DONEGAL DEVELOPMENTS LTD.

A MAGNETIC GRADIOMETER SURVEY OF THE CABIN CREEK PROPERTY LIARD RIVER AREA, YUKON TERRITORY

120135

M.A. Power M.Sc.

CLAIMS

Placer Lease PL8542

NTS: 105 B/9
Location: 60° 42' N 130° 15' W
Watson Lake Mining District, Yukon Territory
Date: April 12, 1991

Summary

A magnetic gradiometer survey was conducted on the Cabin Creek Property (Placer lease PL8542) for Donegal Developments Ltd. between March 28, 1991 and March 30, 1991. Approximately 8 line-kilometres of flagged grid was surveyed at a 5 m station spacing. Most of the data consists of low amplitude noise caused by surface deposits of gravel and, in some areas, by metallic debris. A low amplitude anomaly at the south end of the survey grid appears to be caused by a shallow, narrow buried source - possibly an old stream channel.

Table of Contents

Figures

I. Introduction

This report describes a total magnetic field vertical gradient (gradiometer) survey of a portion of the Cabin Creek Property in the southwest Yukon Territory. Approximately 8 line-kilometres were surveyed between March 28, 1991 and March 30, 1991.

II. Property

The Cabin Creek Property consists of placer lease PL8542, located in the Watson Lake Mining District, Yukon Territory. The registered owner is Bryan Jack of Whitehorse and the lease anniversary date is May 29, 1991.

III. Location and access

The Cabin Creek Property is located on Cabin Creek immediately above its confluence with the Liard River in the southwest Yukon Territory at 60° 42' N 130° 15' W. The property is 115 km northwest of Watson Lake by air and 120 km north of the Alaska Highway by winter road. A short airstrip, adequate for a Twin Otter or smaller fixed wing aircraft, is located 4.5 km northeast of the lease. The winter road runs from the Alaska Highway near Upper Liard to Sayea Creek.

IV. Geology

The Cabin Creek Property is underlain by Cambrian phyllite, slate and biotite schist and Jurassic to Lower Cretaceous biotite quartz monzonite (Poole *et al.* 1960). These units are overlain by a nearly continuous blanket of glacial till. The alignment of drumlins and other glacial features indicate that the area was affected by a large valley glacier originating at the headwaters of the Liard River (Klassen 1987). Cabin Creek is a gravel-bottomed meandering stream which has incised both the tills and bedrock to form a floodplain up to 600 m wide. The walls of the canyon surrounding the flood plain are steep and it appears probable that preglacial creek deposits may be preserved beneath the till. The creek is roughly perpendicular to the direction of glacial ice transport indicated by local moraines and the canyon may have escaped deep scouring. The present creek is up to 50 m wide (bank full) and meanders within the flood plain have wavelengths of up to 700 m.

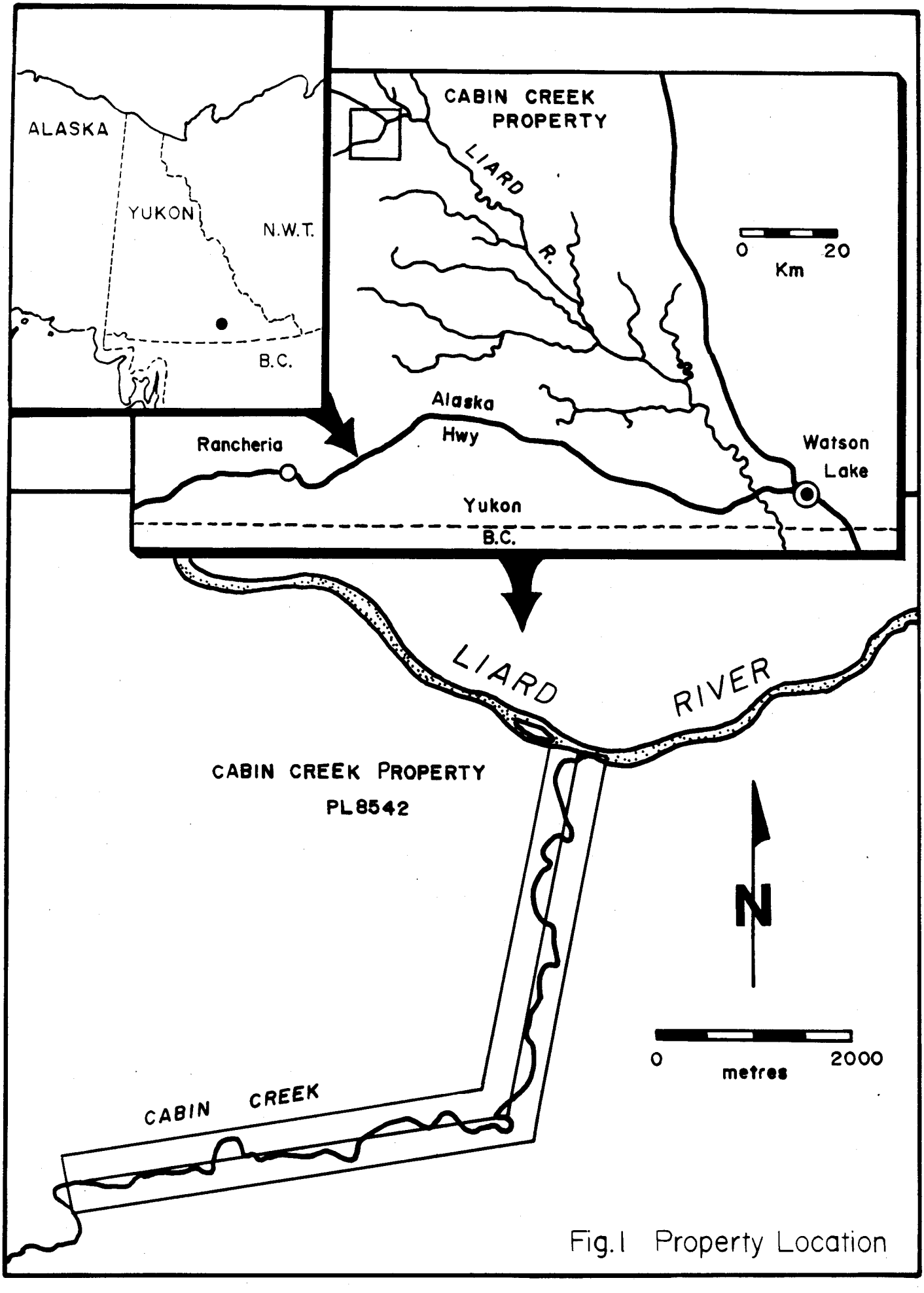


Fig. 1 Property Location

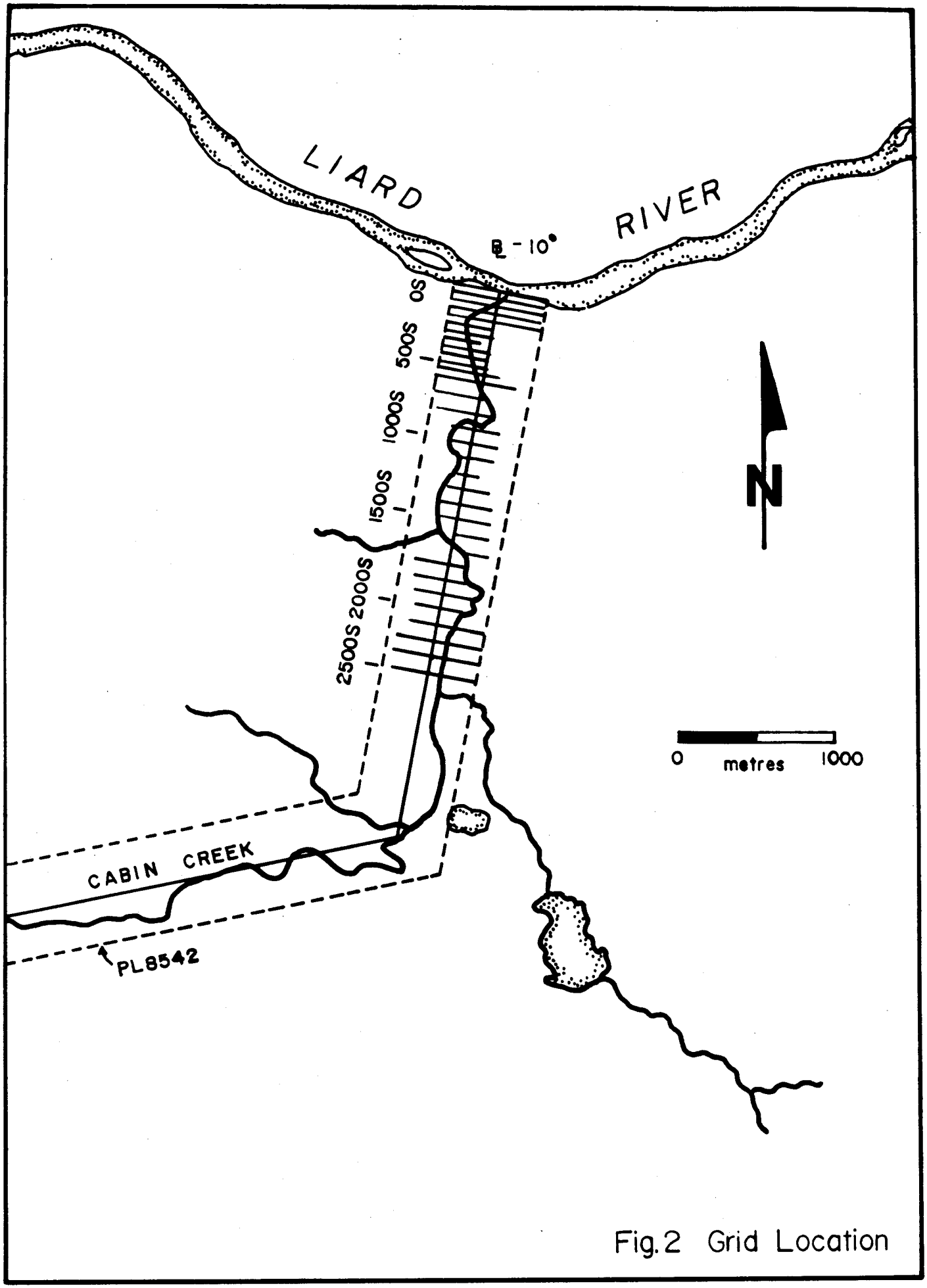


Fig. 2 Grid Location

V. Survey description

The gradiometer survey was conducted on a flagged grid centred on the placer lease location line. The grid consists of survey lines up to 600 m long and spaced 50 m or 100 m apart. Stations are marked at 10 m intervals on both the survey lines and the baseline. Where possible, survey lines extended to the lease boundaries but in many areas the lines were restricted to the current flood plain by the steep walls of the canyon or to one side of the creek by open water. The gradiometer survey was conducted with an EDA/Scintrex Omni Plus magnetometer/gradiometer (S/N A150). This instrument is a proton precession magnetometer recording both the total magnetic field and the vertical gradient of the total magnetic field. Since a base station was not used in the survey, the total magnetic field data contains diurnal variation and consequently it is not plotted or analyzed in this report. G. Davidson and the writer surveyed a total of 7.9 line-km at a 5 m station spacing between March 28 and March 30, 1991. The survey was suspended before covering the entire grid because of a malfunctioning precession board in the instrument.

VI. Data

The Omni series of magnetometers and VLF receivers are equipped with microprocessor driven electronic memories and record all survey data internally. At the end of a survey day, the stored data is transferred to a microcomputer via a serial port. Copies of the raw data are contained in Appendix C and a disc containing the data files is in the back pocket of this report (Company report copies only). The gradient data is plotted in individual line profiles and on a compilation line profile map in Appendix A. Two high amplitude anomalies on lines 550S and 600S caused by a barrel and a sluice box were deleted from the compilation map to avoid obscuring other data.

VII. Results and interpretation

The gradiometer survey was conducted to detect magnetite concentrations associated with placer gold deposits. The current creek channel and its associated lag deposits serve as the best guide to the dimensions of a buried placer deposit. Currently, the low water channel of Cabin Creek is approximately 10 m wide and the gravels may be several metres thick. Meander wavelengths are in the order of at least 500 m although some secondary meander loops have smaller wavelengths. Heavy magnetite concentrations have not been noted with placer gold deposits in this creek. Taken together, these observations suggest that buried placer deposits will consist of concave ribbons of gravel, approximately 10 m wide and up to 3 m deep, with strike lengths of at least 200 m and with small magnetic susceptibility

contrasts.

The model shown in Figure 3 consists of three stacked horizontal sheets. Each is 1 m thick, 100 m long and widths, from top to bottom, are 10 m, 6 m and 4 m. The ribbons are aligned about to create a concave upwards body resembling a stream channel in profile. They are assumed to strike parallel to the grid baseline and thus strike roughly 20° W of magnetic north in this area. A magnetic susceptibility contrast of 9.0 emu is assumed: This is equivalent to a concentration of roughly 0.5 pounds of magnetite per cubic yard and yields responses which have amplitudes in the same order of magnitude as those observed in the data. The total field response from a model consisting of 3 horizontal sheets at any point x is:

$$T=\sum_{i=1}^{3} 2kT_o Y\left[\frac{x-b_i(\cos^2 I \sin^2 I - \sin^2 I) - 2z_i \sin I \cos I \sin B}{r_{i1}^2\sqrt{1+r_{i1}^2}}\right.$$

$$\left.\frac{x(\cos^2 I \sin^2 I - \sin^2 I) - 2z_i \sin I \cos I \sin B}{r_{i2}^2\sqrt{1+r_{i2}^2}}\right] \quad (1)$$

where
- I - magnetic field inclination
- B - angle between source body strike and magnetic declination.
- T_o - primary field strength
- z_i - depth to top of ribbon.
- r_{i1} - radial distance from measurement point to the left edge of the i-th ribbon.
- r_{i2} - radial distance from measurement point to the right edge of the i-th ribbon.
- b_i - length of the ribbon
- Y - half strike length of the ribbon.
- k - magnetic susceptibility contrast between gravel and bedrock.

(Telford *et al* 1976 p191 with modifications). The gradiometer response is determined from the difference between total field calculations at z=0 and z=-1 m. In keeping with the common convention of showing gradient measurements with the same sign as total field measurements, the gradient is the measurement at the bottom sensor less the measurement at the top sensor. This is also the convention used in the EDA/Scintrex Omni gradiometers.

The responses from the buried channel model at depths of 2 m (surface), 5 m and 10 m are shown in Figures 3 to 5. Variations in strike length or magnetic strike (within 30°) will not significantly change the expected response. Increasing the susceptibility contrast increases only the magnitude of the

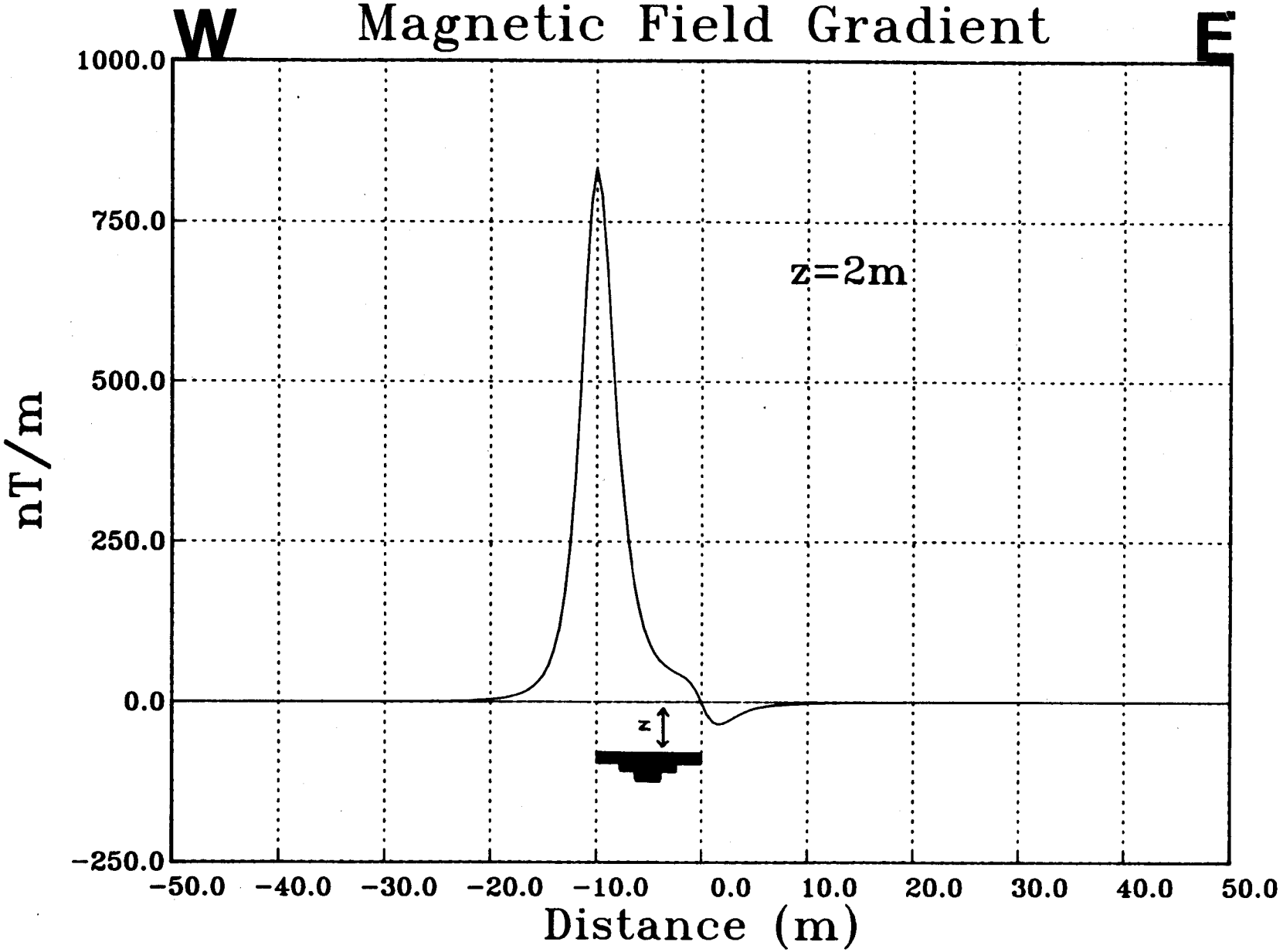


Figure 3 Response from placer channel model at depth of 2 m.

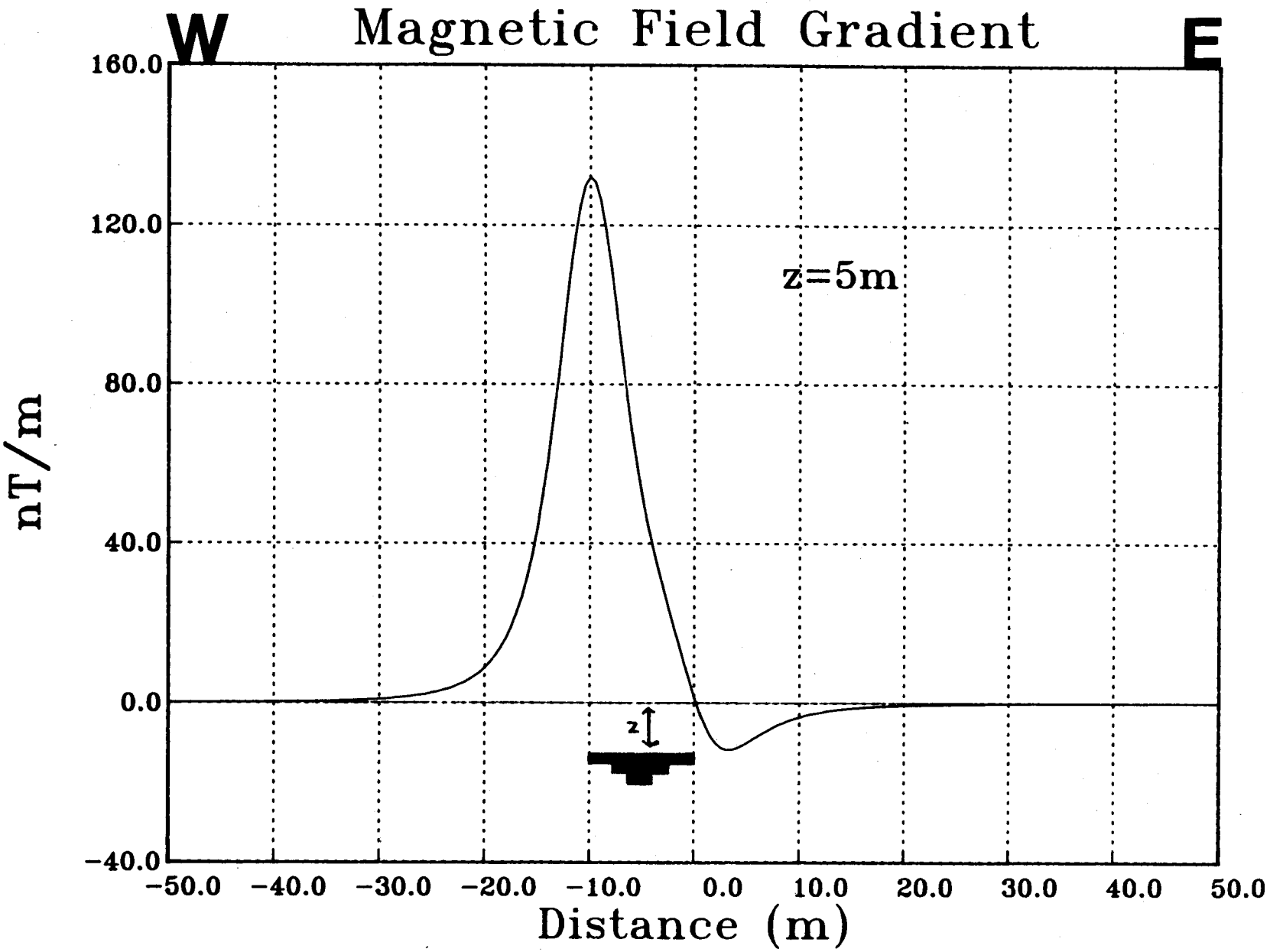


Figure. 4 Response from placer channel model at depth of 5 m.

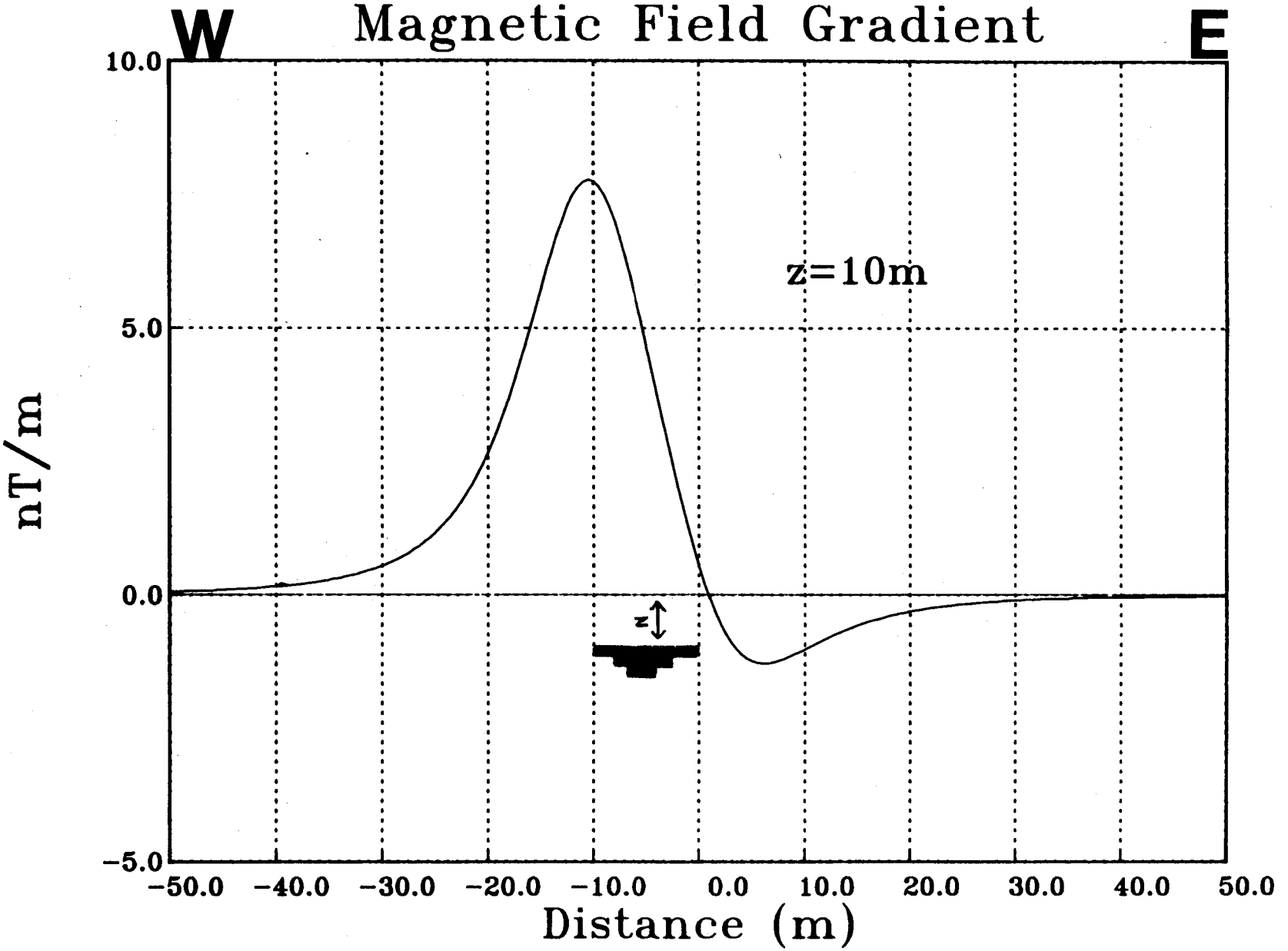


Figure 5 Response from placer channel model at depth of 10 m.

response and not its shape. Regardless of depth, the response consists of a sharp peak centred on the west edge and a small trough on the east side of the body. Response wavelength ranges from 10 to 30 m.

Using these responses as a guide, the survey data was examined to determine whether there were any anomalies which could be attributed to magnetite concentrations in a buried channel. One low amplitude anomaly may be caused by a buried placer channel (Anomaly A, line profile map in Appendix A). This anomaly is roughly 300 m long and appears to be caused by a weak concentration of magnetite at a depth probably less than 10 m. Isolated anomalies occur on other lines but they are not considered significant and may be due to boulders. Buried metallic debris may be contributing to the noise on lines 300S through 600S since these lines cross ground which has been stripped and tested.

VIII. Conclusions and Recommendations

The survey data suggests that magnetic field surveys may not be an effective means of exploring for placer deposits on Cabin Creek. Most of the data consists of surface noise and only one response appears to be caused by a large geological feature. The anomaly at the south end of the grid merits testing since it appears to originate from a shallow channel in the old flood plain. Ground radar or shallow seismic surveys could be used to determine gravel thicknesses and bedrock topography within the flood plain but it is the writer's opinion that any further geophysical surveys should follow systematic testing and sampling to determine the nature of placer deposits on the creek.

Respectfully submitted,

M. A. Power M.Sc.

Whitehorse, Y.T.
April 12, 1991

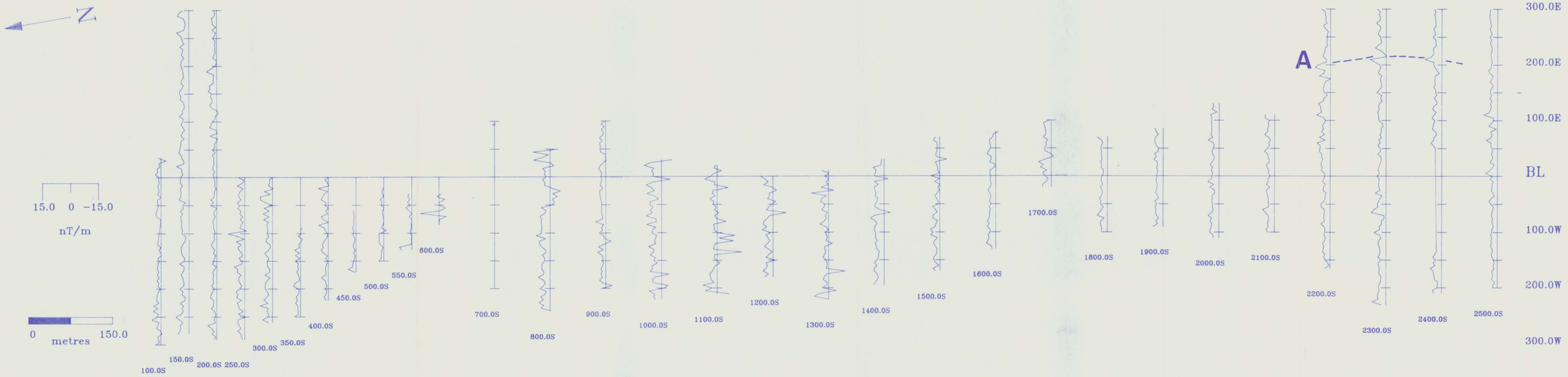
References cited

Klassen R.W. (1987) The Tertiary Pleistocene stratigraphy of the Liard Plain. Geological Survey of Canada Paper 86-17.

Poole W.H. J.A. Roddick and L.H. Green (1960) Wolf Lake Map Sheet (Map sheet 10-1060). Geological Survey of Canada.

Telford W.M., L.P. Geldart, R.E. Sheriff, D.A. Keys (1976) Applied Geophysics. New York: Cambridge University Press.

