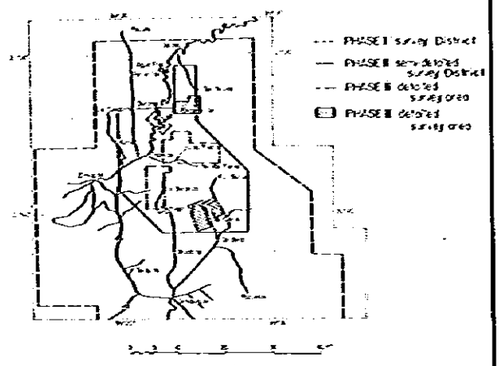
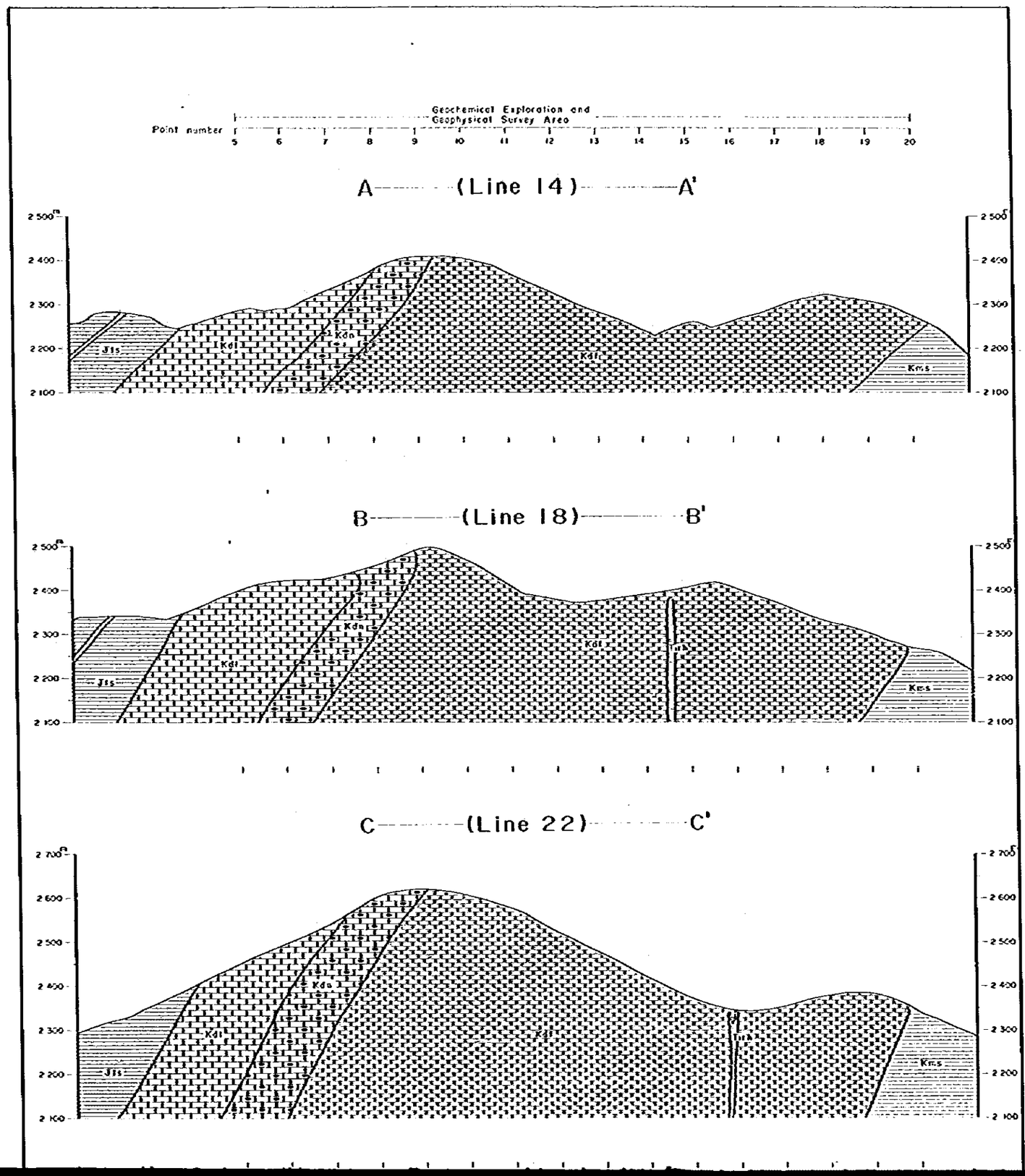
GEOLOGICAL SURVEY
OF
THE PACHUCA - ZIMAPAN AREA
PHASE II

GEOLOGICAL PROFILES OF THE PROVIDENCIA AREA

Scale 1 : 5,000



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

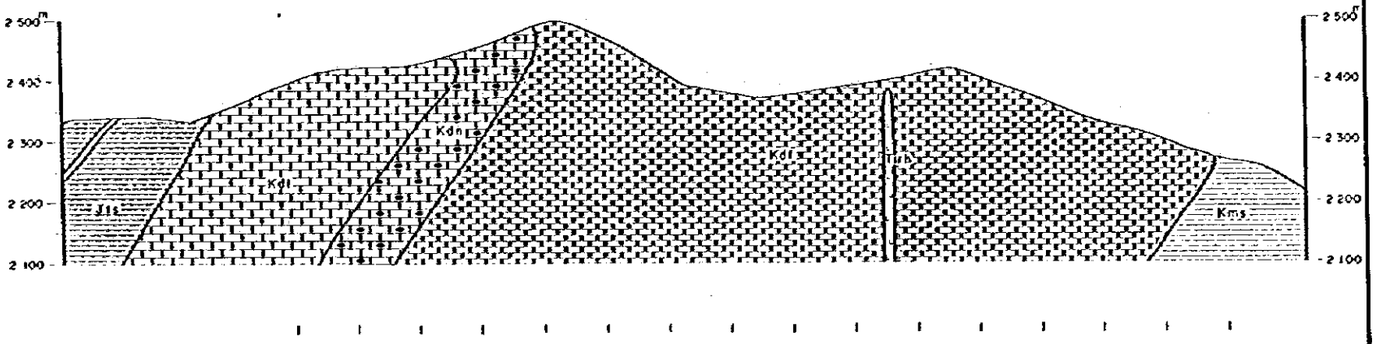


LEGEND

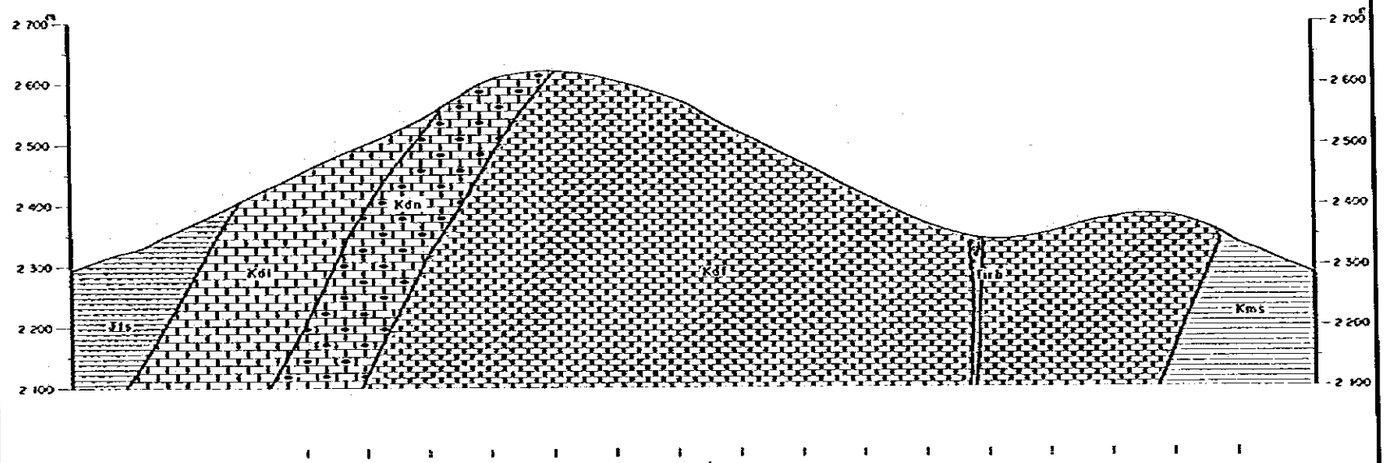
Intrusive rock	Tirh	Rhyolite
Mendez Formation	Kms	Shale intercalated with siltstone and marl
El Doctor Formation	Kdl	Alternation of muddy limestone and black flint
	Kdn	Limestone with black flint nodule
	Kdm	Massive limestone
Las Trancas Formation	Jls	Calcareaite
	Jls	Alternation of shale, calcareous shale and marl

