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Volum 2: Interpretation Report 2005 UTEM Survey

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Vedlagt CD: Espedalen, Norway UTEM3 Survey-2005, Data and Logistics Report

VOLUME 2 OF 2

2005 Winter Geophysical Program

Espedalen,
Oppland County, Norway

APPENDIX E

LAMONTAGNE GEOPHYSICS LTD.
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1246/05

-Interpretation Report-
2005 UTEM Survey
Espedalen
Norway
for
A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

April, 2005

Rob Langridge, M.Sc.

CONTENTS

Figures

Appendices

INTRODUCTION

During the period of February 17th 2005 through March 23th 2005 a UTEM/BHUTEM-3 survey was carried out by Lamontagne Geophysics Limited personnel for A/S Sulfidmalm in the area of Espedalen, Norway (Figure 1). This survey continues on from 2003/2004 UTEM 3 surveys (Loops 01-04 and Loops 05-18 respectively). The location of the property is shown in Figures 1 and 2. The survey was carried out to locate/detail conductors in the immediate grid areas with the intention of outlining targets for future work and for drilling.

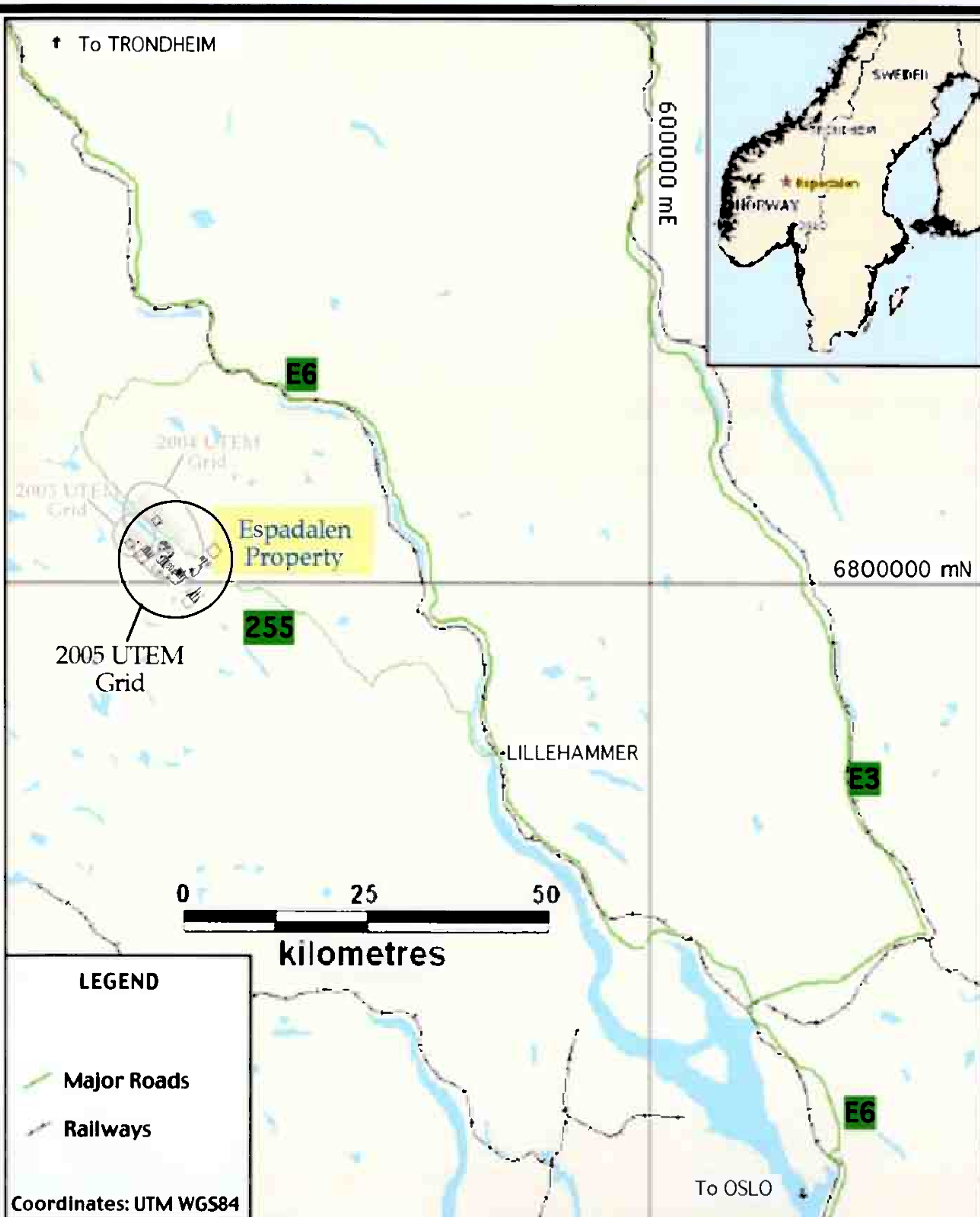
A total of 77.000km of surface UTEM data was collected using 11 transmitter loops (Loops 19-29). All lines were surveyed measuring the vertical component, Hz. A station spacing of 25m (50m beyond 1000m out from the loop) and a line spacing of 200m was employed with detailing lines closer intervals as required.

In addition to the surface UTEM a total of 9 holes were surveyed with BHUTEM-3. This included 7 holes drilled in 2004 and 2 holes drilled in 2005. Three additional loops were required to complete the BHUTEM-3 surveying - Loop 15a (~Loop 15 from 2004 relaid) and Loops B16 and B17 (new loops laid to survey holes ES2004-16 and ES2004-17 respectively).

For all loops - both surface UTEM and BHUTEM-3 - the receiver operated in 10-channel mode at a transmitter frequency of 3.251Hz.

This report documents the UTEM/BHUTEM 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 Diary (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)



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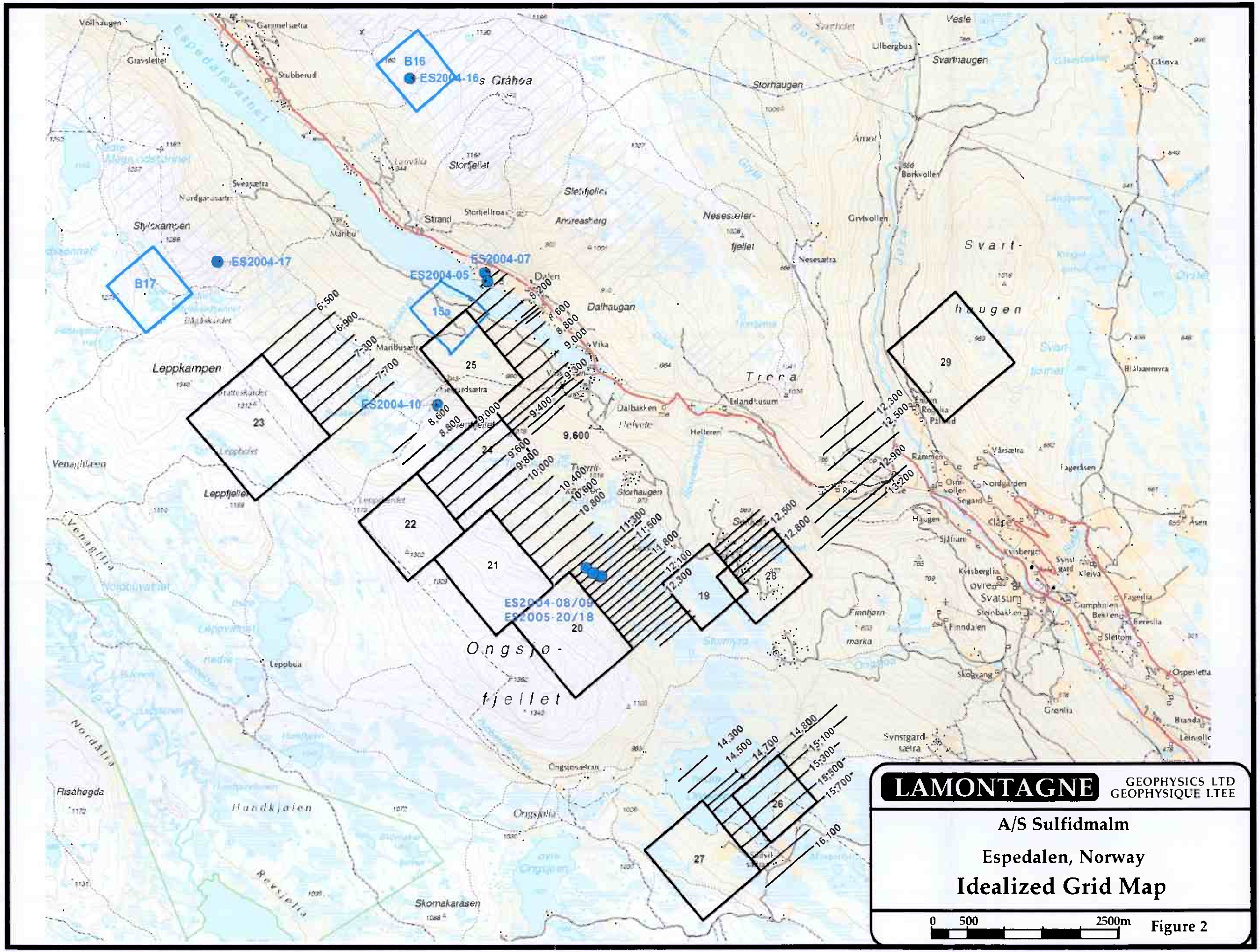
A/S Sulfidmalm

Espedalen, Norway

UTEM Survey Location Map

Figure 1


LAMONTAGNE
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A/S Sulfidmalm
Espedalen, Norway
Idealized Grid Map
0 500 2500m
Figure 2

SURVEY DESIGN

This UTEM survey is part of a nickel exploration program in the Espedalen area. 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 area. Loop size and locations were selected to provide good coupling with the expected targets 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:

- outside-the-loop coverage with 2 receivers
- variable transmitter loop size - to fit the area to be covered and the relief
- 1.18mm (~1mm^2 ~17-gauge copper wire) doubled in places for increased current - more signal requires shorter stacking times and/or better quality data
- line spacing of 200m with detailing lines at 100m intervals or as required
- station interval of 25m reduced to 12.5m in anomalous areas. At ~1000m from the loop the station spacing was changed to 50m.
- Hz (vertical component measurements)
- BHUTEM-3 coverage of selected boreholes @5m, 4/2/1m in zones of interest
- 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 collected by the client and made available for use in reducing the UTEM data. GPS data was collected for all survey points and at intervals around all transmitter loops. 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 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 Kingston on February 15th and arrived in Oslo on February 16th. The crew and equipment were picked up by client representative Finn Hansen and driven to the base of operations for the Espedalen survey - Strand Fjellstue (Figure 1 - www.strand-fjellstue.no). The survey began the following morning.

Eleven transmitter loops were used during the surface UTEM survey for a total survey coverage of 77.000km. Loop numbering began at Loop 19 - following along with the loop numbering in the 2003 and 2004 UTEM surveys. Three additional loops were required to complete the BHUTEM surveying - Loop 15a (~Loop 15 from 2004 relaid) and Loops B16 and B17 (new loops laid to survey holes ES2004-16 and ES2004-17 respectively). Figure 2 shows the loop locations and grid layout. Access to the grid was by snowmobile along a series of pre-existing trails used for accessing the area by skiers/hikers etc. Loop 29 was accessed by road. The grid/loop positions had been established by GPS and were demarcated by bamboo wands and flagging.

Surveying began with Loop 19. The wire for this loop was laid in advance by the client. The generator (Honda 7500W) was moved out to the loop along with the UTEM equipment. Electrical connection to the generator was made through an LGL isolation-transformer/Variac combination rewired to conform with the sockets (standard 2-pin/side-clip ground european) on the generator. For all but a few nights the transmitter was connected to a battery, switched to remote, packed up against drifting snow and left in the field. This worked well for the duration of the survey. The small-volume gas tank on the generator was the only drawback - it required filling at least 2 times a survey day (every 4.5-5 hours).

In general surface surveying for all loops went well although the BHUTEM survey was slowed at times by what turned out to be an intermittent cable problem exacerbated by cold. Noise levels proved to be high and in places, along certain geologic structures, extremely high. This likely indicates channeling telluric currents along conductive features in the relatively-resistive host rock. During loop laying a double strand of wire was laid along one side of the loop - the side with the best access. Doubling the wire reduces the resistance of the loop and this allows a higher transmitter current to be used. Higher current equals more signal and an improved signal-to-noise ratio - less stacking is required and surveying proceeds more quickly. In practice it requires a considerable additional effort to lay/retrieve double strands of wire. As a compromise only one side was doubled. Use of a heavier gauge wire could be considered on future surveys.

For the most part the UTEM surveying this year did not encounter powerlines. The exception to this is Loop 29 - lines surveyed from Loop 29 cross powerlines/phone lines. In general crossing the powerlines required additional stacking and the profiles from Loop 29(Appendix A) become noisier in the vicinity of the cultural features. The noise is particularly evident on the earlier channels - Ch10-5 - as the channel width is too narrow to allow the 50Hz powerline transmission to be adequately stacked out (Appendix E).

The final surface UTEM data was collected March 17th and the BHUTEM surveys were completed and all remaining wire was picked up on March 22nd. The survey was declared completed and the equipment was packed for shipping. The equipment was transported to SAS cargo at Oslo Gardemoen Airport. The crew demobilized to Calgary, Canada. Details of the daily production and personnel are included in the Production Diary (Appendix B) along with a summary of production.

The survey equipment consisted of two UTEM 3 receivers, the requisite BHUTEM-3 equipment 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. Snowshoes equipped with crampons were obtained for the survey. Given the conditions stiff boots - insulated if possible - are recommended for kicking steps. Consideration should also be given to crampons/crampon-ready boots.

Particular care was taken during the survey not to leave anything on the site. In practice the UTEM operators worked with coilers when personnel were available. Where survey conditions allowed - where the topography was more gentle and towards the ends of survey lines where long stacking times were required - the coiler could be freed up to facilitate looping and picket retrieval. The weather conditions were generally good for surveying - cold nights and pleasant days. The snow conditions were generally good.

SURVEY RESULTS

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. Overall the data quality is good - though in places it is noisy. A number of conductors and/or conductive features are evident. Although every effort was taken to shelter the receiver coil minor wind noise may be evident in some profiles.

Surface profiles are listed by 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)**

BHUTEM3 profiles follow in order of Hole number by area. The following plots are presented for a borehole:

3-axis plot
total field plot
plan vectorplot
gridnorth-south section vectorplot

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 data~300m out from the loop-front centre

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 data has been point normalized to a the field at a point ~300m out from the centre of the loop front. Note that this field value is intermediate and it was chosen because the survey was roughly half inside-the-loop and half off-loop. Normalizing to an intermediate point allows the interpretation of responses along the entire line. The amplitude of responses close to (**further from**) the loop front will be blown up (**muted**).
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

Note: In areas near powerlines channels 4 and higher (earlier times) are quite noisy. In this instance - Loop 29 for instance on this survey - the axis are presented as follows:

top axis - Ch4-10
middle axis - Ch2-3
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

Outline of BHUTEM-3 plot types

3-axis plot - **secondary field**
total field plot - **total field**

Both continuously normalized secondary and total field plots are presented for each borehole surveyed. Note that for reference the primary field is plotted on all BHUTEM profiles. The axis on the **3-axis plot** contain:

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1 + primary field

The axis on the **total field plot** contains:

axis - Ch1-10 + primary field

plan and gridnorth-south section vectorplots

Plan and gridnorth-south section vectorplots are included for each borehole surveyed. Vectorplots are useful in both planning loop locations and in evaluating profiles - particularly in areas of high relief. Vectorplots show the primary field local to the borehole - allowing the coupling to be evaluated.

Discussion of the Grid

The profiles presented in Appendix A have been reduced with a grid produced from the GPS data collected by the client. 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 the locating of the double-strand loop sides and "adjustments" of the loop to topography and wind.

Discussion of Results

A number of responses of interest can be seen on the profiles. An interpretation is presented in two figures:

Figures 3 Interpreted Features
Figures 4 Interpretation

Features outlined are mainly contacts, shallow conductors and thin conductive zones - geological units and structural features. A series of interesting conductors have been outlined - for the most part these have been modeled in-house by Falconbridge, however, a number were selected for modeling using MultiLoop. The details of these conductors and the MultiLoop modeling are presented in the Interpretation section. Note: Conductors are designated by **ESP**edalen, loop number and conductor number. For example: **ESP-19-18** designates **ESP**edalen-Loop **19**-Conductor **18**.

The 2003 and 2004 surveys outlined Conductor 01-17 as follows:

The two conductors outlined in the 2003 report as **Conductor A** and **B** become:
- **Conductor A = ESP-04-01** and **Conductor B = ESP-02-02**

The 15 conductors outlined in the 2004 report are **Conductor 03-17**

Note that character on the Ch1 profiles may reflect one or a combination of (see Appendix D):

- local magnetics
- conductive features
- poor geometric control

Ch1 responses - spikes and broader features - should be checked against magnetics and rechecked against geometry. The character of the Ch1 profiles suggests that geometric control is quite good. Stations affected by poor geometry are close to the loop.

A number of points can be said about the results in general:

- The pattern of responses outlined in Figure 3 generally fits with the map pattern of the geological mapping, contoured airborne magnetics and confirms the results of the airborne EM survey. Features are generally continuous over sections of the grid - in the case of isolated loops over the entire grid.
  Note: Some breaks or offsetting of weaker features occurs at the boundary between the area covered by one loop and the adjacent loop. This reflects the different coupling from the two loops. Also note that coverage was extended to the side of the loop to better map features detected from Loop 22 and Loop 27 (both sides). Off to the side of the loop the coupling is very different - further off to the side the coupling can be at right-angles to normal off-loop coupling.

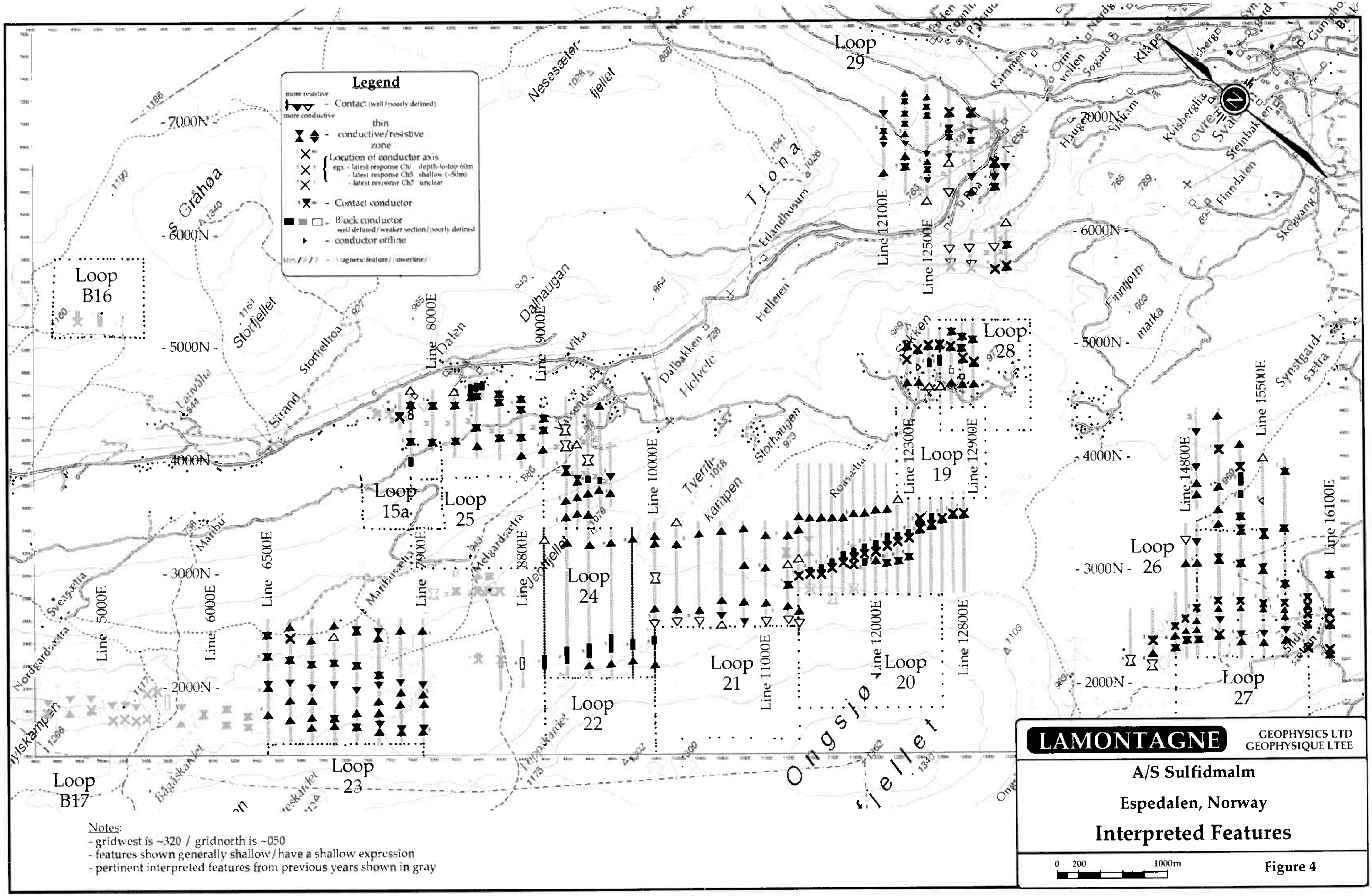
- Response of interest are typically in the Ch5-3 range, in places to Ch2. No clear Ch1 responses were detected. Responses reflect shallow features or features that have a shallow expression - possibly minor mineralization. Many features outlined in Figures 3/4 represent contacts, shallow conductors and thin conductive zones - geological units and structural features.

- The UTEM survey coverage was designed in part to follow up on conductive features detected by the airborne EM survey. The responses outlined by the UTEM survey outline features at a suitable depth - shallow - and sufficient conductivity - to UTEM Ch5-3 - to confirm the results of the airborne EM survey. Typically the airborne detects the updip edge (shallowest expression) of a feature.

- There is generally a good correlation between the airborne magnetics and the Ch1 profiles. Note that the correlation is not expected to be exact (Appendix D). Note that Ch1 responses may represent features small enough or poorly-located (steep/sharp terrain) that they may not be reflected in the airborne survey data.

- Overall the background response seen in the profiles indicates a resistive area. The background response is modeled in MultiLoop with a laterally-extensive layer (~15-30S) at depth. Where the local response requires it another laterally extensive layer (~0.2-2S) is added at an intermediate depth.

- The profiles are in places fairly noisy - in particular the mid-to-late time channels. Some of this is wind noise but a good portion of it is geological noise - reflecting the character of the local mineralization - in places thin stringers of sulphides - and the lithology.


Legend
more resistive
Contact (well / poorly defined)
more conductive
thin conductive / resistive zone
Location of conductor axis
egs. - latest response Ch1 depth-to-top 60m
- latest response Ch5 shallow (<50m)
- latest response Ch7 unclear
Contact conductor
Block conductor
well defined / weaker section / poorly defined
conductor offline
Magnetic feature / powerline
Loop B16
Loop B17
Loop 15a
Loop 19
Loop 20
Loop 21
Loop 22
Loop 23
Loop 24
Loop 25
Loop 26
Loop 27
Loop 28
Loop 29
Line 5000E
Line 6000E
Line 6500E
Line 7900E
Line 8000E
Line 8800E
Line 9000E
Line 10000E
Line 11000E
Line 12000E
Line 12100E
Line 12300E
Line 12500E
Line 12800E
Line 12900E
Line 14800E
Line 15500E
Line 16100E
7000N
6000N
5000N
4000N
3000N
2000N
Gråhøa
Storfjellet
Nesesæter-fjellet
Trona
Ongsjøfjellet
Dalhaugen
Dalen
Helleren
Tverrlikampen
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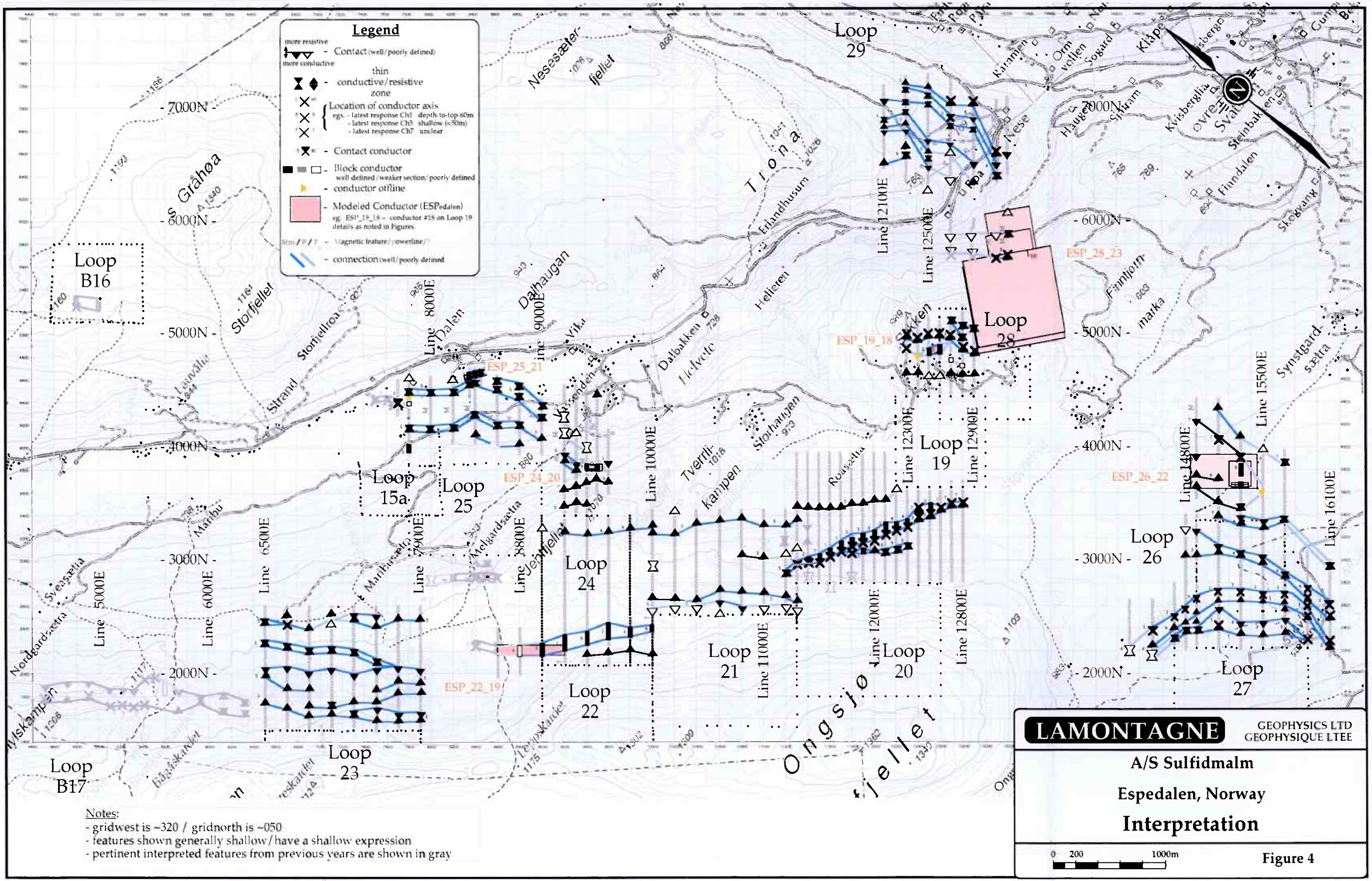
Espedalen, Norway
Interpreted Features
0 200 1000m
Figure 4
Notes:
- gridwest is ~320 / gridnorth is ~050
- features shown generally shallow / have a shallow expression
- pertinent interpreted features from previous years shown in gray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more resistive
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Contact (well/poorly defined)
thin conductive/resistive zone
Location of conductor axis
egs. - latest response Ch1 depth-to-top 60m
- latest response Ch5 shallow (<50m)
- latest response Ch7 unclear
Contact conductor
Block conductor
well defined / weaker section / poorly defined
conductor offline
Modeled Conductor (ESPedalen)
eg. ESP_19_18 = conductor #18 on Loop 19 details as noted in Figures
Magnetic feature / powerline / ?
connection (well/poorly defined)
Loop 29
Loop B16
Loop 28
Loop 19
Loop 15a
Loop 25
Loop 24
Loop 26
Loop 21
Loop 20
Loop 22
Loop 27
Loop 23
Loop B17
ESP_28_23
ESP_19_18
ESP_25_21
ESP_24_20
ESP_26_22
ESP_22_19
Line 5000E
Line 6000E
Line 6500E
Line 7900E
Line 8000E
Line 8800E
Line 9000E
Line 10000E
Line 11000E
Line 12000E
Line 12100E
Line 12300E
Line 12500E
Line 12800E
Line 12900E
Line 14800E
Line 15500E
Line 16100E
7000N
6000N
5000N
4000N
3000N
2000N
Notes:
- gridwest is ~320 / gridnorth is ~050
- features shown generally shallow/have a shallow expression
- pertinent interpreted features from previous years are shown in gray
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Espedalen, Norway
Interpretation
0 200 1000m
Figure 4

INTERPRETATION

An interpretation is presented in two figures:

Figures 3 Interpreted Features
Figures 4 Interpretation

Features outlined are mainly contacts, shallow conductors and thin conductive zones - geological units and structural features. A series of interesting conductors have been outlined. The majority of the responses detected during the 2005 survey - including BHUTEM responses have been modeled in-house by Falconbridge geophysicist Tony Watts. A number were selected for modeling using MultiLoop. The details of these conductors and the MultiLoop modeling are presented in this Interpretation section.

The interpretation presented in this section is an interpretation of the UTEM data alone - with a passing reference to airborne magnetics and airborne EM anomaly maps. As such it should be evaluated in conjunction with other available information on the Espedalen property.

Note: Conductors are designated by **ESP**edalen, loop number and conductor number. For example: **ESP-19-18** designates **ESP**edalen-Loop **19**-Conductor **18**.

The 2003 and 2004 surveys outlined Conductor 01-17 as follows:

The two conductors outlined in the 2003 report as **Conductor A** and **B** become:

- **Conductor A = ESP-04-01**
- **Conductor B = ESP-02-02**

The 15 conductors outlined in the 2004 report are **Conductor 03-17**.

In general in the model figures significant conductors will be shown in black and other weaker conductors - modeling details of the local response - are shown in pale blue.

Several points about the interpretation in general:

- There is considerable similarity among the set of **Conductors** outlined by the combined 2003/2004/2005 UTEM surveys. As noted in the 2003 Report:
  - the main conductive zone(s) are modeled to be an enhancement along a conductive horizon..
  - noisy later channels noisy coincident with a **Conductor** suggests that sharp features - stringers of mineralization? - may be present.
- The models presented are not expected to match the drill results exactly. There are errors in depth estimates and dip angle ($^{+}/^{-}$5 to 10°). In particular note that the modeling of smaller zones at shallow depths will have relatively large errors.

Several specific points about the interpretation:

- a small Ch3 (2?) response was detected on Loop 25 Line 7800E @ ~4000N.

- a response similar to the later-time response of **Conductor ESP_26_22** was detected on Loop 21 Line 10000E @ ~3950/3975N.

- The character of the responses detected from Loops 26 and 27 is different from other responses detected over the 2003/2004/2005 surveys..

The responses chosen for discussion/modeling are as follows:

Conductor	**Figure #**	**Loop**	**Line #**	**~station**
ESP_19_18	Figure 5	Loop 19	Line 12600E	4875N
ESP_22_19	Figure 6	Loop 22	Line 9000/8800E	2225N
ESP_24_20	Figure 7	Loop 24	Line 9500E	3800N
ESP_25_21	Figure 8	Loop 25	Line 8400E	4650N
ESP_26_22	Figure 9	Loop 26	Line 15300E	3600-3925N
ESP_28_23	Figure 10	Loop 28	Line 13200E	5650~N

An interpretation of features follows. Note: a general Legend for Figures 3 and 4 is enlarged and presented as Figure 11.

Conductor ESP_19_18 Lines 12500/12600E ~4800-4900N

Conductor ESP_19_18 was detected during surveying from Loop 19. Flanking Lines 12400E and 12700E show considerably weaker responses that may include an off-line response component. Note that **Conductor ESP_19_18** is located amid a group of cottages which contribute cultural responses to the profiles

The overall best response detected was that on Loop 19 Line 12600E - to Ch3 - and this response was selected for MultiLoop modeling. Line 12500E was included in the modeling for reference.

Modeling **Conductor ESP_19_18**: Loop 19 Line Lines 12500/12600E Figure 5

The modeling results for Loop 19 Lines 12500/12600E are shown in Figure 5. The overall background response was modeled using a laterally extensive conductive layer at a depth of ~1200m and a weakly conductive layer at a depth of ~900m. **Conductor ESP_05_03** is modeled as a shallow short-strike length flat-lying conductor. Details of **ESP_05_03** as modeled as listed in Figure 5 are:

centre of conductor 12560E, 4855N, 900 m.a.s.l. (grid coords.)
local elevation ~948 m.a.s.l. giving ~48m depth-to-centre
strike/dip ~120/flat conductance 2200S
along strike/downdip 120m/60m

Conductor ESP_19_18 is interpreted to be a small good-excellent conductor. It should be evaluated in comparison with other known features in the Espedalen area. Primary field coupling is ~maximum coupled as modeled suggesting that the conductance is a reasonable maximum estimate. Increasing the strike length of the modeled body would act to lower the conductance somewhat, however, the Loop 19 survey line spacing of 100m serves to give a good definition of the strike length.

Note: that ESP_19_18 is oriented 20° off grideast-gridwest.

Conductor ESP_19_18 as modeled on Line 12600E

Figure 5

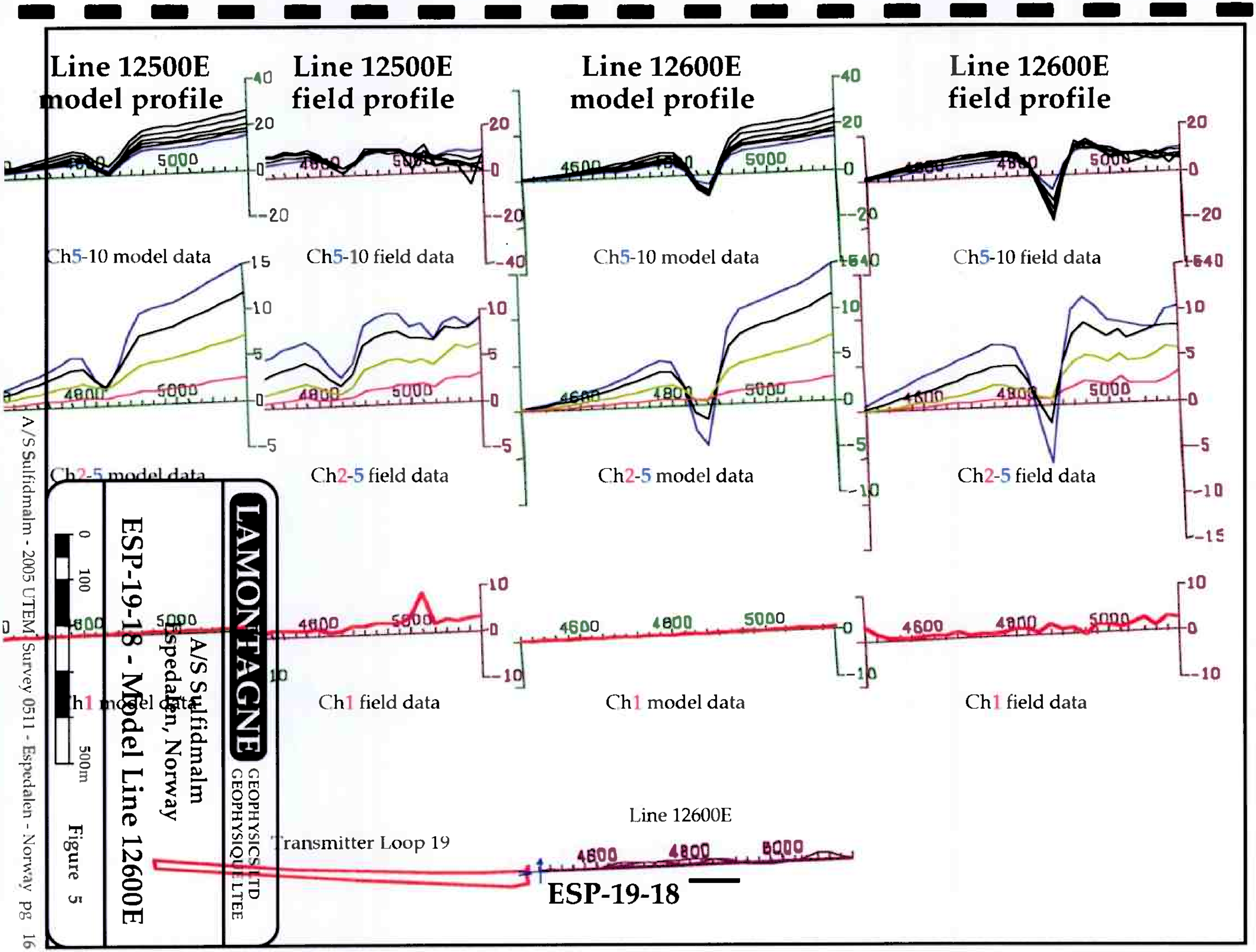
centre of conductor 12560E, 4855N, 900 m.a.s.l. (grid coords.)

local elevation ~948 m.a.s.l. giving ~48m depth-to-top

strike/dip ~120/flat conductance 2200S

along strike/downdip 120m/60m

Notes:
- view is looking gridwest (~320)
- conductor as modeled is ~maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response in the vicinity of the conductor.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.


Line 12500E model profile
Line 12500E field profile
Line 12600E model profile
Line 12600E field profile
Ch5-10 model data
Ch5-10 field data
Ch5-10 model data
Ch5-10 field data
Ch2-5 model data
Ch2-5 field data
Ch2-5 model data
Ch2-5 field data
Ch1 model data
Ch1 field data
Ch1 model data
Ch1 field data
Line 12600E
Transmitter Loop 19
ESP-19-18
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-19-18 - Model Line 12600E
Figure 5
0
100
500m

Conductor ESP_22_19 Lines 9000/8800E ~2225N

Conductor ESP_22_19 was detected during surveying from Loop 22 - the eastward extension of a feature outlined by 2004 UTEM in-loop surveying from Loop 16. The feature was modeled (included MultiLoop model "Loop 16 Line 08400 pretty good") as a ~75S gently gridnorth-dipping feature. The **Conductor ESP_22_19** response continues both:

- to the gridwest Line 8600E and 2004 Loop 16 in-loop Lines 8400E and ?Line 8200E. There is a small gap in coverage gridwest of this - and the coverage changes back to off-loop - Loop 23. It is possible that **Conductor ESP_22_19** connects up with weak responses detected from Loop 25.
- to the grideast Lines 92/94/96/98/10000E and possibly further under the front section of Loop 21. Interestingly the general trend of **ESP_22_19** is along strike from the Stormyra conductor - **ESP_17_17**.

The overall best response detected was that on Loop 22 Line 9000/8800E - to Ch4 - and this response was selected for MultiLoop modeling.

Modeling **Conductor ESP_22_19**: Loop 22 Line 9000/8800E Figure 6

The modeling results for Loop 22 Line 9000/8800E are shown in Figure 6 The overall background response was modeled using a laterally extensive conductive layer at a depth of ~1500m and a weakly conductive layer at a depth of ~1200m. **Conductor ESP_22_19** is modeled as an enhancement along a ~grideast-gridwest feature that dips shallowly to the grideast and has roughly the same conductance as modeled on 2004 Loop 16 Line 8400E. The details of **ESP_22_19** as modeled as listed in Figure 6 are:

centre of conductor 8920E, 2210N, 940 m.a.s.l. (grid coords.)
local elevation ~1045 m.a.s.l. giving ~85m depth-to-centre
strike/dip ~050/04° conductance 75S
along strike/downdip 90m/600m

Note: **that the feature as interpreted/described above dips grideast and has a short-strike-length.**

Conductor ESP_22_19 is interpreted to be a fair conductor. It should be evaluated in comparison with other known features in the Espedalen area. What makes **Conductor ESP_22_19** interesting is that it could be a (considerably-weaker) extension of the Stormyra conductor - **ESP_17_17**.
Primary field coupling is ~maximum coupled as modeled suggesting that the conductance is a reasonable maximum estimate. Increasing the strike length of the modeled body would act to lower the conductance somewhat.

Conductor ESP_22_19 as modeled on Line 90/8800E

Figure 6

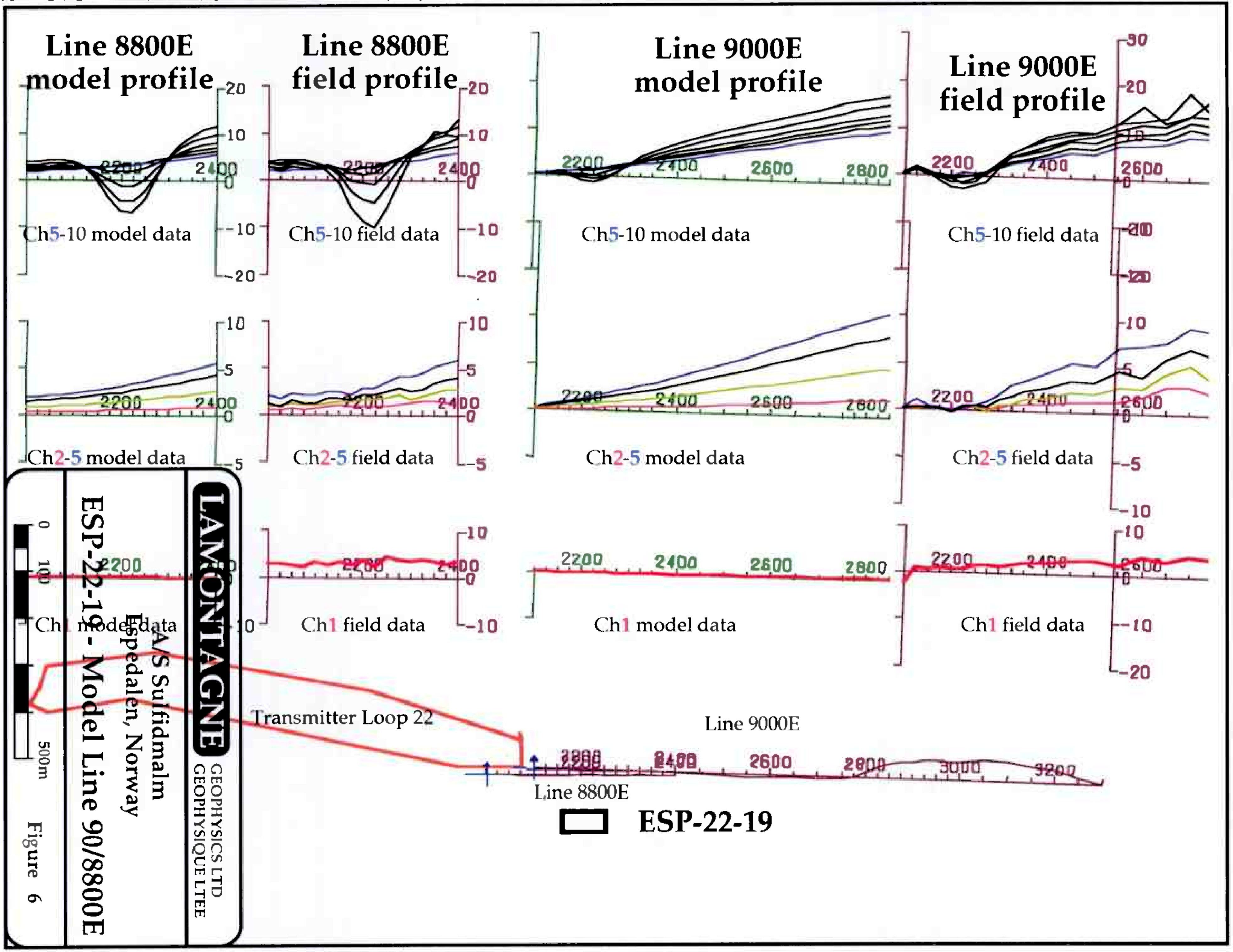
centre of conductor 8920E, 2210N, 940 m.a.s.l. (grid coords.)
local elevation ~1045 m.a.s.l. giving ~85m depth-to-top

strike/dip ~050/04° conductance 75S

along strike/downdip 90m/600m

Note: that the feature as interpreted/described above dips grideast and has a short-strike-length.

Notes:
- view is looking gridwest (~320)
- conductor as modeled is well-coupled but not maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response in the vicinity of the conductor.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.


Line 8800E model profile
Line 8800E field profile
Line 9000E model profile
Line 9000E field profile
Ch5-10 model data
Ch5-10 field data
Ch5-10 model data
Ch5-10 field data
Ch2-5 model data
Ch2-5 field data
Ch2-5 model data
Ch2-5 field data
Ch1 model data
Ch1 field data
Ch1 model data
Ch1 field data
2200
2400
2600
2800
3000
3200
Transmitter Loop 22
Line 9000E
Line 8800E
ESP-22-19
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-22-19 - Model Line 90/8800E
Figure 6
0
100
500m

Conductor ESP_24_20 Line 9500E ~3800N

Conductor ESP_24_20 was detected during surveying from Loops 24 The **Conductor ESP_24_20** response coincides with old copper workings above Vassenden - the only old workings in the area that showed a significant airborne response. Line 9400E crosses over the old mine - it is possible that had the survey been carried out prior to mining the response on Line 9400E would have equaled that on Line 9500E. **Conductor ESP_24_20** is interpreted to be a short strike-length feature.

The overall best response detected was that on Loop 24 Line 9500E - to Ch2/1 - and this response was selected for MultiLoop modeling.

Modeling **Conductor Conductor ESP_24_20:** Loop 24 Line 9500E Figure 7

The modeling results for Loop 24 Line 9500E are shown in Figure 7. The overall background response was modeled using a laterally extensive conductive layer at a depth of ~1400m and a weakly conductive layer at a depth of ~1000m. **Conductor ESP_24_20** is modeled as a small, shallow very gently dipping feature. Details of **Conductor ESP_24_20** as modeled as listed in Figure 7 are:

centre of conductor 9475E, 3825N, 868 m.a.s.l. (grid coords.)
local elevation ~875m.a.s.l. giving ~7m depth-to-centre
strike/dip ~320/15° conductance 1000S
along strike/downdip 160m/60m

centre of conductor 9475E, 3831N, 868 m.a.s.l. (grid coords.)
local elevation ~875m.a.s.l. giving ~7m depth-to-centre
strike/dip ~320/15° conductance 2000S
along strike/downdip 100m/40m

Conductor ESP_24_20 a small good-excellent conductor. It was tested by the historic mining (Line 9400E). It should be evaluated in comparison with any information about the old workings as well as other known features in the Espedalen area. Primary field coupling is ~maximum coupled as modeled suggesting that the conductance is a reasonable maximum estimate. Increasing the strike length of the modeled body would act to lower the conductance somewhat, however, the Loop 24 survey line spacing of 100m serves to give a good definition of the strike length.

Conductor ESP_24_20 as modeled on Line 9500E

Figure 7

centre of top edge 9475E, 3825N, 868 m.a.s.l. (grid coords.)

local elevation ~875 m.a.s.l. giving ~7m depth-to-top

strike/dip ~320/15° conductance 1000S

along strike/downdip 160m/60m

centre of top edge 9475E, 3831N, 868 m.a.s.l. (grid coords.)

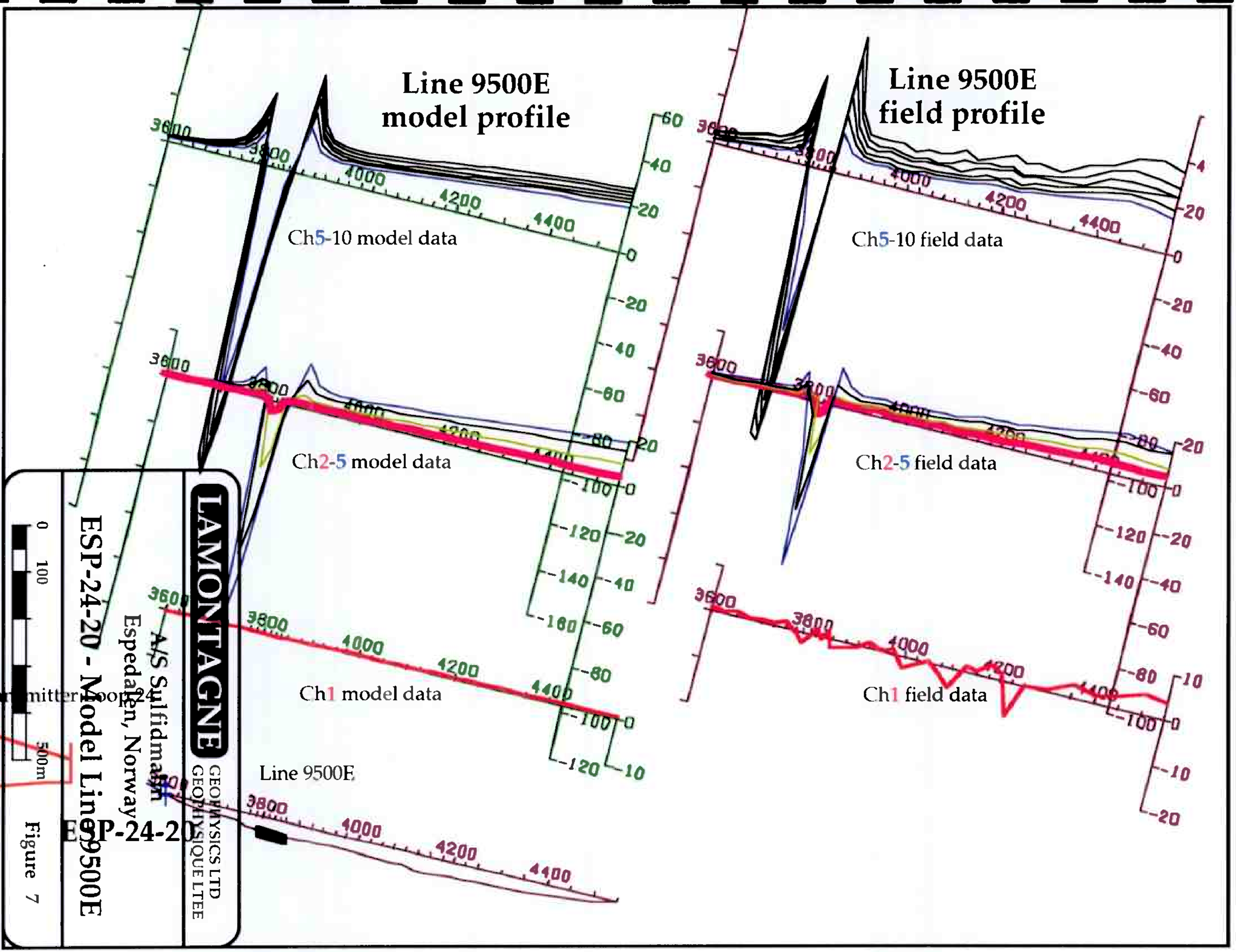
local elevation ~875 m.a.s.l. giving ~7m depth-to-top

strike/dip ~320/15° conductance 2000S

along strike/downdip 100m/40m

Notes:

- view is looking gridwest (~320).
- conductor as modeled is well-coupled but not maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response in the vicinity of the conductor.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.



Line 9500E
model profile
Line 9500E
field profile
Ch5-10 model data
Ch5-10 field data
Ch2-5 model data
Ch2-5 field data
Ch1 model data
Ch1 field data
Line 9500E
Transmitter Loop 24
ESP-24-20
0
100
500m
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-24-20 - Model Line 9500E
Figure 7

Conductor ESP_25_21 Line 8400E ~4650N

Conductor ESP_25_21 was detected during surveying from Loop 25. The **Conductor ESP_08_06** response is a single-line (Line 8400E) feature. Short flanking profiles were added @ 8350E and 8450E to improve the coverage. The Line 8400E response was therefore chosen for modeling - although the flanking lines were included in the modeling..

Modeling **Conductor ESP_25_21**: Loop 25 Line 8400E Figure 8

The modeling results for Loop 25 Line 8400E are shown in Figure 8. The overall background response was modeled using a laterally extensive conductive layer at a depth of ~1000m and a weakly conductive layer at a depth of ~700m. **Conductor ESP_25_21** is modeled as an isolated conductor. Details of **Conductor ESP_25_21** as modeled as listed in Figure 8 are:

centre of conductor 8400E, 4655N, 690 m.a.s.l. (grid coords.)
local elevation ~722 m.a.s.l. giving ~32m depth-to-centre
strike/dip ~305/flat conductance 300S
along strike/downdip 200m/30m

centre of conductor 8400E, 4655N, 690 m.a.s.l. (grid coords.)
local elevation ~722 m.a.s.l. giving ~32m depth-to-centre
strike/dip ~305/flat conductance 300S
along strike/downdip 200m/50m

Conductor ESP_25_21 is interpreted to be a small good conductor. It should be evaluated in comparison with other known features in the Espedalen area. Primary field coupling is ~maximum as modeled suggesting that the conductance is a reasonable ~maximum estimate. Increasing the strike length of the modeled body would act to lower the conductance somewhat.

Note: that ESP_25_21 is oriented 15° off grideast-gridwest.

Conductor ESP_25_21 as modeled on Line 8400E

Figure 8

centre of conductor 8400E, 4655N, 690 m.a.s.l. (grid coords.)

local elevation ~722 m.a.s.l. giving ~32m depth-to-centre

strike/dip ~305/flat conductance 300S

along strike/downdip 200m/30m

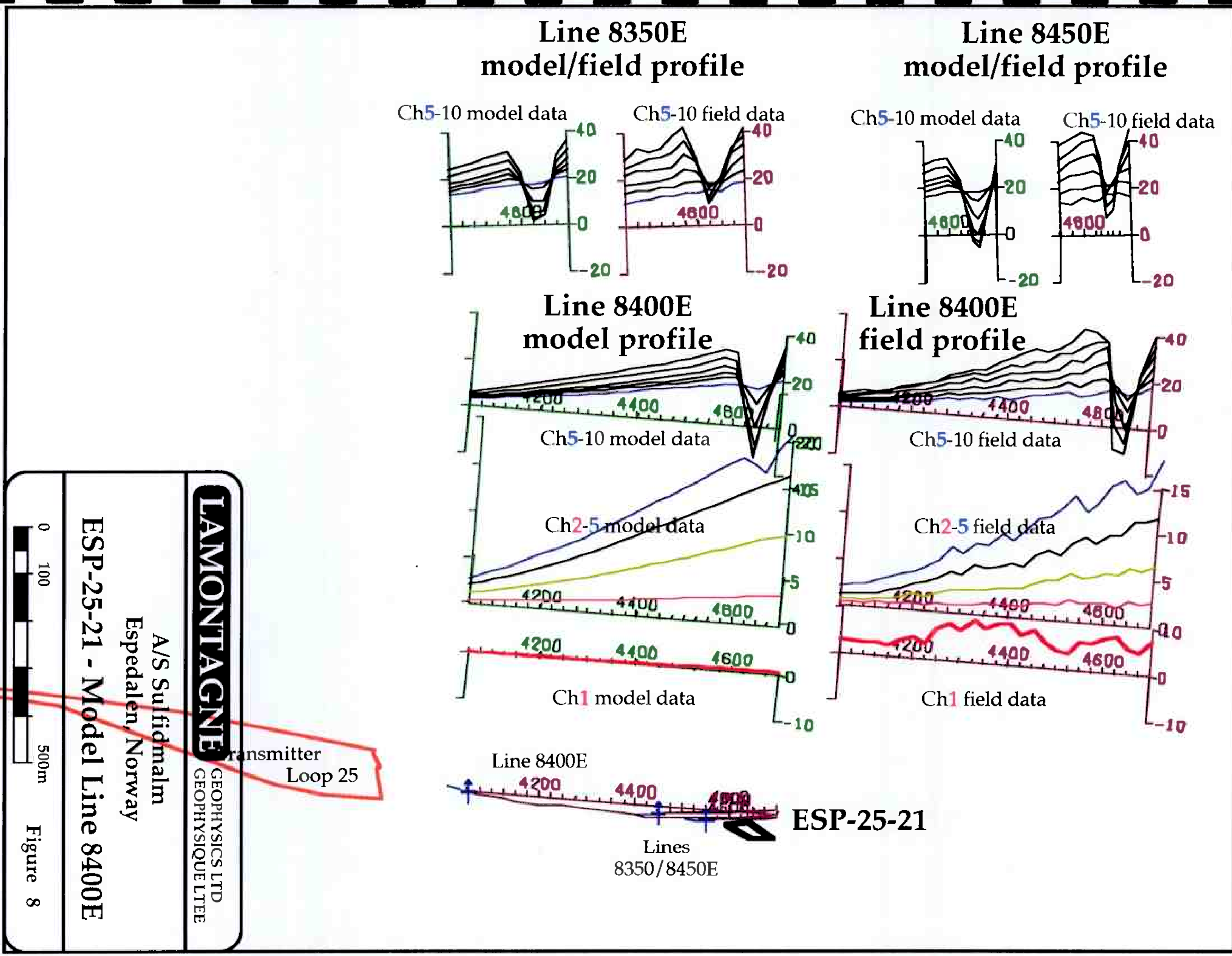
centre of conductor 8400E, 4655N, 690 m.a.s.l. (grid coords.)

local elevation ~722 m.a.s.l. giving ~32m depth-to-centre

strike/dip ~305/flat conductance 300S

along strike/downdip 200m/50m

Notes:
- view is looking 15° off gridwest (~305)
- conductor as modeled is ~maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response in the vicinity of the conductor.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.


Line 8350E model/field profile
Ch5-10 model data
Ch5-10 field data
Line 8450E model/field profile
Ch5-10 model data
Ch5-10 field data
Line 8400E model profile
Ch5-10 model data
Ch2-5 model data
Ch1 model data
Line 8400E field profile
Ch5-10 field data
Ch2-5 field data
Ch1 field data
4200
4400
4600
40
20
0
-20
15
10
5
-10
Transmitter Loop 25
Line 8400E
Lines 8350/8450E
ESP-25-21
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-25-21 - Model Line 8400E
0
100
500m
Figure 8

Conductor ESP_26_22 Line 15300E ~3600-3925N

Conductor ESP_26_22 was detected during the surveying of Loop 26. The **Conductor ESP_26_22** response continues both:

- as a broad response to the gridwest on Lines 15100/14900/14800E - the extent of coverage.
- to the grideast on Line 15500E there is an off-line response.

The most interesting response detected is on Line 15300E - to Ch3(2?) and this response on was selected for MultiLoop modeling.

Modeling **Conductor ESP_26_22**: Loop 26 Line 153000E Figure 9

The modeling results for Loop 26 Line 15500E are shown in Figure 9 The overall background response was modeled using a laterally extensive conductive layer at a depth of ~900m and a weakly conductive layer at a depth of ~600m. Details of the local response are modeled using four shallow ~gently dipping conductors (blue in Figure 9) ranging from 5-35S. These four conductors model the overall response and some of the details of the earlier-time response. There is a subtle response to Ch3(2?) on Line 15300E @3625-3700N - a ~top-anomaly response. **Conductor ESP_26_22** is modeled as a small feature. The details of the two plates used to model **Conductor ESP_26_22** as listed in Figure 9 are:

centre of conductor 15300E, 3655N, 910 m.a.s.l. (grid coords.)
local elevation ~955 m.a.s.l. giving ~45m depth-to-top
strike/dip ~320/20° conductance 500S
along strike/downdip 150m/40m

centre of conductor 15300E, 3655N, 910 m.a.s.l. (grid coords.)
local elevation ~955 m.a.s.l. giving ~45m depth-to-top
strike/dip ~320/flat conductance 500S
along strike/downdip 150m/40m

Conductor ESP_26_22 is interpreted to be a small good-to-excellent conductor. Modeling results should be considered preliminary - the conductor as modeled is small and may be positioned to the side of Line 15300E. There is the possibility that the conductance is higher than modeled. The overall response also complicates the interpretation. Further work or further modeling is suggested. **Conductor ESP_26_22** should be evaluated in comparison with other known features in the Espedalen area. Primary field coupling is ~maximum coupled . Increasing the strike length of the modeled body would act to lower the conductance somewhat.

Conductor ESP_26_22 as modeled on Line 15300E

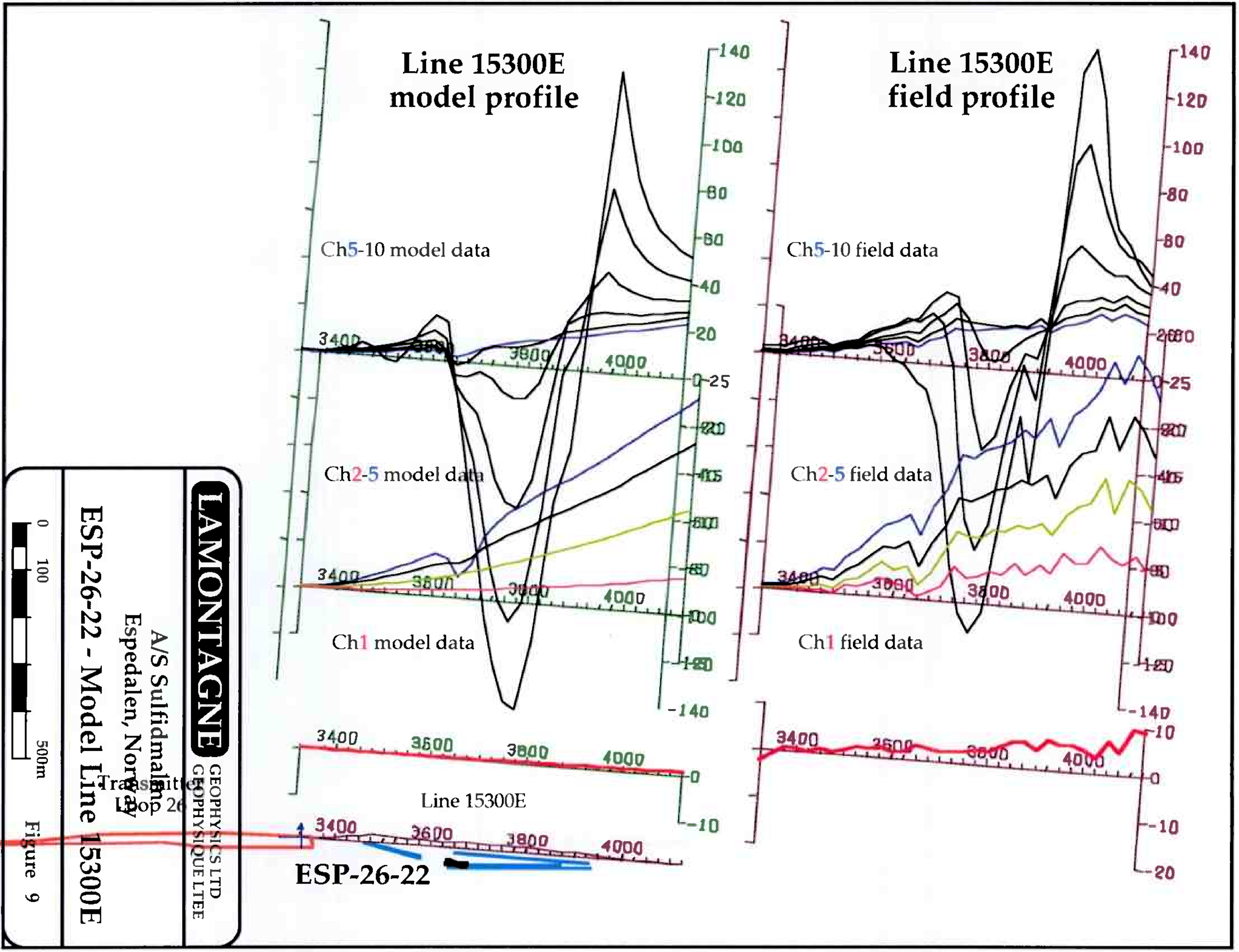
Figure 9

centre of top edge 15300E, 3655N, 910 m.a.s.l. (grid coords.)
local elevation ~955 m.a.s.l. giving ~45m depth-to-top
strike/dip ~320/20° conductance 500S
along strike/downdip 150m/40m

centre of top edge 15300E, 3655N, 910 m.a.s.l. (grid coords.)
local elevation ~955 m.a.s.l. giving ~45m depth-to-top
strike/dip ~320/flat conductance 500S
along strike/downdip 150m/40m

centre of conductor 15300E, 3760N, 910 m.a.s.l. (grid coords.)
local elevation ~950 m.a.s.l. giving ~40m depth-to-top
strike/dip ~320/flat conductance 35S
along strike/downdip 220m/220m

Notes:
- view is looking gridwest (~320)
- conductor as modeled is ~maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response in the vicinity of the conductor.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.


Line 15300E
model profile
Line 15300E
field profile
Ch5-10 model data
Ch2-5 model data
Ch1 model data
Ch5-10 field data
Ch2-5 field data
Ch1 field data
Line 15300E
ESP-26-22
Transmitter Loop 26
3400
3600
3800
4000
140
120
100
80
60
40
20
0
-25
-140
10
-10
-20
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-26-22 - Model Line 15300E
0
100
500m
Figure 9

Conductor ESP_28_23 Line 13200E ~5650N

Conductor ESP_28_23 was detected during the surveying of Loop 28. **Conductor ESP_28_23** was detected by the airborne EM survey and the response, in partial form, cuts across all lines surveyed from Loop 28 - Lines 127/129/131/13200E. **Conductor ESP_28_23** correlates with a cliff (Figures 2 and 3) which curtailed surveying somewhat and suggests that the response may be related to a structure. The most complete section is on Line 13200E and this Line was selected for modeling MultiLoop modeling - Line 13100E was included in the modeling for reference and to adjust the strike.

Modeling **Conductor ESP_28_23**: Loop 28 Line 13200/13100E Figure 10

The modeling results for Loop 28 Line 13200/13100E are shown in Figure 10 The overall background response was modeled using a laterally extensive conductive layer at a depth of ~1000m and a weakly conductive layer at a depth of ~700m. **Conductor ESP_28_23** is modeled as a series of large plates dipping gridsouth @50° - back towards Loop 28. Details of **ESP_28_23** as modeled as listed in Figure 10 are:

centre of top edge 13200E, 5660N, 675 m.a.s.l. (grid coords.)
local elevation ~690 m.a.s.l. giving ~15m depth-to-top
strike/dip ~130/50° conductance 10S
along strike/downdip 800m/1200m

centre of top edge 13200E, 5710N, 665 m.a.s.l. (grid coords.)
local elevation ~675 m.a.s.l. giving ~10m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 800m/1200m

centre of top edge 13200E, 5900N, 560 m.a.s.l. (grid coords.)
local elevation ~620 m.a.s.l. giving ~60m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 400m/1200m

centre of top edge 13200E, 6100N, 525 m.a.s.l. (grid coords.)
local elevation ~575 m.a.s.l. giving ~50m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 400m/1200m

Conductor ESP_28_23 is interpreted to be a large fair conductor. **Conductor ESP_28_23** ~comes to surface at a cliff which suggests that the response may be related to a structure. All of the responses modeled are partial - again due to the cliff. Modeling results should be considered preliminary - further field work or further modeling is suggested. **Conductor ESP_28_23** should be evaluated in comparison with other known features in the Espedalen area. Primary field coupling is ~maximum coupled as modeled suggesting that the conductance is a reasonable maximum estimate.

Note: that ESP_25_23 is oriented 10° off grideast-gridwest.

Conductor ESP_28_23 as modeled on Line 13200E

Figure 10

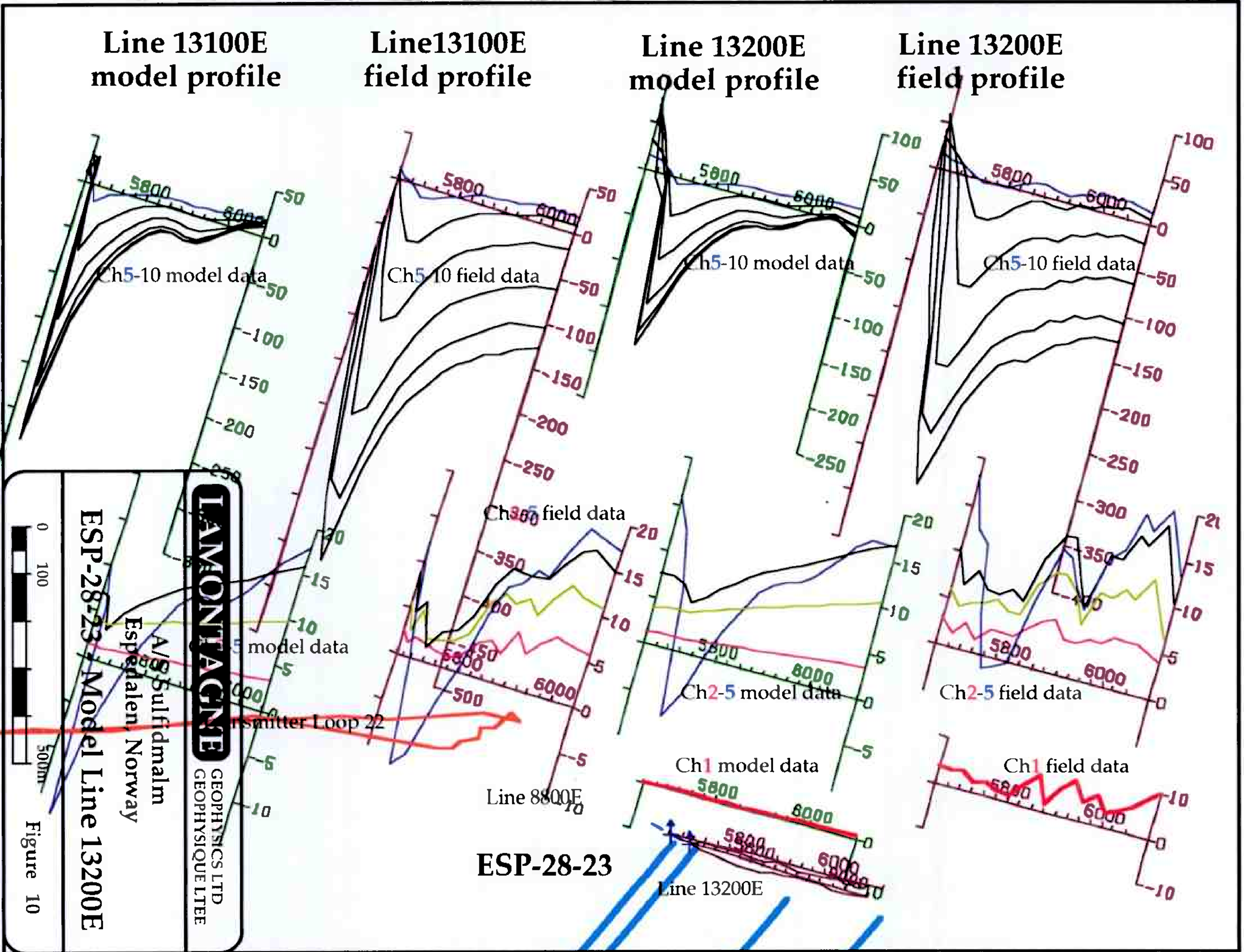
centre of top edge 13200E, 5660N, 675 m.a.s.l. (grid coords.)
local elevation ~690 m.a.s.l. giving ~15m depth-to-top
strike/dip ~130/50° conductance 10S
along strike/downdip 800m/1200m

centre of top edge 13200E, 5710N, 665 m.a.s.l. (grid coords.)
local elevation ~675 m.a.s.l. giving ~10m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 800m/1200m

centre of top edge 13200E, 5900N, 560 m.a.s.l. (grid coords.)
local elevation ~620 m.a.s.l. giving ~60m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 400m/1200m

centre of top edge 13200E, 6100N, 525 m.a.s.l. (grid coords.)
local elevation ~575 m.a.s.l. giving ~50m depth-to-top
strike/dip ~130/50° conductance 30S
along strike/downdip 400m/1200m

Notes:
- view is looking 10° off gridwest (~310)
- conductor as modeled is moderately well-coupled but not maximum coupled.
- locations are listed in Grid coordinates - refer to GPS notes for UTM locations.
- conductors shown in light blue model the background/current channeling/local response.
- the overall background response.in modeled by conductors (laterally extensive, centred under loop) at depth.


Line 13100E model profile
Line13100E field profile
Line 13200E model profile
Line 13200E field profile
Ch5-10 model data
Ch5-10 field data
Ch5-10 model data
Ch5-10 field data
Ch2-5 field data
Ch2-5 model data
Ch2-5 model data
Ch2-5 field data
Ch1 model data
Ch1 field data
Transmitter Loop 22
Line 8800E
ESP-28-23
Line 13200E
5800
6000
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
A/S Sulfidmalm
Espedalen, Norway
ESP-28-23
Model Line 13200E
Figure 10
0
100
500m

Conclusions and Recommendations

The results of the survey are summarized and presented as UTEM profiles and BHUTEM-3 profiles/vectorplots in Appendix A. Overall the data quality is good and a number of conductive features are evident. The final Grid and Loop Locations are presented in Figure 2 and an interpretation is presented as Interpreted Features (Figure 3) and Interpretation (Figure 4). There are a number of responses of considerable interest - although no clear Ch1 conductors have been delineated.

Features outlined are mainly contacts, shallow conductors and thin conductive zones - geological units and structural features. The pattern of responses outlined in Figures 3 and 4 fits the map pattern of the geological mapping and pattern of airborne EM conductors. In general the airborne EM detected shallower features or the shallowest occurrence of deeper features. There is also a reasonable correlation between the airborne magnetics and UTEM Ch1 features interpreted as magnetic in origin. This indicates that field location of the grids was sufficiently accurate to cover the target geology.

The profiles presented in Appendix A have been reduced with a grid corrected as well as possible using available information. The location of all survey points and loop locations were collected using a GPS system. For reference GPS collection for UTEM reduction should be more detailed along loop fronts. The goal along the loop front - and loop sides/back - is to recover the topographic shape of the loop as well as the loop/line intersection points.

As in the 2003/2004 UTEM surveys a number of responses of interest were detected. The majority of the responses detected during the 2005 survey - including BHUTEM responses have been modeled in-house by Falconbridge geophysicist Tony Watts. The profiles were examined by Falconbridge personnel and a number - 6 - were selected for MultiLoop modeling. The results of the modeling are presented in the Interpretation section and the reader is directed there and to the accompanying CD for specific details. A summary follows in which the modeled features and the 2003 modeled features - in total 17 features - are grouped into one of four categories:

good-to-excellent	- >1000S	**Conductors 18,20,22**
good	- 400-1000S	**Conductors 21**
fair-to-good	- 150-400S	
fair	- <150S	**Conductor 19,23**

Note that in some instances an adjustment is made to allow for size - a large feature moving up a category, a small feature down. The features are listed on the following page in numerical order - no ranking of **Conductors** within a group has been done.

In conclusion - the UTEM survey and subsequent MultiLoop modeling have resulted in a number of **Conductors** of interest. Several of the **Conductors** of interest come near to surface, in one instance mining has been done in the past, allowing for possible field examination. Following a surface examination of the shallower **Conductors** drill testing several of the **Conductors** would seem to be in order.

Conductor - good-to-excellent (>1000S)

ESP_19_18 - 2200S

Figure 5 Loop 19 Line 12500E 4800-4900N

ESP_24_20 - 2000-3000S

Figure 7 Loop 09 Line 9500/9400E 3800N

ESP_26_22 - 1000S?

Figure 9 Loop 26 Line 15300E 3650N

Conductor - good (400-1000S)

ESP_25_21 - ~600S

Figure 8 Loop 25 Line 8400E 8400N

Conductor - fair-to-good 150-400S)

-

Conductor - fair (<150S)

ESP_22_19 - 75S

Figure 6 Loop 22 Line 9000/8800E 2225N

ESP_28_23 - (3x) 30S

Figure 10 Loop 28 Line 13200E 5710N
5900N
6100N

In terms of logistics the survey ran very smoothly and the crew supplied by Falconbridge was excellent and is thanked for their efforts. Several small points should be noted for future surveys:

- Rectangular transmitter loops work very well and are recommended. Transmitter loops, however, can take any shape and take advantage of/be fit to trails and topography. Factors to consider in setting out a uniquely-shaped transmitter loop:
  - will the primary field be well-coupled to potential targets?
  - can the loop be safely laid out and picked up?
  - can the loop be accurately GPS surveyed?
  - avoid UTEM surveying close to (say within 3-400m of) "uniquely" shaped sidewires. Errors in location can superimpose the shape on Ch1.

- If the same generator is to be used on future surveys it should be rigged with a larger gas tank. The small-volume gas tank currently on the generator required filling 2-3 times a survey day. With terrain less difficult than in previous years this was only a minor problem.

- On lengthy jobs in difficult terrain such as this one it is advisable to build in a scheduled break for all crew members.

- Use of a heavier gauge wire on future survey could be considered.
  As noted above: during this survey a double strand of wire was laid along one side of the loop. In practice it requires a considerable additional effort to lay/retrieve double strands of wire. The total loop resistance is lowered, however, allowing a higher transmitter current. Signal-to-noise is improved, less stacking is required and surveying proceeds more quickly. Data quality would improve in areas of high noise - along certain geologic structures and near powerlines.

Legend

more resistive
- Contact (well / poorly defined)
more conductive

- thin conductive / resistive zone

1 60 / 5 S / 7 ?
Location of conductor axis
egs. - latest response Ch1 depth-to-top 60m
- latest response Ch5 shallow (<50m)
- latest response Ch7 unclear

5 80 - Contact conductor

- Block conductor
well defined / weaker section / poorly defined

- conductor offline

- Modeled Conductor (ESPedalen)
eg. ESP_05_03 = conductor #03 on Loop 05
details as noted in Figures

Mm / P / ? - Magnetic feature / powerline / ?

- connection (well / poorly defined

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

A/S Sulfidmalm

Espedalen, Norway

Interpretation Legend

Figure 11

Appendix A

0511 UTEM Profiles
0511 BHUTEM Profiles

UTEM 3 Survey

Espedalen
Norway

for

A/S Sulfidmalm

Presentation

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. Overall the data quality is good and a number of conductors and/or conductive features are evident. Moderate-to-severe noise levels to the gridnorth of lines surveyed from Loops 05 through 12 reflect the presence of a regional powerline beyond the end of the lines. 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)**

BHUTEM3 profiles follow in order of Hole number by area. The following plots are presented for a borehole: **3-axis plot**

total field plot

plan vectorplot
gridnorth-south section vectorplot

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 data has been point normalized to a the field at a point ~300m out from the centre of the loop front. Note that this field value is intermediate and it was chosen because the survey was roughly half inside-the-loop and half off-loop. Normalizing to an intermediate point allows the interpretation of responses along the entire line. The amplitude of responses close to (**further from**) the loop front will be blown up (**muted**). 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

Note: In areas near powerlines channels 4 and higher (earlier times) are quite noisy. In this instance - Loop 29 for instance on this survey - the axis are presented as follows:

top axis - Ch4-10
middle axis - Ch2-3
bottom axis - Ch1
bottom axis - topography - no vertical exaggeration

Outline of BHUTEM-3 plot types

3-axis plot - **secondary field**
total field plot - **total field**

Both continuously normalized secondary and total field plots are presented for each borehole surveyed. Note that for reference the primary field is plotted on all BHUTEM profiles. The axis on the **3-axis plot** contain:

top axis - Ch5-10
middle axis - Ch2-5
bottom axis - Ch1 + primary field

The axis on the **total field plot** contains:

axis - Ch1-10 + primary field

plan and gridnorth-south section vectorplots

Plan and gridnorth-south section vectorplots are included for each borehole surveyed. Vectorplots are useful in both planning loop locations and in evaluating profiles - particularly in areas of high relief. Vectorplots show the primary field local to the borehole - allowing the coupling to be evaluated.

Notes on Survey and Presentation/plotting details

- An effort has been to keep the scales consistent. The horizontal scale is 1cm:100m. For BHUTEM plots it is 1cm:10m.

- Lines added to planned coverage to detail conductors:

Loop 20	Line 12700E	Loop 25	Line 8350E
	Line 12800E		Line 8450E
Loop 22	Line 8600E	Loop 27	Line 14300E
	Line 8800E		Line 14500E
			Line 16100E

List of Data Collected and Plotted

Espedalen 2005 Grid

Surface coverage - @ 3.251 Hertz

	Line	coverage	
Loop 19	Line 12300E	4450N - 5150N	700m
	Line 12400E	4450N - 5150N	700m
	Line 12500E	4450N - 5150N	700m
	Line 12600E	4450N - 5150N	700m
	Line 12700E	4450N - 5150N	700m
	Line 12800E	4450N - 5250N	800m
	Line 12900E	4450N - 5250N	800m
	Espedalen	Loop 19 Total	5100m
Loop 20	Line 11300E	2800N - 3950N	1150m
	Line 11400E	2800N - 3950N	1150m
	Line 11500E	2800N - 3950N	1150m
	Line 11600E	2800N - 3950N	1150m
	Line 11700E	2800N - 3950N	1150m
	Line 11800E	2800N - 3950N	1150m
	Line 11900E	2800N - 3950N	1150m
	Line 12000E	2800N - 3950N	1150m
	Line 12100E	2800N - 3950N	1150m
	Line 12200E	2800N - 3650N	850m
	Line 12300E	2800N - 3650N	850m
	Line 12400E	2800N - 3650N	850m
	Line 12500E	2800N - 3650N	850m
	Line 12600E	2800N - 3650N	850m
	Line 12700E	3100N - 3700N	600m
	Line 12800E	3100N - 3700N	600m
	Espedalen	Loop 20 Total	15800m
Loop 21	Line 10000E	2525N - 3450N	925m
	Line 10200E	2525N - 3450N	925m
	Line 10400E	2525N - 3450N	925m
	Line 10600E	2525N - 3450N	925m
	Line 10800E	2525N - 3450N	925m
	Line 11000E	2525N - 3450N	925m
	Line 11200E	2525N - 3200N	675m
	Line 11300E	2525N - 3450N	925m
	Espedalen	Loop 21 Total	7150m

List of Data Collected and Plotted (cont)

	Line	coverage	
Loop 22	Line 8600E	2000N - 2400N	400m
	Line 8800E	2000N - 2400N	400m
	Line 9000E	2075N - 3300N	1225m
	Line 9200E	2075N - 3475N	1400m
	Line 9400E	2075N - 3550N	1475m
	Line 9600E	2075N - 3400N	1325m
	Line 9800E	2075N - 3400N	1325m
	Line 10000E	2075N - 2700N	625m
	Espedalen	Loop 22 Total	8175m
Loop 23	Line 6500E	1500N - 2600N	1100m
	Line 6700E	1500N - 2600N	1100m
	Line 6900E	1500N - 2600N	1100m
	Line 7100E	1500N - 2600N	1100m
	Line 7300E	1500N - 2600N	1100m
	Line 7500E	1500N - 2600N	1100m
	Line 7700E	1500N - 2600N	1100m
	Line 7900E	1500N - 2600N	1100m
	Espedalen	Loop 23 Total	8800m
Loop 24	Line 9200E	3400N - 4550N	1150m
	Line 9300E	3400N - 4550N	1150m
	Line 9400E	3400N - 4550N	1150m
	Line 9500E	3600N - 4550N	950m
	Line 9600E	3600N - 4150N	550m
	Espedalen	Loop 24 Total	4950m
Loop 25	Line 7700E	4300N - 4600N	300m
	Line 7800E	3950N - 4600N	650m
	Line 8000E	4100N - 4625N	525m
	Line 8200E	4050N - 4575N	525m
	Line 8350E	4450N - 4700N	250m
	Line 8400E	4050N - 4700N	650m
	Line 8450E	4550N - 4700N	150m
	Line 8600E	3950N - 4550N	600m
	Line 8800E	3950N - 4425N	475m
	Line 9000E	4025N - 4650N	625m
	Espedalen	Loop 25 Total	4750m

List of Data Collected and Plotted (cont)

	Line	coverage	
Loop 26	Line 14900E	3350N - 4125N	775m
	Line 15100E	3350N - 4425N	1075m
	Line 15300E	3350N - 4425N	1075m
	Line 15500E	3350N - 4025N	675m
	Line 15700E	3350N - 3975N	625m
	Espedalen	Loop 26 Total	4225m
Loop 27	Line 14300E	2150N - 2650N	500m
	Line 14500E	2150N - 2650N	500m
	Line 14700E	2225N - 2800N	575m
	Line 14800E	2225N - 3400N	1175m
	Line 14900E	2225N - 3400N	1175m
	Line 15100E	2225N - 3500N	1275m
	Line 15300E	2225N - 3500N	1275m
	Line 15500E	2225N - 3450N	1225m
	Line 15700E	2225N - 3450N	1225m
	Line 15900E	2225N - 3075N	850m
	Line 16100E	2150N - 3000N	850m
	Espedalen	Loop 27 Total	10625m
Loop 28	Line 12700E	5750N - 6150N	400m
	Line 12900E	5725N - 6025N	300m
	Line 13100E	5675N - 6050N	375m
	Line 13200E	5650N - 6100N	450m
	Espedalen	Loop 28 Total	1525m
Loop 29	Line 12100E	6475N - 7200N	725m
	Line 12300E	6350N - 7275N	925m
	Line 12500E	6250N - 7300N	1050m
	Line 12700E	6300N - 7300N	1000m
	Line 12900E	6300N - 7100N	800m
	Line 13100E	6350N - 7075N	725m
	Line 13200E	6425N - 7100N	675m
	Espedalen	Loop 29 Total	5900m
	Espedalen 2005	**Total**	**77.000km**

List of Borehole Data Collected and Plotted

Area	Borehole Name	Survey Depth	Dummy Depth	Loop Number	Frequency
Listed by hole number:					
Dalen:	ES2004-05	118m	~119m	Loop 15a	3.251Hz
Dalen:	ES2004-07	70m	71m	Loop 15a	3.251Hz
Stormyra:	ES2004-08	82m	84m	Loop 20	3.251Hz
Stormyra:	ES2004-09	110(130)m	~139m	Loop 20	3.251Hz
Melgard:	ES2004-10	128m	~130m	Loop 25	3.251Hz
Grahoa:	ES2004-16	178m	179.5m	Loop B16	3.251Hz
Stylskampen:	ES2004-17	93m	93m	Loop B17	3.251Hz
Stormyra:	ES2005-18	170m	171m	Loop 20	3.251Hz
Stormyra:	ES2005-20	127m	130.5m	Loop 20	3.251Hz
Stormyra:	ES2005-21		blocked	Loop 20	
Listed by area:					
Dalen:	ES2004-05	118m	~119m	Loop 15a	3.251Hz
	ES2004-07	70m	71m	Loop 15a	3.251Hz
Stormyra:	ES2004-08	82m	84m	Loop 20	3.251Hz
	ES2004-09	110(130)m	~139m	Loop 20	3.251Hz
	ES2005-18	170m	171m	Loop 20	3.251Hz
	ES2005-20	127m	130.5m	Loop 20	3.251Hz
	ES2005-21		blocked	Loop 20	
Melgard:	ES2004-10	128m	~130m	Loop 25	3.251Hz
Grahoa:	ES2004-16	178m	179.5m	Loop B16	3.251Hz
Stylskampen:	ES2004-17	93m	93m	Loop B17	3.251Hz

0511

Surface UTEM Profiles

Espedalen

Loop 19

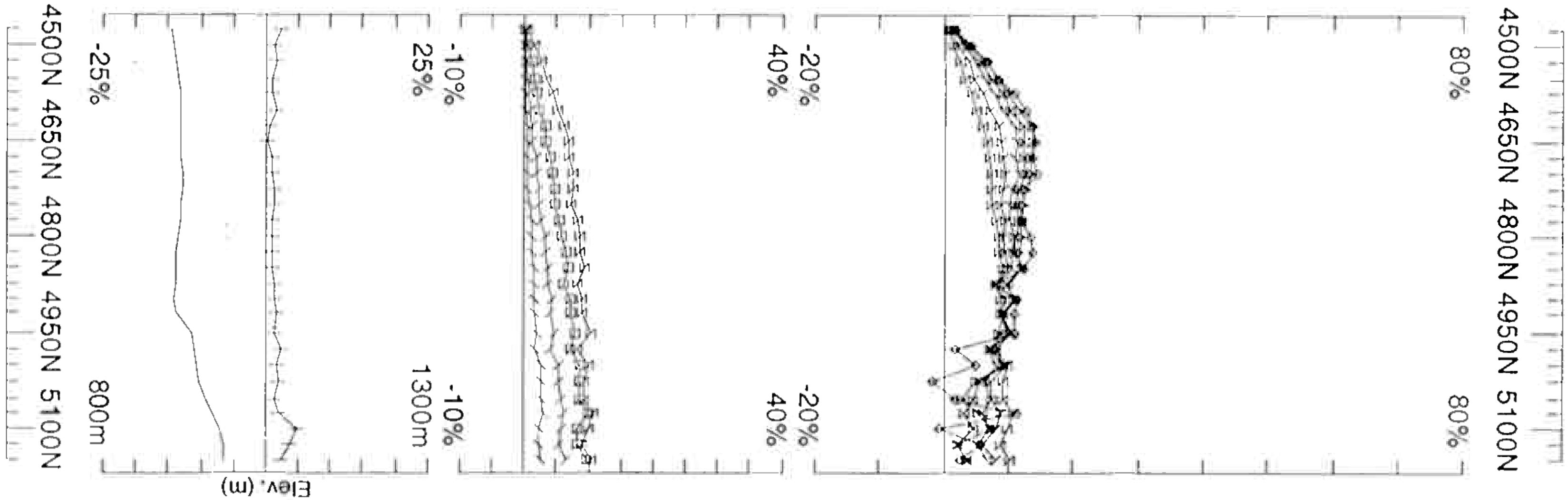
Hz
@3.251 Hz frequency

continuous norm

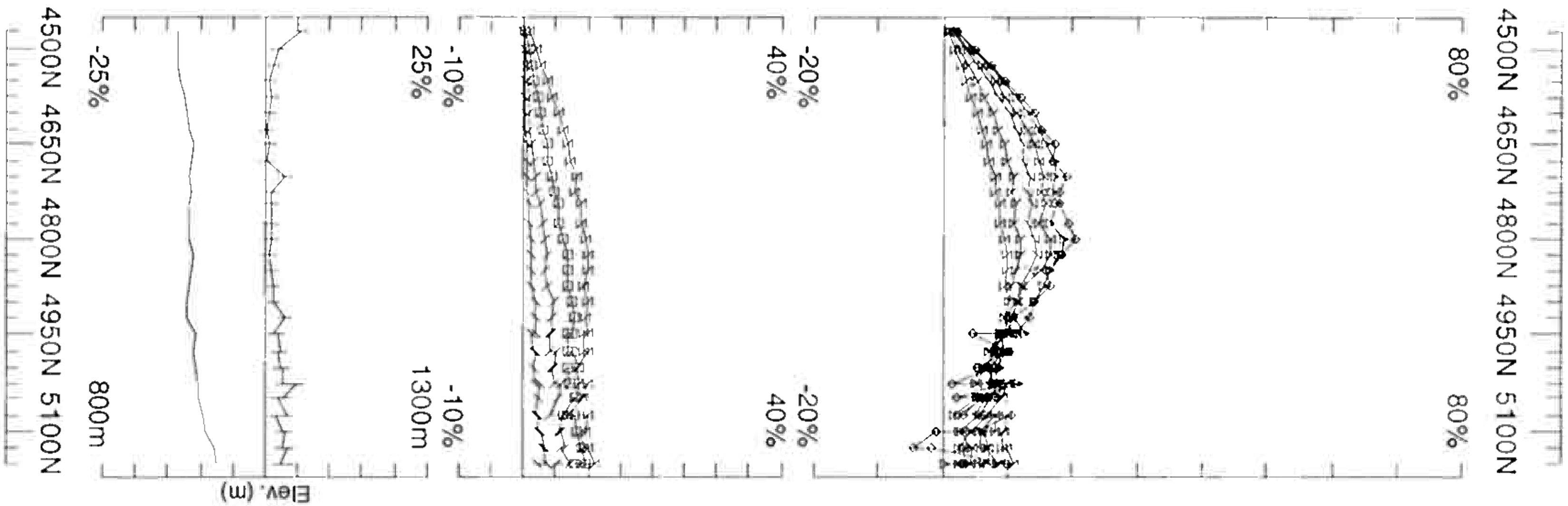
Ch1 reduced

Loop 19	Line 12300E	4450N - 5150N	700m
	Line 12400E	4450N - 5150N	700m
	Line 12500E	4450N - 5150N	700m
	Line 12600E	4450N - 5150N	700m
	Line 12700E	4450N - 5150N	700m
	Line 12800E	4450N - 5250N	800m
	Line 12900E	4450N - 5250N	800m
	Espedalen	Loop 19 Total	5100m

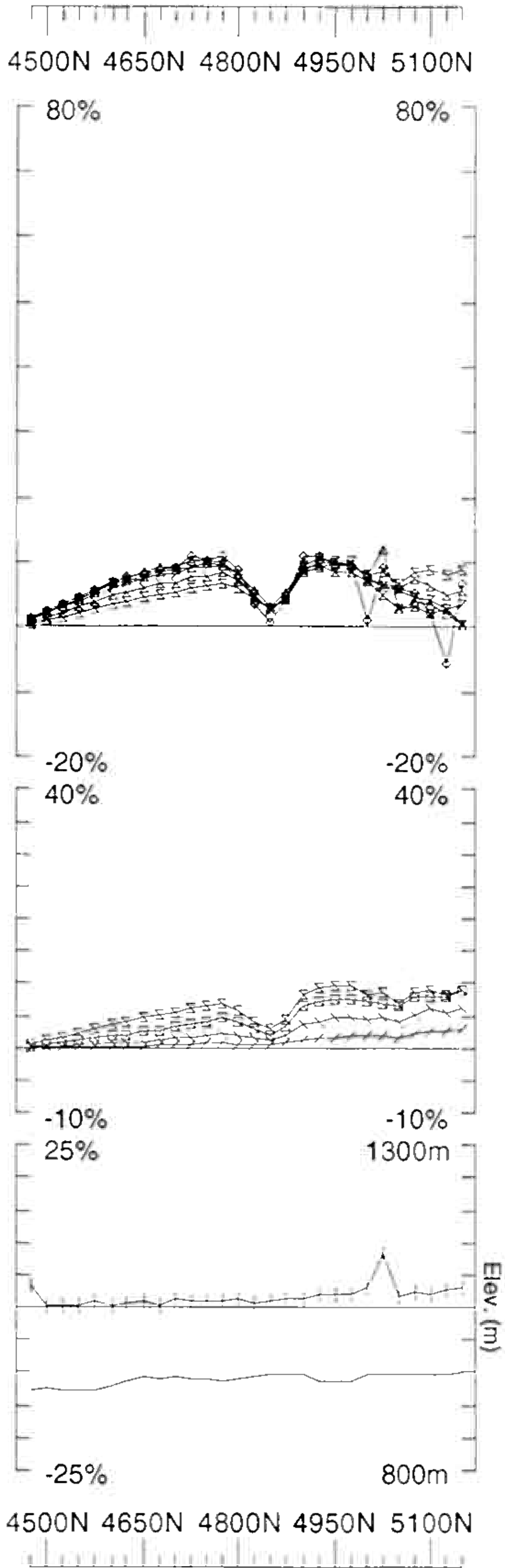
Loop 19 - continuous norm



Loop: 19	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 12300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 17/2/5 Reduced : 1/4/5 Plotted : 1/4/5



Loop: 19	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 12400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Plotted : 1/4/5



