85-220-13655
02/86

MPH

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

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
PHYSICAL / ORTHOPHOTO and TRENCHING	$ 45,929.76

AUTHOR(S) D.W. Blackadar, Sr. Geologist, Aberford Resources Ltd. SIGNATURE(S) D.W. Blackadar

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED February 28, 1985 YEAR OF WORK 1984

PROPERTY NAME(S) ~~LARA GROUP (1984, #536)~~ HOPE

COMMODITIES PRESENT Cu, ~~Pb~~, Zn, Ag, Au, ~~Ba~~

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN 92B-110

MINING DIVISION Victoria NTS 92 B/13W

LATITUDE 48° 53' N LONGITUDE 123° 52' W

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)]:

Silver I (12 units), Silver II (9 units), Fang (20 units), T.L. (20 units), Solly (9 uni
Susan (lot 23G), Klondyke (lot 68G), Tintoview (lot 78G), Jennie (4 units)
Ugly (6 units), Wimp (2 units) Nero (1 unit), Flat (1 unit)

OWNER(S)

(1) Laramide Resources Ltd.

MAILING ADDRESS

904 - 675 West Hastings St.
Vancouver, B.C. V6B 1N2

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

(1) Aberford Resources Ltd.

MAILING ADDRESS

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P.O. Box 2533, Station M
Calgary, Alberta T2P 3X9

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

Vein and volcanogenic massive sulphides (Cu, Pb, Zn, Ag, Au, Ba) are hosted by foliated (100-110°) quartz-sericite and chlorite schists, which are possibly part of the Paleozoic age Sicker Group.

REFERENCES TO PREVIOUS WORK B.C. Assessment Reports 936, 3099, 4626, 6972, 7183, 7435, 10116, 11123, GEM 1973 p244, GEM 1977 pE105, GEM 1978 pE122

Vancouver, B.C.
November, 1984

J.L. LeBel, P.Eng.
MPH Consulting Limited

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CERTIFICATE

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Also Claim map
Orthophoto Coverage
Trench / Drill locations.

SUMMARY

A time domain electromagnetic (Geonics EM-37) geophysical survey was conducted on parts of the Lara Project property near Chemainus, B.C. for Aberford Resources Ltd. by MPH Consulting Limited during September and October, 1984.

The purpose of the survey was to detect conductors at depth, down dip from Zones I, II, III, IV and V surface exposures of sulphide mineralization. Such conductors could be indicative of massive sulphide mineralization similar to the Westmin Resources H-W deposit at Buttle Lake.

No anomalies indicative of conductors of economic proportions were detected by the survey to a depth of 150 m, which is the estimated depth of detection for a hypothetical target representative of the mineralization on the property.

The survey did detect a series of questionable anomalies along the north side of the coverage in the East Grid area; these are inferred to be caused by a unit of pyritic andesite volcanics.

Another series of anomalies along the south edge of both the East Grid and West Grid areas reflects a contact between high resistivity formations (Sicker Group) and low resistivity formations (Nanaimo Group and sediment sill unit).

Additional EM-37 coverage on the unsurveyed parts of the property is recommended. Consideration should be given to preparing any drill holes on the property for drill hole electromagnetic surveys using the EM-37.

1.0 INTRODUCTION

This report presents the results of a time domain electromagnetic survey conducted on the Lara Project by MPH Consulting Limited on behalf of Aberford Resources Ltd.

The purpose of the survey was to locate electromagnetic conductors indicative of massive sulphide mineralization at depth, down dip from a number of mineralized zones located on the property. The zones consist of lean polymetallic sulphide horizons exposed in a number of showings and backhoe trenches excavated on the property. The mineralization at surface is only weakly conductive as indicated by very low frequency electromagnetic and induced polarization geophysical anomalies.

The coverage provided by the survey was concentrated in two areas, namely the East Grid and West Grid areas.

The principal targets of the survey were Zones I and II on the East Grid, Zone III, Zone IV and Zone V on the West Grid.

Given the character of the exposed mineralized zones, an electromagnetic anomaly from a conventional low-frequency electromagnetic geophysical method was not anticipated, except perhaps for the massive sulphide mineralization associated with parts of Zone III on the West Grid. The time-domain electromagnetic survey, with its greater depth of detection offered the possibility of detecting more massive mineralization at depth in a setting similar to the Westmin Resources H-W orebody at Buttle Lake.

The survey was conducted during the period September 14-October 19, 1984 by a three-man crew headed by K. Morrison, B.Sc., geophysicist. Overall supervision was provided by L. LeBel, P.Eng., Senior Geophysical Consultant.

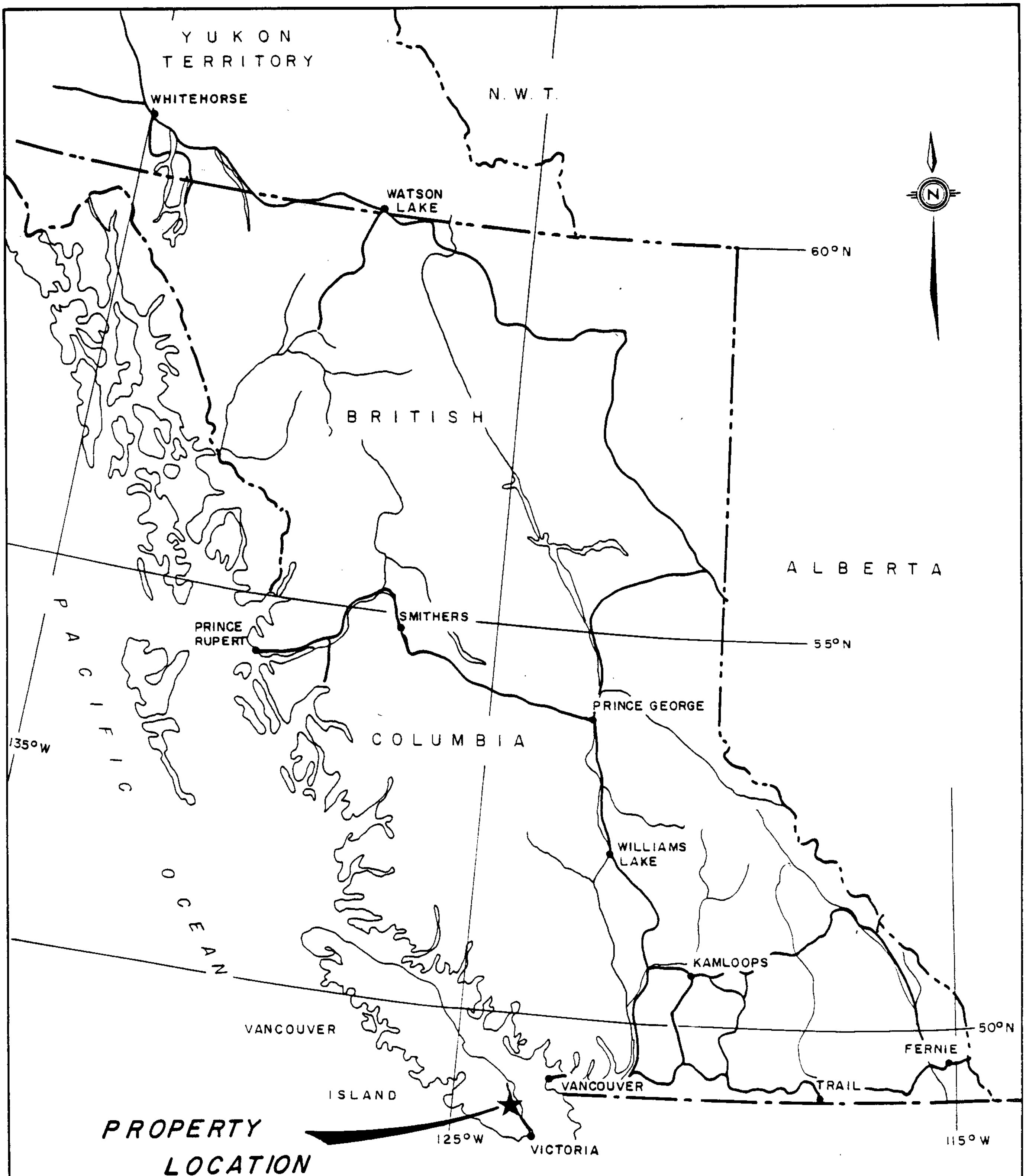
A total of 22 line km of surveying divided into 6 km in the East Grid area and 16 km in the West Grid area was effected.

2.0 LOCATION AND ACCESS

The Lara Project property is located on Vancouver Island approximately 10 km west-southwest of Chemainus, B.C. (Figure 1).

Access is gained via the Chemainus River logging-trunk road for approximately 13 km from the Trans-Canada Highway followed by about 9 km of rough bush road.

Access required a one-way travel time of up to two hours from the headquarters of the geophysical crew at Crofton, B.C.



ABERFORD RESOURCES LTD.

LARA PROJECT
LOCATION MAP

Project No:	V 174	By:	J.L.L.
Scale:	1 : 8 000 000	Drawn:	J. S.
Drawing No:	FIGURE 1	Date:	

MPH Consulting Limited

3.0 GEOLOGY, MINERALIZATION, PREVIOUS WORK

Descriptions of the Lara Project property geology and mineralization contained herein are provided by D. Blackadar of Aberford Resources Ltd.

Much of the property is underlain by west-northwest striking rhyolitic to basaltic rocks of the Sicker Group. These rocks dip to the north at between 36° and 87°. Most dips are relatively steep (65°-85°). Sicker Group rocks are strongly deformed (commonly schistose) and are regionally metamorphosed to lower to middle greenschist facies. Felsic volcanics predominate.

The Sicker Group in this area appears to contain only minor sedimentary interbeds including green volcanic sandstone and dark grey to black slate, grey tuffaceous slate and chert. Black, possibly graphitic slate has been noted locally.

A number of laterally persistent pyritic zones occur in both felsic and intermediate units. Several IP anomalies outlined on the property are associated with these zones.

The Sicker Group is intruded locally by dykes, sills and plugs of intermediate to mafic composition.

Sicker Group rocks are in fault contact with sedimentary rocks of the Cretaceous age Nanaimo Group along the southern part of the property. This fault contact is assumed to be steeply dipping. The Nanaimo Group includes thinly bedded to massive siltstone and shale and minor conglomerate.

To date, two mineralized zones have been outlined in each of the East and West Grids. A possible third mineralized horizon, indicated by weak polymetallic mineralization in one trench, may occur in the West Grid.

All five zones are pyritic and are broadly associated with IP anomalies. The zones have been defined on the surface by backhoe trenching. No drilling has yet been carried out. With the exception of Zone III in the West Grid, mineralization is not massive in character. Generally it is disseminated or occurs in small pods and bands separated by intervals of barren rock.

The following table provides a summary of the relevant characteristics of the mineralized zones.

SUMMARY OF MINERALIZED ZONES

Grid Area	Location	Zone	Dominant Host Rock	Character of Mineralization	Metals Present	Approx. Thickness (m)	Strike Length (m)	
							Definite	Probable
EAST	South	I	Rhyolite (pyritic)	Laminated, banded, local small pods of massive sulphide; locally baritic	Cu,Zn,Ag Pb,Au	6.5	240	650
	North	II	Rhyolite (pyritic)	Pods, dissemina-tions, reticulate masses	Cu,Ag	0.25	100	1500
WEST	South	Trench showing (TR83-35)	Rhyolite (pyritic)	Disseminated	Cu,Zn,Ag, Pb,Au	1.0		
	Central	III	Rhyodacite, dacite (strongly pyritic)	Banded, semi-massive, strongly pyritic, local massive pyrite	Cu,Ag	2.3 to 9	575	
	North	IV	Dacite to andesite lapilli tuff (pyritic)	Disseminations, veinlets, narrow bands	Cu,Ag	1.8 to 3	120	

Previous work carried out on the property consists of geological mapping; soil geochemical surveys; very low frequency electromagnetic, magnetic and induced polarization geophysical surveys and backhoe trenching.

The geophysical surveys detected a number of laterally persistent VLF-EM and induced polarization anomalies. Locally, the mineralized zones coincide with VLF-EM anomalies and/or induced polarization anomalies. The coincidence, however, is inconsistent, for example as displayed by Zone I which has an induced polarization anomaly but no VLF-EM anomaly. In many instances, the anomalies obtained are not related to any known mineralization. This is particularly evident in the case of a broad induced polarization anomaly accompanied by a number of VLF-EM conductors which crosses through the north parts of the east and west grids. This feature appears to be caused by a unit of pyritic andesite volcanics within the Sicker Group.

The contact between the Sicker Group and the Nanaimo and sediment sill units which crosses the southern part of the property, is signatured by a VLF-EM conductor. The resistivity of the Sicker rocks averages about 1000 ohm-m and the resistivity of the sedimentary units is as low as 200 ohm-m resulting in a resistivity contrast of up to 5:1 across the contact.

4.0 INSTRUMENTATION AND SURVEY PROCEDURES

The survey was conducted with a Geonics EM-37 time-domain electromagnetic system. Detailed specifications of the Geonics system are contained in Appendix IV.

The Geonics system was deployed with large, rectangular, stationary transmitter loops and a mobile 1 m diameter receiver loop.

With the Geonics EM-37, the transmitter loop is energized by a square wave current form which repeats at a frequency of 30 hz. As the current in the transmitter shuts off, a large primary magnetic field is induced by the loop. Currents in the transmitter loop averaged about 25 amps during the survey.

The receiver measures the decay of the electromagnetic fields generated in the earth by the transmitter across twenty separate channels. The primary field induces secondary fields in conductive bodies. Distortions in the shape and amplitude of the primary field, caused by the secondary fields, provide a measure of the location, size, geometry and electrical properties of the body.

In the survey, the vertical (z) and horizontal (x) components of the primary fields were measured, where the x direction was taken along the survey lines at right angles to the long dimension of the transmitter loop. Two readings of each component, by reversing the polarity of the receiver, were taken at each station. This procedure tends to reduce any noise that may be present in the data. Readings were averaged for 2^8 and 2^{10} current cycles for the z- and x-components, respectively.

Readings were taken at 25 m intervals. This station spacing was dictated by consideration of analytical modelling done prior to the survey which showed that a close station interval was necessary to resolve two deep, parallel conductors, such as in the case of Zones I and II on the East Grid, which are separated by only 150 m at the surface.

Line spacing was nominally 200 m throughout. This wide line spacing was established on the premise that a target of economic size would exhibit a significant strike length. On the West Grid, one fill-in line, line 63+00W, was surveyed to provide coverage of a thin massive sulphide horizon exposed in Zone III.

Transmitters consisted of 600 m x 300 m loops, initially laid out to the north of the survey areas. This arrangement was done because some of the zones to be investigated were located close to a contact between low resistivity rocks (Nanaimo Group on the East Grid and sediment sill unit on the the West Grid) and high resistivity rocks (Sicker Group). The contact was expected to produce an appreciable anomaly but with the transmitter located north of the contact, its anomaly would migrate spatially with increasing channels to the south, away from the prime area of interest. With loops to the south of the areas of interest, the anomaly of the contact would migrate to the north and interfere with any responses from the zones of interest.

Note that the original intention was to use 800 m x 400 m loops. Loop size was reduced to take advantage of the availability of aluminum (versus copper) wire. The aluminum wire used is lighter and therefore easier to handle and allows up to a 50% increase in current. Unfortunately, only enough wire for 600 m x 300 m loops was available at the time of the survey.

Later, in the case of the East Grid, two loops were installed to the south of the area. These installations were made to provide a different induction angle. This was considered important in case the zones of interest dipped shallowly to the north in an attitude which would be poorly coupled to primary fields from a transmitter located to the north.

In the case of the West Grid, two loops were placed in the centre of the area and lines surveyed both north and south of the transmitter in the interest of efficiency. The area in the middle of the loops not covered in this instance, was later covered from two loops placed to the south. A fifth loop was installed to the north at the west side of the West Grid to cover western extensions of Zone III to complete the survey coverage.

The various loop locations and coverage provided from each loop are illustrated in figures 2 and 3 for the East Grid and West Grid areas, respectively.

5.0 DATA PROCESSING AND PRESENTATION

The data was recorded manually in the field. The two sets of data collected for each component were averaged and entered into an HP-85 computer. Data processing was accomplished using GSP37 software.

The principal data processing done by the GSP37 software is reduction of the field data for transmitter current and size and turn off time of the transmitter pulse. Secondary functions provided by the software are:

1) data storage (on magnetic tape),
2) data plotting,
3) analytical modelling.

The results were stored on magnetic tape and identified using various file numbers. Because many of the lines were repeated using different transmitter locations, the file numbering system used was necessarily complex.

On the East Grid, the numbering system was straightforward, for example file number L28WXD refers to the L28W x-component data, except that a lower case "l" is used to identify data collected with the southern loop locations. The notations D and R in all of the file numbers refer to raw data and reduced data, respectively.

In the case of the West Grid, data collected north of the central loop locations is identified by an N designation, for example, L60N and an S designation refers to data collected to the south of the transmitters, for example, L60S. Data collected from the two southern loops is identified by L60W.

The results of the survey are presented as computer drawn profiles in Appendices I and II for the East Grid and West Grid areas respectively. Horizontal scales vary according to the length of the line surveyed, so that the full width of the computer chart paper is utilized. Vertical plotting scales for individual channels were set to different values in order to emphasize variations in the data.

6.0 RESULTS AND DISCUSSION

6.1 General

In general, the quality of the data recorded by the survey is excellent. There is some noise evident in the data from lines 64W and 68W of the West Grid, probably because of the proximity of these lines to a power transmission line. Occasional noisy data in channel 1 for some of the lines, for example L58W, is an artifact of the data processing algorithm. This noise is not present in the raw field data nor does it persist through to later channels.

Amplitudes of the secondary fields generally decay rapidly and disappear by channel 15. This situation is indicative of a high resistivity environment. A low resistivity environment sustains the secondary field longer and measurable values persist into later channels.

In electromagnetic surveys employing large loop transmitters, an appreciable background response is obtained because large volumes of rock are energized. Background response is manifested by gentle inflections in the z-component and broad peaks in the x-component.

This type of response is recognized because it normally decays quite rapidly with channel number, the inflections in the z-component and peaks in the x-component migrate spatially away from the leading edge of the transmitter and the anomalies are located the same distance from the transmitter on adjacent lines.

For the most part, the results obtained in the present survey display this general behaviour. Modelling was carried out to examine this behaviour. Figure 1 in Appendix III shows a pertinent example of the modelling results, comparing the channels 2, 4 and 6 data from L60W and the half-space response calculated for a background resistivity of 1300 ohm-m. In this and all of the other modelling done, the observed data is identified by dotted lines annotated by lowercase letters and the calculated data is identified by solid lines annotated by uppercase letters. The numeric part of the label indicates the channel number selected for the modelling. As can be seen in the figure, the fit between the observed and calculated data, apart from the anomaly at about 750N, is excellent.

6.2 East Grid

The East Grid data exhibits characteristics suggestive of a background response but the observed data could not be satisfactorily modelled using a half-space model. Figure 2 (Appendix III) shows a series of half space models with different background resistivities for line 30W. As can be seen, the inflection point in the z-component and peak in the x-component, at about 350N, cannot be matched using a half-space model. Similar modelling done for the anomalies located at L28W, 300N; line 32W, 400N; line 34W, 400N and line 36W, 500N, using a half-space model, was also unsuccessful in matching the observed data, for example as shown in Figure 3 (Appendix III) which displays the half-space modelling (done for line 36W) using a selection of background resistivities.

All of the anomalies cited above display characteristics consisting of broad x-component peaks, appreciable distance betwen the z-component peak negative and peak positive responses and fast anomaly decay which typically disappears by channel 5.

Figure 4 (Appendix III) shows a series of analytical calculations done for Line 30W, assuming that the anomalies are caused by a conductive plate. Variables provided for in the GSP37 plate modelling routine include: location, strike, length, depth extent, dip, depth and conductance (conductivity x thickness). As can be seen in Figure 4a, a reasonable fit in terms of the shape of the z-component is achieved. However, amplitude of the modelled data decays more slowly than the observed data and the fit between the calculated and observed x-component shown in Figure 4b is totally inadequate.

Figure 5 shows a similar situation for the results from line 36W. The modellng shown in Figures 4 and 5 is for a plate alone without a background response. Although this situation is not strictly correct, it gives reasonable approximation if the background resistivity is high as is the case for the Lara property.

Note that the modelled depth of the plate for these two lines of data is zero. This shallow depth is necessary to provide sufficient amplitude to duplicate the observed channel 1 amplitudes.

It is evident from this modelling exercise that the anomalies cited do not represent a plate-like massive sulphide horizon. Since the anomalies appear to represent a real geoelectric feature, it is possible that they are the effect of a wide, poorly conductive zone.

Their location correlates with a unit of pyritic andesite volcanics. The volcanics encompass a number of VLF-EM conductors and resistivity lows, the cumulative effect of which may give rise to the EM-37 anomalies.

Several other anomalies are evident in the results of the survey. Locations of these features are indicated on the individual data profiles and on Figure 2. All of these features correlate with the contact between high resistivity Sicker rocks and low resistivity Nanaimo rocks. No attempt was made to model these anomalies, principally because the contact has no economic potential. In addition, modelling of a contact is not available on the GSP37 software.

Figure 6 shows a series of analytical calculations done for line 3400W and a model of Zone I. The model consists of a 400 m long by 200 m wide plate with a conductance of 10 mhos. The plate has a strike of 20° relative to the leading of loop 2 and a dip of 90°. The dip is relative to the plane of the transmitter loop and equates to a real dip of 70°-80°N, in this case, since the transmitter was located on a gentle, south facing slope. The modelling was done for various depths from 50 m to 200 in 50 m increments. The results of the plate modelling were convolved with half space response with a background resistivity of 1000 ohm-m.

The results indicate that the model produces a measureable anomaly to a depth of 150 m. At 200 m, the combined response of the model and the background differs only slightly from the response of the background alone (as shown in Figure 6e), to indicate that at 200 m the zone may not be detectable.

Note that in the modelling not much of a response is evident (on channel 10) at the greater depths. This is a function of the plotting scale used, which was necessarily insensitive, to display the channel 5 response. When the results are displayed on a more sensitive scale, an anomaly is evident on channel 10. It is unlikely that a response would be seen on channel 20 because of the low 10 mho conductance used for the model.

6.3 West Grid

A number of anomalies were recorded on the West Grid at the following locations: 64W, 1050N (transmitter 2); 62W, 900N; 60W, 750N; 58W, 700N and 56W, 650N, as shown on the individual data profiles and on Figure 3. The anomaly on line 64W received coverage from transmitter loops 2 and 4. The location of the anomaly from transmitter 4 is at about 1100N. However, the location of the anomaly from transmitter 2 is considered more reliable because in the case of transmitter 4, the anomaly is located rather close to the leading wire of the loop.

From an electromagnetic point of view, the anomalies cited above are quite interesting, particularly the ones located on lines 62W and 60W. These two features exhibit z-component cross-overs and x-component peaks which persist through to channel 10. The distance between the z-component peaks and width of the x-component anomalies would indicate a conductor at a moderate depth of 25 m to 50 m.

Unfortunately, these and all of the other anomalies recorded on the West Grid correlate spatially with the contact between the high resistivity Sicker rocks and the low resistivity sediment sill unit and, as such, are not considered economically interesting. The electrical property which gives rise to these anomalies is the 5:1 resistivity contrast which occurs across the contact.

No anomaly was recorded over the thin massive horizon (Zone V) at 1300N on line 3W which yields a response at VLF-EM frequencies. The absence of a response here indicates that the sulphide zone is small.

7.0 CONCLUSIONS

No anomalies indicative of a massive sulphide body of economic proportions were detected on the property.

A series of anomalies detected at the north end of the coverage effected on the East Grid is inferred to be caused by a wide unit of weakly conductive pyritic andesite volcanics.

A series of anomalies detected at the south end of both the East and West Grid areas is interpreted to be caused by the contact between Sicker Rocks and Nanaimo Sediments (on the East Grid) and the sediment sill unit (on the West Grid). This contact is 'signatured' by a VLF-EM conductor and a resistivity contact outlined by an induced polarization survey.

The survey provided detailed coverage in both station spacing and transmitter location, so that any conductor present in the areas surveyed, regardless of dip should have been detected. Analytical calculations, using Zone I as a model, for example, indicate that the survey was capable of detecting such a zone (if conductive) at depths of at least 150 m.

8.0 RECOMMENDATIONS

Additional EM-37 survey coverage is recommended over the parts of the property that were not covered by the survey.

If any drilling attempted on the property is encouraging, a drill hole EM-37 survey may be warranted. Since the present survey has provided a depth of exploration of at least 150 m, only deep holes need be considered for this kind of survey within the areas covered.

If drill-hole geophysical surveys are to be undertaken, it is necessary to leave the drill casing in the holes. In areas where ground conditions are very unstable, it may be necessary to line the holes with plastic pipe to assure access of the logging tools at a later date.

Respectfully submitted,

J. L. LeBel, P.Eng.
MPH Consulting Limited

Vancouver, B.C.
November 13, 1984

CERTIFICATE

I, J.L. LeBel, do hereby certify:

1. That I am a Consulting Geophysicist with business offices at 301 - 409 Granville Street, Vancouver, British Columbia, V6C 1T2.

2. That I am a graduate in geological engineering of Queen's University, Kingston, Ontario (B.Sc. 1971) and of the University of Manitoba, Winnipeg, Manitoba (M.Sc. 1973).

3. That I have practised within the geological profession for the past twelve years.

4. That I am a Professional Engineer registered with the Association of Professional Engineers of British Columbia.

5. That the opinions, conclusions and recommendations contained herein are based on field work carried out by MPH Consulting Limited on the Lara Project property.

6. That I own no direct, indirect or contingent interests in the subject property, or shares or securities of Aberford Resources Ltd. or associated companies.

J.L. LeBel, P.Eng.

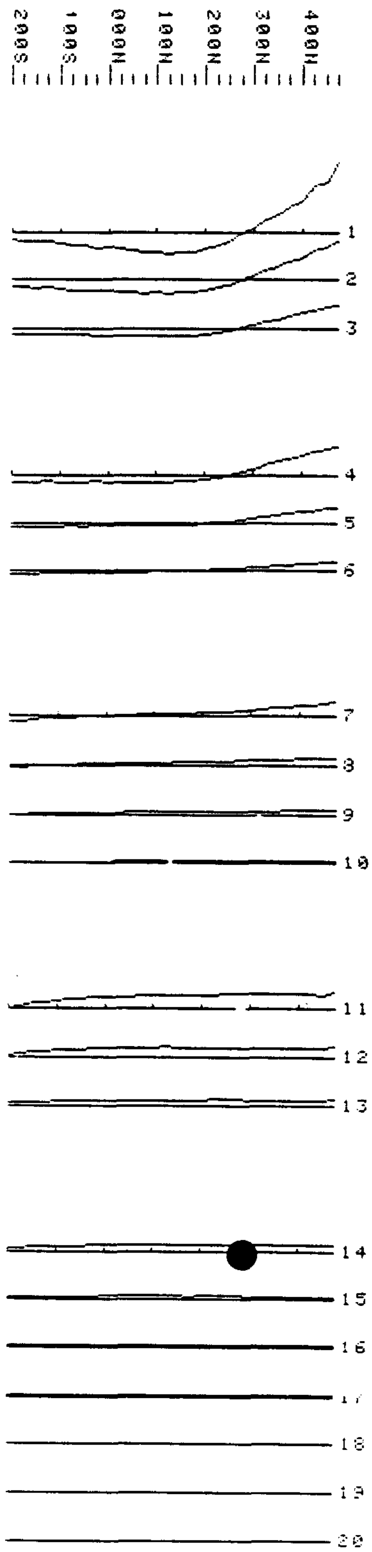
Dated at Vancouver, British Columbia
this 15th day of November 1984

APPENDIX I

SURVEY RESULTS - EAST GRID

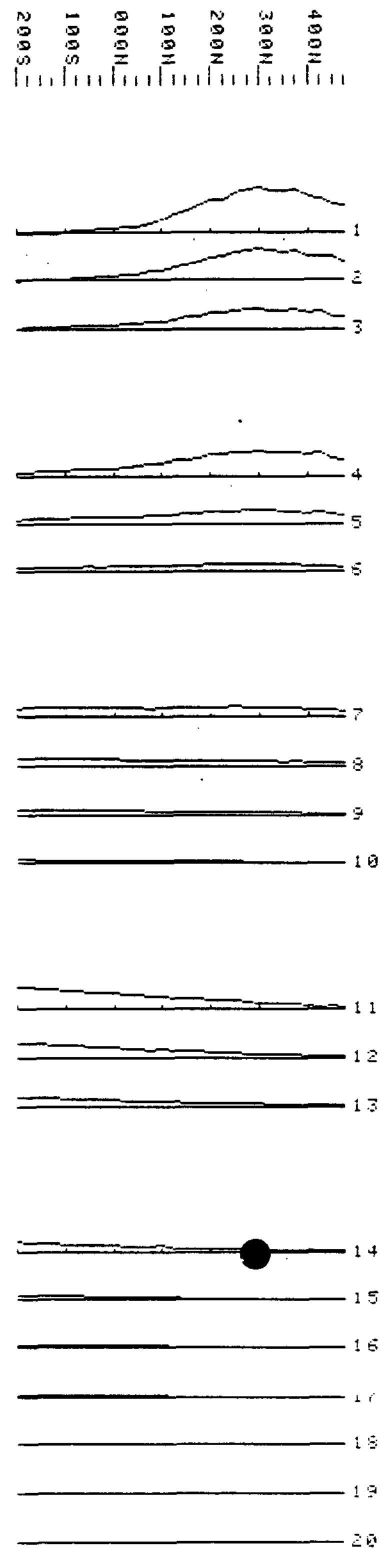
Data file L28WZD
LINE 28W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	250.00
7	to	10	100.00
11	to	13	10.00
14	to	20	5.00



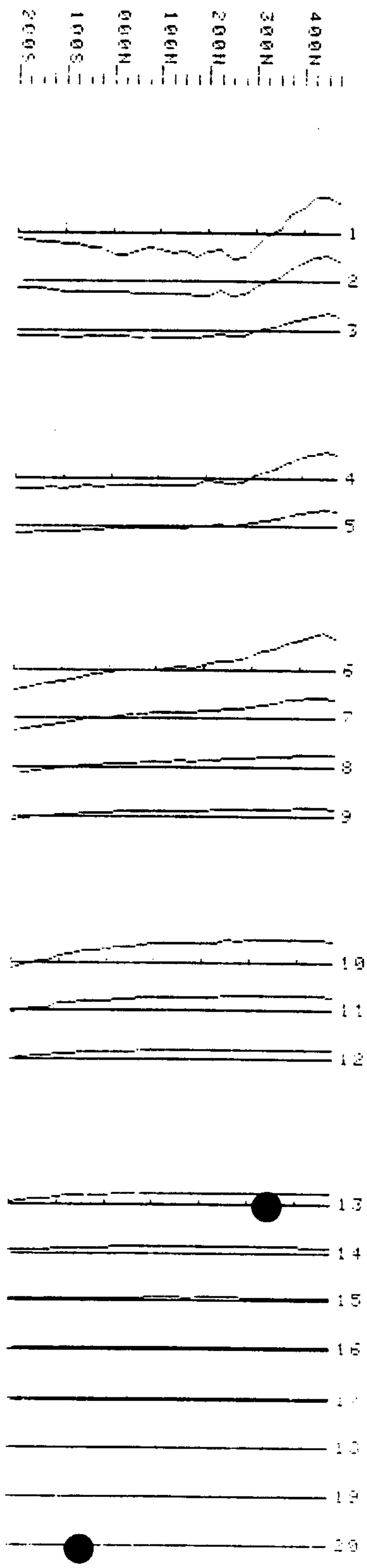
Data file L28WXR
LINE 28W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	250.00
7	to	10	100.00
11	to	13	10.00
14	to	20	5.00



Data file L30WZR
LINE 30W Z Component
dBZ/dT (nV/Am²) TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	5	200.00
6	to	9	50.00
10	to	12	10.00
13	to	20	5.00



