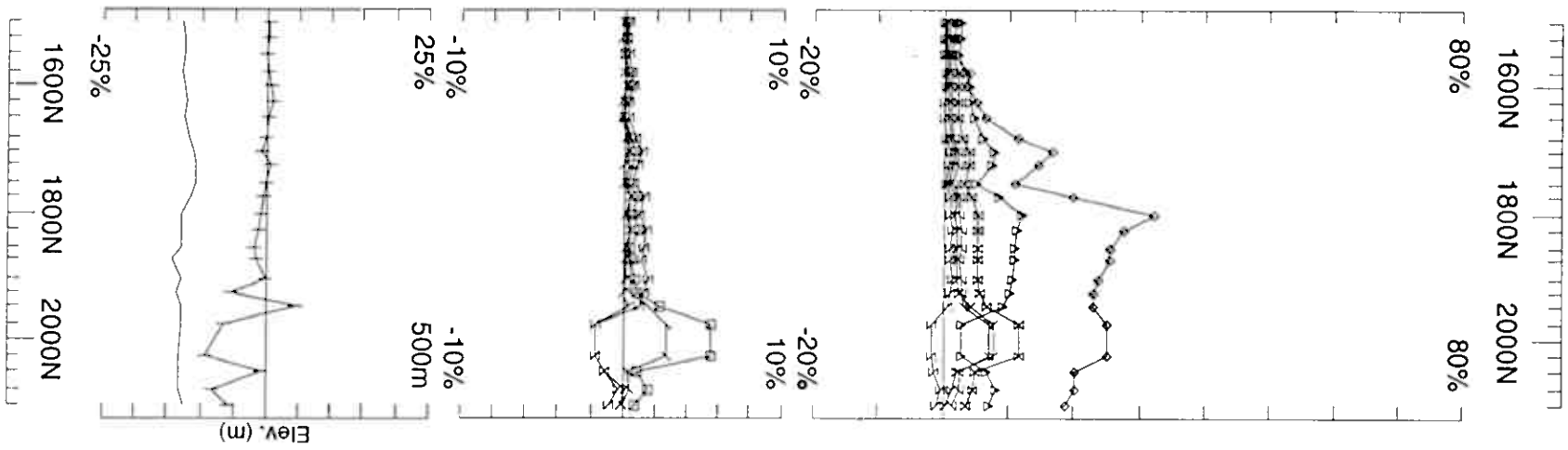
Loop: 03S Line: 9350N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2700,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S Line: 9400N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2700,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S Line: 9450N Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Point Norm.at x,y,z (9850,2700,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6



Loop: 03S Line: 9500N Compt: Hz	Secondary, (Chn - Ch1)/IHpI Point Norm.at x,y,z (9850,2700,150) Base Freq. 3.251 Hz	UTEM Survey at: Seljassen Grid For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE Job 0616 Surveyed : 6/7/6 Reduced : 6/9/6 Plotted : 6/9/6

Appendix B

0616 Production Diary

UTEM 3 Surface Survey

Bamble/Seljaasen
Norway

for

A/S Sulfidmalm

Production Log (0616)
UTEM Survey - Bamble/Seljaasen
Norway
A/S Sulfidmalm

Date	Rate	Production	Comments
up to June 04		-	Discussions, signing of the contract, assembly of crew and equipment.
June 05	Mob	(equip)	Equipment packed up and labelled. Picked up from Kingston. Shipping address is: Wilhelmsen Agencies AS P. Box 14 NO 2061 Gardermoen Norway
June 11	Mob	-	The LGL crew -Rob Langridge, John Frost, Kevin Arsenault and Pat Foley - travel from Canada->Frankfurt(FRA)->Oslo (OSL).
June 12	Mob	-	Continuation of air travel. The gear clears customs and meet with Falconbridge geologist Trevor Blair and crew. The group drives to the southern field house and then on to the project site arriving ~22:15.
June 13	L(4)	-	Unpack gear and get ready for looping. Do a tour of the site with Trevor Blair, have lunch and loop. Problems locating the northern edge of the loop and the northwest corner stretch out the day. Crew back in camp ~20:30. Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley
June 14	**P(2)-4**	4900m	Get gear ready and head out to the grid. Read two lines each without incident. Return to camp and head into Kragero to grocery shop. Crew back in camp ~19:30. **Loop 02** **Line 4100E 650N - 800N Hz Rx05** **Line 4200E 575N - 1750N Hz Rx05** **Line 4300E 525N - 1750N Hz Rx04** **Line 4400E 525N - 1750N Hz Rx05** **Line 4500E 625N - 1750N Hz Rx04** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 4.900km

Date	Rate	Production	Comments
June 15	**P(2)-4**	3700m	Get gear ready and head out to the grid. Read until 11:00 when the loop was broken by a moose or two. Repair the loop and read without further incident. Crew back in camp ~18:30. **Loop 02** **Line 4100E 1750N - 2250N Hz Rx05** **Line 4200E 1750N - 2250N Hz Rx05** **Line 4300E 1750N - 2250N Hz Rx05** **Line 4400E 1750N - 2250N Hz Rx05** **Line 5000E 900N - 1750N Hz Rx04** **Line 5050E 900N - 1750N Hz Rx04** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 8.600km
June 16	**P(2)-4**	3600m	Get gear ready and head out to the grid. The loop was broken by a moose. Repair the loop and read without further incident. Crew back in camp ~17:00. **Loop 02** **Line 4600E 700N - 1750N Hz Rx05** **Line 4700E 875N - 1750N Hz Rx05** **Line 4800E 900N - 1750N Hz Rx04** **Line 4900E 925N - 1750N Hz Rx04** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 12.200km
June 17	**P(2)-4**		Head out to the grid. Pick up Loop 2 and lay out Loop 1. Crew back in camp ~15:45. Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 12.200km
June 18	**P(2)-4**	4700m	Get gear ready and head out to the grid. Read without further incident - a portion of Line 3700 was read @50m stations.. Crew back in camp ~17:40 **Loop 01** **Line 3700E 400N - 550N Hz Rx05** **700N - 1725N Hz Rx06** **Line 3800E 475N - 1725N Hz Rx06** **Line 3900E 600N - 1725N Hz Rx05** **Line 4000E 575N - 1725N Hz Rx05** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 16.900km

Date	Rate	Production	Comments
June 19	**P(2)-4**	4350m	Get gear ready and head out to the grid. Read through rain in the morning. Transmitter shut down - walked the loop and found it was either overheating or in wet ground. Re-set up Tx and read till 17:15 when heavy rain started again and the Transmitter shut down again. Called it a day. Patti Tirschmann stopped through during the evening and discussed further work. Crew back in camp ~17:40

Loop 01

Line 3300E	**825N**	**- 1725N**	**Hz**	**Rx05**
Line 3400E	**550N**	**- 1725N**	**Hz**	**Rx06**
Line 3500E	**700N**	**- 1725N**	**Hz**	**Rx05**
Line 3600E	**475N**	**- 1725N**	**Hz**	**Rx05**

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 21.250km

June 20	**P(2)-4**	2050m	Get gear ready and head out to the grid. Read through rain in the morning. Transmitter shut down - walked the loop and found it was either overheating or in wet ground. Re-set up Tx and read till 17:15 when heavy rain started again and the Transmitter shut down again. Called it a day. Patti Tirschmann stopped through during the evening and discussed further work. Crew back in camp ~17:40

Loop 01

Line 3100E	**875N**	**- 1725N**	**Hz**	**Rx06**
Line 3200E	**875N**	**- 1725N**	**Hz**	**Rx05**
Line 3400E	**450N**	**- 550N**	**Hz**	**Rx05**
Line 3500E	**450N**	**- 700N**	**Hz**	**Rx06**

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 23.300km

June 21	**P(2)-4**		Get gear ready and head out to the Nystein-Vissestad Grid. The day started as cloudy but rain came ~mid-morning. Lay out wire and flag the loop in on Loop 4 in progressively wetter conditions. By 14:00 we have most of the loop out but the section remaining crosses a large cliff in the SE corner and a christmas tree farm. We start laying out these sections and the rain increases - the decision is made to stop work for today. Crew back in camp ~15:20

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 23.300km

Date	Rate	Production	Comments
June 22	**P(2)-4**		Get gear ready and head out to the Nystein-Vissestad Grid. Worked on the SE section of Loop 4 in rain - this was complete and we were back at the truck for lunch ~12:00. The rain picked up by 13:00 it was still raining very hard so we decided to scout out and flag in the remaining section of Loop 3. When this was completed we packed up and headed home. Crew back in camp ~16:40 Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 23.300km
June 23	**P(2)-4**	4825m	Get gear ready and head out to the grid. Read all midsummer day with little incident.. Crew back in camp ~17:00 **Loop 04** **Line 7700E 1725N - 3075N Hz Rx05** **Line 7900E 1850N - 3075N Hz Rx05** **Line 8550E 2400N - 2825N Hz Rx06** **Line 8650E 2450N - 2825N Hz Rx06** **Line 8700E 2500N - 3075N Hz Rx06** **Line 8750E 2475N - 2825N Hz Rx06** **Line 8800E 2550N - 3075N Hz Rx06** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 28.125km
June 24	**P(2)-4**	2825m	Read on Loop 4. Loop was broken overnight. Loop repaired and is broken again (~1500m from first break) while we are setting up. Read one line each. Crew back in camp ~19:00 **Loop 04** **Line 8200E 1725N - 3075N Hz Rx05** **Line 8300E 1725N - 2475N Hz Rx06** **Line 8300E 2650N - 3075N Hz Rx06** **Line 8400E 1725N - 2025N Hz Rx06** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 30.950km
June 25	**P(2)-4**	5700m	Read on Loop 4 without incident. Crew back in camp ~17:30 **Loop 04** **Line 8000E 1875N - 2950N Hz Rx05** **Line 8100E 1825N - 2950N Hz Rx06** **Line 8400E 2175N - 3075N Hz Rx06** **Line 8450E 1975N - 2825N Hz Rx06** **Line 8500E 2350N - 3075N Hz Rx05** **Line 8550E 1975N - 2350N Hz Rx05**

