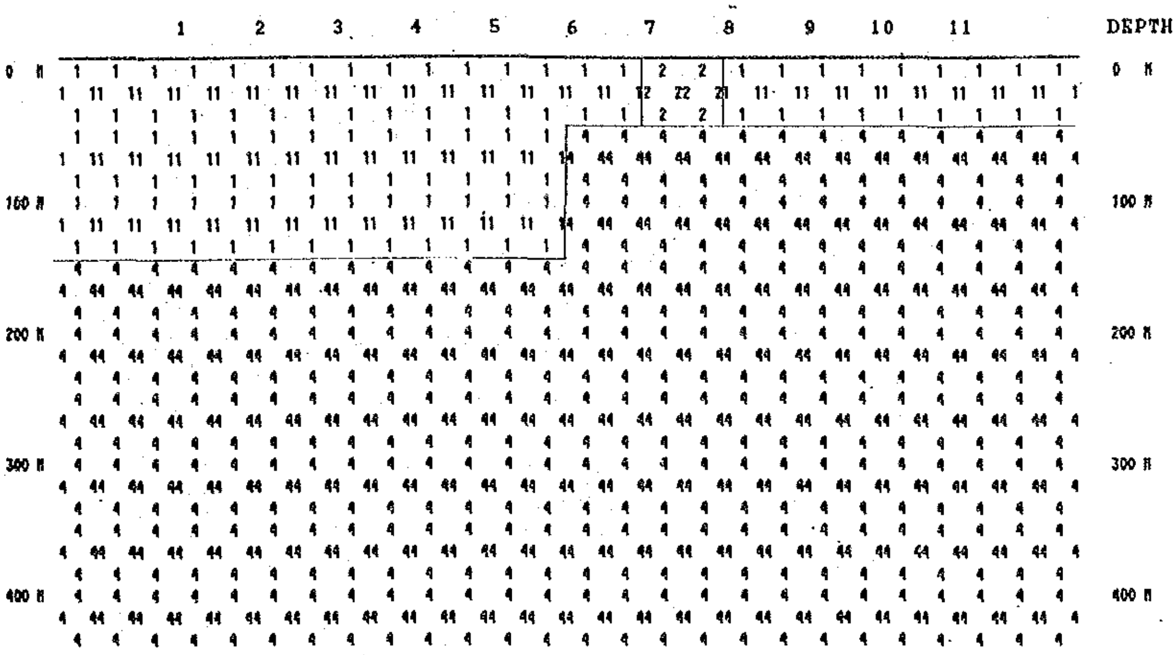
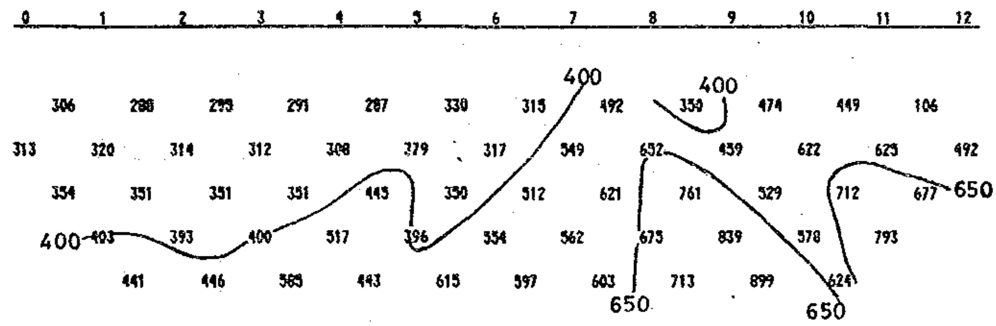
** SIMULATED MODEL BY CODE NUMBER **   LINE-PC



CODE NUMBER	1	2	3	4	5	6	7	8	9
RESISTIVITY(OHM-M)	300	200	300	1000	0	0	0	0	0
FREQUENCY EFFECT(%)	1.3	1.2	.7	1.0	0.0	0.0	0.0	0.0	0.0

** RESISTIVITY(OHM-M) **



** FREQUENCY EFFECT(%) **

0 1 2 3 4 5 6 7 8 9 10 11 12

1.3 1.3 1.3 1.3 1.3 1.3 1.2 1.2 1.2 1.2 1.2 1.7

1.3 1.3 1.3 1.3 1.3 1.3 1.2 1.2 1.2 1.1 1.2 1.2 1.2

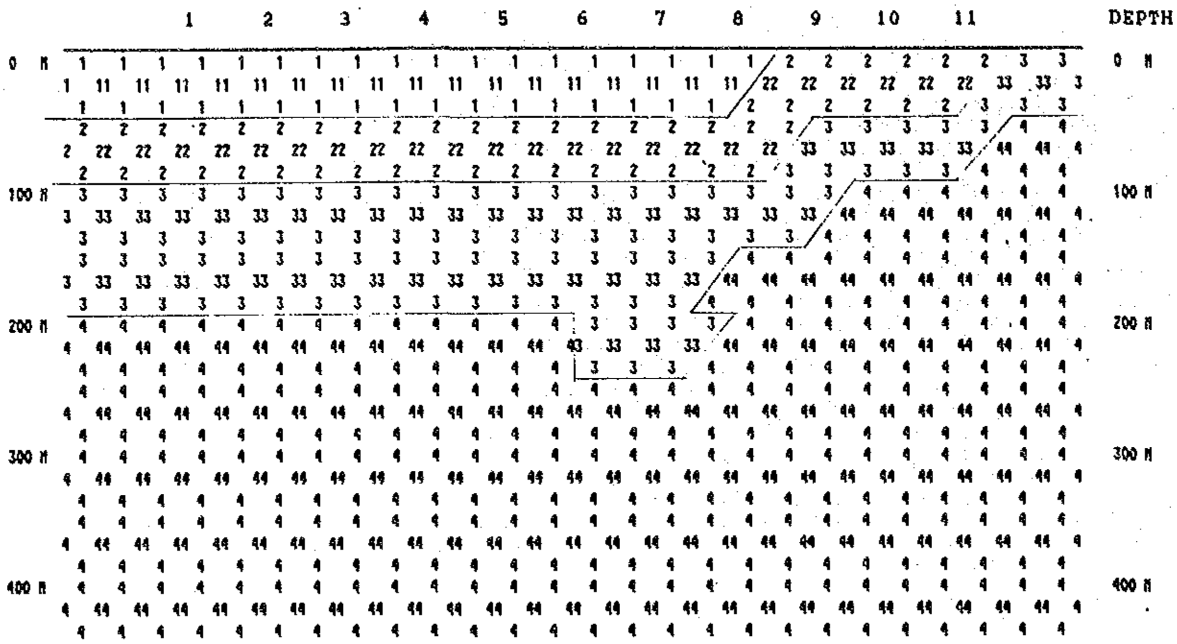
1.3 1.3 1.3 1.3 1.3 1.2 1.2 1.2 1.1 1.1 1.2 1.1

1.3 1.3 1.3 1.2 1.1 1.2 1.2 1.2 1.1 1.0 1.1

1.2 1.2 1.2 1.1 1.2 1.2 1.2 1.1 1.1 1.0

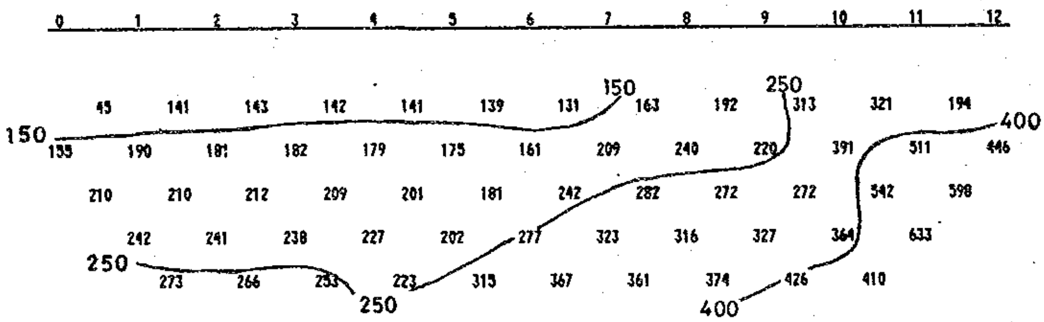
Fig. 40-4 Model Simulation (Line-PA TO PE)

** SIMULATED MODEL BY CODE NUMBER ** LINE-PD



CODE NUMBER	1	2	3	4	5	6	7	8	9
RESISTIVITY(OHM-M)	100	300	300	1000	0	0	0	0	0
FREQUENCY EFFECT(%)	1.3	1.3	.7	1.0	0.0	0.0	0.0	0.0	0.0

** RESISTIVITY(OHM-M) **



** FREQUENCY EFFECT(%) **

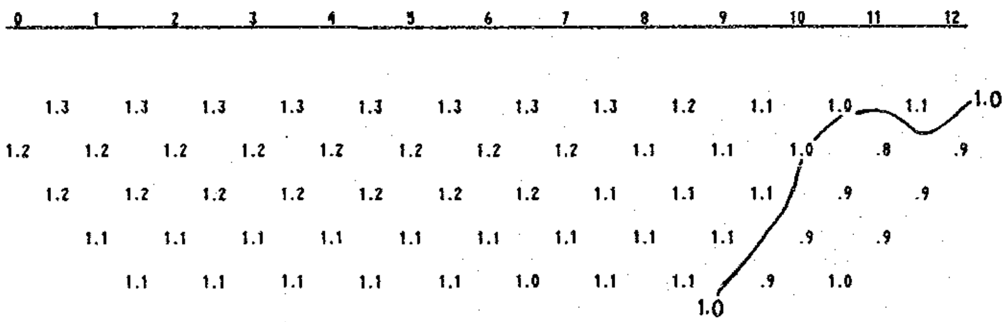


Fig. 40-5 Model Simulation (Line-PA TO PE)

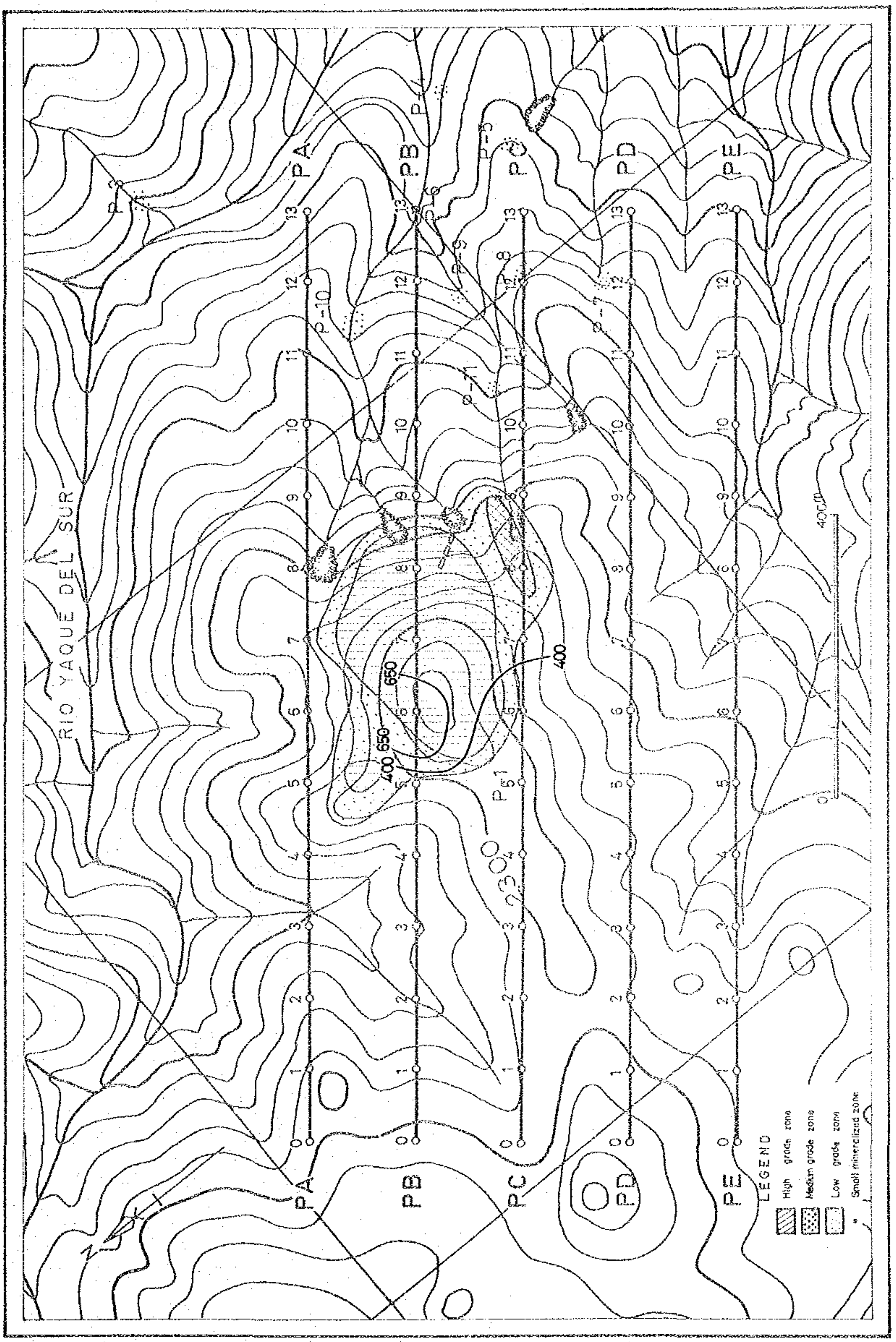


Fig. 41-1 Plan Map of Apparent Resistivity [2200 m Level]

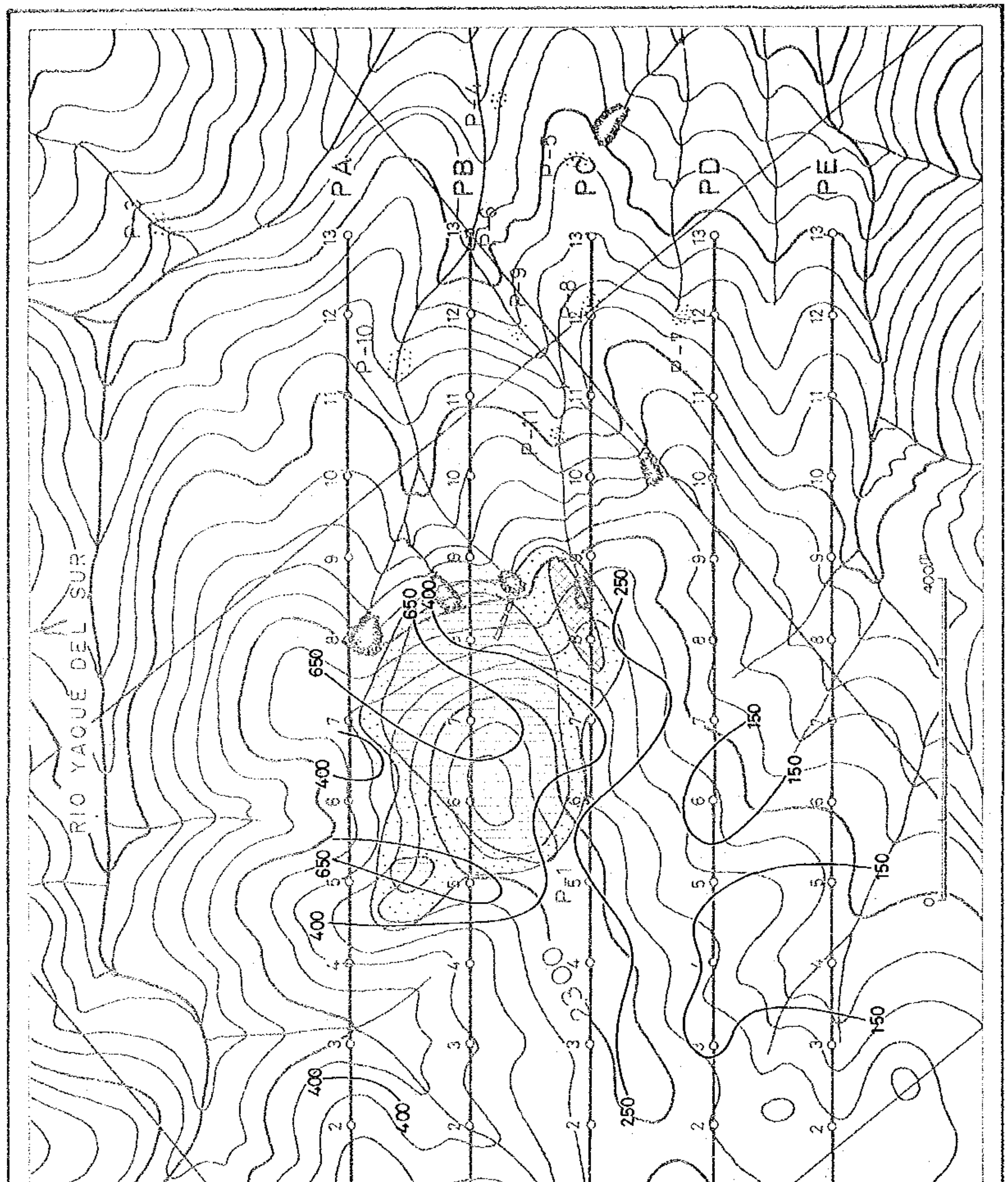


Fig. 41-2 Plan Map of Apparent Resistivity [2100 m Level]

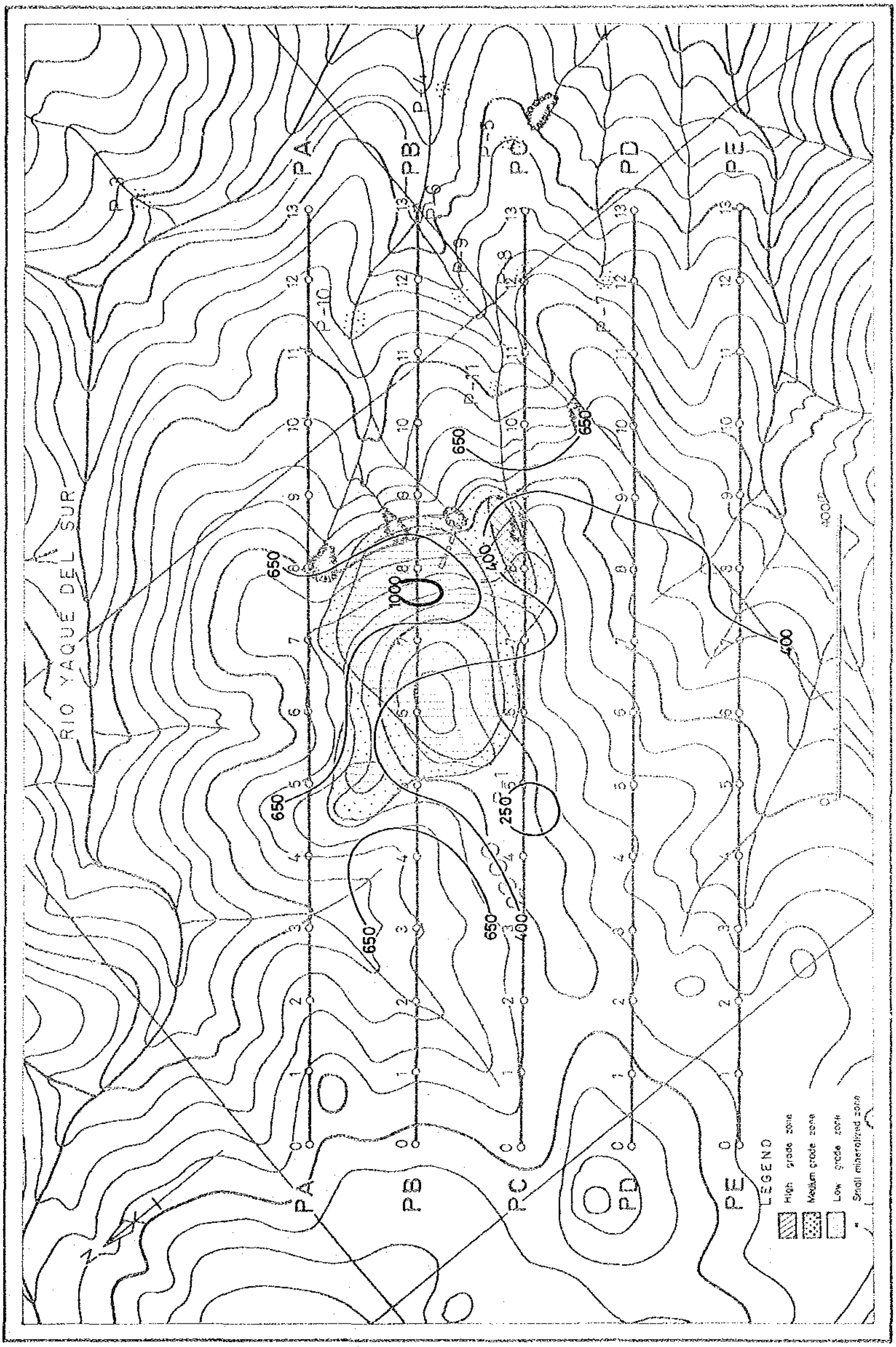


Fig. 41-3 Plan Map of Apparent Resistivity [2000 m Level]

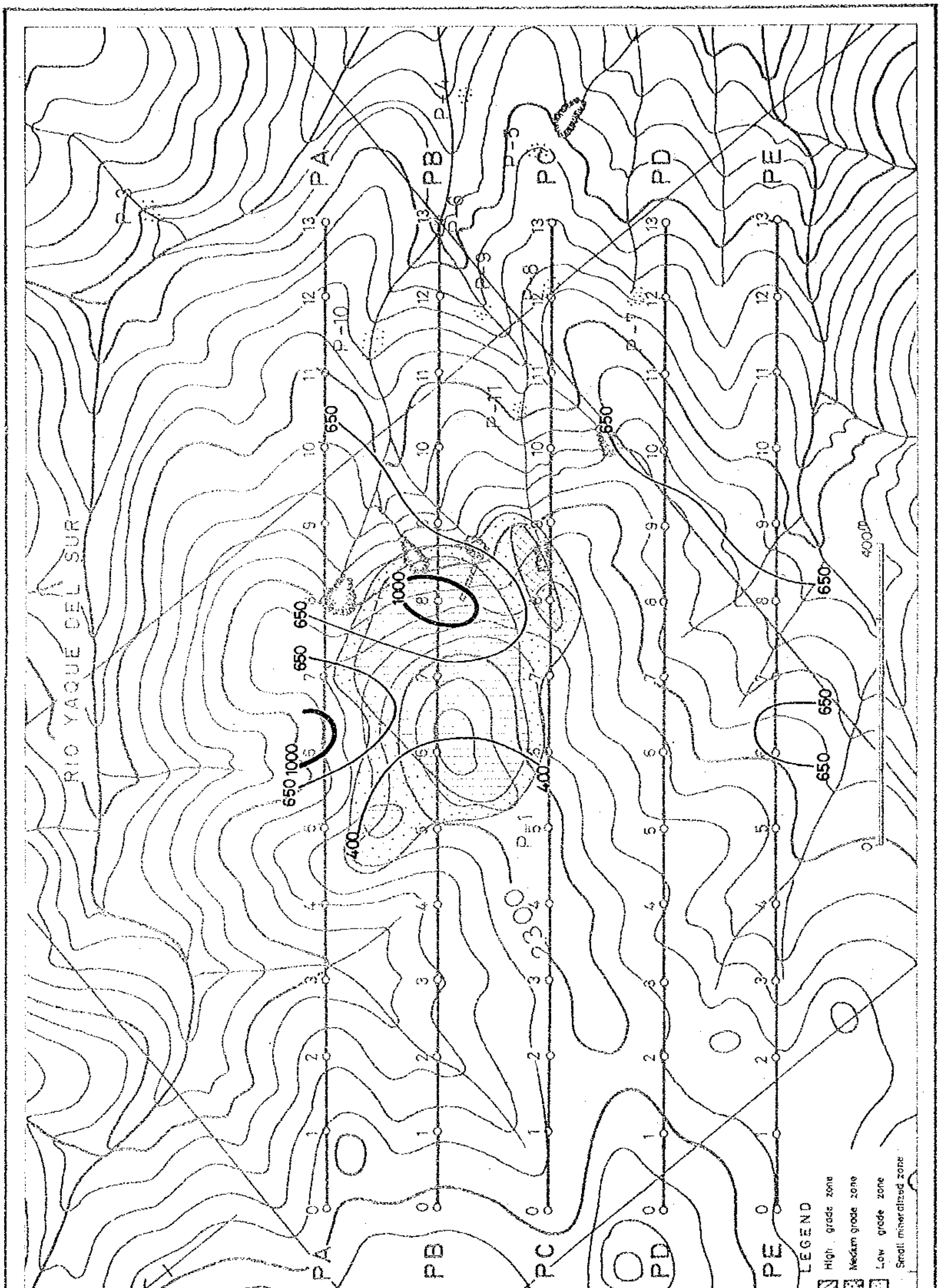


Fig. 41-4 Plan Map of Apparent Resistivity [1900 m Level]

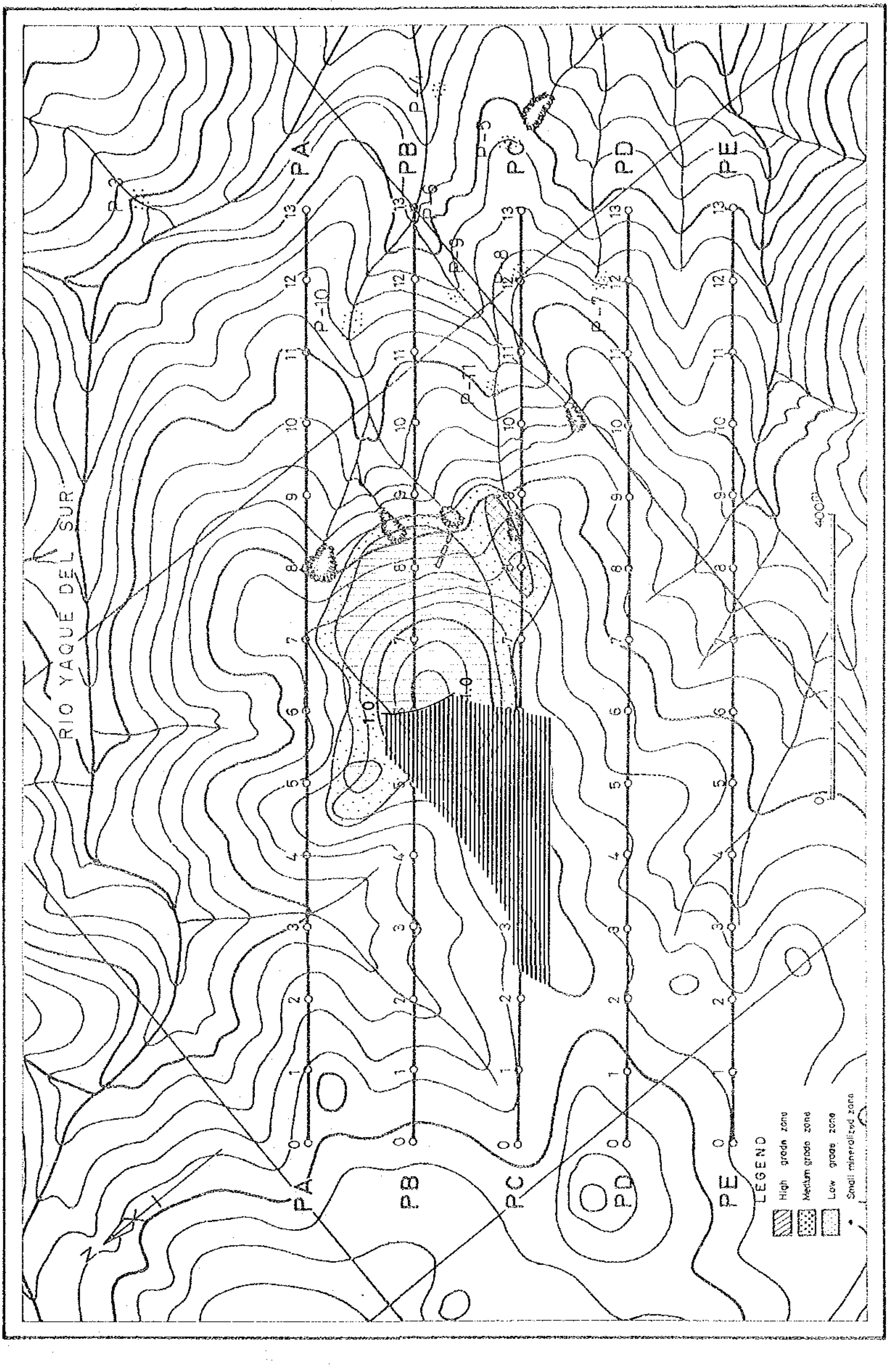


Fig. 42-1 Plan Map of PFE [2200 m]

