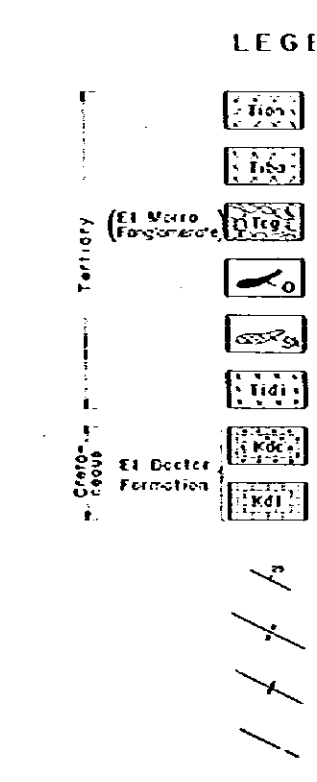
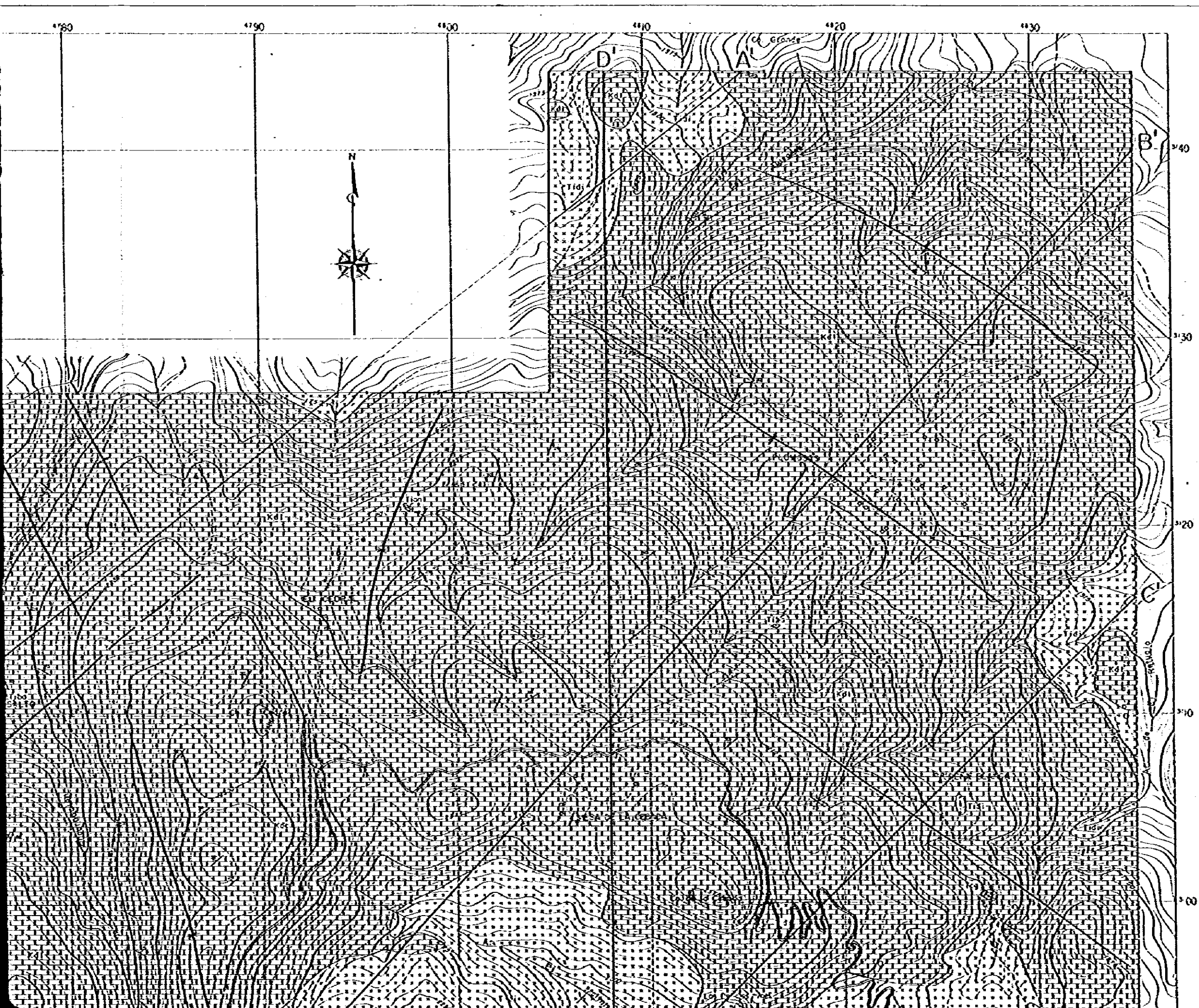


GEOLOGICAL MAP OF THE PACHUCA AREA  
 PHOTOCOPIED FROM THE ORIGINAL  
 GEOLOGICAL MAP OF EL TEJO  
 Scale 1:50,000

JAPAN INTERNATIONAL METAL MINING IN COLLABORATION WITH THE COMMISSION NACIONAL DE RECURSOS MINERALES FEBRUARY 1964

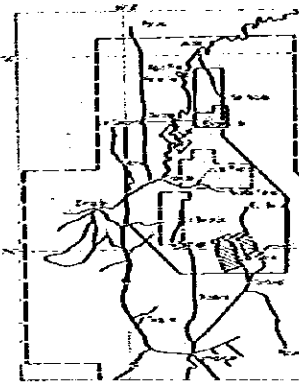




PL 2-2-1

GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIMAPAN AREA  
PHASE III  
GEOLOGICAL MAP OF THE  
EL TEJOCOTE AREA

Scale 1 : 10,000



--- PHASE I survey District

--- PHASE II semi-detailed survey District

--- PHASE II detailed survey area

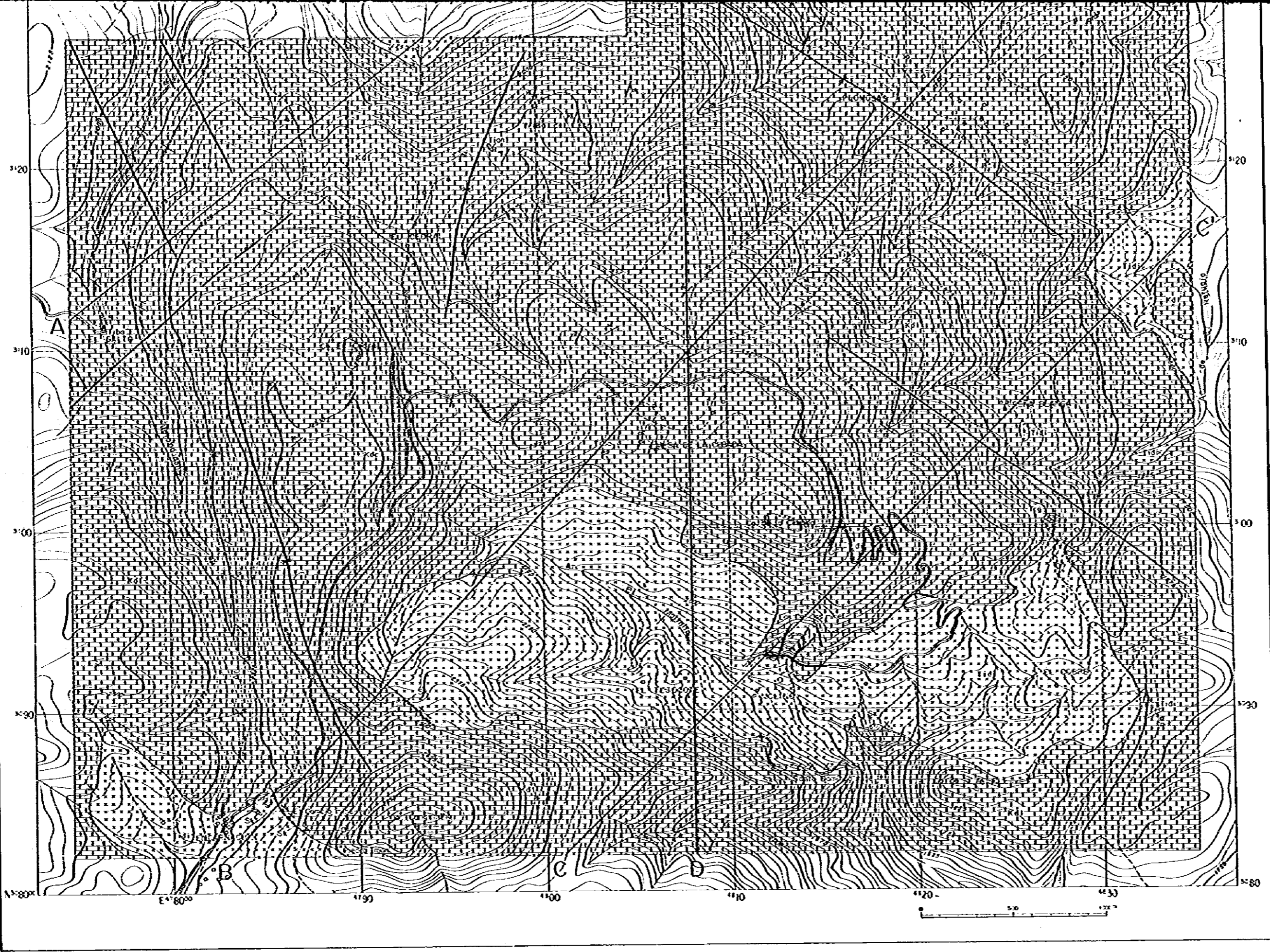
▨ PHASE II detailed survey area

JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982

**LEGEND**

Tertiary		Andesite
		Basalt
		Conglomerate
		Ore outcrop
Cretaceous		Skarn
		Diorite ~ granodiorite
		Calcicudite
		Massive to thick-bedded limestone
		Strike and dip
		Anticlinal axis
		Synclinal axis
		Fault
		Mine and prospect

JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
 IN COLLABORATION WITH  
 CONSEJO DE RECURSOS MINERALES DE MEXICO  
 FEBRUARY 1982