IN COLLABORATION WITH
CONSEJO DE RECURSOS MINERALES DE MEXICO
FEBRUARY 1982

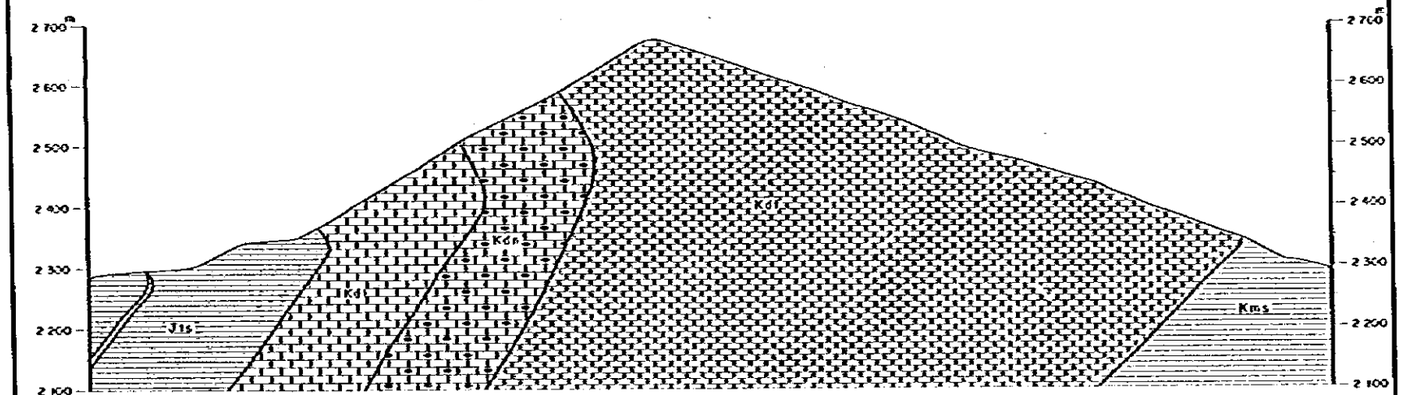
B ——— (Line 18) ——— B'

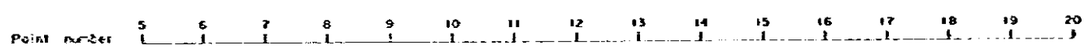


C ——— (Line 22) ——— C'



D ——— (Line 26) ——— D'





LEGEND

Intrusive rock — Tirh — Rhyolite

Mendez Formation — Kms — Shale intercalated with siltstone and marl

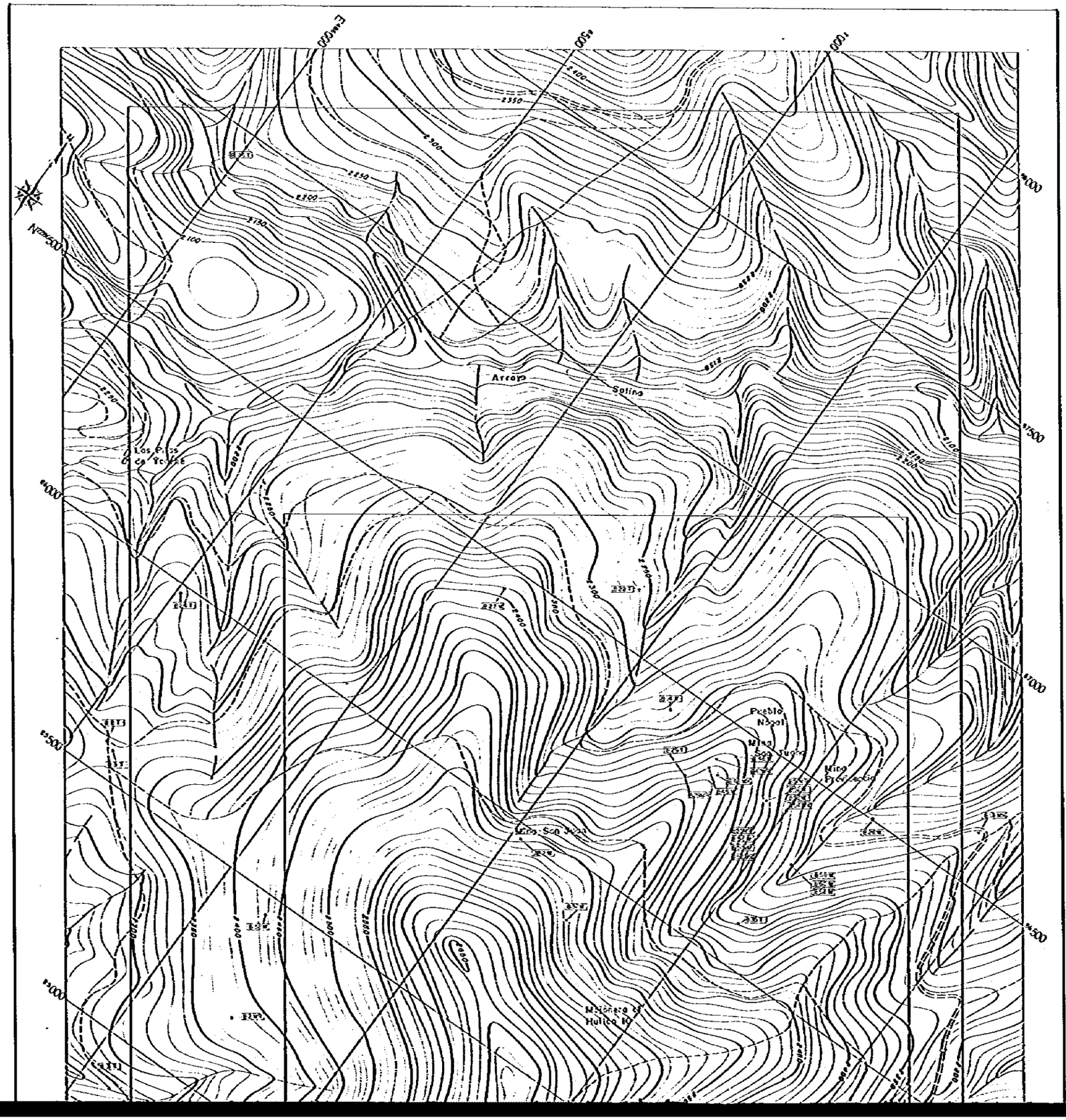
El Doctor Formation — Kdl — Alternation of muddy limestone and black flint

