REPORT ON THE MAXMIN II EM SURVEY

ON THE

GARY CLAIM GROUP - NORTH AND CENTRAL GRIDS

CLAIMS: Net 1, 58Fr, 59Fr, 61Fr, 77, 78, 80
Gary 1-3, 5-11, 13-21, 23, 25-27, 58

Mayo Mining District, Yukon Territory
Macmillan Pass Area, N.T.S. 105-O-1
Lat. 63°04'N Long. 130°15'W

WORK PERIOD: June 8 - July 6, 1977

FOR

OGILVIE JOINT VENTURE

CLAIMS HELD IN TRUST BY

BRITISH NEWFOUNDLAND EXPLORATION LIMITED
704 - 602 West Hastings Street
Vancouver, B. C.

BY

John E. Betz - John Betz Limited
Toronto, Ontario

Supervised by: O. S. Hairsine, P.Eng.
CORDILLERAN ENGINEERING LIMITED
1418 - 355 Burrard Street
Vancouver, B.C. V6C 2G8

NOVEMBER, 1977

[redacted]

061657

This report has been [illegible] by the
Geological Evaluation [illegible] and is recom-
mended to the [illegible] to be consider-
ed as [illegible] the amount of
~~$12,505.00~~ 8173.20 [illegible]

D. B. Craig

Considered [illegible] work under
Section [illegible] Mining Act.

B. R. BAXTER
Supervising Mining Recorder

for. [illegible]

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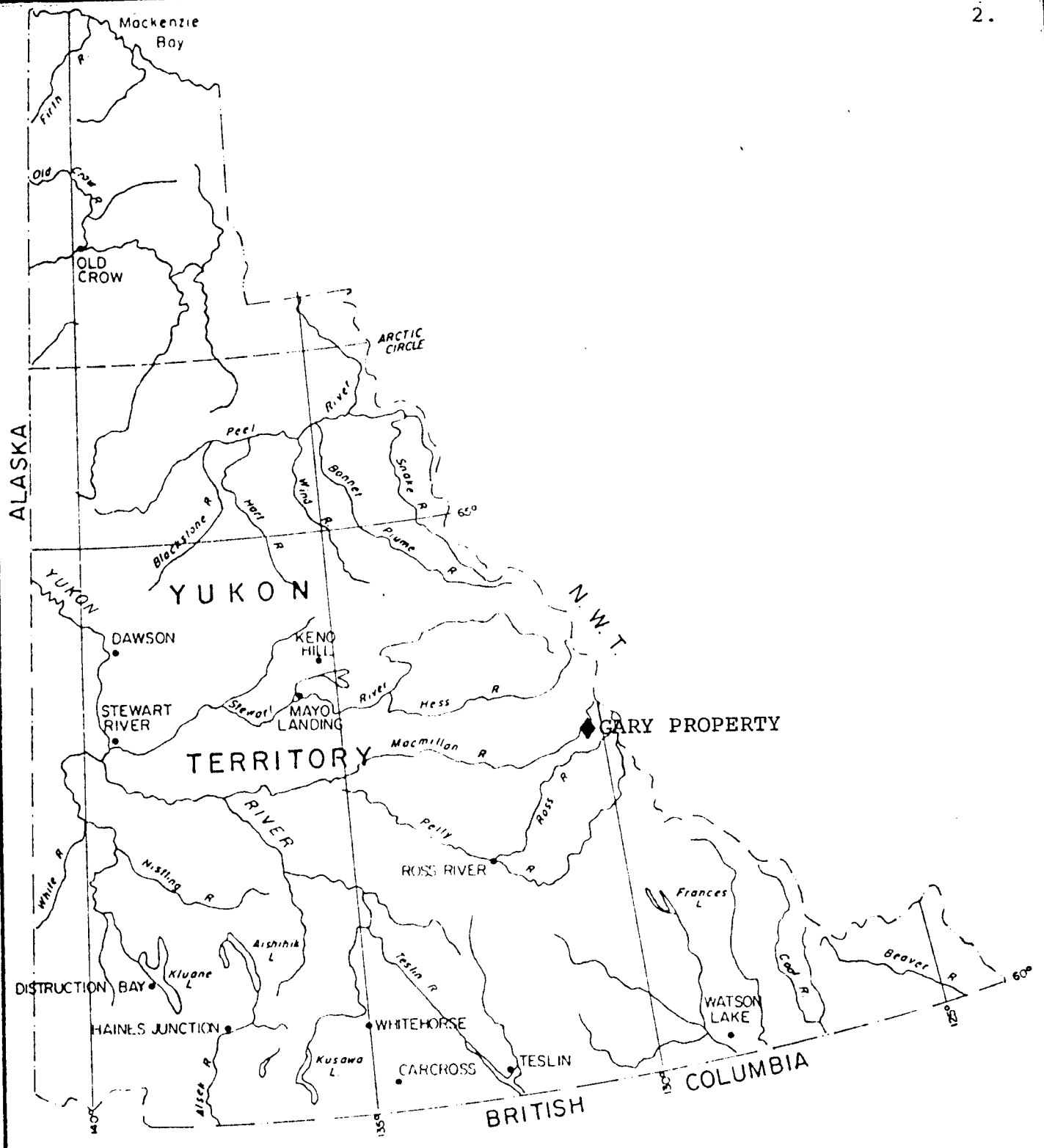
SUMMARY

An electromagnetic survey using the Maxmin II system was conducted over the north and central grids on the Gary property by Cordilleran Engineering Limited, under the direction of J. E. Betz, P.Eng., and the supervision of O. S. Hairsine, P.Eng. This work was carried out between June 8 - July 6, 1977, for the Ogilvie Joint Venture whose claims are held in trust by British Newfoundland Exploration Limited.

On the north grid 9.8 miles of line was cut and secant chained allowing 8.1 miles EM surveying. Six miles of cut line on the central grid had to be secant chained prior to conducting the EM survey. Both of the above grids are in the Mayo and Watson Lake Mining Districts. Division of costs as to districts has been worked out on the basis of working time. The affidavit of expenditures with this report details the costs incurred on each grid in the Mayo Mining District.



LOCATION MAP

GARY PROPERTY

SCALE 0 20 40 60 80 100 MILES

BY

CORDILLERAN ENGINEERING LTD.
1418 - 355 BURRARD STREET
VANCOUVER 1, B.C.

FIGURE 1

REPORT ON THE MAXMIN II EM SURVEY, OGILVIE JOINT VENTURE,
GARY NORTH & CENTRAL GRIDS,
MAYO MINING DISTRICT, YUKON TERRITORY.
LAT. 63°04'N LONG. 130°15'W N.T.S. 105 0/1

INTRODUCTION

The MaxMin II EM system was used successfully in the autumn of 1976 for detecting and tracing out conductive graphite horizons associated with the nearby Jason orebody of Ogilvie Joint Venture and the Tom orebody of Hudson Bay Mining and Smelting.

The geological setting in the area of the Gary grids is very similar to that on the Jason and Tom grids; so, the use of the MaxMin II system on these grids was a logical step.

As with the previous work in the area, the MaxMin II was used in the coplanar mode with the turns of the transmitting and receiving coils held parallel to the mean slope of the terrain (along the traverse line) between the coils. Knowing the mean slope and coil spacing at all reading points was insured by secant chaining the grids prior to the Max Min II coverage.

The secant method of chaining and the use of the subsequent data are amply described in the MaxMin II manual. They will not be described here. However, it is worthy of mention here that the end result of secant chaining the lines is to have "noise-free" EM results. Two bonus features of secant chaining are: a) equal station spacings on the horizontal plane, and b) accurate topographic profiles along the line. In fact, the topographic profiles shown on the profile sheets in this report are computed from the secant chaining notes.

Based on previous experience, a reconnaissance coil spacing of 400 ft (122 meters) and frequencies of 222 and 1777 Hz were used throughout the survey. The reasons for this choice are dealt with at some length in the report on the Jason and Tom surveys. In brief they are:

a) that a coil spacing of 400 ft gives about the best combination of conductor resolution and search-depth capability for this area,
b) two widely spaced frequencies lead to a fairly accurate conductivity-thickness estimate for the conductive zones detected, as well as helping to interpret the shape and attitude of non-simplistic conductive zones,
c) the results at one frequency serve to monitor the inevitable reading and/or recording errors at the other frequency.

The writer played a role in both the secant chaining and the MaxMin II coverage of the central grid while training assistants Brian Goodacre and Paul Pitcher, who later did the work on the north grid.

PRESENTATION OF RESULTS

The MaxMin II profiles, topographic profiles, and the interpreted conductor picture for each line were plotted on special profiles sheets. Reduced-scale copies of these sheets are bound with an index and legend sheet in Appendix "A" of this report.

A plan--showing the grid lines, topographic contours, interpreted conductive zones, and a geological section-- is included in the pocket at the end of the report.

INTERPRETATION OF RESULTS

The conductor picture is quite complex on the Gary grids. This complexity prohibits a unique interpretation. It is always helpful in cases like this to have some preliminary geological information. With this information, the conductor interpretation can be "fitted" to the known geological picture, then subsequently used to extend the latter.

Of course, the conductor interpretation cannot be made to "fit" all geological pictures. The location of the upper part of the more strongly conductive units will always remain constant. It is not subject to interpretational whims. However, with these very complex conductive pictures, the interpretation for the dip, width, and internal changes of many of the component parts lends itself to considerable "bending".

Two geological sections in the area of the north and central Gary grids provided the basis for the conductor interpretation shown on the plan and profile sheets. Section A-A_1,

shown on the plan, provided the key to the conductor interpretation on the central grid and in the southwest corner of the north grid. Section $B-B_1$--not shown on the plan, but located about one half mile north of the north grid--provided the key to the conductor interpretation at the northern end of the north grid. However, there is appreciable room for change in the latter conductor interpretation due to the distance of section $B-B_1$ from the grid.

Geological section $A-A_1$ is shown at the bottom of the plan. Unfortunately, a finished sketch for section $B-B_1$ was not available in time for this report. The interpreted conductive zones can be quickly related to the lithological units by superimposing the geological sections on the sectional view of the interpreted conductors, shown on the profile sheets. This exercise is left to the company geologists.

Specific conductivity-thickness figures were not worked out for these conductive zones, because they are time consuming to obtain and have no known bearing to the occurrence and grade of the ore-bearing zones in the area. However, a rough conductor classification has been used in the sections and plans for whatever future correlation it may have with ore occurrences in the area. The classification is arbitrary and it consists of three groups--"fair to good", "poor to fair", and "poor". The criterion for the dividing line between the "fair to good" and "poor to fair" conductive zones is the ratio of the in-phase to out-of-phase anomaly amplitudes at 222 Hz. A conductive zone is classified as "fair to good", when the "in-phase/out-of-phase" ratio is greater than unity, i.e. the conductivity-thickness value of the zone is greater than 25 mhos.

