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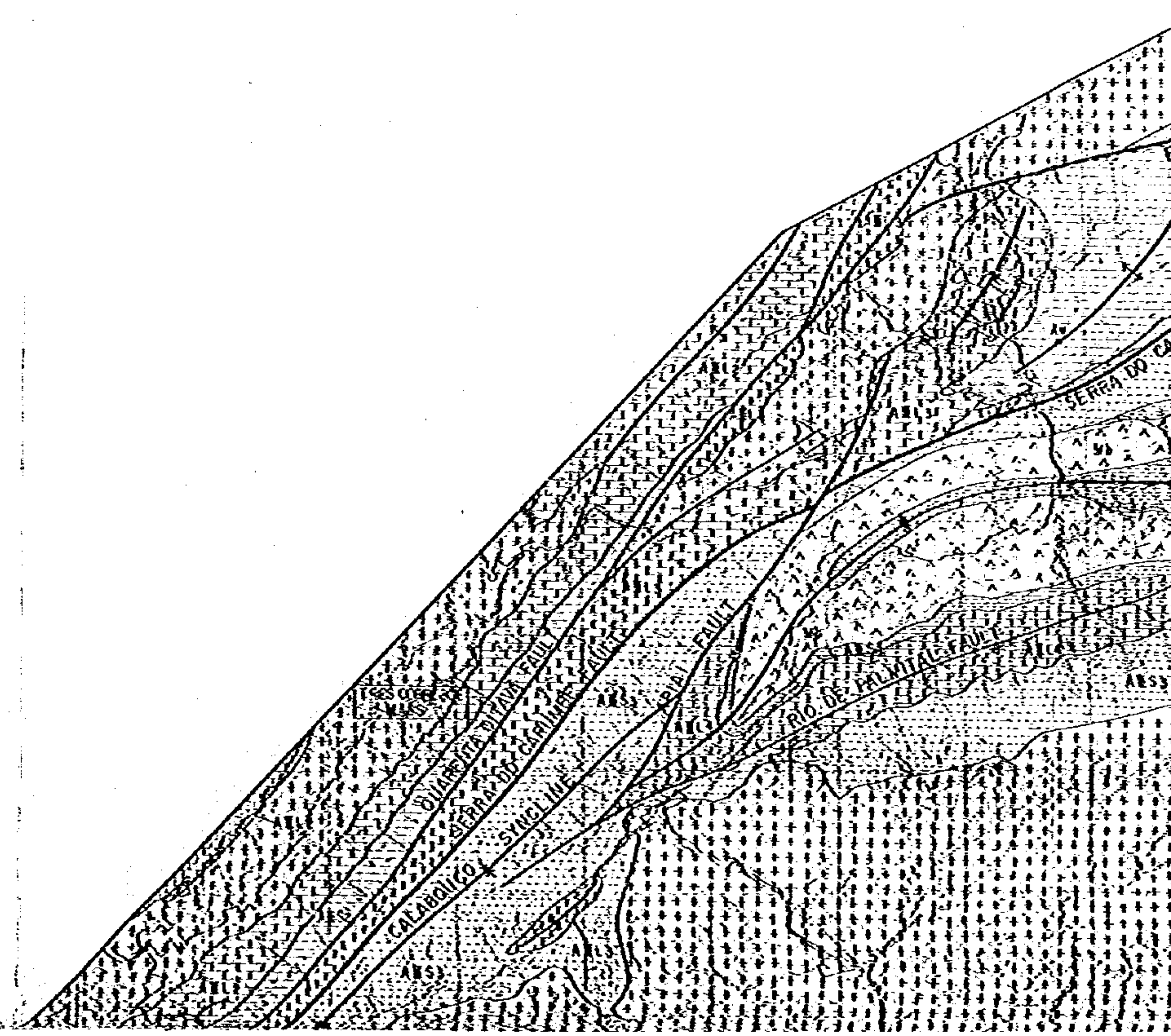
