

87-519-16194
8/88

GROUND GEOPHYSICAL SURVEYS

on the

KAREN MINERAL CLAIM

- Pine Creek

DIVISION

Atlin Mining ~~District~~

Atlin, B.C.

Lat: 59° 48' N 35' 10"
Long: 133° 30' W 31' 36"

NTS: 104-N-12E

Owned by: → DAVID G.S. PURVIS
Operators → Surprise Lake Exploration Limited Partnership

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

16,194

Scott Geophysics Ltd.
J.M. Thornton

FILMED

July, 1987

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APPENDICES

Appendix A Data Listings (Magnetometer, VLF and Fraser filter)

LIST OF ILLUSTRATIONS

Claim Map showing Grid Location

LIST OF MAPS

(map pocket)

Magnetometer Data

SCALE

Contour Map (Total field)	1:5000
Magnetometer Data Posting	1:5000
Stacked Profiles	1:5000

VLF-EM Data

Stacked Profiles (IP. & Quad.)	1:5000
Contour Map of "Fraser Filter" Data	1:5000
"Fraser Filter" Data Posting	1:5000

Summary

On behalf of Surprise Lake Exploration Syndicate, Scott Geophysics Ltd. personnel performed ground magnetometer and VLF surveys on 14.4 km of line on the Karen Claim to investigate the anomalous conditions detected in the DIGHEM airborne survey carried out over the area on behalf of the owner in 1984.

Formational VLF structures were observed. Magnetometer data did not indicate the presence of near surface ultramafic rocks.

Some evidence of cross-cutting structures was noted.

Introduction

In late June, 1987, Scott Geophysics Ltd. performed total field ground magnetometer and VLF-EM surveys on 14.4 km of line on behalf of the Surprise Lake Exploration Limited Partnership. Data was gathered at 20 meter intervals on well cut and marked lines 100 meters apart.

Linecutting was contracted to J.W.R. Smith of Atlin, B.C.

The purpose of the ground work was to investigate the anomalous conditions observed in the DIGHEM airborne survey flown in 1984.

Location and Access

The Karen claim lies south of Pine Creek approximately 12 km east of Atlin on the Discovery road. The road south of Pine Creek heading west provides 2 wheel access to within 0.5 km of the E-W baseline. A bridge across the ditch and a cat road mark the easiest route.

Claim Status

The surveys were performed on the following mineral claims:

<u>NAME</u>	<u>UNITS</u>	<u>ANNIV. DATE</u>	<u>RECORD NO.</u>
Karen	10	Aug 25, 1987	2751

Geophysical Surveys 14.4 km

Prior to the geophysical work, 17.8 km of line was cut and flagged at 20 meter intervals during the period May 13 to May 29. This work was contracted to Rick Smith of Atlin, B.C.

The north baseline extends east from the LCP and the north-south cross lines are set at 100 meter intervals. The lines extend to 23+00E and to 6+00S where they stop at the blazed property boundary.

Ground magnetometer and VLF-EM data were gathered along the cross lines for a total of 14.4 km. Readings were taken at 20 meter intervals, facing grid west to minimize orientation errors. Field magnetometer data was later corrected for drift using the data from a recording base station magnetometer.

The transmitting station at Lualualei, Hawaii (Az 215 degrees) provided the energizing signal for the VLF survey. This station was well suited to the grid and the strike of the airborne conductors.

Equipment Used

The magnetometer survey used an IGS system manufactured by Scintrex. (Serial number 8412233) Data is stored internally with time, by line and station. A base station magnetometer (Scintrex MP-3), sampling at a 6 second interval, was used to monitor the diurnal variation. At the start of a survey day, the clocks within the two instruments were synchronized. At the end of a survey day, diurnal drift was removed by plugging the field and base units together. Internal software in the computer-based instruments performed the corrections to the field data to an accuracy of 0.1 nT.

VLF data was gathered by a VLF board in the IGS system. Once the magnetometer data has been stored, the instrument switches to VLF mode. It can be programmed to gather data for up to 3 stations. Programmed for 1 station, Hawaii (23.4 kHz), it gathered In Phase, Quadrature and Horizontal Field Strength, storing the data internally by line and station.

Data was transferred from the IGS to a Toshiba 1100+ portable computer for editing and later processing. Field plots of mag and VLF were made on selected lines to monitor data quality.

Survey Results

Field plotting was performed on a dot matrix printer. Final data presentation was done with the use of software proprietary to Scott Geophysics on a Houston Instruments DMP-42 plotter.

Magnetometer data was plotted as stacked profiles and as a contour map at a scale of 1:5000. The field data was also posted at the same scale.

VLF data was plotted as stacked profiles of In-phase and Quadrature at a scale of 1:5000.

The In-phase data was also subjected to the "Fraser filter" technique in order to remove topographic response and to make the data more easily understood. During the filtering process, the data was re-sampled to a 15 meter interval using a spline technique to determine the data values between survey stations as needed. Filtering was performed in accordance with the method put forth by D.C. Fraser (1969, Contouring of VLF-EM Data, Geophysics v.34 pp 958-967). Filtered results were plotted as stacked profiles and as a contour map

at a scale of 1:5000.

Appendix A contains a complete data listing.

Discussion of Results

MAGNETOMETER SURVEY

Magnetic response was very weak in comparison to other surveys in the Atlin Camp. No strong near surface anomalies were observed. The depression in the magnetic data values and the smooth appearance of the data indicates the lack of magnetic material in the subsurface rocks, possibly meta-sediments or carbonatized ultramafics. (alteration process destroys the magnetite)

A weak dyke-like feature crossing the property is first evident on line 6+00E and is noticeable on several lines, finally exiting the grid at approximately 20+00E. This feature is not visible in the contour plan, only in the profile data. It parallels the strike of the airborne features, and may be due to a late stage dyke.

Elevated magnetic readings at the north end of lines 2+00E to 7+00E suggest a different (weakly magnetized) rock type at some depth. The chopped up nature of the magnetic data in the north-west corner of the survey area is suggestive of bedded volcanics or possibly heavily sheared, fully altered ultramafics.

VLF SURVEY

VLF data reveals the presence of several strong VLF conductors east of line 14+00E. The strongest responses come from sources apparently buried less than 20 meters. It is difficult to estimate depths from the profiles because of interference between the anomalies. However, it is felt that most are near surface. (less than 20 meters to source) These anomalies are most probably due to graphite smears in the meta-sedimentary sequence. They are most certainly the same as those mapped in the airborne survey.

Several crosscutting linears are evident in the Fraser Filter plan map. These are most likely due to faulting. The magnetic and VLF data both suggest that the fault interpreted from the VLF data (shown on the Fraser Filter contour map) transecting the SE from Line 10+00E at the Baseline has a vertical component as VLF response west of this feature is broad and weak. The strong VLF conductor is seen to extend beyond this interpreted fault but attenuated.

Conclusions and Recommendations

The rocks underlying the north west corner of the survey area deserve investigation, particularly in view of the encouraging drill results on the adjacent property to the north of the west end of the survey area. The south boundary of these rocks is approximately delimited by the 7900 nT contour as seen on the magnetic contour map.

The VLF survey established the presence of anomalies strong enough to account for the airborne conductors. Graphitic conductors are suspected as the source in each case.

J. M. Thornton

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Itemized Cost Statement

LINECUTTING \$ 5862.45

"Establishing Grid; linecutting, flagging and marking together with all associated rentals, supplies, wages and equipment" *INVOICE ATTACHED*

GEOPHYSICAL SURVEYS 14.4 km @ \$ 120.00 \$ 1728.00

Data Reduction and Plotting 452.00
Materials 14.44

GEOPHYSICAL REPORT

1.5 days @ \$ 300.00 / day 450.00

Materials; duplicating/binding (est) 25.00

Total: \$ 8531.89

J. M. Thornton

J.W. Richard Smith
 P.O. Box 8
 Atlin, B.C.
 V0W 1A0

STATEMENT

DATE May 29 19 87

Surprise Lake Exploration
Partnership Ltd.

LINE-Cutting Karen Mineral Claim ATLIN

DATE	DETAILS	DEBIT	CREDIT	BALANCE
1987				
May 12-29	WAGES			4,425.00
	Chain saw rental			260.00
	Chainsaw ^{GAS} Mx-oil & files			75.35
	Chain-oil			71.64
	20 Bundles Stakes			245.00
	Spray paint, felt pens			57.96
	Topofill, flagging & book			100.25
	Groceries, bug dope & coils			427.43
	TRUCK GAS			49.82
	Trip to Whitehorse for supplies			150.00
			TOTAL	5862.45
			ADVANCE	3000.00
			Amount owing	2862.45

Pat J. [Signature]

Statement of Qualifications

I, Jeremy M. Thornton, of 3393 Fairmont Road, North Vancouver, B.C. do certify that:

- 1) I have worked as a geophysical technician for the past twenty years.
- 2) I have been engaged in mineral exploration since graduation from the British Columbia Institute of Technology in 1967.
- 3) I personally carried out the work presented in this report for Scott Geophysics Ltd.
- 4) I have no direct or indirect interest in the property represented in this report, nor do I expect to receive such.

J. M. Thornton
J.M. Thornton

July 30, 1987
Date

MAGNETOMETER DATA

Total Field (Proton precession)
Equipment: Scintrex MP-4 (IGS)

Note: 57000 nT has been subtracted
from all readings

Karen Grid - Lines: 0 to 23+00E

June, 1987

X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.
0.0	-600.0	7824.2	200.0	-320.0	7895.7	400.0	-40.0	8113.5
0.0	-580.0	7855.5	200.0	-300.0	7874.0	400.0	-20.0	7988.4
0.0	-560.0	7839.1	200.0	-280.0	7814.1	400.0	0.0	8017.1
0.0	-540.0	7801.2	200.0	-260.0	8010.1	500.0	-600.0	7823.6
0.0	-520.0	7872.2	200.0	-240.0	7925.5	500.0	-580.0	7852.0
0.0	-500.0	7911.5	200.0	-220.0	7925.5	500.0	-560.0	7885.4
0.0	-480.0	7880.3	200.0	-200.0	7926.6	500.0	-540.0	7860.8
0.0	-460.0	7841.2	200.0	-180.0	7932.5	500.0	-520.0	7919.9
0.0	-440.0	7887.8	200.0	-160.0	7937.4	500.0	-500.0	7881.1
0.0	-420.0	7925.8	200.0	-140.0	7937.4	500.0	-480.0	7923.2
0.0	-400.0	7875.6	200.0	-120.0	7956.7	500.0	-460.0	7937.5
0.0	-380.0	7829.4	200.0	-100.0	7891.7	500.0	-440.0	7890.7
0.0	-360.0	7814.1	200.0	-80.0	7925.8	500.0	-420.0	7932.3
0.0	-340.0	7960.9	200.0	-60.0	7914.4	500.0	-400.0	7914.3
0.0	-320.0	7922.8	200.0	-40.0	7923.2	500.0	-380.0	7911.9
0.0	-300.0	7884.7	200.0	-20.0	7951.2	500.0	-360.0	7930.7
0.0	-280.0	7920.4	200.0	0.0	7964.4	500.0	-340.0	7930.2
0.0	-260.0	7893.2	300.0	-600.0	7823.3	500.0	-320.0	8104.9
0.0	-240.0	7824.0	300.0	-580.0	7835.5	500.0	-300.0	7920.9
0.0	-220.0	7813.7	300.0	-560.0	7894.4	500.0	-280.0	7962.3
0.0	-200.0	7968.6	300.0	-540.0	7860.7	500.0	-260.0	7929.8
0.0	-180.0	7999.8	300.0	-520.0	7893.5	500.0	-240.0	7931.5
0.0	-160.0	7923.4	300.0	-500.0	7879.1	500.0	-220.0	7930.7
0.0	-140.0	7882.5	300.0	-480.0	7885.1	500.0	-200.0	7965.2
0.0	-120.0	7834.2	300.0	-460.0	7924.6	500.0	-180.0	7923.6
0.0	-100.0	7868.3	300.0	-440.0	7921.1	500.0	-160.0	7969.4
0.0	-80.0	7925.3	300.0	-420.0	7941.9	500.0	-140.0	8049.5
0.0	-60.0	7932.5	300.0	-400.0	7951.2	500.0	-120.0	8121.4
0.0	-40.0	7933.0	300.0	-380.0	7969.1	500.0	-100.0	8144.5
0.0	-20.0	7959.8	300.0	-360.0	7961.9	500.0	-80.0	8053.9
0.0	0.0	8041.8	300.0	-340.0	7940.0	500.0	-60.0	7945.1
100.0	-600.0	7879.7	300.0	-320.0	7940.5	500.0	-40.0	8039.6
100.0	-580.0	7927.2	300.0	-300.0	7947.8	500.0	-20.0	8128.6
100.0	-560.0	7832.2	300.0	-280.0	7952.9	500.0	0.0	8093.2
100.0	-540.0	7826.5	300.0	-260.0	7966.6	600.0	-600.0	7850.4
100.0	-520.0	7862.5	300.0	-240.0	7920.8	600.0	-580.0	7879.6
100.0	-500.0	7859.0	300.0	-220.0	7951.5	600.0	-560.0	7945.6
100.0	-480.0	7887.4	300.0	-200.0	8101.9	600.0	-540.0	7872.4
100.0	-460.0	7895.0	300.0	-180.0	7947.8	600.0	-520.0	7864.4
100.0	-440.0	7874.4	300.0	-160.0	7955.1	600.0	-500.0	7878.5
100.0	-420.0	7891.9	300.0	-140.0	7995.3	600.0	-480.0	7859.9
100.0	-400.0	7971.0	300.0	-120.0	8041.2	600.0	-460.0	7884.5
100.0	-380.0	7961.8	300.0	-100.0	8086.5	600.0	-440.0	7895.0
100.0	-360.0	7934.3	300.0	-80.0	8037.0	600.0	-420.0	7887.2
100.0	-340.0	7918.9	300.0	-60.0	8062.8	600.0	-400.0	7888.8
100.0	-320.0	7906.4	300.0	-40.0	8124.0	600.0	-380.0	7883.3
100.0	-300.0	7965.4	300.0	-20.0	8033.4	600.0	-360.0	7967.9
100.0	-280.0	7852.2	300.0	0.0	8115.1	600.0	-340.0	8132.8
100.0	-260.0	7839.3	400.0	-600.0	7864.2	600.0	-320.0	7975.6
100.0	-240.0	7906.1	400.0	-580.0	7871.4	600.0	-300.0	8054.2
100.0	-220.0	8022.6	400.0	-560.0	7898.7	600.0	-280.0	8120.0
100.0	-200.0	7894.4	400.0	-540.0	7929.9	600.0	-260.0	8139.0
100.0	-180.0	7830.5	400.0	-520.0	7911.6	600.0	-240.0	8068.9
100.0	-160.0	7957.5	400.0	-500.0	7951.0	600.0	-220.0	7947.8
100.0	-140.0	7976.9	400.0	-480.0	7973.3	600.0	-200.0	7861.2
100.0	-120.0	8017.6	400.0	-460.0	7878.3	600.0	-180.0	7962.8
100.0	-100.0	7972.0	400.0	-440.0	7893.7	600.0	-160.0	7976.4
100.0	-80.0	7939.3	400.0	-420.0	7914.0	600.0	-140.0	7984.3
100.0	-60.0	7949.0	400.0	-400.0	7925.4	600.0	-120.0	7950.4
100.0	-40.0	7929.2	400.0	-380.0	7915.5	600.0	-100.0	7979.0
100.0	-20.0	7948.7	400.0	-360.0	7922.9	600.0	-80.0	8023.8
100.0	0.0	7977.4	400.0	-340.0	7948.7	600.0	-60.0	8068.6
200.0	-600.0	7825.8	400.0	-320.0	7934.4	600.0	-40.0	7996.8
200.0	-580.0	7844.3	400.0	-300.0	7951.2	600.0	-20.0	8042.7
200.0	-560.0	7839.7	400.0	-280.0	7966.4	600.0	0.0	8054.8
200.0	-540.0	7865.6	400.0	-260.0	7929.7	700.0	-600.0	7904.0
200.0	-520.0	7874.4	400.0	-240.0	7966.2	700.0	-580.0	7906.1
200.0	-500.0	7860.7	400.0	-220.0	7968.2	700.0	-560.0	7946.7
200.0	-480.0	7882.9	400.0	-200.0	7943.8	700.0	-540.0	7975.5
200.0	-460.0	7886.5	400.0	-180.0	7993.0	700.0	-520.0	8013.7
200.0	-440.0	7909.3	400.0	-160.0	8025.5	700.0	-500.0	7904.1
200.0	-420.0	7889.5	400.0	-140.0	8010.4	700.0	-480.0	7891.5
200.0	-400.0	7843.3	400.0	-120.0	8062.4	700.0	-460.0	7886.9
200.0	-380.0	7972.6	400.0	-100.0	8047.5	700.0	-440.0	7893.3
200.0	-360.0	7938.7	400.0	-80.0	8119.0	700.0	-420.0	7896.9
200.0	-340.0	7936.4	400.0	-60.0	8121.2	700.0	-400.0	7868.4

