COMINCO LTD

EXPLORATION

NTS: NTS 82F/1

GEOPHYSICS

SHA 1987 RECONNAISSANCE

UTEM SURVEY

- ASSESSMENT REPORT -
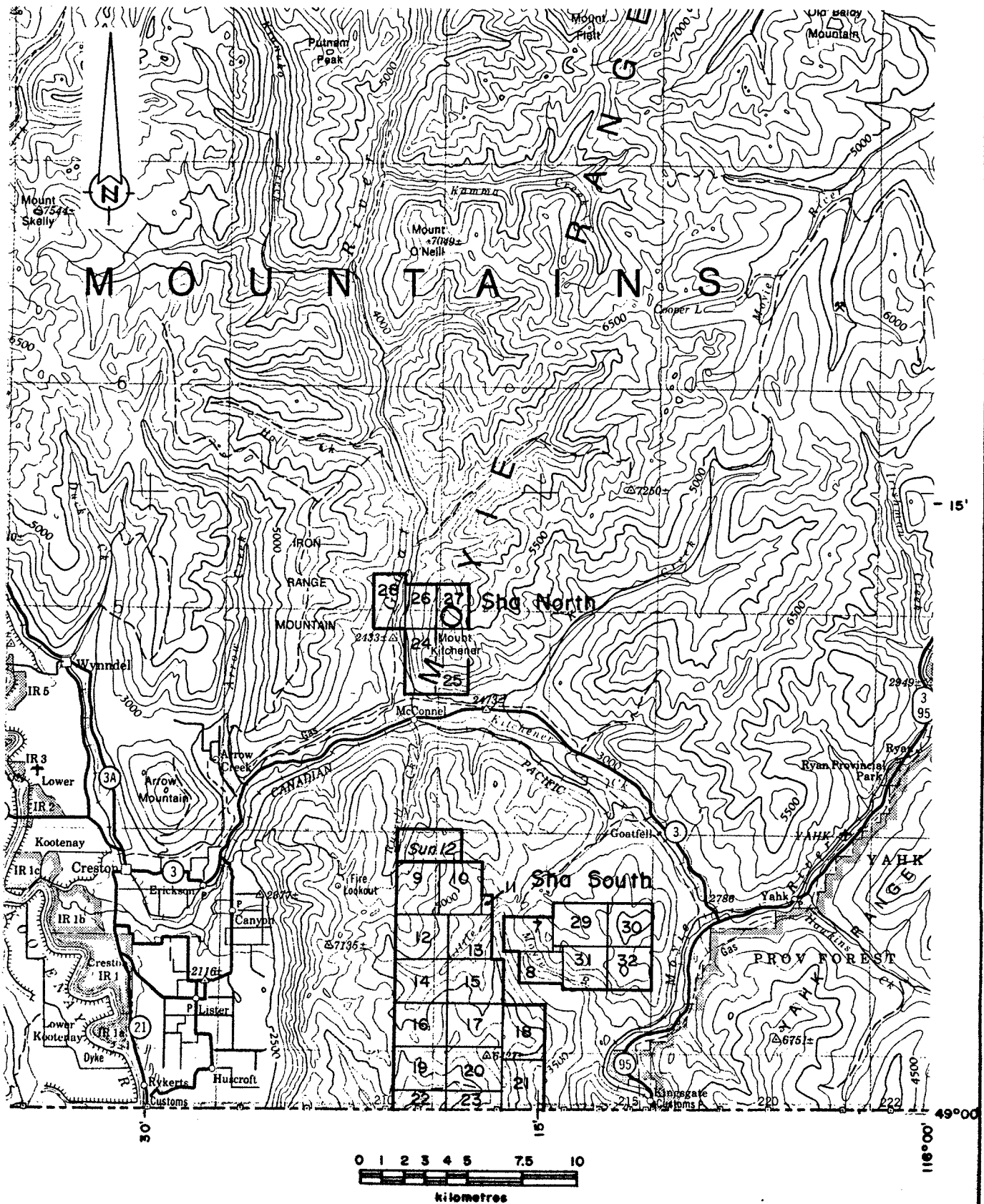
Latitude: 49 06'N

Longitude: 116 17'W

Work Performed by: I.J. Jackish, J. Vyselaar

Claim Owner and Operator: Cominco Ltd.

17,044

FEBRUARY 1987   JULES J. LAJOIE

PURCELL RANGE

MOUNTAINS

Mount Skelly 7544±

Putnam Peak

Mount Fisit

Old Baldy Mountain

Kamma

Mount O'Neill 7049±

Cooper L.

7250±

IRON RANGE MOUNTAIN 2433±

28 26 27 Sha North
24 Mount Kitchener
25

2473±

McConnel

Wynndel

IR 5

IR 3
Lower
IR 2

Kootenay
IR 1c
Creston
Erickson 2677±
Canyon
IR 1b
Creston IR 1 2116±
Lister
Lower Kootenay IR 1a
Dyke
Rykerts Customs
Huscroft

Arrow Creek
Arrow Mountain

CANADIAN PACIFIC

Gas

Kitchener

2949±
3 95

Ryan
Ryan Provincial Park

Goatfell
2788
YAHK
YAHK
Yahk

29 30
31 32

PROV FOREST

Sun 12
9 10
11 Sha South
12 13
14 15
16 17 18
19 20 21
22 23

7135±
7

8

675±

fire Lookout

95
Kingsgate Customs

30'
15'
49°00'
118°00'

15'

0 1 2 3 4 5 7.5 10
kilometres

SHA PROPERTY

Drawn by: Traced by:

Revised by | Date | Revised by | Date

CLAIM LOCATION MAP

Scale: 1:250,000   Date: Jan. '88   Plate: 330-87-1

TABLE OF CONTENTS

COMINCO LTD

EXPLORATION   GEOPHYSICS
------------   ----------

NTS: 82F/1

SHA 1987 RECONNAISSANCE

UTEM SURVEY

- ASSESSMENT REPORT -

INTRODUCTION

This report describes a reconnaissance style Utem survey
on the Sha claims in 1987. These claims are centered within
the Fort Steele and Nelson Mining Divisions, and are
approximately 40 km east of Creston, B.C. and 75 km southwest
of Cranbrook, B.C. A small part of the program was done on
Sha claims north of highway 3, herein called Sha North, while
the bulk of the work was done on Sha claims between highway 3
and the U.S. border, herein called Sha South.
Access to the Sha North area is provided by a road
extending north from Kitchener, B.C. along the Goat River,
then along logging roads. Access to the Sha South area is
provided by the Caroll Creek road from highway 3 and the
Shorty Creek road from highway 95.
The Sha South survey covers about 100 square kilometres.
Only three lines were surveyed in the Sha North survey. A
major power line crosses the Sha South survey area. The area
is mountainous and approximately 10% logged. Elevation varies
from 1000 metres to about 2000 metres.
The area is underlain by rocks of the Aldridge Formation
which are known to host the Sullivan massive sulphide deposit
at Kimberley, B.C. The objective of the survey described
within was to locate anomalies which could be caused by
massive sulphide deposits.

FIELD WORK

The field work was carried out in the periods July 24 to
August 1, September 28 to 30, and October 7 to 22. Seven

loops were used on the Sha South area and one was used on the Sha North area.
A total 60.3 kilometres of surveying
was completed mostly along available logging roads with some of the data being acquired on uncut lines through the bush. Station spacing was generally 50 or 100 metres. Topofil chaining and compass bearings were used to acquire location information as best as possible.

The work was carried out by geophysicists I. Jackish and J. Vyselaar. Assistants at various times were Eric Ricketts, Steve Kempt, Steve Morrisson, Dave Murphy, and Nick Murphy.

DESCRIPTION OF THE UTEM SYSTEM

UTEM is an acronym for "University of Toronto ElectroMagnetometer". The system was developped by Dr. Y. Lamontagne (1975) while he was a graduate student of that university.

The field procedure consists of first laying out a large loop of single strand insulated wire and energizing it with current from a transmitter which is powered by a motor generator. Survey lines are generally oriented perpendicular to one side of the loop and surveying can be performed both inside and outside the loop.

The transmitter loop is energized with a precise triangular waveform at a carefully controlled base frequency (30.974Hz for this survey). The receiver system includes a sensor coil and backpack portable receiver module which has a digital recording facility on cassette magnetic tape. The time synchronization between transmitter and receiver is achieved through quartz crystal clocks in both units, and it must be accurate to about one second in fifty years.

The receiver sensor coil measures the vertical component of the electromagnetic field and responds to its time derivative. Since the transmitter current waveform is rectangular, the receiver coil will sense a perfect square wave in the absence of geologic conductors. Deviations from a perfect square wave are caused by electrical conductors which may be geologic or cultural in origin. The receiver stacks any pre-set number of cycles in order to increase the signal to noise ratio.

The UTEM receiver gathers and records 9 channels of information at each station. The higher number channels

(7-8-9) correspond to short time or high frequency while the lower number channels (1-2-3) correspond to late time or low frequency. Therefore, poor or weak conductors will respond on channels 9, 8, 7, and 6. Better conductors will give responses on progressively lower number channels as well. For example, massive, highly conducting sulphides or graphite will produce a response on all nine channels.

At the end of the day the casette tape is played back into a Pascal microengine computer at the base camp. The computer is used to process the data and control the plotting on an 11" x 15" graphics plotter. Data are portrayed on Data Sections as profiles of each of the nine channels, one section for each survey line.

In the reconnaissance survey mode used herein, existing logging roads are used as much as possible to lay out the transmitter loops and to collect Utem data. Topofil chainage and compass direction notes were kept to retain at least some location information. In such a surveying procedure, gross errors will result in the channel 1 data, and this would affect the conductance determination of excellent conductors, if they exist. Nevertheless, this survey technique is used as a first pass to detect deep good conductors and it can be followed with more detailed work later.

DATA PRESENTATION

The results of this survey are presented in two compilation maps and 46 Data Sections

The maps are listed as follows:

Plate 330-87-1   Location Map
(beginning of text)   Scale 1:7.5M

Plate 330-87-2   Utem Compilation Map - South Sha
(in envelope)   Scale 1:20,000

PLATE 330-87-3   Utem Compilation Map - North Sha
(in enveloppe)   Scale 1:20,000

PLATE 330-87-4   Claim Map - Sha Claims
(in enveloppe)   Scale 1:50,000

A legend for the compilation map and data sections is

included. The data sections are arranged in order of loop number within each sub area: south part of Sha South, north part of Sha South, and finally, Sha North; then in order of line number. Loop number defines a loop survey area for purposes of data processing and data management. The loop numbers are depicted by a heavy dashed line in the compilation map. Nomenclature for the line numbering is a three digit code, the first digit being the loop number, and the last two being the line number.

The magnetic field amplitudes from both the transmitter loop (primary field) and from the electric currents induced in the ground (secondary field) vary considerably from the beginning of a line near the transmitter loop, to the end of the survey line far from the transmitter loop. To present such data, a normalizing scheme must be used. In this survey, the primary field from the loop is used for normalizing and presenting the data according to the following schemes:

1.   Continuously normalized plots.

This is the standard normalization scheme.

a) For channel 1:

$$\% \text{ Ch.1 anomaly} = \frac{\text{Ch.1} - P}{P} \times 100\%$$

where P is the primary field from the loop at the station and Ch.1 is the observed amplitude for channel 1.

b) The remaining channels (n=2 to 9) are channel 1 reduced and channel 1 normalized:

$$\% \text{ Ch.n anomaly} = \frac{\text{Ch.n} - \text{Ch.1}}{\text{Ch.1}} \times 100\%$$

where Ch.n is the observed amplitude of Channel n (n=2 to 9).

2.   Point normalized plots.

These plots display an arrow at the top of the section indicating the station to which all data on the line are normalized. The purpose of point normalized plots is to display only the relative amplitude

variation of the secondary field along the line, that is, only that magnetic field from the currents induced in the ground.

a) For Channel 1:

$$\% \text{ Ch.1 anomaly} = \frac{\text{Ch.1} - Ppn}{Ppn} \times 100\%$$

where Ppn is the primary field from the loop at the point norm station and Ch.1 is the observed amplitude for Channel 1.

b) The remaining channels (n=2 to 9) are channel 1 reduced and channel 1 normalized:

$$\% \text{ Ch.n anomaly} = \frac{\text{Ch.n} - \text{Ch.1pn}}{\text{Ch.1pn}} \times 100\%$$

where Ch.n is the observed amplitude of Channel n and Ch.1pn is the observed channel 1 amplitude at the point norm station.

Point normalized plots are usually produced on data sections containing anomalies to help interpretation by providing a different perspective to the data. They are identified by an arrow at the top of the plot which denotes the station used for point normalization; the latter is usually chosen as a station which is at a constant separation from the loop for the whole grid, or, if there is an anomaly,, at a station near the center of the anomalous response.

The above normalizing procedures result in chaining errors displayed in Channel 1 only. In the reconnaissance mode of surveying used herein, the chainage information is not accurate and therefore there are sometimes large errors in the channel 1 amplitude. Although this does detract from interpretation of very good conductors, it does not hinder their detectability using higher numbered channels and allows one to return with grid work later where deemed necessary.

The stations locations are projected onto a straight line for presentation on data sections.

INTERPRETATION
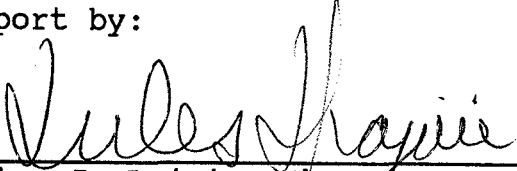
Plates 330-87-2 and 330-87-3 are compilations of the Utem anomalies depicted on the Data Sections. A legend is included in the text explaining the symbols used. Because of the nature of the reconnaissance mode of surveying, grid Utem work would be required before detailed interpretation could be attempted on any of the responses detected herein.

In summary, a number of crossover type anomalies are identified by crosses on the compilation maps. The majority are poor conductors responding only in the early time channels, to channels 8 and 7. A few are better conductors, respondung to channels 4, 3, and 2. All are caused by shallow conductive sources. A number of contact type responses are indicated by a triangle where the apex of the triangle points to the region of higher conductivity; these likely indicate geological contacts.

CONCLUSIONS

60.3 kilometres of Utem reconnaissance surveying were completed. While only limited conductivity was encountered in the vicinity of the Sha North claims, about thirty, generally poor conductivity shallow "crossover" responses were located on the Sha South claim group. Some of these may warrant grid follow-up to provide definition, depending upon geological assessment.

Report by:

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist,
Cominco Ltd.

Approved for Release by:

John M. Hamilton,
Manager,
Western District Exploration,
Cominco Ltd.

cc: Mining Recorder:
        Fort Steele M.D. (2)
        Nelson M.D. (2)
    Kootenay Exploration (1)
    Western District files (1)
    Geophysics (1)

REFERENCES

Lamontagne, Y., 1975, Applications of Wideband, time-domain EM measurements in mineral exploration: Ph.D. thesis, U. of Toronto.

LEGEND

UTEM COMPILATION MAP AND DATA SECTIONS

SYMBOL	CHANNEL	MEAN DELAY TIME
		30 Hz
│	1	12.8 ms
╱	2	6.4
╲	3	3.2
☐	4	1.6
⟋	5	0.8
△	6	0.4
▽	7	0.2
⋈	8	0.1
△	9	0.05
◇	10	0.025

In the data sections, the upper graph contains Channels 9 to 5, the centre graph contains Channels 5 to 2, and the lower graph contains Channel 1. Station numbers are indicated along the abscissa. Elevations along the survey line are shown by the solid profile in the lower graph, the scale for which is the ordinate on the right hand side of the graph.
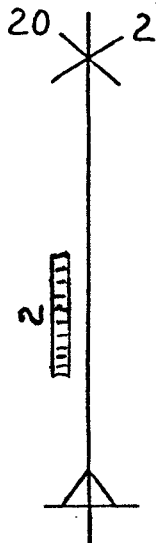
Axis of a crossover anomaly. The right superscript indicates the latest anomalous channel. The left superscript indicates depth to current axis in metres, or S = shallow depth, M = moderate depth and D = deep.

Indicates a negative anomaly of width shown by the dash. The latest anomalous channel is shown. Can sometimes be confused with the negative part of a crossover anomaly.

Indicates contact between two regions of differing resistivity. Arrow points to low resistivity zone.

Outline of a transmitter loop

APPENDIX I

IN THE MATTER OF THE B.C. MINERAL ACT

AND THE MATTER OF A GEOPHYSICAL PROGRAMME

CARRIED OUT ON THE SHA CLAIMS

LOCATED 40 KM E OF CRESTON, B.C.

IN THE FORT STEELE AND NELSON MINING DIVISIONS OF THE

PROVINCE OF BRITISH COLUMBIA, MORE PARTICULARLY

N.T.S. 82 F/1
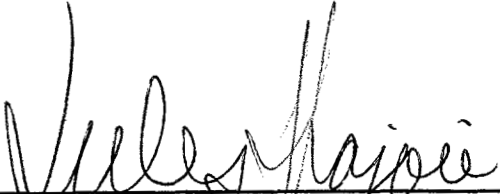
A F F I D A V I T

    I, Jules J. Lajoie, of the City of West Vancouver in the Province of British Columbia, make oath and say:

    1. THAT I am employed as a geophysicist by Cominco Ltd. and, as such, have a personal knowledge of the facts to which I hereinafter depose;

    2. THAT annexed hereto and marked as "Exhibit A" to this statement is a true copy of expenditures incurred on a geophysical survey on the SHA claims;

    3. THAT the said expenditures were incurred between July 24 and October 22, 1987, for the purpose of mineral exploration of the above-noted claims.

_____
Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.

APPENDIX II

EXHIBIT 'A'

STATEMENT OF GEOPHYSICAL EXPENDITURES (1987)

SHA CLAIMS
----

1. SALARIES
   I. Jackish: 31 days @ $285.00/day $8835.00
   J. Vyselaar: 18 days @ $290.00/day $5220.00
   S. Kemp: 27 days @ $125.00/day $3375.00
   D. Murphy: 18 days @ $110.00/day $1980.00
   E. Ricketts: 18 days @ $102.50/day $1845.00
   S. Morrison: 9 days @ $102.50/day $922.50
   N. Murphy: 9 days @ $102.50/day $922.50

                                            $23,100.00

2. OPERATING DAY CHARGES
   Note: This charge is applied for those days on which
          useful data are acquired, to cover the costs of
          data compilation, drafting, interpretation, and
          report.
   24 days @ $300.00/day $7,200.00

3. EQUIPMENT RENTAL
   Utem system: 25 days @ $150.00/day $3,750.00

4. EXPENSE ACCOUNTS $4,398.04

5. MISCELLANEOUS
   Accomodation: $776.60
   4 X 4 Trucks(2): $2960.00
   Fuel: $757.00
   Wire Usage: $100.00

                                                     $4,593.60

          T O T A L $43,041.64
          =====================================

     I certify this to be a true statement of expenditures
for the geophysical program on the SHA claims in 1987.

          Jules J. Lajole, Ph.D. P.Eng.
          Geophysicist, Cominco Ltd.

APPENDIX III

C E R T I F I C A T I O N

I, Jules J. Lajoie, of 5655 Keith Road, in the City of West Vancouver, in the Province of British Columbia, do hereby certify that:

1. I graduated from the University of Ottawa in 1968 with an Honours B.Sc. in Physics, from the University of British Columbia in 1970 with an M.Sc. in Geophysics, and from the University of Toronto in 1973 with a Ph.D. in Geophysics.

2. I am a registered member (#12077) of the Association of Professional Engineers of the Province of British Columbia, the Society of Exploration Geophysicists, and the British Columbia Geophysical Society.

3. I have been practicing my profession for the past fourteen years.

Jules J. Lajoie, Ph.D., P.Eng.
Geophysicist, Cominco Ltd.

DATA SECTIONS
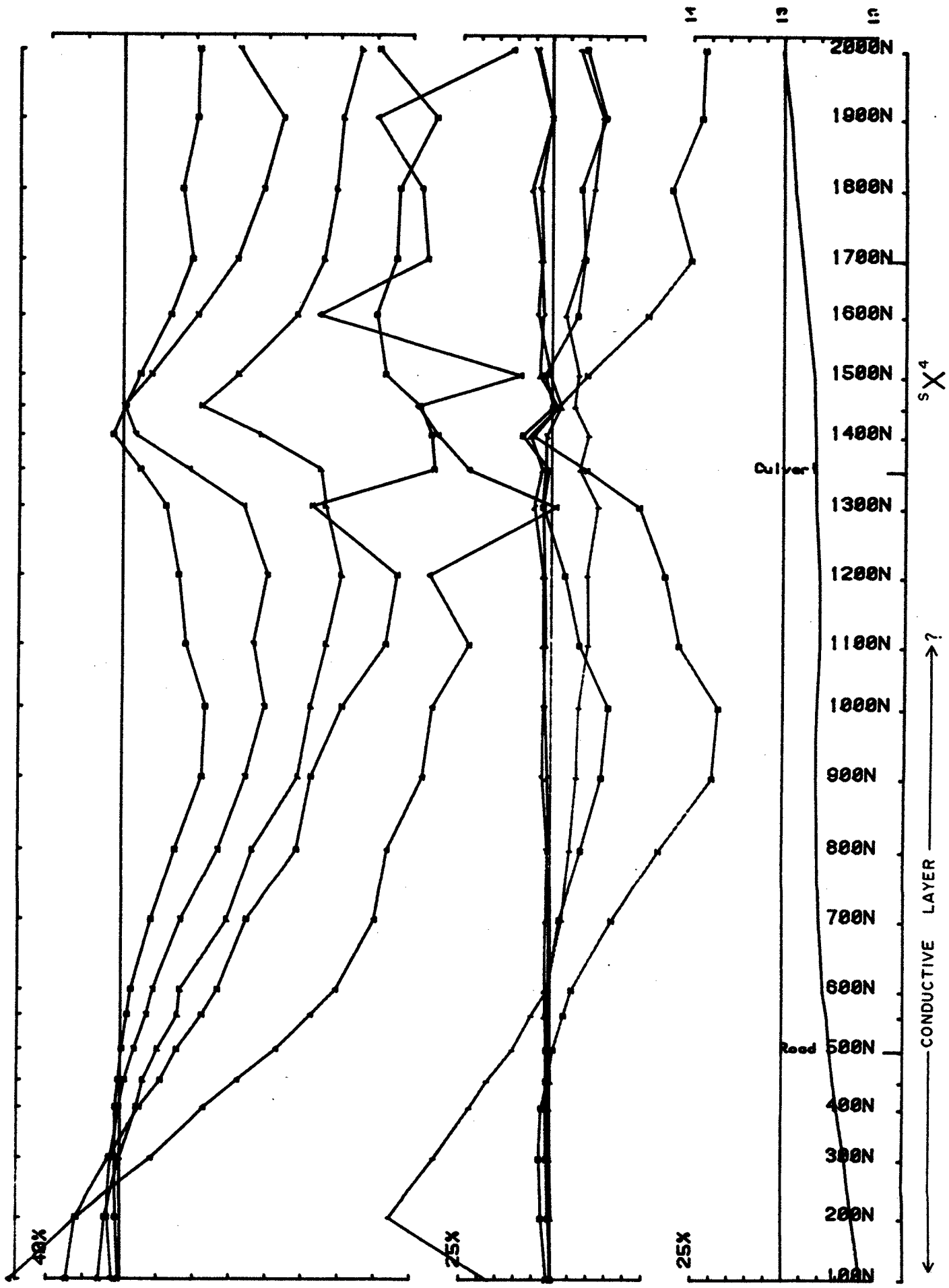
Area SHA   COMINCO   operator IJ JV   freq(hz) 30.974   D.S. 1

Locono 1   Line 10 component Hz secondary   Ch 1 normalized   Ch 1 reduced
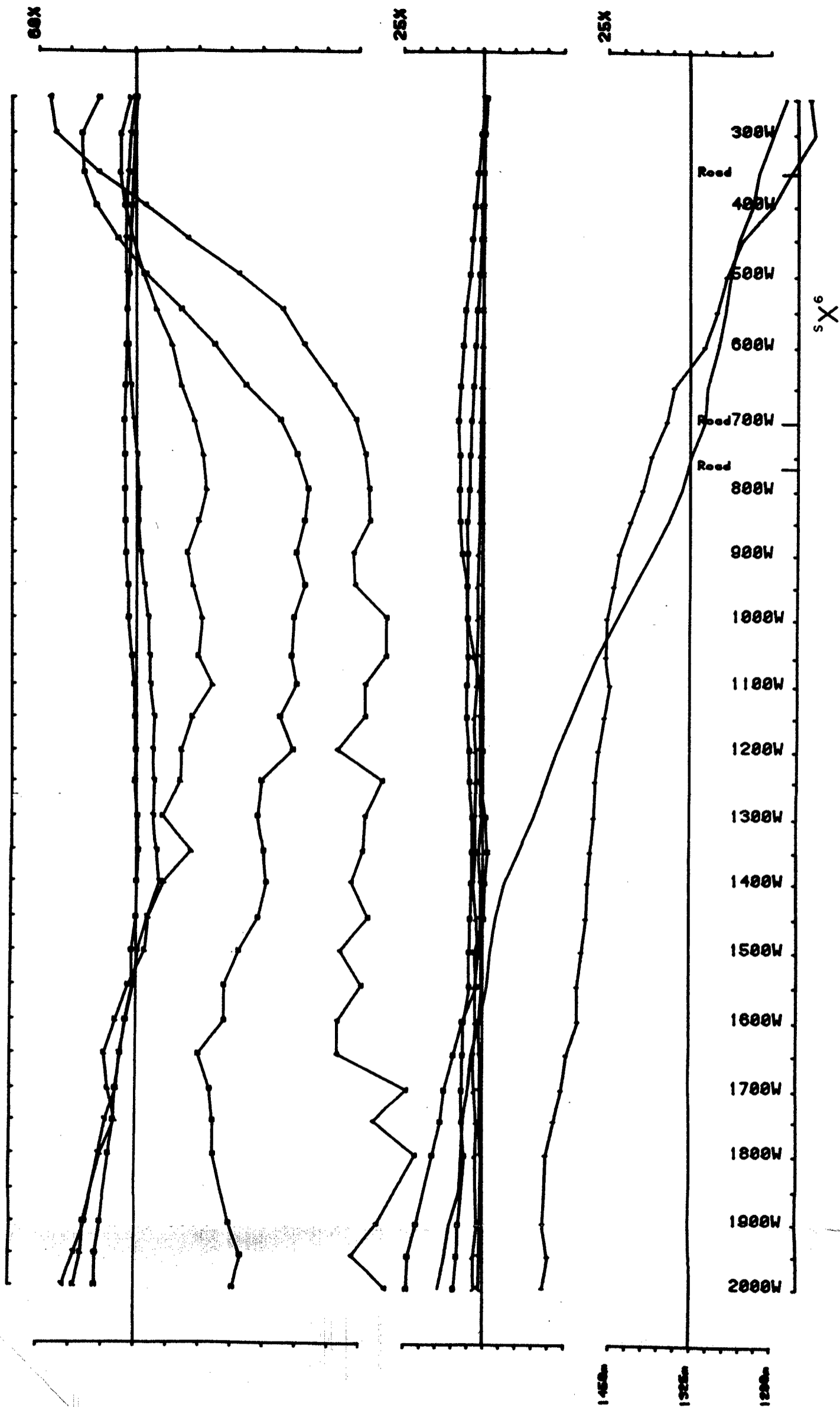
Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974
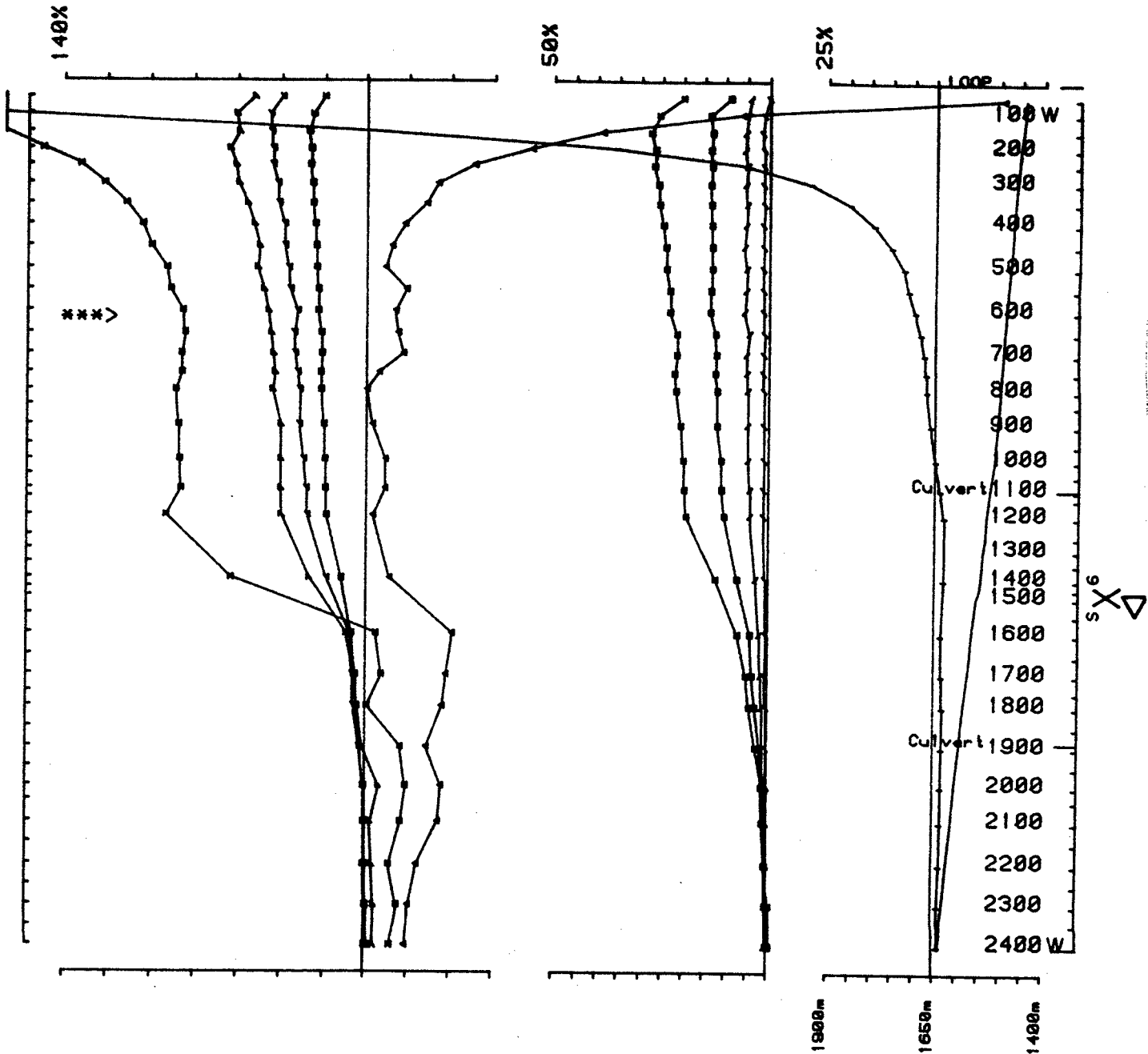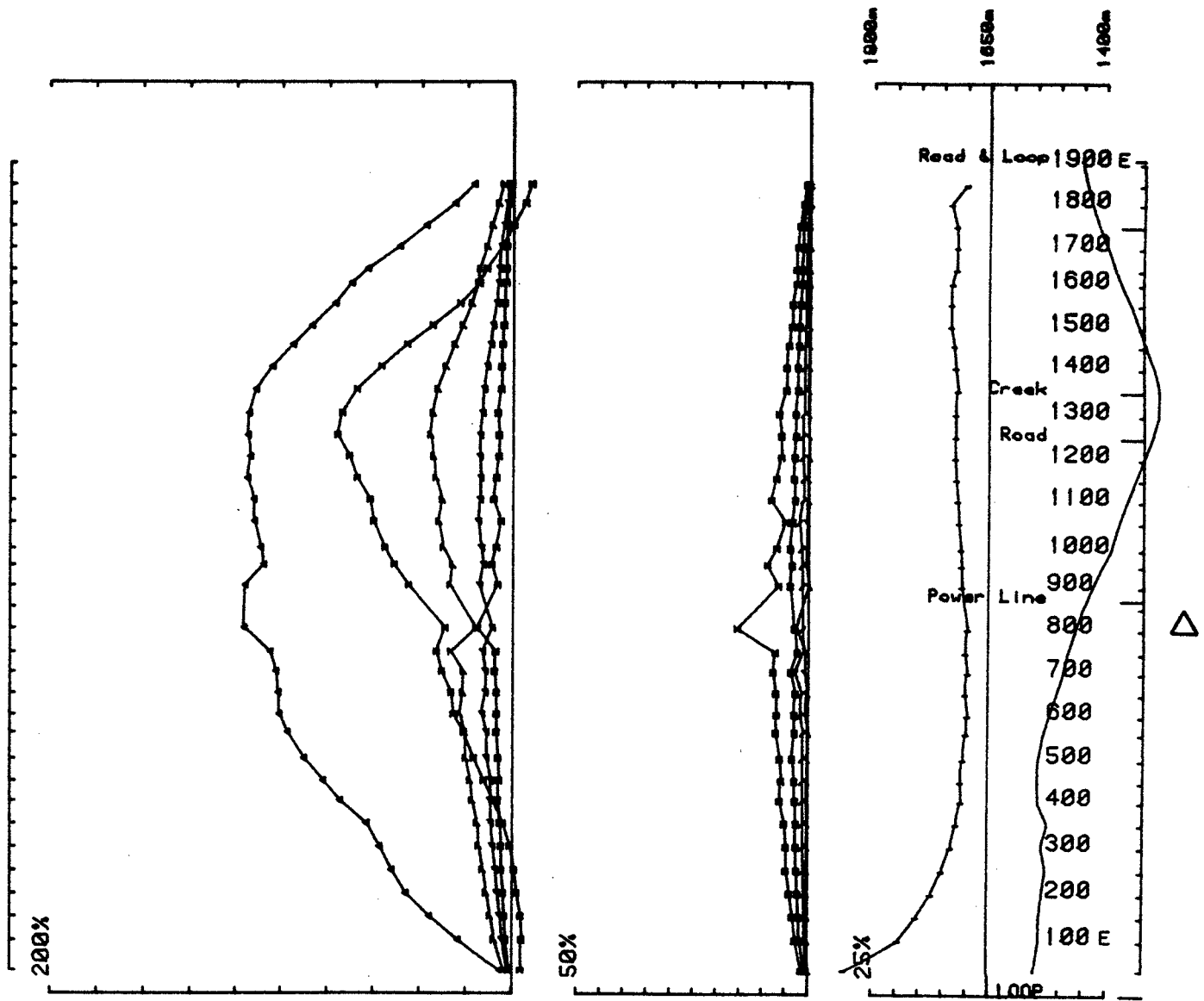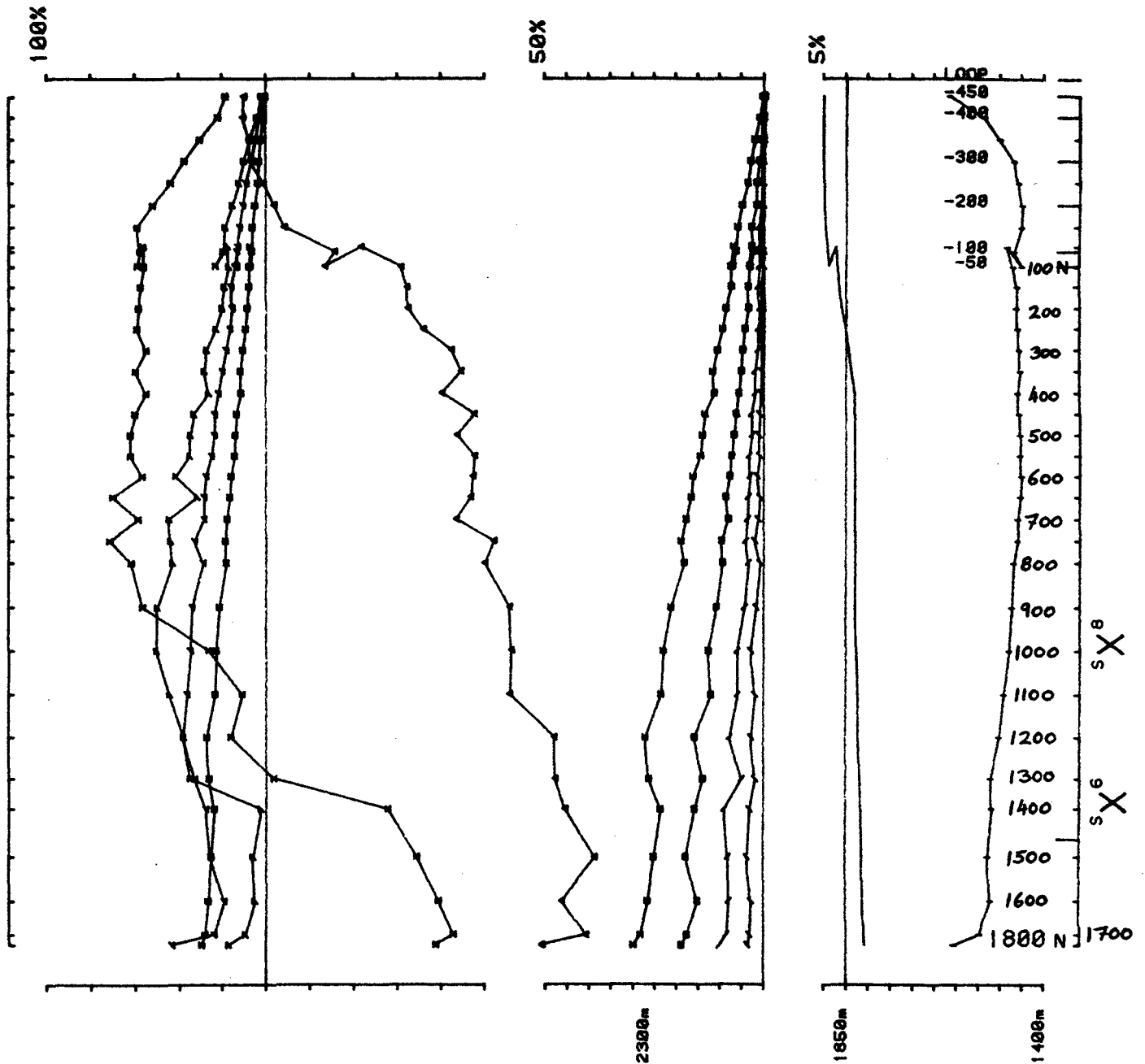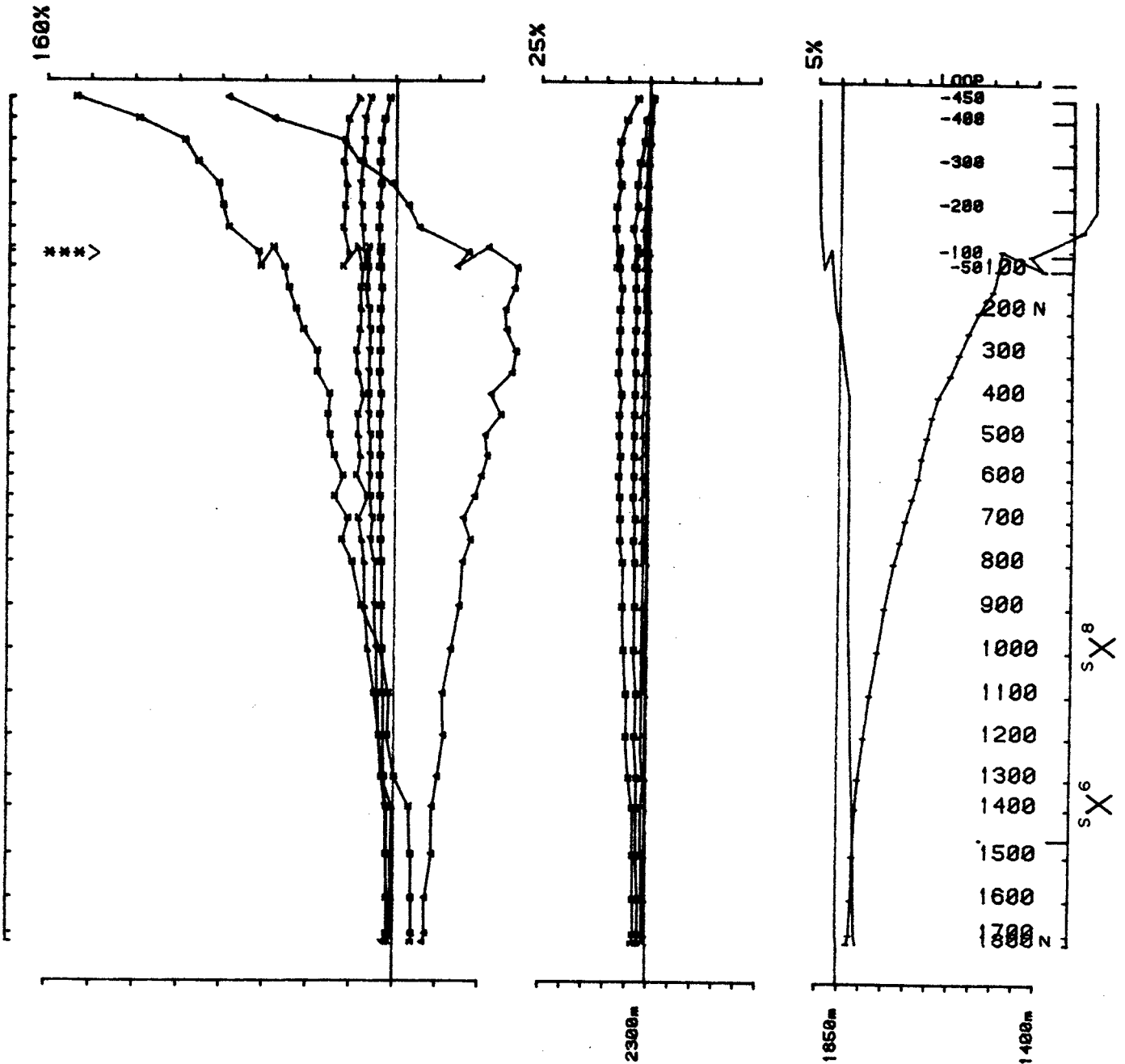Loopno 1 Line 20 component Hz secondary Ch 1 normalized Ch 1 reduced

DS2

60% 40% 25%

100W
200W
300W
400W
500W
600W
700W
800W
900W
1000W
1100W
1200W
1300W
1400W
1500W
Road Junction
1600W
1700W

125m 1125m 1000m
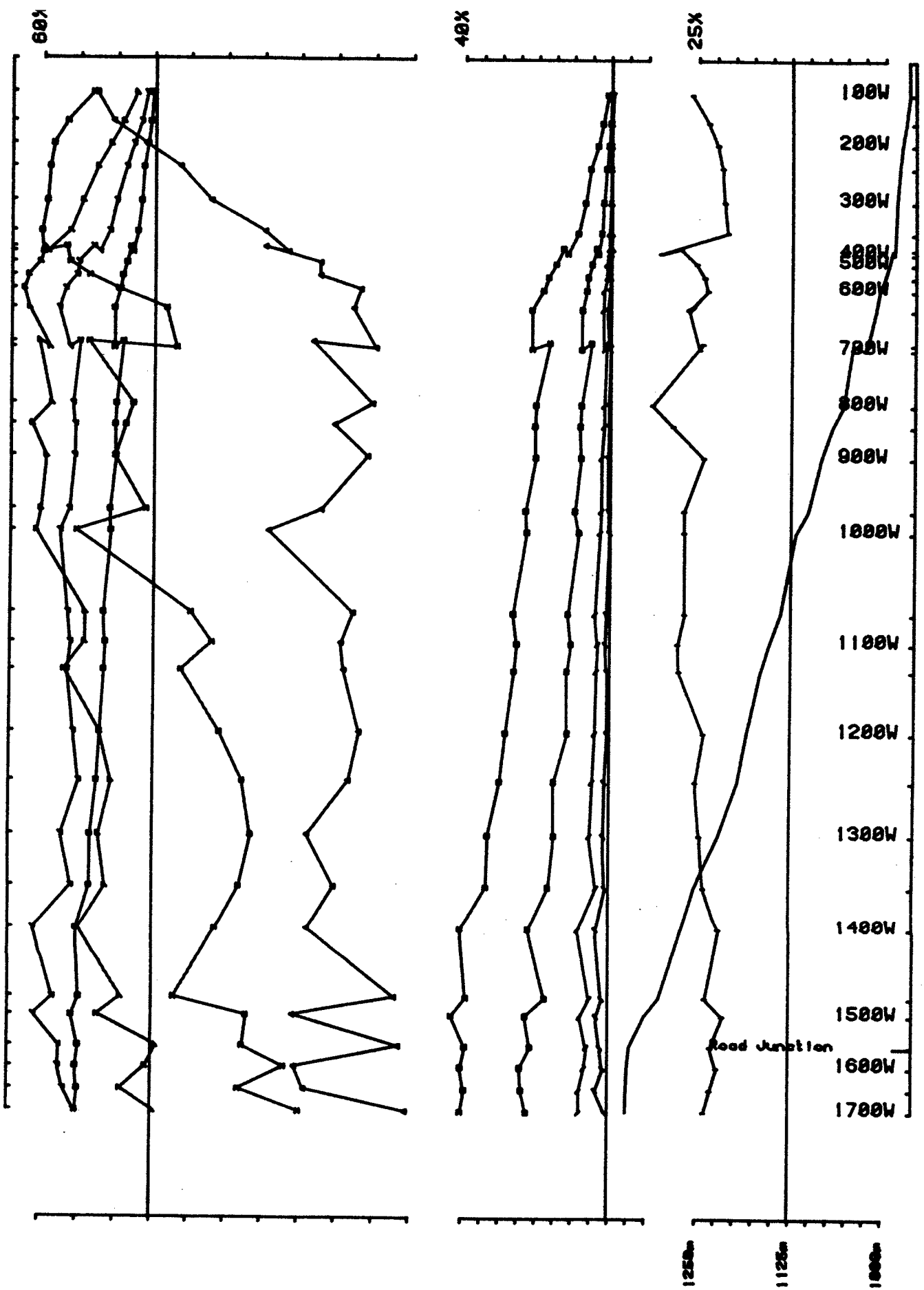
Area SHA   SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 1   Line 30 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS3