LEGEND

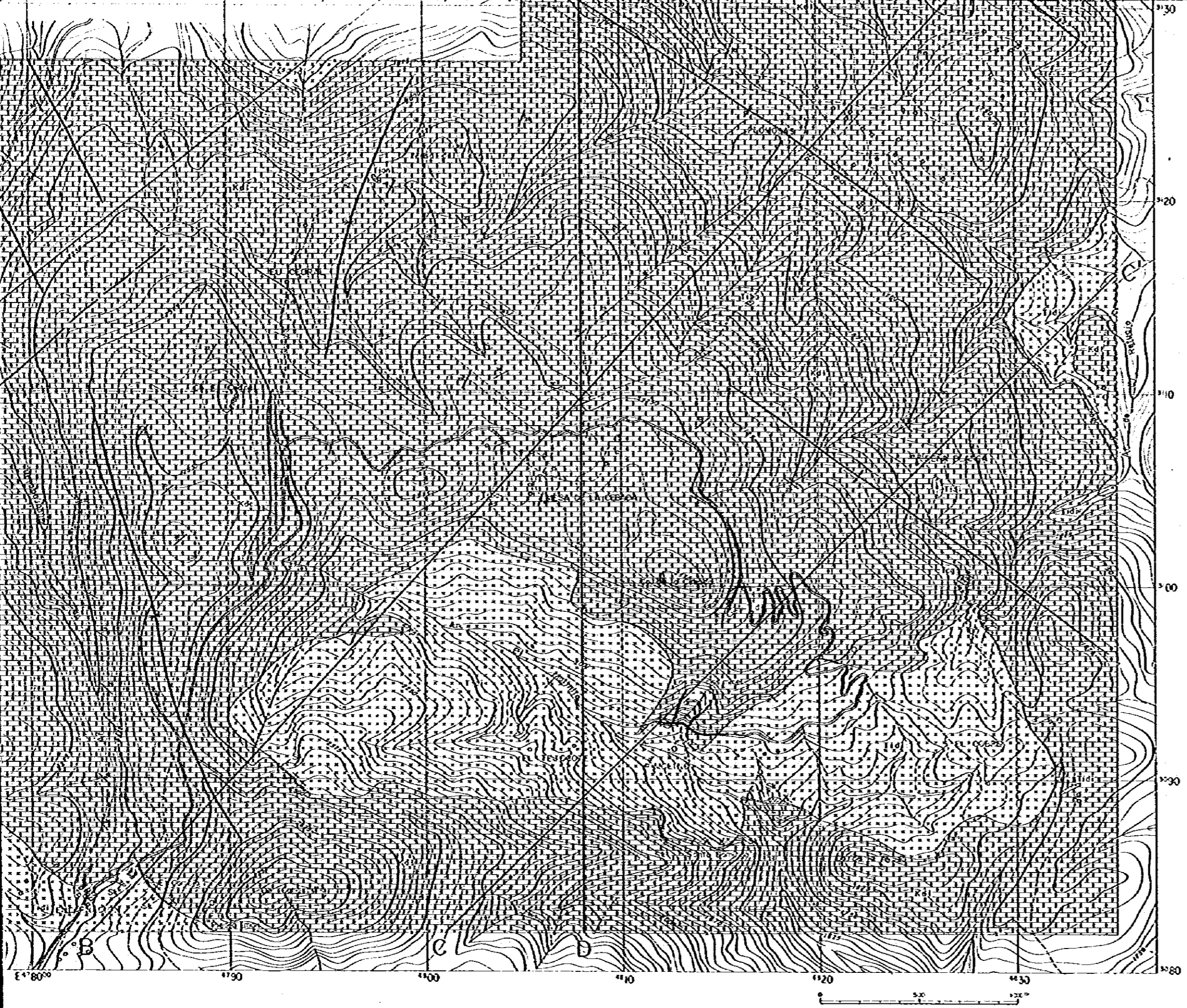
- |                                     |            |      |                            |                 |
|-------------------------------------|------------|------|----------------------------|-----------------|
| Tertiary<br>(El Morro<br>Formation) |            | T100 | Andesite                   |                 |
|                                     |            | T101 | Basalt                     |                 |
|                                     |            | T102 | Conglomerate               |                 |
|                                     |            | O    | Ore outcrop                |                 |
|                                     |            | S    | Skarn                      |                 |
|                                     |            | T105 | Diorite ~ granodiorite     |                 |
|                                     |            | Kdc  | Calcic diorite             |                 |
|                                     |            | Kdt  | Massive to thick limestone |                 |
|                                     | Cretaceous |      |                            | Strike and dip  |
|                                     |            |      |                            | Anticlinal axis |
|                                     |            |      | Synclinal axis             |                 |
|                                     |            |      | Fault                      |                 |
|                                     |            | X    | Mine and prospect          |                 |

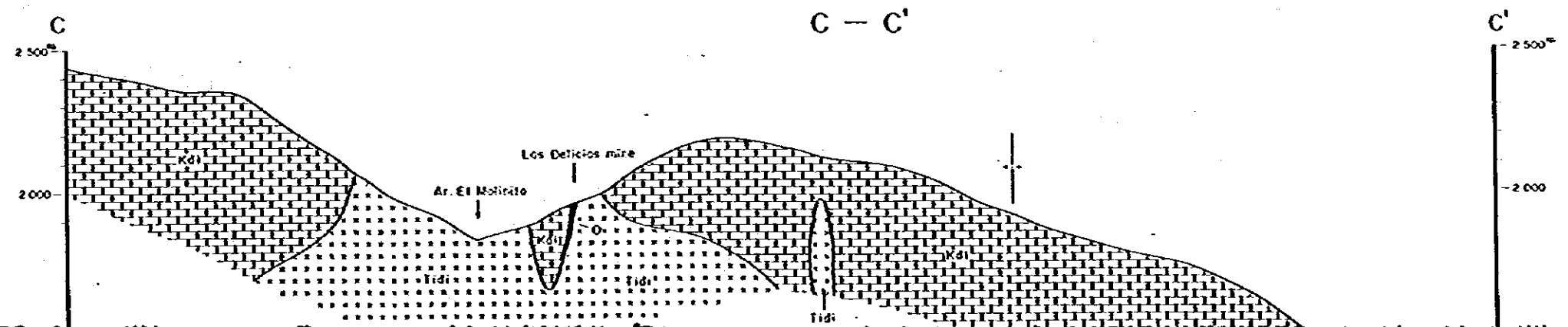
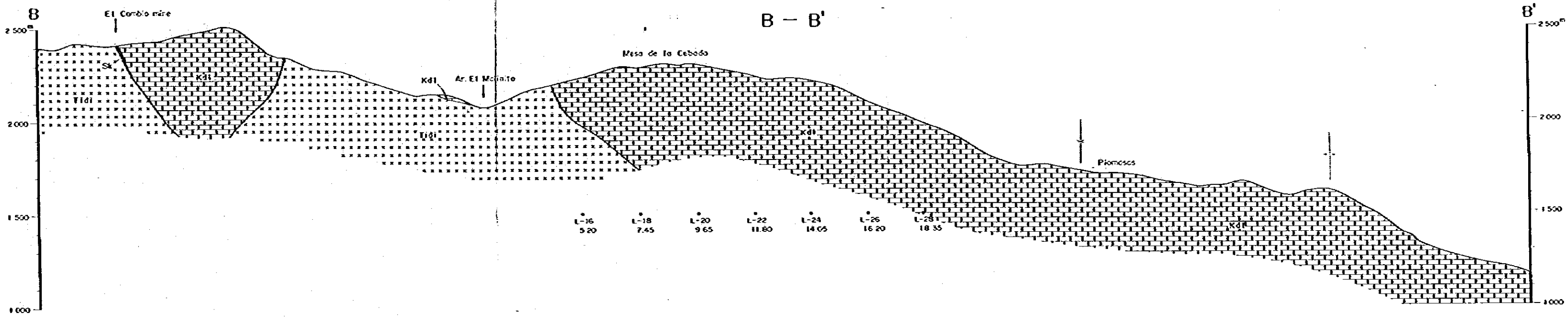
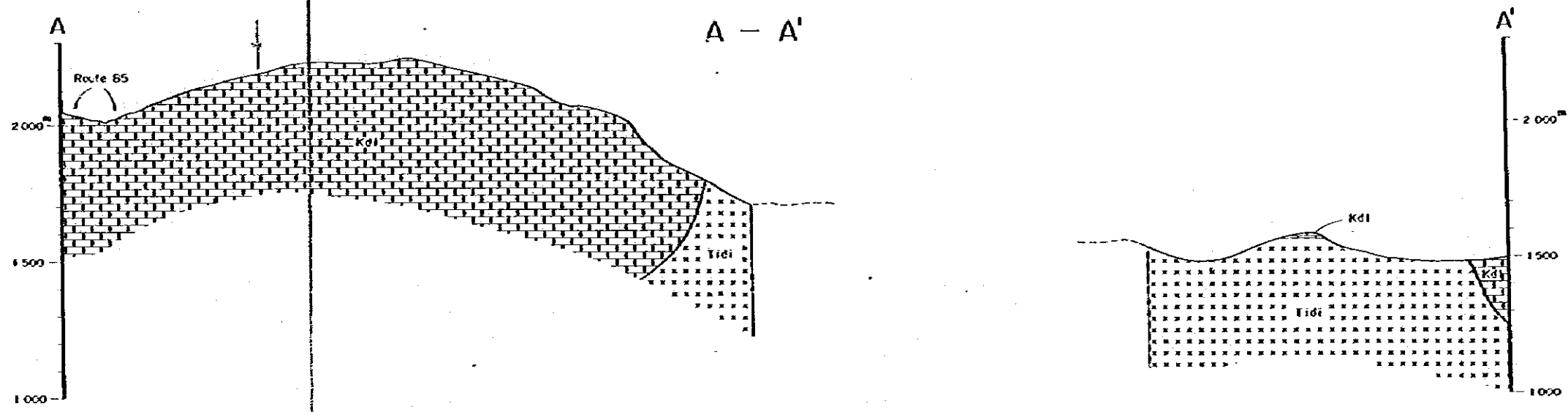


JAPAN INTERNATIONAL COOPERATION AGENCY AND  
 METAL MINING AGENCY OF JAPAN  
 IN COLLABORATION WITH  
 CONSEJO DE RECURSOS MINERALES DE MEXICO  
 FEBRUARY 1962

LEGEND

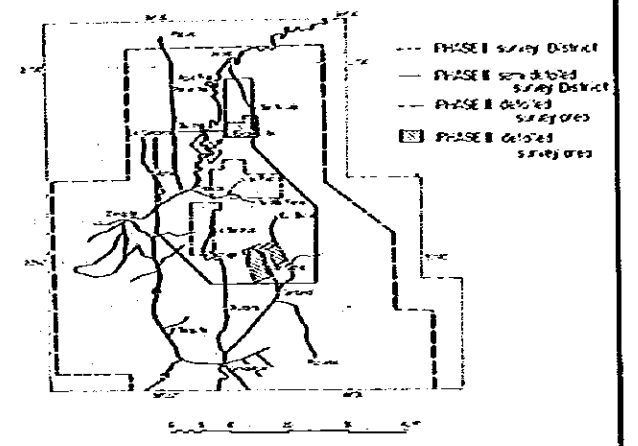
- |            |  |                                   |
|------------|--|-----------------------------------|
| Tertiary   |  | Andesite                          |
|            |  | Basalt                            |
|            |  | Conglomerate                      |
|            |  | Ore outcrop                       |
|            |  | Skarn                             |
| Cretaceous |  | Diorite ~ granodiorite            |
|            |  | Calcirudite                       |
|            |  | Massive to thick-bedded limestone |
|            |  | Strike and dip                    |
|            |  | Anticlinal axis                   |
|            |  | Synclinal axis                    |
|            |  | Fault                             |
|            |  | Mine and prospect                 |





GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIMAPAN AREA  
PHASE III  
GEOLOGICAL PROFILES OF THE  
EL TEJOCOTE AREA

