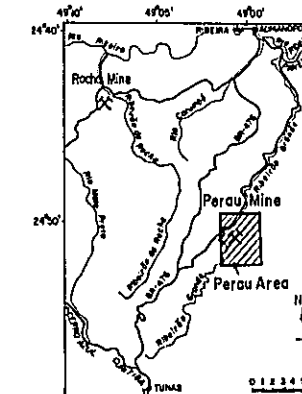


BRAZIL GEOLOGICAL SURVEY OF ANTA GORDA AREA PHASE III

Geological Map and Profile of Perau Area



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

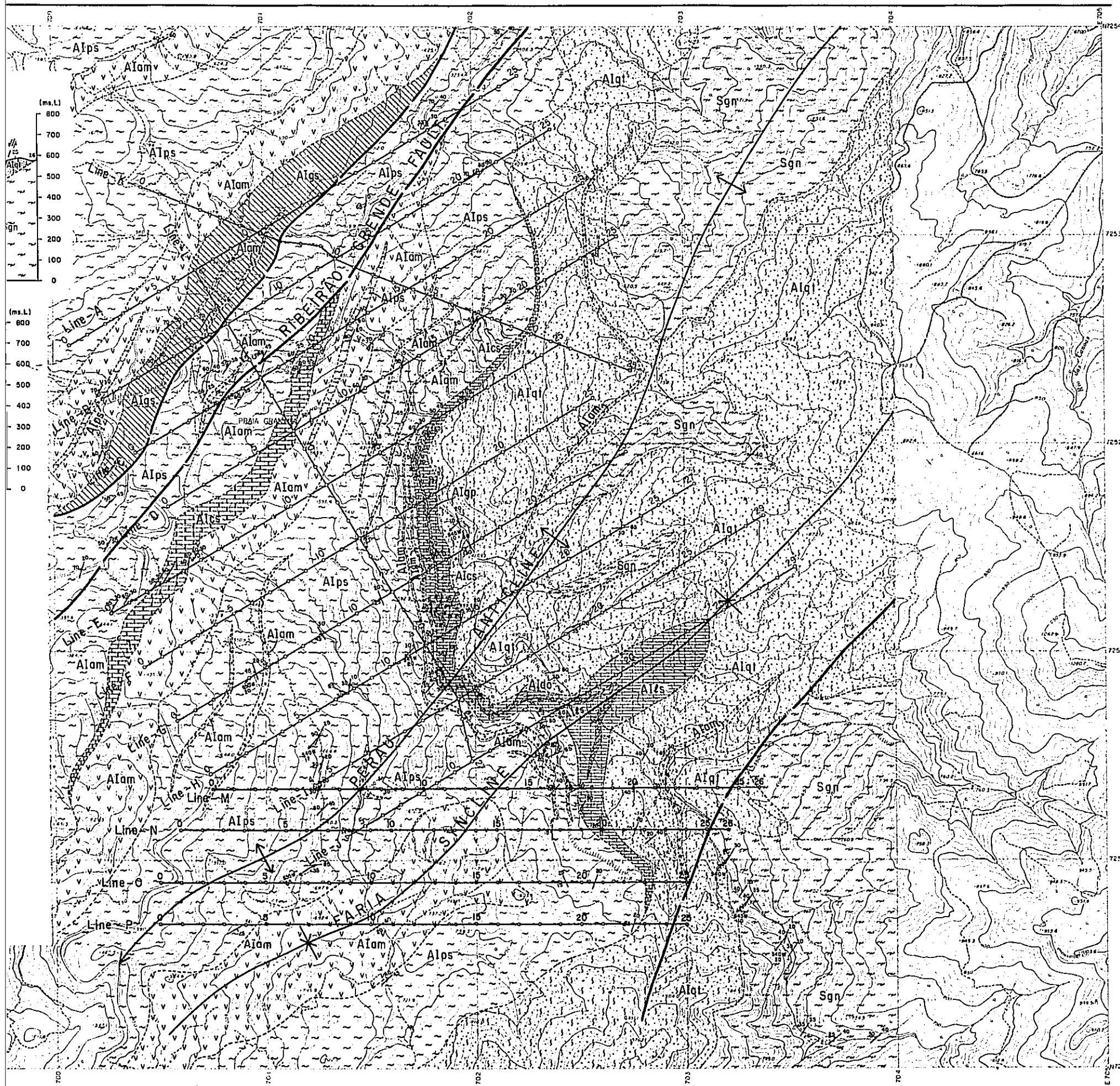
FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

Scale 1:10,000



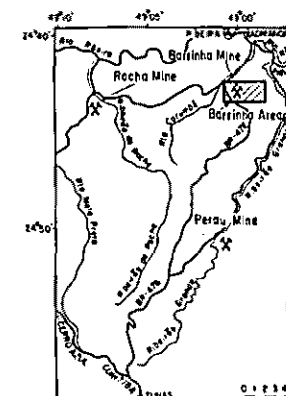
LEGEND

- | | | | |
|---------------------------|--|------|--|
| Apungui
Formation
I | | Algs | Graphite schist |
| | | Alco | calc - schist |
| | | Alam | Amphibolite, amphybole schist |
| | | Alps | Mica schist |
| | | Alda | Dolomite layer |
| | | Alqp | Graphite schist, phyllite layer |
| | | Alés | Limestone, dolomite, calc-silicate rock, barite and sulphides. "Perau horizon" |
| Seluva
Formation | | Alqi | Quartzite, with amphibolite |
| | | Sgn | Gneiss with minor amphibolite |
| | | | Anticlinal axis |
| | | | Synclinal axis |
| | | | Fault |
| | | | Bedding |
| | | | Schistosity |
| | | | Lineation |
| | | | Plunge of fold |



BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

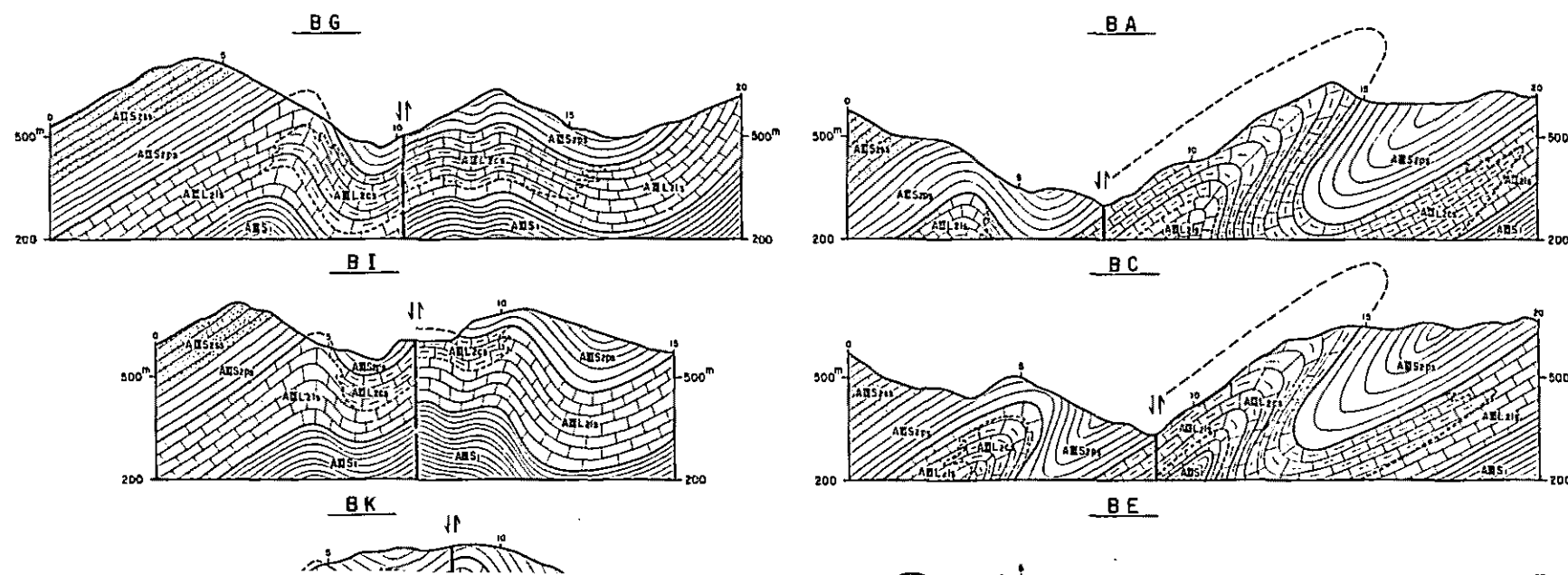
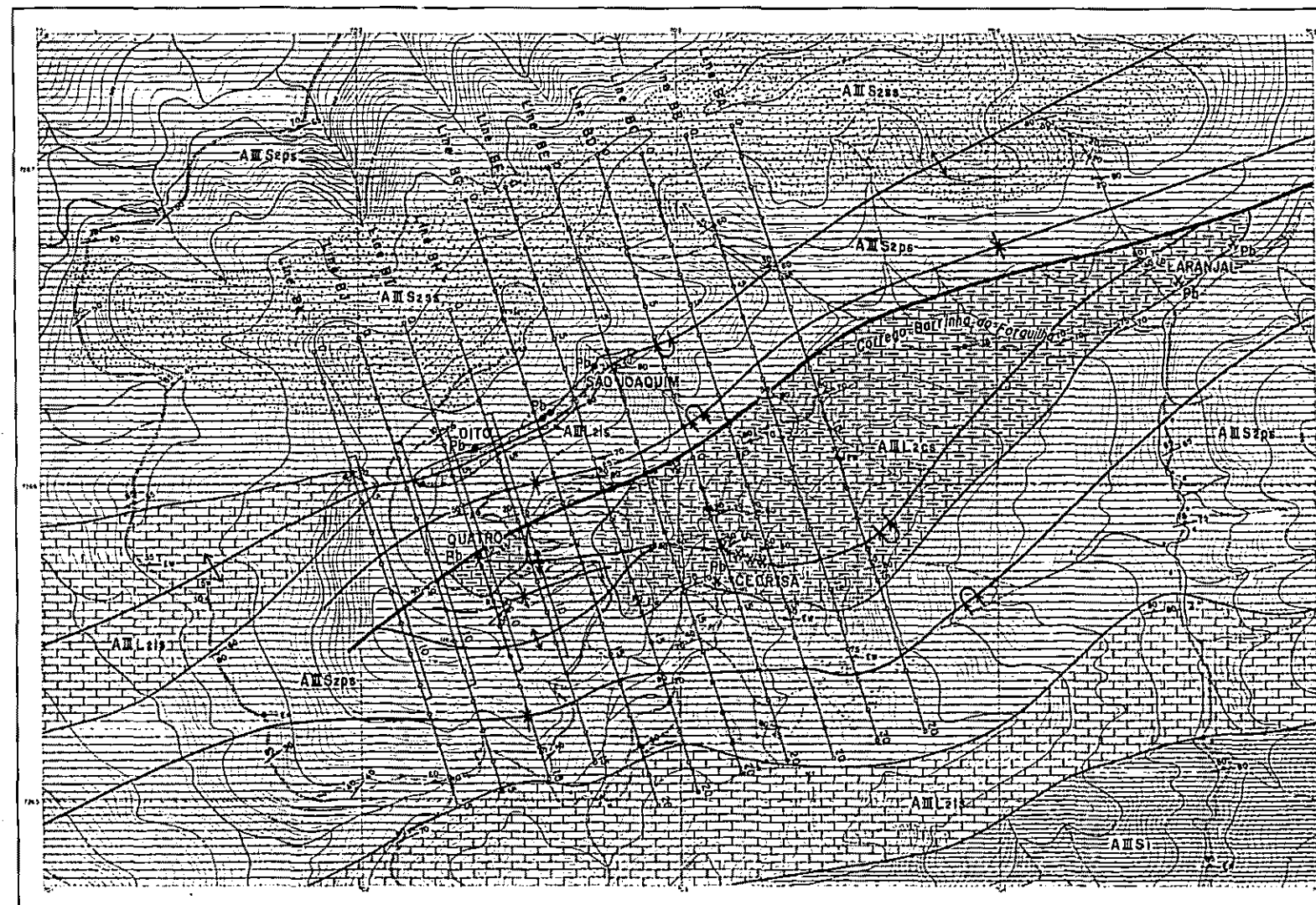
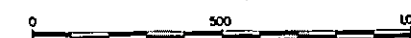
Geological Map and Profile
of Barrinha Area



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishimetal Exploration Co., Ltd.

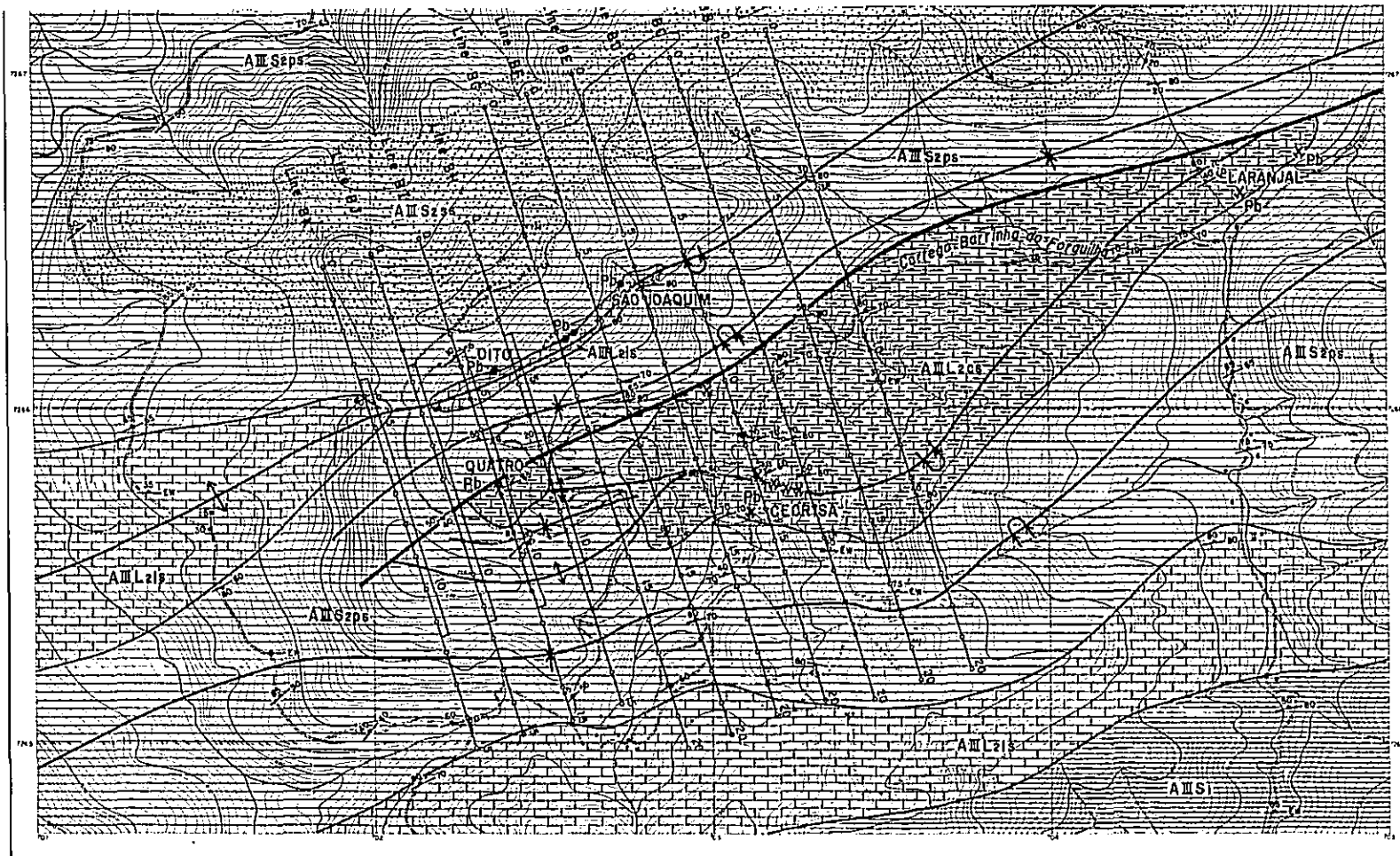
Scale 1:10,000



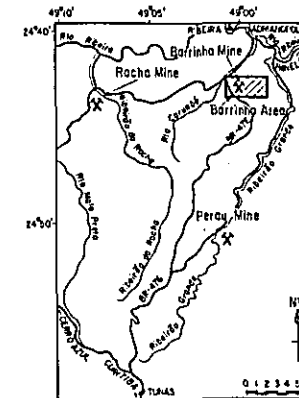
LEGEND

Upper Pre - Cambrian Apungui Formation III		sericite schist-phyllite (ps) meta quartz sandstone (ss)
		carbonate schist-calc-schist limestone (ls)
		sericite schist

- bedding
- schistosity
- anticline
- syncline
- overfold anticline
- overfold syncline



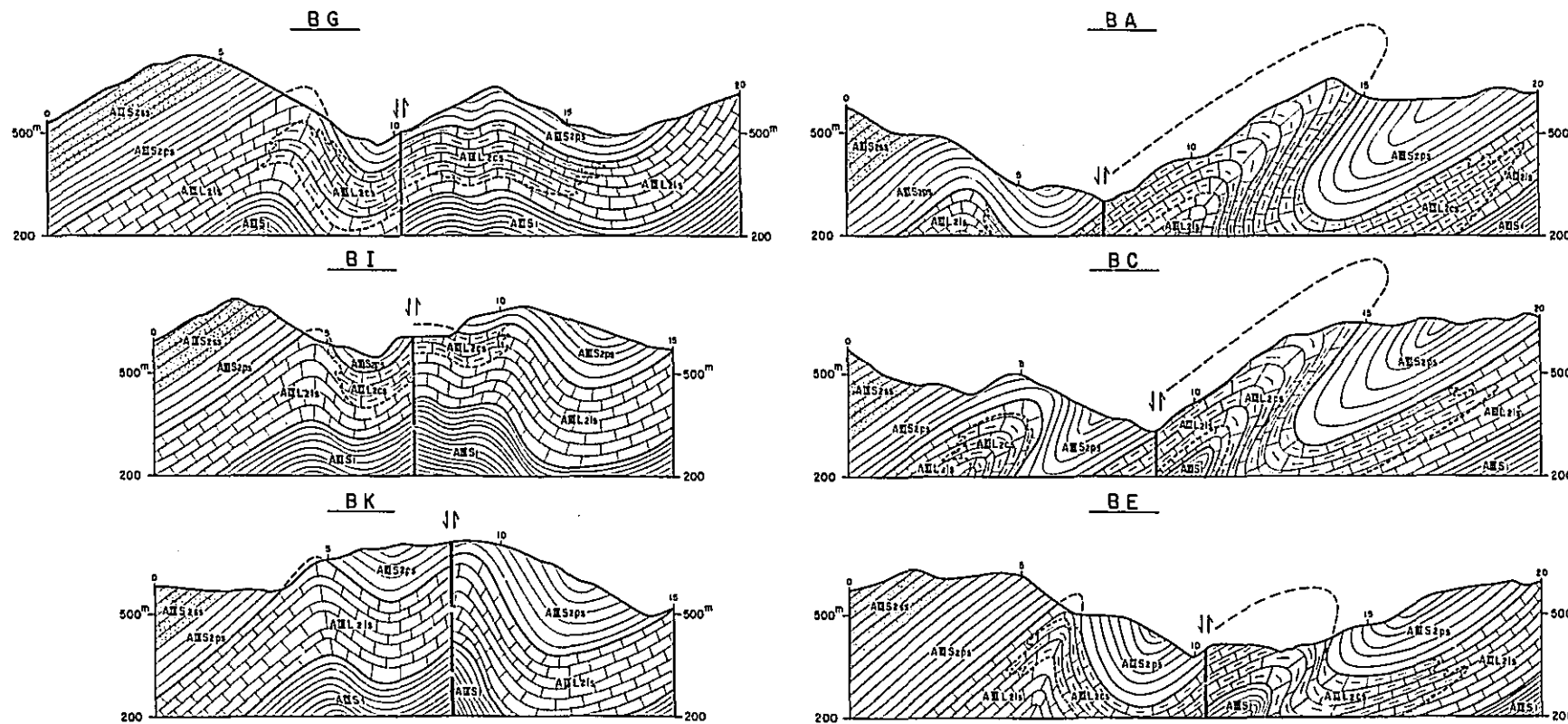
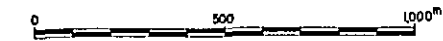
PHASE III
Geological Map and Profile
of Barrinha Area



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

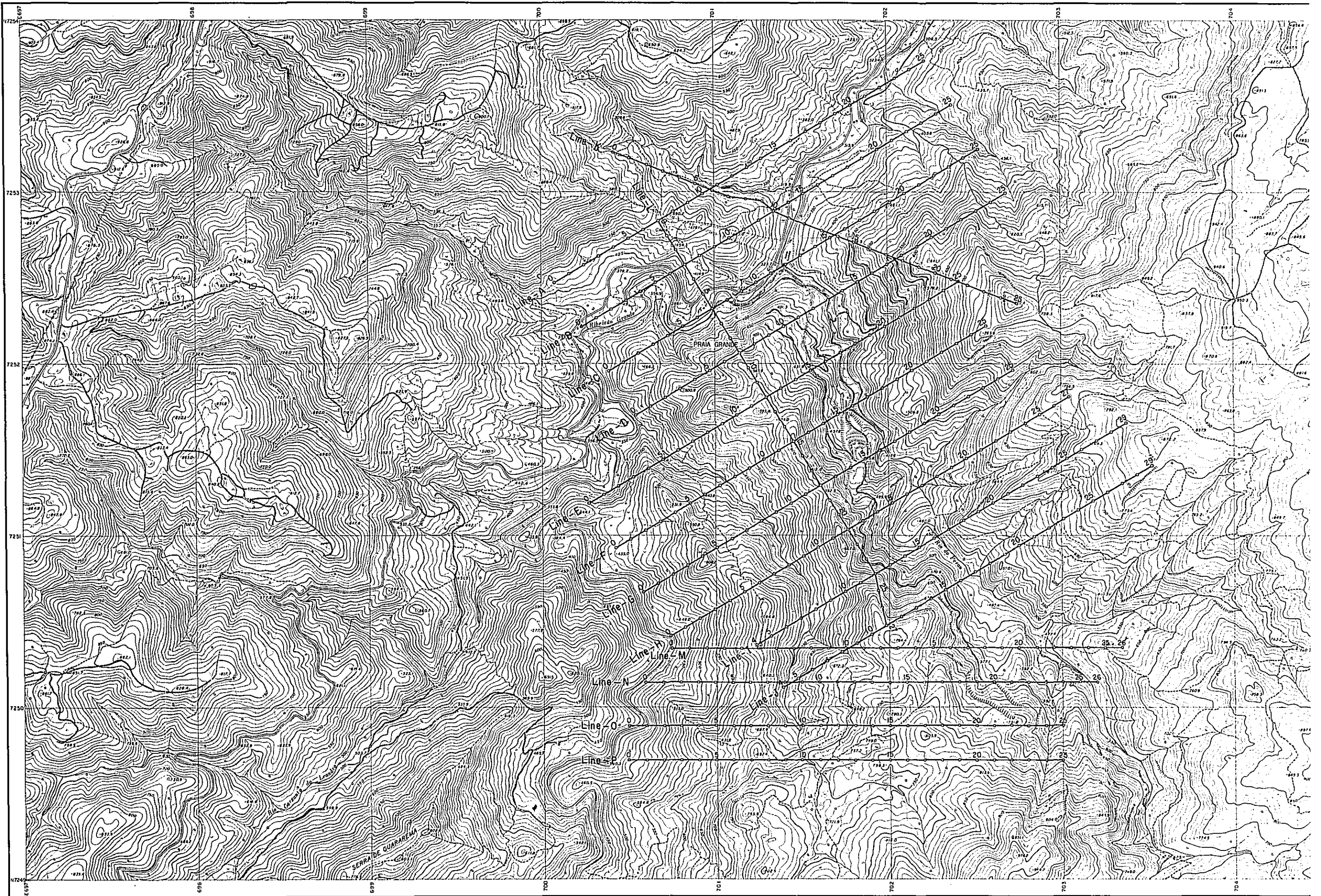
Scale 1:10,000

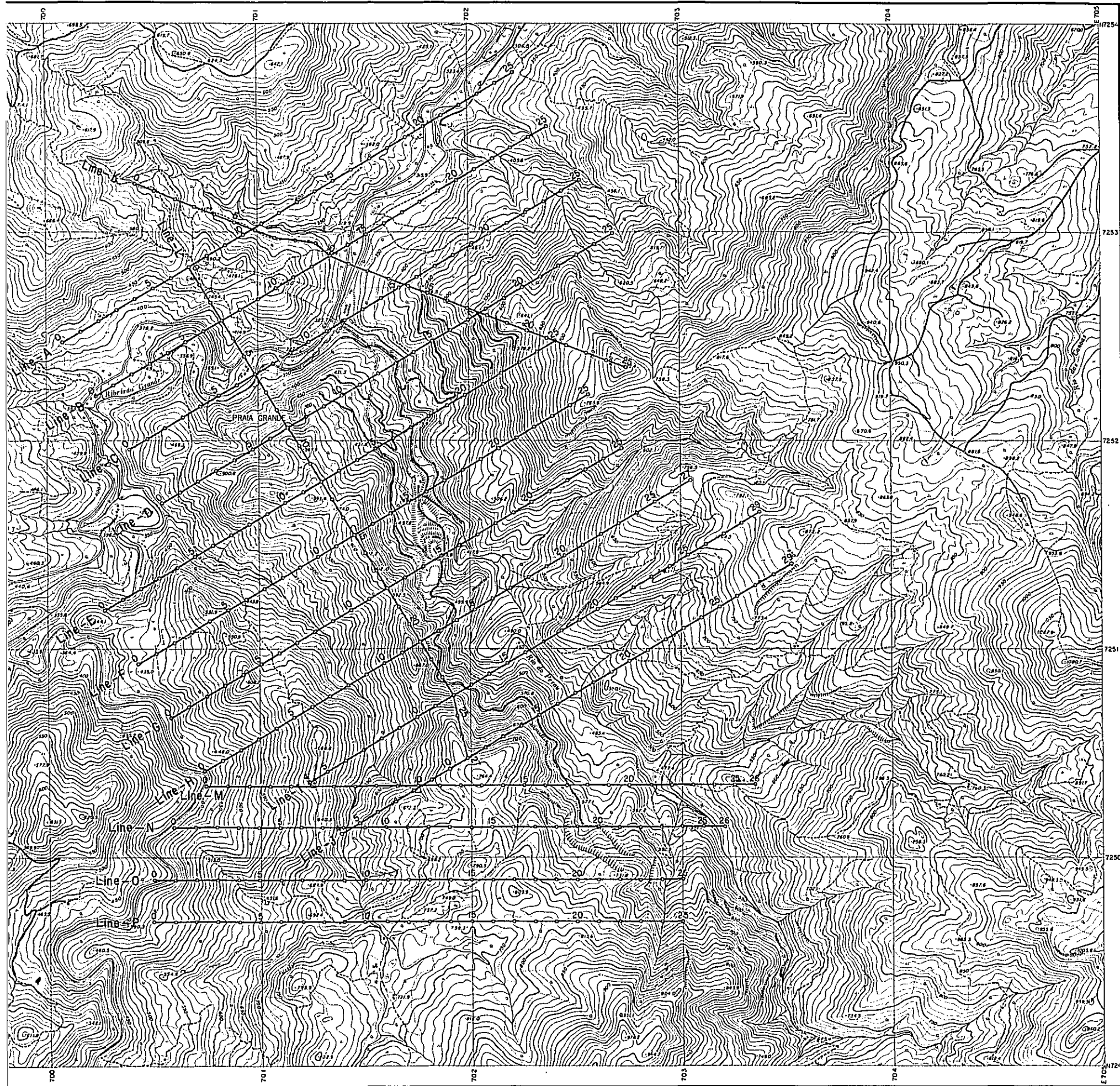


LEGEND

Upper Pre - Cambrian Apungui Formation III	AMSz	sericite schist-phyllite (ps) meta quartz sandstone (ss)
	AMLz	carbonate schist-calc-schist limestone (ls)
	AMSs	sericite schist

- bedding
- schistosity
- anticline
- syncline
- overfold anticline
- overfold syncline
- fault
- IP, SIP survey line
- Operating Mine
- Closed Mine
- Showing

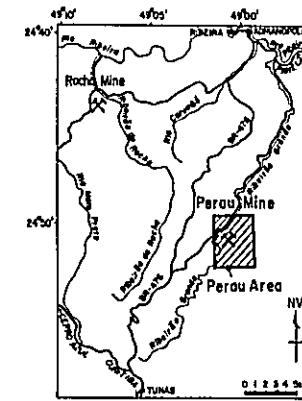




PL. II-1

BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Location Map of IP Survey Lines
in Perau Area



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
 Prepared by Bishimetal Exploration Co., Ltd.