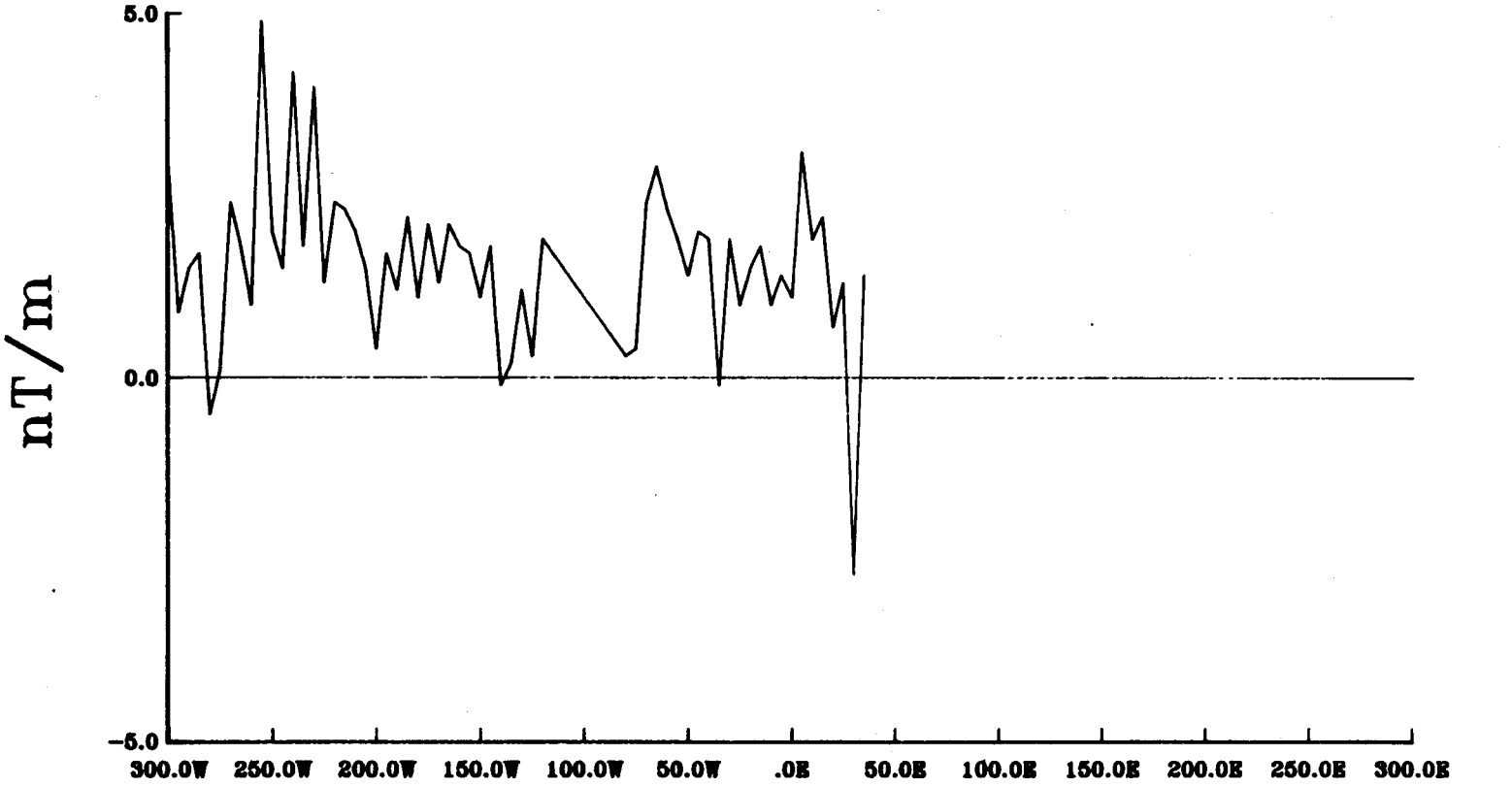
Appendix A. Map and profiles



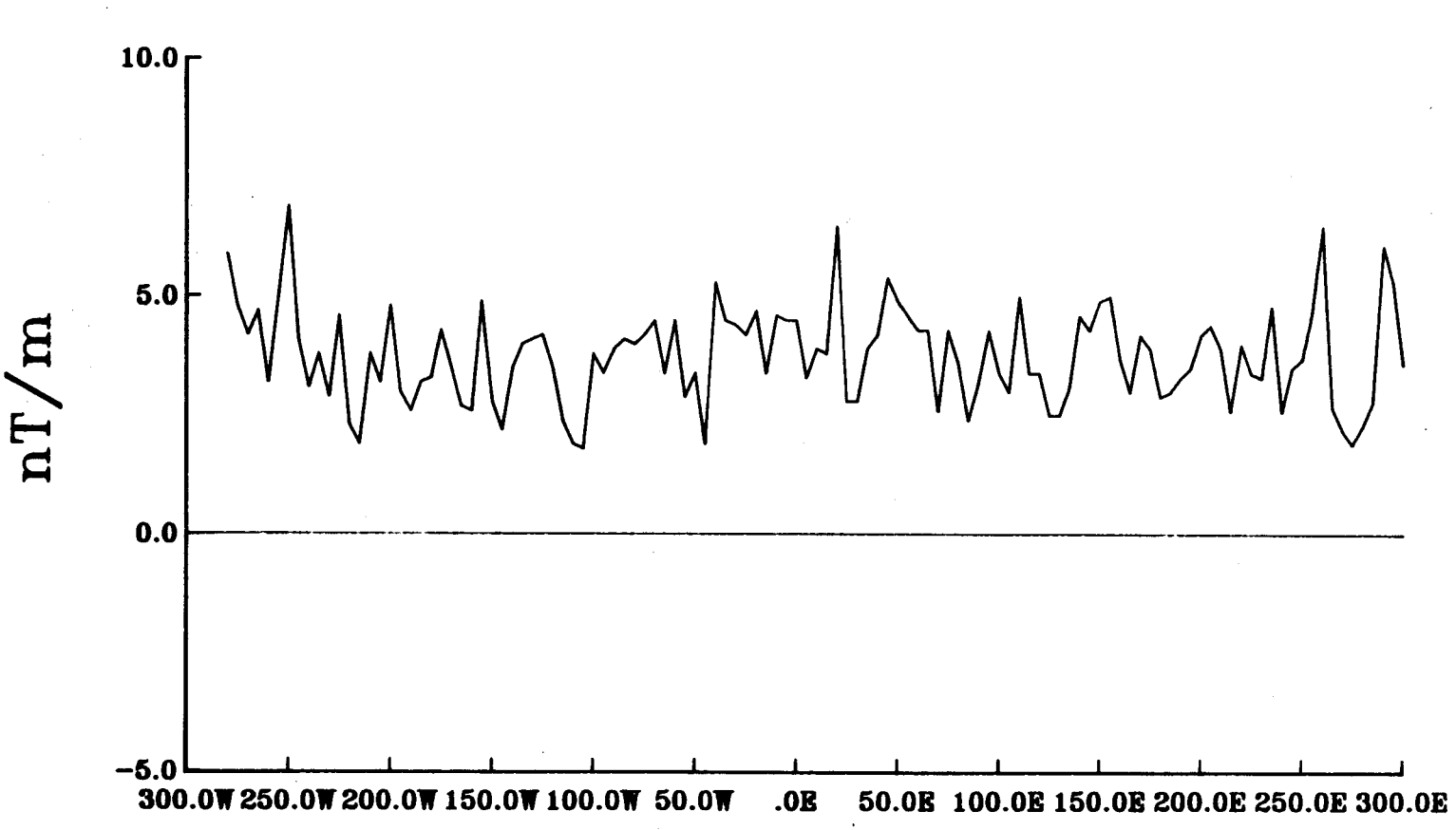
120135 404

DONEGAL DEVELOPMENT LTD.	Scale 1: 4000	07 APR 91
CABIN CREEK PROPERTY	NTS: 105B M.D.: Watson YT	
Gradiometer Survey	AMEROK GEOPHYSICS	

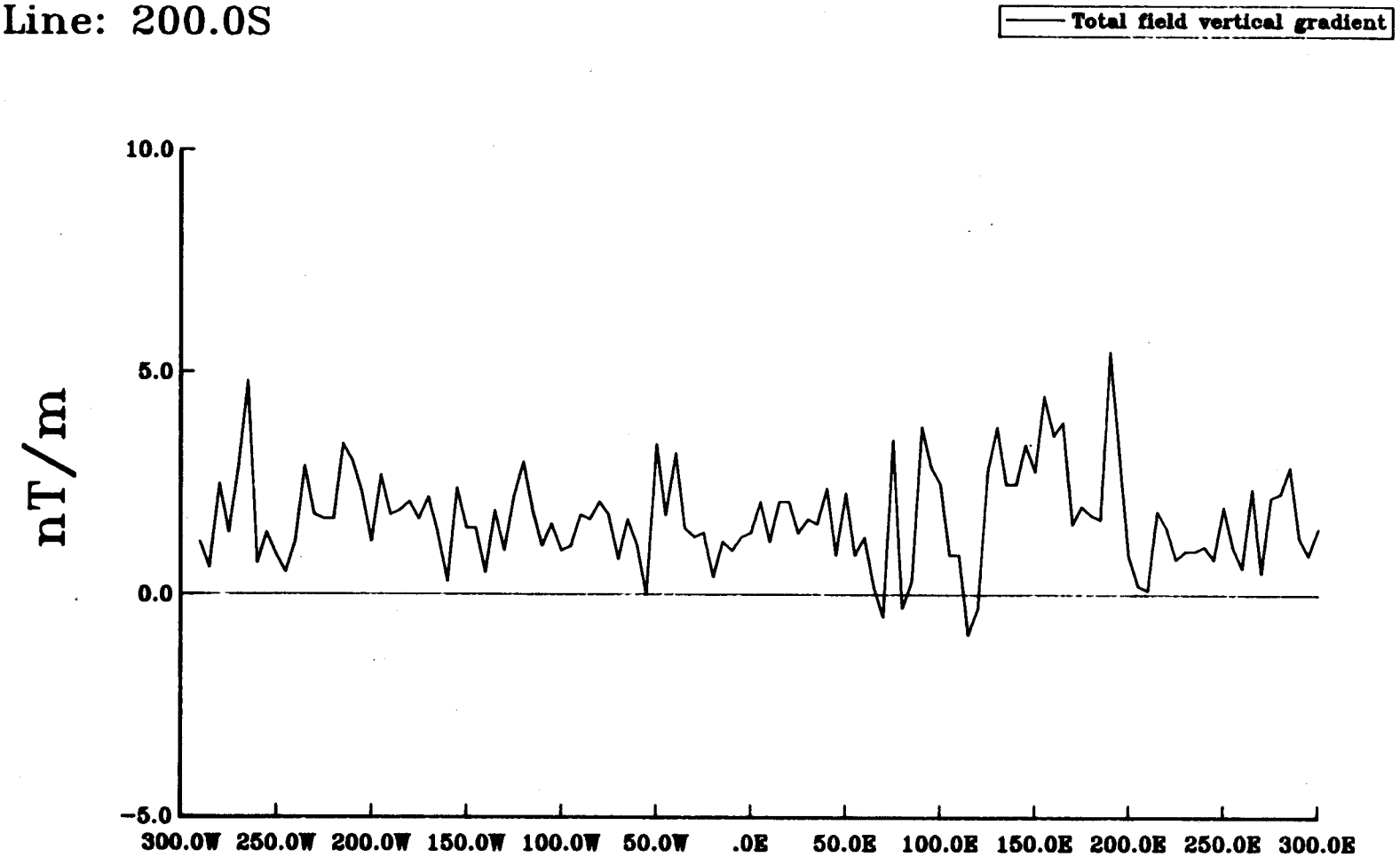
Line: 100.0S


Total field vertical gradient
nT/m
5.0
0.0
-5.0
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

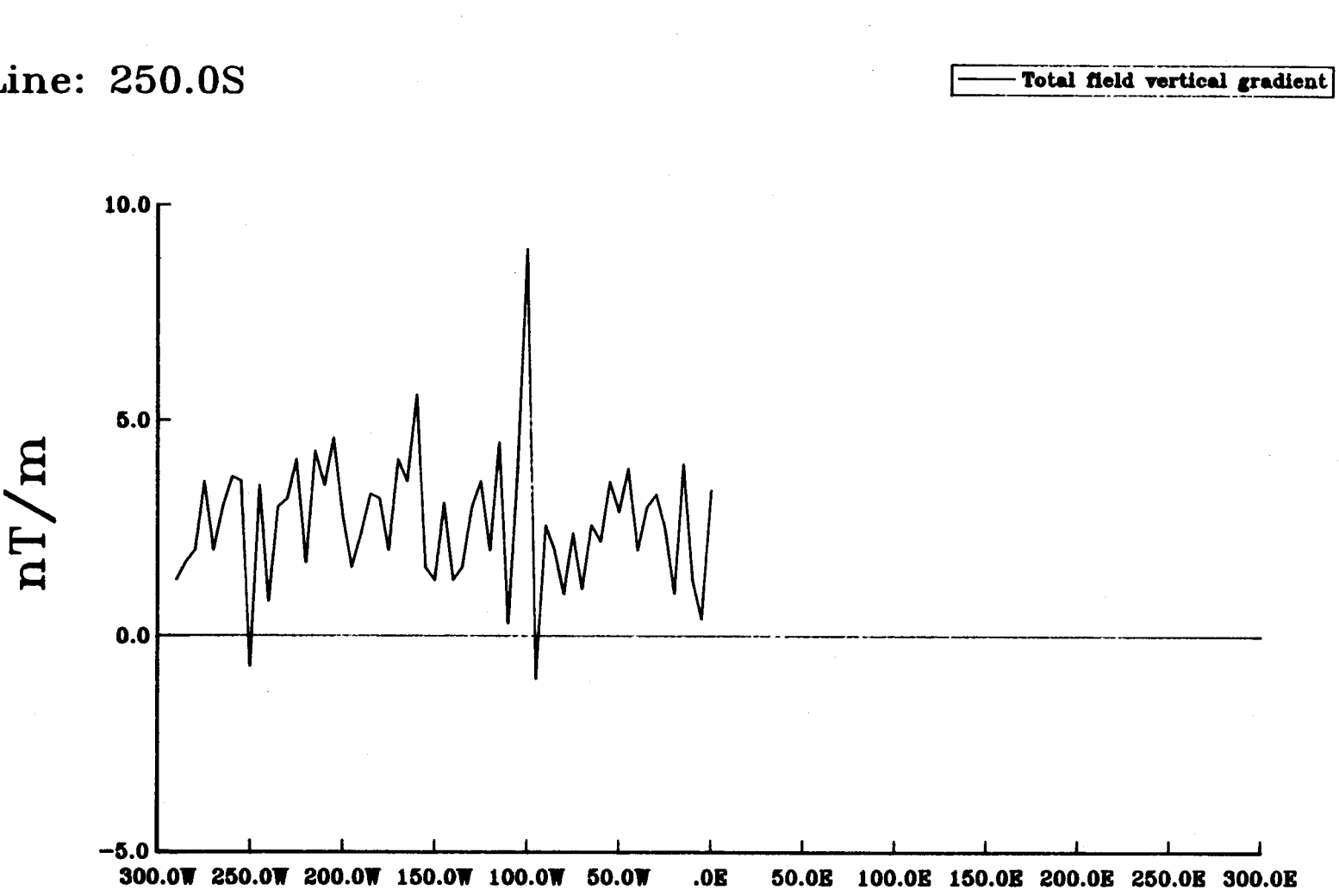
Line: 150.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

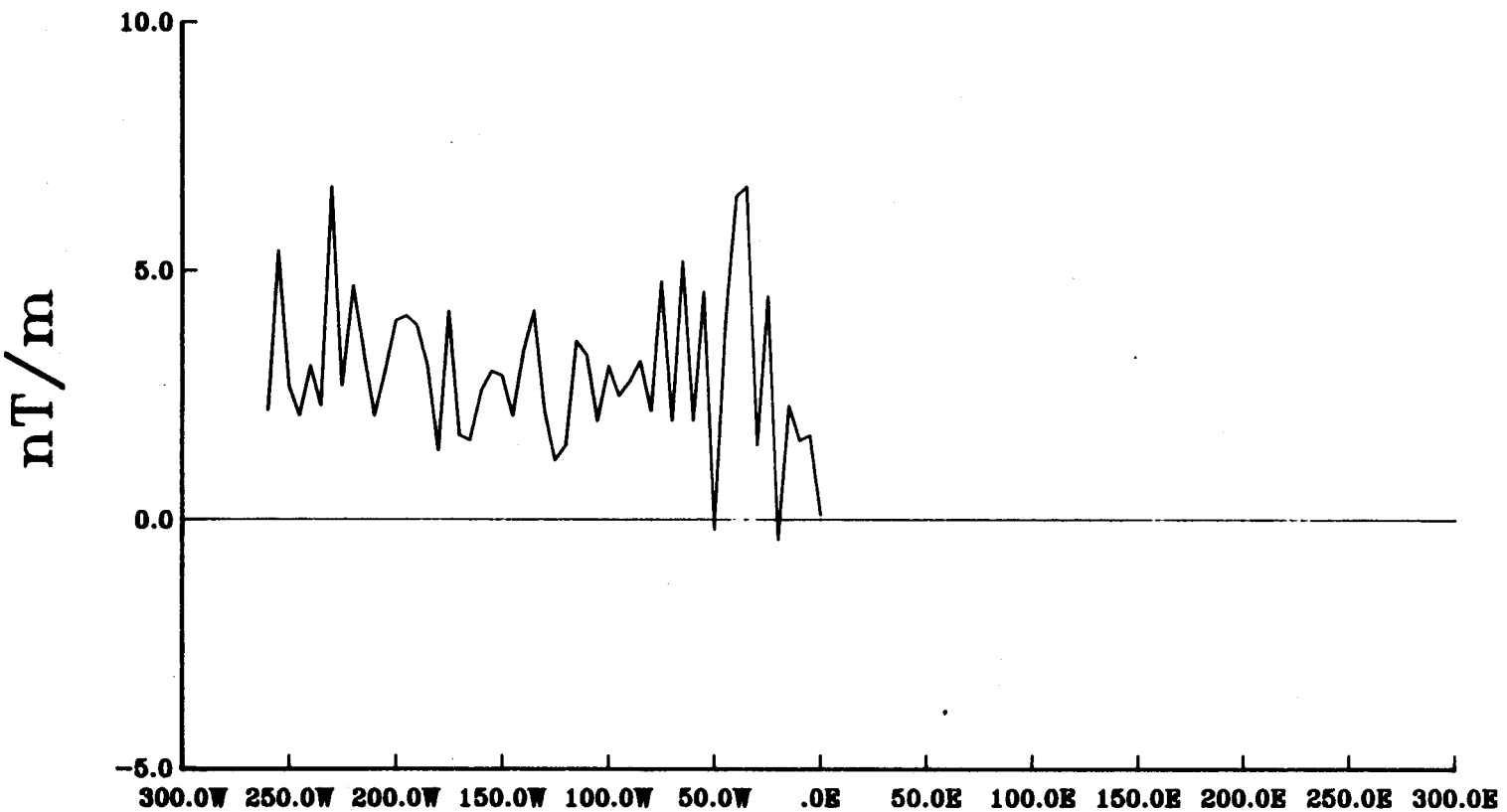
Line: 200.0S


Total field vertical gradient
nT/m
10.0
5.0
0.0
-5.0
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

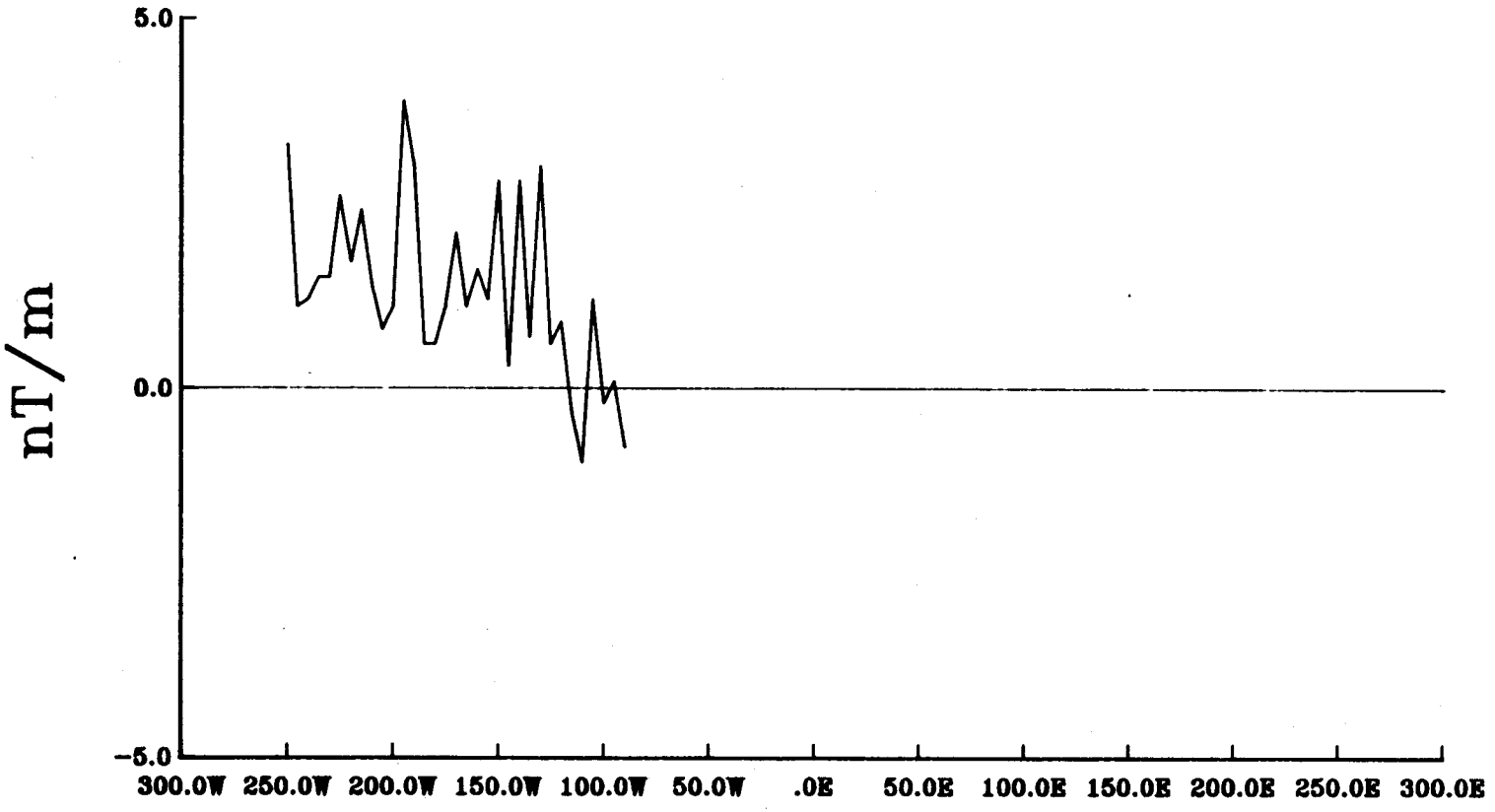
Line: 250.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

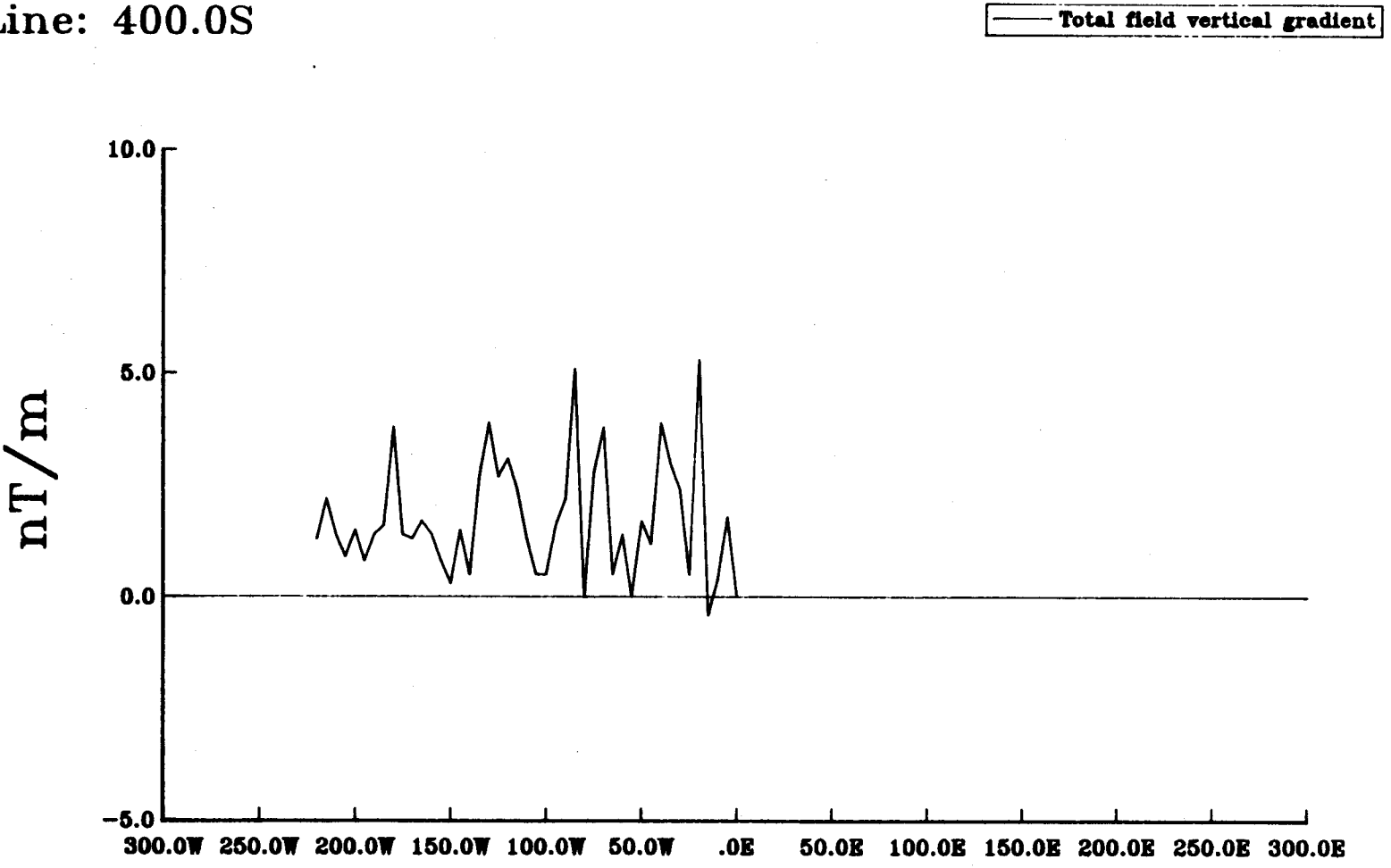
Line: 300.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

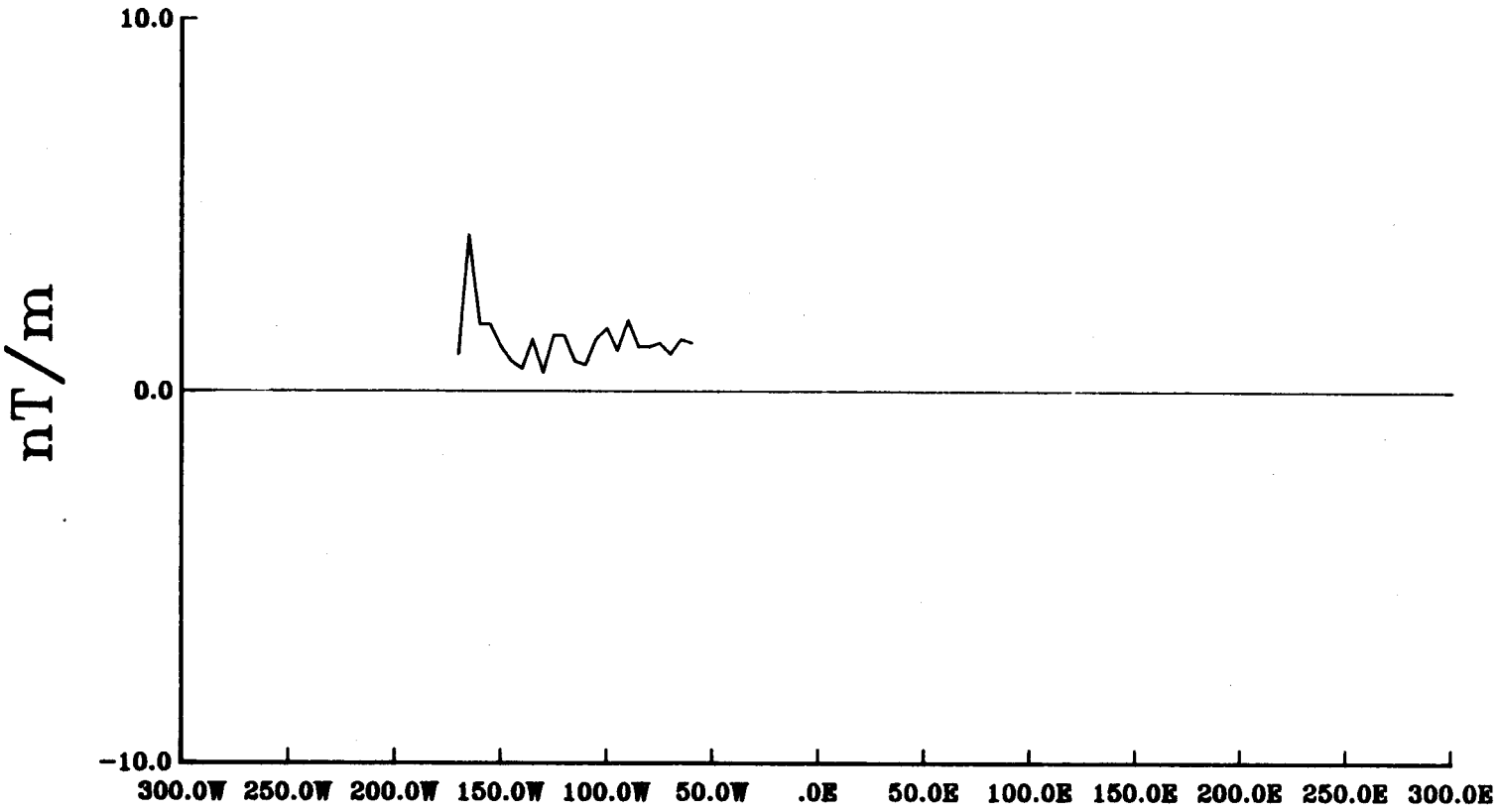
Line: 350.0S


Total field vertical gradient
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

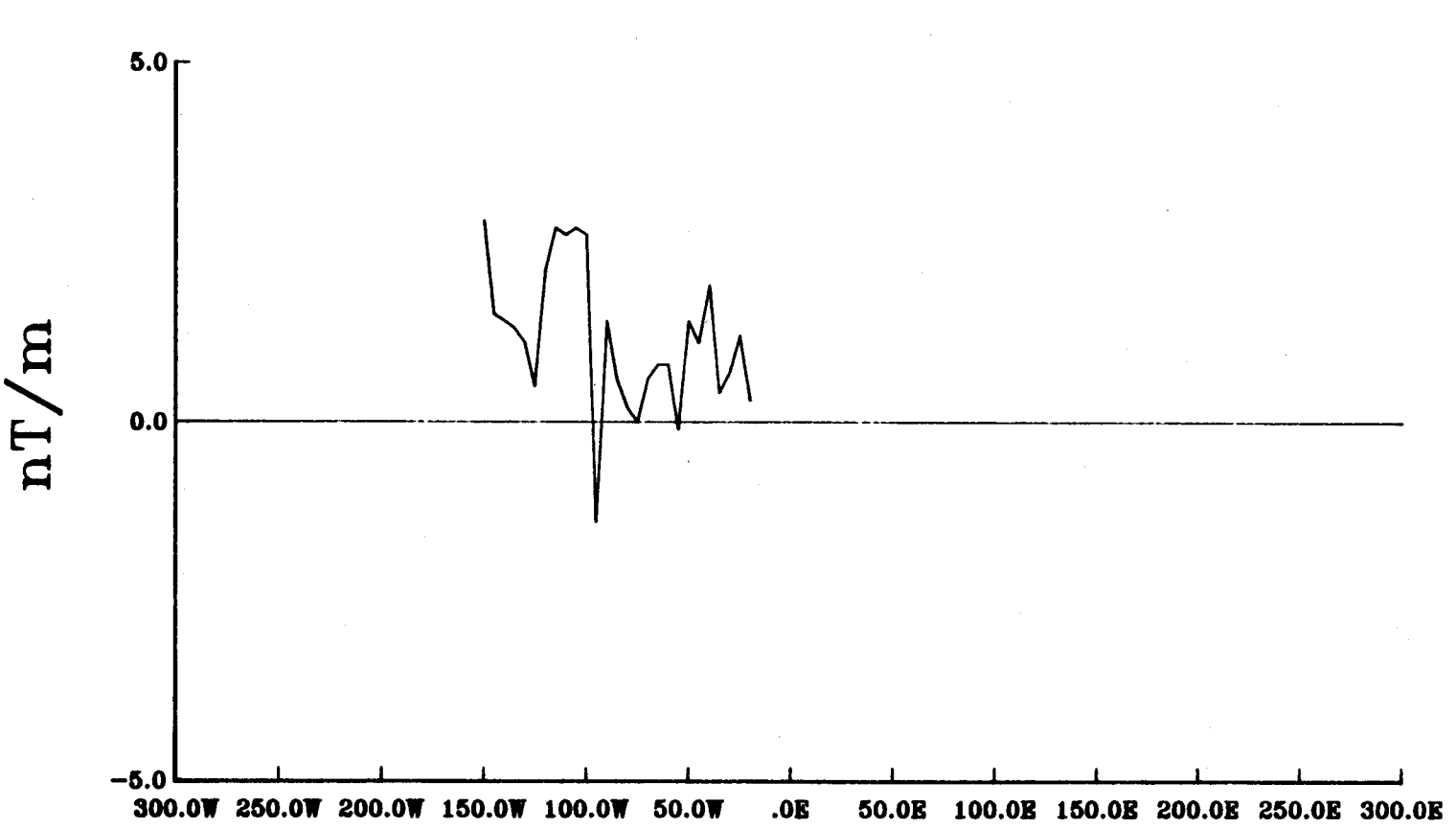
Line: 400.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