Scale 1 : 10,000

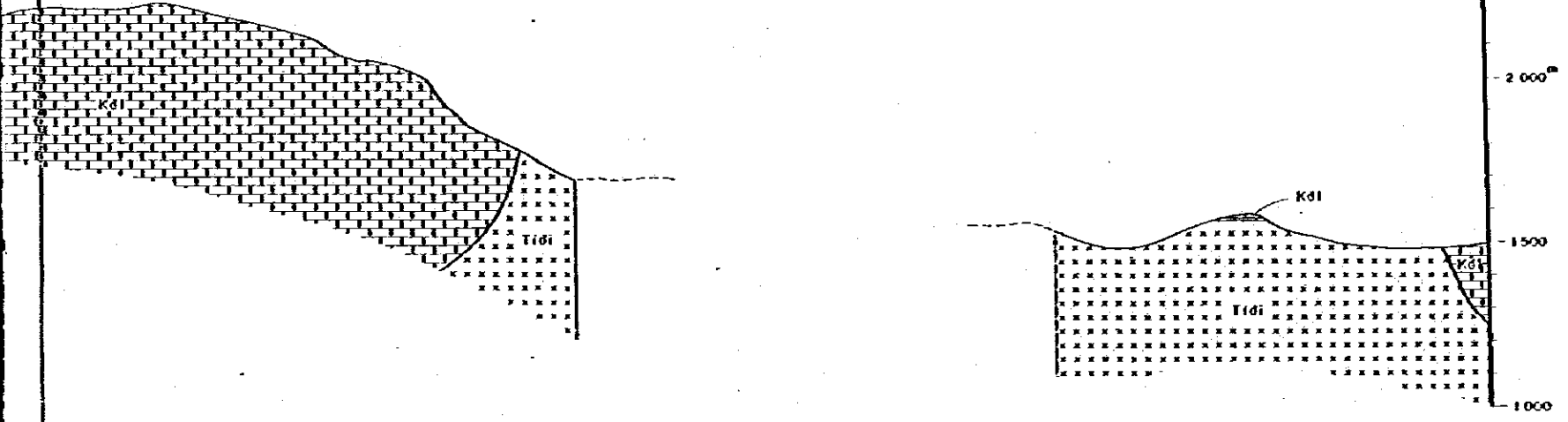


JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982

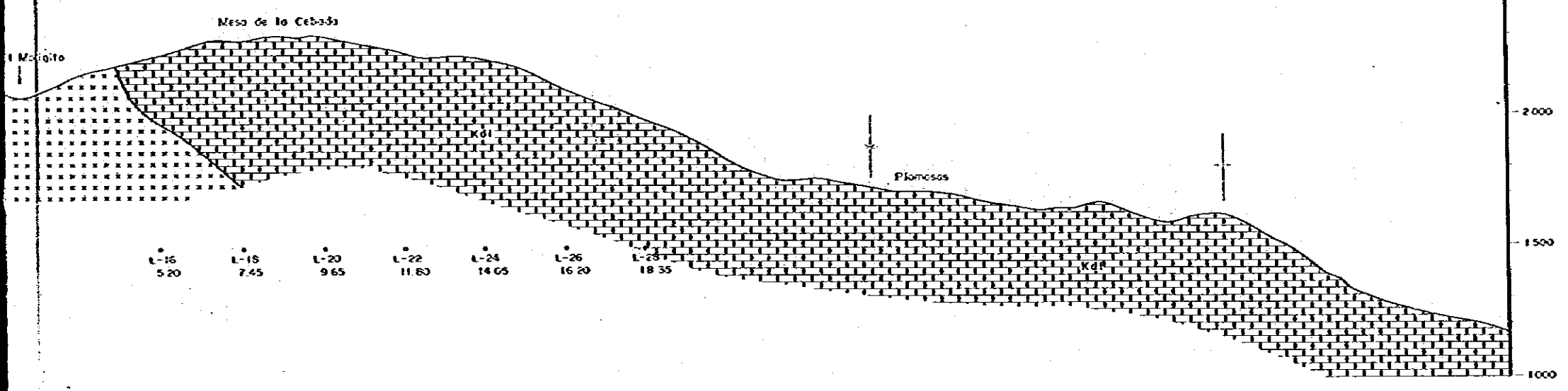
LEGEND

- |                     |  |                                   |
|---------------------|--|-----------------------------------|
| Tertiary            |  | Ore deposit                       |
|                     |  | Stern                             |
| Intrusive rock      |  | Diorite ~ granodiorite            |
| El Dorder Formation |  | Massive to thick-bedded limestone |
|                     |  | Anticlinal axis                   |
|                     |  | Synclinal axis                    |

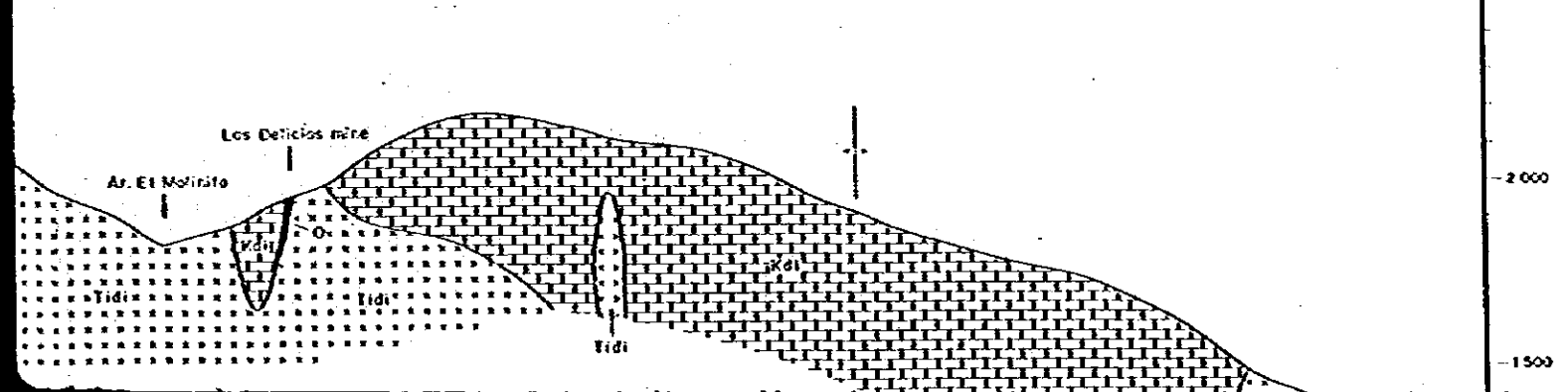
A - A'

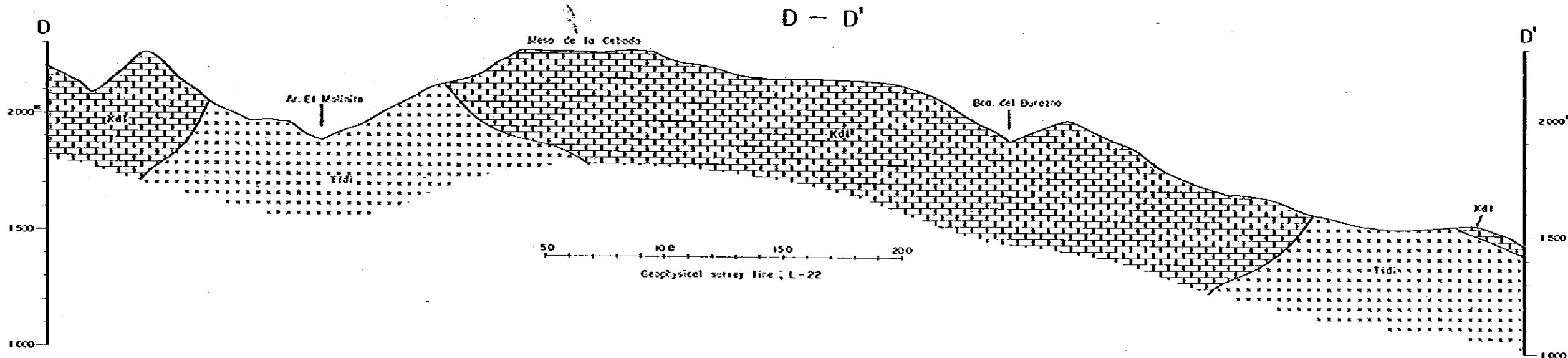
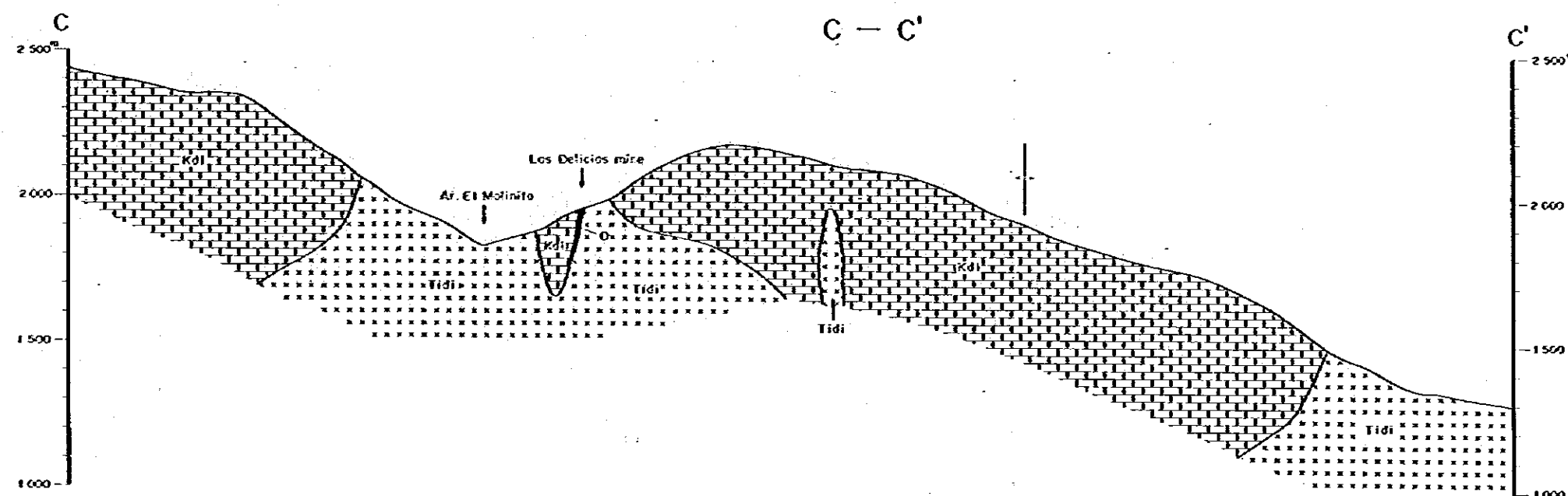
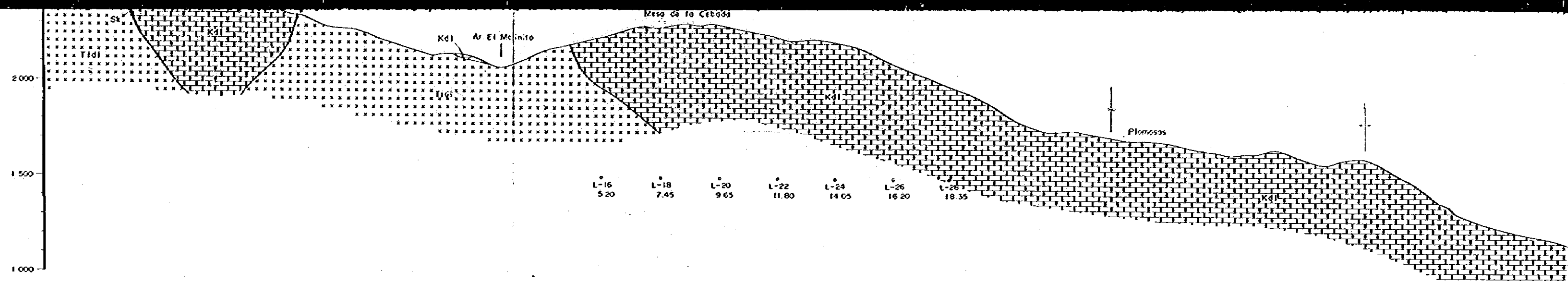