X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.
700.0	-380.0	7857.1	900.0	-100.0	7984.5	1200.0	-440.0	7839.0
700.0	-360.0	7935.4	900.0	-80.0	8012.3	1200.0	-420.0	7821.0
700.0	-340.0	7938.3	900.0	-60.0	8040.3	1200.0	-400.0	7830.7
700.0	-320.0	7876.3	900.0	-40.0	8025.7	1200.0	-380.0	7836.4
700.0	-300.0	7954.5	900.0	-20.0	7987.9	1200.0	-360.0	7864.9
700.0	-280.0	7985.0	900.0	0.0	8003.5	1200.0	-340.0	7955.3
700.0	-260.0	7910.3	1000.0	-600.0	7837.4	1200.0	-320.0	7768.9
700.0	-240.0	7919.8	1000.0	-580.0	7839.4	1200.0	-300.0	7865.2
700.0	-220.0	7944.8	1000.0	-560.0	7835.7	1200.0	-280.0	7791.2
700.0	-200.0	7942.8	1000.0	-540.0	7838.9	1200.0	-260.0	7862.3
700.0	-180.0	7979.7	1000.0	-520.0	7864.6	1200.0	-240.0	7834.7
700.0	-160.0	7956.7	1000.0	-500.0	7886.2	1200.0	-220.0	7830.0
700.0	-140.0	7956.0	1000.0	-480.0	7847.9	1200.0	-200.0	7861.4
700.0	-120.0	7944.1	1000.0	-460.0	7925.9	1200.0	-180.0	7874.3
700.0	-100.0	8013.2	1000.0	-440.0	7950.4	1200.0	-160.0	7904.8
700.0	-80.0	8162.1	1000.0	-420.0	7897.9	1200.0	-140.0	7791.2
700.0	-60.0	8047.6	1000.0	-400.0	7907.1	1200.0	-120.0	7828.3
700.0	-40.0	8106.6	1000.0	-380.0	7828.8	1200.0	-100.0	7818.3
700.0	-20.0	8162.5	1000.0	-360.0	7798.4	1200.0	-80.0	7894.3
700.0	0.0	8184.6	1000.0	-340.0	7803.7	1200.0	-60.0	7832.7
800.0	-600.0	7920.7	1000.0	-320.0	7860.4	1200.0	-40.0	7817.1
800.0	-580.0	7896.8	1000.0	-300.0	7875.6	1200.0	-20.0	7853.1
800.0	-560.0	7842.1	1000.0	-280.0	7854.0	1200.0	0.0	7862.3
800.0	-540.0	7819.7	1000.0	-260.0	7880.1	1300.0	-600.0	7782.9
800.0	-520.0	7815.2	1000.0	-240.0	7876.3	1300.0	-580.0	7804.2
800.0	-500.0	7835.2	1000.0	-220.0	7898.7	1300.0	-560.0	7811.8
800.0	-480.0	7843.4	1000.0	-200.0	7888.6	1300.0	-540.0	7817.4
800.0	-460.0	7905.7	1000.0	-180.0	7905.9	1300.0	-520.0	7801.1
800.0	-440.0	7880.9	1000.0	-160.0	7916.0	1300.0	-500.0	7782.6
800.0	-420.0	7872.1	1000.0	-140.0	7918.1	1300.0	-480.0	7805.3
800.0	-400.0	7894.7	1000.0	-120.0	7948.0	1300.0	-460.0	7804.0
800.0	-380.0	7889.3	1000.0	-100.0	7975.6	1300.0	-440.0	7800.9
800.0	-360.0	7894.0	1000.0	-80.0	7911.4	1300.0	-420.0	7790.1
800.0	-340.0	7936.7	1000.0	-60.0	7954.2	1300.0	-400.0	7798.2
800.0	-320.0	7888.3	1000.0	-40.0	7967.3	1300.0	-380.0	7809.0
800.0	-300.0	7853.3	1000.0	-20.0	7941.4	1300.0	-360.0	7796.1
800.0	-280.0	7905.2	1000.0	0.0	7958.8	1300.0	-340.0	7808.7
800.0	-260.0	7918.0	1100.0	-600.0	7833.4	1300.0	-320.0	7813.2
800.0	-240.0	7933.8	1100.0	-580.0	7851.9	1300.0	-300.0	7882.6
800.0	-220.0	7957.6	1100.0	-560.0	7802.0	1300.0	-280.0	7805.1
800.0	-200.0	7941.6	1100.0	-540.0	7834.5	1300.0	-260.0	7799.9
800.0	-180.0	7964.1	1100.0	-520.0	7816.9	1300.0	-240.0	7835.6
800.0	-160.0	7973.6	1100.0	-500.0	7846.8	1300.0	-220.0	7878.1
800.0	-140.0	7987.4	1100.0	-480.0	7831.8	1300.0	-200.0	7867.8
800.0	-120.0	7997.1	1100.0	-460.0	7822.8	1300.0	-180.0	7782.3
800.0	-100.0	8035.0	1100.0	-440.0	7859.4	1300.0	-160.0	7796.8
800.0	-80.0	8037.1	1100.0	-420.0	7838.3	1300.0	-140.0	7775.9
800.0	-60.0	8013.6	1100.0	-400.0	7828.2	1300.0	-120.0	7751.1
800.0	-40.0	8008.2	1100.0	-380.0	7827.2	1300.0	-100.0	7770.9
800.0	-20.0	8030.8	1100.0	-360.0	7934.9	1300.0	-80.0	7844.2
800.0	0.0	8112.7	1100.0	-340.0	7809.2	1300.0	-60.0	7801.9
900.0	-600.0	7867.6	1100.0	-320.0	7817.2	1300.0	-40.0	7776.8
900.0	-580.0	7862.4	1100.0	-300.0	7832.4	1300.0	-20.0	7755.6
900.0	-560.0	7893.9	1100.0	-280.0	7834.0	1300.0	0.0	7790.3
900.0	-540.0	7886.8	1100.0	-260.0	7835.2	1400.0	-600.0	7782.4
900.0	-520.0	7871.7	1100.0	-240.0	7851.5	1400.0	-580.0	7777.3
900.0	-500.0	7872.8	1100.0	-220.0	7873.7	1400.0	-560.0	7792.7
900.0	-480.0	7964.7	1100.0	-200.0	7871.0	1400.0	-540.0	7801.7
900.0	-460.0	7903.4	1100.0	-180.0	7861.0	1400.0	-520.0	7792.2
900.0	-440.0	7836.0	1100.0	-160.0	7872.2	1400.0	-500.0	7785.5
900.0	-420.0	7833.3	1100.0	-140.0	7901.3	1400.0	-480.0	7789.5
900.0	-400.0	7852.0	1100.0	-120.0	7865.2	1400.0	-460.0	7789.8
900.0	-380.0	7839.2	1100.0	-100.0	7849.3	1400.0	-440.0	7787.8
900.0	-360.0	7849.8	1100.0	-80.0	7896.7	1400.0	-420.0	7803.5
900.0	-340.0	7838.4	1100.0	-60.0	7902.9	1400.0	-400.0	7797.6
900.0	-320.0	7888.0	1100.0	-40.0	7873.1	1400.0	-380.0	7787.2
900.0	-300.0	7938.2	1100.0	-20.0	7887.0	1400.0	-360.0	7845.9
900.0	-280.0	7929.3	1100.0	0.0	7905.2	1400.0	-340.0	7793.5
900.0	-260.0	7926.2	1200.0	-600.0	7819.5	1400.0	-320.0	7825.6
900.0	-240.0	7952.4	1200.0	-580.0	7817.8	1400.0	-300.0	7844.3
900.0	-220.0	7947.6	1200.0	-560.0	7825.8	1400.0	-280.0	7831.2
900.0	-200.0	7945.1	1200.0	-540.0	7818.7	1400.0	-260.0	7844.4
900.0	-180.0	7919.6	1200.0	-520.0	7822.5	1400.0	-240.0	7829.0
900.0	-160.0	7948.7	1200.0	-500.0	7822.1	1400.0	-220.0	7798.2
900.0	-140.0	7956.4	1200.0	-480.0	7806.0	1400.0	-200.0	7806.7
900.0	-120.0	8000.7	1200.0	-460.0	7809.6	1400.0	-180.0	7817.9

