LOG NO: 1209 RD.
ACTION:
FILE NO: 87-561-16600

GEOPHYSICAL SURVEYS

ECSTALL PROPERTY
THIRTEEN CREEK GRID

(RED 2, 3 & 4, BLUE 1 AND GREEN 1 CLAIMS, SKINNY FRACTION)

SKEENA MINING DIVISION,

BRITISH COLUMBIA

NTS 103H/13E

53°50'56" 129°31'35"

Owner: KIDD CREEK MINES LTD.

Operator: ~~KIDD CREEK MINES LTD.~~ FALCONBRIDGE LIMITED

SUB-RECORDER
RECEIVED
DEC 1987
M.R. # $
VANCOUVER, B.C.

FILMED

November 17, 1987. G.A. Hendrickson, B.A.Sc., GEOLOGICAL BRANCH ASSESSMENT REPORT

16,600

SMITHERS

87-861-16600

Province of British Columbia | Ministry of Energy, Mines and Petroleum Resources

ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
Geophysical ; Physical	$65,400.00

AUTHOR(S) G.A. HENDRICKSON SIGNATURE(S) F. R. [signature], P.Eng.

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED October 30, 1987 YEAR OF WORK 1987

PROPERTY NAME(S)

WEST GRID; THIRTEEN CREEK CIRQUE

COMMODITIES PRESENT Cu, Zn, Ag, Au

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN 103H - 53;54

MINING DIVISION SKEENA NTS 103 H/13E

LATITUDE 53°50'56" LONGITUDE 129°31'35"

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

RED 1	(16 units)	RED 4	(15 units)	BLUE 3	(10 units)
RED 2	(12 units)	RED 6	(8 units)	BLUE 4	(6 units)
RED 3	(9 units)	BLUE 1	(16 units)	GREEN 1	(1 unit)
				SKINNY FR	(1 unit)

OWNER(S)

(1) KIDD CREEK MINES LTD. (2)

MAILING ADDRESS

701 - 1281 W. Georgia St
VANCOUVER, B.C. V6E 3J7

OPERATOR(S) (that is, Company paying for the work)

(1) FALCONBRIDGE LIMITED (2)

MAILING ADDRESS

701 - 1281 W. Georgia Street
Vancouver, B.C. V6E 3J7

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The claims are underlain by metamorphic rocks of the Ecstall Pendant, Central Gneiss Complex of possible early Paleozoic to early Mesozoic age. Metamorphic grade is greenschist to amphibolite. The property surrounds claims hosting the Ecstall massive sulphide deposit and is underlain by favourable metavolcanic rocks hosting that deposit. Foliation and bedding strike northerly; dips are steeply east.

REFERENCES TO PREVIOUS WORK

(over)

TABLE OF CONTENTS

Introduction

On behalf of Kidd Creek Mines Ltd., a division of Falconbridge Ltd., Delta Geoscience Ltd. conducted ground geophysical surveys on the Thirteen Creek Grid of the Ecstall property. The surveys took place during the period July 25 to August 14, 1987. The 1987 work is a large expansion of the work begun on the West Grid during the summer of 1986, and is essentially ground follow-up of a helicopter INPUT survey flown by Questor Surveys during December of 1985.

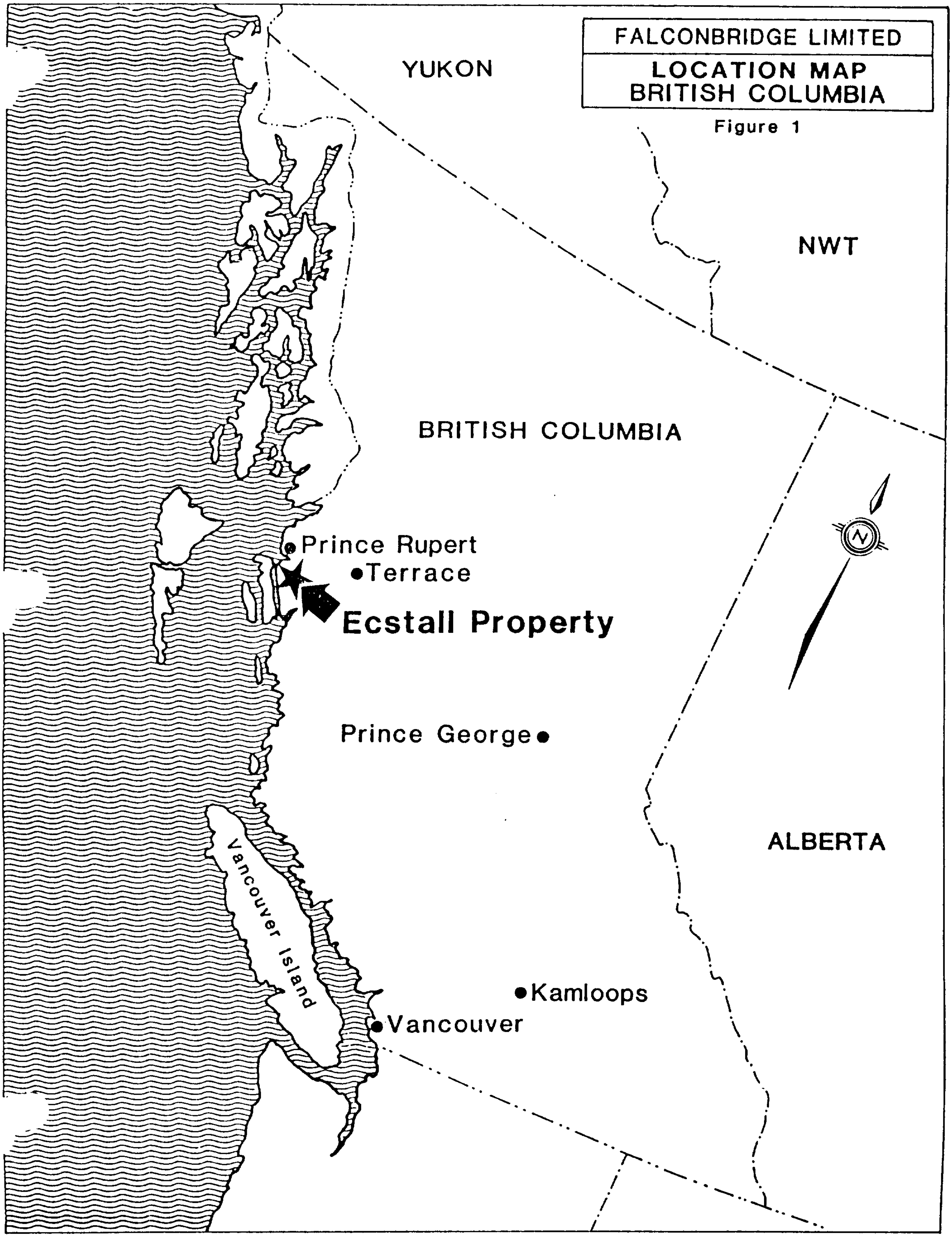
The grid lies within claims RED 2-4, BLUE 1, GREEN and SKINNY FRACTION. These claims are owned by Kidd Creek Mines Ltd., and are located in the Skeena Mining Division, NTS Sheet 103H/13E, approximately 100 kms. southeast of Prince Rupert (Figure 1). The Ecstall river runs along the north edge of the grid (Figure 2). Johnson Lake is approximately 5 kms. northeast of the grid.

The property is located on an assemblage of Permian (?) metasedimentary and volcanic rocks that exist as a very large pendant within the Coast Range intrusives. Exploration was for volcanogenic massive sulphide deposits. The topography of the grid is rugged.

G. Hendrickson, the author of this report and Senior Geophysicist for Delta Geoscience Ltd., planned and supervised the geophysical work in consultation with Frank Hassard, a senior geologist for Falconbridge Ltd.

Ground geophysical techniques included horizontal co-planer loop electromagnetics, V.L.F., magnetic total field and magnetic gradiometer surveys. Approximately 34 kms. of grid lines were surveyed during the survey period.

Room and board for the crew was provided in the camp Falconbridge Ltd. established near the Ecstall River. Access to the grid was provided by a 206B helicopter chartered by Falconbridge Ltd.


FALCONBRIDGE LIMITED
LOCATION MAP
BRITISH COLUMBIA
Figure 1
YUKON
NWT
BRITISH COLUMBIA
Prince Rupert
Terrace
Ecstall Property
Prince George
ALBERTA
Vancouver Island
Kamloops
Vancouver
N

Personnel - Delta Geoscience Ltd.

July 25 - August 14, 1987:
Robert Wilson-Smith - Junior Geophysicist/Crew Chief
Dean Truant - Junior Geophysicist
Greg Martin - Technician

August 1 - 14, 1987:
Rick Ofner - Technician

July 29 - 31, 1987:
Grant Hendrickson - Senior Geophysicist - Supervisor

Equipment

2 - Apex Parametrics Maxmin 1+ Electromagnetic System
1 - Scintrex I.G.S. System, configured as a VLF/MAG/GRAD
1 - Scintrex MP-3 Base Station Magnetometer
1 - H.P.110 Field Computer, complete with disc drive and printer.

Data Presentation

Stacked profile plans of the filtered V.L.F., magnetics, horizontal co-planer loop electromagnetics and gradiometer data are presented at a scale of 1:5000. Profiles are provided, since they aid in interpretation.

In addition, the magnetics and filtered V.L.F. data are presented as contoured plans with the contour interval at 100 nanotesla and 10% respectively. Figure numbers and map titles are listed below.

Fig.#3 - H.L.E.M. 3555 Hz. plan @ 1cm = 40%.
Fig.#4 - H.L.E.M. 888 Hz. plan @ 1cm = 40%.
Fig.#5 - Filtered vertical in-phase V.L.F. profile plan (Fraser Filter) @ 1cm = 40%.
Fig.#6 - Contoured V.L.F. plan (Fraser filter) @ contour interval = 10%.
Fig.#7 - Total Field Magnetic Profile plan @ 1cm = 500nt
Fig.#8 - Total Field Magnetic Contour plan @ contour interval = 100nt.
Fig.#9 - Gradiometer Profile Plan @ 1cm = 100nt/.5m.

Separate profile sections of the V.L.F. data are also given, with the Fraser and Hjelt filtered values posted below the profiles. The scale of these sections is 1:2500 and they can be found at the back of this report.

Survey Procedures

Falconbridge Ltd. personnel ensured that the grid was cut and chained prior to the arrival of the geophysical crew. Line cutting was contracted out, however Falconbridge crews accurately chained the grid using portable inclinometers to correct for the steep slopes. Line separation was 100 metres, with a station separation of 20 metres horizontal (Figure 2).

Horizontal Co-Planer Loop Survey:

Two coil separations were used: 160m. and 120m. The larger coil separation was used in an effort to see deeper. It became apparent that interference from closely spaced conductors and difficulty in manoeuvring the larger cable was a problem, therefore the crew switched to the 120m. coil separation. Note that the maximum depth of detection for vertical bodies is half the coil separation. All lines north of 8300N were read with the 120m. coil separation, whereas L8300N and all lines to the south were read with the 160m. coil separation.

Data was recorded at two frequencies, 3555 Hz. and 888 Hz. to help evaluate conductor quality. The higher frequency responds better to poor conductors, whereas the lower frequency only responds well to good conductivity, thus some means of discriminating conductivity is provided. In addition, coil separation and reading errors are quite recognizable in the two frequency data.

Topography profiles provided by Falconbridge allowed the geophysical crew to correct the in-phase H.L.E.M. data for coil separation variations and to keep the coils co-planer, essential for accurate results. This was no small task in the severe terrain of the Thirteen Creek grid area.

V.L.F. Survey:

Three components of the V.L.F. field were read at each station: the vertical in-phase, vertical quadrature and horizontal field strength.

Data was taken using the HAWAII station transmitting at 23.4 khz. The orientation of this station to the expected strike of the geology is acceptable (approximately 45°), but not optimal. The Seattle station transmitting at 24.8 khz. has a much better orientation - unfortunately the U.S. Navy shut down this station for the duration of this field work.

The V.L.F. data was filtered using two different filters, the Fraser Filter and the Hjelt Filter. Fraser filtering helps to remove topographical effects and gives a numerical evaluation of the relative strength of the V.L.F. conductors.

The Hjelt filter gives a numerical evaluation of the conductors as well, however provides some information on the dip and best depth to test a V.L.F. conductor.

An important parameter of V.L.F. surveying - the skin depth - should be noted here. Skin depth is a useful parameter for describing the depth of penetration of V.L.F. signals. A good conductor buried at one skin depth will produce a signal at the surface with an amplitude equal to approximately 10% of the incident field. Detection and subsequent interpretation of this weak signal would be difficult in the presence of any noise. Skin depth decreases with an increase in frequency and decrease of the resistivity of the bedrock and/or overburden. For the average apparent resistivity encountered in this survey, estimated from the background H.L.E.M. responses to be greater than 1000 ohm-m, the skin depth is approximately 125 metres.

Magnetic and Gradiometer Surveys:

Measurements of the total magnetic field strength and vertical gradient were taken simultaneously with the V.L.F. survey. Magnetic field measurements were corrected for any diurnal variation, through the use of the MP-3 base station magnetometer located at the Falconbridge camp, north of the Ecstall River. A base station standard of 56600 nanotesla was assumed for this survey. The gradiometer and total field magnetic measurements were taken with the sensor 2.5 metres and 3 metres above the ground. Readings are accurate to the 1 nanotesla range.

The gradiometer survey is a useful adjunct to magnetic surveying. The gradiometer acts like a filter in that it enhances local near surface anomalies at the expense of long wavelength regional anomalies. The rate of fall-off of the magnetic field with height is much higher for local sources than for regional sources, therefore a higher gradient can be recorded over local sources using sensors either 1 metre or 0.5 metres vertically apart. For this survey, the sensors were spaced 0.5 metres apart for convenience in the rough topography and thick underbrush.

A useful feature of the gradiometer data is that it allows a simple calculation to be made for the depth of an anomaly (assuming a dipole field).

$$\text{Depth (in metres)} = \frac{-3\ (\text{total field anomaly})\ \text{in nanotesla}}{\text{gradient anomaly in nanotesla/metre}}$$

The gradiometer measurement can also help to accurately locate the contact area between rocks of slightly different magnetic susceptibility.

Discussion of the Data

Data quality is generally quite good, despite the rough topography and thick underbrush prevalent in the area. Occasionally, lines could not be extended or surveyed due to severe topography problems.

This report is written with only a cursory knowledge of the grid geology, however a perusal of the geophysical data suggests several possibilities about the geology and mineralization.

The continuity of conductors is the most remarkable feature of the E.M. data.

Four conductive horizons, A, B, C & D, have been detected by the electromagnetic survey. Conductors A and C were detected poorly by the H.L.E.M., yet showed up excellently in the V.L.F. data. Conductors B & D are better conductors and responded well to both the 888 and 3555 frequencies. Conductor D, a strong conductor, was detected on only one line by the H.L.E.M., however was not detected at all by the V.L.F. This is likely due to the very limited strike length of conductor D. Conductor D is directly associated with a strong magnetic anomaly, a fact that suggests Pyrrhotite mineralization is the source of the conductivity. Conductor B was detected excellently by both the H.L.E.M. and V.L.F. techniques. Conductor B, by far the strongest conductor, looks very formational (very long strike length). Conductive argillites are very likely the cause of some of the conductivity.

All of the conductors, with the exception of A, appear to subcrop. Overburden thickness is negligible. The Hjelt filter sections suggest that conductor A does not always reach the surface. The apparent NNW strike of the conductors must be considered in light of the apparent dip and the substantial topography changes that take place along strike. Dip generally appears to be steeply to the west. Interference from closely spaced conductors is a problem affecting the interpretation of conductors A & B.

The 3555 Hz. H.L.E.M. data is noisy, especially at lines 7700N to 8200N. This noise, which is attenuated by the 888 Hz. frequency, probably reflects more difficult terrain and an increase in geologic noise due to minor variations in the conductivity of the bedrock.

The magnetic survey has shown that the west half of the grid is underlain by rocks that generally have a higher magnetic susceptibility. Higher magnetic susceptibility generally indicates that the bedrock is more mafic. Numerous magnetic anomalies within the west half of the grid are undoubtedly due to magnetite horizons that likely are hosted in mafic volcanics. These magnetic anomalies also indicate a steep west dip to the bedrock. Intercalated magnetic lows within the west half of the grid may be due to felsic volcanic horizons.

The Coast Range intrusive rocks (Quartz Diorite), which flank the west side of the grid, are known to be magnetic due to the presence of disseminated magnetite. These intrusives may be responsible for the high magnetics on the extreme west side of the grid.

The east half of the grid has a low magnetic susceptibility, a fact that suggests the east half is dominantly underlain by metasediments. Felsic volcanics can also have a low magnetic susceptibility, thus one has to be cautious of this interpretation.

Conductors A and B are hosted by rocks of low magnetic susceptibility, while conductor D is hosted by rocks of relatively higher magnetic susceptibility. Conductor C is unique in that it lies close to the contact area that defines the magnetic susceptibility difference between the east and west half of the grid.

Minor magnetic anomalies are coincident with most of the conductors, a fact which suggests a minor amount of pyrrhotite may be contributing to the conductivity.

Cross faulting does not appear to be a problem, however there appears to have been some dislocation of conductors along strike.

Conclusion and Recommendations

The H.L.E.M/V.L.F/MAG surveys have accurately mapped the conductivity and magnetic susceptibility of the grid in a cost effective manner.

Conductors should be related to the detailed geology and known mineralization to help evaluate the possible source of the conductivity. The limited amount of drilling done in 1986 should be plotted on the conductor plans, to see which conductors have been tested. The drill holes should also be plotted on the Hjelt filter sections appended to this report.

Conductor C is an attractive feature that deserves close attention. The limited strike length of this conductor may be significant.

Despite the formational look of conductors A and B, they should be carefully evaluated, since the source of conductivity can change rapidly along strike.

G. Hendrickson

Grant A. Hendrickson, P.Geoph.

REFERENCES

Hassard, F.R., et al. 1986: Geological, Geophysical and Geochemical Surveys and Diamond Drilling, Ecstall Project, Skeena Mining Division; unpublished Falconbridge Limited report.

Karous, M., and Hjelt, S.E, 1983: Linear Filtering of V.L.F. Dip-Angle Measurements; Geophysical Prospecting.

Martyn, D., 1986: Airborne Electromagnetic/Magnetic Survey, Ecstall River Area, British Columbia; unpublished report prepared by Questor Surveys Limited for Kidd Creek Mines Ltd.

Statement of Qualification

Grant A. Hendrickson

- B.Science, U.B.C. 1971, Geophysics option.
- For the past 17 years, I have been actively involved in mineral exploration projects throughout Canada and the United States.
- I am a registered Professional Geophysicist with the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- I am an active member of the S.E.G., E.A.E.G., and B.C.G.S.

G. Hendrickson

Grant A. Hendrickson, P.Geoph.

COST STATEMENTS

GROUP ECSTALL K-1
(RED 1 to 4 and 6; BLUE 1, 3 and 4; GREEN 1; SKINNY FRACTION)

Linecutting

S.R. Oscsko Exploration Services:

Linecutting: 33 km. grid lines @ $275. (measured horizontally)	$ 9,075.
Mob & Demob, men & equipment: Oscsko invoice 3 men, 16 days	1,250.

Falconbridge Limited:

Falconbridge wages: Chaining 33.8 km; cutting 0.8 km. grid 4 men, 10 days @ $85.50 average, Cook 8 days (pro rata) @ $114.	$ 4,300.

General:

Camp costs: Total of 96 man-days @ $55.	$ 5,300.
(Camp Cost rate is averaged for program and includes cost of: food, camp mob & demob., service by fixed-wing aircraft and helicopter, fuel, supplies and equipment purchase and repair; divided by the total man-days out of the camp.)	
Helicopter: 12.5 hrs. @ $508.63 (incl. fuel & oil)	$ 6,400.
Fixed-wing Aircraft: Crew mob by TPA Otter @ $428. (demob. by helicopter)	$ 400.
Total Linecutting:	**$26,700.**

Ground Geophysics:

Delta Geoscience Ltd:

4 man crew: Maxmin (3 men) + VLF, Mag. - 14 days @ $950.	$13,300.
3 man crew: Maxmin (2 men) + VLF, Mag. - 5 days @ $875. Total of 71 man-days on property	$ 4,375.
Mob & Demob (men & equipment)	$ 3,081.
Crew travel - 2 days	$ 1,248.
Travel charges: Fixed-wing aircraft TPA: 2 Beavers @ $301., 1 Otter @ $428.	$ 1,030.
Falconbridge wages: (cooking - 11 days, pro rata @ $114. Supervision & grid orientation - 2 days @ $124)	$ 1,500.
Camp costs: 84 man-days @ $55.	$ 4,600.
Helicopter: 14.1 hrs. @ $508.63.	$ 7,170.
Report, interpretation and drafting Delta Geoscience Ltd: 8 days @ $300.	$ 2,400.
Total Ground Geophysics:	**$38,700.**

CERTIFICATION

I, Franklin R. Hassard, of Burnaby, British Columbia, do hereby certify that:

1. I am a Senior Exploration Geologist with Falconbridge Limited at #701, 1281 West Georgia Street, Vancouver, B.C., V6E 3J7.

2. I am a graduate of the University of British Columbia, B.A.Sc. degree in Geological Engineering 1970.

3. I have practiced my profession for over 17 years.

4. I am a member of the Association of Professional Engineers of Ontario and a Fellow of the Geological Association of Canada.

5. Geophysical exploration on the Ecstall property during 1987, and the subject of this report by Delta Geoscience Ltd., was carried out under my general direction.

6. The costs itemized in the Cost Statement are correct and were incurred on behalf of Kidd Creek Mines Ltd., a division of Falconbridge Limited.

Dated this seventeenth day of November, 1987, at Vancouver, B.C.

Franklin R. Hassard, P.Eng.

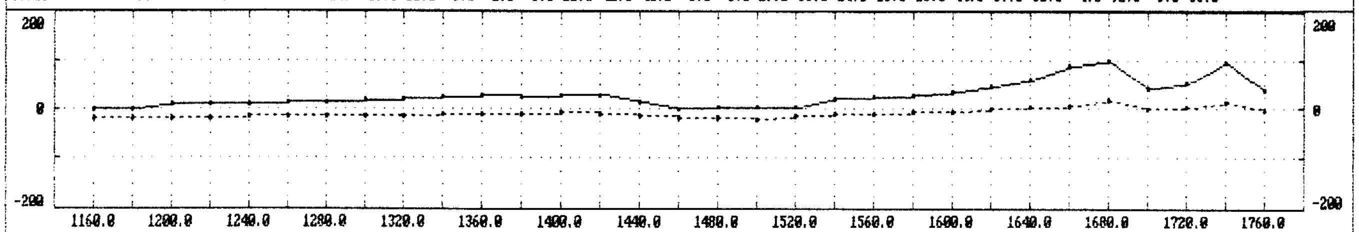
ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 7200N.

Q% -17.0 -17.0 -16.0 -16.0 -15.0 -15.0 -15.0 -14.0 -12.0 -10.0 -10.0 -9.0 -8.0 -9.0 -12.0 -18.0 -18.0 -19.0 -15.0 -11.0 -9.0 -6.0 -6.0 0.0 3.0 6.0 17.0 -1.0 4.0 13.0 -3.0

I% 1.0 2.0 11.0 12.0 12.0 13.0 15.0 19.0 23.0 26.0 28.0 26.0 29.0 28.0 16.0 -1.0 5.0 4.0 5.0 23.0 24.0 28.0 34.0 46.0 60.0 87.0 101.0 42.0 54.0 95.0 39.0

FRFLT -20.0 -11.0 -2.0 -4.0 -9.0 -14.0 -15.0 -12.0 -5.0 -1.0 -3.0 11.0 42.0 40.0 6.0 -5.0 -19.0 -38.0 -24.0 -15.0 -28.0 -44.0 -67.0 -82.0 4.0 92.0 -6.0 -38.0



20.0 -2.8 -5.9 -6.6 -1.3 -2.1 -2.5 -4.1 -5.4 -4.5 -3.8 -0.6 0.3 0.9 8.0 17.1 7.2 -2.9 0.6 -12.5 -12.2 -5.4 -9.9 -14.5 -19.0 -20.5 -25.3 19.9 29.[illegible] -27.2 16.4 40.1 20.0

40.0 -5.3 -8.5 -6.8 -7.1 -3.7 -5.4 -8.0 -9.1 -6.8 -1.7 -2.6 -1.4 6.7 13.4 12.0 13.1 5.3 -15.5 -12.8 -16.7 -21.7 -12.4 -19.5 -41.3 -39.3 5.8 4.6 -3.0 36.6 10.6 25.4 40.0

60.0 -4.1 -6.3 -8.6 -8.0 -9.6 -5.8 -5.6 -7.8 -7.7 -9.0 -7.6 2.1 12.9 10.9 9.0 9.0 -3.8 -11.3 -16.1 -15.4 -25.6 -29.3 -32.9 -37.7 -6.2 -9.4 -25.3 14.3 38.4 [illegible] 27.0 60.0

80.0 -1.2 -3.7 -5.7 -8.5 -9.3 -10.5 -7.6 -8.9 -10.9 -10.7 -4.3 6.9 4.8 4.6 4.8 0.2 0.7 -4.8 -8.2 -26.2 -28.5 -40.2 -48.6 -4.1 -9.8 -30.0 4.0 15.4 31.3 53.5 69.[illegible] 80.0

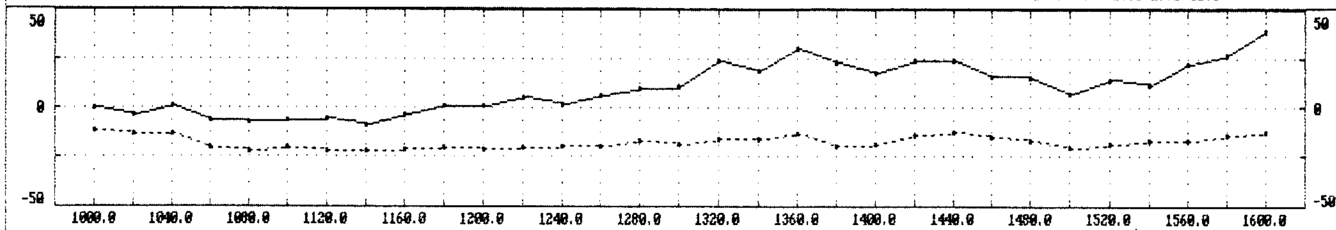
100.0 4.4 0.3 -3.9 -8.5 -14.9 -15.3 -13.8 -11.3 -11.5 -5.3 1.6 -2.3 6.0 6.7 -5.4 2.7 1.4 -1.8 -7.2 -18.3 -45.1 -48.7 -15.4 -20.6 -31.9 1.8 10.9 22.1 36.1 49.1 69.9 100.0

120.0 120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7300N.

Q%	-11.0	-13.0	-13.0	-20.0	-22.0	-20.0	-22.0	-22.0	-21.0	-20.0	-21.0	-20.0	-19.0	-19.0	-17.0	-18.0	-16.0	-16.0	-13.0	-19.0	-18.0	-14.0	-12.0	-15.0	-17.0	-20.0	-18.0	-17.0	-17.0	-14.0	-12.0
I%	0.0	-3.0	1.0	-6.0	-7.0	-6.0	-5.0	-9.0	-3.0	1.0	1.0	5.0	2.0	6.0	10.0	11.0	24.0	19.0	30.0	23.0	18.0	24.0	24.0	16.0	15.0	7.0	14.0	12.0	22.0	27.0	39.0
FRFLT		2.0	11.0	8.0	-2.0	1.0	1.0	-12.0	-14.0	-8.0	-5.0	-2.0	-9.0	-13.0	-19.0	-22.0	-14.0	-10.0	8.0	11.0	-7.0	2.0	17.0	18.0	10.0	-4.0	-13.0	-23.0	-32.0		

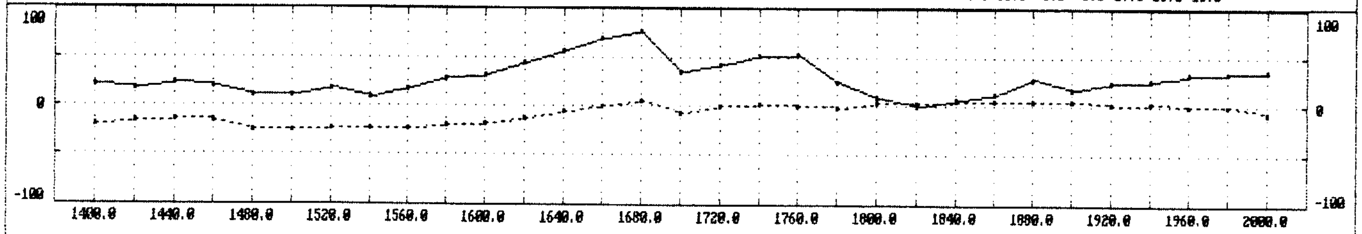


20.0	3.0	-0.3	2.0	4.8	0.3	-0.9	1.2	-1.5	-6.4	-2.1	-3.5	-1.6	-1.0	-6.5	-2.9	-9.9	-5.0	-3.5	-3.9	7.0	-0.6	-2.2	5.9	4.5	5.7	0.5	-3.5	-5.8	-11.2	-11.8	-15.5	20.0
40.0	-0.9	4.3	3.7	0.8	3.1	1.5	-2.4	-4.2	-3.8	-8.9	-5.1	-4.2	-7.0	-5.6	-12.8	-8.6	-12.6	-6.8	2.9	-2.6	2.4	3.1	0.9	0.1	4.9	-0.2	-7.1	-13.7	-16.8	-23.9	-24.5	40.0
60.0	1.6	2.7	2.9	2.2	2.4	1.2	-5.1	-6.4	-7.4	-6.0	-9.2	-7.6	-6.6	-14.2	-8.9	-16.4	-9.8	-5.6	-7.6	-2.1	-0.3	4.7	4.5	-2.1	1.6	-2.7	-10.6	-17.6	-28.4	-30.1	-36.2	60.0
80.0	1.2	1.2	1.1	4.3	-1.3	-4.4	-3.0	-8.4	-5.7	-8.0	-9.2	-11.0	-15.2	-9.3	-15.9	-10.5	-10.9	-13.1	-11.6	-8.2	0.0	1.2	3.0	0.1	-9.7	-8.9	-16.3	-25.9	-30.4	-41.4	-42.0	80.0
100.0	-1.1	-1.9	1.5	-2.0	-2.5	-2.6	-6.3	-2.6	-7.3	-10.3	-9.6	-16.4	-15.7	-19.5	-13.7	-12.7	-14.8	-16.9	-11.6	-9.8	-4.9	-2.0	-4.3	-3.8	-10.8	-20.8	-23.4	-29.0	-39.4	-44.8	-54.5	100.0
120.0																																120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7350N.

Q%	-19.0	-16.0	-14.0	-15.0	-24.0	-25.0	-23.0	-22.0	-23.0	-20.0	-17.0	-11.3	-5.7	0.0	5.0	-7.0	0.0	2.0	0.0	-2.0	3.0	3.0	5.0	5.0	5.0	5.0	2.0	3.0	0.0	0.0	-6.0
I%	22.0	17.0	24.0	19.0	10.0	11.0	17.0	9.0	17.0	28.0	32.0	44.3	56.7	69.0	76.0	35.0	42.0	52.0	54.0	25.0	9.0	0.0	8.0	12.0	20.0	18.0	25.0	26.0	34.0	35.0	30.0
FRFLT			-4.0	12.0	22.0	1.0	-5.0	2.0	-19.0	-34.0	-31.3	-41.0	-49.3	-44.0	14.7	68.0	17.0	-29.0	15.0	72.0	70.0	26.0	-11.0	-32.0	-26.0	-3.0	-5.0	-17.0	-18.0	-13.0	



20.0	3.7	-0.1	-0.6	0.0	4.9	-3.8	0.6	-1.2	-13.2	-10.4	-12.9	-17.4	-12.0	-12.4	17.4	18.3	-6.3	-0.5	16.8	25.6	15.4	2.4	-4.9	-11.8	-5.0	-0.1	-6.5	-5.1	-6.6	-3.3	-5.0	20.0
40.0	-1.6	2.7	6.7	1.8	2.6	4.1	-7.0	-13.3	-11.0	-18.0	-22.0	-25.6	-27.0	5.0	10.3	11.3	12.0	4.8	17.[illegible]	33.0	30.[illegible]	6.2	-11.6	-8.3	-6.4	-7.4	-5.2	-12.7	-10.7	-11.0	-7.2	40.0
60.0	-0.3	4.5	3.8	-0.7	0.0	-0.5	-4.4	-11.3	-18.6	-24.6	-32.6	-29.1	0.2	-4.5	-4.9	-1.3	22.3	34.0	18.1	15.9	20.4	16.0	6.3	-6.7	-16.8	-14.5	-11.0	-3.1	-14.1	-13.9	-17.1	60.0
80.0	1.1	0.5	-2.7	7.3	2.3	-6.9	-5.0	-14.1	-23.9	-28.3	-29.9	-13.1	-14.7	-14.2	-13.0	10.3	24.9	35.7	35.6	8.5	3.7	15.1	12.[illegible]	-1.2	-13.9	-19.0	-15.7	-17.9	-9.2	-15.1	-13.4	80.0
100.0	2.9	0.2	4.9	1.6	-0.6	-4.2	-12.5	-15.7	-25.7	-37.9	-14.1	-15.5	-25.6	-22.4	1.5	11.7	22.9	26.2	30.1	23.2	5.5	5.3	8.6	5.2	-11.0	-19.0	-25.1	-21.9	-20.4	-10.9	-21.7	100.0
120.0																																120.0

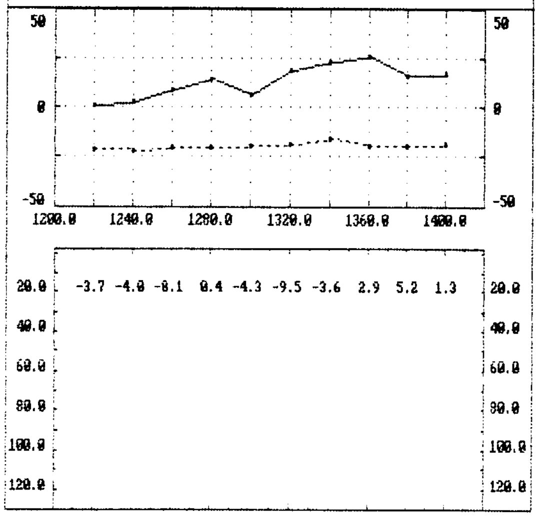
ECSTALL WEST GRID, VLF DAT

LINE 7400N.

