EVAPORATION AT ALTAI CITY

1997 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
1	7/1	68.1			
2	7/2	66.6			5.5
3	7/3	62.7			
4	7/4	60.7			
5	7/5	43.3			
6	7/6	33.1			
7	7/7	27.1			16
8	7/8	40.5			
9	7/9	35.2			
10	7/10	20.1	71.6	51.5	
11	7/11	64.3			
12	7/12	55.8			
13	7/13	51.6			3.1
14	7/14	50.2			0.8
15	7/15	45.6			
16	7/16	38.2			5.9
17	7/17	45.4			26.3
18	7/18	65.3			15.4
19	7/19	64.7			6.2
20	7/20	65.3			3.9
21	7/21	57.4			
22	7/22	48.9			
23	7/23	37.9			
24	7/24	35.7			
25	7/25	31.2			0.6
26	7/26	25.7			
27	7/27				
28	7/28				
29	7/29				
30	7/30				
31	7/31				

EVAPORATION AT ALTAI CITY

1997 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
1	8/1	41.2			
2	8/2	44.6			
3	8/3	38.7			
4	8/4	39.9			
5	8/5	38.6			
6	8/6	35.9			
7	8/7	32.4			
8	8/8	26.0			
9	8/9	20.0			
10	8/10	13.4			
11	8/11	3.4	34.6	31.2	
12	8/12	20.8			
13	8/13	11.2			
14	8/14	2.80	71.3	68.5	
15	8/15	61.8			
16	8/16	57.9			
17	8/17	49.8			
18	8/18	41.5			
19	8/19	37.8			
20	8/20	27.8			
21	8/21	20.5			
22	8/22	12.4	71.4	59	1.2
23	8/23	60.4			
24	8/24	59.0			
25	8/25	57.4			
26	8/26	48.8			
27	8/27	41.8			
28	8/28	47.9			
29	8/29	32.9			
30	8/30	26.8			
31	8/31	21.9			

EVAPORATION AT ALTAI CITY

1997 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
1	9/1	12.4			
2	9/2	5.7	70.9	65.2	
3	9/3	60.9			
4	9/4	57.8			
5	9/5	48.7			
6	9/6	39.9			
7	9/7	34.7			
8	9/8	30.1			
9	9/9	24.5			
10	9/10	17.0			
11	9/11	11.9			
12	9/12	7.5	72.8	65.3	0.7
13	9/13	72.5			5.8
14	9/14	80.0			4.2
15	9/15	79.2			0.9
16	9/16	79.8			
17	9/17	77.6			
18	9/18	74.2			
19	9/19	72.5			
20	9/20	70.6			
21	9/21	66.7			
22	9/22	62.3			
23	9/23	58.5			
24	9/24	54.8			
25	9/25	50.0			
26	9/26	45.8			
27	9/27	41.2			
28	9/28	37.5			
29	9/29	33.7			
30	9/30	27.8			
31					

EVAPORATION AT ALTAI CITY

1998 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
32	5/1	53.6			
33	5/2	46.8			
34	5/3	39.3			
35	5/4	39.8			6.1
36	5/5	35.1			
37	5/6	30.1			
38	5/7	24.3			
39	5/8	18.9			
40	5/9	14.2			
41	5/10	10.1			
42	5/11	1.0	49.3	48.3	
43	5/12	41.3			
44	5/13	30.9			
45	5/14	26.8			2.0
46	5/15	23.9			
47	5/16	10.5			
48	5/17	6.1	40.3	34.2	
49	5/18	30.3			
50	5/19	25.1			
51	5/20	23.1			3.1
52	5/21	13.1			
53	5/22	15.2			4.7
54	5/23	14.1			
55	5/24	9.0			
56	5/25	2.1	14.1	12.0	
57	5/26	12.1			
58	5/27	8.1			
59	5/28	1.2	13.4	12.2	
60	5/29	4.1	18.2	14.1	
61	5/30	10.1			
62	5/31	8.1			

EVAPORATION AT ALTAI CITY

1998 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
62	6/1	3.0	18.2	15.2	
63	6/2	11.0			
64	6/3	6.1	26.5	20.4	
65	6/4	10.8			
66	6/5	1.7	19.5	17.8	2.6
67	6/6	14.0			
68	6/7	6.1			
69	6/8	0.2	31.3	31.1	
70	6/9	23.3			
71	6/10	16.1			
72	6/11	12.1	26.1	14.0	
73	6/12	16.1			
74	6/13	7.1			
75	6/14	2.1	12.1	10.0	
76	6/15	8.1			
77	6/16	2.1	12.1	10.0	
78	6/17	10.1			
79	6/18	4.2			
80	6/19	2.1	12.1	10.0	
81	6/20	2.1	13.1	11.0	
82	6/21	6.1			
83	6/22	10.1	25.1	15.0	8.0
84	6/23	17.1			
85	6/24	9.1			
86	6/25	1.1	12.1	12.0	
87	6/26	1.2	27.1	26.9	
88	6/27	20.1			
89	6/28	15.1			
90	6/29	6.1	21.1	15.0	
91	6/30	10.1			

EVAPORATION AT ALTAI CITY

1998 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
93	7/1	0.1	30.1	30.0	
94	7/2	21.1			
95	7/3	12.1			
96	7/4	6.2	38.1	31.9	
97	7/5	28.4			
98	7/6	18.3			
99	7/7	24.3			9.2
100	7/8	26.1			
101	7/9	29.3			11.0
102	7/10	25.5			
103	7/11	13.3			
104	7/12	17.0			5.0
105	7/13	18.1			12.2
106	7/14	28.2			10.1
107	7/15	37.1			11.0
108	7/16	43.1			17.4
109	7/17	52.1			
110	7/18	47.1			11.0
111	7/19	42.7			
112	7/20	48.1			
113	7/21	44.0			3.0
114	7/22	43.1			1.2
115	7/23	37.2			
116	7/24	31.1			6.0
117	7/25	30.0			
118	7/26	26.3			1.1
119	7/27	21.9			
120	7/28	11.8			
121	7/29	9.1	29.2	20.1	
122	7/30	32.5			7.4
123	7/31	39.3			8.1

EVAPORATION AT ALTAI CITY

1998 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
124	8/1	39.5			
125	8/2	34.5			
126	8/3	32.1			
127	8/4	27.1			2.8
128	8/5	24.8			
129	8/6	21.1			
130	8/7	16.1			
131	8/8	8.9			
132	8/9	3.3	34.9	31.6	
133	8/10	26.0			
134	8/11	20.1			
135	8/12	13.2			
136	8/13	9.9			
137	8/14	5.1			
138	8/15	4.1			
139	8/16	0.8	27.4	26.6	
140	8/17	18.1			
141	8/18	10.3			
142	8/19	6.1	21.1	15.0	3.3
143	8/20	20.1			
144	8/21	17.1			
145	8/22	20.1			5.8
146	8/23	17.8			
147	8/24	10.1			
148	8/25	8.1			1.2
149	8/26	7.1			
150	8/27	2.1	24.1	22.0	
151	8/28	17.3			
152	8/29	12.8			
153	8/30	7.4			
154	8/31	1.1	16.0	14.9	

EVAPORATION AT ALTAI CITY

1998 JICA Study Team

No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
155	9/1	10.5			
156	9/2	5.2	20.1	14.9	
157	9/3	12.1			
158	9/4	7.5			
159	9/5	2.8	16.3	13.5	
160	9/6	7.1			
161	9/7	1.2	14.0	12.8	
162	9/8	4.8			4.0
163	9/9	3.1	17.9	14.8	1.1
164	9/10	14.1			
165	9/11	11.1			
166	9/12	11.1			
167	9/13	8.0			
168	9/14	4.3			
169	9/15	1.2	13.9	12.7	
170	9/16	11.1			
171	9/17	7.0			
172	9/18	5.2			
173	9/19	2.3	17.3	15.0	
174	9/20	11.2			
175	9/21	9.1			
176	9/22	5.5			
177	9/23	0.1	14.1	14.0	
178	9/24	8.1			2.0
179	9/25	6.1			
180	9/26	1.2	15.3	14.1	
181	9/27	10.1			
182	9/28	7.1			
183	9/29	2.4	21.7	19.3	
184	9/30	18.1			

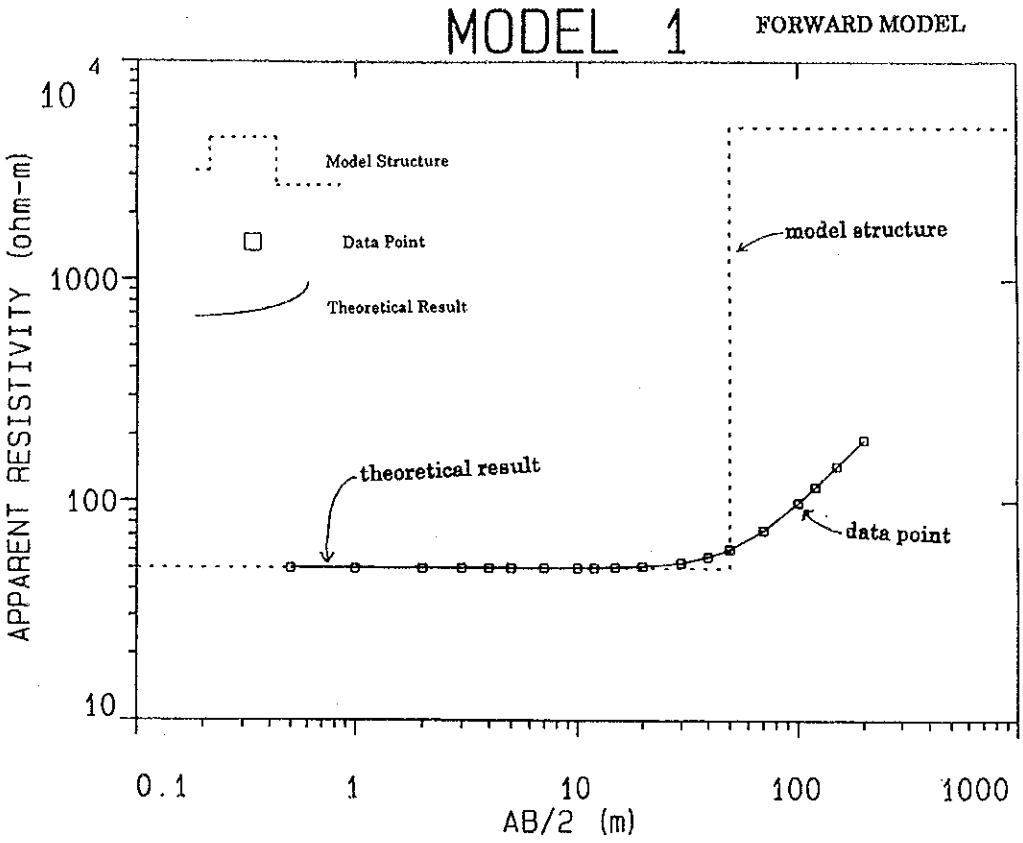
EVAPORATION AT ALTAI CITY

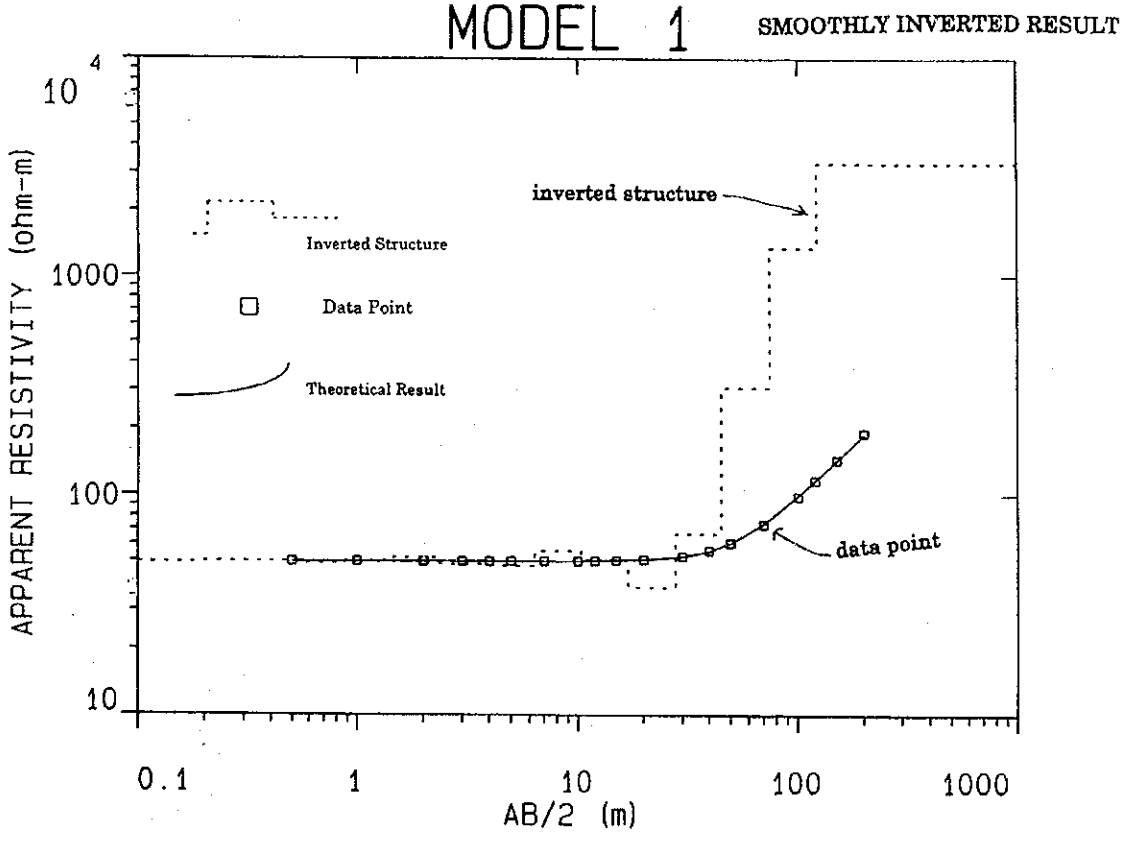
1998 JICA Study Team

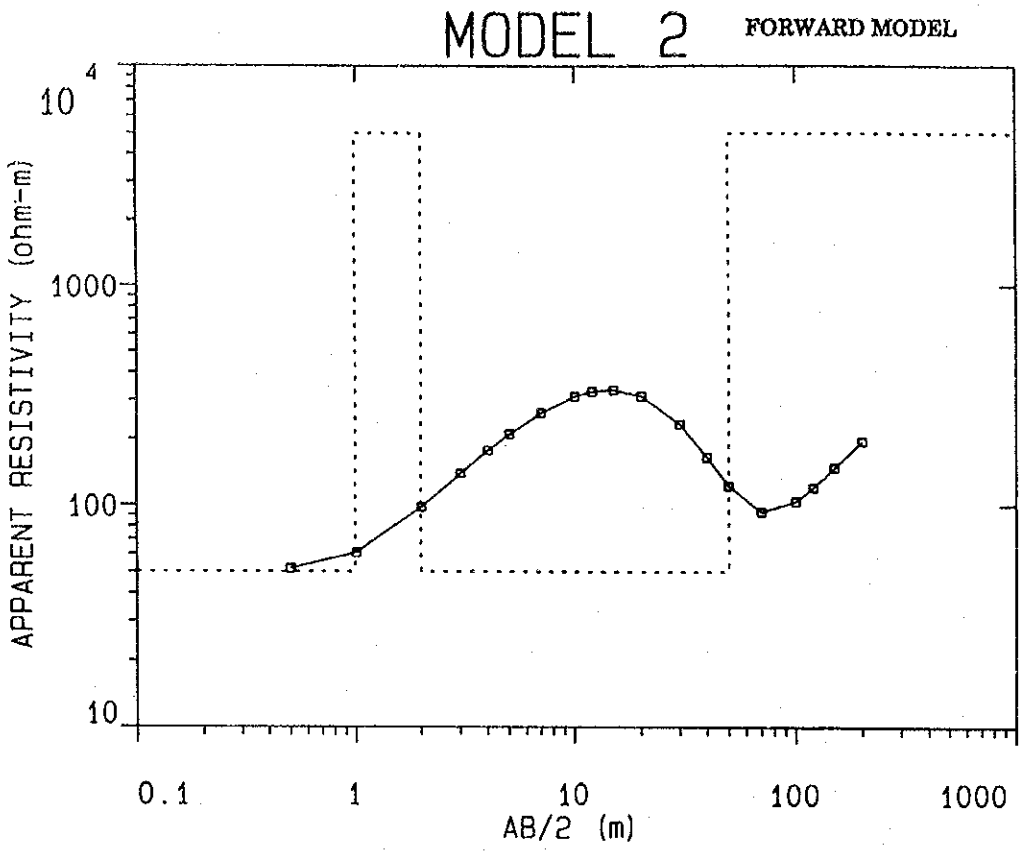
No.	Date	Scale before Addition (A)	Scale after Addition (B)	Difference (B)-(A)	Rainfall (mm)
185	10/1	17.1			
186	10/2	13.1			
187	10/3	8.2			
188	10/4	1.5	14.8	13.3	
189	10/5	10.1			
190	10/6	5.5			
191	10/7	0.7	17.0	16.3	
192	10/8	13.9			
193	10/9	10.3			
194	10/10	5.3			
195	10/11	2.1	14.5	12.4	
196	10/12	11.0			
197	10/13	10.1			
198	10/14	7.9			
199	10/15	5.5			
200	10/16	2.1			
201	10/17	0.9	14.5	13.6	
202	10/18	11.0			
203	10/19	11.0			
204	10/20	10.1			
205	10/21	10.1			
206	10/22	10.1			
207	10/23				
208	10/24				
209	10/25				
210	10/26				
211	10/27				
212	10/28				
213	10/29				
214	10/30				
215	10/31				

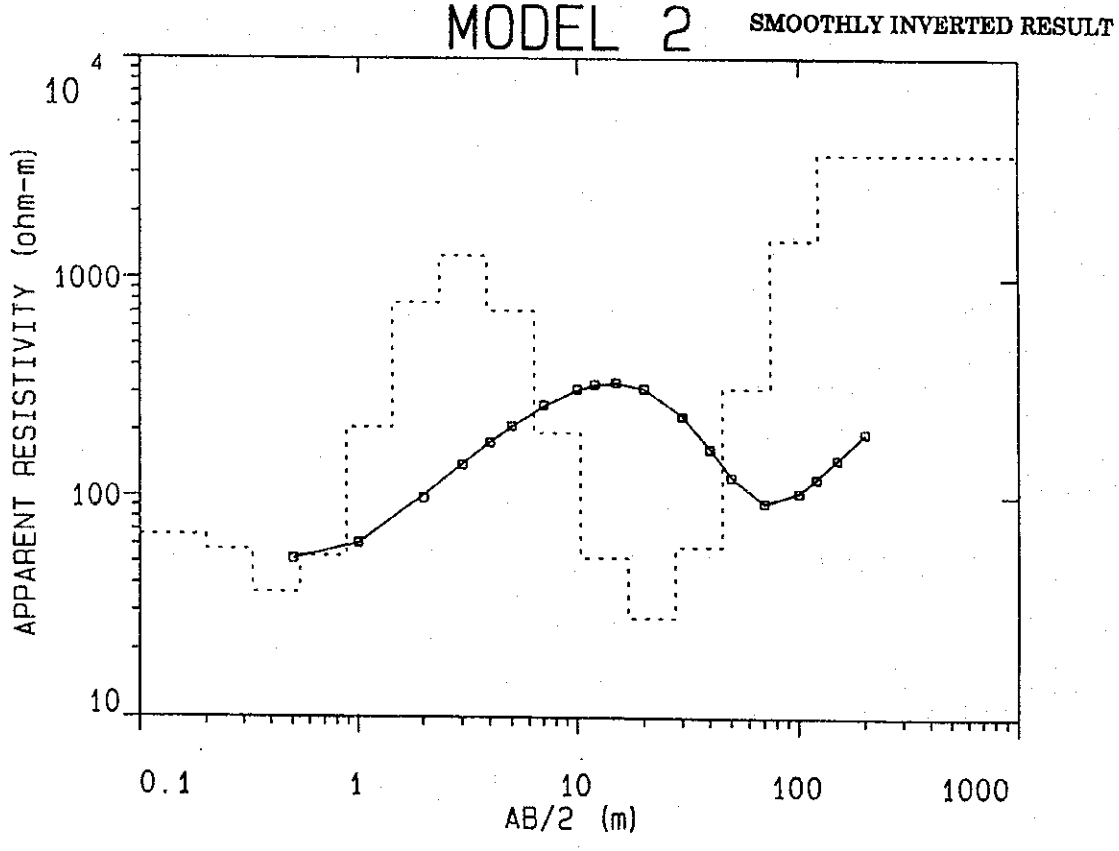
DATA BOOK

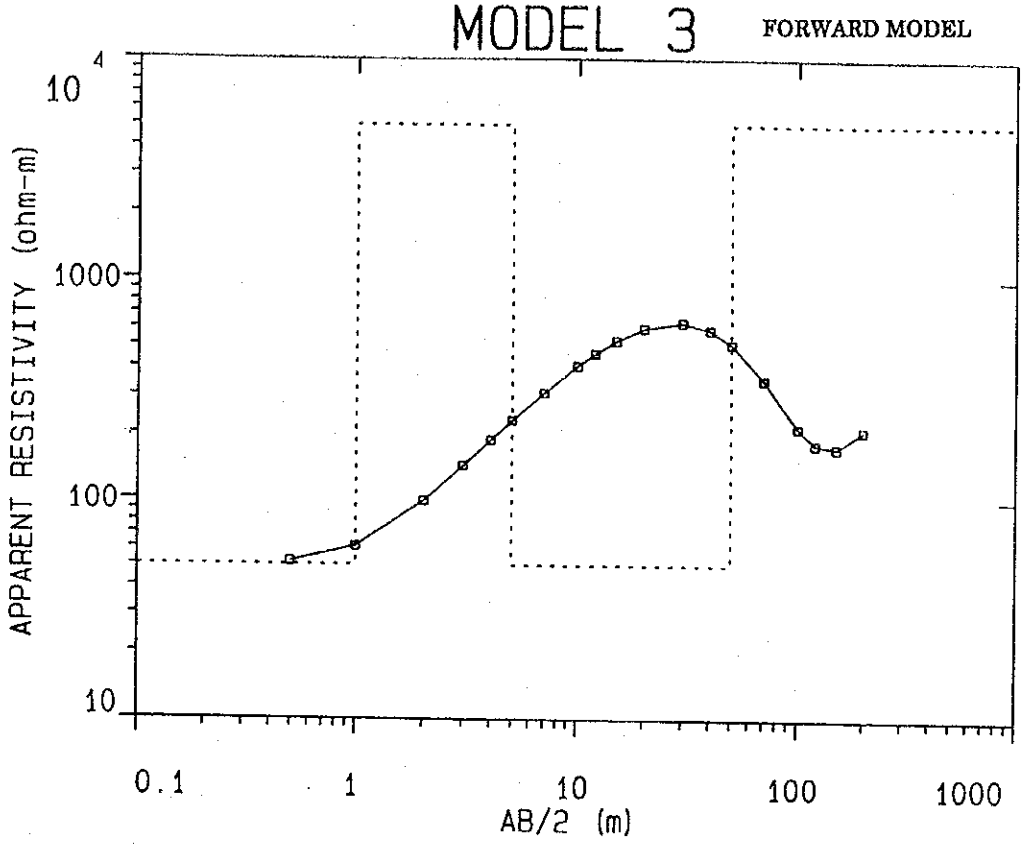
CHAPTER 4 TOPOGRAPHY AND GEOLOGY

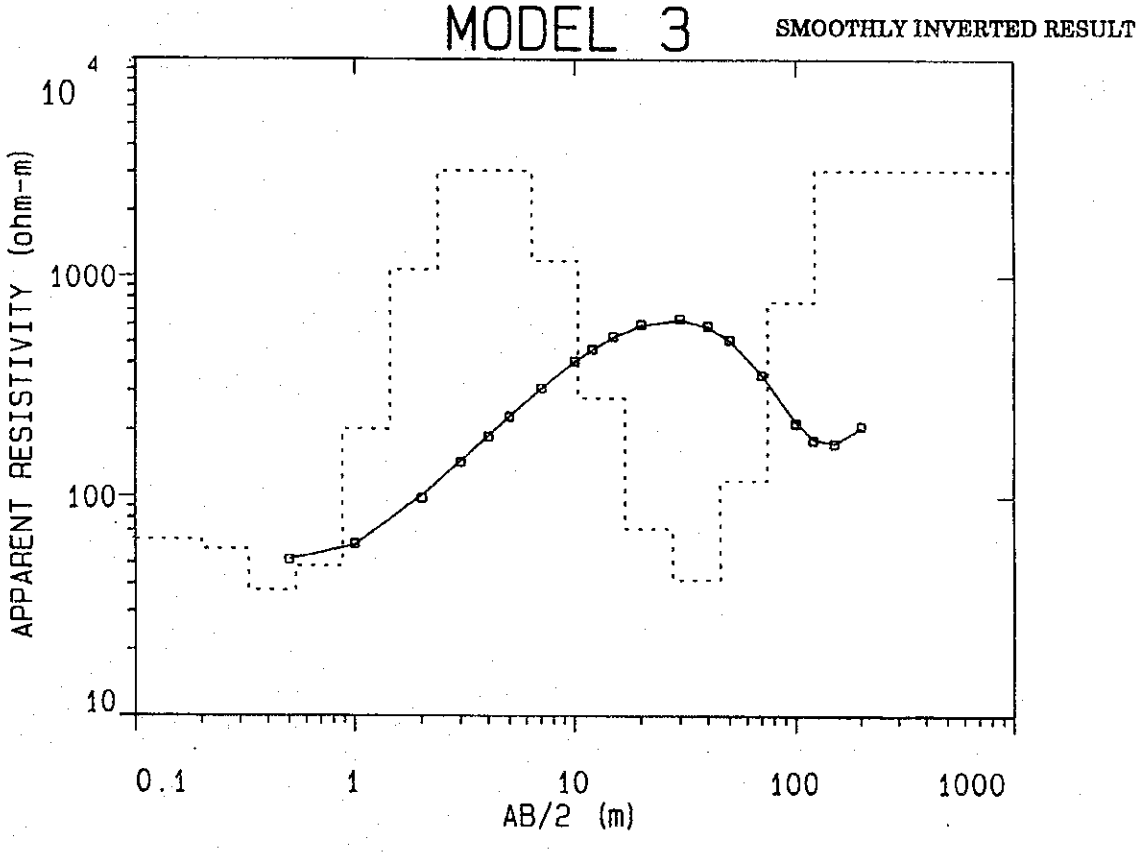

MODEL 1
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
Model Structure
Data Point
Theoretical Result
model structure
theoretical result
data point
0.1
1
10
100
1000
AB/2 (m)

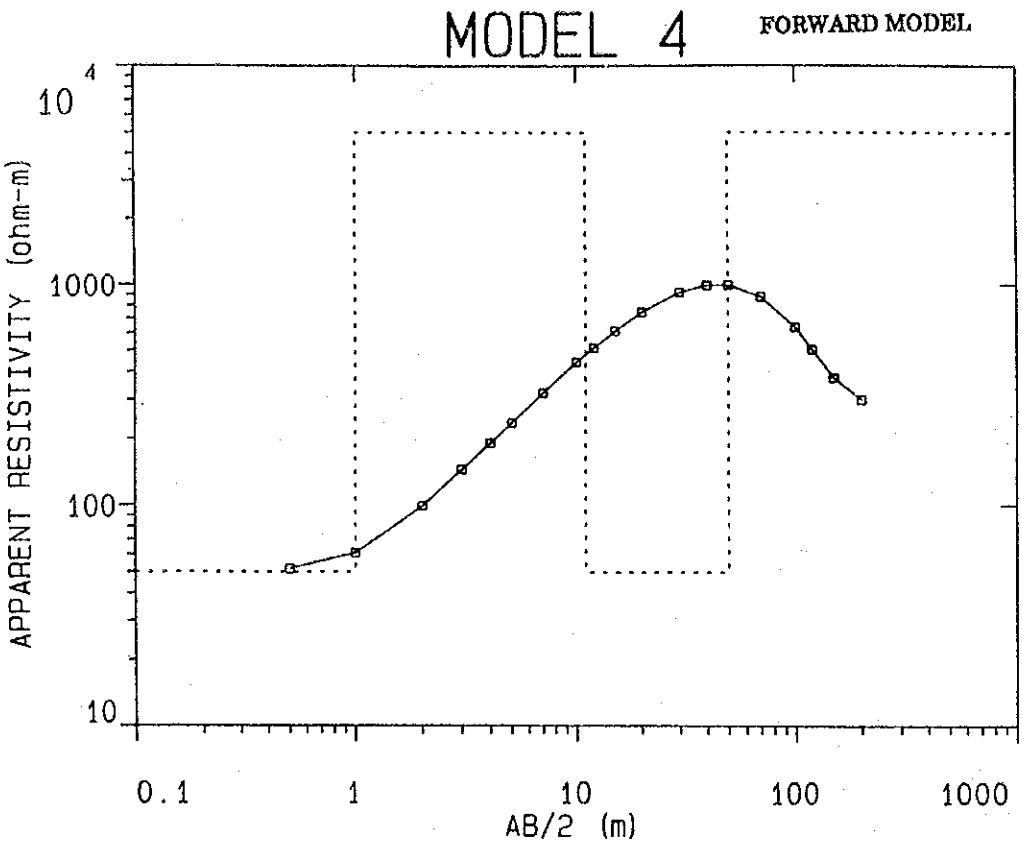

MODEL 1
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
Inverted Structure
Data Point
Theoretical Result
inverted structure
data point
0.1
1
10
100
1000
AB/2 (m)