Data file L30WXR
LINE 30W X Component
ΔBX/Δt mV at gain # 6

Channels			Scale
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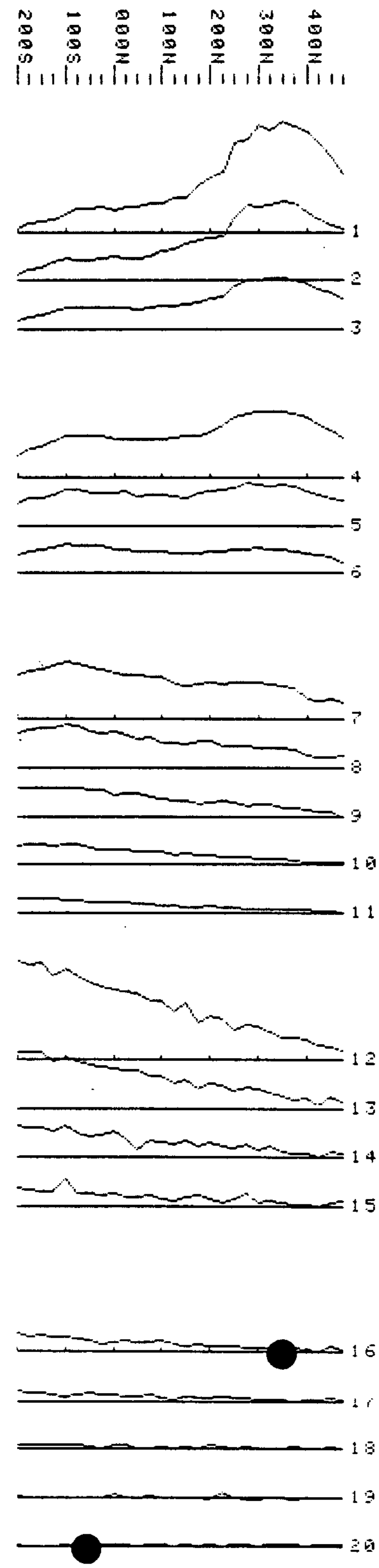
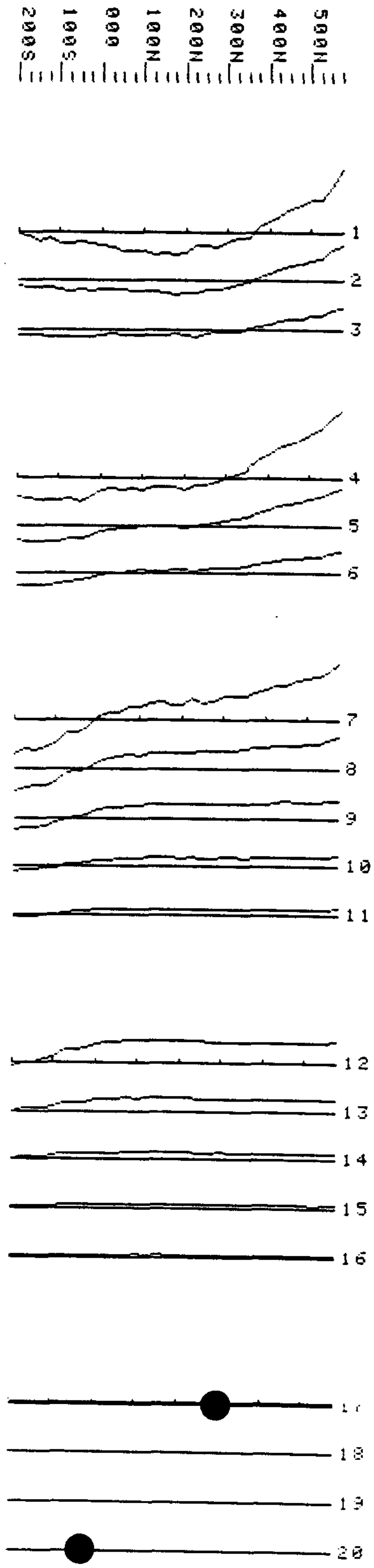
4	to	6	250.00
7	to	11	100.00
12	to	15	10.00
16	to	20	5.00



Data file L32WZR
LINE 32W   Z Component
dBZ/dT (nV/Am²)) TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	100.00
7	to	11	25.00
12	to	16	5.00
17	to	20	3.00



Data file L32WXR
LINE 32W   X Component
dBX/dT (nV/Am²)) TOFF corrected

Channels			Scale
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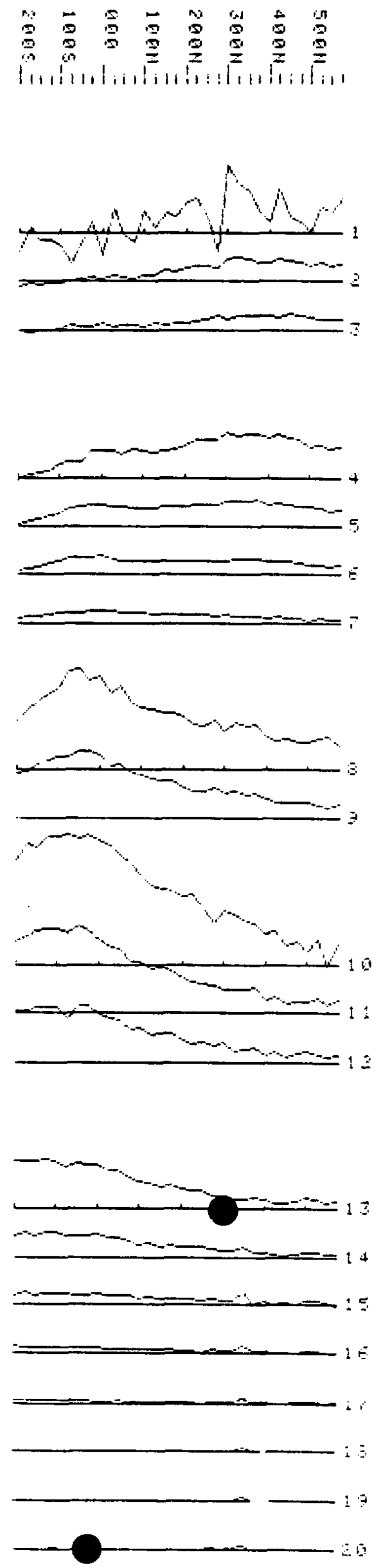
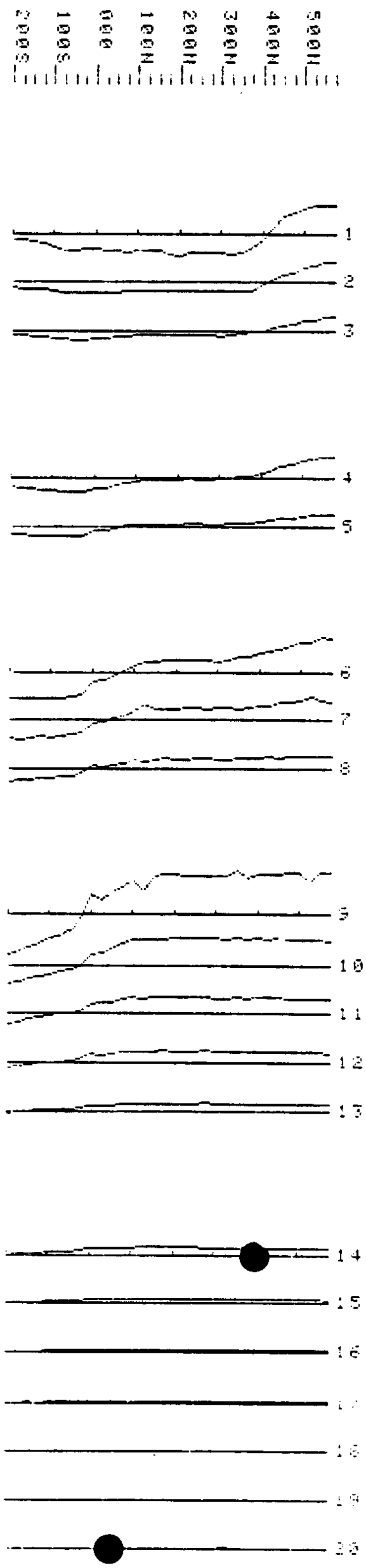
4	to	7	100.00
8	to	9	10.00
10	to	12	3.00
13	to	20	2.00



Data file L34WZR
LINE 34W Z Component
dBZ/dT (nV/Am4) TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	5	200.00
6	to	8	50.00
9	to	13	10.00
14	to	20	5.00



Data file L34WXR
LINE 34W X Component
dBX/dT (nV/Am4) TOFF corrected

Channels			Scale
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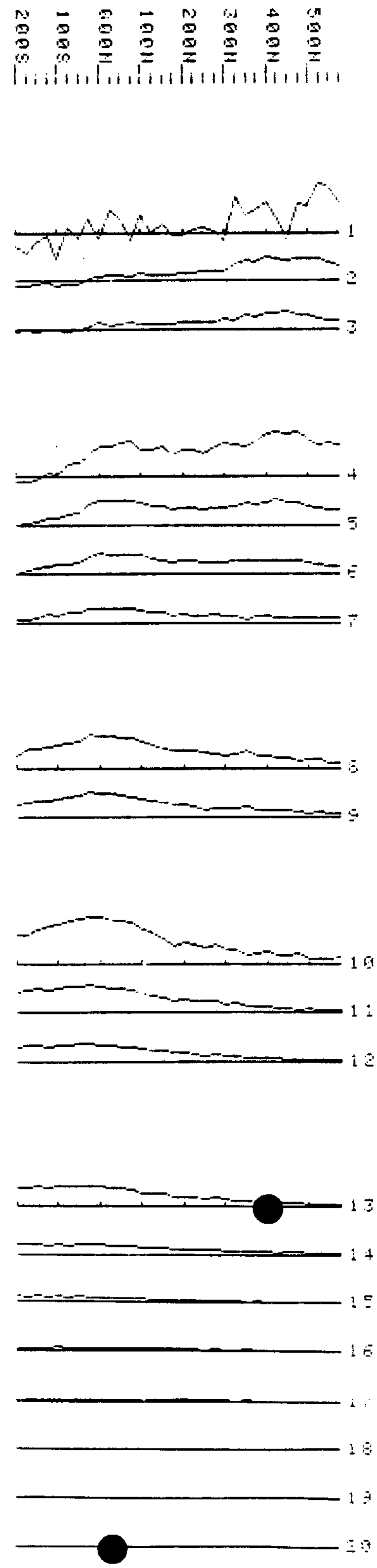
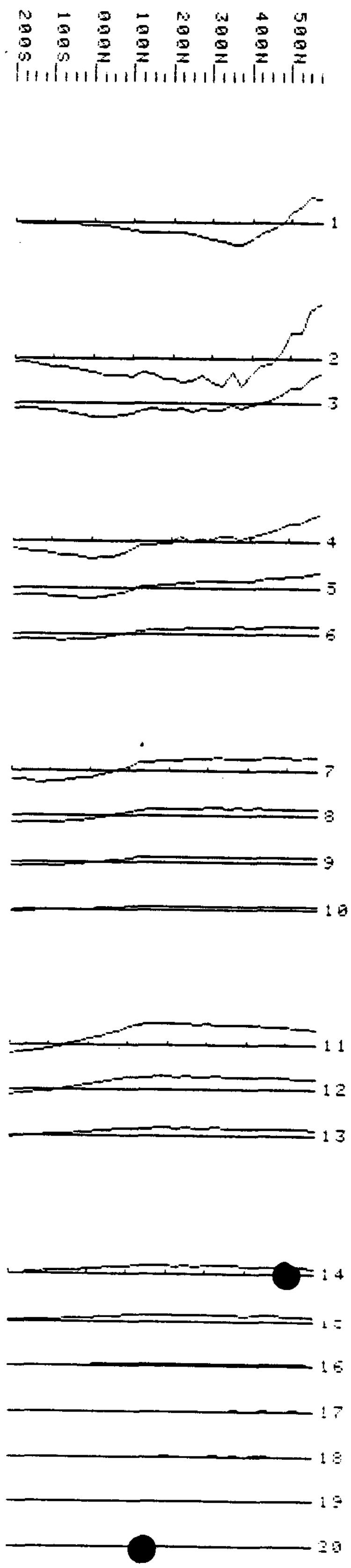
4	to	7	100.00
8	to	9	30.00
10	to	12	10.00
13	to	20	5.00



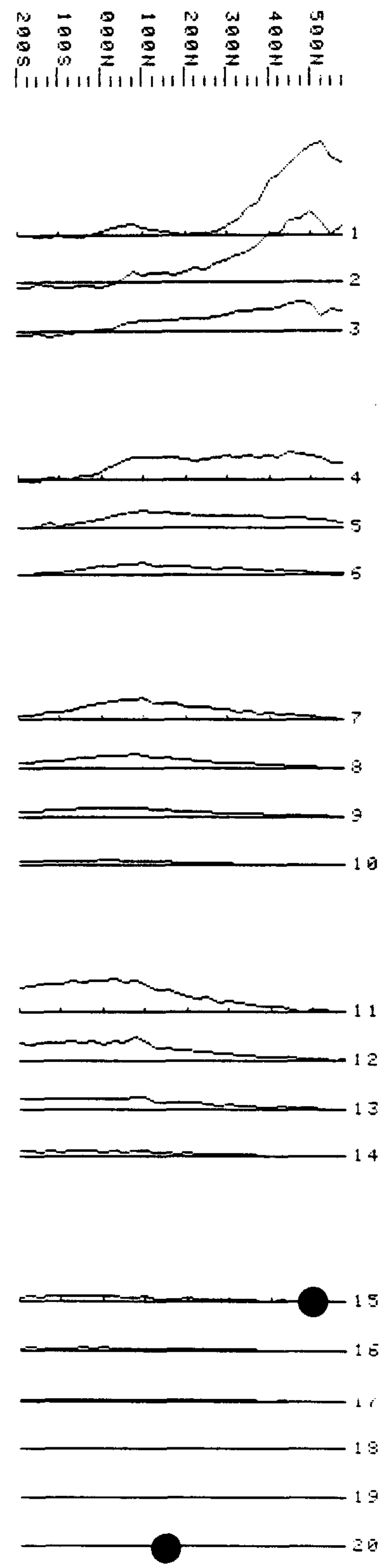
Data file L36WZR
LINE 36W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	1	2000.00
2	to	3	500.00
4	to	6	250.00
7	to	10	100.00
11	to	13	10.00
14	to	20	5.00



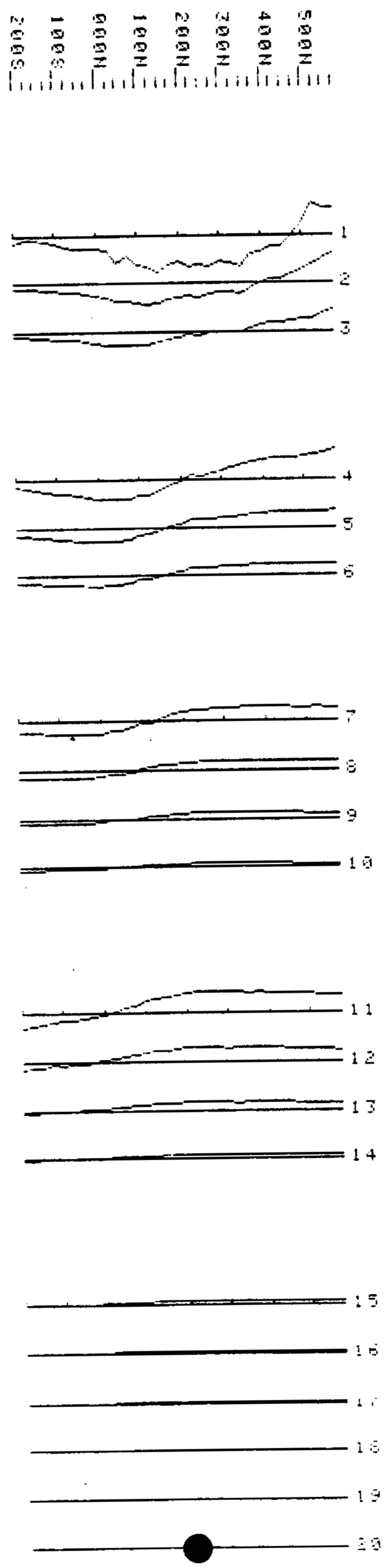
Data file L36WXR
LINE 36W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	250.00
7	to	10	100.00
11	to	14	10.00
15	to	20	5.00



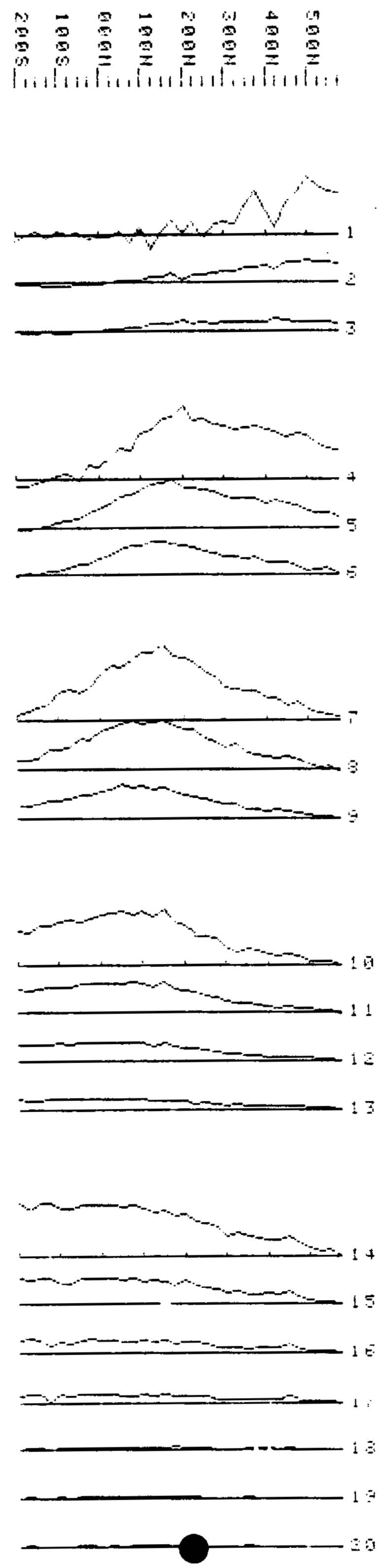
Data file L38WZD
LINE 38W Z Component
dBZ/dT (nV/Am^4), TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	200.00
7	to	10	100.00
11	to	14	10.00
15	to	20	5.00



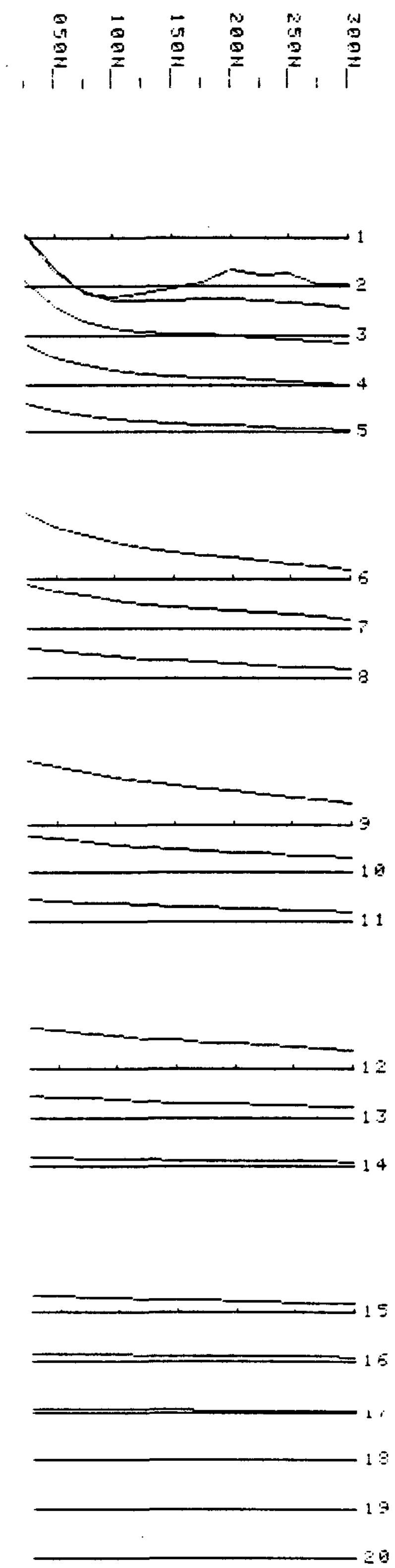
Data file L38WXR
LINE 38W X Component
dBX/dT (nV/Am^4), TOFF corrected

Channels			Scale
1	to	3	1000.00
4	to	6	100.00
7	to	9	30.00
10	to	13	10.00
14	to	20	1.00



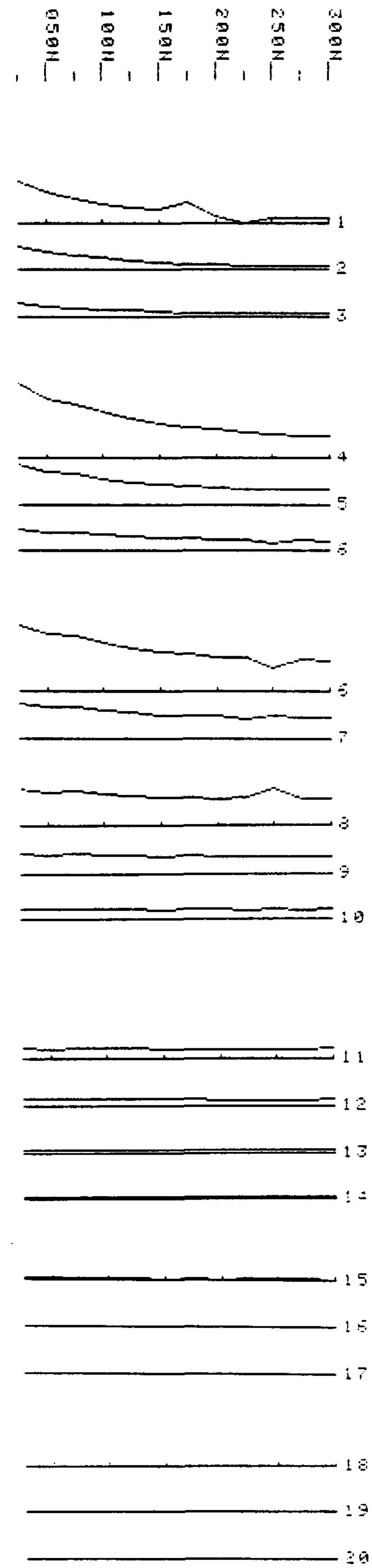
Data file 132WZD
LINE 32W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 5	600.00
6 to 8	200.00
9 to 11	60.00
12 to 14	20.00
15 to 20	5.00



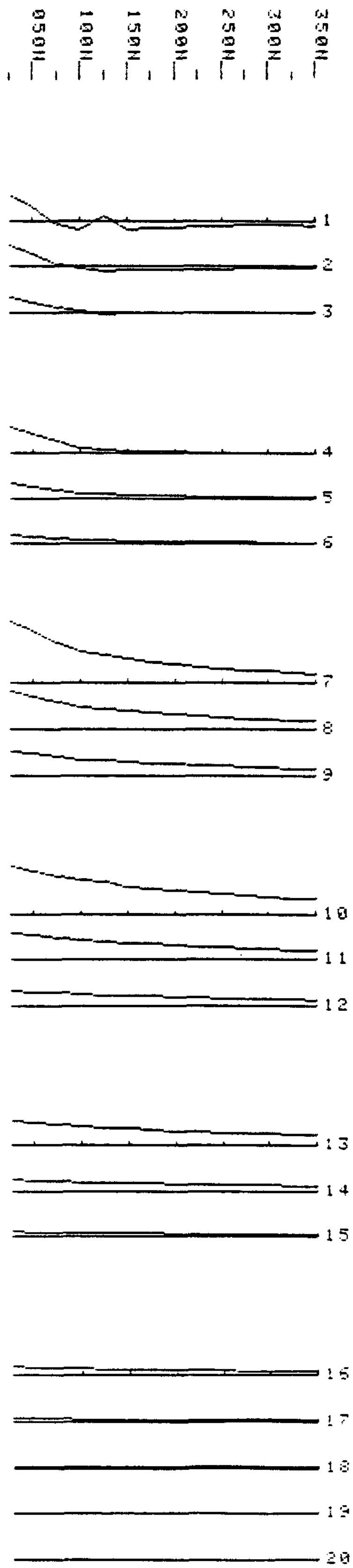
Data file 132WXD
LINE 32W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	6000.00
4 to 6	600.00
6 to 7	200.00
8. to 10	100.00
11 to 14	60.00
15 to 17	30.00
18 to 20	10.00



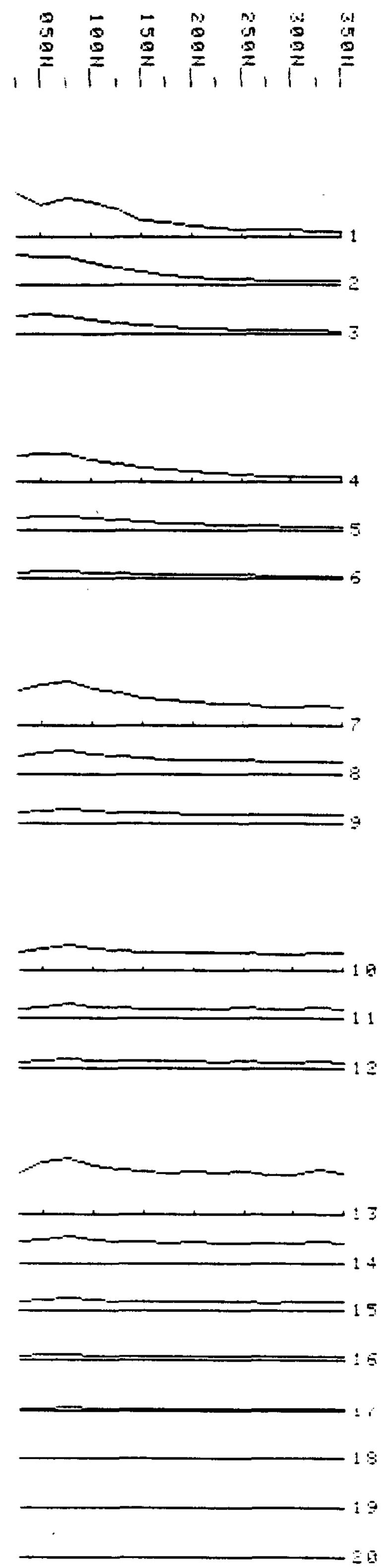
Data file 134WZD
LINE 34W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	5000.00
4	to	6	2000.00
7	to	9	200.00
10	to	12	60.00
13	to	15	20.00
16	to	20	5.00



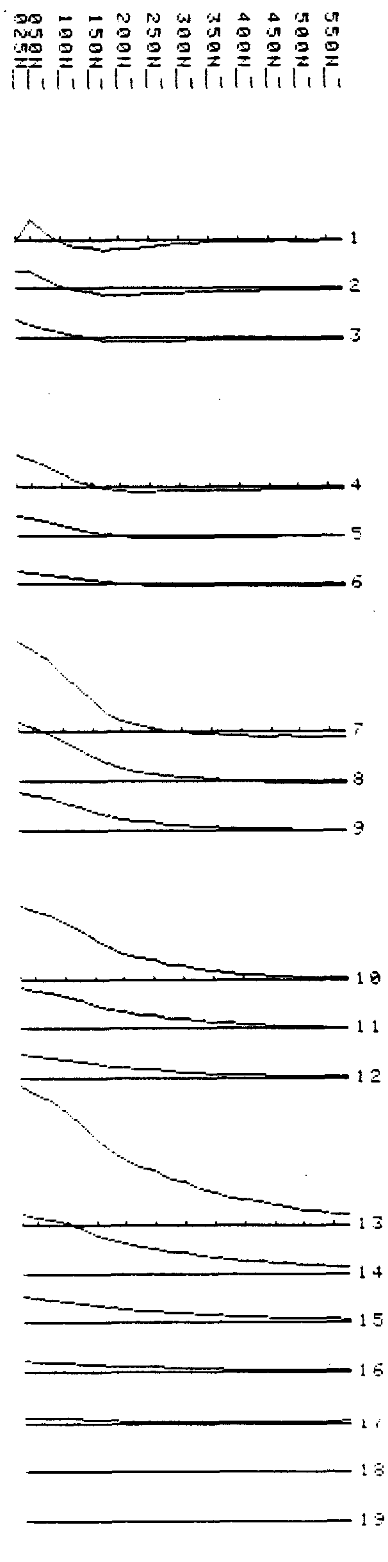
Data file 134WXD
LINE 34W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	5000.00
4	to	6	2000.00
7	to	9	200.00
10	to	12	60.00
13	to	20	5.00



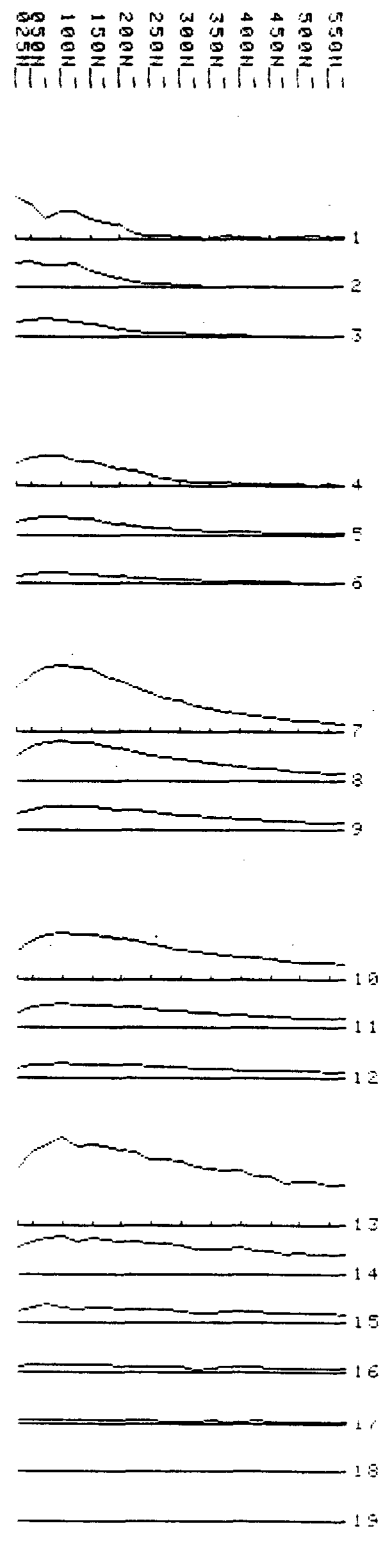
Data file 138WZD
LINE 38W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	5000.00
4 to 6	2000.00
7 to 9	200.00
10 to 12	60.00
13 to 20	5.00



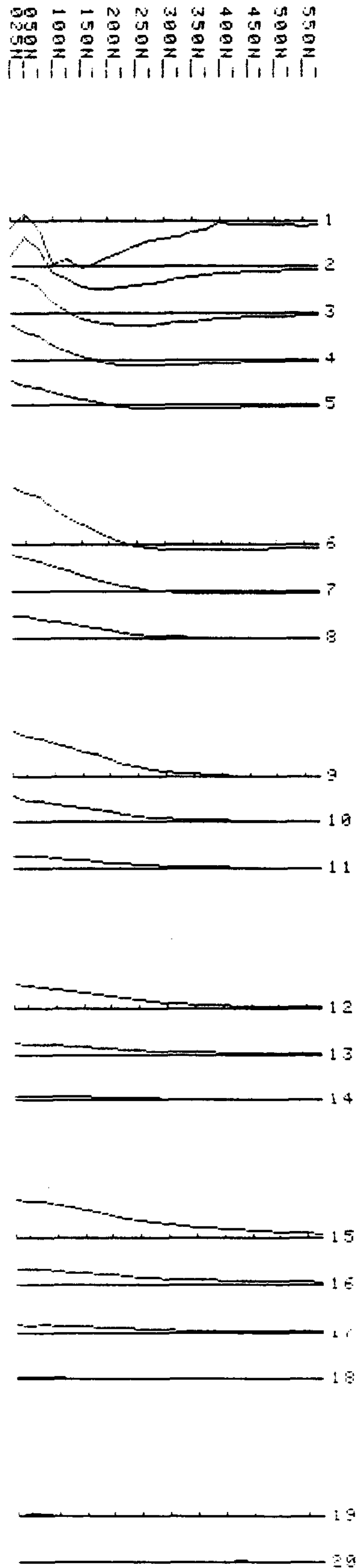
Data file 138WXD
LINE 38W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	5000.00
4 to 6	2000.00
7 to 9	200.00
10 to 12	60.00
13 to 20	5.00



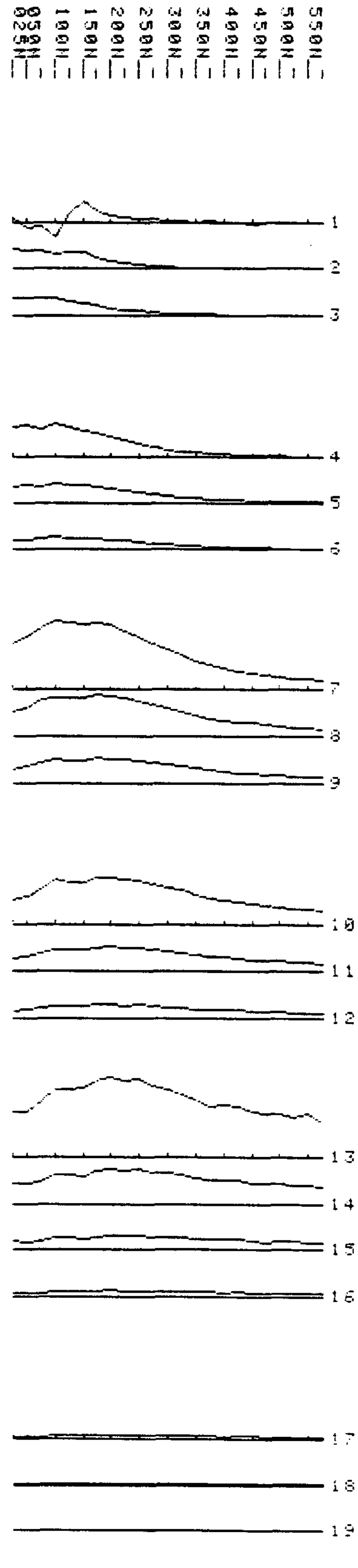
Data file 140WZD
LINE 40W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 5	2000.00
6 to 8	600.00
9 to 11	200.00
12 to 14	60.00
15 to 18	3.00
19 to 20	1.00



Data file 140WXD
LINE 40W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	6000.00
4 to 6	2000.00
7 to 9	200.00
10 to 12	60.00
13 to 16	5.00
17 to 20	3.00