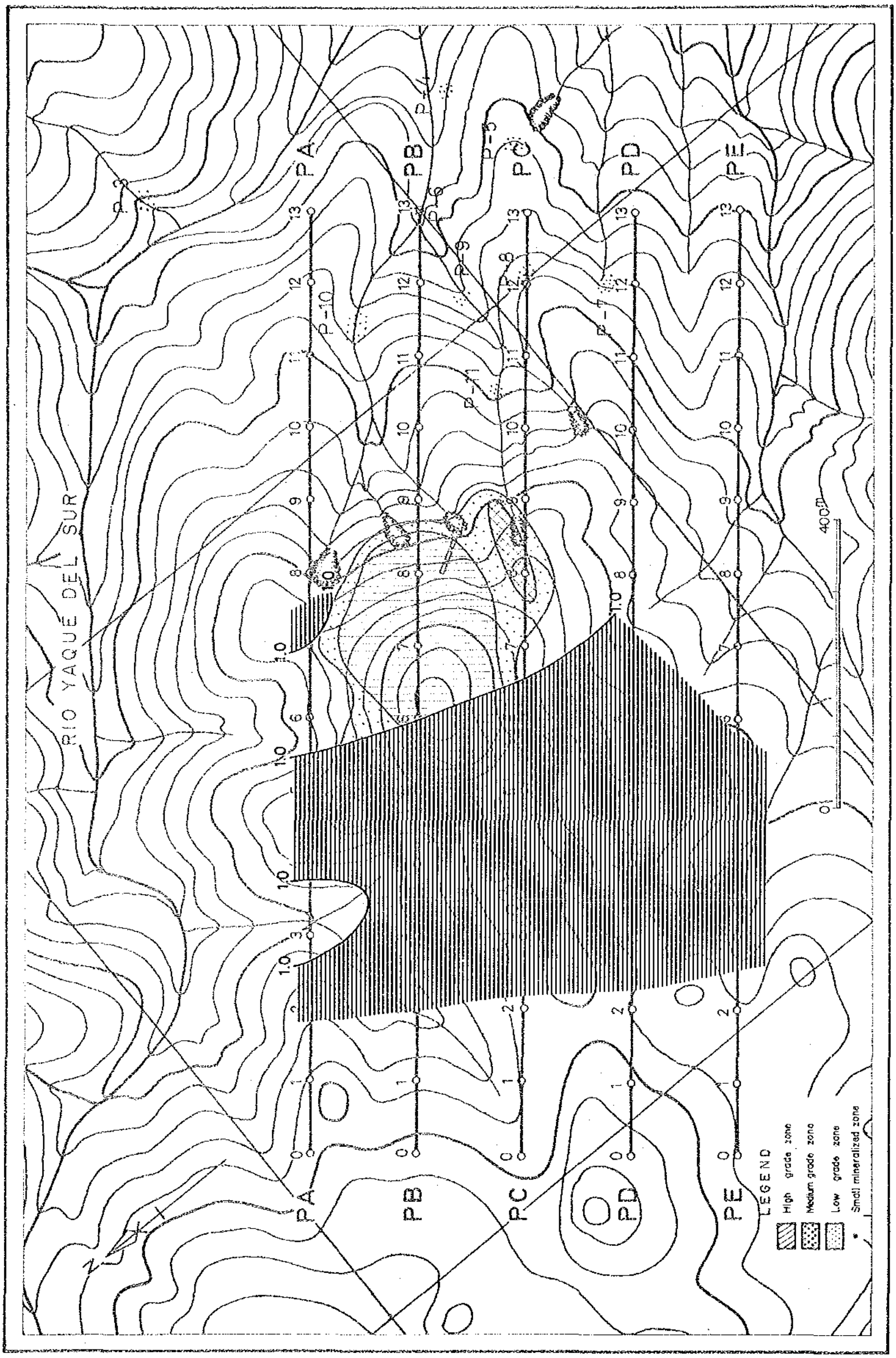


Fig. 42-2 Plan Map of PFE [2100 m]

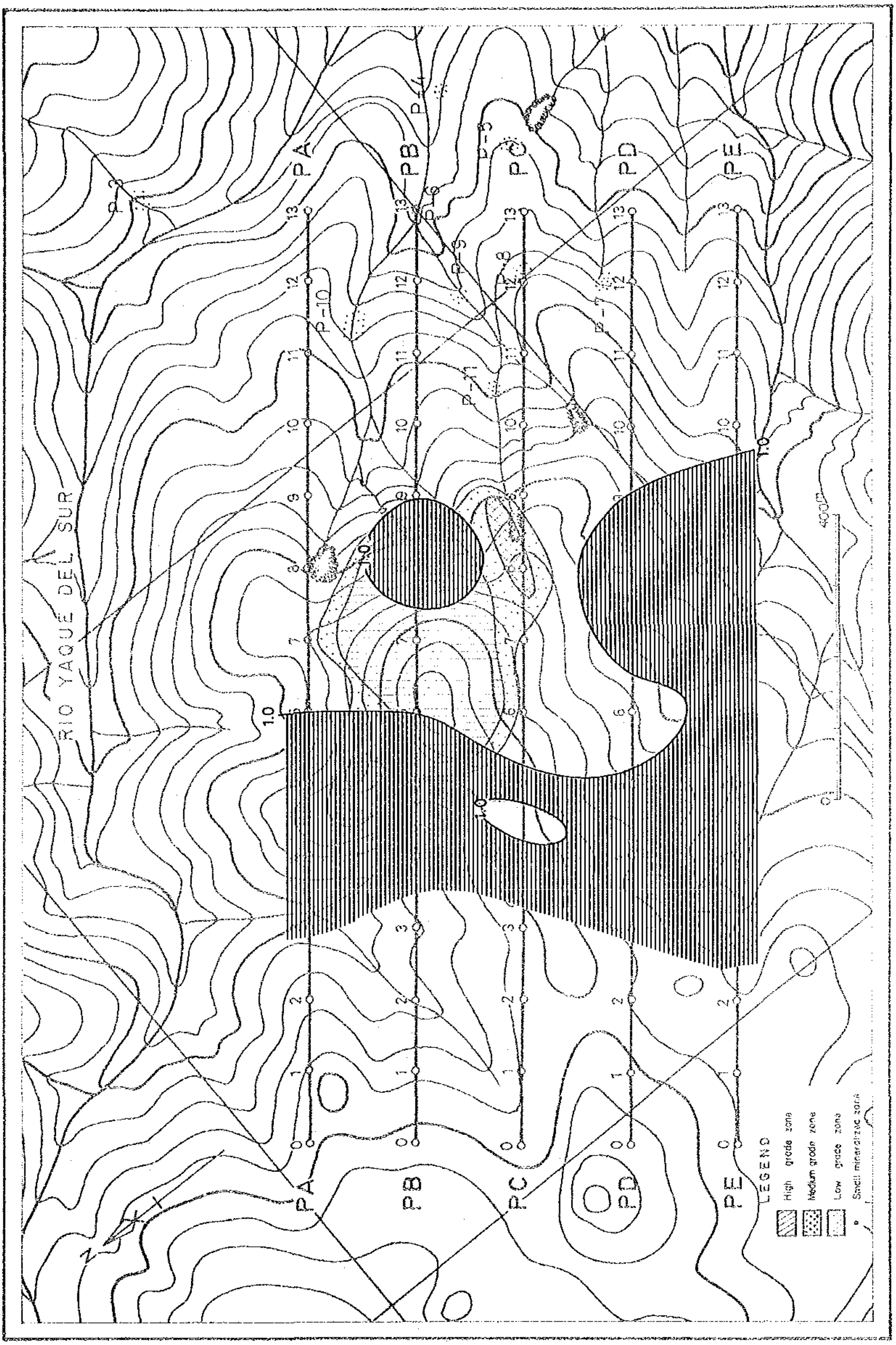


Fig. 42-3 Plan Map of PFE [2000 m]

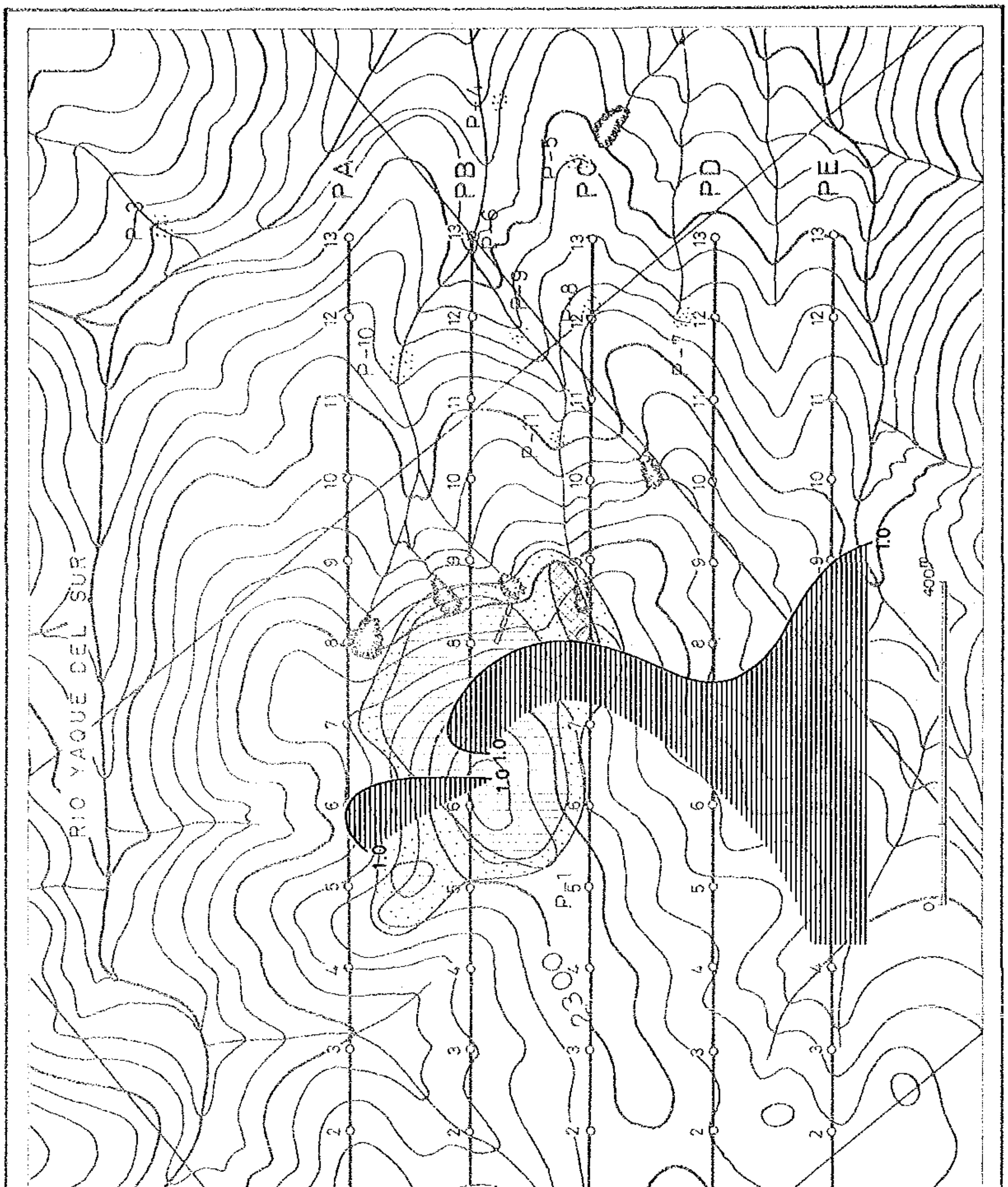


Fig. 42-4 Plan Map of PFE [1900 m]

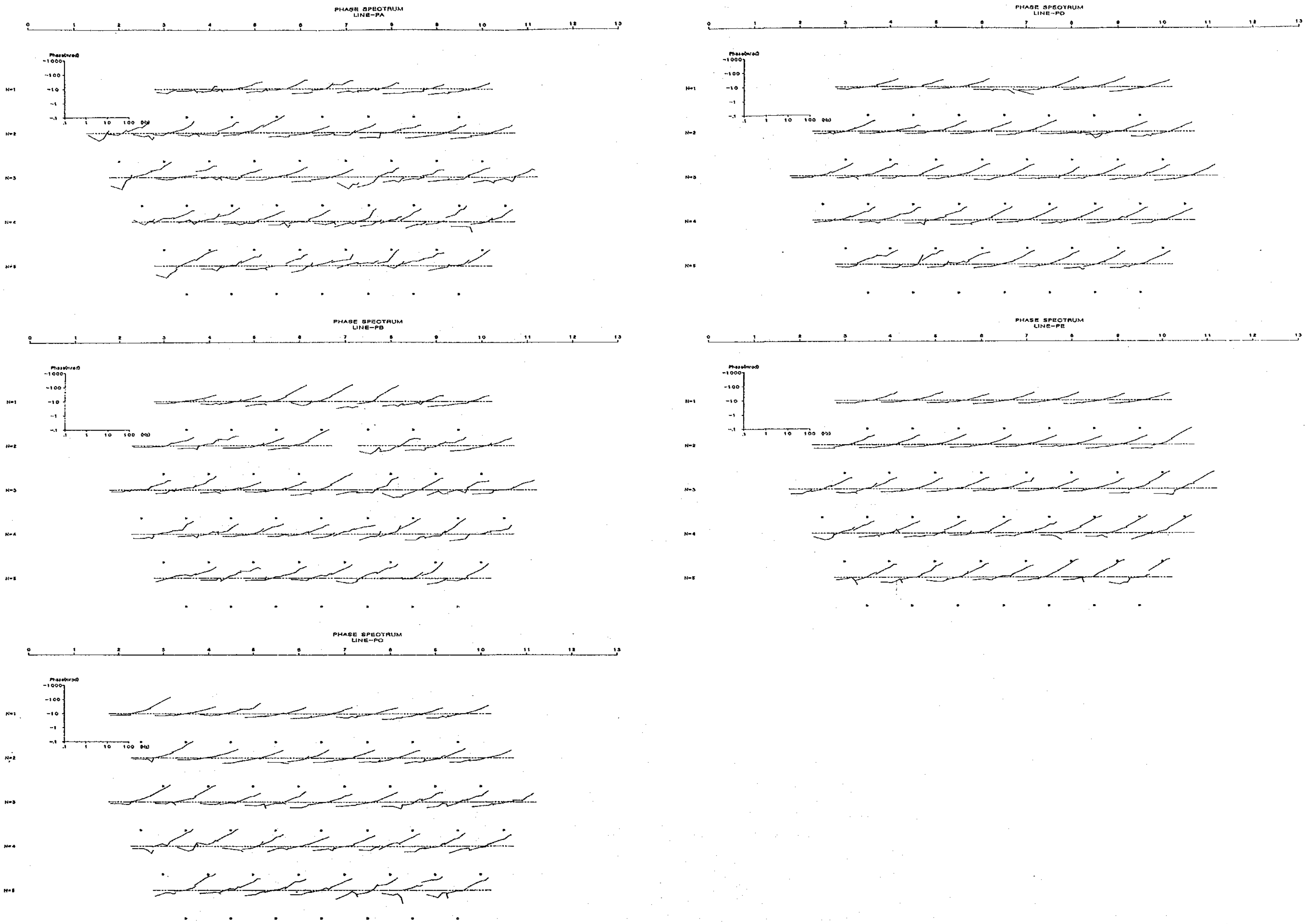


Fig. 43 Phase Spectrum (Line-PA TO PE)

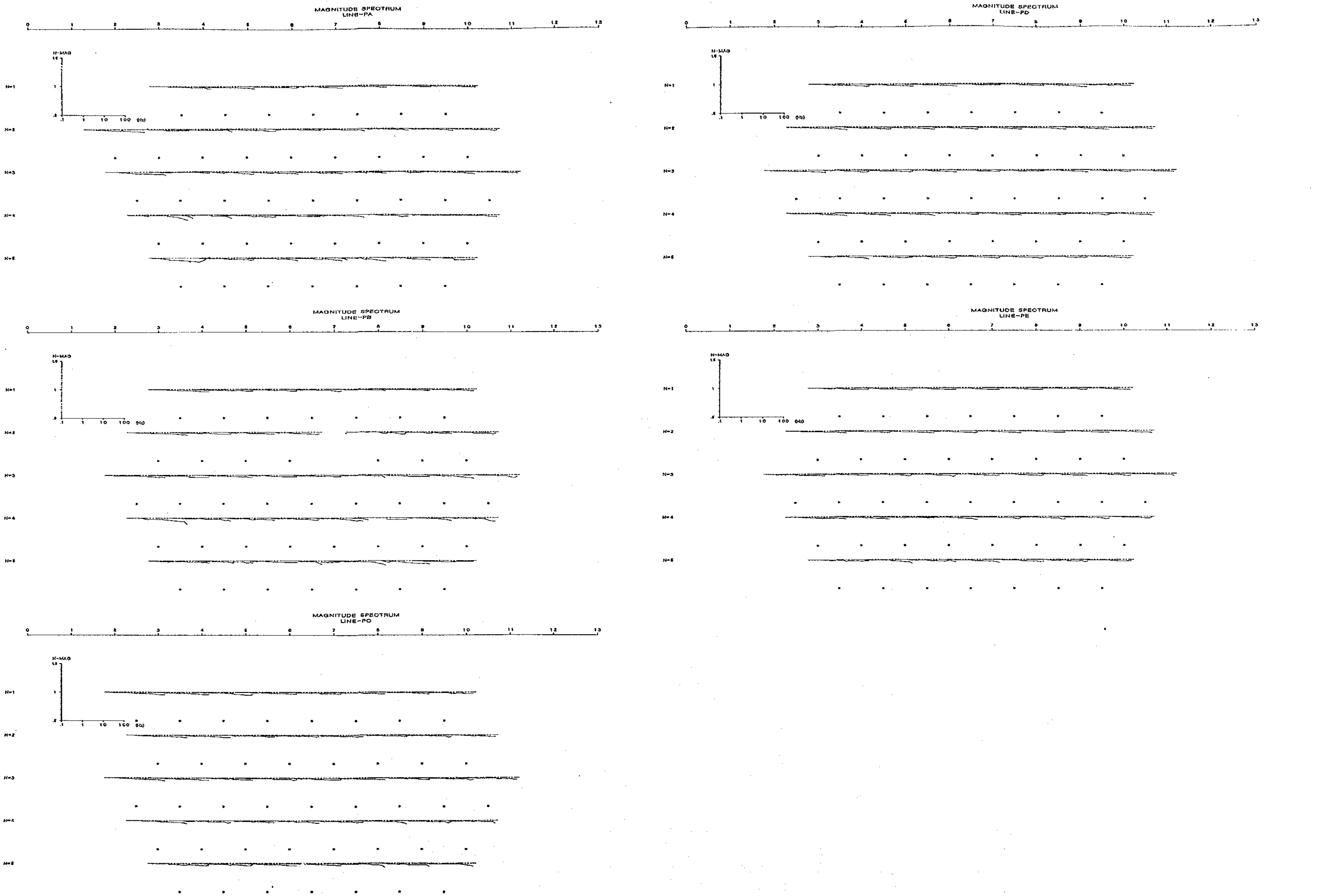


Fig. 44 Magnitude Spectrum (Line-PA TO PE)

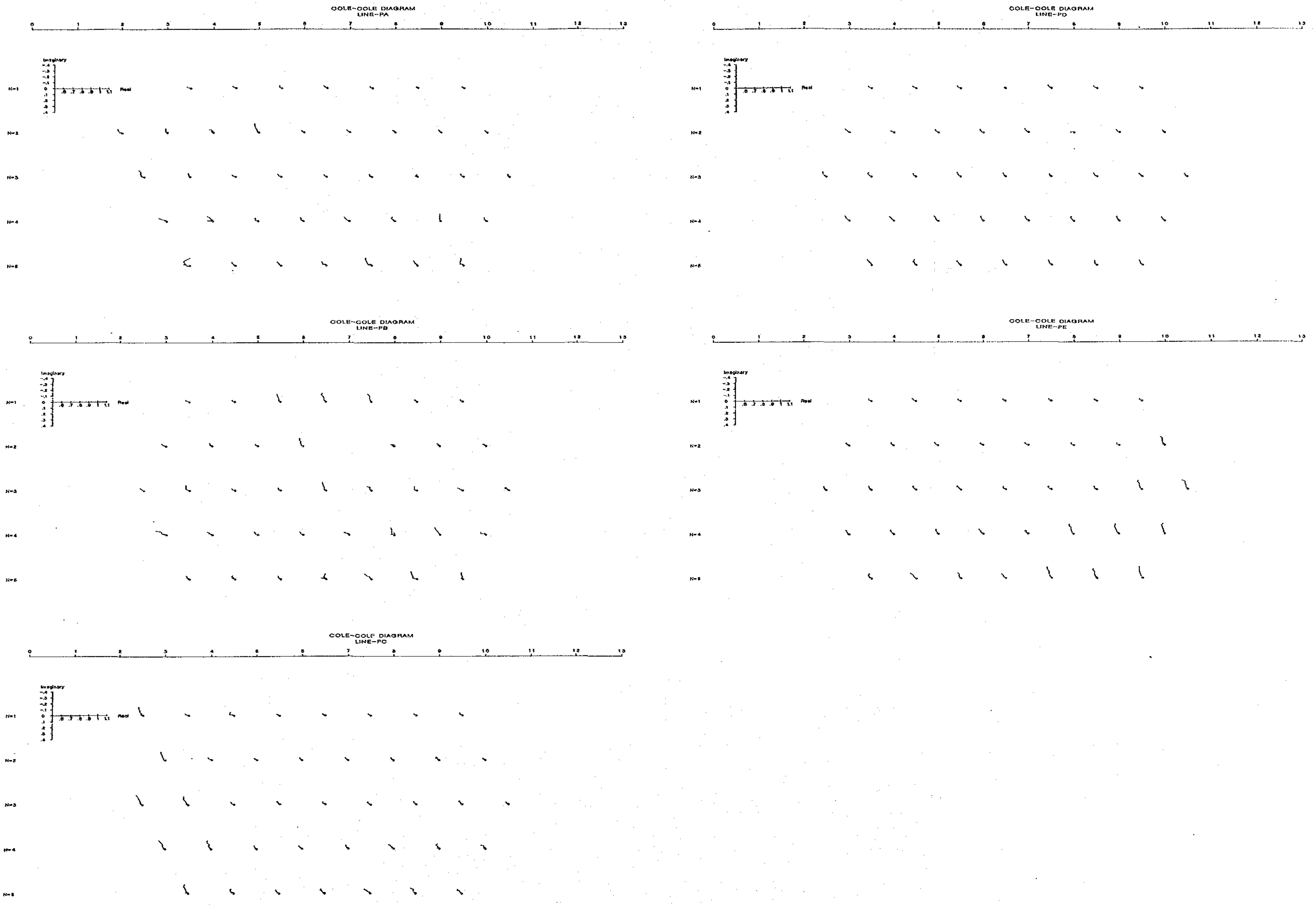


Fig. 45 Cole-Cole Diagram (Line-PA TO PE)