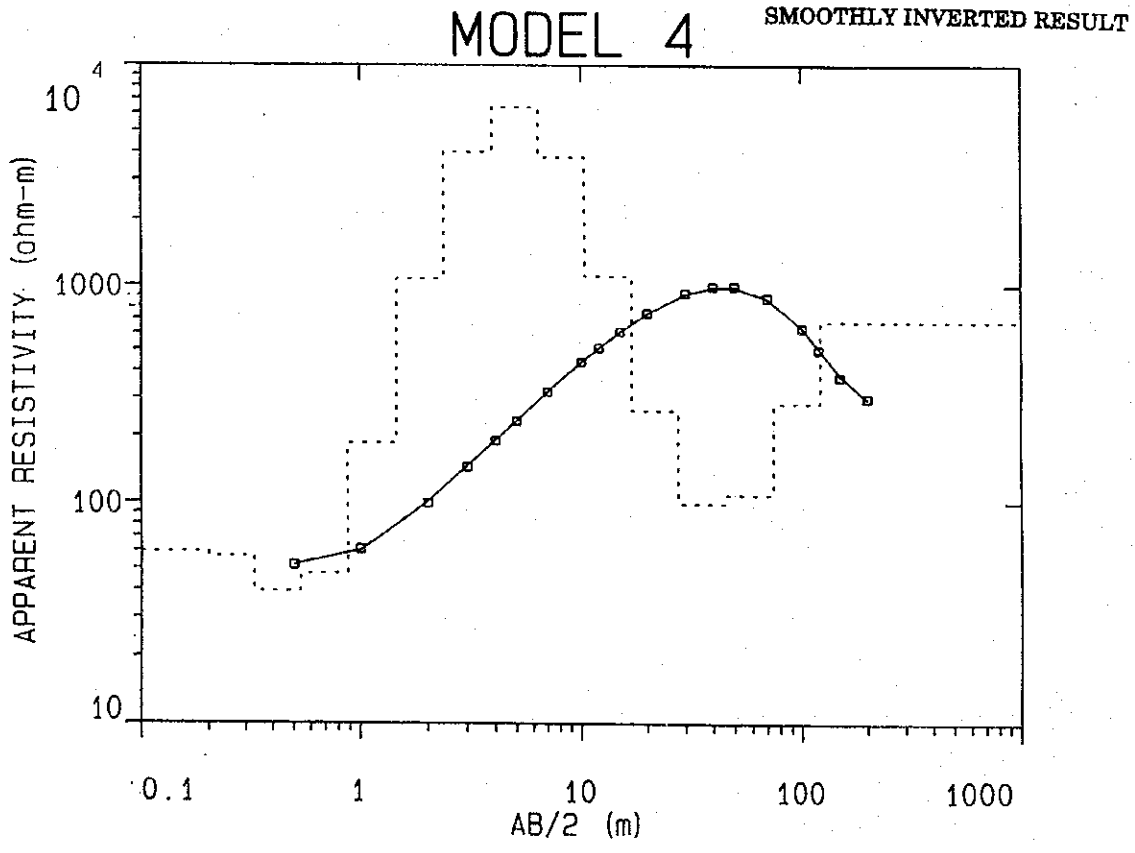

MODEL 2
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

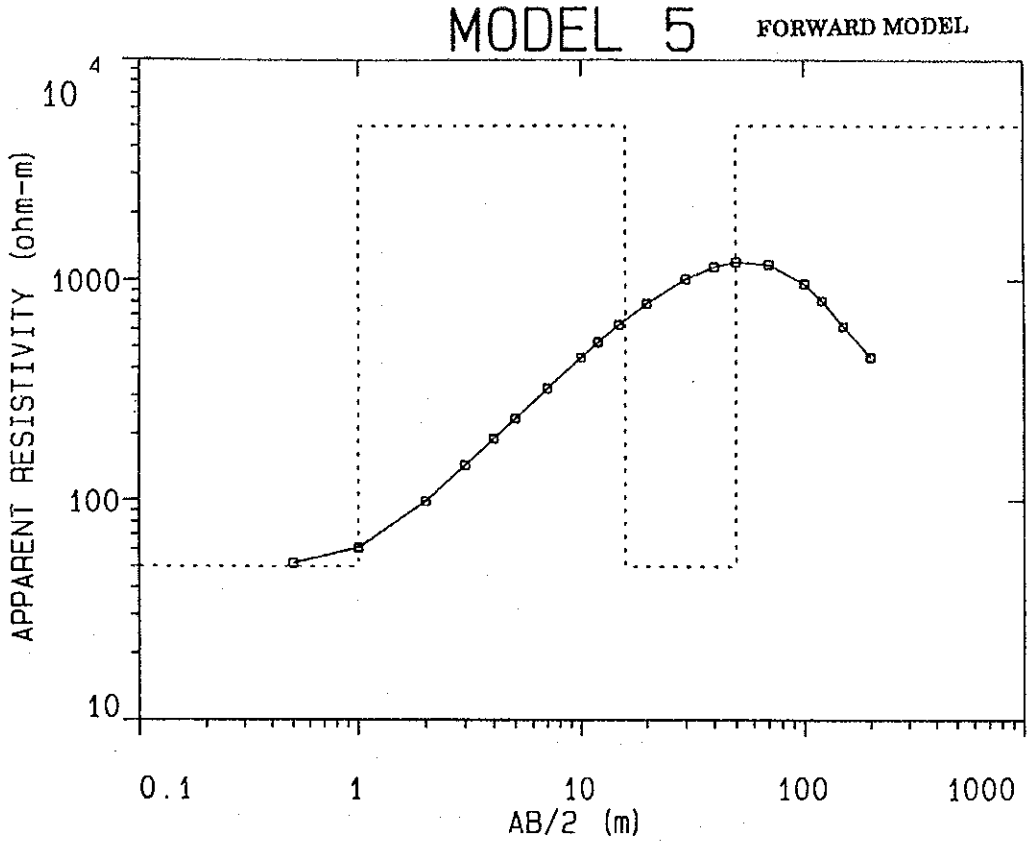

MODEL 2
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

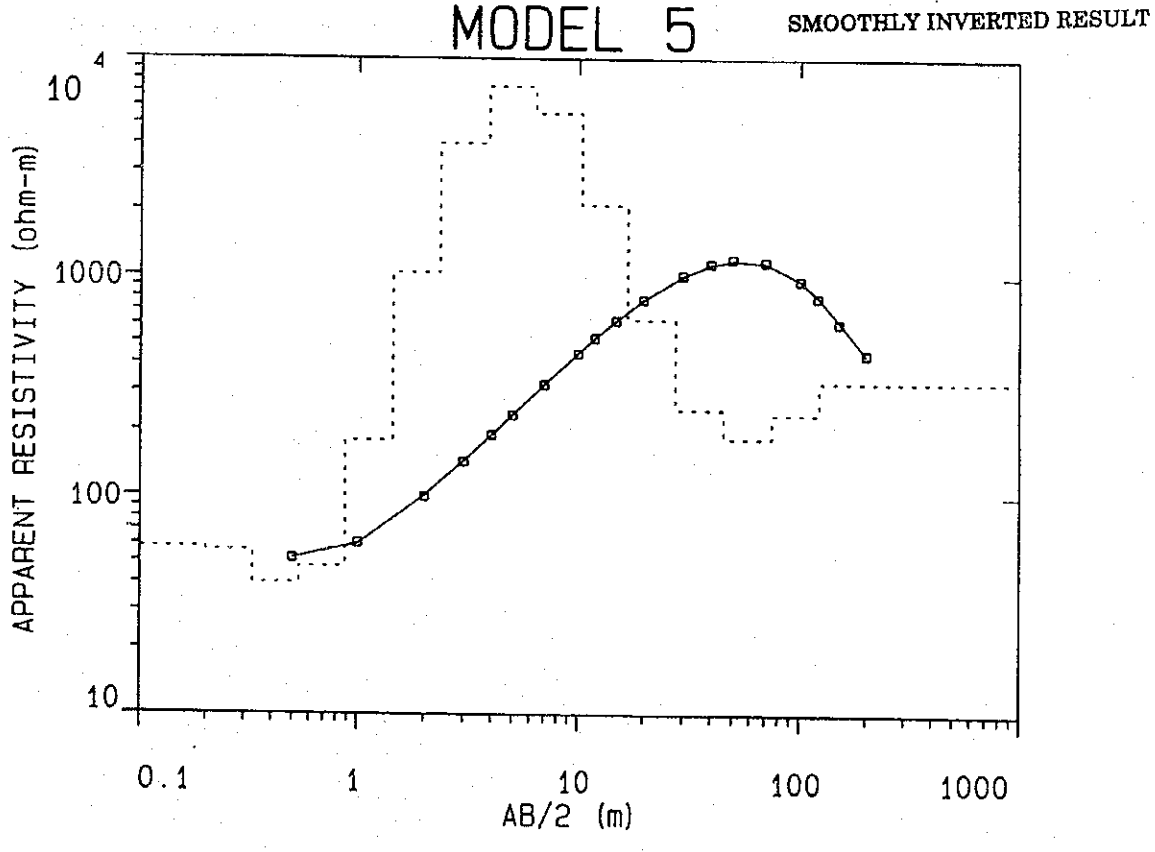

MODEL 3
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

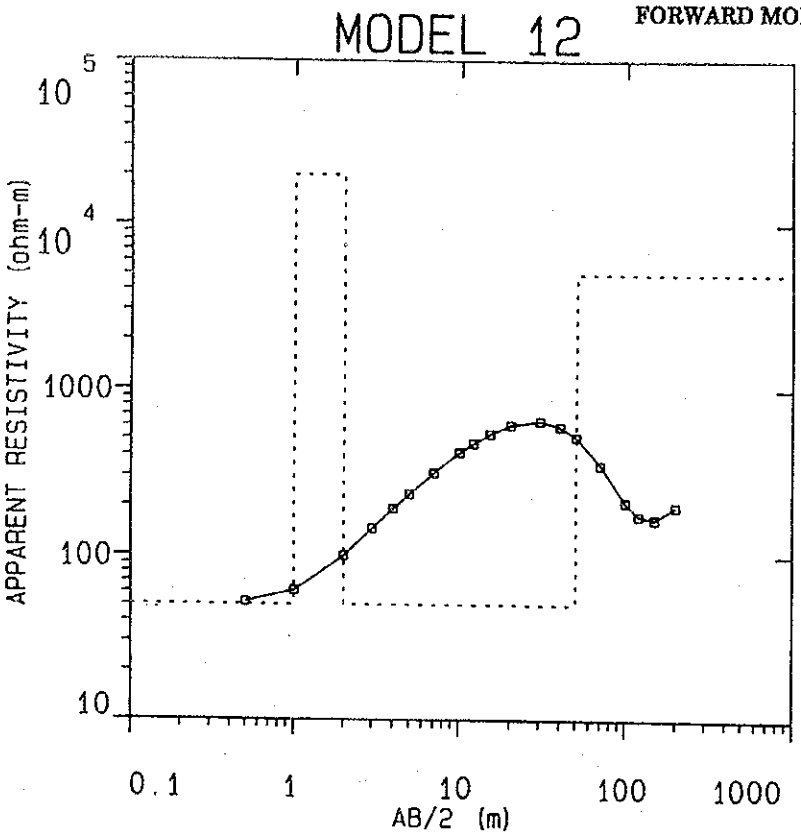

MODEL 3
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

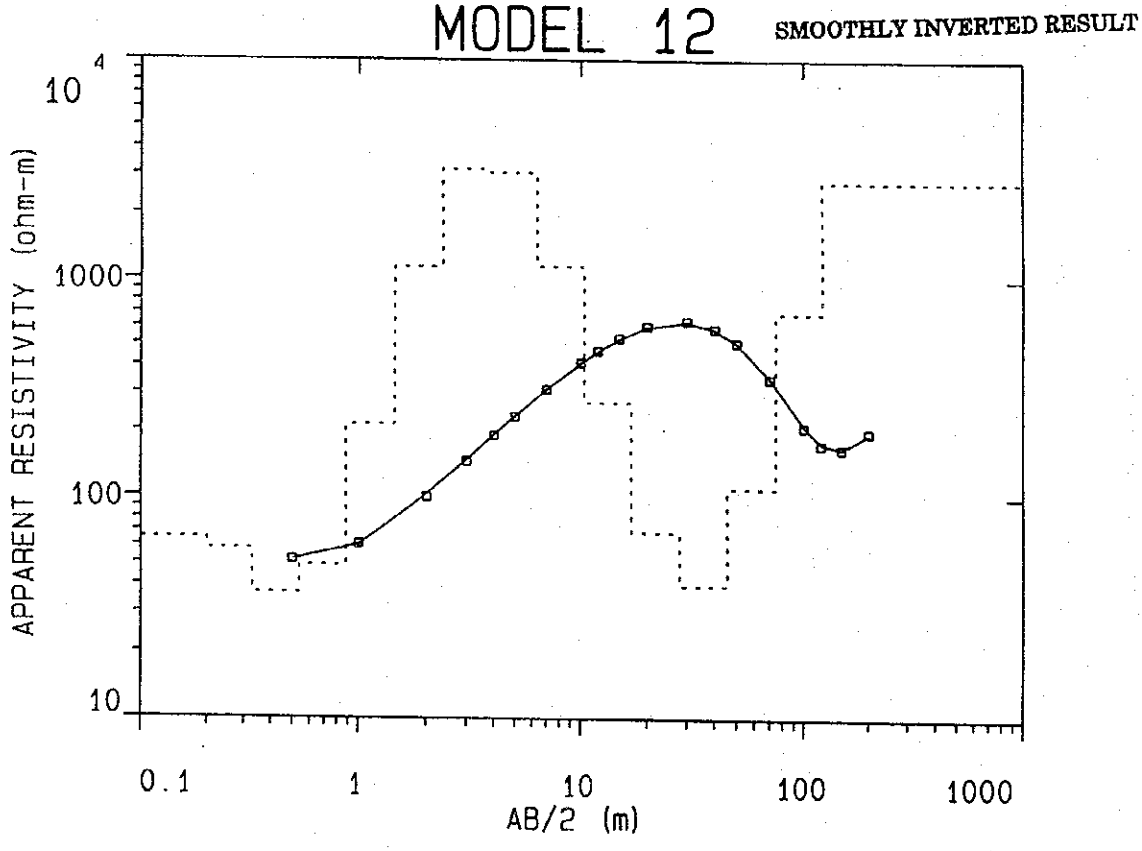

MODEL 4
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

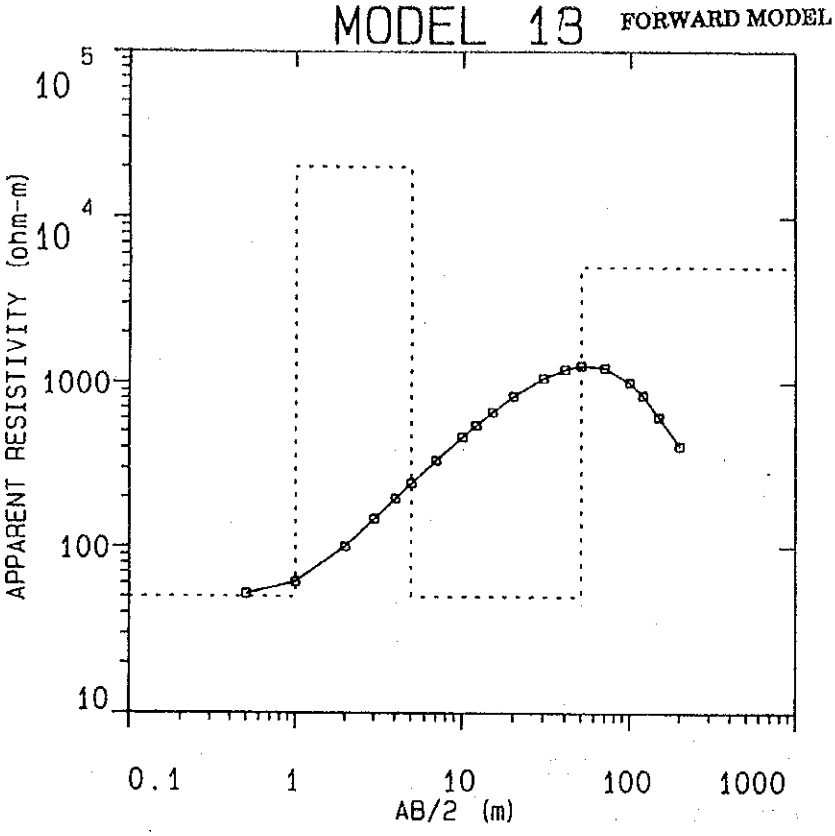

MODEL 4
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

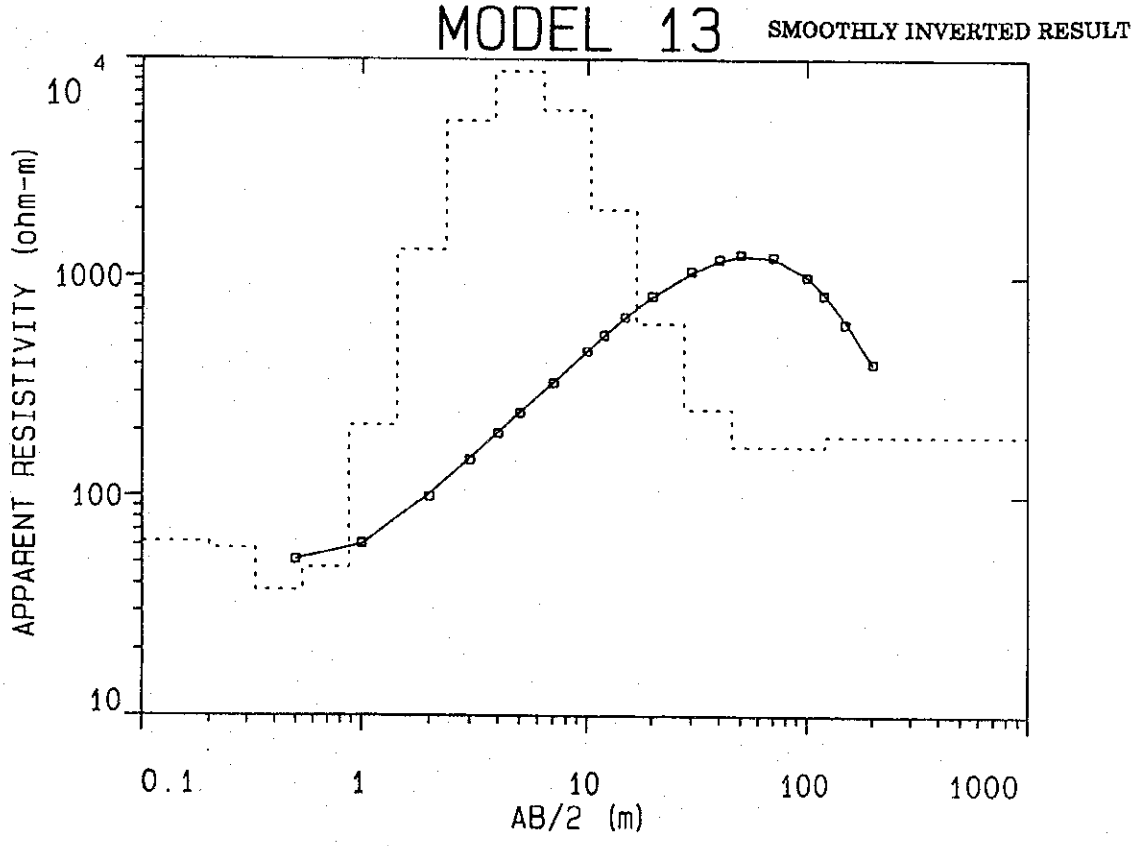

MODEL 5
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

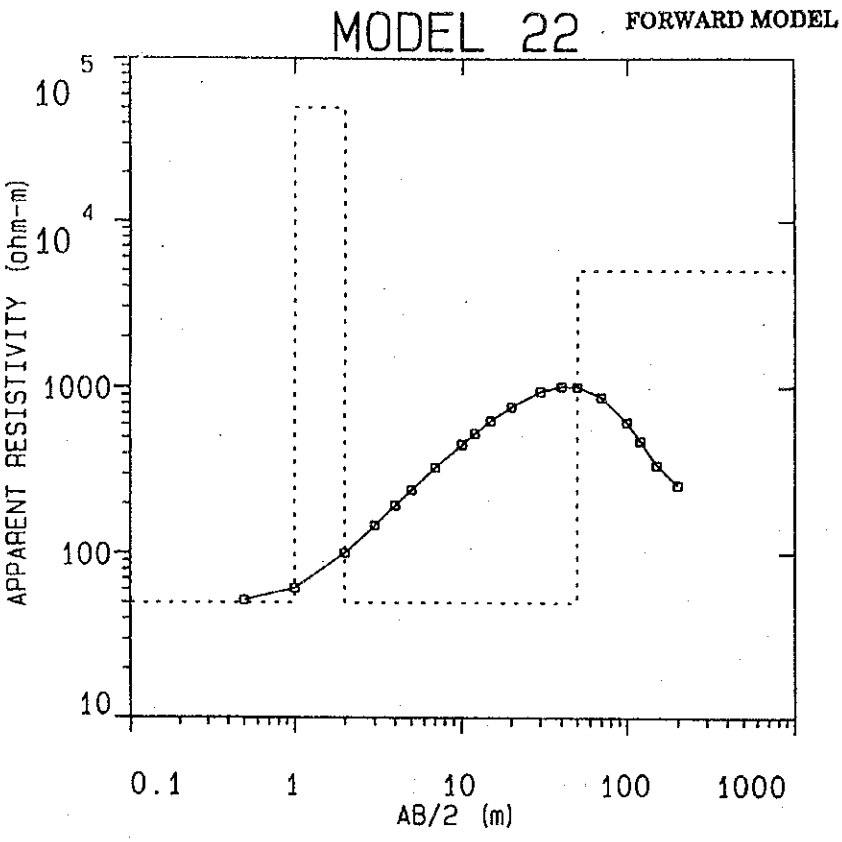

MODEL 5
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

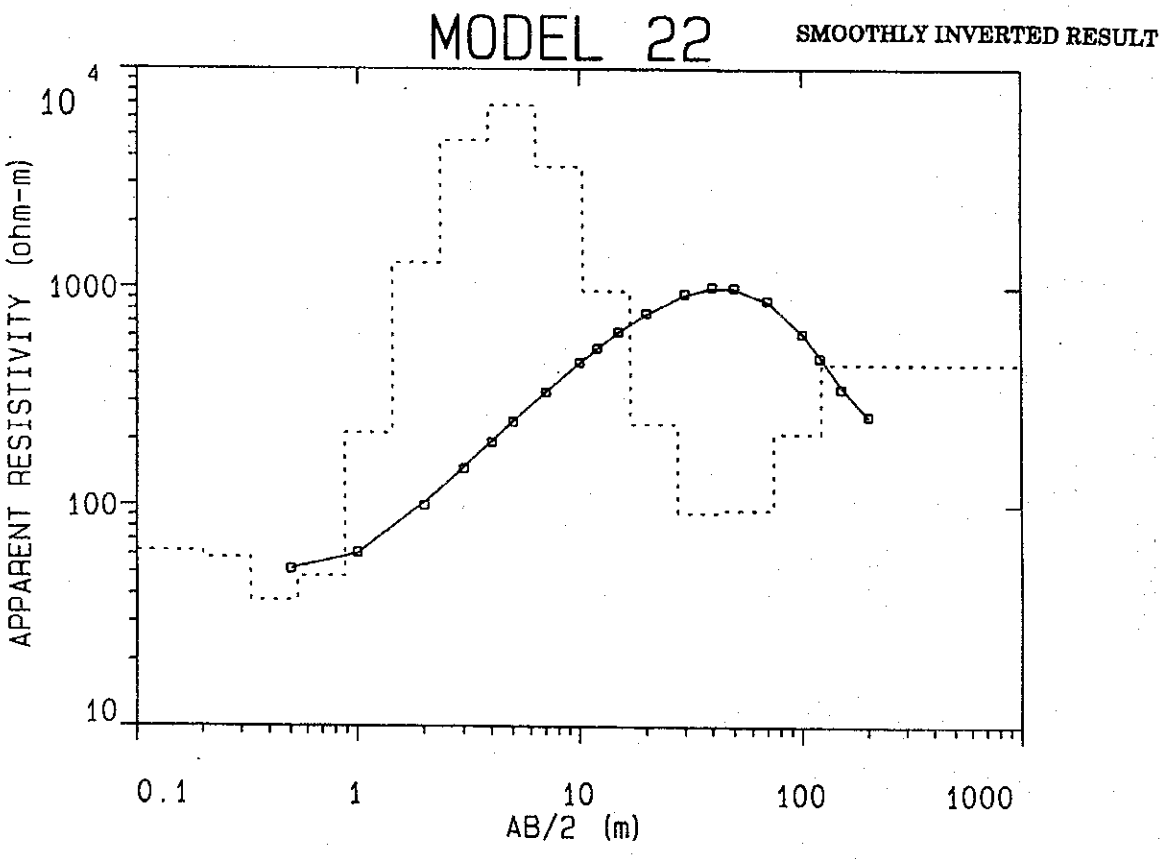

MODEL 12
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

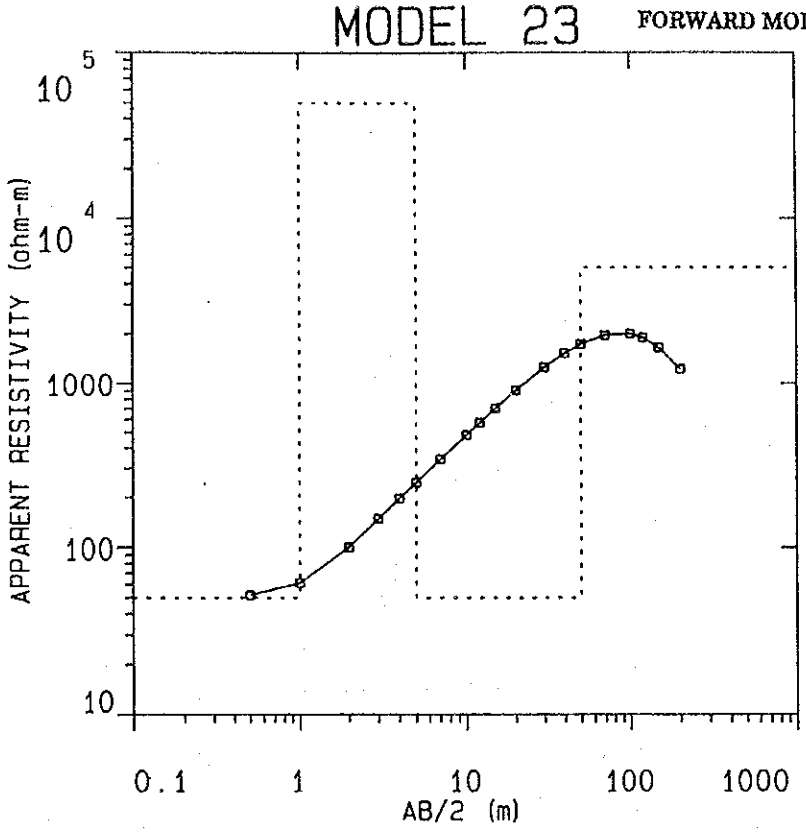

MODEL 12
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

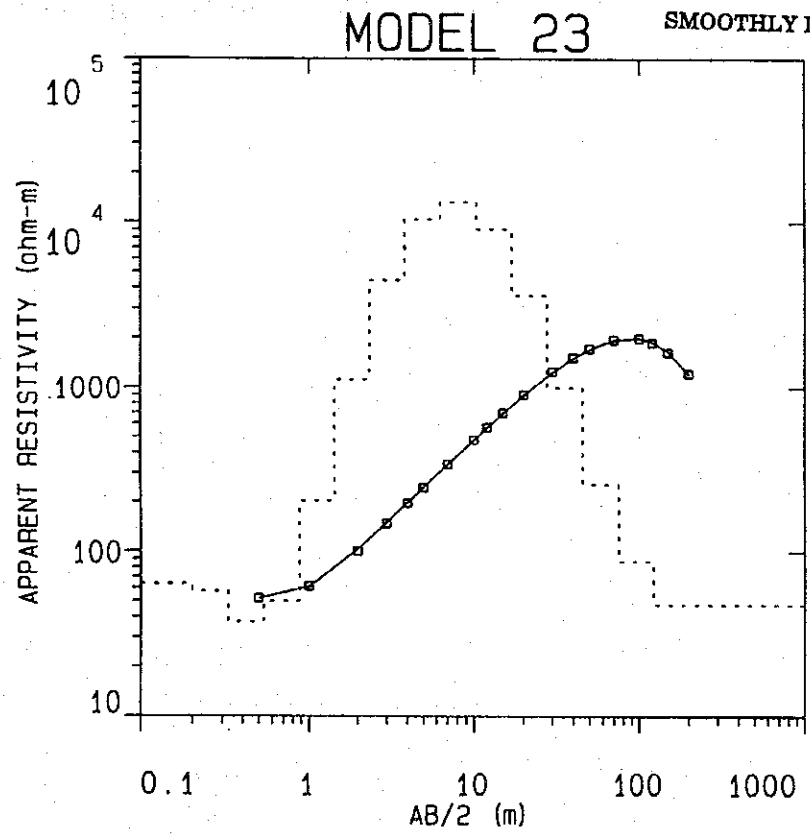

MODEL 13 FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

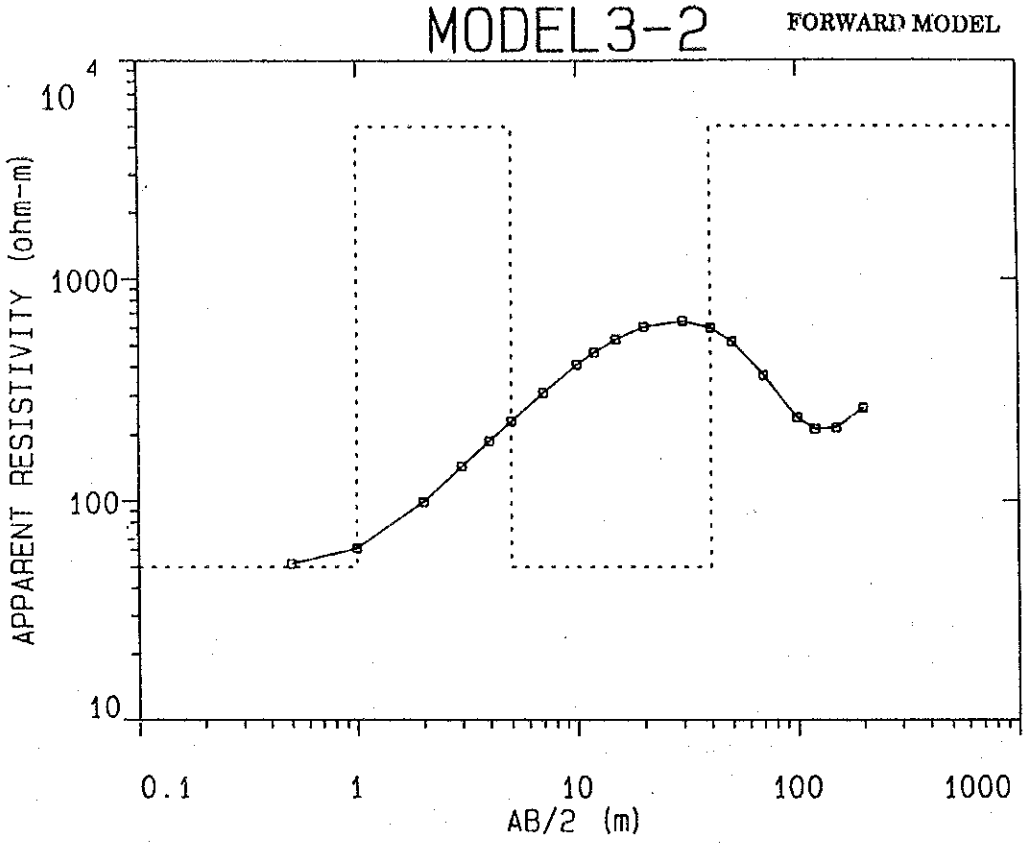

MODEL 13 SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

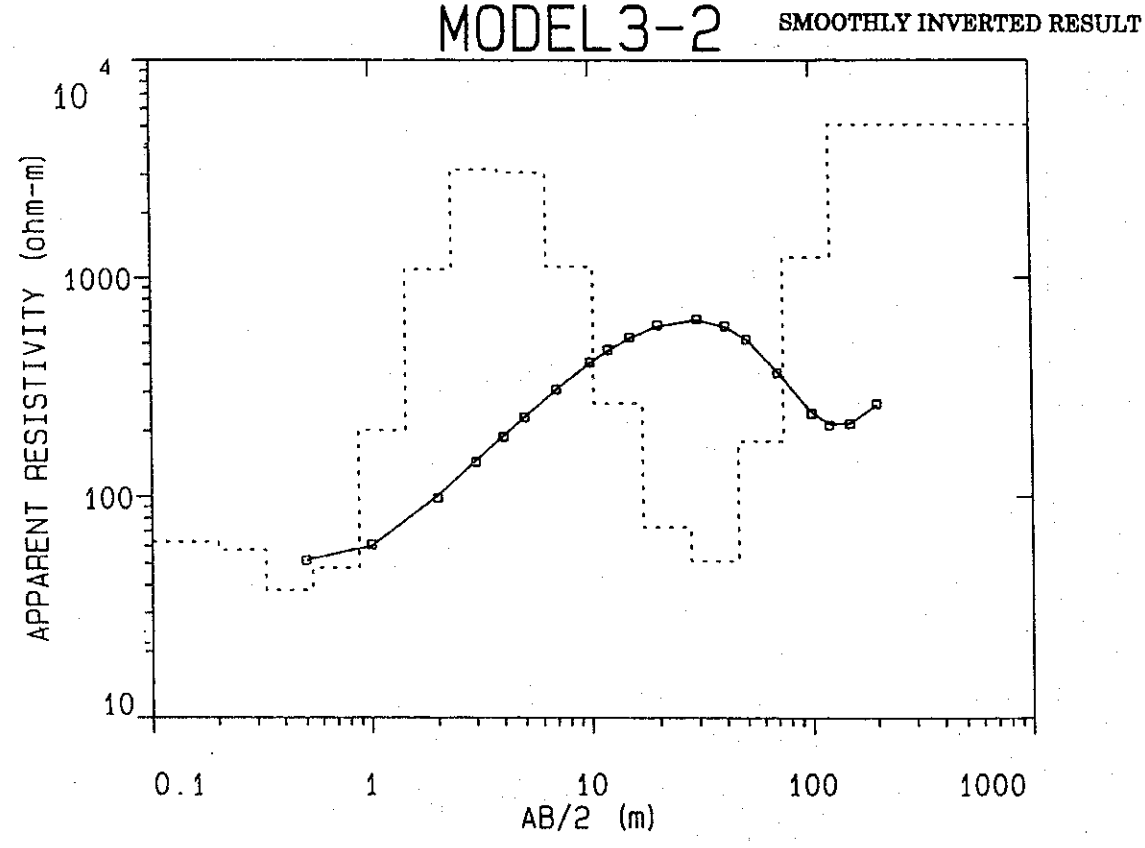

MODEL 22
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

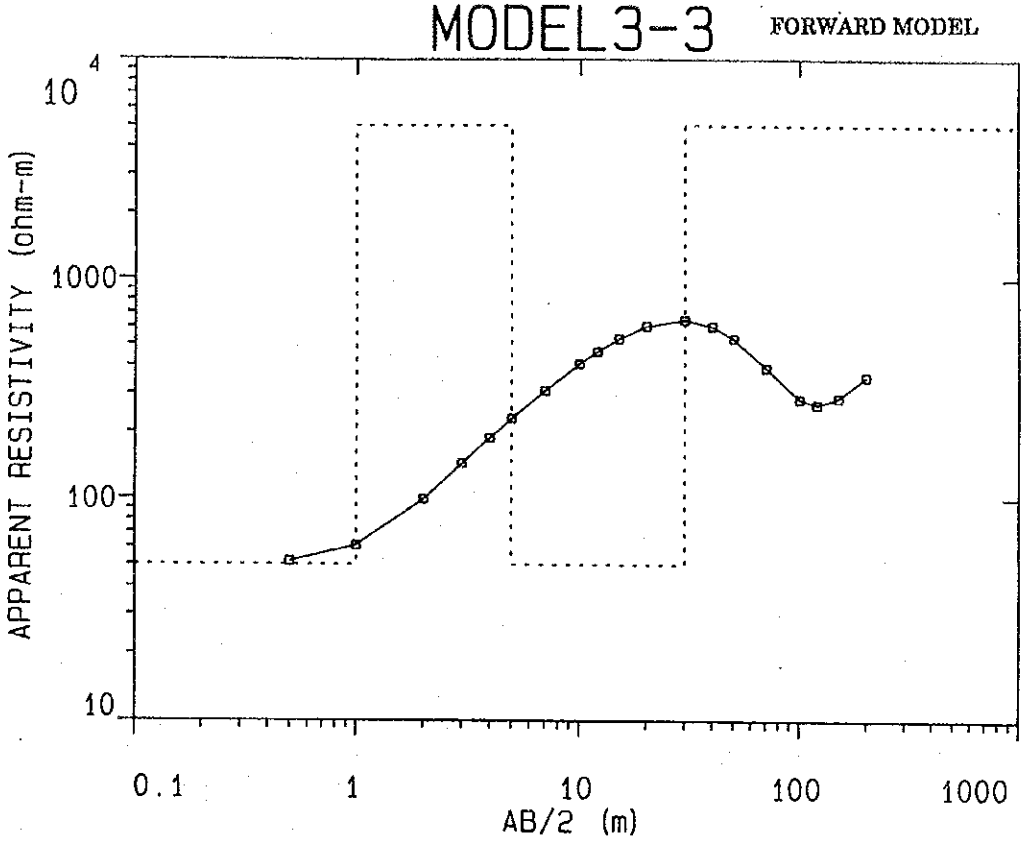

MODEL 22
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

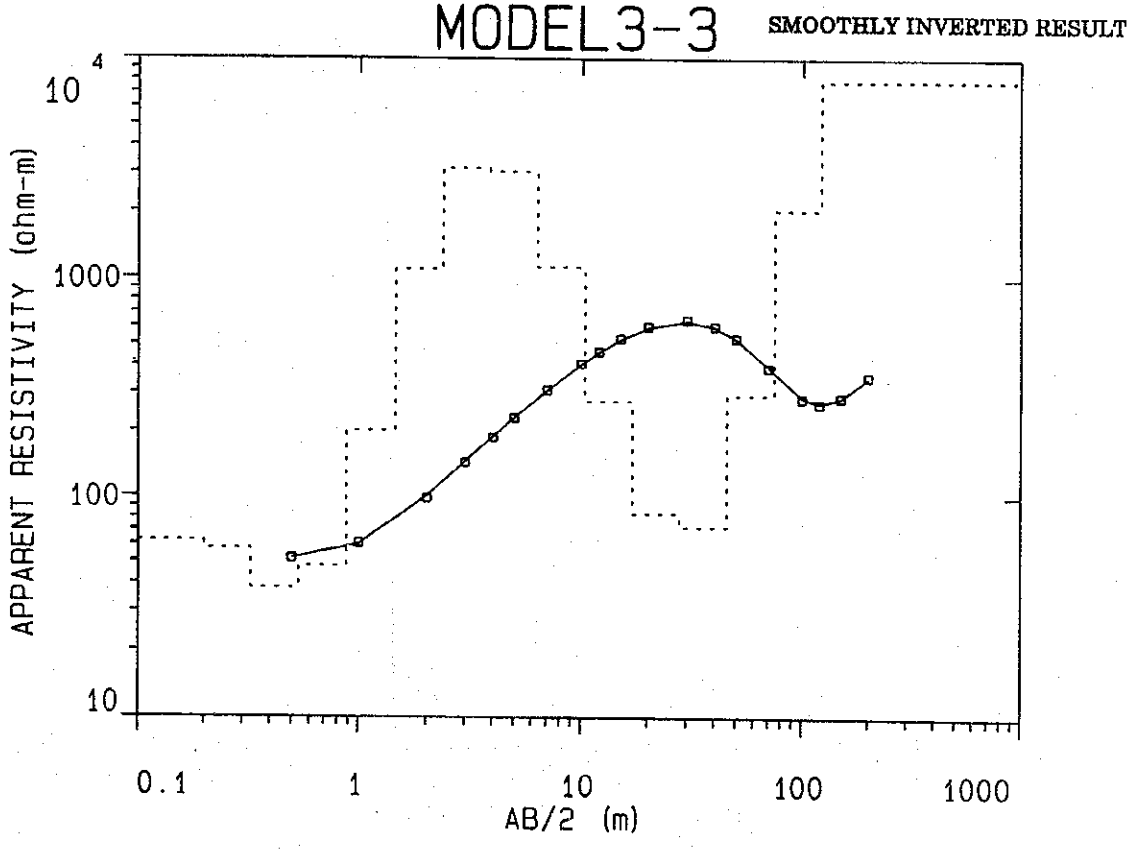

MODEL 23
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

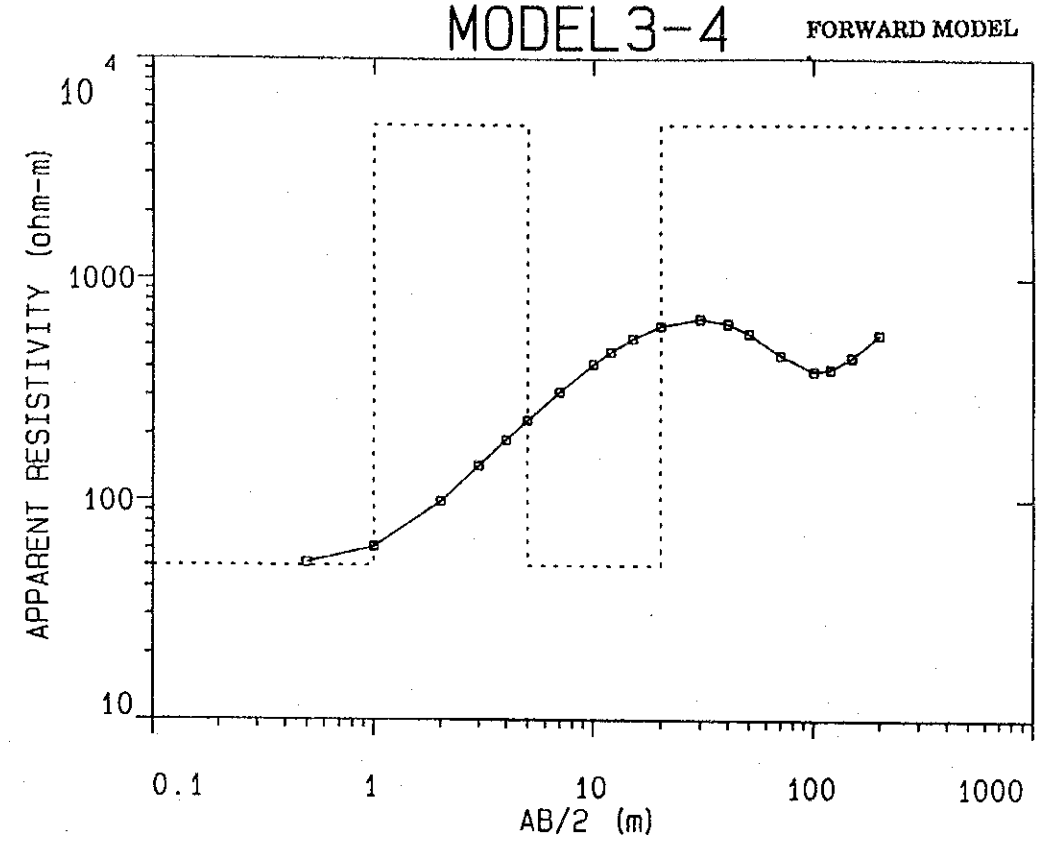

MODEL 23
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

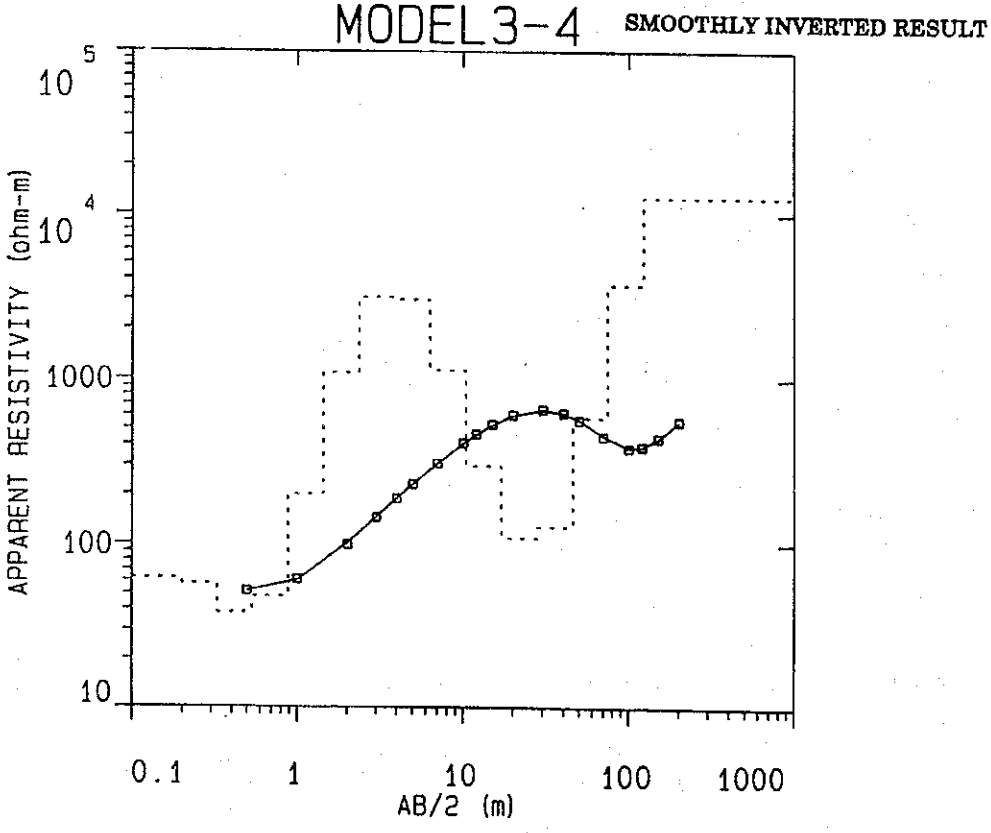

MODEL3-2
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)


MODEL3-2
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)


MODEL3-3
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)


MODEL3-3
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10 4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)


MODEL3-4
FORWARD MODEL
APPARENT RESISTIVITY (ohm-m)
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)


MODEL3-4
SMOOTHLY INVERTED RESULT
APPARENT RESISTIVITY (ohm-m)
10^5
10^4
1000
100
10
0.1
1
10
100
1000
AB/2 (m)

RESISTIVITY MODEL STUDY ON PERMAFROST LAYER

1. Purpose of the Study

As a result of the resistivity survey for the Ulaanbaatar water research project in 1994 by JICA survey team (The Study on Water Supply System in Ulaanbaatar and Surroundings, Interim Report, March 1994), it was revealed that, in some places at higher elevations, there are some very resistive thin layers at the near surface. They were interpreted to be permafrost layers.

The elevation of Altai City is several hundred meters higher than that of Ulaanbaatar. Annual average temperatures of Altai City and Khantaishir, near Altai city, are 1.8 and 4.8 degrees Celsius below freezing, respectively.

The environment of the proposed underground water survey area is cold enough to form a permafrost layer in the ground. A permafrost layer is an insulator or a very resistive layer and may prohibit us from surveying beyond it by DC resistivity method because electric current cannot flow through an insulator. Resistivity information of DC resistivity method is carried only by electric current.

Therefore I modeled the underground by computer to study the effect of a very resistive thin layer, modeled after a permafrost layer, in exploring depth to the basement in the area.

2. Study

The study was made by using a DC resistivity interpretation computer program called RESIX by Intepex, Golden, Colorado USA.

The resistivity structure used for this study is horizontally layered earth. Resistivity of a permafrost layer is assumed to be 5,000 ohm meters, 20,000 ohm meters and 50,000 ohm meters and its thickness is 1 meter, 4 meters, 10 meters and 15 meters.

The basement rock needed to be identified in the forthcoming ground water survey in the Altai area is very resistive with assumed resistivity of 5,000 ohm meters.

Overlaying the basement are layers of clays, soils, sands, and gravels which are supposed to contain underground water and to be conductive with resistivity of 50 ohm meters.

At the surface of the earth, the permafrost layer is assumed to be covered by an unconsolidated soil layer of one meter with resistivity of 50 ohm meters.

The electrode array for the study is Schlumberger array with inner potential electrode spacing, MN, being one meter. One half of current electrode spacing used is from 50 centi-meters to 200 meters. The number of current electrode spacing used for calculation is nineteen for each sounding with electrode separation incremented logarithmically.

The study was made to determine how sensitive DC resistivity soundings is in detecting a resistive basement with interference of a very thin resistive layer within overlaying conductive surface layer.

For the study, the theoretical response is calculated for modeled layered earth by the forward program. The results of forward calculation are fed to the inversion program of smoothed model estimation with the number of modeled layers being fifteen.

The smoothed model estimation program requires no initial model estimation by an operator.

3. Results

The models studied are tabulated as below.

Resistivity Model Study for Assuming Permafrost (Resistive) Layer

Model	1st layer		2nd layer		3rd layer		4th layer	Remark
No.	resistivity	thickness	resistivity	thickness	resistivity	thickness	resistivity	
1	50 Ωm	50 m	5,000 Ωm					2 layer earth
2	50 Ωm	1 m	5,000 Ωm	1 m	50 Ωm	48 m	5,000 Ωm	
3	50 Ωm	1 m	5,000 Ωm	4 m	50 Ωm	45 m	5,000 Ωm	
4	50 Ωm	1 m	5,000 Ωm	10 m	50 Ωm	39 m	5,000 Ωm	
5	50 Ωm	1 m	5,000 Ωm	15 m	50 Ωm	34 m	5,000 Ωm	
12	50 Ωm	1 m	20,000 Ωm	1 m	50 Ωm	48 m	5,000 Ωm	
13	50 Ωm	1 m	20,000 Ωm	4 m	50 Ωm	45 m	5,000 Ωm	
22	50 Ωm	1 m	50,000 Ωm	1 m	50 Ωm	48 m	5,000 Ωm	
23	50 Ωm	1 m	50,000 Ωm	4 m	50 Ωm	45 m	5,000 Ωm	
3-2	50 Ωm	1 m	5,000 Ωm	4 m	50 Ωm	35 m	5,000 Ωm	
3-3	50 Ωm	1 m	5,000 Ωm	4 m	50 Ωm	25 m	5,000 Ωm	
3-4	50 Ωm	1 m	5,000 Ωm	4 m	50 Ωm	15 m	5,000 Ωm	

- Model 1 is a simple two-layer model with a 50-meter thick conductive layer resting on a resistive basement. The inverted result shows fair agreement with the original model.
- Models 2 through 5 have a resistive thin layer (resistivity of 5,000 ohm meters) in a conductive layer with thickness of one, four, ten, and fifteen meters respectively. The inverted results of Models 2 through 5 show a gradual loss of sensitivity for detecting the resistive basement with increased thickness of an inserted resistive layer.
- When the thickness of the inserted resistive layer is one or four meters (Model 2 and 3), it is clear that the interpreted depth to the basement is about 50 meters.
- When the thickness of an inserted resistive layer is ten meters (Model 4), the interpreted depth to the basement is about 80 meters, 60% more than that of the original model.
- With the thickness of an inserted resistive layer being fifteen meters (Model 5),

existence of the basement can hardly be recognized in the interpreted smoothed model.

- Models 12 and 13 are with an inserted resistive layer of 20,000 ohm meters and thickness of one and four meters.
- With the thickness of the inserted layer being one meter (Model 12), the interpreted the resistive basement appears at about 80 meters from the surface about 60% deeper than the original model.
- When its thickness becomes four meters (Model 13), the sign of the basement does not appear on the inverted model.
- Models 22 and 23 are with an inserted resistive layer of 50,000 ohm meters and thickness of one and four meters.
- With its thickness being one meter (Model 22), the basement was interpreted to be 80 meters or more likely over 100 meters which is more than double of the original model. By making its thickness four meters, even a trace of the resistive basement cannot be recognized.
- Models 3-2 through 3-4 are with depths to the resistive basement being varied, 40 meters, 30 meters and 20 meters respectively, with a 5,000-ohm-meter inserted layer of four meters thick.

All the interpreted results of Models 3-2 through 3-4 show the basement at a depth between 40 to 50 meters and insensitive to the thickness of an overlaying layer.

4. Conclusion

It is clear that if a permafrost layer exists in the survey area, it is not easy to detect the basement. Difficulty depends on thickness and resistivity of a permafrost layer. The thicker and the more resistive a permafrost layer is, the more difficult it becomes for DC resistivity survey to detect the depth to the resistive basement.

Thickness of a permafrost layer depends on annual average temperature of the survey area. In North Slope of Alaska, USA, it has been measured permafrost of several tens meters thick where DC resistivity survey cannot see through the permafrost layer, only EM method can tell resistivity information of the earth beyond it.

RESULT OF TOPOGRAPHICAL SURVEY

(Entrusted to Mongolian Contractor)

3.TOPOGRAPHICAL SURVEY RESULTS

3.1 Index map for drawings

The index map showing location of sheets for study area.

3.2 The drawings for study area

The study area has 6 to map at scale 1/50000 sheets. 1 sheet is represents 400 km^2 area. Attached index map with legend.

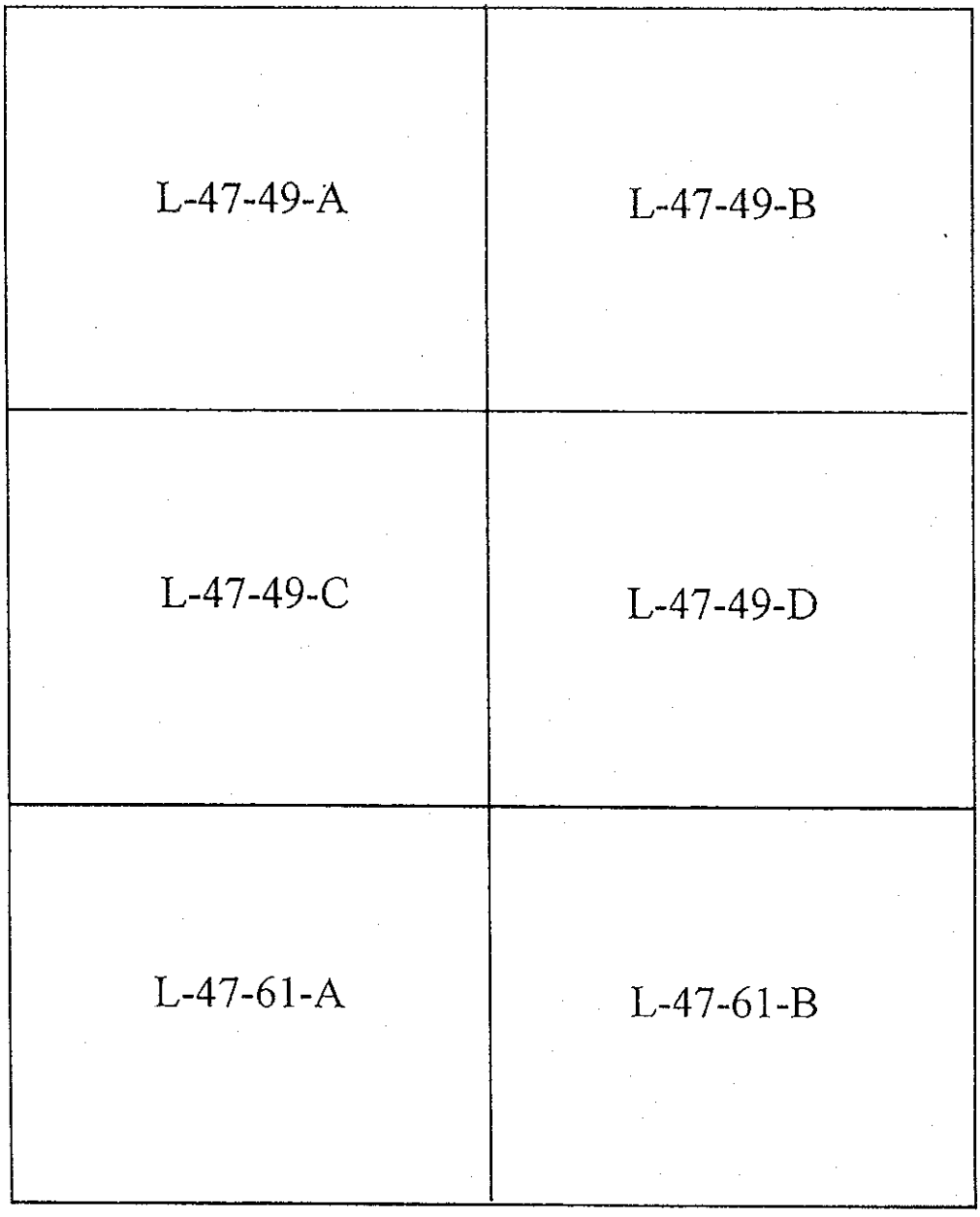
The cross section has 5 drawings.