Scale 1:10,000



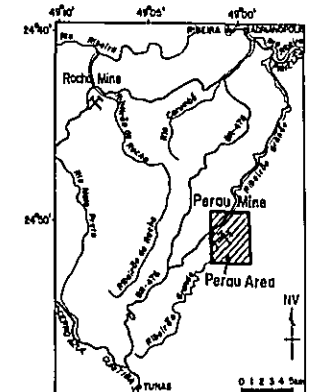
LEGEND

—○— SIP and IP Survey Line

BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Equi-Frequency Effect Map
($a=200m, n=1$)

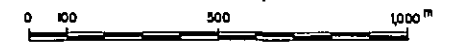
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

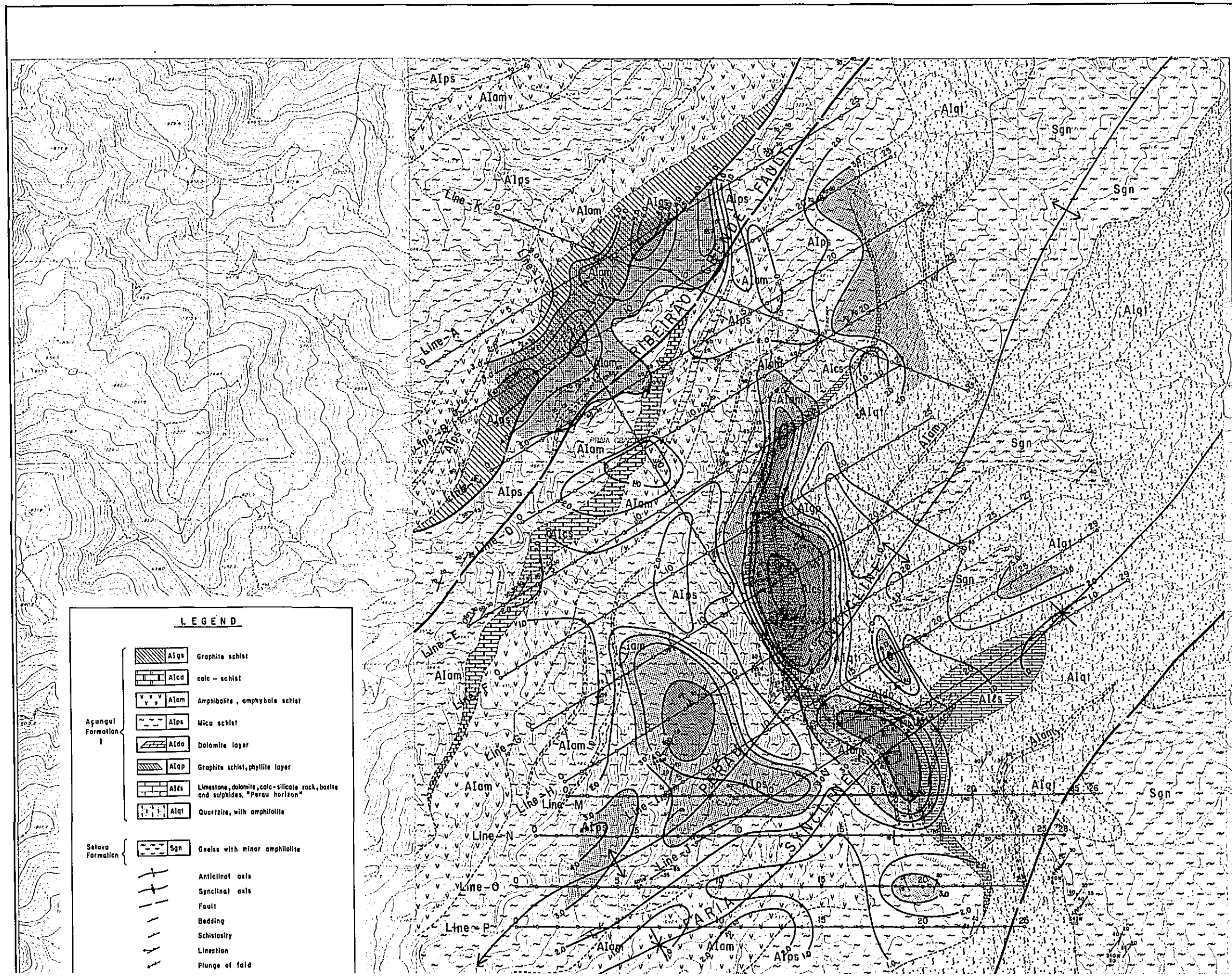
FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

50 Iso F.E. Contour (%)

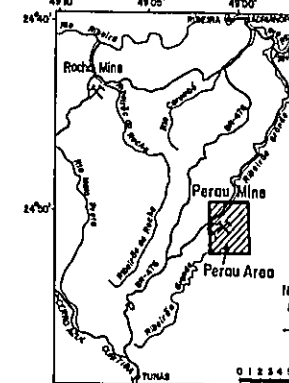


LEGEND

- | | | |
|--|------|--|
| | Alqs | Graphite schist |
| | Alca | calc - schist |
| | Alam | Amphibolite, amphybole schist |
| | Alps | Mica schist |
| | Alad | Dolomite layer |
| | Alap | Graphite schist, phyllite layer |
| | Alis | Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon" |
| | Alat | Quartzite, with amphibolite |
| | Sgn | Gneiss with minor amphibolite |
| | | Anticline axis |
| | | Syncline axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |

ANIA GOHDA AREA
 PHASE III
 Equi-Frequency Effect Map
 (a=200m, n=1)

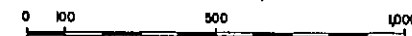
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
 Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000

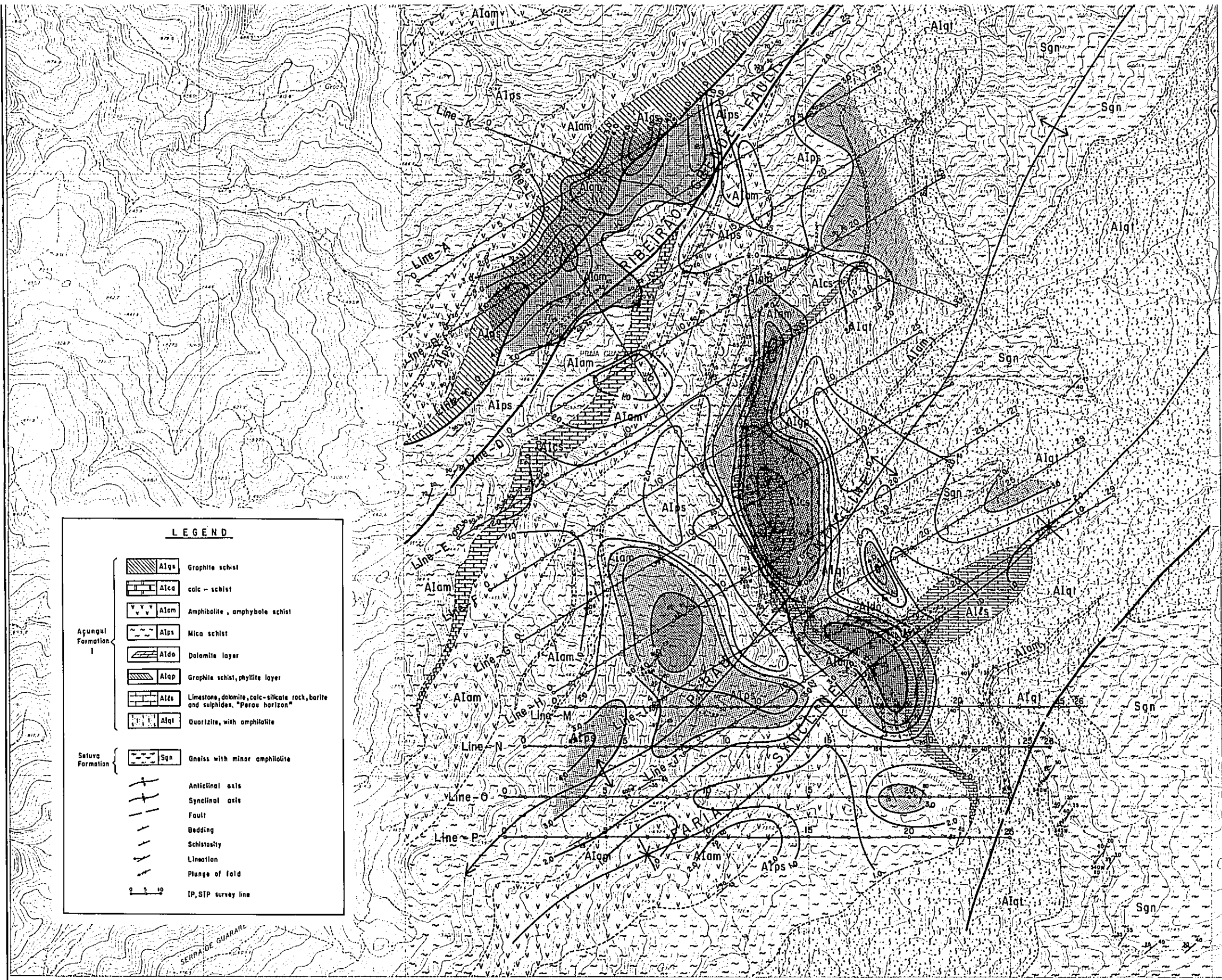


LEGEND

~ 5.0 Iso F.E. Contour (%)

LEGEND

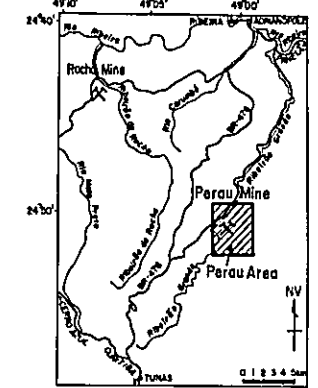
- | | | |
|-------------------------|------|--|
| | Alqs | Graphite schist |
| | Alca | calc-schist |
| | Alam | Amphibolite, amphibole schist |
| | Alps | Mica schist |
| | Alda | Dolomite layer |
| | Alap | Graphite schist, phyllite layer |
| | Alzs | Limestone, dolomite, calc-silicate rock, barite and sulphides. "Perau horizon" |
| | Alqt | Quartzite, with amphibolite |
| Setava Formation | | |
| | Sgn | Gneiss with minor amphibolite |
| | | Anticlinal axis |
| | | Synclinal axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |
| | | IP, SIP survey line |



BRAZIL
 GEOLOGICAL SURVEY OF
 ANTA GORDA AREA
 PHASE III

Equi-Frequency Effect Map
 (a=200m, n=3)

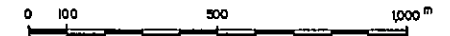
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

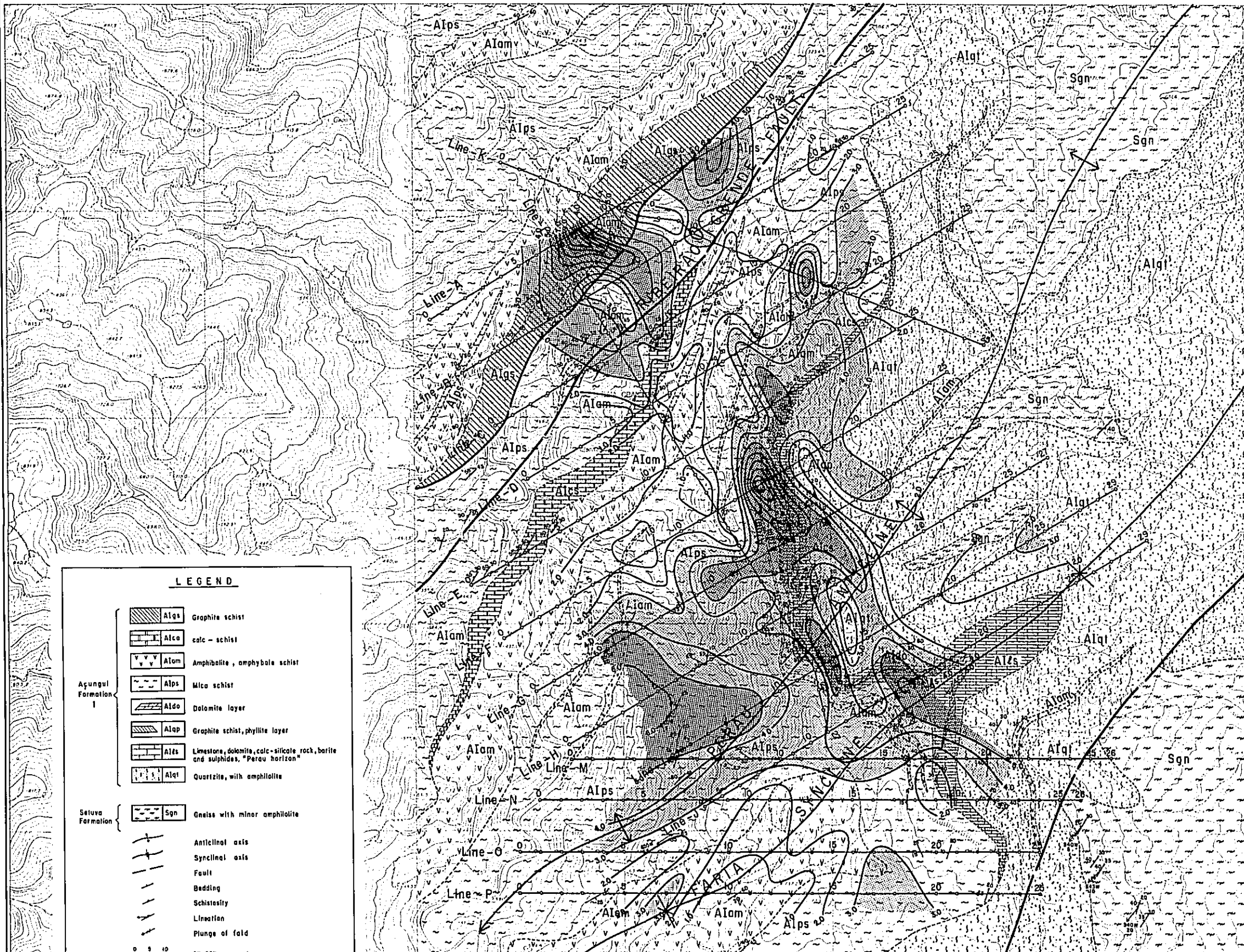
FEB. 1983
 Prepared by Bishimetal Exploration Co., Ltd.

SCALE 1:10,000



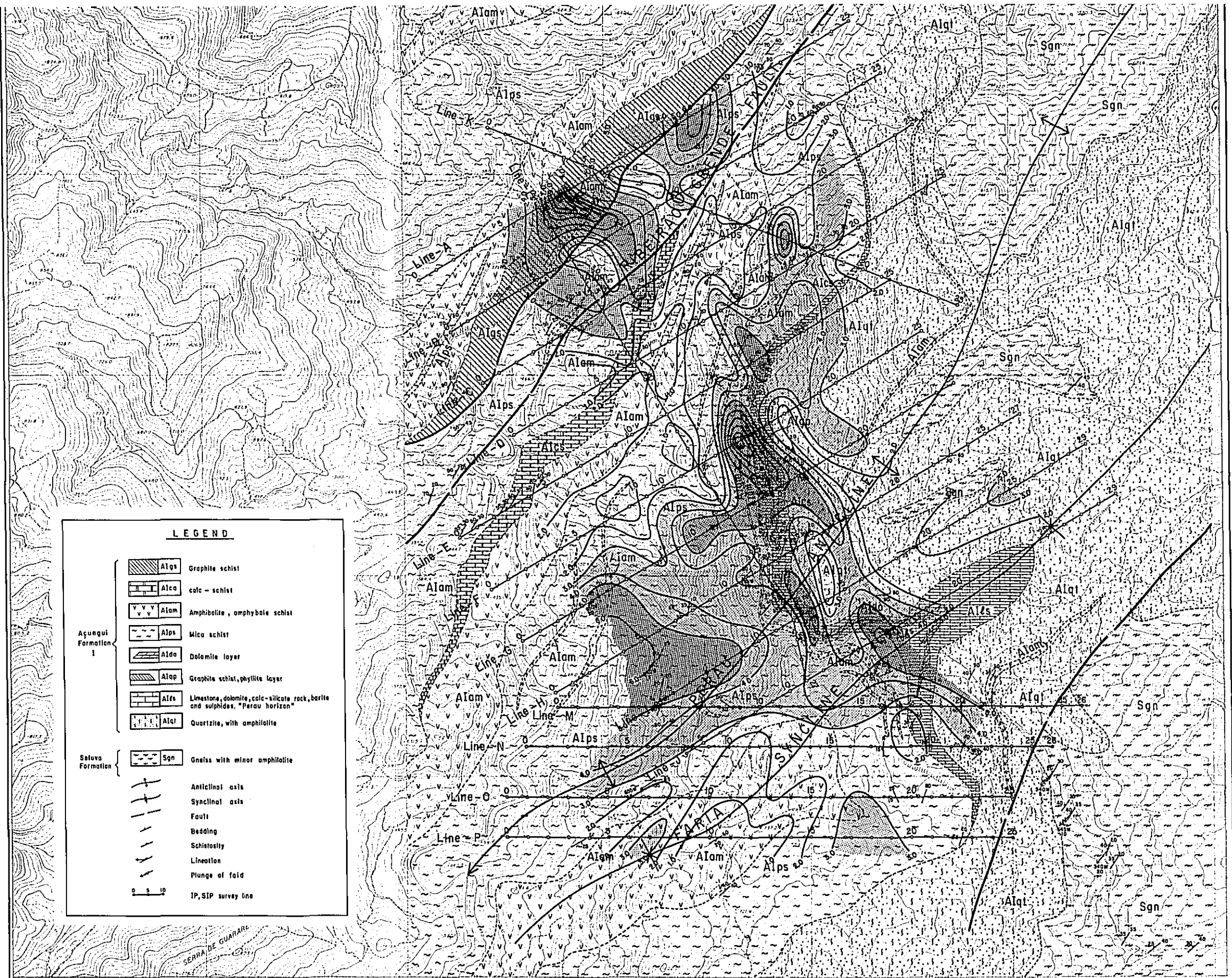
LEGEND

~5.0 Iso F.E. Contour (%)



LEGEND

[Symbol]	Alqs	Graphite schist
[Symbol]	Alca	calc-schist
[Symbol]	Alam	Amphibolite, amphibole schist
[Symbol]	Alps	Mica schist
[Symbol]	Alao	Dolomite layer
[Symbol]	Alap	Graphite schist, phyllite layer
[Symbol]	Als	Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perai horizon"
[Symbol]	Alq	Quartzite, with amphibolite
[Symbol]	Sgn	Gneiss with minor amphibolite
[Symbol]		Anticlinal axis
[Symbol]		Synclinal axis
[Symbol]		Fault
[Symbol]		Bedding
[Symbol]		Schistosity
[Symbol]		Lineation
[Symbol]		Plunge of fold
0 5 10 to 6th survey line		



LEGEND

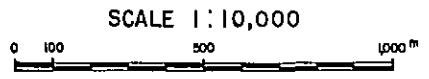
Açungui Formation 1		Alqs	Graphite schist
		Alca	calc - schist
		Alam	Amphibolite, amphibole schist
		Alps	Mica schist
		Alde	Dolomite layer
		Alaq	Graphite schist, phyllite layer
		Alfs	Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perau horizon"
Selva Formation		Sgn	Gneiss with minor amphibolite
			Anticlinal axis Synclinal axis Fault Bedding Schistosity Lineation Plunge of fold
		IP, SIP survey line	

PHASE III
 Equi-Frequency Effect Map
 (a=200m, n=3)

LOCATION INDEX

METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
 Prepared by Bishmetal Exploration Co., Ltd.