Q% -21.0 -22.0 -20.0 -20.0 -19.0 -18.0 -16.0 -19.0 -19.0 -18.0

I% 1.0 3.0 9.0 14.0 6.0 19.0 23.0 26.0 16.0 17.0

FRFLT -19.0 -8.0 -2.0 -22.0 -24.0 0.0 16.0



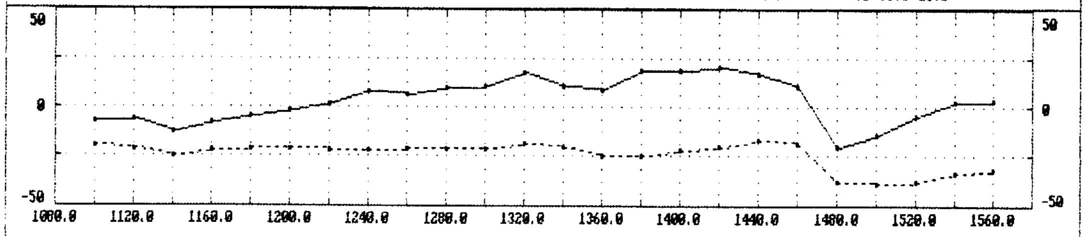
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7500N.

Q% -19.0 -21.0 -25.0 -22.0 -21.0 -21.0 -22.0 -22.0 -21.0 -21.0 -21.0 -18.0 -20.0 -25.0 -25.0 -22.0 -20.0 -17.0 -18.0 -38.0 -39.0 -38.0 -33.0 -32.0

I% -7.0 -6.0 -12.0 -8.0 -4.0 -2.0 2.0 8.0 6.0 10.0 11.0 18.0 11.0 9.0 19.0 19.0 20.0 17.0 11.0 -20.0 -14.0 -4.0 3.0 4.0

FRFLT 7.0 -6.0 -14.0 -12.0 -16.0 -14.0 -6.0 -7.0 -13.0 -8.0 9.0 1.0 -18.0 -11.0 1.0 11.0 46.0 62.0 9.0 -33.0 -25.0

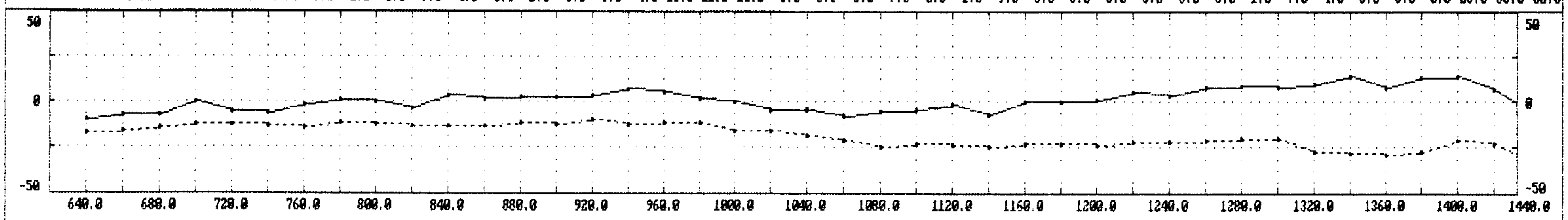


20.0	-0.4	2.4	0.9	-5.2	-4.0	-4.3	-6.9	-3.1	-2.6	-3.1	-4.3	-1.4	4.6	-5.3	-5.0	-0.1	3.6	6.1	21.1	14.5	-8.1	-7.9	-6.5	-5.3
40.0	1.8	-0.4	-2.6	-3.2	-8.9	-10.5	-6.1	-6.7	-7.3	-7.7	-4.3	-0.7	-4.6	2.7	-3.0	-5.3	3.8	22.5	18.4	10.5	4.0	-14.0	-12.9	-8.5
60.0	-1.5	-3.0	-4.4	-6.2	-8.7	-11.5	-11.8	-10.3	-11.8	-5.3	2.3	-6.0	-4.9	-7.4	-1.2	-1.5	15.3	16.5	11.5	8.2	5.9	-0.9	-21.3	-19.4
80.0																								
100.0																								
120.0																								

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7600N.

Q%	-17.0	-16.0	-14.0	-12.0	-12.0	-13.0	-14.0	-11.0	-12.0	-13.0	-13.0	-13.0	-11.0	-12.0	-10.0	-12.0	-11.0	-11.0	-16.0	-16.0	-18.0	-21.0	-25.0	-23.0	-24.0	-25.0	-23.0	-23.0	-24.0	-22.0	-22.0	-21.0	-20.0	-20.0	-27.0	-28.0	-29.0	-27.0	-21.0	-23.0	-33.0	-3
I%	-10.0	-7.0	-7.0	0.0	-5.0	-6.0	-2.0	1.0	0.0	-3.0	4.0	2.0	3.0	3.0	4.0	7.0	5.0	2.0	0.0	-4.0	-4.0	-8.0	-5.0	-4.0	-2.0	-7.0	0.0	0.0	1.0	5.0	4.0	8.0	9.0	8.0	10.0	14.0	8.0	13.0	14.0	7.0	-5.0	-1
FRFLT		-10.0	-9.0	4.0	3.0	-10.0	-9.0	2.0	0.0	-9.0	-4.0	0.0	-2.0	-5.0	-5.0	4.0	10.0	11.0	10.0	8.0	5.0	-3.0	-7.0	0.0	1.0	-9.0	-8.0	-6.0	-8.0	-6.0	-8.0	-5.0	-1.0	-7.0	-4.0	3.0	-5.0	0.0	25.0	36.0	32.0	



	640	660	680	700	720	740	760	780	800	820	840	860	880	900	920	940	960	980	1000	1020	1040	1060	1080	1100	1120	1140	1160	1180	1200	1220	1240	1260	1280	1300	1320	1340	1360	1380	1400	1420	
20.0	-3.7	-1.4	-4.3	-1.9	2.8	-2.3	-3.3	-1.9	1.8	-2.7	-2.8	0.5	-1.6	-0.4	-2.1	-0.3	3.3	3.0	4.4	2.7	2.6	0.8	-1.8	-2.0	1.2	-1.5	-4.7	-0.5	-4.1	-2.1	-2.0	-3.5	-0.6	-0.6	-3.9	0.9	0.9	-2.2	5.0	12.2	20.0
40.0	-1.4	-7.3	-2.8	-0.2	-3.6	-1.8	-3.5	-2.6	-4.0	-0.7	-2.3	-3.8	0.1	-2.0	-0.9	0.7	2.7	6.1	5.0	6.0	2.8	0.2	-0.7	-0.6	-2.9	-2.7	-2.5	-7.7	-3.1	-5.4	-4.9	-2.9	-4.4	-3.6	1.8	-1.3	-0.6	5.8	7.2	12.3	40.0
60.0	-3.1	-2.4	-3.3	-4.5	-4.2	-3.9	1.0	-6.0	-5.3	-3.4	-0.8	-2.1	-4.7	-0.9	-0.4	1.4	4.2	4.1	7.8	5.3	2.8	0.6	0.9	-2.6	-4.4	-3.2	-5.5	-3.2	-9.3	-5.8	-5.4	-3.9	-3.6	0.0	-1.7	-3.0	-0.2	6.9	12.6	14.4	60.0
80.0	1.2	0.0	-3.5	-7.3	-5.1	-1.5	-5.3	0.2	-3.7	-4.5	-3.5	-4.5	-3.6	-2.9	1.4	3.1	3.2	4.8	4.2	5.3	2.9	4.0	-0.6	-3.4	-3.1	-8.0	-5.5	-5.7	-4.4	-6.0	-2.4	-5.5	-3.8	-4.9	-7.2	-1.5	6.3	7.3	14.6	17.0	80.0
100.0	3.6	-0.2	-3.1	-3.9	-3.4	-5.8	-2.8	-3.9	-0.3	-4.3	-6.4	-4.5	-1.2	-1.4	-1.1	3.0	4.2	2.8	3.2	2.3	5.8	2.1	0.3	-1.7	-5.7	-3.2	-7.6	-4.9	-3.5	-5.0	-10.5	-4.0	-8.4	-9.2	-3.3	2.8	6.8	13.0	12.9	5.9	100.0
120.0	4.0	1.1	0.1	0.8	-5.2	-5.9	-5.4	-3.6	-5.0	-3.1	-4.8	-4.1	-1.0	1.8	1.3	1.2	3.4	1.3	1.3	4.0	0.6	3.9	2.6	-0.6	-0.1	-3.9	-6.0	-8.7	-8.5	-11.0	-7.4	-13.3	-9.6	-5.5	1.2	5.6	10.1	12.6	4.7	2.9	120.0

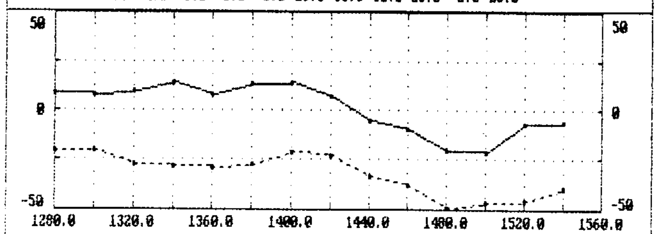
ECSTALL WEST GRID, VLF DATA (23.

LINE 7600N.

Q% -20.0 -20.0 -27.0 -28.0 -29.0 -27.0 -21.0 -23.0 -33.0 -38.0 -49.0 -47.0 -46.0 -40.0

I% 9.0 8.0 10.0 14.0 8.0 13.0 14.0 7.0 -5.0 -10.0 -20.0 -21.0 -7.0 -6.0

FRFLT -1.0 -7.0 -4.0 3.0 -5.0 0.0 25.0 36.0 32.0 26.0 -2.0 -28.0

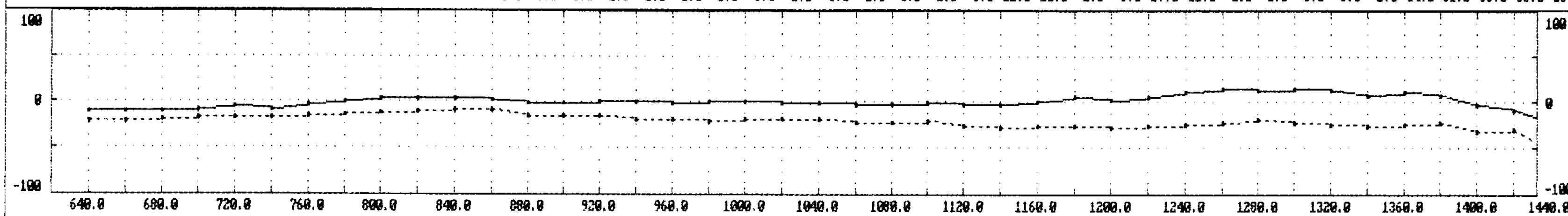


20.0	.6	-0.6	-3.9	0.9	0.9	-2.2	5.0	12.2	11.0	8.9	7.4	-7.5	-8.7	-4.8	20.0
40.0	.4	-3.6	1.8	-1.3	-0.6	5.8	7.2	12.3	19.3	15.6	0.1	-2.5	-10.3	-14.3	40.0
60.0	.6	0.0	-1.7	-3.0	-0.2	6.9	12.6	14.4	17.8	10.2	5.7	-4.1	-9.6	-18.4	60.0
80.0	.8	-4.9	-7.2	-1.5	6.3	7.3	14.6	17.0	5.6	8.1	5.4	-1.4	-10.7	-16.9	80.0
100.0	.4	-9.2	-3.3	2.8	6.8	13.0	12.9	5.9	6.9	1.0	0.7	-1.6	-8.2	-18.3	100.0
120.0	.6	-5.5	1.2	5.6	10.1	12.6	4.7	2.9	1.3	0.4	-5.7	-6.7	-8.5	-15.4	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7700N.

Q% -21.0 -21.0 -20.0 -18.0 -18.0 -17.0 -15.0 -13.0 -12.0 -11.0 -9.0 -9.0 -16.0 -15.0 -15.0 -19.0 -19.0 -21.0 -20.0 -20.0 -20.0 -22.0 -22.0 -21.0 -27.0 -28.0 -27.0 -27.0 -28.0 -27.0 -25.0 -22.0 -20.0 -22.0 -25.0 -26.0 -24.0 -23.0 -31.0 -29.0 -53.0 -4[illegible]
I% -10.0 -10.0 -10.0 -9.0 -5.0 -8.0 -4.0 0.0 4.0 3.0 3.0 2.0 -1.0 -2.0 0.0 0.0 -1.0 0.0 0.0 -2.0 -1.0 -3.0 -3.0 -2.0 -4.0 -3.0 0.0 5.0 2.0 5.0 10.0 14.0 12.0 14.0 12.0 8.0 10.0 8.0 -4.0 -9.0 -22.0 -2[illegible]
FRFLT -1.0 -6.0 -6.0 -2.0 -9.0 -16.0 -11.0 -2.0 2.0 5.0 8.0 3.0 -3.0 -1.0 1.0 -1.0 1.0 3.0 2.0 3.0 1.0 0.0 2.0 -3.0 -12.0 -10.0 -2.0 -8.0 -17.0 -11.0 -2.0 0.0 6.0 8.0 2.0 14.0 31.0 35.0 38.0 26.0



20.0 -0.2 -0.4 -0.5 -3.3 -1.2 -1.5 -5.2 -4.7 -2.3 0.4 0.5 2.4 2.4 -0.3 -0.9 0.6 0.0 -0.6 1.4 0.6 0.6 1.5 -0.6 0.5 -0.1 -2.3 -4.9 -2.1 -1.1 -5.2 -5.4 -1.6 -0.2 -0.4 3.9 2.4 1.4 10.3 11.4 11.8 20.0
40.0 -0.3 -1.5 -3.8 -1.8 -3.9 -5.5 -5.2 -6.3 -4.7 -1.7 2.6 2.0 1.0 1.1 0.3 -0.7 0.6 1.5 0.1 1.7 1.5 -0.7 1.4 -0.1 -2.5 -5.1 -3.9 -5.3 -6.2 -5.1 -6.3 -6.0 -0.2 5.0 2.7 5.5 10.8 10.5 18.4 21.8 40.0
60.0 -1.4 -3.5 -1.5 -3.5 -5.6 -8.1 -7.2 -4.9 -6.1 -2.2 0.5 1.8 1.3 1.9 0.2 -0.9 0.0 0.7 1.3 1.2 0.8 1.4 -0.9 -1.5 -5.3 -3.2 -4.0 -7.9 -9.7 -5.8 -3.6 -3.0 0.8 1.6 3.7 8.6 12.4 17.5 19.6 20.3 60.0
80.0 -2.6 -1.0 -3.5 -5.9 -8.2 -7.8 -7.7 -6.3 -2.6 -3.5 -2.4 -0.4 2.4 1.3 0.7 0.7 -1.2 -1.1 0.1 -0.1 1.0 1.0 -0.3 -3.7 -2.0 -4.7 -6.2 -7.5 -6.2 -5.9 -3.9 -0.3 -4.0 -2.3 6.1 11.2 17.1 21.8 20.2 13.4 80.0
100.0 -1.0 -3.3 -5.9 -8.3 -7.5 -7.5 -6.8 -5.1 -4.1 -2.9 -4.6 -2.3 -1.1 1.4 1.3 0.5 0.6 -0.8 -2.5 0.6 0.5 -1.3 -2.9 0.6 -2.0 -3.1 -5.7 -5.2 -7.4 -7.8 -6.2 -7.0 -3.2 1.8 5.9 15.8 21.7 19.3 16.0 12.0 100.0
120.0 -3.3 -5.5 -7.8 -7.2 -7.3 -6.9 -4.9 -4.6 -6.0 -6.1 -3.0 -5.5 -3.9 -0.9 1.2 1.8 1.5 1.2 0.5 -0.4 -0.1 -2.2 0.6 -0.3 -2.5 -6.3 -5.5 -8.5 -9.1 -7.1 -10.1 -8.5 -0.2 5.3 10.9 16.1 19.3 15.6 11.9 10.1 120.0

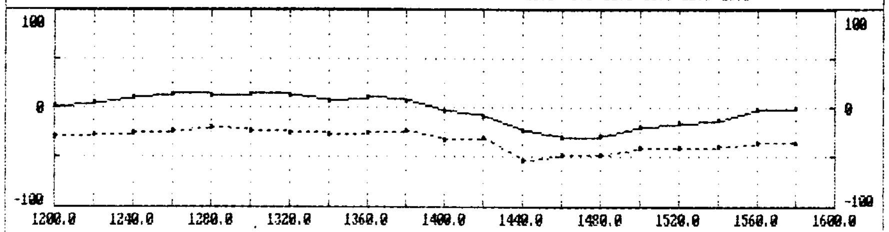
ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 7700N.

Q% -28.0 -27.0 -25.0 -22.0 -20.0 -22.0 -25.0 -26.0 -24.0 -23.0 -31.0 -29.0 -53.0 -48.0 -47.0 -41.0 -40.0 -38.0 -35.0 -35.0

I% 2.0 5.0 10.0 14.0 12.0 14.0 12.0 8.0 10.0 8.0 -4.0 -9.0 -22.0 -29.0 -28.0 -20.0 -16.0 -12.0 -2.0 0.0

FRFLT -8.0 -17.0 -11.0 -2.0 0.0 6.0 8.0 2.0 14.0 31.0 35.0 38.0 26.0 -3.0 -21.0 -20.0 -22.0 -26.0

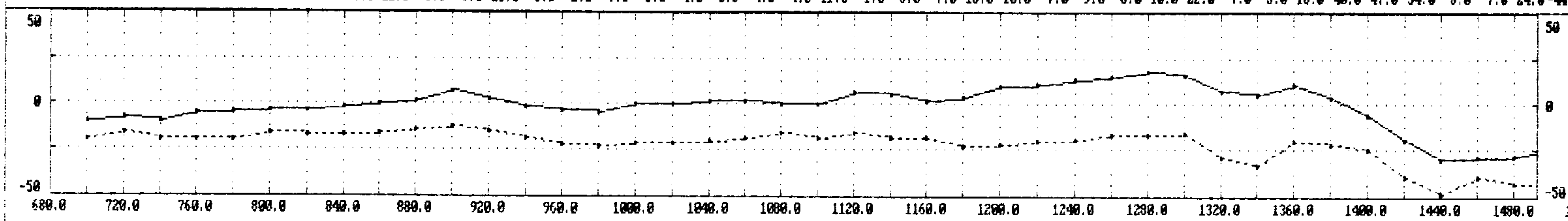


20.0	.1	-5.2	-5.4	-1.6	-0.2	-0.4	3.9	2.4	1.4	10.3	11.4	11.8	12.7	3.9	-4.4	-7.8	-5.9	-10.0	-8.6	-5.8	20.0
40.0	.2	-5.1	-6.3	-6.0	-0.2	5.0	2.7	5.5	10.8	10.5	18.4	21.8	13.4	5.8	-2.7	-9.2	-14.9	-11.9	-14.0	-16.0	40.0
60.0	.7	-5.8	-3.6	-3.0	0.8	1.6	3.7	8.6	12.4	17.5	19.6	20.3	15.3	6.0	0.8	-12.4	-17.4	-19.4	-17.3	-18.9	60.0
80.0	.2	-5.9	-3.9	-0.3	-4.0	-2.3	6.1	11.2	17.1	21.8	20.2	13.4	11.8	8.4	-3.5	-7.0	-17.6	-24.3	-26.2	-24.9	80.0
100.0	.4	-7.8	-6.2	-7.0	-3.2	1.8	5.9	15.8	21.7	19.3	16.0	12.0	7.1	2.5	0.7	-9.5	-14.9	-24.5	-31.1	-33.7	100.0
120.0	.1	-7.1	-10.1	-8.5	-0.2	5.3	10.9	16.1	18.3	15.6	11.9	10.1	3.3	-0.4	-2.8	-7.0	-16.4	-21.8	-32.3	-38.7	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7800N.

Q%	-19.0	-16.0	-19.0	-19.0	-19.0	-16.0	-17.0	-17.0	-16.0	-14.0	-12.0	-15.0	-18.0	-22.0	-23.0	-21.0	-21.0	-20.0	-18.0	-16.0	-18.0	-16.0	-18.0	-18.0	-23.0	-22.0	-20.0	-19.0	-17.0	-17.0	-16.0	-29.0	-33.0	-20.0	-22.0	-25.0	-40.0	-48.0	-40.0	-43.0	-42.0	-34
I%	-10.0	-8.0	-10.0	-5.0	-4.0	-3.0	-3.0	-2.0	0.0	2.0	7.0	3.0	-2.0	-3.0	-4.0	0.0	0.0	2.0	2.0	0.0	0.0	6.0	5.0	2.0	4.0	10.0	11.0	13.0	15.0	18.0	16.0	7.0	5.0	11.0	4.0	-6.0	-19.0	-30.0	-29.0	-28.0	-24.0	-9
FRFLT		-3.0	-9.0	-8.0	-3.0	-2.0	-4.0	-7.0	-11.0	-8.0	8.0	15.0	8.0	-1.0	-7.0	-6.0	-4.0	0.0	4.0	-4.0	-11.0	-1.0	5.0	-7.0	-15.0	-10.0	-7.0	-9.0	-6.0	10.0	22.0	7.0	-3.0	18.0	40.0	47.0	34.0	8.0	-7.0	-24.0	-44.0	

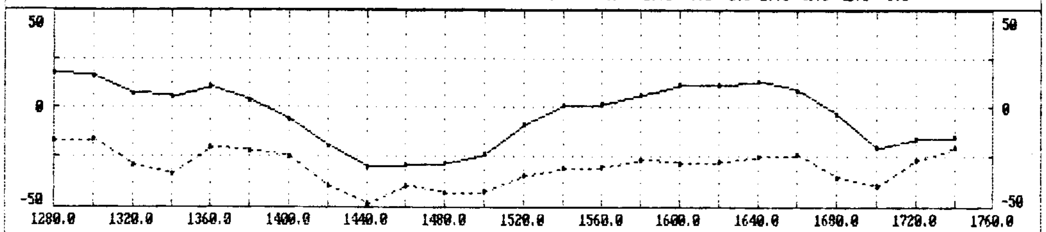


20.0	-2.2	-0.2	-2.2	-3.8	-1.3	-1.4	-1.0	-2.5	-2.3	-3.7	-0.6	5.2	2.9	1.7	-1.5	-2.4	-1.1	-1.5	0.5	0.8	-3.2	-2.9	1.5	-0.3	-4.8	-4.3	-2.7	-3.0	-2.2	-0.3	5.8	6.9	-0.5	3.4	11.9	14.0	15.5	7.2	-1.1	-3.6-	20.0
40.0	0.0	-3.6	-3.7	-3.4	-5.1	-2.5	-2.1	-2.8	-6.1	-3.3	0.7	2.4	5.7	1.5	-1.4	-3.4	-3.0	0.6	-0.1	-3.5	-3.0	-2.0	-3.2	-3.1	-3.9	-6.2	-6.0	-4.7	-2.6	4.3	7.5	6.9	8.8	8.6	14.8	23.7	18.3	11.[illegible]	2.5	-11.4-	40.0
60.0	-2.4	-4.1	-4.9	-3.6	-2.7	-5.1	-4.4	-6.9	-4.4	-1.5	0.0	1.5	0.3	3.1	0.1	-2.7	-3.0	-3.4	-4.1	-2.9	-0.6	-2.2	-5.7	-6.1	-4.2	-5.6	-7.9	-4.3	4.7	5.[illegible]	3.2	6.8	12.2	17.5	19.3	18.0	21.1	15.[illegible]	2.3	-10.4-	60.0
80.0	-1.5	-2.6	-2.9	-4.8	-5.6	-5.9	-9.9	-4.5	-1.3	-0.9	-0.3	-2.2	-1.2	-1.3	1.1	0.1	-2.8	-6.7	-6.8	-1.5	-1.8	-4.2	-3.6	-6.0	-6.4	-3.4	-3.5	-0.3	0.8	-1.6	2.0	8.7	16.8	25.2	23.9	17.9	15.2	12.[illegible]	4.6	-1.2-	80.0
100.0	-1.0	-1.9	-3.7	-5.6	-7.3	-9.2	-6.5	-4.7	-1.0	-0.3	-2.8	-2.8	-3.6	-3.3	-1.4	2.0	-2.4	-4.6	-3.6	-4.4	-4.8	-4.3	-2.9	-3.5	-6.6	-6.2	-0.5	-2.2	-7.4	-2.7	6.3	14.7	22.8	24.0	26.2	24.6	11.[illegible]	4.3	6.5	-0.2	100.0
120.0	-0.8	-2.0	-3.9	-6.1	-9.5	-7.5	-4.3	-3.4	-4.1	-3.4	-3.2	-4.3	-4.2	-1.4	-0.1	-3.2	0.8	1.3	-1.3	-4.5	-6.2	-4.4	-6.6	-8.9	-9.3	-5.9	-4.9	-5.5	-1.4	2.8	11.7	22.6	24.4	25.0	23.[illegible]	17.6	10.6	3.9	-0.5	0.4	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7800N.

Q%	-17.0	-16.0	-29.0	-33.0	-20.0	-22.0	-25.0	-40.0	-48.0	-40.0	-43.0	-42.0	-34.0	-31.0	-30.0	-26.0	-28.0	-27.0	-25.0	-24.0	-35.0	-40.0	-26.0	-20.0
I%	18.0	16.0	7.0	5.0	11.0	4.0	-6.0	-19.0	-30.0	-29.0	-28.0	-24.0	-9.0	1.0	2.0	6.0	12.0	12.0	13.0	9.0	-3.0	-20.0	-16.0	-15.0
FRFLT	10.0	22.0	7.0	-3.0	18.0	40.0	47.0	34.0	8.0	-7.0	-24.0	-44.0	-36.0	-16.0	-15.0	-16.0	-7.0	2.0	19.0	45.0	42.0	8.0		



20.0	.3	5.8	6.9	-0.5	3.4	11.9	14.0	15.5	7.2	-1.1	-3.6	-12.2	-15.8	-8.5	-5.2	-7.2	-3.5	0.1	3.4	9.[illegible]	17.3	8.8	-0.9	1.7	20.0
40.0	.2	7.5	6.9	8.8	8.6	14.8	23.7	18.3	11.7	2.5	-11.4	-16.2	-16.3	-17.3	-12.1	-5.1	-7.0	-3.8	8.[illegible]	18.5	16.7	14.3	8.7	0.0	40.0
60.0	.9	3.2	6.8	12.2	17.5	19.3	18.0	21.1	15.7	2.3	-10.4	-16.5	-16.0	-18.0	-16.7	-10.8	-4.0	2.[illegible]	13.2	13.8	13.7	16.1	15.1	[illegible].1	60.0
80.0	.6	2.0	8.7	16.8	25.2	23.9	17.9	15.2	12.2	4.6	-1.2	-10.7	-20.9	-21.1	-21.0	-15.8	0.6	15.0	12.3	12.5	14.4	14.6	15.8	14.3	80.0
100.0	.7	6.3	14.7	22.8	24.0	26.2	24.6	11.3	4.3	6.5	-0.2	-9.4	-15.7	-21.9	-19.2	-11.2	1.0	7.[illegible]	12.6	14.3	16.4	19.1	17.5	17.0	100.0
120.0	.8	11.7	22.6	24.4	25.0	23.8	17.6	10.6	3.9	-0.5	0.4	-3.6	-10.2	-14.9	-13.2	-2.8	-4.6	-2.2	7.[illegible]	14.5	15.3	17.[illegible]	22.5	22.1	120.0

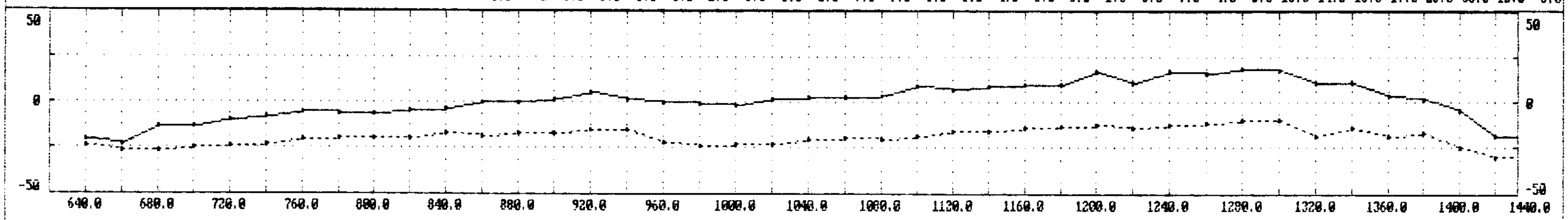
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7900N.