Loop: 19
Line: 12500E
Compt: Hz

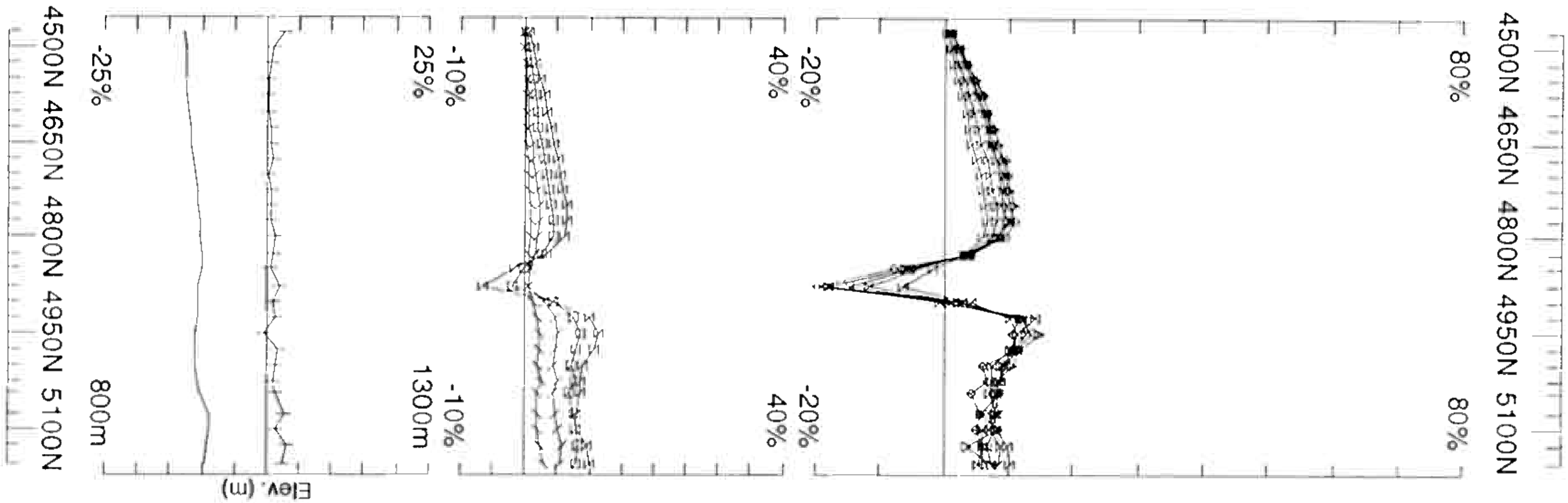
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

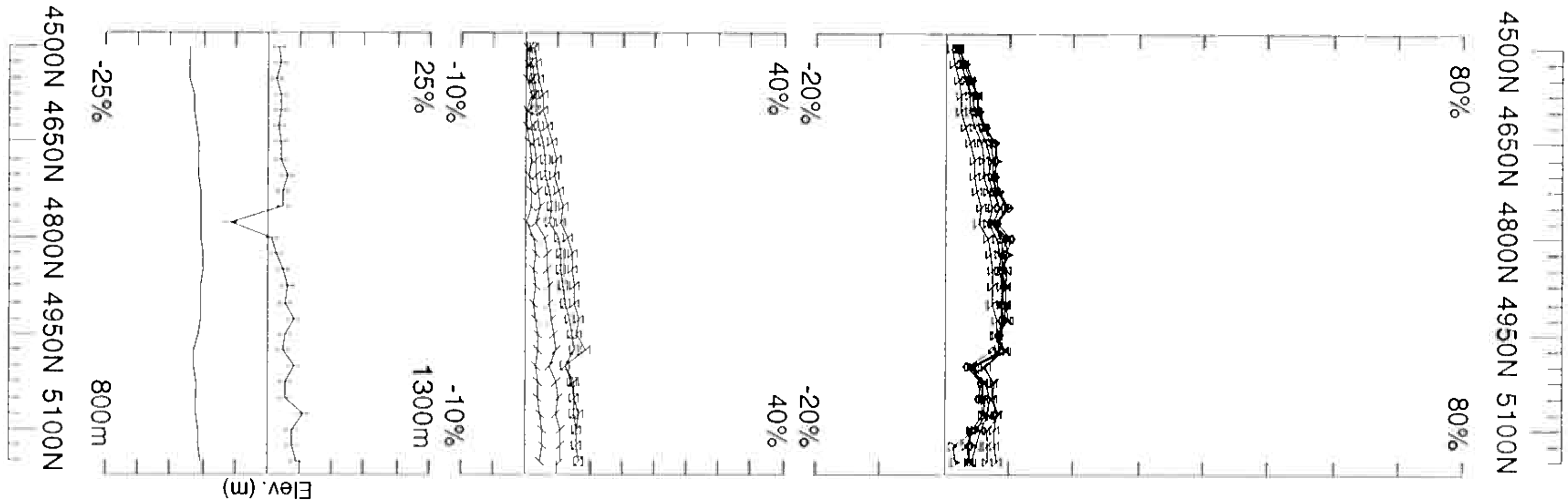
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

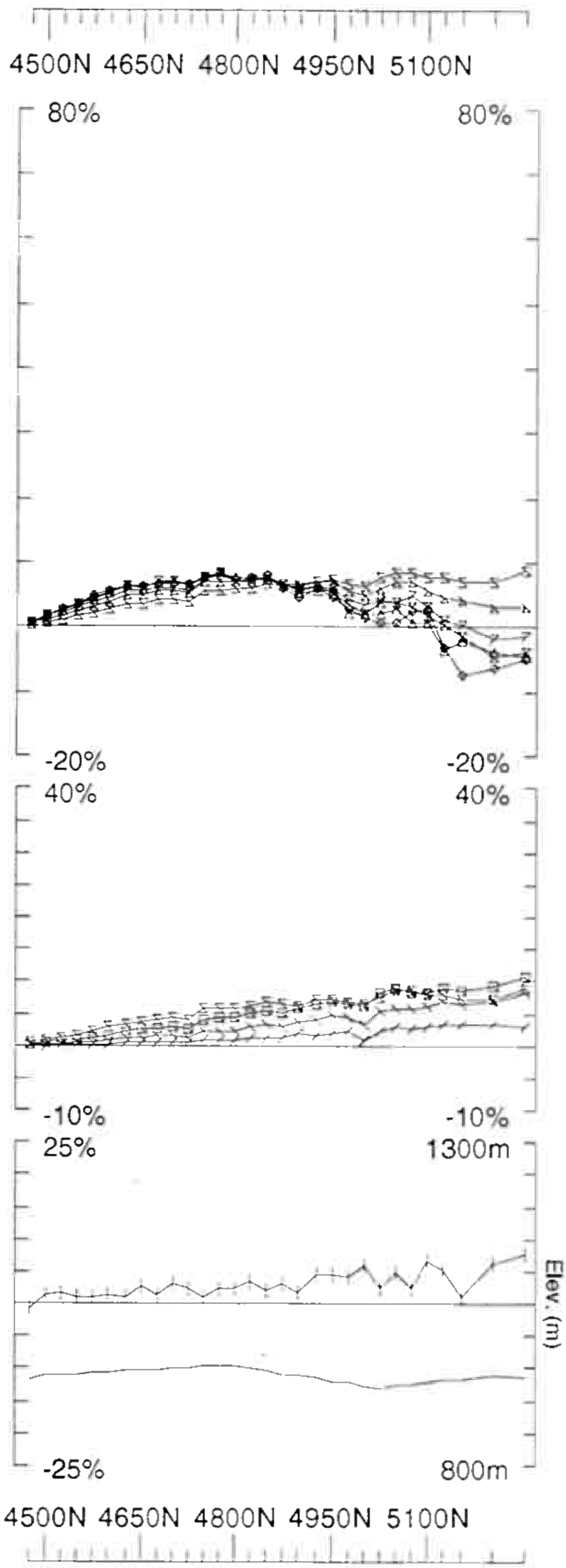
Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5



Loop: 19 Line: 12600E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 18/2/5 Reduced : 1/4/5 Plotted : 1/4/5



Loop: 19	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 12700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 18/2/5 Reduced : 1/4/5 Plotted : 1/4/5



Loop: 19
Line: 12800E
Compt: Hz

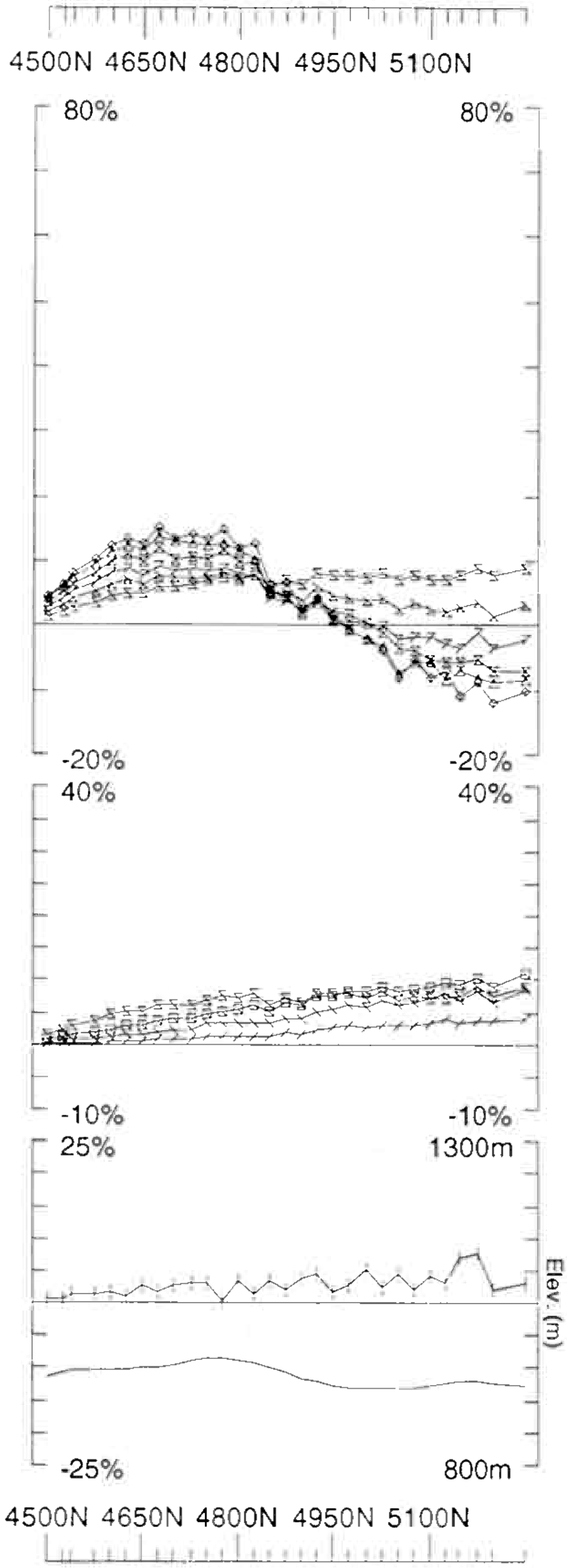
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5



Loop: 19
Line: 12900E
Compt: Hz

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed: 18/2/5
Reduced: 1/4/5
Plotted: 1/4/5

Espedalen

Loop 20

Hz

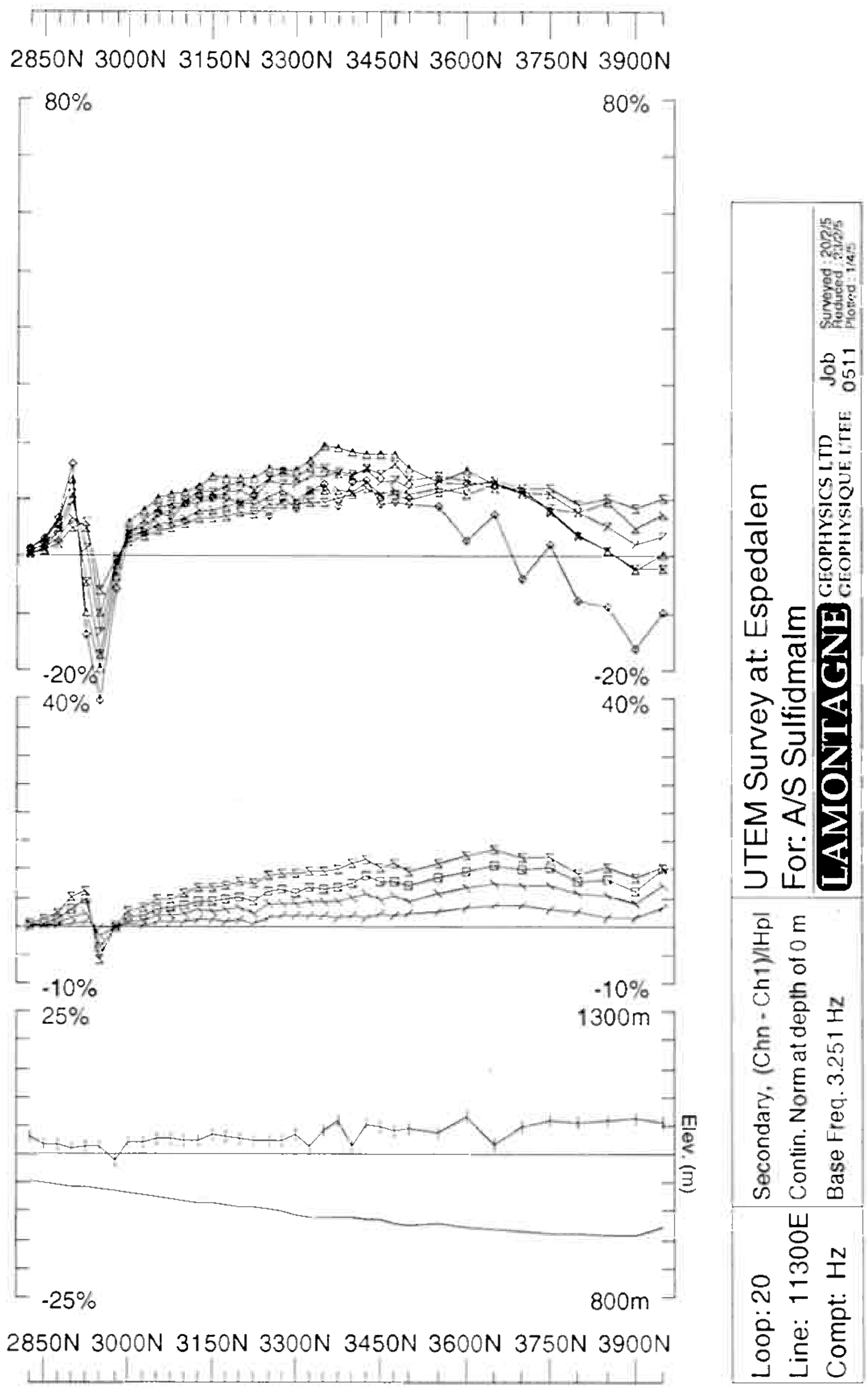
@3.251 Hz frequency

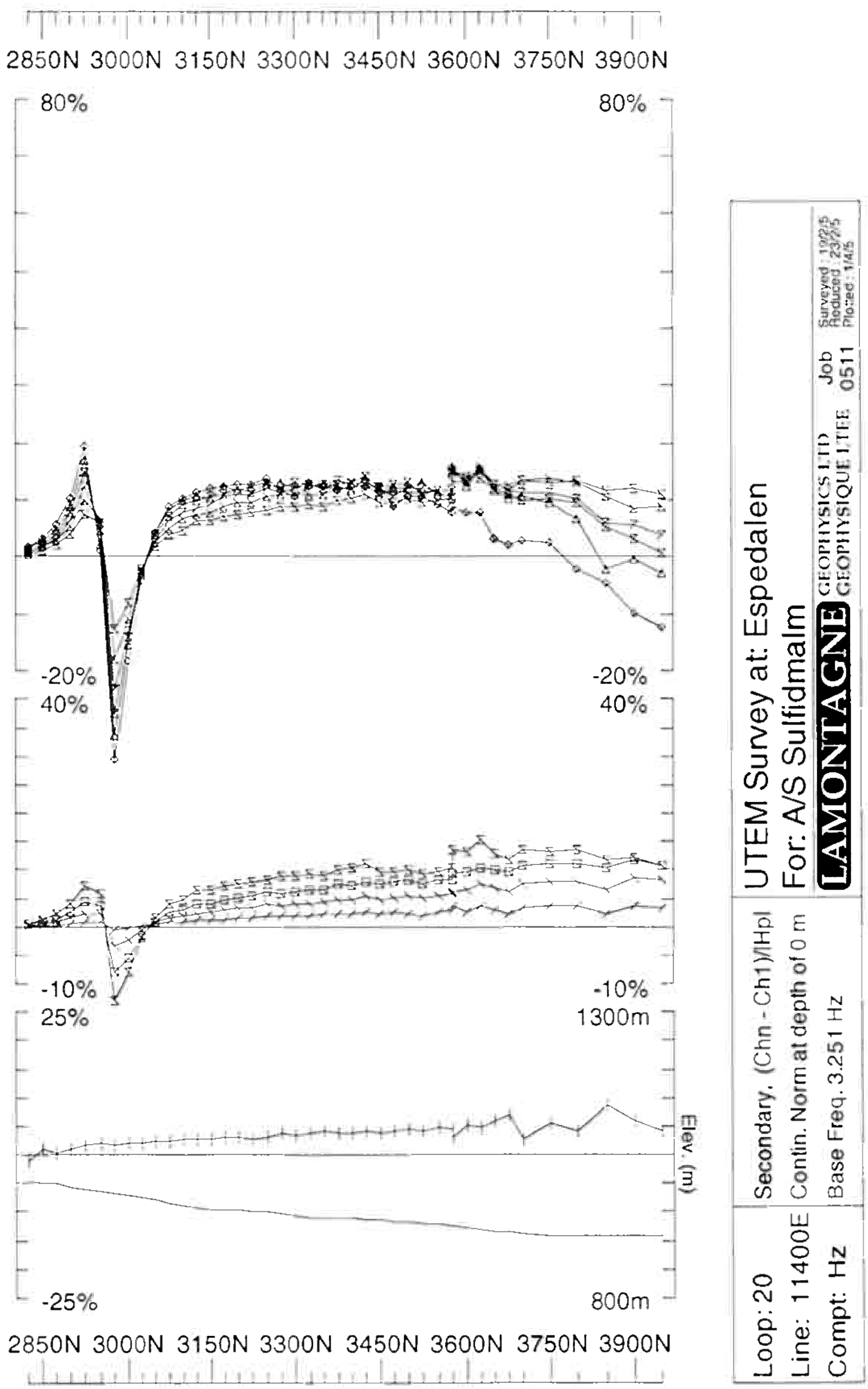
continuous norm

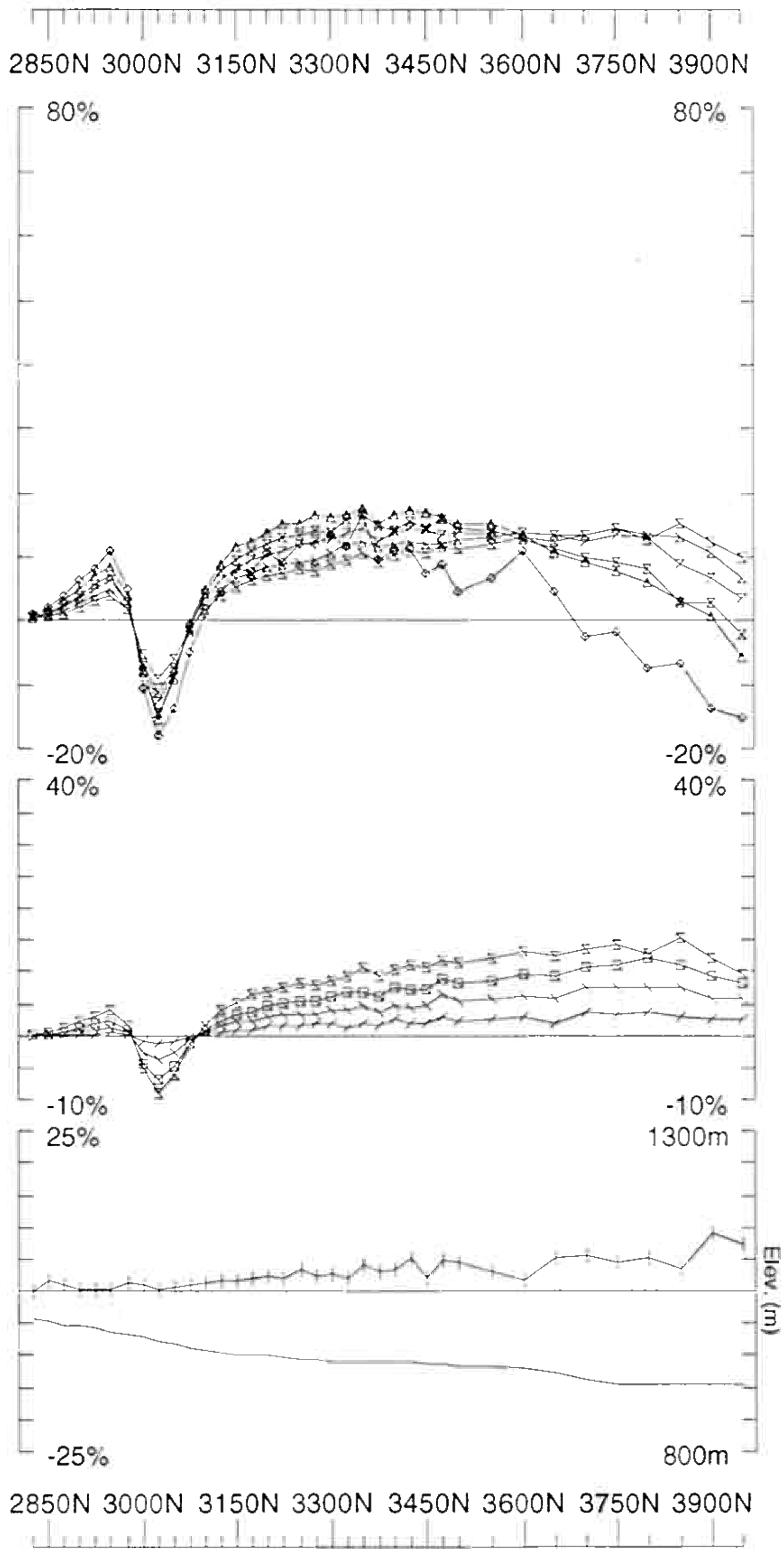
Ch1 reduced

Loop 20	Line 11300E	2800N - 3950N	1150m
	Line 11400E	2800N - 3950N	1150m
	Line 11500E	2800N - 3950N	1150m
	Line 11600E	2800N - 3950N	1150m
	Line 11700E	2800N - 3950N	1150m
	Line 11800E	2800N - 3950N	1150m
	Line 11900E	2800N - 3950N	1150m
	Line 12000E	2800N - 3950N	1150m
	Line 12100E	2800N - 3950N	1150m
	Line 12200E	2800N - 3650N	850m
	Line 12300E	2800N - 3650N	850m
	Line 12400E	2800N - 3650N	850m
	Line 12500E	2800N - 3650N	850m
	Line 12600E	2800N - 3650N	850m
	Line 12700E	3100N - 3700N	600m
	Line 12800E	3100N - 3700N	600m
	Espedalen	Loop 20 Total	15800m

Loop 20 - continuous norm


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
-25%
800m
Elev. (m)
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 20
Line: 11300E
Compt: Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 20
Line: 11400E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 20
Line: 11500E
Compt: Hz

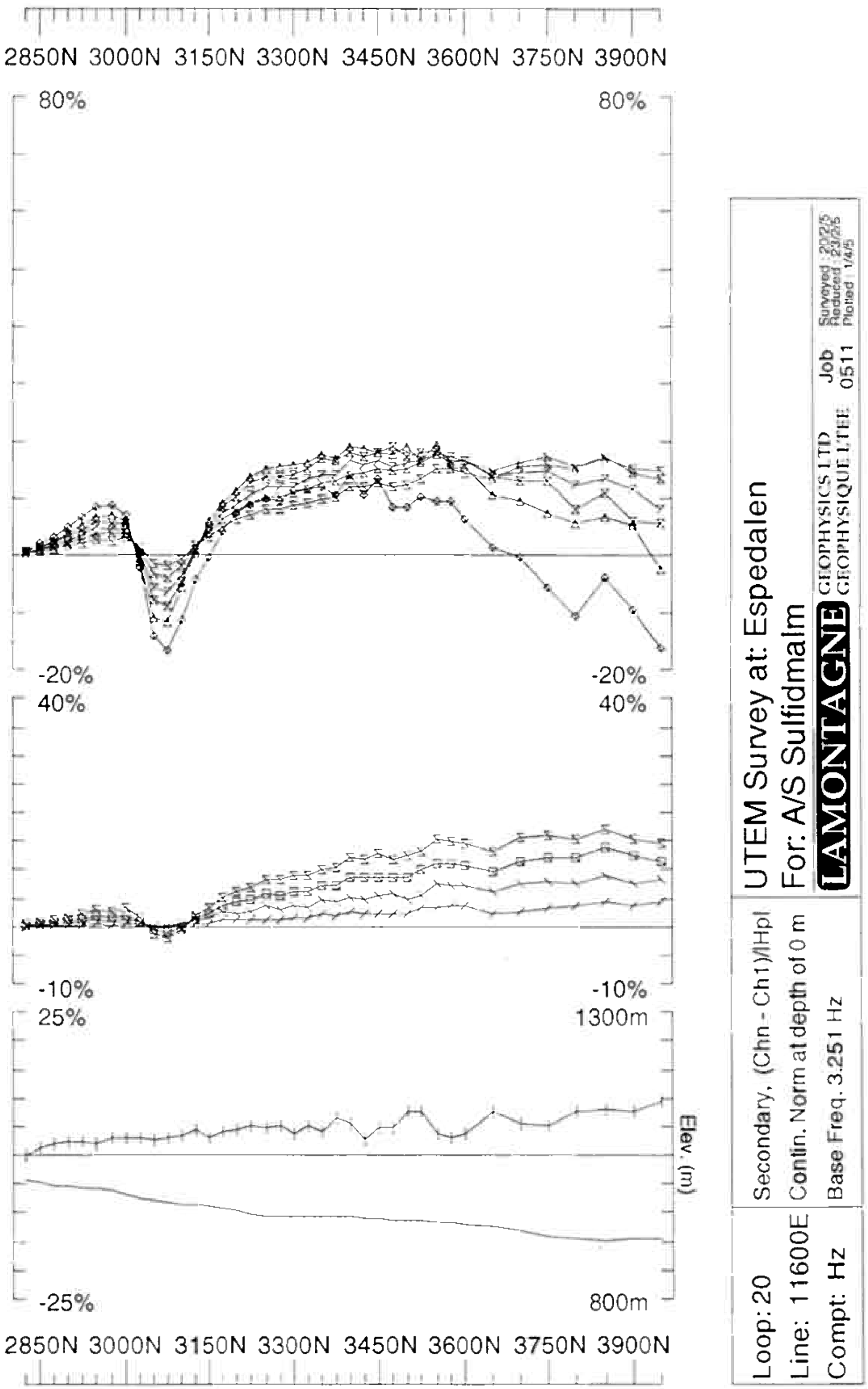
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

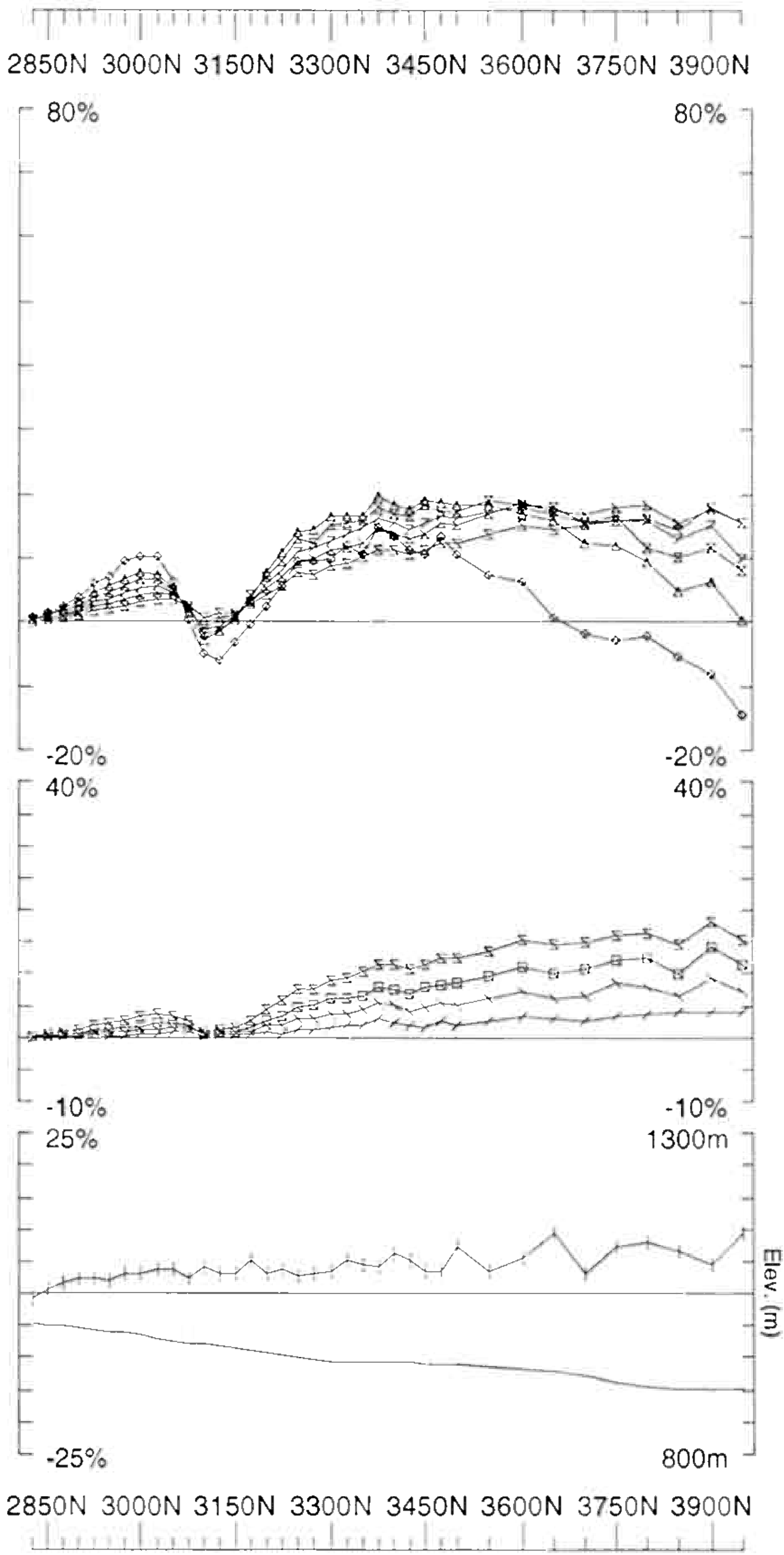
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5



2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 20
Line: 11600E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

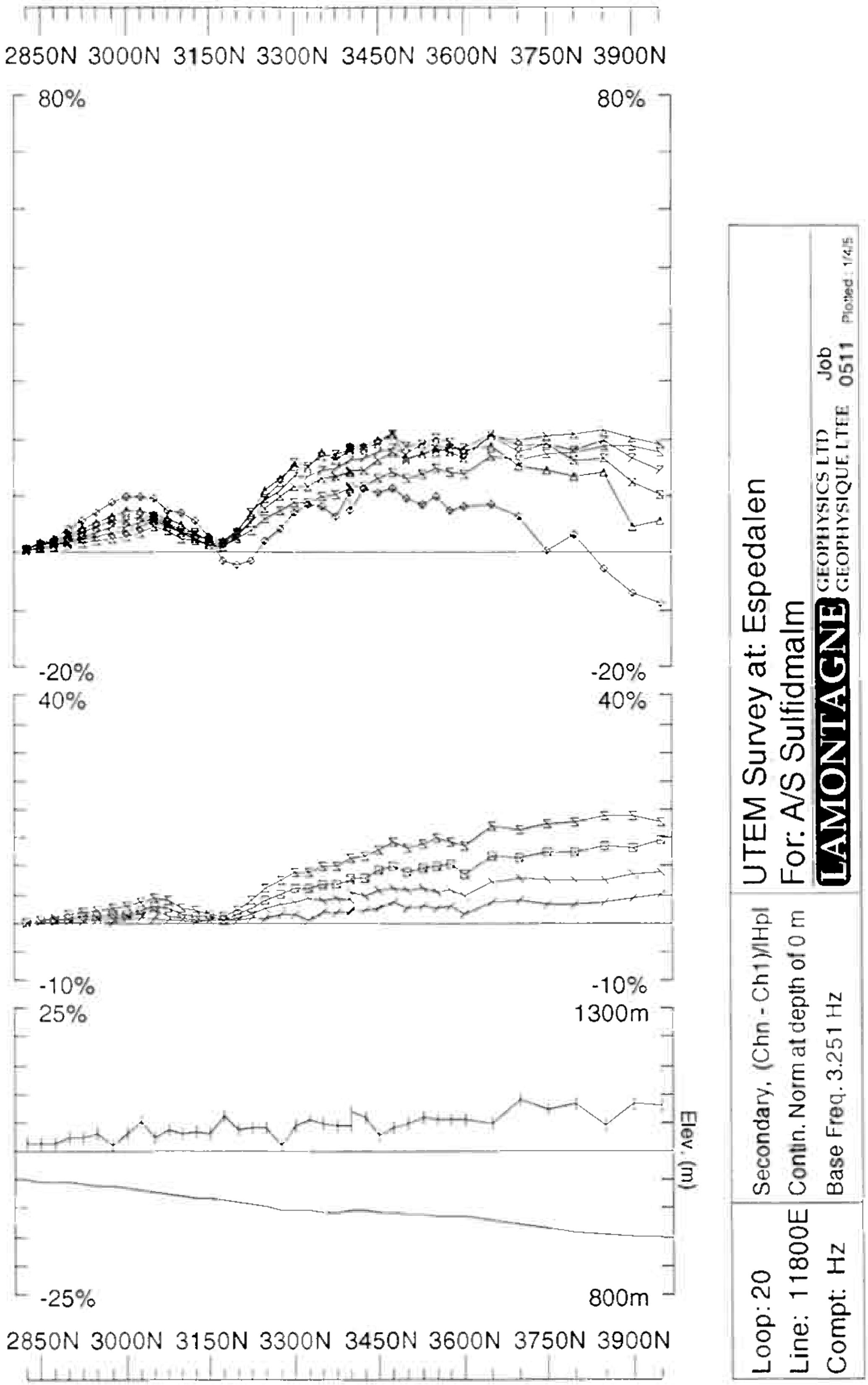
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

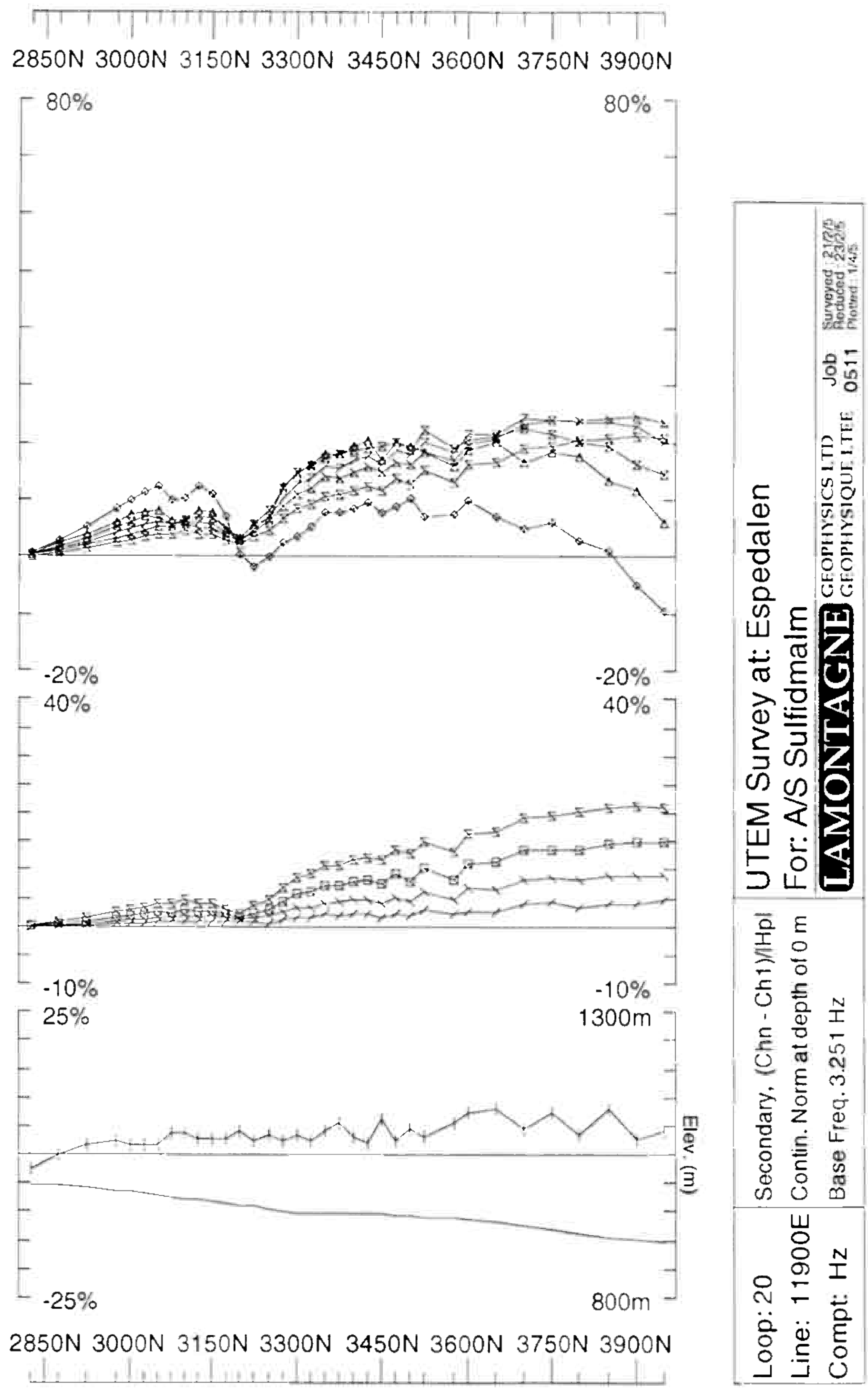
Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5

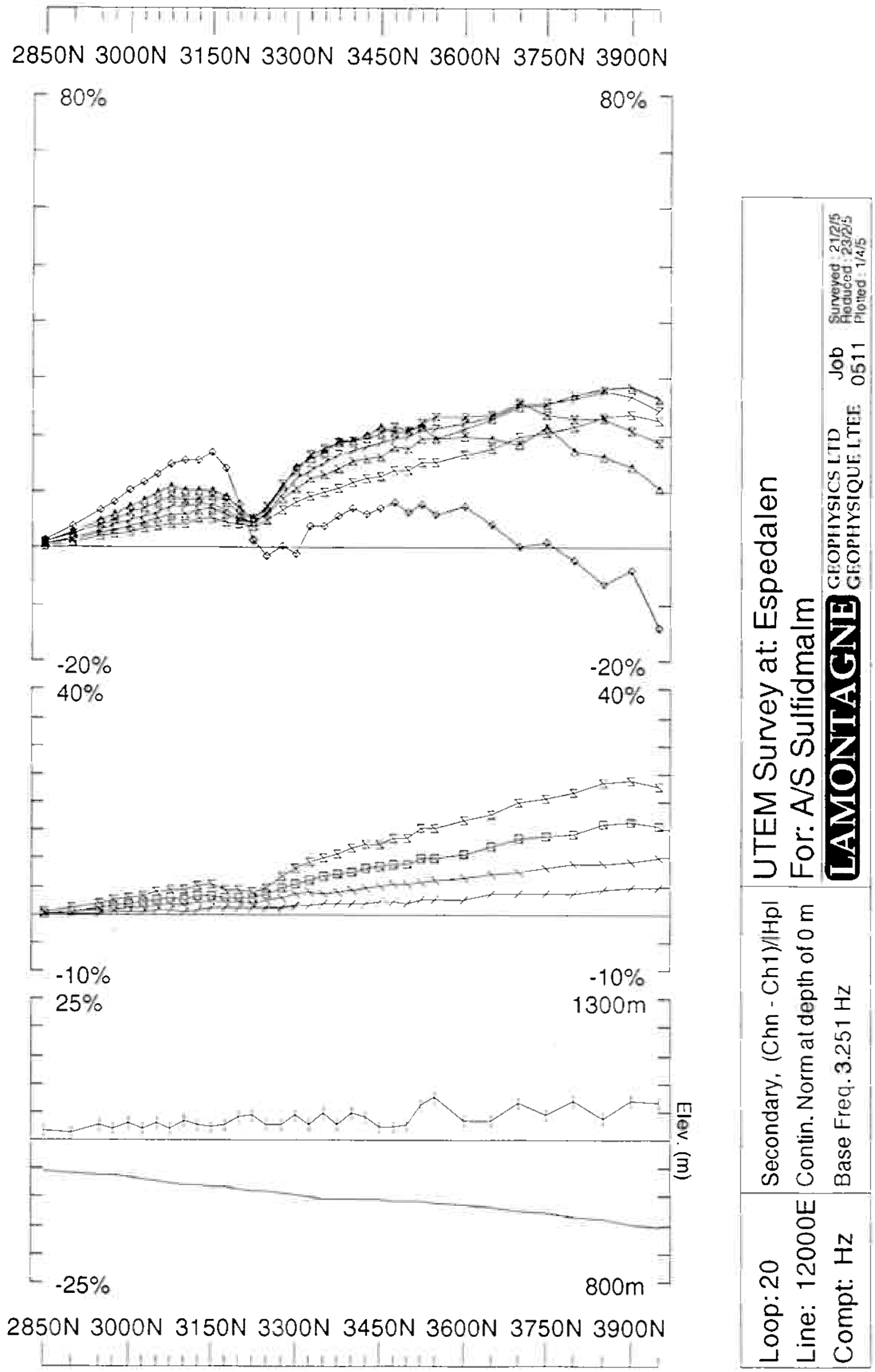
Loop: 20
Line: 11700E
Compt: Hz

Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

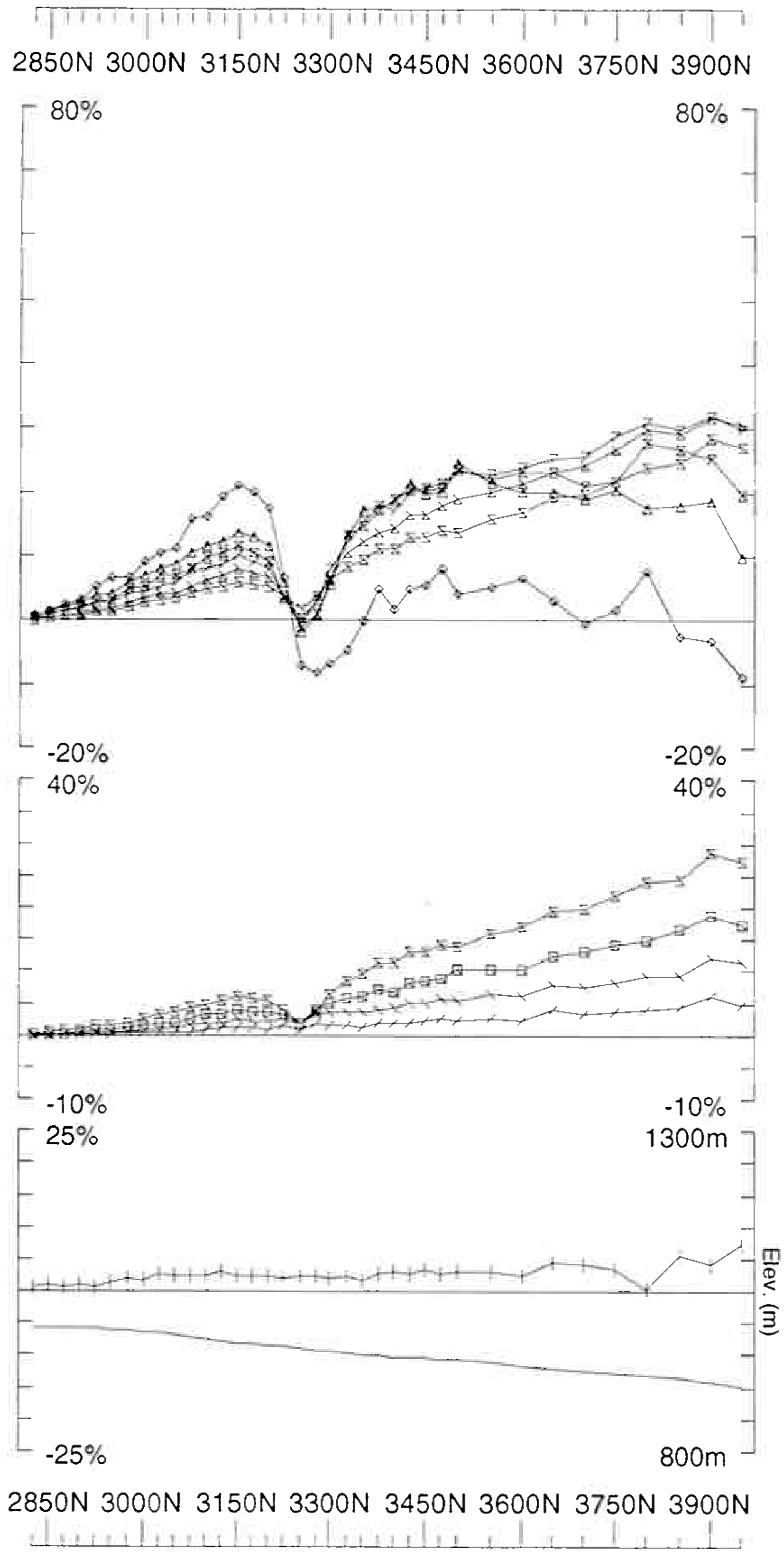


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 20
Line: 11800E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Loop: 20
Line: 11900E
Compt: Hz
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5
Loop: 20
Line: 12000E
Compt: Hz
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

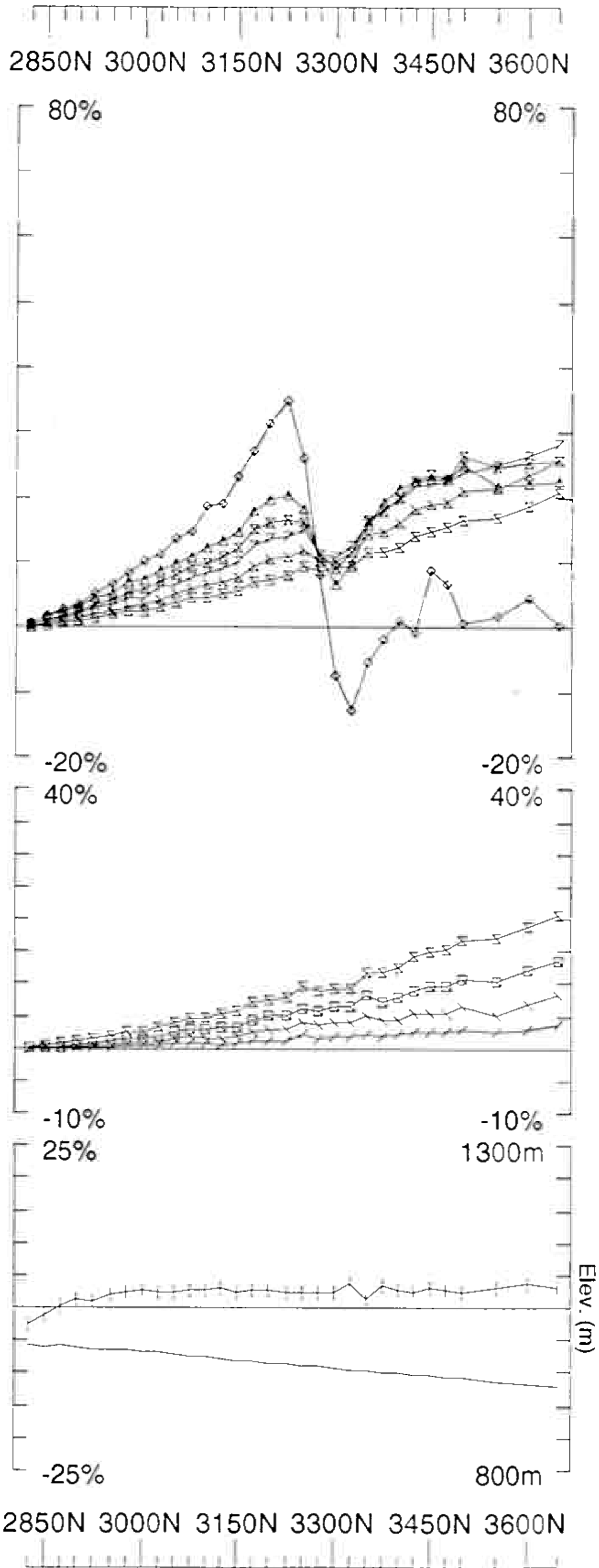
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 22/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

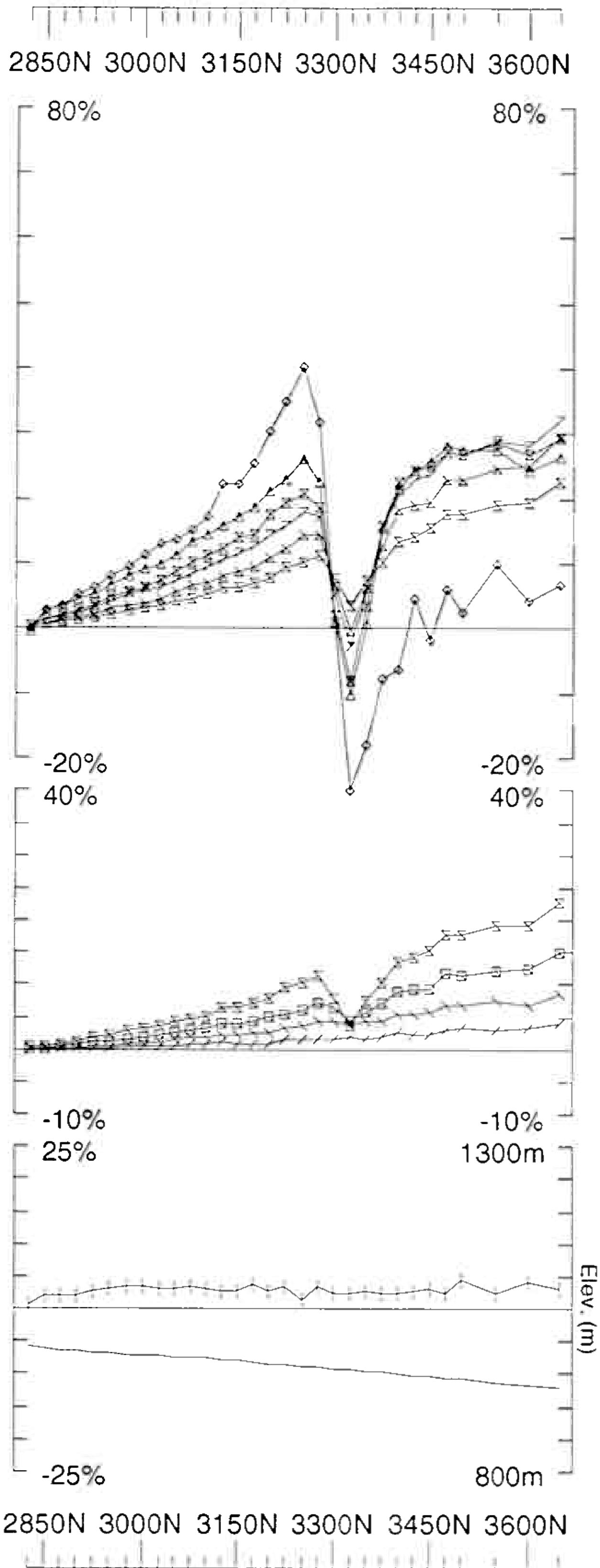
Loop: 20
Line: 12100E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 22/2/5
Reduced: 23/2/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12200E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

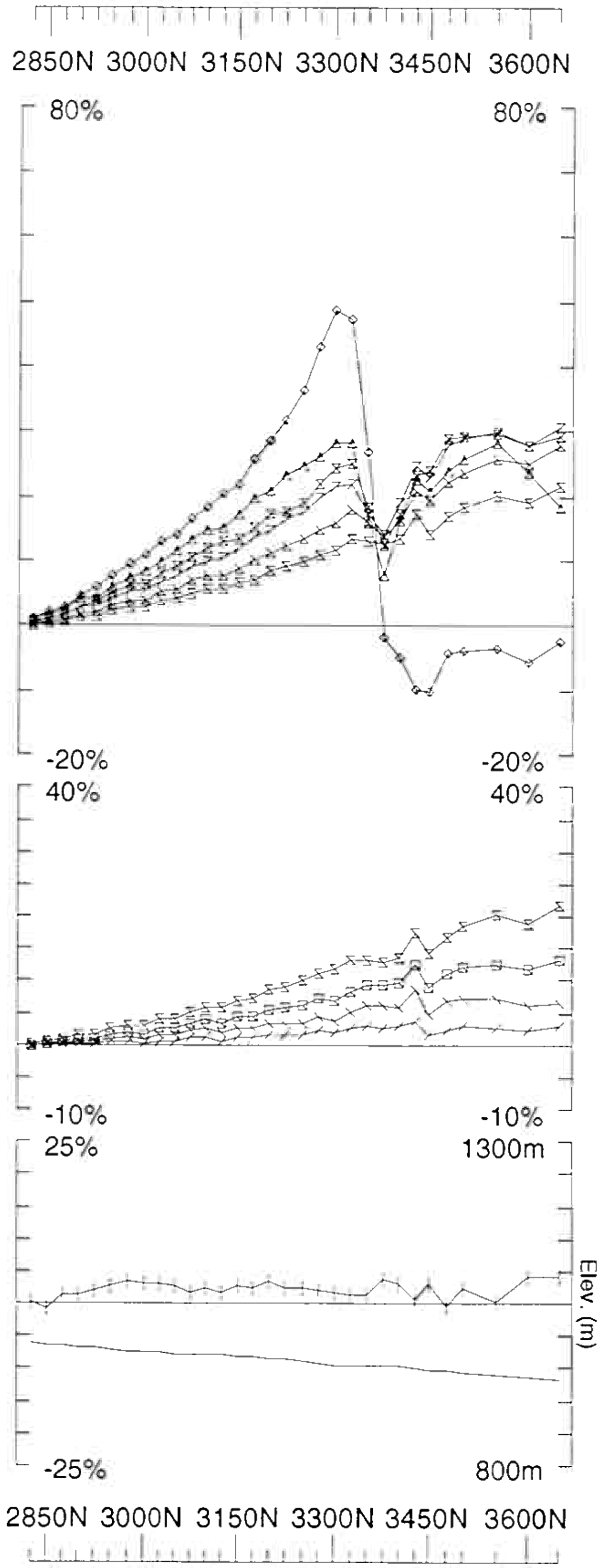
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 22/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12300E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

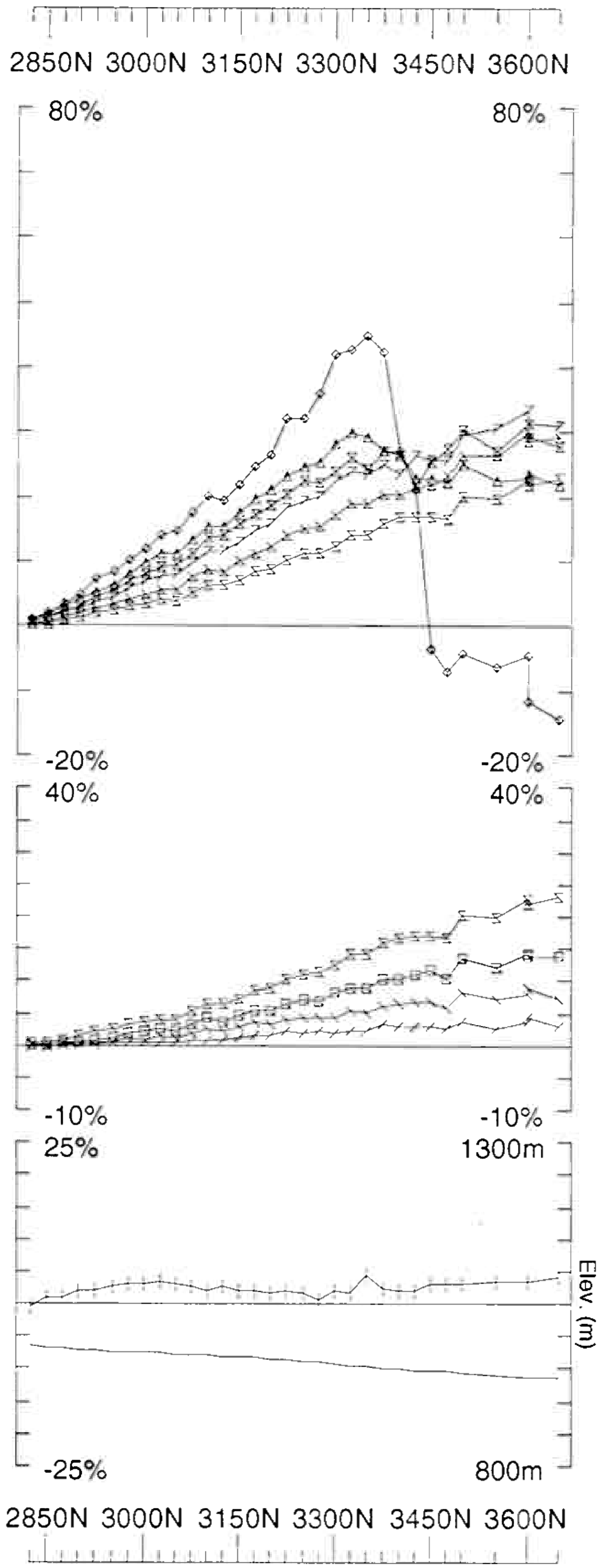
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12400E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

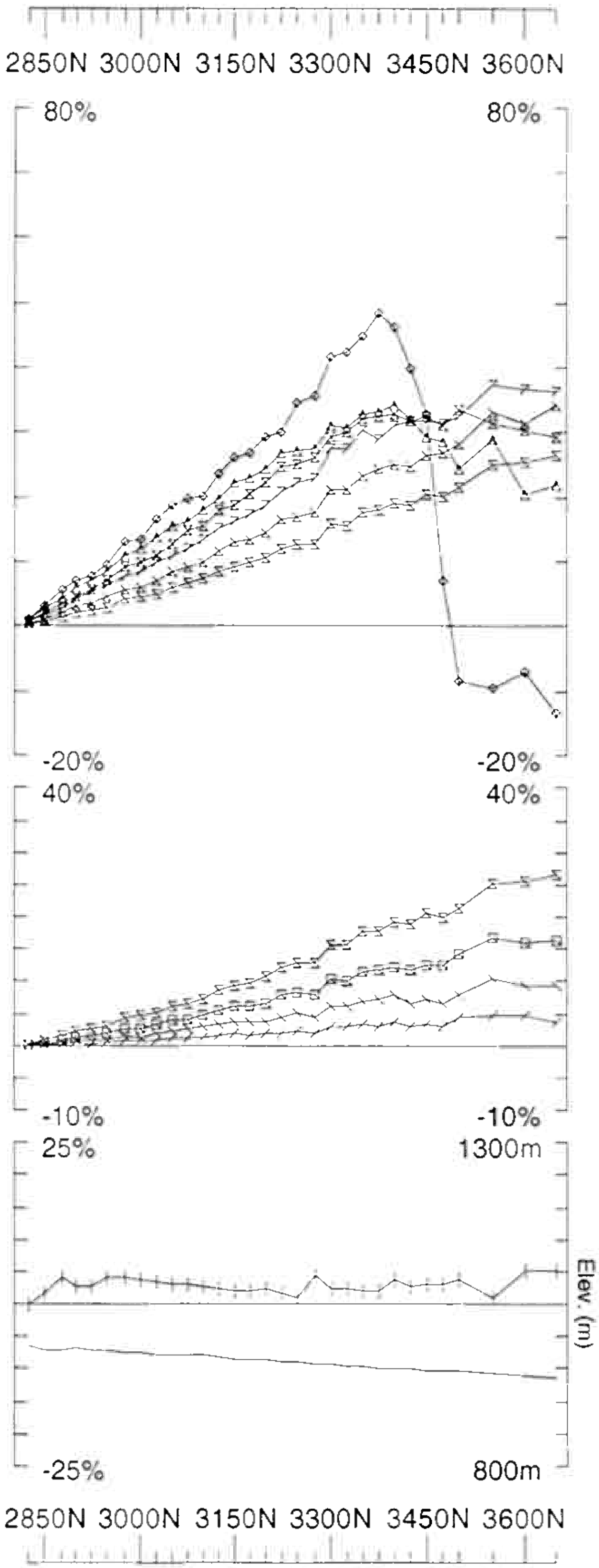
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12500E
Compt: Hz



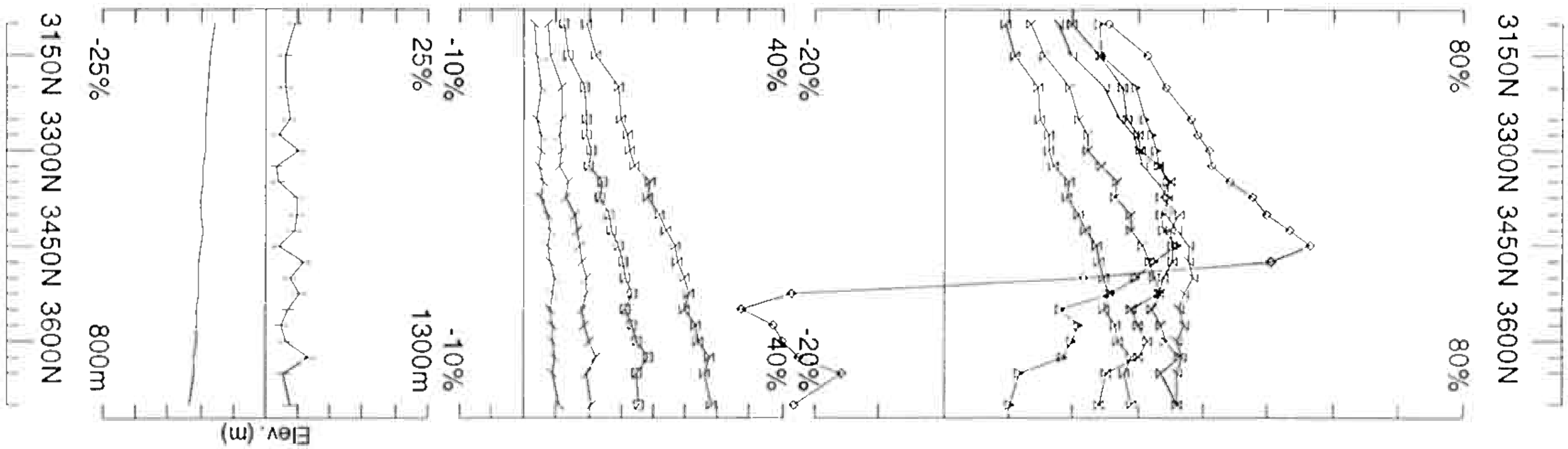
UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

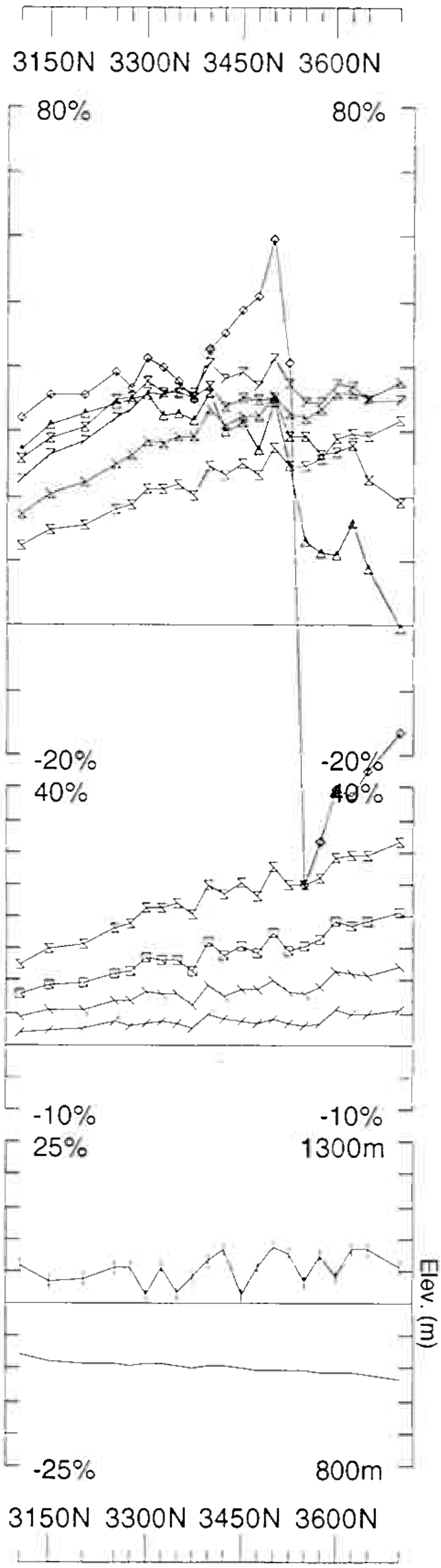
Job 0511

Loop: 20
Line: 12600E
Compt: Hz

Secondary, (Chn - Ch1)/MHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 20	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 12700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 23/2/5 Reduced : 23/2/5 Plotted : 1/4/5



Loop: 20
Line: 12800E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 23/2/5
Reduced: 23/2/5
Plotted: 1/4/5

Espedalen

Loop 21

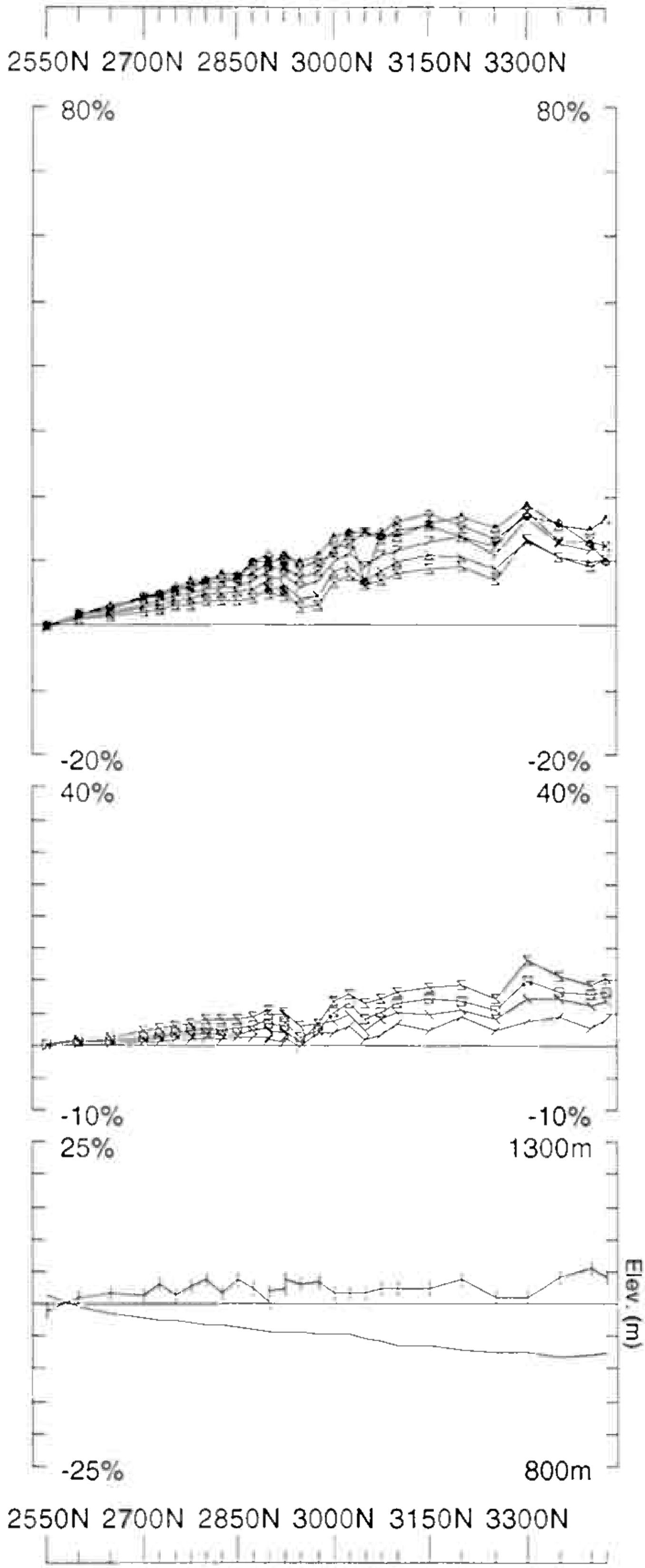
Hz
@3.251 Hz frequency

continuous norm

Ch1 reduced

Loop 21	Line 10000E	2525N - 3450N	925m
	Line 10200E	2525N - 3450N	925m
	Line 10400E	2525N - 3450N	925m
	Line 10600E	2525N - 3450N	925m
	Line 10800E	2525N - 3450N	925m
	Line 11000E	2525N - 3450N	925m
	Line 11200E	2525N - 3200N	675m
	Line 11300E	2525N - 3450N	925m
	Espedalen	Loop 21 Total	7150m

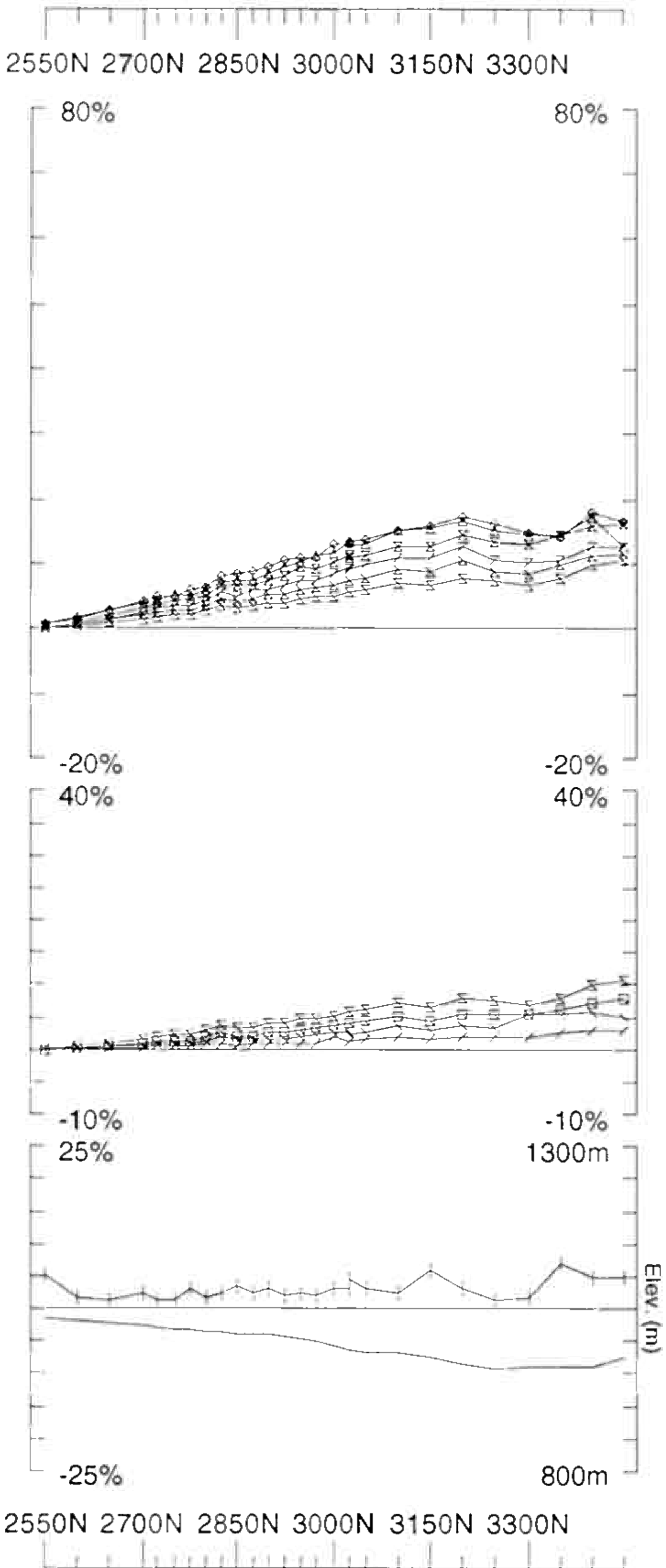
Loop 21 - continuous norm



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted: 1/4/5

Loop: 21
Line: 10000E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen

For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 27/2/5
Reduced : 27/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl

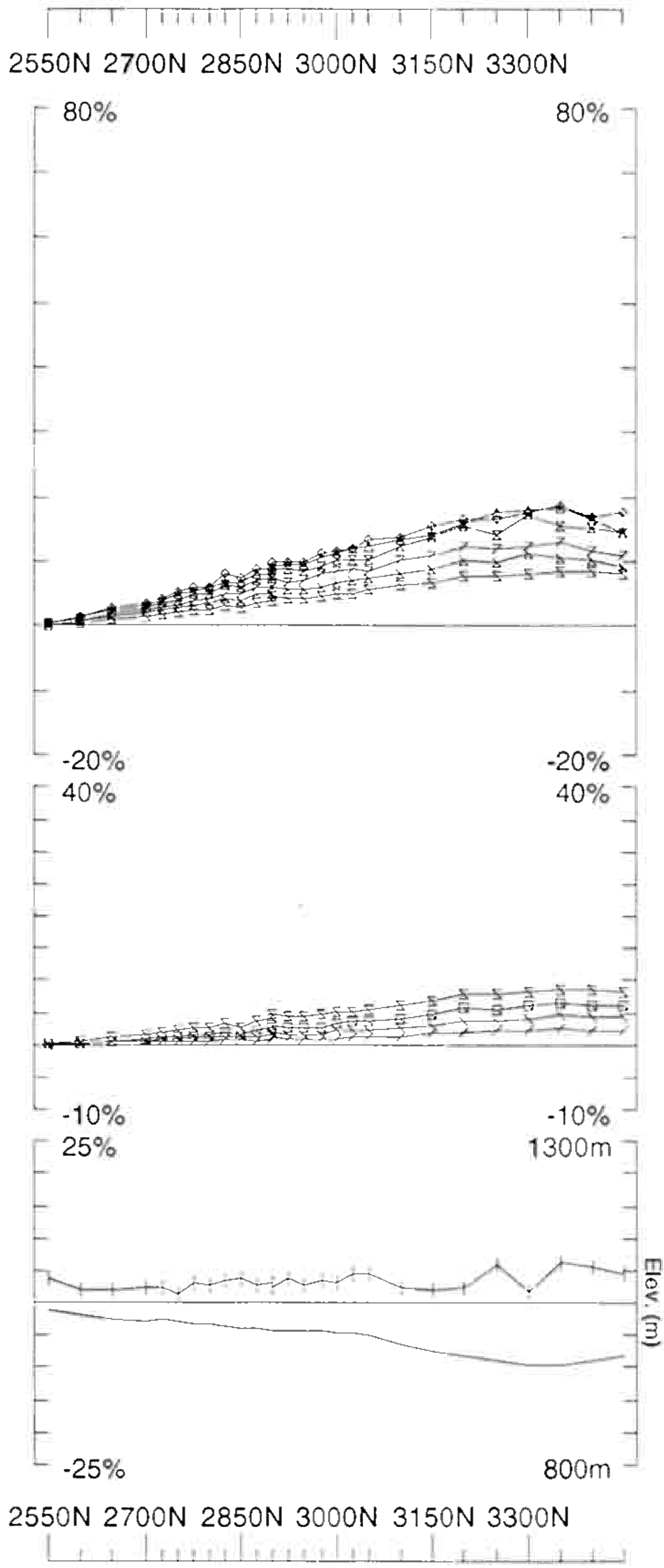
Contin. Norm at depth of 0 m

Base Freq. 3.251 Hz

Loop: 21

Line: 10200E

Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

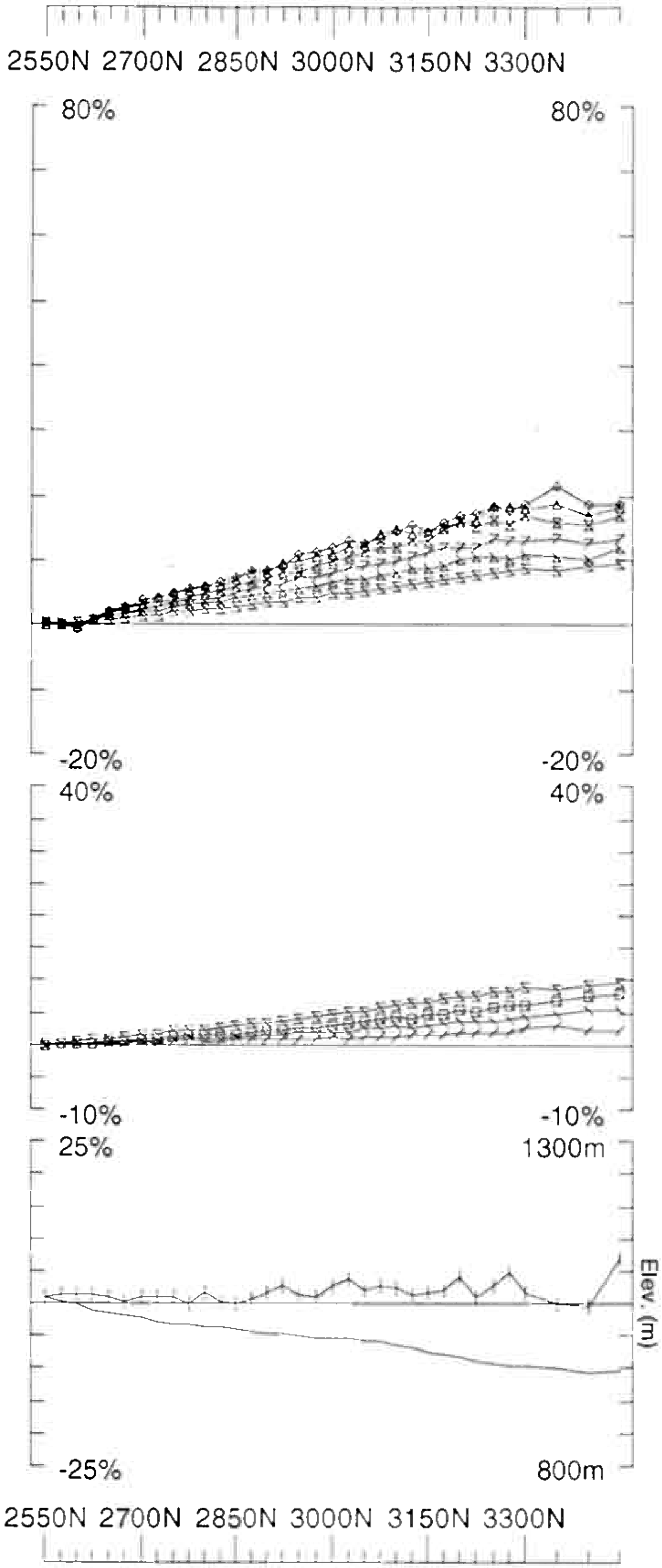
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 27/2/5
Reduced : 27/2/5
Plotted : 1/4/5

Loop: 21
Line: 10400E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 21
Line: 10600E
Compt: Hz

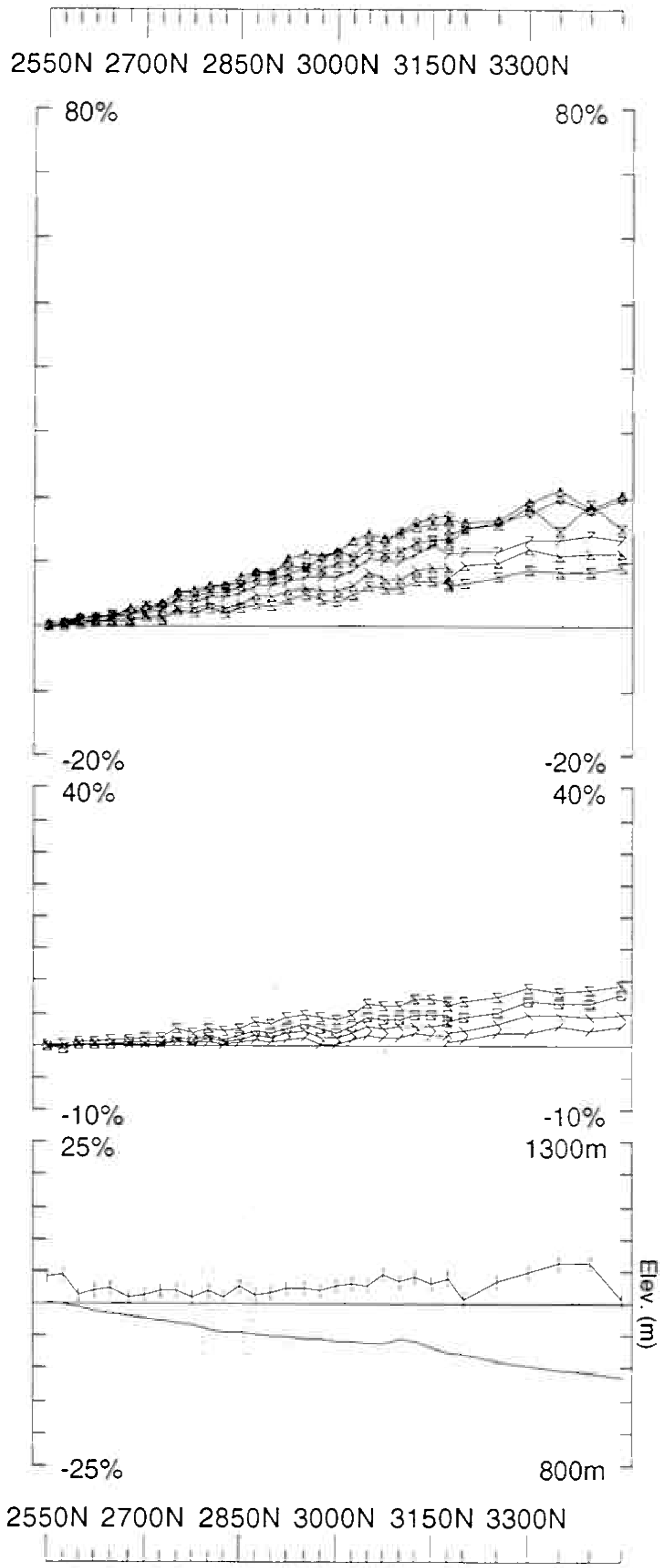
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

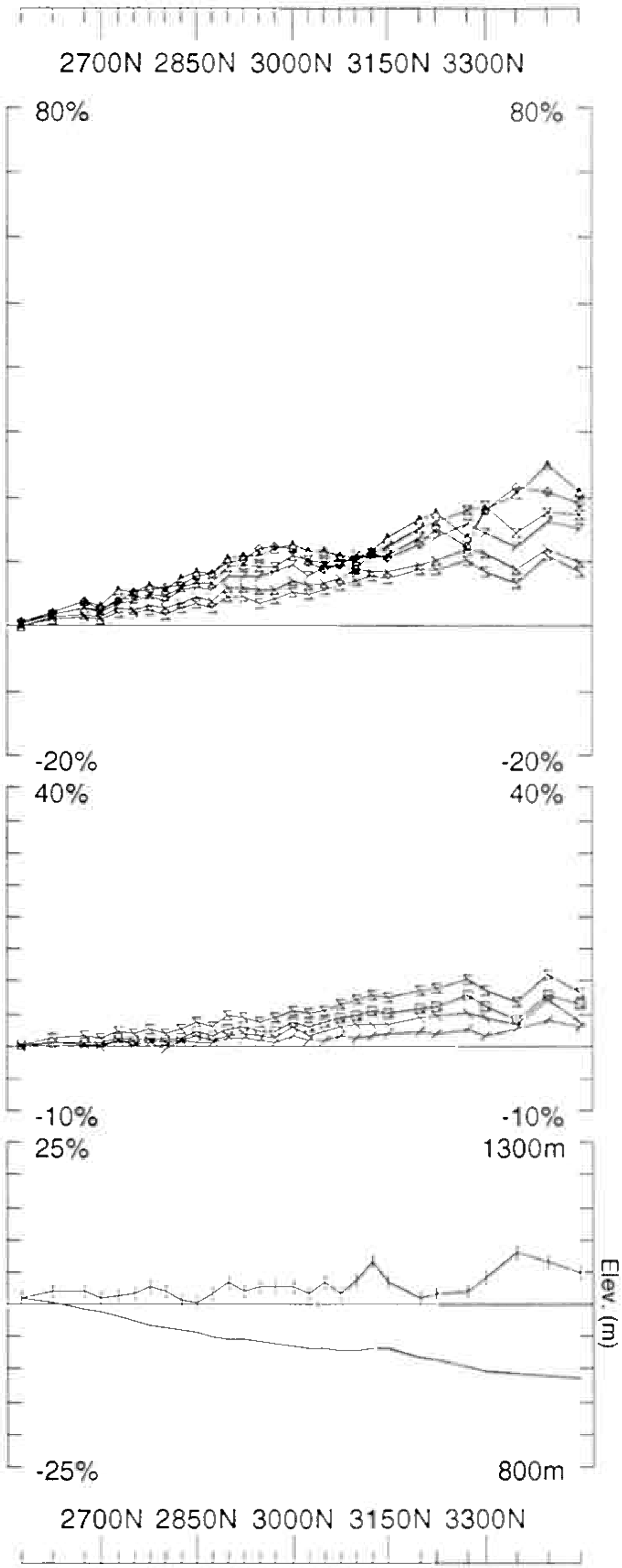
Surveyed : 26/2/5
Reduced : 27/2/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted : 1/4/5

Loop: 21
Line: 10800E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

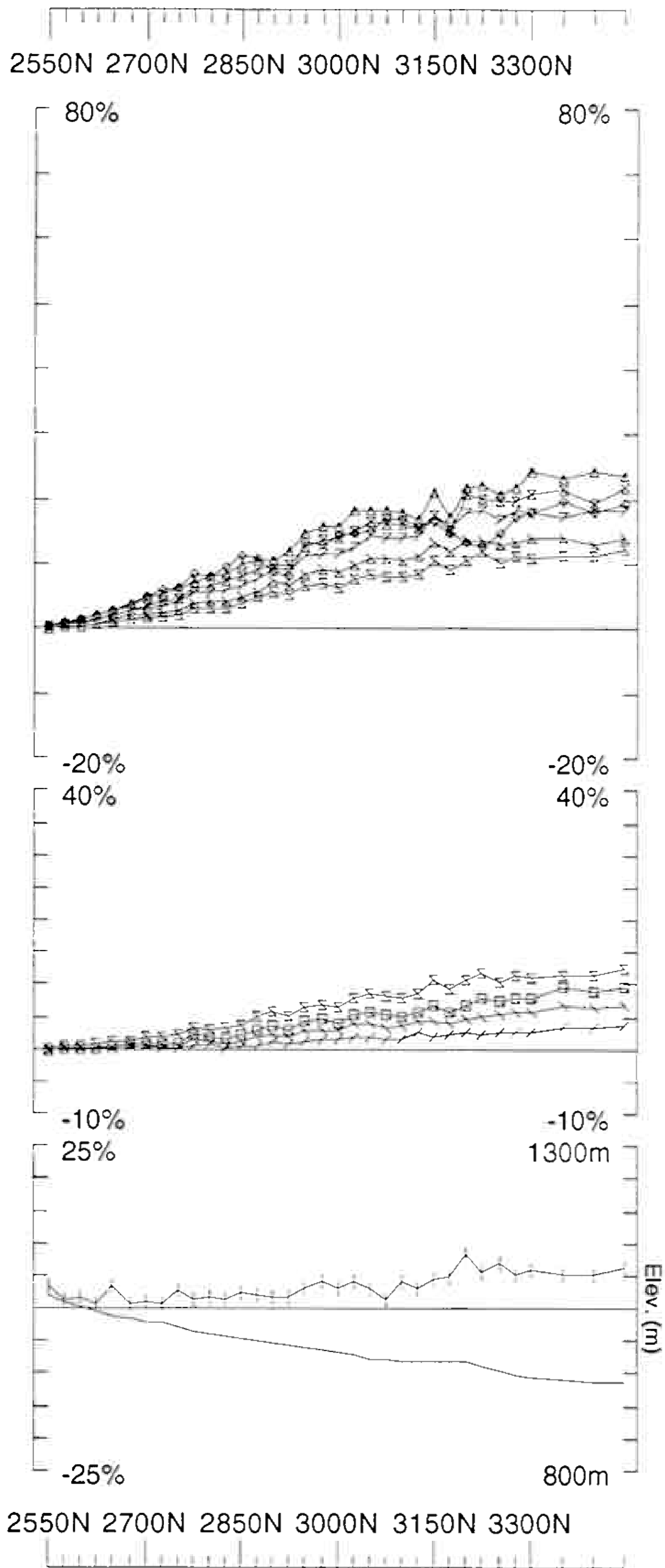
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 27/2/5
Reduced : 27/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 21
Line: 11000E
Compt: Hz

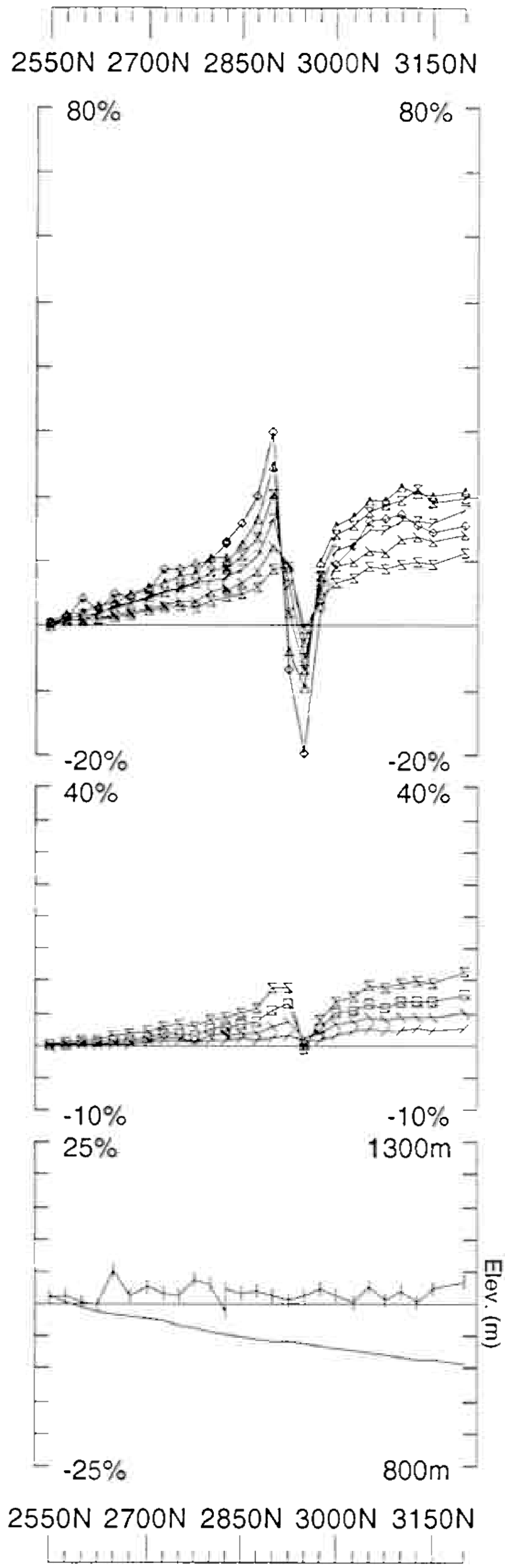


Loop: 21
Line: 11200E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 26/2/5
Reduced: 27/2/5
Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 21
Line: 11300E
Compt: Hz

Espedalen

Loop 22

Hz

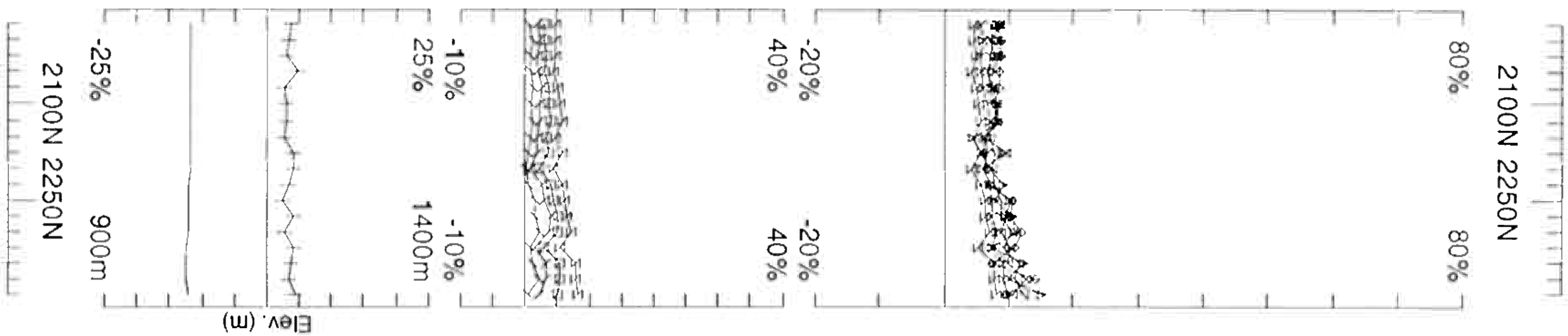
@3.251 Hz frequency

continuous norm

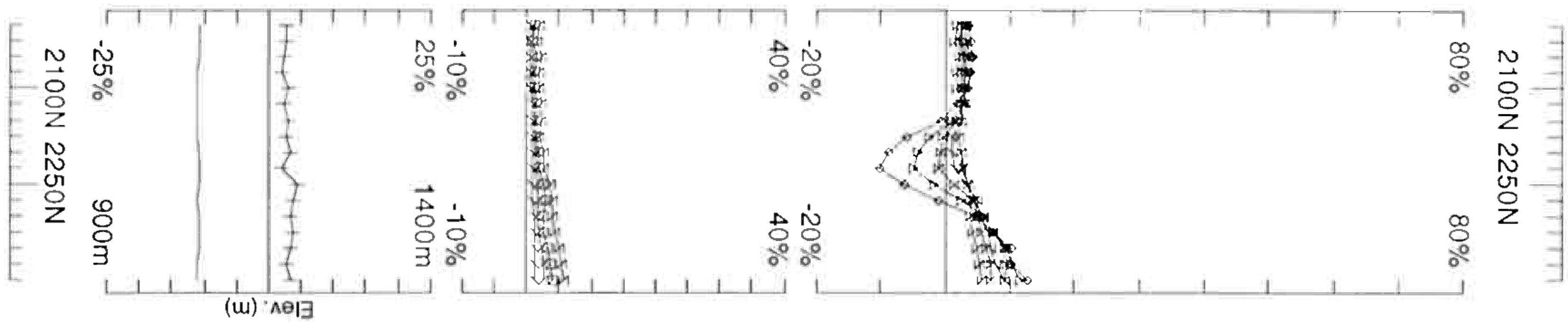
Ch1 reduced

Loop 22	Line 8600E	2000N - 2400N	400m
	Line 8800E	2000N - 2400N	400m
	Line 9000E	2075N - 3300N	1225m
	Line 9200E	2075N - 3475N	1400m
	Line 9400E	2075N - 3550N	1475m
	Line 9600E	2075N - 3400N	1325m
	Line 9800E	2075N - 3400N	1325m
	Line 10000E	2075N - 2700N	625m
	Espedalen	Loop 22 Total	8175m

