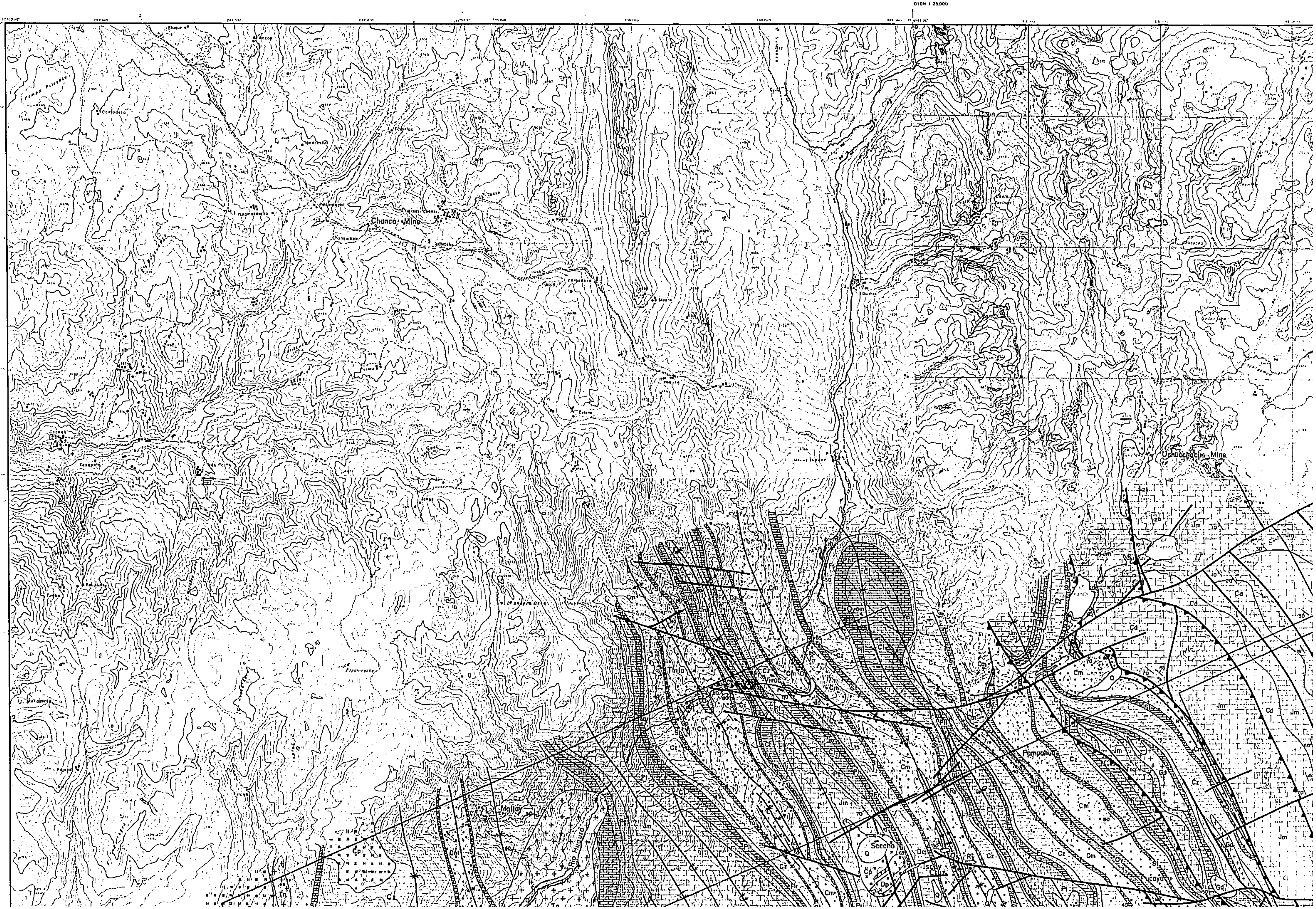
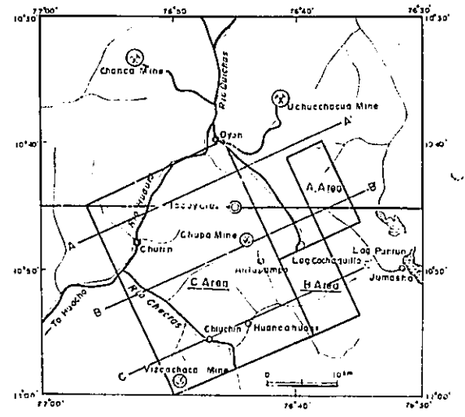

Chanca Mine
Uchucchacua Mine
Oyon
Tinta
Viroc
Pampahuay
Saccha
Iscay Cruz
Mallay
Rio Huaura

OYON 1 25,000

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅲ

PL. I-1-1

GEOLOGICAL MAP
OF
THE NORTHERN PART



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 5km

LEGEND

SEDIMENTARY ROCK

Quaternary	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Cd	Celendin formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
Cretaceous	Ph	Pariahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	Si	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

Dc	Dacite B porphyrite
Dp	Dacite porphyry
Ry,Gp	Rhyolite B granite porphyry
Tn GdDr	Tonalite, Granodiorite B Diorite
Cp	Calipuy volcanics

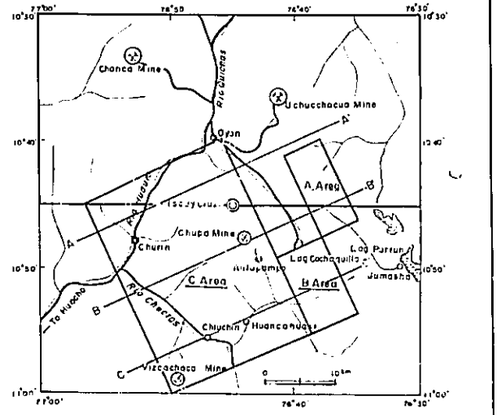
Bedding plane

Anticlinal folding axis

Synclinal folding axis

PHASE III

GEOLOGICAL MAP OF THE NORTHERN PART



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 5km

LEGEND

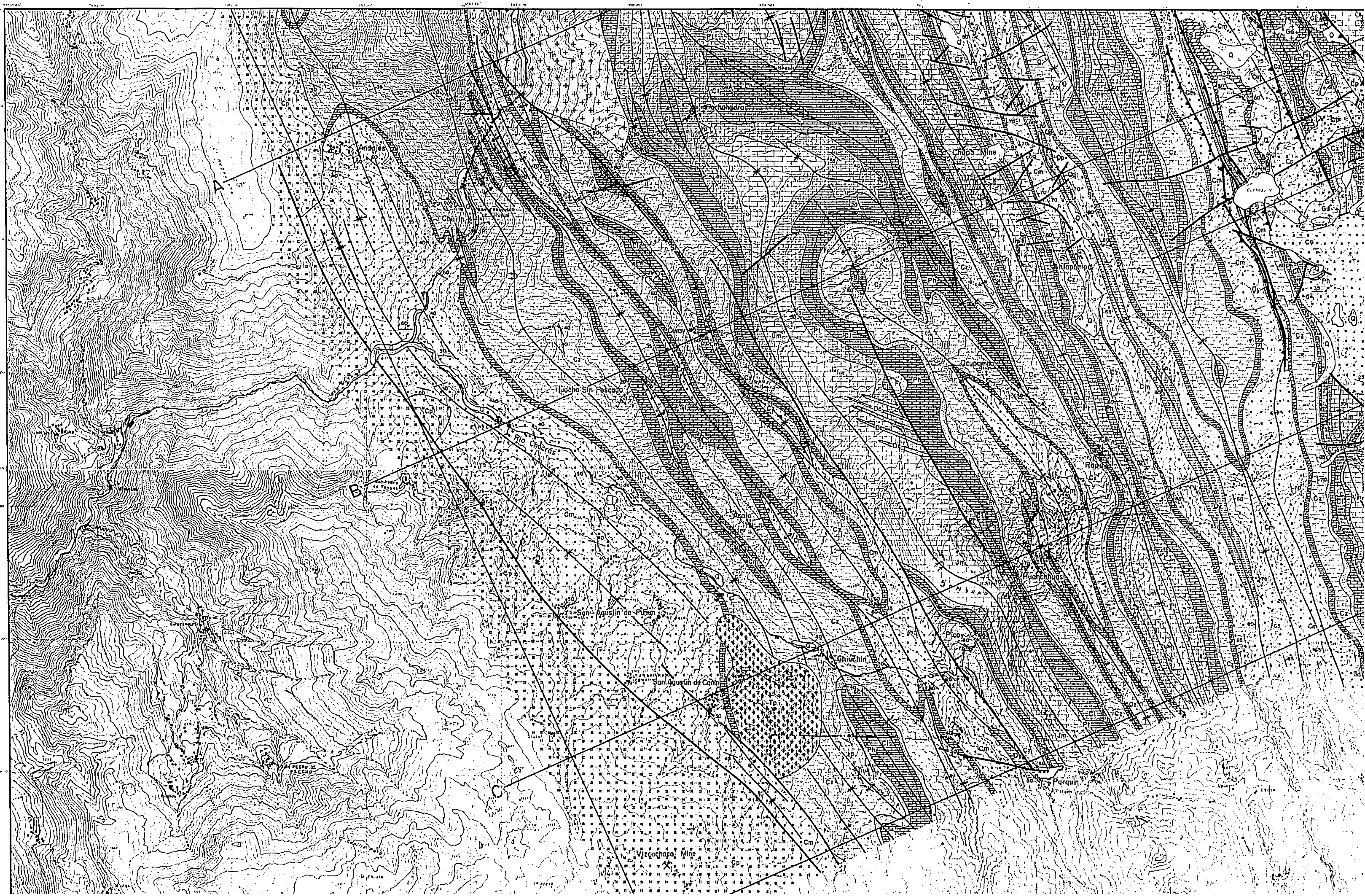
SEDIMENTARY ROCK

Quaternary	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Cd	Celendin formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Ch	Chulec formation
Cretaceous	Ph	Pariahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	Si	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

Dc	Dacite & porphyrite
Dp	Dacite porphyry
Ry.Gp	Rhyolite & granite porphyry
Tn GdDr	Tonalite, Granodiorite & Diorite
Cp	Calipuy volcanics

- Bedding plane
- Anticlinal folding axis
- Synclinal folding axis
- Overturned folding axis
- Fault
- Thrust fault


A
B
C
Andajes
Churin
Huacho Sin Pescado
Rio Checras
San Agustin de Puñun
San Agustin de Cañin
Chiuchin
Vizcachaca Mine
Parquin
Picoy
Huancahuasi
Rapaz
Ocupampa
Pocon
Chupa Mine
Curay
San Pedro de Pacc...

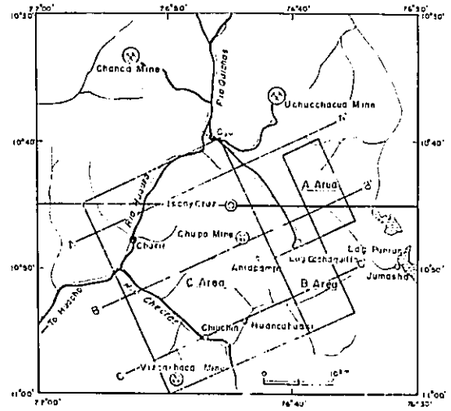
OYON 1:25,000

0323

PL.I-1-2

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL MAP
OF
THE SOUTHERN PART



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

LEGEND

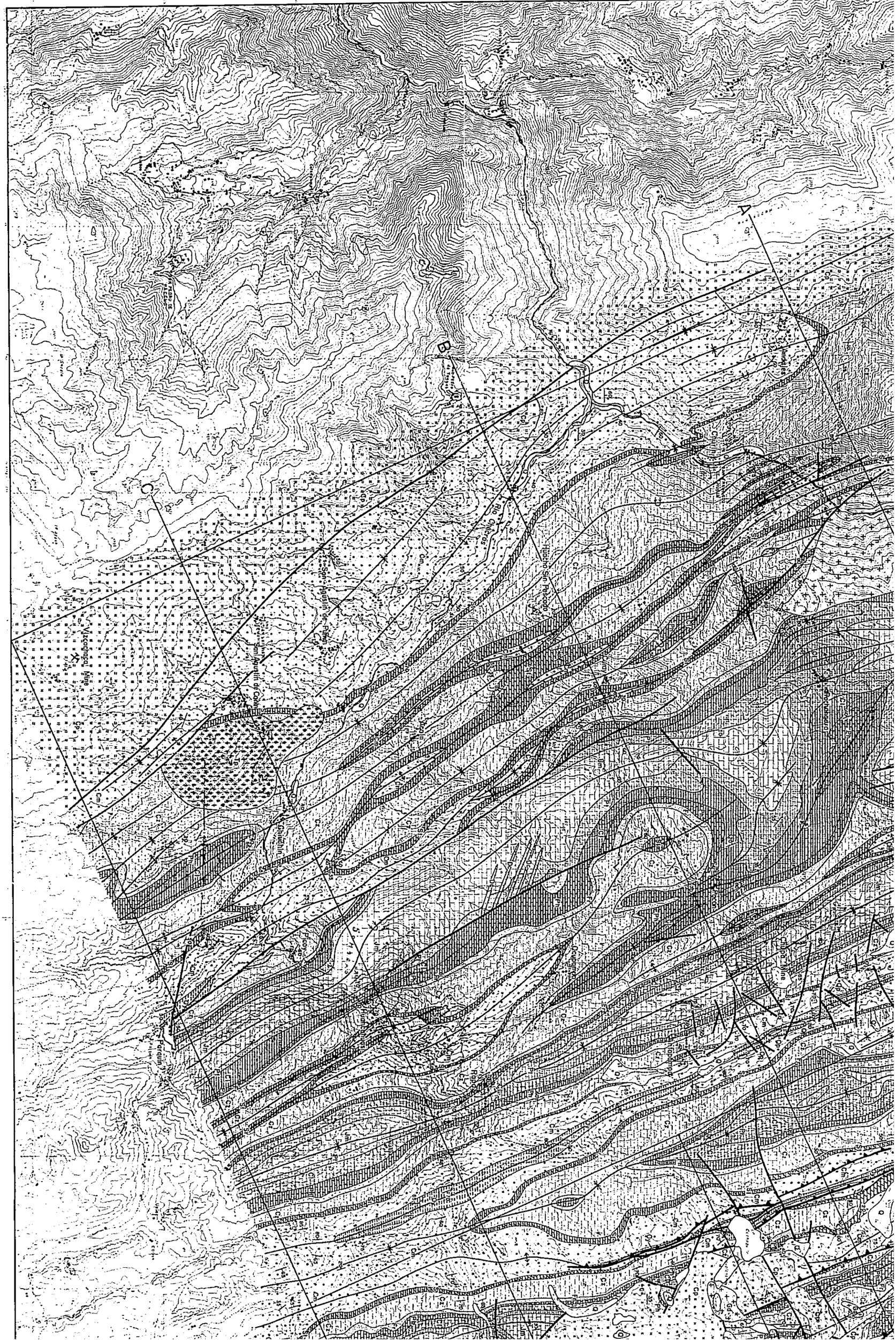
SEDIMENTARY ROCK

Quaternary	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Cd	Celendin formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
Cretaceous	Ph	Parahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	Sa	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

Dc	Dacite & Porphyrite
Qp Qp	Quartz porphyry & Granite porphyry
Tp	Tonalite porphyry
Tn Gd Dr	Tonalite, Granodiorite & Diorite
Cp	Calipuy volcanics

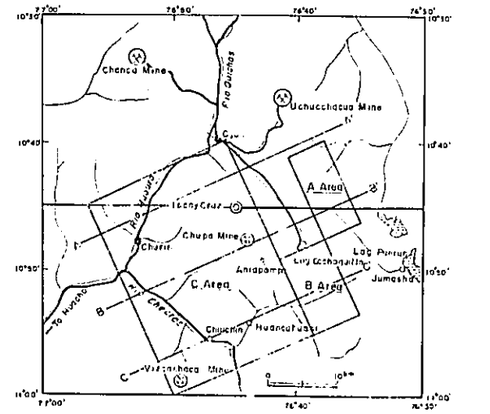
- Bedding plane
- Anticlinal folding axis
- Synclinal folding axis



A
B
C
Andajes
Churin
Pachangara
Chupa Mine
Pocon
Santapampa
Curay
Huacho Sin Pescado
Rio Chacras
Ocupampa
Rapaz
Acoin
Huancahuas
San Agustin de Pumin
Picoy
Chiuchin
San Agustin de Canin
Parquin
Vizcachaca Mine
Cp
Cm
Cz
Cl
Ph
Pl
Sl
Jm
Dc
Q
Qy
Gd
Ti
Fr

PHASE III

GEOLOGICAL MAP OF THE SOUTHERN PART



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 5km

LEGEND

SEDIMENTARY ROCK

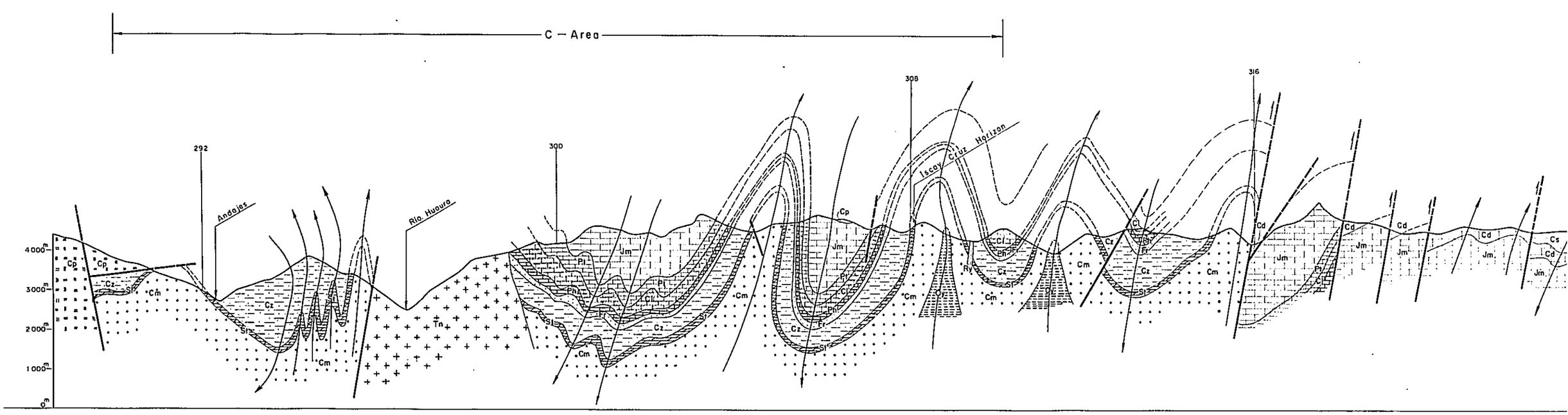
Quaternary	Q	Alluvium
Tertiary Cretaceous	Cs	Casapata formation
	Cd	Celendin formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
Cretaceous	Pc	Parachuanca formation
	Fr	Farrat formation
	Ci	Carhuaz formation
	Su	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

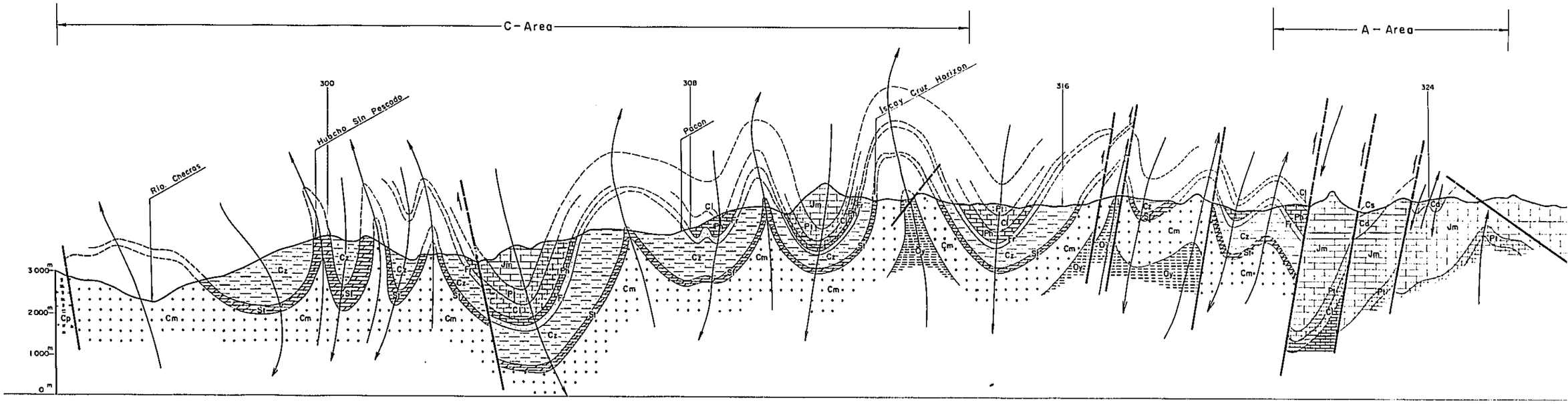
Dc	Dacite & Porphyrite
Qp Gp	Quartz porphyry & Granite porphyry
Tp	Tonalite porphyry
Tn Gd Dr	Tonalite, Granodiorite & Diorite
Cp	Calipuy volcanics

- Bedding plane
- Anticlinal folding axis
- Synclinal folding axis
- Overturned folding axis
- Fault
- Thrust fault

A ——— A'

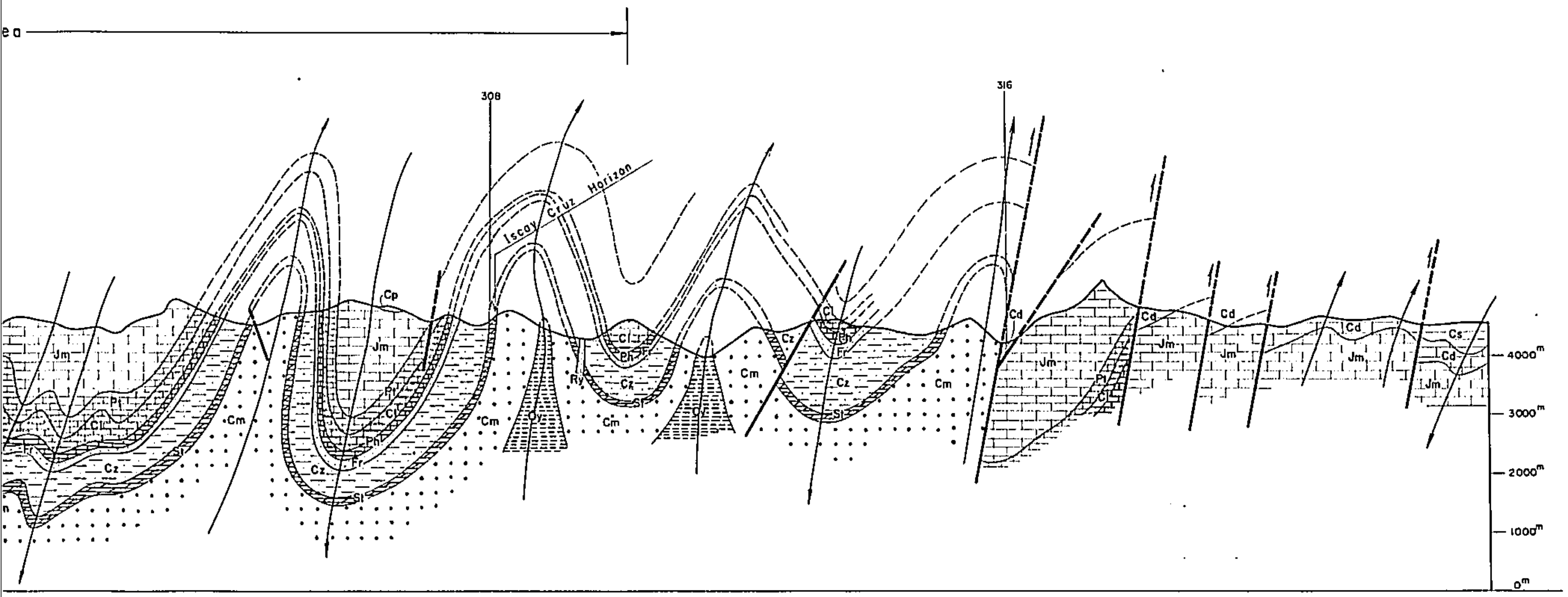

C – Area
292
Andajes
300
Río Huguro
308
Iscay
Cruz
Horizon
316
Cp
Cz
Cm
Jm
Pl
Tn
Cl
Cd
Cs
Sl
Ry
Oy
4000 m
3000 m
2000 m
1000 m
0 m