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

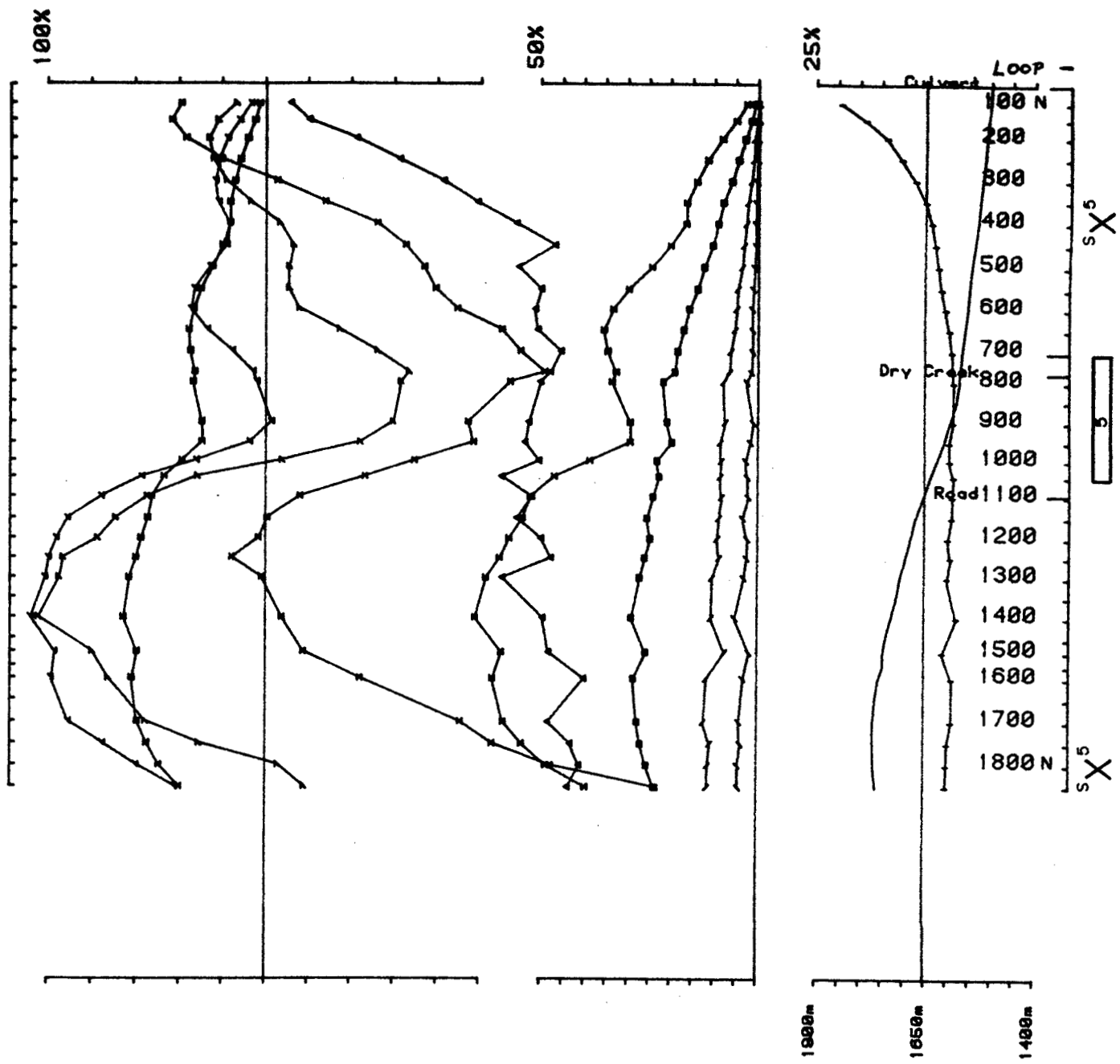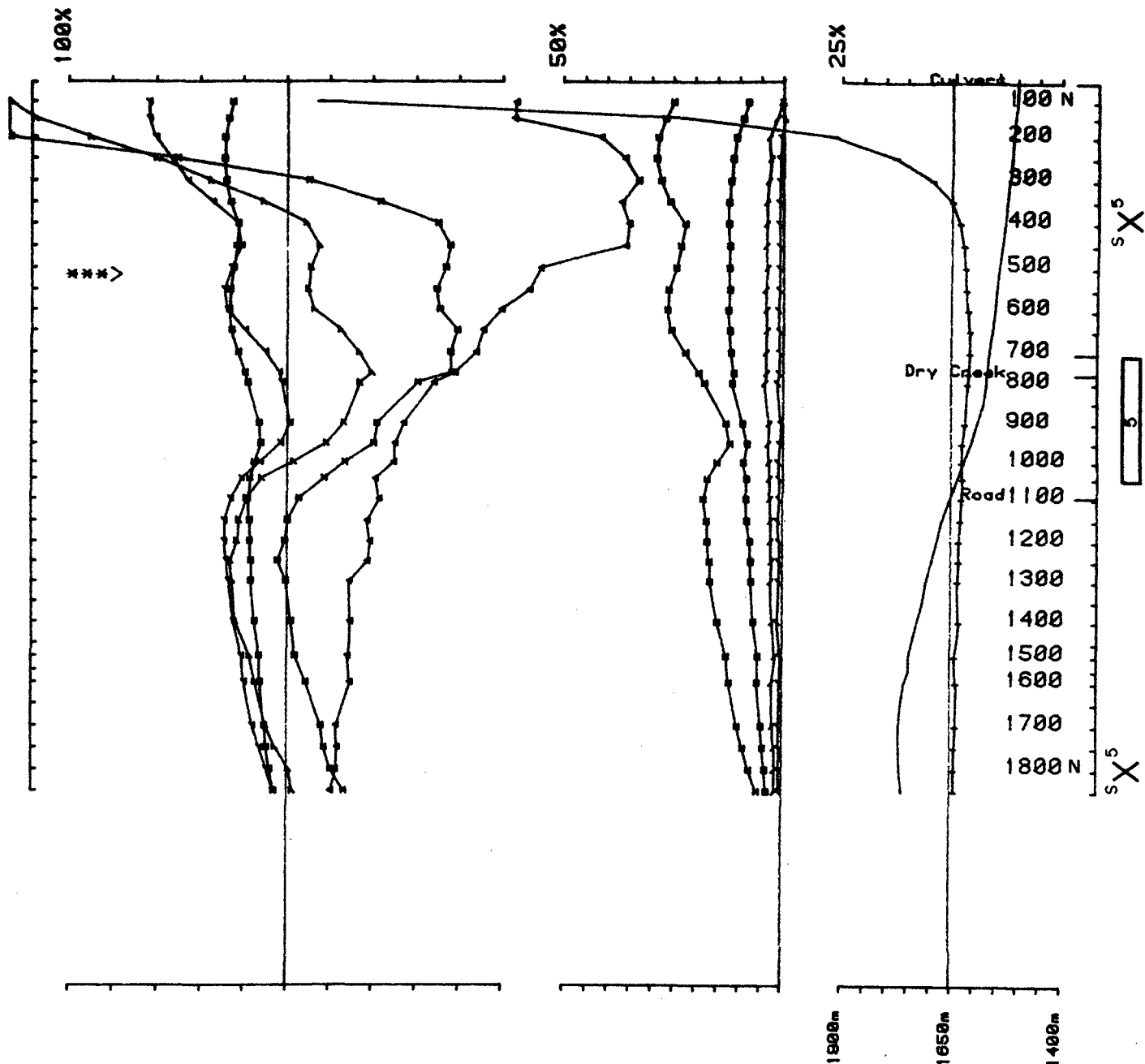Loopno 1   Line 31 component Hz secondary   Ch 1 normalized   Ch 1 reduced
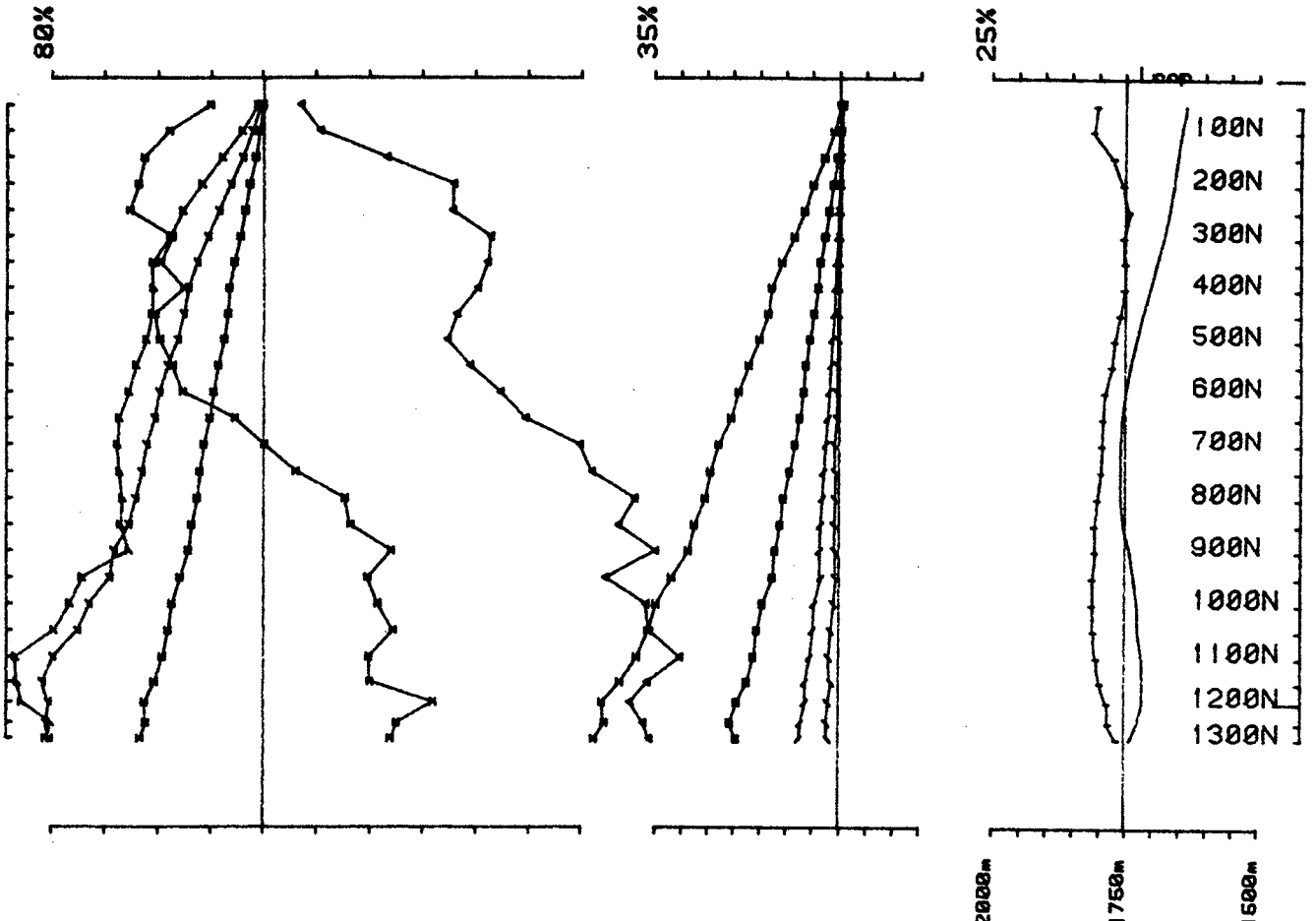
DS4

60% **40%** **25%**

900W
1000W

Creek

1100W

***>

1200W

1300W

1400W

1150m
1025m
900m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 1   Line 31 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS4a

Area SHA   COMINCO   operator IJ JV   freq(hz) 38.974

Loopno 1   Line 48 component Hz secondary   Ch I normalized   Ch I reduced

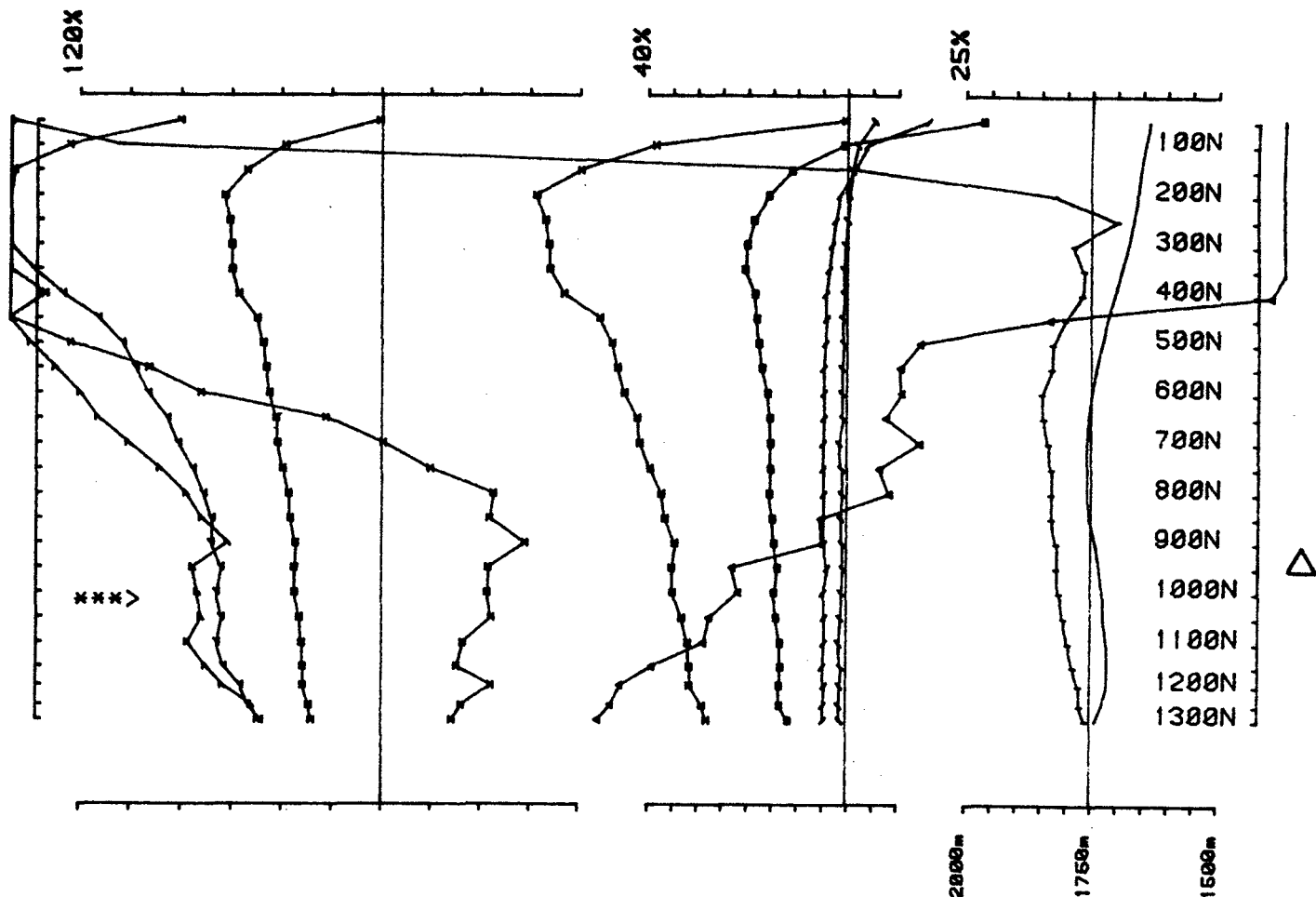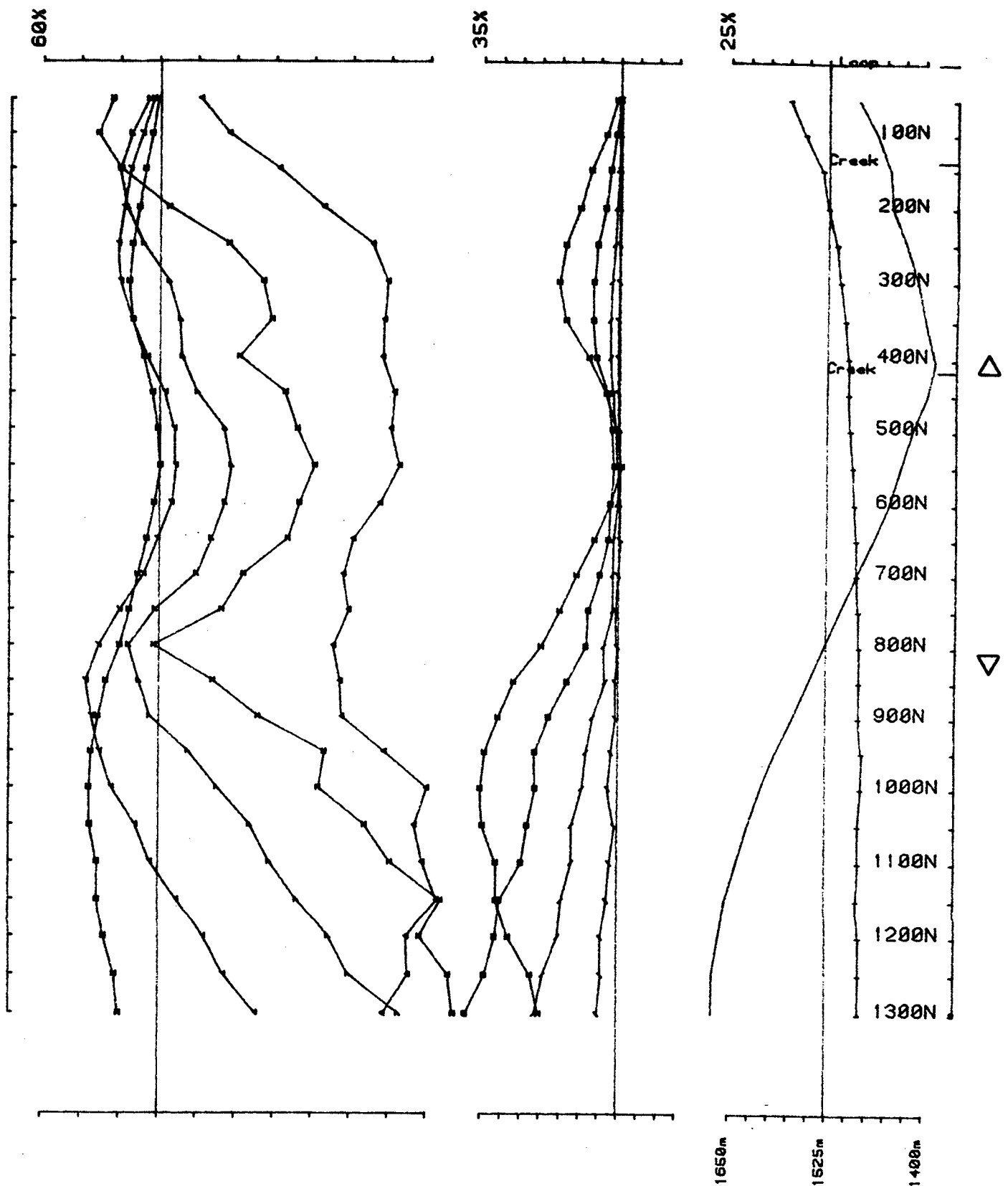D.S. 5
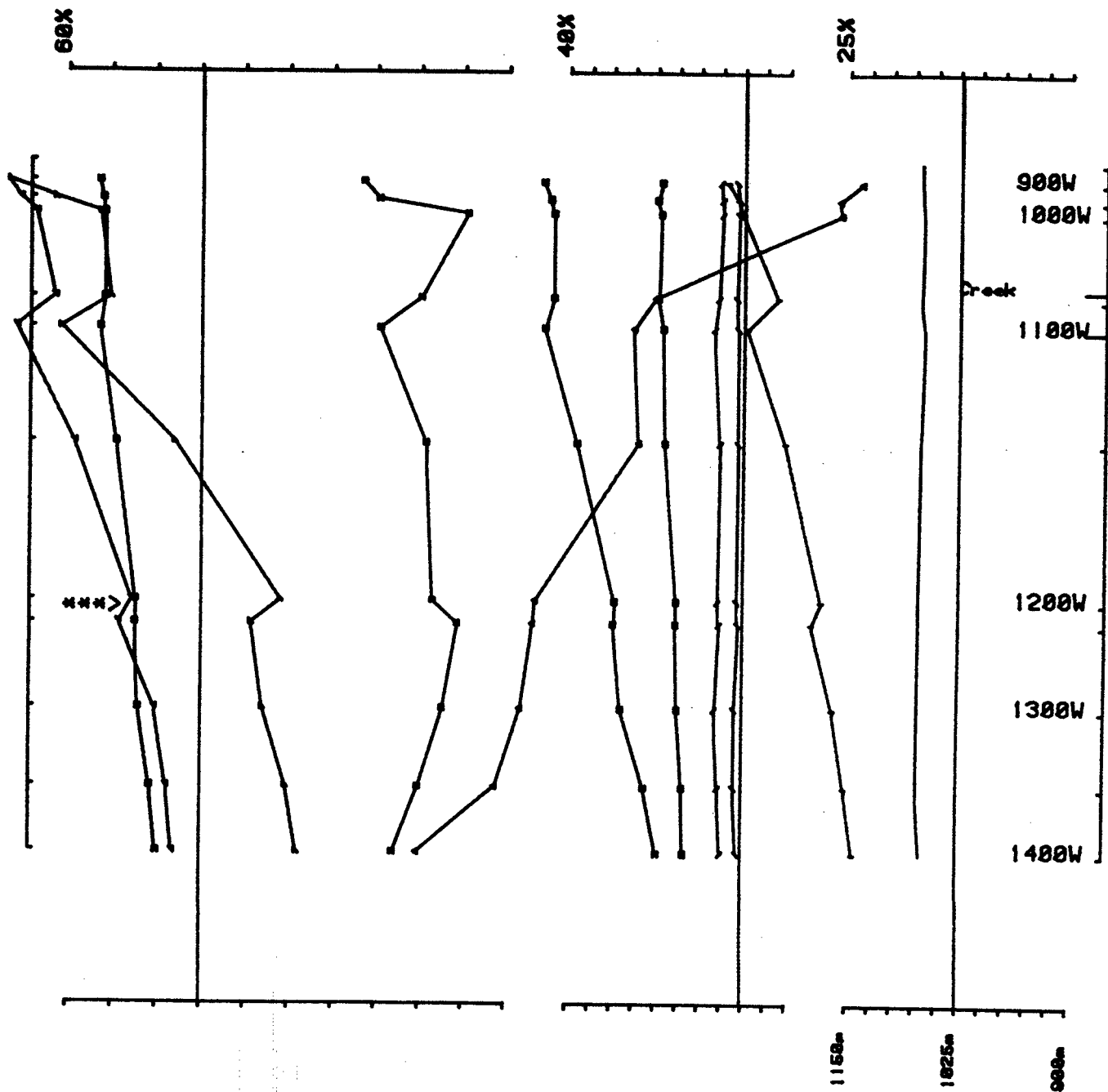
Area SHA   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 1   Line 40 component Hz secondary   Ch I normalized   Ch I reduced

D.S. 5a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 2 Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS6

***>

+2A%

50%

25%

1800m 1550m 1300m

2100E
2000
1900
1800
Fork In Road 1700
1600
1500
Creek 1400
1300
1200
1100
1000
900
800
700
600
500
Creek 400
300
200
100 E
LOOP

△

△

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 2 Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS6a

Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974

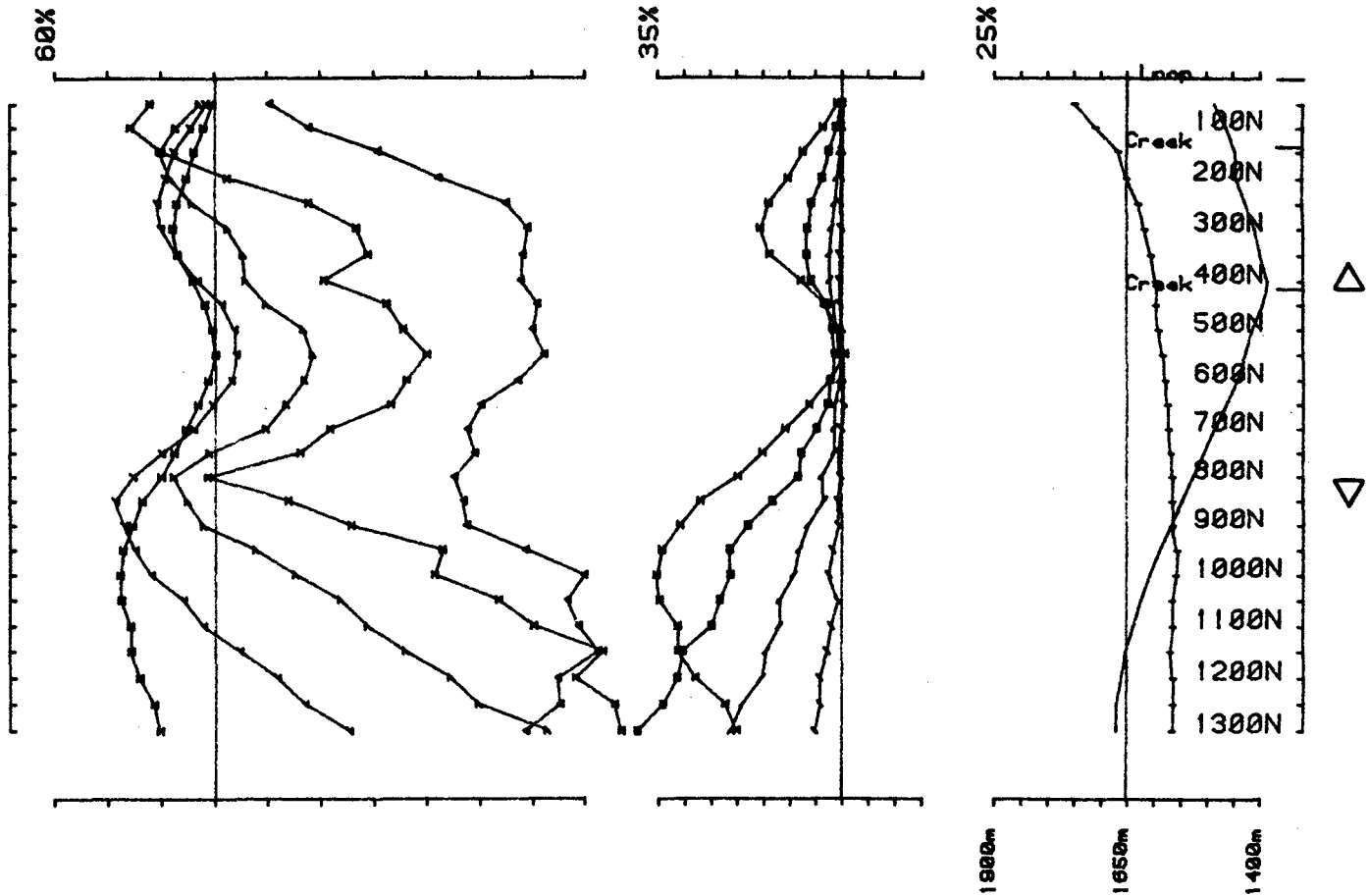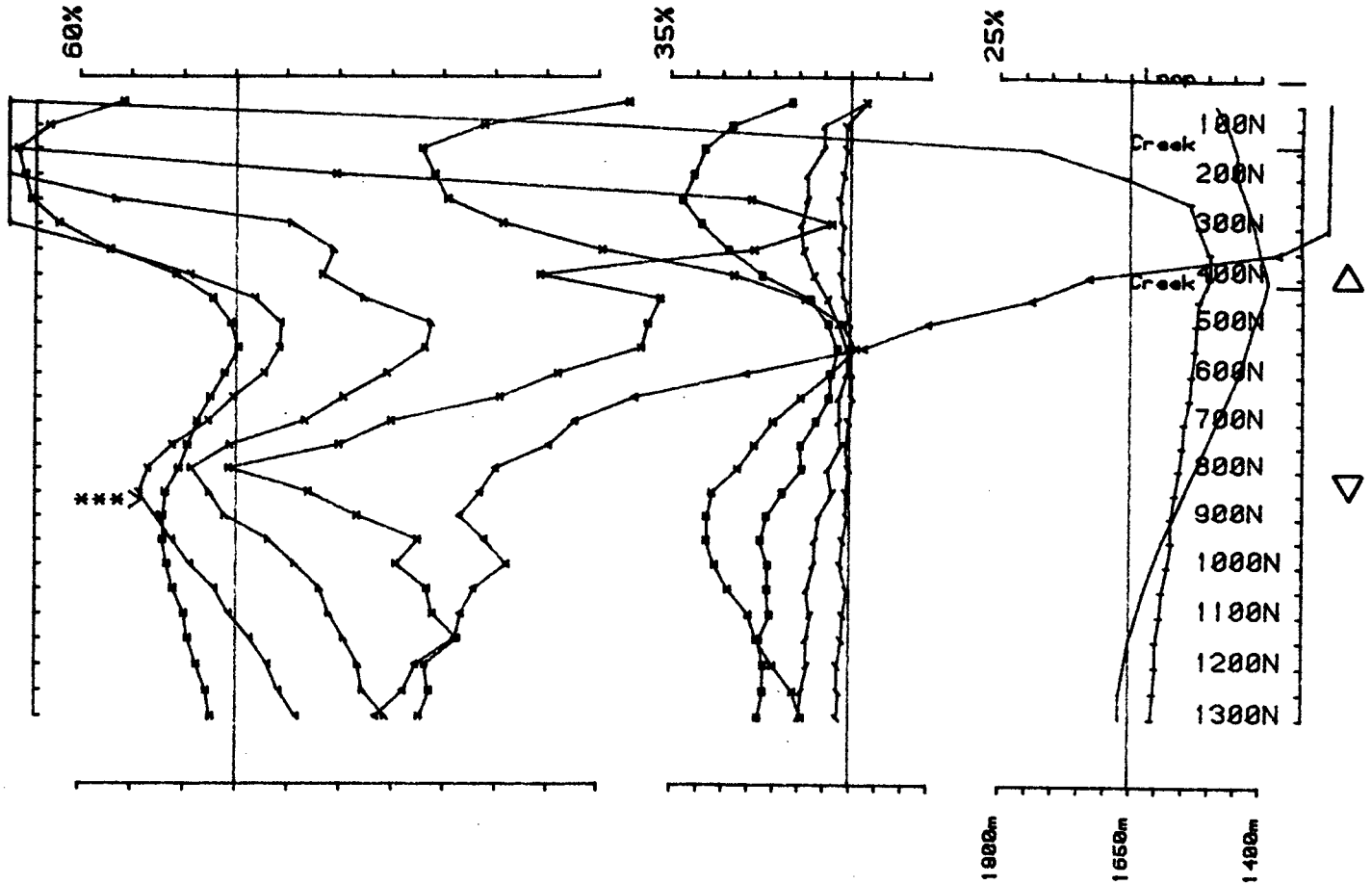Loopno 2 Line 30 component Hz secondary Ch I normalized Ch I reduced
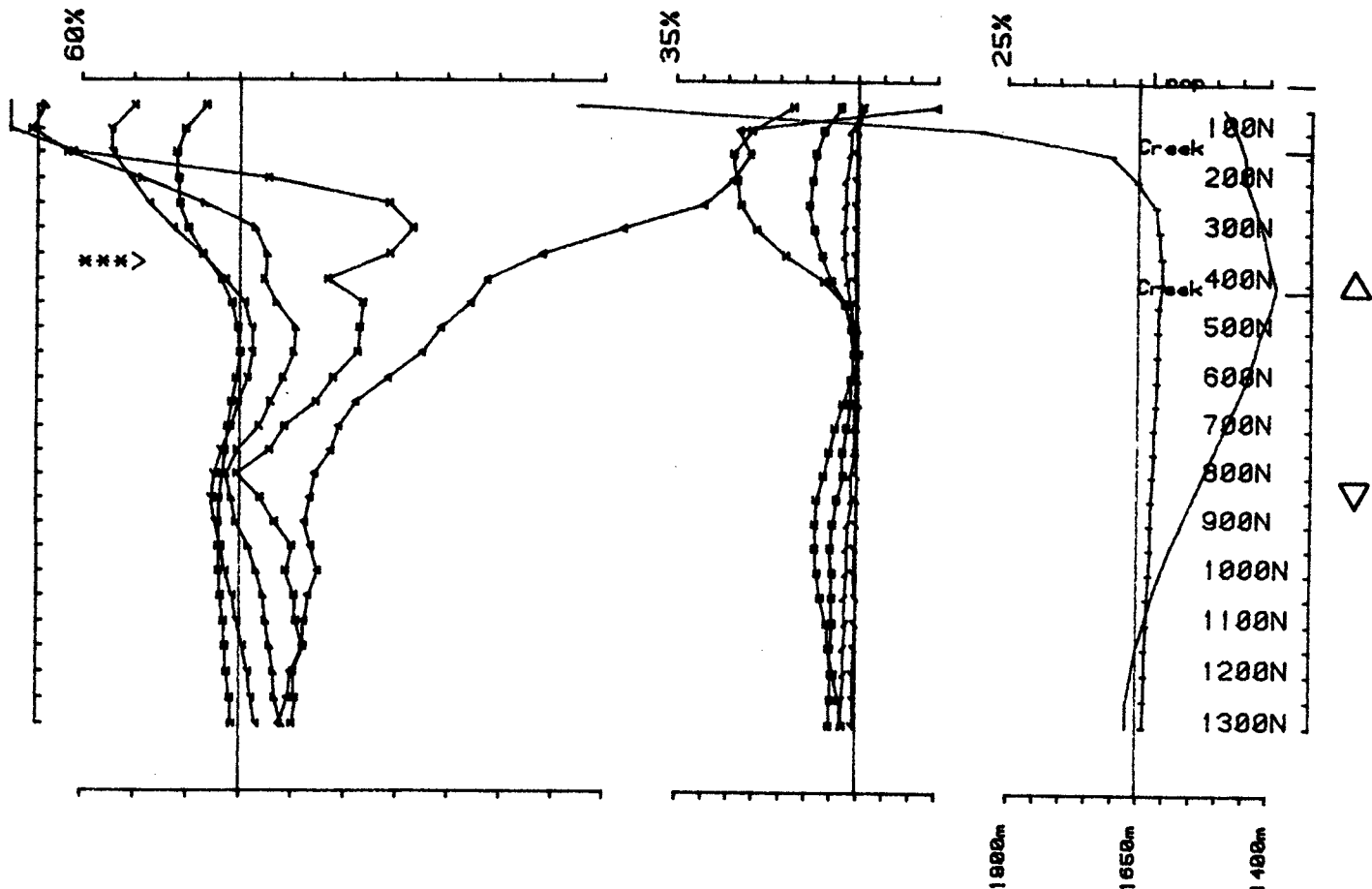
DS7

***>

120%

25%

25%

1900m   1650m   1400m

2400 E
2300
2200
2100
2000
1900
1800
1700
1600
Pyriferous Slate Outcrop 1400
1300
1200
1100
1000
900
800
Fork in Road 700
600
500
400
300 E
LOOP

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 2 Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS7a

1300 S
1200
1100
1000
900
800
700
600
500
400
300
200
100 S

1000m
1050m
1400m

60%
50%
25%
LOOP

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 2 Line 40 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS8

1000m   1050m   1400m

1300 S
1200
1100
1000
900
800
700
600
500
400
300
200
100 S

***>

180%

50%

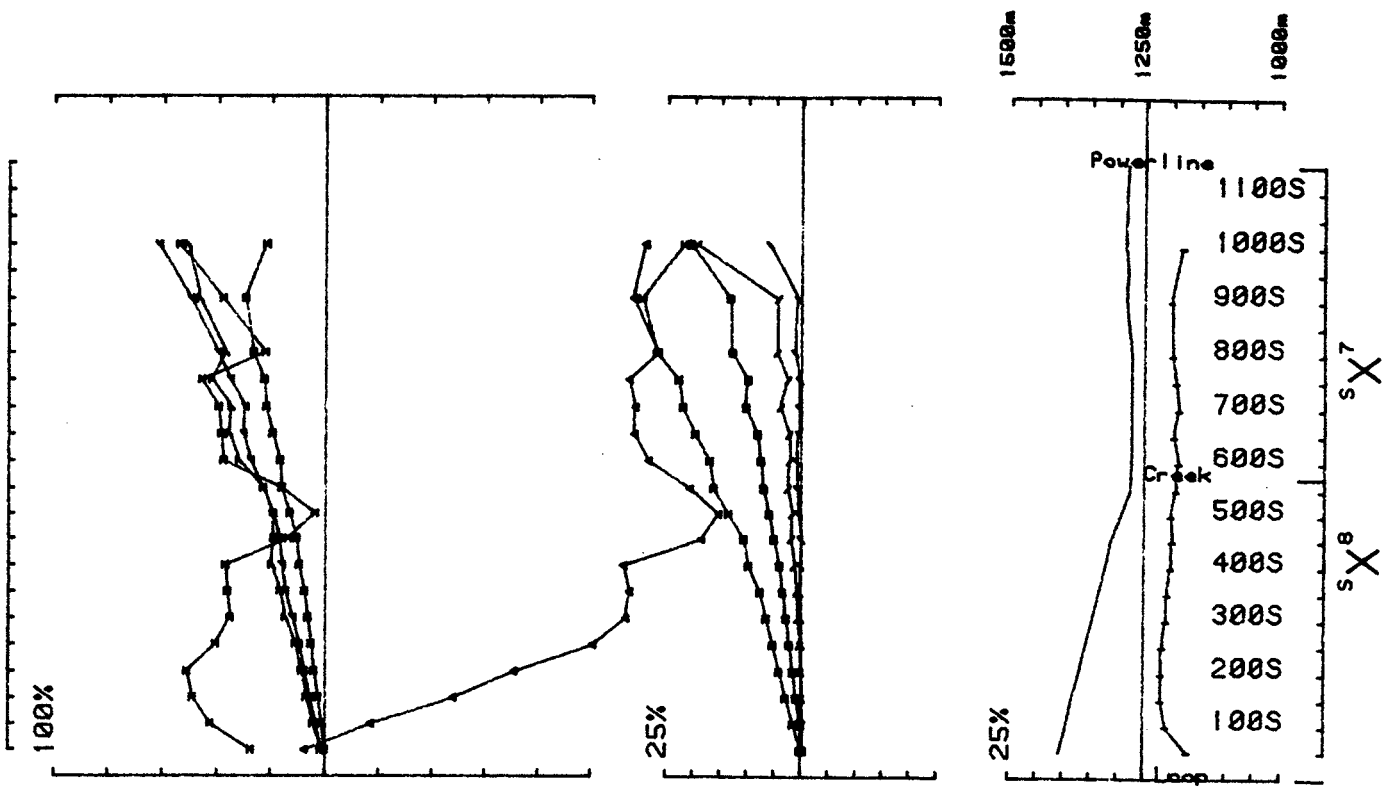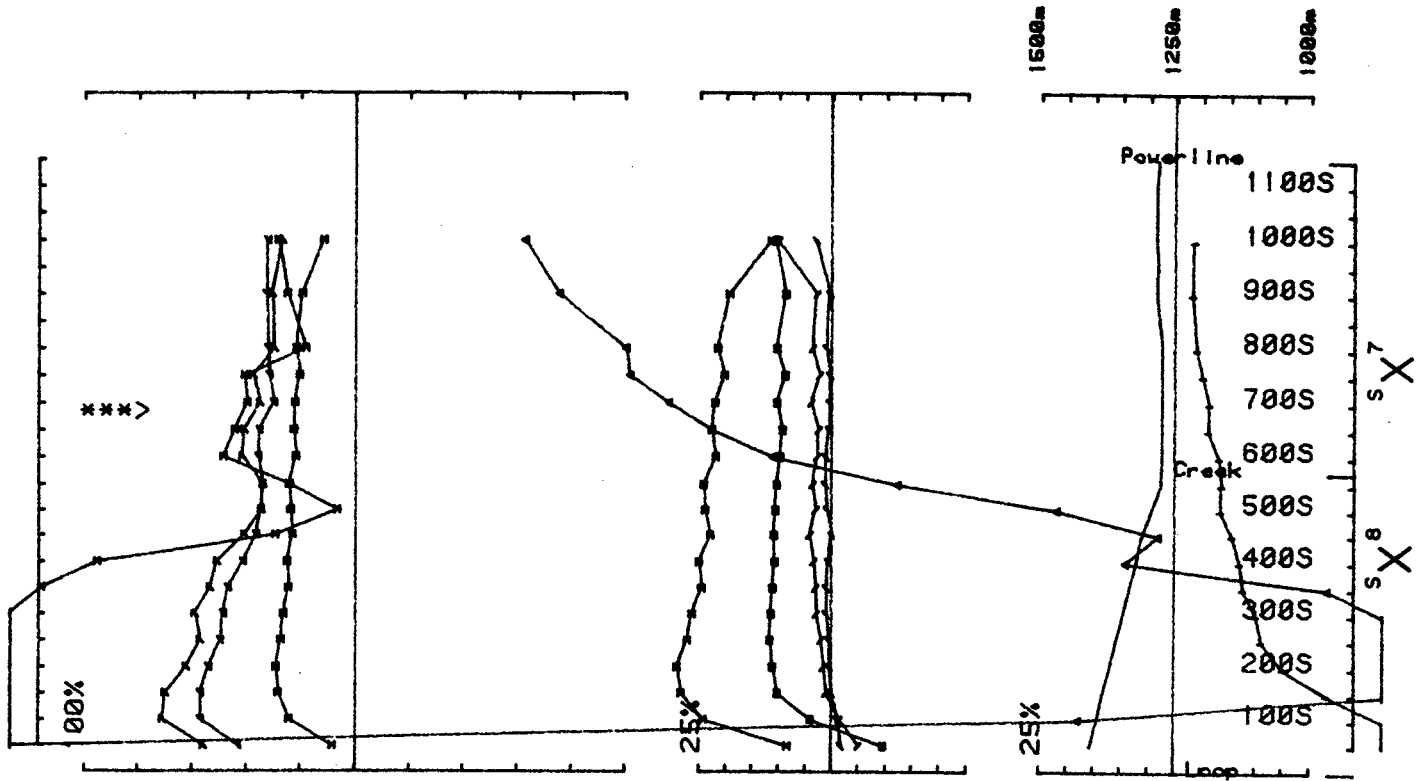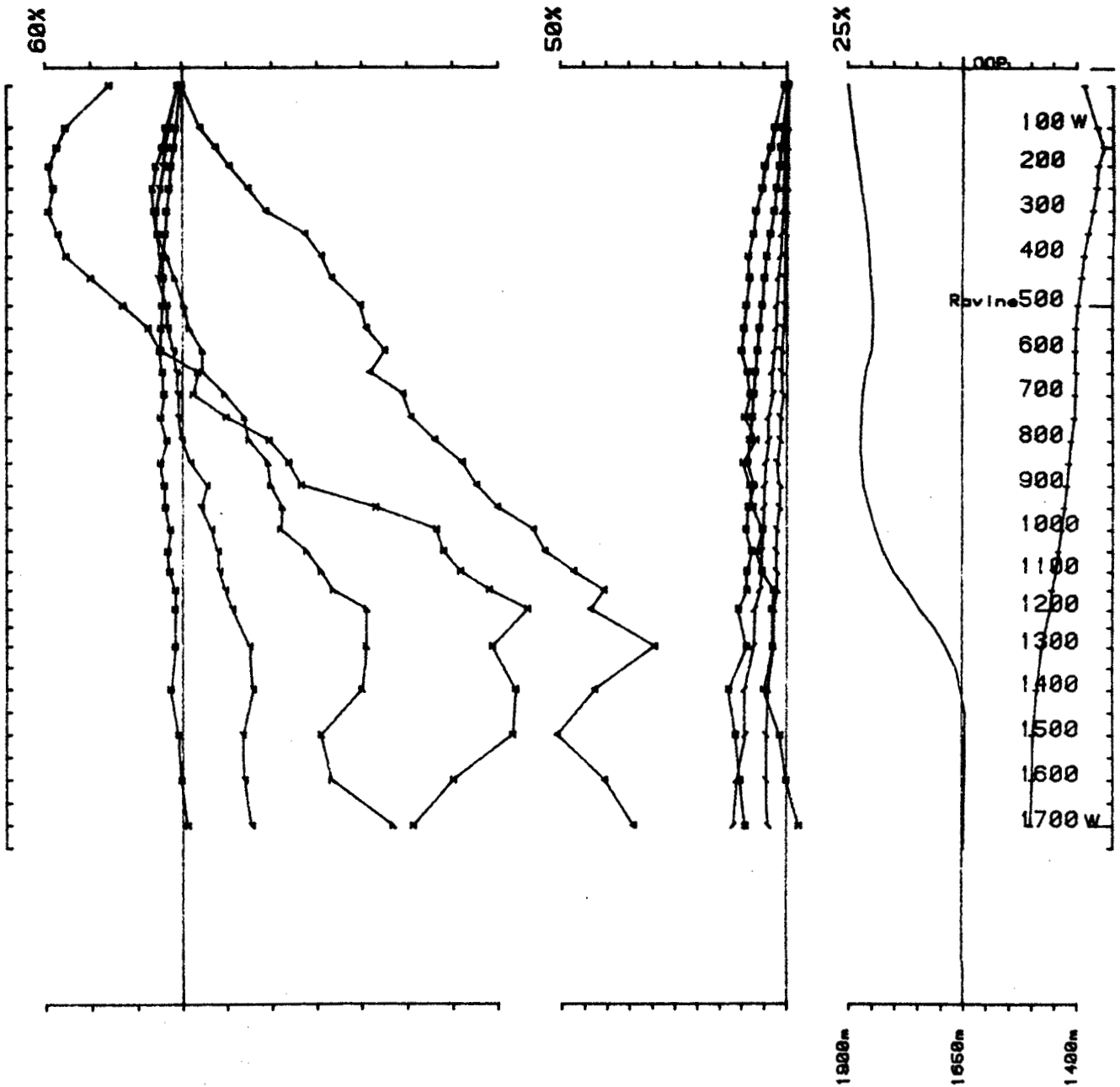25%