X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.
1400.0	-160.0	7761.8	1700.0	-540.0	7789.3	1900.0	-260.0	7862.3
1400.0	-140.0	7760.4	1700.0	-520.0	7805.8	1900.0	-240.0	7818.0
1400.0	-120.0	7765.7	1700.0	-500.0	7788.1	1900.0	-220.0	7879.7
1400.0	-100.0	7768.2	1700.0	-480.0	7812.8	1900.0	-200.0	7839.8
1400.0	-80.0	7767.0	1700.0	-460.0	7803.8	1900.0	-180.0	7848.8
1400.0	-60.0	7766.3	1700.0	-440.0	7782.9	1900.0	-160.0	7864.0
1400.0	-40.0	7822.7	1700.0	-420.0	7803.7	1900.0	-140.0	7854.1
1400.0	-20.0	7783.2	1700.0	-400.0	7805.4	1900.0	-120.0	7879.7
1400.0	0.0	7817.7	1700.0	-380.0	7801.3	1900.0	-100.0	7872.9
1400.0	20.0	7830.4	1700.0	-360.0	7821.8	1900.0	-80.0	7895.3
1500.0	-600.0	7786.6	1700.0	-340.0	7805.6	1900.0	-60.0	7880.4
1500.0	-580.0	7780.0	1700.0	-320.0	7825.8	1900.0	-40.0	7883.0
1500.0	-560.0	7792.9	1700.0	-300.0	7816.9	1900.0	-20.0	7828.3
1500.0	-540.0	7795.6	1700.0	-280.0	7786.3	1900.0	0.0	7807.6
1500.0	-520.0	7787.2	1700.0	-260.0	7798.7	2000.0	-600.0	7824.5
1500.0	-500.0	7788.1	1700.0	-240.0	7806.7	2000.0	-580.0	7875.8
1500.0	-480.0	7778.9	1700.0	-220.0	7816.0	2000.0	-560.0	7854.7
1500.0	-460.0	7762.0	1700.0	-200.0	7792.6	2000.0	-540.0	7791.8
1500.0	-440.0	7805.0	1700.0	-180.0	7809.5	2000.0	-520.0	7838.3
1500.0	-420.0	7801.0	1700.0	-160.0	7968.0	2000.0	-500.0	7877.0
1500.0	-400.0	7794.9	1700.0	-140.0	7779.5	2000.0	-480.0	7867.6
1500.0	-380.0	7811.7	1700.0	-120.0	7813.0	2000.0	-460.0	7839.5
1500.0	-360.0	7812.6	1700.0	-100.0	7788.4	2000.0	-440.0	7845.1
1500.0	-340.0	7799.5	1700.0	-80.0	7830.7	2000.0	-420.0	7864.6
1500.0	-320.0	7787.8	1700.0	-60.0	7813.1	2000.0	-400.0	7844.0
1500.0	-300.0	7806.6	1700.0	-40.0	7777.5	2000.0	-380.0	7861.0
1500.0	-280.0	7813.7	1700.0	-20.0	7824.9	2000.0	-360.0	7870.4
1500.0	-260.0	7847.9	1700.0	0.0	7841.3	2000.0	-340.0	7886.8
1500.0	-240.0	7847.3	1800.0	-600.0	7793.7	2000.0	-320.0	7871.3
1500.0	-220.0	7853.1	1800.0	-580.0	7815.6	2000.0	-300.0	7898.1
1500.0	-200.0	7829.4	1800.0	-560.0	7813.5	2000.0	-280.0	7883.2
1500.0	-180.0	7785.5	1800.0	-540.0	7816.1	2000.0	-260.0	7846.9
1500.0	-160.0	7822.8	1800.0	-520.0	7826.7	2000.0	-240.0	7866.7
1500.0	-140.0	7858.7	1800.0	-500.0	7816.5	2000.0	-220.0	7880.3
1500.0	-120.0	7822.4	1800.0	-480.0	7845.7	2000.0	-200.0	7901.0
1500.0	-100.0	7760.4	1800.0	-460.0	7827.5	2000.0	-180.0	7892.6
1500.0	-80.0	7737.9	1800.0	-440.0	7805.3	2000.0	-160.0	7896.6
1500.0	-60.0	7768.9	1800.0	-420.0	7811.5	2000.0	-140.0	7921.7
1500.0	-40.0	7795.6	1800.0	-400.0	7828.5	2000.0	-120.0	7925.9
1500.0	-20.0	7742.8	1800.0	-380.0	7856.4	2000.0	-100.0	7907.4
1500.0	0.0	7700.2	1800.0	-360.0	7839.4	2000.0	-80.0	7909.4
1600.0	-600.0	7789.8	1800.0	-340.0	7825.4	2000.0	-60.0	7912.5
1600.0	-580.0	7789.3	1800.0	-320.0	7840.1	2000.0	-40.0	7915.6
1600.0	-560.0	7786.2	1800.0	-300.0	7857.7	2000.0	-20.0	7967.7
1600.0	-540.0	7781.2	1800.0	-280.0	7850.2	2000.0	0.0	7915.7
1600.0	-520.0	7784.1	1800.0	-260.0	7866.0	2100.0	-600.0	7893.7
1600.0	-500.0	7791.0	1800.0	-240.0	7874.1	2100.0	-580.0	7887.4
1600.0	-480.0	7793.6	1800.0	-220.0	7811.0	2100.0	-560.0	7886.8
1600.0	-460.0	7777.1	1800.0	-200.0	7821.5	2100.0	-540.0	7962.1
1600.0	-440.0	7774.1	1800.0	-180.0	7837.2	2100.0	-520.0	7908.4
1600.0	-420.0	7794.5	1800.0	-160.0	7855.8	2100.0	-500.0	7895.1
1600.0	-400.0	7793.8	1800.0	-140.0	7854.9	2100.0	-480.0	7875.9
1600.0	-380.0	7778.8	1800.0	-120.0	7902.7	2100.0	-460.0	7850.3
1600.0	-360.0	7797.7	1800.0	-100.0	7855.1	2100.0	-440.0	7845.7
1600.0	-340.0	7797.7	1800.0	-80.0	7791.9	2100.0	-420.0	7844.6
1600.0	-320.0	7800.8	1800.0	-60.0	7783.3	2100.0	-400.0	7818.3
1600.0	-300.0	7802.2	1800.0	-40.0	7798.3	2100.0	-380.0	7859.9
1600.0	-280.0	7787.3	1800.0	-20.0	7811.7	2100.0	-360.0	7854.9
1600.0	-260.0	7797.9	1800.0	0.0	7811.2	2100.0	-340.0	7887.1
1600.0	-240.0	7832.1	1900.0	-600.0	7841.9	2100.0	-320.0	7916.7
1600.0	-220.0	7797.5	1900.0	-580.0	7800.5	2100.0	-300.0	7893.7
1600.0	-200.0	7844.0	1900.0	-560.0	7828.3	2100.0	-280.0	7909.0
1600.0	-180.0	7833.6	1900.0	-540.0	7857.6	2100.0	-260.0	7861.0
1600.0	-160.0	7780.7	1900.0	-520.0	7813.2	2100.0	-240.0	7886.1
1600.0	-140.0	7760.7	1900.0	-500.0	7818.2	2100.0	-220.0	7884.6
1600.0	-120.0	7765.7	1900.0	-480.0	7818.7	2100.0	-200.0	7921.1
1600.0	-100.0	7801.1	1900.0	-460.0	7824.3	2100.0	-180.0	7921.2
1600.0	-80.0	7855.8	1900.0	-440.0	7827.0	2100.0	-160.0	7898.1
1600.0	-60.0	7736.8	1900.0	-420.0	7819.4	2100.0	-140.0	7940.3
1600.0	-40.0	7722.4	1900.0	-400.0	7825.5	2100.0	-120.0	7915.9
1600.0	-20.0	7668.5	1900.0	-380.0	7843.3	2100.0	-100.0	7927.2
1600.0	0.0	7738.7	1900.0	-360.0	7873.5	2100.0	-80.0	7954.2
1700.0	-620.0	7812.9	1900.0	-340.0	7831.4	2100.0	-60.0	7908.6
1700.0	-600.0	7844.2	1900.0	-320.0	7902.3	2100.0	-40.0	7927.9
1700.0	-580.0	7850.0	1900.0	-300.0	7844.0	2100.0	-20.0	7912.4
1700.0	-560.0	7791.8	1900.0	-280.0	7845.5	2100.0	0.0	7884.2

X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.	X(East)	Y(North)	Tot F.
2200.0	-500.0	7949.6	2200.0	-180.0	7942.8	2300.0	-380.0	7967.0
2200.0	-580.0	7974.4	2200.0	-160.0	7907.0	2300.0	-360.0	7922.2
2200.0	-560.0	7952.7	2200.0	-140.0	7926.3	2300.0	-340.0	7930.9
2200.0	-540.0	7920.2	2200.0	-120.0	7932.5	2300.0	-320.0	7971.6
2200.0	-520.0	7912.7	2200.0	-100.0	7917.0	2300.0	-300.0	7967.7
2200.0	-500.0	7950.6	2200.0	-80.0	7915.0	2300.0	-280.0	7916.4
2200.0	-480.0	7945.1	2200.0	-60.0	7943.0	2300.0	-260.0	7913.0
2200.0	-460.0	7929.8	2200.0	-40.0	7952.6	2300.0	-240.0	7930.3
2200.0	-440.0	7897.3	2200.0	-20.0	7984.4	2300.0	-220.0	7912.1
2200.0	-420.0	7890.5	2200.0	0.0	7961.0	2300.0	-200.0	7980.8
2200.0	-400.0	7870.5	2300.0	-600.0	7918.3	2300.0	-180.0	7969.4
2200.0	-380.0	7912.2	2300.0	-580.0	7936.5	2300.0	-160.0	7958.0
2200.0	-360.0	7867.8	2300.0	-560.0	7884.9	2300.0	-140.0	7980.2
2200.0	-340.0	7920.1	2300.0	-540.0	7911.7	2300.0	-120.0	8016.5
2200.0	-320.0	7931.5	2300.0	-520.0	7922.1	2300.0	-100.0	8001.2
2200.0	-300.0	7901.9	2300.0	-500.0	7917.4	2300.0	-80.0	7926.3
2200.0	-280.0	7906.9	2300.0	-480.0	7913.3	2300.0	-60.0	7927.1
2200.0	-260.0	7966.8	2300.0	-460.0	7912.0	2300.0	-40.0	7979.7
2200.0	-240.0	7923.8	2300.0	-440.0	7898.0	2300.0	-20.0	7993.7
2200.0	-220.0	7943.7	2300.0	-420.0	7932.1	2300.0	0.0	7998.7
2200.0	-200.0	7926.6	2300.0	-400.0	7954.8			

VLF-EM DATA

In Phase, Quadrature

Station: NPM (Lualualei, Hawaii) 23.4 kHz

Equipment: Scintrex VLF-4 (IGS)

Karen Grid - Lines: 0 to 23+00E

June, 1987

X(East)	Y(North)	In	Ph	Quad	X(East)	Y(North)	In	Ph	Quad	X(East)	Y(North)	In	Ph	Quad
0.0	-600.0	2		4	200.0	-340.0	5		4	400.0	-60.0	3		-1
0.0	-600.0	2		4	200.0	-320.0	12		8	400.0	-40.0	6		0
0.0	-580.0	2		5	200.0	-300.0	15		7	400.0	-20.0	7		1
0.0	-560.0	6		6	200.0	-280.0	15		5	400.0	0.0	4		j
0.0	-540.0	9		6	200.0	-260.0	12		3	500.0	-600.0	7		-5
0.0	-520.0	6		6	200.0	-240.0	10		6	500.0	-580.0	4		-6
0.0	-500.0	5		7	200.0	-220.0	12		5	500.0	-560.0	2		-7
0.0	-480.0	8		7	200.0	-200.0	6		3	500.0	-540.0	1		-6
0.0	-460.0	5		7	200.0	-180.0	7		2	500.0	-520.0	1		-7
0.0	-440.0	3		7	200.0	-160.0	6		3	500.0	-500.0	0		-4
0.0	-420.0	1		7	200.0	-140.0	7		3	500.0	-480.0	1		-4
0.0	-400.0	6		8	200.0	-120.0	1		2	500.0	-460.0	3		-2
0.0	-380.0	3		8	200.0	-100.0	11		5	500.0	-440.0	3		-2
0.0	-360.0	2		7	200.0	-80.0	11		7	500.0	-420.0	0		-2
0.0	-340.0	0		8	200.0	-60.0	14		8	500.0	-400.0	1		-1
0.0	-320.0	3		7	200.0	-40.0	13		6	500.0	-380.0	0		-2
0.0	-300.0	1		7	200.0	-20.0	12		5	500.0	-360.0	-1		-2
0.0	-280.0	3		4	200.0	0.0	4		4	500.0	-340.0	-6		-2
0.0	-260.0	6		1	300.0	-600.0	12		1	500.0	-320.0	-2		-1
0.0	-240.0	8		0	300.0	-580.0	11		2	500.0	-300.0	-1		-2
0.0	-220.0	6		0	300.0	-560.0	7		2	500.0	-280.0	-3		-3
0.0	-200.0	11		-1	300.0	-540.0	5		2	500.0	-260.0	-1		-2
0.0	-180.0	5		0	300.0	-520.0	10		3	500.0	-240.0	0		-2
0.0	-160.0	6		0	300.0	-500.0	9		3	500.0	-220.0	0		-2
0.0	-140.0	7		1	300.0	-480.0	11		4	500.0	-200.0	0		-3
0.0	-120.0	6		0	300.0	-460.0	9		2	500.0	-180.0	4		-2
0.0	-100.0	5		1	300.0	-440.0	5		1	500.0	-160.0	4		-1
0.0	-80.0	2		1	300.0	-420.0	2		0	500.0	-140.0	6		0
0.0	-60.0	3		0	300.0	-400.0	0		0	500.0	-120.0	9		0
0.0	-40.0	1		0	300.0	-380.0	1		0	500.0	-100.0	10		0
0.0	-20.0	3		0	300.0	-360.0	3		4	500.0	-80.0	11		0
0.0	0.0	5		1	300.0	-340.0	8		5	500.0	-60.0	14		0
100.0	-600.0	3		6	300.0	-320.0	11		7	500.0	-40.0	13		0
100.0	-580.0	1		6	300.0	-300.0	17		8	500.0	-20.0	9		-1
100.0	-560.0	-1		5	300.0	-280.0	14		4	500.0	0.0	19		0
100.0	-540.0	-2		5	300.0	-260.0	12		4	600.0	-600.0	27		2
100.0	-520.0	-4		5	300.0	-240.0	15		4	600.0	-580.0	24		0
100.0	-500.0	-2		4	300.0	-220.0	16		4	600.0	-560.0	18		-1
100.0	-480.0	-2		6	300.0	-200.0	11		4	600.0	-540.0	18		-1
100.0	-460.0	1		7	300.0	-180.0	13		3	600.0	-520.0	21		0
100.0	-440.0	1		7	300.0	-160.0	12		2	600.0	-500.0	13		-2
100.0	-420.0	-2		5	300.0	-140.0	10		1	600.0	-480.0	12		-2
100.0	-400.0	-2		5	300.0	-120.0	10		2	600.0	-460.0	11		-1
100.0	-380.0	2		7	300.0	-100.0	11		4	600.0	-440.0	9		-2
100.0	-360.0	5		8	300.0	-80.0	10		4	600.0	-420.0	9		-3
100.0	-340.0	5		7	300.0	-60.0	12		5	600.0	-400.0	8		-2
100.0	-320.0	9		5	300.0	-40.0	14		6	600.0	-380.0	12		0
100.0	-300.0	9		5	300.0	-20.0	12		6	600.0	-360.0	11		0
100.0	-280.0	12		5	300.0	0.0	12		5	600.0	-340.0	12		0
100.0	-260.0	7		1	400.0	-600.0	4		-5	600.0	-320.0	8		-1
100.0	-240.0	7		0	400.0	-580.0	0		-6	600.0	-300.0	8		-1
100.0	-220.0	5		0	400.0	-560.0	-2		-5	600.0	-280.0	8		0
100.0	-200.0	4		-1	400.0	-540.0	-3		-7	600.0	-260.0	8		0
100.0	-180.0	-2		-4	400.0	-520.0	-5		-4	600.0	-240.0	9		-1
100.0	-160.0	-6		-4	400.0	-500.0	0		0	600.0	-220.0	9		-1
100.0	-140.0	-5		-2	400.0	-480.0	1		0	600.0	-200.0	9		-1
100.0	-120.0	-2		0	400.0	-460.0	0		-1	600.0	-180.0	9		-1
100.0	-100.0	4		0	400.0	-440.0	0		-1	600.0	-160.0	8		-1
100.0	-80.0	6		1	400.0	-420.0	-2		-1	600.0	-140.0	9		-1
100.0	-60.0	4		1	400.0	-400.0	-2		-3	600.0	-120.0	7		-2
100.0	-40.0	1		0	400.0	-380.0	-2		-3	600.0	-100.0	6		-1
100.0	-20.0	2		1	400.0	-360.0	-8		-6	600.0	-80.0	6		-1
100.0	0.0	6		1	400.0	-340.0	-7		-7	600.0	-60.0	11		0
200.0	-600.0	8		3	400.0	-320.0	-4		-5	600.0	-40.0	12		0
200.0	-580.0	7		4	400.0	-300.0	0		-3	600.0	-20.0	13		0
200.0	-560.0	4		3	400.0	-280.0	-1		-4	600.0	0.0	14		0
200.0	-540.0	0		5	400.0	-260.0	0		-5	700.0	-600.0	7		-6
200.0	-520.0	4		4	400.0	-240.0	-2		-6	700.0	-580.0	0		-8
200.0	-500.0	1		4	400.0	-220.0	1		-5	700.0	-560.0	0		-8
200.0	-480.0	0		4	400.0	-200.0	0		-4	700.0	-540.0	-2		-7
200.0	-460.0	-3		5	400.0	-180.0	-2		-5	700.0	-520.0	-1		-7
200.0	-440.0	0		6	400.0	-160.0	-1		-5	700.0	-500.0	6		-5
200.0	-420.0	2		10	400.0	-140.0	1		-4	700.0	-480.0	6		-4
200.0	-400.0	4		9	400.0	-120.0	0		-4	700.0	-460.0	5		-5
200.0	-380.0	-1		3	400.0	-100.0	0		-4	700.0	-440.0	11		-2
200.0	-360.0	0		4	400.0	-80.0	4		-4	700.0	-420.0	14		-1