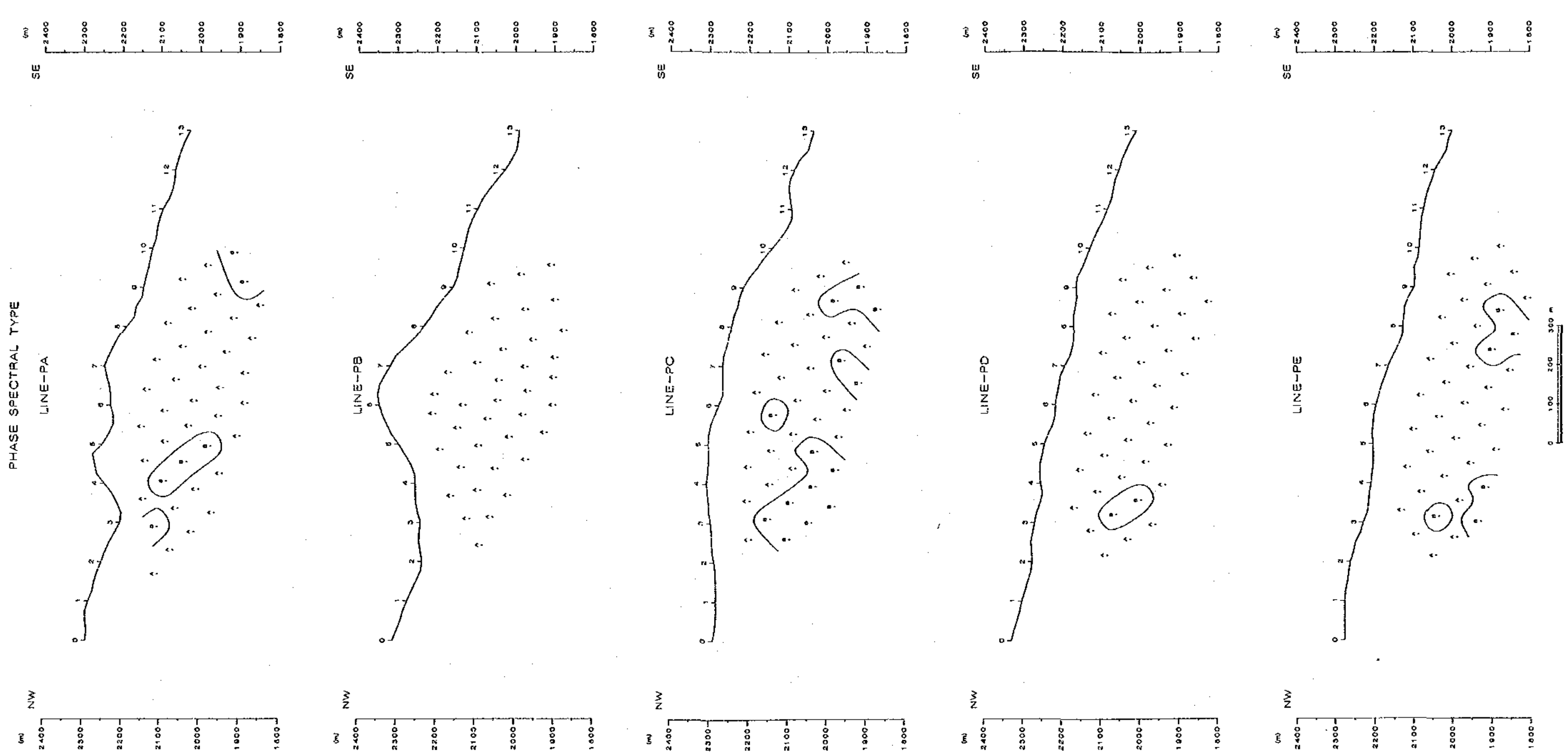
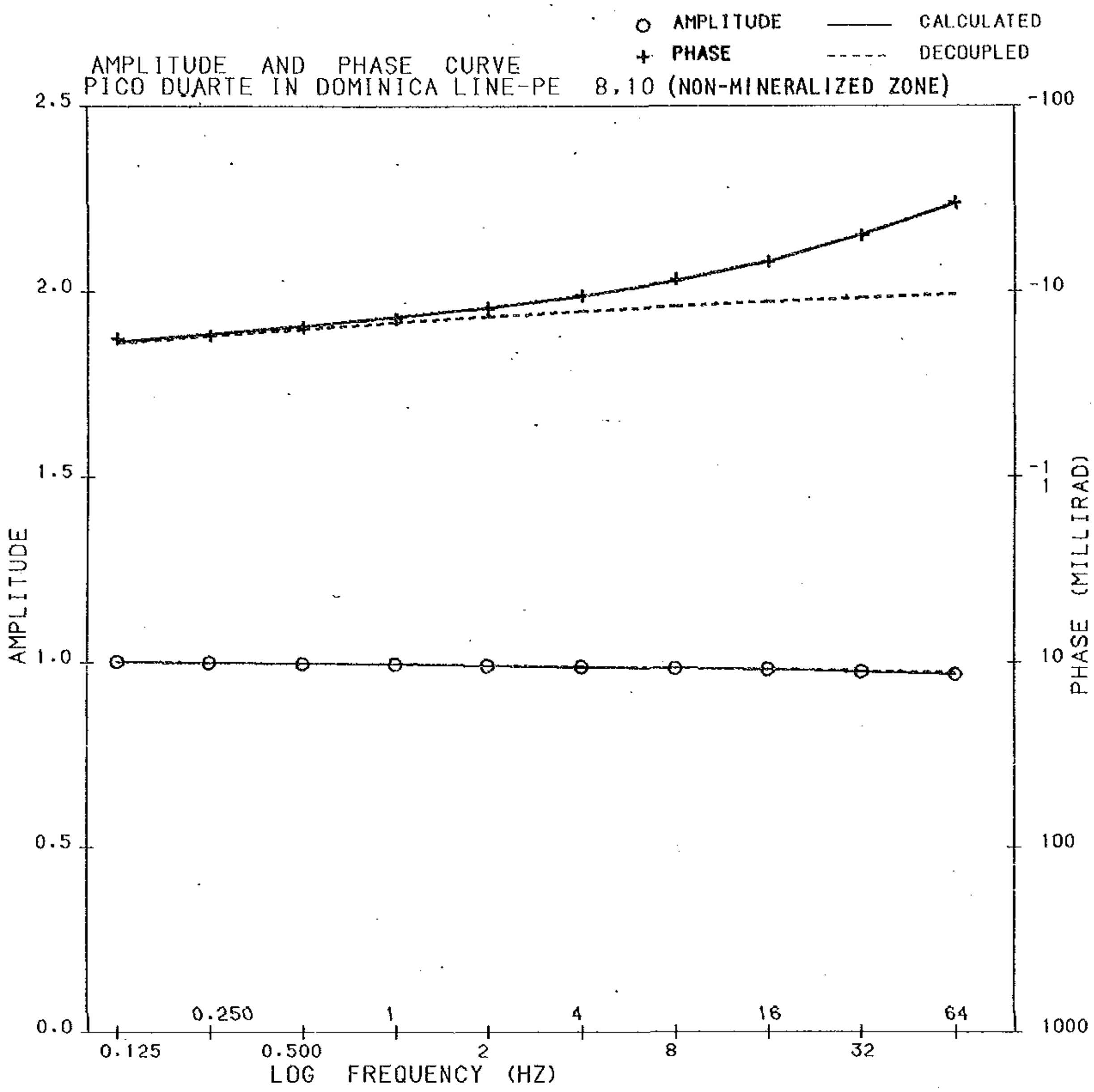


Fig. 46 Spectral Type (Line-PA TO PE)

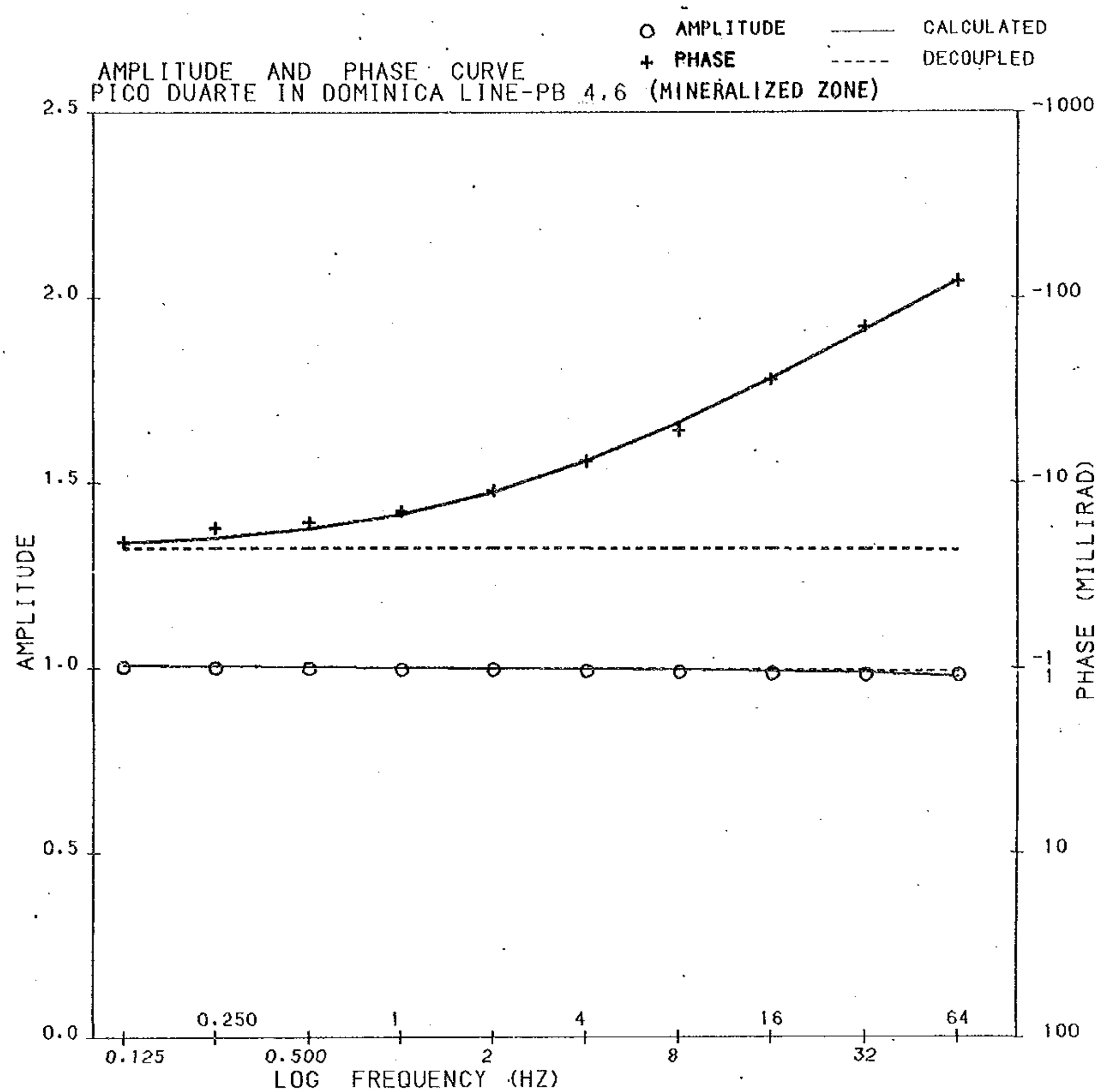


	R0	M1	M2	M3	T1	T2	T3	C1	C2	C3
INITIAL	1.0000	0.3000	0.5000		0.0001	0.0010		0.1000	1.0000	
FINAL	1.0214	0.1396	0.1683		0.0001	0.0002		0.1799	0.9214	

NO.	F (HZ)	AMPLITUDE			PHASE		
		OBSERVED	CALCULATED	DECOUPLED	OBSERVED	CALCULATED	DECOUPLED
1	0.125	1.0000	0.9997	0.9997	-5.60	-5.36	-5.29
2	0.250	0.9970	0.9973	0.9973	-5.80	-5.90	-5.77
3	0.500	0.9940	0.9946	0.9947	-6.40	-6.51	-6.27
4	1.000	0.9917	0.9918	0.9918	-7.10	-7.23	-6.78
5	2.000	0.9890	0.9886	0.9887	-8.10	-8.15	-7.30
6	4.000	0.9860	0.9852	0.9854	-9.50	-9.42	-7.81
7	8.000	0.9813	0.9815	0.9819	-11.60	-11.36	-8.31
8	16.000	0.9780	0.9774	0.9782	-14.50	-14.56	-8.79
9	32.000	0.9720	0.9725	0.9743	-20.00	-20.12	-9.24
10	64.000	0.9650	0.9658	0.9702	-30.00	-29.92	-9.64

AMPLITUDE MEASURED AT 0.125 HZ IS 1.0000
THE SUM OF SQUARES OF RESIDUALS IS 0.00002

Fig. 47-1 Decoupled Spectrum



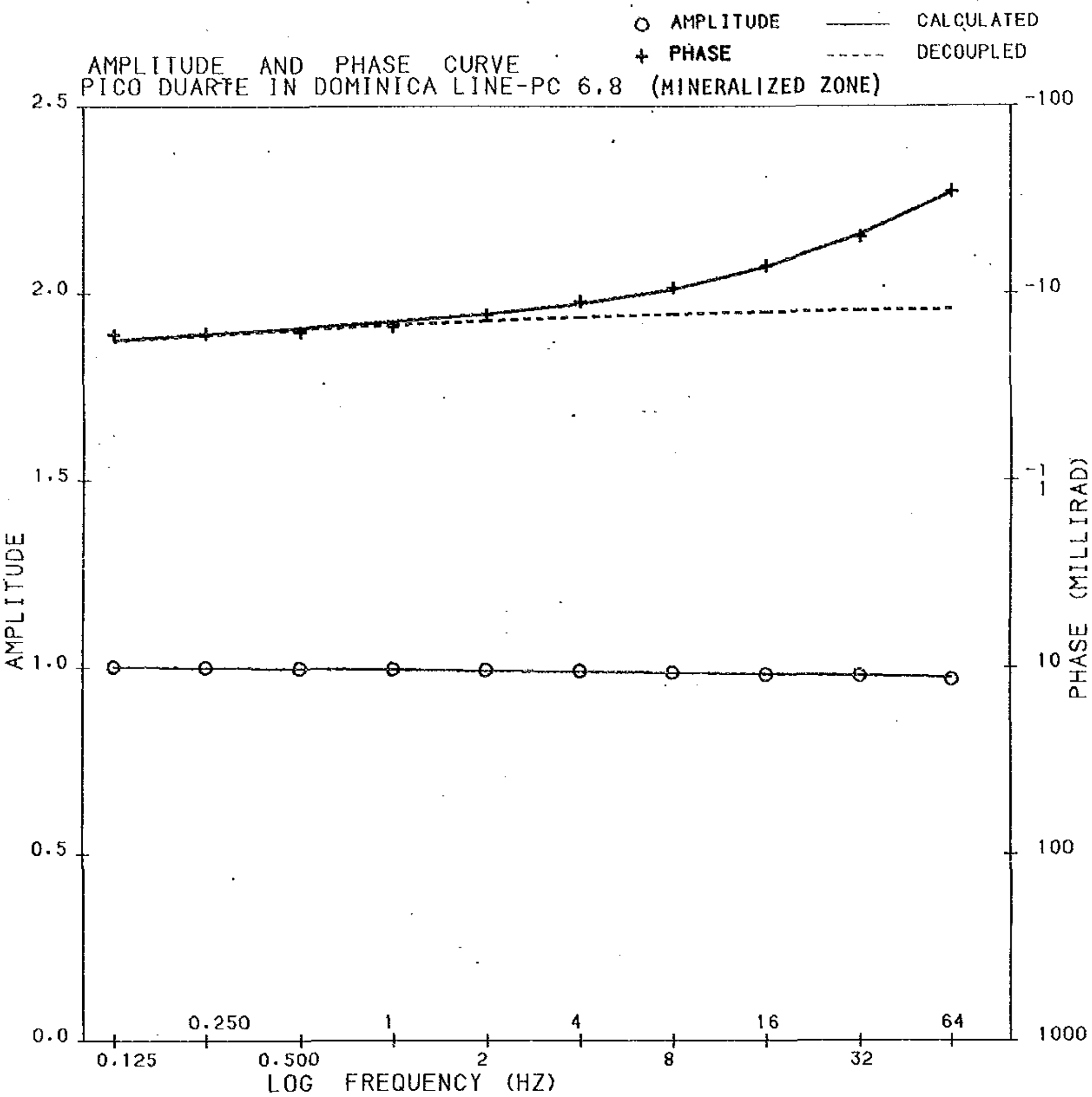
	RO	M1	M2	M3	T1	T2	T3	C1	C2	C3
INITIAL	1.0000	0.3000	0.5000		0.0001	0.0001		0.0050	1.0000	
FINAL	1.0881	0.1534	1.1622		1.1422	0.0002		0.0676	0.9468	

NO.	F (HZ)	AMPLITUDE OBSERVED	AMPLITUDE CALCULATED	AMPLITUDE DECOUPLED	PHASE OBSERVED	PHASE CALCULATED	PHASE DECOUPLED
1	0.125	1.0000	1.0050	1.0050	-4.80	-4.74	-4.42
2	0.250	0.9980	1.0030	1.0030	-5.70	-5.04	-4.42
3	0.500	0.9960	1.0010	1.0011	-6.10	-5.62	-4.42
4	1.000	0.9934	0.9989	0.9991	-7.00	-6.73	-4.42
5	2.000	0.9930	0.9968	0.9972	-9.00	-8.88	-4.41
6	4.000	0.9890	0.9945	0.9952	-13.00	-13.02	-4.40
7	8.000	0.9853	0.9919	0.9933	-19.00	-21.02	-4.38
8	16.000	0.9820	0.9886	0.9914	-36.00	-36.47	-4.36
9	32.000	0.9780	0.9836	0.9895	-69.00	-66.23	-4.34
10	64.000	0.9780	0.9744	0.9876	-122.00	-123.31	-4.31

AMPLITUDE MEASURED AT 0.125 HZ IS 1.0000

THE SUM OF SQUARES OF RESIDUALS IS 0.00147

Fig. 47-2 Decoupled Spectrum

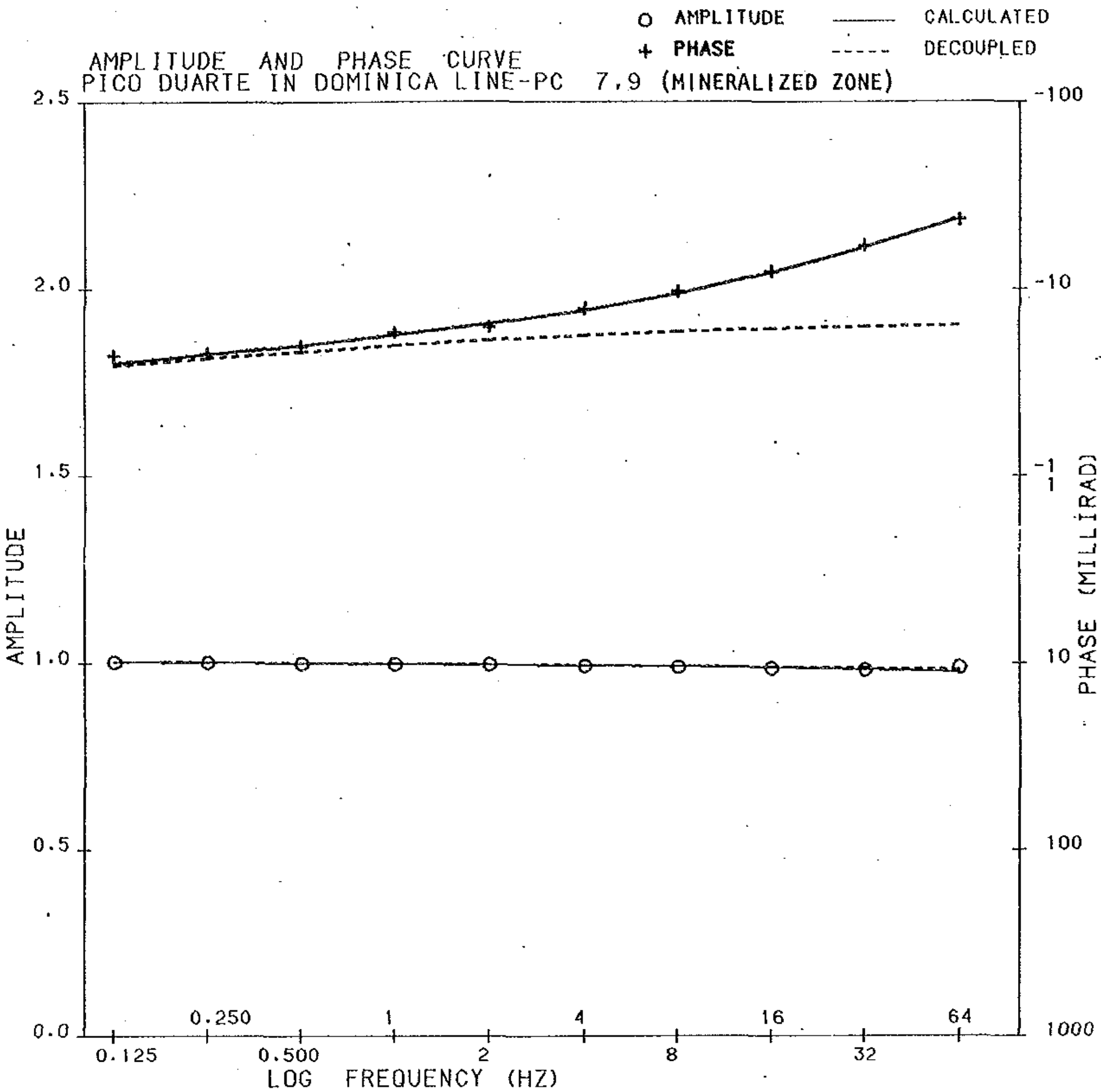


	R0	M1	M2	M3	T1	T2	T3	C1	C2	C3
INITIAL	1.0000	0.3000	0.5000		0.0001	0.0010		0.0050	1.0000	
FINAL	1.0254	0.1110	0.1848		0.0013	0.0004		0.1778	1.0747	

NO.	F (HZ)	AMPLITUDE OBSERVED	AMPLITUDE CALCULATED	AMPLITUDE DECOUPLED	PHASE OBSERVED	PHASE CALCULATED	PHASE DECOUPLED
1	0.125	1.0000	0.9998	0.9998	-6.00	-5.63	-5.60
2	0.250	0.9980	0.9973	0.9973	-6.10	-6.06	-6.00
3	0.500	0.9950	0.9946	0.9946	-6.20	-6.52	-6.38
4	1.000	0.9930	0.9917	0.9917	-6.60	-7.04	-6.75
5	2.000	0.9910	0.9887	0.9886	-7.60	-7.71	-7.10
6	4.000	0.9880	0.9856	0.9854	-9.00	-8.72	-7.41
7	8.000	0.9830	0.9824	0.9821	-10.60	-10.45	-7.69
8	16.000	0.9780	0.9793	0.9787	-14.00	-13.77	-7.92
9	32.000	0.9750	0.9760	0.9752	-20.00	-20.53	-8.09
10	64.000	0.9660	0.9718	0.9717	-35.00	-34.60	-8.21

AMPLITUDE MEASURED AT 0.125 HZ IS 1.0000
THE SUM OF SQUARES OF RESIDUALS IS 0.00014

Fig. 47-3 Decoupled Spectrum



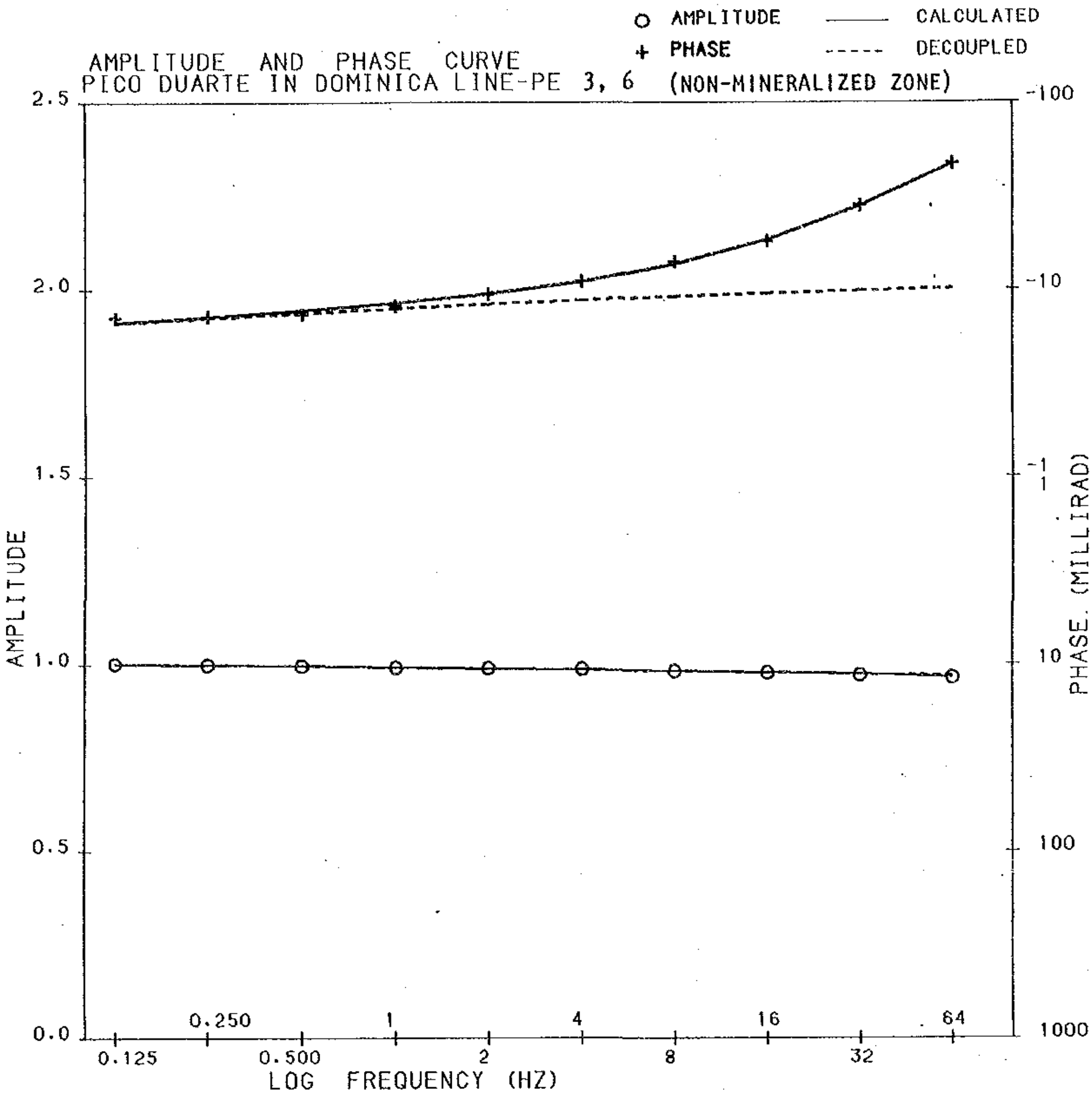
	R0	M1	M2	M3	T1	T2	T3	C1	C2	C3
INITIAL	1.0000	0.3000	0.5000		0.0001	0.0010		0.0050	1.0000	
FINAL	1.0162	0.0758	0.1467		0.0013	0.0002		0.2057	0.8059	

NO.	F (HZ)	AMPLITUDE OBSERVED	AMPLITUDE CALCULATED	AMPLITUDE DECOUPLED	PHASE OBSERVED	PHASE CALCULATED	PHASE DECOUPLED
1	0.125	1.0000	1.0016	1.0016	-4.40	-4.02	-3.90
2	0.250	0.9980	0.9998	0.9998	-4.50	-4.46	-4.25
3	0.500	0.9960	0.9978	0.9979	-4.90	-4.98	-4.60
4	1.000	0.9934	0.9956	0.9958	-5.80	-5.61	-4.95
5	2.000	0.9930	0.9931	0.9935	-6.20	-6.43	-5.28
6	4.000	0.9890	0.9905	0.9911	-7.80	-7.59	-5.59
7	8.000	0.9853	0.9874	0.9886	-9.60	-9.35	-5.86
8	16.000	0.9820	0.9838	0.9859	-12.30	-12.14	-6.08
9	32.000	0.9780	0.9793	0.9832	-17.00	-16.66	-6.26
10	64.000	0.9860	0.9730	0.9804	-23.50	-23.93	-6.37

AMPLITUDE MEASURED AT 0.125 HZ IS 1.0000

THE SUM OF SQUARES OF RESIDUALS IS 0.00024

Fig. 47-4 Decoupled Spectrum



	R0	M1	M2	M3	T1	T2	T3	C1	C2	C3
INITIAL	1.0000	0.3000	0.5000		0.0001	0.0010		0.1000	1.0000	
FINAL	1.0359	0.1690	0.2217		0.0001	0.0004		0.1473	1.0233	

NO.	F (HZ)	AMPLITUDE			PHASE		
		OBSERVED	CALCULATED	DECOUPLED	OBSERVED	CALCULATED	DECOUPLED
1	0.125	1.0000	1.0001	1.0001	-7.10	-6.73	-6.67
2	0.250	0.9970	0.9970	0.9970	-7.20	-7.21	-7.09
3	0.500	0.9940	0.9938	0.9938	-7.40	-7.76	-7.51
4	1.000	0.9902	0.9905	0.9904	-8.20	-8.45	-7.93
5	2.000	0.9880	0.9869	0.9869	-9.40	-9.39	-8.34
6	4.000	0.9860	0.9832	0.9831	-11.00	-10.88	-8.74
7	8.000	0.9791	0.9794	0.9793	-14.00	-13.48	-9.12
8	16.000	0.9750	0.9753	0.9752	-18.00	-18.38	-9.47
9	32.000	0.9680	0.9707	0.9711	-28.00	-27.96	-9.79
10	64.000	0.9620	0.9636	0.9668	-47.00	-46.85	-10.07

AMPLITUDE MEASURED AT 0.125 HZ IS 1.0000

THE SUM OF SQUARES OF RESIDUALS IS 0.00009

Fig. 47-5 Decoupled Spectrum

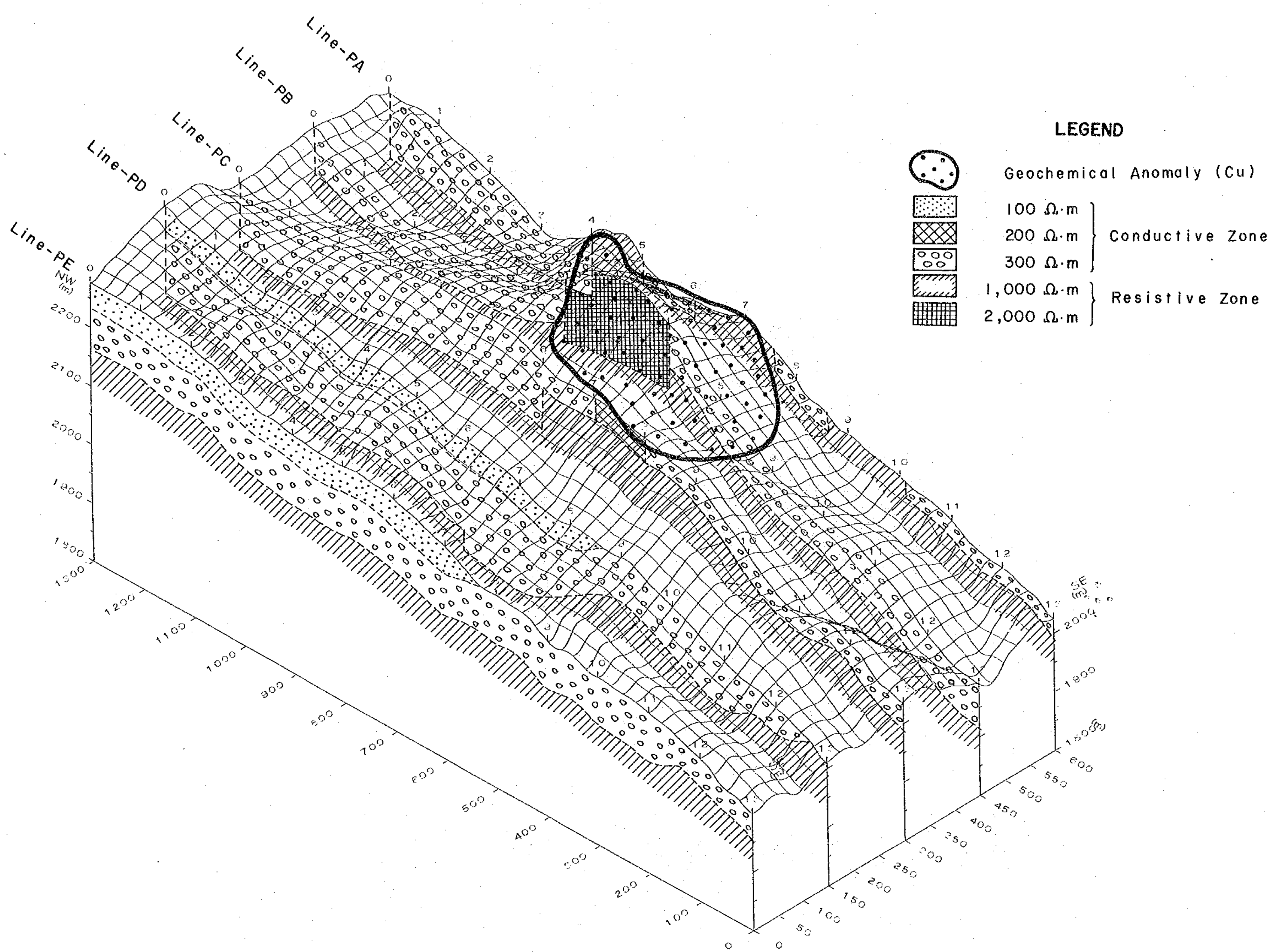


Fig. 48 Block Diagram for Interpretation

III. CONCLUSION AND RECOMMENDATION

CHAPTER 1 CONCLUSION

The conclusion obtained as the result of the survey conducted in the third phase such as geological survey (detailed survey) and drilling survey in the Constanza area, and geophysical survey (SIP method) in the Pico Duarte area, is as follows.