Q% -24.0 -26.0 -26.0 -25.0 -24.0 -23.0 -20.0 -19.0 -19.0 -19.0 -17.0 -18.0 -17.0 -17.0 -15.0 -15.0 -22.0 -24.0 -23.0 -23.0 -20.0 -19.0 -20.0 -18.0 -16.0 -16.0 -14.0 -13.0 -12.0 -14.0 -12.0 -11.0 -10.0 -10.0 -18.0 -14.0 -18.0 -17.0 -25.0 -30.0 -30.0 -3

I% -20.0 -23.0 -13.0 -13.0 -10.0 -8.0 -5.0 -6.0 -6.0 -4.0 -3.0 0.0 0.0 2.0 5.0 2.0 0.0 -1.0 -2.0 2.0 3.0 3.0 4.0 9.0 7.0 9.0 10.0 10.0 17.0 11.0 17.0 16.0 19.0 18.0 11.0 11.0 4.0 2.0 -4.0 -18.0 -17.0 -17

FRFLT -17.0 -13.0 -8.0 -10.0 -7.0 -1.0 -1.0 -5.0 -7.0 -7.0 -5.0 -7.0 -5.0 5.0 8.0 5.0 -1.0 -8.0 -6.0 -2.0 -7.0 -9.0 -3.0 -3.0 -4.0 -8.0 -8.0 -1.0 -5.0 -7.0 -4.0 6.0 15.0 14.0 16.0 17.0 28.0 33.0 12.0 -5.0



20.0	0.5	-4.4	-6.4	-2.3	-4.1	-3.1	-1.8	0.1	-1.8	-1.8	-2.7	-2.5	-1.3	-3.0	0.1	2.8	1.3	1.3	-1.6	-3.0	-1.2	-1.1	-3.8	-2.0	-0.4	-2.9	-0.2	-4.8	-0.9	-0.6	-3.5	-0.1	-1.5	5.5	4.5	5.3	7.8	5.6	12.8	7.9	20.0
40.0	-4.3	-5.2	-5.8	-8.9	-5.4	-5.0	-3.7	-4.0	-2.4	-4.3	-3.8	-3.6	-4.4	-1.8	-0.9	1.1	3.4	-0.9	-2.5	-2.5	-3.5	-4.2	-3.3	-4.1	-4.5	-1.5	-6.5	-2.2	-3.9	-3.0	-0.8	-3.2	4.0	5.1	10.6	9.8	9.4	16.5	12.9	11.9	40.0
60.0	-2.6	-5.7	-8.3	-8.3	-10.2	-4.8	-5.9	-4.5	-5.6	-3.8	-6.4	-7.4	-4.8	-2.6	-0.6	0.3	-1.1	0.0	-1.6	-3.9	-6.4	-6.3	-4.4	-4.6	-4.4	-7.6	-1.4	-5.3	-3.5	-4.2	-2.5	5.1	1.8	7.7	7.5	12.9	20.0	15.2	14.3	8.0	60.0
80.0	-3.5	-5.9	-8.9	-9.0	-7.8	-10.5	-5.2	-7.6	-6.4	-6.5	-7.4	-6.7	-5.4	-4.3	-2.4	-2.6	-3.7	-1.7	-0.9	-5.6	-5.5	-7.3	-7.5	-4.8	-7.1	-3.4	-5.6	-1.4	-4.9	-3.5	0.1	-1.2	6.8	4.3	9.[illegible]	18.0	17.6	16.7	15.1	13.8	80.0
100.0	-3.3	-5.7	-6.2	-7.1	-9.5	-9.4	-13.0	-7.6	-9.4	-9.0	-6.7	-4.0	-4.7	-4.7	-5.7	-6.1	-4.8	-4.6	-5.7	-2.4	-4.7	-5.6	-5.9	-9.9	-3.3	-5.9	-5.3	-6.9	-4.2	-2.3	-1.6	1.3	2.4	8.7	12.7	15.7	21.8	23.2	17.3	12.6	100.0
120.0	-3.0	-3.9	-4.9	-7.3	-9.2	-12.6	-11.5	-14.3	-10.5	-8.9	-6.8	-4.3	-3.1	-5.7	-7.3	-6.3	-5.5	-7.3	-5.1	-5.2	-2.2	-2.7	-8.0	-5.2	-9.6	-7.8	-9.5	-9.5	-6.2	-3.1	-0.9	0.6	9.[illegible]	18.5	24.[illegible]	17.9	18.7	15.2	14.5	13.3	120.0

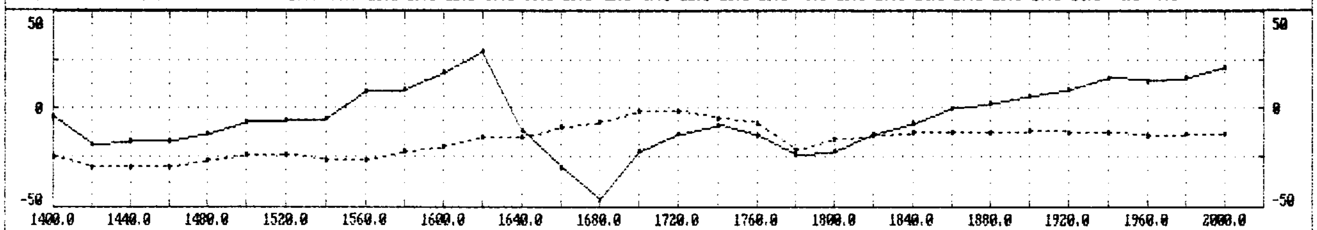
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 7900N.

Q% -25.0 -30.0 -30.0 -30.0 -26.0 -24.0 -24.0 -26.0 -26.0 -22.0 -19.0 -15.0 -15.0 -10.0 -7.0 -2.0 -2.0 -5.0 -8.0 -21.0 -16.0 -14.0 -12.0 -12.0 -12.0 -11.0 -12.0 -12.0 -14.0 -13.0 -13.0

I% -4.0 -18.0 -17.0 -17.0 -13.0 -7.0 -6.0 -5.0 9.0 10.0 19.0 29.0 -11.0 -30.0 -47.0 -22.0 -13.0 -9.0 -14.0 -24.0 -22.0 -13.0 -8.0 0.0 3.0 6.0 10.0 16.0 14.0 16.0 21.0

FRFLT 33.0 12.0 -5.0 -14.0 -17.0 -9.0 -17.0 -30.0 -25.0 -29.0 11.0 89.0 95.0 28.0 -42.0 -47.0 -12.0 16.0 23.0 -3.0 -25.0 -27.0 -24.0 -17.0 -13.0 -17.0 -14.0 -4.0 -7.0

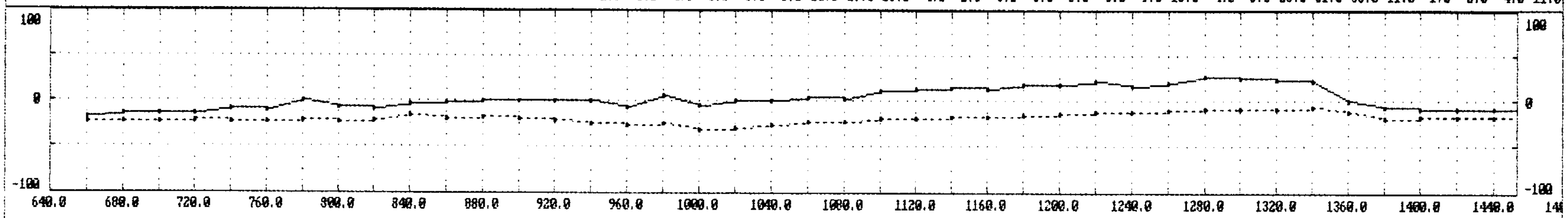


20.0	.8	7.9	-0.2	-1.4	-6.3	-5.9	-2.6	-10.7	-10.6	-3.1	-9.3	20.2	32.5	20.5	-0.7	-17.5	-6.0	-2.1	7.0	3.7	-6.7	-8.2	-8.9	-8.3	-5.3	-5.2	-6.6	-3.5	-1.2	-5.2	-5.0	20.0
40.0	.9	11.9	4.7	-6.5	-6.9	-7.8	-9.5	-5.6	-10.8	-19.9	8.[illegible]	21.6	36.5	29.[illegible]	2.3	-12.6	-16.4	5.1	5.9	-0.1	-8.2	-16.5	-15.4	-10.8	-11.5	-12.1	-9.4	-9.5	-8.9	-6.6	-9.4	40.0
60.0	.3	8.0	3.6	4.1	-1.5	-7.1	-12.2	-16.9	-20.8	3.5	14.6	31.8	17.1	16.3	18.8	-0.6	-6.1	-15.8	-4.8	-0.2	-0.4	-10.6	-20.7	-24.0	-19.5	-14.1	-10.6	-12.9	-14.2	-14.0	-11.6	60.0
80.0	.1	13.8	12.1	7.9	-5.5	-15.6	-19.8	-22.9	1.7	15.9	24.4	[illegible]	11.1	7.9	15.6	26.[illegible]	3.1	-12.1	-25.2	-16.0	-9.3	-7.7	-10.8	-20.4	-22.9	-21.2	-22.8	-16.9	-16.1	-16.2	-16.5	80.0
100.0	.3	12.6	9.2	-3.1	-4.9	-11.3	-25.3	-2.0	7.9	19.2	8.6	4.3	2.3	12.9	18.6	21.2	20.2	-4.9	-21.3	-32.3	-19.9	-17.7	-16.5	-15.7	-21.5	-23.8	-20.0	-23.2	-22.1	-23.3	-20.9	100.0
120.0	.5	13.3	0.0	0.9	-8.7	-15.7	2.7	4.7	15.6	0.9	-0.4	1.0	4.7	11.5	17.4	13.0	13.9	14.[illegible]	-10.5	-24.5	-37.1	-26.6	-20.7	-19.7	-23.0	-29.1	-27.2	-25.3	-23.8	-20.2	-24.0	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8000N.

Q%	-22.0 -23.0 -22.0 -21.0 -23.0 -22.0 -21.0 -22.0 -21.0 -16.0 -19.0 -17.0 -19.0 -21.0 -25.0 -27.0 -24.0 -32.0 -30.0 -27.0 -23.0 -22.0 -20.0 -19.0 -18.0 -17.0 -15.0 -14.0 -12.0 -12.0 -11.0 -8.0 -9.0 -8.0 -6.0 -12.0 -19.0 -18.0 -18.0 -17.0 -17.0 -2[illegible]
I%	-18.0 -14.0 -14.0 -13.0 -9.0 -10.0 0.0 -6.0 -8.0 -3.0 -2.0 0.0 0.0 0.0 1.0 -6.0 5.0 -5.0 0.0 0.0 3.0 2.0 11.0 13.0 15.0 13.0 17.0 17.0 21.0 16.0 19.0 26.0 25.0 24.0 21.0 0.0 -6.0 -9.0 -8.0 -8.0 -7.0 -[illegible]
FRFLT	-5.0 -6.0 -8.0 -12.0 -13.0 4.0 5.0 -9.0 -9.0 -5.0 -2.0 -1.0 5.0 2.0 -5.0 4.0 0.0 -8.0 -5.0 -10.0 -19.0 -15.0 -4.0 -2.0 -6.0 -8.0 -3.0 3.0 -9.0 -16.0 -4.0 6.0 28.0 51.0 36.0 11.0 1.0 -2.0 -4.0 -11.0



20.0	-3.5	-2.7	-1.1	-4.4	-1.7	-5.2	-3.2	4.2	-2.8	-3.0	-1.0	-1.9	0.5	-1.6	4.2	-2.5	-0.6	3.0	-3.7	-1.9	-2.3	-5.3	-6.0	-3.0	-1.2	-1.9	-2.2	-2.5	-0.6	0.8	-6.1	-2.9	2.9	3.3	15.2	16.6	6.6	3.5	-0.1	-1.0	20.0
40.0	-2.9	-4.2	-4.6	-2.7	-0.9	-5.3	-1.7	-4.6	0.1	-3.5	-5.9	-2.2	-0.9	2.6	-3.8	2.3	-0.6	-4.6	0.2	-4.1	-7.2	-8.6	-7.4	-7.3	-4.2	-4.1	-5.1	-3.2	-1.6	-3.1	0.1	-3.2	-0.2	15.7	18.7	18.6	16.2	4.6	1.1	-0.4	40.0
60.0	-1.0	-5.0	-6.1	-10.3	-4.7	-3.7	-5.6	-5.4	-6.3	-1.4	-4.0	-6.5	0.2	-5.6	1.1	-1.2	-1.2	-2.9	-5.6	-4.9	-10.8	-9.0	-9.0	-9.1	-10.4	-5.7	-0.9	-0.3	-5.8	-4.1	-4.1	0.5	9.[illegible]	14.0	18.5	18.2	17.5	14.7	0.9	-1.0	60.0
80.0	-2.4	-2.9	-9.8	-6.9	-5.8	-5.5	-6.6	-7.6	-5.4	-6.9	-2.7	-2.6	-10.0	-0.9	-3.6	-1.9	-3.4	-2.8	-6.4	-12.9	-7.7	-11.9	-10.8	-7.6	-8.3	-5.2	-2.3	-7.1	-4.9	-6.8	-3.5	7.5	13.3	12.0	13.3	17.3	20.4	22.7	16.[illegible]	-0.9	80.0
100.0	0.7	-7.2	-4.1	-4.8	-8.9	-9.0	-7.2	-8.8	-8.3	-6.9	-3.5	-5.0	-2.4	-6.9	-4.0	-5.2	-4.2	-8.8	-9.4	-9.8	-10.4	-4.6	-10.6	-10.4	-7.3	-8.1	-13.6	-8.2	-7.5	-4.6	5.0	11.0	10.9	17.7	18.5	18.3	19.7	16.6	[illegible].4	5.9	100.0
120.0	-3.8	-1.7	-2.1	-6.6	-8.7	-11.9	-10.7	-8.3	-9.2	-4.9	-8.8	-3.2	-0.9	-5.6	-8.3	-5.1	-9.5	-7.8	-8.5	-5.9	-7.6	-11.8	-7.8	-12.3	-11.1	-16.5	-14.5	-13.9	-8.6	4.7	13.6	18.2	18.0	15.9	18.3	13.3	9.3	6.8	8.2	5.7	120.0

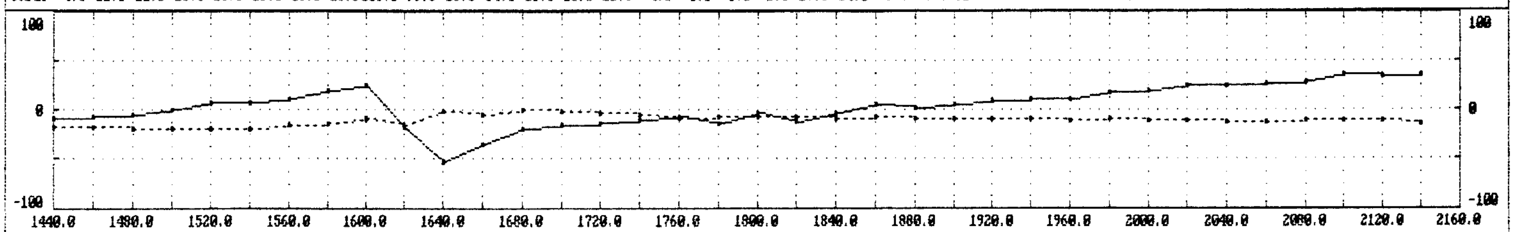
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8000N.

Q% -17.0 -17.0 -20.0 -19.0 -20.0 -19.0 -16.0 -14.0 -8.0 -16.0 -2.0 -5.0 1.0 -1.0 -4.0 -5.0 -8.0 -7.0 -6.0 -7.0 -9.0 -7.0 -9.0 -9.0 -9.0 -9.0 -11.0 -9.0 -10.0 -11.0 -12.0 -12.0 -11.0 -11.0 -11.0 -14.0

I% -8.0 -7.0 -5.0 1.0 8.0 8.0 11.0 20.0 25.0 -17.0 -53.0 -35.0 -19.0 -15.0 -13.0 -11.0 -6.0 -14.0 -3.0 -12.0 -4.0 6.0 2.0 6.0 9.0 11.0 11.0 17.0 19.0 25.0 25.0 26.0 29.0 35.0 34.0 36.0

FRFLT -4.0 -11.0 -21.0 -20.0 -10.0 -15.0 -26.0 23.0 115.0 96.0 -16.0 -54.0 -26.0 -10.0 -11.0 -4.0 0.0 -5.0 -1.0 -17.0 -24.0 -6.0 -7.0 -12.0 -7.0 -8.0 -14.0 -16.0 -14.0 -7.0 -5.0 -13.0 -14.0 -6.0



20.0 .0 -2.9 -5.2 -8.3 -5.7 -3.6 -3.9 -3.7 21.4 43.0 11.1 -15.1 -9.5 -6.7 -3.6 -5.5 2.0 -2.7 -2.7 0.9 -11.8 -3.5 -1.6 -5.2 -3.4 -2.2 -4.7 -5.3 -5.2 -4.7 -1.8 -3.2 -5.6 -3.5 -1.4 -3.0 20.0

40.0 .4 -4.1 -10.3 -5.6 -2.5 -8.5 -11.2 12.7 35.1 30.7 24.7 -0.7 -22.8 -10.0 -1.4 -1.5 -10.3 -2.4 -3.1 -12.9 -4.4 -11.5 -9.0 -5.1 -6.5 -8.9 -7.6 -9.6 -9.9 -6.7 -7.2 -7.4 -7.0 -7.4 -6.5 -3.6 40.0

60.0 .0 -1.5 -1.4 -6.9 -14.1 -17.1 10.0 38.4 24.3 15.6 19.3 19.9 -4.7 -27.6 -13.3 -7.4 2.5 -1.2 -11.4 -10.3 -15.9 -9.6 -15.6 -10.4 -9.2 -11.4 -13.8 -11.4 -11.8 -12.9 -12.1 -11.1 -8.5 -9.5 -9.9 -9.6 60.0

80.0 .9 -6.7 -12.8 -16.0 -16.4 9.1 29.4 23.4 15.7 11.3 12.5 15.2 14.9 -3.6 -30.2 -15.4 -10.5 -11.9 -6.1 -7.1 -6.6 -17.0 -14.5 -21.3 -16.6 -13.3 -16.2 -13.9 -13.9 -17.6 -15.8 -14.8 -14.0 -10.7 -12.1 -12.5 80.0

100.0 .9 -7.4 -14.1 -19.4 6.2 25.4 16.7 [illegible] 11.3 13.1 11.9 9.2 17.1 13.1 -6.1 -30.7 -26.4 -15.4 -15.6 -12.5 -10.6 -8.7 -16.5 -11.0 -24.1 -23.4 -16.9 -18.8 -20.2 -17.3 -17.7 -18.8 -17.0 -16.0 -14.7 -15.0 100.0

120.0 .7 0.8 -14.0 5.2 23.9 14.0 5.4 3.6 4.8 7.6 9.2 13.2 8.8 18.5 14.9 -16.1 -34.6 -26.5 -19.5 -19.0 -17.9 -16.9 -12.6 -21.6 -16.1 -21.1 -18.0 -20.2 -25.9 -22.6 -20.9 -19.9 -21.1 -19.2 -18.3 -17.0 120.0

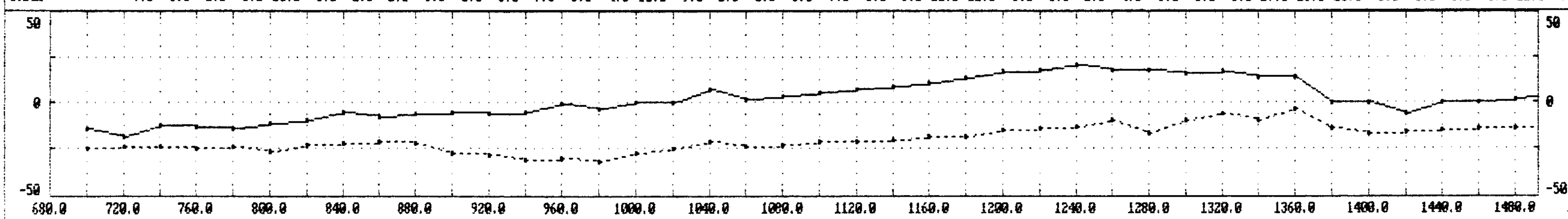
ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 8100N.

Q% -25.0 -24.0 -24.0 -25.0 -24.0 -26.0 -23.0 -22.0 -21.0 -22.0 -27.0 -28.0 -31.0 -30.0 -32.0 -27.0 -25.0 -21.0 -24.0 -23.0 -21.0 -21.0 -20.0 -18.0 -18.0 -15.0 -14.0 -13.0 -10.0 -17.0 -10.0 -6.0 -10.0 -3.0 -14.0 -17.0 -16.0 -15.0 -14.0 -14.0 -13.0 -13

I% -14.0 -18.0 -12.0 -13.0 -14.0 -11.0 -10.0 -5.0 -8.0 -6.0 -5.0 -6.0 -5.0 -1.0 -3.0 0.0 0.0 7.0 2.0 4.0 5.0 7.0 9.0 11.0 13.0 17.0 18.0 20.0 18.0 18.0 16.0 17.0 14.0 14.0 0.0 0.0 -6.0 0.0 0.0 2.0 4.0 9

FRFLT -7.0 -3.0 0.0 -6.0 -10.0 -8.0 -1.0 -2.0 -3.0 0.0 -5.0 -7.0 -3.0 -4.0 -10.0 -9.0 1.0 0.0 -6.0 -7.0 -8.0 -8.0 -10.0 -11.0 -8.0 -3.0 2.0 4.0 3.0 3.0 5.0 17.0 28.0 20.0 6.0 -6.0 -8.0 -6.0 -11.0 -7.0



20.0	2.3	-1.1	-3.1	1.1	-2.3	-2.2	-3.7	-1.7	0.3	-2.3	-0.2	-0.2	-3.3	-1.3	-1.6	-1.9	-4.1	-1.7	1.3	-2.6	-1.7	-3.0	-3.1	-3.0	-4.2	-3.2	-2.1	-0.2	1.0	1.4	0.9	2.7	2.6	9.1	8.4	4.0	1.2	-3.7	-1.5	-2.7	20.0
40.0	-1.6	-1.2	-0.4	-4.2	-1.7	-4.6	-3.9	-4.1	-3.2	-0.2	-2.7	-4.3	-1.9	-3.5	-3.7	-5.2	-3.6	-3.5	-3.9	-1.2	-5.3	-5.4	-5.4	-5.8	-5.7	-5.7	-3.3	-0.9	2.1	2.6	3.1	2.8	9.4	10.3	11.7	7.9	0.6	-1.1	-6.1	-1.1	40.0
60.0	-1.3	-0.5	-2.1	-2.7	-8.1	-2.9	-4.8	-5.5	-4.4	-3.7	-3.7	-3.5	-4.7	-4.6	-8.8	-5.5	-4.2	-6.1	-5.5	-6.3	-3.5	-7.1	-8.1	-8.4	-7.9	-4.3	-2.7	-0.5	-0.1	2.1	2.8	9.6	9.7	12.2	0.0	7.0	9.8	3.0	-0.1	-4.3	60.0
80.0	-0.9	-2.7	-2.9	-6.0	-4.3	-8.2	-5.0	-5.0	-6.2	-6.3	-5.4	-4.3	-6.1	-9.8	-5.9	-8.0	-7.6	-6.1	-8.0	-6.9	-8.2	-6.5	-8.4	-8.6	-6.4	-5.9	-4.4	-3.8	-1.6	1.1	9.4	9.7	11.3	12.1	12.6	11.8	8.6	3.2	-1.7	-6.3	80.0
100.0	-3.0	-3.5	-6.9	-4.4	-5.7	-6.3	-8.1	-5.1	-8.4	-7.9	-8.3	-7.4	-9.0	-7.5	-7.3	-7.0	-9.2	-9.0	-8.0	-9.0	-9.4	-9.1	-6.7	-8.9	-8.5	-7.1	-7.5	-4.1	-3.3	4.7	11.2	17.2	14.3	12.0	10.0	7.0	4.1	5.4	0.6	-11.0	100.0
120.0	-3.9	-6.6	-5.0	-6.0	-6.7	-5.8	-7.0	-11.0	-7.3	-9.6	-9.9	-12.0	-8.3	-6.2	-8.4	-8.2	-7.4	-9.2	-9.4	-10.6	-11.7	-11.6	-11.6	-7.9	-9.3	-9.2	-7.8	-2.7	8.3	8.3	11.8	10.7	12.5	10.7	6.9	5.0	6.2	1.5	-5.2	15.5	120.0

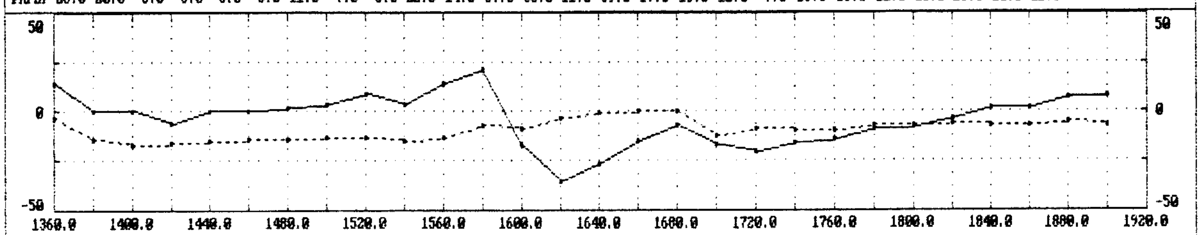
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8100N.

Q% -3.0 -14.0 -17.0 -16.0 -15.0 -14.0 -14.0 -13.0 -13.0 -15.0 -13.0 -7.0 -9.0 -3.0 -1.0 0.0 0.0 -12.0 -9.0 -10.0 -10.0 -7.0 -7.0 -6.0 -7.0 -7.0 -5.0 -7.0

I% 14.0 0.0 0.0 -6.0 0.0 0.0 2.0 4.0 9.0 4.0 14.0 21.0 -17.0 -35.0 -26.0 -15.0 -7.0 -17.0 -20.0 -16.0 -14.0 -9.0 -8.0 -3.0 2.0 2.0 7.0 8.0

FRFLT 28.0 20.0 6.0 -6.0 -8.0 -6.0 -11.0 -7.0 -5.0 -22.0 14.0 87.0 65.0 -11.0 -39.0 -17.0 15.0 12.0 -7.0 -13.0 -13.0 -12.0 -16.0 -15.0 -10.0 -11.0



20.0	.1	8.4	4.0	1.2	-3.7	-1.5	-2.7	-5.1	-1.4	0.1	-7.1	18.7	31.9	5.1	-6.8	-9.3	-0.5	6.0	1.6	-2.8	-4.6	-4.8	-4.3	-7.1	-3.7	-4.0	-4.4	-2.4	20.0
40.0	.3	11.7	7.9	0.6	-1.1	-6.1	-1.1	2.9	-5.1	-10.7	13.6	22.5	23.7	29.0	-5.3	-11.0	-0.9	4.5	3.1	-7.6	-9.6	-8.5	-9.1	-7.7	-10.5	-8.2	-6.6	-7.7	40.0
60.0	.2	9.0	7.0	9.8	3.0	-0.1	-4.3	-7.5	-10.2	13.6	23.1	20.1	9.7	11.4	20.3	0.9	-11.8	-7.9	-2.7	3.1	-5.0	-14.2	-14.4	-14.6	-11.2	-11.3	-11.0	-10.1	60.0
80.0	.1	12.6	11.8	8.6	3.2	-1.7	-6.3	-13.4	11.6	21.2	17.1	11.8	9.4	11.0	17.8	18.9	-3.1	-16.0	-11.8	-8.8	-4.4	-9.6	-13.7	-12.0	-16.6	-16.3	-16.0	-13.6	80.0
100.0	.0	10.6	7.0	4.1	5.4	0.6	-11.0	10.1	16.2	14.7	8.4	5.6	12.1	17.1	11.5	15.8	15.4	-6.7	-20.6	-17.6	-12.1	-10.7	-14.5	-15.9	-16.1	-15.9	-14.1	-18.2	100.0
120.0	.7	6.9	5.0	6.2	1.5	-5.2	15.5	18.3	13.1	4.1	3.1	9.1	12.2	11.5	13.2	7.0	12.3	13.0	-11.3	-23.0	-21.2	-16.0	-12.8	-20.1	-20.7	-18.5	-18.7	-18.3	120.0

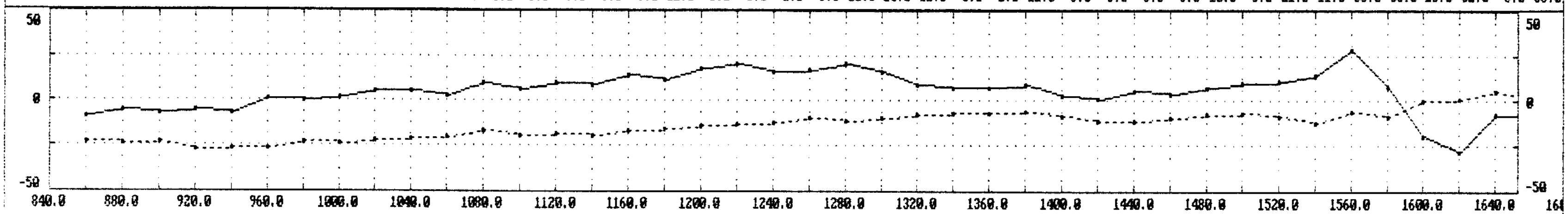
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8200N.

Q% -23.0 -24.0 -23.0 -27.0 -26.0 -26.0 -23.0 -24.0 -22.0 -21.0 -20.0 -17.0 -19.0 -18.0 -19.0 -17.0 -16.0 -14.0 -13.0 -12.0 -10.0 -11.0 -10.0 -8.0 -7.0 -7.0 -6.0 -9.0 -11.0 -11.0 -10.0 -8.0 -7.0 -9.0 -12.0 -6.0 -9.0 0.0 1.0 5.0 1.0 -11

I% -9.0 -5.0 -7.0 -5.0 -7.0 1.0 0.0 2.0 5.0 5.0 3.0 10.0 6.0 10.0 9.0 14.0 12.0 18.0 20.0 16.0 17.0 20.0 16.0 9.0 7.0 7.0 9.0 3.0 1.0 5.0 4.0 7.0 10.0 11.0 14.0 20.0 8.0 -19.0 -20.0 -8.0 -7.0 -23

FRFLT -2.0 0.0 -6.0 -13.0 -8.0 -6.0 -8.0 -1.0 -3.0 -8.0 -3.0 -3.0 -7.0 -7.0 -7.0 -12.0 -6.0 5.0 -1.0 -3.0 12.0 20.0 11.0 0.0 2.0 12.0 6.0 -5.0 -5.0 -8.0 -10.0 -8.0 -21.0 -11.0 53.0 83.0 25.0 -32.0 -6.0 35.0



20.0	-3.3	-1.0	-1.1	-0.6	-3.7	-4.7	-0.9	-3.6	-2.4	1.0	-3.6	-1.8	-0.6	-2.4	-2.7	-2.6	-2.2	-5.2	0.8	1.4	-1.6	1.5	6.5	5.1	2.4	0.1	2.3	4.7	-1.4	-1.5	-1.4	-4.3	-4.0	-1.4	-7.0	5.5	25.8	20.2	-1.9	-8.4	20.0
40.0	-1.4	-3.3	-1.7	-3.9	-4.3	-5.4	-7.7	-2.9	-2.5	-5.9	-2.0	-3.8	-5.0	-2.9	-3.6	-5.7	-6.8	-0.4	-2.5	-1.1	1.9	4.4	6.1	7.9	4.6	3.4	3.4	1.9	3.2	-3.9	-4.9	0.8	-1.4	-12.1	0.0	18.1	25.7	21.4	9.2	2.0	40.0
60.0	-1.4	-1.0	-7.0	-5.2	-4.6	-7.0	-6.9	-6.9	-7.0	-5.2	-5.5	-3.7	-6.4	-6.6	-4.6	-7.7	-3.1	-5.0	-3.1	-2.2	6.6	6.8	4.7	3.6	8.9	7.7	0.8	2.4	3.5	5.1	-1.6	-6.5	-11.8	0.6	17.3	22.7	10.9	11.0	27.8	18.7	60.0
80.0	1.2	-4.7	-5.2	-7.4	-8.3	-6.5	-6.8	-9.0	-8.4	-6.5	-6.0	-7.5	-4.1	-7.4	-10.2	-3.8	-6.9	-5.9	-4.0	1.9	2.0	5.3	4.8	5.0	8.7	11.0	10.2	4.1	-0.3	-0.4	-0.6	-10.9	-0.9	15.5	18.4	8.3	9.3	18.7	22.6	20.0	80.0
100.0	-3.0	-2.8	-5.8	-8.5	-9.1	-7.0	-9.1	-7.3	-7.7	-8.4	-6.9	-6.8	-8.7	-8.6	-6.9	-8.8	-6.3	-7.3	-1.3	-1.0	1.2	0.7	10.8	14.1	7.8	9.1	10.4	4.5	-0.5	-2.3	-10.0	0.2	12.2	16.7	7.5	6.0	17.0	21.3	19.0	18.2	100.0
120.0	-1.6	-3.1	-6.0	-7.0	-6.6	-10.5	-7.0	-7.3	-8.1	-9.1	-9.2	-9.0	-10.9	-8.3	-7.4	-9.8	-9.2	-3.1	-2.1	3.4	2.4	6.8	6.8	10.8	11.0	6.0	4.4	6.0	1.2	-11.5	-2.4	13.4	18.9	4.6	3.6	15.4	17.1	17.1	17.3	16.1	120.0

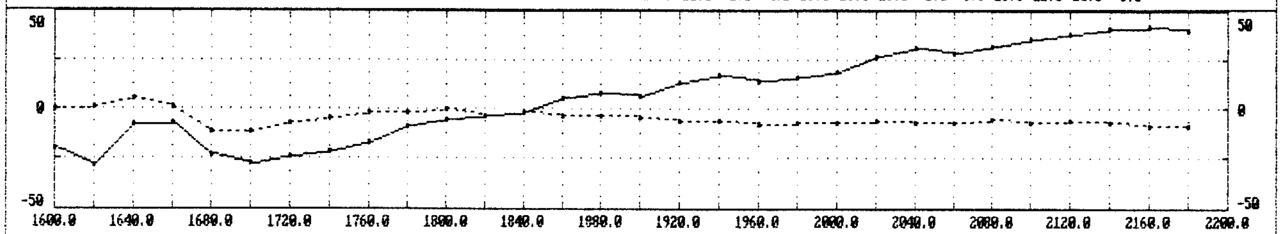
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8200N.