X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Ph	Quad
700.0	-400.0	10	-3	900.0	-120.0	2	-9	1200.0	-460.0	13	-5
700.0	-380.0	2	-5	900.0	-100.0	0	-9	1200.0	-440.0	11	-5
700.0	-360.0	0	-8	900.0	-80.0	-1	-8	1200.0	-420.0	12	-4
700.0	-340.0	1	-6	900.0	-60.0	4	-7	1200.0	-400.0	10	-5
700.0	-320.0	0	-8	900.0	-40.0	2	-4	1200.0	-380.0	8	-7
700.0	-300.0	-1	-8	900.0	-20.0	2	-3	1200.0	-360.0	7	-8
700.0	-280.0	5	-6	900.0	0.0	3	-1	1200.0	-340.0	4	-9
700.0	-260.0	4	-5	1000.0	-600.0	4	-6	1200.0	-320.0	6	-6
700.0	-240.0	5	-3	1000.0	-580.0	8	-5	1200.0	-300.0	9	-5
700.0	-220.0	7	-3	1000.0	-560.0	8	-5	1200.0	-280.0	9	-4
700.0	-200.0	8	-1	1000.0	-540.0	7	-5	1200.0	-260.0	7	-4
700.0	-180.0	6	-2	1000.0	-520.0	3	-8	1200.0	-240.0	7	-2
700.0	-160.0	7	-1	1000.0	-500.0	3	-6	1200.0	-220.0	3	-2
700.0	-140.0	6	-3	1000.0	-480.0	2	-5	1200.0	-200.0	0	-2
700.0	-120.0	6	-4	1000.0	-460.0	3	-5	1200.0	-180.0	-6	-2
700.0	-100.0	1	-4	1000.0	-440.0	2	-7	1200.0	-160.0	-6	-1
700.0	-80.0	4	-3	1000.0	-420.0	3	-7	1200.0	-140.0	-10	0
700.0	-60.0	3	-2	1000.0	-400.0	2	-7	1200.0	-120.0	-12	0
700.0	-40.0	3	-2	1000.0	-380.0	0	-7	1200.0	-100.0	-15	0
700.0	-20.0	1	-1	1000.0	-360.0	1	-8	1200.0	-80.0	-11	0
700.0	0.0	9	0	1000.0	-340.0	0	-9	1200.0	-60.0	-19	0
800.0	-600.0	4	-5	1000.0	-320.0	3	-7	1200.0	-40.0	-14	-1
800.0	-580.0	3	-7	1000.0	-300.0	3	-6	1200.0	-20.0	-5	0
800.0	-560.0	0	-8	1000.0	-280.0	5	-5	1200.0	0.0	5	1
800.0	-540.0	6	-6	1000.0	-260.0	10	-2	1300.0	-600.0	41	-20
800.0	-520.0	6	-5	1000.0	-240.0	5	-4	1300.0	-580.0	37	-21
800.0	-500.0	1	-7	1000.0	-220.0	5	-6	1300.0	-560.0	22	-22
800.0	-480.0	-2	-8	1000.0	-200.0	3	-5	1300.0	-540.0	23	-25
800.0	-460.0	-1	-9	1000.0	-180.0	7	-2	1300.0	-520.0	18	-26
800.0	-440.0	-7	-11	1000.0	-160.0	9	0	1300.0	-500.0	22	-26
800.0	-420.0	-2	-10	1000.0	-140.0	7	0	1300.0	-480.0	24	-25
800.0	-400.0	0	-11	1000.0	-120.0	7	-1	1300.0	-460.0	22	-26
800.0	-380.0	0	-10	1000.0	-100.0	3	-3	1300.0	-440.0	26	-23
800.0	-360.0	9	-7	1000.0	-80.0	0	-4	1300.0	-420.0	32	-21
800.0	-340.0	13	-7	1000.0	-60.0	-7	-6	1300.0	-400.0	36	-23
800.0	-320.0	14	-7	1000.0	-40.0	-7	-6	1300.0	-380.0	40	-25
800.0	-300.0	13	-8	1000.0	-20.0	-9	-5	1300.0	-360.0	40	-24
800.0	-280.0	10	-11	1000.0	0.0	-7	-3	1300.0	-340.0	46	-23
800.0	-260.0	9	-11	1100.0	-600.0	11	-5	1300.0	-320.0	45	-18
800.0	-240.0	10	-9	1100.0	-580.0	6	-4	1300.0	-300.0	41	-13
800.0	-220.0	10	-8	1100.0	-560.0	7	-3	1300.0	-280.0	39	-10
800.0	-200.0	13	-8	1100.0	-540.0	4	-4	1300.0	-260.0	30	-9
800.0	-180.0	10	-8	1100.0	-520.0	3	-5	1300.0	-240.0	23	-6
800.0	-160.0	10	-8	1100.0	-500.0	4	-3	1300.0	-220.0	22	-3
800.0	-140.0	8	-6	1100.0	-480.0	4	-2	1300.0	-200.0	16	0
800.0	-120.0	9	-6	1100.0	-460.0	0	-5	1300.0	-180.0	13	3
800.0	-100.0	9	-5	1100.0	-440.0	0	-5	1300.0	-160.0	9	1
800.0	-80.0	9	-4	1100.0	-420.0	-1	-4	1300.0	-140.0	3	2
800.0	-60.0	7	-2	1100.0	-400.0	-1	-4	1300.0	-120.0	-2	0
800.0	-40.0	10	-2	1100.0	-380.0	-2	-4	1300.0	-100.0	-8	0
800.0	-20.0	9	0	1100.0	-360.0	-1	-5	1300.0	-80.0	-8	0
800.0	0.0	9	2	1100.0	-340.0	-4	-5	1300.0	-60.0	-7	0
900.0	-600.0	8	-5	1100.0	-320.0	-2	-5	1300.0	-40.0	-6	0
900.0	-580.0	8	-5	1100.0	-300.0	0	-3	1300.0	0.0	3	0
900.0	-560.0	4	-6	1100.0	-280.0	-2	-3	1400.0	-600.0	12	8
900.0	-540.0	6	-7	1100.0	-260.0	-3	-3	1400.0	-580.0	10	2
900.0	-520.0	4	-7	1100.0	-240.0	-2	-2	1400.0	-560.0	18	7
900.0	-500.0	0	-8	1100.0	-220.0	-5	-1	1400.0	-540.0	16	0
900.0	-480.0	2	-8	1100.0	-200.0	-6	0	1400.0	-520.0	24	0
900.0	-460.0	5	-6	1100.0	-180.0	-9	-1	1400.0	-500.0	10	0
900.0	-440.0	7	-5	1100.0	-160.0	-11	-1	1400.0	-480.0	7	-1
900.0	-420.0	5	-8	1100.0	-140.0	-12	-1	1400.0	-460.0	4	2
900.0	-400.0	5	-7	1100.0	-120.0	-8	0	1400.0	-440.0	12	0
900.0	-380.0	4	-9	1100.0	-100.0	-9	0	1400.0	-420.0	7	-1
900.0	-360.0	4	-10	1100.0	-80.0	-15	-1	1400.0	-400.0	5	2
900.0	-340.0	7	-8	1100.0	-60.0	-19	-1	1400.0	-380.0	3	-4
900.0	-320.0	12	-7	1100.0	-40.0	7	3	1400.0	-360.0	9	-5
900.0	-300.0	2	-12	1100.0	-20.0	2	0	1400.0	-340.0	8	-1
900.0	-280.0	-1	-15	1100.0	0.0	2	-1	1400.0	-320.0	6	-2
900.0	-260.0	3	-11	1200.0	-600.0	21	-7	1400.0	-300.0	11	-6
900.0	-240.0	11	-7	1200.0	-580.0	13	-8	1400.0	-280.0	36	-18
900.0	-220.0	13	-8	1200.0	-560.0	9	-7	1400.0	-260.0	55	-19
900.0	-200.0	8	-9	1200.0	-540.0	11	-5	1400.0	-240.0	37	-18
900.0	-180.0	4	-11	1200.0	-520.0	11	-5	1400.0	-220.0	27	-16
900.0	-160.0	7	-10	1200.0	-500.0	8	-6	1400.0	-200.0	19	-11
900.0	-140.0	3	-10	1200.0	-480.0	10	-5	1400.0	-180.0	17	-8