1. Copper bearing vein-type mineralization at El Gramoso in the Constanza area is the one related to the tonalite intrusive masses, and the center of mineralization seems to be in the vicinity of the top of Mt. Loma Sito Grande.

2. Among the five holes of drilling survey in the Constanza area, the veins which encountered in two holes were much the same quality as the outcrops.

3. As a result of geophysical survey (SIP method) in the Pico Duarte area for the mineralized zone P-1 in the porphyry copper-type mineralized zone emplaced in granodiorite showed small IP effect, but a high resistivity zone reflecting the silicified zone which seems to be due to mineralization was clearly defined. The size of the silicified zone appears to be 300 meters long, 300 meters wide and 150 meters deep.

CHAPTER 2 RECOMMENDATION

The following survey is recommended based on the conclusion of the third phase.

The Northern Slope Area of Mt. Loma Sito Grande:

The area corresponds to the northern half of the copper vein-type mineralized zone centering on the top of Mt. Loma Sito Grande. The southern half, the zone centering on the El Gramoso settlement, was investigated, and the actual condition of the mineralized zone has been illuminated. However, the whole aspect of the northern half of the mineralized zone has not yet been made clear.

It is desired that geological and geochemical surveys be conducted in order to make clear the occurrence of the mineralized zone of the area.

REFERENCE

Barabas, A.H. (1982): Potassium-argon dating of magmatic events and hydrothermal activity associated with porphyry mineralization in west central Puerto Rico. Econ. Geol, 77, p109–126.

Bowin, C.O. (1960): Geology of Central Dominican Republic. Republic. Princeton Univ. Ph. D. Thesis, 211. Bowin, C.O. And Nagle (1980): Igneous and metamorphic rocks of northern Dominican Republic: An uplifted subduction zone complex. 9th Caribbean Geological Conference, Santo Domingo, Dominican Republic, p39–50.

B.R.G.M. (1980): Exploracion minera del area Las Canitas. D.G.M., Santo Domingo, Republica Dominicana.

D.G.M (1983): Estudio de Pre-factibilidad del Area Geotermica Yayas-Constanza. Santo Dominto, Republica Domicana.

D.G.M.(1984): Resultados preliminares de los recientes trabajos de exploracion geotermica en la Republica Dominicana. Analysis de la demande Futura de expertos en esta area. Santo Domingo, Republica Dominicana.

Espaillat-Lamarche, J.E. (1981): The Mata Crande deposit. University College, Cardiff.

Harland, W.B. et. al. (1982): A geological time scale. Cambridge University Press.

Kesler, S.E. et. al. (1977): Early Island-Arc Intrusive Activity, Cordillera Central, Dominican Republic. Cantrib. Mineral, Petrol. 65. p91–99.

Khudoley, K.M. and Meyerhoff, A.A. (1971): Palaeogeography and geological history of Greater Antilles. Geol. Soc. America, Mem. 129, 199.

Kurodo, H. (1973): Vein outcrops and their developments. Mining Journal of the Mitsubishi Metal Company, 112, p21–28 in Japanese.

Lewis, J.F. (1980): Cenozoic tectonic evolution and sedimentation in Hispaniola. 9th Caribbean Geological Conference, Santo Domingo, Dominican Republic, p65–73.

Lipeltier, C. (1964): A Simplified Statistical Treatment of Geochemical Data by Graphical Representation. Econ. Geol., 64

Malfalt, B.T. (1972): Circum-caribbean Tectonic and Igneous Activity and the Evolution of the Caribbean Plate, Geol. Soc. America Bull., 83, P 251 – 272.

Palmer, H.C. (1963): Geology of portion of NOrth-Central Dominican Republic. Princeton Univ.

Palmer, H.C. (1963): Geology of portion of North-Central Dominican Republic. Princeton Univ. Ph. D. Thesis, 256.

Walper, J.L. (1980): Geologic evolution of the Greater Antilles. 9th Caribbean Geological Conferen

Ph. D. Thesis, 256.

Walper, J.L. (1980): Geologic evolution of the Greater Antilles. 9th Caribbean Geological Conference, Santo Domingo, Dominican Republic, p11–21.

Watanabe, W. et al. (1972): Geochemical investigation in the Cordillera Central Dominican Republic. Min. Geol. Japan, 22, p177–190 in Japanese.

Watanabe, W. (1974): Geology and Copper Mineralization of the Island of Hispaniola, Greater Antilles, West Indies. Min. Geol. Japan, 24, p323–333 in Japanese.

Woodring, W.P. (1954): Caribbean land and sea through the ages. Geol. Soc. America, Bull. 65, p719–732.

APPENDICES

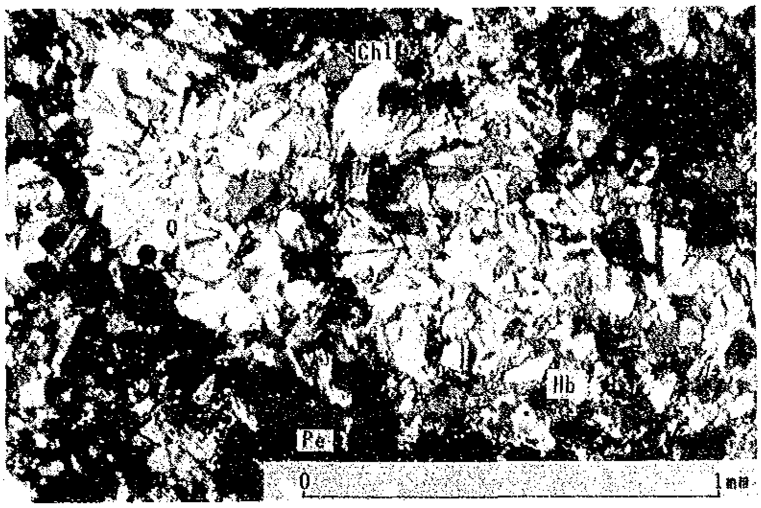
Photo. 1 Microphotograph of Thin Section

Abbreviation

Q	:	quartz
pl	:	plagioclase
Hb	:	hornblende
chl	:	chlorite
Im	:	iron mineral
And frag.	:	Andesite fragment
Vol. glass	:	Volcanic glass

(a) Geological Survey

(1)



(crossed polars)

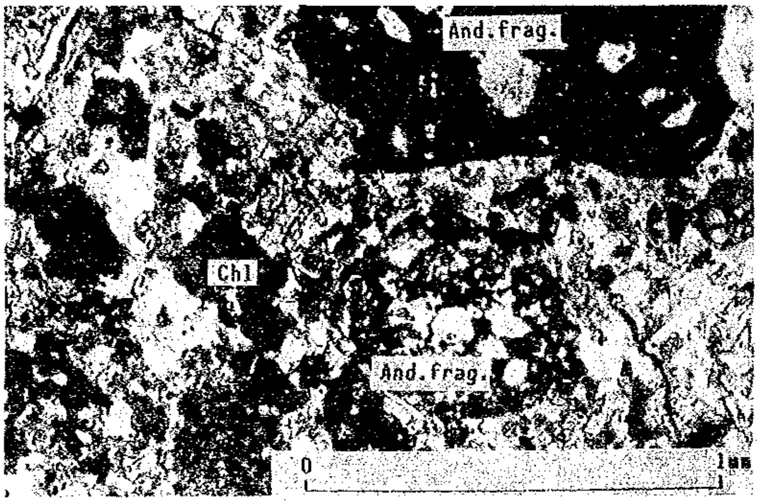
Sample No. : GK002
Location : Ar. Alejandro
Rock Name : Hb-Dacite (Dd)
Texture : Halocrystalline, porphyritic

(crossed polars)

Sample No. : GK009
Location : El Gramoso
Rock Name : Hb-tonalite (Tns)
Texture : Halocrystalline, mylmekite

(crossed polars)

Sample No. : GK005
Location : Ar. Alejandro
Rock Name : Andesitic fine tuff (Tmatf)
Texture : Pyloclastic



(crossed polars)

Sample No. : GK008
Location : El Gramoso
Rock Name : Andesitic coarse tuff (Tmatf)
Texture : Pyloclastic

Photo. 2 Microphotograph of Polished Section

Abbreviation

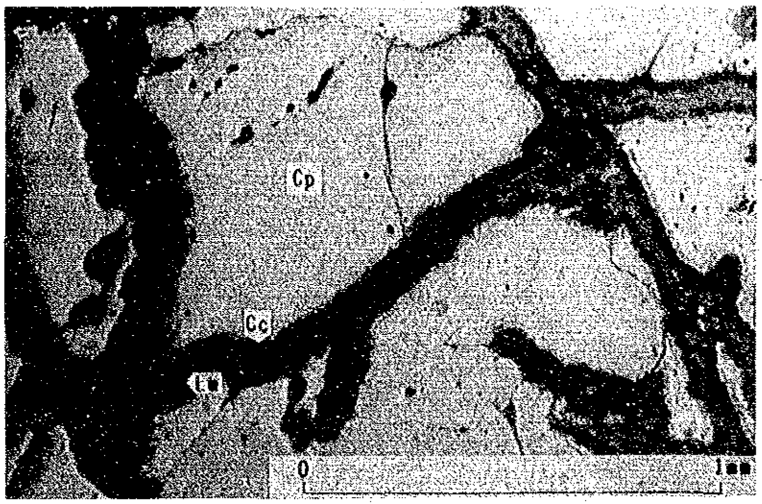
Cp : chalcopyrite

Cc : chalcocite

Cv : covelline

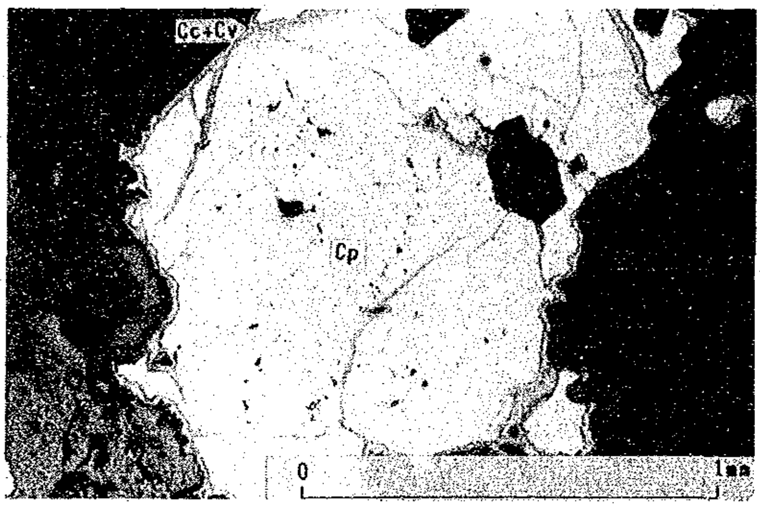
Lm : limonite

(a) Geological survey



Sample No. : GK058
Location : El Gramoso (G-12)
Ore Name : Cp-Cc-Lm-Ore

(only power polar)



Sample No. : GK061
Location : El Gramoso (G-12)
Ore Name : Cp-Cc-Cv-Lm-Ore

(only power polar)

(b) Drilling survey

Hole No. : DJM-2
Depth : 103,40 m
Ore Name : Cp-Cv-Py-Lm-Ore

(only lower polar)

Table A-1 Result of Thin Section Examination

(a) Igneous rocks

(1)

No.	Sample No.	Location	Rock Name	Texture	Phenocryst				Groundmass					Secondary Mineral						Remarks
					Quartz (Q)	Plagioclase (Pl)	Hornblende (Hb)	Augite (Au)	Iron Mineral	Quartz	Plagioclase	Augite	Volcanic glass	Iron Mineral	Epidote	Chlorite	Sericite	Calcite	Quartz	
1	GK002	Ar. Alejandro	Hb-Dacite (Dd)	Halocrystalline, porphyritic	L	L				A	A		L	L	L	C				Stock dyke
2	GK009	El Gramoso	Hb-tonalite (Tns)	Halocrystalline, mylmekite	A	A	L		L						C	C				do.
3	GL011	Loma Sito Grande	Hb-tonalite (Tns)	Halocrystalline, porphyritic			L								L	C				do.
4	GP004	El Gramoso	Q-pl-porphry (Tns)	do.	C	C	L		L						L	C	L	L		do.
5	GL022	do.	An-andesite (Tma)	Porphyritic, intergranular		L		L	L		A	L		L	L	C			L	lava
6	GP010	do.	An-andesite (Tma)	do.		L		L	L		A	L		L	L	C			L	lava

(b) Pyroclastic rocks

(2)

No.	Sample	Location	Rock Name	Texture	Fragment Matrix					Secondary Mineral			Remarks
					Andesite	Andesitic tuff	Quartz	Volcanic glass	Hematite	Quartz	Epidote	Chlolite	
7	GK005	Ar. Alejandro	Andestic fine tuff (Tmatf)	Pyloclastic	C			L		C		A	
8	GP001	El Gramoso	do.	do.			L	L		C		A	
9	GK008	do.	Andestic coarse tuff (Tmatl)	do.	C	L		L		C	C	C	
10	GL014	do.	do.	do.	C	L				C	L	C	

Abundant : A Common : C Little : L

Table A-2 Result of Polished Section Examination

(a) Geological survey

No.	Sample No.	Location (Mineralized Zone No.)	Ore Name	Pyrite (Py)	Chalcopyrite (Cp)	Chalcocite (Cc)	Covelline (Cv)	Malachite (Mal)	Specularite (Spc)	Limonite (Lm)
1	GK007	El Gramoso	Cp-Mal-Lm-Ore		C			L		A
2	GK031	do. (G−19)	Mal-Cp-Lm-Ore		L			A		A
3	GK032	do. (G−19)	Mal-Cp-Lm-Ore		L			A		A
4	GK043	do. (G−18)	Mal-Cp-Lm-Ore		L		T	L		L
5	GK047	do. (G−18)	Cp-Cc-Mal-Lm-Ore		C	L	T	L		A
6	GK058	do. (G−12)	Cp-Cc-Mal-Lm-Ore		A	L		L		C
7	GK060	do. (G−12)	Mal-Spc-Lm-Ore					L	A	A
8	GK061	do. (G−12)	Cp-Cc-Cv-Lm-Ore		C	L	L		C	C
9	GL016	do.	Mal-Cp-Lm-Ore		L			A		A
10	GL018	do. (G-21)	Cp-Cc-Cv-Py-Lm-Ore	C	C	T	T			C

(b) Drilling survey

No.	Hole No.	Depth	Ore Name	Pyrite (Py)	Sphalerite (Sph)	Chalcopyrite (Cp)	Bornite (Bo)	Chalcocite (Ca)	Covelline (Cv)	Malachite (Mal)	Hematite (Hm)	Limonite (Lm)
1	DJM−1	132.70 mm	Cp-Cc-Py-Lm-Ore	L		L		L				T
2	do.	231.00 m	Cp-Cc-Ore			L		L				
3	DJM−2	90.50 m	Cp-Cc-Ore			L		L				
4	do.	103.40 m	Cp-Cv-Py-Lm-Ore	L		C			L			L
5	DJM−3	192.50 m	Cp-Bo-Py-Hm-Ore	L		C	L				L	
6	do.	228.47 m	Cp-Shp-Py-Ore	L	L	L		T				
7	DJM−4	52.50 m	Cp-Ore			L						
8	do.	60.30 m	Cp-Shp-Py-Ore	L	L	C						
9	DJM−5	42.50 m	Cc-Cp-Mal-Lm-Ore			L		C		L		L
10	do.	143.00 m	Cp-Cc-Lm-Ore	L		A					L	

Abundant : A Common : C Little : L Trace : T

Table A-3 Result of X-ray Diffractive Analysis

(a) Geological survey

(1)

No.	Sample No.	Location	Chlorite	Epdote	Sericite	Quartz	Calcite	Plagioclase	Hornblende	Fe/Fe+Mg in chlorite	Remarks
1	GK001	El Gramoso (north of G-16)	A			A	A			0.36	Andesitic coarse tuff with py dissemination
2	GK002	do.	L			A		A		0.80	do.
3	GK003	do.	C		L	A				0.20	do.
4	GK005	do.	C			C	C	L		0.48	Andesitic coarse tuff
5	GK007	do.	C	L		A				0.46	Wall rock of Cu vein (andesitic coarse tuff)
6	GK008	do.	C	L		C		C		0.36	Andesitic coarse tuff
7	GK009	do.	L			A		A		0.34	Tonalite
8	GK031-1	do. (G-19)	A			A				0.88	Wall rock of Cu vein (andesitic tuff)
9	GK033	do. (do.)	A			A				0.90	do.
10	GK037	do. (do.)	A			A				0.48	do.
11	GK040	do. (North of G-19)	C			A				0.58	Wall rock of Cu vein (andesitic lapilli tuff)
12	GK041	do. (do.)	A			A				0.64	do.
13	GK048	do. (G-18)	A	L		A				0.56	Wall rock of Cu vein (andesitic tuff)
14	GK049	do. (do.)	C	L		A				0.56	do.
15	GK050	do. (G-12)	C	L		A	A			0.48	Wall rock of Cu vein (andesitic tuff)
16	GK052	do. (do.)	A	L		A				0.36	do.
17	GK056	do. (do.)	C			A				0.56	do.
18	GK061	do. (do.)	C			A				0.38	do.
19	GK062	do. (do.)	A			A				0.60	do.
20	GK065	do. (G-17)	A			C				0.48	do.
21	GK066	do. (do.)	C			A				0.28	do.
22	GK082	do. (North of G-19)	L			A		A		0.36	Altered andesitic lapilli tuff
23	GK071	do. (Trench No.1)	A			A				0.60	Wall rock of Cu vein (andesitic fine tuff)
24	GK075	do. (Trench No.4)	A			A				0.56	do. (andesitic lapilli tuff)
25	GK081	do. (do.)	A			A				0.60	do. (do.)
26	GK087	do. (G-21)	A			A				0.78	do. (do.)
27	GK091	do. (do.)	A			A				0.80	do. (do.)
28	GK095	do. (Trench No.5)	A	C		A				0.82	do. (do.)
29	GL001	do.	C			C		C		0.44	Andesitic lapilli tuff
30	GL011	do.	L	L		A		C		0.20	Tonalite
31	GL013	do.	C			A				0.50	Wall rock of Cu-vein (andesitic tuff)
32	GL014	do.	C			A				0.86	Andesitic coarse tuff
33	GL016	do. (G-17)	C	A		C				0.20	Wall rock of Cu-vein (andesitic tuff)
34	GL017	do. (do.)	A			A				0.50	Wall rock of Cu-vein (andesitic tuff)
35	GL020		A					A	C	0.52	Wall rock of Cu vein (andesitic coarse tuff)

No.	Sample No.	Location	Chlorite	Epdote	Sericite	Quartz	Calcite	Plagioclase	Hornblende	Fe/Fe+Mg in chlorite	Remarks
36	GL023	El gramoso	C	L		A				0.50	Wall rock of Cu vein (andesitic coarse tuff)
37	GL024	do.	C			A		C		0.54	Wall rock of Cu vein (Tonalite)
38	GP001	do.	C			A	L	L		0.40	Andesitic coarse tuff
39	GP004	do.	L			A	L	A		0.48	Tonalite
40	GP006	do.	C			A	L	A		0.62	Dacite with py dissemination
41	GP007	do.	A	C			A			0.94	Wall rock of Cu vein (andesitic tuff)
42	GP009	do.	C	L		A		A		0.80	Tonalite
43	GP010	do.	L	L		A		A		0.52	Andesite
44	GP011	do.	C			A				0.62	Dacite
45	GP012	do.	L			A				0.16	Silicified rock
46	GP016	do.	C			A				0.42	Wall rock of Cu vein (andesitic tuff)
47	GP017	do.	A			A				0.64	do. (do.)
48	GP018	do.	C			A				0.70	do. (do.)
49	GP020	do.				A				–	do. (do.)
50	GG001	do.	C			A	L			0.50	do. (do.)
51	GG004	do.	C			A		A		0.50	Andesite

Abundant : A Common : C Little : L

(b) Drilling survey

(3)

No.	Sample No.	Depth (m)	Chlorite	Epdote	Sericite	Quartz	Calcite	Plagioclase	Hornblende	Fe/Fe+Mg in chlorite	Remarks
1	DJM-1	132.70 m	A	C		A				0.40	Wall rock of Cu vein (andesitic fine tuff)
2	do.	191.40 m	A	C		A				0.42	do. (do.)
3	do.	230.85 m	A	C		A				0.20	do. (andesitic coarse tuff)
4	do.	240.70 m	A	C		A				0.26	do. (do.)
5	do.	247.50 m	A				L			0.24	Hematitized andesitic fine tuff
6	DJM-2	72.70 m	A	A		A				0.40	Wall rock of Rp-Q vein.(andestic lapilli tuff)
7	do.	88.30 m	A			A				0.38	Wall rock of Cu vein (andesitic fine tuff)
8	do.	103.30 m	A			A				0.36	do. (do.)
9	DJM-3	65.75 m	A	C		A	L			0.70	do. (andesitic coarse tuff)
10	do.	154.60 m	A	A		L	L			0.42	Hematitized andesitic lapilli tuff
11	do.	192.50 m	A			A	L			0.42	Wall rock of Qv vein (andesitic lapilli tuff)
12	do.	194.60 m	A			A	L			0.44	do. (do.)
13	DJM-4	60.20 m	A	C		A	L			0.32	do. (do.)
14	do.	92.40 m	A			A	L			0.20	Wall rock of Q-Hm vein (andesitic fine tuff)
15	do.	122.50 m	A			C	L			0.36	Heamtitized andesitic fine tuff
16	DJM-5	49.00 m	A			A				0.42	Strongly silicified andesitic coarse tuff
17	do.	70.80 m	A	A		A				0.68	Wall rock of Cu vein (andesitic coarse tuff)
18	do.	143.00 m	A	C		A				0.72	do. (do.)