1 sheet is contains location of wells.

1 sheet is scheme of network triangulation for ground control points.

All results of survey work are showed at 12 drawings.

INDEX MAP



Explanation Legends

Triangulation point

Gravymetric point

Bench mark

Ger area

Apartment area

Airport

Benzin station

khash. Cattle fence

mal nyad. gaz Butchery

meteo. stn. Meteorological station

Khan Tayshiryn khyreenii tuur Ruins

Power transmission lines

Communication lines

Improved sightability road

Earth road

Path

River

River non-perennial

Lake

(davst) Lake non-perennial and with salt

Swamp

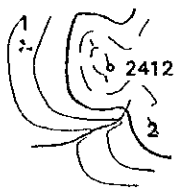
Olon nuuriin h. Well

Well in house

bul. Spring

us. san. Water reservoir

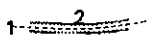
Bridge



° 2412 Elevation point

1 Rocks

2 Supplementary contour



1 River - bed

2 Ravine

Precipice

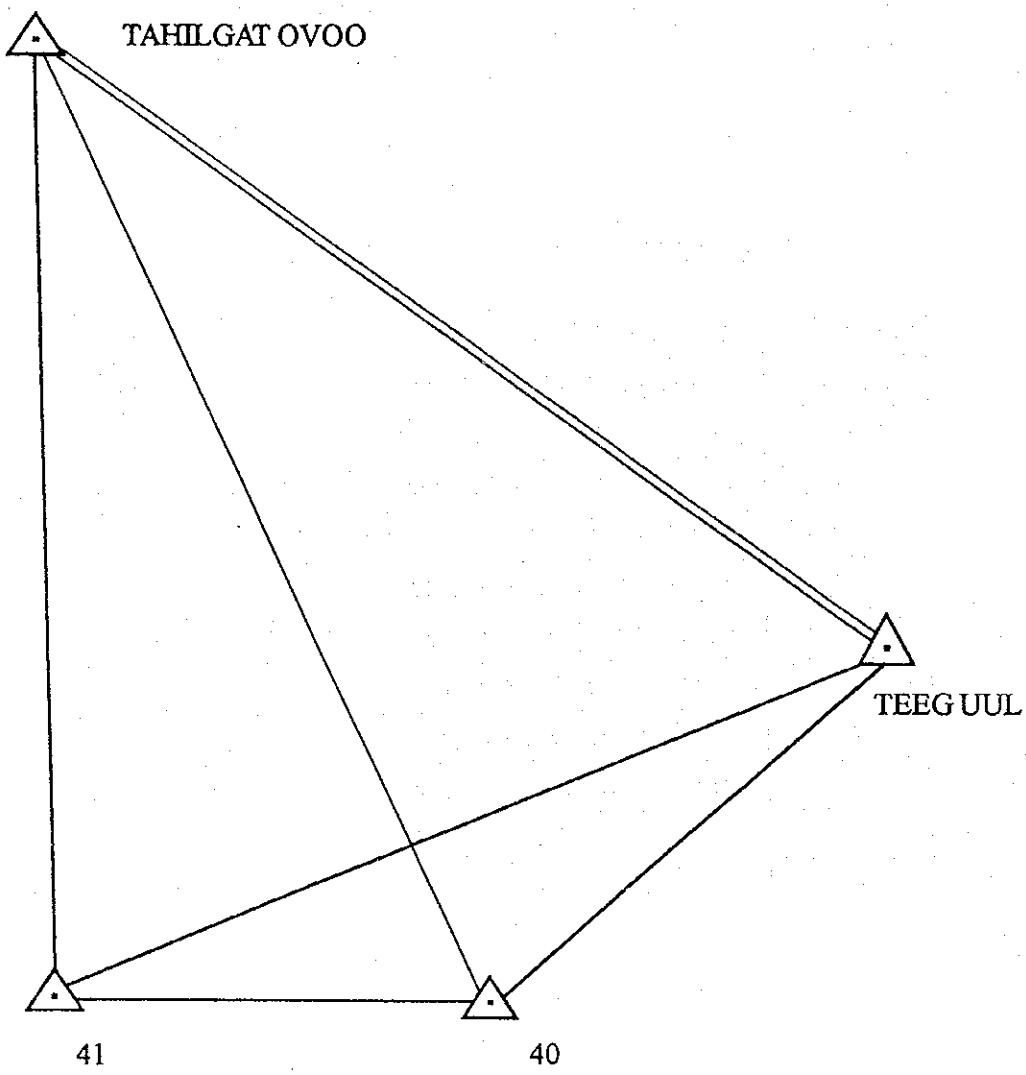
Stone

Field data of ground control point survey

Point ID	Angular (Az)	Distance (m)	North (m)	East (m)
Teeg uul				
	313°48'09"			
Tahilgat ovo			**5161428.600**	**17289241.800**
	178°12'05"	18262.801		
41			5143174.790	17289815.000
	76°57'49"	4143.996		
40			5144109.543	1729385.186
	63°49'21"	9907.128		
Teeg uul			**5148480.100**	**17302743.150**
	313°48'09"			
Tahilgat ovoo				

Point ID	North in meters	East in meters	Elevations in meters	Descrition
Tahilgat ovo	5161428.600	17289241.800	2275.600	2d order triangulation
Teeg uul	5148480.100	17302743.150	2049.800	3d order triangulation
40	5144109.543	17293852.186	-	3d order triangulation
41	5143174.790	17289815.000	2177.449	3d order triangulation
42	5141389.282	17287995.679	2186.099	for wells point
43	5141892.651	17289383.217	2150.998	for wells point
115	5141038.143	17289097.361	2151.998	for wells point
71	5141499.340	17288343.702	-	for cross sections
76	5145481.706	17285062.335	-	for cross sections
77	5146119.467	17284319.872	-	for cross sections
84	5151285.946	17298352.019	-	for cross sections
85	5152059.313	17296578.737	2018.067	for cross sections

GROUND CONTROL POINT SURVEY NETWORK

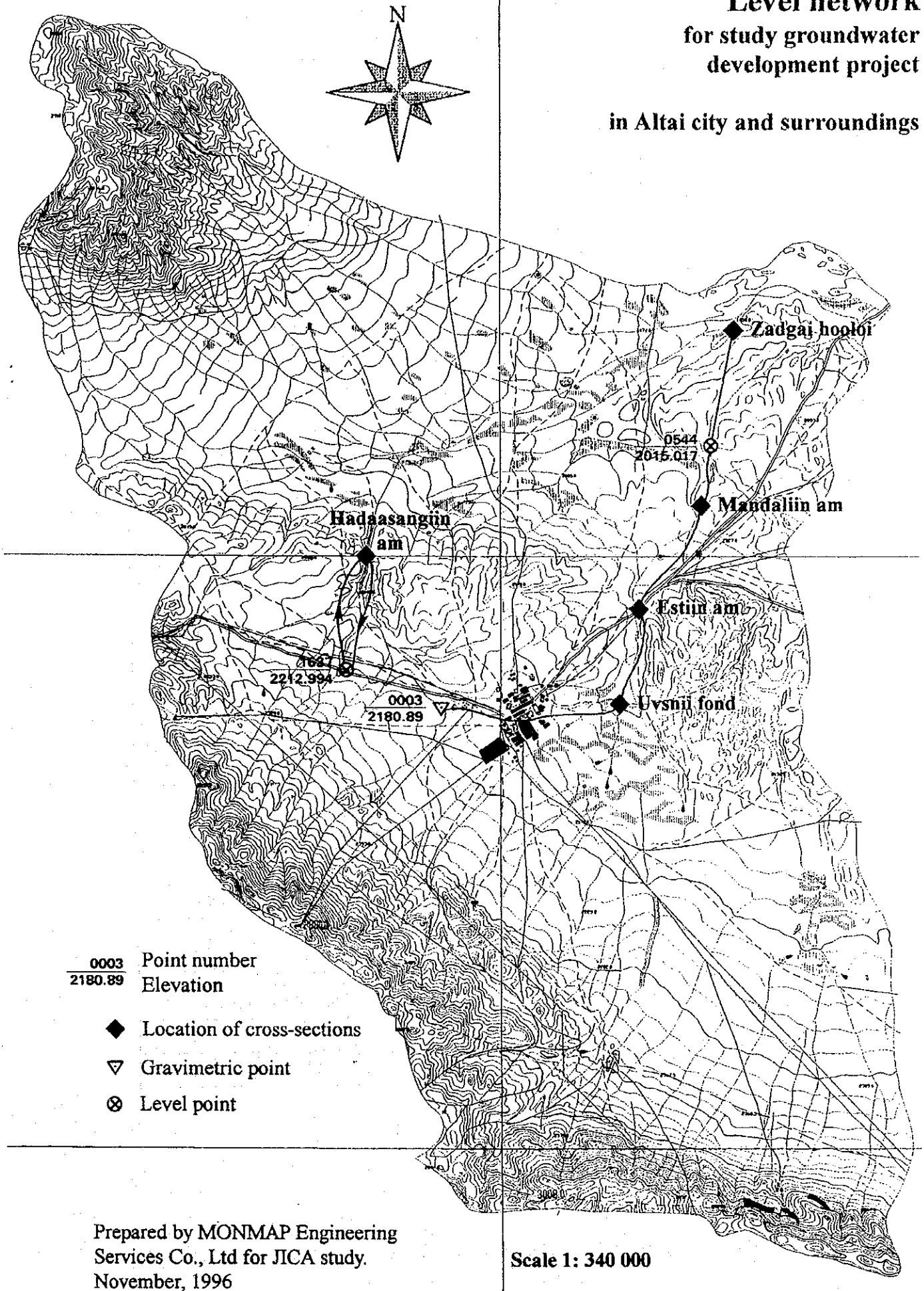


Prepared by MONMAP Engineering Service Co,.Ltd. for JICA study, 1996.

Level network

for study groundwater development project

in Altai city and surroundings



Prepared by MONMAP Engineering Services Co., Ltd for JICA study.
November, 1996

Scale 1: 340 000

Coordinates of cross section for study on groundwater development for Altai city

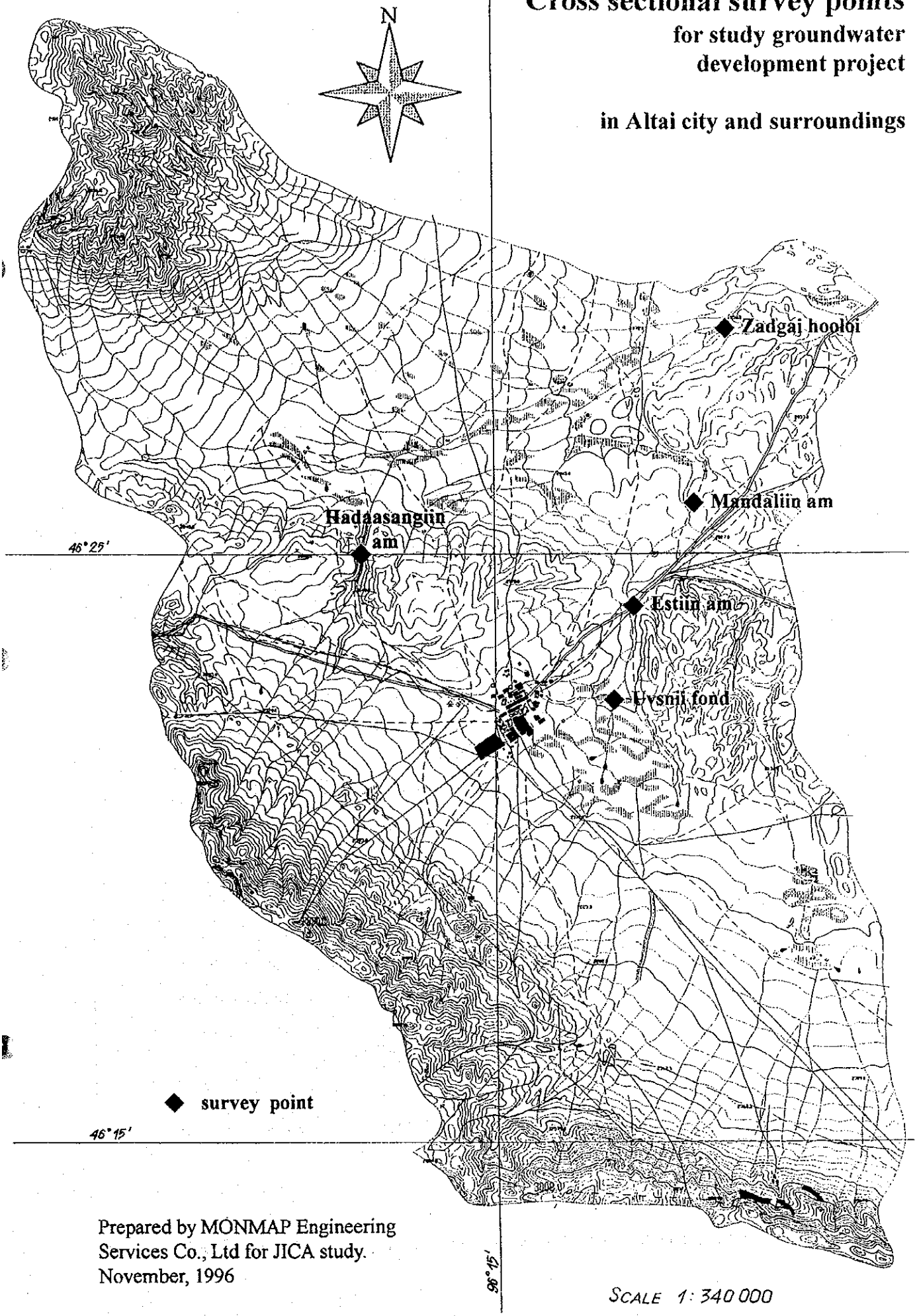
Point ID	North in meters	East in meters	Elevations in meters	Description
1	5'144'365.192	292'652.797	2'069.731	Estyn am
2	5'144'365.083	292'663.396	2'070.052	Estyn am
3	5'144'364.992	292'662.296	2'070.054	Estyn am
4	5'144'364.918	292'679.484	2'069.924	Estyn am
1	5'147'447.628	294'875.095	2'024.240	Mandlyn am
2	5'147'438.660	294'870.670	2'024.207	Mandlyn am
3	5'147'437.943	294'870.316	2'024.200	Mandlyn am
4	5'147'429.182	294'865.993	2'024.164	Mandalyn am
1	5'141'763.744	292'261.573	2'101.270	Uvsnii fond
2	5'141'760.318	292'258.655	2'100.945	Uvsnii fond
3	5'141'760.166	292'258.525	2'100.225	Uvsnii fond
4	5'141'757.197	292'255.996	2'099.520	Uvsnii fond
5	5'141'757.197	292'255.996	2'101.202	Uvsnii fond
6	5'141'753.844	292'253.139	2'101.375	Uvsnii fond
1	5'146'340.134	284'547.439	2'127.191	Hadaasangiin am
2	5'146'340.814	284'542.485	2'127.021	Hadaasangiin am
3	5'146'341.385	284'538.324	2'125.914	Hadaasangiin am
4	5'146'342.527	284'531.092	2'125.784	Hadaasangiin am
5	5'146'342.873	284'530.002	2'127.581	Hadaasangiin am
6	5'146'342.922	284'529.062	2'128.638	Hadaasangiin am
1	5'153'165.288	296'183.999	1'967.828	Zadgay hooloy
2	5'153'165.962	296'188.126	1'967.341	Zadgay hooloy
3	5'153'166.175	296'188.847	1'966.596	Zadgay hooloy
4	5'153'166.822	296'192.490	1'965.590	Zadgay hooloy
5	5'153'167.722	296'198.079	1'965.531	Zadgay hooloy
6	5'153'168.206	296'201.461	1'965.525	Zadgay hooloy
7	5'153'168.548	296'204.175	1'966.636	Zadgay hooloy
8	5'153'168.753	296'205.489	1'966.646	Zadgay hooloy

Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

Cross sectional survey points

for study groundwater development project

in Altai city and surroundings



Prepared by MONMAP Engineering Services Co., Ltd for JICA study.
November, 1996

SCALE 1: 340 000

Coordinates of cross section for study on groundwater development for Altai city

Point ID	North in meters	East in meters	Elevations in meters	Description
1	5'144'365.192	292'652.797	2'069.731	Estiin am
2	5'144'365.171	292'654.797	2'069.791	Estiin am
3	5'144'365.151	292'656.797	2'069.853	Estiin am
4	5'144'365.130	292'658.797	2'069.911	Estiin am
5	5'144'365.110	292'660.797	2'069.971	Estiin am
6	5'144'365.089	292'662.797	2'069.033	Estiin am
7	5'144'365.083	292'664.396	2'070.052	Estiin am
8	5'144'365.068	292'664.797	2'050.052	Estiin am
9	5'144'365.048	292'666.797	2'050.052	Estiin am
10	5'144'365.028	292'668.797	2'050.053	Estiin am
11	5'144'365.007	292'670.796	2'050.053	Estiin am
12	5'144'364.992	292'672.296	2'070.054	Estiin am
13	5'144'364.987	292'672.796	2'070.022	Estiin am
14	5'144'364.966	292'674.796	2'070.025	Estiin am
15	5'144'364.946	292'676.796	2'069.988	Estiin am
16	5'144'364.925	292'678.796	2'069.956	Estiin am
17	5'144'364.918	292'679.484	2'069.924	Estiin am
1	5'147'447.628	294'875.095	2'024.240	Mandliin am
2	5'147'445.834	294'874.210	2'024.250	Mandliin am
3	5'147'444.041	294'873.325	2'024.244	Mandliin am
4	5'147'442.247	294'872.440	2'024.231	Mandliin am
5	5'147'440.454	294'871.555	2'024.228	Mandliin am
6	5'147'438.660	294'870.670	2'024.207	Mandliin am
7	5'147'437.943	294'870.316	2'024.200	Mandliin am
8	5'147'436.868	294'869.785	2'024.190	Mandliin am
9	5'147'435.075	294'868.900	2'024.185	Mandliin am
10	5'147'433.282	294'868.015	2'024.173	Mandliin am
11	5'147'431.489	294'867.130	2'024.169	Mandliin am
12	5'147'429.696	294'866.245	2'024.166	Mandliin am
13	5'147'429.182	294'865.993	2'024.164	Mandliin am

Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

Coordinates of cross section for study on groundwater development for Altai city

Point ID	North in meters	East in meters	Elevations in meters	Description
1	5'141'763.744	292'261.573	2'101.270	Uvsnii fond
2	5'141'762.205	292'260.283	2'101.100	Uvsnii fond
3	5'141'760.683	292'258.986	2'101.000	Uvsnii fond
4	5'141'760.318	292'258.655	2'100.945	Uvsnii fond
5	5'141'760.166	292'258.525	2'100.225	Uvsnii fond
6	5'141'759.161	292'257.689	2'099.998	Uvsnii fond
7	5'141'757.638	292'256.392	2'099.998	Uvsnii fond
8	5'141'757.197	292'255.996	2'099.520	Uvsnii fond
8'	5'141'757.197	292'255.996	2'101.202	Uvsnii fond
9	5'141'756.116	292'255.950	2'101.253	Uvsnii fond
10	5'141'754.594	292'253.798	2'101.322	Uvsnii fond
11	5'141'753.844	292'253.139	2'101.375	Uvsnii fond
1	5'146'340.134	284'547.439	2'127.191	Hadaasangiin am
2	5'146'340.421	284'545.484	2'127.123	Hadaasangiin am
3	5'146'340.693	284'543.503	2'127.004	Hadaasangiin am
4	5'146'340.814	284'542.485	2'127.021	Hadaasangiin am
5	5'146'340.965	284'541.522	3'126.757	Hadaasangiin am
6	5'146'341.237	284'539.540	2'126.230	Hadaasangiin am
7	5'146'341.385	284'538.324	2'125.914	Hadaasangiin am
8	5'146'341.509	284'537.559	2'125.890	Hadaasangiin am
9	5'146'341.781	284'535.578	2'125.863	Hadaasangiin am
10	5'146'342.053	284'533.597	2'125.828	Hadaasangiin am
11	5'146'342.325	284'531.616	2'125.796	Hadaasangiin am
12	5'146'342.394	284'531.092	2'125.784	Hadaasangiin am
13	5'146'342.543	284'530.002	2'127.581	Hadaasangiin am
14	5'146'342.597	284'529.635	2'127.747	Hadaasangiin am
15	5'146'342.922	284'529.062	2'128.638	Hadaasangiin am

Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

Coordinates of cross section for study on groundwater development for Altai city

Point ID	North in meters	East in meters	Elevations in meters	Description
1	5'153'165.288	296'183.999	1'967.828	Zadgay hooloy
2	5'153'165.606	296'185.973	1'967.273	Zadgay hooloy
3	5'153'165.962	296'187.600	1'967.341	Zadgay hooloy
4	5'153'166.175	296'188.847	1'966.596	Zadgay hooloy
5	5'153'166.430	296'189.922	1'966.316	Zadgay hooloy
6	5'153'166.561	296'191.897	1'965.796	Zadgay hooloy
7	5'153'166.822	296'192.490	1'965.590	Zadgay hooloy
8	5'153'166.880	296'193.872	1'965.569	Zadgay hooloy
9	5'153'167.198	296'195.847	1'965.552	Zadgay hooloy
10	5'153'167.722	296'198.079	1'965.531	Zadgay hooloy
11	5'153'167.834	296'199.797	1'965.528	Zadgay hooloy
12	5'153'168.206	296'201.461	1'965.525	Zadgay hooloy
13	5'153'168.470	296'203.747	1'966.414	Zadgay hooloy
14	5'153'168.548	296'204.175	1'966.636	Zadgay hooloy
15	5'153'168.753	296'205.489	1'966.646	Zadgay hooloy

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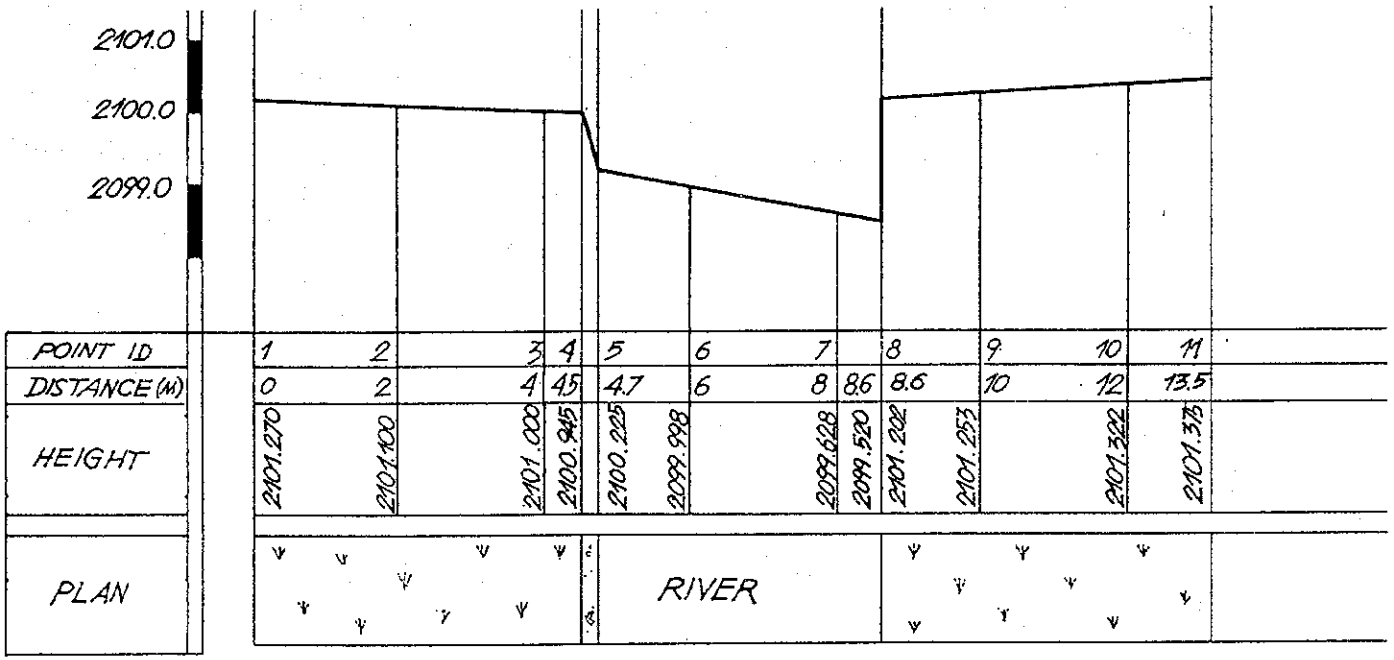
CROSS-SECTION AND PLAN OF UVSNII FOND

SCALE
HORIZONTAL 1:100
VERTICAL 1:100



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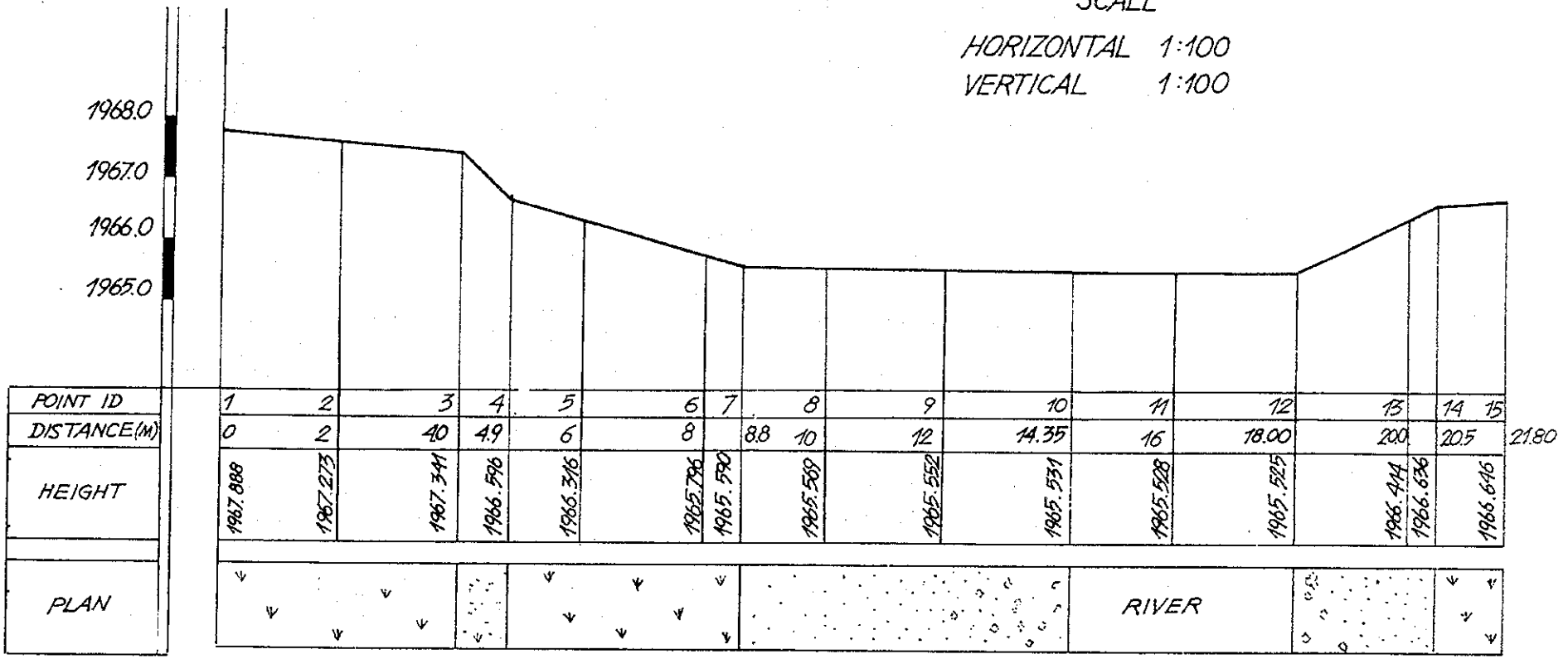
CROSS-SECTION AND PLAN OF ZADGAI HOOLOY

SCALE

HORIZONTAL 1:100

VERTICAL 1:100



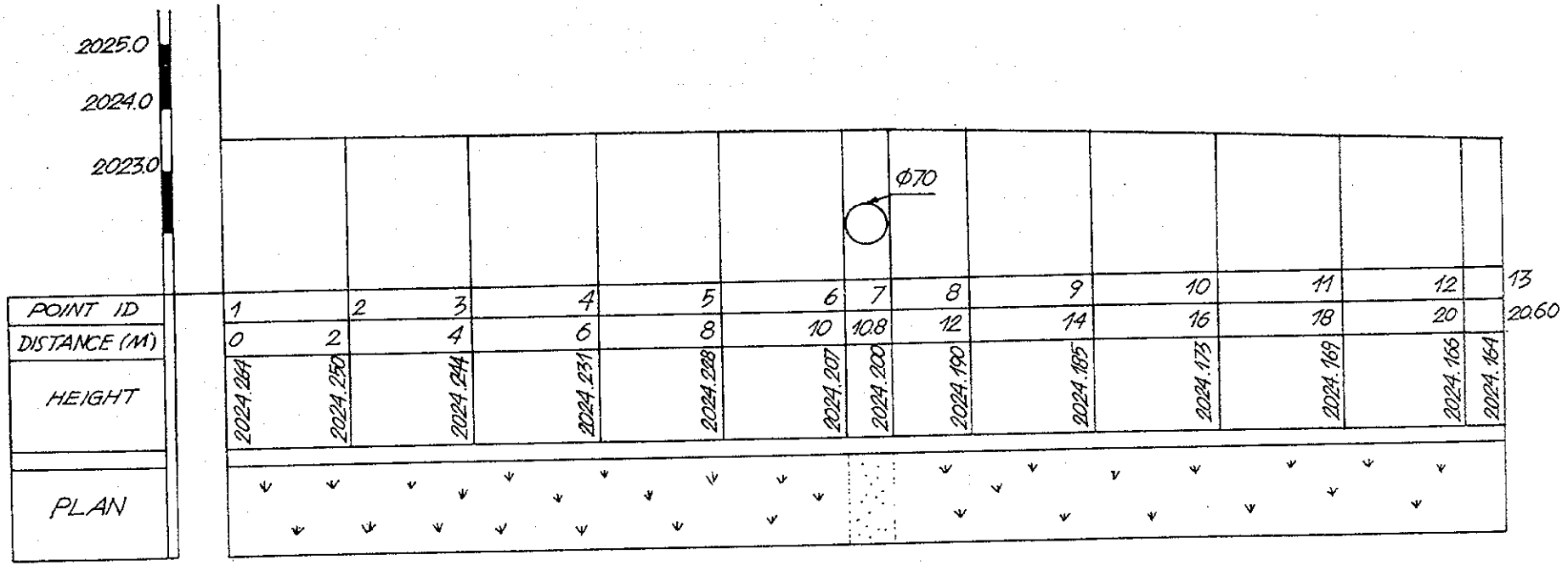
Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

CROSS-SECTION AND PLAN OF MANDALIIN AM

SCALE

HORIZONTAL 1:100

VERTICAL 1:100



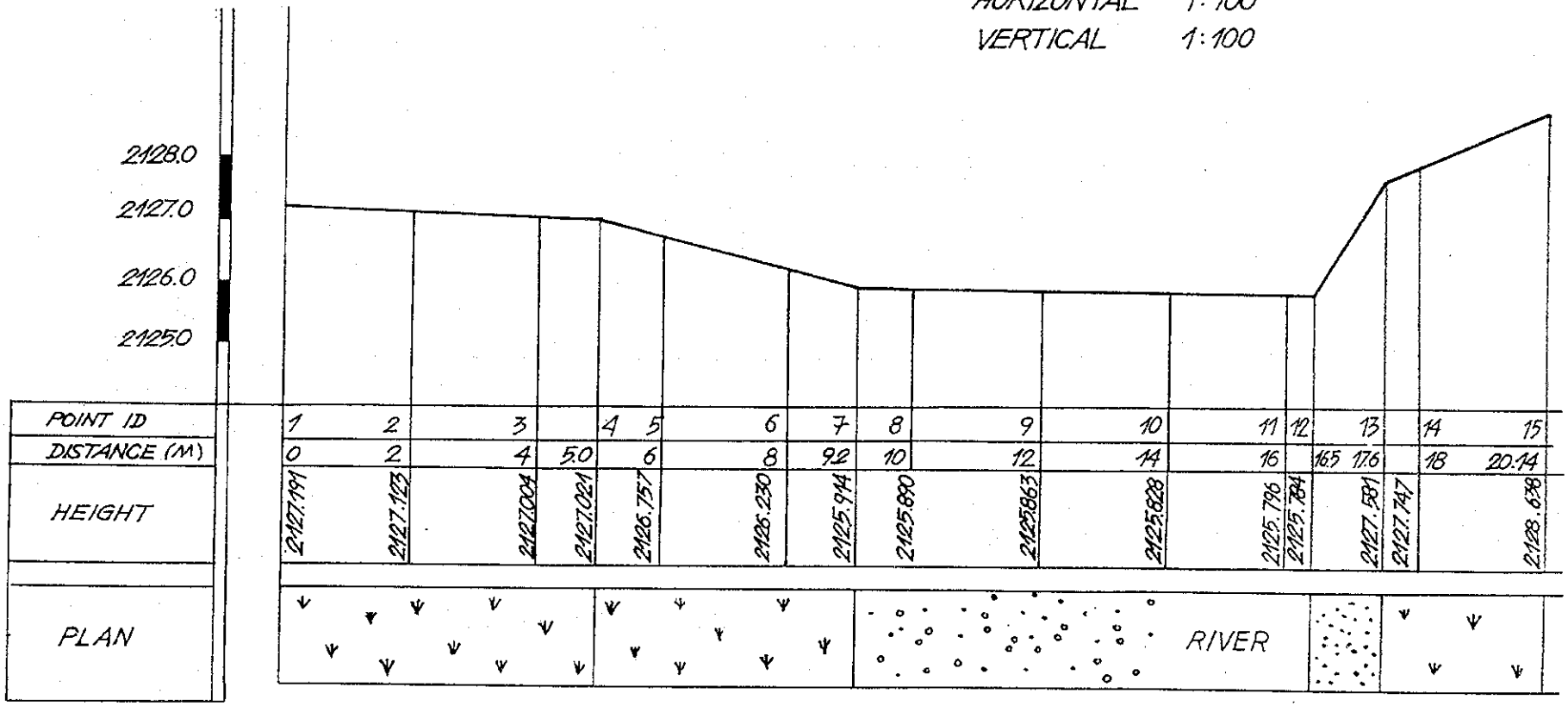
Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

CROSS-SECTION AND PLAN OF HADAASANGIIN AM

SCALE

HORIZONTAL 1:100

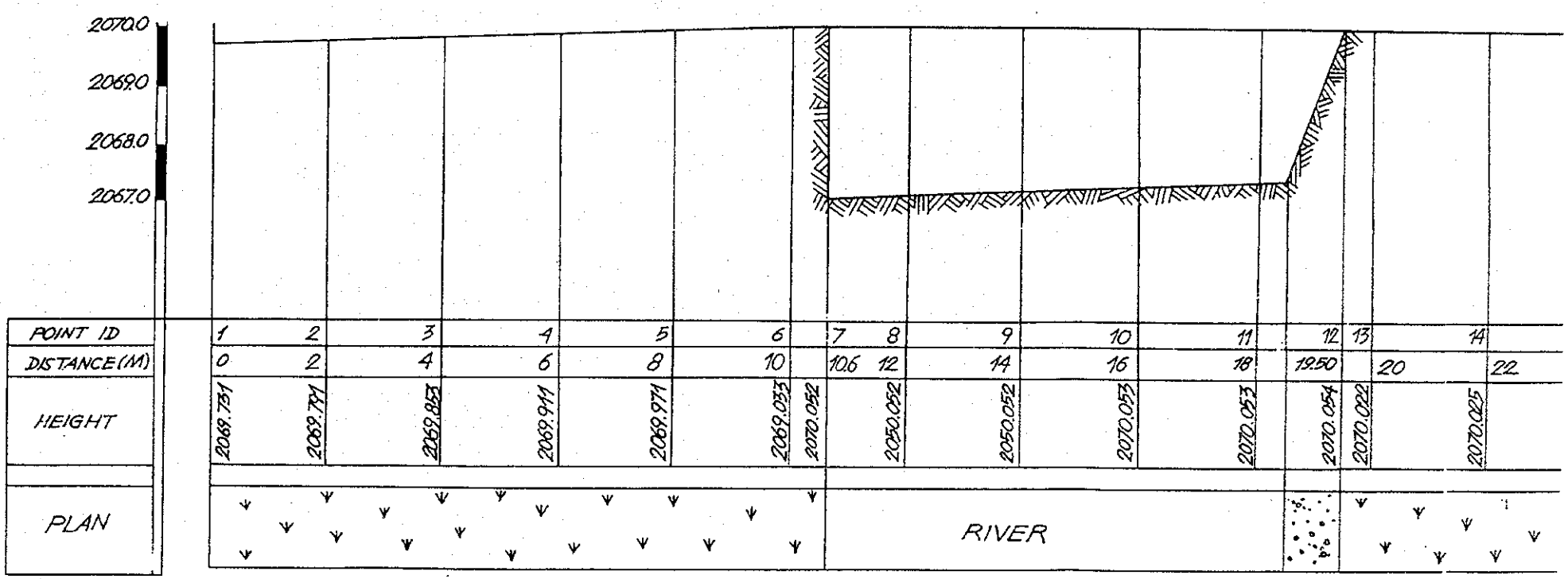
VERTICAL 1:100



Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

CROSS - SECTION AND PLAN OF ESTIIN AMYN BRIDGE

SCALE
HORIZONTAL 1: 100
VERTICAL 1: 100



Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

Coordinates of wells for study groundwater development for Altai city

Point ID	North in meters	East in meters	Elevations in meters	Code	Description
1	5'137'989.706	292'119.603	2'180.999	8761	Harzat
2	5'138'231.921	291'506.653	2'177.139	8836	Harzat
3	5'138'410.054	291'513.208	2'174.130	4924	Harzat
4	5'138'463.675	291'511.003	2'173.425		Harzat
5	5'138'508.176	291'478.670	2'172.644	4923	Harzat
6	5'138'534.806	291'476.685	2'172.140		Harzat
7	5'139'304.615	289'819.578	2'178.668	8850	Harzat
8	5'139'447.874	289'357.062	2'181.910		Building factory
9	5'139'762.596	289'493.504	2'176.521	4902	Altay Camel Co ,.Ltd
10	5'139'692.786	289'107.158	2'182.705		Block construction factory
11	5'140'426.571	288'964.357	2'175.190		Central road left
12	5'140'482.727	288'809.148	2'177.627		Central road right
13	5'140'919.520	288'952.769	2'172.834		Automobile park
14	5'140'988.773	289'397.929	2'163.511		Shower bath
15	5'141'356.372	289'594.158	2'147.805		Water supply department
16	5'141'291.715	289'312.206	2'152.860	211	Secondary school
17	5'141'196.637	289'112.353	2'156.247		In the market
18	5'141'366.632	288'570.410	2'163.436	8818	Well
19	5'141'499.337	288'643.703	2'165.662		Well
20	5'140'412.498	288'642.707	2'175.951	1651	Power station
21	5'139'764.018	288'835.807	2'179.044	4883	Han Taishir Co,.Ltd
22	5'140'620.699	288'521.622	2'173.960		School
23	5'140'653.017	288'517.748	2'173.539		School
24	5'140'690.984	288'493.446	2'176.266		School
25	5'141'072.060	287'698.106	2'182.893		In side park
26	5'141'034.224	287'637.846	2'184.534		Out side park
27	5'141'710.716	289'566.111	2'145.733		Veterinary hospital
28	5'139'531.697	289'195.626	2'176.264		Building factory
29	5'140'922.429	287'876.202	2'179.656		Park

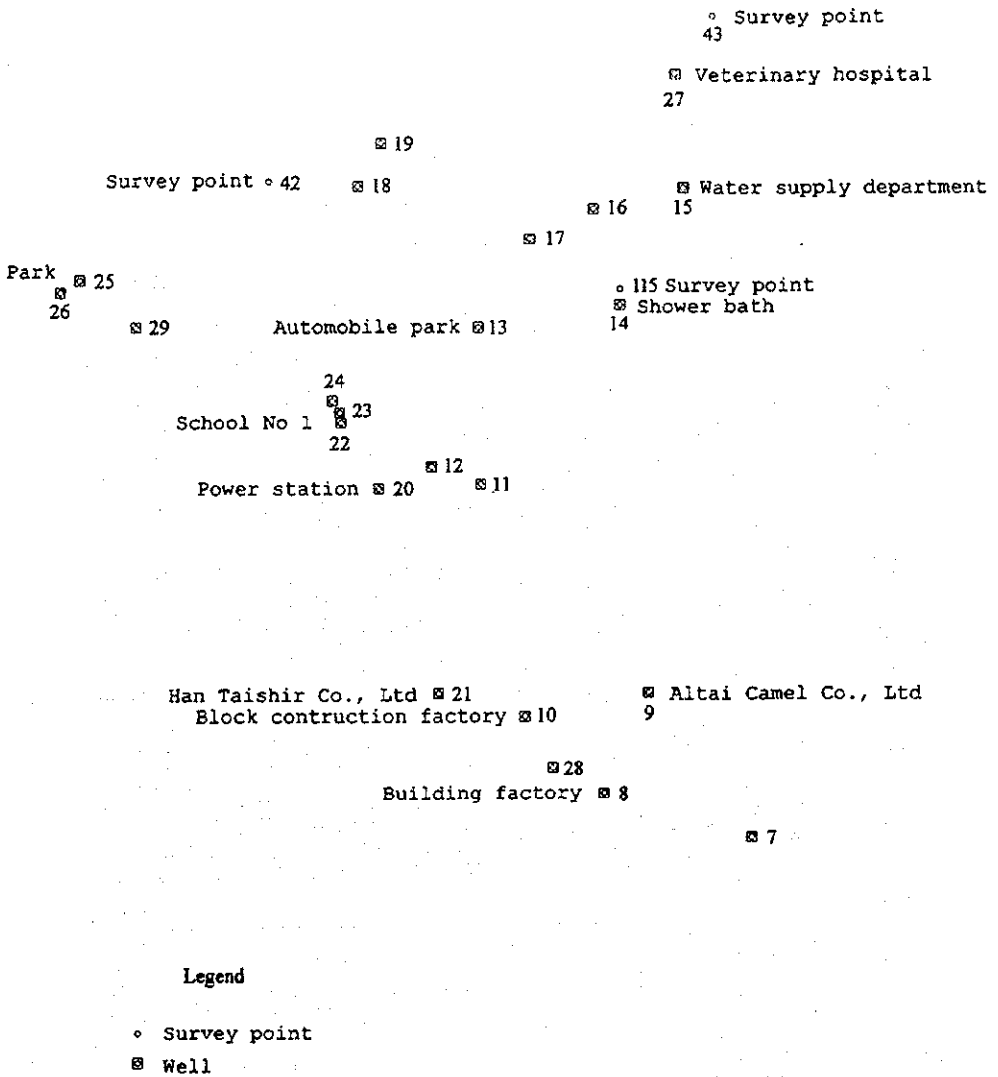
Prepared by MONMAP Engineering Services Co,.Ltd for JICA study, 1996