Date	Rate	Production	Comments
			Line 8600E 2425N - 3075N Hz Rx06
			Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 36.650km

Date	Rate	Production	Comments
June 26	**P(1)-3**	2500m	One receiver reads on Loop 4 without incident. Kevin Arsenault has an irritation and infection in his eye from a stick impact in the bush. Rob Langridge takes him into town to have it looked at and treated. He also purchases safety glasses and a SIM card for a second cell phone to improve communication in the field. Kevin is treated and returned to the crew cottage. Construction on the access road means that returning to the field is longer than usual ~26km. Rob returns and lays out wire on Loop 3 until surveying is completed Crew back in camp ~17:30 **Loop 04** **Line 8500E 1725N - 2250N Hz Rx05** **Line 8600E 1725N - 2300N Hz Rx05** **Line 8650E 1975N - 2275N Hz Rx05** **Line 8700E 1725N - 2250N Hz Rx05** **Line 8750E 1975N - 2225N Hz Rx05** **Line 8800E 1850N - 2175N Hz Rx05** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 39.150km
June 27	**P(2)-4**		We find out that our GPSing will be definitive for these loops. Head out to the Nystein-Vissestad Grid and pick up Loop 4 and lay out Loop 3 in the rain. Added details to GPS data. When this was completed we packed up and headed home. Crew back in camp ~15:40 Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 39.150km
June 28	**P(2)-4**	6700m	Out early to avoid construction and read on Loop 3 to try to complete the loop in a day. Crew back in camp ~18:40 **Loop 03** **Line 6500E 1725N - 2525N Hz Rx05** **Line 6700E 1725N - 2675N Hz Rx05** **Line 6900E 1725N - 2725N Hz Rx05** **Line 7100E 1725N - 2975N Hz Rx5/6** **Line 7300E 1725N - 3075N Hz Rx06** **Line 7500E 1725N - 3075N Hz Rx06** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 45.850km
June 29	**P(2)-4**		Head out to the Nystein-Vissestad Grid and pick up Loop 3. Start to pack for the move to the Arendal area.. Crew back in camp ~15:30

Date	Rate	Production	Comments
	Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley	45.850km	Total to date:

Date	Rate	Production	Comments
June 30	**P(2)-4**		Pack and head to the Arendal area..Drop a load off at the new house and go out to the Seljaasen Grid. Find the grid numbering to be confusing but lay out Loop 01S. Head back to Stavnes. Crew back in camp ~18:00 Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 45.850km
July 01	S(2)-4		Pack, scrub the house to the satisfaction of the owner and head to the Arendal area..Arrive ~15:00 to take possession. Unpack and shop. Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 45.850km
July 02	P(2)-4	2975m	Out to the Seljaasen Grid to try to complete the loop in a day. We do despite one loop break. Crew back in camp ~15:40 **Loop 01S** **Line 1200N 225E - 375E Hz Rx06** **Line 1300N 150E - 600E Hz Rx06** **Line 1400N 125E - 600E Hz Rx06** **Line 1500N 125E - 600E Hz Rx06** **Line 1600N 125E - 600E Hz Rx05** **Line 1700N 125E - 600E Hz Rx05** **Line 1800N 125E - 600E Hz Rx05** Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 48.825km
July 03	P(2)-4		Out to the Seljaasen Grid to put out Loop 2S. Wire is swum across a lake in the NE corner. Loop is completed and a small portion of Loop 1S is collected. Crew back in camp ~16:30 Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 48.825km
July 04	P(2)-4	6075m	Out to the Seljaasen Grid to survey on Loop 2S. Crew back in camp ~17:45 **Loop 02S** **Line 2000N 9200E - 10500E Hz Rx06** **Line 2100N 9200E - 10500E Hz Rx06** **Line 2200N 9200E - 10500E Hz Rx05** **Line 2300N 9200E - 10500E Hz Rx05** **Line 2400N 9950E - 10500E Hz Rx06** **Line 2500N 10175E - 10500E Hz Rx05**
	Mob (BH equip)		Borehole equipment packed up and labeled. Picked up from Kingston.

Date	Rate	Production	Comments
			Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley
		54.900km	Total to date:

Date	Rate	Production	Comments
July 05	P(2)-4 Mob (BH equip)	5525m	Out to the Seljaasen Grid to survey on Loop 2S. Crew back in camp ~17:15

Loop 02S

Line 2400N	**9200E - 9950E**	**Hz**	**Rx06**
Line 2500N	**9200E - 9975E**	**Hz**	**Rx06**
Line 2600N	**9200E - 9900E**	**Hz**	**Rx05**
Line 2700N	**9200E - 10000E**	**Hz**	**Rx05**
Line 2800N	**9200E - 9850E**	**Hz**	**Rx06**
Line 2900N	**9200E - 9850E**	**Hz**	**Rx05**
Line 3000N	**9575E - 9900E**	**Hz**	**Rx05**
Line 3100N	**9475E - 9950E**	**Hz**	**Rx06**
Line 3200N	**9550E - 9950E**	**Hz**	**Rx05**

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 60.425km

July 06 — P(2)-4 Mob (BH equip) — 2100m — Out to the Seljaasen Grid. Modify Loop 02S to Loop 03S to allow surveying of NS lines. Survey on Loop 3S. Pick up the remainder of Loop 03S. Crew back in camp ~16:15

Loop 03S

Line 9350E	**1600E - 2100N**	**Hz**	**Rx05**
Line 9400E	**1600E - 2100N**	**Hz**	**Rx05**
Line 9450E	**1600E - 2100N**	**Hz**	**Rx06**
Line 9500E	**1500E - 2100N**	**Hz**	**Rx06**

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 62.525km

July 07 — P(2)-4 Mob (BH equip) — Out to the Seljaasen Grid to pick up Loop 3S. Pack up gear on return. Josh arrives to help move. Crew back in camp ~15:30

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 62.525km

July 08 — P(2)-4 — Move to Tyristrand. Stop at airport to clarify Pat and Kevin's tickets.

Crew:R.Langridge,J.Frost,K.Arsenault,P.Foley Total to date: 62.525km

July 09 - July 21 — Crew working on other grids in Norway.

July 22 — Transport surface equipment to Gardemoen. Help in the shuffle of field trucks for maintenance. Rob Langridge to Gardemoen.

Crew:R.Langridge,J.Frost

Date	Rate	Production	Comments
July 23	**Demob** (all equipment) Crew:R.Langridge,J.Frost		Crew makes the journey back to Canada. Equipment (borehole and surface) in transit.

Date	Rate	Production	Comments
July 24 ->July 27	**Demob** (all equipment)	-	Equipment (borehole and surface) in transit.
July 28	**Demob** (surface equipment)		Equipment (borehole) arrives in Kingston. Equipment (surface) in transit.
July 29 ->August 07	**Demob** (surface equipment)	-	Equipment (surface) in transit.
August 08	**Demob**		Equipment (surface) arrives in Kingston.

LEGEND

P(n)-x	Surface Production (# of receivers) - # of personnel
PB(n)-x	BHUTEM3 Production (# of receivers) - # of personnel
L(n)-x	Looping (# of receivers) - # of personnel
S(n)-x	Standby (# of receivers) - # of personnel
D(n)-x	Down (# of receivers) - # of personnel
DB(n)-x	Down BHUTEM3 (# of receivers) - # of personnel
SES	Surface Equipment Standby
BES	Borehole Equipment Standby

Appendix C

The UTEM SYSTEM

The UTEM System

UTEM Data Reduction and Plotting Conventions

Data Presentation

The UTEM SYSTEM

UTEM uses a large, fixed, horizontal transmitter loop as its source. Loops range in size from 300m x 300m up to as large as 4km x 4km. Smaller loops are generally used over conductive terrain or for shallow sounding work. The larger loops are only used over resistive terrain. The UTEM receiver is typically syncronized with the transmitter at the beginning of a survey day and operates remotely after that point. The clocks employed - one in each of the receiver and transmitter - are sufficiently accurate to maintain synchronisation.