Abundant : A Common : C Little : L

Table A-4 Result of Chemical Analysis of Ore Samples

(a) Geological survey (1)

No.	Sample No.	Location (Mineralized Zone No.)	Description	Au (g/t)	Ag (g/T)	Cu (%)	Pb (%)	Zn (%)
1	GK001	El Gramoso	Py dissemination in andestic coarse tuff	tr.	tr.	0.03	0.08	0.05
2	GK003	do.	do.	tr.	tr.	0.02	0.02	0.03
3	GK004	do.	Hm, Lm, Q.v	tr.	tr.	0.03	0.02	0.02
4	GK007	do.	Cp; Mal, Lm, Ep, Q.v	0.13	4.9	0.85	0.04	0.01
5	GK030	do. (G–19)	Mal, Cp, Lm, Q.v	0.20	19.3	2.81	0.07	0.05
6	GK031	do. (do.)	do.	0.67	45.9	7.24	0.09	0.03
7	GK032	do. (do.)	do.	0.30	28.2	2.55	0.04	0.02
8	GK034	do. (do.)	do.	0.20	18.1	4.50	0.05	0.02
9	GK035	do. (do.)	do.	0.10	7.2	1.60	0.07	0.05
10	GK036	do. (do.)	do.	0.40	17.9	5.13	0.09	0.05
11	GK038	do. (do.)	do.	0.50	18.4	1.29	0.02	0.02
12	GK039	do. (North of G–19)	Mal, Cp, Cc, Lm, Q.v	0.40	20.4	1.45	0.02	0.02
13	GK042	do. (G–18)	Mal, Cc, Lm, Q.v	0.10	2.2	1.94	0.02	0.05
14	GK043	do. (do.)	Mal, Cp, Lm, Q.v	0.30	4.3	2.99	0.04	0.01
15	GK044	do. (do.)	Q.v	0.20	3.6	0.93	0.02	0.05
16	GK045	do. (do.)	do.	0.10	0.9	0.04	0.02	0.02
17	GK046	do. (do.)	do.	0.10	1.2	0.19	0.02	0.05
18	GK047	do. (do.)	do.	0.50	15.0	2.37	0.02	0.05
19	GK051	do. (G–12)	Mal, Cp, Lm, Q.v	0.30	6.2	1.02	0.02	0.02
20	GK053	do. (do.)	Mal, Cp, Py, Q.v	0.40	8.0	2.61	0.03	0.02
21	GK054	do. (do.)	Q.v	0.30	2.6	0.67	0.02	0.02
22	GK055	do. (do.)	Mal, Lm, Q.v	0.67	22.1	4.46	0.03	0.01
23	GK057	do. (do.)	Q.v	0.20	5.9	0.45	0.04	0.03
24	GK058	do. (do.)	Mal, Cp, Py, Q.v	0.50	22.2	3.33	0.02	0.01
25	GK059	do. (do.)	Mal, Cp, Lm, Q.v	0.30	10.8	4.84	0.02	0.03
26	GK060	do. (do.)	Mal, Cp, Lm, Q.v	0.10	4.1	1.95	0.03	0.05
27	GK061	do. (do.)	Strongly chloritized tuff	0.60	34.4	3.56	0.02	0.03
28	GK063	do. (South of G–12)	Mal, Q.v	0.10	2.0	0.18	0.02	0.02
29	GK064	do. (G–17)	Py, Lm, Ep, Q.v	0.40	4.6	0.32	0.02	0.05
30	GK067	do. (do.)	Mal, Py, Lm, Ep, Q.v	0.10	1.2	0.08	0.02	0.02
31	GK069	do (Trench No.1)	Mal, Cp, Lm, Q.v	0.20	4.2	0.41	0.02	0.01
32	GK070	do. (do.)	Mal, Lm, Q, Epv	0.40	28.1	2.10	0.02	0.01
33	GK071	do. (do.)	Mal, Cp, Py, Lm, Q.v	0.20	17.2	0.86	0.07	0.01
34	GK076	do. (Trench No.5)	Mal, Cp, Cc, Q.v	0.10	5.4	0.64	0.02	0.01
35	GK077	do. (do.)	do.	0.20	12.4	0.87	0.03	0.01
36	GK078	do. (do.)	do.	0.20	71.9	6.61	0.08	0.02
37	GK079	do. (do.)	do.	0.50	20.9	2.86	0.09	0.03
38	GK080	do. (do.)	do.	0.20	55.1	5.94	0.04	0.01

No.	Sample No.	Location (Mineralized Zone No.)	Description	Au (g/T)	Ag (g/T)	Cu (%)	Pb (%)	Zn (%)
39	GK085	El Gramoso (G–21)	Mal, Lm, Q.v					
40	GK086	do. (do.)	Mal, Cp, Lm, Q.v	tr.	tr.	14.41	0.16	0.01
41	GK087	do. (do.)	do.	0.10	2.8	2.16	0.17	0.01
42	GK088	do. (do.)	do.	0.10	4.3	1.73	0.15	0.02
43	GK089	do. (do.)	do.	0.30	117.9	6.03	0.20	0.21
44	GK090	do. (do.)	Mal, Cp, Lm, Q.v	0.50	40.6	4.03	0.22	0.05
45	GK094	do. (Trench No.3)	Mal, Cp, Spc, Lm, Q, Ep.v	0.10	4.9	0.36	0.09	0.01
46	GK095	do. (Trench No.4)	Lm, Q, Ep.v	tr.	tr.	0.19	0.02	0.02
47	GK096	do. (Trench No.2)	Mal, Spc, Lm, Q, Ep.v	0.30	8.7	2.88	0.03	0.10
48	GK097	do. (do.)	do.	tr.	tr.	0.21	0.02	0.05
49	GK098	do. (do.)	do.	0.2	3.6	0.83	0.08	0.05
50	GL013	do.	Mal, Spc, Q.v	tr.	0.8	1.17	0.02	0.02
51	GL016	do.	Mal, Cp, Spc, Q.v	0.70	165.0	7.85	0.08	0.10
52	GL017	do.	Lm, Q.v	0.30	9.3	0.40	0.10	0.60
53	GL023	do.	Lm, Q.v	tr.	1.1	0.05	0.02	0.05
54	GL024	do.	Lm, Spc, Mal, Q.v	0.25	3.7	3.76	0.02	0.01
55	GP007	do.	Cp, Mal, Lm, Spc, Q.v	0.30	4.3	1.35	0.02	0.01
56	GP008	do. (G–22)	Cp, Shp, Q.v	0.38	10.6	2.27	0.07	12.56
57	GP016	do.	Mal, Spc, Q.v	0.50	65.6	2.00	0.04	0.01
58	GP017	do.	Cp, Mal, Spc, Q.v	0.20	11.6	1.73	0.03	0.03
59	GP018	do.	do.	0.40	27.9	2.97	0.02	0.02
60	GP020	do.	do.	0.88	90.7	5.44	0.02	0.01

No.	Hole No.	Depth (m)	Description	Au (g/T)	Ag (g/T)	Cu (%)	Pb (%)	Zn (%)
1	DJM-1	43.50- 43.55	Ep,v	tr.	tr.	0.17	0.02	0.01
2	do.	125.00-125.55	Q, Ca,v	tr.	tr.	0.05	0.02	0.01
3	do.	132.45-132.65	Mal, Cp, Q, Ep,v	0.1	2.0	0.35	0.02	0.05
4	do.	132.75-132.80	Mal, Cp, Q, Ep,v	tr.	1.9	0.35	0.02	0.03
5	do.	143.60-143.64	Ep, Q, Ca,v	tr.	0.2	0.04	0.02	0.01
6	do.	159.30-159.40	Cp, Sph, Py, Ep, Q,v	tr.	1.5	0.31	0.02	0.83
7	do.	168.30-168.35	Q, Ca,v	tr.	tr.	0.06	0.03	0.03
8	do.	191.30-191.40	Ep, Q,v	tr.	1.1	0.06	0.02	0.02
9	do.	192.90-193.00	Cp, Py, Ep, Q,v	tr.	tr.	0.20	0.02	0.01
10	do.	222.70-222.80	Q, Ca,v	tr.	tr.	0.08	0.02	0.01
11	do.	230.75-231.05	Cp, Py, Ep, Q,v	tr.	1.3	0.24	0.02	0.01
12	do.	242.30-242.60	Hm, Py, Q,v	tr.	tr.	0.06	0.02	0.01
13	do.	245.50-246.30	Q,v	tr.	tr.	0.04	0.02	0.01
14	do.	247.55-247.65	Q, Ca,v	0.1	8.3	0.03	0.02	0.01
15	DJM-2	32.70- 32.80	Ep, Q,v	tr.	tr.	0.11	0.02	0.11
16	do.	50.15- 50.25	Ep,v	tr.	tr.	0.04	0.02	0.01
17	do.	72.55- 72.75	Ep,v	tr.	tr.	0.03	0.02	0.00
18	do.	73.00- 73.10	Ep, Q,v	tr.	tr.	0.03	0.03	0.00
19	do.	74.50- 74.60	Ep,v	tr.	1.1	0.04	0.04	0.00
20	do.	76.00- 76.40	Q, Ca,v	tr.	tr.	0.05	0.02	0.00
21	do.	87.50- 87.65	Cp, Py, Q,v	0.2	30.3	3.76	0.02	0.02
22	do.	88.65- 88.80	Cp, Py, Q,v	0.1	20.1	2.65	0.02	0.01
23	do.	89.45- 89.60	Cp, Py, Q,v	tr.	1.9	0.40	0.02	0.03
24	do.	89.90- 90.05	Cp, Py, Q,v	0.1	11.7	2.94	0.02	0.03
25	do.	90.40- 90.75	Cp, Py, Q,v	0.1	16.4	2.37	0.02	0.05
26	do.	91.35- 91.70	Cp, Py, Q,v	0.1	9.1	1.78	0.01	0.01
27	do.	95.30- 95.40	Cp, Py, Q,v	tr.	1.7	0.41	0.03	0.01
28	do.	99.60- 99.80	Cp, Py, Q,v	0.2	12.0	1.97	0.02	0.02
29	do.	100.80-100.85	Cp, Py, Q,v	0.3	23.2	3.19	0.01	0.02
30	do.	101.20-101.30	Cp, Py, Q,v	0.1	7.9	1.38	0.02	0.05
31	do.	101.50-101.70	Cp, Py, Q,v	tr.	8.4	0.97	0.02	0.02
32	do.	103.20-104.05	Cp, Py, Sph, Q,v	0.2	22.3	2.71	0.02	0.73
33	DJM-3	35.10- 35.13	Cp, Py, Q,v	tr.	2.1	0.45	0.01	0.01
34	do.	65.80- 66.85	Cp, Py, Q, Ca, Ep,v	tr.	2.5	0.40	0.02	0.06
35	do.	113.0 -113.0	Cp, Py, Ep, Q,v	tr.	1.1	0.29	0.01	0.01
36	do.	139.15-139.20	Cp, Py, Q,v	0.1	4.3	0.93	0.02	0.01
37	do.	156.85-156.88	Cp, Py, Hm, Ep,v	tr.	0.8	0.29	0.02	0.01
38	do.	165.60-166.00	Cp, Py, Q,v	tr.	tr.	0.07	0.02	0.02

No.	Hole No.	Depth (mm)	Description	Au (g/T)	Ag (g/T)	Cu (%)	Pb (%)	Zn (%)
39	DJM-3	174.60-174.80	Py, Q, Ca, Ep,v	tr.	tr.	0.05	0.02	0.03
40	do.	183.15-183.40	Cp, Py, Q, Ca,v	0.1	3.7	0.75	0.02	0.01
41	do.	189.40-189.70	Mal, Py, Lm, Q, Ca,v	0.2	4.2	0.59	0.09	0.01
42	do.	192.30-192.80	Cp, Py, Q, Ca,v	tr.	1.4	0.17	0.04	0.05
43	do.	193.70-194.50	Cp, Py, Q, Ca,v	tr.	2.2	0.41	0.02	0.03
44	do.	197.70-197.75	Cp, Py, Q, Ca, Ep,v	tr.	tr.	0.23	0.02	0.01
45	do.	228.45-228.50	Cp, Sph, Py, Q, Ca,v	tr.	tr.	0.16	0.04	2.09
46	DJM-4	52.45- 52.60	Cp, Py, Q, Ep,v	0.1	1.4	0.74	0.02	0.02
47	do.	60.20- 60.45	Cp, Py, Spc, Q, Ep, Ca,v	0.4	22.5	5.71	0.04	0.26
48	do.	74.80- 75.00	Q, Ca, Ep,v	tr.	tr.	0.06	0.03	0.02
49	do.	90.70- 90.85	Q, Hm, Ca,v	tr.	tr.	0.07	0.02	0.01
50	do.	93.00- 93.75	Q, Hm, Ca,v	tr.	tr.	0.24	0.02	0.01
51	do.	106.35-106.50	Q, Ep, Ca,v	tr.	tr.	0.06	0.02	0.01
52	DJM-5	40.50- 40.70	Mal, Cp, Cc, Py, Q,v	0.3	13.1	2.74	0.02	0.03
53	do.	47.80- 48.20	Mal, Cp, Py, Q,v	0.2	7.8	1.03	0.02	0.02
54	do.	58.60- 61.00	Mal, Cp, Py, Lm, Q,v	tr.	1.3	0.43	0.02	0.03
55	do.	61.50- 61.90	Mal, Cp, Cc, Py, Lm, Q,v	0.6	25.8	5.41	0.10	0.05
56	do.	68.60- 68.70	Py, diss.	tr.	tr.	0.07	0.02	0.01
57	do.	71.40- 71.60	Py, Cp, Q, Ep,v	0.1	2.0	0.92	0.02	0.01
58	do.	72.20- 73.00	Cp, Py, Q, Ep,v	tr.	1.1	0.36	0.02	0.02
59	do.	121.90-123.00	Cp, Py, diss.	tr.	Tr	0.20	0.02	0.01
60	do.	142.00 142.50	Py, diss.	tr.	tr.	0.04	0.02	0.01
61	do.	142.80-143.80	Cp, Py, diss.	tr.	1.7	0.32	0.02	0.01

Table A-5 Generalized Drilling Results

Drill Hole No.	Machine Type	Drilling Period	Drilled Lengh	Core		Number of Drilling Shift			Drilling Speed		Remarks
				Length	Recovery	Drilling	Casing etc.	Total	m/shift*	m/shift**	
DJM-1	TOM-3	Aug. 3, '85~ Sep. 2, '85	250.20m	247.20m	100 %	53	1	54	4.63	4.72	
DJM-2	TOM-3	Sep. 3, '85~ Sep. 20, '85	150.50	147.50	100	26	1	27	5.57	5.79	
DJM-3	TOM-3	Sep. 21, '85~ Oct. 6, '85	250.40	246.40	100	29	1	30	8.35	8.63	
DJM-5	TOM-3	Oct. 7, '85~ Oct. 27, '85	201.00	183.00	99.51	35	1	36	5.58	5.74	
DJM-4	TOM-3	Oct. 28, '85~ Nov. 6, '85	150.40	147.40	100	14	1	15	10.03	10.74	
Total			1002.50	971.50		157	5	162	6.19	6.39	

Notes: * Drilling Length per one shift covering total works operated
** Drilling Length per one shift covering net drilling operations

Table A-6-1 Summary Record of Drilling Results

		Periods			Number of Days	Actual Working Days	Pay off	Total Number of Workers
Drilling Period	Preparation.	Aug. 3, 1985 ~ Aug. 13, 1985			11	11	0	204
	Drilling	Aug. 14, 1985 ~ Aug. 31, 1985			18	18	0	275
	Removing	Sep. 1, 1985 ~ Sep. 2, 1985			2	2	0	34
	Total	Aug. 3, 1985 ~ Sep. 2, 1985			31	31	0	513
Drilling Length	Planned Length	250.00mm	Overburden	3.00 m	Core Recovery for Each 100 m Section			
	Increase or Decrease in Length	+0.20 m	Core Length	247.20 m	Depth (m)	Section (%)	Total (%)	
	Drilled Length	250.20 m	Core Recovery	100%	0–100	100	100	
Working Time	Drilling	220°	51.64 %	31.70 %	100–200	100	100	
	Accompanying Works	206°	48.36	29.68	200–250.20	100	100	
	Repairing	0°	0	0	300–400			
	Total	426°	100 %	19.60	Drilling Efficiency			
	Preparation	124°		17.87	250.20m/18 days (Total Length (m) / Drilling Period)			13.90 m/Day
	Moving	8°		1.15	250.20m/18 days (Total Length (m) / Working Days)			13.90 m/Day
	Others	136°			250.20m/18 days (Total Length (m) / Net Drilling Days)			13.90 m/Day
	Grand Total	694°		100%	275men/250.20m (Net Drilling Workers / Total Length (m))			1.10 men/m
Inserted Casing Pipe	Pipe size & Inserted Length (m)	Inserted Length / Drilling Length x 100%		Recovery of Casing Pipe(%)	Remarks			
	NW CP 3.00	1.20		100				
	BW CP 92.10	36.81		100				

Table A-6-2 Summary Record of Drilling Results

		Periods			Number of Days	Actual Working Days	Pay off	Total Number of Workers
Drilling Period	Preparation	Sep. 3, 1985 ~ Sep. 8, 1985			6	6	0	102
	Drilling	Sep. 9, 1985 ~ Sep. 17, 1985			9	9	0	81
	Removing	Sep. 18, 1985 ~ Sep. 20, 1985			3	3	0	51
	Total	Sep. 3, 1985 ~ Sep. 20, 1985			18	18	0	234
Drilling Length	Planned Length	150.00m	Overburden	3.00 m	Core Recovery for Each 100 m Section			
	Increase or Decrease in Length	+0.50 m	Core Length	147.50 m	Depth(m)	Section (%)	Total (%)	
	Drilled Length	150.50 m	Core Recovery	100 %	0–100	100	100	
Working Time	Drilling	91°	42.13 %	22.30 %	100–150.50	100	100	
	Accompanying Works	125°	57.87	30.64	200–300			
	Repairing	0°	0	0	300–400			
	Total	216°	100 %		Drilling Efficiency			
	Preparation	152°		37.25	150.50m/9 days (Total Length (m) / Drilling Period)			16.72 m/Day
	Moving	32°		7.84	150.50m/9 days (Total Length (m) / Working Days)			16.72 m/Day
	Others	8°		1.97	150.50m/9 days (Total Length (m) / Net Drilling Days)			16.72 m/Day
	Grand Total	408°		100 %	234men/150.50m (Net Drilling Workers / Total Length (m))			1.55 men/m
Inserted Casing Pipe	Pipe size & Inserted Length (m)	Inserted Length / Drilling Length x 100%		Recovery of Casing Pipe(%)	Remarks			
	NW CP 15.00	9.97		100				
	BW CP 78.10	51.89		100				

Table A-6-3 Summary Record of Drilling Resutls

		Periods			Number of Days	Actual Working Days	Pay off	Total Number of Workers
Drilling Period	Preparation	Sep. 21, 1985 ~ Sep. 23, 1985			3	3	0	43
	Drilling	Sep. 24, 1985 ~ Oct. 3, 1985			10	10	0	90
	Removing	Oct. 4, 1985 ~ Oct. 6, 1985			3	3	0	36
	Total	Sep. 21, 1985 ~ Oct. 6, 1985			16	16	0	169
Drilling Length	Planned Length	250.00m	Overburden	4.00 m	Core Recovery for Each 100 m Section			
	Increase or Decrease in Length	+ 0.40 m	Core Length	246.40 m	Depth(m)	Section (%)	Total (%)	
	Drilled Length	250.40 m	Core Recovery	100 %	0–100	100	100	
Working Time	Drilling	141°	59.24 %	38.32 %	100–200	100	100	
	Accompanying Works	97°	40.76	26.36	200–250.40	100	100	
	Repairing	0°	0	0	300–400			
	Total	238°	100		Drilling Efficiency			
	Preparation	88°		23.91	250.40m/10 days(Total Length (m) / Drilling Period)			25.04 m/Day
	Moving	34°		9.24	250.40m/10 days(Total Length (m) / Working Days)			25.04 m/Day
	Others	8°		2.17	250.40m/10 days(Total Length (m) / Net Drilling Days)			25.04 m/Day
	Grand Total	368°		100 %	169 men/250.40m(Net Drilling Workers / Total Length (m))			0.67 men/m
Inserted Casing Pipe	Pipe size & Inserted Length (m)	Inserted Length / Drilling Length x100%		Recovery of Casing Pipe(%)	Remarks			
	NW CP 4.00	1.60		100				
	BW CP 128.20	51.20		100				

Table A-6-4 Summary Record of Drilling Resutls

		Periods			Number of Days	Actual Working Days	Pay off	Total Number of Workers
Drilling Period	Preparation	Oct. 28, 1985 ~ Oct. 30, 1985			3	3	0	51
	Drilling	Oct. 31, 1985 ~ Nov. 4, 1985			5	5	0	45
	Removing	Nov. 5, 1985 ~ Nov. 6, 1985			2	2	0	30
	Total	Oct. 28, 1985 ~ Nov. 6, 1985			10	10	0	126
Drilling Length	Planned Length	150.00m	Overburden	3.00 m	Core Recovery for Each 100 m Section			
	Increase or Decrease in Length	+ 0.40 m	Core Length	147.40 m	Depth(m)	Section(%)	Total(%)	
	Drilled Length	150.40 m	Core Recovery	100 %	0–100	100	100	
Working Time	Drilling	75°	66.96 %	42.13 %	100–150.40	100	100	
	Accompanying Works	37°	33.04	20.79	200–300			
	Repairing	0°	0	0	300–400			
	Total	112°	100 %		Drilling Efficiency			
	Preparation	8°		4.49	150.40m/5 days $\left(\frac{\text{Total Length (m)}}{\text{Drilling Period}}\right)$			30.05 m/Day
	Moving	58°		32.59	150.40m/5 days $\left(\frac{\text{Total Length (m)}}{\text{Working Days}}\right)$			30.05 m/Day
	Others	0°		0	150.40m/5 days $\left(\frac{\text{Total Length (m)}}{\text{Net Drilling Days}}\right)$			30.05 m/Day
	Grand Total	178°		100 %	125 men/150.40m $\left(\frac{\text{Net Drilling Workers}}{\text{Total Length (m)}}\right)$			0.84 men/m
Inserted Casing Pipe	Pipe size & Inserted Length (m)	$\frac{\text{Inserted Length}}{\text{Drilling Length}} \times 100\%$		Recovery of Casing Pipe(%)	Remarks			
	NW CP 3.00	1.99		100				
	BW CP 100.20	66.62		100				

Table A-6-5 Summary Record of Drilling Resutls

		Periods			Number of Days	Actual Working Days	Pay off	Total Number of Workers
Drilling Period	Preparation	Oct. 7, 1985 ~ Oct. 13, 1985			6	6	0	101
	Drilling	Oct. 14, 1985 ~ Oct. 25, 1985			12	12	0	108
	Removing	Oct. 26, 1985 ~ Oct. 27, 1985			2	2	0	34
	Total	Oct. 7, 1985 ~ Oct. 27, 1985			20	20	0	243
Drilling Length	Planned Length	200.00m	Overburden	17.10 m	Core Recovery for Each 100 m Section			
	Increase or Decrease in Length	+ 1.00 m	Core Length	183.00 m	Depth(m)	Section (%)	Total (%)	
	Drilled Length	201.00 m	Core Recovery	99.51 %	0–100	98.91	98.91	
Working Time	Drilling	118°	41.84 %	33.52 %	100–200	100	99.51	
	Accompanying Works	164°	58.16	46.59	200–201	100	99.51	
	Repairing	0°	0	0	300–400			
	Total	282°	100 %		Drilling Efficiency			
	Preparation	32°		9.09	201.00m/12 days (Total Length (m) / Drilling Period)			16.75 m/Day
	Moving	38°		10.80	201.00 m/12 days(Total Length (m) / Working Days)			16.75 m/Day
	Others	0°		0	201.00 m/12 days(Total Length (m) / Net Drilling Days)			16.75 m/Day
	Grand Total	352°		100 %	243 men/201.00m(Net Drilling Workers / Total Length (m))			1.21 men/m
Inserted Casing Pipe	Pipe size & Inserted Length (m)	Inserted Length / Drilling Length x 100%		Recovery of Casing Pipe(%)	Remarks			
	NW CP 18.00	8.96		100				
	BW CP 49.70	24.73		100				

Table A-7 Drilling Equipments and Consumed Materials

A. Model "TOM-3" (1)

Article	Model	Specifications	Quantity
Drilling Machine	Model "TOM-3" (Tone Boring Co.)	Capacity: BQ-WL 790 m Dimensions: Height 1,550 mm Length 2,410 mm Width 960 mm Weight (without Power Unit): 1,350 kg	1 set
	Swivel Head	Spindle Speed: 120, 250, 600/R 120 r.p.m.	
	Hoist	Type: Planetary Gear Type (Power Up) Capacity: 2,500 kg	
	Oil Pump	Type: Hydraulic Capacity: 20/min Pressure: Max. 70 kg/cm²	
Motor	Model "F3L"	Diesel Engine: 3 Cycle Air-cool Type Revolution: 1,500 ~ 2,000 r.p.m. Related Power: 35 P.S.	1 set
Drilling Pump	Model "NAS-3T" (Tone Boring Co.)	Weight (without Power Unit): 480 kg Piston Diameter: 75 mm Stroke: 50 mm Max. Capacity: 130 ℓ/min Max. Pressure: 32 kg/cm²	1 set
Water Supply Pump	Model "NAS-3B" (Tone Boring Co.)	Diesel Engine (Yanmar Co.) Revolution: 2,200 r.p.m. Related Power: 13 P.S.	1 set
Mixer	Model "MCE-100A" (Tone Boring Co.)	100ℓ	1 set
Generator	Model "YSG-1300B" (Yanmar Co.)	1.1 KVA	1 set
Drill Rod		NQ – 3.0 m BQ – 3.0 m	36 Pcs 126 Pcs
Casing Pipe		NW – 1.5 m NW – 0.5 m BW – 3.0 m	6 Pcs 3 Pcs 45 Pcs
Wireline Hoist		Attached to Drilling Machine	1 set
Rod Safety Clamps		RH Type	1 set
Water Swicvel		EH Type	1 set
Hoisting Swivel		L Type	1 set

B. Consumed Materials

(2)

Article	Specification	Unit	Quantity					
			DJM-1	DJM-2	DJM-3	DJM-4	DJM-5	Total
Gasoline	Generator	L	120	160	350	275	630	1,535
Light Oil	Engine	L	1,200	2,620	5,550	1,535	5,290	16,195
Mobil Oil	Engine	L	180	210	360	150	450	1,350
Mission Oil	Gear	L	20	15	15	25	20	95
Turbine Oil	Oil Pressure	L	40	20	35	40	45	180
Grease		kg	5	7	10	12	16	50
Cutting Oil		ℓ	160	70	120	10	80	440
Metal Crown		pcs						4
Single Core Tube	99 m/m x 0.5 m	set						2
Double Core Tube	NQ–WL	set						2
do	BQ–WL	set						2
Core Tube Head	99	pcs						1
Casing Head	HQ	pcs						1
do	NQ	pcs						1
Casing Metal Shoe	HQ	pcs						1
do	NQ	pcs						1
Cement		pack	5	3	2	4	2	16
Rag		kg						70
Core Box		pcs	33	21	34	21	24	133
Board	30 m/m	m^3						0.5
Wire	# 10	kg						90
do	# 12	kg						30
Nail	75 m/m	kg						30
do	38 m/m	kg						30
Wire Rope	12.5 m/m x 50 m	vol						1
Vinyl Rope	16 m/m x 30 m	vol						1
V-Belt	Engine	set						5
do	Pump	set						2
Wire Rope	6 m/m x 300 m	vol						1
Core-Lifter	NQ–WL	pcs						10
do	BQ–WL	pcs						10
Core-Lifter Case	NQ–WL	pcs						5
do	BQ–WL	pcs						5
WL-Accessary	NQ–WL	set						1
	BQ–WL	set						1
Working Dress	M, L	set						3
Working Gloves		pair						120
Working Shoes	25 ~ 27 cm	pair						3
Pressure Gauge	kg/cm^2	pcs						2
Bentnite		kg						7,375
C.M.C.		kg						55
Libonite		kg						1,610

C. Consumed Bits

(3)

Bit Type		DJM-1		DJM-2		DJM-3		Total	
		Drilled Length	Quantity	Drilled Length	Quantity	Drilled Length	Quantity	Drilled Length	Quantity
101 Single	Bit (Metal)	3.00 m	1 pcs	15.00 m	0 pcs (used old Bit)	4.00 m	0 pcs	m	pcs
	Reamer	–	–	–	–	–	–		
NQ–WL	Bit	89.10	2	75.10	2	128.20	1		
	Reamer	89.10	1	75.10	0	128.20	0		
BQ–WL	Bit	158.10	3	72.40	2	118.20	2		
	Reamer	158.10	1	72.40	0	118.20	1		