Coordinates of wells by GPS GeoExplorer

Point ID	Name of well	B	L
1	Ajindain	46° 27' 22.54"	96° 17' 20.96"
2	Olon nuuriin	46° 18' 23.2"	96° 21'47.53"
3	Suhiin	46° 27' 01.53"	96° 09' 23.21"
4	Huhengiih	46° 26' 03.7"	96° 13' 19.45"
5	Tsagaan dersni	46° 29' 02.1"	96° 14' 23.64"
6	Tsagaan dersni	46° 29' 00"	96° 14' 21"
7	Untsugiin	46° 26' 21.85"	96° 19' 56.88"
8	Usan san	46° 24' 15.4"	96° 21' 35.61"
9	Heating house	46° 22' 03.5"	96° 15' 19.7"
10	Uvdugyn	46° 29' 42.96"	96° 16' 01.56"
11	Uvdugyn	46° 29' 37.63"	96° 15' 56.35"
12	hudag	46° 19' 51.96"	96° 19' 35"

Coordinates of wells by GPS GeoExplorer

Point ID	North in meters	East in meters	Descrition
1	5150465.226	291742.124	Ajindain
2	5133619.778	296875.312	Olon nuuriin
3	5150174.980	281523.995	Suhiin
4	5148209.989	286502.899	Nuhengiin
5	5153670.351	288065.710	Tsagaan dersnii
6	5153607.478	288007.136	Tsagaan dersnii
7	5148478.043	295006.060	Untsugiin
8	5144502.911	296983.112	Usan san
9	5140703.773	288812.493	Heating house
10	5154859.320	290197.858	Uvdugyn
11	5154698.594	290081.059	Uvdugyn
12	5145515.689	293352.924	Esungiin hudag
13	5136425.791	294131.010	Well



Location of Well's in Altai city

Scale 1:153 000

Prepared by MONMAP Engineering Services Co., Ltd
November, 1996

Table 1 (1/30) VLF Data Sheet Altay City

date 1997/6/23

LINE NUMBE 1 Line Length 690

First Station (st #0) Latitude 19.900 Longitu 11.283

Last Station (st #690) Latitude 19.714 Longitu 10.920

bearing 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
0	20	22		650	7	23	5
10	35	17		660	10	25	3
20	33	11	-10	670	5	26	0
30	32	13	5	680	12	20	-7
40	31	15	0	690	10	27	
50	34	15	3				
60	26	10	30				
70	9	4	53				
80	-2	10	39				
90	-2	15	10				
100	-1	16	10				
110	-13	21	25				
120	-15	33	8				
130	-7	22	-15				
140	-6	22	-1				
150	-15	16	4				
160	-2	21	-34				
170	15	26	-51				
180	19	29	-22				
190	16	23	-11				
200	29	21	-22				
210	28	19	-10				
220	27	23	-1				
230	31	13	-3				
240	27	7	2				
250	29	4	26				
260	3	-3	28				
270	25	23	-10				
280	17	10	-11				
290	22	13	-8				
300	28	11	-2				
310	13	20	17				
320	20	22	-3				
330	24	24	-11				
340	20	31	20				
350	4	20	31				
360	9	23	23				
370	-8	42	32				
380	-11	16	62				
390	-50	59	119				
400	-88	49	111				
410	-84	54	1				
420	-55	48	-76				
430	-41	49	-33				
440	-65	46	-2				
450	-29	44	-73				
460	-4	45	-104				
470	14	32	-49				
480	2	29	6				
490	2	33	4				
500	10	35	-17				
510	11	25	-9				
520	10	20	-10				
530	21	15	-17				
540	17	19	-1				
550	15	24	10				
560	13	31	-1				
570	20	19	-12				
580	20	25	2				
590	11	27	9				
600	20	24	-3				
610	14	28	-5				
620	22	21	1				
630	11	20	14				
640	11	24	15				

Table 1 (2/30) VLF Data Shee Altay City

date 1997/6/24

LINE NUMBER 2 Line Length 400

First Station (st# **Latitude** 20.466 **Longitude** 10.303

Last Station (St# 4 **Latitude** 20.339 **Longitude** 10.103

bearing 315

Station	Tilt	Elipticity	F Filter
0	23	17	
10	14	26	
20	9	25	20
30	8	26	-12
40	27	27	-37
50	27	36	-13
60	21	35	37
70	-4	28	41
80	11	29	-10
90	16	35	-39
100	30	7	-19
110	16	25	9
120	21	22	4
130	21	22	-7
140	23	31	-8
150	27	22	-14
160	31	12	-4
170	23	22	19
180	16	21	-1
190	39	14	-16
200	16	21	54
210	-15	45	97
220	-27	41	55
230	-27	31	18
240	-33	52	15
250	-36	57	-16
260	-8	57	59
270	-120	50	205
280	-129	52	129
290	-128	42	-87
300	-34	49	-248
310	25	27	-209
320	22	36	-57
330	26	22	9
340	12	23	32
350	4	22	20
360	14	31	-15
370	17	28	-18
380	19	25	-19
390	31	24	13
400	-8	-1	

Table 1 (3/30) VLF Data Sheet Altay City

date 1997/6/24

LINE NUMBE 3 Line Lengt 690

First Station (Latitud 19.446 Longitu 12.074

Last Station (s Latitud 19.161 Longitu 11.713

directi 315

Station	Tilt	Elipt.	Filte	Station	Tilt	Elipt.	F Filter
0	-8	-1		660	26	28	19
10	0	20		670	-23	42	110
20	5	14	-10	680	-23	58	58
30	-3	21	-12	690	-32	56	
40	20	1	-27				
50	9	22	-15				
60	23	18	-6				
70	12	15	-2				
80	22	8	-3				
90	16	-4	3				
100	15	18	11				
110	12	16	0				
120	19	20	11				
130	-3	19	42				
140	-8	21	35				
150	-11	24	2				
160	-2	20	-27				
170	10	23	-40				
180	17	23	-25				
190	16	23	0				
200	11	31	9				
210	13	26	-3				
220	17	23	-1				
230	8	20	9				
240	13	25	-1				
250	13	23	-6				
260	14	24	-10				
270	22	23	-14				
280	19	21	2				
290	15	19	13				
300	13	26	10				
310	11	22	7				
320	10	25	5				
330	9	26	-3				
340	15	27	-13				
350	17	25	2				
360	5	23	4				
370	23	27	-19				
380	18	30	7				
390	3	25	26				
400	12	27	0				
410	9	36	-12				
420	18	36	-5				
430	8	33	17				
440	2	35	12				
450	12	26	-6				
460	4	29	1				
470	9	32	12				
480	-5	28	27				
490	-9	31	17				
500	-4	31	-1				
510	-9	45	1				
520	-5	38	-20				
530	12	36	-30				
540	4	43	20				
550	-17	55	26				
560	7	42	-34				
570	14	50	-41				
580	17	48	11				
590	-7	50	40				
600	-2	31	42				
610	-30	43	28				
620	-7	46	4				
630	-29	47	8				
640	-16	38	-58				
650	38	62	-109				

Table 1 (4/30) VLF Data Sheet Altay City

date 1997/6/24

LINE NU 4 Line Length 500

Base Station (st # 200 Latitude 18.999 Longitude 12.867

Last Station Latitude Longitude

Bearing 315

Station	Tilt	Elipticity	F Filter
0	-23	30	
10	-17	40	
20	-9	52	-25
30	-6	46	-16
40	-4	47	13
50	-24	56	49
60	-35	43	43
70	-36	26	-1
80	-22	36	-22
90	-27	37	-15
100	-16	40	-23
110	-10	43	-41
120	8	52	-36
130	2	41	3
140	-7	51	-7
150	24	43	-29
160	0	40	15
170	2	39	34
180	-12	34	13
190	1	36	-7
200	-4	22	-29
210	22	28	-48
220	23	26	-16
230	11	23	15
240	19	28	-12
250	27	25	-28
260	31	28	-7
270	22	15	14
280	22	28	20
290	11	24	25
300	8	14	15
310	10	28	-9
320	18	25	20
330	-20	12	21
340	27	23	-32
350	3	33	5
360	-1	27	16
370	15	16	-41
380	28	27	-37
390	23	29	4
400	16	31	24
410	11	30	28
420	0	31	15
430	12	25	-11
440	10	4	-2
450	4	31	12
460	6	15	3
470	5	28	-7
480	12	31	-26
490	25	25	-26
500	18	25	

Table 1 (5/30) VLF Data Sheet Altay City

date 1997/6/25

LINE NUMBER 5 Line Length 800

First Station (0) Latitude 19.131 Longitude 13.567

Last Station (800) Latitude 18.853 Longitude 13.148

directi 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
0	11	37		620	-45	58	-6
10	-3	32		630	-94	46	15
20	18	0	-17	640	-59	53	40
30	7	6	14	650	-120	50	70
40	-6	39	16	660	-103	47	-47
50	15	39	-31	670	-29	54	-162
60	17	30	-39	680	-32	39	-82
70	31	9	3	690	-18	17	-8
80	-2	29	41	700	-35	36	-28
90	9	42	7	710	13	42	-71
100	13	30	-26	720	5	21	-39
110	20	20	-14	730	12	6	6
120	16	26	-2	740	0	24	14
130	19	22	-5	750	3	23	-5
140	22	25	-7	760	14	18	-9
150	20	21	-12	770	-2	24	19
160	33	18	0	780	0	18	-5
170	9	17	21	790	17	24	-31
180	23	32	3	800	12	18	
190	16	5	14				
200	2	39	6				
210	31	28	-39				
220	26	34	-23				
230	30	31	12				
240	15	21	41				
250	0	31	51				
260	-6	35	10				
270	11	27	-6				
280	-11	28	21				
290	-5	9	-4				
300	9	-11	-27				
310	2	15	-17				
320	19	7	-32				
330	24	15	-9				
340	6	-5	6				
350	31	26	-25				
360	24	11	-11				
370	24	6	-6				
380	37	12	-16				
390	27	-10	4				
400	30	15	7				
410	27	-10	2				
420	28	6	7				
430	22	3	3				
440	30	1	2				
450	18	0	2				
460	32	16	6				
470	10	15	25				
480	15	18	16				
490	11	20	-2				
500	16	19	4				
510	6	23	15				
520	6	25	12				
530	4	35	14				
540	-6	33	24				
550	-8	47	45				
560	-39	41	62				
570	-37	53	26				
580	-36	64	25				
590	-65	47	44				
600	-52	56	44				
610	-93	50	21				

Table 1 (6/30) VLF Data Sheet Altay City

LINE NUM 6 Line Lengt 300

First Station (st # 0) Latitude 18.504 Longitude 14.266

Last Station (st # 300) Latitude 18.375 Longitude 14.087

directon 315

Station	Tilt	Elipticity	F Filter
0	10	26	
10	16	18	
20	23	31	-19
30	22	23	5
40	12	27	47
50	-14	41	64
60	-16	34	25
70	-11	48	32
80	-51	61	67
90	-43	51	49
100	-68	50	-11
110	-15	38	-77
120	-19	34	-42
130	-22	40	-3
140	-9	32	-21
150	-11	26	-19
160	-1	27	-13
170	-6	27	-5
180	-1	29	-5
190	-1	26	-15
200	9	29	-24
210	13	27	-10
220	5	30	9
230	8	28	28
240	-18	42	142
250	-111	48	123
260	-22	56	-41
270	-66	46	25
280	-92	51	95
290	-91	56	44
300	-111	36	

Table 1 (7/30) VLF Data Sheet Altay City

LINE NUMBE 7 Line Lengt 500

First Station (#0) Latitude 23.065 Longitude 16.279

Last Station (# 500) Latitude 22.748 Longitude 16.600

direction 135

Station	Tilt	Elipticity	F Filter
0	-8	18	
10	-8	1	
20	-10	-12	7
30	-13	2	4
40	-9	10	-4
50	-10	10	-7
60	-5	14	-5
70	-9	11	2
80	-8	2	7
90	-13	11	12
100	-16	13	16
110	-21	19	17
120	-25	20	26
130	-38	22	20
140	-28	15	1
150	-36	15	8
160	-38	18	6
170	-32	3	-5
180	-37	-4	-2
190	-31	-20	-7
200	-31	-31	10
210	-47	-1	-73
220	58	54	-120
230	-16	41	53
240	-26	24	76
250	-8	13	-14
260	-20	21	2
270	-16	13	8
280	-20	15	2
290	-18	12	-2
300	-16	19	-9
310	-13	19	-6
320	-15	18	-7
330	-7	5	-15
340	-6	17	1
350	-17	13	18
360	-14	15	-2
370	-7	20	-8
380	-16	17	10
390	-15	16	9
400	-17	16	2
410	-16	22	7
420	-23	23	10
430	-20	27	21
440	-40	26	30
450	-33	33	1
460	-28	40	-15
470	-30	40	18
480	-49	42	37
490	-46	37	23
500	-56	45	

Table 1 (8/30) VLF Data Sheet Altay City

date 1997/6/27

LINE NUMBER 8 Line Lengt 500

First Station (# 0) Latitude 23.505 Longitude 16.558

Last Station (# 500) Latitude 22.971 Longitude 16.915

direction 135

Station	Tilt	Elipticity	F Filter
0	65	22	
10	10	57	
20	-9	31	89
30	-5	19	13
40	-7	18	5
50	-12	13	-3
60	3	7	-38
70	16	21	-30
80	5	6	13
90	1	6	34
100	-14	8	31
110	-11	-8	7
120	-9	-13	-6
130	-10	-13	-2
140	-8	-7	-3
150	-8	-8	-1
160	-9	-11	-1
170	-6	-4	-11
180	0	-12	-16
190	1	-9	-9
200	2	1	-2
210	1	-3	0
220	2	10	-42
230	43	-21	-33
240	-7	-1	52
250	0	0	46
260	-10	-13	-36
270	39	2	-38
280	-11	-2	43
290	-3	-2	34
300	-3	-5	-2
310	-9	4	3
320	0	10	-22
330	10	6	-16
340	-3	13	23
350	-10	0	25
360	-8	1	0
370	-5	5	-5
380	-8	3	11
390	-16	-11	17
400	-14	-5	2
410	-12	-8	-20
420	2	7	-21
430	-7	11	8
440	-11	-3	30
450	-24	-11	25
460	-19	-10	-6
470	-10	6	-33
480	0	3	-17
490	-12	11	19
500	-17	-10	

Table 1 (9/30) VLF Data Sheet Altay City

LINE NUMBER 9 Line Lengt 500

First Station (# 0) Latitude 23.288 Longitude 16.832

Last Station (# 500) Latitude Longitude

direction 135

Station	Tilt	Elipticity	F Filter
0	-13	-5	
10	-6	-11	
20	-8	6	-5
30	-6	-10	-24
40	16	-19	-22
50	-8	-27	18
60	0	-14	19
70	-11	-32	27
80	-24	-23	-53
90	66	53	-122
100	21	52	-3
110	24	43	47
120	16	38	12
130	17	31	6
140	17	29	10
150	6	25	10
160	18	18	-10
170	15	19	-5
180	14	9	-1
190	20	22	2
200	7	17	40
210	-13	12	34
220	6	23	-21
230	9	25	-27
240	11	30	-7
250	11	27	5
260	4	18	21
270	-3	24	19
280	-1	27	-2
290	4	28	8
300	-16	14	11
310	8	18	-51
320	31	-20	-17
330	-22	-4	64
340	-3	2	8
350	4	-18	-8
360	-21	-9	50
370	-28	12	14
380	-3	11	-37
390	-9	13	-20
400	-2	21	-4
410	-6	11	3
420	-8	22	32
430	-32	6	37
440	-19	30	-14
450	-7	32	-36
460	-8	15	-19
470	1	17	-6
480	-10	15	7
490	-4	21	-7
500	2	26	

Annex III-1

Table 1 (10/30) VLF Data Sheet Altay City

LINE NUMBER 10 Line Length 640

First Station (# 0) Latitude 23.207 Longitude 15.732

Last Station (# 340) Latitude 23.072 Longitude 15.916

directi 135

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-300	-1	10		290	-9	3	-50
-290	-17	9		300	-24	22	5
-280	-6	13	-6	310	-28	21	26
-270	-6	16	-24	320	-31	18	15
-260	7	16	-26	330	-36	3	52
-250	7	14	-16	340	-75	-15	
-240	10	19	-8				
-230	12	18	-12				
-220	17	16	-16				
-210	21	10	2				
-200	6	19	18				
-190	14	1	5				
-180	8	8	7				
-170	5	12	7				
-160	10	4	10				
-150	-7	-3	17				
-140	5	-5	-13				
-130	11	-1	-22				
-120	9	5	-11				
-110	18	12	-11				
-100	13	-5	4				
-90	10	5	13				
-80	8	5	3				
-70	12	13	-10				
-60	16	20	-11				
-50	15	25	-6				
-40	19	25	-1				
-30	13	35	2				
-20	19	-7	-12				
-10	25	-7	-1				
0	8	-1	27				
10	9	-6	8				
20	16	-9	-15				
30	16	-17	1				
40	8	-14	19				
50	5	-20	15				
60	4	-19	7				
70	2	-15	3				
80	4	-10	1				
90	1	-10	5				
100	0	4	17				
110	-12	-12	15				
120	-2	-9	-17				
130	7	-4	-12				
140	-9	-17	21				
150	-7	-12	-14				
160	19	-27	-58				
170	23	-20	-18				
180	7	-13	11				
190	24	-9	21				
200	-15	6	139				
210	-93	17	135				
220	-33	12	-48				
230	-27	12	-45				
240	-54	20	34				
250	-40	21	0				
260	-41	18	-8				
270	-45	24	2				
280	-38	18	-39				

Table 1 (11/30) VLF Data Sheet Altay City

LINE NUMBER 11 Line Length 1000

First Station (#0) Latitude 23.071 Longitude 15.592

Last Station (# 600) Latitude 22.799 Longitude 15.901

directi 135

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-400	14	10		190	-2	-25	21
-390	12	8		200	-15	17	15
-380	-6	-4	22	210	-8	17	-13
-370	10	11	-10	220	4	22	-20
-360	6	12	-10	230	-7	16	8
-350	8	16	5	240	-5	8	22
-340	3	14	4	250	-20	9	26
-330	7	15	-2	260	-18	14	12
-320	6	16	-11	270	-19	21	-7
-310	15	20	-11	280	-12	28	-2
-300	9	18	6	290	-23	23	-7
-290	6	-18	5	300	-1	32	-13
-280	13	-18	-10	310	-21	27	25
-270	12	3	2	320	-28	21	28
-260	5	-5	6	330	-22	11	-7
-250	14	-4	-18	340	-20	24	-32
-240	21	-3	-17	350	2	11	-21
-230	15	-1	25	360	-23	28	19
-220	-5	3	26	370	-14	25	13
-210	15	8	-15	380	-20	22	-17
-200	10	14	-8	390	0	13	-24
-190	8	14	-2	400	-10	1	14
-180	19	16	-21	410	-24	28	33
-170	20	10	-5	420	-19	44	11
-160	12	15	24	430	-26	29	0
-150	3	1	17	440	-17	33	5
-140	12	9	-19	450	-33	32	11
-130	22	13	-24	460	-21	35	8
-120	17	4	20	470	-37	38	7
-110	-3	9	23	480	-24	36	-5
-100	19	13	-23	490	-29	38	0
-90	18	14	-24	500	-32	42	10
-80	22	1	14	510	-31	44	1
-70	1	19	29	520	-31	47	-18
-60	10	18	6	530	-14	30	-20
-50	7	9	6	540	-28	27	8
-40	-2	2	13	550	-25	35	16
-30	6	4	-14	560	-33	37	3
-20	13	0	-21	570	-23	46	-25
-10	12	7	16	580	-10	44	-38
0	-9	13	44	590	-8	50	2
10	-10	0	11	600	-27	40	
20	2	20	-6				
30	-15	20	13				
40	-6	6	4				
50	-11	3	-12				
60	2	22	-20				
70	1	15	-16				
80	6	12	-6				
90	3	15	-1				
100	5	3	1				
110	3	21	11				
120	-6	23	24				
130	-10	17	-9				
140	15	18	-37				
150	6	20	-6				
160	5	25	6				
170	10	19	7				
180	-6	20	23				

Table 1 (12/30) VLF Data Sheet Altay City

date 1997/6/27

LINE NUMBER 12 Line Length 1700

First Station (# 0) Latitude 24.874 Longitude 19.153

Last Station (# 1700) Latitude 24.237 Longitude 18.235

directi 225

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
0	20	26		600	-2	22	-7
10	18	21		610	-8	4	24
20	12	17	15	620	-9	7	30
30	11	24	7	630	-19	12	28
40	12	21	-5	640	-28	23	31
50	16	13	6	650	20	8	-36
60	1	22	16	660	-6	22	19
70	11	20	10	670	-15	9	70
80	-4	16	14	680	7	0	-7
90	2	16	28	690	19	10	-7
100	8	21	10	700	-26	24	78
110	8	20	31	710	-1	14	20
120	5	20	12	720	-13	8	25
130	11	17	-4	730	-6	15	0
140	18	17	1	740	-14	14	15
150	11	22	1	750	-36	31	31
160	19	24	26	760	6	10	-29
170	6	28	53	770	-12	11	-4
180	5	29	35	780	-20	26	34
190	-8	26	46	790	-8	26	-20
200	-12	31	31	800	-7	10	-21
210	-9	25	-3	810	-11	24	-4
220	-7	22	-36	820	11	24	-29
230	0	19	-6	830	-6	6	6
240	5	23	-47	840	20	-24	-15
250	9	18	-21	850	-29	22	43
260	4	20	4	860	-23	27	41
270	0	23	16	870	-20	27	28
280	11	23	19	880	-29	25	-13
290	-2	22	9	890	-1	31	-54
300	18	5	11	900	6	-4	-33
310	11	8	39	910	-3	32	-9
320	11	15	21	920	17	-12	2
330	1	15	35	930	-16	34	59
340	-16	10	47	940	-29	30	45
350	-16	16	25	950	-15	13	-3
360	-14	21	19	960	-27	35	5
370	3	17	-62	970	-22	17	-12
380	-16	22	-31	980	-8	30	-63
390	1	25	-16	990	22	2	-42
400	-11	7	13	1000	-10	7	-11
410	-2	15	-7	1010	35	-10	-40
420	-10	14	26	1020	17	2	2
430	-16	19	21	1030	6	14	49
440	-24	14	19	1040	-3	20	52
450	15	6	-39	1050	-26	31	25
460	1	18	14	1060	4	22	-13
470	-6	15	36	1070	-20	19	32
480	-11	22	30	1080	-34	30	21
490	-1	21	-25	1090	-3	27	-37
500	-6	26	42	1100	-14	26	-4
510	19	-2	12	1110	-19	27	26
520	-4	18	51	1120	-24	41	28
530	17	-5	23	1130	-37	35	-35
540	-3	2	24	1140	29	-27	-126
550	12	2	-16	1150	36	19	-46
560	15	25	8	1160	2	6	80
570	-9	25	60	1170	-17	38	56
580	-14	22	39	1180	-1	26	15
590	-11	6	3	1190	-29	13	28

Table 1 (12/30) VLF Data She (continuation)

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
1200	-17	31	8				
1210	-21	33	-9				
1220	-16	21	2				
1230	-24	20	1				
1240	-14	36	-2				
1250	-24	28	-23				
1260	9	13	1				
1270	-48	28	71				
1280	-38	35	33				
1290	-34	42	-27				
1300	-25	24	-39				
1310	-8	16	-69				
1320	18	21	-37				
1330	-14	24	48				
1340	-24	10	47				
1350	-19	31	-4				
1360	-15	18	-12				
1370	-16	18	11				
1380	-29	17	29				
1390	-31	28	12				
1400	-26	30	-3				
1410	-31	28	5				
1420	-31	26	-5				
1430	-21	45	0				
1440	-41	23	10				
1450	-21	15	-21				
1460	-20	14	-6				
1470	-36	33	-11				
1480	6	12	-46				
1490	-16	-5	8				
1500	-22	15	11				
1510	1	23	-2				
1520	-37	36	35				
1530	-19	18	3				
1540	-20	31	-18				
1550	-18	38	9				
1560	-30	25	14				
1570	-22	26	4				
1580	-30	29	6				
1590	-28	30	3				
1600	-27	27	-5				
1610	-26	32	-3				
1620	-26	34	12				
1630	-39	34	-5				
1640	-8	49	-37				
1650	-20	37	-12				
1660	-15	32	14				
1670	-27	27	6				
1680	-14	41	-8				
1690	-20	23	-17				
1700	-4	30					

Table 1 (13/30) VLF Data Sheet Altay City

date 1997/6/28

LINE NUMBER 13 Line Length 2200

First Station (# 0) Latitude 24.760 Longitude 19.697

Last Station (# 2200) Latitude 23.455 Longitude 18.075

directi 225

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-210				390	-1	17	-86
-200	-6	32		400	-32	29	-31
-190	-9	26	3	410	-37	26	-4
-180	0	15	2	420	-30	23	-63
-170	-17	12	7	430	-23	21	-37
-160	1	22	15	440	-24	7	-57
-150	-33	32	44	450	-26	37	-22
-140	-27	27	-1	460	-38	30	-22
-130	-4	30	-27	470	-34	20	-63
-120	-29	25	21	480	-10	21	-74
-110	-23	23	33	490	-18	24	-33
-100	-43	29	7	500	-23	36	1
-90	-16	22	-31	510	-7	38	-52
-80	-19	32	-27	520	6	13	-23
-70	-13	16	-21	530	17	37	-13
-60	-1	10	-7	540	1	12	3
-50	-24	23	17	550	-8	29	23
-40	-7	29	-8	560	-8	32	-14
-30	-10	17	-13	570	-6	1	-23
-20	-8	24	3	580	-34	37	27
-10	-12	15	-11	590	-41	34	12
0	5	24	-25	600	-45	29	-34
10	0	28	6	610	-20	32	-77
20	-13	24	32	620	-4	23	-67
30	-14	24	18	630	8	21	-29
40	-17	34	-2	640	31	29	-21
50	-8	34	-5	650	24	16	4
60	-18	33	-6	660	25	7	11
70	-1	39	-33	670	21	1	19
80	8	33	-29	680	25	8	24
90	2	27	-6	690	-21	29	73
100	11	41	20	700	-25	33	25
110	-21	43	28	710	-40	33	-4
120	6	31	-8	720	-41	29	-22
130	-8	42	-3	730	-54	31	-37
140	-4	22	9	740	-41	29	-67
150	-7	41	-14	750	-47	35	-69
160	9	40	-21	760	-37	28	-73
170	1	43	-2	770	-26	14	-53
180	3	21	41	780	-5	7	-53
190	-34	27	72	790	-5	30	-4
200	-34	39	16	800	-22	-5	9
210	-13	31	-20	810	3	20	-33
220	-35	30	31	820	3	32	-30
230	-43	28	6	830	8	13	0
240	-11	37	-50	840	-2	9	3
250	-17	22	-26	850	10	13	-20
260	-11	19	16	860	16	18	-20
270	-33	10	42	870	12	6	-2
280	-37	39	-1	880	16	18	-5
290	-6	41	-37	890	17	28	18
300	-27	25	10	900	-7	28	31
310	-26	17	-2	910	9	10	-11
320	-5	23	-5	920	12	36	-28
330	-43	30	30	930	18	4	-21
340	-18	34	-22	940	24	1	-9
350	-8	26	-17	950	15	1	19
360	-36	28	-33	960	8	30	4
370	-11	2	-54	970	27	22	-25
380	-37	34	-58	980	29	15	-15

Table 1 (13/30) VLF Data Sh (continuation)

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
990	21	14	6	1650	-3	30	-9
1000	29	-10	30	1660	4	31	-30
1010	-9	9	43	1670	22	24	-39
1020	16	13	36	1680	18	30	-8
1030	-32	17	-5	1690	16	26	10
1040	44	-14	-65	1700	14	33	15
1050	5	35	4	1710	5	26	9
1060	3	16	60	1720	16	27	-7
1070	-14	0	-7	1730	10	29	-2
1080	29	17	-55	1740	13	25	4
1090	15	17	-14	1750	9	29	6
1100	14	9	27	1760	8	27	-2
1110	3	33	26	1770	16	26	-16
1120	0	31	17	1780	17	22	-15
1130	0	29	1	1790	22	19	-18
1140	2	28	-8	1800	29	22	-15
1150	6	14	-47	1810	25	23	3
1160	43	0	-44	1820	23	18	12
1170	9	22	27	1830	19	28	22
1180	13	35	50	1840	7	27	33
1190	-11	27	20	1850	2	25	29
1200	13	0	16	1860	-5	30	31
1210	-27	21	-2	1870	-17	23	37
1220	31	18	-71	1880	-23	26	18
1230	26	6	-65	1890	-17	20	-3
1240	43	23	-7	1900	-20	24	-8
1250	21	1	0	1910	-12	22	-5
1260	48	14	-23	1920	-20	31	-8
1270	39	2	5	1930	-4	37	-30
1280	25	12	54	1940	2	35	-22
1290	8	20	32	1950	-4	35	2
1300	24	-8	16	1960	0	30	-4
1310	-7	12	11	1970	2	12	-9
1320	28	-7	-12	1980	3	38	-13
1330	1	24	10	1990	12	29	-12
1340	10	-1	-14	2000	5	20	-2
1350	33	-12	-34	2010	12	14	-10
1360	12	19	24	2020	15	22	-17
1370	7	25	44	2030	19	26	-5
1380	-6	18	7	2040	13	25	3
1390	18	3	-4	2050	18	28	2
1400	-13	14	30	2060	12	19	3
1410	-5	20	-9	2070	16	20	9
1420	19	7	-40	2080	5	27	36
1430	3	16	-4	2090	-13	9	43
1440	15	26	-6	2100	-9	12	12
1450	13	16	12	2110	-11	15	0
1460	-7	11	46	2120	-11	23	-7
1470	-11	17	13	2130	-2	28	-24
1480	4	3	-33	2140	4	22	-15
1490	11	16	-24	2150	-2	28	6
1500	6	-4	12	2160	-2	16	-6
1510	-3	22	26	2170	10	13	-27
1520	-6	6	-2	2180	13	14	-26
1530	11	9	-39	2190	21	19	-20
1540	19	8	-23	2200	22	3	
1550	9	11	24				
1560	-3	16	37				
1570	-6	23	9				
1580	3	24	-16				
1590	4	32	-13				
1600	6	27	2				
1610	-1	33	21				
1620	-10	31	22				
1630	-7	30	-3				
1640	-1	36	-13				

Table 1 (14/30) VLF Data Sheet Altay City

date 1997/7/1 1997/7/2

LINE NUMBER 14 Line Length 700

First Station (#0) Latitude 22.588 Longitude 14.986

Last Station (#-400) Latitude 22.442 Longitude 15.047

directi 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-300	0	-5		300	-32	25	77
-290	-15	17		310	-38	43	12
-280	-5	22	-20	320	-39	48	32
-270	10	16	9	330	-63	19	45
-260	-39	-3	61	340	-59	18	6
-250	-17	-8	-10	350	-49	29	-40
-240	-2	2	-65	360	-33	25	-45
-230	11	-11	-43	370	-30	24	-24
-220	13	8	5	380	-28	23	-1
-210	-9	-4	18	390	-34	23	1
-200	15	-5	-27	400	-25	23	
-190	16	8	-27				
-180	17	6	1				
-170	13	8	0				
-160	20	5	-33				
-150	43	17	85				
-140	-95	4	194				
-130	-36	-24	9				
-120	-25	-19	-98				
-110	-8	-7	-69				
-100	16	14	-66				
-90	17	-6	-21				
-80	12	-9	12				
-70	9	-6	14				
-60	6	0	5				
-50	10	-1	-5				
-40	10	15	-5				
-30	11	12	0				
-20	9	-12	-1				
-10	13	9	38				
0	-31	13	75				
10	-22	25	24				
20	-20	24	-14				
30	-19	23	-6				
40	-17	24	-2				
50	-20	20	5				
60	-21	20	10				
70	-26	19	5				
80	-20	11	5				
90	-32	12	24				
100	-38	17	22				
110	-36	19	-1				
120	-33	23	-5				
130	-36	23	5				
140	-38	28	3				
150	-34	23	-13				
160	-27	22	-23				
170	-22	18	-37				
180	-2	5	-36				
190	-11	1	0				
200	-13	22	13				
210	-13	22	4				
220	-15	14	-3				
230	-8	22	-6				
240	-14	28	2				
250	-11	27	-6				
260	-5	28	1				
270	-21	6	-35				
280	40	3	-33				
290	-33	16	84				

Table 1 (15/30) VLF Data Sheet Altay City

date 1997/6/30 1997/7/2

LINE NUMBE 15 Line Length 1100

First Station(# 0) Latitude 22.559 Longitude 14.664

Last Station(# 500) Latitude 22.752 Longitude 14.417

directi 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-600	28	10		-10	-33	-4	210
-590	-13	-14		0	-186	24	212
-580	-6	-3	31	10	-63	21	-111
-570	-10	-25	-8	20	-45	19	-191
-560	-1	-17	-22	30	-13	14	-59
-550	7	-22	-33	40	-36	19	19
-540	15	-23	-20	50	-41	26	24
-530	11	-25	7	60	-32	17	-17
-520	4	-22	16	70	-28	13	-17
-510	6	-20	0	80	-28	7	-1
-500	9	10	0	90	-31	16	-2
-490	1	-18	-1	100	-23	15	-10
-480	15	-23	-8	110	-26	15	-3
-470	3	-14	16	120	-25	18	-1
-460	-3	5	20	130	-23	19	0
-450	1	-18	1	140	-28	19	10
-440	-2	-4	4	150	-30	19	8
-430	-4	-15	10	160	-29	18	-5
-420	-7	-17	10	170	-24	19	-14
-410	-9	-15	10	180	-21	20	-6
-400	-12	-15	9	190	-26	17	3
-390	-13	-16	1	200	-22	18	-1
-380	-9	-12	-36	210	-24	17	-6
-370	20	-16	-76	220	-18	18	-10
-360	34	-7	-57	230	-18	22	-13
-350	34	6	-12	240	-11	18	-22
-340	32	-9	13	250	-3	5	-17
-330	23	-13	21	260	-9	16	6
-320	22	5	10	270	-11	13	-1
-310	23	0	-4	280	0	4	-12
-300	26	-8	12	290	-8	14	5
-290	7	-12	20	300	-8	16	9
-280	22	6	-14	310	-9	19	0
-270	25	15	-20	320	-7	20	4
-260	24	13	-8	330	-14	16	1
-250	31	18	-44	340	-3	12	1
-240	62	17	25	350	-19	12	3
-230	-32	-22	136	360	-1	4	-3
-220	-11	-18	33	370	-18	16	19
-210	8	-6	-57	380	-21	8	9
-200	6	7	-15	390	-7	3	-5
-190	6	4	-14	400	-27	9	4
-180	22	13	-30	410	-5	15	-1
-170	20	-3	-19	420	-28	7	4
-160	27	14	-8	430	-8	5	-7
-150	23	9	11	440	-18	10	-10
-140	13	17	33	450	-8	1	9
-130	4	5	15	460	-27	19	-8
-120	17	21	6	470	9	-16	-44
-110	-6	1	6	480	0	1	44
-100	21	14	-26	490	-62	20	38
-90	16	8	-10	500	33	28	
-80	9	6	21				
-70	7	1	24				
-60	-6	3	30				
-50	-8	-4	21				
-40	-12	2	3				
-30	-5	15	-11				
-20	-4	11	20				

Table 1 (16/30) VLF Data Sheet Altay City

date 1997/6/30

LINE NUMBER 16 Line Length 670

First Station (# 0) Latitude 22.431 Longitude 14.382

Last Station Latitude Longitude

directi 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
-500	5	6		100	-39	19	59
-490	5	12		110	-41	22	17
-480	6	0	-5	120	-14	8	-32
-470	9	4	-10	130	-34	15	10
-460	12	-1	-1	140	-31	17	7
-450	4	-6	5	150	-24	13	-40
-440	12	6	-7	160	-1	-20	-58
-430	11	-4	12	170	4	17	
-420	-7	4	32				
-410	-2	9	-6				
-400	12	-3	-30				
-390	9	2	-4				
-380	5	3	4				
-370	12	7	-4				
-360	6	3	-1				
-350	12	3	-13				
-340	19	2	-8				
-330	7	4	12				
-320	12	-10	5				
-310	9	4	9				
-300	1	-9	20				
-290	0	-15	16				
-280	-6	-9	9				
-270	-2	-23	10				
-260	-14	-23	12				
-250	-6	10	-48				
-240	38	46	171				
-230	-229	-17	286				
-220	-25	-11	-149				
-210	-17	-10	-238				
-200	1	13	-52				
-190	9	15	-28				
-180	3	4	3				
-170	4	8	-3				
-160	11	15	-17				
-150	13	5	-7				
-140	9	15	8				
-130	7	2	12				
-120	3	0	-1				
-110	14	13	-8				
-100	4	5	7				
-90	6	-2	5				
-80	7	-1	30				
-70	-27	0	38				
-60	2	11	-28				
-50	6	-7	-36				
-40	5	2	-1				
-30	4	15	-5				
-20	12	15	-7				
-10	4	14	30				
0	-18	33	49				
10	-15	24	30				
20	-29	23	-15				
30	11	11	-23				
40	-32	22	36				
50	-22	21	53				
60	-52	28	20				
70	-22	16	-30				
80	-22	19	-53				
90	1	14	-6				

Table 1 (17/30) VLF Data Sheet Altay City

date 1997/6/30

LINE NUMBE 17 Line Lengt 540

First Station (# 0) Latitude 23.041 Longitude 14.086

Last Station Latitude Longitude

direction 225

Station	Tilt	Elipticity	F Filter	
0	4	17		
10	13	13		
20	8	16	-3	
30	12	17	4	
40	5	22	-2	
50	17	14	-15	
60	15	18	-10	
70	17	17	-8	
80	23	18	-15	
90	24	21	-10	
100	26	18	-2	
110	23	16	9	
120	18	10	13	
130	18	9	-4	
140	27	10	-65	
150	74	6	-74	
160	45	18	125	
170	-69	-21	215	
180	-27	10	19	
190	-16	12	-77	
200	-3	19	-43	
210	3	12	-32	
220	10	24	-27	
230	17	19	-18	
240	14	23	2	
250	11	17	12	
260	8	11	18	
270	-1	18	31	
280	-11	18	25	
290	-7	20	12	
300	-17	21	7	
310	-8	17	-8	
320	-8	19	-16	
330	-1	19	-10	
340	-5	10	1	
350	-5	14	-15	
360	14	5	-20	
370	-4	15	6	
380	7	21	-10	
390	13	14	-22	
400	12	19	-1	
410	9	14	4	
420	12	13	-5	
430	14	15	-6	
440	13	11	-1	
450	14	1	-8	
460	21	17	-32	
470	38	13	-32	
480	29	15	6	
490	24	15	33	
500	10	16	53	
510	-10	16	59	
520	-15	18	19	
530	-4	25	-130	
540	109	39		airport fence

Table 1 (18/30) VLF Data Sheet Altay City

LINE NUMBE 18 Line Lengt 490

First Station (# 0) Latitude 24.047 Longitude 12.148

Last Station Latitude Longitude

direction 225

Station	Tilt	Elipticity	F Filter
0	13	21	
10	17	24	
20	12	20	9
30	9	22	10
40	10	17	3
50	8	19	16
60	-5	18	
70	1	20	4
80	-2	17	-5
90	3	16	2
100	-6	21	8
110	-1	23	2
120	-4	20	-2
130	-1	23	-7
140	3	21	-11
150	3	22	-16
160	15	27	-20
170	11	24	-5
180	12	20	5
190	9	22	11
200	3	9	14
210	4	14	-4
220	12	18	-15
230	10	9	-12
240	18	16	-22
250	26	5	-15
260	17	6	10
270	17	7	10
280	16	13	8
290	10	7	6
300	17	10	17
310	-8	-8	52
320	-17	24	27
330	-1	24	-8
340	-16	36	34
350	-36	27	43
360	-24	32	3
370	-31	31	-1
380	-28	26	4
390	-31	36	13
400	-41	34	15
410	-33	27	-8
420	-31	33	-14
430	-29	31	-19
440	-16	33	-40
450	-4	-3	-11
460	-30	25	9
470	1	26	-36
480	1	6	-32
490	2	10	

Table 1 (19/30) VLF Data Sheet Altay City

LINE NUMBE 19 Line Lengt 490

First Station (# 0) Latitude 24.047 Longitude 12.148

Last Station (# 500) Latitude 24.253 Longitude 11.896

direction 315

Station	Tilt	Elipticity	F Filter
0	-17	18	
10	-13	11	
20	-18	6	3
30	-15	1	3
40	-19	10	5
50	-19	8	-15
60	0	-4	-22
70	-16	8	10
80	-13	8	18
90	-21	1	6
100	-14	6	3
110	-23	3	7
120	-19	-11	0
130	-18	-2	-26
140	2	2	-32
150	-7	10	-3
160	-6	5	16
170	-15	10	12
180	-10	15	-5
190	-6	15	-9
200	-10	8	3
210	-9	12	5
220	-12	7	9
230	-16	12	12
240	-12	8	-17
250	1	-5	-29
260	0	15	5
270	-16	12	28
280	-11	6	8
290	-13	6	-4
300	-10	0	-3
310	-11	5	-1
320	-11	9	-28
330	18	-7	-22
340	-18	2	24
350	1	0	15
360	-16	-9	18
370	-19	1	22
380	-18	4	-2
390	-15	-3	-7
400	-15	3	-4
410	-14	8	-3
420	-13	9	-8
430	-8	8	-12
440	-7	9	-5
450	-9	15	-1
460	-5	17	-1
470	-10	19	-4
480	0	-4	-3
490	-12	17	

Table 1 (20/30) VLF Data Shee Altay City

LINE NUMBER 20 Line Length 790

First Station (# 0) Latitude 24.364 Longitude 11.583

Last Station (# 800) Latitude 24.703 Longitude 11.103

directio 315

Station	Tilt	Elipt.	F Filter
0	-15	12	
10	-18	14	
20	-18	17	7
30	-22	17	5
40	-19	13	-12
50	-9	10	-18
60	-14	18	4
70	-18	18	16
80	-21	15	12
90	-23	14	-24
100	8	18	-31
110	-21	15	30
120	-24	11	31
130	-20	13	-9
140	-16	13	-12
150	-16	14	-13
160	-7	3	-26
170	1	12	-11
180	-13	14	17
190	-10	16	17
200	-19	11	9
210	-13	9	-3
220	-13	18	-10
230	-9	8	2
240	-19	16	13
250	-16	13	-7
260	-5	19	-20
270	-10	10	-12
280	1	16	-15
290	-1	13	-8
300	0	8	4
310	-4	17	13
320	-10	19	16
330	-10	16	9
340	-13	12	9
350	-16	13	1
360	-8	2	0
370	-21	13	11
380	-14	13	-9
390	-6	0	-18
400	-11	17	-8
410	-1	8	-2
420	-14	16	4
430	-2	9	-6
440	-7	15	-2
450	-7	13	11
460	-13	15	12
470	-13	13	3
480	-10	14	-1
490	-15	14	-15
500	7	3	-25
510	-7	18	1
520	-2	7	19
530	-17	14	27
540	-19	14	11
550	-11	10	-6
560	-19	6	15
570	-26	14	24
580	-28	4	-12
590	-5	2	-23
600	-26	-2	26
610	-33	7	1
620	1	-3	-54
630	-6	9	5
640	-31	11	36
650	-10	18	5
660	-32	12	4
670	-13	6	1
680	-30	14	20
690	-35	14	-48
700	40	6	-77
710	-28	14	58
720	-25	14	65
730	-28	12	-17
740	-8	10	-15
750	-30	7	15
760	-21	11	3
770	-20	16	-6
780	-25	16	-7
790	-9	10	