LOOP

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 2 Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS8a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 2 Line 50 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS9

200X

50X

25X

X_s

100 W
200
300
400
500
600
700
800
1100
1200
1300
1400
1500
1600
1700
1800
1900 W
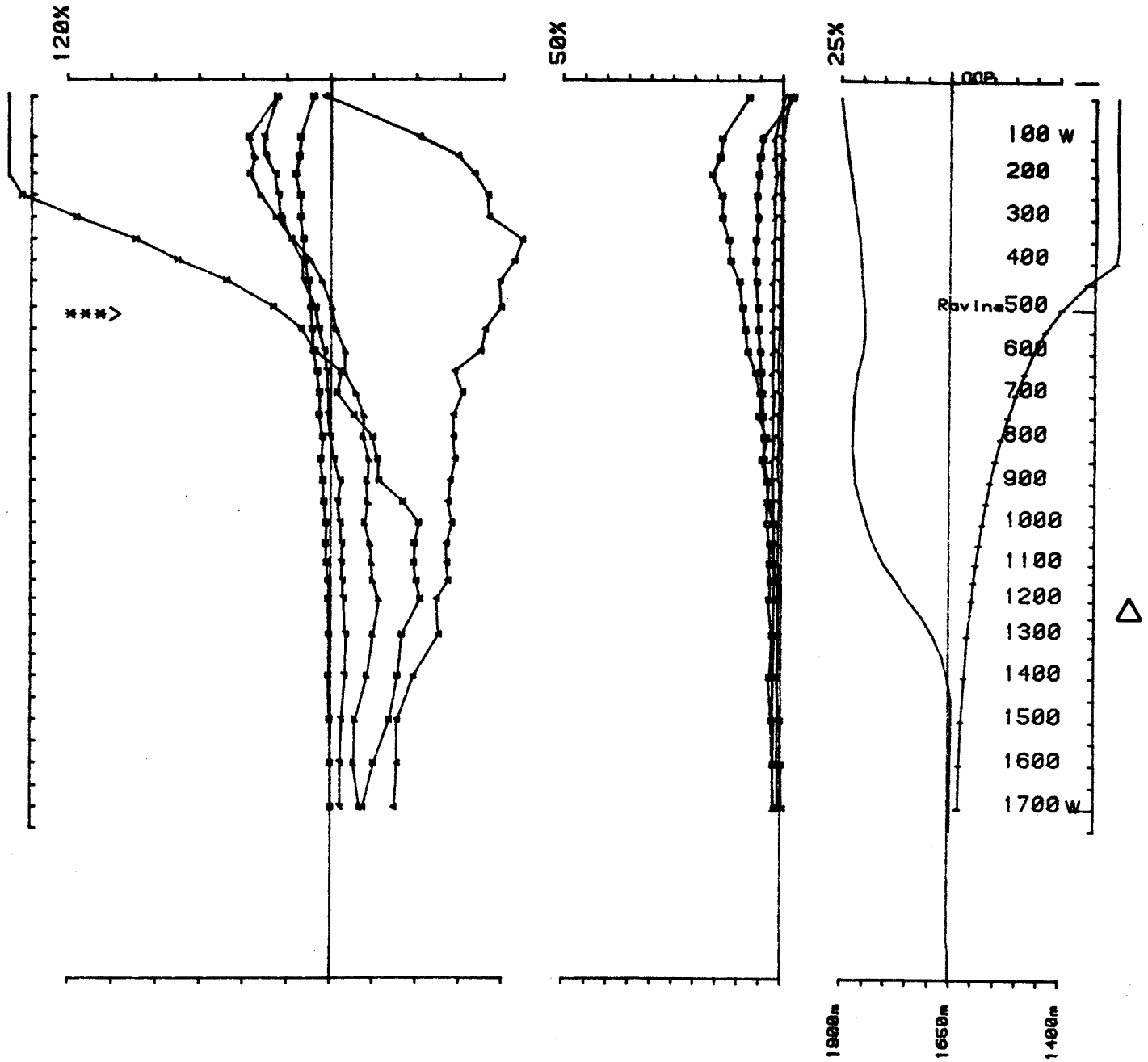
***>

1900m   1650m   1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 2   Line 50 component   Hz   secondary   Ch I normalized   Ch I reduced

DS9a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 2 Line 60 component Hz secondary Ch I normalized Ch I reduced
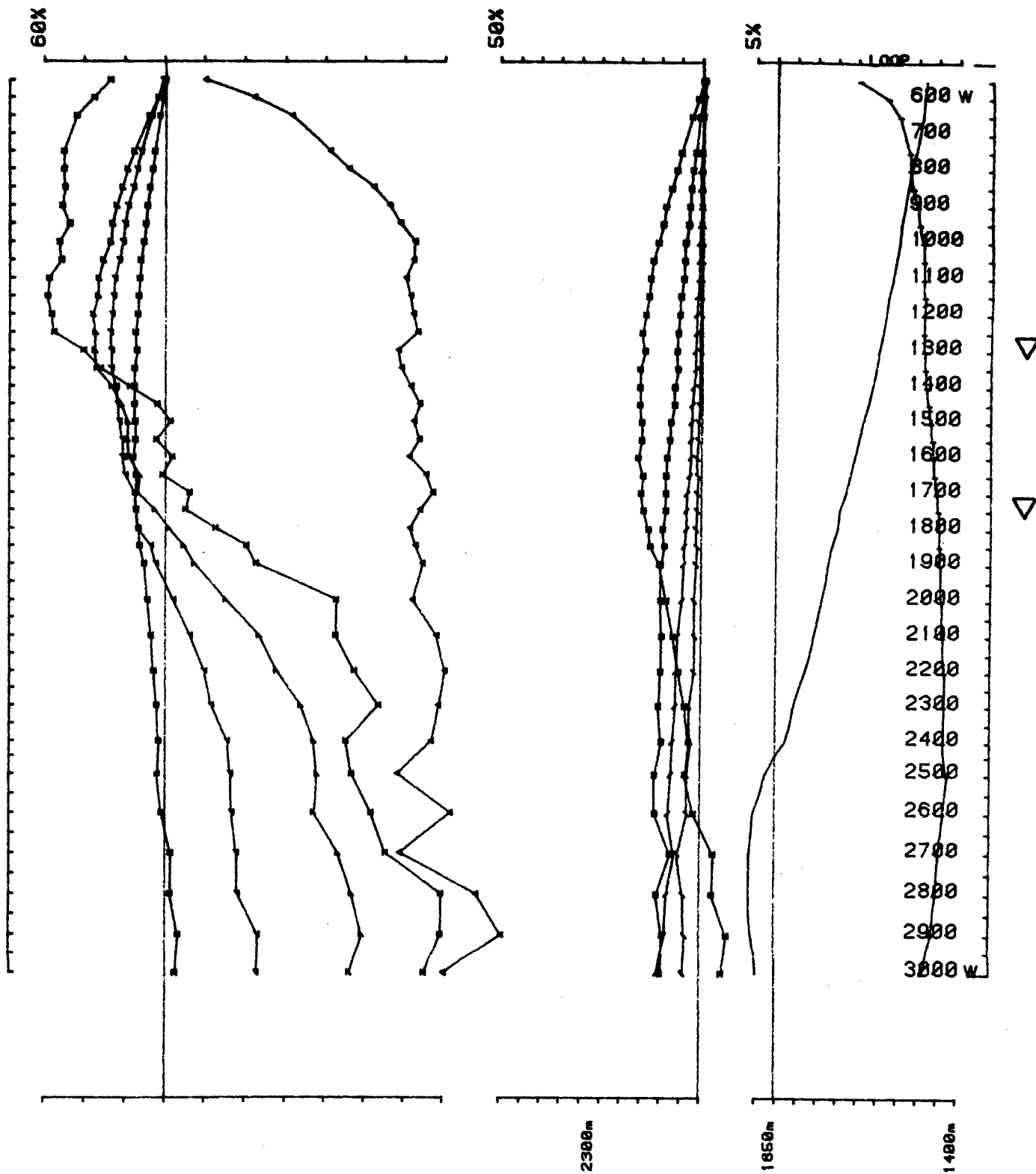
DSIO

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 2 Line 60 component Hz secondary   Ch I normalized   Ch I reduced

DSIOa

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 2 Line 70 component Hz secondary   primary field normalized   Ch 1 reduced

DSII

Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974

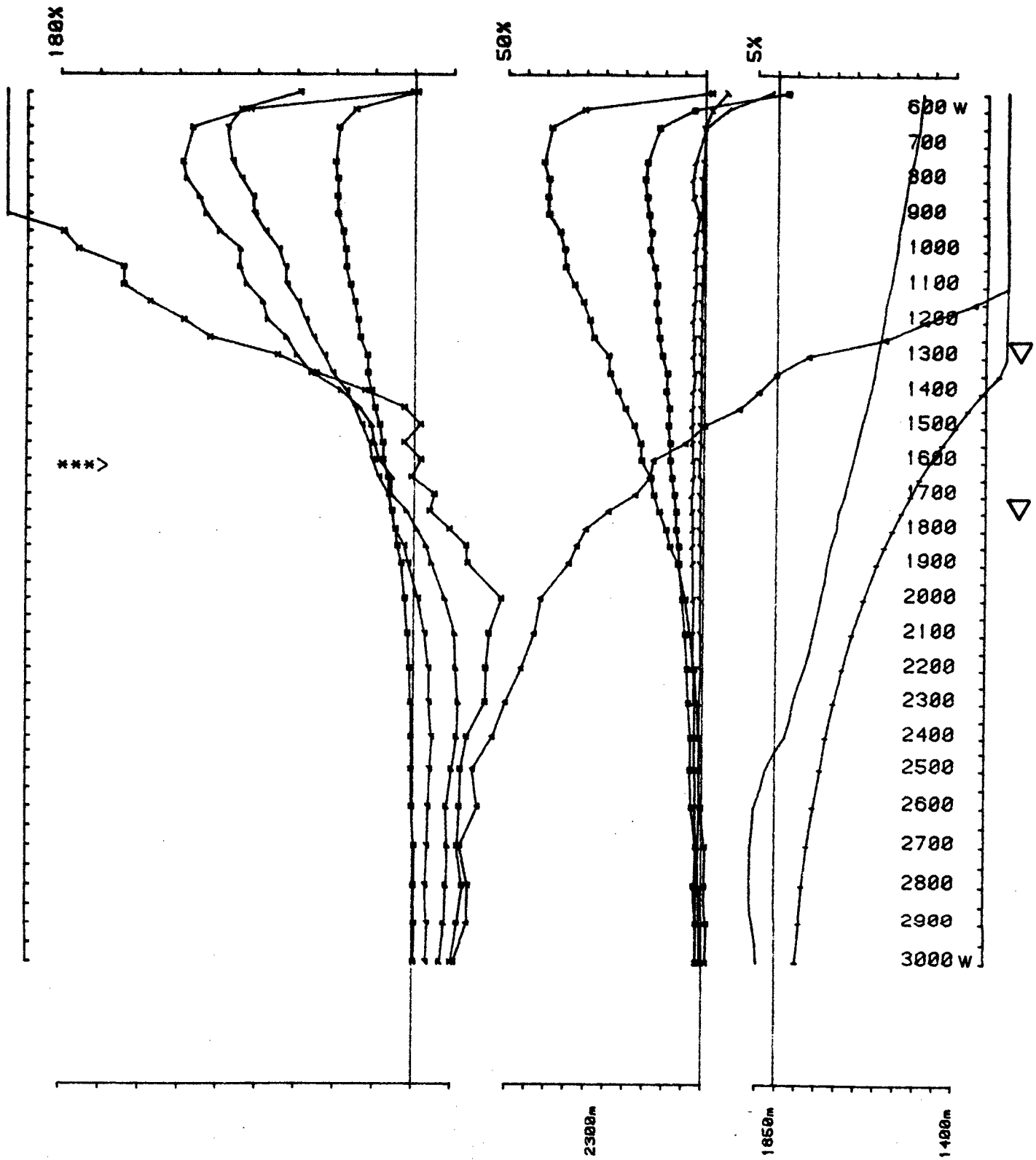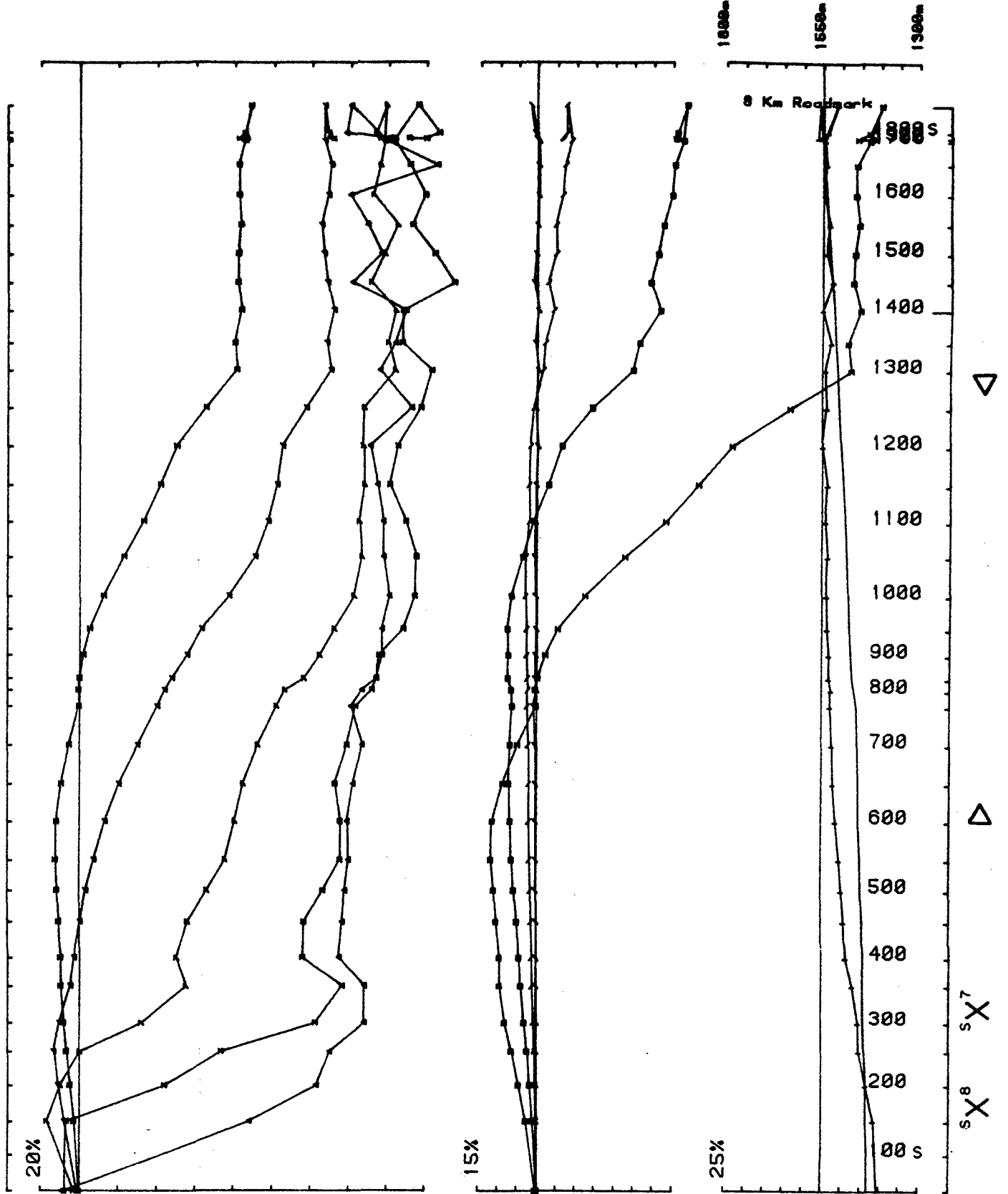Loopno 3 Line 10 component Hz secondary Ch 1 normalized Ch 1 reduced

DS12

160%   25%   5%

***>

LOOP

-450
-400
-300
-200
-100
-50 100
200 N
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800 N

S8 X

S6 X

2300m   1850m   1400m

Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974

Loopno 3 Line 10 component Hz secondary Ch I normalized Ch I reduced
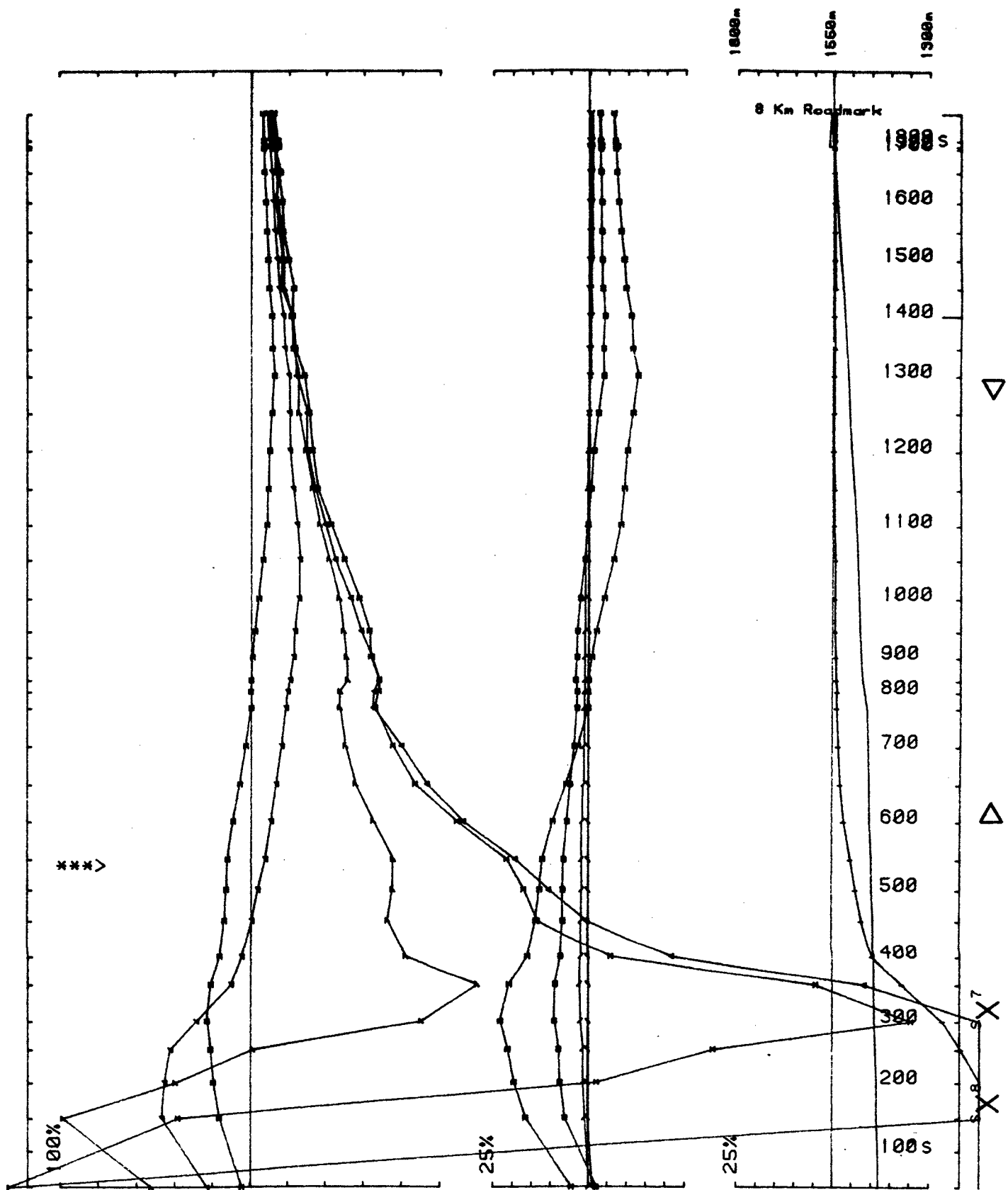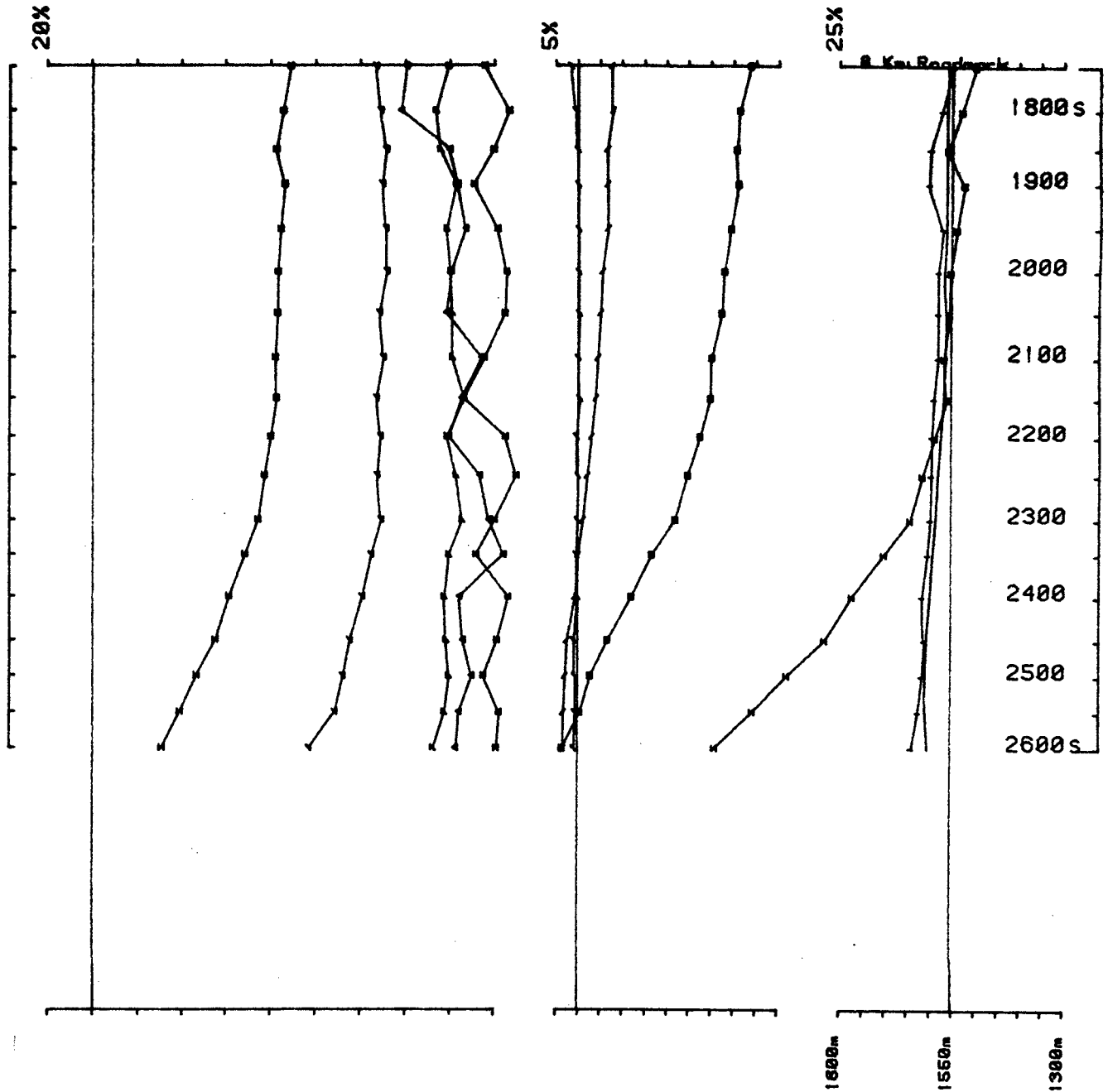
DSI2a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 3 Line 20 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS13

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 3 Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DSI3a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 3 Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DSI4

120%

40%

25%

100N
200N
300N
400N
500N
600N
700N
800N
900N
1000N
1100N
1200N
1300N

***>

△

2000m
1750m
1500m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 3 Line 30 component Hz secondary Ch I normalized   Ch I reduced
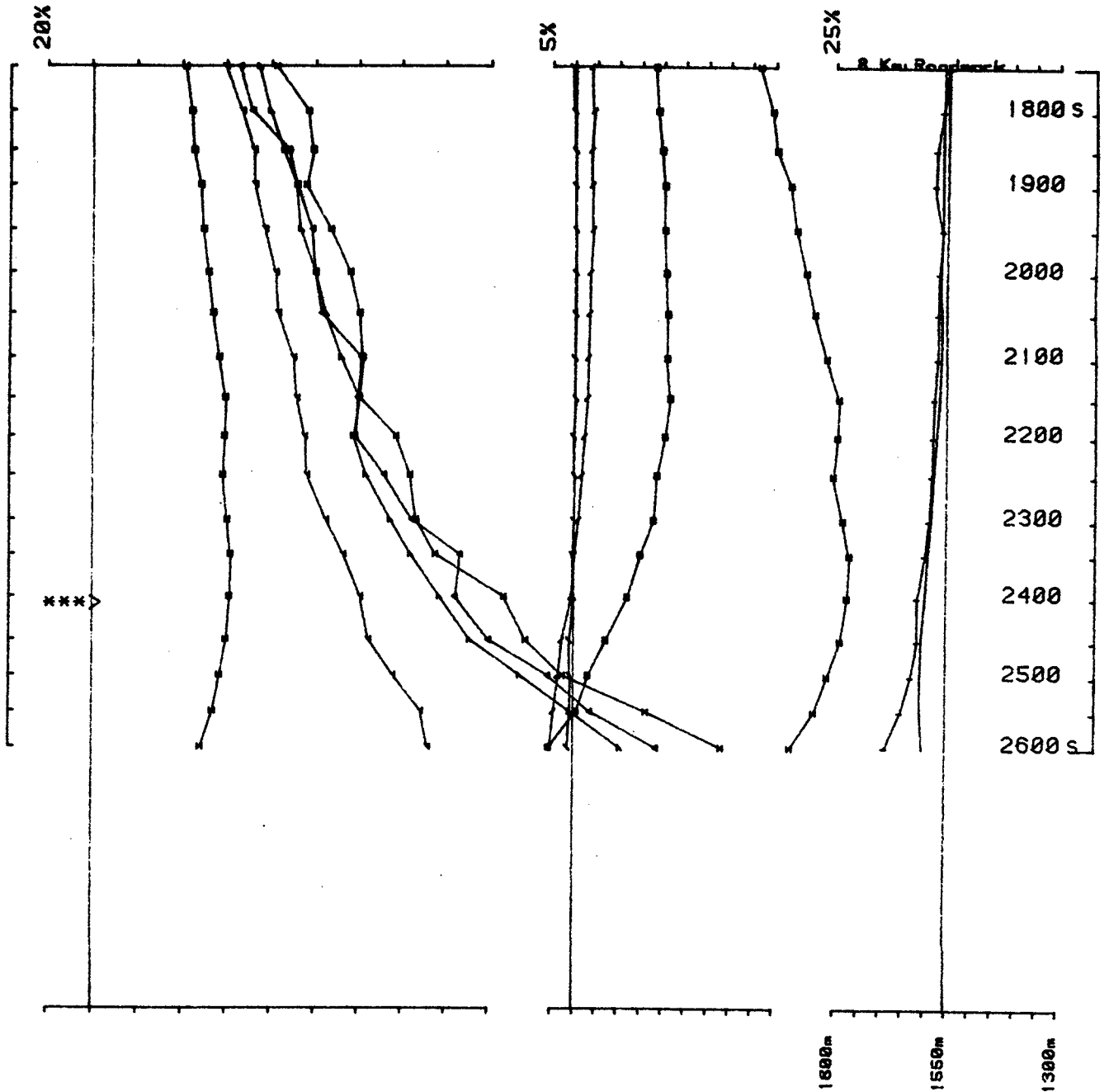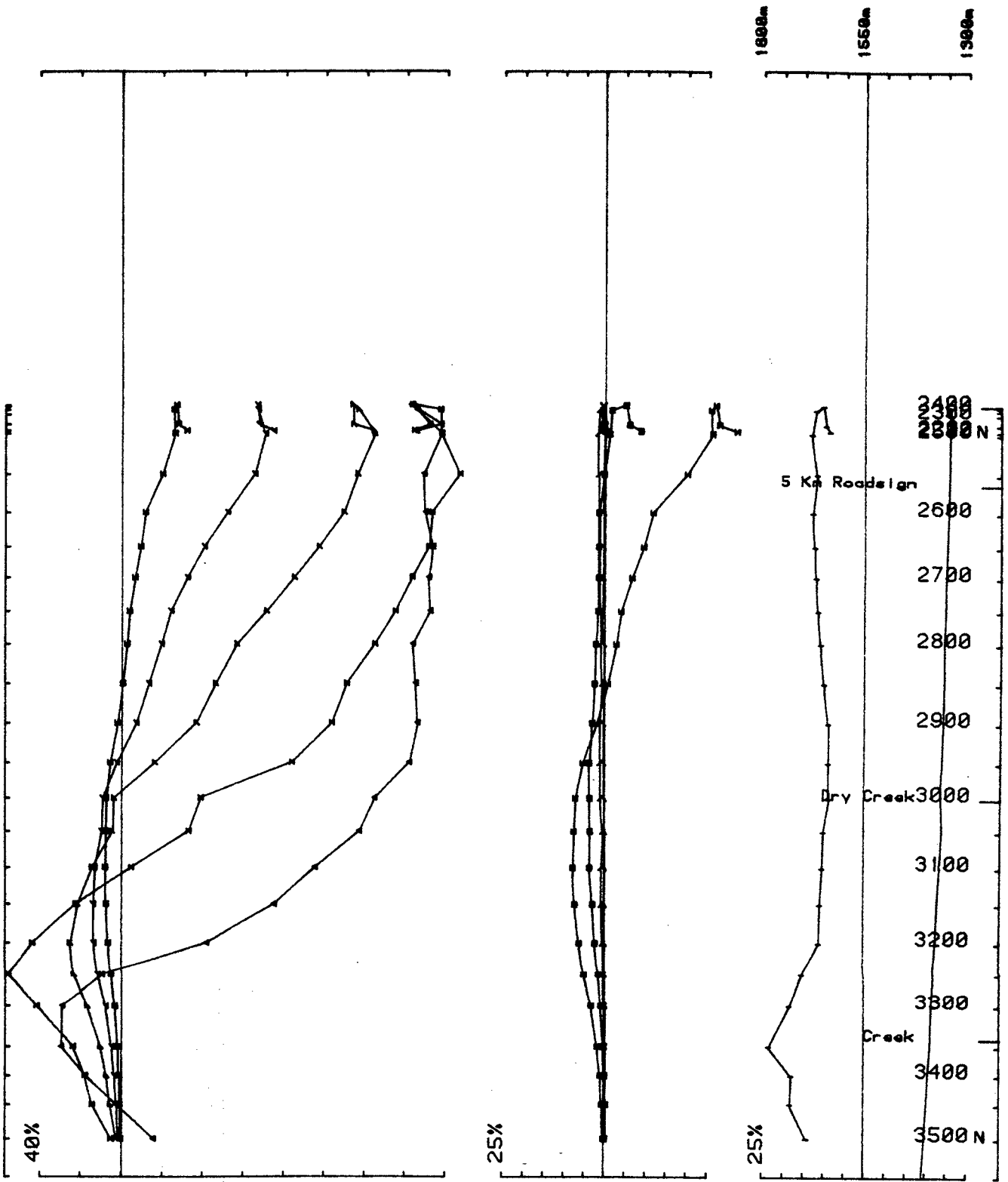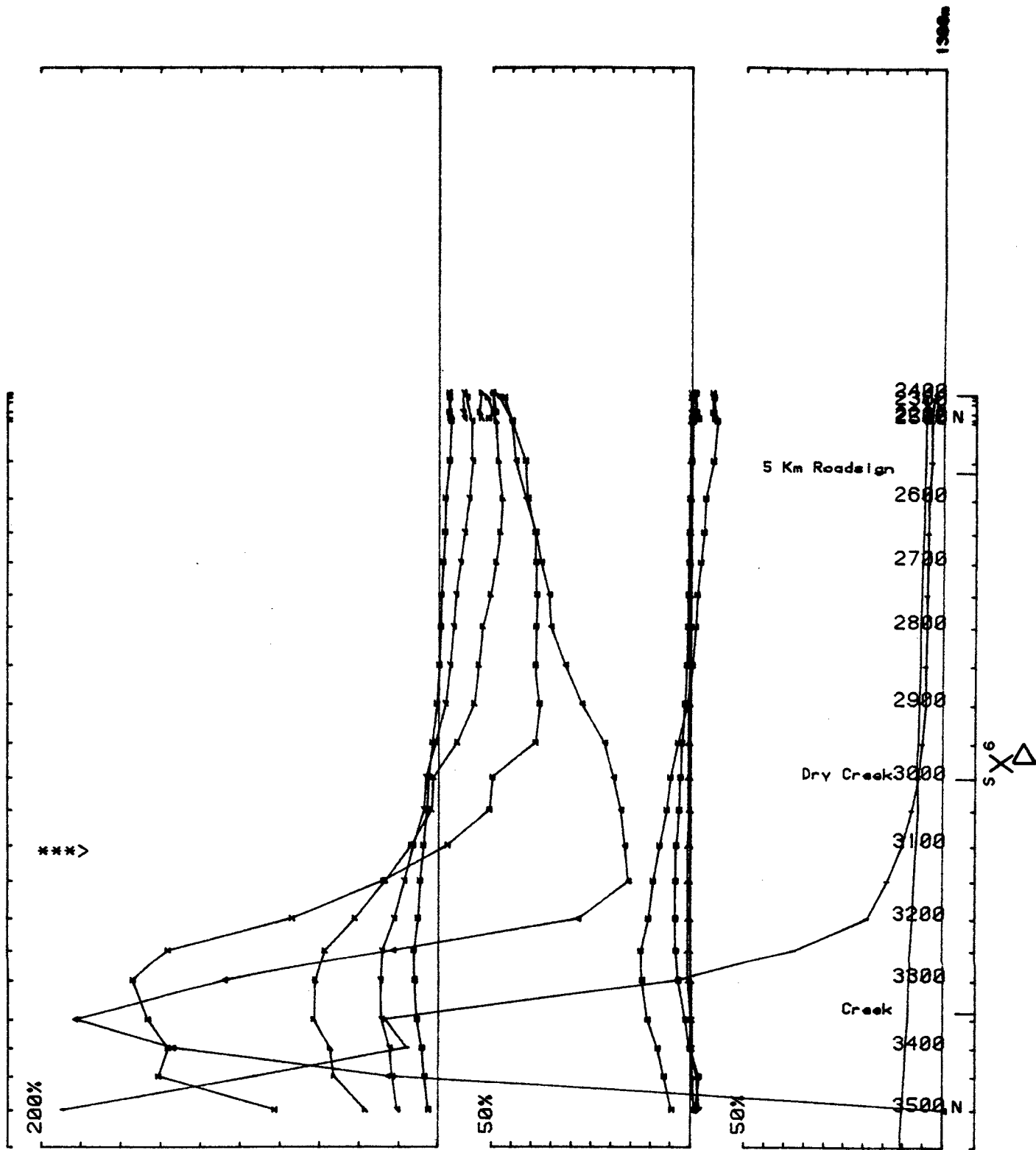
DS14a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 3   Line 40   component Hz   secondary   Ch I normalized   Ch I reduced

DSI5

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 3 Line 40 component Hz secondary Ch I normalized Ch I reduced

DSI5 a

60%   35%   25%

Loop

100N
Creek
200N
300N
400N
Creek
500N
600N
700N
800N
900N
1000N
1100N
1200N
1300N

△

▽

1000m   1650m   1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 3 Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS15b

60%   35%   25%

***>

100N
Creek 200N
       300N
Creek 400N △
       500N
       600N
       700N
       800N ▽
       900N
       1000N
       1100N
       1200N
       1300N