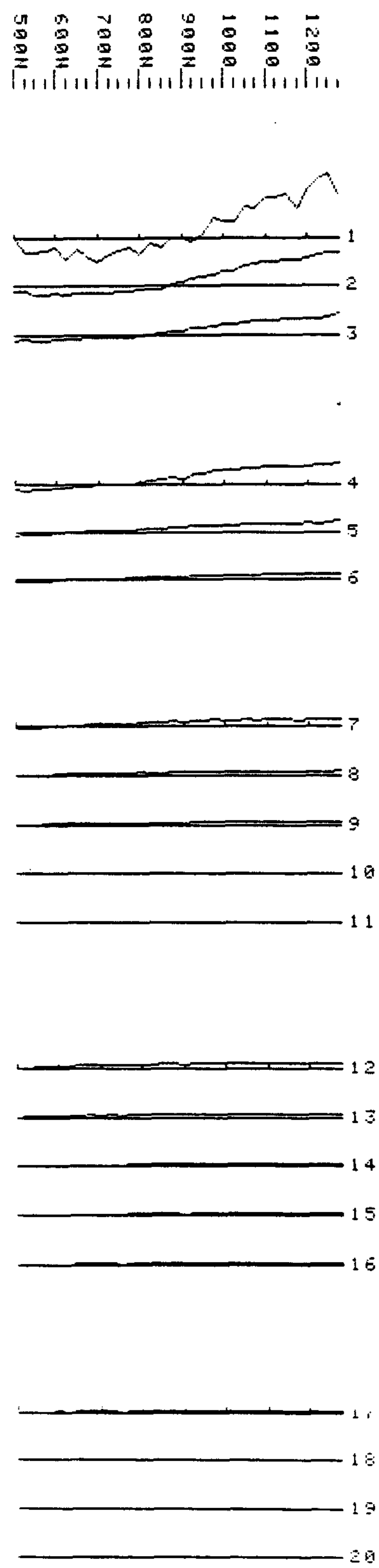


APPENDIX II

SURVEY RESULTS - WEST GRID

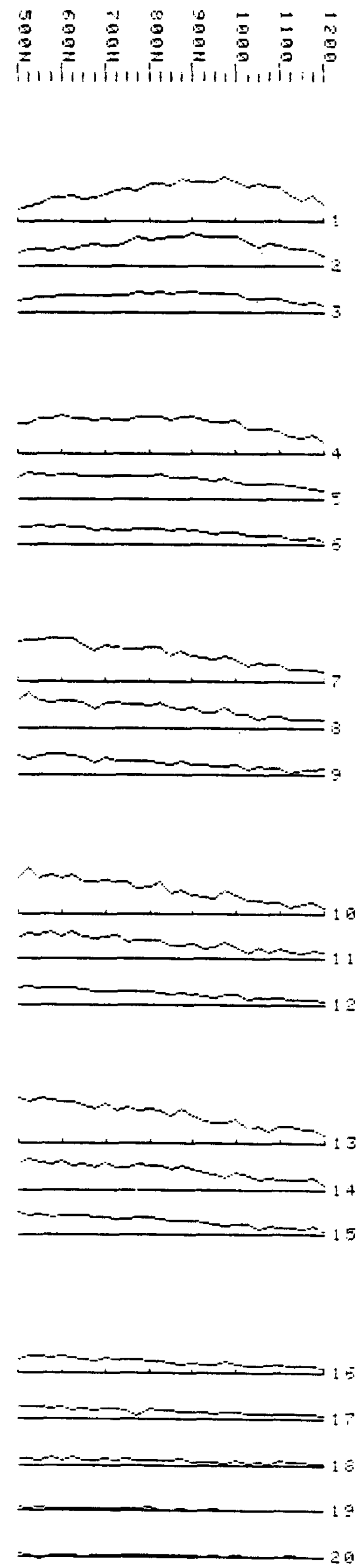
Data file L54SZD
LINE 54W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	500.00
4 to 6	250.00
7 to 11	100.00
12 to 16	10.00
17 to 20	5.00



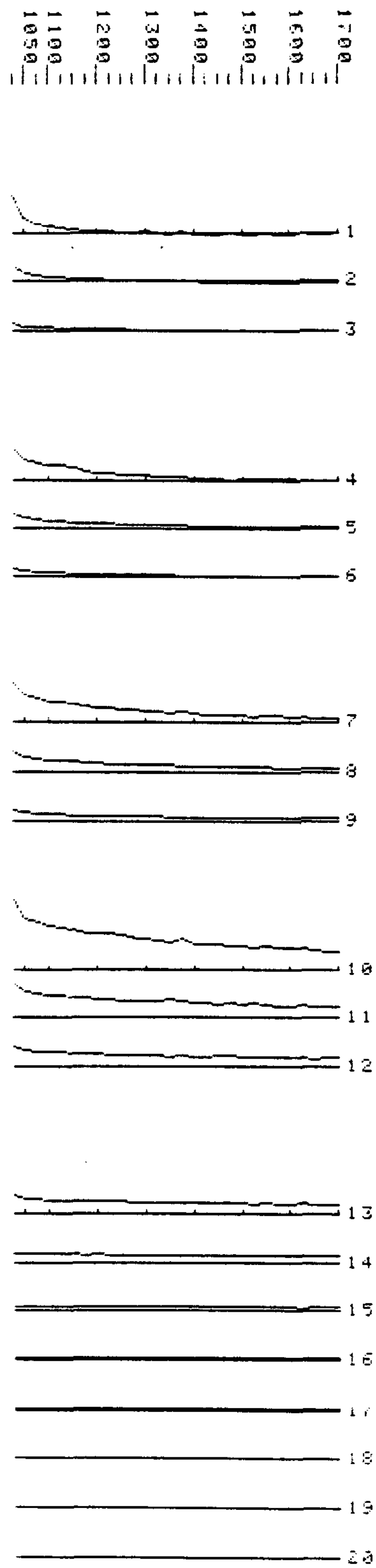
Data file L54SXD
LINE 54W X Component
ΔBX/Δt mV at gain # 6

Channels	Scale
1 to 3	500.00
4 to 6	200.00
7 to 9	60.00
10 to 12	20.00
13 to 15	5.00
16 to 20	3.00



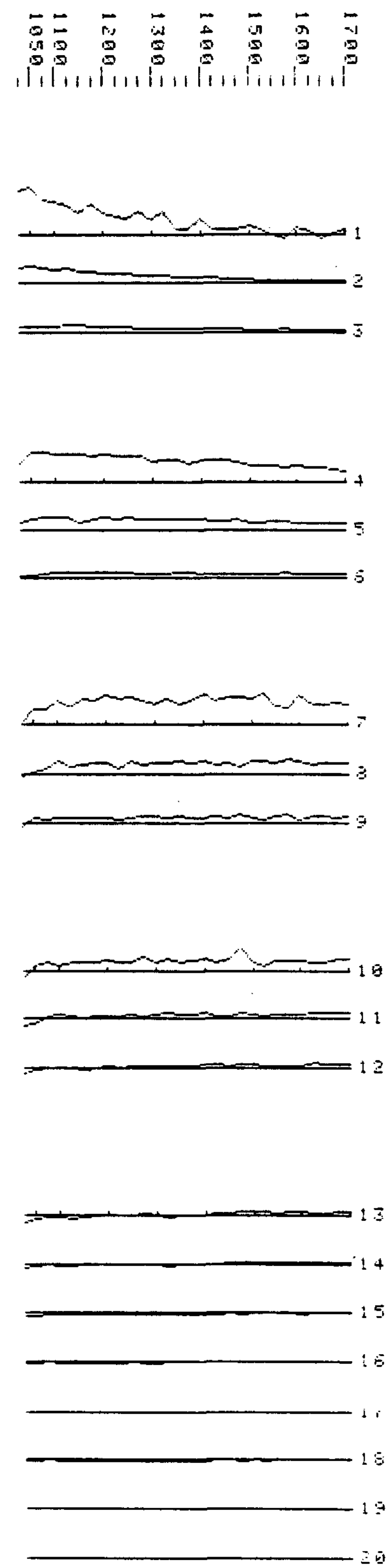
Data file L54WZD
LINE 54W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	5000.00
4	to	6	600.00
7	to	9	60.00
10	to	12	5.00
13	to	20	3.00



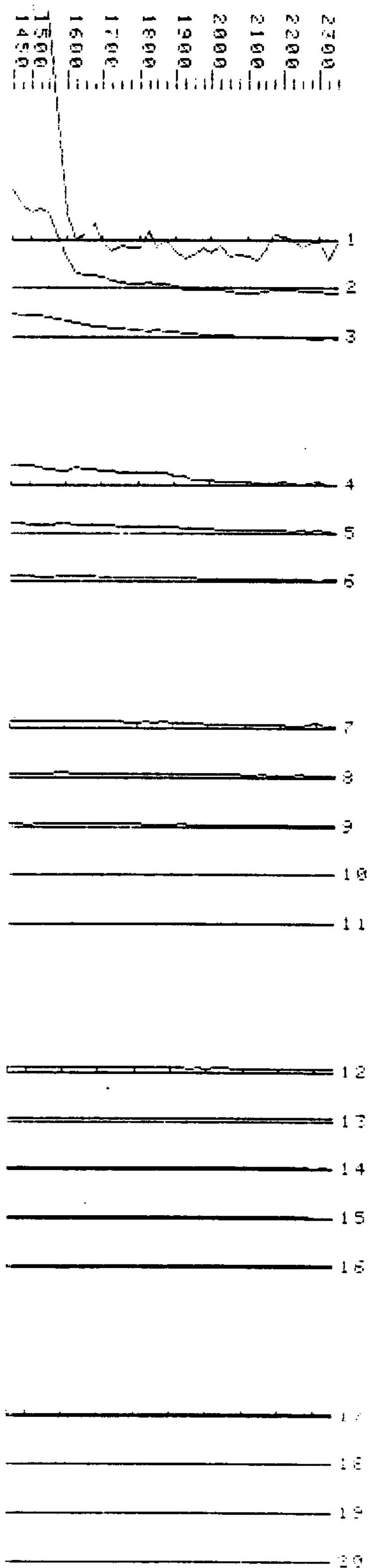
Data file L54WXD
LINE 54W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	2000.00
4	to	6	200.00
7	to	9	20.00
10	to	12	5.00
13	to	20	3.00



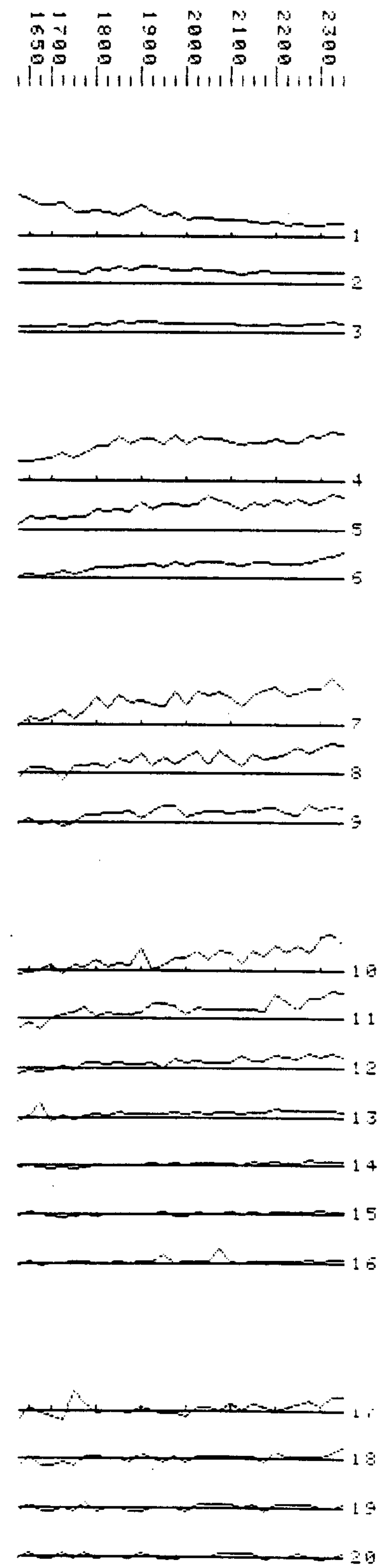
Data file L54NZD
LINE 54W   Z Component
dBZ/dT (nV/Am²) TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	250.00
7	to	11	100.00
12	to	16	10.00
17	to	20	5.00



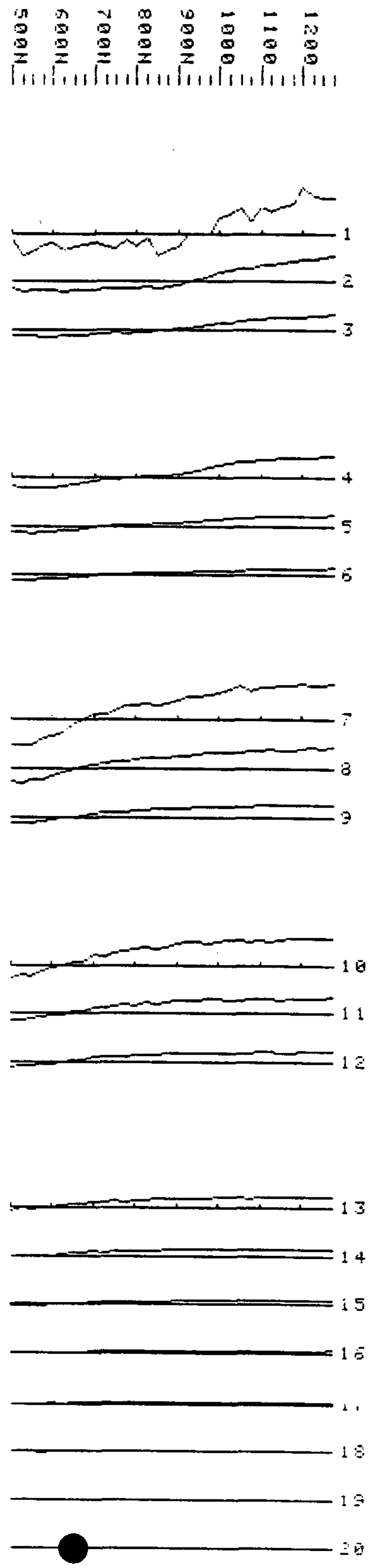
Data file L54NXD
LINE 54W   X Component
ΔBX/Δt nV/m²

Channels			Scale
1	to	3	2000.00
4	to	6	300.00
7	to	9	90.00
10	to	16	30.00
17	to	20	5.00



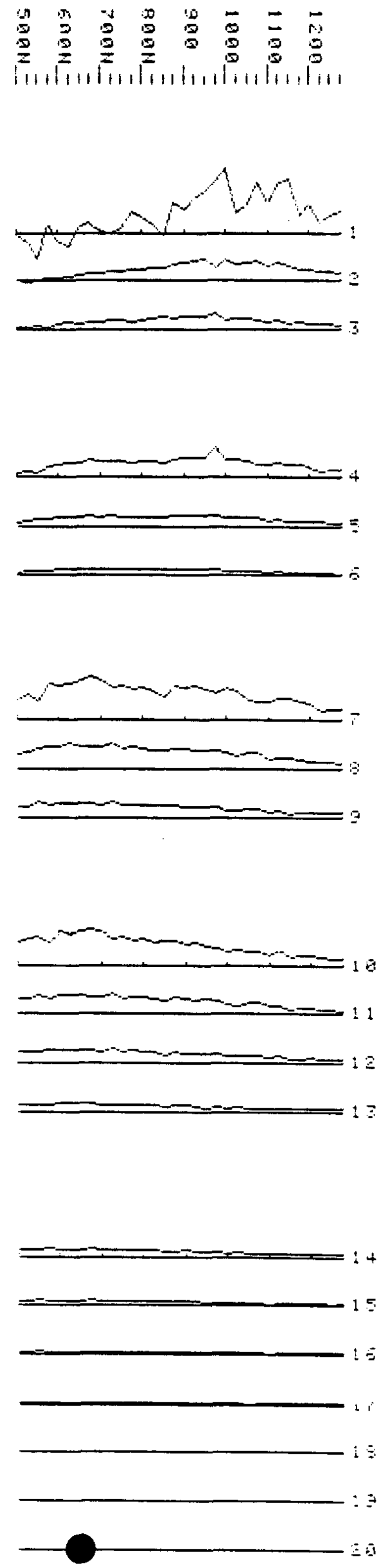
Data file L56SZD
LINE 56W Z Component
dBZ/dT (nV/Am²): TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	200.00
7	to	9	20.00
10	to	12	5.00
13	to	20	3.00



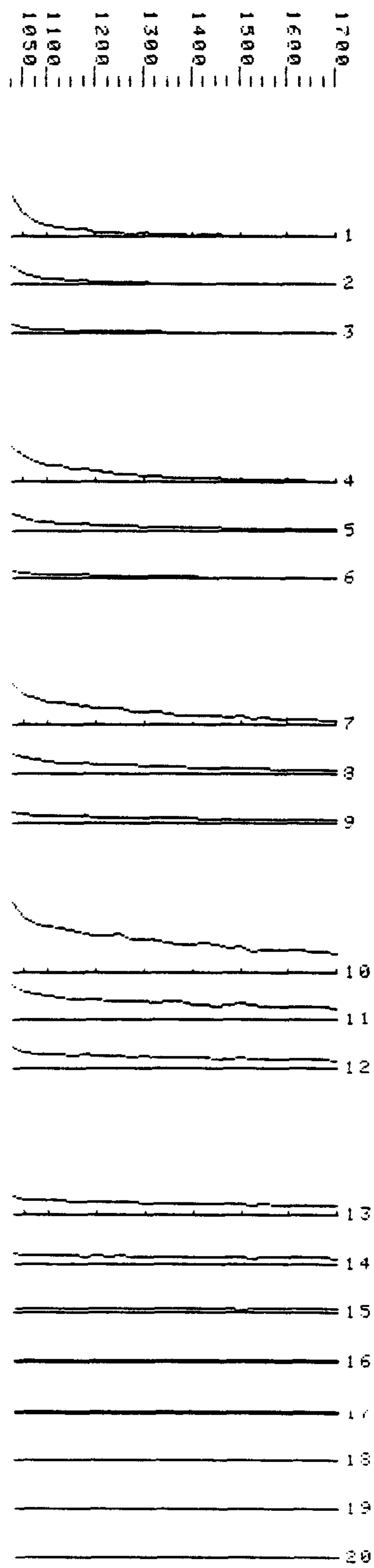
Data file L56SXD
LINE 56W X Component
dBX/dT (nV/Am²): TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	200.00
7	to	9	20.00
10	to	13	5.00
14	to	20	3.00



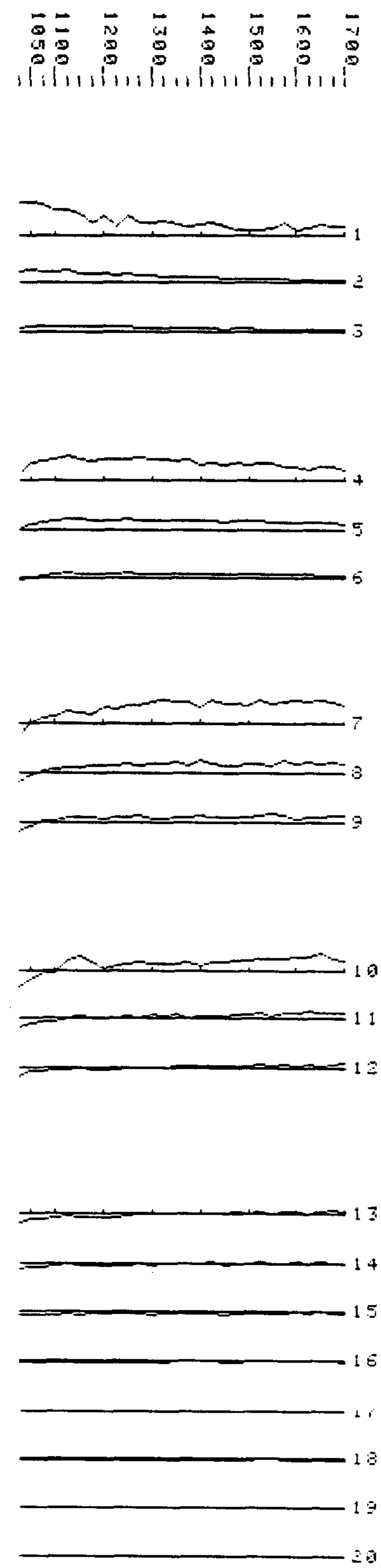
Data file L56WZD
LINE 56W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	5000.00
4 to 6	600.00
7 to 9	60.00
10 to 12	5.00
13 to 20	3.00



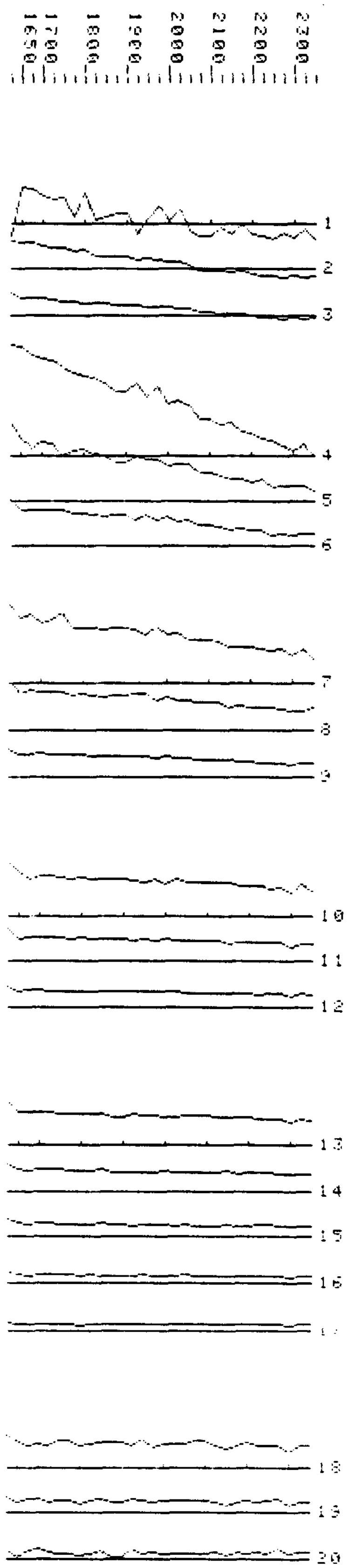
Data file L56WXD
LINE 56W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	2000.00
4 to 6	200.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



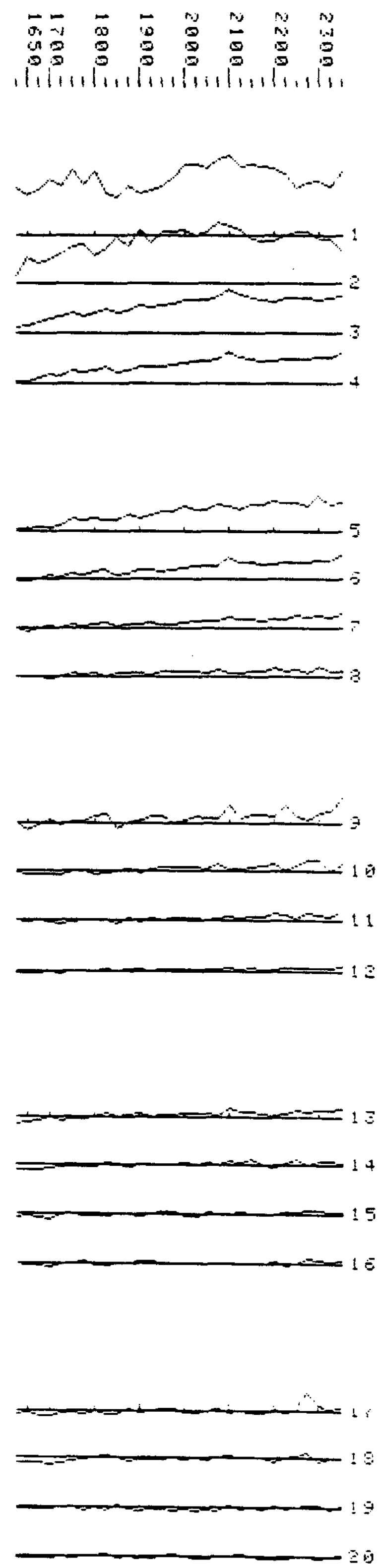
Data file L56NZD
LINE 56N Z Component
dBZ/dT (nV/Am4); TOFF corrected

Channels	Scale
1 to 3	300.00
4 to 6	30.00
7 to 9	10.00
10 to 12	3.00
13 to 17	1.00
18 to 20	.10



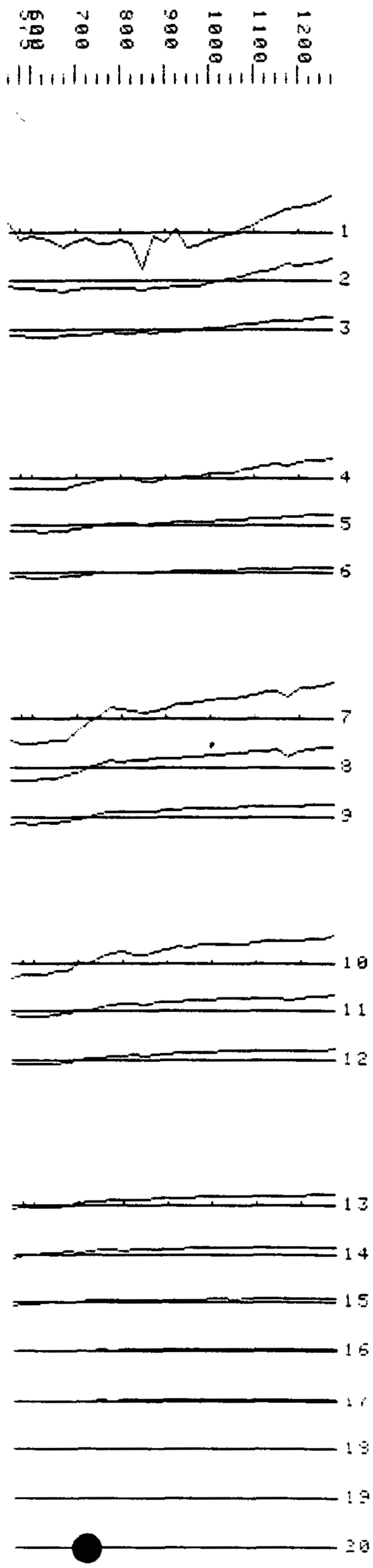
Data file L56NXD
LINE 56N X Component
ΔBX/Δt nV/m²

Channels	Scale
1 to 4	500.00
5 to 8	300.00
9 to 12	100.00
13 to 16	30.00
17 to 20	10.00



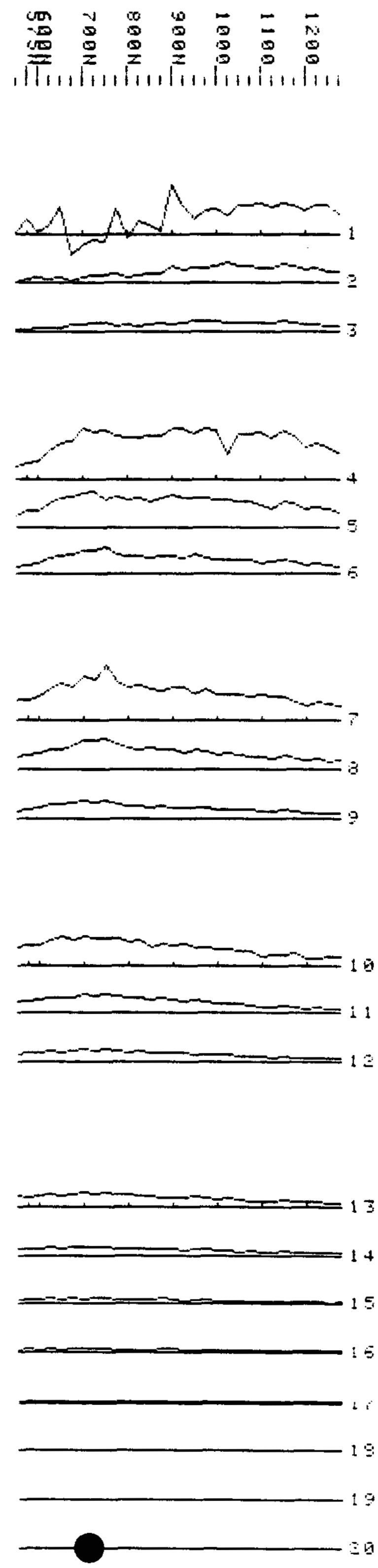
Data file L58SZD
LINE 58W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	200.00
7	to	9	20.00
10	to	12	5.00
13	to	20	3.00



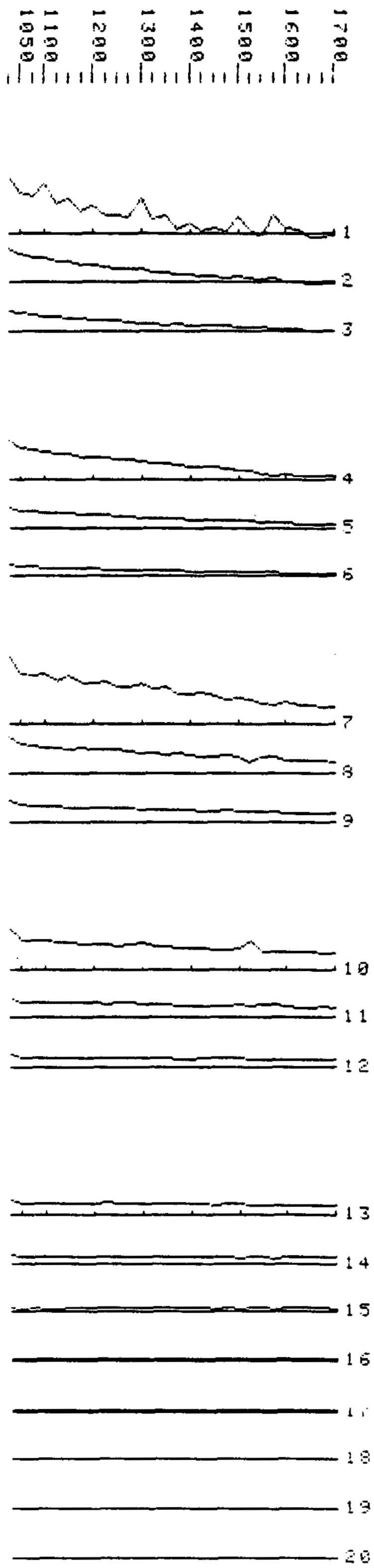
Data file L58SXD
LINE 58W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	60.00
7	to	9	20.00
10	to	12	6.00
13	to	20	3.00



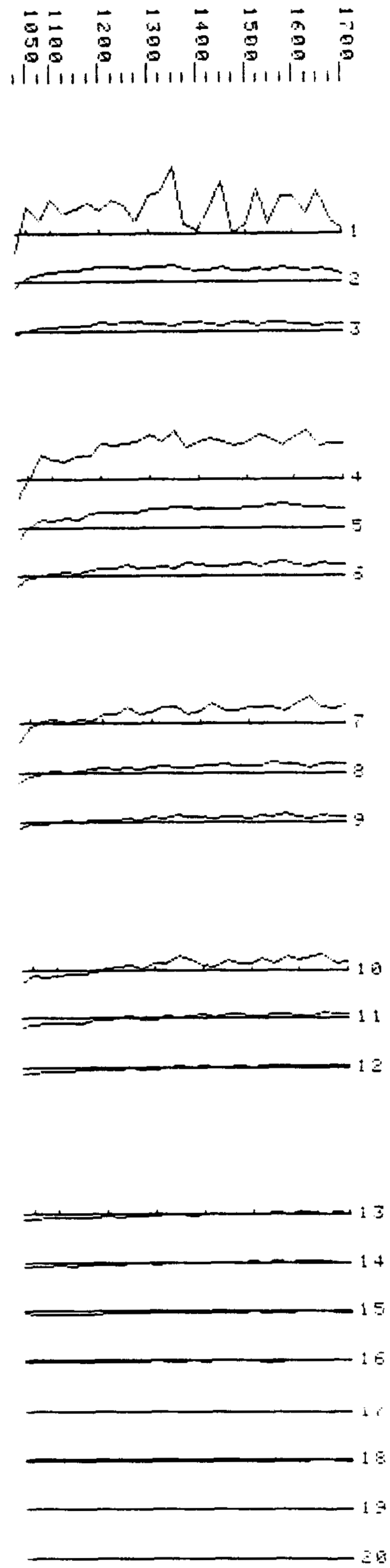
Data file L58WZD
LINE 58W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	200.00
7 to 9	20.00
10 to 12	6.00
13 to 20	3.00



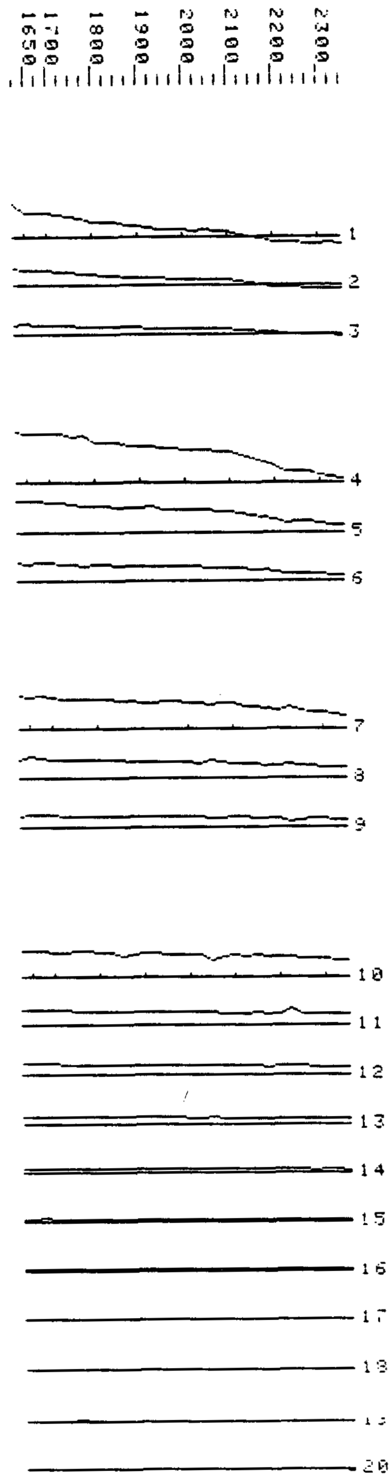
Data file L58WXD
LINE 58W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	500.00
4 to 6	60.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