B ——— B'

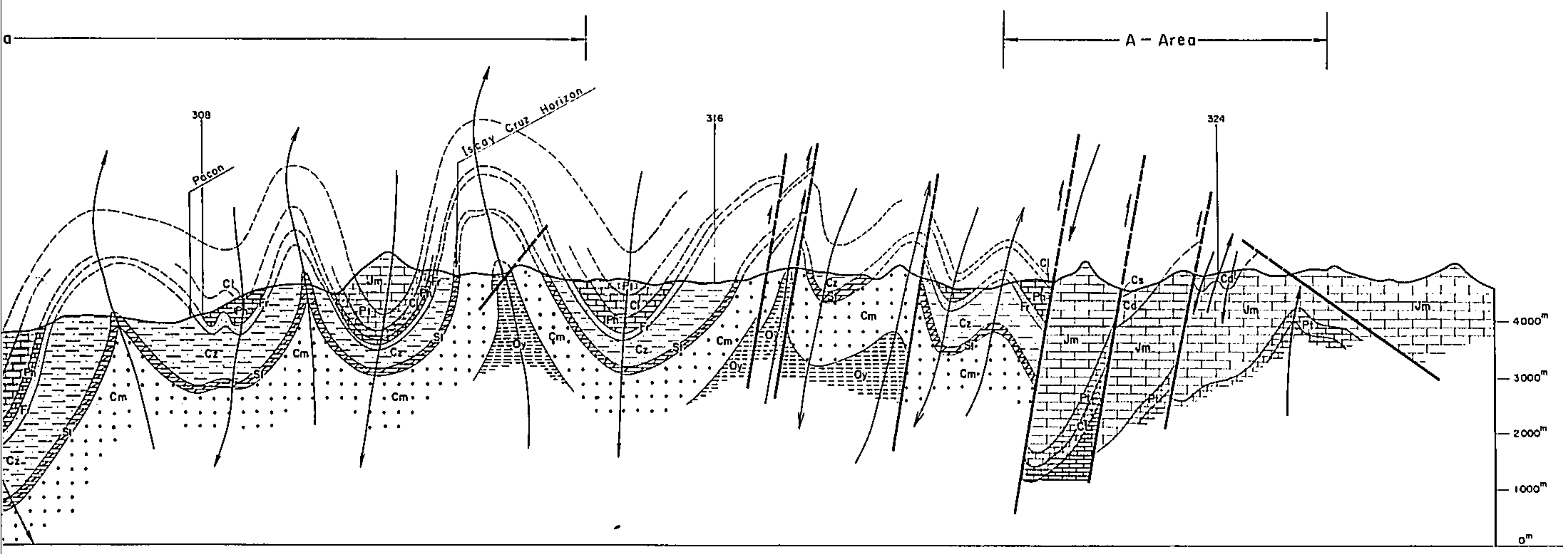

C – Area
A – Area
300
Huacho Sin Pescado
Río Checras
308
Pacon
Iscay Cruz Horizon
316
324
Cp
Cz
Cm
Jm
Pl
Cl
Cd
Cs
Sl
Oy
3000 m
2000 m
1000 m
0 m

C ——— C'

A —— A'



B —— B'



C —— C'

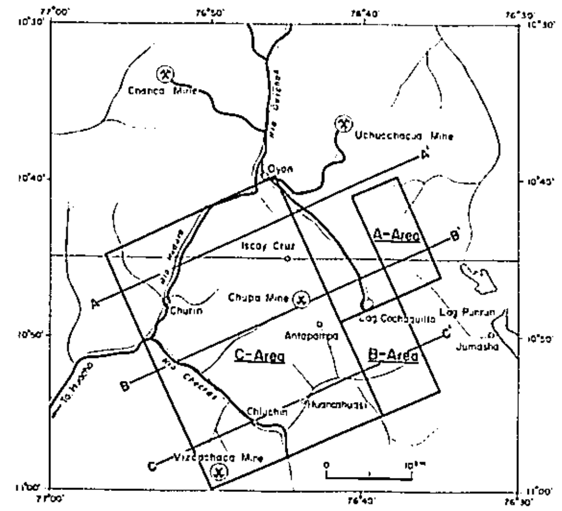
09263

GEOLOGICAL SURVEY OF THE OYON AREA, PERU

PHASE III

PL. I-1-3

GEOLOGICAL PROFILE OF THE SURVEYED AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 — 5km

LEGEND

SEDIMENTARY ROCK

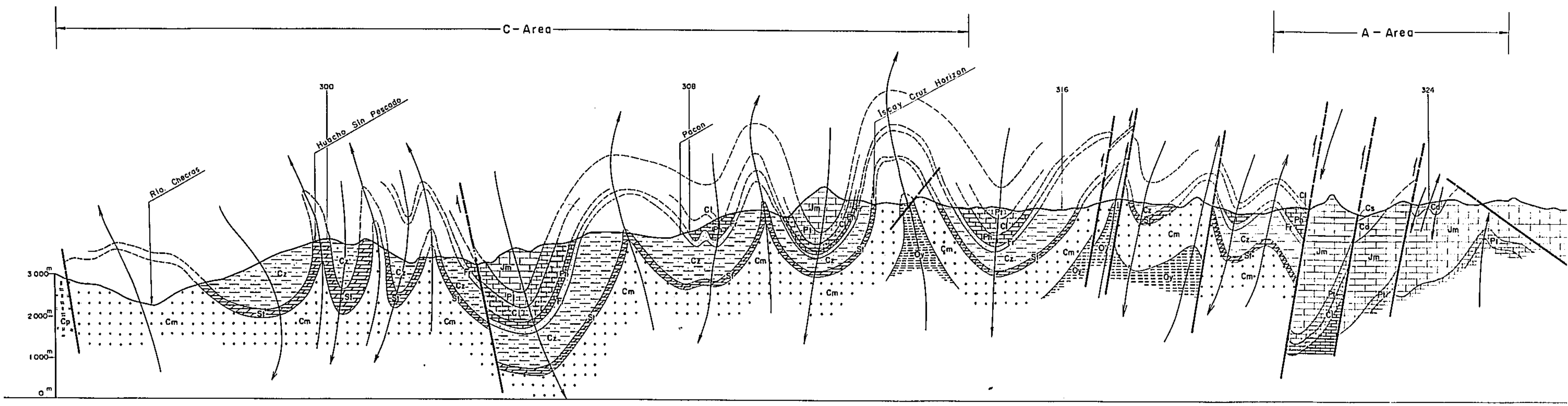
Age	Symbol	Formation
Quaternary	a	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
Cretaceous	Cd	Celendin formation
	Jm	Jumasha formation
	Pt	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	Sl	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

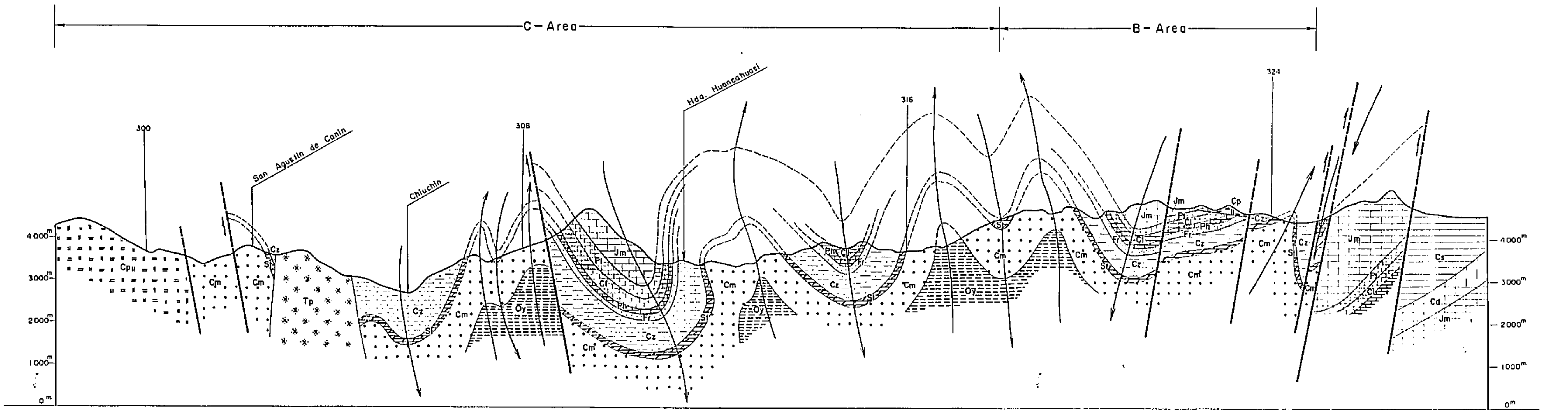
Symbol	Rock
Ry Qp	Rhyolite, Quartz porphyry
Tp	Tonalite porphyry
Tn	Tonalite
Cp	Calipuy volcanics

Fault
Anticlinal folding axis
Synclinal folding axis

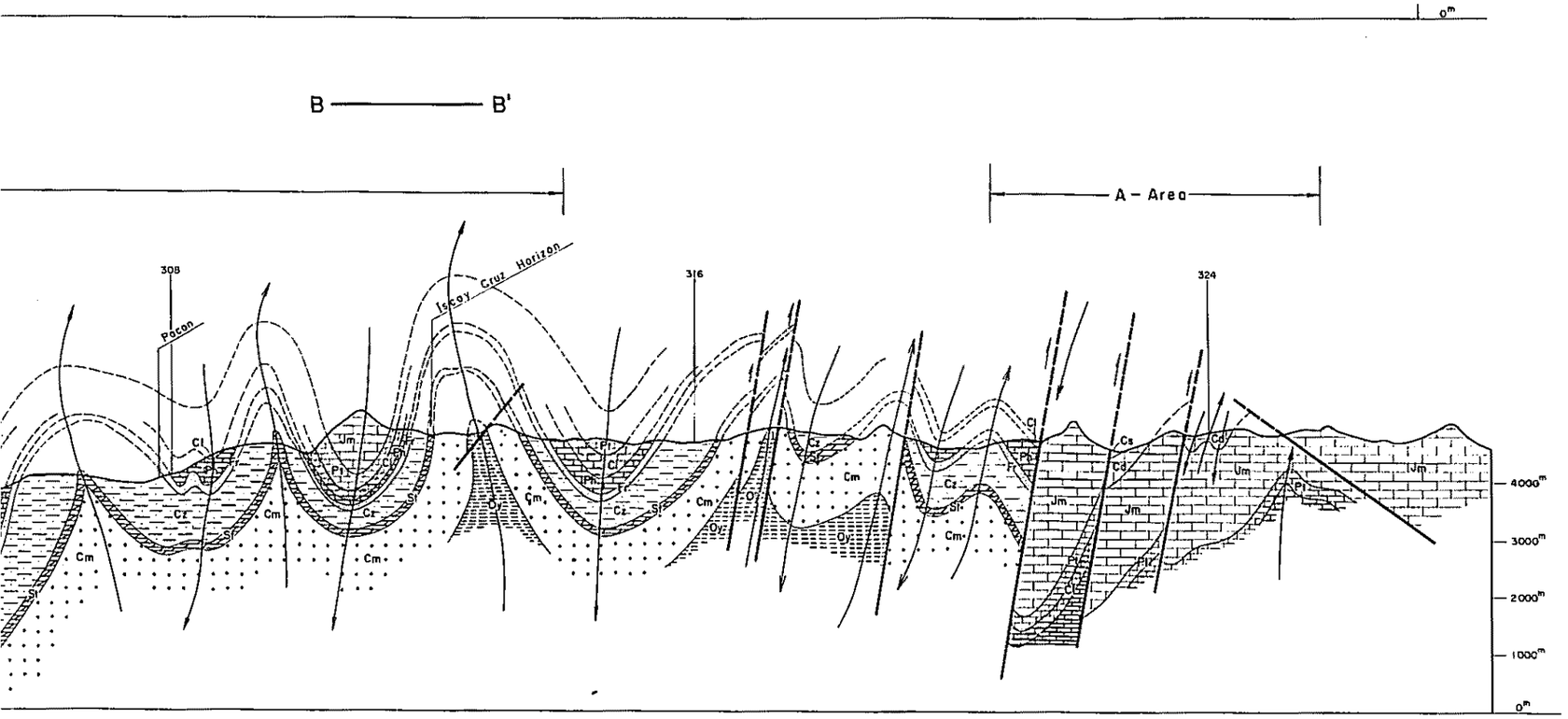
B ——— B'


C – Area
A – Area
300
308
316
324
Rio Checras
Huacho Sin Pescado
Pacon
Iscay Cruz Horizon
3000m
2000m
1000m
0m

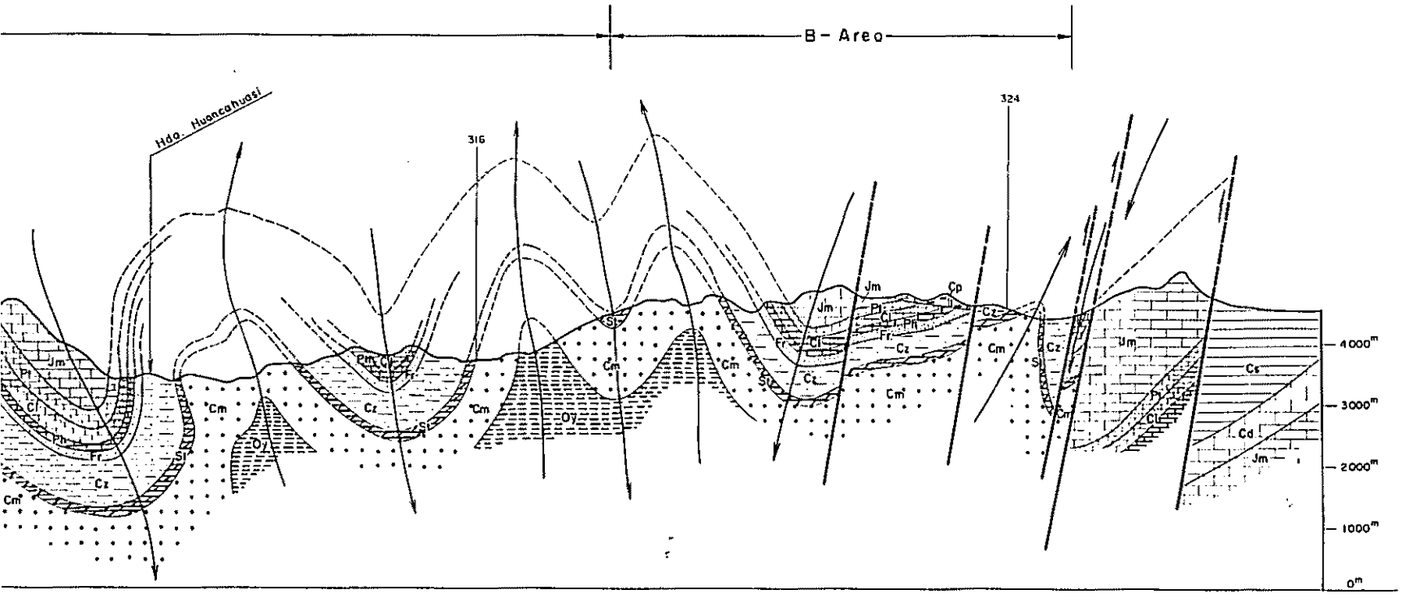
C ——— C'


C – Area
B – Area
300
308
316
324
San Agustin de Canin
Chiuchin
Hda. Huancahuasi
4000m
3000m
2000m
1000m
0m

B ——— B'



C ——— C'



FEBRUARY 1982

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0 5km

LEGEND

SEDIMENTARY ROCK

Quaternary	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Cd	Celendin formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
Cretaceous	Pk	Pariahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	Sl	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

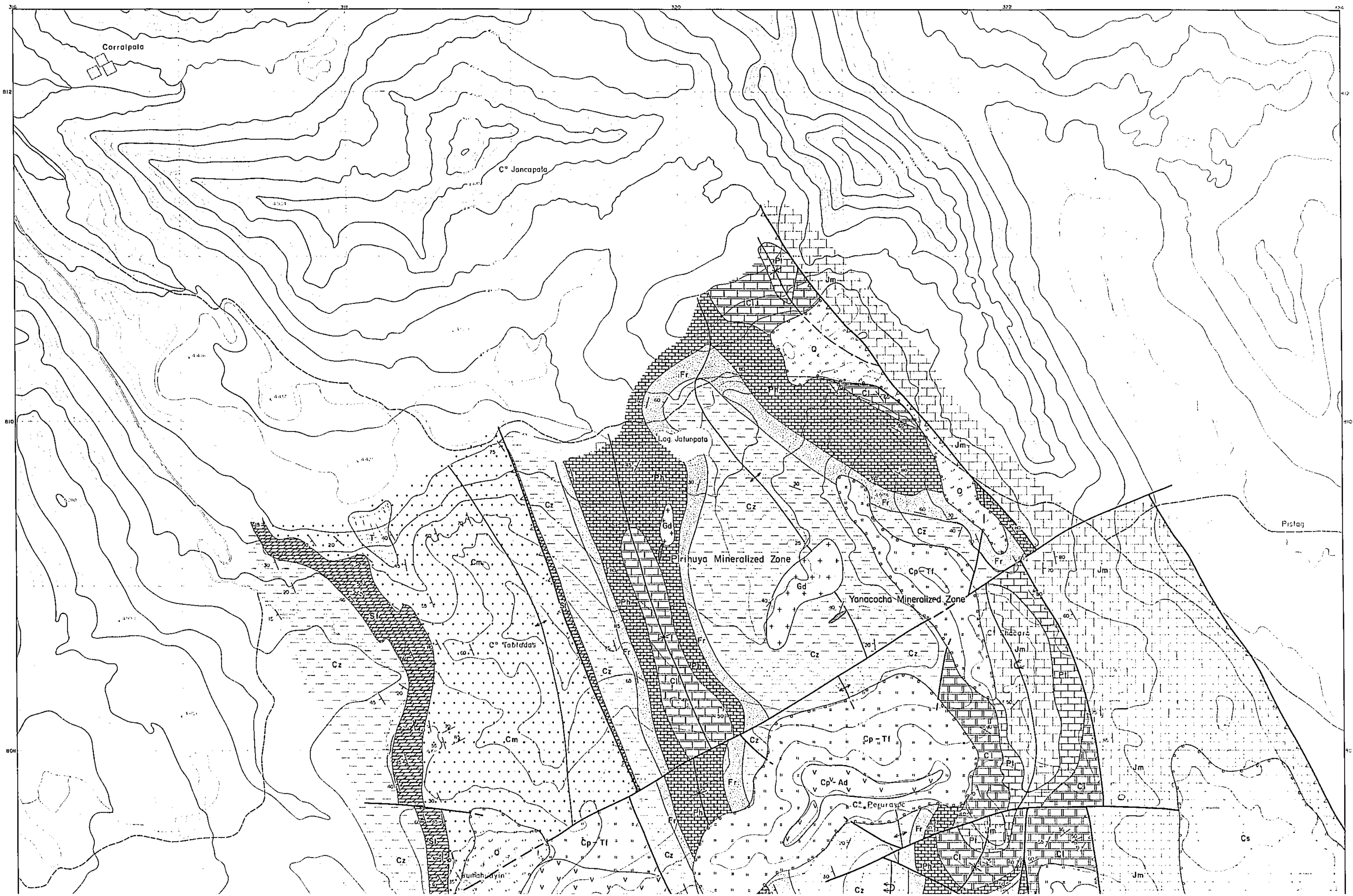
Ry Qp	Rhyolite, Quartz porphyry
Tp	Tonalite porphyry
Tn	Tonalite
Cp	Calipuy volcanics

Fault

Anticlinal folding axis

Synclinal folding axis

A ——— A' Geological section line

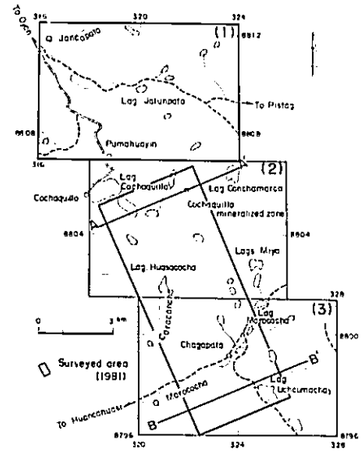


Corralpata
Cº Jancapata
Lag. Jatunpata
Pirihuya Mineralized Zone
Yanacocha Mineralized Zone
Cº Tabladas
Cº Peruraypc
Pistag
Cz
Cm
Sl
Ph
Cl
Pl
Jm
Fr
Gd
Q
Cp - Tf
Cp - Ad
Cs

PL.I-2-1

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL MAP
OF
THE DETAILED SURVEY AREA
(JATUNPATA AREA)



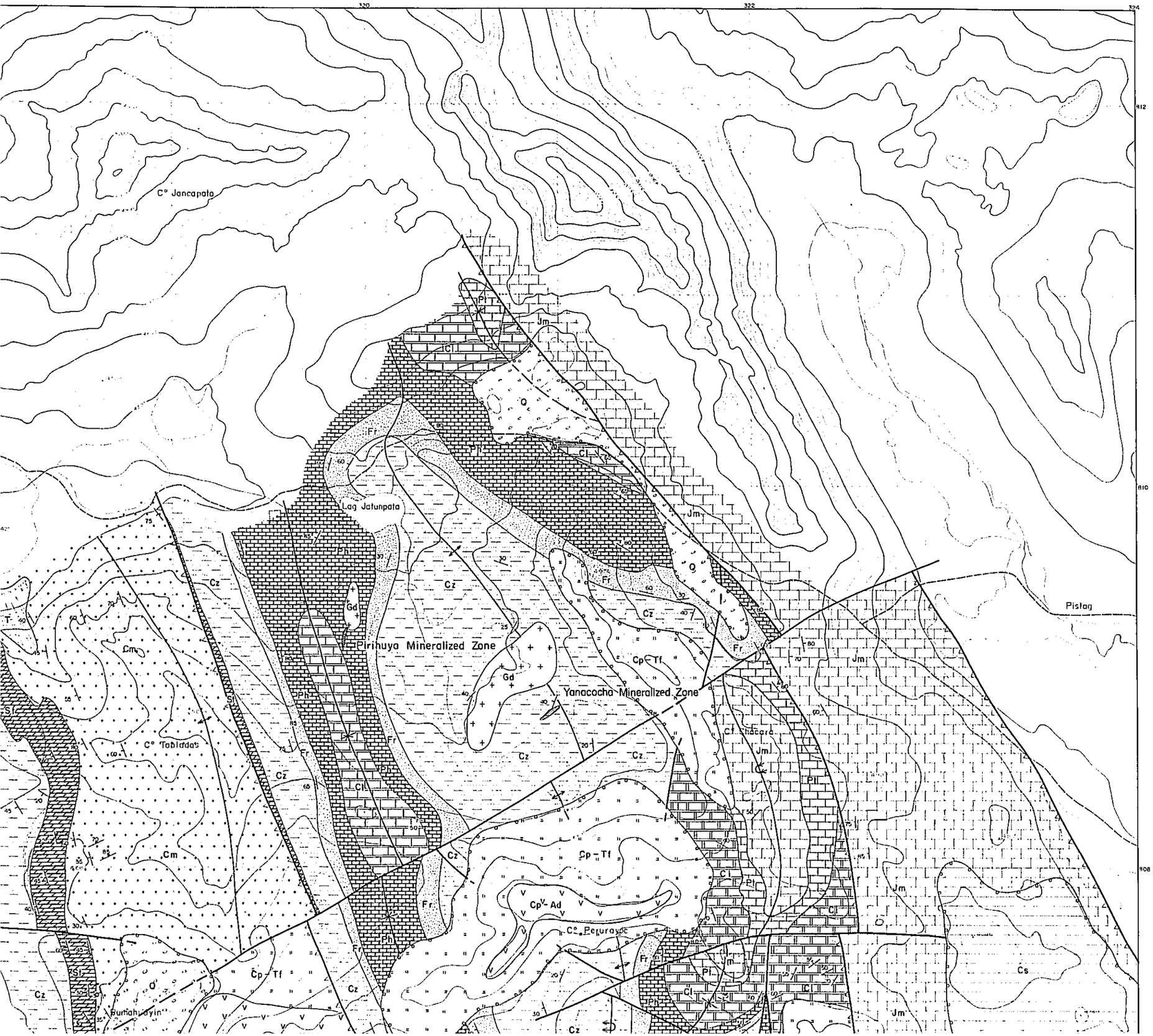
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc

Scale 1 : 10,000

0 500 1000m



LEGEND

SEDIMENTARY ROCK

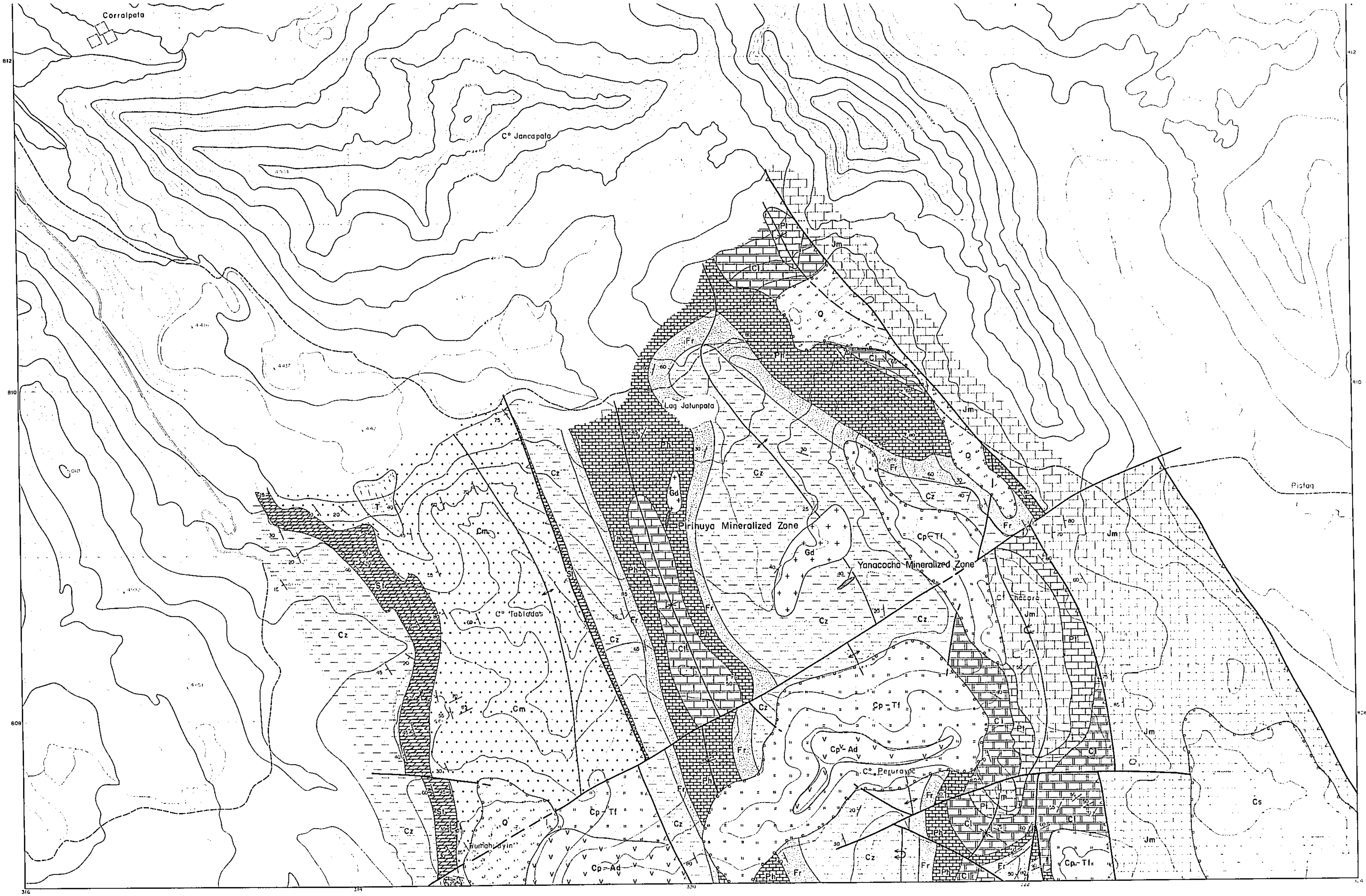
Quaternary	Q'	Talus
	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
Cretaceous	Fr	Farrat formation
	Cz	Carhuaz formation
	Si	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

	Gp	Granite porphyry
	Gd	Granodiorite, diorite
v v v	Cp - Adv	Andesite, tuff breccia
	Cp - Tf	Agglomerate, tuff breccia

Calipuy volcanics

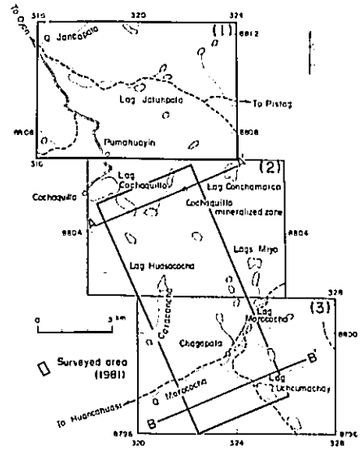
- Mineralized zone
- 60 Bedding plane
- Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis



Corralpata
C° Jancapata
Lag. Jatunpata
Pirihuya Mineralized Zone
Yanacocha Mineralized Zone
C° Tabladas
C° Chacara
C° Peruruyoc
Pistaq
Cz
Cm
Sl
T
Fr
Ph
Cl
Pl
Jm
Q
Gd
Cp-Tf
Cp-Ad
Cs
812
810
808

THE OYON AREA, PERU
PHASE II

GEOLOGICAL MAP OF THE DETAILED SURVEY AREA (JATUNPATA AREA)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 10,000

0 500 1000m

LEGEND

SEDIMENTARY ROCK

Quaternary
- Talus
- Alluvium

Tertiary Cretaceous
- Cs — Casapalca formation
- Jm — Jumasha formation
- Pl — Pariatambo formation
- Cl — Chulec formation
- Ph — Pariahuanca formation

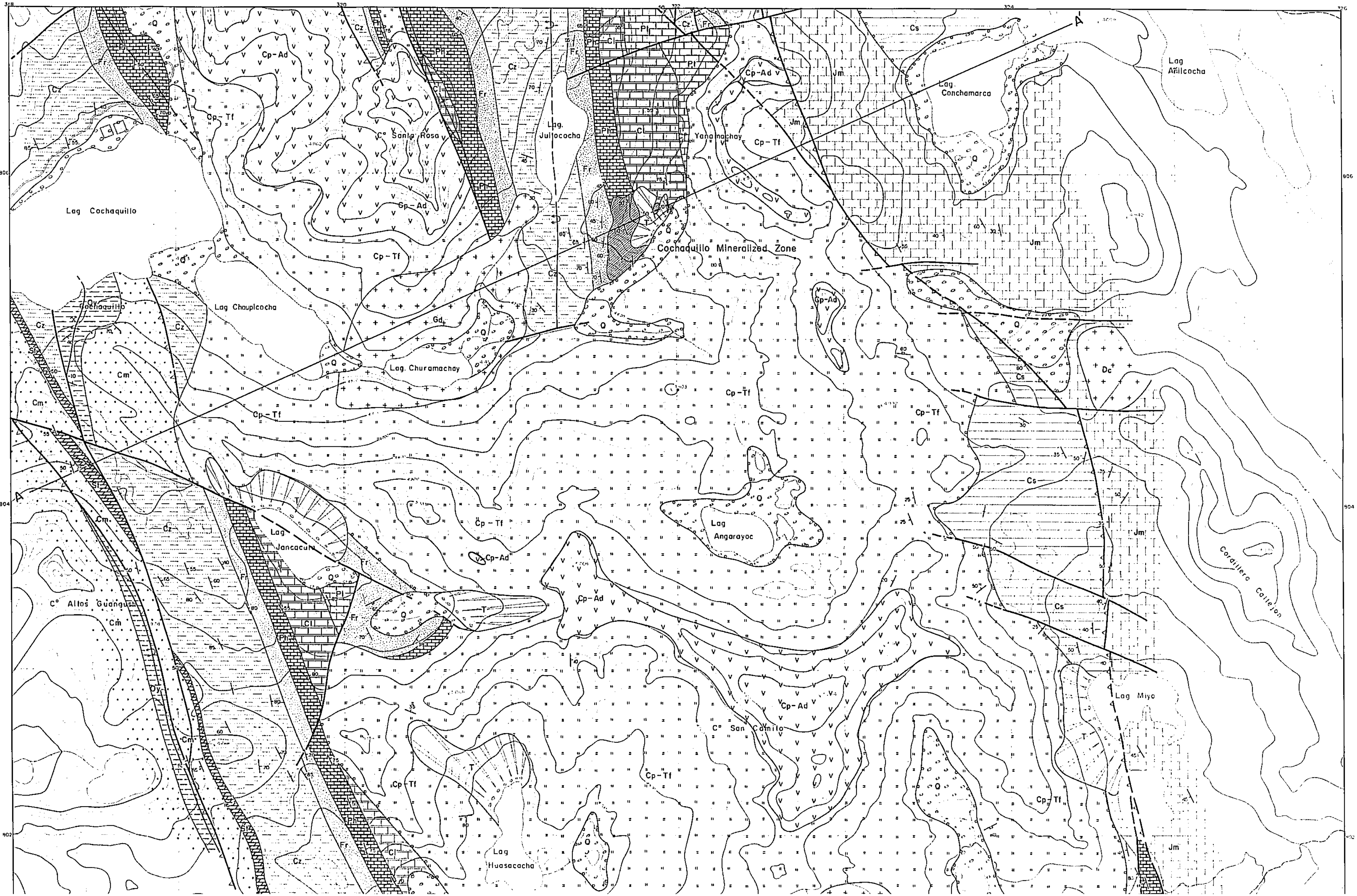
Cretaceous
- Fr — Farrat formation
- Cz — Carhuaz formation
- Sl — Santa formation
- Cm — Chimu formation
- Oy — Oyon formation

IGNEOUS ROCK

- Gp — Granite porphyry
- Gd — Granodiorite, diorite
- Cp-Adv — Andesite, tuff breccia
- Cp-Tf — Agglomerate, tuff breccia

Calipuy volcanics

- Mineralized zone
- 60 — Bedding plane
- 60 — Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis
- Synclinal folding axis
- Overturned folding axis
- Fault, thrust fault

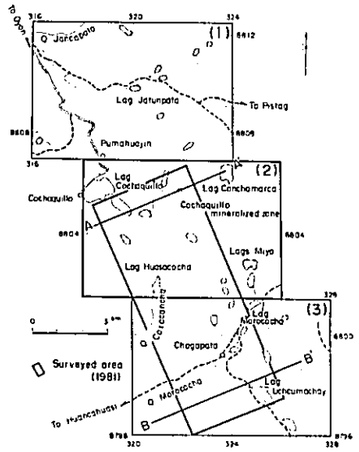


Lag Cochaquillo
Cochaquillo
Lag Chaupicocha
Lag. Churamachay
C° Santa Rosa
Lag. Juilococha
Yanamachay
Cochaquillo Mineralized Zone
Lag. Conchamarca
Lag Añilcocha
Lag Angarayoc
Lag Jancacuta
C° Altos Guangusi
C° San Camilo
Lag Huasacacha
Lag Miyo
Cordillera Callejon
A
A'

PL.I-2-2

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE II

GEOLOGICAL MAP
OF
THE DETAILED SURVEY AREA
(COCHAQUILLO AREA)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc

Scale 1 : 10,000

0 500 1000m

LEGEND

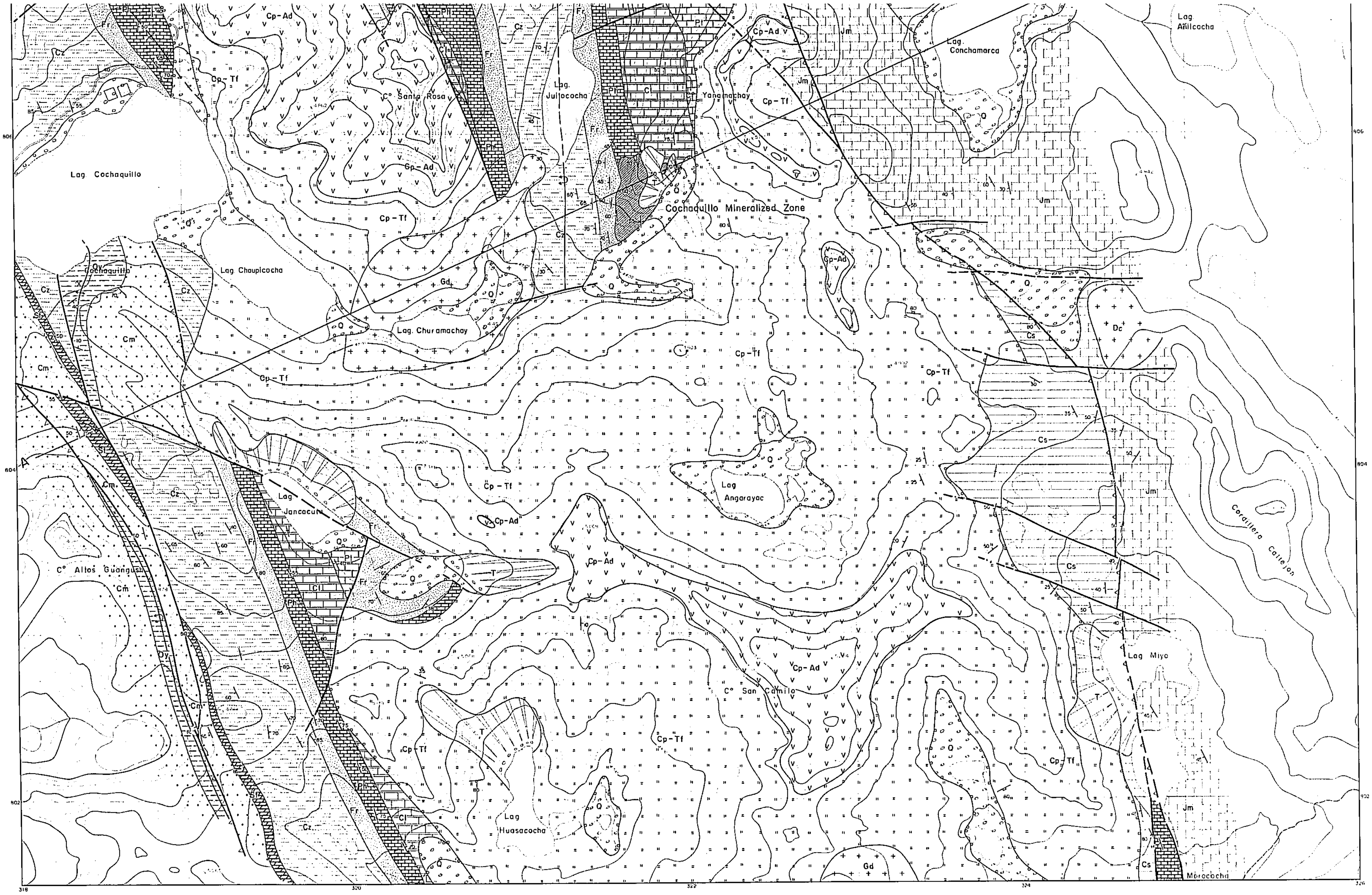
SEDIMENTARY ROCK

Quaternary	T	Talus
	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
Cretaceous	Fr	Farrat formation
	Cz	Carhuaz formation
	Si	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

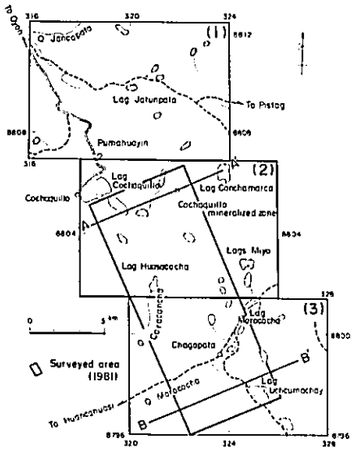
Gp	Granite porphyry	
Gd, Dc	Granodiorite, diorite, dacite	
vCp-Adv	Andesite, tuff breccia	Calipuy volcanics
Cp-Tf	Agglomerate, tuff breccia	Calipuy volcanics

- Mineralized zone
- 60 Bedding plane
- 80 Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis


Lag. Cochaquillo
Lag Chaupicocha
Cochaquillo
Lag. Churamachay
C° Santa Rosa
Lag. Jullococha
Yanamachay
Cochaquillo Mineralized Zone
Lag. Conchamarca
Lag. Añilcocha
Lag Jancacuta
Lag Angarayac
C° Altos Guangush
C° San Camilo
Lag Huasacocha
Lag Miyo
Cordillera Callejon
Morococha
A
Cp-Ad
Cp-Tf
Cz
Fr
Pl
Cl
Jm
Cs
Cm
Sl
Oy
Gd
Dc
Q
T
318
320
322
324
326
806
804
802

PHASE II

GEOLOGICAL MAP OF THE DETAILED SURVEY AREA (COCHAQUILLO AREA)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 10,000

0 500 1000m

LEGEND

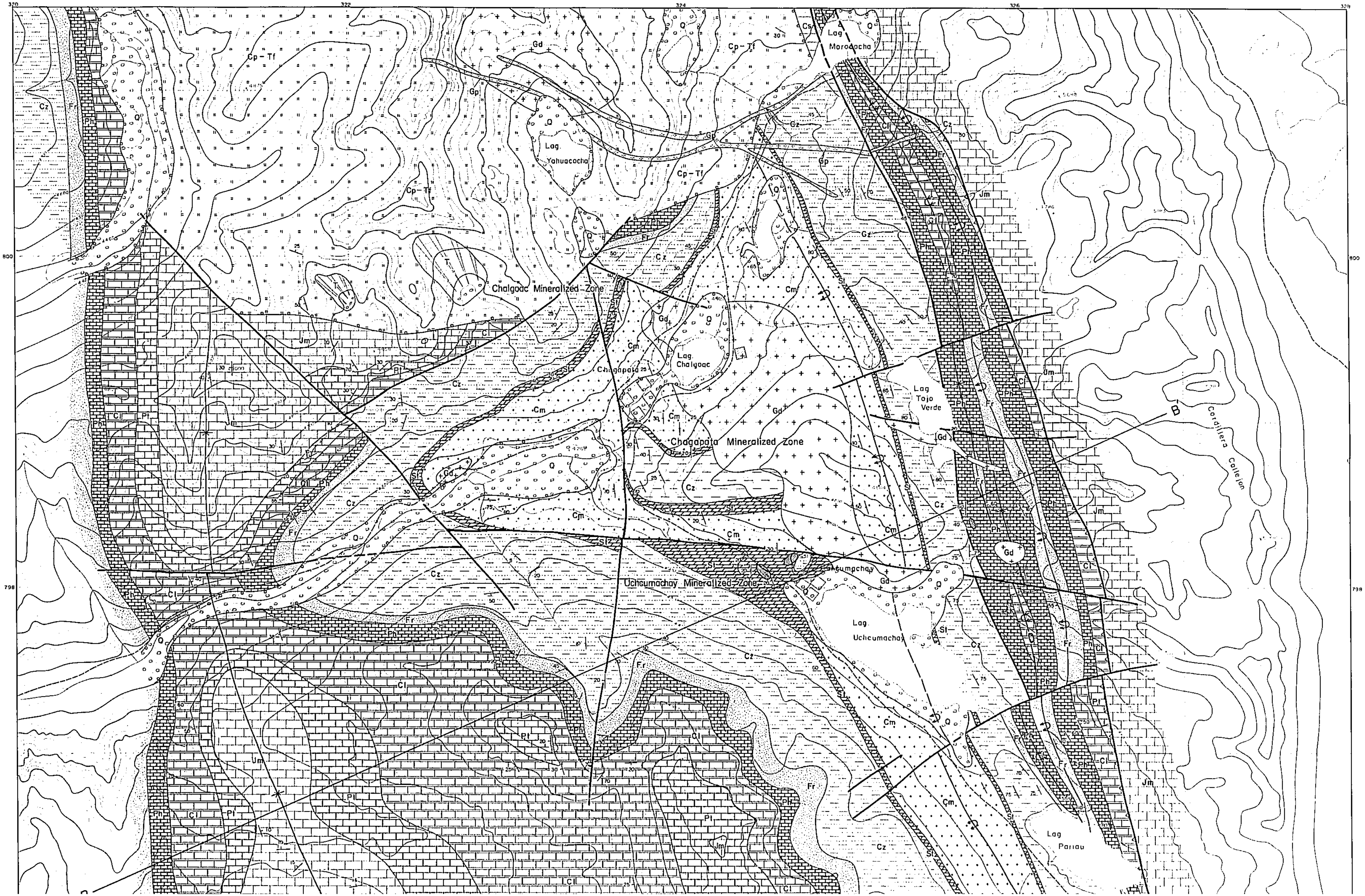
SEDIMENTARY ROCK

Quaternary	T	Talus
	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
Cretaceous	Fr	Farrat formation
	Cz	Carhuaz formation
	St	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

Gp	Granite porphyry	
Gd, Dc	Granodiorite, diorite, dacite	
Cp-Adv	Andesite, tuff breccia	Calipuy volcanics
Cp-Tf	Agglomerate, tuff breccia	Calipuy volcanics

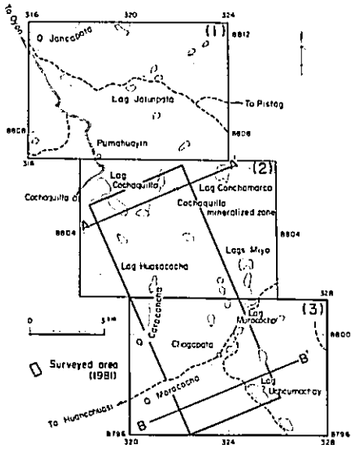
- Mineralized zone
- 60 Bedding plane
- 80 Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis
- Synclinal folding axis
- Overturned folding axis
- Fault, thrust fault



320
322
324
326
800
798
Lag. Morococha
Lag. Yahuacocha
Cp-Tf
Gd
Gp
Q
Cz
Fr
Ph
Cl
Jm
Pl
Cm
Sl
Chalgoac Mineralized Zone
Lag. Chalgoac
Chagapata
Chagapata Mineralized Zone
Lag. Tojo Verde
Uchcumachay
Uchcumachay Mineralized Zone
Lag. Uchcumachay
Lag. Pariau
Cordillera Callejon
B'

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL MAP OF THE DETAILED SURVEY AREA (CHAGAPATA AREA)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 10,000

0 500 1000m

LEGEND

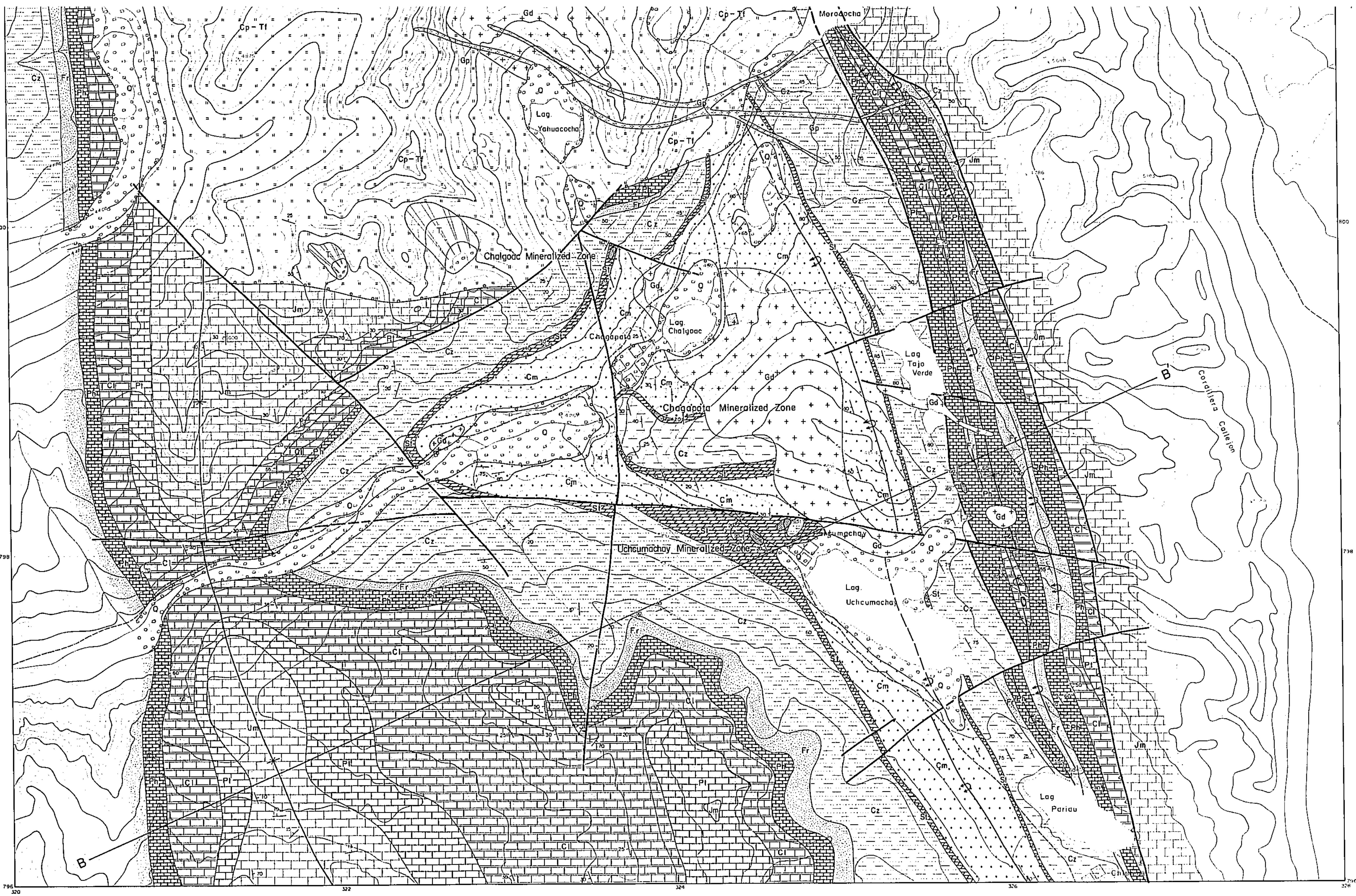
SEDIMENTARY ROCK

Quaternary	T	Talus
	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Jm	Jumasha formation
	Pl	Pariatamba formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
Cretaceous	Fr	Farrat formation
	Cz	Carhuaz formation
	Sl	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