CONCLUDING REMARKS

When the lithological picture, interpreted from the MaxMin II results and known geology in the area is combined with the previously obtained soil geochemical and gravity results, it will put the latter results into perspective, and guide any future drilling in the area.
This exercise is left to the company geologists.

WRITER'S DECLARATION

Neither I, nor John Betz Limited, have any financial interest in any of the properties of the Ogilvie Joint Venture Group.

I hold BA and MA degrees in geophysics from the University of Toronto. I have worked full time in mining exploration geophysics since 1953, and two summer seasons prior to 1953.

All statements made in this report are correct to the best of my knowledge.

John E. Betz, M.A., P.Eng. Ont.
John Betz Limited

November, 1977
Toronto, Ontario

APPENDIX "A"

- EM Profile Index and Legend

- EM Profile Sheets with Interpreted Conductive Zones

North Grid:	Line	#545N & 535N
		525N & 515N
		505N & 495N
		485N & 475N
		465N
Central Grid:	Line	20N & 10N
		0 & 10S
		20S & 30S

#1 Plan of North and Central Grids with Interpreted Conductive Zones

1" = 500 feet

#2 Plan of North and Central Grids with Interpreted Conductive Zones and Claims.

1" = 500 feet

EM PROFILE INDEX

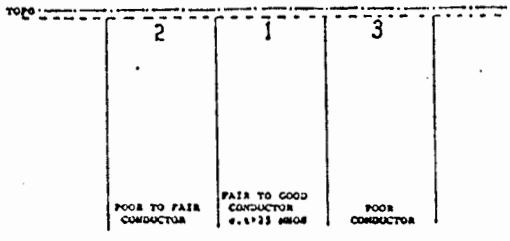
Grid	Line #
North	545N & 535N
	525N & 515N
	505N & 495N
	485N & 475N
	465N
Central	20N & 10N
	0 & 10S
	20S & 30S

EM PROFILE LEGEND

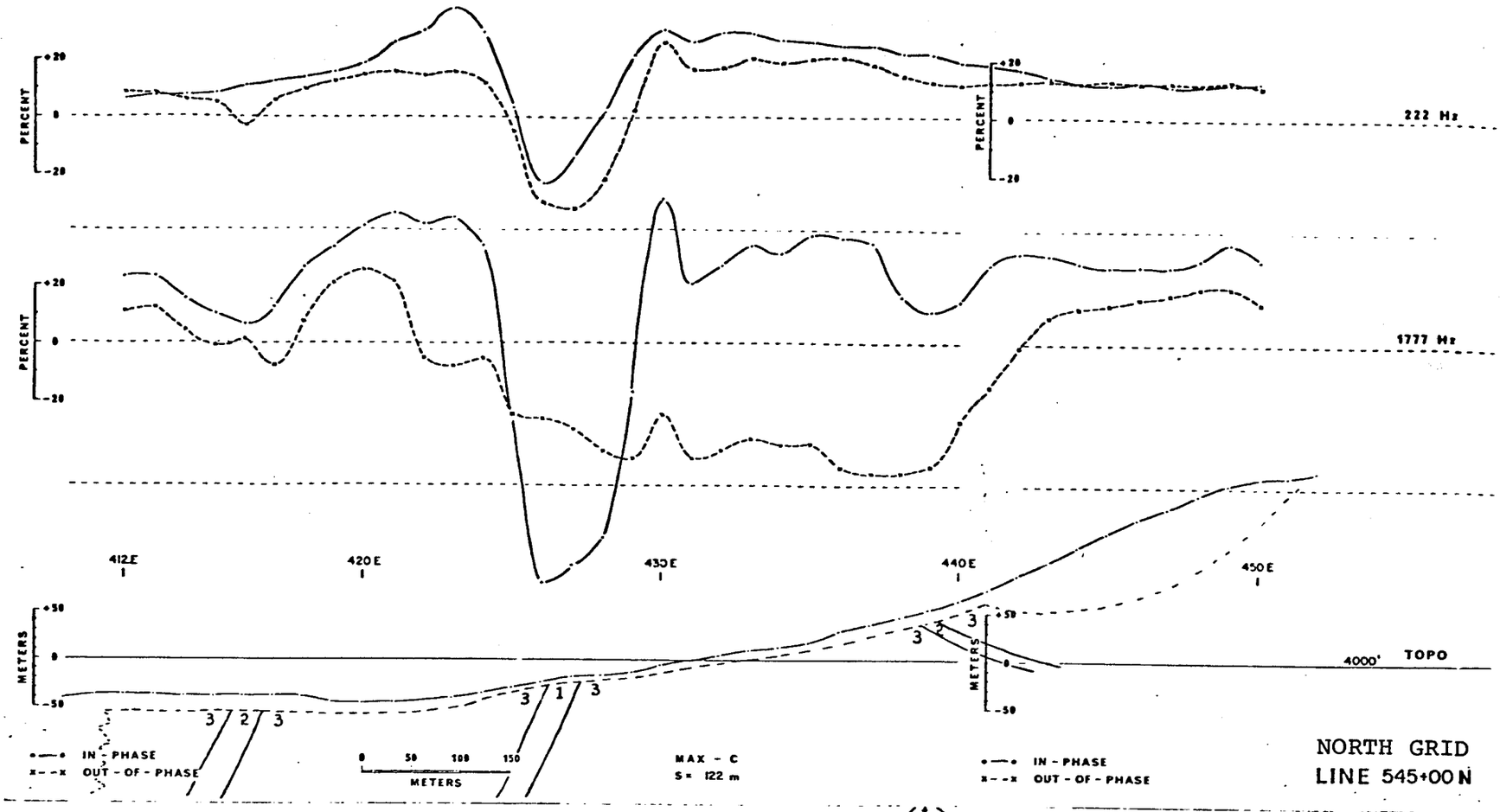
The above-listed profiles are bound in the order shown. Additional Notes: The background in-phase and out-of-phase values are +2, +2 at 222 Hz and -1, +2 at 1777 Hz.

"S" on the profile sheet is the abbreviation for the coil spacing, which was 122 meters or 400 ft throughout the survey.

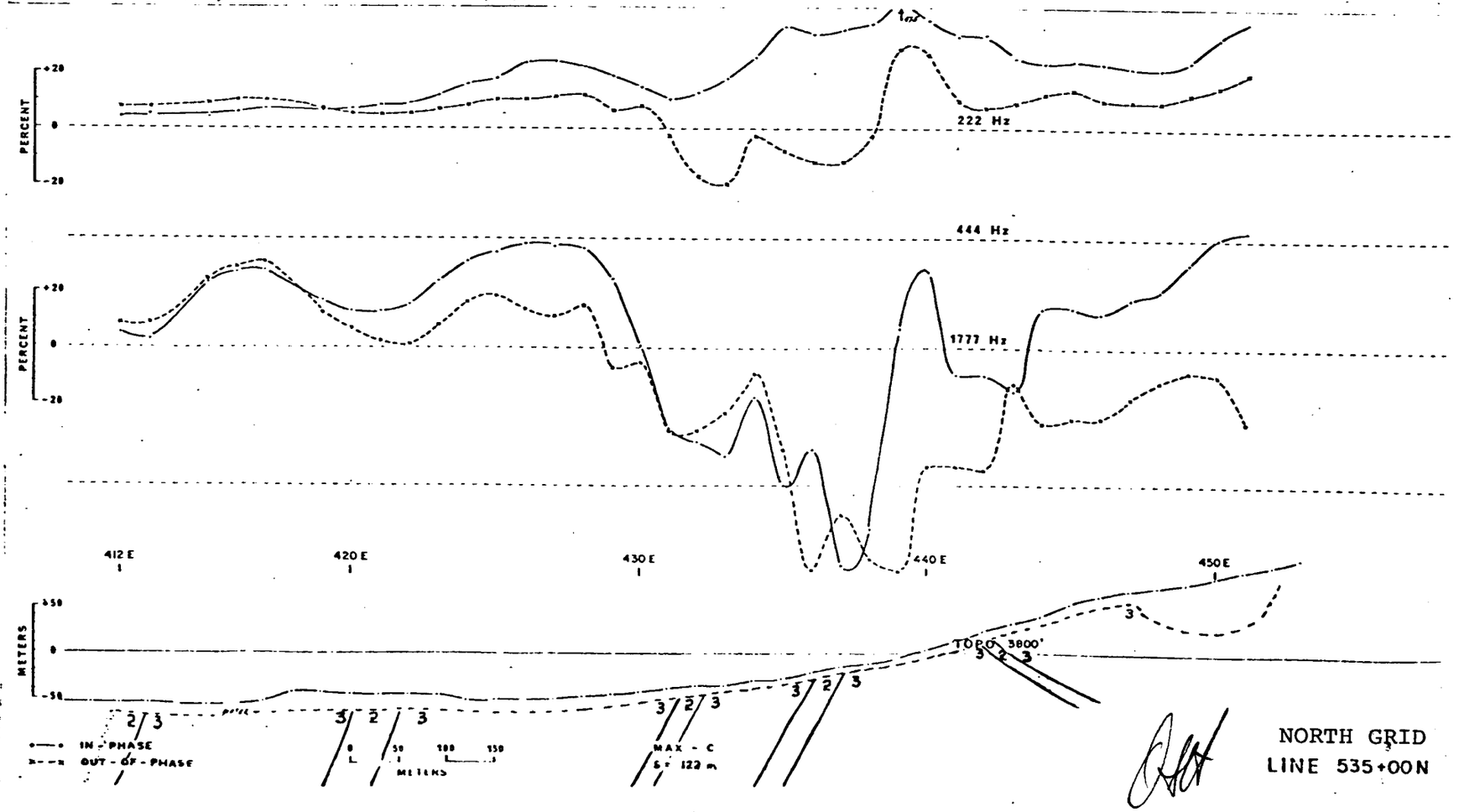
Conductor Legend:



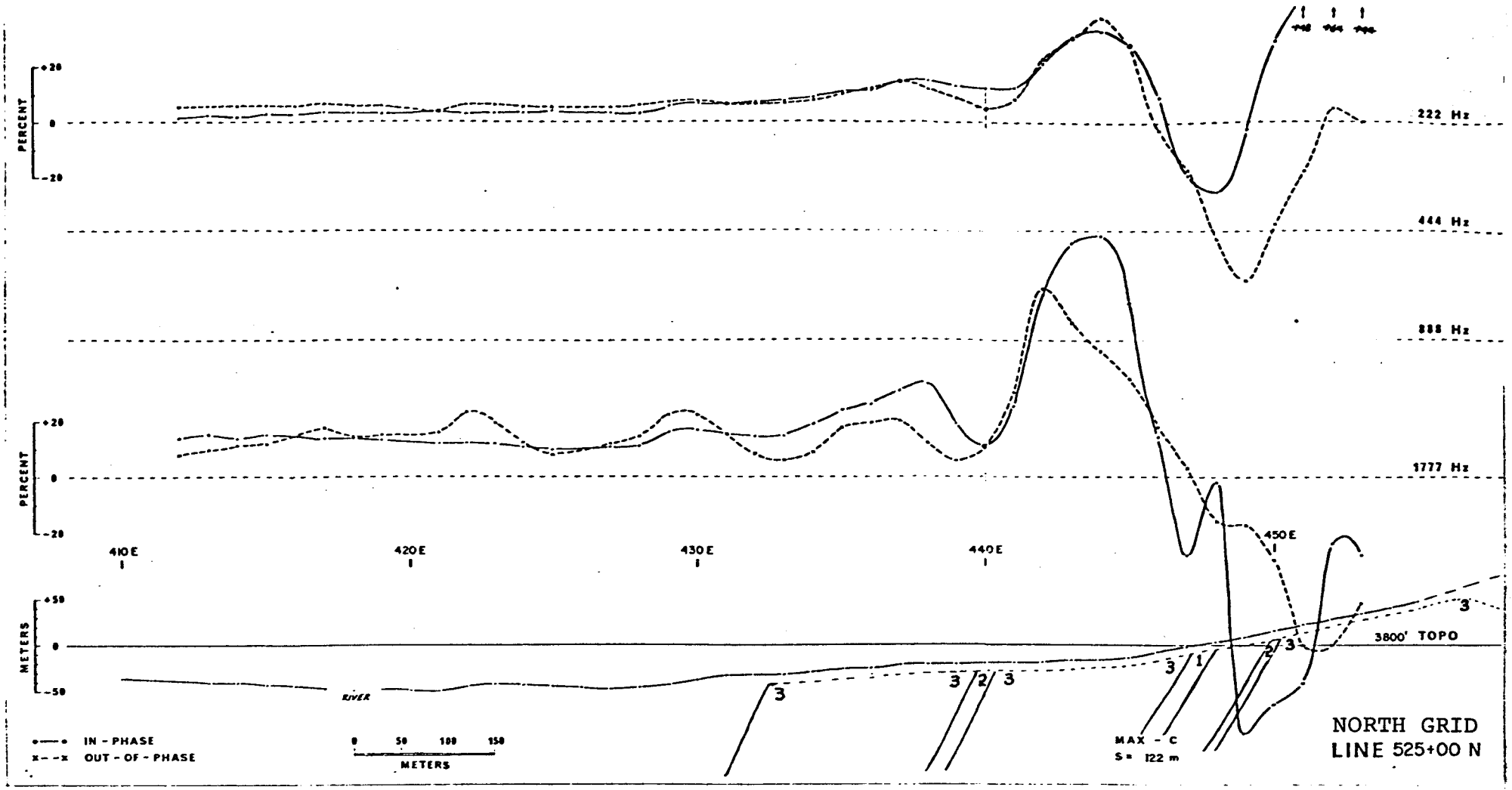
Note: There are no truly non-conductive areas on either grid. However, to avoid cluttering, some of the very poorly conductive areas have not been marked on the profile sheets (or on the plan).