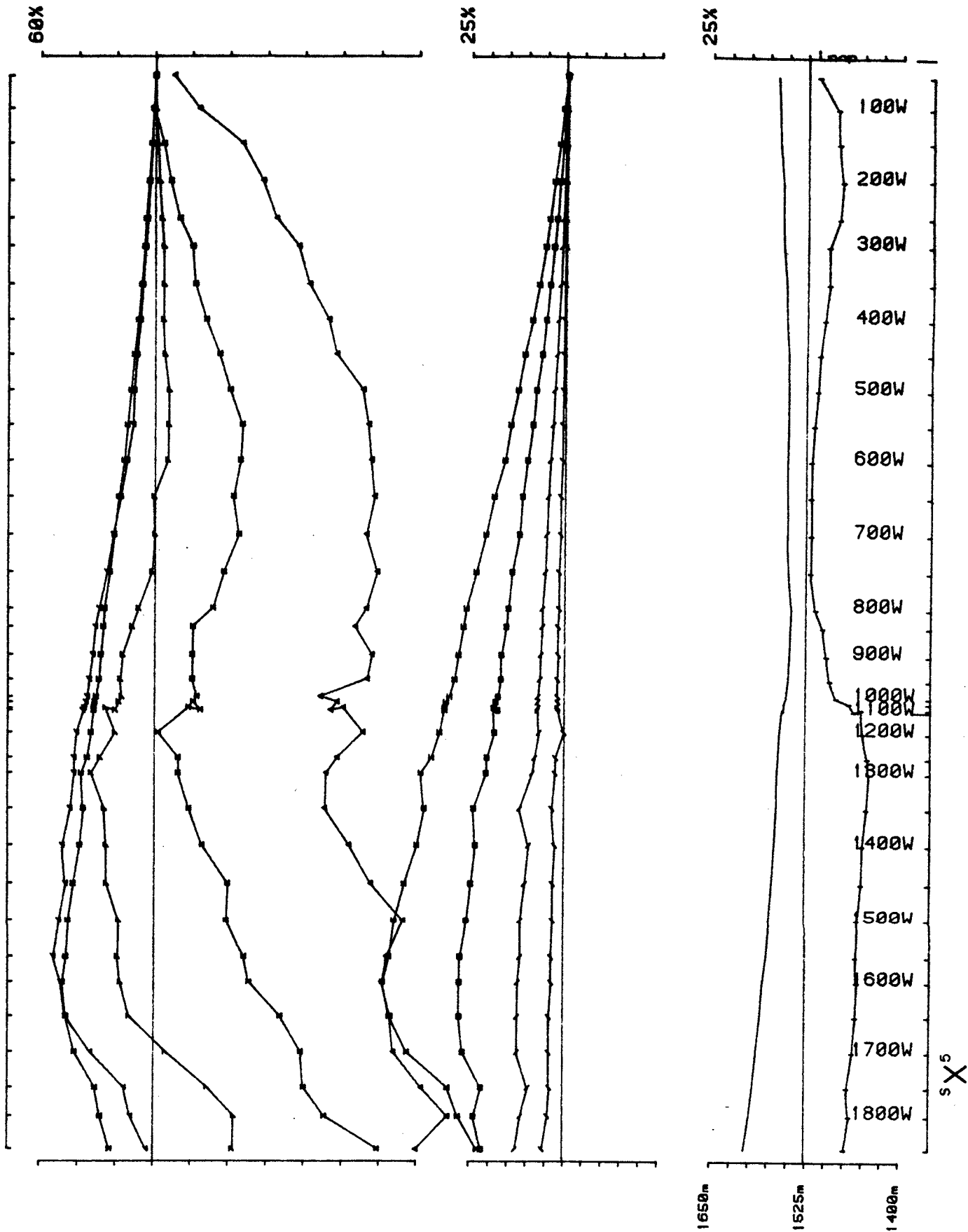1000m 1650m 1400m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 3 Line 40 component Hz secondary   Ch 1 normalized   Ch 1 reduced
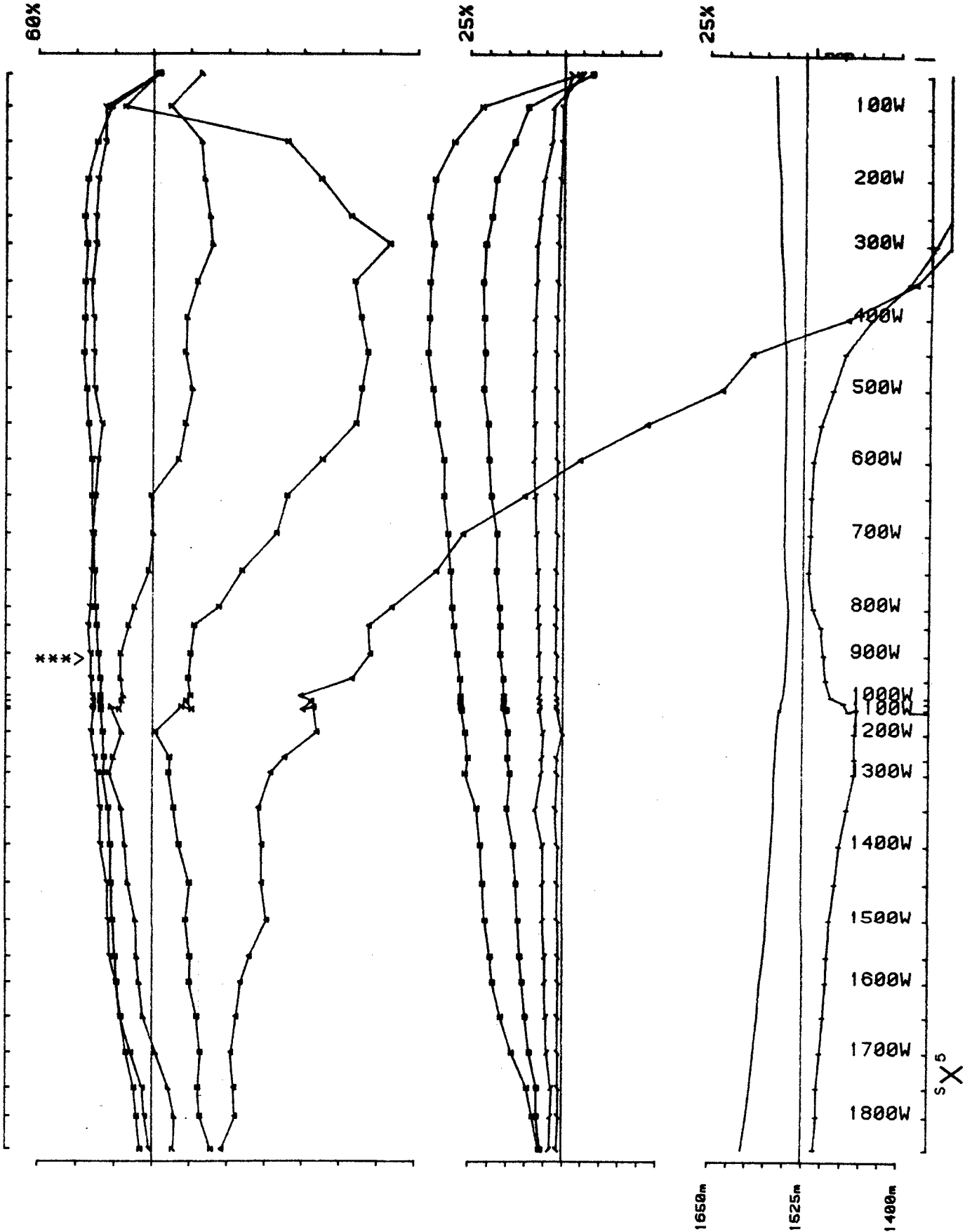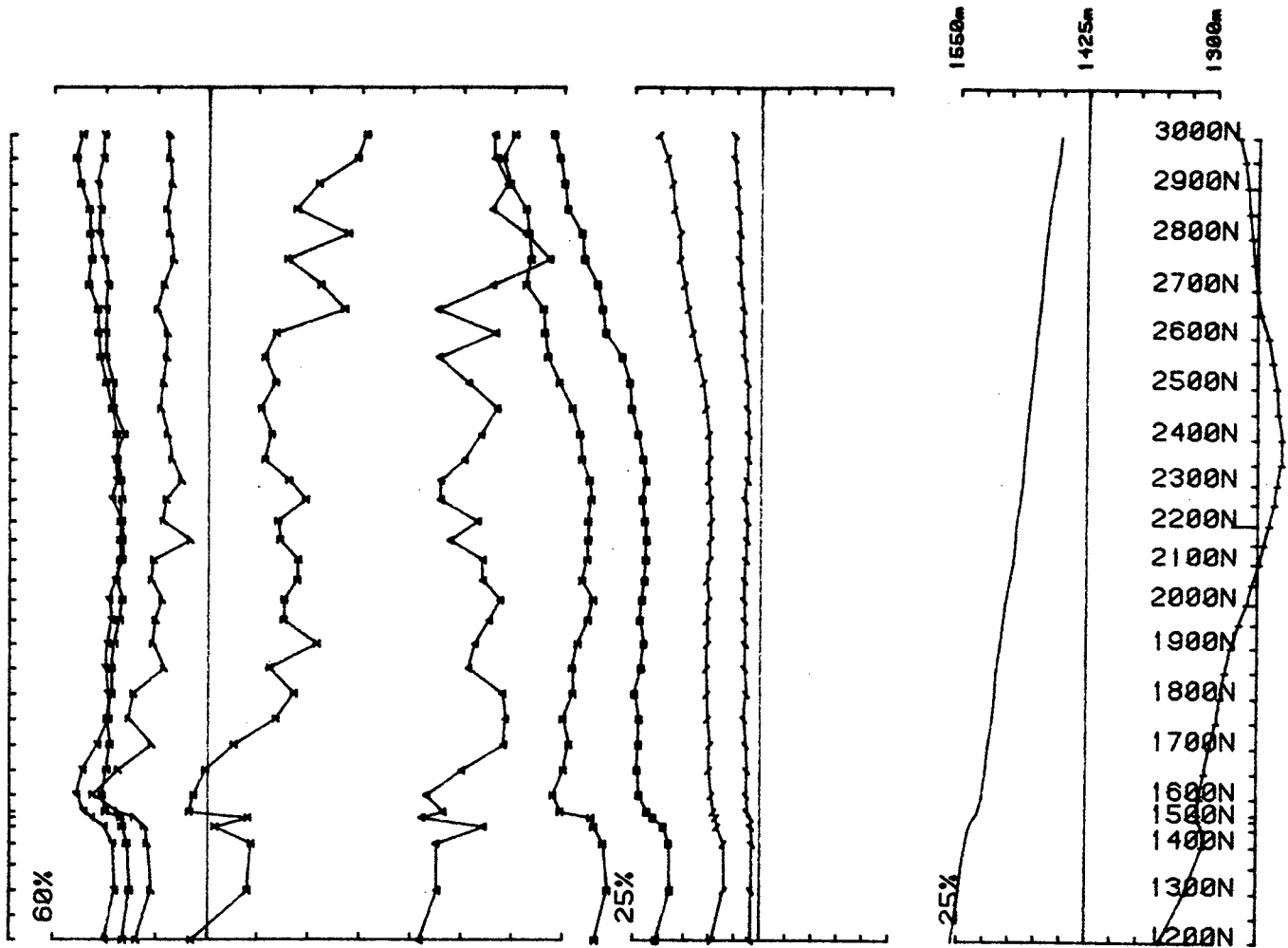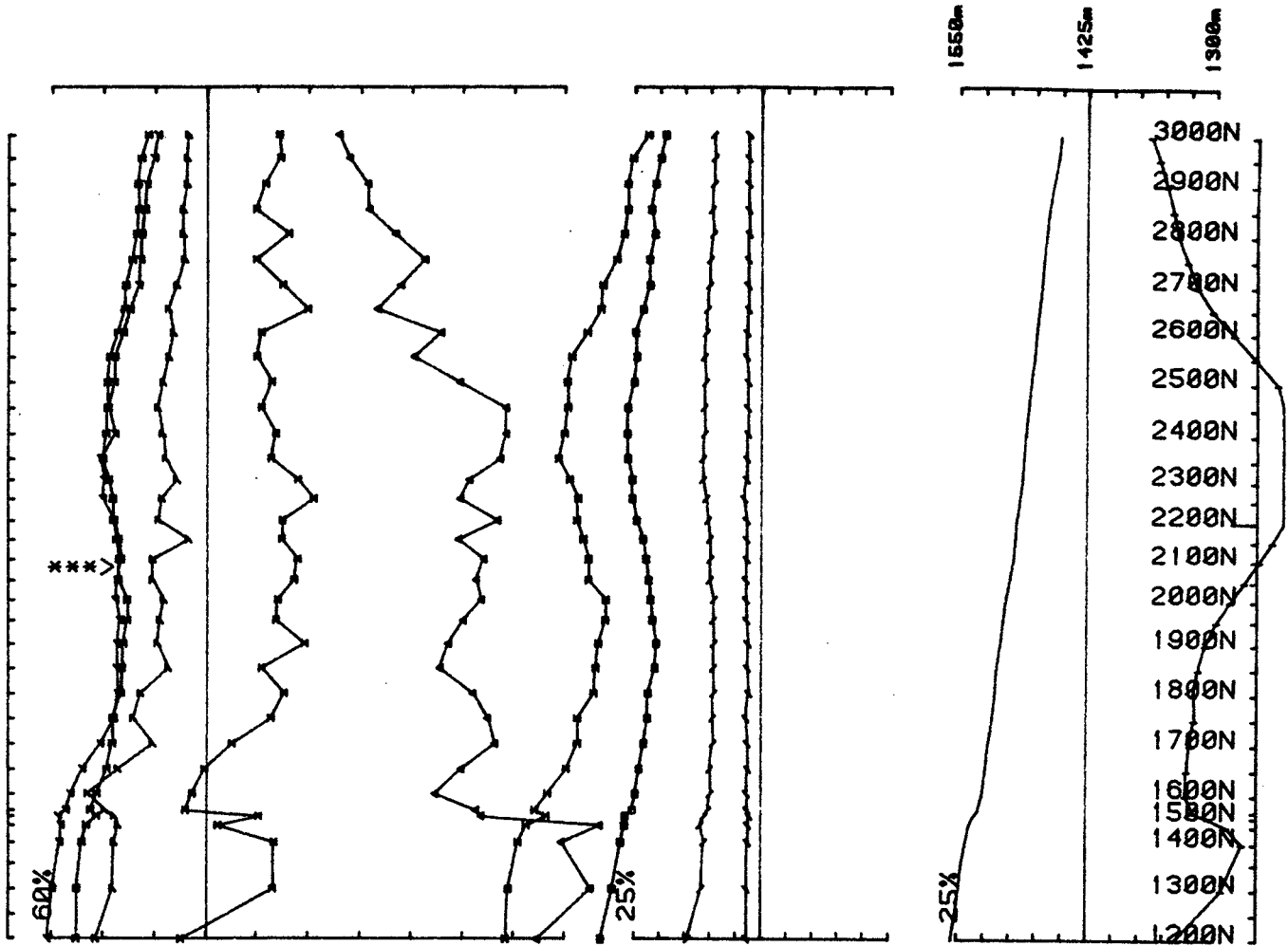
DS15c

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 3 Line 50 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS16

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 3 Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS16a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 3 Line 60 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS17

120%   50%   25%

***>

100 W
200
300
400
Ravine500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700 W

△

1900m   1650m   1400m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 3 Line 60 component Hz secondary   Ch I normalized   Ch I reduced

DS17a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 3 Line 70 component Hz secondary   Ch I normalized   Ch I reduced

DS18

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

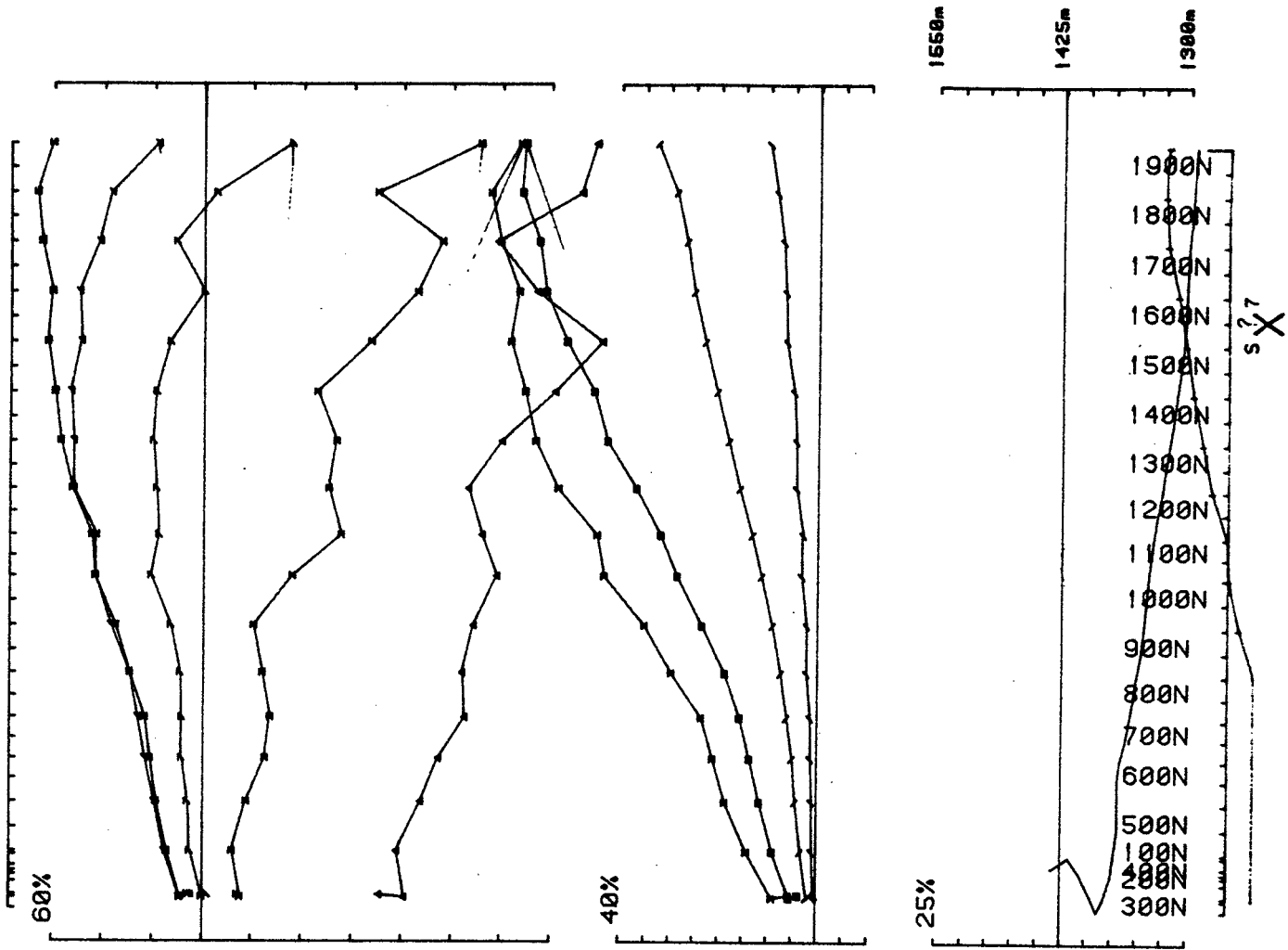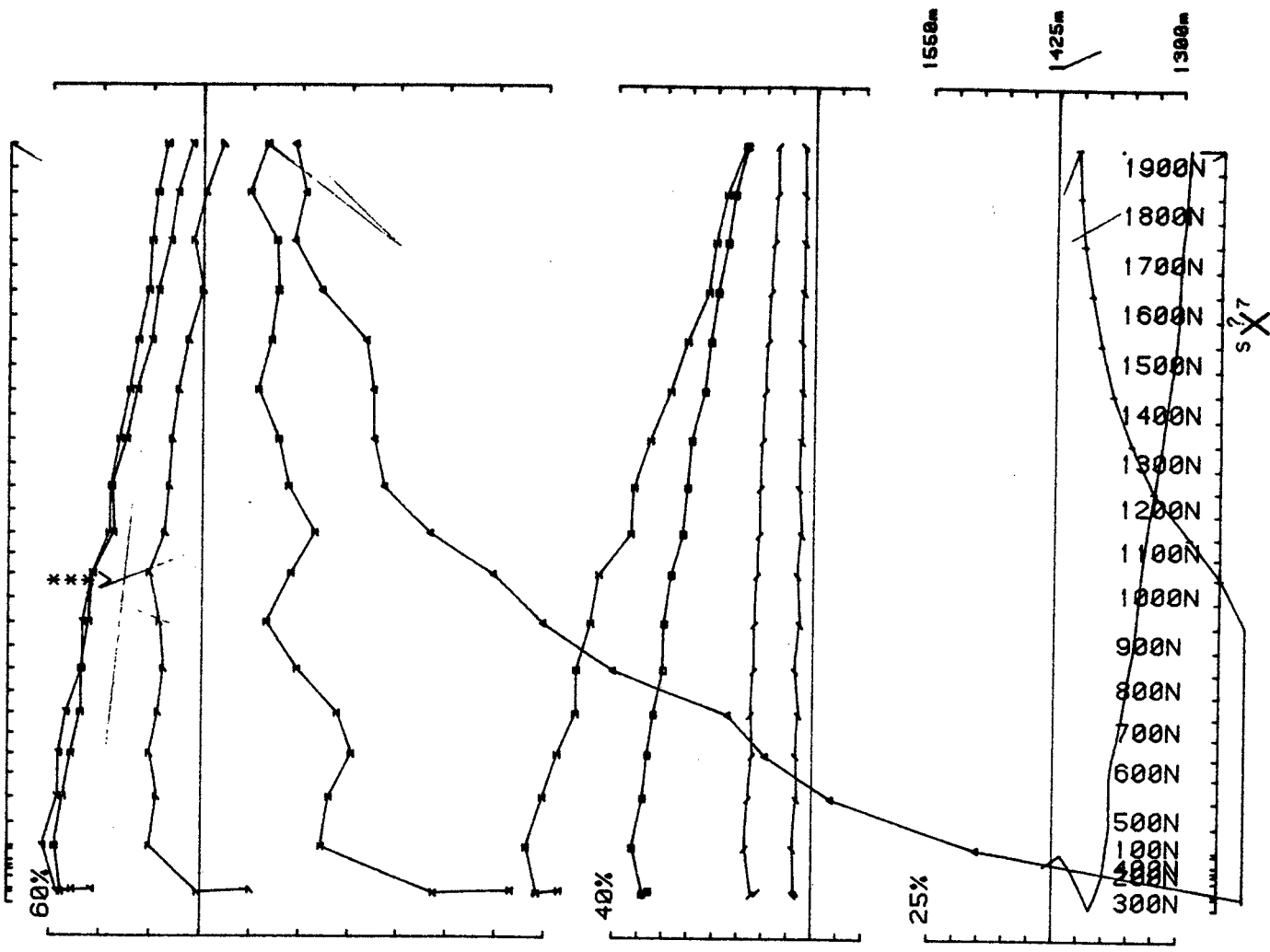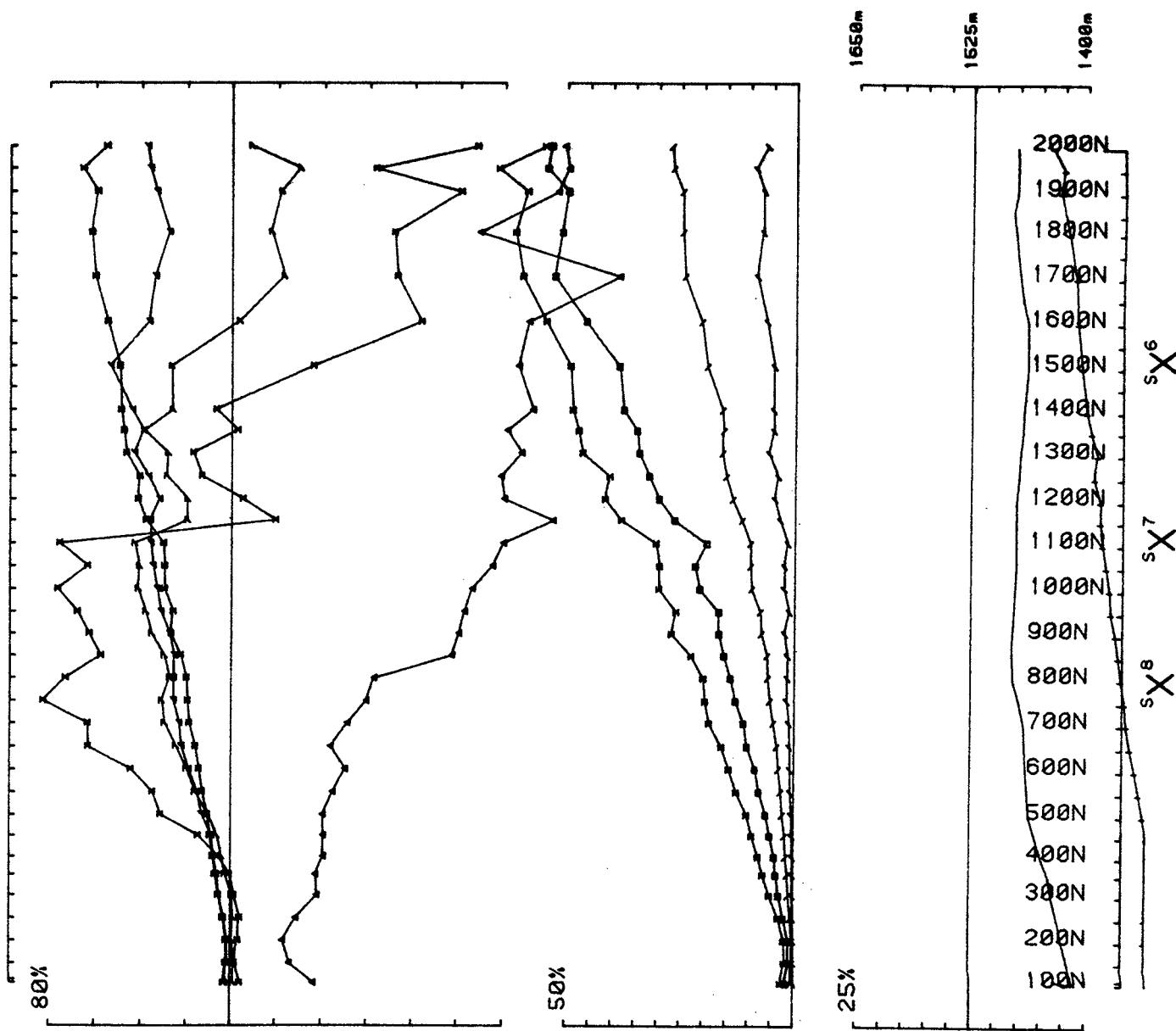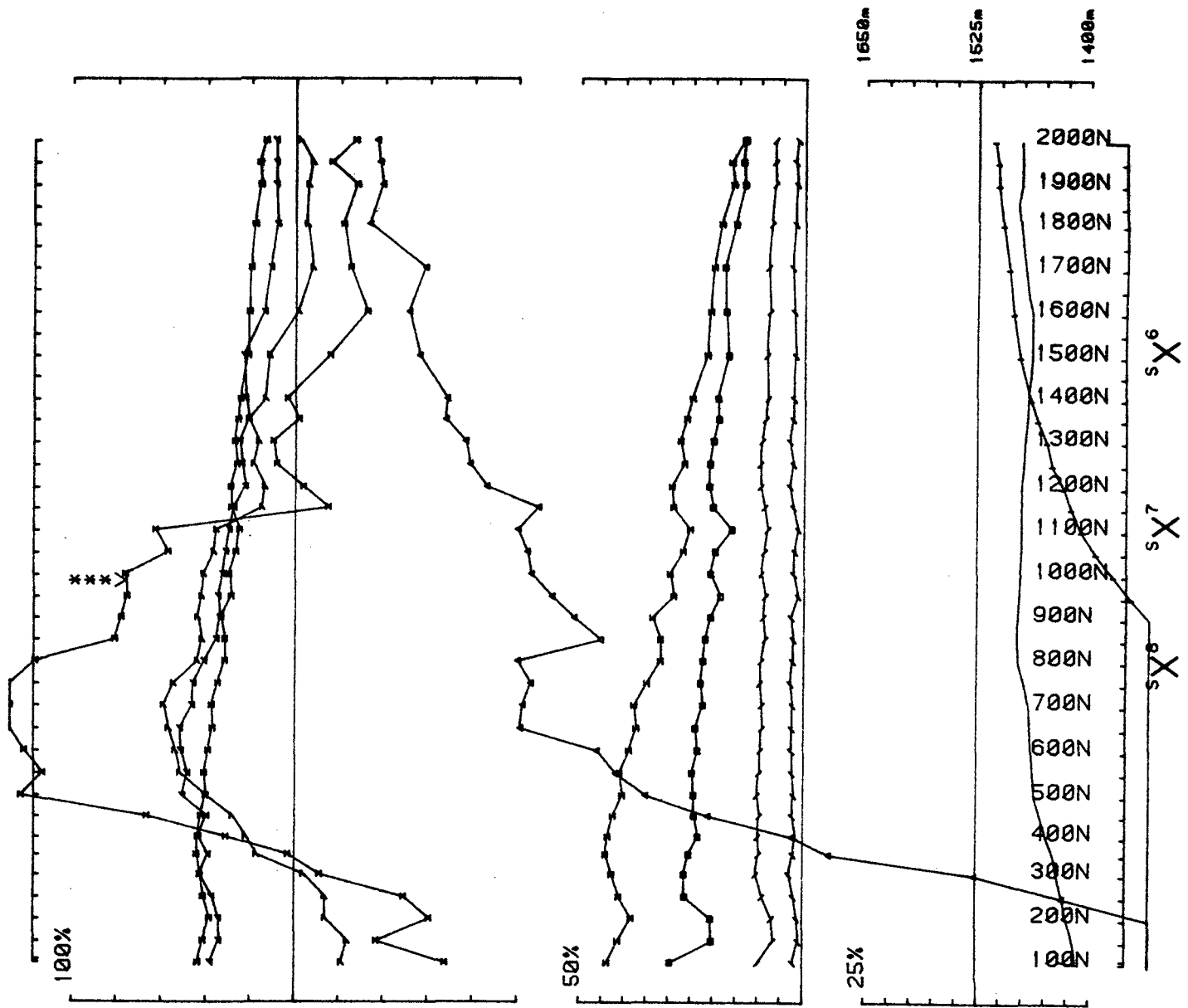Loopno 3 Line 70 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS18a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 4   Line 10 component Hz secondary   Ch I normalized   Ch I reduced

DS 19

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

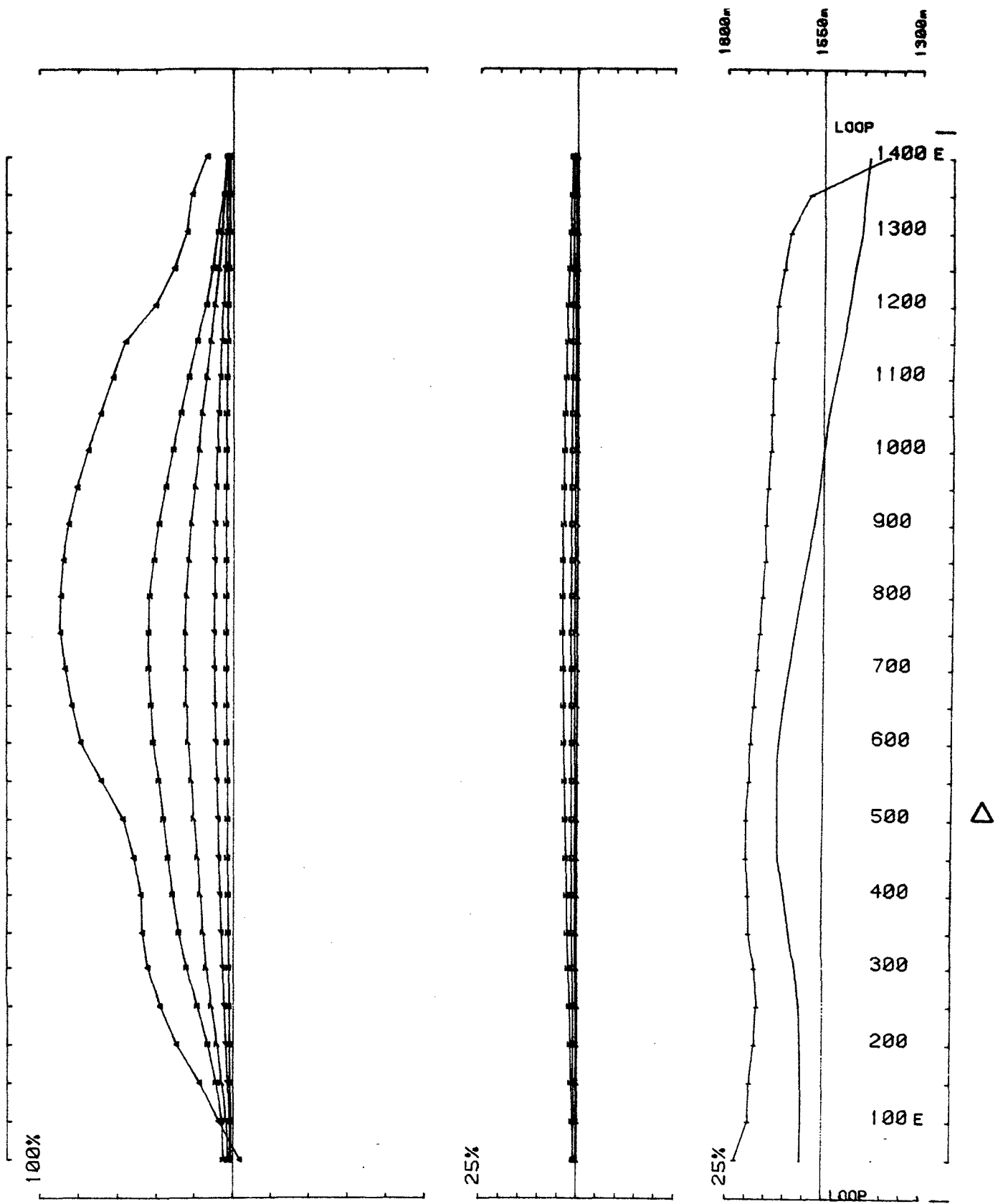Loopno 4   Line 10 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 19a

20% 5% 25%

1800s
1900
2000
2100
2200
2300
2400
2500
2600s

8 Km Roadwork

1800m 1550m 1300m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 4   Line 10 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 20

20%

5%

25%

8 Km Roadwork

1800 s

1900

2000

2100

2200

2300

2400

2500

2600 s

***>

1800m

1550m

1300m
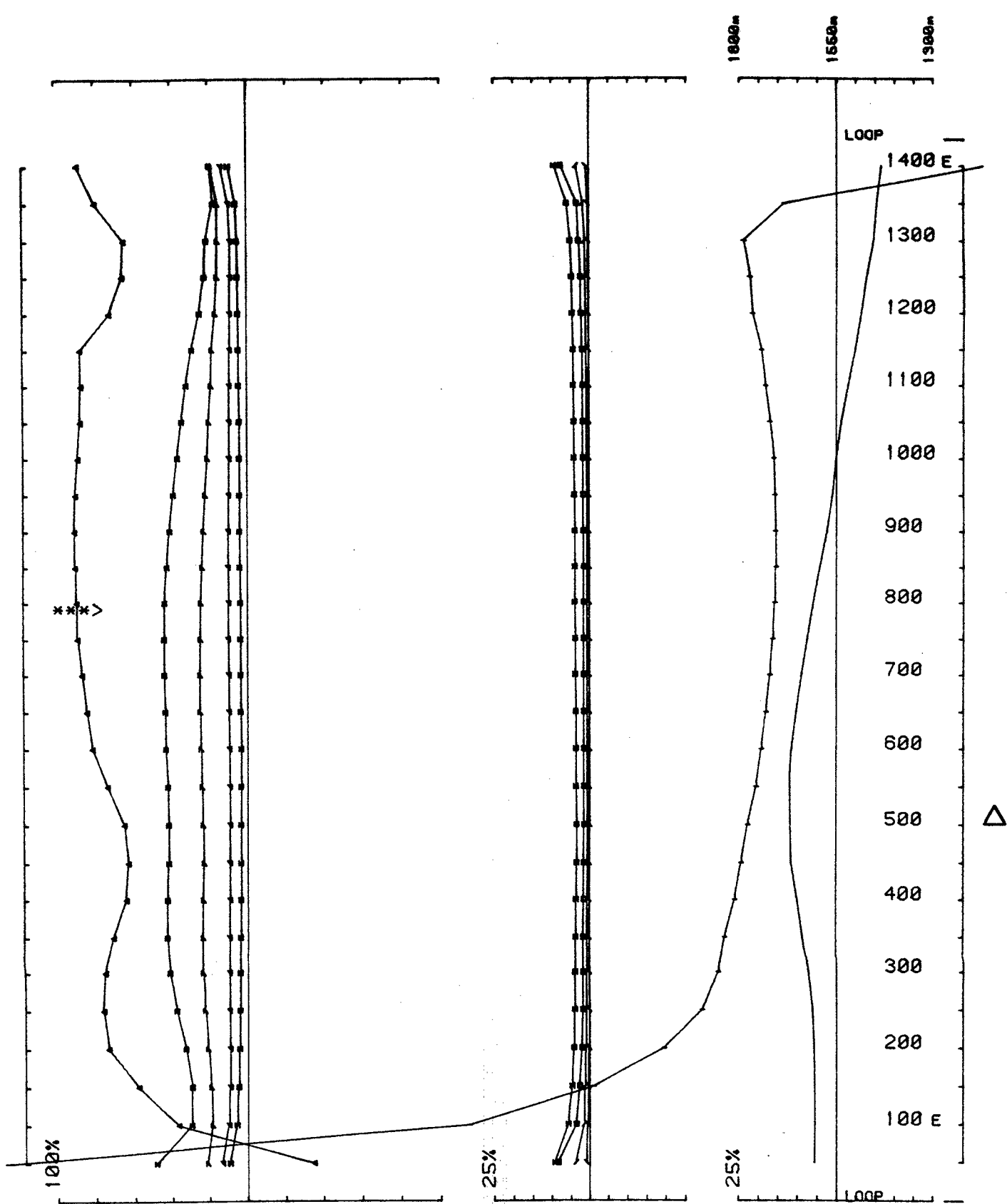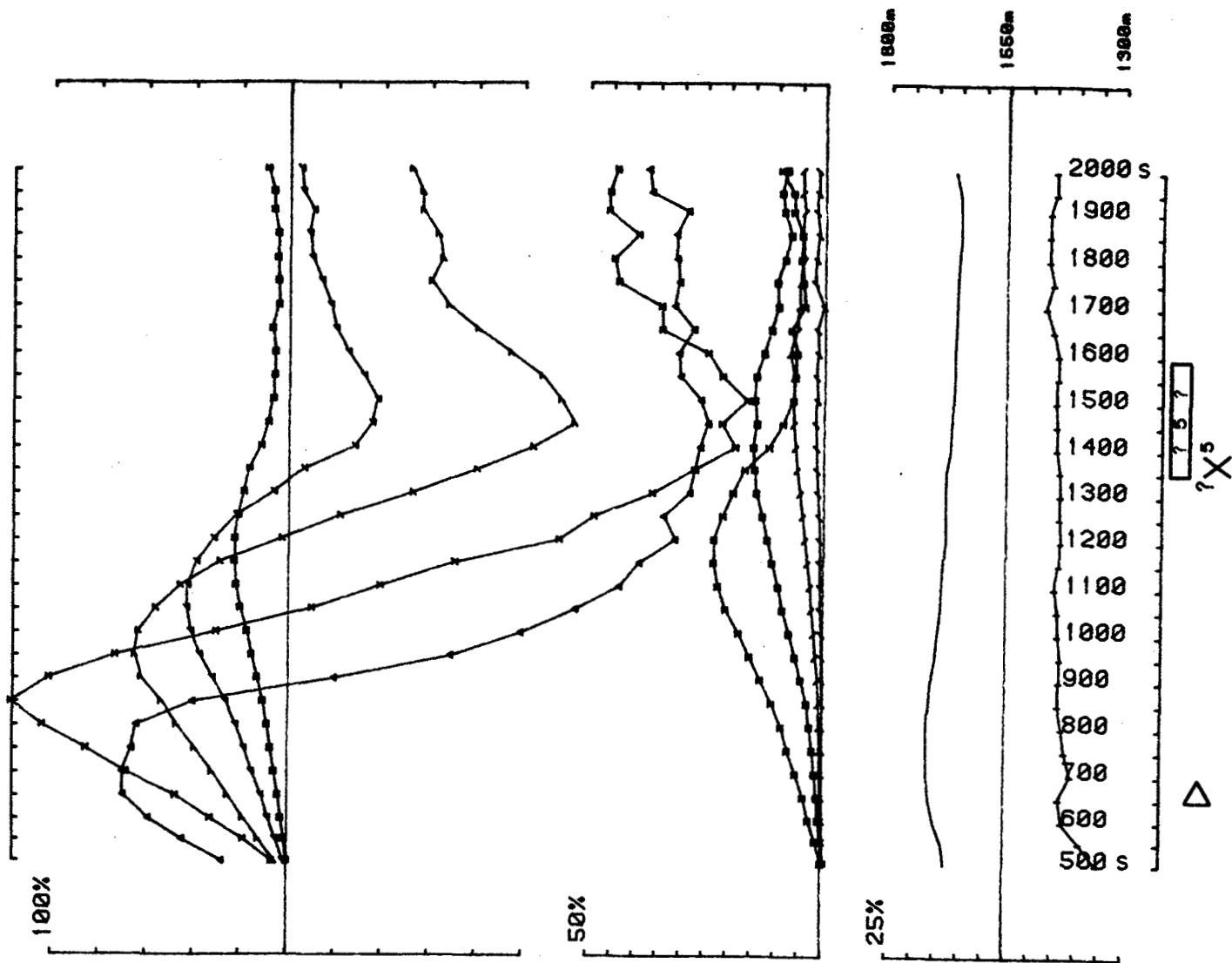
Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 10 component Hz secondary   Ch I normalized   Ch I reduced

DS 20a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

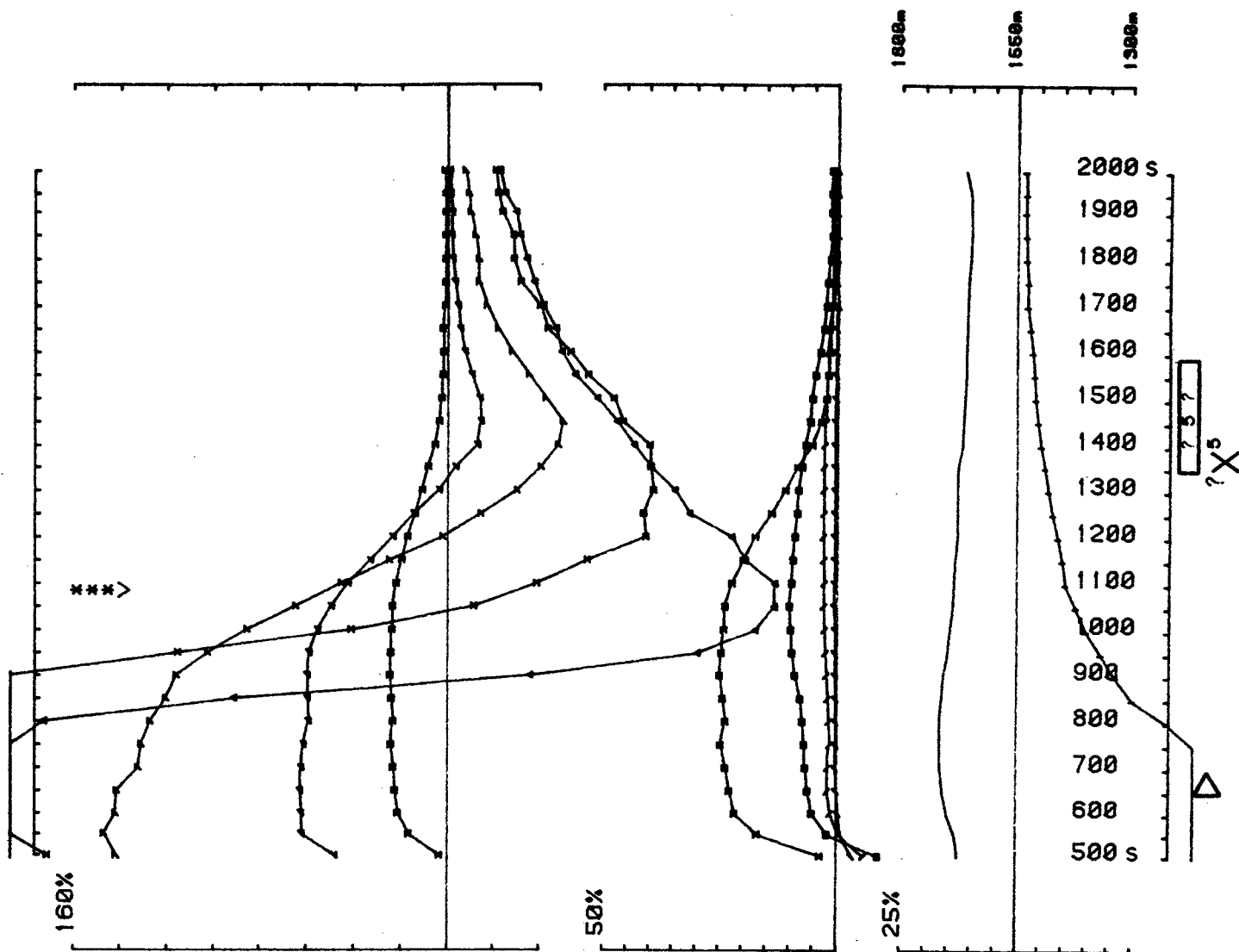Loopno 4   Line 20 component Hz   secondary   Ch I normalized   Ch I reduced