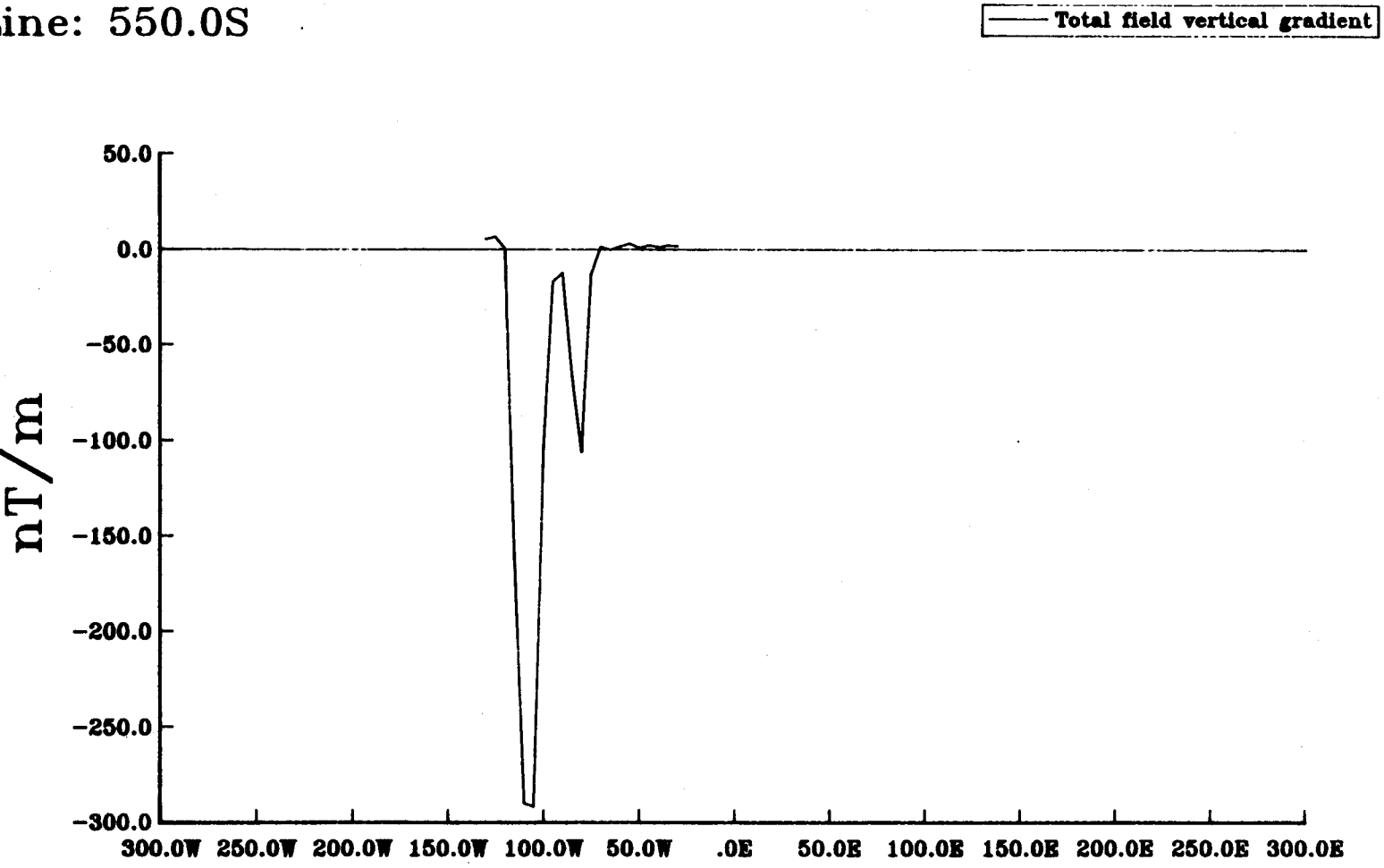
Line: 450.0S


Total field vertical gradient
10.0
0.0
-10.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

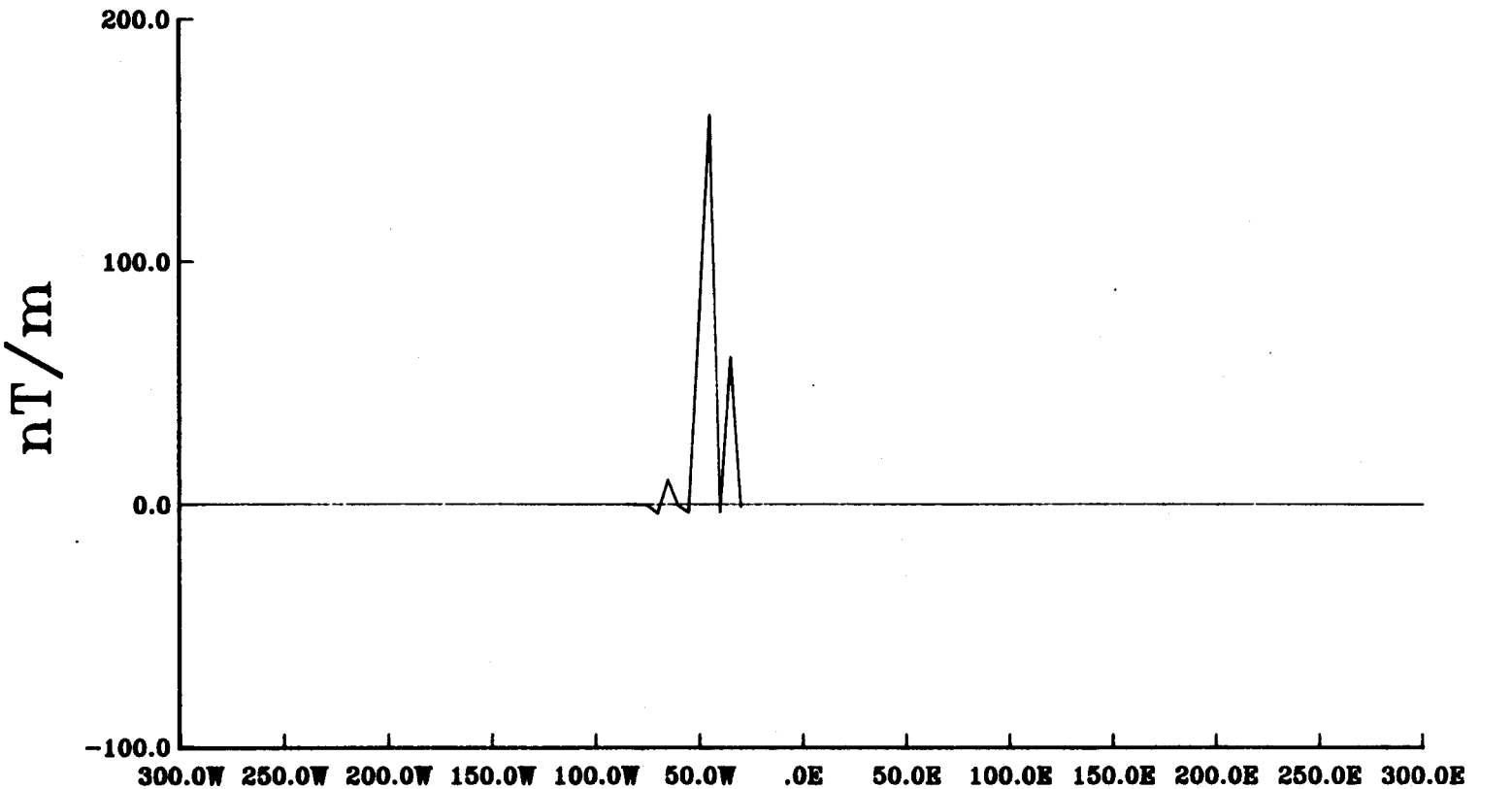
Line: 500.0S


Total field vertical gradient
nT/m
5.0
0.0
-5.0
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

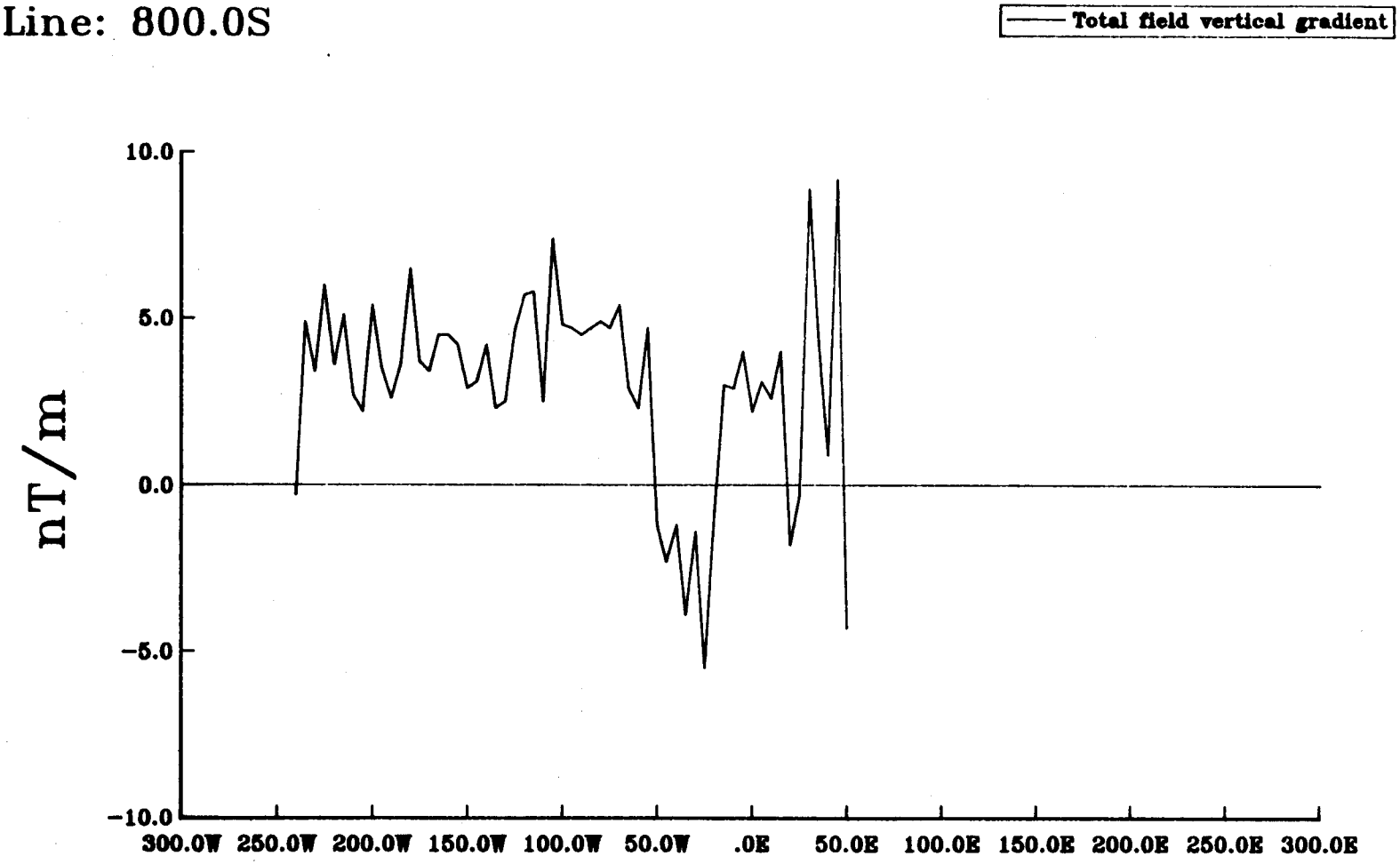
Line: 550.0S


Total field vertical gradient
50.0
0.0
-50.0
-100.0
-150.0
-200.0
-250.0
-300.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

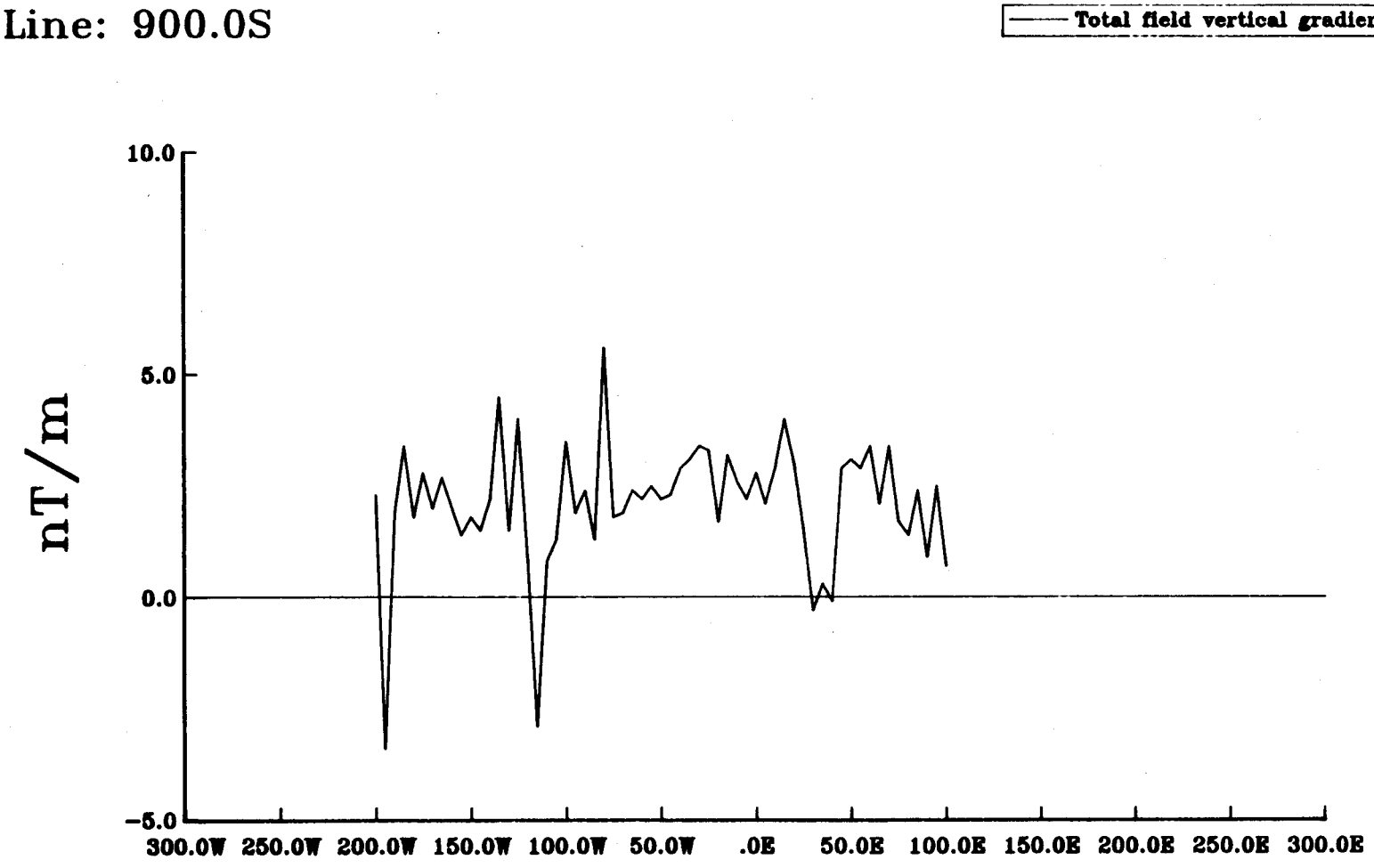
Line: 600.0S


Total field vertical gradient
200.0
100.0
0.0
-100.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

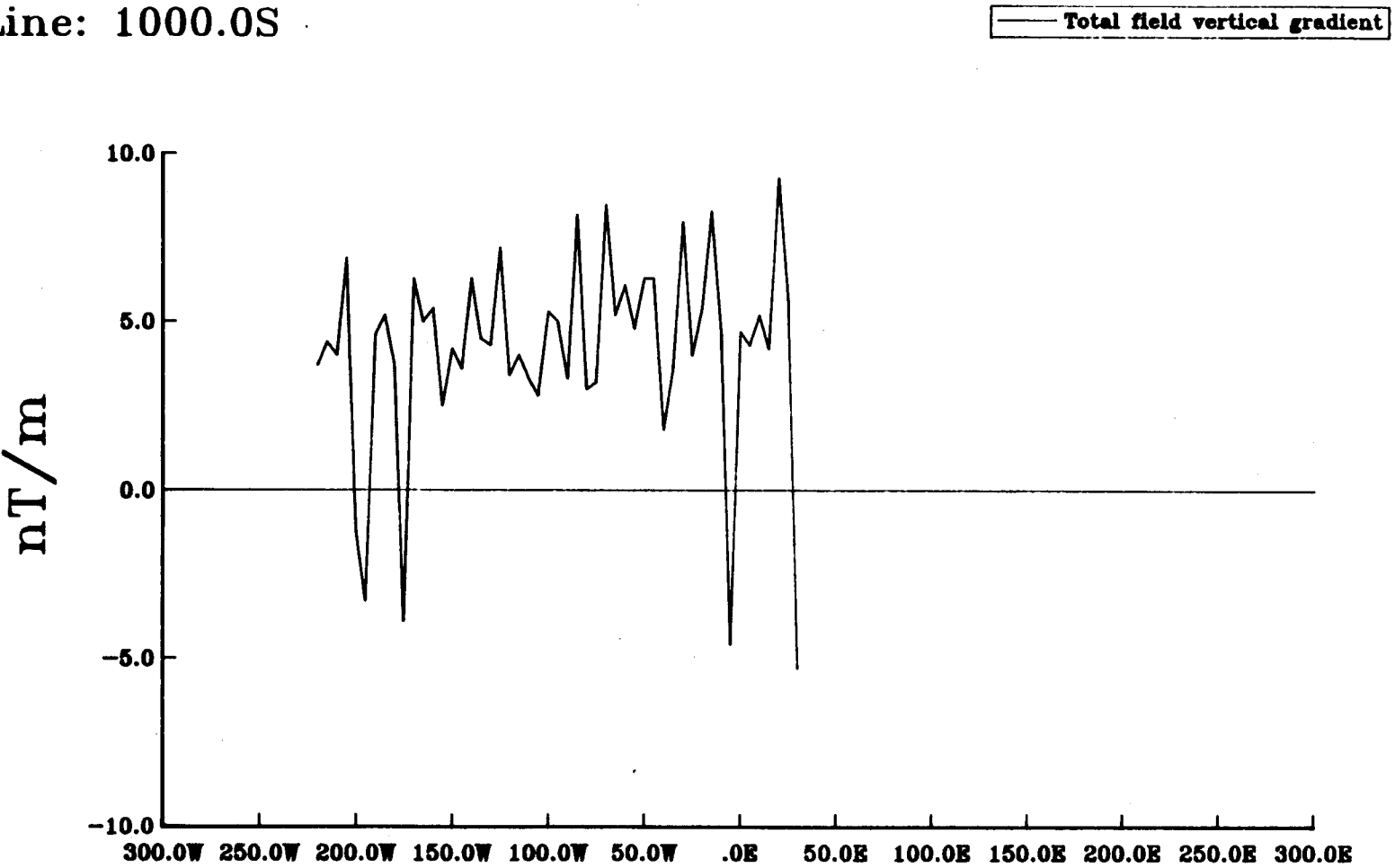
Line: 800.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
-10.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

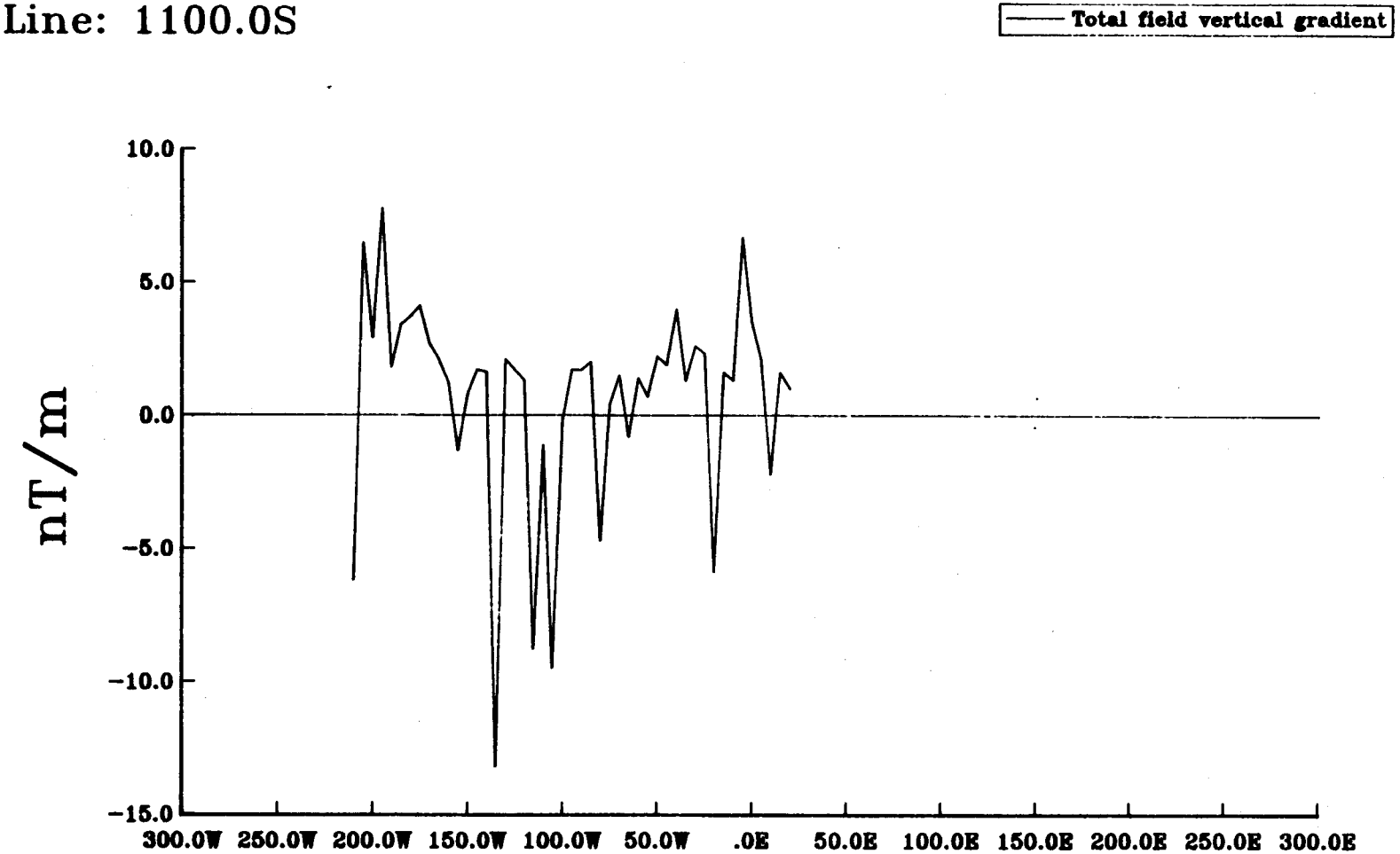
Line: 900.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

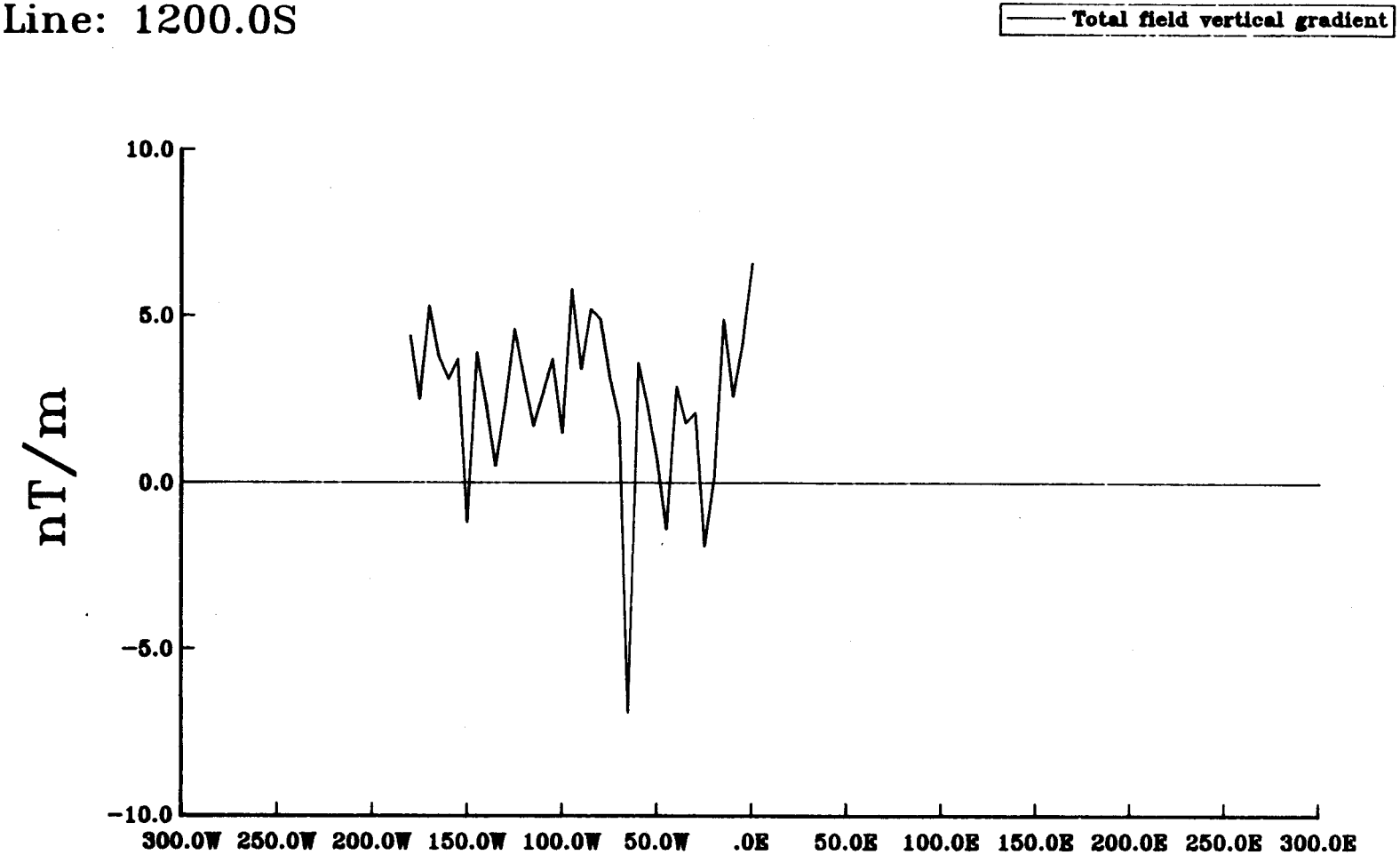
Line: 1000.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
-10.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

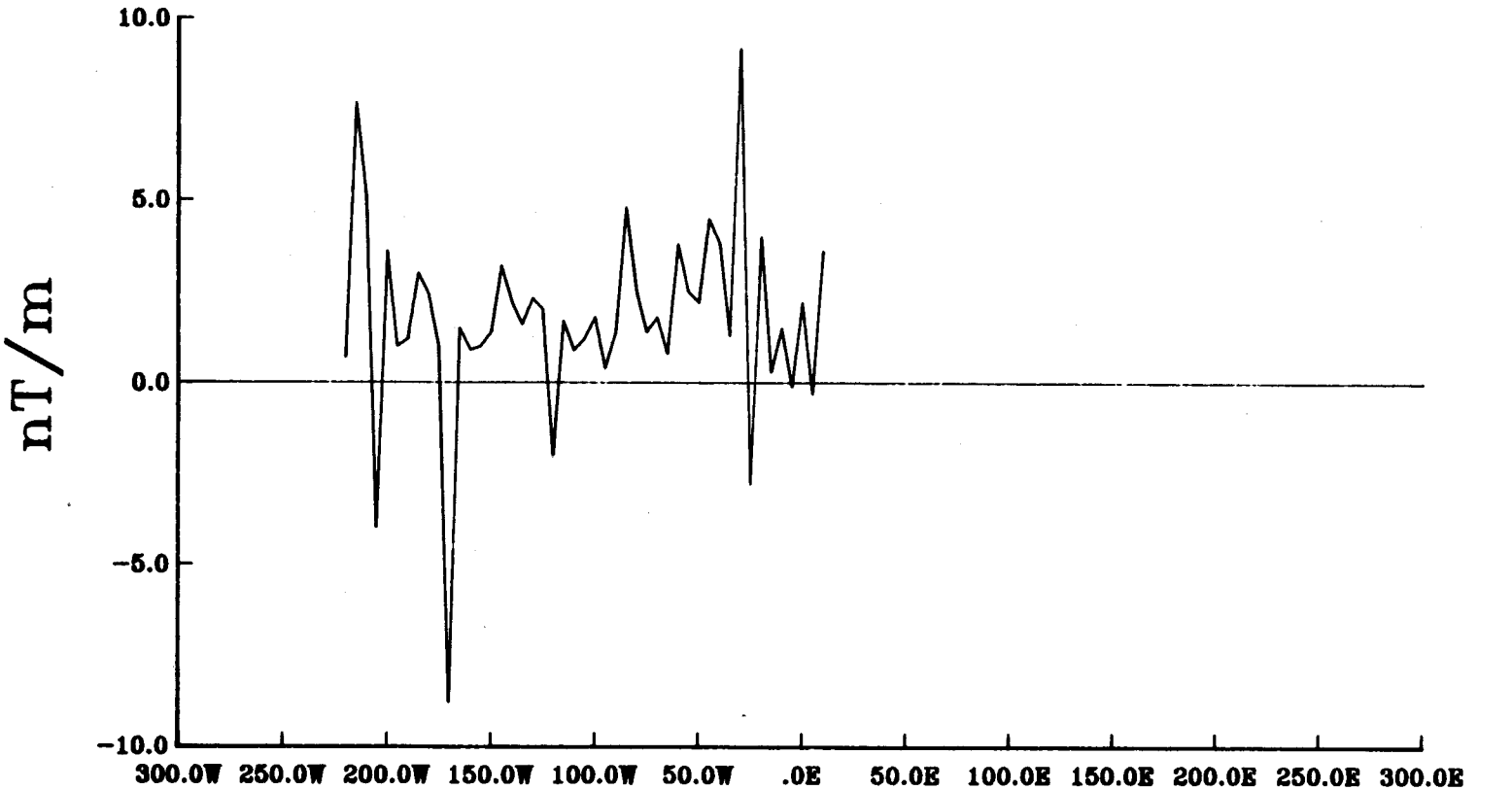
Line: 1100.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
-10.0
-15.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

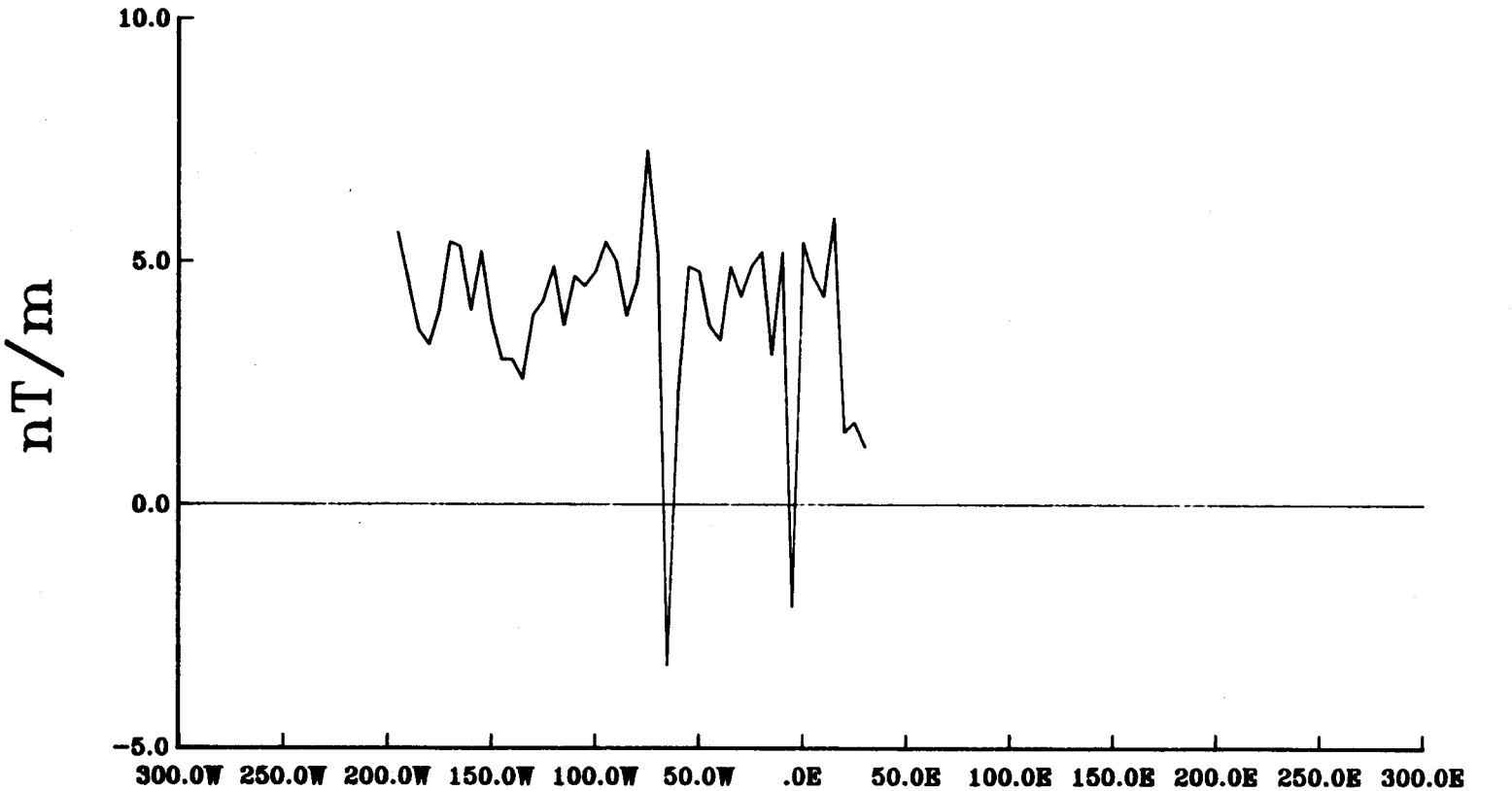
Line: 1200.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
-10.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