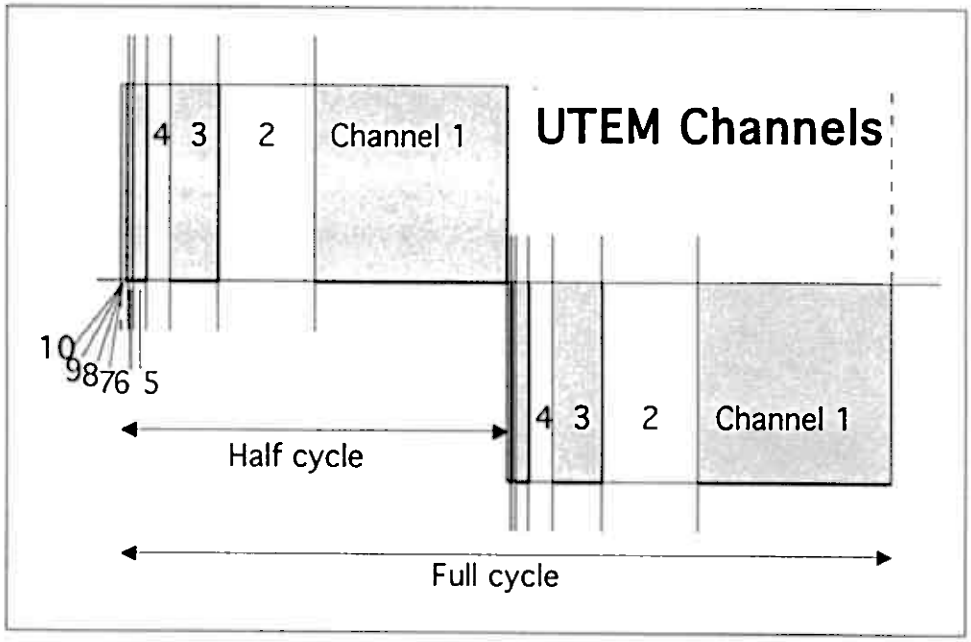
Measurements are routinely taken to a distance of 1.5 to twice the loop dimensions, depending on the local noise levels, and can be continued further. Lines are typically surveyed out from the edge of the loop but may also be read across the loop wire and through the centre of the loop, a configuration used mainly to detect horizontal conductors. BHUTEM - the borehole version of UTEM -surveys have been carried out to depths up to 3000+ metres.

System Waveform

The UTEM transmitter passes a low-frequency (4 Hz to 90 Hz) current of a precisely regulated triangular waveform through the transmitter loop. The frequency can be set to any value within the operating range of the transmitter, however, it is usually set at 31 Hz to minimise power line (60 Hz in North America) effects. Since a receiver coil responds to the time derivative of the magnetic field, the UTEM system really "sees" the step response of the ground. UTEM is the only time domain system which measures the step response of the ground. All other T.D.E.M. systems to date transmit a modified step current and "see" the (im)pulse response of the ground at the receiver. In practice, the transmitted UTEM waveform is tailored to optimize signal-to-noise. Deconvolution techniques are employed within the system to produce an equivalent to the conceptual "step response" at the receiver.

System Sampling

The UTEM receiver measures the time variation of the magnetic field in the direction of the receiver coil at 10 delay times (channels). UTEM channels are spaced in a binary, geometric progression across each half-cycle of the received waveform. Channel **10** is the earliest channel and it is $1/2^{10}$ of the half-cycle wide. Channel **1**, the latest channel, is $1/2^{1}$ of the half-cycle wide (see Figure below). The measurements obtained for each of 10 channels are accumulated over many half-cycles. Each final channel value, as stored, is the average of the measurements for that time channel. The number of half-cycles averaged generally ranges between 2048 (1024 full-cycles - 1K in UTEM jargon) to 32768 (16K) depending on the level of ambient noise and the signal strength.



System Configurations

For surface work the receiver coil is mounted on a portable tripod and oriented. During a surface UTEM survey the vertical component of the magnetic field (Hz) of the transmitter loop is always measured. Horizontal in-line (Hx) and cross-line (Hy) components are also measured if more detailed information is required. The UTEM System is also capable of measuring the two horizontal components of the electric field, Ex and Ey. A dipole sensor comprised of two electrodes is used to measure the electric field components. This is generally used for outlining resistive features to which the magnetic field is not very sensitive.

BHUTEM surveys employ a receiver coil that is smaller in diameter than the surface coil. The borehole receiver coil forms part of a down-hole receiver package used to measure the axial (along-borehole) component of the magnetic field of the transmitter loop. Due to the distance between coil and receiver in borehole surveys the signal must be transmitted up to the receiver. In BHUTEM the signal is transmitted to surface digitally using a kevlar-reinforced fibre-optic cable as a data link. Using a fibre-optic link avoids signal degradation problems and allows surveying of boreholes to 3000+m. The cable is also very light - the specific gravity is nearly 1.0 - making the cable handling hardware quite portable.

The EM Induction Process

Any time-varying transmitted ("primary") field induces current flow in conductive regions of the ground below and around the transmitter loop (i.e. in the earth or "half-space"). This current flow produces a measurable EM field, the secondary field, which has an inherent "inertia" that resists the change in primary field direction. This "inertial" effect is called self-inductance; it limits the rate at which current can change and is only dependent on the shape and size of a conductive path.

It takes a certain amount of time for the transmitted current flow to be redirected (reversed) and reestablished to full amplitude after the rate-of-change of the primary field reverses direction. This measurable reversal time is characteristic for a given conductor. In general, for a good conductor this time is greater than that of a poor conductor. This is because in a good conductor the terminal current level is greater, whereas its rate of change is limited by the inductance of the current path. The time-varying current causes an Emf in the sensor proportional to the time derivative of the current. This Emf decays with time - it vanishes when the reversal is complete - and the characteristic time of the Emf decay as measured by the sensor is referred to as the **decay time** of the conductor.

The large-scale current which is induced in the half-space by the primary field produces the half-space response as seen in typical UTEM profiles. This background response is influenced by the finite conductivity of the surrounding rock. Other currents may be induced in locally more conductive zones (conductors) that have longer decay times than the half-space response. The responses of these conductors are superimposed upon the background response. The result is that the UTEM receiver detects:

- the primary field waveform, a square-wave
- the half-space (background) response of the surrounding rock
- a slight-to-large response due to any conductors present.

The result is that in the presence of conductors the primary field waveform is substantially (and anomalously) distorted.

UTEM DATA REDUCTION and PLOTTING CONVENTIONS

The UTEM data as it appears in the data files is in total field, continuously normalized form. In this form, the magnetic field data collected by the receiver is expressed as a % of the calculated primary magnetic field vector magnitude at the station. These are total field values - the UTEM system measures during the "on-time" and as such samples both the primary and secondary fields.

For plotting purposes, the reduced magnetic field data (as it appears in the data file) are transformed to other formats as required. The following is provided as a description of the various plotting formats used for the display of UTEM data. A plotting format is defined by the choice of the *normalization* and *field type* parameters selected for display.

NORMALIZATION

UTEM results are always expressed as a % of a normalizing field at some point in space.

In **continuously normalized** form the normalizing factor (the denominator) is the magnitude of the computed local primary field vector. As the primary exciting field magnitude diminishes with increasing distance from the transmitter loop the response is continuously amplified as a function of offset from the loop. Although this type of normalization considerably distorts the response shape, it permits anomalies to be easily identified at a wide range of distances from the loop.

Note: An optional form of continuous normalization permits the interpreter to normalize the response to the magnitude of the primary field vector at a fixed depth below each station. This is useful for surface profiles which come very close to the loop. Without this adjustment option, the normalizing field is so strong near the loop that the secondary effects become too small in the presence of such a large primary component. In such circumstances interpretation is difficult, however; by "normalizing at some depth" the size of the normalizing field, near the loop in particular, is reduced and the resulting profile can be more effectively interpreted to a very close distance from the transmitter wire. The usual choice for the depth is the estimated target depth is used.

In **point normalized form** the normalizing factor is the magnitude of the computed primary field vector at a single point in space. When data is presented in this form, the point of normalization is displayed in the title block of the plot. Point normalized profiles show the non-distorted shape of the field profiles. Unfortunately, the very large range in magnitude of anomalies both near and far from the loop means that small anomalies, particularly those far from the loop, may be overlooked on this type of plot in favor of presenting larger amplitude anomalies.

Note: Selecting the correct plot scales is critical to the recognition of conductors over the entire length of a point normalized profile. Point normalized data is often used for interpretation where an analysis of the shape of a specific anomaly is required. Point normalized profiles are therefore plotted selectively as required during interpretation. An exception to this procedure occurs where surface data has been collected entirely inside a transmitter loop. The primary field does not vary greatly inside the loop, therefore, the benefits of continuous normalization are not required in the display of such results. In these cases data is often point normalized to a fixed point near the loop centre.

FIELD TYPE

The type of field may be either the **Total field** or the **Secondary field.** In general, it is the secondary field that is most useful for the recognition and interpretation of discrete conductors.

UTEM Results as Secondary Fields

Because the UTEM system measures during the transmitter on-time the determination of the secondary field requires that an estimate of the primary signal be subtracted from the observations. Two estimates of the primary signal are available:

1) UTEM Channel 1

   One estimate of the primary signal is the value of the latest time channel observed by the UTEM System, channel 1. When Channel 1 is subtracted from the UTEM data the resulting data display is termed ***Channel 1 Reduced.*** This reduction formula is used in situations where it can be assumed that all responses from any target bodies have decayed away by the latest time channel sampled. The Channel 1 value is then a reasonable estimate of the primary signal present during Channels 2....10.