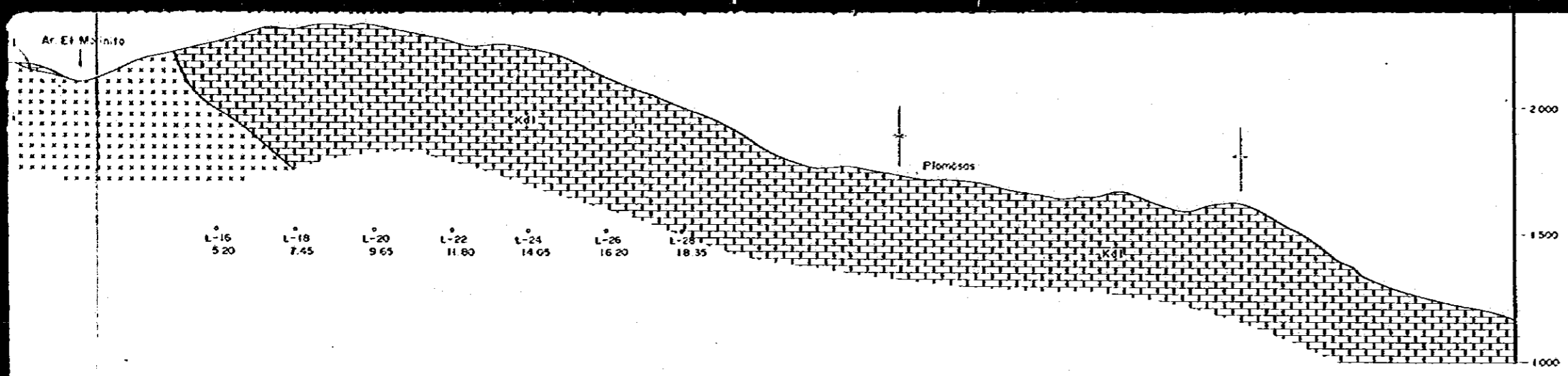
B - B'



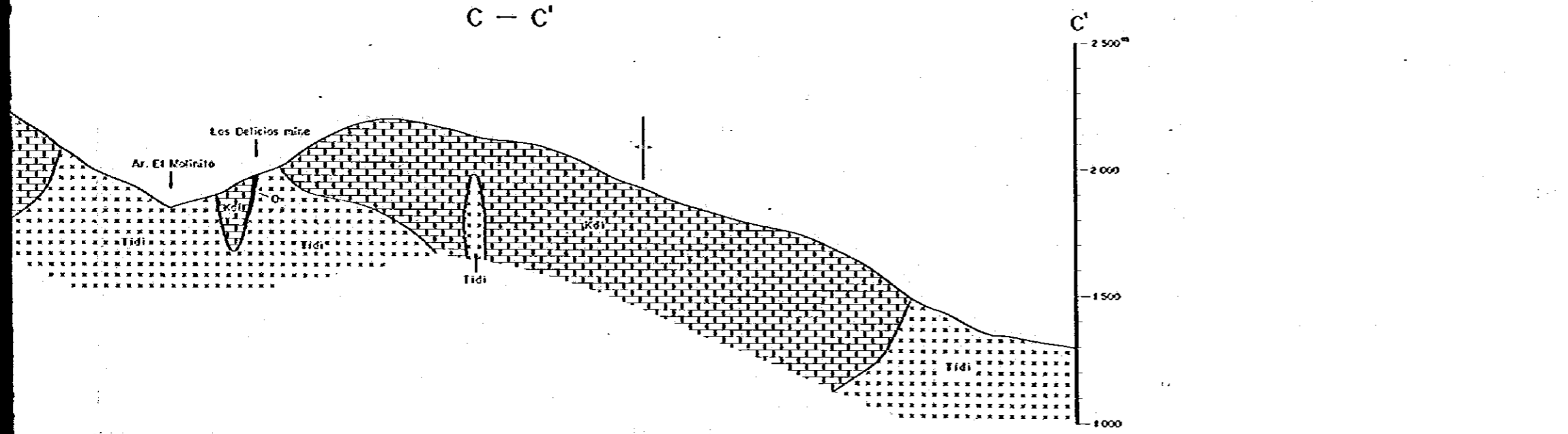
C - C'



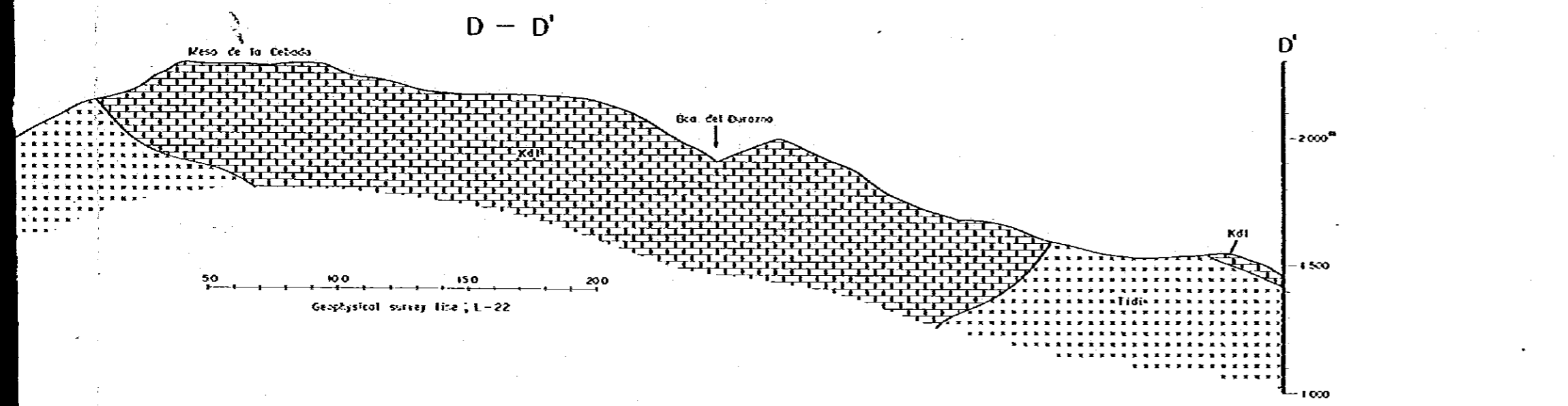




C - C'



D - D'

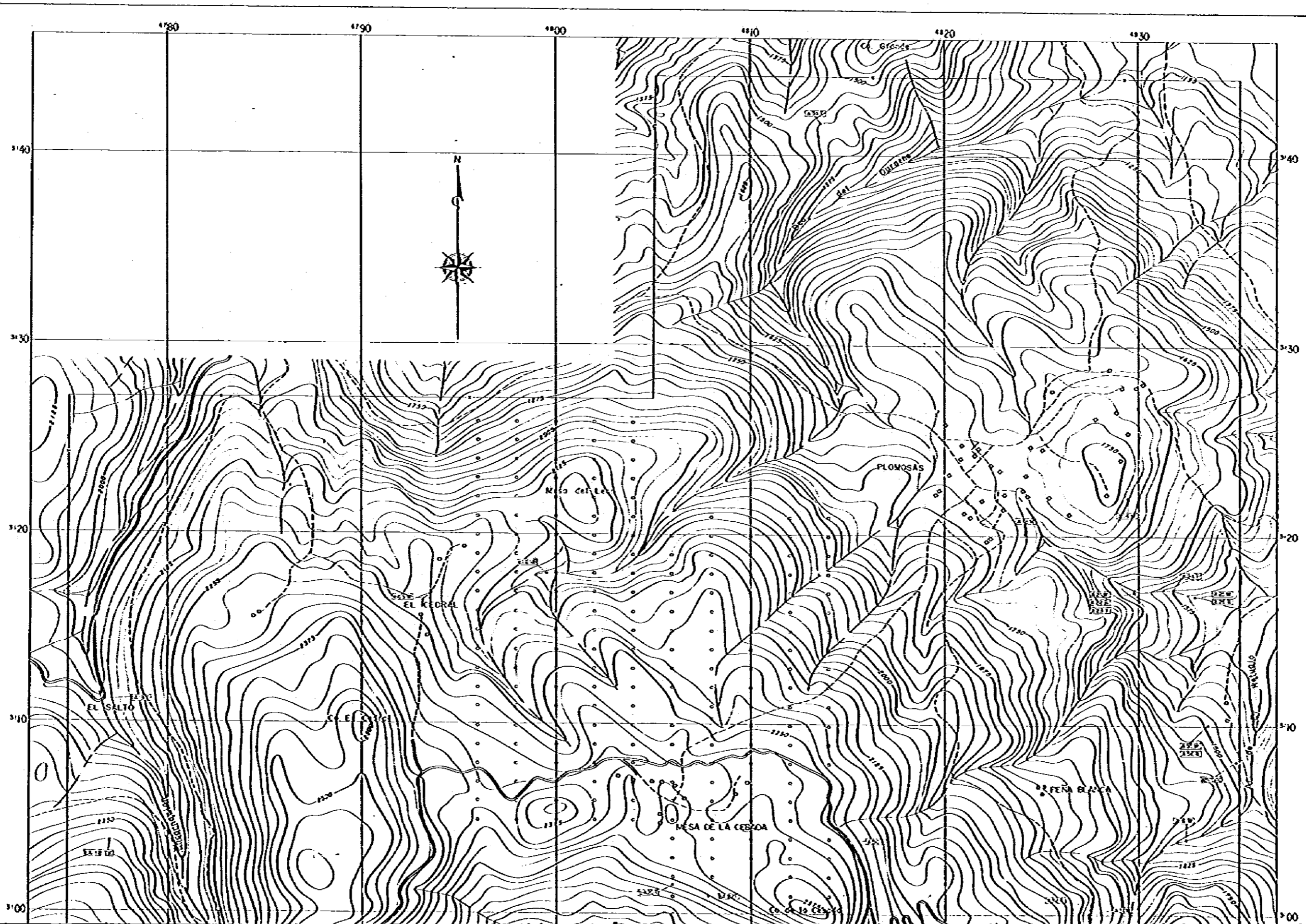


50 100 150 200  
 Geophysical survey line L-22

LEGEND

- |                     |      |                                   |
|---------------------|------|-----------------------------------|
| Tertiary            | O    | Ore deposit                       |
|                     | Sk   | Skarn                             |
| Intrusive rock      | Tidi | Diorite ~ granodiorite            |
| El Doctor Formation | Kdl  | Massive to thick-bedded limestone |
|                     | / \  | Anticlinol axis                   |
|                     | \ /  | Synclinal axis                    |





GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIV  
PHASE I

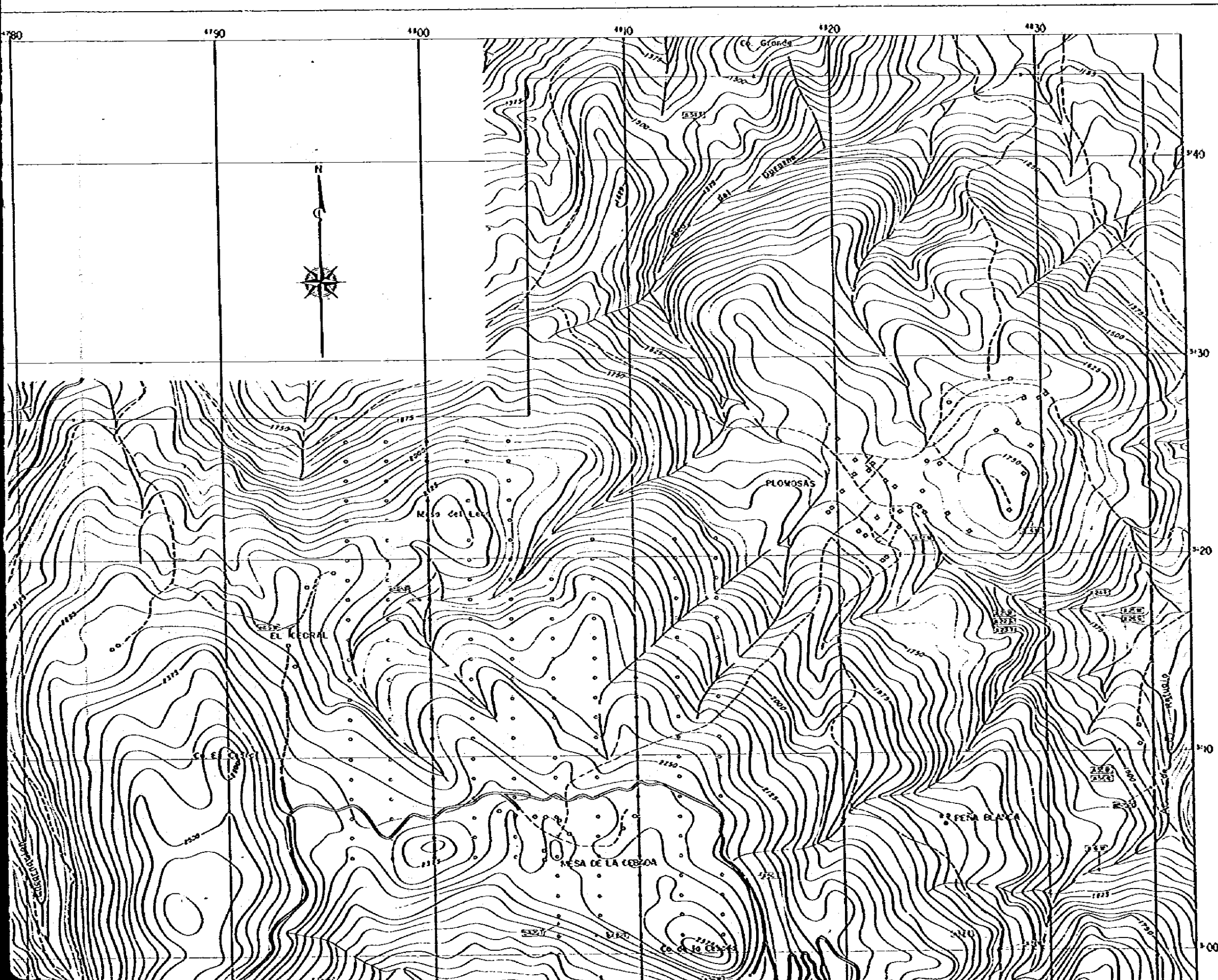
**LOCATION MAP OF THE  
AND ORE SAMPLES FROM  
TEJOCOTE AREA**

Scale 1 : 10,000

JAPAN INTERNATIONAL COOPERATION  
METAL MINING AGENCY  
IN COLLABORATION  
CONSEJO DE RECURSOS MINERALES  
FEBRUARY 1965

**EXPLANATION**

- Suffices mean the type of examination as follows:
- C ; Whole-rock chemical analysis
  - D ; K-Ar whole-rock dating
  - M ; Ore assaying
  - R ; Microscopic observations of polished sections
  - T ; Microscopic observations of thin sections
  - X ; X-ray powder diffraction
- Those samples taken are out of the area:
- A 45V
  - A 47RT
  - A 49V
- } from the Corral Viejo mine, 12 km west of Erasmópolis
- A 66V
  - A 67RT
  - A 68R
  - A 69R
- } from the Alto Encino mine, 5 km north-northeast of Pachuca

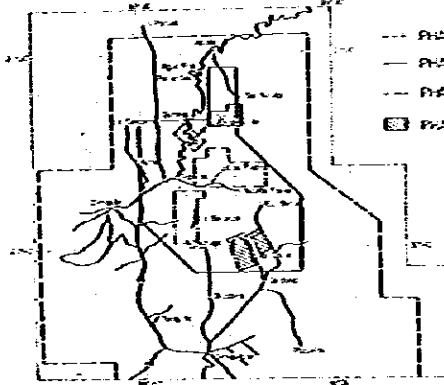


PL 2-2-3

GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIMAPAN AREA  
PHASE III

**LOCATION MAP OF THE EXAMINED ROCK  
AND ORE SAMPLES FROM THE EL  
TEJOCOTE AREA**

Scale 1 : 10,000



--- PHASE I survey District

--- PHASE II survey District

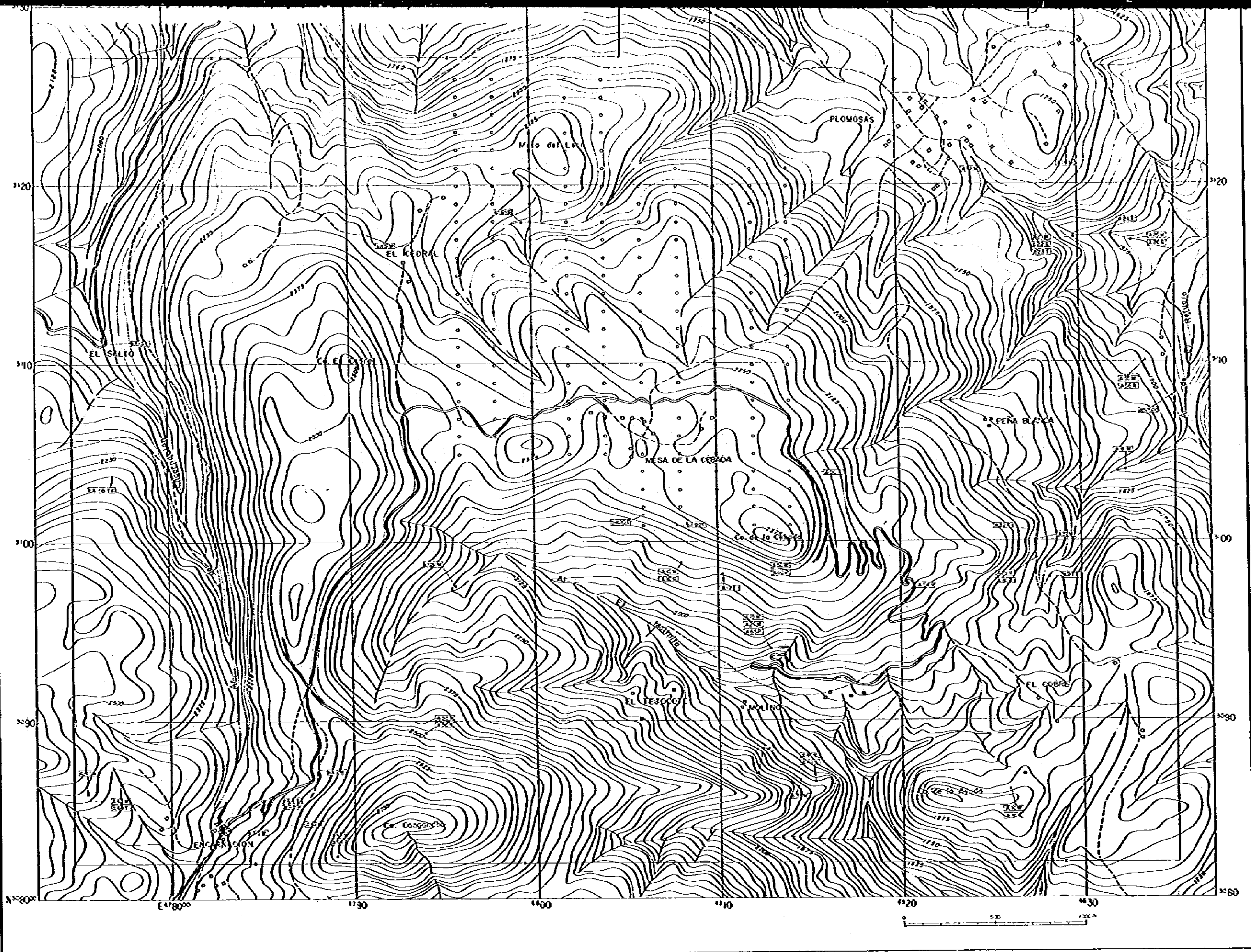
--- PHASE III detailed survey area

■ PHASE III detailed survey area

JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982

**EXPLANATION**

- Suffices mean the type of examination as follows:
- C ; Whole-rock chemical analysis
  - D ; K-Ar whole-rock dating
  - V ; Ore assaying
  - R ; Microscopic observations of polished section
  - T ; Microscopic observations of thin section
  - X ; X-ray powder diffraction
- These samples below are cut of the area mapped:
- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>A 45V</li> <li>A 48T</li> <li>A 49V</li> </ul>                | } from the Corda Vieja mine, 12km west of Encarnacion              |
| <ul style="list-style-type: none"> <li>A 66M</li> <li>A 67T</li> <li>A 68R</li> <li>A 69R</li> </ul> | } from the Nuevo Encino Prieta mine, 5km north-northeast of Pლოსas |