Table 1 (21/30) VLF Data Sheet Altay City

LINE NUMBE 21 Line Length 1300

First Station (# 0) Latitude 22.510 Longitude 14.523

Last Station (#-1000) Latitude 22.148 Longitude 15.079

directi 315

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter	
-1000	-8	-4		-400	-12	-15	-7	
-990	-12	-17		-390	-15	-12	1	
-980	-15	-19	-11	-380	-9	-10	-7	
-970	6	6	-58	-370	-11	-20	-5	
-960	25	10	-53	-360	-8	-20	-8	
-950	19	12	-9	-350	-4	-7	-19	
-940	21	2	22	-340	4	10	-23	
-930	1	-1	26	-330	7	5	-13	
-920	13	0	12	-320	6	-2	-7	
-910	-3	10	6	-310	12	5	-1	
-900	11	-8	-5	-300	2	-9	3	
-890	4	16	2	-290	13	-2	-6	
-880	2	2	3	-280	7	-19	3	
-870	10	10	-12	-270	5	-18	-4	
-860	8	7	-5	-260	19	16	-40	
-850	9	-17	22	-250	33	11	31	
-840	-13	-4	21	-240	-40	-1	106	metal fenc
-830	9	-5	-25	-230	-14	-4	17	
-820	12	-9	-30	-220	-10	-13	-37	
-810	14	-11	-4	-210	-7	0	-15	
-800	11	-14	0	-200	-2	-5	-9	
-790	15	-6	18	-190	-6	2	-5	
-780	-8	-11	64	-180	2	11	-8	
-770	-30	-24	30	-170	-2	6	-8	
-760	7	-1	-69	-160	6	11	-10	
-750	24	11	-50	-150	4	17	-5	
-740	3	12	19	-140	5	-13	-5	
-730	9	-7	11	-130	10	-6	1	
-720	7	-12	-2	-120	-2	-9	18	
-710	7	32	3	-110	-1	8	1	
-700	6	19	-2	-100	8	8	-12	
-690	10	2	16	-90	1	17	-7	
-680	-13	-7	31	-80	13	6	-13	
-670	-2	6	-10	-70	9	7	-13	
-660	9	9	-26	-60	18	5	2	
-650	2	5	3	-50	2	0	4	
-640	2	12	11	-40	21	13	-18	
-630	-2	-15	9	-30	17	10	-5	
-620	-3	8	-7	-20	11	13	-11	
-610	10	0	-26	-10	38	21	-88	
-600	11	16	4	0	78	20	6	metal fenc
-590	-8	-10	46	10	-35	19	157	
-580	-17	13	28	20	-6	10	65	
-570	-8	16	-12	30	-16	14	-10	
-560	-5	6	-14	40	-15	14	11	
-550	-6	9	-3	50	-18	8	4	
-540	-4	-8	-2	60	-17	12	-8	
-530	-5	-7	9	70	-8	7	-10	
-520	-14	0	10	80	-17	18	6	
-510	-5	-3	-5	90	-14	16	3	
-500	-9	7	-2	100	-14	17	0	
-490	-8	-5	5	110	-17	14	2	
-480	-11	-3	13	120	-13	18	-4	
-470	-19	-7	16	130	-14	13	2	
-460	-16	-10	2	140	-18	14	10	
-450	-16	-14	-2	150	-19	14	3	
-440	-17	-10	9	160	-16	18	0	
-430	-24	-13	14	170	-21	11	10	
-420	-23	-12	-7	180	-24	4	3	
-410	-11	-9	-24	190	-16	3	-9	

Table 1 (21/30) VLF Data She (continuation)

Station	Tilt	Elipt.	F Filter	Station	Tilt	Elipt.	F Filter
200	-20	-1	2				
210	-22	5	6				
220	-20	14	-10				
230	-12	16	-8				
240	-22	15	9				
250	-19	16	1				
260	-16	6	-8				
270	-17	-1	-5				
280	-13	-4	-1				
290	-19	14	-2				
300	-9	12					

Table 1 (22/30) VLF Data Sheet Altay City

date 1997/7/2

LINE NUMBE 22 Line Lengt 360

First Station (# 0) Latitude 22.741 Longitude 14.448

Last Station (# 200) Latitude 22.769 Longitude 14.535

direction 45

Station	Tilt	Elipticity	F Filter
-160	-28	4	
-150	8	29	
-140	17	26	-56
-130	19	28	-36
-120	42	26	41
-110	-47	17	137
-100	-29	27	38
-90	-14	28	-55
-80	-7	29	-30
-70	-6	26	-7
-60	-8	20	-2
-50	-3	22	-4
-40	-7	16	1
-30	-5	22	4
-20	-9	23	-1
-10	-2	25	12
0	-24	-8	27
10	-14	10	17
20	-29	38	-3
30	-6	38	-55
40	18	30	-103
50	50	34	-13
60	-25	12	101
70	-8	19	34
80	-1	15	-39
90	7	16	-13
100	-3	17	28
110	-19	28	36
120	-13	20	4
130	-13	13	-5
140	-14	20	2
150	-14	28	-9
160	-4	30	-22
170	-2	27	-18
180	2	31	27
190	2	27	-5
200	3	31	

Table 1 (23/30) VLF Data Sheet Altay City

date 1997/7/2

LINE NUMBE 23 Line Lengt 500

First Station (# 0) **Latitude** **25.404** **Longitude 11.759**

Last Station (# 500) **Latitude** **25.597** **Longitude 12.073**

direction 45

Station	Tilt	Elipticity	F Filter
0	2	20	
10	4	25	
20	1	21	2
30	3	22	1
40	1	23	-2
50	5	21	-5
60	4	22	-4
70	6	22	-5
80	8	20	-4
90	6	20	4
100	4	16	0
110	10	23	7
120	-7	21	14
130	7	17	-17
140	13	26	-6
150	-7	19	23
160	4	23	12
170	-10	6	11
180	-4	18	-2
190	0	14	-16
200	2	16	-8
210	2	22	-6
220	6	24	-7
230	5	23	-13
240	16	20	-15
250	10	24	-8
260	19	23	-8
270	15	23	-11
280	25	23	-25
290	34	22	
300	18	19	19
310	22	19	13
320	17	20	6
330	17	19	8
340	14	19	5
350	15	17	5
360	11	17	8
370	10	16	22
380	-6	17	25
390	2	19	11
400	-9	17	15
410	-10	18	8
420	-5	20	0
430	-14	24	4
440	-5	29	0
450	-14	19	8
460	-13	22	3
470	-9	21	-22
480	4	22	-30
490	4	24	-6
500	-3	21	

Table 1 (24/30) VLF Data Sheet Altay City

date 1997/7/2

LINE NUMBE 24 Line Lengt 300

First Station (# 0) Latitude 25.404 Longitude 11.759

Last Station (# 300) Latitude 25.677 Longitude 11.793

direction 0 rugged topography

Station	Tilt	Elipticity	F Filter
0	-9	16	
10	-10	17	
20	-10	16	7
30	-16	14	7
40	-11	17	-9
50	-6	14	-13
60	-8	13	-2
70	-7	17	-3
80	-4	17	-5
90	-6	12	7
100	-12	16	11
110	-9	13	-8
120	-1	19	-19
130	-1	13	-2
140	-7	15	13
150	-8	15	7
160	-7	12	-10
170	2	13	-14
180	-3	14	1
190	-3	15	2
200	0	12	0
210	-6	15	17
220	-14	15	20
230	-12	14	3
240	-11	19	-10
250	-5	16	-3
260	-15	20	19
270	-20	-16	19
280	-19	21	0
290	-16	12	-7
300	-16	14	

Table 1 (25/30) VLF Data Sheet Altay City

date 1997/7/2

LINE NUMBE 25 Line Lengt 300

First Station (# 0) Latitude 25.404 Longitude 11.759

Last Station (# 300) Latitude 25.391 Longitude 11.906

diection 135

Station	Tilt	Elipticity	F Filter
0	-9	14	
10	-10	9	
20	-9	15	-1
30	-9	10	-6
40	-4	15	-14
50	0	13	-7
60	-6	5	6
70	-4	13	3
80	-5	15	2
90	-7	14	5
100	-7	18	-7
110	2	16	-16
120	0	13	8
130	-13	0	21
140	-6	3	8
150	-15	-9	-17
160	13	13	-19
170	-15	-5	28
180	-15	-5	18
190	-5	-9	-16
200	-9	-1	-6
210	-5	-1	7
220	-16	7	16
230	-14	-7	9
240	-16	4	-25
250	11	-6	-35
260	-6	13	13
270	-12	2	27
280	-10	13	13
290	-21	13	12
300	-13	13	

Annex III-1

Table 1 (26/30) VLF Data Sheet Altay City

date 1997/7/3

LINE NUMBE 26 Line Lengt 400

First Station (# 0) Latitude 24.365 Longitude 11.588

Last Station (# 400) Latitude 24.336 Longitude 11.793

direction 90

Station	Tilt	Elipticity	F Filter
0	-7	-16	
10	5	28	
20	10	11	-14
30	2	16	20
40	-7	5	18
50	1	-4	3
60	-9	28	1
70	2	-2	-23
80	13	4	-34
90	14	-4	38
100	-37	-33	99
110	-35	47	81
120	-69	58	49
130	-52	66	36
140	-88	50	59
150	-92	52	34
160	-82	45	13
170	-111	48	23
180	-86	54	-31
190	-76	49	-126
200	5	48	-178
210	11	20	-68
220	-14	27	40
230	-10	1	26
240	-19	15	-25
250	20	8	-60
260	11	-14	1
270	-11	-25	48
280	-6	15	17
290	-11	-23	1
300	-7	-20	-11
310	1	-7	-6
320	-13	-15	1
330	6	-8	-11
340	-7	-17	12
350	-12	-9	19
360	-8	-23	1
370	-12	-20	-2
380	-6	-19	-1
390	-13	8	-5
400	0	2	

Table 1 (27/30) VLF Data Sheet Altay City

date 1997/7/4

LINE NUMBE 27 Line Lengt 300

First Station (# 0) **Latitude** 25.101 **Longitude** 11.901

Last Station (# 300) **Latitude** 25.282 **Longitude** 11.902

direction 0

Station	Tilt	Eliptioity	F Filter
0	-26	34	
10	-45	46	
20	-55	39	26
30	-42	49	-37
40	-21	40	-61
50	-15	34	-36
60	-12	30	-11
70	-13	28	-5
80	-9	26	-10
90	-6	29	-1
100	-15	28	10
110	-10	29	0
120	-11	34	2
130	-16	32	4
140	-9	34	0
150	-18	32	21
160	-28	30	22
170	-21	29	-8
180	-17	34	-12
190	-20	37	3
200	-21	31	9
210	-25	34	8
220	-24	36	0
230	-22	42	-6
240	-21	29	-5
250	-20	37	3
260	-26	37	10
270	-25	33	-6
280	-15	35	-6
290	-30	33	1
300	-11	37	

Table 1 (28/30) VLF Data Sheet Altay City

date 1997/7/3

LINE NUMBE 28 Line Lengt 600

First Station (# 0) Latitude 26.964 Longitude 20.038

Last Station (# 600) Latitude 26.696 Longitude 19.696

direction 225

Station	Tilt	Elipticity	F Filter
0	10	17	
10	13	15	
20	-2	22	19
30	6	-3	-4
40	9	2	0
50	-5	20	18
60	2	-7	-8
70	10	14	-25
80	12	1	-4
90	4	-4	19
100	-1	4	20
110	-3	-6	-18
120	24	-2	-32
130	4	0	-2
140	19	7	-20
150	29	19	-3
160	-3	-4	52
170	-1	14	15
180	12	-13	-13
190	-3	1	-14
200	28	-3	-56
210	37	-22	-38
220	26	25	8
230	31	20	-16
240	48	-2	-16
250	25	-4	33
260	21	6	24
270	28	5	0
280	18	18	33
290	-2	21	36
300	12	39	9
310	-5	32	40
320	-25	26	36
330	-4	42	-36
340	10	37	-28
350	-11	25	12
360	5	14	2
370	-8	17	-2
380	4	24	0
390	-7	33	-4
400	7	50	5
410	-15	43	25
420	-10	41	26
430	-24	35	-7
440	6	19	-38
450	-2	37	-12
460	-4	22	-15
470	23	9	-21
480	-8	51	42
490	-15	43	56
500	-26	41	14
510	-11	41	-11
520	-19	-20	0
530	-18	38	4
540	-16	46	11
550	-32	50	15
560	-17	43	3
570	-34	44	-4
580	-11	53	-90
590	50	22	-70
600	-25	44	

Table 1 (29/30) VLF Data Sheet Altay City

date 1997/7/3

LINE NUMBE 29 Line Lengt 500

First Station (# 0) Latitude 24.406 Longitude 15.240

Last Station (# 400) Latitude 24.640 Longitude 15.258

direction 0

Station	Tilt	Elipticity	F Filter
0	9	31	
10	9	24	
20	8	24	-1
30	11	17	13
40	-7	19	32
50	-6	19	15
60	-5	25	2
70	-10	23	10
80	-11	22	2
90	-6	25	-2
100	-13	26	13
110	-17	28	12
120	-14	25	0
130	-16	30	2
140	-17	23	-1
150	-12	29	-15
160	-6	32	-17
170	-6	32	-5
180	-7	33	3
190	-8	25	9
200	-14	26	18
210	-19	27	1
220	-4	39	-17
230	-12	29	-2
240	-9	34	3
250	-10	37	0
260	-11	33	19
270	-27	26	35
280	-29	32	20
290	-29	26	1
300	-28	31	2
310	-32	30	8
320	-33	32	-3
330	-24	34	-25
340	-16	36	-30
350	-11	41	-9
360	-20	30	19
370	-26	35	20
380	-25	33	1
390	-22	37	-14
400	-15	38	0
410	-32	41	13
420	-18	43	-9
430	-20	38	-31
440	1	48	-23
450	-16	45	6
460	-9	41	6
470	-12	42	-6
480	-7	42	3
490	-17	45	2
500	-4	42	

Table 1 (30/30) VLF Data Sheet Altay City

date 1997/7/4

LINE NUM 30 Line Lengt 470

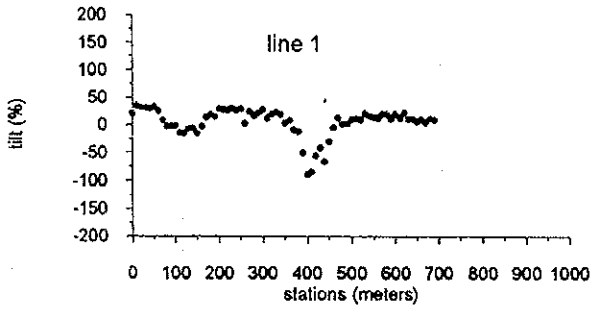
First Station (# 0) Latitude 23.000 Longitude 14.281

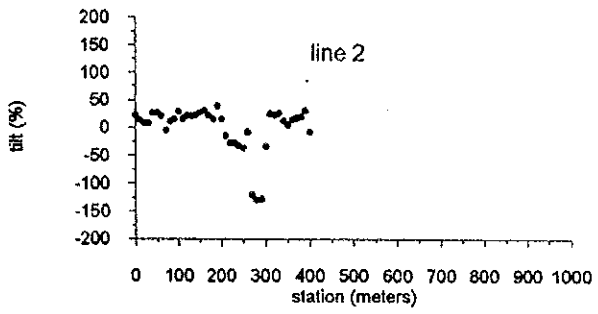
Last Station Latitude Longitude

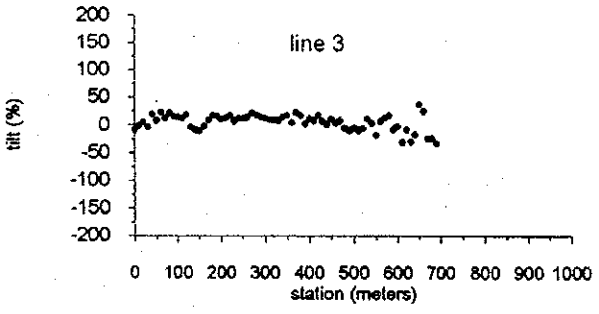
direction 225

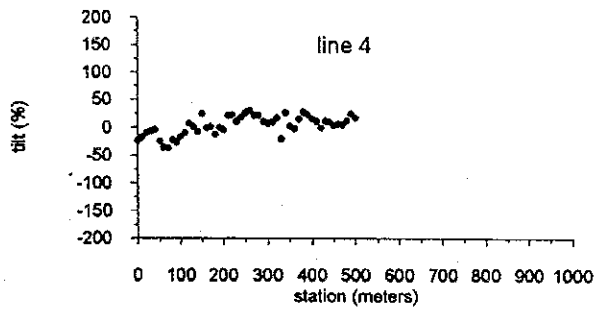
Station	Tilt	Elipticity	F Filter
0	-69	35	
10	-120	30	
20	-47	52	-103
30	-39	36	-106
40	-22	31	-55
50	-9	32	-40
60	-12	29	3
70	-22	23	14
80	-13	22	-11
90	-10	26	-8
100	-17	25	6
110	-12	30	-9
120	-6	20	-7
130	-16	23	1
140	-3	25	-28
150	9	30	-36
160	8	32	-7
170	5	25	-14
180	26	10	-25
190	12	20	1
200	18	27	14
210	6	29	13
220	11	28	-6
230	19	26	-14
240	12	28	-1
250	19	29	-15
260	27	31	-26
270	30	27	-9
280	25	20	12
290	20	32	25
300	10	14	25
310	10	33	0
320	20	30	2
330	-2	20	36
340	-4	35	30
350	-8	33	25
360	-23	35	3
370	8	23	-30
380	-9	27	-28
390	22	46	-39
400	16	25	-9
410	6	46	26
420	6	33	3
430	13	33	-29
440	28	31	-17
450	8	37	9
460	24	31	-21
470	33	37	

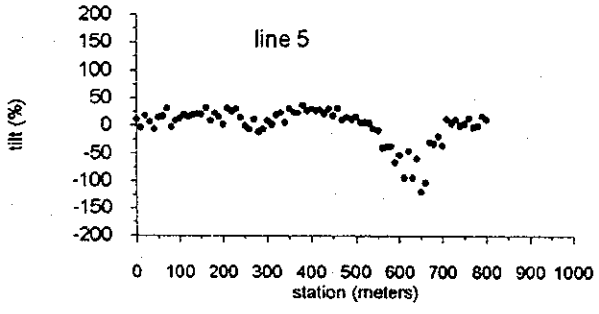
Annex III-2 (1/4) VLF Result (Compilation)

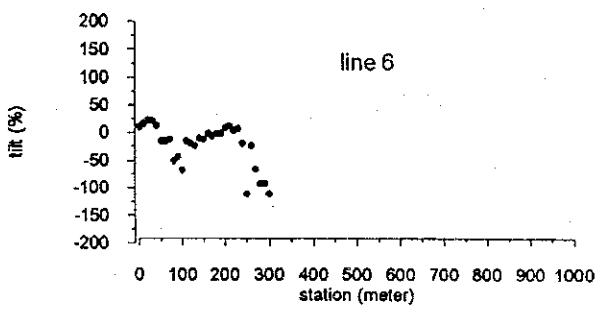


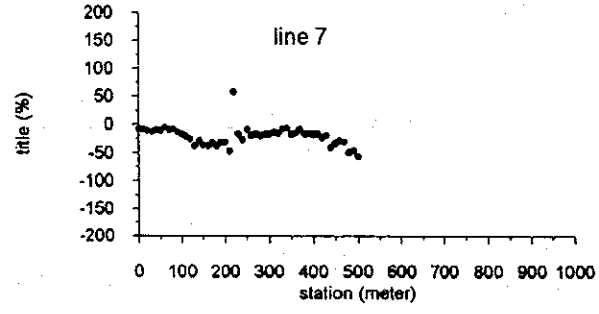


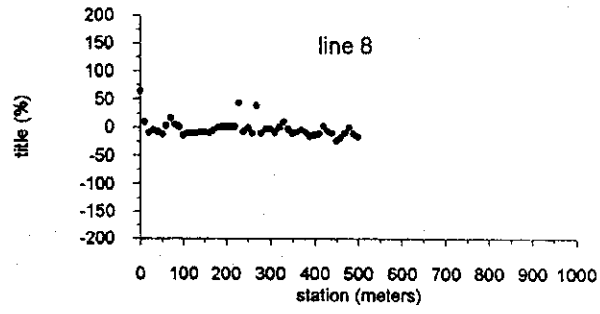




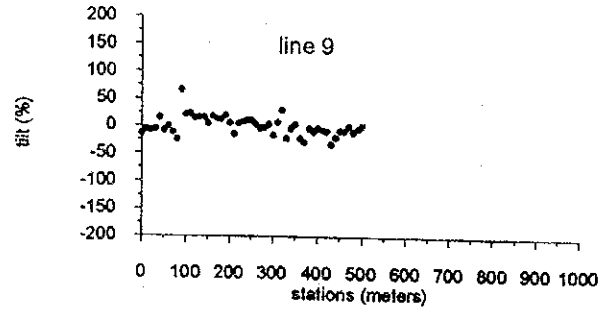


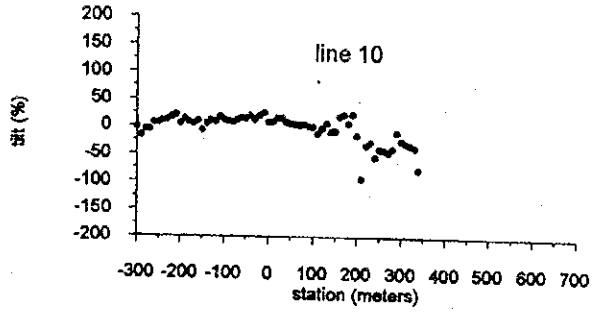


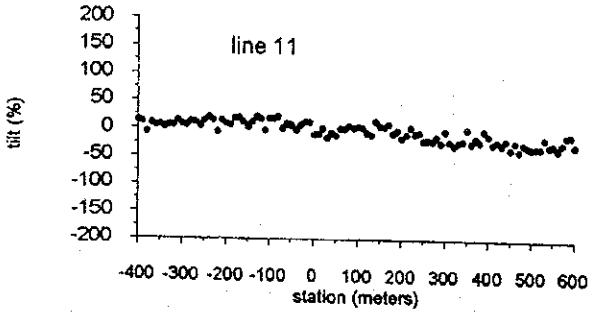


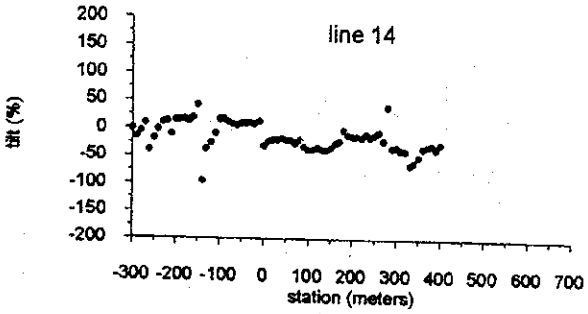


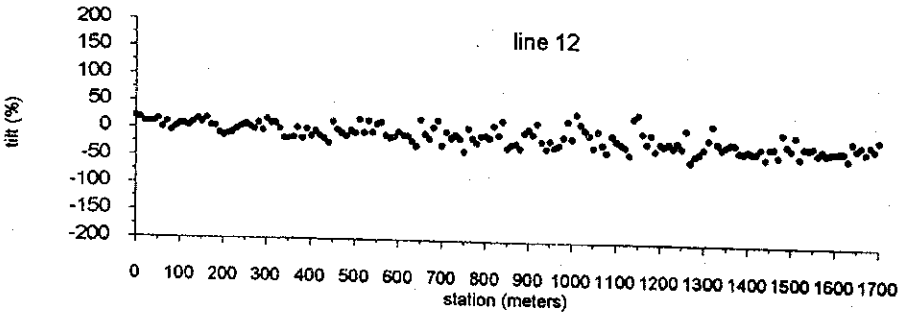
Annex III-2 (2/4) VLF Result (Compilation)

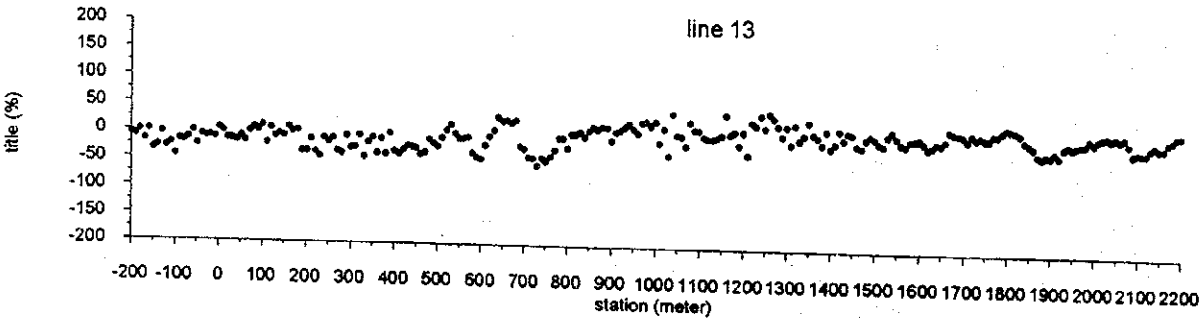




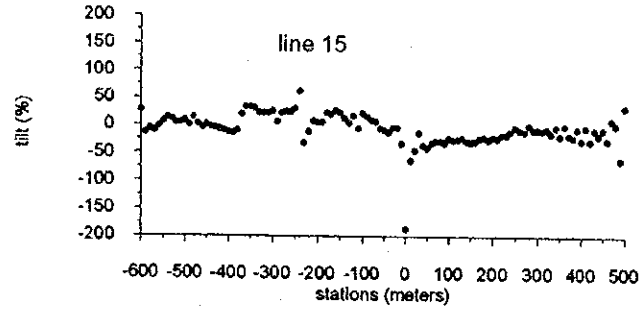


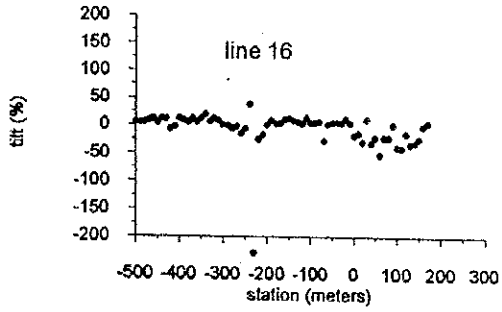


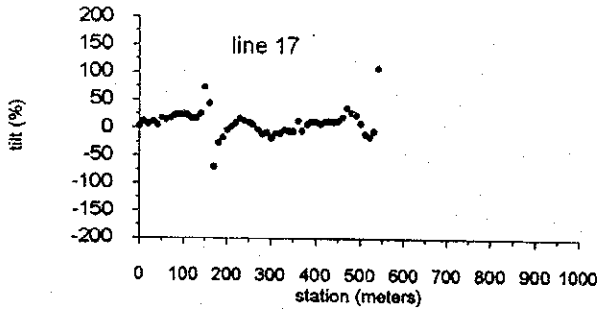


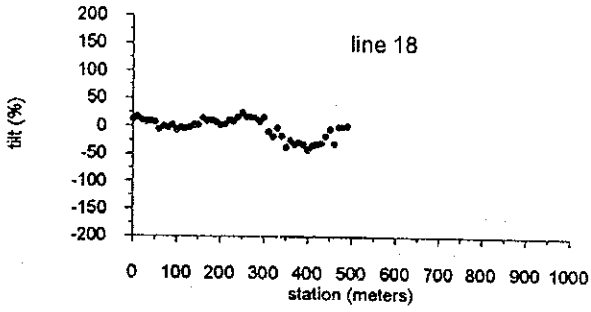


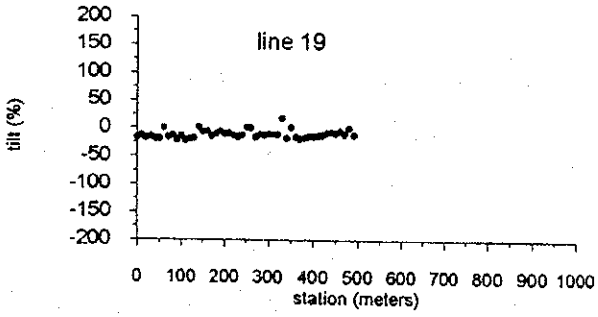
Annex III-2 (3/4) VLF Result (Compilation)

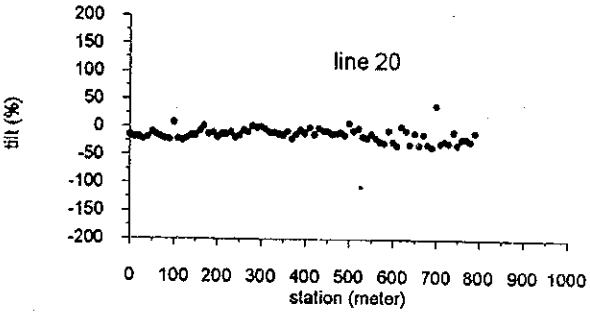


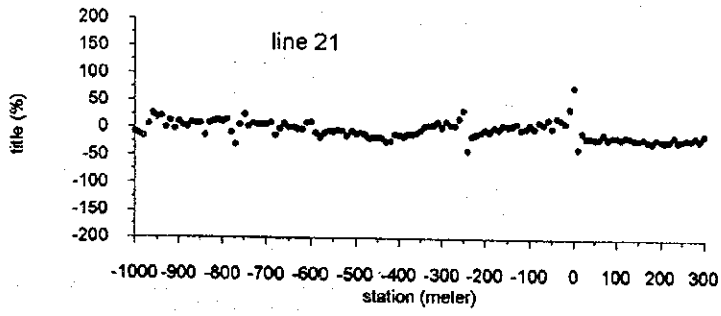


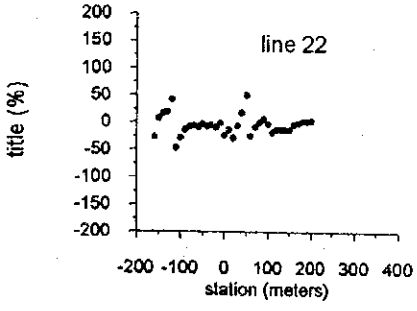




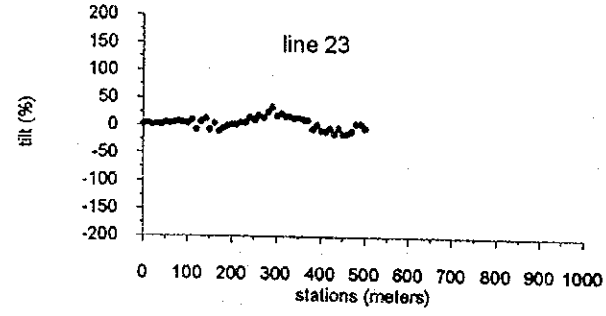


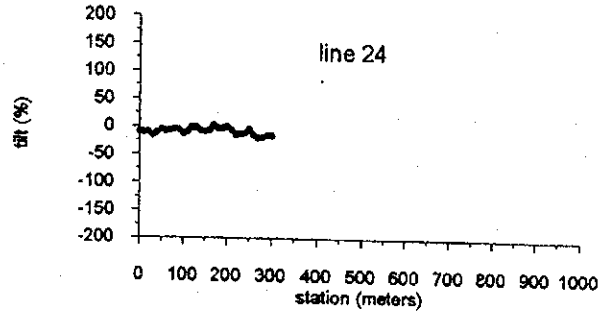


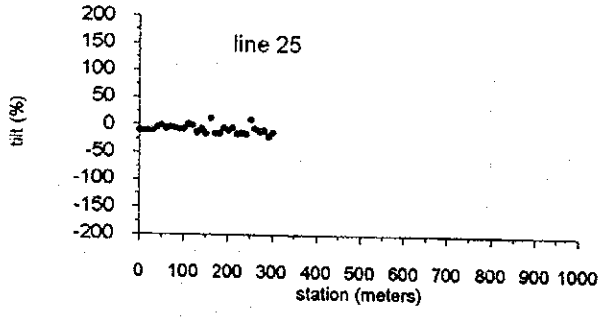


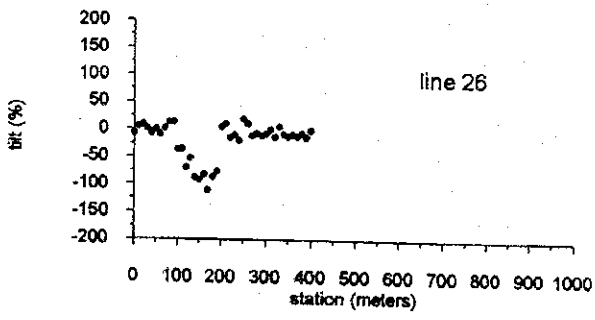


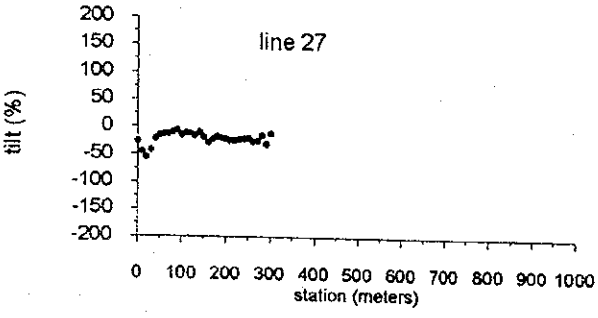
Annex III-2 (4/4) VLF Result (Compilation)