DS 21

***>

200%

50%

50%

3400
3300
2800
N

5 Km Roadsign

2600

2700

2800

2900

Dry Creek 3000

3100

3200

3300

Creek

3400

3500 N

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS 21a

60% **25%** **25%**

100W
200W
300W
400W
500W
600W
700W
800W
900W
1000W
1100W
1200W
1300W
1400W
1500W
1600W
1700W
1800W

1650m 1525m 1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS 22

60% 25% 25%

100W
200W
300W
400W
500W
600W
700W
800W
900W
1000W
1100W
1200W
1300W
1400W
1500W
1600W
1700W
1800W

***>

1650m 1525m 1400m

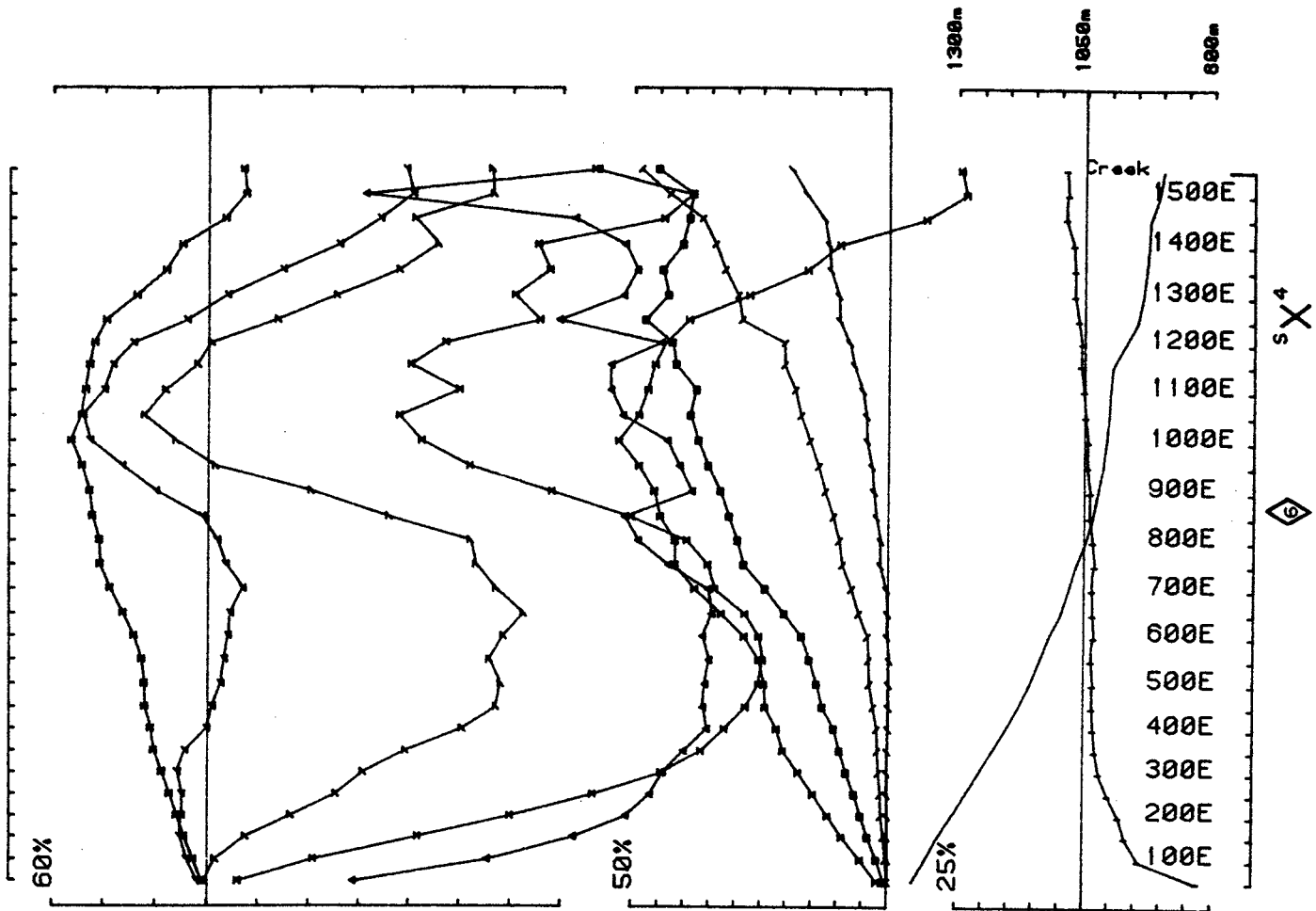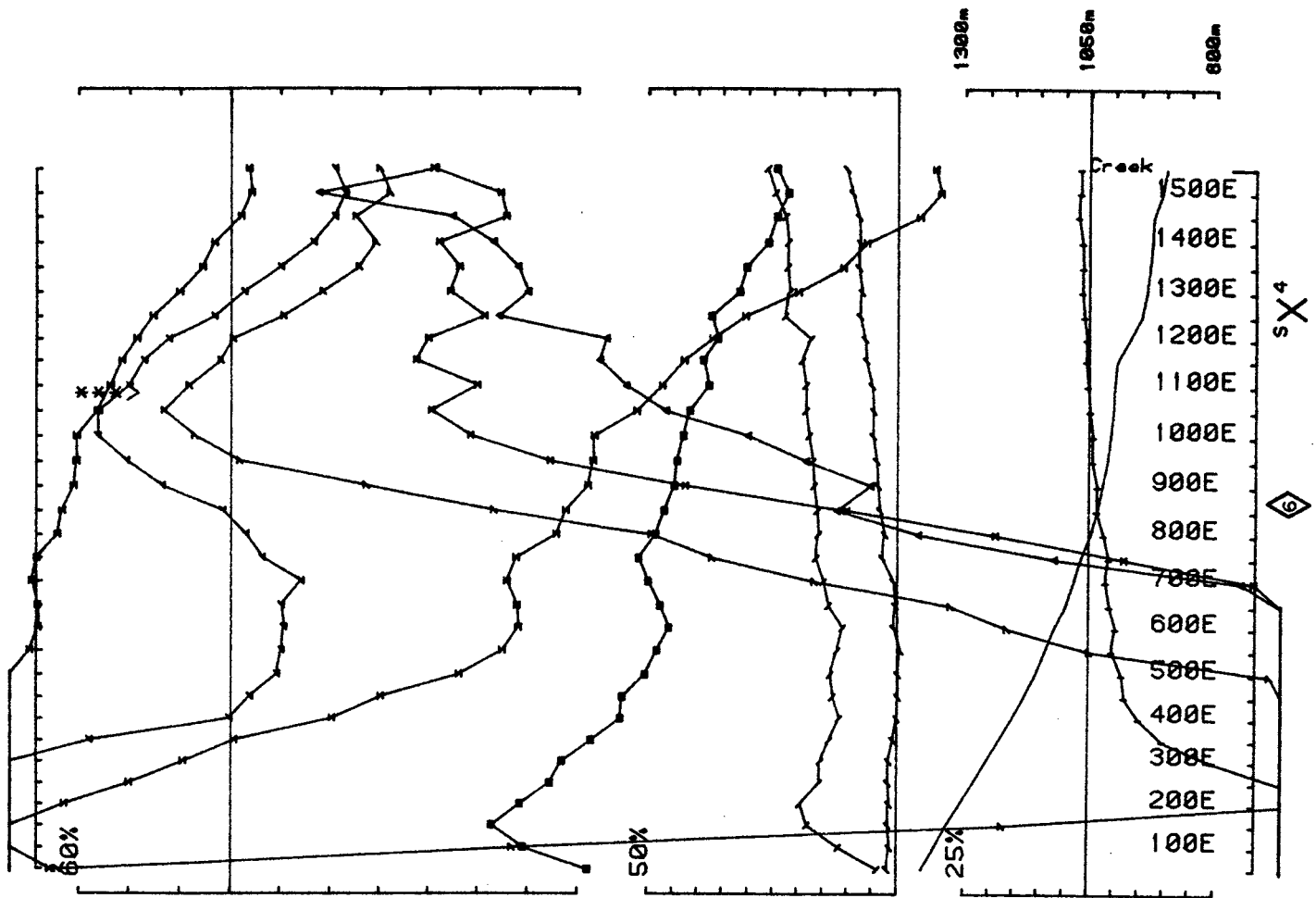Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS 22a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 4   Line 31 component Hz secondary   Ch I normalized   Ch I reduced
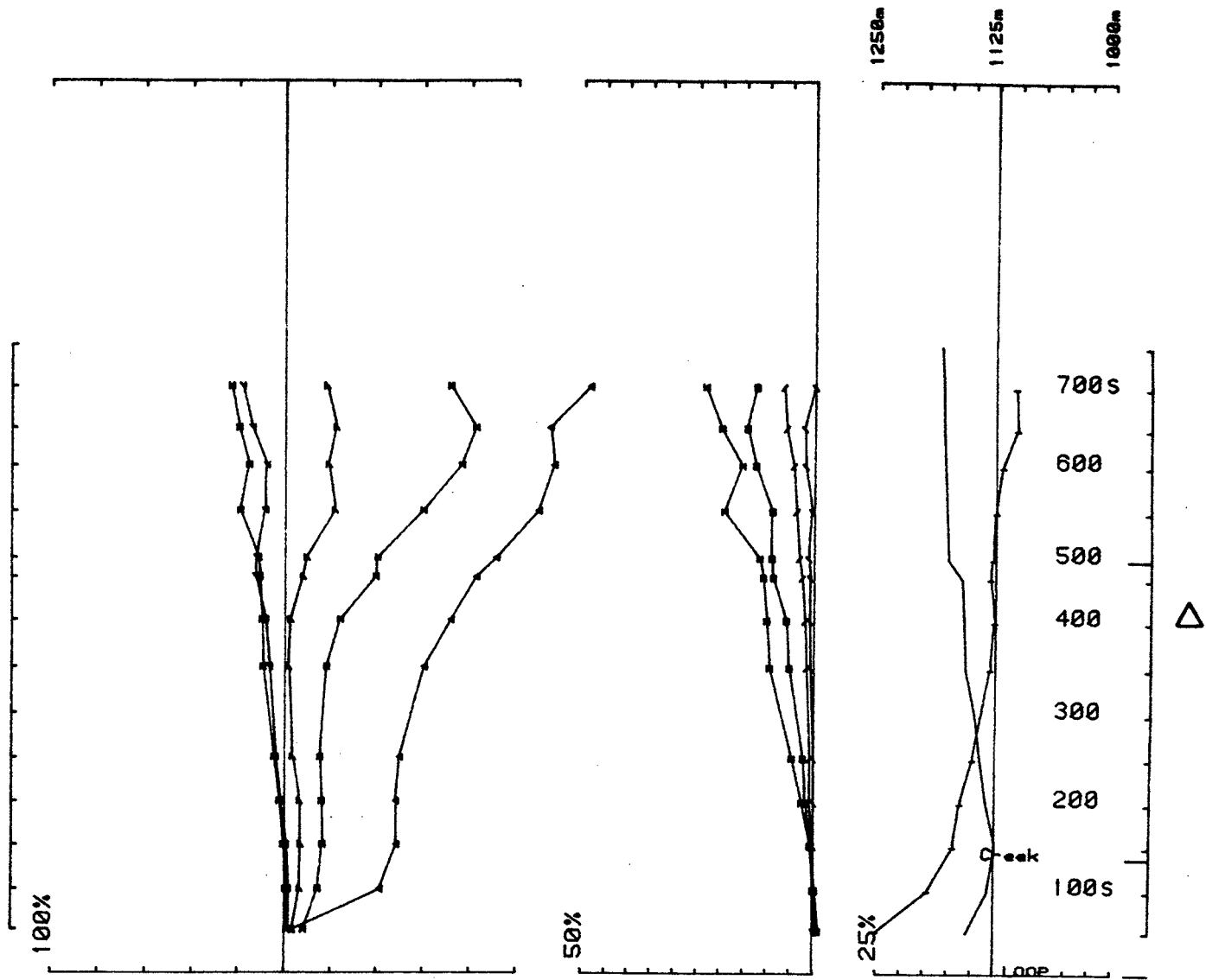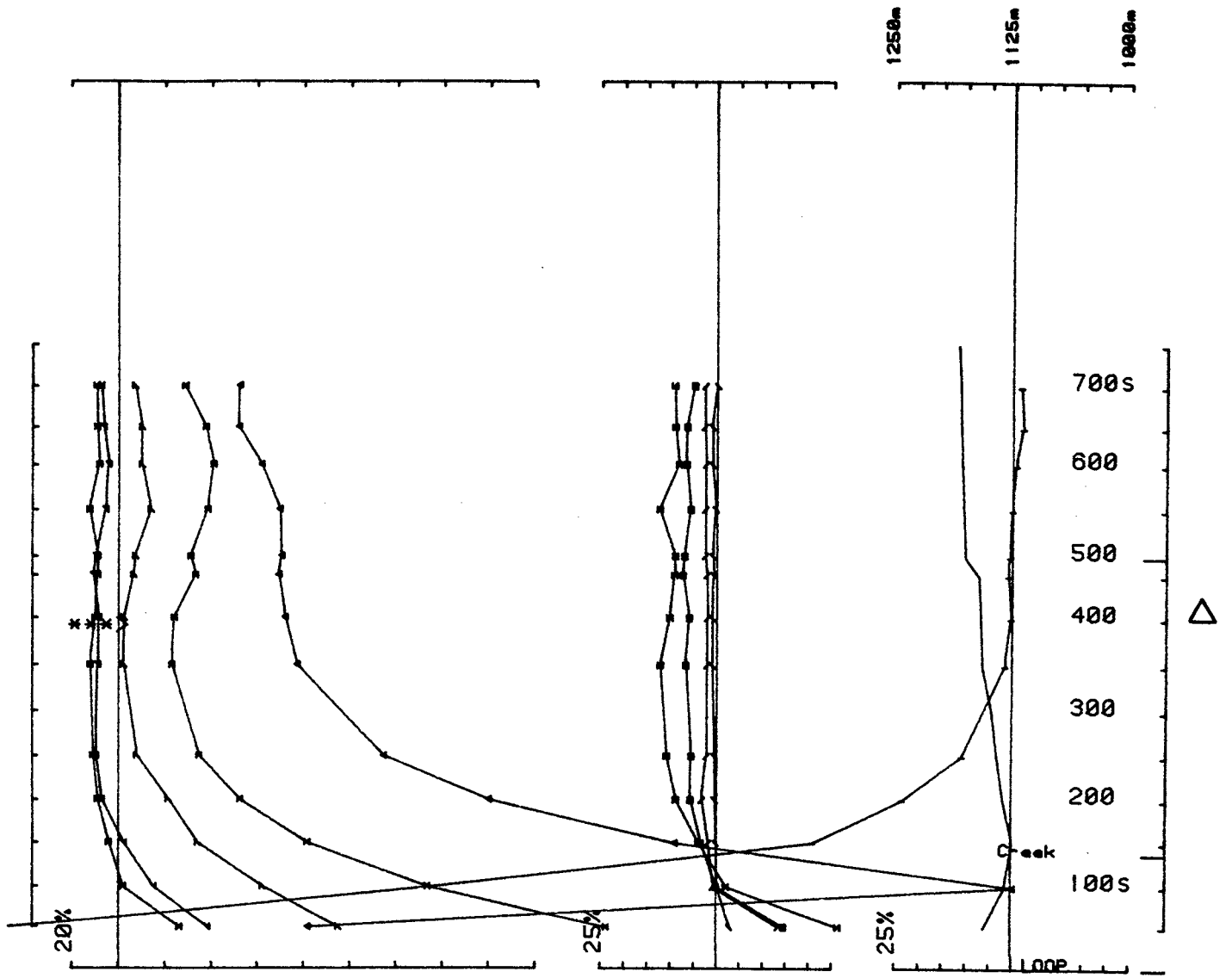
DS 23

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 31 component Hz secondary   Ch I normalized   Ch I reduced

DS 23a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 4   Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS 24

1900N
1800N
1700N
1600N
1500N
1400N
1300N
1200N
1100N
1000N
900N
800N
700N
600N
500N
100N
200N
300N

1550m
1425m
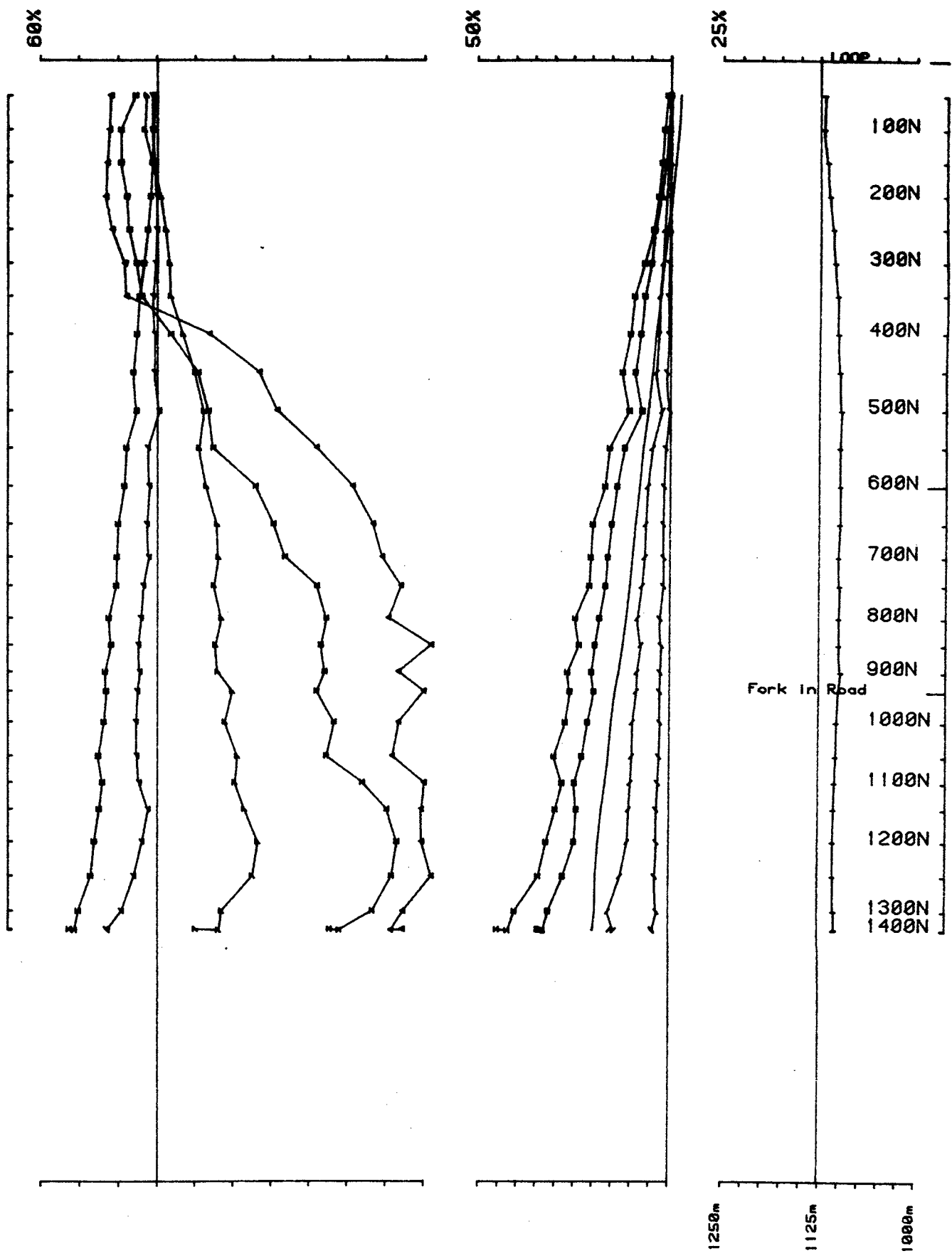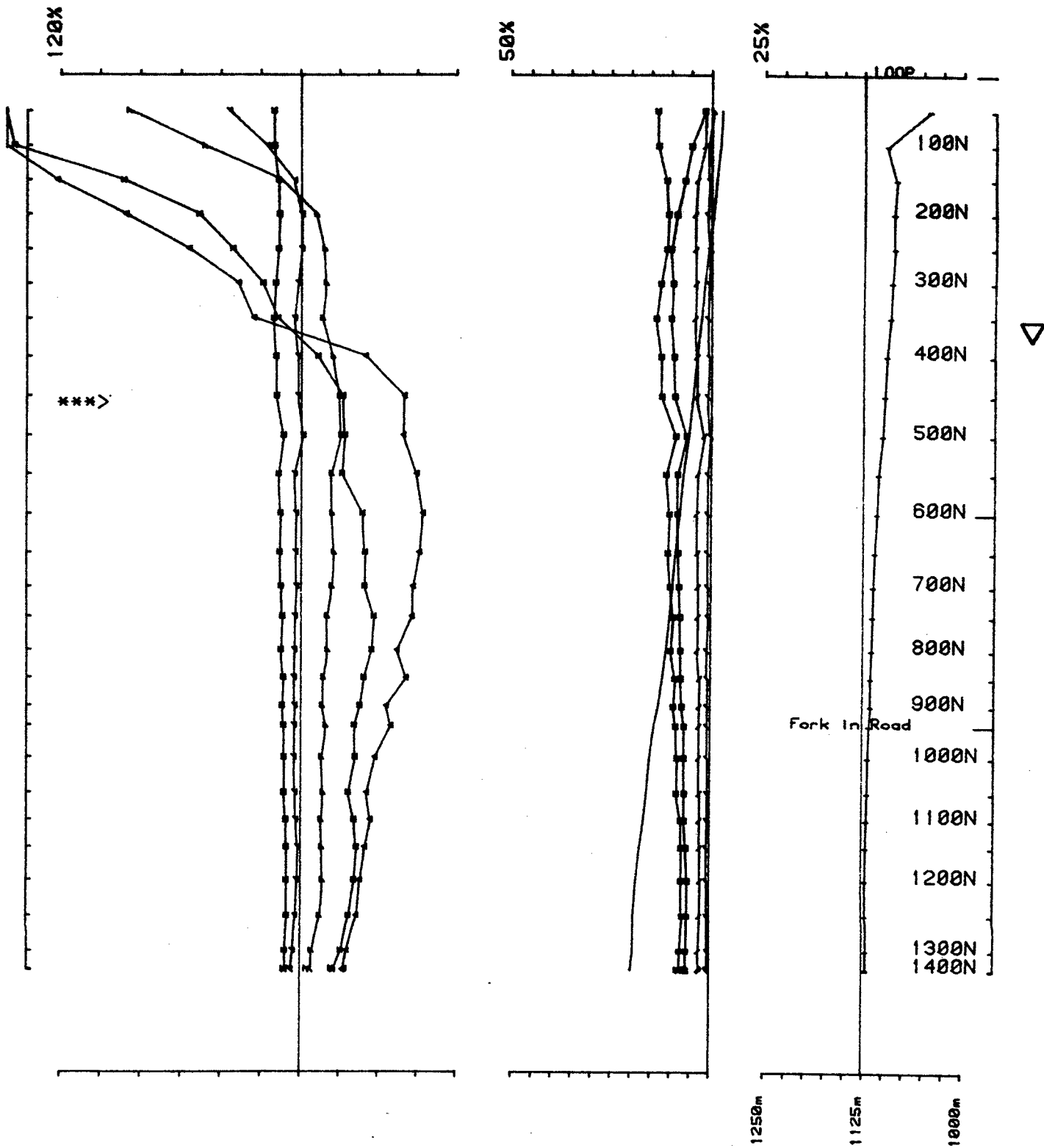1300m

60%
40%
25%

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 4   Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS 24a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS 25

1650m
1525m
1400m

2000N
1900N
1800N
1700N
1600N
1500N
1400N
1300N
1200N
1100N
1000N
900N
800N
700N
600N
500N
400N
300N
200N
100N

100%
50%
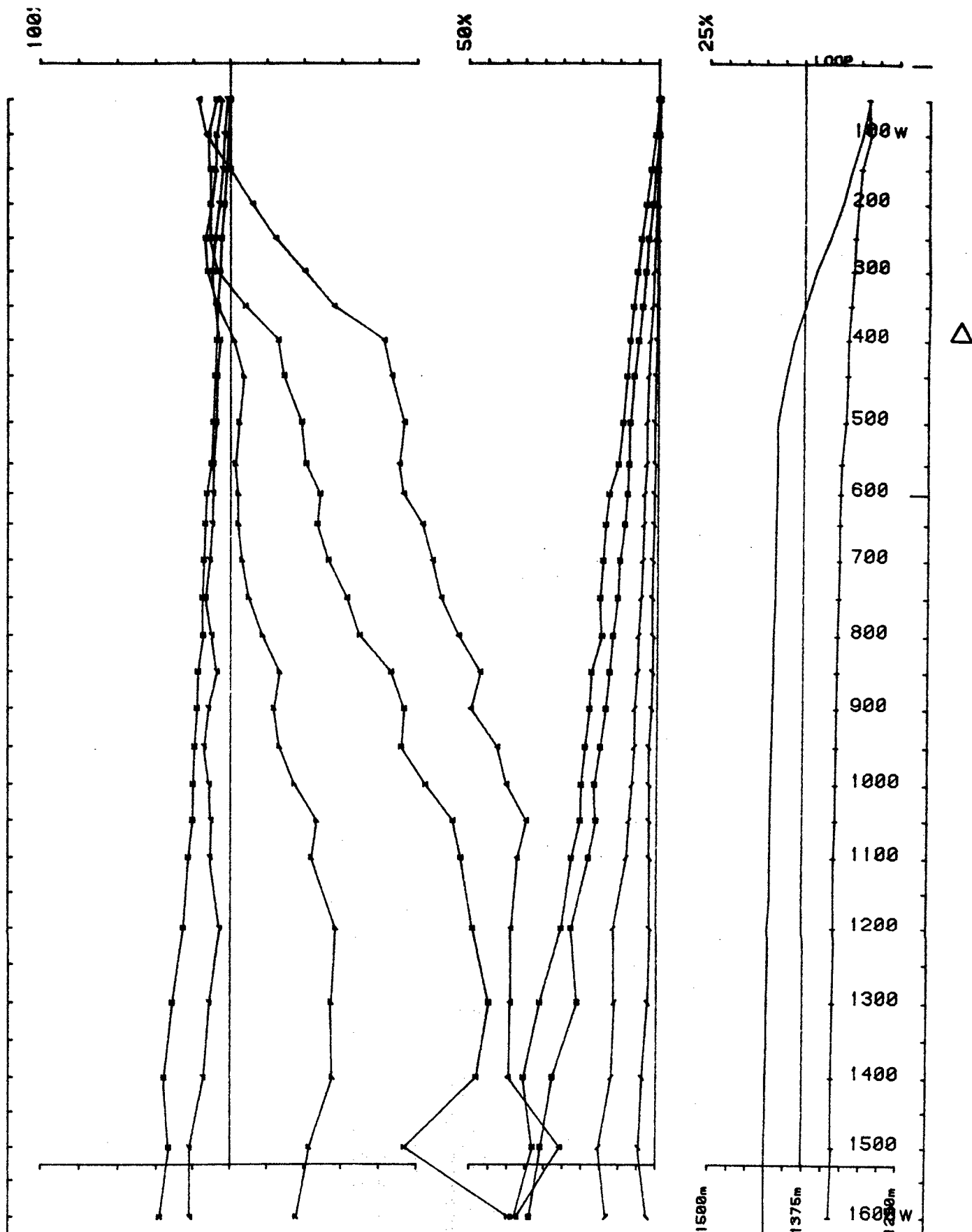25%

S X 6
S X 7
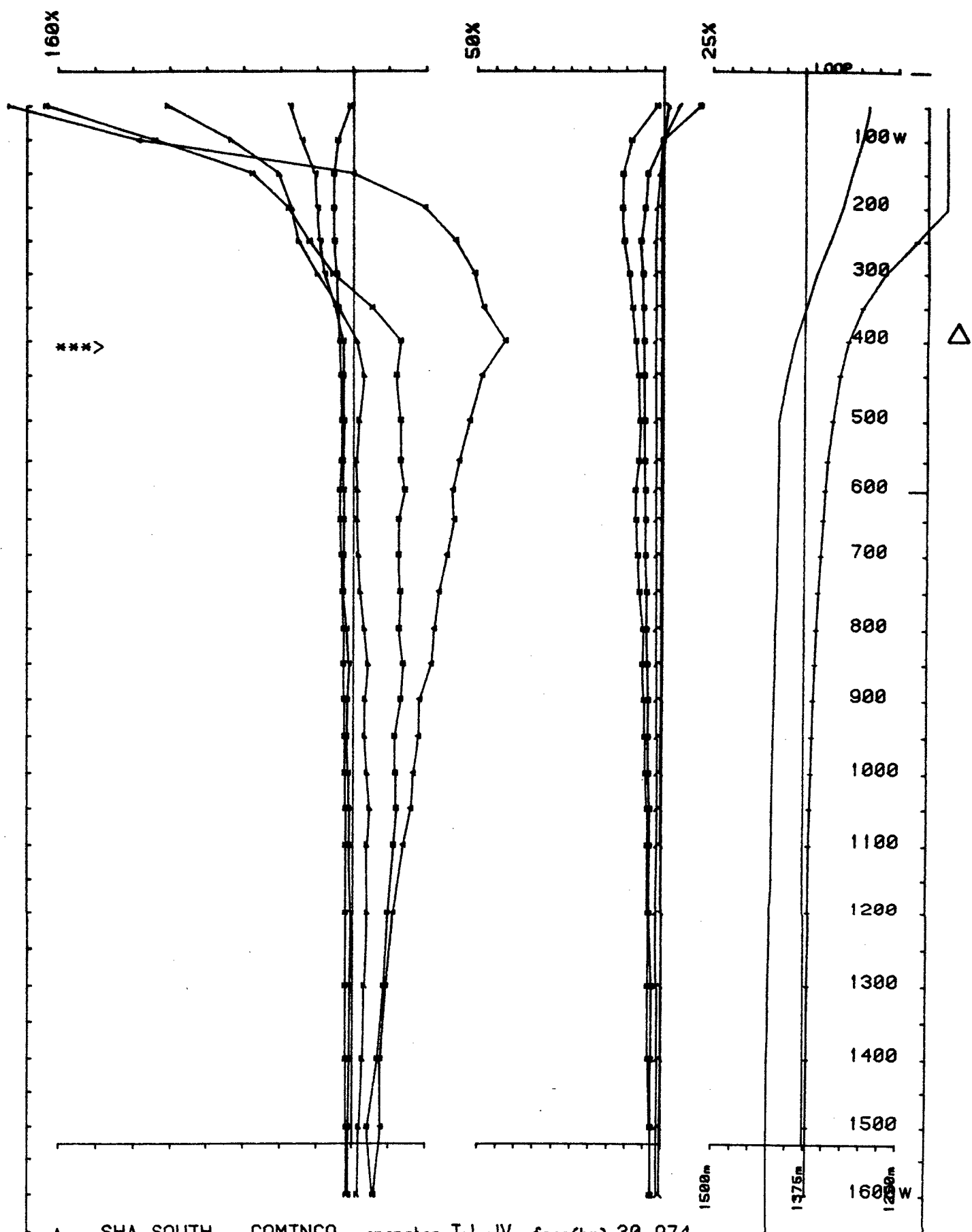S X 8

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS 25a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 60 component Hz secondary   primary field normalized   Ch 1 reduced

DS 26

1800m   1550m   1300m

LOOP

1400 E
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100 E

LOOP

100%

***>

25%

25%

△

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 60 component Hz secondary   primary field normalized   Ch I reduced

DS 26a
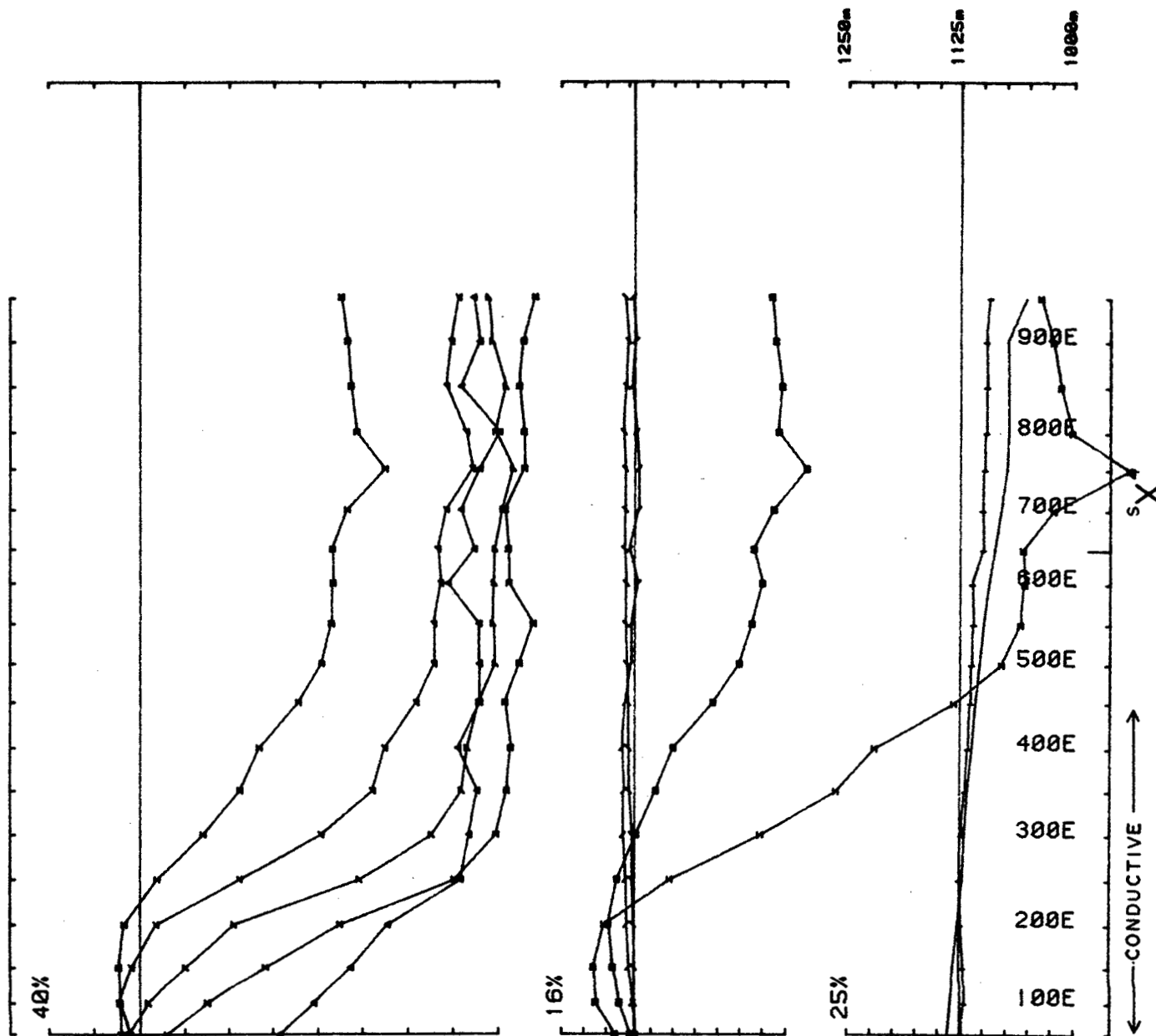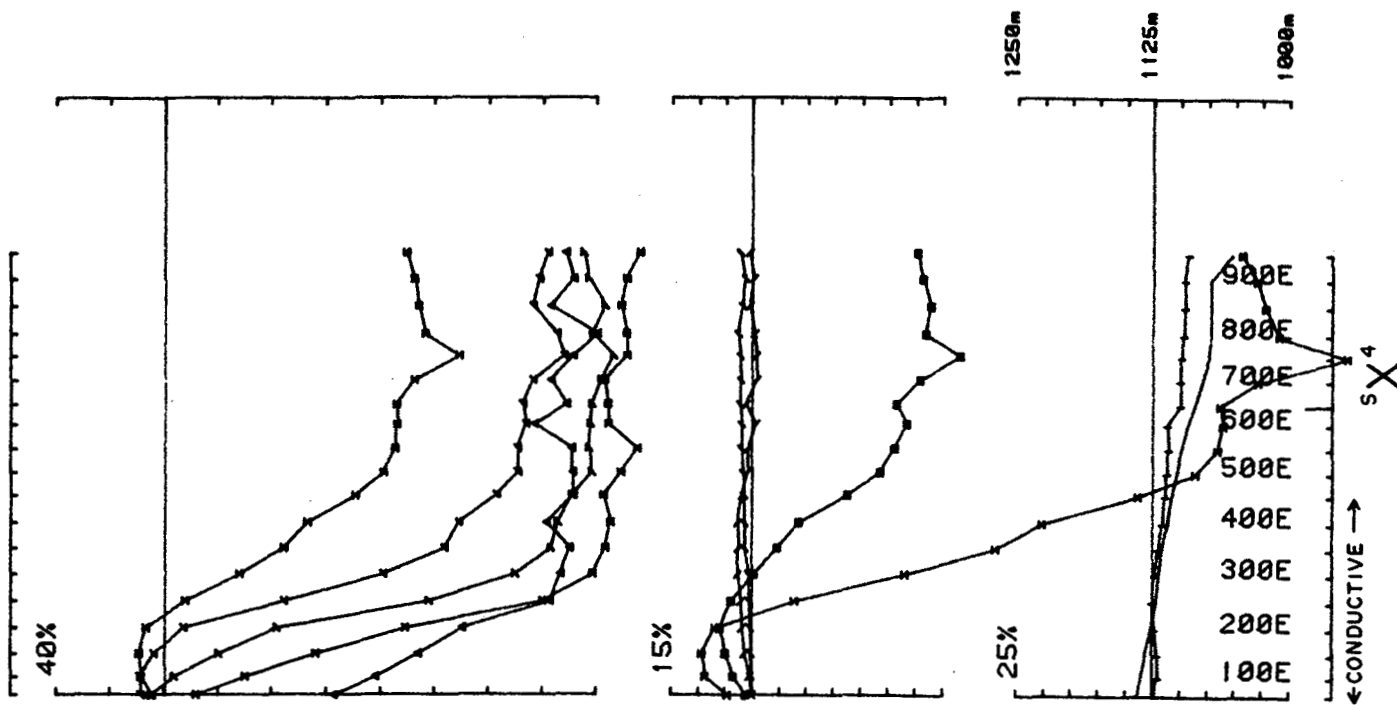
Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 70 component Hz secondary   Ch I normalized   Ch I reduced

DS 27

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 70 component Hz secondary   Ch I normalized   Ch I reduced

DS 27a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 4   Line 80 component Hz secondary   Ch I normalized   Ch I reduced

DS 28

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
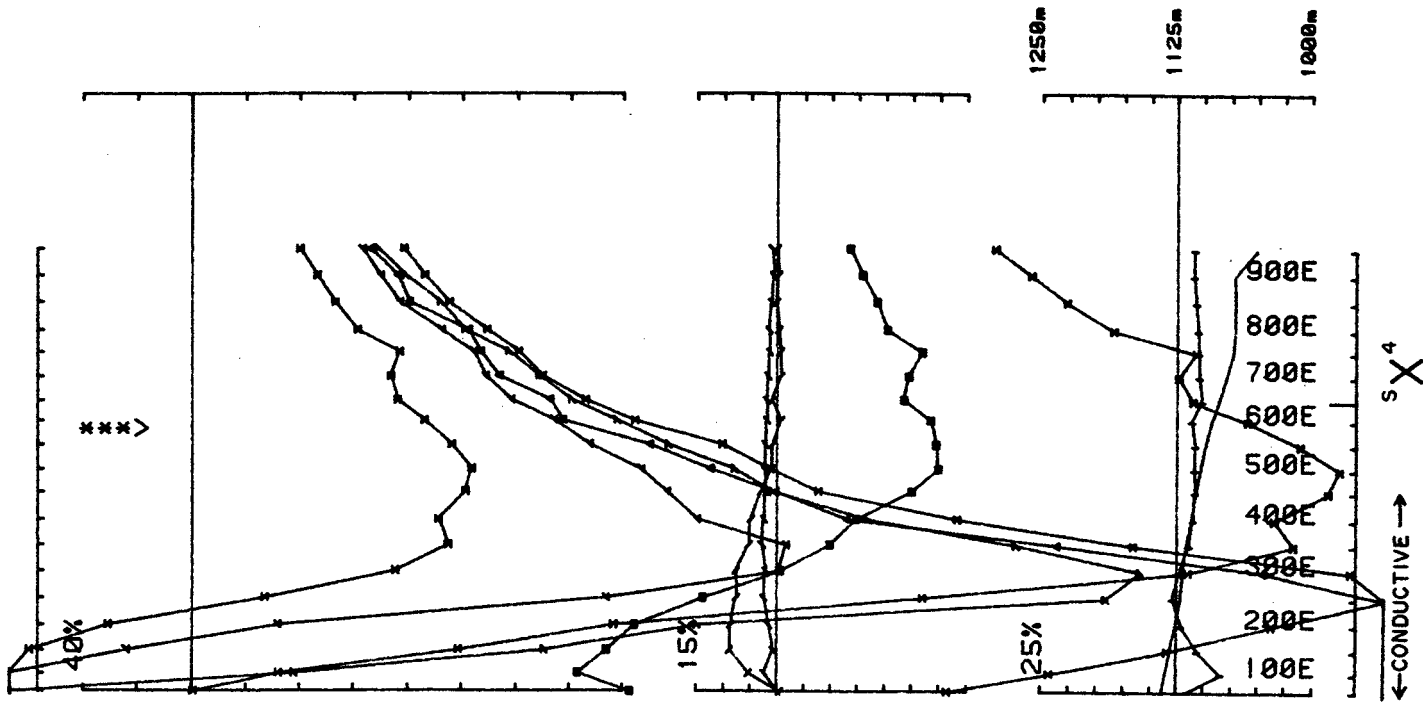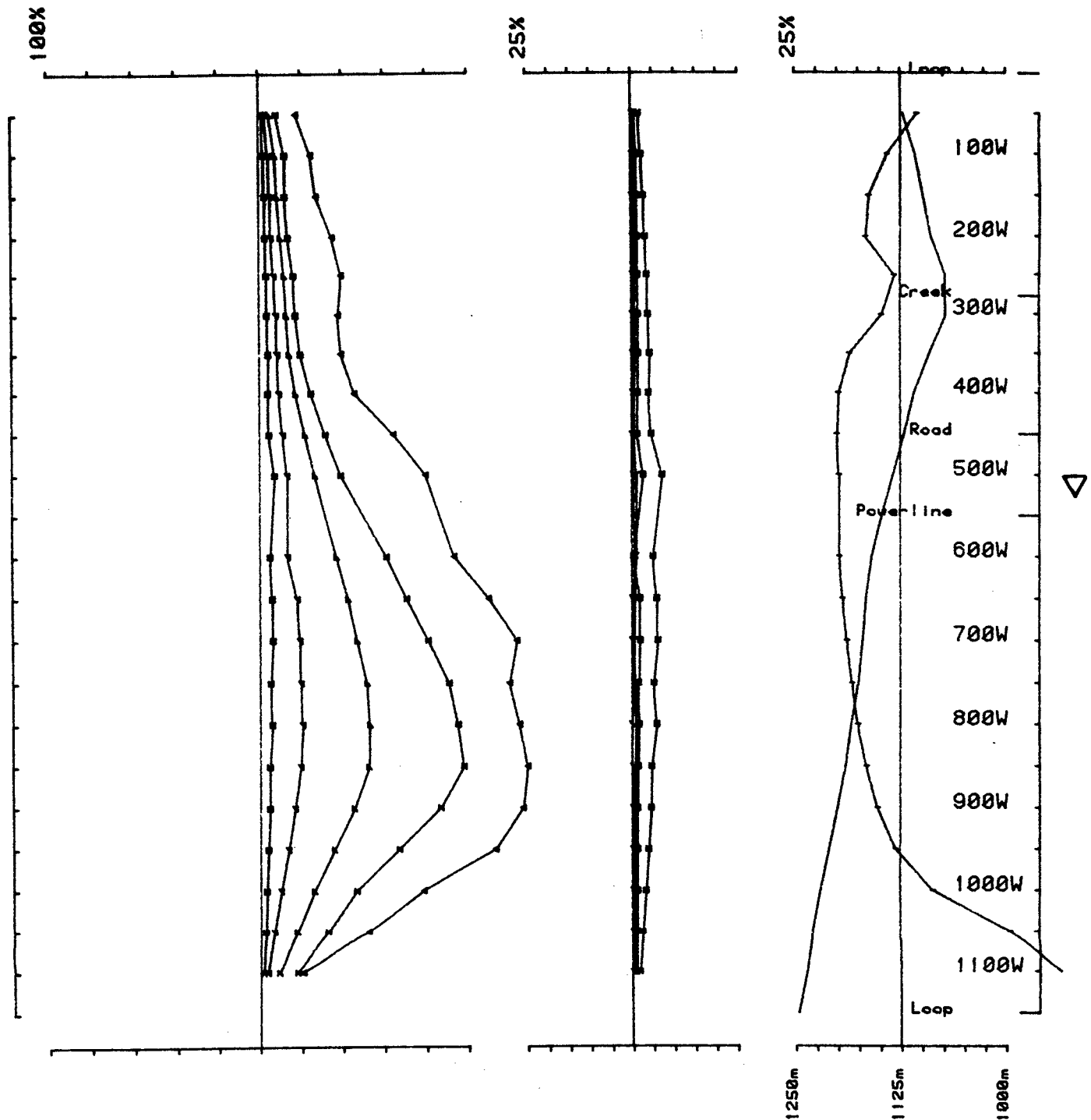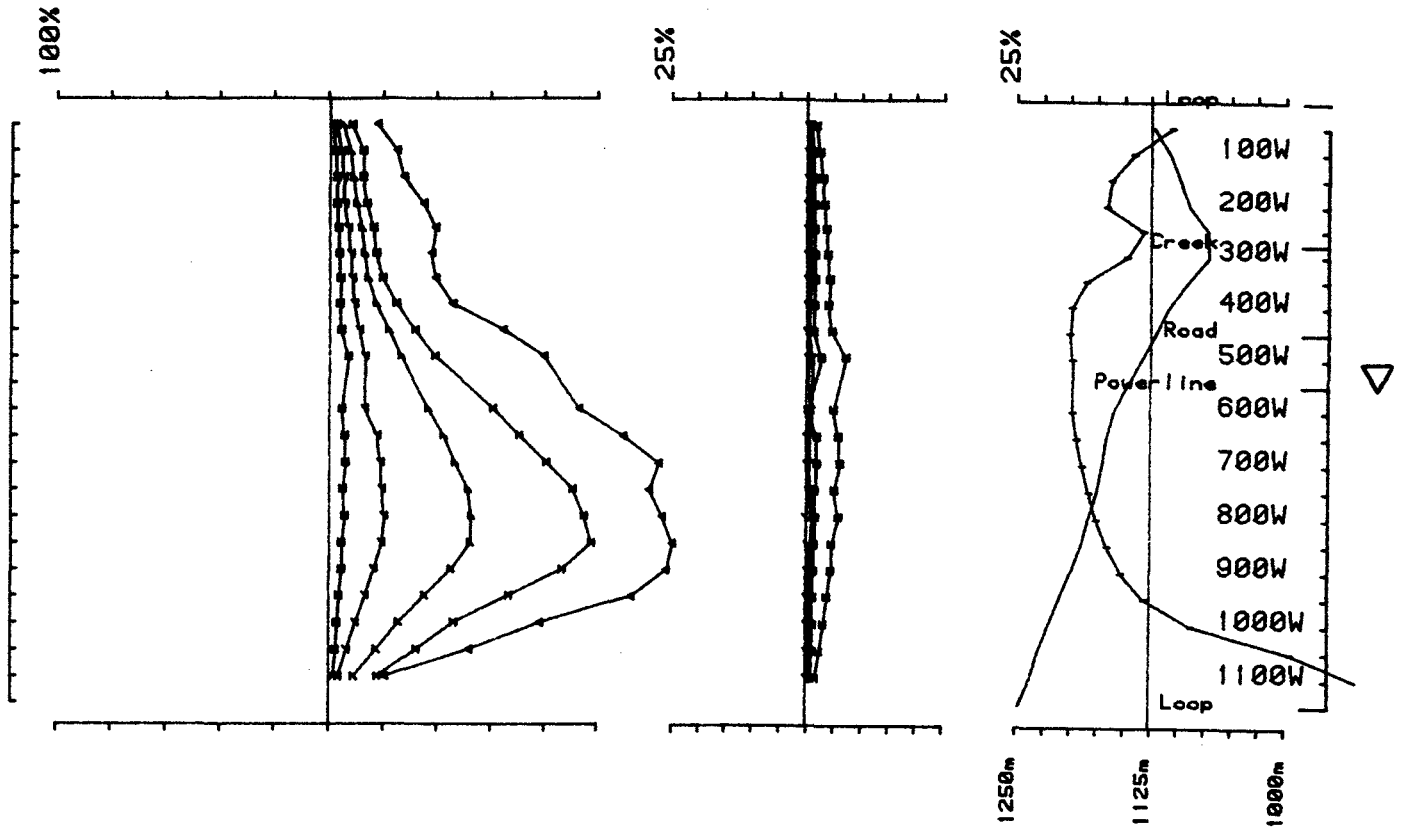Loopno 4   Line 80 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 28a

700s

600

500

400

300

200

100s

1250m

1125m

1000m

Creek

LOOP

100%

50%

25%

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 5 Line 10 component Hz secondary   Ch I normalized   Ch I reduced

△

DS 29

1250m
1125m
1000m

700s
600
500
400
300
200
Creek
100s

20%
25%
25%

LOOP

△

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 5 Line 10 component Hz secondary   Ch I normalized   Ch I reduced