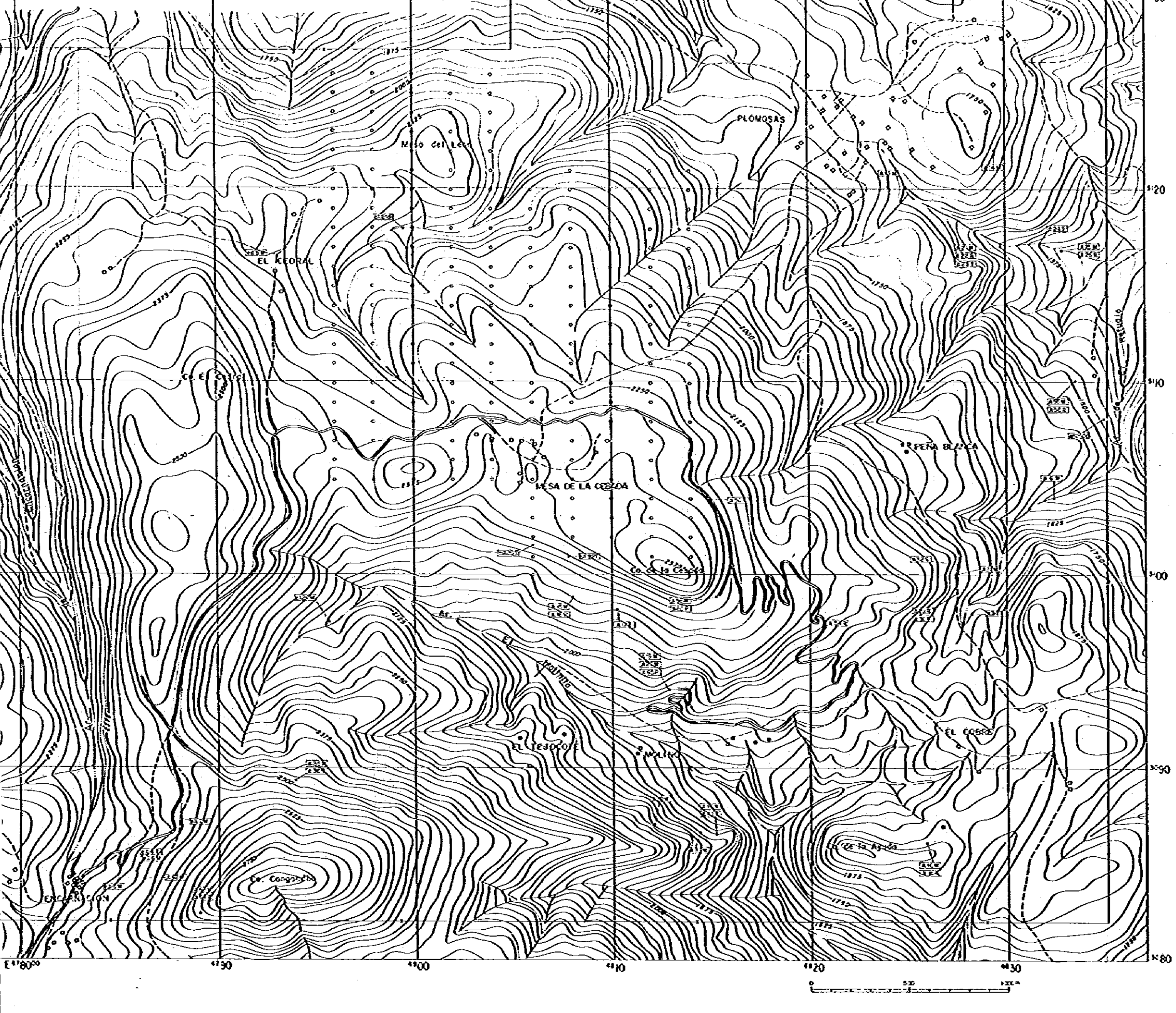


**EXPLANATION**

Suffices mean the type of examination as follows:  
 C ; Whole-rock chemical analysis  
 D ; K-Ar whole-rock dating  
 M ; Ore assaying  
 R ; Microscopic observations of polished  
 T ; Microscopic observations of thin se  
 X ; X-ray powder diffraction

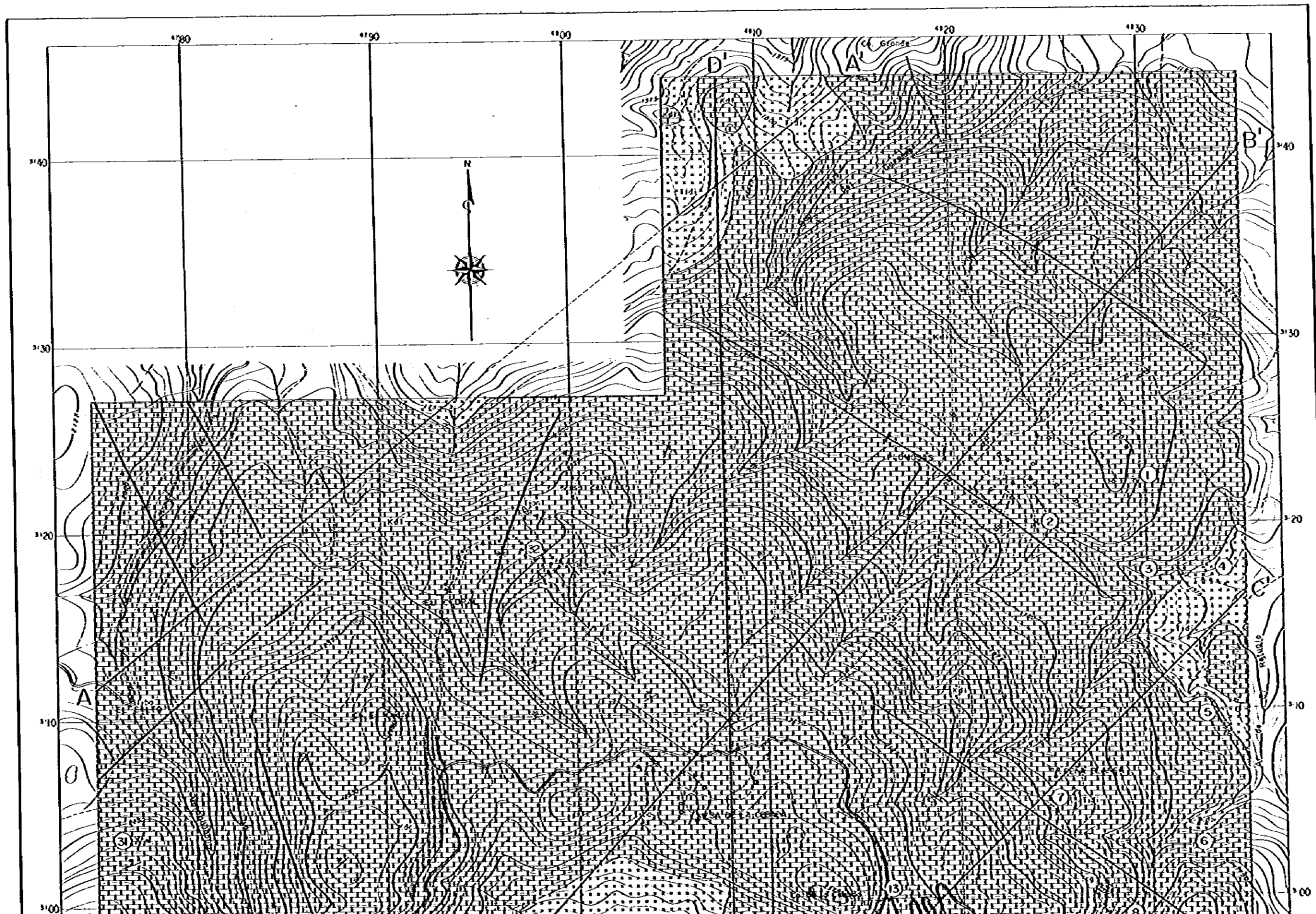
Those samples taken are out of the area map:  
 A 45M }  
 A 47RT } from the Corral Viejo mine, 12km  
 A 49V } west of Encarnacion  
 A 66M }  
 A 67RT } from the Nueva Espera Prieta m r  
 A 68R } 5 km north-northeast of Plomosas  
 A 69R }

JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982



### EXPLANATION

- Suffixes mean the type of examination as follows:
- C ; Whole-rock chemical analysis
  - D ; K-Ar whole-rock dating
  - M ; Ore assaying
  - R ; Microscopic observations of polished section
  - T ; Microscopic observations of thin section
  - X ; X-ray powder diffraction
- Those samples below are out of the area mapped:
- A 46M
  - A 47RT
  - A 49M
- } from the Corral Viejo mine, 12km west of Encarnacion
- A 66M
  - A 67RT
  - A 68R
  - A 69R
- } from the Nueva Encino Prieto mine, 5km north-northeast of Plomosas



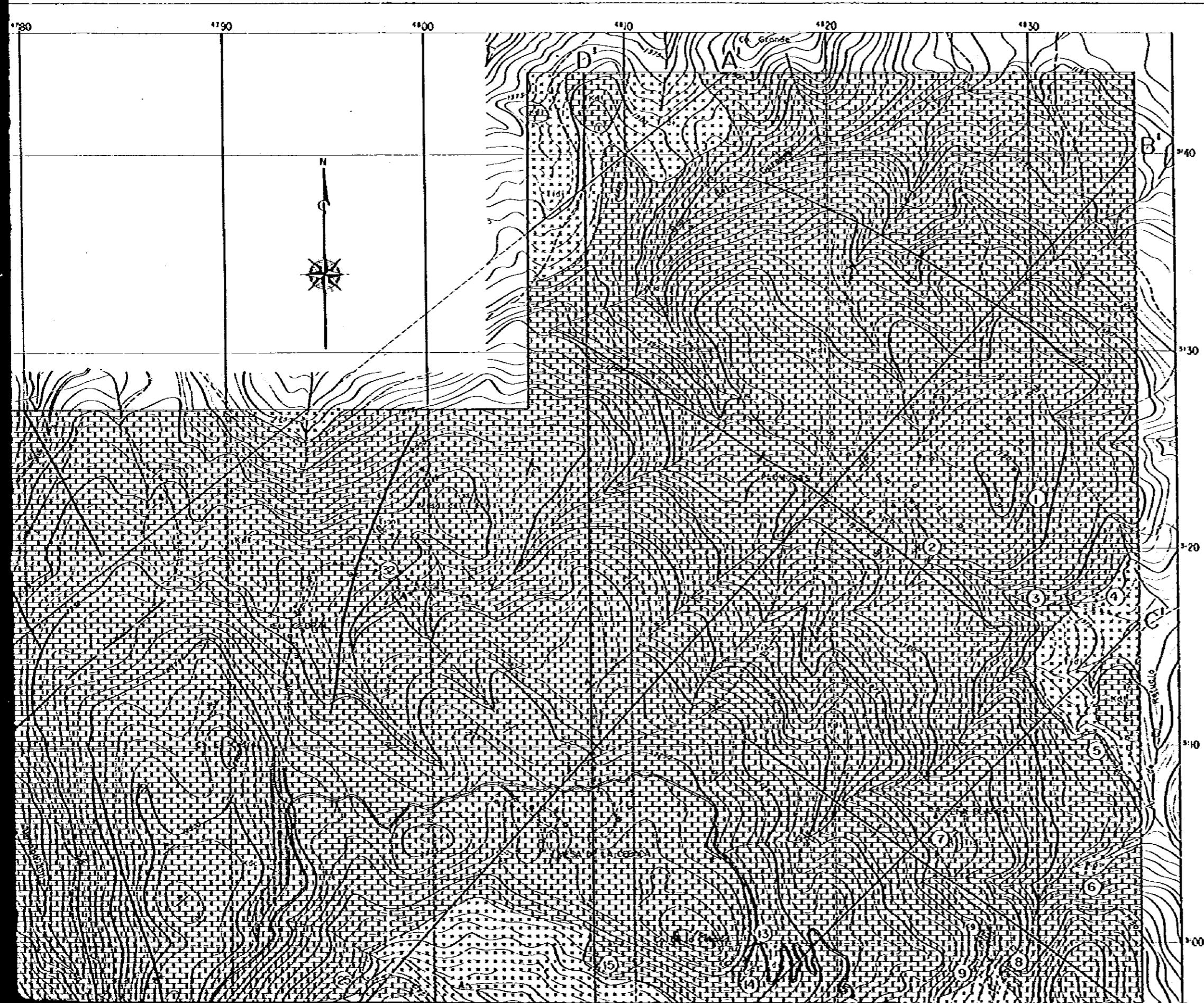
GEOLOGIC  
 THE PACHUCA  
 PH  
 LOCATION  
 MINES, PROSPECT  
 IN THE EL  
 Scale 1