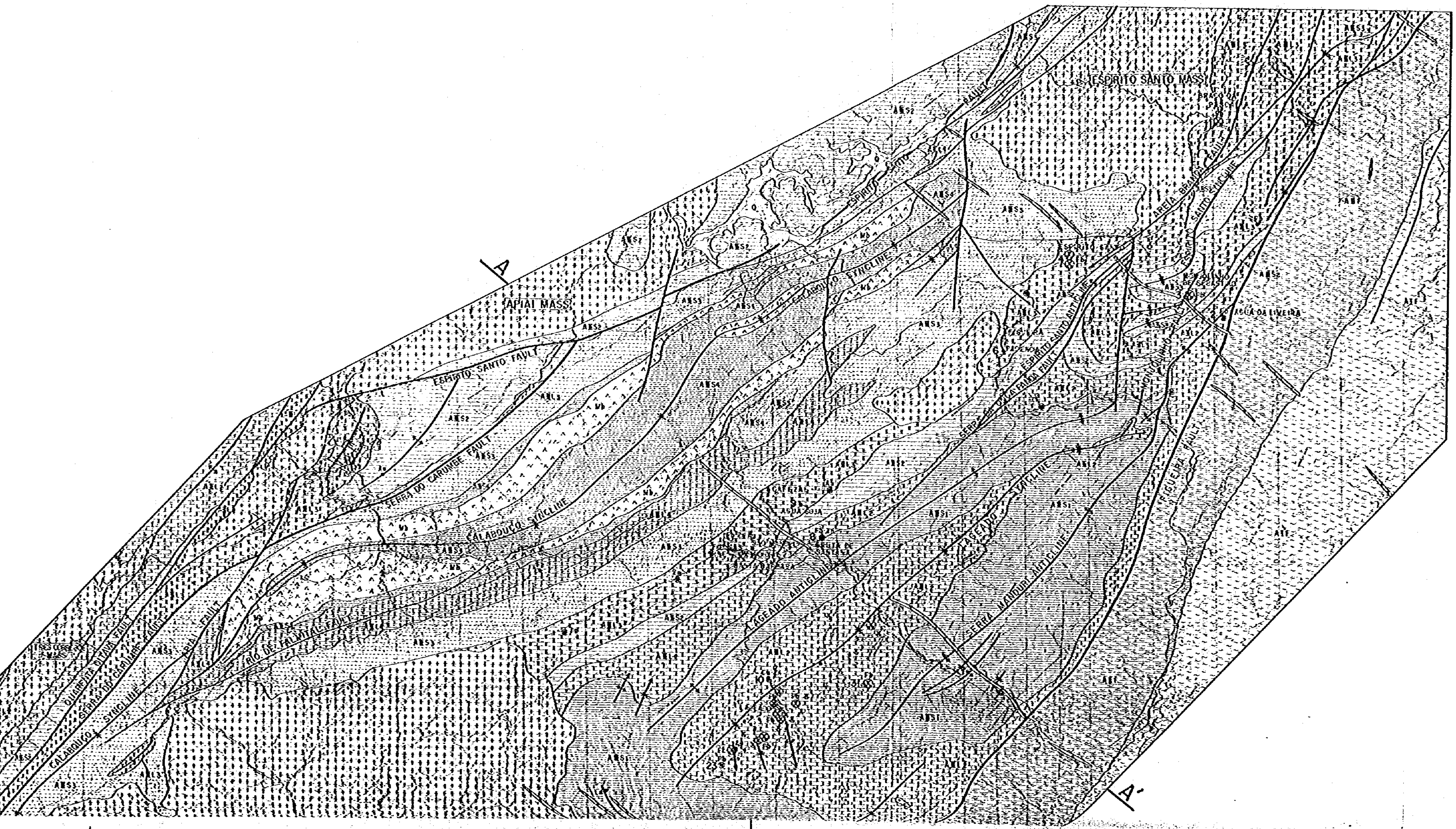
List of Mines and Showings in Survey Area