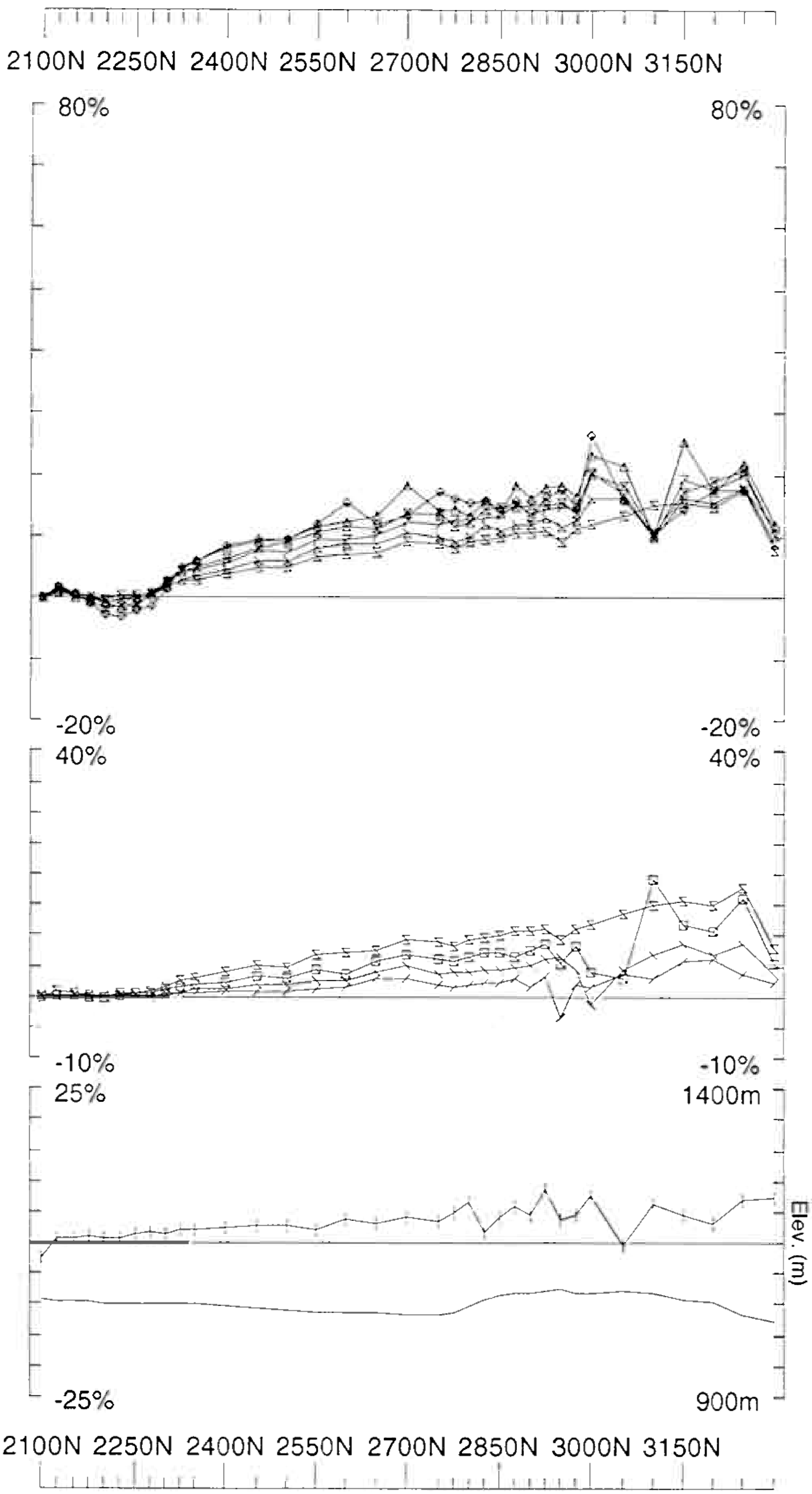
Loop 22 - continuous norm



Loop: 22 Line: 8600E Compt: Hz	Secondary. (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 14/3/5 Reduced: 14/3/5 Plotted: 1/4/5



Loop: 22	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
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 0511 Surveyed : 14/3/5 Reduced : 14/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

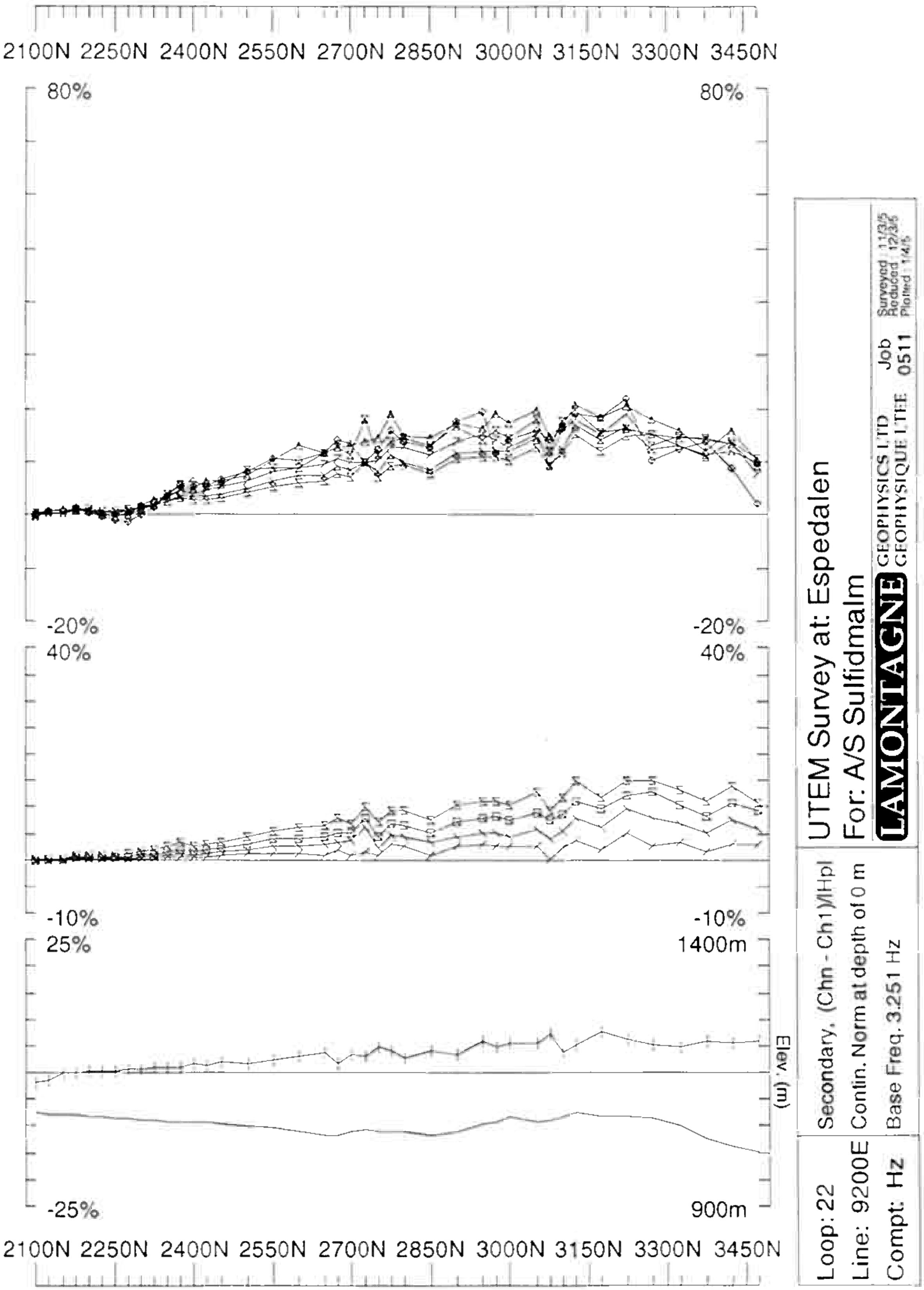
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

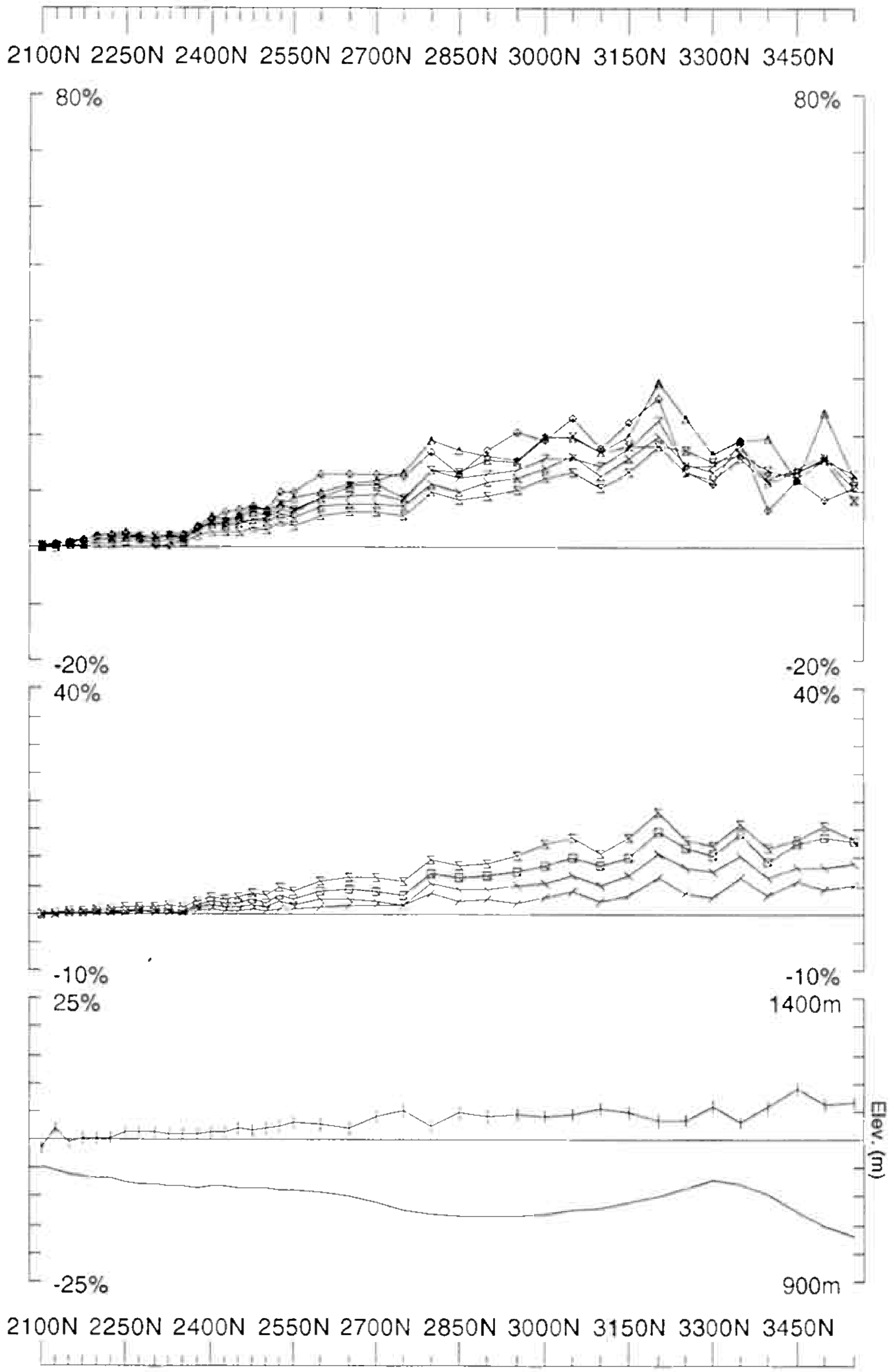
Job 0511

Surveyed: 11/3/5
Reduced: 12/3/5
Plotted: 1/4/5

Loop: 22
Line: 9000E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz


2100N 2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N 3450N
80%
-20%
40%
-10%
25%
-25%
1400m
900m
Elev. (m)
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 11/3/5
Reduced: 12/3/5
Plotted: 1/4/5
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 22
Line: 9200E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

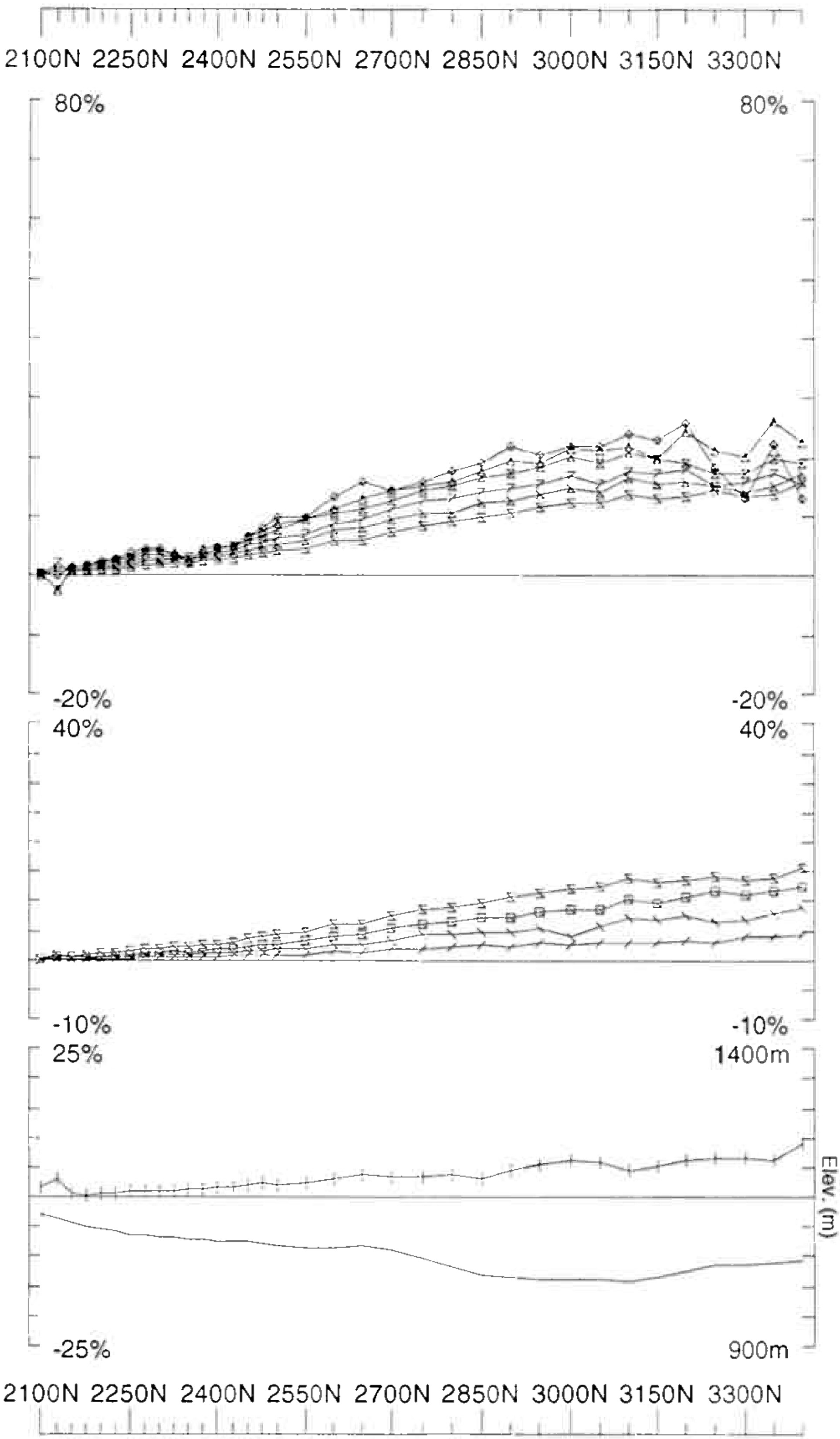
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed: 12/3/5
Reduced: 12/3/5
Plotted: 1/4/5

Loop: 22
Line: 9400E
Compt: Hz

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 22
Line: 9600E
Compt: Hz

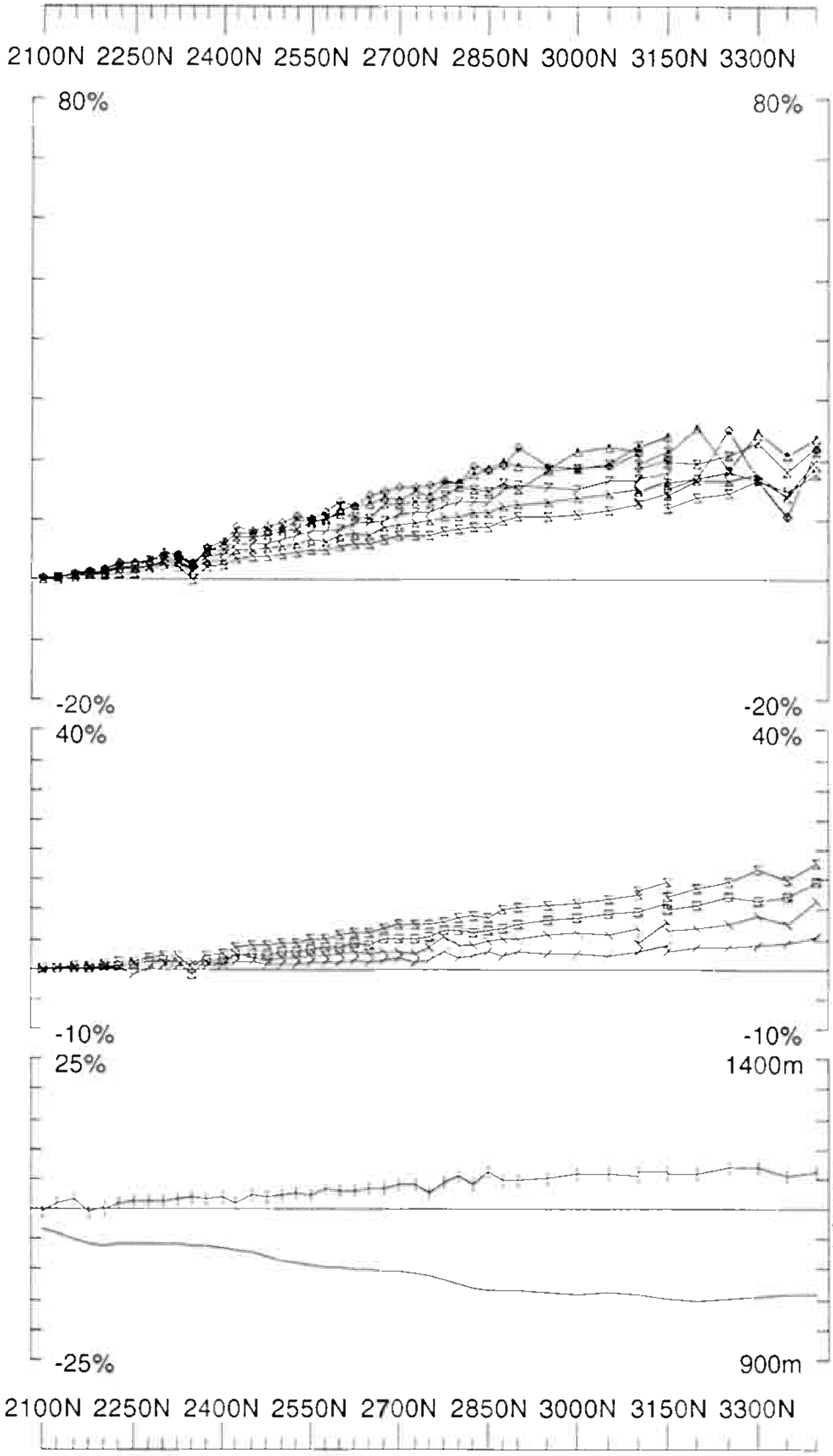
Secondary, (Chn - Ch1)/MHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

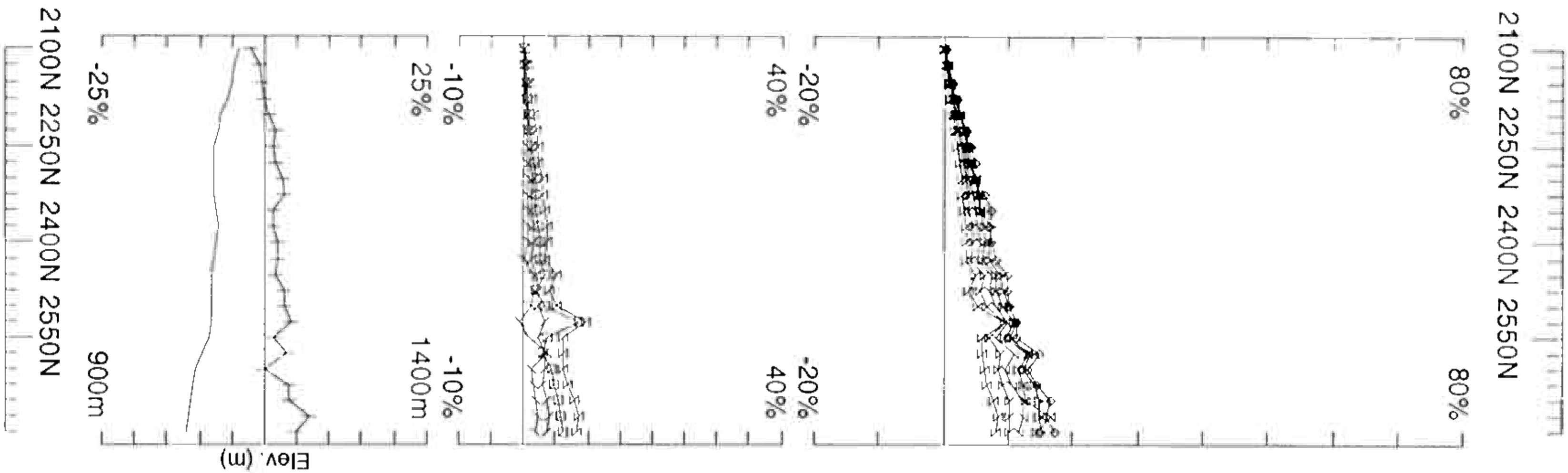
Surveyed: 12/3/5
Reduced: 12/3/5
Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511

Loop: 22
Line: 9800E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 22 Line: 10000E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 11/3/5 Reduced: 12/3/5 Plotted: 1/4/5

Espedalen

Loop 23

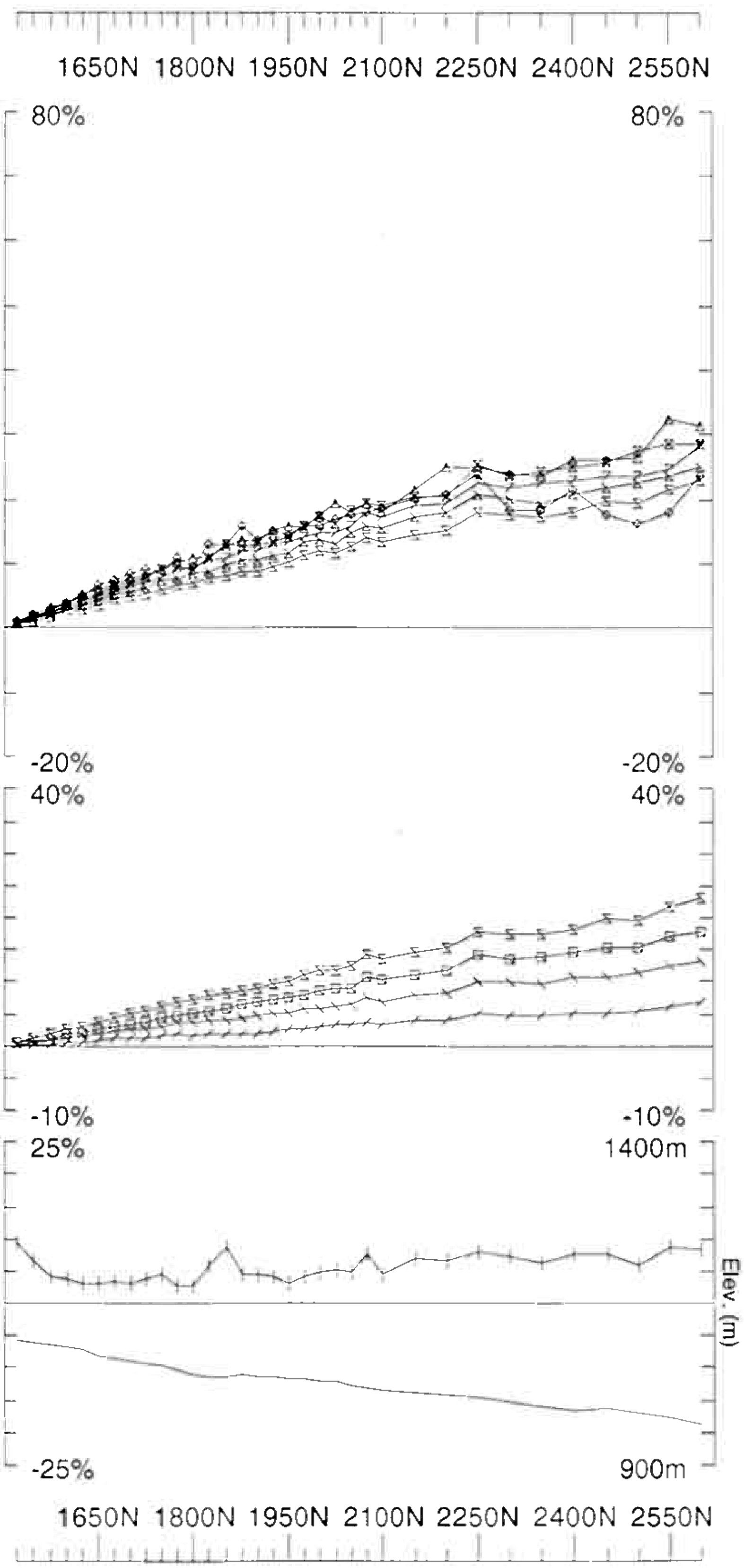
Hz
@3.251 Hz frequency

continuous norm

Ch1 reduced

Loop 23	Line 6500E	1500N - 2600N	1100m
	Line 6700E	1500N - 2600N	1100m
	Line 6900E	1500N - 2600N	1100m
	Line 7100E	1500N - 2600N	1100m
	Line 7300E	1500N - 2600N	1100m
	Line 7500E	1500N - 2600N	1100m
	Line 7700E	1500N - 2600N	1100m
	Line 7900E	1500N - 2600N	1100m
	Espedalen	Loop 23 Total	8800m

Loop 23 - continuous norm



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

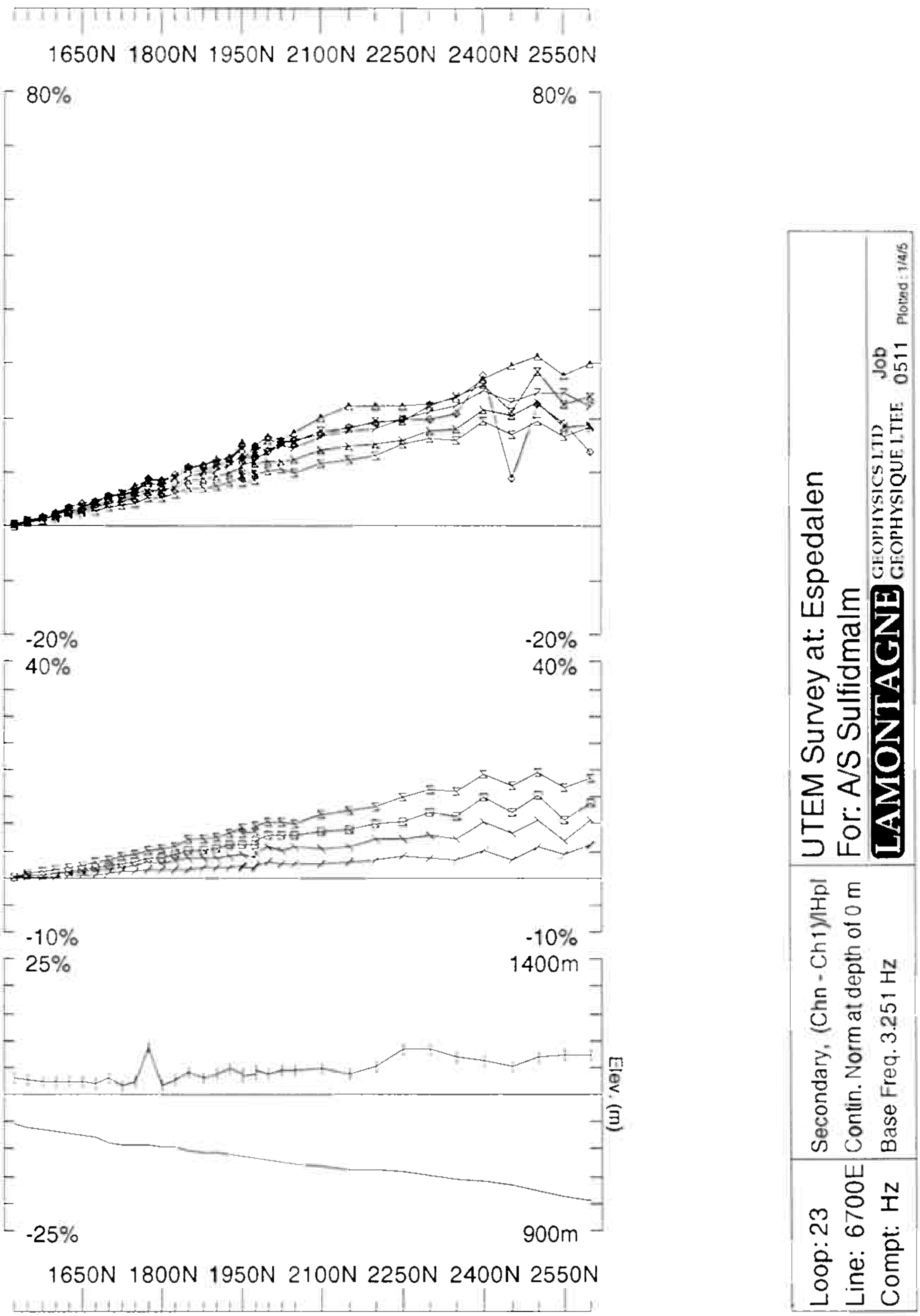
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

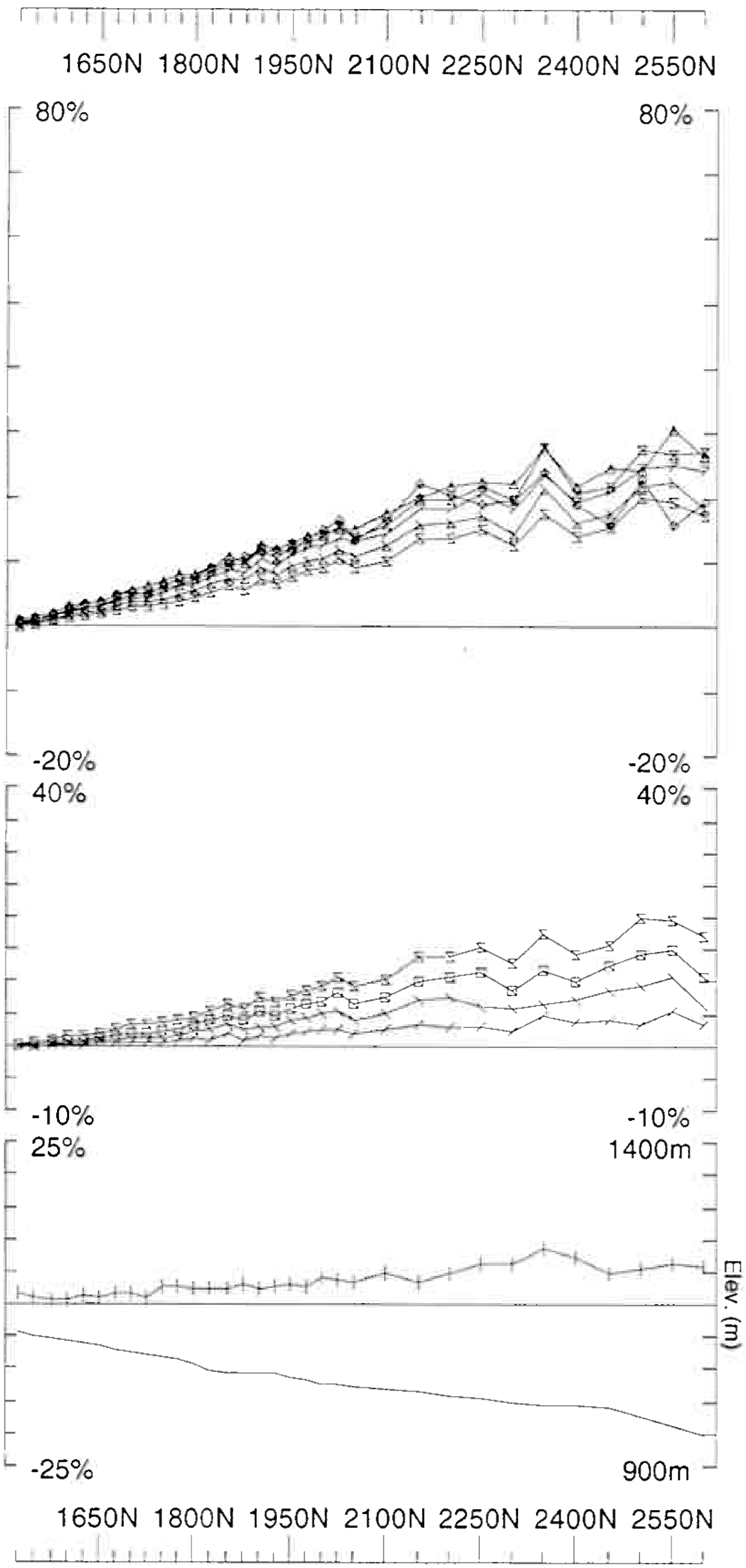
Job 0511

Surveyed : 14/3/5
Reduced : 14/3/5
Plotted : 1/4/5

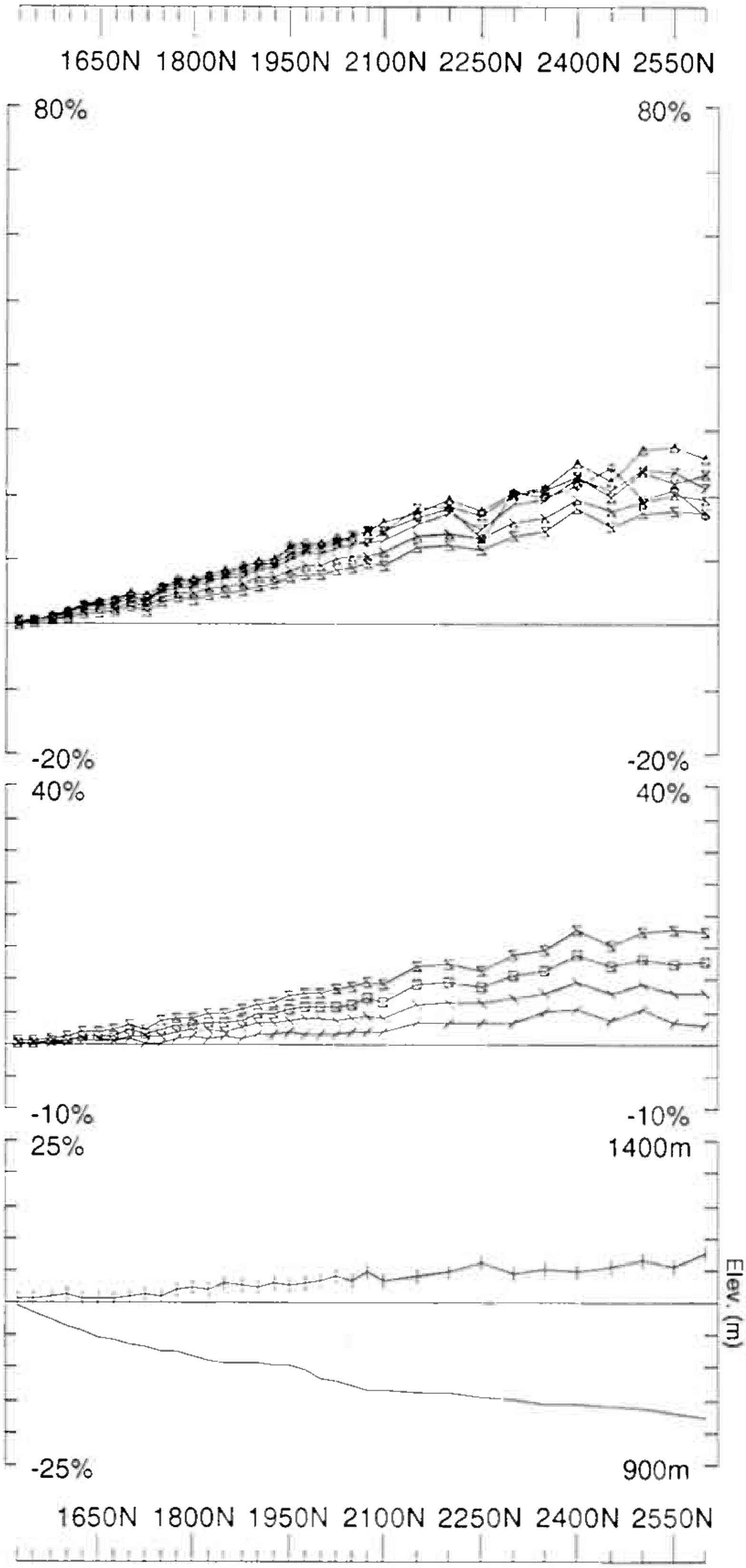
Loop: 23
Line: 6500E
Compt: Hz

Secondary, (Chn - Ch1)/MHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz


1650N 1800N 1950N 2100N 2250N 2400N 2550N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1400m
Elev. (m)
-25%
900m
1650N 1800N 1950N 2100N 2250N 2400N 2550N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted: 1/4/5
Loop: 23
Line: 6700E
Compt: Hz
Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 23	Secondary, (Chn - Ch1)/lHpl	UTEM Survey at: Espedalen
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 0511 · Surveyed: 14/3/5 Reduced: 14/3/5 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

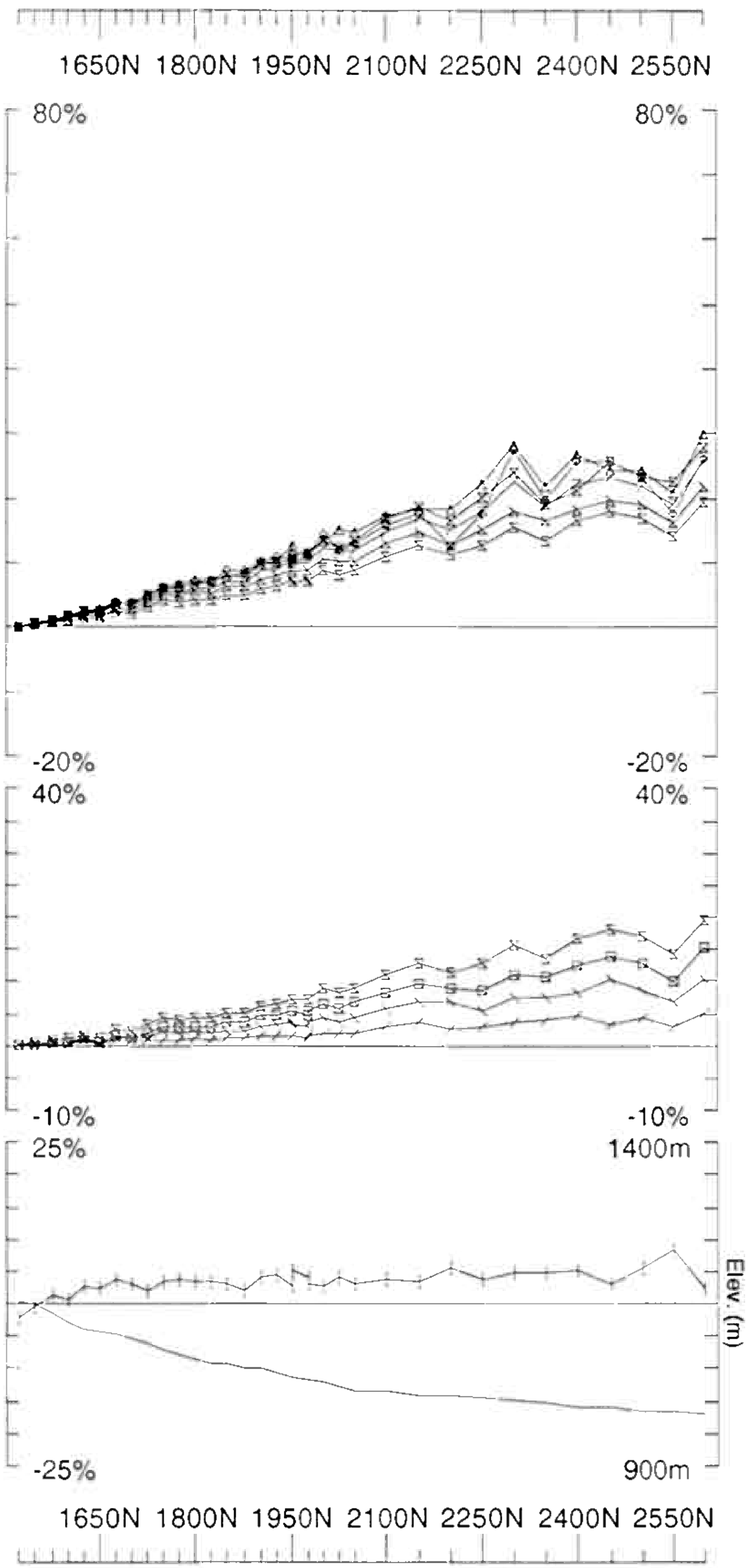
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 13/3/5
Reduced : 14/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 23
Line: 7100E
Compt: Hz

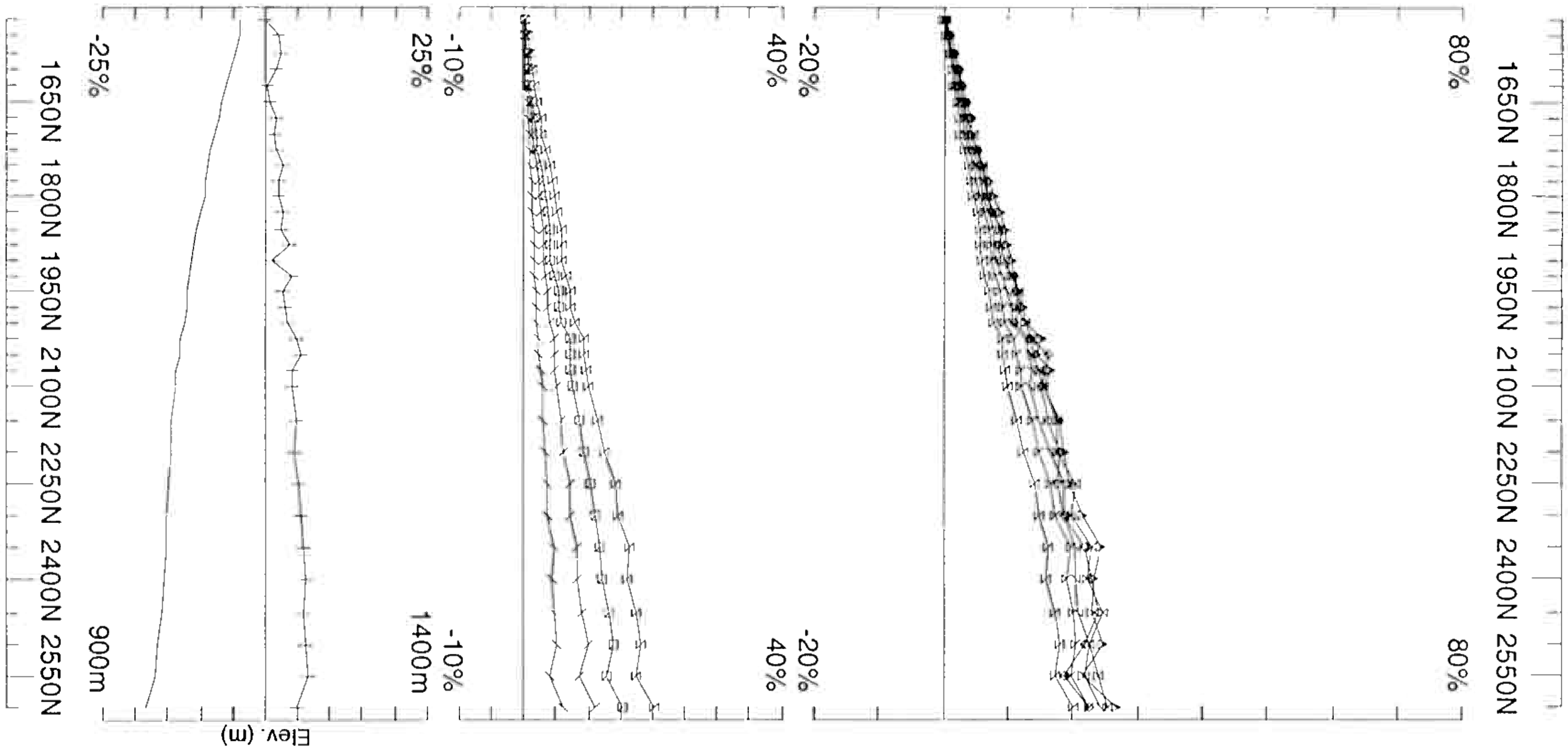


UTEM Survey at: Espedalen
For: A/S Sulfidmalm

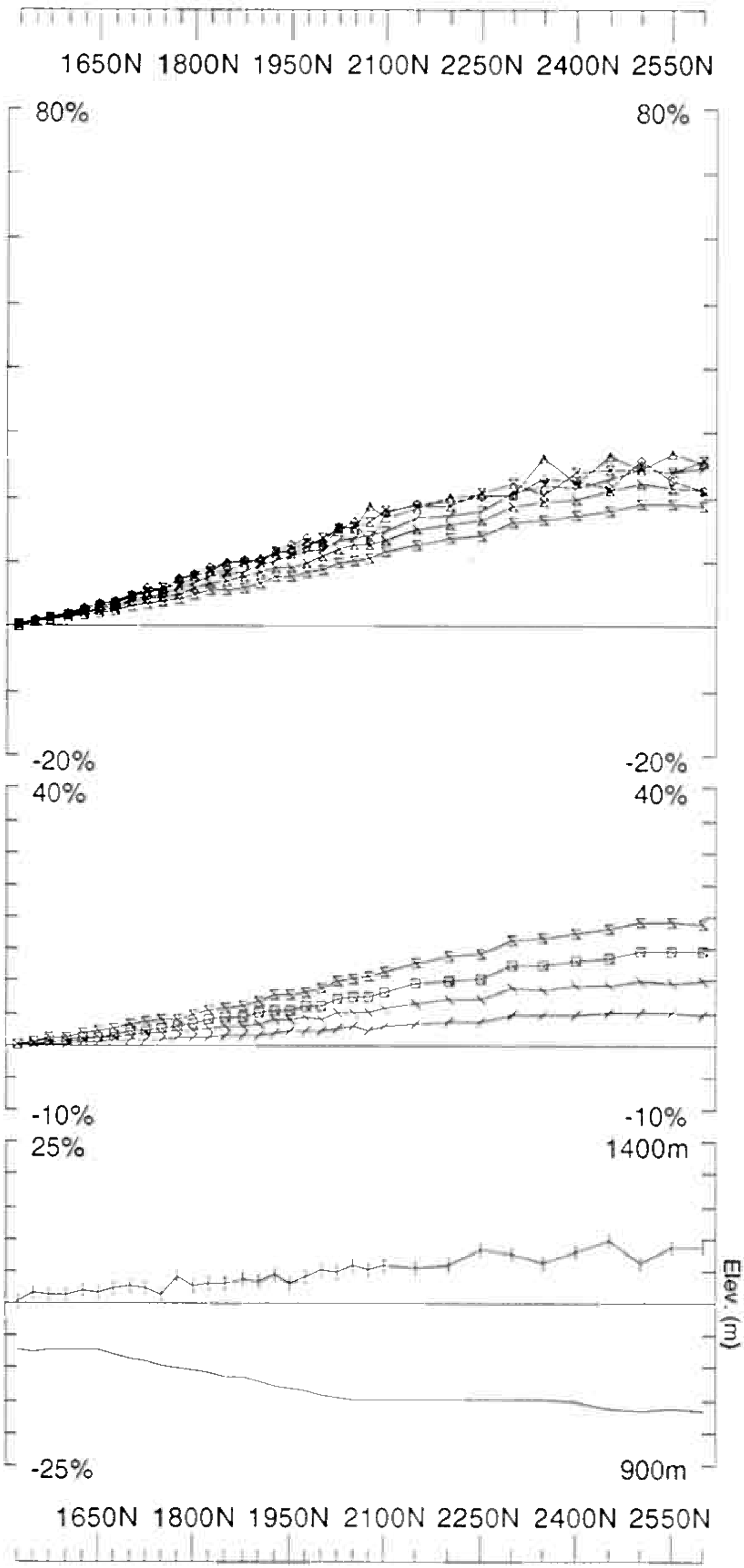
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job 0511
Plotted: 1/4/5

Loop: 23
Line: 7300E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 23	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
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 0511 Surveyed : 13/3/5 Reduced : 14/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

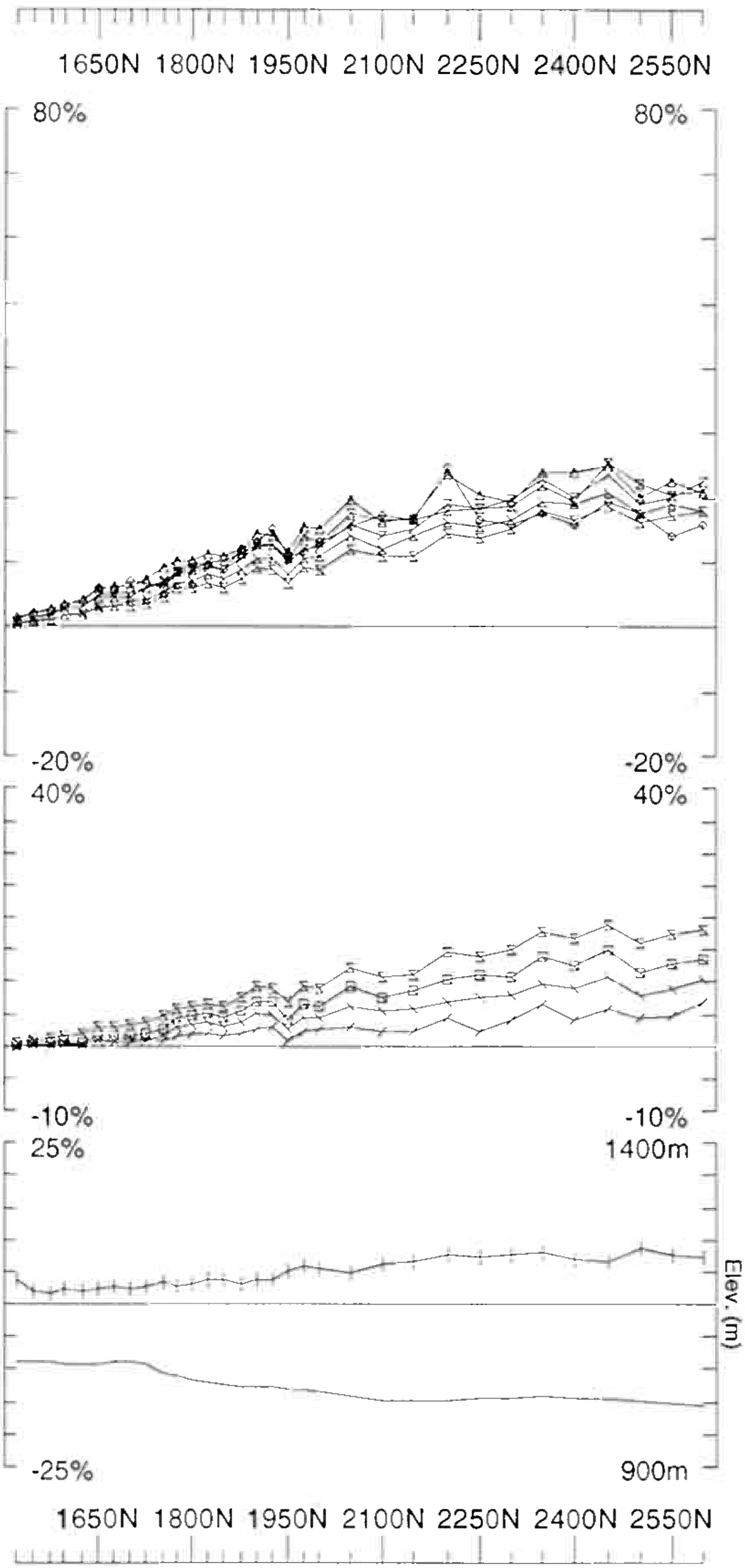
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed: 13/3/5
Reduced: 14/3/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 23
Line: 7700E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 13/3/5
Reduced : 14/3/5
Plotted : 1/4/5

Loop: 23
Line: 7900E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Espedalen

Loop 24

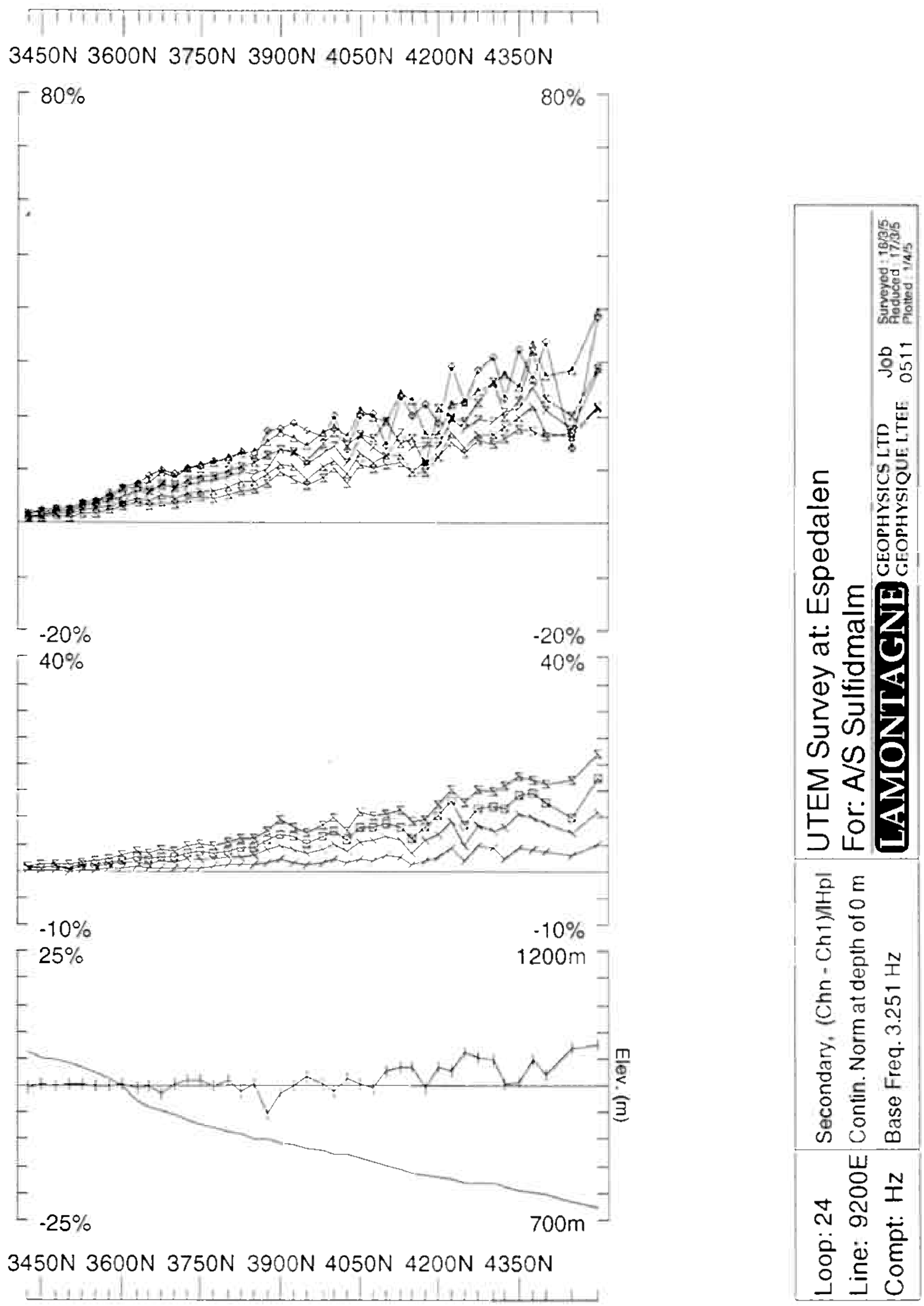
Hz
@3.251 Hz frequency

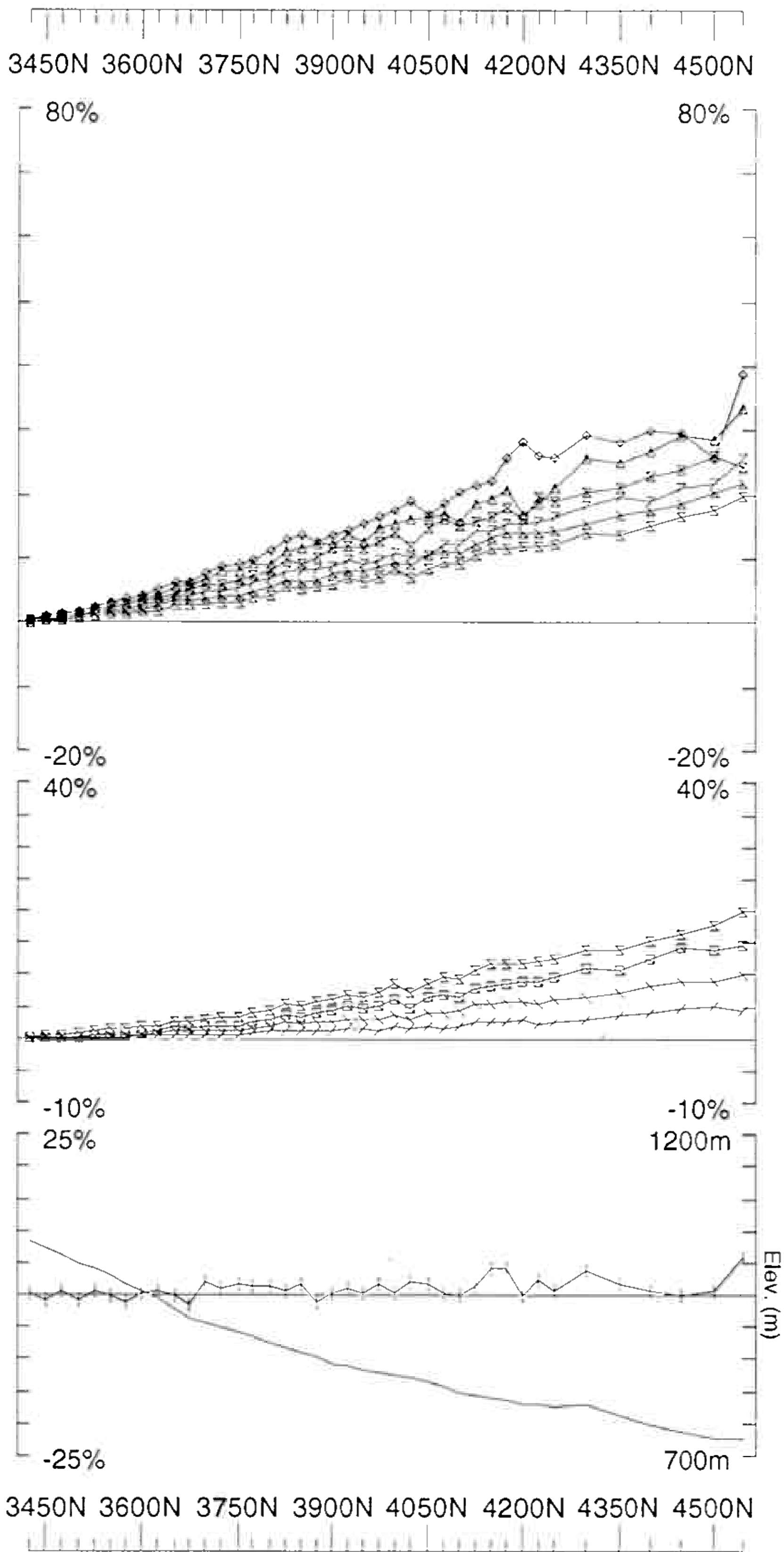
continuous norm

Ch1 reduced

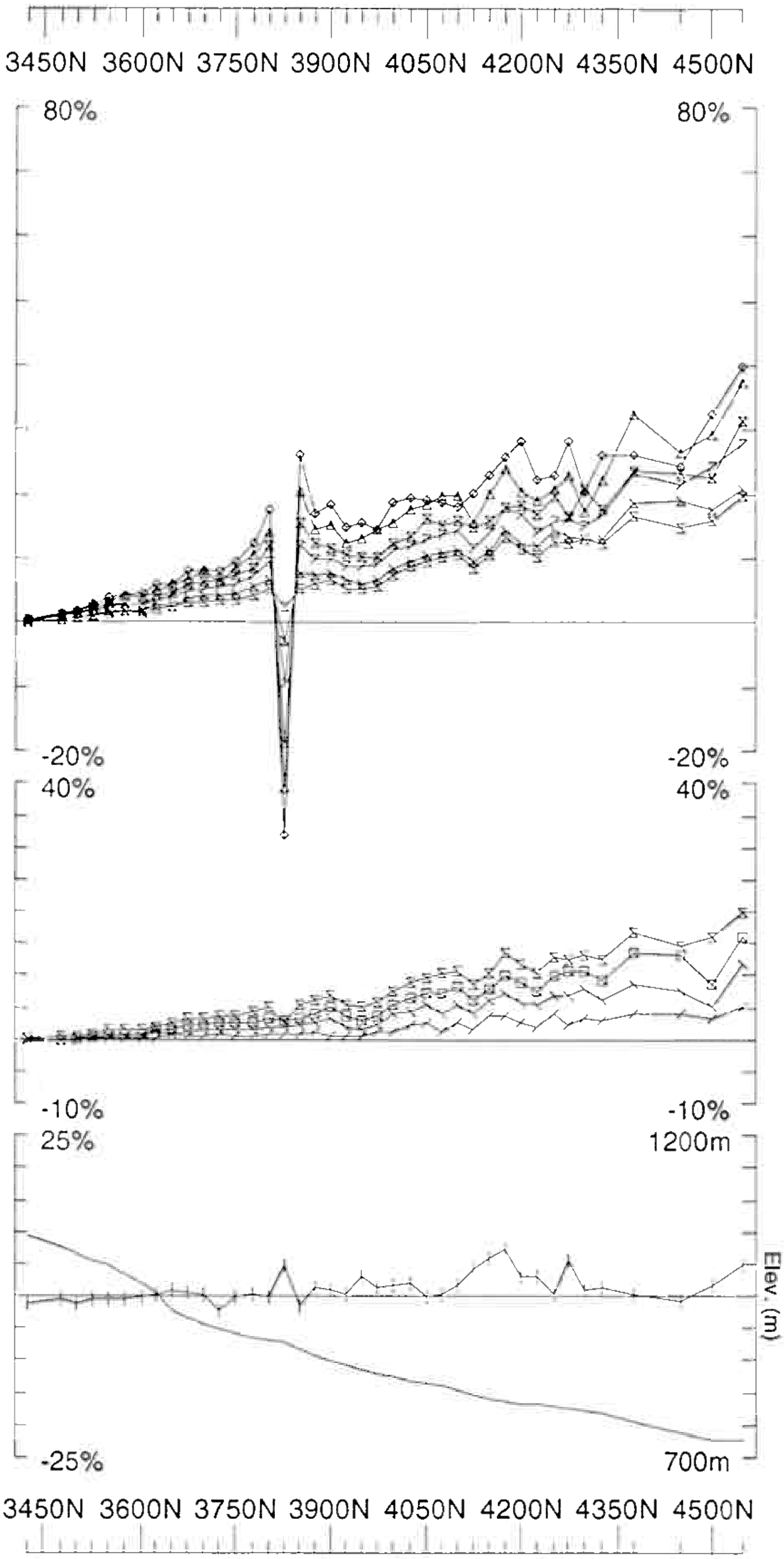
Loop 24	Line 9200E	3400N - 4550N	1150m
	Line 9300E	3400N - 4550N	1150m
	Line 9400E	3400N - 4550N	1150m
	Line 9500E	3600N - 4550N	950m
	Line 9600E	3600N - 4150N	550m
	Espedalen	Loop 24 Total	4950m

Loop 24 - continuous norm


3450N 3600N 3750N 3900N 4050N 4200N 4350N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1200m
Elev. (m)
-25%
700m
3450N 3600N 3750N 3900N 4050N 4200N 4350N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 18/3/5
Reduced : 17/3/5
Plotted : 1/4/5
Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 24
Line: 9200E
Compt: Hz



Loop: 24 Line: 9300E Compt: Hz	Secondary, (Chn - Ch1)/lHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 17/3/5 Reduced: 17/3/5 Plotted: 1/4/5



Loop: 24
Line: 9400E
Compt: Hz

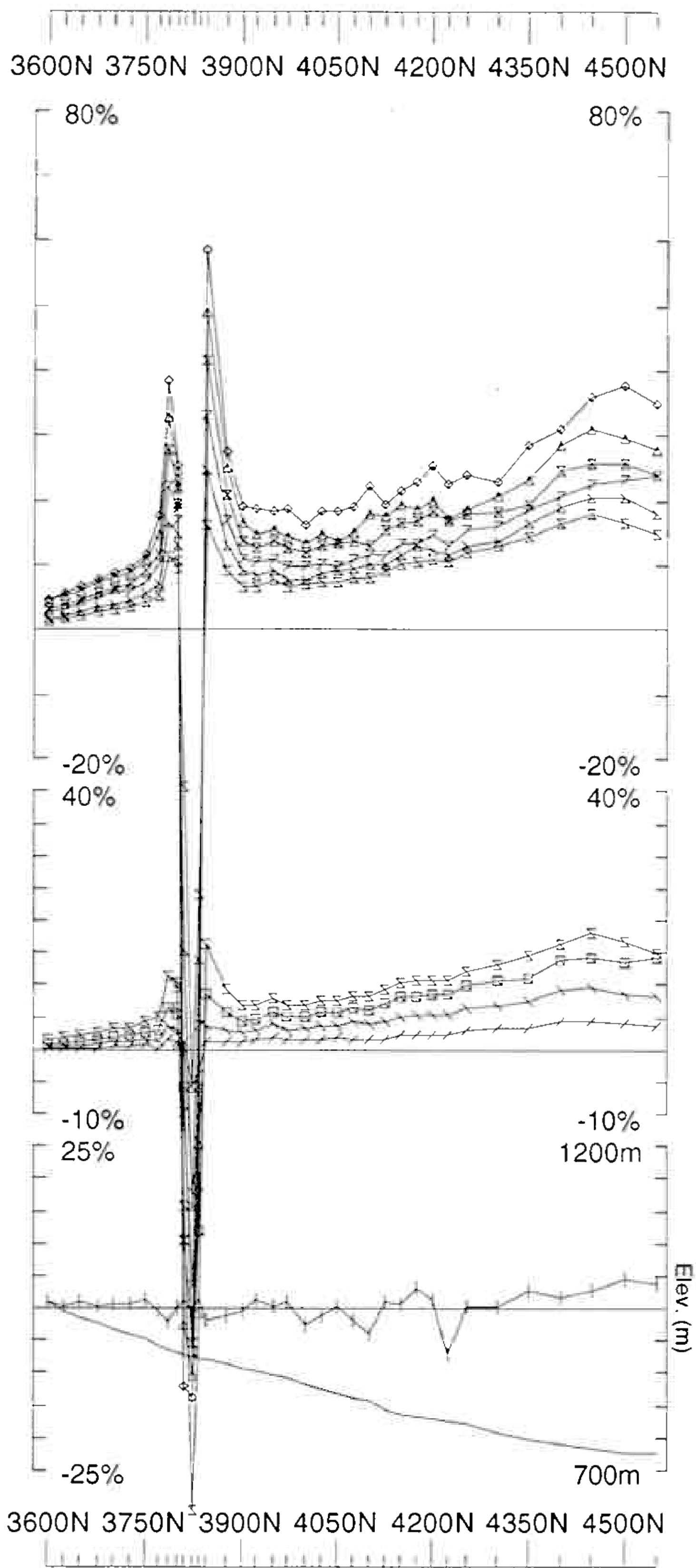
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 17/3/5
Reduced : 17/3/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

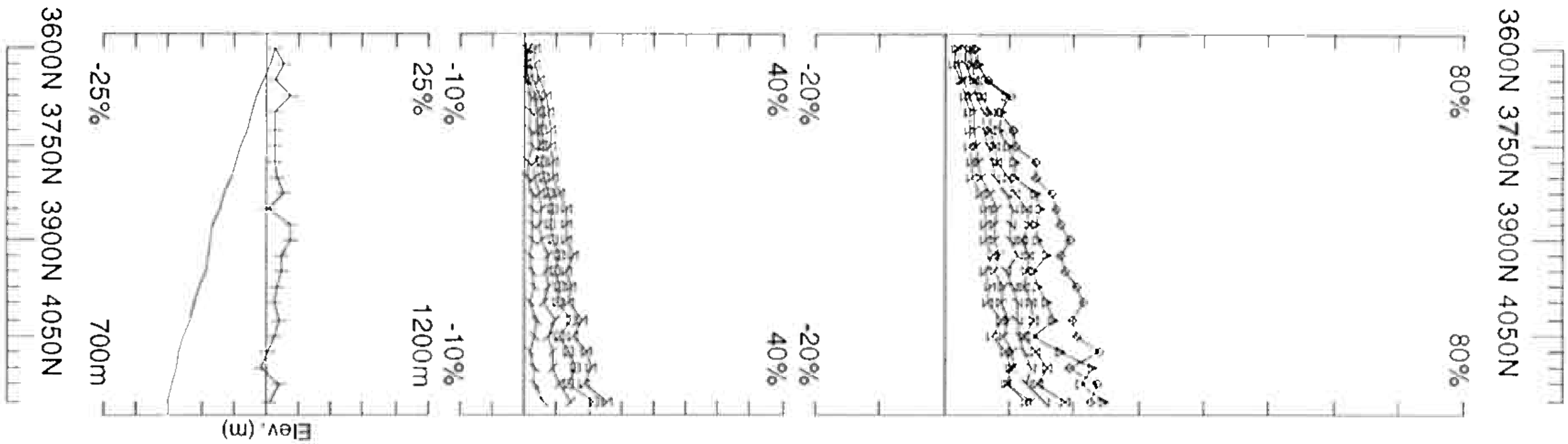
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted : 1/4/5

Loop: 24
Line: 9500E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 24	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 9600E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 17/3/5 Reduced: 17/3/5 Plotted: 1/4/5

Espedalen

Loop 25

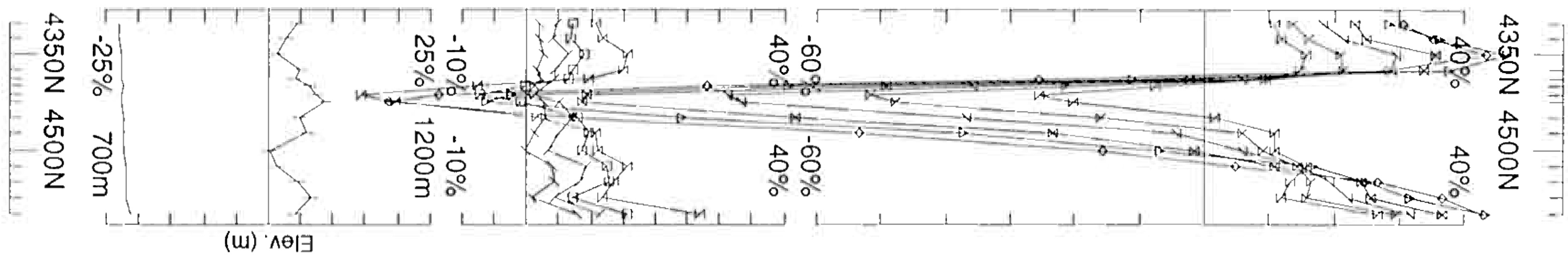
Hz
@3.251 Hz frequency

continuous norm

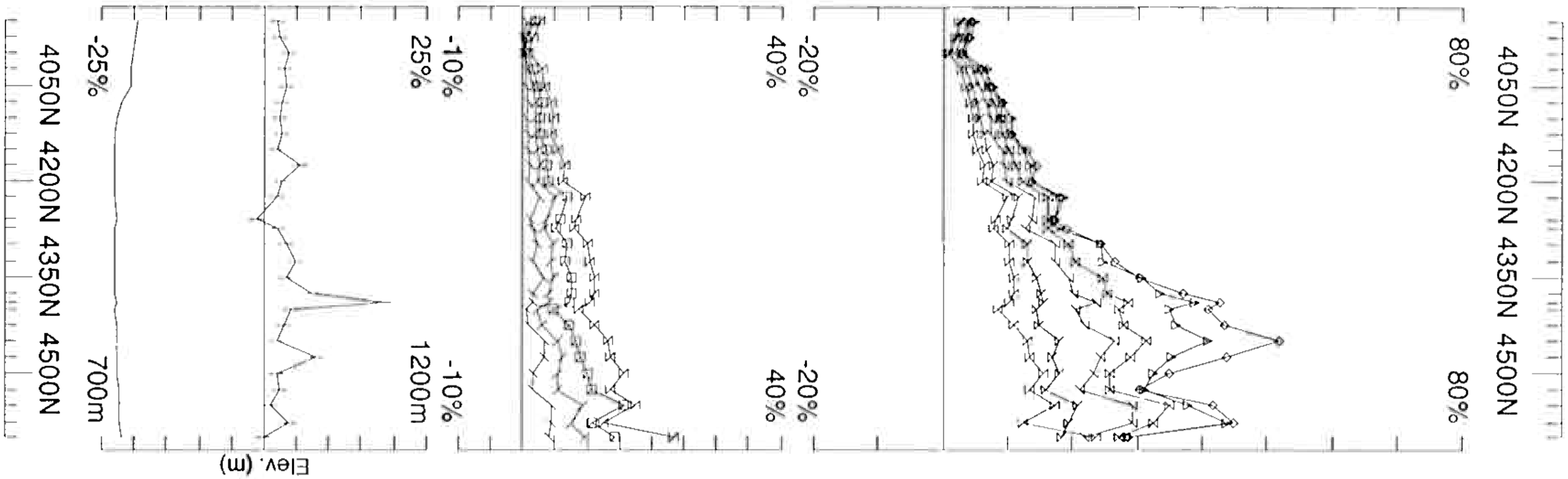
Ch1 reduced

Loop 25	Line	7700E	4300N - 4600N	300m
	Line	7800E	3950N - 4600N	650m
	Line	8000E	4100N - 4625N	525m
	Line	8200E	4050N - 4575N	525m
	Line	8350E	4450N - 4700N	250m
	Line	8400E	4050N - 4700N	650m
	Line	8450E	4550N - 4700N	150m
	Line	8600E	3950N - 4550N	600m
	Line	8800E	3950N - 4425N	475m
	Line	9000E	4025N - 4650N	625m
	Espedalen		Loop 25 Total	4750m

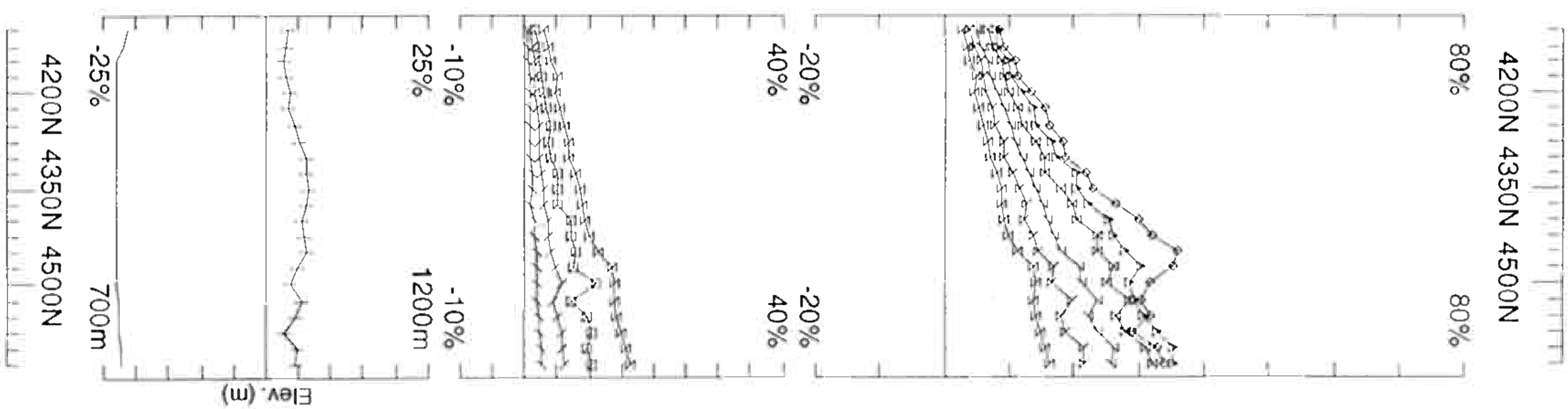
Loop 25 - continuous norm



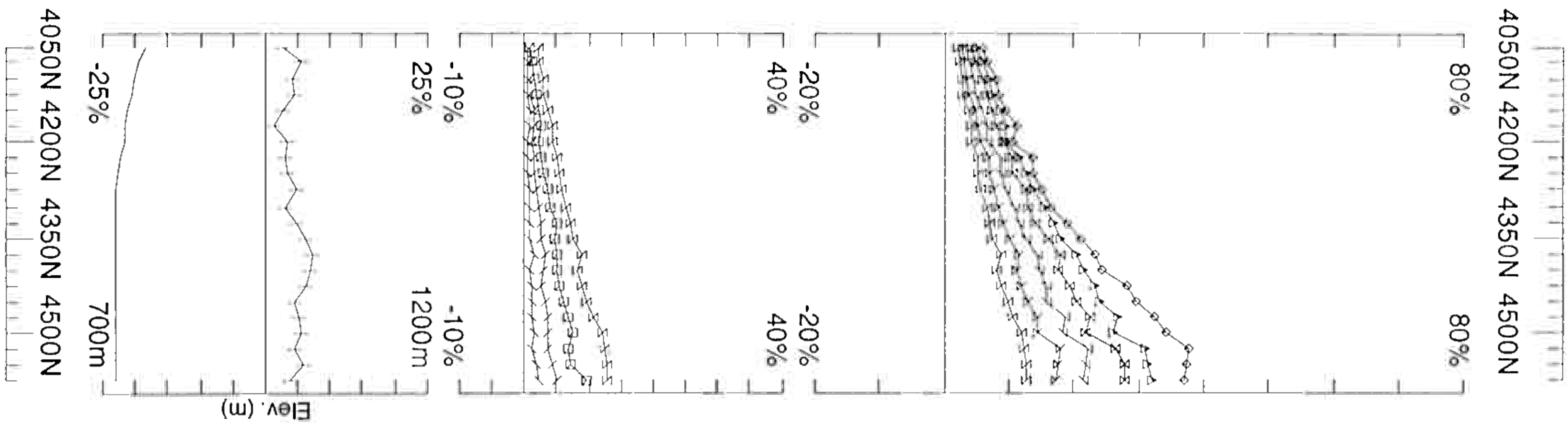
Loop: 25 Line: 7700E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 10/3/5 Plotted : 1/4/5



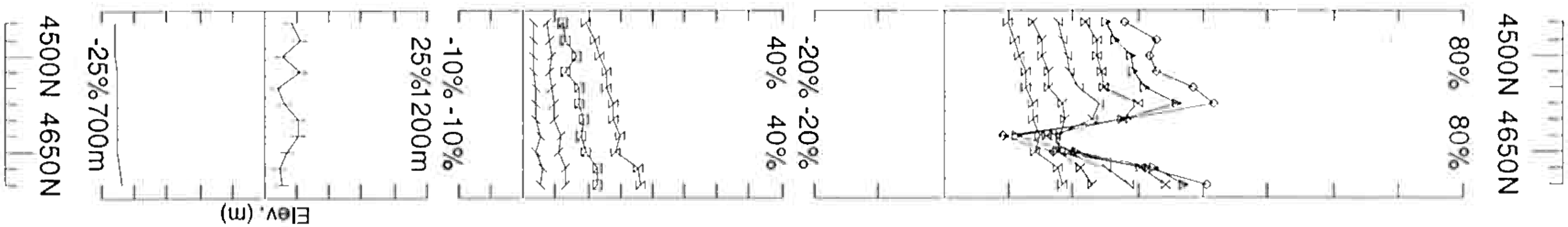
Loop: 25	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 7800E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 5/3/5 Reduced: 5/3/5 Plotted: 1/4/5



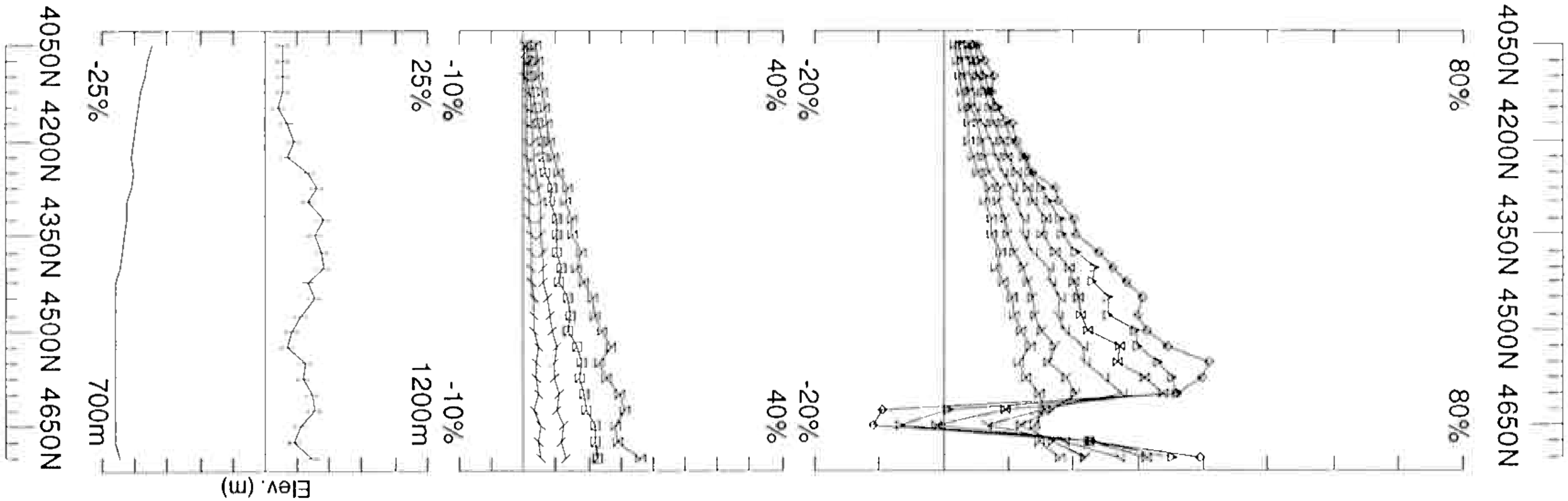
Loop: 25	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 8000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 6/3/5 Plotted : 1/4/5



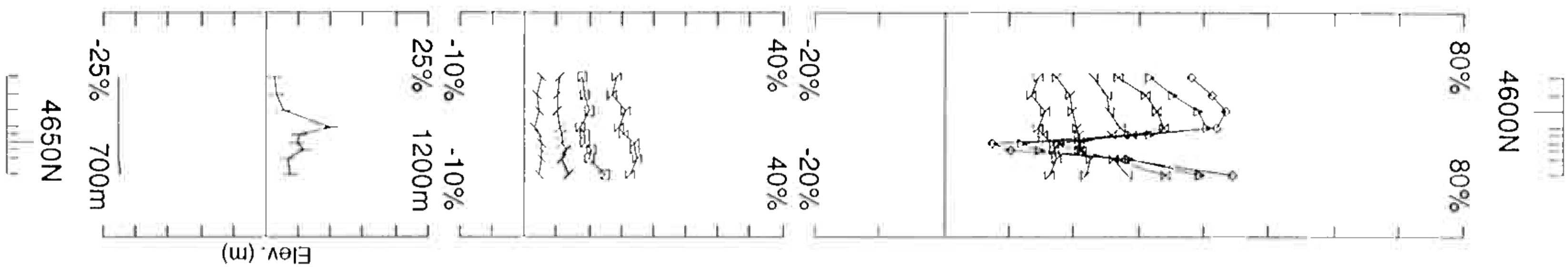
Loop: 25 Line: 8200E Compt: Hz	Secondary, (Chn - Ch1)/lHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 6/3/5 Plotted : 1/4/5



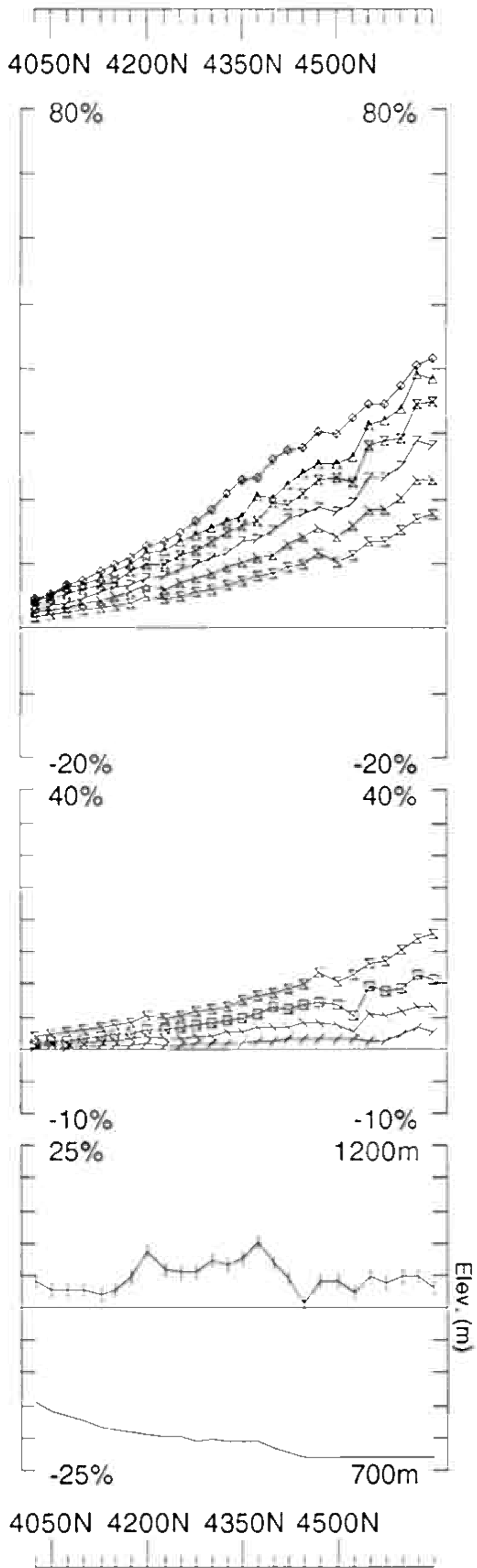
Loop: 25	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 8350E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 6/3/5 Reduced: 6/3/5 Plotted: 1/4/5



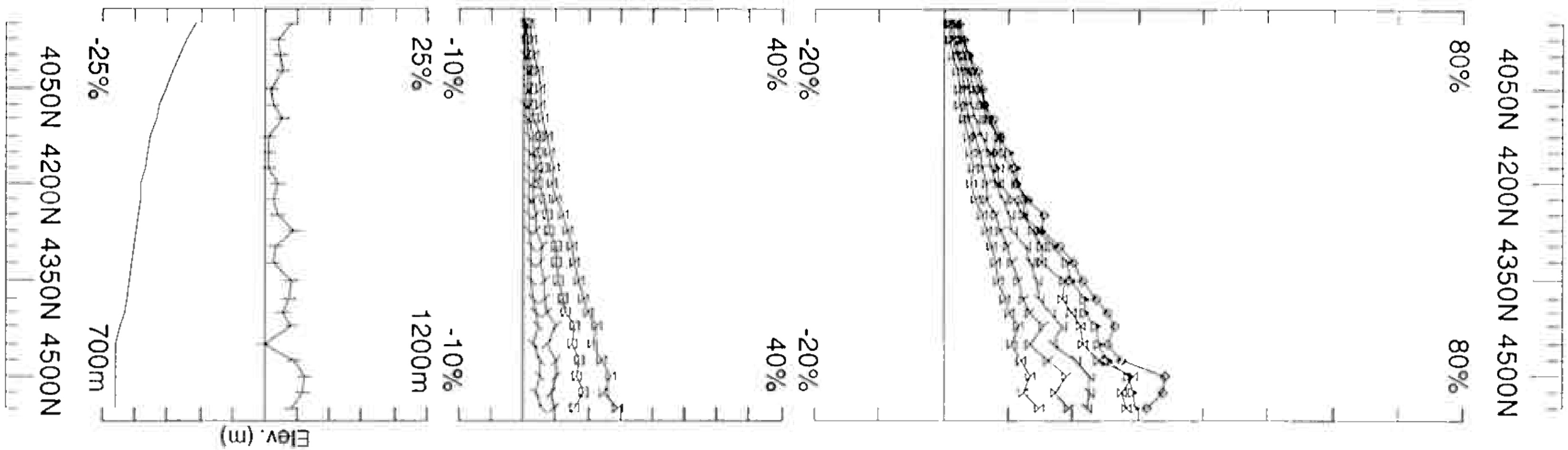
Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 8400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 6/3/5 Plotted : 1/4/5



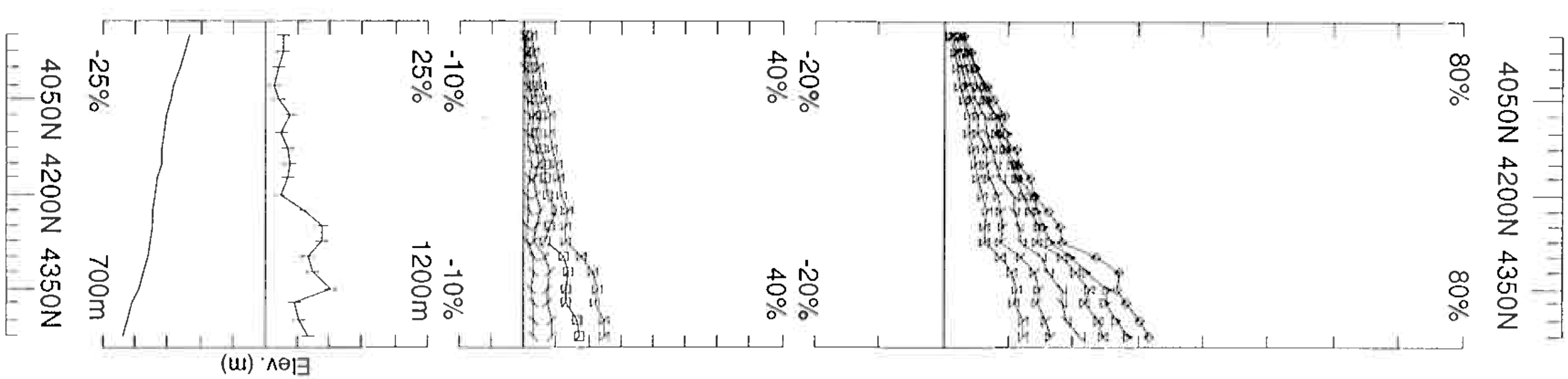
Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 8450E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 6/3/5 Reduced: 6/3/5 Plotted: 1/4/5



Loop: 25 Line: 8600E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz
UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE	Job 0511 Surveyed : 4/3/5 Reduced : 6/3/5 Plotted : 1/4/5



Loop: 25 Line: 8800E Compt: Hz	Secondary, (Chn - Ch1)/lHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 4/3/5 Reduced: 6/3/5 Plotted: 1/4/5



Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 9000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 4/3/5 Reduced : 6/3/5 Plotted : 1/4/5

Espedalen

Loop 26

Hz

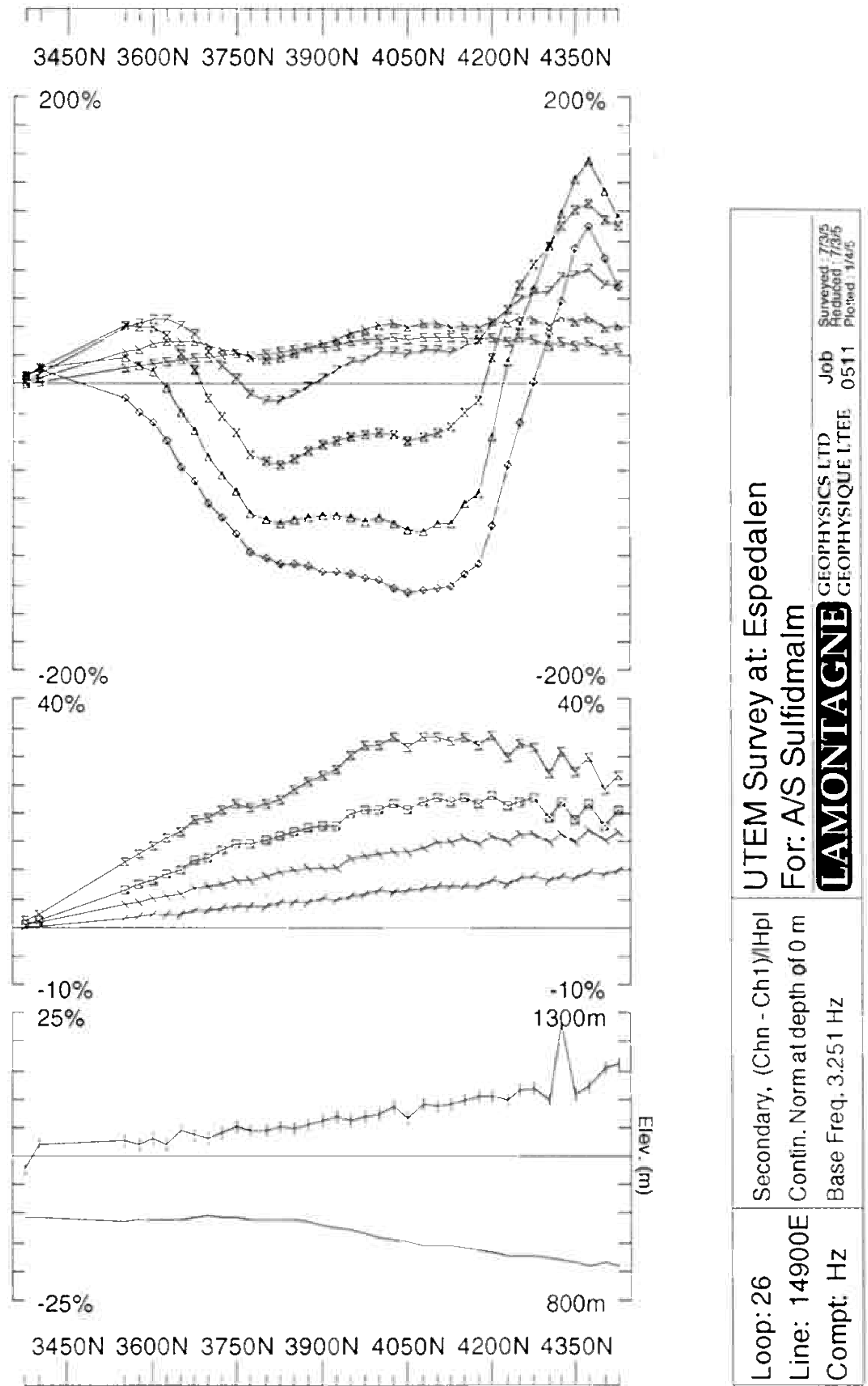
@3.251 Hz frequency

continuous norm

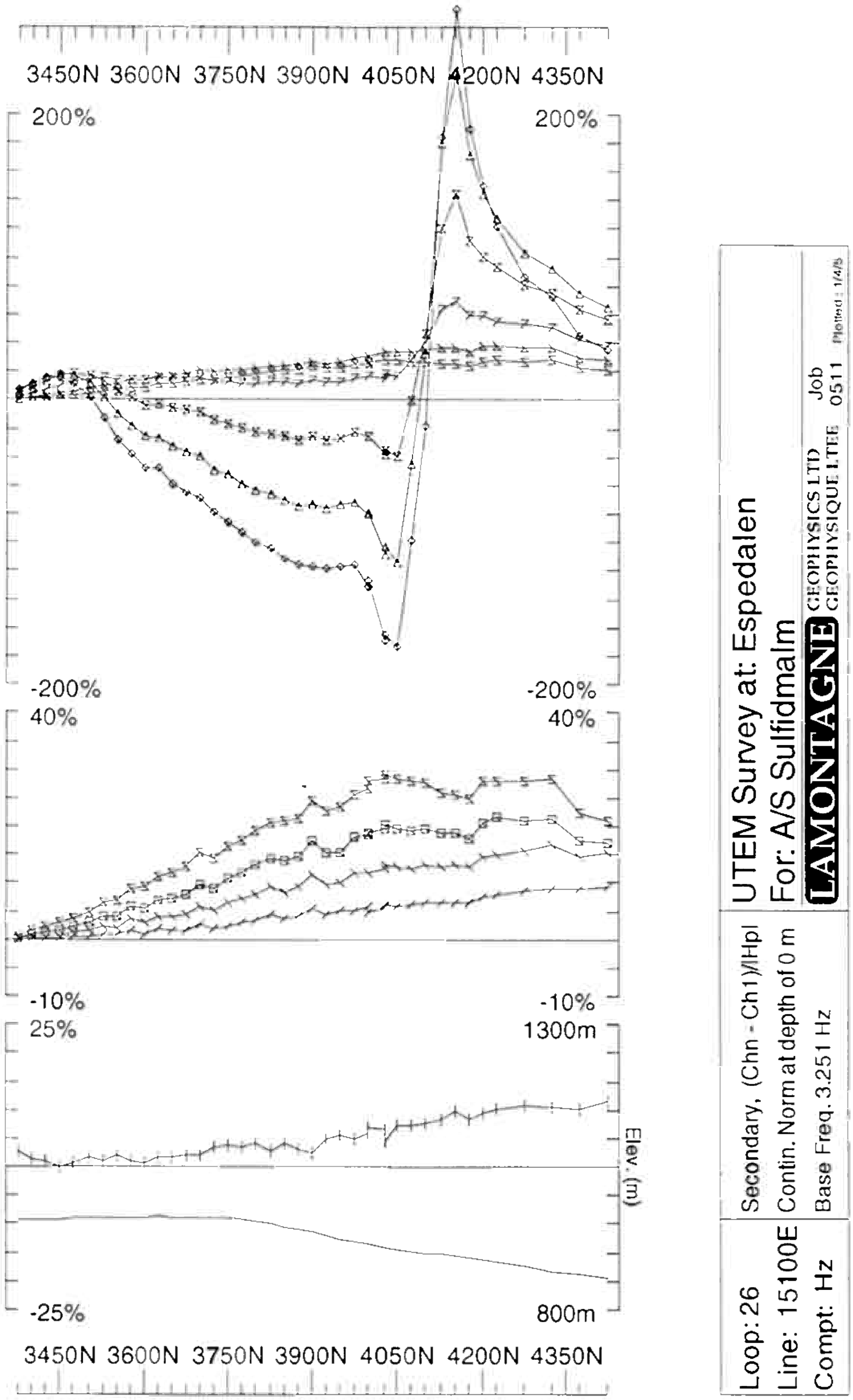
Ch1 reduced

Loop 26	Line 14900E	3350N - 4125N	775m
	Line 15100E	3350N - 4425N	1075m
	Line 15300E	3350N - 4425N	1075m
	Line 15500E	3350N - 4025N	675m
	Line 15700E	3350N - 3975N	625m
	Espedalen	Loop 26 Total	4225m