JAPAN INTERNATIONAL  
 METAL MINING  
 BY COLLABORATION  
 CONSEJO DE RECURSOS  
 FEDERALES

LEGEND

- Territory (El Morro, Fongomere)
- El Doctor Formation
- Creos
- Tián
- Tibo
- Tico
- Tidi
- Koc
- Mol



PL 2-2-4

GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIMAPAN AREA  
PHASE III  
LOCATION MAP OF THE  
MINES, PROSPECTS AND ORE SHOWINGS  
IN THE EL TEJOCOTE AREA

Scale 1 : 10,000

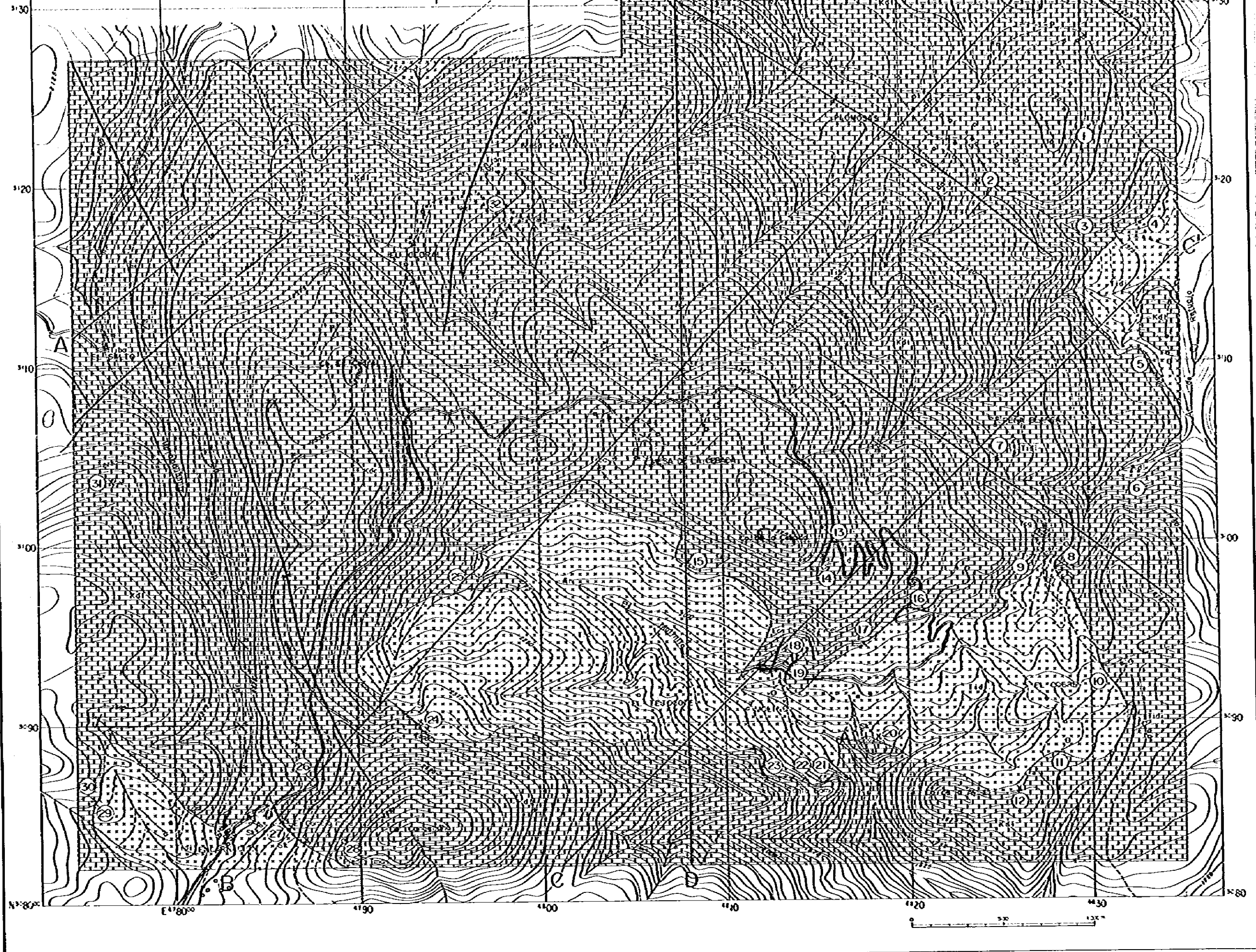
JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982

**LEGEND**

Territory (El Mero Fanglomerado)		Andesite	
		Basalt	
		Conglomerate	
		Ore outcrop	
		Sand	
		Diorite ~ granodiorite	
	El Doctor Formation		Calcirudite
			Massive to thick-bedded limestone
	Geo- r. Geos		Strike and dip
			Anticline axis
		Syncline axis	
		Fault	
		Mine and prospect	



JAPAN INTERNATIONAL COOPERATION AGENCY  
 METAL MINING AGENCY OF JAPAN  
 IN COLLABORATION WITH  
 CONSEJO DE RECURSOS MINERALES DE MEXICO  
 FEBRUARY 1982



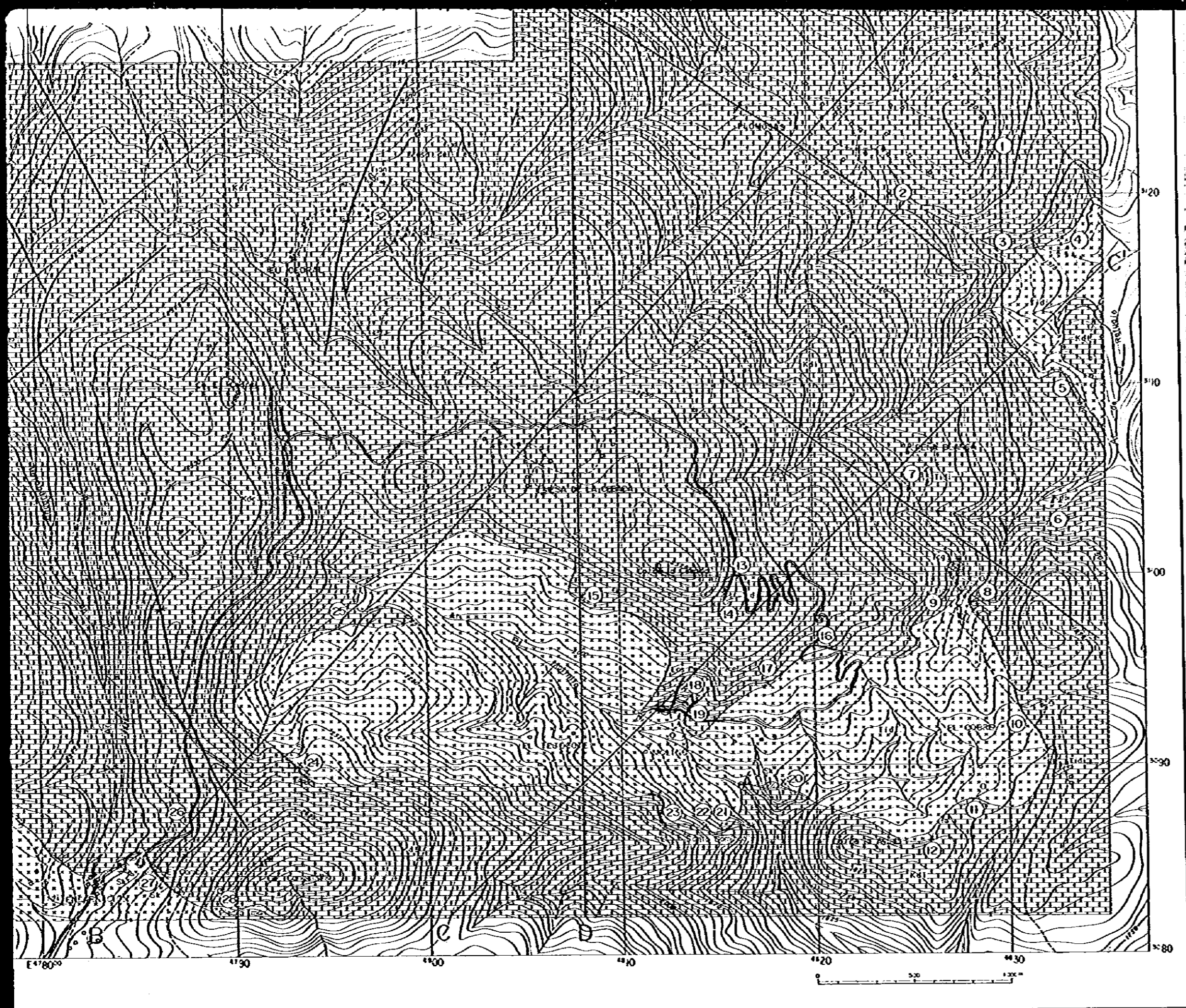
**LEGEND**

- Andesite
- Basalt
- Conglomerate
- Ore outcrop
- Skorn
- Diorite ~ granodiorite
- Calcirudite
- Massive to thick limestone
- Strike and dip
- Anticlinal axis
- Synclinal axis
- Fault
- Mine and prospect
- Ore floats