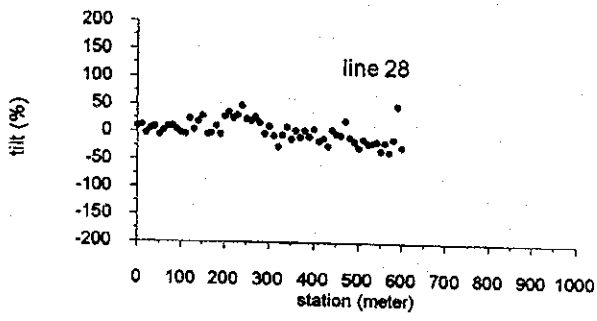


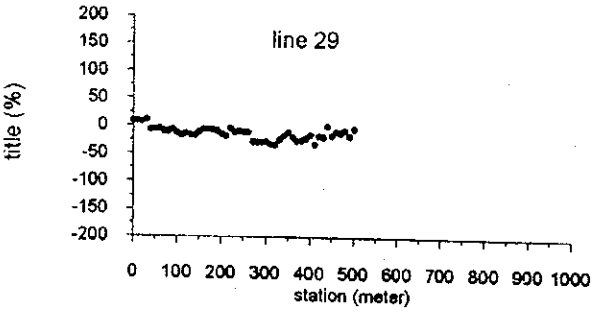


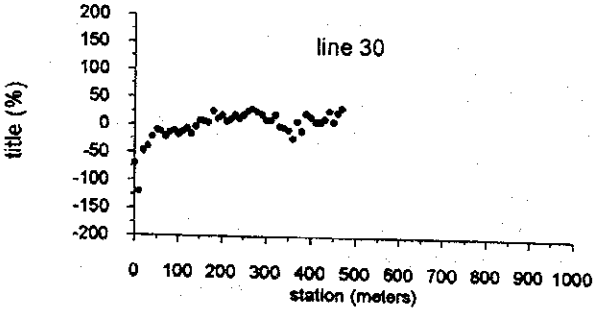




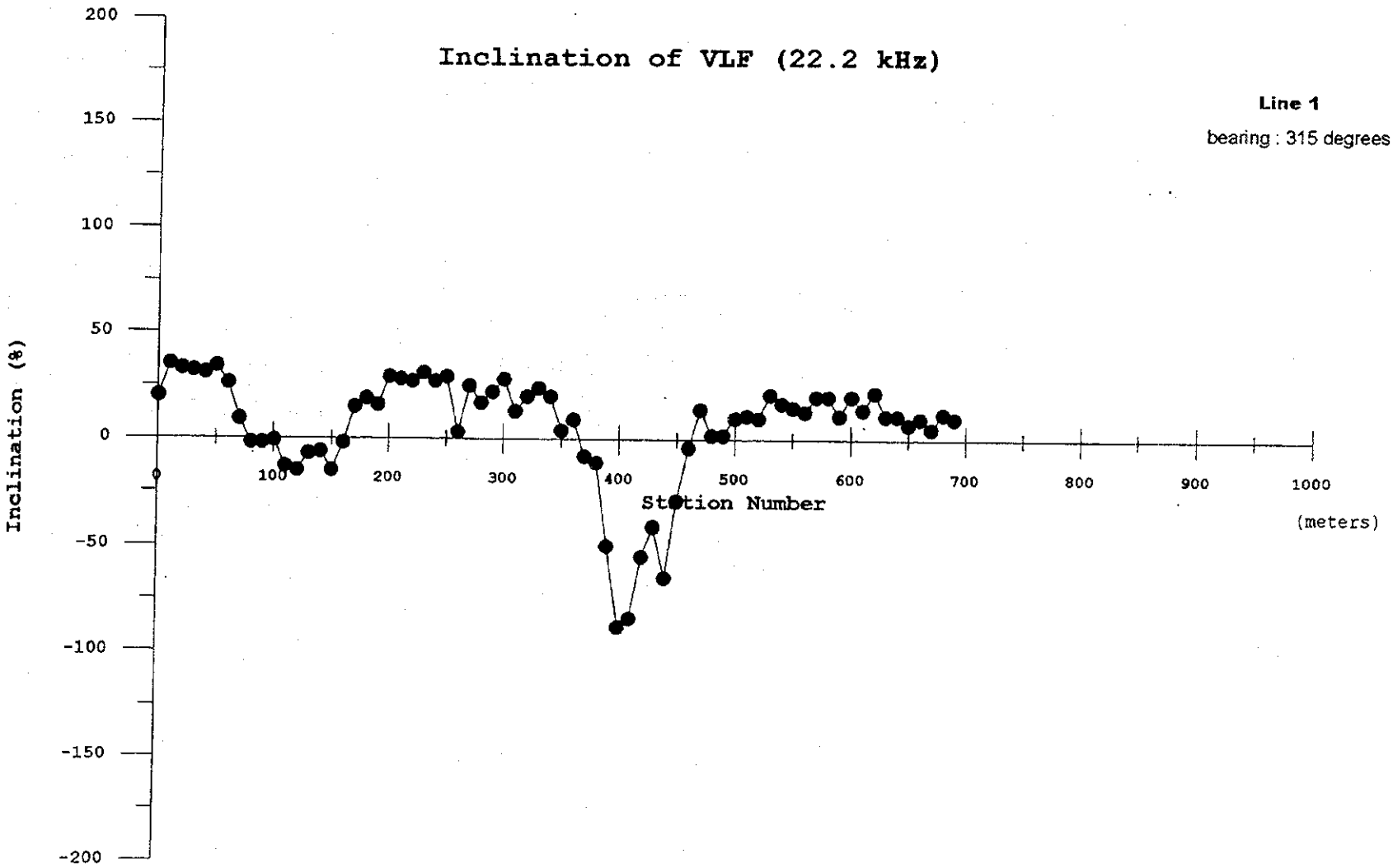


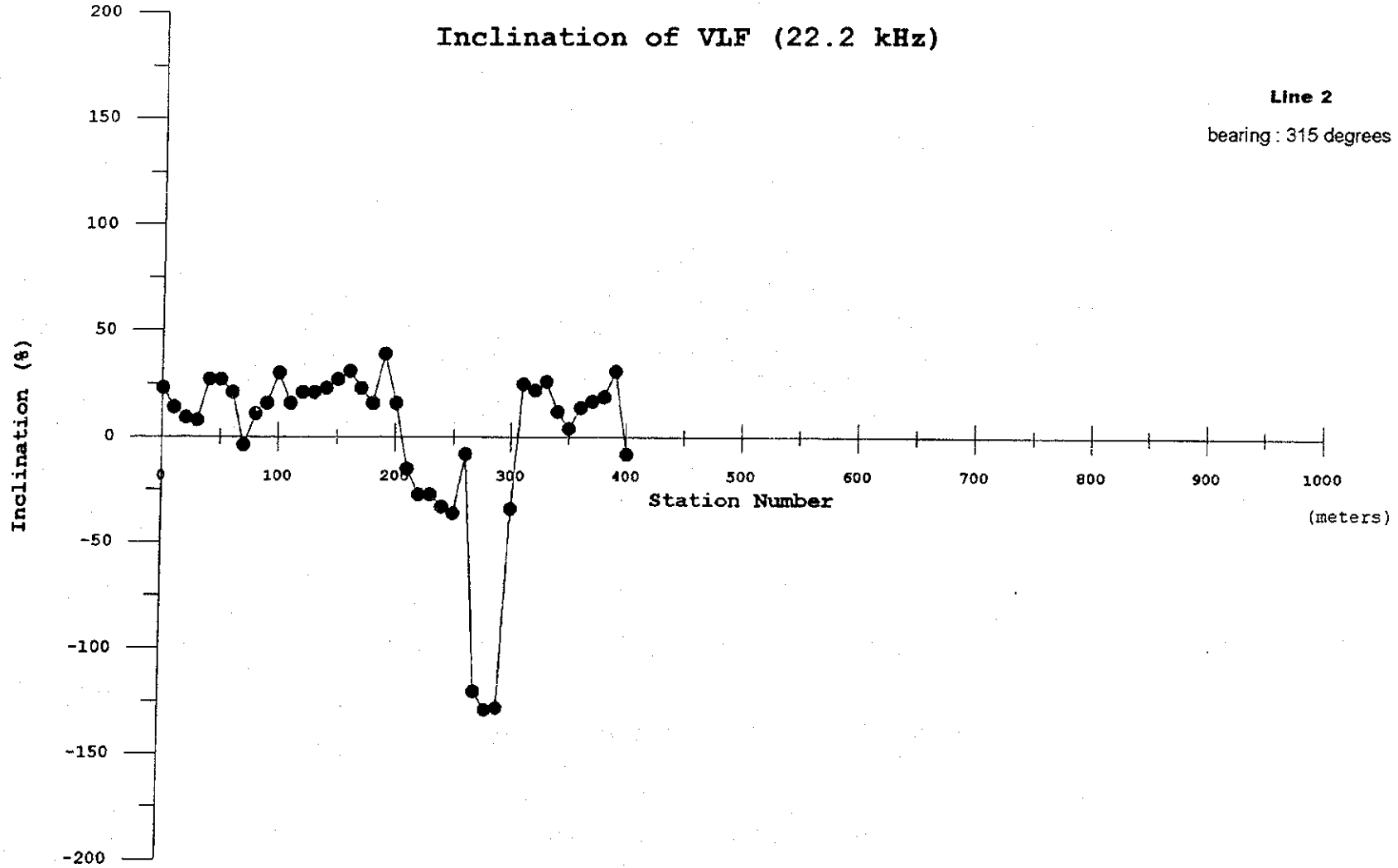


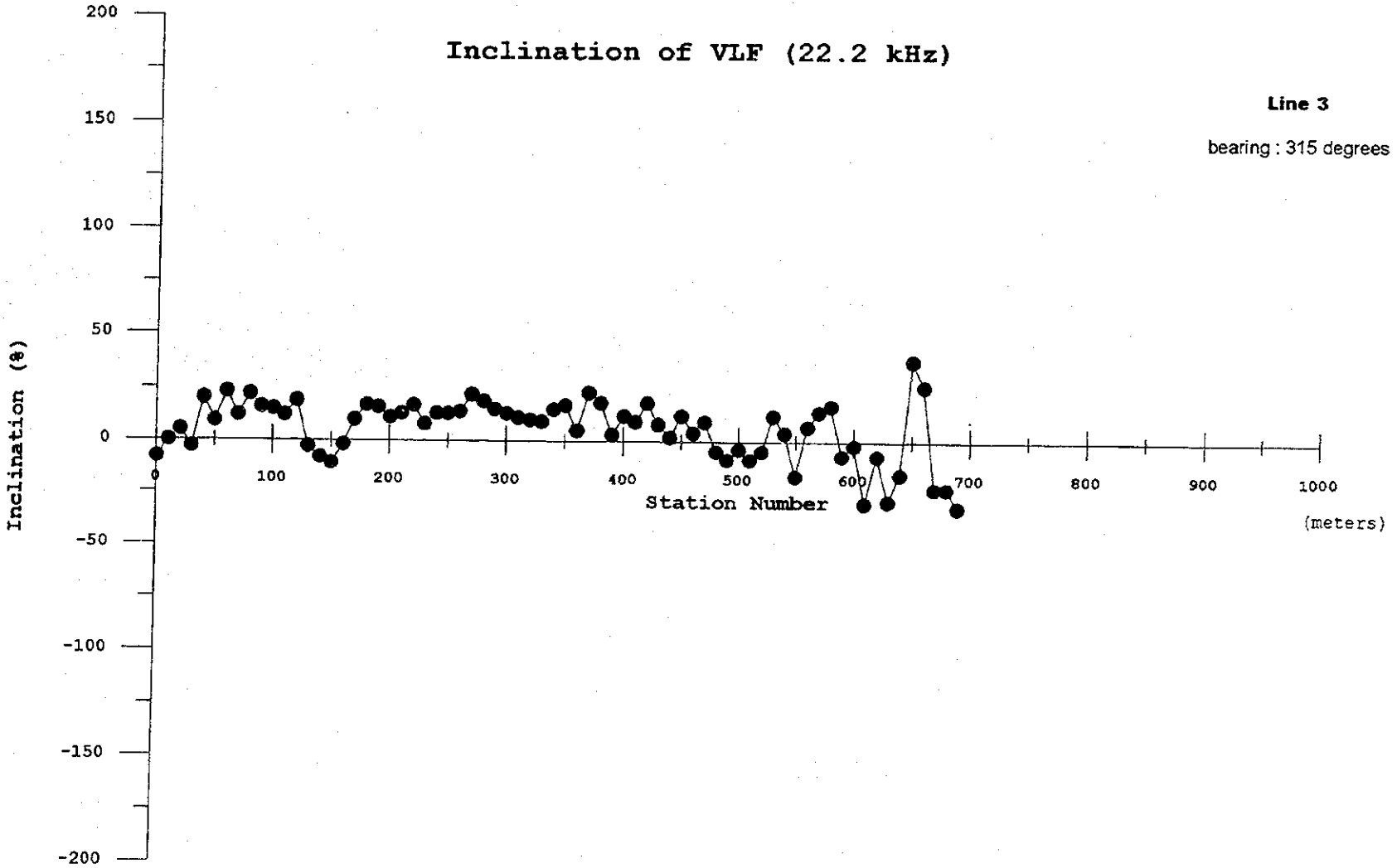




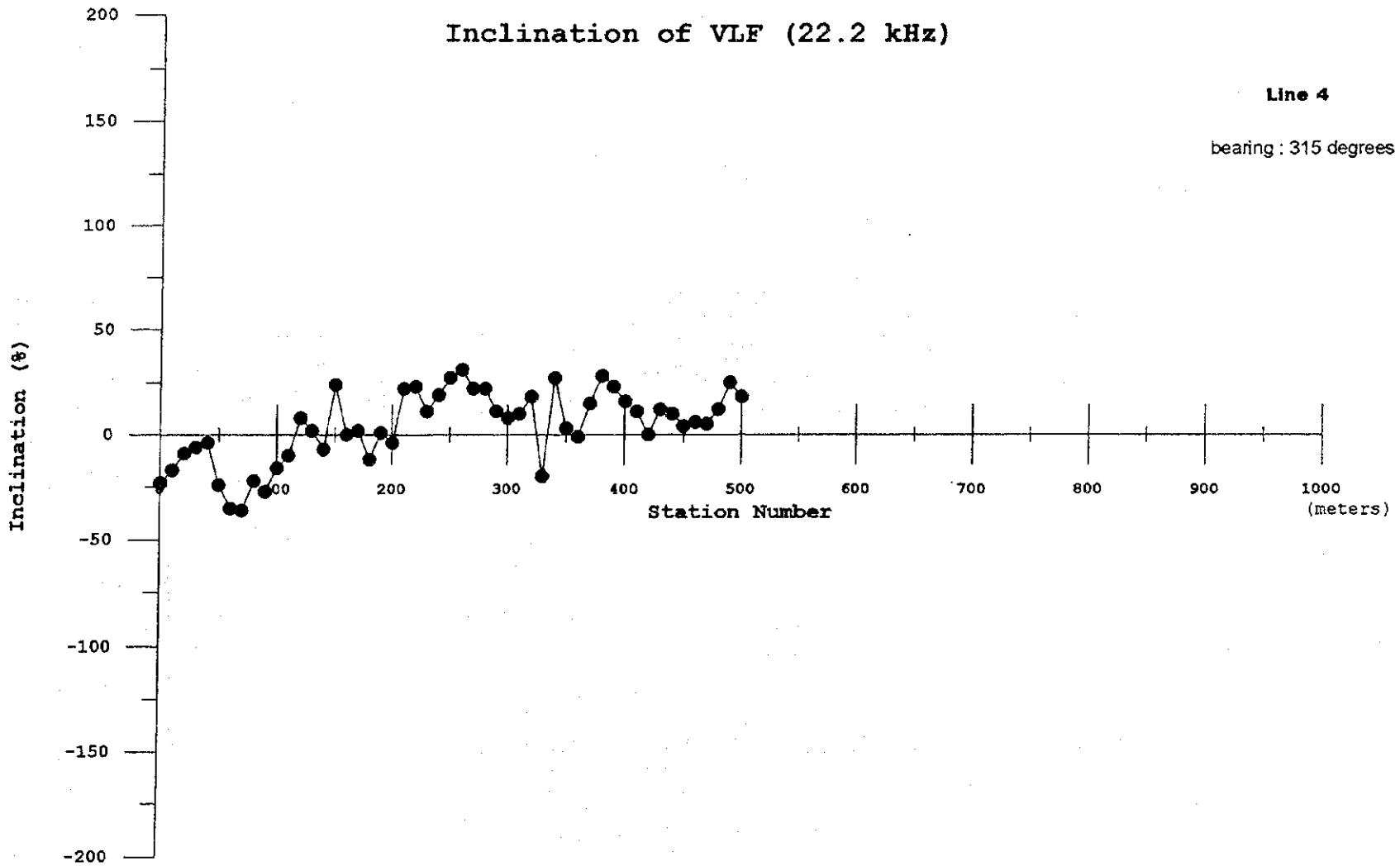
Annex III-3 (1/36) VLF Result



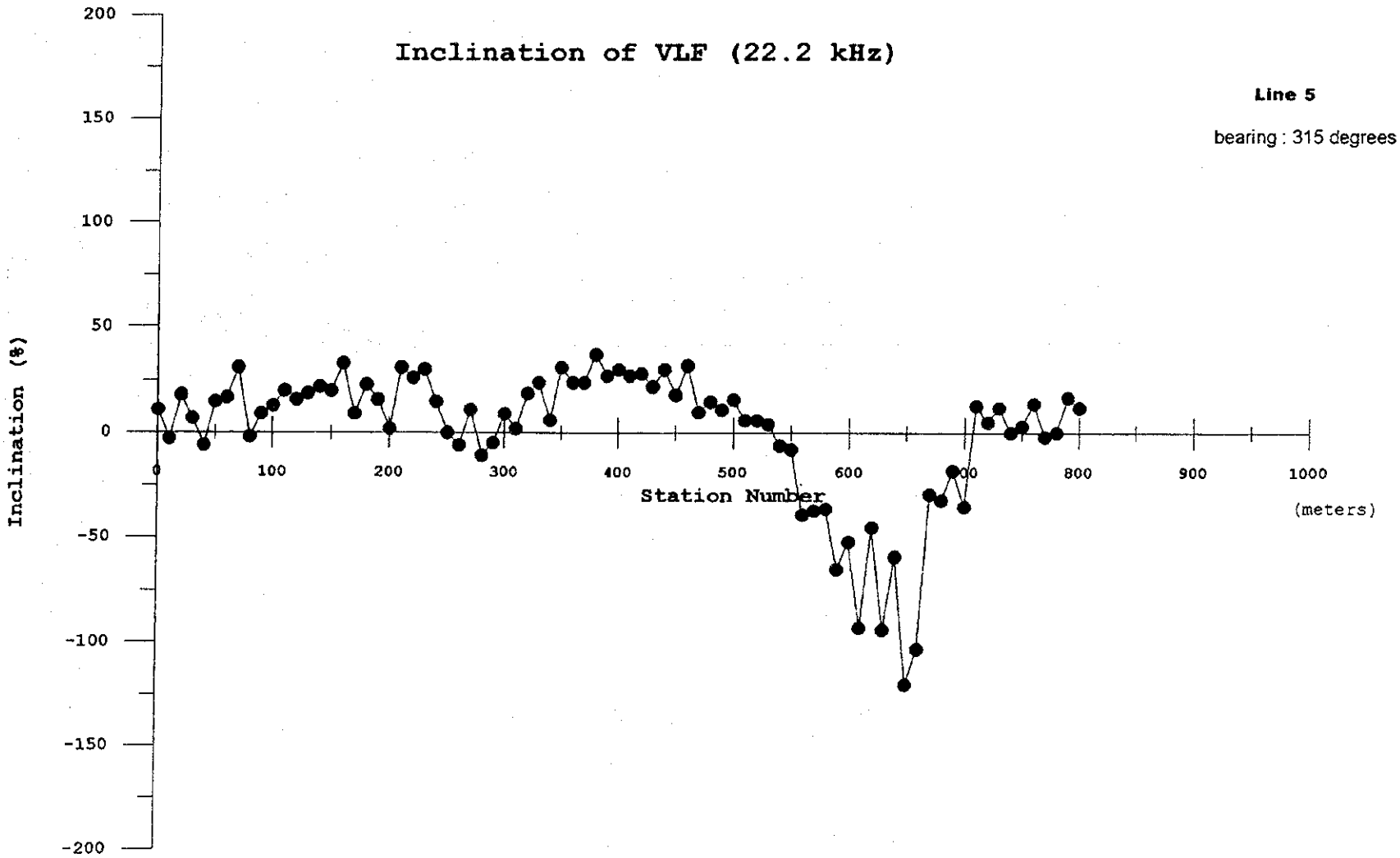

Inclination of VLF (22.2 kHz)
Line 2
bearing : 315 degrees
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
0
100
200
300
400
500
600
700
800
900
1000
Station Number
(meters)

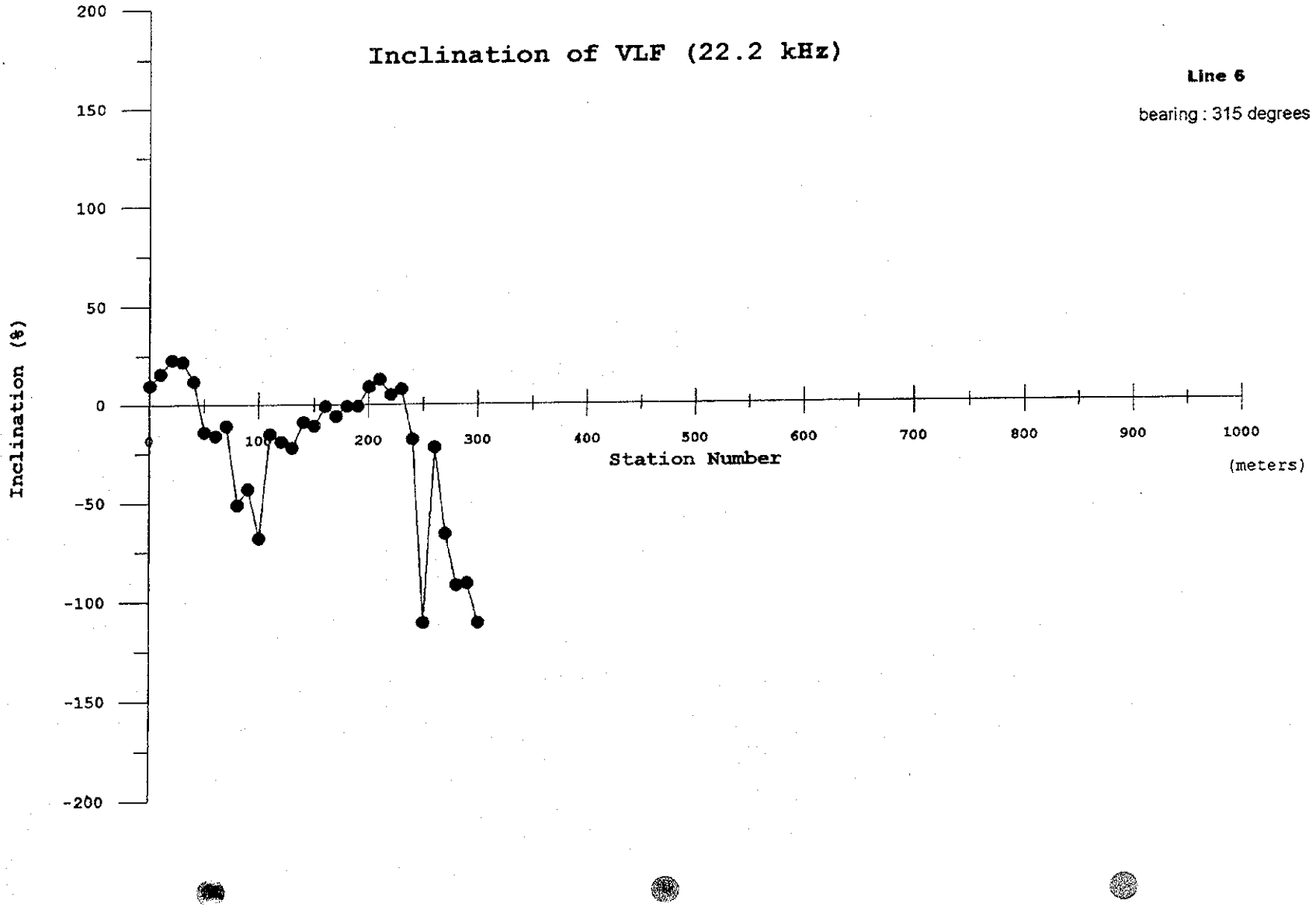

Inclination of VLF (22.2 kHz)
Line 3
bearing : 315 degrees
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
0
100
200
300
400
500
600
700
800
900
1000
Station Number
(meters)

Annex III-3 (4/36) VLF Result

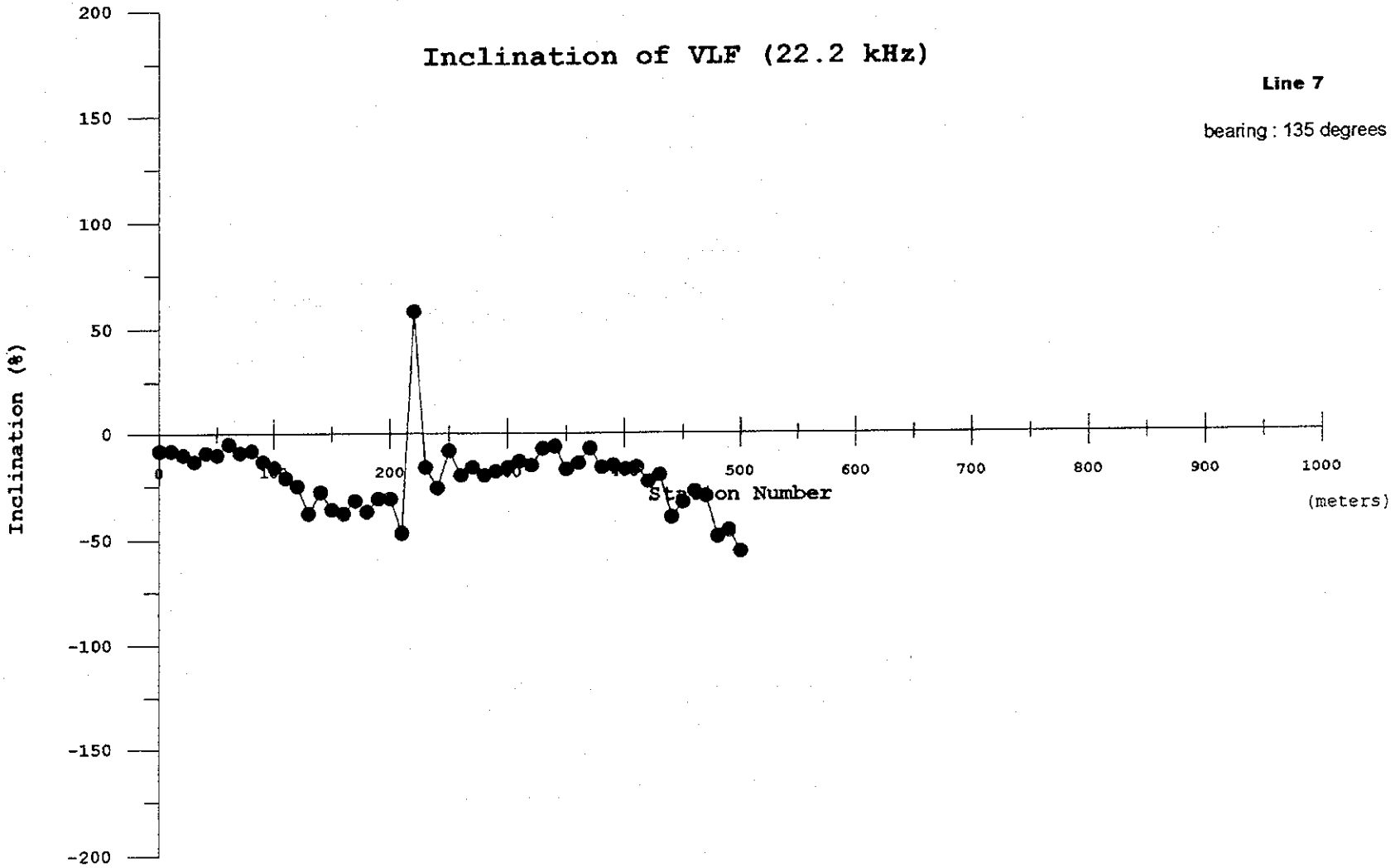


Annex III-3 (5/36) VLF Result

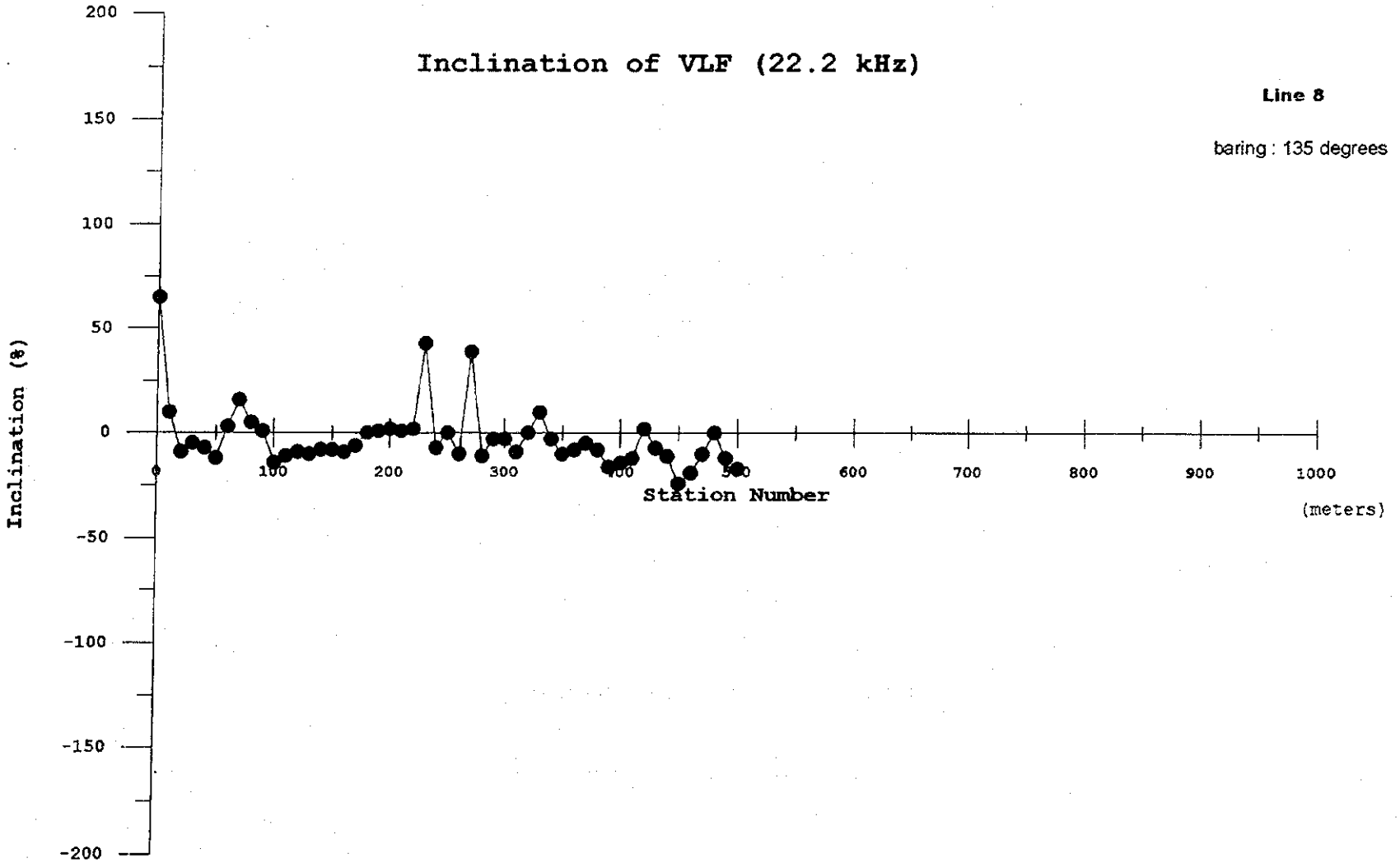



Inclination of VLF (22.2 kHz)
Line 6
bearing : 315 degrees
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
100
200
300
400
500
600
700
800
900
1000
Station Number
(meters)