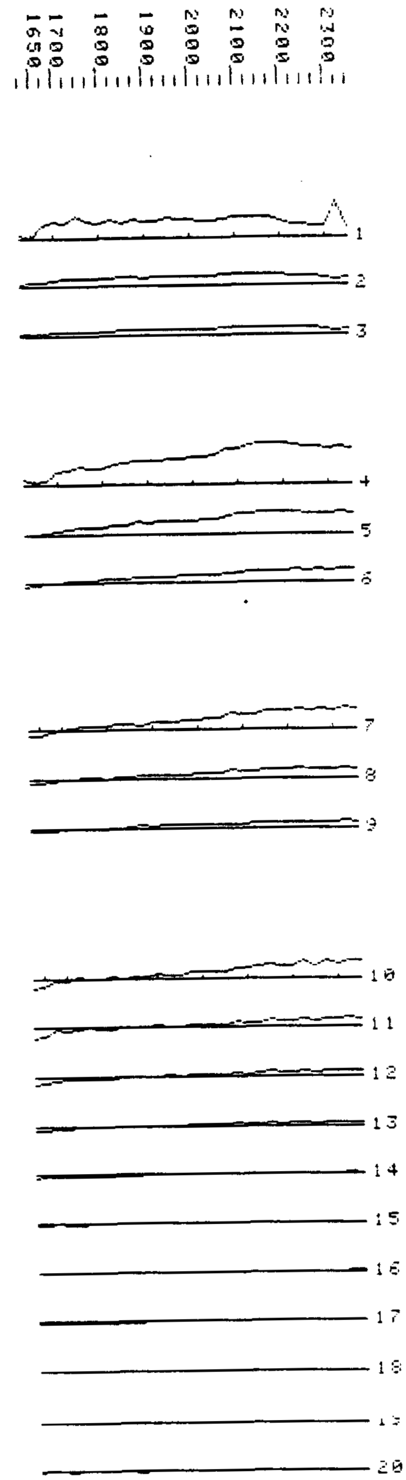
Data file L58NZD
LINE 58W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	500.00
4 to 6	60.00
7 to 9	20.00
10 to 20	5.00



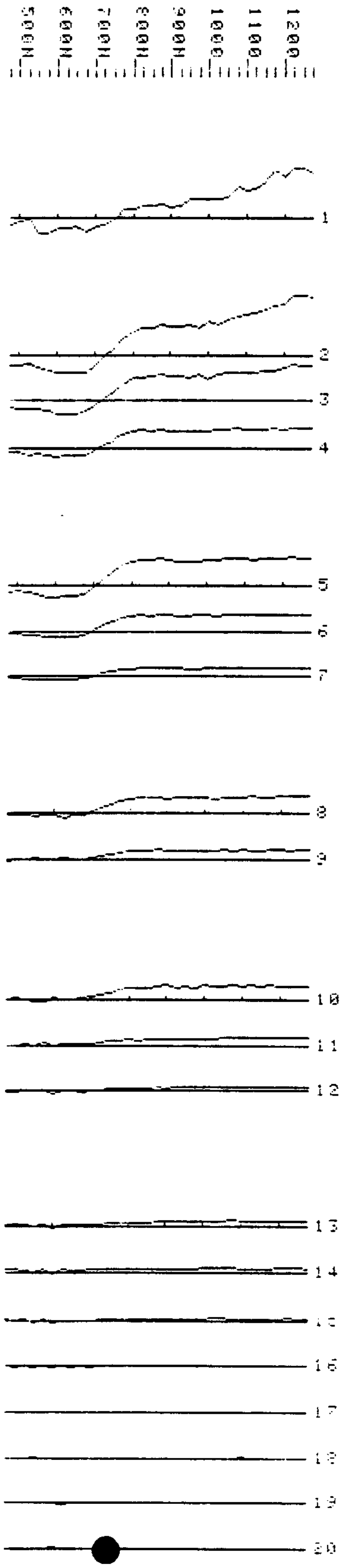
Data file L58NXD
LINE 58W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	500.00
4 to 6	60.00
7 to 9	20.00
10 to 20	3.00



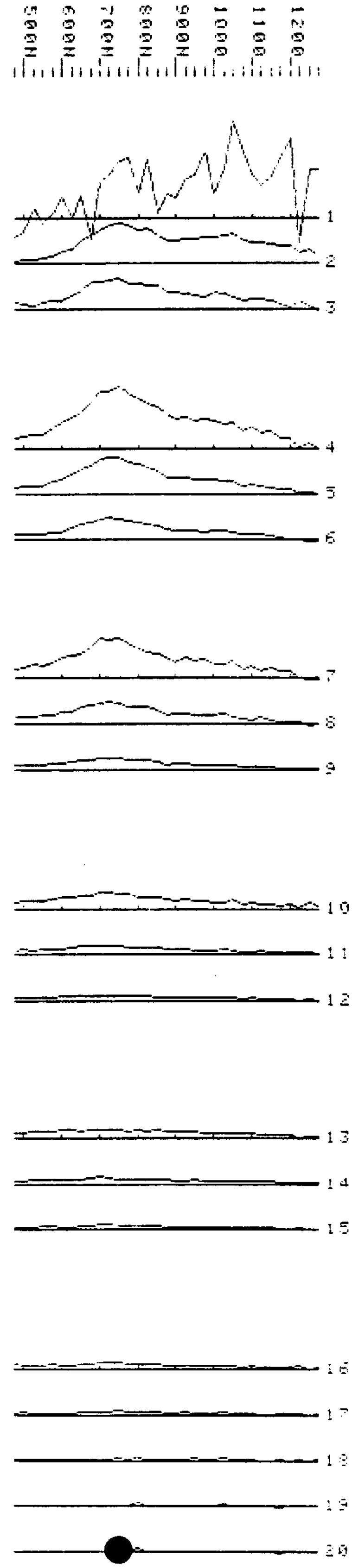
Data file L60SZR
LINE 60W Z Component
dBZ/dT (nV/Am⁴)) TOFF corrected

Channels			Scale
1	to	1	500.00
2	to	4	250.00
5	to	7	100.00
8	to	9	30.00
10	to	12	10.00
13	to	20	5.00



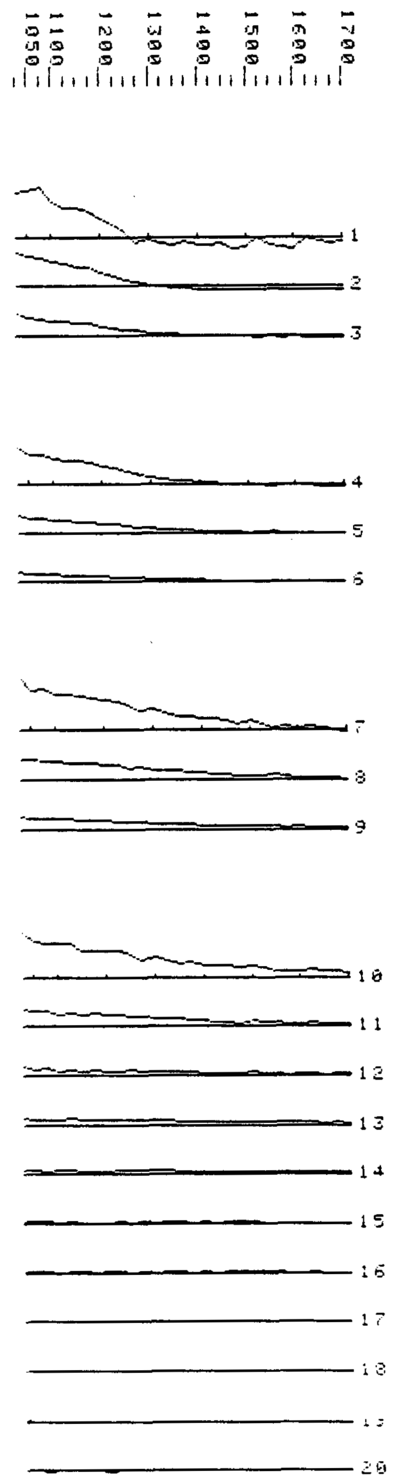
Data file L60SXD
LINE 60W X Component
dBX/dT (nV/Am⁴)) TOFF corrected

Channels			Scale
1	to	3	300.00
4	to	6	100.00
7	to	9	30.00
10	to	12	10.00
13	to	15	3.00
16	to	20	1.00



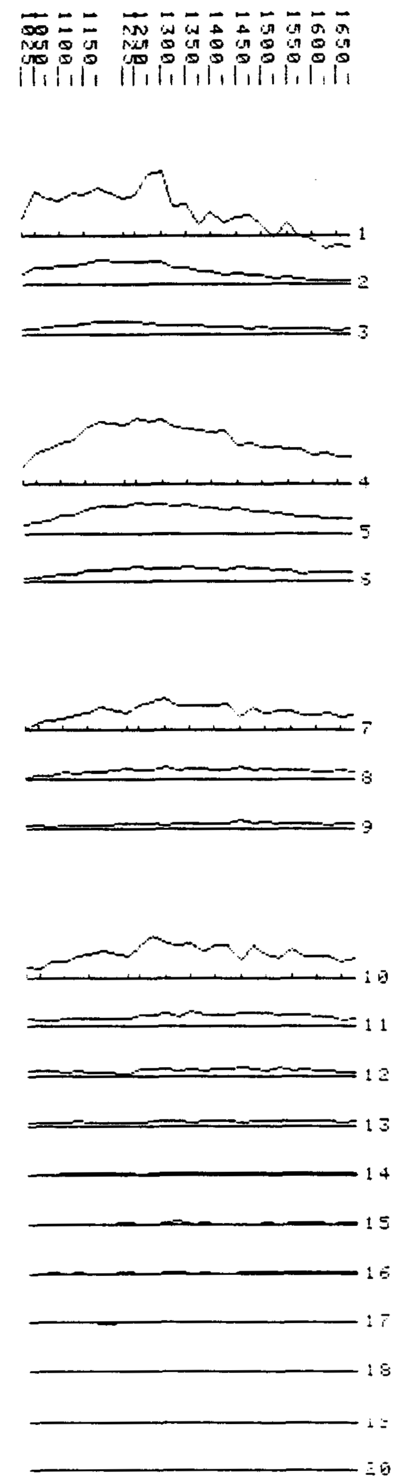
Data file L60WZD
LINE 60W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	200.00
7 to 9	20.00
10 to 20	3.00



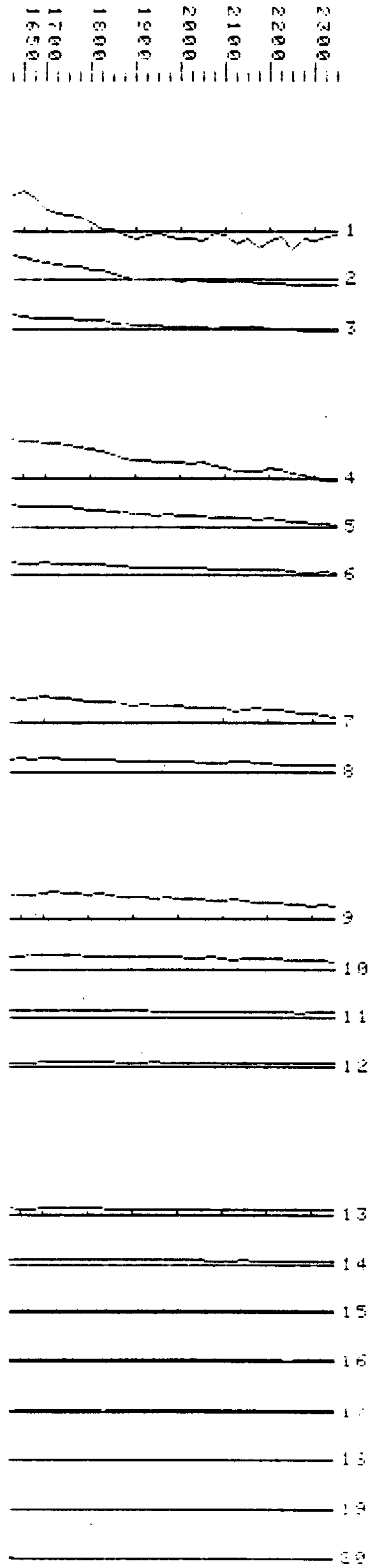
Data file L60WXD
LINE 60W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	60.00
7 to 9	20.00
10 to 20	2.00



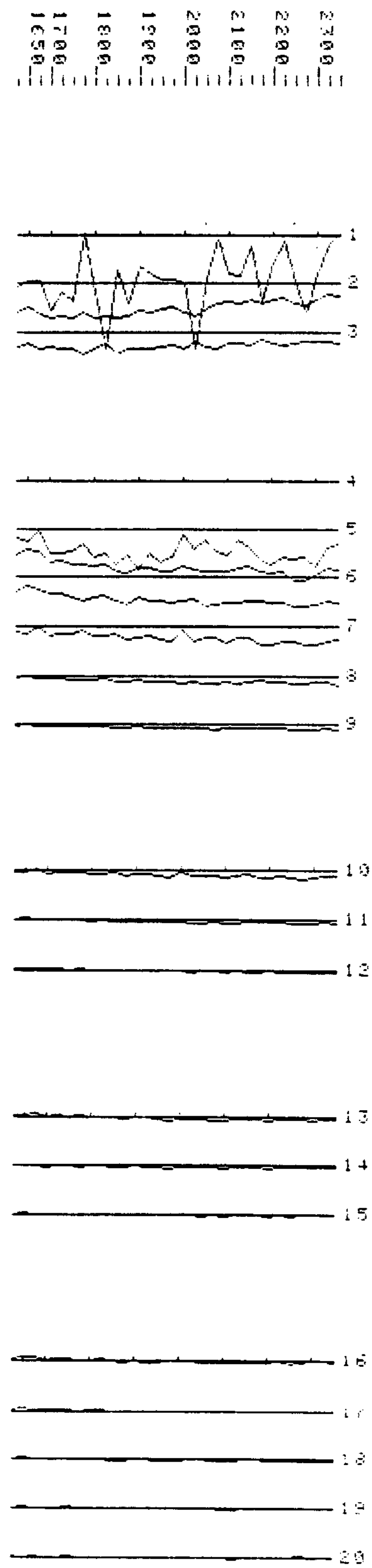
Data file L60NZD
LINE 60W Z Component
dBZ/dT (nV/Am4), TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	100.00
7	to	8	30.00
9	to	12	10.00
13	to	20	5.00



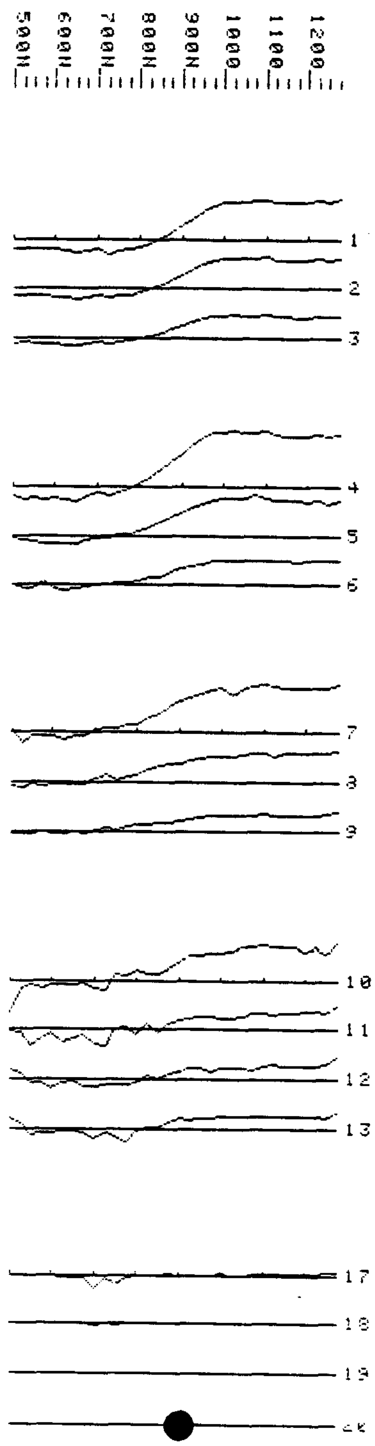
Data file L60NXD
LINE 60W X Component
dBX/dT (nV/Am4), TOFF corrected

Channels			Scale
1	to	3	300.00
4	to	9	30.00
10	to	12	10.00
13	to	15	3.00
16	to	20	1.00



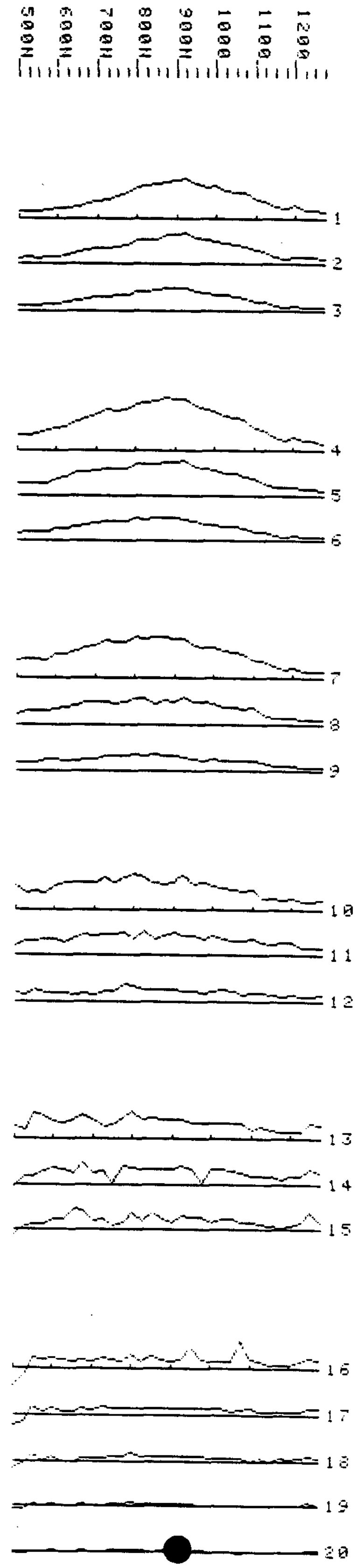
Data file L62SZD
LINE 62W Z Component
ΔBZ/Δt nV/m²

Channels			Scale
1	to	3	2000.00
4	to	6	600.00
7	to	9	200.00
10	to	13	60.00
17	to	20	20.00



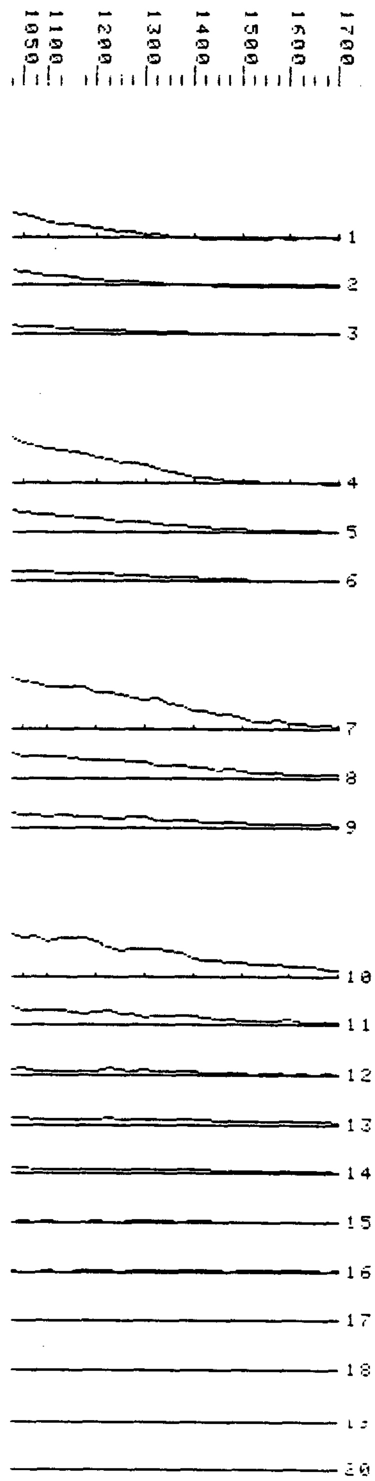
Data file L62SXD
LINE 62W X Component
ΔBX/Δt nV/m²

Channels			Scale
1	to	3	2000.00
4	to	6	600.00
7	to	9	200.00
10	to	12	60.00
13	to	15	20.00
16	to	20	10.00



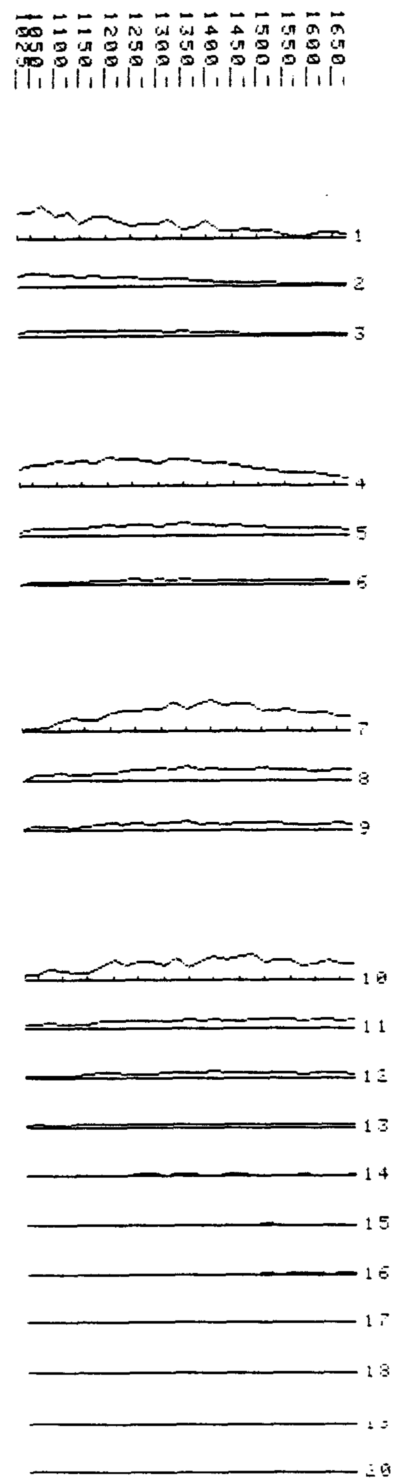
Data file L62WZD
LINE 62W Z Component
dBZ/dT (nV/Am²), TOFF corrected

Channels			Scale
1	to	3	2000.00
4	to	6	200.00
7	to	9	20.00
10	to	20	3.00



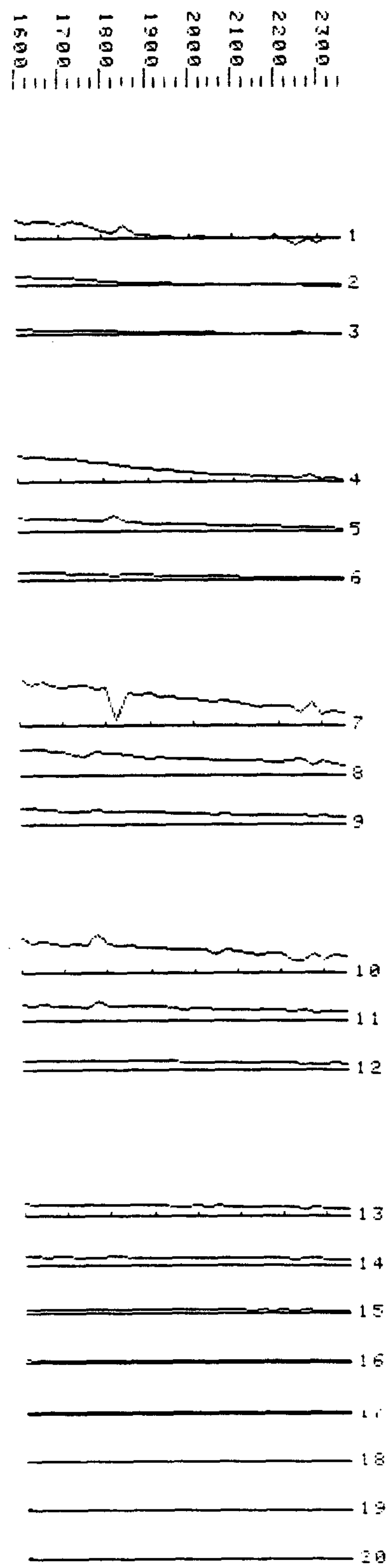
Data file L62WXD
LINE 62W X Component
dBX/dT (nV/Am²), TOFF corrected

Channels			Scale
1	to	3	2000.00
4	to	6	200.00
7	to	9	20.00
10	to	20	3.00



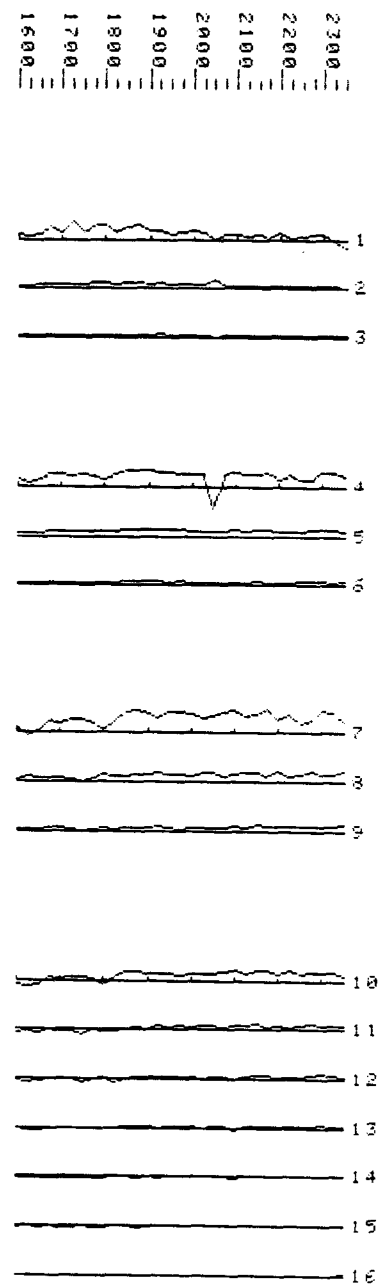
Data file L62NZD
LINE 62W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	2000.00
4 to 6	200.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



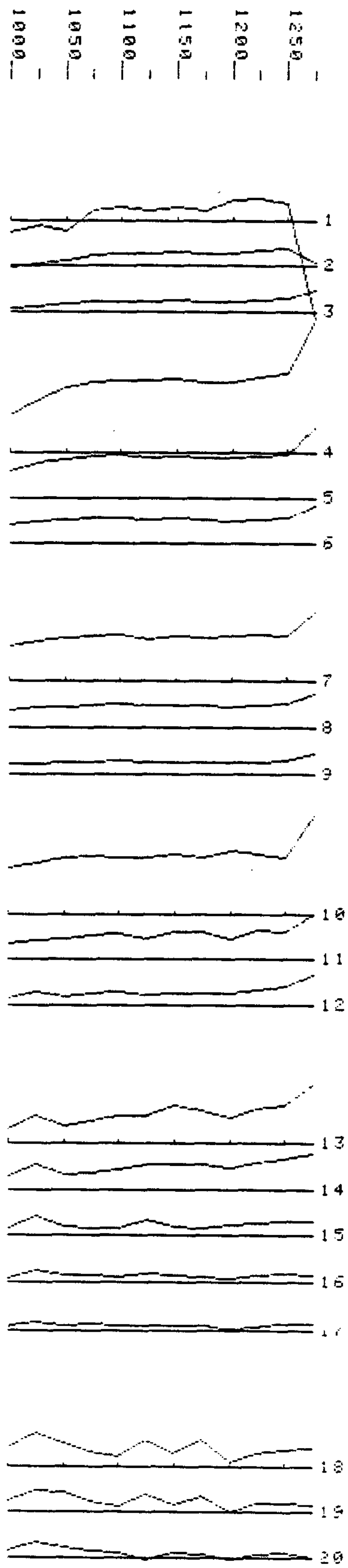
Data file L62NXD
LINE 62W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	2000.00
4 to 6	200.00
7 to 9	20.00
10 to 16	5.00



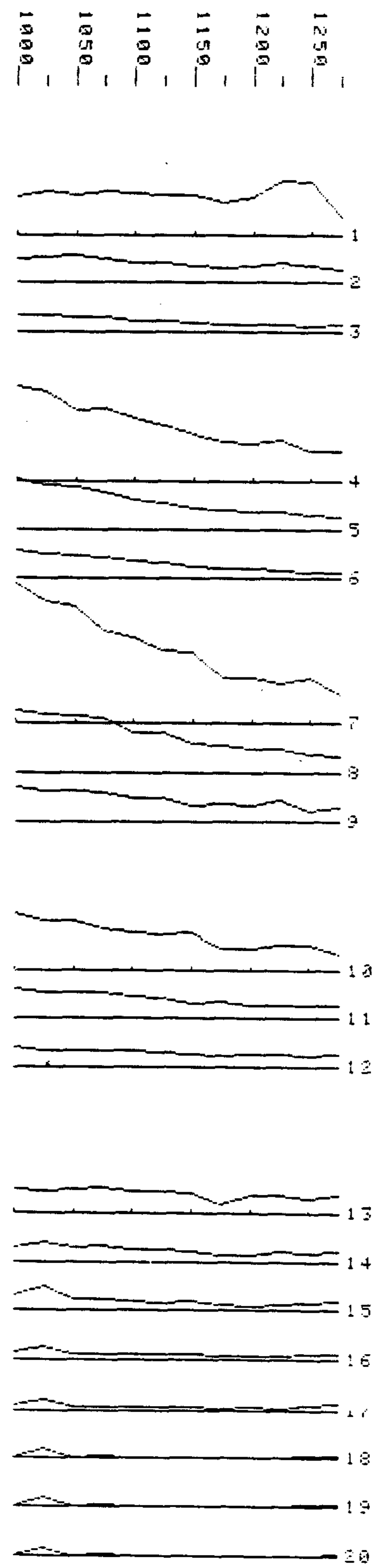
Data file L63SZD
LINE 63W   Z Component
dBZ/dT (nV/Am²), TOFF corrected

Channels	Scale
1 to 3	1000.00
4 to 6	100.00
7 to 9	30.00
10 to 12	3.00
13 to 17	1.00
18 to 20	.10



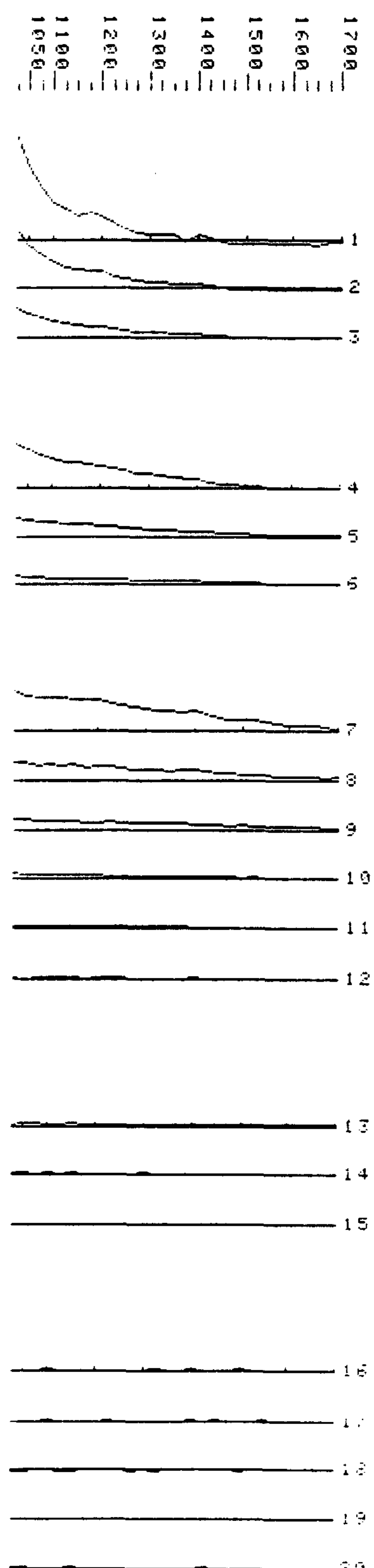
Data file L63SXD
LINE 63W   X Component
dBX/dT (nV/Am²), TOFF corrected

Channels	Scale
1 to 3	1000.00
4 to 6	100.00
7 to 9	10.00
10 to 12	3.00
13 to 20	1.00



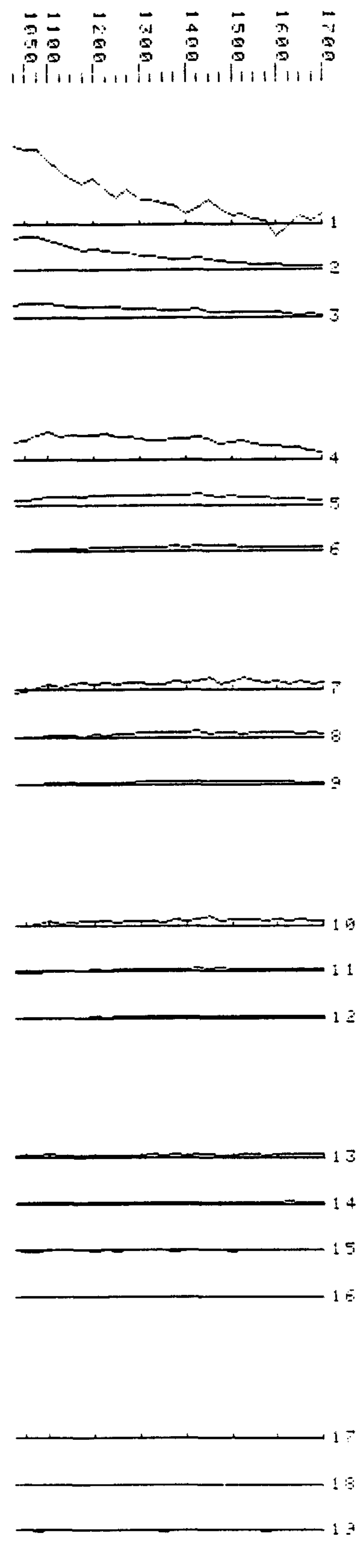
Data file L63MZD
LINE 63W   Z Component
dBZ/dT (nv/Am^4) TOFF corrected