DS 29a

60% 50% 25%

100N
200N
300N
400N
500N
600N
700N
800N
900N
Fork in Road
1000N
1100N
1200N
1300N
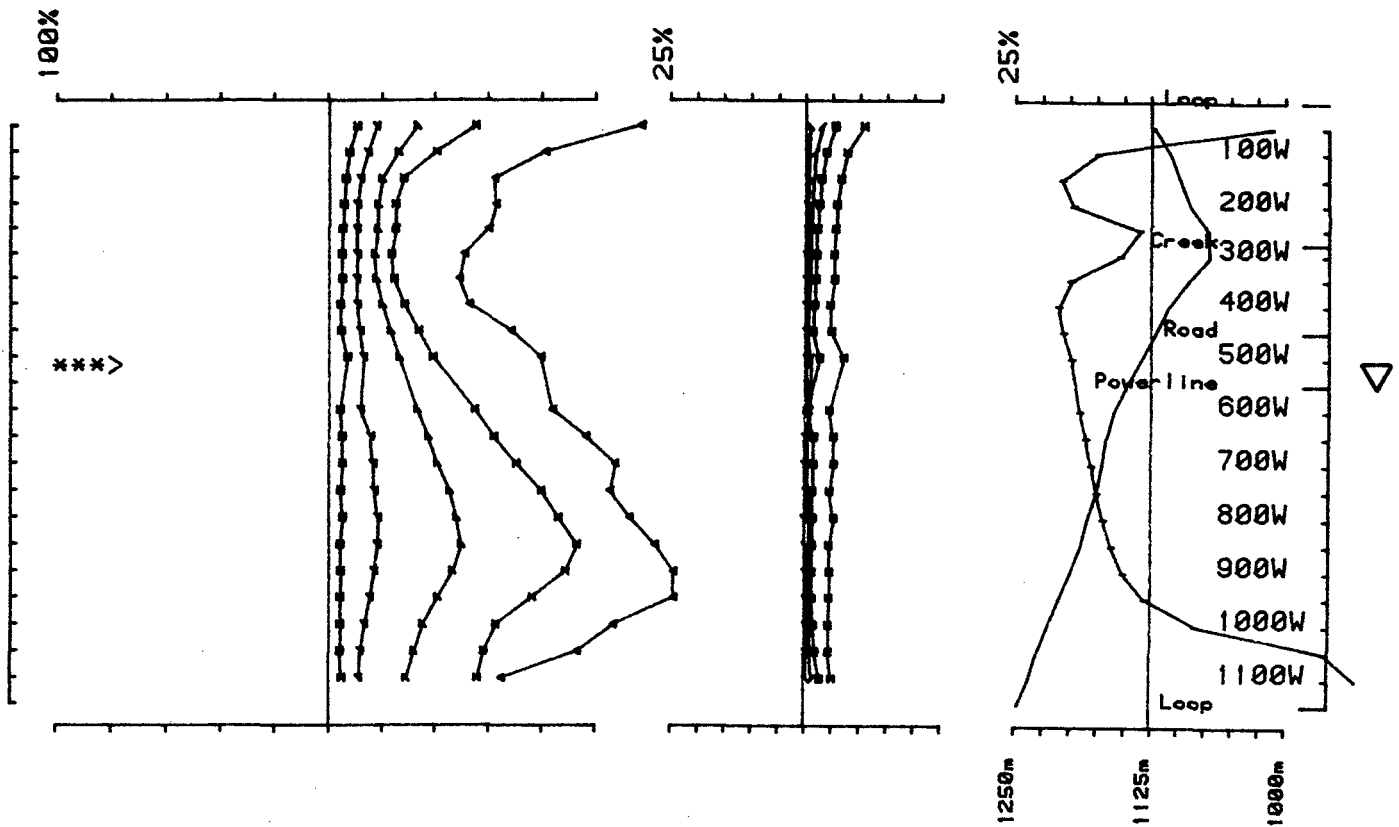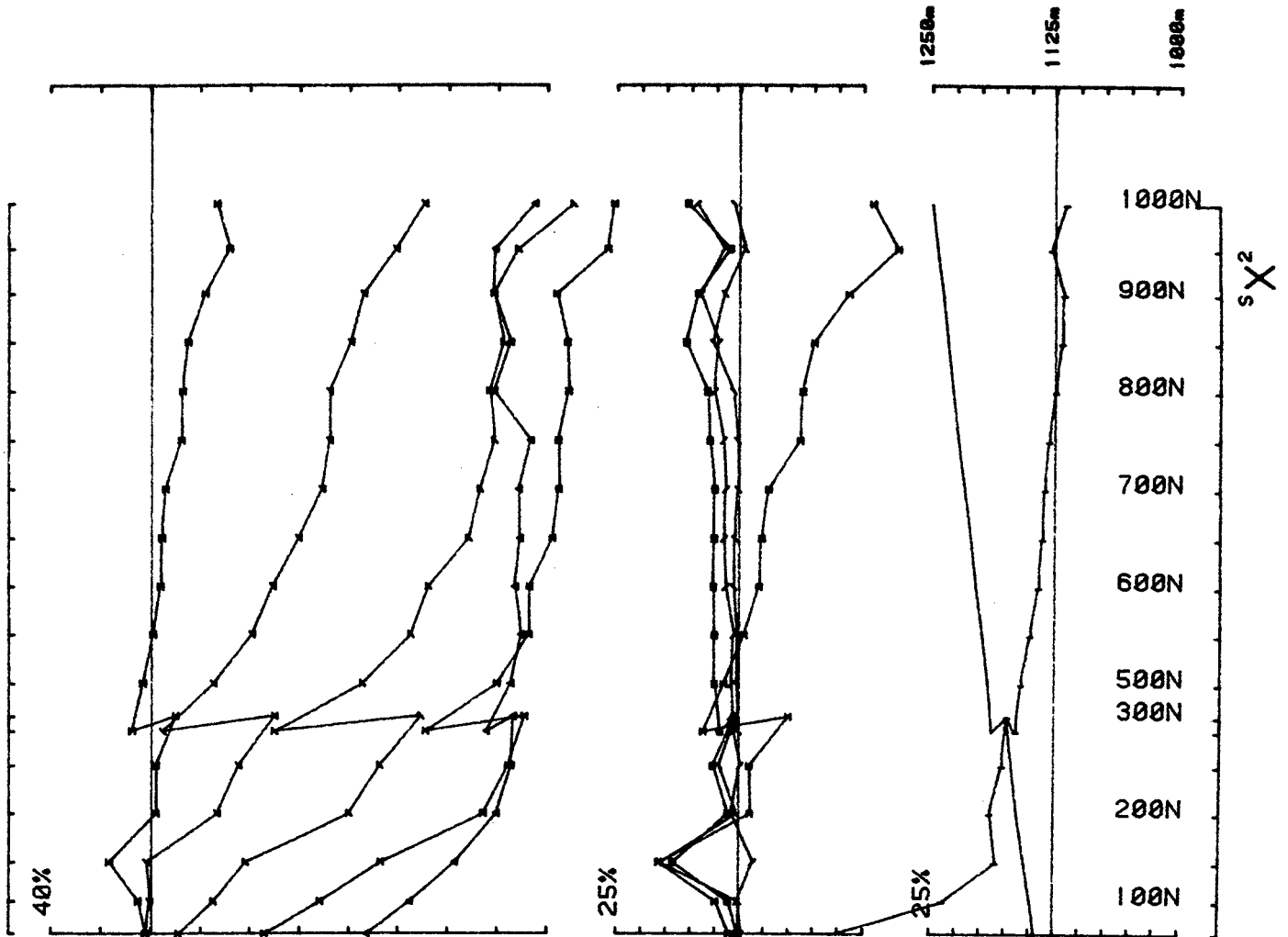1400N

1250m 1125m 1000m

Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974

Loopno 5 Line 20 component Hz secondary Ch 1 normalized Ch 1 reduced
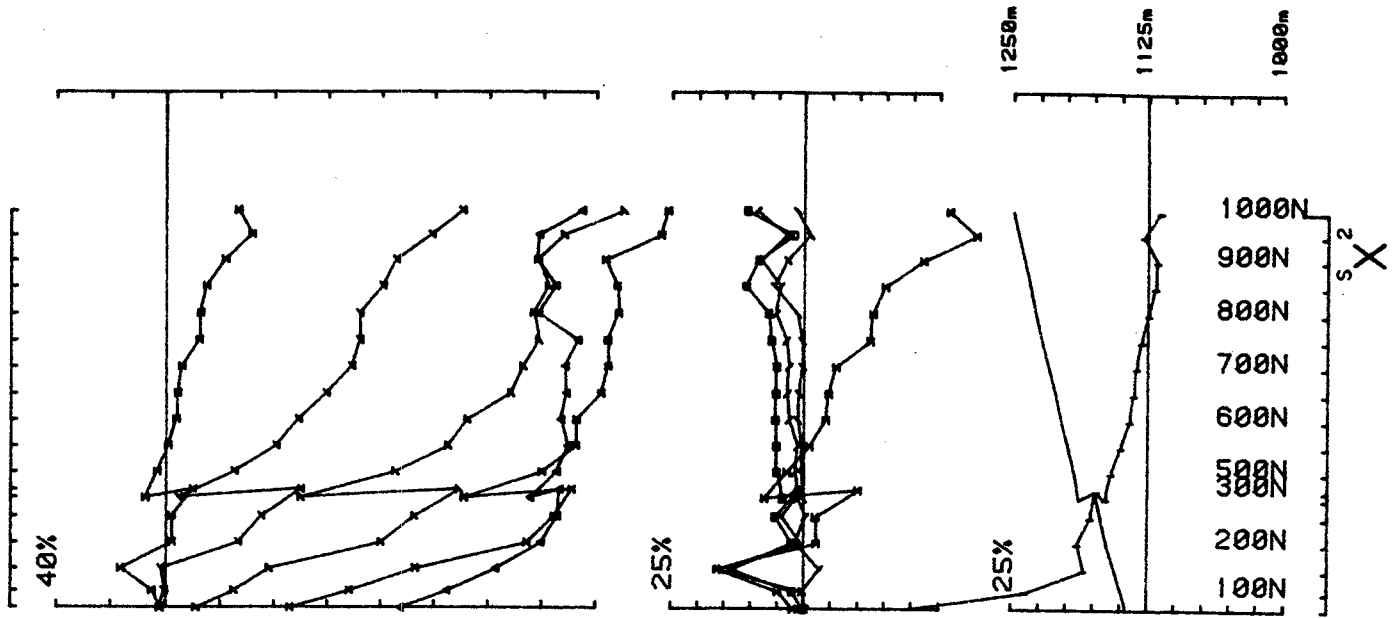
DS 30

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 5 Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS 30a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 5 Line 21 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 31

160%　　　　　　　　　　50%　　　25%　　　1.000

***>

100W
200
300
△
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1500m   1375m   1200W
1600W

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 5 Line 21 component Hz secondary   Ch I normalized   Ch I reduced

DS 31a

1250m

1125m

1000m

900E

800E

700E

s

600E

500E

400E

300E

← CONDUCTIVE →

200E

100E

40%

16%

25%

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 5 Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS 32

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
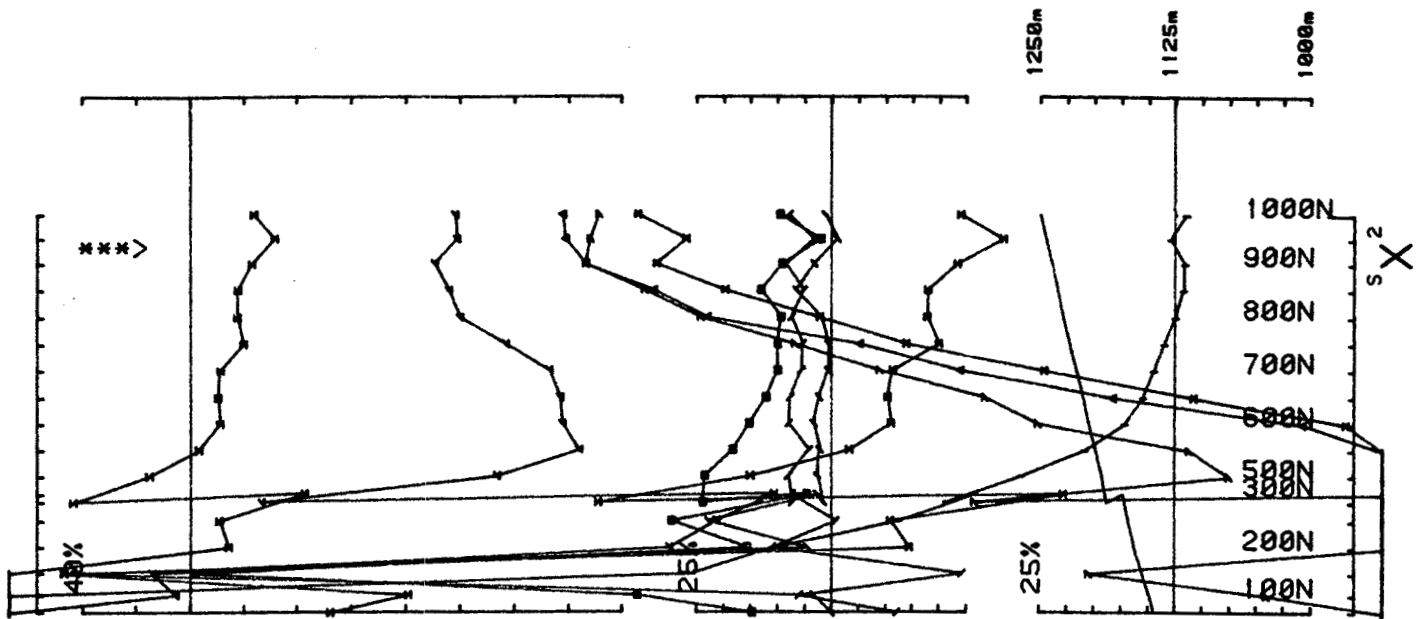Loopno 5 Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS 32a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
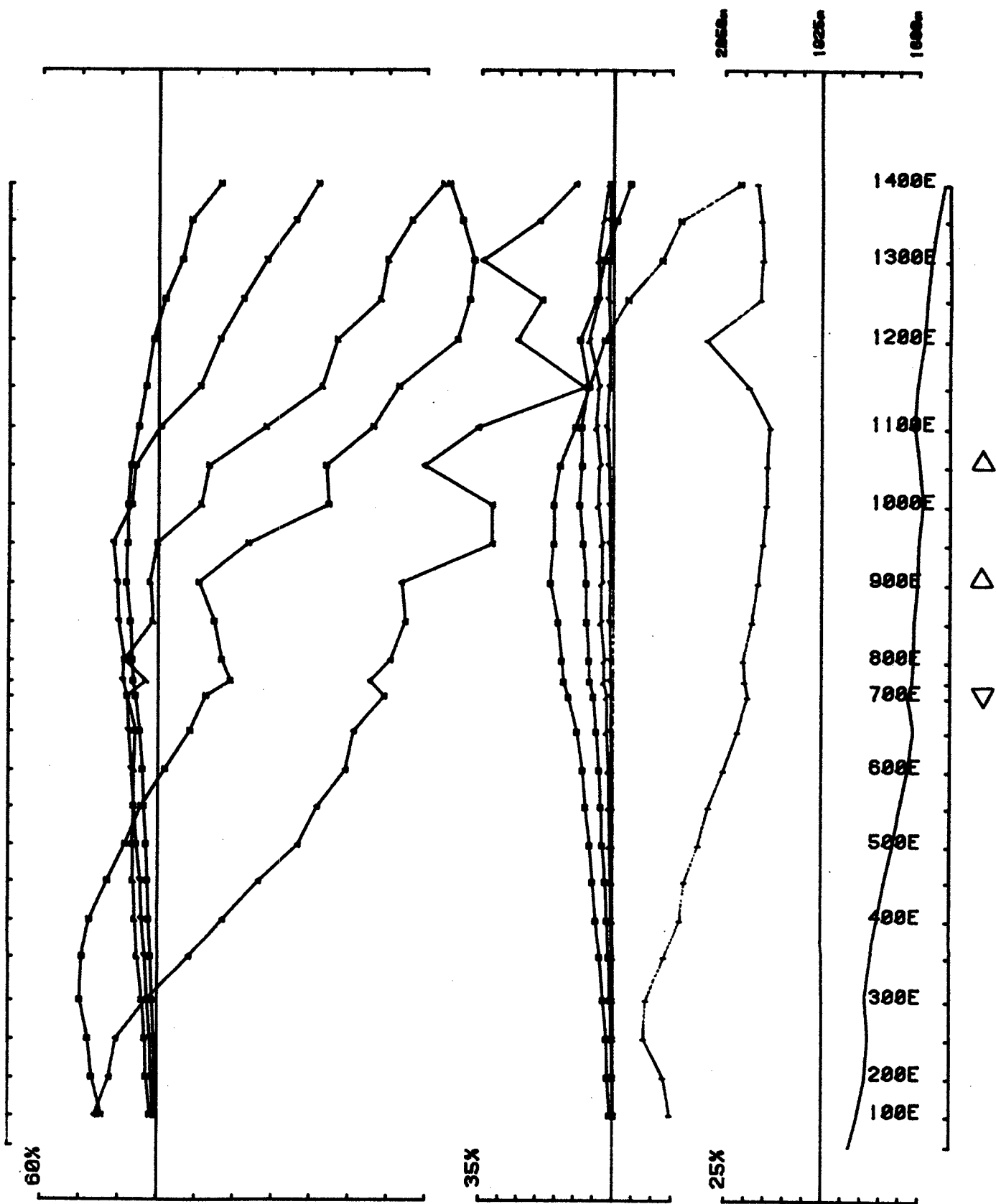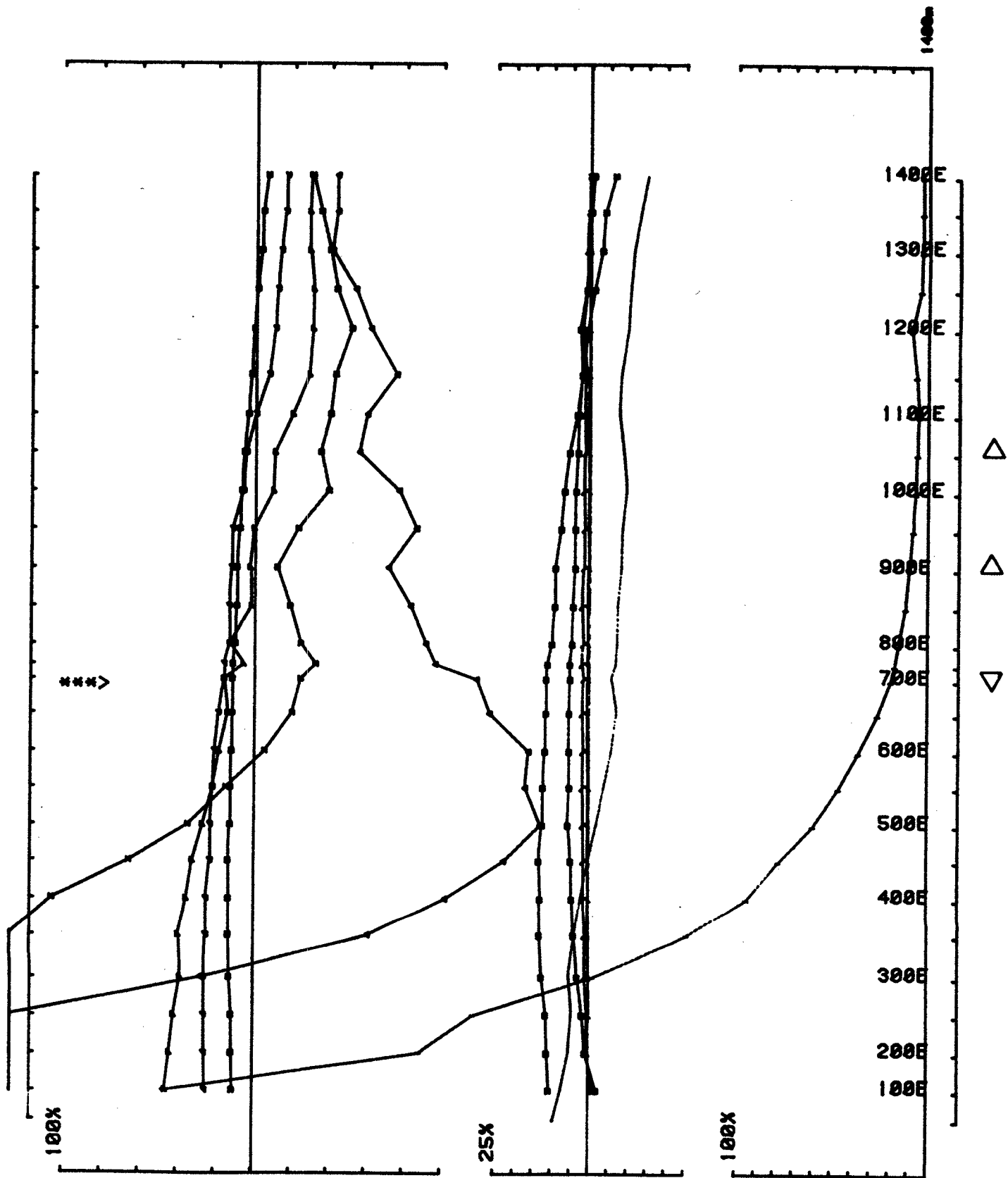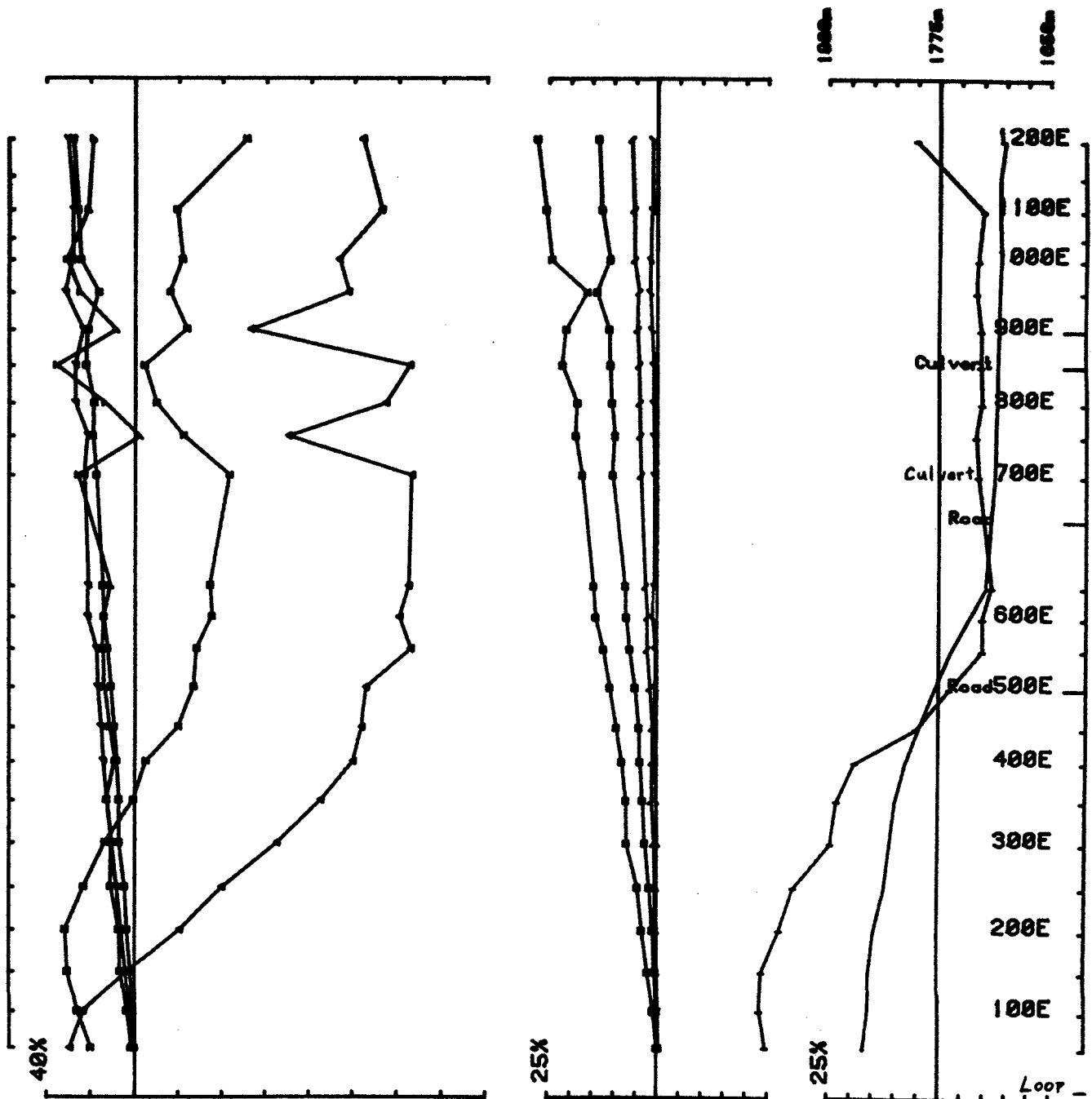Loopno 5 Line 30 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 32b

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
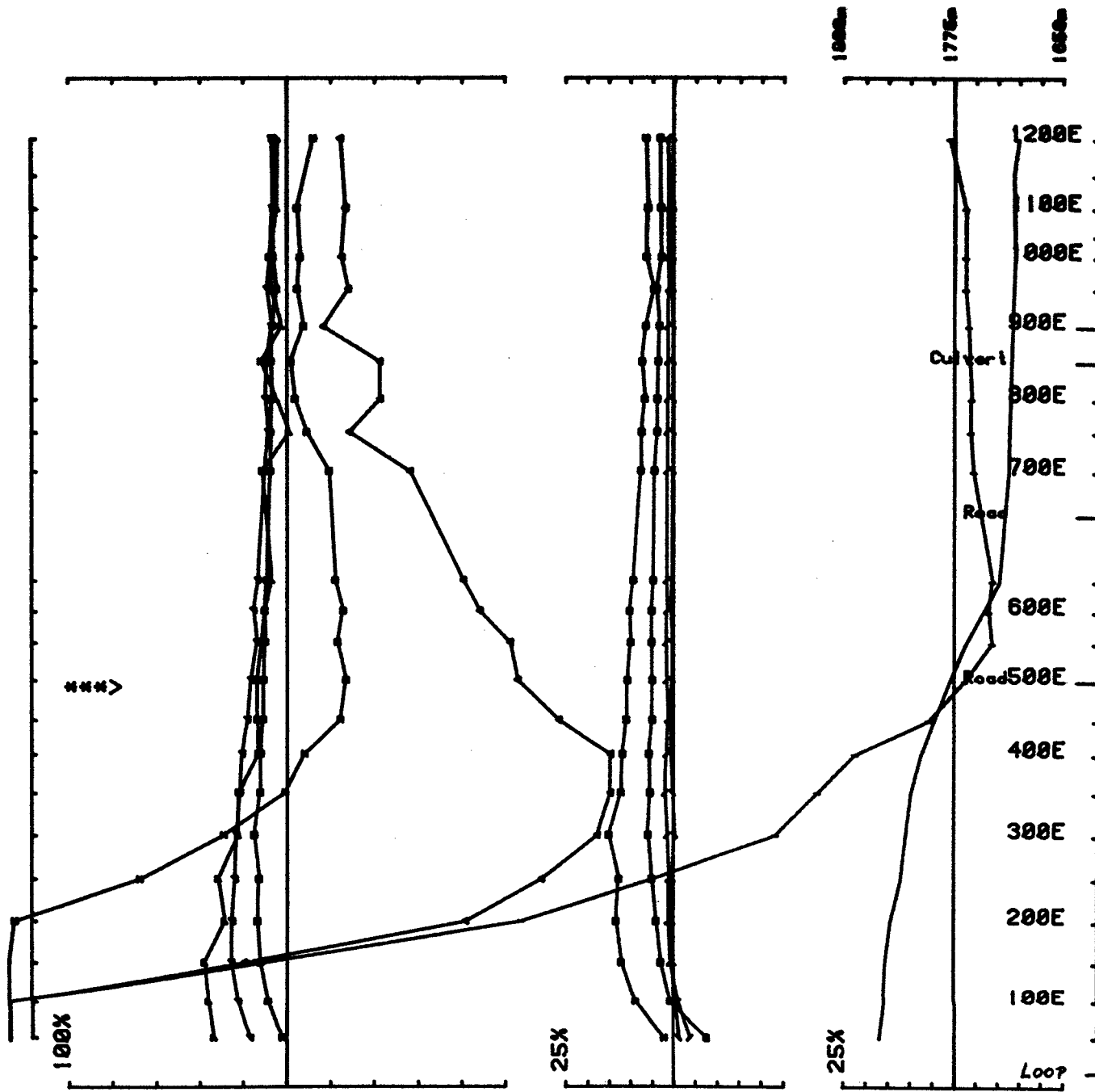Loopno 5 Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS 33

100% 25% 25%

Loop
100W
200W
Creek 300W
400W
Road 500W
Power line
600W
700W
800W
900W
1000W
1100W
Loop

1250m 1125m 1000m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 5 Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS 33a

100% 25% 25%

***>

Loop
100W
200W
Creek 300W
400W
Road 500W
Powerline 600W
700W
800W
900W
1000W
1100W
Loop

1250m   1125m   1000m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 5 Line 40 component Hz secondary   Ch I normalized   Ch I reduced
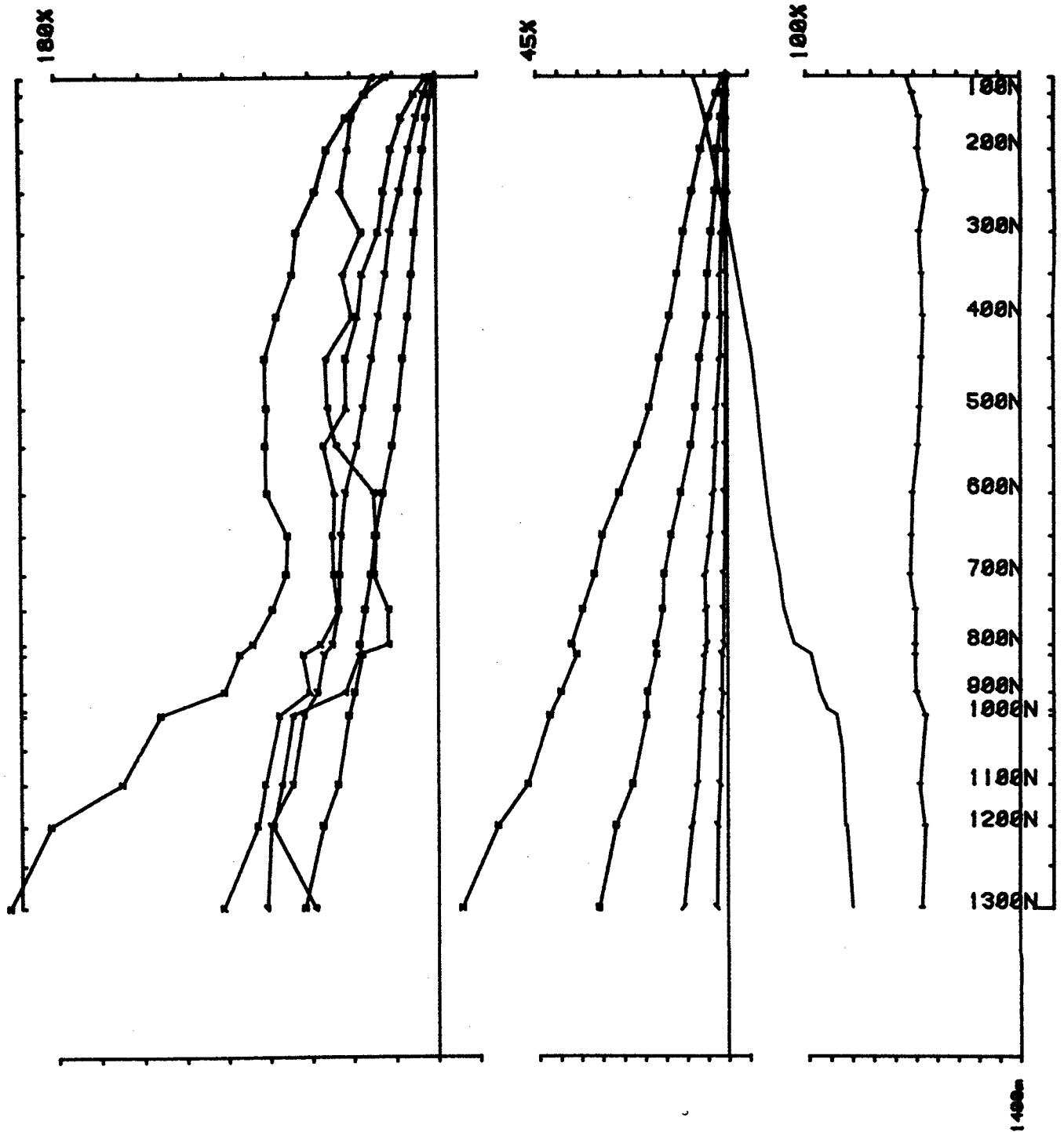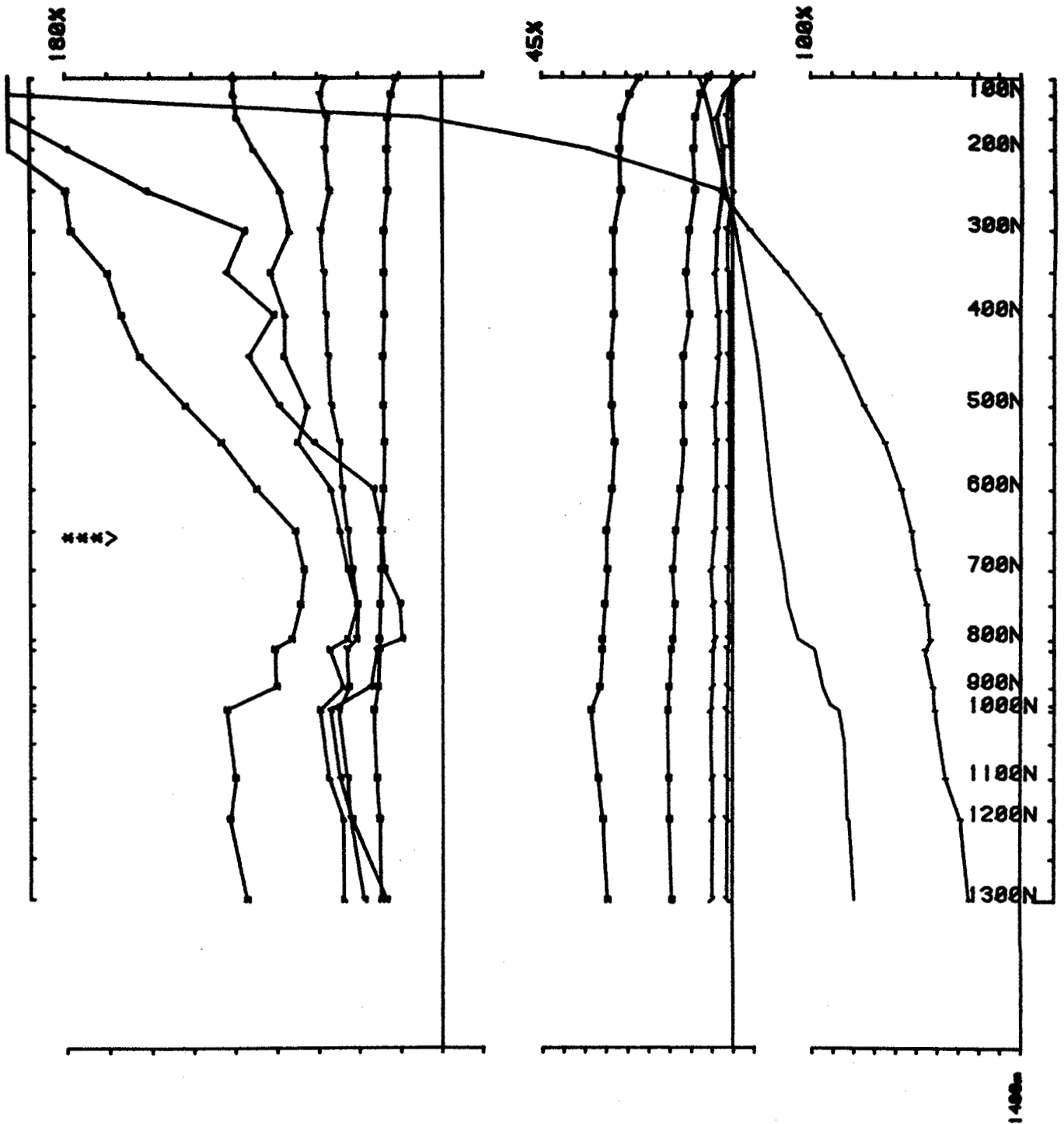
DS 33b

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 5 Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS 34

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

Loopno 5 Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS 34a

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 5 Line 50 component Hz secondary   Ch I normalized   Ch I reduced
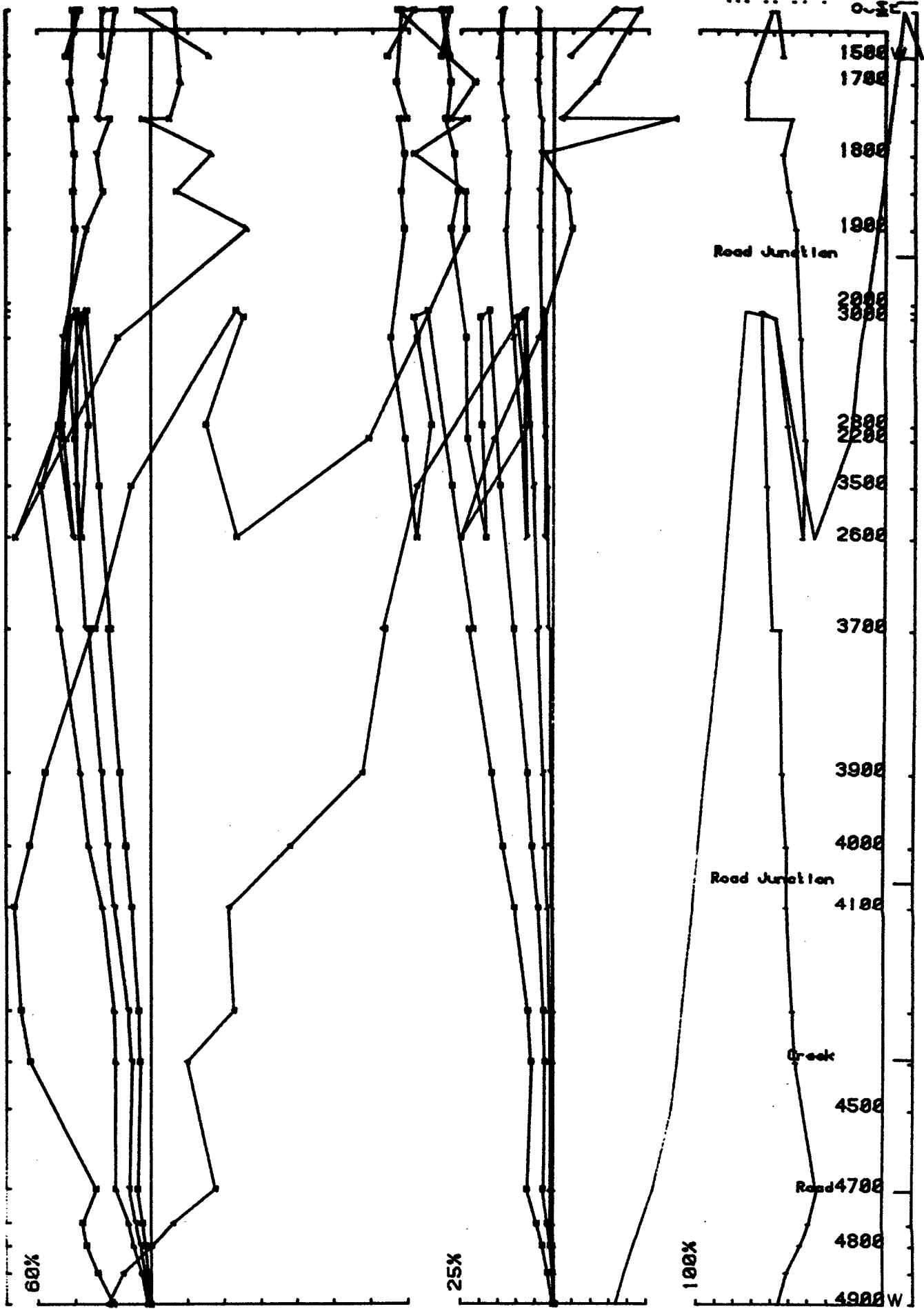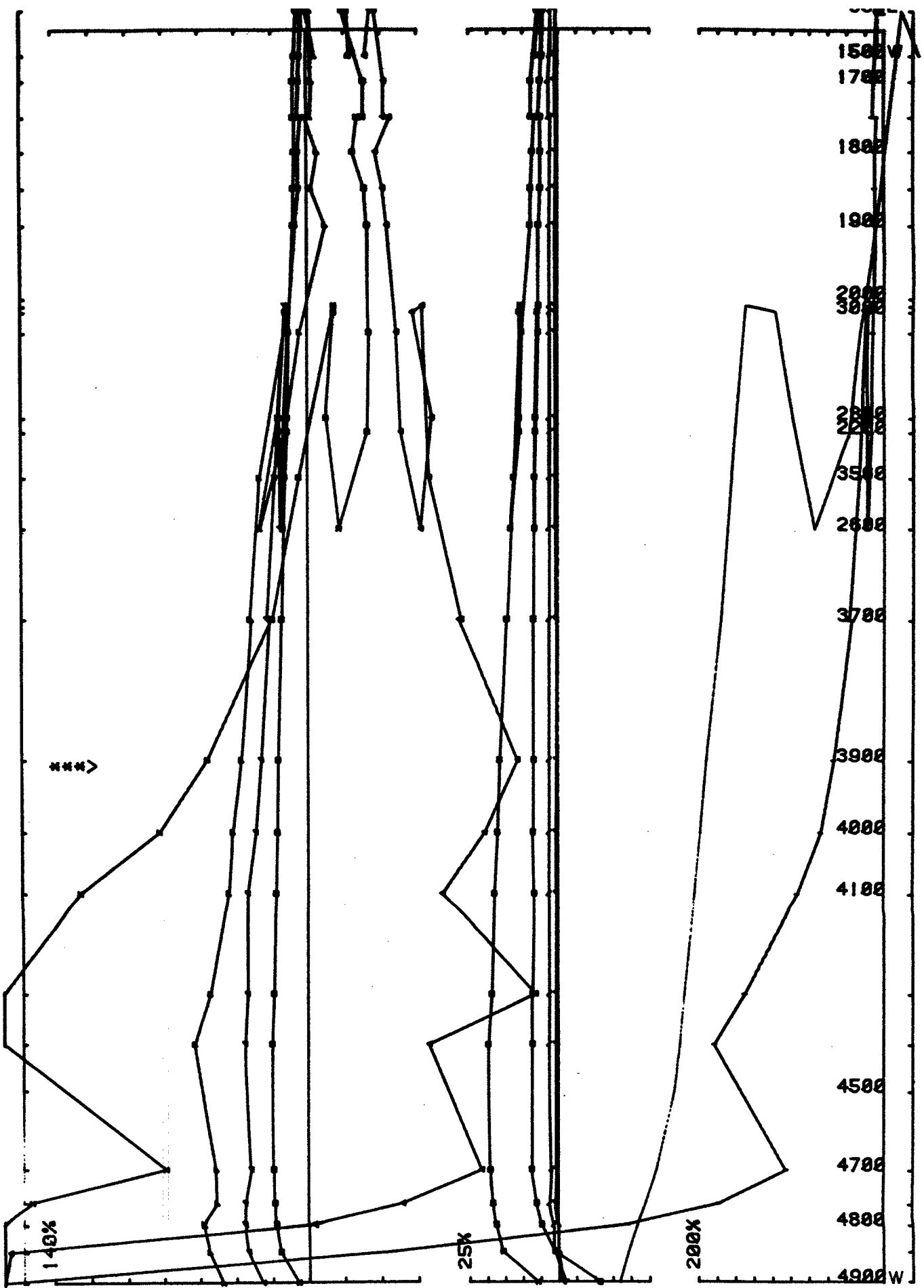
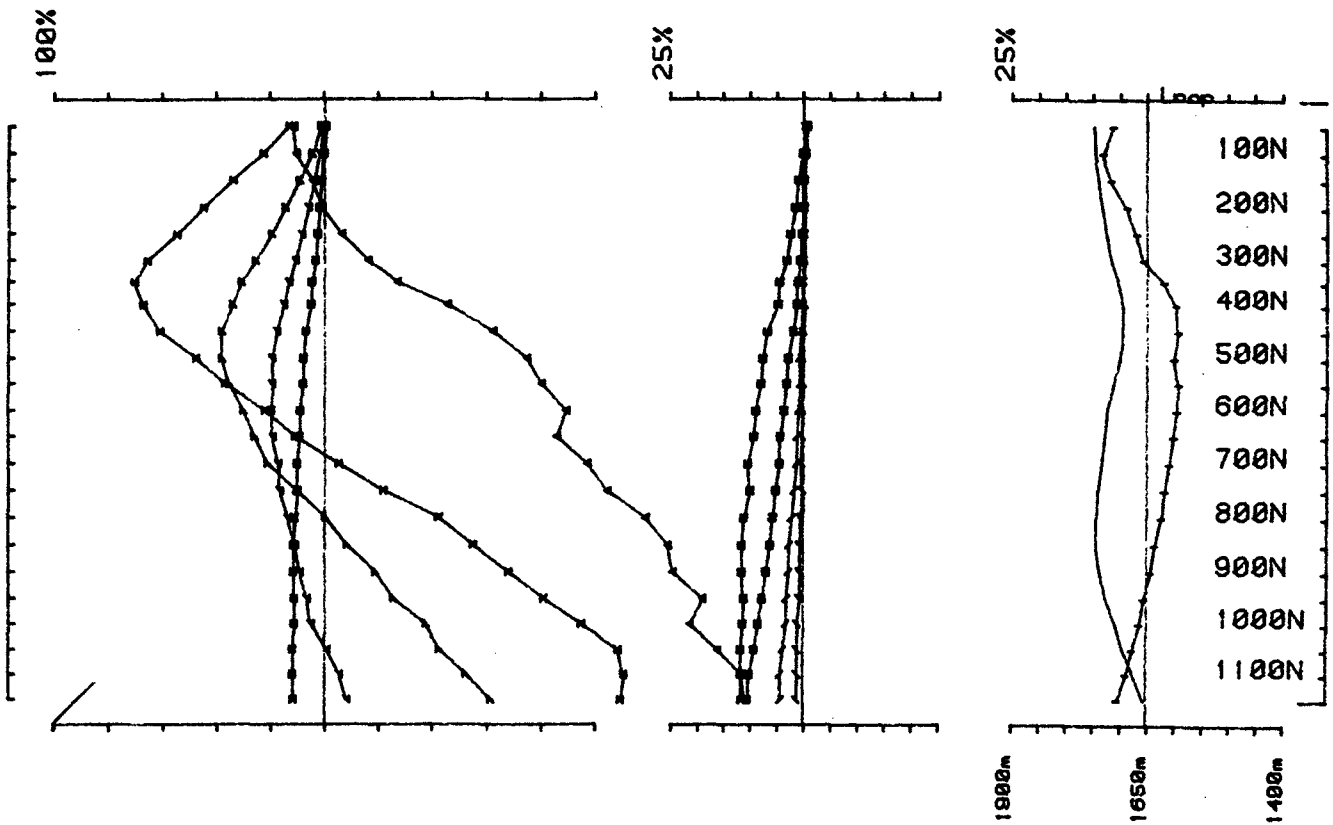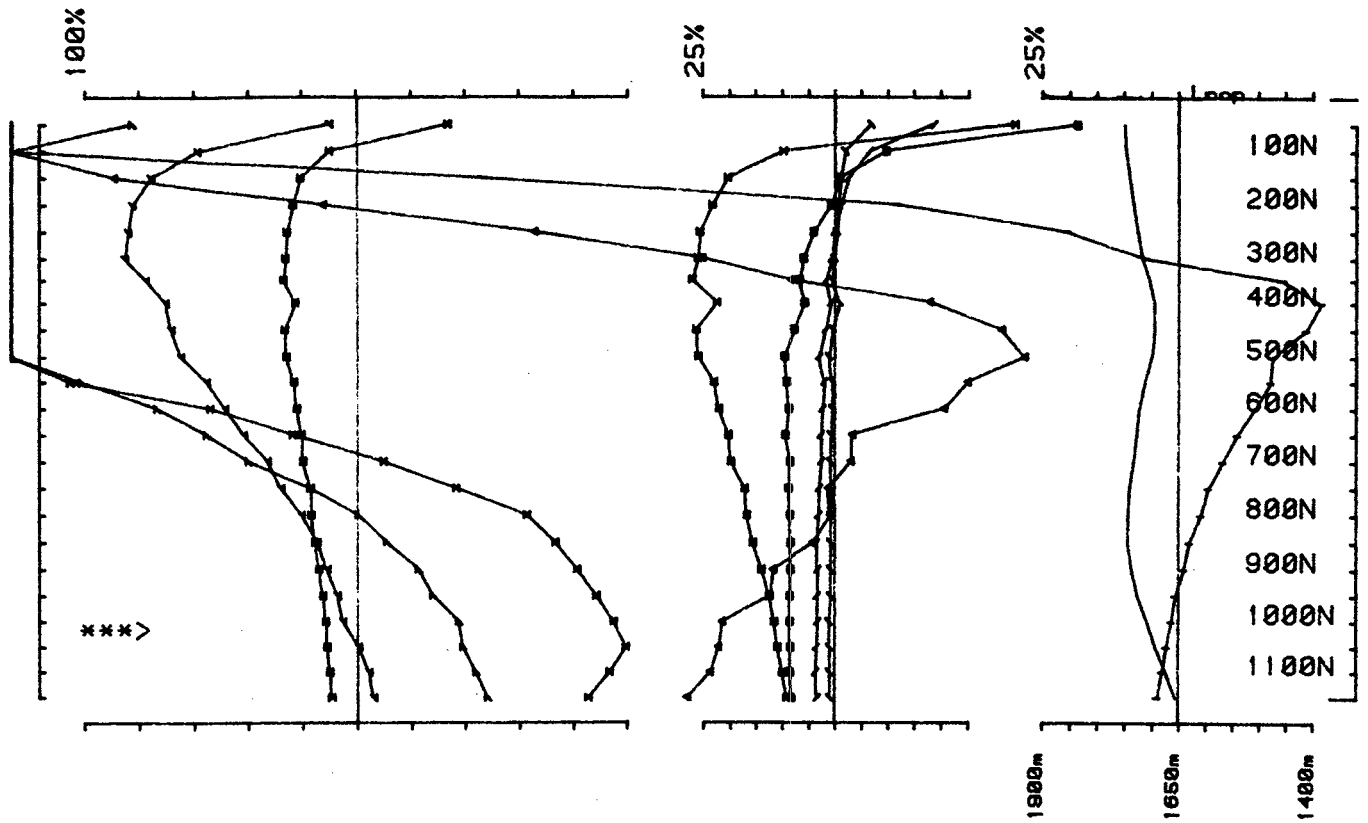DS 34b