No.		Name of Mine & Showing	Kind of Ore	Type	Status	Location	Host Rock	Strike & dip	Lateral Extension	Longitudinal Extension	Average Width	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Ore Mineral	Remarks
1		Braço da Pescaria	Pb	Vein	closed	Areia Branca	Açungui III F L_2 limestone	-	-	-	-	-	-	-	-	-	Ga	
2		Agua da Limeira	Pb	do	do	East of Espírito Santo	Açungui III F L_2 limestone	N10°~60°W, 30°~70°SW	1,200m	-	0.005~0.20m	0.4	554.0	0.06	12.09	0.00	Ga, Cp, Py, Ce, Cv	
3		M..ginha de Sebastião	Pb	do	do	do	Açungui III F L_3 & dolomite	N40°E, 87°SE	10	-	network 0.03~0.19	0.8	204.0	0.00	7.70	0.00	Ga, Py, Cp	production several tons
4		Espírito Santo	Pb	do	do	Espírito Santo	Açungui III F L_2 limestone	N50°E, 80°NW	250	100	0.30	0.0	15.9	0.05	0.57	0.66	Ga, Hm, Cer, Py, Cv	production several hundred tons
5		Figueira	Pb	do	do	Southeast of Espírito Santo	do	N50°E, 35°NW	-	-	0.15~0.20	-	-	-	-	-	Sp, Ga, Py, Cp	production several hundred kilograms
6		Paciência	Zn, Pb	do	do	do	do	N60°E, 50°SE	-	-	0.80~1.50	-	-	-	-	-	Ga, Sp, Py, Cp	production Galena 200 kg
7		Furnas	Pb, Ag, Zn	Vein and pipe like	operating	Furnas	do	N60°W, 80°SW N40°E, 45°NW	800	100	-	0.2	2556.0	0.11	12.69	3.82	Ga, Sp, Py, Tt, Cer	production (1981), 500 T/M Pb. 7%, Ag 1,000 g/T
8		Gruta de Santana	Pb	Vein	closed	East of Furnas	Açungui III F L_2 limestone	-	-	-	network 0.01~0.05	0.0	7.9	0.02	5.92	2.79	Ga, Sp	production 10 tons
9		Agua Suja	(Pb)	(Vein)	do	Northeast of Furnas	Açungui III F L_2 limestone	-	-	-	(0.02~0.04)	11.8	2.0	0.01	0.12	0.01	Hm, Ct	
10	Lajeado Deposits	Ocorrência de Cobre	Cu, Zn	Vein	do	Lajeado	Açungui III F L_2 dolomite	N55°E, 50°SE	1.5	30	network 0.02	1.5	100.2	1.33	0.50	11.50	Ga, Cv, Py, Hm, Cer	
11		Lourenço Velho (São Lourenço)	Pb	do	do	do	Açungui III F L_2 limestone	N45°E, 75°SE	20~30	-	1.00	-	-	-	-	-	Ga, Cer	production 10 tons
12		Santana Velha	Pb	do	do	do	do	N75°E, 70°SE	5	250	0.50	-	-	-	-	-	Ga, Sp	production 1,000 tons
13		Porco ou Porca do Mato	Pb, Zn	do	do	do	do	N70°E, 70°SE	-	-	0.60~0.80	-	-	-	-	-	Ga, Sp, Py	production Ga, 2 tons
14		Mamangava	Pb	do	do	do	do	N65°E, 70°SE	500	100	0.50	0	215	9.0	11.2	0.01	Ga, Sp, Py, Cer	by JICA (1981), production several thousand tons
15		Santana Nova	Pb, Ag	do	do	do	do	N50°E, 75°SE	600	200	0.30	0.3	1674.0	0.06	12.24	0.01	Ga, Py, Cer, Cv	production several thousand tons Pb, 5~50%
16		Santana F	Pb	do	do	do	do	N50°E, 60°SE	-	100+	1.00~2.00	-	-	-	-	-	Ga, Py, Cer	production Ga, 20~30 tons
17		Nova Esperança	Pb, Ag	do	do	do	do	N50°E, 70°SE	20	60+	0.50	0.5	1931.0	0.08	12.04	0.02	Ga, Cer, Py, Cp, Cv	production 40 tons Pb, 47%
18		São Vicente	Pb	do	do	do	do	N50°E, 50°SE	-	50	0.60	0.5	436.0	0.08	12.08	0.22	Ga, Hm, Cer	production 40 tons
19		Coqueiro	Pb	do	do	do	do	N60°E, 80°SE	-	6+	0.20	-	-	-	-	-	Ga, Py, Cer	production 5 tons
20		Bagres	Pb	do	do	do	do	N50°E, 70°SE	-	150	0.30	-	-	-	-	-	Ga, Py	production 500 tons
21		Jardim I-II	Pb, Ag	do	do	do	do	N50°~60°E, 60°SE	20	250	0.70	0.1	2150.0	0.51	12.18	0.58	Ga, Py, Hm, Cer	production 1,000 tons (I), 80 tons Pb, 50% (II)
22		São Rafael I-II-III	Pb	do	do	do	do	N70°E, 60°SE	-	150+	1.00	-	-	-	-	-	Ga, Py	by Sabópa, production 550~1,000 tons
23		Boa Ventura	Pb	do	do	do	do	N70°E, 60°SE	5~10	30m (by adit, 1,000m)	1.00~1.50	0.1	1373.0	0.05	11.94	0.22	Ga, Py, Hm, Cer	production 85 tons
24	Serra Deposits	Manguinho	Pb	do	do	do	do	E-W, 65°S	-	-	0.10	-	-	-	-	-	Ga, Sp, Hm, Cer	production several hundred tons
25		Jaguatirica	Pb, Zn	do	do	do	do	N50°E, 65°SE	-	50+	0.10~0.50	0.1	635.0	0.16	19.56	5.37	Ga, Cer, Sp, Py, Mt, Hm, Cv	production 53 tons
26		Sete Alqueires	Pb	do	do	do	do	N70°E, 35°SE	-	-	?	-	-	-	-	-	Ga, Hm	
27		Barra Funda I II III IV	Pb	do	do	do	do	N50°E, 40°SE	-	-	0.20~0.30	-	-	-	-	-	Ga, Sp	
28		Alto da Barra (Descoberta I-II)	Pb	do	do	do	do	N70°E, 70°SE	-	-	0.30~0.40	-	-	-	-	-	Ga, Sp, Py	by Sabópa, production Ga, 15 tons
29		Casa Velha	Pb	do	do	do	do	N60°E, 80°SE	-	200	0.10~0.40	tr	265	-	9.45	nd	Ga, Sp, Py, Hm, Cer	by Sabópa
30		Sítio Novo	Pb	do	do	do	do	N50°E, 60°SE	-	-	0.20~0.30	-	-	-	-	-	Ga	
31		Barra do Leão	Pb, Ag	do	do	do	do	N45°E, 60°SE	-	65	0.20~0.30	0.0	3131.0	0.61	12.56	0.27	Ga, Sp, Py	
32		Santo Antonio do Pardo	Pb	do	do	Pardo	do	N60°W, 30°~80°NE	300	100+	0.15	0.0	51.0	0.00	4.29	0.36	Py, Ga	by Sabópa, production 20 tons
33		Fluorita de Sete Barras	F	do	do	do	do	N50°E	50+	20	0.50	nd	(F) 24.6	nd	nd	nd	F	
34		Matos Empresa de Mineração	Cu	strata-form	do	do	Açungui II calc-silicate rock	N50°W, 35°N	60	60	0.50	1.0	10	9.8	0.2	0.7	Cp, Py, (Ga)	