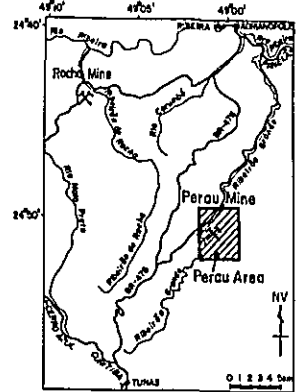
LEGEND

5.0 Iso F.E. Contour (%)

BRAZIL GEOLOGICAL SURVEY OF ANTA GORDA AREA PHASE III

Equi-Frequency Effect Map ($a=200m, n=5$)

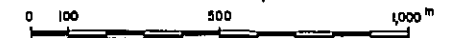
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000

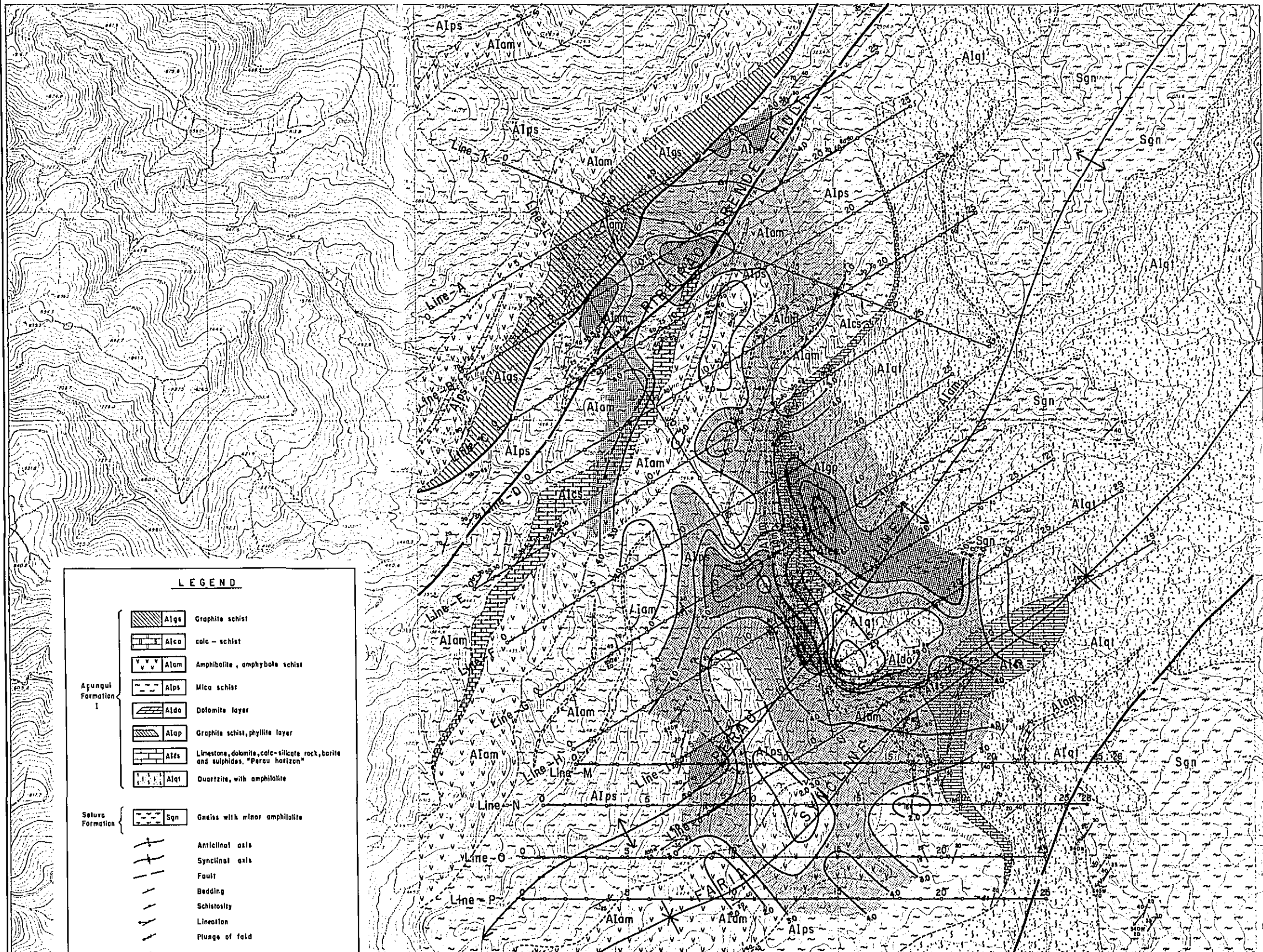


LEGEND

~50 Iso F.E. Contour (%)

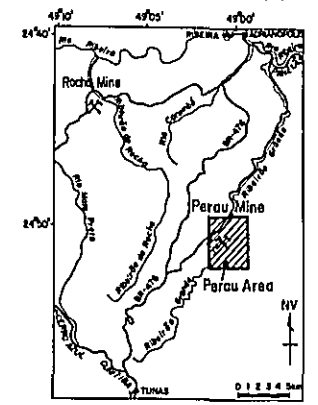
LEGEND

- | | | |
|--|------|--|
| | Alqs | Graphite schist |
| | Alca | calc - schist |
| | Alam | Amphibolite, amphybole schist |
| | Alps | Mica schist |
| | Aldo | Dolomite layer |
| | Alap | Graphite schist, phyllite layer |
| | Alfs | Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon" |
| | Alqt | Quartzite, with amphibolite |
| | Sgn | Gneiss with minor amphibolite |
-
- | | |
|--|-----------------|
| | Anticlinal axis |
| | Synclinal axis |
| | Fault |
| | Bedding |
| | Schistosity |
| | Lineation |
| | Plunge of fold |



PHASE III
 Equi-Frequency Effect Map
 (a=200m, n=5)

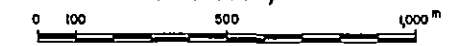
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

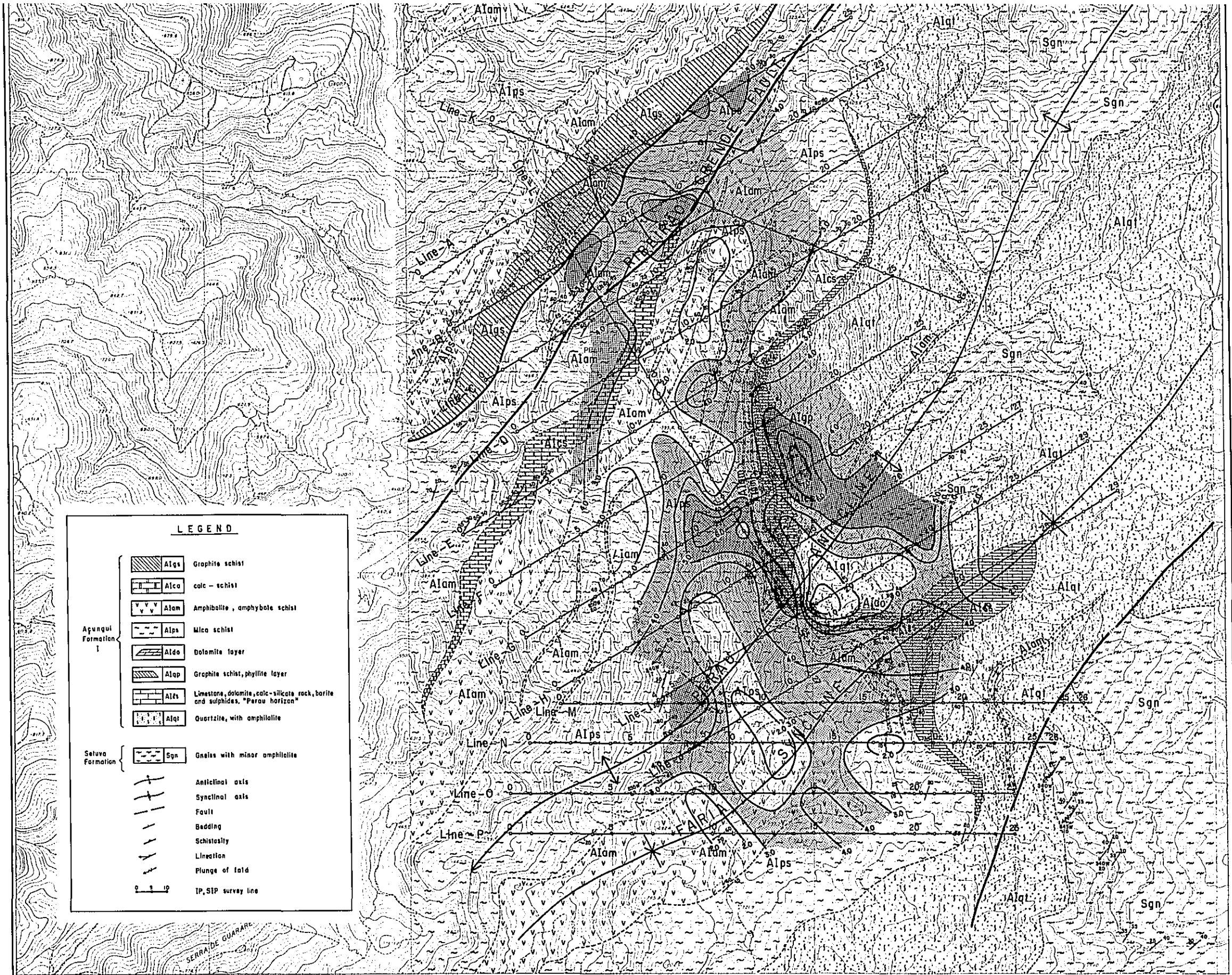
FEB. 1983
 Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

5.0 Iso F.E. Contour (%)



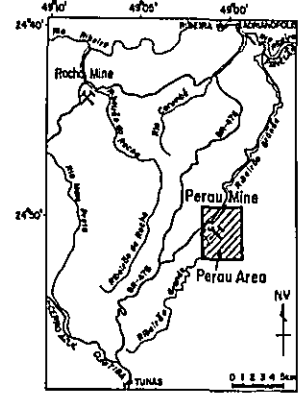
LEGEND

- | | | |
|--|------|--|
| | Alqs | Graphite schist |
| | Alcs | calc - schist |
| | Alom | Amphibolite, amphybole schist |
| | Alps | Mica schist |
| | Aldo | Dolomite layer |
| | Alap | Graphite schist, phyllite layer |
| | Alts | Limestone, dolomite, calc-silicate rock, barite and sulphides. "Parau horizon" |
| | Alqt | Quartzite, with amphibolite |
| | | |
| | Sgn | Gneiss with minor amphibolite |
| | | |
| | | Anticlinical axis |
| | | Synclinal axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |
| | | IP, SIP survey line |

BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Apparent Resistivity Map
(a=200m, n=1)

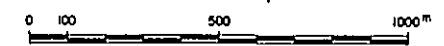
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

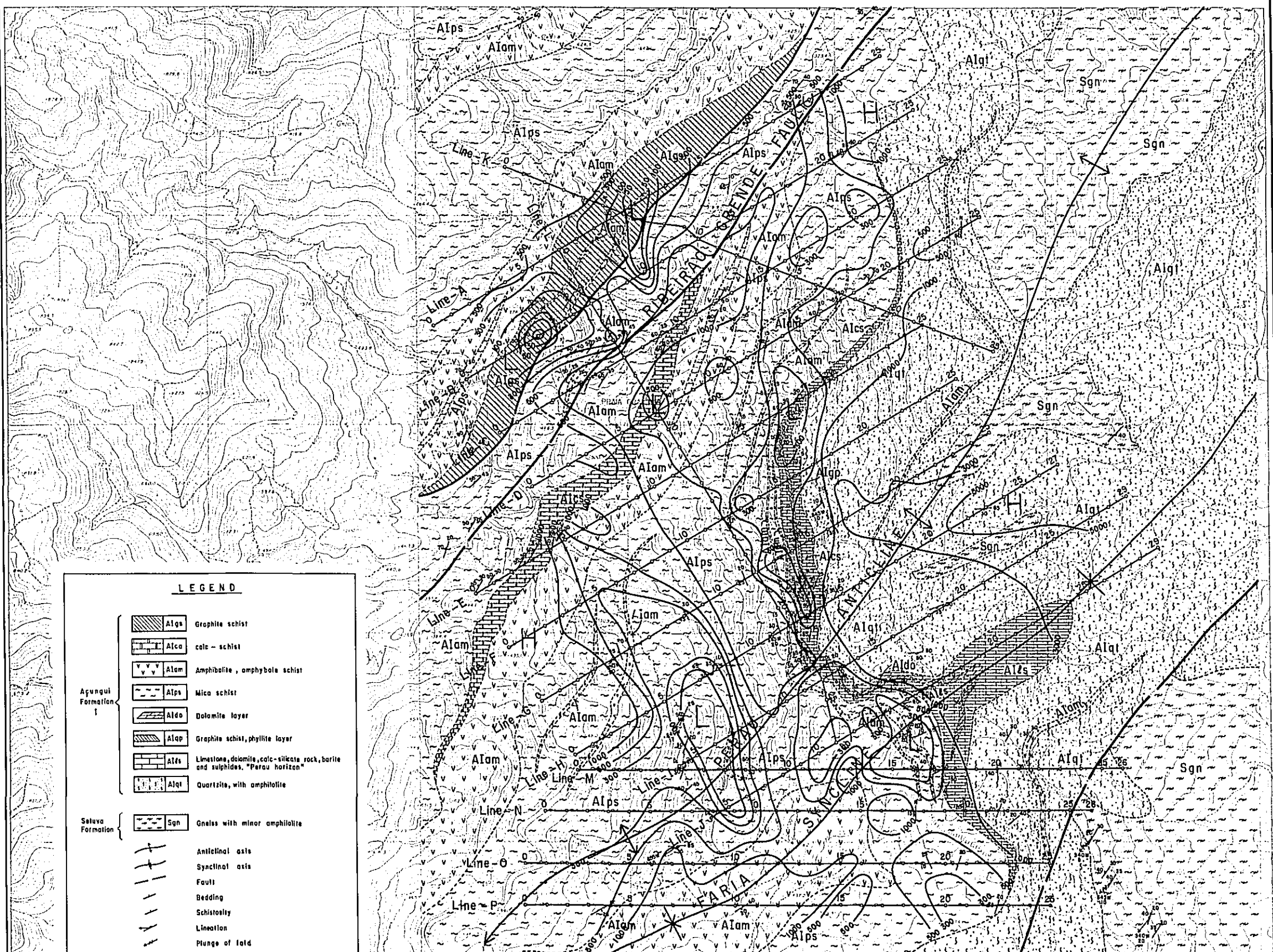
FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

500 Iso Apparent Resistivity Contour (Ω -m)

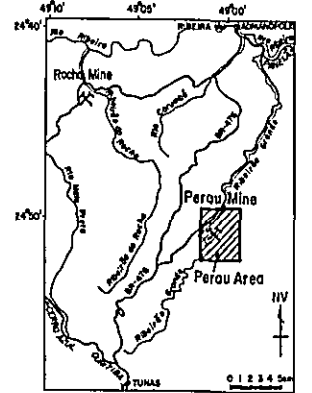


LEGEND

- Alqs Graphite schist
- Alca calc-schist
- Alam Amphibolite, amphybole schist
- Alps Mica schist
- Aldo Dolomite layer
- Alap Graphite schist, phyllite layer
- Alfs Limestone, dolomite, calc-silicate rock, barite and sulphides. "Perou horizon"
- Alqt Quartzite, with amphibolite
- Sgn Gneiss with minor amphibolite
- Anticline axis
- Synclinal axis
- Fault
- Bedding
- Schistosity
- Lamination
- Plunge of fold

PHASE III
 Apparent Resistivity Map
 (a=200m, n=1)

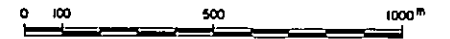
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
 Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000

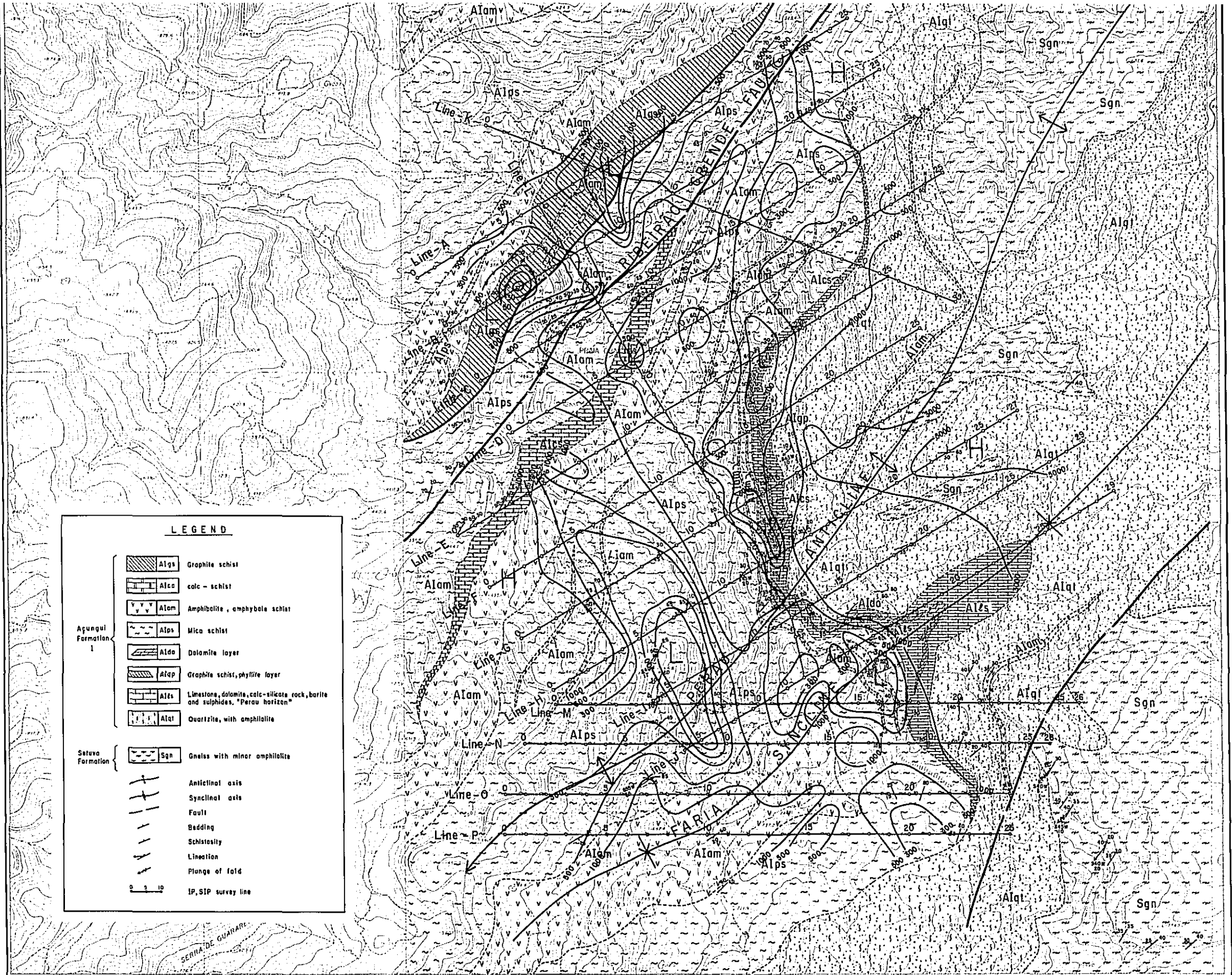


LEGEND

500 Iso Apparent Resistivity Contour ($\Omega\text{-m}$)

LEGEND

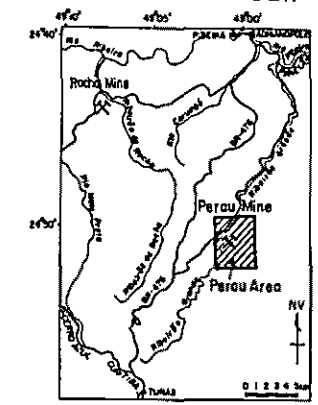
	Alqs	Graphite schist
	Alca	calc - schist
	Alam	Amphibolite, amphybole schist
	Alps	Mica schist
	Alda	Dolomite layer
	Alap	Graphite schist, phyllite layer
	Alzs	Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon"
	Alqt	Quartzite, with amphiolite
	Sgn	Gneiss with minor amphiolite
		Anticlinax axis
		Synclinax axis
		Fault
		Bedding
		Schistosity
		Lineation
		Plunge of fold
		0 5 10
		IP, SIP survey line



BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Apparent Resistivity Map
($a=200m, n=3$)

LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

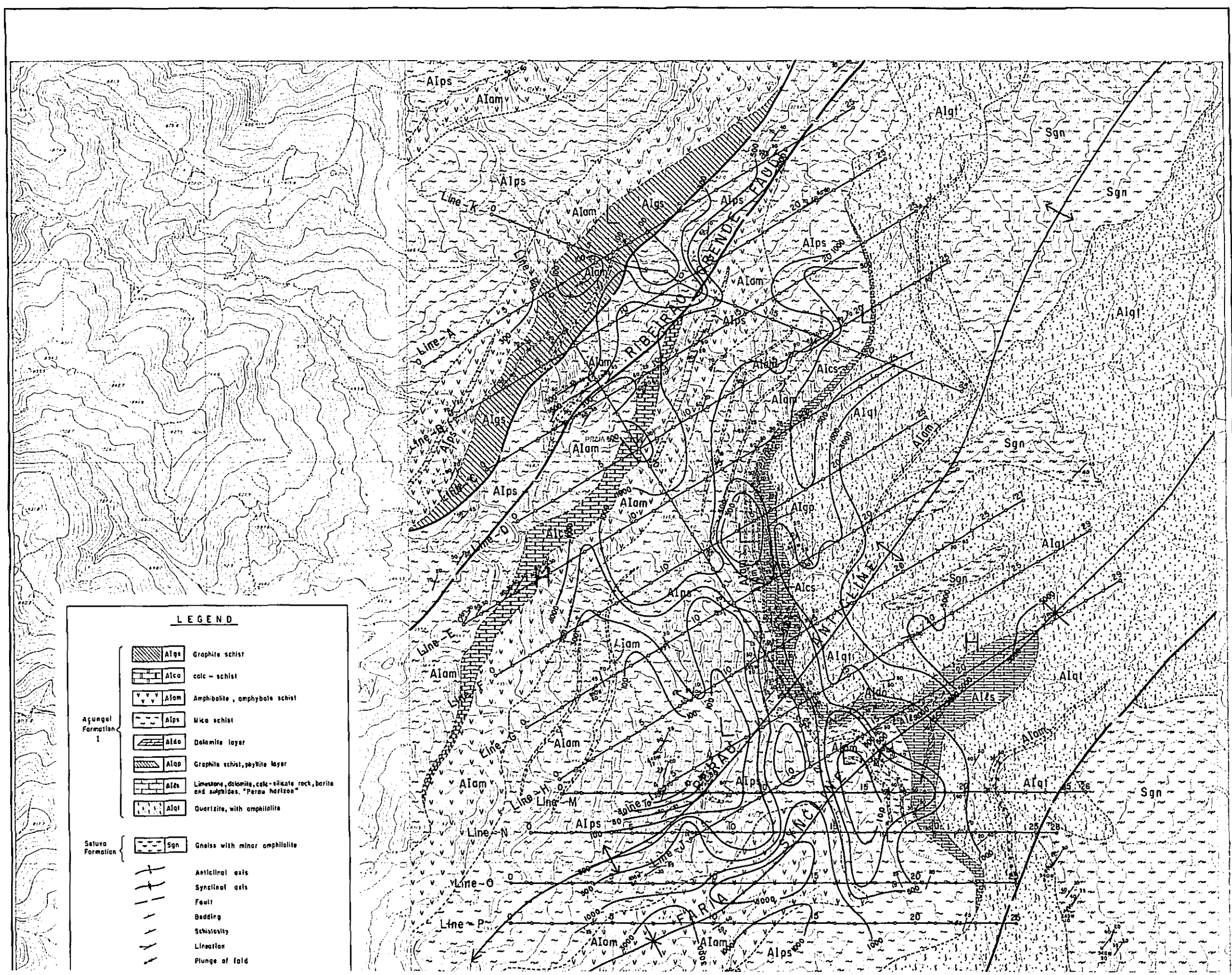
FEB. 1983
Prepared by Bishimetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

500 Iso Apparent Resistivity Contour ($\Omega \cdot m$)

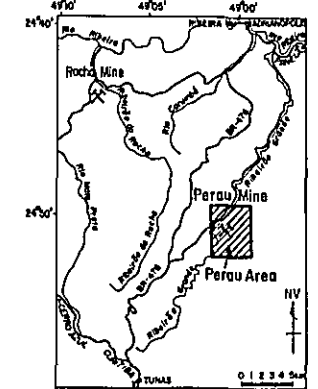


LEGEND

- Alqs Graphite schist
- Alca calc - schist
- Alam Amphibolite, amphybole schist
- Alps mica schist
- Aldo Dolomite layer
- Alqp Graphite schist, phyllite layer
- Alcs Limestone, dolomite, calc-silicate rock, barite and sulphides. "Perou horizon"
- Alqi Quartzite, with amphibolite
- Sgn Gneiss with minor amphibolite
- Anticline axis
- Syncline axis
- Fault
- Bedding
- Schistosity
- Lineation
- Plunge of fold

PHASE III
 Apparent Resistivity Map
 ($a=200m, n=3$)

LOCATION INDEX



METAL MINING AGENCY OF JAPAN
 JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
 Prepared by Bishimetal Exploration Co., Ltd.