Kdn — Limestone with black flint nodule

Kdll — Massive limestone

Las Trancas Formation — Jts — Calcarenite

Jtc — Alternation of shale, calcareous shale and marl

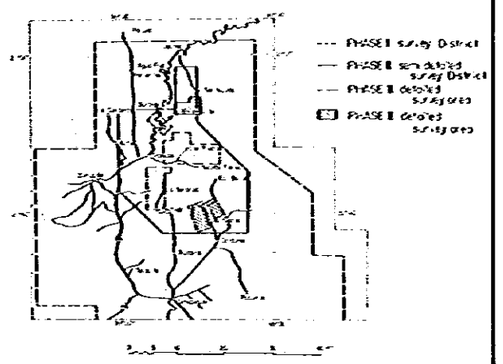


PL. 2-3-3

GEOLOGICAL SURVEY
OF
THE PACHUCA - ZIMAPAN AREA
PHASE II

LOCATION MAP OF THE EXAMINED ROCK AND ORE SAMPLES FROM THE PROVIDENCIA AREA

Scale 1 : 5,000

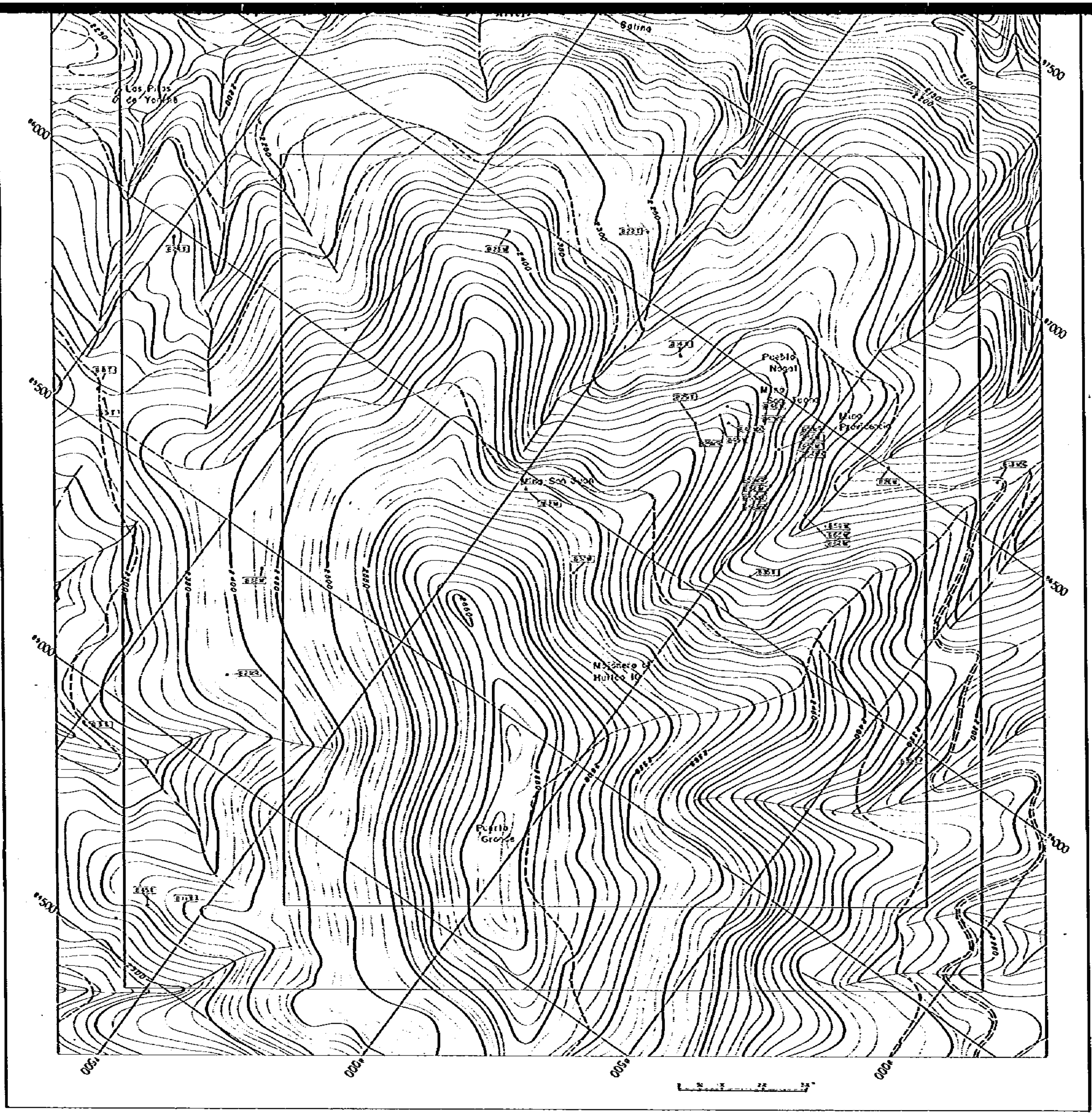


JAPAN INTERNATIONAL COOPERATION AGENCY AND
METAL MINING AGENCY OF JAPAN
IN COLLABORATION WITH
CONSEJO DE RECURSOS MINERALES DE MEXICO
FEBRUARY 1982

EXPLANATION

Suffixes mean the type of examination as follows:

M; Ore assaying
R; Microscopic observations of polished section
T; Microscopic observations of thin section
X; X-ray powder diffraction.



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:

M; Ore assaying

R; Microscopic observations of polished section

T; Microscopic observations of thin section

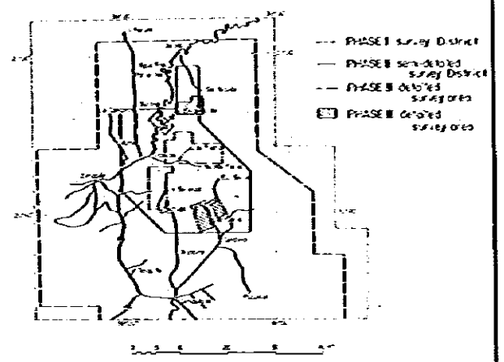
X; X - ray powder diffraction.