X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Pa	Quad
1400.0	-160.0	13	-6	1700.0	-540.0	21	-1	1900.0	-260.0	3	0
1400.0	-140.0	9	-3	1700.0	-520.0	6	-6	1900.0	-240.0	34	-2
1400.0	-120.0	4	-4	1700.0	-500.0	15	1	1900.0	-220.0	4	0
1400.0	-100.0	-1	-4	1700.0	-480.0	6	-2	1900.0	-200.0	19	0
1400.0	-80.0	-6	-3	1700.0	-460.0	7	0	1900.0	-180.0	24	3
1400.0	-60.0	-10	-5	1700.0	-440.0	22	0	1900.0	-160.0	-4	0
1400.0	-40.0	0	-1	1700.0	-420.0	30	-2	1900.0	-140.0	6	-1
1400.0	-20.0	0	0	1700.0	-400.0	18	-7	1900.0	-120.0	23	-9
1400.0	0.0	1	0	1700.0	-380.0	20	0	1900.0	-100.0	22	-11
1400.0	20.0	2	-1	1700.0	-360.0	16	1	1900.0	-80.0	34	-7
1500.0	-600.0	25	3	1700.0	-340.0	8	3	1900.0	-60.0	15	-7
1500.0	-580.0	22	3	1700.0	-320.0	9	1	1900.0	-40.0	12	-4
1500.0	-560.0	12	0	1700.0	-300.0	15	-4	1900.0	-20.0	0	-6
1500.0	-540.0	8	4	1700.0	-280.0	32	-3	1900.0	0.0	15	-4
1500.0	-520.0	0	6	1700.0	-260.0	20	-1	2000.0	-600.0	-17	7
1500.0	-500.0	-4	2	1700.0	-240.0	7	-1	2000.0	-580.0	-9	7
1500.0	-480.0	4	0	1700.0	-220.0	2	5	2000.0	-560.0	0	5
1500.0	-460.0	19	2	1700.0	-200.0	3	0	2000.0	-540.0	13	0
1500.0	-440.0	3	4	1700.0	-180.0	28	-12	2000.0	-520.0	6	-2
1500.0	-420.0	7	5	1700.0	-160.0	48	-25	2000.0	-500.0	4	-2
1500.0	-400.0	-1	5	1700.0	-140.0	55	-24	2000.0	-480.0	5	-2
1500.0	-380.0	11	2	1700.0	-120.0	38	-23	2000.0	-460.0	13	-6
1500.0	-360.0	13	-2	1700.0	-100.0	25	-18	2000.0	-440.0	16	-6
1500.0	-340.0	18	-1	1700.0	-80.0	21	-13	2000.0	-420.0	13	-6
1500.0	-320.0	5	0	1700.0	-60.0	16	-10	2000.0	-400.0	12	0
1500.0	-300.0	2	1	1700.0	-40.0	9	-10	2000.0	-380.0	7	0
1500.0	-280.0	11	-8	1700.0	-20.0	4	-6	2000.0	-360.0	13	-8
1500.0	-260.0	42	-28	1700.0	0.0	6	0	2000.0	-340.0	8	-3
1500.0	-240.0	60	-36	1800.0	-600.0	6	2	2000.0	-320.0	8	0
1500.0	-220.0	38	-29	1800.0	-580.0	4	0	2000.0	-300.0	7	2
1500.0	-200.0	29	-22	1800.0	-560.0	12	-2	2000.0	-280.0	-1	-4
1500.0	-180.0	22	-19	1800.0	-540.0	5	0	2000.0	-260.0	16	0
1500.0	-160.0	21	-13	1800.0	-520.0	17	-9	2000.0	-240.0	-6	1
1500.0	-140.0	18	-5	1800.0	-500.0	9	-7	2000.0	-220.0	-2	0
1500.0	-120.0	12	-3	1800.0	-480.0	17	3	2000.0	-200.0	6	-2
1500.0	-100.0	7	-1	1800.0	-460.0	-3	1	2000.0	-180.0	17	-4
1500.0	-80.0	2	-4	1800.0	-440.0	-9	-1	2000.0	-160.0	16	-2
1500.0	-60.0	1	-4	1800.0	-420.0	5	-2	2000.0	-140.0	15	-4
1500.0	-40.0	11	-1	1800.0	-400.0	2	1	2000.0	-120.0	9	0
1500.0	-20.0	10	1	1800.0	-380.0	-5	1	2000.0	-100.0	10	2
1500.0	0.0	10	0	1800.0	-360.0	15	0	2000.0	-80.0	7	-3
1600.0	-600.0	11	5	1800.0	-340.0	8	3	2000.0	-60.0	24	-8
1600.0	-580.0	21	-3	1800.0	-320.0	10	1	2000.0	-40.0	33	-12
1600.0	-560.0	32	-4	1800.0	-300.0	10	3	2000.0	-20.0	36	-8
1600.0	-540.0	22	-1	1800.0	-280.0	11	0	2000.0	0.0	28	-5
1600.0	-520.0	18	-1	1800.0	-260.0	12	1	2100.0	-600.0	11	3
1600.0	-500.0	18	2	1800.0	-240.0	19	-3	2100.0	-580.0	5	5
1600.0	-480.0	4	2	1800.0	-220.0	16	-2	2100.0	-560.0	0	4
1600.0	-460.0	15	6	1800.0	-200.0	6	-4	2100.0	-540.0	3	3
1600.0	-440.0	0	4	1800.0	-180.0	1	0	2100.0	-520.0	1	2
1600.0	-420.0	6	3	1800.0	-160.0	19	0	2100.0	-500.0	3	0
1600.0	-400.0	8	4	1800.0	-140.0	26	-14	2100.0	-480.0	6	0
1600.0	-380.0	0	3	1800.0	-120.0	40	-18	2100.0	-460.0	6	-1
1600.0	-360.0	2	0	1800.0	-100.0	33	-17	2100.0	-440.0	8	-1
1600.0	-340.0	13	4	1800.0	-80.0	11	-18	2100.0	-420.0	2	-4
1600.0	-320.0	12	0	1800.0	-60.0	20	-7	2100.0	-400.0	4	-4
1600.0	-300.0	9	0	1800.0	-40.0	16	-5	2100.0	-380.0	5	0
1600.0	-280.0	27	-3	1800.0	-20.0	3	-5	2100.0	-360.0	16	-2
1600.0	-260.0	7	-5	1800.0	0.0	16	-9	2100.0	-340.0	16	0
1600.0	-240.0	6	-2	1900.0	-600.0	-4	0	2100.0	-320.0	5	1
1600.0	-220.0	20	-15	1900.0	-580.0	10	2	2100.0	-300.0	0	1
1600.0	-200.0	37	-23	1900.0	-560.0	5	0	2100.0	-280.0	8	0
1600.0	-180.0	51	-22	1900.0	-540.0	6	0	2100.0	-260.0	17	-6
1600.0	-160.0	36	-21	1900.0	-520.0	19	-1	2100.0	-240.0	10	-9
1600.0	-140.0	24	-16	1900.0	-500.0	8	-4	2100.0	-220.0	4	-3
1600.0	-120.0	15	-14	1900.0	-480.0	26	-15	2100.0	-200.0	6	5
1600.0	-100.0	14	-10	1900.0	-460.0	39	-1	2100.0	-180.0	-4	2
1600.0	-80.0	9	-8	1900.0	-440.0	10	-4	2100.0	-160.0	-1	3
1600.0	-60.0	5	-8	1900.0	-420.0	11	-1	2100.0	-140.0	11	-1
1600.0	-40.0	0	-7	1900.0	-400.0	13	-3	2100.0	-120.0	14	-2
1600.0	-20.0	-1	-8	1900.0	-380.0	26	-10	2100.0	-100.0	12	-2
1600.0	0.0	1	-7	1900.0	-360.0	12	-4	2100.0	-80.0	6	-3
1700.0	-620.0	19	3	1900.0	-340.0	9	0	2100.0	-60.0	15	-5
1700.0	-600.0	-1	-1	1900.0	-320.0	-5	-2	2100.0	-40.0	12	-1
1700.0	-580.0	11	-3	1900.0	-300.0	8	3	2100.0	-20.0	0	-1
1700.0	-560.0	24	-7	1900.0	-280.0	28	-2	2100.0	0.0	22	-6

X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Ph	Quad	X(East)	Y(North)	In Ph	Quad
2200.0	-600.0	12	0	2200.0	-180.0	7	-3	2300.0	-380.0	-7	7
2200.0	-580.0	12	2	2200.0	-160.0	18	0	2300.0	-360.0	-2	5
2200.0	-560.0	11	4	2200.0	-140.0	12	0	2300.0	-340.0	0	1
2200.0	-540.0	8	4	2200.0	-120.0	0	0	2300.0	-320.0	-1	0
2200.0	-520.0	0	3	2200.0	-100.0	3	4	2300.0	-300.0	10	-2
2200.0	-500.0	2	3	2200.0	-80.0	-3	3	2300.0	-280.0	20	0
2200.0	-480.0	1	3	2200.0	-60.0	-4	5	2300.0	-260.0	3	1
2200.0	-460.0	3	3	2200.0	-40.0	1	1	2300.0	-240.0	-9	1
2200.0	-440.0	0	4	2200.0	-20.0	3	2	2300.0	-220.0	12	0
2200.0	-420.0	1	6	2200.0	0.0	4	3	2300.0	-200.0	2	3
2200.0	-400.0	-6	5	2300.0	-600.0	2	9	2300.0	-180.0	2	1
2200.0	-380.0	4	0	2300.0	-580.0	4	10	2300.0	-160.0	3	-3
2200.0	-360.0	7	-1	2300.0	-560.0	0	9	2300.0	-140.0	10	-4
2200.0	-340.0	18	3	2300.0	-540.0	3	8	2300.0	-120.0	8	-5
2200.0	-320.0	0	1	2300.0	-520.0	3	8	2300.0	-100.0	7	-5
2200.0	-300.0	-17	4	2300.0	-500.0	0	11	2300.0	-80.0	3	-4
2200.0	-280.0	-11	2	2300.0	-480.0	-3	12	2300.0	-60.0	3	0
2200.0	-260.0	-2	0	2300.0	-460.0	-9	13	2300.0	-40.0	13	0
2200.0	-240.0	10	0	2300.0	-440.0	-15	13	2300.0	-20.0	7	0
2200.0	-220.0	6	-3	2300.0	-420.0	-22	12	2300.0	0.0	6	2
2200.0	-200.0	8	-3	2300.0	-400.0	-16	8				

VLF-EM DATA

"Fraser Filter" of In-Phase Response

(15 Meter re-sampling of in-phase data provides
the data-base for the filtering operation)

Station: NPM (Lualualei, Hawaii) 23.4 kHz

Karen Grid - Lines: 0 to 23+00E

June, 1987

X(East) Y(North) Fraser

X(East) Y(North) Fraser

X(East) Y(North) Fraser

0.0 -577.5 7
 0.0 -562.5 11
 0.0 -547.5 5
 0.0 -532.5 -4
 0.0 -517.5 -5
 0.0 -502.5 2
 0.0 -487.5 3
 0.0 -472.5 -4
 0.0 -457.5 -8
 0.0 -442.5 -7
 0.0 -427.5 0
 0.0 -412.5 7
 0.0 -397.5 1
 0.0 -382.5 -6
 0.0 -367.5 -5
 0.0 -352.5 -3
 0.0 -337.5 2
 0.0 -322.5 2
 0.0 -307.5 -1
 0.0 -292.5 3
 0.0 -277.5 8
 0.0 -262.5 8
 0.0 -247.5 3
 0.0 -232.5 0
 0.0 -217.5 5
 0.0 -202.5 0
 0.0 -187.5 -9
 0.0 -172.5 -3
 0.0 -157.5 3
 0.0 -142.5 1
 0.0 -127.5 -2
 0.0 -112.5 -4
 0.0 -97.5 -6
 0.0 -82.5 -4
 0.0 -67.5 -1
 0.0 -52.5 -2
 0.0 -37.5 1
 0.0 -22.5 6
 100.0 -577.5 -6
 100.0 -562.5 -5
 100.0 -547.5 -4
 100.0 -532.5 -4
 100.0 -517.5 1
 100.0 -502.5 3
 100.0 -487.5 3
 100.0 -472.5 6
 100.0 -457.5 4
 100.0 -442.5 -4
 100.0 -427.5 -6
 100.0 -412.5 -1
 100.0 -397.5 7
 100.0 -382.5 11
 100.0 -367.5 7
 100.0 -352.5 4
 100.0 -337.5 7
 100.0 -322.5 6
 100.0 -307.5 5
 100.0 -292.5 3
 100.0 -277.5 -4
 100.0 -262.5 -8
 100.0 -247.5 -4
 100.0 -232.5 -3
 100.0 -217.5 -5
 100.0 -202.5 -9
 100.0 -187.5 -15
 100.0 -172.5 -12
 100.0 -157.5 -3
 100.0 -142.5 5
 100.0 -127.5 11
 100.0 -112.5 15
 100.0 -97.5 11
 100.0 -82.5 2
 100.0 -67.5 -6
 100.0 -52.5 -7
 100.0 -37.5 -2
 100.0 -22.5 6

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 200.0 -562.5 -11
 200.0 -547.5 -5
 200.0 -532.5 4
 200.0 -517.5 0
 200.0 -502.5 -6
 200.0 -487.5 -6
 200.0 -472.5 -5
 200.0 -457.5 1
 200.0 -442.5 7
 200.0 -427.5 7
 200.0 -412.5 3
 200.0 -397.5 -6
 200.0 -382.5 -7
 200.0 -367.5 3
 200.0 -352.5 14
 200.0 -337.5 18
 200.0 -322.5 16
 200.0 -307.5 8
 200.0 -292.5 1
 200.0 -277.5 -5
 200.0 -262.5 -8
 200.0 -247.5 -3
 200.0 -232.5 0
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 200.0 -202.5 -9
 200.0 -187.5 -2
 200.0 -172.5 1
 200.0 -157.5 -1
 200.0 -142.5 -7
 200.0 -127.5 -3
 200.0 -112.5 14
 200.0 -97.5 14
 200.0 -82.5 5
 200.0 -67.5 4
 200.0 -52.5 1
 200.0 -37.5 -4
 200.0 -22.5 -12
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 300.0 -562.5 -10
 300.0 -547.5 -1
 300.0 -532.5 8
 300.0 -517.5 5
 300.0 -502.5 1
 300.0 -487.5 2
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 300.0 -442.5 -11
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 300.0 -397.5 -1
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 300.0 -367.5 8
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 300.0 -337.5 12
 300.0 -322.5 13
 300.0 -307.5 10
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 300.0 -277.5 -7
 300.0 -262.5 0
 300.0 -247.5 7
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 300.0 -217.5 -7
 300.0 -202.5 -6
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 300.0 -112.5 2
 300.0 -97.5 0
 300.0 -82.5 1
 300.0 -67.5 5
 300.0 -52.5 5
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 300.0 -22.5 -3

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 400.0 -547.5 -5
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 400.0 -502.5 10
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 400.0 -472.5 -2
 400.0 -457.5 -1
 400.0 -442.5 -3
 400.0 -427.5 -4
 400.0 -412.5 -1
 400.0 -397.5 0
 400.0 -382.5 -8
 400.0 -367.5 -11
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 400.0 -337.5 7
 400.0 -322.5 11
 400.0 -307.5 8
 400.0 -292.5 2
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 400.0 -247.5 -1
 400.0 -232.5 4
 400.0 -217.5 2
 400.0 -202.5 -4
 400.0 -187.5 -4
 400.0 -172.5 1
 400.0 -157.5 5
 400.0 -142.5 2
 400.0 -127.5 -2
 400.0 -112.5 1
 400.0 -97.5 7
 400.0 -82.5 5
 400.0 -67.5 2
 400.0 -52.5 5
 400.0 -37.5 6
 400.0 -22.5 -2
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 500.0 -547.5 -2
 500.0 -532.5 -1
 500.0 -517.5 -2
 500.0 -502.5 -1
 500.0 -487.5 3
 500.0 -472.5 5
 500.0 -457.5 2
 500.0 -442.5 -4
 500.0 -427.5 -5
 500.0 -412.5 -1
 500.0 -397.5 0
 500.0 -382.5 -2
 500.0 -367.5 -7
 500.0 -352.5 -9
 500.0 -337.5 1
 500.0 -322.5 8
 500.0 -307.5 2
 500.0 -292.5 -3
 500.0 -277.5 1
 500.0 -262.5 4
 500.0 -247.5 3
 500.0 -232.5 0
 500.0 -217.5 0
 500.0 -202.5 5
 500.0 -187.5 8
 500.0 -172.5 4
 500.0 -157.5 3
 500.0 -142.5 7
 500.0 -127.5 7
 500.0 -112.5 4
 500.0 -97.5 3
 500.0 -82.5 6
 500.0 -67.5 6
 500.0 -52.5 -2
 500.0 -37.5 -8
 500.0 -22.5 5