SCALE 1:10,000

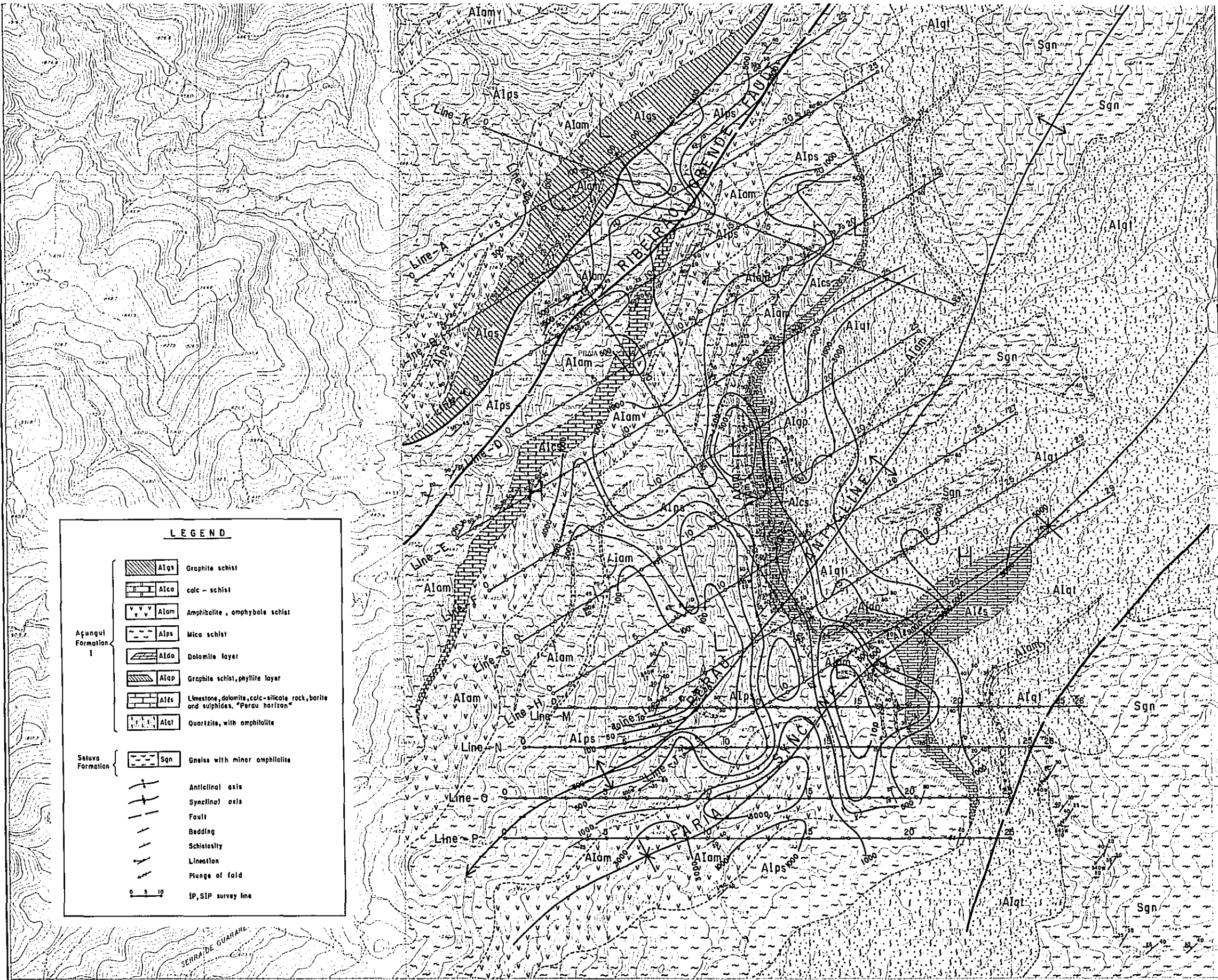


LEGEND

500 Iso Apparent Resistivity Contour ($\Omega \cdot m$)

LEGEND

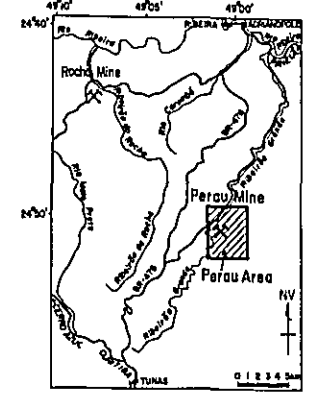
- | | | |
|--|------|--|
| | Algs | Graphite schist |
| | Alca | calc-schist |
| | Alam | Amphibolite, amphybole schist |
| | Alps | Mica schist |
| | Aldo | Dolomite layer |
| | Alqp | Graphite schist, phyllite layer |
| | Alfs | Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon" |
| | Alqt | Quartzite, with amphibolite |
| | Sgn | Gneiss with minor amphibolite |
| | | Anticlinal axis |
| | | Synclinal axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |
| | | IP, SIP survey line |



BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Apparent Resistivity Map
($a=200m, n=5$)

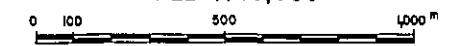
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

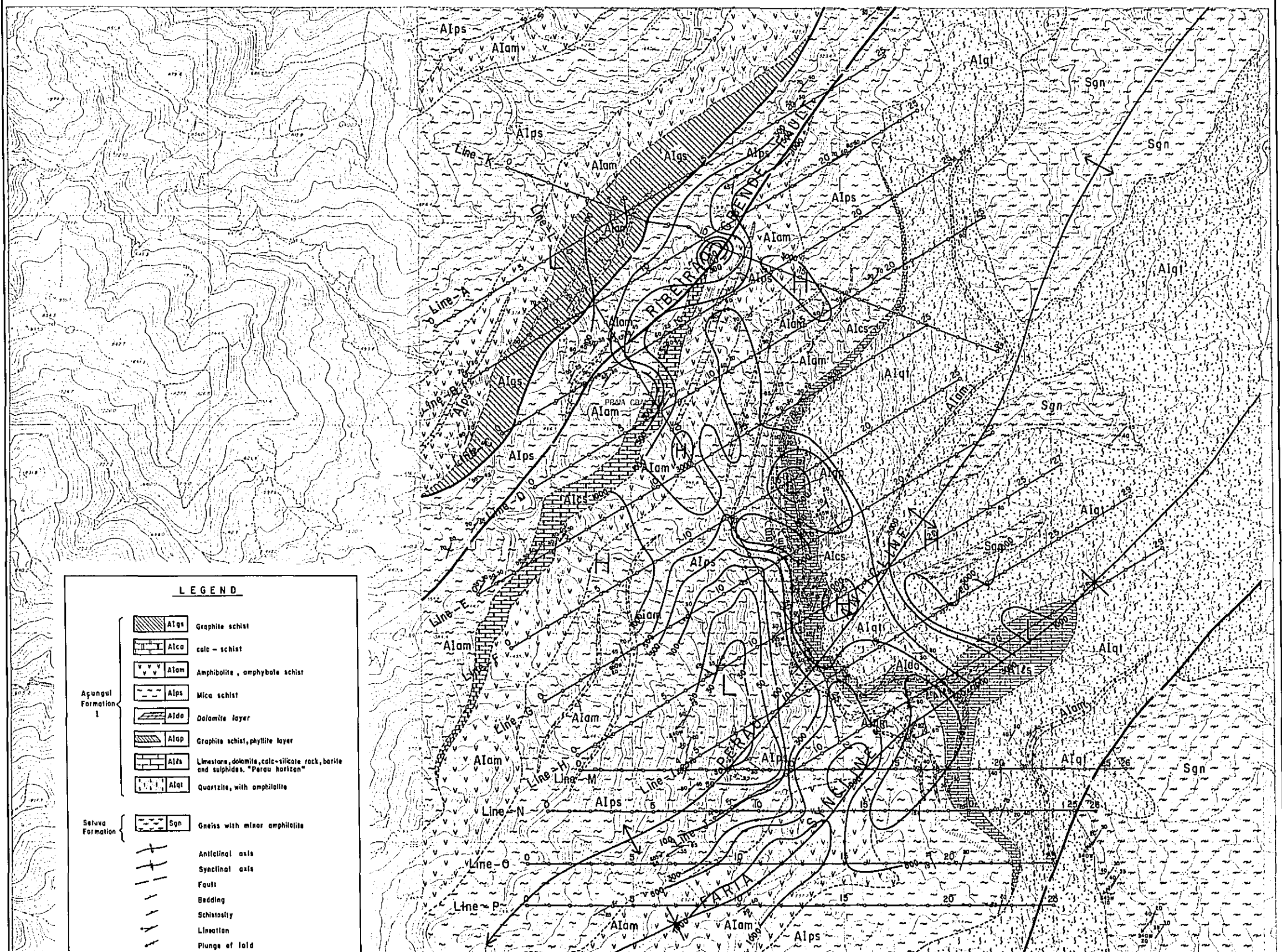
FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

500 Iso Apparent Resistivity Contour ($\Omega \cdot m$)



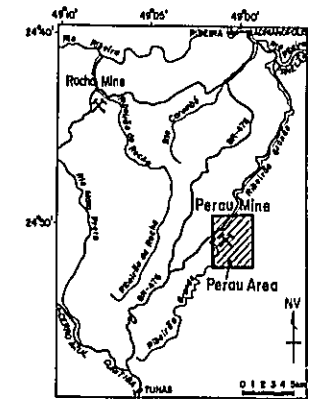
LEGEND

- Alps Graphite schist
- Alca calc - schist
- Alam Amphibolite, amphybole schist
- Alps Mica schist
- Alca Dolomite layer
- Alps Graphite schist, phyllite layer
- Alca Limestone, dolomite, calc-silicate rock, barite and sulphides. "Parau horizon"
- Alqi Quartzite, with amphibolite
- Sgn Gneiss with minor amphibolite
- Antiformal axis
- Synclinal axis
- Fault
- Bedding
- Schistosity
- Lineation
- Plunge of fold

ANTA GORDA AREA
PHASE III

Apparent Resistivity Map
($a=200m, n=5$)

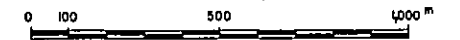
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000

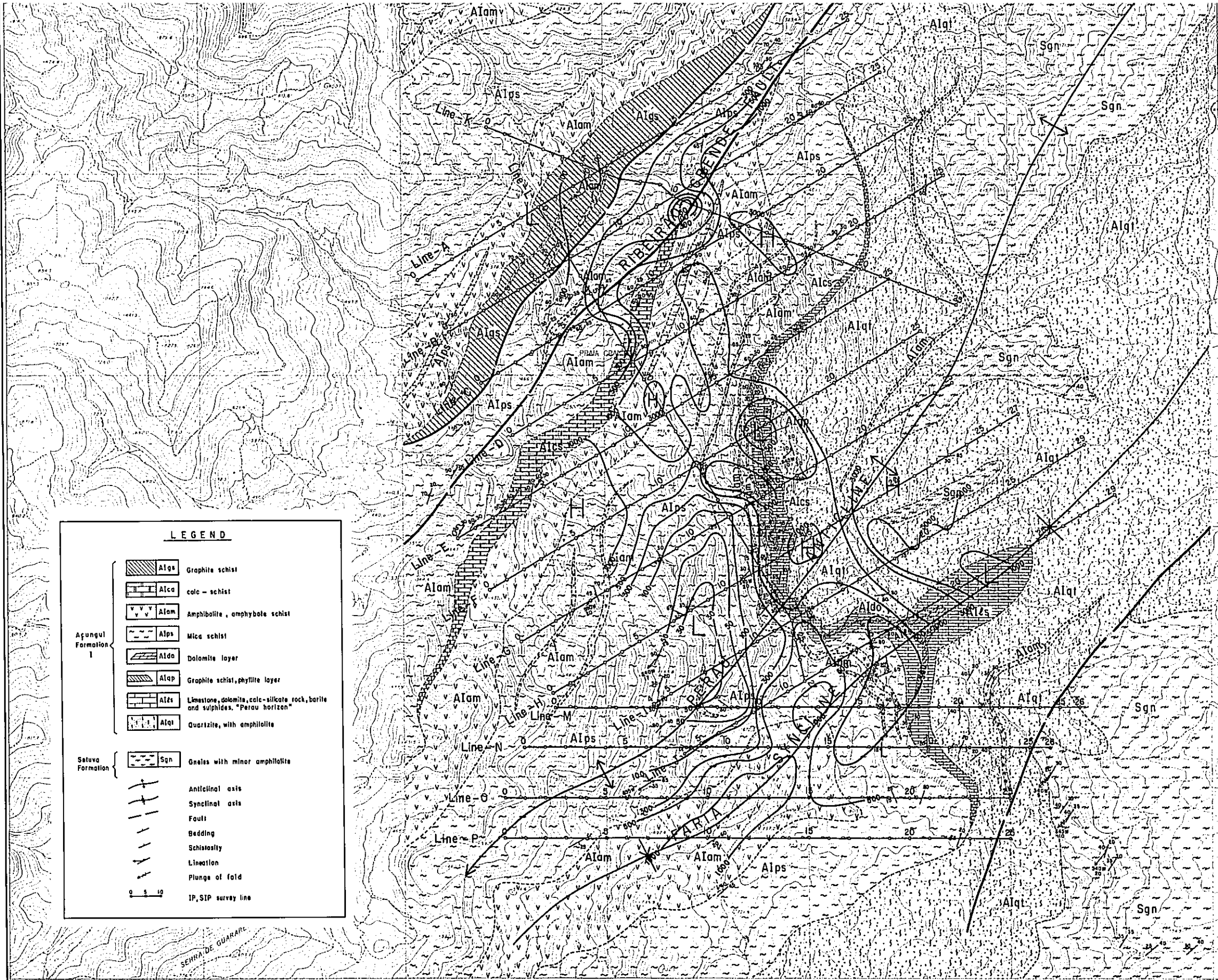


LEGEND

500 Iso Apparent Resistivity Contour ($\Omega-m$)

LEGEND

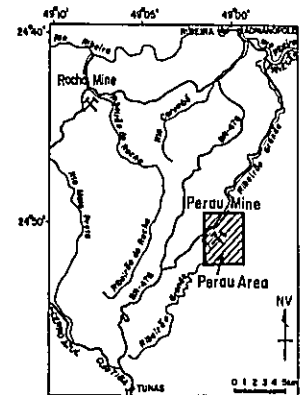
- | | | |
|--|------|--|
| | Alqs | Graphite schist |
| | Alca | calc-schist |
| | Alam | Amphibolite, amphybole schist |
| | Alps | Mica schist |
| | Aldo | Dolomite layer |
| | Alqp | Graphite schist, phyllite layer |
| | Alzs | Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon" |
| | Alqt | Quartzite, with amphibolite |
| | Sgn | Gneiss with minor amphibolite |
| | | Anticlinal axis |
| | | Synclinal axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |
| | | IP, SIP survey line |



BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

IP Interpretation Map

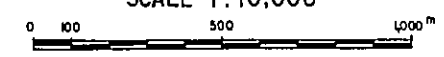
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishimetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

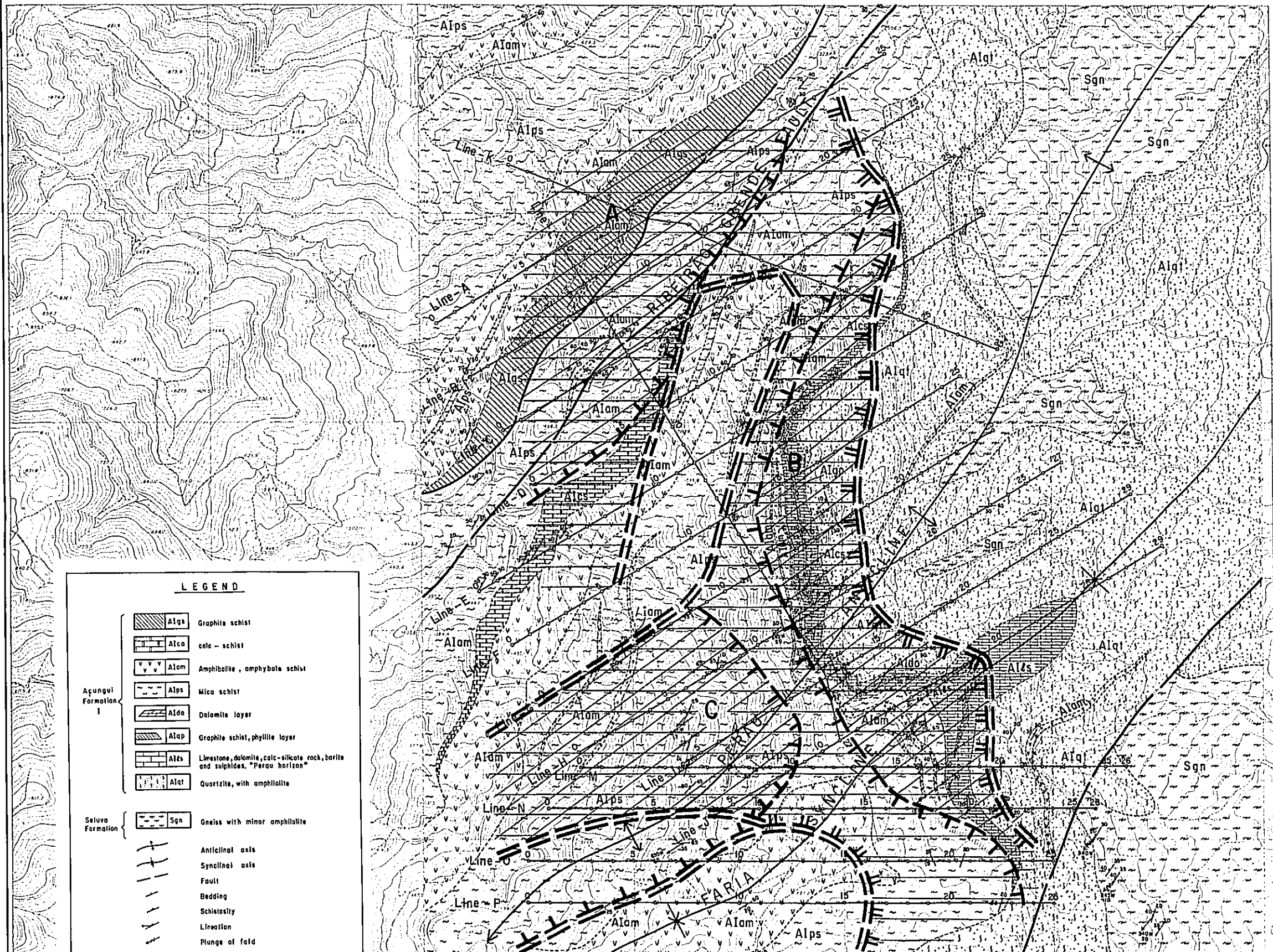
out Line of Apparent Resistivity
Low - middle Resistivity Zone High Resistivity Zone

FE anomaly (shallow to deep)

FE anomaly (deep)

Out Line of FE anomaly

name of anomaly zone (A, B, C)



LEGEND

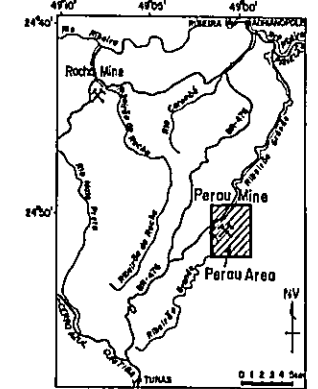
- Alqa Graphite schist
- Alca calc - schist
- Alam Amphibolite, amphybole schist
- Alps Mica schist
- Alca Dolomite layer
- Alap Graphite schist, phyllite layer
- Alcs Limestone, dolomite, calc-silicate rock, barite and sulphides, "Parau horizon"
- Alai Quartzite, with amphibolite

- Sgn Gneiss with minor amphibolite
- Anticline axis
- Syncline axis
- Fault
- Bedding
- Schistosity
- Lineation
- Plunge of fold

ANTA GORDA AREA
PHASE III

IP Interpretation Map

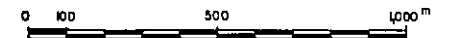
LOCATION INDEX



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

SCALE 1:10,000



LEGEND

out Line of Apparent Resistivity
Low ~ middle Resistivity Zone
High Resistivity Zone

FE anomaly (shallow to deep)

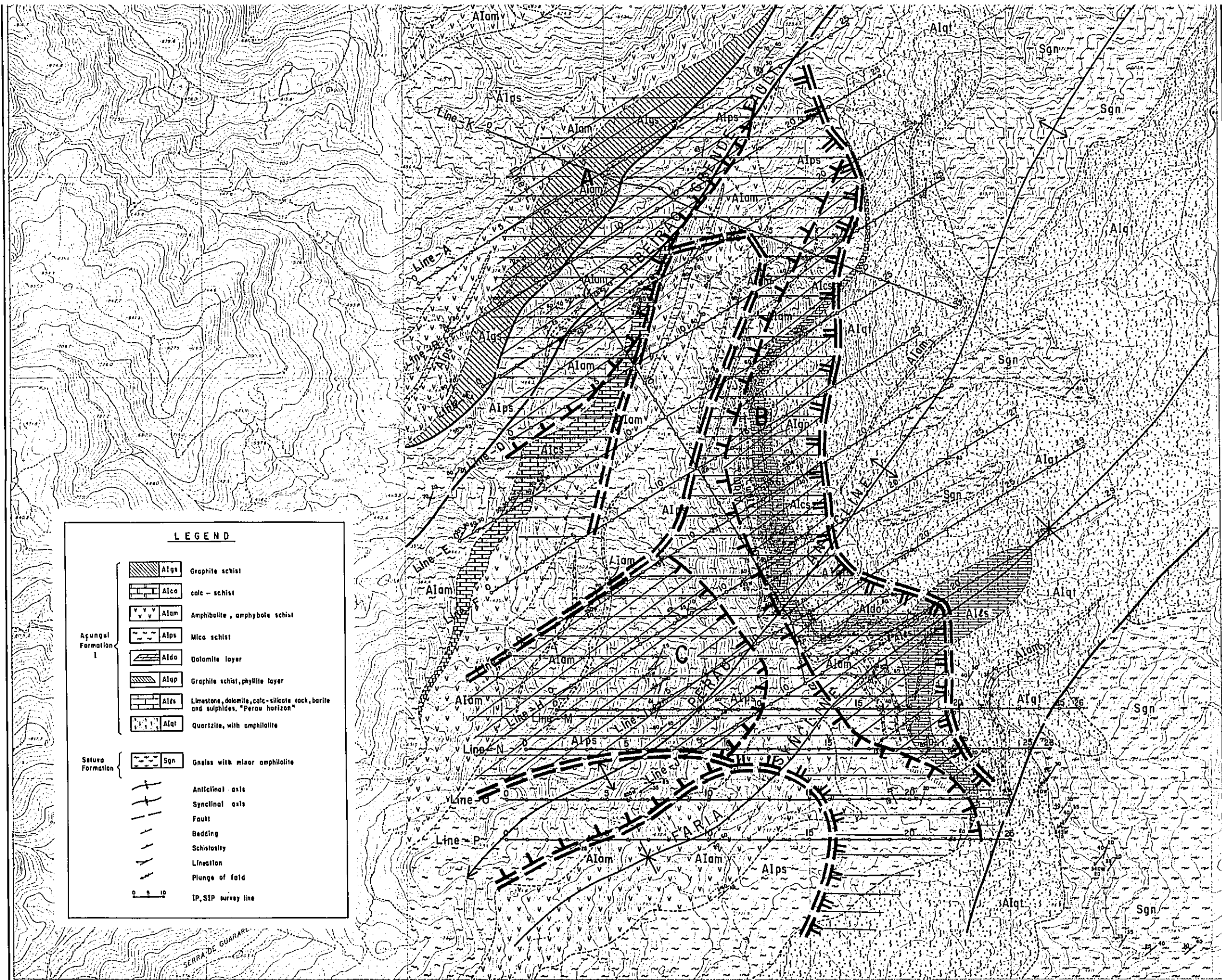
FE anomaly (deep)

Out Line of FE anomaly

name of anomaly zone (A, B, C)

LEGEND

- | | | |
|------------------------|------|--|
| | Alqt | Graphite schist |
| | Alca | calc - schist |
| | Alam | Amphibolite, amphibole schist |
| | Alps | Mica schist |
| | Aldo | Dolomite layer |
| | Alap | Graphite schist, phyllite layer |
| | Alfs | Limestone, dolomite, calc-silicate rock, barite and sulphides, "Perou horizon" |
| | Alqt | Quartzite, with amphibolite |
| Serra Formation | | |
| | Sgn | Gneiss with minor amphibolite |
| | | Anticline axis |
| | | Syncline axis |
| | | Fault |
| | | Bedding |
| | | Schistosity |
| | | Lineation |
| | | Plunge of fold |
| | | IP, SIP survey line |

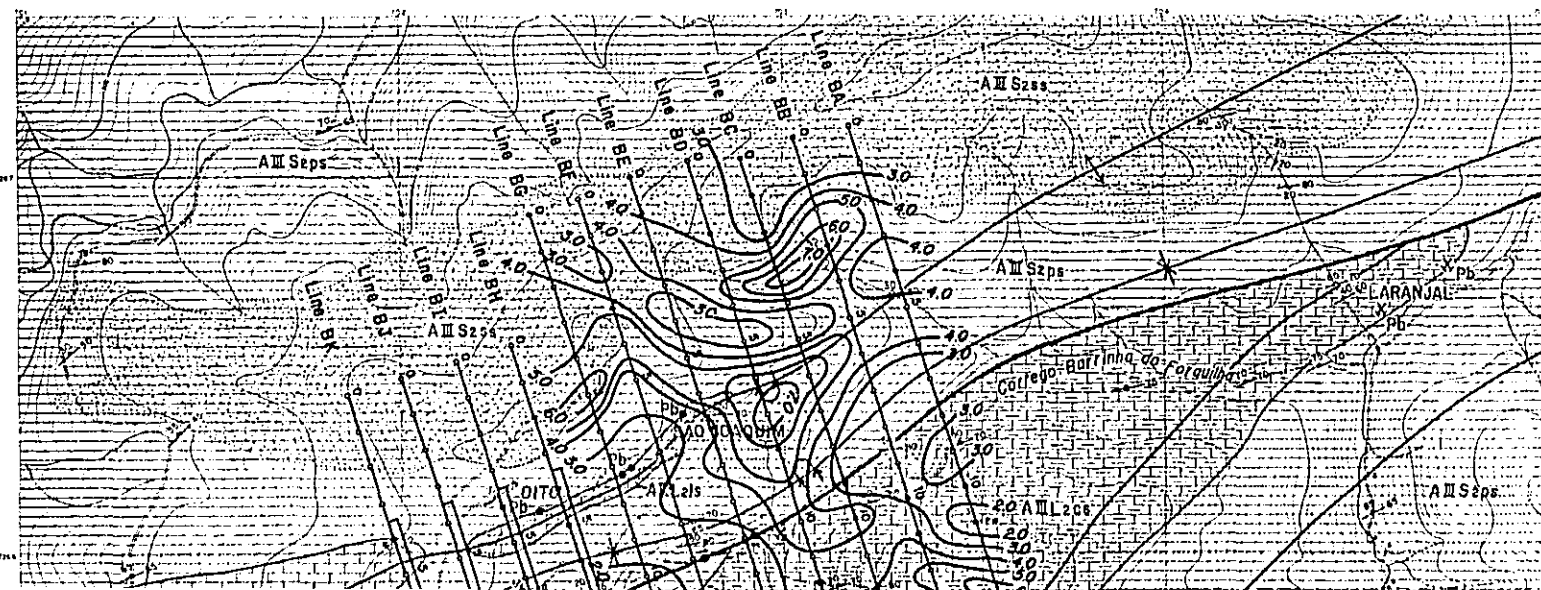


LEGEND

- | | | |
|---|--------|---|
| Upper Pre - Cambrian
Apungui Formation III | AMSz | sericite schist - phyllite (ps)
meta quartz sandstone (ss) |
| | AMLz | carbonate schist calc-schist
limestone (ls) |
| | AMS1 | sericite schist |
| | / | bedding |
| | / | schistosity |
| | / | anticline |
| | / | syncline |
| | / | overfold anticline |
| | / | overfold syncline |
| | / | fault |
| | 0 5 10 | IP, SIP survey line |
| | X | Operating Mine |
| | X | Closed Mine |
| | • | Showing |

GE
AI
Equi-Frequency
Resistivity Map
MET
JAPAN INT
Prop.