Ser. No.	Name of Mine & Showing	Kind of Ore	Type	Status Quo	Location	Host Rock	Strike & Dip	Lateral Extension	Longitudinal Extension	Average Width	Au g/t	Ag g/t	Cu (%)	Pb (%)	Zn (%)	Ore Mineral	Remarks
35	Perau	Pb, Ag	stratiform	operating do	Estado Paraná Município Adrianópolis	Açungui II calc-silicate rock	N35E 30N	300+	200	0.50	0	120	0.2	11.7	2.0	Ga, Sp, Cp, Py	production (1982) 3,500 T/M Pb 8.5% Ag 120 g/T
36	Agua Clara	Cu, Pb, Ba	do	closed	do	Açungui II dolomite	E-W 40S	10	50	0.20	0	8	0.8	9.8	0.0	Ga, Cp, Ba	
37	Pretinho	Ba	do	operating	do	Açungui II calc-silicate rock	N40E 35S	1,000	100+	1.50	($BaSO_4$) 85	(S) 0.5	ppm 100	ppm 50	ppm 60	Ba	production (1982) 167 T/Y
38	Panelas	Pb	bedded vein & vein	operating	do	Açungui III F L_2 limestone	N40E 50N	900	200	0.32	0	130	0.3	24.0	0.0	Ga, Sp, Py, Po	total production 1,500,000 T Pb. 7.6% production (1981) 2,500 T/M Pb 5.8% Ag 197 g/T
39	Laranjal	Pb	bedded vein do	closed	do	do	N30E 60N	-	-	0.50	1	223	0.6	17.6	0.1	Ga	
40	Canoas	Pb	do	do	do	Açungui III F L_2 calcareous shale	E-W 60N	-	-	0.10~0.50	0	167	0.1	7.0	0.0	Ga, Cer	
41	Barrinha	Pb, Ag	do	under Exploration	do	Açungui III F L_2 limestone & calcareous shale	N50~70E 40~65N	55~70	70~200	0.50~14.00	1	150	0.1	30.6	0.0	Ga, Sp, Cp, Py, Cer, Pyro	
42	Diogo Lopes	Pb, Ag	do	closed	do	Açungui III F L_2 limestone	N75~85E 50~70S	10	50	0.80	1	221	0.1	16.0	0.4	Ga, Py	total production 1,411 T Pb 9.32%
43	[illegible]	Pb, Ag	do	do	do	do	N35E 50S	15	20	1.50	1	70	0.2	23.1	0.0	Ga, Py	total production 685 T Pb 19.4%
44	Paqueiro	Pb, Ag	bedded vein & vein	do	do	do	N50~60E 80N~85S	1~70	40	0.30~1.20	1	216	0.5	9.6	0.0	Ga, Sp, Cp, Py	total production 16,300 T Pb 9%
45	Carumbé	Pb, Cu	vein	do	do	Açungui III F L_2 limestone	-	-	-	-	-	-	-	-	-	Ga, Py, Cp, F	
46	Braz	F	do	do	do	do	-	-	-	-	-	-	-	-	-	F, Ga, Py, Cp	
47	Quarenta Oitava	Pb	do	do	do	Açungui III F Sch limestone	N30E, 90	-	-	-	-	-	-	-	-	Ga, Lim, Py, Sp, Tt	
48	Onça I	Pb	do	do	do	do	-	-	-	0.30	-	-	-	-	-	Ga	
49	Onça II	Pb	do	do	do	Açungui III F L_2 limestone	N30E, 85NW	-	-	-	3.6	954	1.54	7.42	0.03	Ga, Lim, Py, Tt, Cp, Sp	
50	Rocha	Pb, Ag	do	operating	do	Açungui III F L_2 dolomite	N10~30W 65N, 65S	(10~40)	150~300	0.15~2.00	1	130	0.5	14.0	0.4	Ga, Sp, Cp, Py	production (1981) 2,500 T/M Pb 15% Ag 135 g/T