PL 2-3-4

GEOLOGICAL SURVEY
OF
THE PACHUCA - ZIMAPAN AREA
PHASE II

DISTRIBUTION MAP OF THE MINES, PROSPECTS AND ORE SHOWINGS IN THE PROVIDENCIA AREA

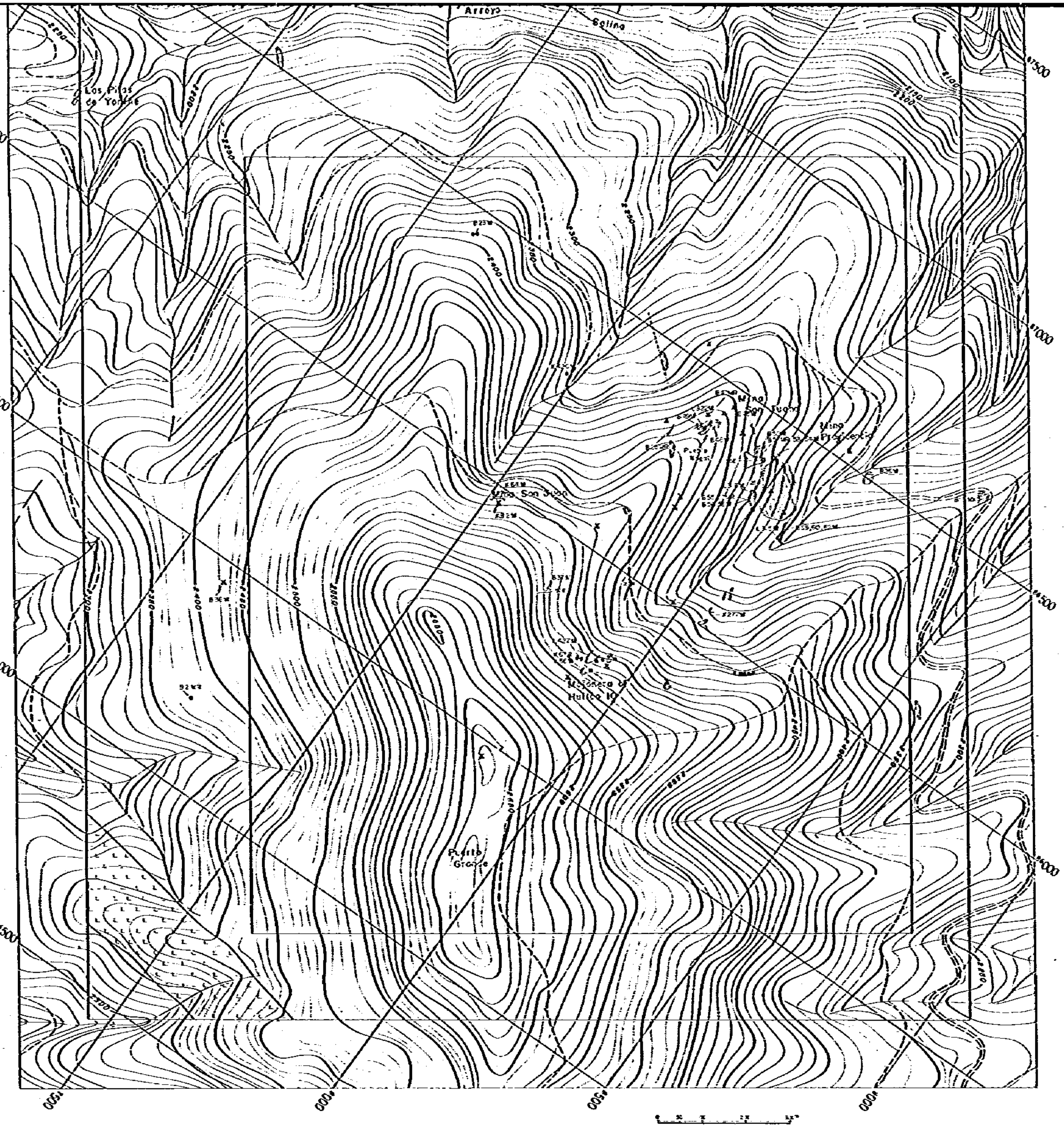
Scale 1 : 5,000



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

LEGEND

- Open pit
- Old mine or prospect
- Waste dump
- Ore bank
- Slag dump
- Ore vein
- Ore float
- Mining claim stake
- Rhyolite dike
- B53M Sample for ore assaying
- B57MR Sample for ore assaying and microscopic observation of polished section



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

LEGEND

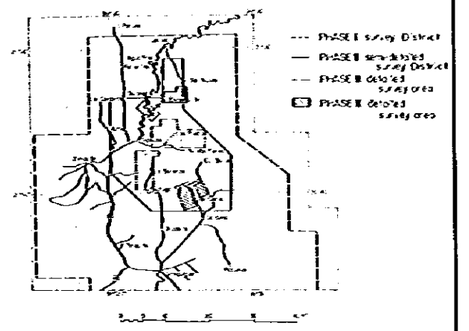
- Open pit
- X Old mine or prospect
- Waste dump
- Ore bank
- Slag dump
- / Ore vein
- • Ore float
- ▪ Mining claim stake
- Rhyolite dyke
- B53M Sample for ore assaying
- B57MR Sample for ore assaying and microscopic observation of polished section

PL. 2-4-1

GEOLOGICAL SURVEY
OF
THE PACHUCA - ZIMAPAN AREA
PHASE II

GEOLOGICAL MAP OF THE SAN CLEMENTE AREA

Scale 1 : 5,000



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

LEGEND

- Quaternary — Tsd — Sand, silt and ash
- Tertiary — Tvlp-l — Banded rhyolite lava
- Tertiary — Tvlp-t — Rhyolitic tuff breccia
- Tertiary — Tvlp-c — Compact rhyolite
- Tertiary — Tvbs — Basalt lava and pyroclastic rocks
- Lower-Upper Cretaceous — El Doctor Formation — Kkd — Alternation of limestone, marl, calcareous shale and black flint
- Lower Cretaceous - Upper Jurassic — Las Trancas Formation — Jkt — Alternation of shale calcareous shale, sandstone and marl

Intrusive rocks

- Tvlk — Rhyolite
- Tvdc — Dacite
- Tvan — Andesite
- Tvba — Basalt

SAN CLEMENTE

B

B'

C

C'

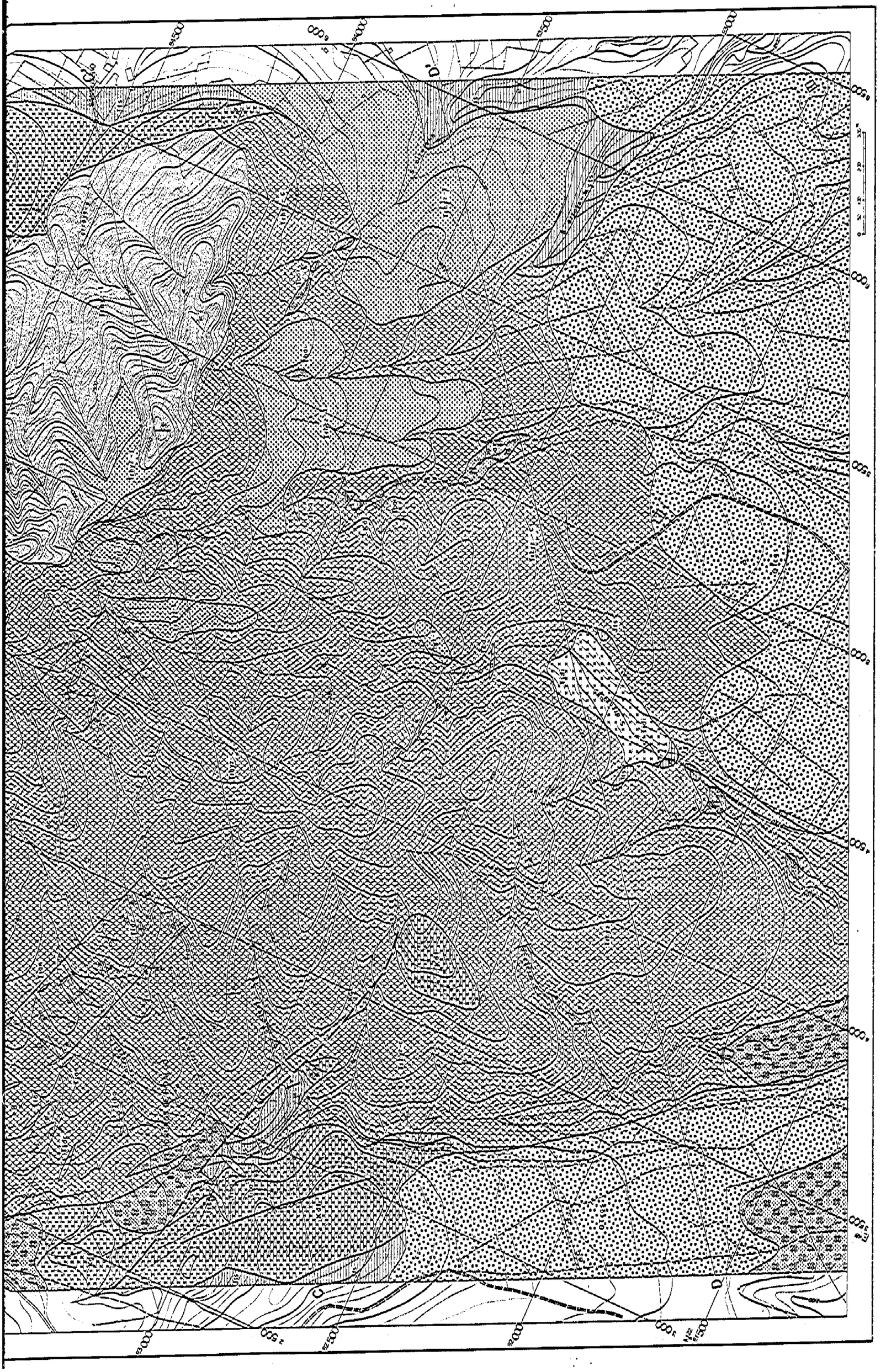
LEGEND

Quaternary		Qtsc	Sand, silt and ash
Tertiary		Trhy-l	Banded rhyolite lava
		Trhy-t	Rhyolitic tuff breccia
		Trhy-c	Compact rhyolite
		Tbay	Basalt lava and pyroclastic rocks
Lower-Upper Cretaceous	El Doctor Formation	Kdt	Alternation of limestone, marl, calcareous shale and black flint
Lower Cretaceous & Upper Jurassic	Las Trancas Formation	JKs	Alternation of shale calcareous shale, sandstone and marl