Frequency Effect (n=1)



Apparent Resistivity (n=1)



LEGEND

- Upper Pre - Cambrian
 - Apurugi Formation III
 - AIII S2 sericite schist-phyllite (ps)
meta quartz sandstone (ss)
 - AIII L2 carbonate schist calc-schist
limestone (ls)
 - AIII S1 sericite schist
- bedding
- schistosity
- anticline
- syncline
- overfold anticline
- overfold syncline
- fault
- IP, SIP survey line
- Operating Mine
- Closed Mine
- Showing

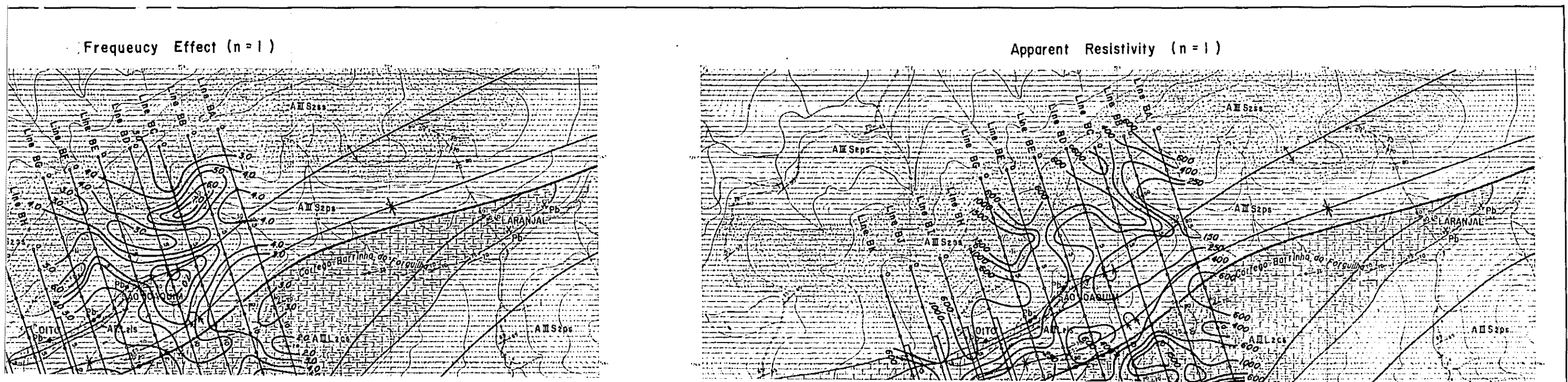
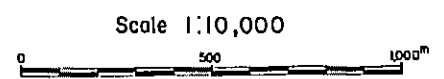
PL. II - 5

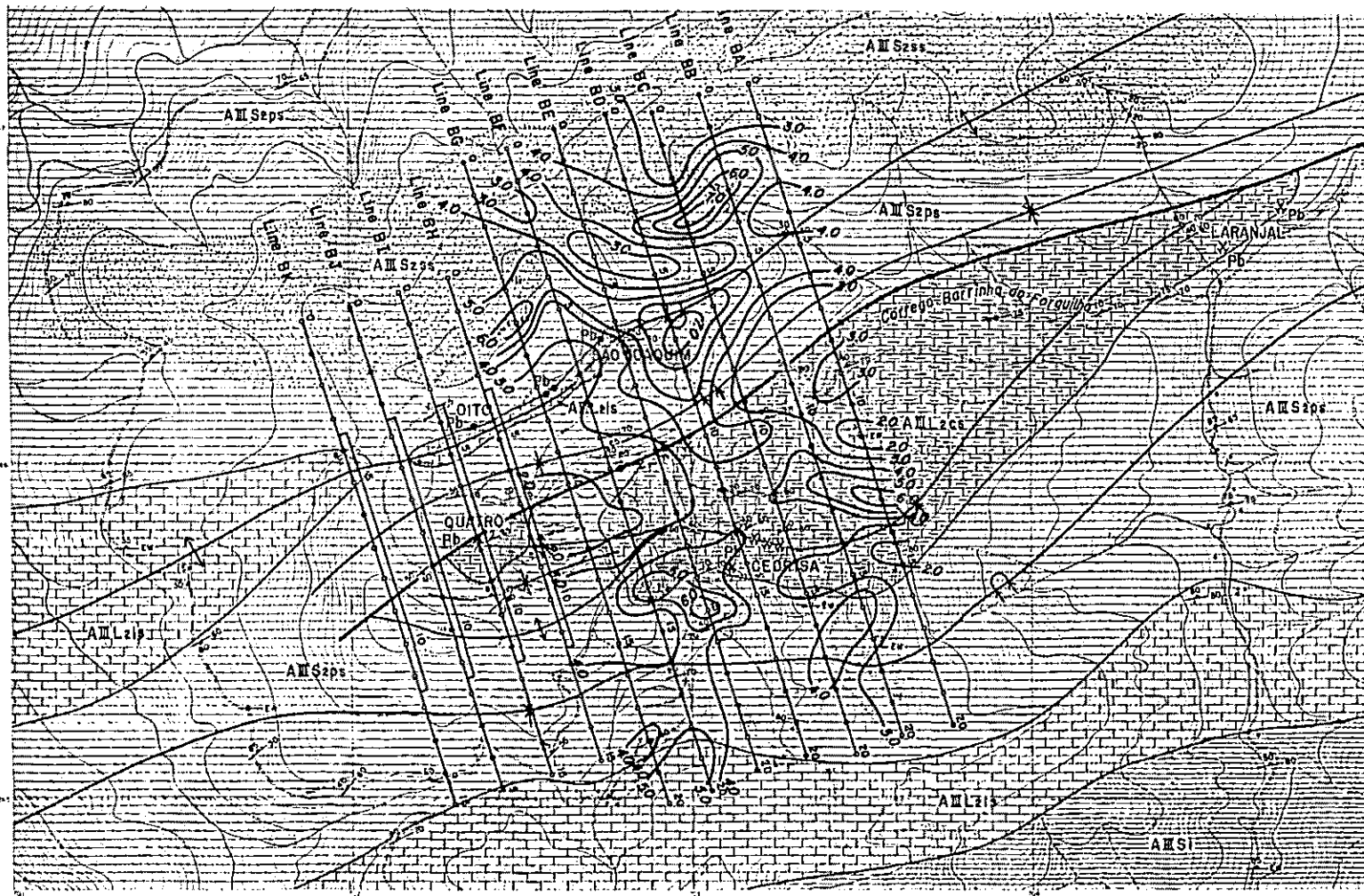
BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

Equi-Frequency Effect Map and Apparent Resistivity Map in Barrinha Area

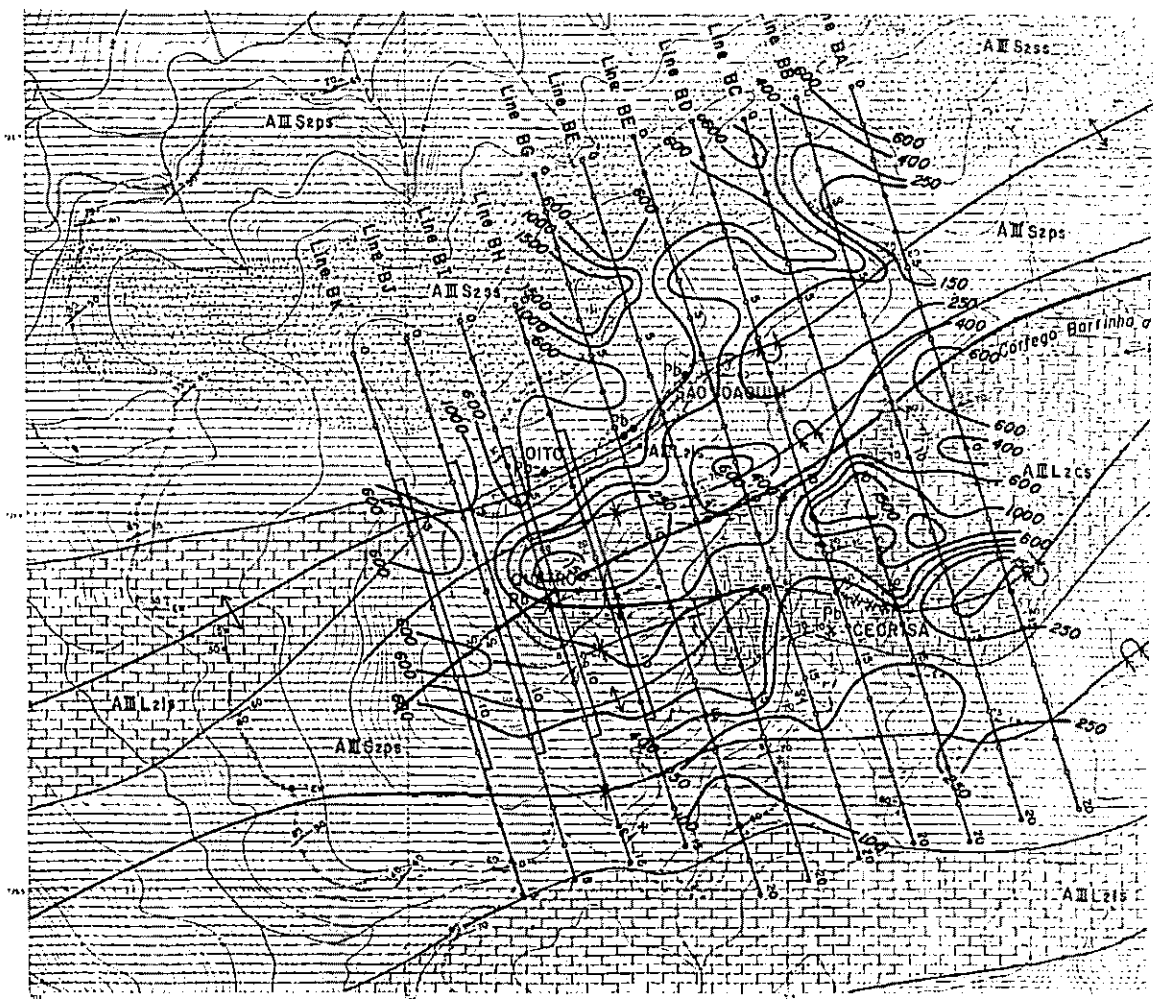
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishimetal Exploration Co., Ltd.

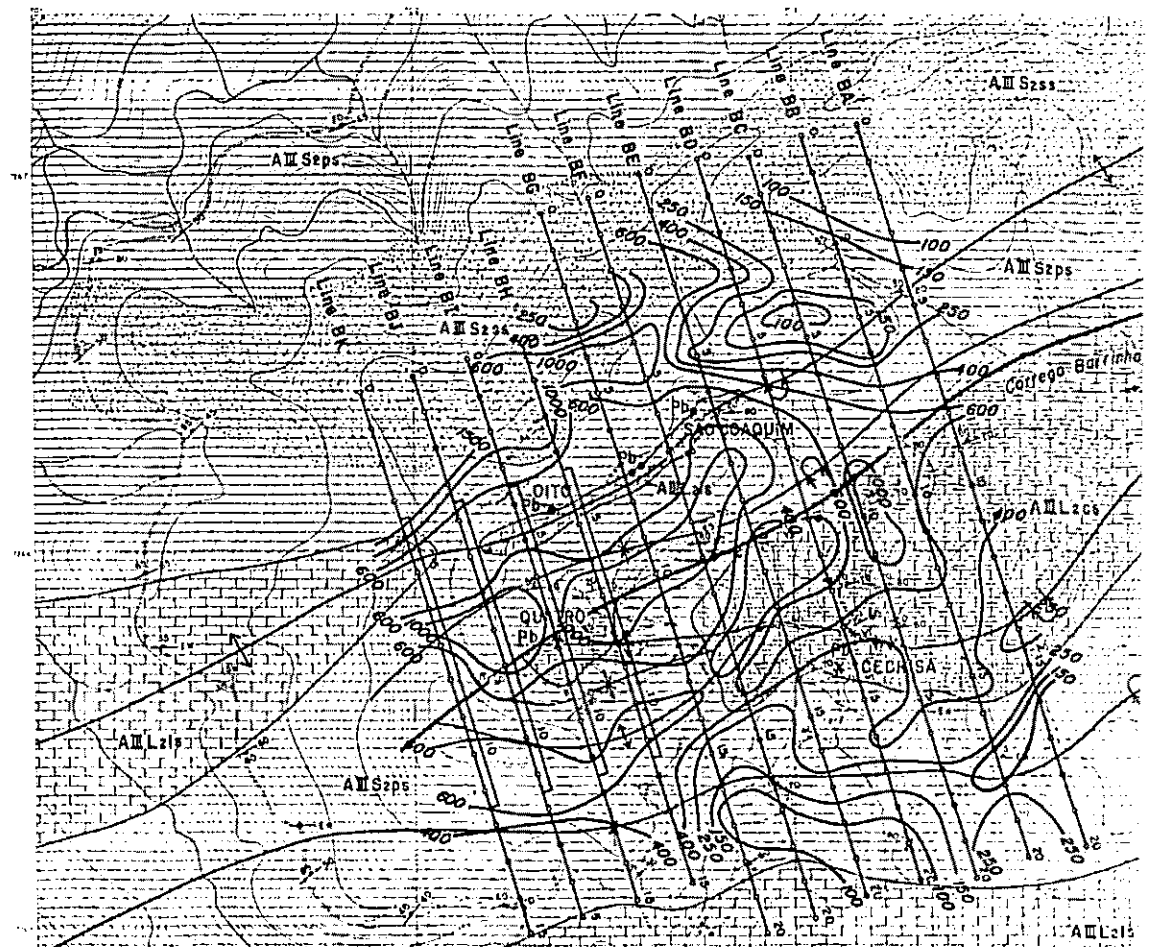
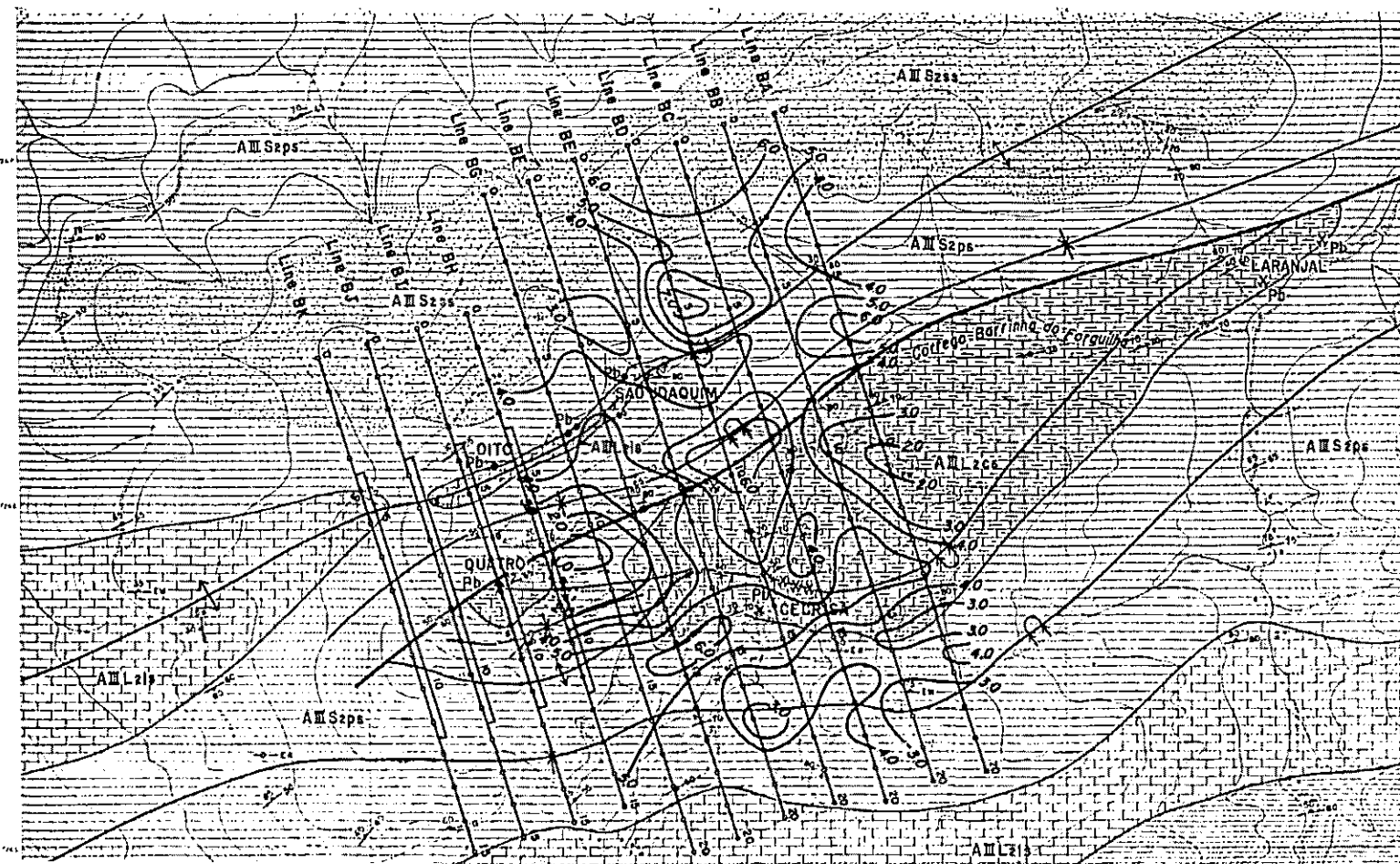


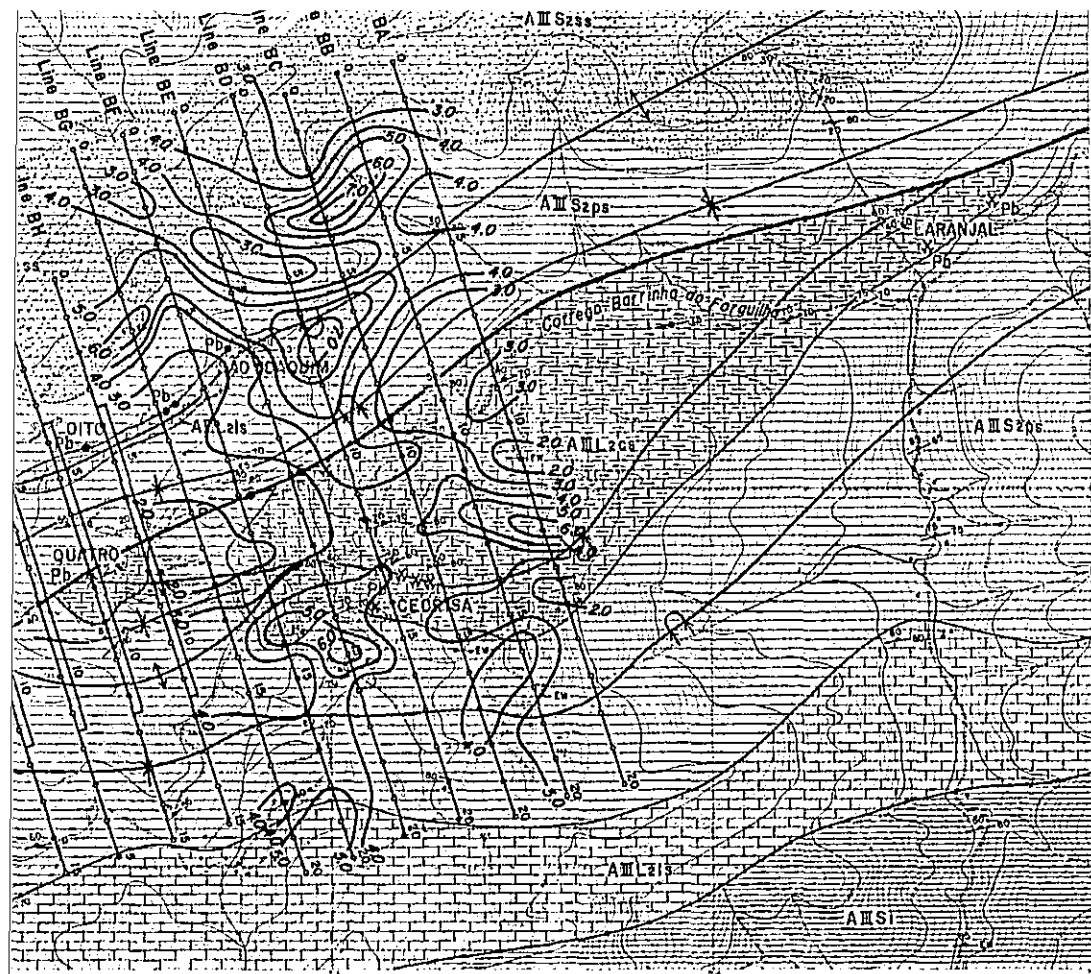


Frequency Effect (n=3)

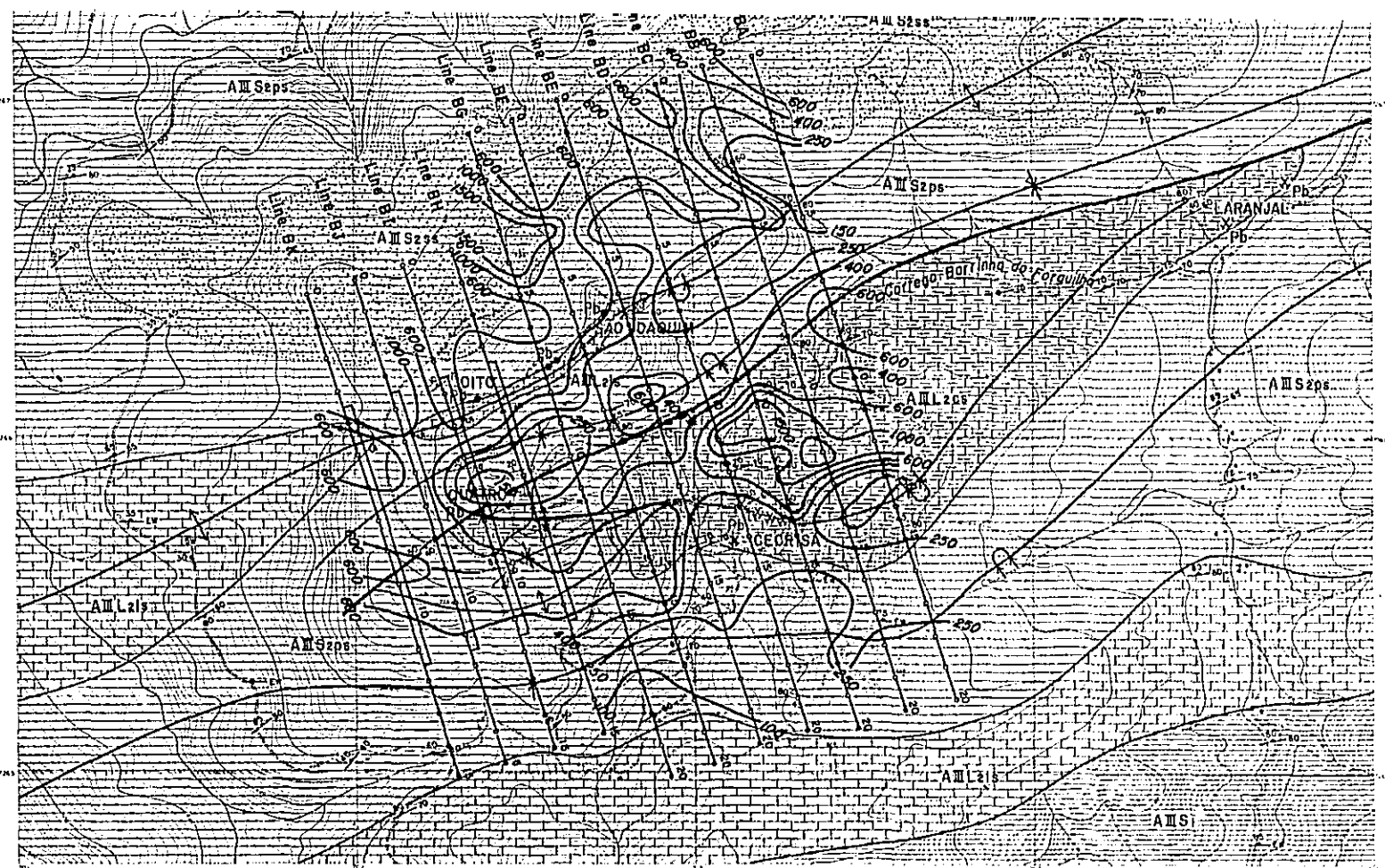


Apparent Resistivity (n=3)