Ga : Galena Cer : Cerussite Py : Pyrite Ba : Barite
Sp : Sphalerite Pyro : Pyromorphite Lim : Limonite Tt : Tetrahedrite
Cp : Chalcopyrite Po : Pyrrhotite F : Fluorite

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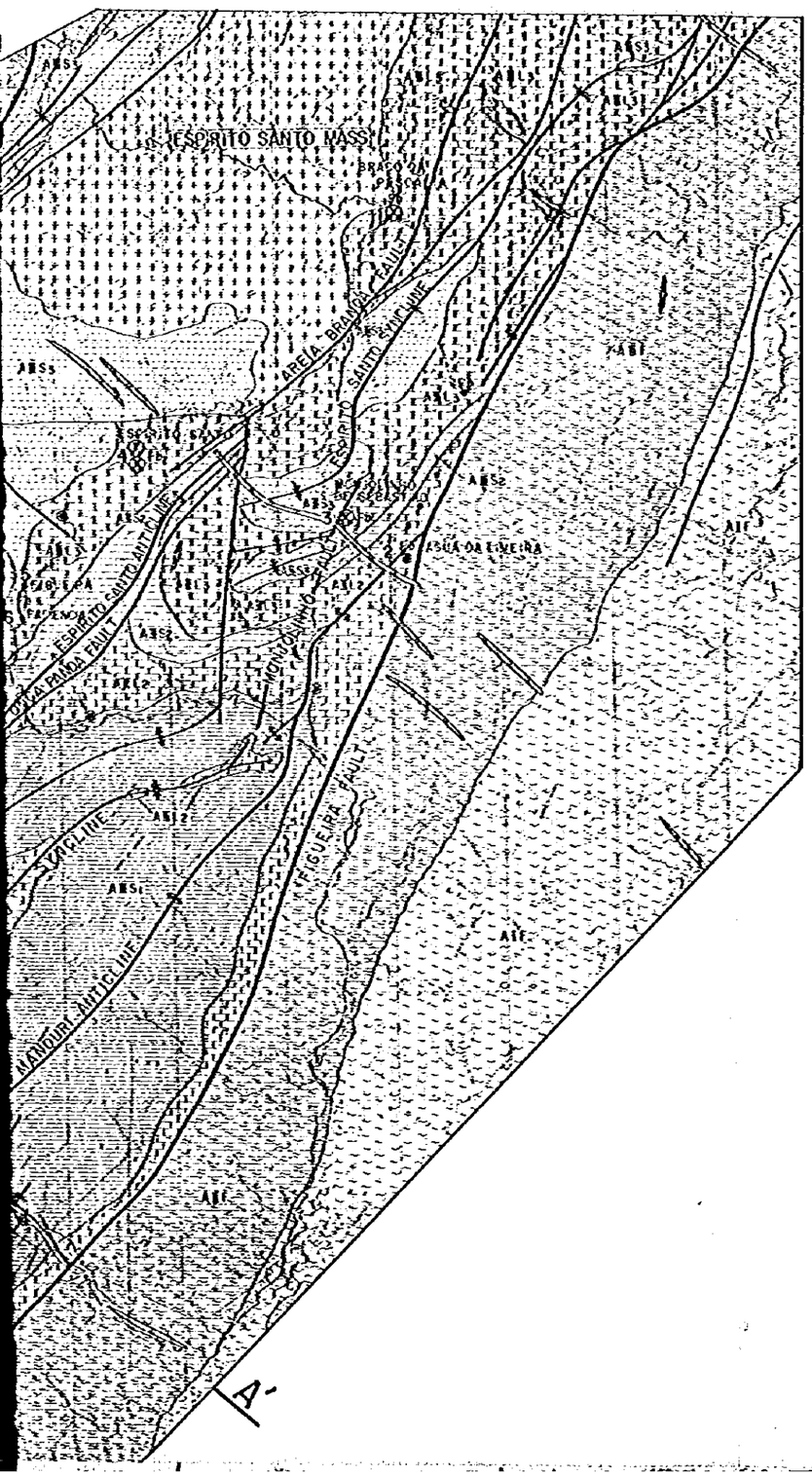
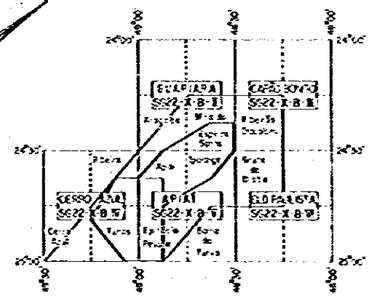


PL. 1

BRAZIL
GEOLOGICAL SURVEY OF ANTA GORDA AREA

Relation Map between Mineralization and Geological Structure in the Semi-detailed Surveyed Area

LOCATION INDEX



JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

MAR. 1984

Prepared by Bishimetal Exploration Co.,Ltd.