Q% 0.0 1.0 5.0 1.0 -11.0 -11.0 -7.0 -4.0 -2.0 -2.0 0.0 -3.0 -2.0 -3.0 -3.0 -4.0 -6.0 -6.0 -8.0 -7.0 -7.0 -6.0 -7.0 -7.0 -5.0 -7.0 -6.0 -7.0 -9.0 -9.0

I% -19.0 -28.0 -8.0 -7.0 -23.0 -27.0 -24.0 -21.0 -17.0 -9.0 -5.0 -3.0 -2.0 5.0 8.0 6.0 13.0 17.0 14.0 16.0 19.0 27.0 31.0 28.0 32.0 35.0 38.0 41.0 42.0 40.0

FRFLT 25.0 -32.0 -6.0 35.0 21.0 -5.0 -13.0 -19.0 -24.0 -18.0 -9.0 -11.0 -18.0 -11.0 -6.0 -16.0 -12.0 0.0 -4.0 -16.0 -23.0 -13.0 -2.0 -8.0 -13.0 -12.0 -10.0 -3.0



20.0	.2	-1.9	-8.4	9.0	9.6	0.7	-2.8	-4.7	-8.1	-7.9	-5.1	-3.4	-5.3	-6.9	-1.7	-3.7	-6.9	-1.1	-1.2	-4.1	-6.3	-7.9	-1.7	-2.0	-4.9	-3.7	-4.0	-2.7	0.2	1.0	20.0
40.0	.4	9.2	2.0	0.1	12.5	10.	-4.9	-13.2	-11.1	-9.5	-10.2	-10.7	-9.4	-7.3	-11.0	-9.3	-5.8	-7.5	-5.5	-7.4	-11.5	-9.2	-8.8	-5.4	-5.2	-8.9	-7.2	-3.4	-1.4	-0.1	40.0
60.0	.0	27.8	18.7	2.4	-5.4	4.7	2.9	-6.6	-13.4	-14.9	-16.9	-14.2	-9.6	-13.4	-14.7	-12.6	-9.8	-10.0	-14.9	-13.1	-8.8	-12.3	-12.5	-12.5	-9.7	-7.4	-7.8	-6.2	-4.4	-2.2	60.0
80.0	.7	22.6	28.0	15.0	-2.7	-12.5	-3.6	-3.0	-10.7	-16.6	-17.0	-15.8	-19.6	-17.8	-12.1	-12.7	-15.5	-16.6	-16.9	-15.9	-13.8	-13.0	-16.1	-16.3	-15.5	-9.4	-6.6	-8.5	-5.6	-3.9	80.0
100.0	.3	19.0	18.2	24.6	8.9	-9.7	-16.6	-5.8	-10.0	-19.5	-18.8	-20.3	-21.8	-16.8	-14.0	-15.8	-20.1	-19.7	-14.1	-16.9	-20.4	-17.9	-17.1	-19.3	-16.5	-14.1	-9.8	-7.6	-8.2	-5.7	100.0
120.0	.1	17.3	16.1	12.1	16.7	4.8	-11.7	-20.8	-12.1	-10.6	-23.8	-27.2	-21.7	-20.1	-20.4	-19.9	-17.5	-16.6	-21.2	-20.1	-18.2	-21.4	-19.9	-17.1	-18.4	-17.3	-15.3	-9.7	-7.4	-9.0	120.0

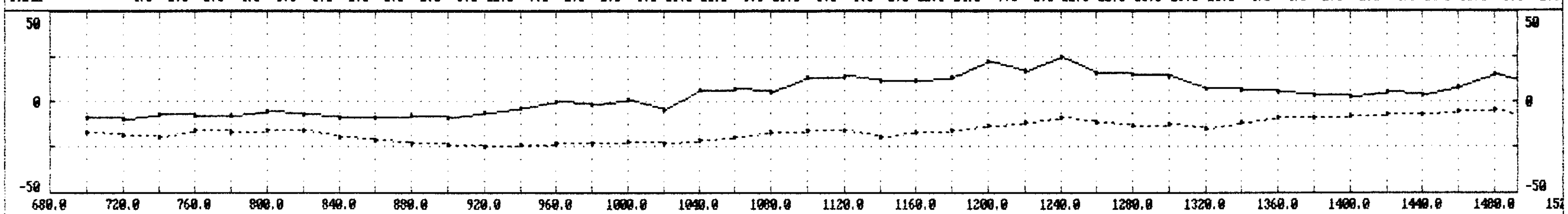
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8300N.

Q% -17.0 -18.0 -19.0 -16.0 -17.0 -16.0 -16.0 -19.0 -21.0 -23.0 -24.0 -25.0 -24.0 -23.0 -23.0 -22.0 -23.0 -21.0 -19.0 -17.0 -16.0 -16.0 -19.0 -17.0 -16.0 -13.0 -11.0 -9.0 -11.0 -13.0 -12.0 -15.0 -11.0 -9.0 -9.0 -8.0 -7.0 -7.0 -5.0 -4.0 -10.0 -12

I% -9.0 -10.0 -7.0 -8.0 -8.0 -5.0 -7.0 -9.0 -9.0 -8.0 -9.0 -6.0 -3.0 0.0 -2.0 1.0 -4.0 6.0 7.0 5.0 13.0 14.0 12.0 12.0 13.0 22.0 17.0 25.0 16.0 15.0 14.0 7.0 6.0 5.0 4.0 3.0 5.0 4.0 8.0 15.0 9.0 9

FRFLT -4.0 -1.0 -2.0 -4.0 3.0 6.0 1.0 -1.0 -2.0 -8.0 -12.0 -7.0 -2.0 1.0 -3.0 -16.0 -10.0 -5.0 -15.0 -8.0 3.0 1.0 -11.0 -14.0 -7.0 -2.0 11.0 12.0 10.0 16.0 10.0 4.0 4.0 1.0 -2.0 -4.0 -14.0 -12.0 5.0 -1.0



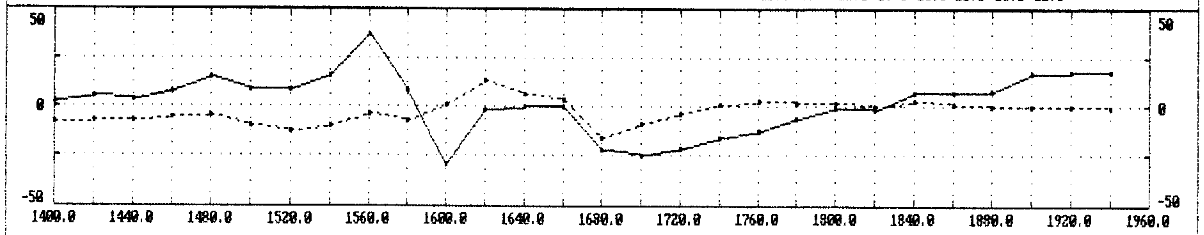
20.0	0.4	-1.1	-1.5	0.7	-1.8	-0.4	2.2	1.0	-0.6	-0.2	-1.7	-3.6	-3.9	-0.7	-1.8	0.5	-2.8	-7.5	0.2	-4.5
40.0	-1.2	-0.4	-0.4	-2.9	0.0	0.3	-0.2	0.8	0.9	-2.3	-3.5	-5.0	-5.1	-4.5	-0.7	-5.0	-6.2	-3.3	-10.3	-6.1
60.0	-0.2	-0.4	-2.6	-1.6	-1.4	0.7	-0.6	0.6	-0.7	-3.3	-6.3	-5.3	-6.5	-4.0	-7.2	-6.4	-4.7	-10.0	-9.7	-10.2
80.0	-0.6	-2.7	-1.6	-0.9	0.0	-2.0	0.0	-1.8	-4.7	-4.2	-4.1	-7.0	-3.8	-10.0	-10.3	-8.3	-10.1	-8.1	-8.5	-6.0
100.0	-2.4	-0.8	-0.7	-0.9	-1.5	-1.4	-4.1	-3.3	-5.5	-4.6	-5.1	-2.9	-10.7	-10.3	-8.5	-13.1	-11.5	-7.7	-6.6	-8.3
120.0	-1.3	0.0	-1.1	-1.8	-1.6	-2.9	-4.4	-7.7	-3.9	-6.9	-3.4	-7.2	-8.9	-7.5	-12.4	-11.8	-11.7	-10.2	-9.2	-12.8

-5.4	0.4	-0.6	-0.5	-6.4	-1.9	-1.8	0.0	7.0	1.2	5.9	5.1	1.8	1.8	1.4	-0.8	-1.3	-1.5	-6.5	-1.4	20.0
-3.7	-5.4	-1.4	-4.2	-3.3	-7.4	-0.9	4.5	2.1	10.0	5.7	6.1	5.9	2.6	0.9	1.6	-2.3	-9.6	-1.8	2.7	40.0
-4.4	-3.7	-9.1	-2.5	-6.2	-2.9	-1.8	-0.9	8.0	6.1	10.6	6.0	6.5	4.2	-0.3	-0.7	0.0	0.8	-1.7	-6.7-	60.0
-9.9	-9.4	-6.0	-11.8	-1.9	-1.0	-2.3	1.3	2.1	8.6	6.1	9.3	6.3	9.8	4.7	-2.6	-0.8	-0.4	-3.4	-14.8	80.0
-11.2	-12.2	-11.5	-6.5	-7.6	-2.3	2.9	1.3	0.2	4.5	13.5	6.2	12.6	6.7	2.5	3.7	1.3	-4.2	-16.4	-3.0	100.0
-11.3	-15.0	-12.2	-5.9	-5.8	-5.6	2.7	8.0	4.5	4.6	4.7	14.2	7.2	5.3	4.3	4.5	-0.6	-18.8	-2.6	17.1	120.0

ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 8300N.

Q%	-8.0	-7.0	-7.0	-5.0	-4.0	-10.0	-12.0	-10.0	-3.0	-7.0	1.0	13.0	6.0	4.0	-16.0	-9.0	-3.0	1.0	3.0	2.0	2.0	0.0	3.0	1.0	0.0	0.0	0.0	-1.0
I%	3.0	5.0	4.0	8.0	15.0	9.0	9.0	16.0	37.0	9.0	-29.0	-2.0	0.0	0.0	-22.0	-25.0	-21.0	-16.0	-12.0	-6.0	-1.0	-2.0	7.0	7.0	8.0	17.0	18.0	18.0
FRFLT	-2.0	-4.0	-14.0	-12.0	5.0	-1.0	-35.0	-21.0	73.0	77.0	-18.0	-31.0	20.0	47.0	24.0	-10.0	-18.0	-19.0	-21.0	-15.0	-12.0	-17.0	-10.0	-11.0	-20.0	-11.0		



20.0	.8	-1.3	-1.5	-6.5	-1.4	0.5	-2.7	-11.2	2.8	[illegible]	5.6	-10.8	2.8	10.2	14.2	-0.3	-3.8	-6.1	-6.8	-8.2	-3.5	-5.8	-6.9	-1.4	-7.0	-6.3	-1.4	-2.3	20.0
40.0	.6	-2.3	-9.6	-1.8	2.7	-3.6	-14.0	-0.1	23.1	12.9	22.6	5.2	-5.2	13.7	16.7	9.9	-9.3	-11.7	-10.3	-7.7	-13.0	-9.7	-7.4	-13.1	-8.6	-8.0	-8.5	-4.7	40.0
60.0	.7	0.0	0.8	-1.7	-6.7	-15.9	2.4	27.0	6.7	4.6	8.0	32.1	18.9	-5.0	5.8	6.2	5.4	-9.3	-13.3	-19.7	-13.0	-11.1	-13.1	-13.5	-14.6	-10.6	-11.5	-11.6	60.0
80.0	.6	-0.8	-0.4	-3.4	-14.8	0.7	19.7	5.9	7.8	4.6	16.2	21.9	31.1	12.1	-11.1	0.7	-1.6	0.3	-15.0	-17.7	-14.1	-19.3	-20.2	-14.0	-12.4	-14.3	-12.9	-14.6	80.0
100.0	.7	1.3	-4.2	-16.4	-3.0	18.0	4.2	2.8	4.4	20.0	18.5	15.3	16.9	25.7	6.2	-17.3	-1.5	-6.2	-7.1	-17.7	-22.9	-22.9	-19.5	-16.3	-15.6	-17.6	-16.7	-12.9	100.0
120.0	.5	-0.6	-18.8	-2.6	17.1	2.0	0.5	1.2	14.5	17.9	20.8	13.6	11.2	11.9	20.1	4.4	-22.5	-7.2	-6.8	-12.2	-26.5	-26.2	-22.1	-22.6	-21.6	-18.6	-13.5	-17.8	120.0

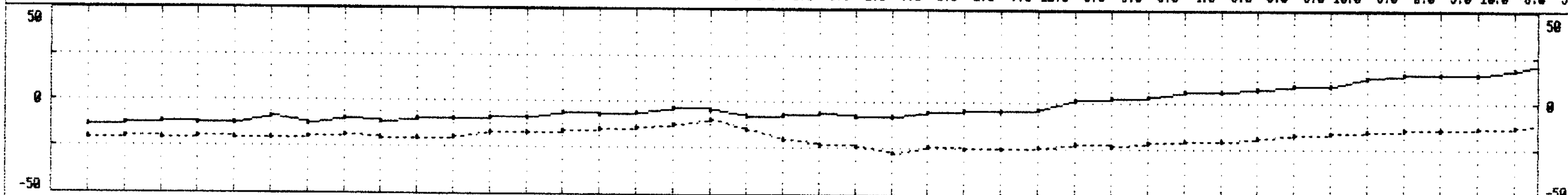
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8400N.

Q% -20.0 -19.0 -20.0 -19.0 -20.0 -20.0 -19.0 -18.0 -20.0 -20.0 -19.0 -17.0 -17.0 -16.0 -15.0 -14.0 -12.0 -10.0 -15.0 -20.0 -23.0 -24.0 -27.0 -24.0 -25.0 -25.0 -24.0 -22.0 -23.0 -21.0 -20.0 -20.0 -18.0 -17.0 -16.0 -15.0 -14.0 -14.0 -13.0 -12.0 -9.0 -7

I% -13.0 -12.0 -11.0 -12.0 -12.0 -9.0 -12.0 -10.0 -11.0 -10.0 -10.0 -9.0 -9.0 -6.0 -7.0 -6.0 -3.0 -4.0 -8.0 -7.0 -6.0 -8.0 -8.0 -5.0 -4.0 -4.0 -3.0 2.0 3.0 4.0 6.0 6.0 8.0 10.0 10.0 14.0 16.0 16.0 16.0 19.0 23.0 2

FRFLT -2.0 1.0 -2.0 -3.0 1.0 0.0 -1.0 -1.0 -2.0 -2.0 -4.0 -5.0 -2.0 -4.0 -6.0 3.0 8.0 1.0 -1.0 3.0 -1.0 -7.0 -5.0 -2.0 -7.0 -12.0 -8.0 -5.0 -5.0 -4.0 -6.0 -6.0 -6.0 -10.0 -8.0 -2.0 -3.0 -10.0 -8.0 5.0



20.0 -0.9 -1.1 -0.4 0.6 -1.9 0.1 0.4 -0.8 0.1 -0.8 -0.9 -0.7 -1.9 -1.7 -0.2 -2.2 -1.1 2.6 1.7 -0.8 0.7 0.8 -1.9 -2.3 -1.3 -1.3 -3.9 -3.9 -1.6 -2.6 -1.6 -1.5 -3.0 -1.7 -2.8 -3.0 -1.7 -1.0 -1.9 -3.0 20.0

40.0 -1.0 -0.8 -0.6 -1.7 0.4 -1.5 -0.9 0.1 -1.4 -1.0 -1.7 -2.5 -1.6 -1.6 -3.8 -1.2 0.5 0.0 1.1 2.1 -0.5 -1.9 -1.4 -2.5 -3.7 -4.5 -4.5 -5.7 -6.2 -3.4 -4.1 -4.7 -3.4 -5.5 -5.9 -4.2 -3.6 -2.3 -2.7 -1.6 40.0

60.0 -0.1 -0.4 -2.6 -0.6 -1.5 -0.2 -1.5 -1.8 -0.7 -1.8 -2.2 -2.5 -2.4 -4.2 -2.9 -1.3 0.1 -1.1 0.2 1.6 -0.5 -3.3 -2.6 -2.7 -6.4 -6.7 -6.1 -7.0 -6.9 -7.3 -6.1 -5.9 -7.0 -6.7 -5.6 -3.8 -4.2 -6.7 -3.2 -0.6 60.0

80.0 0.3 -2.0 -0.6 -2.2 -1.6 -1.3 -0.4 -1.6 -1.7 -1.7 -3.1 -2.8 -5.1 -4.1 -1.7 -2.3 -2.8 0.1 -0.9 -1.5 -0.7 -1.4 -4.1 -6.7 -6.9 -8.1 -9.1 -7.5 -8.1 -8.9 -8.4 -6.7 -6.3 -6.1 -5.0 -7.3 -9.1 -6.9 -5.6 2.6 80.0

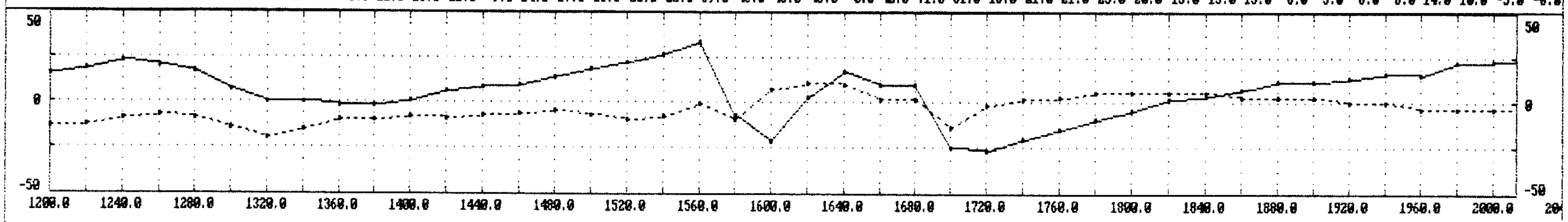
100.0 -1.1 -0.1 -1.5 -0.7 -1.9 -1.6 -1.2 -0.7 -3.5 -3.1 -2.0 -5.7 -4.7 -2.9 -3.0 -3.9 -1.9 -1.8 -2.0 -3.1 -2.5 -2.0 -5.0 -8.0 -8.1 -8.9 -9.7 -10.4 -8.3 -7.0 -9.0 -9.1 -6.6 -7.5 -9.5 -10.8 -9.6 -7.5 -0.9 3.1 100.0

120.0 1.4 -0.1 -0.1 -0.8 -1.0 -2.4 -2.3 -3.4 -2.4 -4.2 -6.0 -3.7 -3.4 -2.9 -4.3 -2.6 -2.6 -4.3 -4.7 -3.0 -3.9 -6.5 -5.8 -6.1 -9.3 -7.7 -7.6 -9.6 -9.4 -10.0 -10.8 -11.6 -11.9 -10.7 -12.6 -11.1 -8.9 -3.4 1.1 6.0 120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8400N.

Q%	-13.0	-12.0	-9.0	-7.0	-9.0	-14.0	-19.0	-15.0	-10.0	-10.0	-8.0	-9.0	-7.0	-6.0	-4.0	-7.0	-10.0	-8.0	-1.0	-10.0	7.0	11.0	10.0	2.0	2.0	-14.0	-2.0	2.0	3.0	5.0	5.0	5.0	5.0	3.0	3.0	3.0	0.0	0.0	-3.0	-3.0	-3.0	-4.0	-3
I%	16.0	19.0	23.0	20.0	17.0	7.0	0.0	0.0	-2.0	-2.0	1.0	6.0	9.0	10.0	14.0	19.0	22.0	27.0	34.0	-7.0	-21.0	3.0	17.0	10.0	10.0	-25.0	-26.0	-20.0	-15.0	-10.0	-4.0	2.0	4.0	7.0	12.0	12.0	13.0	16.0	15.0	22.0	23.0	24.0	2
FRFLT	-10.0	-8.0	5.0	19.0	30.0	24.0	9.0	4.0	-1.0	-11.0	-16.0	-12.0	-9.0	-14.0	-17.0	-16.0	-20.0	22.0	89.0	45.0	-48.0	-45.0	0.0	42.0	71.0	31.0	-16.0	-21.0	-21.0	-23.0	-20.0	-13.0	-13.0	-13.0	-6.0	-5.0	-6.0	-8.0	-14.0	-10.0	-5.0	-6.0	

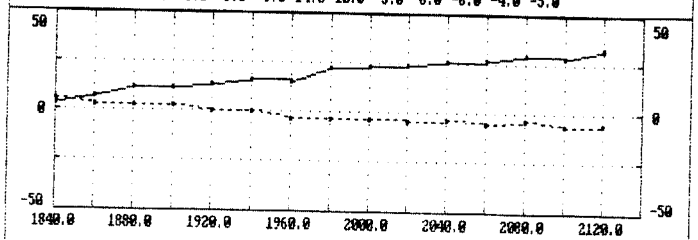


20.0	.9	-3.8	0.4	4.3	7.9	10.9	5.0	2.2	1.3	-2.2	-4.9	-5.4	-3.6	-4.2	-6.4	-6.0	-1.6	-4.7	18.2	29.[illegible]	-4.9	-17.9	-0.3	2.8	19.4	21.7	-2.2	-3.9	-7.1	-7.9	-8.4	-6.2	-4.1	-5.6	-3.7	-1.2	-3.6	-1.7	-4.0	-5.3	-1.6	20.0
40.0	.7	-1.6	-0.3	7.4	13.4	11.0	10.[illegible]	5.1	-0.1	-3.1	-5.9	-7.7	-9.3	-4.9	-3.4	-10.8	-14.6	13.8	24.2	16.5	12.[illegible]	-8.6	-17.2	18.7	28.4	15.1	10.2	-9.3	-12.2	-10.7	-8.7	-11.8	-11.5	-8.4	-7.8	-7.3	-3.6	-7.2	-7.3	-5.7	-7.4	40.0
60.0	.2	-0.6	4.3	7.9	9.8	13.0	11.4	7.8	-1.1	-6.9	-2.7	-3.3	-8.0	-12.2	-13.2	-14.8	13.0	22.3	10.9	2.4	8.8	12.5	8.7	1.6	11.9	19.5	14.2	10.2	-17.8	-20.4	-16.9	-13.3	-11.4	-8.7	-10.9	-9.8	-11.5	-9.6	-9.9	-10.3	-8.9-	60.0
80.0	.6	2.6	7.4	7.2	8.4	9.4	9.6	9.8	8.0	-0.1	-7.3	-11.6	-15.1	-12.0	-12.5	12.0	20.8	4.3	-2.9	3.3	4.7	27.1	31.[illegible]	5.7	-4.8	5.5	10.4	5.3	5.3	-16.9	-20.6	-20.7	-20.0	-14.2	-9.2	-11.0	-10.9	-14.0	-12.7	-13.1	-13.4-	80.0
100.0	.9	3.1	4.9	6.6	11.4	11.4	8.1	7.5	6.3	0.1	-5.3	-9.6	-12.0	-17.6	5.0	12.5	1.9	-3.7	0.6	2.3	23.9	25.4	24.4	25.[illegible]	-0.9	-12.2	-1.8	4.9	-1.2	-0.9	-19.1	-21.8	-20.5	-16.2	-21.7	-18.5	-13.2	-12.2	-12.2	-10.9	-14.4-	100.0
120.0	.1	6.0	8.7	9.0	7.2	5.4	4.1	6.8	6.2	2.4	-0.6	-9.9	-18.2	2.1	8.4	-4.5	-10.5	-2.8	-0.5	20.1	23.6	22.2	20.8	19.4	18.9	-7.4	-17.1	-5.1	-0.4	-4.3	-5.1	-24.1	-23.0	-24.8	-23.0	-20.0	-17.1	-16.5	-18.0	-13.8	-12.8-	120.0

ECSTALL WEST GRID, ULF DATA (23.4

LINE 8400N.

Q%	5.0	3.0	3.0	3.0	0.0	0.0	-3.0	-3.0	-3.0	-4.0	-3.0	-5.0	-3.0	-6.0	-5.0
I%	4.0	7.0	12.0	12.0	13.0	16.0	15.0	22.0	23.0	24.0	26.0	27.0	29.0	28.0	33.0
FRFLT	-13.0	-13.0	-6.0	-5.0	-6.0	-8.0	-14.0	-10.0	-5.0	-6.0	-6.0	-4.0	-5.0		



20.0	.1	-5.6	-3.7	-1.2	-3.6	-1.7	-4.0	-5.3	-1.6	-2.8	-1.9	-2.5	-1.3	-3.0	-5.1	20.0
40.0	.5	-8.4	-7.8	-7.3	-3.6	-7.2	-7.3	-5.7	-7.4	-4.5	-4.9	-3.9	-5.9	-6.2	-6.6	40.0
60.0	.4	-8.7	-10.9	-9.8	-11.5	-9.6	-9.9	-10.3	-8.9	-10.4	-5.8	-7.8	-8.7	-9.4	-10.1	60.0
80.0	.0	-14.2	-9.2	-11.0	-10.9	-14.0	-12.7	-13.1	-13.4	-10.9	-14.1	-11.1	-11.9	-12.7	-12.5	80.0
100.0	.5	-16.2	-21.7	-18.5	-13.2	-12.2	-12.2	-10.9	-14.4	-17.2	-16.6	-18.3	-15.7	-16.0	-16.4	100.0
120.0	.0	-24.8	-23.0	-20.0	-17.1	-16.5	-18.0	-13.8	-12.8	-15.3	-16.6	-20.3	-22.6	-19.8	-20.5	120.0

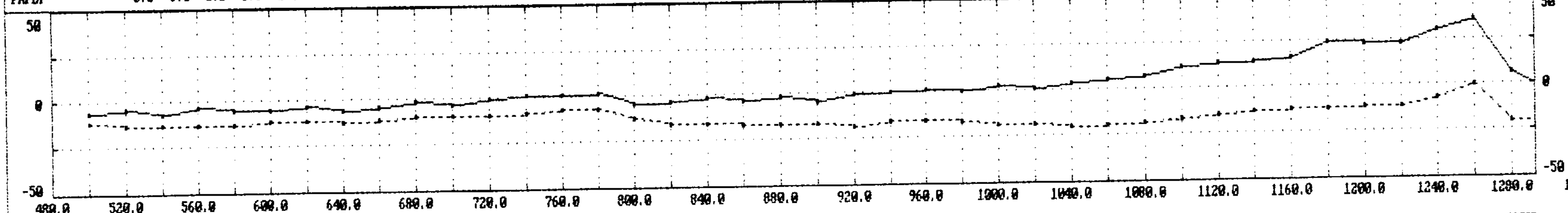
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8500N.

Q% -11.0 -13.0 -13.0 -13.0 -13.0 -11.0 -11.0 -12.0 -11.0 -10.0 -10.0 -10.0 -9.0 -7.0 -7.0 -12.0 -16.0 -16.0 -17.0 -17.0 -17.0 -18.0 -16.0 -16.0 -17.0 -18.0 -18.0 -20.0 -19.0 -18.0 -17.0 -15.0 -13.0 -12.0 -12.0 -11.0 -11.0 -7.0 0.0 -20.0 -19.0 -18

I% -6.0 -4.0 -7.0 -3.0 -5.0 -5.0 -3.0 -6.0 -4.0 -2.0 -3.0 -1.0 1.0 1.0 2.0 -4.0 -3.0 -2.0 -3.0 -2.0 -4.0 -1.0 0.0 1.0 0.0 3.0 1.0 4.0 5.0 7.0 12.0 13.0 14.0 16.0 24.0 23.0 23.0 30.0 35.0 6.0 -5.0 -6

FRFLT 0.0 -3.0 0.0 0.0 -1.0 2.0 -3.0 -5.0 -2.0 -5.0 -6.0 -3.0 4.0 10.0 3.0 -2.0 0.0 1.0 0.0 -5.0 -6.0 -2.0 -2.0 -3.0 -2.0 -5.0 -7.0 -10.0 -13.0 -8.0 -5.0 -13.0 -17.0 -6.0 -6.0 -19.0 12.0 64.0 52.0 11.0



20.0 -1.8 0.7 -0.7 -1.5 1.6 -1.6 0.5 0.5 -2.7 -0.7 -1.0 -2.7 -0.6 -0.7 2.7 3.0 -1.1 0.7 -0.4 0.3 -0.7 -2.4 -1.4 -0.3 -1.6 -0.9 -0.9 -3.2 -2.1 -4.7 -4.1 -2.5 -2.6 -6.1 -5.1 -0.8 -2.3 -4.8 14.8 23.1 20.0

40.0 0.5 -1.8 -0.5 0.3 -2.4 1.2 -1.0 -2.1 -0.6 -2.3 -2.7 -1.9 -2.7 1.3 2.2 1.5 2.2 -1.4 0.5 -0.5 -1.4 -2.2 -2.8 -2.8 -1.6 -2.7 -3.9 -3.3 -7.8 -6.5 -6.0 -6.7 -9.1 -4.5 -2.7 -6.9 -5.7 9.7 15.2 20.3 40.0

60.0 -1.2 -0.6 -1.1 -1.9 0.6 -2.0 -0.3 -1.1 -2.2 -2.6 -4.0 -3.5 0.9 -0.3 -0.1 2.0 0.9 3.0 -2.4 -2.4 -2.6 -2.3 -3.6 -3.5 -4.0 -4.7 -4.9 -8.4 -7.5 -10.0 -6.1 -8.6 -6.3 -5.6 -9.7 -12.8 5.0 15.6 15.6 14.9 60.0

80.0 0.0 -0.2 -1.9 0.1 -0.7 -0.8 -1.8 -1.2 -3.3 -3.7 -3.2 -1.8 -1.1 -0.5 -0.6 0.3 2.0 0.2 -0.2 -4.4 -3.3 -4.3 -4.4 -4.0 -6.3 -6.4 -8.5 -6.3 -6.1 -5.1 -10.7 -10.5 -11.1 -13.6 -13.5 3.0 9.9 11.4 13.4 11.0 80.0

100.0 1.1 -0.4 0.9 -0.5 -2.1 -1.3 -1.6 -4.5 -2.4 -4.0 -1.2 -0.4 -2.8 -1.4 -1.1 -0.8 -1.5 -1.0 -1.4 -1.3 -5.9 -4.1 -6.3 -7.6 -4.6 -7.2 -5.8 -5.5 -6.0 -13.1 -11.8 -13.2 -15.7 -17.9 -0.4 7.2 8.1 7.0 6.5 14.2 100.0

120.0 0.6 1.8 0.5 -1.7 -1.5 -3.1 -3.8 -3.0 -5.2 0.3 -1.5 -2.2 -1.2 -3.6 -1.4 -2.3 -4.2 -3.4 -1.5 -3.5 -2.7 -4.3 -2.9 -3.5 -7.0 -7.2 -8.9 -9.3 -14.2 -13.4 -13.5 -15.9 -20.3 -4.0 2.2 4.3 11.4 8.0 5.6 7.3 120.0

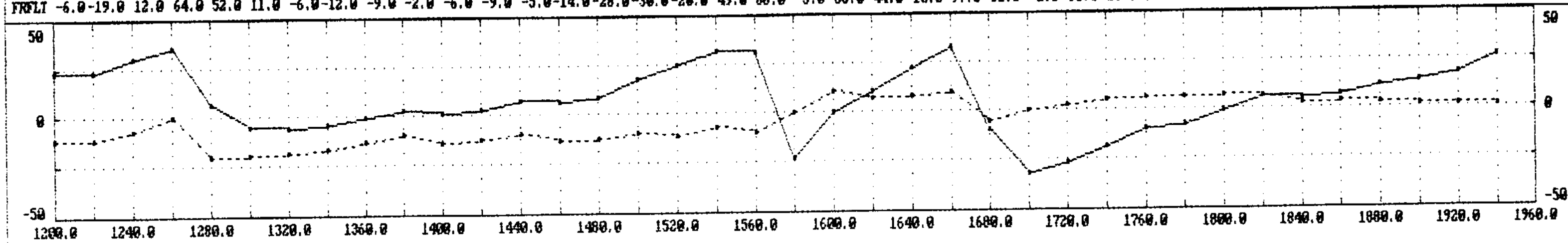
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8500N.