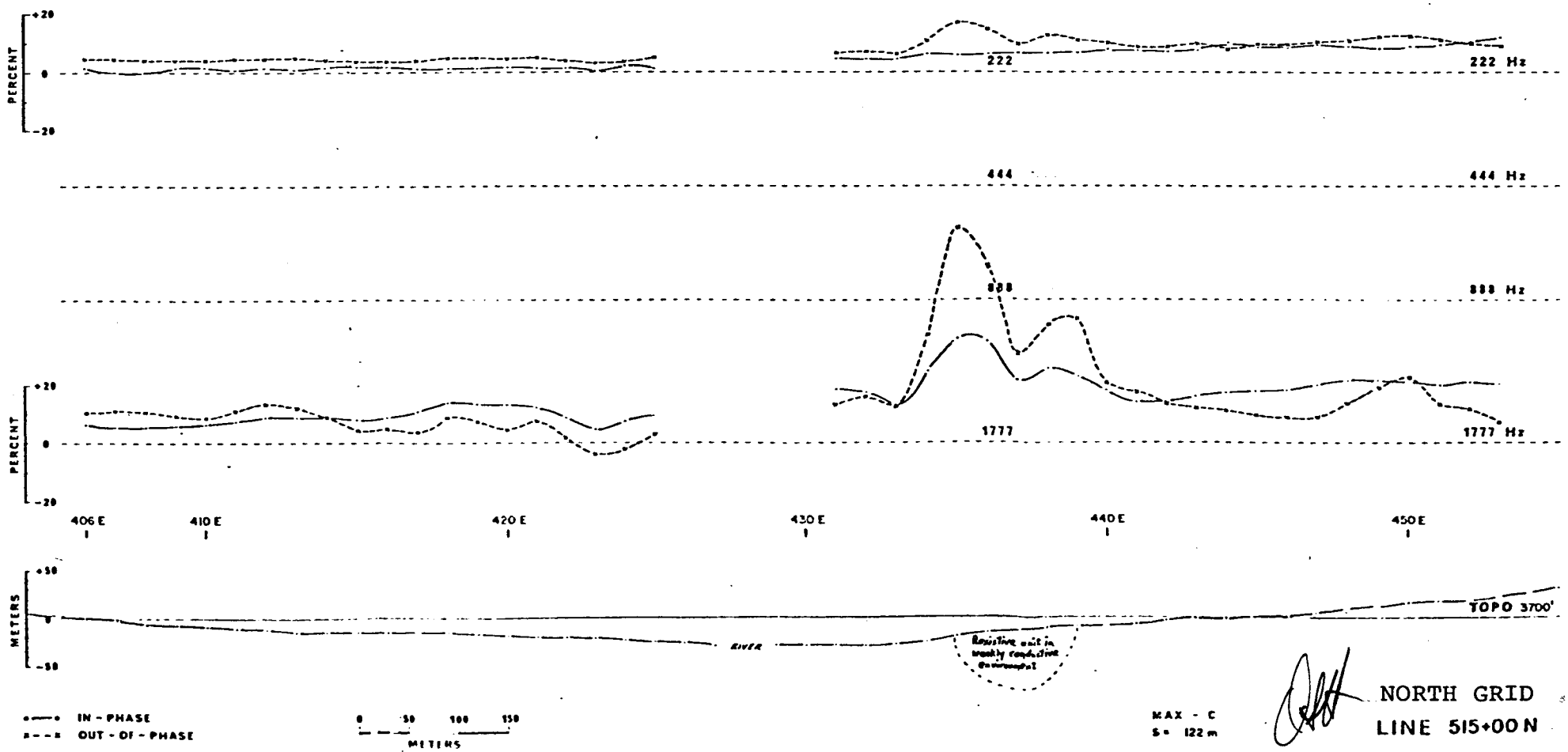


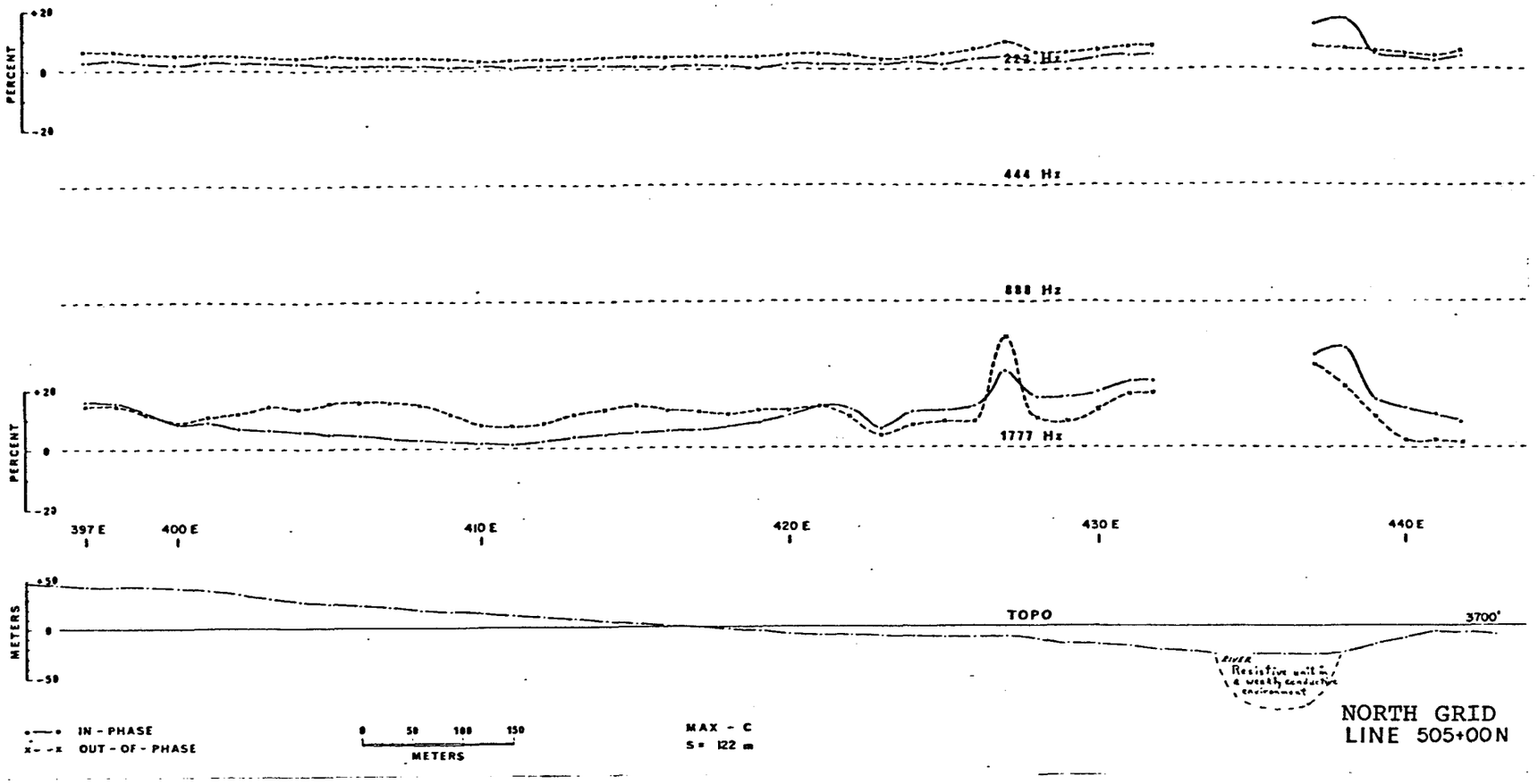
NORTH GRID
LINE 545+00N



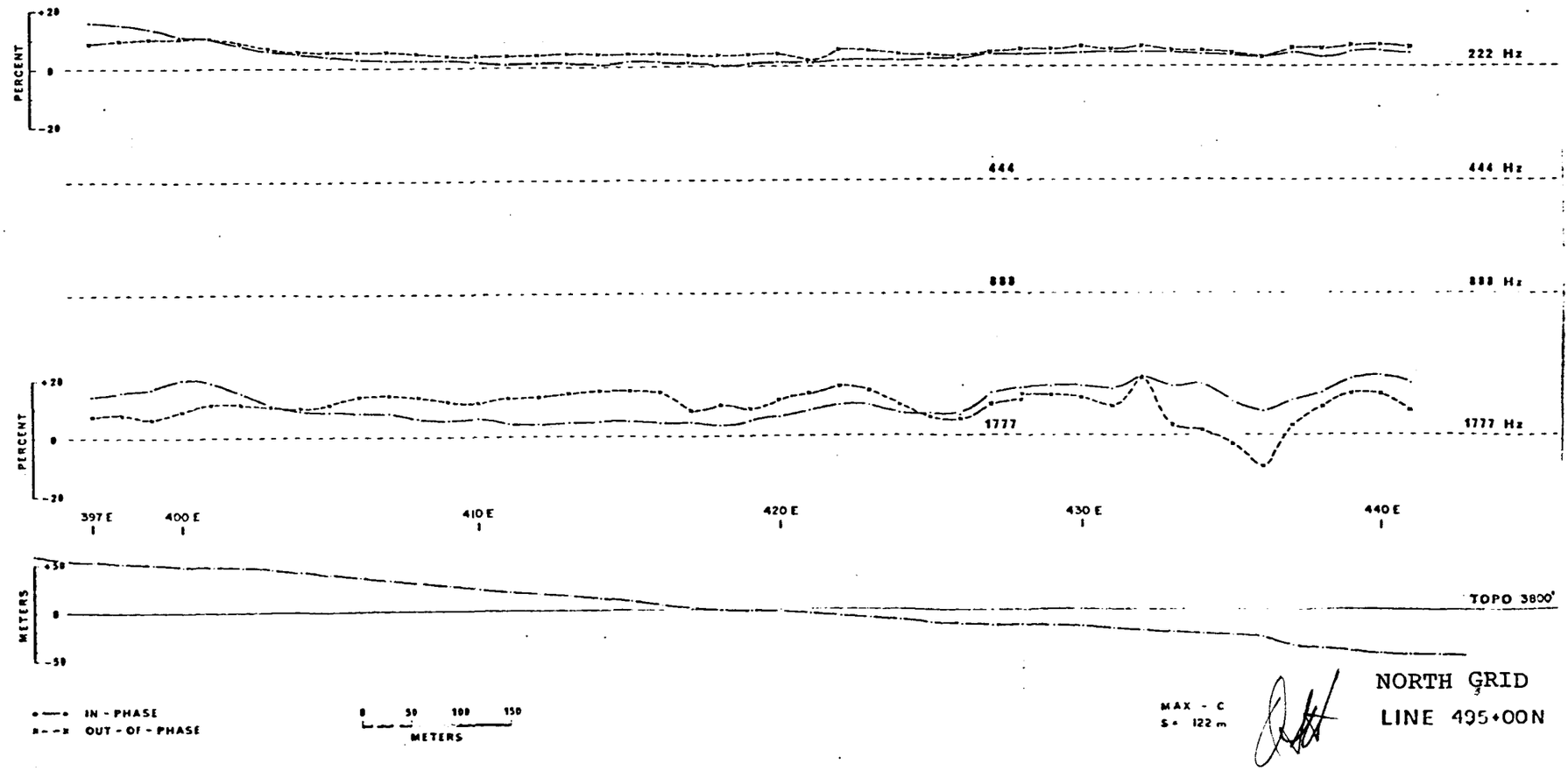
NORTH GRID
LINE 535+00N


PERCENT
+20
0
-20
222 Hz
444 Hz
888 Hz
1777 Hz
410E
420E
430E
440E
450E
METERS
+50
-50
3800' TOPO
RIVER
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
NORTH GRID
LINE 525+00 N

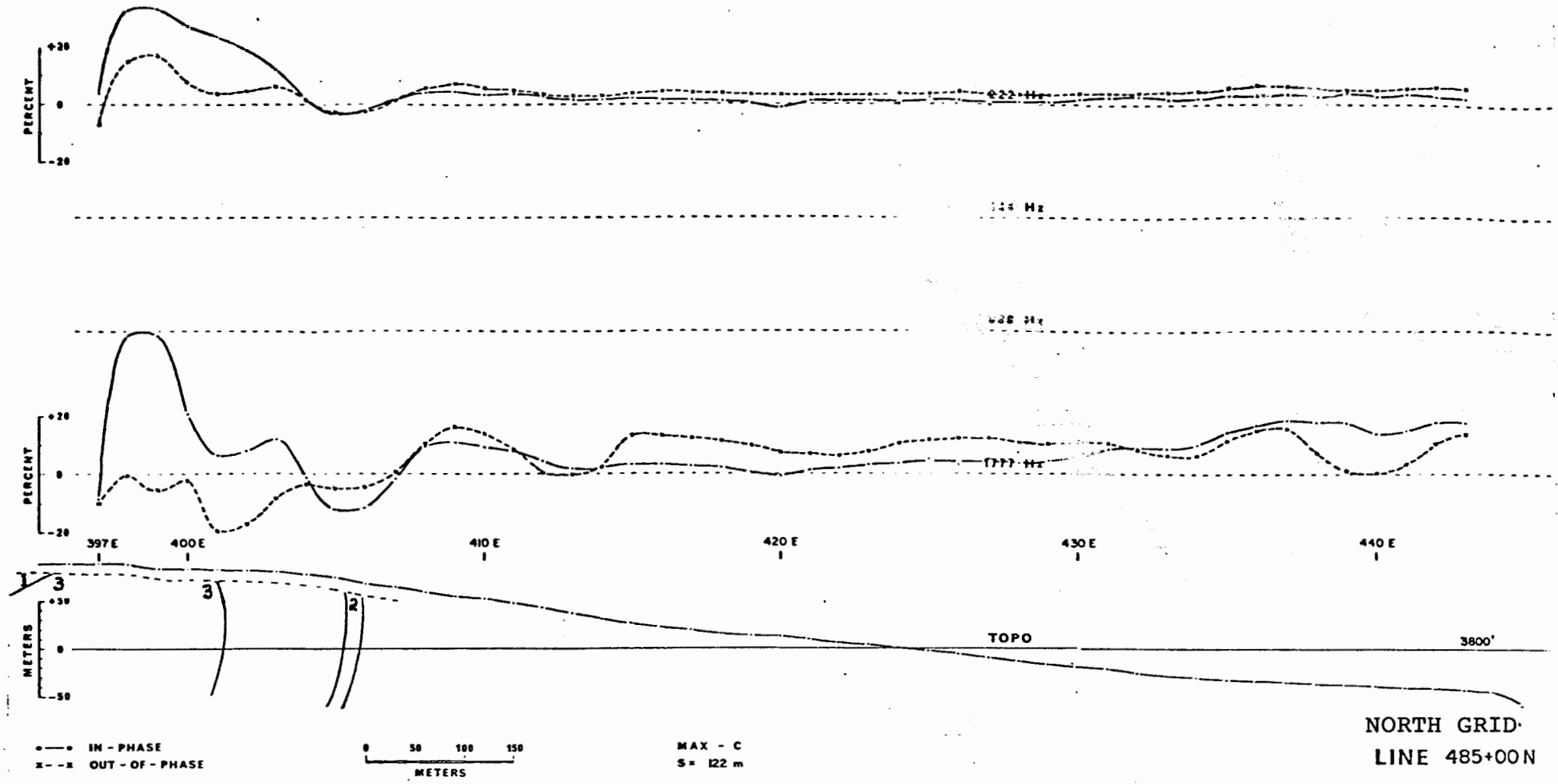

PERCENT
+20
0
-20
222
222 Hz
444
444 Hz
888
888 Hz
1777
1777 Hz
406E
410E
420E
430E
440E
450E
METERS
+50
-50
TOPO 3700'
RIVER
Resistive unit in weakly conductive environment
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
NORTH GRID
LINE 515+00N