   In practice the ***Channel 1 Reduced*** form is most useful when the secondary response is very small at the latest delay time. In these cases channel 1 is indeed a good estimate of the primary field and using it avoids problems due to geometric errors or transmitter loop current/system sensitivity errors.

2) Calculated primary field

An alternate estimate of the primary field is obtained by computing the primary field from the known locations of the transmitter loop and the receiver stations. When the computed primary field is subtracted from the UTEM data the resulting data display is termed ***Primary Field Reduced*** .

The calculated primary field will be in error if the geometry is in error - mislocation of the survey stations or the loop vertices - or if the transmitter loop current/system sensitivity is in error. Mislocation errors from loop/station geometry may give rise to very large secondary field errors depending on the accuracy of the loop and station location method used. Transmitter loop current/system sensitivity error is rarely greater than 2%. ***Primary Field Reduced*** is plotted in situations where a large Channel 1 response is observed. In this case the assumption that the Channel 1 value is a reasonable estimate of the primary field effect is not valid.

Note: When UTEM data is plotted in the ***Channel 1 Reduced*** form the secondary field data for Channel 1 itself are always presented in ***Primary Field Reduced*** form and are plotted on a separate axis. This plotting format serves to show any long time-constant responses, magnetostatic anomalies and/or geometric errors present in the data.

Mathematical Formulations

In the following expressions:

$\mathbf{Rn_j}$ is the result plotted for the n^{th} UTEM channel,

$\mathbf{R1_j}$ is the result plotted for the latest-time UTEM channel, channel 1,

$\mathbf{Chn_j}$ is the raw component sensor value for the n^{th} channel at station j,

$\mathbf{Ch1_j}$ is the raw component sensor value for channel 1 at station j,

$\mathbf{H^P_j}$ is the computed primary field component in the sensor direction

$|\mathbf{H^P}|$ is the magnitude of the computed primary field at:
- a fixed station for the entire line (point normalized data)
- the local station of observation (continuously normalized data)
- a fixed depth below the station (continuously normalized at a depth).

Channel 1 Reduced Secondary Fields : Here, the latest time channel, Channel 1 is used as an "estimate" of the primary signal and channels 2-10 are expressed as:

$$Rn_j = (Chn_j - Ch1_j) / |H^P| \quad x\,100\%$$

Channel 1 itself is reduced by subtracting a calculation of the primary field observed in the direction of the coil, H^P as follows:

$$R1_j = (Ch1_j - H^P{}_j) / |H^P| \quad x\,100\%$$

Primary Field Reduced Secondary Fields : In this form all channels are reduced according to the equation used for channel 1 above:

$$Rn_j = (Chn_j - H^P{}_j) / |H^P| \quad x\,100\%$$

This type of reduction is most often used in cases where very good geometric control is available (leading to low error in the calculated primary field, $H^P{}_j$) and where very slowly decaying responses result in significant secondary field effects remaining in channel 1 observations.

UTEM Results as a Total Field

In certain cases results are presented as a % of the **Total Field**. This display is particularly useful, in borehole surveys where the probe may actually pass through a very good conductor. In these cases the shielding effect of the conductor will cause the observed (total) field to become very small below the intersection point. This nullification due to shielding effects on the total field is much easier to see on a separate *Total Field* plot. In cases where the amplitude of the anomalies relative to the primary field is small, suggesting the presence of poorly conductive bodies, the *Total Field* plot is less useful.

The data contained in the UTEM reduced data files is in *Total Field*, continuously normalized form if:

$$Rn_j = Chn_j / |H^P| \quad x\,100\%$$

DATA PRESENTATION

All UTEM survey results are presented as profiles in an Appendix of this report. For BHUTEM surveys the requisite Vectorplots, presented as plan and section views showing the direction and magnitude of the calculated primary field vectors for each transmitter loop, are presented in a separate Appendix.

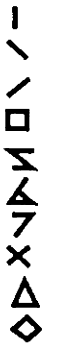
The symbols used to identify the channels on all plots as well as the mean delay time for each channel is shown in the table below.

UTEM System Mean Delay Times

10 Channel Mode @ 31 hz.(approx.)

(base freq: 30.974 hertz)

Channel #	Delay time (ms)	Plot Symbol
1	12.11	
2	6.053	
3	3.027	
4	1.513	
5	0.757	
6	0.378	
7	0.189	
8	0.095	
9	0.047	
10	0.024	



Notes on Standard plotting formats:

10 channel data in *Channel 1 Reduced* form - The data are usually displayed on three separate axes. This permits scale expansion, allowing for accurate determination of signal decay rates. The standard configuration is:

Bottom axis - Channel 1 (latest time) is plotted alone in ***Primary Field Reduced*** form using the same scale as the center axis.

Center axis - The intermediate to late time channels, ch5 to ch2 are plotted on the center axis using a suitable scale.

Top axis - The early time channels, ch10 to ch6 and a repeat of ch5 for comparison are plotted on the top axis at a reduced scale. The earliest channels, ch8 to ch10, may not be plotted to avoid clutter.

10 channel data in ***Primary Field Reduced*** form: The data are displayed using a

single axis plot format. Secondary effects are plotted using a Y axis on each data plot with peak to peak values up to 200%.

BHUTEM data plotted as total field profiles: Data are expressed directly as a percentage of the ***Total Field*** value. The Y axis on each single axis data plot shows peak values of up to 100%. These departures are always relative to the measured total field value at the observation station.

BHUTEM data plotted as secondary field profiles: Check the title block of the plot to determine if the data is in ***Channel 1 Reduced*** form or in ***Primary Field Reduced*** form.

Note that on all BHUTEM plots the ratio between the axial component of the primary field of the loop and the magnitude of the total primary field strength **(dc)** is plotted as a profile without symbols. In UTEM jargon this is referred to as the "primary field" and it is plotted for use as a polarity reference tool.

Appendix D

Note on sources of anomalous Ch1

Note on sources of anomalous Ch1

This section outlines the possible sources of anomalous channel 1 which is not correlated to the Ch2-10 data plotted on the upper axes of a *channel 1 normalized* plot.

1) **Mislocation of the transmitter loop and/or survey stations**

Mislocating the transmitter loop and/or the survey stations results in an error in the calculated primary field at the station and appears as an anomalous Ch1 value not correlated to *channel 1 normalized* Ch2-10. The effect is amplified near the loop front. This can be seen in the profiles - the error in Ch1 generally increases approaching the loop. As a rule a 1% error in measurement of the distance from the loop will result in, for outside the loop surveys, an error in Ch1 of:

- 1% near the loop front (long-wire field varies as $1/r$)
- 3% at a distance from the loop front (dipolar field varies as $1/r^3$)
- 2% at intermediate distances (intermediate field varies as $\sim 1/r^2$)

Errors in elevation result in smaller errors but as they often affect the chainage they accumulate along the line.

The in-loop survey configuration generally diminishes geometric error since the field gradients are very low. At the centre of the loop the gradient in the vertical field is essentially zero so it is difficult to introduce geometric anomalies near the loop centre. Near the loop sides and at the closest approach of the lines to the wire mislocation of the loop and the station becomes more critical. Typically loop sides are designed to be >200m from any survey stations.

2) **Magnetostatic UTEM responses**

Magnetostatic UTEM responses arise over rocks which generate magnetic anomalies. Such magnetic materials will amplify the total (primary + secondary) field of the UTEM transmitter which is sensed by the receiver coil. The secondary field is generated by subtracting a computed primary which does not include magnetic effects. This can give rise to strong and abrupt channel 1 anomalies when the source of the magnetics is at surface. This is the case in a number of places on these grids. UTEM magnetostatic anomalies differ from DC magnetic anomalies in the following three major ways:

1) In the case of DC magnetics the field is dipping N and is very uniform over the scale of the survey area while the UTEM field inside the loop is vertical and it is stronger near the loop edges.
2) Most aeromagnetics are collected as total field while with UTEM we measure a given (in this case generally z,x) component.
3) DC magnetic instruments observe the total magnetization of the causative body which is due to its susceptibility as well as any remnant magnetization. An AC method such as UTEM will not respond to the remnant portion of the magnetization.

The larger amplitude of the UTEM Ch1 response is explained by the fact that the UTEM primary field is often more favourably coupled (magnetostatically speaking) to

magnetic mineralization as compared to the earths field. Another factor could be the presence of a reverse remnant component to the magnetization.
Note that positive magnetic anomalies will cause:

- positive Ch1 anomalies in data collected outside the loop
- negative Ch1 anomalies in data collected inside the loop

3) **Extremely good conductors**

An extremely good conductor will be characterized by a time constant much longer than the half-period (@ 30Hz >>16ms). This will give rise to an anomalous Ch1 which is not correlated to the Ch2-10 data plotted on the upper axes of a *channel 1 normalized* plot.

Appendix E

Note on 4 Hz UTEM data: The effect of the presence of a 60-cycle powerline.