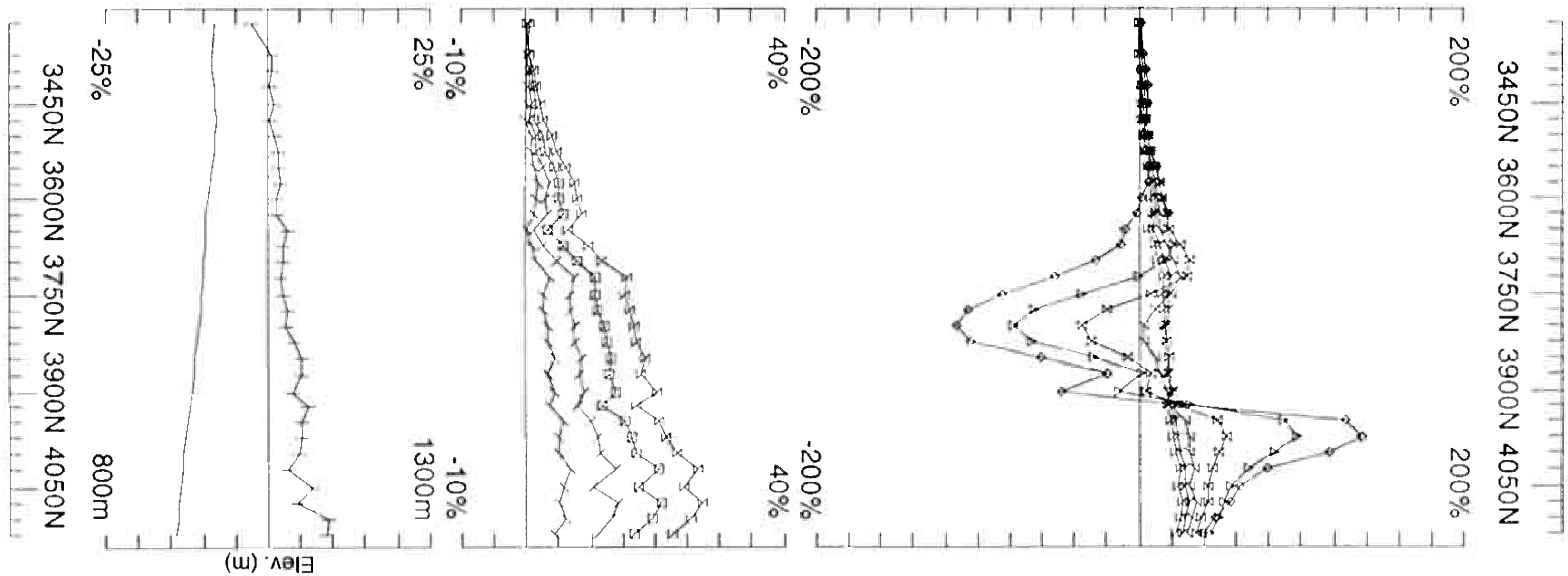
Loop 26 - continuous norm



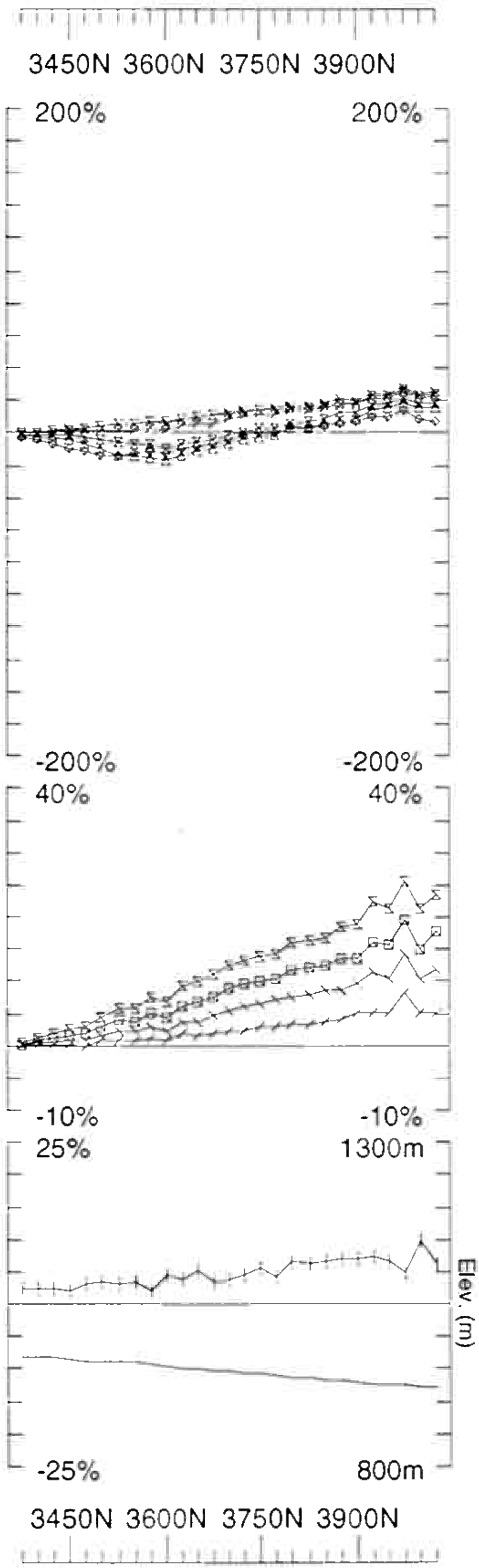
3450N 3600N 3750N 3900N 4050N 4200N 4350N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
3450N 3600N 3750N 3900N 4050N 4200N 4350N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 26
Line: 14900E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



3450N 3600N 3750N 3900N 4050N 4200N 4350N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
3450N 3600N 3750N 3900N 4050N 4200N 4350N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 26
Line: 15100E
Compt: Hz
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 26 Line: 15300E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE	Job 0511 Surveyed : 7/3/5 Reduced : 7/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

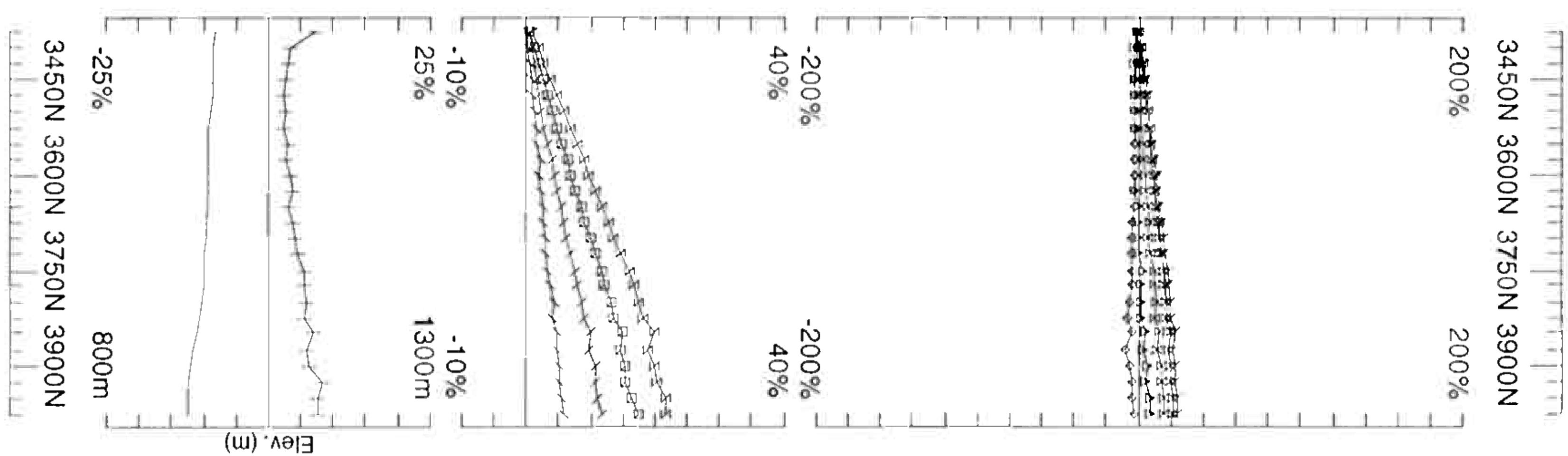
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed: 6/3/5
Reduced: 7/3/5
Plotted: 1/4/5

Loop: 26
Line: 15500E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 26 Line: 15700E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 6/3/5 Reduced: 7/3/5 Plotted: 1/4/5

Espedalen

Loop 27

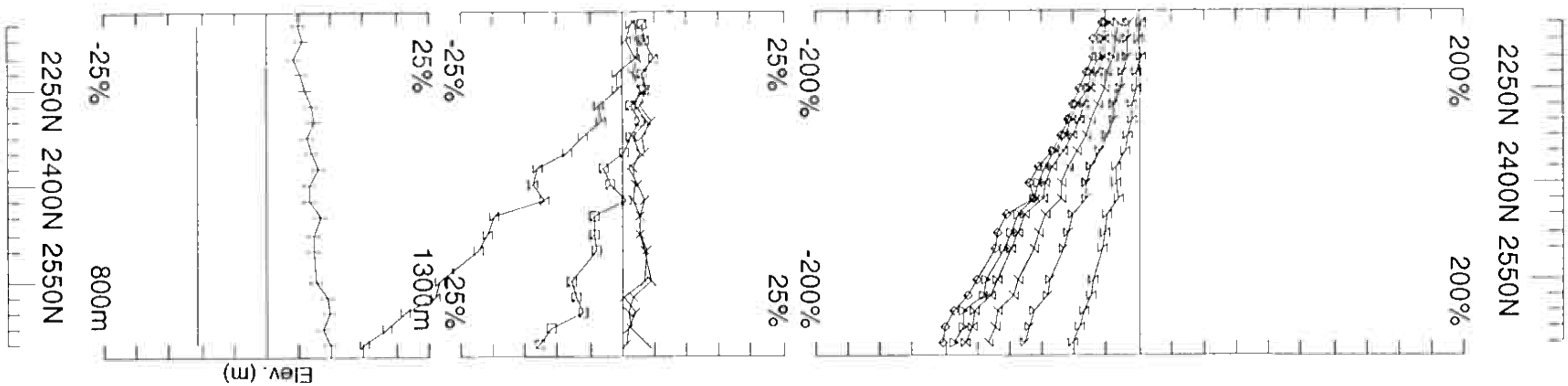
Hz
@3.251 Hz frequency

continuous norm

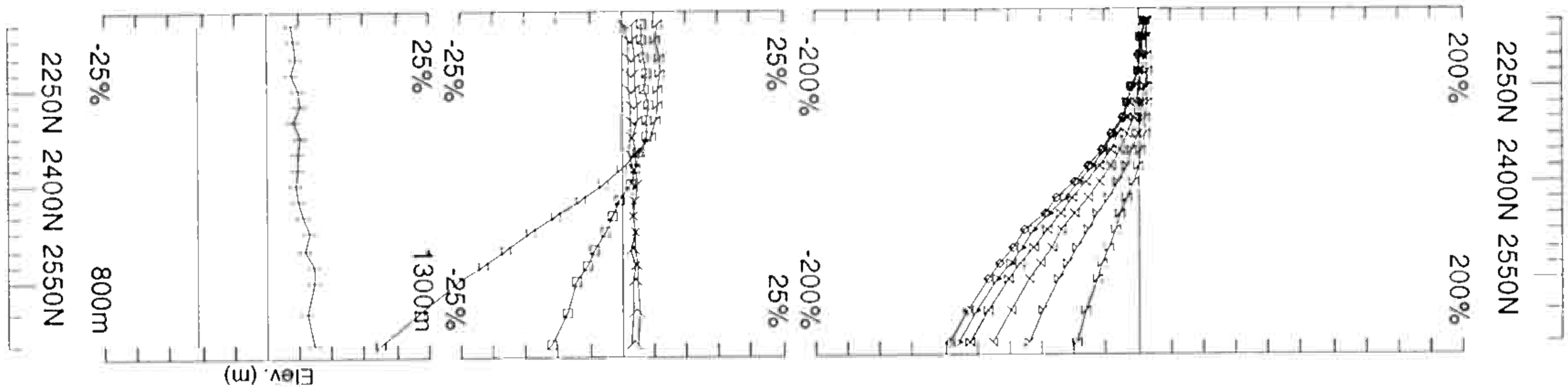
Ch1 reduced

Loop 27	Line 14300E	2150N - 2650N	500m
	Line 14500E	2150N - 2650N	500m
	Line 14700E	2225N - 2800N	575m
	Line 14800E	2225N - 3400N	1175m
	Line 14900E	2225N - 3400N	1175m
	Line 15100E	2225N - 3500N	1275m
	Line 15300E	2225N - 3500N	1275m
	Line 15500E	2225N - 3450N	1225m
	Line 15700E	2225N - 3450N	1225m
	Line 15900E	2225N - 3075N	850m
	Line 16100E	2150N - 3000N	850m
	Espedalen	Loop 27 Total	10625m

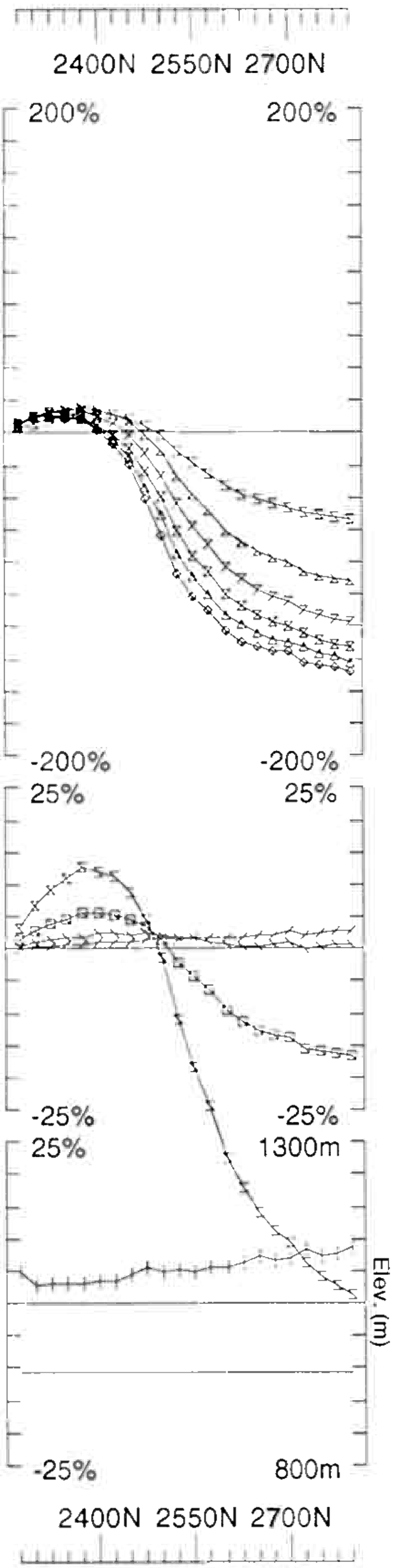
Loop 27 - continuous norm



Loop: 27	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 14300E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 10/3/5 Reduced: 10/3/5 Plotted: 1/4/5



Loop: 27 Line: 14500E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 10/3/5 Reduced : 10/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen

For: A/S Sulfidmalm

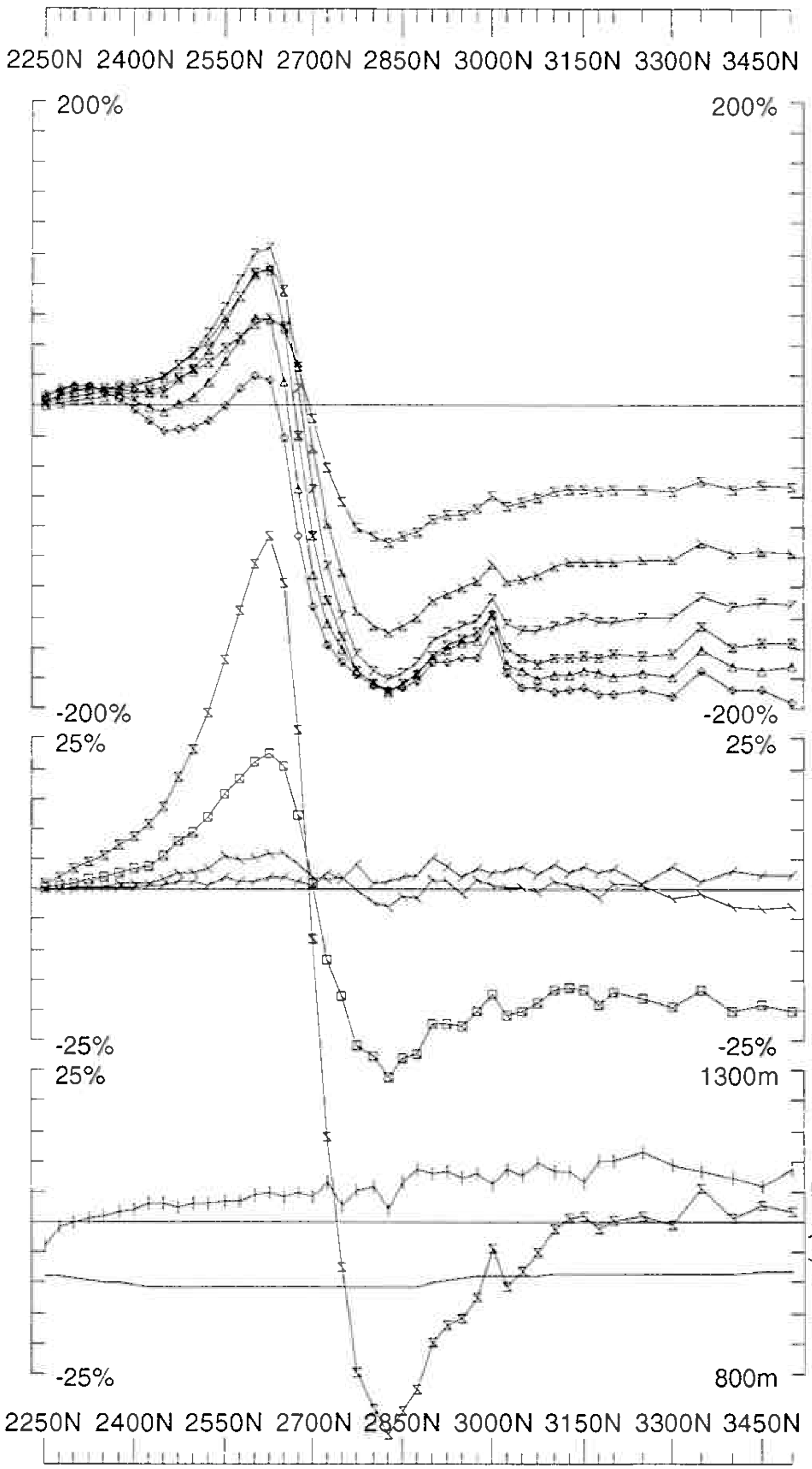
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 8/3/5
Reduced: 8/3/5
Plotted: 1/4/5

Loop: 27
Line: 14700E
Compt: Hz

Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

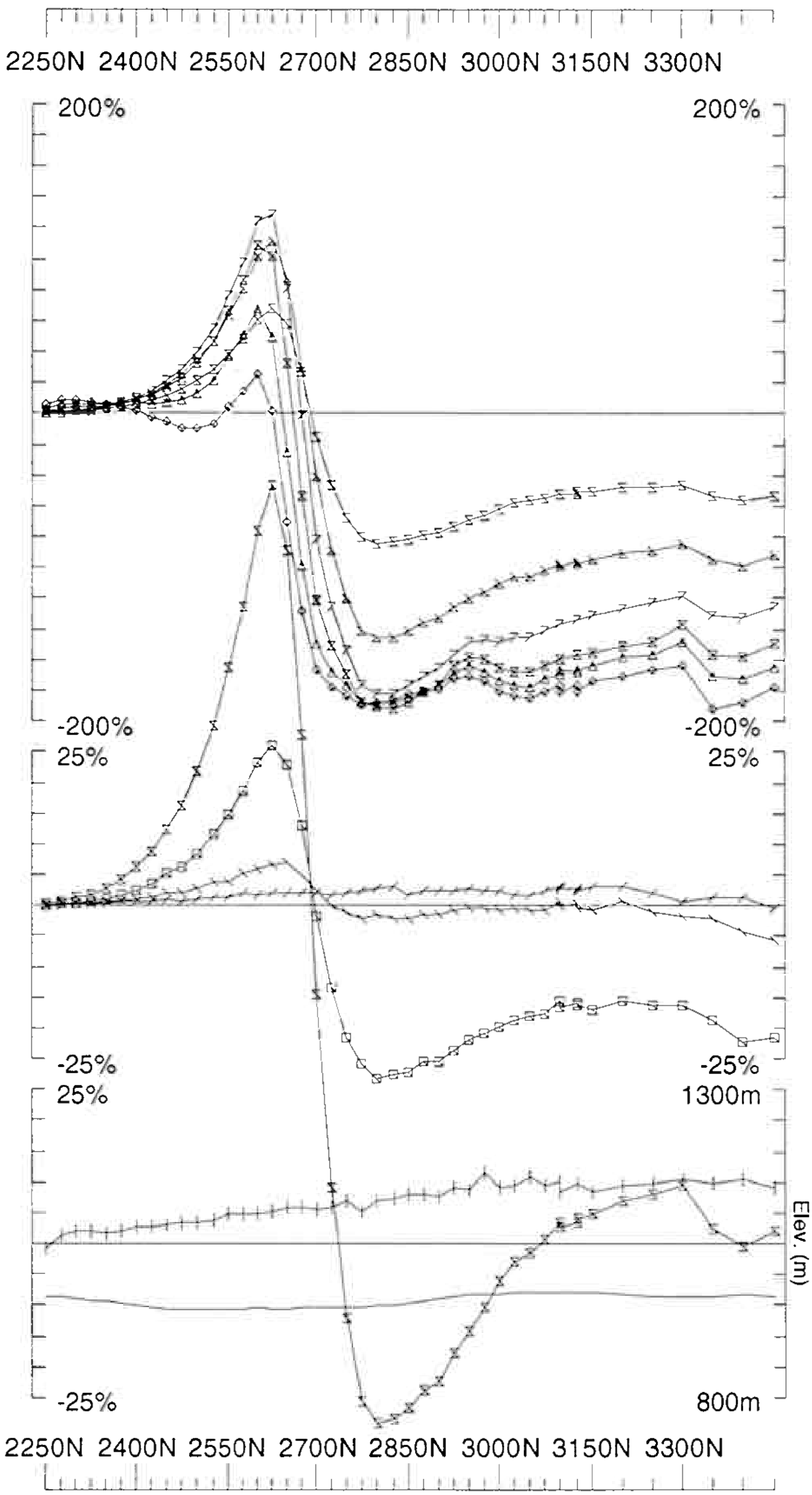
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

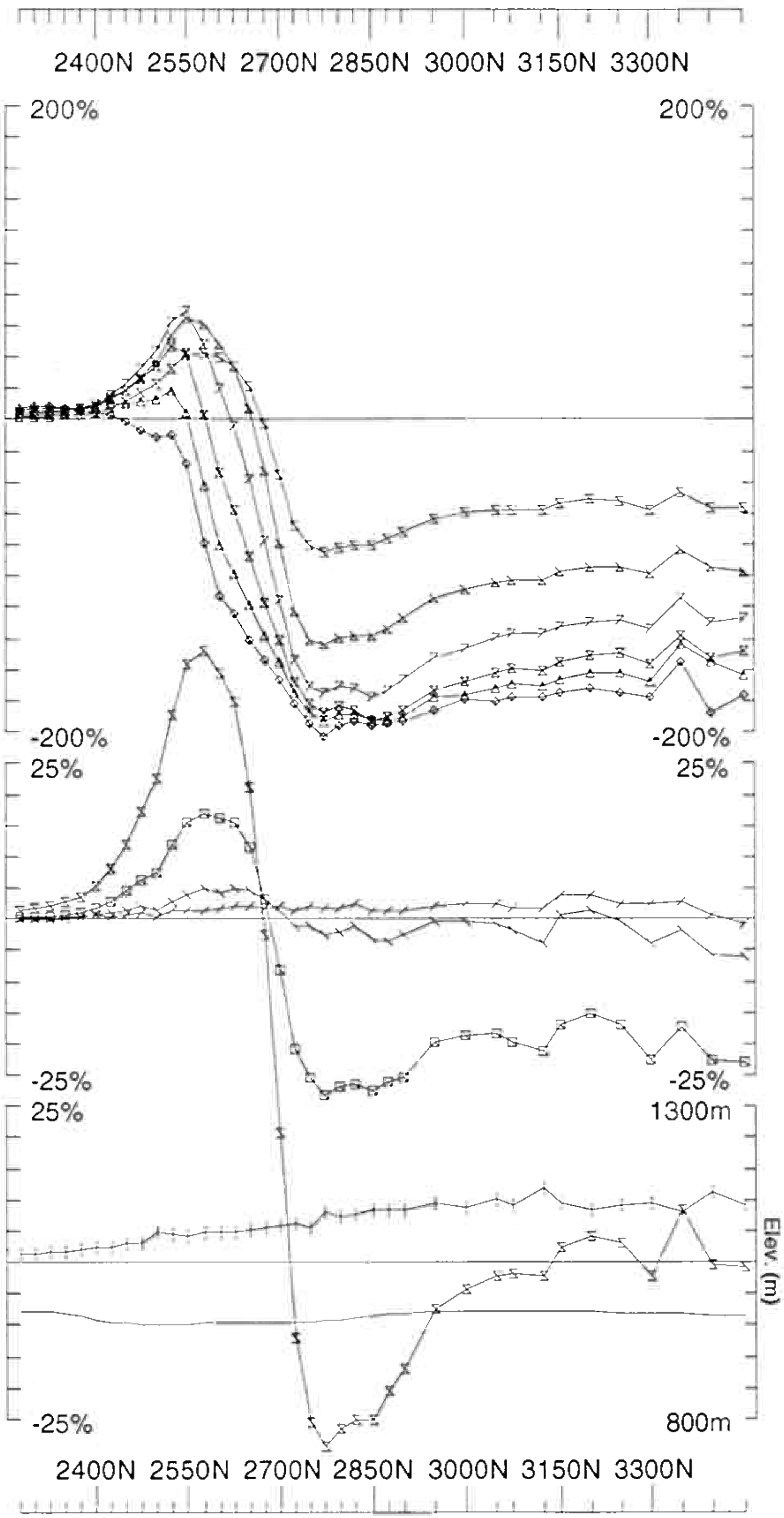
Surveyed : 8/3/4
Reduced : 8/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 27
Line: 15300E
Compt: Hz



Loop: 27 Line: 15500E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 9/3/5 Reduced: 9/3/5 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

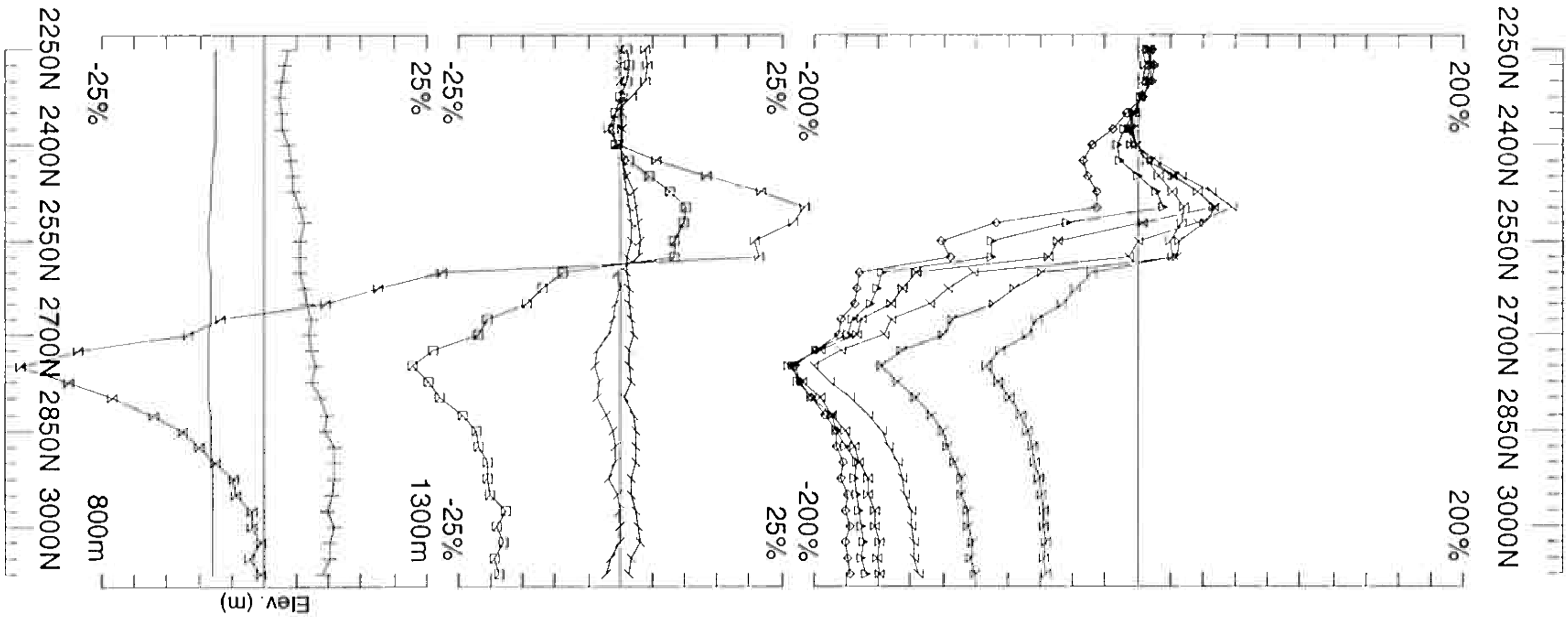
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

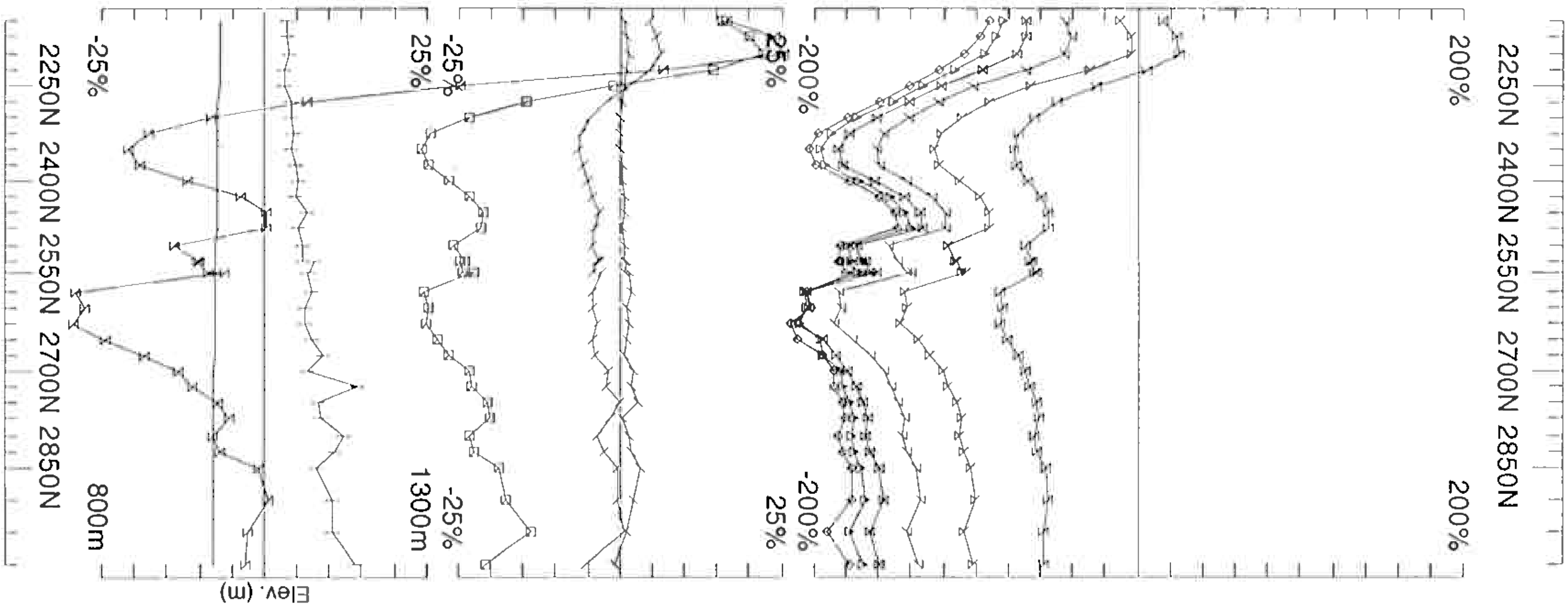
Surveyed : 9/3/5
Reduced : 9/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 27
Line: 15700E
Compt: Hz



Loop: 27	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 15900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 9/3/5 Reduced: 9/3/5 Plotted: 1/4/5



Loop: 27	Secondary, (Chn - Ch1)/lHpl	UTEM Survey at: Espedalen
Line: 16100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Plotted : 1/4/5

Espedalen

Loop 28

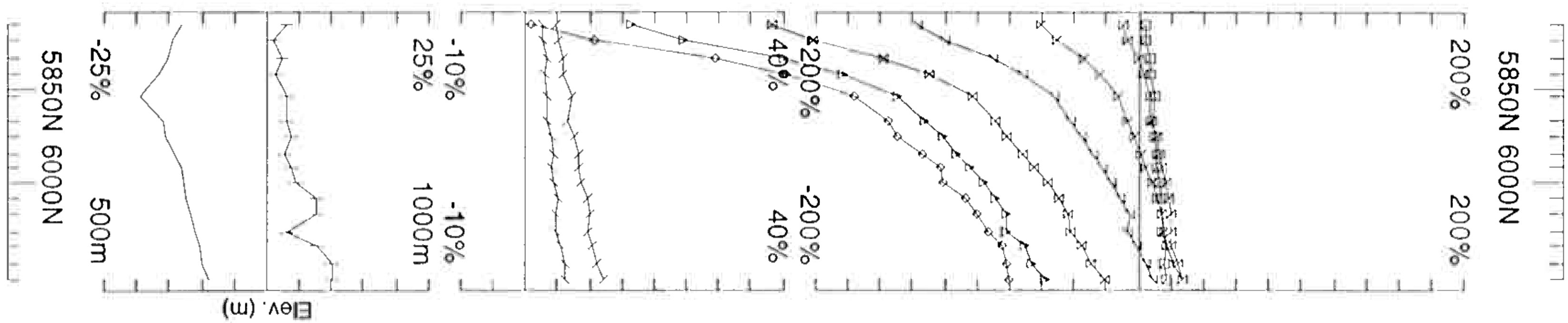
Hz
@3.251 Hz frequency

continuous norm

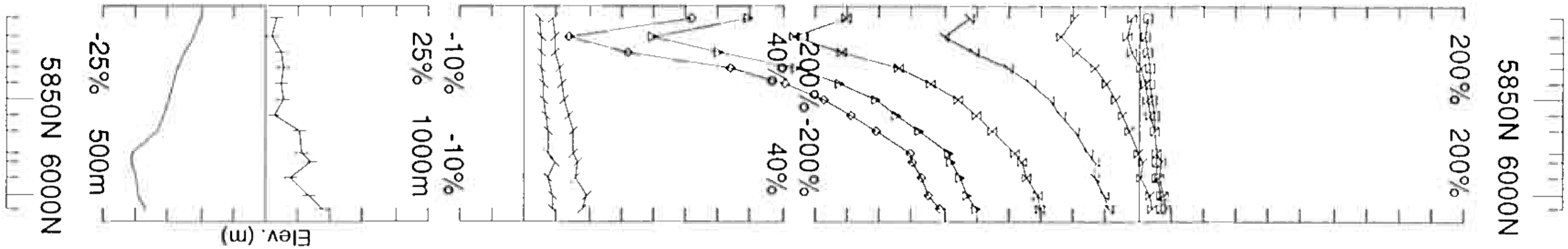
Ch1 reduced

Loop 28	Line 12700E	5750N - 6150N	400m
	Line 12900E	5725N - 6025N	300m
	Line 13100E	5675N - 6050N	375m
	Line 13200E	5650N - 6100N	450m
	Espedalen	Loop 28 Total	1525m

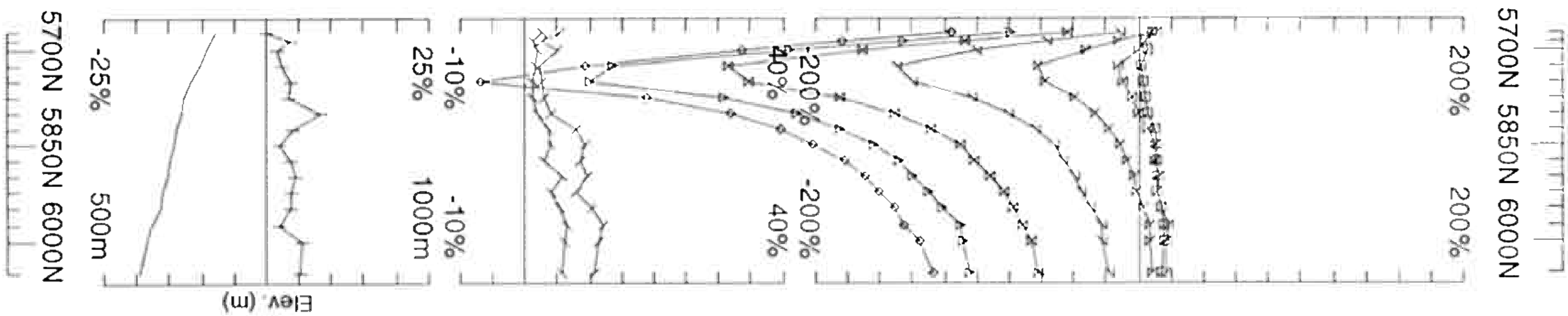
Loop 28 - continuous norm



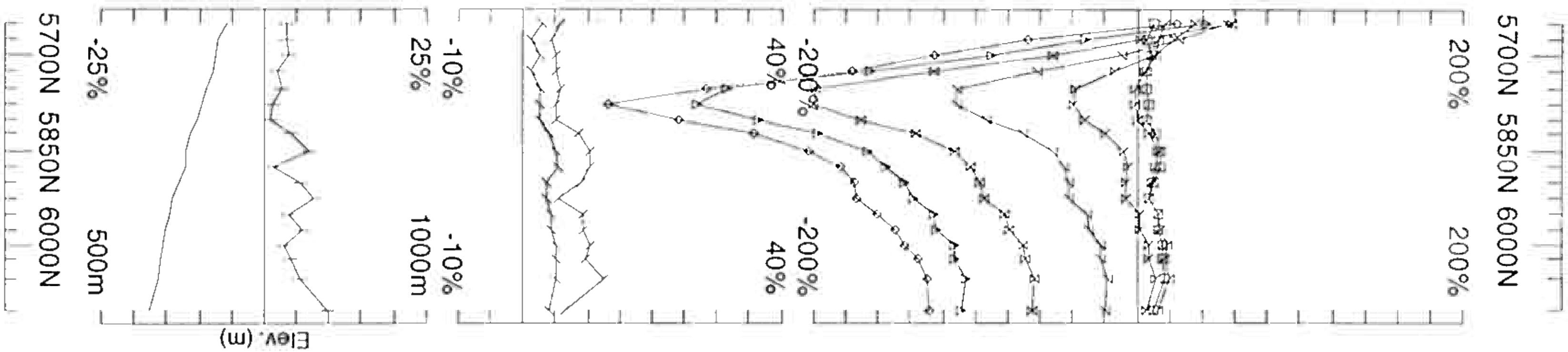
Loop: 28	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 12700E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE — Job 0511 — Surveyed: 3/3/5 Reduced: 3/3/5 Plotted: 1/4/5



Loop: 28	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 12900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 3/3/5 Reduced : 3/3/5 Plotted : 1/4/5



Loop: 28	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 13100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 3/3/5 Reduced: 3/3/5 Plotted: 1/4/5



Loop: 28	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 13200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 3/3/5 Reduced : 3/3/5 Plotted : 1/4/5

Espedalen

Loop 29

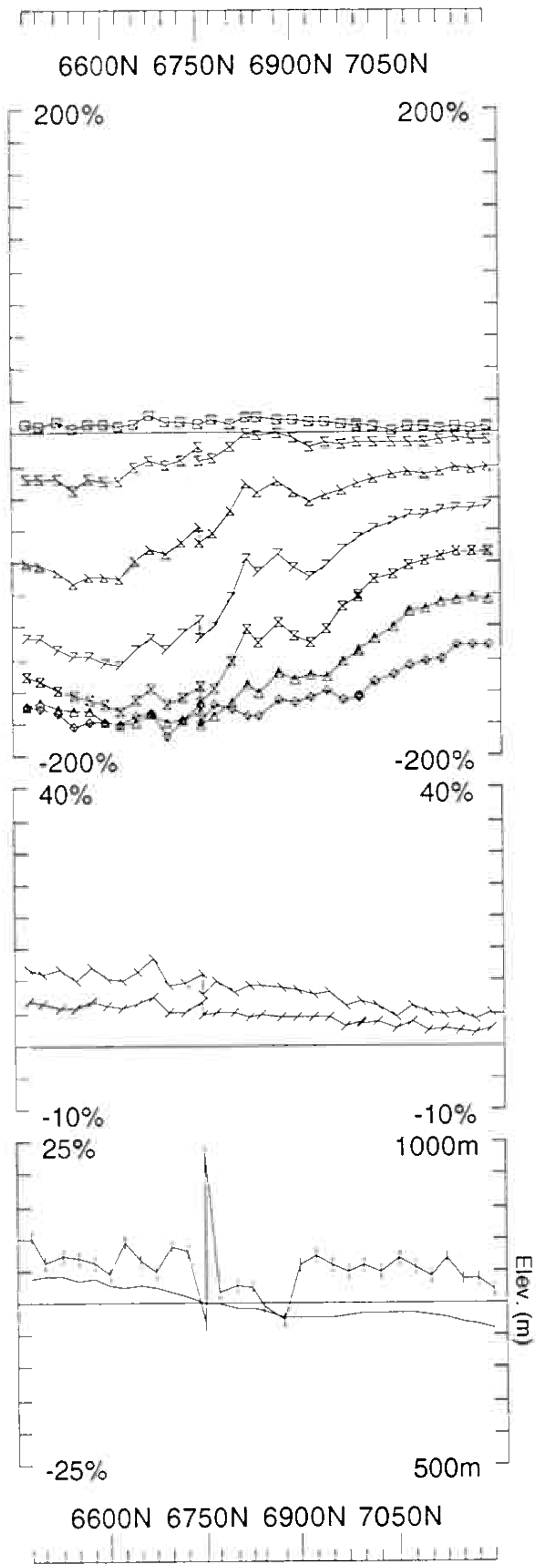
Hz
@3.251 Hz frequency

continuous norm

Ch1 reduced

Loop 29	Line 12100E	6475N - 7200N	725m
	Line 12300E	6350N - 7275N	925m
	Line 12500E	6250N - 7300N	1050m
	Line 12700E	6300N - 7300N	1000m
	Line 12900E	6300N - 7100N	800m
	Line 13100E	6350N - 7075N	725m
	Line 13200E	6425N - 7100N	675m
	Espedalen	Loop 29 Total	5900m

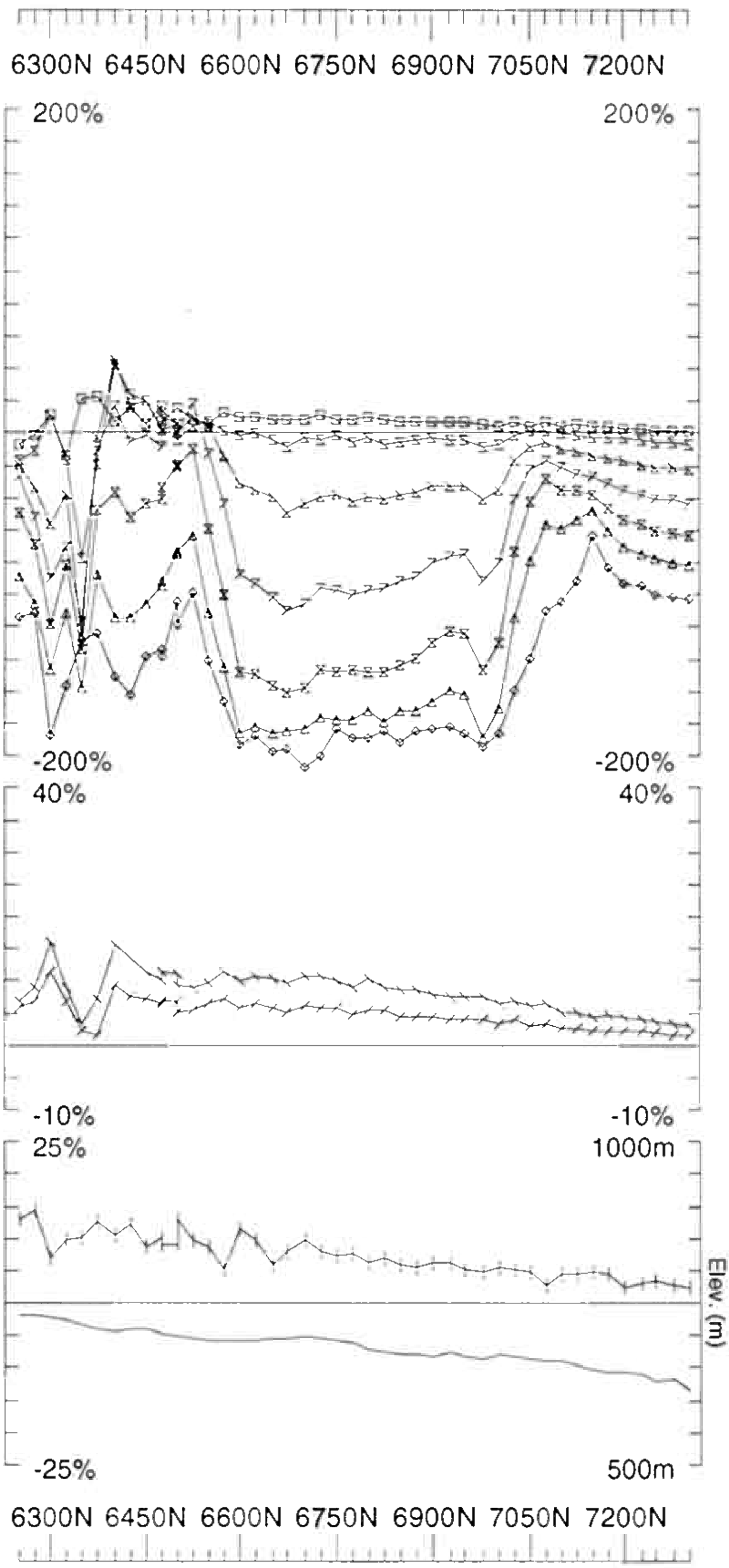
Loop 29 - continuous norm



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted : 1/4/5

Loop: 29
Line: 12100E
Compt: Hz

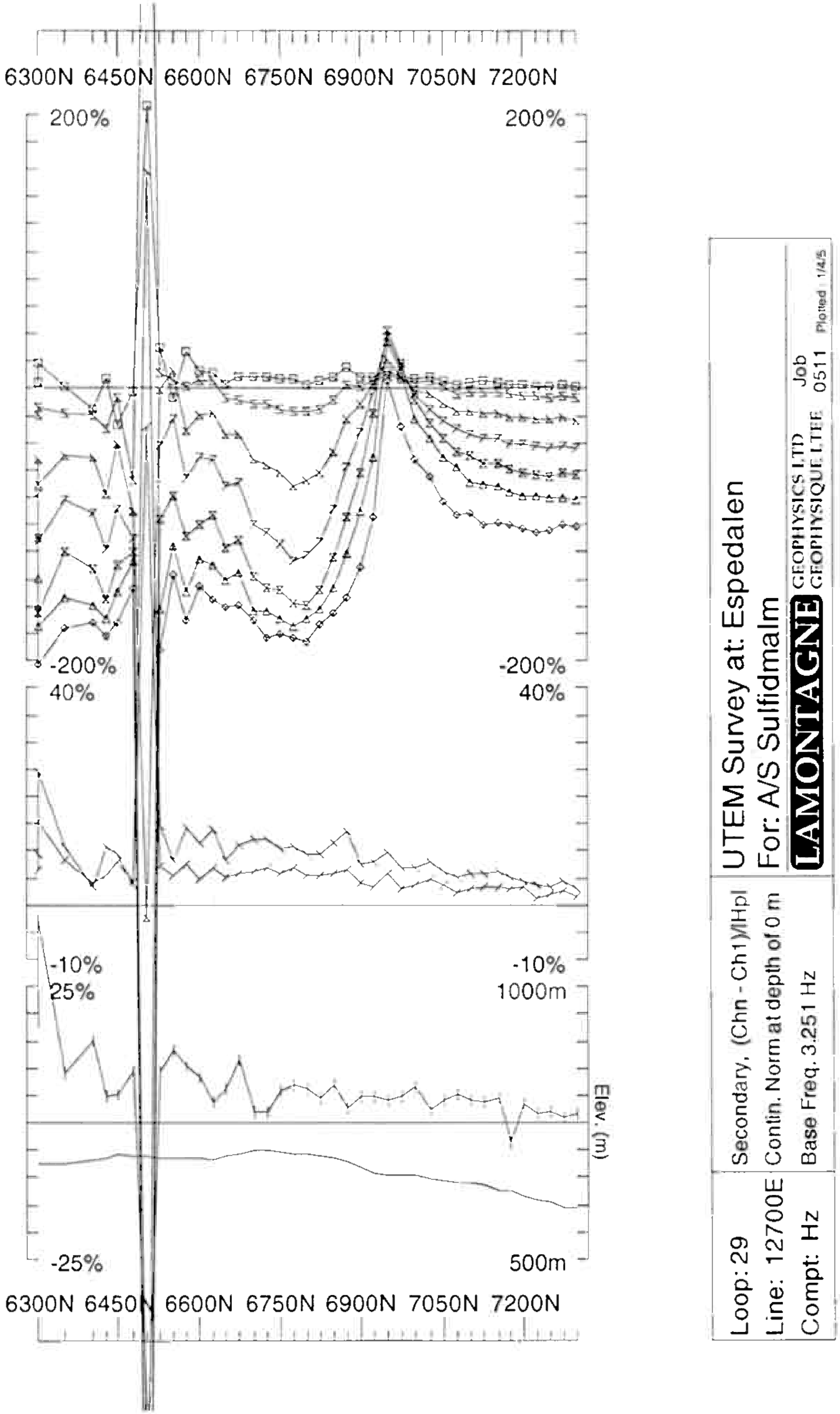
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



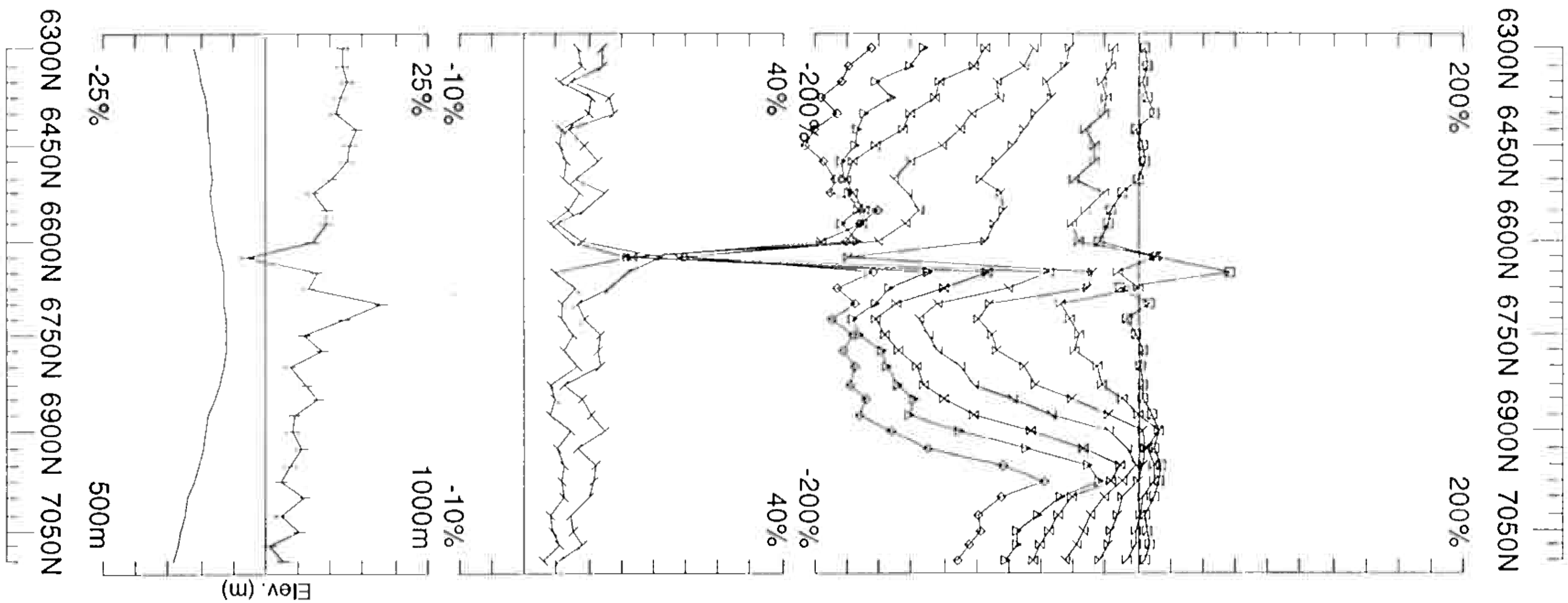
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511

Secondary, (Chn - Ch1)/IHp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

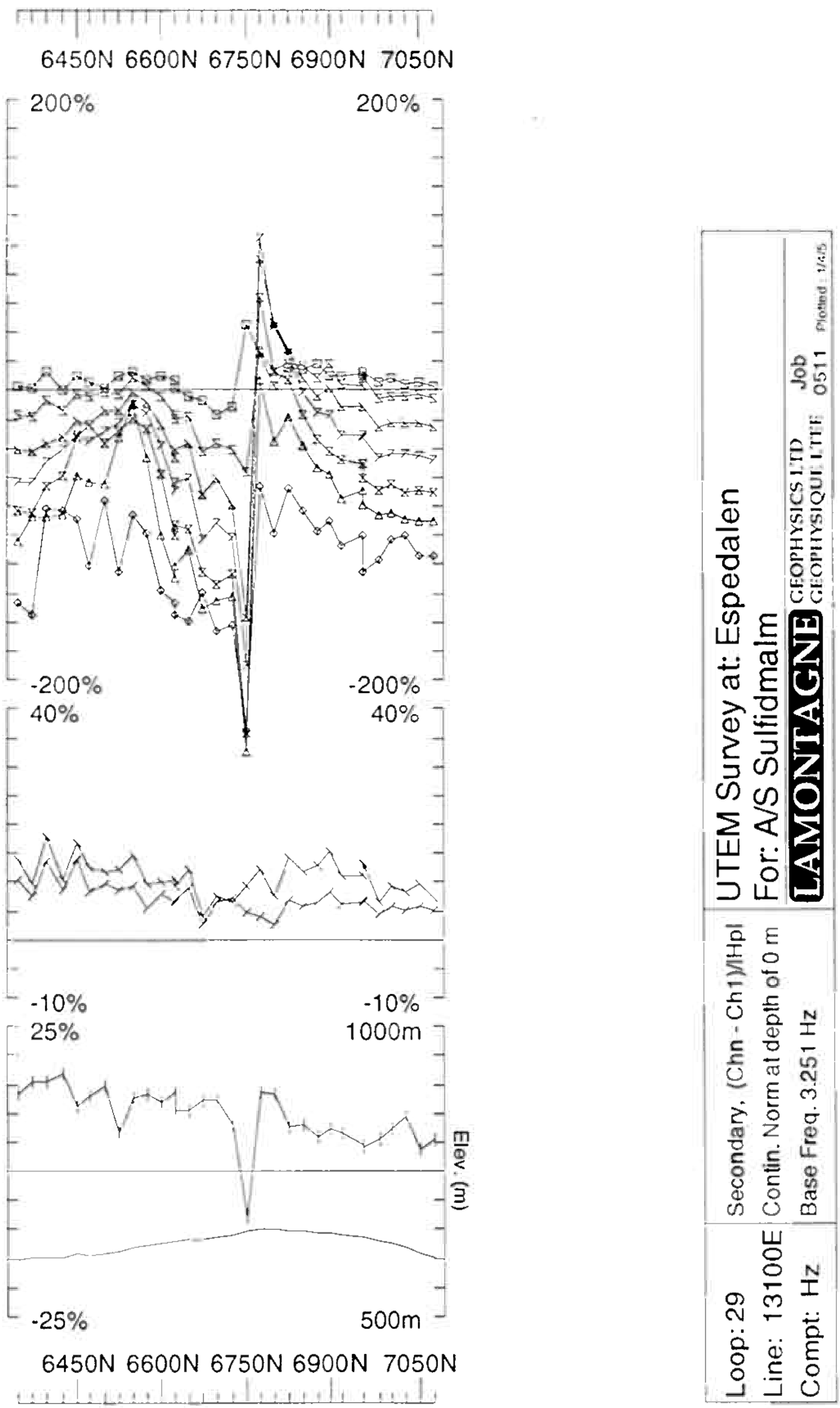
Loop: 29
Line: 12500E
Compt: Hz



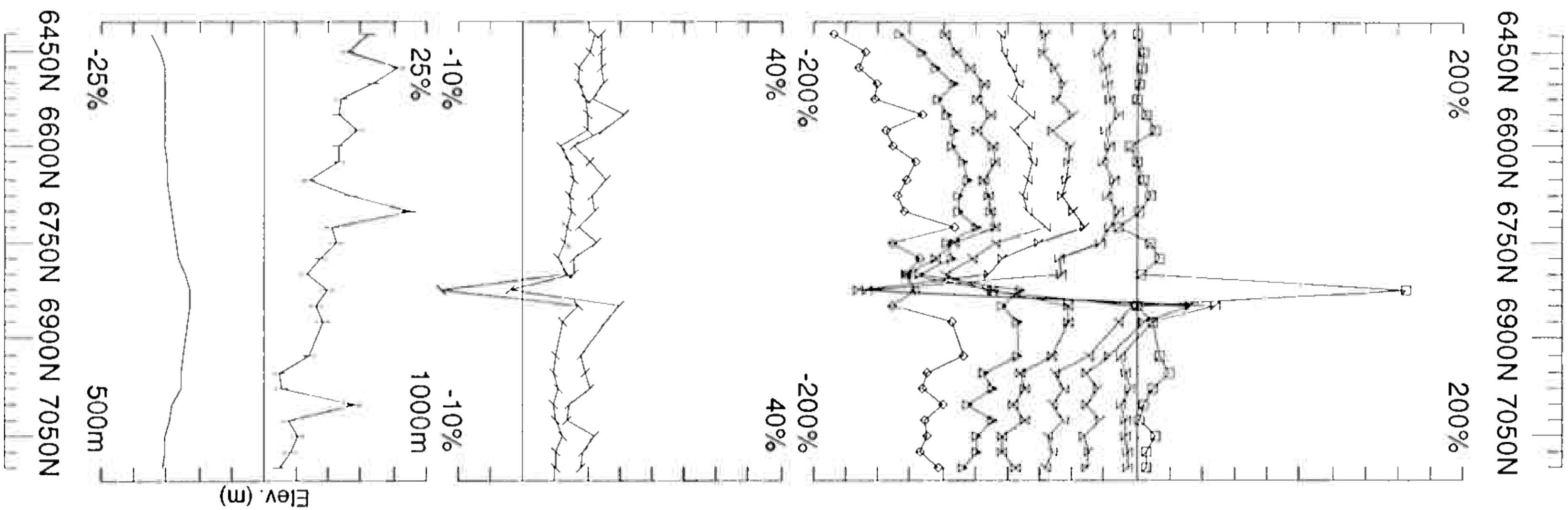
6300N 6450N 6600N 6750N 6900N 7050N 7200N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1000m
Elev. (m)
-25%
500m
6300N 6450N 6600N 6750N 6900N 7050N 7200N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Loop: 29
Line: 12700E
Compt: Hz
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 29	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 12900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE — Job 0511 — Surveyed: 1/3/5 Reduced: 2/3/5 Plotted: 1/4/5



6450N 6600N 6750N 6900N 7050N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1000m
Elev. (m)
-25%
500m
6450N 6600N 6750N 6900N 7050N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 29
Line: 13100E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 29 Line: 13200E Compt: Hz	Secondary, (Chn - Ch1)/|Hp| Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 28/2/5 Reduced: 2/3/5 Plotted: 1/4/5

Espedalen

Loop 19

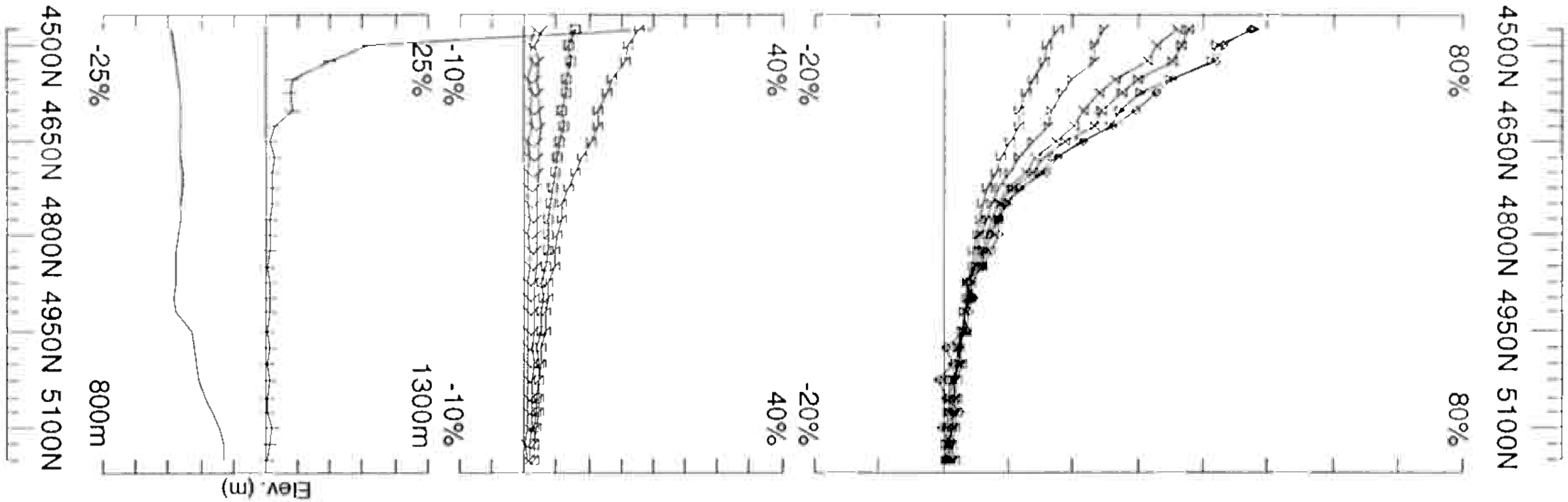
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (12600E,4750N, 950 m.a.s.l.)

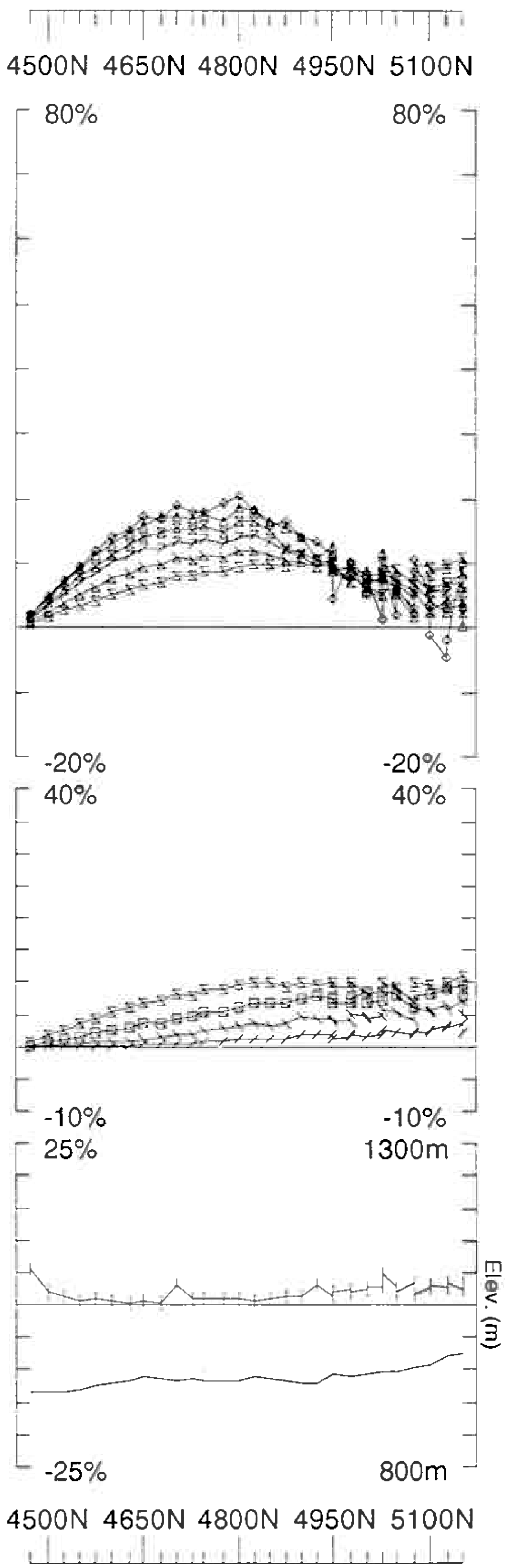
Ch1 reduced

Loop 19	Line 12300E	4450N - 5150N	700m
	Line 12400E	4450N - 5150N	700m
	Line 12500E	4450N - 5150N	700m
	Line 12600E	4450N - 5150N	700m
	Line 12700E	4450N - 5150N	700m
	Line 12800E	4450N - 5250N	800m
	Line 12900E	4450N - 5250N	800m
	Espedalen	Loop 19 Total	5100m

Loop 19 - point norm



Loop: 19 Line: 12300E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Point Norm.at x,y,z (12600,4750,950) Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 17/2/5 Reduced : 1/4/5 Plotted : 1/4/5



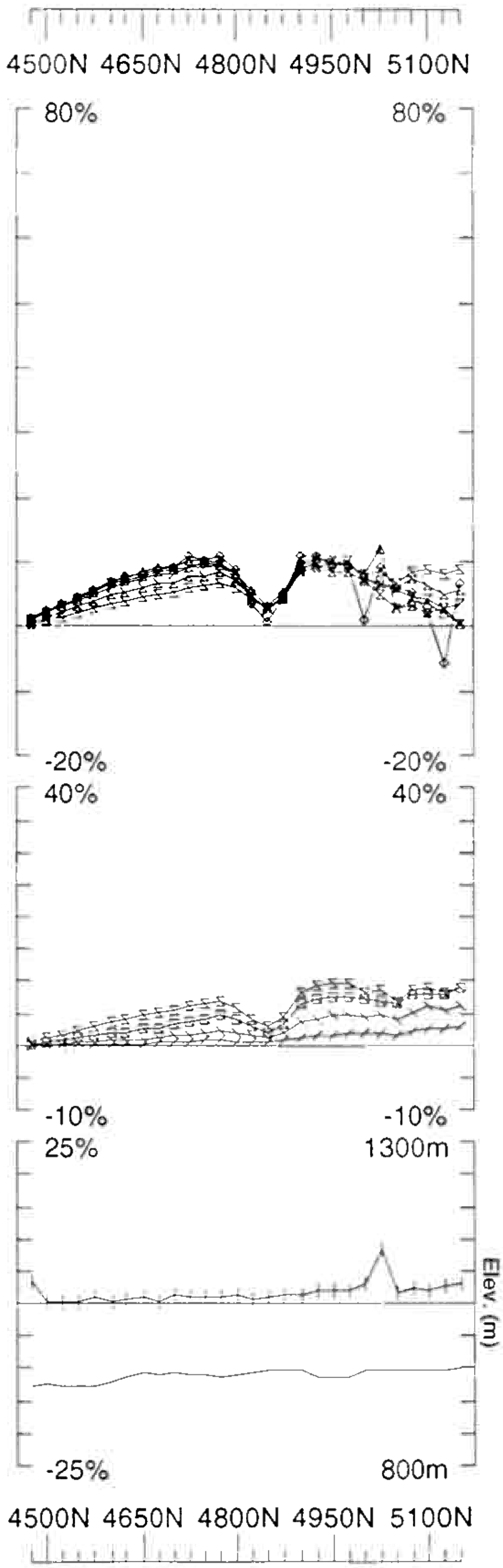
Loop: 19 Line: 12400E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted: 1/4/5



Loop: 19
Line: 12500E
Compt: Hz

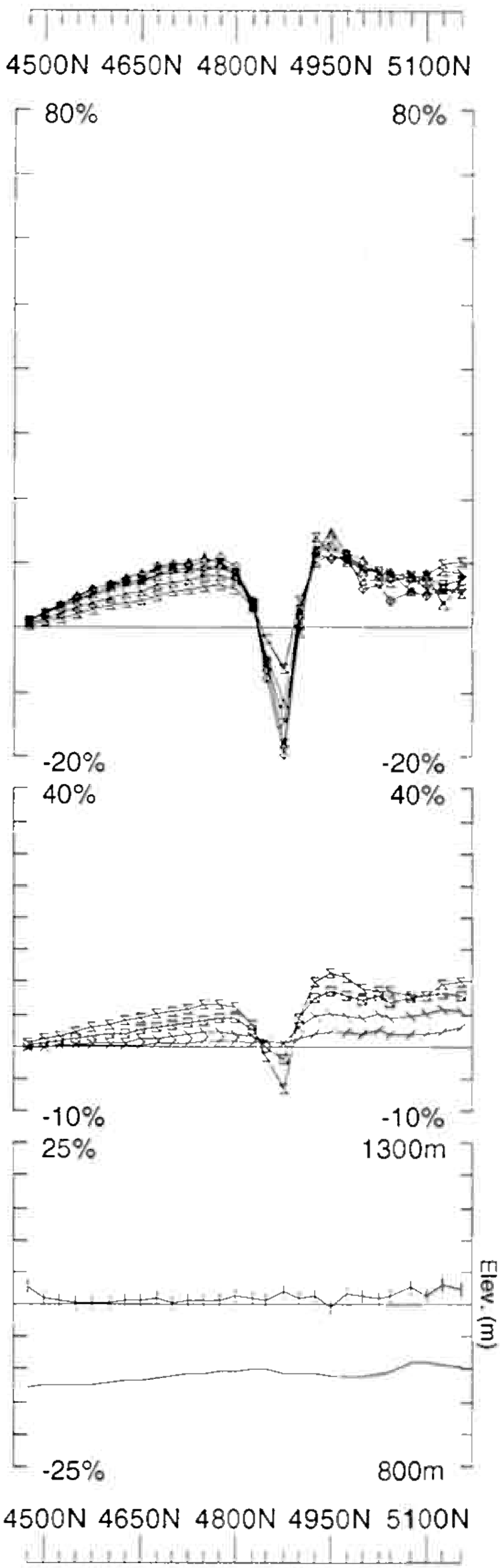
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

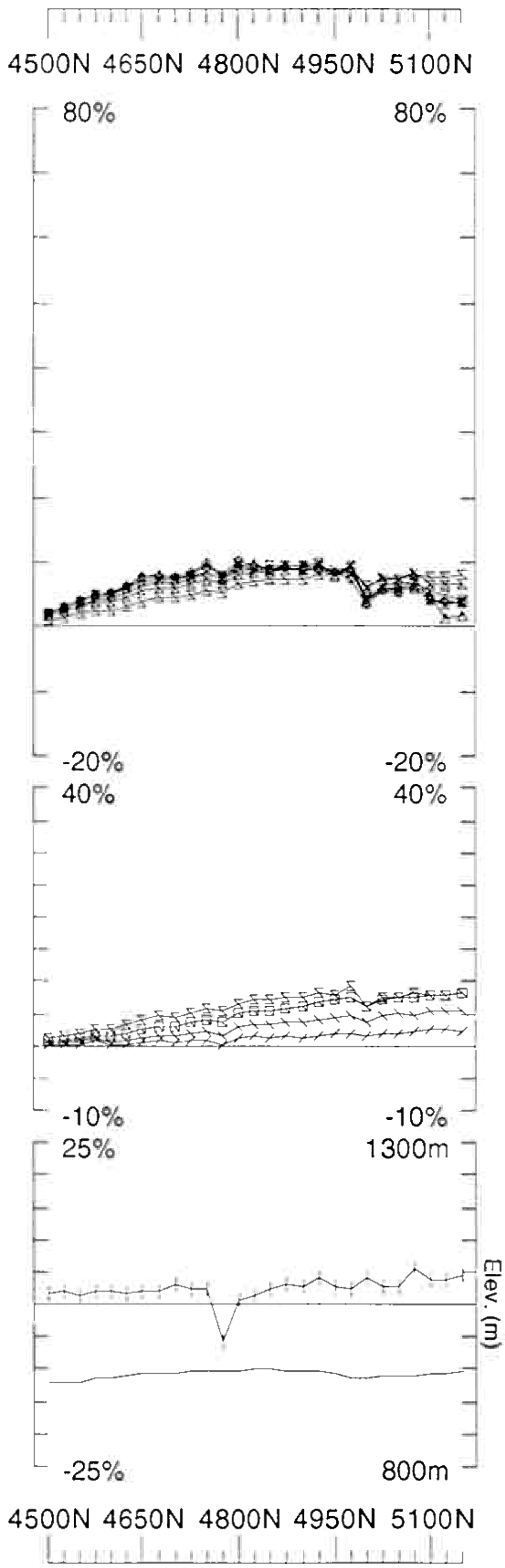
Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

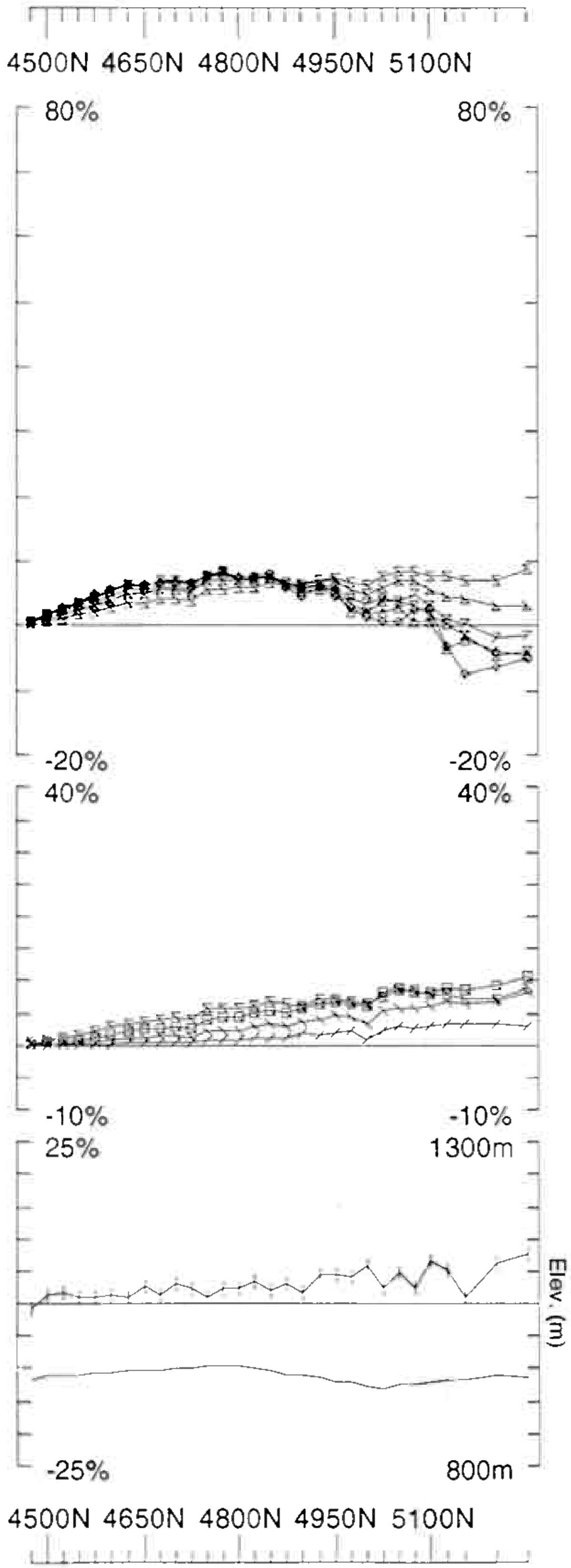
Loop: 19
Line: 12600E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job 0511
Surveyed: 18/2/5
Reduced: 1/4/5
Plotted: 1/4/5

Loop: 19
Line: 12700E
Compt: Hz

Secondary, (Chn - Ch1)/IHp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 19
Line: 12800E
Compt: Hz

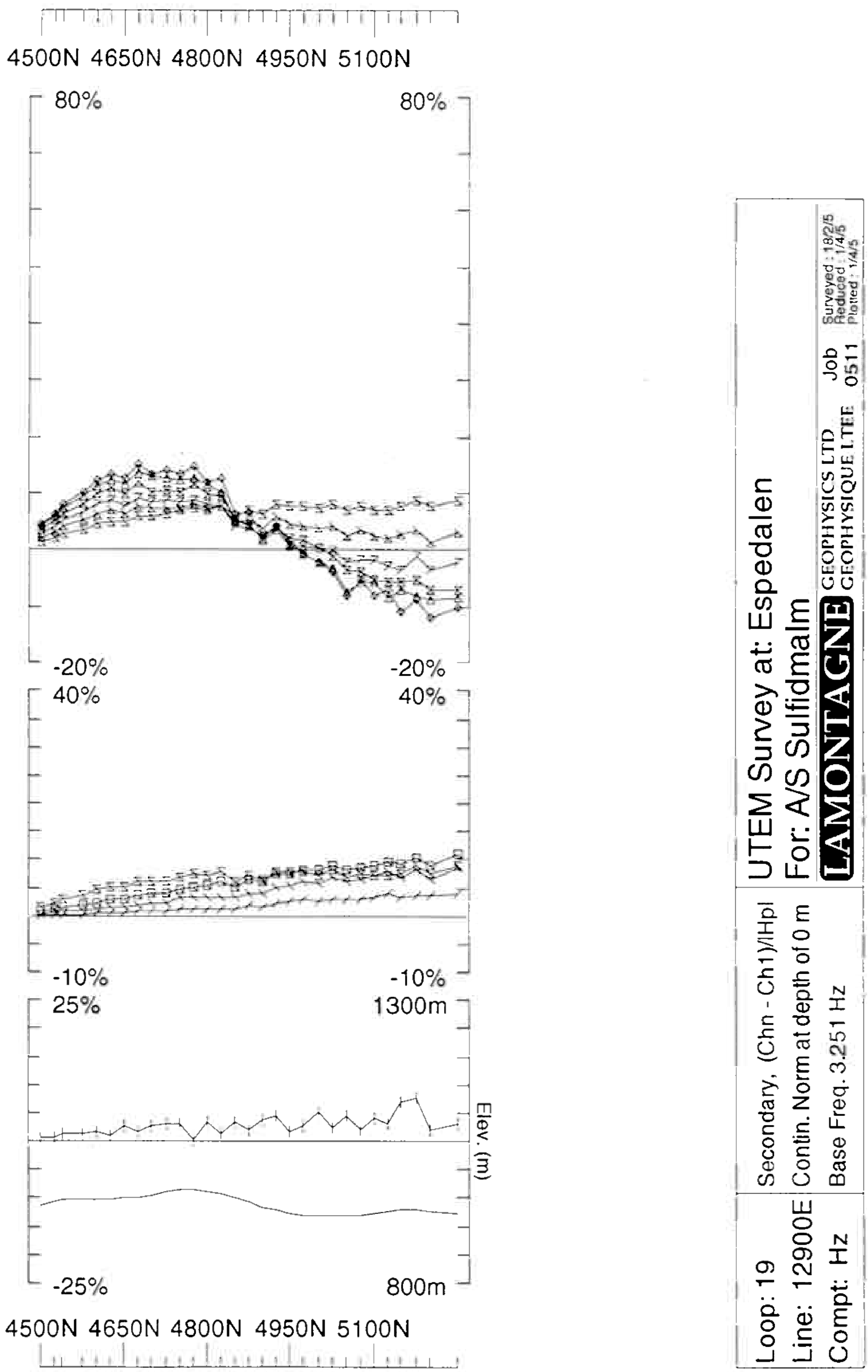
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5


4500N 4650N 4800N 4950N 5100N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
4500N 4650N 4800N 4950N 5100N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD. GEOPHYSIQUE LTEE
Job 0511
Surveyed : 18/2/5
Reduced : 1/4/5
Plotted : 1/4/5
Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 19
Line: 12900E
Compt: Hz

Espedalen

Loop 20

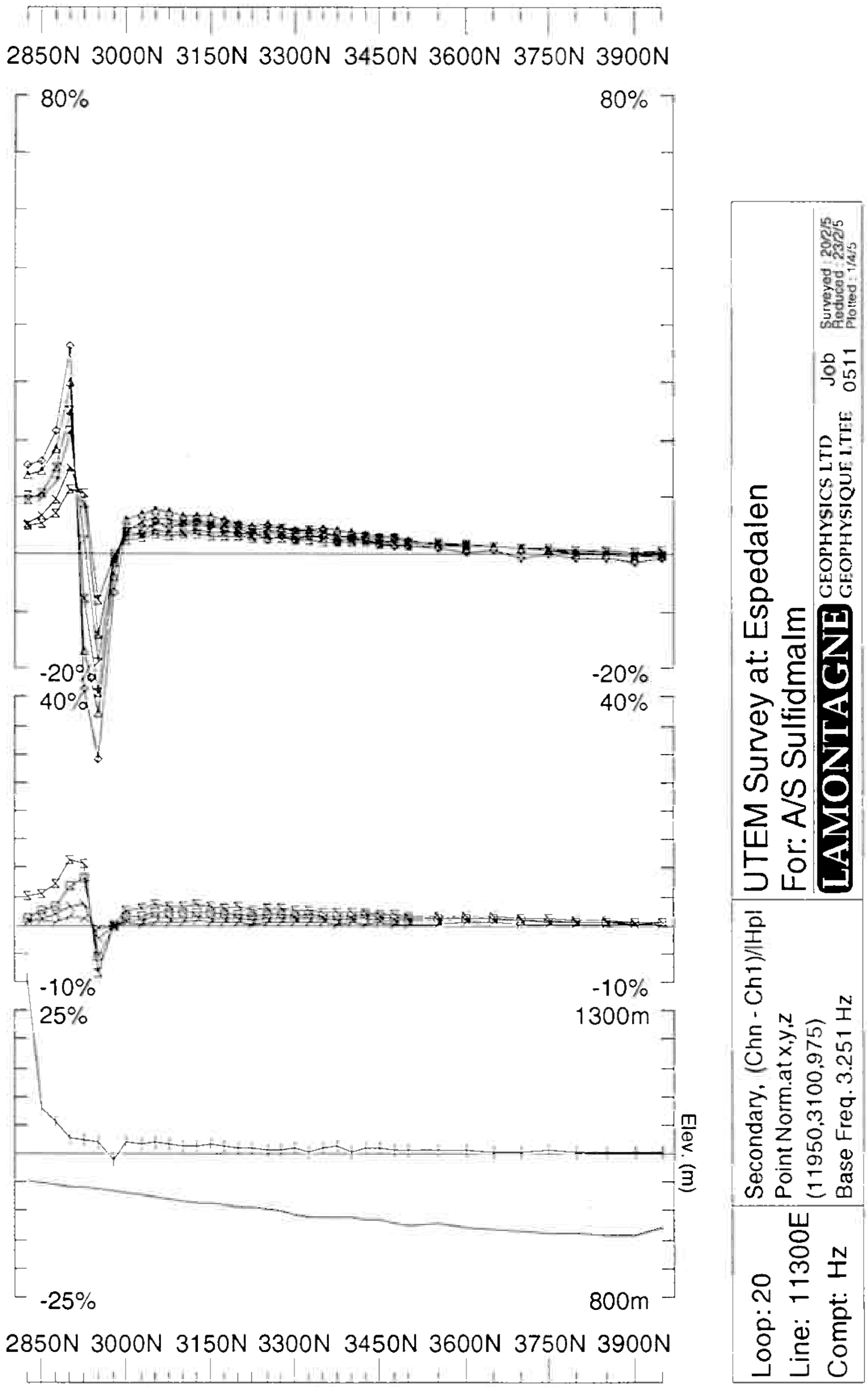
Hz
@3.251 Hz frequency

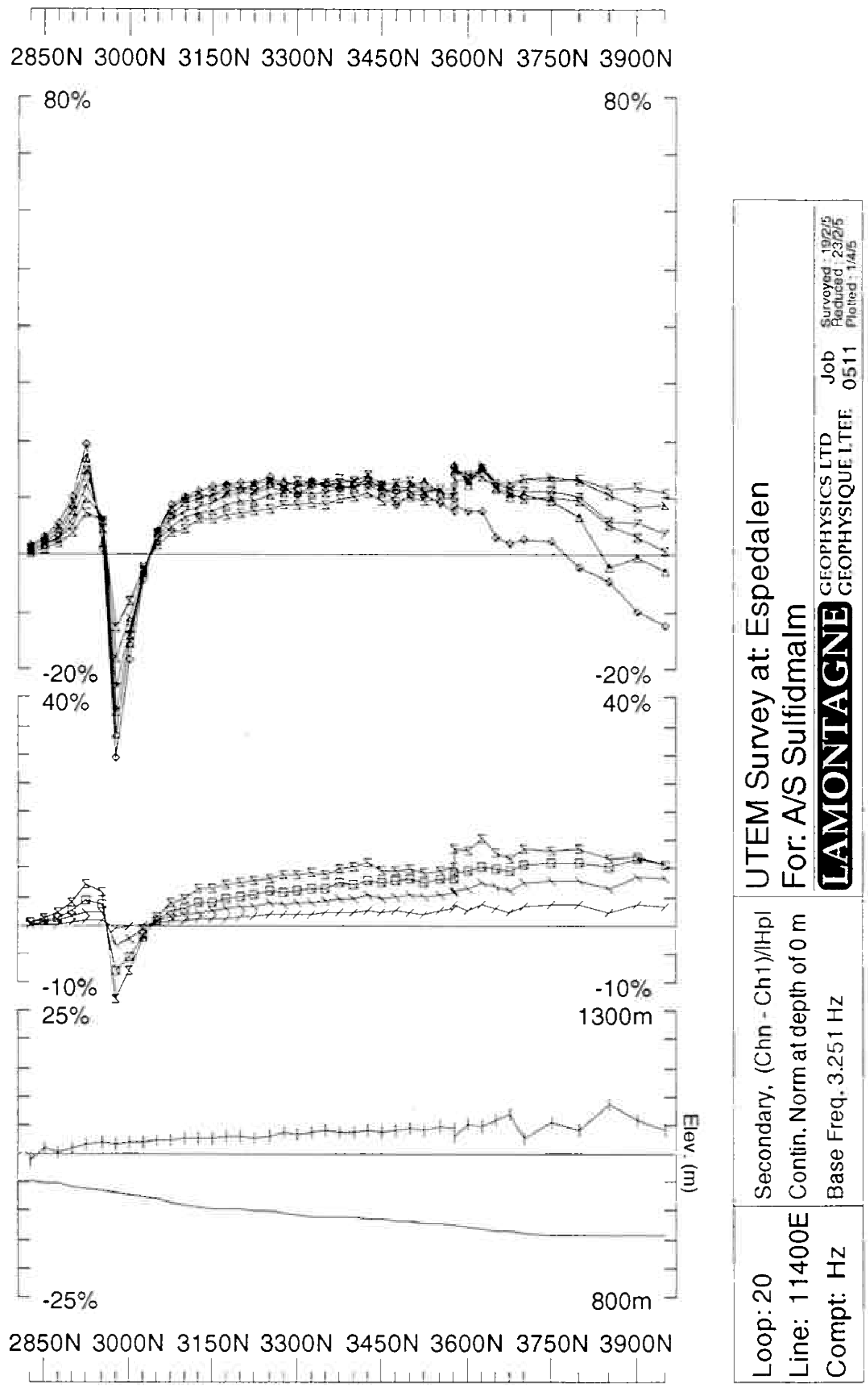
point norm
@
(x,y,z) = (11950E,3100N, 975 m.a.s.l.)