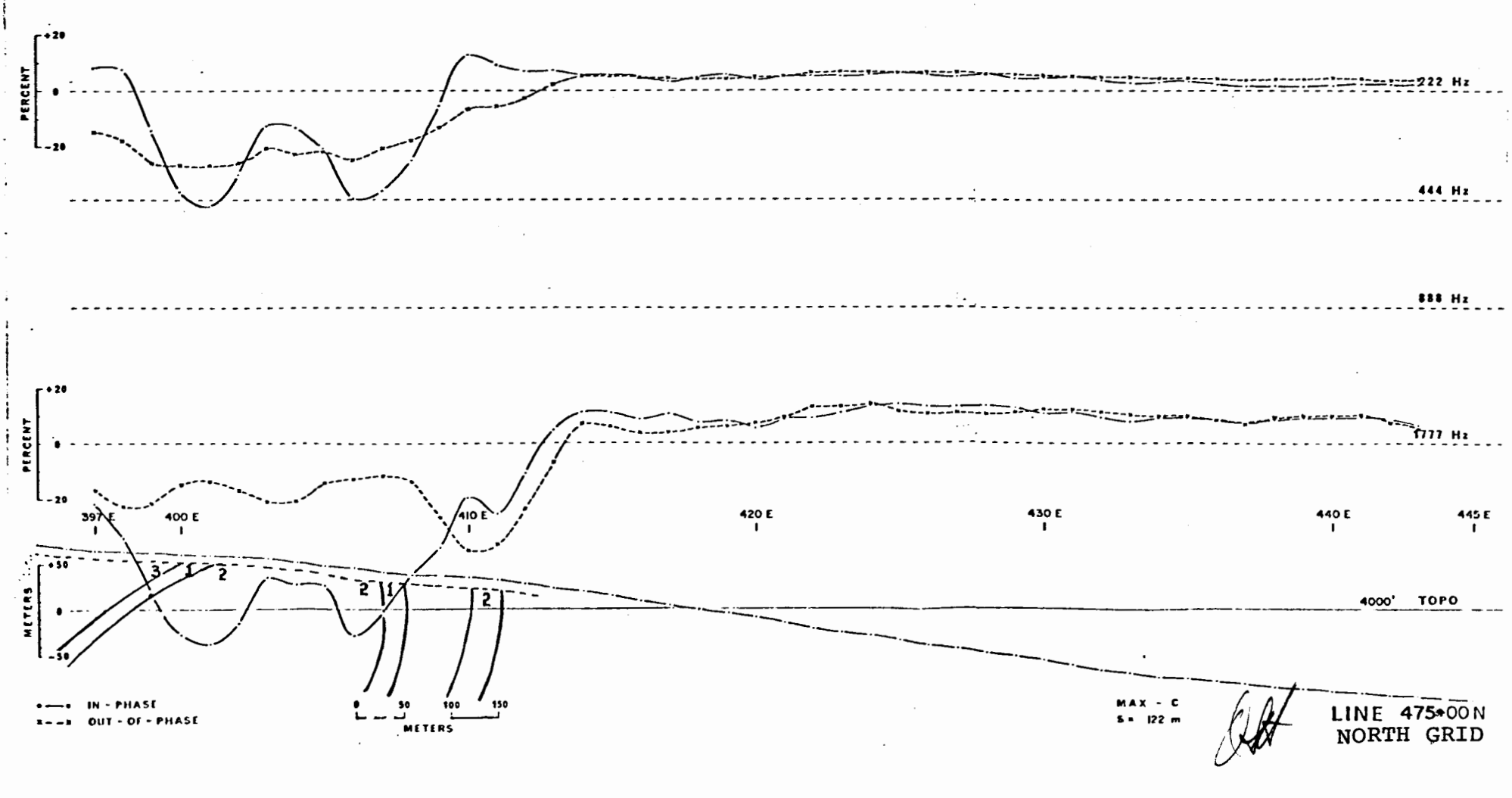


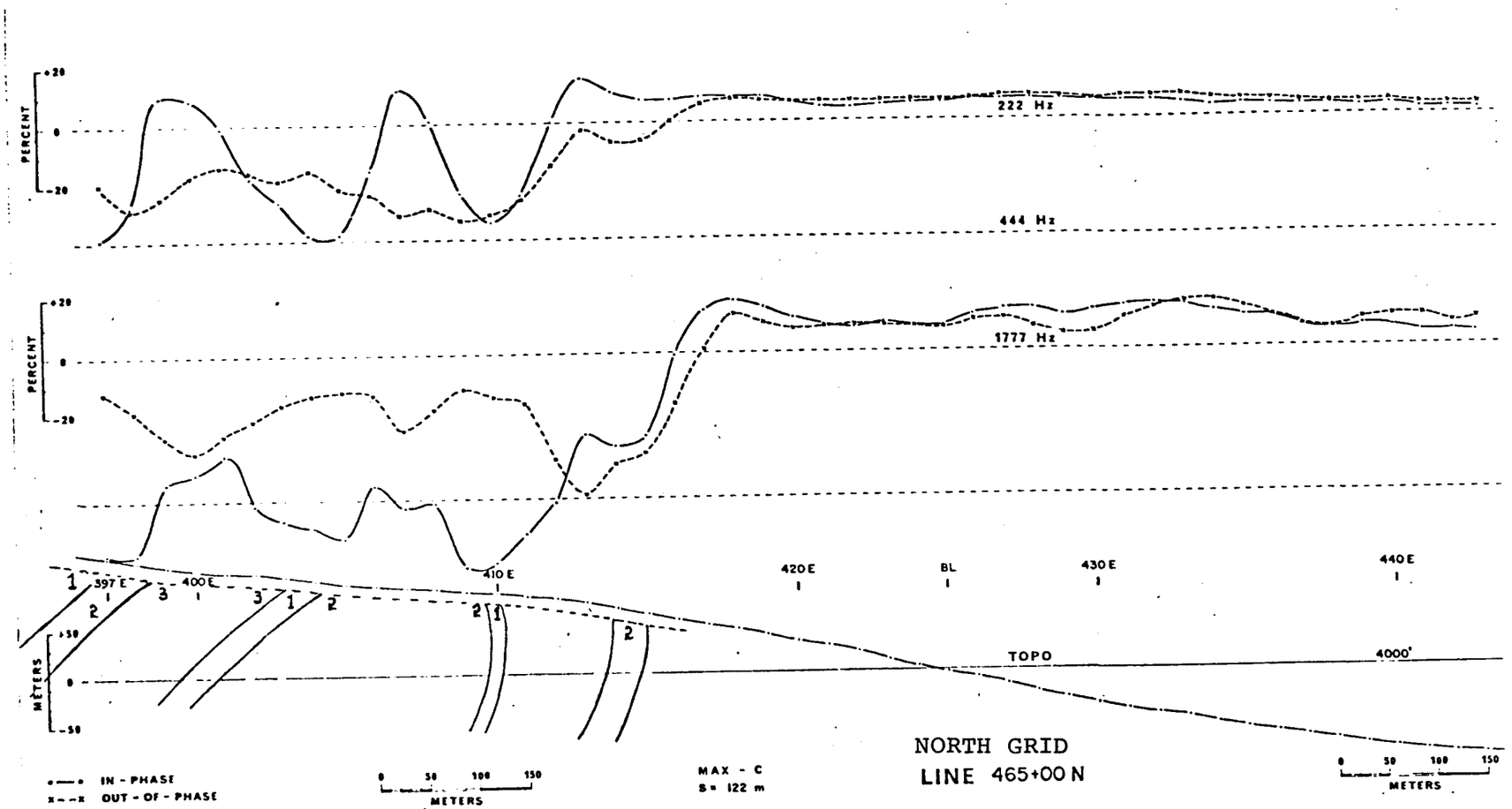
NORTH GRID
LINE 505+00N

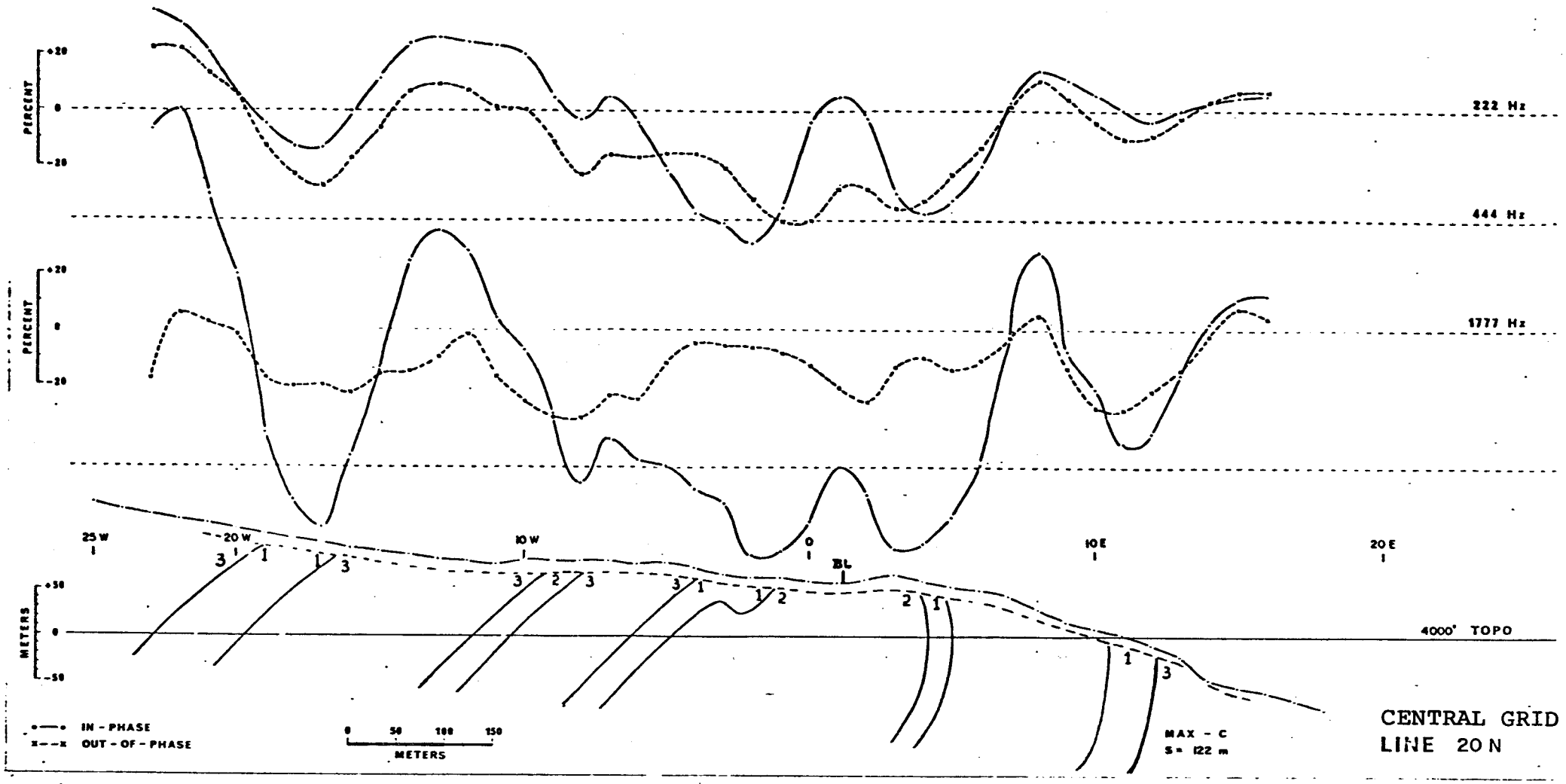


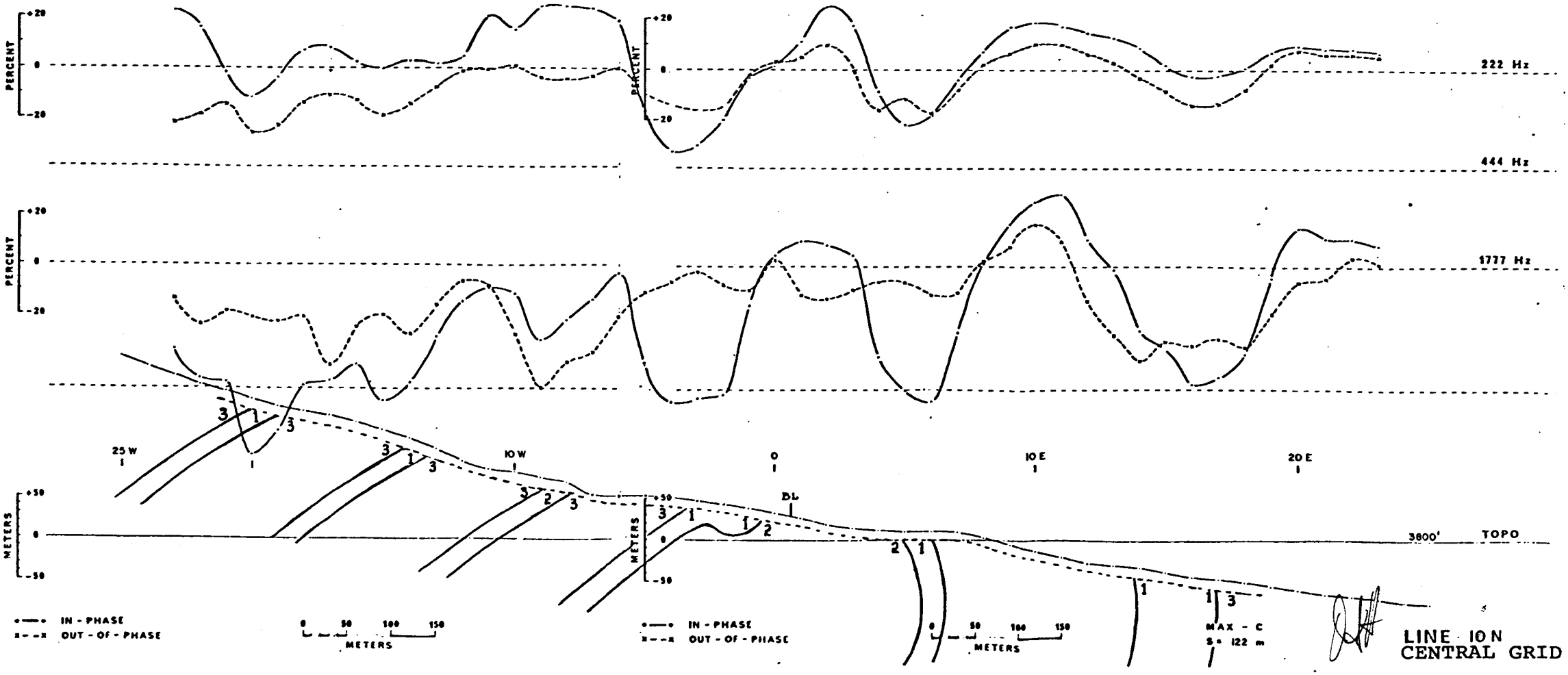
NORTH GRID
LINE 495+00N

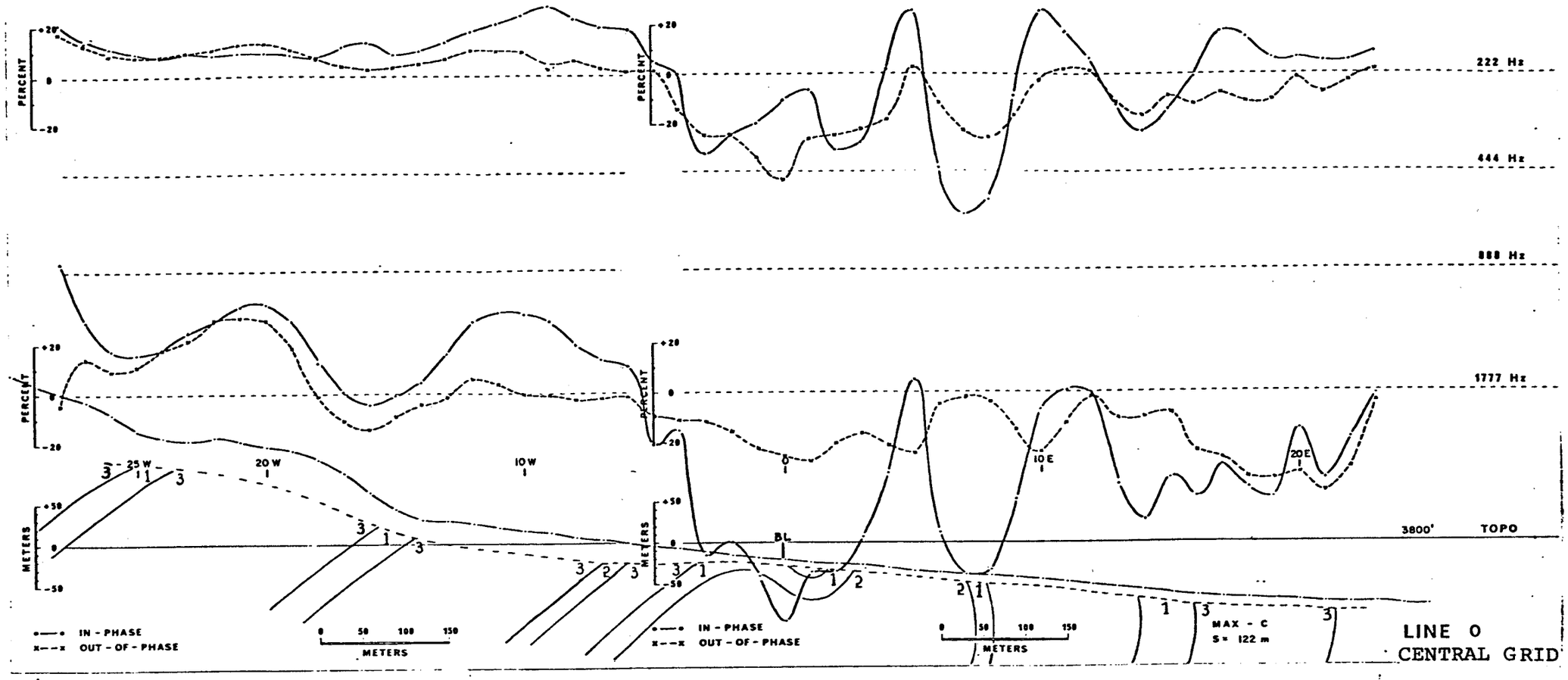

+20
0
-20
PERCENT
444 Hz
888 Hz
1777 Hz
397 E
400 E
410 E
420 E
430 E
440 E
+30
0
-50
METERS
TOPO
3800'
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
NORTH GRID
LINE 485+00N


+20
0
-20
PERCENT
222 Hz
444 Hz
888 Hz
1777 Hz
397 E
400 E
410 E
420 E
430 E
440 E
445 E