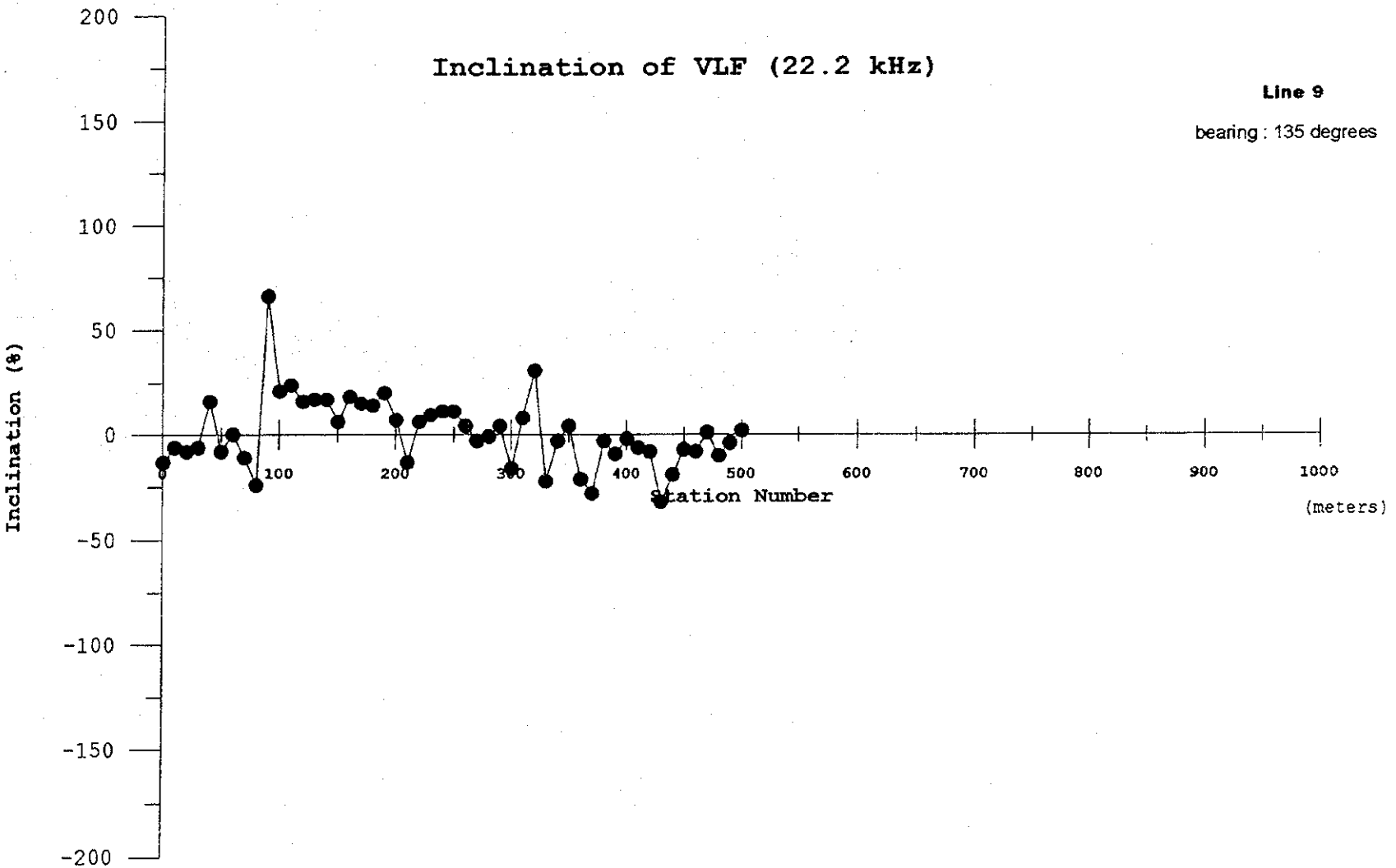
Annex III-3 (7/36) VLF Result



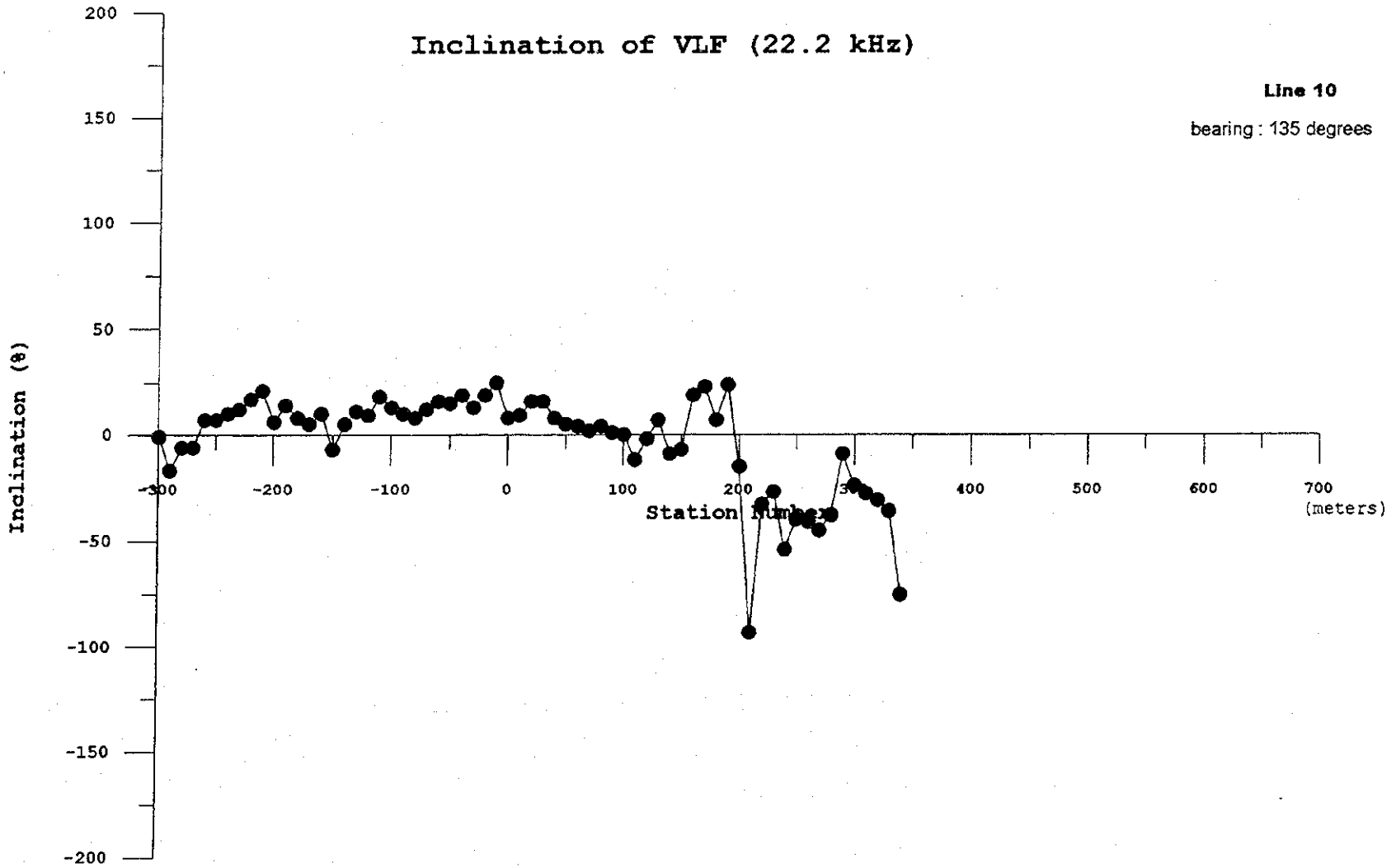
Annex III-3 (8/36) VLF Result



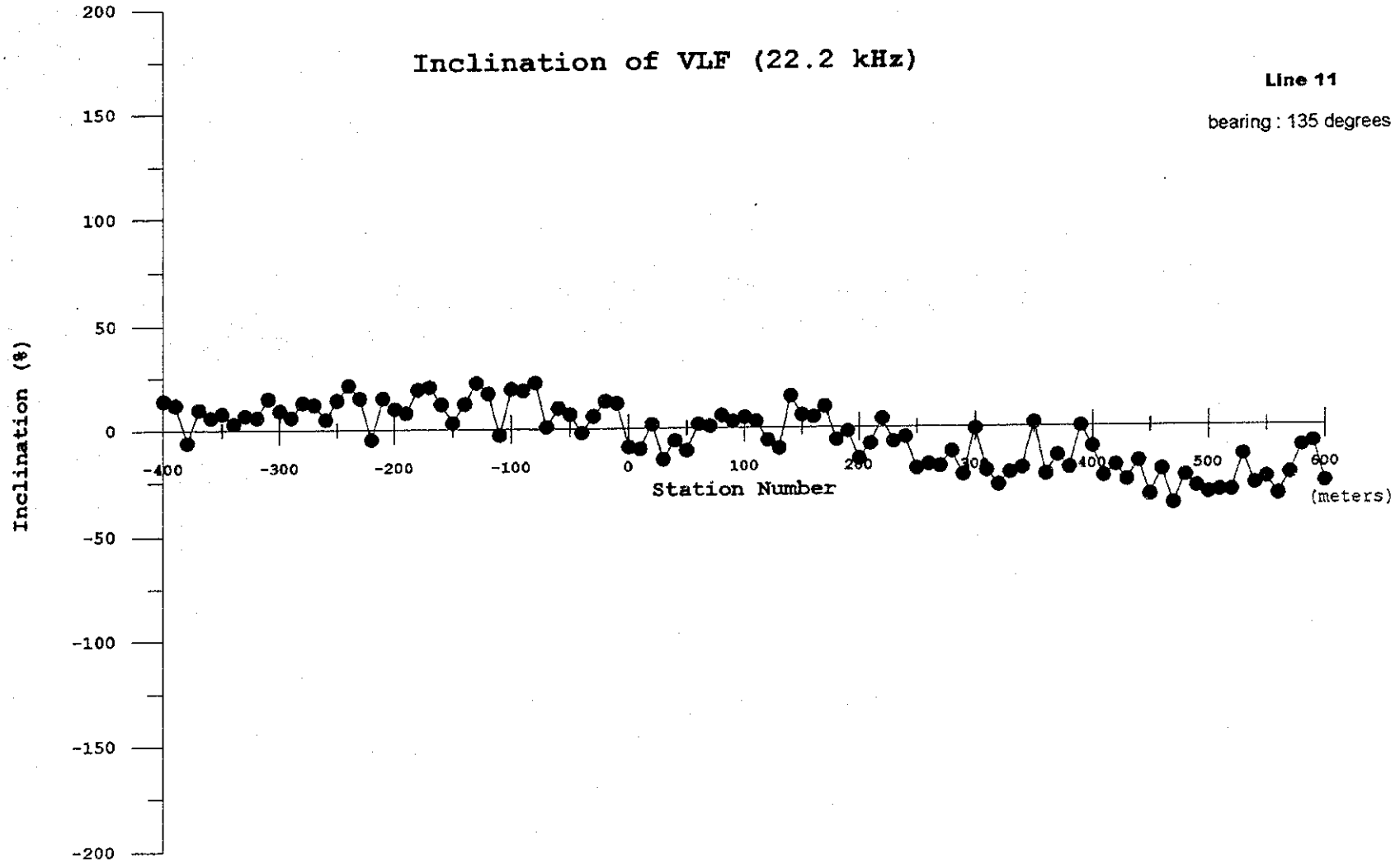
Annex III-3 (9/36) VLF Result



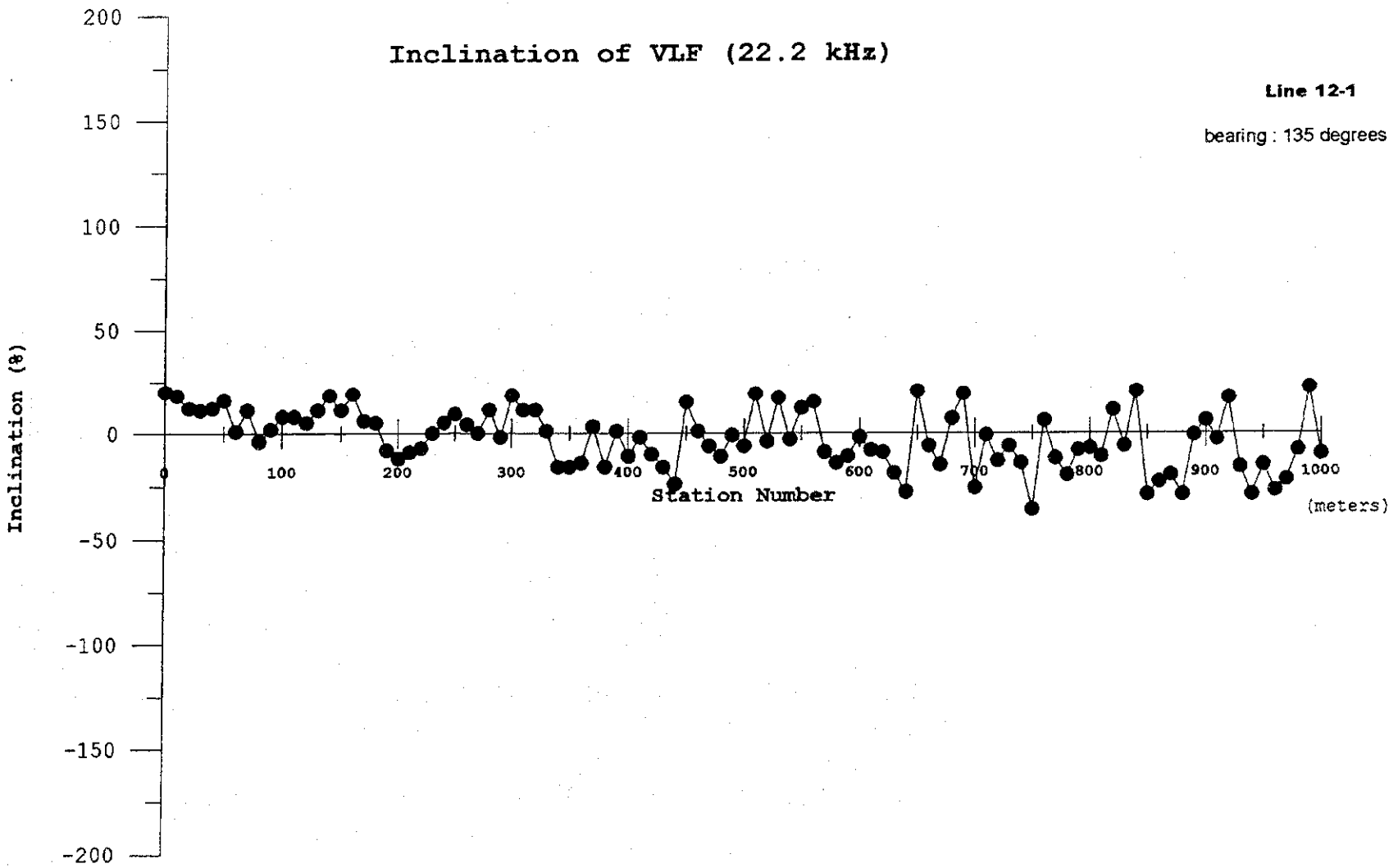
Annex III-3 (10/36) VLF Result



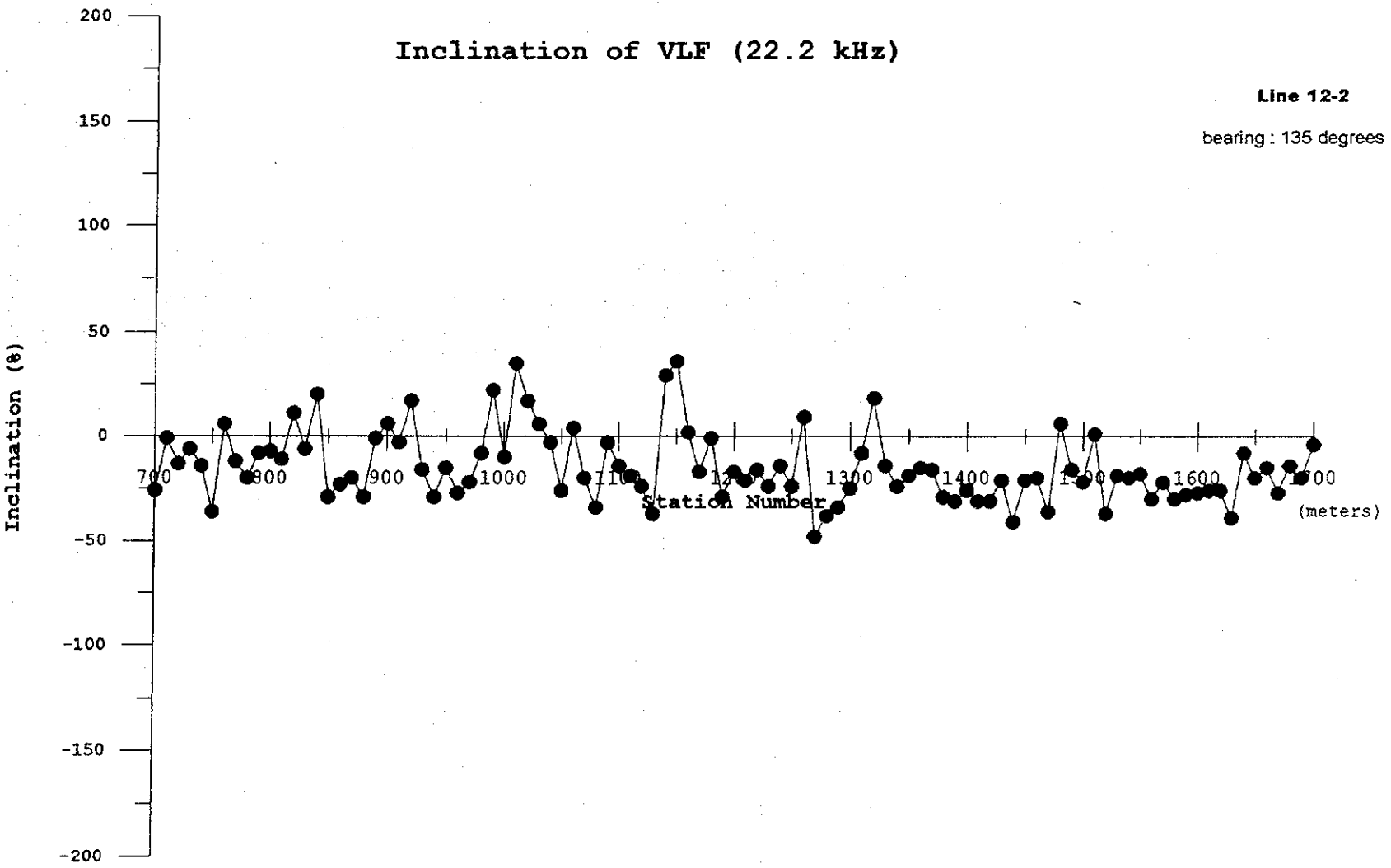
Annex III-3 (11/36) VLF Result

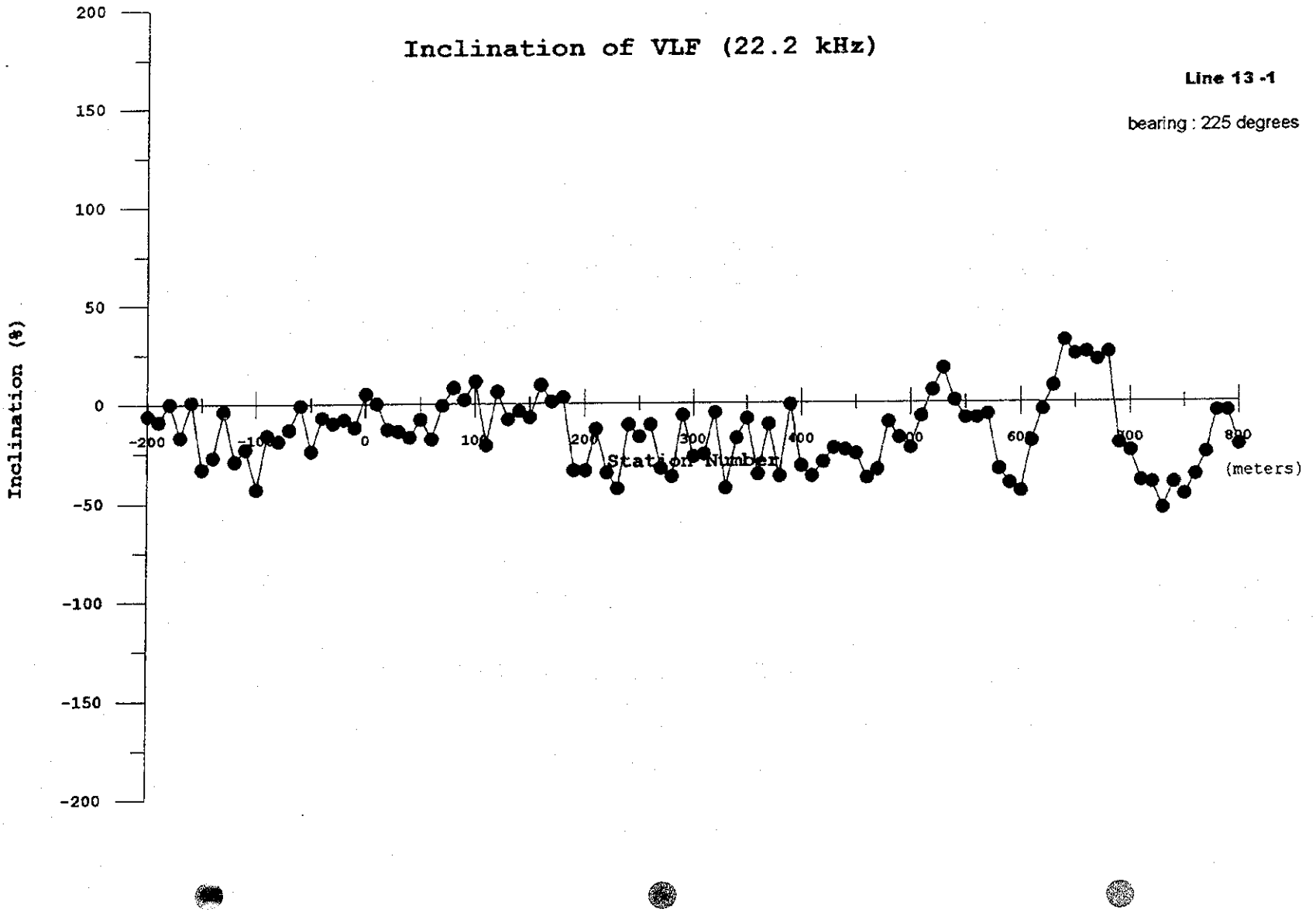


Annex III-3 (12/36) VLF Result

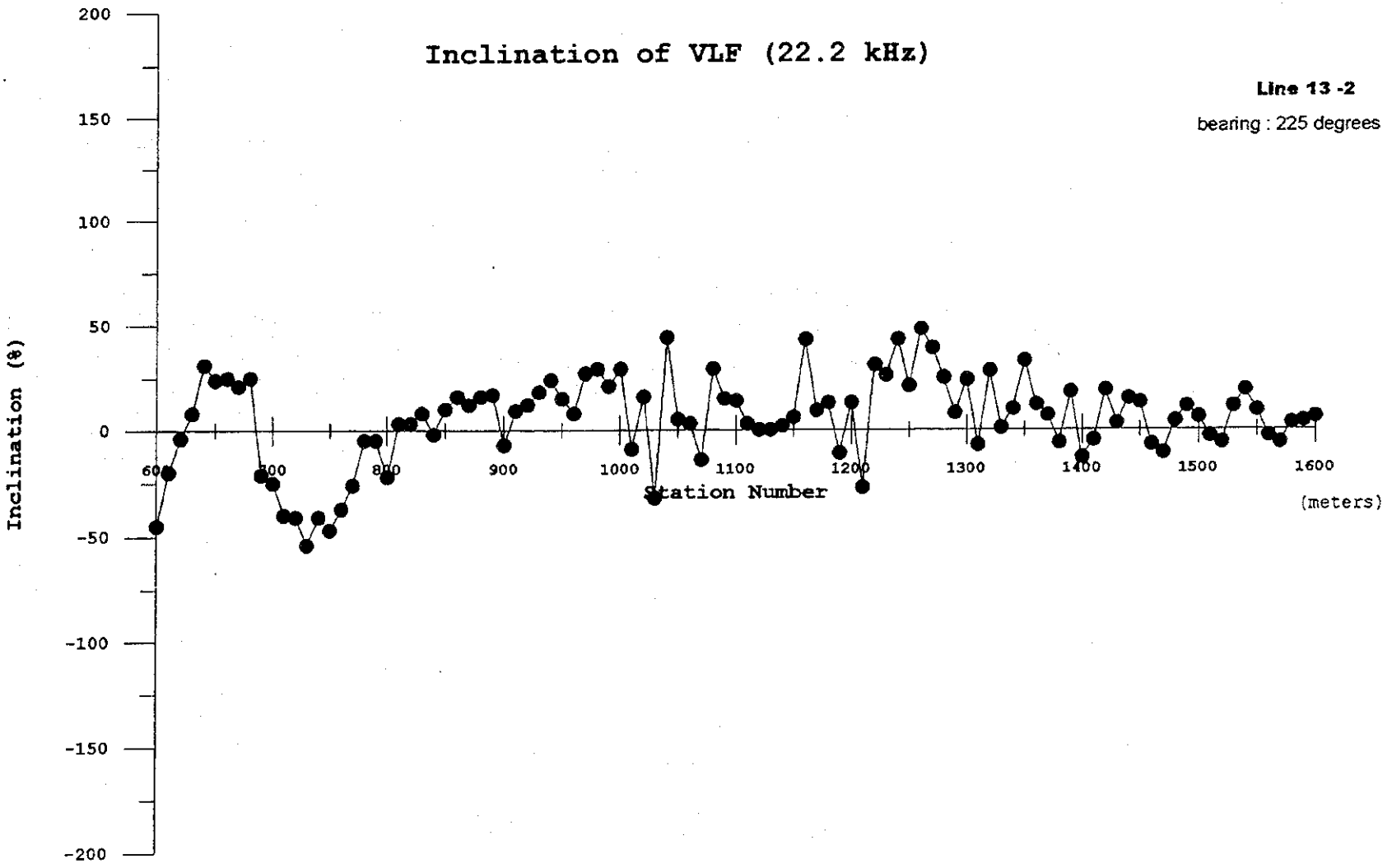


Annex III-3 (13/36) VLF Result

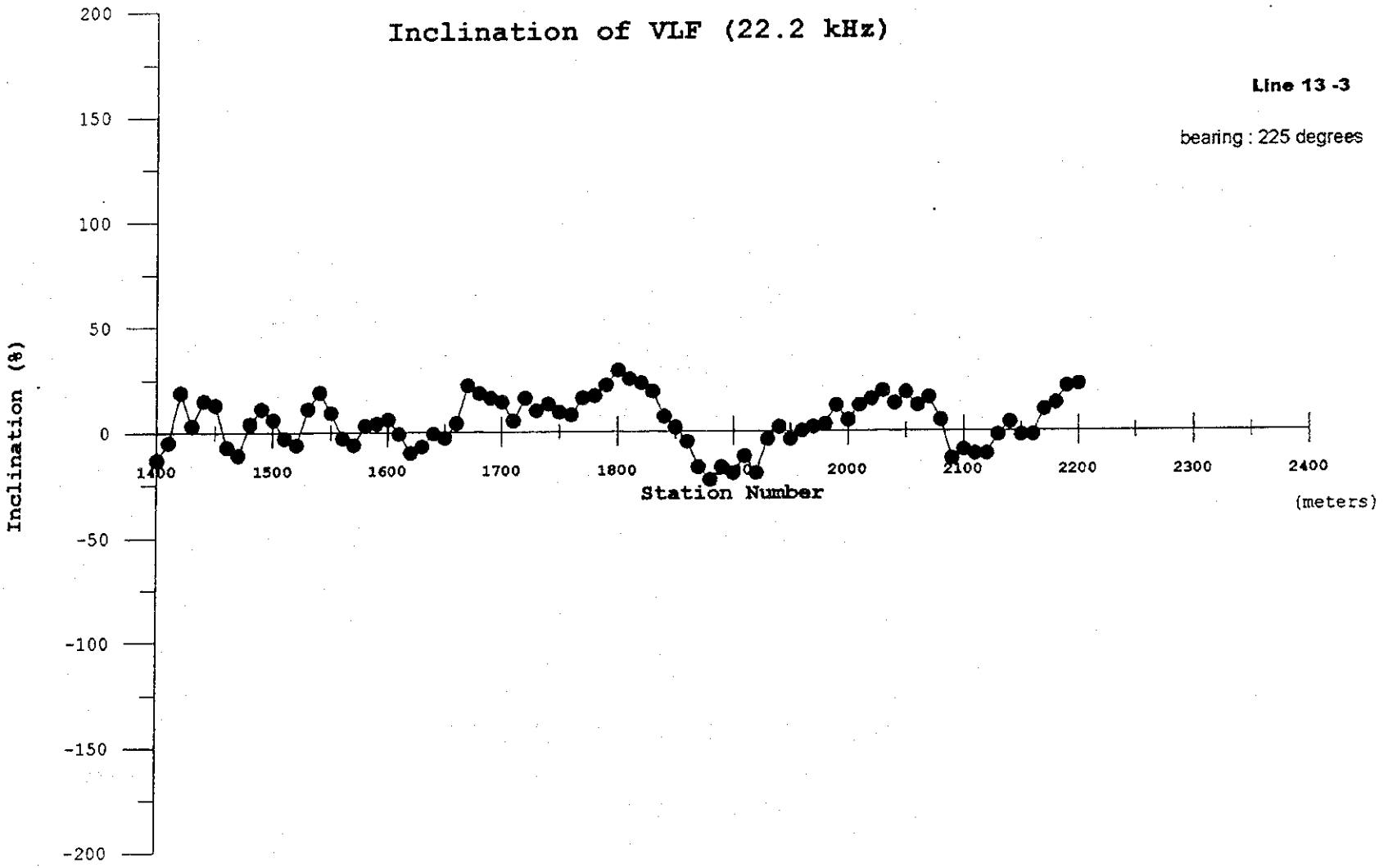



Inclination of VLF (22.2 kHz)
Line 13 -1
bearing : 225 degrees
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
-200
-100
0
100
200
300
400
500
600
700
800
Station Number
(meters)