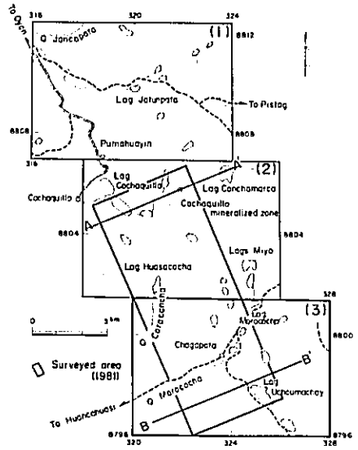
	Gp	Granite porphyry
	Gd	Granodiorite, diorite
Colipuy volcanics	Cp-Adv	Andesite, tuff breccia
	Cp-Tf	Agglomerate, tuff breccia

- Mineralized zone
- Bedding plane
- Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis


Morococha
Lag. Yahuacocha
Chalgoac Mineralized Zone
Lag. Chalgoac
Chagapata
Chagapata Mineralized Zone
Lag. Tajo Verde
Cordillera Callejon
Uchcumachay
Uchcumachay Mineralized Zone
Lag. Uchcumachay
Lag. Pariau
Cp-Tf
Gd
Gp
Cz
Cm
Jm
Cl
Ph
Pt
Fr
Q
St
B
B'
800
798
796
320
322
324
326
328

THE OYON AREA, PERU
PHASE III

GEOLOGICAL MAP OF THE DETAILED SURVEY AREA (CHAGAPATA AREA)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 10,000

0 500 1000m

LEGEND

SEDIMENTARY ROCK

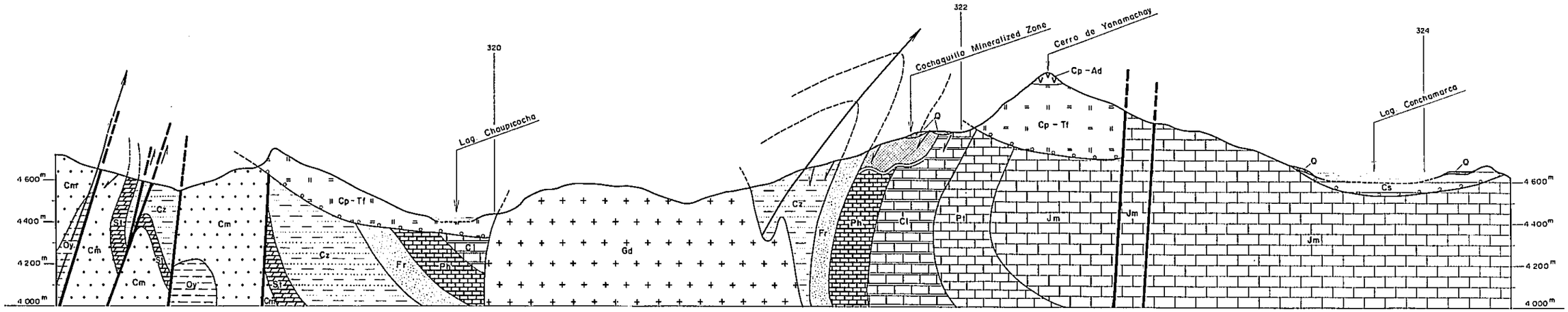
Quaternary	Q	Talus
	Q	Alluvium
Tertiary Cretaceous	Cs	Casapalca formation
	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
Cretaceous	Fr	Farrat formation
	Cz	Carhuaz formation
	St	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

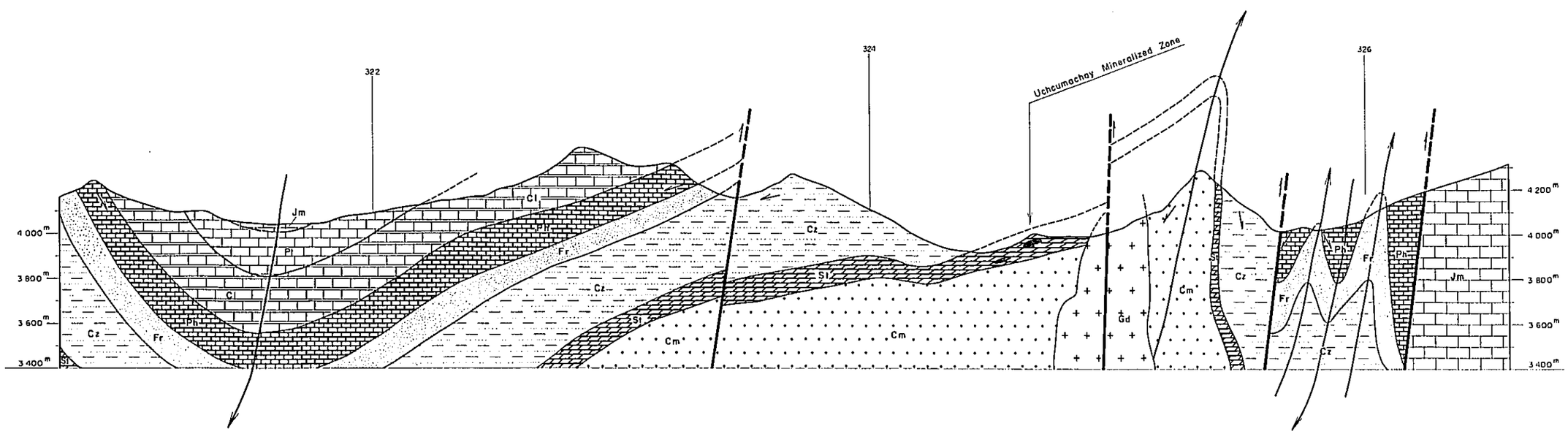
	Gp	Granite porphyry
	Gd	Granodiorite, diorite
	Cp-Adv	Andesite, tuff breccia
Calipuy volcanics	Cp-Tf	Agglomerate, tuff breccia

- Mineralized zone
- 60 Bedding plane
- 80 Joint
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis
- Synclinal folding axis
- Overturned folding axis
- Fault, thrust fault

A ——— A'


320
322
324
Lag. Chaupicocha
Cochaguilla Mineralized Zone
Cerro de Yanamachay
Lag. Conchamarca
Cp - Ad
Cp - Tf
Cz
Cm
Oy
Cl
Ph
Pl
Fr
Gd
Jm
Cs
St
4 600m
4 400m
4 200m
4 000m

B ——— B'

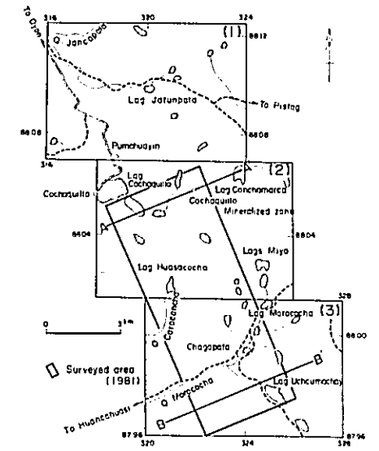

322
324
326
Uchcumachay Mineralized Zone
Jm
Cl
Ph
Pl
Fr
Cz
Cm
Gd
St
4 200m
4 000m
3 800m
3 600m
3 400m

09283

PL.I-2-4

GEOLOGICAL SURVEY OF THE OYON AREA, PERU PHASE III

GEOLOGICAL PROFILE OF THE DETAILED SURVEY AREA



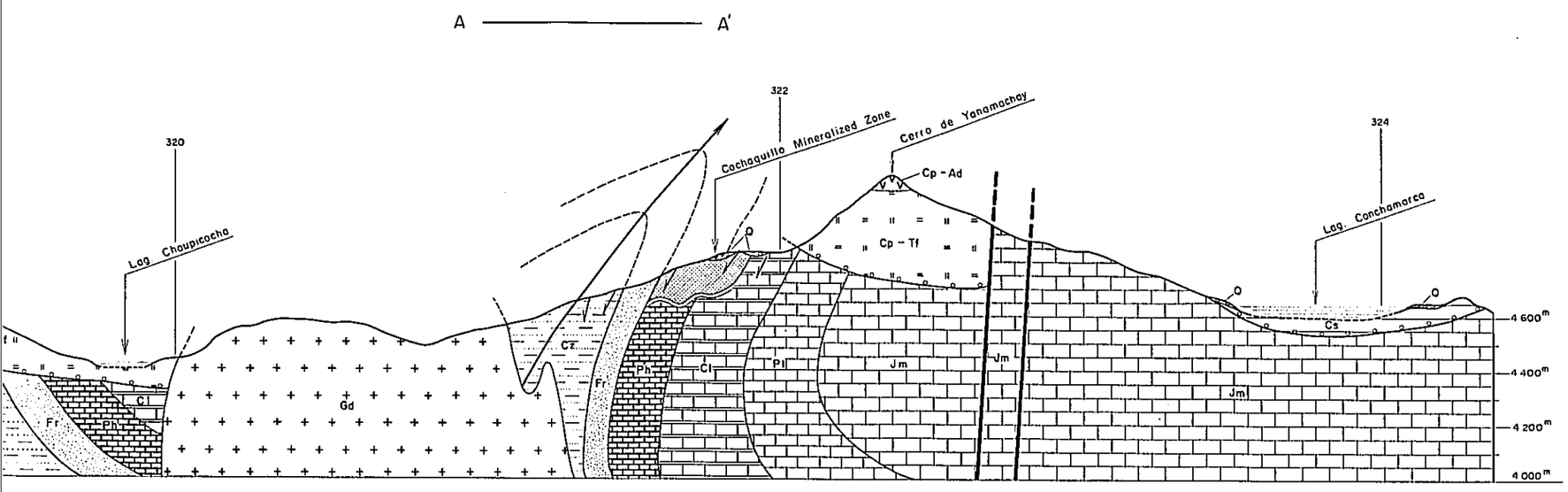
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982
prepared by MESCO, Inc.

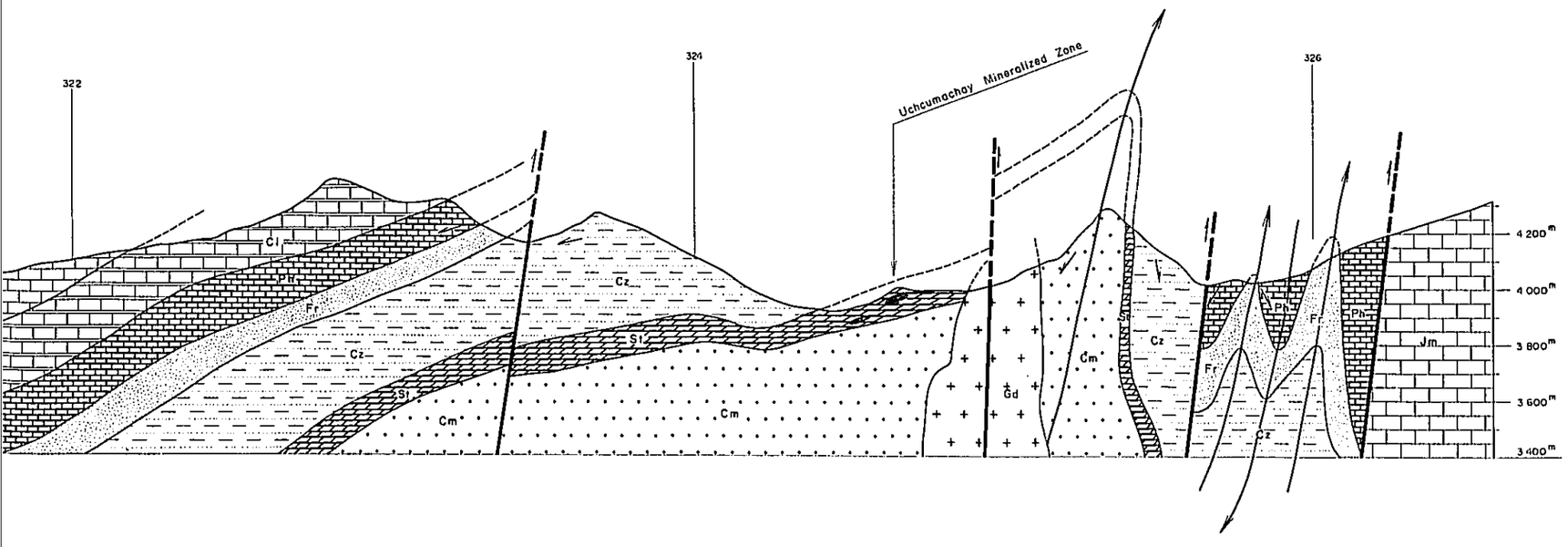
Scale 1 : 10,000

0 500 1000m

A ——— A'



B ——— B'



LEGEND

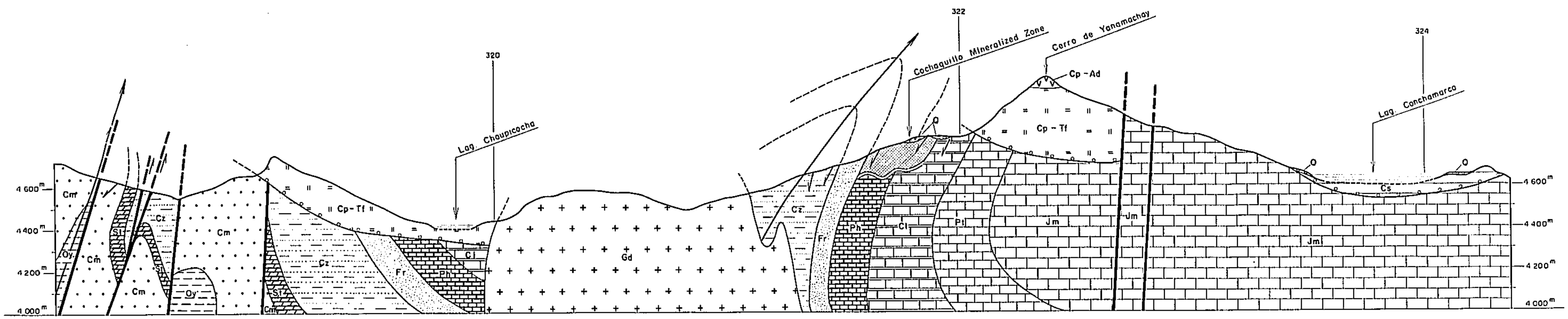
SEDIMENTARY ROCK

Quaternary	Qo	Alluvium
Tertiary	Cs	Casapalca formation
Cretaceous	Jm	Jumasha formation
	Pl	Pariatambo formation
	Cl	Chulec formation
	Ph	Pariahuanca formation
	Fr	Farrat formation
	Cz	Carhuaz formation
	St	Santa formation
	Cm	Chimu formation
	Oy	Oyon formation

IGNEOUS ROCK

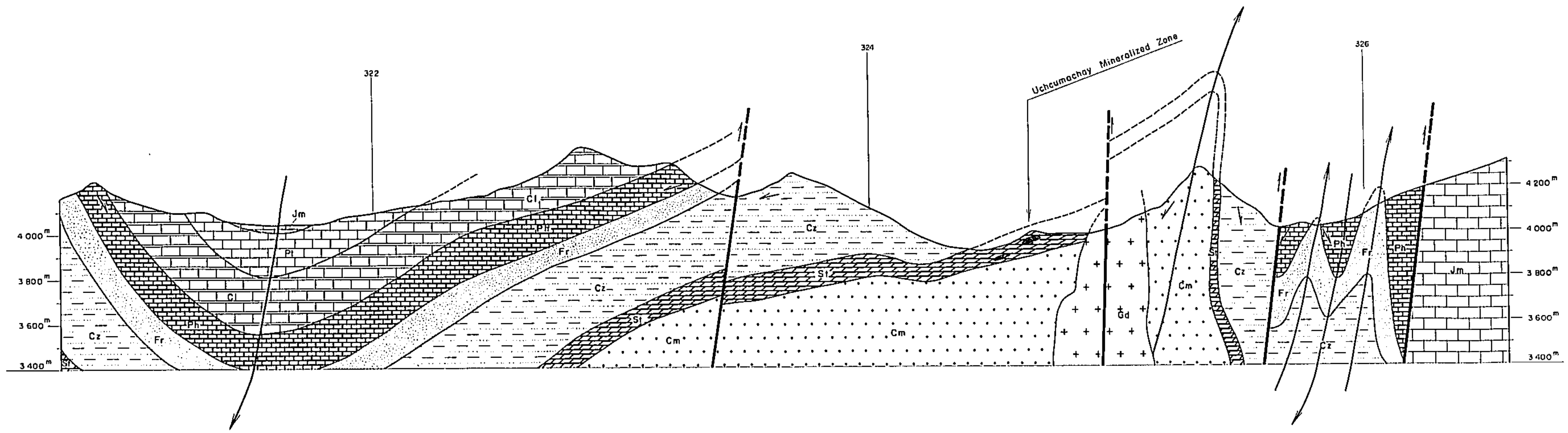
Gd	Granodiorite, diorite
Cp-Ad	Andesite, tuff breccia (Calipuy Volcanics)
Cp-Tf	Agglomerate, tuff breccia (Calipuy Volcanics)
	Mineralized zone
	Stratum dip
	Geologic boundary conformable
	Geologic boundary unconformable
	Anticlinal folding axis
	Synclinal folding axis
	Fault

A —— A'



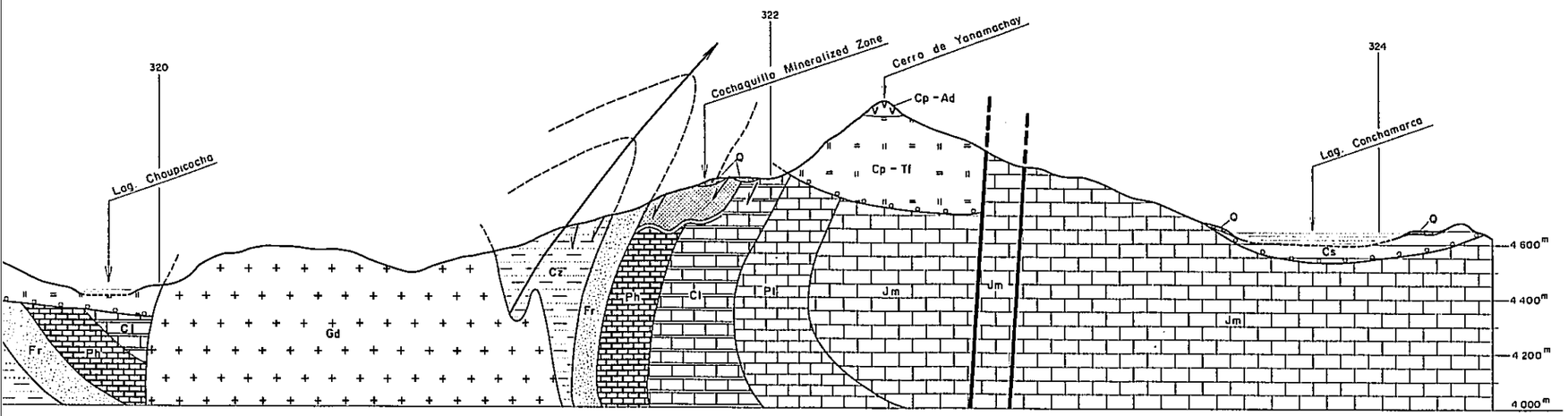
320
322
324
Lag. Chaupicocha
Cochaquillo Mineralized Zone
Cerro de Yanamachay
Lag. Conchamarca
Cp - Ad
Cp - Tf
Cm
Cz
St
Oy
Cl
Ph
Fr
Gd
Pt
Jm
Cs
4 600m
4 400m
4 200m
4 000m

B —— B'

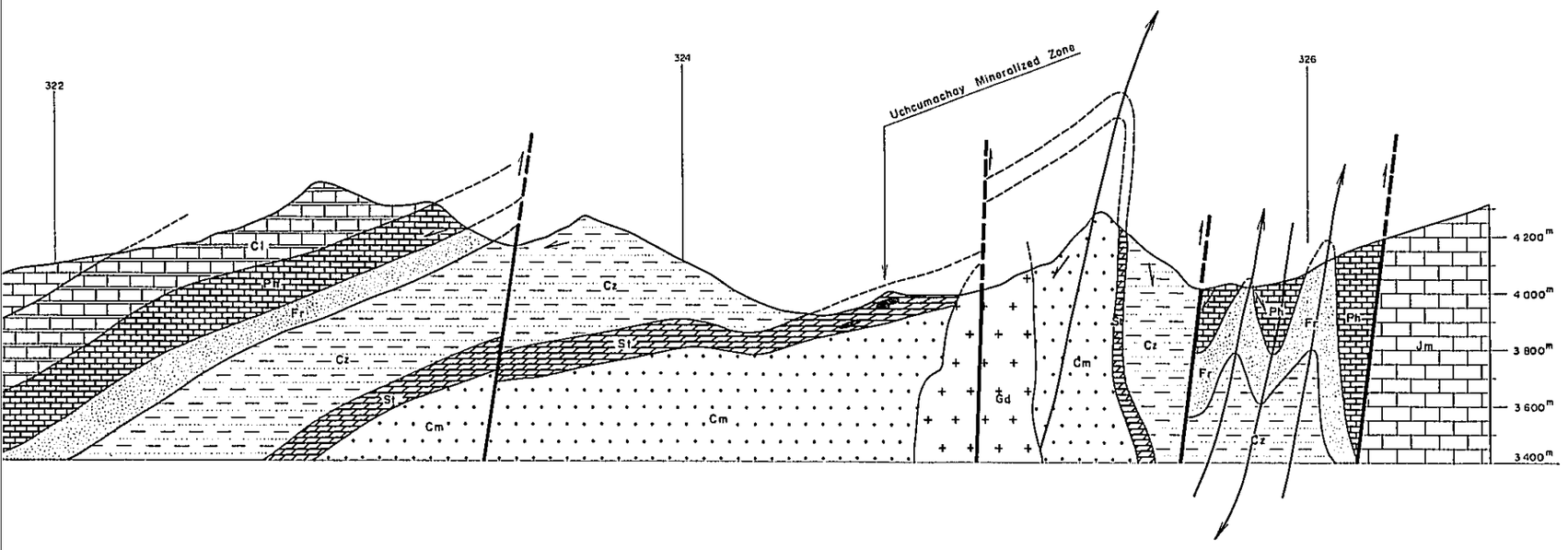


322
324
326
Uchcumachay Mineralized Zone
Jm
Pt
Cl
Ph
Fr
Cz
St
Cm
Gd
4 200m
4 000m
3 800m
3 600m
3 400m

A ——— A'

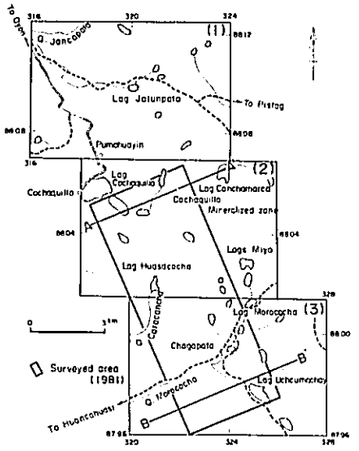


B ——— B'



PHASE III

GEOLOGICAL PROFILE OF THE DETAILED SURVEY AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982
prepared by MESCO, Inc.