Scale 1:100,000

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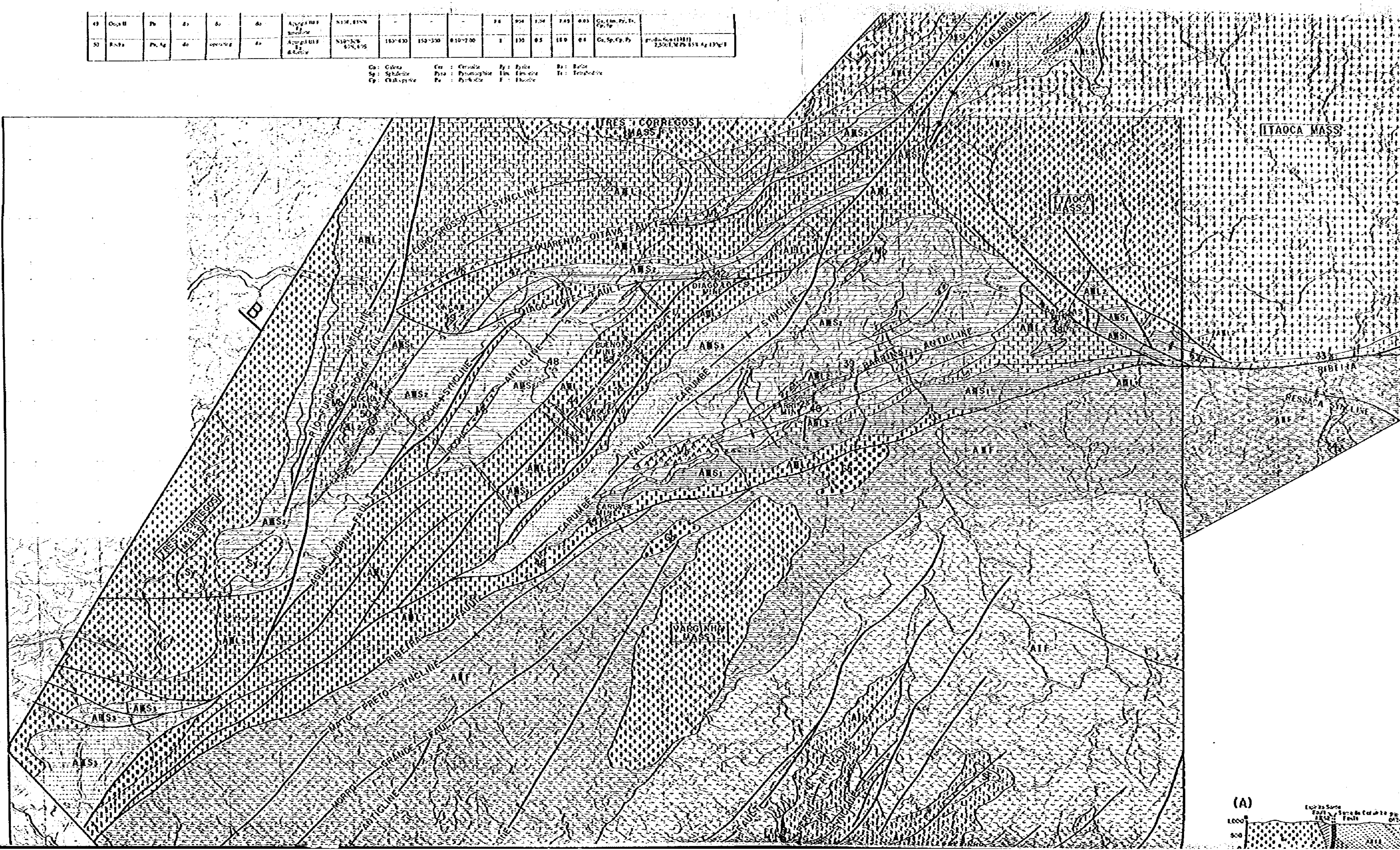
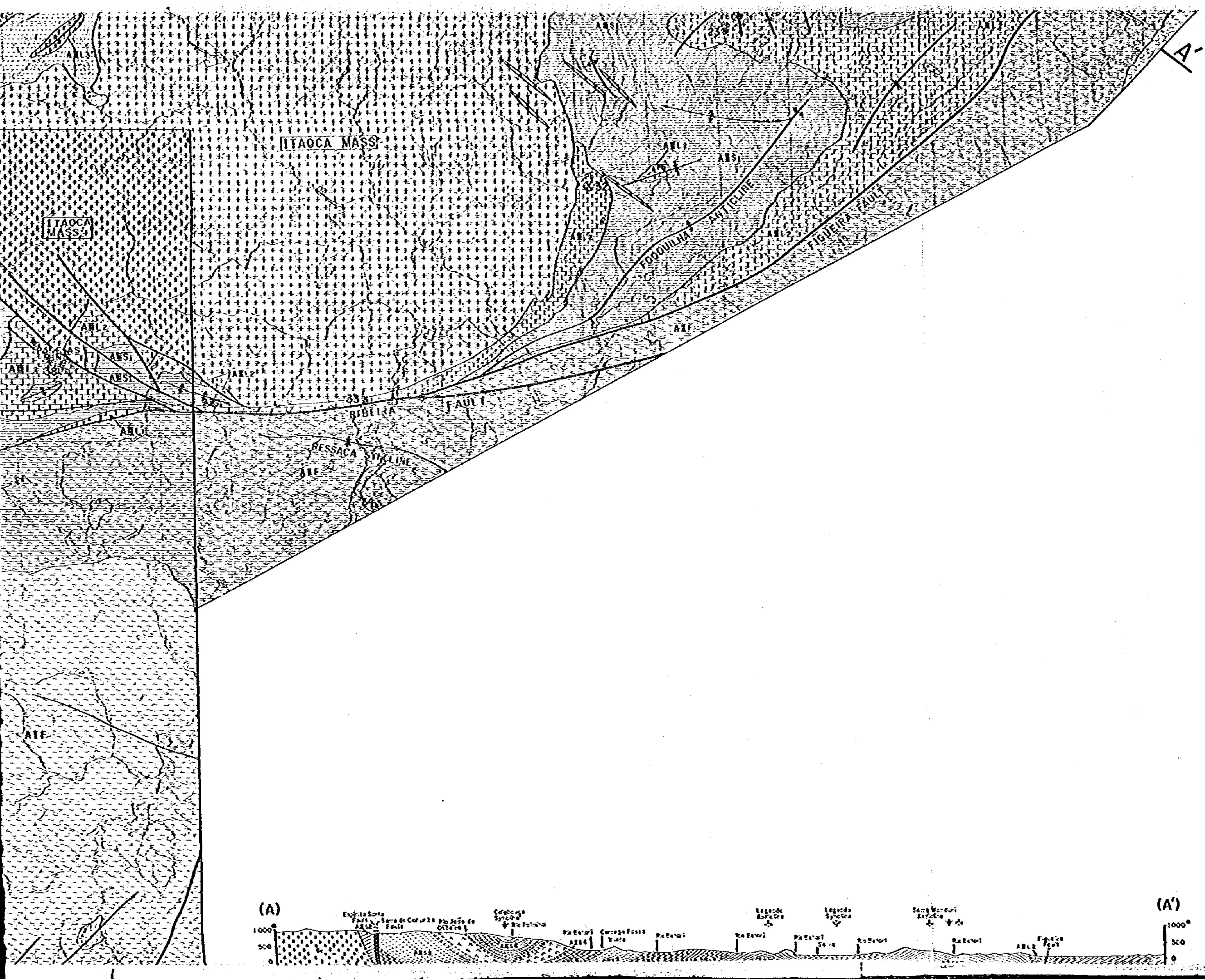
49	Ouça II	Pb	do	do	do	Açungui III F Ls limestone	N15E, 85NW	-	-	-	3.4	954	1.34	7.43	0.03	Ga, Cer, Py, Tt, Cp, Sp	
50	Rocha	Pb, Ag	do	operating	do	Açungui III F Ls dolomite	N30~50W 40N, 60S	150~600	150~300	0.10~2.00	1	130	0.5	18.0	0.4	Ga, Sp, Cp, Py	production (1981) 2,530 t, M Pb 65% Ag 13 g/t