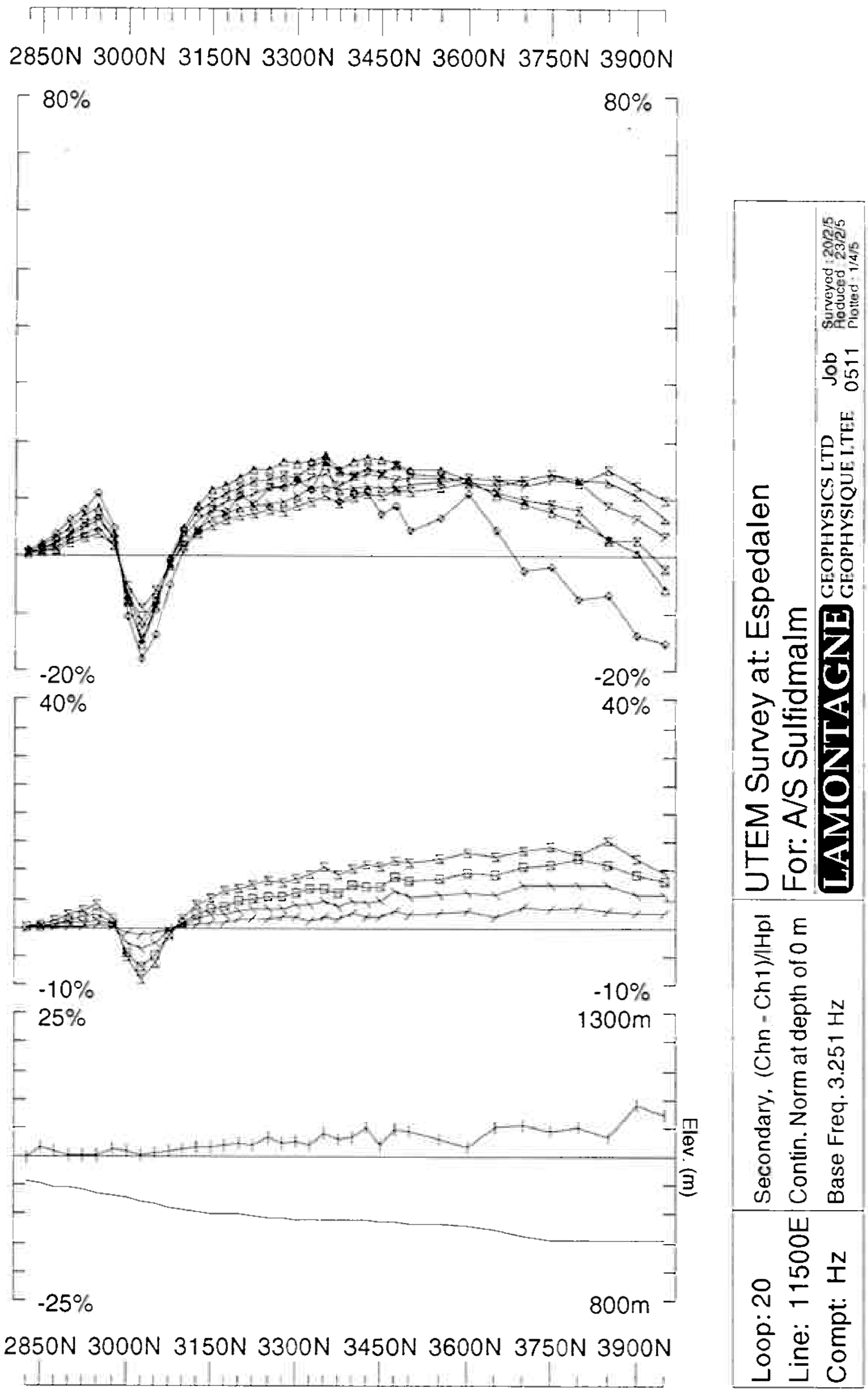
Ch1 reduced

Loop 20	Line 11300E	2800N - 3950N	1150m
	Line 11400E	2800N - 3950N	1150m
	Line 11500E	2800N - 3950N	1150m
	Line 11600E	2800N - 3950N	1150m
	Line 11700E	2800N - 3950N	1150m
	Line 11800E	2800N - 3950N	1150m
	Line 11900E	2800N - 3950N	1150m
	Line 12000E	2800N - 3950N	1150m
	Line 12100E	2800N - 3950N	1150m
	Line 12200E	2800N - 3650N	850m
	Line 12300E	2800N - 3650N	850m
	Line 12400E	2800N - 3650N	850m
	Line 12500E	2800N - 3650N	850m
	Line 12600E	2800N - 3650N	850m
	Line 12700E	3100N - 3700N	600m
	Line 12800E	3100N - 3700N	600m
	Espedalen	Loop 20 Total	15800m

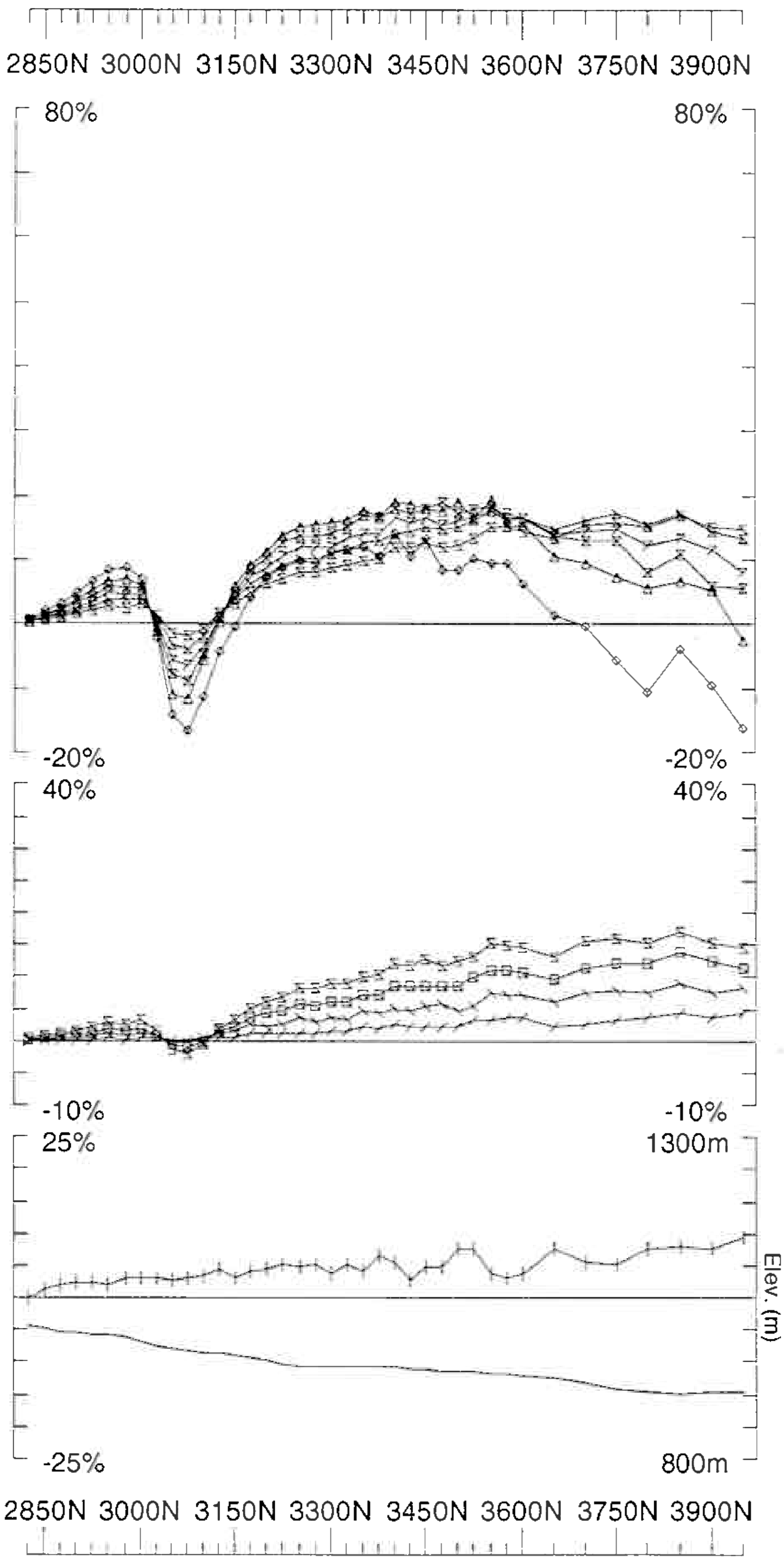
Loop 20 - point norm


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5
Secondary, (Chn - Ch1)/|Hp|
Point Norm.at x,y,z
(11950,3100,975)
Base Freq. 3.251 Hz
Loop: 20
Line: 11300E
Compt: Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job 0511
Surveyed : 19/2/5
Reduced : 23/2/5
Plotted : 1/4/5
Loop: 20
Line: 11400E
Compt: Hz
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 20
Line: 11500E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

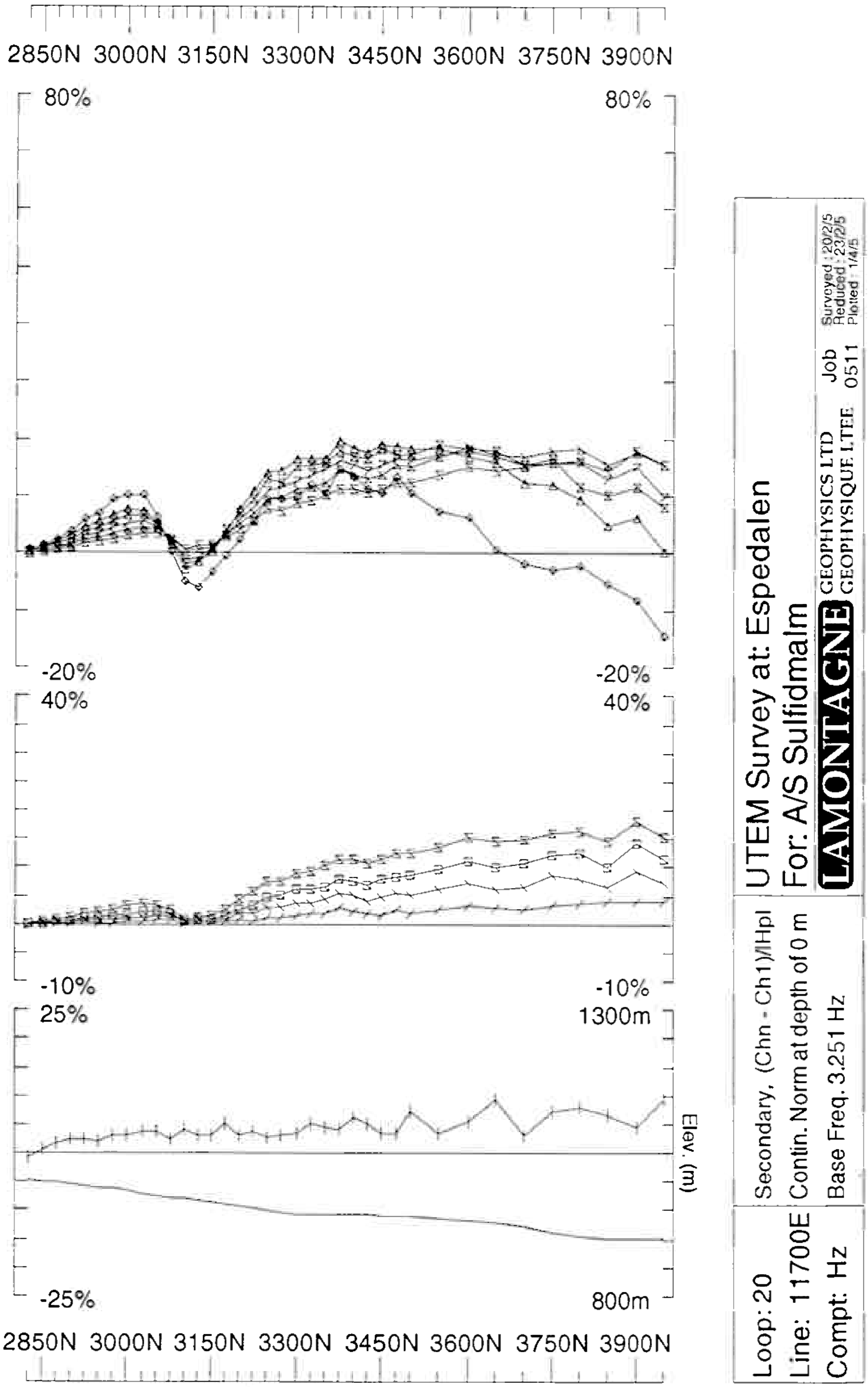
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

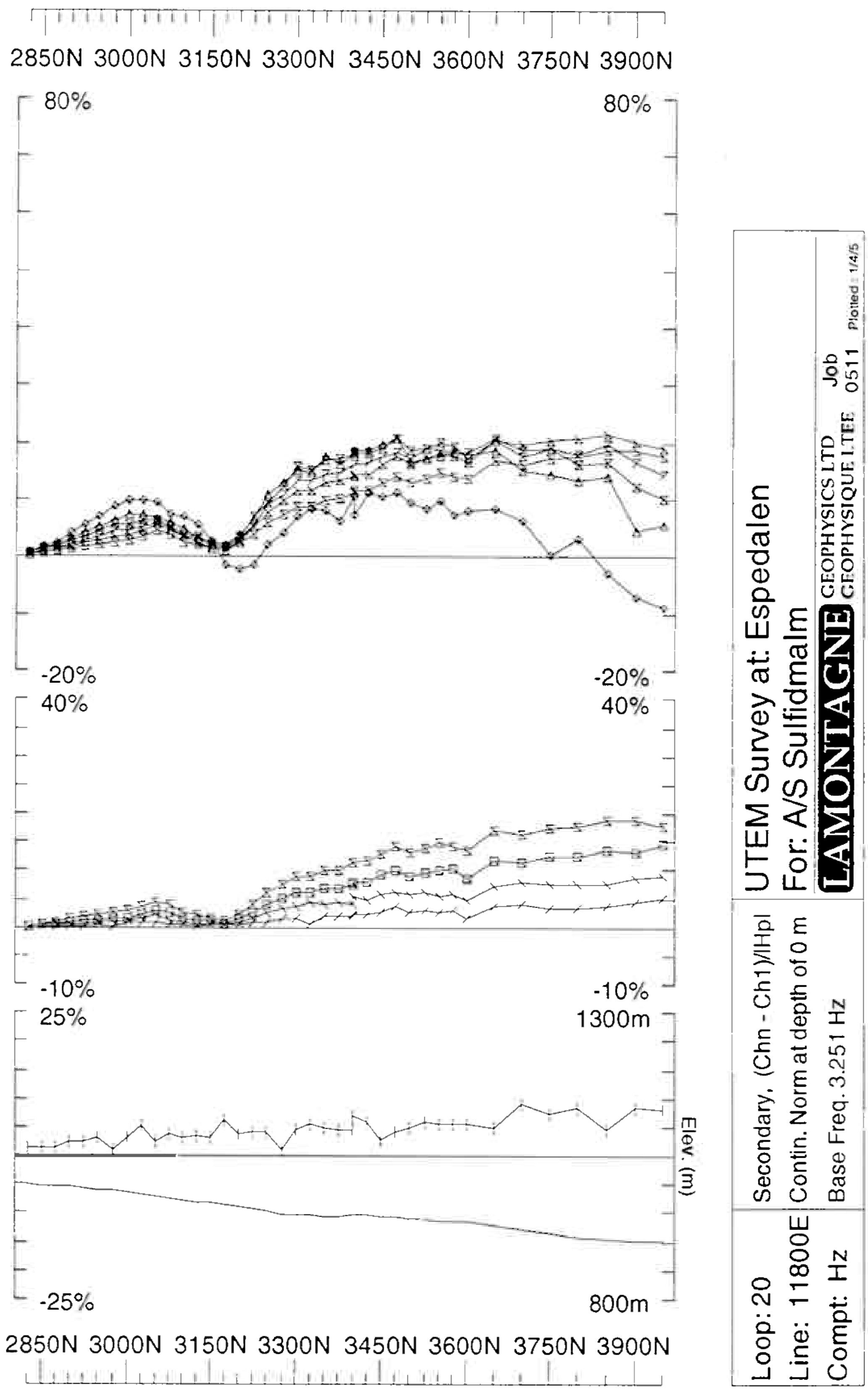
Job 0511

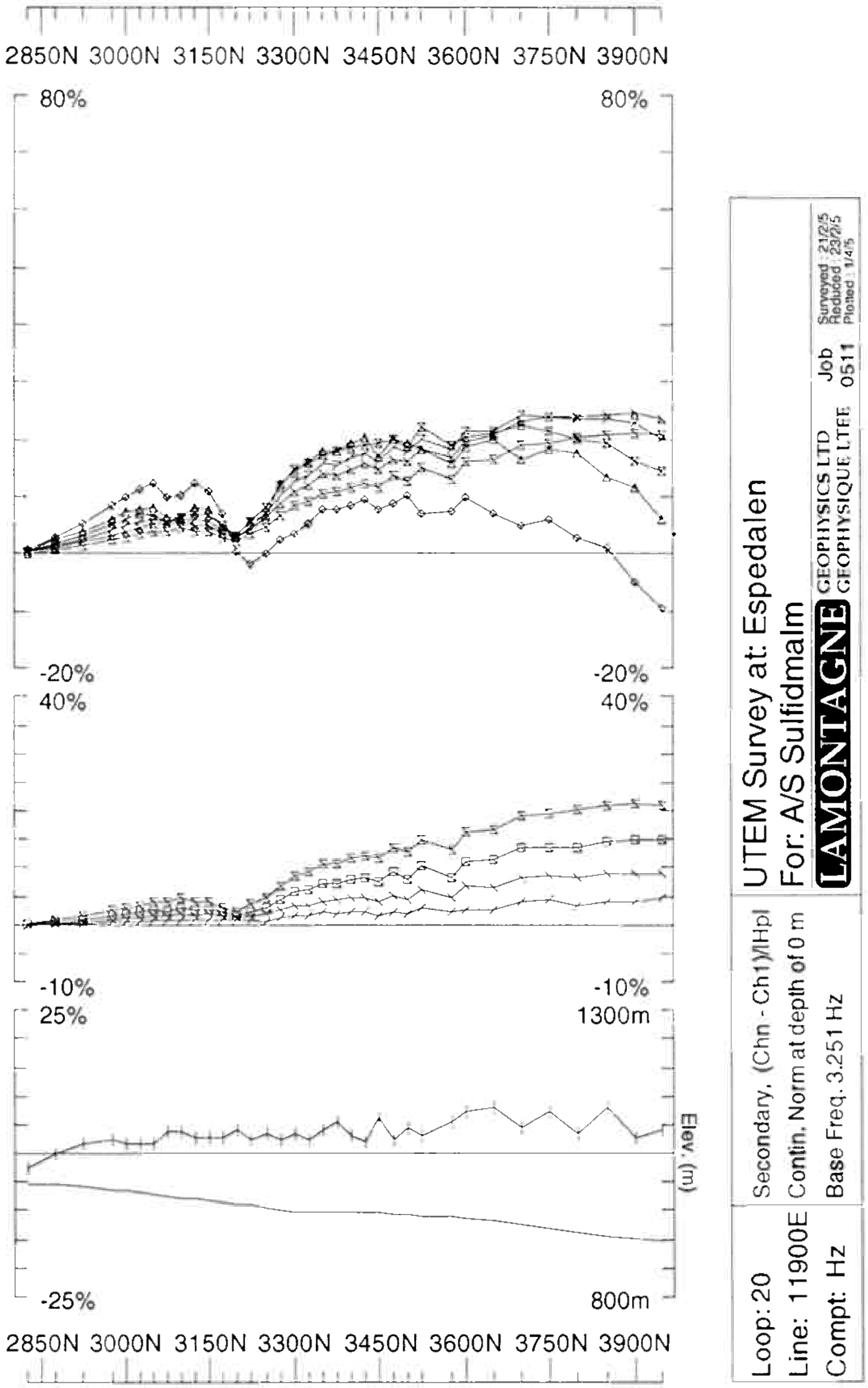
Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5

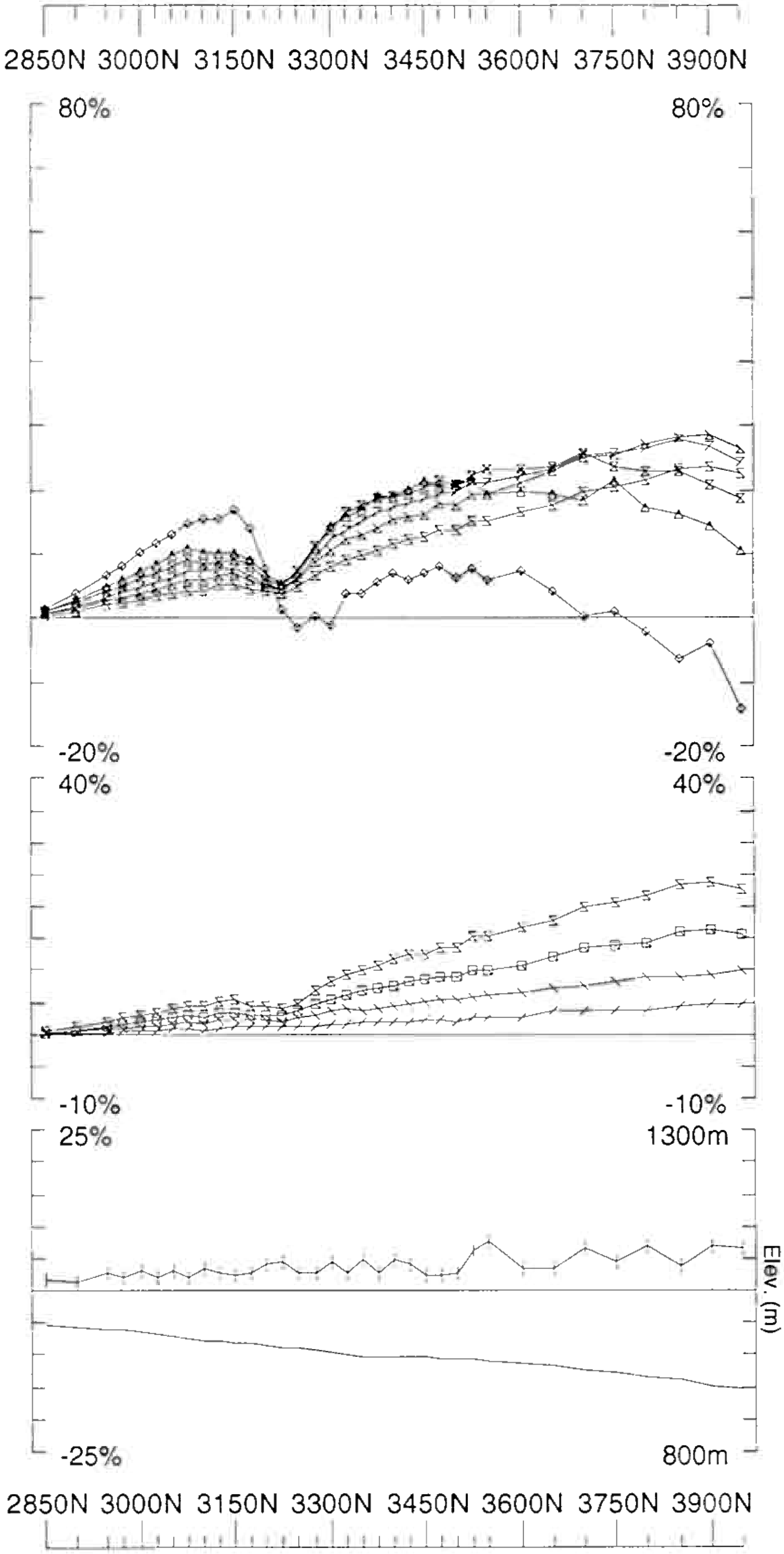
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 11600E
Compt: Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
Loop: 20
Line: 11700E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Surveyed : 20/2/5
Reduced : 23/2/5
Plotted : 1/4/5


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted : 1/4/5
Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 20
Line: 11800E
Compt: Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5
Loop: 20
Line: 11900E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

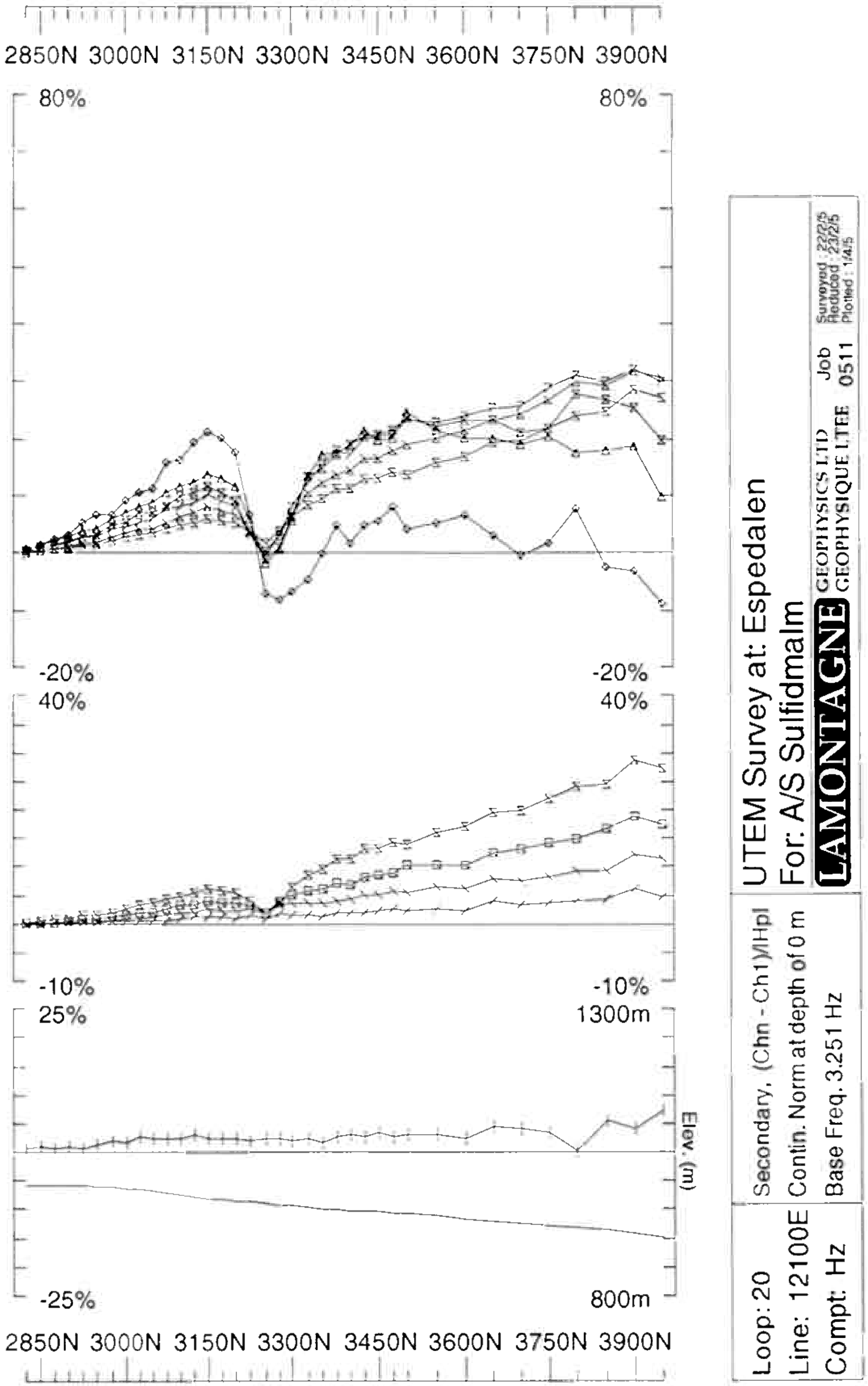
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

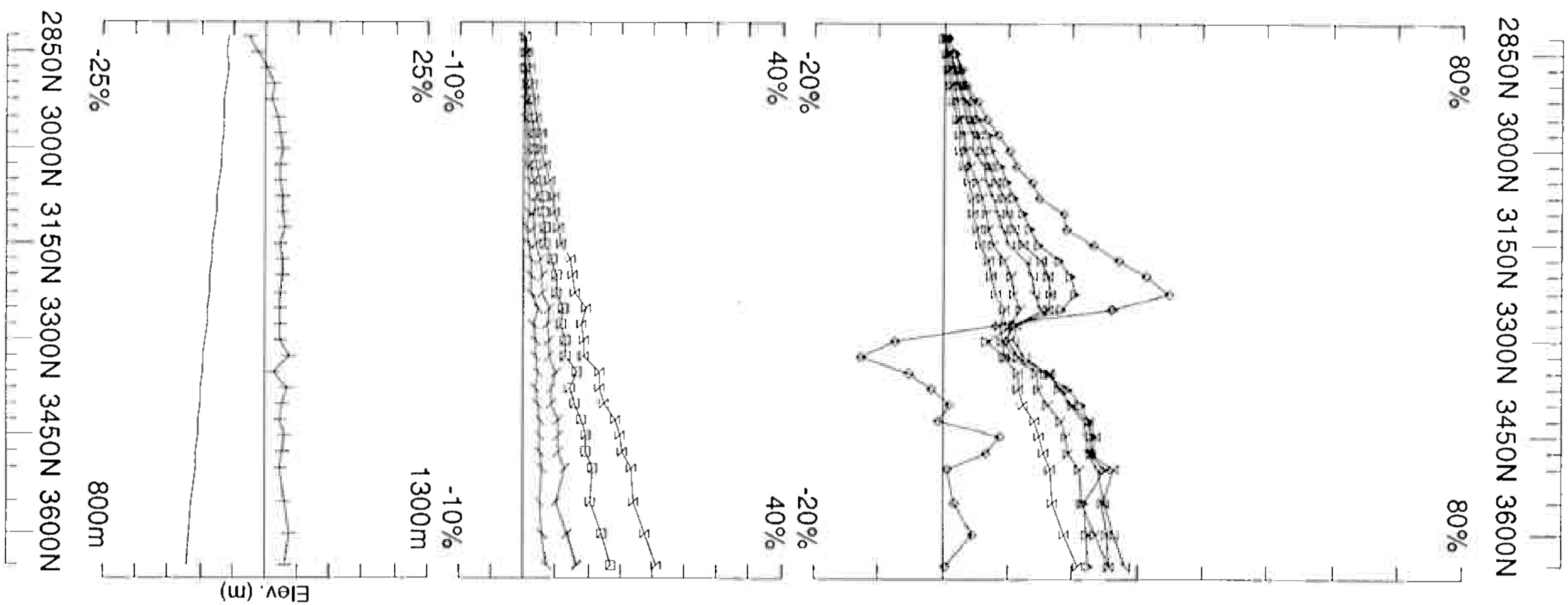
Job 0511

Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5

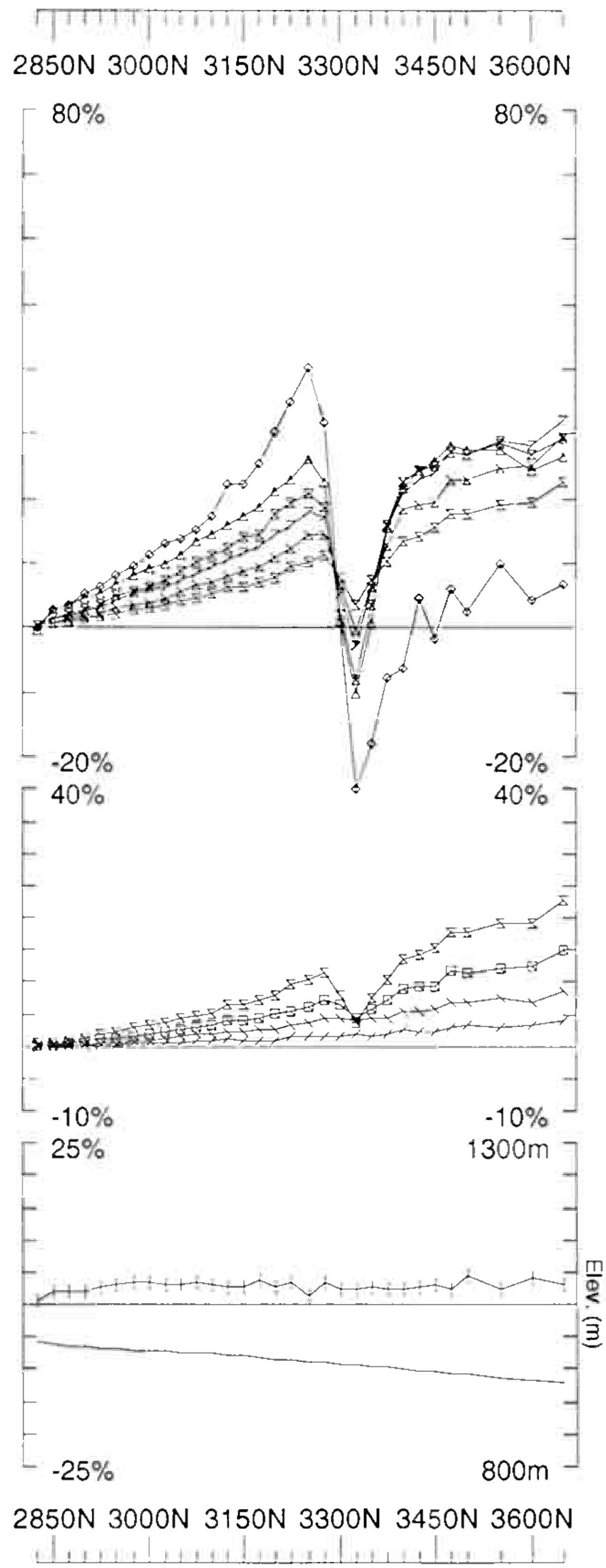
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12000E
Compt: Hz


2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1300m
Elev. (m)
-25%
800m
2850N 3000N 3150N 3300N 3450N 3600N 3750N 3900N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Surveyed: 22/2/5
Reduced: 23/2/5
Plotted: 1/4/5
Loop: 20
Line: 12100E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 20 Line: 12200E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 22/2/5 Reduced : 23/2/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

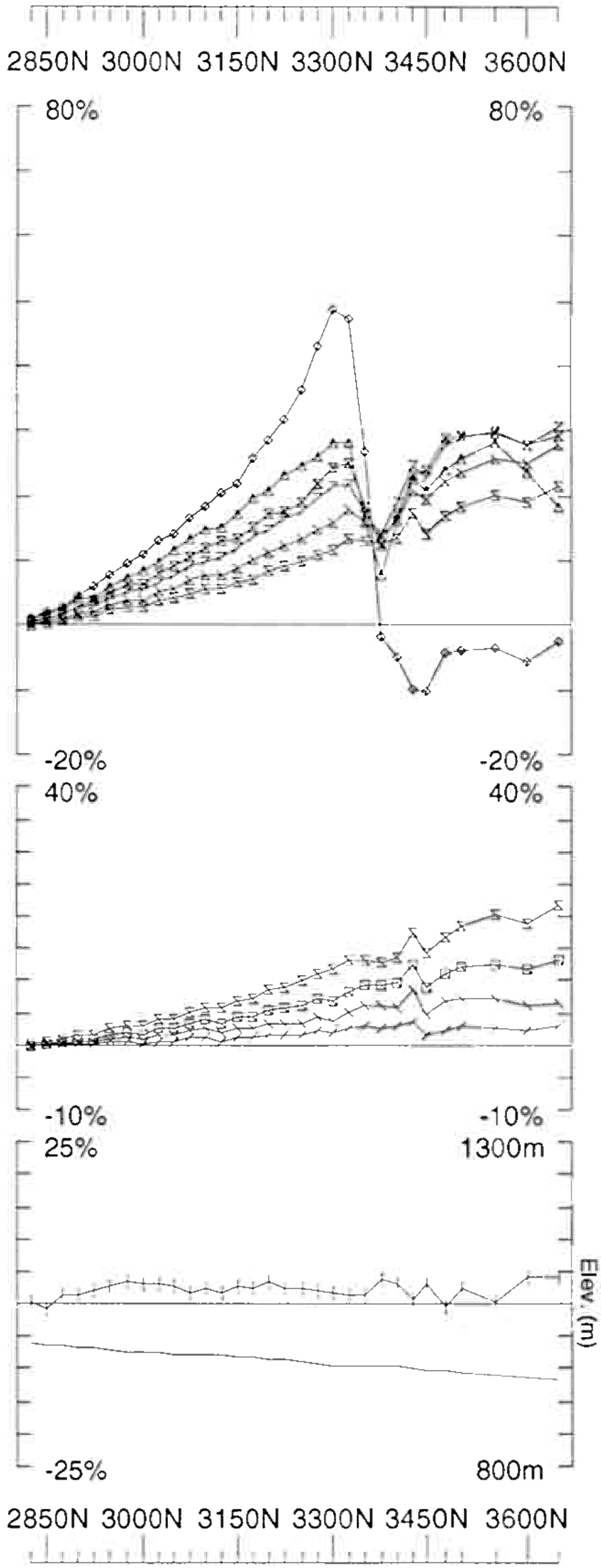
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 22/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12300E
Compt: Hz



Loop: 20
Line: 12400E
Compt: Hz

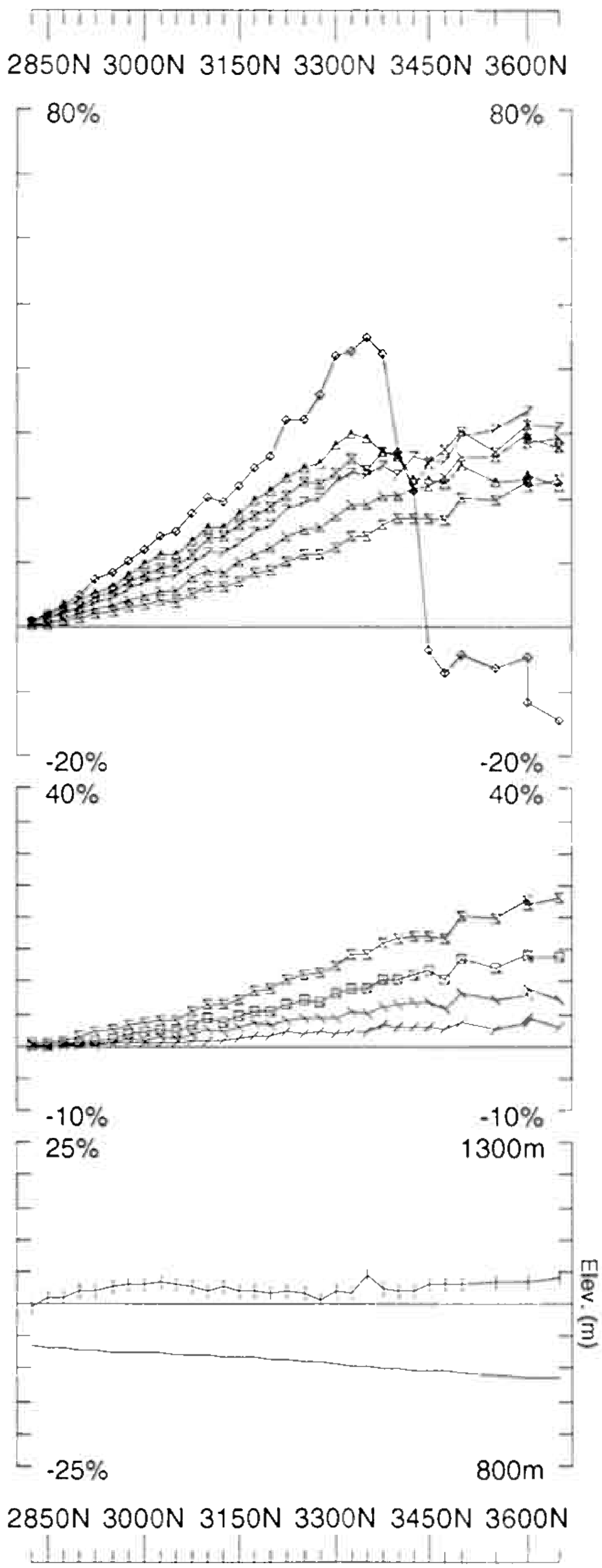
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

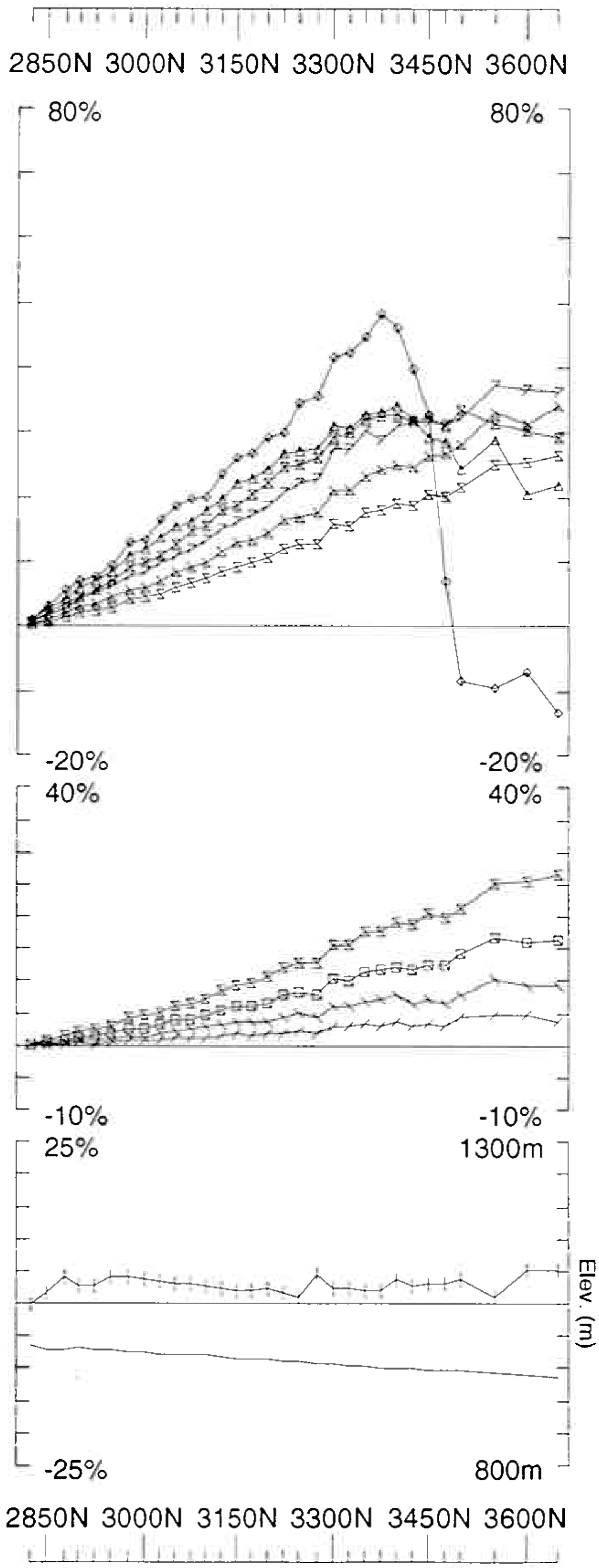
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 21/2/5
Reduced: 23/2/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12500E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

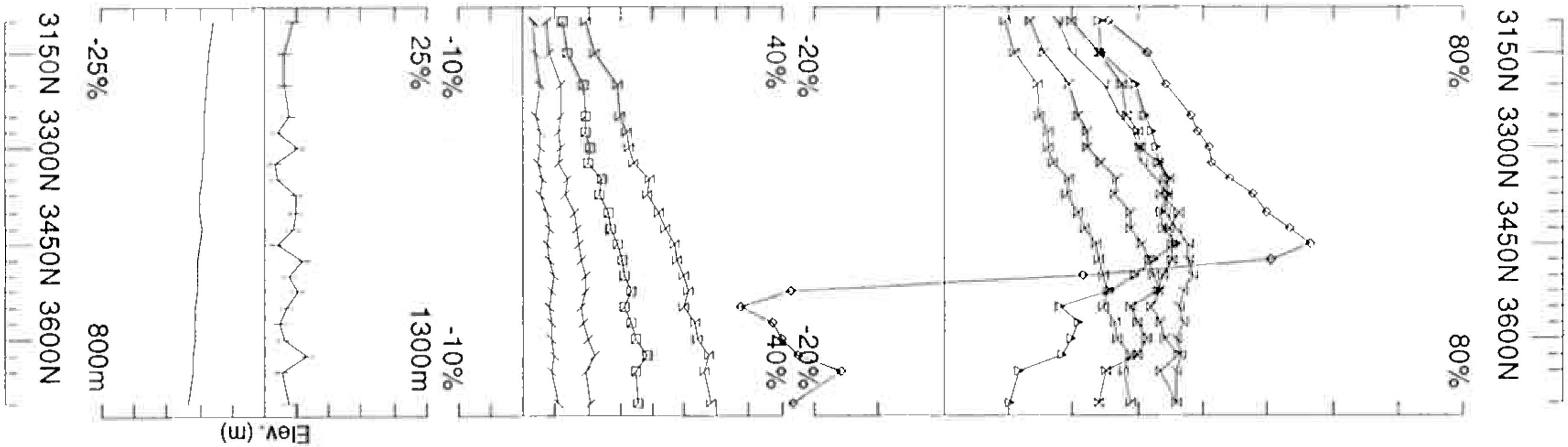
LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE

Job 0511

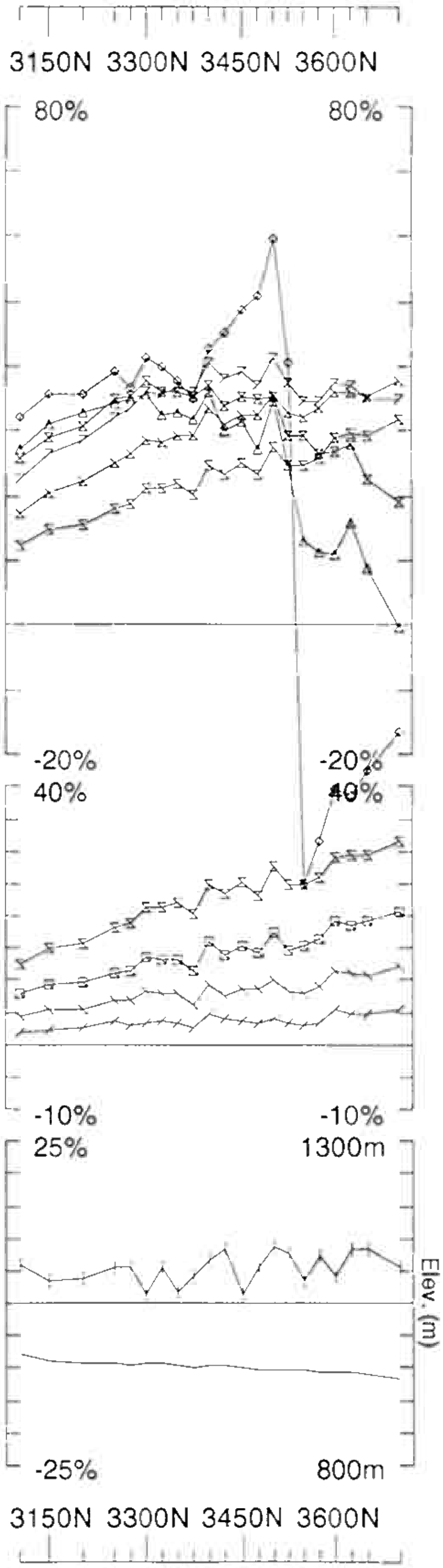
Surveyed : 21/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 20
Line: 12600E
Compt: Hz



Loop: 20 Line: 12700E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 23/2/5 Reduced: 23/2/5 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 23/2/5
Reduced : 23/2/5
Plotted : 1/4/5

Loop: 20
Line: 12800E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Espedalen

Loop 21

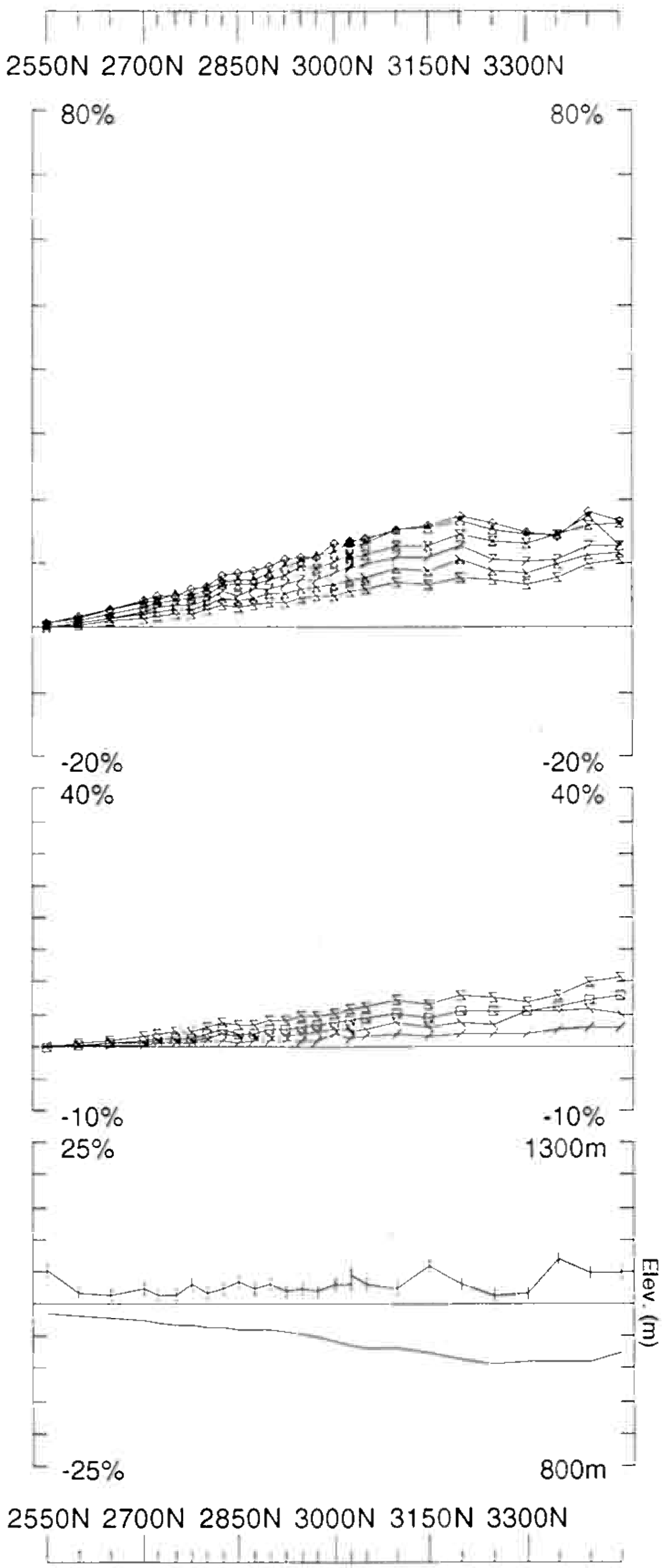
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (10650E,2825N, 1010 m.a.s.l.)

Ch1 reduced

Loop 21	Line 10000E	2525N - 3450N	925m
	Line 10200E	2525N - 3450N	925m
	Line 10400E	2525N - 3450N	925m
	Line 10600E	2525N - 3450N	925m
	Line 10800E	2525N - 3450N	925m
	Line 11000E	2525N - 3450N	925m
	Line 11200E	2525N - 3200N	675m
	Line 11300E	2525N - 3450N	925m
	Espedalen	Loop 21 Total	7150m

Loop 21 - point norm



Loop: 21
Line: 10200E
Compt: Hz

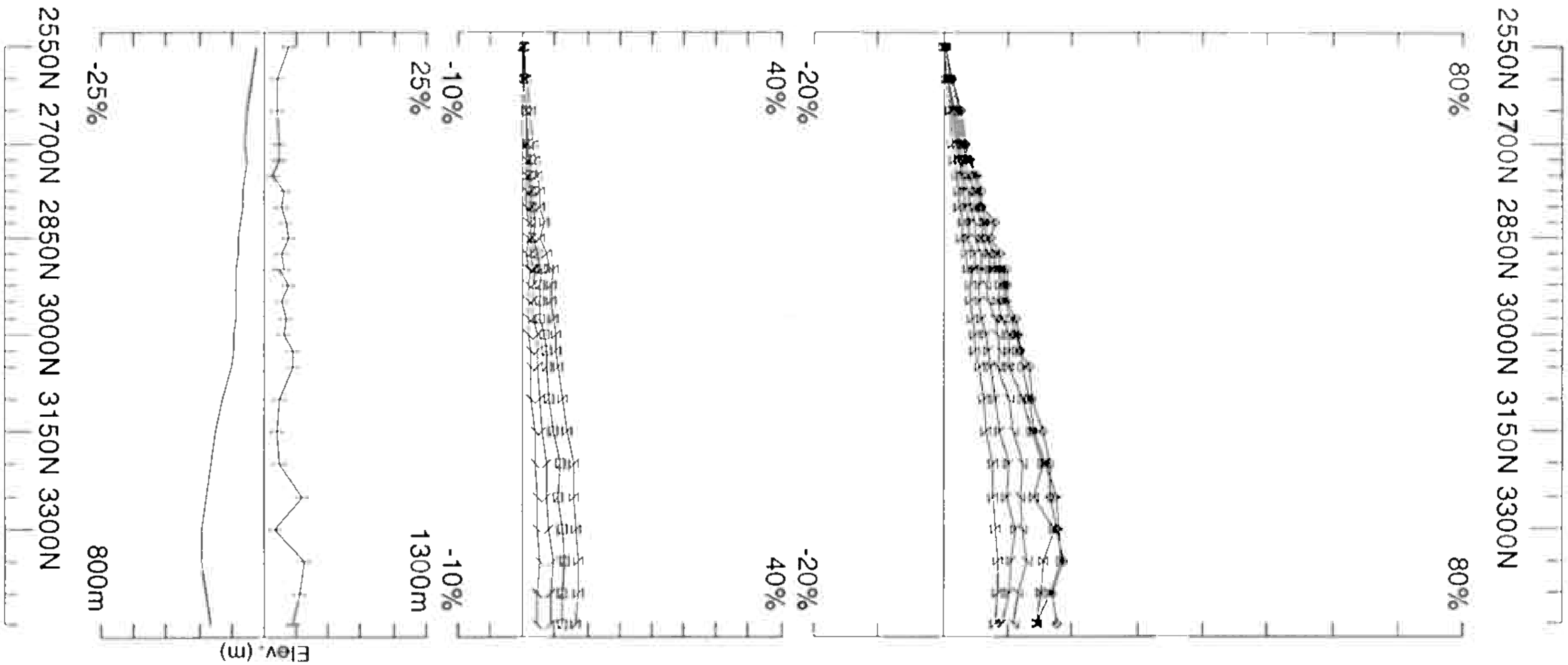
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

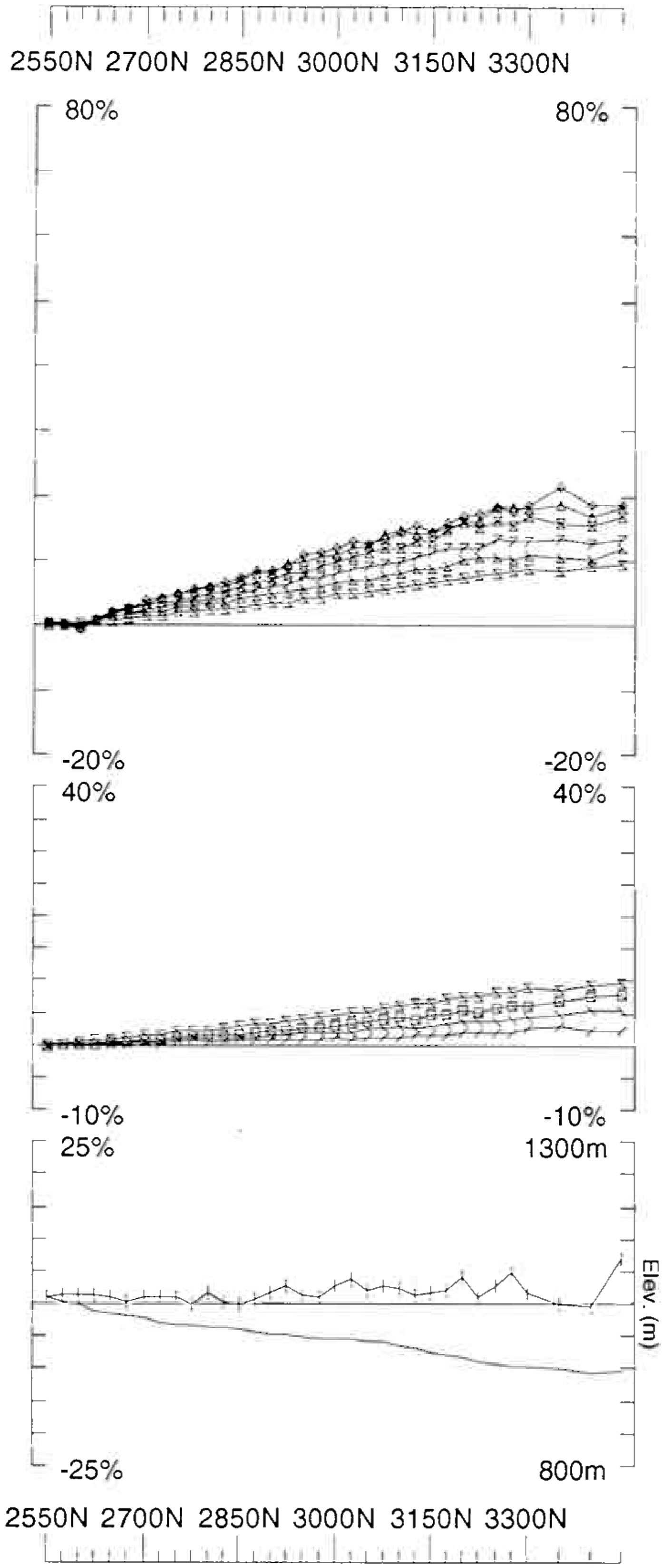
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 27/2/5
Reduced: 27/2/5
Plotted: 1/4/5



Loop: 21	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 10400E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 27/2/5 Reduced: 27/2/5 Plotted: 1/4/5



Loop: 21
Line: 10600E
Compt: Hz

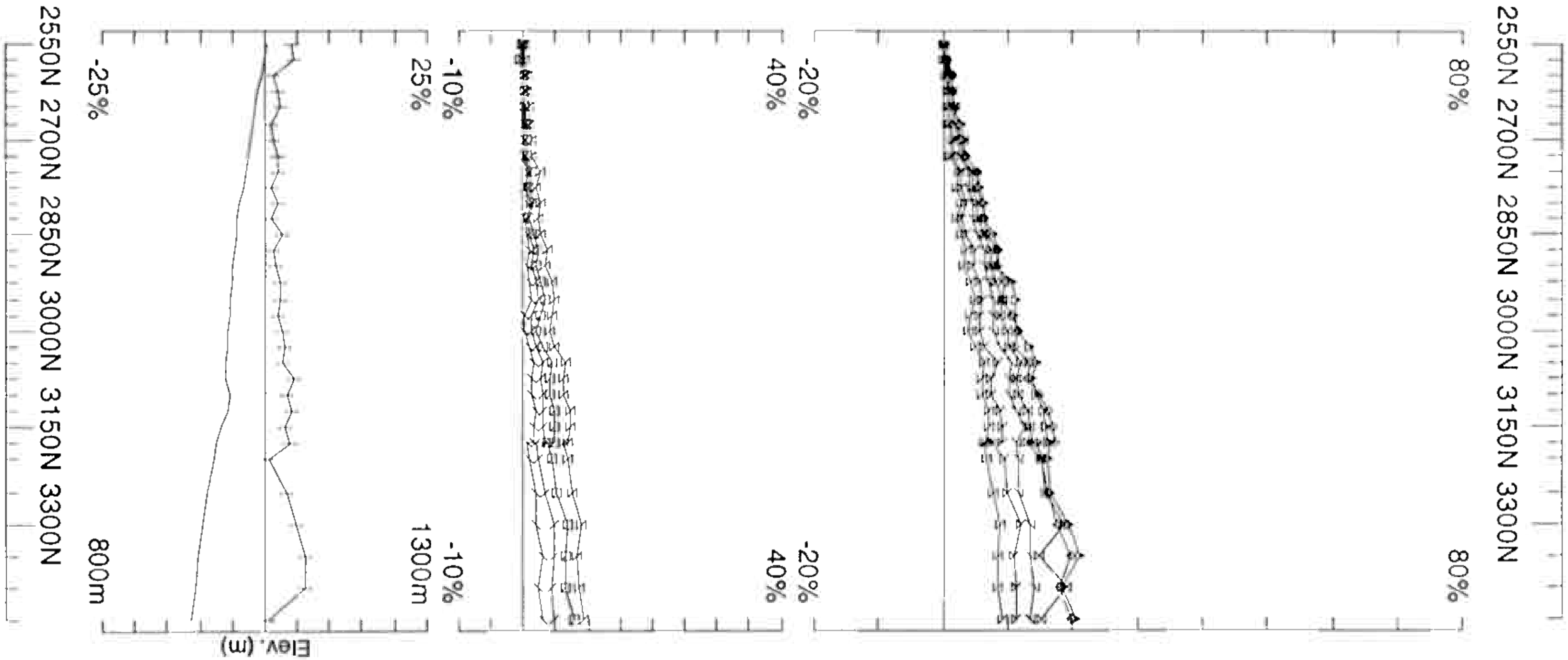
Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

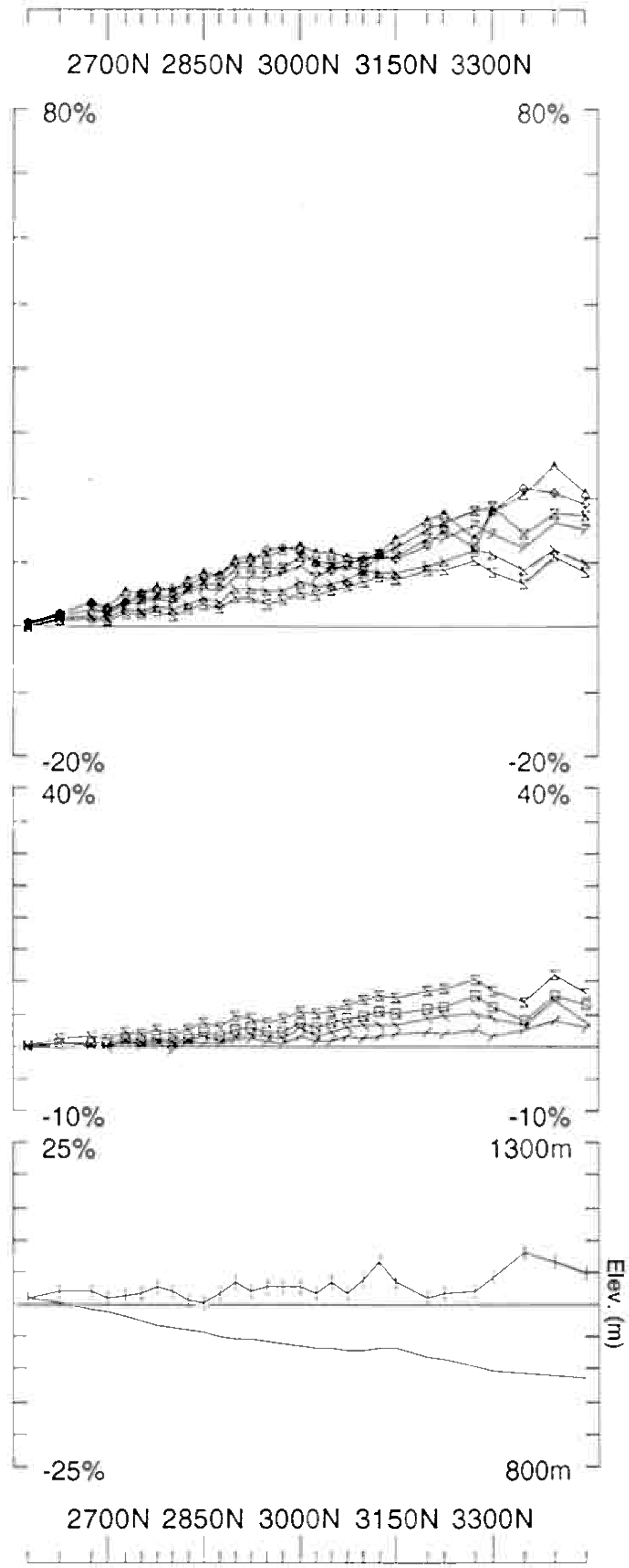
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 26/2/5
Reduced : 27/2/5
Plotted : 1/4/5



Loop: 21 Line: 10800E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

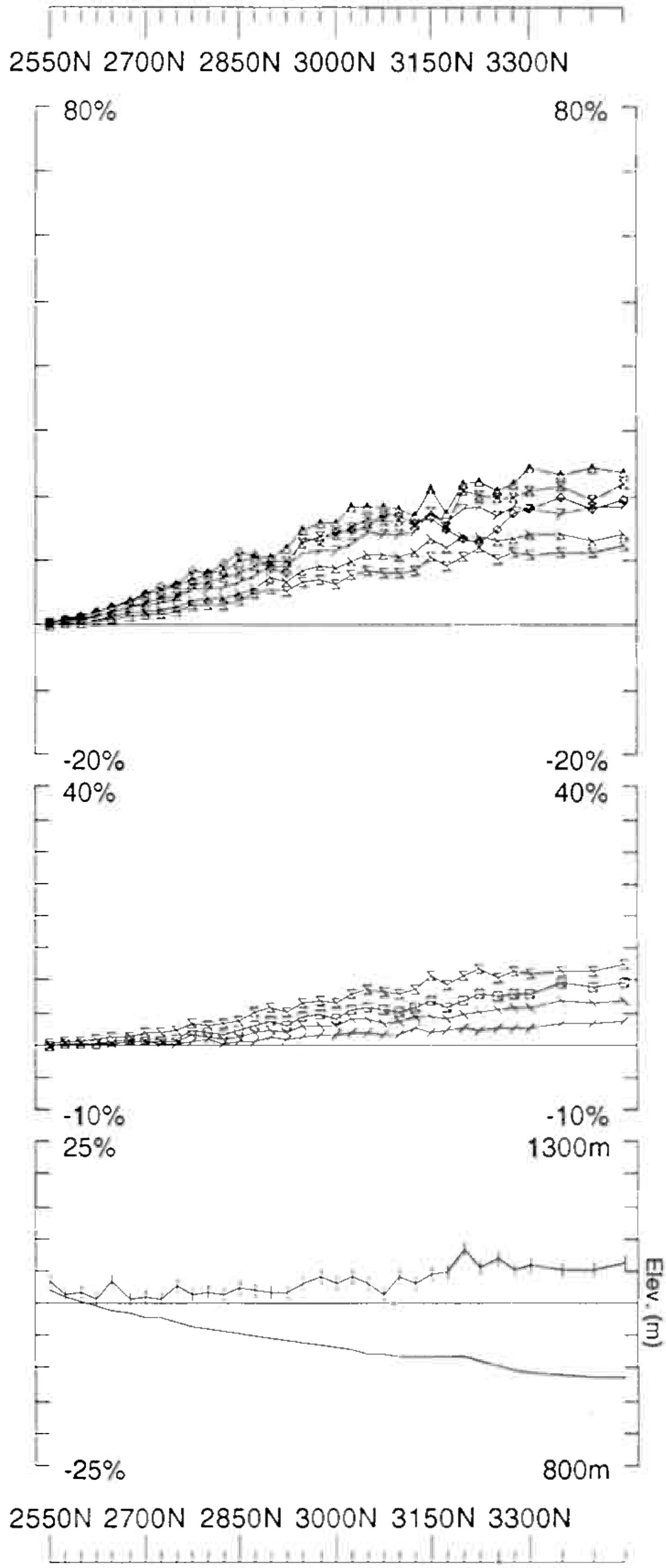
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 27/2/5
Reduced : 27/2/5
Plotted : 1/4/5

Loop: 21
Line: 11000E
Compt: Hz

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 21
Line: 11200E
Compt: Hz

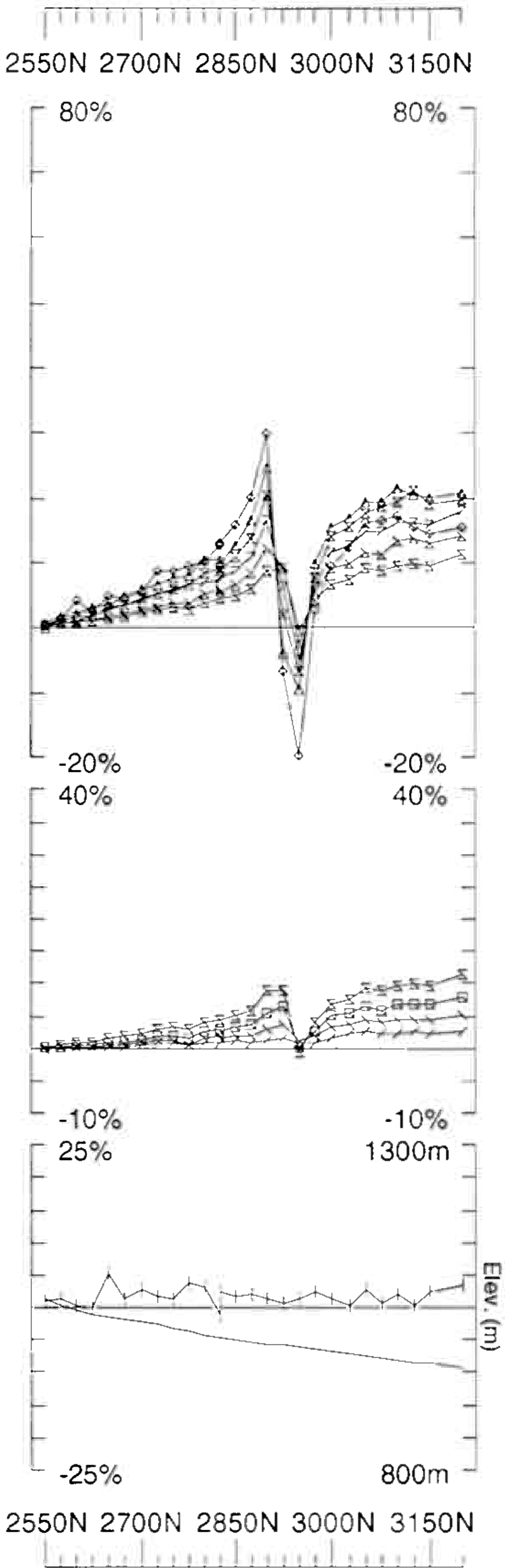
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 26/2/5
Reduced : 27/2/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted : 1/4/5

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 21
Line: 11300E
Compt: Hz

Espedalen

Loop 22

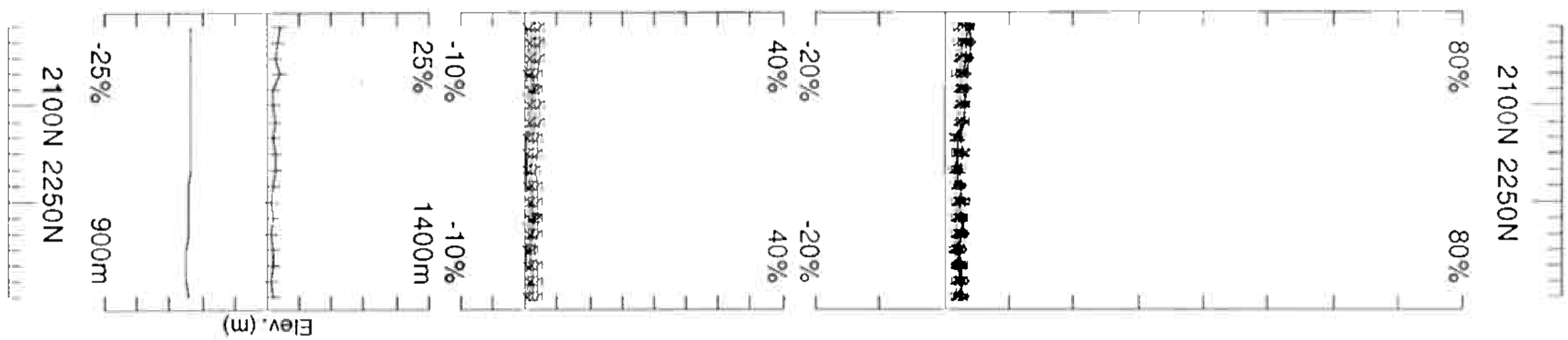
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (9500E,2375N, 1070 m.a.s.l.)

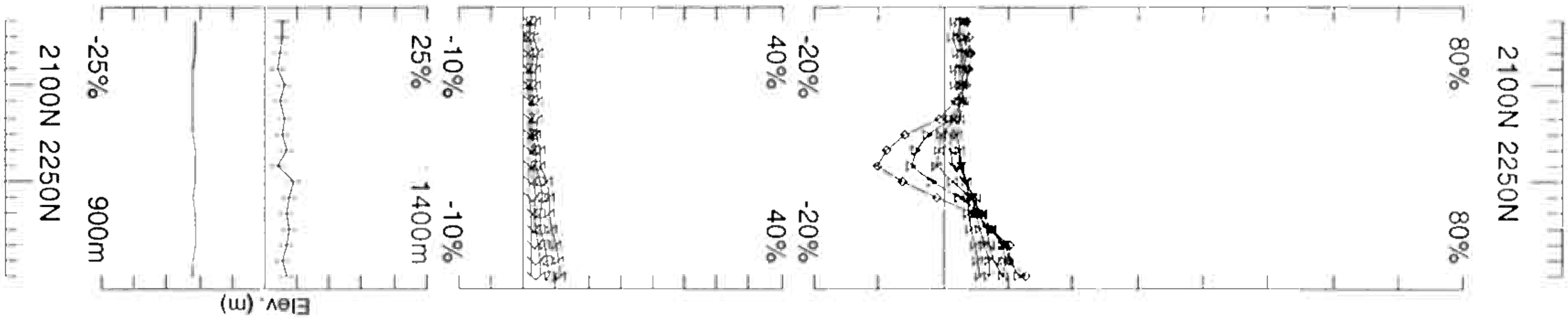
Ch1 reduced

Loop 22	Line 8600E	2000N - 2400N	400m
	Line 8800E	2000N - 2400N	400m
	Line 9000E	2075N - 3300N	1225m
	Line 9200E	2075N - 3475N	1400m
	Line 9400E	2075N - 3550N	1475m
	Line 9600E	2075N - 3400N	1325m
	Line 9800E	2075N - 3400N	1325m
	Line 10000E	2075N - 2700N	625m
	Espedalen	Loop 22 Total	8175m

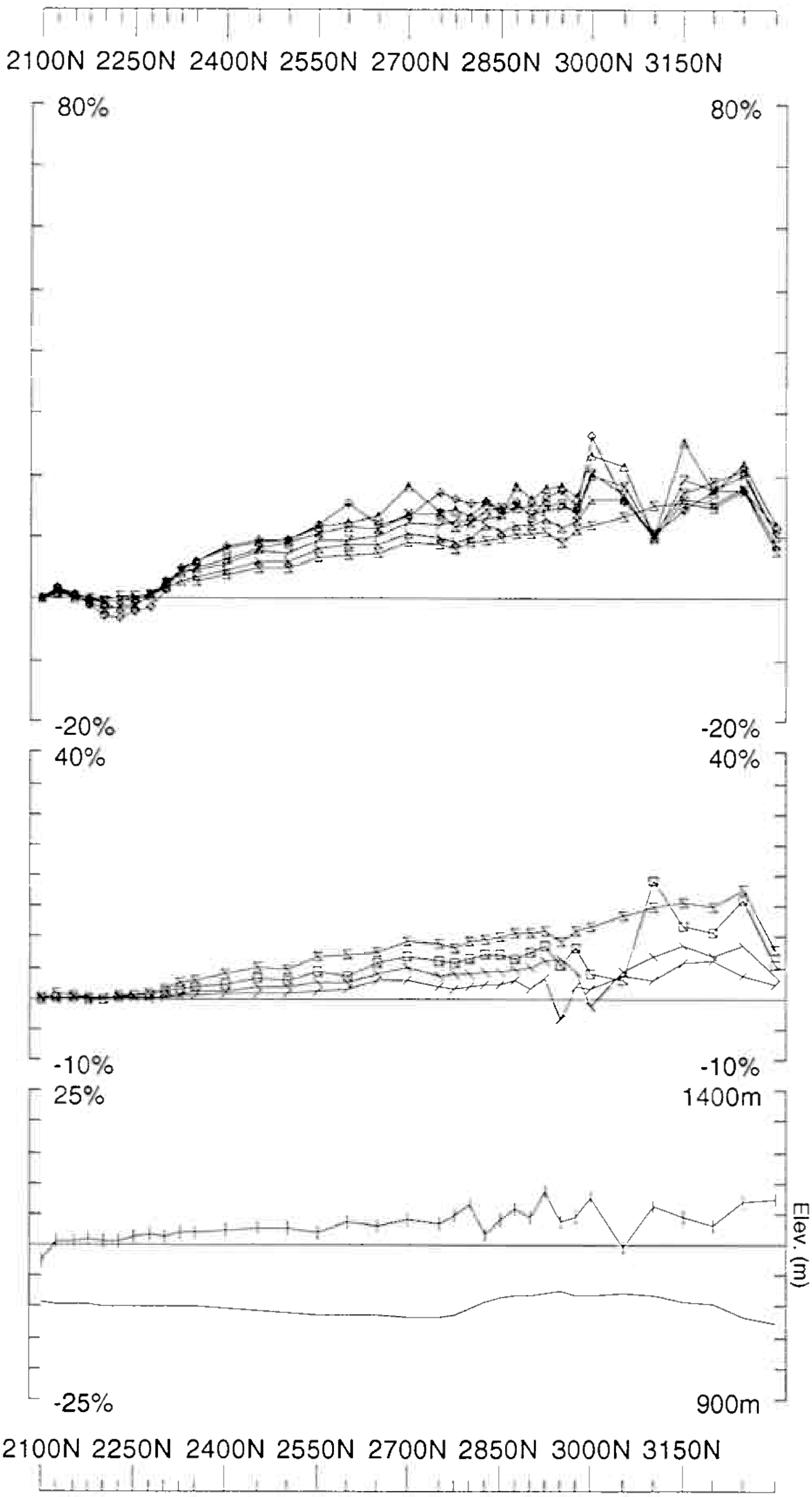
Loop 22 - point norm



Loop: 22 Line: 8600E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Point Norm.at x,y,z (9500,2375,1070) Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 14/3/5 Reduced : 14/3/5 Plotted : 1/4/5



Loop: 22	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
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 0511 Surveyed : 14/3/5 Reduced : 14/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

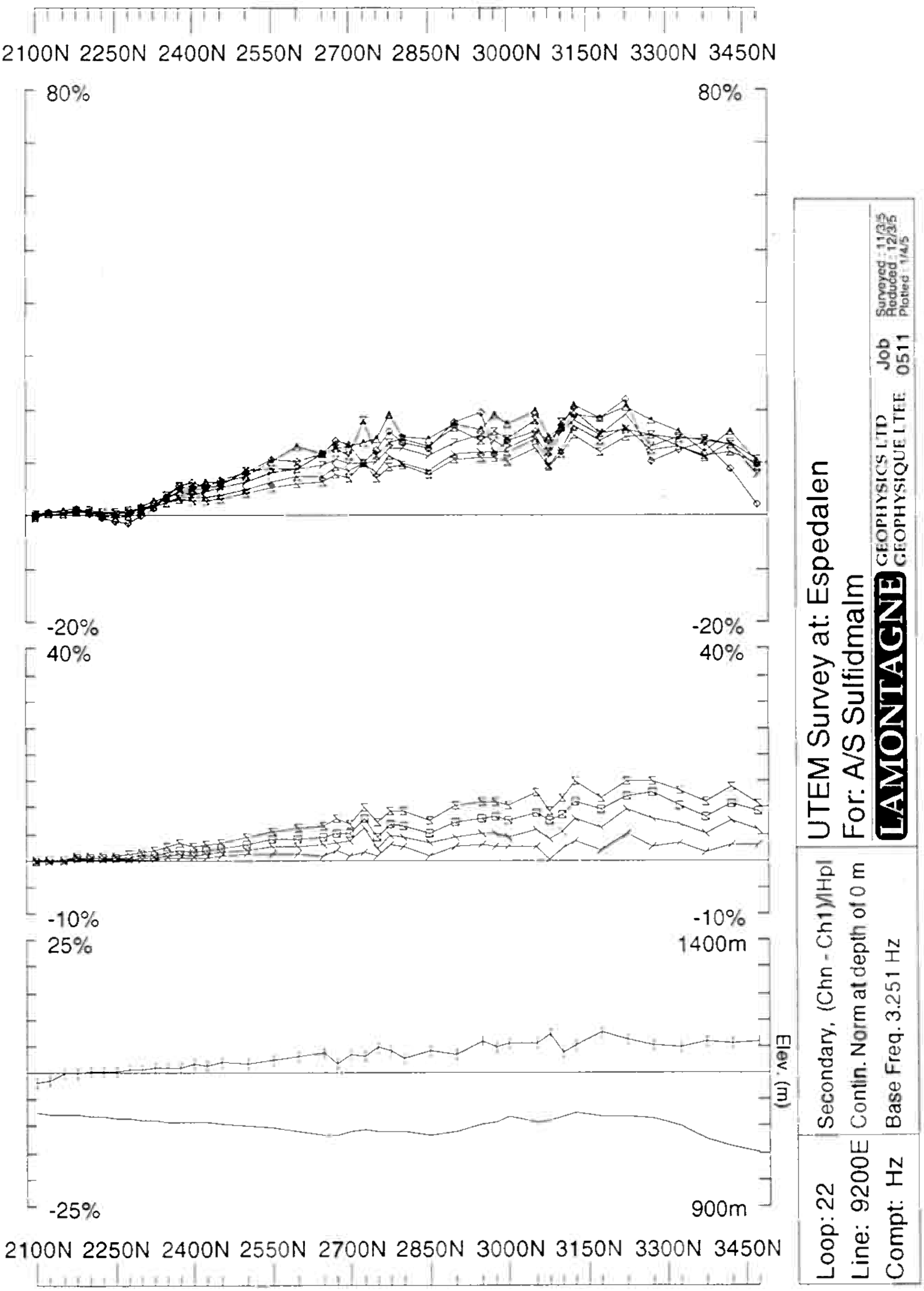
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

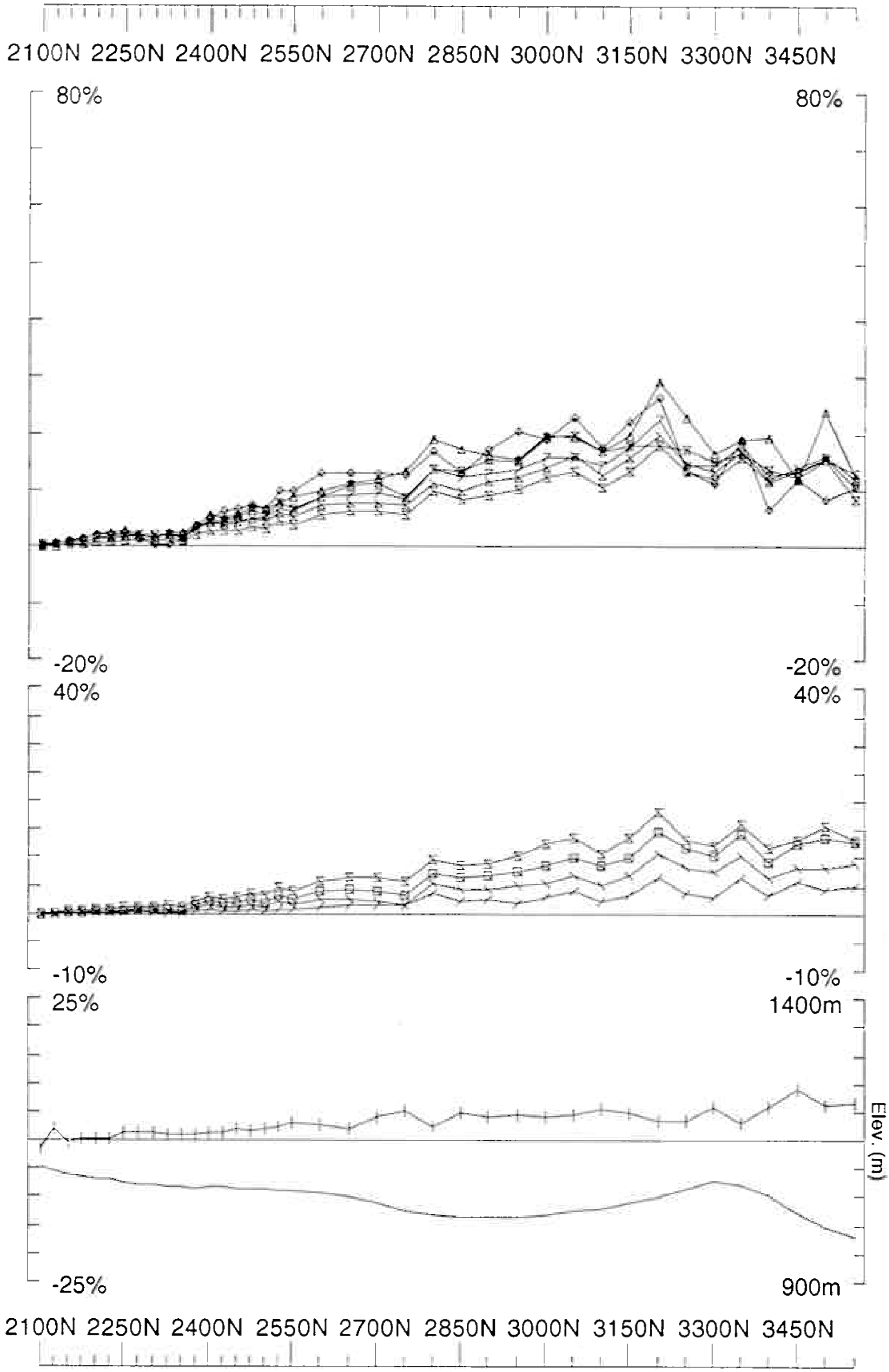
Job 0511

Surveyed : 11/3/5
Reduced : 12/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 22
Line: 9000E
Compt: Hz


2100N 2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N 3450N
80%
-20%
40%
-10%
25%
-25%
1400m
900m
Elev. (m)
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed:
Reduced:
Plotted:
Loop: 22
Line: 9200E
Compt: Hz
Secondary, (Chn - Ch1)/Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen

For: A/S Sulfidmalm

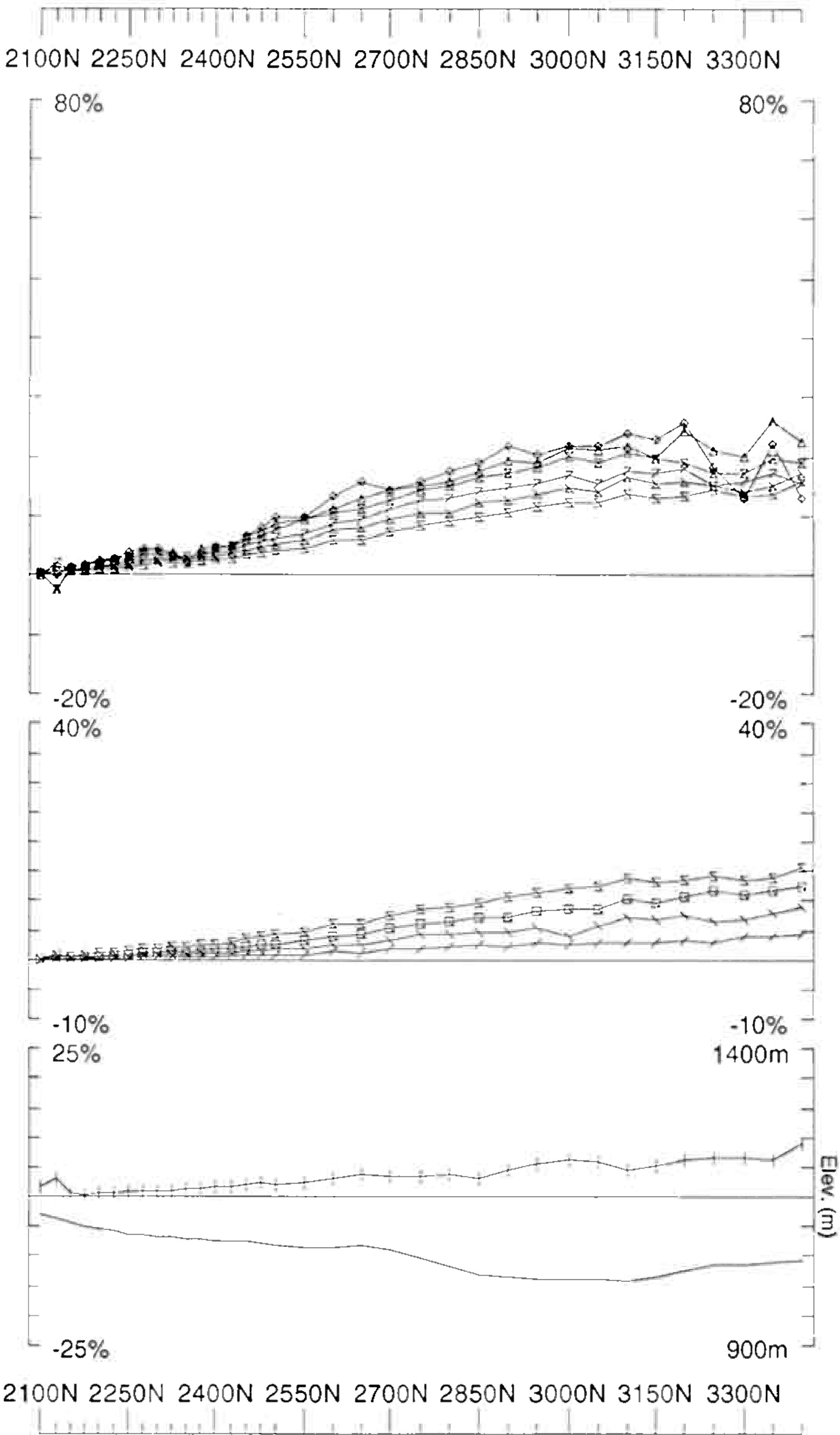
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 12/3/5
Reduced : 12/3/5
Plotted : 1/4/5

Loop: 22
Line: 9400E
Compt: Hz

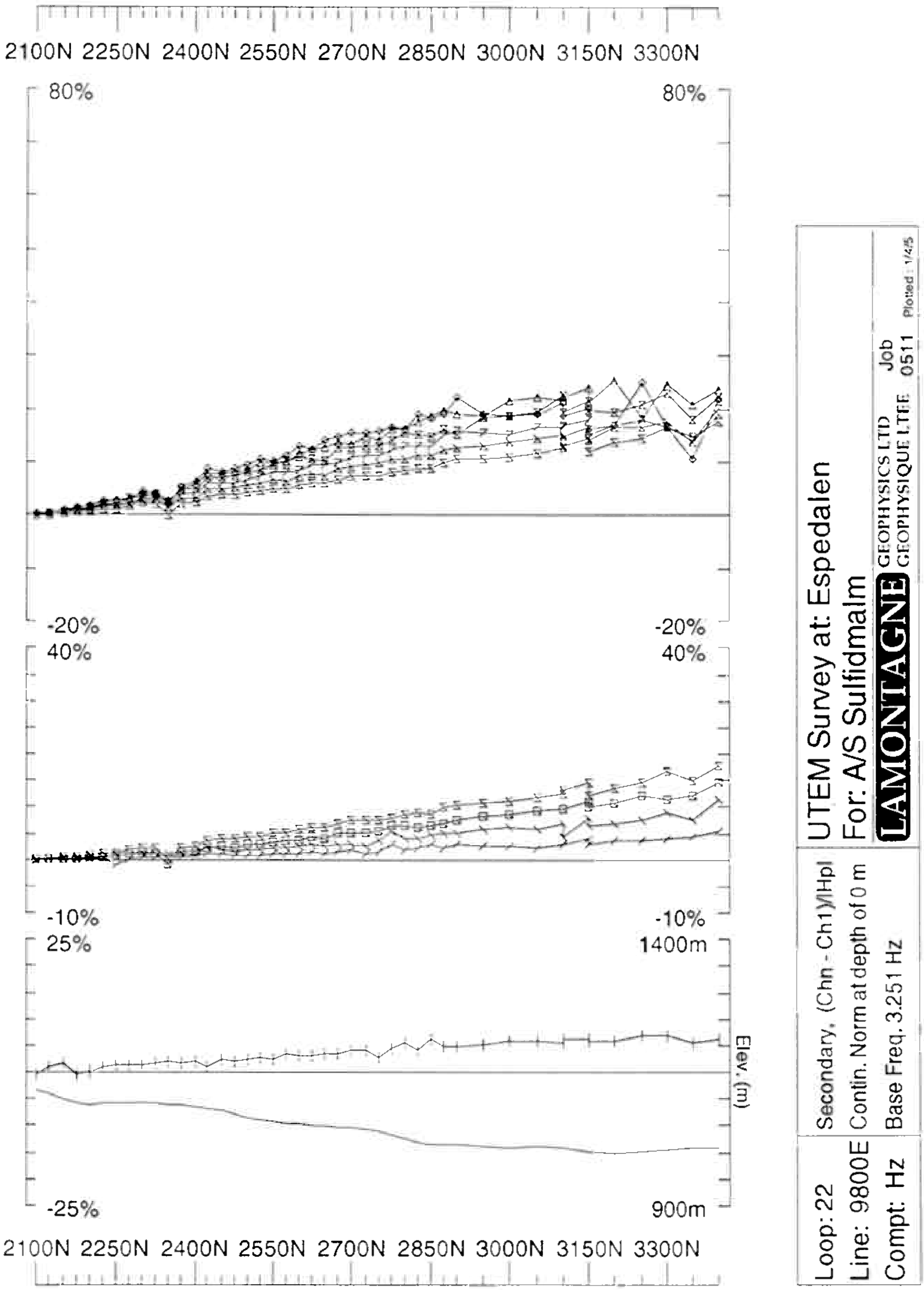
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



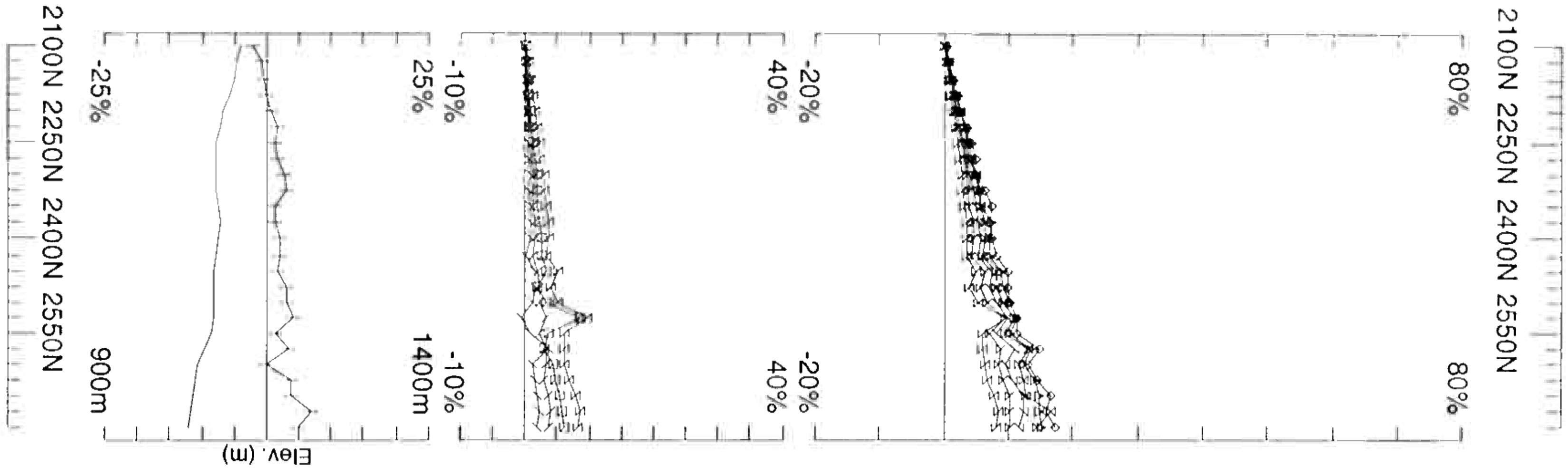
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job 0511
Surveyed : 12/3/5
Reduced : 12/3/5
Plotted : 1/4/5

Loop: 22
Line: 9600E
Compt: Hz

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



2100N 2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
80%
80%
-20%
-20%
40%
40%
-10%
-10%
25%
1400m
Elev.(m)
-25%
900m
2100N 2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Loop: 22
Line: 9800E
Compt: Hz
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 22	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 10000E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 11/3/5 Reduced : 12/3/5 Plotted : 1/4/5

Espedalen

Loop 23

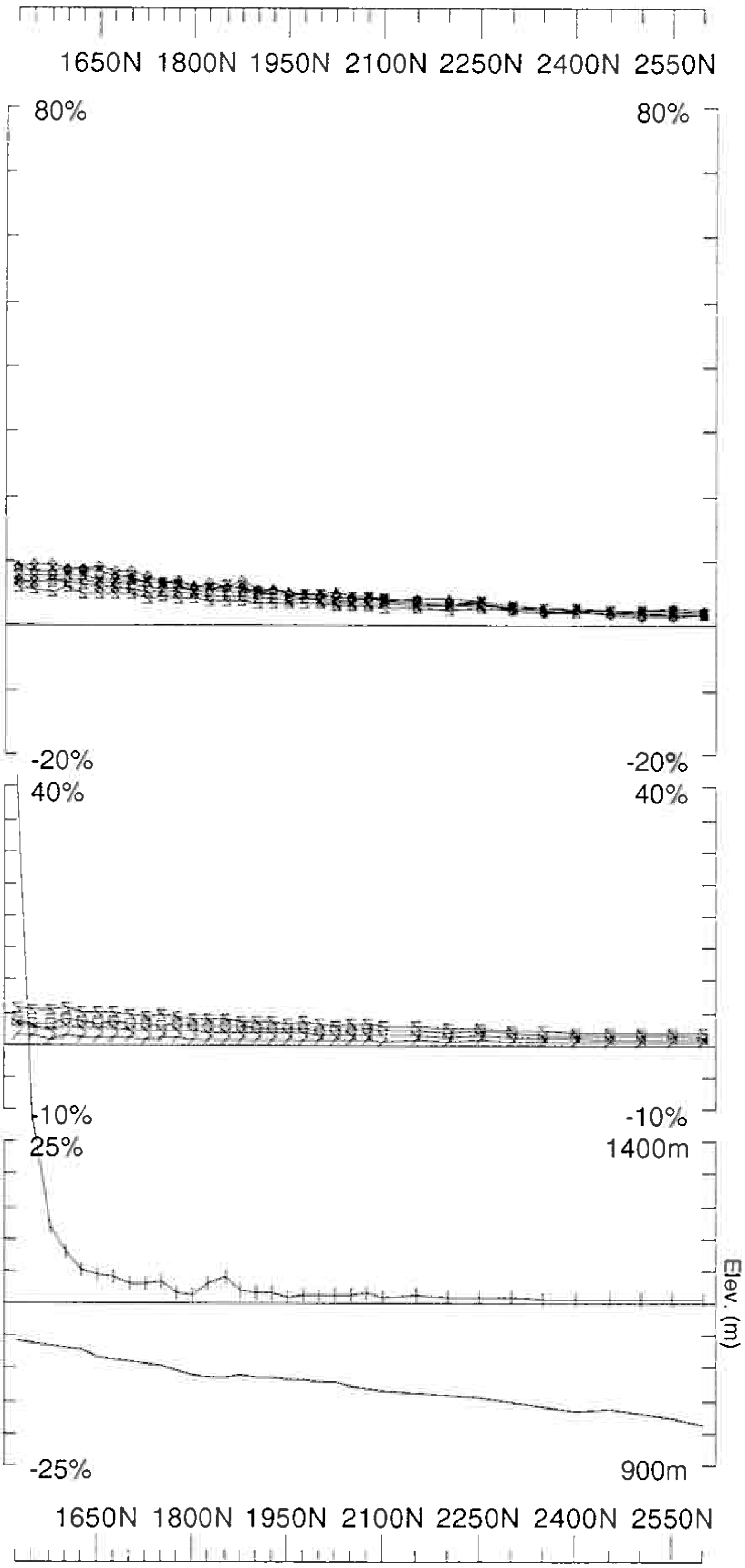
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (7200E,1800N, 1070 m.a.s.l.)