Channels			Scale
1	to	3	1000.00
4	to	6	300.00
7	to	12	30.00
13	to	15	10.00
16	to	20	3.00



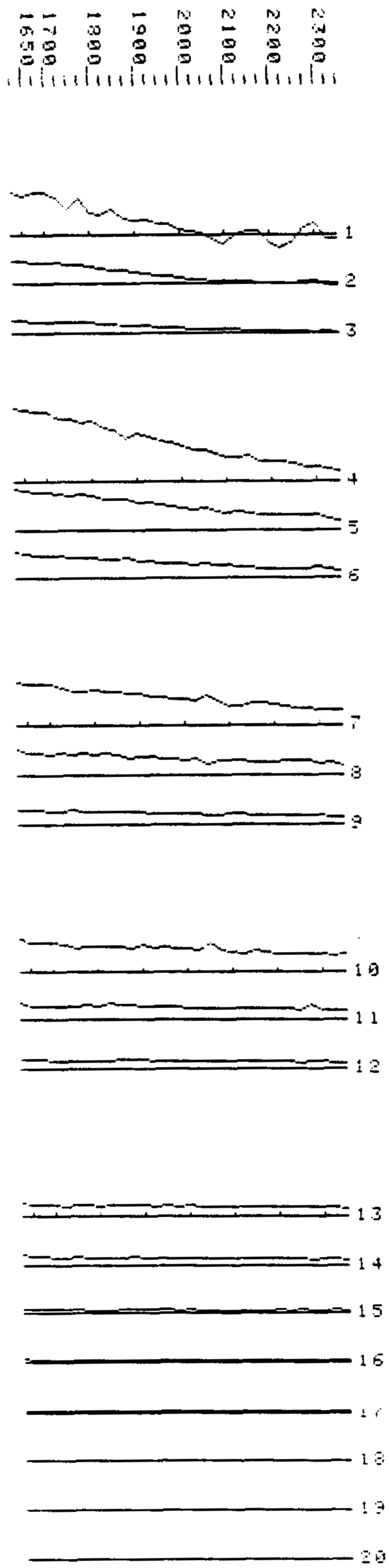
Data file L63MXD
LINE 63W   X Component
dBX/dT (nv/Am^4) TOFF corrected

Channels			Scale
1	to	3	1000.00
4	to	6	200.00
7	to	9	50.00
10	to	12	10.00
13	to	16	3.00
17	to	20	1.00



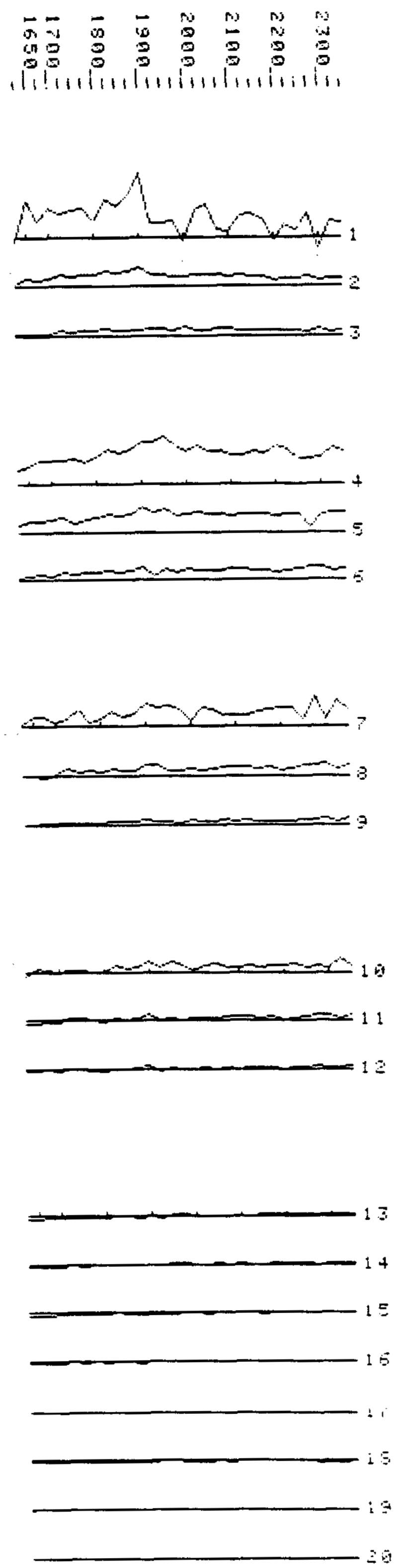
Data file L63NZR
LINE 63W Z Component
dBZ/dT (nV/Am²): TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	60.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



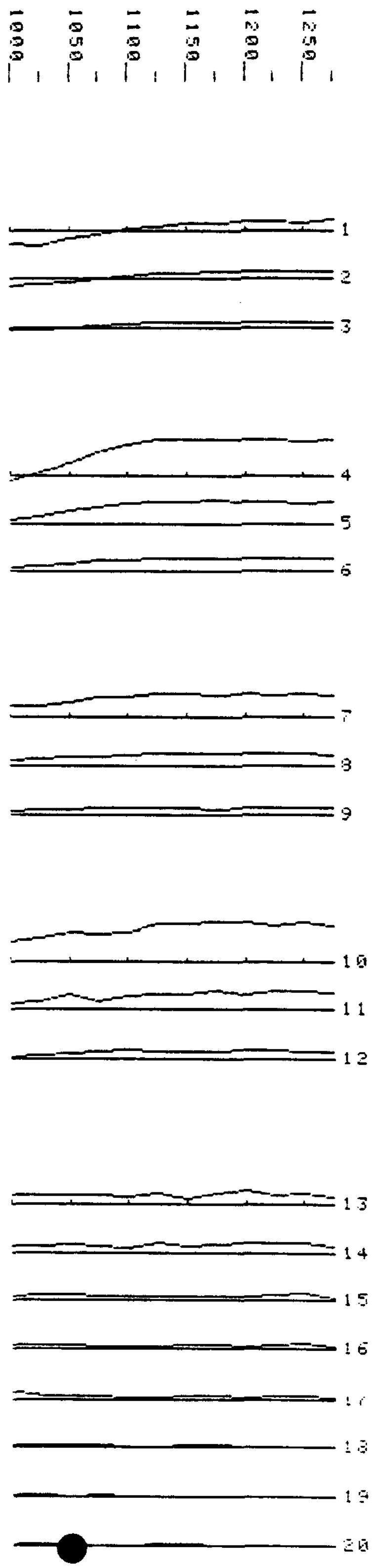
Data file L63NXD
LINE 63W X Component
dBX/dT (nV/Am²): TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	60.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



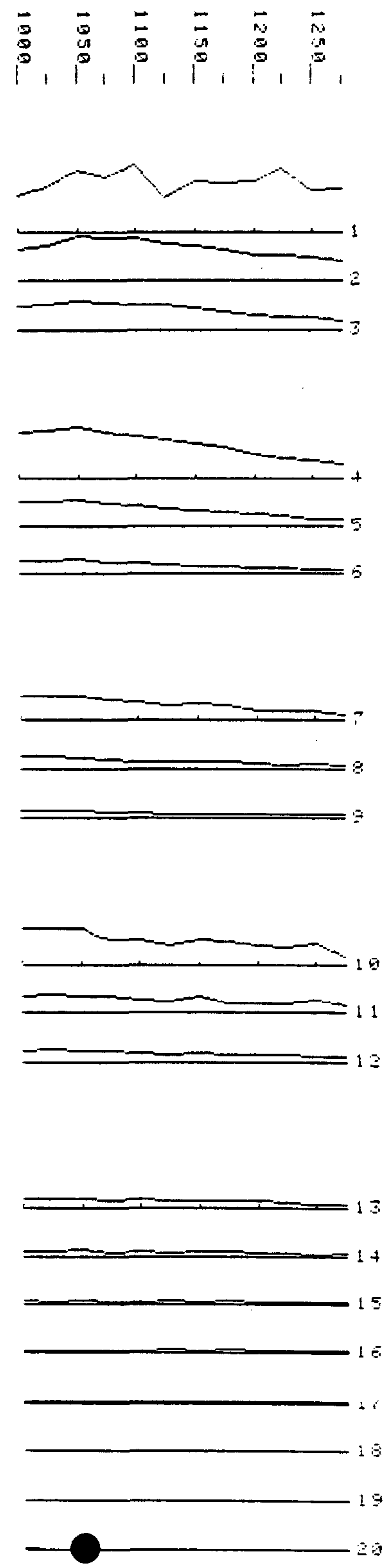
Data file L64SZD
LINE 64W Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	2000.00
4	to	6	200.00
7	to	9	60.00
10	to	12	5.00
13	to	20	3.00



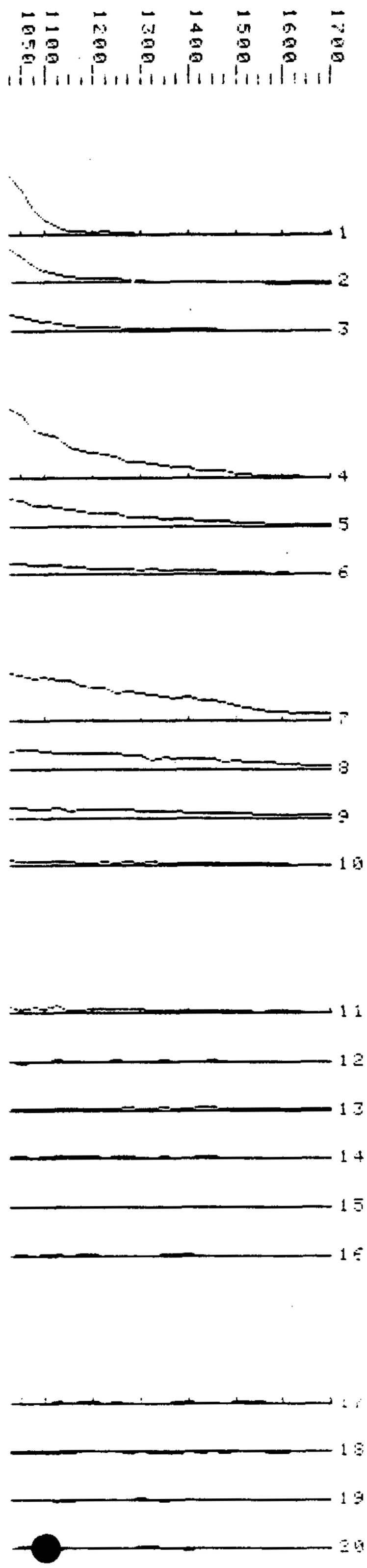
Data file L64SXD
LINE 64W X Component
dBX/dT (nV/Am²); TOFF corrected

Channels			Scale
1	to	3	600.00
4	to	6	200.00
7	to	9	60.00
10	to	12	5.00
13	to	20	3.00



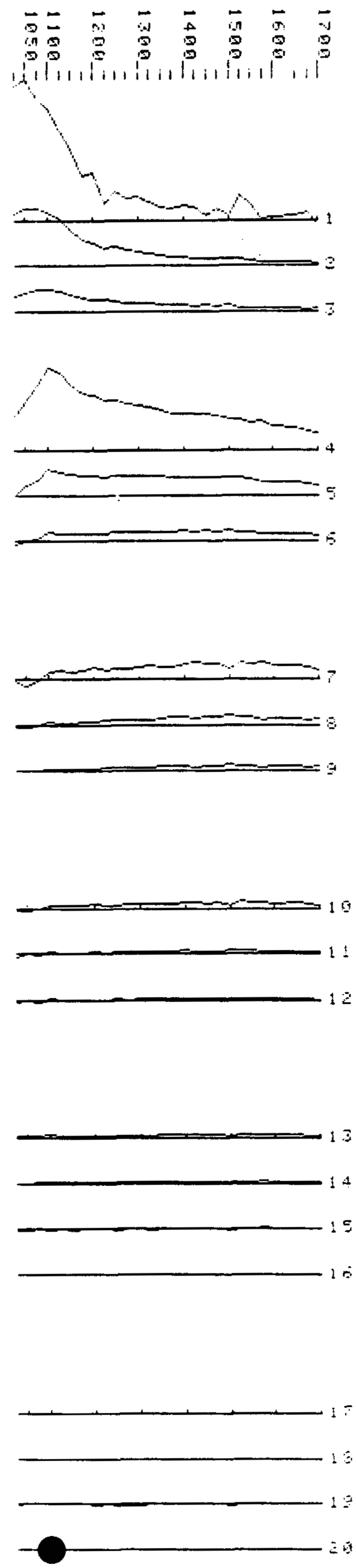
Data file L64MZD
LINE 64W Z Component
dBZ/dT (nV/Am²) TOFF corrected

Channels	Scale
1 to 3	3000.00
4 to 6	300.00
7 to 10	30.00
11 to 16	10.00
17 to 20	3.00



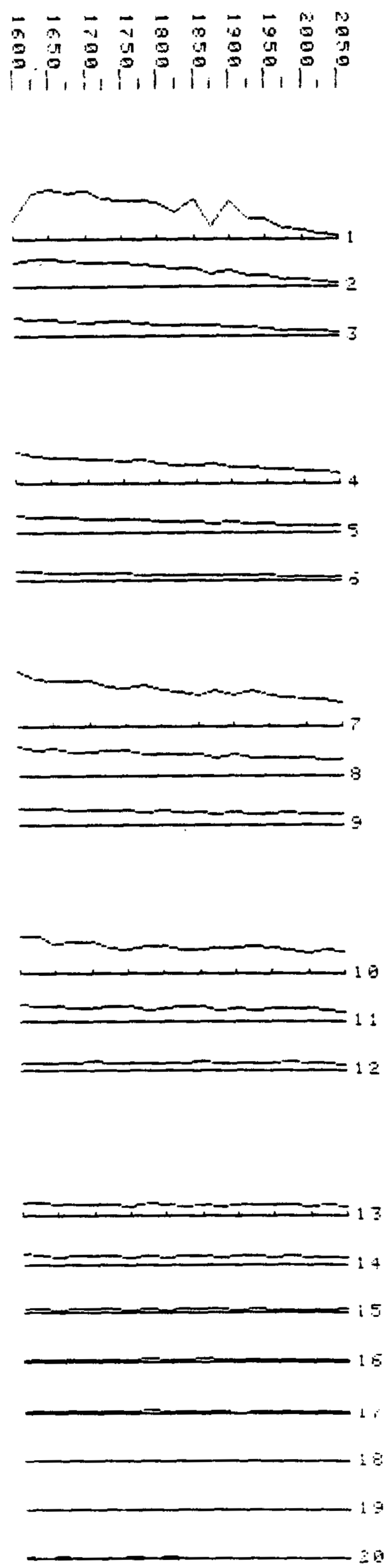
Data file L64MXD
LINE 64W X Component
dBX/dT (nV/Am²) TOFF corrected

Channels	Scale
1 to 3	1000.00
4 to 6	100.00
7 to 9	30.00
10 to 12	10.00
13 to 16	3.00
17 to 20	1.00



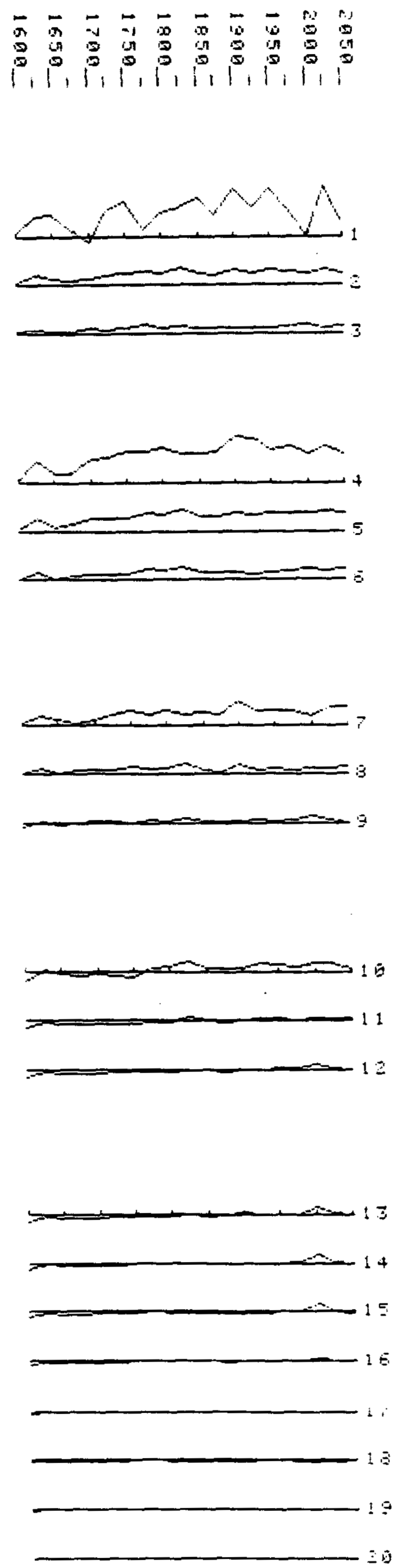
Data file L64NZD
LINE 64W   Z Component
dBZ/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	200.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



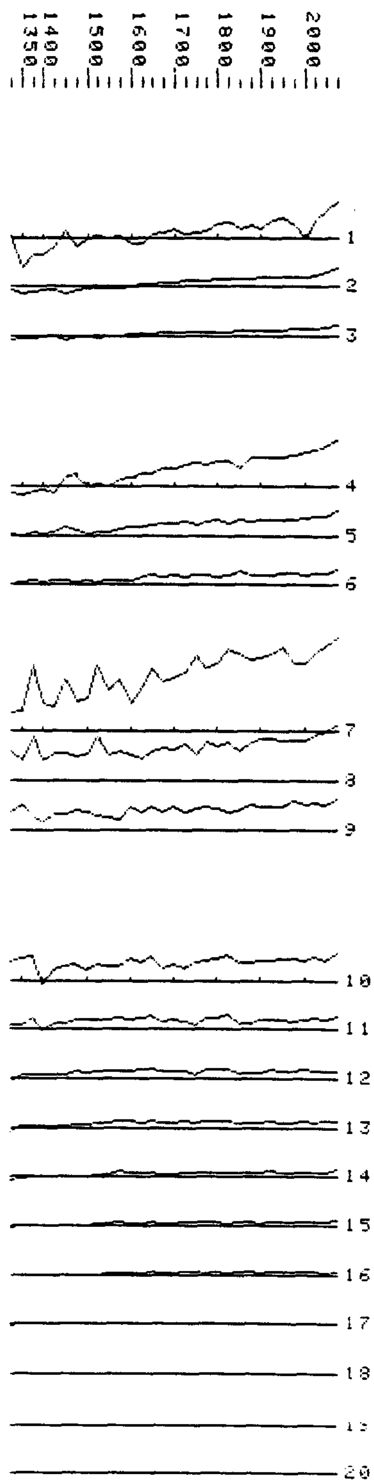
Data file L64NXD
LINE 64W   X Component
dBX/dT (nV/Am²); TOFF corrected

Channels	Scale
1 to 3	600.00
4 to 6	60.00
7 to 9	20.00
10 to 12	5.00
13 to 20	3.00



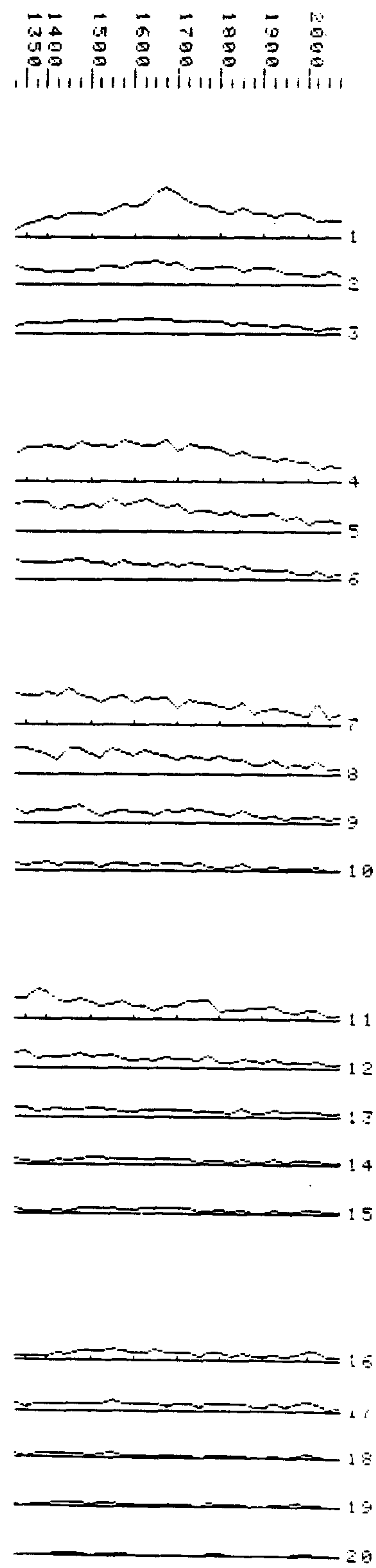
Data file L66WZD
LINE 66W Z Component
dBZ/dT (nV/Am^2); TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	60.00
7	to	9	5.00
10	to	20	3.00



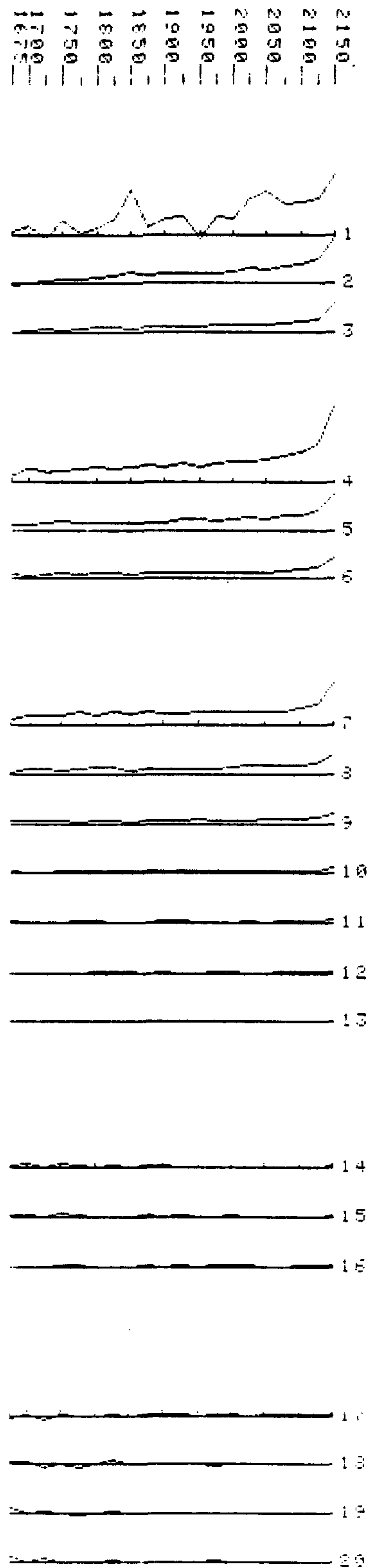
Data file L66WXD
LINE 66W X Component
$\Delta Bx/\Delta t$ nV/m^2

Channels			Scale
1	to	3	1000.00
4	to	6	250.00
7	to	10	100.00
11	to	15	30.00
16	to	20	10.00



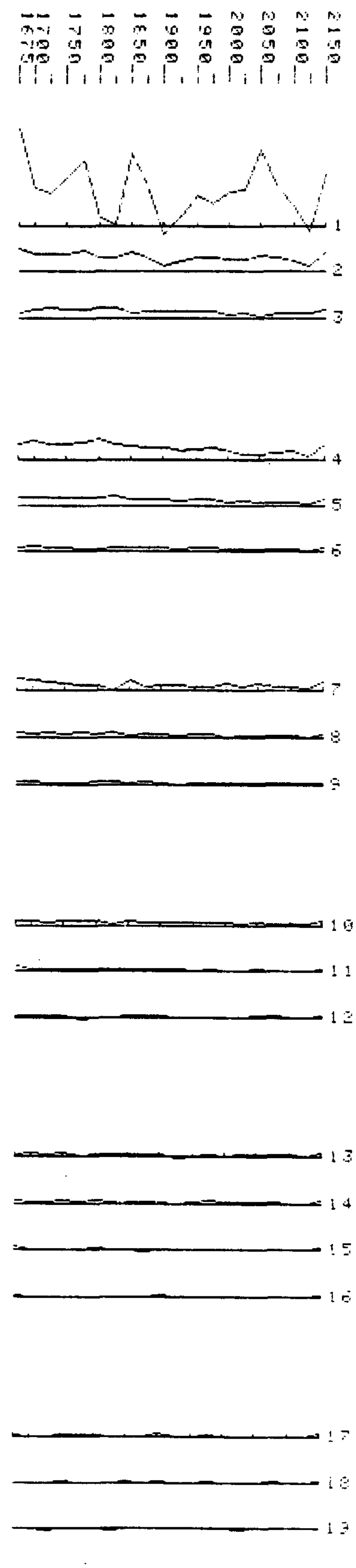
Data file L68NZD
LINE 68W Z Component
dBZ/dT (nV/Am²) TOFF corrected

Channels			Scale
1	to	3	500.00
4	to	6	100.00
7	to	13	30.00
14	to	16	10.00
17	to	20	3.00



Data file L68NXD
LINE 68W X Component
dBX/dT (nV/Am²) TOFF corrected

Channels			Scale
1	to	3	300.00
4	to	6	100.00
7	to	9	30.00
10	to	12	10.00
13	to	16	3.00
17	to	20	1.00



APPENDIX III

ANALYTICAL MODELLING

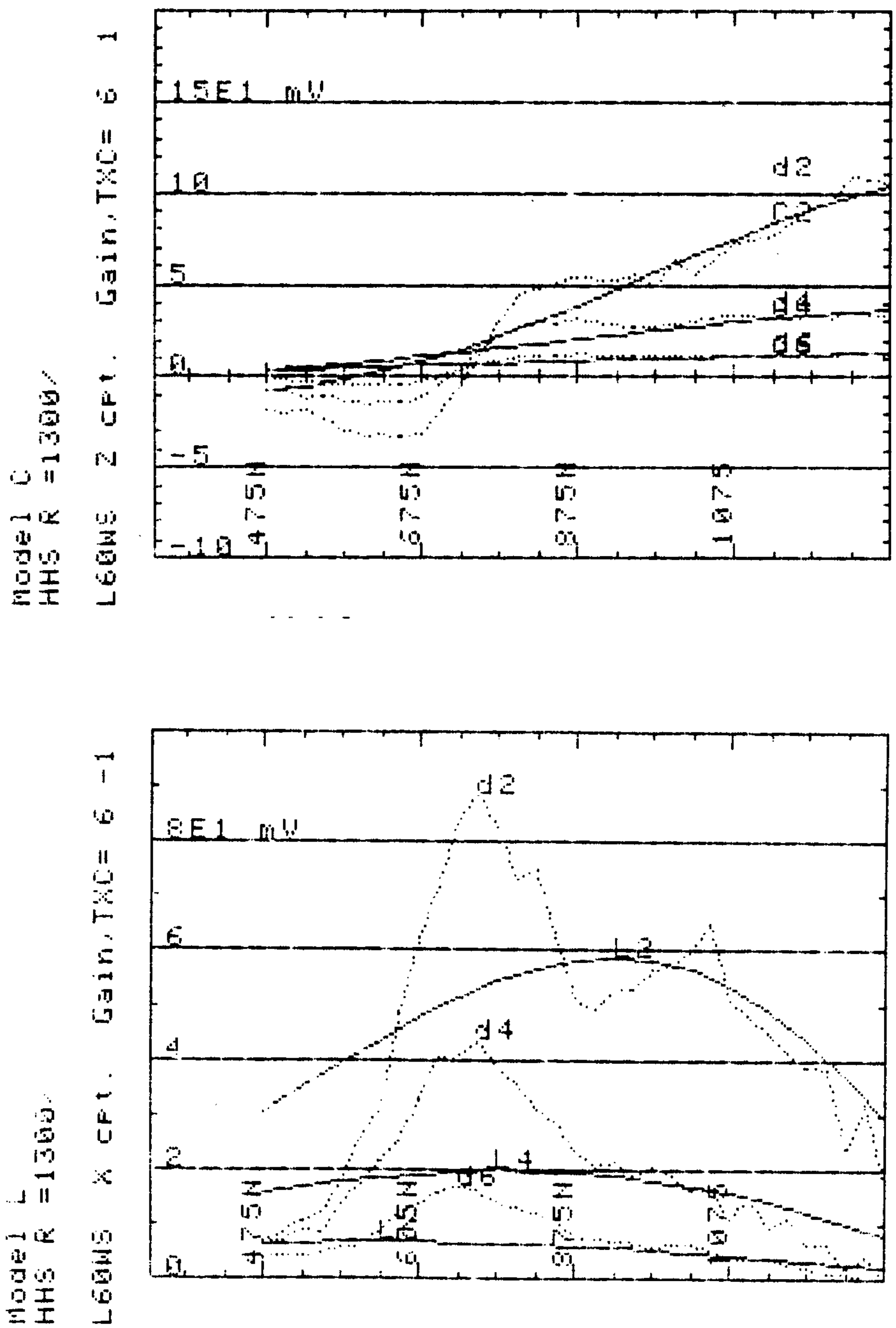
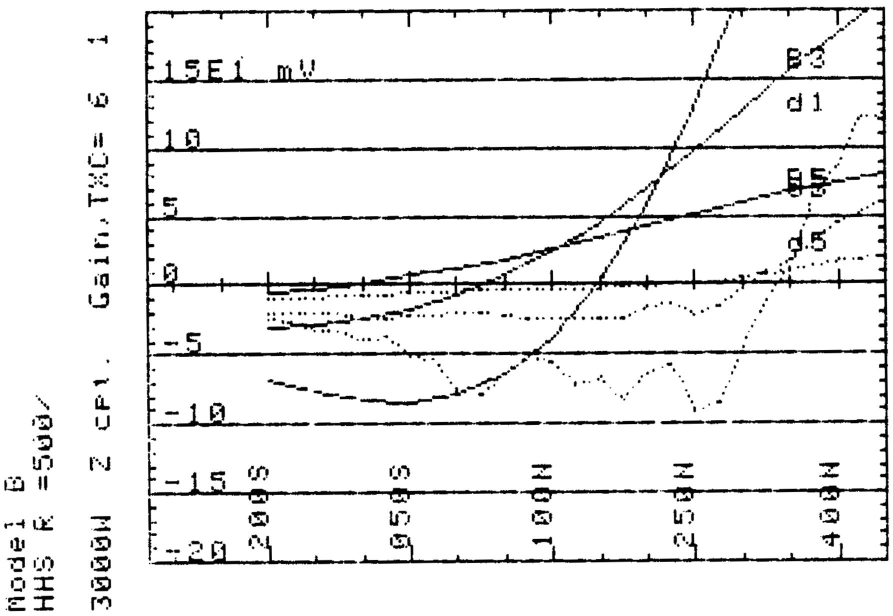


Figure 1: Comparison of the results for Line 60W and the response of a 1300 ohm-m half space
(top) z-component
(bottom) x-component



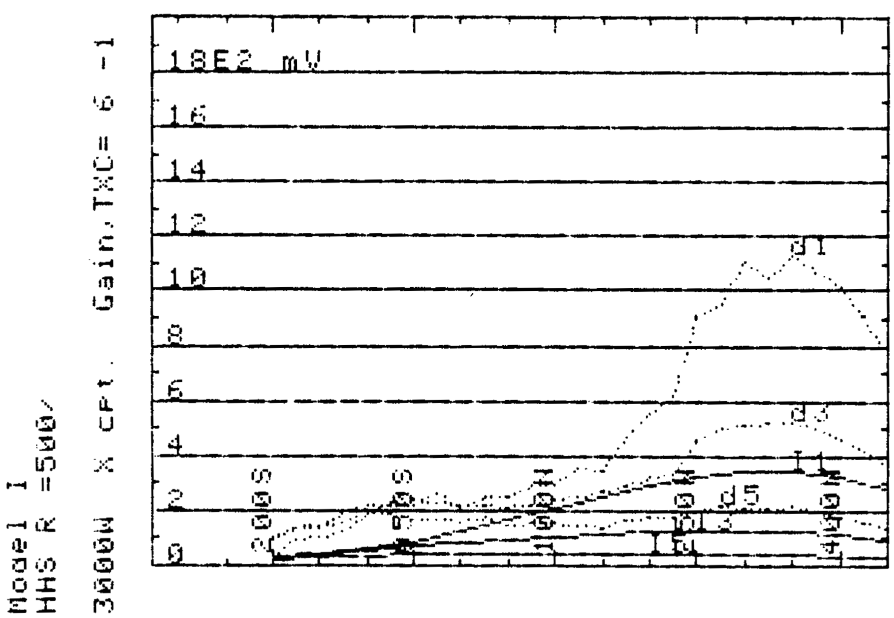
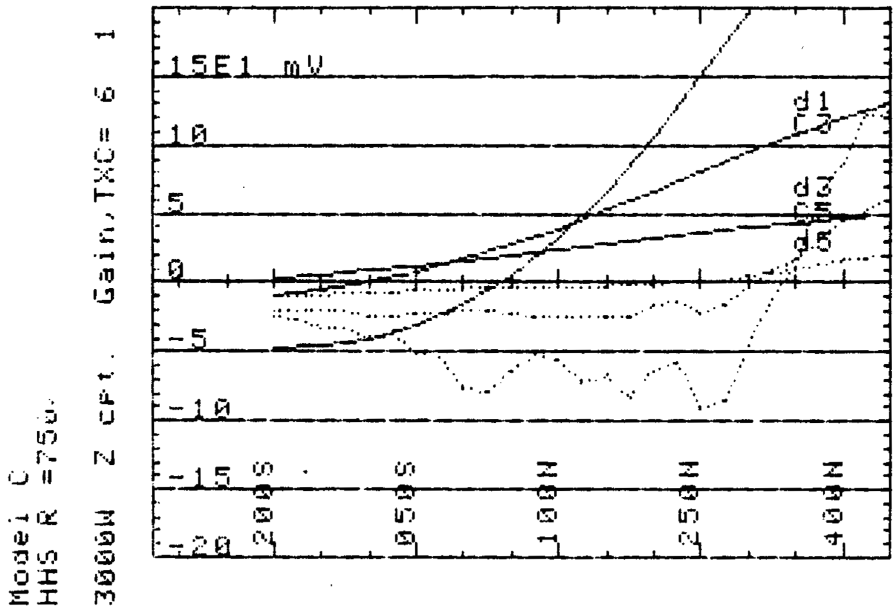