+50
0
-50
METERS
4000' TOPO
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
LINE 475+00N
NORTH GRID

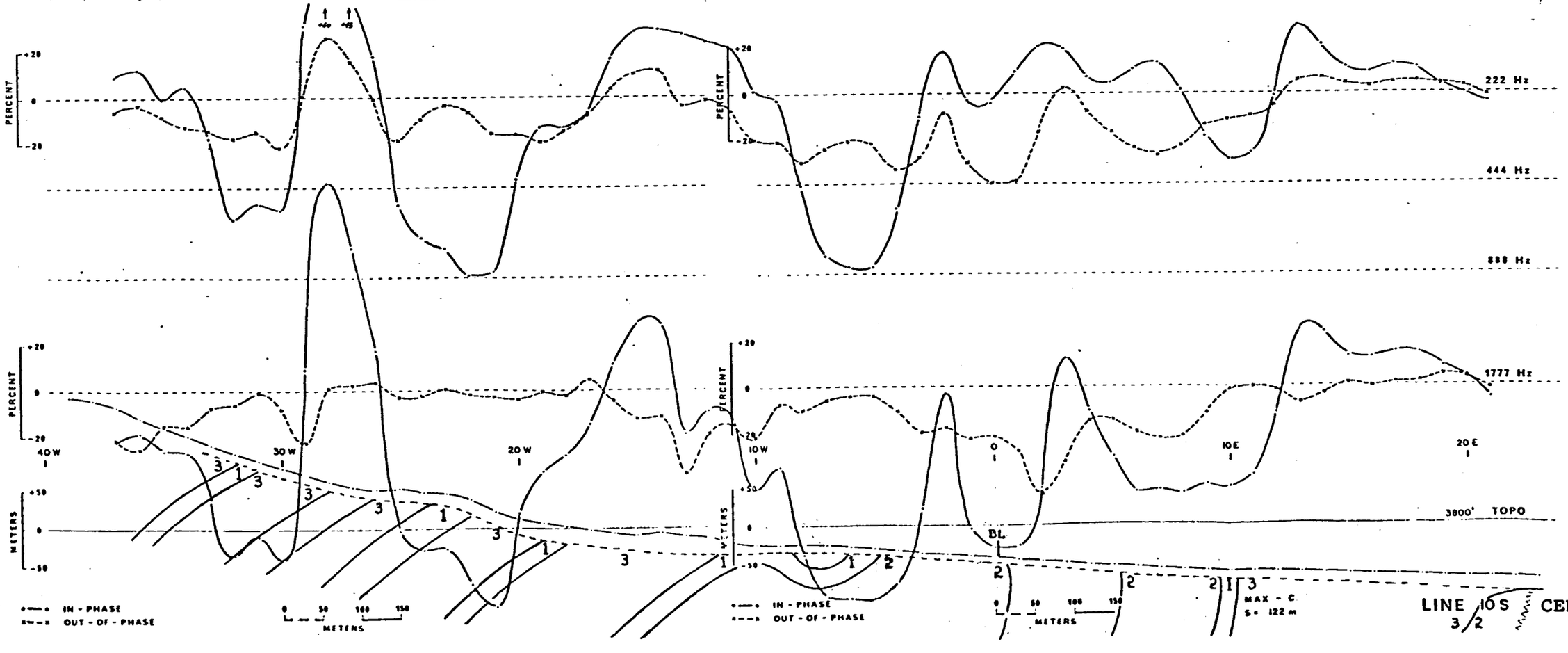

PERCENT
+20
0
-20
222 Hz
444 Hz
1777 Hz
397 E
400 E
410 E
420 E
BL
430 E
440 E
METERS
+50
0
-50
TOPO
4000'
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
NORTH GRID
LINE 465+00 N
0 50 100 150
METERS


PERCENT
+20
0
-20
222 Hz
444 Hz
1777 Hz
25 W
20 W
10 W
0
BL
10 E
20 E
METERS
+50
-50
4000' TOPO
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
CENTRAL GRID
LINE 20 N