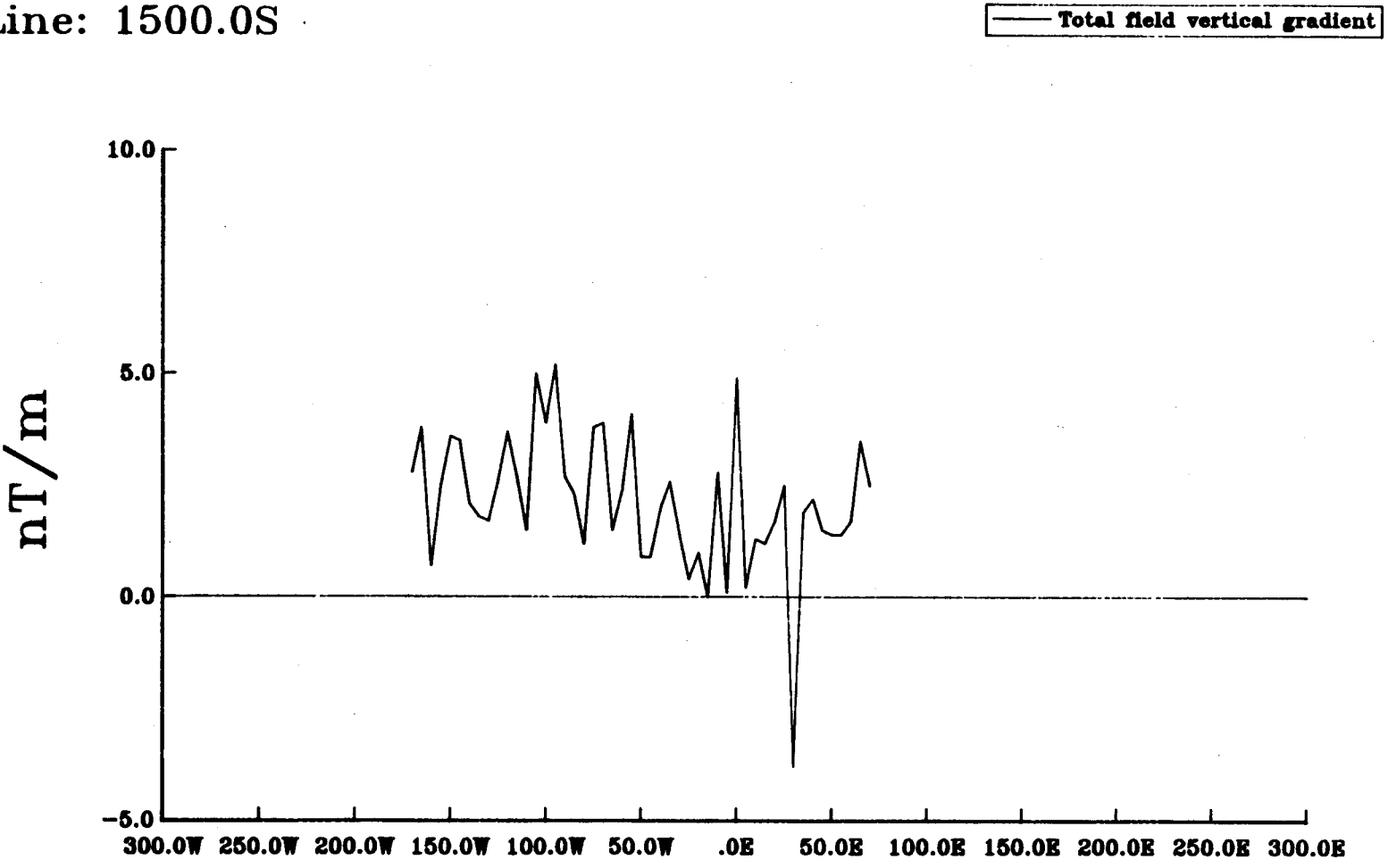
Line: 1300.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
-10.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

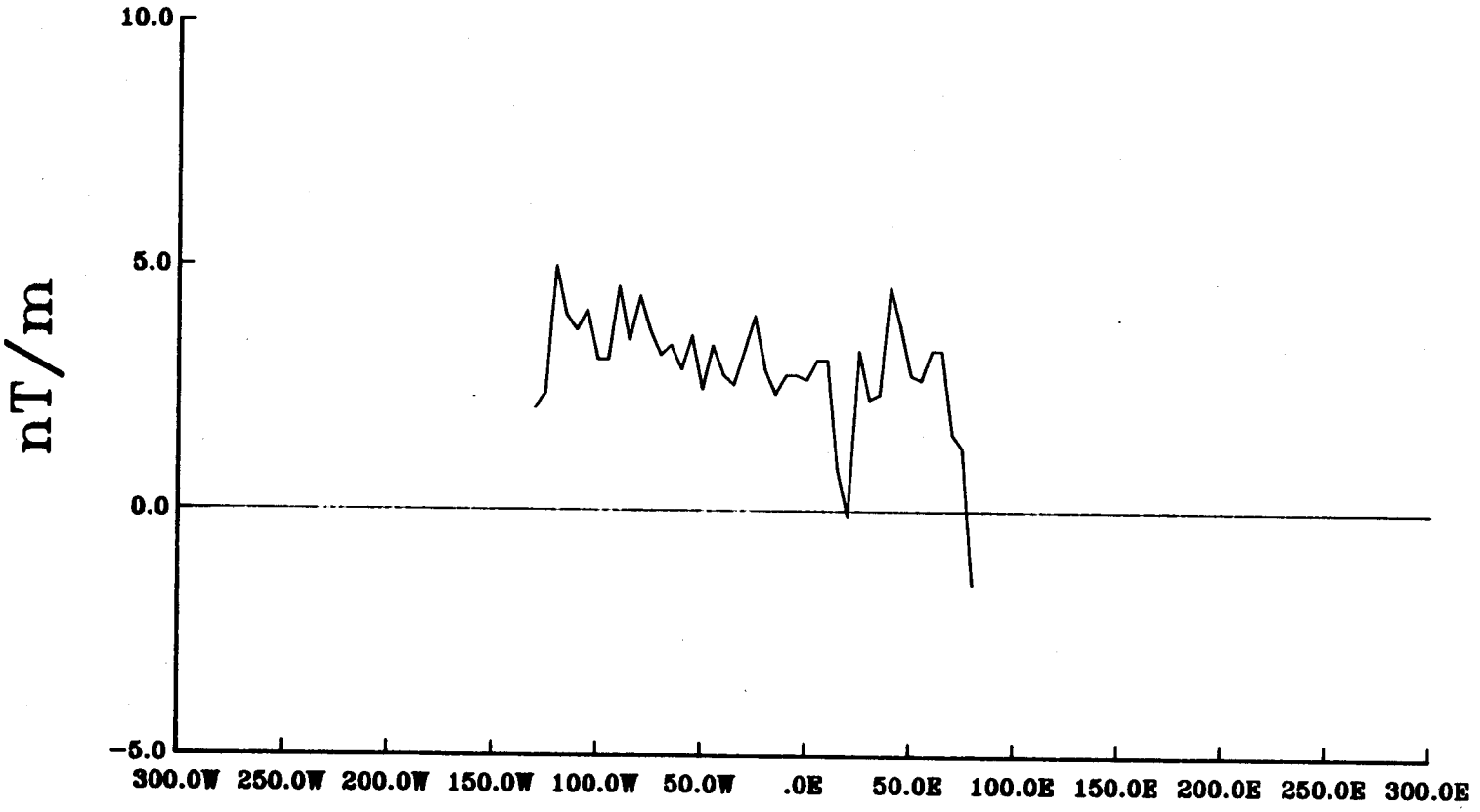
Line: 1400.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

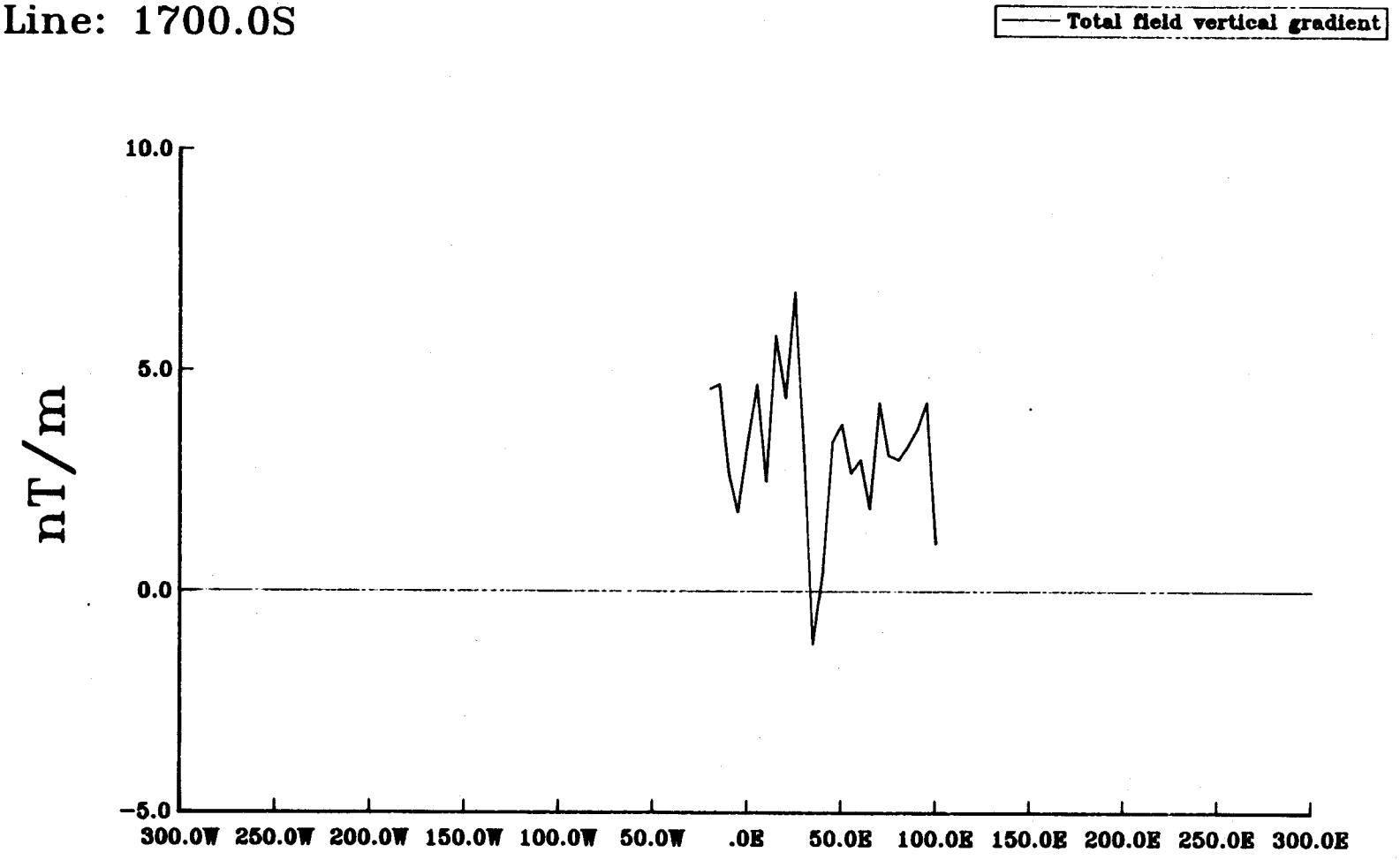
Line: 1500.0S


Total field vertical gradient
nT/m
10.0
5.0
0.0
-5.0
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

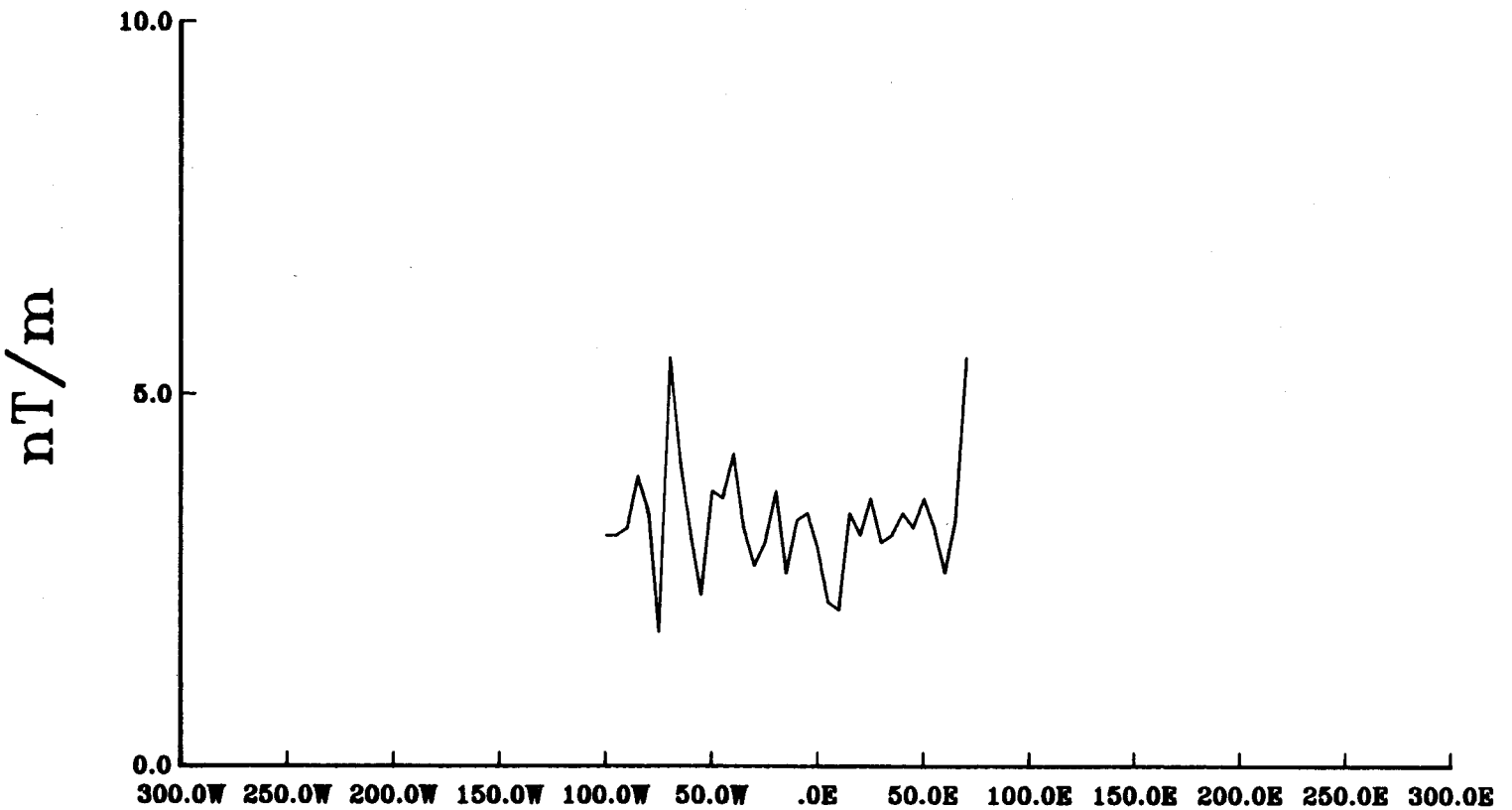
Line: 1600.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

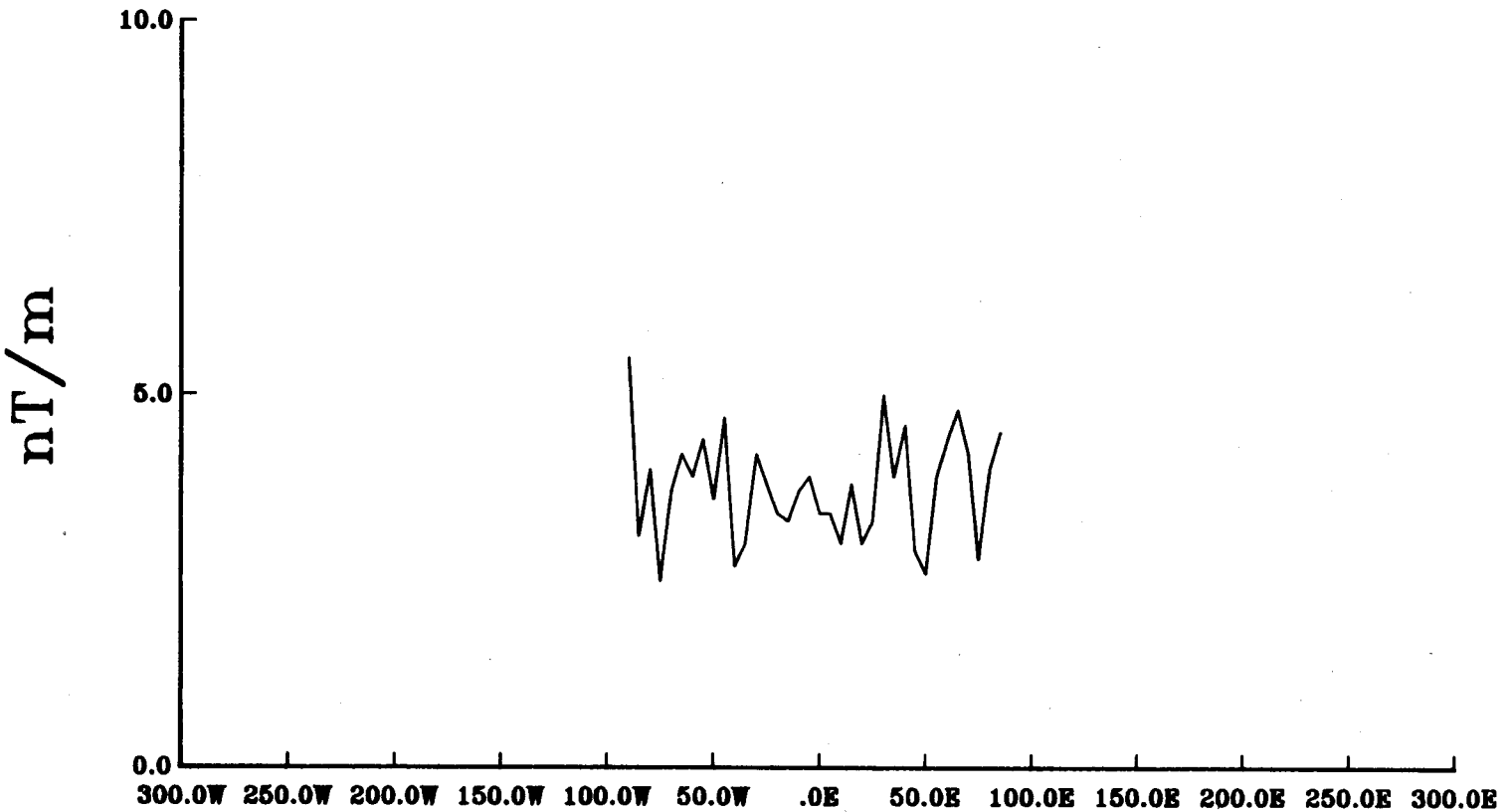
Line: 1700.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

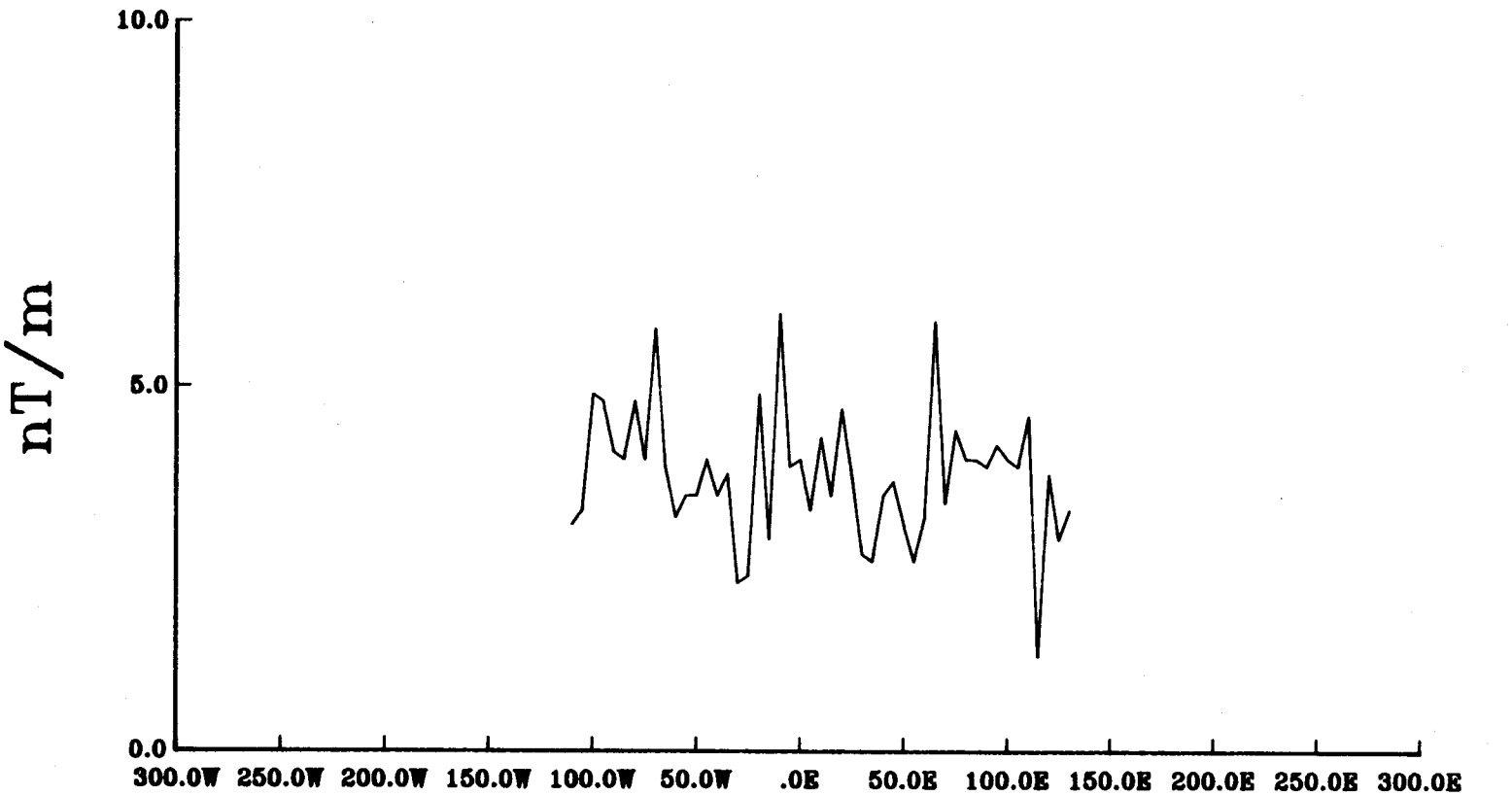
Line: 1800.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

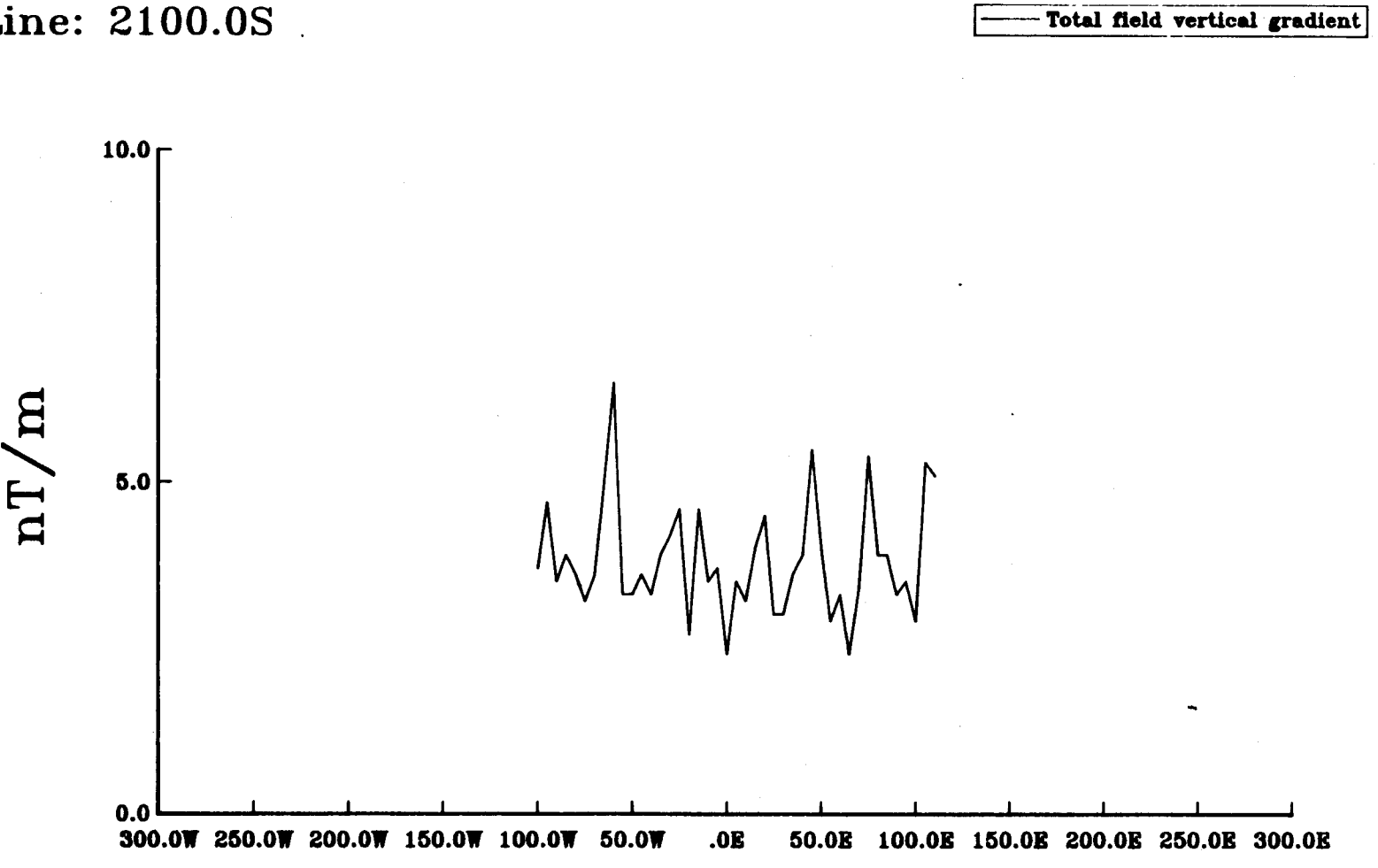
Line: 1900.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

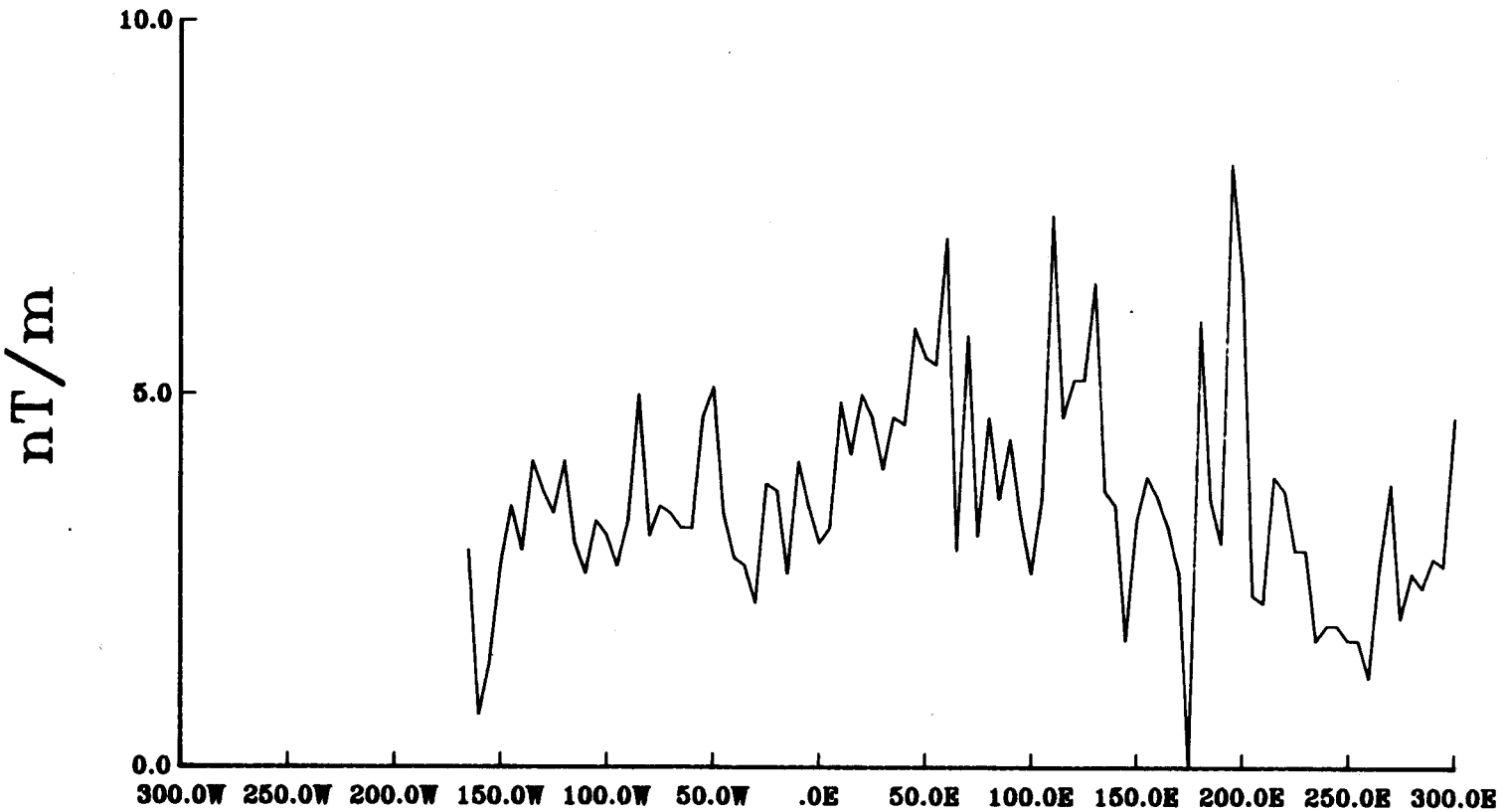
Line: 2000.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