Scale 1 : 10,000

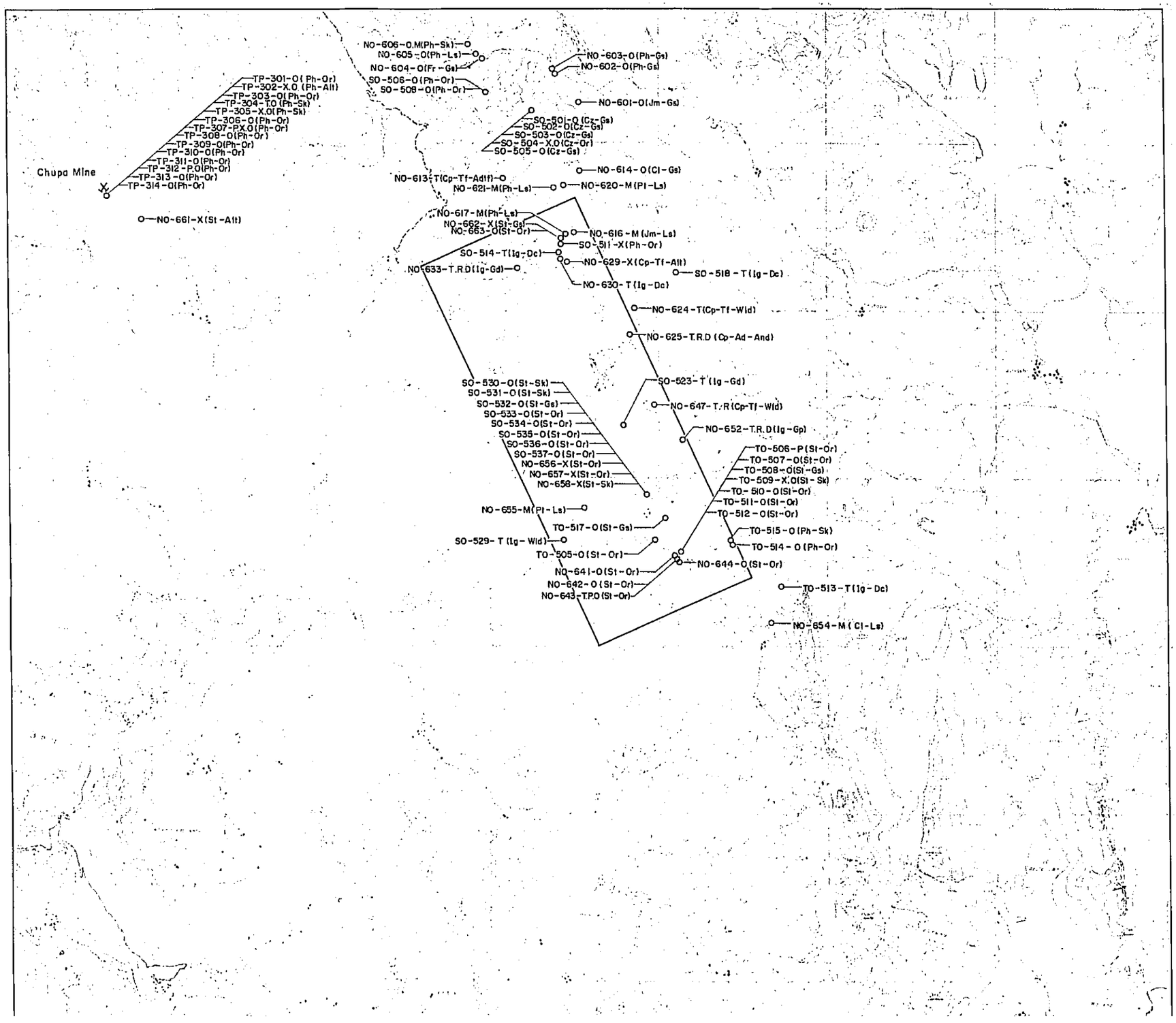
LEGEND

SEDIMENTARY ROCK

- Quaternary — Alluvium
- Tertiary Cretaceous — Cs — Casapalca formation
- Jm — Jumasha formation
- Pl — Pariatambo formation
- Cl — Chulec formation
- Ph — Pariahuanca formation
- Cretaceous — Fr — Farrat formation
- Cz — Carhuaz formation
- Sl — Santa formation
- Cm — Chimu formation
- Oy — Oyon formation

IGNEOUS ROCK

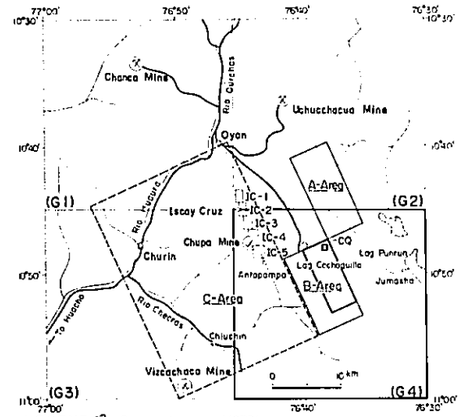
- Gd — Granodiorite, diorite
- Cp-Ad — Andesite, tuff breccia — Calipuy Volcanics
- Cp-Tf — Agglomerate, tuff breccia — Calipuy Volcanics
- Mineralized zone
- Stratum dip
- Geologic boundary conformable
- Geologic boundary unconformable
- Anticlinal folding axis
- Synclinal folding axis
- Fault



GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I - 3

LOCATION MAP FOR SAMPLING IN THE SURVEY AREA



LEGEND
- Surveyed area (1979)
- Surveyed area (1980)
- Detailed survey area (1979, 1980)
- Detailed survey area (1981)

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 5km

LEGEND

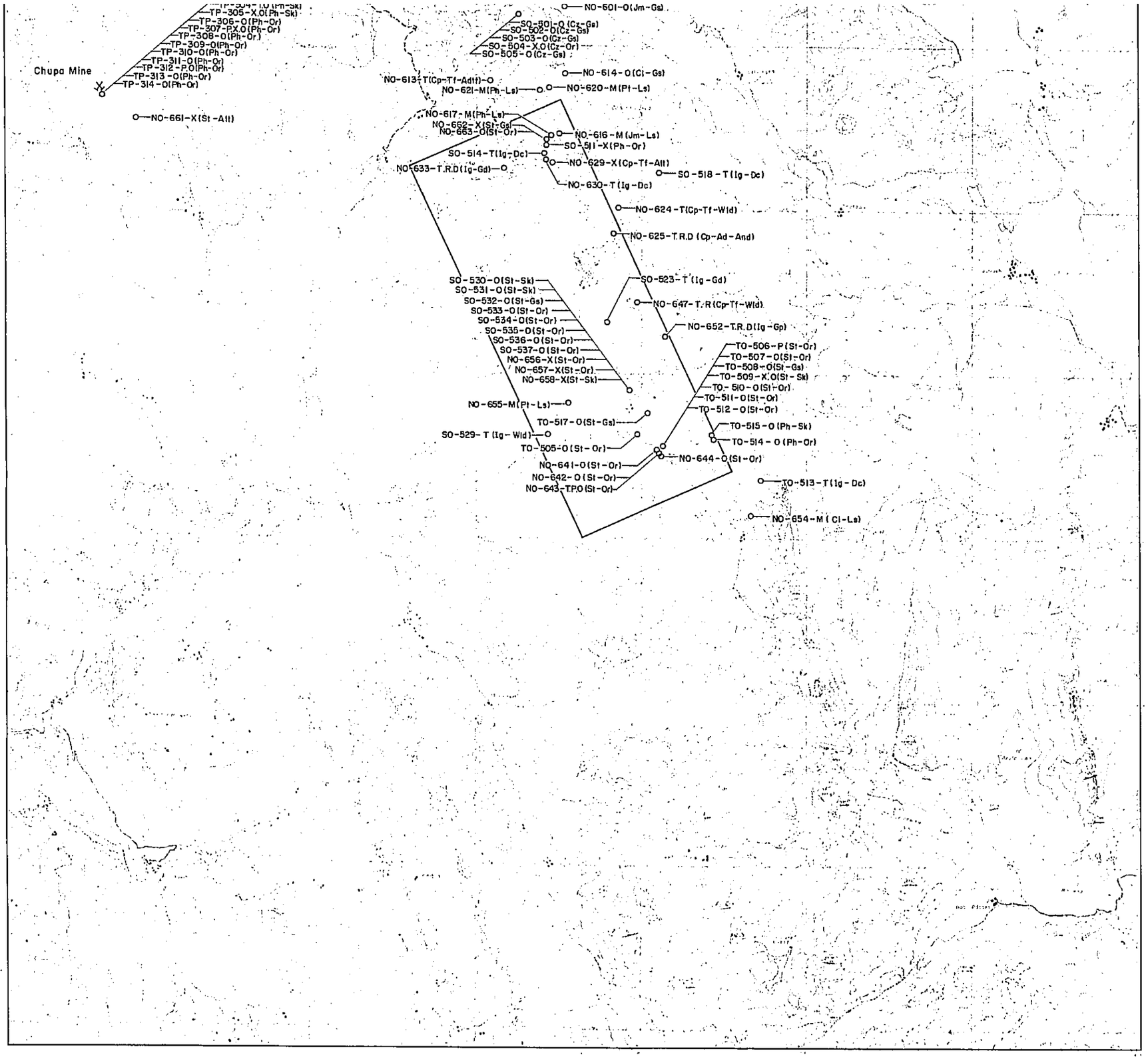
O ---------- Sample location of rock or ore

SO - 502 - T	Sample for thin section
SO - 503 - P	Sample for polished section
SO - 504 - X	Sample for X-ray diffraction test
SO - 505 - E	Sample for EPMA (electron prove microanalysis)
SO - 506 - O	Ore sample for chemical analysis
SO - 507 - R	Sample for complete assay
SO - 508 - D	Sample for isotopic age determination
SO - 510 - M	Sample for analysis of rock forming elements

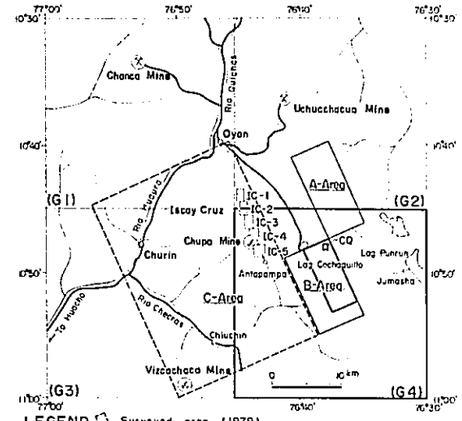
⛏ Abandoned mine

ABBREVIATION

Jm	Jumasha formation	Ls	Limestone
Pl	Pariatambo formation	Adlf	Andesitic tuff
Cl	Chulec formation	Wld	Welded tuff
Ph	Pariahuanca formation	Ry	Rhyolite
Fr	Farrat formation	Dc	Dacite & Dacite porphyry
Cz	Carhuaz formation	And	Andesite
St	Santa formation	Gd	Granodiorite



IN THE SURVEY AREA



LEGEND
- Surveyed area (1979)
- Surveyed area (1980)
- Detailed survey area (1979, 1980)
- Detailed survey area (1981)

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 50,000

0 5km

LEGEND

O ---------- Sample location of rock or ore

SO-502-T	Sample for thin section
SO-503-P	Sample for polished section
SO-504-X	Sample for X-ray diffraction test
SO-505-E	Sample for EPMA (electron prove microanalysis)
SO-506-O	Ore sample for chemical analysis
SO-507-R	Sample for complete assay
SO-508-D	Sample for isotopic age determination
SO-510-M	Sample for analysis of rock forming elements

Abandoned mine

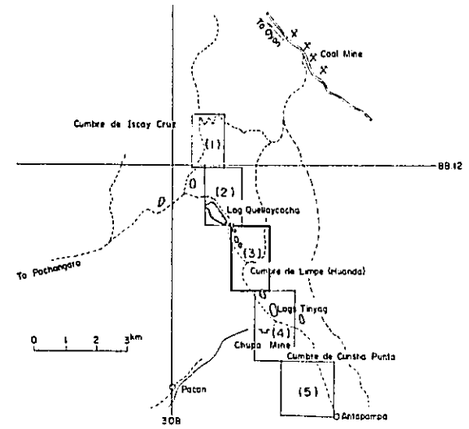
ABBREVIATION

Jm	Jumasha formation	Ls	Limestone
Pt	Pariatambo formation	Adtf	Andesitic tuff
Cl	Chulec formation	Wld	Welded tuff
Ph	Pariahuanca formation	Ry	Rhyolite
Fr	Farrat formation	Dc	Dacite & Dacite porphyry
Cz	Carhuaz formation	And	Andesite
St	Santa formation	Gd	Granodiorite
		Gp	Granite porphyry
Ig	Igneous rock	Alt	Altered rocks
Cp-Ad	Andesite, tuff breccia		
Cp-Tf	Agglomerate, tuff breccia	Or	Ore
		Gs	Gossan
		Sk	Skorn

PL.I-4-1

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL SKETCH AND GEOCHEMICAL ASSAY MAP OF THE ISCAY CRUZ (CENTRAL PART)

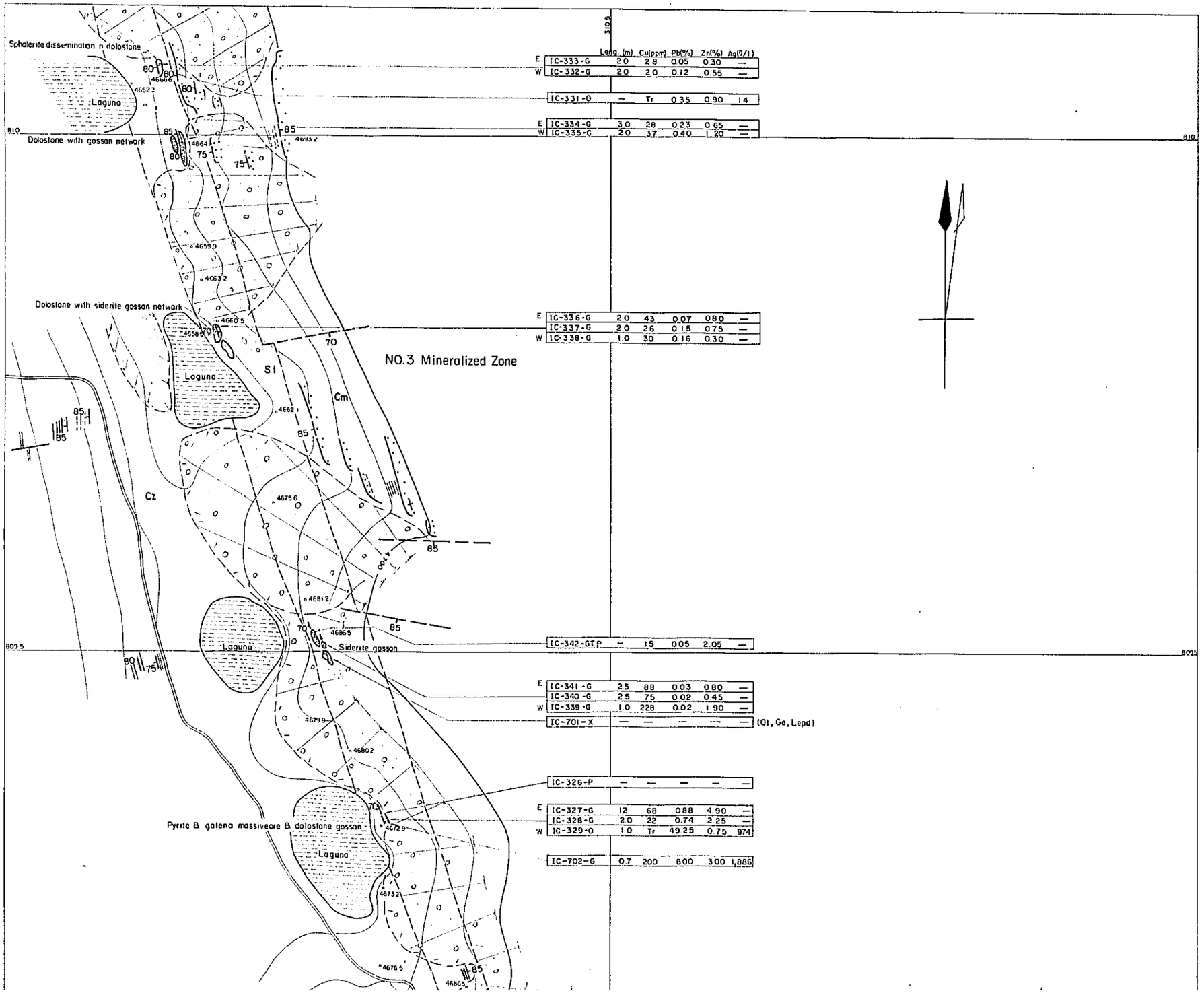


METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

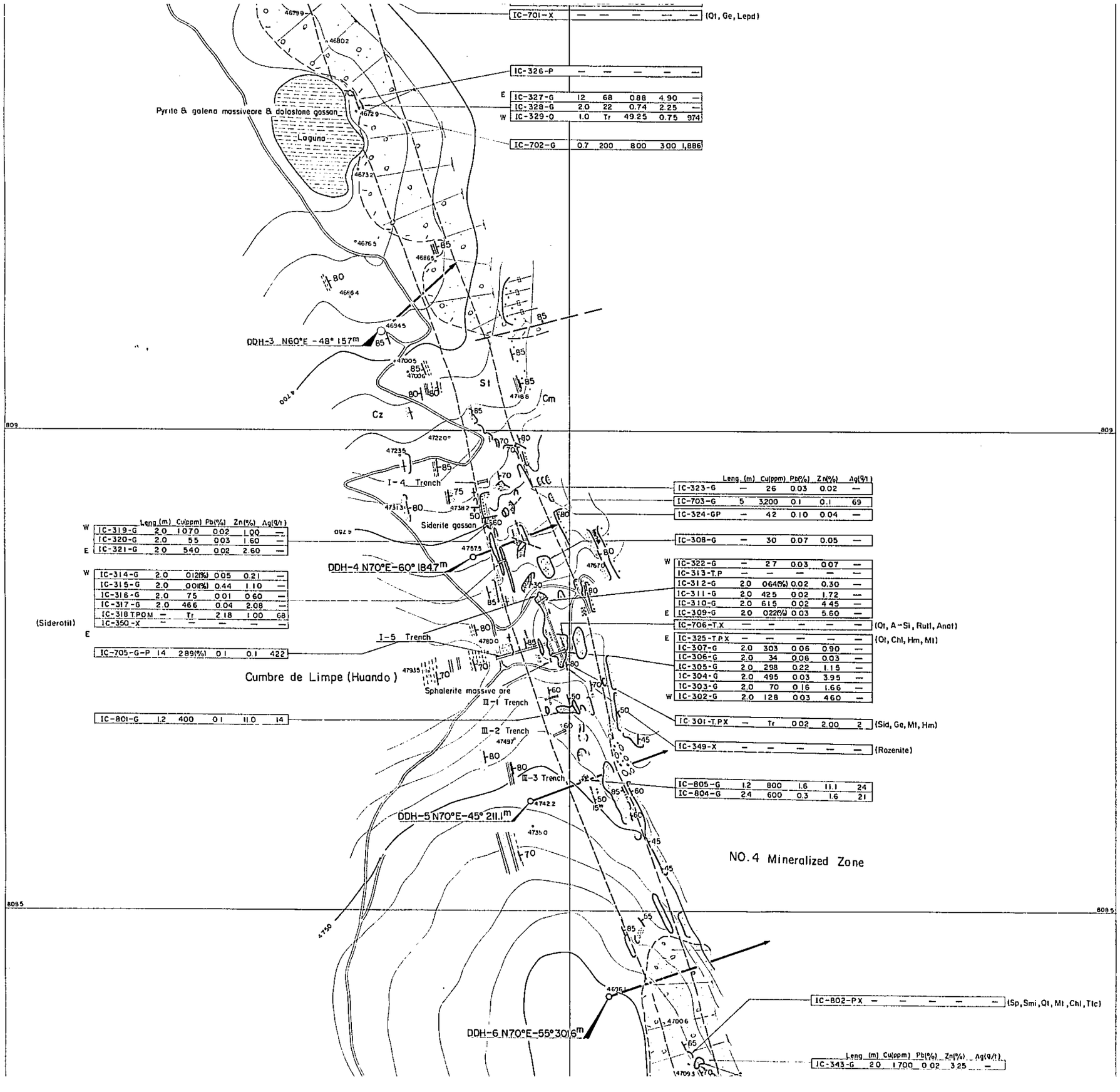
Prepared by MESCO, Inc.

0 Scale 1:2,000 200m



LEGEND

- Talus
- Shale
- Red shale
- Alternation of shale and sandstone
- Sandstone
- Quartzite
- Limestone
- Dolomitic limestone
- Dolostone
- Gossan
- Porous gossan
- Rhyolite, Quartz porphyry
- Bedding Plane
- Fault, confirmed
- Joint



Alternation of shale and sandstone
Sandstone
Quartzite
Limestone
Dolomitic limestone
Dolostone
Gossan
Porous gossan
Rhyolite, Quartz porphyry
Bedding Plane
Fault, confirmed
Joint
Adit
Trenching
Locality of channel sampling

STRATIGRAPHY

- Jm — Jumasha formation
- Pt — Pariatambo formation
- Cl — Chulec formation
- Ph — Pariahuanca formation
- Fr — Farrat formation
- Cz — Carhuaz formation
- St — Santa formation
- Cm — Chimu formation

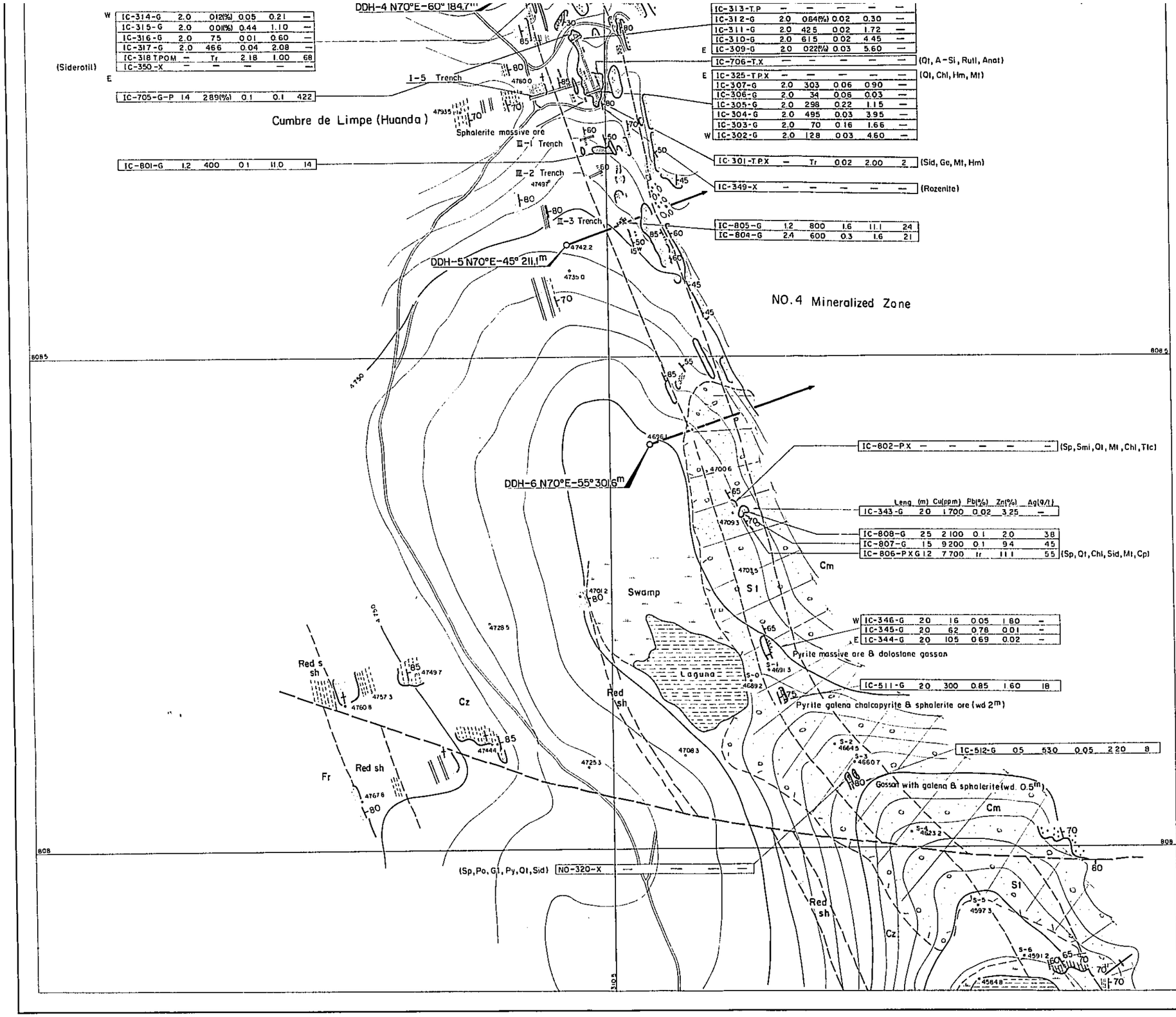
Leng (m) Cu(ppm) Pb(%) Zn(%) Ag(g/t)
IC-101-G 2.5 25 0.02 5.05 12.0
Sampling location and assay results