Ch1 reduced

Loop 23	Line 6500E	1500N - 2600N	1100m
	Line 6700E	1500N - 2600N	1100m
	Line 6900E	1500N - 2600N	1100m
	Line 7100E	1500N - 2600N	1100m
	Line 7300E	1500N - 2600N	1100m
	Line 7500E	1500N - 2600N	1100m
	Line 7700E	1500N - 2600N	1100m
	Line 7900E	1500N - 2600N	1100m
	Espedalen	Loop 23 Total	8800m

Loop 23 - point norm



Loop: 23
Line: 6500E
Compt: Hz

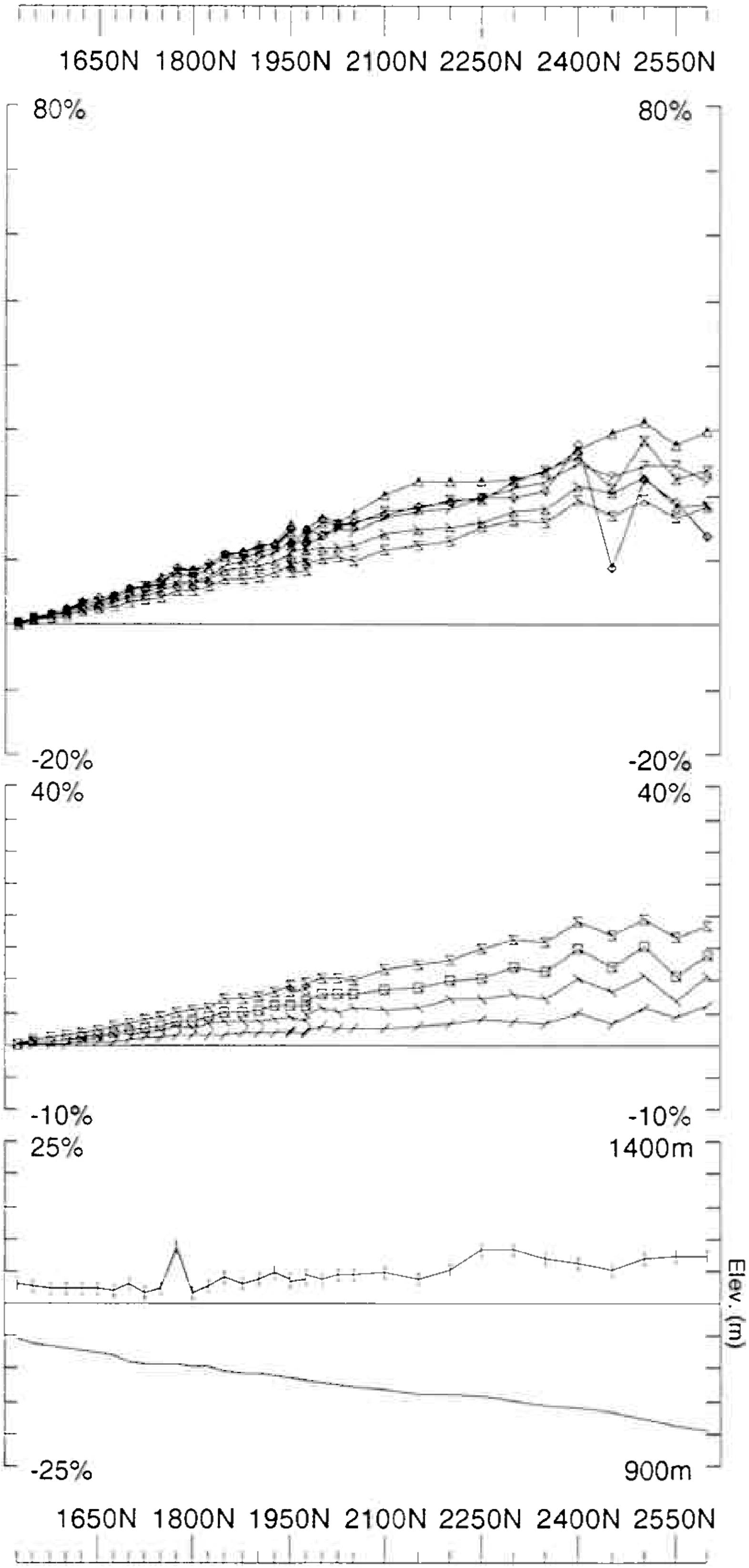
Secondary, (Chn - Ch1)/IHpI
Point Norm.at x,y,z
(7200,1800,1070)
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 14/3/5
Reduced : 14/3/5
Plotted : 1/4/5



Loop: 23
Line: 6700E
Compt: Hz

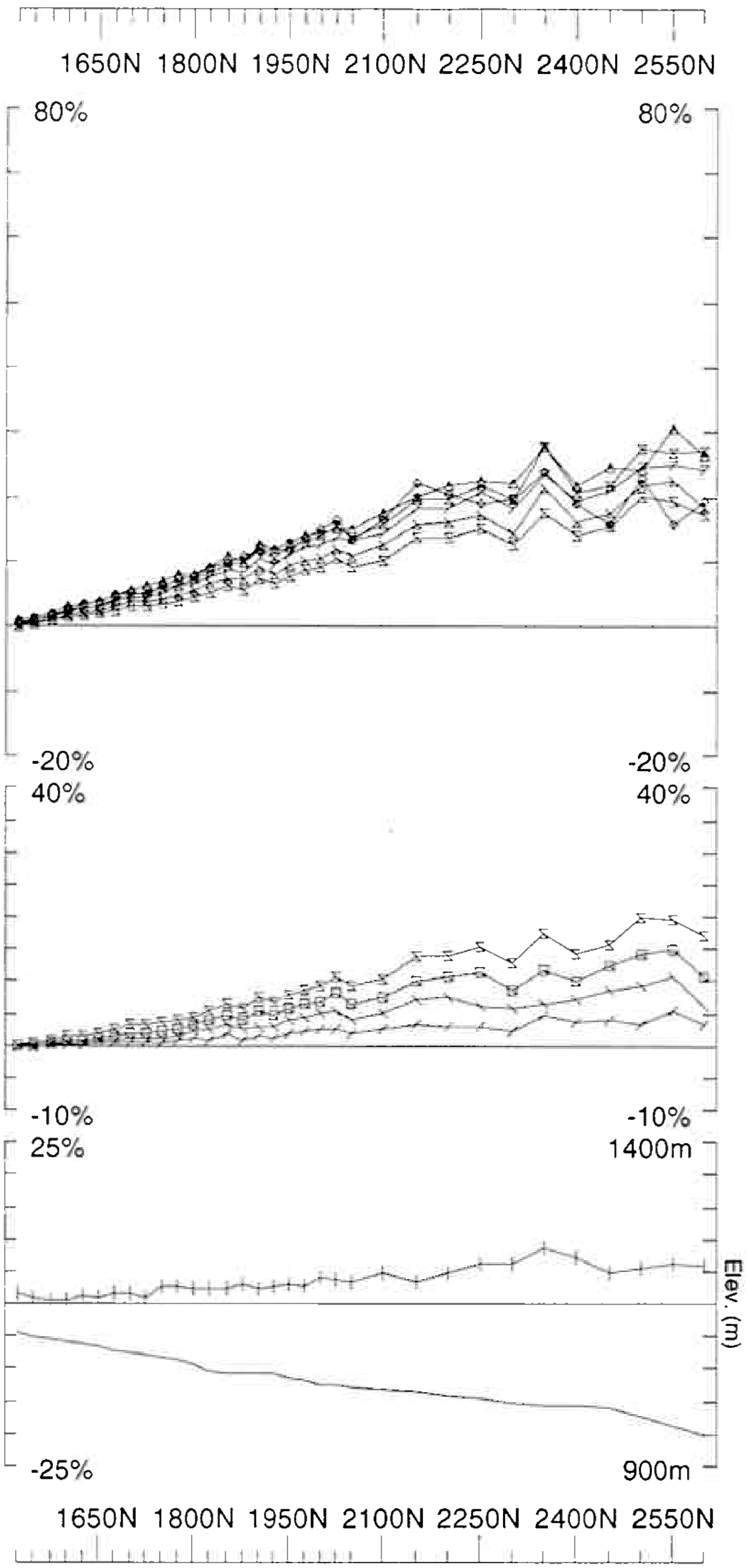
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

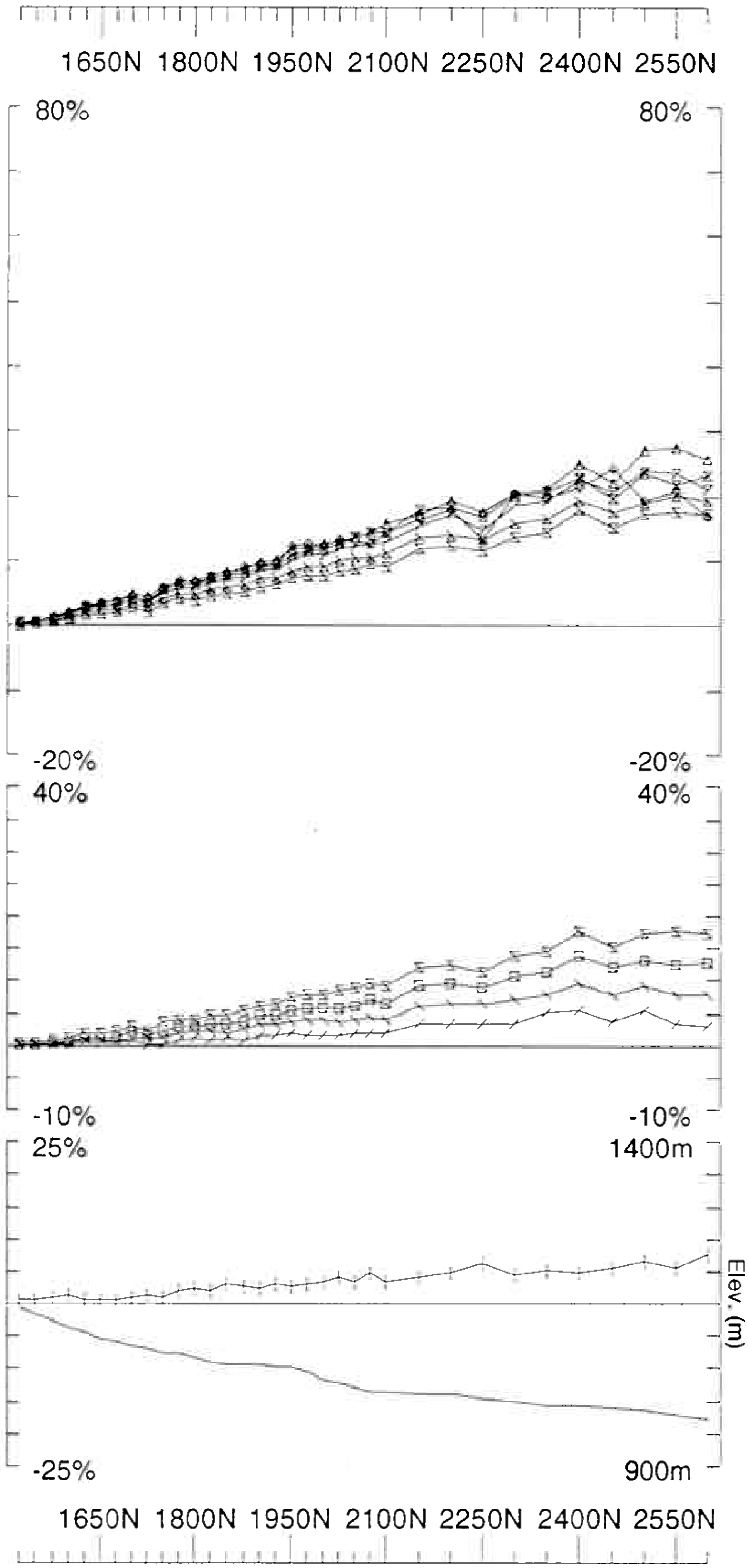
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 14/3/5
Reduced : 14/3/5
Plotted : 1/4/5

Loop: 23
Line: 6900E
Compt: Hz

Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 23
Line: 7100E
Compt: Hz

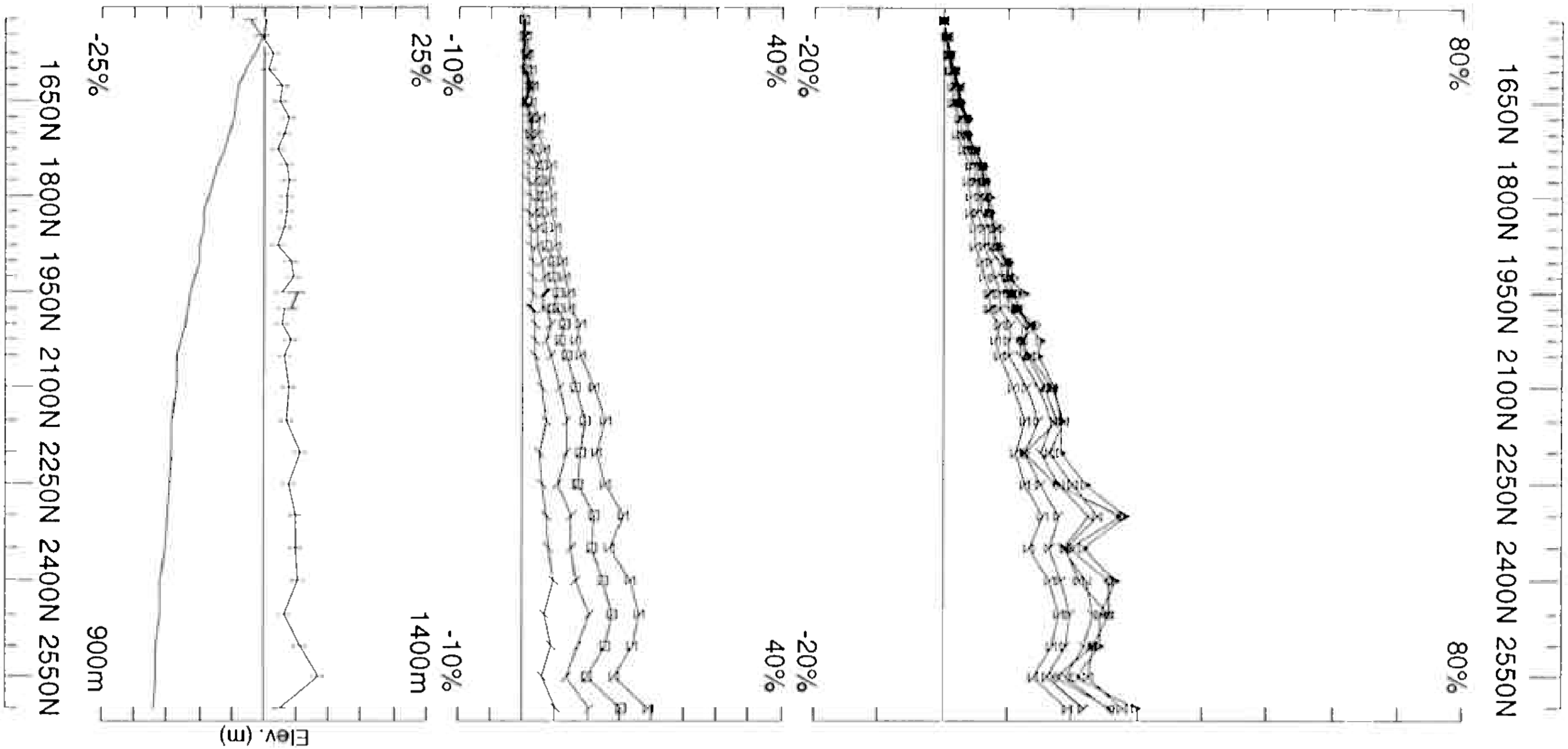
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

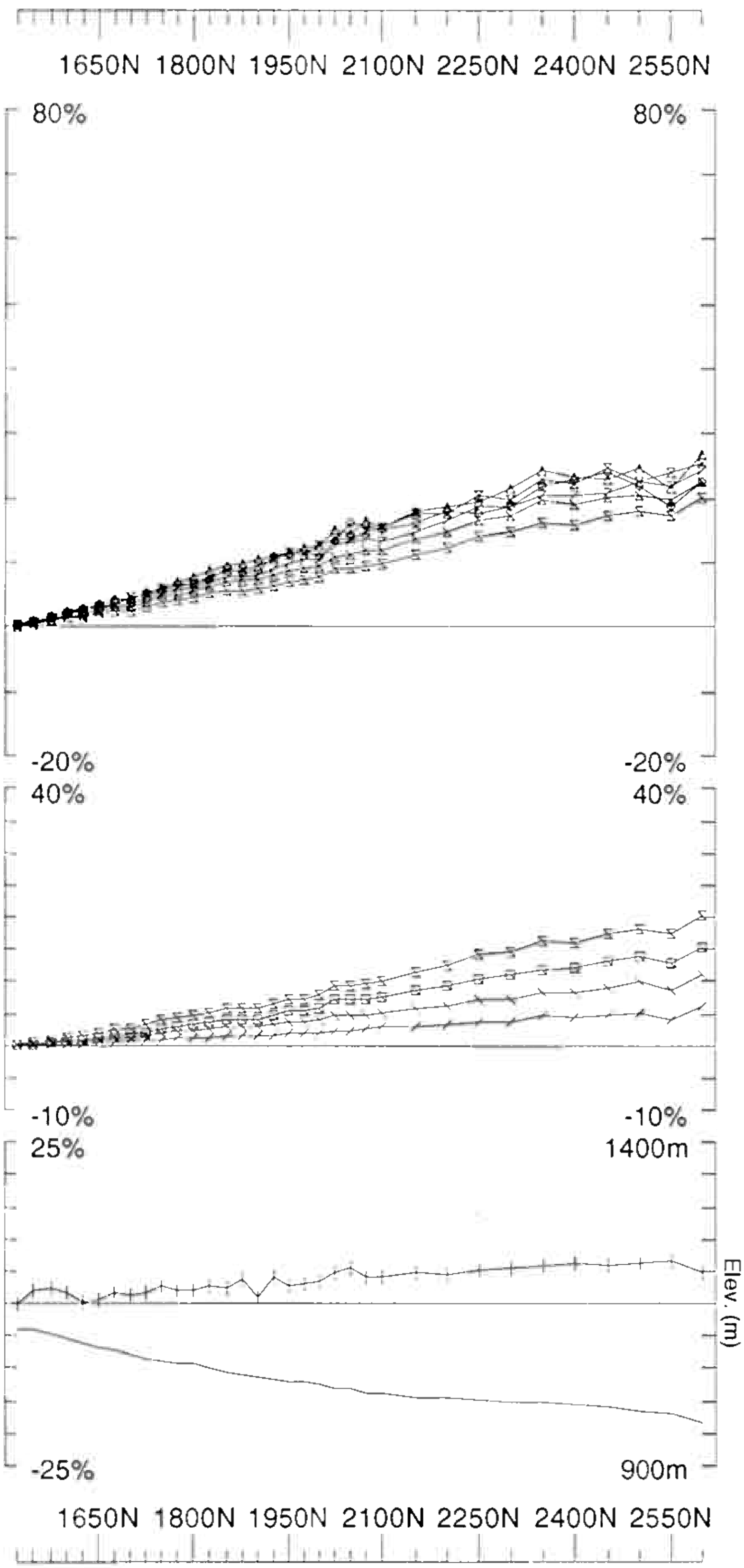
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 13/3/5
Reduced : 14/3/5
Plotted : 1/4/5



Loop: 23	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
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 0511 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

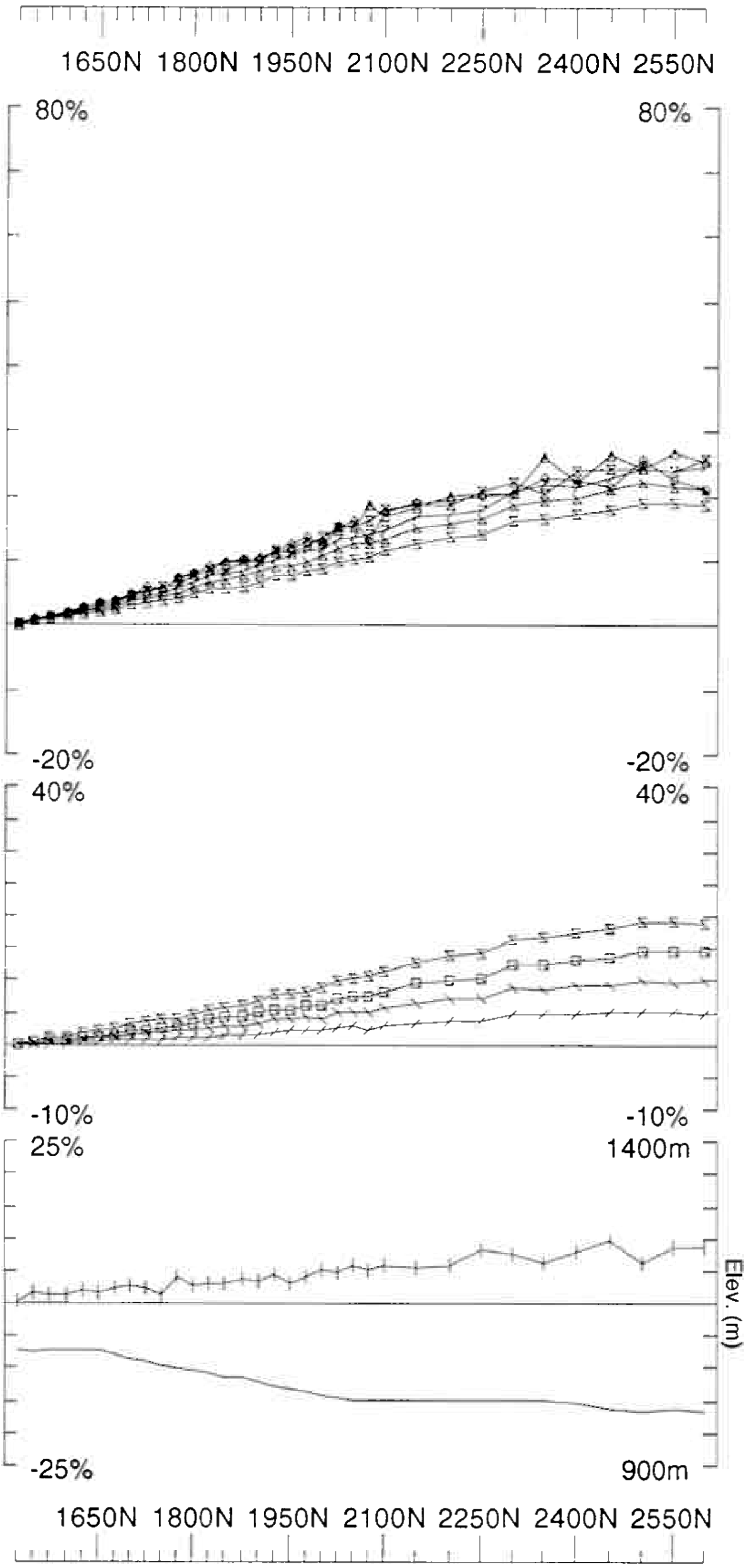
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 13/3/5
Reduced: 14/3/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 23
Line: 7500E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

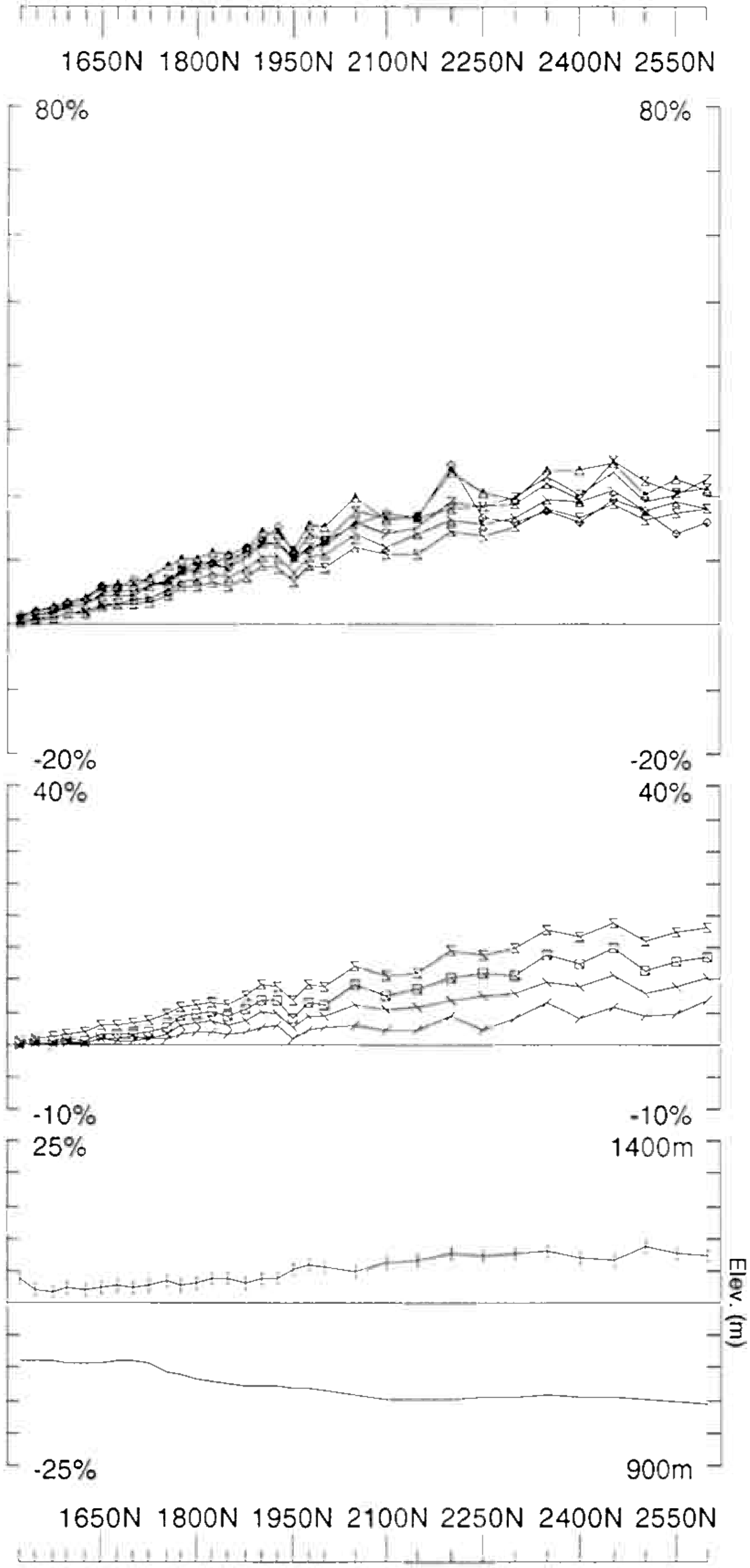
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 13/3/5
Reduced : 14/3/5
Plotted : 1/4/5

Loop: 23
Line: 7700E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 13/3/5
Reduced: 14/3/5
Plotted: 1/4/5

Loop: 23
Line: 7900E
Compt: Hz

Secondary, (Chn - Ch1)/MHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Espedalen

Loop 24

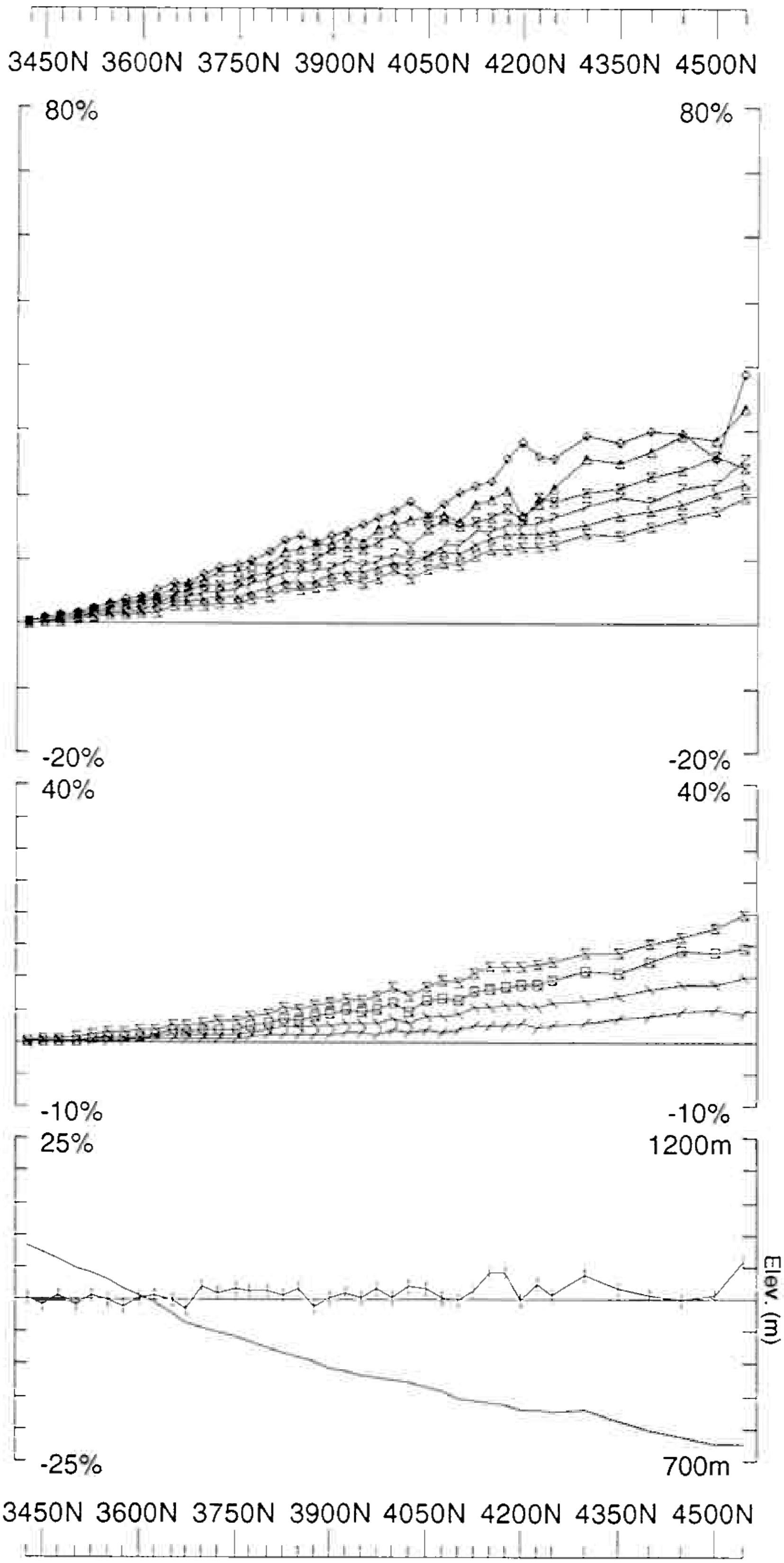
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (9400E,3700N, 900 m.a.s.l.)

Ch1 reduced

Loop 24	Line 9200E	3400N - 4550N	1150m
	Line 9300E	3400N - 4550N	1150m
	Line 9400E	3400N - 4550N	1150m
	Line 9500E	3600N - 4550N	950m
	Line 9600E	3600N - 4150N	550m
	Espedalen	Loop 24 Total	4950m

Loop 24 - point norm



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

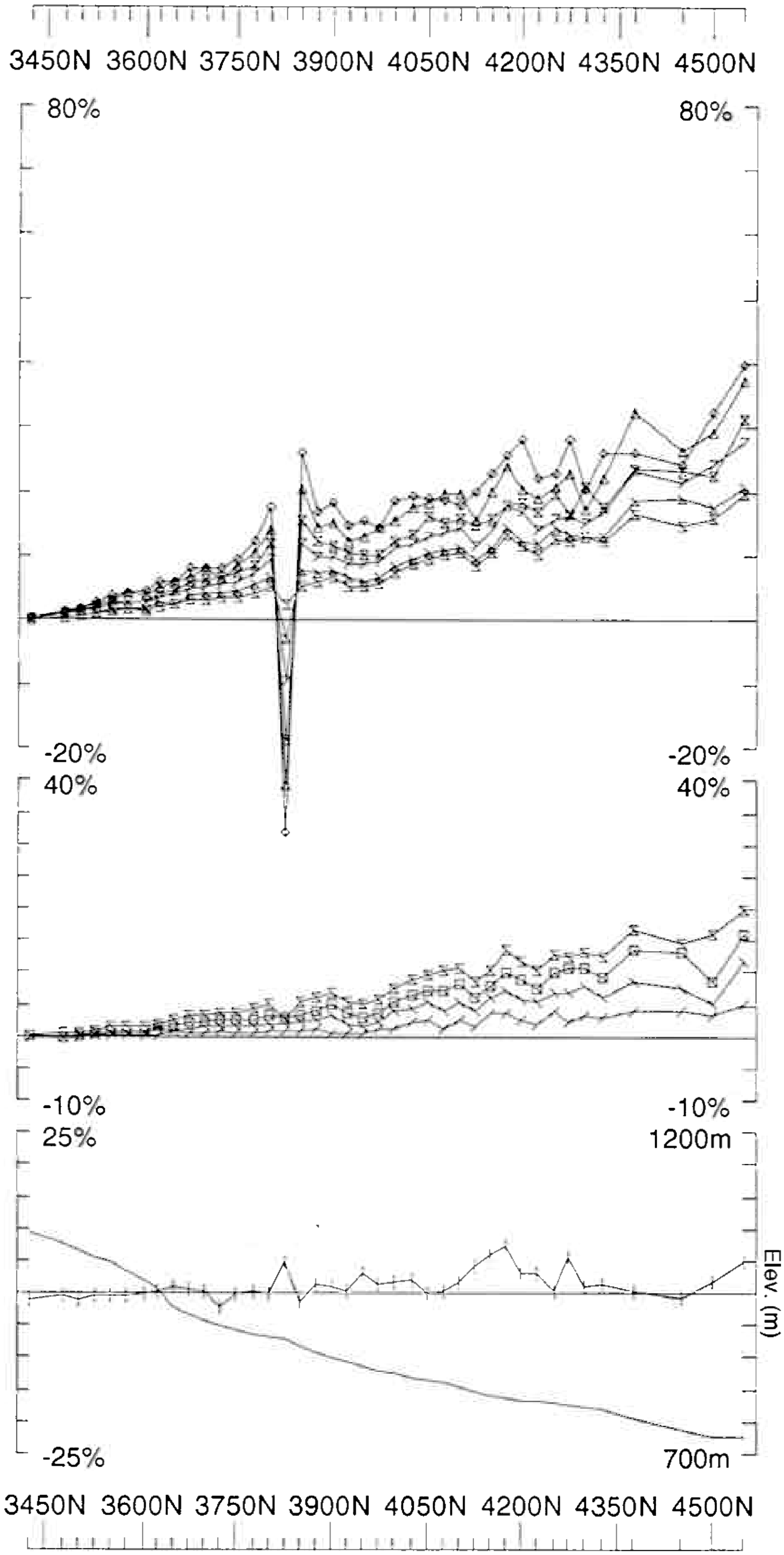
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 17/3/5
Reduced : 17/3/5
Plotted : 1/4/5

Loop: 24
Line: 9300E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 24
Line: 9400E
Compt: Hz

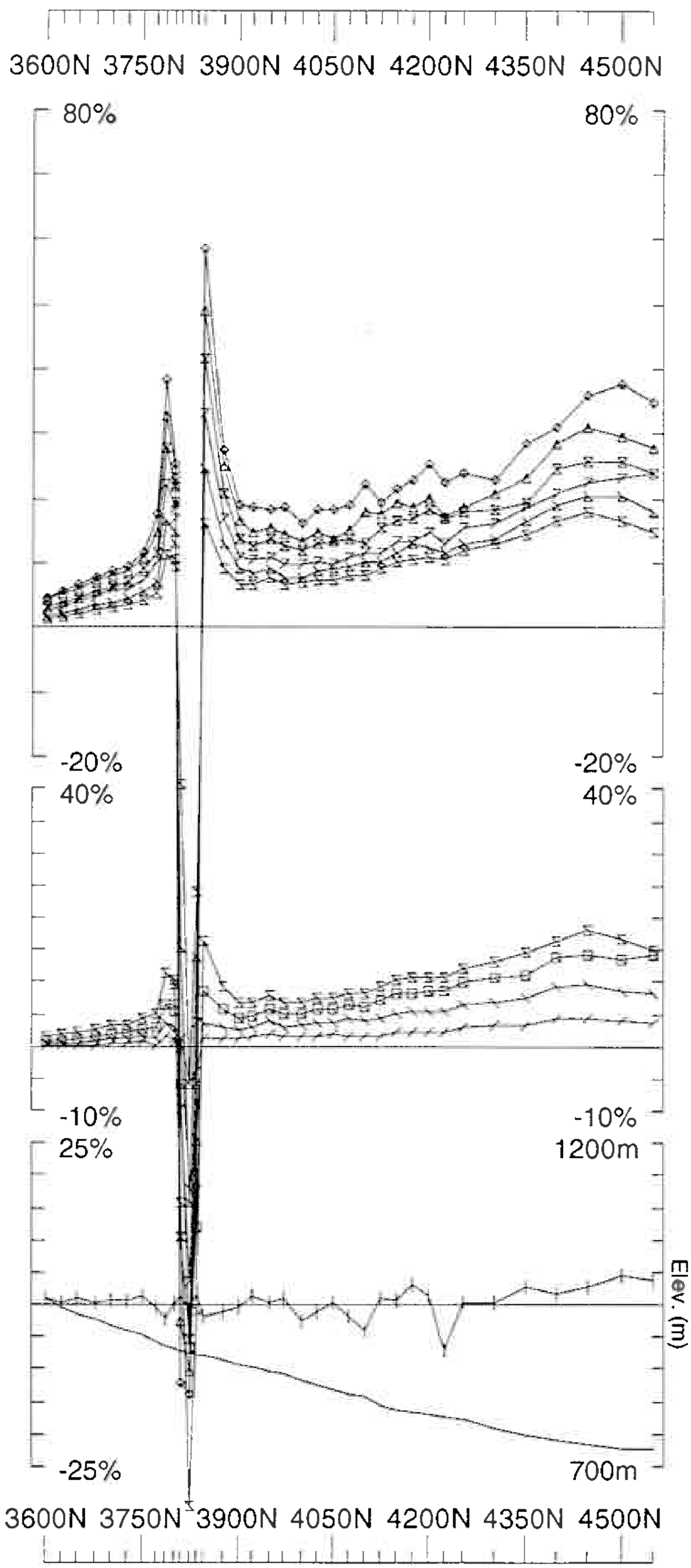
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

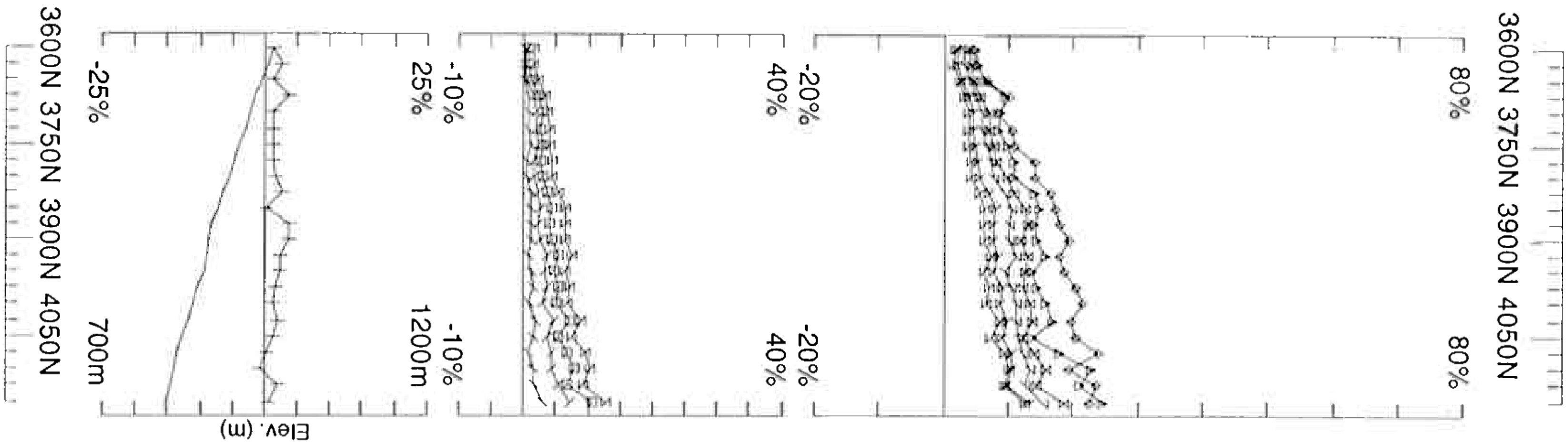
Surveyed : 17/3/5
Reduced : 17/3/5
Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted 1/4/5

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 24
Line: 9500E
Compt: Hz



Loop: 24	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 9600E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 17/3/5 Reduced: 17/3/5 Plotted: 1/4/5

Espedalen

Loop 25

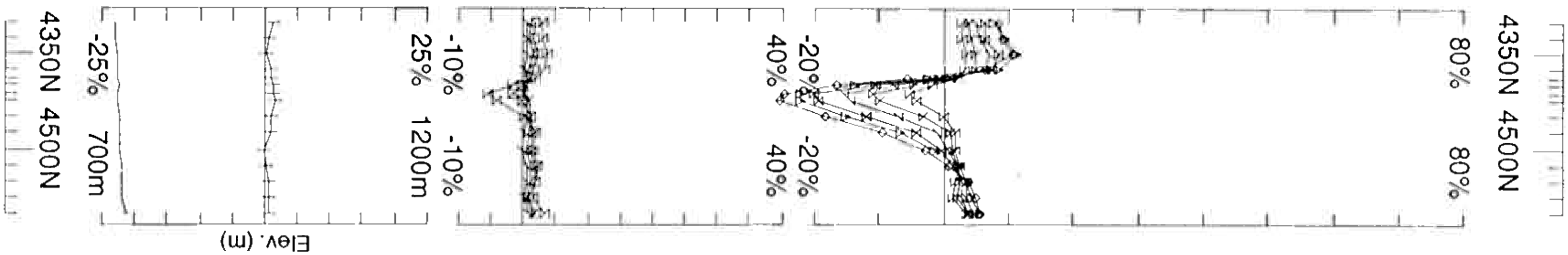
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (8400E,4150N, 750 m.a.s.l.)

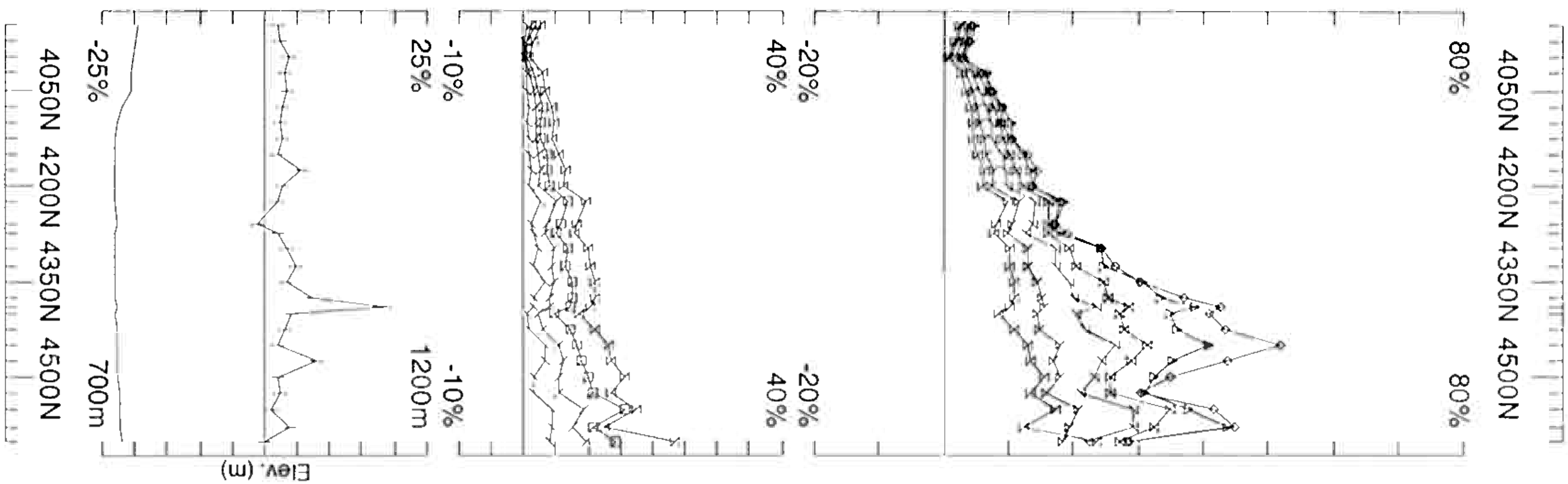
Ch1 reduced

Loop 25	Line	7700E	4300N - 4600N	300m
	Line	7800E	3950N - 4600N	650m
	Line	8000E	4100N - 4625N	525m
	Line	8200E	4050N - 4575N	525m
	Line	8350E	4450N - 4700N	250m
	Line	8400E	4050N - 4700N	650m
	Line	8450E	4550N - 4700N	150m
	Line	8600E	3950N - 4550N	600m
	Line	8800E	3950N - 4425N	475m
	Line	9000E	4025N - 4650N	625m
	Espedalen		Loop 25 Total	4750m

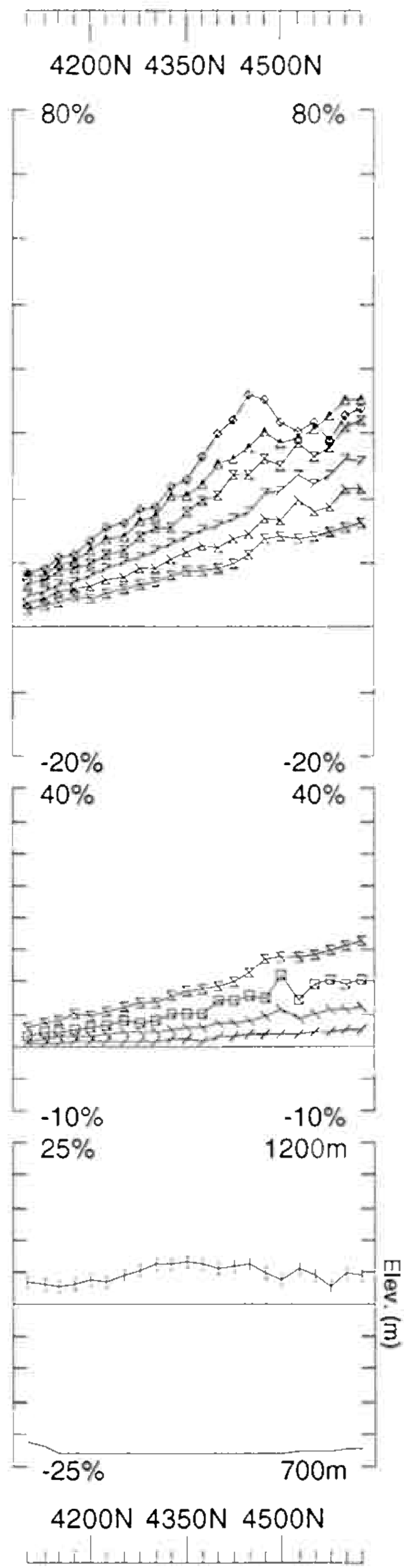
Loop 25 - point norm



Loop: 25 Line: 7700E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Point Norm.at x,y,z (8400,4150,750) Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 10/3/5 Plotted : 1/4/5



Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 7800E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 5/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

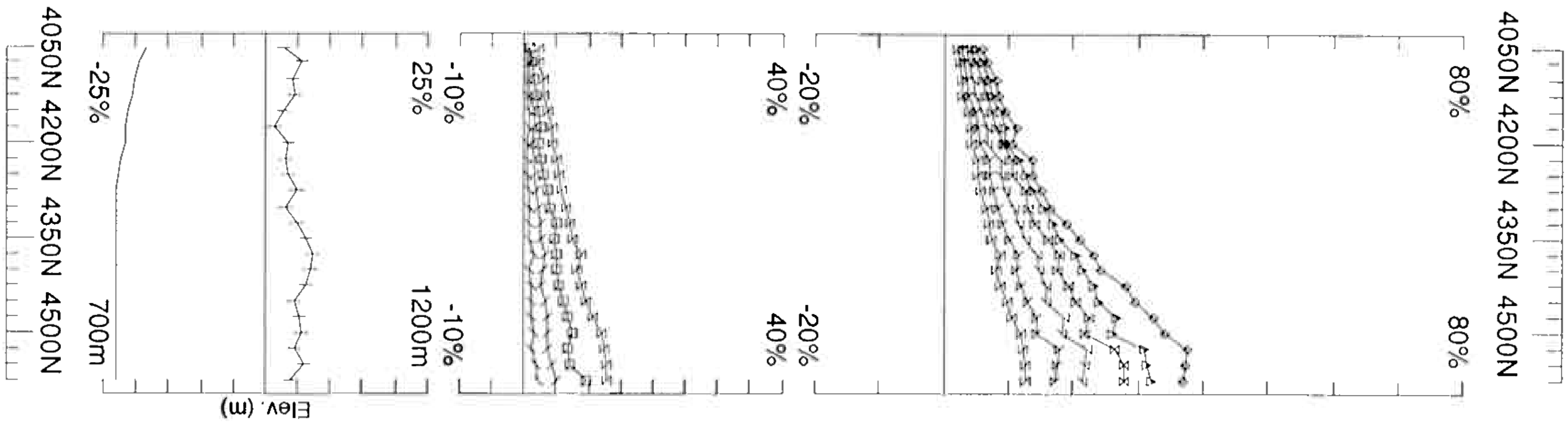
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

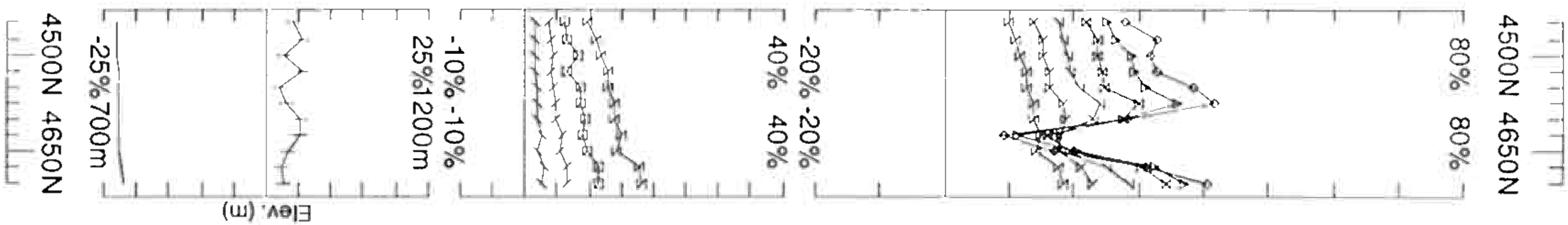
Surveyed : 5/3/5
Reduced : 6/3/5
Plotted : 1/4/5

Loop: 25
Line: 8000E
Compt: Hz

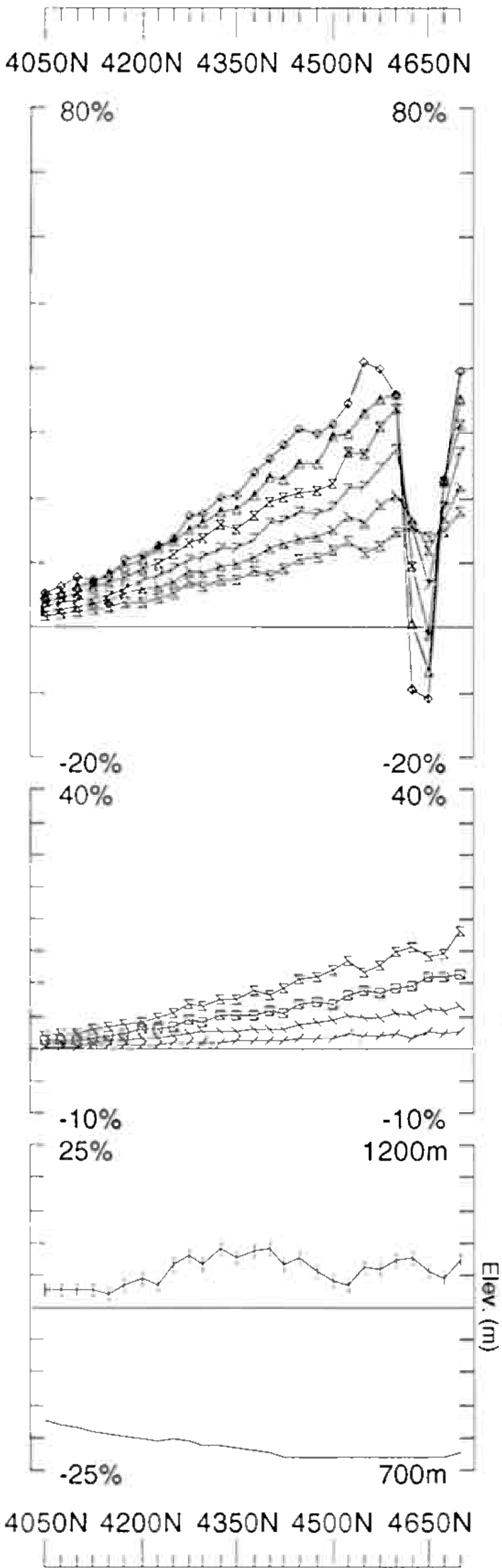
Secondary, (Chn - Ch1)/\Hpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 25 Line: 8200E Compt: Hz	Secondary, (Chn - Ch1)/IHpI Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/3/5 Reduced : 6/3/5 Plotted : 1/4/5



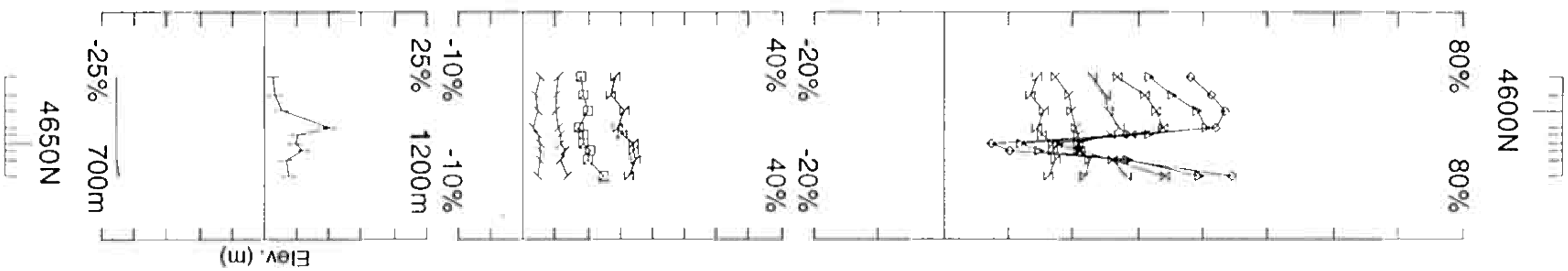
Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 8350E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 6/3/5 Reduced : 6/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 5/3/5
Reduced: 6/3/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

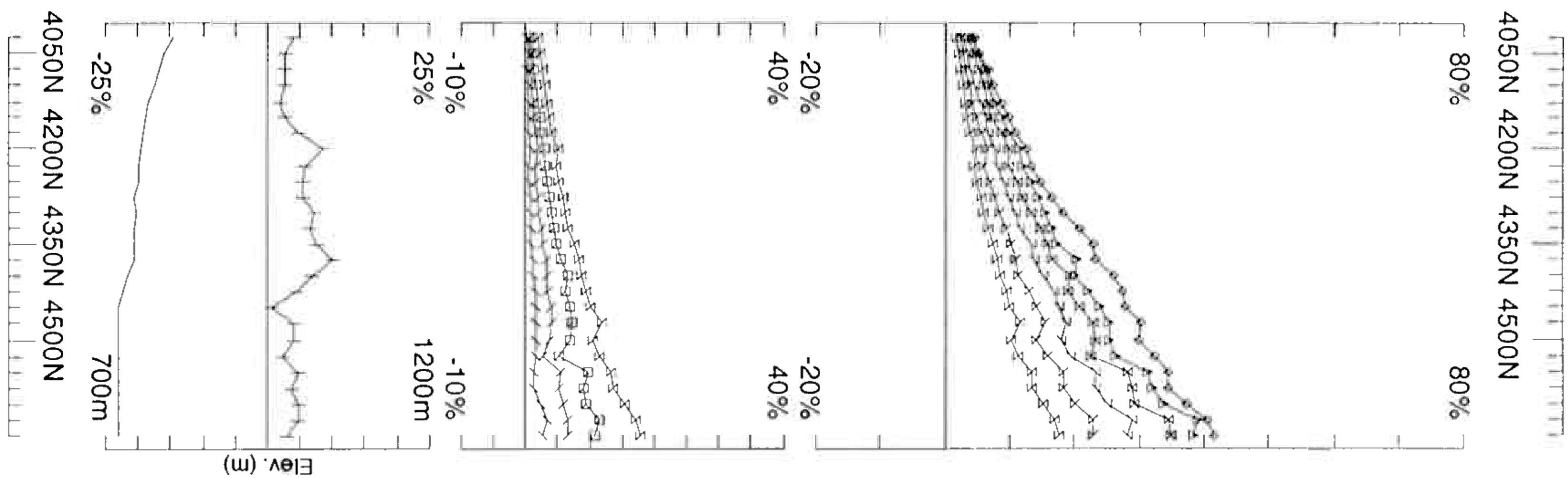
Loop: 25
Line: 8400E
Compt: Hz



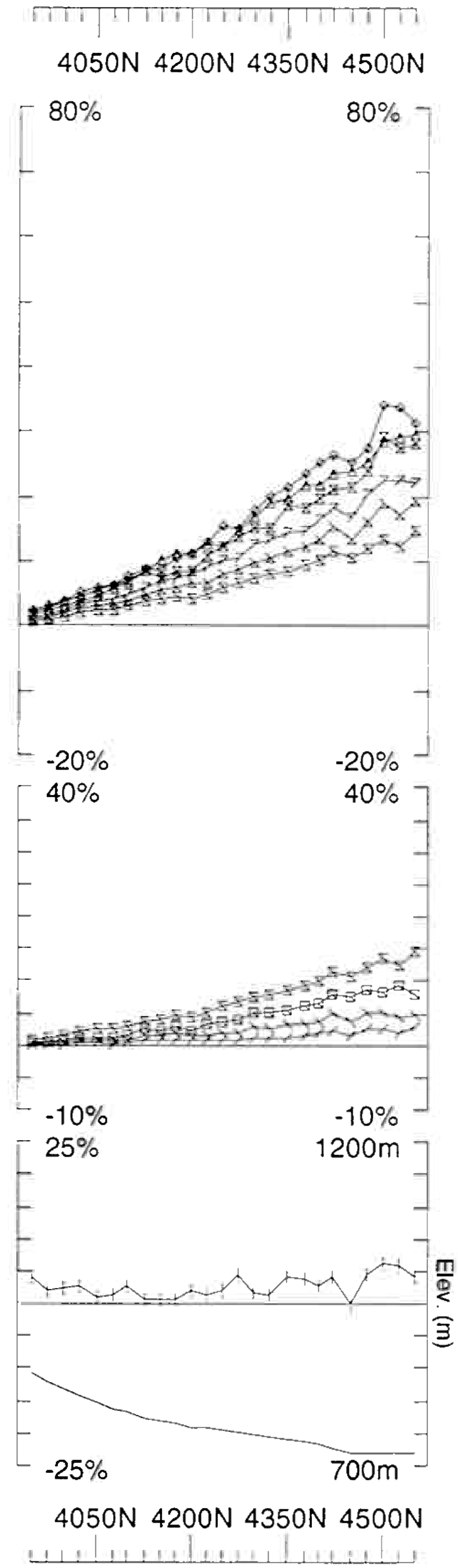
Loop: 25	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 8450E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 6/3/5
Reduced : 6/3/5
Plotted : 1/4/5



Loop: 25	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
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 0511 Surveyed: 4/3/5 Reduced: 6/3/5 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

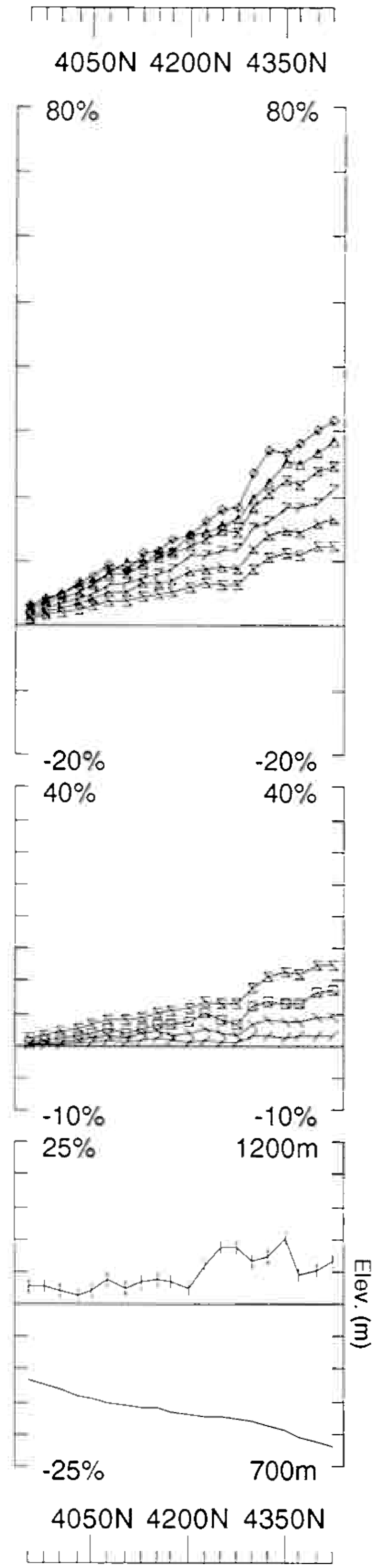
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 4/3/5
Reduced : 6/3/5
Plotted : 1/4/5

Loop: 25
Line: 8800E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 4/3/5 Reduced : 6/3/5 Plotted : 1/4/5

Loop: 25
Line: 9000E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Espedalen

Loop 26

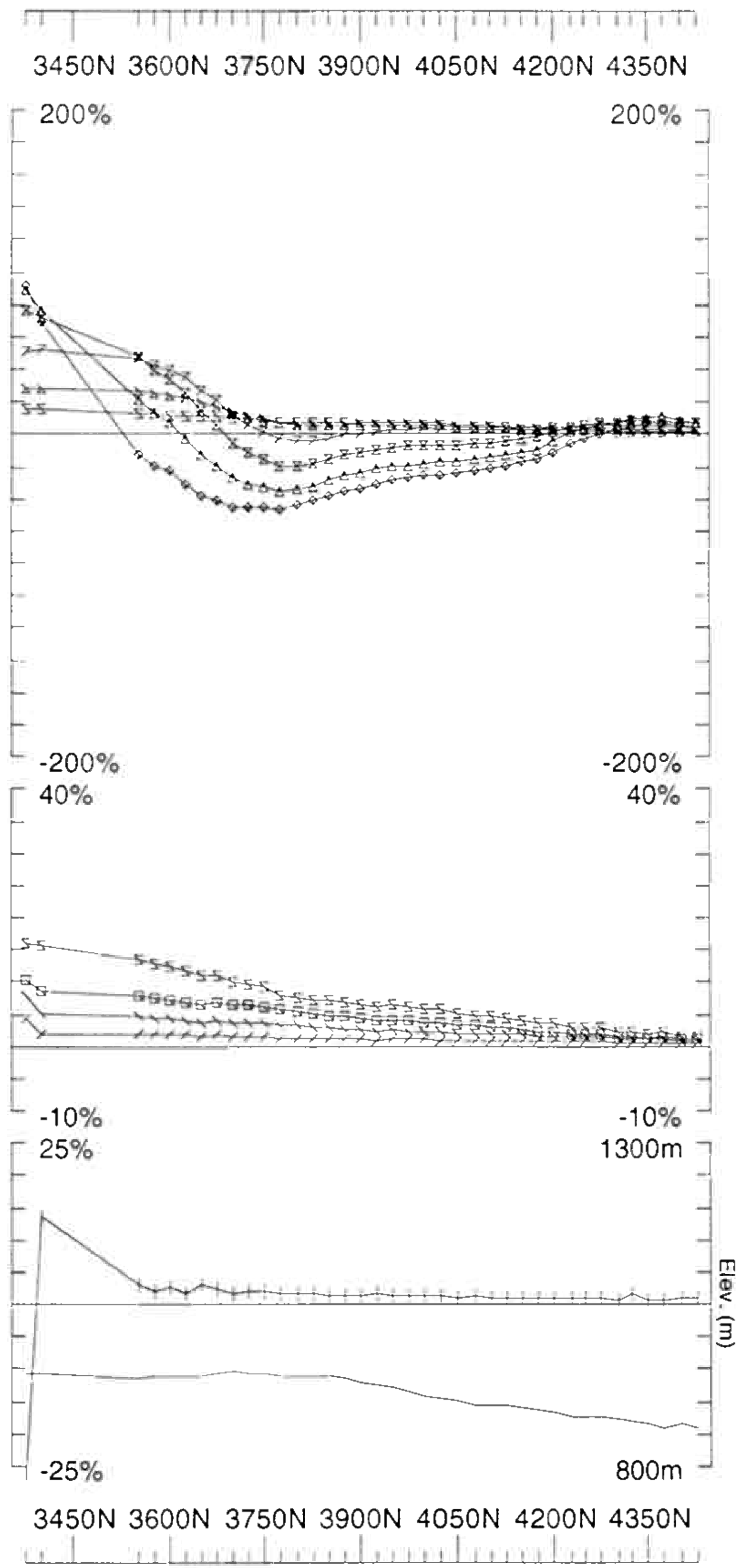
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (15300E,3650N, 950 m.a.s.l.)

Ch1 reduced

Loop 26	Line 14900E	3350N - 4125N	775m
	Line 15100E	3350N - 4425N	1075m
	Line 15300E	3350N - 4425N	1075m
	Line 15500E	3350N - 4025N	675m
	Line 15700E	3350N - 3975N	625m
	Espedalen	Loop 26 Total	4225m

Loop 26 - point norm



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

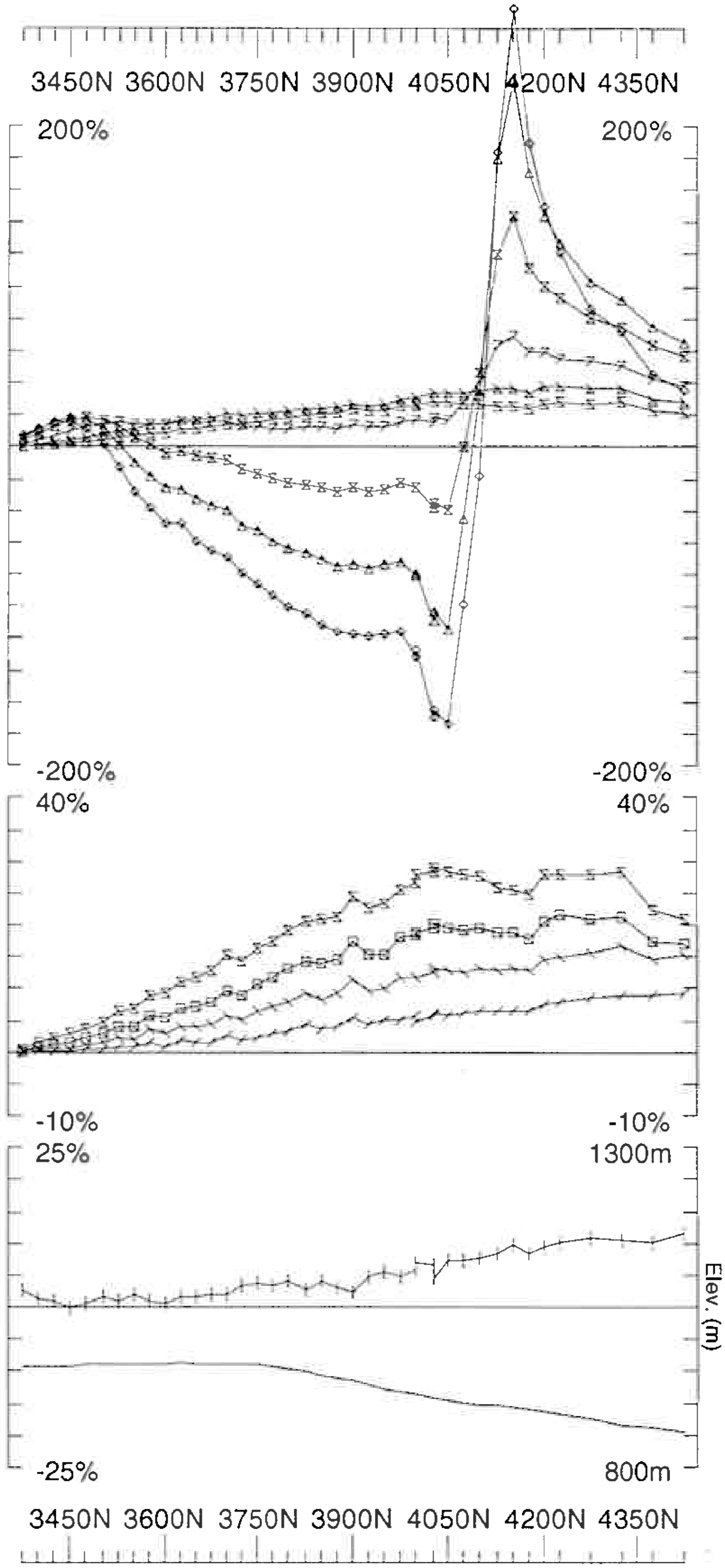
LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed : 7/3/5
Reduced : 7/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl
Point Norm.at x,y,z
(15300,3650,950)
Base Freq. 3.251 Hz

Loop: 26
Line: 14900E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

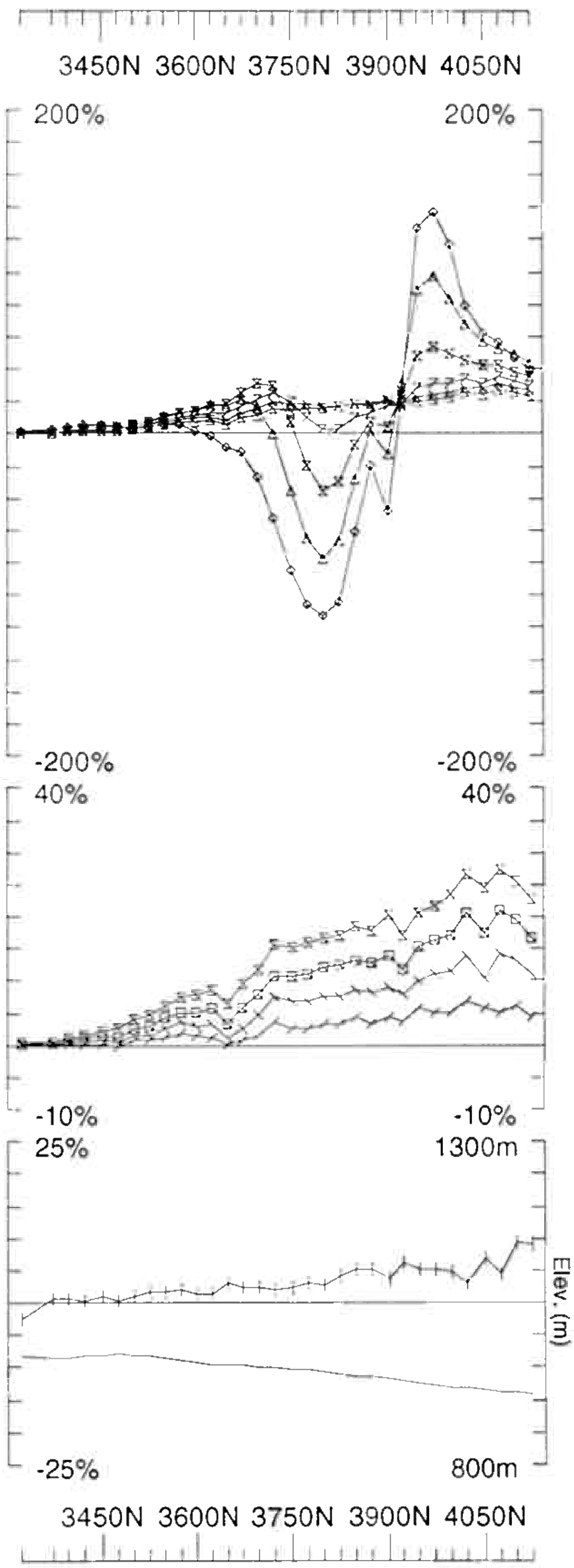
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted : 1/4/5

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 26
Line: 15100E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

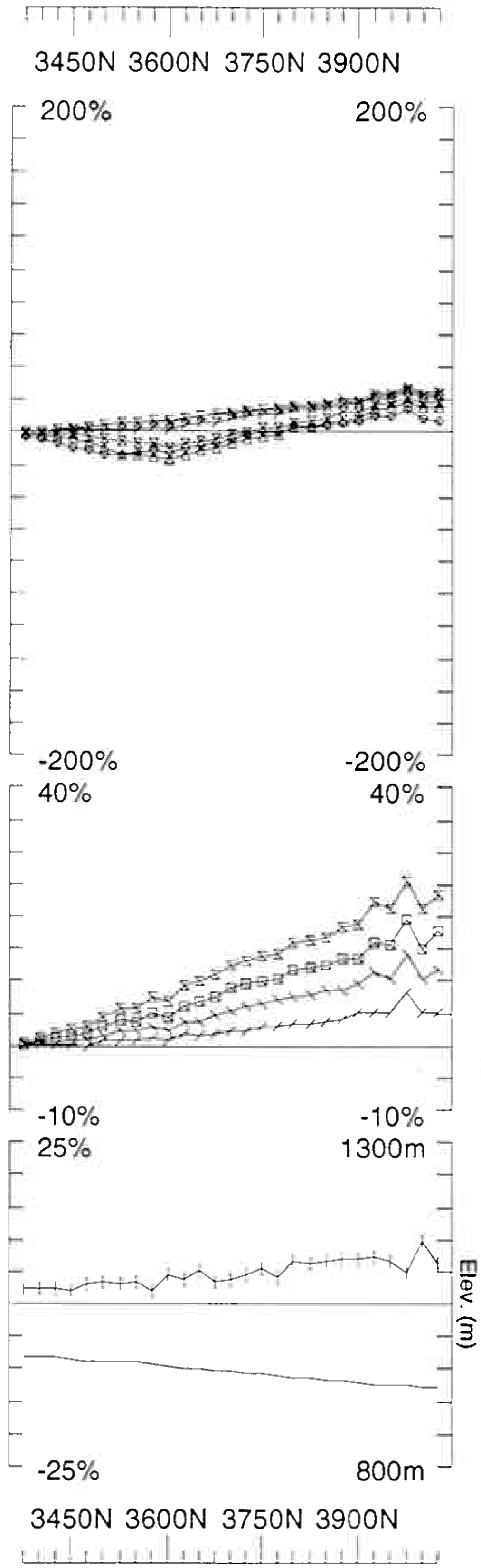
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 7/3/5
Reduced: 7/3/5
Plotted: 1/4/5

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 26
Line: 15300E
Compt: Hz



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

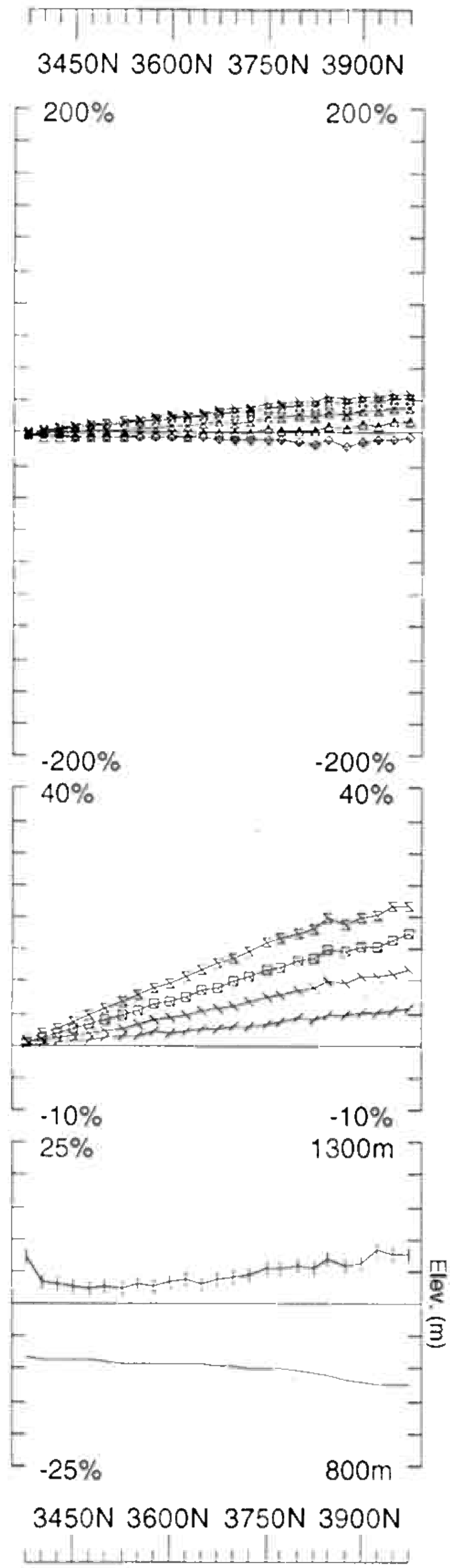
LAMONTAGNE GEOPHYSICS LTD / GEOPHYSIQUE LTEE

Job 0511

Surveyed: 6/3/5
Reduced: 7/3/5
Plotted: 1/4/5

Loop: 26
Line: 15500E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz



Loop: 26
Line: 15700E
Compt: Hz

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 6/3/5
Reduced: 7/3/5
Plotted: 1/4/5

Espedalen

Loop 27

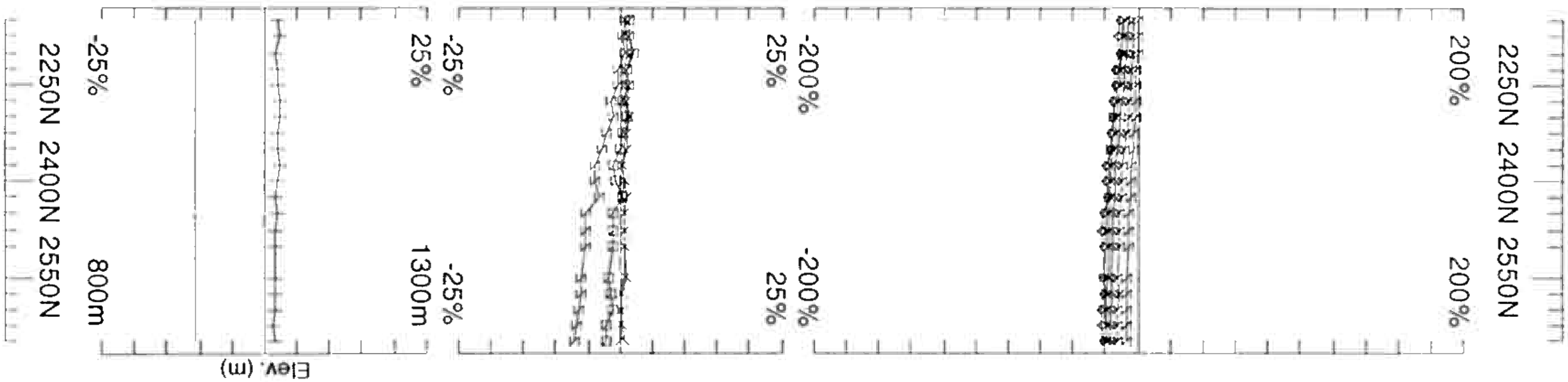
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (15300E,2525N, 950 m.a.s.l.)

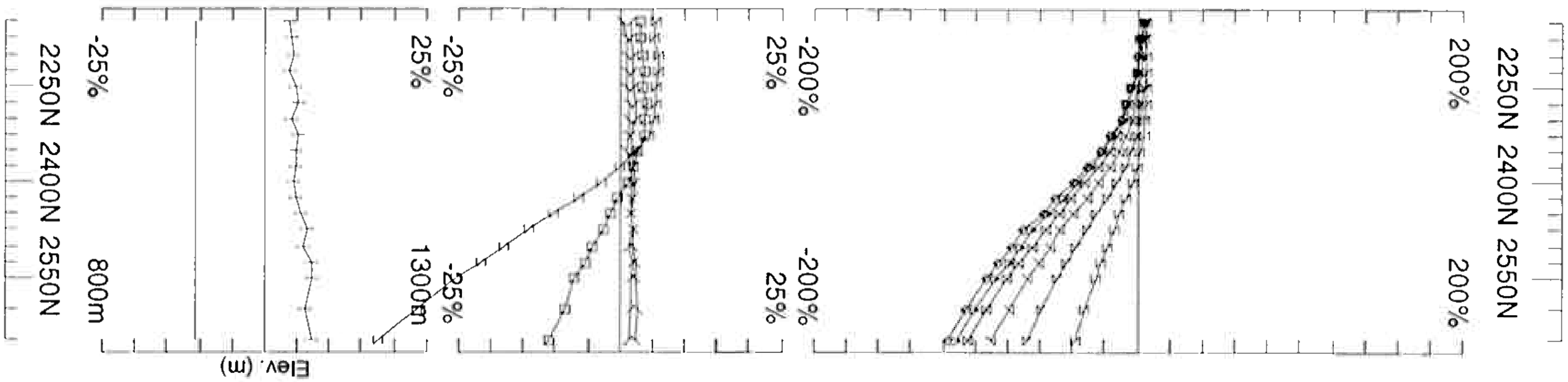
Ch1 reduced

Loop 27	Line 14300E	2150N - 2650N	500m
	Line 14500E	2150N - 2650N	500m
	Line 14700E	2225N - 2800N	575m
	Line 14800E	2225N - 3400N	1175m
	Line 14900E	2225N - 3400N	1175m
	Line 15100E	2225N - 3500N	1275m
	Line 15300E	2225N - 3500N	1275m
	Line 15500E	2225N - 3450N	1225m
	Line 15700E	2225N - 3450N	1225m
	Line 15900E	2225N - 3075N	850m
	Line 16100E	2150N - 3000N	850m
	Espedalen	Loop 27 Total	10625m

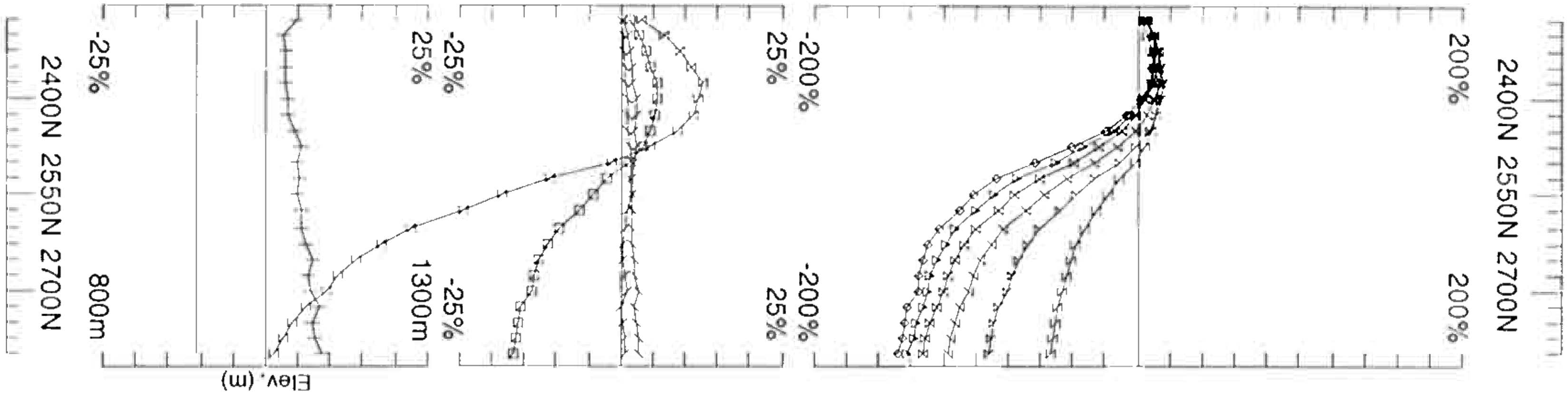
Loop 27 - point norm



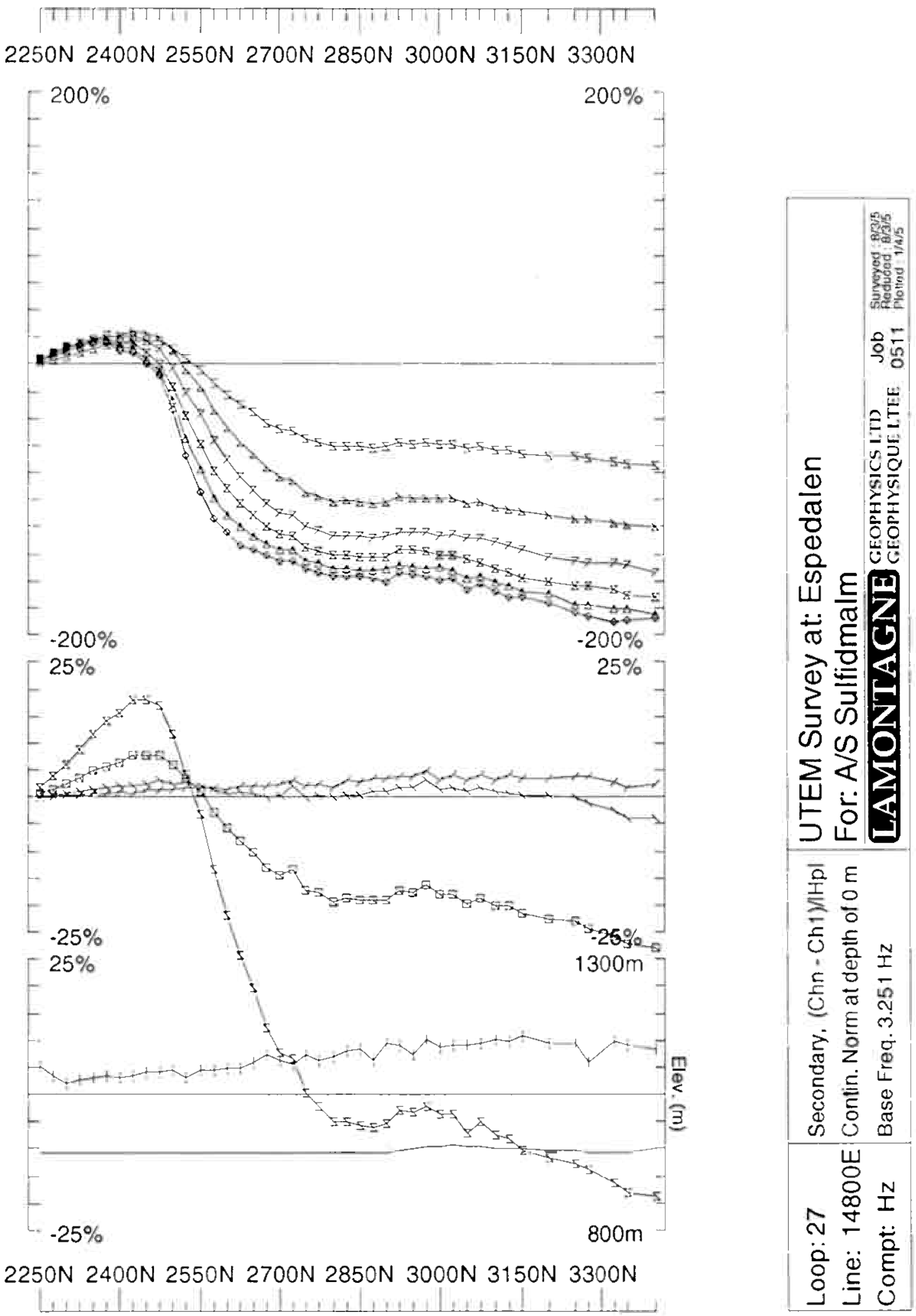
Loop: 27 Line: 14300E Compt: Hz	Secondary, (Chn - Ch1)/lHpl Point Norm.at x,y,z (15300,2525,950) Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 10/3/5 Reduced : 10/3/5 Plotted : 1/4/5



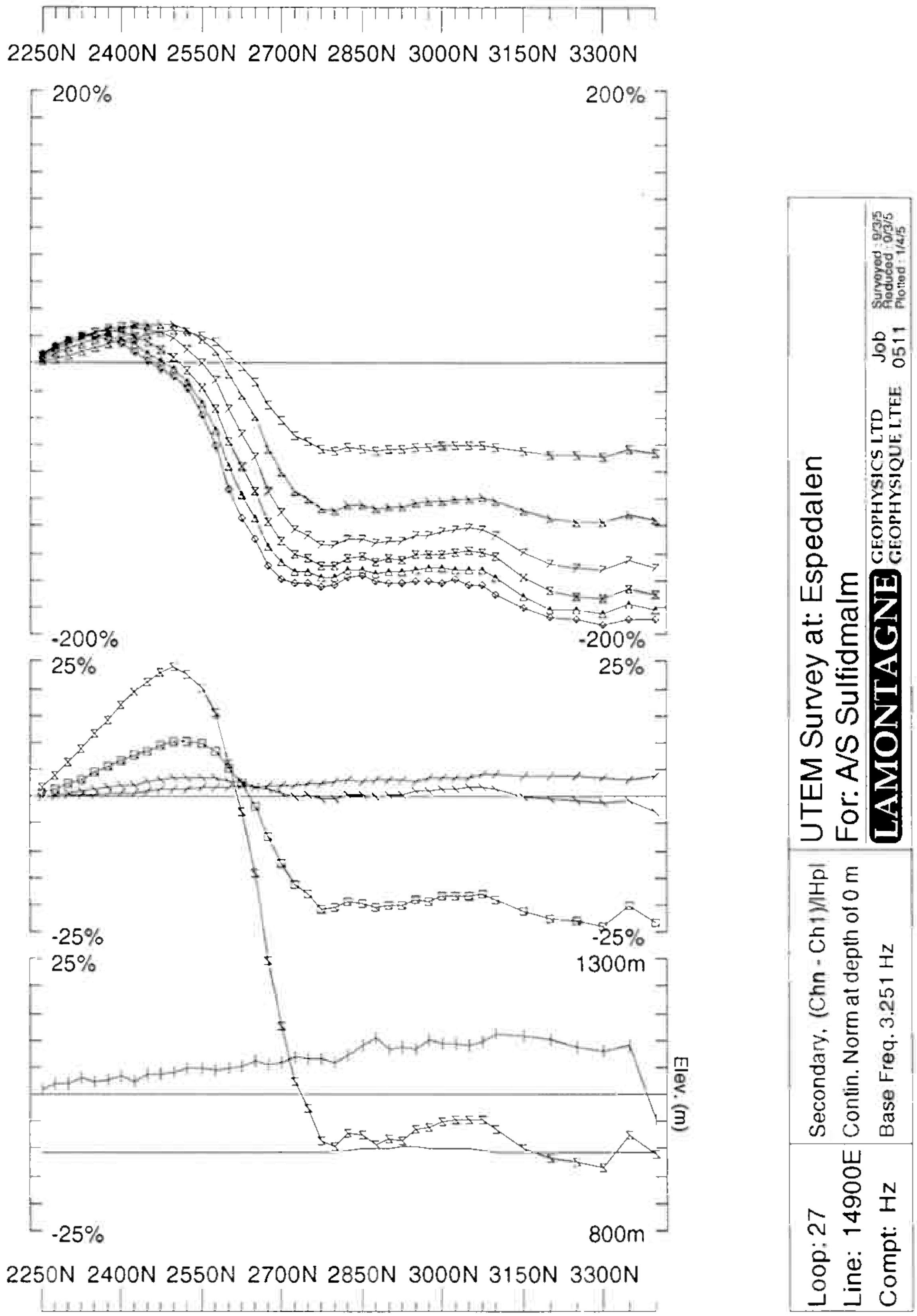
Loop: 27 Line: 14500E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 10/3/5 Reduced : 10/3/5 Plotted : 1/4/5



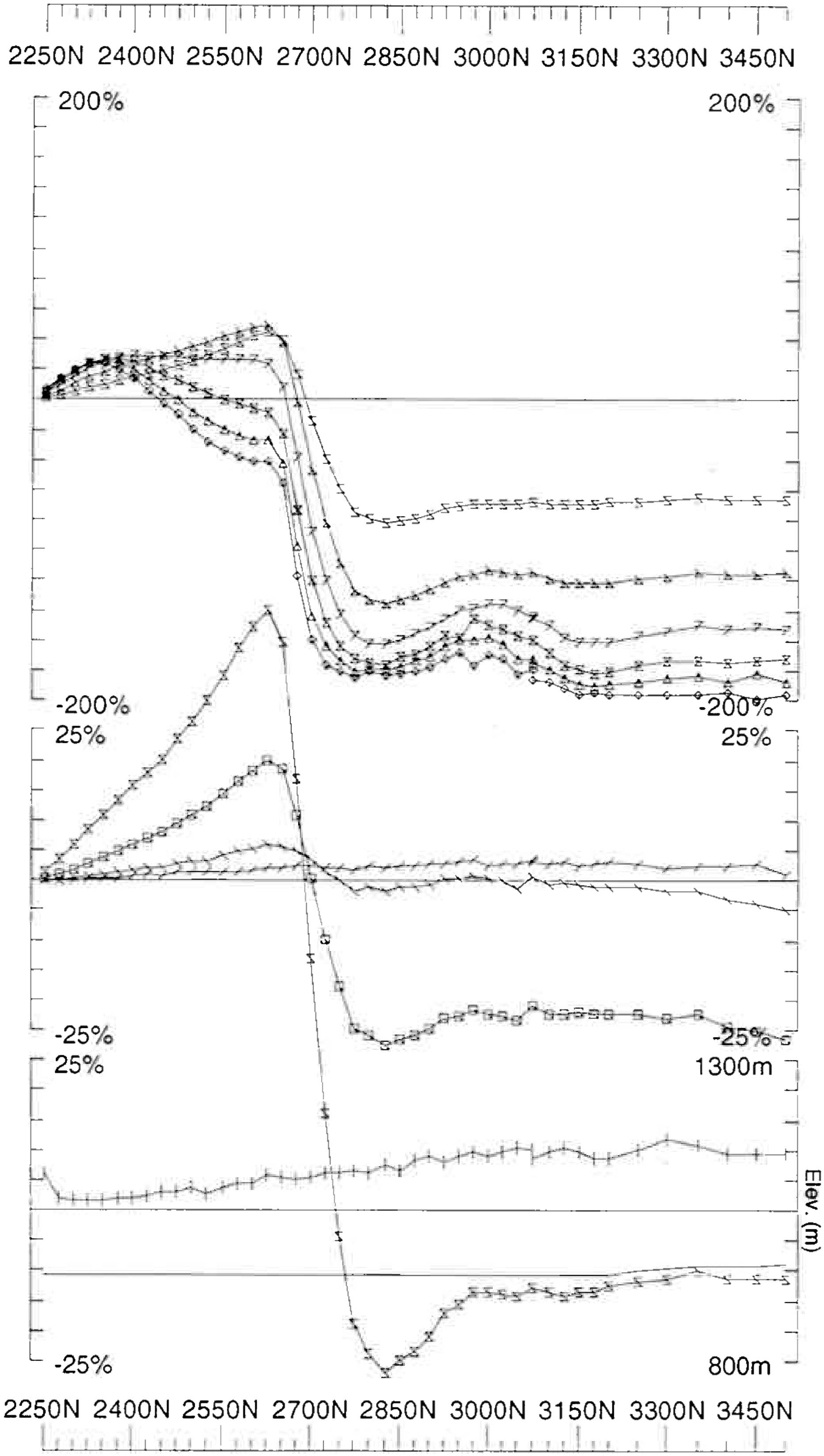
Loop: 27 Line: 14700E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 8/3/5 Reduced: 8/3/5 Plotted: 1/4/5



2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
200%
200%
-200%
-200%
25%
25%
-25%
-25%
25%
1300m
Elev. (m)
-25%
800m
2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 27
Line: 14800E
Compt: Hz



2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
200%
200%
-200%
-200%
25%
25%
-25%
-25%
25%
1300m
Elev. (m)
-25%
800m
2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N
Loop: 27
Line: 14900E
Compt: Hz
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 9/3/5
Reduced : 0/3/5
Plotted : 1/4/5



Loop: 27
Line: 15100E
Compt: Hz

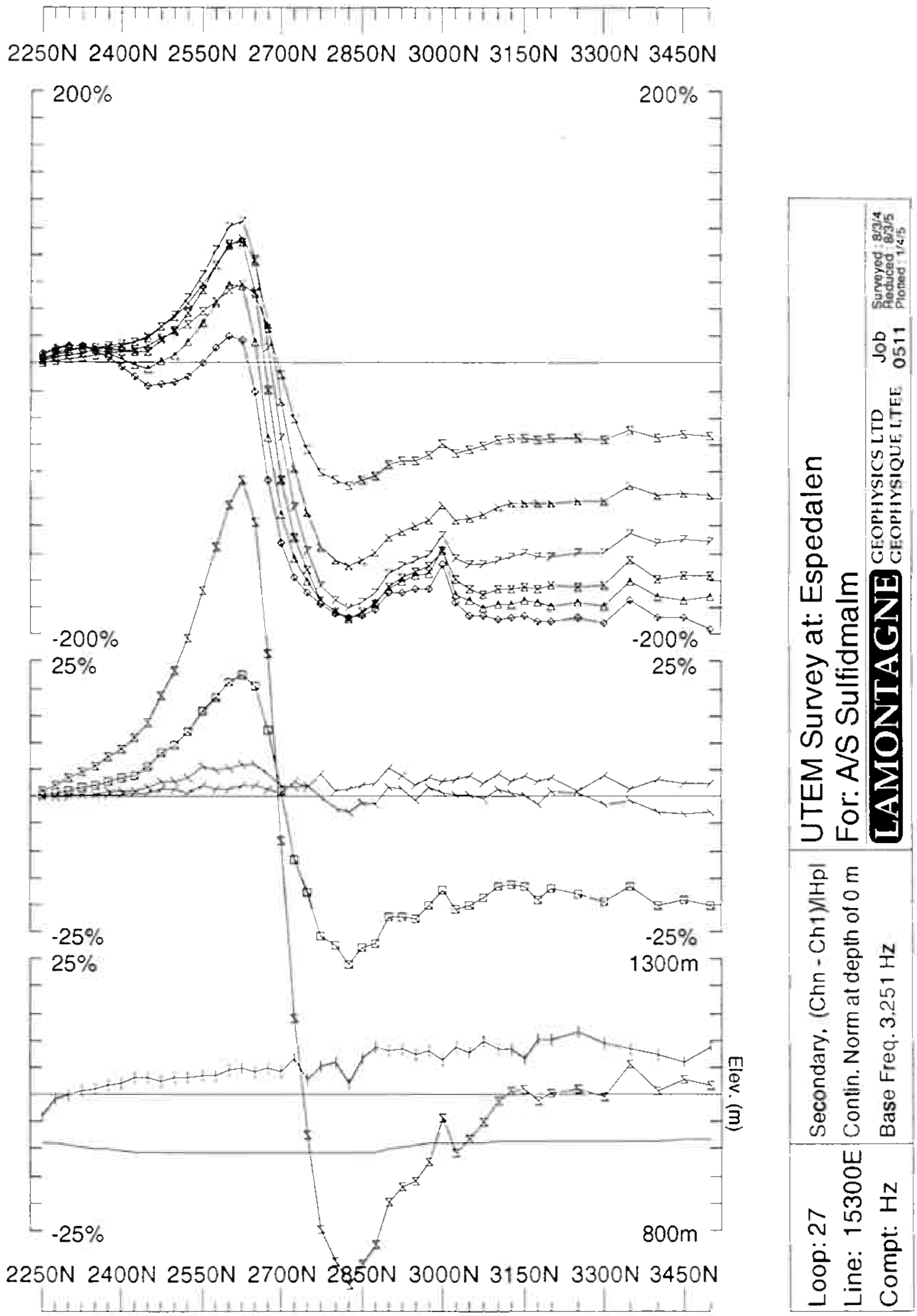
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