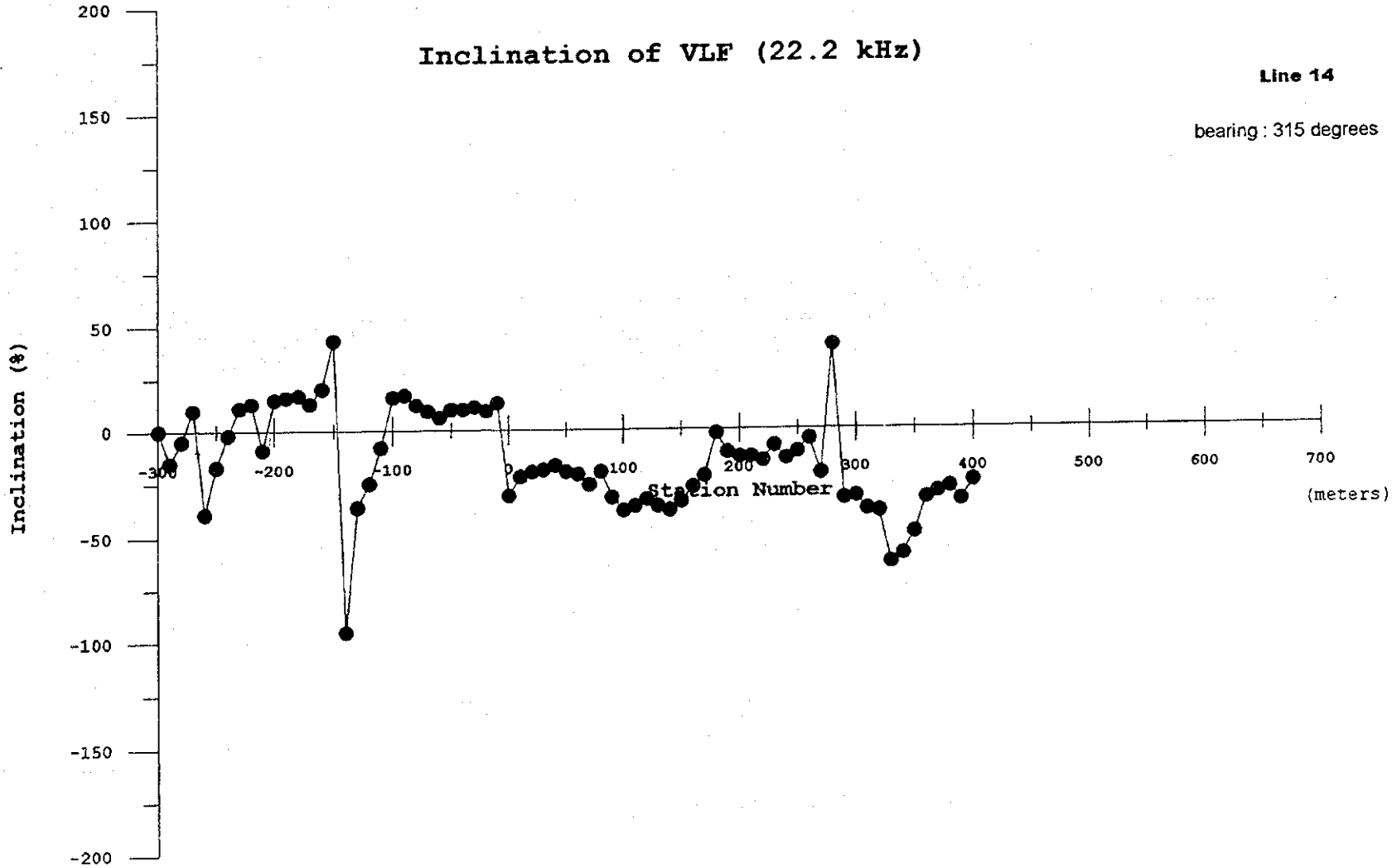
Annex III-3 (15/36) VLF Result



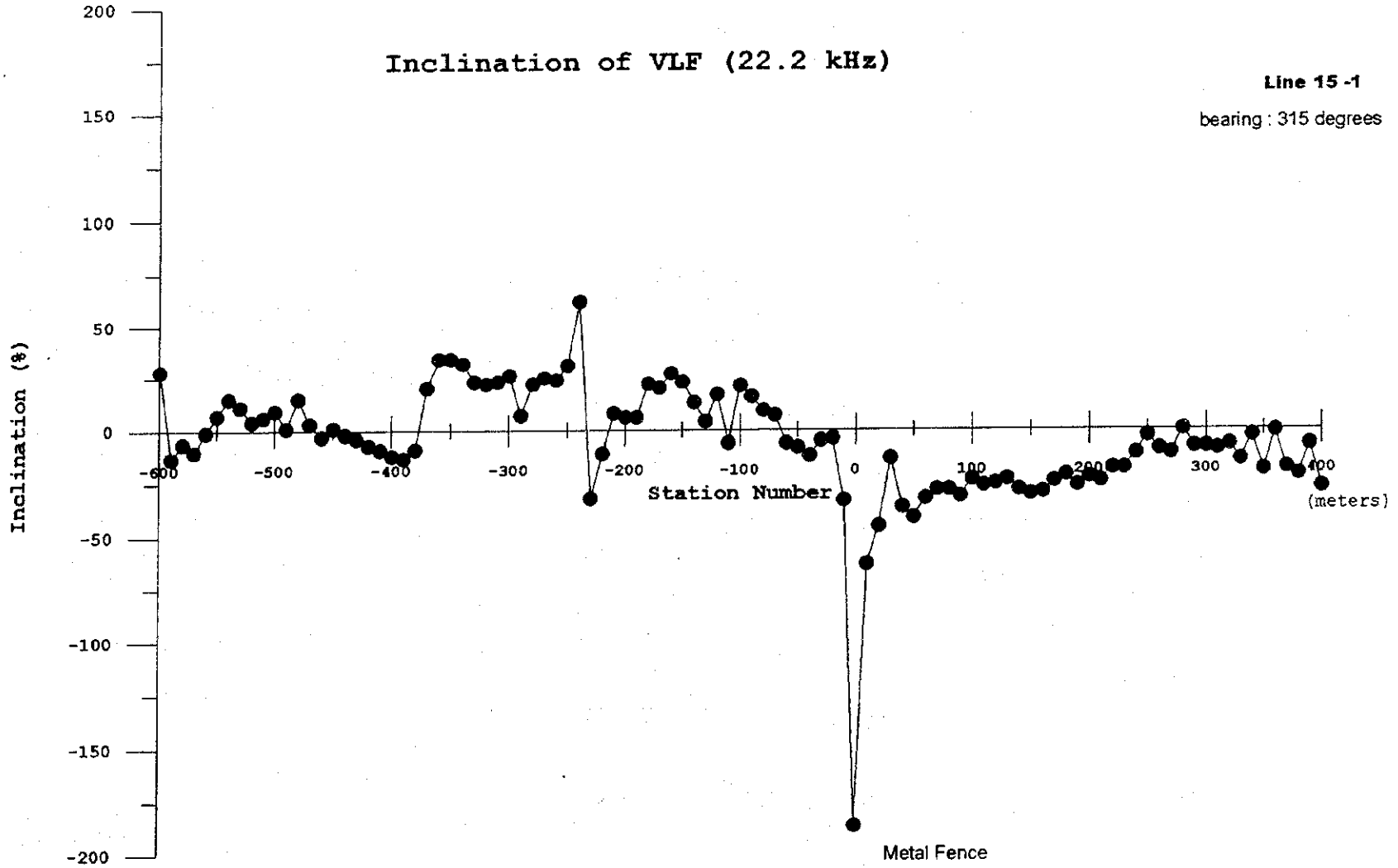
Annex III-3 (16/36) VLF Result



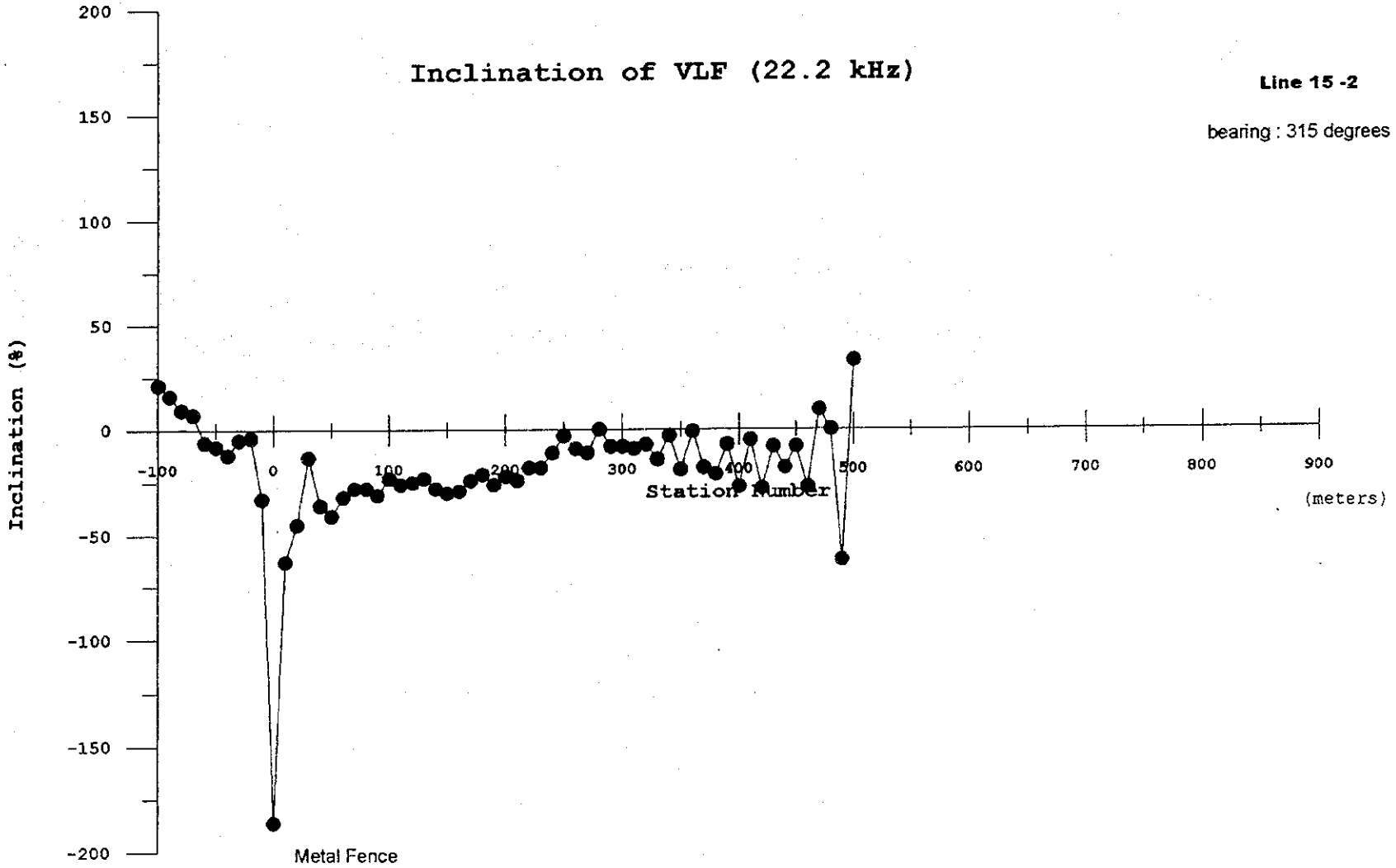
Annex III-3 (17/36) VLF Result



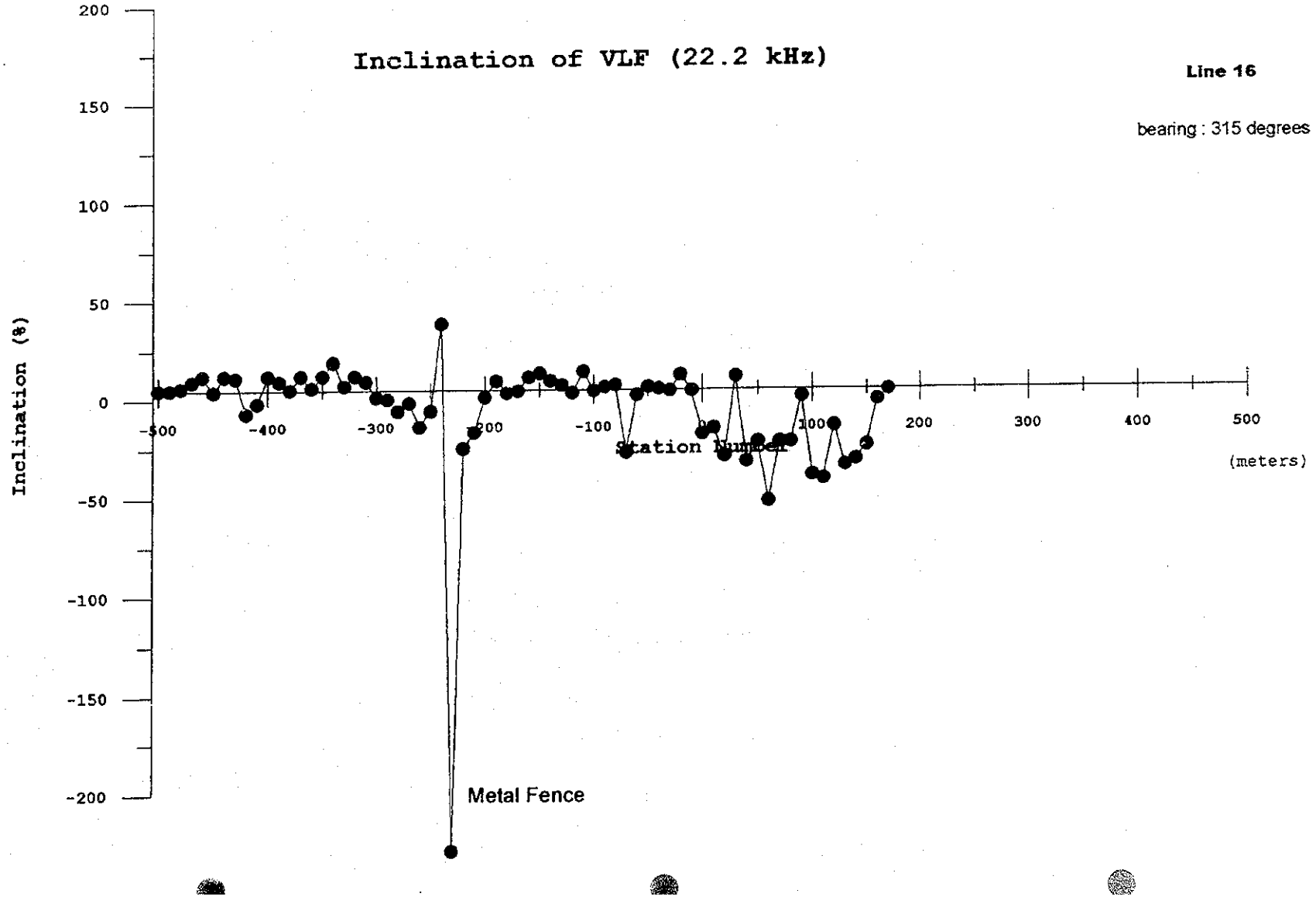
Annex III-3 (18/36) VLF Result



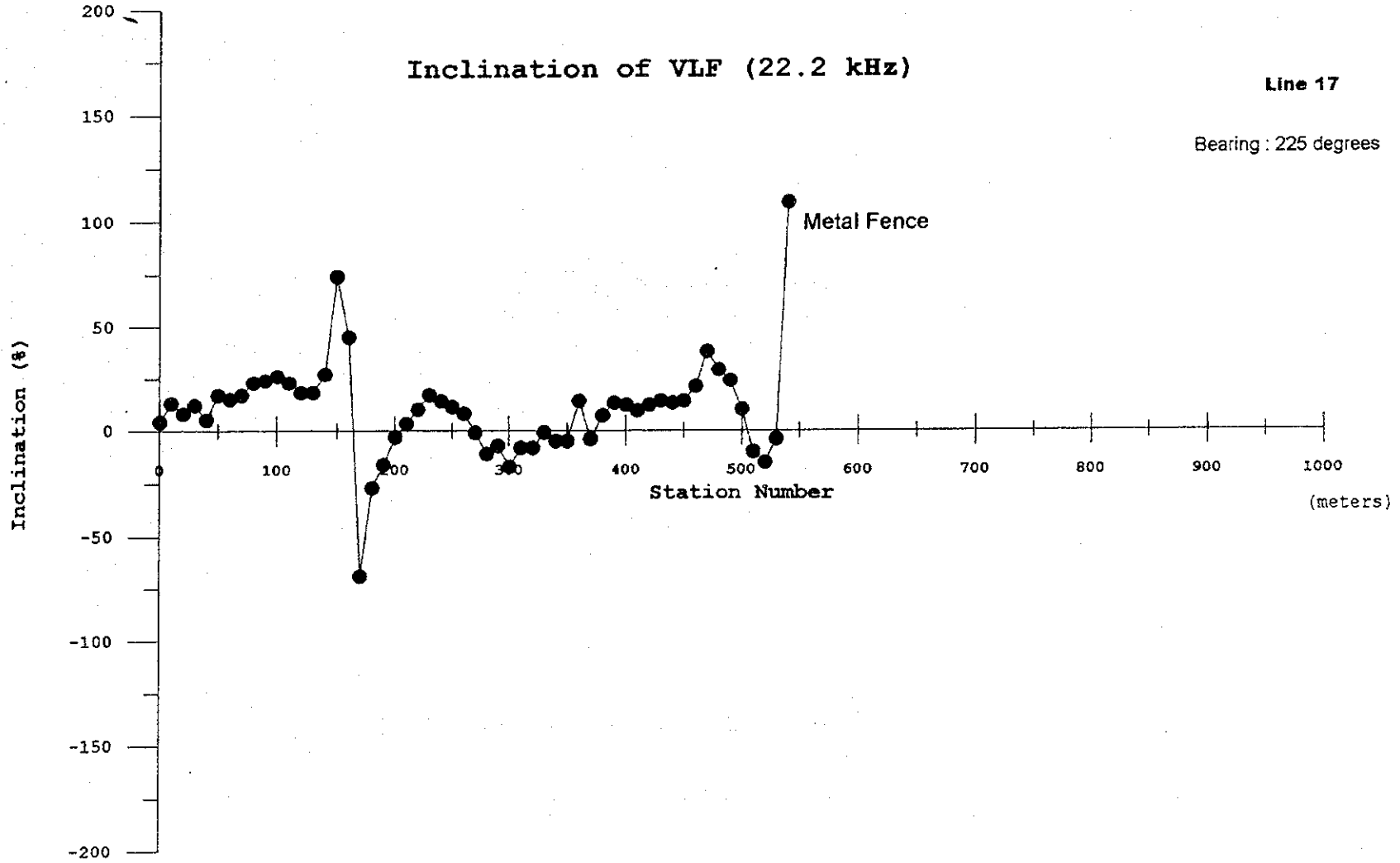
Annex III-3 (19/36) VLF Result



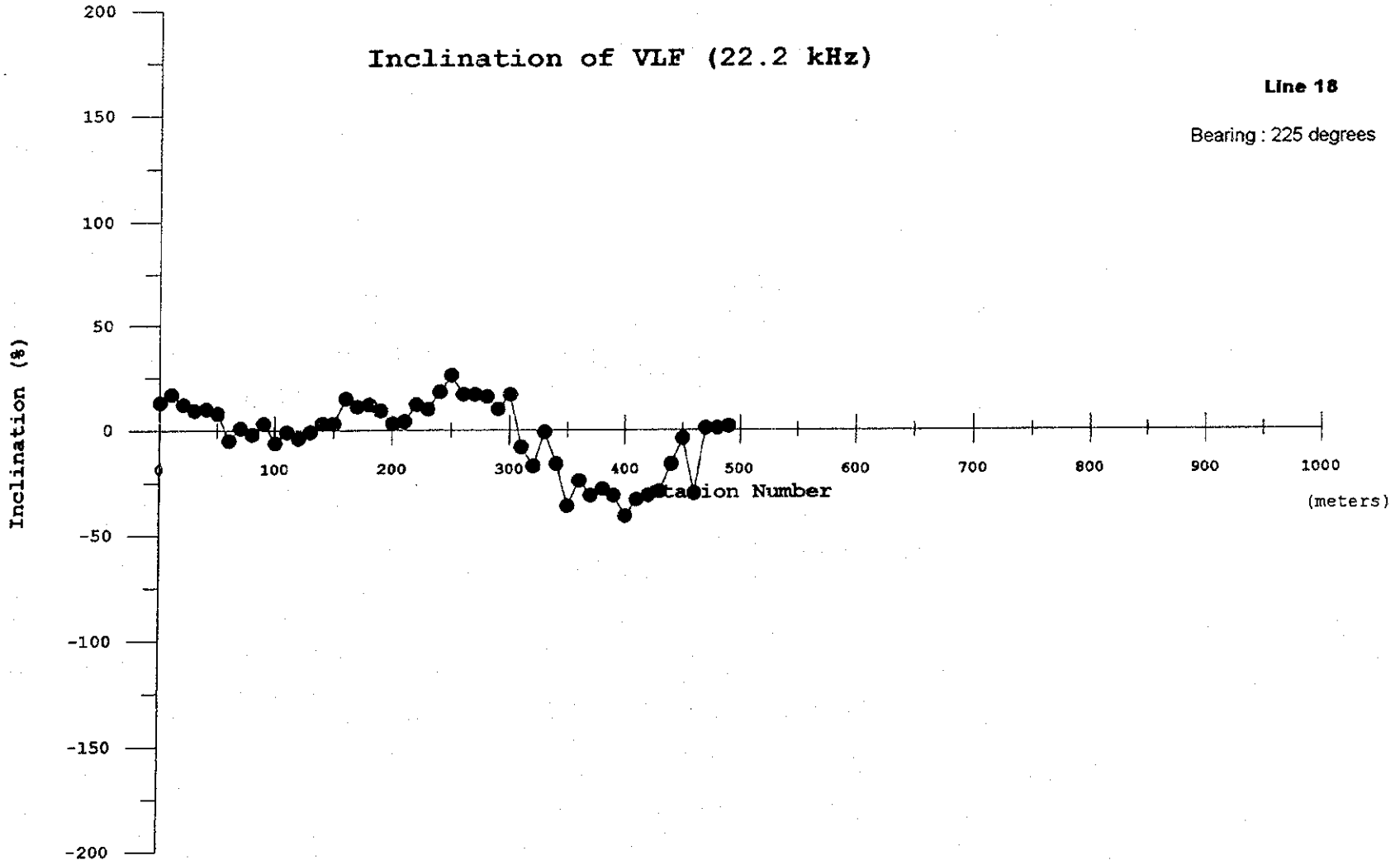
Annex III-3 (20/36) VLF Result



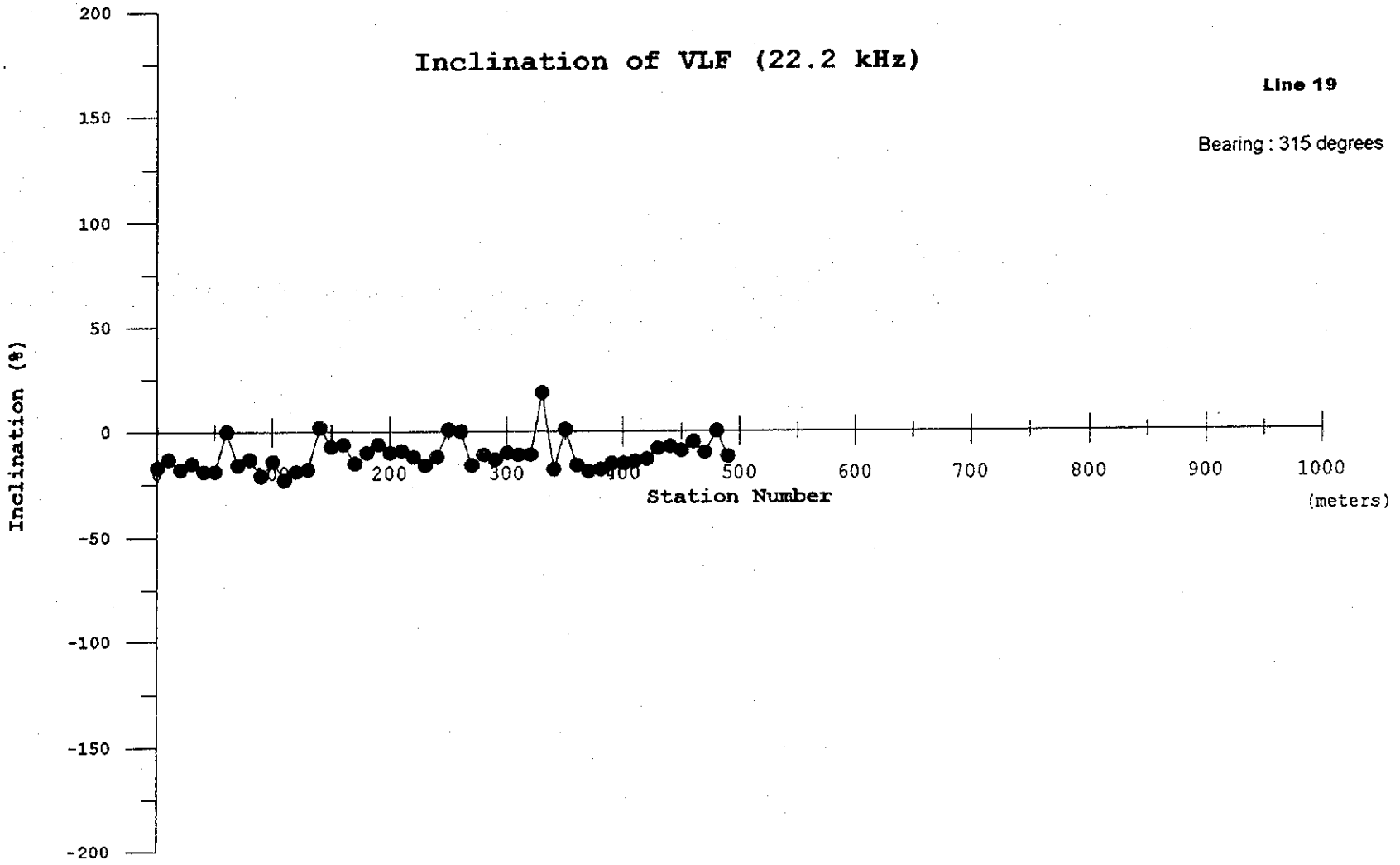
Annex III-3 (21/36) VLF Result



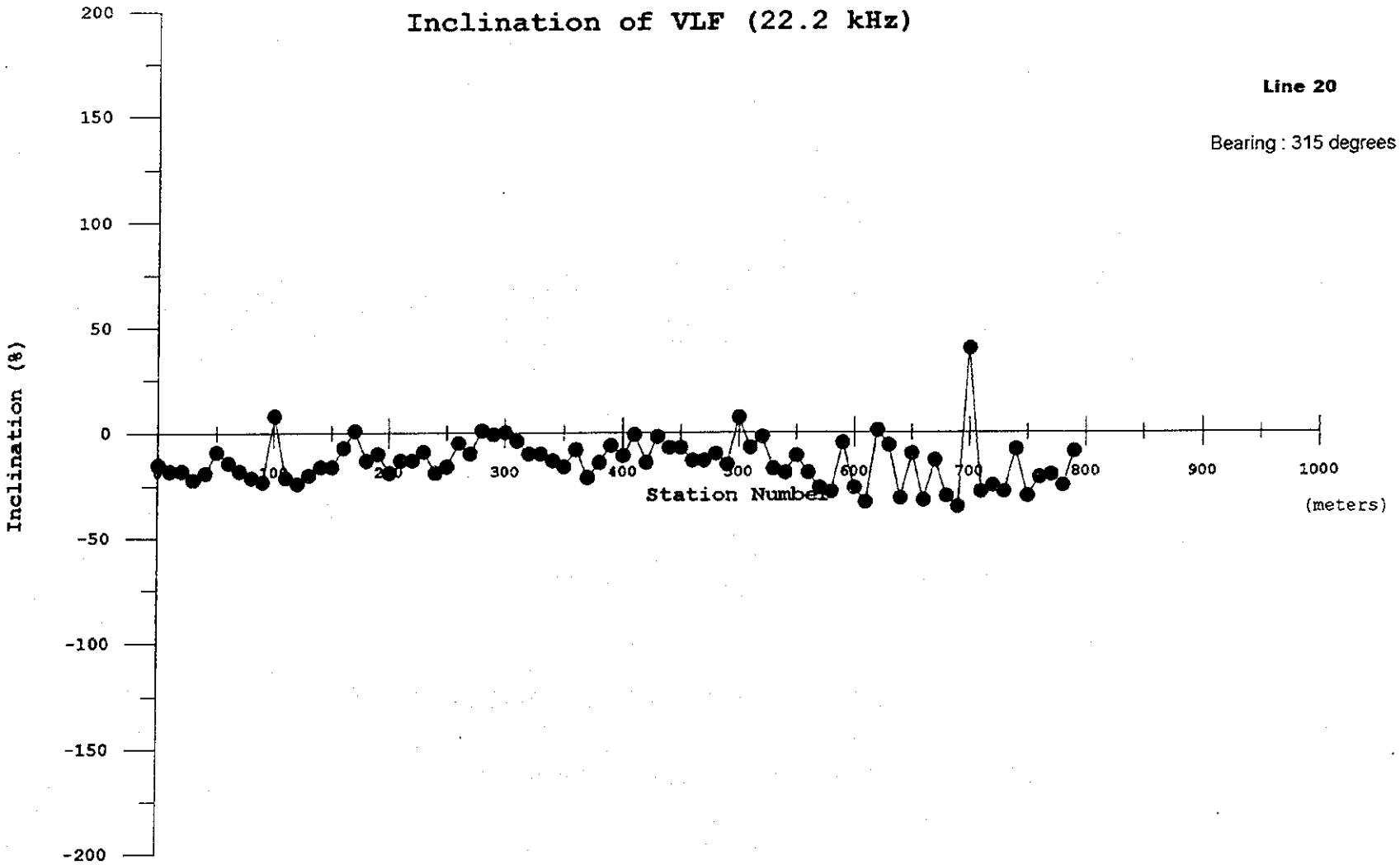
Annex III-3 (22/36) VLF Result



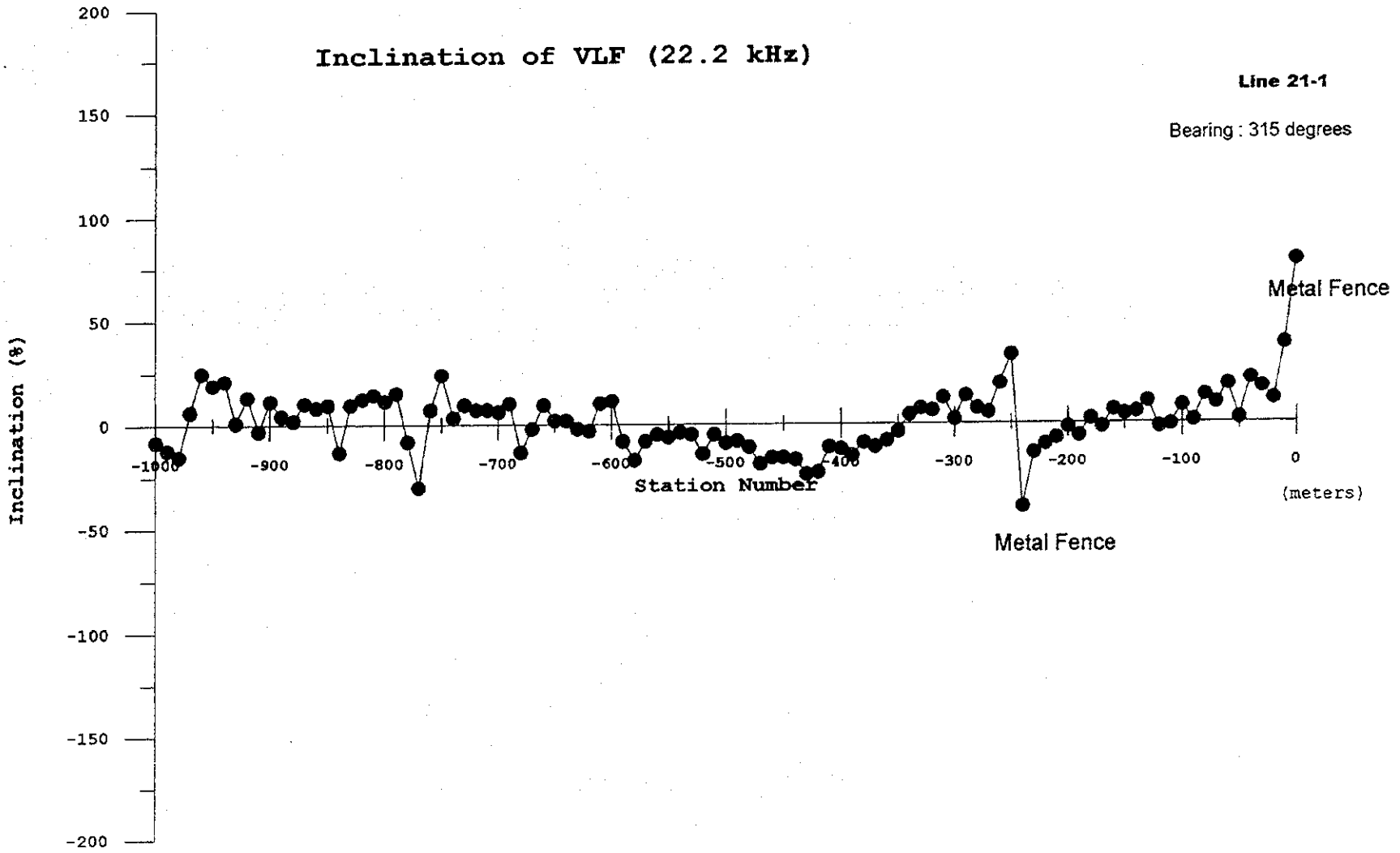
Annex III-3 (23/36) VLF Result



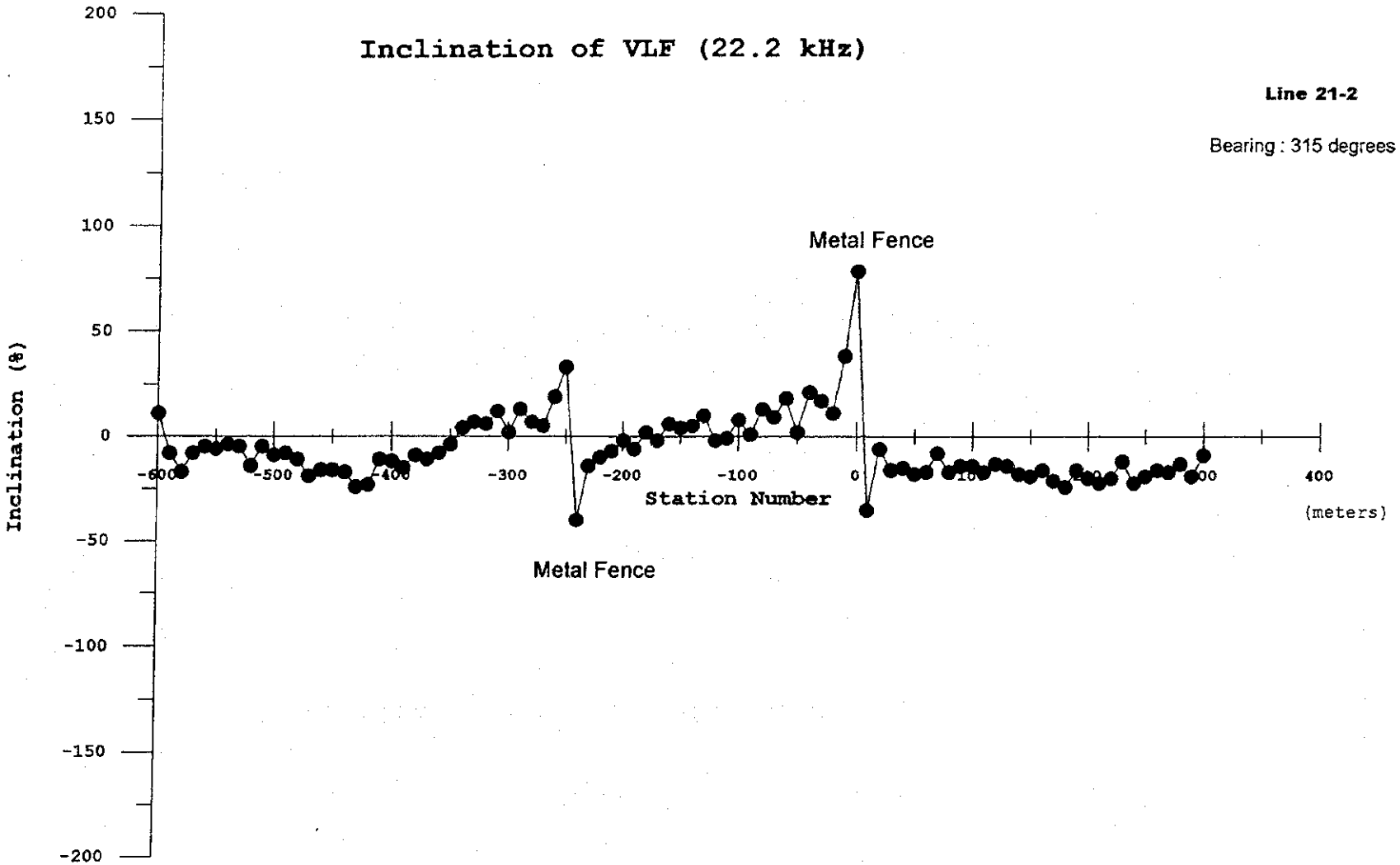
Annex III-3 (24/36) VLF Result

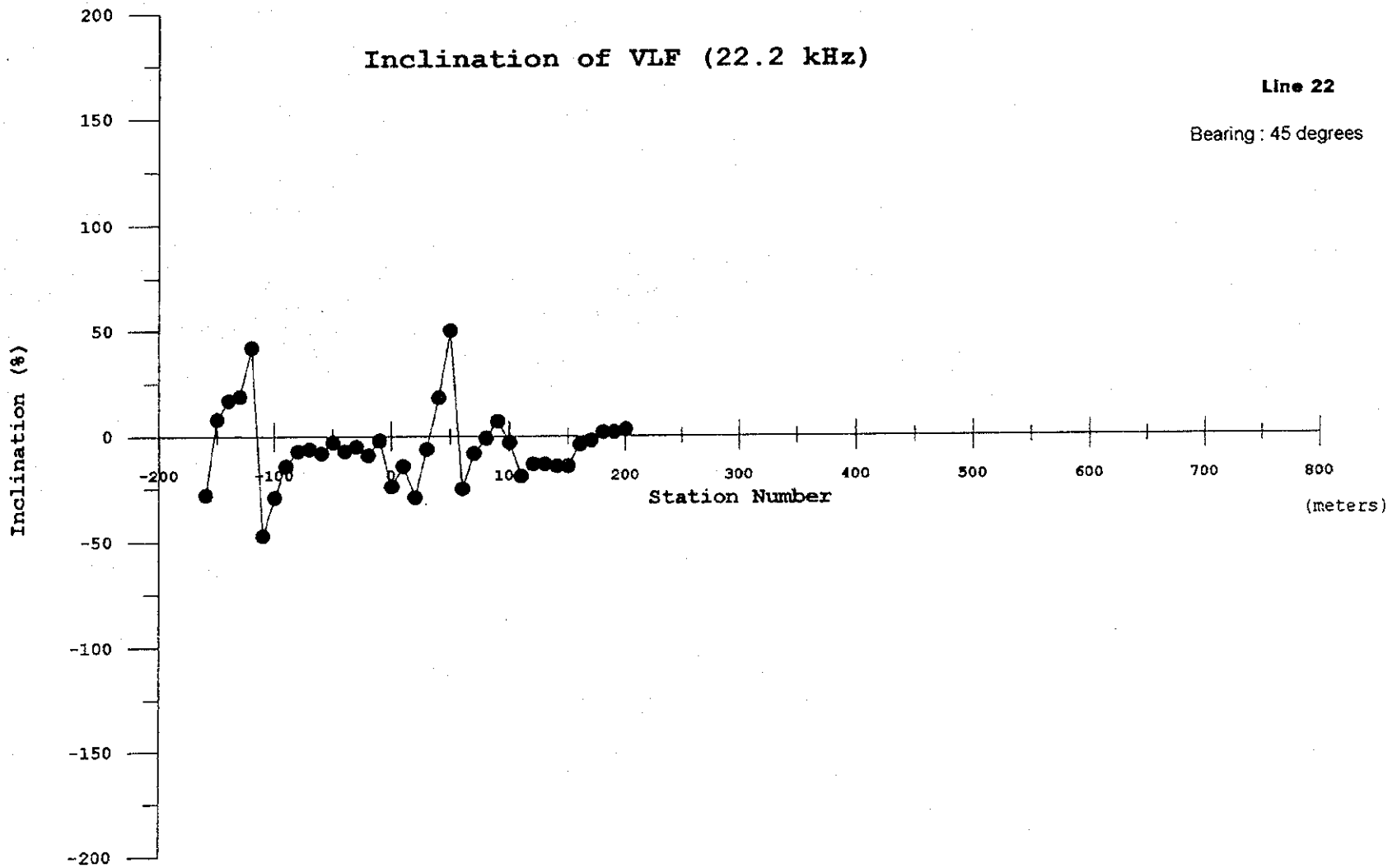


Annex III-3 (25/36) VLF Result

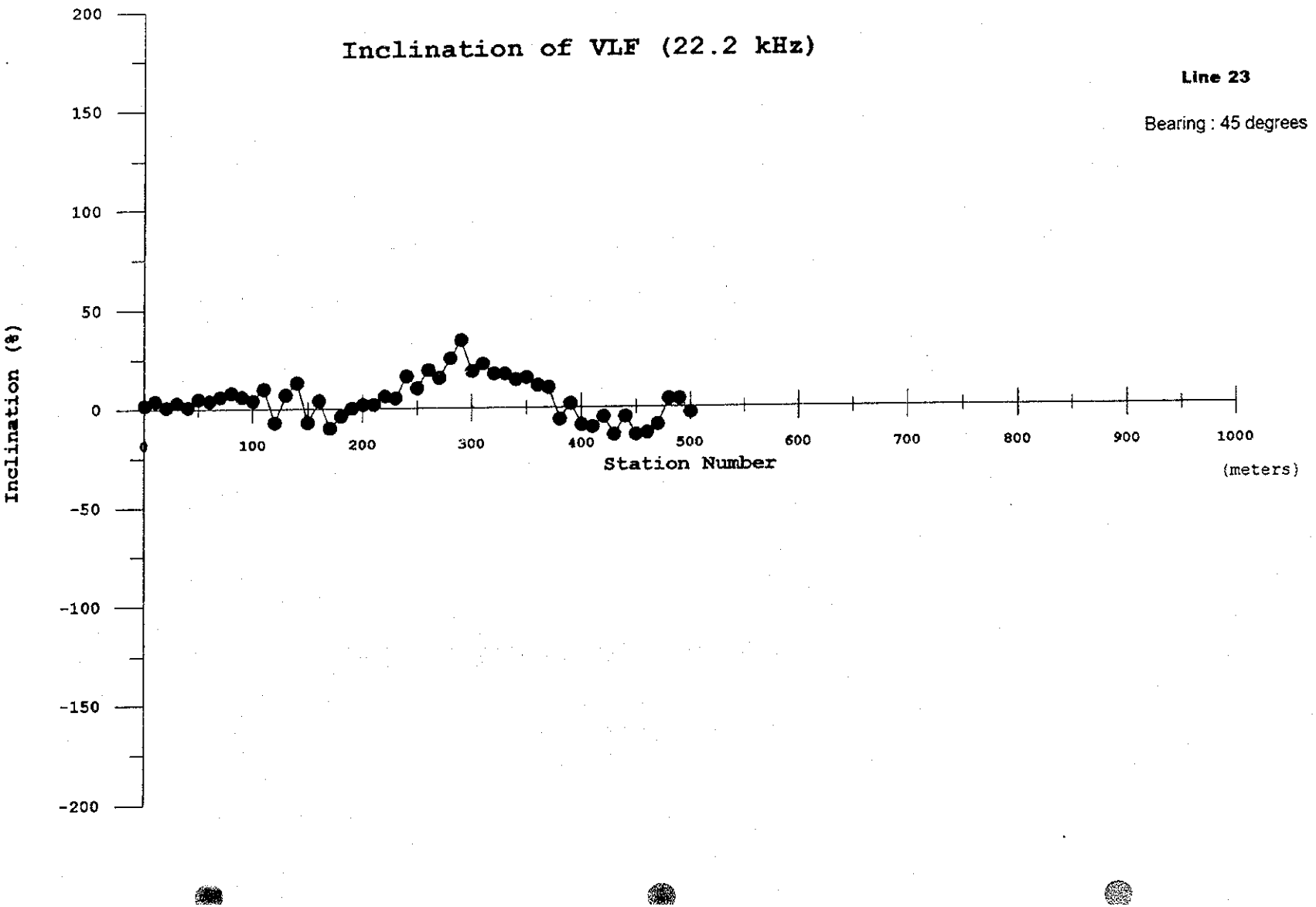


Annex III-3 (26/36) VLF Result

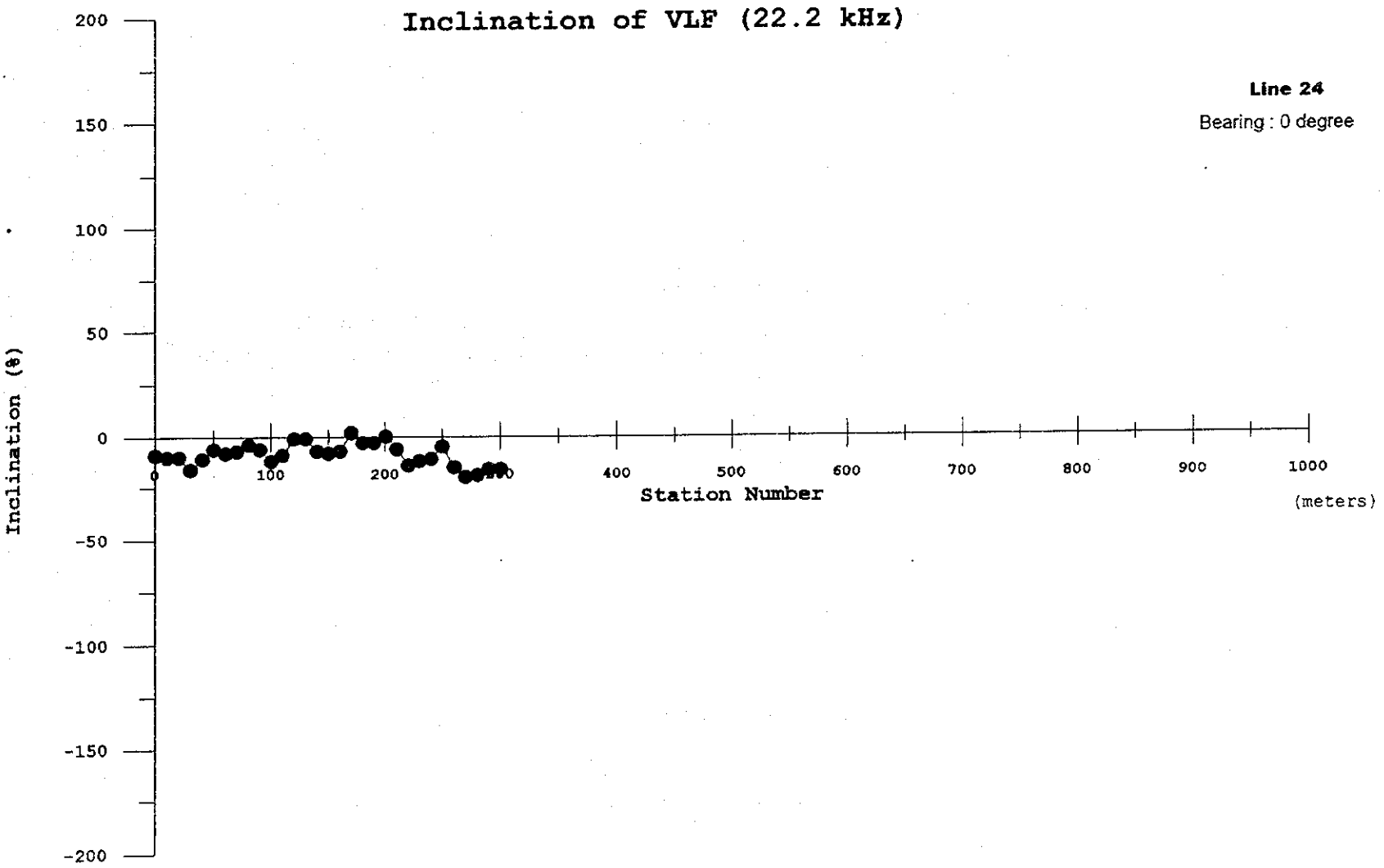



Inclination of VLF (22.2 kHz)
Line 22
Bearing : 45 degrees
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
-200
-100
0
100
200
300
400
500
600
700
800
Station Number
(meters)

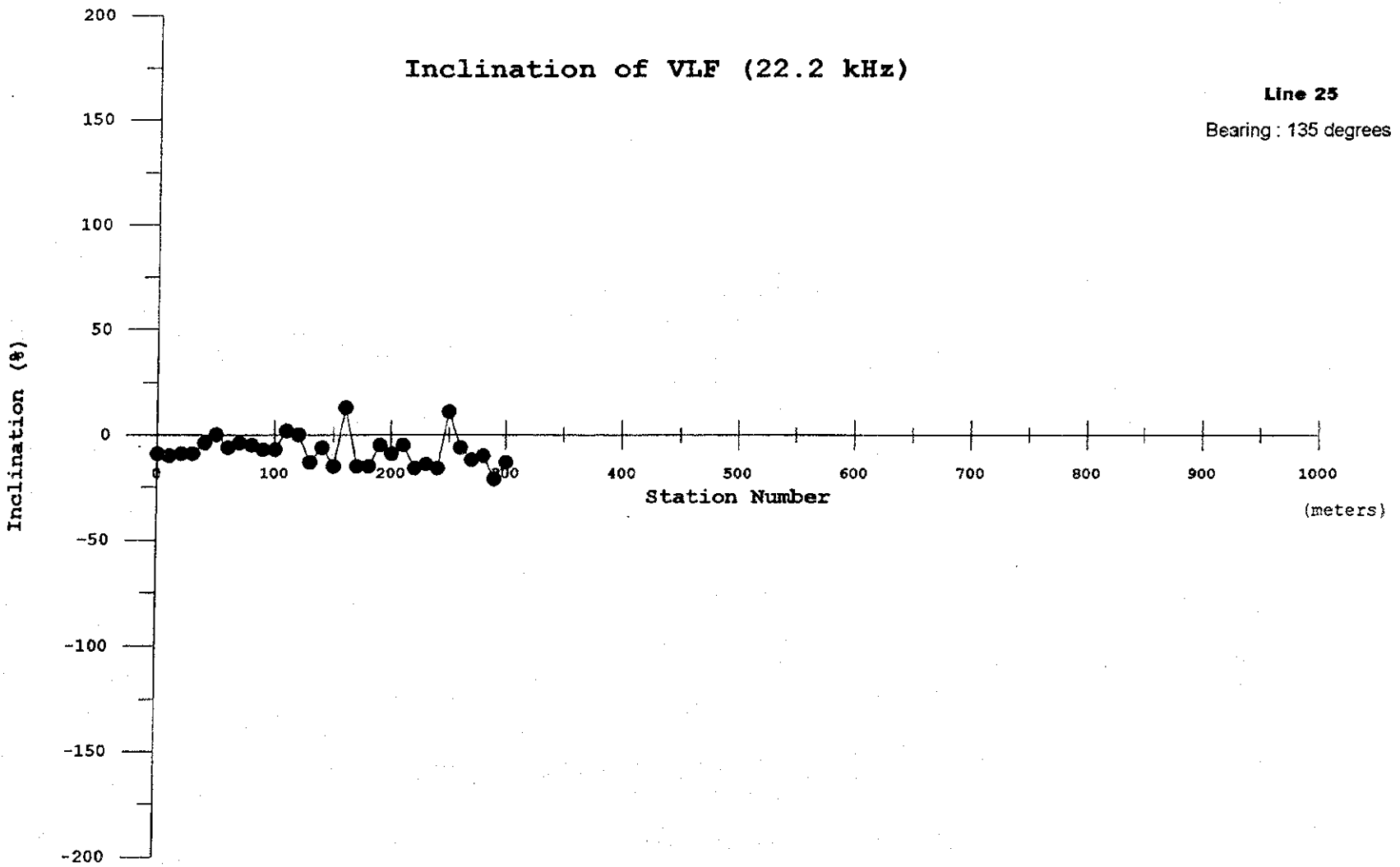
Annex III-3 (28/36) VLF Result



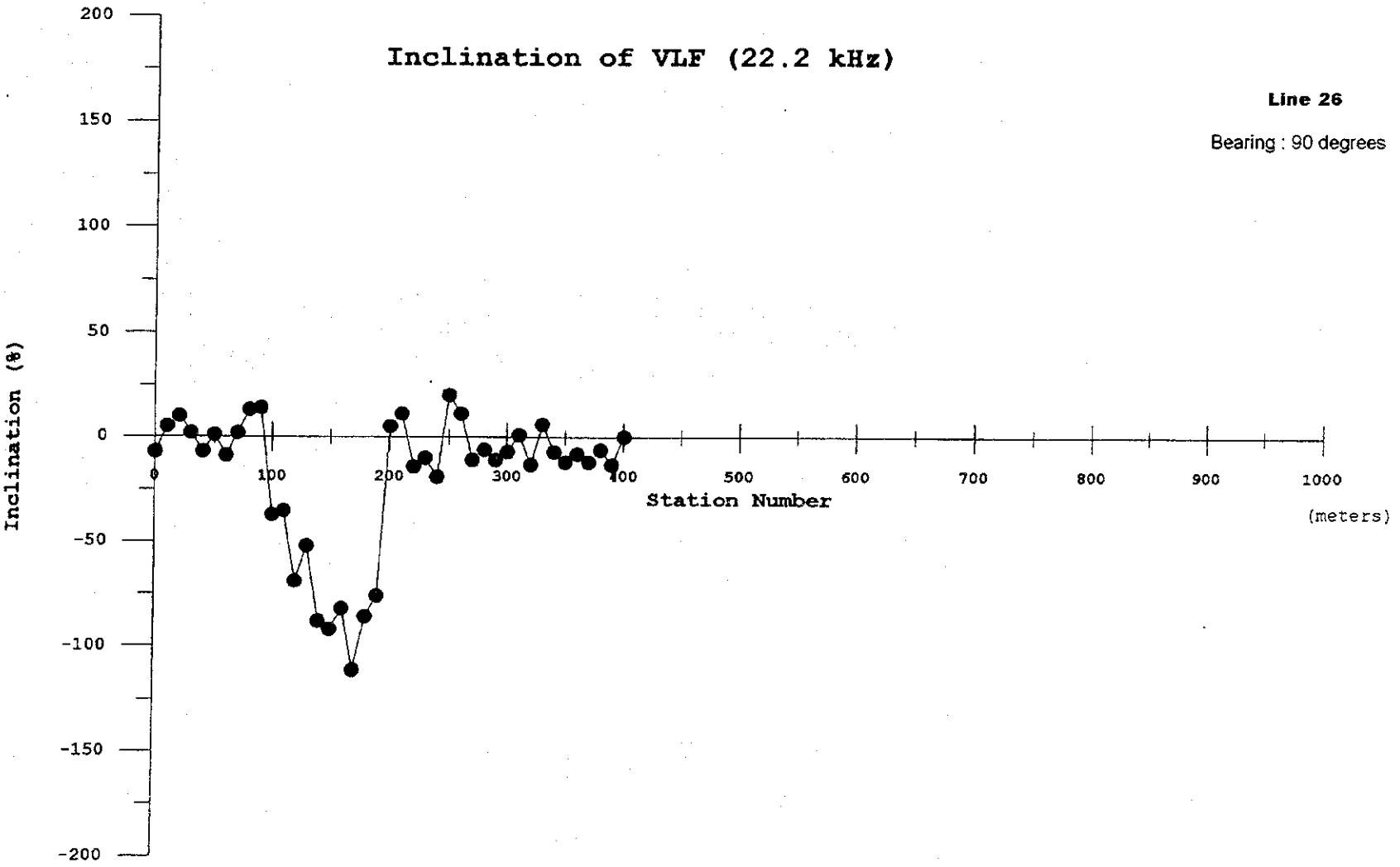
Annex III-3 (29/36) VLF Result



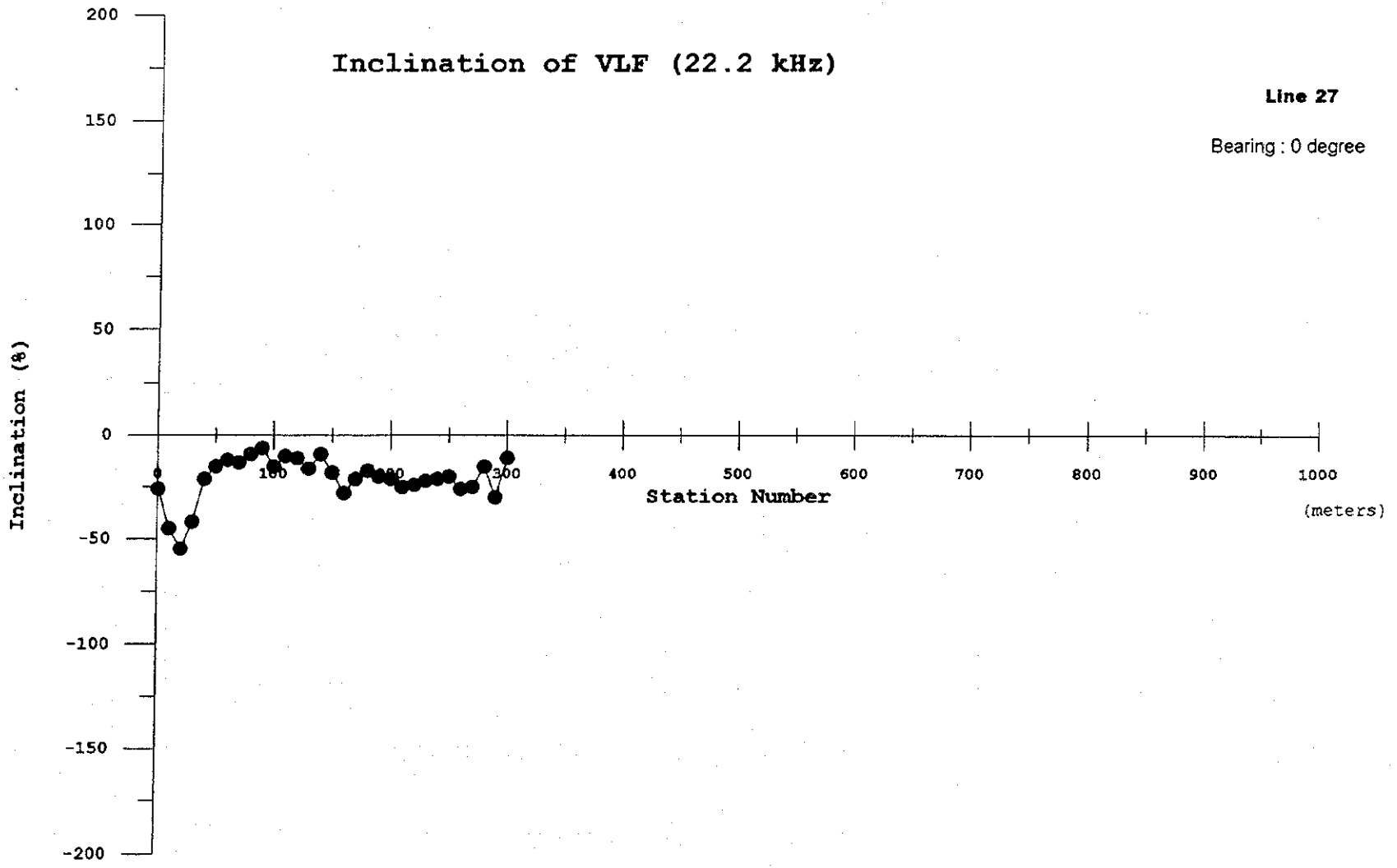
Annex III-3 (30/36) VLF Result



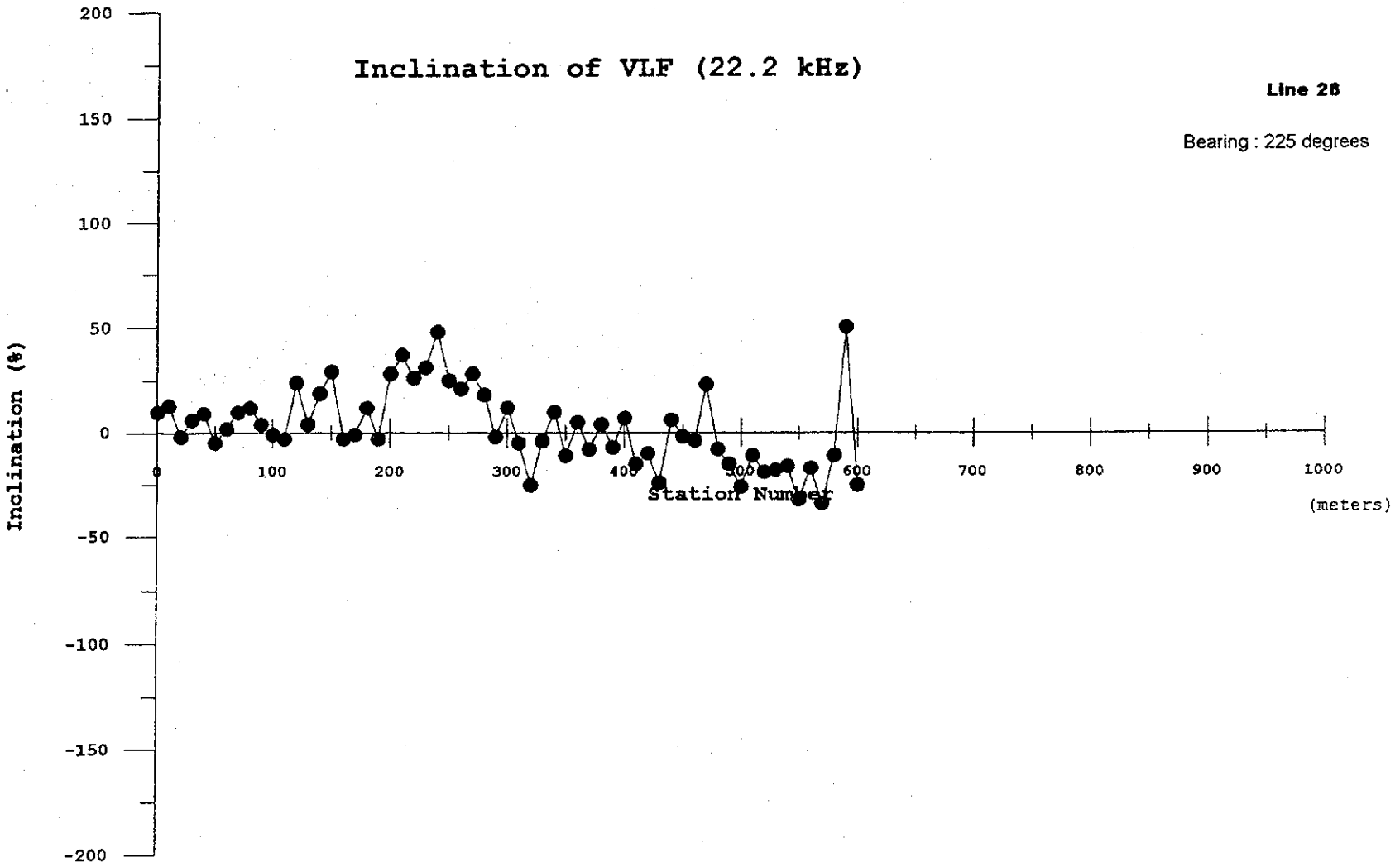
Annex III-3 (31/36) VLF Result



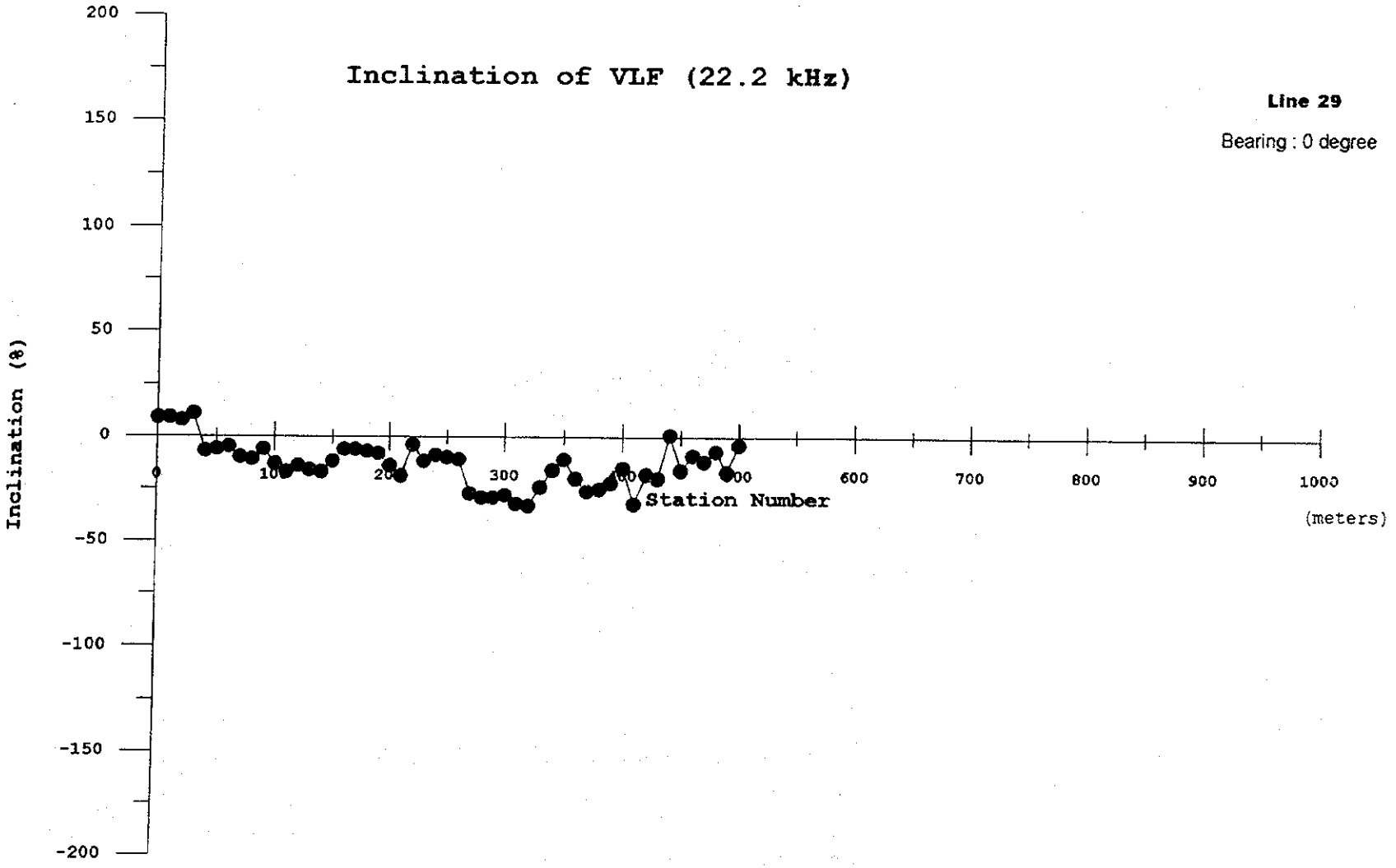
Annex III-3 (32/36) VLF Result



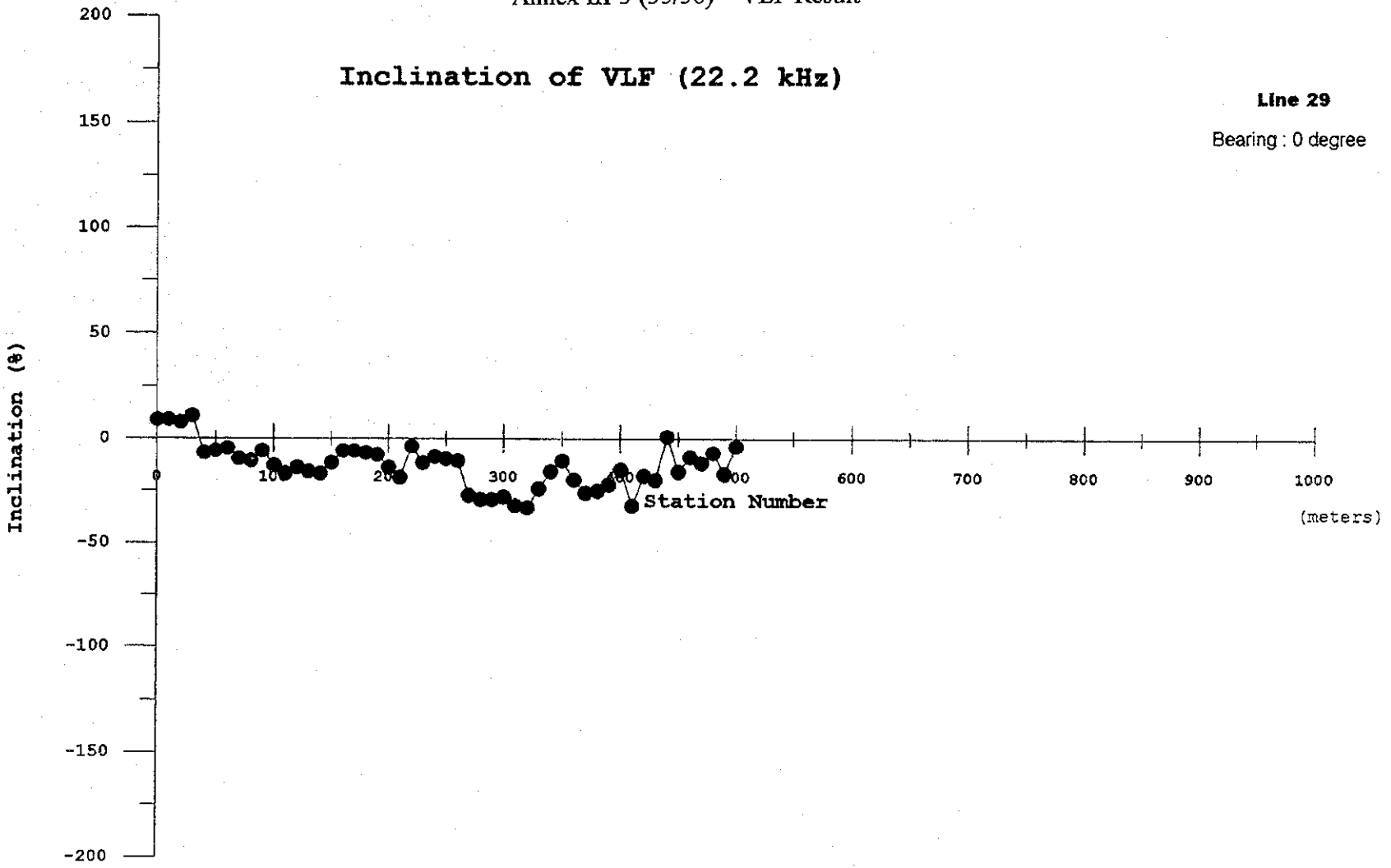
Annex III-3 (33/36) VLF Result

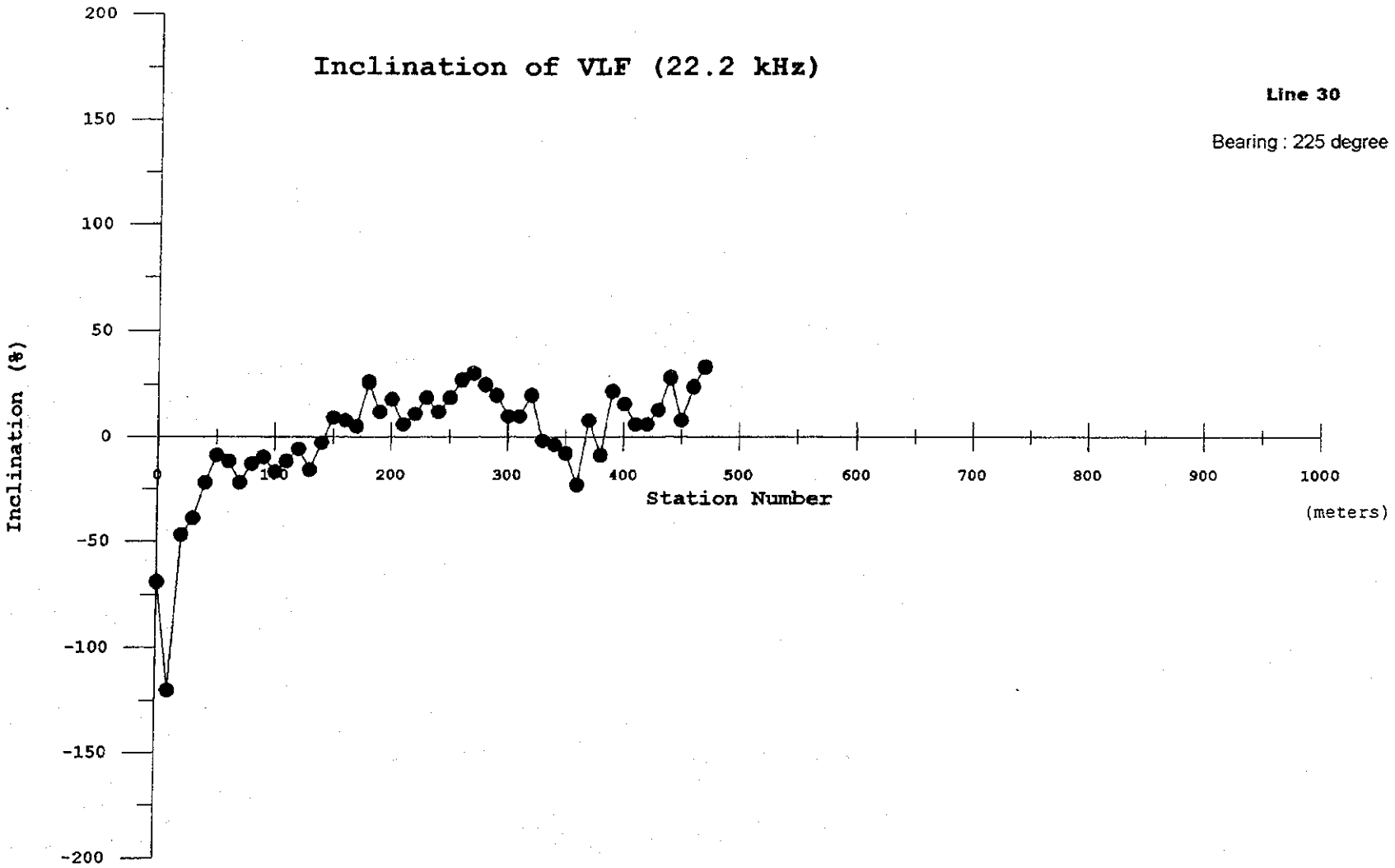


Annex III-3 (34/36) VLF Result



Annex III-3 (35/36) VLF Result




Inclination of VLF (22.2 kHz)
Line 30
Bearing : 225 degree
Inclination (%)
200
150
100
50
0
-50
-100
-150
-200
0
100
200
300
400
500
600
700
800
900
1000
Station Number
(meters)