NO-102-T Sample for thin section
NO-103-P Sample for polished section
NO-104-X Sample for X-roy diffraction test
NO-105-E Sample for EPMA (Electron prove microanalysis)
NO-106-O Sample for chemical analysis
NO-107-M Sample for analysis of rock forming elements

Location of drilling

Abbreviation of the contained minerals

Qt	Quartz
Cal	Calcite
Do	Dolomite
Sid	Siderite
Bar	Barite
Ser	Sericite
Chl	Chlorite
Kaol	Kaolinite
Sp	Sphalerite
Gl	Galena



		Leng (m)	Cu(ppm)	Pb(%)	Zn(%)	Ag(g/t)
W	IC-314-G	2.0	012(%)	0.05	0.21	—
	IC-315-G	2.0	001(%)	0.44	1.10	—
	IC-316-G	2.0	75	0.01	0.60	—
	IC-317-G	2.0	466	0.04	2.08	—
	IC-318 T.POM	—	Tr	2.18	1.00	68
	IC-350-X	—	—	—	—	—
E	IC-705-G-P	1.4	289(%)	0.1	0.1	422

	IC-313-T.P	—	—	—	—	—
	IC-312-G	2.0	064(%)	0.02	0.30	—
	IC-311-G	2.0	425	0.02	1.72	—
	IC-310-G	2.0	615	0.02	4.45	—
E	IC-309-G	2.0	022(%)	0.03	5.60	—
	IC-706-T.X	—	—	—	—	—
E	IC-325-T.P.X	—	—	—	—	—
	IC-307-G	2.0	303	0.06	0.90	—
	IC-306-G	2.0	34	0.06	0.03	—
	IC-305-G	2.0	298	0.22	1.15	—
	IC-304-G	2.0	495	0.03	3.95	—
	IC-303-G	2.0	70	0.16	1.66	—
W	IC-302-G	2.0	128	0.03	4.60	—

	IC-801-G	1.2	400	0.1	11.0	14
	IC-301-T.P.X	—	Tr	0.02	2.00	2
	IC-349-X	—	—	—	—	—
	IC-805-G	1.2	800	1.6	11.1	24
	IC-804-G	2.4	600	0.3	1.6	21
	IC-802-P.X	—	—	—	—	—

	Leng (m)	Cu(ppm)	Pb(%)	Zn(%)	Ag(g/t)	
IC-343-G	2.0	1700	0.02	3.25	—	
IC-808-G	2.5	2100	0.1	2.0	38	
IC-807-G	1.5	9200	0.1	9.4	45	
IC-806-P.X.G	1.2	7700	tr	11.1	55	(Sp, Qt, Chl, Sid, Mt, Cp)

W	IC-346-G	2.0	16	0.05	1.80	—
	IC-345-G	2.0	62	0.78	0.01	—
E	IC-344-G	2.0	105	0.69	0.02	—
	IC-511-G	2.0	300	0.85	1.60	18

	IC-512-G	0.5	530	0.05	2.20	8

Leng (m) Cu(ppm) Pb(%) Zn(%) Ag(g/t)

IC-101-G 2.5 25 002 505 12.0
Sampling location and assay results

NO-102-T Sample for thin section

NO-103-P Sample for polished section

NO-104-X Sample for X-ray diffraction test

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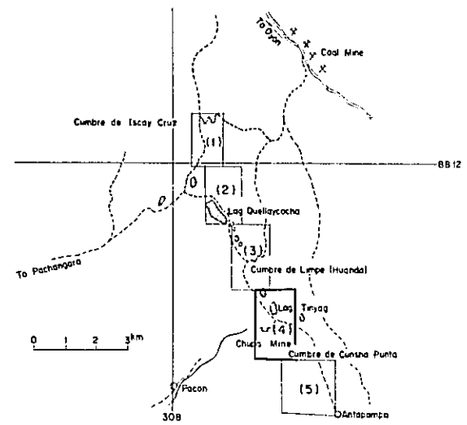
Do	Dolamite
Sid	Siderite
Bar	Barite
Ser	Sericite
Chl	Chlorite
Kaol	Kaolinite
Sp	Sphalerite
Gl	Galena
Py	Pyrite
Po	Pyrrhotite
Mt	Magnetite
Hm	Hematite
Ge	Goethite
Cph	Chalcophanite
Lepd	Lepidocrosite
A-Si	Amorphous silica
Rutl	Rutile
Anat	Anatase
Smi	Smithsonite
Tlc	Talc
Cp	Chalcopyrite

PL.I-4-2

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL SKETCH AND GEOCHEMICAL ASSAY MAP OF THE ISCAY CRUZ (SOUTHERN CENTRAL PART)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

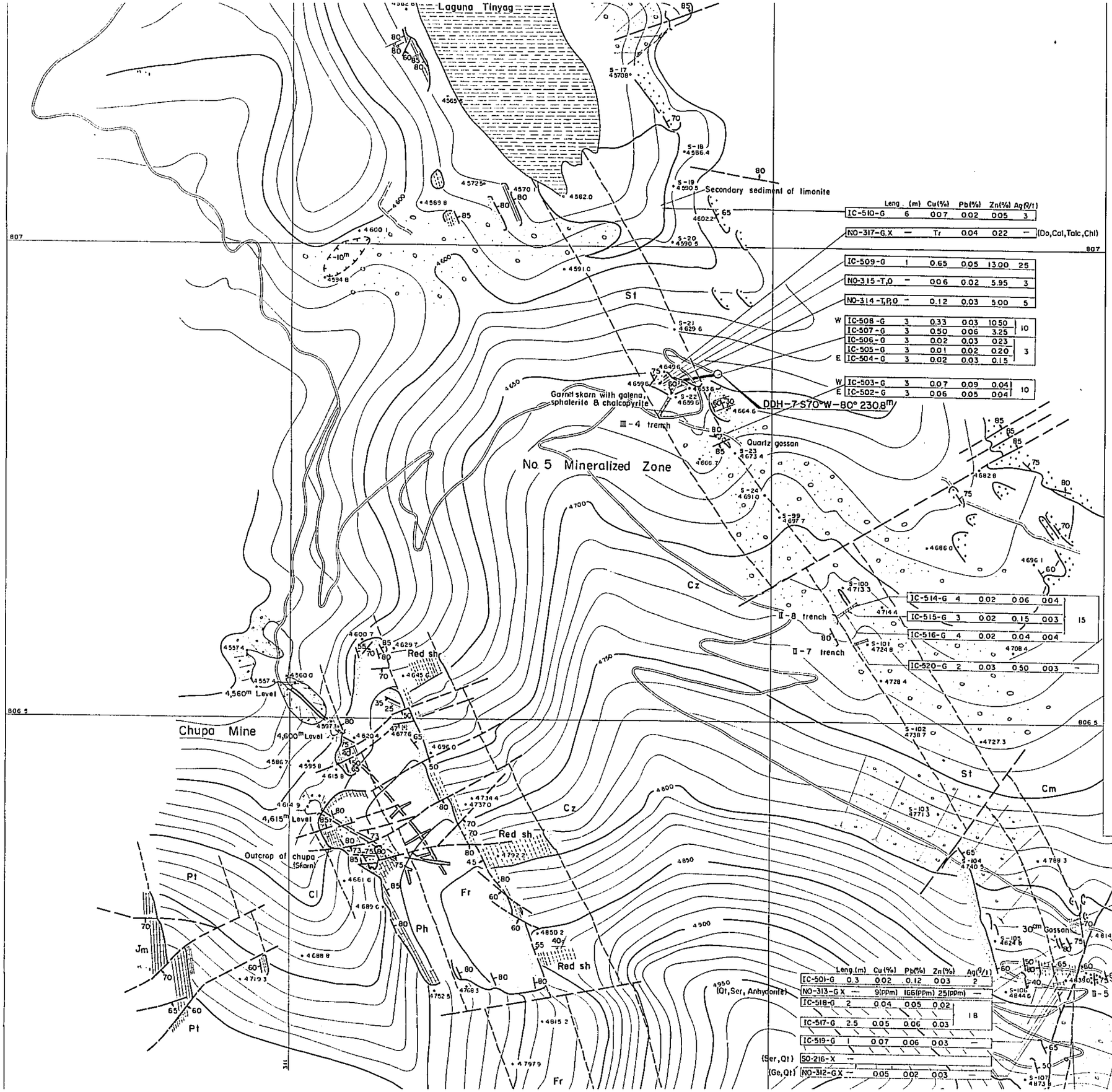
Prepared by MESCO, Inc

0 Scale 1:2,000 200m

LEGEND

- Talus
- Shale
- Red shale
- Alternation of shale and sandstone
- Sandstone
- Quartzite
- Limestone
- Dolomitic limestone
- Dolostone
- Gossan
- Porous gossan
- Rhyolite, Quartz porphyry
- Bedding Plane (40)
- Fault, confirmed
- Joint
- Adit
- Trenching

	Leng. (m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)	
IC-510-G	6	007	002	005	3	
NO-317-G X	—	Tr	0.04	022	—	(Do,Cal,Talc,Chl)
IC-509-G	1	0.65	005	1300	25	
NO-315-T,O	—	006	0.02	5.95	3	



Alternation of shale and sandstone
Sandstone
Quartzite
Limestone
Dolomitic limestone
Dolostone
Gossan
Porous gossan
Rhyolite, Quartz porphyry
Bedding Plane
Fault, confirmed
Joint
Adit
Trenching
Locality of channel sampling

STRATIGRAPHY

- Jm — Jumasha formation
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- Cl — Chulec formation
- Ph — Pariahuanca formation
- Fr — Farrat formation
- Cz — Carhuaz formation
- St — Santa formation
- Cm — Chimu formation

Leng. (m) Cu(%) Pb(%) Zn(%) Ag(g/t)
IC-101-G 2.5 0.02 0.06 5.05 12.0
Sampling location and assay results

- NO-102-T — Sample for thin section
- NO-103-P — Sample for polished section
- NO-104-X — Sample for X-ray diffraction test
- NO-105-E — Sample for EPMA (Electron prove microanalysis)
- NO-106-O — Sample for chemical analysis
- NO-107-M — Sample for analysis of rock forming elements

Location of drilling

Abbreviation of the contained minerals

Qt	Quartz
Cal	Calcite
Do	Dolomite
Sid	Siderite
Bar	Barite
Ser	Sericite
Chl	Chlorite
Kaol	Kaolinite
Sp	Sphalerite
Gl	Galena
Py	Pyrite
Po	Pyrrhotite

Sampling location and assay results

NO-102-T Sample for thin section

NO-103-P Sample for polished section

NO-104-X Sample for X-ray diffraction test

NO-105-E Sample for EPMA (Electron prove microanalysis)

NO-106-O Sample for chemical analysis

NO-107-M Sample for analysis of rock forming elements

Location of drilling

Abbreviation of the contained minerals

Qt	Quartz
Cal	Calcite
Do	Dolomite
Sid	Siderite
Bar	Barite
Ser	Sericite
Chl	Chlorite
Kaol	Kaolinite
Sp	Sphalerite
Gl	Galena
Py	Pyrite
Po	Pyrrhotite
Mt	Magnetite
Hm	Hematite
Ge	Goethite
Cph	Chalcophanite

	Leng.(m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)	
IC-514-G	4	0.02	0.06	004		
IC-515-G	3	0.02	0.15	003		15
IC-516-G	4	0.02	0.04	004		
IC-520-G	2	0.03	0.50	003	—	
IC-501-G	0.3	0.02	0.12	0.03	2	
NO-313-GX	—	9(ppm)	166(ppm)	25(ppm)	—	
IC-518-G	2	0.04	0.05	0.02		18
IC-517-G	2.5	0.05	0.06	0.03		
IC-519-G	1	0.07	0.06	0.03	—	
SO-216-X	—					
NO-312-GX	—	0.05	002	003	—	

	Wd(m)	Cu(%)	Pb(%)	Zn(%)
IC-632-G	0.6	0.01	0.15	0.60

Sketch of Ⅲ-4 & Ⅲ-5 Trench

1 : 500

0 10 20m

Ⅲ-4 Trench (20m)

Epidote skarn

Moraine

Ⅲ-5 Trench (30m)

Floot of quartzite

Brown oxidized quartzite

Oxidized quartzite

Green skarn with pyrite

Soil

Chupa Mine

4,560m Level

4,600m Level

4,615m Level

Outcrop of chupa (Skarn)

Red sh

Cz

Fr

Ph

Pt

Jm

Cl

St

Cm

White altred rock NO-661

Gossan

Ⅱ-8 trench

Ⅱ-7 trench

Ⅱ-5 trench

Ⅲ-5 trench

Ⅱ-4 trench

Cumbre de Cunsha Punta

DDH-8 N70°E-60°200.3m

2m Red shale

Brecciated quartzite with limonite

(Qt, Ser, Anhydorite)

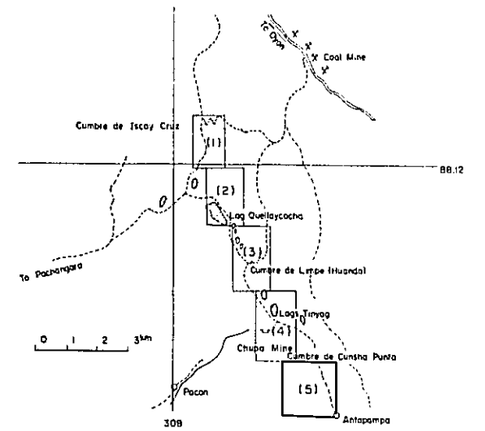
(Ser, Qt)

(Ge, Qt)

PL.I-4-3

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

GEOLOGICAL SKETCH AND GEOCHEMICAL ASSAY MAP OF THE ISCAY CRUZ (SOUTHERN PART)



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

Prepared by MESCO, Inc

Scale 1:2,000

0 200m

LEGEND

- Talus
- Shale
- Red shale
- Alternation of shale and sandstone
- Sandstone
- Quartzite
- Limestone
- Dolomitic limestone
- Dolostone
- Gossan
- Porous gossan
- Rhyolite, Quartz porphyry
- Bedding Plane
- Fault, confirmed
- Joint
- Adit
- Trenching
- Locality of channel sampling

STRATIGRAPHY

- Jm — Jumasha formation
- Pt — Pariatambo formation

Quartzite
Limestone
Dolomitic limestone
Dolostone
Gossan
Porous gossan
Rhyolite, Quartz porphyry
Bedding Plane
Fault, confirmed
Joint
Adit
Trenching
Locality of channel sampling

STRATIGRAPHY

- Jm: Jumasha formation
- Pl: Pariatambo formation
- Cl: Chulec formation
- Ph: Pariahuanca formation
- Fr: Farrat formation
- Cz: Carhuaz formation
- St: Santa formation
- Cm: Chimu formation

Leng.(m) Cu(%) Pb(%) Zn(%) Ag(g/t)
IC-101-G 2.5 0.02 0.04 5.05 12.0
Sampling location and assay results

NO-102-T Sample for thin section
NO-103-P Sample for polished section
NO-104-X Sample for X-ray diffraction test
NO-105-E Sample for EPMA (Electron prove microanalysis)
NO-106-O Sample for chemical analysis
NO-107-M Sample for analysis of rock forming elements

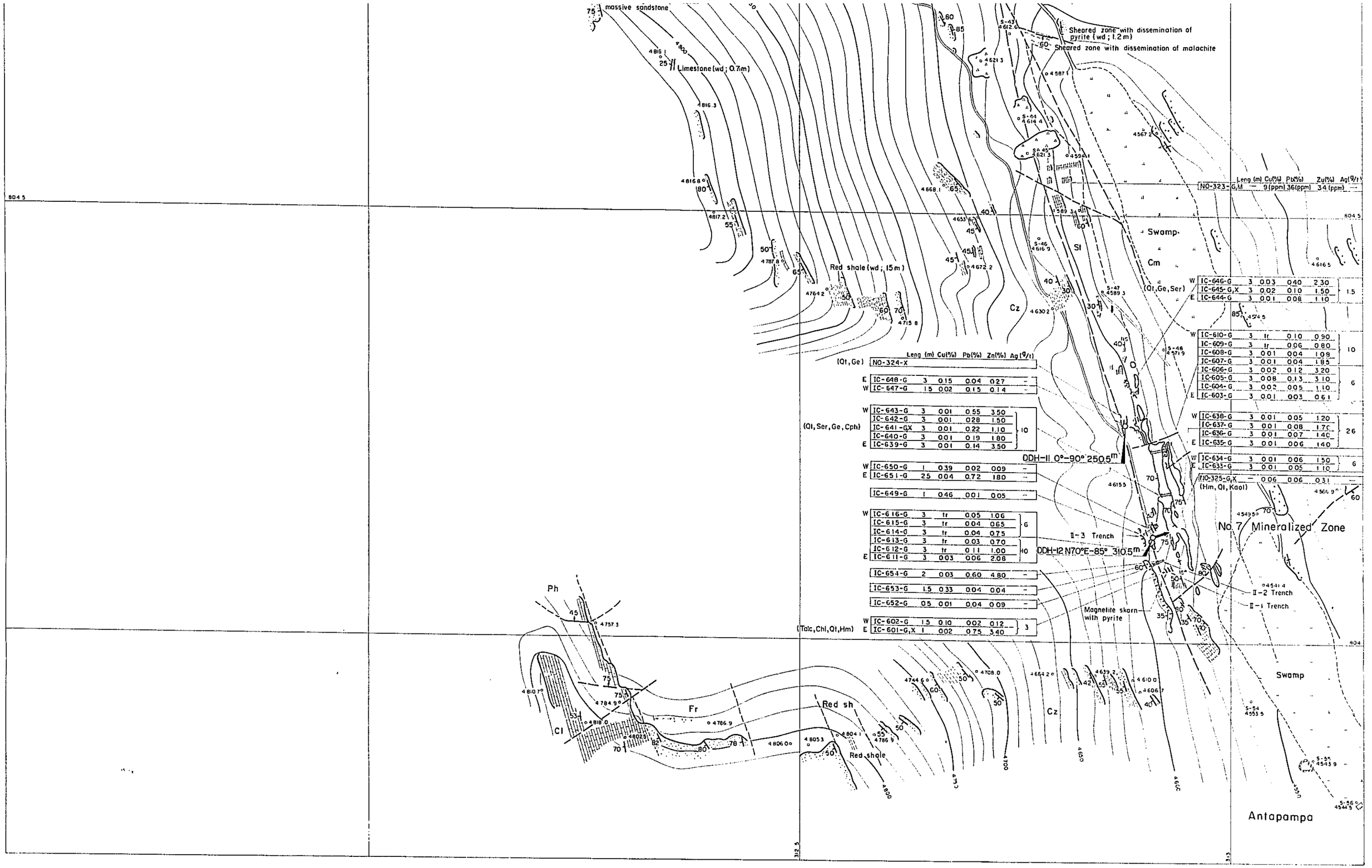
Black gossan with limonite
DDH-10 N75°W-60° 200.4m
Red shale
Swamp
Laguna
Red sh
Black gossan (wd 4 m)
Red shale
Red shale
White fine-grained quartzous massive sandstone
Limestone (wd ; 0.7m)
Red shale (wd ; 15 m)
Sheared zone of sandstone & shale with gossan
White rhyolitic rock(wd : 1.2m)
Sheared zone with dissemination of pyrite (wd ; 1.2 m)
Sheared zone with dissemination of malachite
DDH-11 0°-90° 250.5m

	Leng.(m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)
IC-631-G	4	0.02	0.10	0.60	—

	Leng.(m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)
IC-902-T	—	—	—	—	—
IC-901-T	—	—	—	—	—

	Leng.(m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)	
NO-323-G,M	—	9(ppm)	36(ppm)	34(ppm)	—	
W IC-646-G	3	0.03	0.40	2.30		1.5
IC-645-G,X	3	0.02	0.10	1.50		
E IC-644-G	3	0.01	0.09	1.10		
W IC-610-G	3	tr	0.10	0.90		10
IC-609-G	3	tr	0.06	0.80		
IC-608-G	3	0.01	0.04	1.08		
IC-607-G	3	0.01	0.04	1.85		
IC-606-G	3	0.02	0.12	3.20		6
IC-605-G	3	0.08	0.13	3.10		
IC-604-G	3	0.02	0.05	1.10		
E IC-603-G	3	0.01	0.03	0.61		
W IC-638-G	3	0.01	0.05	1.20		2.6
IC-637-G	3	0.01	0.08	1.70		
IC-636-G	3	0.01	0.07	1.40		
E IC-635-G	3	0.01	0.06	1.40		
W IC-634-G	3	0.01	0.06	1.50		6
E IC-633-G	3	0.01	0.05	1.10		
NO-325-G,X	—	0.06	0.06	0.31		—
(Hm,Ol,Kaol)						

	Leng.(m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)	
(Ql,Ge) NO-324-X						
E IC-648-G	3	0.15	0.04	0.27	—	
W IC-647-G	1.5	0.02	0.15	0.14	—	
W IC-643-G	3	0.01	0.55	3.50		10
IC-642-G	3	0.01	0.28	1.50		
(Ql,Ser,Ge,Cph) IC-641-GX	3	0.01	0.22	1.10		
IC-640-G	3	0.01	0.19	1.80		
E IC-639-G	3	0.01	0.14	3.50		
W IC-650-G	1	0.39	0.02	0.09	—	
E IC-651-G	2.5	0.04	0.72	1.80	—	