X(East) Y(North) Fraser

X(East) Y(North) Fraser

X(East) Y(North) Fraser

600.0 -577.5 -14
600.0 -562.5 -11
600.0 -547.5 1
600.0 -532.5 3
600.0 -517.5 -10
600.0 -502.5 -15
600.0 -487.5 -6
600.0 -472.5 -3
600.0 -457.5 -5
600.0 -442.5 -3
600.0 -427.5 -2
600.0 -412.5 0
600.0 -397.5 5
600.0 -382.5 5
600.0 -367.5 1
600.0 -352.5 -1
600.0 -337.5 -5
600.0 -322.5 -7
600.0 -307.5 -2
600.0 -292.5 0
600.0 -277.5 0
600.0 -262.5 1
600.0 -247.5 2
600.0 -232.5 1
600.0 -217.5 0
600.0 -202.5 0
600.0 -187.5 -1
600.0 -172.5 -1
600.0 -157.5 0
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600.0 -127.5 -4
600.0 -112.5 -4
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600.0 -82.5 6
600.0 -67.5 10
600.0 -52.5 6
600.0 -37.5 3
600.0 -22.5 3
700.0 -577.5 -9
700.0 -562.5 -3
700.0 -547.5 -3
700.0 -532.5 3
700.0 -517.5 13
700.0 -502.5 12
700.0 -487.5 1
700.0 -472.5 -1
700.0 -457.5 9
700.0 -442.5 14
700.0 -427.5 6
700.0 -412.5 -9
700.0 -397.5 -19
700.0 -382.5 -17
700.0 -367.5 -6
700.0 -352.5 1
700.0 -337.5 -1
700.0 -322.5 -3
700.0 -307.5 3
700.0 -292.5 11
700.0 -277.5 6
700.0 -262.5 0
700.0 -247.5 3
700.0 -232.5 6
700.0 -217.5 4
700.0 -202.5 -1
700.0 -187.5 -3
700.0 -172.5 0
700.0 -157.5 0
700.0 -142.5 -1
700.0 -127.5 -5
700.0 -112.5 -8
700.0 -97.5 -2
700.0 -82.5 3
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700.0 -52.5 -2
700.0 -37.5 -3
700.0 -22.5 6

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800.0 -562.5 2
800.0 -547.5 11
800.0 -532.5 3
800.0 -517.5 -9
800.0 -502.5 -13
800.0 -487.5 -6
800.0 -472.5 -3
800.0 -457.5 -8
800.0 -442.5 -4
800.0 -427.5 9
800.0 -412.5 8
800.0 -397.5 3
800.0 -382.5 11
800.0 -367.5 21
800.0 -352.5 15
800.0 -337.5 6
800.0 -322.5 1
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800.0 -292.5 -7
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800.0 -172.5 -4
800.0 -157.5 -3
800.0 -142.5 -2
800.0 -127.5 1
800.0 -112.5 1
800.0 -97.5 0
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800.0 -67.5 -1
800.0 -52.5 4
800.0 -37.5 2
800.0 -22.5 -1
900.0 -577.5 -7
900.0 -562.5 -4
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900.0 -532.5 -3
900.0 -517.5 -9
900.0 -502.5 -5
900.0 -487.5 5
900.0 -472.5 9
900.0 -457.5 7
900.0 -442.5 1
900.0 -427.5 -3
900.0 -412.5 -2
900.0 -397.5 -2
900.0 -382.5 -2
900.0 -367.5 1
900.0 -352.5 9
900.0 -337.5 11
900.0 -322.5 -4
900.0 -307.5 -20
900.0 -292.5 -13
900.0 -277.5 4
900.0 -262.5 17
900.0 -247.5 19
900.0 -232.5 8
900.0 -217.5 -7
900.0 -202.5 -14
900.0 -187.5 -7
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900.0 -142.5 -8
900.0 -127.5 -5
900.0 -112.5 -5
900.0 -97.5 -4
900.0 -82.5 5
900.0 -67.5 8
900.0 -52.5 0
900.0 -37.5 -3
900.0 -22.5 1

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1000.0 -562.5 -1
1000.0 -547.5 -5
1000.0 -532.5 -8
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1000.0 -412.5 -2
1000.0 -397.5 -5
1000.0 -382.5 -2
1000.0 -367.5 0
1000.0 -352.5 0
1000.0 -337.5 4
1000.0 -322.5 5
1000.0 -307.5 2
1000.0 -292.5 6
1000.0 -277.5 11
1000.0 -262.5 2
1000.0 -247.5 -8
1000.0 -232.5 -6
1000.0 -217.5 -3
1000.0 -202.5 2
1000.0 -187.5 9
1000.0 -172.5 7
1000.0 -157.5 -1
1000.0 -142.5 -3
1000.0 -127.5 -4
1000.0 -112.5 -8
1000.0 -97.5 -11
1000.0 -82.5 -15
1000.0 -67.5 -14
1000.0 -52.5 -6
1000.0 -37.5 -3
1000.0 -22.5 -1
1100.0 -577.5 -5
1100.0 -562.5 -2
1100.0 -547.5 -6
1100.0 -532.5 -4
1100.0 -517.5 1
1100.0 -502.5 2
1100.0 -487.5 -3
1100.0 -472.5 -8
1100.0 -457.5 -5
1100.0 -442.5 -2
1100.0 -427.5 -2
1100.0 -412.5 -1
1100.0 -397.5 -1
1100.0 -382.5 0
1100.0 -367.5 -1
1100.0 -352.5 -4
1100.0 -337.5 0
1100.0 -322.5 6
1100.0 -307.5 3
1100.0 -292.5 -3
1100.0 -277.5 -4
1100.0 -262.5 0
1100.0 -247.5 -1
1100.0 -232.5 -5
1100.0 -217.5 -6
1100.0 -202.5 -6
1100.0 -187.5 -7
1100.0 -172.5 -7
1100.0 -157.5 -4
1100.0 -142.5 3
1100.0 -127.5 7
1100.0 -112.5 0
1100.0 -97.5 -13
1100.0 -82.5 -18
1100.0 -67.5 12
1100.0 -52.5 46
1100.0 -37.5 25
1100.0 -22.5 -6

X(East) Y(North) Fraser

X(East) Y(North) Fraser

X(East) Y(North) Fraser

1200.0 -577.5 -16
 1200.0 -562.5 -5
 1200.0 -547.5 3
 1200.0 -532.5 1
 1200.0 -517.5 -5
 1200.0 -502.5 -3
 1200.0 -487.5 5
 1200.0 -472.5 7
 1200.0 -457.5 0
 1200.0 -442.5 -2
 1200.0 -427.5 0
 1200.0 -412.5 -4
 1200.0 -397.5 -6
 1200.0 -382.5 -5
 1200.0 -367.5 -5
 1200.0 -352.5 -6
 1200.0 -337.5 0
 1200.0 -322.5 7
 1200.0 -307.5 7
 1200.0 -292.5 1
 1200.0 -277.5 -3
 1200.0 -262.5 -3
 1200.0 -247.5 -4
 1200.0 -232.5 -8
 1200.0 -217.5 -11
 1200.0 -202.5 -13
 1200.0 -187.5 -12
 1200.0 -172.5 -6
 1200.0 -157.5 -6
 1200.0 -142.5 -9
 1200.0 -127.5 -9
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 1200.0 -22.5 28
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 1300.0 -547.5 -8
 1300.0 -532.5 -6
 1300.0 -517.5 0
 1300.0 -502.5 9
 1300.0 -487.5 4
 1300.0 -472.5 -2
 1300.0 -457.5 5
 1300.0 -442.5 14
 1300.0 -427.5 16
 1300.0 -412.5 14
 1300.0 -397.5 11
 1300.0 -382.5 7
 1300.0 -367.5 6
 1300.0 -352.5 11
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 1300.0 -292.5 -10
 1300.0 -277.5 -18
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 1300.0 -232.5 -9
 1300.0 -217.5 -11
 1300.0 -202.5 -14
 1300.0 -187.5 -11
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 1300.0 -142.5 -17
 1300.0 -127.5 -17
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 1300.0 -52.5 4
 1300.0 -37.5 8
 1300.0 -22.5 13

1400.0 -577.5 11
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 1400.0 -547.5 7
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 1400.0 -517.5 -13
 1400.0 -502.5 -26
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 1400.0 -442.5 7
 1400.0 -427.5 -8
 1400.0 -412.5 -10
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 1400.0 -352.5 2
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 1400.0 -172.5 -10
 1400.0 -157.5 -12
 1400.0 -142.5 -13
 1400.0 -127.5 -15
 1400.0 -112.5 -15
 1400.0 -97.5 -15
 1400.0 -82.5 -15
 1400.0 -67.5 -1
 1400.0 -52.5 16
 1400.0 -37.5 13
 1400.0 -22.5 2
 1400.0 -7.5 2
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 1500.0 -562.5 -22
 1500.0 -547.5 -17
 1500.0 -532.5 -20
 1500.0 -517.5 -17
 1500.0 -502.5 1
 1500.0 -487.5 29
 1500.0 -472.5 29
 1500.0 -457.5 -8
 1500.0 -442.5 -20
 1500.0 -427.5 -7
 1500.0 -412.5 -6
 1500.0 -397.5 9
 1500.0 -382.5 21
 1500.0 -367.5 15
 1500.0 -352.5 5
 1500.0 -337.5 -16
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 1500.0 -307.5 -7
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 1500.0 -277.5 66
 1500.0 -262.5 78
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 1500.0 -187.5 -16
 1500.0 -172.5 -8
 1500.0 -157.5 -6
 1500.0 -142.5 -12
 1500.0 -127.5 -16
 1500.0 -112.5 -16
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 1500.0 -82.5 -11
 1500.0 -67.5 5
 1500.0 -52.5 19
 1500.0 -37.5 11

1500.0 -22.5 -1
 1600.0 -577.5 30
 1600.0 -562.5 7
 1600.0 -547.5 -19
 1600.0 -532.5 -16
 1600.0 -517.5 -6
 1600.0 -502.5 -19
 1600.0 -487.5 -16
 1600.0 -472.5 4
 1600.0 -457.5 -10
 1600.0 -442.5 -17
 1600.0 -427.5 7
 1600.0 -412.5 8
 1600.0 -397.5 -12
 1600.0 -382.5 -12
 1600.0 -367.5 10
 1600.0 -352.5 24
 1600.0 -337.5 11
 1600.0 -322.5 -6
 1600.0 -307.5 10
 1600.0 -292.5 25
 1600.0 -277.5 -11
 1600.0 -262.5 -34
 1600.0 -247.5 -1
 1600.0 -232.5 34
 1600.0 -217.5 48
 1600.0 -202.5 49
 1600.0 -187.5 22
 1600.0 -172.5 -23
 1600.0 -157.5 -41
 1600.0 -142.5 -33
 1600.0 -127.5 -21
 1600.0 -112.5 -10
 1600.0 -97.5 -10
 1600.0 -82.5 -13
 1600.0 -67.5 -14
 1600.0 -52.5 -13
 1600.0 -37.5 -8
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 1700.0 -567.5 30
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 1700.0 -522.5 -14
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 1700.0 -477.5 -10
 1700.0 -462.5 19
 1700.0 -447.5 38
 1700.0 -432.5 22
 1700.0 -417.5 -11
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 1700.0 -372.5 -8
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 1700.0 -312.5 20
 1700.0 -297.5 36
 1700.0 -282.5 15
 1700.0 -267.5 -27
 1700.0 -252.5 -38
 1700.0 -237.5 -24
 1700.0 -222.5 -10
 1700.0 -207.5 19
 1700.0 -192.5 57
 1700.0 -177.5 67
 1700.0 -162.5 46
 1700.0 -147.5 7
 1700.0 -132.5 -34
 1700.0 -117.5 -44
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 1700.0 -87.5 -15
 1700.0 -72.5 -14
 1700.0 -57.5 -19

X(East) Y(North) Fraser

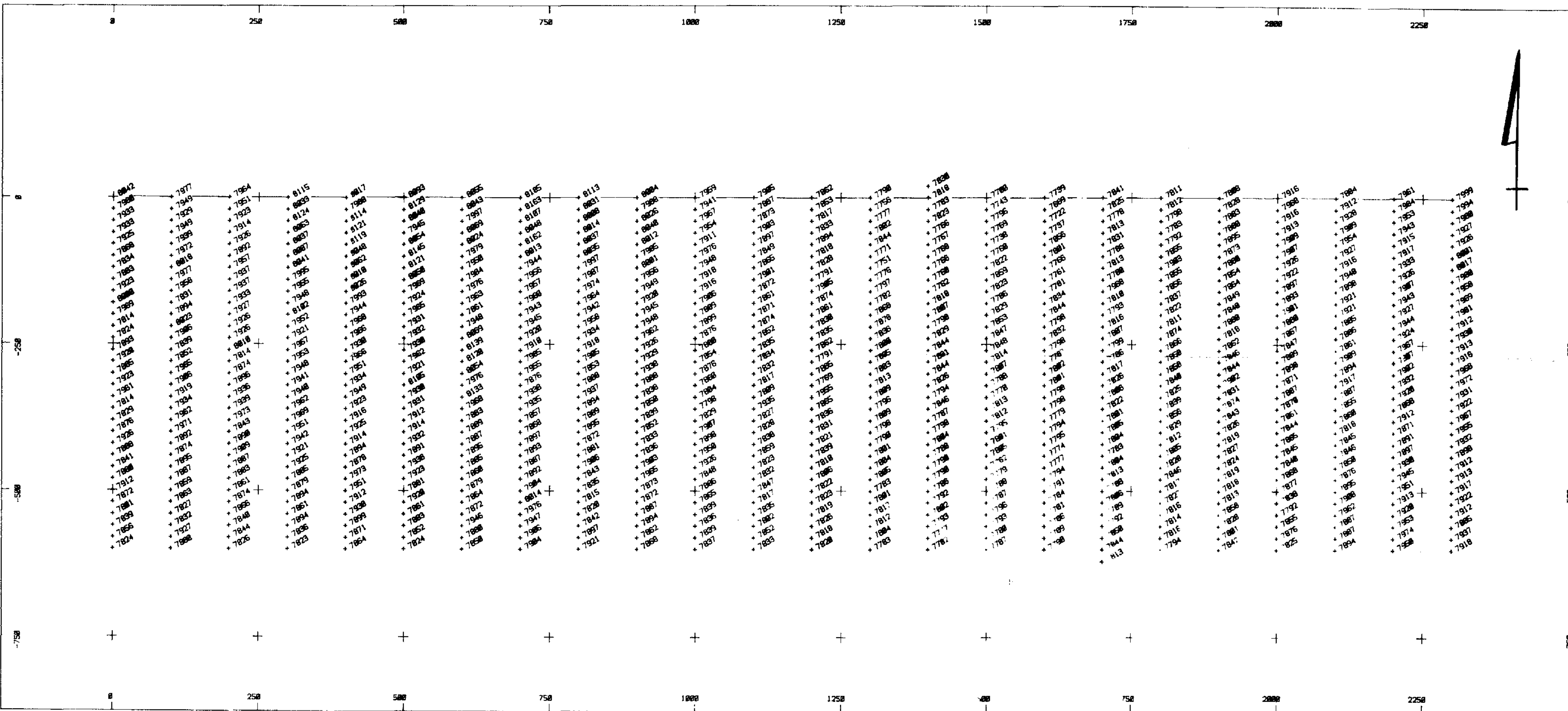
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 1800.0 -562.5 3
 1800.0 -547.5 1
 1800.0 -532.5 13
 1800.0 -517.5 4
 1800.0 -502.5 -1
 1800.0 -487.5 -4
 1800.0 -472.5 -34
 1800.0 -457.5 -36
 1800.0 -442.5 6
 1800.0 -427.5 25
 1800.0 -412.5 1
 1800.0 -397.5 -15
 1800.0 -382.5 14
 1800.0 -367.5 31
 1800.0 -352.5 4
 1800.0 -337.5 -7
 1800.0 -322.5 2
 1800.0 -307.5 3
 1800.0 -292.5 1
 1800.0 -277.5 4
 1800.0 -262.5 11
 1800.0 -247.5 12
 1800.0 -232.5 -3
 1800.0 -217.5 -22
 1800.0 -202.5 -25
 1800.0 -187.5 1
 1800.0 -172.5 33
 1800.0 -157.5 37
 1800.0 -142.5 32
 1800.0 -127.5 25
 1800.0 -112.5 -12
 1800.0 -97.5 -46
 1800.0 -82.5 -27
 1800.0 -67.5 8
 1800.0 -52.5 -4
 1800.0 -37.5 -27
 1800.0 -22.5 -7
 1900.0 -577.5 8
 1900.0 -562.5 -7
 1900.0 -547.5 11
 1900.0 -532.5 22
 1900.0 -517.5 -1
 1900.0 -502.5 4
 1900.0 -487.5 43
 1900.0 -472.5 30
 1900.0 -457.5 -34
 1900.0 -442.5 -47
 1900.0 -427.5 -10
 1900.0 -412.5 14
 1900.0 -397.5 23
 1900.0 -382.5 4
 1900.0 -367.5 -23
 1900.0 -352.5 -24
 1900.0 -337.5 -26
 1900.0 -322.5 -9
 1900.0 -307.5 40
 1900.0 -292.5 38
 1900.0 -277.5 -14
 1900.0 -262.5 2
 1900.0 -247.5 24
 1900.0 -232.5 -25
 1900.0 -217.5 -15
 1900.0 -202.5 31
 1900.0 -187.5 -5
 1900.0 -172.5 -50
 1900.0 -157.5 -17
 1900.0 -142.5 37
 1900.0 -127.5 36
 1900.0 -112.5 16
 1900.0 -97.5 16
 1900.0 -82.5 -5
 1900.0 -67.5 -33
 1900.0 -52.5 -28