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 6   Line 10 component Hz secondary Ch I normalized   Ch I reduced

DS 35

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 6   Line 10 component Hz secondary   Ch I normalized   Ch I reduced

DS35a

1000m
1770m
1000m

1200E
1100E
1000E
900E
Culvert
800E
Culvert 700E
Road
600E
Road 500E
400E
300E
200E
100E
Loop

40%

25%

25%

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 6   Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS36

xxx>

Right axis labels (top to bottom): 1200E, 1100E, 1000E, 900E, Culvert, 800E, 700E, Road, 600E, Road 500E, 400E, 300E, 200E, 100E, Loop

Top right scale labels: 1800m, 1775m, 1650m

Left panel bottom label: 100%
Middle panel bottom label: 25%
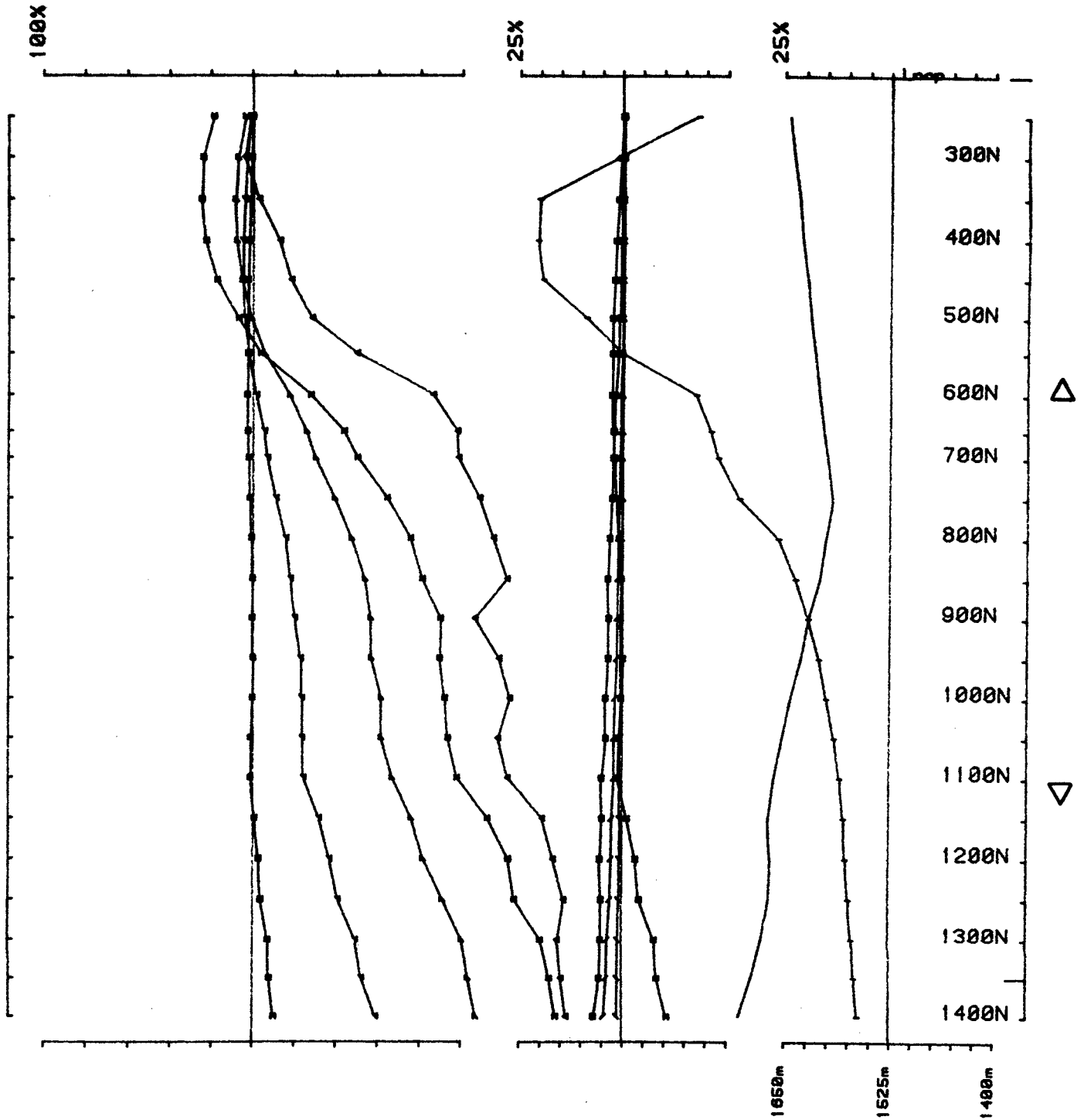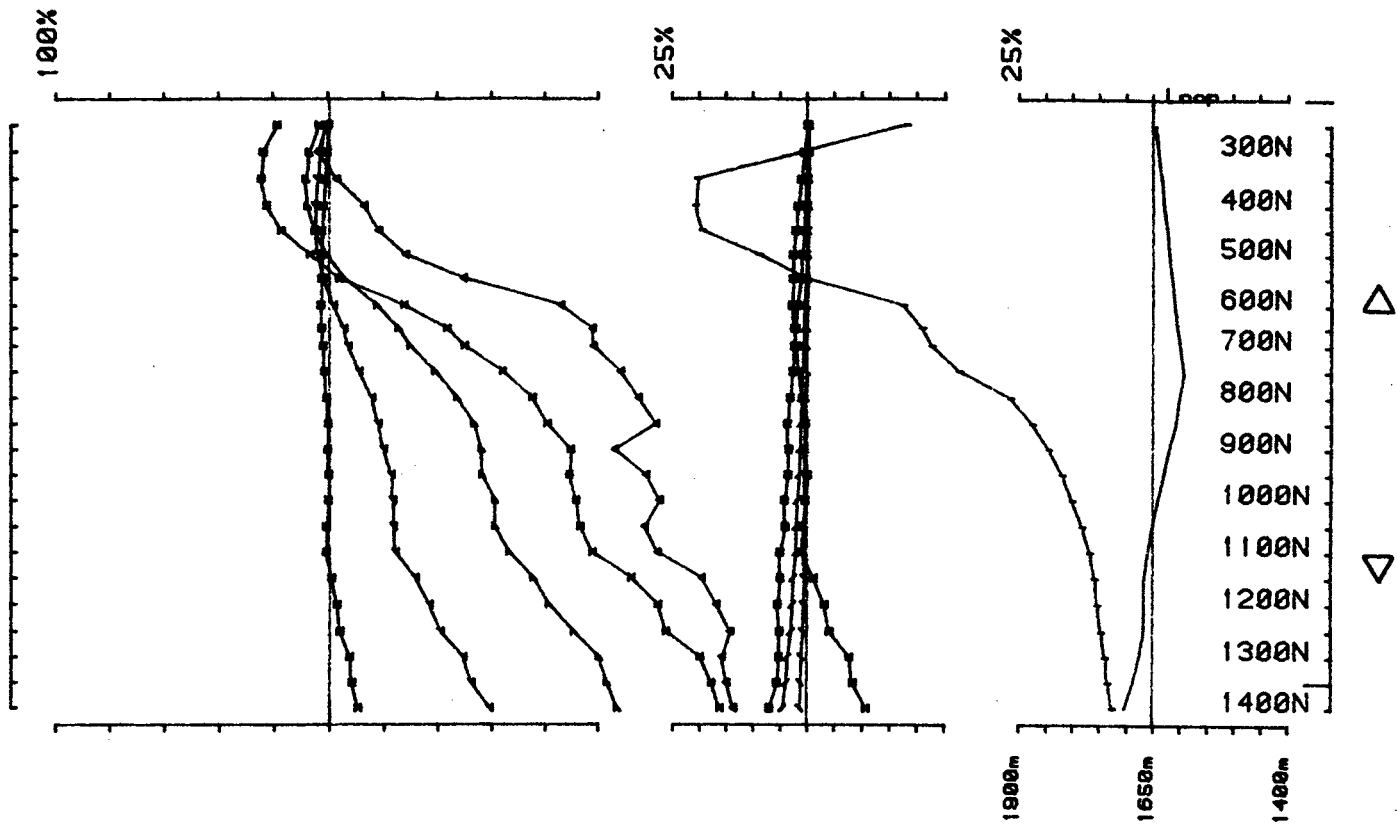Right panel bottom label: 25%
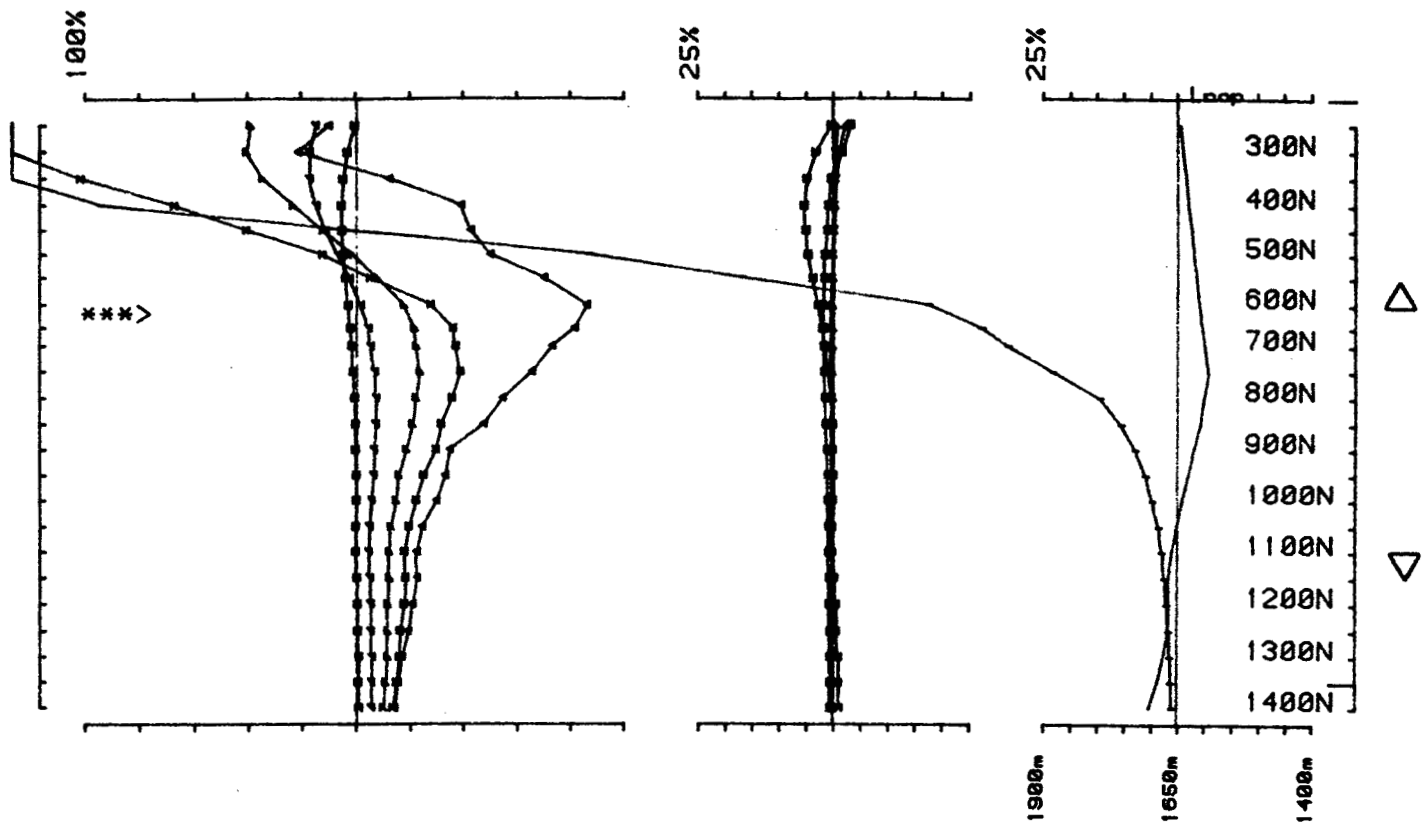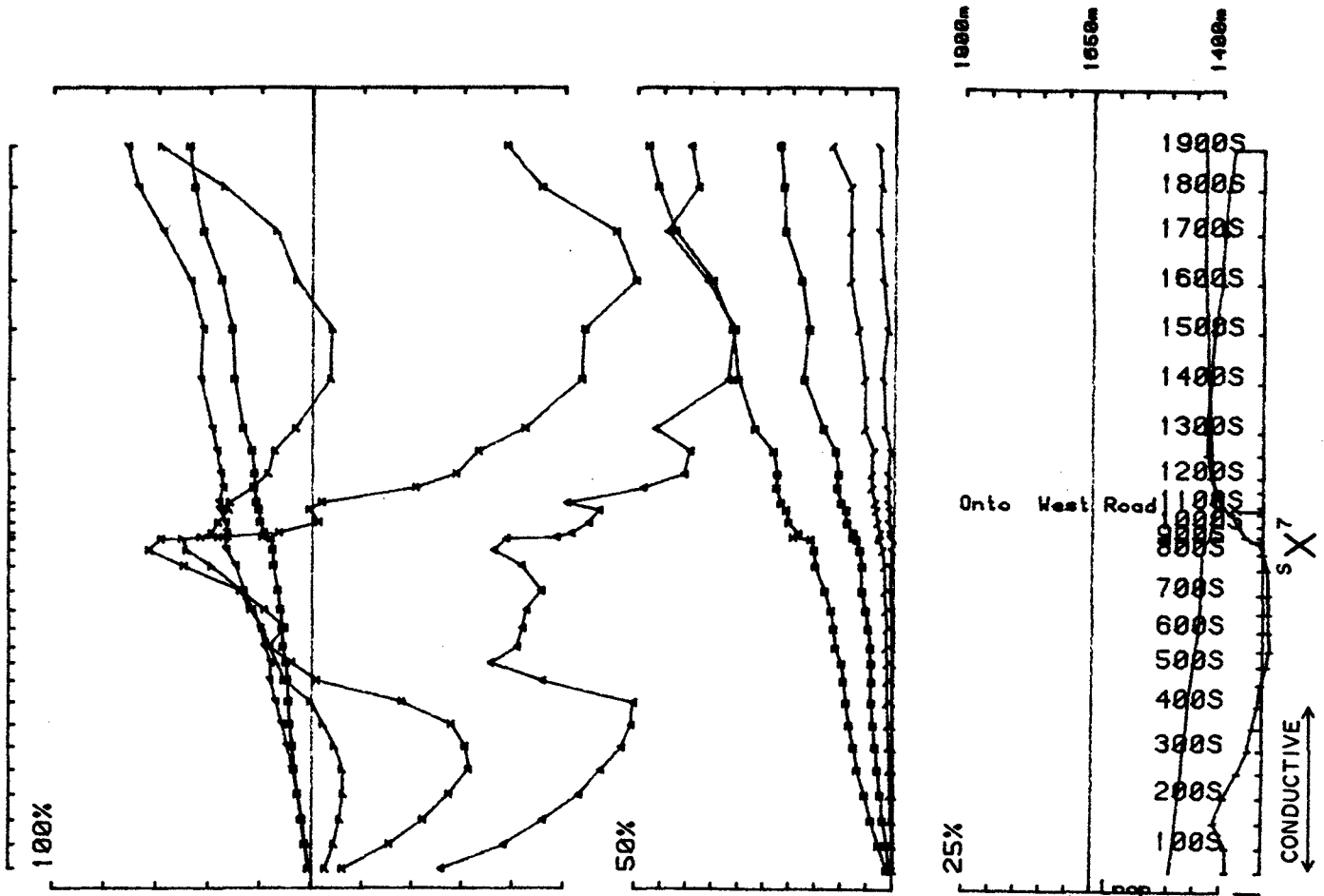
Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 6   Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS36a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 6   Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS 37

100X   45X   100X

100N
200N
300N
400N
500N
600N
700N
800N
900N
1000N
1100N
1200N
1300N

1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 6   Line 30 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS37a

***>

140% 25% 200%

N
1500V
1700
1800
1900
2000
3000
2800
2200
3500
2600
3700
3900
4000
4100
4500
4700
4800
4900W

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974   D.S. 38a

Locono 6   Line 32 component Hz secondary   Ch I normalized   Ch I reduced

100% 25% 25%

100N
200N
300N
400N
500N
600N
700N
800N
900N
1000N
1100N

1000m 1650m 1400m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 7 Line 10 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS39

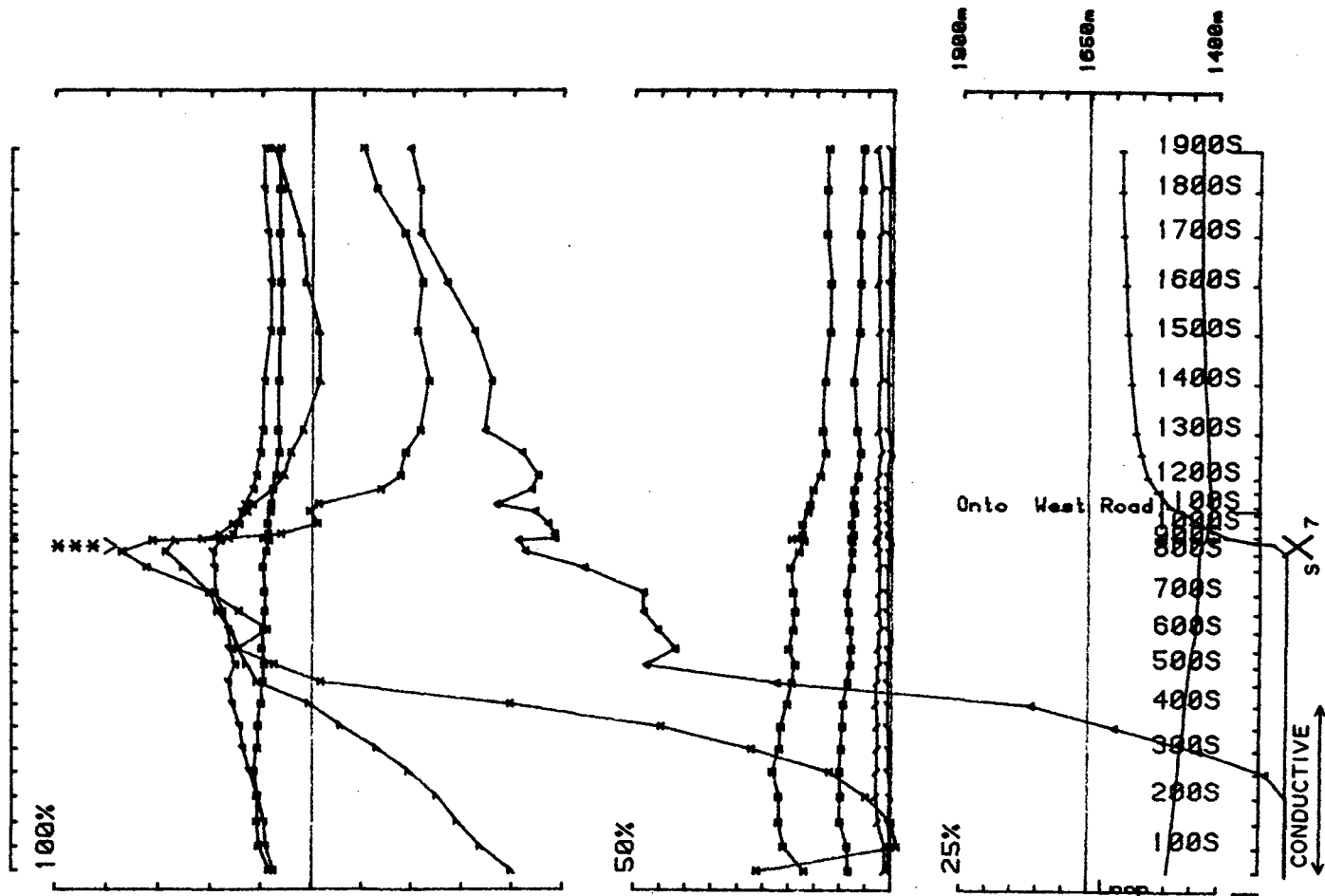100%   25%   25%

***>

100N
200N
300N
400N
500N
600N
700N
800N
900N
1000N
1100N

1900m 1650m 1400m

Area SHA SOUTH COMINCO operator IJ JV freq(hz) 30.974
Loopno 7 Line 10 component Hz secondary Ch 1 normalized Ch 1 reduced

DS39a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

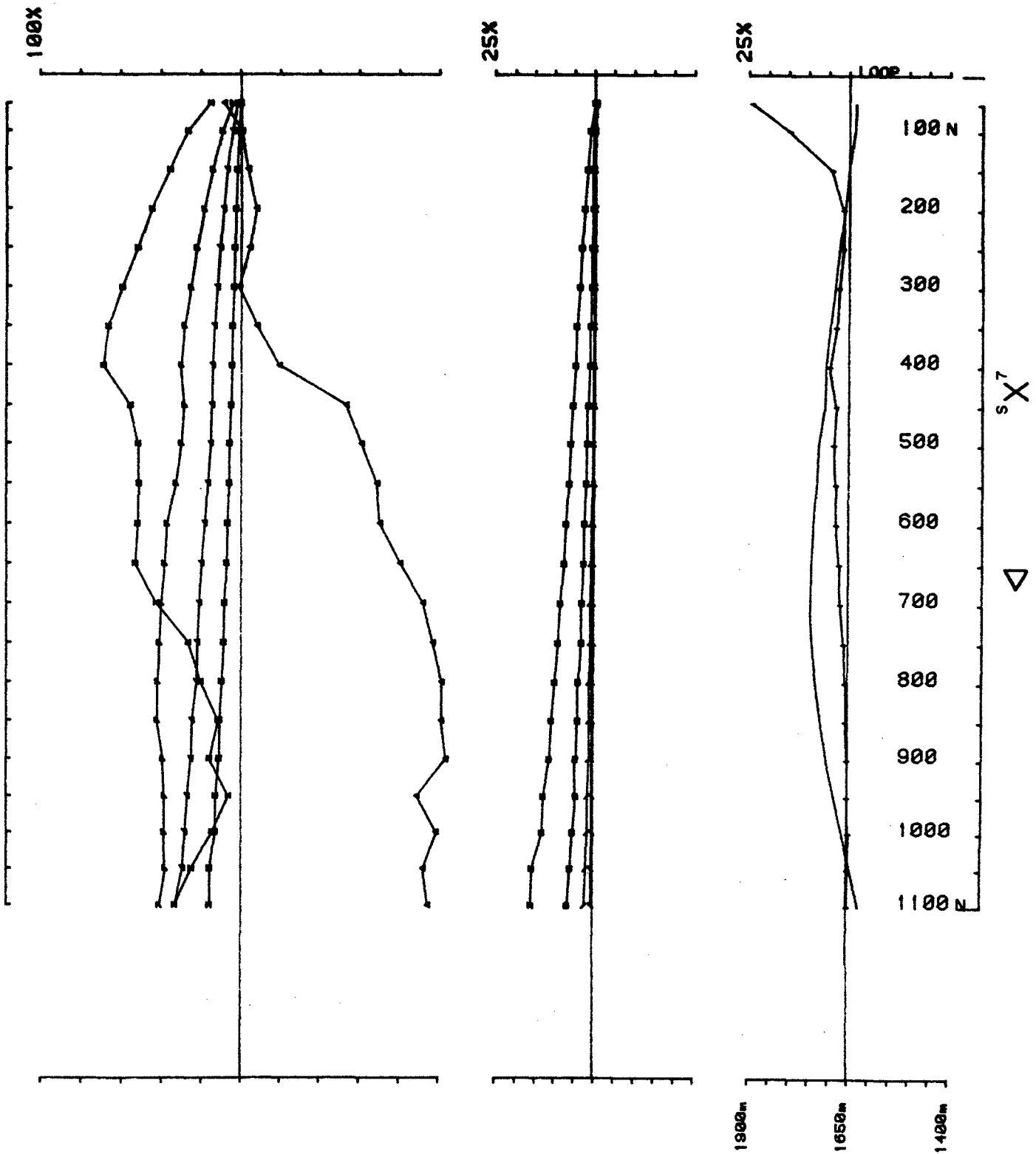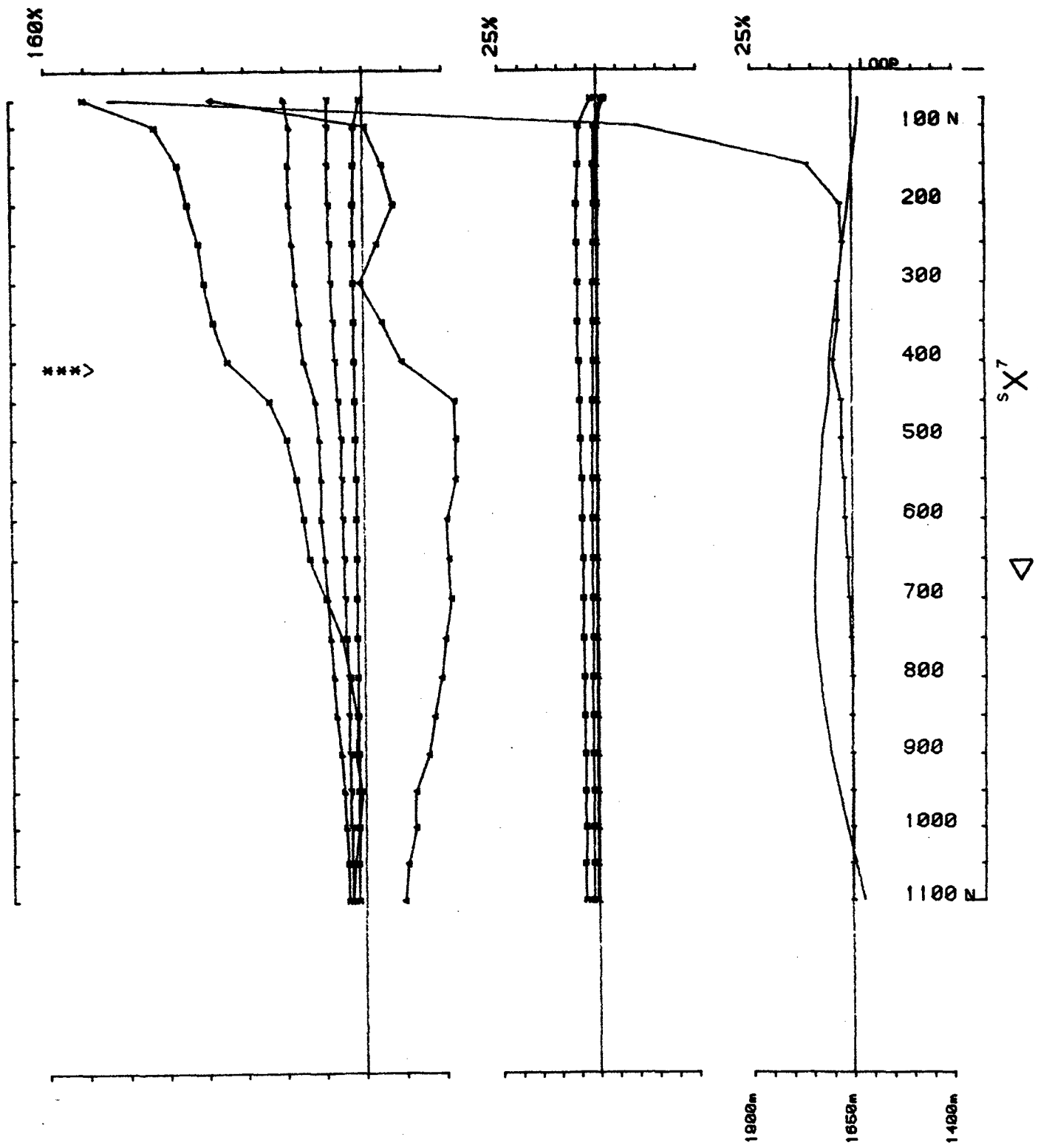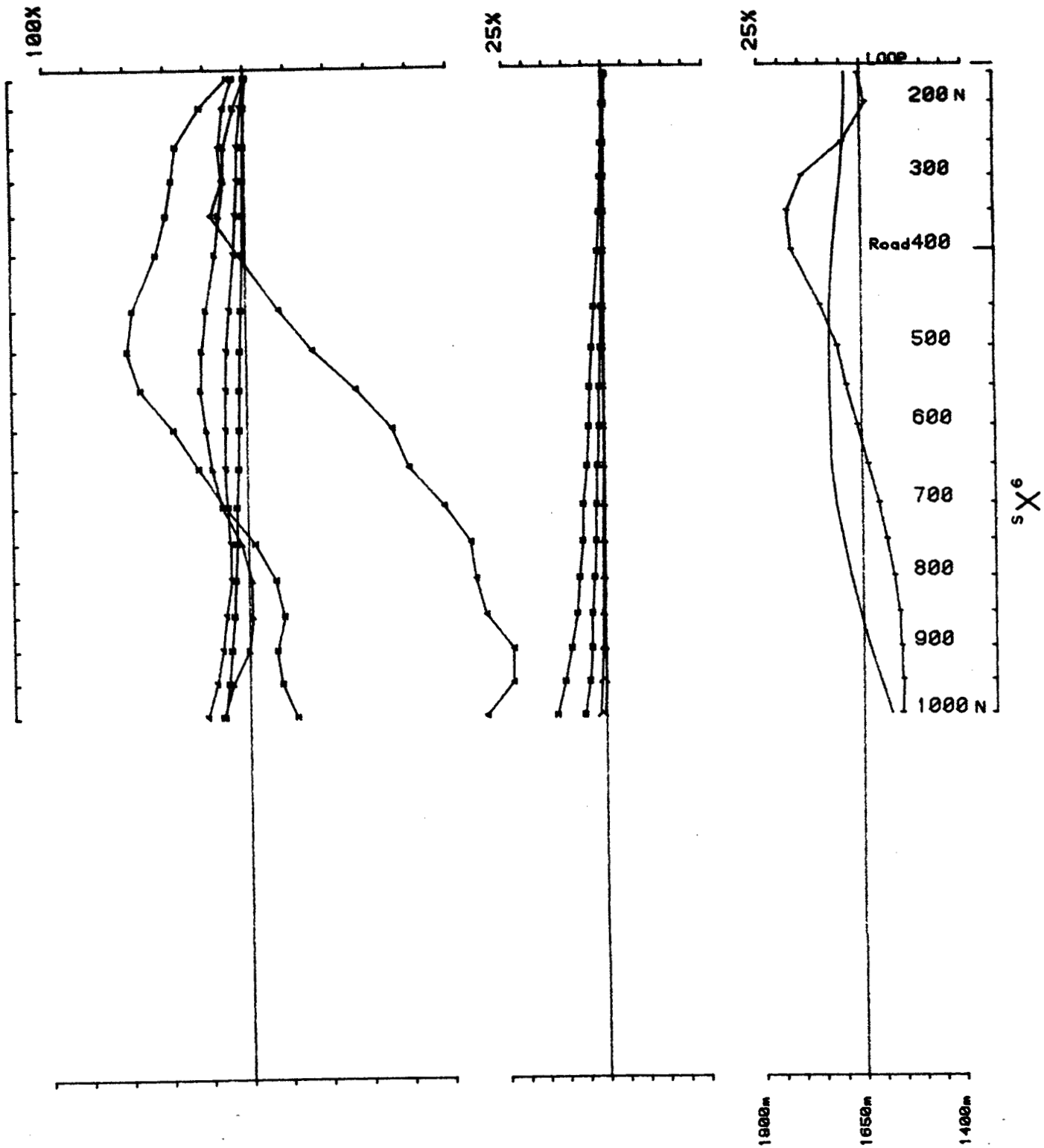Loopno 7   Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS40

100%   25%   25%

300N
400N
500N
600N   △
700N
800N
900N
1000N
1100N   ▽
1200N
1300N
1400N

1900m   1650m   1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974
Loopno 7 Line 20 component Hz secondary   Ch I normalized   Ch I reduced

DS 40a

100% 25% 25%

***>

300N
400N
500N
600N △
700N
800N
900N
1000N
1100N ▽
1200N
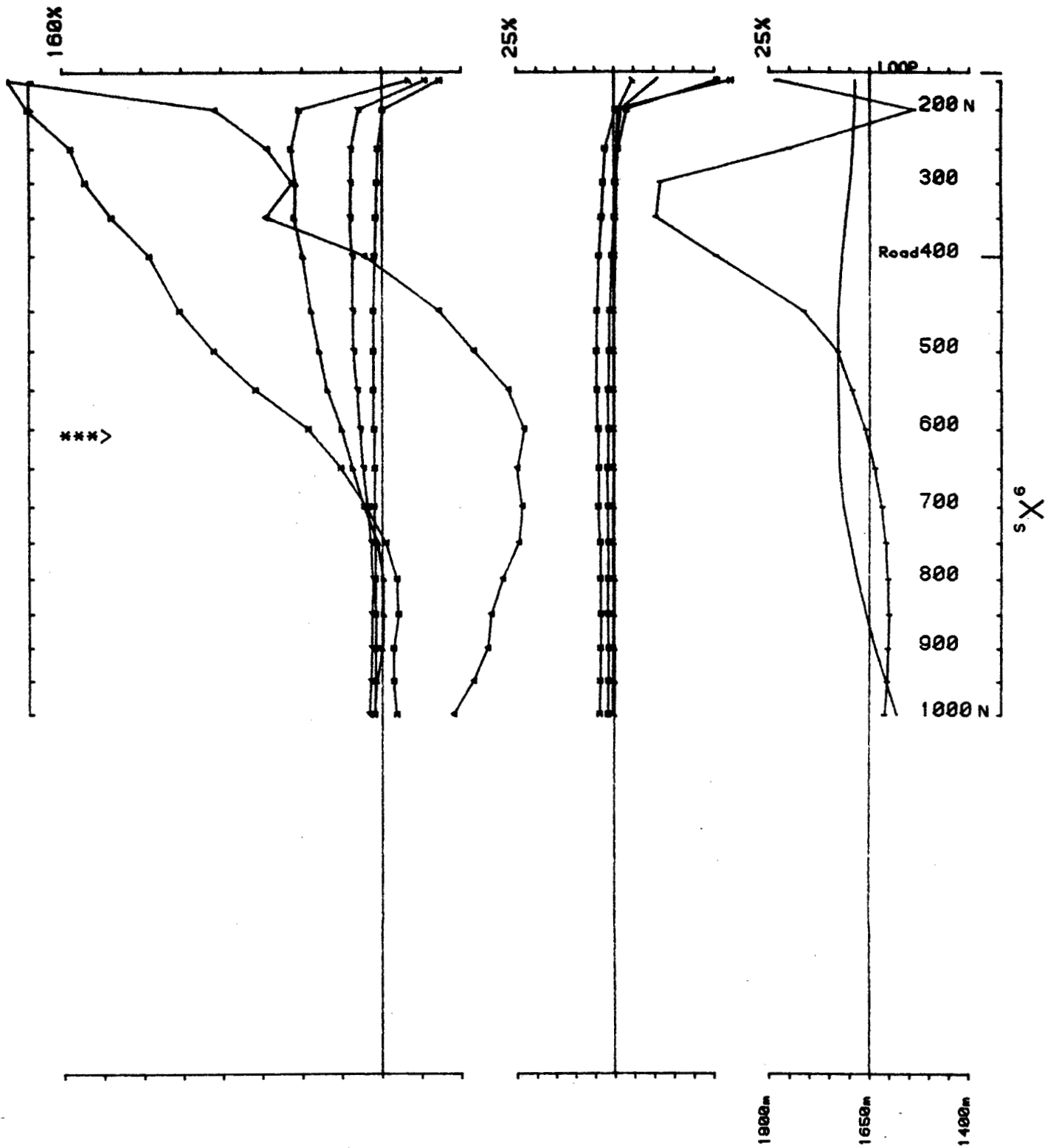1300N
1400N

1900m 1650m 1400m

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974
Loopno 7 Line 20 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 40b

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 7 Line 30 component Hz secondary   Ch I normalized   Ch I reduced
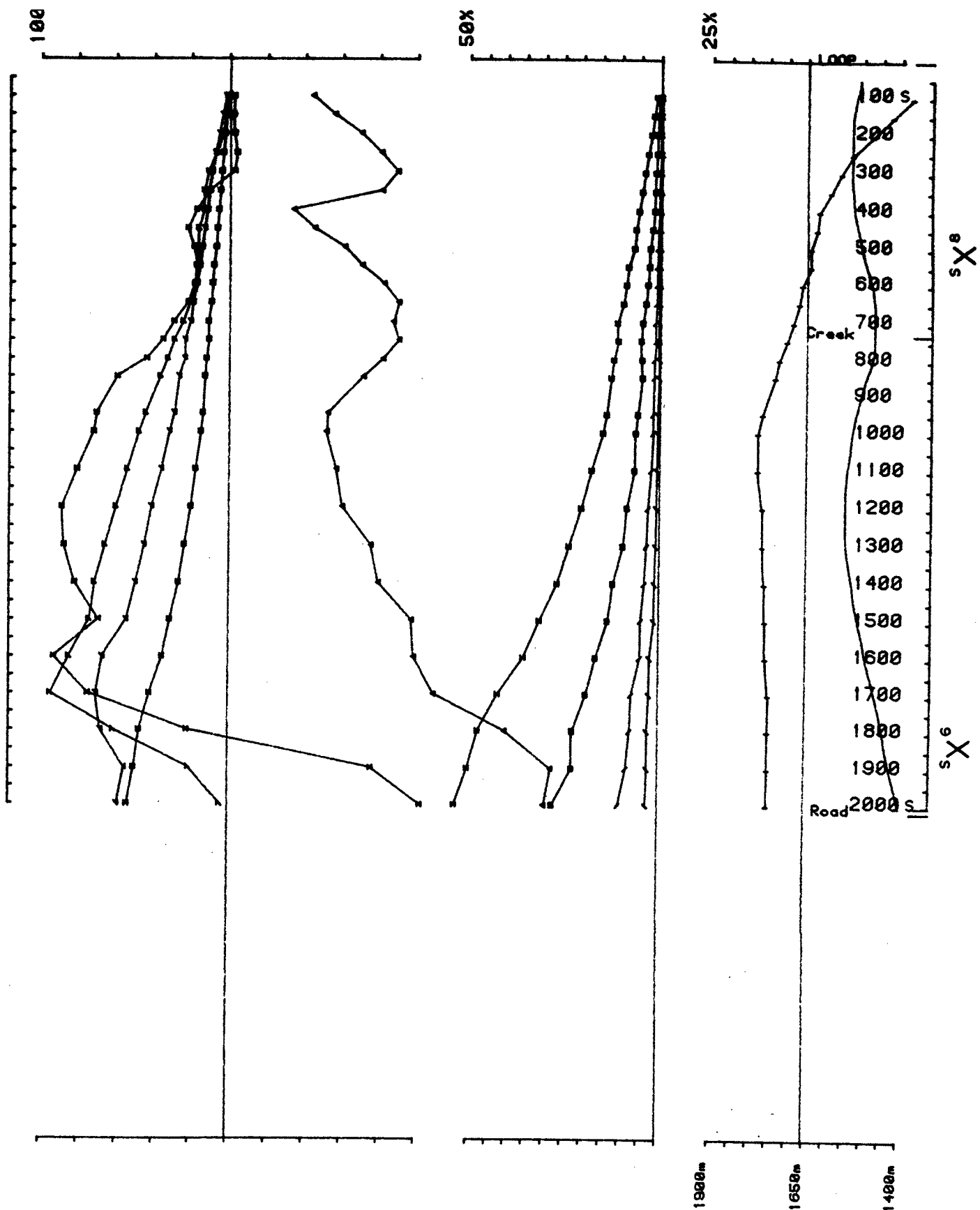
DS41