Q% -11.0 -11.0 -7.0 0.0 -20.0 -19.0 -18.0 -17.0 -13.0 -10.0 -14.0 -12.0 -10.0 -13.0 -12.0 -10.0 -11.0 -7.0 -10.0 0.0 11.0 7.0 8.0 10.0 -5.0 0.0 3.0 5.0 6.0 6.0 7.0 6.0 3.0 4.0 3.0 2.0 2.0 1.0

I% 23.0 23.0 30.0 35.0 6.0 -5.0 -6.0 -4.0 -1.0 3.0 1.0 3.0 7.0 6.0 9.0 18.0 25.0 32.0 31.0 -23.0 0.0 11.0 22.0 33.0 -10.0 -32.0 -26.0 -18.0 -10.0 -8.0 -1.0 6.0 5.0 7.0 12.0 14.0 18.0 27.0

FRFLT -6.0 -19.0 12.0 64.0 52.0 11.0 -6.0 -12.0 -9.0 -2.0 -6.0 -9.0 -5.0 -14.0 -28.0 -30.0 -20.0 49.0 86.0 -3.0 -56.0 -44.0 10.0 97.0 81.0 2.0 -30.0 -26.0 -19.0 -23.0 -20.0 -7.0 -8.0 -14.0 -13.0 -19.0



20.0 .8 -2.3 -4.8 14.8 23.1 [illegible].6 2.3 -1.8 -4.3 -2.0 -0.5 -4.2 -2.7 -2.7 -8.6 -9.9 -3.6 [illegible] [illegible] 16.5 -19.7 -4.9 -12.0 18.1 36.6 9.2 -3.7 -8.5 -8.0 -6.8 -9.5 -4.7 -2.0 -5.4 -5.3 -5.1 -9.3 -10.4 20.0

40.0 .9 -5.7 9.7 15.2 20.3 22.[illegible] 3.8 -4.6 -1.7 -1.5 -5.5 -4.2 -6.7 -4.8 -8.4 -16.9 -14.9 20.7 16.5 16.5 6.6 -31.5 5.8 28.5 29.6 24.5 -1.9 -14.6 -12.1 -9.2 -9.0 -12.5 -11.7 -8.3 -10.9 -15.3 -15.5 -17.5 40.0

60.0 .8 5.0 15.6 15.6 14.9 16.6 16.6 0.9 -6.5 -9.1 0.2 -0.4 -3.8 -16.2 -20.1 -12.6 20.4 9.4 5.1 0.6 -1.5 21.7 3.0 12.6 15.5 21.0 25.1 -4.0 -27.0 -21.9 -15.3 -11.3 -10.8 -14.2 -18.3 -22.1 -24.3 -24.8 60.0

80.0 .0 9.[illegible] 11.4 13.4 11.0 8.0 13.4 21.2 0.9 -5.3 -9.0 -16.7 -11.6 -9.7 -9.5 22.2 5.0 -4.6 -9.4 -10.7 18.[illegible] 34.7 30.3 -4.6 3.3 7.0 9.3 15.2 -9.4 -22.9 -23.4 -26.5 -19.6 -21.4 -20.4 -19.5 -28.7 -33.6 80.0

100.0 .2 8.1 7.0 6.5 14.2 13.0 10.9 12.1 14.3 -2.7 -9.8 -14.1 -17.4 -15.4 16.9 1.4 -3.9 -6.7 -12.8 9.4 26.0 26.3 24.8 19.6 -11.9 -4.2 -2.6 4.1 8.8 -14.9 -29.1 -28.1 -28.9 -28.9 -34.5 -30.6 -29.7 -33.3 100.0

120.0 .3 11.4 8.0 5.6 7.3 10.0 11.5 10.7 14.0 11.3 -8.9 -18.9 -21.9 8.0 -3.0 -6.9 -12.3 -16.0 10.3 21.5 19.7 20.0 16.3 17.3 12.1 -22.0 -8.6 -4.0 -1.5 3.1 -23.1 -37.7 -39.1 -38.0 -37.2 -39.7 -37.1 -41.1 120.0

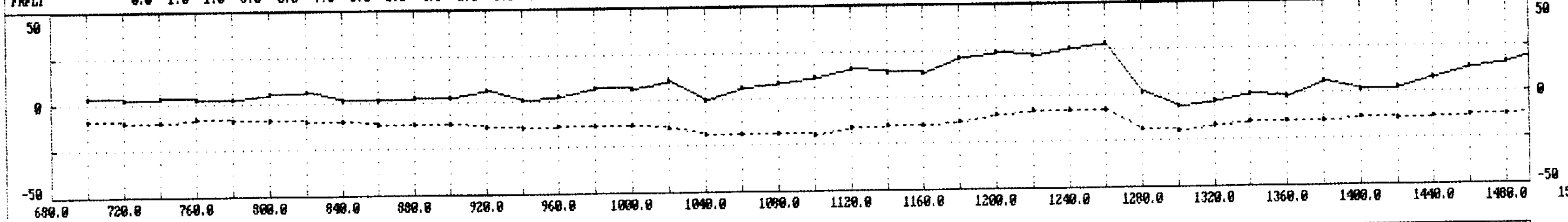
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8600N.

Q% -9.0 -10.0 -10.0 -8.0 -9.0 -9.0 -10.0 -10.0 -11.0 -11.0 -11.0 -13.0 -14.0 -13.0 -13.0 -13.0 -15.0 -18.0 -18.0 -18.5 -19.0 -16.0 -15.0 -15.0 -13.0 -10.0 -8.0 -8.0 -8.0 -18.0 -19.0 -17.0 -15.0 -15.0 -15.0 -13.0 -14.0 -13.0 -12.0 -12.0 -10.0 -[illegible]

I% 4.0 3.0 4.0 3.0 3.0 5.0 6.0 2.0 2.0 3.0 3.0 6.0 1.0 3.0 7.0 6.0 11.0 0.0 6.0 9.0 12.0 16.0 14.0 13.0 21.0 24.0 22.0 26.0 28.0 2.0 -6.0 -3.0 0.0 -2.0 6.0 2.0 3.0 8.0 13.0 16.0 21.0 2[illegible]

FRFLT 0.0 1.0 -1.0 -5.0 0.0 7.0 3.0 -2.0 -4.0 -1.0 5.0 -3.0 -9.0 -7.0 2.0 11.0 -4.0 -15.0 -13.0 -9.0 1.0 -4.0 -18.0 -12.0 -3.0 -8.0 18.0 58.0 39.0 -1.0 -7.0 -7.0 -10.0 -1.0 -3.0 -16.0 -18.0 -16.0 -19.0 -1.0



20.0	0.8	0.0	-0.1	0.5	-0.9	-1.5	1.6	2.1	-0.8	0.2	-1.8	0.6	1.6	-4.2	-0.5	-2.9	2.7	2.5	-6.0	-2.7	-4.8	-2.4	0.7	-4.5	-6.7	-1.2	0.4	-1.9	14.6	19.6	4.0	-1.4	0.1	-4.0	-3.2	0.9	-4.8	-6.3	-6.0	-4.2	20.0
40.0	-0.4	0.9	0.8	-1.2	-1.1	0.4	0.8	1.3	1.3	-2.7	-0.2	0.7	-1.7	-0.9	-6.5	0.5	0.1	-1.6	-2.2	-10.7	-5.4	-2.9	-5.8	-3.7	-2.3	-6.9	-3.9	13.2	15.3	15.9	16.0	2.5	-7.3	-1.4	0.2	-7.0	-4.4	-4.1	-8.7	-11.9	40.0
60.0	0.4	0.4	-0.6	-1.0	0.5	0.8	-0.4	-0.7	0.1	2.8	-0.7	-3.9	-3.0	-5.2	3.1	-3.6	-5.0	-4.4	-6.8	-3.0	-6.0	-6.5	-6.8	-4.8	-5.5	-8.1	5.3	14.4	14.8	11.6	14.6	10.[illegible]	-2.0	-4.6	-1.8	-2.5	-6.0	-7.4	-15.8	-7.3	60.0
80.0	0.2	-0.9	-1.7	1.0	0.1	0.2	0.4	-2.2	0.7	-0.3	-1.5	-2.8	-6.3	0.2	-3.0	-3.4	-7.6	-5.7	-1.6	-2.2	-3.8	-13.0	-10.0	-9.7	-9.8	7.2	10.6	7.5	10.2	11.4	8.4	16.9	16.4	-1.1	-10.5	-13.6	-14.0	-13.0	2.7	19.7	80.0
100.0	-1.7	-2.4	0.9	0.6	0.2	-0.3	-2.7	0.2	-1.0	-3.8	-2.2	-3.9	-0.6	-4.1	-2.1	-2.9	-4.1	-5.5	-3.6	-8.2	-10.3	-6.4	-15.3	-13.8	2.5	8.0	8.0	7.3	11.5	10.7	13.9	11.8	8.6	4.9	-7.6	-13.0	-14.1	-4.0	13.6	11.3	100.0
120.0	-2.6	-0.3	-0.2	-1.0	-0.3	-2.4	-0.2	-2.0	-3.3	-3.4	-6.5	3.4	1.9	-2.1	-4.2	-5.4	-4.9	-3.9	-11.8	-12.6	-9.5	-12.8	-11.2	-3.6	6.3	9.6	8.4	11.4	4.8	7.1	8.5	8.6	7.0	7.1	6.1	-13.1	-8.6	9.9	4.2	-0.6	120.0

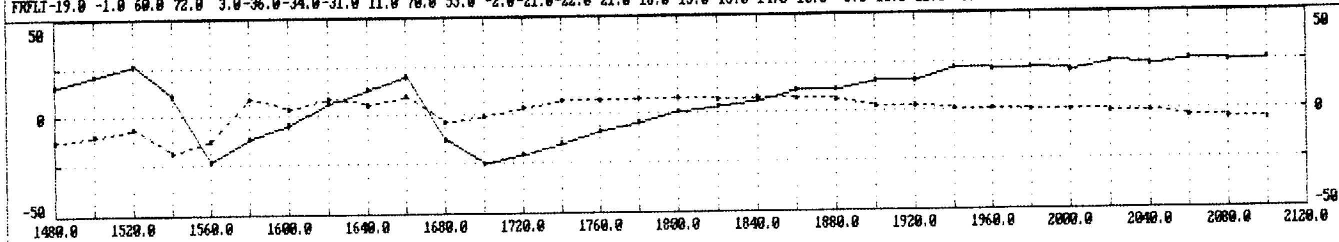
ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 8600N.

Q% -12.0-10.0 -6.0-18.0-12.0 9.0 4.0 9.0 5.0 10.0 -3.0 -1.0 4.0 7.0 7.0 8.0 8.0 7.0 8.0 7.0 6.0 3.0 3.0 1.0 1.0 0.0 0.0 -1.0 -1.0 -3.0 -4.0 -5.0

I% 16.0 21.0 27.0 11.0-23.0-11.0 -4.0 6.0 13.0 20.0-12.0-25.0-20.0-15.0 -9.0 -4.0 1.0 4.0 6.0 12.0 12.0 16.0 16.0 22.0 21.0 22.0 20.0 25.0 23.0 26.0 25.0 26.0

FRFLT-19.0 -1.0 60.0 72.0 3.0-36.0-34.0-31.0 11.0 70.0 53.0 -2.0-21.0-22.0-21.0-18.0-13.0-13.0-14.0-10.0 -8.0-10.0-11.0 -5.0 1.0 -2.0 -6.0 -4.0 -3.0 -2.0



20.0	.2	-3.1	5.8	28.2	12.0	-9.5	-8.3	-8.8	-6.9	13.8	25.4	4.7	-3.0	-6.3	-7.9	-7.1	-6.4	-4.0	-5.9	-4.2	-3.5	-3.2	-3.9	-3.3	-0.7	0.0	-2.0	-1.9	-0.7	-1.7	0.0	-1.4	20.0
40.0	.9	0.3	20.0	15.8	19.3	6.6	-18.8	-15.8	8.3	18.7	15.8	17.5	-3.4	-13.3	-10.6	-8.1	-9.4	-11.9	-8.9	-9.0	-7.4	-7.5	-6.5	-4.8	-3.5	-2.5	-2.1	-3.2	-3.7	-0.9	-2.4	-1.3	40.0
60.0	.3	18.3	16.7	14.1	9.4	6.7	-6.5	-7.6	6.6	9.1	14.1	14.8	13.5	-10.9	-19.7	-17.4	-15.1	-9.7	-9.3	-9.8	-13.6	-11.3	-8.5	-6.8	-7.1	-5.9	-3.9	-4.0	-3.4	-5.3	-2.4	-4.0	60.0
80.0	.7	13.4	7.3	1.9	0.0	-0.9	20.1	18.6	-3.6	-0.1	0.8	4.8	8.3	10.5	-8.2	-21.2	-22.2	-21.0	-15.1	-13.7	-10.1	-8.4	-9.9	-11.0	-9.7	-8.8	-7.8	-4.9	-5.3	-5.1	-6.4	-3.7	80.0
100.0	.3	4.6	-0.8	-1.6	-2.7	14.1	23.5	24.[illegible]	12.2	-10.3	-5.8	-4.9	-1.8	3.0	5.8	-12.4	-22.1	-19.0	-21.8	-21.7	-16.4	-11.0	-11.5	-8.8	-6.8	-9.9	-9.8	-9.9	-6.5	-7.2	-6.6	-7.8	100.0
120.0	.6	-2.3	-6.7	-8.9	12.3	21.6	21.2	21.2	19.0	6.0	-15.6	-10.5	-8.1	-5.3	-2.4	0.6	-15.0	-25.8	-22.6	-20.5	-15.8	-17.9	-15.6	-13.6	-11.6	-8.1	-8.1	-5.8	-9.8	-8.3	-8.9	-8.6	120.0

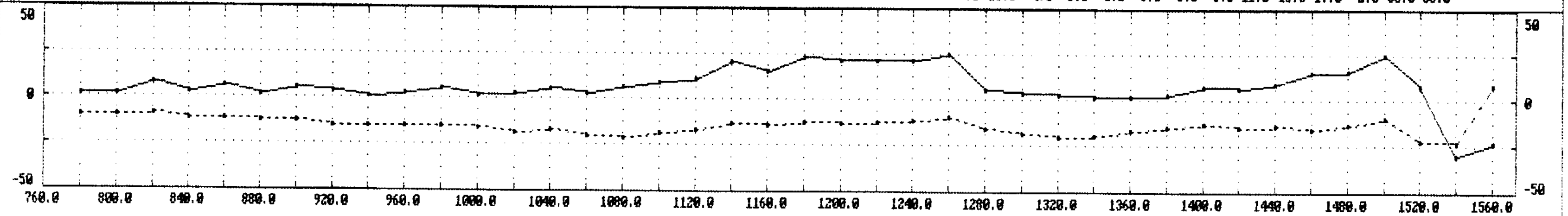
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8700N.

Q% -10.0 -10.0 -9.0 -11.0 -11.0 -12.0 -12.0 -15.0 -15.0 -15.0 -15.0 -16.0 -18.0 -17.0 -20.0 -21.0 -18.0 -17.0 -13.0 -14.0 -12.0 -13.0 -12.0 -11.0 -10.0 -16.0 -18.0 -20.0 -19.0 -17.0 -15.0 -13.0 -15.0 -14.0 -16.0 -13.0 -10.0 -22.0 -23.0 8.0

I% 2.0 2.0 8.0 3.0 6.0 2.0 5.0 4.0 1.0 3.0 5.0 2.0 3.0 5.0 3.0 6.0 9.0 11.0 20.0 15.0 23.0 21.0 21.0 21.0 25.0 5.0 4.0 3.0 2.0 2.0 3.0 7.0 6.0 9.0 15.0 16.0 25.0 8.0 -30.0 -23.0

FRFLT -7.0 1.0 3.0 2.0 -1.0 2.0 5.0 -3.0 -3.0 3.0 -1.0 -3.0 -1.0 -7.0 -11.0 -16.0 -15.0 -7.0 -9.0 -4.0 2.0 -4.0 12.0 37.0 23.0 4.0 3.0 0.0 -6.0 -8.0 -5.0 -11.0 -16.0 -17.0 -2.0 63.0 86.0



20.0	-0.3	-3.6	-0.4	0.0	0.2	1.3	-1.4	2.4	0.6	-2.2	0.6	1.0	-2.1	-0.2	-1.1	-4.7	-2.8	-7.7	-2.9	-2.3
40.0	-3.1	-1.1	-1.7	0.2	1.3	-0.6	2.5	-0.9	0.3	1.0	-1.5	-1.9	0.1	-2.9	-4.7	-4.4	-10.0	-6.0	-9.0	-4.7
60.0	0.7	-1.9	-0.3	-1.3	-0.9	4.1	-0.2	0.0	-1.3	-0.5	-1.7	-2.1	-2.6	-3.1	-5.7	-10.5	-4.8	-10.4	-7.1	-6.4
80.0	-0.3	1.1	-0.9	-1.6	0.5	-0.8	0.4	-0.1	0.2	-3.0	-0.1	-2.5	-5.8	-3.7	-7.1	-6.3	-9.4	-8.9	-10.0	-8.7
100.0	2.7	-0.1	-0.4	-0.3	-1.7	-2.8	-0.8	2.0	-1.4	0.6	-1.0	-1.1	-3.1	-9.6	-5.7	-10.0	-11.2	-10.0	-9.5	-13.3
120.0	0.4	0.9	0.9	-0.5	-2.2	-1.1	-0.9	-0.4	4.7	0.1	0.2	-3.3	-6.7	-6.1	-12.7	-10.7	-10.5	-12.2	-14.8	-0.4

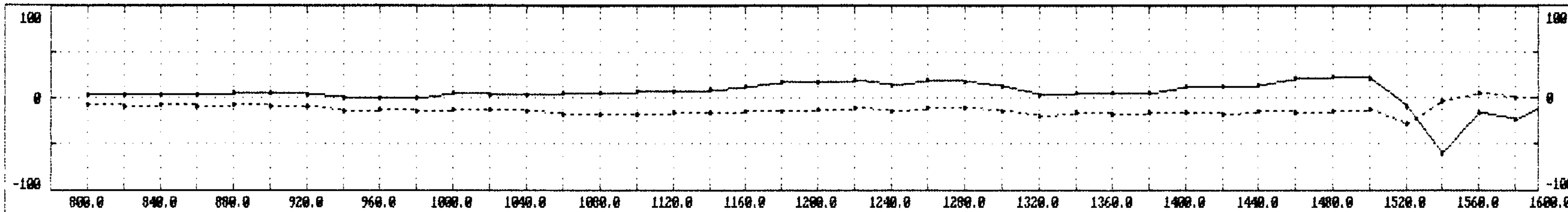
20.0	-4.3	1.0	1.1	-1.3	9.8	12.7	1.7	3.2	0.3	-0.5	-3.2	-2.6	-1.8	-6.8	-2.9	-2.0	5.1	33.7	20.3	8.1	20.0
40.0	0.3	-3.4	-1.4	9.2	10.0	9.8	13.6	2.1	0.1	-1.5	-1.6	-3.5	-1.9	-2.0	-8.8	3.8	29.2	26.5	38.4	36.3	40.0
60.0	-5.6	-3.0	5.0	9.8	8.8	9.6	9.1	11.1	-0.8	4.0	1.1	-1.4	-2.9	-5.3	5.0	26.2	24.3	34.6	42.4	54.7	60.0
80.0	-9.5	2.6	8.0	5.4	9.4	10.2	13.2	10.9	15.3	2.9	-1.1	-1.1	-5.6	5.4	27.9	26.7	33.9	40.8	51.2	58.7	80.0
100.0	-1.0	1.1	4.3	13.5	10.7	15.9	13.8	14.6	11.5	12.[illegible]	0.7	-4.0	5.7	27.9	23.8	33.6	42.9	49.7	58.7	69.7	100.0
120.0	3.6	4.7	8.7	10.9	17.4	12.3	16.2	15.0	12.2	11.7	9.0	8.3	28.9	25.4	32.4	39.8	48.3	58.5	66.0	74.8	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8800N.

Q%	-7.0	-8.0	-7.0	-8.0	-7.0	-8.0	-9.0	-13.0	-12.0	-13.0	-12.0	-12.0	-14.0	-17.0	-18.0	-18.0	-16.0	-16.0	-14.0	-14.0	-12.0
I%	4.0	4.0	4.0	4.0	6.0	5.0	4.0	1.0	0.0	0.0	6.0	4.0	4.0	5.0	5.0	7.0	8.0	9.0	12.0	17.0	17.0
FRELT		0.0	-2.0	-3.0	1.0	6.0	8.0	5.0	-5.0	-10.0	-2.0	1.0	-2.0	-3.0	-5.0	-5.0	-6.0	-12.0	-13.0	-7.0	0.0

Q%	-11.0	-13.0	-11.0	-10.0	-13.0	-19.0	-16.0	-18.0	-16.0	-15.0	-17.0	-13.0	-15.0	-13.0	-12.0	-20.0	-3.0	6.0	1.0	3.0	2
I%	19.0	15.0	20.0	18.0	12.0	3.0	5.0	6.0	6.0	12.0	13.0	15.0	22.0	24.0	22.0	-9.0	-59.0	-15.0	-22.0	-2.0	1
FRELT	1.0	-4.0	5.0	23.0	22.0	4.0	-4.0	-7.0	-13.0	-10.0	-12.0	-18.0	-9.0	33.0	114.0	87.0	-31.0	-50.0	-53.0	-55.0	



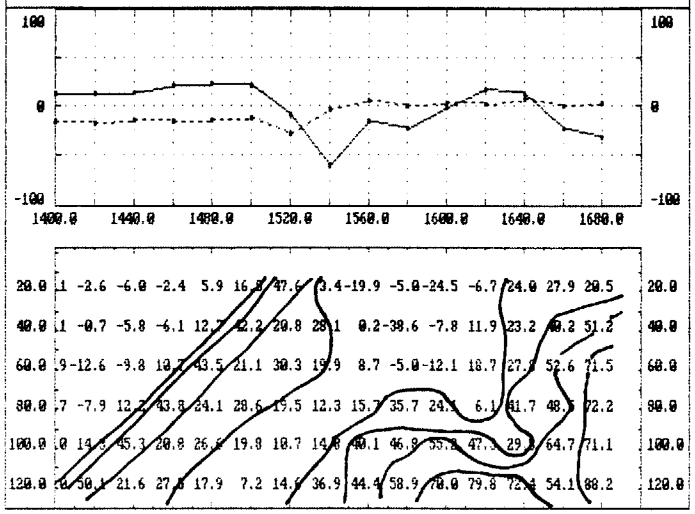
20.0	0.0	-0.2	0.0	-1.1	-0.3	1.4	2.3	1.9	0.8	-3.2	-2.4	0.9	-1.3	-0.6	-1.4	-2.3	-1.9	-2.9	-5.2	-2.9	-2.1
40.0	0.1	0.4	-0.7	-0.3	-0.4	1.4	3.5	2.7	-1.3	-2.0	-2.4	-2.9	0.2	-2.8	-3.6	-3.4	-4.1	-6.4	-5.9	-5.6	-0.9
60.0	0.4	-1.5	-0.8	-0.2	1.7	2.1	1.9	-0.3	0.1	-0.6	-3.5	-3.9	-5.0	-1.1	-3.3	-4.8	-7.3	-6.1	-6.4	-3.5	-6.5
80.0	-1.4	-0.9	0.0	1.4	1.8	1.8	-1.9	-1.1	0.0	-1.2	-1.2	-4.2	-5.3	-5.0	-2.6	-6.3	-6.2	-7.2	-6.6	-8.5	-7.0
100.0	-0.7	-0.4	1.2	1.5	1.0	-2.3	-1.3	-0.8	-1.7	-0.1	-1.2	-1.3	-3.9	-6.0	-9.0	-6.6	-9.4	-7.1	-9.9	-8.8	-4.2
120.0	-0.8	0.4	1.0	0.9	-2.0	-1.3	-1.0	-0.6	0.3	-0.9	-0.7	-1.5	-4.5	-9.4	-10.7	-12.4	-7.1	-10.8	-6.1	3.2	3.9

0.7	0.0	-0.7	5.2	8.4	4.6	-1.4	-0.1	-4.1	-5.1	-2.6	-6.0	-2.4	5.9	16.8	47.6	3.4	-19.9	-5.0	-	20.0
-1.3	-0.9	3.5	6.1	8.1	6.8	2.6	-6.1	-4.1	-1.1	-0.7	-5.8	-6.1	12.7	42.2	20.8	28.1	0.2	-38.6		40.0
-4.3	1.9	6.7	6.3	3.2	6.4	5.7	7.7	-3.4	-6.9	-12.6	-9.8	10.7	43.5	21.1	30.3	19.9	8.7	-5.0	-	60.0
-3.9	3.6	5.3	7.9	14.6	4.4	7.2	1.2	-11.1	-13.7	-7.9	12.2	43.8	24.1	28.6	19.5	12.3	15.7	35.7		80.0
4.7	9.0	5.9	9.5	4.5	0.9	-4.9	0.1	-1.9	-1.0	14.3	45.3	20.8	26.6	19.8	10.7	14.8	40.1	46.8		100.0
5.1	3.0	1.4	-1.7	0.9	3.2	1.6	1.8	8.4	26.0	50.1	21.6	27.5	17.9	7.2	14.6	36.9	44.4	58.9		120.0

ECSTALL WEST GRID, VLF DATA (23.4

LINE 8800N.

Q%	-15.0	-17.0	-13.0	-15.0	-13.0	-12.0	-28.0	-3.0	6.0	1.0	3.0	2.0	7.0	0.0	4.0
I%	12.0	13.0	15.0	22.0	24.0	22.0	-9.0	-59.0	-15.0	-22.0	-2.0	18.0	13.0	-23.0	-32.0
FRFLT	-10.0	-12.0	-18.0	-9.0	33.0	114.0	87.0	-31.0	-50.0	-53.0	-55.0	26.0	86.0		



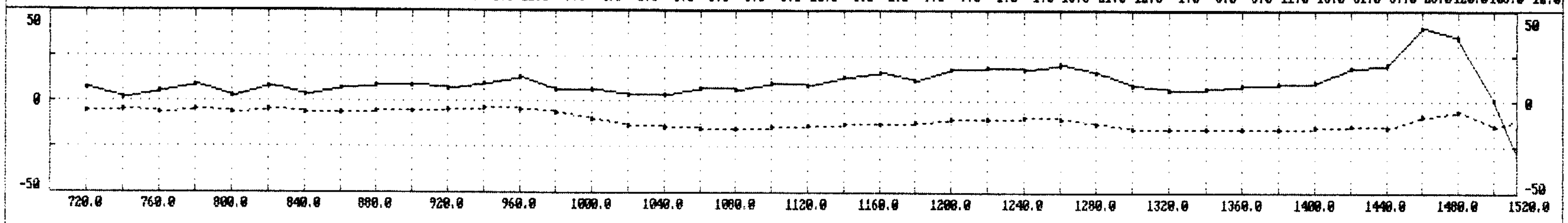
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 8900N.

Q% -5.0 -4.0 -6.0 -4.0 -6.0 -4.0 -6.0 -6.0 -5.0 -5.0 -4.0 -3.0 -4.0 -6.0 -10.0 -13.0 -14.0 -15.0 -15.0 -14.0 -13.0 -12.0 -12.0 -11.0 -10.0 -10.0 -9.0 -10.0 -12.0 -15.0 -15.0 -15.0 -15.0 -15.0 -14.0 -13.0 -14.0 -8.0 -5.0 -13.0 -8.0 9

I% 7.0 2.0 5.0 9.0 3.0 8.0 4.0 7.0 9.0 9.0 7.0 10.0 13.0 6.0 6.0 4.0 4.0 7.0 6.0 10.0 9.0 13.0 16.0 12.0 18.0 19.0 18.0 20.0 16.0 9.0 6.0 7.0 9.0 10.0 11.0 19.0 20.0 41.0 35.0 1.0 -45.0 -22

FRFLT -5.0 -5.0 3.0 0.0 0.0 -4.0 -7.0 0.0 1.0 -7.0 -2.0 11.0 9.0 4.0 -1.0 -5.0 -5.0 -6.0 -6.0 -10.0 -6.0 -1.0 -9.0 -7.0 -1.0 1.0 13.0 21.0 12.0 -1.0 -6.0 -5.0 -11.0 -18.0 -31.0 -37.0 25.0 120.0 103.0 -12.0



20.0	2.9	1.6	-4.2	1.8	0.0	-1.1	0.9	-3.2	-1.1	0.4	-0.2	-3.2	2.7	3.9	0.9	1.9	-2.1	-1.1	-2.3	-2.6	-1.6	-5.0	0.2	-1.7	-4.5	0.5	-0.4	1.8	6.7	5.8	1.7	-1.1	-2.4	-1.0	-7.9	-5.9	-10.0	-3.8	22.8	44.2	20.0
40.0	1.0	-0.8	1.7	-3.7	0.7	1.3	-3.9	-0.9	-1.2	-1.3	-2.2	1.6	0.1	2.9	5.0	-1.0	-1.2	-3.2	-2.7	-4.2	-6.0	-2.0	-5.6	-3.0	-0.7	-4.4	0.5	5.6	6.7	6.0	3.3	-2.9	-4.3	-2.9	1.8	-14.6	-15.0	8.6	36.1	35.2	40.0
60.0	-2.4	1.9	-0.6	0.9	-3.0	-2.2	0.6	-1.7	-1.0	-5.2	-0.2	1.2	2.5	0.5	1.3	2.7	-2.9	-2.5	-5.9	-6.9	-2.0	-5.1	-4.4	-5.2	-4.5	-0.9	0.5	5.1	3.3	2.8	7.0	10.3	-1.1	-6.1	-21.0	-14.6	5.9	33.6	25.8	18.8	60.0
80.0	0.3	-1.3	1.3	0.5	-0.9	-4.4	-1.4	-1.3	-6.2	0.7	-2.0	1.3	2.0	-0.3	-0.1	-0.8	1.4	-3.4	-5.2	-3.9	-7.7	-6.7	-7.1	-6.4	-4.3	-1.1	2.9	3.6	10.7	9.7	6.7	0.6	-5.0	-19.2	-15.5	6.0	33.0	21.1	13.6	8.9	80.0
100.0	-2.4	0.6	-0.8	-1.7	-1.6	-0.9	-5.8	-5.9	0.7	-3.0	0.9	-0.6	-0.8	0.9	0.2	-0.4	-1.4	-1.3	-3.1	-7.5	-9.6	-9.7	-11.0	-8.0	1.7	7.9	7.6	8.3	3.1	4.0	-3.0	-2.0	-10.2	-8.7	6.1	29.3	15.8	9.4	2.7	5.9	100.0
120.0	-0.6	-2.6	-3.1	-3.1	-1.8	-2.4	-5.2	-3.9	-2.1	1.3	-1.5	0.2	-0.7	-0.9	0.4	-2.0	-4.7	-2.2	-4.0	-11.3	-9.8	-8.1	-1.6	2.5	1.8	4.2	2.6	2.2	1.4	-2.2	1.1	-10.5	-8.6	10.1	32.9	15.6	6.8	0.3	3.3	3.5	120.0

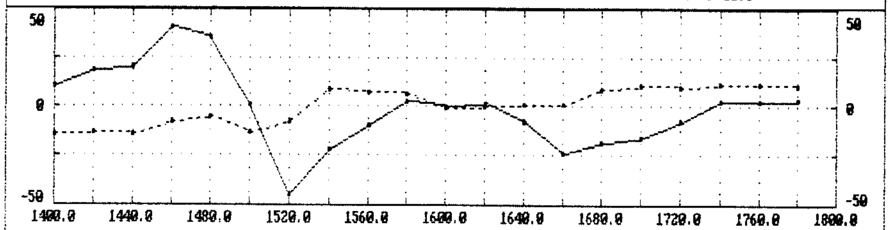
ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 8900N.

Q% -14.0 -13.0 -14.0 -8.0 -5.0 -13.0 -8.0 9.0 7.0 6.0 -1.0 0.0 1.0 1.0 9.0 11.0 10.0 12.0 12.0 11.0

I% 11.0 19.0 20.0 41.0 35.0 1.0 -45.0 -22.0 -10.0 3.0 0.0 2.0 -8.0 -24.0 -18.0 -16.0 -8.0 3.0 3.0 4.0

FRFLT -18.0 -31.0 -37.0 25.0 120.0 103.0 -12.0 -60.0 -35.0 -9.0 9.0 34.0 36.0 2.0 -18.0 -29.0 -30.0 -12.0



20.0	.9	-5.9	-10.0	-3.8	22.0	44.2	14.1	-15.9	-11.5	-8.0	0.9	3.7	15.5	5.4	-4.6	-5.1	-12.3	-7.5	-2.2	-3.5	20.0
40.0	.8	-14.6	-15.0	8.6	36.1	35.2	26.0	1.0	-23.9	-9.1	4.9	15.3	5.3	7.4	-1.5	-15.6	-12.1	-10.4	-8.7	-5.7	40.0
60.0	.0	-14.6	5.9	33.6	25.8	18.8	22.5	18.8	-2.1	-23.3	0.1	6.0	16.8	8.5	-0.9	-12.0	-19.1	-16.1	-14.4	-10.7	60.0
80.0	.5	6.0	53.0	21.1	13.6	8.9	11.0	20.9	23.0	12.9	-16.4	-5.9	-3.3	0.6	1.6	2.8	-5.5	-20.1	-22.7	-20.7	80.0
100.0	.1	29.2	15.8	9.4	2.7	5.9	9.8	16.2	36.1	29.4	8.3	-22.8	-16.2	-10.6	-3.5	-4.5	-1.2	-9.5	-18.4	-17.9	100.0
120.0	.9	15.6	6.8	0.3	3.3	3.5	9.9	23.2	21.1	31.7	23.5	-1.7	-28.0	-17.0	-12.0	-7.3	-9.8	-8.0	-12.2	-23.1	120.0

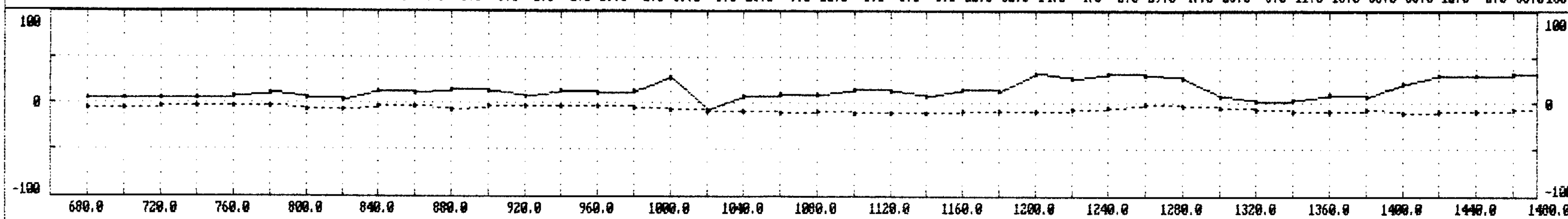
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9000N.