X(East) Y(North) Fraser

1900.0 -37.5 -22
 1900.0 -22.5 -2
 2000.0 -577.5 26
 2000.0 -562.5 33
 2000.0 -547.5 23
 2000.0 -532.5 -5
 2000.0 -517.5 -13
 2000.0 -502.5 -3
 2000.0 -487.5 8
 2000.0 -472.5 18
 2000.0 -457.5 15
 2000.0 -442.5 2
 2000.0 -427.5 -5
 2000.0 -412.5 -7
 2000.0 -397.5 -9
 2000.0 -382.5 0
 2000.0 -367.5 6
 2000.0 -352.5 -5
 2000.0 -337.5 -7
 2000.0 -322.5 -1
 2000.0 -307.5 -10
 2000.0 -292.5 -8
 2000.0 -277.5 17
 2000.0 -262.5 0
 2000.0 -247.5 -33
 2000.0 -232.5 -10
 2000.0 -217.5 22
 2000.0 -202.5 29
 2000.0 -187.5 23
 2000.0 -172.5 7
 2000.0 -157.5 -4
 2000.0 -142.5 -10
 2000.0 -127.5 -10
 2000.0 -112.5 -5
 2000.0 -97.5 -2
 2000.0 -82.5 16
 2000.0 -67.5 38
 2000.0 -52.5 33
 2000.0 -37.5 15
 2000.0 -22.5 -4
 2100.0 -577.5 -16
 2100.0 -562.5 -5
 2100.0 -547.5 2
 2100.0 -532.5 -1
 2100.0 -517.5 1
 2100.0 -502.5 7
 2100.0 -487.5 6
 2100.0 -472.5 3
 2100.0 -457.5 3
 2100.0 -442.5 -5
 2100.0 -427.5 -9
 2100.0 -412.5 -2
 2100.0 -397.5 6
 2100.0 -382.5 16
 2100.0 -367.5 22
 2100.0 -352.5 5
 2100.0 -337.5 -20
 2100.0 -322.5 -26
 2100.0 -307.5 -8
 2100.0 -292.5 16
 2100.0 -277.5 25
 2100.0 -262.5 8
 2100.0 -247.5 -16
 2100.0 -232.5 -17
 2100.0 -217.5 -5
 2100.0 -202.5 -10
 2100.0 -187.5 -17
 2100.0 -172.5 2
 2100.0 -157.5 25
 2100.0 -142.5 25
 2100.0 -127.5 9
 2100.0 -112.5 -5
 2100.0 -97.5 -12
 2100.0 -82.5 1
 2100.0 -67.5 15
 2100.0 -52.5 -4

X(East) Y(North) Fraser

2100.0 -37.5 -23
 2100.0 -22.5 6
 2200.0 -577.5 -2
 2200.0 -562.5 -5
 2200.0 -547.5 -13
 2200.0 -532.5 -17
 2200.0 -517.5 -7
 2200.0 -502.5 1
 2200.0 -487.5 1
 2200.0 -472.5 1
 2200.0 -457.5 -2
 2200.0 -442.5 -3
 2200.0 -427.5 -6
 2200.0 -412.5 -8
 2200.0 -397.5 8
 2200.0 -382.5 19
 2200.0 -367.5 21
 2200.0 -352.5 17
 2200.0 -337.5 -18
 2200.0 -322.5 -52
 2200.0 -307.5 -36
 2200.0 -292.5 3
 2200.0 -277.5 25
 2200.0 -262.5 32
 2200.0 -247.5 23
 2200.0 -232.5 2
 2200.0 -217.5 -3
 2200.0 -202.5 1
 2200.0 -187.5 8
 2200.0 -172.5 19
 2200.0 -157.5 3
 2200.0 -142.5 -25
 2200.0 -127.5 -23
 2200.0 -112.5 -5
 2200.0 -97.5 -6
 2200.0 -82.5 -11
 2200.0 -67.5 -1
 2200.0 -52.5 10
 2200.0 -37.5 10
 2200.0 -22.5 5
 2300.0 -577.5 -4
 2300.0 -562.5 -3
 2300.0 -547.5 4
 2300.0 -532.5 2
 2300.0 -517.5 -6
 2300.0 -502.5 -9
 2300.0 -487.5 -11
 2300.0 -472.5 -16
 2300.0 -457.5 -18
 2300.0 -442.5 -20
 2300.0 -427.5 -11
 2300.0 -412.5 10
 2300.0 -397.5 24
 2300.0 -382.5 22
 2300.0 -367.5 15
 2300.0 -352.5 6
 2300.0 -337.5 1
 2300.0 -322.5 12
 2300.0 -307.5 30
 2300.0 -292.5 23
 2300.0 -277.5 -18
 2300.0 -262.5 -45
 2300.0 -247.5 -12
 2300.0 -232.5 29
 2300.0 -217.5 11
 2300.0 -202.5 -15
 2300.0 -187.5 -5
 2300.0 -172.5 6
 2300.0 -157.5 13
 2300.0 -142.5 9
 2300.0 -127.5 -2
 2300.0 -112.5 -6
 2300.0 -97.5 -8
 2300.0 -82.5 -8
 2300.0 -67.5 7
 2300.0 -52.5 18



LEGEND:
 50000 nT removed from all data
 Equipment: IGS (Scintrex MP-4)

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

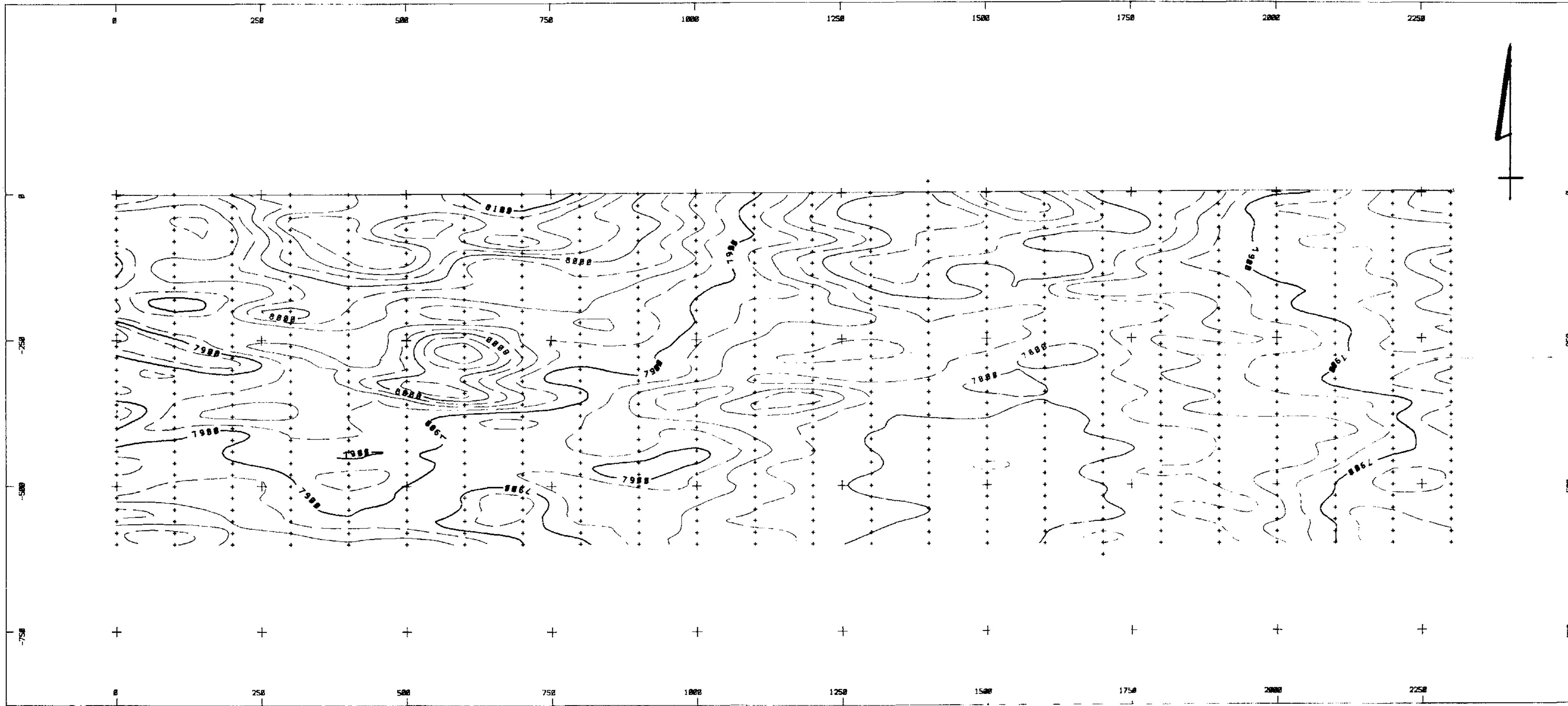
16,194

SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
 Karen Grid 1:5000
 Ground Magnetometer Survey
 Total Field Data

DRAWN BY: Jet DATE: July 1987

SCOTT GEOPHYSICS LTD.



LEGEND:
 50000 nT removed from all data
 Equipment: IGS (Scintrex MP-4)
 Contour Interval 25 nT

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

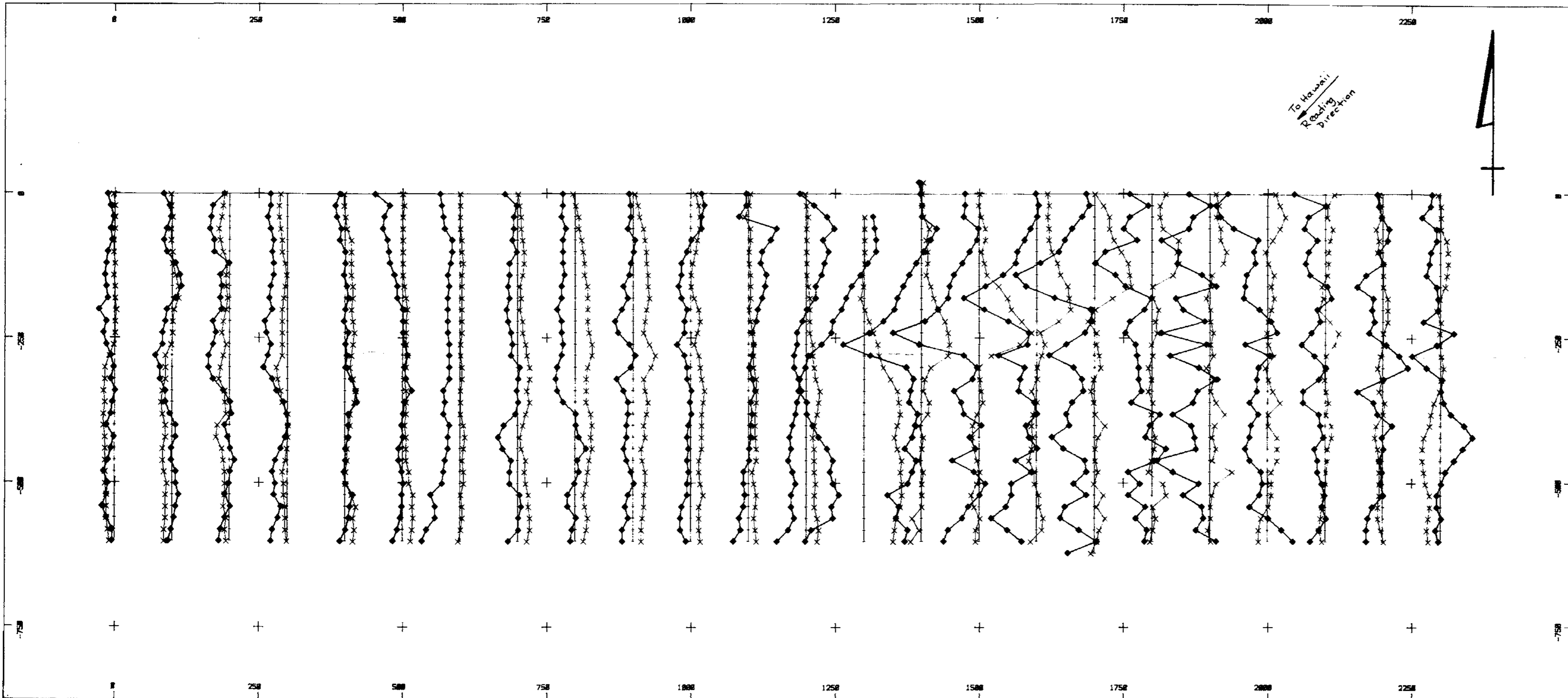
16,194

SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
 Karen Grid 1:5000
 Ground Magnetometer Survey
 Total Field Contour Plan

DRAWN BY: jmt DATE: July 1987

SCOTT GEOPHYSICS LTD.