Note

While this Appendix uses data collected in the presence of a 60Hz powerline the issue dealt with applies equally to UTEM data collected in the presence of a 50Hz powerline.

Note: The standard presentation in Appendix A has Ch2-5 plotted on the middle axis. An alternative presentation - with Ch2 and Ch3 on the middle axis - is sometimes chosen when a powerline cuts through the surveyed area. This Appendix is a brief discussion of why the alternative presentation is chosen.

Note on 4 Hz UTEM data:The effect of the presence of a 60-cycle powerline.

This appendix outlines and discusses the effect of the presence of a 60-cycle powerline on ~4Hz (3.872Hz) UTEM data. This line is from a series of loops with a powerline cutting across the survey area. The UTEM data is affected by the presence of the powerline.

example data:

Figure E1(a) is the example data as presented in Appendix A - an alternative presentation with Ch2 and Ch3 on the middle axis. The standard presentation is shown in Figure E1(b) - with Ch2-5 plotted on the middle axis. The alternative presentation was chosen for a series of loops (including this loop) with a powerline cutting through the surveyed area. Figure E1(c) shows why - Ch4 and Ch5 show a pattern where when one is up the other is down and vice versa. The amplitude of the pattern decreases with distance away from the powerline. It was felt that this pattern obscured the information in Ch2 and 3 and the alternative presentation was chosen.

explanation:

Figure E2a) shows the UTEM waveform at ~4Hz with a 60Hz waveform superimposed on it. Roughly 16 cycles of the 60-cycle waveform fit into the full UTEM waveform. On a channel-by-channel basis:

~4 cycles fit into Ch1
~2 cycles fit into Ch2
~1 cycle fits into Ch3.

The multiple cycles tend to cancel out. Earlier channels are narrower - only part of a cycle wide. In particular Ch4 is ~half a cycle wide and Ch5 falls in the opposite halfcycle. The result is the pattern shown in Figure 1(c): Ch4 and Ch5 tending to diverge from one another - more strongly near the powerline.

other presentations:

Figures E3(a) and (b) show the example data in two other presentations where several channels are combined to give fewer, cleaner channels:

Figure E3(a): In this presentation Ch4 and 5 are combined to give a combined Ch"4" that is ~1.5 times as wide as the original Ch4. The Ch"4" is cleaner than the original. The original Ch5-10 are shown on the upper axis.

Figure E3(b): In this presentation Ch4-10 are combined to give a combined Ch"4" that is 2x as wide as the original Ch4 (equal in width to the original Ch3). The Ch"4" is as clean as the original Ch3. Note that Ch10 is added in twice to make the 2x factor exact. The original Ch5-10 are shown on the upper axis.

Discussion:

Several elements of UTEM survey design and procedure will have an affect on the number of useful channels in the final data set. These would include:

- careful positioning of the transmitter loops relative to the powerline(s)
- increasing the transmitter current (and the signal-to-noise ratio)
- care in the selection of gains during surveying. Near a source of coherent noise (eg powerline) the signal gain should be selected to minimize data rejections.

Consideration should also be given to increasing the station spacing in the vicinity of the powerline. This allows additional stacking to be done (at fewer stations) without much of an increase in surveying time.

Several other ways to increase the number of channels free of the powerline affects are:

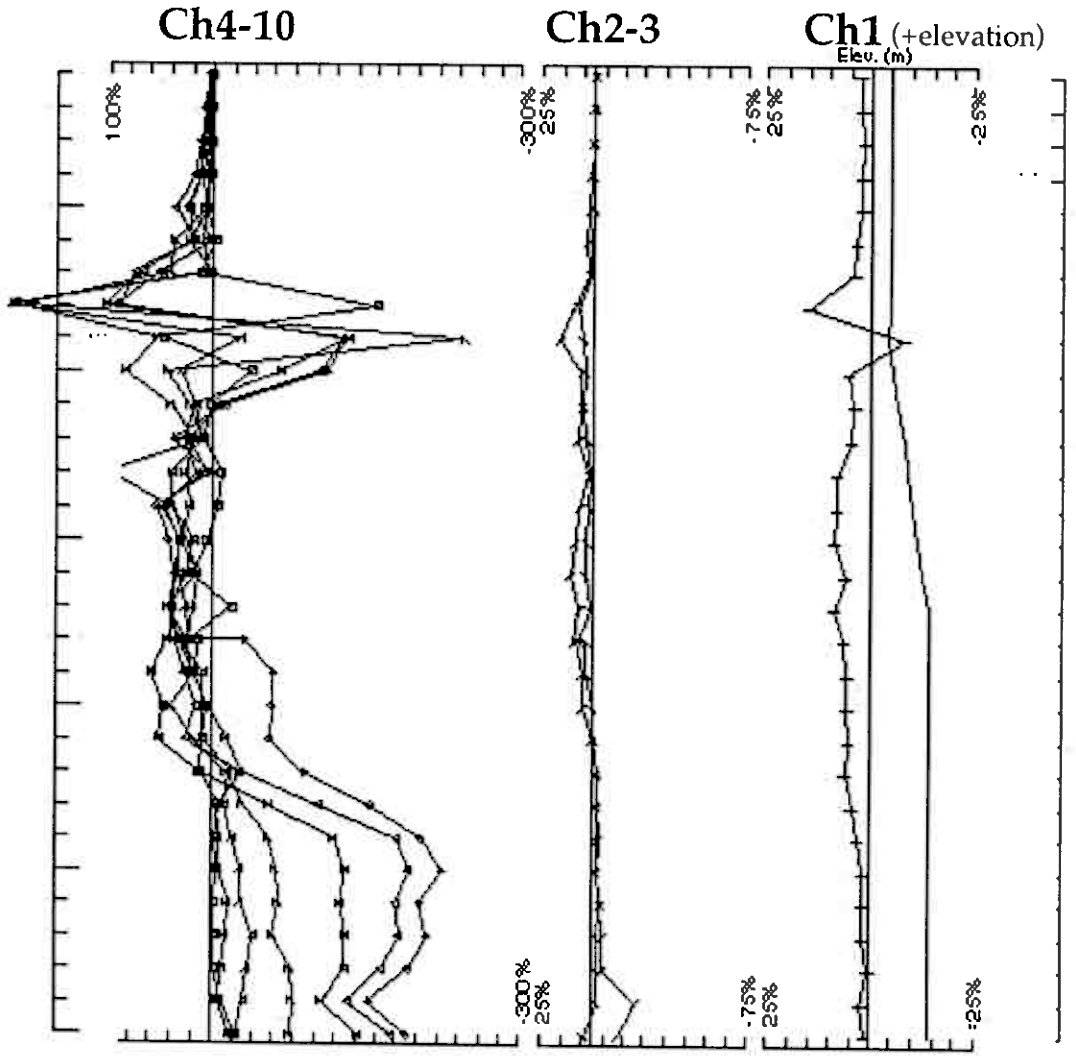
- lowering the frequency: each factor of two lower in frequency would add a channel relatively free of the affects of the powerline. The cost would be increased stacking time at each station.

- taking multiple readings: each reading starts at a different (random) point on the 60-cycle waveform. The sum of several readings will tend to better average out any affect.

- alternative channel sampling: Figure E2b) shows the standard UTEM 3 Boxcar channel sampling. An alternative - tapered channel sampling - is available (and often used) with UTEM 4. In this case if tapered sampling had been available it would likely have been used. The result would have been:

  - a slightly noisier Ch3
  - a considerably improved Ch4
  - an improved Ch5

  The choice of which sampling to use on a UTEM 4 survey depends on the frequency of the survey, the proximity and the frequency of any local powerline and the type of decay seen.



Loop	Secondary, (Chn-Ch1/Hpl	
Line	Contin. Norm at a depth of 0m	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Compt: Hz	Base Freq. 3.872Hz	