Bit Type		DJM-5		DJM-4		–		Total	
		Drilled Length	Quantity	Drilled Length	Quantity	Drilled Length	Quantity	Drilled Length	Quantity
101 Single	Bit (Metal)	18.00 m	2 pcs	3.00 m	1 pcs	m	pcs	43.00 m	4 pcs
	Reamer	–	–	–	–			-	-
NQ–WL	Bit	31.70	1	97.20	1			421.30	7
	Reamer	31.70	1	97.20	1			421.30	3
BQ–WL	Bit	151.30	1	50.20	1			550.20	9
	Reamer	151.30	0	50.20	1			550.20	3

Fig. A-1 Location Map of the Survey Area

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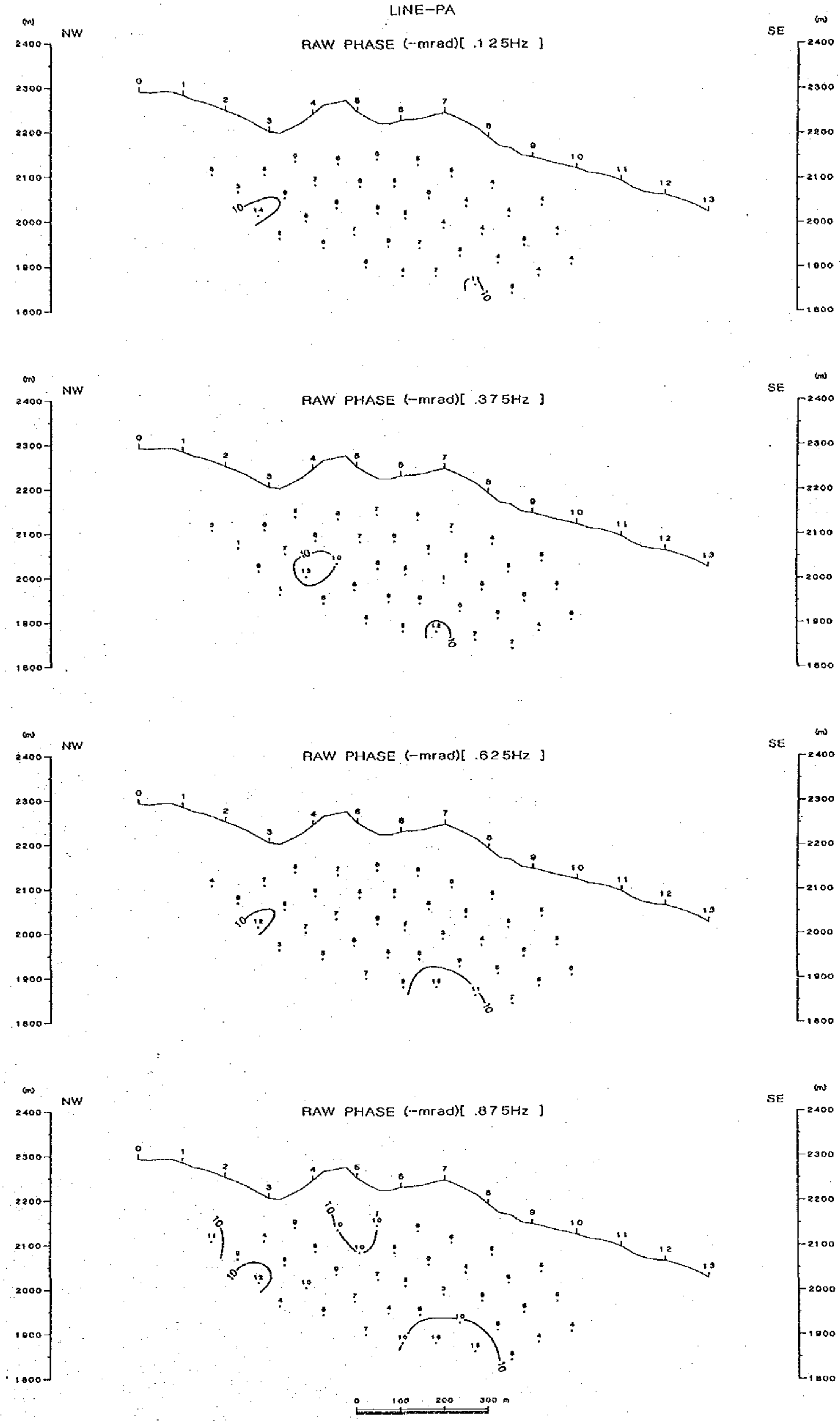

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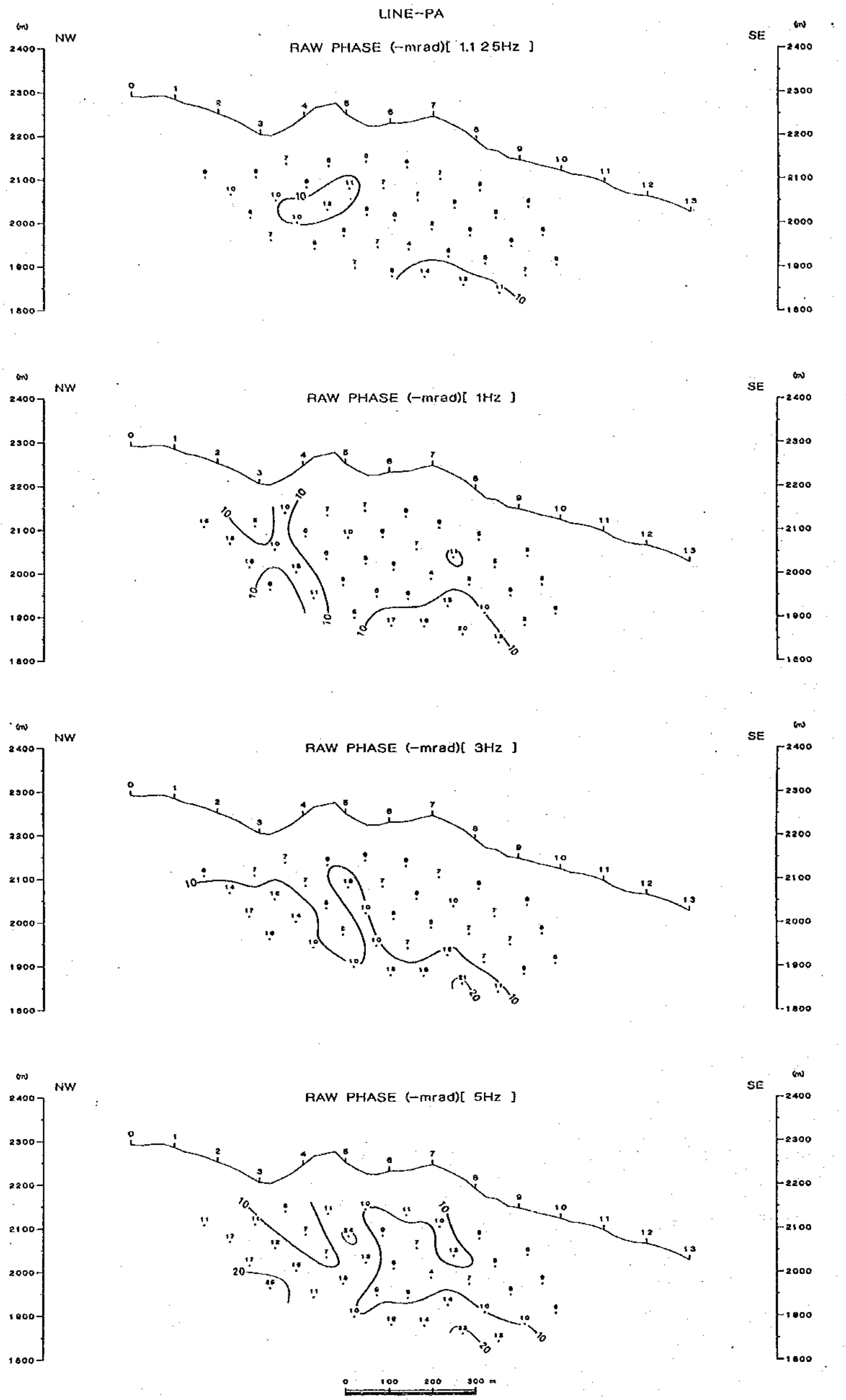
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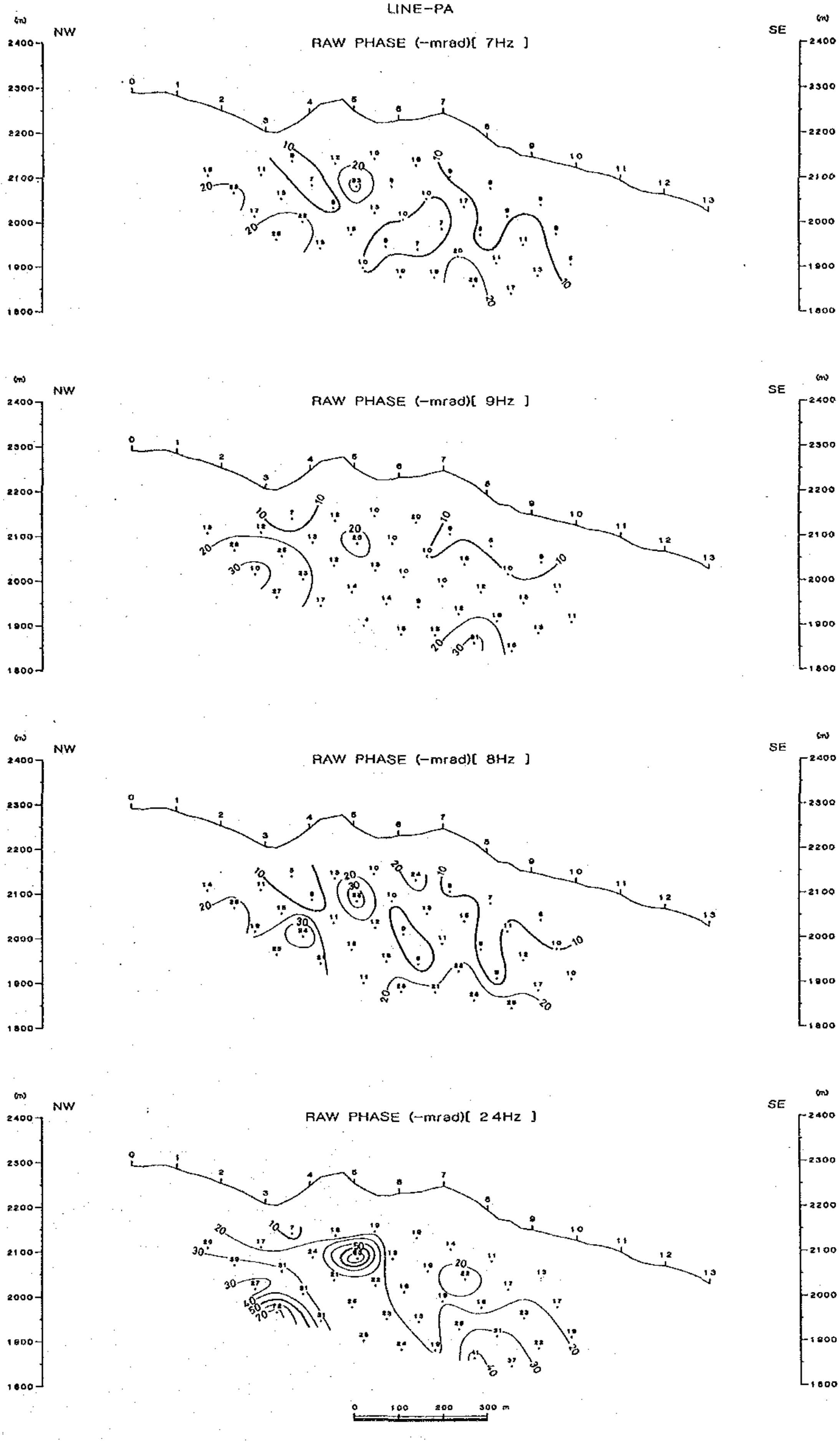
LINE-PA



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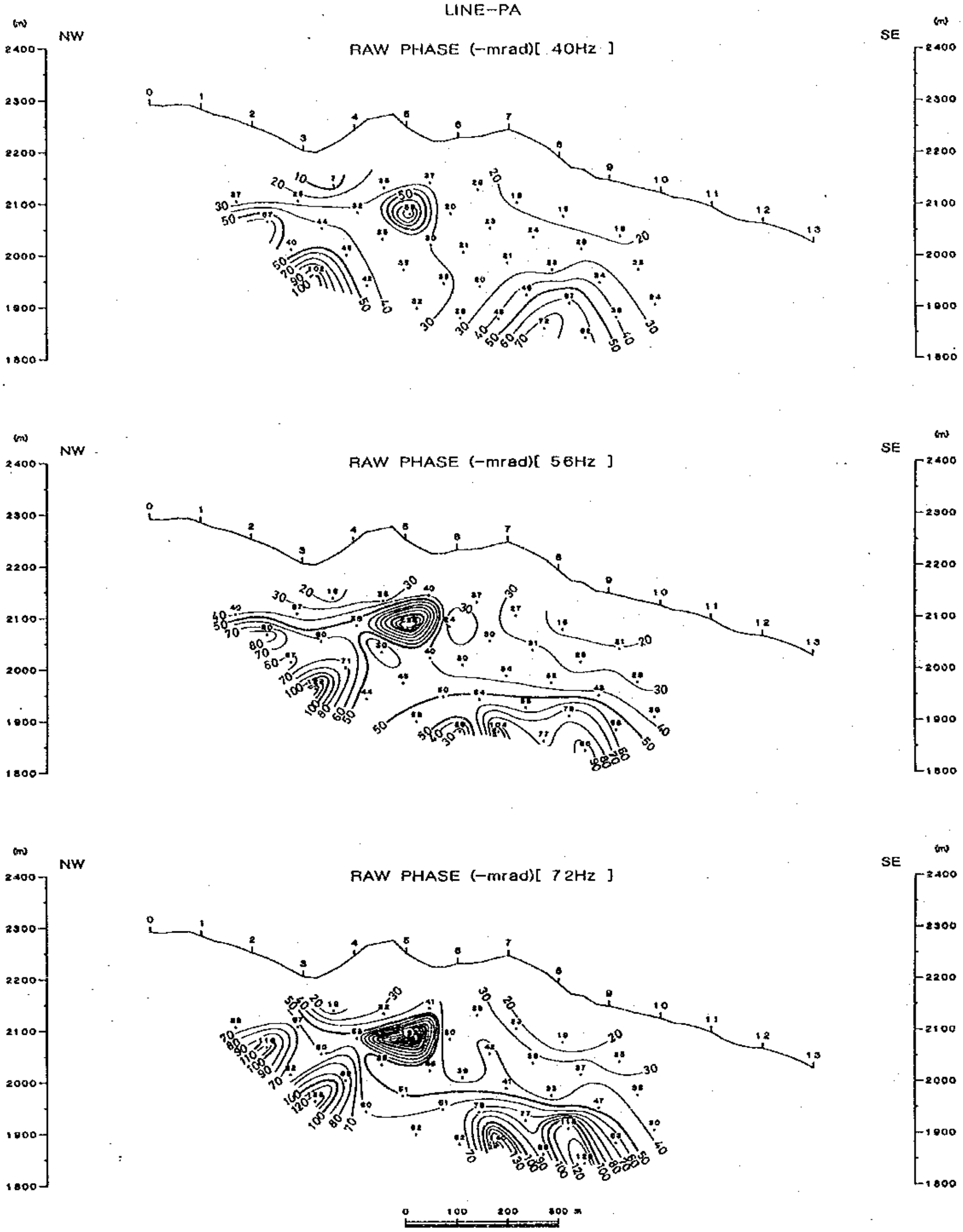
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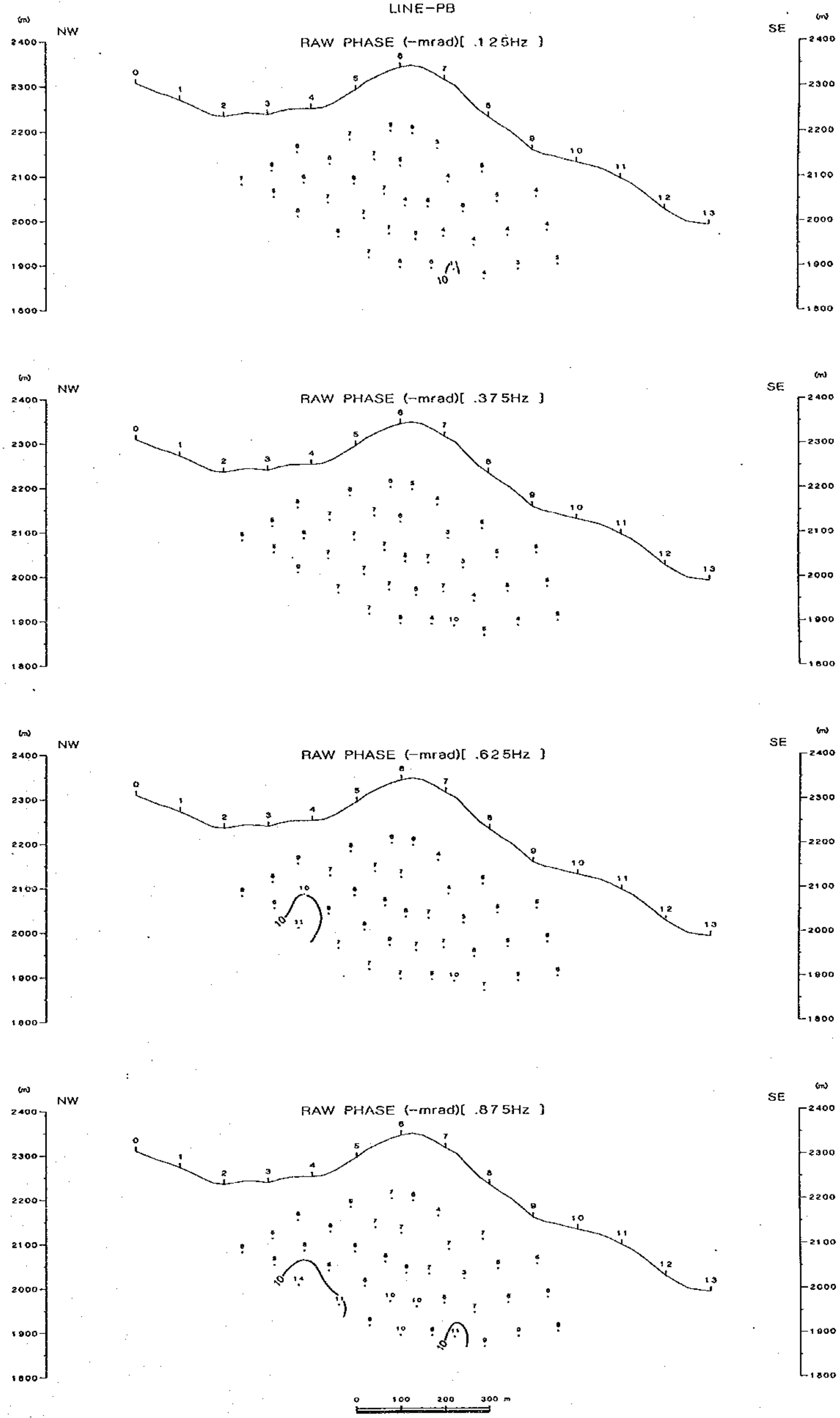
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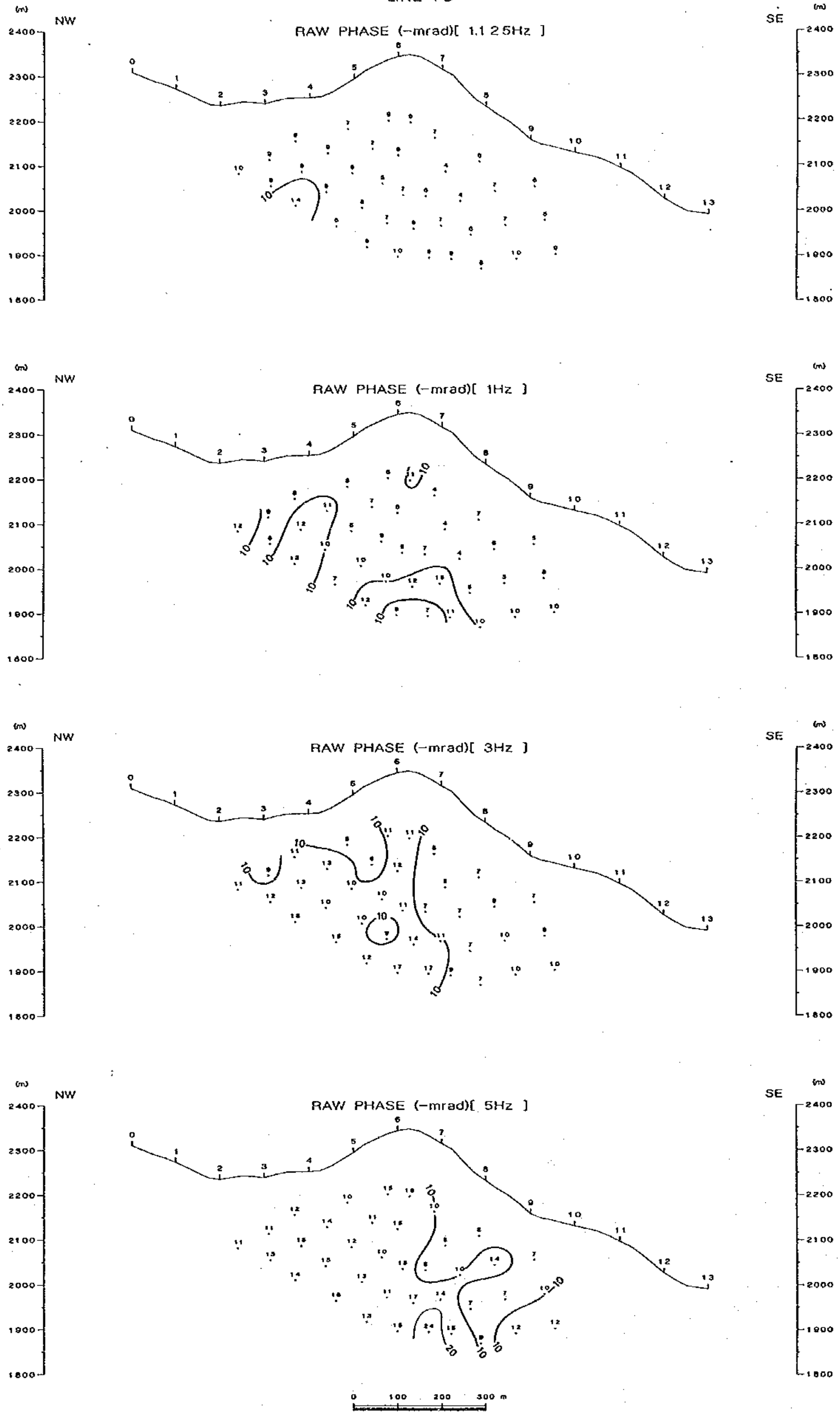
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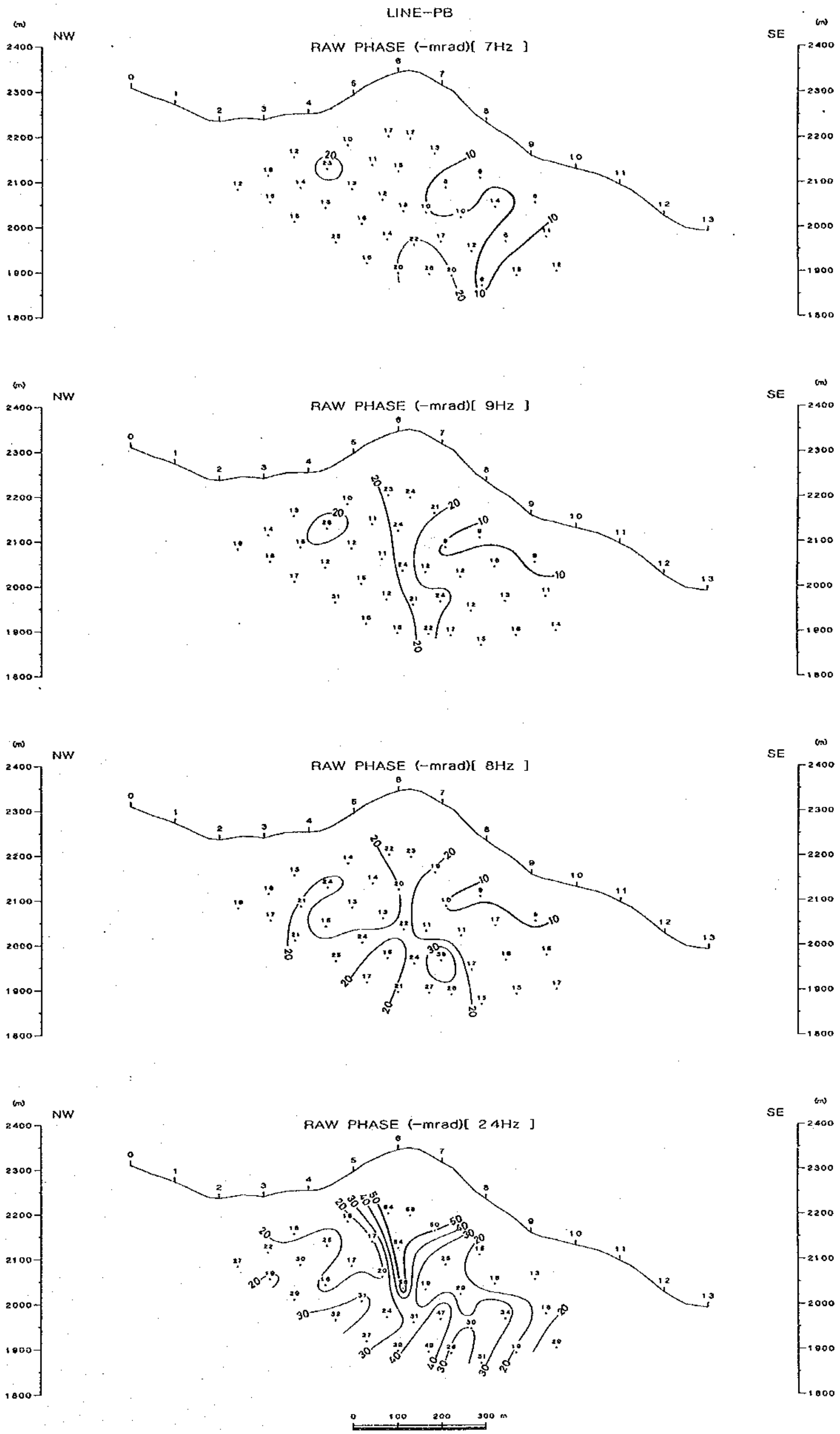