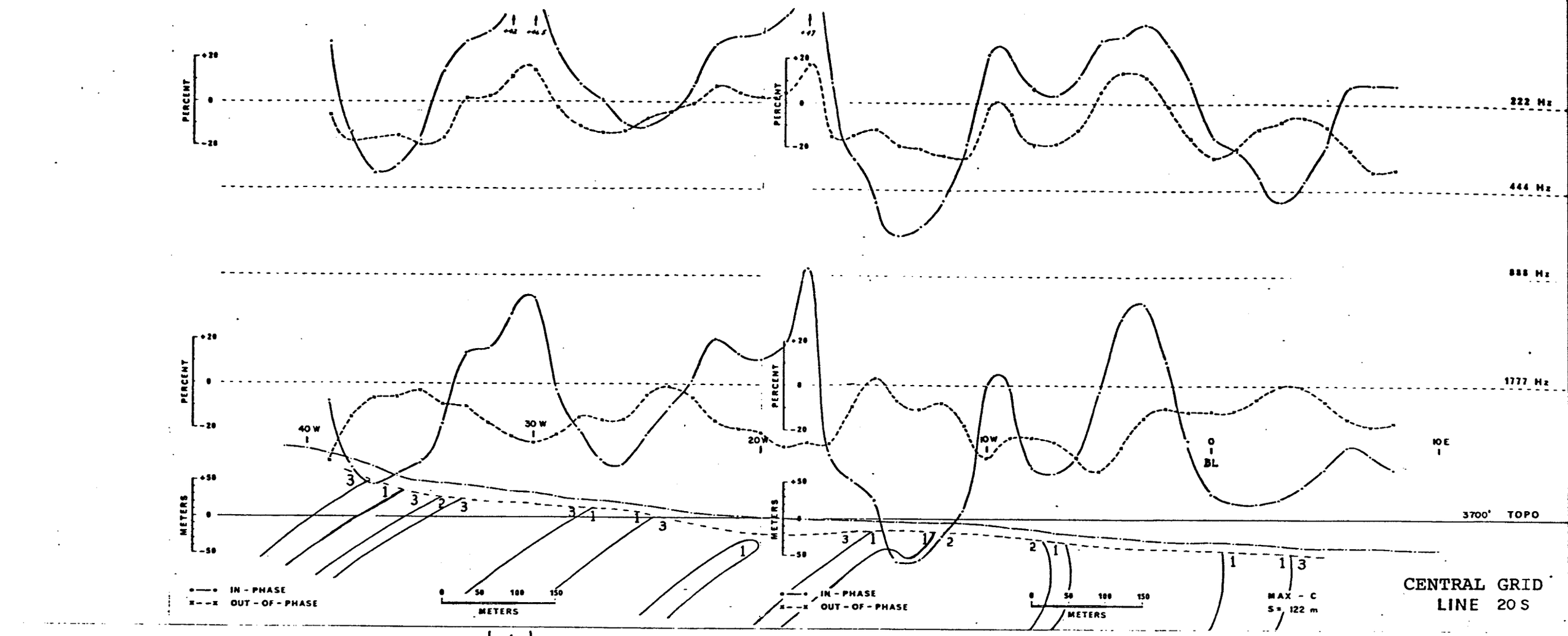

PERCENT
+20
0
-20
222 Hz
444 Hz
1777 Hz
25 W
10 W
0
10 E
20 E
BL
METERS
+50
-50
3800' TOPO
IN - PHASE
OUT - OF - PHASE
0 50 100 150
METERS
MAX - C
S = 122 m
LINE 10 N
CENTRAL GRID



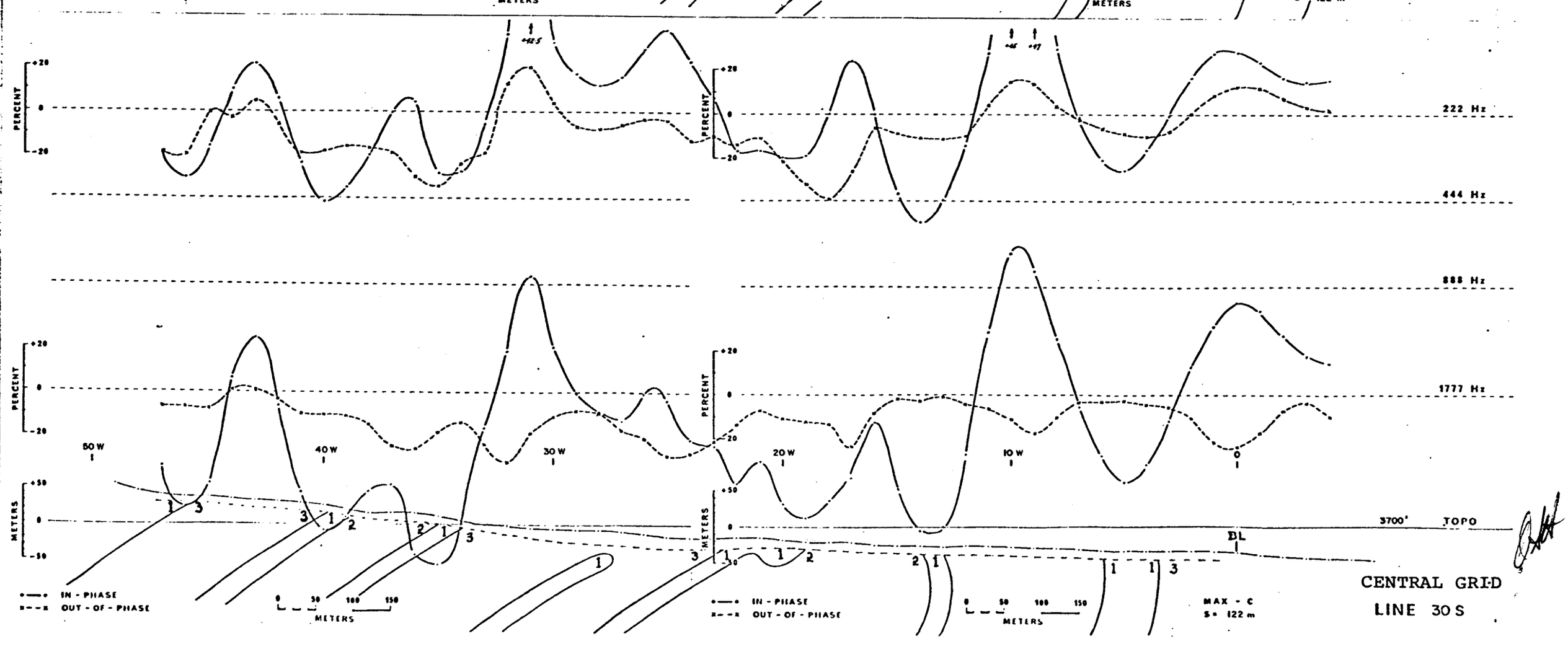
LINE 0
CENTRAL GRID



LINE 10S CENTRAL GRID



CENTRAL GRID
LINE 20 S

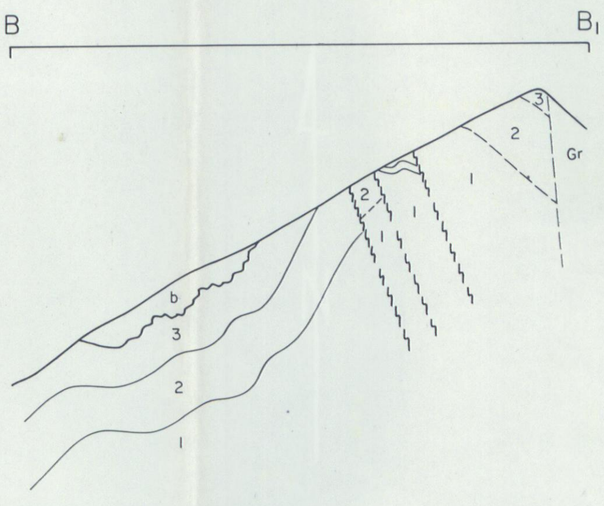


CENTRAL GRID
LINE 30 S

GEOLOGICAL SECTION B–B₁ FROM
567N, 429E TO 573N, 441E

B – B₁
GEOLOGICAL SECTION FROM
567 N, 429 E TO 573 N, 441 E

(FROM 1977 MAPPING)



b – Bedded barite with locally interbedded shale.
3 – Carbonaceous and siliceous shale and siltstone.
2 – Cherty breccia.
1 – Low to non-carbonaceous and moderately to non-siliceous siltstone and shale.
Gr – Granite

BASIN
FETCH 4
FETCH 2
FETCH 1
545 N
535 N
525 N
515 N
505 N
495 N
485 N
475 N
465 N
20 N
10 N
0
10 S
20 S
30 S
415E
425E
435E
445E
455E
40 W
30 W
20 W
10 W
0
10 E
20 E
GARY 74
GARY 66
GARY 65
GARY 64
GARY 63
GARY 73
GARY 72
GARY 71
GARY 11
GARY 23
GARY 9
GARY 8
GARY 20
GARY 21
GARY 7
GARY 6
GARY 18
GARY 5
GARY 17
GARY 13
GARY 1
GARY 2
GARY 14
GARY 15
GARY 3
GARY 16
GARY 25
GARY 4
GARY 32
GARY 26
GARY 34
GARY 33
GARY 58
GARY 27
GARY 29
GARY 28
GARY 36
GARY 35
NET 60 FR.
NET 77
NET 59 FR.
NET 78
NET 81 FR.
NET 61 FR.
NET 82 FR.
NET 58 FR.
NET 64
NET 65
NET 66
NET 67
NET 85 FR.
NET 86 FR.
NET 88 FR.
NET 68
NET 69
NET 70
NET 83 FR.
NET 80
NET 72
NET 73
NET 84 FR.
NET 1
Resistive hole in very poorly conductive surroundings
SOUTH MACMILLAN RIVER
CANOL ROAD
MOOSE 4
MOOSE 3
MOOSE 2
MOOSE 1
A – A₁ GEOLOGICAL SECTION
MAYO MINING DISTRICT
WATSON LAKE MINING DISTRICT
NORTHERN GRID
CENTRAL GRID
N

LEGEND

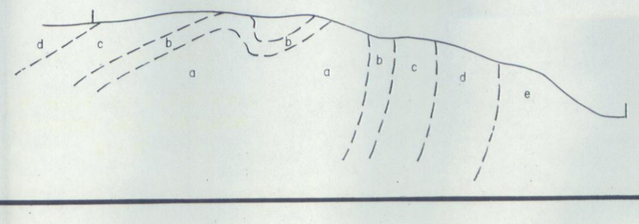
Moderately to highly conductive material

Poorly to moderately conductive material

Poorly conductive material

4000 Topo contour – elevation in feet above sea level

A–A₁
GEOLOGICAL SECTION FROM BETWEEN THE
NORTH & CENTRAL GARY GRIDS
SEE PLAN FOR EXACT LOCATION
(FROM 1975 MAPPING)



a – Rosé River Shale
b – Bedded Barite
c – Siliceous Argillite & Barite
d – Wide Bedded Member 2'–6' Argillite bands
e – Micaceous Siltstone