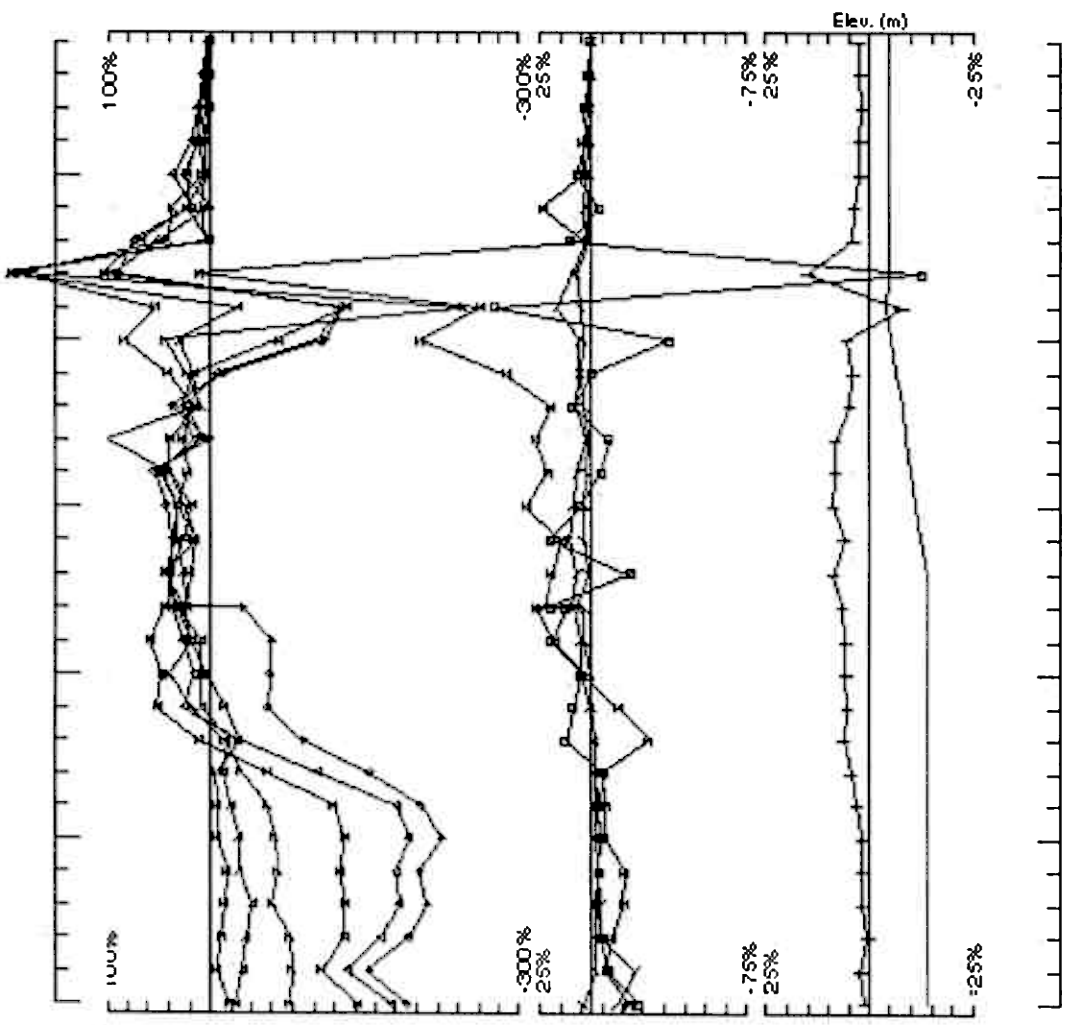
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E1(a)

Original 4Hz data: alternative format

Figure E1a



Loop	Secondary, (Chn-Ch1 / Hpl	
Line	Contin. Norm at a depth of 0m	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Compt: Hz	Base Freq. 3.872Hz	

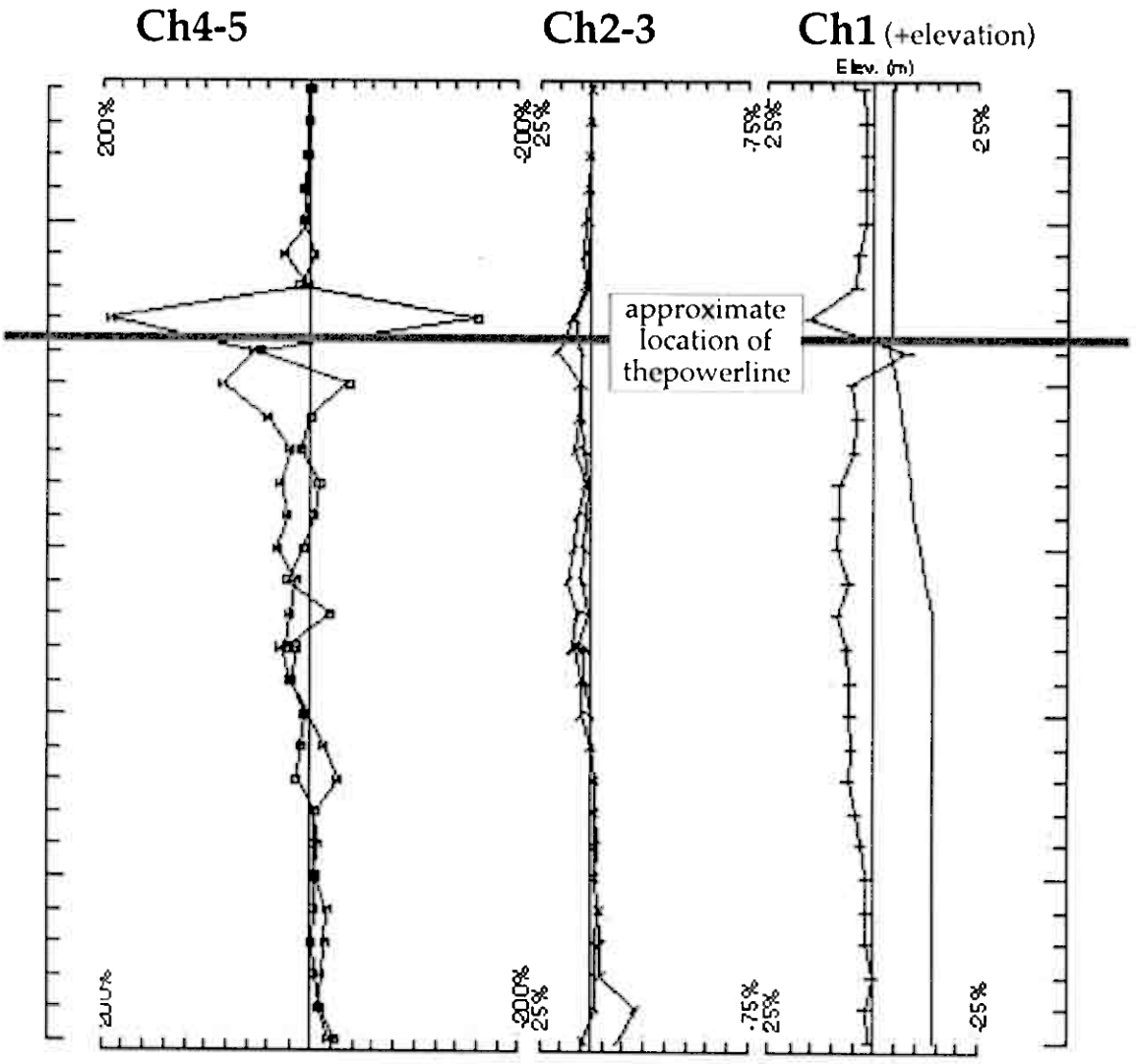
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E1(b)

Original 4Hz data: standard format

Figure E1b



Loop	Secondary, (Chn-Ch1 / Hpl	
Line	Contin. Norm at a depth of 0m	
Compt: Hz	Base Freq. 3.872Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

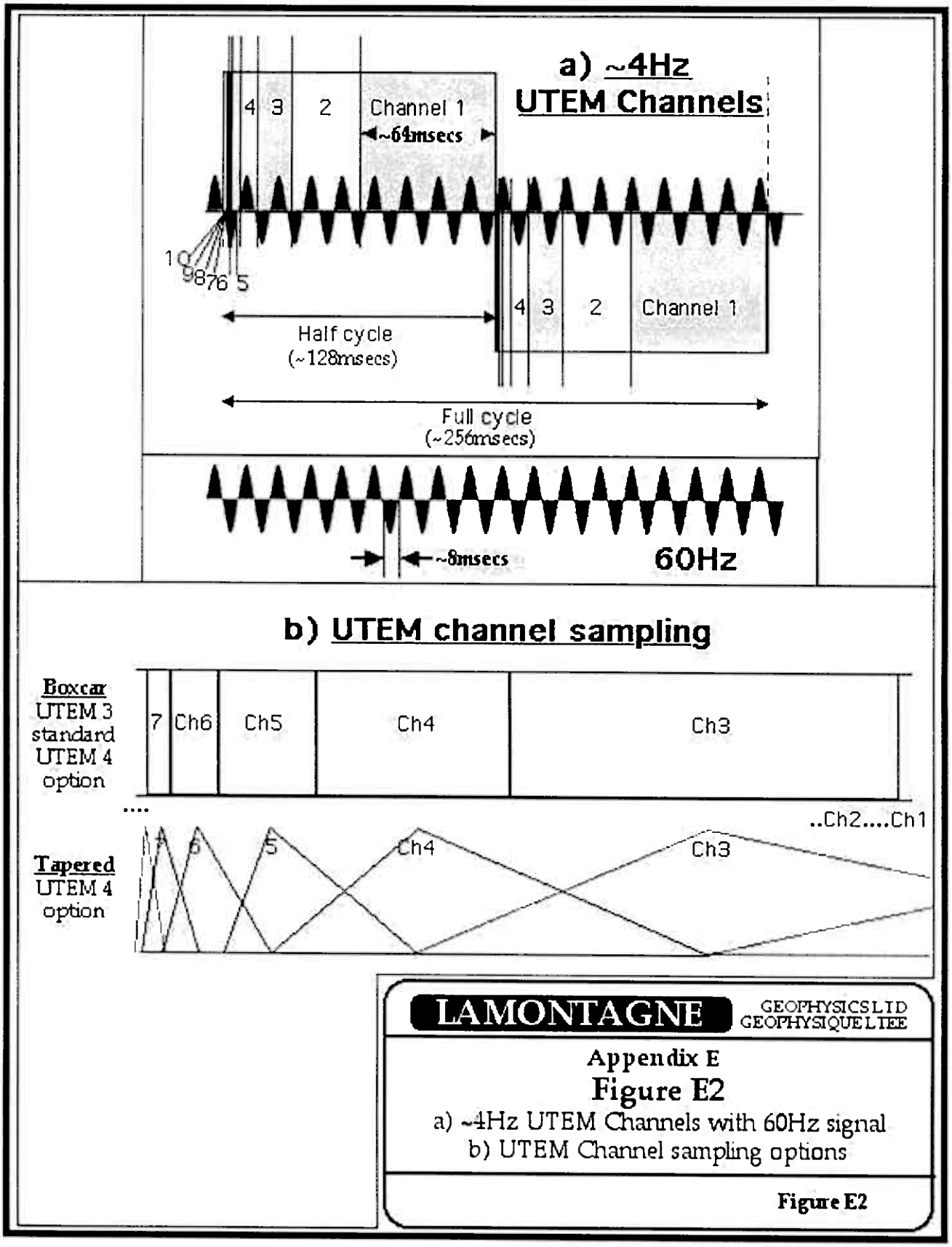
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E1(c)