Ga : Galena
Sp : Sphalerite
Cp : Chalcopyrite
Cer : Cerussite
Pysa : Pyromorphite
Po : Pyrrhotite
Py : Pyrite
Hm : Hematite
F : Fluorite
Ba : Barite
Tt : Tetrahedrite

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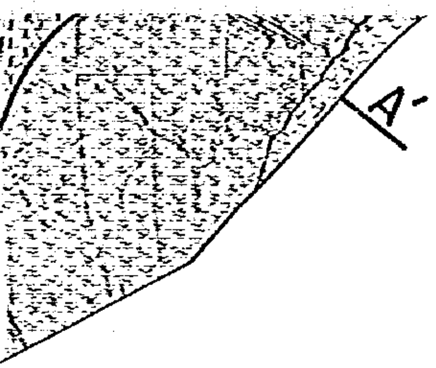

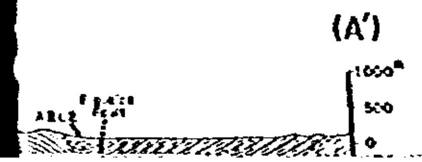

LEGEND

Age / Unit	Symbol	Lithology
Quaternary	Q	mud
Upper Precambrian – Açungui Group – Açungui Formation III	AIIIS4	meta siltstone, meta sandstone
	AIIIL4	limestone
	AIIIS3	meta quartz sandstone
	AIIIL3	limestone with dolomite, mica schist and meta siltstone
	AIIIS2	mica schist ~ phyllite with meta sandstone
	AIIIL2	limestone and dolomite with mica schist and meta siltstone
	AIIIS1	mica schist ~ phyllite and meta sandstone
	AIIIL1	limestone
Açungui Formation II	AIIF	mica schist ~ phyllite with meta sandstone, amphibole schist and calc-schist ~ limestone
Açungui Formation I	AIF	mica schist with meta sandstone, meta basalt ~ amphibolite and calc schist
	AIls	limestone, dolomite and calc-silicate rock (Perau horizon)
	AIqt	quartzite
	SF	gneiss
Intrusive rocks	Mb	meta basite
		granite
	Gb	gabbro
	Sy	syenite
		diabase

anticlinal axis — Synclinal axis — Fault

MORRO AGUDO
(MASS)
MORRO GRANDE ANTICLINE
MORRO GRANDE SYNCLINE
RIBEIRAO FAULT
AGUA CLARA SYNCLINE
ANTA GORDA ANTICLINE
OLHO D'AGUA FAULT
OURO FINO SYNCLINE
OURO FINO ANTICLINE
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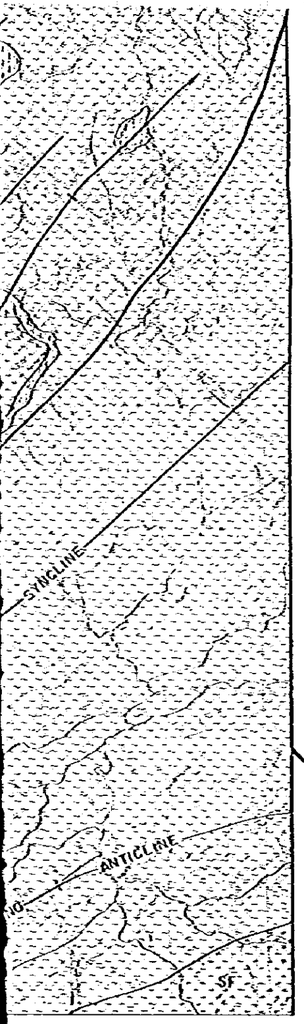
(A)
(B)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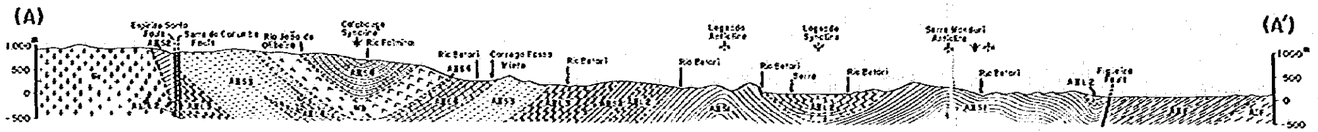
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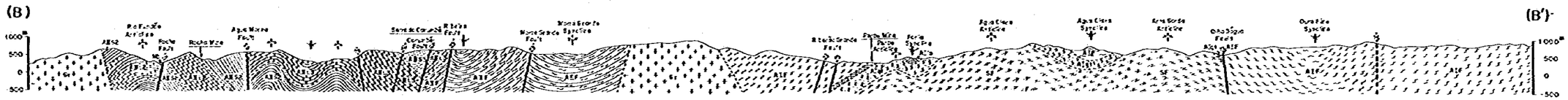
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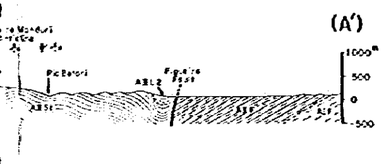

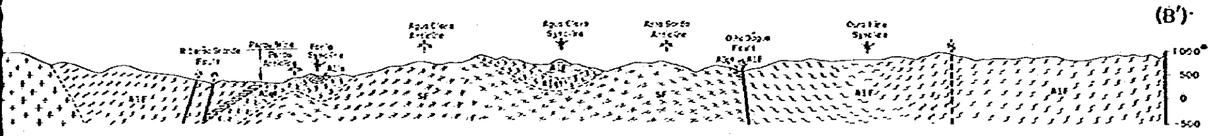

diabase

anticlinal axis

Synclinal axis

Fault

operating mine

closed mine