LEGEND:

- Station NPM (Lualaba, Hawaii) - 23.4 kHz
- ◊ In Phase - 200 / cm
- × Quadrature - 200 / cm
- Zero I on line
- Positive values to west
- Rhombic loci point of maximum slope with positive values to the north

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

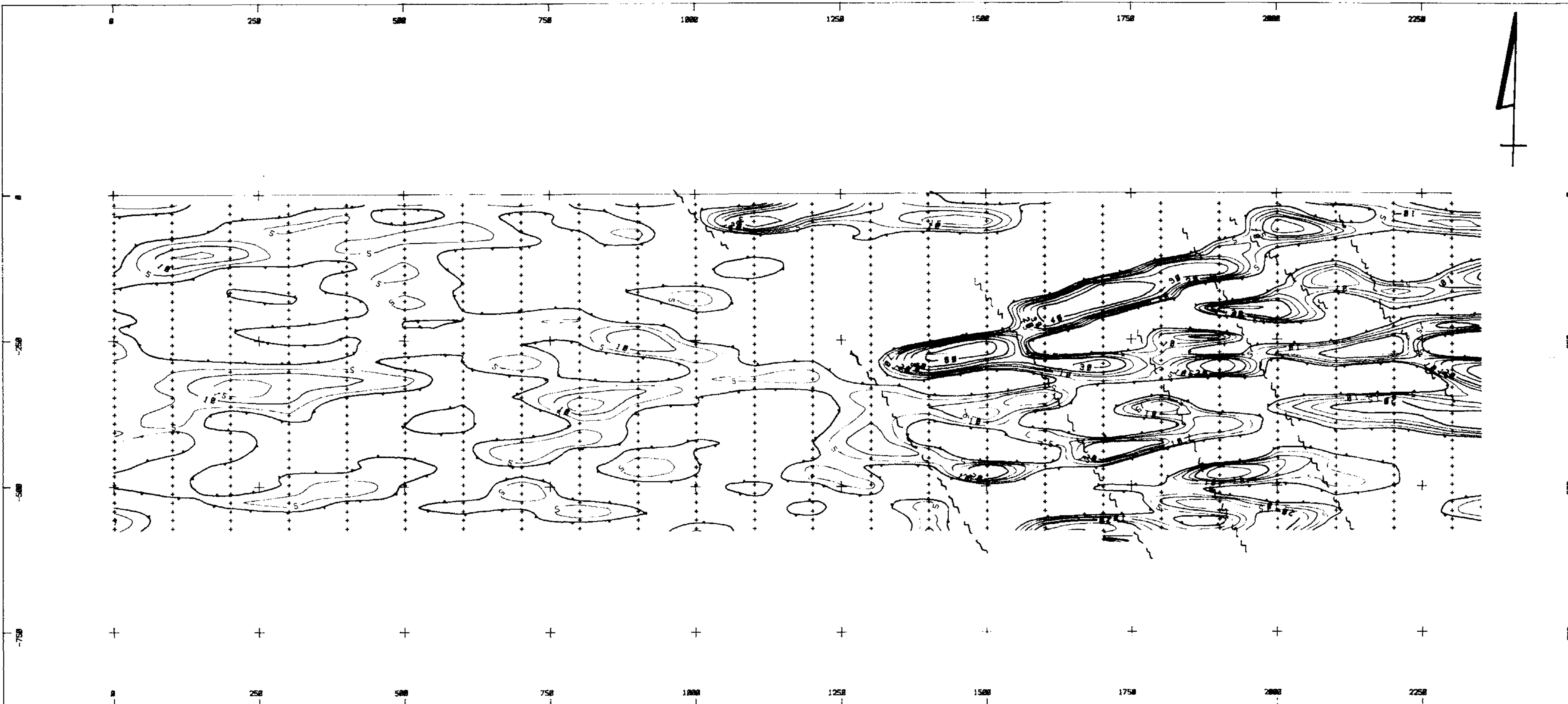
16,194

SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
Karen Grid 1:5000
VLF-EM Survey

DRAWN BY: jet DATE: July 1987

SCOTT GEOPHYSICS LTD.



LEGEND:

Contours: 0, 5, 10, 15, 20, 30, 40, 60
 Equipment: IGS (SciIntrex VLF-4)

Note: In Phase data re-sampled at
 a 15 meter interval for this map

Faults ~ ~
 (Inferred from VLF data)

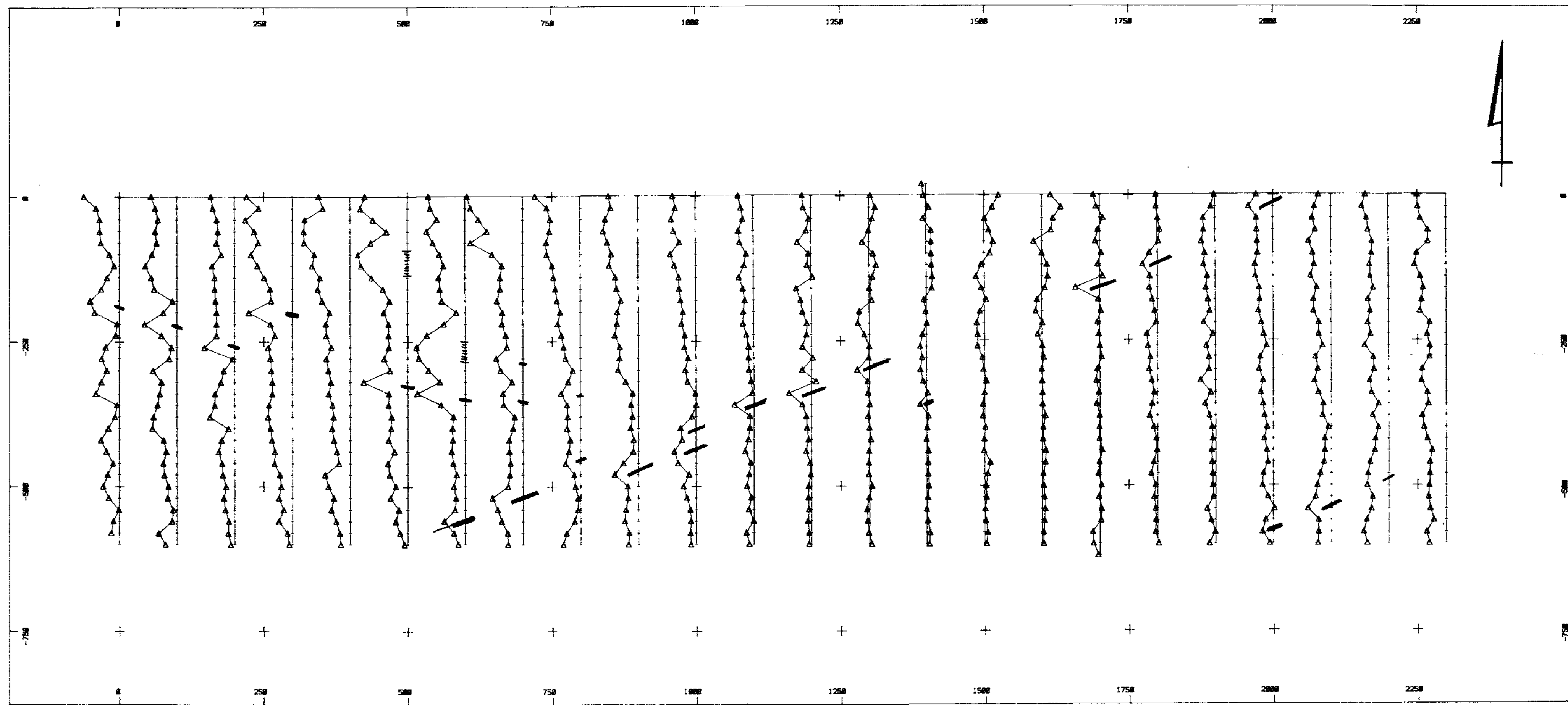
**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

16,194
 SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
 Keren Grid 1:5000
 VLF-EM Survey
 Fraser Filter Contour Plan

DRAWN BY: jmt DATE: July 1987

SCOTT GEOPHYSICS LTD.



LEGEND:

Profile Scale: 1 cm = 200 nT
 Base level: 57800 nT

— discrete magnetic feature

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

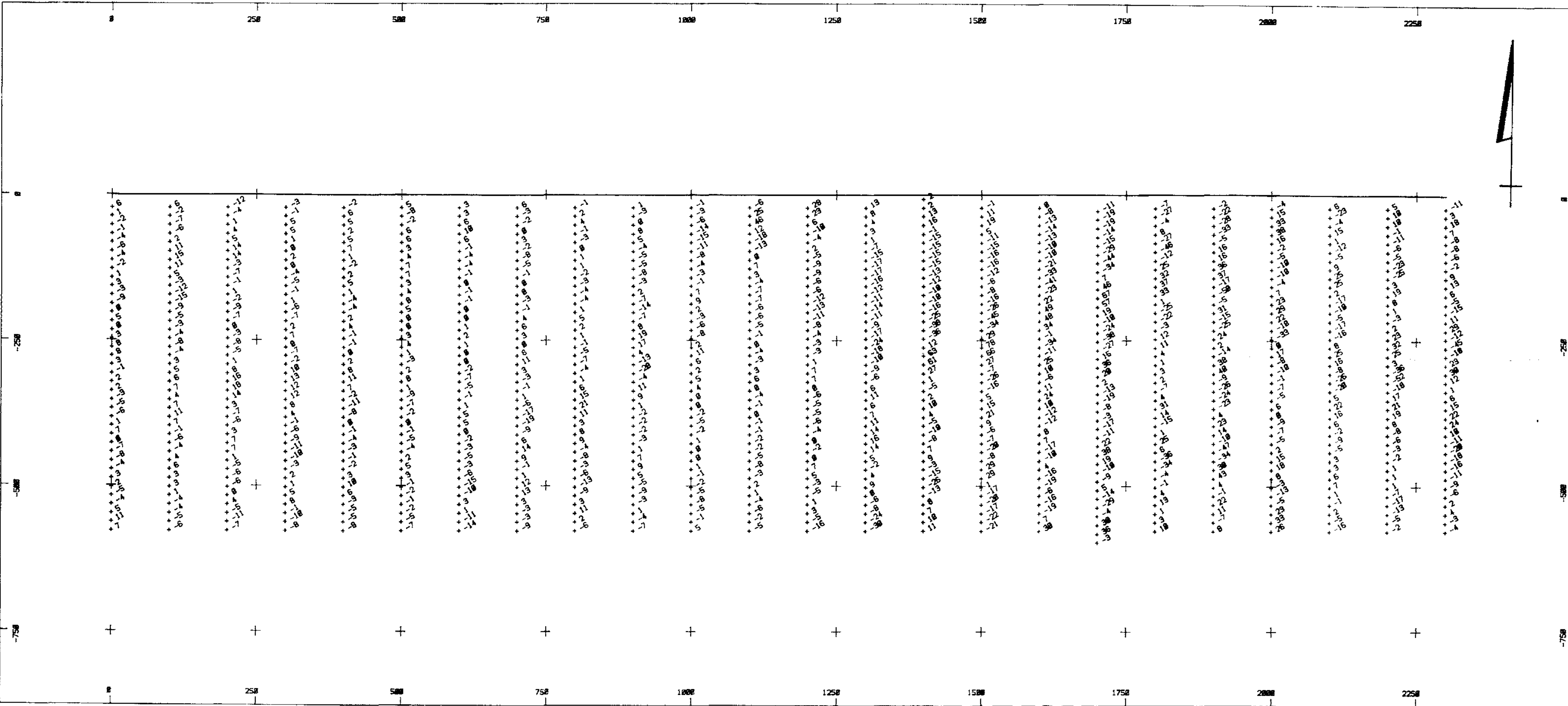
16,194

SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
 Karen Grid 1:5000
 Ground Magnetometer Profiles

DRAWN BY: jmt DATE: July 1987

SCOTT GEOPHYSICS LTD.



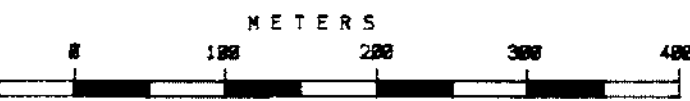
LEGEND:

Equipment: IGS (Scintrex VLF-4)

Note: In Phase data re-sampled at
a 15 meter interval for this map

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

16,194



SURPRISE LAKE EXPL. SYNDICATE

Atlin B.C.
Karen Grid 1:5000

VLF-EM Survey
Fraser Filter Data

DRAWN BY: Jat DATE: June 1987

SCOTT GEOPHYSICS LTD.