Original 4Hz data: Ch4/5 detail

Figure E1c



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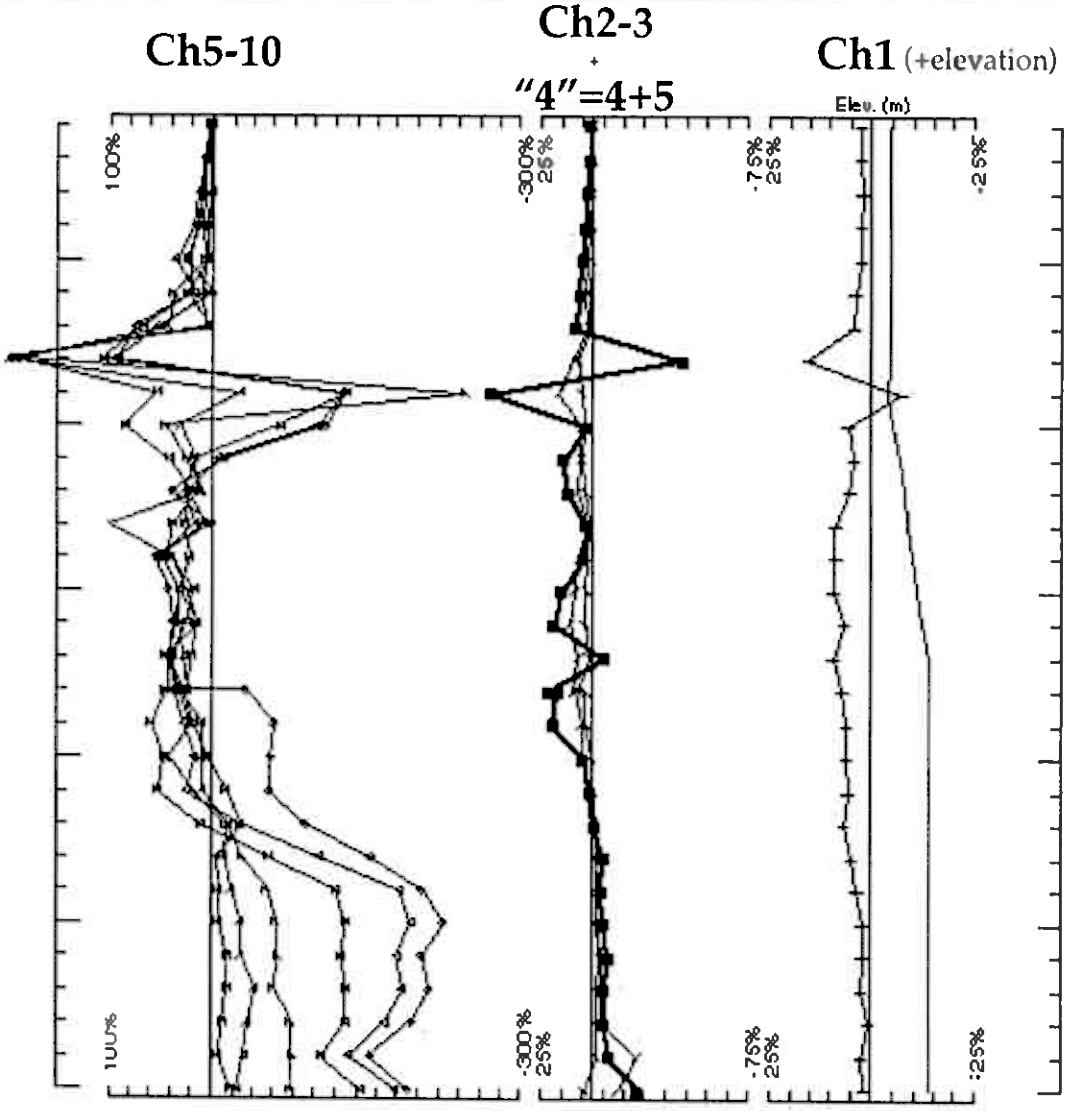
Appendix E

Figure E2

a) ~4Hz UTEM Channels with 60Hz signal
b) UTEM Channel sampling options

Figure E2



Loop:	Secondary, (Chn-Ch1/Hp)	
Line	Contin. Norm at a depth of 0m	
Compt: Hz	Base Freq. 3.872Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

"modified" Ch4
=
2/3(Ch4+1/2Ch5)

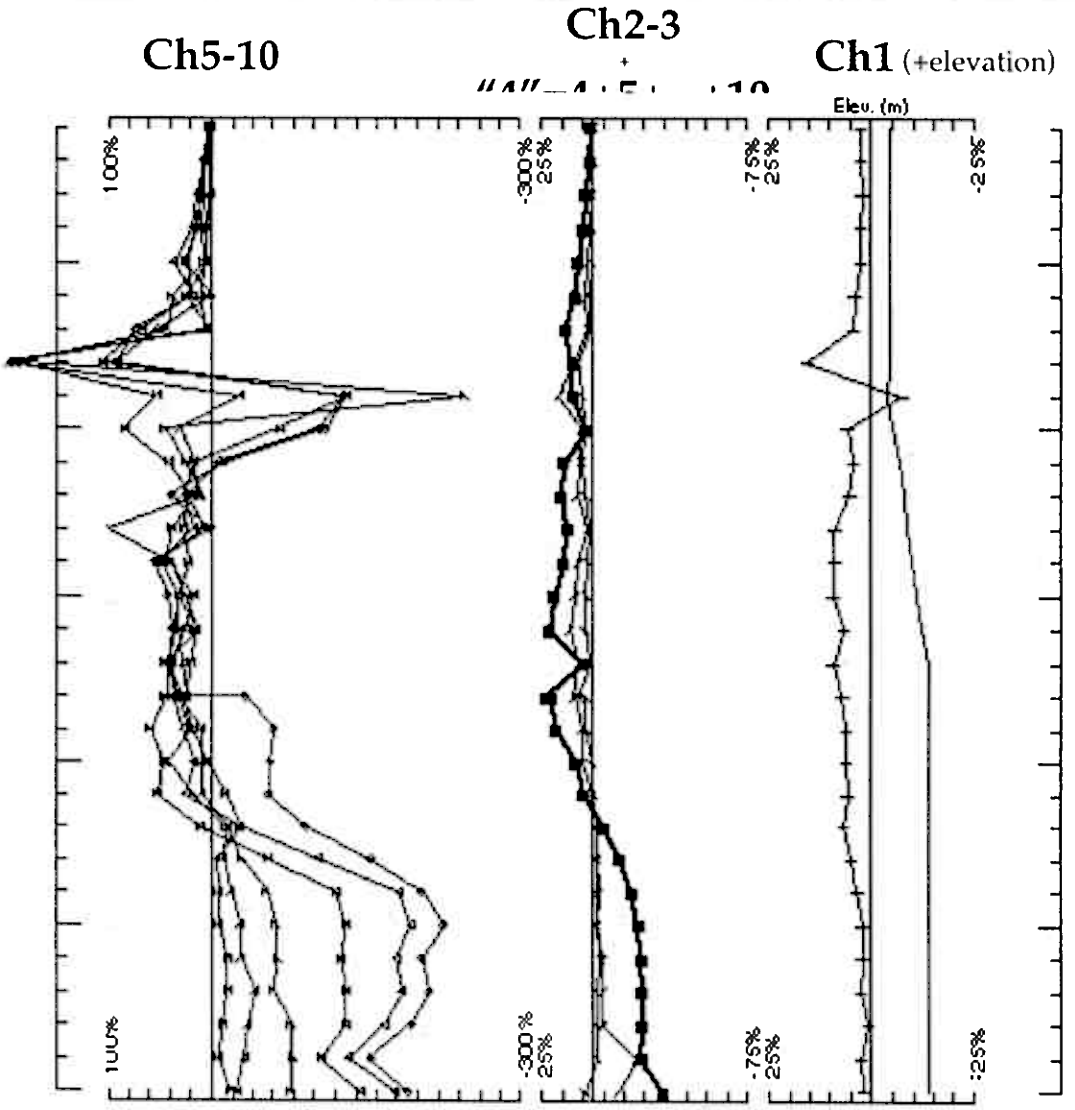
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E3(a)