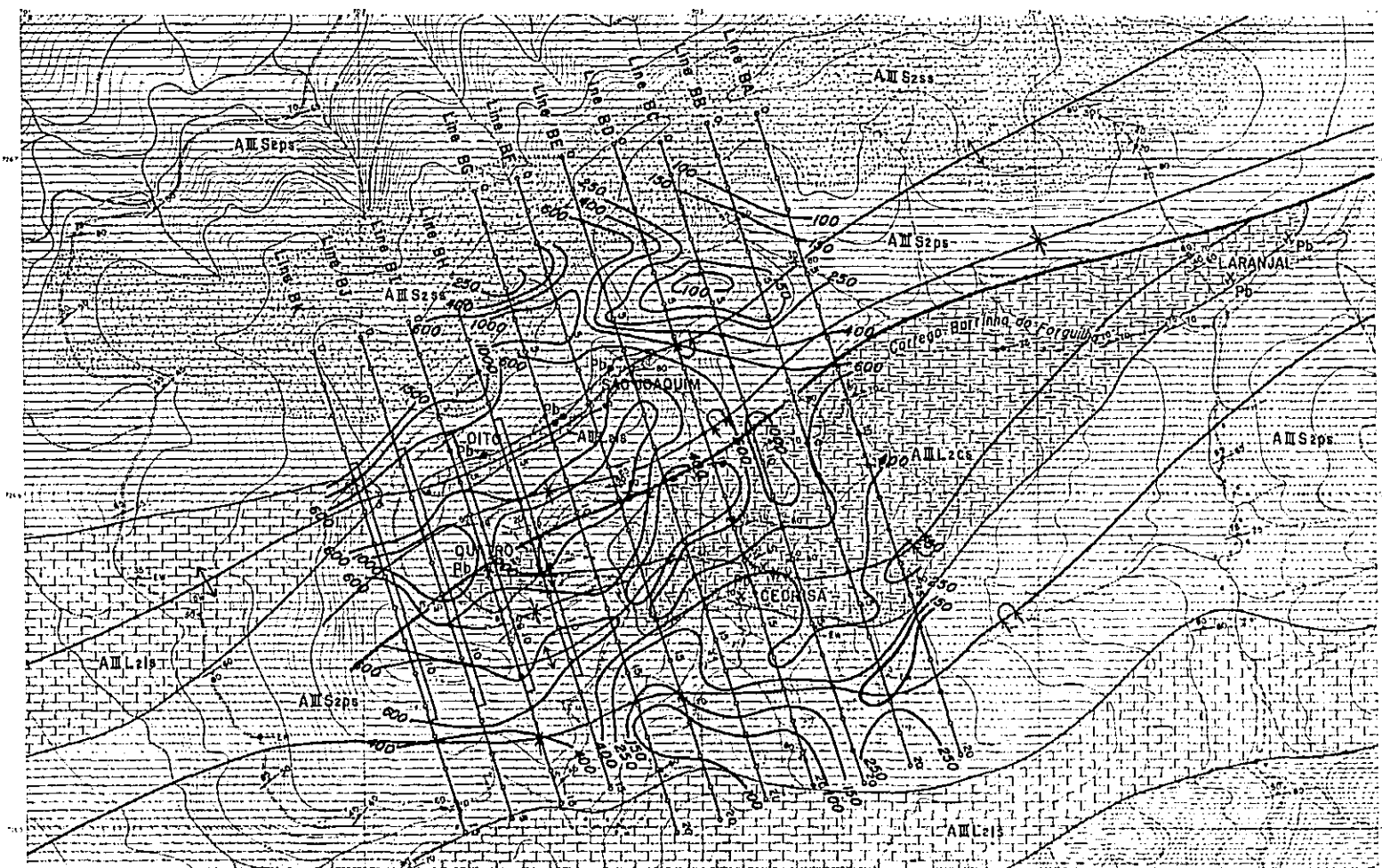
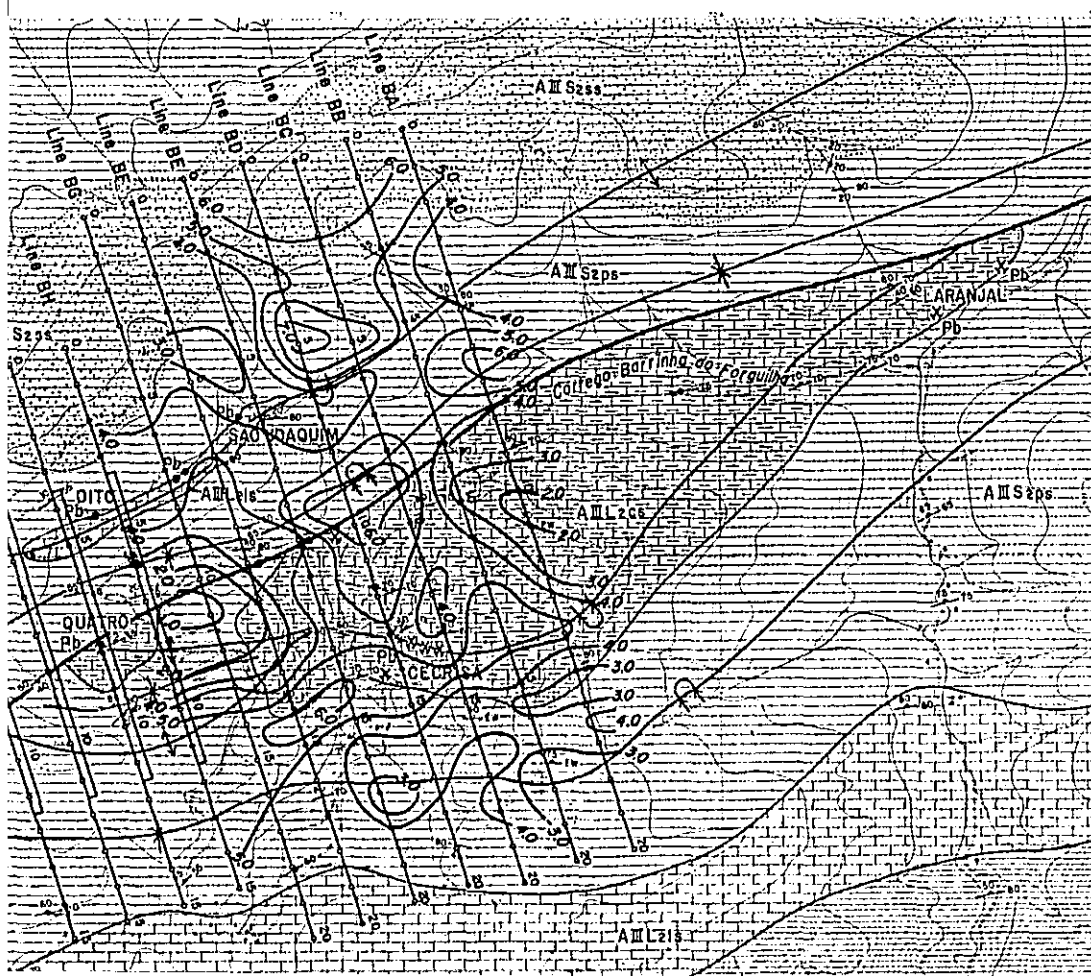


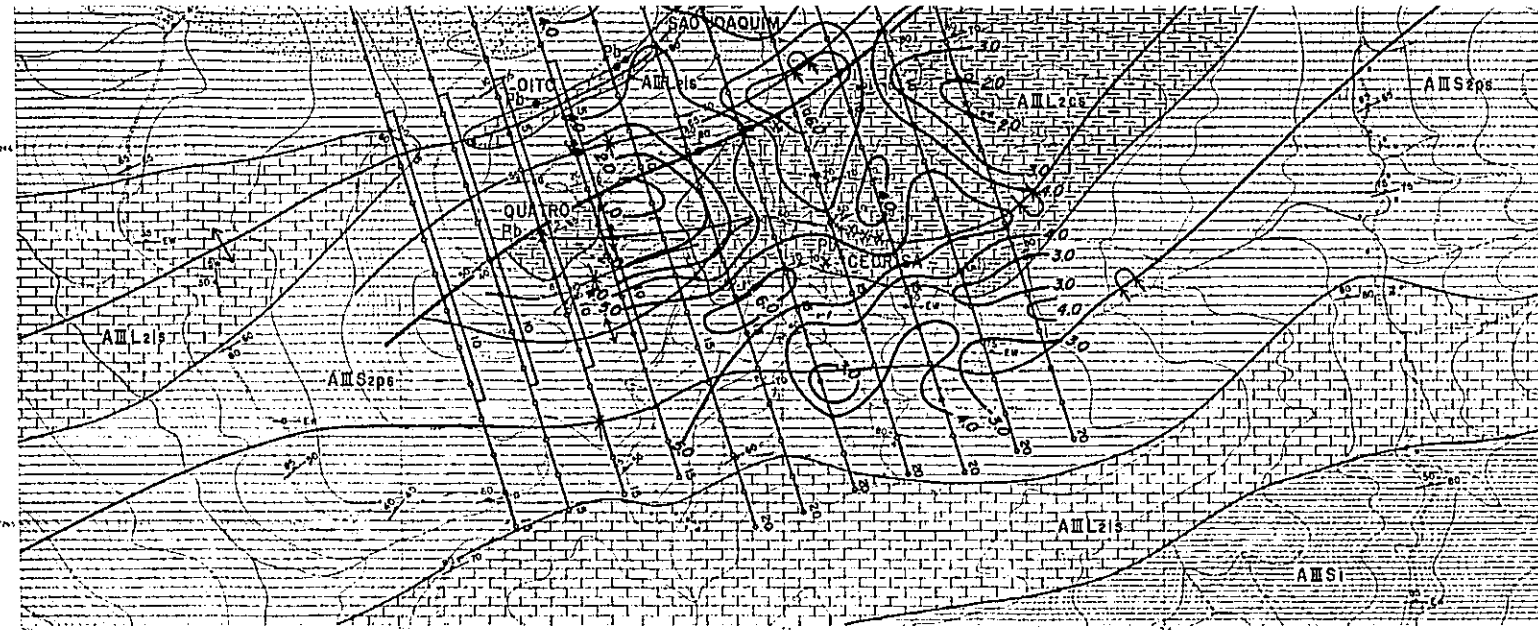


Frequency Effect (n=3)

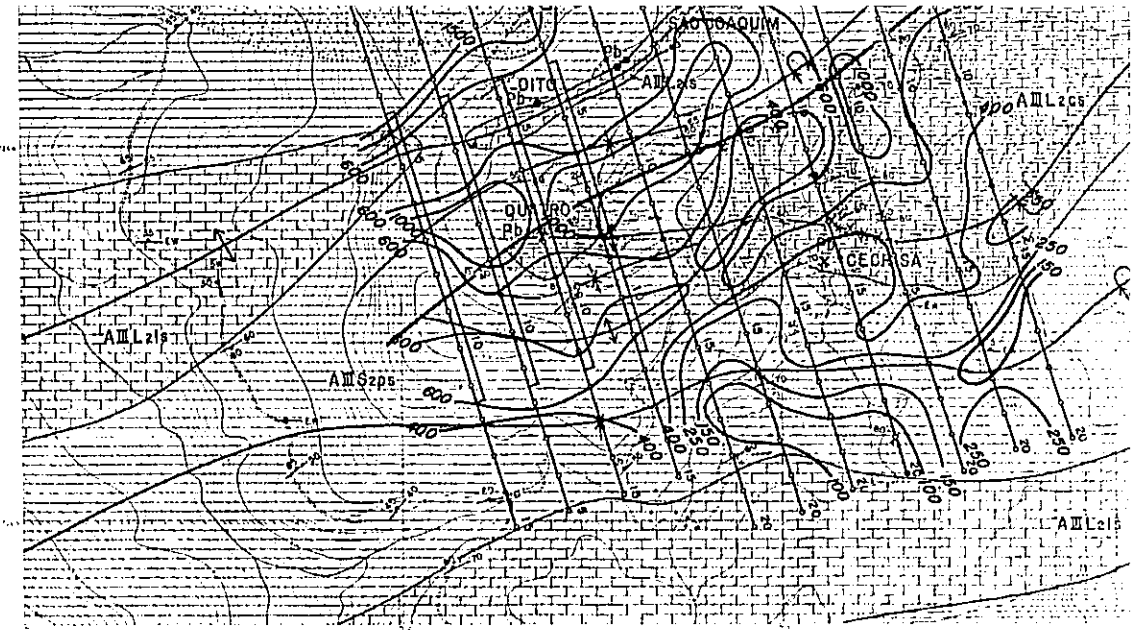
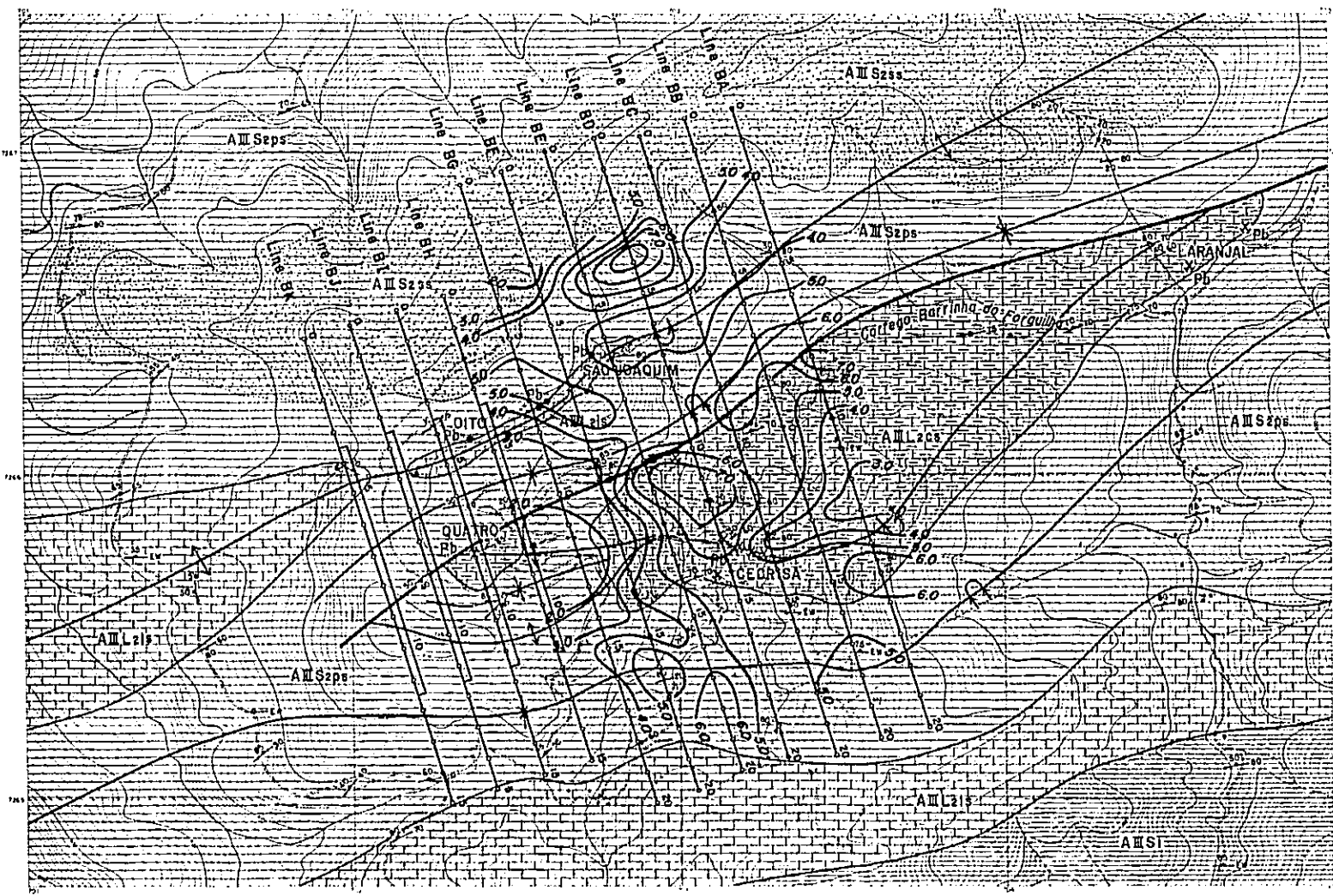


Apparent Resistivity (n=3)

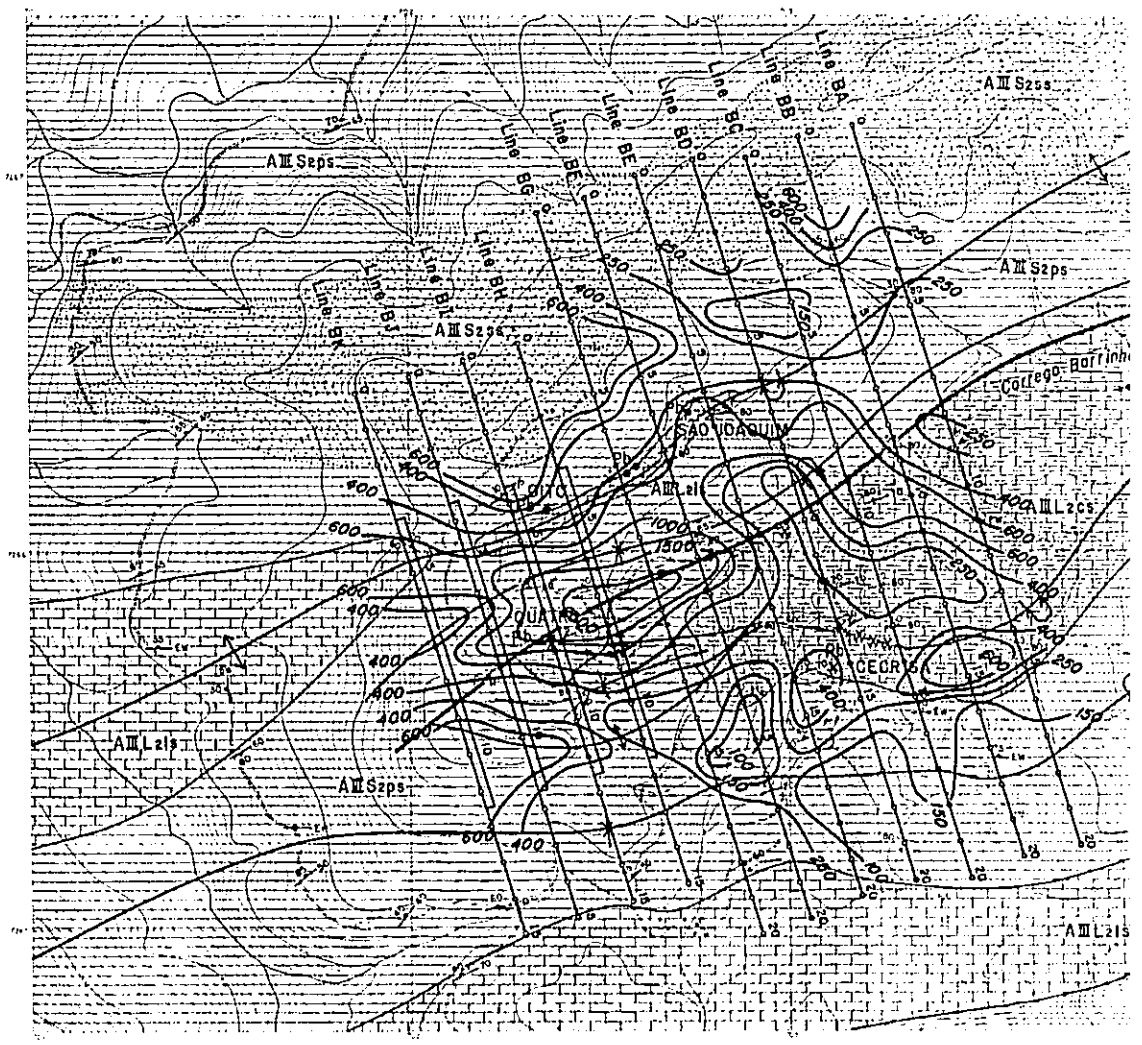


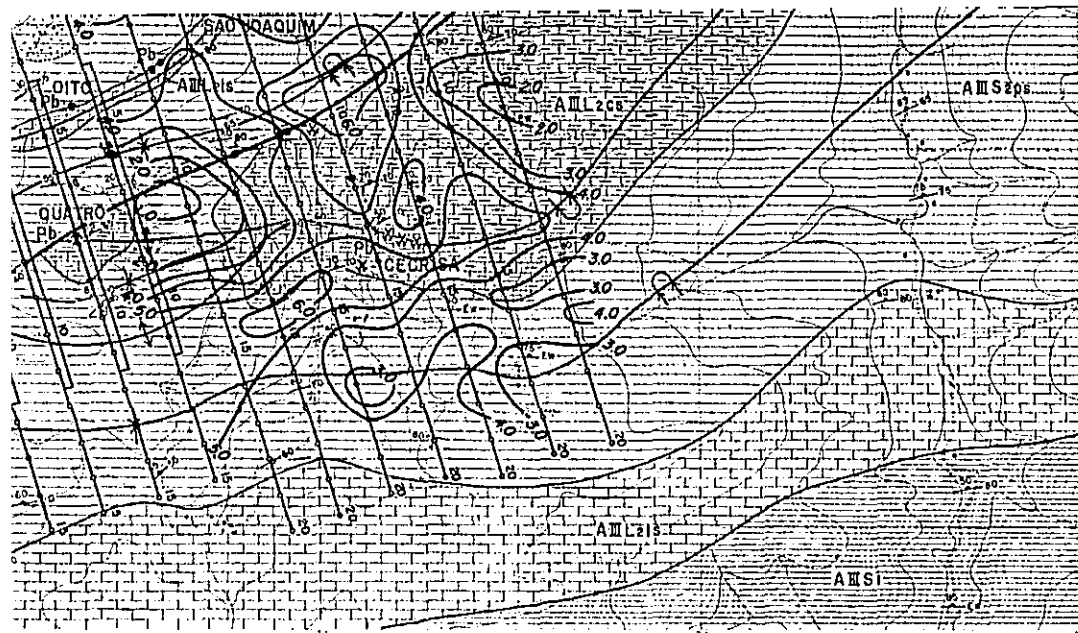


Frequency Effect (n=5)

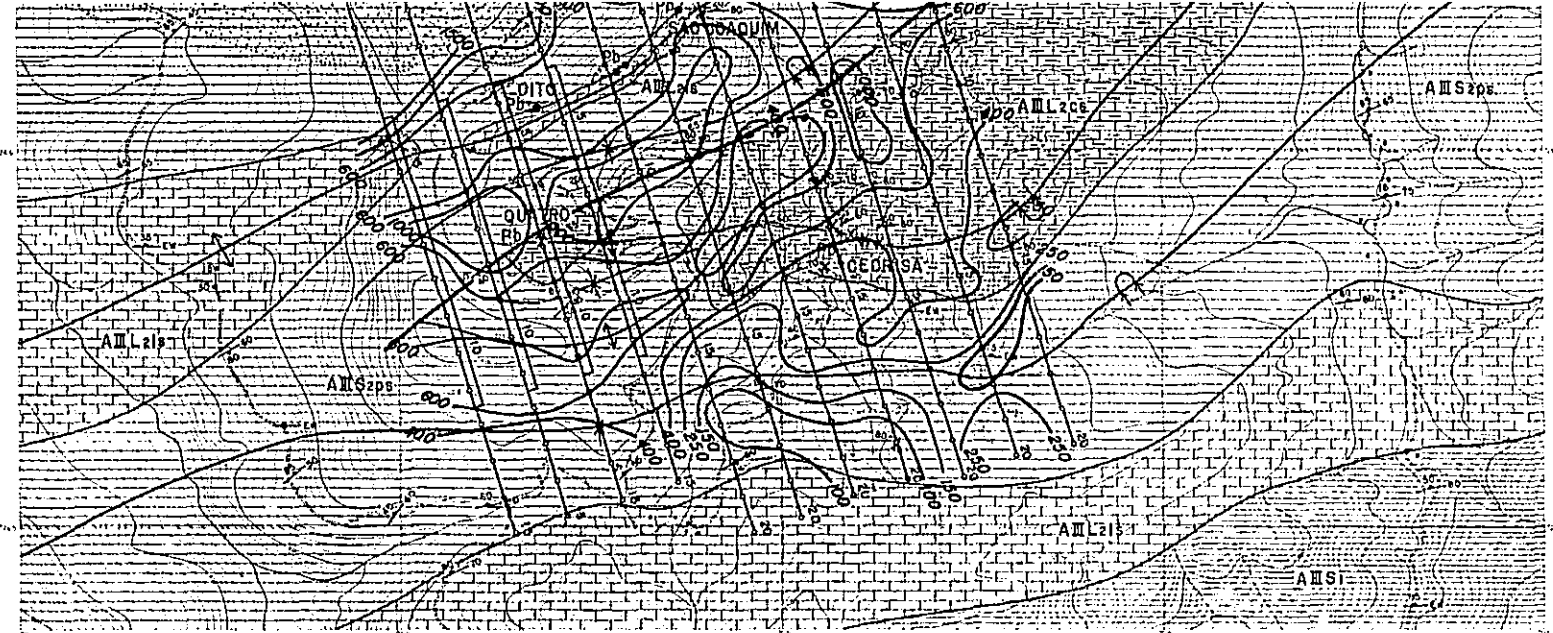


Apparent Resistivity (n=5)