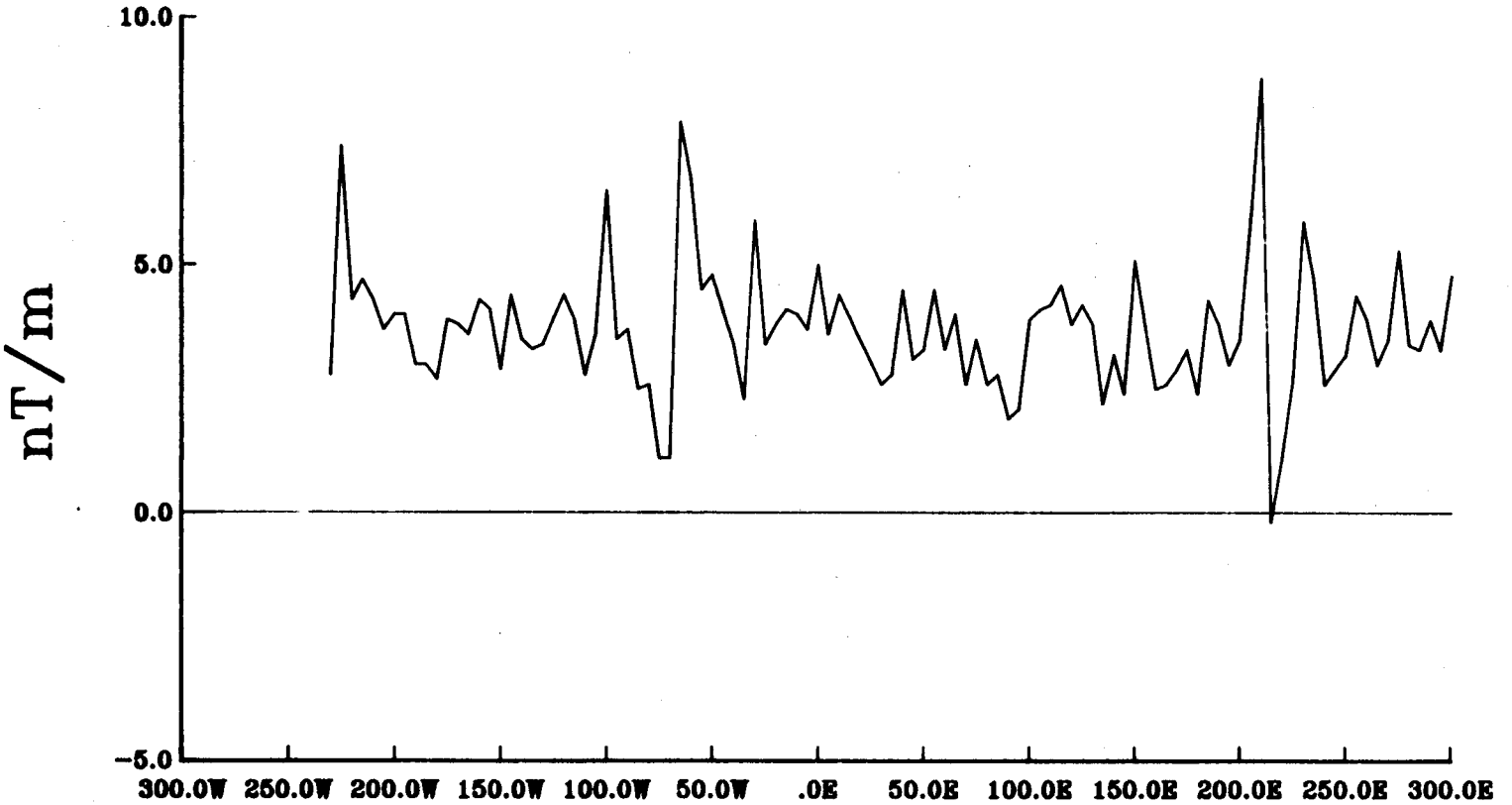
Line: 2100.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

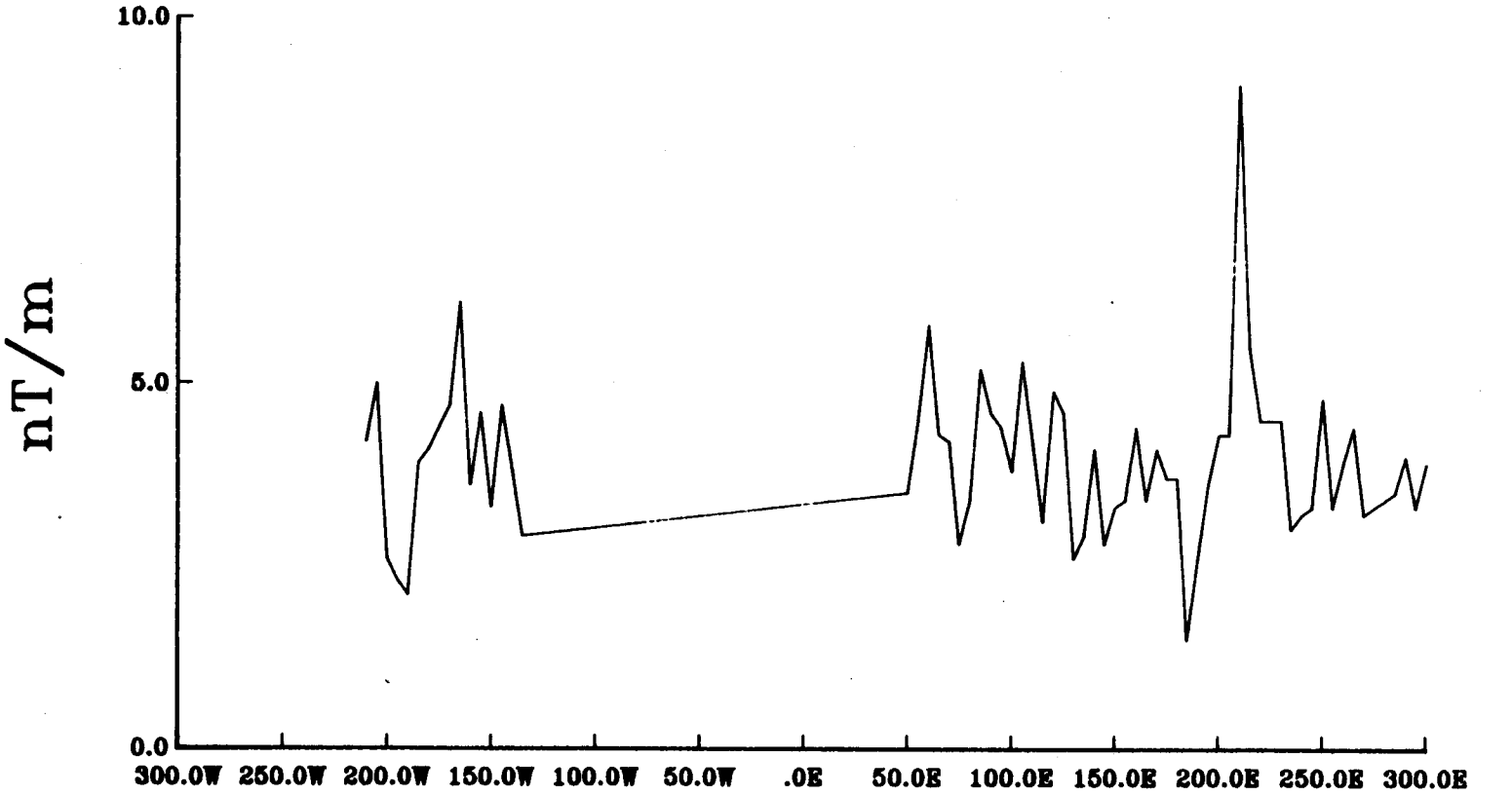
Line: 2200.0S


Total field vertical gradient
nT/m
10.0
5.0
0.0
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

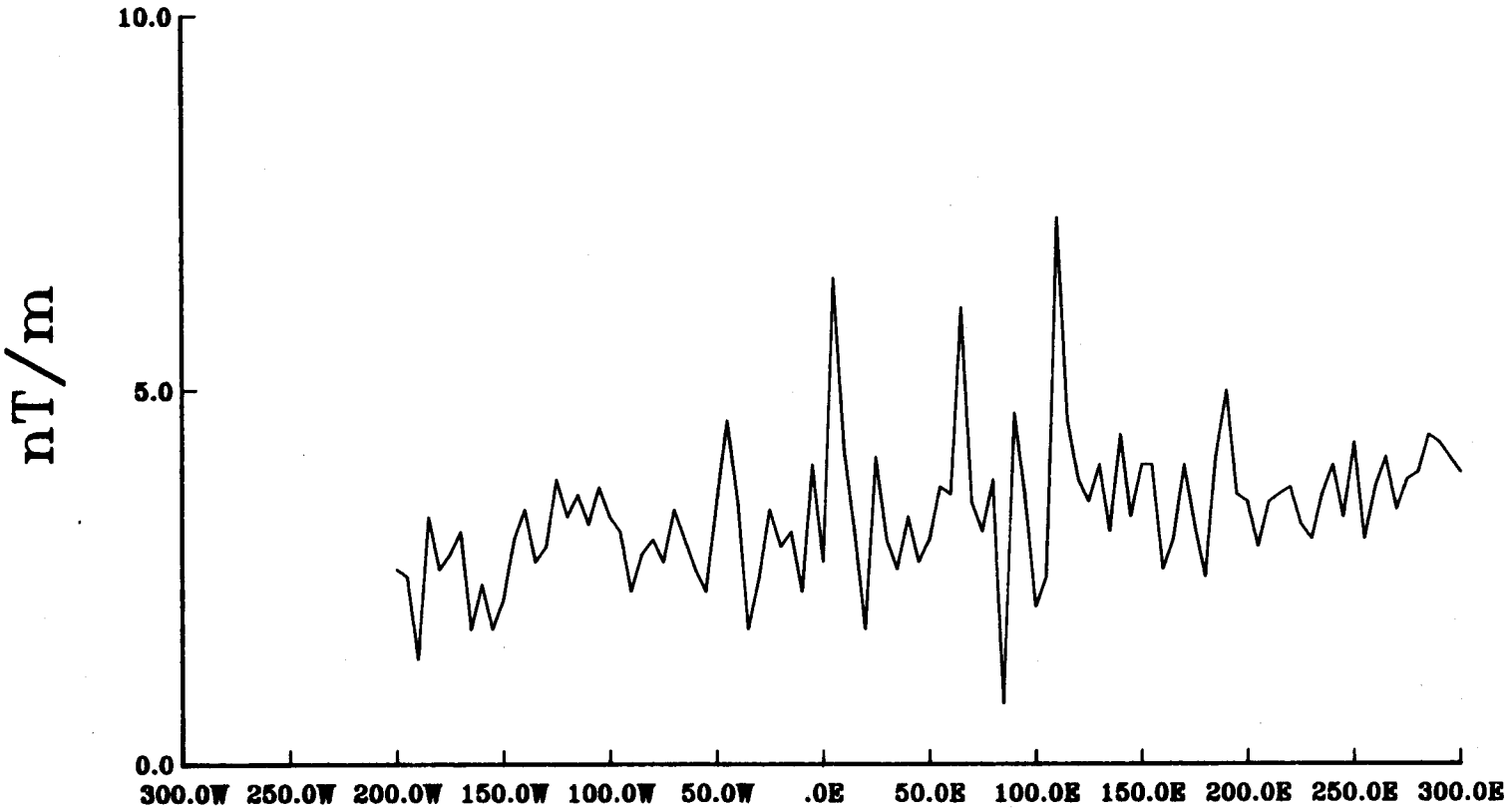
Line: 2300.0S


Total field vertical gradient
10.0
5.0
0.0
-5.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

Line: 2400.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W
250.0W
200.0W
150.0W
100.0W
50.0W
.0E
50.0E
100.0E
150.0E
200.0E
250.0E
300.0E

Line: 2500.0S


Total field vertical gradient
10.0
5.0
0.0
nT/m
300.0W 250.0W 200.0W 150.0W 100.0W 50.0W .0E 50.0E 100.0E 150.0E 200.0E 250.0E 300.0E

Appendix B. Statement of Qualifications

I, Michael Allan Power of Whitehorse, Yukon Territory, certify that:

1. I obtained a B.Sc. (Honours) degree in Geology from the University of Alberta in 1986 and a Masters degree in Geophysics from the University of Alberta in 1988.

2. I have worked in the mining exploration industry and in geophysical research since 1984.

3. I visited the Cabin Creek Property between March 27, 1991 and April 1, 1991 and conducted the geophysical survey described in this report.

4. I have not received nor expect to receive any interest in the property of Donegal Developments Ltd.

M.A. Power M.Sc.

Whitehorse, Yukon Territory
April 12, 1991

Appendix C. Data records

OMNI-PLUS Tie-line MAG/VLF R22N Ser #428150
TOTAL FIELD DATA (uncorrected)
& GRADIENT

Reference field: 58000.0
Datum subtracted: 0.0Date 30 MAR 91
Operator: 5000
Records: 201
Bat: 16.7 Volt Lithium: 3.50 Volt
Last time update: 3/29 8:46:00
Start of print: 3/30 10:12:07

Line 2+00 S Date 30 MAR 91 #1

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+90 E	58242.7	.06	0.0	8:43:35	88	55	5.5
1+95 E	58229.1	.06	0.0	8:44:20	88		3.2
2+00 E	58222.5	.06	0.0	8:44:37	88		0.9
2+05 E	58219.2	.06	0.0	8:44:49	88		0.2
2+10 E	58216.7	.07	0.0	8:45:07	88		0.1
2+15 E	58215.6	.07	0.0	8:45:26	88		1.9
2+20 E	58227.0	.06	0.0	8:45:41	88		1.5
2+25 E	58246.3	.06	0.0	8:46:01	88		0.8
2+30 E	58267.1	.06	0.0	8:46:23	88		1.0
2+35 E	58288.5	.06	0.0	8:46:41	88		1.0
2+40 E	58294.5	.06	0.0	8:46:53	88		1.1
2+45 E	58301.4	.06	0.0	8:47:07	88		0.8
2+50 E	58308.7	.06	0.0	8:47:22	88		2.0
2+55 E	58311.8	.06	0.0	8:47:36	88		1.1
2+60 E	58313.5	.06	0.0	8:47:49	88		0.6
2+65 E	58313.8	.07	0.0	8:47:59	88		2.4
2+70 E	58311.8	.06	0.0	8:48:14	88		0.5
2+75 E	58311.9	.06	0.0	8:48:26	88		2.2
2+80 E	58315.8	.06	0.0	8:48:44	88		2.3
2+85 E	58313.6	.06	0.0	8:49:00	88		2.9
2+90 E	58313.7	.06	0.0	8:49:16	88		1.3
2+95 E	58309.8	.06	0.0	8:49:33	88		0.9
3+00 E	58303.4	.06	0.0	8:49:46	88		1.5

Line 1+50 S Date 30 MAR 91 #24

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
3+00 E	58309.9	.06	0.0	8:51:50	88		3.6
2+95 E	58326.0	.06	0.0	8:52:36	88		5.3
2+90 E	58331.4	.06	0.0	8:52:53	88		6.1
2+85 E	58335.2	.06	0.0	8:53:06	88		2.8
2+80 E	58346.6	.06	0.0	8:53:19	88		2.3
2+75 E	58353.0	.06	0.0	8:53:30	88		1.9
2+70 E	58365.3	.06	0.0	8:53:44	88		2.2
2+65 E	58372.7	.06	0.0	8:53:57	88		2.7
2+60 E	58386.2	.06	0.0	8:54:15	88		6.5
2+55 E	58394.2	.06	0.0	8:54:28	88		4.7

2+50	E	58402.1	.06	0.0	8:54:39	88	3.7
2+45	E	58424.2	.06	0.0	8:55:03	88	3.5
2+40	E	58429.6	.06	0.0	8:55:15	88	2.6
2+35	E	58437.3	.06	0.0	8:55:29	88	4.8
2+30	E	58439.8	.06	0.0	8:55:42	88	3.3
2+25	E	58439.0	.06	0.0	8:55:54	88	3.4
2+20	E	58438.3	.06	0.0	8:56:09	88	4.0
2+15	E	58436.7	.06	0.0	8:56:21	88	2.6
2+10	E	58436.9	.06	0.0	8:56:34	88	3.9
2+05	E	58434.6	.06	0.0	8:56:52	88	4.4
2+00	E	58430.0	.05	0.0	8:57:06	88	4.2
1+95	E	58426.2	.06	0.0	8:57:19	88	3.5
1+90	E	58420.0	.06	0.0	8:57:31	88	3.3
1+85	E	58415.0	.06	0.0	8:57:45	88	3.0
1+80	E	58410.7	.06	0.0	8:58:00	88	2.9
1+75	E	58402.9	.06	0.0	8:58:17	88	3.9
1+70	E	58385.6	.06	0.0	8:58:55	88	4.2
1+65	E	58380.7	.06	0.0	8:59:14	88	3.0
1+60	E	58383.9	.06	0.0	8:59:26	88	3.7
1+55	E	58400.5	.06	0.0	9:00:12	88	5.0
1+50	E	58398.1	.05	0.0	9:00:24	88	4.9
1+45	E	58388.4	.06	0.0	9:00:41	88	4.3
1+40	E	58383.9	.06	0.0	9:00:50	88	4.6
1+35	E	58375.6	.06	0.0	9:01:06	88	3.1
1+30	E	58367.5	.06	0.0	9:01:21	88	2.5
1+25	E	58353.9	.06	0.0	9:01:52	88	2.5
1+20	E	58345.6	.06	0.0	9:02:07	88	3.4
1+15	E	58341.6	.05	0.0	9:02:24	88	3.4
1+10	E	58342.6	.06	0.0	9:02:38	88	5.0
1+05	E	58352.9	.06	0.0	9:02:50	88	3.0
1+00	E	58364.2	.06	0.0	9:03:04	88	3.4
0+95	E	58375.5	.05	0.0	9:03:16	88	4.3
0+90	E	58383.2	.05	0.0	9:03:28	88	3.2
0+85	E	58387.7	.06	0.0	9:03:40	88	2.4
0+80	E	58390.9	.06	0.0	9:03:54	88	3.6
0+75	E	58391.4	.06	0.0	9:04:09	88	4.3
0+70	E	58391.1	.06	0.0	9:04:21	88	2.6
0+65	E	58390.1	.06	0.0	9:04:37	88	4.3
0+60	E	58386.4	.06	0.0	9:04:49	88	4.3
0+55	E	58384.5	.06	0.0	9:05:08	88	4.6
0+50	E	58387.3	.06	0.0	9:05:32	88	4.9
0+45	E	58387.9	.06	0.0	9:05:49	88	5.4
0+40	E	58389.1	.06	0.0	9:06:02	88	4.2
0+35	E	58386.2	.06	0.0	9:06:18	88	3.9
0+30	E	58383.0	.06	0.0	9:06:35	88	2.8
0+25	E	58383.6	.06	0.0	9:06:48	88	2.8
0+20	E	58380.1	.06	0.0	9:07:01	88	6.5
0+15	E	58378.2	.06	0.0	9:07:15	88	3.8
0+10	E	58379.5	.06	0.0	9:07:28	88	3.9
0+05	E	58378.8	.06	0.0	9:07:40	88	3.3
0+00	E	58373.6	.06	0.0	9:07:54	88	4.5
0+05	W	58368.8	.06	0.0	9:08:13	88	4.5
0+10	W	58372.3	.06	0.0	9:08:31	88	4.6
0+15	W	58374.9	.06	0.0	9:08:43	88	3.4

0+20	W	58375.2	.06	0.0	9:08:53	88	4.7
0+25	W	58377.2	.06	0.0	9:09:08	88	4.2
0+30	W	58380.9	.06	0.0	9:09:22	88	4.4
0+35	W	58377.4	.06	0.0	9:09:41	88	4.5
0+40	W	58376.1	.06	0.0	9:09:55	88	5.3
0+45	W	58372.8	.06	0.0	9:10:06	88	1.9
0+50	W	58371.7	.06	0.0	9:10:16	88	3.4
0+55	W	58372.1	.06	0.0	9:10:29	88	2.9
0+60	W	58370.6	.07	0.0	9:10:47	88	4.5
0+65	W	58369.0	.06	0.0	9:10:57	88	3.4
0+70	W	58371.5	.06	0.0	9:11:08	88	4.5
0+75	W	58368.9	.06	0.0	9:11:45	88	4.2
0+80	W	58365.5	.06	0.0	9:12:04	88	4.0
0+85	W	58367.2	.06	0.0	9:12:14	88	4.1
0+90	W	58368.7	.06	0.0	9:12:24	88	3.9
0+95	W	58366.3	.05	0.0	9:12:36	88	3.4
1+00	W	58361.1	.06	0.0	9:13:10	88	3.8
1+05	W	58361.6	.06	0.0	9:13:20	88	1.8
1+10	W	58360.7	.07	0.0	9:13:34	88	1.9
1+15	W	58361.6	.06	0.0	9:13:45	88	2.4
1+20	W	58362.8	.07	0.0	9:13:57	88	3.5
1+25	W	58370.8	.07	0.0	9:14:12	88	4.2
1+30	W	58368.8	.06	0.0	9:14:25	88	4.1
1+35	W	58370.3	.06	0.0	9:14:37	88	4.0
1+40	W	58374.1	.06	0.0	9:14:49	88	3.5
1+45	W	58375.1	.06	0.0	9:15:02	88	2.2
1+50	W	58382.0	.06	0.0	9:15:16	88	2.8
1+55	W	58385.2	.06	0.0	9:15:29	88	4.9
1+60	W	58385.7	.06	0.0	9:15:39	88	2.6
1+65	W	58385.7	.06	0.0	9:15:50	88	2.7
1+70	W	58386.7	.06	0.0	9:16:02	88	3.5
1+75	W	58389.3	.06	0.0	9:16:25	88	4.3
1+80	W	58386.9	.06	0.0	9:16:37	88	3.3
1+85	W	58384.7	.06	0.0	9:16:47	88	3.2
1+90	W	58380.3	.06	0.0	9:16:57	88	2.6
1+95	W	58376.2	.06	0.0	9:17:07	88	3.0
2+00	W	58358.3	.06	0.0	9:17:33	88	4.8
2+05	W	58313.7	.06	0.0	9:18:17	88	3.2
2+10	W	58289.6	.06	0.0	9:18:44	88	3.8
2+15	W	58273.5	.07	0.0	9:19:02	88	1.9
2+20	W	58262.9	.06	0.0	9:19:16	88	2.3
2+25	W	58247.1	.06	0.0	9:19:31	88	4.6
2+30	W	58235.6	.06	0.0	9:19:43	88	2.9
2+35	W	58225.8	.06	0.0	9:20:01	88	3.8
2+40	W	58224.3	.06	0.0	9:20:13	88	3.1
2+45	W	58232.4	.06	0.0	9:20:24	88	4.1
2+50	W	58236.1	.06	0.0	9:20:51	88	6.9
2+55	W	58232.4	.06	0.0	9:21:15	88	5.0
2+60	W	58231.2	.07	0.0	9:21:29	88	3.2
2+65	W	58230.6	.07	0.0	9:21:40	88	4.7
2+70	W	58227.7	.06	0.0	9:21:52	88	4.2
2+75	W	58230.6	.06	0.0	9:22:03	88	4.8
2+80	W	58233.8	.06	0.0	9:22:14	88RIVR	5.9

Line 1+00 S Date 30 MAR 91 #141

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
3+00 W	58170.4	.06	0.0	9:26:53	88	2.9
2+95 W	58149.5	.06	0.0	9:27:38	88	0.9
2+90 W	58151.5	.06	0.0	9:27:49	88	1.5
2+85 W	58151.5	.06	0.0	9:28:01	88	1.7
2+80 W	58144.9	.07	0.0	9:28:21	88	-0.5
2+75 W	58141.8	.06	0.0	9:28:33	88	0.1
2+70 W	58141.9	.07	0.0	9:28:47	88	2.4
2+65 W	58133.5	.07	0.0	9:29:04	88	1.8
2+60 W	58115.7	.06	0.0	9:29:21	88RIVR	1.0
2+55 W	58097.8	.07	0.0	9:29:51	88	4.9
2+50 W	58103.9	.07	0.0	9:30:03	88	2.0
2+45 W	58111.7	.07	0.0	9:30:14	88RIVR	1.5
2+40 W	58113.1	.06	0.0	9:30:44	88RIVR	4.2
2+35 W	58113.1	.07	0.0	9:31:00	88RIVR	1.8
2+30 W	58126.7	.06	0.0	9:31:19	88	4.0
2+25 W	58139.2	.07	0.0	9:31:35	88	1.3
2+20 W	58128.9	.07	0.0	9:31:48	88	2.4
2+15 W	58117.1	.06	0.0	9:32:00	88	2.3
2+10 W	58105.1	.07	0.0	9:32:12	88	2.0
2+05 W	58060.2	.08	0.0	9:32:23	88	68.5
2+00 W	58087.1	.07	0.0	9:32:35	88	0.4
1+95 W	58089.0	.07	0.0	9:32:49	88CREC	1.7
1+90 W	58097.5	.06	0.0	9:33:05	88	1.2
1+85 W	58113.3	.06	0.0	9:33:31	88	2.2
1+80 W	58126.0	.07	0.0	9:33:44	88	1.1
1+75 W	58140.1	.07	0.0	9:33:57	88	2.1
1+70 W	58154.3	.06	0.0	9:34:14	88RIVR	1.3
1+65 W	58148.2	.06	0.0	9:34:34	88RIVR	2.1
1+60 W	58138.3	.07	0.0	9:34:58	88RIVR	1.8
1+55 W	58119.8	.06	0.0	9:35:20	88RIVR	1.7
1+50 W	58116.3	.06	0.0	9:35:38	88RIVR	1.1
1+45 W	58118.9	.07	0.0	9:35:59	88RIVR	1.8
1+40 W	58125.2	.07	0.0	9:36:22	88RIVR	-0.1
1+35 W	58118.0	.07	0.0	9:36:44	88RIVR	0.2
1+30 W	58100.2	.07	0.0	9:37:06	88RIVR	1.2
1+25 W	58088.2	.07	0.0	9:37:25	88RIVR	0.3
1+20 W	58054.5	.07	0.0	9:38:53	88RIVR	1.9
0+80 W	58036.3	.07	0.0	9:39:44	88RIVR	0.3
0+75 W	58032.1	.06	0.0	9:40:10	88RIVR	0.4
0+70 W	58037.4	.06	0.0	9:40:55	88RIVR	2.4
0+65 W	58042.9	.06	0.0	9:41:10	88	2.9
0+60 W	58039.1	.06	0.0	9:41:19	88	2.3
0+55 W	58038.2	.07	0.0	9:41:30	88	1.9
0+50 W	58041.8	.07	0.0	9:41:44	88	1.4
0+45 W	58042.1	.06	0.0	9:41:56	88	2.0
0+40 W	58055.7	.06	0.0	9:42:11	87	1.9
0+35 W	58065.6	.06	0.0	9:43:10	87	-0.1
0+30 W	58070.0	.06	0.0	9:43:58	88	1.9
0+25 W	58072.8	.07	0.0	9:44:19	88	1.0
0+20 W	58084.5	.06	0.0	9:44:34	87	1.5
0+15 W	58093.0	.07	0.0	9:44:47	88	1.8
0+10 W	58095.9	.06	0.0	9:45:00	86	1.0

```
0+05 W 58101.4 .06      0.0   9:45:14 85          1.4
0+00 E 58105.3 .06      0.0   9:45:32 85          1.1
0+05 E 58110.3 .06      0.0   9:45:47 87          3.1
0+10 E 58108.2 .06      0.0   9:46:05 84          1.9
0+15 E 58109.9 .06      0.0   9:46:17 85          2.2
0+20 E 58111.5 .06      0.0   9:46:37 85          0.7
0+25 E 58117.2 .07      0.0   9:46:50 88          1.3
0+30 E 58116.8 .06      0.0   9:47:10 85         -2.7
0+35 E 58127.8 .07      0.0   9:48:02 84          1.4

EOF

^Z
```

OMNI-PLUS Tie-line MAG/VLF R22N Ser #428150
TOTAL FIELD DATA (uncorrected)
& GRADIENT

Reference field: 58000.0
Datum subtracted: 0.0Date 29 MAR 91
Operator: 5000
Records: 369
Bat: 18.7 Volt Lithium: 3.50 Volt
Last time update: 3/29 8:46:00
Start of print: 3/29 11:58:09

Line 6+00 S Date 29 MAR 91 #1

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+30 W	58345.3	.05	0.0	8:22:44	88	55	-0.9
0+35 W	58414.2	.07	0.0	8:23:36	88		61.1
0+40 W	58348.1	.05	0.0	8:23:54	88		-3.1
0+45 W	58542.8	.09	0.0	8:24:22	88	RAIL	161.0
0+50 W	58458.2	.07	0.0	8:25:02	88		81.1
0+55 W	58352.7	.05	0.0	8:25:19	88		-3.3
0+60 W	58363.9	.05	0.0	8:25:35	88		-0.7
0+65 W	58391.5	.05	0.0	8:25:53	88		10.4
0+70 W	58358.5	.05	0.0	8:26:46	88		-3.7
0+75 W	58355.6	.05	0.0	8:27:08	88		-0.4
0+80 W	58357.3	.05	0.0	8:27:26	88		0.0
0+85 W	58357.3	.05	0.0	8:27:50	88	RIVR	0.0

Line 5+50 S Date 29 MAR 91 #13

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+30 W	58357.8	.05	0.0	8:37:21	88		1.7
0+35 W	58357.3	.05	0.0	8:38:52	88		2.1
0+40 W	58356.4	.05	0.0	8:39:21	88		1.1
0+45 W	58356.5	.06	0.0	8:40:27	88		2.3
0+50 W	58355.9	.05	0.0	8:40:58	88		0.9
0+55 W	58355.5	.06	0.0	8:41:23	88		3.2
0+60 W	58352.4	.05	0.0	8:41:40	88		1.5
0+65 W	58342.0	.05	0.0	8:43:21	88		-0.1
0+70 W	58326.3	.05	0.0	8:43:41	88		1.4
0+75 W	58234.2	.06	0.0	8:44:02	88	RAIL	-13.1
0+80 W	58183.0	.08	0.0	8:44:43	88	RAIL	-106.1
0+85 W	58282.3	.07	0.0	8:45:22	88	RAIL	-65.4
0+90 W	58277.6	.06	0.0	8:45:50	88	RAIL	-12.2
0+95 W	58190.5	.06	0.0	8:46:15	88	RAIL	-16.8
1+00 W	57991.4	.08	0.0	8:46:51	88	RAIL	-102.8
1+05 W	58063.9	.54	0.0	8:47:47	88	RAIL	-292.1
1+10 W	58302.5	.68	0.0	8:48:12	78	RAIL	-290.3
1+15 W	57858.8	3.0	0.0	8:48:57	78	RAIL	-159.1
1+20 W	58163.8	.04	0.0	8:49:59	88		0.4
1+25 W	58210.2	.05	0.0	8:50:20	88		6.6
1+30 W	58287.1	.05	0.0	8:50:47	88	RIVR	5.5

Line 5+00 S Date 29 MAR 91 #34

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+50 W	58371.0	.06	0.0	8:53:11	88		2.8
1+45 W	58370.6	.05	0.0	8:54:01	88		1.5
1+40 W	58370.3	.05	0.0	8:54:14	88		1.4
1+35 W	58369.9	.06	0.0	8:54:29	88		1.3
1+30 W	58369.3	.05	0.0	8:54:47	88		1.1
1+25 W	58369.1	.05	0.0	8:55:11	88		0.5
1+20 W	58373.7	.06	0.0	8:57:38	88		2.1
1+15 W	58377.8	.06	0.0	8:58:40	88		2.7
1+10 W	58377.9	.05	0.0	8:59:00	88		2.6
1+05 W	58376.1	.05	0.0	8:59:18	88		2.7
1+00 W	58370.4	.05	0.0	9:00:10	88		2.6
0+95 W	58366.5	.06	0.0	9:01:33	88		-1.4
0+90 W	58369.8	.06	0.0	9:01:55	88		1.4
0+85 W	58367.0	.05	0.0	9:02:21	88		0.6
0+80 W	58366.4	.06	0.0	9:02:35	88		0.2
0+75 W	58363.9	.06	0.0	9:02:50	88		0.0
0+70 W	58363.8	.06	0.0	9:03:05	88		0.6
0+65 W	58366.3	.05	0.0	9:03:23	88		0.8
0+60 W	58366.3	.06	0.0	9:03:57	88		0.8
0+55 W	58364.2	.05	0.0	9:04:35	88		-0.1
0+50 W	58369.8	.05	0.0	9:05:12	88		1.4
0+45 W	58369.7	.05	0.0	9:05:35	88		1.1
0+40 W	58369.4	.06	0.0	9:06:04	88		1.9
0+35 W	58366.6	.06	0.0	9:06:27	88		0.4
0+30 W	58365.6	.06	0.0	9:07:09	88		0.7
0+25 W	58365.5	.05	0.0	9:10:11	88		1.2
0+20 W	58365.9	.05	0.0	9:11:38	88		0.3