Q% -5.0 -5.0 -4.0 -4.0 -4.0 -4.0 -6.0 -6.0 -3.0 -4.0 -6.0 -4.0 -3.0 -3.0 -4.0 -5.0 -7.0 -9.0 -9.0 -10.0 -9.0 -11.0 -10.0 -10.0 -9.0 -9.0 -8.0 -6.0 -5.0 -2.0 -4.0 -5.0 -6.0 -9.0 -8.0 -6.0 -10.0 -9.0 -8.0 -6.0 -4.0 14

I% 6.0 6.0 6.0 5.0 7.0 10.0 6.0 3.0 13.0 11.0 14.0 12.0 8.0 12.0 10.0 12.0 29.0 -6.0 8.0 9.0 9.0 15.0 13.0 8.0 14.0 12.0 32.0 26.0 32.0 30.0 26.0 7.0 2.0 3.0 9.0 7.0 21.0 30.0 31.0 32.0 31.0 -53

FRFLT 1.0 0.0 -6.0 -4.0 8.0 0.0 -15.0 -9.0 -2.0 5.0 6.0 -2.0 -2.0 -19.0 -1.0 39.0 6.0 -16.0 -7.0 -10.0 3.0 6.0 -5.0 -22.0 -32.0 -14.0 -4.0 2.0 29.0 47.0 28.0 -3.0 -11.0 -16.0 -35.0 -33.0 -12.0 -2.0 85.0 136.0

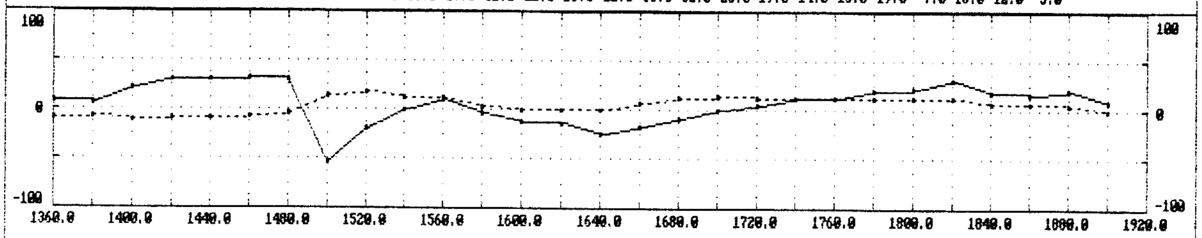


20.0	0.2	-0.2	0.2	-0.3	-2.5	-0.3	3.7	-4.6	-4.2	-0.2	-1.8	3.7	-0.3	-2.7	3.1	-11.7	10.3	11.7	-9.9	2.3	-4.5	-2.9	3.9	-3.1	-2.2	-11.0	-9.0	-0.2	-2.1	5.3	13.5	14.2	3.6	-3.4	-3.5	-8.1	-14.6	-6.4	5.6	-0.7	20.0
40.0	0.0	1.2	-1.3	-3.0	-0.4	0.8	-3.1	-0.8	-4.8	-5.6	0.8	1.6	3.0	-1.6	-11.7	9.5	1.3	2.3	10.8	-12.0	-5.9	0.2	-1.7	-1.0	-11.1	-9.0	-8.6	-8.9	3.1	10.2	14.8	12.2	9.0	-0.6	-10.3	-5.2	-5.9	-16.7	-8.1	46.9	40.0
60.0	-0.1	-1.6	-2.4	0.0	1.5	-4.0	-3.9	-5.9	0.4	-0.9	-4.1	0.4	-1.5	-8.7	10.1	-0.6	0.7	-1.6	-2.9	7.1	-6.4	-4.4	-1.0	-10.0	-4.2	-8.7	-14.1	-8.8	0.4	14.5	11.6	12.1	19.[illegible]	6.6	-11.8	-18.9	-15.9	-8.2	38.5	27.8	60.0
80.0	-0.6	-2.8	0.0	1.4	-6.2	-1.3	-4.5	-3.9	0.5	-2.8	-2.8	-5.0	-9.7	9.2	1.1	-0.2	-3.1	-3.7	-2.7	2.7	11.0	-8.2	-12.0	-9.3	-15.8	-9.7	-9.4	-1.6	7.2	10.7	16.8	12.9	7.1	-1.9	-3.3	-13.4	-13.6	32.5	18.1	4.8	80.0
100.0	-2.8	-2.3	2.8	-3.9	-2.9	-4.5	-3.0	-2.6	-4.1	-2.4	-1.6	-15.1	3.4	0.3	-0.9	0.9	-0.3	-1.0	3.6	-1.3	1.0	-3.5	-21.1	-15.8	-14.0	-11.6	10.6	11.2	5.3	4.2	5.7	6.3	-3.5	3.5	1.4	-2.0	32.6	18.9	-2.6	-3.3	100.0
120.0	-0.6	1.3	-4.3	-3.6	-4.0	-4.3	-2.0	-3.9	-4.8	-5.5	-14.7	6.6	-2.8	-3.2	4.2	-0.7	1.7	3.3	-3.7	-2.2	-15.5	-11.1	-4.4	-14.1	-6.7	2.4	5.5	9.4	5.0	0.3	-2.2	-7.5	2.5	-3.3	1.4	43.5	23.0	0.6	-8.1	0.9	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9000N.

0%	-8.0	-6.0	-10.0	-9.0	-8.0	-6.0	-4.0	14.0	18.0	13.0	12.0	4.0	1.0	0.0	0.0	7.0	12.0	14.0	13.0	13.0	13.0	13.0	13.0	13.0	8.0	7.0	6.0	0.0
1%	9.0	7.0	21.0	30.0	31.0	32.0	31.0	-53.0	-20.0	1.0	10.0	-4.0	-12.0	-13.0	-25.0	-18.0	-8.0	0.0	6.0	12.0	13.0	19.0	21.0	30.0	17.0	16.0	19.0	9.0
FRFLT	-16.0	-35.0	-33.0	-12.0	-2.0	85.0	136.0	-3.0	-84.0	-25.0	27.0	31.0	22.0	18.0	-12.0	-35.0	-32.0	-26.0	-19.0	-14.0	-15.0	-19.0	-7.0	18.0	12.0	5.0		



20.0	.5	-8.1	-14.6	-6.4	5.6	-0.7	47.6	28.9	-27.9	-9.6	-0.8	12.0	4.9	8.3	2.6	-10.6	-10.8	-10.0	-9.3	-5.8	-6.1	-4.5	-6.3	1.5	8.8	-0.7	6.2	9.1	20.0
40.0	.3	-5.2	-5.9	-16.7	-8.1	46.9	30.1	17.4	13.9	-25.2	-3.8	13.2	22.9	1.2	-5.8	-8.2	-17.0	-18.4	-12.0	-10.8	-11.4	-11.9	-2.8	1.4	1.6	12.7	7.9	9.9	40.0
60.0	.8	-18.9	-15.9	-8.2	38.5	27.8	17.6	11.6	17.8	21.6	-25.3	1.7	10.3	15.0	-0.1	-7.6	-20.4	-23.3	-19.9	-14.0	-14.7	-5.4	-2.0	-4.7	4.8	9.[illegible]	17.5	13.0	60.0
80.0	.3	-13.4	-13.6	32.5	18.1	4.8	7.2	19.7	24.4	23.6	28.6	-23.5	-8.6	-1.1	1.9	-1.9	-9.2	-13.9	-21.8	-30.8	-13.9	-6.4	-2.9	4.4	6.0	11.3	13.4	21.3	80.0
100.0	.4	-2.0	32.6	10.8	-2.6	-3.3	3.5	19.2	24.0	33.5	29.7	23.3	-29.9	-14.9	-6.8	-1.4	-12.1	-11.5	-18.0	-18.4	-14.1	-9.3	-7.1	2.2	10.9	14.5	18.4	20.7	100.0
120.0	.4	[illegible]	23.0	0.6	-8.1	0.9	9.8	9.3	24.5	27.9	25.8	22.1	18.1	-32.1	-14.8	-9.0	-5.5	-18.1	-14.5	-9.5	-18.3	-8.9	-1.2	6.7	13.0	10.3	17.5	25.1	120.0

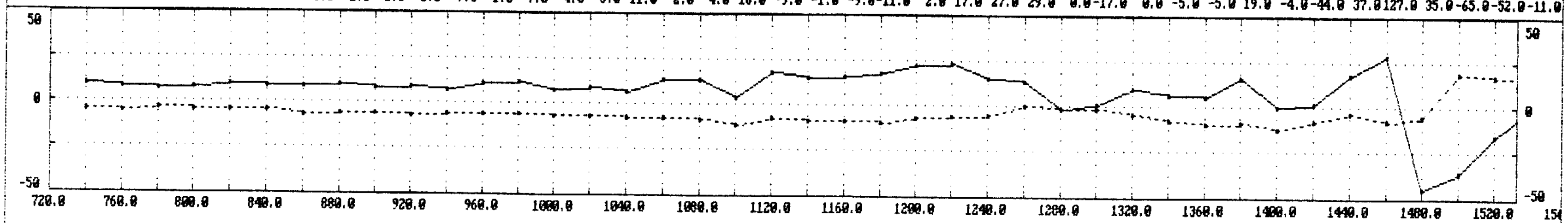
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9100N.

Q% -4.0 -5.0 -3.0 -4.0 -4.0 -4.0 -7.0 -6.0 -6.0 -7.0 -6.0 -6.0 -6.0 -7.0 -7.0 -8.0 -8.0 -9.0 -11.0 -8.0 -9.0 -9.0 -10.0 -7.0 -6.0 -5.0 0.0 -2.0 -2.0 -4.0 -8.0 -10.0 -9.0 -12.0 -8.0 -3.0 -8.0 -5.0 19.0 17.0 17.0 1

I% 10.0 8.0 7.0 8.0 10.0 9.0 9.0 10.0 8.0 9.0 7.0 11.0 12.0 7.0 9.0 6.0 13.0 13.0 4.0 18.0 15.0 16.0 18.0 22.0 23.0 15.0 13.0 -2.0 1.0 10.0 6.0 5.0 16.0 0.0 2.0 18.0 28.0 -45.0 -36.0 -16.0 0.0

FRFLT 3.0 -3.0 -4.0 0.0 0.0 0.0 2.0 2.0 -1.0 -7.0 -1.0 7.0 4.0 -3.0 -11.0 2.0 4.0 -16.0 -9.0 -1.0 -9.0 -11.0 2.0 17.0 27.0 29.0 0.0 -17.0 0.0 -5.0 -5.0 19.0 -4.0 -44.0 37.0 127.0 35.0 -65.0 -52.0 -11.0



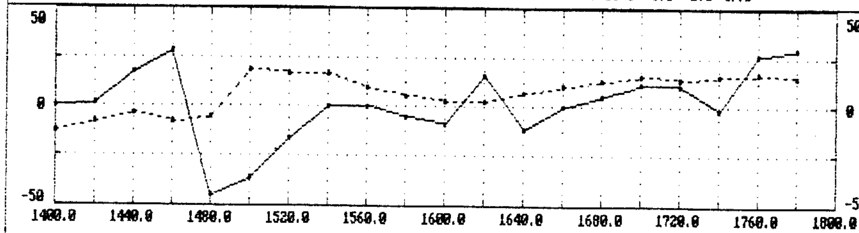
20.0	1.7	1.5	0.2	-1.5	-0.6	0.6	-0.8	0.9	0.2	0.3	-0.6	-3.0	2.7	0.8	0.4	-1.1	-5.3	5.1	-3.7	-6.5
40.0	1.4	1.4	-0.1	-0.6	-0.9	-1.0	0.9	0.3	1.0	-0.5	-2.6	0.5	-0.3	2.2	-1.5	-3.7	1.9	-7.3	-1.7	-1.6
60.0	0.0	-0.2	0.5	-0.1	-1.3	-0.7	-0.2	1.3	-1.2	-1.2	0.8	-1.1	0.6	-3.7	-2.0	3.5	-6.0	-3.2	-3.8	-1.7
80.0	-2.4	-0.6	-0.2	0.5	0.4	-1.6	0.1	-3.2	-1.7	0.7	-1.0	1.7	-3.8	-2.5	1.6	-2.2	0.1	-4.8	-4.4	-9.2
100.0	-2.2	-1.9	-1.7	0.7	-0.5	0.2	-2.8	-4.1	-1.6	-0.8	1.1	-2.3	0.1	4.0	-4.2	-3.7	-2.3	-5.0	-8.0	-7.0
120.0	-2.5	-4.1	-1.9	-2.0	0.0	-1.9	-3.7	-0.3	-1.9	1.9	-1.0	-2.2	3.5	-3.9	-4.4	-3.6	-5.9	-6.8	-8.2	0.6

20.0	1.0	-3.4	-2.6	-2.7	5.5	5.9	9.5	8.2	-6.1	-2.7	3.5	-6.3	1.8	6.4	-4.3	-11.9	34.7	34.1	-16.1	-14.2	20.0
40.0	-7.7	-1.3	-2.7	-0.3	1.8	14.4	11.0	3.4	5.1	-4.4	-9.6	12.9	8.8	-9.1	-9.1	25.0	21.5	20.5	15.3	-25.7	40.0
60.0	-4.7	-10.5	1.2	0.2	10.8	9.9	6.3	6.1	11.1	3.3	2.4	-2.3	-5.1	-10.3	30.4	28.3	9.2	0.4	10.6	17.3	60.0
80.0	-7.1	0.0	-4.7	10.4	6.4	7.9	11.2	11.8	6.0	6.1	3.9	-10.7	-16.6	32.7	24.3	13.1	11.0	-0.8	5.1	12.2	80.0
100.0	-6.0	-2.3	14.3	5.8	6.6	6.5	8.2	-0.6	11.6	9.1	-0.8	-8.0	23.6	18.1	14.9	3.6	0.9	11.1	4.1	-10.1	100.0
120.0	2.6	6.4	7.5	3.0	1.3	6.2	-4.0	9.7	8.9	2.1	-3.3	31.7	28.7	4.1	-2.1	2.1	1.2	3.9	-5.8	2.2	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9100N.

Q%	-12.0	-8.0	-3.0	-8.0	-5.0	19.0	17.0	17.0	10.0	5.0	3.0	3.0	7.0	11.0	13.0	16.0	14.0	16.0	17.0	15.0
I%	0.0	2.0	18.0	28.0	-45.0	-36.0	-16.0	0.0	0.0	-5.0	-9.0	16.0	-11.0	0.0	5.0	12.0	11.0	-2.0	27.0	29.0
FRFLT	-4.0	-44.0	37.0	127.0	35.0	-65.0	-52.0	-11.0	14.0	-12.0	-19.0	18.0	0.0	-28.0	-18.0	8.0	-2.0	-47.0		

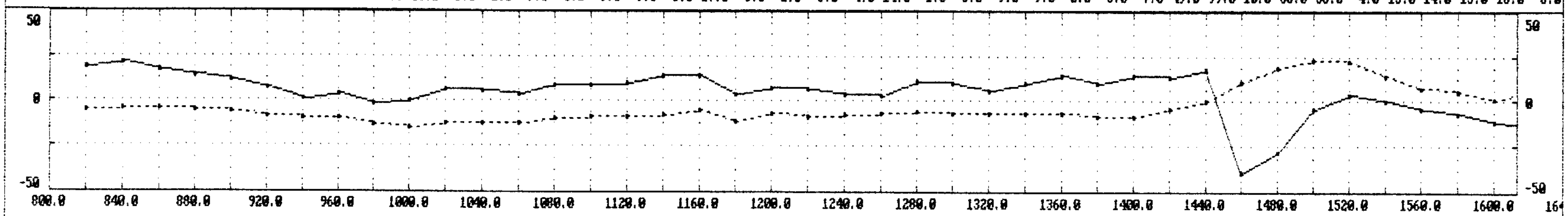


20.0	.4	-4.3	-11.9	34.7	34.1	-16.1	-14.2	-10.8	-2.1	5.5	-12.4	0.9	8.1	-11.3	-3.6	-7.4	6.2	-11.3	-19.3	-7.5	20.0
40.0	.1	-9.1	25.0	21.5	20.5	15.3	-25.7	-17.9	-0.6	-5.2	1.7	-5.6	-11.6	-0.5	-14.0	-3.3	-16.0	-11.6	-20.4	-32.1	40.0
60.0	.3	30.4	20.3	9.2	0.4	10.6	17.3	-20.9	-28.1	-6.5	0.5	-2.8	-8.8	-19.7	2.2	-27.2	-20.7	-24.5	-24.6	-31.4	60.0
80.0	.7	24.3	13.1	11.0	-0.8	5.1	12.2	3.6	-21.2	-24.5	-16.3	-11.5	-8.6	-4.8	-23.2	-10.6	-38.3	-36.1	-36.1	-37.2	80.0
100.0	.1	14.9	3.6	0.9	11.1	4.1	-10.1	11.8	11.9	-34.8	-32.8	-20.6	-6.0	-23.3	-22.2	-31.7	-23.8	-43.4	-41.4	-50.8	100.0
120.0	.1	-2.1	2.1	1.2	3.9	-5.8	2.2	-3.5	2.1	3.8	-37.7	-26.6	-32.6	-24.9	-30.1	-39.0	-42.2	-32.7	-55.8	-55.5	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9200N.

Q%	-5.0	-4.0	-4.0	-5.0	-6.0	-9.0	-10.0	-10.0	-13.0	-15.0	-12.0	-12.0	-12.0	-10.0	-9.0	-9.0	-8.0	-5.0	-11.0	-7.0	-9.0	-8.0	-7.0	-6.0	-7.0	-7.0	-7.0	-7.0	-9.0	-9.0	-4.0	0.0	11.0	19.0	23.0	22.0	14.0	7.0	5.0	1.0	6.5	12
I%	19.0	21.0	17.0	14.0	12.0	7.0	1.0	4.0	-2.0	0.0	6.0	5.0	4.0	9.0	9.0	10.0	14.0	14.0	4.0	7.0	6.0	4.0	3.0	11.0	10.0	5.0	10.0	14.0	10.0	14.0	13.0	18.0	-40.0	-28.0	-4.0	4.0	0.0	-4.0	-7.0	-11.0	-15.0	-1
FRFLT		9.0	12.0	12.0	18.0	14.0	6.0	7.0	-4.0	-13.0	-3.0	-2.0	-9.0	-6.0	-6.0	-9.0	6.0	17.0	5.0	1.0	6.0	-4.0	-14.0	-1.0	6.0	-9.0	-9.0	0.0	-3.0	-7.0	49.0	99.0	10.0	-68.0	-36.0	4.0	15.0	14.0	15.0	16.0	6.0	



20.0	-0.3	1.5	4.8	3.8	4.7	7.5	2.3	1.9	2.7	-4.7	-3.0	0.5	-3.1	-3.3	-0.9	-2.5	-2.3	5.7	4.1	-0.6	1.9	1.3	-3.5	-4.3	2.8	-0.5	-5.4	0.2	-1.1	3.7	[illegible]	28.7	[illegible]	19.7	-13.3	-4.2	2.6	4.2	5.4	4.9	20.0
40.0	2.3	3.9	4.8	8.8	9.1	5.9	8.7	4.6	-2.5	0.0	-3.1	-5.4	-1.0	-2.3	-6.5	-3.1	3.2	0.8	3.5	6.1	0.2	-3.2	-1.5	-0.1	-4.6	-2.2	5.3	-1.4	-3.9	-3.5	28.2	23.9	10.7	9.3	-21.1	-11.8	5.8	10.9	3.5	4.4	40.0
60.0	2.8	4.0	7.1	10.2	9.5	10.0	7.8	3.2	1.2	-0.4	-1.3	-4.6	-4.4	-3.4	-5.0	-0.7	0.8	0.8	2.3	5.5	0.8	-4.0	0.0	2.8	-1.2	-1.4	-3.4	-3.2	-6.6	29.0	24.5	9.2	7.7	8.2	11.5	-19.7	-10.5	5.0	15.2	8.2	60.0
80.0	2.7	5.6	9.9	8.5	11.0	11.3	6.8	5.4	5.3	-0.1	-3.6	-2.9	-8.4	-6.4	2.0	-0.7	-0.2	2.4	2.4	-1.5	6.5	8.2	-2.1	-3.4	-5.0	-6.8	-4.4	-2.8	30.7	21.4	9.0	5.1	4.4	8.3	9.1	14.1	-16.0	-6.4	4.1	3.1	80.0
100.0	4.8	8.2	6.9	12.1	11.2	7.6	9.7	8.2	2.3	1.5	-1.3	-7.5	-6.0	-2.6	-3.5	0.5	1.4	7.0	3.9	1.9	3.5	3.1	-1.8	-5.0	-3.6	-2.1	-6.2	24.8	22.2	7.4	-0.5	4.7	8.9	6.7	12.8	14.7	20.1	-15.6	-13.8	-3.1	100.0
120.0	8.0	6.8	10.8	10.4	7.9	8.2	7.8	6.8	4.1	1.3	-1.7	-4.4	-1.9	-2.8	0.9	2.5	3.9	-1.3	-0.7	5.6	-0.4	-1.3	4.4	2.6	-3.9	-6.4	24.4	15.9	1.8	0.9	2.5	4.0	8.4	14.3	14.9	19.6	15.6	12.0	-22.7	-19.3	120.0

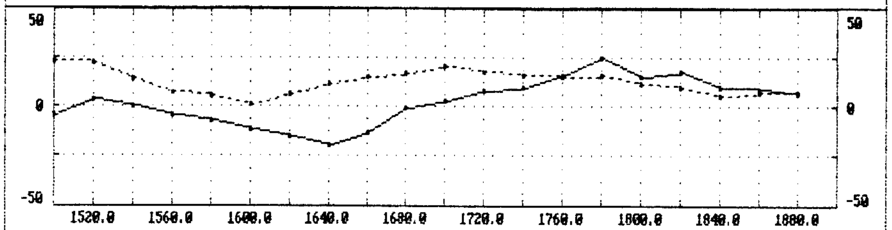
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9200N.

Q% 23.0 22.0 14.0 7.0 5.0 1.0 6.5 12.0 15.0 17.0 20.0 18.0 16.0 15.0 16.0 12.0 10.0 5.0 7.0 7.0

I% -4.0 4.0 0.0 -4.0 -7.0 -11.0 -15.0 -19.0 -13.0 -1.0 3.0 8.0 10.0 16.0 25.0 15.0 18.0 10.0 9.0 6.0

FRFLT -36.0 4.0 15.0 14.0 15.0 16.0 6.0 -20.0 -34.0 -25.0 -16.0 -15.0 -23.0 -14.0 8.0 12.0 14.0 13.0

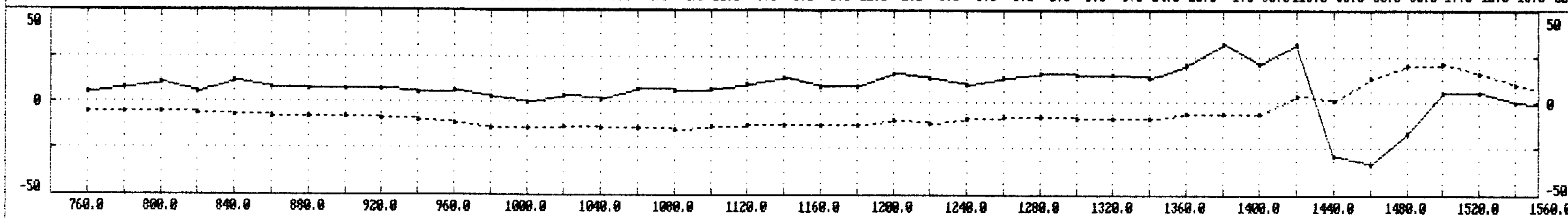


20.0	.3	-4.2	2.6	4.2	5.4	4.9	3.8	-1.6	-11.0	-9.9	-7.3	-6.8	-4.8	-9.5	0.8	3.7	2.9	6.8	2.9	5.0	20.0
40.0	.1	-11.8	5.8	10.9	3.5	4.4	2.1	-6.1	-11.6	-15.5	-13.1	-9.7	-13.0	-5.8	-5.7	3.2	9.2	5.6	8.9	7.5	40.0
60.0	.5	-19.7	-10.5	5.0	15.2	8.2	-0.6	-10.8	-13.1	-14.2	-18.4	-20.4	-7.9	-7.3	-0.6	0.1	4.6	11.[illegible]	9.3	13.0	60.0
80.0	.1	14.9	-16.0	-6.4	4.1	3.1	2.3	-3.4	-7.2	-12.9	-25.6	-20.7	-16.2	-3.8	-1.0	3.4	5.8	10.0	16.3	11.9	80.0
100.0	.8	14.7	20.1	-15.6	-13.8	-3.1	-1.4	-4.7	-6.2	-13.9	-11.4	-15.8	-12.7	-14.3	-4.3	2.5	8.3	11.1	15.7	21.6	100.0
120.0	.9	19.6	15.6	12.0	-22.7	-19.3	-6.6	-4.8	-12.0	-9.3	-8.6	-6.5	-9.8	-10.3	-4.9	4.5	2.9	9.[illegible]	14.8	21.1	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9300N.

Q%	-5.0	-5.0	-5.0	-6.0	-7.0	-8.0	-8.0	-8.0	-9.0	-10.0	-11.0	-14.0	-14.0	-13.0	-14.0	-14.0	-15.0	-13.0	-12.0	-12.0	-12.0	-12.0	-10.0	-11.0	-9.0	-8.0	-8.0	-9.0	-9.0	-9.0	-6.0	-6.0	-6.0	4.0	1.0	13.0	20.0	21.0	16.0	10.0	6.0	3
I%	5.0	8.0	11.0	5.0	12.0	8.0	7.0	7.0	7.0	5.0	6.0	3.0	0.0	4.0	2.0	7.0	6.0	7.0	10.0	13.0	9.0	9.0	16.0	13.0	10.0	13.0	16.0	15.0	15.0	13.0	20.0	32.0	21.0	32.0	-29.0	-33.0	-17.0	5.0	5.0	0.0	-2.0	-8
FRFLT			-3.0	2.0	-4.0	2.0	6.0	1.0	2.0	3.0	3.0	8.0	5.0	-3.0	-5.0	-7.0	-4.0	-4.0	-10.0	-5.0	5.0	-3.0	-11.0	2.0	6.0	-6.0	-8.0	-1.0	3.0	-3.0	-24.0	-20.0	-1.0	50.0	115.0	53.0	-50.0	-60.0	-17.0	12.0	15.0	22.0

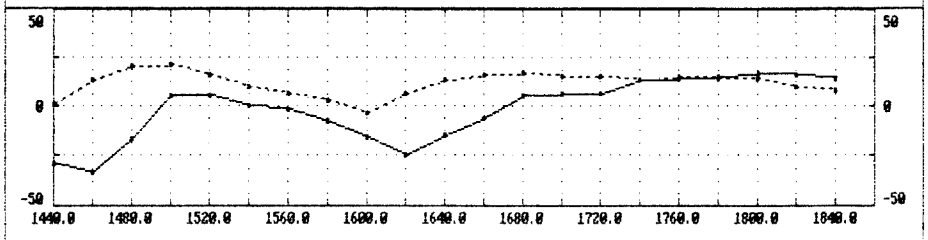


20.0	-2.0	-4.0	1.6	-0.8	-1.8	3.3	0.3	0.4	1.6	1.0	1.0	3.8	-1.0	-0.9	-1.7	-3.1	-0.4	-2.6	-3.4	-0.3	2.0	-3.9	-2.2	2.9	-0.6	-3.1	-0.8	-0.5	-0.6	-2.3	-12.0	5.0	1.[illegible]	28.0	37.0	-6.7	-16.0	-13.1	1.1	3.1		20.0
40.0	-2.7	-0.5	-3.7	0.4	2.3	-1.2	3.0	2.0	0.8	1.8	4.2	0.7	1.9	-2.7	-3.3	-1.5	-5.0	-4.1	-1.9	-1.7	-4.6	-0.5	-1.1	-2.7	-0.7	-2.8	-3.8	-1.2	3.0	-3.7	-3.3	-12.7	26.7	37.5	22.2	15.4	-16.8	-15.1	-4.0	11.6		40.0
60.0	1.7	-3.3	-1.6	-0.1	1.2	2.8	-0.3	3.0	1.9	3.5	0.8	2.9	-1.4	-0.1	-2.6	-5.7	-5.1	-4.3	-1.6	-6.0	-3.6	-1.6	-2.3	-5.5	-5.3	5.3	4.8	-1.5	-12.5	-5.1	-10.2	26.0	27.3	22.0	18.0	10.9	18.0	-17.5	-15.4	-1.4		60.0
80.0	-0.6	0.2	0.1	-1.5	-0.8	2.1	2.7	1.0	6.7	1.9	1.6	-0.5	-0.1	-1.6	-2.2	-6.3	-5.2	-2.8	-8.6	-5.2	-2.8	-5.6	1.3	4.0	-0.7	-0.9	-4.9	-12.7	-6.9	-9.4	27.2	30.0	19.7	4.8	7.6	16.3	11.5	21.3	-8.0	-6.0		80.0
100.0	2.0	1.6	0.4	-0.6	-0.8	0.1	3.4	6.0	0.8	6.3	0.4	-0.2	-0.6	-2.2	-5.6	-2.9	-5.3	-9.5	-7.3	0.2	1.6	-1.5	-3.0	-0.9	-1.3	-7.7	-13.1	-1.3	-8.0	22.8	26.5	17.0	3.8	3.8	5.0	10.7	21.2	20.1	31.1	-8.3	-	100.0
120.0	3.0	2.0	1.4	1.9	-0.3	0.8	3.8	3.0	5.2	-0.9	3.9	1.1	-2.3	-5.4	-2.2	-4.3	-2.0	-1.6	-2.6	-3.3	-6.4	-2.4	-5.7	-3.9	-4.3	-7.3	-4.3	-12.2	24.9	24.6	13.0	1.3	3.5	6.7	7.8	10.4	19.6	32.0	19.8	21.1	-	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9300N.

Q%	1.0	13.0	20.0	21.0	16.0	10.0	6.0	3.0	-3.0	6.0	13.0	16.0	17.0	15.0	15.0	13.0	15.0	14.0	14.0	10.0	8.0
I%	-29.0	-33.0	-17.0	5.0	5.0	0.0	-2.0	-8.0	-16.0	-25.0	-15.0	-6.0	5.0	6.0	6.0	13.0	14.0	15.0	17.0	16.0	14.0
FRFLT	53.0	-50.0	-60.0	-17.0	12.0	15.0	22.0	31.0	16.0	-20.0	-39.0	-32.0	-13.0	-8.0	-15.0	-10.0	-5.0	-4.0	2.0		



20.0	.0	-6.7	-16.0	-13.1	1.1	3.1	6.3	8.4	9.4	-1.2	-10.8	-11.6	-9.4	-2.4	-5.5	-5.2	-1.5	-2.3	-0.6	1.8	1.8	20.0
40.0	.2	15.4	-16.8	-15.1	-4.0	11.6	8.4	9.4	4.9	-1.6	-12.2	-17.7	-11.9	-10.7	-6.2	-7.6	-8.4	-3.0	-0.2	0.7	2.4	40.0
60.0	.0	10.9	18.0	-17.5	-15.4	-1.4	20.8	14.2	6.5	-8.1	-12.3	-14.6	-21.0	-15.6	-11.1	-5.7	-5.8	-5.9	-3.0	-0.8	1.2	60.0
80.0	.6	16.3	11.5	21.3	-8.0	-6.0	-2.2	4.7	3.1	1.4	-1.6	-9.0	-20.3	-26.0	-19.7	-11.4	-3.6	-2.4	-2.6	0.8	0.5	80.0
100.0	.8	10.7	21.2	20.1	31.1	-8.3	-15.5	-12.9	-0.4	-1.0	-4.3	-5.0	-8.6	-16.6	-20.0	-19.1	-13.7	-5.0	-1.1	0.0	3.5	100.0
120.0	.8	10.4	19.6	32.0	19.8	21.1	-18.3	-21.3	-13.1	-5.0	-4.6	-8.6	-7.2	-10.0	-13.5	-18.0	-12.9	-5.9	-5.2	-4.1	-1.4	120.0

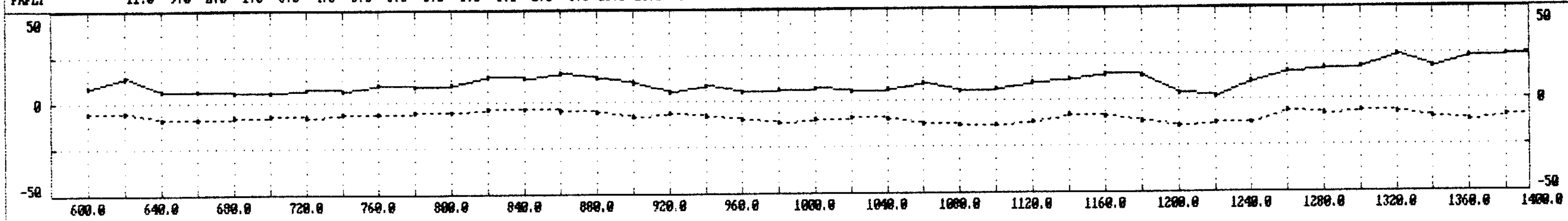
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9400N.