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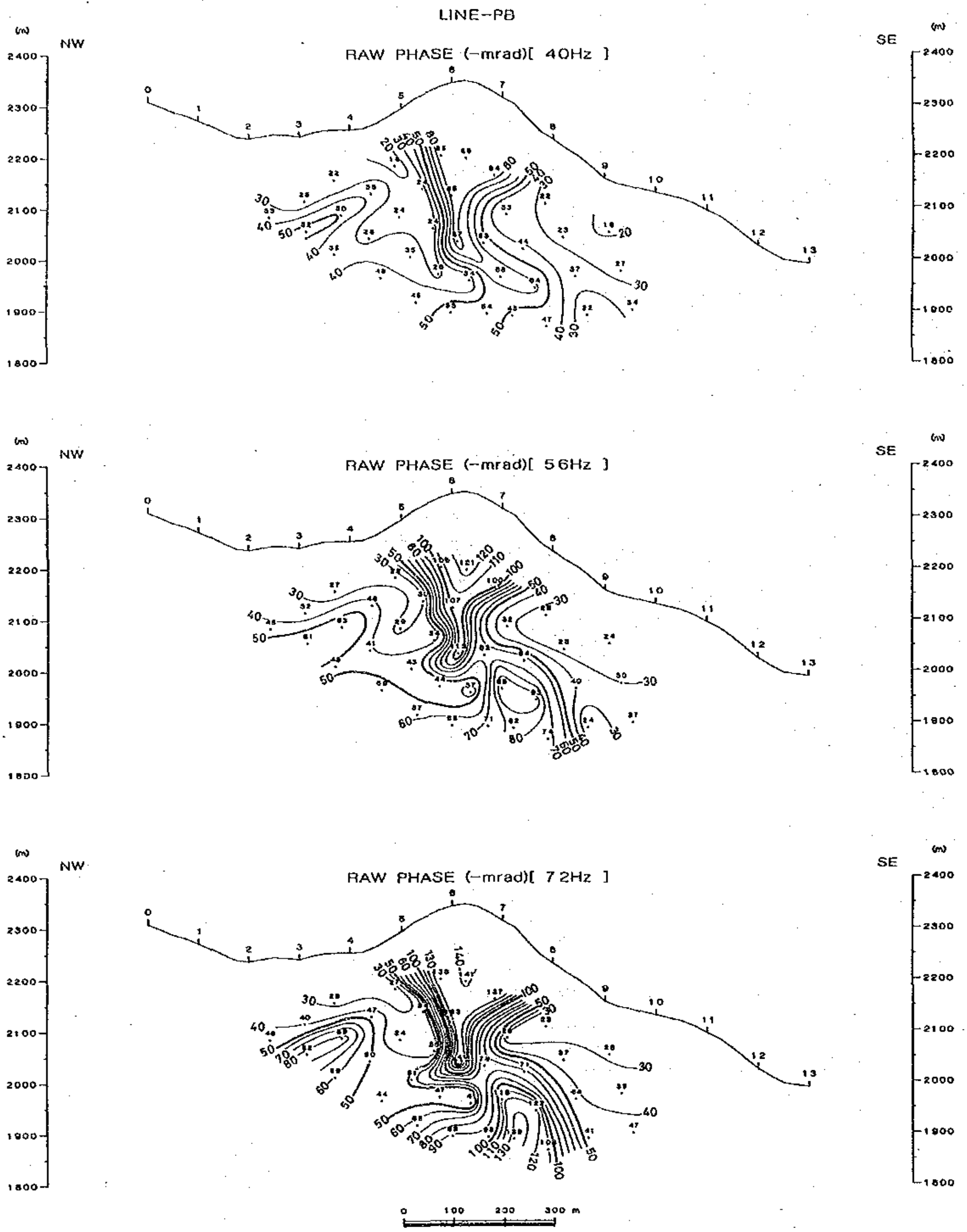

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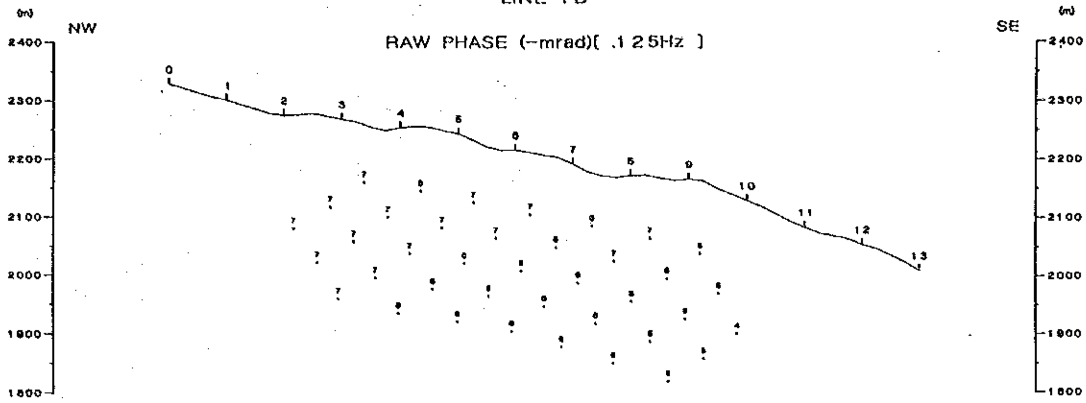
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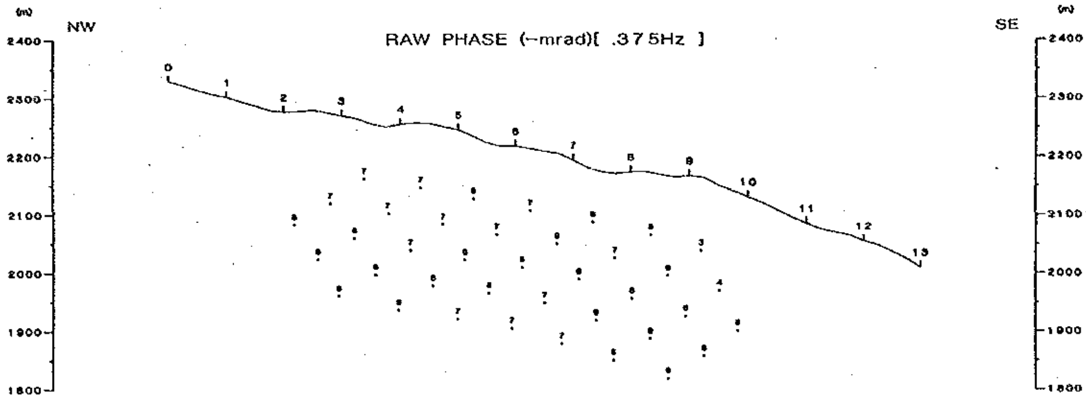
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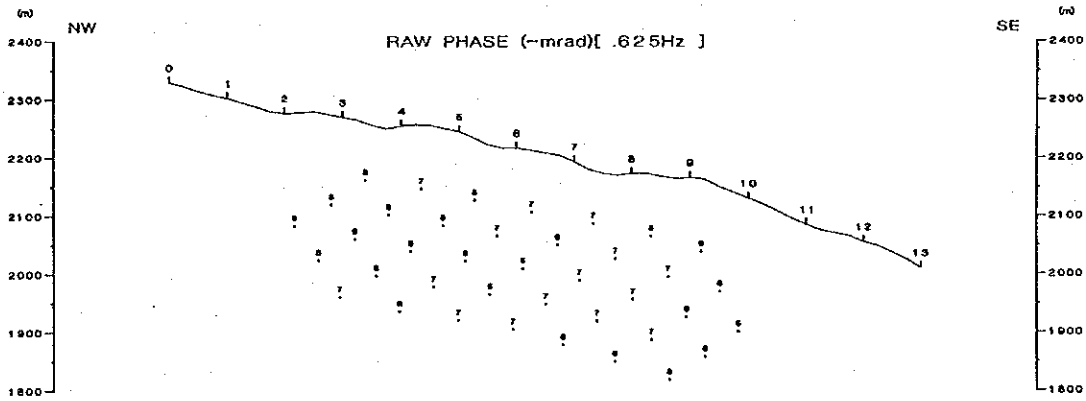
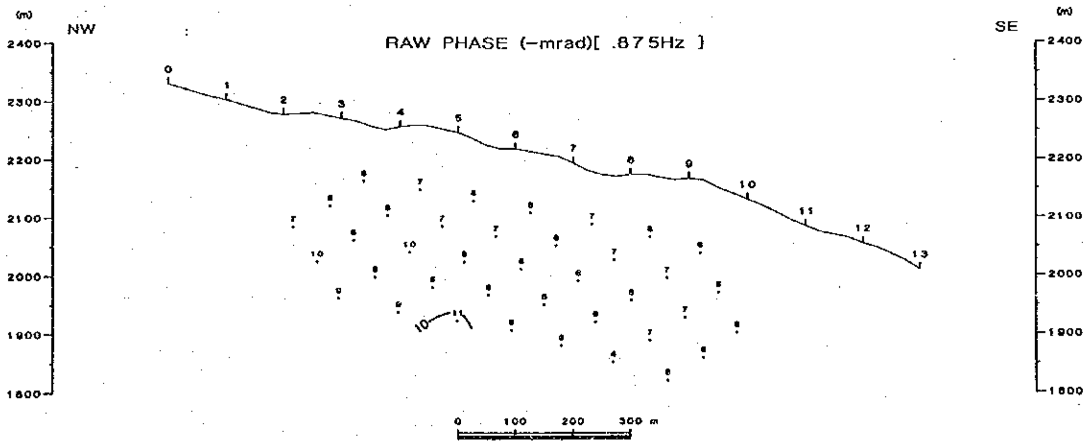
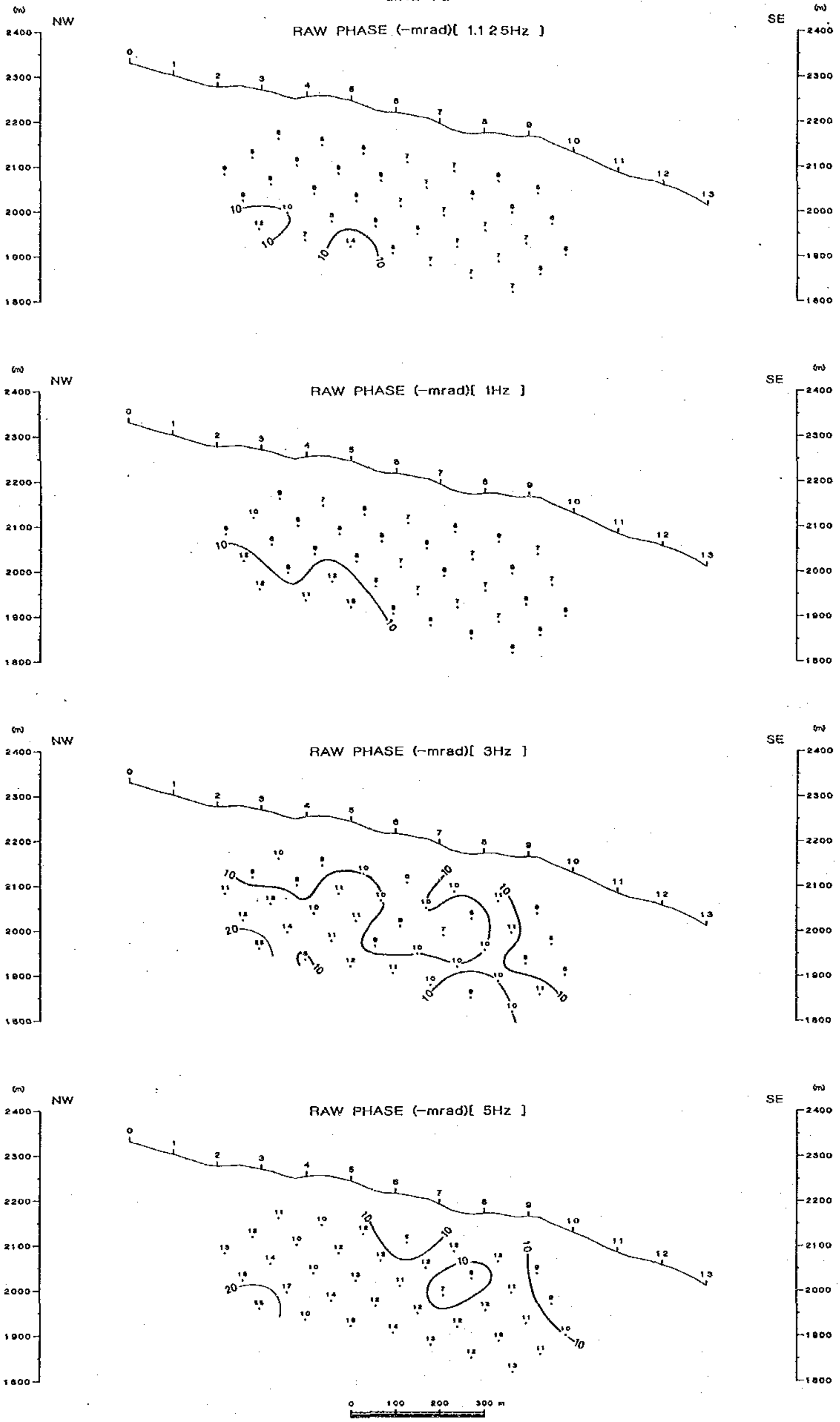
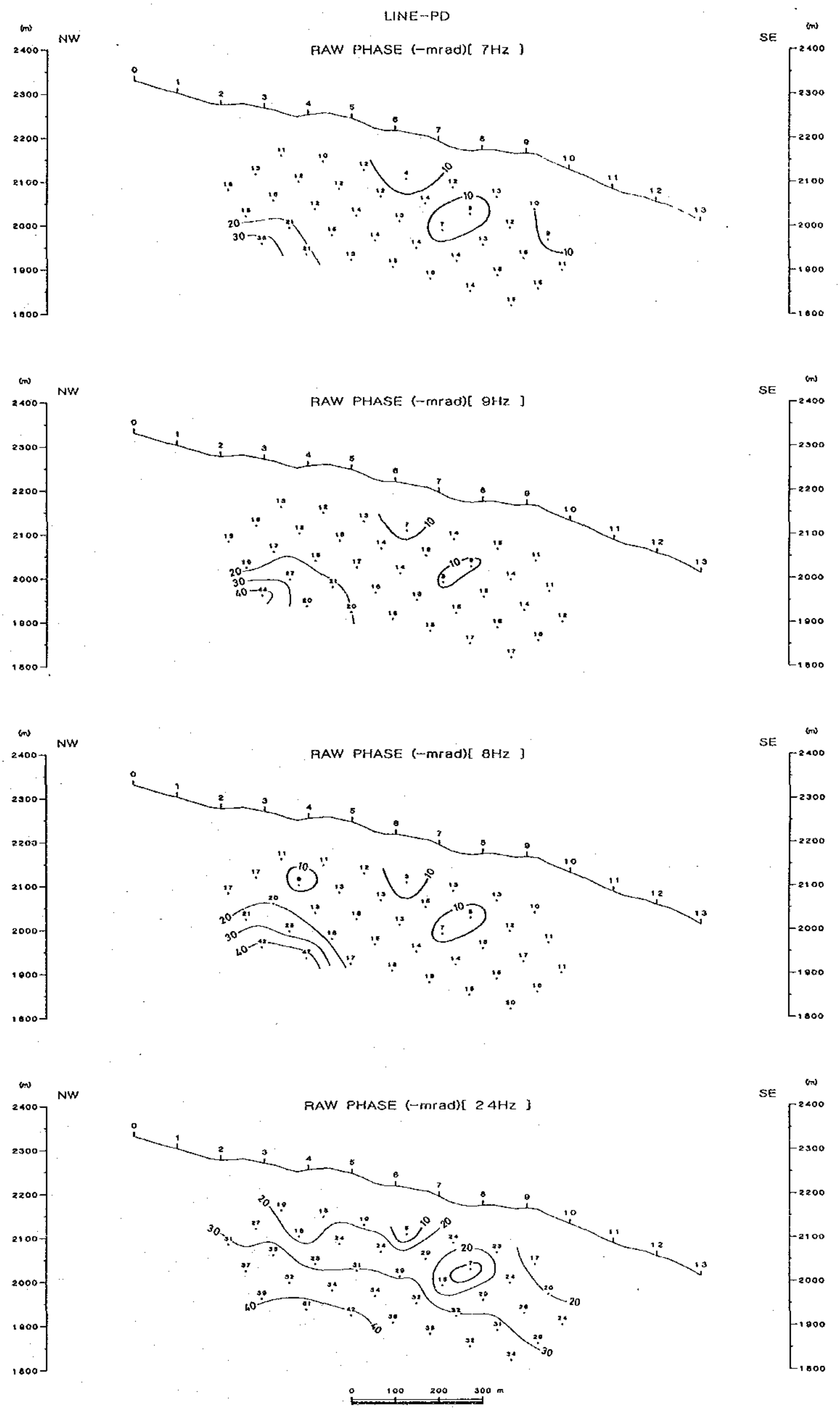

RAW PHASE (-mrad)[.625Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800

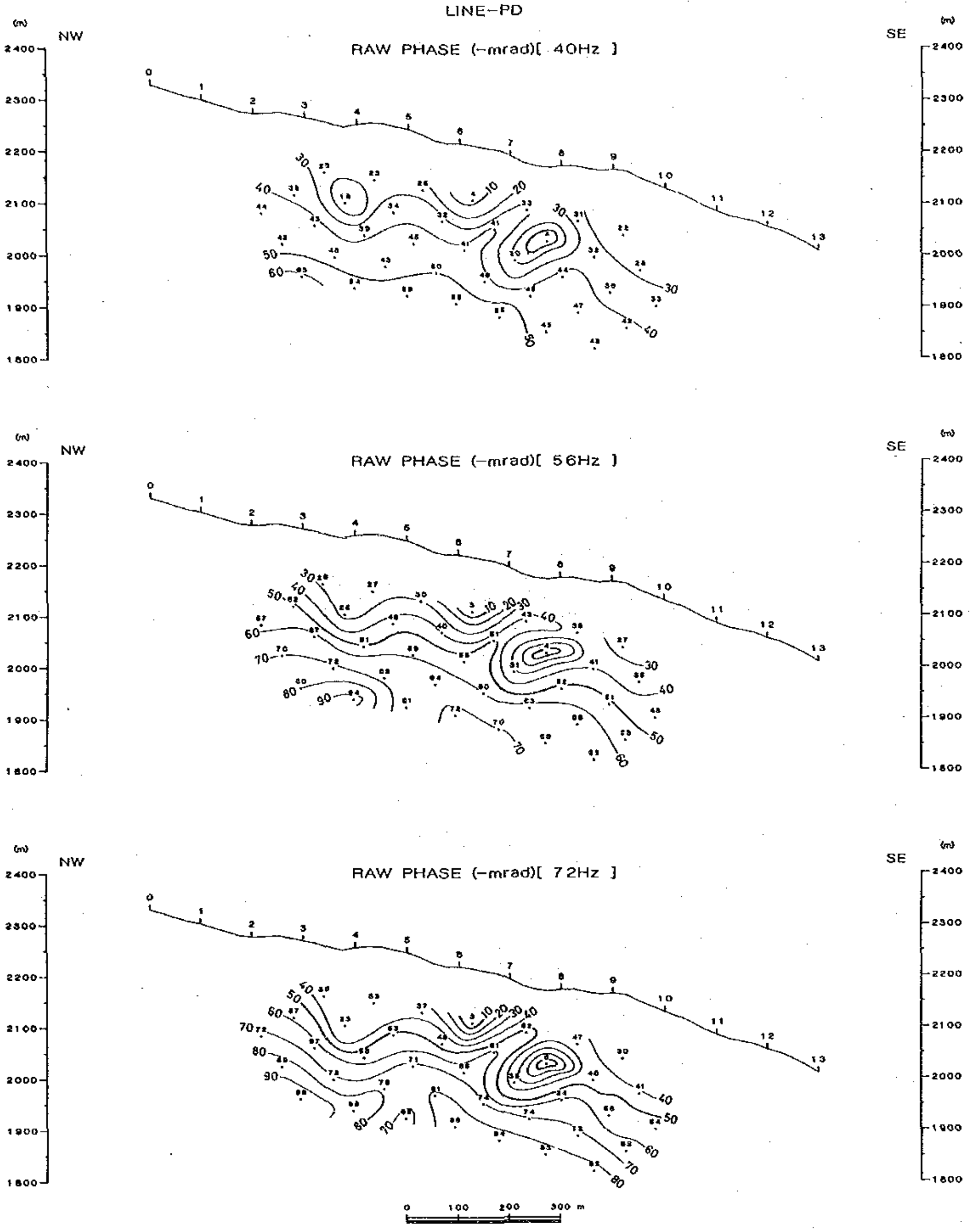

RAW PHASE (-mrad)[.875Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

LINE-PD


RAW PHASE (-mrad)[1.125Hz]
RAW PHASE (-mrad)[1Hz]
RAW PHASE (-mrad)[3Hz]
RAW PHASE (-mrad)[5Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

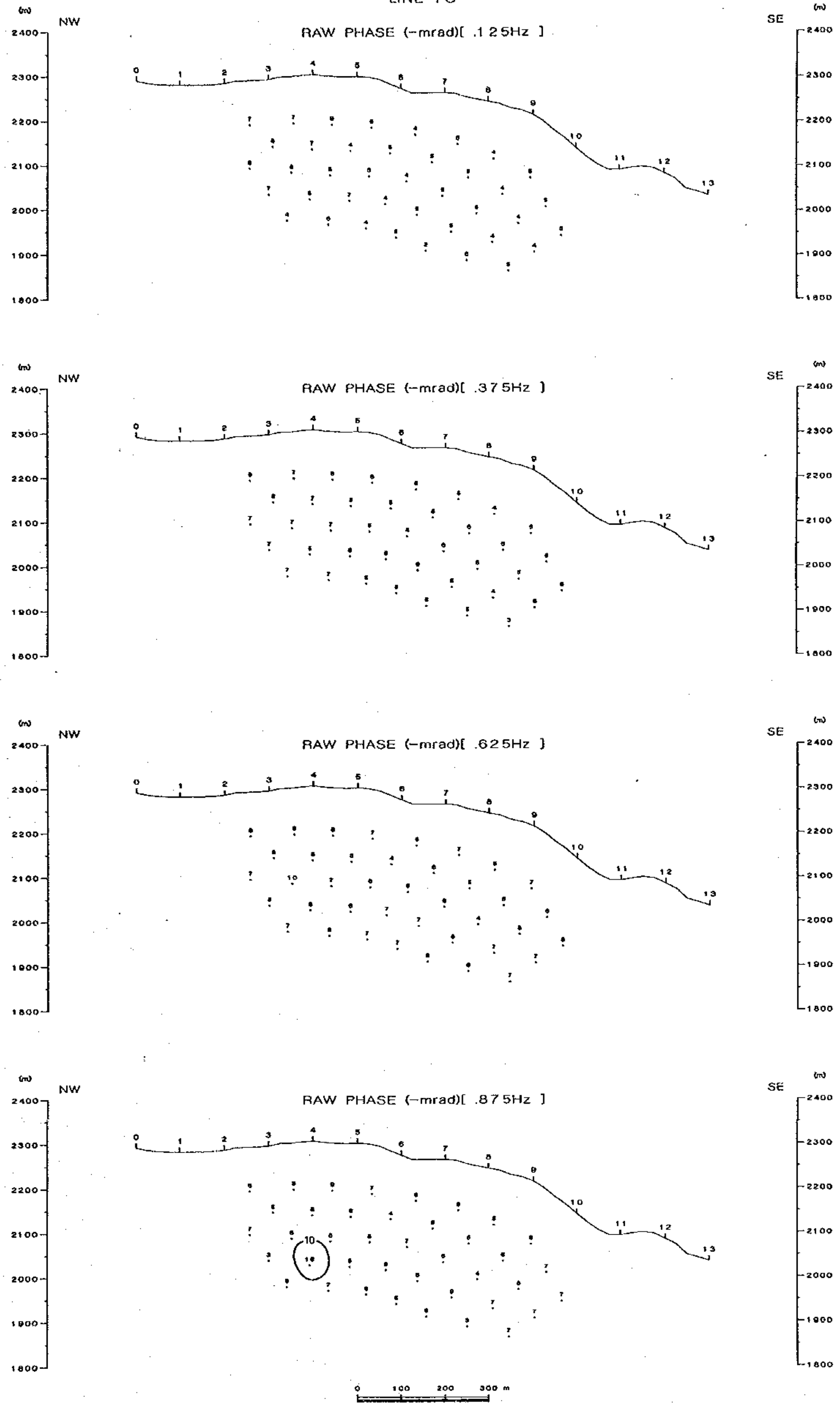

LINE--PD
NW
SE
RAW PHASE (-mrad)[7Hz]
RAW PHASE (-mrad)[9Hz]
RAW PHASE (-mrad)[8Hz]
RAW PHASE (-mrad)[24Hz]
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

LINE-PD



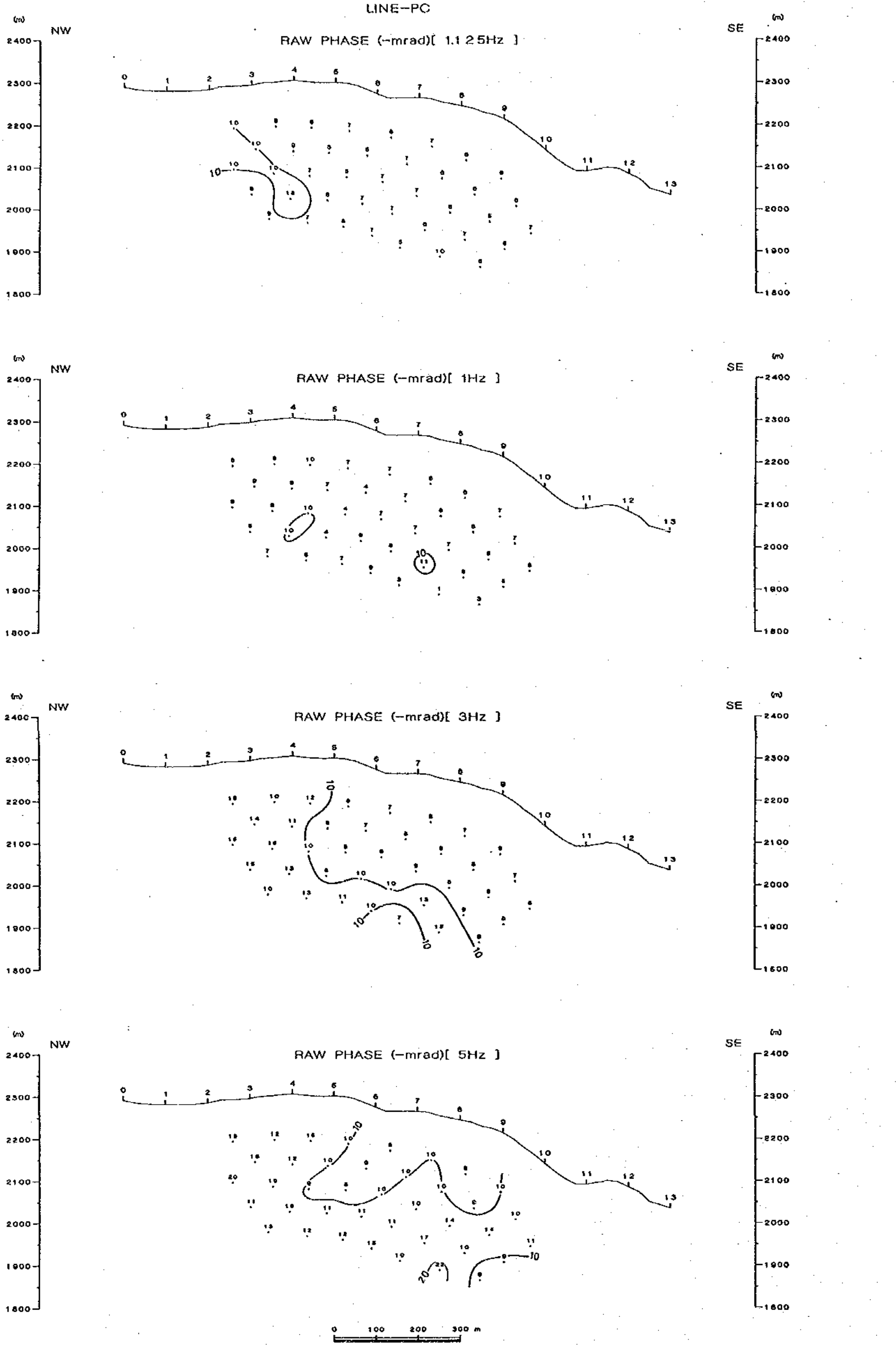
RAW PHASE (-mrad)[40Hz]
RAW PHASE (-mrad)[56Hz]
RAW PHASE (-mrad)[72Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0
1
2
3
4
5
6
7
8
9
10
11
12
13
0 100 200 300 m