Line 4+50 S Date 29 MAR 91 #61

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+60 W	58368.8	.06	0.0	9:16:53	88		1.3
0+65 W	58368.3	.06	0.0	9:18:36	88		1.4
0+70 W	58367.7	.05	0.0	9:18:59	88		1.0
0+75 W	58368.3	.05	0.0	9:19:16	88		1.3
0+80 W	58368.5	.06	0.0	9:19:31	88		1.2
0+85 W	58369.4	.06	0.0	9:19:49	88		1.2
0+90 W	58370.3	.05	0.0	9:20:03	88		1.9
0+95 W	58370.8	.06	0.0	9:20:23	88		1.1
1+00 W	58370.7	.05	0.0	9:20:52	88		1.7
1+05 W	58367.9	.06	0.0	9:21:20	88		1.4
1+10 W	58369.8	.06	0.0	9:21:45	88		0.7
1+15 W	58373.1	.06	0.0	9:22:24	88		0.8
1+20 W	58374.5	.06	0.0	9:22:37	88		1.5
1+25 W	58374.6	.06	0.0	9:22:54	88		1.5
1+30 W	58373.0	.06	0.0	9:23:12	88		0.5
1+35 W	58373.5	.06	0.0	9:23:32	88		1.4
1+40 W	58372.5	.06	0.0	9:23:45	88		0.6
1+45 W	58372.0	.06	0.0	9:24:02	88		0.8
1+50 W	58373.9	.05	0.0	9:24:21	88		1.2
1+55 W	58373.8	.06	0.0	9:24:37	88		1.8
1+60 W	58372.3	.06	0.0	9:25:04	88		1.8

1+65 W	58371.2	.06	0.0	9:25:40	88	4.2
1+70 W	58372.0	.05	0.0	9:25:59	88RIVR	1.0

Line 4+00 S Date 29 MAR 91 #84

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
2+20 W	58373.2	.06	0.0	9:28:36	88RIVR	1.3
2+15 W	58376.7	.06	0.0	9:29:57	88	2.2
2+10 W	58376.0	.06	0.0	9:30:09	88	1.4
2+05 W	58374.6	.06	0.0	9:30:23	88	0.9
2+00 W	58375.3	.05	0.0	9:30:41	88	1.5
1+95 W	58373.7	.06	0.0	9:31:05	88	0.8
1+90 W	58372.9	.06	0.0	9:31:50	88	1.4
1+85 W	58372.9	.06	0.0	9:32:04	88	1.6
1+80 W	58371.8	.07	0.0	9:32:24	88	3.8
1+75 W	58369.9	.06	0.0	9:32:40	88	1.4
1+70 W	58372.0	.06	0.0	9:32:55	88	1.3
1+65 W	58374.4	.06	0.0	9:33:12	88	1.7
1+60 W	58374.5	.06	0.0	9:33:31	88	1.4
1+55 W	58374.1	.06	0.0	9:33:46	88	0.8
1+50 W	58373.6	.06	0.0	9:34:02	88	0.3
1+45 W	58373.1	.07	0.0	9:34:16	88	1.5
1+40 W	58371.4	.07	0.0	9:34:34	88	0.5
1+35 W	58370.7	.06	0.0	9:34:53	88	2.7
1+30 W	58369.3	.06	0.0	9:35:09	88	3.9
1+25 W	58367.7	.05	0.0	9:35:23	88	2.7
1+20 W	58367.0	.06	0.0	9:35:39	88	3.1
1+15 W	58365.9	.06	0.0	9:36:09	88	2.4
1+10 W	58365.7	.05	0.0	9:36:46	88	1.3
1+05 W	58363.1	.06	0.0	9:38:10	88	0.5
1+00 W	58365.2	.06	0.0	9:38:50	88	0.5
0+95 W	58367.8	.06	0.0	9:39:11	88	1.6
0+90 W	58367.3	.06	0.0	9:39:47	88	2.2
0+85 W	58367.2	.06	0.0	9:40:04	88	5.1
0+80 W	58366.1	.06	0.0	9:40:16	88	0.0
0+75 W	58365.8	.07	0.0	9:40:32	88	2.8
0+70 W	58364.2	.06	0.0	9:40:49	88	3.8
0+65 W	58362.2	.06	0.0	9:41:15	88	0.5
0+60 W	58362.0	.06	0.0	9:41:55	88	1.4
0+55 W	58361.0	.06	0.0	9:42:55	88	0.0
0+50 W	58361.7	.06	0.0	9:43:15	88	1.7
0+45 W	58361.0	.06	0.0	9:43:47	88	1.2
0+40 W	58361.9	.06	0.0	9:44:41	88	3.9
0+35 W	58361.9	.06	0.0	9:45:33	88	3.0
0+30 W	58361.0	.06	0.0	9:47:11	88	2.4
0+25 W	58360.5	.06	0.0	9:47:49	88	0.5
0+20 W	58358.7	.06	0.0	9:52:08	88	5.3
0+15 W	58357.9	.06	0.0	9:53:09	88	-0.4
0+10 W	58358.1	.06	0.0	9:53:37	88	0.4
0+05 W	58357.6	.06	0.0	9:54:20	88	1.8
0+00 E	58359.0	.06	0.0	9:54:46	88	0.0

Line 3+00 S Date 29 MAR 91 #129

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
0+00 E	58356.5	.06	0.0	10:02:09	88	0.1

0+05	W	58356.0	.06	0.0	10:03:31 88	1.7
0+10	W	58355.7	.06	0.0	10:03:54 88	1.6
0+15	W	58356.2	.06	0.0	10:04:20 88	2.3
0+20	W	58355.6	.06	0.0	10:04:41 88	-0.4
0+25	W	58356.7	.06	0.0	10:05:07 88	4.5
0+30	W	58356.4	.06	0.0	10:05:32 88	1.5
0+35	W	58356.5	.06	0.0	10:06:31 88	6.7
0+40	W	58373.4	.06	0.0	10:07:08 88CLIF	6.5
0+45	W	58371.1	.06	0.0	10:07:40 88	3.9
0+50	W	58368.5	.06	0.0	10:08:05 88	-0.2
0+55	W	58371.0	.06	0.0	10:08:21 88	4.6
0+60	W	58371.7	.06	0.0	10:08:35 88	2.0
0+65	W	58374.1	.06	0.0	10:08:50 88	5.2
0+70	W	58373.2	.05	0.0	10:09:07 88	2.0
0+75	W	58373.6	.07	0.0	10:09:17 88	4.8
0+80	W	58373.0	.07	0.0	10:09:29 88	2.2
0+85	W	58373.1	.06	0.0	10:09:44 88	3.2
0+90	W	58374.0	.06	0.0	10:09:59 88	2.8
0+95	W	58373.6	.06	0.0	10:10:17 88	2.5
1+00	W	58373.8	.06	0.0	10:10:30 88	3.1
1+05	W	58374.7	.06	0.0	10:10:46 88	2.0
1+10	W	58375.9	.06	0.0	10:11:00 88	3.3
1+15	W	58376.3	.06	0.0	10:11:14 88	3.6
1+20	W	58375.0	.06	0.0	10:11:25 88	1.5
1+25	W	58374.8	.06	0.0	10:11:40 88	1.2
1+30	W	58376.9	.06	0.0	10:12:01 88	2.2
1+35	W	58378.6	.06	0.0	10:12:19 88	4.2
1+40	W	58378.0	.06	0.0	10:12:33 88	3.4
1+45	W	58376.1	.06	0.0	10:13:17 88	2.1
1+50	W	58376.4	.06	0.0	10:13:38 88	2.9
1+55	W	58375.7	.06	0.0	10:13:56 88	3.0
1+60	W	58374.3	.06	0.0	10:14:18 88	2.6
1+65	W	58375.3	.06	0.0	10:14:43 88	1.6
1+70	W	58375.4	.06	0.0	10:14:54 88	1.7
1+75	W	58375.5	.06	0.0	10:15:10 88	4.2
1+80	W	58376.1	.06	0.0	10:15:30 88	1.4
1+85	W	58376.1	.07	0.0	10:15:47 88	3.1
1+90	W	58376.1	.07	0.0	10:15:58 88	3.9
1+95	W	58375.5	.07	0.0	10:16:11 88	4.1
2+00	W	58374.3	.07	0.0	10:16:30 88	4.0
2+05	W	58374.0	.07	0.0	10:16:47 88	3.0
2+10	W	58371.8	.07	0.0	10:17:02 88	2.1
2+15	W	58370.5	.06	0.0	10:17:18 88	3.4
2+20	W	58370.3	.06	0.0	10:17:30 88	4.7
2+25	W	58369.8	.06	0.0	10:17:43 88	2.7
2+30	W	58371.3	.06	0.0	10:17:58 88	6.7
2+35	W	58369.6	.06	0.0	10:18:15 88	2.3
2+40	W	58369.2	.06	0.0	10:18:30 88	3.1
2+45	W	58370.8	.07	0.0	10:18:51 88	2.1
2+50	W	58375.0	.06	0.0	10:19:07 88	2.7
2+55	W	58382.0	.06	0.0	10:19:24 88	5.4
2+60	W	58379.3	.07	0.0	10:19:39 88RIVR	2.2

Line 3+50 S Date 29 MAR 91 #182

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
2+50 W	58367.9	.06	0.0	10:23:07	88RIVR	3.3
2+45 W	58367.1	.06	0.0	10:24:02	88RIVR	1.1
2+40 W	58367.3	.06	0.0	10:24:41	88RIVR	1.2
2+35 W	58370.4	.06	0.0	10:25:20	88	1.5
2+30 W	58371.1	.06	0.0	10:25:41	88	1.5
2+25 W	58371.0	.06	0.0	10:26:00	88	2.6
2+20 W	58370.2	.06	0.0	10:26:13	88	1.7
2+15 W	58370.8	.06	0.0	10:26:27	88	2.4
2+10 W	58370.5	.06	0.0	10:26:41	88	1.4
2+05 W	58370.6	.06	0.0	10:27:11	88	0.8
2+00 W	58370.3	.06	0.0	10:27:30	88	1.1
1+95 W	58370.8	.06	0.0	10:27:46	88	3.9
1+90 W	58370.5	.06	0.0	10:28:03	88	3.0
1+85 W	58369.6	.06	0.0	10:28:21	88	0.6
1+80 W	58368.6	.06	0.0	10:28:36	88	0.6
1+75 W	58366.2	.07	0.0	10:28:57	88	1.1
1+70 W	58368.2	.06	0.0	10:29:14	88	2.1
1+65 W	58369.8	.06	0.0	10:29:33	88	1.1
1+60 W	58370.8	.06	0.0	10:29:52	88	1.6
1+55 W	58373.2	.06	0.0	10:30:09	88	1.2
1+50 W	58374.1	.06	0.0	10:30:30	88	2.8
1+45 W	58373.2	.06	0.0	10:30:46	88	0.3
1+40 W	58373.6	.06	0.0	10:31:01	88	2.8
1+35 W	58372.9	.06	0.0	10:31:15	88	0.7
1+30 W	58373.8	.07	0.0	10:31:38	88	3.0
1+25 W	58365.9	.07	0.0	10:32:51	88	0.6
1+20 W	58368.2	.06	0.0	10:33:08	88	0.9
1+15 W	58367.3	.06	0.0	10:33:24	88	-0.3
1+10 W	58366.4	.06	0.0	10:33:48	88	-1.0
1+05 W	58364.8	.06	0.0	10:34:06	88	1.2
1+00 W	58363.9	.06	0.0	10:34:17	88	-0.2
0+95 W	58361.4	.06	0.0	10:34:38	88	0.1
0+90 W	58359.6	.06	0.0	10:34:54	88CLIF	-0.8

Line 2+50 S Date 29 MAR 91 #215

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
0+00 E	58369.5	.06	0.0	10:40:25	88	3.4
0+05 W	58369.8	.06	0.0	10:41:28	88	0.4
0+10 W	58371.5	.06	0.0	10:41:44	88	1.3
0+15 W	58374.4	.06	0.0	10:42:00	88	4.0
0+20 W	58373.8	.06	0.0	10:42:17	88	1.0
0+25 W	58374.8	.06	0.0	10:42:33	88	2.5
0+30 W	58374.1	.07	0.0	10:42:53	88	3.3
0+35 W	58374.6	.06	0.0	10:43:08	88	3.0
0+40 W	58374.8	.06	0.0	10:43:20	88	2.0
0+45 W	58375.4	.07	0.0	10:43:37	88	3.9
0+50 W	58374.7	.07	0.0	10:43:49	88	2.9
0+55 W	58374.8	.07	0.0	10:44:05	88	3.6
0+60 W	58374.9	.06	0.0	10:44:21	88	2.2
0+65 W	58376.8	.07	0.0	10:44:40	88	2.6
0+70 W	58377.0	.06	0.0	10:44:53	88	1.1
0+75 W	58378.2	.06	0.0	10:45:08	88	2.4
0+80 W	58377.2	.06	0.0	10:45:26	88	1.0

0+85 W	58373.9	.07	0.0	10:45:47	88	2.0
0+90 W	58373.4	.06	0.0	10:45:59	88	2.6
0+95 W	58370.0	.06	0.0	10:46:19	88	-1.0
1+00 W	58372.8	.06	0.0	10:46:44	88	9.0
1+05 W	58376.4	.06	0.0	10:47:11	88	3.9
1+10 W	58376.4	.06	0.0	10:47:25	88	0.3
1+15 W	58378.1	.06	0.0	10:47:45	88	4.5
1+20 W	58379.3	.06	0.0	10:48:18	88	2.0
1+25 W	58379.5	.06	0.0	10:48:41	88	3.6
1+30 W	58379.0	.06	0.0	10:48:54	88	3.0
1+35 W	58378.5	.07	0.0	10:49:10	88	1.6
1+40 W	58381.3	.07	0.0	10:49:34	88	1.3
1+45 W	58381.2	.06	0.0	10:50:01	88	3.1
1+50 W	58380.7	.06	0.0	10:50:13	88	1.3
1+55 W	58381.0	.06	0.0	10:50:37	88	1.6
1+60 W	58381.4	.06	0.0	10:50:54	88	5.6
1+65 W	58379.8	.06	0.0	10:51:12	88	3.6
1+70 W	58378.5	.06	0.0	10:51:34	88	4.1
1+75 W	58376.4	.06	0.0	10:51:51	88	2.0
1+80 W	58375.3	.06	0.0	10:52:08	88	3.2
1+85 W	58375.1	.06	0.0	10:52:27	88	3.3
1+90 W	58375.1	.06	0.0	10:52:42	88	2.4
1+95 W	58374.8	.06	0.0	10:52:59	88	1.6
2+00 W	58376.2	.06	0.0	10:53:17	88	2.8
2+05 W	58377.3	.06	0.0	10:53:34	88	4.6
2+10 W	58376.4	.06	0.0	10:53:52	88	3.5
2+15 W	58375.9	.07	0.0	10:54:07	88	4.3
2+20 W	58375.1	.06	0.0	10:54:21	88	1.7
2+25 W	58374.7	.06	0.0	10:54:38	88	4.1
2+30 W	58372.3	.06	0.0	10:54:53	88	3.2
2+35 W	58369.1	.06	0.0	10:55:22	88	3.0
2+40 W	58367.6	.07	0.0	10:55:36	88	0.8
2+45 W	58367.3	.06	0.0	10:55:51	88	3.5
2+50 W	58365.2	.06	0.0	10:56:08	88	-0.7
2+55 W	58369.5	.06	0.0	10:56:27	88	3.6
2+60 W	58370.9	.06	0.0	10:56:45	88	3.7
2+65 W	58372.0	.06	0.0	10:57:02	88	3.0
2+70 W	58373.2	.06	0.0	10:57:23	88	2.0
2+75 W	58374.3	.06	0.0	10:57:48	88	3.6
2+80 W	58375.2	.06	0.0	10:58:14	88	2.0
2+85 W	58373.6	.06	0.0	10:58:29	88	1.7
2+90 W	58369.8	.06	0.0	10:58:47	88RIVR	1.3

Line 2+00 S Date 29 MAR 91 #274

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
2+90 W	58371.4	.06	0.0	11:01:05	88RIVR	1.2
2+85 W	58373.8	.06	0.0	11:02:12	88	0.6
2+80 W	58375.0	.06	0.0	11:02:24	88	2.5
2+75 W	58375.4	.06	0.0	11:02:38	88	1.4
2+70 W	58378.4	.06	0.0	11:02:55	88	2.9
2+65 W	58379.4	.06	0.0	11:03:18	88	4.8
2+60 W	58379.4	.06	0.0	11:03:36	88	0.7
2+55 W	58376.2	.06	0.0	11:03:58	88	1.4
2+50 W	58375.7	.06	0.0	11:04:15	88	0.9

2+45	W	58376.2	.06	0.0	11:04:28 88	0.5
2+40	W	58378.2	.06	0.0	11:04:45 88	1.2
2+35	W	58380.1	.06	0.0	11:05:16 88	2.9
2+30	W	58379.9	.06	0.0	11:05:30 88	1.8
2+25	W	58379.4	.06	0.0	11:05:47 88	1.7
2+20	W	58379.6	.07	0.0	11:06:03 88	1.7
2+15	W	58381.9	.06	0.0	11:06:28 88	3.4
2+10	W	58381.6	.06	0.0	11:06:48 88	3.0
2+05	W	58381.8	.06	0.0	11:07:02 88	2.3
2+00	W	58382.5	.06	0.0	11:07:18 88	1.2
1+95	W	58382.9	.06	0.0	11:07:33 88	2.7
1+90	W	58382.8	.06	0.0	11:07:47 88	1.8
1+85	W	58382.5	.06	0.0	11:08:03 88	1.9
1+80	W	58381.2	.06	0.0	11:08:18 88	2.1
1+75	W	58379.6	.06	0.0	11:08:30 88	1.7
1+70	W	58378.2	.07	0.0	11:08:43 88	2.2
1+65	W	58376.4	.06	0.0	11:08:59 88	1.4
1+60	W	58374.9	.06	0.0	11:09:13 88	0.3
1+55	W	58373.4	.06	0.0	11:09:30 88	2.4
1+50	W	58372.6	.06	0.0	11:09:41 88	1.5
1+45	W	58371.6	.06	0.0	11:09:56 88	1.5
1+40	W	58371.2	.07	0.0	11:10:10 88	0.5
1+35	W	58372.4	.07	0.0	11:10:28 88	1.9
1+30	W	58371.4	.07	0.0	11:10:43 88	1.0
1+25	W	58372.4	.06	0.0	11:10:56 88	2.2
1+20	W	58373.4	.06	0.0	11:11:07 88	3.0
1+15	W	58373.1	.06	0.0	11:11:20 88	1.9
1+10	W	58371.5	.06	0.0	11:11:32 88	1.1
1+05	W	58372.0	.07	0.0	11:11:47 88	1.6
1+00	W	58372.5	.06	0.0	11:11:59 88	1.0
0+95	W	58372.8	.06	0.0	11:12:14 88	1.1
0+90	W	58373.4	.06	0.0	11:12:32 88	1.8
0+85	W	58373.4	.06	0.0	11:12:47 88	1.7
0+80	W	58372.8	.06	0.0	11:12:58 88	2.1
0+75	W	58372.5	.06	0.0	11:13:12 88	1.8
0+70	W	58372.4	.06	0.0	11:13:29 88	0.8
0+65	W	58373.2	.06	0.0	11:13:44 88	1.7
0+60	W	58372.0	.06	0.0	11:13:59 88	1.1
0+55	W	58372.3	.06	0.0	11:14:17 88	0.0
0+50	W	58372.6	.06	0.0	11:14:40 88	3.4
0+45	W	58376.6	.06	0.0	11:15:11 88	1.8
0+40	W	58376.8	.06	0.0	11:15:30 88	3.2
0+35	W	58376.0	.06	0.0	11:15:42 88	1.5
0+30	W	58376.1	.06	0.0	11:16:00 88	1.3
0+25	W	58375.2	.06	0.0	11:16:13 88	1.4
0+20	W	58375.1	.06	0.0	11:16:28 88	0.4
0+15	W	58374.6	.06	0.0	11:16:49 88	1.2
0+10	W	58373.8	.06	0.0	11:17:03 88	1.0
0+05	W	58374.6	.06	0.0	11:17:20 88	1.3
0+00	E	58375.3	.06	0.0	11:17:49 88	1.4
0+05	E	58375.1	.06	0.0	11:18:05 88	2.1
0+10	E	58374.5	.06	0.0	11:18:19 88	1.2
0+15	E	58374.4	.06	0.0	11:18:33 88	2.1
0+20	E	58372.4	.06	0.0	11:18:49 88	2.1

```
0+25 E 58371.4 .06      0.0 11:19:09 88          1.4
0+30 E 58371.8 .06      0.0 11:19:23 88          1.7
0+35 E 58373.0 .06      0.0 11:19:43 88          1.6
0+40 E 58371.7 .07      0.0 11:19:59 88          2.4
0+45 E 58370.4 .06      0.0 11:20:12 88          0.9
0+50 E 58368.7 .06      0.0 11:20:28 88          2.3
0+55 E 58366.5 .06      0.0 11:20:46 88          0.9
0+60 E 58366.1 .06      0.0 11:21:10 88          1.3
0+65 E 58364.9 .06      0.0 11:21:24 88          0.2
0+70 E 58365.3 .06      0.0 11:21:37 88         -0.5
0+75 E 58368.3 .07      0.0 11:22:02 88          3.5
0+80 E 58367.3 .06      0.0 11:22:36 88         -0.3
0+85 E 58367.9 .06      0.0 11:23:32 88          0.3
0+90 E 58369.9 .06      0.0 11:23:54 88          3.8
0+95 E 58370.3 .06      0.0 11:24:19 88          2.9
1+00 E 58373.7 .06      0.0 11:24:50 88          2.5
1+05 E 58374.4 .06      0.0 11:25:08 88          0.9
1+10 E 58373.8 .06      0.0 11:25:30 88          0.9
1+15 E 58373.9 .06      0.0 11:25:53 88         -0.9
1+20 E 58374.7 .06      0.0 11:26:17 88         -0.3
1+25 E 58375.7 .06      0.0 11:26:39 88          2.8
1+30 E 58376.6 .06      0.0 11:26:53 88          3.8
1+35 E 58377.8 .06      0.0 11:27:11 88          2.5
1+40 E 58379.0 .06      0.0 11:27:27 88          2.5
1+45 E 58381.2 .07      0.0 11:27:43 88          3.4
1+50 E 58383.8 .06      0.0 11:27:59 88          2.8
1+55 E 58387.1 .06      0.0 11:28:13 88          4.5
1+60 E 58388.6 .06      0.0 11:28:26 88          3.6
1+65 E 58385.1 .06      0.0 11:28:40 88          3.9
1+70 E 58379.6 .06      0.0 11:28:55 88          1.6
1+75 E 58378.5 .07      0.0 11:29:21 88          2.0
1+80 E 58375.8 .06      0.0 11:29:49 88          1.8
1+85 E 58374.4 .06      0.0 11:30:04 88          1.7

EOF

^Z
```

OMNI-PLUS Tie-line MAG/VLF R22N Ser #428150
TOTAL FIELD DATA (uncorrected)
& GRADIENT

Reference field: 58000.0
Datum subtracted: 0.0Date 28 MAR 91
Operator: 5000
Records: 399
Bat: 15.4 Volt Lithium: 3.48 Volt
Last time update: 3/16 9:10:00
Start of print: 3/28 12:50:13

Line 8+00 W Date 28 MAR 91 #3

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+50 N	58319.6	.05	0.0	9:04:12	88		-4.3
0+45 N	58323.4	.05	0.0	9:05:10	88		9.2
0+40 N	58321.2	.05	0.0	9:05:45	88		0.9
0+35 N	58321.2	.06	0.0	9:06:03	88		4.4
0+30 N	58320.9	.05	0.0	9:06:22	88		8.9
0+25 N	58318.0	.06	0.0	9:06:44	88		-0.3
0+20 N	58316.3	.05	0.0	9:07:05	88	CREC	-1.8
0+15 N	58315.3	.06	0.0	9:07:59	88		4.0
0+10 N	58315.7	.05	0.0	9:08:14	88		2.6
0+05 N	58314.8	.05	0.0	9:08:30	88		3.1
0+00 N	58313.5	.05	0.0	9:08:48	88		2.2
0+05 S	58312.9	.05	0.0	9:09:01	88		4.0
0+10 S	58312.8	.05	0.0	9:09:17	88		2.9
0+15 S	58313.4	.05	0.0	9:09:33	88		3.0
0+20 S	58316.9	.06	0.0	9:09:56	88		-0.7
0+25 S	58317.9	.06	0.0	9:10:16	88		-5.5
0+30 S	58315.5	.06	0.0	9:10:37	88		-1.4
0+35 S	58317.6	.06	0.0	9:10:58	88		-3.9
0+40 S	58318.9	.05	0.0	9:11:14	88		-1.2
0+45 S	58317.3	.06	0.0	9:11:31	88		-2.3
0+50 S	58317.8	.06	0.0	9:11:46	88		-1.2
0+55 S	58318.0	.06	0.0	9:11:58	88		4.7
0+60 S	58316.7	.06	0.0	9:12:13	88		2.3
0+65 S	58316.4	.06	0.0	9:12:28	88		2.9
0+70 S	58317.1	.06	0.0	9:12:43	88		5.4
0+75 S	58319.1	.05	0.0	9:12:58	88		4.7
0+80 S	58320.3	.06	0.0	9:13:15	88		4.9
0+85 S	58319.8	.05	0.0	9:13:26	88		4.7
0+90 S	58319.9	.06	0.0	9:13:42	88		4.5
0+95 S	58320.1	.06	0.0	9:13:55	88		4.7
1+00 S	58317.9	.06	0.0	9:14:09	88		4.8
1+05 S	58320.6	.05	0.0	9:14:23	88		7.4
1+10 S	58322.0	.05	0.0	9:14:36	88		2.5

1+15 S	58322.1	.05	0.0	9:14:50	88	5.8
1+20 S	58319.5	.05	0.0	9:15:00	88	5.7
1+25 S	58317.4	.05	0.0	9:15:12	88	4.6
1+30 S	58314.5	.06	0.0	9:15:24	88	2.5
1+35 S	58313.6	.06	0.0	9:15:39	88	2.3
1+40 S	58312.4	.06	0.0	9:15:50	88	4.2
1+45 S	58311.9	.06	0.0	9:16:04	88	3.1
1+50 S	58311.4	.06	0.0	9:16:17	88	2.9
1+55 S	58311.5	.05	0.0	9:16:31	88	4.2
1+60 S	58312.0	.06	0.0	9:16:47	88	4.5
1+65 S	58311.0	.05	0.0	9:17:00	88	4.5
1+70 S	58312.0	.05	0.0	9:17:15	88	3.4
1+75 S	58312.6	.05	0.0	9:17:28	88	3.7
1+80 S	58313.3	.06	0.0	9:17:40	88	6.5
1+85 S	58310.6	.06	0.0	9:17:56	88	3.6
1+90 S	58309.2	.05	0.0	9:19:00	88	2.6
1+95 S	58309.9	.05	0.0	9:19:19	88	3.5
2+00 S	58311.2	.06	0.0	9:19:33	88	5.4
2+05 S	58310.2	.06	0.0	9:19:45	88	2.2
2+10 S	58309.4	.06	0.0	9:19:59	88	2.7
2+15 S	58309.7	.05	0.0	9:20:13	88	5.1
2+20 S	58309.3	.05	0.0	9:20:27	88	3.6
2+25 S	58305.4	.05	0.0	9:20:41	88	6.0
2+30 S	58302.8	.06	0.0	9:20:55	88	3.4
2+35 S	58297.1	.05	0.0	9:21:08	88	4.9
2+40 S	58290.1	.06	0.0	9:21:20	88	-0.3

Line 9+00 W Date 28 MAR 91 #62

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
2+00 S	58327.1	.06	0.0	9:30:16	88		2.3
1+95 S	58330.6	.06	0.0	9:31:41	88		-3.4
1+90 S	58332.2	.06	0.0	9:31:59	88		1.9
1+85 S	58333.2	.06	0.0	9:32:13	88		3.4
1+80 S	58333.7	.06	0.0	9:32:25	88		1.8
1+75 S	58334.8	.06	0.0	9:32:36	88		2.8
1+70 S	58335.8	.06	0.0	9:32:51	88		2.0
1+65 S	58336.6	.06	0.0	9:33:04	88		2.7
1+60 S	58336.6	.05	0.0	9:33:21	88		2.0
1+55 S	58336.5	.06	0.0	9:33:34	88		1.4
1+50 S	58336.7	.06	0.0	9:33:48	88		1.8
1+45 S	58337.1	.06	0.0	9:34:06	88		1.5
1+40 S	58333.9	.06	0.0	9:34:31	88		2.2
1+35 S	58339.3	.07	0.0	9:34:58	88		4.5
1+30 S	58334.2	.06	0.0	9:35:33	88		1.5
1+25 S	58331.5	.06	0.0	9:36:09	88		4.0
1+20 S	58329.2	.06	0.0	9:36:25	88		0.8
1+15 S	58327.2	.06	0.0	9:36:47	88		-2.9
1+10 S	58326.6	.06	0.0	9:37:07	88		0.8
1+05 S	58327.3	.06	0.0	9:37:31	88	CREC	1.3
1+00 S	58328.8	.06	0.0	9:38:38	88	CREC	3.5
0+95 S	58330.3	.06	0.0	9:40:01	88		1.9
0+90 S	58330.2	.06	0.0	9:40:15	88	CREC	2.4

0+85	S	58331.6	.06	0.0	9:41:25 88CREC	1.3
0+80	S	58336.1	.06	0.0	9:46:32 88	5.6
0+75	S	58336.0	.06	0.0	9:46:50 88	1.8
0+70	S	58336.7	.07	0.0	9:47:02 88	1.9
0+65	S	58338.7	.06	0.0	9:47:18 88	2.4
0+60	S	58339.6	.06	0.0	9:47:33 88	2.2
0+55	S	58340.1	.06	0.0	9:47:48 88	2.5
0+50	S	58339.4	.07	0.0	9:48:01 88	2.2
0+45	S	58339.7	.06	0.0	9:48:18 88	2.3
0+40	S	58340.7	.06	0.0	9:48:44 88	2.9
0+35	S	58340.6	.06	0.0	9:48:57 88	3.1
0+30	S	58339.7	.07	0.0	9:49:12 88	3.4
0+25	S	58336.6	.06	0.0	9:49:26 88	3.3
0+20	S	58336.1	.06	0.0	9:49:36 88	1.7
0+15	S	58335.4	.06	0.0	9:49:47 88	3.2
0+10	S	58333.8	.06	0.0	9:50:05 88	2.6
0+05	S	58329.7	.06	0.0	9:50:21 88	2.2
0+00	N	58326.9	.06	0.0	9:50:51 88	2.8
0+05	N	58324.2	.06	0.0	9:51:06 88	2.1
0+10	N	58320.5	.06	0.0	9:51:22 88	2.9
0+15	N	58315.1	.06	0.0	9:51:37 88	4.0
0+20	N	58312.1	.07	0.0	9:51:49 88	3.0
0+25	N	58306.4	.06	0.0	9:52:05 88	1.5
0+30	N	58300.9	.06	0.0	9:52:17 88	-0.3
0+35	N	58304.2	.06	0.0	9:52:32 88	0.3
0+40	N	58312.3	.06	0.0	9:52:47 88	-0.1
0+45	N	58318.1	.06	0.0	9:53:07 88	2.9
0+50	N	58321.7	.06	0.0	9:53:22 88	3.1
0+55	N	58326.4	.06	0.0	9:53:40 88	2.9
0+60	N	58327.4	.06	0.0	9:53:58 88	3.4
0+65	N	58327.8	.06	0.0	9:54:15 88	2.1
0+70	N	58328.2	.06	0.0	9:54:29 88	3.4
0+75	N	58326.6	.06	0.0	9:54:46 88	1.7
0+80	N	58327.7	.07	0.0	9:55:03 88	1.4
0+85	N	58328.8	.06	0.0	9:55:18 88	2.4
0+90	N	58328.0	.06	0.0	9:55:40 88	0.9
0+95	N	58328.6	.07	0.0	9:56:10 88	2.5
1+00	N	58328.3	.06	0.0	9:56:20 88	0.7

Line 10+00 W Date 28 MAR 91 #123

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+30	N	58345.7	.06	0.0	10:00:25	88		-5.3
0+25	N	58349.6	.06	0.0	10:01:32	88		5.7
0+20	N	58351.3	.06	0.0	10:01:53	88		9.3
0+15	N	58350.7	.06	0.0	10:02:12	88		4.2
0+10	N	58349.0	.06	0.0	10:02:51	88		5.2
0+05	N	58349.2	.06	0.0	10:03:31	88		4.3
0+00	N	58348.3	.06	0.0	10:03:52	88		4.7
0+05	S	58347.8	.06	0.0	10:04:17	88		-4.6
0+10	S	58347.9	.06	0.0	10:04:39	88		4.7
0+15	S	58348.9	.06	0.0	10:05:00	88		8.3
0+20	S	58349.7	.06	0.0	10:05:20	88		5.4