CONDUCTIVITY MAP
OGILVIE JOINT VENTURE

MACMILLAN PASS AREA
MAYO AND WATSON LAKE MINING DISTRICTS
YUKON TERRITORY
63° 04' N, 130° 15' W
N.T.S. 105-D-1

GARY PROPERTY
(NORTH & CENTRAL)

HORIZONTAL and VERTICAL SCALE: 1 inch = 500 feet

0 500 1000 FEET

936,000 N
445,500 E

TO ACCOMPANY REPORT

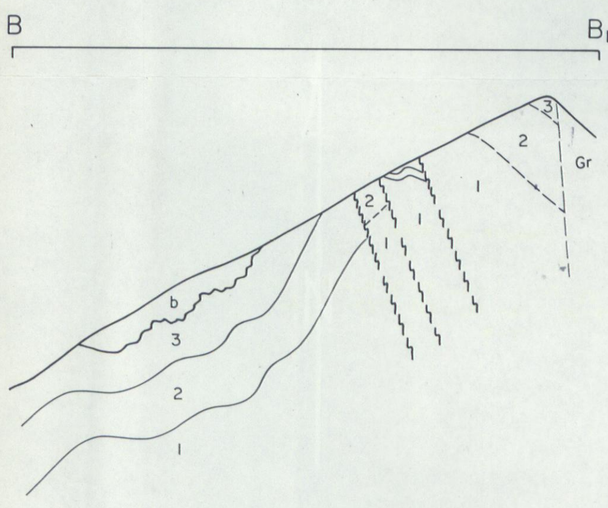
JOHN BETZ LTD.
NOV., 1977

PLAN I.

— GEOLOGICAL SECTION B-B$_1$ FROM —
567N, 429E TO 573N, 441E

B – B$_1$
GEOLOGICAL SECTION FROM
567N, 429E TO 573N, 441E

(FROM 1977 MAPPING)



b – Bedded barite with locally interbedded shale.
3 – Carbonaceous and siliceous shale and siltstone.
2 – Cherty breccia.
1 – Low to non-carbonaceous and moderately to non-siliceous siltstone and shale.
Gr – Granite

BASIN 1
FETCH 4
FETCH 2
FETCH 1
SOUTH MACMILLAN RIVER
CANOL ROAD
MOOSE 3
MOOSE 4
MOOSE 1
MOOSE 2
GEOLOGICAL SECTION A-A1

GARY 66 GARY 65 GARY 74
GARY 64 GARY 63 GARY 73
GARY 71 GARY 72
GARY 11 GARY 23
GARY 9 GARY 8
GARY 20 GARY 21
GARY 7 GARY 6
GARY 18 GARY 9
GARY 5
GARY 17
GARY 13 GARY 1
GARY 2
GARY 14 GARY 15 GARY 3
GARY 16
GARY 25 GARY 4 GARY 32
GARY 26
GARY 58 GARY 27 GARY 34 GARY 33
GARY 29 GARY 28 GARY 36 GARY 35

NET 60 FR.
NET 77
NET 59 FR.
NET 78
NET 61 FR.
NET 81 FR.
NET 82 FR.
NET 64
NET 58 FR.
NET 65
NET 66
NET 85 FR.
NET 81 FR. I
NET 67
NET 68
NET 86 FR.
NET 88 FR.
NET 69
NET 70
NET 83 FR.
NET 80
NET 72
NET 73
NET 84 FR.
NET 1

Resistive hole in very poorly conductive surroundings

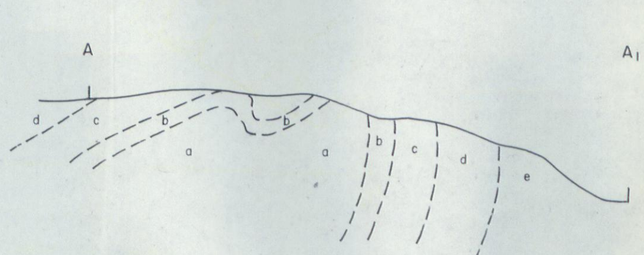
MAYO MINING DISTRICT
WATSON LAKE MINING DISTRICT

NORTHERN GRID
CENTRAL GRID

545 N
535 N
525 N
515 N
505 N
495 N
485 N
475 N
465 N
20 N
10 N
0
10 S
20 S
30 S

395E 405E 415E 425E 435E 445E 455E
40W 30W 20W 10W 0

A-A$_1$
GEOLOGICAL SECTION FROM BETWEEN THE
NORTH & CENTRAL GARY GRIDS
SEE PLAN FOR EXACT LOCATION
(FROM 1975 MAPPING)



a – Road River Shale
b – Bedded Barite
c – Siliceous Argillite & Barite
d – Wide Bedded Member 2" – 6" Argillite Bands
e – Micaceous Siltstone

LEGEND
Moderately to highly conductive material
Poorly to moderately conductive material
Poorly conductive material
4000 Topo contour – elevation in feet above sea level

CONDUCTIVITY MAP
OGILVIE JOINT VENTURE
MACMILLAN PASS AREA
MAYO AND WATSON LAKE MINING DISTRICTS
YUKON TERRITORY
63° 04' N, 130° 15' W
N.T.S. 105-O-1

GARY PROPERTY
(NORTH & CENTRAL)

HORIZONTAL and VERTICAL SCALE = 1 inch = 500 feet
0 500 1000 FEET

936,000 N
445,500 E

TO ACCOMPANY REPORT

JOHN BETZ LTD.
NOV., 1977

PLAN 2.

APPENDIX "B"

R E F E R E N C E S

REFERENCES

BETZ, J.E., 1976: Maxmin II EM Survey on the Jason and Tom Properties, Assessment Report.

BETZ, J.E.: Maxmin II Manual.

APPENDIX "C"

P E R S O N N E L

PERSONNEL

G. L. Wesa	Crew Chief, Geologist	Box 306 Lipton, Saskatchewan
S. S. Jones	Line Cutter	1566 Wilmont Place Victoria, B.C.
R. H. Hoffmann	Line Cutter	19 Queen Wawa, Ontario
W. F. McKenzie	Line Cutter	2585 Bellview West Vancouver, B.C.
P. R. Pitcher	EM Assistant	2325 West 8th Ave. Vancouver, B.C.
B. W. Goodacre	EM Operator	1895 San Juan Ave. Victoria, B.C.
K. B. Williams	Bull Cook	1855 Arbutus #102 Vancouver, B.C.
L. Hewstan	Cook	Box 4396 Whitehorse, Y.T.

APPENDIX "D"

C L A I M R E C O R D S U M M A R Y

CLAIM RECORD SUMMARY

Claim Name	Grant Number	Renewal Date
Net 1	YA 14843	December 22
Net 58 Fr	YA 14844	December 22
Net 59 Fr	YA 14845	December 22
Net 61 Fr	YA 14846	December 22
Net 77	YA 15144	November 21
Net 78	YA 15145	November 21
Net 80	YA 15147	November 21
Gary 1	Y 96250	November 21
Gary 2	Y 96251	November 21
Gary 3	Y 96252	November 21
Gary 5	Y 96253	November 21
Gary 6	Y 96254	November 21
Gary 7	Y 96255	November 21
Gary 8	Y 96256	November 21
Gary 9	Y 96257	November 21
Gary 10	Y 96258	November 21
Gary 11	Y 96259	November 21
Gary 13	Y 96260	November 21
Gary 14	Y 96261	November 21
Gary 15	Y 96262	November 21
Gary 16	Y 96263	November 21
Gary 17	Y 96264	November 21
Gary 18	Y 96265	November 21
Gary 19	Y 96266	November 21
Gary 20	Y 96267	November 21
Gary 21	Y 96269	November 21
Gary 23	Y 96270	November 21
Gary 25	Y 96272	November 21
Gary 26	Y 96273	November 21
Gary 27	Y 96274	November 21
Gary 58	Y 97711	November 21

APPENDIX "E"

AFFIDAVIT OF EXPENDITURES

APPENDIX "E"

CANADA)
)
)
TO WIT:)

In the matter of a Maxmin II EM Survey report on behalf of the Ogilvie Joint Venture

I, Owen S. Hairsine, agent for Cordilleran Engineering Limited of city of Vancouver, Province of British Columbia

do solemnly declare, - Line cutting and electromagnetic survey were conducted on the Gary Claim Group (Net 1, 58Fr, 59Fr, 61Fr, 77, 78, 80; Gary 1-3, 5-11, 13-21, 23, 25-27, 58 claims), Mayo Mining District, Y.T., during the period June 8 to July 6, 1977.

The costs of this work were as follows:

	NORTH GRID	CENTRAL GRID	TOTAL
Consulting Fees	$1,348.75	$1,348.75	$ 2,697.50
Salaries	2,146.08	804.76	2,950.84
Fixed-Wing Aircraft	252.14	252.14	504.28
Travel	283.50	283.50	567.00
Freight,Truck Rental	211.41	211.41	422.82
Camp supplies & Food	515.38	515.38	1,030.76
	$4,757.26	$3,415.94	$ 8,173.20

And I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of The Canada Evidence Act.

Declared before me at Vancouver
Province of
in the British Columbia this
29 day of November 1977

O. S. Hairsine

Anthony J. Jasick

~~A Commissioner for Oaths for Yukon Territory~~ OR Notary Public for
A Notary Public in and for the
Province of British Columbia

APPENDIX "F"

SUPERVISOR'S CERTIFICATE

CORDILLERAN ENGINEERING LIMITED

MINERAL EXPLORATION
MANAGEMENT AND
ENGINEERING CONSULTANTS

1418 - 355 BURRARD STREET
VANCOUVER, B. C.
V 6 C 2 G 8
TELEPHONE (604) 681 - 8381

SUPERVISOR'S CERTIFICATE

I, Owen S. Hairsine of Port Moody, British Columbia hereby certify that:

1. I am a geological engineer residing at 1069 Cecile Drive, Port Moody, B.C.

2. I am employed by Cordilleran Engineering Limited of 1418 - 355 Burrard Street, Vancouver, B.C.

3. I received a Bachelor of Science degree from Michigan Technological University, Houghton, Michigan in 1969 and have practiced my profession since that time.

4. I am a member of the Association of Professional Engineers of the Province of British Columbia.

5. I supervised the writing of this report and the field work upon which it is based.

6. I have no beneficial interest in the Ogilvie Joint Venture or the mineral claims described in this report, nor do I expect to receive any.

CORDILLERAN ENGINEERING LIMITED

O. S. Hairsine, P.Eng.
Geologist

November, 1977
Vancouver, B.C.