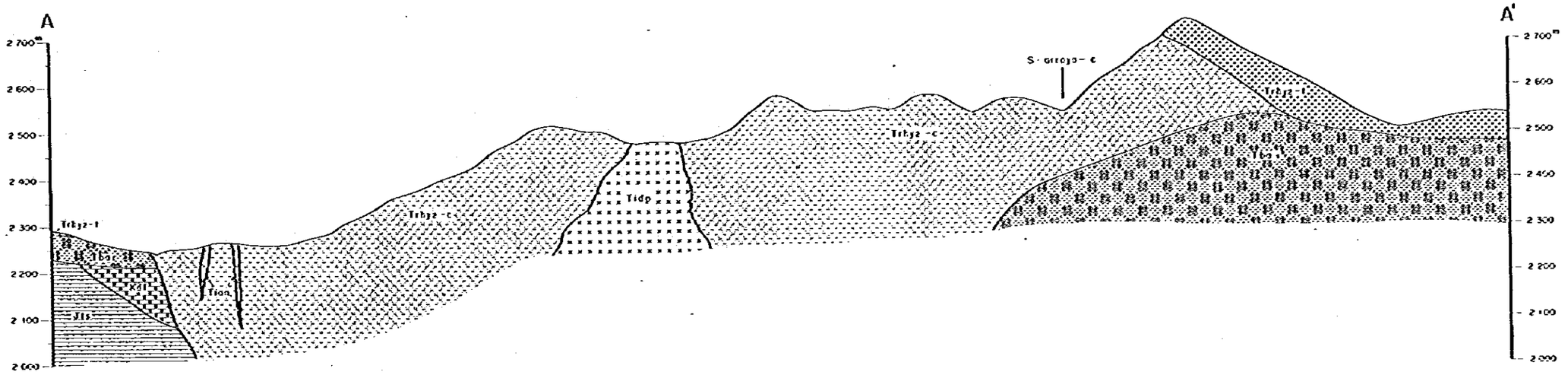
Intrusive rocks

Trrh	Rhyolite
Tidc	Dacite
Tiga	Andesite
Tiba	Basalt
Tidi	Diorite

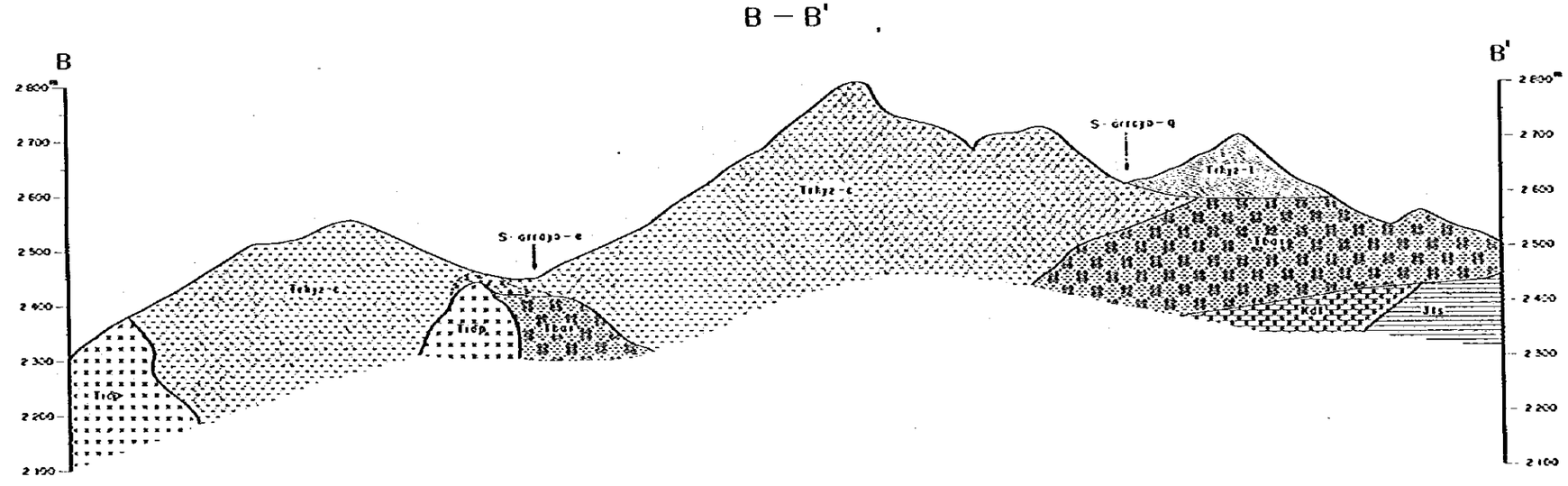
- Brecciated zone
- Bedding
- Joint
- Fault
- Synclinal axis
- Adit
- Open pit



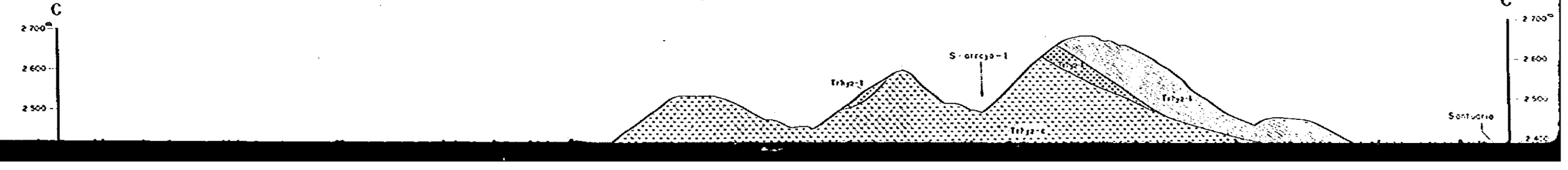
A – A'


A
A'
2 700m
2 600
2 500
2 400
2 300
2 200
2 100
2 000
S. arrcyo – c
Trbyz – c
Trbyz – t
Tidp
Tlan
Jls

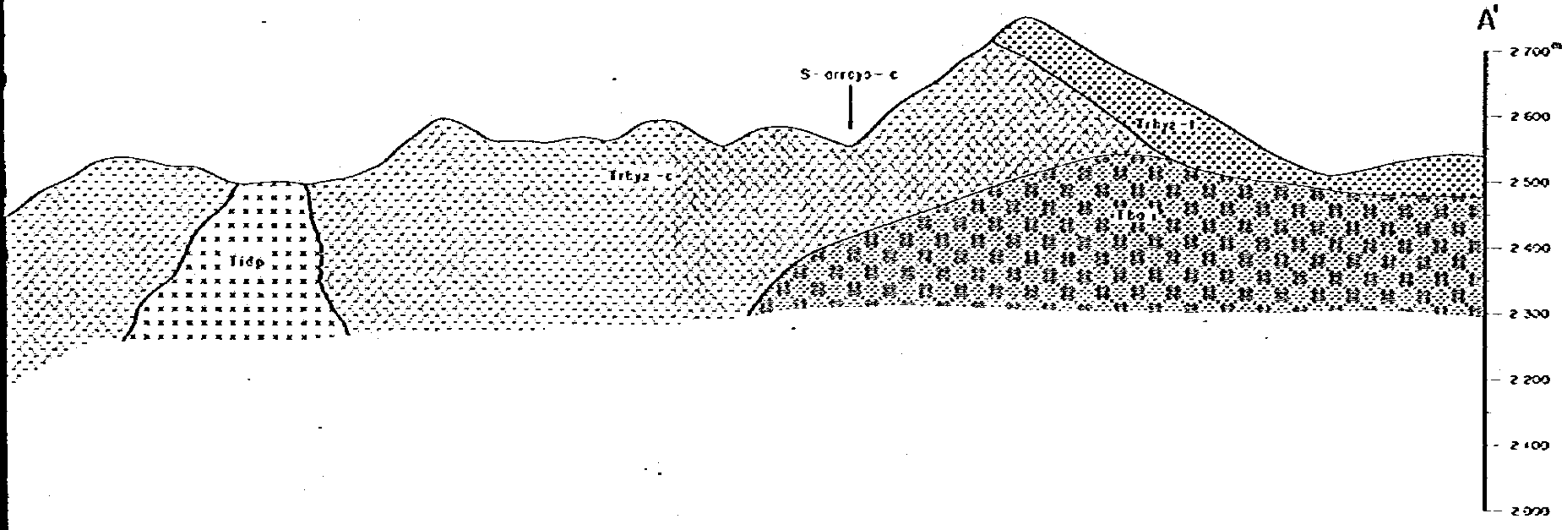
B – B'