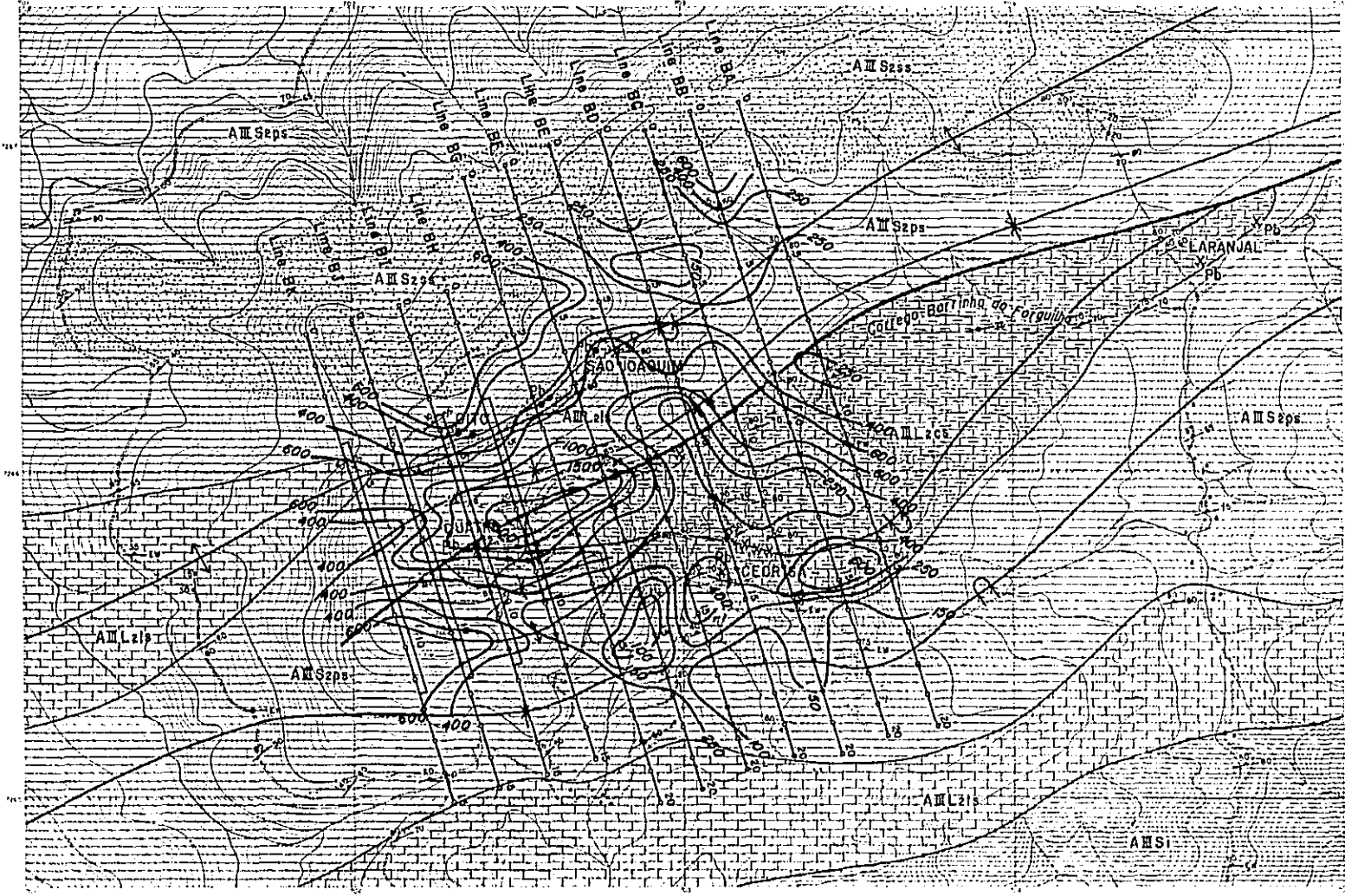
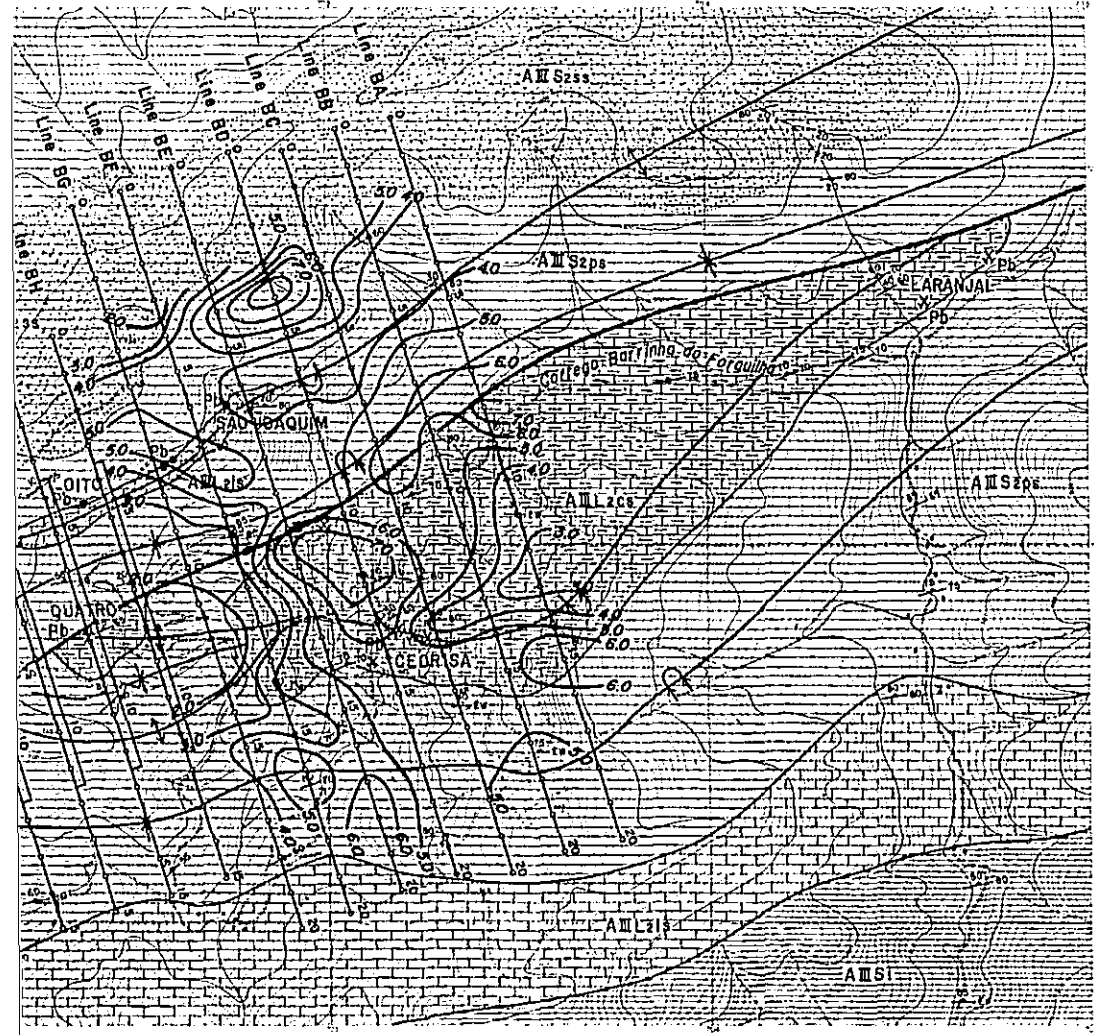


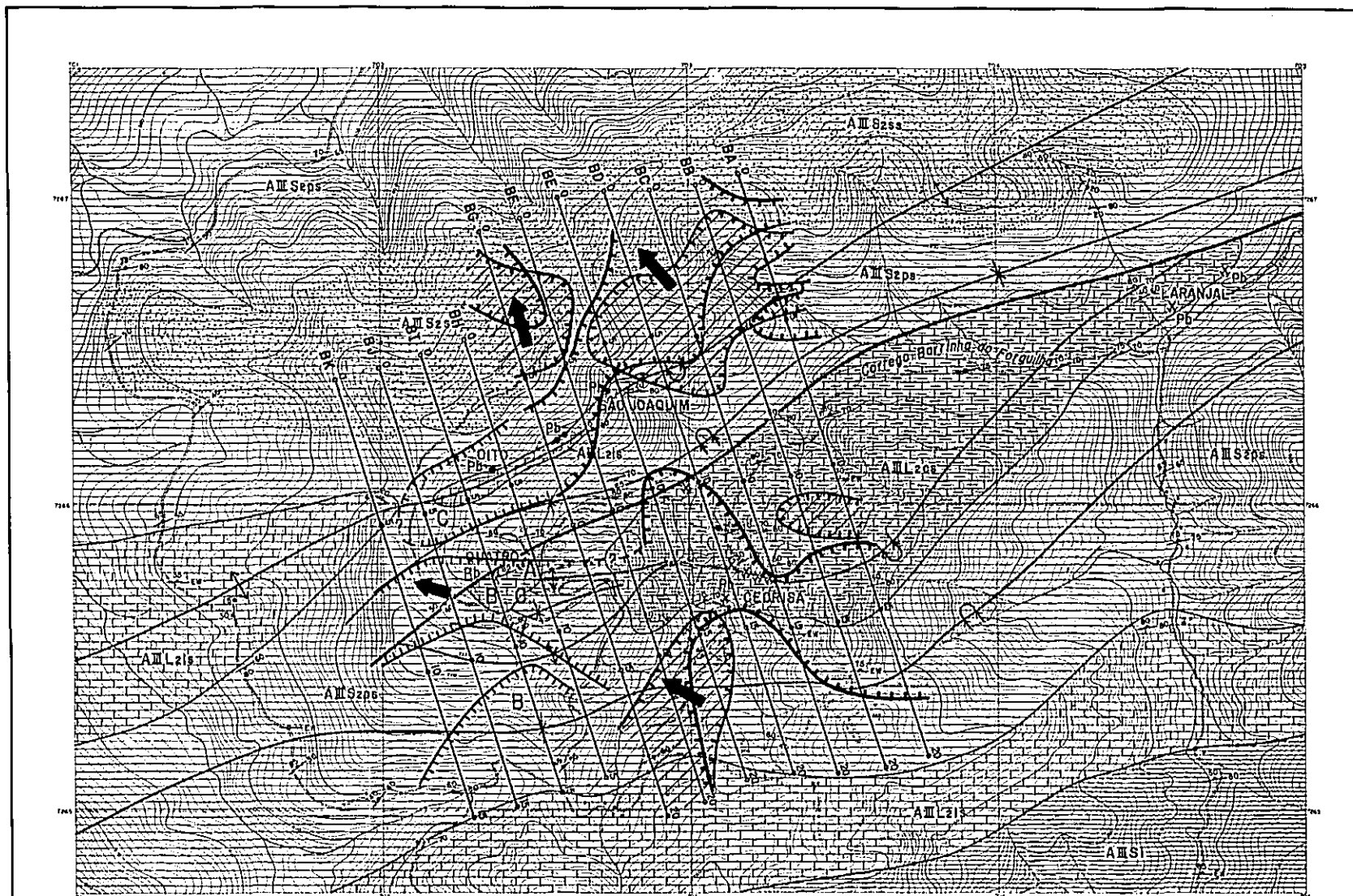


Frequency Effect (n=5)



Apparent Resistivity (n=5)





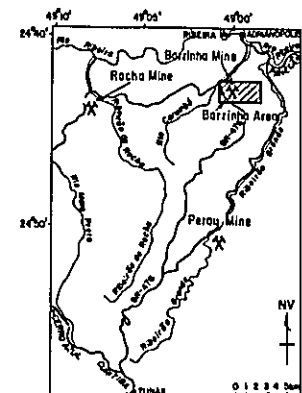
LEGEND

- | | | | | | |
|---|---------------|---|-----------|--------------------|---|
| Upper Pre-Cambrian
Aquangi Formation III | AIII S2 ss-ps | sericite schist-phyllite (ps)
meta quartz sandstone (ss) | / / / | bedding | 0 5 10
IP, SIP survey
* Operating Mine
✱ Close Mine
● Showing |
| | AIII L2 ls | carbonate schist-calc-schist
limestone (ls) | / / / / / | schistosity | |
| | AIII S1 | sericite schist | / / / / / | anticline | |
| | | | / / / / / | syncline | |
| | | | / / / / / | overfold anticline | |
| | | | / / / / / | overfold syncline | |
| | | | / / / / / | fault | |

PL. II - 6

BRAZIL
GEOLOGICAL SURVEY
OF
ANTA GORDA AREA
PHASE III

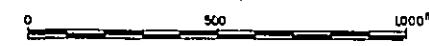
IP Interpretation Map in Barrinha Area



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishmetal Exploration Co., Ltd.

Scale 1:10,000



LEGEND

- Out Line of IP Anomaly
- surface to shallow
- deep
- Out Line of SIP Anomaly
- A, B, C. type of phase spectrum

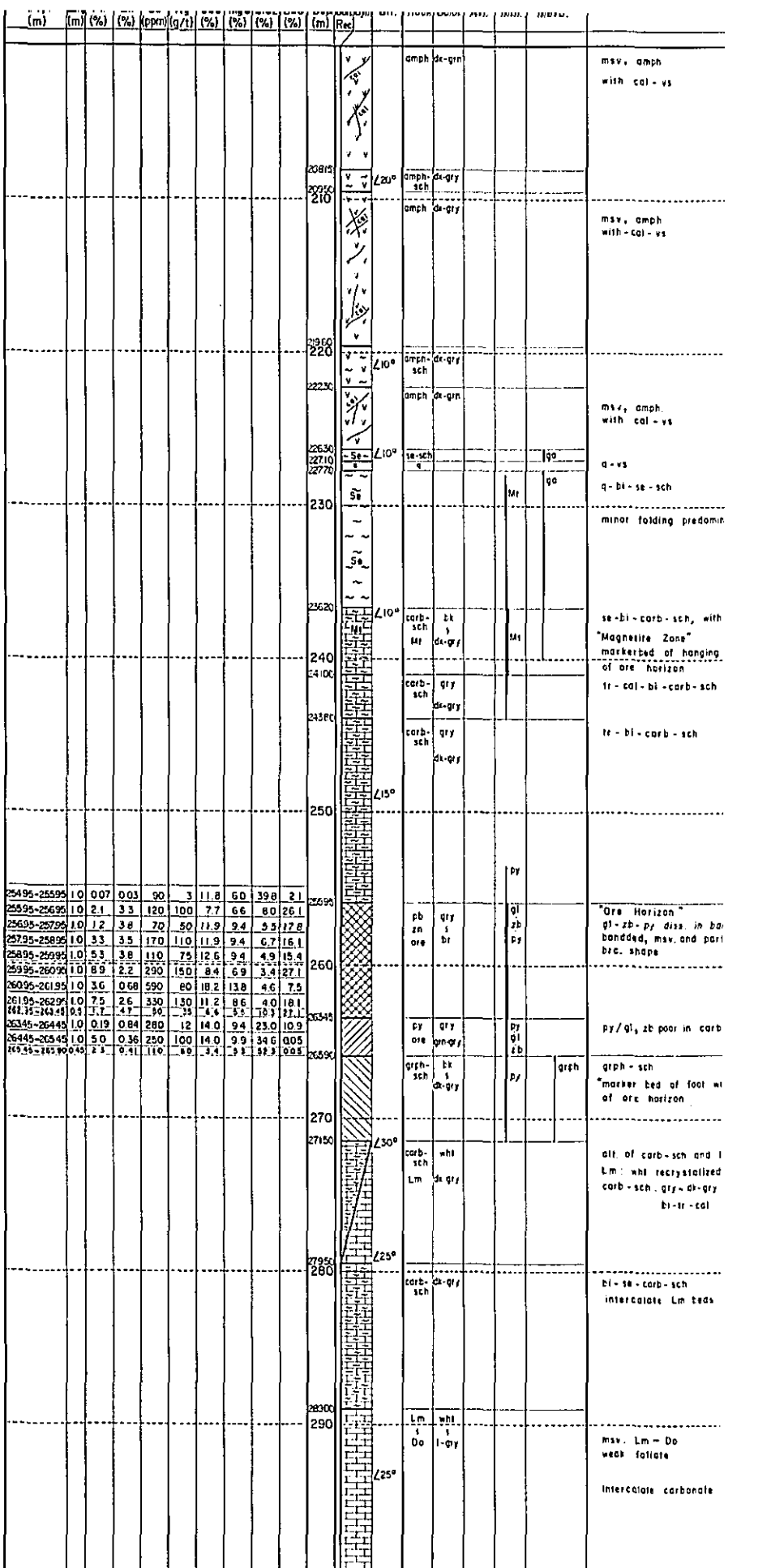
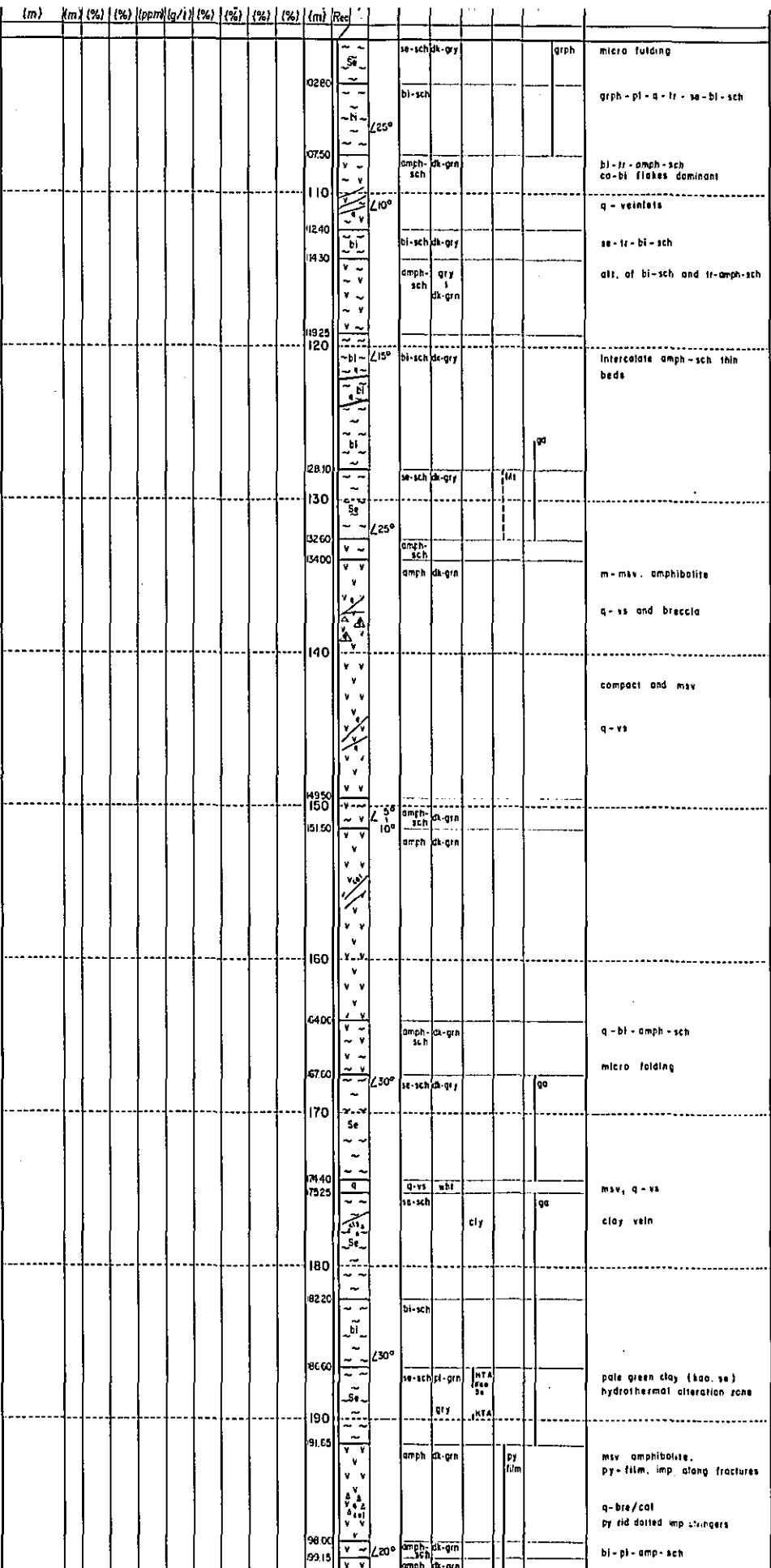
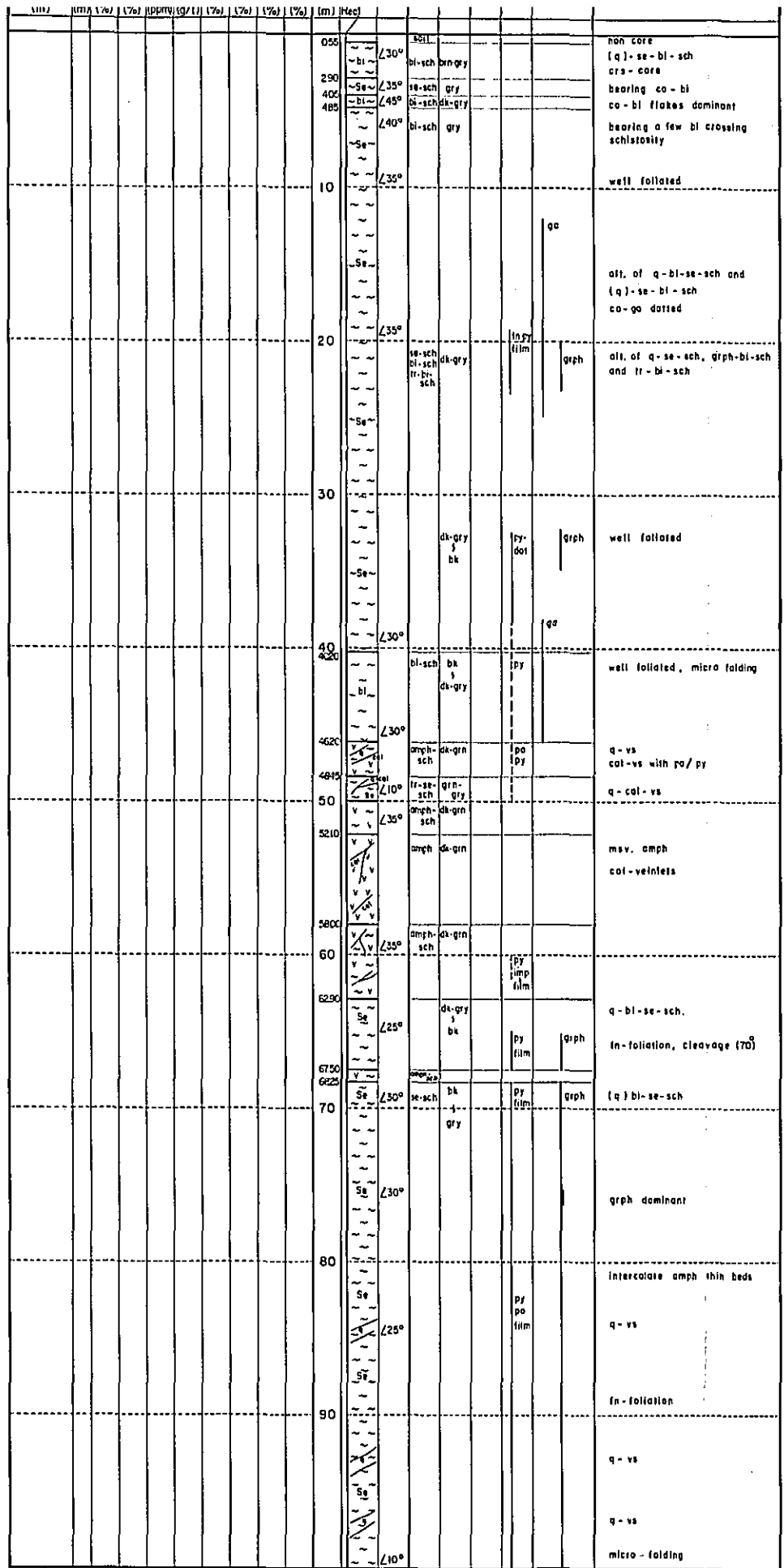
GEOLOGIC DRILL LOG
ANTA GORDA PROJECT

AG-01
 Coordinate N 725110 Direction 0°
 E 70129 Incline 90°
 Elevation 490 m Total Depth 331.15 m

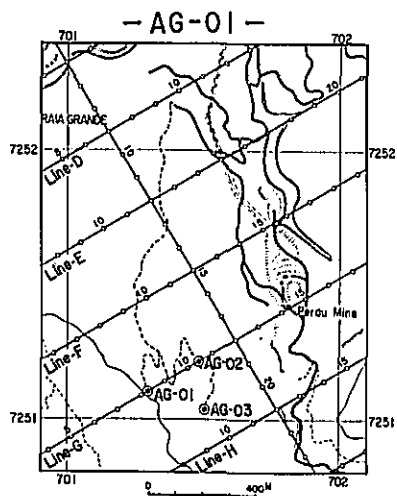
Assays										Depth (m)	Core Rec	Str.	Occurrence				Observations
Dep. (m)	Lead (%)	Pb (%)	Zn (%)	Cu (%)	Ag (ppm)	CoO (%)	MgO (%)	SiO ₂ (%)	BaO (%)				Rock	Color	Alt.	Min.	
055																nan core	
290																(q)-se-bl-sch	
405																crs - core	
485																bearing co-bl	
																co-bl flakes dominant	
																bearing a few bl crossing schistosity	
10																well foliated	
																go	
																alt. of q-bl-se-sch and (q)-se-bl-sch	
																co-go dotted	
20																alt. of q-se-sch, grph-bl-sch and tr-bl-sch	
																grph	
30																well foliated	
																grph	
40																well foliated, micro folding	
420																q-vs	
485																col-vs with po/py	
50																q-col-vs	
5210																msv. amph	
																col-veinlets	
5600																q-bl-se-sch.	
60																fa-foliation, cleavage (70)	
6230																(q)bl-se-sch	
6750																grph dominant	
6720																intercalate amph thin beds	

Assays										Depth (m)	Core Rec	Str.	Occurrence				Observations
Dep. (m)	Lead (%)	Pb (%)	Zn (%)	Cu (%)	Ag (ppm)	CoO (%)	MgO (%)	SiO ₂ (%)	BaO (%)				Rock	Color	Alt.	Min.	
0280																micro folding	
0750																grph-pl-q-tr-se-bl-sch	
110																bi-tr-amph-sch	
1240																co-bl flakes dominant	
1430																q-veinlets	
1925																se-tr-bl-sch	
120																alt. of bi-sch and tr-amph-sch	
2810																intercalate amph-sch thin beds	
130																go	
3260																m-msv. amphibolite	
3400																q-vs and breccia	
140																compact and msv	
4930																q-vs	
5150																msv. amph	
160																col-veinlets	
6400																q-bl-amph-sch	
6760																micro folding	
170																go	
1940																msv, q-vs	
17525																clay vein	
180																	
18220																	

Assays										Depth (m)	Core Rec	Str.	Occurrence				Observations
Dep. (m)	Lead (%)	Pb (%)	Zn (%)	Cu (%)	Ag (ppm)	CoO (%)	MgO (%)	SiO ₂ (%)	BaO (%)				Rock	Color	Alt.	Min.	
2085																msv, amph	
210																with col-vs	
220																msv, amph	
2230																with col-vs	
2260																msv, amph	
2270																with col-vs	
2276																q-vs	
230																q-bl-se-sch	
230																minor folding predom	
2362																se-bl-core-sch, with "Magnetite Zone" marked by at hanging of ore horizon	
240																tr-col-bl-carb-sch	
2400																tr-bl-carb-sch	
2430																tr-bl-carb-sch	
250																	
25495-25595	10	007	005	20	3	11.8	6.0	39.8	2.1							"Ore Horizon"	
25595-25695	10	2.1	3.3	122	100	7.7	6.6	80	26.1							gl-zb-py diss in b banded, msv and po bre. shape	
25695-25795	10	12	3.8	70	50	11.9	9.4	5.5	17.8								
25795-25895	10	3.3	3.5	170	110	11.9	9.4	6.7	18.1								
25895-25995	10	5.3	3.8	110	75	12.6	9.4	4.3	15.4								
25995-26095	10	8.9	2.2	290	150	8.4	6.9	3.4	27.1								
26095-26195	10	3.6	0.68	590	80	18.2	13.8	4.6	7.5								
26195-26295	10	7.5	2.6	330	150	11.2	8.6	4.0	18.1								
26295-26395	10	13.7	4.7	190	35	6.4	3.7	19.3	27.1								
26395-26495	10	0.19	0.84	200	12	14.0	9.4	23.0	10.9							py/gl, zb poor in car	
26495-26595	10	5.0	0.36	250	100	14.0	9.3	34.6	10.5								
26595-26695	10	0.41	1.10	50	3.4	3.4	32.3	0.94									
26590																grph-sch	
270																"marker bed of foot of ore horizon	
27150																alt. of carb-sch and LM am recrystallized carb-sch gr-gr-bl-tr-col	
280																bl-se-carb-sch	
280																intercalate LM beds	



Columnar Section of Core Logs in Perau Area



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEB. 1983
Prepared by Bishimetal Exploration Co., Ltd.