Figure 2a: Comparison of the results
for line 30W and a
500 ohm-m half space
(top) z-component
(bottom) x-component



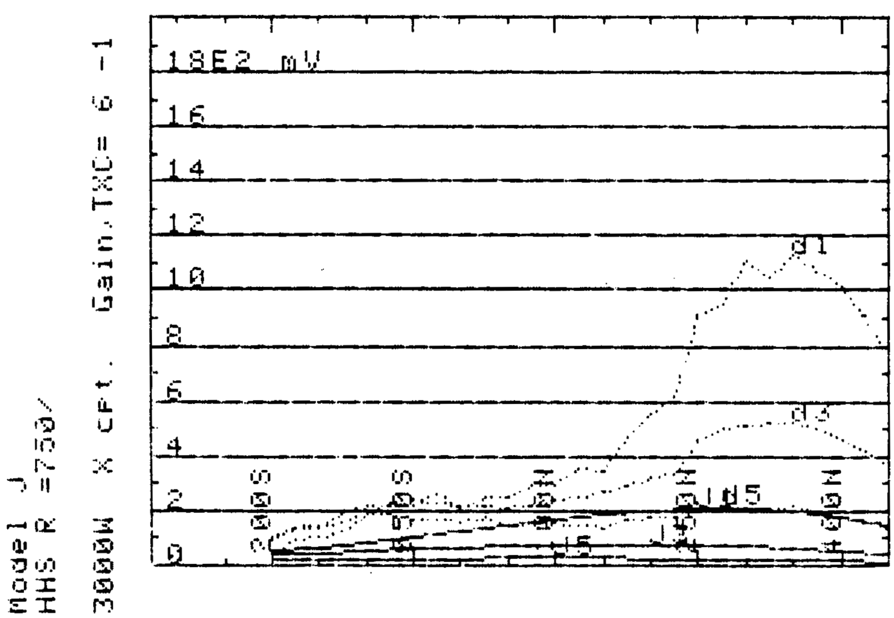
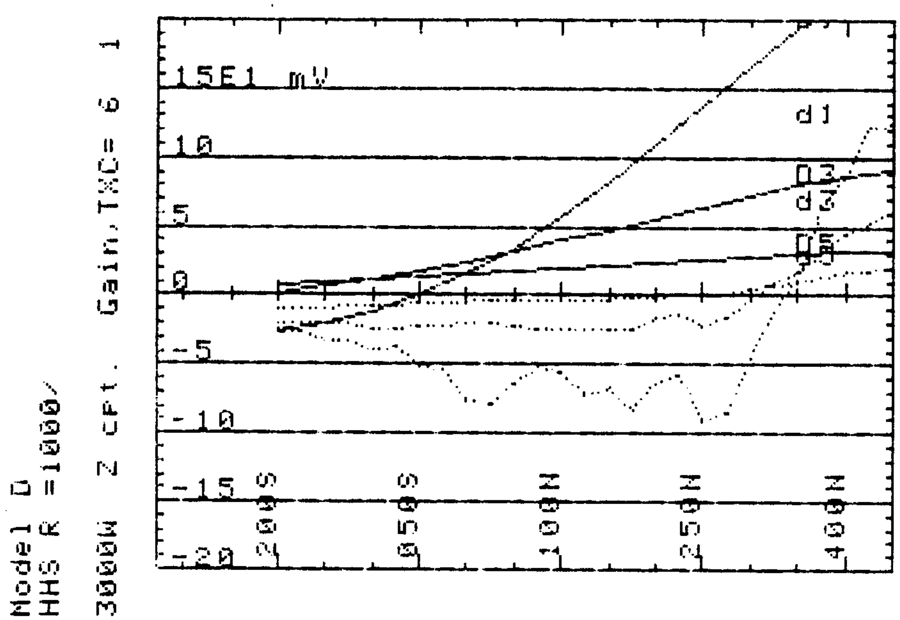


Figure 2b: Comparison of the results
from line 30W and the response
of a 750 ohm-m half space
(top) z-component
(bottom) x-component



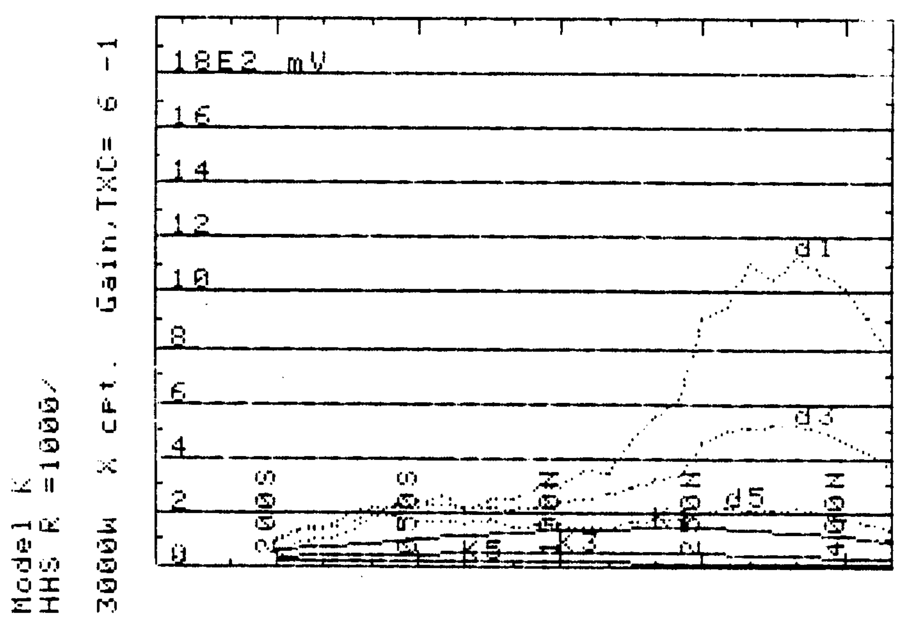
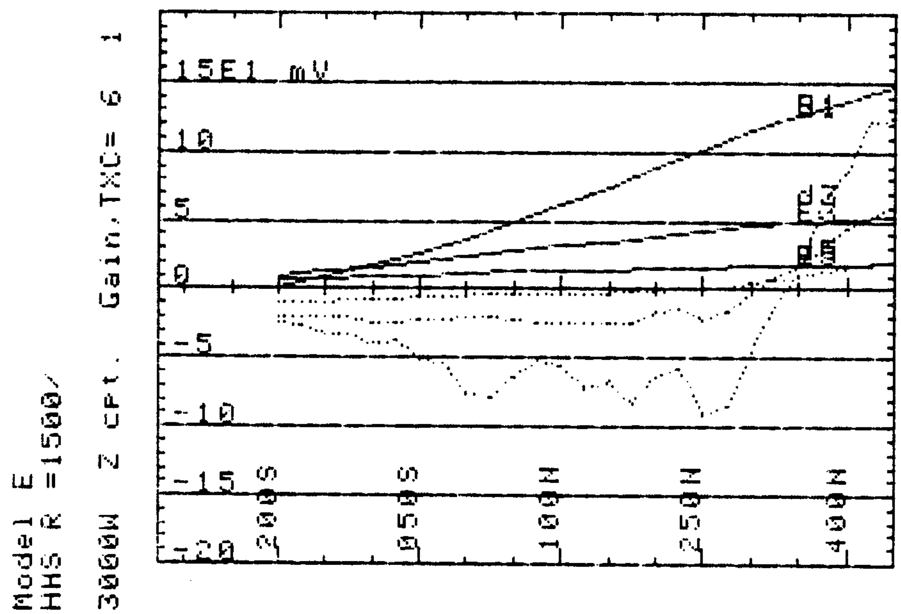


Figure 2c: Comparison of the results
from line 30W and the response
of a 1000 ohm-m half space

(top) z-component
(bottom) x-component



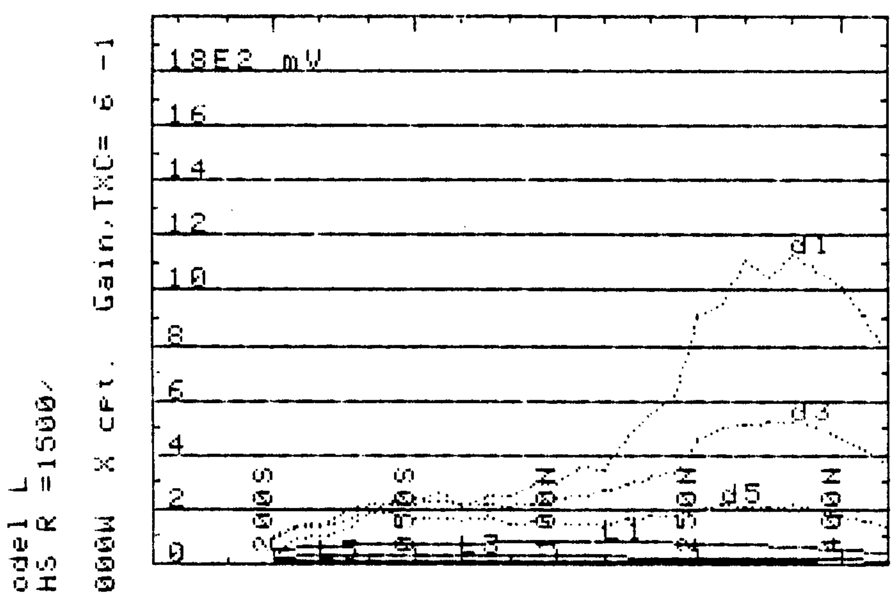
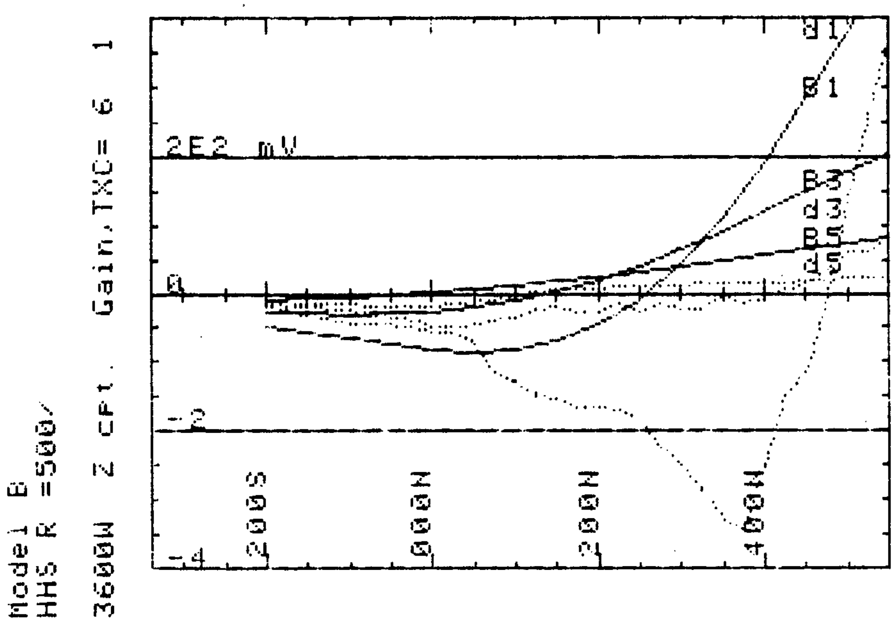


Figure 2d: Comparison of the results from Line 30W and the response of a 1500 ohm-m half space
(top) z-component
(bottom) x-component



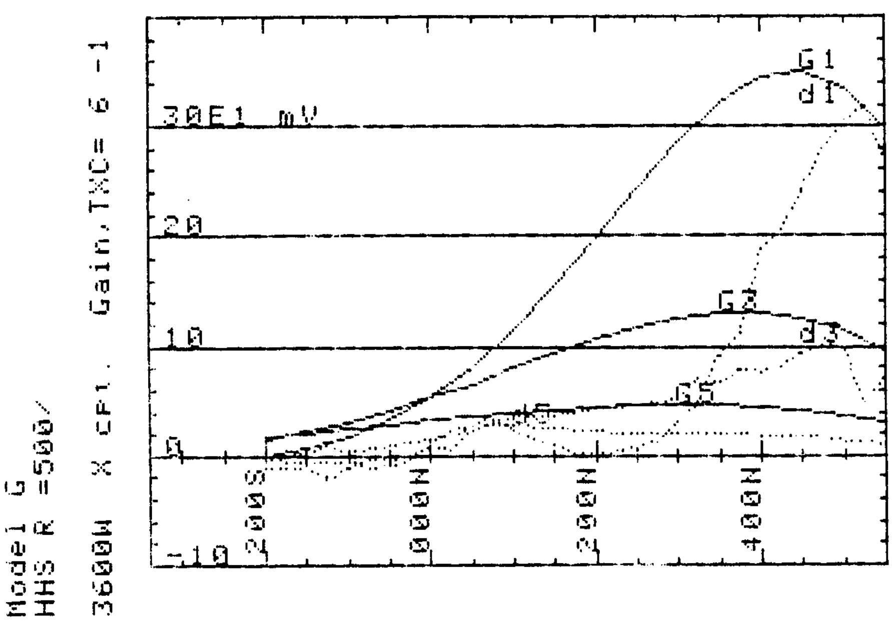


Figure 3a: Comparison of the results
from Line 36W and the response of
of a 500 ohm-m half space
(top) z-component
(bottom) x-component

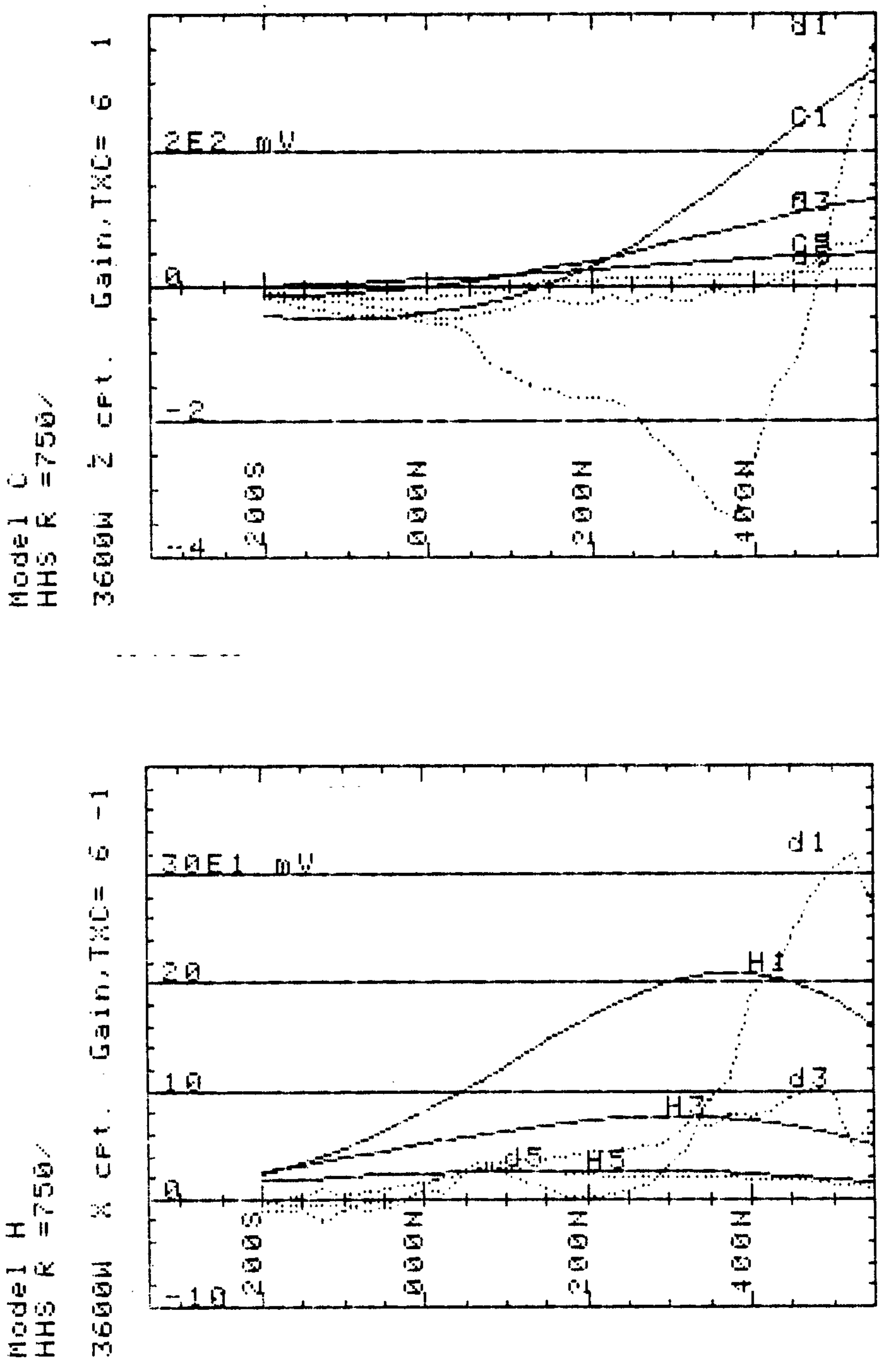


Figure 3b: Comparison of the results
from Line 36W and the response of
a 750 ohm-m half space
(top) z-component
(bottom) x-component

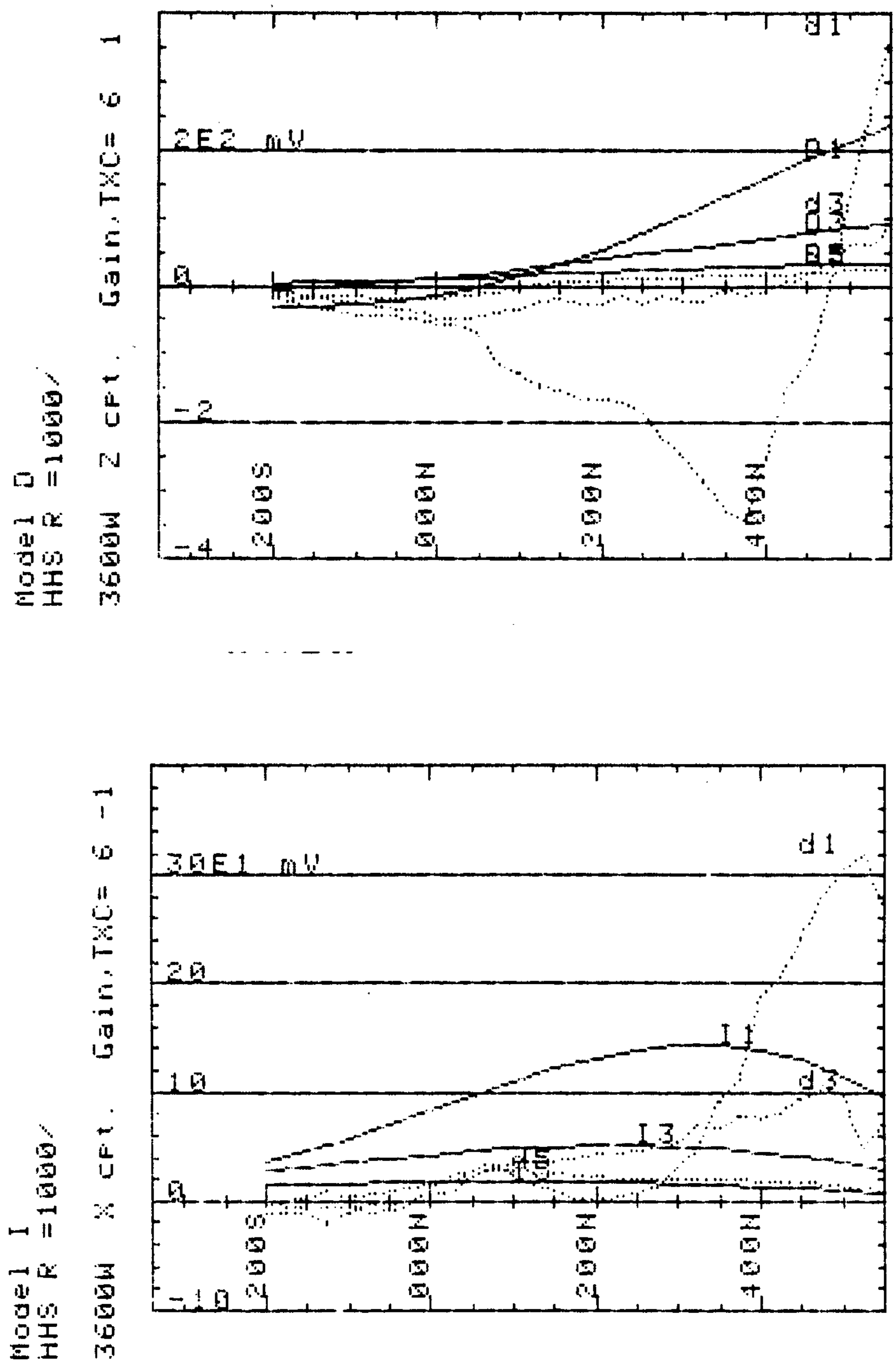


Figure 3c: Comparison of the results
from Line 36W and the response of
a 1000 ohm-m half space
(top) z-component
(bottom) x-component

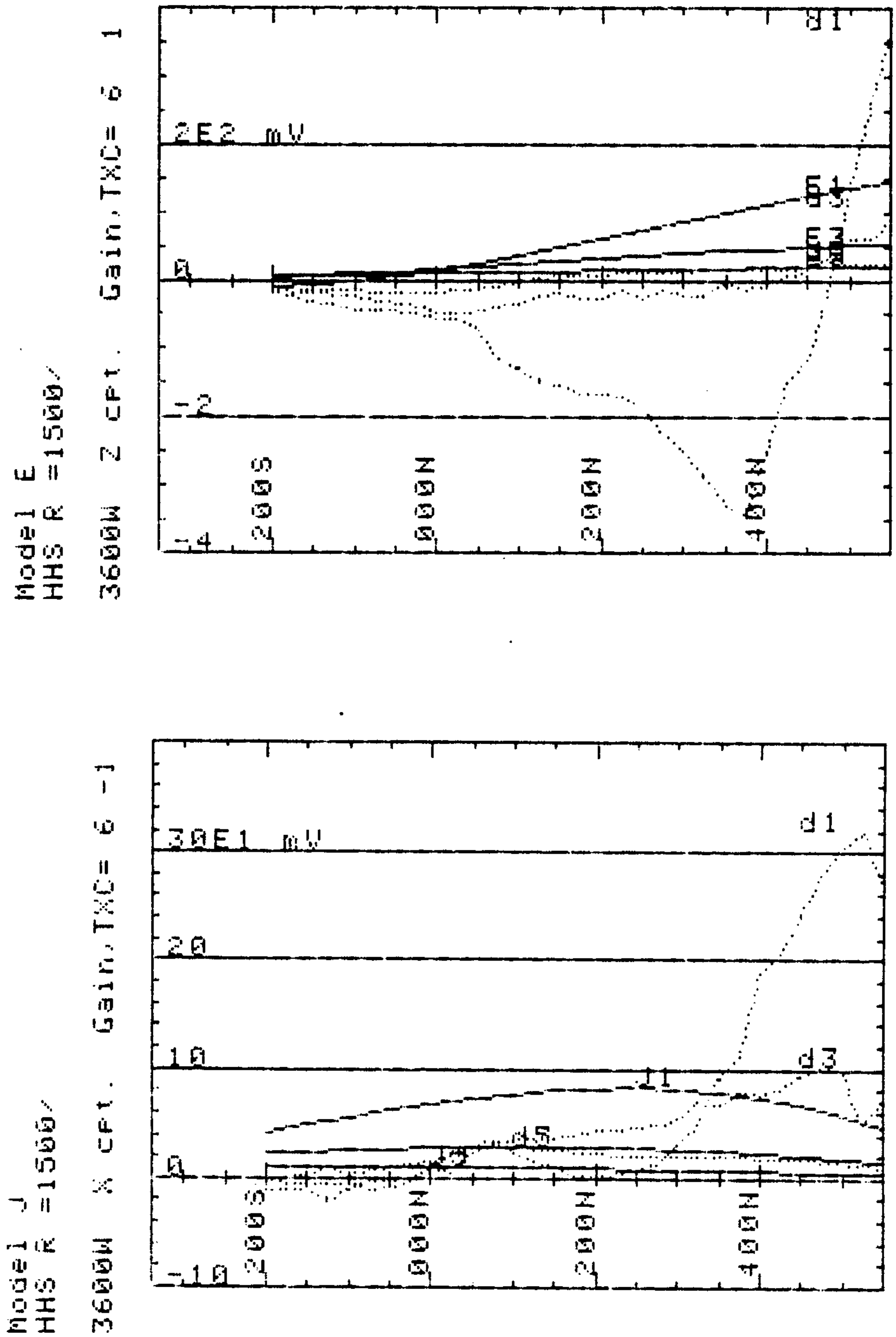
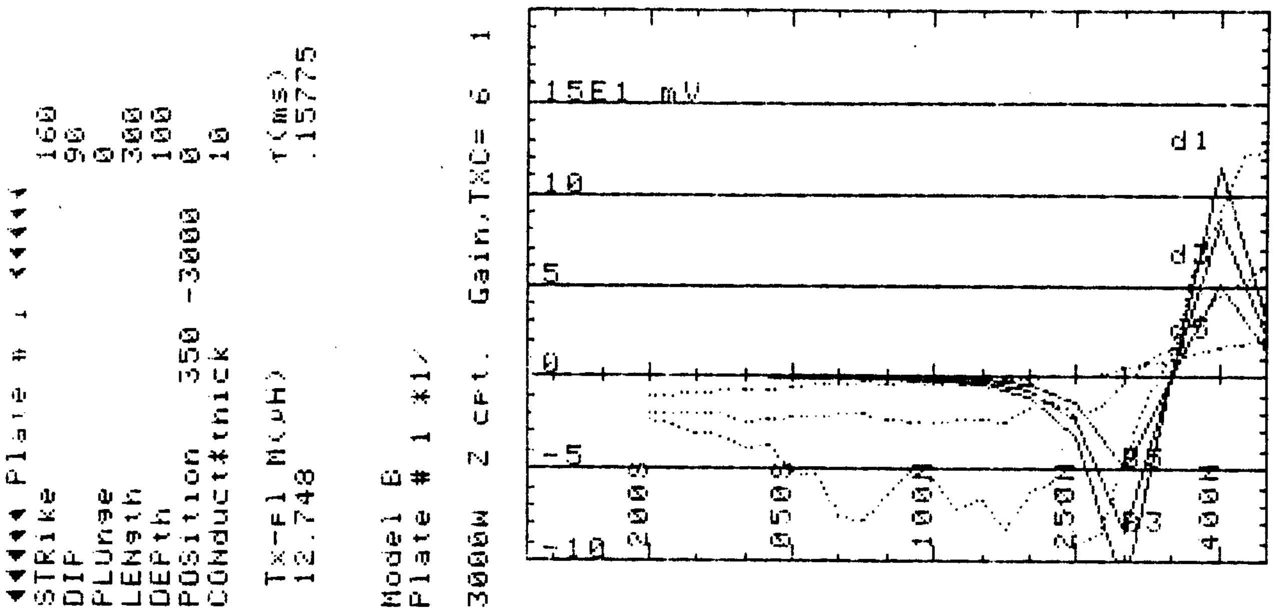


Figure 3d: Comparison of the results from Line 36W and the response of a 1500 ohm-m half space
(top) z-component
(bottom) x-component



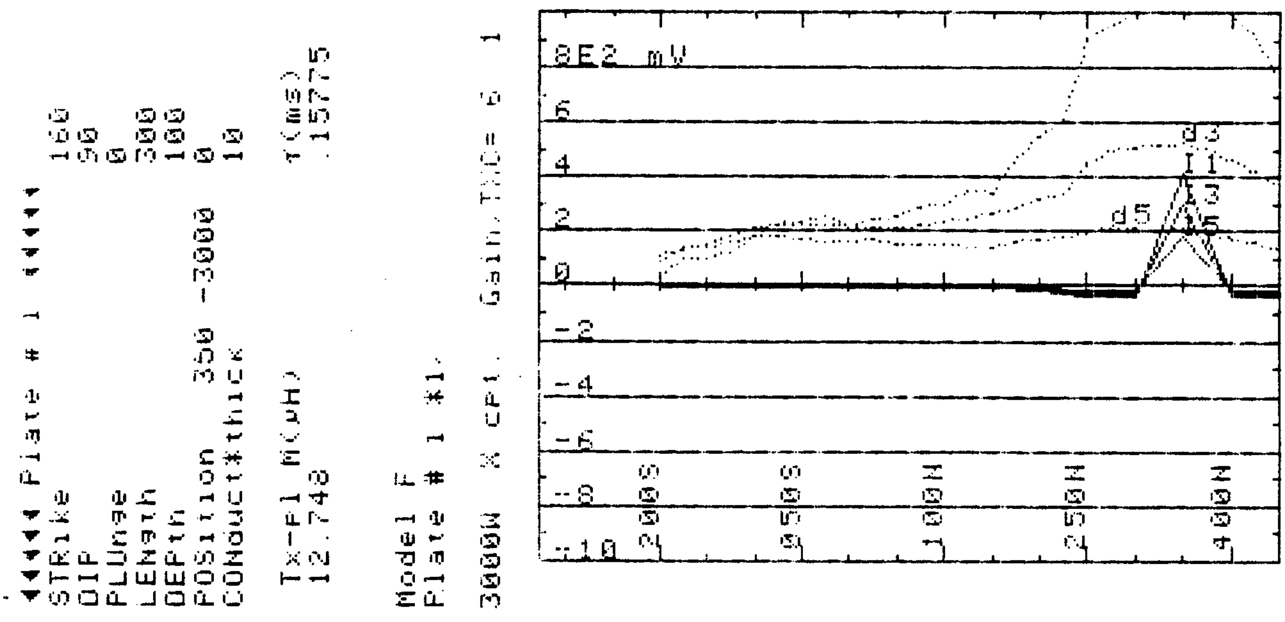


Figure 4: Comparison of the results from
Line 30W and a conductive plate
(top) z-component (bottom) x-component

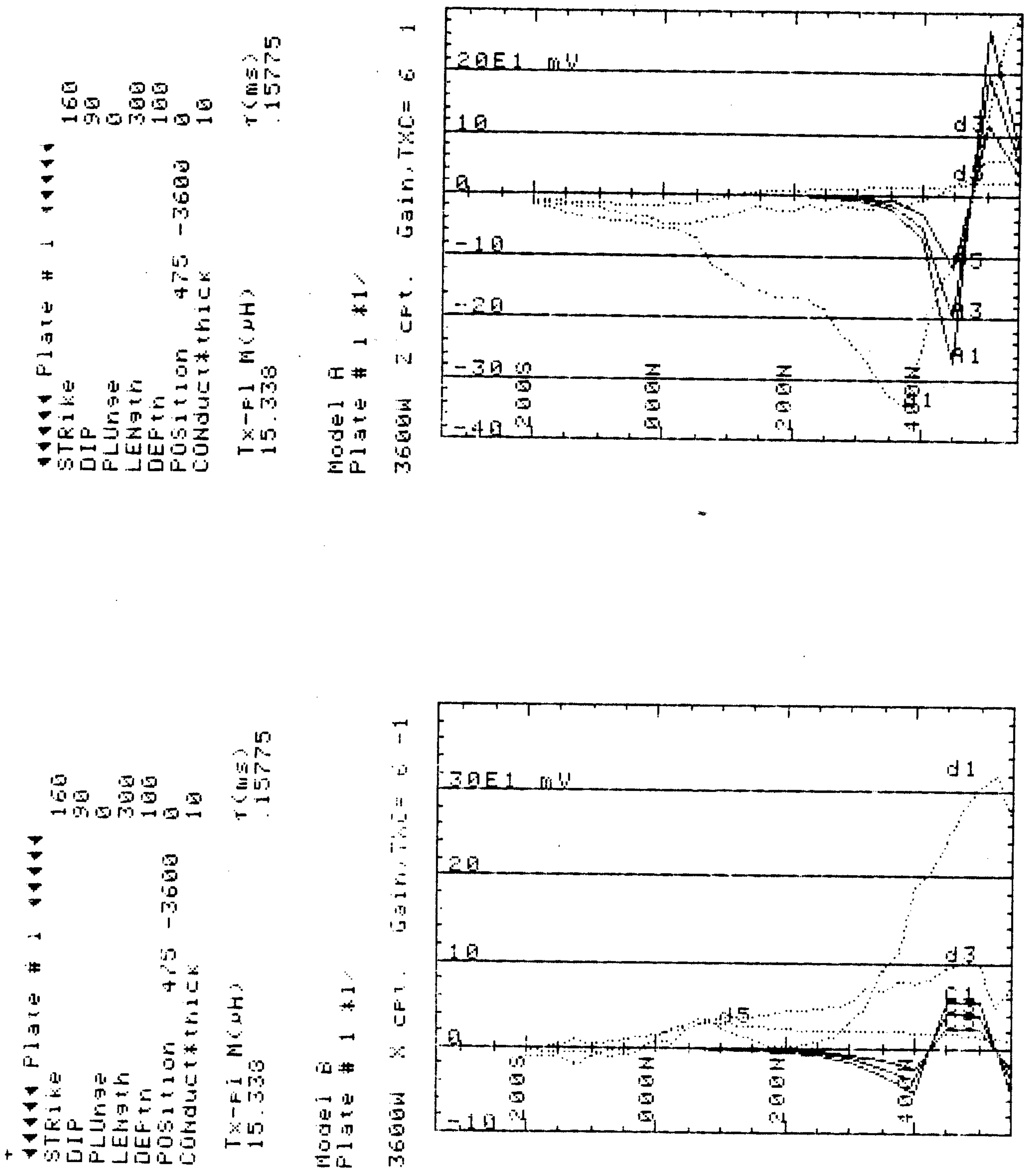


Figure 5: Comparison of the results from Line 36W and a conductive plate
(top) z-component (bottom) x-component