0+25	S	58349.7	.06	0.0	10:05:39	88	4.0
0+30	S	58350.2	.06	0.0	10:05:58	88	8.0
0+35	S	58350.3	.06	0.0	10:06:25	88	3.6
0+40	S	58352.6	.06	0.0	10:07:05	88	1.8
0+45	S	58354.1	.06	0.0	10:07:30	88	6.3
0+50	S	58353.1	.06	0.0	10:07:50	88	6.3
0+55	S	58353.2	.06	0.0	10:08:08	88	4.8
0+60	S	58353.3	.06	0.0	10:08:22	88	6.1
0+65	S	58353.1	.06	0.0	10:08:40	88	5.2
0+70	S	58353.4	.06	0.0	10:08:57	88	8.5
0+75	S	58352.6	.06	0.0	10:09:10	88	3.2
0+80	S	58353.7	.07	0.0	10:09:27	88	3.0
0+85	S	58356.9	.06	0.0	10:11:51	88	8.2
0+90	S	58355.8	.06	0.0	10:12:11	88	3.3
0+95	S	58355.8	.06	0.0	10:12:30	88	5.0
1+00	S	58356.2	.06	0.0	10:13:00	88CREC	5.3
1+05	S	58355.2	.06	0.0	10:13:41	88	2.8
1+10	S	58355.0	.06	0.0	10:13:58	88	3.3
1+15	S	58355.9	.06	0.0	10:14:13	88	4.0
1+20	S	58356.4	.06	0.0	10:14:30	88	3.4
1+25	S	58356.7	.06	0.0	10:14:44	88	7.2
1+30	S	58356.1	.07	0.0	10:14:58	88	4.3
1+35	S	58354.0	.06	0.0	10:15:12	88	4.5
1+40	S	58352.3	.06	0.0	10:15:30	88	6.3
1+45	S	58352.1	.06	0.0	10:15:50	88	3.6
1+50	S	58354.1	.06	0.0	10:16:11	88	4.2
1+55	S	58355.0	.06	0.0	10:16:26	88	2.5
1+60	S	58358.3	.06	0.0	10:16:47	88	5.4
1+65	S	58357.6	.06	0.0	10:17:02	88	5.0
1+70	S	58358.2	.06	0.0	10:17:17	88	6.3
1+75	S	58358.1	.06	0.0	10:17:36	88	-3.9
1+80	S	58357.2	.07	0.0	10:18:11	88	3.7
1+85	S	58359.4	.06	0.0	10:18:35	88	5.2
1+90	S	58361.0	.06	0.0	10:18:53	88	4.6
1+95	S	58363.7	.06	0.0	10:19:19	88	-3.3
2+00	S	58362.3	.06	0.0	10:19:35	88	-1.2
2+05	S	58360.9	.06	0.0	10:19:58	88	6.9
2+10	S	58360.1	.07	0.0	10:20:33	88	4.0
2+15	S	58354.5	.06	0.0	10:21:06	88	4.4
2+20	S	58350.9	.06	0.0	10:21:22	88RIVR	3.7

Line 11+00 W Date 28 MAR 91 #174

POSITION	FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
2+10 S	58360.1	.07	0.0	10:27:47	88	-6.2
2+05 S	58358.7	.06	0.0	10:29:31	88	6.5
2+00 S	58353.5	.07	0.0	10:29:57	88CREC	2.9
1+95 S	58356.0	.06	0.0	10:30:45	88	7.8
1+90 S	58358.8	.06	0.0	10:31:13	88	1.8
1+85 S	58363.0	.06	0.0	10:31:41	88	3.4
1+80 S	58363.1	.06	0.0	10:32:09	88	3.7
1+75 S	58362.0	.07	0.0	10:32:34	88	4.1
1+70 S	58358.7	.06	0.0	10:32:58	88	2.7

1+65	S	58359.8	.06	0.0	10:33:19	88	2.1
1+60	S	58359.8	.06	0.0	10:33:42	88	1.2
1+55	S	58359.0	.07	0.0	10:34:06	88	-1.3
1+50	S	58358.1	.07	0.0	10:34:29	88	0.8
1+45	S	58357.7	.07	0.0	10:34:42	88	1.7
1+40	S	58357.6	.07	0.0	10:34:56	88	1.6
1+35	S	58356.8	.08	0.0	10:35:15	88	-13.2
1+30	S	58355.3	.06	0.0	10:35:38	88	2.1
1+25	S	58353.0	.06	0.0	10:35:57	88	1.7
1+20	S	58353.4	.06	0.0	10:36:16	88	1.3
1+15	S	58352.1	.07	0.0	10:36:39	88	-8.8
1+10	S	58354.6	.06	0.0	10:36:59	88	-1.1
1+05	S	58355.3	.07	0.0	10:37:18	88	-9.5
1+00	S	58354.7	.06	0.0	10:37:33	88	-0.2
0+95	S	58358.2	.07	0.0	10:39:10	88	1.7
0+90	S	58359.7	.07	0.0	10:39:32	88	1.7
0+85	S	58359.9	.06	0.0	10:39:52	88	2.0
0+80	S	58361.2	.07	0.0	10:40:13	88	-4.7
0+75	S	58363.0	.06	0.0	10:40:36	88	0.4
0+70	S	58363.4	.06	0.0	10:40:52	88	1.5
0+65	S	58362.2	.06	0.0	10:41:20	88	-0.8
0+60	S	58361.4	.07	0.0	10:41:38	88	1.4
0+55	S	58360.9	.06	0.0	10:41:57	88	0.7
0+50	S	58362.7	.07	0.0	10:42:11	88	2.2
0+45	S	58363.5	.06	0.0	10:42:29	88	1.9
0+40	S	58363.5	.06	0.0	10:42:43	88	4.0
0+35	S	58364.8	.06	0.0	10:43:06	88	1.3
0+30	S	58367.8	.07	0.0	10:43:31	88	2.6
0+25	S	58369.2	.07	0.0	10:43:53	88	2.3
0+20	S	58369.2	.07	0.0	10:44:08	88	-5.9
0+15	S	58371.8	.06	0.0	10:44:28	88	1.6
0+10	S	58372.0	.06	0.0	10:44:42	88	1.3
0+05	S	58371.5	.06	0.0	10:46:07	88	6.7
0+00	N	58371.3	.06	0.0	10:46:30	88	3.5
0+05	N	58370.8	.06	0.0	10:46:50	88	2.1
0+10	N	58369.1	.06	0.0	10:47:05	88	-2.2
0+15	N	58372.1	.07	0.0	10:47:27	88	1.6
0+20	N	58373.1	.06	0.0	10:47:43	88	1.0

Line 12+00 W Date 28 MAR 91 #221

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+00	N	58368.5	.06	0.0	10:51:09	88		6.6
0+05	S	58367.7	.06	0.0	10:52:38	88		4.2
0+10	S	58367.6	.06	0.0	10:53:17	88		2.6
0+15	S	58371.1	.06	0.0	10:53:53	88	CREC	4.9
0+20	S	58373.3	.07	0.0	10:54:20	88		0.2
0+25	S	58374.9	.07	0.0	10:54:56	88		-1.9
0+30	S	58375.7	.05	0.0	10:55:23	88		2.1
0+35	S	58374.8	.06	0.0	10:55:44	88		1.8
0+40	S	58375.9	.06	0.0	10:56:12	88		2.9
0+45	S	58376.2	.06	0.0	10:56:30	88		-1.4
0+50	S	58376.7	.06	0.0	10:56:55	88		0.7

0+55	S	58378.3	.06	0.0	10:57:20	88		2.3
0+60	S	58377.9	.06	0.0	10:57:44	88		3.6
0+65	S	58377.4	.07	0.0	10:58:07	88		-6.9
0+70	S	58376.5	.06	0.0	10:58:43	88		1.9
0+75	S	58377.9	.06	0.0	10:59:00	88		3.2
0+80	S	58381.3	.06	0.0	10:59:22	88		4.9
0+85	S	58384.1	.06	0.0	10:59:44	88		5.2
0+90	S	58384.6	.06	0.0	10:59:58	88		3.4
0+95	S	58386.0	.06	0.0	11:00:17	88		5.8
1+00	S	58387.5	.06	0.0	11:00:36	88		1.5
1+05	S	58388.9	.06	0.0	11:00:53	88		3.7
1+10	S	58386.1	.06	0.0	11:01:13	88		2.7
1+15	S	58385.1	.06	0.0	11:01:48	88		1.7
1+20	S	58385.8	.06	0.0	11:02:17	88		3.1
1+25	S	58388.4	.06	0.0	11:02:45	88		4.6
1+30	S	58389.6	.06	0.0	11:03:09	88		2.4
1+35	S	58391.0	.06	0.0	11:03:36	88		0.5
1+40	S	58392.2	.06	0.0	11:04:35	88	CREC	2.3
1+45	S	58394.6	.06	0.0	11:05:07	88		3.9
1+50	S	58397.1	.06	0.0	11:05:25	88		-1.2
1+55	S	58397.3	.06	0.0	11:05:46	88		3.7
1+60	S	58397.3	.06	0.0	11:06:03	88		3.1
1+65	S	58397.5	.06	0.0	11:06:23	88		3.8
1+70	S	58397.6	.06	0.0	11:06:43	88		5.3
1+75	S	58398.6	.06	0.0	11:07:00	88		2.5
1+80	S	58400.4	.07	0.0	11:07:22	88		4.4

Line 13+00 W Date 28 MAR 91 #258

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
2+20	S	58431.2	.06	0.0	11:11:09	88		0.7
2+15	S	58430.3	.06	0.0	11:12:23	88		7.7
2+10	S	58424.3	.06	0.0	11:12:39	88		5.1
2+05	S	58417.9	.06	0.0	11:12:54	88		-4.0
2+00	S	58411.6	.06	0.0	11:15:07	88		3.6
1+95	S	58408.6	.07	0.0	11:15:28	88		1.0
1+90	S	58402.4	.06	0.0	11:15:52	88		1.2
1+85	S	58399.0	.07	0.0	11:16:17	88		3.0
1+80	S	58397.2	.07	0.0	11:16:33	88		2.4
1+75	S	58393.9	.06	0.0	11:17:01	88		1.0
1+70	S	58394.3	.07	0.0	11:17:18	88		-8.8
1+65	S	58392.2	.07	0.0	11:17:44	88		1.5
1+60	S	58393.8	.06	0.0	11:17:59	88		0.9
1+55	S	58397.0	.06	0.0	11:18:15	88		1.0
1+50	S	58399.8	.07	0.0	11:18:27	88		1.4
1+45	S	58401.9	.06	0.0	11:18:41	88		3.2
1+40	S	58402.7	.07	0.0	11:18:56	88		2.2
1+35	S	58402.2	.06	0.0	11:19:12	88		1.6
1+30	S	58401.7	.06	0.0	11:19:27	88		2.3
1+25	S	58399.2	.06	0.0	11:19:39	88		2.0
1+20	S	58394.8	.06	0.0	11:20:14	88		-2.0
1+15	S	58393.6	.06	0.0	11:20:33	88		1.7
1+10	S	58391.8	.06	0.0	11:20:49	88		0.9

1+05	S	58390.3	.06	0.0	11:21:02 88	1.2
1+00	S	58389.8	.07	0.0	11:21:14 88	1.8
0+95	S	58387.7	.06	0.0	11:21:27 88	0.4
0+90	S	58387.3	.06	0.0	11:21:44 88	1.4
0+85	S	58388.3	.06	0.0	11:21:58 88	4.8
0+80	S	58384.5	.06	0.0	11:22:11 88	2.5
0+75	S	58379.7	.06	0.0	11:22:25 88	1.4
0+70	S	58376.8	.06	0.0	11:22:39 88	1.8
0+65	S	58376.3	.07	0.0	11:22:53 88	0.8
0+60	S	58375.7	.07	0.0	11:23:07 88	3.8
0+55	S	58372.9	.06	0.0	11:23:33 88	2.5
0+50	S	58374.0	.07	0.0	11:23:48 88	2.2
0+45	S	58373.9	.07	0.0	11:24:10 88	4.5
0+40	S	58373.3	.07	0.0	11:24:35 88CREC	3.8
0+35	S	58376.6	.06	0.0	11:25:58 88	1.3
0+30	S	58378.8	.06	0.0	11:28:36 88	9.2
0+25	S	58378.2	.07	0.0	11:29:10 88	-2.8
0+20	S	58378.6	.06	0.0	11:29:42 88	4.0
0+15	S	58375.0	.07	0.0	11:30:01 88	0.3
0+10	S	58374.8	.06	0.0	11:30:26 88	1.5
0+05	S	58374.4	.07	0.0	11:30:48 88	-0.1
0+00	N	58372.0	.06	0.0	11:31:10 88	2.2
0+05	N	58371.7	.06	0.0	11:31:31 88	-0.3
0+10	N	58374.2	.06	0.0	11:32:11 88	3.6

Line 14+00 W Date 28 MAR 91 #305

POSITION		FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
0+30	N	58372.3	.06	0.0	11:37:38	88CREC	1.2
0+25	N	58372.8	.06	0.0	11:39:32	88	1.7
0+20	N	58373.1	.06	0.0	11:40:02	88	1.5
0+15	N	58372.5	.06	0.0	11:40:23	88	5.9
0+10	N	58372.2	.06	0.0	11:40:39	88	4.3
0+05	N	58372.2	.06	0.0	11:40:53	88	4.7
0+00	N	58370.8	.06	0.0	11:41:10	88	5.4
0+05	S	58370.6	.06	0.0	11:41:30	88	-2.1
0+10	S	58372.7	.06	0.0	11:41:54	88	5.2
0+15	S	58372.6	.07	0.0	11:42:20	88	3.1
0+20	S	58372.8	.07	0.0	11:42:52	88	5.2
0+25	S	58371.3	.06	0.0	11:43:13	88	4.9
0+30	S	58370.9	.06	0.0	11:43:39	88	4.3
0+35	S	58371.1	.07	0.0	11:43:57	88	4.9
0+40	S	58369.9	.06	0.0	11:44:15	88	3.4
0+45	S	58370.3	.06	0.0	11:44:33	88	3.7
0+50	S	58369.7	.07	0.0	11:44:51	88	4.8
0+55	S	58371.9	.07	0.0	11:45:13	88	4.9
0+60	S	58374.1	.06	0.0	11:45:30	88	2.4
0+65	S	58375.8	.06	0.0	11:45:48	88	-3.3
0+70	S	58377.6	.06	0.0	11:46:14	88	5.2
0+75	S	58378.9	.06	0.0	11:46:45	88	7.3
0+80	S	58380.2	.06	0.0	11:47:10	88	4.6
0+85	S	58382.2	.06	0.0	11:47:26	88	3.9
0+90	S	58385.5	.07	0.0	11:47:43	88	5.0

0+95	S	58388.2	.06	0.0	11:48:00 88	5.4
1+00	S	58389.3	.07	0.0	11:48:23 88	4.8
1+05	S	58390.0	.06	0.0	11:48:37 88	4.5
1+10	S	58388.8	.07	0.0	11:48:56 88	4.7
1+15	S	58388.4	.07	0.0	11:49:12 88	3.7
1+20	S	58388.3	.06	0.0	11:49:25 88	4.9
1+25	S	58387.7	.06	0.0	11:49:46 88	4.2
1+30	S	58386.7	.06	0.0	11:50:01 88	3.9
1+35	S	58385.6	.07	0.0	11:50:17 88	2.6
1+40	S	58387.1	.06	0.0	11:50:33 88	3.0
1+45	S	58388.3	.06	0.0	11:50:45 88	3.0
1+50	S	58390.3	.06	0.0	11:51:01 88	3.8
1+55	S	58393.7	.07	0.0	11:51:19 88	5.2
1+60	S	58395.5	.07	0.0	11:51:40 88	4.0
1+65	S	58397.9	.07	0.0	11:52:00 88	5.3
1+70	S	58397.8	.06	0.0	11:52:12 88	5.4
1+75	S	58396.5	.06	0.0	11:52:28 88	4.0
1+80	S	58397.8	.06	0.0	11:52:43 88	3.3
1+85	S	58398.4	.06	0.0	11:53:03 88	3.6
1+90	S	58398.4	.06	0.0	11:53:17 88	4.6
1+95	S	58395.5	.06	0.0	11:53:37 88	5.6

Line 15+00 W Date 28 MAR 91 #351

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+70	S	58401.4	.06	0.0	11:56:17	88	RIVR	2.8
1+65	S	58399.3	.07	0.0	11:57:07	88		3.8
1+60	S	58398.2	.06	0.0	11:57:24	88		0.7
1+55	S	58398.4	.06	0.0	11:57:40	88		2.5
1+50	S	58398.9	.07	0.0	11:57:53	88		3.6
1+45	S	58397.8	.06	0.0	11:58:11	88		3.5
1+40	S	58397.6	.06	0.0	11:58:28	88		2.1
1+35	S	58397.4	.07	0.0	11:58:54	88		1.8
1+30	S	58398.6	.06	0.0	11:59:13	88		1.7
1+25	S	58398.2	.07	0.0	11:59:28	88		2.6
1+20	S	58397.8	.06	0.0	11:59:42	88		3.7
1+15	S	58397.3	.06	0.0	11:59:55	88		2.7
1+10	S	58397.3	.06	0.0	12:00:08	88		1.5
1+05	S	58397.9	.06	0.0	12:00:24	88		5.0
1+00	S	58398.0	.06	0.0	12:00:39	88		3.9
0+95	S	58398.6	.06	0.0	12:00:53	88		5.2
0+90	S	58396.8	.06	0.0	12:01:09	88		2.7
0+85	S	58393.1	.06	0.0	12:01:23	88		2.3
0+80	S	58392.6	.07	0.0	12:01:37	88		1.2
0+75	S	58392.3	.06	0.0	12:01:57	88		3.8
0+70	S	58392.4	.06	0.0	12:02:15	88		3.9
0+65	S	58392.2	.06	0.0	12:02:29	88		1.5
0+60	S	58393.1	.07	0.0	12:02:47	88		2.4
0+55	S	58394.0	.07	0.0	12:03:00	88		4.1
0+50	S	58394.1	.06	0.0	12:03:15	88		0.9
0+45	S	58394.9	.07	0.0	12:03:30	88		0.9
0+40	S	58394.6	.07	0.0	12:03:46	88		2.0
0+35	S	58394.5	.06	0.0	12:04:08	88		2.6

0+30	S	58391.1	.06	0.0	12:04:25	88	1.4
0+25	S	58386.1	.07	0.0	12:04:41	88	0.4
0+20	S	58382.2	.07	0.0	12:04:56	88	1.0
0+15	S	58380.1	.06	0.0	12:05:10	88	0.0
0+10	S	58379.6	.06	0.0	12:05:26	88	2.8
0+05	S	58379.6	.06	0.0	12:05:42	88	0.1
0+00	N	58380.0	.06	0.0	12:06:50	88	4.9
0+05	N	58377.9	.06	0.0	12:07:04	88	0.2
0+10	N	58379.7	.07	0.0	12:07:39	88	1.3
0+15	N	58380.6	.06	0.0	12:07:58	88	1.2
0+20	N	58380.0	.07	0.0	12:08:28	88	1.7
0+25	N	58381.8	.07	0.0	12:08:52	88	2.5
0+30	N	58383.7	.07	0.0	12:09:19	88	-3.8
0+35	N	58383.3	.07	0.0	12:09:36	88	1.9
0+40	N	58383.1	.07	0.0	12:09:59	88	2.2
0+45	N	58382.7	.06	0.0	12:10:15	88	1.5
0+50	N	58382.3	.06	0.0	12:10:27	88	1.4
0+55	N	58381.3	.06	0.0	12:10:54	88	1.4
0+60	N	58382.6	.06	0.0	12:11:16	88	1.7
0+65	N	58382.7	.07	0.0	12:11:37	88	3.5
0+70	N	58382.3	.06	0.0	12:12:10	88	2.5

EOF

OMNI-PLUS Tie-line MAG/VLF R22N Ser #428150
TOTAL FIELD DATA (uncorrected)
& GRADIENT

Reference field: 58000.0
Datum subtracted: 0.0Date 28 MAR 91
Operator: 5000
Records: 321
Bat: 17.0 Volt Lithium: 3.50 Volt
Last time update: 3/16 9:10:00
Start of print: 3/28 17:48:54

Line 16+00 W Date 28 MAR 91 #1

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+35 N	58373.1	.06	0.0	13:36:51	88		-2.0
0+35 N	58372.1	.06	0.0	13:37:46	88		-1.9
0+30 N	58373.2	.06	0.0	13:38:11	88		1.8
0+25 N	58373.3	.06	0.0	13:38:32	88		-0.3
#5	58376.7	.06	0.0	13:40:05	88		-0.3
0+80 N	58379.8	.06	0.0	13:41:27	88		-1.5
0+75 N	58379.4	.06	0.0	13:42:13	88		1.3
0+70 N	58379.2	.05	0.0	13:42:27	88		1.6
0+65 N	58378.3	.06	0.0	13:42:41	88		3.3
0+60 N	58379.7	.06	0.0	13:42:59	88		3.3
0+55 N	58380.2	.06	0.0	13:43:17	88		2.7
0+50 N	58379.6	.06	0.0	13:43:33	88		2.8
0+45 N	58380.8	.06	0.0	13:43:48	88		3.8
0+40 N	58380.0	.06	0.0	13:44:01	88		4.6
0+35 N	58380.1	.06	0.0	13:44:16	88		2.4
0+30 N	58382.3	.06	0.0	13:44:31	88		2.3
0+25 N	58383.5	.06	0.0	13:44:49	88		3.3
0+20 N	58383.7	.06	0.0	13:45:03	88		-0.1
0+15 N	58385.9	.06	0.0	13:45:21	88		0.9
0+10 N	58388.9	.06	0.0	13:45:36	88		3.1
0+05 N	58390.3	.06	0.0	13:45:51	88		3.1
0+00 N	58391.4	.06	0.0	13:46:08	88		2.7
0+05 S	58393.2	.06	0.0	13:46:55	88		2.8
0+10 S	58393.8	.06	0.0	13:47:11	88		2.8
0+15 S	58393.9	.06	0.0	13:47:37	88		2.4
0+20 S	58395.0	.05	0.0	13:47:53	88		2.9
0+25 S	58397.6	.06	0.0	13:48:12	88		4.0
0+30 S	58400.3	.06	0.0	13:48:30	88		3.3
0+35 S	58403.8	.06	0.0	13:48:49	88		2.6
0+40 S	58404.9	.06	0.0	13:49:16	88		2.8
0+45 S	58406.6	.06	0.0	13:49:42	88		3.4
0+50 S	58405.8	.06	0.0	13:49:54	88		2.5
0+55 S	58405.1	.06	0.0	13:50:10	88		3.6
0+60 S	58406.1	.06	0.0	13:50:29	88		2.9
0+65 S	58405.8	.06	0.0	13:50:43	88		3.4
0+70 S	58406.0	.06	0.0	13:50:58	88		3.2

0+75	S	58406.4	.06	0.0	13:51:15	88	3.7
0+80	S	58406.8	.06	0.0	13:51:29	88	4.4
0+85	S	58407.0	.06	0.0	13:51:44	88	3.5
0+90	S	58407.6	.06	0.0	13:51:59	88	4.6
0+95	S	58407.9	.06	0.0	13:52:20	88	3.1
1+00	S	58408.1	.06	0.0	13:52:34	88	3.1
1+05	S	58409.8	.06	0.0	13:52:54	88	4.1
1+10	S	58409.8	.06	0.0	13:53:11	88	3.7
1+15	S	58410.8	.06	0.0	13:53:35	88	4.0
1+20	S	58411.9	.06	0.0	13:53:52	88	5.0
1+25	S	58410.1	.06	0.0	13:54:14	88	2.4
1+30	S	58411.4	.06	0.0	13:54:39	88	2.1

Line 17+00 W Date 28 MAR 91 #49

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+00	N	58380.7	.06	0.0	14:06:46	88		1.1
0+95	N	58384.5	.06	0.0	14:07:42	88		4.3
0+90	N	58387.5	.06	0.0	14:08:01	88		3.7
0+85	N	58389.9	.06	0.0	14:08:15	88		3.3
0+80	N	58394.1	.06	0.0	14:08:36	88		3.0
0+75	N	58396.8	.06	0.0	14:08:53	88		3.1
0+70	N	58400.8	.06	0.0	14:09:13	88		4.3
0+65	N	58401.2	.06	0.0	14:09:46	88		1.9
0+60	N	58401.4	.06	0.0	14:10:04	88		3.0
0+55	N	58401.0	.06	0.0	14:10:19	88		2.7
0+50	N	58399.2	.06	0.0	14:10:38	88		3.8
0+45	N	58395.5	.06	0.0	14:10:55	88		3.4
0+40	N	58388.2	.06	0.0	14:11:12	88		0.4
0+35	N	58387.0	.06	0.0	14:11:39	88		-1.2
0+30	N	58405.1	.06	0.0	14:12:08	88		3.1
0+25	N	58421.8	.06	0.0	14:12:24	88		6.8
0+20	N	58420.7	.06	0.0	14:12:45	88		4.4
0+15	N	58412.2	.06	0.0	14:13:19	88		5.8
0+10	N	58408.2	.06	0.0	14:13:37	88		2.5
0+05	N	58407.4	.06	0.0	14:13:56	88		4.7
0+00	N	58405.6	.06	0.0	14:14:14	88		3.4
0+05	S	58404.1	.07	0.0	14:14:43	88		1.8
0+10	S	58404.3	.06	0.0	14:15:06	88		2.7
0+15	S	58405.2	.06	0.0	14:15:28	88		4.7
0+20	S	58405.5	.06	0.0	14:15:55	88		4.6

Line 18+00 W Date 28 MAR 91 #74

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+70	N	58412.8	.06	0.0	14:23:54	88		5.5
0+65	N	58412.8	.06	0.0	14:24:48	88		3.3
0+60	N	58411.4	.06	0.0	14:25:18	88		2.6
0+55	N	58412.9	.06	0.0	14:25:37	88		3.2
0+50	N	58415.8	.06	0.0	14:25:58	88		3.6
0+45	N	58416.2	.06	0.0	14:26:14	88		3.2
0+40	N	58415.9	.06	0.0	14:26:30	88		3.4
0+35	N	58413.6	.06	0.0	14:26:56	88		3.1
0+30	N	58413.6	.06	0.0	14:27:08	88		3.0
0+25	N	58414.0	.06	0.0	14:27:34	88		3.6
0+20	N	58414.3	.06	0.0	14:27:47	88		3.1

0+15	N	58415.4	.06	0.0	14:28:03	88	3.4
0+10	N	58414.2	.06	0.0	14:28:18	88	2.1
0+05	N	58414.6	.06	0.0	14:28:42	88	2.2
0+00	N	58415.3	.06	0.0	14:28:59	88	2.9
0+05	S	58414.0	.06	0.0	14:29:15	88	3.4
0+10	S	58413.9	.06	0.0	14:29:29	88	3.3
0+15	S	58414.2	.06	0.0	14:29:48	88	2.6
0+20	S	58414.0	.06	0.0	14:30:08	88	3.7
0+25	S	58412.9	.06	0.0	14:30:28	88	3.0
0+30	S	58412.4	.06	0.0	14:30:42	88	2.7
0+35	S	58411.4	.06	0.0	14:31:00	88	3.2
0+40	S	58411.5	.06	0.0	14:31:16	88	4.2
0+45	S	58411.1	.06	0.0	14:31:36	88	3.6
0+50	S	58409.6	.06	0.0	14:31:54	88	3.7
0+55	S	58409.0	.06	0.0	14:32:14	88	2.3
0+60	S	58409.1	.06	0.0	14:32:33	88	3.1
0+65	S	58405.9	.05	0.0	14:33:02	88	4.1
0+70	S	58405.3	.06	0.0	14:33:22	88	5.5
0+75	S	58404.3	.06	0.0	14:34:09	88CREC	1.8
0+80	S	58408.9	.06	0.0	14:35:40	88	3.4
0+85	S	58409.5	.06	0.0	14:35:58	88	3.9
0+90	S	58408.7	.06	0.0	14:36:17	88	3.2
0+95	S	58407.8	.06	0.0	14:36:40	88	3.1
1+00	S	58408.1	.05	0.0	14:37:50	88CREC	3.1

Line 19+00 W Date 28 MAR 91 #109

POSITION		FIELD	ERR	DRIFT	TIME	DS CULT	GRADIENT
0+90	S	58414.3	.06	0.0	14:42:42	88	5.5
0+85	S	58412.8	.06	0.0	14:43:55	88	3.1
0+80	S	58412.6	.06	0.0	14:44:16	88	4.0
0+75	S	58412.2	.06	0.0	14:44:36	88	2.5
0+70	S	58415.0	.05	0.0	14:44:59	88	3.7
0+65	S	58417.3	.06	0.0	14:45:16	88	4.2
0+60	S	58418.0	.06	0.0	14:45:29	88	3.9
0+55	S	58418.0	.06	0.0	14:45:52	88	4.4
0+50	S	58418.2	.06	0.0	14:46:06	88	3.6
0+45	S	58418.9	.06	0.0	14:46:26	88	4.7
0+40	S	58418.7	.06	0.0	14:46:45	88	2.7
0+35	S	58418.8	.06	0.0	14:47:04	88	3.0
0+30	S	58420.7	.06	0.0	14:47:21	88	4.2
0+25	S	58421.4	.06	0.0	14:47:42	88	3.8
0+20	S	58420.5	.06	0.0	14:47:57	88	3.4
0+15	S	58420.3	.06	0.0	14:48:16	88	3.3
0+10	S	58421.7	.06	0.0	14:48:35	88	3.7
0+05	S	58423.5	.05	0.0	14:48:53	88	3.9
0+00	N	58422.9	.06	0.0	14:49:17	88	3.4
0+05	N	58423.0	.06	0.0	14:49:43	88	3.4
0+10	N	58422.6	.06	0.0	14:50:03	88	3.0
0+15	N	58423.3	.06	0.0	14:50:22	88	3.8
0+20	N	58422.2	.06	0.0	14:50:38	88	3.0
0+25	N	58422.1	.06	0.0	14:51:00	88	3.3
0+30	N	58421.7	.06	0.0	14:51:17	88	5.0
0+35	N	58422.2	.06	0.0	14:51:40	88	3.9
0+40	N	58422.8	.06	0.0	14:51:55	88	4.6

0+45	N	58421.6	.06	0.0	14:52:13	88	2.9
0+50	N	58421.2	.06	0.0	14:52:30	88	2.6
0+55	N	58422.9	.06	0.0	14:52:53	88	3.9
0+60	N	58423.6	.06	0.0	14:53:09	88	4.4
0+65	N	58422.0	.05	0.0	14:53:30	88	4.8
0+70	N	58420.9	.06	0.0	14:53:43	88	4.2
0+75	N	58420.1	.06	0.0	14:53:57	88	2.8
0+80	N	58419.7	.06	0.0	14:54:15	88	4.0
0+85	N	58419.8	.06	0.0	14:54:25	88RIVR	4.5

Line 20+00 W Date 28 MAR 91 #145

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+30	N	58403.8	.06	0.0	14:58:39	88		3.3
1+25	N	58406.6	.06	0.0	14:59:40	88		2.9
1+20	N	58407.7	.06	0.0	15:00:00	88		3.8
1+15	N	58409.2	.07	0.0	15:00:23	88		1.3
1+10	N	58416.2	.06	0.0	15:00:56	88		4.6
1+05	N	58416.6	.07	0.0	15:01:17	88		3.9
1+00	N	58416.8	.06	0.0	15:01:32	88		4.0
0+95	N	58418.7	.06	0.0	15:01:50	88		4.2
0+90	N	58420.0	.06	0.0	15:02:06	88		3.9
0+85	N	58421.2	.06	0.0	15:02:21	88		4.0
0+80	N	58420.8	.06	0.0	15:02:39	88		4.0
0+75	N	58419.9	.06	0.0	15:02:56	88		4.4
0+70	N	58420.5	.06	0.0	15:03:09	88		3.4
0+65	N	58422.7	.06	0.0	15:03:27	88		5.9
0+60	N	58421.0	.06	0.0	15:03:44	88		3.2
0+55	N	58420.8	.06	0.0	15:04:06	88		2.6
0+50	N	58420.3	.06	0.0	15:04:26	88		3.1
0+45	N	58419.7	.06	0.0	15:04:46	88		3.7
0+40	N	58419.4	.06	0.0	15:05:00	88		3.5
0+35	N	58419.3	.06	0.0	15:05:18	88		2.6
0+30	N	58419.5	.06	0.0	15:05:31	88		2.7
0+25	N	58420.8	.06	0.0	15:05:50	88		3.8
0+20	N	58421.0	.05	0.0	15:06:05	88		4.7
0+15	N	58420.1	.07	0.0	15:06:27	88		3.5
0+10	N	58420.3	.06	0.0	15:06:45	88		4.3
0+05	N	58419.9	.06	0.0	15:07:02	88		3.3
0+00	N	58420.1	.05	0.0	15:07:21	88		4.0
0+05	S	58420.8	.06	0.0	15:07:36	88		3.9
0+10	S	58421.4	.06	0.0	15:07:52	88		6.0
0+15	S	58418.9	.06	0.0	15:08:09	88		2.9
0+20	S	58418.9	.06	0.0	15:08:24	88		4.9
0+25	S	58416.6	.06	0.0	15:08:40	88		2.4
0+30	S	58416.2	.06	0.0	15:08:56	88		2.3
0+35	S	58417.4	.06	0.0	15:09:15	88		3.8
0+40	S	58417.6	.06	0.0	15:09:34	88		3.5
0+45	S	58417.0	.06	0.0	15:09:57	88		4.0
0+50	S	58415.7	.06	0.0	15:10:20	88		3.5
0+55	S	58415.2	.06	0.0	15:10:42	88		3.5
0+60	S	58413.8	.06	0.0	15:10:57	88		3.2
0+65	S	58413.5	.05	0.0	15:11:28	88		3.9
0+70	S	58414.8	.06	0.0	15:11:52	88		5.8
0+75	S	58413.8	.06	0.0	15:12:14	88		4.0