B
B'
2 800m
2 700
2 600
2 500
2 400
2 300
2 200
2 100
S. arrcyo – q
S. arrcyo – e
Trbyz – t
Trbyz – c
Tlan
Jls

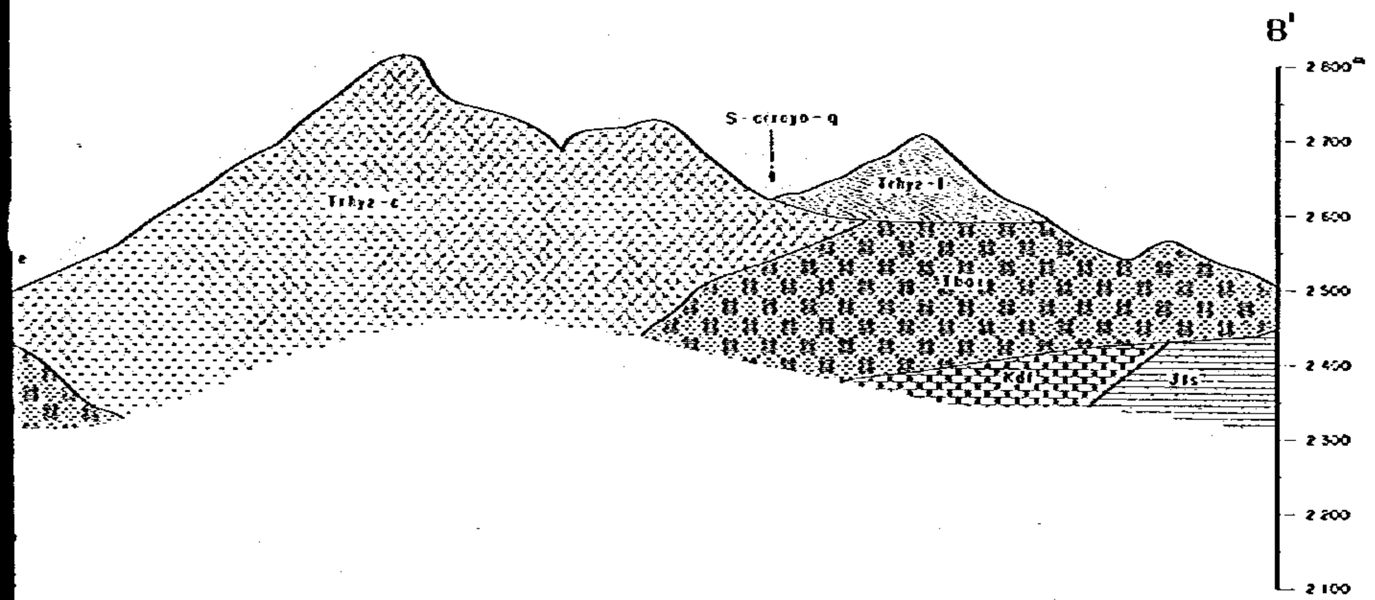
C – C'


C
C'
2 700m
2 600
2 500
S. arrcyo – t
Trbyz – t
Trbyz – c
Santuario

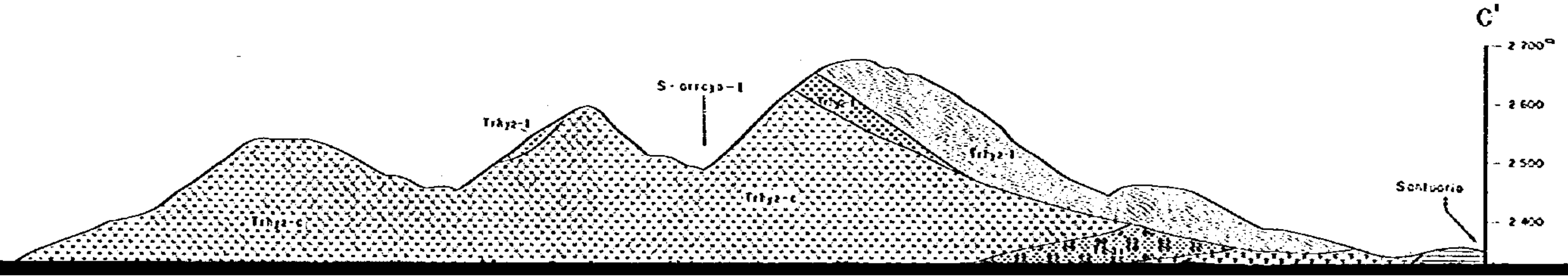
A – A'



B – B'



C – C'

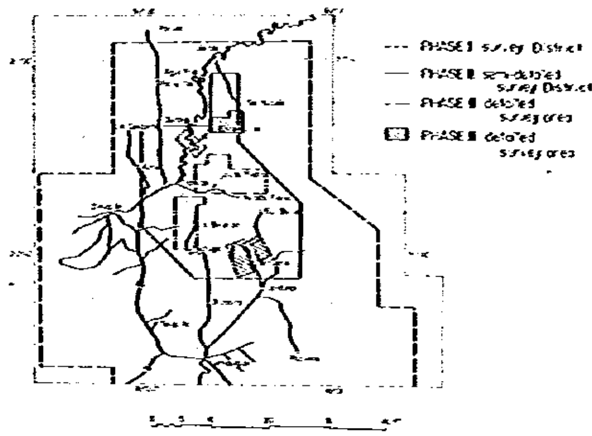


PL 2-4-2

GEOLOGICAL SURVEY
OF
THE PACHUCA – ZIMAPAN AREA
PHASE II

GEOLOGICAL PROFILES OF THE SAN CLEMENTE AREA

Scale 1 : 5,000



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

LEGEND

Quaternary { QTcgs — Sand, silt and ash

Tertiary {
- Trhyz-l — Banded rhyolite lava
- Trhyz-t — Rhyolitic tuff breccia
- Trhyz-c — Compact rhyolite
- Tba — Basalt lava and pyroclastic rocks

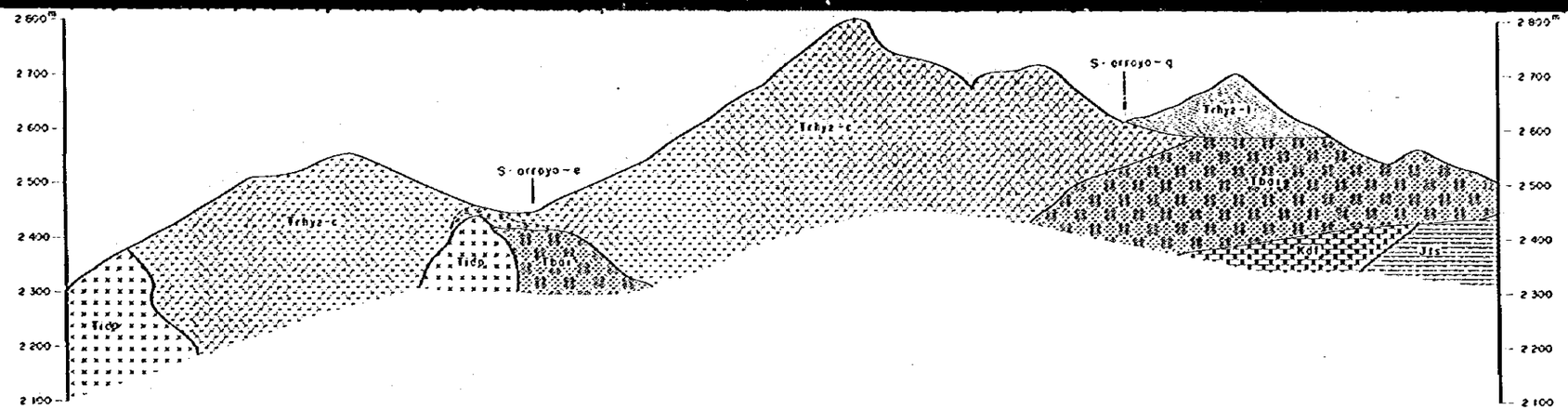
Lower–Upper Cretaceous { El Doctor Formation — Kdl — Alternation of limestone, marl, calcarenite, shale and black flint