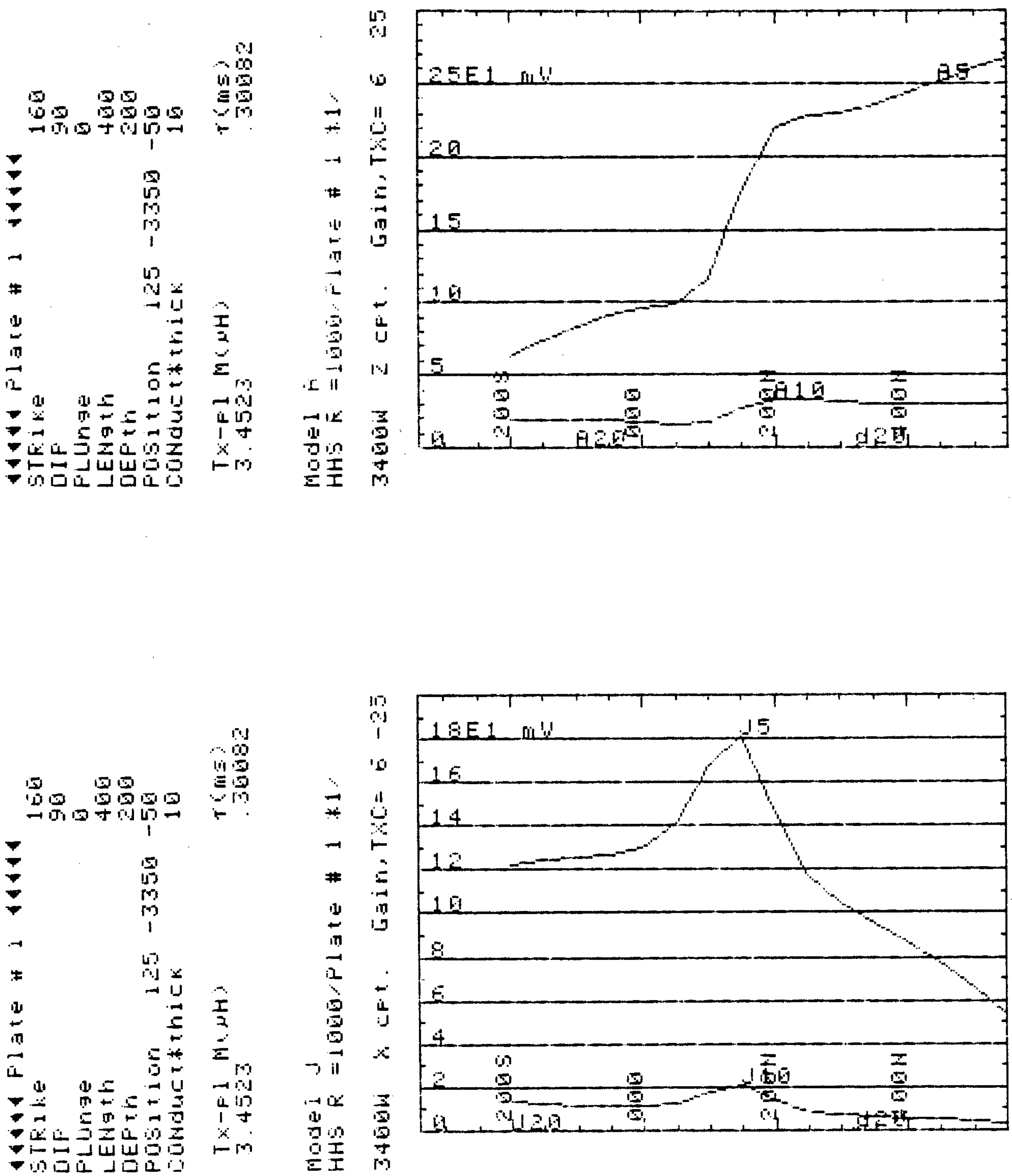
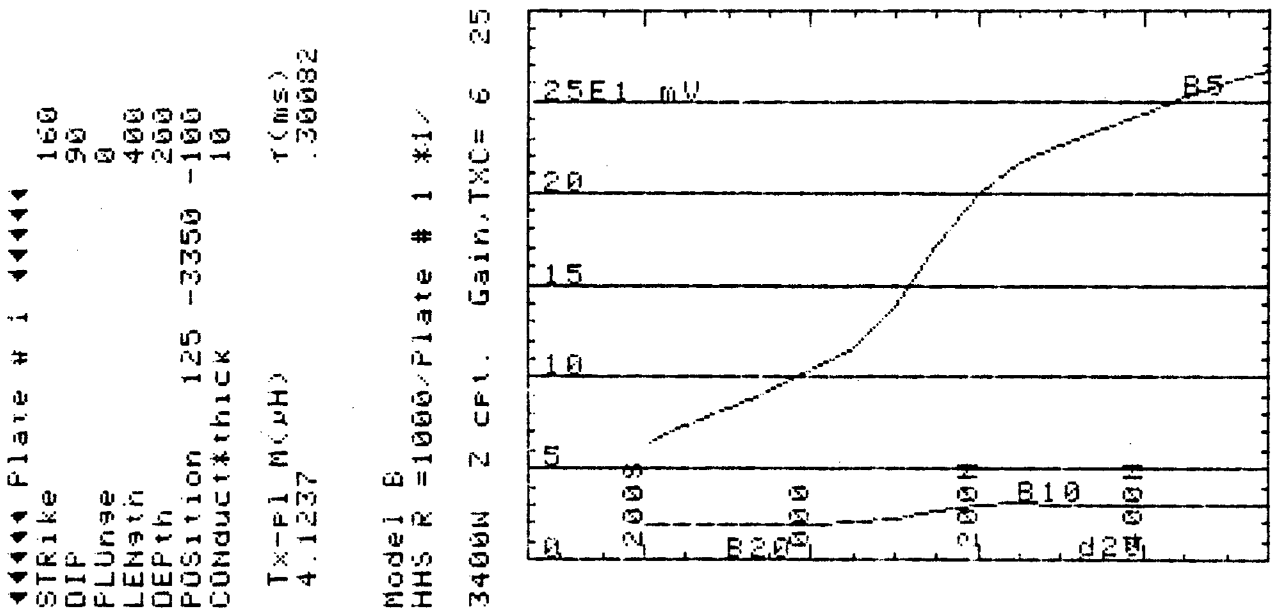


Figure 6a: Calculated response of a model of Zone I at a depth of 50 m (top) z-component (bottom) x-component



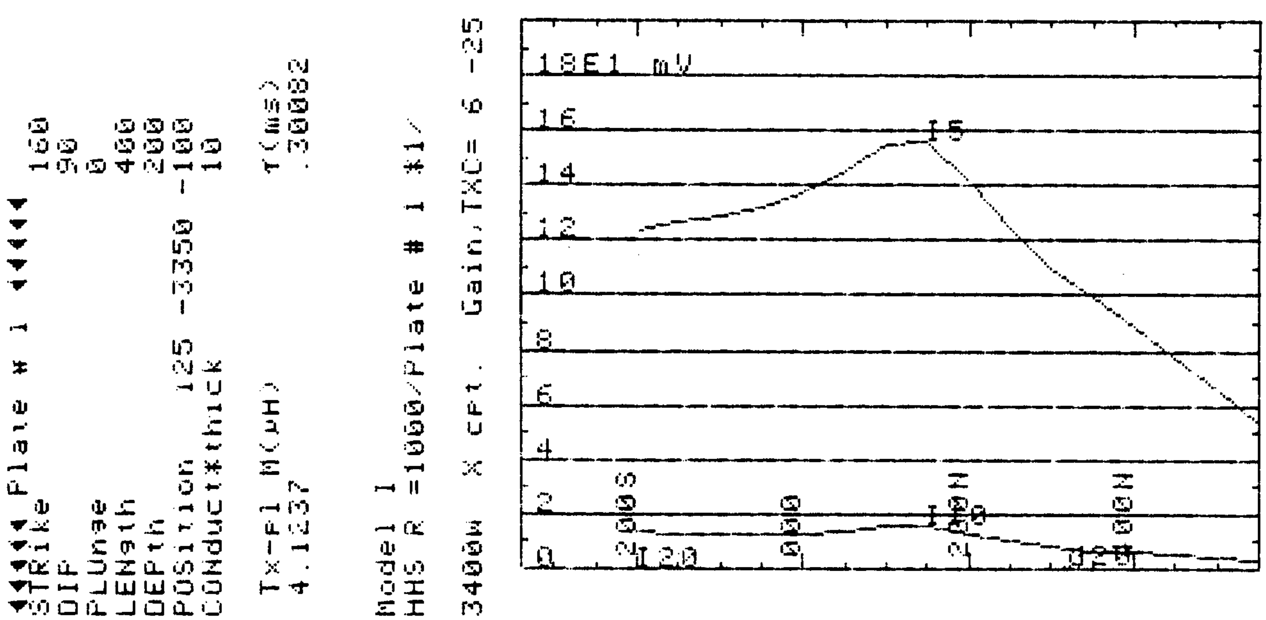
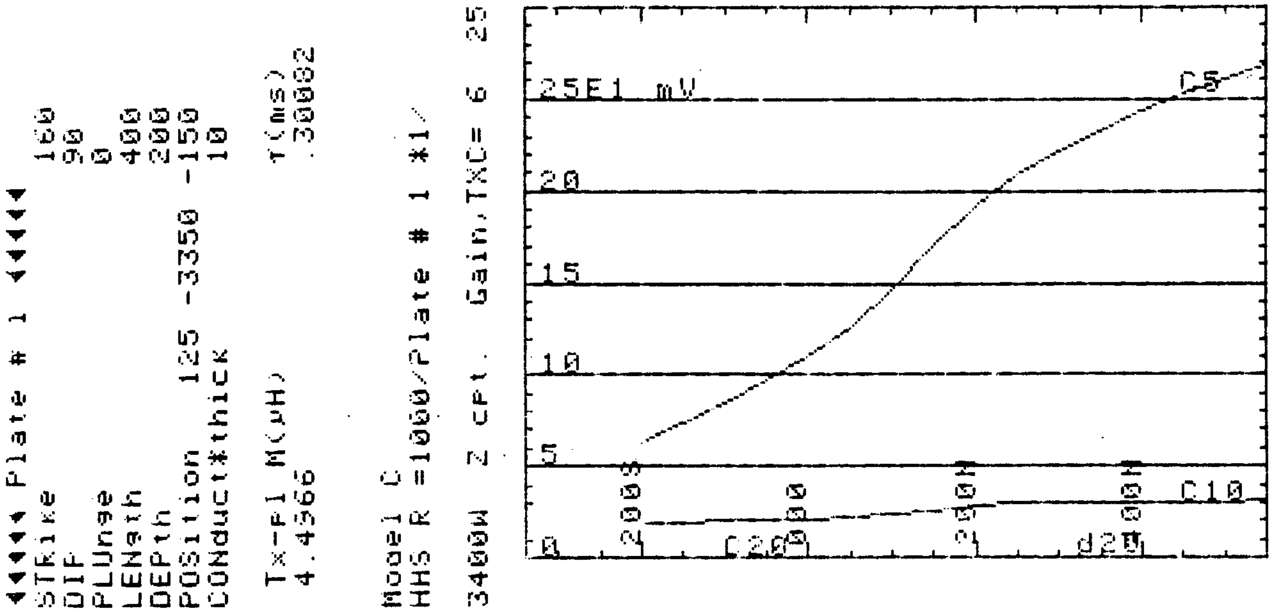


Figure 6b: Calculated response of a model of Zone I at a depth of 100 m
(top) z-component (bottom) x-component



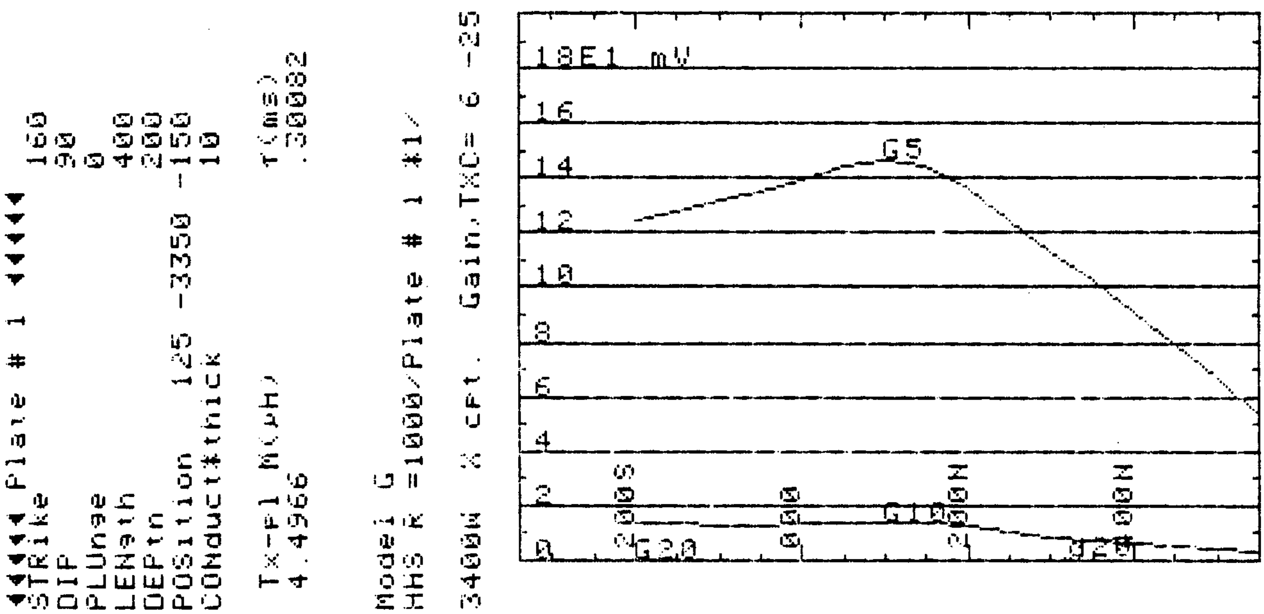


Figure 6c: Calculated response of a model of Zone I at a depth of 150 m (top) z-component (bottom) x-component

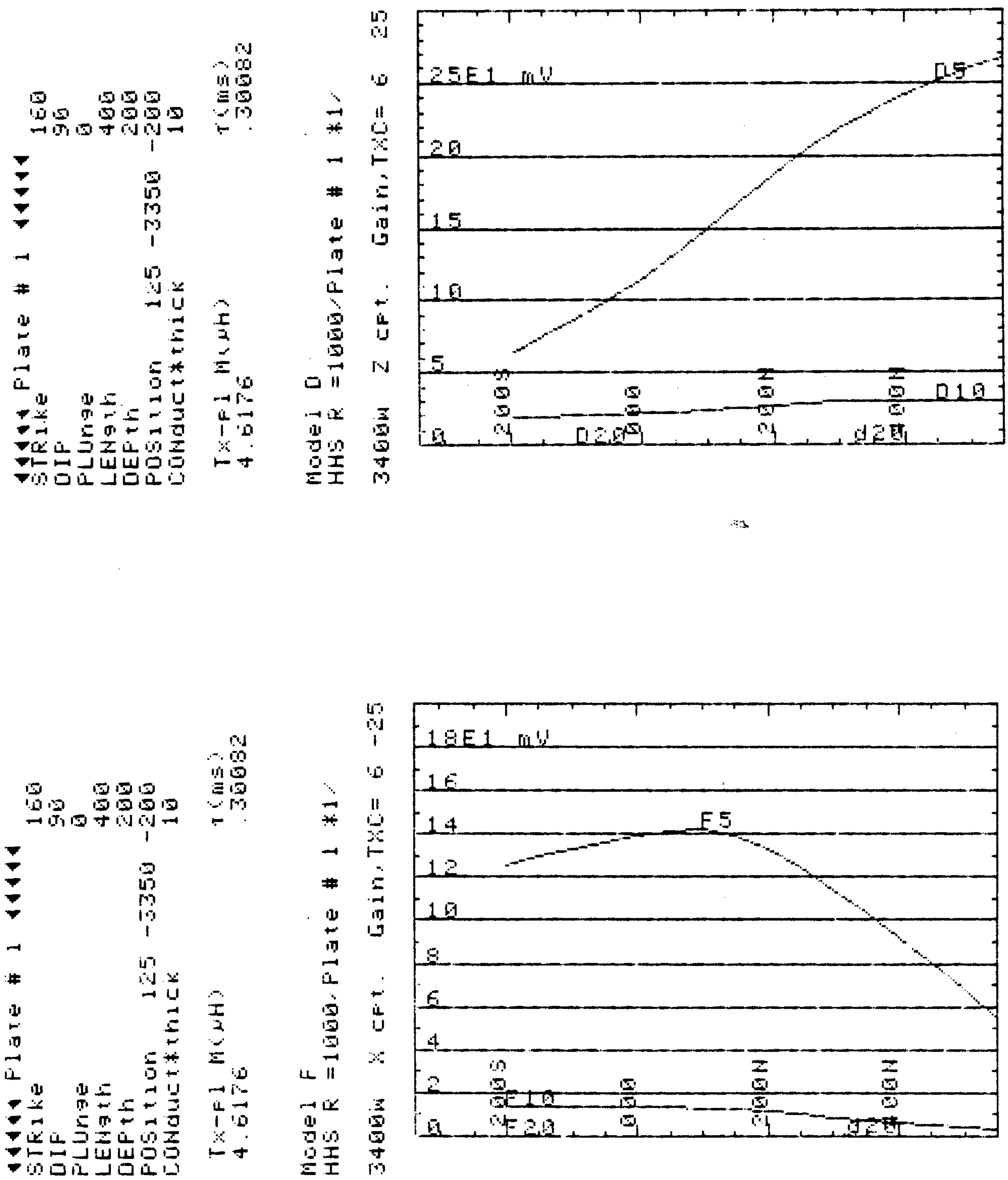
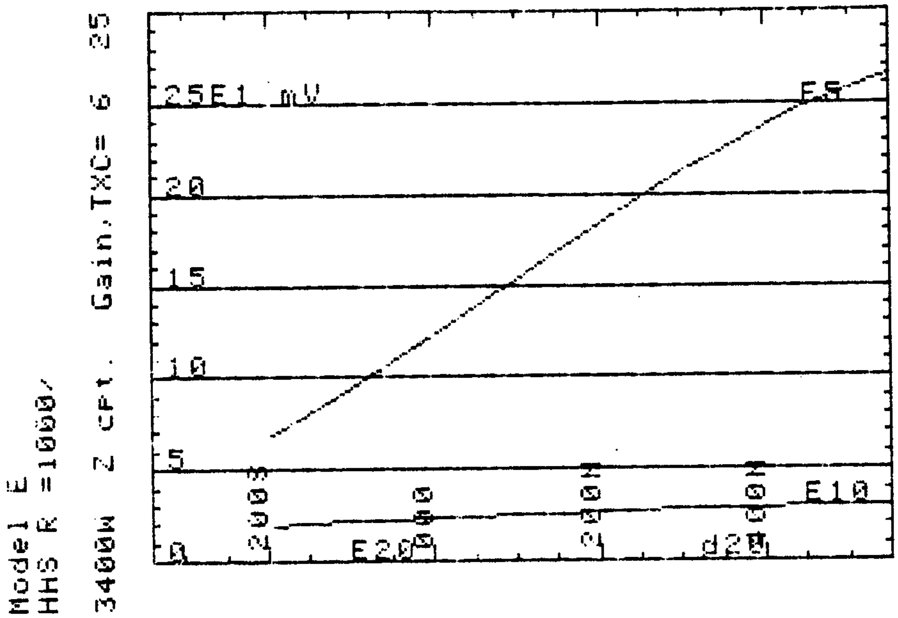


Figure 6d: Calculated response of a model of Zone I at a depth of 200 m (top) z-component (bottom) x-component



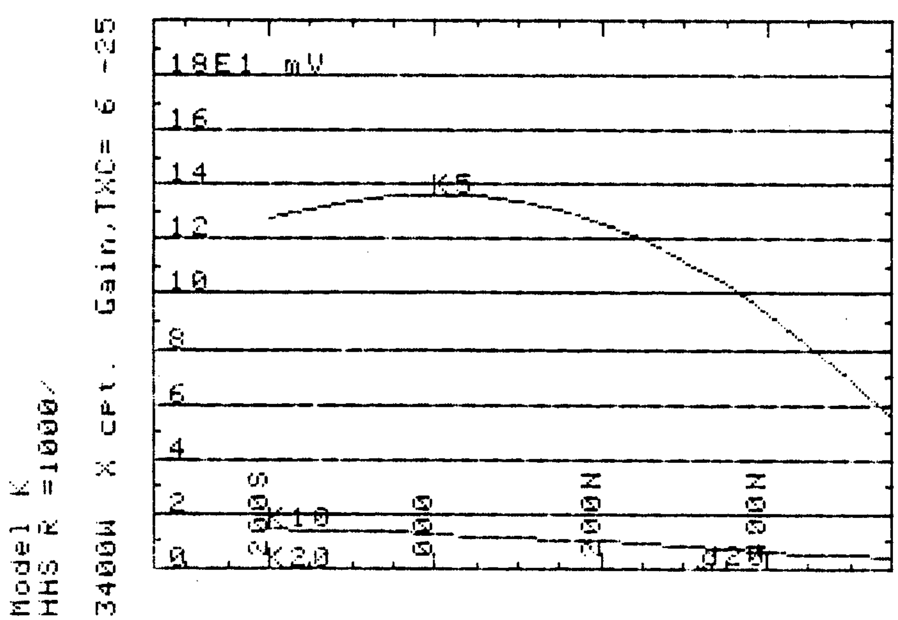


Figure 6e: Half space response for
Line 34W for a resistivity of 1000 ohm-m
(top) z-component (bottom) x-component

APPENDIX IV

INSTRUMENT SPECIFICATIONS

EM37 Ground Transient Electromagnetic System Technical Specifications

Transmitter

Current Waveform	-	See Fig. 1
Repetition rate	-	3Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz or 25Hz in countries using 50Hz power line frequency; all four base frequencies are switch selectable.
Turn-off time (Δt)	-	fast linear turn-off of maximum 300 μsec. at 20 amps into 300x600m loop. Decreases proportionally with current and $(\text{loop area})^{\frac{1}{2}}$ to minimum of 20 μsec. Actual value of Δt read on front panel meter.
Transmitter loop	-	any dimensions from 40x40m to 300x600m maximum at 20 amps. Larger dimensions at reduced current. Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest voltage setting to prevent overload.
Transmitter protection	-	circuit breaker protection against input overvoltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage, output voltage and current indicated on front panel meter.
Transmitter output voltage	-	150 volts (zero to peak) maximum; 20 volts (zero to peak) minimum
Transmitter output power	-	2.8 kw maximum
Transmitter wire supplied	-	1800m. #10 copper wire PVC insulated with nylon jacket; transmitter wire contained on 6 reels (supplied); 2 reel winders supplied.
Transmitter motor generator	-	5 HP Honda gasoline engine coupled to 120 volt, 3 phase, 400Hz alternator. Approximately 8 hours continuous operation from full (built-in) fuel tank.

Receiver

Measured quantity -	time rate of decay of magnetic flux along 3 axes.
Sensor -	air-cored coil of bandwidth 40 kHz; 100cm dia. by 7x5cm cross-section. Coil holder supplied to facilitate measurement along 3 axes.
Time channels -	20 time channels with locations and widths as shown in Fig. 2. Successive operation at 30Hz, then 3Hz, effectively gives 30 channels covering range from 80 μsec. to 80 msec.
Output display -	4 digit plus sign LED display; display also shows channel number and gain.
Integration time -	2^n cycles at 30Hz; n=4,6,8,10,12,14 (switch selectable); similar integration times at other base frequencies.
Receiver output noise referred to input -	typically 1.5×10^{-10} volt/m^2 at last gate at 30Hz with integration time of 34 seconds. Noise will be higher during intense local spherics activity.
Output connector -	all 20 channels in analogue format and housekeeping functions in digital format available from output connector.
Synchronization to Tx -	any of the following (switch selectable) (1) reference cable (2) primary pulse (3) 27 MHz radio link (40 channels) (4) high stability (oven controlled) quartz crystals.
Noise rejection circuitry -	Selective clipping of atmospheric noise pulses at all times. Audio output of Rx coil (transmitter pulse blanked out) is available on built-in loud speaker for ready identification of interference.
Receiver batteries -	12 volt rechargeable Gel-cell; 9 hours continuous operating time at 17°C. Two batteries and a battery charger supplied to permit charging of second battery from transmitter motor-generator during survey.

Component Dimensions

Transmitter console	25x42x36 cm
GPU	35x74x48 cm
Wirewinder	42x38x35 cm each (2 off)
Wire reels (20 amp)	33x31(dia.)cm each (6 off)
Receiver console	38x37x27 cm
Receiver coil	100 cm dia. 7x5 cm cross-section

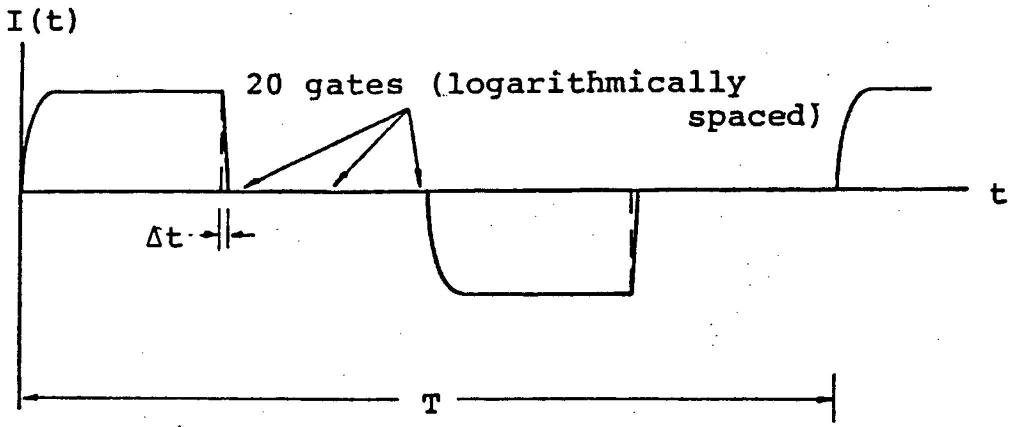
Component Weights

Transmitter console	20 kg
GPU	60 kg
Wirewinders and loaded reels (20 amp)	120 kg (total)
Receiver console (incl.20 amp-hour battery)	21.8 kg
Receiver coil	8.0 kg

Shipping Information

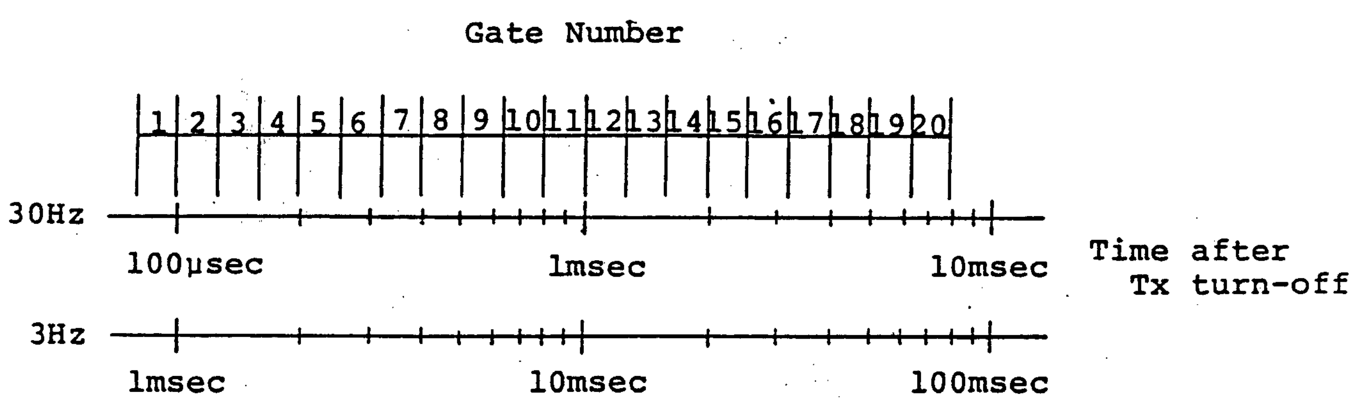
Shipment consists of 5 boxes

Two wire boxes	116x62x48 cm @ 186 kg (total)
GPU box	96x61x73 cm @ 90 kg
Receiver/transmitter box	96x75x73 cm @ 86 kg
Receiver coil/coil-holder box	110x110x20 cm @ 34 kg
Total shipping volume	1.90 cubic metres
Total shipping weight	390 kg