No.	Name of mine	Metals	No.	Name of mine
1	Prospect	Pb, Zn	17	Prospect
2	Prospect	Pb, Zn	18	Los Delos
3	Outcrop	(Trace)	19	Outcrop
4	(Floats)	Fe, Cu	20	Prospect
5	Outcrop	Fe, Cu	21	Santa Co
6	(Floats)	(Trace)	22	Santa Co
7	(Floats)	(Trace)	23	Outcrop
8	Outcrop	(Trace)	24	Outcrop
9	Outcrop	Fe	25	Prospect
10	Outcrop	Fe	26	Outcrop
11	Outcrop	Fe	27	El Camb
12	Prospect	Fe, Cu	28	Piedra I
13	Outcrop	Fe	29	Prospect
14	Nameless mine	Fe, Cu	30	Nameless
15	Prospect	Fe, Cu	31	Prospect
16	Outcrop	Fe	32	(Floats)



JAPAN INTERNATIONAL COOPERATION AGENCY AND  
 METAL MINING AGENCY OF JAPAN  
 IN COLLABORATION WITH  
 CONSEJO DE RECURSOS MINERALES DE MEXICO  
 FEBRUARY 1982

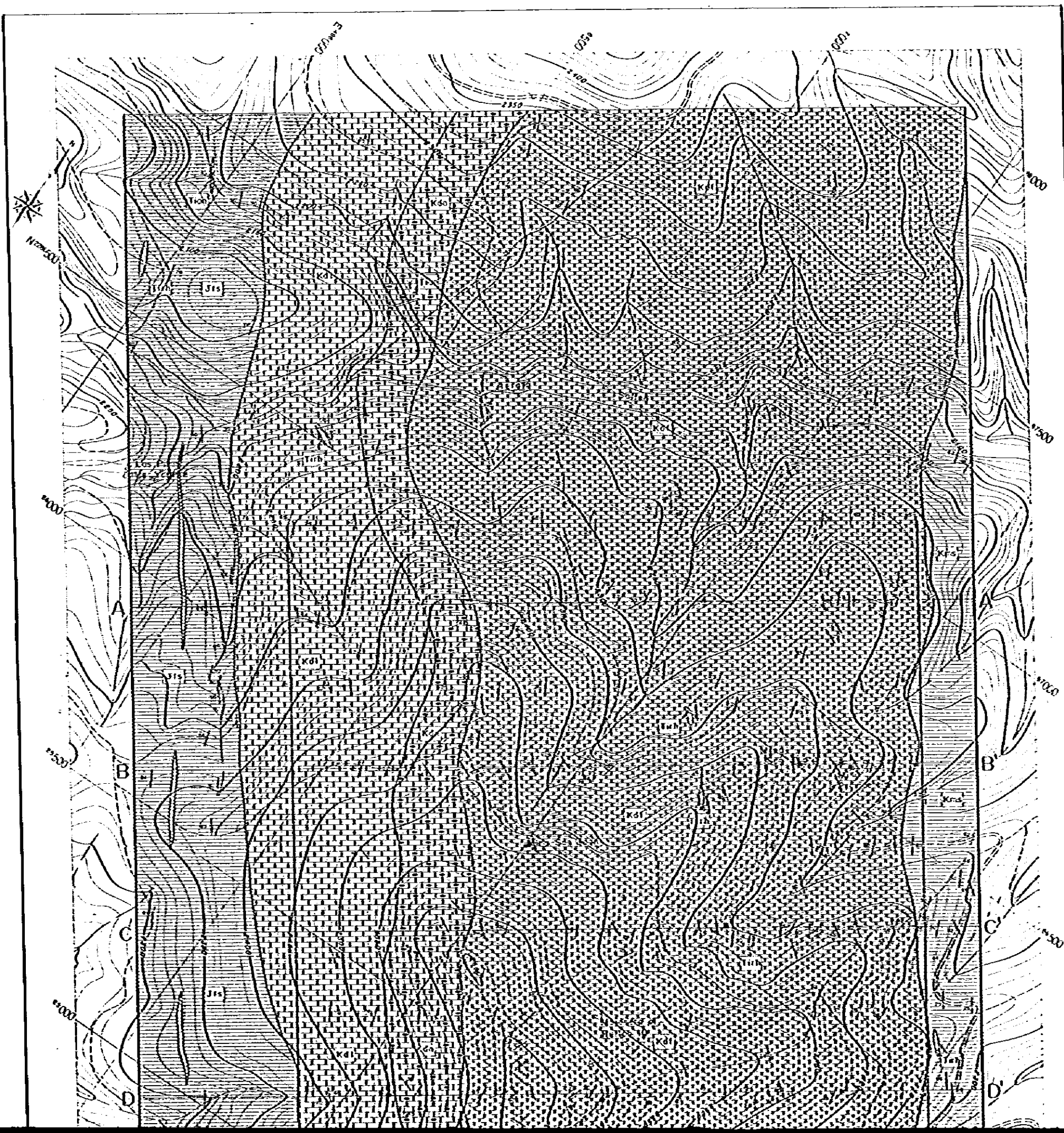


LEGEND

- Andesite
- Basalt
- Conglomerate
- Ore outcrop
- Skarn
- Diorite ~ granodiorite
- Colcirudite
- Massive to thick-bedded limestone
- Strike and dip
- Anticlinal axis
- Synclinal axis
- Fault
- Wire and prospect
- Ore floats

No	Name of mine	Metals	No	Name of mine	Metals
1	Prospect	Fe, Zn	17	Prospect	(Cu)
2	Prospect	Fe, Zn	18	Las Delicias	Fe, Cu
3	Outcrop	(Trace)	19	Outcrop	Fe, Cu
4	(floats)	Fe, Cu	20	Prospect	(Trace)
5	Outcrop	Fe, Cu	21	Santo Domingo	Cu
6	(floats)	(Trace)	22	Santo Domingo	Cu, Pb, Zn
7	(floats)	(Trace)	23	Outcrop	(Trace)
8	Outcrop	(Trace)	24	Outcrop	(Trace)
9	Outcrop	Fe	25	Prospect	(Cu)
10	Outcrop	Fe	26	Outcrop	(Trace)
11	Outcrop	Fe	27	El Cambio	Fe, Cu
12	Prospect	Fe, Cu	28	"Piedra Inca"	Fe, Cu
13	Outcrop	Fe	29	Prospect	(Pb, Zn)
14	Nonmetallic mine	Fe, Cu	30	Nonmetallic mine	(Cu)
15	Prospect	Fe, Cu	31	Prospect	Co
16	Outcrop	Fe	32	(floats)	Fe



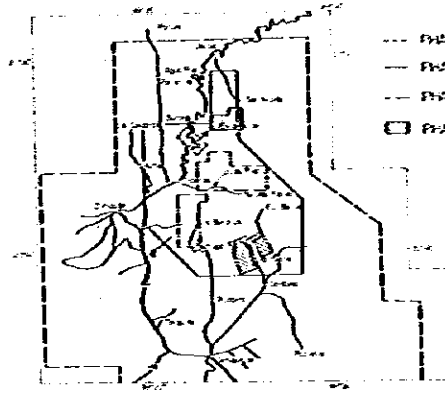


PL 2-3-1

GEOLOGICAL SURVEY  
OF  
THE PACHUCA - ZIMAPAN AREA  
PHASE III

**GEOLOGICAL MAP OF THE  
PROVIDENCIA AREA**

Scale 1 : 5,000



--- PHASE I study District

--- PHASE II study District

--- PHASE III study District

□ PHASE III detailed study area

JAPAN INTERNATIONAL COOPERATION AGENCY AND  
METAL MINING AGENCY OF JAPAN  
IN COLLABORATION WITH  
CONSEJO DE RECURSOS MINERALES DE MEXICO  
FEBRUARY 1982

**LEGEND**

			Intrusive rocks								
Lower Cretaceous	Mendez Formation	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; border: 1px solid black; text-align: center;">Krs</td> <td style="font-size: x-small;">Shale intercalated with siltstone and marl</td> <td style="width: 30px; border: 1px solid black; text-align: center;">Jrn</td> <td style="font-size: x-small;">Rhyolite</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">Kd1</td> <td style="font-size: x-small;">Alternation of limestone and black flint band</td> <td style="border: 1px solid black; text-align: center;">J2s</td> <td style="font-size: x-small;">Andesite</td> </tr> </table>	Krs	Shale intercalated with siltstone and marl	Jrn	Rhyolite	Kd1	Alternation of limestone and black flint band	J2s	Andesite	
Krs	Shale intercalated with siltstone and marl	Jrn	Rhyolite								
Kd1	Alternation of limestone and black flint band	J2s	Andesite								
Upper Jurassic-Lower Cretaceous	El Doctor Formation	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; border: 1px solid black; text-align: center;">Kd1</td> <td style="font-size: x-small;">Limestone with black flint nodules</td> <td></td> <td></td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">Krs</td> <td style="font-size: x-small;">Massive limestone</td> <td></td> <td></td> </tr> </table>	Kd1	Limestone with black flint nodules			Krs	Massive limestone			
Kd1	Limestone with black flint nodules										
Krs	Massive limestone										
Lower Cretaceous	Los Trancos Formation	<table border="0" style="width: 100%;"> <tr> <td style="width: 30px; border: 1px solid black; text-align: center;">J1s</td> <td style="font-size: x-small;">Calcareous shale</td> <td></td> <td></td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">J2s</td> <td style="font-size: x-small;">Alternation of shale, calcareous shale, marl and muddy limestone</td> <td></td> <td></td> </tr> </table>	J1s	Calcareous shale			J2s	Alternation of shale, calcareous shale, marl and muddy limestone			
J1s	Calcareous shale										
J2s	Alternation of shale, calcareous shale, marl and muddy limestone										
		<table border="0" style="width: 100%;"> <tr> <td style="width: 20px; border-bottom: 1px solid black;"></td> <td style="font-size: x-small;">Bedding</td> </tr> <tr> <td style="width: 20px; border-bottom: 1px dashed black;"></td> <td style="font-size: x-small;">Joint</td> </tr> </table>		Bedding		Joint					
	Bedding										
	Joint										



JAPAN INTERNATIONAL COOPERATION AGENCY AND  
 METAL MINING AGENCY OF JAPAN  
 IN COLLABORATION WITH  
 CONSEJO DE RECURSOS MINERALES DE MEXICO  
 FEBRUARY 1982

**LEGEND**

			<b>Intrusive rocks</b>
Lower Cretaceous	Mendez Formation	Kms	Rhyolite
		Shale intercalated with siltstone and marl	Andesite
Upper Cretaceous	El Doctor Formation	Kdl	
		Alternation of limestone and block flint band	
Lower-Upper Cretaceous		Kdl	
		Limestone with block flint nodules	
Lower Cretaceous		Jms	
		Massive limestone	
Upper Cretaceous	Los Trancos Formation	Jts	
		Calcareous shale, calcareous shale, marl and muddy limestone	
		a/	Bedding
		j/	Joint