Q% -5.0 -5.0 -9.0 -9.0 -8.0 -7.0 -8.0 -6.0 -6.0 -5.0 -5.0 -3.0 -3.0 -4.0 -5.0 -8.0 -6.0 -8.0 -10.0 -11.0 -10.0 -9.0 -10.0 -12.0 -13.0 -13.0 -11.0 -8.0 -9.0 -11.0 -14.0 -12.0 -12.0 -6.0 -8.0 -6.0 -7.0 -10.0 -11.0 -9.0 -7.0 4

I% 9.0 14.0 6.0 6.0 5.0 5.0 7.0 6.0 10.0 9.0 10.0 14.0 13.0 16.0 13.0 11.0 5.0 9.0 5.0 6.0 7.0 5.0 6.0 10.0 5.0 6.0 10.0 12.0 14.0 13.0 4.0 2.0 10.0 15.0 17.0 18.0 24.0 18.0 23.0 24.0 26.0 43

FRFLT 11.0 9.0 2.0 -1.0 -3.0 -4.0 -6.0 -3.0 -5.0 -8.0 -5.0 -2.0 5.0 13.0 10.0 2.0 3.0 1.0 -1.0 2.0 -4.0 -4.0 5.0 -1.0 -11.0 -10.0 -5.0 9.0 21.0 5.0 -19.0 -20.0 -10.0 -10.0 -7.0 1.0 -5.0 -9.0 -22.0 44.0

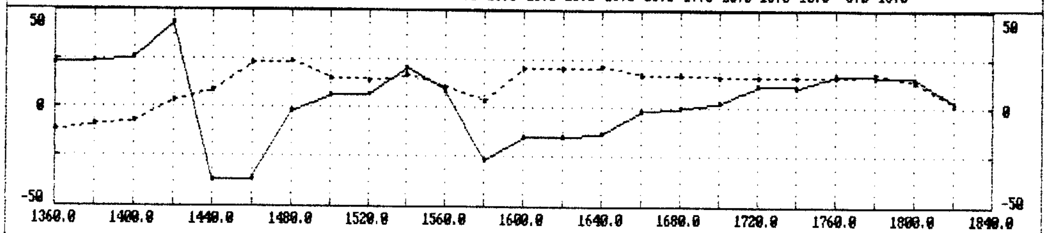


20.0	-2.6	1.9	4.7	0.2	1.4	-1.5	-0.6	-2.0	-2.4	-0.1	-3.6	-1.6	-1.1	0.3	2.8	4.9	1.7	0.3	2.4	-1.5	0.5	0.0	-2.9	0.3	1.0	-3.5	-3.1	-1.7	-0.5	5.0	5.6	-3.6	-7.0	-5.0	-2.5	-5.1	-0.6	0.0	-5.8	6.0	20.0
40.0	1.6	1.8	2.0	4.8	-0.6	-0.8	-3.0	-2.0	-1.9	-4.3	-1.3	-4.0	-1.8	1.7	4.5	3.9	4.5	2.6	-0.7	3.2	-0.3	-2.5	0.5	-0.6	-1.7	-0.2	-5.5	-5.4	2.5	5.3	0.7	-2.0	-8.0	-9.9	-8.0	-3.4	1.0	2.2	-3.1	-16.3	40.0
60.0	1.4	1.9	1.8	0.7	3.8	-2.4	-1.7	-2.3	-4.6	-2.7	-4.8	-1.5	-1.1	2.7	2.1	4.5	5.4	3.1	2.6	-1.6	-0.6	1.0	2.0	-1.1	-4.4	-5.9	-2.4	-0.8	1.7	-1.2	-2.5	-3.0	-5.4	-6.2	-4.0	-4.3	-6.9	-6.6	-15.4	[illegible]3.2	60.0
80.0	1.6	1.3	0.7	1.8	0.0	3.1	-1.7	-4.1	-4.6	-6.1	-3.1	-2.9	3.3	0.8	2.3	4.1	2.2	5.2	4.2	0.9	0.1	0.9	-4.1	-4.3	-4.8	-4.3	0.8	3.9	-3.9	-7.8	1.4	1.7	-3.5	-0.7	-13.5	-16.2	-10.3	-12.9	33.0	34.1	80.0
100.0	1.7	1.5	1.7	0.1	0.5	-0.3	0.1	-3.7	-6.0	-4.3	-3.2	0.5	-2.0	2.5	1.3	2.3	6.4	3.9	2.7	3.5	1.1	-5.2	-3.1	-6.4	-5.2	0.5	-0.2	3.4	3.6	-4.1	-5.1	-5.8	-7.0	-8.2	-3.3	-10.1	-21.1	28.8	29.5	8.9	100.0
120.0	1.2	2.0	-0.5	0.3	-0.6	-3.0	-2.2	-1.1	-4.3	-3.5	-0.8	-2.7	1.3	0.2	1.8	2.0	2.0	1.8	2.8	5.0	-0.1	-2.0	-6.8	-5.9	5.7	6.6	0.1	-4.5	-4.6	-3.1	-12.7	-4.9	-5.0	-4.0	-4.8	-15.1	23.7	19.7	4.7	2.8	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9400N.

Q%	-11.0	-9.0	-7.0	4.0	9.0	23.0	24.0	15.0	14.0	17.0	11.0	4.0	20.0	20.0	21.0	17.0	17.0	16.0	16.0	16.0	16.0	18.0	13.0	2.0
I%	23.0	24.0	26.0	43.0	-37.0	-36.0	-2.0	6.0	7.0	20.0	9.0	-26.0	-15.0	-15.0	-13.0	-2.0	0.0	3.0	12.0	11.0	17.0	16.0	15.0	3.0
FRFLT	-9.0	-22.0	44.0	142.0	44.0	-77.0	-51.0	-23.0	-16.0	44.0	70.0	13.0	-13.0	-15.0	-26.0	-18.0	-17.0	-20.0	-13.0	-10.0	-3.0	15.0		



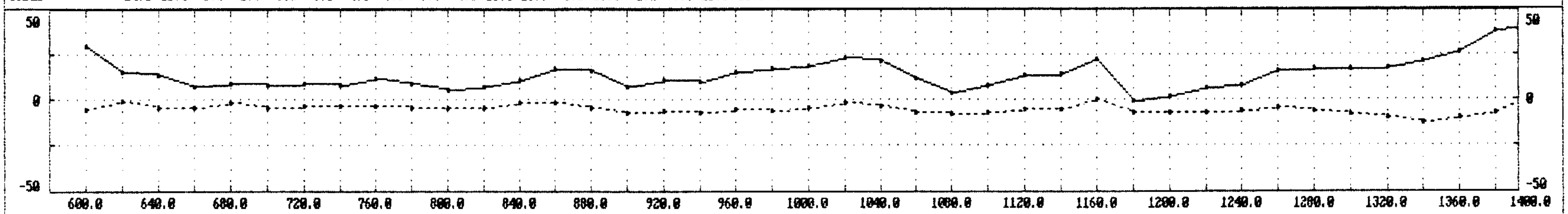
20.0	.8	6.0	-8.7	34.4	44.5	-19.9	-18.6	-6.4	-8.2	-1.7	26.6	13.4	-5.2	1.2	-9.4	-9.0	-4.0	-9.0	-5.3	-3.6	-2.6	2.2	8.2	12.3	20.0
40.0	.1	-16.2	33.1	32.7	16.3	25.0	-21.8	-31.5	-0.9	23.0	7.9	15.2	10.[illegible]	-15.0	-9.3	-7.5	-12.7	-8.4	-9.1	-7.5	-1.5	5.9	12.8	16.6	40.0
60.0	.4	33.2	32.[illegible]	16.7	12.3	11.1	12.7	-25.7	-6.4	5.8	15.3	14.4	15.9	0.0	-19.7	-15.2	-12.6	-12.7	-5.0	-4.2	0.8	10.3	13.5	20.8	60.0
80.0	.0	34.1	17.3	5.8	7.5	0.2	7.1	37.[illegible]	-13.7	-12.8	6.3	4.1	9.0	16.1	[illegible].7	-14.2	-19.3	-19.2	-13.1	3.0	7.5	14.4	22.2	21.3	80.0
100.0	.5	8.9	5.9	8.3	-2.4	6.5	26.7	21.0	31.7	-12.5	-16.9	1.8	5.2	0.3	12.5	3.7	-17.0	-10.2	-1.5	-5.4	5.4	16.0	21.8	30.9	100.0
120.0	.7	2.8	2.9	-2.6	7.2	25.0	22.8	23.9	25.0	28.8	-17.9	-18.9	-4.1	1.7	-0.7	6.5	6.5	-6.8	1.8	5.4	10.6	21.6	19.2	26.9	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9500N.

Q%	-5.0	-1.0	-4.0	-4.0	-2.0	-4.0	-3.0	-3.0	-3.0	-4.0	-4.0	-4.0	-2.0	-2.0	-4.0	-7.0	-6.0	-7.0	-5.0	-6.0	-4.0
I%	29.0	15.0	13.0	7.0	9.0	8.0	9.0	8.0	12.0	9.0	5.0	7.0	11.0	17.0	16.0	7.0	11.0	10.0	15.0	17.0	19.0
FRFLT			24.0	12.0	3.0	-1.0	0.0	-3.0	-4.0	6.0	9.0	-4.0	-16.0	-15.0	5.0	15.0	2.0	-7.0	-11.0	-11.0	-10.0

Q%	-2.0	-3.0	-7.0	-8.0	-7.0	-5.0	-5.0	0.0	-7.0	-7.0	-7.0	-6.0	-4.0	-6.0	-8.0	-10.0	-12.0	-10.0	-7.0	1.0	2
I%	23.0	21.0	12.0	4.0	0.0	13.0	14.0	22.0	-1.0	2.0	6.0	8.0	16.0	16.7	17.3	18.0	21.0	27.0	38.0	41.0	1
FRFLT	-8.0	9.0	28.0	21.0	-5.0	-15.0	-15.0	6.0	35.0	13.0	-13.0	-16.0	-18.7	-10.0	-2.7	-5.0	-12.7	-26.0	-31.0	14.0	95.0



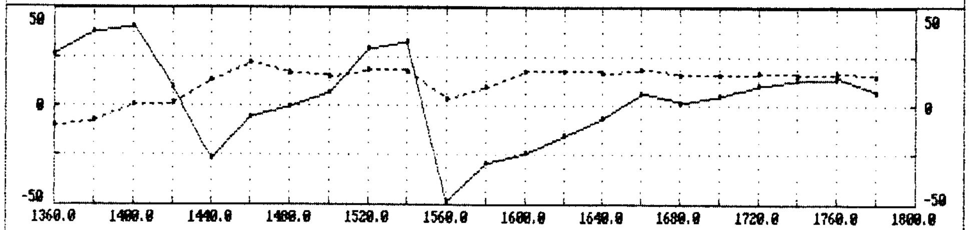
20.0	13.1	9.2	6.3	3.9	-0.1	0.2	0.0	-1.2	-0.7	3.7	0.1	-3.3	-4.0	-3.4	5.3	2.0	-1.7	-2.0	-5.1	-2.5	20.0
40.0	7.3	16.0	10.0	3.3	3.7	2.2	-0.3	-0.8	2.1	1.1	0.8	-4.8	-6.8	-0.9	-0.1	3.1	-0.6	-5.8	-3.5	-6.1	40.0
60.0	4.2	8.7	14.5	8.9	1.1	-1.7	-0.8	4.2	3.6	0.3	-5.1	-2.7	-0.2	-4.1	-1.7	-0.9	0.9	-1.5	-9.9	-7.9	60.0
80.0	-3.4	1.6	6.1	12.0	6.0	0.7	1.6	-3.2	-2.9	-5.6	-3.0	3.8	3.7	1.0	-4.9	-6.1	-6.3	-2.5	-1.6	-2.2	80.0
100.0	-9.4	-5.0	1.1	4.0	10.6	7.6	-1.1	-4.0	-9.1	-6.1	-0.5	-0.8	0.0	-0.7	-0.8	-5.1	-7.8	-4.7	2.5	5.4	100.0
120.0	-16.9	-10.9	-8.2	-2.2	5.7	10.6	5.0	-6.1	-6.7	-4.5	-6.2	-4.0	-5.6	-5.8	-3.6	-7.0	-7.0	-1.3	4.6	4.3	120.0

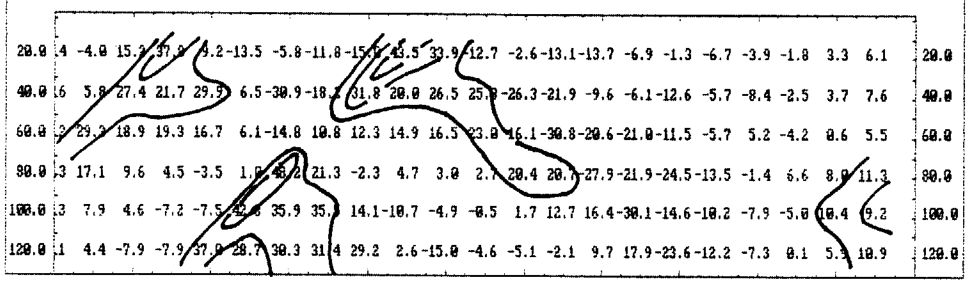
20.0	-3.2	-0.3	6.2	9.3	2.7	-5.0	-1.0	-5.4	8.0	11.3	-5.0	-1.0	-6.6	-5.8	-1.7	-2.4	-3.7	-6.3	-7.4	-4.0	20.0
40.0	-3.5	2.0	7.2	9.4	6.0	-1.4	-10.1	3.4	6.8	4.4	6.6	-10.7	-9.9	-7.5	-6.1	-2.0	-1.0	-10.8	-14.6	5.8	40.0
60.0	-0.5	7.5	6.8	3.5	3.4	-1.8	5.9	0.4	0.5	2.3	-1.8	1.7	-9.3	-4.5	-6.0	-8.7	-13.3	-15.0	0.2	29.3	60.0
80.0	5.0	-0.7	-0.9	0.6	-2.6	13.4	9.6	0.2	-5.4	-4.6	2.5	1.9	6.4	-10.6	-17.1	-21.2	-14.5	7.6	29.2	17.1	80.0
100.0	-1.7	-2.1	-3.7	-5.5	7.2	6.5	9.6	11.[illegible]	0.7	-4.2	-3.9	-5.4	-9.0	2.6	-17.4	-17.6	2.6	22.9	8.3	7.9	100.0
120.0	0.0	-6.7	-8.7	6.6	11.3	7.7	8.0	6.0	1.8	-5.6	-4.3	-3.9	-4.9	-12.2	-8.5	-4.5	14.0	5.2	3.1	4.4	120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9500N.

Q%	-10.0	-7.0	1.0	2.0	13.0	22.0	17.0	15.0	19.0	18.0	4.0	10.0	18.0	18.0	17.0	19.0	16.0	16.0	17.0	16.0	17.0	15.0
I%	27.0	38.0	41.0	10.0	-26.0	-5.0	0.0	7.0	29.0	33.0	-48.0	-29.0	-24.0	-15.0	-6.0	6.0	2.0	5.0	11.0	13.0	14.0	7.0
FRFLT	-31.0	14.0	95.0	82.0	-11.0	-38.0	-41.0	-55.0	51.0	139.0	38.0	-38.0	-32.0	-39.0	-29.0	-7.0	-8.0	-17.0	-11.0	3.0		





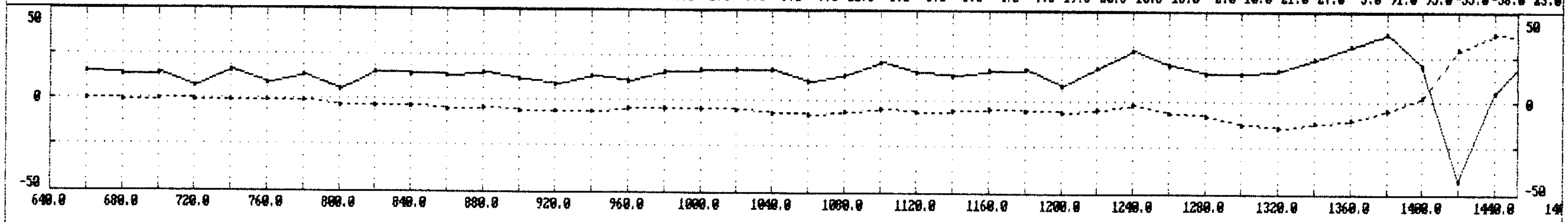
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9600N.

Q% 0.0 -1.0 0.0 -1.0 -1.0 -1.0 -1.0 -3.0 -3.0 -3.0 -5.0 -4.0 -6.0 -6.0 -6.0 -4.0 -4.0 -4.0 -5.0 -7.0 -8.0 -6.0 -4.0 -6.0 -5.0 -4.0 -5.0 -6.0 -4.0 -2.0 -6.0 -8.0 -12.0 -14.0 -11.0 -10.0 -4.0 3.0 29.0 38.0 35.0 16

I% 15.0 13.0 14.0 7.0 16.0 9.0 13.0 5.0 15.0 14.0 13.0 15.0 12.0 9.0 13.0 11.0 16.0 17.0 17.0 17.0 11.0 14.0 21.0 16.0 14.0 17.0 18.0 9.0 18.5 28.0 20.0 16.0 16.0 18.0 24.0 31.0 38.0 20.0 -42.0 5.0 28.0 -7

FRFLT 7.0 4.0 -4.0 1.0 7.0 2.0 -11.0 -7.0 1.0 0.0 7.0 5.0 -3.0 -5.0 -9.0 -7.0 -1.0 6.0 9.0 -7.0 -12.0 5.0 6.0 -5.0 4.0 7.5 -19.5 -20.5 10.5 16.0 2.0 -10.0 -21.0 -27.0 -3.0 91.0 95.0 -55.0 -58.0 23.0



20.0 2.7 -0.1 4.2 -1.2 -0.4 1.5 1.5 -0.5 -5.7 1.8 -1.1 0.5 3.7 -1.1 -1.1 -1.7 -3.9 0.0 -0.6 2.7 2.0 -5.4 -0.9 3.4 -0.2 -2.4 3.5 -0.2 -10.4 -0.2 5.7 1.1 -1.2 -5.4 -6.4 -1.8 3.[illegible] [illegible] 11.7 -38.7 20.0

40.0 0.3 5.7 -1.1 1.5 0.8 1.4 0.8 -1.9 -0.1 -6.0 1.7 2.3 -0.3 1.2 -1.6 -4.4 -3.1 -3.2 3.1 1.2 -2.9 0.8 -1.9 -3.3 1.8 4.9 -3.1 -6.6 -1.3 -5.4 -0.7 6.6 5.0 -8.5 -17.0 1.[illegible] 38.[illegible] 10.7 11.8 21.3 40.0

60.0 2.6 -1.7 3.7 0.7 4.4 -0.8 -3.9 1.3 -3.4 0.6 -2.7 1.9 1.2 -1.5 -2.1 -2.9 -5.2 0.9 -1.1 -2.9 -0.5 0.7 -0.6 -3.6 2.3 0.5 -7.9 -5.3 0.4 7.4 -2.7 -3.6 -2.9 -10.6 -4.[illegible] 37.[illegible] 11.7 2.[illegible] 21.0 10.4 60.0

80.0 -3.5 1.7 0.1 6.1 -1.2 -1.9 -0.5 -5.6 2.3 0.2 -0.4 -2.7 -0.8 -1.8 -2.2 -0.7 0.2 -4.6 -4.9 -4.3 1.4 0.7 -1.3 3.2 -6.9 -8.9 6.6 1.4 -0.8 2.2 -7.1 -15.3 -4.0 8.[illegible] 38.[illegible] 10.[illegible] -9.5 12.3 3.5 -6.0 80.0

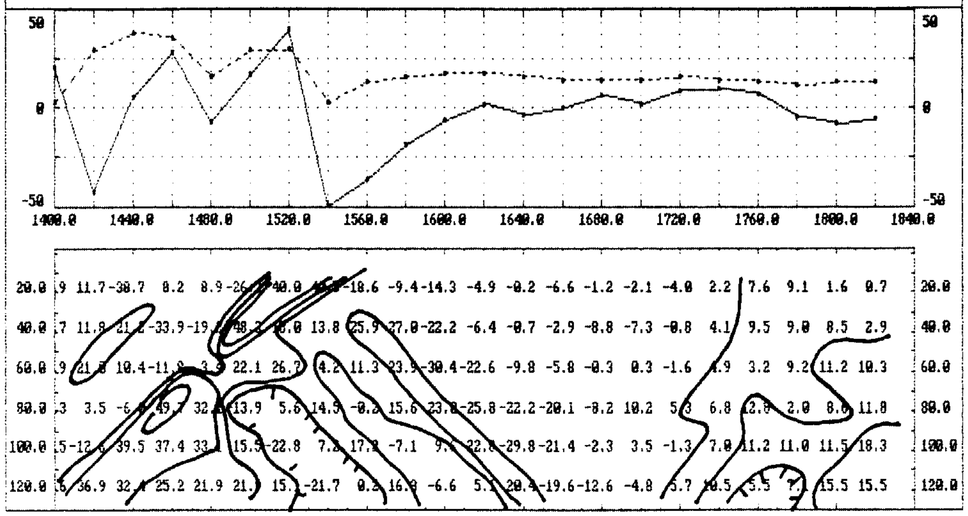
100.0 -1.0 -2.5 2.8 -1.9 0.0 0.1 -2.1 -0.4 -2.0 1.0 -2.1 -2.3 -5.9 -0.9 -2.9 1.1 0.6 -5.0 -4.9 -0.6 -5.2 -3.6 3.2 5.5 -4.6 -5.4 2.4 2.5 -7.8 0.0 -2.1 -9.0 -4.[illegible] 36.[illegible] 11.[illegible] -6.5 11.6 0.5 -12.6 39.5 100.0

120.0 -5.3 0.1 -3.5 -2.3 -1.0 -0.5 0.5 0.8 -1.3 -2.9 -1.1 -6.8 -3.6 -7.2 2.0 -0.4 -5.3 -0.9 -3.1 -4.6 3.0 1.6 -2.0 -3.6 -0.6 -2.4 0.5 2.5 2.2 -7.7 -12.4 [illegible] 31.[illegible] [illegible] -6.2 19.2 1.7 -13.6 36.9 32.4 120.0

ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9600N.

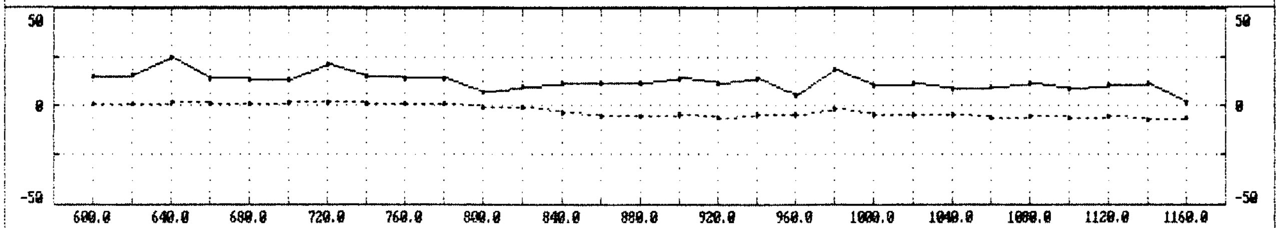
Q%	3.0	29.0	38.0	35.0	16.0	29.0	30.0	3.0	13.0	16.0	18.0	18.0	16.0	14.0	14.0	14.0	16.0	14.0	13.0	12.0	13.0	13.0
I%	20.0	-42.0	5.0	28.0	-7.0	17.0	40.0	-49.0	-36.0	-18.0	-6.0	2.0	-3.0	0.0	6.0	2.0	9.0	10.0	7.0	-4.0	-8.0	-5.0
FRFLT	95.0	-55.0	-58.0	23.0	-36.0	19.0	142.0	45.0	-61.0	-50.0	-23.0	-1.0	-7.0	-11.0	-5.0	-11.0	-6.0	16.0	29.0	16.0		



ECSTALL WEST GRID, ULF DATA (23.4 KHZ)

LINE 9700N.

Q%	1.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	-1.0	-1.0	-3.0	-5.0	-5.0	-4.0	-6.0	-4.0	-4.0	-2.0	-4.0	-4.0	-4.0	-6.0	-5.0	-6.0	-5.0	-7.0	-6.0
I%	15.0	16.0	25.0	14.0	13.0	13.0	21.0	15.0	14.0	14.0	7.0	10.0	12.0	12.0	12.0	14.0	12.0	14.0	5.0	19.0	11.0	12.0	9.0	10.0	12.0	9.0	11.0	12.0	2.0
FRFLT			-8.0	14.0	13.0	-7.0	-10.0	5.0	8.0	8.0	11.0	-1.0	-7.0	-2.0	-2.0	-2.0	0.0	7.0	2.0	-11.0	1.0	9.0	4.0	-1.0	-2.0	2.0	-2.0	6.0	



20.0	-0.6	-5.4	1.0	5.9	0.4	-3.3	-1.1	4.6	0.0	4.6	2.4	-2.7	-0.8	-0.3	-1.5	0.8	-1.1	4.3	-2.7	-3.2	4.6	-0.1	2.2	-1.9	0.7	1.4	-1.0	6.3	9.0	20.0
40.0	-5.9	-0.1	1.9	2.1	3.0	-0.3	-1.3	-0.4	9.1	2.7	0.7	1.0	-1.3	-2.7	0.2	-0.4	3.7	-2.8	0.4	1.2	-2.1	5.0	0.8	2.9	-0.5	1.1	7.4	8.3	11.7	40.0
60.0	2.7	2.7	1.3	-2.5	0.9	6.6	0.1	3.4	0.8	6.1	1.3	2.6	-0.7	-2.2	-2.1	4.7	-3.2	0.9	1.3	2.0	3.4	-2.1	7.4	1.8	2.7	5.8	9.7	12.4	15.0	60.0
80.0	4.3	3.3	-2.6	-0.2	1.5	1.8	11.6	2.4	1.1	0.9	4.5	1.2	1.3	0.7	1.8	-5.1	1.6	1.3	4.7	5.0	2.4	5.4	-1.3	6.4	8.0	11.1	12.5	15.1	19.1	80.0
100.0																														100.0
120.0																														120.0

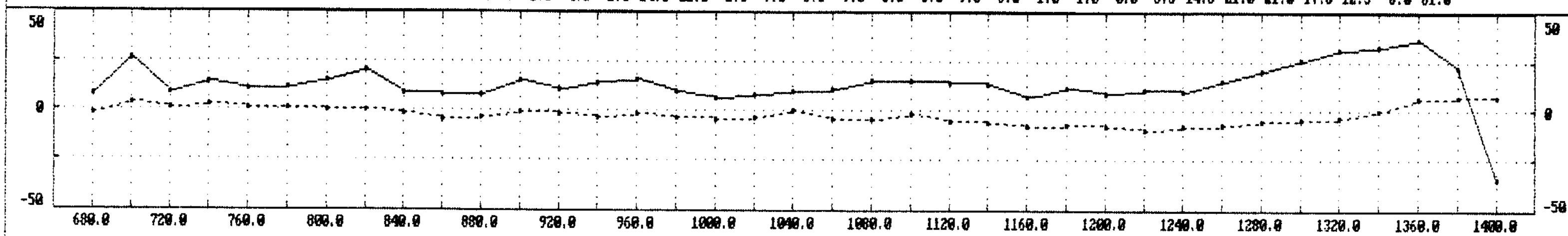
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9800N.

	680.0		720.0		760.0		800.0		840.0		880.0		920.0		960.0		1000.0		1040.0
Q%	-2.0	4.0	1.0	3.0	1.0	1.0	0.0	0.0	-2.0	-4.0	-3.0	-1.0	-2.0	-3.0	-2.0	-3.0	-4.0	-3.0	0.0
I%	8.0	27.0	9.0	14.0	11.0	12.0	15.0	20.0	9.0	8.0	8.0	15.0	11.0	14.0	16.0	10.0	6.0	8.0	10.0

		1080.0		1120.0		1160.0		1200.0		1240.0		1280.0		1320.0		1360.0		1400.0
Q%	-4.0	-4.0	-2.0	-5.0	-6.0	-8.0	-7.0	-8.0	-10.0	-8.0	-6.8	-5.5	-4.3	-3.0	0.0	6.0	7.0	7.0
I%	11.0	15.0	15.0	14.0	13.0	7.0	12.0	9.0	11.0	10.0	15.3	20.5	25.8	31.0	33.0	36.0	22.0	-34.0

FRFLT 12.0 11.0 0.0 -2.0 -12.0 -2.0 18.0 13.0 -6.0 -10.0 -2.0 -4.0 -1.0 14.0 12.0 -2.0 -7.0 -8.0 -9.0 -3.0 3.0 9.0 8.0 -1.0 -1.0 0.0 -5.3 -14.8 -21.0 -21.0 -17.8 -12.3 6.0 81.0



	680.0		720.0		760.0		800.0		840.0		880.0		920.0		960.0		1000.0		1040.0
20.0	-13.2	-0.3	6.6	-2.7	2.2	-1.9	-4.0	3.4	6.0	0.7	-3.2	-2.0	0.8	-2.9	2.7	5.4	1.1	-2.1	-1.7
40.0	0.2	-5.7	-0.5	9.8	-3.3	-5.6	0.8	3.6	3.2	3.3	-0.6	-3.5	-4.2	3.7	2.3	2.4	3.0	-0.3	-4.8
60.0	1.5	0.9	-3.6	-2.7	4.6	0.7	3.8	1.1	-1.7	1.8	4.7	-4.8	-1.5	0.3	4.2	1.8	2.9	0.4	-3.3
80.0	5.8	2.3	-2.2	-6.6	2.0	13.0	2.6	0.8	0.1	-2.5	-1.1	4.5	2.0	1.7	-1.2	2.1	-2.3	-0.7	0.6
100.0	8.5	5.1	-0.8	2.7	0.7	2.2	8.5	0.7	1.8	-0.5	2.5	5.1	7.2	-0.8	-3.1	-5.2	-0.2	-4.5	-1.3
120.0	10.3	4.9	8.2	5.8	3.0	-3.3	1.9	10.3	-0.6	5.2	5.6	4.3	3.2	3.7	-4.8	-6.2	-6.3	-0.6	6.9

		1080.0		1120.0		1160.0		1200.0		1240.0		1280.0		1320.0		1360.0		1400.0
20.0	-3.2	-2.5	1.0	0.5	4.4	0.7	-0.0	0.5	-1.7	-3.1	-7.3	-6.9	-7.5	-3.8	2.5	11.7	[illegible]	58.2
40.0	-3.5	-1.5	-1.0	4.0	0.9	1.4	-0.4	-2.9	-2.9	-7.3	-8.0	-6.0	-1.3	-0.3	[illegible]	47.1	67.0	89.2
60.0	-4.8	-3.2	0.8	-1.5	2.3	0.5	0.1	-1.7	-2.0	1.5	-0.3	0.1	-1.2	[illegible]	[illegible]	[illegible]	90.8	111.2
80.0	-2.5	-2.9	-4.7	-2.0	0.2	8.9	9.5	9.5	7.8	0.8	4.1	2.4	[illegible]	45.9	[illegible]	90.4	112.6	134.4
100.0	2.9	-1.4	3.9	8.3	12.1	12.9	15.0	13.0	10.4	10.3	6.7	[illegible]	48.6	69.4	89.6	111.4	133.9	156.4
120.0	11.0	16.2	15.7	17.1	17.4	16.1	15.5	14.9	15.4	14.8	[illegible]	53.0	73.5	93.3	113.1	131.6	154.3	177.2

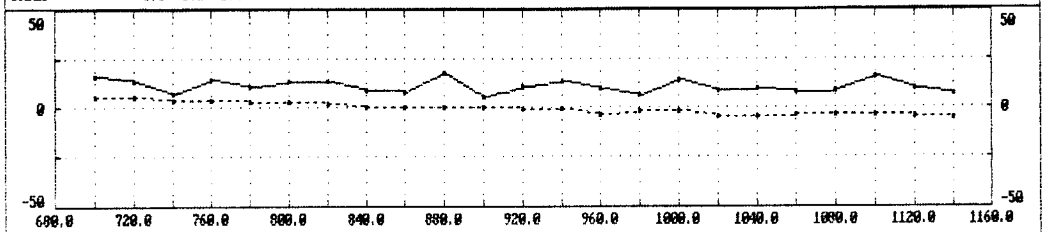
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 9900N.