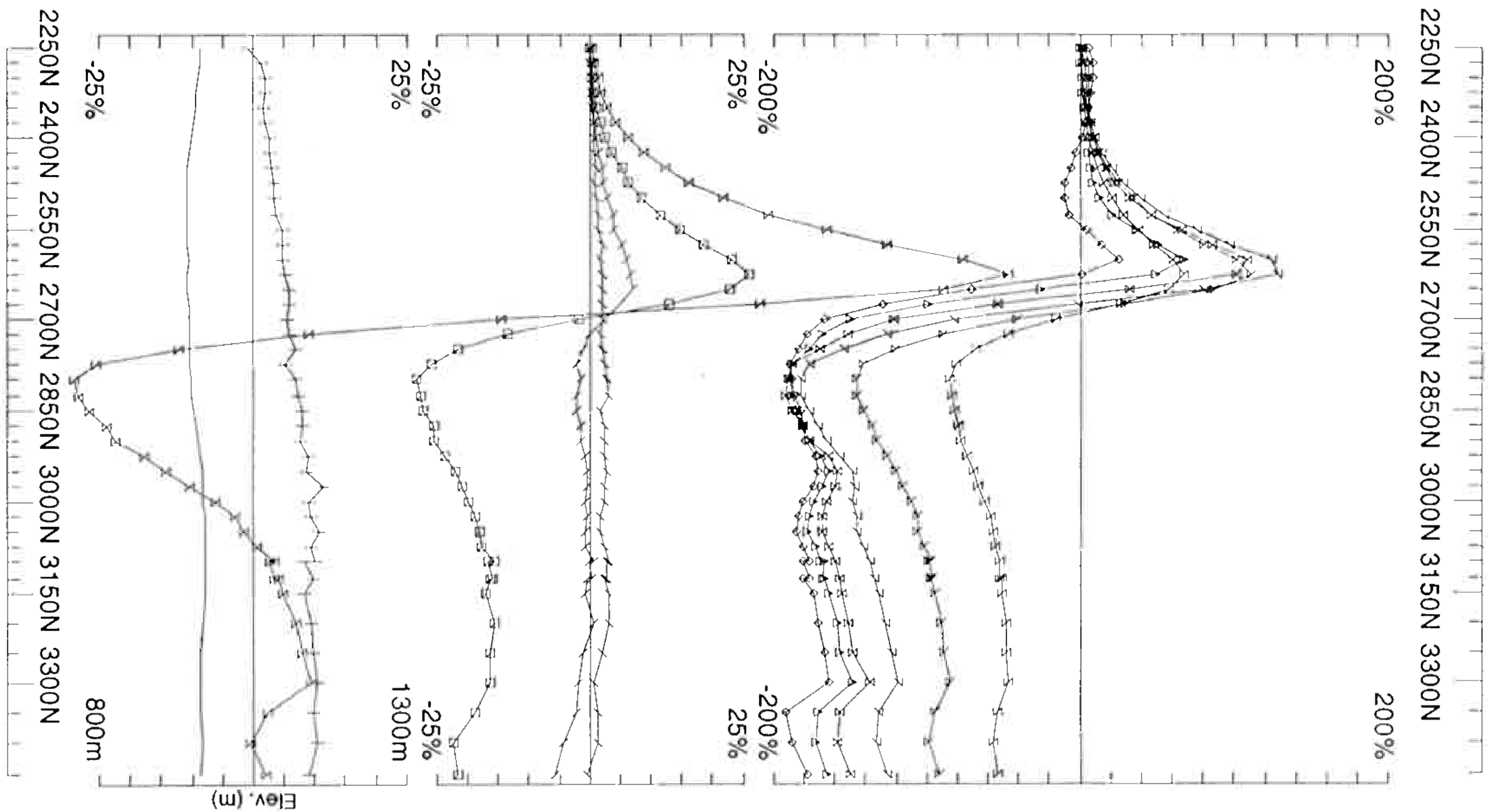
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

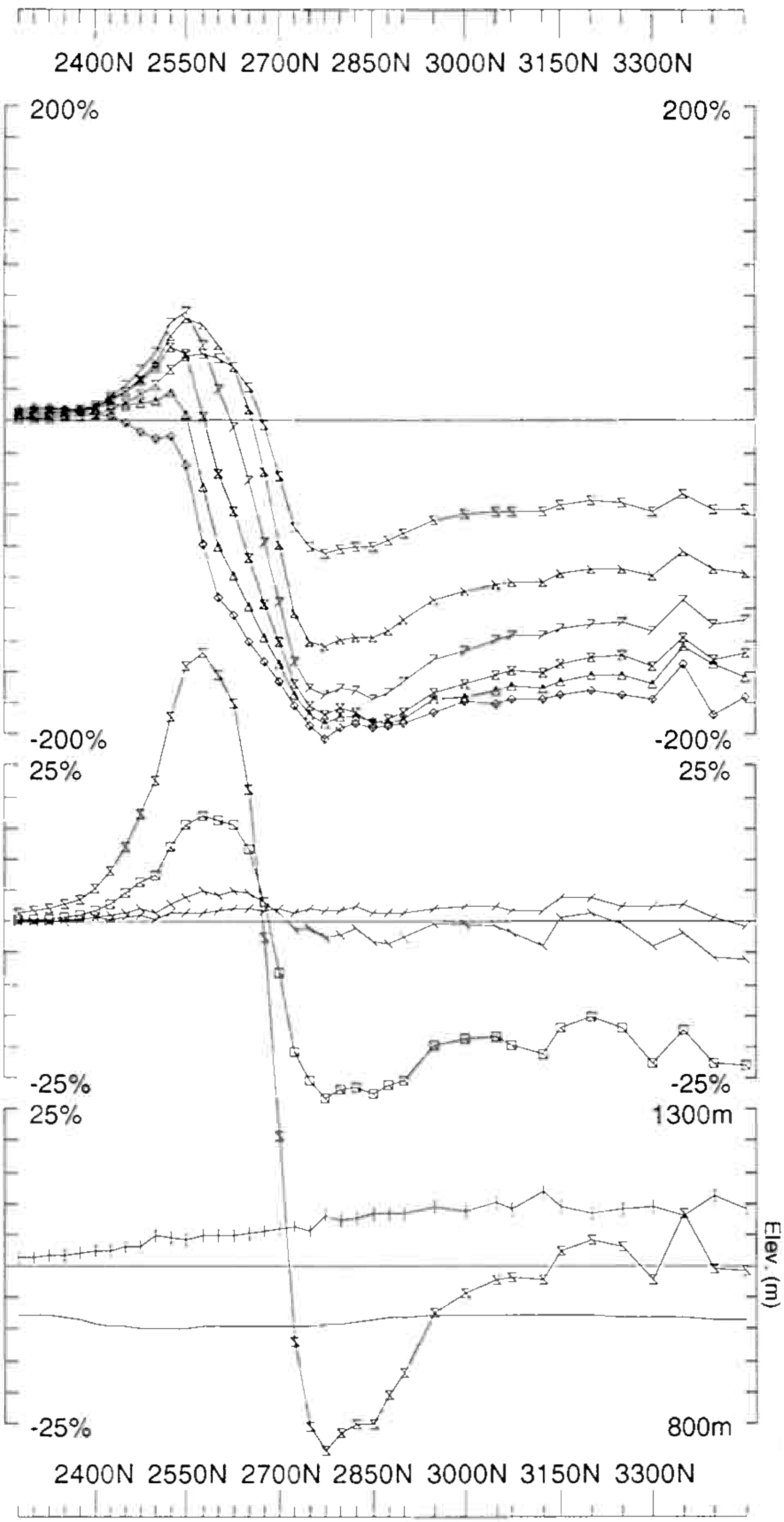
Plotted: 1/4/5



2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N 3450N
200%
200%
-200%
-200%
25%
25%
-25%
-25%
25%
1300m
-25%
800m
Elev. (m)
2250N 2400N 2550N 2700N 2850N 3000N 3150N 3300N 3450N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job 0511
Surveyed: 8/3/4
Reduced: 8/3/5
Plotted: 1/4/5
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 27
Line: 15300E
Compt: Hz



Loop: 27	Secondary, (Chn - Ch1)/IHpl	UTEM Survey at: Espedalen
Line: 15500E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 9/3/5 Reduced: 9/3/5 Plotted: 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

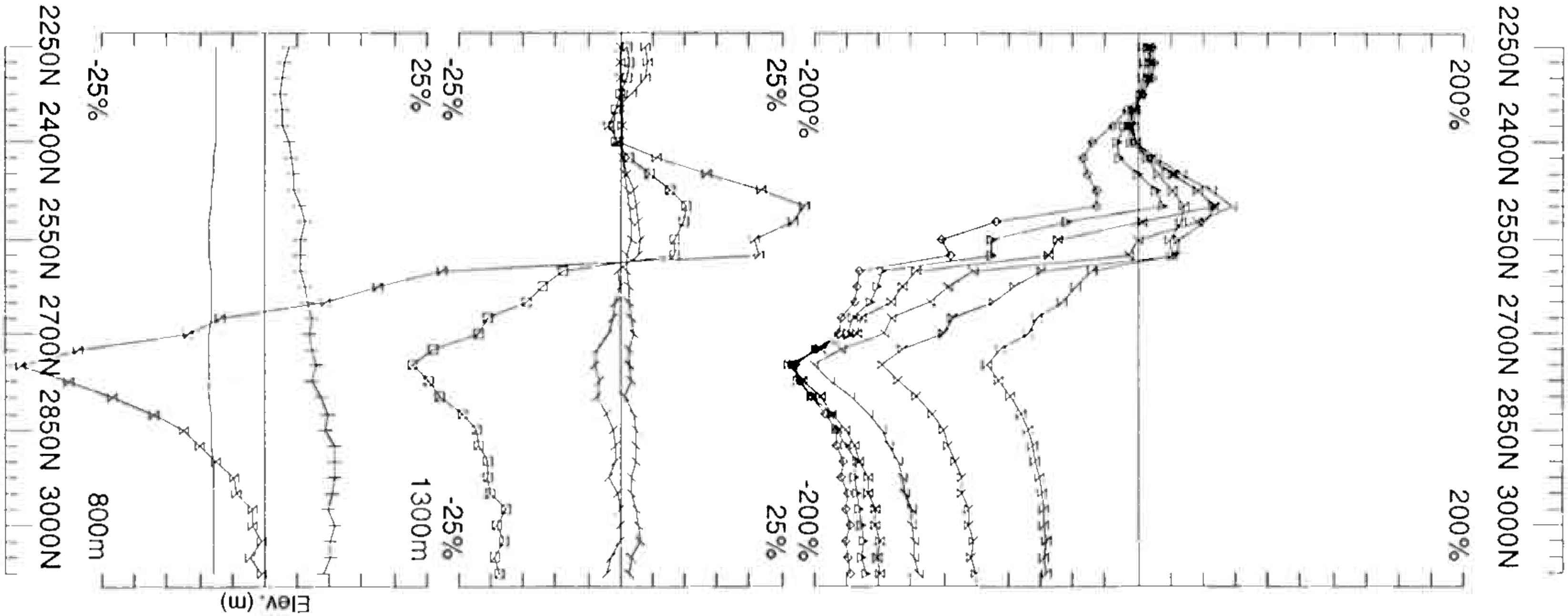
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

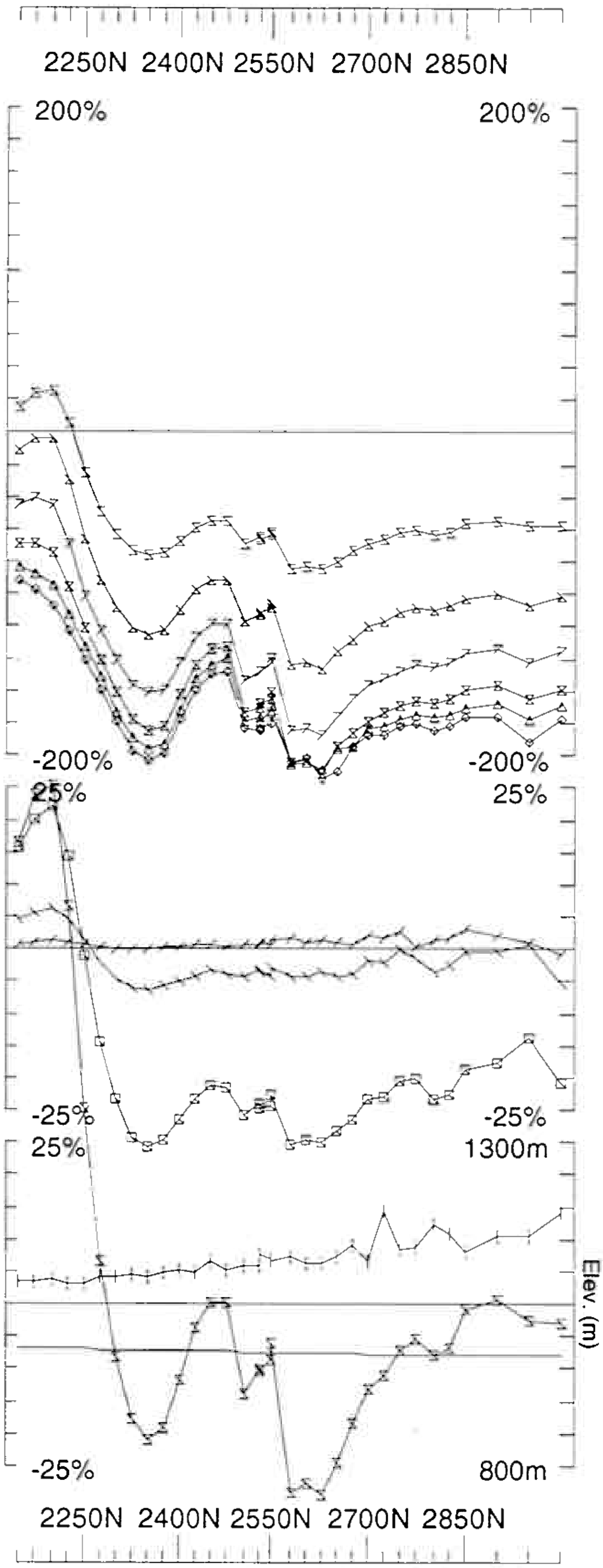
Surveyed : 9/3/5
Reduced : 9/3/5
Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: 27
Line: 15700E
Compt: Hz



Loop: 27	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 15900E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 9/3/5 Reduced : 9/3/5 Plotted : 1/4/5



UTEM Survey at: Espedalen

For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Plotted : 1/4/5

Secondary, (Chn - Ch1)/IHpl

Contin. Norm at depth of 0 m

Base Freq. 3,251 Hz

Loop: 27

Line: 16100E

Compt: Hz

Espedalen

Loop 28

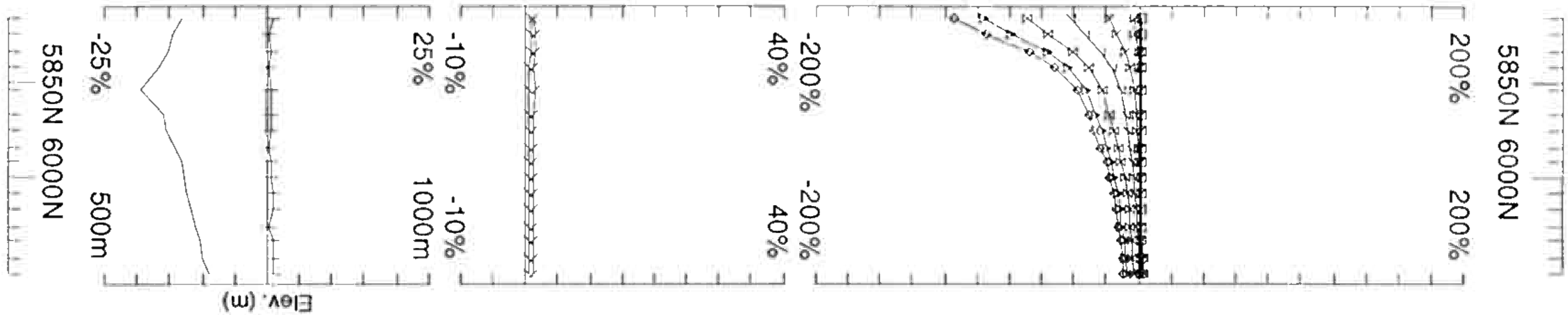
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (13000E,5525N,800 m.a.s.l.)

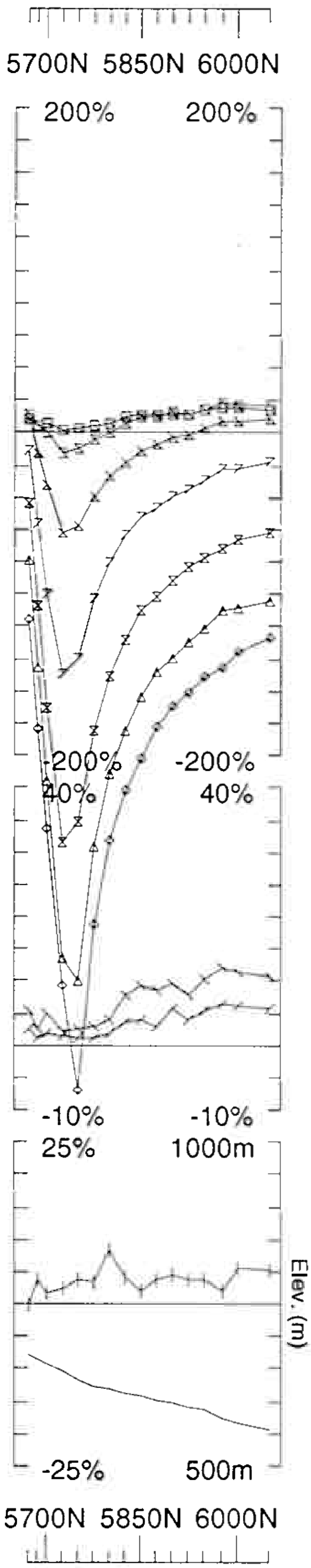
Ch1 reduced

Loop 28	Line 12700E	5750N - 6150N	400m
	Line 12900E	5725N - 6025N	300m
	Line 13100E	5675N - 6050N	375m
	Line 13200E	5650N - 6100N	450m
	Espedalen	Loop 28 Total	1525m

Loop 28 - point norm



Loop: 28 Line: 12700E Compt: Hz	Secondary, (Chn - Ch1)/IHpl Point Norm.at x,y,z (13000,5525,800) Base Freq. 3.251 Hz	UTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 3/3/5 Reduced : 3/3/5 Plotted : 1/4/5



Loop: 28
Line: 13100E
Compt: Hz

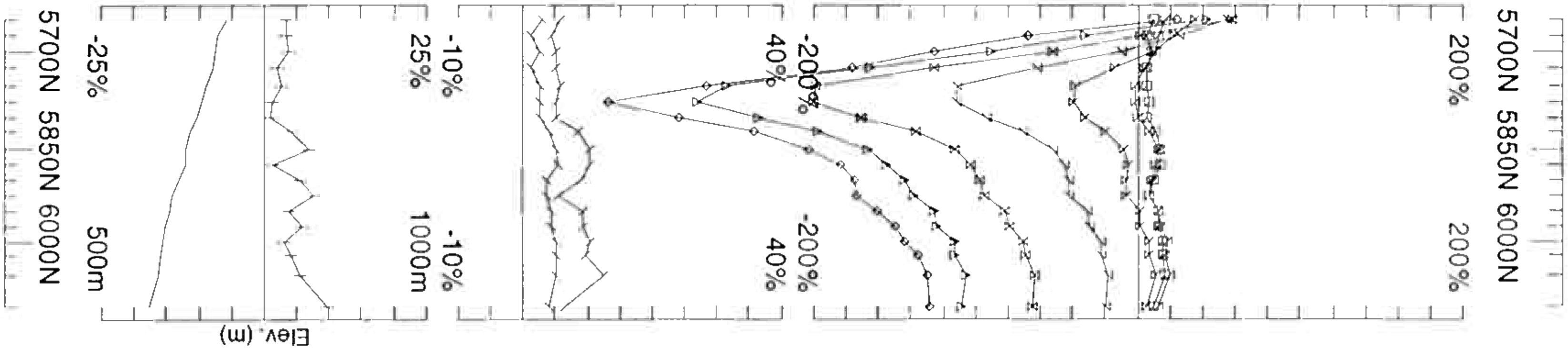
Secondary, (Chn - Ch1)/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed : 3/3/5
Reduced : 3/3/5
Plotted : 1/4/5



Loop: 28	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 13200E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 3/3/5 Reduced: 3/3/5 Plotted: 1/4/5

Espedalen

Loop 29

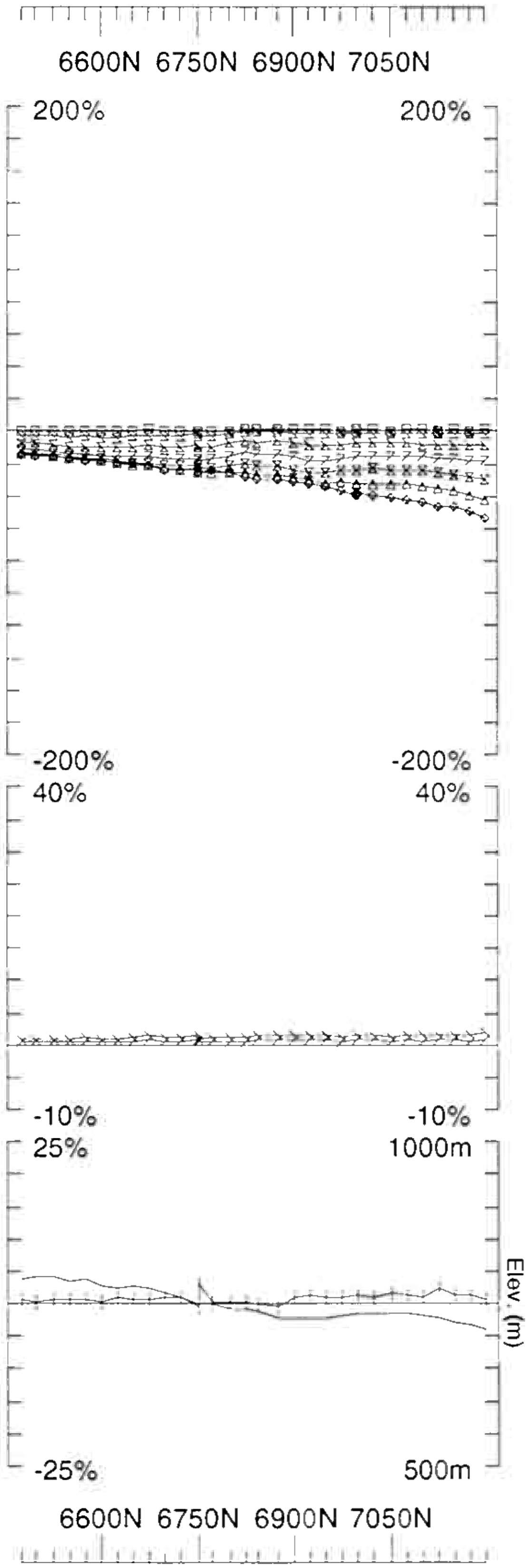
Hz
@3.251 Hz frequency

point norm
@
(x,y,z) = (12400E,7400N, 600 m.a.s.l.)

Ch1 reduced

Loop 29	Line 12100E	6475N - 7200N	725m
	Line 12300E	6350N - 7275N	925m
	Line 12500E	6250N - 7300N	1050m
	Line 12700E	6300N - 7300N	1000m
	Line 12900E	6300N - 7100N	800m
	Line 13100E	6350N - 7075N	725m
	Line 13200E	6425N - 7100N	675m
	Espedalen	Loop 29 Total	5900m

Loop 29 - point norm



Loop: 29
Line: 12100E
Compt: Hz

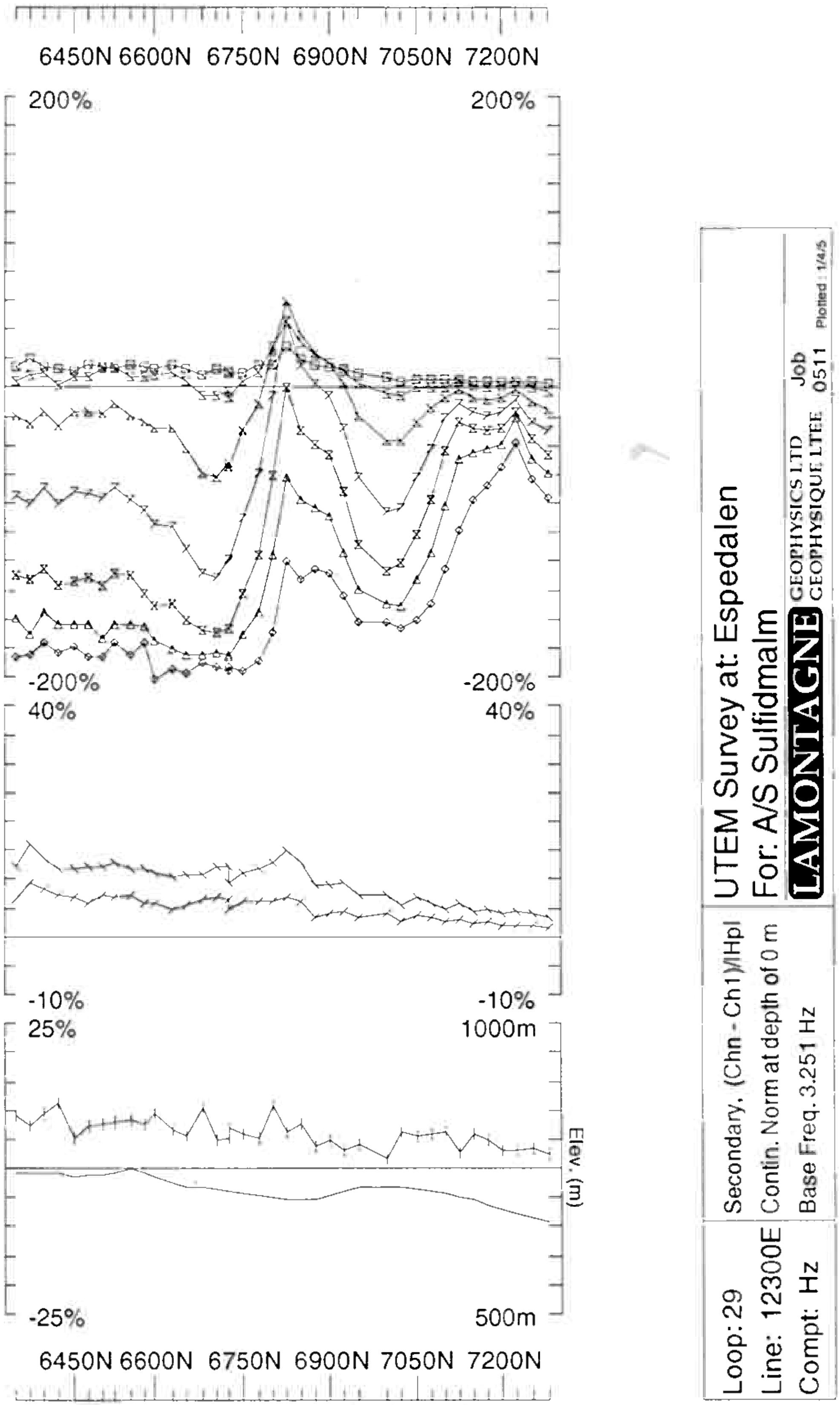
Secondary, (Chn - Ch1)/IHpl
Point Norm.at x,y,z
(12400,7400,600)
Base Freq. 3.251 Hz

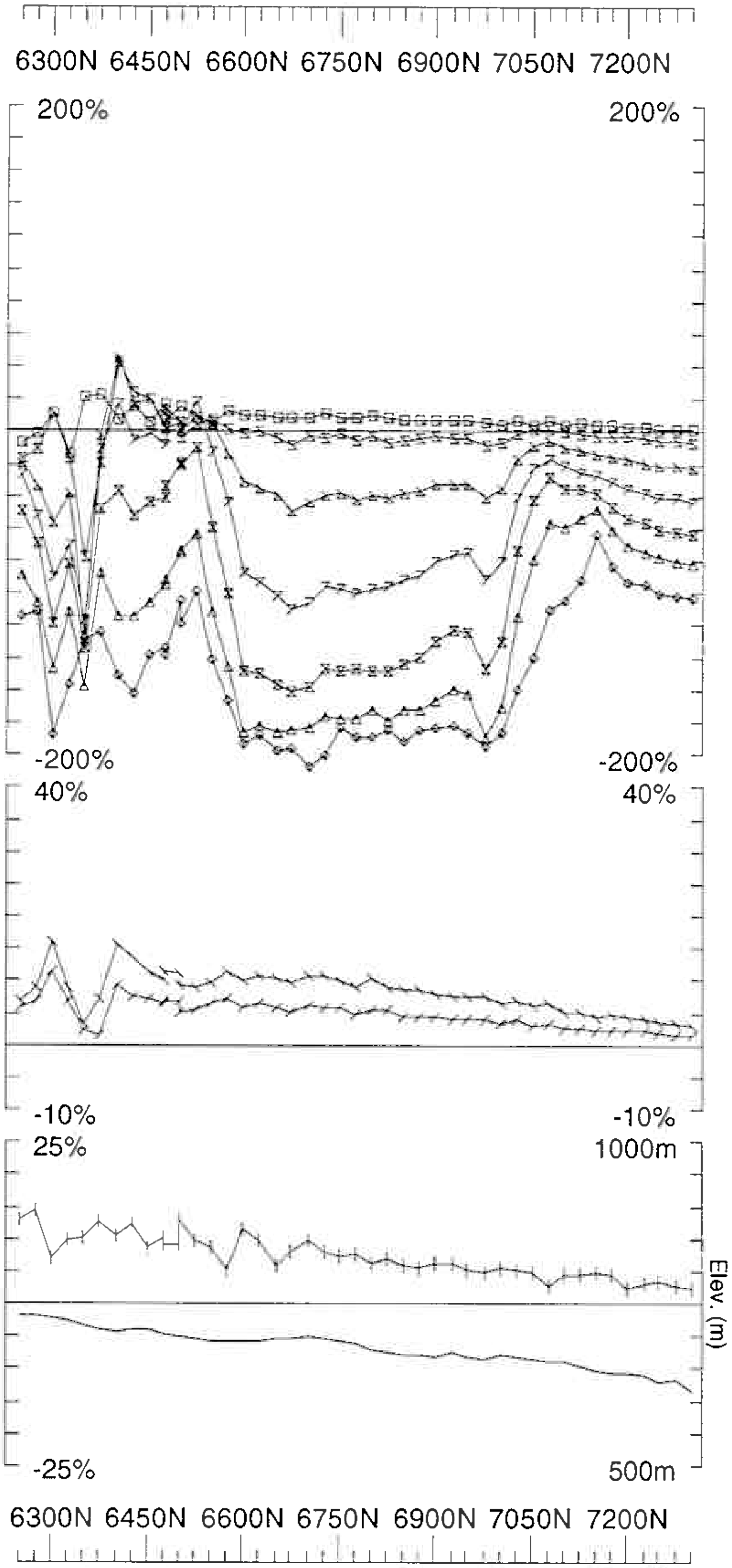
UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Plotted 1/4/5

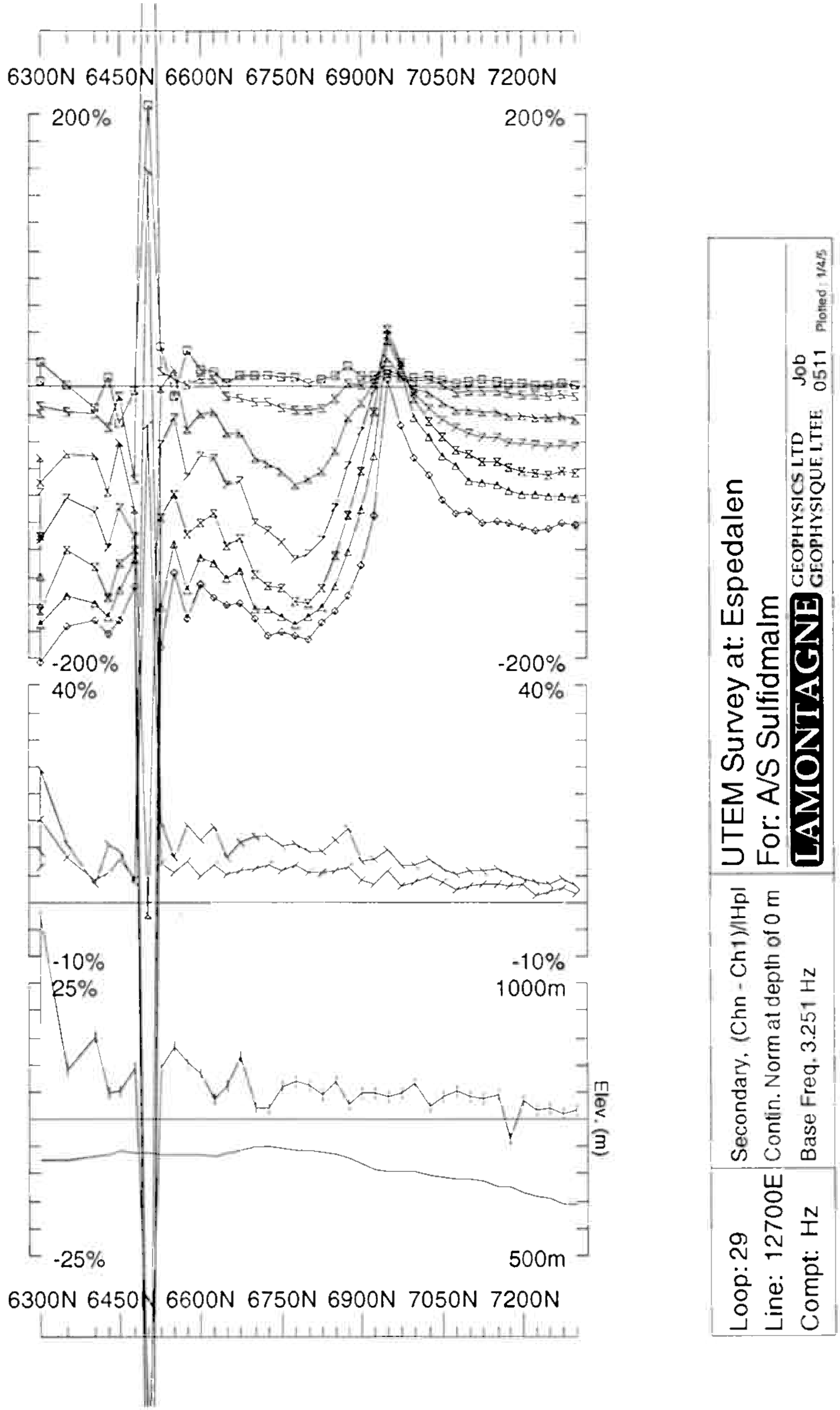

6450N 6600N 6750N 6900N 7050N 7200N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1000m
Elev. (m)
-25%
500m
6450N 6600N 6750N 6900N 7050N 7200N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Secondary, (Chn - Ch1)/IHpI
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 29
Line: 12300E
Compt: Hz

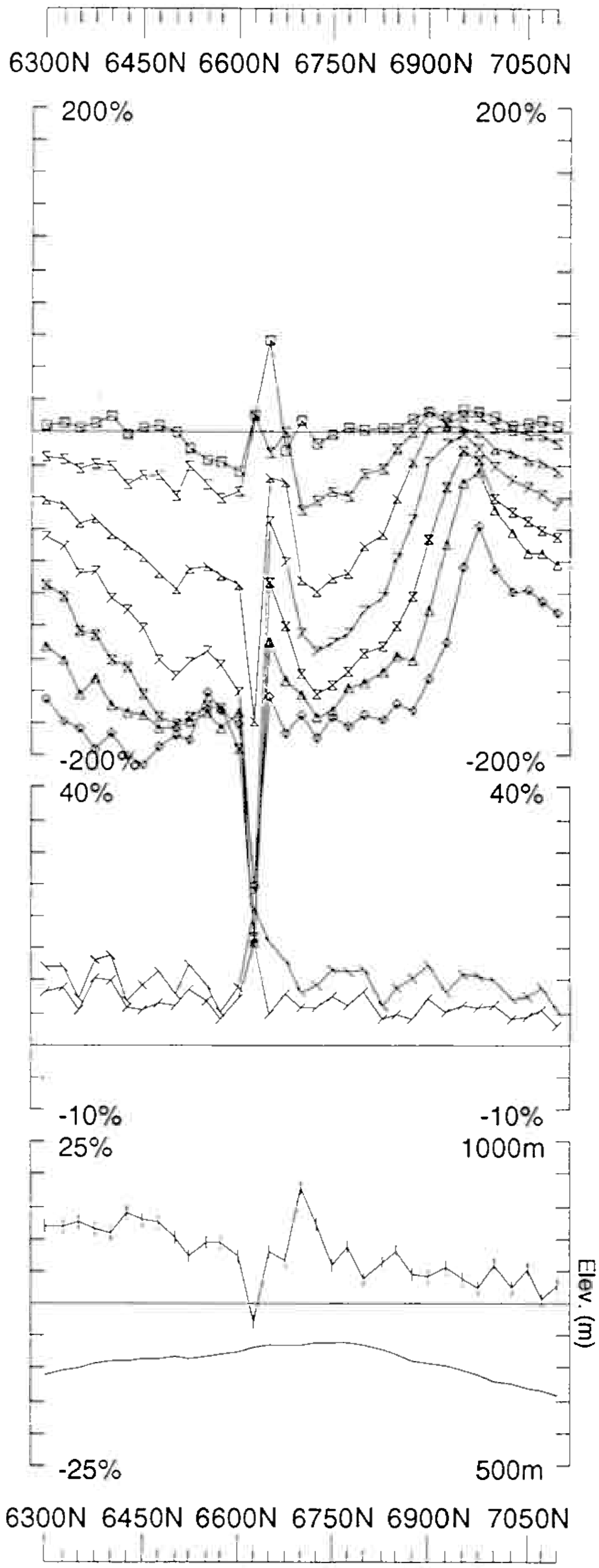


UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted : 1/4/5

Loop: 29
Line: 12500E
Compt: Hz

Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz


6300N 6450N 6600N 6750N 6900N 7050N 7200N
200%
200%
-200%
-200%
40%
40%
-10%
-10%
25%
1000m
Elev. (m)
-25%
500m
6300N 6450N 6600N 6750N 6900N 7050N 7200N
UTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Plotted: 1/4/5
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 29
Line: 12700E
Compt: Hz



Loop: 29
Line: 12900E
Compt: Hz

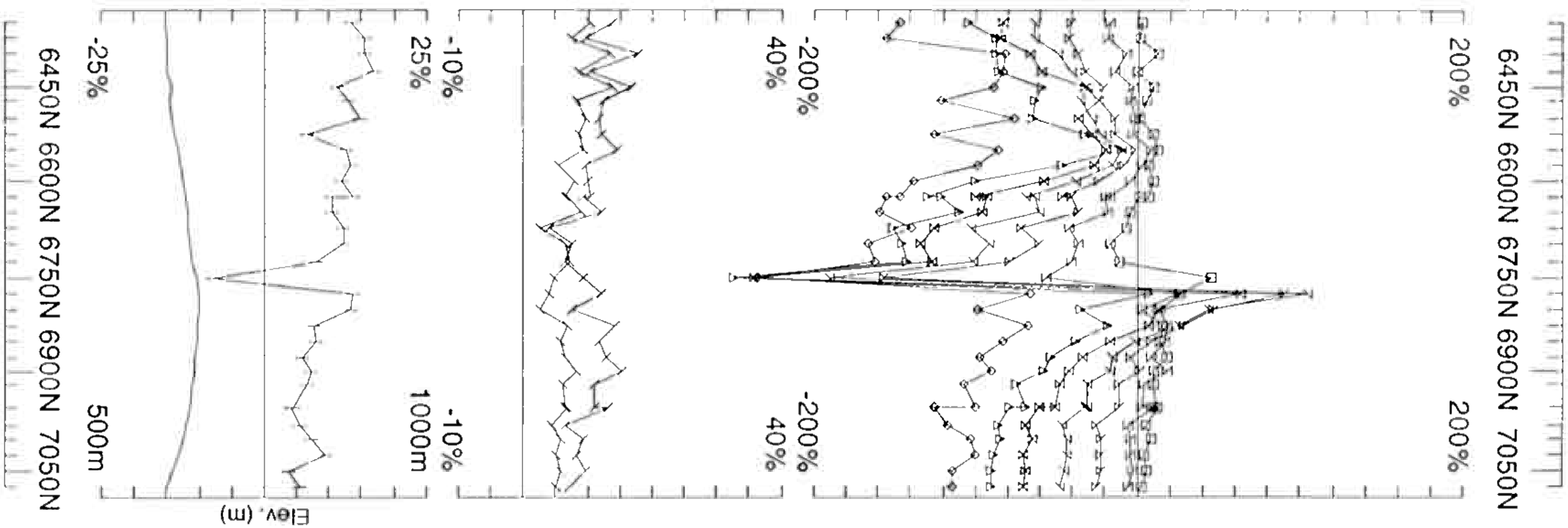
Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

UTEM Survey at: Espedalen
For: A/S Sulfidmalm

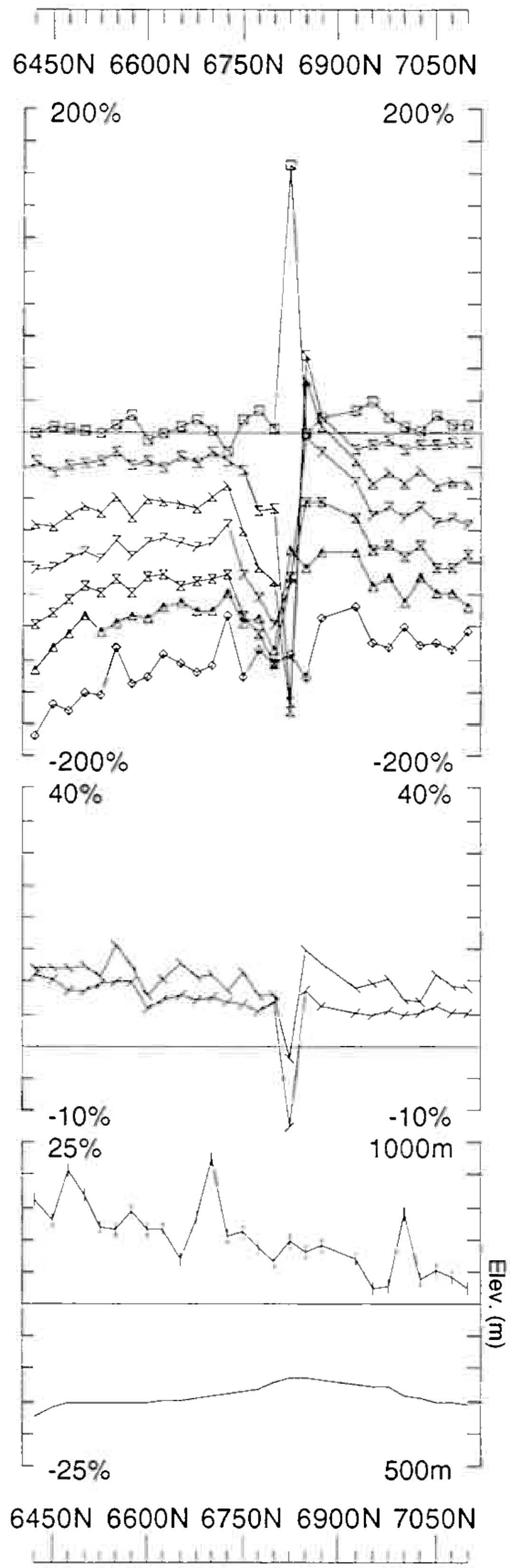
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Job 0511

Surveyed: 1/3/5
Reduced: 2/3/5
Plotted: 1/4/5



Loop: 29	Secondary, (Chn - Ch1)/IHpI	UTEM Survey at: Espedalen
Line: 13100E	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Hz	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Plotted : 1/4/5



UTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job 0511

Surveyed: 28/2/5
Reduced: 2/3/5
Plotted: 1/4/5

Loop: 29
Line: 13200E
Compt: Hz

Secondary, (Chn - Ch1)/|Hp|
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

0511

BHUTEM 3 Profiles with vectorplots

Dalen:	ES2004-05	118m	~119m	Loop 15a	3.251Hz
	ES2004-07	70m	71m	Loop 15a	3.251Hz
Stormyra:	ES2004-08	82m	84m	Loop 20	3.251Hz
	ES2004-09	110(130)m	~139m	Loop 20	3.251Hz
	ES2005-18	170m	171m	Loop 20	3.251Hz
	ES2005-20	127m	130.5m	Loop 20	3.251Hz
Melgard:	ES2004-10	128m	~130m	Loop 25	3.251Hz
Grahoa:	ES2004-16	178m	179.5m	Loop B16	3.251Hz
Stylskampen:	ES2004-17	93m	93m	Loop B17	3.251Hz

Dalen

Loop 15a - BH UTEM-3

@3.251 Hz frequency

Ch1 reduced

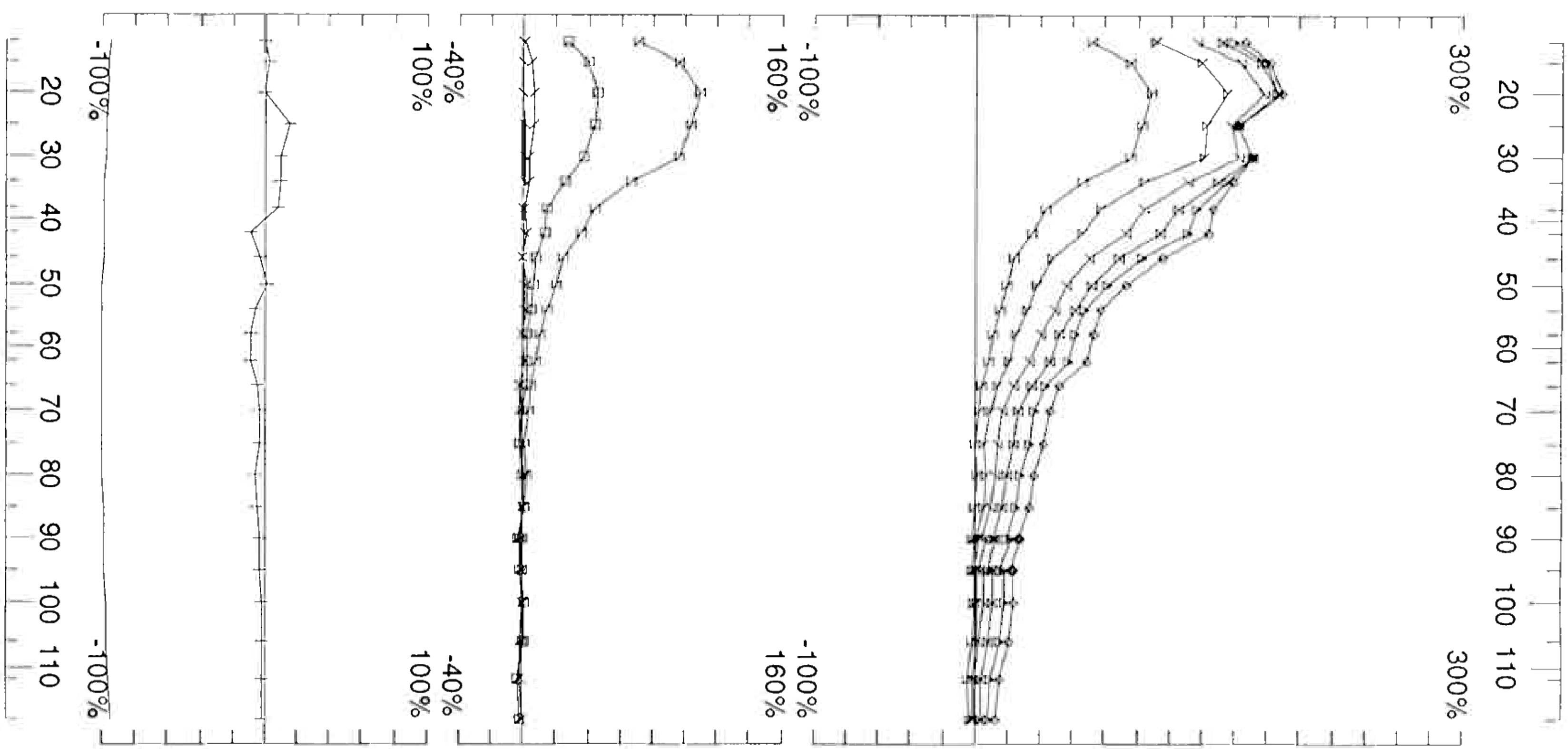
Dalen:	ES2004-05	118m	-119m	Loop 15a	3.251Hz
	ES2004-07	70m	71m	Loop 15a	3.251Hz

ES2004-05
ES2004-07

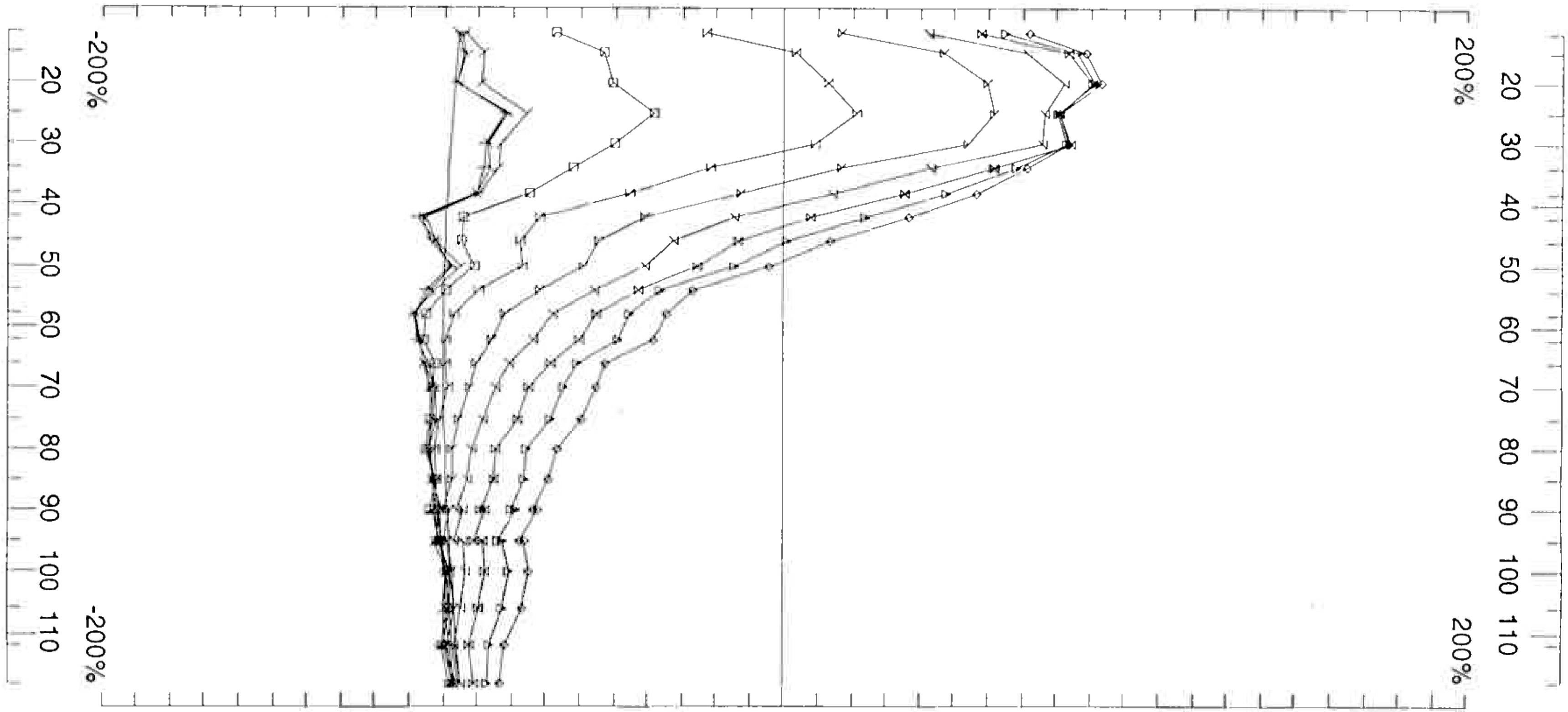
3-axis plot
total field plot

plan vectorplot
gridnorth-south section vectorplot

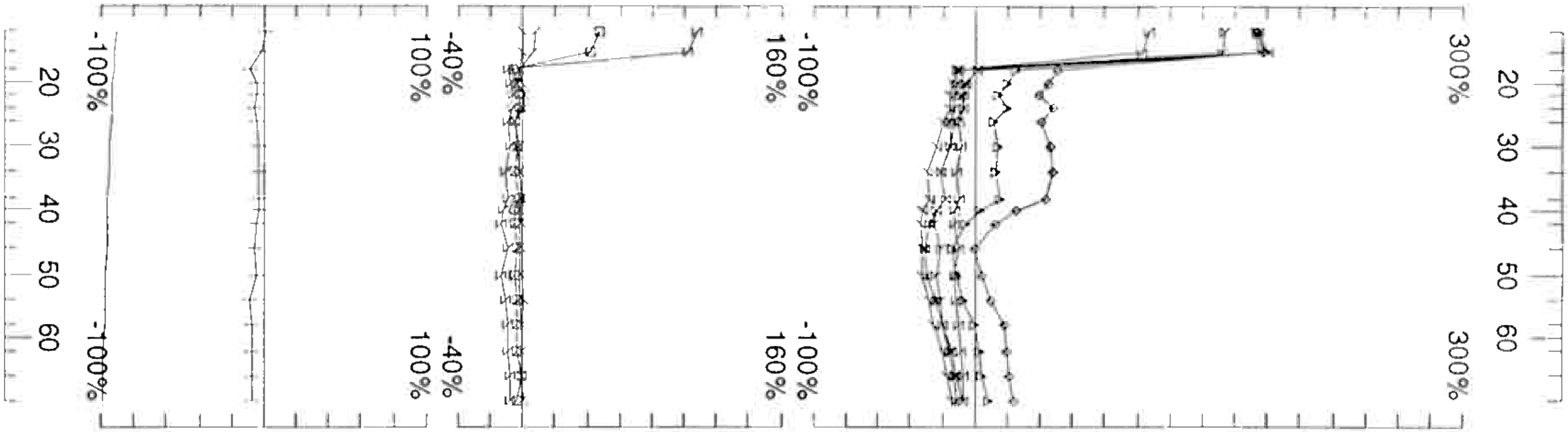
ES2004-05/07



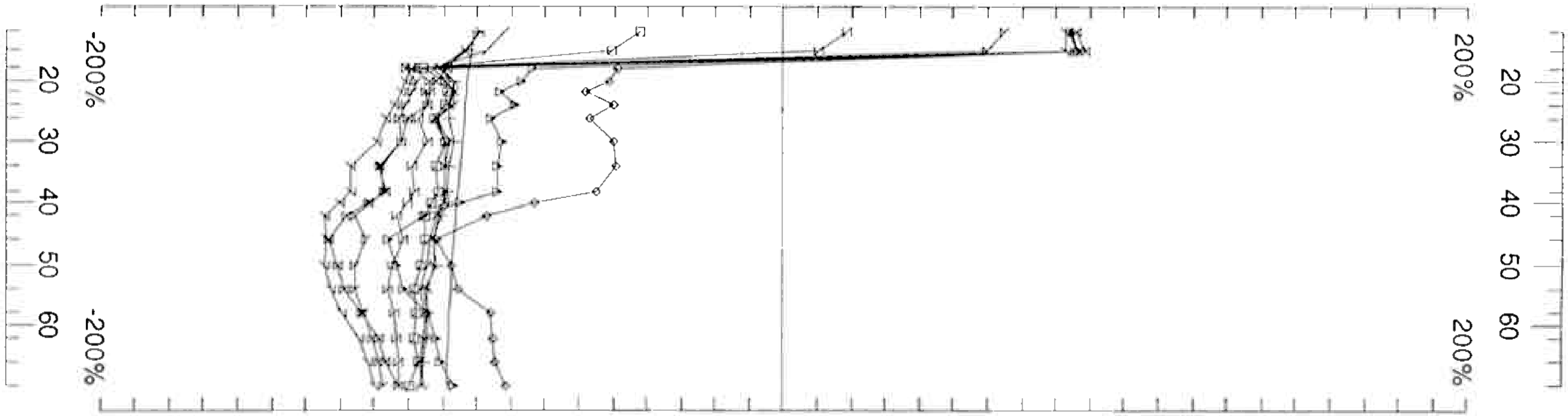
Loop: 15a	Secondary, (Chn - Ch1)/IHpI	BHUTEM Survey at: Espedalen
Hole: ES-2004-05	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE — Job 0511 — Surveyed: 5/11/15 Reduced: 22/3/5 Plotted: 11/4/5



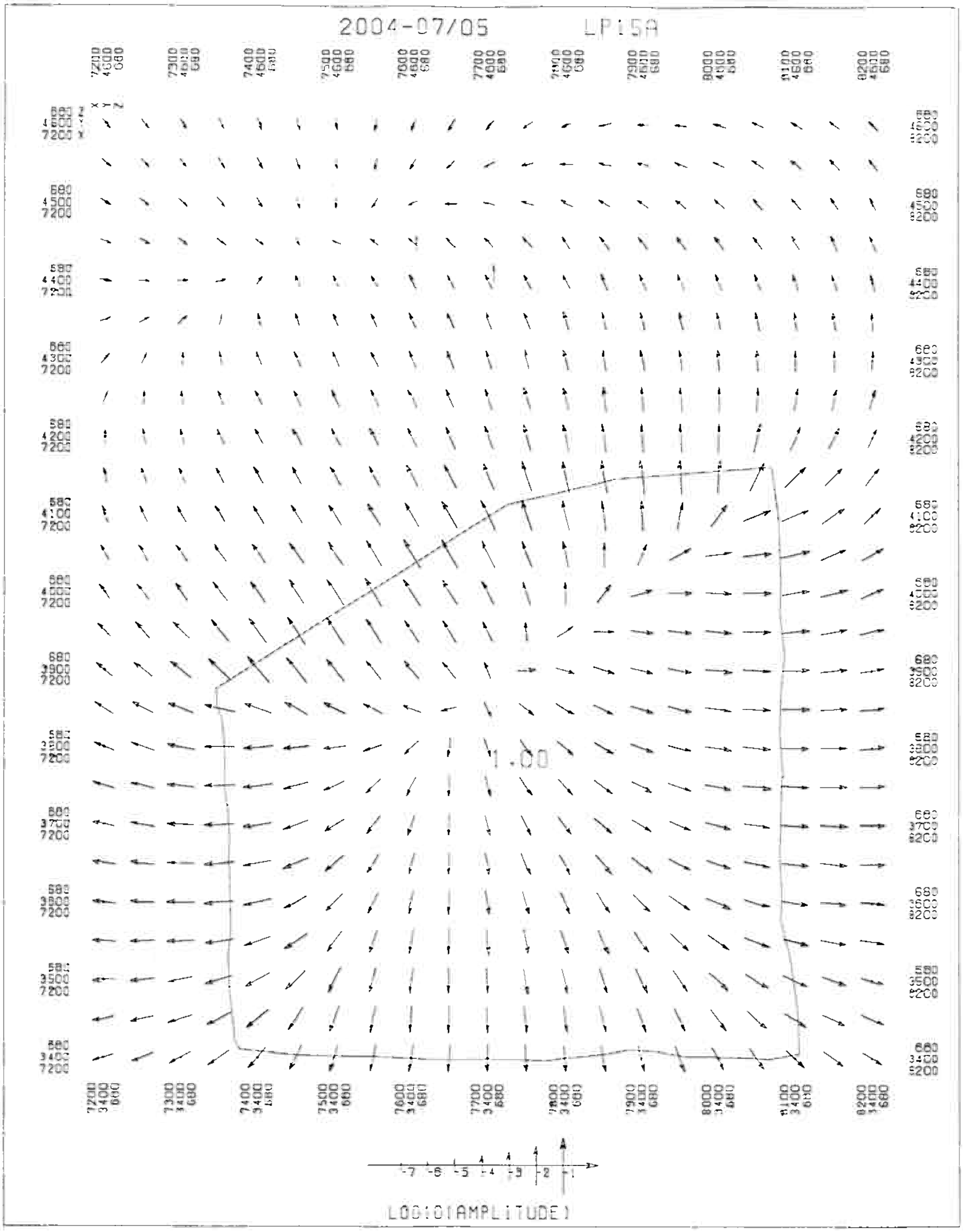
Loop: 15a	Total, Chn/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-05	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/11/15 Reduced : 22/3/5 Plotted : 11/4/5

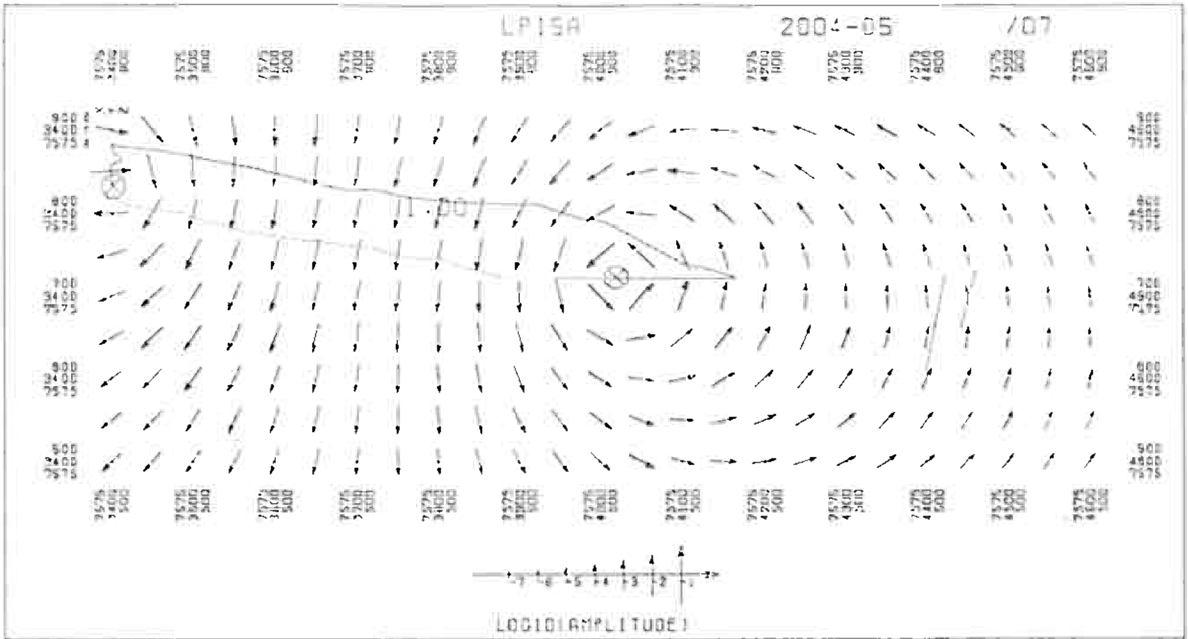


Loop: 15a	Secondary, (Chn - Ch1)/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-07	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/11/15 Reduced : 22/3/5 Plotted : 11/4/5



Loop: 15a Hole: ES-2004-07 Compt: Axial	Total, Chn/lHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	BHUTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 5/11/15 Reduced : 22/3/5 Plotted : 11/4/5


2004-07/05
LP15A
1.00
LOG10(AMPLITUDE)


LPISA
2004-05
/07
LOG10(AMPLITUDE)

Stormyra

Loop 20 - BH UTEM-3

@3.251 Hz frequency

Ch1 reduced

Stormyra:	ES2004-08	82m	84m	Loop	20	3.251Hz
	ES2004-09	110(130)m	~139m	Loop	20	3.251Hz
a	ES2005-18	170m	171m	Loop	20	3.251Hz
	ES2005-20	127m	130.5m	Loop	20	3.251Hz

ES2004-08
ES2004-09

3-axis plot
total field plot

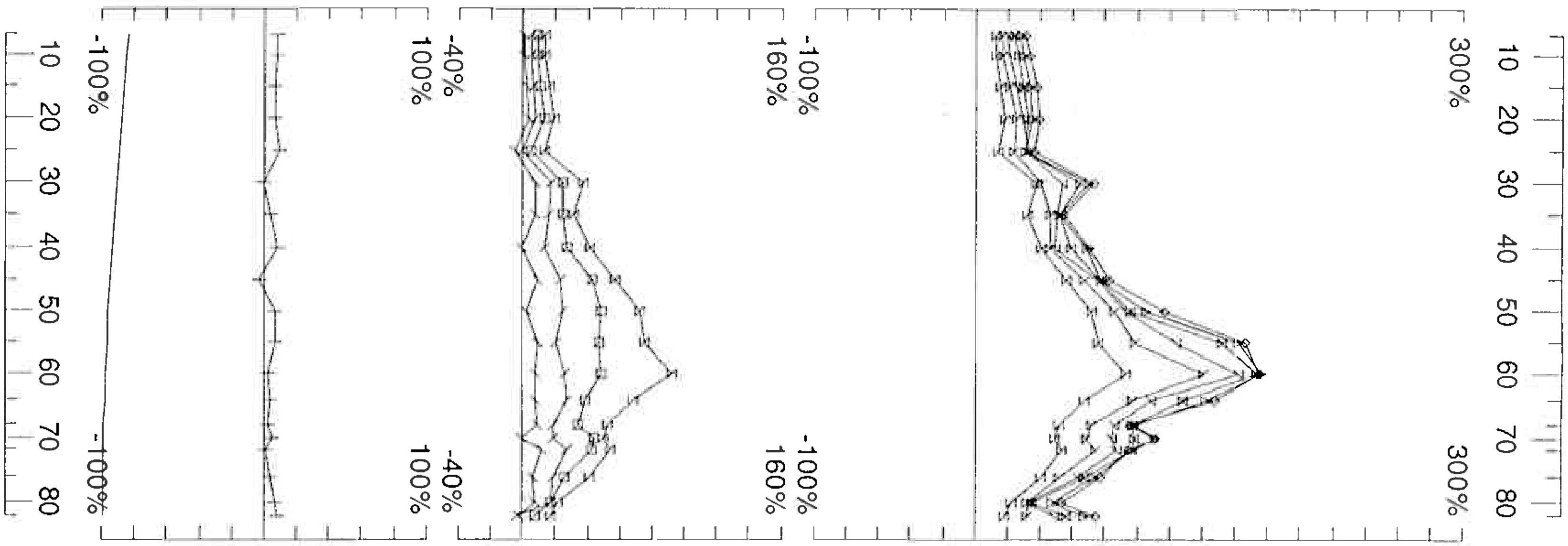
plan vectorplot
gridnorth-south section vectorplot

ES2004-18
ES2004-20

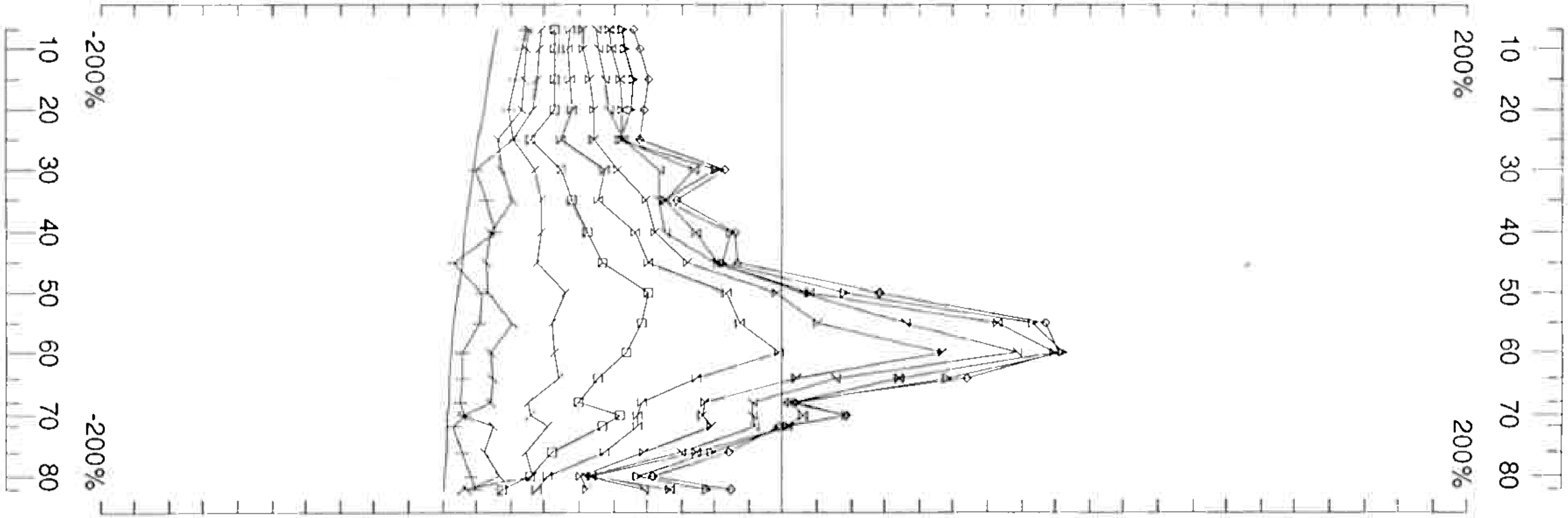
3-axis plot
total field plot

plan vectorplot
gridnorth-south section vectorplot

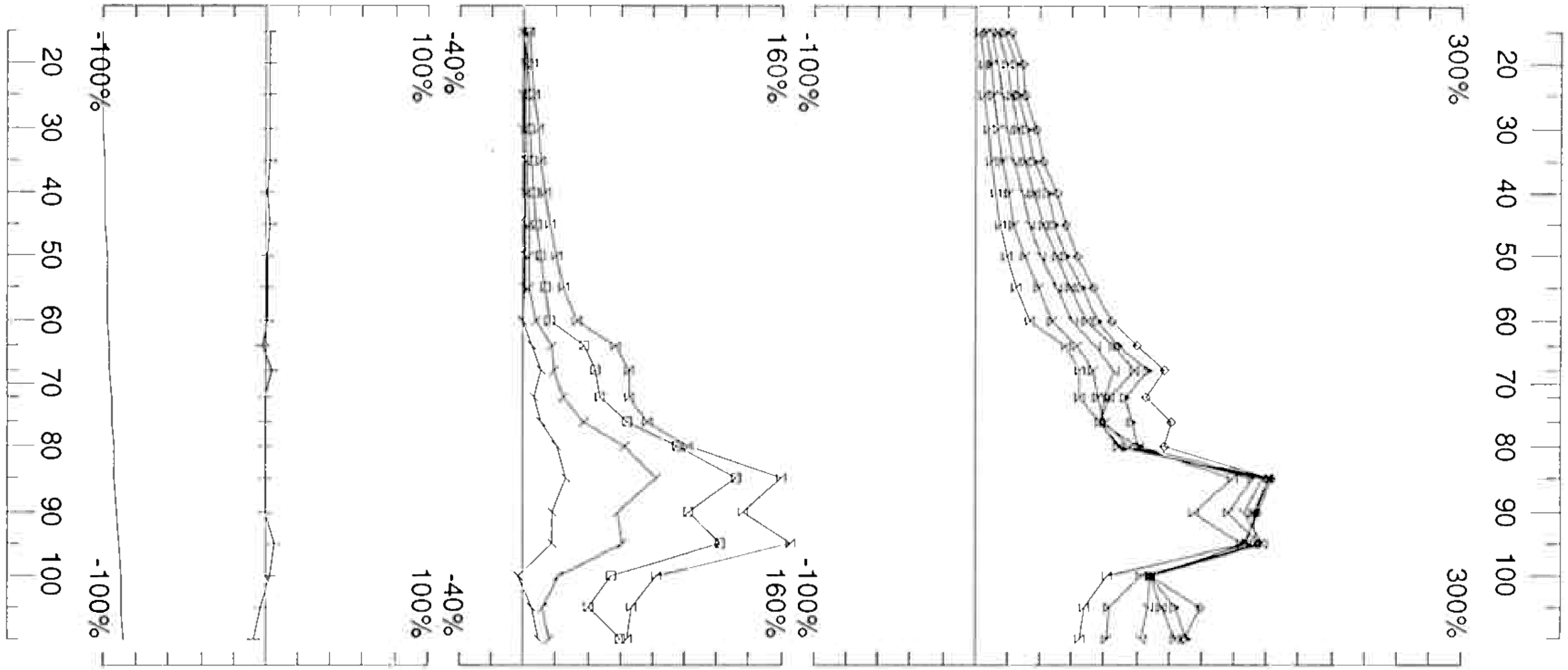
ES2004-08/09 +ES2005-18/20



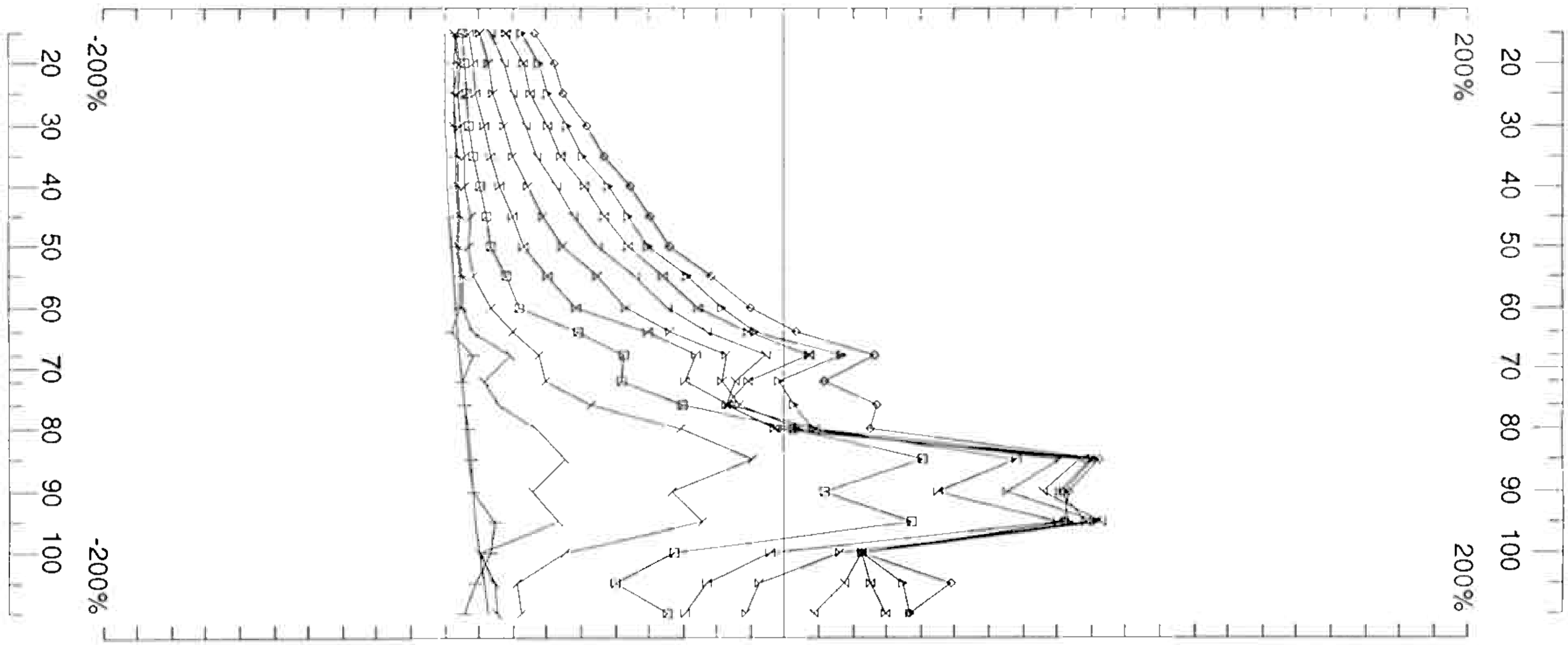
Loop: 20	Secondary, (Chn - Ch1)/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-08	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 23/2/5 Reduced : 10/3/5 Plotted : 11/4/5



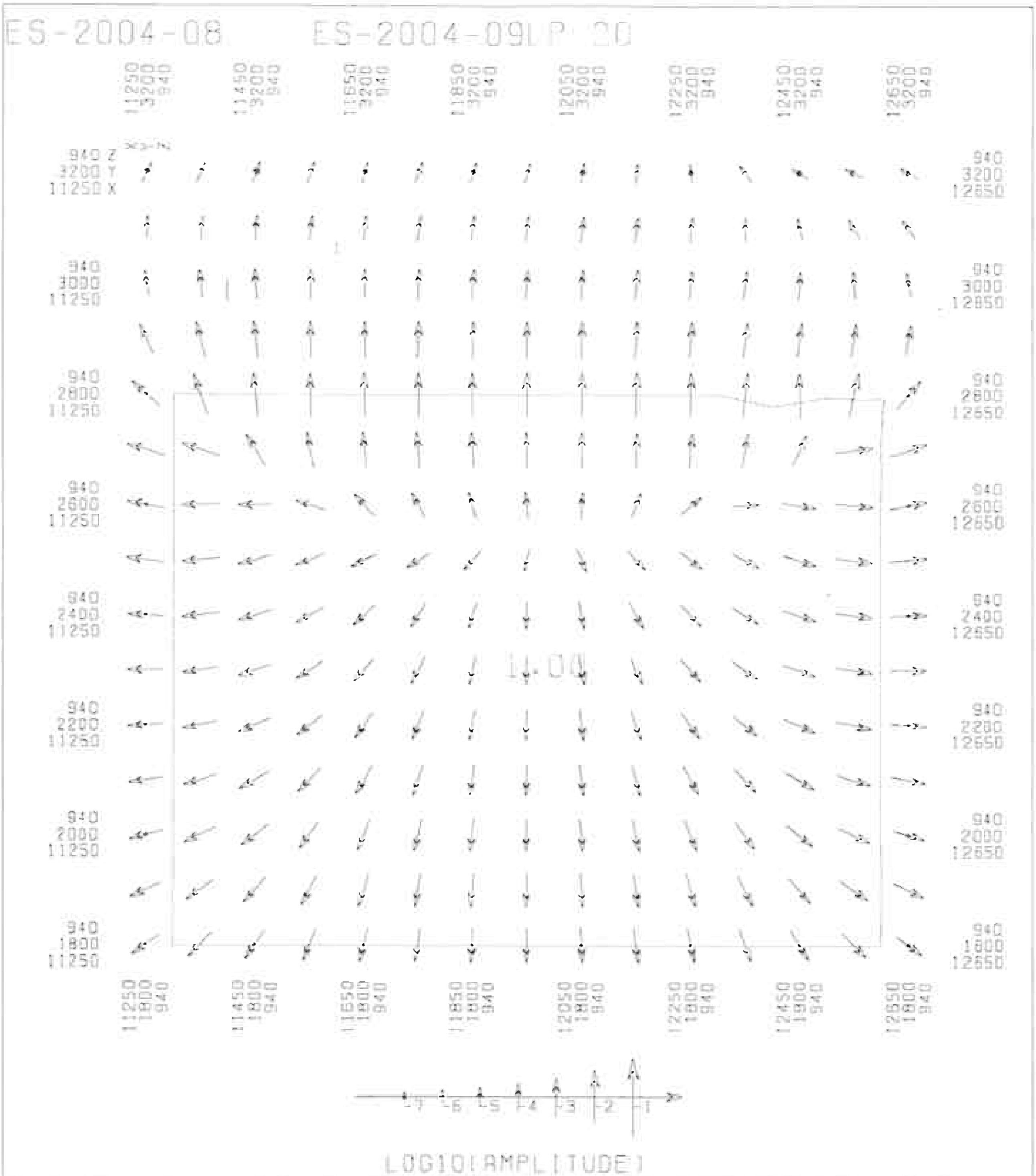
Loop: 20	Total, Chn/lHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-08	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 23/2/5 Reduced : 10/3/5 Plotted : 11/4/5

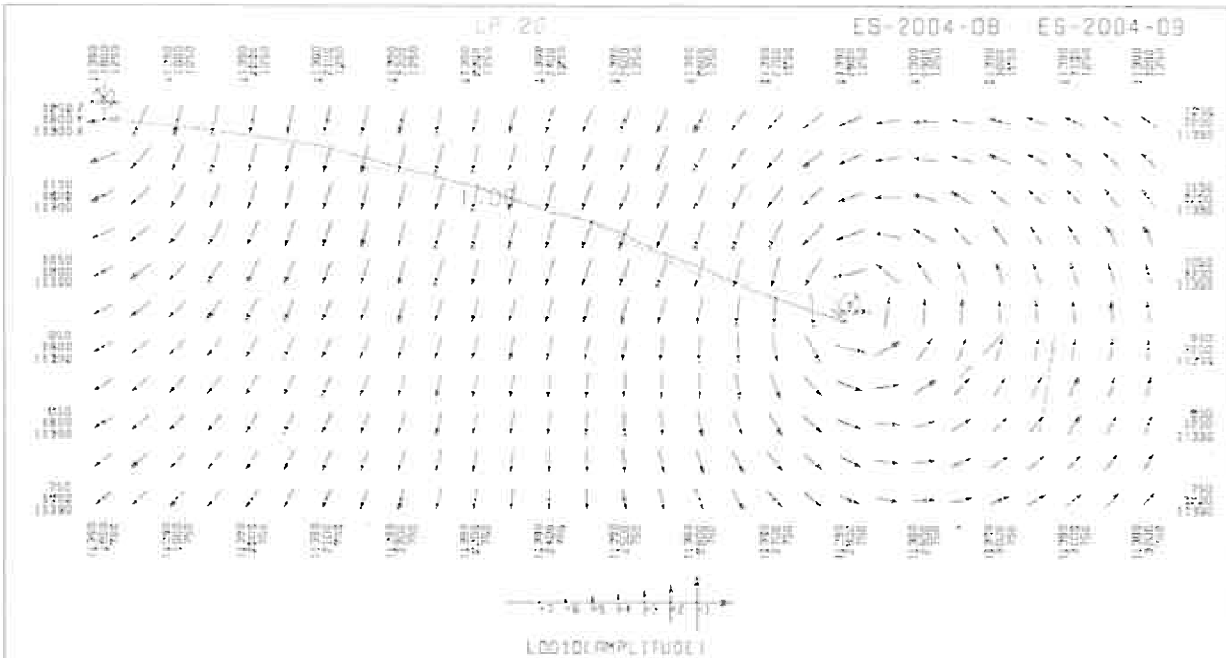


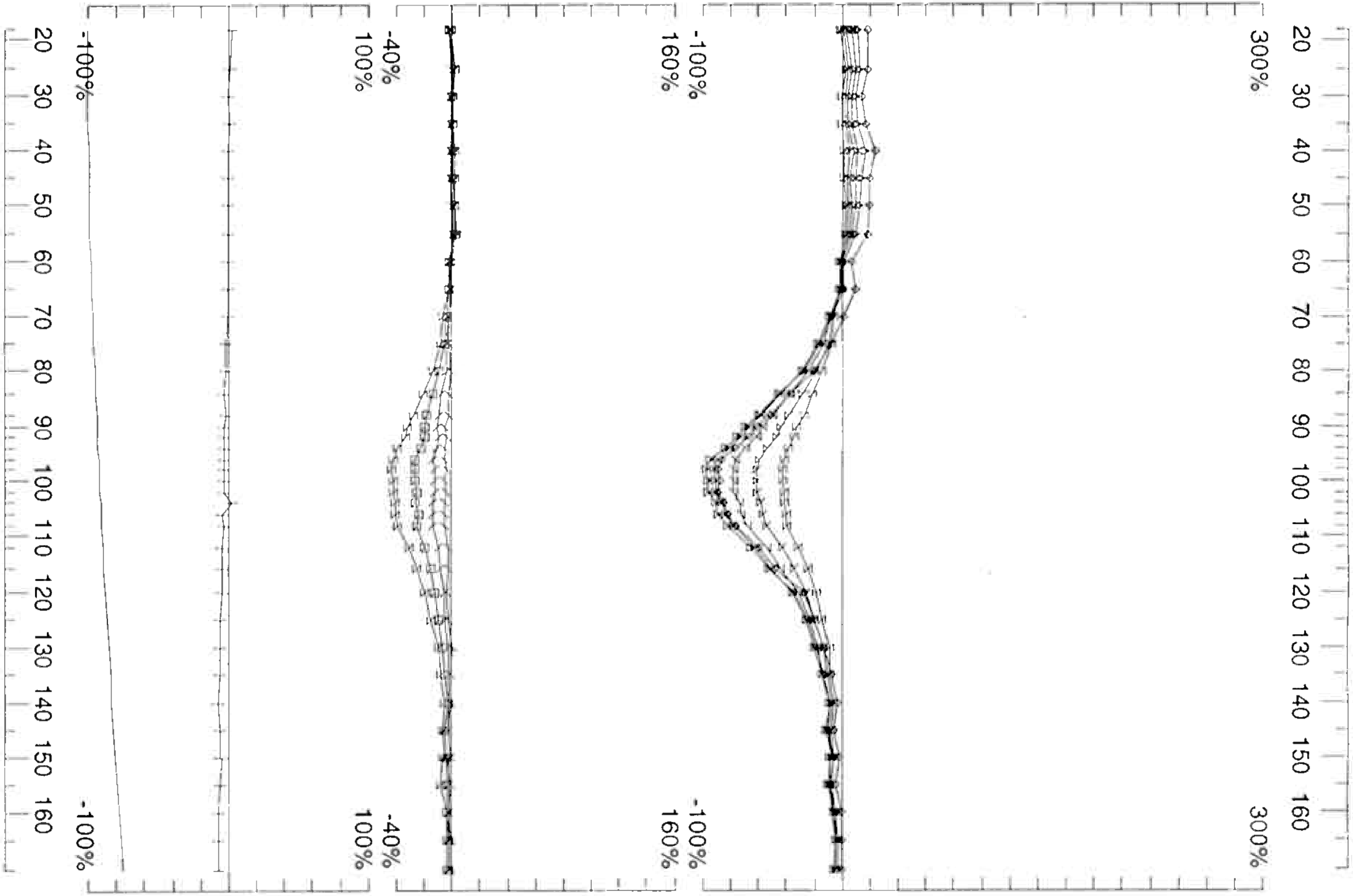
Loop: 20	Secondary, (Chn - Ch1)/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-09	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 25/2/5 Reduced : 21/3/5 Plotted : 11/4/5



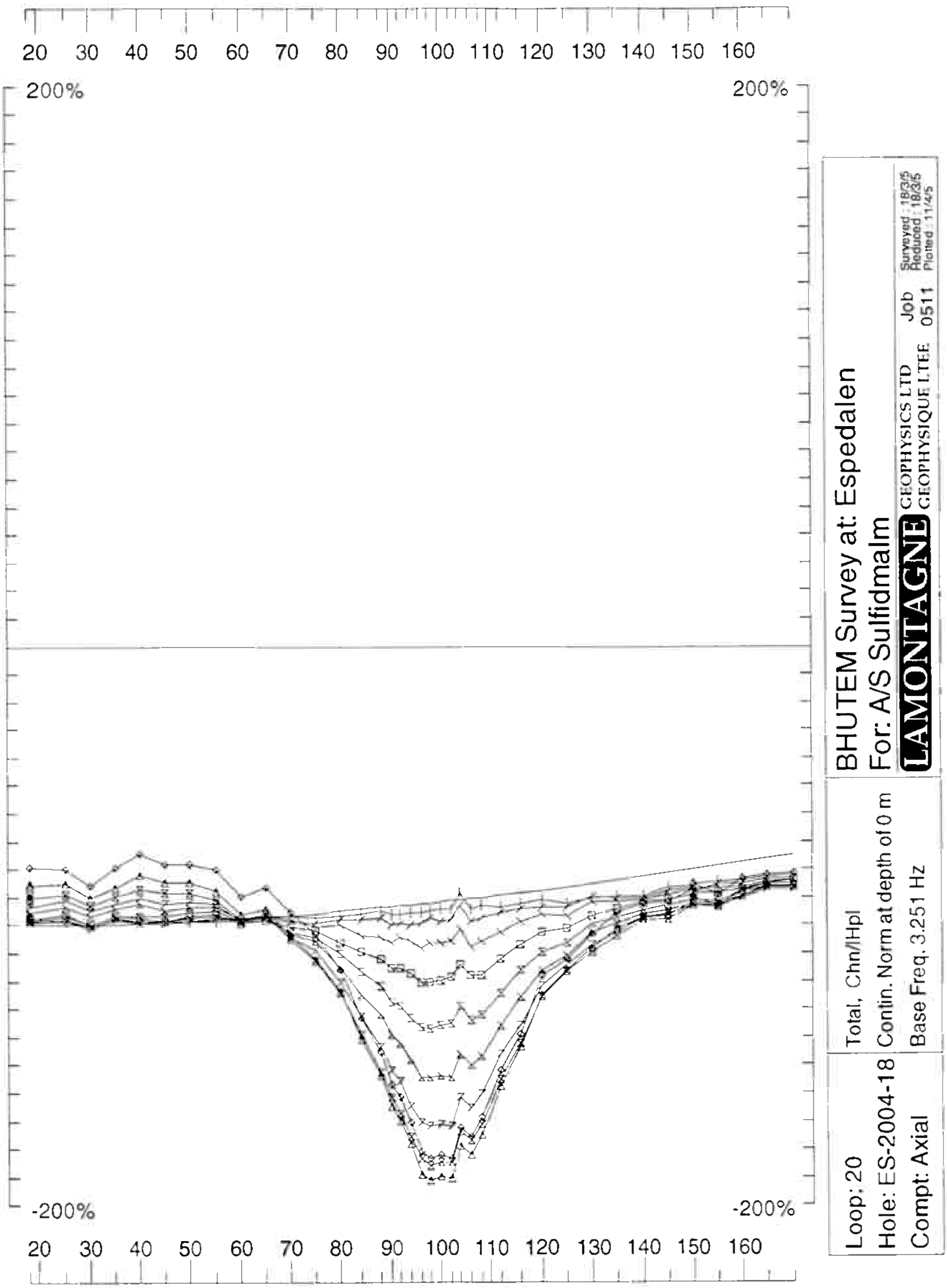
Loop: 20	Total, Chn/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-09	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE · Job 0511 · Surveyed : 25/2/5 Reduced : 21/3/5 Plotted : 11/4/5

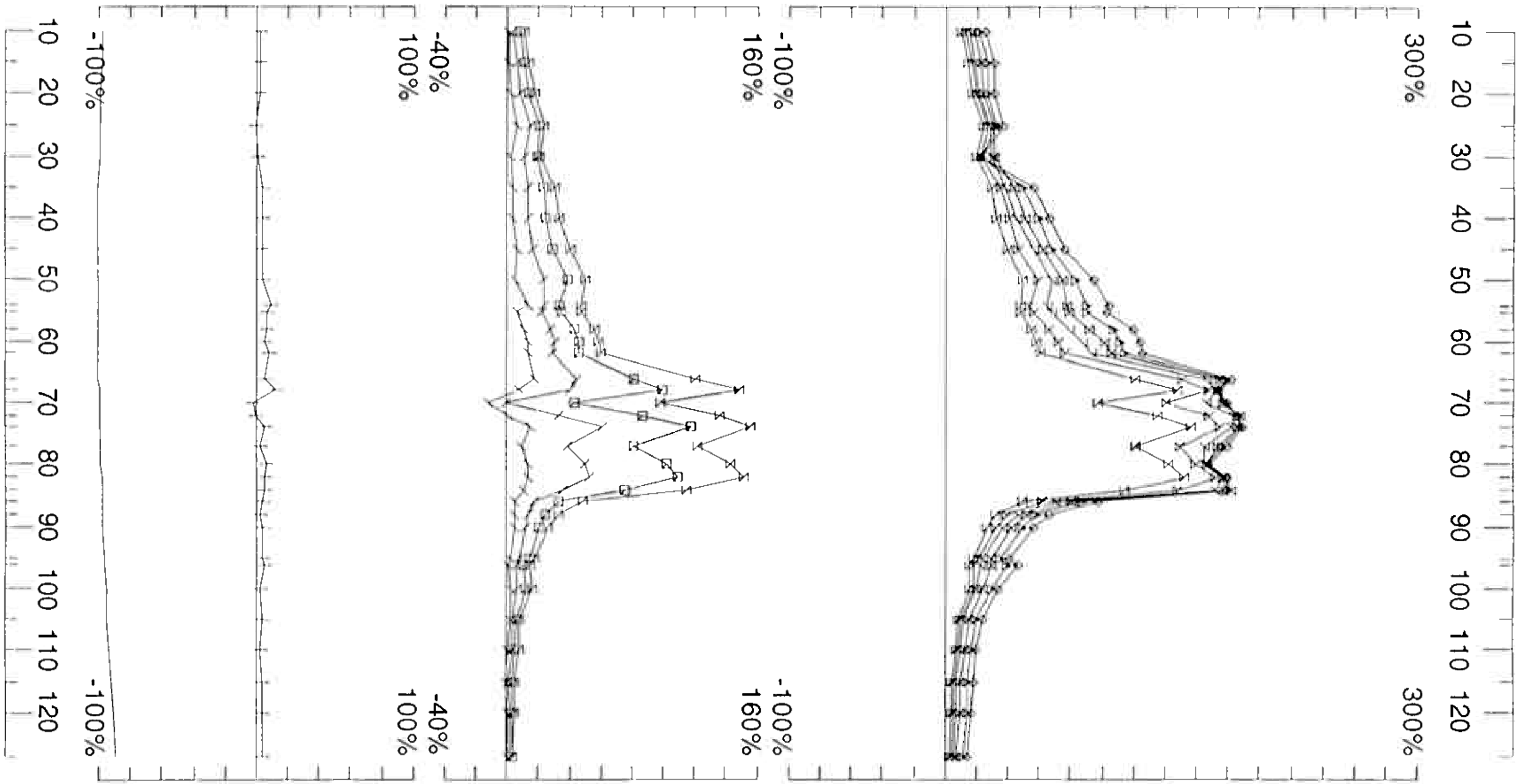

ES-2004-08
ES-2004-09
-7 -6 -5 -4 -3 -2 -1
LOG10(AMPLITUDE)


LP 20
ES-2004-08
ES-2004-09
LOG10(AMPLITUDE)