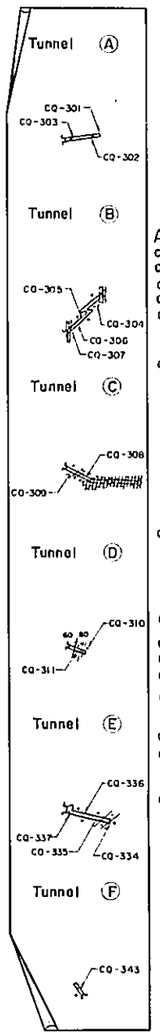


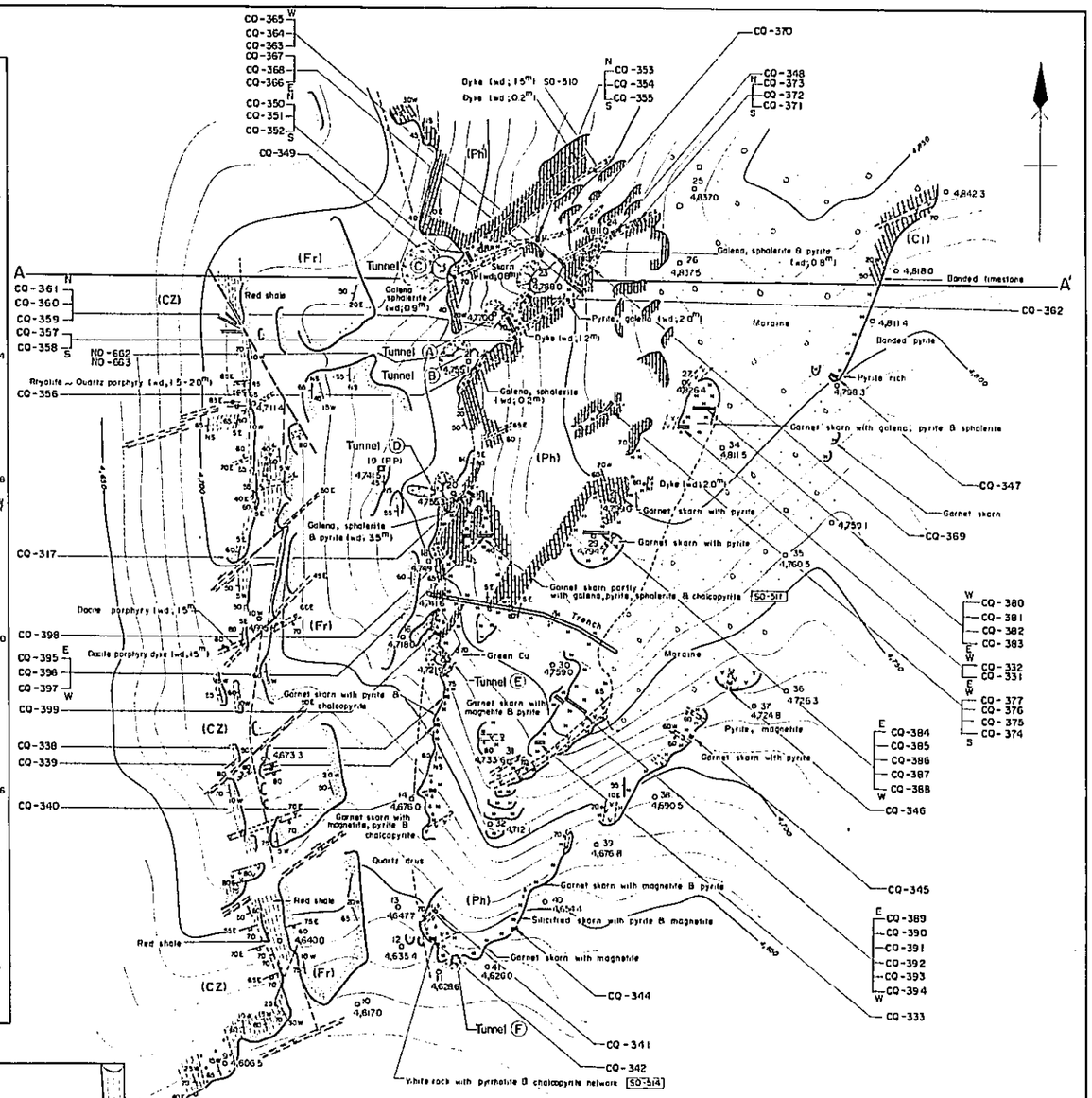
		Leng (m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)
	NO-323-G,M	—	9(ppm)	36(ppm)	34(ppm)	—
W	IC-646-G	3	0.03	0.40	2.30	1.5
	IC-645-G,X	3	0.02	0.10	1.50	
E	IC-644-G	3	0.01	0.08	1.10	
W	IC-610-G	3	tr	0.10	0.90	10
	IC-609-G	3	tr	0.06	0.80	
	IC-608-G	3	0.01	0.04	1.08	
	IC-607-G	3	0.01	0.04	1.85	
	IC-606-G	3	0.02	0.12	3.20	6
	IC-605-G	3	0.08	0.13	3.10	
E	IC-604-G	3	0.02	0.05	1.10	
	IC-603-G	3	0.01	0.03	0.61	
W	IC-638-G	3	0.01	0.05	1.20	26
	IC-637-G	3	0.01	0.08	1.70	
	IC-636-G	3	0.01	0.07	1.40	
E	IC-635-G	3	0.01	0.06	1.40	
W	IC-634-G	3	0.01	0.06	1.50	6
E	IC-633-G	3	0.01	0.05	1.10	
	NO-325-G,X	—	0.06	0.06	0.31	—

		Leng (m)	Cu(%)	Pb(%)	Zn(%)	Ag(g/t)
	NO-324-X					
E	IC-648-G	3	0.15	0.04	0.27	—
W	IC-647-G	1.5	0.02	0.15	0.14	—
W	IC-643-G	3	0.01	0.55	3.50	10
	IC-642-G	3	0.01	0.28	1.50	
	IC-641-GX	3	0.01	0.22	1.10	
	IC-640-G	3	0.01	0.19	1.80	
E	IC-639-G	3	0.01	0.14	3.50	
W	IC-650-G	1	0.39	0.02	0.09	—
E	IC-651-G	2.5	0.04	0.72	1.80	—
	IC-649-G	1	0.46	0.01	0.05	—
W	IC-616-G	3	tr	0.05	1.06	6
	IC-615-G	3	tr	0.04	0.65	
	IC-614-G	3	tr	0.04	0.75	
	IC-613-G	3	tr	0.03	0.70	40
	IC-612-G	3	tr	0.11	1.00	
E	IC-611-G	3	0.03	0.06	2.08	
	IC-654-G	2	0.03	0.60	4.80	—
	IC-653-G	1.5	0.33	0.04	0.04	—
	IC-652-G	0.5	0.01	0.04	0.09	—
W	IC-602-G	1.5	0.10	0.02	0.12	3
E	IC-601-G,X	1	0.02	0.75	3.40	

Assay results of ore samples

No.	Sample No.	Location	Length (m)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	No.	Sample No.	Location	Length (m)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
1	CQ-301	Tunnel (A)	2	233	025	23	35	50	350	Outcrop	2	926	003	11	07
2	302	"	2	2091	018	24	20	51	CQ-351	"	2	1234	003	20	01
3	303	"	2	5279	009	28	25	52	352	"	3	514	006	24	02
4	304	Tunnel (B)	2	1406	012	23	30	53	353	"	2	3566	018	82	28
5	305	"	2	960	016	72	85	54	354	"	1	3223	012	87	32
6	306	"	2	789	004	44	28	55	355	"	1	754	012	44	21
7	307	"	2	857	014	33	20	56	356	"	2.5	446	028	33	43
8	308	Tunnel (C)	2	1029	006	29	21	57	357	"	2	549	006	46	01
9	309	"	2	617	006	16	24	58	358	"	2	617	004	29	02
10	310	Tunnel (D)	2	309	007	17	42	59	359	"	3	1166	021	94	51
11	CQ-311	"	2	377	008	21	13	60	360	"	3	720	024	72	64
12	312	Trench	15	583	012	34	26	61	CQ-361	"	4	960	007	48	06
13	313	"	2	446	023	21	22	62	362	"	2	823	006	56	06
14	314	"	4	343	019	20	09	63	363	"	2	720	020	74	48
15	315	"	4	1166	040	07	02	64	364	"	2	1509	011	36	28
16	316	"	4	686	025	06	03	65	365	"	2	1166	019	79	59
17	317	Outcrop	3	617	024	44	51	66	366	"	1	1063	032	99	80
18	318	Trench	35	1783	066	29	25	67	367	"	3	1337	027	74	51
19	319	"	5	2366	046	31	15	68	368	"	3	1166	020	30	13
20	320	"	5	514	050	04	03	69	369	"	1	2846	032	127	57
21	CQ-321	"	5	206	003	02	01	70	370	"	1	206	001	17	14
22	322	"	5	343	022	02	02	71	CQ-371	"	2.5	274	003	26	24
23	323	"	5	514	030	01	01	72	372	"	2	274	001	14	15
24	324	"	5	343	013	01	01	73	373	"	2	206	001	18	14
25	325	"	5	240	004	01	01	74	374	"	3	480	003	15	06
26	326	"	5	171	008	02	01	75	375	"	3	171	001	02	01
27	327	"	6	480	013	02	01	76	376	"	3	171	001	06	02
28	328	"	5	411	006	01	01	77	377	"	3	206	001	04	02
29	329	"	5	377	043	01	tr	78	380	"	35	4526	001	05	tr
30	330	"	8	651	016	01	01	79	381	"	35	5280	001	04	tr
31	CQ-331	Outcrop	35	958	002	03	02	80	382	"	35	1357	001	04	tr
32	332	"	35	514	003	05	02	81	CQ-383	"	35	652	001	02	tr
33	333	"	5	309	013	tr	tr	82	384	"	35	1131	022	27	21
34	334	Tunnel (E)	2	686	008	01	01	83	385	"	35	1542	007	24	05
35	335	"	2	206	008	01	01	84	386	"	35	1166	007	15	10
36	336	"	2	1170	127	09	12	85	387	"	35	103	001	01	01
37	337	"	2	3599	130	09	02	86	388	"	35	103	001	01	01
38	338	Outcrop	2	754	003	01	04	87	389	"	4	1543	009	02	tr
39	339	"	2	549	030	05	02	88	390	"	4	994	014	03	tr
40	340	"	2	2057	089	04	02	89	391	"	4	617	001	01	01
41	CQ-341	"	2	686	119	tr	01	90	392	"	4	343	001	tr	tr
42	342	"	2	171	050	tr	tr	91	CQ-393	"	4	343	002	tr	tr
43	343	Tunnel (F)	2	137	016	tr	tr	92	394	"	4	377	001	tr	tr
44	344	Outcrop	2	137	009	tr	tr	93	395	"	4	1954	002	05	01
45	345	"	2	377	037	tr	tr	94	396	"	4	960	028	03	01
46	346	"	1	206	073	02	02	95	397	"	4	617	009	03	01
47	347	"	4	240	002	01	01	96	398	"	25	1954	024	11	02
48	348	"	4	1166	002	63	24	97	399	"	35	377	005	15	06
49	349	"	1	617	010	25	16								



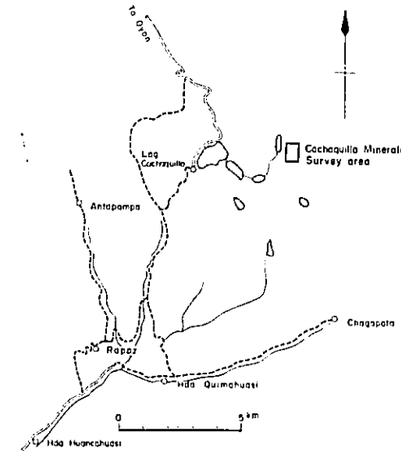


A — A' Section

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I-5

GEOLOGICAL SKETCH AND GEOCHEMICAL ASSAY MAP OF THE COCHAQUILLO AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc

Scale 1 : 2,000

0 100 200m

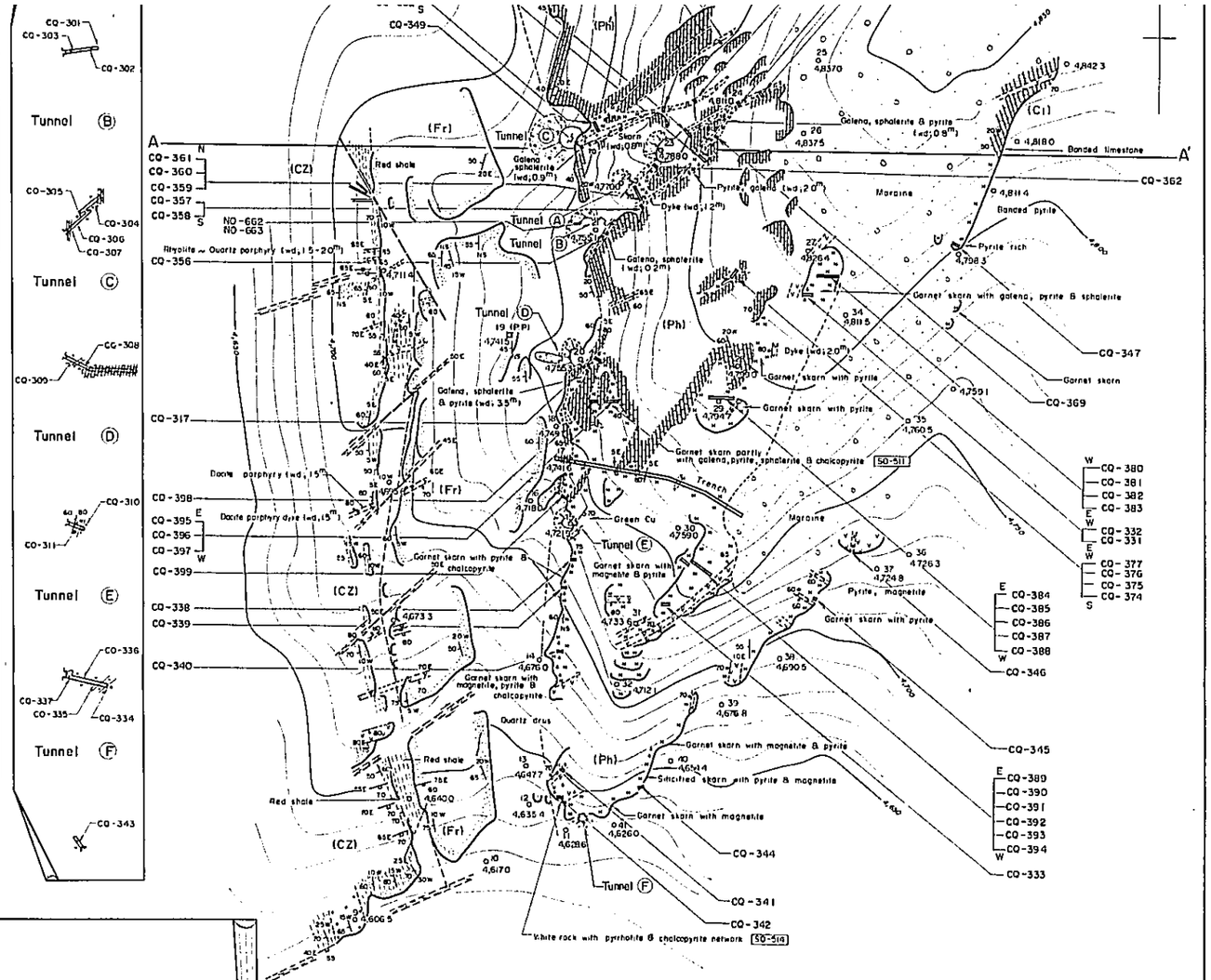
LEGEND

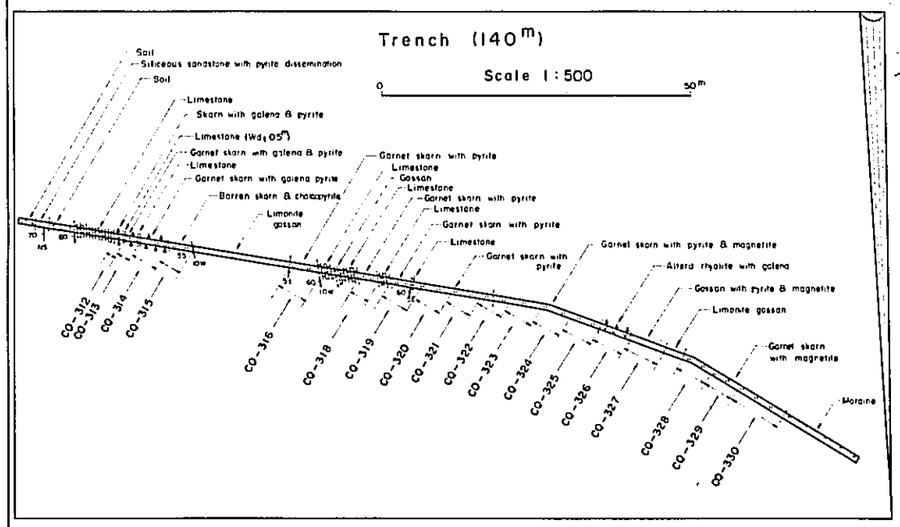
- Moraine
- Sandstone
- Alternation of shale and sandstone
- Red shale
- Marl
- Limestone
- Acidic intrusive (Dacite porphyry)
- Gosson
- Skarn
- Dissemination of Cu, Pb, Zn
- Bedding plane
- Fault
- Joint & crack
- Trenching
- Locality of channel sampling (CQ-331)

STRATIGRAPHY

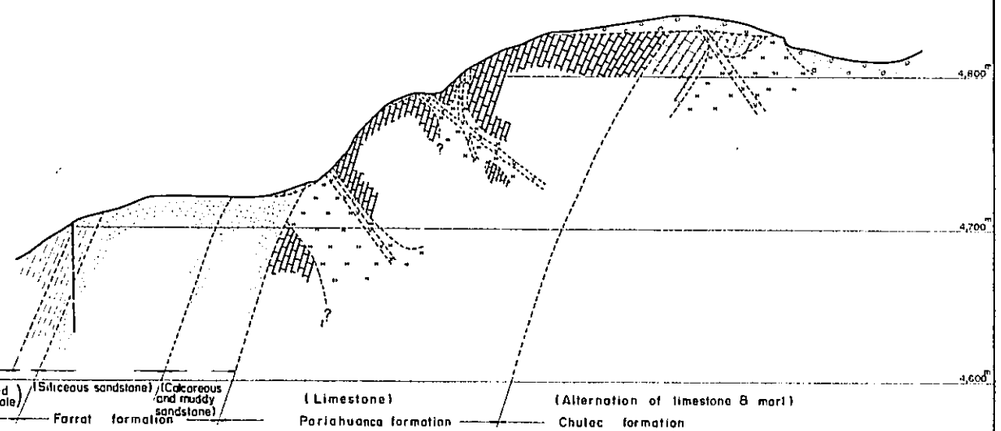
Assay results of ore samples

No	Sample No.	Location	Length (m)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	No	Sample No.	Location	Length (m)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)
1	CQ-301	Tunnel (A)	2	233.1	025	23	35	50	350	Outcrop	2	926	003	1.1	02
2	302	"	2	209.1	016	24	20	51	CQ-351	"	2	1234	0.03	2.0	01
3	303	"	2	527.9	009	28	25	52	352	"	3	514	006	2.4	02
4	304	Tunnel (B)	2	140.6	012	23	30	53	353	"	2	356.6	018	8.2	28
5	305	"	2	960	016	72	85	54	354	"	1	323.1	012	9.7	3.2
6	306	"	2	789	004	44	28	55	355	"	1	754	012	4.4	2.1
7	307	"	2	857	014	33	20	56	356	"	2.5	446	028	3.3	4.3
8	308	Tunnel (C)	2	1029	006	29	21	57	357	"	2	549	006	4.6	0.1
9	309	"	2	617	006	16	21	58	358	"	2	617	004	2.9	02
10	310	Tunnel (D)	2	309	007	17	42	59	359	"	3	1166	021	9.4	5.1
11	CQ-311	"	2	377	008	21	13	60	360	"	3	720	024	7.2	6.4
12	312	Trench	15	583	012	34	26	61	CQ-361	"	4	960	007	4.8	0.6
13	313	"	2	446	023	21	22	62	362	"	2	823	006	5.6	0.6
14	314	"	4	343	019	20	09	63	363	"	2	720	020	7.4	4.8
15	315	"	4	1166	040	07	02	64	364	"	2	1509	011	3.6	2.8
16	316	"	4	686	025	06	03	65	365	"	2	1166	019	7.9	5.9
17	317	Outcrop	3	617	024	44	51	66	366	"	1	1063	032	9.9	8.0
18	318	Trench	35	1783	066	29	25	67	367	"	3	1337	027	7.4	5.1
19	319	"	5	2366	046	31	15	68	368	"	3	1166	020	3.0	1.3
20	320	"	5	514	050	04	03	69	369	"	1	2846	032	12.7	5.7
21	CQ-321	"	5	206	003	02	01	70	370	"	1	206	001	1.7	1.4
22	322	"	5	343	022	02	02	71	CQ-371	"	2.5	274	003	2.6	2.4
23	323	"	5	514	030	01	01	72	372	"	2	274	001	1.4	1.5
24	324	"	5	343	013	01	01	73	373	"	2	206	001	1.8	1.4
25	325	"	5	240	004	01	01	74	374	"	3	480	003	1.5	0.6
26	326	"	5	171	008	02	01	75	375	"	3	171	001	0.2	0.1
27	327	"	6	480	013	02	01	76	376	"	3	171	001	0.6	0.2
28	328	"	5	411	006	01	01	77	377	"	3	206	001	0.4	0.2
29	329	"	5	377	043	01	tr	78	380	"	35	4526	001	0.5	tr
30	330	"	8	651	016	01	01	79	381	"	35	5280	001	0.4	tr
31	CQ-331	Outcrop	35	958	002	03	02	80	382	"	35	1337	001	0.4	tr
32	332	"	35	514	003	05	02	81	CQ-383	"	35	652	001	0.2	tr
33	333	"	5	309	013	tr	tr	82	384	"	35	1131	022	2.7	2.1
34	334	Tunnel (E)	2	686	008	01	01	83	385	"	35	1542	007	2.4	0.3
35	335	"	2	206	008	01	01	84	386	"	35	1166	007	1.5	1.0
36	336	"	2	1170	127	09	12	85	387	"	35	103	001	0.1	0.1
37	337	"	2	3599	130	09	02	86	388	"	35	103	001	0.1	0.1
38	338	Outcrop	2	754	003	01	04	87	389	"	4	1543	009	0.2	tr
39	339	"	2	549	030	05	02	88	390	"	4	994	014	0.3	tr
40	340	"	2	2057	089	04	02	89	391	"	4	617	001	0.1	0.1
41	CQ-341	"	2	686	119	tr	01	90	392	"	4	343	001	tr	tr
42	342	"	2	171	050	tr	tr	91	CQ-393	"	4	343	002	tr	tr
43	343	Tunnel (F)	2	137	016	tr	tr	92	394	"	4	377	001	tr	tr
44	344	Outcrop	2	137	009	tr	tr	93	395	"	4	1954	002	0.5	0.1
45	345	"	2	377	037	tr	tr	94	396	"	4	960	028	0.3	0.1
46	346	"	1	206	073	02	02	95	397	"	4	617	009	0.3	0.1
47	347	"	4	240	002	01	01	96	398	"	2.5	1954	024	1.1	02
48	348	"	4	1166	002	63	24	97	399	"	35	377	065	1.5	06
49	349	"	1	617	010	2.5	1.6								

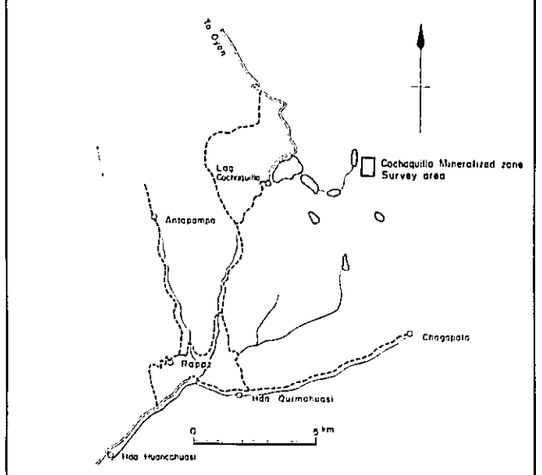




A — A' Section



ASSAY MAP OF THE COCHAQUILLO AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc

Scale 1 : 2,000

0 100 200m

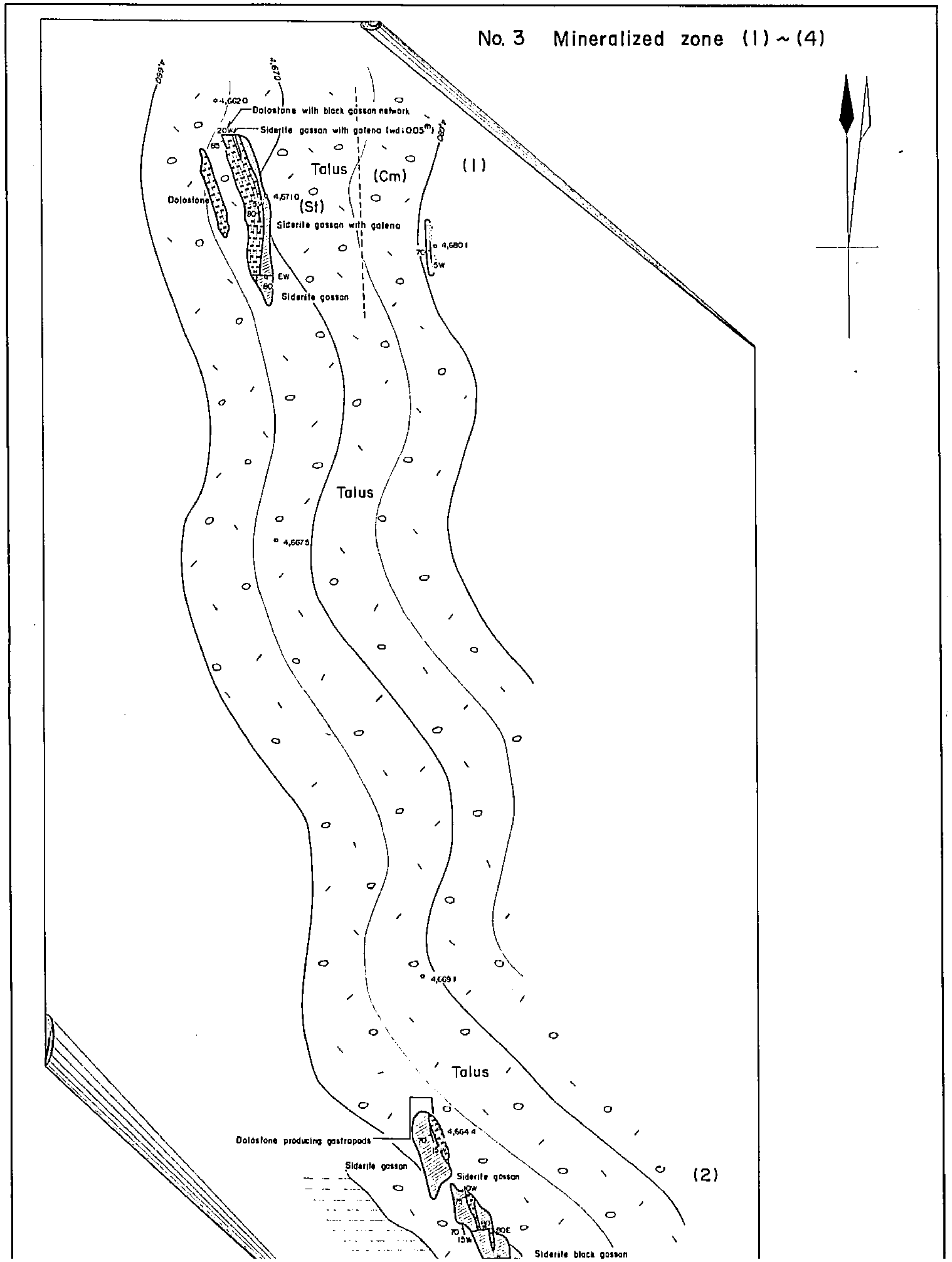
LEGEND

- Moraine
- Sandstone
- Alternation of shale and sandstone
- Red shale
- Marl
- Limestone
- Acidic intrusive (Dacite porphyry)
- Gossan
- Skarn
- Dissemination of Cu, Pb, Zn
- Bedding plane
- Fault
- Joint & crack
- Trenching
- CQ-301 Locality of channel sampling