Q% 5.0 5.0 4.0 4.0 3.0 3.0 2.0 0.0 0.0 0.0 0.0 -1.0 -1.0 -3.0 -2.0 -2.0 -4.0 -4.0 -3.0 -3.0 -3.0 -4.0 -5.0

I% 16.0 13.0 7.0 14.0 11.0 13.0 13.0 9.0 8.0 18.0 5.0 11.0 13.0 10.0 6.0 14.0 9.0 10.0 8.0 9.0 16.0 10.0 7.0

FRFLT 8.0 -5.0 -3.0 -1.0 2.0 9.0 -4.0 -6.0 10.0 -1.0 -7.0 8.0 3.0 -7.0 1.0 5.0 2.0 -7.0 -9.0 8.0



20.0 2.4 5.3 -0.3 -1.9 1.3 -1.5 1.7 3.7 -5.3 1.8 4.1 -4.8 1.0 3.7 -2.4 -1.2 2.5 -0.8 1.4 -4.3 -0.1 5.4 3.1 20.0

40.0 4.4 2.4 3.0 -1.0 -2.7 3.8 1.9 -2.7 4.7 -1.3 -3.0 5.1 0.0 -2.2 1.6 0.7 -1.1 3.5 -2.8 0.5 1.0 3.7 8.7 40.0

60.0 -1.7 2.5 2.1 1.3 1.5 -0.4 -2.5 3.9 1.9 0.8 -0.3 0.0 2.4 -1.8 1.9 3.4 1.6 -4.9 3.9 1.8 4.6 4.6 6.6 60.0

80.0 80.0

100.0 100.0

120.0 120.0

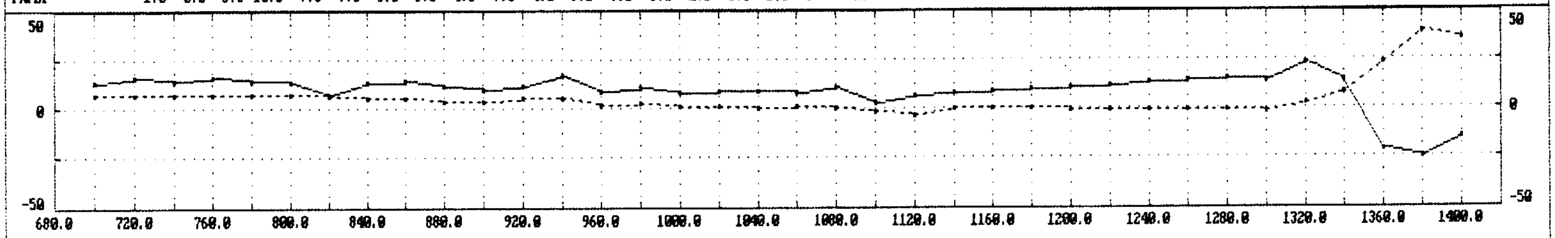
ECSTALL WEST GRID, VLF DATA (23.4 KHZ)

LINE 10000N.

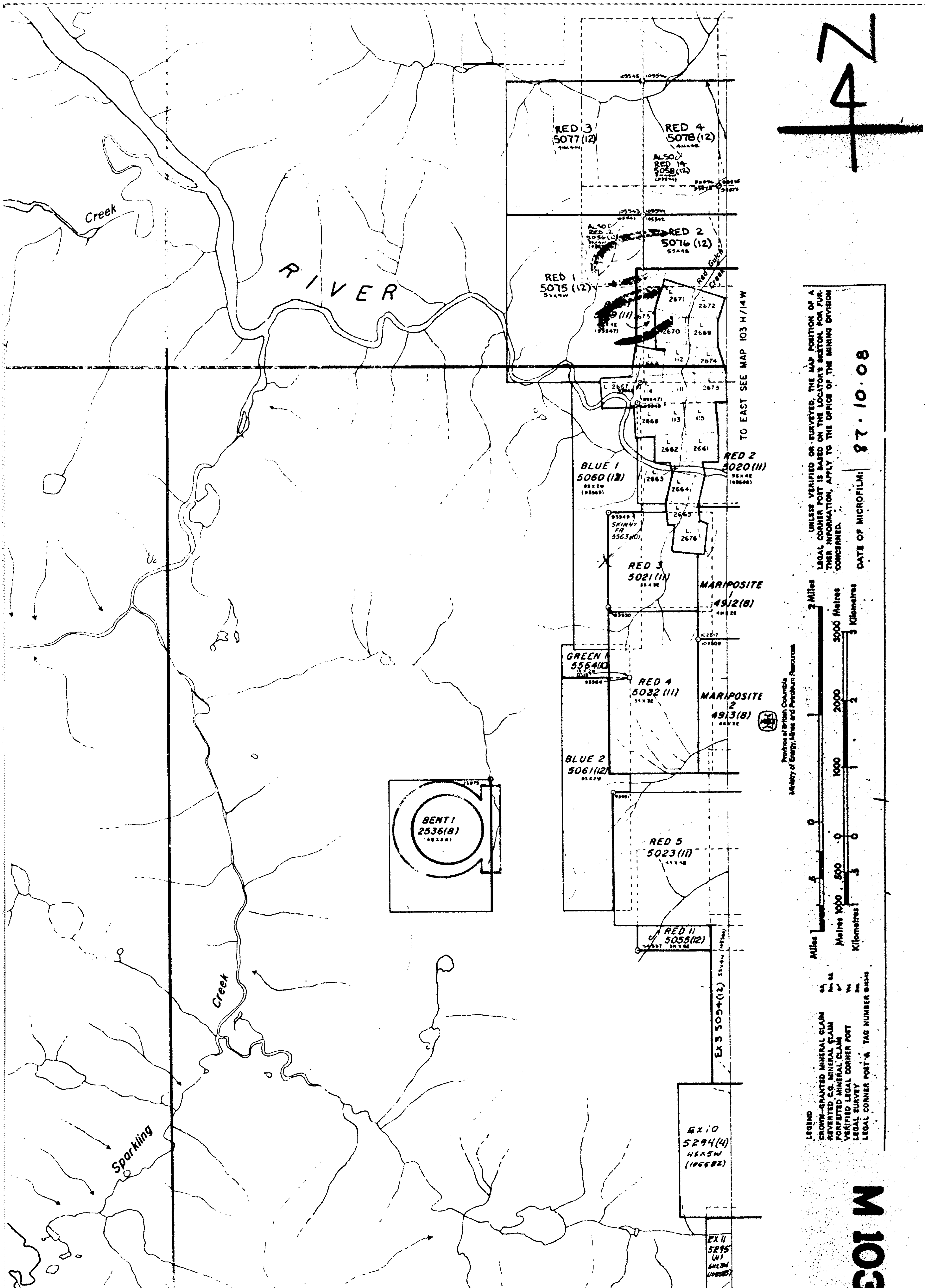
Q% 7.0 7.0 7.0 7.0 7.0 7.0 6.0 5.0 5.0 4.0 4.0 5.0 5.0 2.0 3.0 1.0 1.0 0.0 1.0 0.0 -2.0 -3.0 0.0 -0.1 -0.3 -0.4 -0.6 -0.7 -0.9 -1.0 -2.0 3.0 8.0 23.0 39.0 35.0

I% 13.0 16.0 14.0 16.0 14.0 13.0 7.0 13.0 14.0 12.0 10.0 12.0 17.0 9.0 11.0 8.0 9.0 9.0 8.0 11.0 3.0 6.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 14.0 23.0 14.0 -21.0 -25.0 -15.0

FRFLT -1.0 0.0 3.0 10.0 7.0 -7.0 -6.0 5.0 4.0 -7.0 -4.0 9.0 7.0 3.0 1.0 0.0 -1.0 3.0 10.0 0.0 -8.0 -5.0 -4.0 -4.0 -4.0 -4.0 -4.0 -2.0 -8.0 -8.0 44.0 83.0 33.0



20.0	-2.5	-0.4	-0.1	0.4	1.6	3.7	0.4	-3.6	0.8	1.2	0.6	-3.8	2.1	3.2	0.4	2.0	-0.9	1.6	-1.3	2.7	2.8	-3.1	-1.3	-1.7	-1.6	-1.5	-1.5	-1.3	-2.2	0.4	-1.0	1.[illegible]	25.4	22.0	0.9	-0.7	20.0
40.0	0.4	-2.0	-0.8	2.0	4.3	1.4	-0.6	1.0	-1.2	1.1	-0.9	1.8	-1.0	2.3	5.5	0.6	1.1	-1.6	3.9	1.5	0.0	0.7	-4.2	-3.3	-2.2	-2.9	-3.0	1.3	2.5	-5.1	0.6	21.6	23.5	22.0	19.5	0.7	40.0
60.0	-0.7	0.3	0.0	3.3	2.3	0.5	3.1	2.2	0.7	-5.6	2.5	2.6	3.3	1.1	1.4	4.4	-1.0	4.5	0.6	0.3	-0.2	-0.5	-1.1	-5.0	-0.6	0.8	-0.3	-1.3	-5.6	0.0	20.5	23.5	18.6	19.4	25.8	22.1	60.0
80.0	1.2	1.7	4.1	0.4	0.7	2.9	3.1	2.6	-0.7	2.7	-2.1	2.8	2.5	1.8	1.4	0.6	7.6	1.4	1.1	-1.5	-0.7	2.6	1.5	2.5	-2.4	-3.9	-2.0	-6.2	0.1	20.2	22.0	18.2	19.2	21.3	22.2	28.6	80.0
100.0	3.3	6.0	2.2	0.6	0.8	3.2	3.4	-0.8	4.6	2.4	2.8	-1.4	2.0	2.9	0.0	3.7	2.9	5.0	3.8	4.7	1.4	1.4	0.9	-1.5	-0.7	-3.9	-7.0	-0.2	19.3	22.2	17.4	19.2	21.0	22.7	24.8	24.7	100.0
120.0																																					120.0

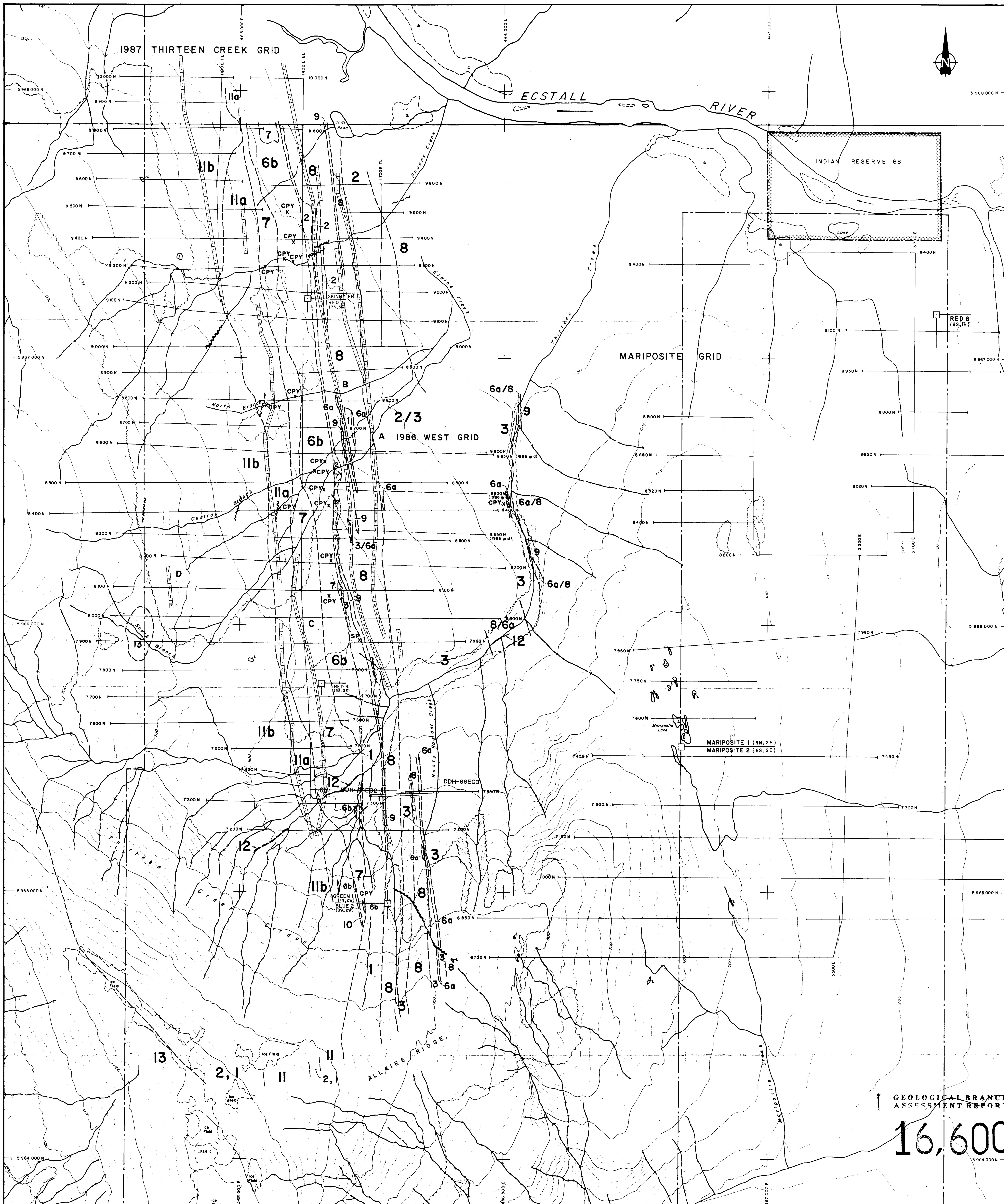


TO SOUTH SEE MAP 103 H/12 E

MINERAL TITLES REFERENCE MAP 103H/13E

DEPARTMENT OF MINES AND PETROLEUM RESOURCES VICTORIA, B.C.

This map is prepared as a guide only to the location of mineral claims that have not been surveyed. Where the geographic position of a legal corner post has been verified it is indicated with the symbol, Ver. Additional information with respect to the claims may be obtained at the Mining Division concerned.



SYMBOLS

- Outcrop, small outcrop
- Geological contact (approximate, inferred)
- Foliation / gneissosity strike and dip
- Minor fold, fold axis and axial plane indicated
- Pillow facing direction
- Fault (approximate, inferred)
- Diamond drillhole
- Property boundary
- Legal corner post
- 1987 grid
- 1986 grid

MINERALS

CPY Chalcopyrite
SP Sphalerite

LITHOLOGIES

COAST RANGE INTRUSIVE COMPLEX

13 Granodiorite, Quartz Diorite
12 Mafic Dyke

ECSTALL PENDANT METAMORPHIC ROCKS

METAPLUTONIC AFFINITY

11 Homogeneous Gneiss
- a Amphibolite
- b Quartzofeldspathic Gneiss

METASEDIMENTARY AFFINITY

10 Chert
9 Marble
8 Clastic Metasediments

METAVOLCANIC AFFINITY

7 Mixed Gneiss
6 Quartz-White Mica Schist
- a Quartz-Sericite Schist
- b Quartz-Sericite-Kyanite Schist

5 Felsic Breccia
4 Quartz-Biotite Gneiss
3 Quartz-Chlorite-Biotite Schist
2 Quartz-Chlorite Schist
- a Massive
- b Fragmental

1 Chlorite Schist
- a Massive
- b Pillowed
- c Fragmental

H.L.E.M. and V.L.F. Conductor axis

V.L.F. Conductor axis

A Conductor axis identifier- see text for discussion

KIDD CREEK MINES LTD.

ECSTALL PROPERTY

GRID, CONDUCTORS

NTS 103H/13E, 14W Project No. 114

WORK BY | DRAWN BY VJG | DATE: Nov. 1987

100 0 100 200 300 500 m
SCALE IN METRES 1: 5000

Figure: 2

KIDD CREEK MINES LTD

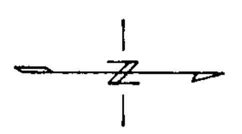
ECSTALL PROJECT, WEST GRID

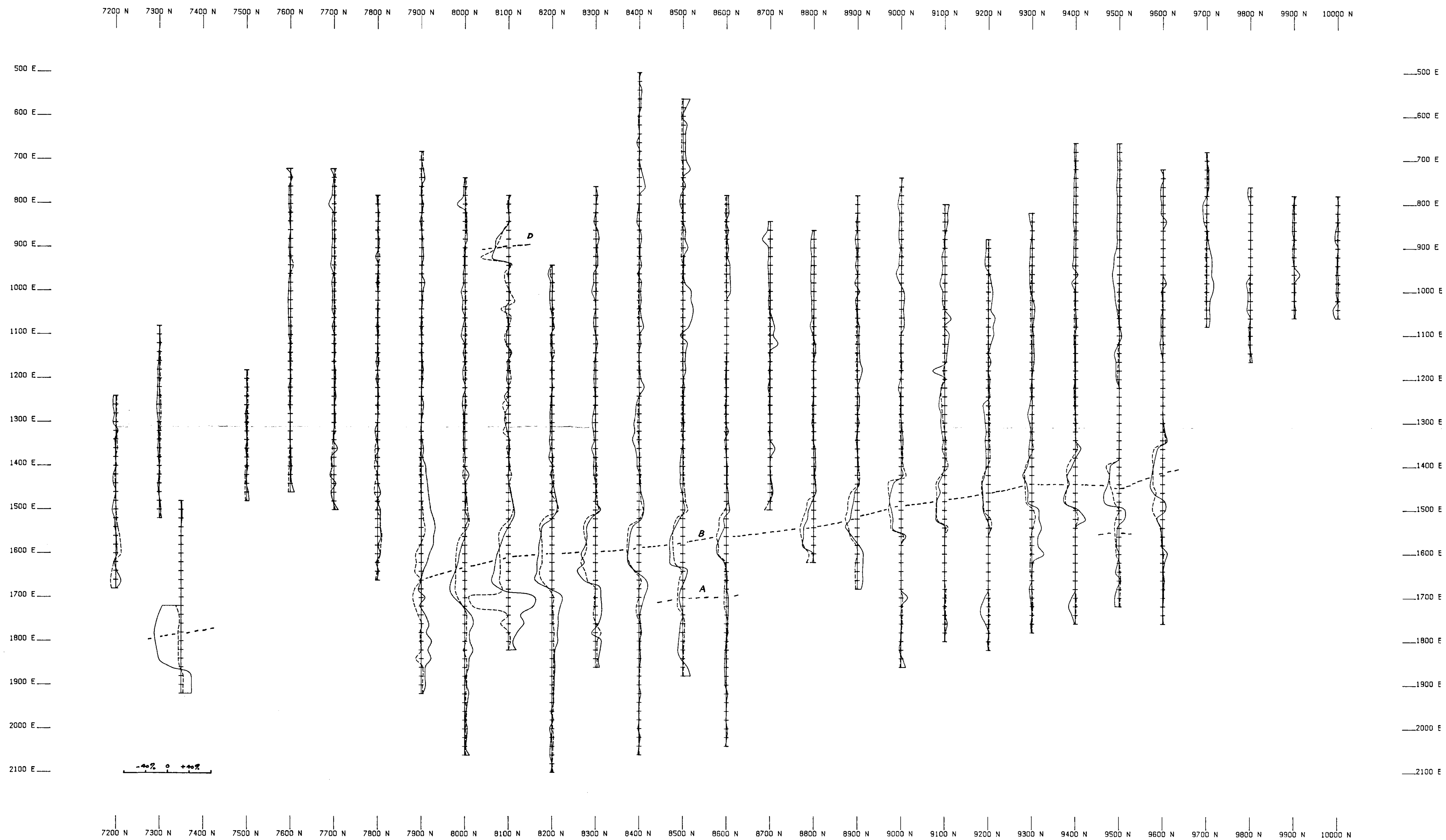
H.L.E.M., 3555 Hertz

Fig. 3

coil separations, 160m & 120m
inphase solid line, quad. dashed, base 0
SCALE 1:5000

DELTA GEOSCIENCE LTD





KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

H.L.E.M., 888 Hertz

Fig. 4

coil separations, 160m & 120m
inphase solid line, quad. dashed, base 0
SCALE 1:5000

DELTA GEOSCIENCE LTD

KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

FILTERED VLF PROFILES, (Fraser)

Fig. 5

1 cm = 40%, base 0%, Station HAWAII

SCALE 1:5000

DELTA GEOSCIENCE LTD

KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

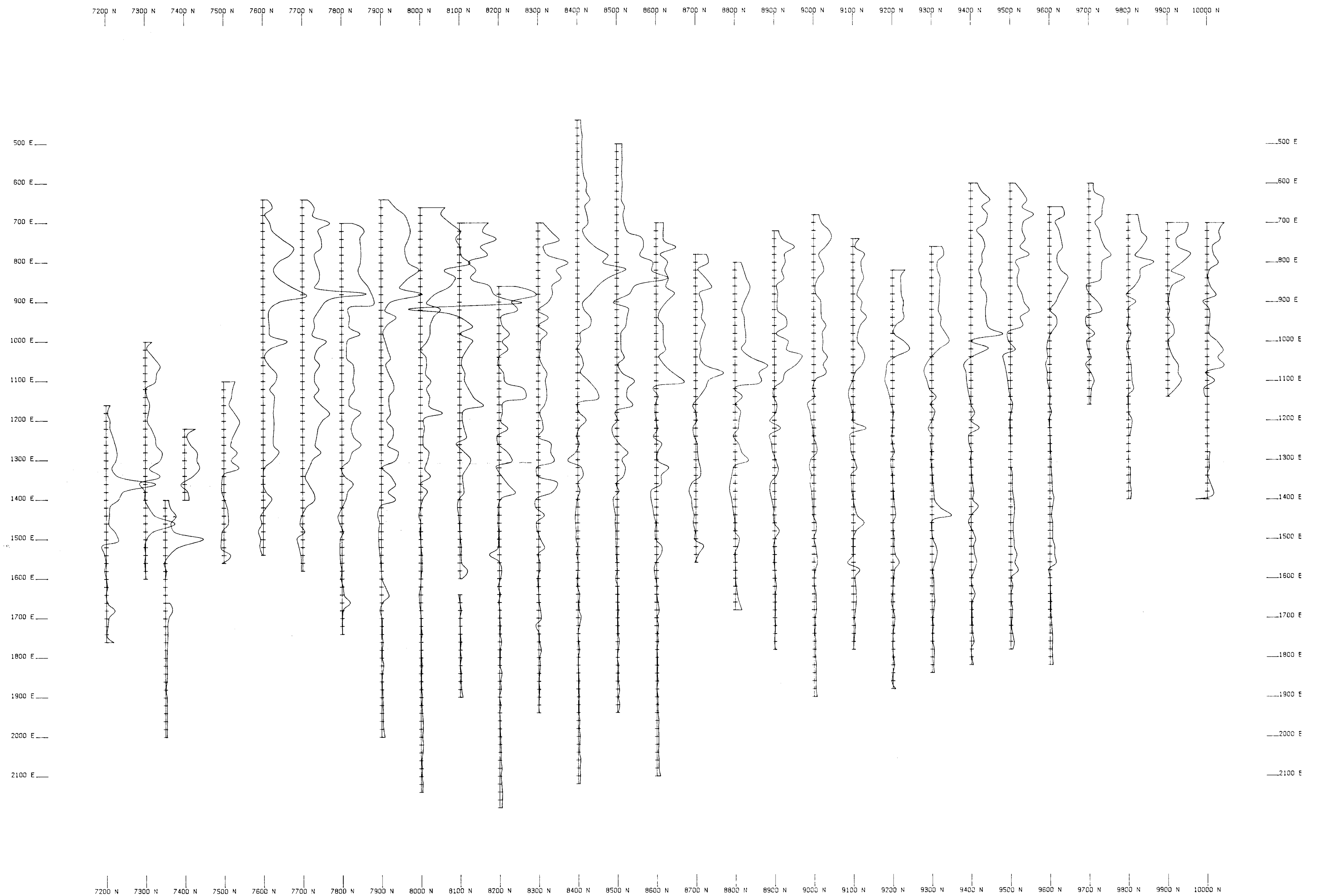
FILTERED VLF CONTOUR PLAN, (Fraser)

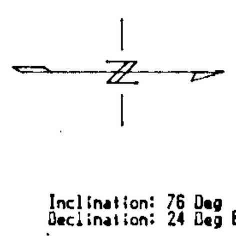
Fig. 6

contour interval 10%

SCALE 1:5000

DELTA GEOSCIENCE LTD





KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

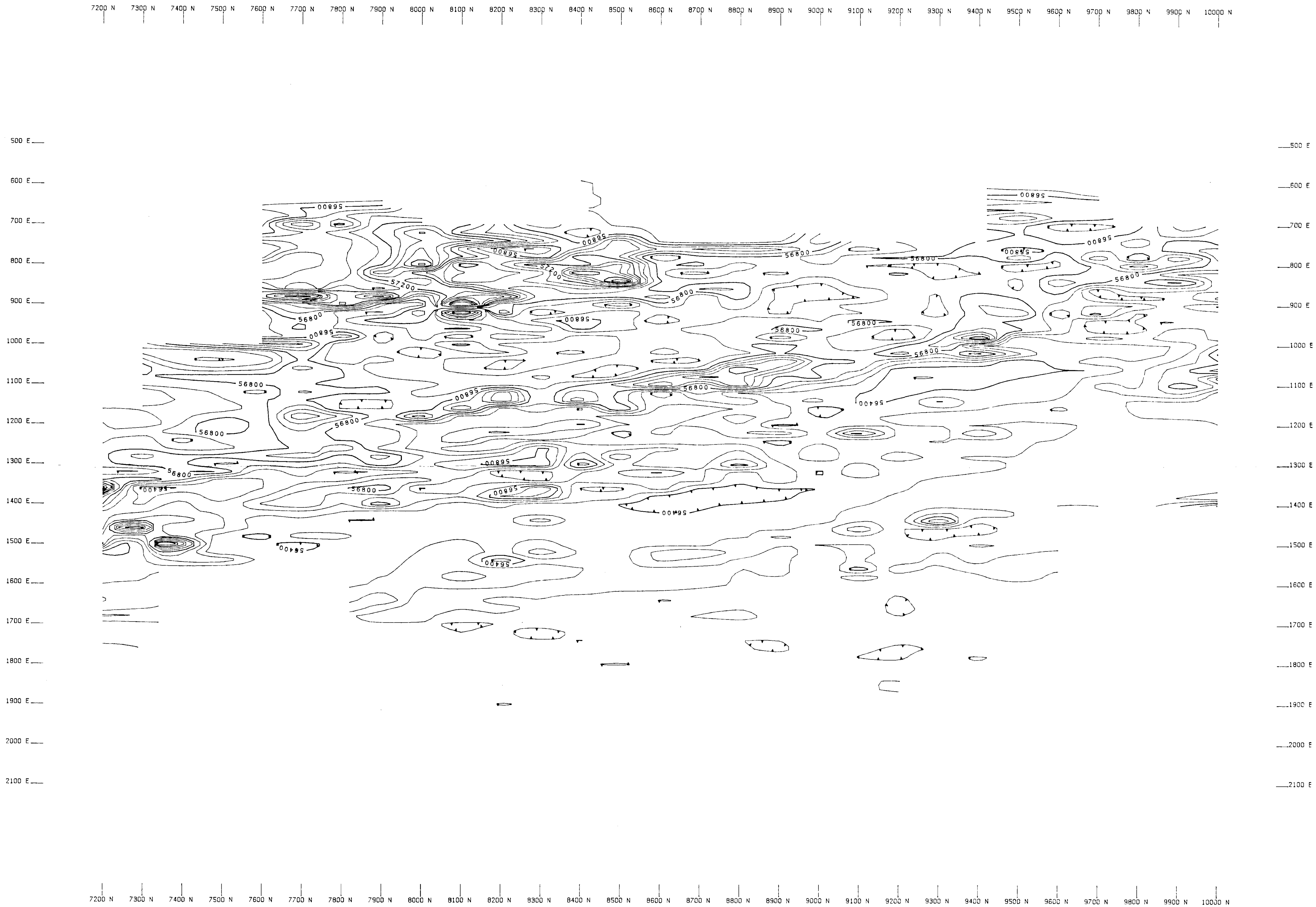
TOTAL FIELD MAGNETIC PROFILES

Fig. 7

1 cm = 500 nt, base 56500 nt

SCALE 1:5000

DELTA GEOSCIENCE LTD



Inclination: 76 Deg
Declination: 24 Deg E

KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

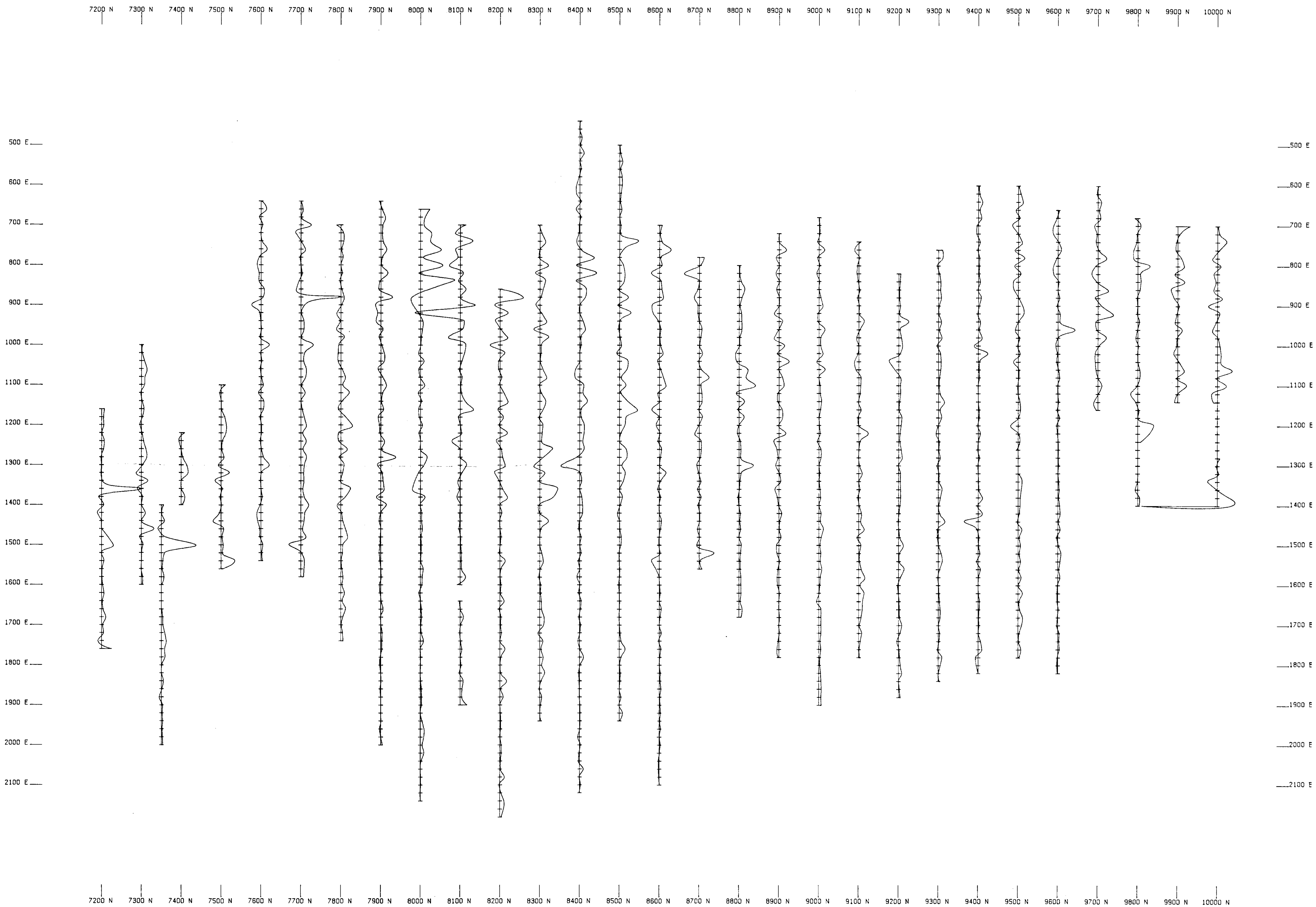
TOTAL FIELD MAGNETIC CONTOUR PLAN

Fig. 8

contour interval 100 nanotesla

SCALE 1:5000

DELTA GEOSCIENCE LTD



Inclination: 76 Deg
Declination: 24 Deg E

KIDD CREEK MINES LTD

ECSTALL PROJECT, WEST GRID

MAGNETIC GRADIOMETER PROFILES

Fig. 9

1 cm = 100 nt/.5m, base 0 nt/.5m

SCALE 1:5000

DELTA GEOSCIENCE LTD