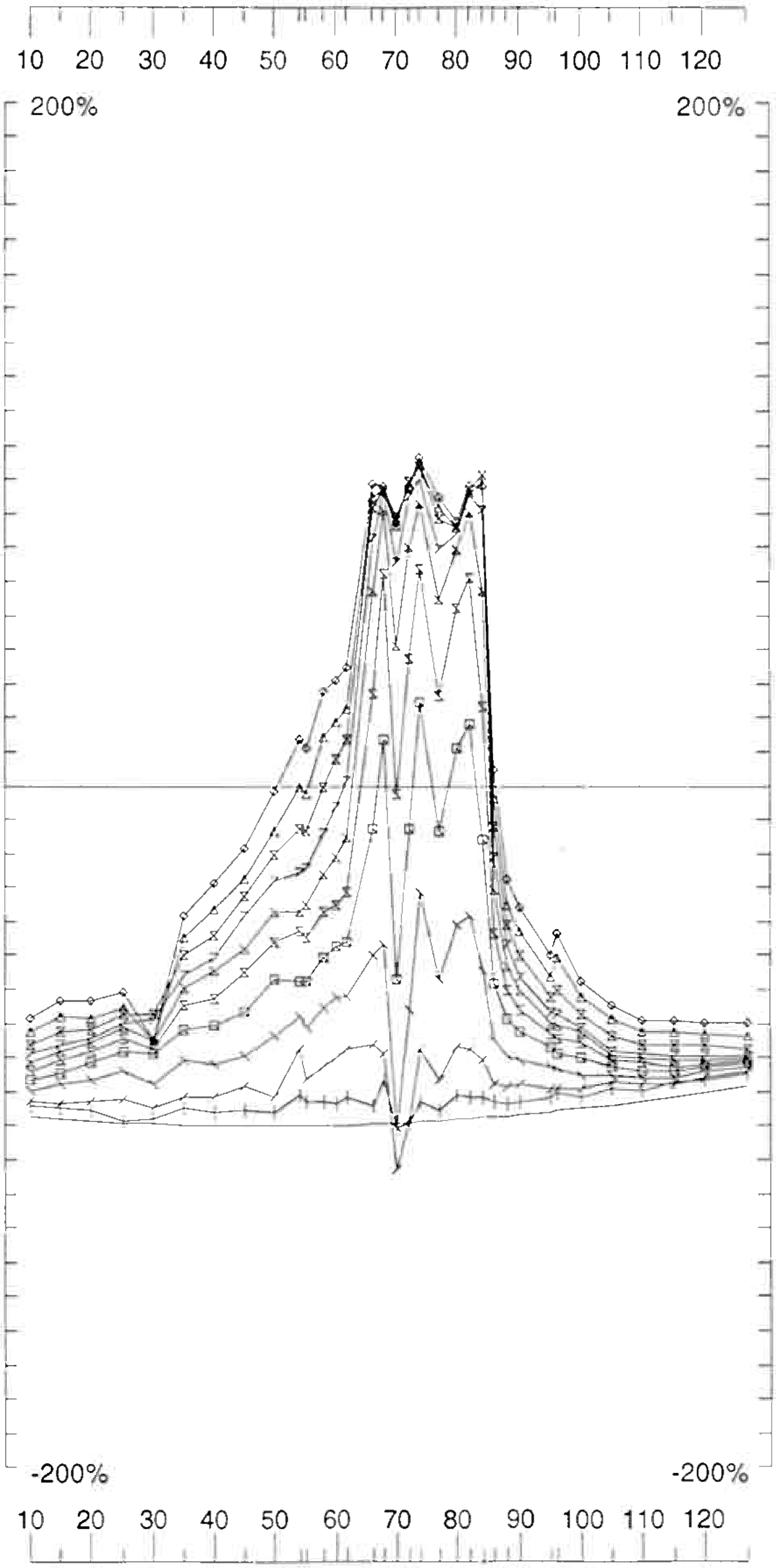


Loop: 20	Secondary, (Chn - Ch1)/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-18	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 18/3/5 Reduced : 18/3/5 Plotted : 11/4/5


BHUTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed: 18/3/5
Reduced: 18/3/5
Plotted: 11/4/5
Total, Chn/lHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: 20
Hole: ES-2004-18
Compt: Axial
200%
-200%
20 30 40 50 60 70 80 90 100 110 120 130 140 150 160



Loop: 20 Hole: ES-2004-20 Compt: Axial	Secondary, (Chn - Ch1)/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	BHUTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 19/3/5 Reduced: 19/3/5 Plotted: 11/4/5



Loop: 20
Hole: ES-2004-20
Compt: Axial

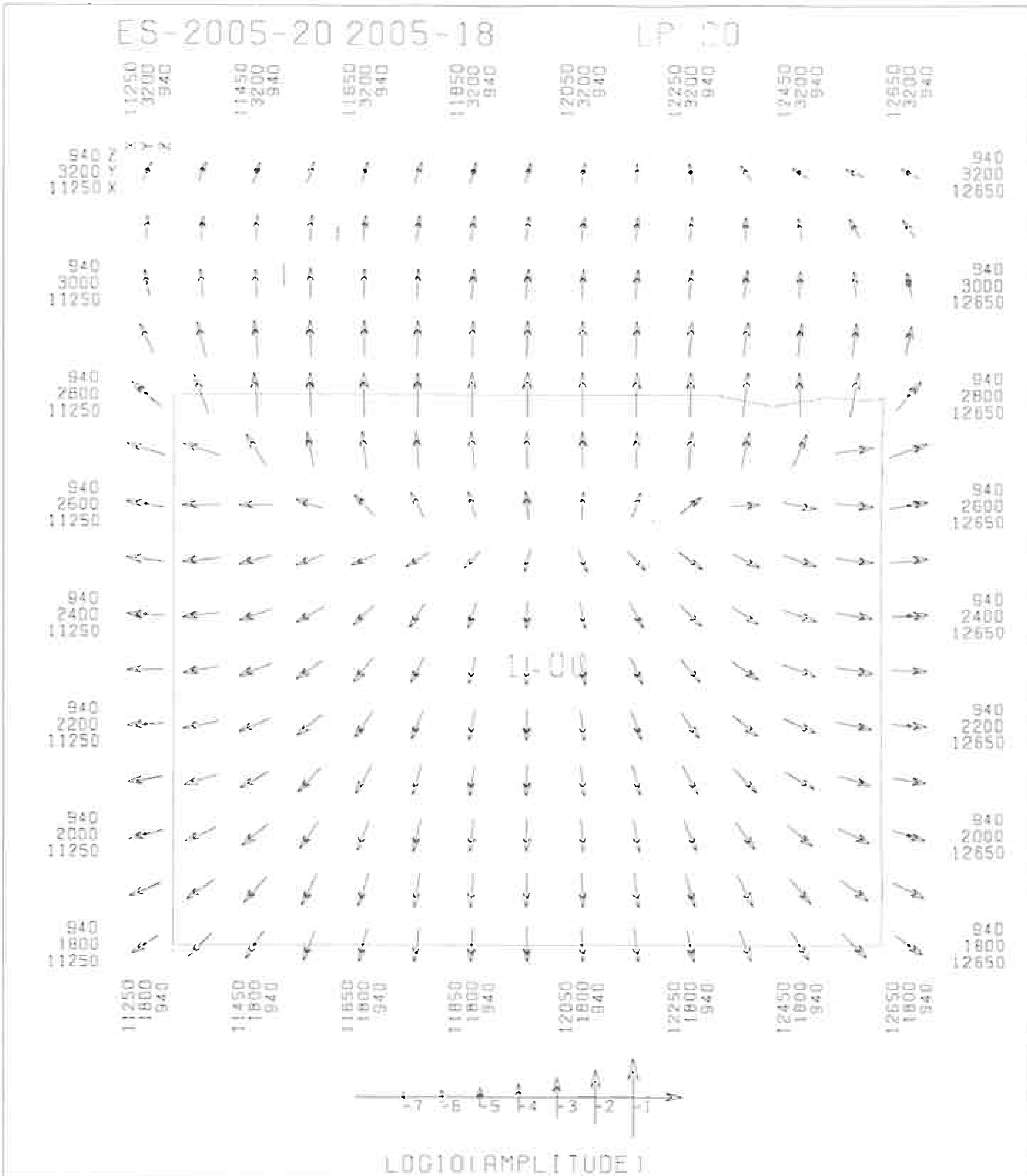
Total, Chn/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

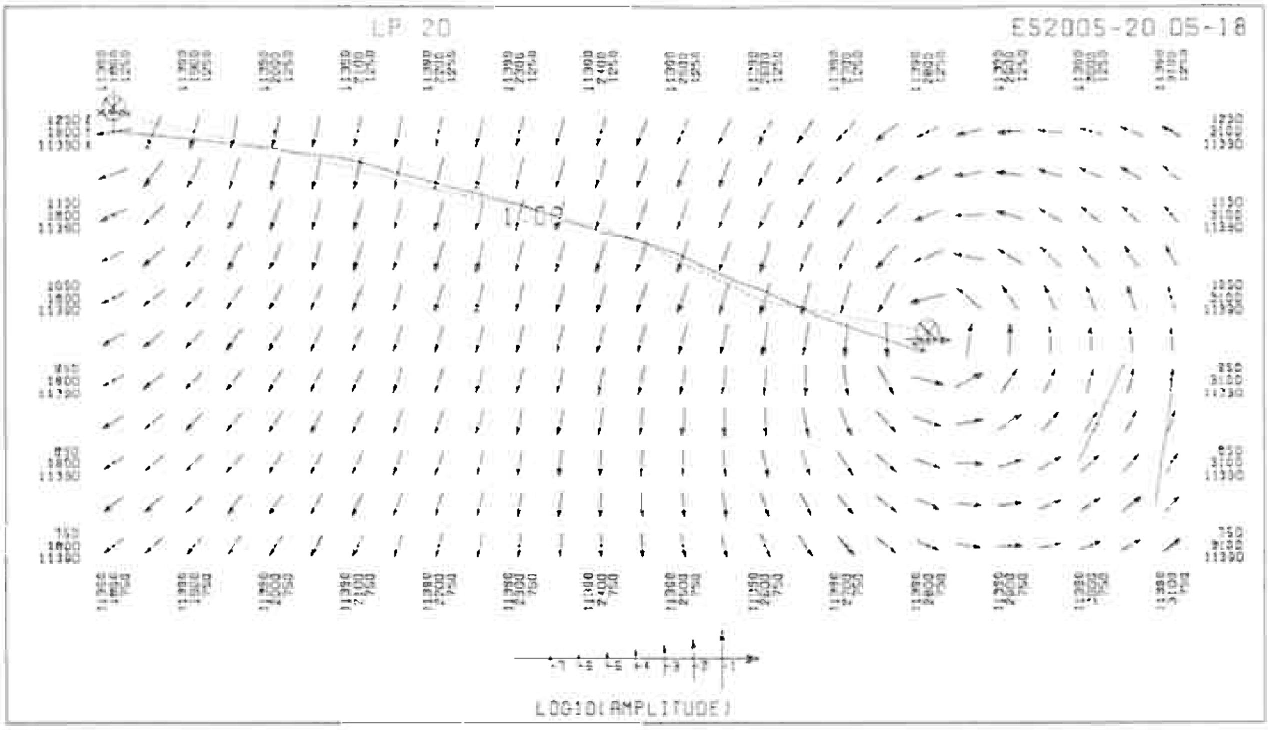
BHUTEM Survey at: Espedalen
For: A/S Sulfidmalm

LAMONTAGNE GEOPHYSICS LTD
GEOPHYSIQUE LTEE

Job
0511

Surveyed : 19/3/5
Reduced : 19/3/5
Plotted : 11/4/5


ES-2005-20 2005-18
LOG10(AMPLITUDE)



Melgard

Loop 25 - BH UTEM-3

@3.251 Hz frequency

Ch1 reduced

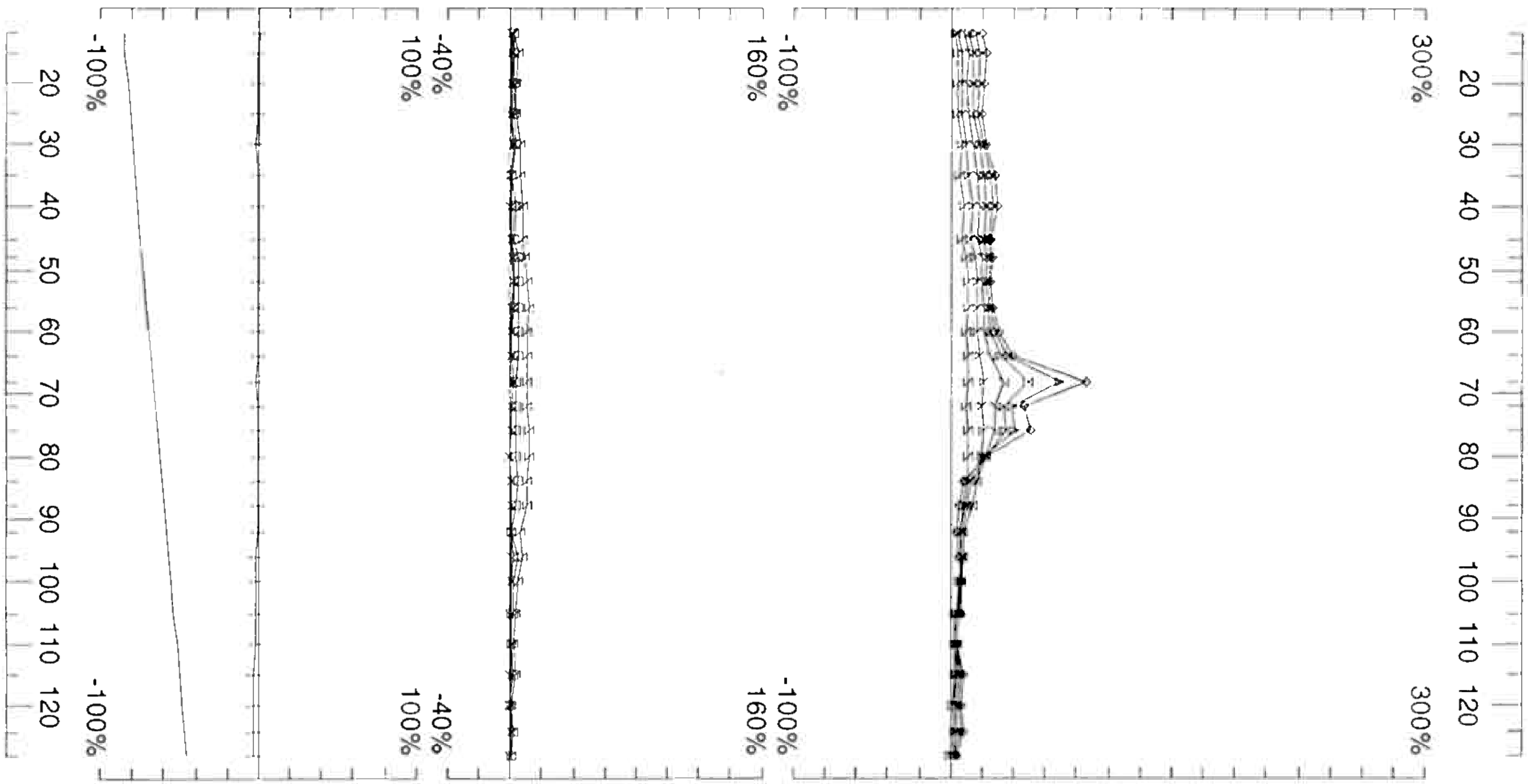
Melgard: ES2004-10 128m -130m Loop 25 3.251Hz

ES2004-10

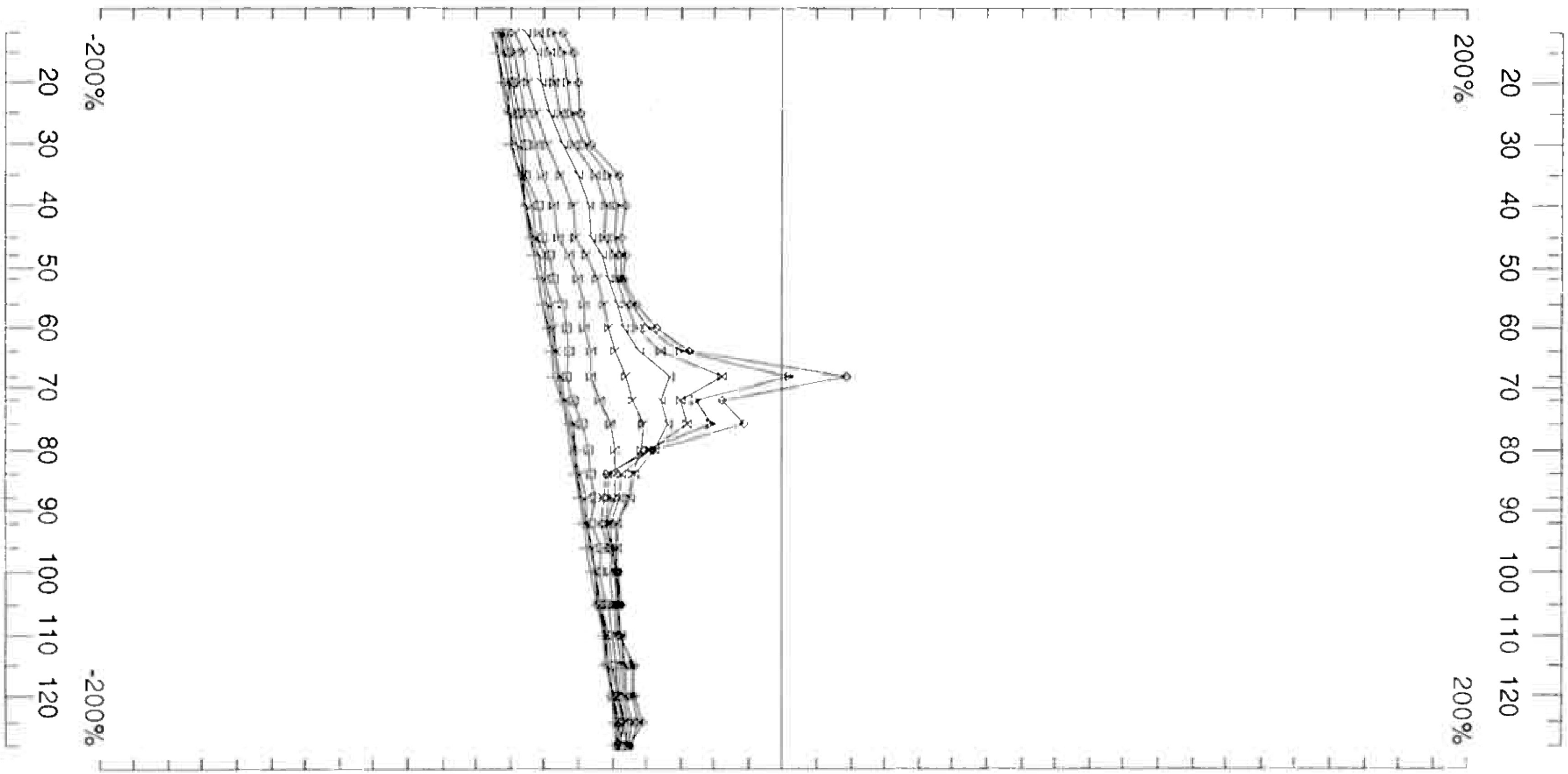
3-axis plot
total field plot

plan vectorplot
gridnorth-south section vectorplot

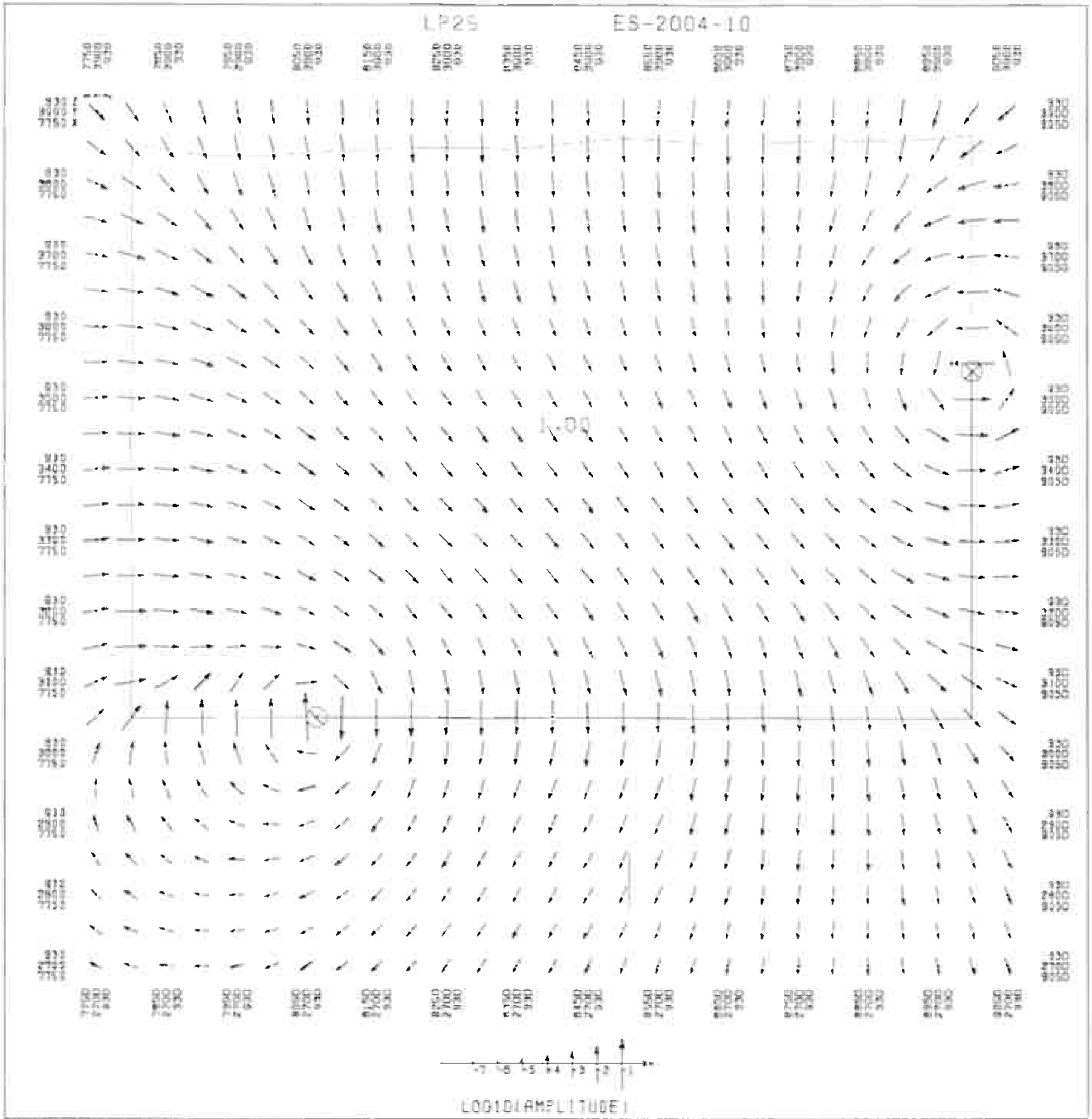
ES2004-10



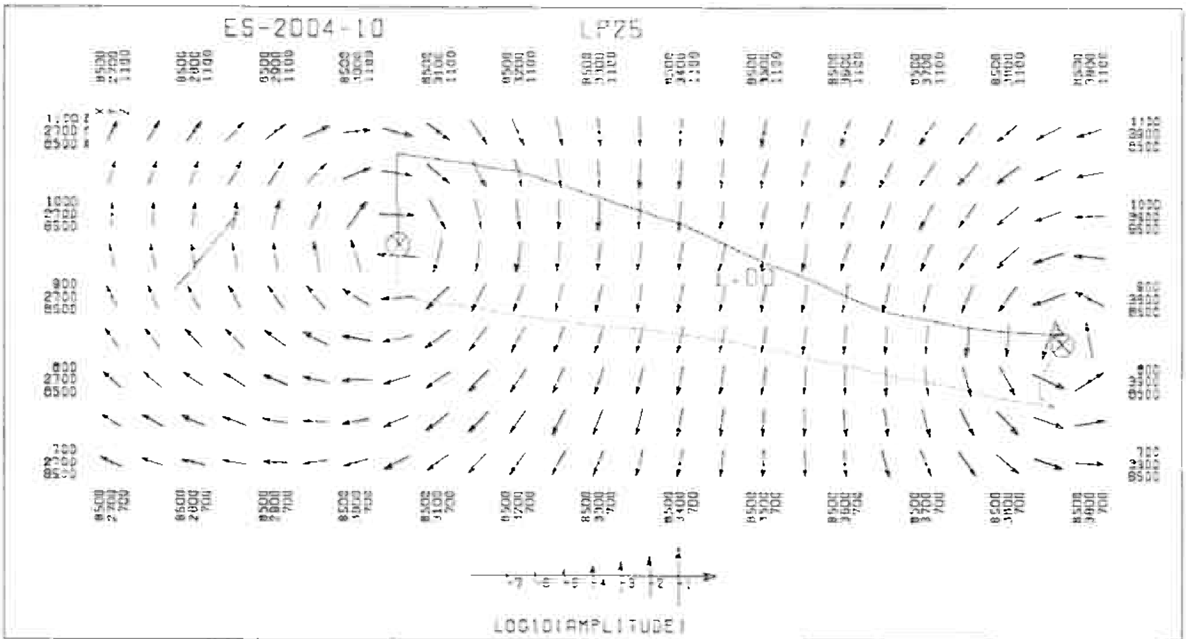
Loop: 25	Secondary, (Chn - Ch1)/IHpI	BHUTEM Survey at: Espedalen
Hole: ES-2004-10	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed: 4/3/5 Reduced: 10/3/5 Plotted: 11/4/5



Loop: 25 Hole: ES-2004-10 Compt: Axial	Total, Chn/IHpl Contin. Norm at depth of 0 m Base Freq. 3.251 Hz	BHUTEM Survey at: Espedalen For: A/S Sulfidmalm LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 4/3/5 Reduced : 10/3/5 Plotted : 11/4/5



LP25
ES-2004-10
1.00
LOG10(AMPLITUDE)


ES-2004-10
LP25
LOG10(AMPLITUDE)

Grahoa

Loop B16 - BH UTEM-3

@3.251 Hz frequency

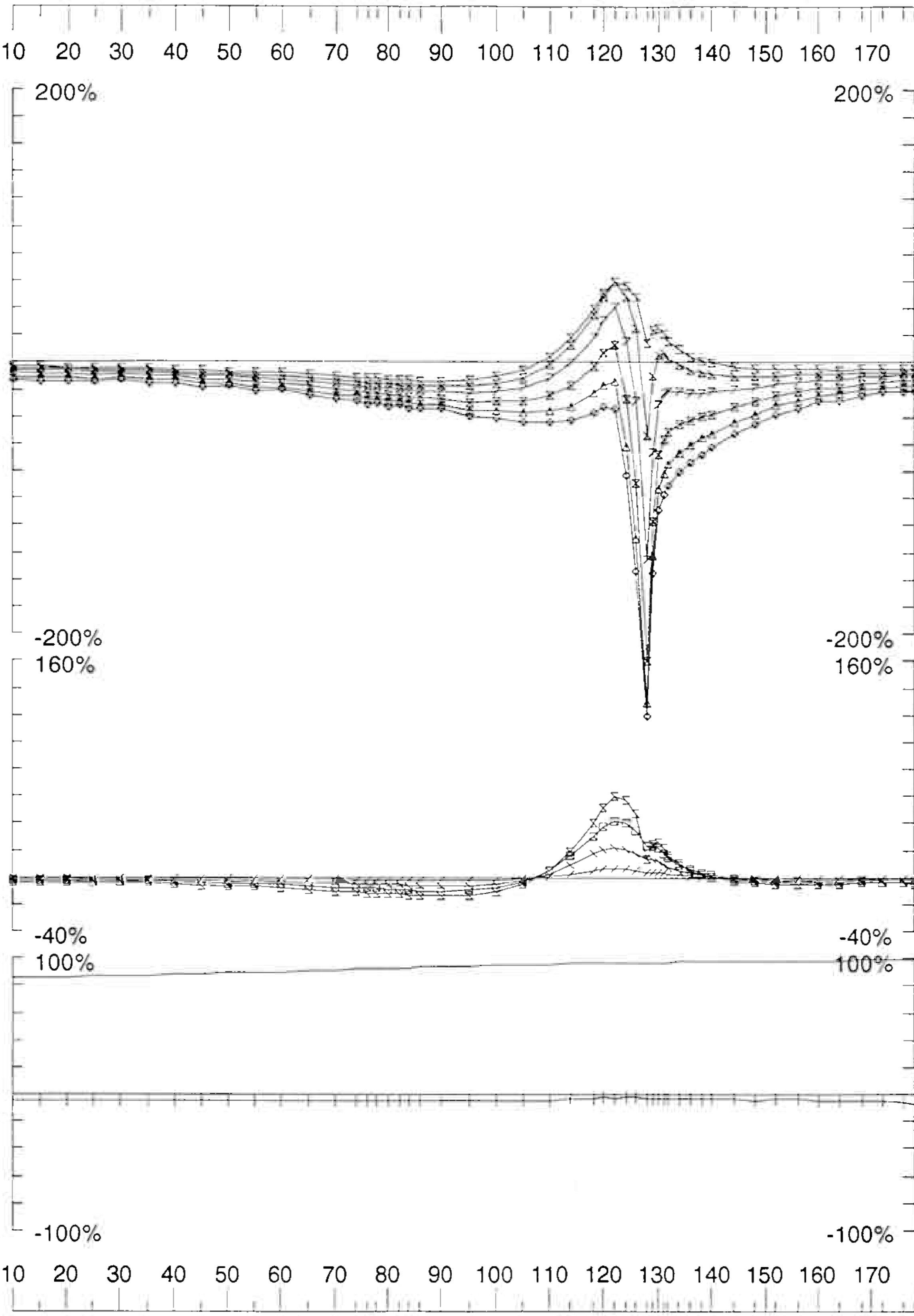
Ch1 reduced

Grahoa:	ES2004-16	178m	179.5m	Loop B16	3.251Hz

ES2004-16

3-axis plot
total field plot
plan vectorplot
gridnorth-south section vectorplot

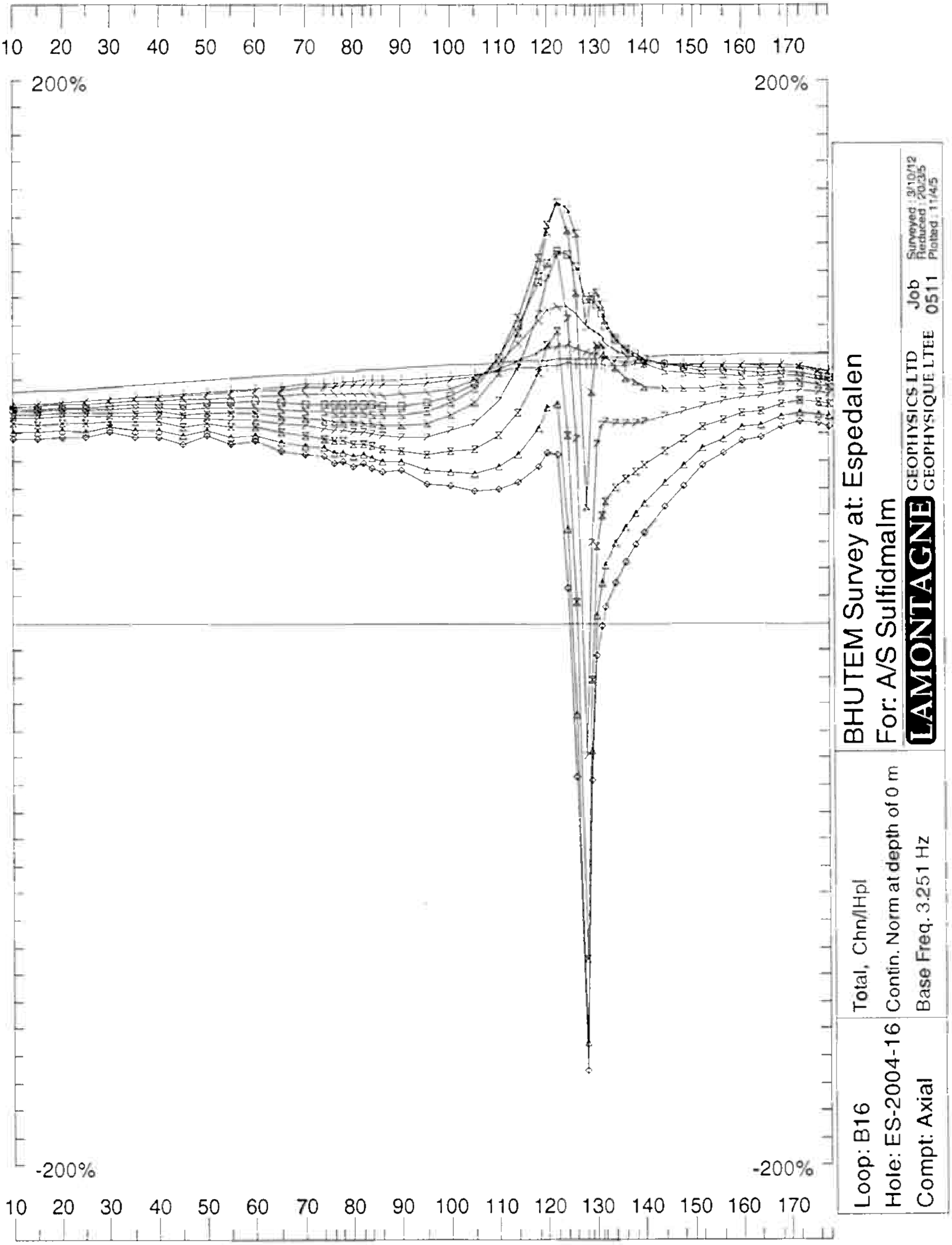
ES2004-16



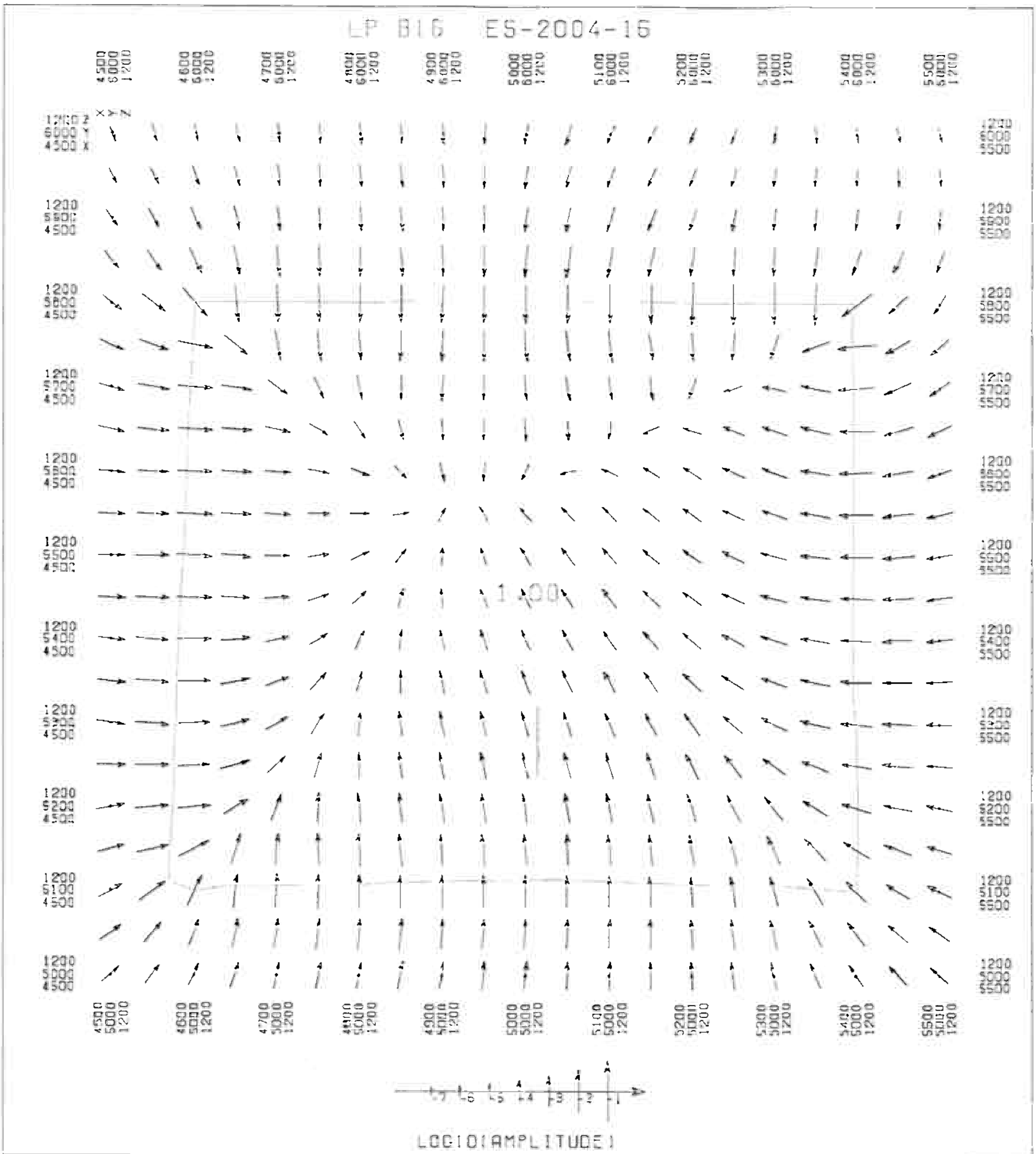
BHUTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE
Job 0511
Surveyed : 3/10/12
Reduced : 20/3/5
Plotted : 11/4/5

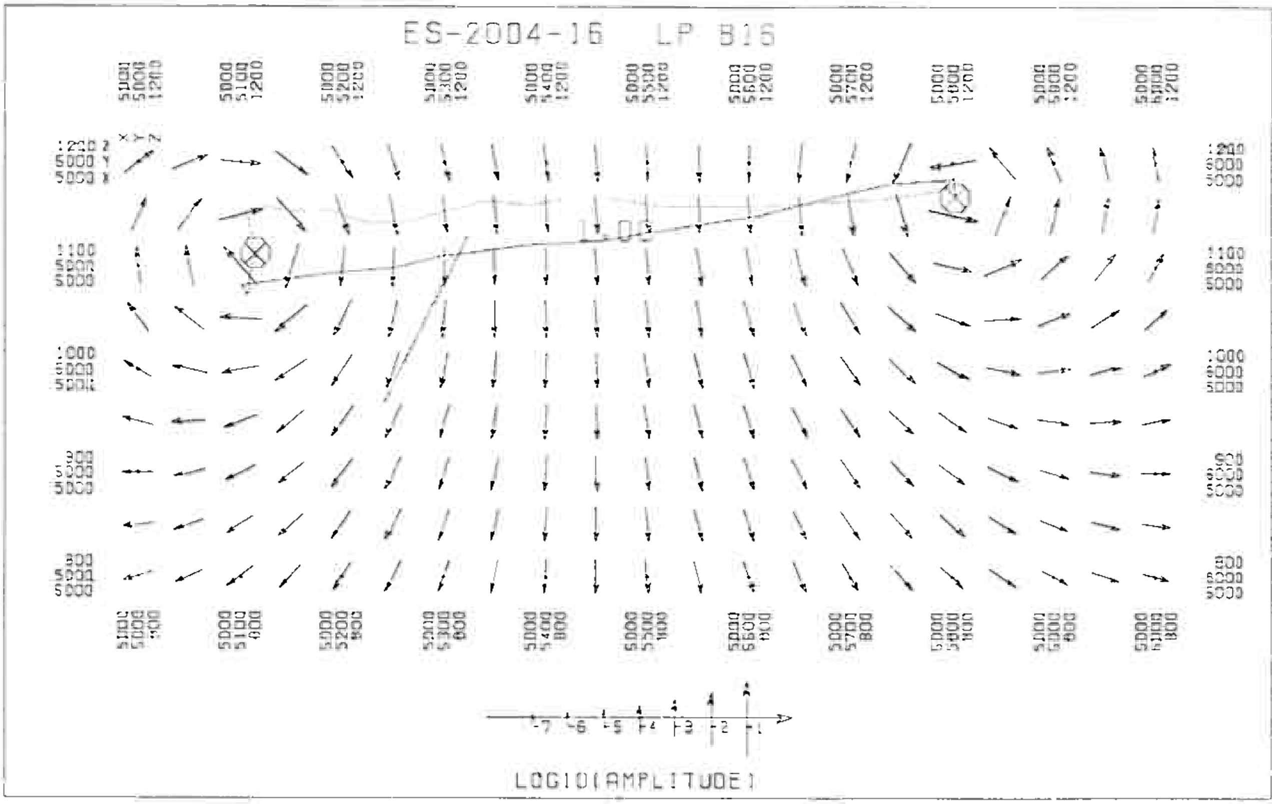
Secondary, (Chn - Ch1)/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz

Loop: B16
Hole: ES-2004-16
Compt: Axial



10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170
200%
200%
-200%
-200%
BHUTEM Survey at: Espedalen
For: A/S Sulfidmalm
LAMONTAGNE
GEOPHYSICS LTD
GEOPHYSIQUE LTEE
Job
0511
Total, Chn/IHpl
Contin. Norm at depth of 0 m
Base Freq. 3.251 Hz
Loop: B16
Hole: ES-2004-16
Compt: Axial


LP B16 ES-2004-16
1.00
LOG10(AMPLITUDE)


ES-2004-16 LP B16
LOG10(AMPLITUDE)

Stylskampen

Loop B17 - BH UTEM-3

@3.251 Hz frequency

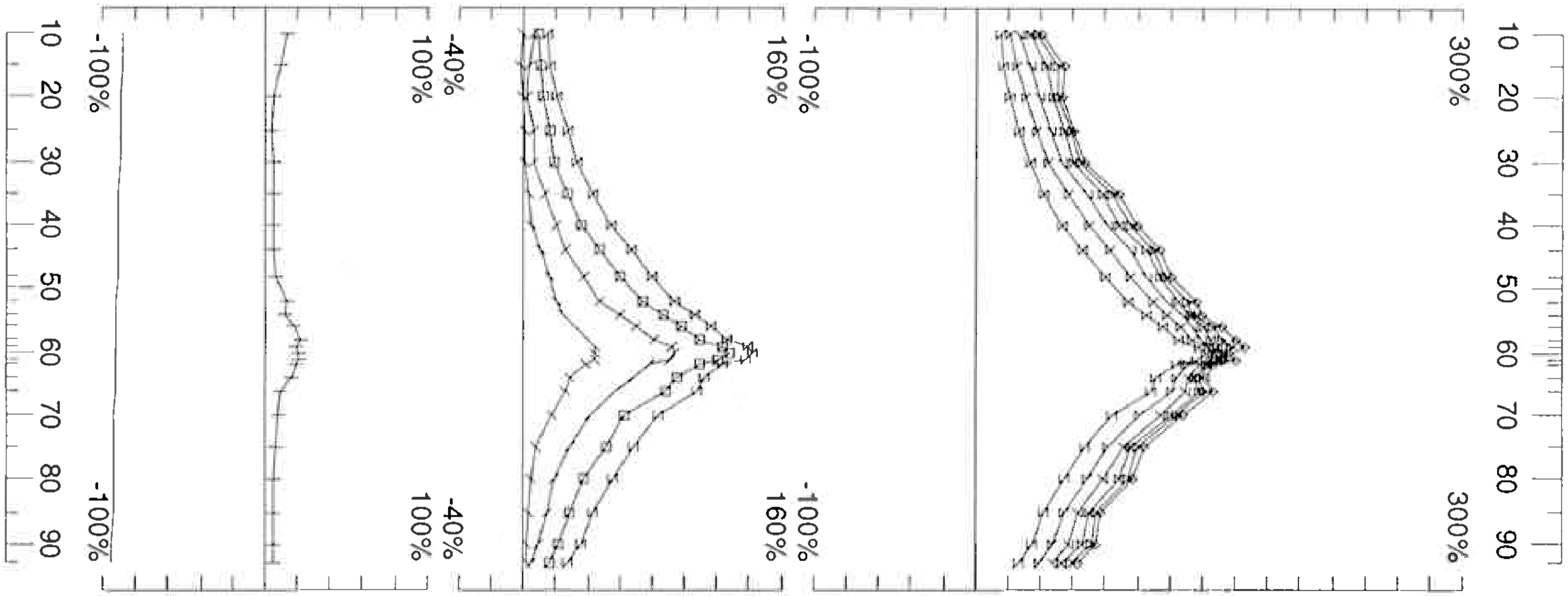
Ch1 reduced

Stylskampen:	ES2004-17	93m	93m	Loop B17	3.251Hz

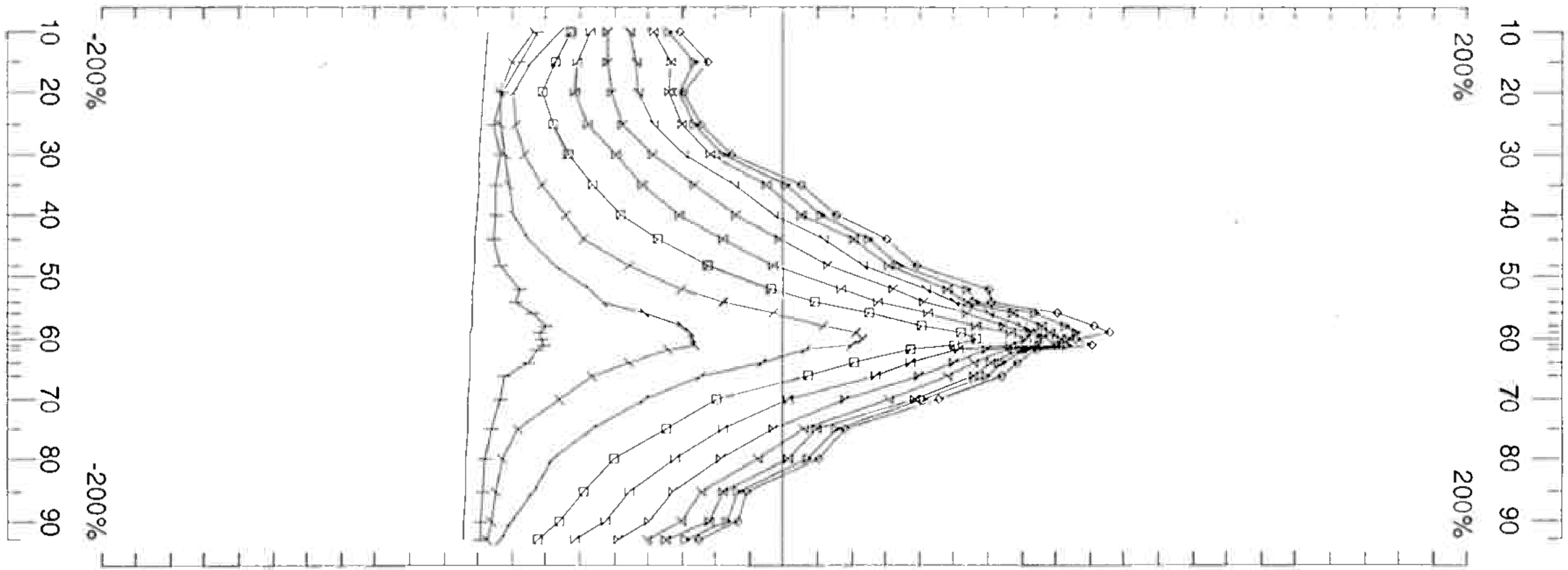
ES2004-17

3-axis plot
total field plot
plan vectorplot
gridnorth-south section vectorplot

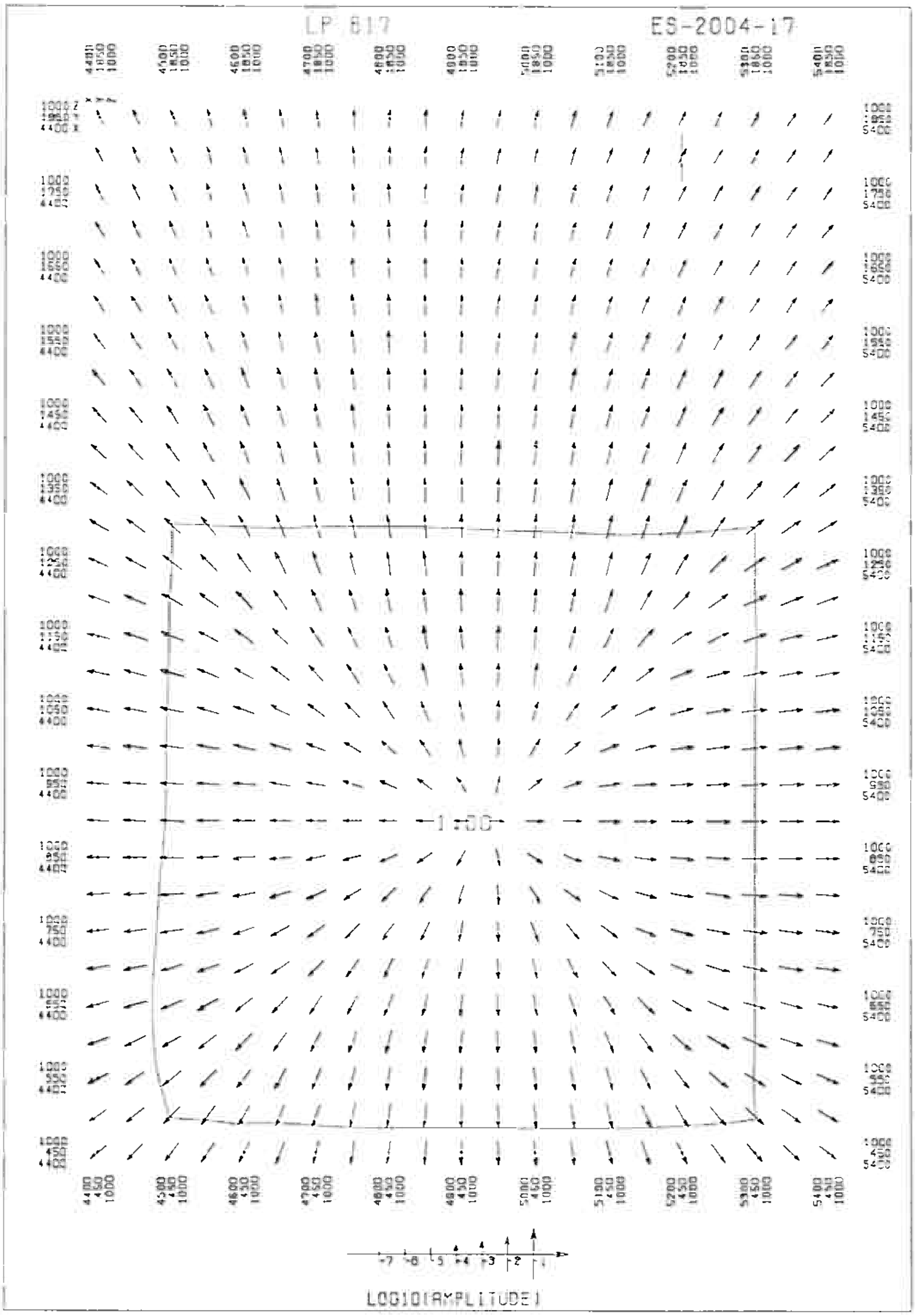
ES2004-17

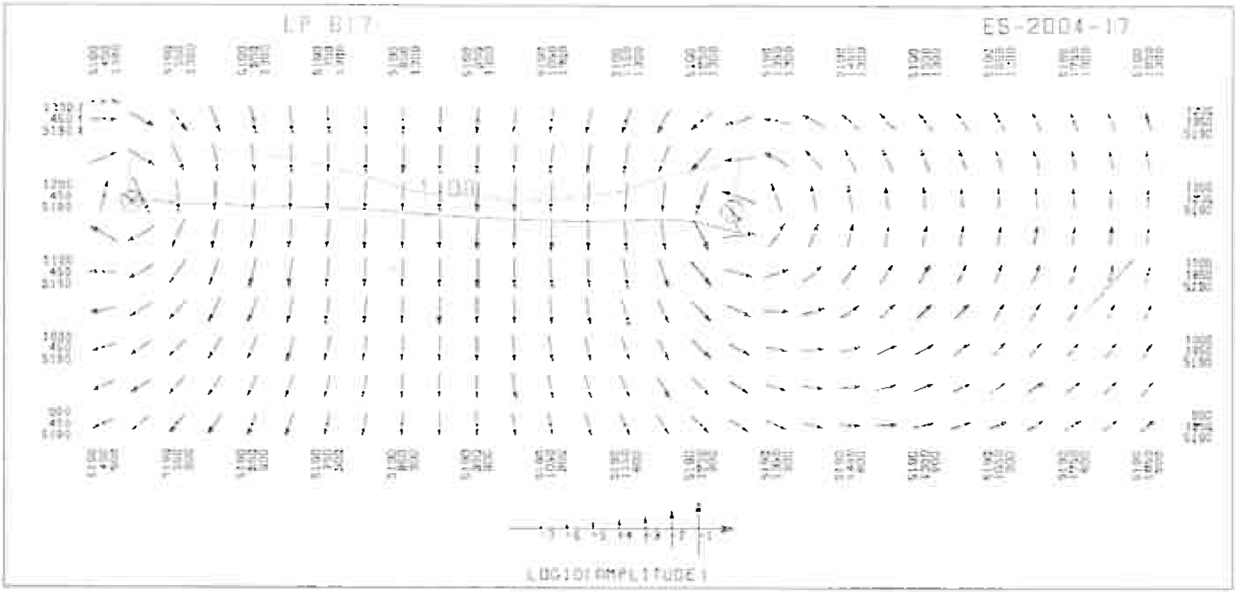


Loop: B17	Secondary, (Chn - Ch1)/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-17	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 21/3/5 Reduced : 21/3/5 Plotted : 11/4/5



Loop: B17	Total, Chn/IHpl	BHUTEM Survey at: Espedalen
Hole: ES-2004-17	Contin. Norm at depth of 0 m	For: A/S Sulfidmalm
Compt: Axial	Base Freq. 3.251 Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE Job 0511 Surveyed : 21/3/5 Reduced : 21/3/5 Plotted : 11/4/5


LP 617
ES-2004-17
1:00
LOG10(AMPLITUDE)



LP 617
ES-2004-17
LOG10(AMPLITUDE)

Appendix B

0511 Production Diary

UTEM 3 Surface Survey

Espedalen Grid
Norway

for

A/S Sulfidmalm

Production Log (0511)
UTEM Survey - Espedalen
Norway
A/S Sulfidmalm

Date	Rate	Production	Comments
up to February 09		-	Discussions, signing of the contract, assembly of crew and equipment.
February 10	Mob	(equip)	Equipment packed up and labelled. Picked up from Kingston. Shipping address is:
February 15	Mob	-	The LGL crew -Rob Langridge and Ryan Land - travel from Calgary (YYC)->Frankfurt(FRA)->Oslo (OSL). BHUTEM 3 gear leaves Kingston. Falconbridge personnel in Espedalen lay out wire.
February 16	Mob	-	Continuation of air travel. The gear clears customs and is collected by Falconbridge personnel. The crew is then collected and both crew and equipment are transported to the hotel in Espedalen (arrive ~21:00 local time). Unpack gear and prepare for survey.
February 17	**1/2L(2)-2** **1/2P(1)-1**	2100m	Continue unpacking gear and setting up. Out to Loop 19 @ 13:00. Complete loop and set up to read. Start reading @14:30. Read till 17:30. Back in camp ~18:00. Problems with Rx04 lead to some data being re-read on February 18.

Loop 19

Line 12300E	**4450N**	**- 5150N**	**Hz**	**Rx91**
Line 12400E	**4450N**	**- 5150N**	**Hz**	**04/91**
Line 12500E	**4450N**	**- 5150N**	**Hz**	**Rx04**

Crew: R.Langridge, R.Land   Total to date: 2.100km

Date	Rate	Production	Comments
February 18	**P(2)-2**	3000m	Get to the site and get the transmitter setup by ~08:45. Complete surveying in the area of Sekken (cottages) prior to the weekend. Back in camp ~16:45.

Loop 19

Line 12600E	**4450N**	**- 5150N**	**Hz**	**Rx91**
Line 12700E	**4450N**	**- 5150N**	**Hz**	**Rx16**
Line 12800E	**4450N**	**- 5250N**	**Hz**	**Rx16**
Line 12900E	**4450N**	**- 5250N**	**Hz**	**Rx16**

Crew: R.Langridge, R.Land   Total to date: 5.100km

Date	Rate	Production	Comments
February 19	**P(1)-1**	1150m	Get to the site and get the transmitter setup by ~09:30. Problems with Rx91 - blown fuses. Restart clock and wait till ~12:30. Return to the Strand to check the Rx and it seems to work/sync with Tx06. Back out to the field - can't syncronize with Tx01. Back to camp to get Rx04. Problems develop with Tx01. Return to camp a third time to get Tx06 and coil #14. Back in camp ~18:00 **Loop 20** **Line 11400E 2800N - 3950N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 6.250km
February 20	**P(2)-2**	5200m	Get to the site and setup by ~08:30. Read without incident. Back in camp ~17:30 **Loop 20** **Line 11300E 2800N - 3950N Hz Rx91** **Line 11500E 2800N - 3950N Hz Rx91** **Line 11600E 2800N - 3950N Hz Rx16** **Line 11700E 2800N - 3950N Hz Rx16** **Line 11800E 2800N - 3400N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 11.450km
February 21	**P(2)-2**	5400m	Get to the site and get the transmitter setup by ~09:00. Read on Loop 20. Back in camp ~17:30. BH Equipment arrives ~18:00. Unpacked BHUTEM3 gear after dinner and started charging batteries. **Loop 20** **Line 11800E 3400N - 3950N Hz Rx91** **Line 11900E 2800N - 3950N Hz Rx91** **Line 12000E 2800N - 3950N Hz Rx91** **Line 12400E 2800N - 3650N Hz Rx16** **Line 12500E 2800N - 3650N Hz Rx16** **Line 12600E 2800N - 3650N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 16.850km
February 22	**P(1)-1** DB(1)-1	2850m dummy BH-09 83m	Out to site - get surface crew going and Tx set-up. Back to camp to get BH equipment. Set up on ESP-2004-08 and dummy the hole. The hand cranking gets harder but eventually the dummy touches bottom @82m. Pull the dummy by hand and try to fix the winch. The belt pulleys are out of line. Try until the surface crew is finished and then head back to camp. Back in camp ~17:20. Fix winch in the evening. **Loop 20** **Line 12100E 2800N - 3950N Hz Rx16** **Line 12200E 2800N - 3650N Hz Rx16** **Line 12300E 2800N - 3650N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 19.700km

Date	Rate	Production	Comments
February 23	P(1)-1 1/2PB(1)-1 1/2DB(1)-1	1200m	Out to site - get Tx set-up and set up on ESP-2004-08 and start to read. Near the bottom of the hole the data it seems very noisy. Pull the probe and try the other probe. Surface crew heads over to read two lines being put in to extend Loop 20 coverage to the grideast. Set up on ESP-2004-08 and start to read. Back in camp ~17:30. Data for BH ESP-2004-08 is considered acceptable. Work on gear in the evening.

Loop 20

Line 12700E	**3100N**	**- 3700N**	**Hz**	**Rx91**
Line 12800E	**3100N**	**- 3700N**	**Hz**	**Rx91**

Crew: R.Langridge, R.Land Total to date: 20.900km

February 24	D(2)-2		Out to site - get Tx set-up and set up on ESP-2004-09 and start to read. data gets very noisy. Complete hole and try other probe combinations/receivers/BL controller. Field repair wire in one battery section. Back in camp ~17:30. Plot data and it is unacceptable. Go over probes and test on table - They appear to be working. Repair wire in one battery section.

Crew: R.Langridge, R.Land Total to date: 20.900km

February 25	1/2PB(1)-2 1/2 surface equip. standby 1/2 DB(1)-2	BH 130m	Get to the site and get set up to read ESP-2004-09. Everything goes fairly smoothly until the zone of interest when the data gets quite noisy. We complete the survey by 14:00 and head back to the Strand to try charging the battery section for a few hours. Head back out ~16:30 and read from 72-110m before the "noise" problem re-occurs. Test the other battery section - it does not work. Pack gear and come back to Espedalen. Back in camp ~18:45. Plot data - it is considered acceptable.

Crew: R.Langridge, R.Land Total to date: 20.900km

February 26	P(2)-2	2800m	Get to the site and get the transmitter setup by ~10:30 - it had to be moved and the loop connected. With the new looping crew one connection was not made. Read until ~15:00 when a problem cropped up with a coil and one Rx. One of the Rx crews headed back to the Strand with the BH gear. All back in camp ~17:15.

Loop 21

Line 10600E	**2525N**	**- 3450N**	**Hz**	**Rx16**
Line 10800E	**3175N**	**- 3450N**	**Hz**	**Rx16**
Line 11200E	**2525N**	**- 3200N**	**Hz**	**91/16**
Line 11300E	**2525N**	**- 3450N**	**Hz**	**Rx91**

Crew: R.Langridge, R.Land Total to date: 23.700km

Date	Rate	Production	Comments
February 27	P(2)-2	4350m	Get to the site and get the transmitter setup. Read remaining lines on Loop 21. Looping crew laid out Loop 29. Back in camp ~16:30.

Loop 21

Line 10000E	2525N	- 3450N	Hz	91/16
Line 10200E	2525N	- 3450N	Hz	Rx16
Line 10400E	2525N	- 3450N	Hz	Rx16
Line 10800E	2525N	- 3175N	Hz	Rx91
Line 11000E	2525N	- 3450N	Hz	Rx91

Crew: R.Langridge, R.Land Total to date: 28.050km

Date	Rate	Production	Comments
February 28	P(2)-2	2075m	Out to Loop 29 by car. Set up the GPS repeater and picked up gas at the Joker. The loop was good (a lot of moose tracks were seen while it was being laid out). Surveyed all day - very slowly due to terrain/distance from the loop and cultural noise. Back in camp ~17:30.

Loop 29

Line 12100E	6750N	- 7200N	Hz	Rx16
Line 12300E	6725N	- 7275N	Hz	Rx16
Line 13100E	6350N	- 6625N	Hz	Rx91
	6950N	- 7075N	Hz	Rx91
Line 13200E	6425N	- 7100N	Hz	Rx91

Crew: R.Langridge, R.Land Total to date: 30.125km

Date	Rate	Production	Comments
March 01	P(2)-2	2225m	Out to Loop 29 by car. Set up and the loop was good. Surveyed all day - very slowly due to terrain/distance from the loop and cultural noise. Back in camp ~17:30.

Loop 29

Line 12100E	6475N	- 6750N	Hz	Rx16
Line 12300E	6350N	- 6725N	Hz	Rx16
Line 12500E	6250N	- 6500N	Hz	Rx16
Line 12700E	6300N	- 6500N	Hz	Rx91
Line 12900E	6300N	- 7100N	Hz	Rx91
Line 13100E	6625N	- 6950N	Hz	Rx91

Crew: R.Langridge, R.Land Total to date: 32.350km

Date	Rate	Production	Comments
March 02	P(2)-2	1600m	Out to Loop 29 by car. Set up and the loop was good. Surveyed until Loop finished. Back in camp ~15:00.

Loop 29

Line 12500E	6500N	- 7300N	Hz	Rx16
Line 12700E	6500N	- 7300N	Hz	Rx91

Crew: R.Langridge, R.Land Total to date: 33.950km

Date	Rate	Production	Comments
March 03	**P(2)-2**	1525m	Out to Loop 28. Problems with Rx91 blowing fuses in the morning. Drillers arrive. Read on steep lines. Back in camp ~18:00. **Loop 28** **Line 12700E 5750N - 6150N Hz Rx16** **Line 12900E 5725N - 6025N Hz Rx16** **Line 13100E 5675N - 6050N Hz Rx91** **Line 13200E 5650N - 6100N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 35.475km
March 04	**P(1)-1** **PB(1)-1**	1700m BH 128m	Out to Loop 25 after a little delay. Set up surface work. Went back to camp and picked up the borehole gear. Set up on BH-ESP-2004-10. Dug out hole and read hole in very windy conditions. Surface crew back in camp ~18:10. **Loop 25** **Line 8600E 3950N - 4550N Hz Rx16** **Line 8800E 3950N - 4425N Hz Rx16** **Line 9000E 4025N - 4650N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 37.175m
March 05	**P(2)-2**	2650m	Out to Loop 25. Surveyed including borehole calibrations. Back in camp ~16:30. Dinner in Lilliehammer. **Loop 25** **Line 7700E 4300N - 4600N Hz Rx16** **Line 7800E 3950N - 4600N Hz Rx16** **Line 8000E 4100N - 4625N Hz Rx16** **Line 8200E 4050N - 4575N Hz Rx91** **Line 8400E 4050N - 4700N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 39.825km
March 06	**P(2)-2**	1700m	Slowish start. Out to Loop 25. Read two detailed lines and stacked longer on a section of Line 7800E. Moved to Loop 26 - furthest loop from camp. Read two lines. Back in camp ~18:00. **Loop 25** **Line 8350E 4450N - 4700N Hz Rx16** **Line 8450E 4550N - 4700N Hz Rx16** **Loop 26** **Line 15500E 3350N - 4025N Hz Rx91** **Line 15700E 3350N - 3975N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 41.525km

Date	Rate	Production	Comments
March 07	P(2)-2	2925m	Out to Loop 26. Surveyed and moved Tx to Loop 27. Back in camp ~17:10. **Loop 26** **Line 14900E 3350N - 4125N Hz Rx16** **Line 15100E 3350N - 4425N Hz 16/91** **Line 15300E 3350N - 4425N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 44.450km
March 08	P(2)-2	4300m	Out to Loop 27 - surveyed all day with one meter problem (Rx16). Fixed equipment in the evening. Back in camp ~17:45. **Loop 27** **Line 14700E 2225N - 2800N Hz Rx16** **Line 14800E 2225N - 3400N Hz Rx16** **Line 15100E 2225N - 3500N Hz 16/91** **Line 15300E 2225N - 3500N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 48.750km
March 09	P(2)-2	4475m	Out to Loop 27. Surveyed. Back in camp ~17:40. **Loop 27** **Line 14900E 2225N - 3400N Hz Rx16** **Line 15500E 2225N - 3450N Hz 16/91** **Line 15700E 2225N - 3450N Hz Rx91** **Line 15900E 2225N - 3075N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 53.225km
March 10	P(2)-2	1850m	Out to Loop 27. Surveyed three lines. Picked up pickets/loop and moved transmitter over to Loop 22 for the morning. Back in camp ~17:30. **Loop 27** **Line 14300E 2150N - 2650N Hz Rx91** **Line 14500E 2150N - 2650N Hz Rx16** **Line 16100E 2150N - 3000N Hz 16/91** Crew: R.Langridge, R.Land Total to date: 55.075km
March 11	P(2)-2	3950m	Out to Loop 22. Surveyed three lines in-loop and one line off-loop. Back in camp ~17:30. **Loop 22** **Line 9000E 2075N - 3300N Hz Rx91** **Line 9200E 2075N - 3100N Hz Rx91** **Line 9800E 2075N - 3150N Hz Rx16** **Line 10000E 2075N - 2700N Hz Rx16** Crew: R.Langridge, R.Land Total to date: 59.025km

Date	Rate	Production	Comments
March 12	P(2)-2	3425m	Out to Loop 22. Surveyed and moved Tx to Loop 23. Back in camp ~16:10. **Loop 22** Line 9200E 3100N - 3475N Hz Rx91 Line 9400E 2075N - 3550N Hz Rx91 Line 9600E 2075N - 3400N Hz Rx16 Line 9800E 3150N - 3400N Hz Rx16 Crew: R.Langridge, R.Land Total to date: 62.450km
March 13	P(2)-2	5500m	Out to read detail lines on Loop 22. Switched to Loop 23 when the GPS unit would not work. Read all day on Loop 23. Windy with snow in the afternoon. Back in camp ~17:35. **Loop 23** Line 7100E 1500N - 2600N Hz Rx91 Line 7300E 1500N - 2600N Hz 16/91 Line 7500E 1500N - 2600N Hz Rx16 Line 7700E 1500N - 2600N Hz Rx16 Line 7900E 1500N - 2600N Hz Rx91 Crew: R.Langridge, R.Land Total to date: 67.950km
March 14	P(2)-2	4100m	Out to Loop 23. Completed surveying and then switched over to do two short lines on Loop 22. Back in camp ~17:00. **Loop 23** Line 6500E 1500N - 2600N Hz Rx91 Line 6700E 1500N - 2600N Hz 16/91 Line 6900E 1500N - 2600N Hz Rx16 **Loop 22** Line 8600E 2000N - 2400N Hz Rx91 Line 8800E 2000N - 2400N Hz Rx16 Crew: R.Langridge, R.Land Total to date: 72.050km
March 15	P(2)-2		Out to loop. Picked up wire on Loop 22/23 and then laid out Loop 24. Broke trail in to near two drillholes. Back in camp ~17:15. Crew: R.Langridge, R.Land Total to date: 72.050km
March 16	P(2)-2	1150m	Out to Loop 24. Set up one receiver and read while the crew looped. Back in camp ~17:00. **Loop 24** Line 9200E 3400N - 4550N Hz Rx91 Crew: R.Langridge, R.Land Total to date: 73.200km

Date	Rate	Production	Comments
March 17	**P(2)-2**	3800m	Out to Loop 24. Crew surveyed downhill and then uphill to finish off Back in camp ~17:30. **Loop 24** **Line 9300E 3400N - 4550N Hz Rx16** **Line 9400E 3400N - 4550N Hz Rx91** **Line 9500E 3600N - 4550N Hz 16/91** **Line 9600E 3600N - 4150N Hz Rx91** Crew: R.Langridge, R.Land Total to date: 77.000km
March 18	**PB(1)-2**	BH 170m surface equip. standby	Pack up borehole gear and head out to Loop 20. Looping crew moved Transmitter and finished the loop off. Set up on ESP-2005-18. Had some trouble getting the hole open - the drillers had plugged it up well to prevent water flow. Removed the birch log plug with the help of a couple of pipe wrenches and thawed out a plug of ice with the tiger torch. Dummied the hole and read without incident. Back in camp ~18:20. Crew: R.Langridge, R.Land
March 19	**PB(1)-2**	BH 128m surface equip. standby	Pack up borehole gear and head out to Loop 20. ESP-2005-21 was blocked at ~4.2m - roughly the end of the casing. Had some trouble getting ESP-2005-20 open - the drillers had plugged it up to prevent water flow. Removed the birch log plug with the help of a couple of pipe wrenches and thawed out a plug of ice with the tiger torch. Dummied the hole and read with problems - the same noise problem that I had several weeks ago. Back in camp ~18:25. Crew: R.Langridge, R.Land
March 20	**PB(1)-2**	BH 178m surface equip. standby	Pack up borehole gear and transmitter and head out to Loop B17. Read ESP-2004-16 and packed up the gear. Returned to the Strand to dump and plot the data. Headed up to ESP-2004-17 to get the gear in place and to set up the transmitter. The hole was frozen so we set up a tent over it with a tiger torch going. Moved up the transmitter and returned to the hole. The hole thawed by 17:00 and it was then dummied to 93m. Back in camp ~18:15.

Date	Rate	Production	Comments
March 21	3/4**PB(1)-2** 3/4 surface equip. standby 1/4**DB(1)-2**	BH 93m	Pack up borehole gear and head out to Loop B17. ESP-2004-17 was refrozen. Thawed the hole with the tiger torch again. Read ESP-2004-16 with hub problems again. Distance from the loop required longer readings than previous holes. Packed up the gear and headed down to the Strand to dump and plot the data. The sleigh hitch was damaged on the way down. Headed up to ESP-2004-05/07 to snowmobile into the holes. Loopers picked up Loops B16 and B17. Back in camp ~18:10.
March 22	**PB(1)-1** surface equip. standby	BH 118/70m	Pack up borehole gear and head out to Loop 15a. Read ESP-2004-05 with hub problems again. Distance from the loop required longer readings than previous holes. Loopers dug/thawed out ESP-2004-07. Packed up the gear and read ESP-2004-07. Plotted data and decided to pick up the loop while we had help and the snow was soft. Loopers picked up Loops B16 and B17. Back in camp ~18:25.
March 23	**L(2)-2**		Packed gear for transport to Gardemoen in the morning. Crew: R.Langridge, R.Land
March 24	**demob**		Gear and crew to Gardemoen. Gear shipped on waybill 117-44472094
March 25	**demob**		Crew starts trip to Canada. Overnight in Frankfort.
March 26	**demob**		Crew to Canada.
March 27 ->April 1	**equipment**	-	Equipment in transit.
April 2	Equipment 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

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.

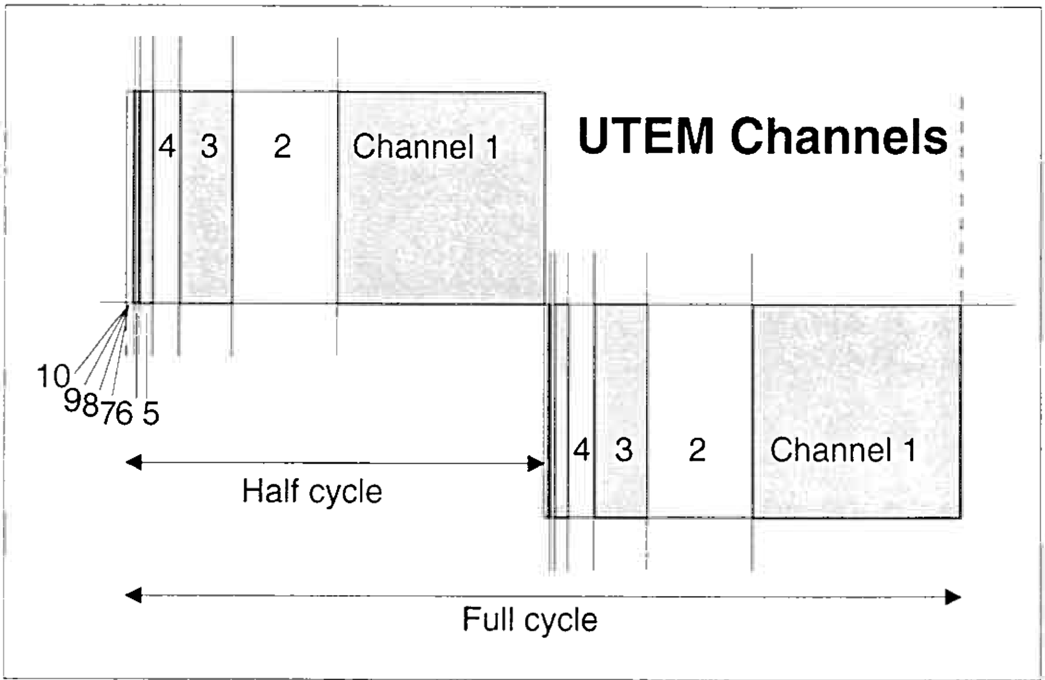
Measurements are routinely taken to a distance of 1.5 to twice the loop dimensions, depending on the local noise levels, and can be continued further. Lines are typically surveyed out from the edge of the loop but may also be read across the loop wire and through the centre of the loop, a configuration 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	Σ
6	0.378	∠
7	0.189	7
8	0.095	X
9	0.047	Δ
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

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:

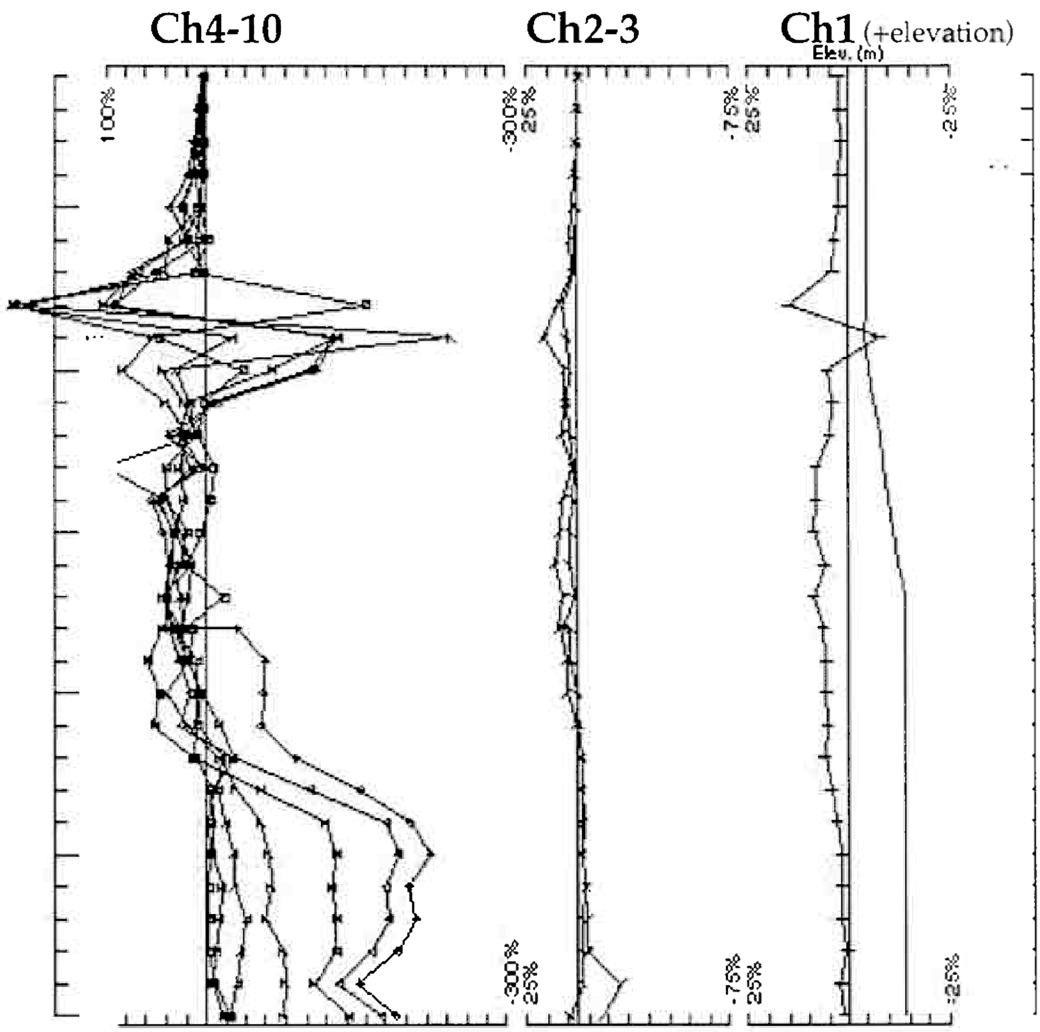
- <u>lowering the frequency</u>: each factor of two lower in frequency would add a channel relatively free of the affects of the powerline. The cost would be increased stacking time at each station.

- <u>taking multiple readings</u>: 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.

- <u>alternative channel sampling</u>: 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	
Compt: Hz	Base Freq. 3.872Hz	LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

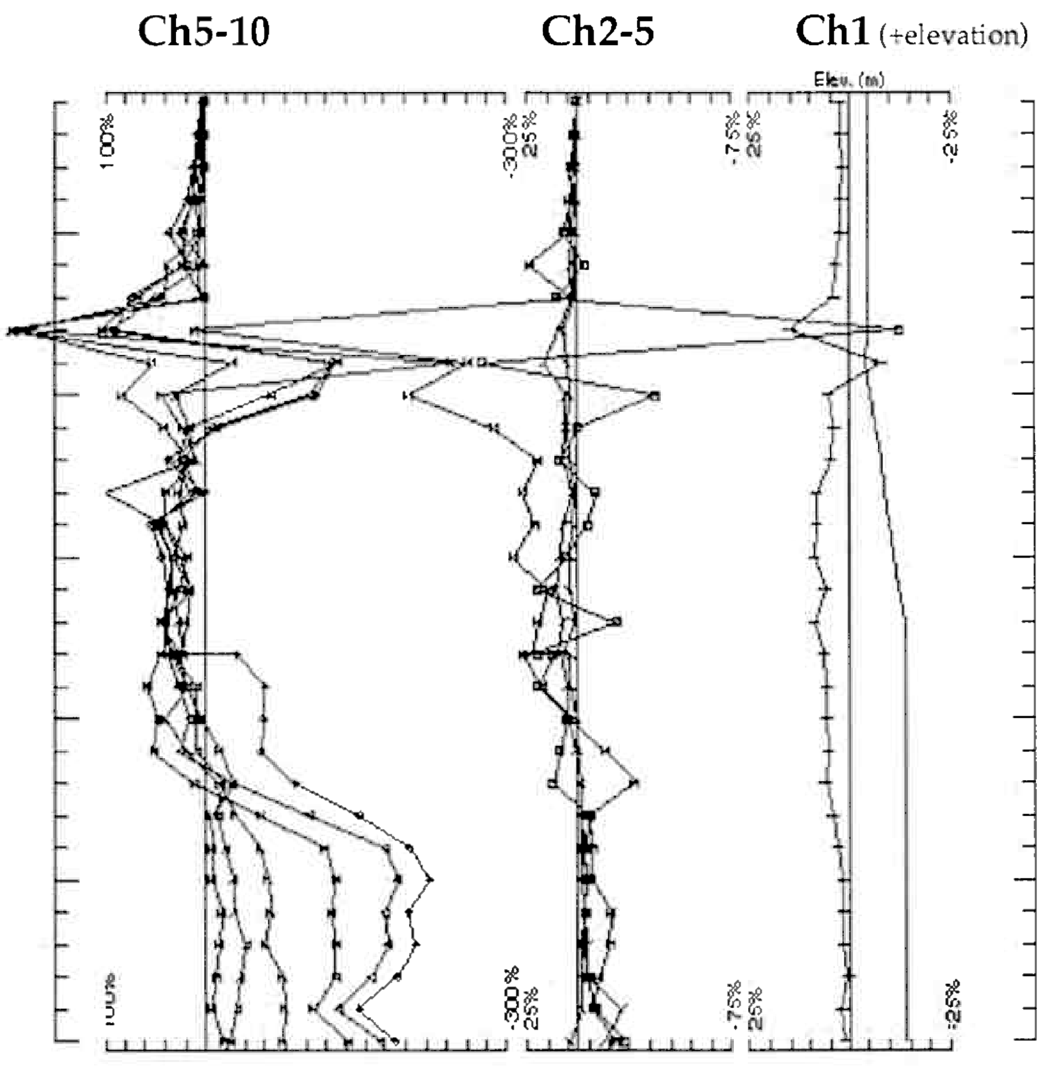
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

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	

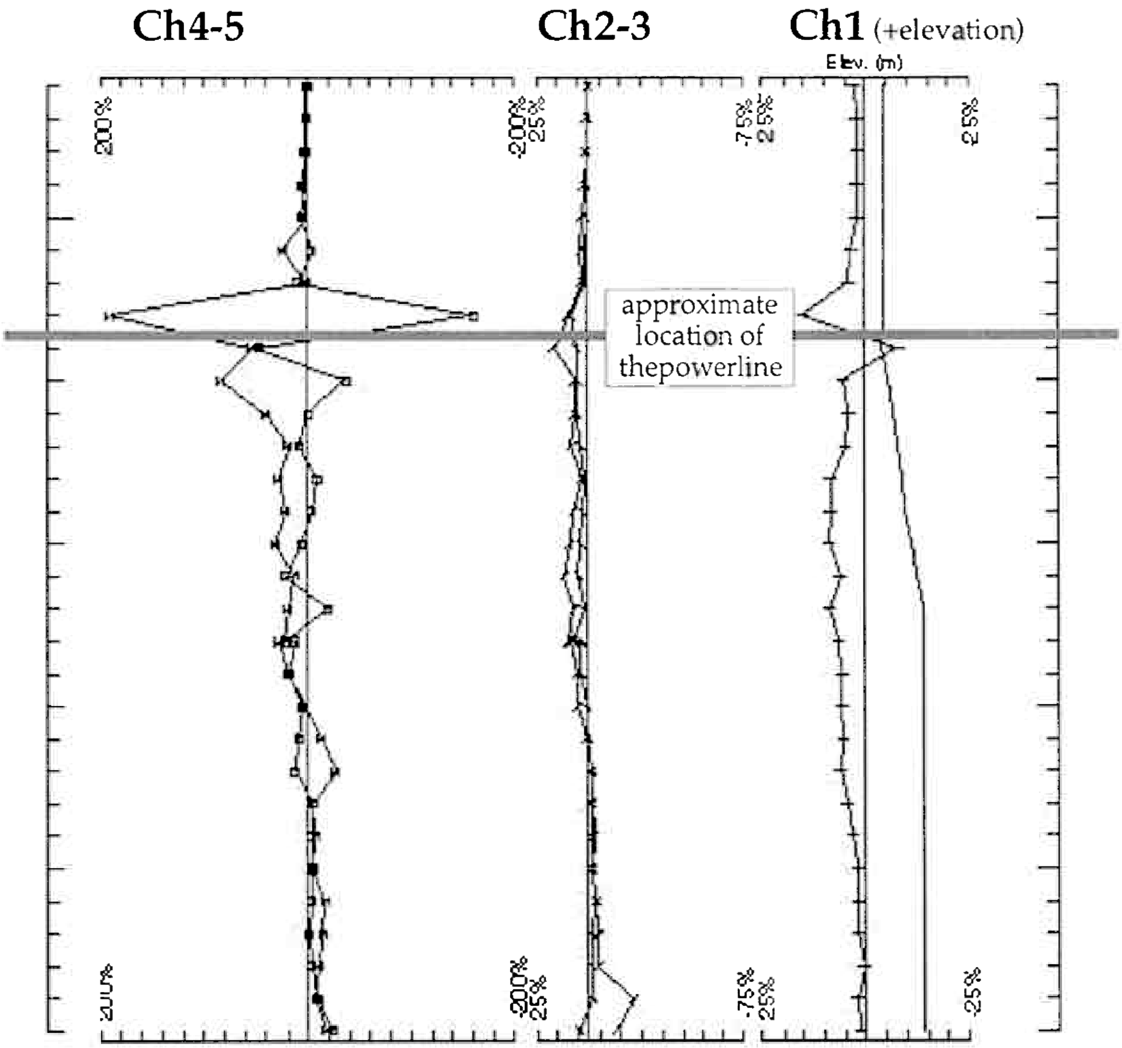
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

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

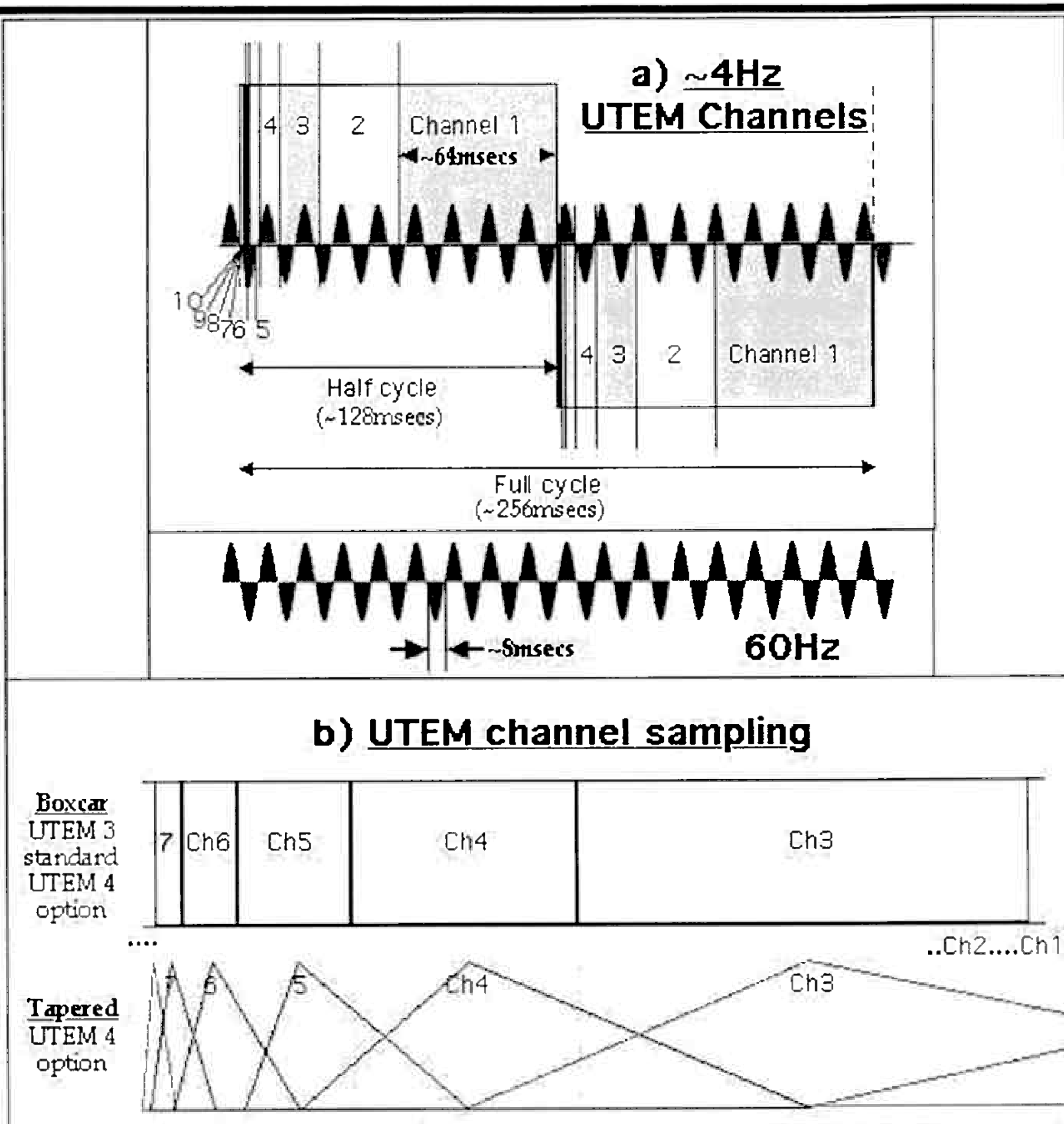
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E1(c)

Original 4Hz data: Ch4/5 detail

Figure E1c



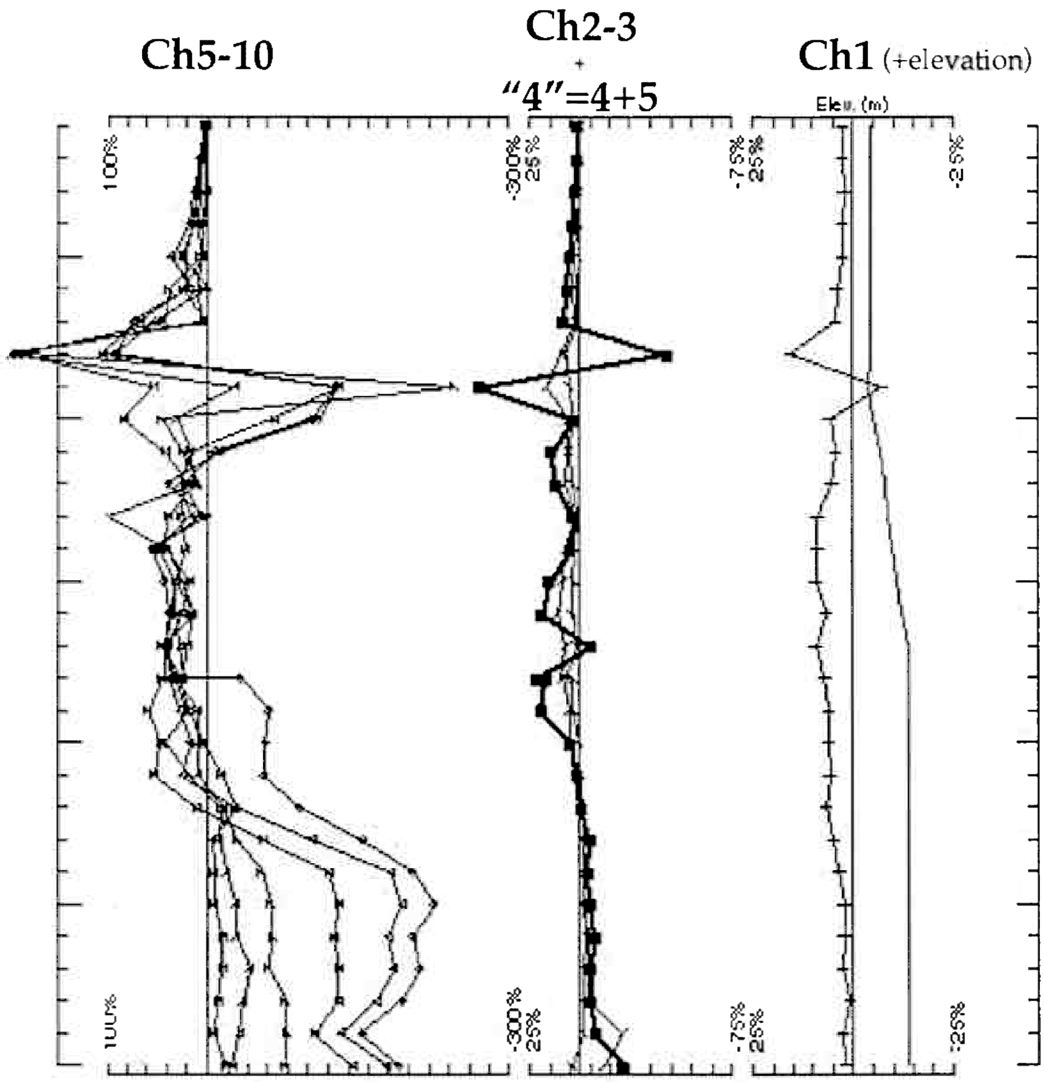
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

Appendix E

Figure E2

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

Figure E2



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

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

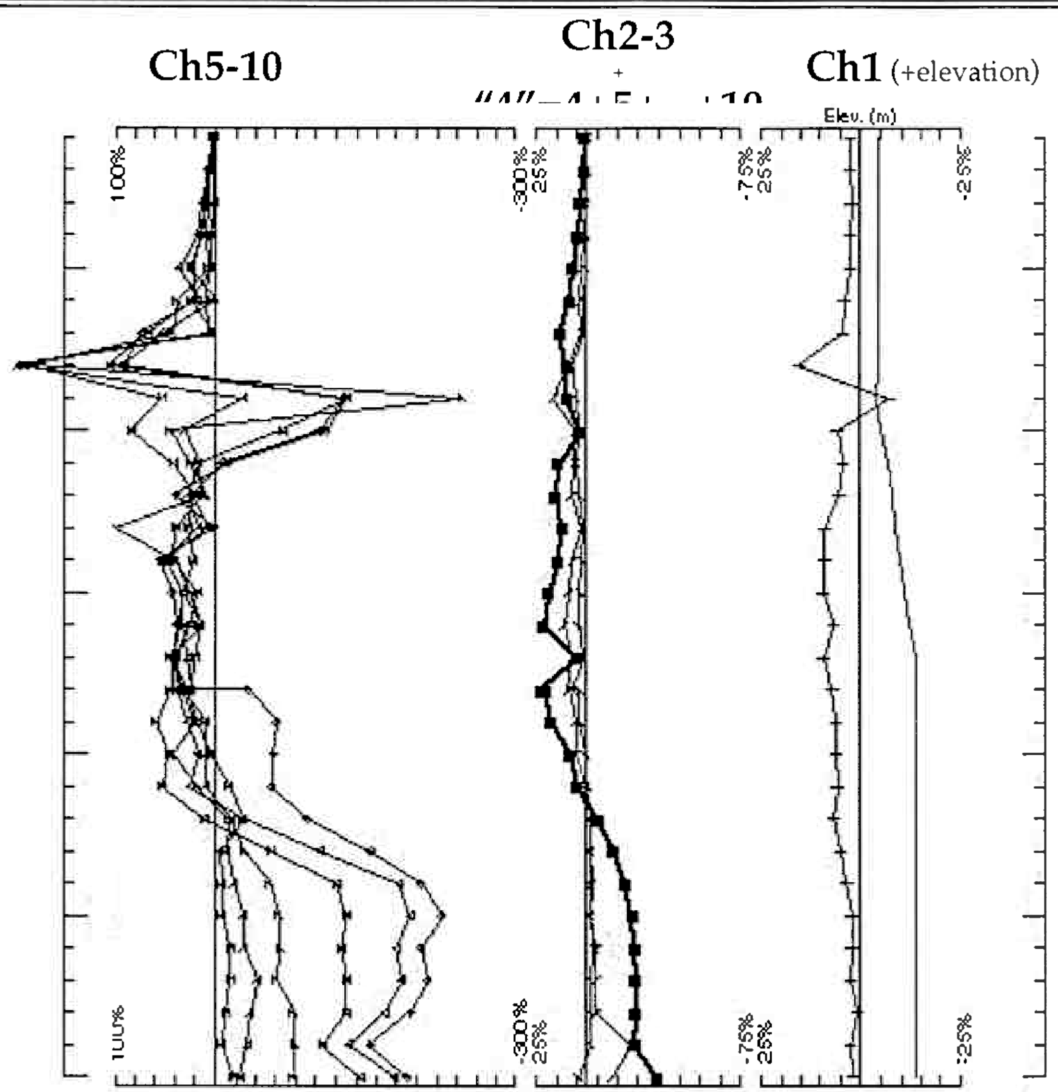
LAMONTAGNE GEOPHYSICS LTD GEOPHYSIQUE LTEE

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