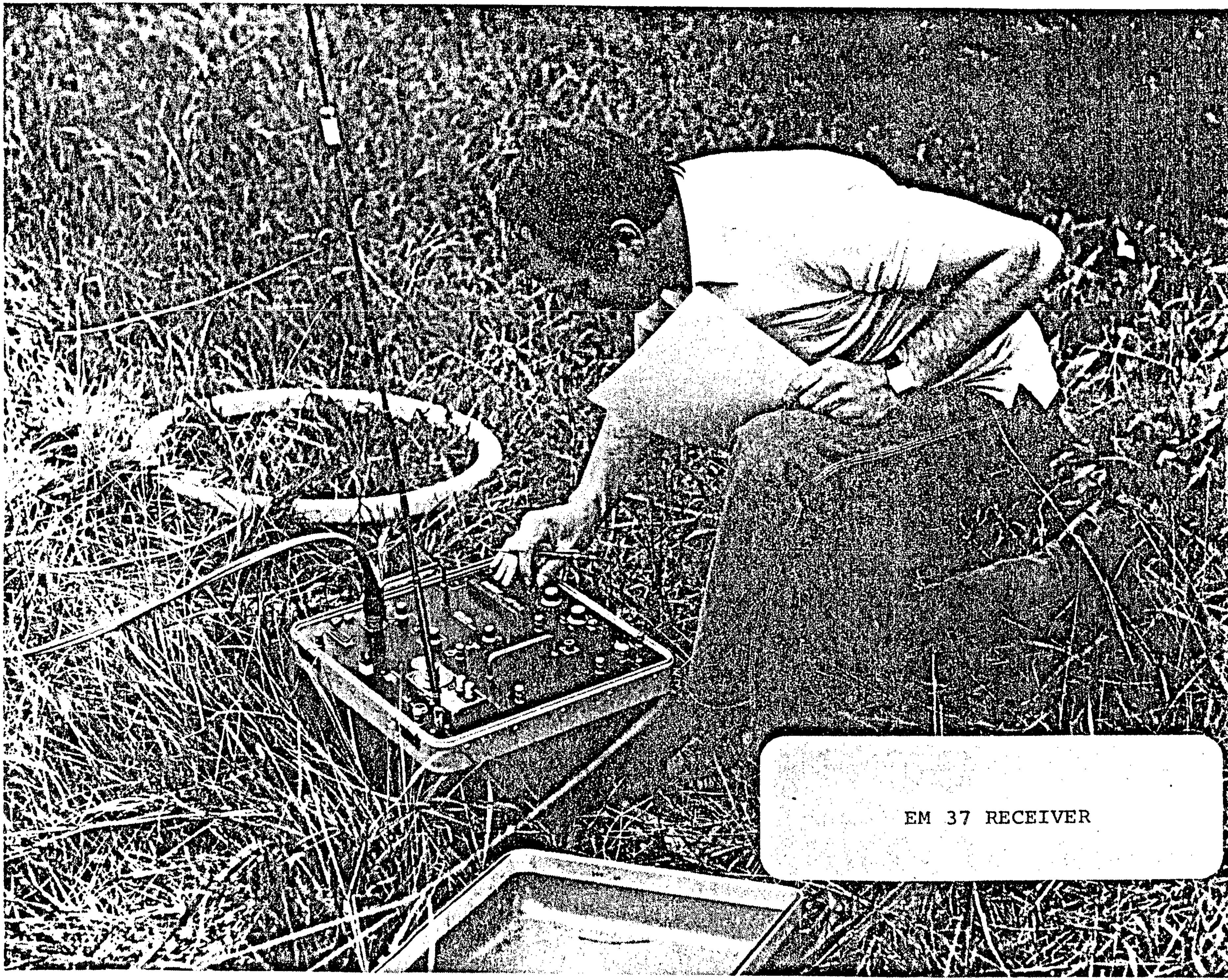
Transmitter Current Waveform

FIG. 1

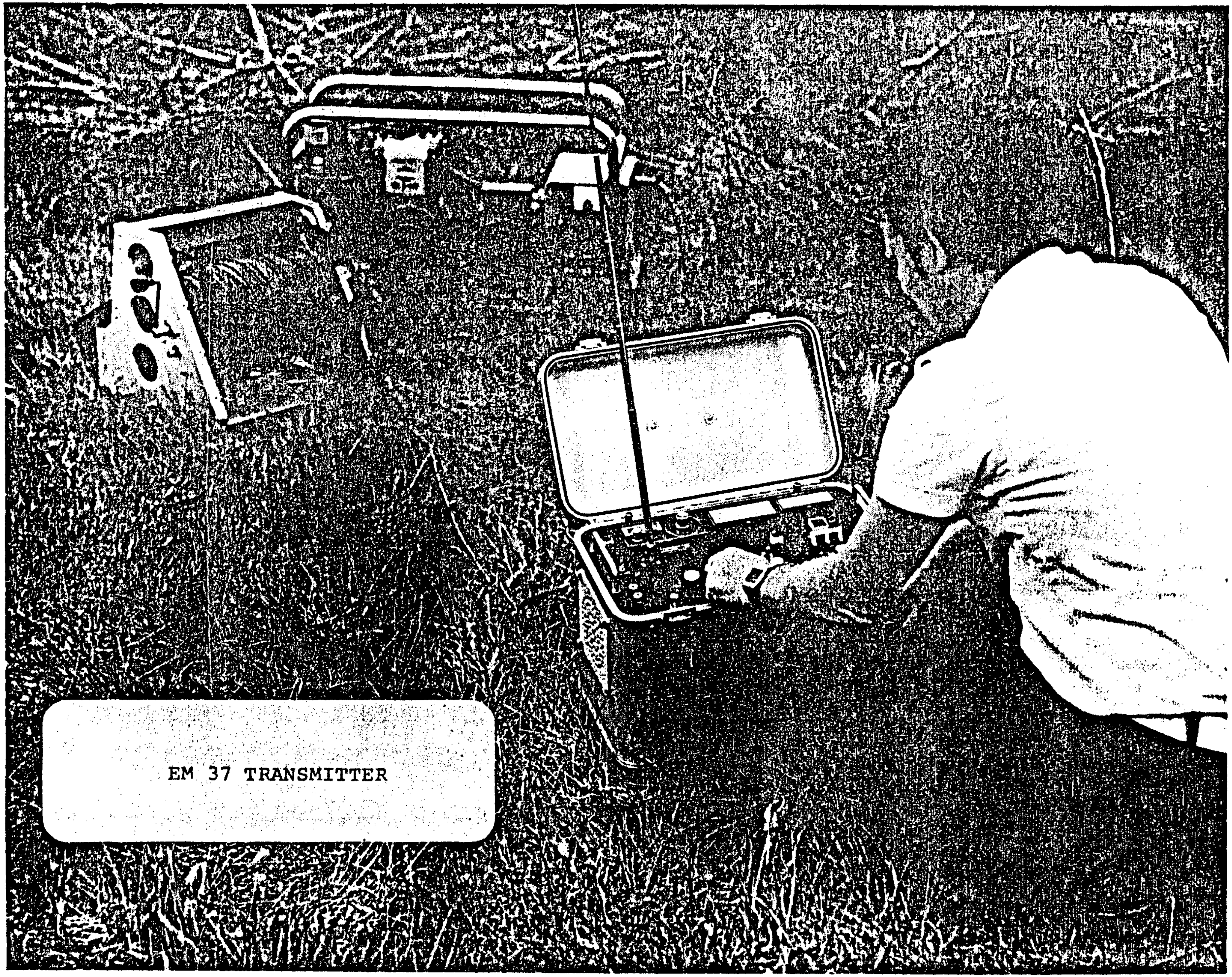


Gate Location and Widths (30 and 3Hz)

FIG. 2



EM 37 RECEIVER


EM 37 TRANSMITTER

EM 37 TRANSMITTER
WIRE CARRIER

APPENDIX "B"

1984 LARA GROUP #536
EXPENDITURES ON PHYSICAL WORK

Summary of Personnel

R. Bailes	Exploration Supervisor	$350.00/day
D. Blackadar	Senior Geologist	250.00/day
J. Kapusta	Contract Geologist	109.00/day
B. Harmeson	Contract Geologist	150.00/day
A. Deagle	Field Assistant	67.00/day
A. Brielsman	Field Assistant	71.00/day
M. Nohel	Field Assistant	76.00/day
B. Deagle	Field Assistant	71.00/day

I Trenching

a) Backhoe:

158 hours at $88.00/hour		$13,904.00
Mob/Demob		360.00
Equipment Rental		288.00
	Subtotal	$14,552.00

b) Personnel:

R. Bailes	Sept. 25	1 day @ $350/day	$ 350.00
D. Blackadar	Sept. 25,28,29	3 days @ $250/day	750.00
J. Kapusta	Sept. 25,28,29,30, Oct. 1,2,3,4,6,7,9,10,11,19,20,21	16 days @ $109/day	1,744.00
B. Harmeson	Sept. 28,29,30, Oct. 1,2,3,4,6,7,9,10,11,19,20,21	15 days @ $150/day	2,250.00
A. Deagle	Sept. 28,29,30, Oct. 1,2,3,4,6,7,9,10,11,20,21	14 days @ $67/day	938.00
A. Brielsman	Sept. 28,29,30, Oct. 1,2,3,4,6,7,9,10,11,20,21	14 days @ $71/day	994.00
		Subtotal	$7,026.00

c) Timber Bucking on Trench Sites:

A. Deagle	Oct. 5,8,12,13,14,15,16,17,18,19	10 days @ $67/day	$ 670.00
A. Brielsman	Oct. 5,8,12,13,14,15,16,17,18,19	10 days @ $71/day	710.00
		Subtotal	1,380.00

d) Reclamation of Trench Sites:

D. Blackadar	Oct. 24	1 day @ $250/day	$ 250.00
J. Kapusta	Oct. 24	1 day @ $109/day	109.00
A. Deagle	Oct. 25,26,27,28	4 days @ $67/day	268.00
A. Brielsman	Oct. 25,26,27,28	4 days @ $71/day	284.00
		Subtotal	$ 911.00

e) Room & Board: 93 man-days @ $20.00/day	Subtotal	$ 1,860.00

f) Transportation:

Truck Rental	22 days for 2 trucks @ $35.00/day/truck	$ 1,540.00
	10 days for 1 truck @ $35.00/day	350.00
Fuel	$10.00/day for 54 days	540.00
	Subtotal	$ 2,430.00
	TOTAL TRENCHING	$28,159.00

II Orthophoto Survey

a) Contractor:

Aero Geometrics Ltd., orthophoto services	Subtotal	$11,976.00

b) Personnel:

Location sruveys and targetting prior to flying orthophoto, July 12-27, 1984.

D. Blackadar	July 12,13,14,18-22,24,27	10 days @ $250/day	$ 2,500.00
J. Kapusta	July 12-15,18-22,24,27	22 days @ $109/day	1,199.00
M. Nohel	July 13,14,15,18-22	8 days @ $ 76/day	608.00
B. Deagle	July 18-22,24	6 days @ $ 71/day	426.00
		Subtotal	$ 4,733.00

c) Room & Board: 35 man-days @ $20.00/day	Subtotal	$ 700.00

d) Transportation:

Truck Rental	(Hertz - Nanaimo) July 17-23, 1984	$ 251.76
Fuel	$10.00/day for 11 days	110.00
	Sutotal	$ 361.76
	TOTAL ORTHOPHOTO	$17,770.76

EXPENSE SUMMARY OF PHYSICAL WORK

Trenching	$28,159.00
Orthophoto Survey	17,770.76
	$45,929.76
1 Year work Applied to Claims	15,400.00
Excess Credits	$30,529.76

APPENDIX "A"

1984 LARA GROUP #536

SUMMARY OF PHYSICAL WORK

I Backhoe Trenching

Six trenches totalling 1,022.15 cubic metres were excavated utilizing a Cat 225 excavator-type backhoe. This backhoe was contracted from Ellison Excavating Ltd. of Duncan, B.C. at a rate of $88.00/hour. Work was carried out on the T.L. Claim (#538).

II Orthophoto Survey

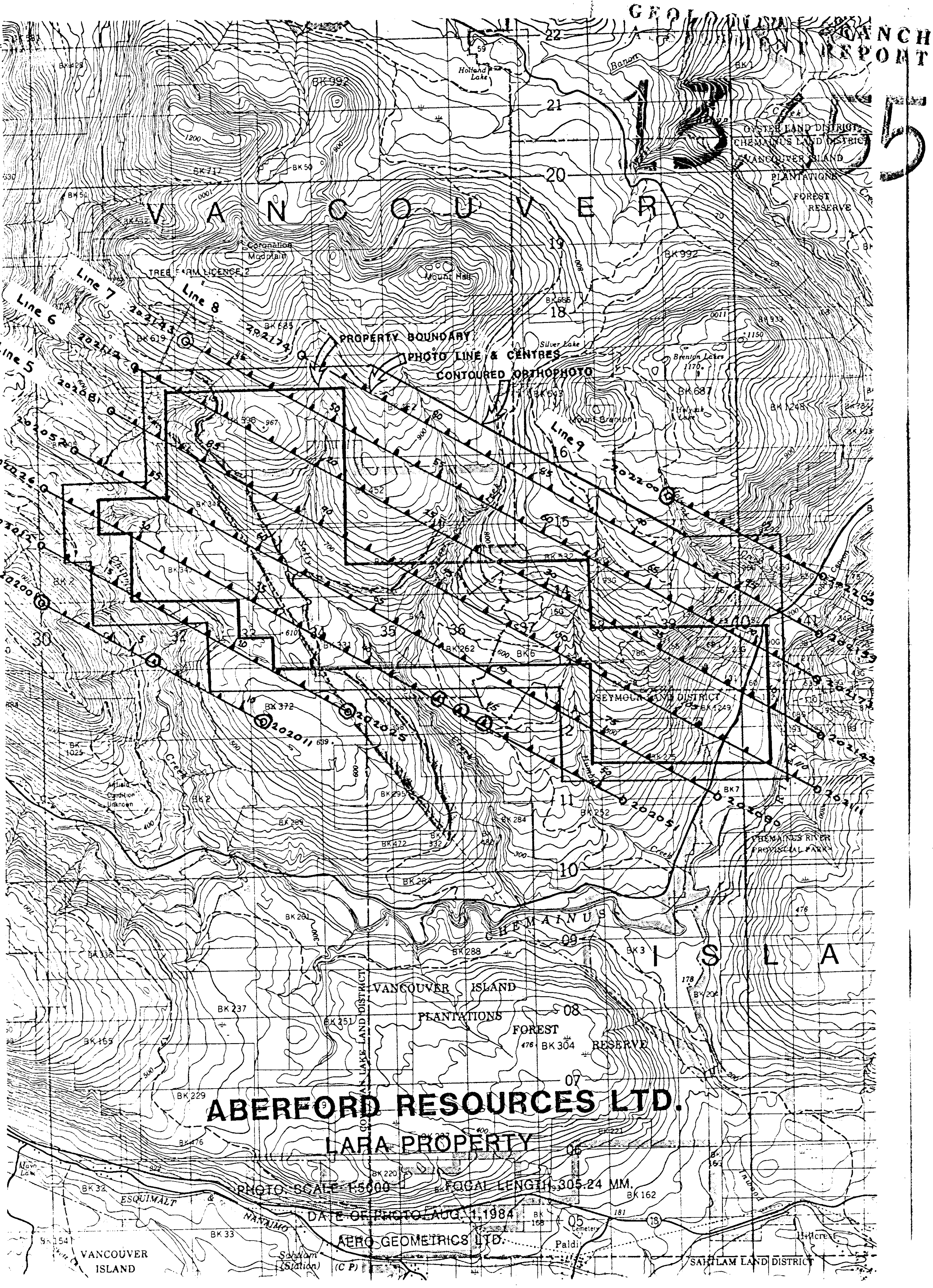
An Orthophoto survey of the Lara Property was flown in late July by Aero Geometrics Ltd. of New Westminster, B.C.

APPENDIX "C"

LARA GROUP #536

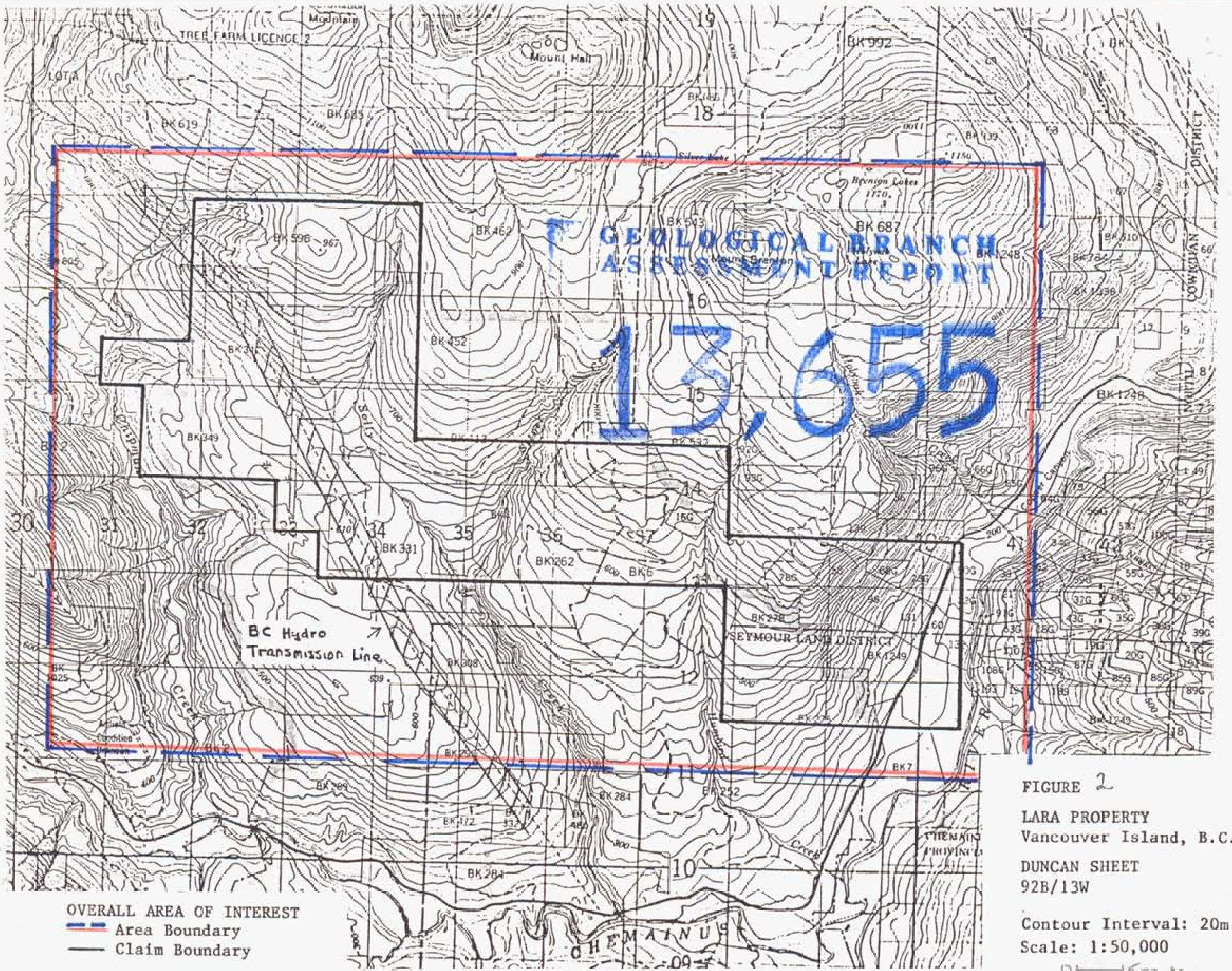
SUMMARY OF ASSESSMENT

Claim	Number Years	x	Number Units	x	Cost/ Unit	=	Assessment	=	Work	+	Allowable Excess Credit	=	Total
Fang	1		20		200		4000		100		3900		4000
Silver 1	1		12		200		2400		100		2300		2400
Silver 2	1		9		200		1800		100		1700		1800
Solly	1		9		200		1800		100		1700		1800
T.L.	1		20		200		4000		100		3900		4000
Susan	1		1		200		200		100		100		200
Klondyke	1		1		200		200		100		100		200
Tinto View	1		1		200		200		100		100		200
Jennie	1		4		200		800		100		700		800
									900		14,500		15,400



ABERFORD RESOURCES LTD.
LARA PROPERTY
PHOTO SCALE 1:5000
FOCAL LENGTH 305.24 MM.
DATE OF PHOTO AUG. 1, 1984
AERO GEOMETRICS LTD.
PROPERTY BOUNDARY
PHOTO LINE & CENTRES
CONTOURED ORTHOPHOTO
Line 1
Line 2
Line 3
Line 4
Line 5
Line 6
Line 7
Line 8
Line 9
VANCOUVER
ISLA
Coronation Mountain
Mount Hall
Mount Brenton
Silver Lake
Brenton Lakes
Holland Lake
TREE FARM LICENCE 2
SEYMOUR LAND DISTRICT
CHEMAINUS RIVER PROVINCIAL PARK
VANCOUVER ISLAND PLANTATIONS FOREST RESERVE
CHEMAINUS
ESQUIMALT & NANAIMO
SAHTLAM LAND DISTRICT
VANCOUVER ISLAND
Paldi

13,555



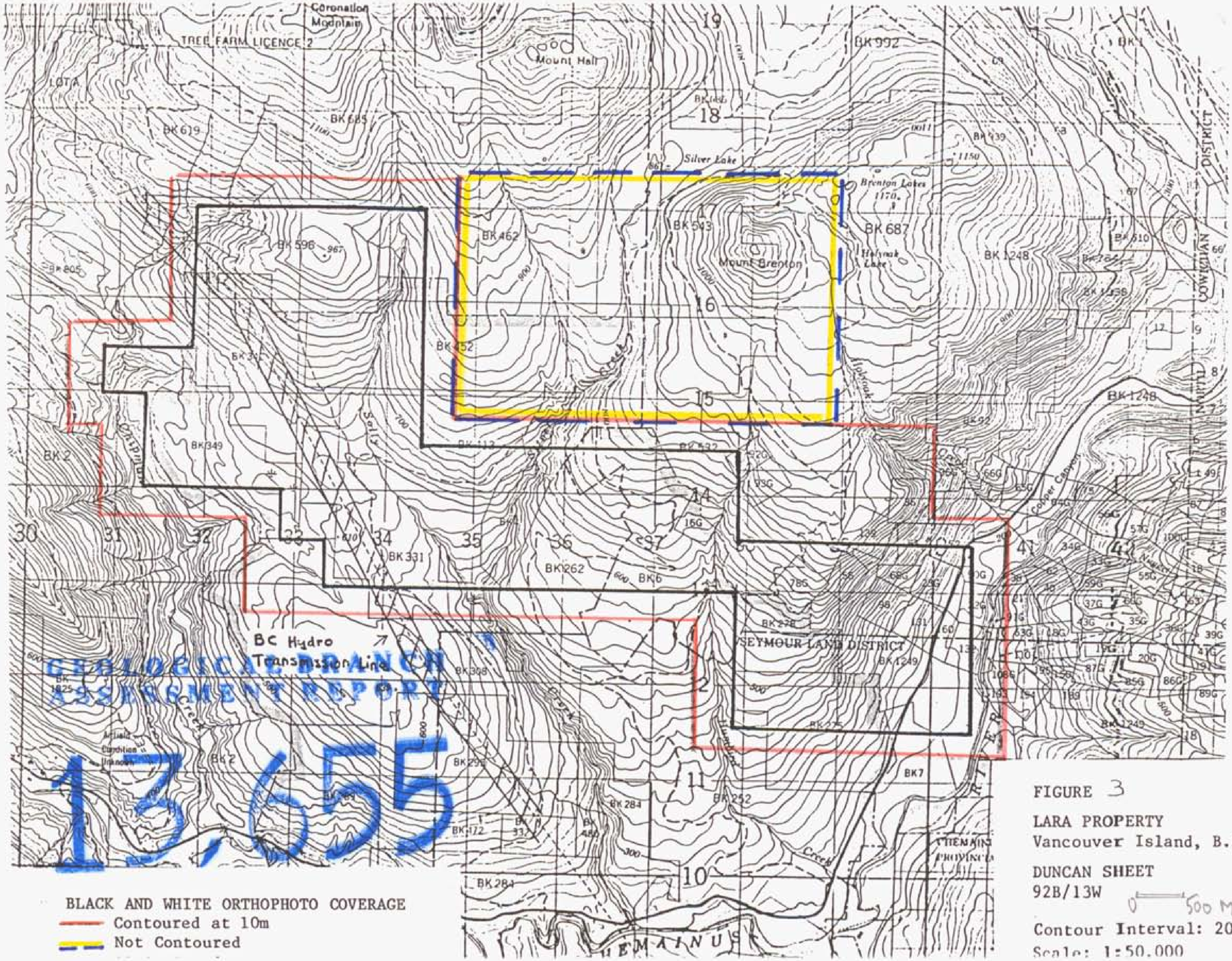
OVERALL AREA OF INTEREST
Area Boundary
Claim Boundary

FIGURE 2

LARA PROPERTY
Vancouver Island, B.C.

DUNCAN SHEET
92B/13W

Contour Interval: 20m
Scale: 1:50,000
0 — 500 M



BLACK AND WHITE ORTHOPHOTO COVERAGE

- Contoured at 10m
- Not Contoured

FIGURE 3

LARA PROPERTY
Vancouver Island, B.C.

DUNCAN SHEET
92B/13W

500 M

Contour Interval: 20m

Scale: 1:50,000

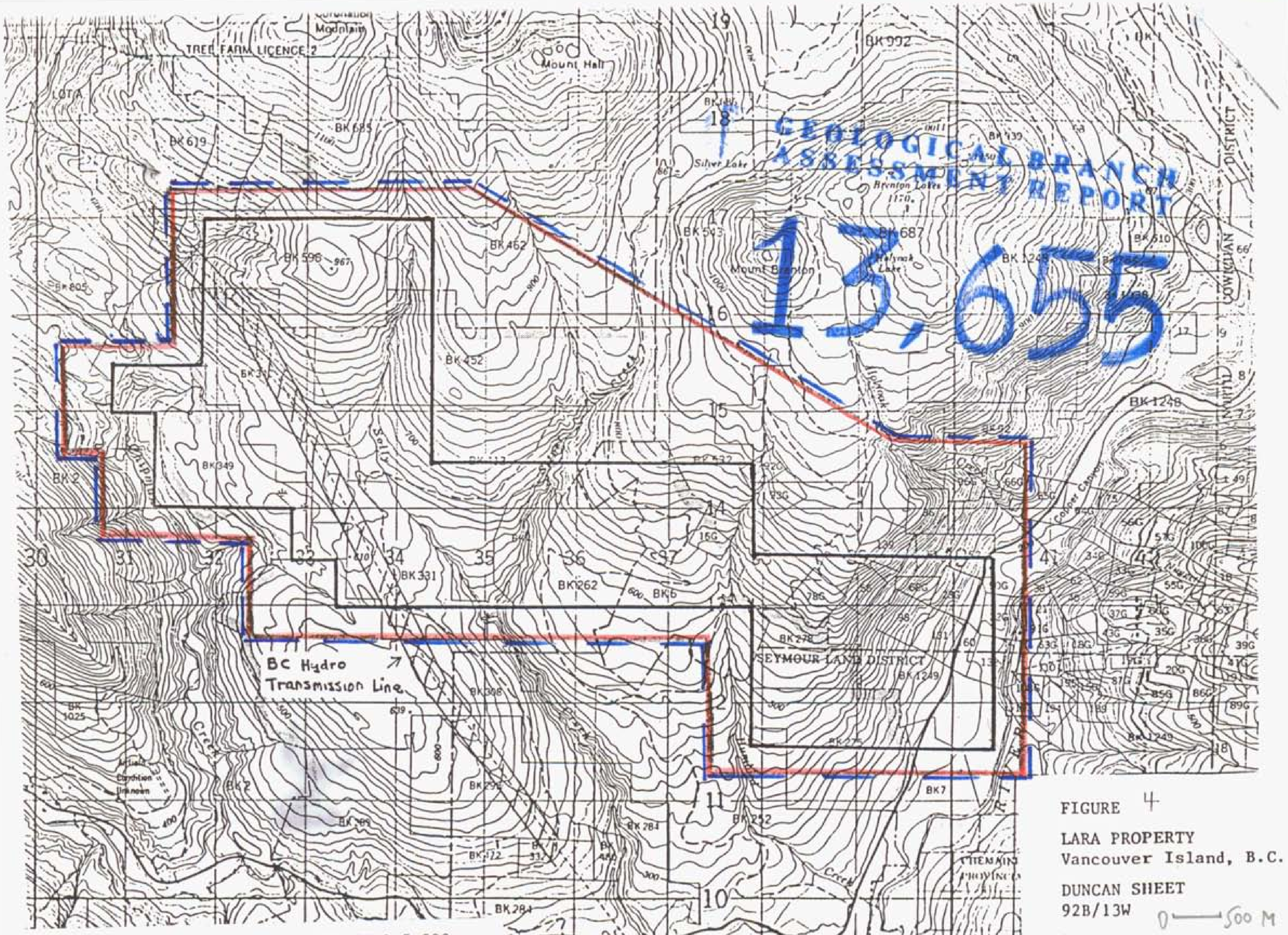


FIGURE 4

LARA PROPERTY
Vancouver Island, B.C.

DUNCAN SHEET
92B/13W

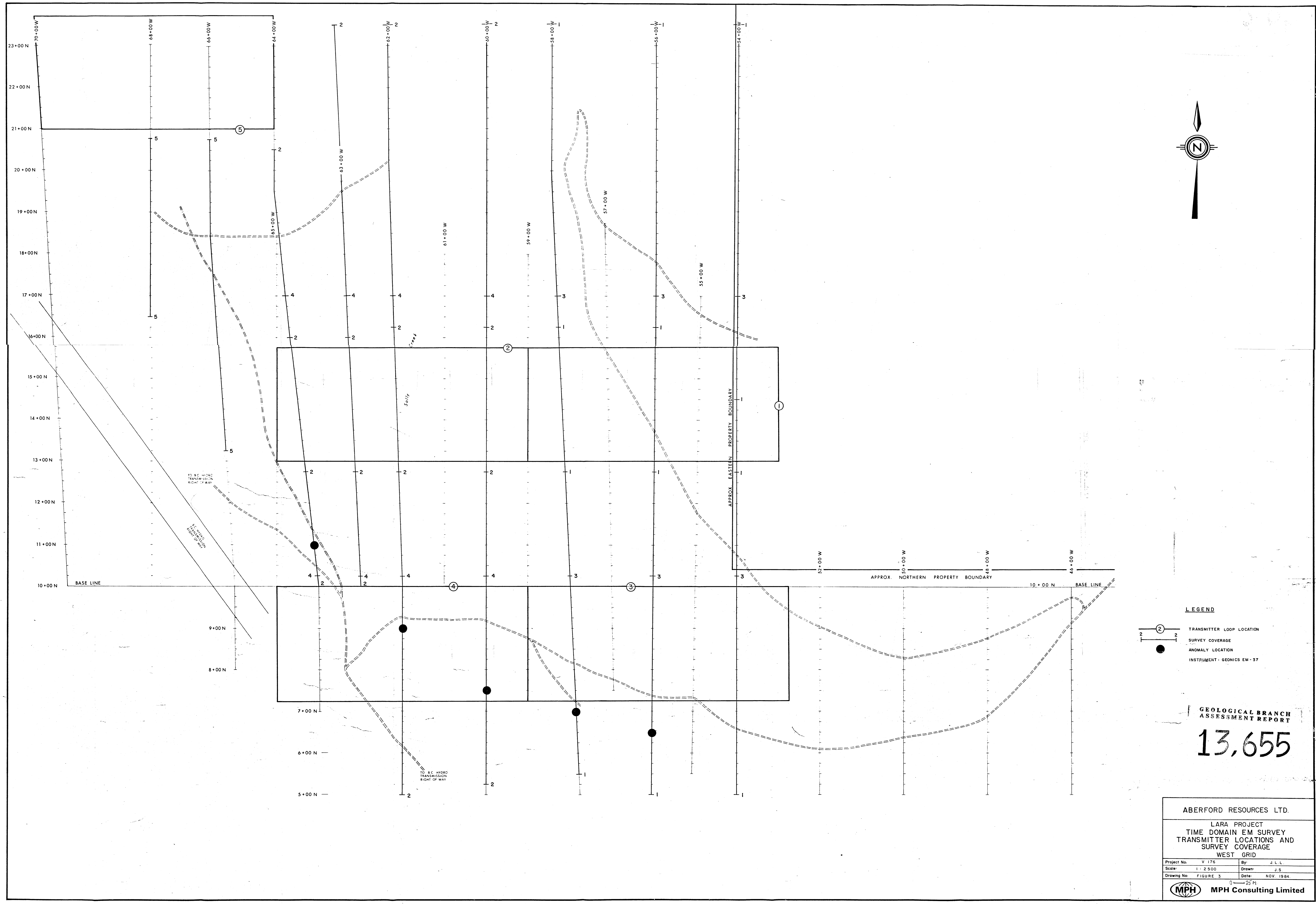
0 —— 500 M

Contour Interval: 20m
Scale: 1:50,000

COLOURED STEREOPAIRS FLOWN AT 1:5,000
Boundary
Claim Boundary

Coronation Mtn Summit
Mt. Hall Summit
Silver Lake
Brenton Lakes
Mt. Brenton
Holyoak Lake
Solly Creek
Silver Creek
Chipman Creek
Holyoak Creek
Humbird Creek
CHEMAINUS RIVER
7 km TO CHEMAINUS (Highway 1)
B.C. HYDRO TRANSMISSION RIGHT OF WAY
25+00N B.L.
10+00N BASE LINE
0+00N BASE LINE
WEST GRID ACCESS
EAST GRID ACCESS
123° 55'
123° 50'
48° 53'
GEOLOGICAL BRANCH ASSESSMENT REPORT
13,655
Diamond Drill Site
Trench Site
Road Access
ABERFORD RESOURCES LTD.
1984 TRENCH AND DRILL LOCATIONS
LARA PROJECT
DATE
SCALE 1: 20 000
NTS 92 B/13
DRAWING NO.
0 200 M

DRAWING NO. X-
APPROX. NORTHERN PROPERTY BOUNDARY
APPROX. SOUTHERN PROPERTY BOUNDARY
10+00 N
9+00 N
8+00 N
7+00 N
6+00 N
5+00 N
4+00 N
3+00 N
2+00 N
1+00 N
BASE LINE 0+00
1+00 S
2+00 S
3+00 S
4+00 S
5+00 S
44+00 W
42+00 W
41+00 W
40+00 W
39+00 W
38+00 W
37+00 W
36+00 W
35+00 W
34+00 W
33+00 W
32+00 W
31+00 W
30+00 W
29+00 W
28+00 W
27+00 W
26+00 W
Silver Creek
TO SILVER LAKE
TO MAIN HAULAGE ROAD
LEGEND
TRANSMITTER LOOP LOCATION
SURVEY COVERAGE
ANOMALY LOCATION
INSTRUMENT: GEONICS EM-37
GEOLOGICAL BRANCH ASSESSMENT REPORT
13,655
ABERFORD RESOURCES LTD.
LARA PROJECT
TIME DOMAIN EM SURVEY
TRANSMITTER LOCATIONS AND
SURVEY COVERAGE
EAST GRID
Project No: V 176
By: J.L.L.
Scale: 1:2500
Drawn: J.S.
Drawing No: FIGURE 2
Date: NOV 1984
0 25 M
MPH
MPH Consulting Limited



70+00 W
68+00 W
66+00 W
64+00 W
63+00 W
62+00 W
61+00 W
60+00 W
59+00 W
58+00 W
57+00 W
56+00 W
55+00 W
54+00 W
52+00 W
50+00 W
48+00 W
46+00 W
65+00 W
23+00 N
22+00 N
21+00 N
20+00 N
19+00 N
18+00 N
17+00 N
16+00 N
15+00 N
14+00 N
13+00 N
12+00 N
11+00 N
10+00 N
9+00 N
8+00 N
7+00 N
6+00 N
5+00 N
BASE LINE
10+00 N
BASE LINE
Sally Creek
TO B.C. HYDRO TRANSMISSION RIGHT OF WAY
B.C. HYDRO TRANSMISSION RIGHT OF WAY
TO B.C. HYDRO TRANSMISSION RIGHT OF WAY
APPROX. EASTERN PROPERTY BOUNDARY
APPROX. NORTHERN PROPERTY BOUNDARY
N
LEGEND
TRANSMITTER LOOP LOCATION
SURVEY COVERAGE
ANOMALY LOCATION
INSTRUMENT: GEONICS EM-37
GEOLOGICAL BRANCH ASSESSMENT REPORT
13,655
ABERFORD RESOURCES LTD.
LARA PROJECT
TIME DOMAIN EM SURVEY
TRANSMITTER LOCATIONS AND
SURVEY COVERAGE
WEST GRID
Project No: V 176
By: J.L.L.
Scale: 1:2500
Drawn: J.S.
Drawing No: FIGURE 3
Date: NOV. 1984
0 — 25 M
MPH
MPH Consulting Limited

DP46BA0P00