Area SHA SOUTH   COMINCO   operator IJ JV freq(hz) 30.974

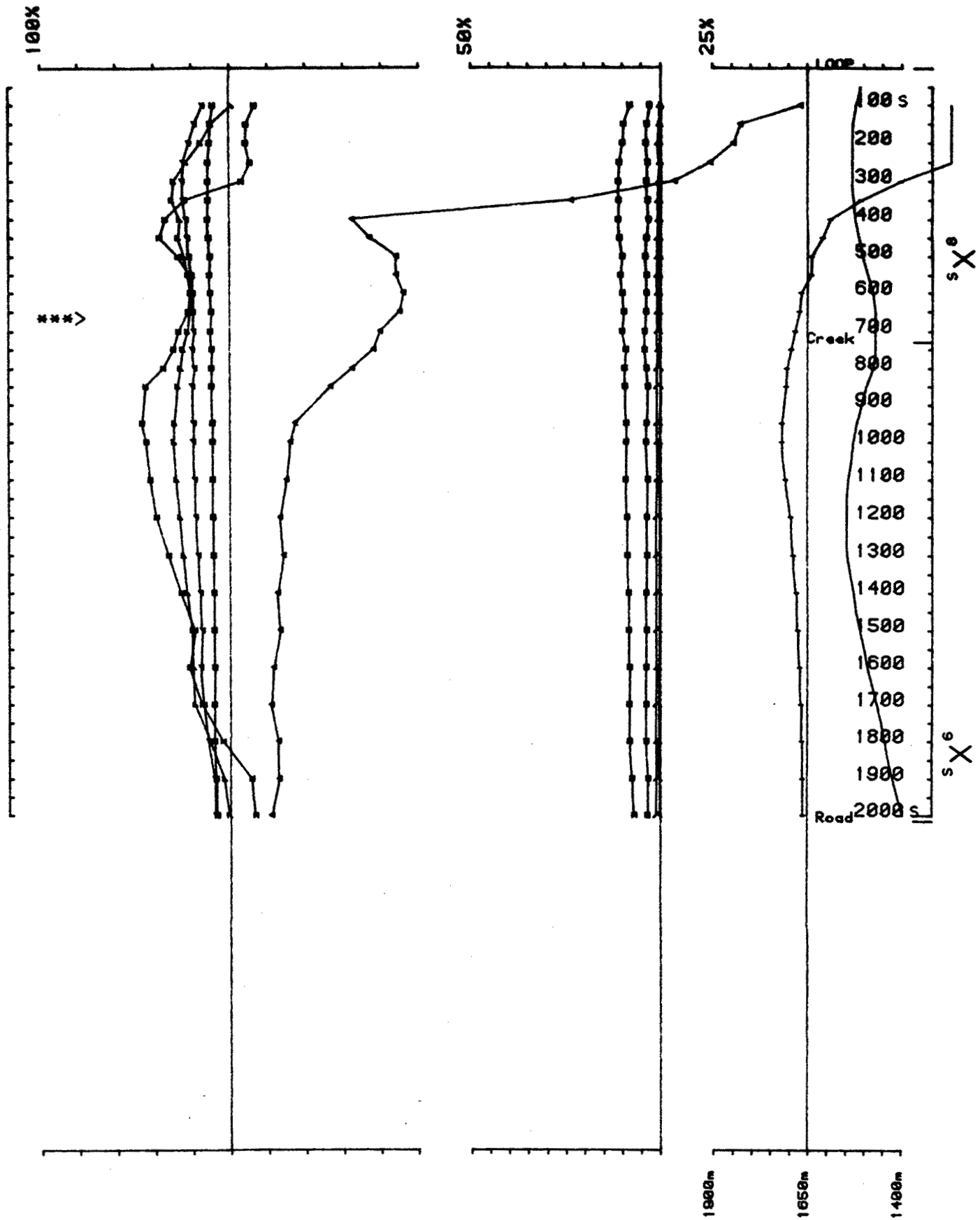Loopno 7 Line 30 component Hz secondary   Ch I normalized   Ch I reduced

DS41a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 7 Line 40 component Hz secondary   Ch I normalized   Ch I reduced

DS42

160X

25X

25X

***>

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 7 Line 40 component Hz secondary   Ch I normalized   Ch I reduced
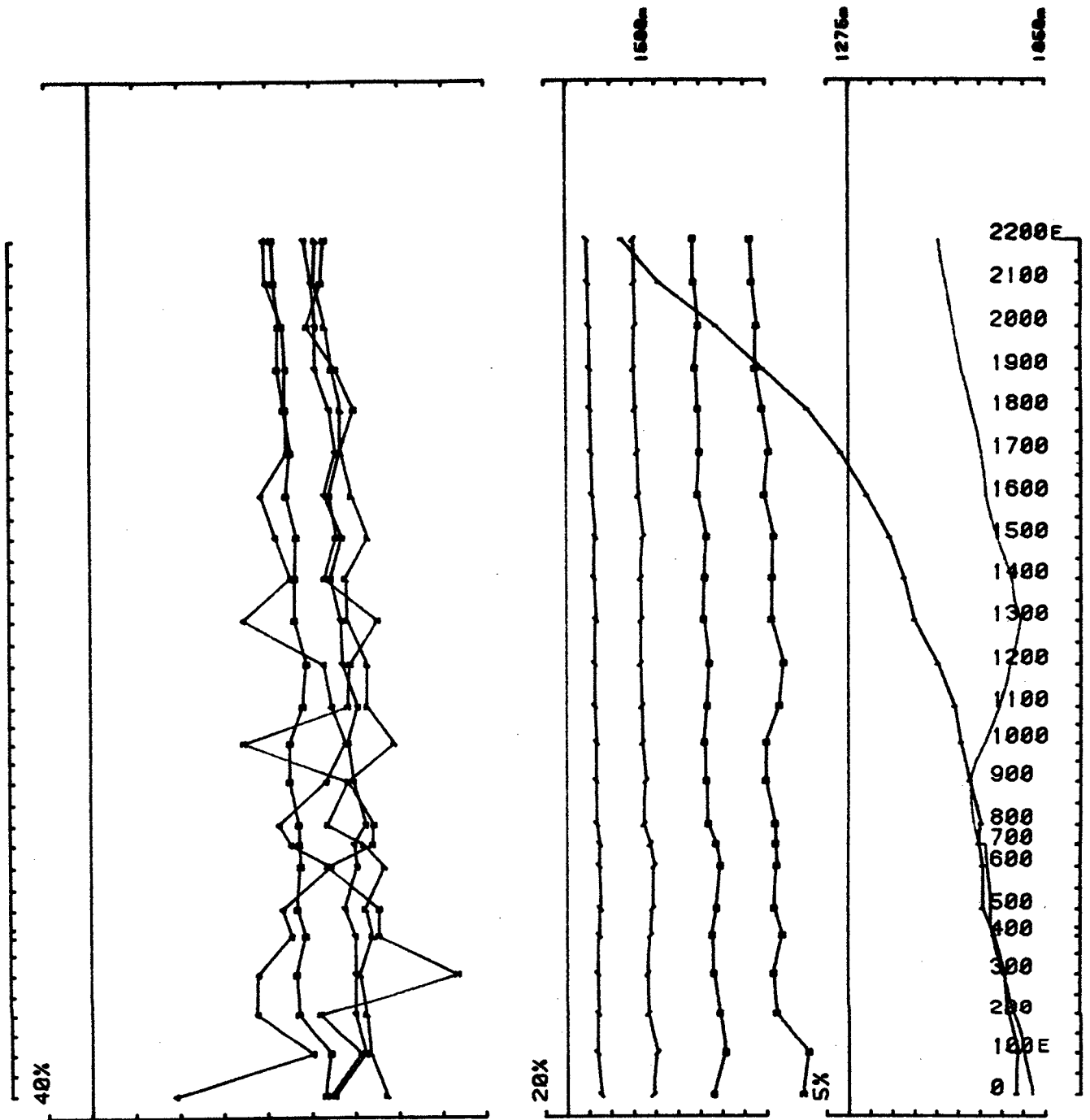
DS42a

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno. 7 Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS43

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

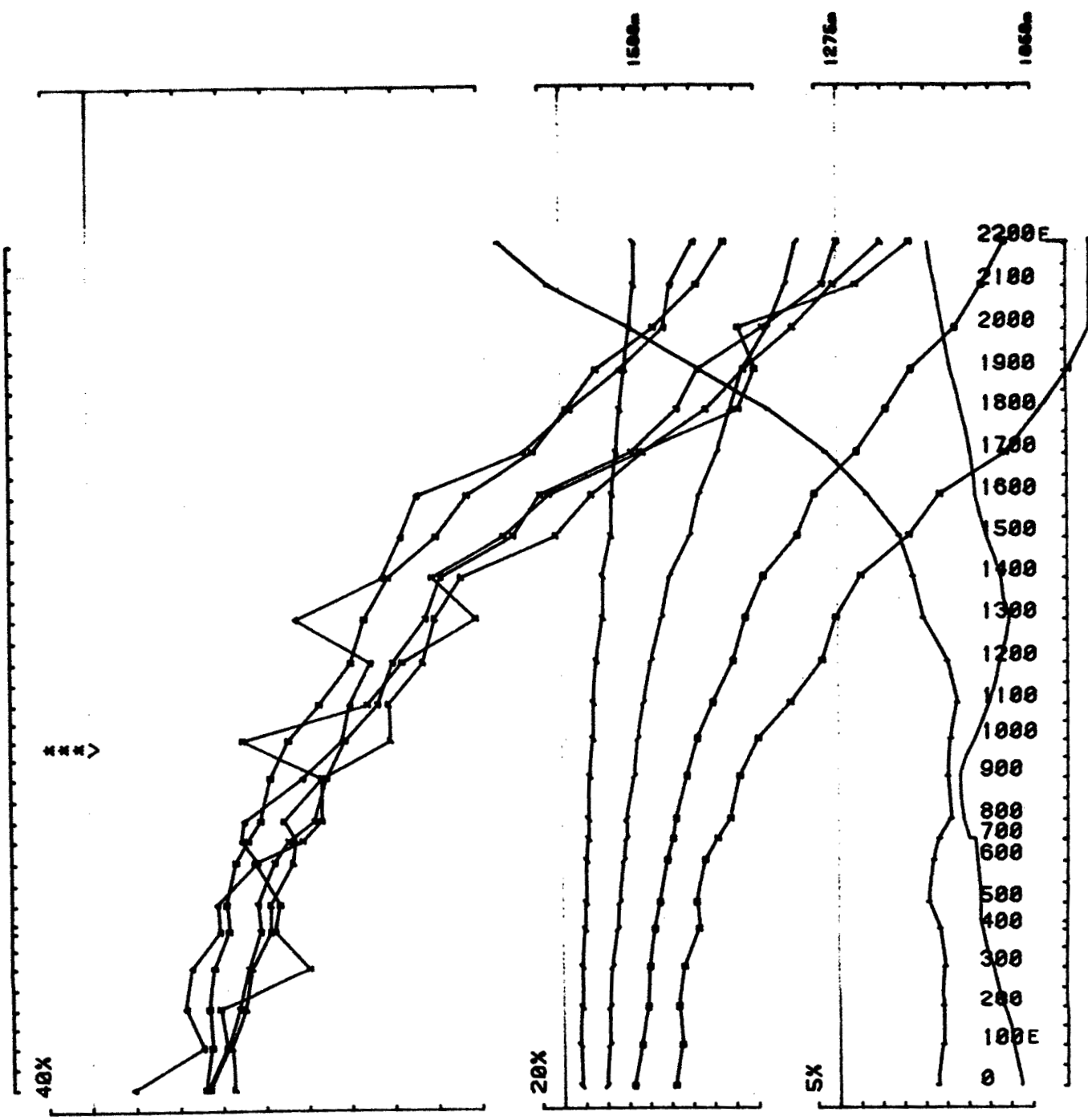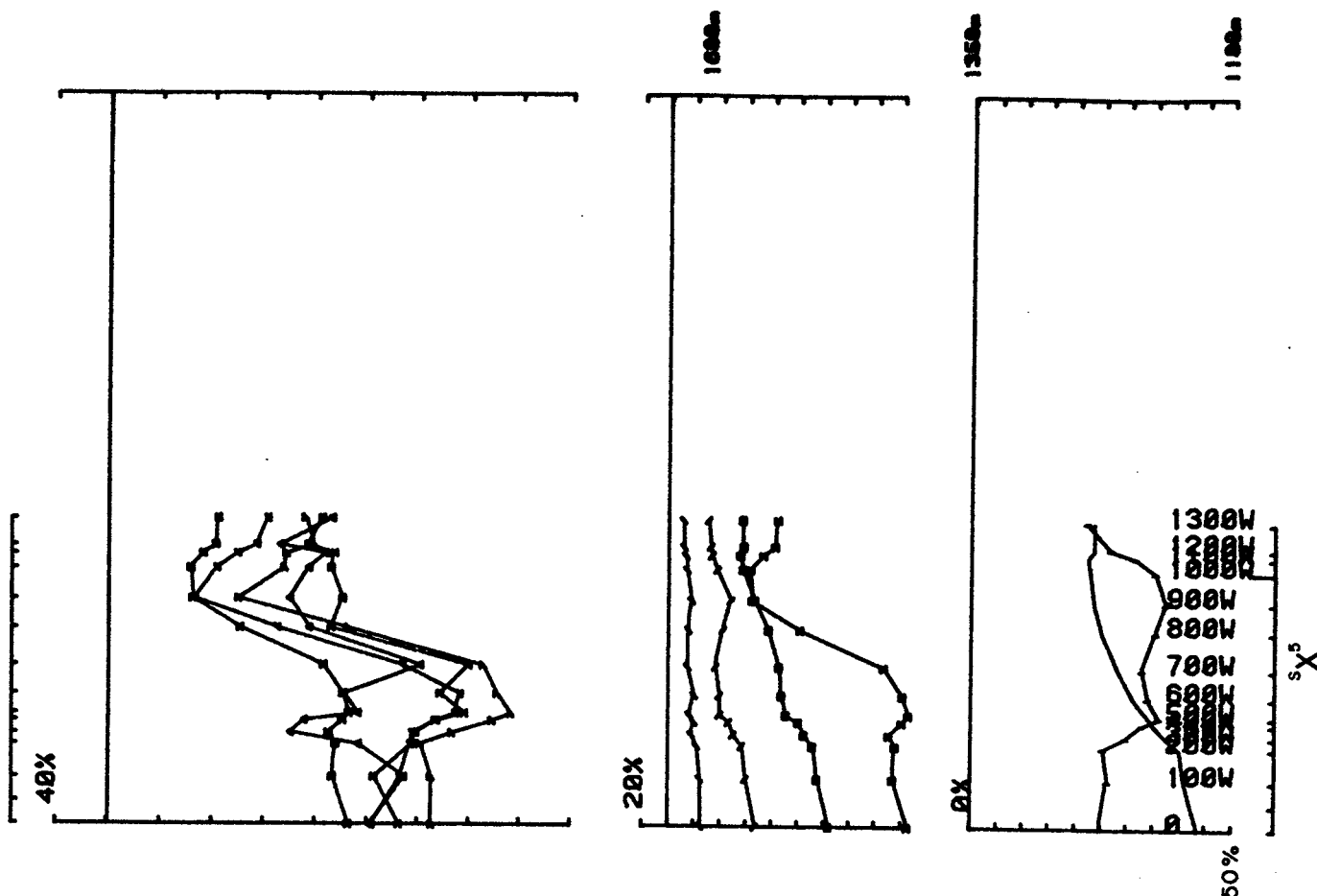Loopno 7 Line 50 component Hz secondary   Ch I normalized   Ch I reduced

DS 43 a

DS 44

100%

50%

25%

LOOP

100 s
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000 s

***>

Creek

Road

X^8_s

X^6_s

1900m

1650m

1400m

Area SHA SOUTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 7 Line 60 component Hz secondary   Ch 1 normalized   Ch 1 reduced

DS 44a

Area **SHA NORTH**   **COMINCO**   operator **IJ JV**   freq(hz) **30.974**

Loopno 8   Line 10   component **Hz** secondary   Ch 1 normalized   Ch 1 reduced
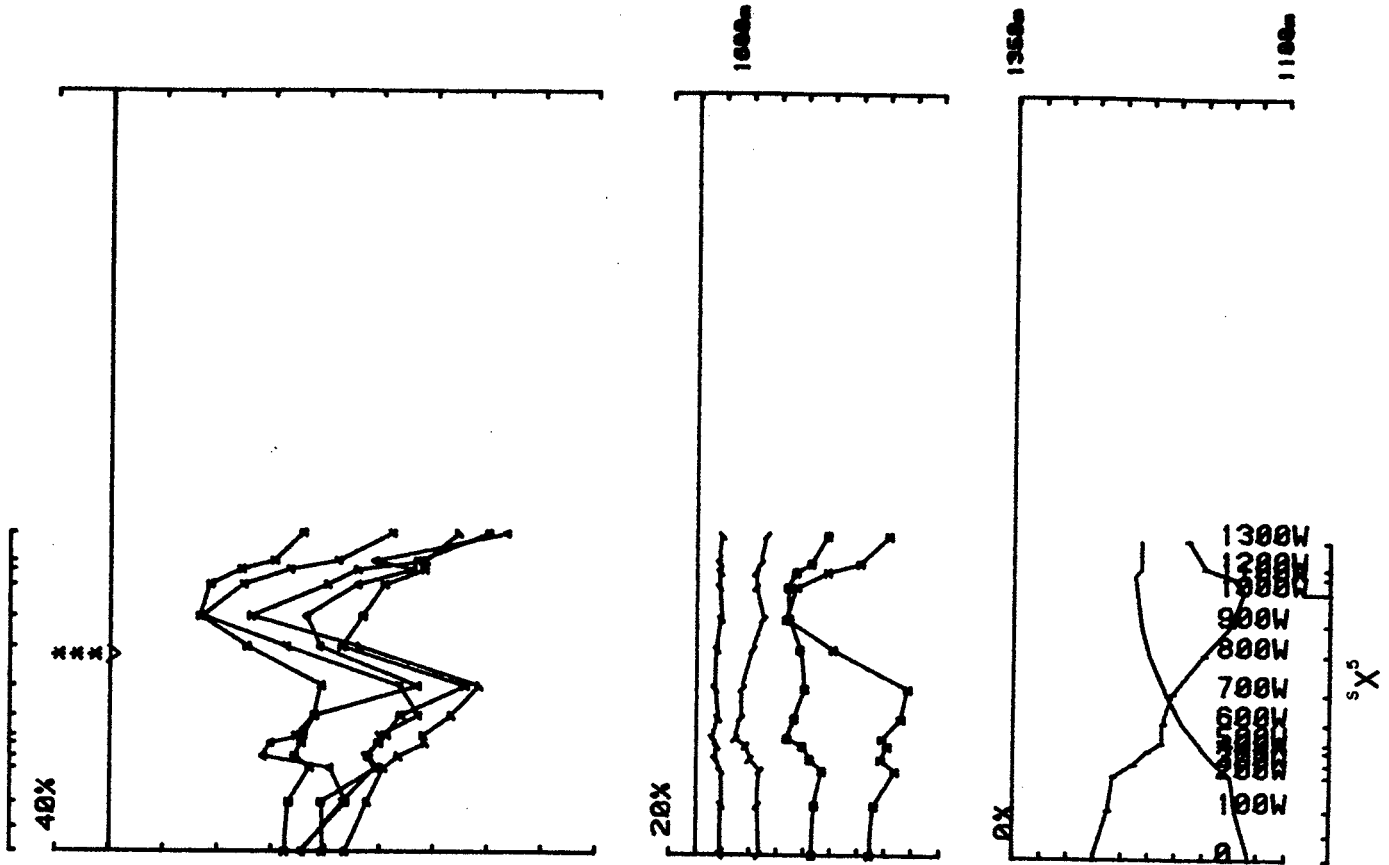
Area SHA NORTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 8   Line 10   component Hz secondary   Ch I normalized   Ch I reduced
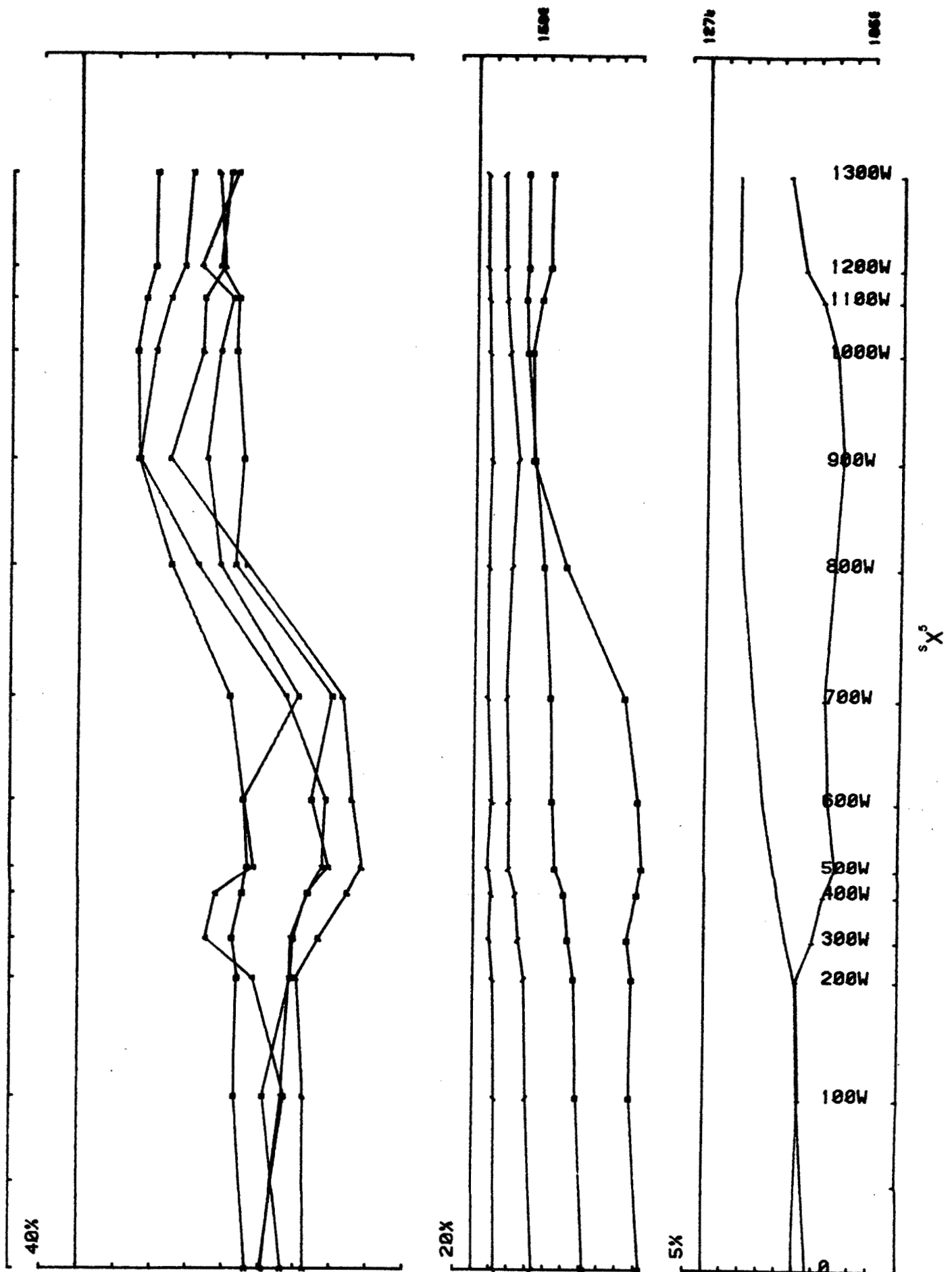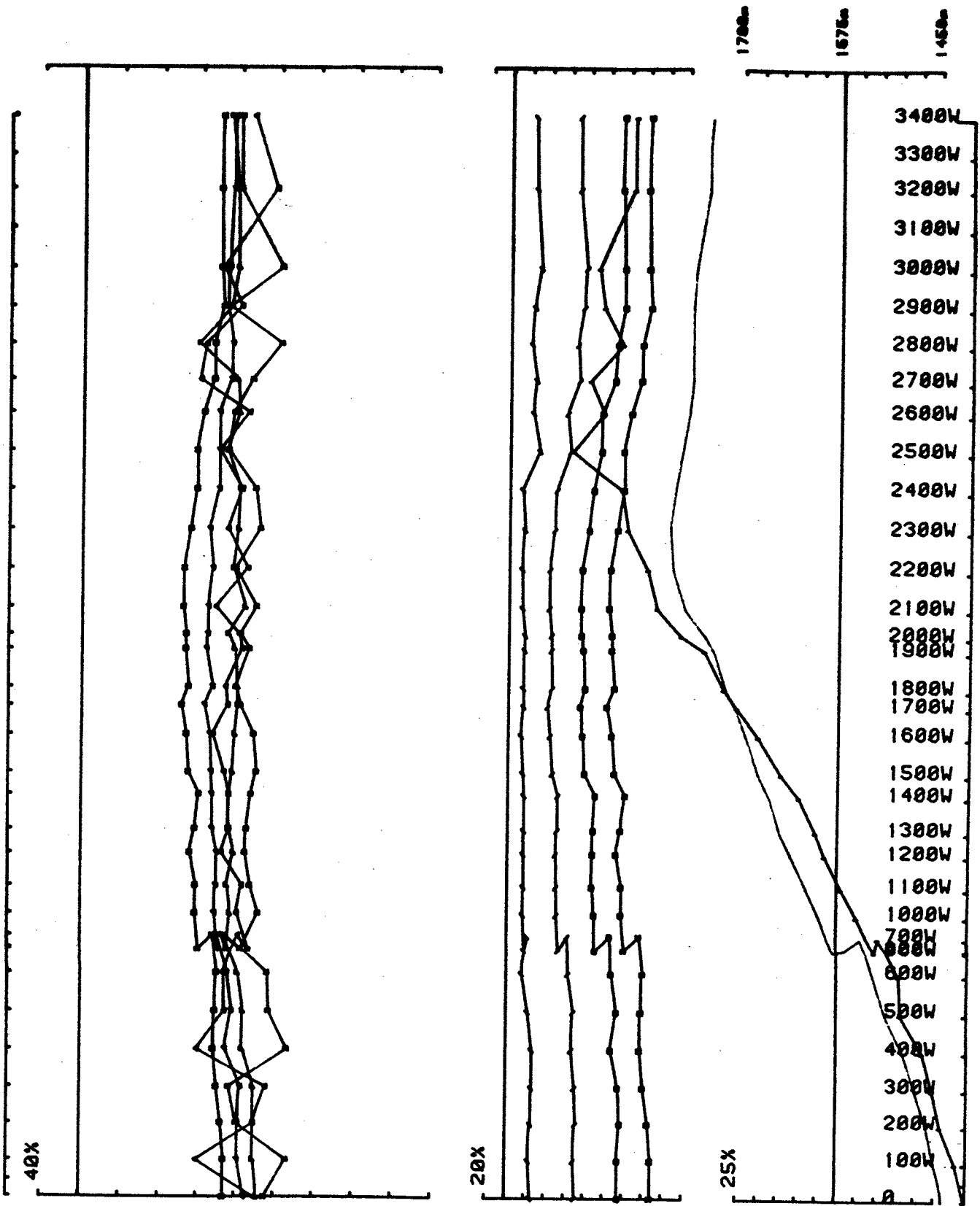
45a

Area SHA NORTH　　COMINCO　　operator IJ JV　　freq(hz) 30.974

Loopno 8　　Line 20　　component Hz secondary　Ch I normalized　Ch I reduced

Area SHA NORTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 8   Line 20   component Hz secondary   Ch 1 normalized   Ch 1 reduced

1500

127b

1000

1300W

1200W
1100W

1000W

900W

800W

$_sX^s$

700W

600W

500W
400W

300W

200W

100W

40%

20%

5%

0

Area SHA NORTH   COMINCO   operator IJ JV   freq(hz) 30.974   D.S. 46b

Loopno 8   Line 20   component Hz secondary   Ch 1 normalized   Ch 1 reduced
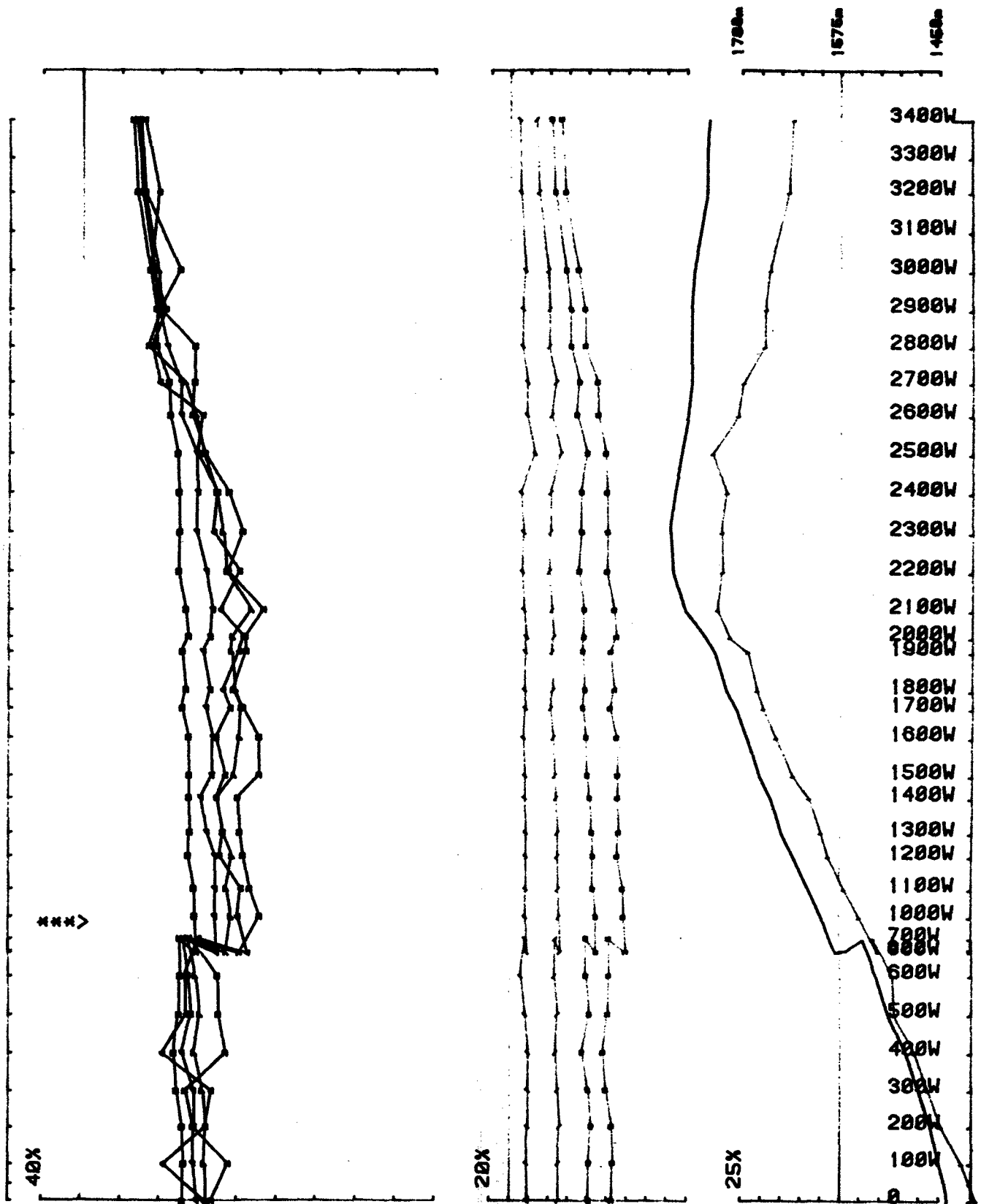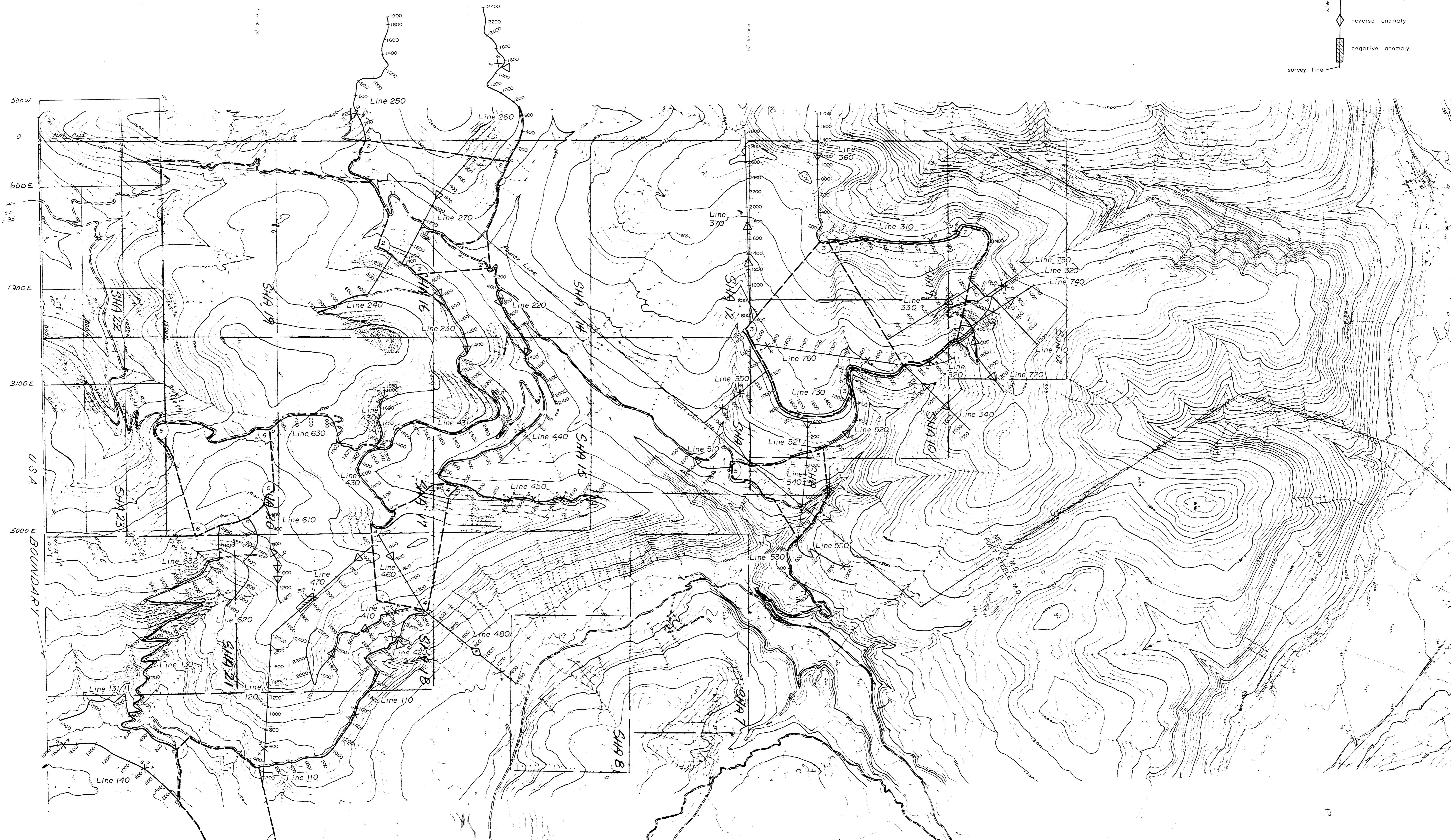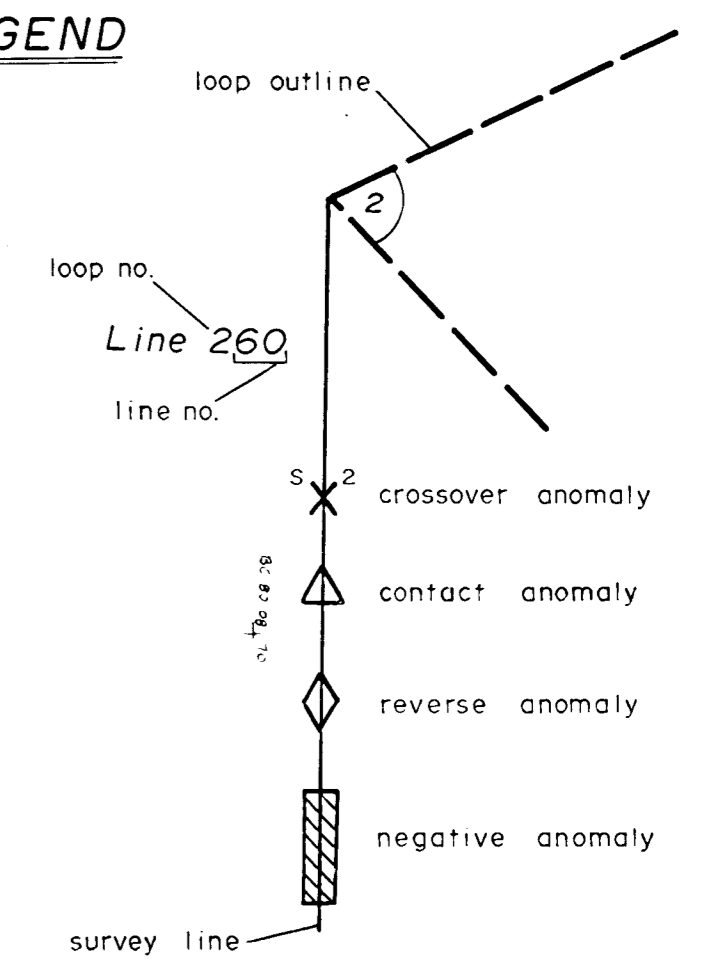
Area SHA NORTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 8   Line 30   component Hz secondary   Ch I normalized   Ch I reduced
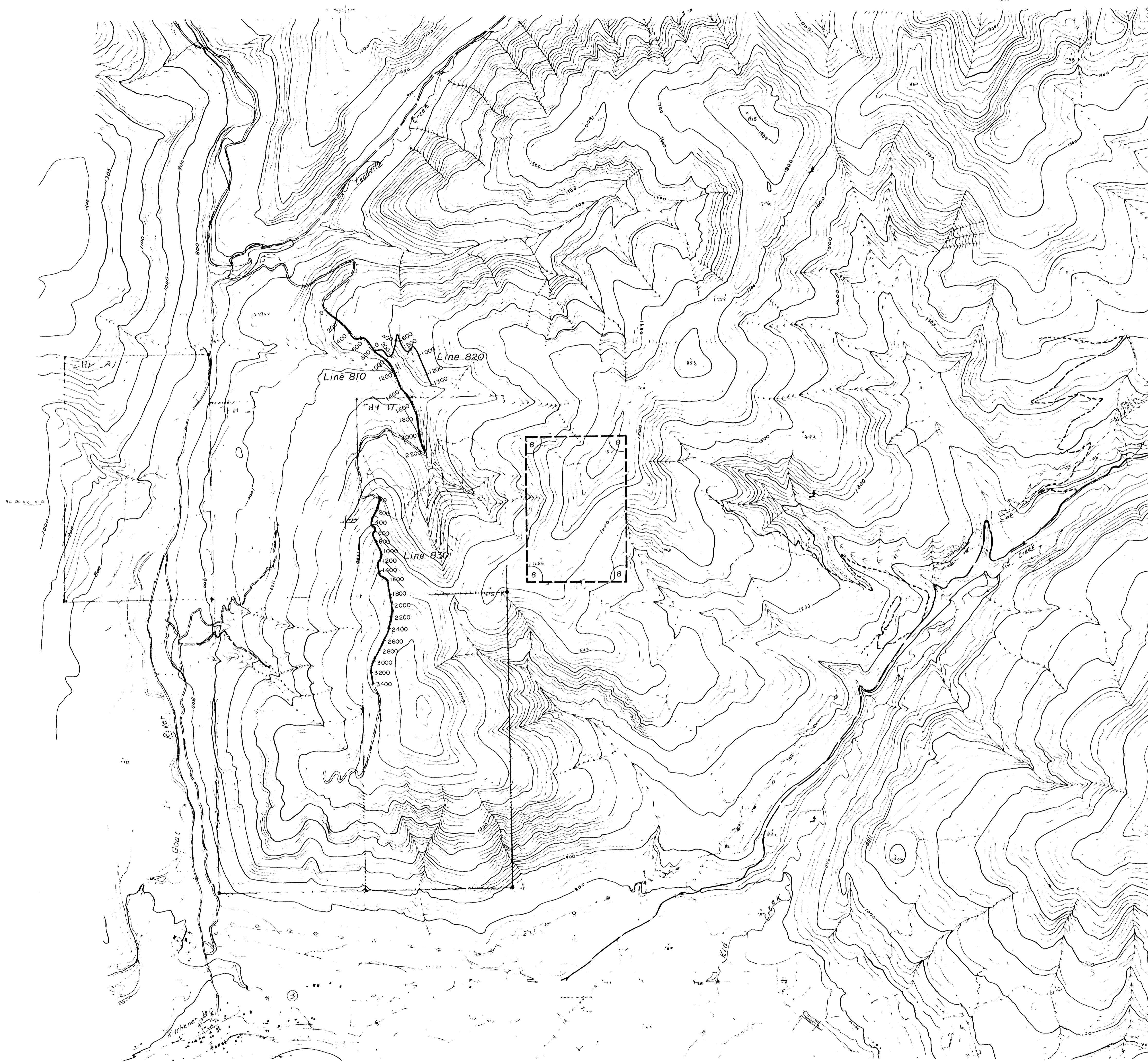
Area SHA NORTH   COMINCO   operator IJ JV   freq(hz) 30.974

Loopno 8   Line 30   component Hz secondary   Ch I normalized   Ch I reduced

47a

SHA PROPERTY
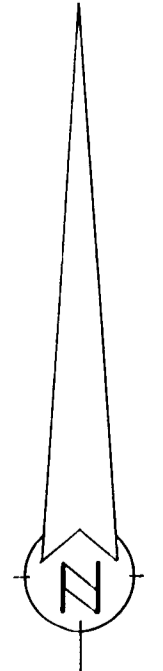
UTEM COMPILATION MAP
Sha South Area

Drawn by: Traced by:
Revised by: Date
Scale 1:20,000 Date: Jan. '88 Plate
330-87-2

17,044

L BRANCH
ENT REPORT

U.S.A. BOUNDARY

Line 250
Line 260
Line 270
Line 240
Line 230
Line 220
Line 210
Line 310
Line 360
Line 370
Line 350
Line 330
Line 340
Line 320
Line 350
Line 740
Line 720
Line 710
Line 730
Line 760
Line 510
Line 520
Line 521
Line 530
Line 540
Line 550
Line 440
Line 450
Line 480
Line 430
Line 460
Line 410
Line 470
Line 610
Line 630
Line 650
Line 620
Line 130
Line 120
Line 110
Line 131
Line 140

SHA 22
SHA 19
SHA 16
SHA 14
SHA 12
SHA 15
SHA 24
SHA 23
SHA 31
SHA 8
SHA 17
SHA 7

Line 820

Line 810

Line 830

800
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400

GEOLOGICAL BRANCH
ASSESSMENT REPORT

17,044

LEGEND

loop no.

Line 810

survey line

line no.

loop outline

8

N

SHA PROPERTY	
Drawn by:	Traced by:
Revised by	Date	Revised by	Date

UTEM COMPILATION MAP
Sha North Area

| Scale: 1:20,000 | Date: Jan. '88 | Plate: 330-87-3 |

FORM 210-088C