Modified 4Hz data: Ch4/5 combined

Figure E3a



Loop:	Secondary, (Chn-Ch1/Hpl
Line	Contin. Norm at a depth of 0m
Compt: Hz	Base Freq. 3.872Hz

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

"modified" Ch4
=
1/2Ch4+1/4Ch5+1/8Ch6+1/16Ch7)+
1/32Ch8+1/64Ch9+1/128Ch10+
1/128Ch10
Note: extra 1/128Ch10 to ~complete "modified" Ch4

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Appendix E

Figure E3(b)

Modified 4Hz data: Ch4-10 combined

Figure E3b

Appendix F

Discussion of Noise Issue in Very Resistive Terrains

Discussion of noise issue in very resistive terrains

From the standpoint of data collection during a UTEM survey there are a number of different sources of "noise" - natural, cultural, coil motion, instrumental and geological. For the purpose of this discussion the following distinction is made:

- "true" noise - results in poor repeatability and is due to:
  - a noise field composed of: power line fields, sferic fields due to thunderstorm activity worldwide, other natural EM sources (micropulsations, etc), or
  - coil motion due to the effect of wind either: moving the the coil directly, causing movement in the ground near trees or undulating the ice surface of a large frozen lake.

  In the case of poor repeatability increased stacking time will improve things.
- geological noise - in resistive areas profiles show scatter but features are repeatable. The scatter in the data is due to short-wavelength geological responses which are spatially undersampled. In this case increased stacking time will not improve things. Repeat readings that are in agreement, however, serve to confirm that the scatter represents geological noise.

  Note that if the features are of interest a finer station spacing may resolve them.

So repeated readings should tell whether noisy-looking data is due to poor repeatability or short-wavelength geological responses.

UTEM surveys carried out at the Ertelien Project area in early 2006 and on projects in northern Norway in late 2005 were carried out over very resistive terrain and ran into very noisy conditions. The following is a discussion of the noise issue as it affects these surveys and the strategies/changes that have been employed/made to combat it.

Overall the high noise issue as it affects UTEM surveys carried out over very resistive terrain - including the 2006 Ertelien Project UTEM survey and the 2005 northern Norway surveys - can be resolved into three factors:

- surveying in/over very resistive terrain
- the nature of the target(?) conductor(s) in very resistive terrain
- the combination of the response of a powerline and the noise associated with a powerline

A look at each of these factors follows. Note that there is some overlap between the three factors.

<u>Surveying in/over very resistive terrain</u>

When conductive overburden or a typically conductive country rock is present very little of the natural sferic field penetrates to the geological conductors. The noise field at the earth's surface is ~horizontally-polarized. In terms of how this affects a typical UTEM survey it means that:

- when measuring Hz - the vertical component and the component most often measured - noise levels are typically lower and stacking times are chosen to allow accurate measurement of the smaller secondary field in the presence of the (typically) stronger primary field.
- when measuring Hx/Hy - horizontal components - noise levels are typically higher

and stacking times are chosen to allow accurate measurement of the small secondary field in the presence of higher noise levels. In relatively flat terrain the horizontal component of the primary field is typically weak.

Over very resistive terrain the noise field becomes somewhat less horizontally-polarized. A significant component of the noise field penetrates to the geological conductors. The result is a tilted noise field - more noise is in the vertical component.

In addition over very resistive terrain there is an increase in geological noise due to induced current channeling in discrete faults and overburden channels. The vertical noise field in particular is amplified by current channeling anomalies.

Result: stacking times for Hz measurements must be increased to allow accurate measurement of the secondary field in the presence of higher noise levels. Increased stacking time will not affect scatter in the data that represents geological noise. Repeat readings will serve to confirm if the scatter represents geological noise.

<u>The nature of the target(?) conductor(s) in very resistive terrain</u>

The presence of a good, consistent conductive feature will make UTEM data look very clean - secondary currents flow in a "well organized" fashion and give a good response. A larger response forces the use of a coarser plotting scale - visually "suppressing" noise even further.

In very resistive areas there is little or no background response present. If there are no local features of appreciable size present to give rise to a response then virtually all you see on a profile is a combination of "true" noise and geological noise. In this instance plotting scales are often blown up in an attempt to reveal whether subtle responses are present - and noise is visually "amplified".

Weakly-conductive features - especially those that are broken up and vary in character/orientation along strike - produce geological noise on a profile. In very resistive terrain even very weakly-conductive features will channel current. The overall result can be line-to-line variable, "scattered" responses that give the profiles the appearance of an increase in noise in general. These weakly-conductive variable features also affect the noise field. The vertical noise field in particular is amplified by current channeling anomalies in very resistive terrain.

Very long geological conductors tilt the natural (for our purposes noise) field in their vicinity giving rise to cross-over tilt angle anomalies - more noise in the vertical component. Since the natural fields are very large scale and the conductors very long the response of very long geological conductors is much greater in proportion than what the UTEM data would lead us to believe.

The net affect on an off-loop UTEM survey appears in one of two fashions:

- locally high noise levels at one or more stations near the "geologically-noisy" feature.

  Result: stacking times for Hz measurements must be increased at the noisy stations to allow accurate measurement of the secondary field but stacking times can be reduced again once the noisy section is passed. If there is an indication that the noise is geological then repeat readings should be taken.

- high noise levels that start abruptly at the "geologically noisy" feature and persist beyond it.

  Result: stacking times for Hz measurements must be increased abruptly at the "geologically noisy" feature and increased stacking must be continued at all stations beyond (further from the loop). If there is an indication that the noise is geological then repeat readings should be taken.

Note that in the field it may take a while for an operator to determine the correct procedure to follow. Abruptly increasing the stacking time and doing repeat readings can add significantly to the survey time. For reference at 3.251Hz approximate reading times are as follows for single readings and to cover 100m (4 stations):

	single	100m @25m
512 stack	~2min 50secs	~11min 20secs
x2 = 1K stack	~5min 40secs	~22min 30secs
x2 = 2K stack	~11min 10secs	~44min 50secs
x2 = 4K stack	~22min 20secs	~89min 25secs
x2 = 8K stack	~44min 40secs	~178min 40secs

As an example increasing from a 512 stack to a 1K stack and doing a repeat reading will take the stacking time from ~2min 50secs (~11min 20secs/100m) to ~~11min 20secs (~44min 50secs/100m). Note also that to the operator in the field abruptly noisy data looks very much like an instrument problem. In checking for instrumental problems some additional delay will occur.

<u>The combination of the response of a powerline and the powerline noise</u>

A typical UTEM survey is affected by the presence of a powerline in two ways:

- There will be a response due to the powerline. The response will be coincident with the powerline and can serve to mask other conductive features. The nature of a powerline response varies depending on the powerline's: characteristics, location with-respect-to the transmitter loop and geological setting. Note that in resistive terrain all power line return currents are concentrated in long geological conductors rather than being dispersed throughout the conductive earth.
  The option of "stripping" the powerline response exists - this can reveal the presence of any masked conductive features. Data used in "stripping" the response is typically collected on a more detailed traverse across the powerline.

Result: surveying time will be increased somewhat because of the increased stacking required to collect data accurate enough to allow "stripping" to reveal any masked features. In some cases a few additional stations will be surveyed.

- There will be EM noise present due to any operating powerline. Noise levels increase as the powerline is approached. Power line noise normally is strongest on the vertical component near a power line and becomes more horizontal at a distance because of induction in the earth. This rotation towards the horizontal occurs much farther away from the power line in resistive terrain than in a conductive area. In very resistive terrain powerline noise in the vertical component will persist to a considerably distance.
  For some powerlines the noise levels will be high enough to force the data to be collected at a lowered signal gain. For many larger powerlines noise levels very close to the powerline are high enough that data cannot be collected at all.

Result: surveying time will be increased because of the increased stacking required to overcome the higher noise levels. Some coverage in the immediate vicinity of the powerline may be missed due to very high noise levels.

Strategies/changes that have been employed/made to combat the noise issue

In order to overcome the noise a number of strategies/changes have been employed/made:

- stacking increased
  improves data quality when dealing with "true" noise but @3.251Hz readings can become quite long
- readings repeated where there are indications that the noise is geological
  repeat readings that are in agreement serve to confirm that scatter in the data represents geological noise.
- increased station spacing at some chosen distance from the loop front
  a trade off between improved data quality and station sampling when readings @3.251Hz become quite long - see above.
- higher pre-whitening levels used where possible
  improves noise rejection but the UTEM 3 transmitter is required to run close to the rise-time limit - transmitter operation can be finicky at this level, especially if there are powerlines in the vicinity.
- the use of heavier gauge wire
  larger wire = allows higher current = improves signal-to-noise ratio
  Improved signal-to-noise ratio means that less stacking is required for the same level of data quality.
- where possible a switch to in-loop surveying
  in-loop = considerably stronger applied field = improved signal-to-noise ratio Note: in-loop surveying is less sensitive to small, steeply-dipping conductors.