Scale 1:25,000



LEGEND and ABBREVIATION

Rock and Mineral	sericite schist	se-sch	
	biotite schist	bi-sch	
	graphite schist	grph-sch	
	carbonate schist	carb-sch	
	amphibolite	amph	
	amphibole schist	amph-sch	
	limestone/dolomite	Lm/Do	
	quartzite	qt	
	Ore, high grade		
	Ore, low grade		
	sericite	se	
	biotite	bi	
	quartz	q	
	calcite	cal	
	tremolite	tr	
	graphite	grph	
	garnet	ga	
Alteration	hydrothermal alteration	H.T.A	
	kaoline	kaa	
	clay	clay	
Mineralization	chalcopyrite	cp	
	pyrite	py	
	pyrrhotite	po	
	galena	gl	
	zincblend or sphalerite	zb	
	magnetite	MI	
	oxide mineral	ox	
Color	light	l-	
	pale	p-	
	dark	dk-	
	grey	gr-	
	black	bk-	
	white	whl	
	brown	brn	
	green	grn	
	red	rd	
Observation	dissimination	diss	
	impregnation	imp	
	alternation	alt	
	veins	vs	
	fine	fn-	
	medium	m-	
	coarse	co-	
	crushed	crs	
	massive	msv	

Lithology	Geochemical Data										Dep. (m)	Core No.	Str.	Rock	Color	Alt.	Min.	Meta.	Observations
	(m)	(m)	(%)	(%)	(ppm)	(g/t)	(%)	(%)	(%)	(%)									
amph dk-grn											20815		Lm	whl				msv. Lm	
amph dk-grn											20950		carb-sch	dk-gry				bl-se-carb-sch	
amph dk-grn											210		amph dk-grn	whl s				alt. of qt. and carb-sch	
amph dk-grn											21960		amph dk-grn	whl s				msv. qt intercalate carb-sch. thin beds.	
amph dk-grn											22230		amph dk-grn	gr s				alt. of carb-sch and qt	
amph dk-grn											22530		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											22710		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											230		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											23620		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											24000		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											24360		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											250		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											25950		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26095		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26195		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26295		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26345		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26445		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26495		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26590		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											26950		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											270		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											27150		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											27950		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											280		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											28000		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											2890		amph dk-grn	whl				msv. amph. with col - vs	
amph dk-grn											290		amph dk-grn	whl				msv. amph. with col - vs	

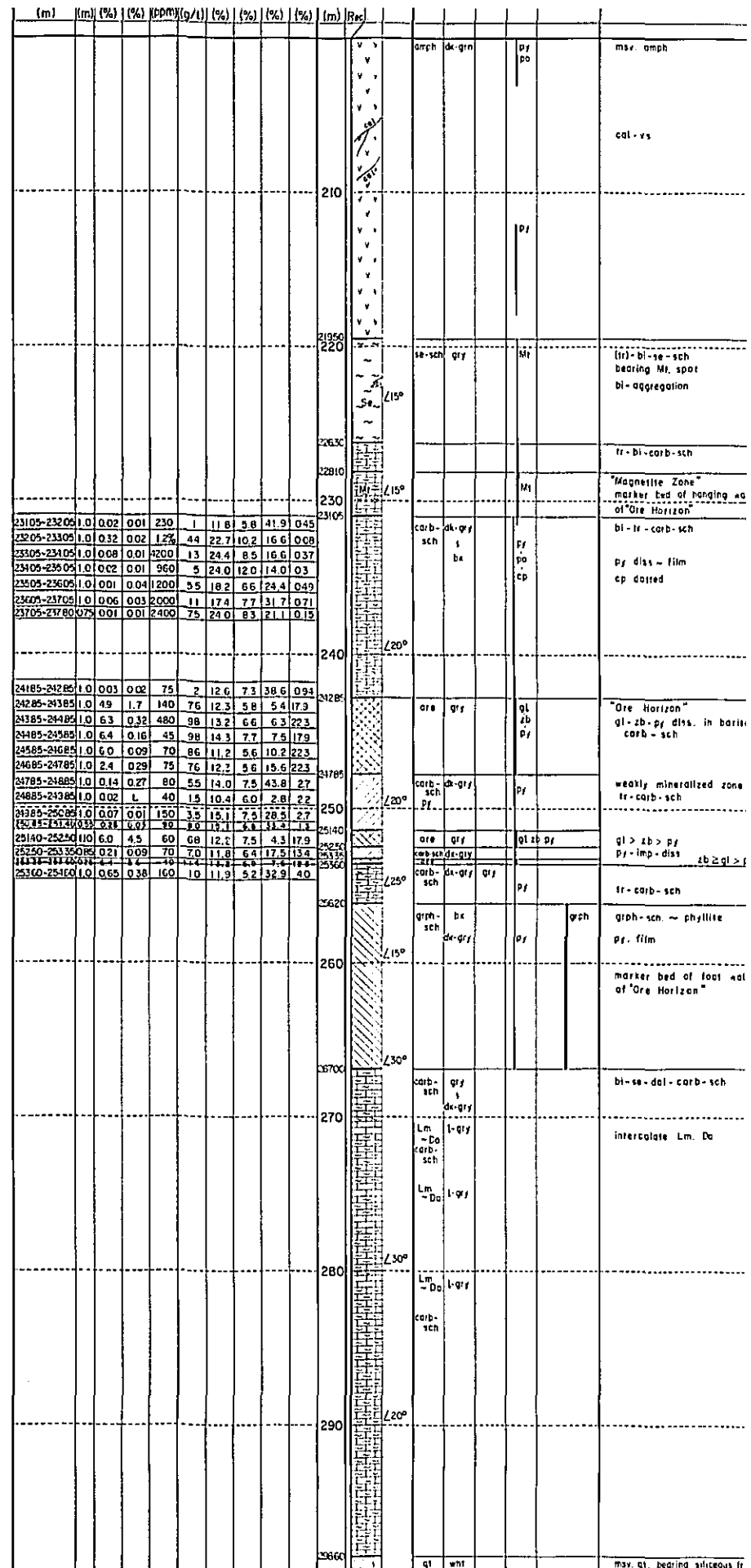
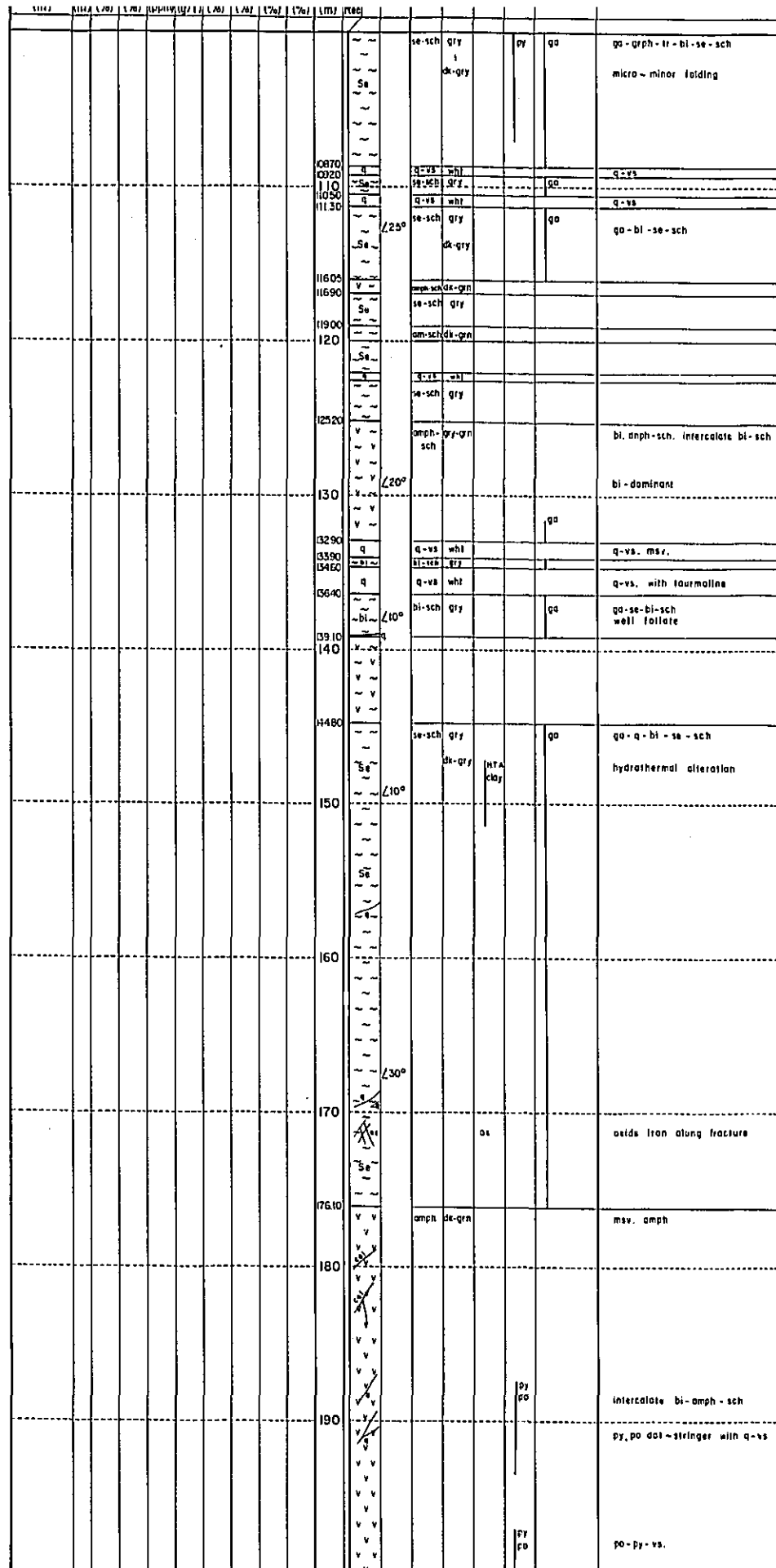
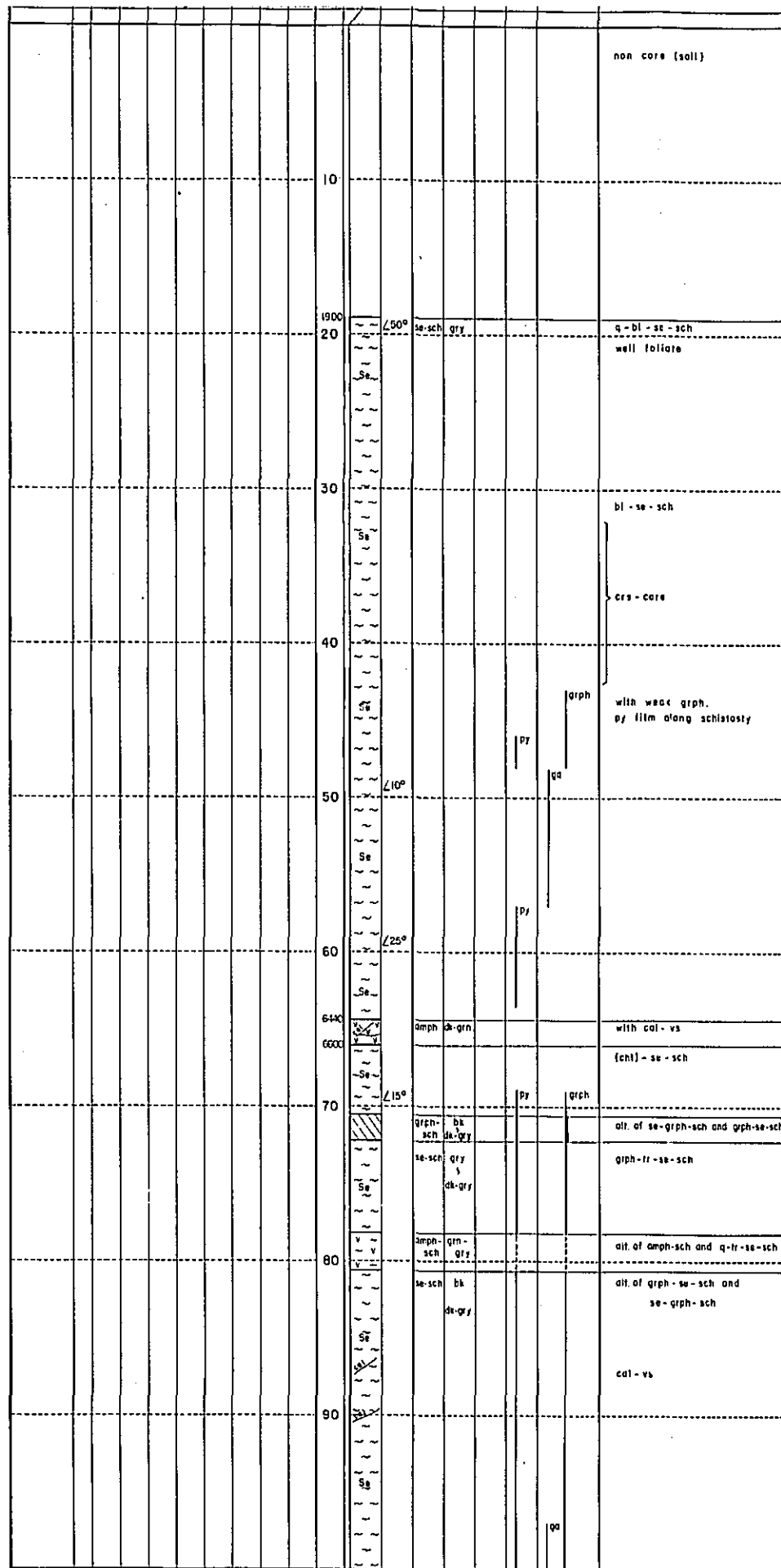
GEOLOGIC DRILL LOG
ANTA GORDA PROJECT

Coordinate N 7251.21 Direction 0°
E 701.49 Inclination -90°
Elevation 592 m Total Depth 330.55 m

Assays										Depth-Symbol		Occurrence				Observations		
Dep. (m)	Leg (m)	Pb (%)	Zn (%)	Cu (ppm)	Ag (g/t)	CaO (%)	MgO (%)	SiO ₂ (%)	BaO (%)	Dep. (m)	Con. Rec.	Str.	Rock	Color	Alt.		Min.	Meta.
										0								non core (soil)
										10								
										20		1900	Se	gr				q-bl-se-sch well foliate
										30								bl-se-sch
										40								crs-core
										50								with weak grph. py film along schistosity
										60								
										64								with cal-vs
										66								(chl)-se-sch
										70								all of se-grph-sch and grph-se-sch
																		grph-tr-se-sch
																		all of amph-sch and q-tr-se-sch
										80								all of grph-se-sch and se-trch-sch

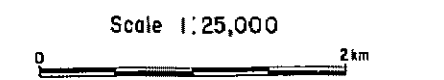
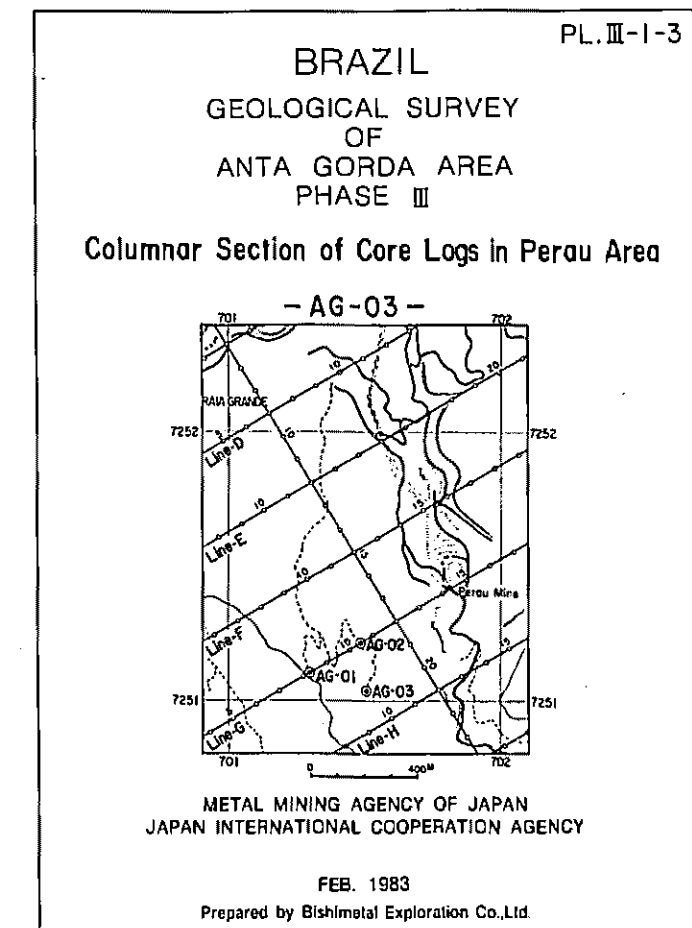
Assays										Depth-Symbol		Occurrence				Observations		
Dep. (m)	Leg (m)	Pb (%)	Zn (%)	Cu (ppm)	Ag (g/t)	CaO (%)	MgO (%)	SiO ₂ (%)	BaO (%)	Dep. (m)	Con. Rec.	Str.	Rock	Color	Alt.		Min.	Meta.
																		ga-grph-tr-bl-se-sch micro-minor folding
										100								q-vs q-vs
										110								q-vs
										113								q-vs
										116								q-bl-se-sch
										119								amph-sch-grn
										120								am-sch-dk-grn
										125								bl-amph-sch. intercalate bl-sch
										130								bl-dominant
										132								q-vs. mbr.
										133								q-vs. with tourmaline
										136								ga-se-bl-sch well foliate
										140								
										148								ga-a-bl-se-sch
										150								hydrothermal alteration
										160								
										170								oxide iron along fracture
										176								msv amph
										180								

Assays										Depth-Symbol		Occurrence				Observation		
Dep. (m)	Leg (m)	Pb (%)	Zn (%)	Cu (ppm)	Ag (g/t)	CaO (%)	MgO (%)	SiO ₂ (%)	BaO (%)	Dep. (m)	Con. Rec.	Str.	Rock	Color	Alt.		Min.	Meta.
																		msv amph
										210								cal-vs
										220								bl-tr-carb-sch
										225								bl-tr-carb-sch
										230								"Magnetite Zone" marker bed of hanging w of Ore Horizon
										231								bl-tr-carb-sch
										232								py diss - film cp dotted
										233								
										234								
										235								
										236								
										237								
										240								
										248								"Ore Horizon" marker bed of hanging w of Ore Horizon
										249								weakly mineralized zone
										250								tr-carb-sch
										251								gl > zb > py py - imp. diss. zb > gl.
										252								
										253								
										254								
										255								
										256								tr-carb-sch
										260								grph-sch ~ phyllite py. film
										262								marker bed of foot w of Ore Horizon
										266								bl-se-dol-carb-sch
										270								intercalate Lm. Do
										276								
										280								



Depth (m)	Assays										Depth (m)	Symbol	Str.	Occurrence					Observations
	Dep. (m)	Lead (%)	Pb (%)	Zn (%)	Cu (%)	Ag (ppm)	CoO (%)	MgO (%)	SiO ₂ (%)	BaO (%)				Dep. (m)	Rock	Color	All.	Min.	
205.00											205.00	grn-sch	wh				grph		
206.00											206.00	Lm Do	wh					msv. Lm - Do. recrystallized	
207.00											207.00	carb-sch	gr					bi-se-carb-sch msv.	
210.00											210.00	Lm	wh						
211.00											211.00	carb-sch	gr					msv. bi-se-carb-sch	
217.00											217.00	Lm	wh						
220.00											220.00	Lm Do	wh						
221.00											221.00	Lm Do	wh					bi-se-carb-sch weak foliate	
230.00											230.00	Lm Do	wh						
240.00											240.00	carb-sch	gr					alt. of bi-carb-sch and Lm, Do	
250.00											250.00	Lm Do	wh						
250.50											250.50							End 250.50	
260.00											260.00								
270.00											270.00								
280.00											280.00								

Depth (m)	Assays										Depth (m)	Symbol	Str.	Occurrence					Observations
	Dep. (m)	Lead (%)	Pb (%)	Zn (%)	Cu (%)	Ag (ppm)	CoO (%)	MgO (%)	SiO ₂ (%)	BaO (%)				Dep. (m)	Rock	Color	All.	Min.	
310.00											310.00								
320.00											320.00								
330.00											330.00								
340.00											340.00								
350.00											350.00								
360.00											360.00								
370.00											370.00								
380.00											380.00								



LEGEND and ABBREVIATION

Rock and Mineral	sericite schist	se-sch	
	biotite schist	bi-sch	
	graphite schist	grph-sch	
	carbonate schist	carb-sch	
	amphibolite	amph	
	amphibole schist	amph-sch	
	limestone/dolomite	Lm/Do	
	quartzite	qt	
	Dre, high grade		
	low grade		
	sericite	se	
	biotite	bi	
	quartz	q	
	calcite	cal	
	tremolite	tr	
	graphite	grph	
	garnet	ga	
Alteration	hydrothermal alteration	H.T.A	
	kaoline	kao	
	clay	clay	
Mineralization	chalcopyrite	cp	
	pyrite	py	
	pyrrhotite	po	
	galena	ga	
	zincblend or sphalerite	zb	
	magnetite	mt	
	oxide mineral	ox	

Dep. (m)	Core Rec	Str.	Rock	Color	All.	Min.	Meta.
900							non core (soil)
1000							
20							py - film along schistosity
2000							crs - core with oxide iron
30							grph - se - sch
3800							
40							grph - se - sch
50							crs - core
60							all. of amph - sch. and q - sch intercalate bi - sch
6000							cal - vs q - tr - vs
70							bi - se - sch co - ga bearing Mt. porphyroblast
80							micro syenite
8100							cal - vs.
8620							q - tr - se - sch.
8720							msv. amph.
8850							q - vs
90							
9510							
9750							msv. amph
9900							

Dep. (m)	Core Rec	Str.	Rock	Color	All.	Min.	Meta.
1000							
110							cal - py - vs.
120							minor folding
130							grph
140							py - film along schistosity py - vs. stringers
1470							msv. amph. intercalate amph - sch. cal - vs
150							
1520							msv. amph.
160							cal - vs
1650							q - cal - vs
170							cal - vs
1760							q - q - se - bi - sch intercalate chert thin layers minor folding.
180							q - bi - se - sch. well foliate
8590							"Magnetite Zone"
8760							py - dominant
190							
9430-9530							"Ore Horizon" gl-zb-py diaz in barite/carb-sch
9530-9620							all. of carb-sch and q-sch (chert ?)
9825							graphite phyllite - sch.

Dep. (m)	Core Rec	Str.	Rock	Color	All.	Min.	Meta.
2000							msv. Lm - Do recrystallized bi - se - carb - sch msv
2100							msv. bi - se - carb - sch
2200							
22100							bi - se - carb - sch well foliate
230							
240							all. of bi - carb - sch and Lr
250							
25050							End 250 50
260							
270							
280							
290							