Lower Cretaceous – Upper Jurassic { Las Trancas Formation — Jts — Alternation of shale, calcareous shale, sandstone and marl

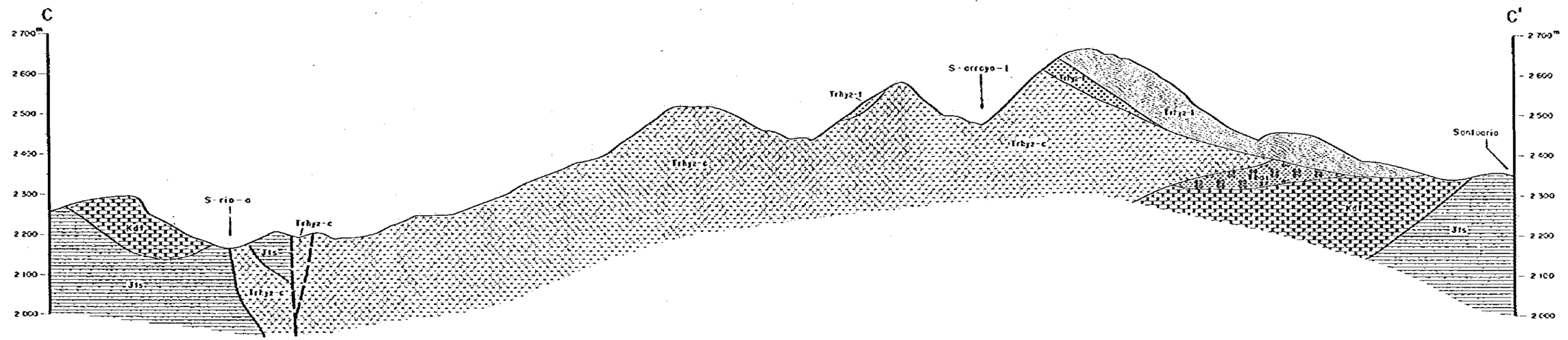
Intrusive rocks

- Tias — Andesite
- Tidp — Diorite porphyry

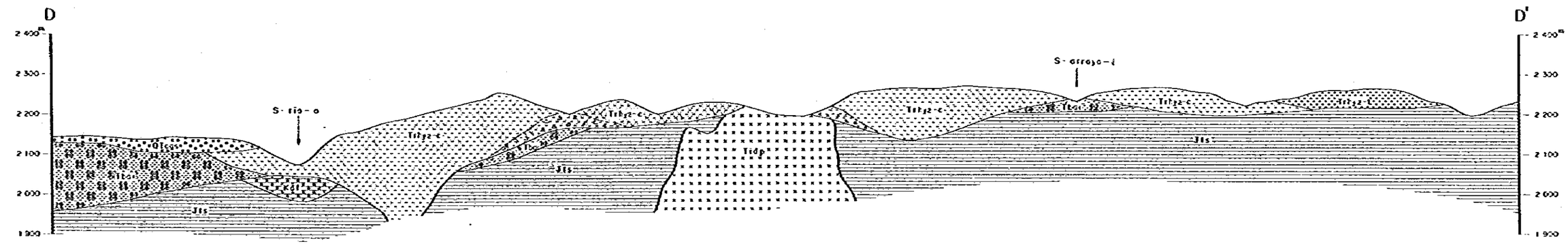
Brecciated zone


S - arroyo - e
S - arroyo - q
Trhyz - c
Trhyz - l
Tidp
Kdl
Jts

C – C'


C
C'
S - arroyo - l
S - río - o
Santuario
Trhyz - c
Trhyz - l
Kdl
Jts

D – D'


D
D'
S - río - o
S - arroyo - l
Trhyz - c
Tidp
Jts

IN COLLABORATION WITH
CONSEJO DE RECURSOS MINERALES DE MEXICO
FEBRUARY 1982

LEGEND

Quaternary

- QTcgs — Sand, silt and ash

Tertiary

- Trhyz-l — Banded rhyolite lava
- Trhyz-c — Rhyolitic tuff breccia
- Trhyz-c — Compact rhyolite
- Tbas / Tbp — Basalt lava and pyroclastic rocks

Lower-Upper Cretaceous — El Doctor Formation

- Kdf — Alternation of limestone, marl, calcarenite, shale and black flint

Lower Cretaceous Upper Jurassic — Los Trances Formation

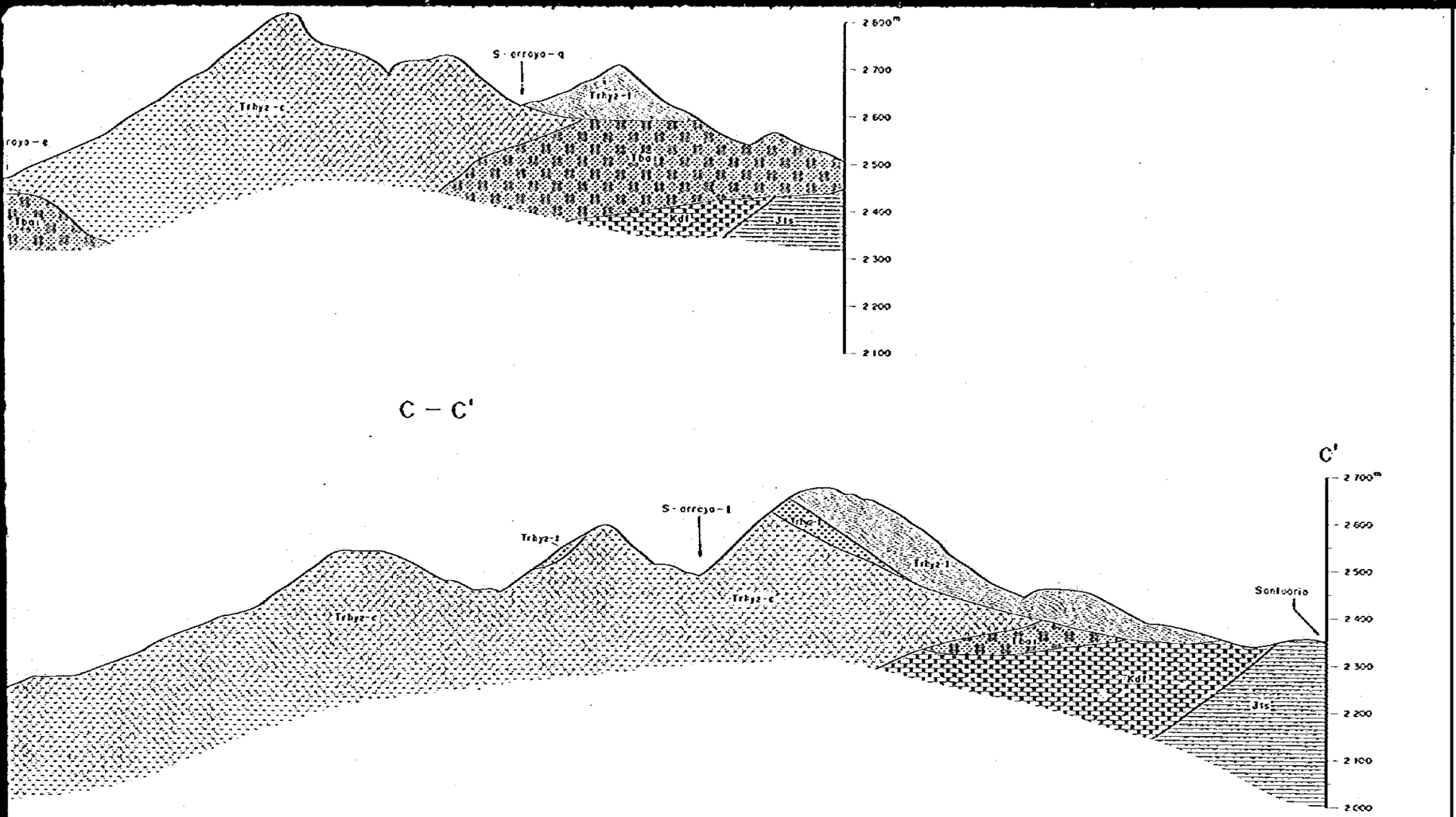
- Jts — Alternation of shale, calcareous shale, sandstone and marl