0+80	S	58414.9	.06	0.0	15:12:32	88	4.8
0+85	S	58415.7	.06	0.0	15:12:51	88	4.0
0+90	S	58415.5	.06	0.0	15:13:08	88	4.1
0+95	S	58414.9	.06	0.0	15:13:27	88	4.8
1+00	S	58413.7	.06	0.0	15:14:11	88	4.9
1+05	S	58410.9	.06	0.0	15:14:34	88	3.3
1+10	S	58406.2	.06	0.0	15:14:54	88	3.1

Line 21+00 W Date 28 MAR 91 #194

POSITION		FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
1+00	S	58416.4	.06	0.0	15:18:18	88		3.7
0+95	S	58419.4	.06	0.0	15:19:11	88		4.7
0+90	S	58420.6	.05	0.0	15:19:30	88		3.5
0+85	S	58423.2	.06	0.0	15:19:56	88		3.9
0+80	S	58424.2	.06	0.0	15:20:10	88		3.6
0+75	S	58424.6	.06	0.0	15:20:28	88		3.2
0+70	S	58424.5	.06	0.0	15:20:57	88		3.6
0+65	S	58424.8	.06	0.0	15:21:13	88		5.0
0+60	S	58424.1	.07	0.0	15:21:32	88		6.5
0+55	S	58420.8	.06	0.0	15:21:56	88		3.3
0+50	S	58420.2	.06	0.0	15:22:15	88		3.3
0+45	S	58420.7	.06	0.0	15:22:39	88		3.6
0+40	S	58420.8	.06	0.0	15:22:54	88		3.3
0+35	S	58420.3	.06	0.0	15:23:12	88		3.9
0+30	S	58419.5	.05	0.0	15:23:28	88		4.2
0+25	S	58418.9	.06	0.0	15:23:47	88		4.6
0+20	S	58418.5	.05	0.0	15:24:04	88		2.7
0+15	S	58419.4	.06	0.0	15:24:34	88		4.6
0+10	S	58417.8	.06	0.0	15:25:02	88		3.5
0+05	S	58417.2	.06	0.0	15:25:23	88		3.7
0+00	N	58417.4	.06	0.0	15:25:38	88		2.4
0+05	N	58418.7	.06	0.0	15:25:59	88		3.5
0+10	N	58419.4	.06	0.0	15:26:15	88		3.2
0+15	N	58419.7	.06	0.0	15:26:32	88		4.0
0+20	N	58419.8	.06	0.0	15:26:47	88		4.5
0+25	N	58420.1	.06	0.0	15:27:08	88		3.0
0+30	N	58420.3	.06	0.0	15:27:23	88		3.0
0+35	N	58420.5	.06	0.0	15:27:53	88		3.6
0+40	N	58420.4	.06	0.0	15:28:11	88		3.9
0+45	N	58421.3	.05	0.0	15:28:35	88		5.5
0+50	N	58420.8	.06	0.0	15:28:47	88		4.0
0+55	N	58418.1	.06	0.0	15:29:08	88	CREC	2.9
0+60	N	58415.8	.05	0.0	15:29:44	88		3.3
0+65	N	58417.9	.06	0.0	15:30:07	88		2.4
0+70	N	58418.2	.06	0.0	15:30:25	88		3.4
0+75	N	58420.1	.06	0.0	15:30:48	88		5.4
0+80	N	58421.2	.06	0.0	15:31:05	88		3.9
0+85	N	58419.9	.06	0.0	15:31:27	88		3.9
0+90	N	58419.3	.06	0.0	15:31:45	88		3.3
0+95	N	58419.8	.06	0.0	15:32:07	88		3.5
1+00	N	58420.0	.06	0.0	15:32:25	88		2.9
1+05	N	58419.7	.06	0.0	15:33:04	88		5.3
1+10	N	58417.4	.06	0.0	15:33:38	88	RIVR	5.1

Line 22+00 W Date 28 MAR 91 #237

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
0+10 N	58406.2	.06	0.0	15:41:45	88		39.7
0+05 N	58423.8	.06	0.0	15:42:28	88		3.2
0+00 N	58422.9	.06	0.0	15:42:43	88		3.0
0+05 S	58421.3	.06	0.0	15:43:02	88		3.5
0+10 S	58420.4	.06	0.0	15:43:20	88		4.1
0+15 S	58419.8	.06	0.0	15:43:37	88		2.6
0+20 S	58421.2	.06	0.0	15:43:53	88		3.7
0+25 S	58422.6	.06	0.0	15:44:15	88		3.8
0+30 S	58422.1	.06	0.0	15:44:44	88		2.2
0+35 S	58425.3	.06	0.0	15:45:05	88		2.7
0+40 S	58427.2	.06	0.0	15:45:21	88		2.8
0+45 S	58429.7	.06	0.0	15:45:48	88		3.4
0+50 S	58429.4	.06	0.0	15:46:09	88		5.1
0+55 S	58426.9	.06	0.0	15:46:31	88		4.7
0+60 S	58425.8	.06	0.0	15:46:51	88		3.2
0+65 S	58424.6	.06	0.0	15:47:14	88		3.2
0+70 S	58424.3	.06	0.0	15:47:30	88		3.4
0+75 S	58423.9	.06	0.0	15:47:51	88		3.5
0+80 S	58422.7	.06	0.0	15:48:07	88		3.1
0+85 S	58420.9	.06	0.0	15:48:30	88		5.0
0+90 S	58418.4	.06	0.0	15:48:49	88	CREC	3.3
0+95 S	58419.1	.06	0.0	15:49:19	88		2.7
1+00 S	58420.9	.06	0.0	15:49:38	88		3.1
1+05 S	58420.5	.06	0.0	15:49:58	88		3.3
1+10 S	58419.0	.06	0.0	15:50:17	88		2.6
1+15 S	58418.6	.06	0.0	15:50:38	88		3.0
1+20 S	58419.6	.06	0.0	15:50:58	88		4.1
1+25 S	58419.3	.06	0.0	15:51:29	88		3.4
1+30 S	58419.7	.06	0.0	15:51:54	88		3.7
1+35 S	58418.2	.06	0.0	15:52:13	88		4.1
1+40 S	58414.4	.06	0.0	15:52:31	88		2.9
1+45 S	58410.0	.06	0.0	15:52:50	88		3.5
1+50 S	58404.9	.06	0.0	15:53:06	88		2.7
1+55 S	58400.4	.06	0.0	15:53:23	88		1.4
1+60 S	58399.6	.06	0.0	15:53:41	88		0.7
1+65 S	58400.9	.06	0.0	15:54:08	88		2.9

Line 23+00 W Date 28 MAR 91 #273

POSITION	FIELD	ERR	DRIFT	TIME	DS	CULT	GRADIENT
2+30 S	58409.3	.06	0.0	15:58:09	88		2.8
2+25 S	58410.7	.06	0.0	15:59:00	88		7.4
2+20 S	58410.3	.06	0.0	15:59:16	88		4.3
2+15 S	58410.4	.06	0.0	15:59:38	88		4.7
2+10 S	58410.4	.06	0.0	15:59:55	88		4.3
2+05 S	58410.1	.06	0.0	16:00:13	88		3.7
2+00 S	58409.1	.06	0.0	16:00:34	88		4.0
1+95 S	58407.0	.06	0.0	16:00:54	88		4.0
1+90 S	58406.4	.06	0.0	16:01:09	88		3.0
1+85 S	58407.4	.06	0.0	16:01:24	88		3.0
1+80 S	58409.6	.06	0.0	16:01:39	88		2.7
1+75 S	58413.5	.06	0.0	16:01:57	88		3.9
1+70 S	58415.9	.06	0.0	16:02:11	88		3.8

```
1+65 S 58418.9  .06      0.0 16:02:29 88              3.6
1+60 S 58421.1  .06      0.0 16:02:46 88              4.3
1+55 S 58422.3  .07      0.0 16:03:00 88              4.1
1+50 S 58422.6  .06      0.0 16:03:15 88              2.9
1+45 S 58423.2  .05      0.0 16:03:30 88              4.4
1+40 S 58424.6  .05      0.0 16:03:43 88              3.5
1+35 S 58425.4  .06      0.0 16:04:01 88              3.3
1+30 S 58422.7  .06      0.0 16:04:18 88              3.4
1+25 S 58422.7  .06      0.0 16:04:38 88CREC          3.9
1+20 S 58422.5  .06      0.0 16:05:15 88              4.4
1+15 S 58422.8  .06      0.0 16:05:52 88              3.9
1+10 S 58422.7  .06      0.0 16:06:08 88              2.8
1+05 S 58422.2  .06      0.0 16:06:24 88              3.6
1+00 S 58422.5  .06      0.0 16:06:39 88              6.5
0+95 S 58422.7  .06      0.0 16:06:55 88              3.5
0+90 S 58421.9  .06      0.0 16:07:10 88              3.7
0+85 S 58418.0  .06      0.0 16:07:27 88              2.5
0+80 S 58416.5  .06      0.0 16:07:42 88              2.6
0+75 S 58414.6  .06      0.0 16:08:01 88              1.1
0+70 S 58425.7  .06      0.0 16:08:21 88              1.1
0+65 S 58455.1  .06      0.0 16:08:45 88              7.9
0+60 S 58455.7  .06      0.0 16:09:31 88              6.7
0+55 S 58447.9  .06      0.0 16:09:49 88              4.5
0+50 S 58445.5  .06      0.0 16:10:11 88              4.8
0+45 S 58440.8  .06      0.0 16:10:53 88              4.1
0+40 S 58436.9  .06      0.0 16:11:19 88              3.4
0+35 S 58432.7  .06      0.0 16:12:05 88              2.3
0+30 S 58434.6  .06      0.0 16:12:25 88CREC          5.9
0+25 S 58428.6  .06      0.0 16:13:14 88              3.4
0+20 S 58430.1  .05      0.0 16:13:39 88              3.8
0+15 S 58428.6  .06      0.0 16:13:59 88              4.1
0+10 S 58427.9  .06      0.0 16:14:16 88              4.0
0+05 S 58426.3  .05      0.0 16:14:34 88              3.7
0+00 N 58426.4  .06      0.0 16:14:49 88              5.0
0+05 N 58425.5  .06      0.0 16:15:06 88              3.6
0+10 N 58423.6  .06      0.0 16:15:26 88              4.4

EOF

^Z
```

29 April 1991

SUMMARY REPORT ON CABIN CREEK PLACER LEASE 8542
WOLF LAKE YUKON TERRITORY MAP 105B
CO-ORDINATES 60°44'N 130°17'W

INTRODUCTION:

The Cabin Creek lease was staked by BRYAN JACK of Whitehorse on May 29, 1990 on behalf of DONEGAL DEVELOPMENTS LTD. of Vancouver, British Columbia,(a private company).

The only assessment report available in the Yukon Territory Mineral Rights file is a publication dated November 1, 1976 and is entitled:

Report On
Liard River Gold Placer Property
Located at
60°45'N 130°20'W
in the
Watson Lake Mining Division
Yukon Territory
for
Sayyea Creek Mining Company Limited
by
Paul Plicka

The report does not detail the sampling methods nor does it show sample locations or assays. The 1976 program also covered some adjacent placer investigations, however the conclusions reached are vague and cannot be substantiated with the data available in the report and therefore will not be summarized in this report.

1990 INVESTIGATIONS:

During the fall of 1990 a two man crew spent two days at site. The purpose of their visit was to obtain some random samples for assaying. The investigation was suspended due to a heavy snowfall shortly after their arrival. The two man crew consisted of MARK TERRY, Geologist and JIM DONALDSON. Two pits were excavated to a depth of 5 feet using hand tools and dynamite and three other random, near surface samples, were taken. The sample locations are shown in Appendix A. Samples 1 to 3 were grab samples and numbers 4 & 5 were taken from the pits. The pit samples were processed using a model 173 hydraulic concentrator manufactured by Keene Engineering Company. The samples were taken to Vancouver where they were tabled and fire assayed for gold. See Appendix B. The samples would not normally be fire assayed for gold content, however our interest was qualitative and not quantative.

Sample assays re-calculated to show true assay values are as follows:

SAMPLE	SAMPLE (DRY)	CON (DRY)	ASSAY O.P.T. AU
C - 90-01	2.23lbs	0.125	0.024
02	2.13lbs	0.125	0.783
03	2.34lbs	0.125	0.132
04	*3.83lbs	0.500	0.030
05	*4.89lbs	0.250	1.653

*Processed from 50lbs

Corrected assay values in O.P.T. Au are as follows:

C - 90-01	0.024	÷	(2.23÷0.125)	=	0.0014
02	0.783	÷	(2.13÷0.125)	=	0.046
03	0.132	÷	(2.34÷0.125)	=	0.007
04	0.030	÷	(50÷0.500)	=	0.0003
05	1.653	÷	(50÷0.250)	=	0.0083

1991 GEOPHYSICAL SURVEY:

A magnetic gradiometer survey was conducted on a portion of the lease during March of 1991. The results of this program, which was conducted by AMEROK GEOPHYSICS and MR. GRAHAM DAVIDSON, Geologist , of Whitehorse, Yukon are detailed in the attached publication entitled:

Donegal Developments Ltd.
A Magnetic Gradiometer Survey
of the Cabin Creek Property
Liard River area, Yukon Territory.
M.A. Power M.Sc.
Placer Lease PL8542

The conclusion of the report is that heavy magnetic concentrations have not been noted with placer gold deposits in Cabin Creek. The report recommends that before doing any further geophysical testing for gravel thickness and bedrock topography, a systematic testing and sampling program should be conducted in order to determine the nature of placer deposits on the creek.

Preparatory work consisting of a camp set-up and the establishment of a grid system on Cabin Creek commenced prior to the arrival of the geophysist and the geologist.

The two man crew left Vancouver March 16 and arrived Watson Lake on March 17. March 18 was spent in Watson Lake purchasing supplies and the 19th and part of the 20th attempting to land at Cabin Creek, finally arriving late on the 20th. A ski-equipped Otter landed at the existing airstrip 4 km east of Cabin Creek. Supplies were taken by ski-doo to the Cabin Creek site where a camp site was established. The next several days were spent cutting and chaining line. The geophysical crew travelled from Whitehorse on the 27th of March and left site on April 1.

COSTS TO DATE:

A summary of the costs to date on the project is listed under Appendix C. This amount is a total and contains amounts not applicable to assessment work, however we believe the allowable items more than cover the amount necessary to keep the lease in good standing. The sum of $5.000 from the aforementioned costs are being submitted for the lease assessment for the period from May 29, 1990 to May 29, 1991.

PLANNED PROGRAM FOR JUNE TO SEPT 1991 is as follows:

The original planning was to move in heavy equipment over the winter road and to this end a land use application was submitted to INDIAN AND NORTHERN AFFAIRS CANADA on March 26, 1991. A re-assessment of the project changed to conduct the test program utilizing air support only for equipment and supplies. The company plans to fly in a small tractor/backhoe for the testing program. The program is partially weather dependent with a provisional start-up of June 1st. A water permit will not be applied for at this time as the planned consumption will be less than the 50,000 gallon per day non-permit allowance. Prior to testing, the existing cleared area will be developed as detailed on the drawing in appendix D.

Test pits of approximately 6 cubic meters will be excavated along lines running perpendicular to the base line on 50 meter centers and depending on location, at 50 or 100 meter line spacing progressing south along the creek. The existing cleared area on the east side of Cabin Creek covers approximately 12 hectares of readily accessible ground and would total approximately 2,400 m of line for testing on a 50 m grid. The area west of the existing cleared portion will be examined on a more random basis and would be dependent on access thru the treed area and the ability to cross Cabin Creek. The area south of the cleared area on the east side of Cabin Creek will also be examined on a random basis.

Where it is not feasible to access the test sites with a backhoe, sampling will be done by hand trenching in conjunction with a Keene hydraulic concentrator Model 173. Provisional plans are to excavate each pit and process the sample on a batch basis. The material from the pits will be placed in piles according to strata and then processed thru a 16" sluice with the tailing being discharged to the excavated pit.

Provisional plans are to test up to 6 cubic meters per pit however this will be revised up or down depending on field conditions. It is anticipated that two to four pits can be tested per day or a total of 25 cubic meters of gravel. The maximum water consumption, based on a 4 to 1 weight ratio, is estimated to be (25 cubic m)(1677 gal/cubic m) = 40,000 gal/day. Following cleanup, samples will be examined and then sent out for assaying.

The initial camp will be staffed with three individuals and personnel will be added as required. Tent housing will be utilized. The proposed equipment list is as follows:

Backhoe/tractor, Caterpiller, D-3 or similar
Bobcat for clean up
All Terrain Vehicle
2 yard dump box with 16" sluice
2" process pump for water supply
3" pump for dewatering (if necessary)
Hydraulic concentrator model 173, Keene Engineering

The only other activity anticipated is clean up and brushing out of the existing airstrip which is located 3 1/2 km east of the lease site.

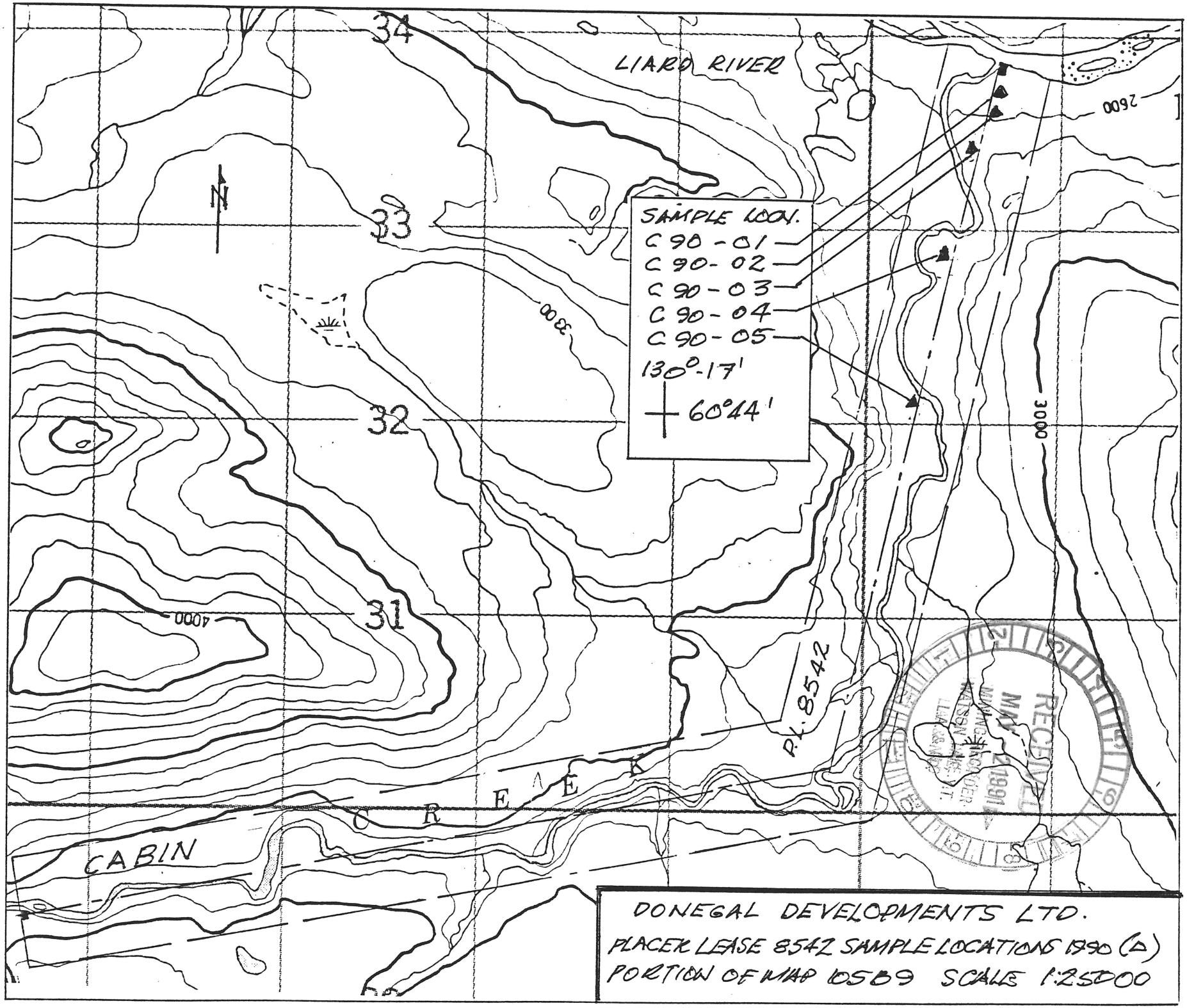
If results are encouraging the testing program could continue until September. A definitive estimate is currently being prepared and will be submitted when complete. The current budget for the 1991 testing program is approximately $200,000.

Yours very truly

W.E. Morel, P.Eng.

WEM/dc

APPENDIX A



DONEGAL DEVELOPMENTS LTD.
PLACER LEASE 8542 SAMPLE LOCATIONS 1990 (A)
PORTION OF MAP 105B9 SCALE 1:25000

APPENDIX B

CANADIAN GRAVITY RECOVERY INC.

475 Howe Street
.couver, B.C.
Canada, V6C 2B3

Bus: (604) 685-8730
Bus: (604) 685-1870
Fax: (604) 687-8789

November 07, 1990

Mr. Seamus Young
Suite 1022
470 Granville Street
Vancouver, B.C.
V6C 1V5

Dear Seamus:

On November 06, 1990, Mr. Jim Donaldson dropped off 5 placer samples.

The following is our laboratory procedures and equipment information:

Each sample was wet weighed and placed on the Gemeni Table for separation. The Gemeni Table is similar to other concentrating tables and as far as gravity processing is concerned is a proven free gold recovery device.

Usually with placer samples, Canadian Gravity amalgamates with triple distilled mercury to recovery all the "free" gold in a sample. Digestion of this mercury occurs in a dilute solution of nitric acid. The resulting residue is weighed and recorded as the total "free" gold for that particular sample. Each sample is then sent for fire assay. A fire assay will indicate the total "locked in" gold values for that particular sample.

In the case of your samples, Jim indicated that the samples were not to be amalgamated, instead just concentrated, and dried in preparation for fire assay. Please find enclosed the sample weights, as you will need these when the fire assay results come back from the lab in order to calculate concentration/dilution ratios. If you have any questions please do not hesitate to give myself or Michael Philpot a call at 685-8730.

Thank-you for the opportunity to work with you on your project.

Sincerely,

M. Anita Brokx, B.Sc.
Project Manager

CANADIAN GRAVITY RECOVERY INC.

2[illegible] 175 Howe Street
V[illegible]couver, B.C.
Canada, V6C 2B3

Bus: (604) 685-8730
Bus: (604) 685-1870
Fax: (604) 687-8780

LABORATORY ANALYSIS

DATE: November 06, 1990
PROJECT: S. Young: Stewart Placer
INSTRUCTIONS: Screen, Concentrate: Gemeni Table, Dry.

SAMPLE NO.	SAMPLE WET WEIGHT (lbs.)		TABLE CONS. DRY WEIGHT (lbs.)
C-90-01	2.625	MARIE SAYS GRAB SAMPLES FROM OLD WORKINGS.	0.125
C-90-02	2.500		0.125
C-90-03	3.750		0.125
C-90-04HM	4.500	MARK SAYS FROM SLUICE (SUCTION) TRENCHES BLASTED	0.500 *
C-90-05HM	5.750		0.250 *

* Note: Free Gold observed in sample.

SIGNED: H.A. Baker

MIN • EN LABORATORIES
(DIVISION OF ASSAYERS CORP.)

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
TELEPHONE (604) 980-5814 OR (604) 988-4524
FAX (604) 980-9621

THUNDER BAY LAB.:
TELEPHONE (807) 622-8958
FAX (807) 623-5931

SMITHERS LAB.:
TELEPHONE/FAX (604) 847-3004

INVOICE

TO : DONEGAL DEVELOPMENTS

1022-470 GRANVILLE ST.,
VANCOUVER, B.C.
V6C 1V5

INVOICE No 19042D
PAGE : 1 OF 1
DATE :Nov 27/90

ACCOUNT:16417

ATTENTION: SEAMUS YOUNG
PROJECT: CABIN CR.

FILE No: OV-1742

QTY	DESCRIPTION	UNIT PRICE	AMOUNT
6	ASSAYS - AU	8.50	51.00
6	SAMPLE PREP	3.75	22.50
	* TOTAL *		73.50

THESE ARE PROFESSIONAL SERVICES AND ARE PAYABLE WHEN RENDERED.
OUTSTANDING BALANCES OVER 30 DAYS WILL BE CHARGED 2% INTEREST/MONTH.

Cabin Creek
11/29/90

RECEIVED
MAY - 2 1991
MINERAL RESOURCES BR.
WATER RESOURCES BR.
VICTORIA, B.C.

Paid
17 Dec 90
CMT 5077
$33.10

MIN-EN LABORATORIES
(DIVISION OF ASSAYERS CORP.)

SPECIALISTS IN MINERAL ENVIRONMENTS
CHEMISTS • ASSAYERS • ANALYSTS • GEOCHEMISTS

VANCOUVER OFFICE:
705 WEST 15TH STREET
NORTH VANCOUVER, B.C. CANADA V7M 1T2
TELEPHONE (604) 980-5814 OR (604) 988-4524
FAX (604) 980-9621

THUNDER BAY LAB.:
TELEPHONE (807) 622-8958
FAX (807) 623-5931

SMITHERS LAB.:
TELEPHONE/FAX (604) 847-3004

Assay Certificate

OV-1742-RA1

Company: DONEGAL DEVELOPMENTS LTD.
Project: CABIN CR.
Attn: SEAMUS YOUNG

Date: NOV-27-90
Copy 1. DONEGAL DEVELOPMENTS, VANCOUVER, B.C.

We hereby certify the following Assay of 6 ROCK/SILT samples submitted NOV-20-90 by S.YOUNG.

Sample Number	AU g/tonne	AU oz/ton
C-90-01	.82	.024
C-90-02	26.83	.783
C-90-03	4.54	.132
C-90-04HM	1.03	.030
C-90-05HM	*56.67	1.653
HF-1	.17	.005

RECEIVED
MAY - 2 1991
MINING RECORDER
WATSON LAKE, Y.T.
L.A. & N.D.

*SAMPLE MAY CONTAIN METALLIC GOLD, RECOMMEND METALLIC GOLD ASSAY.

Certified by _____

MIN-EN LABORATORIES

APPENDIX C

STATEMENT OF COSTS
CABIN CREEK
JOB REF #D1290
1990 Field Season

Wages:		
Geologists		$1,387.50
Rentals:		
Truck rental		225.00
Expenses:		
Travel, Accommodation, Board	125.00	
Vehicle	30.00	
Field Supplies	279.07	
Assays	171.00	
Helicopter Charters	2,413.79	3,018.86
TOTAL COSTS		4,631.36
Contingencies @ 10%		463.14
TOTAL EXPENDITURES		$5,094.50

15 April 1991

STATEMENT OF COSTS
CABIN CREEK
JOB REF #D4-91
1991 FIELD SEASON

WAGES:			
Subcontractors:			
P.MacDonald, 18 days @ 150		2,700.00	
Payroll:			
J.Donaldson, 19 days @ 175	3,325.00		
Benefits @ 25%	831.25	4,156.25	$ 6,856.25
GEOLOGISTS:			
G. Davidson			4,301.24
RENTALS:			
Truck Rental (SY), 19 days @ 75**		1,425.00	
Skidoo Rental (Bill Seeley)		1,270.00	
Norcan Leasing		62.86	2,757.86
EXPENSES:			
Travel, Accommodation, Board:			
Travel Headquarters (SY & BM)	1,874.64		
Credit Card Charges	438.31		
Exp. Submitted (JD)	1,166.65		
Camp Ground Services	479.46	3,959.06	
Vehicle:			
Exp. Submitted (JD)	131.50		
Gas (Credit Card)	771.04		
Park & Fly	10.59	913.13	
Field Supplies:			
Exp. Submitted (JD)	767.36		
Jarand Building Supplies	915.56		
ICG Propane	758.80		
Deakin Equipment Ltd.	219.68		
Ft.McPherson Tent & Awning	1,530.44	4,183.84	
Maps & Reproductions:			
Canada Map Office	27.01		
Exp. Submitted (JD)	21.24		
Energy, Mines, Resources	52.32		
Western Reproducers Ltd.	23.73		
Eagle Mapping	1,236.92	1,361.22	
Air Charters:			
Heli Dynamics Ltd.	1,895.44		
Watson Lake Flying Service	2,973.53	4,868.97	
Licences & Permits:			
Indian & Northern Affairs	6.00		
Rec. General (Land Use Fees)	680.00	686.00	

Freight & Couriers:			
Points North Transport	87.67		
Canadian Airlines Int'l	11.24		
Nova Messengers	3.75	102.66	
Miscellaneous:			
B.C. Tel	124.37		
Canada Post	3.75	128.12	
Promotional:			
Credit Cards (SY)		903.09	17,106.09
GST on ** Services (1,425.00)			99.75
	SUB TOTAL		31,121.19
Office Overhead @ 10%			3,112.19
	TOTAL COSTS TO DATE		**$34,233.31**

APPENDIX D

E 430,000 E 430,250 E 430,500 E 430,750 E 431,000 E 431,250 E 431,500 E 431,750 E 432,000 E 432,250 E 432,500 E 432,750 E 433,000 E 433,250

N 6,734,750 N 6,734,500 N 6,734,250 N 6,734,000 N 6,733,750 N 6,733,500 N 6,733,250

LIARD RIVER

TRAIL TO AIRSTRIP

EAGLE LINE OF TX 8642

CAMP SITE

MATCH LINE See Sheet 2

LEGEND

POSSIBLE TEST LINES

PROBABLE TEST PIT LOCATION

NOTE - NO EXCAVATION TO TAKE PLACE WITHIN A 10 METER MARK AWAY FROM HIGH WATER LEVEL ON CABIN CREEK.

SHEET INDEX

1

2

N

EAGLE MAPPING SERVICES LTD. (91-24)

120135

CABIN CREEK

D-491

EAGLE LEASE 8642

RECEIVED
MAY - 2 1991
MINING RECORDER
WHITEHORSE MINING DIST.
Y.T.

CONTOUR INTERVAL 5 m
SCALE 1:2500

DWG 405

0 50 100 200 300 400 500

DONEGAL DEVELOPMENTS LTD APRIL 1991

MAP # 105B Doc # 120152 (5-2)


CABIN CREEK
LEGEND
POSSIBLE TEST LINES
PROBABLE TEST PIT LOCATION
NOTE: NO EXCAVATION TO TAKE PLACE WITHIN A 10 METER MARK AWAY FROM HIGH WATER LEVEL ON CABIN CREEK.
SHEET INDEX
1
2
EAGLE MAPPING SERVICES LTD. (91-24)
120135
CABIN CREEK
D-491
PLACER LEASE 8542
CONTOUR INTERVAL 5 m
SCALE 1:2500
RECEIVED MAY -2 1991 MINING RECORDER WATSON LAKE, Y.T.
DWG 406
0 50 100 200 300 400 500
DONEGAL DEVELOPMENTS LTD APRIL 1991
MAP# 105B Doc# 120153 (32)