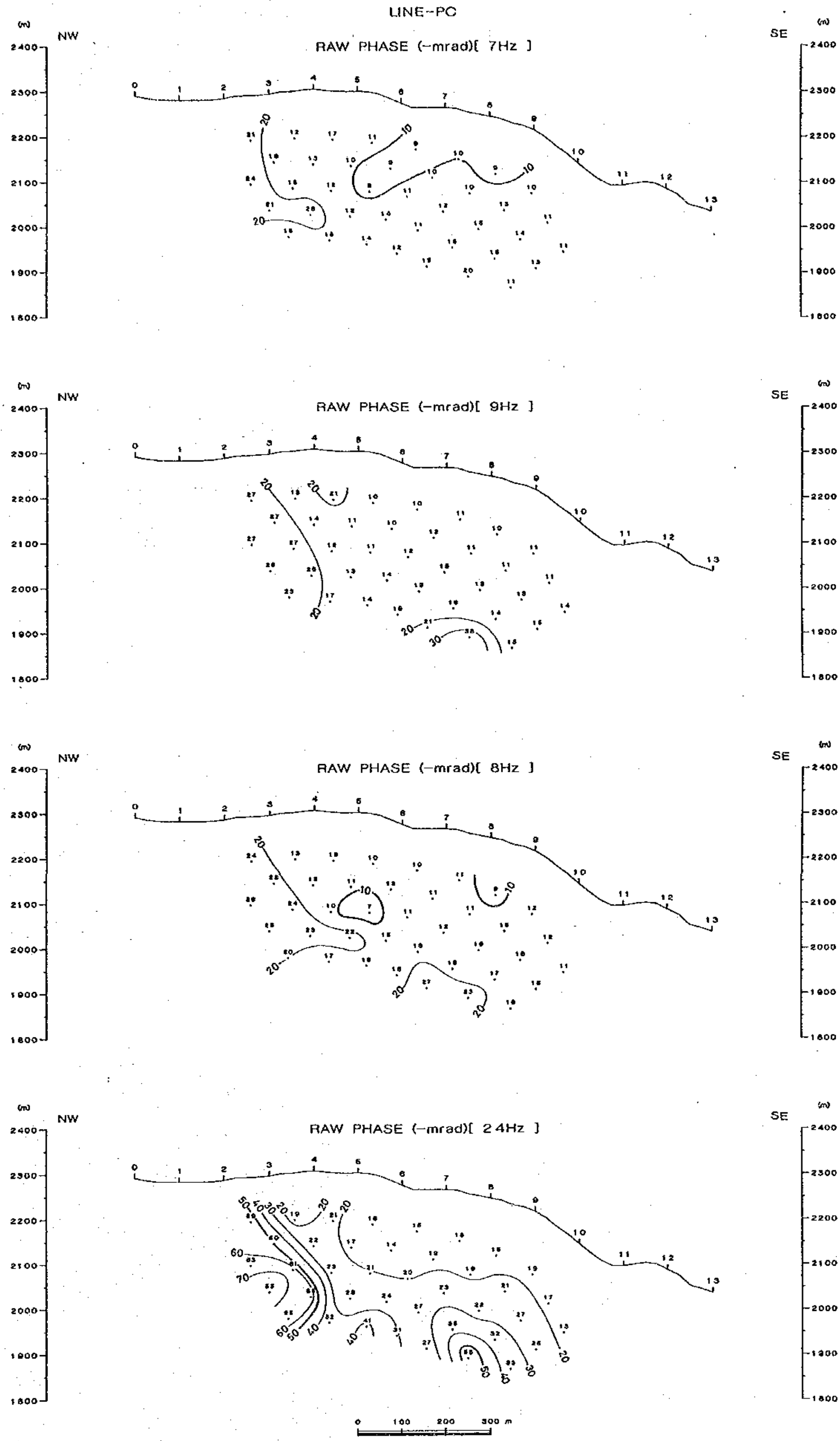
LINE-PC



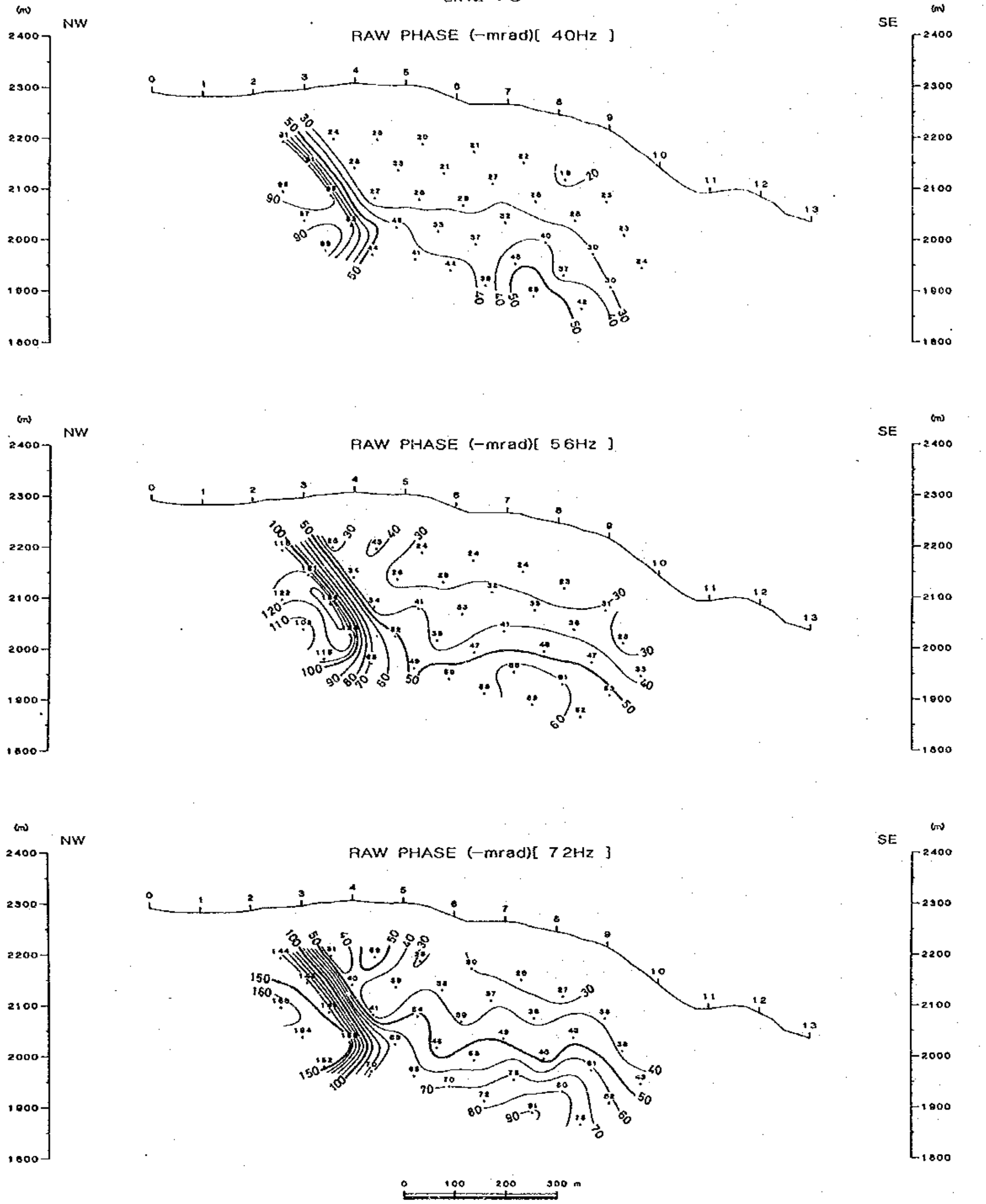
(m)
NW
SE
RAW PHASE (-mrad)[.125Hz]
RAW PHASE (-mrad)[.375Hz]
RAW PHASE (-mrad)[.625Hz]
RAW PHASE (-mrad)[.875Hz]
2400
2300
2200
2100
2000
1900
1800
0
1
2
3
4
5
6
7
8
9
10
11
12
13
0 100 200 300 m

LINE-PC


NW
SE
(m)
RAW PHASE (-mrad)[1.125Hz]
RAW PHASE (-mrad)[1Hz]
RAW PHASE (-mrad)[3Hz]
RAW PHASE (-mrad)[5Hz]
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

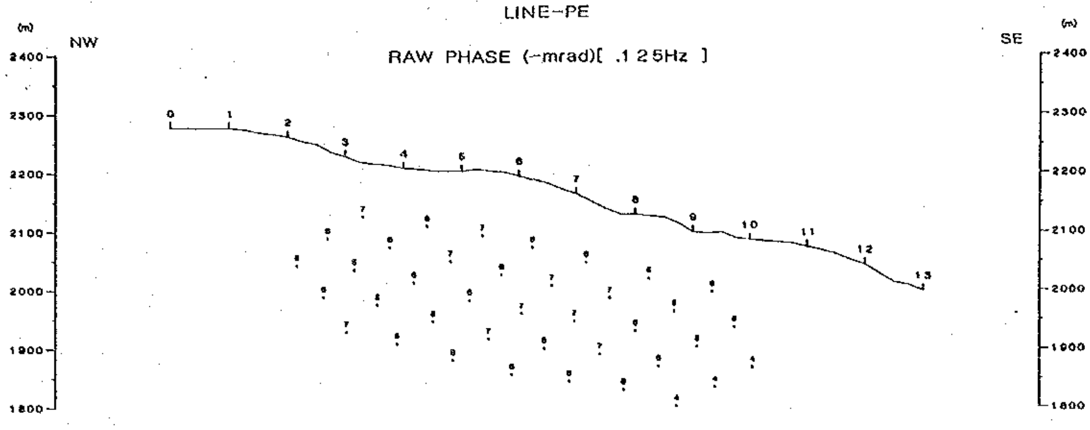

LINE-PC
NW
SE
RAW PHASE (-mrad)[7Hz]
RAW PHASE (-mrad)[9Hz]
RAW PHASE (-mrad)[8Hz]
RAW PHASE (-mrad)[24Hz]
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

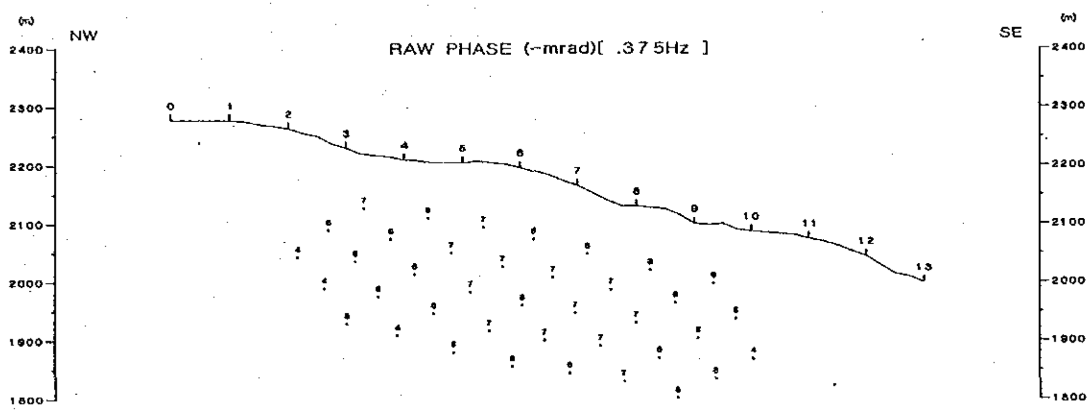
LINE-PC

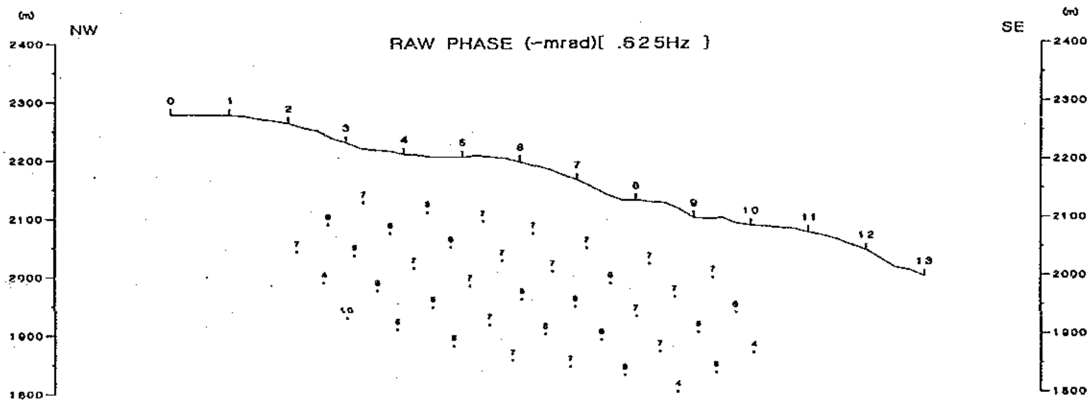


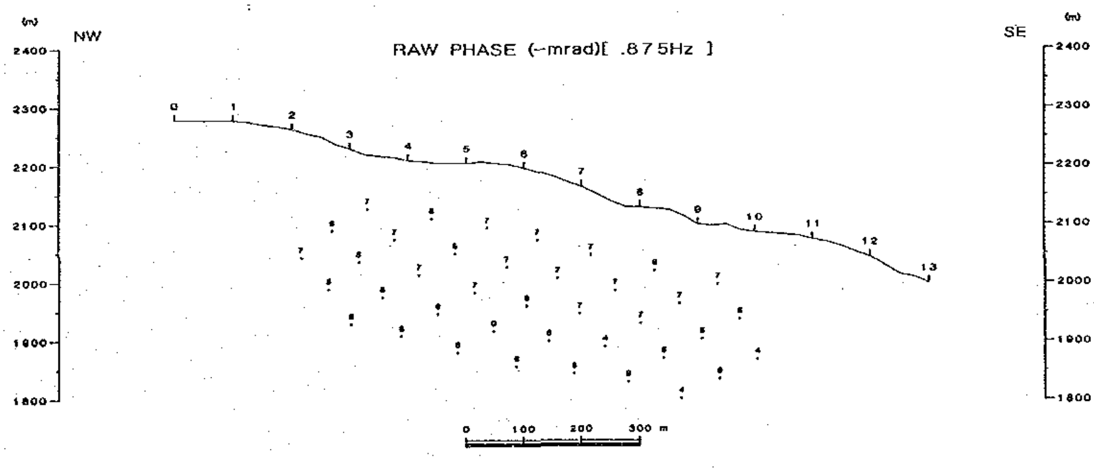
RAW PHASE (-mrad)[40Hz]
RAW PHASE (-mrad)[56Hz]
RAW PHASE (-mrad)[72Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

LINE-PE

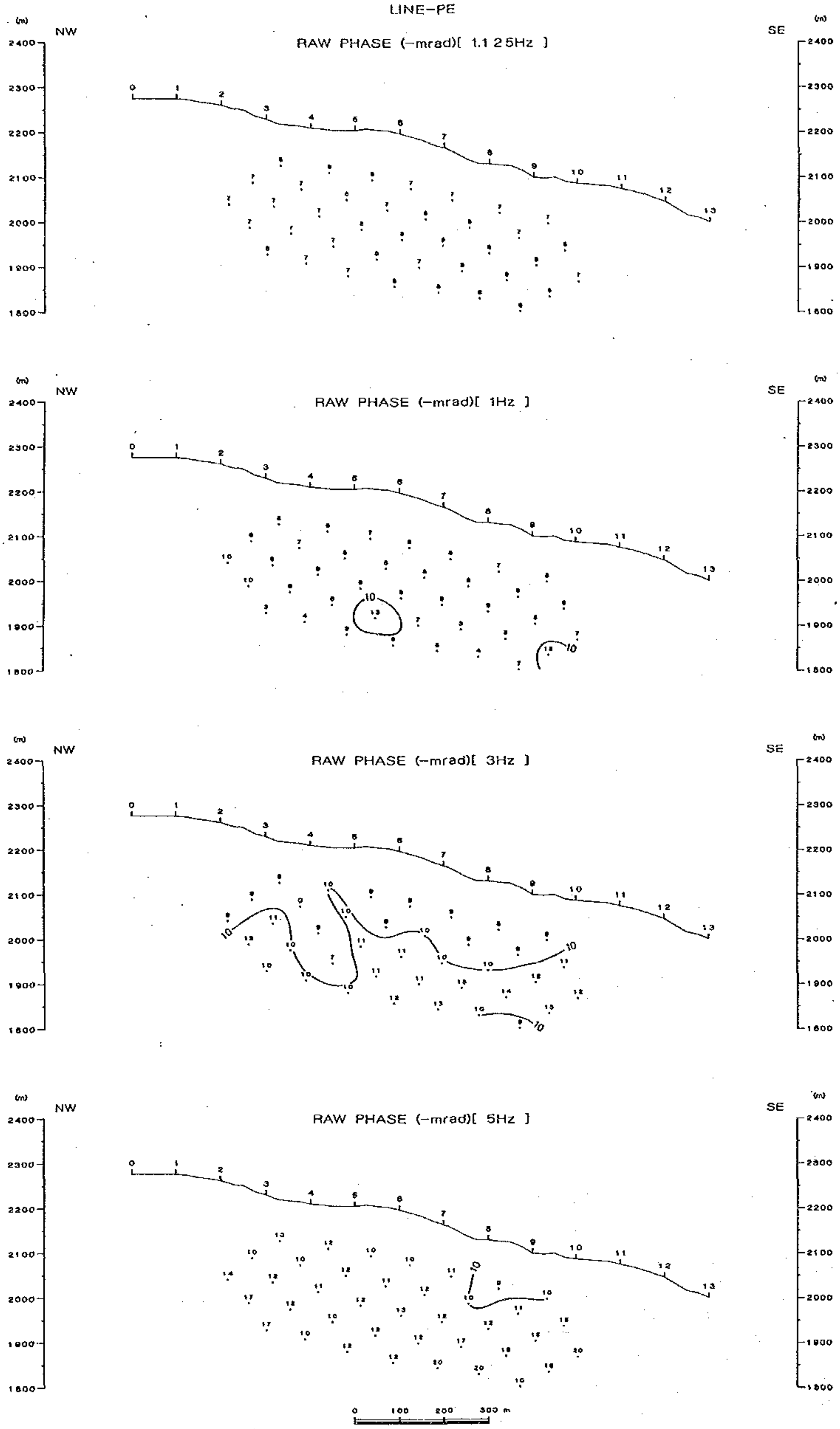

RAW PHASE (-mrad)[.125Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800


RAW PHASE (-mrad)[.375Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800

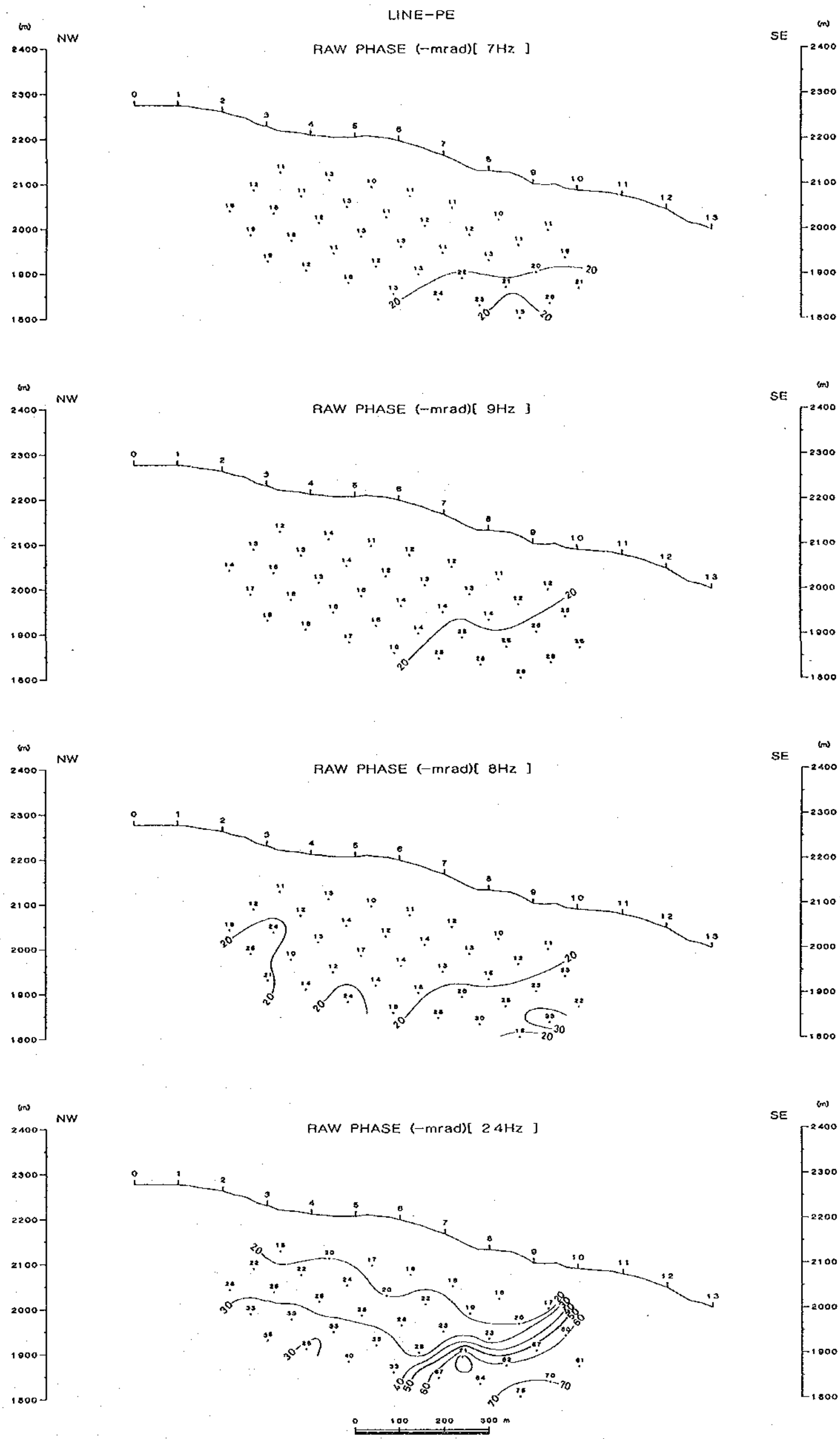

RAW PHASE (-mrad)[.625Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800


RAW PHASE (-mrad)[.875Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m

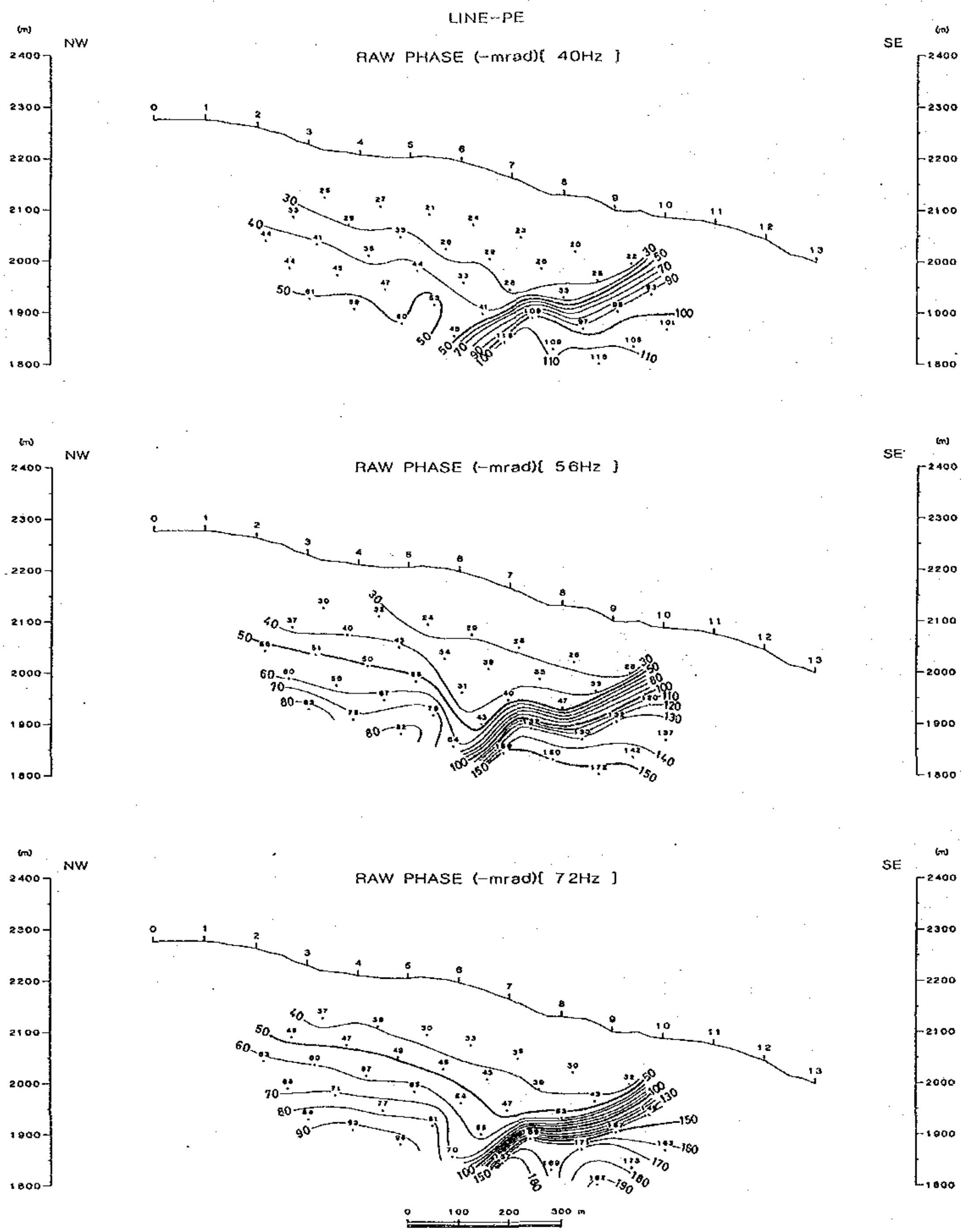
LINE-PE



RAW PHASE (-mrad)[1.125Hz]
RAW PHASE (-mrad)[1Hz]
RAW PHASE (-mrad)[3Hz]
RAW PHASE (-mrad)[5Hz]
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m



LINE-PE
NW
SE
RAW PHASE (-mrad)[7Hz]
RAW PHASE (-mrad)[9Hz]
RAW PHASE (-mrad)[8Hz]
RAW PHASE (-mrad)[24Hz]
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m



LINE-PE
RAW PHASE (-mrad)(40Hz)
RAW PHASE (-mrad)(56Hz)
RAW PHASE (-mrad)(72Hz)
NW
SE
(m)
2400
2300
2200
2100
2000
1900
1800
0 100 200 300 m