Intrusive rocks

- Tiag — Andesite
- Tidp — Diorite porphyry

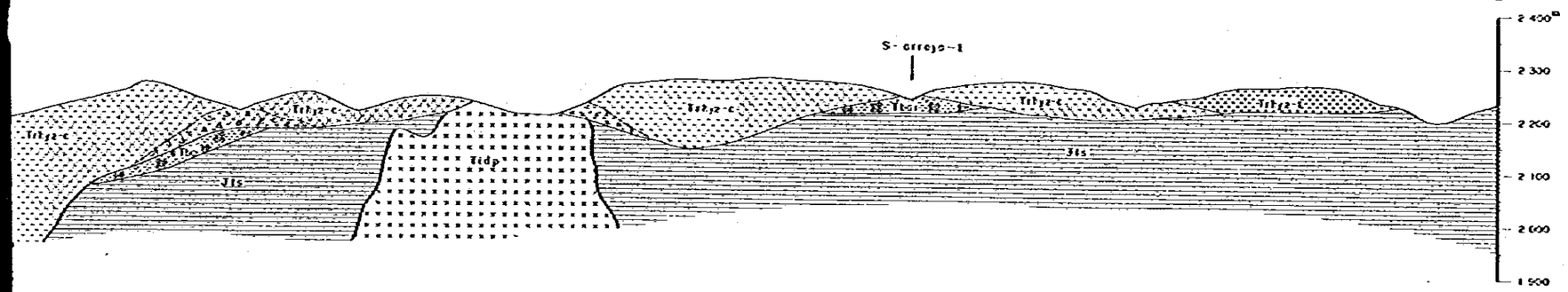
- Brecciated zone
- Fault

C – C'



C'

D – D'

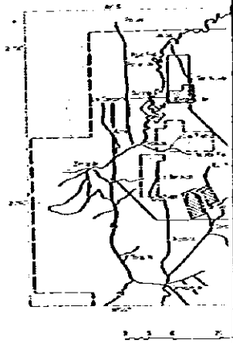


D'

GEOLOGICAL
OF
THE PACHUCA - Z
PHASE

LOCATION MAP OF
ROCK AND ORE SA
THE SAN CLEMENTE

Scale 1 : 5



JAPAN INTERNATIONAL CO
METAL MINING AS
IN COLLABORA
CONSEJO DE RECURSOS M
FEBRUAR

EXPLANATION

Suffixes mean the type of e

M ; Ore assaying

R ; Microscopic observations

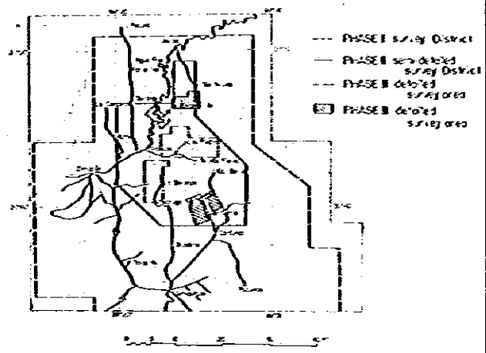
T ; Microscopic observations

X ; X-ray powder diffrac

GEOLOGICAL SURVEY
OF
THE PACHUCA - ZIMAPAN AREA
PHASE II

LOCATION MAP OF THE EXAMINED ROCK AND ORE SAMPLES FROM THE SAN CLEMENTE AREA

Scale 1 : 5,000



JAPAN INTERNATIONAL COOPERATION AGENCY AND
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FEBRUARY 1982

EXPLANATION

Suffixes mean the type of examination as follows:

M ; Ore assaying

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T ; Microscopic observations of thin section

X ; X-ray powder diffraction

EXPLANATION

Suffixes mean the type of e

M ; Ore assaying

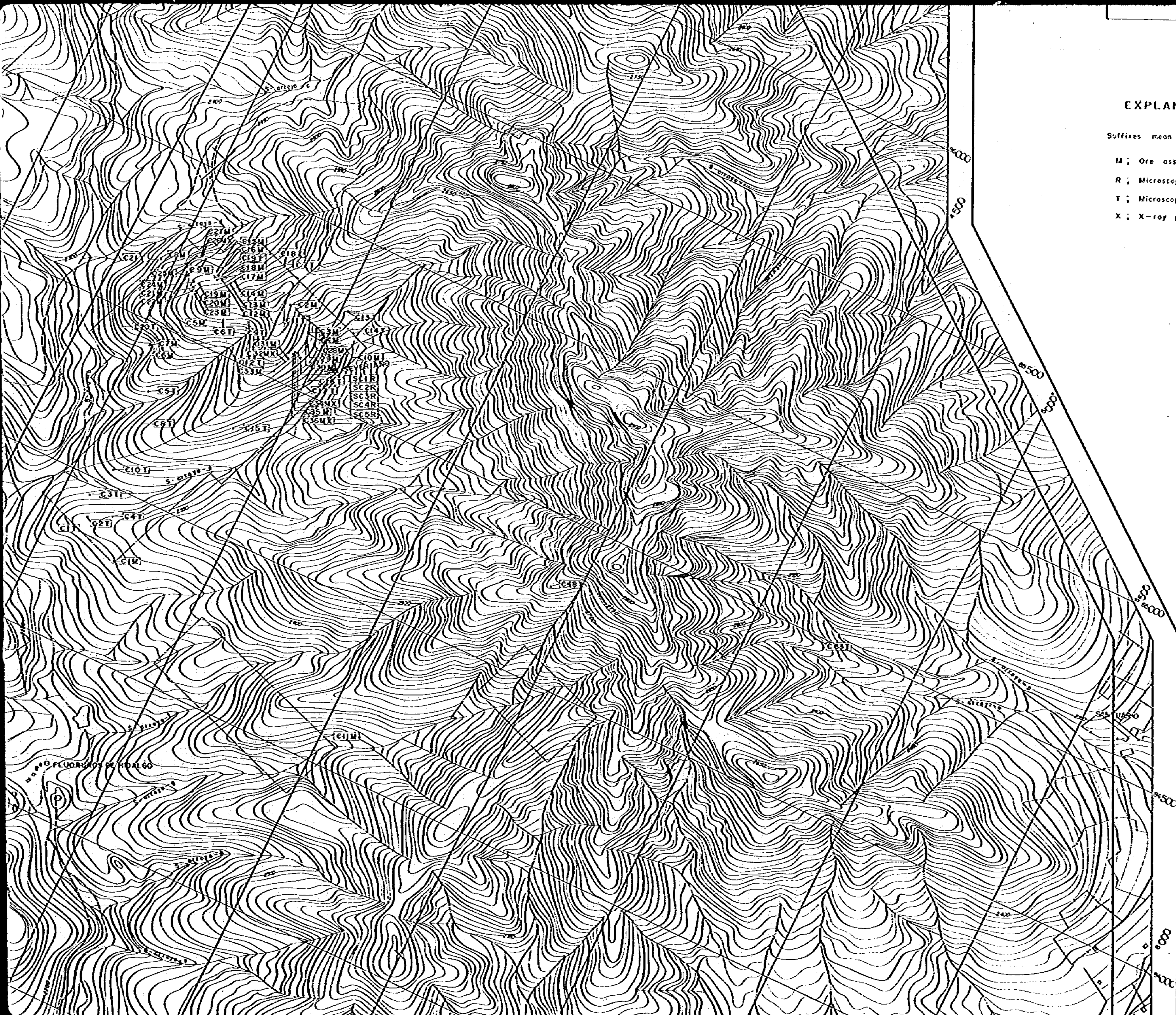
R ; Microscopic observations

T ; Microscopic observations

X ; X-ray powder diffrac

SAN CLEMENTE

PLUDRUNOS DE HIDALGO



EXPLANATION

Suffixes mean the type of examination as follows:

M ; Ore assaying

R ; Microscopic observations of polished section

T ; Microscopic observations of thin section

X ; X-ray powder diffraction