STRATIGRAPHY

- Cl Chulec formation
- Ph Pariahuanca formation
- Fr Farrat formation
- Cz Carhuaz formation

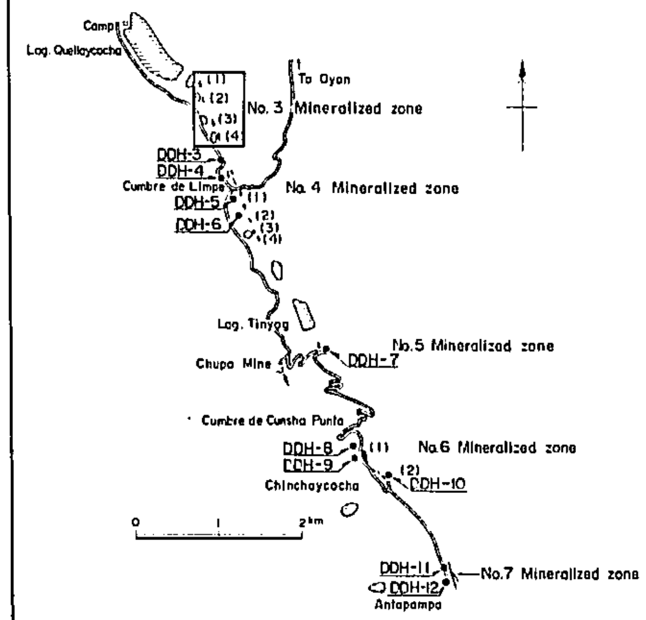
No. 3 Mineralized zone (1) ~ (4)



PL. I-6-1

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅲ

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA
QUELLAYCOCHA AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

Scale 1 : 500

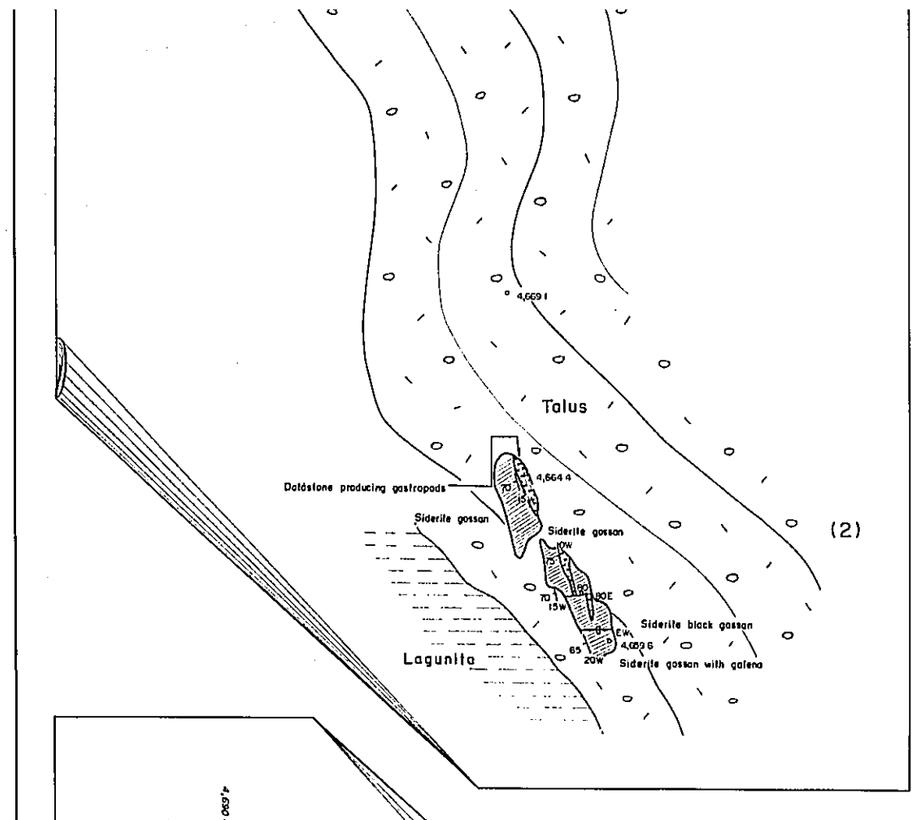
LEGEND

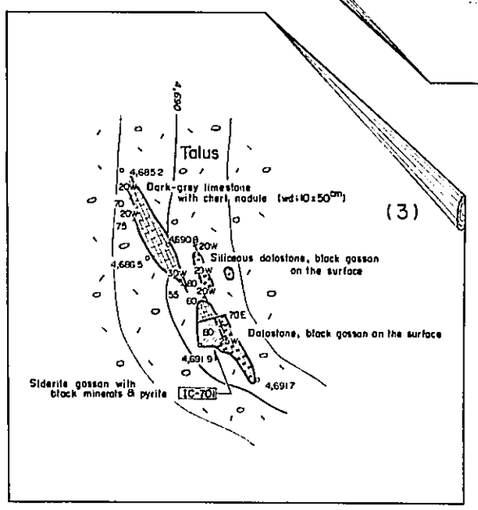
- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

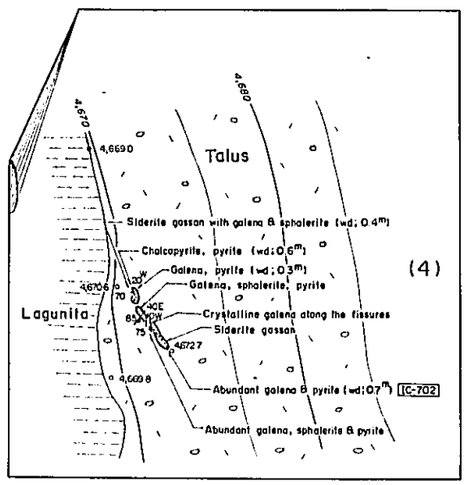
- Bedding plane
- Joint

STRATIGRAPHY

- (St) Santa formation







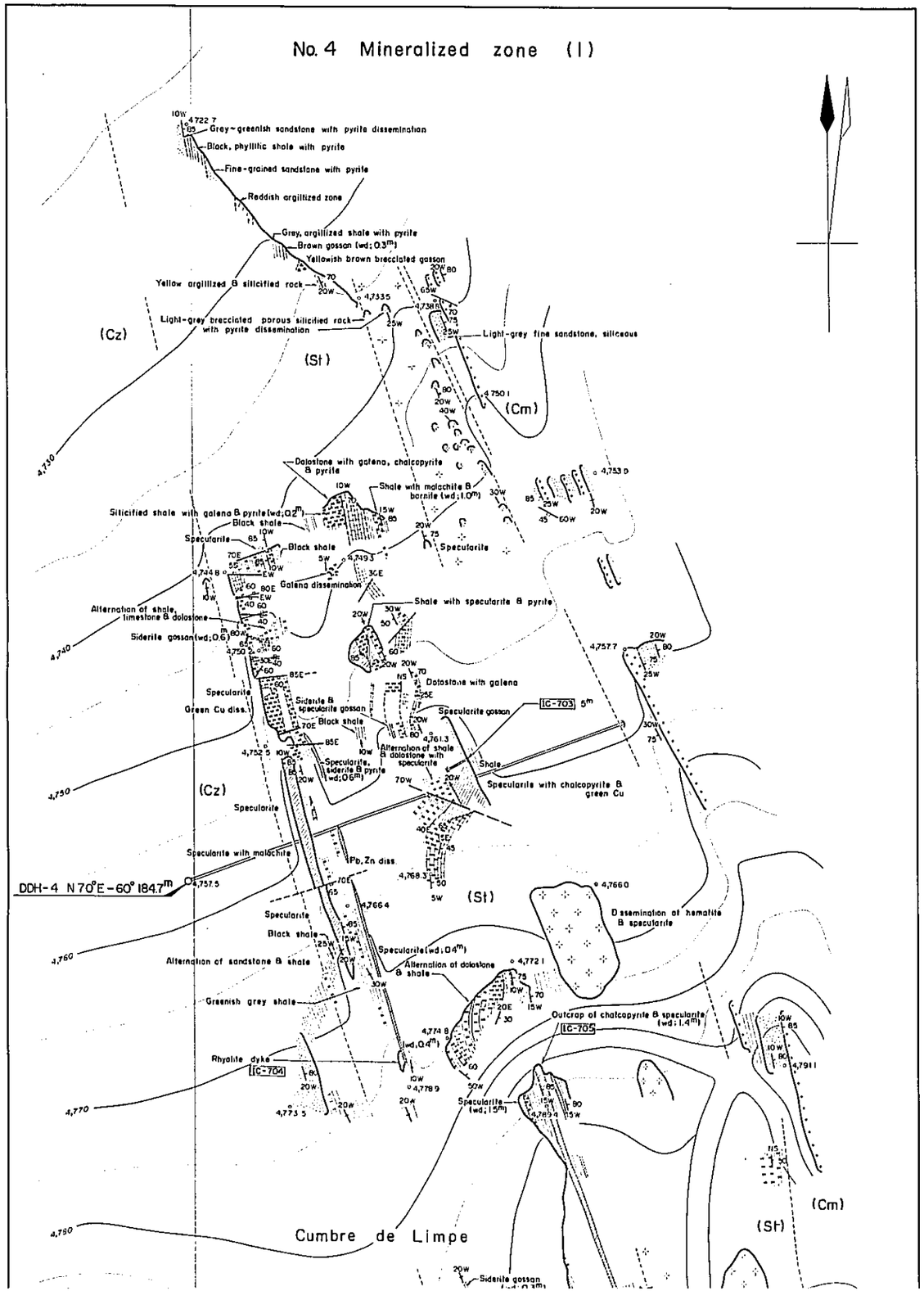
LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

- Bedding plane
- Joint

STRATIGRAPHY

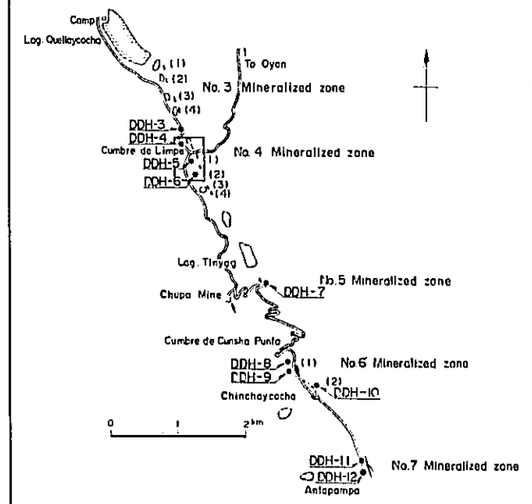
- /(Si)/ Santa formation
- /(Cm)/ Chimu formation



GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I-6-2

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA
LIMPE AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

Scale 1 : 500

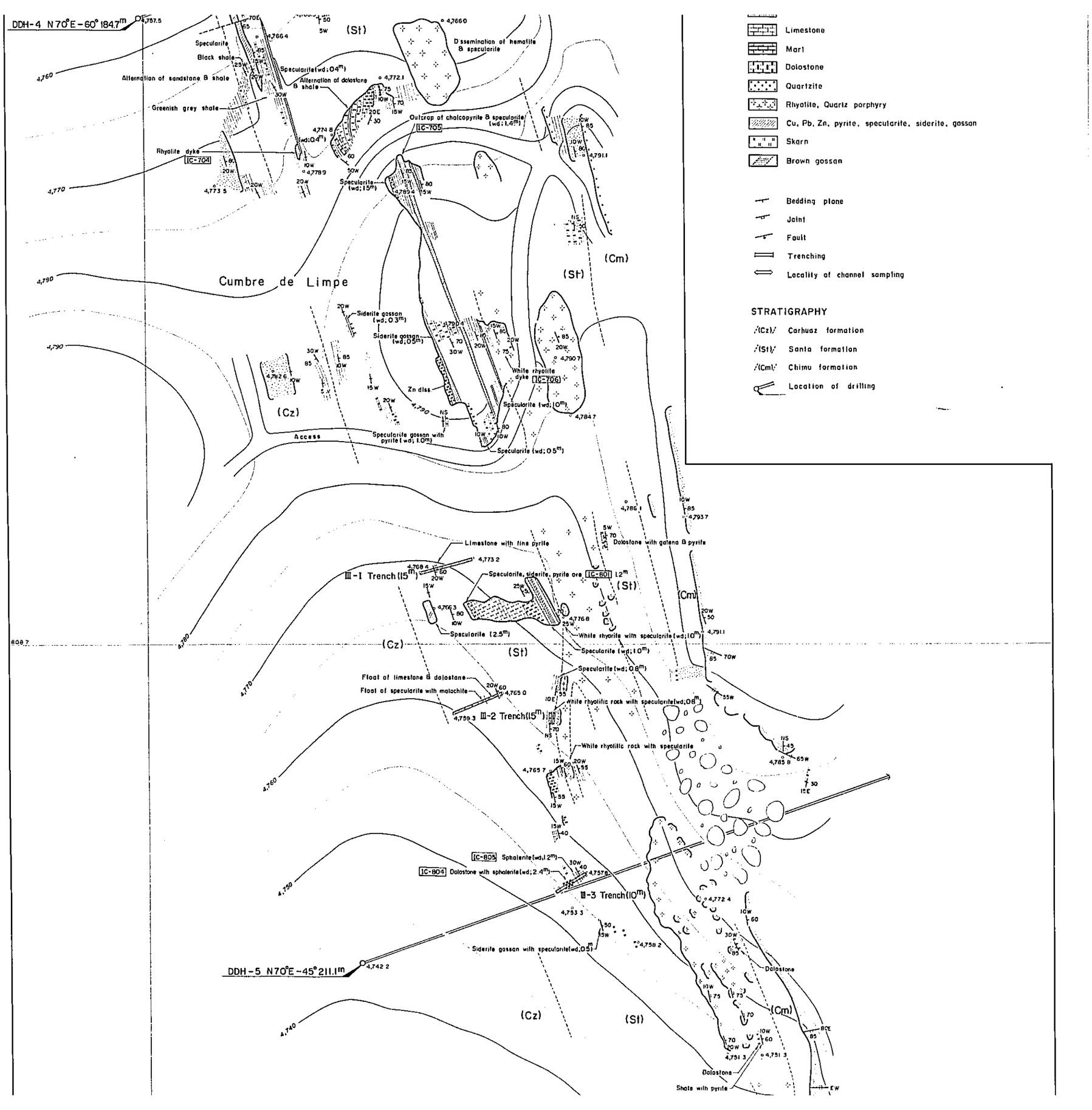
0 50m

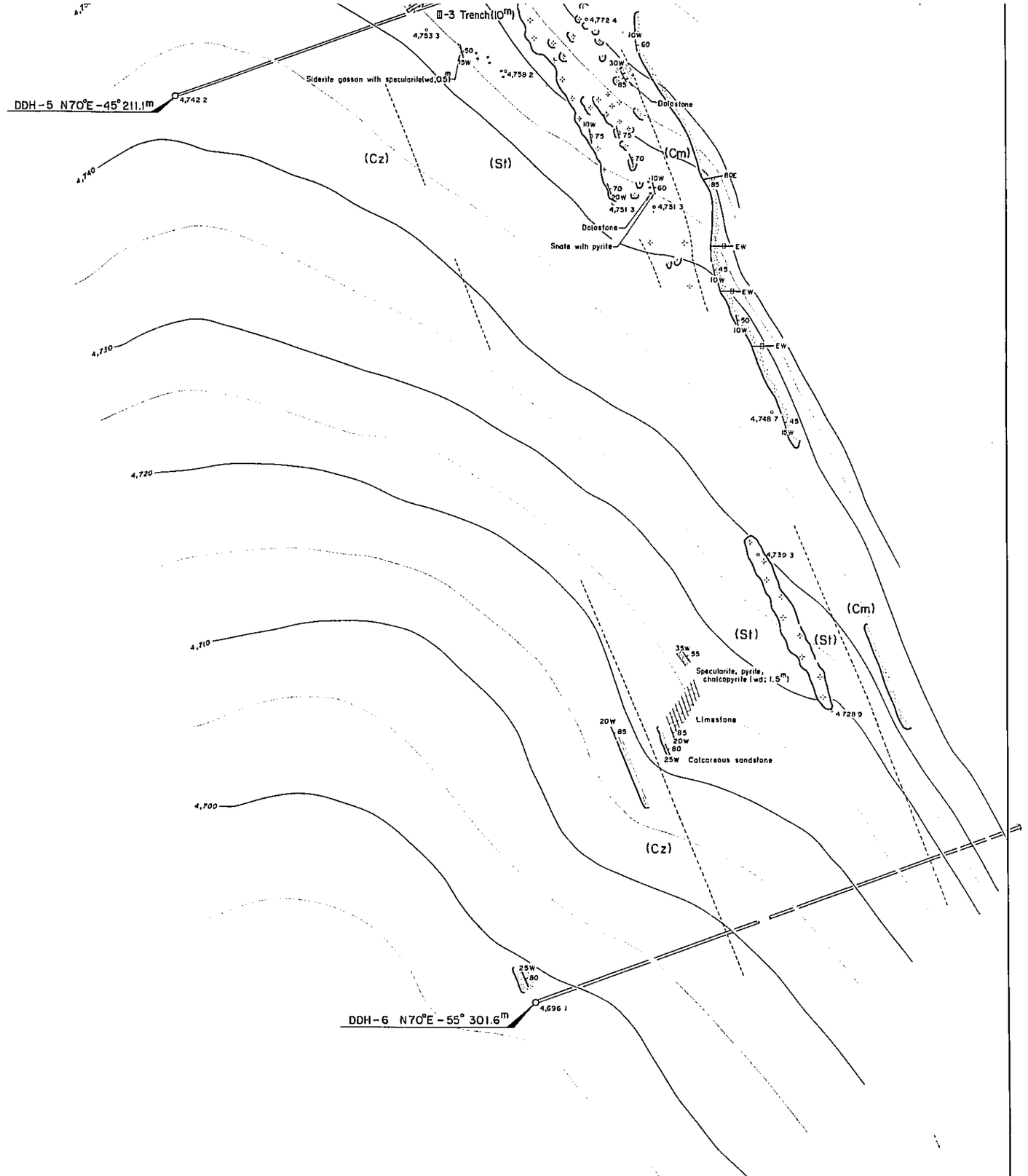
LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

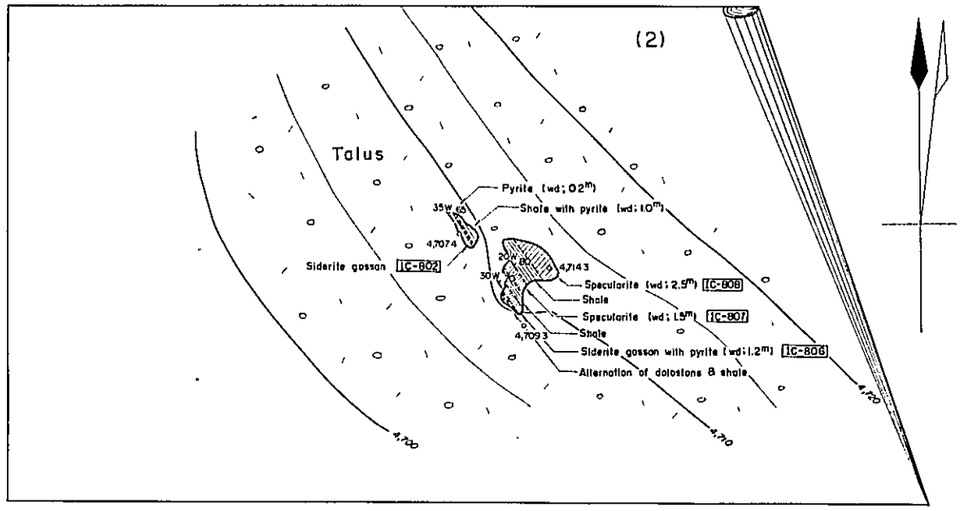
- Bedding plane
- Joint
- Fault
- Trenching
- Locality of channel sampling

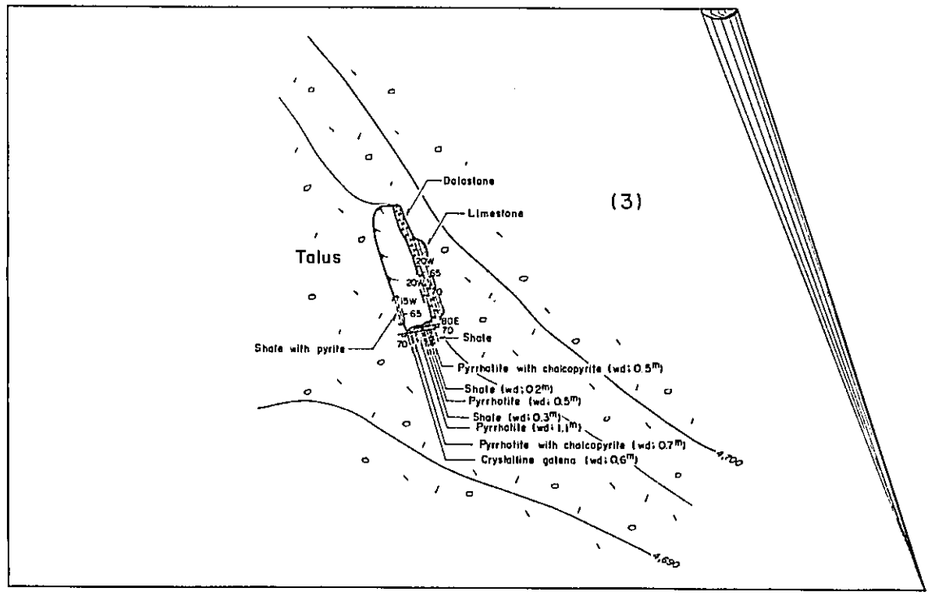
STRATIGRAPHY

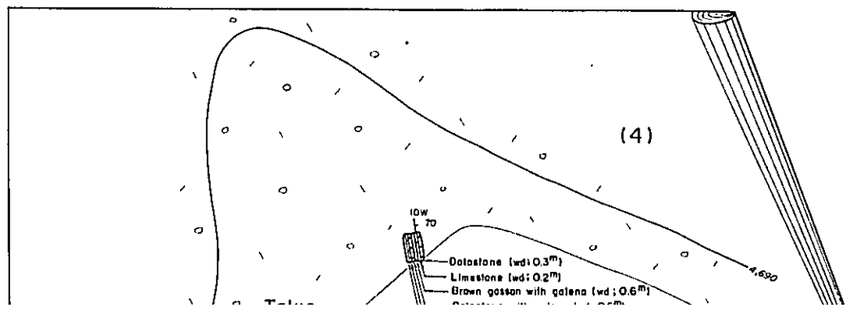

DDH-4 N70°E-60° 184.7m
DDH-5 N70°E-45° 211.1m
Cumbre de Limpe
(Cz)
(St)
(Cm)
Specularite
Black shale
Alternation of sandstone & shale
Greenish grey shale
Rhyolite dyke
IC-704
Specularite (wd; 0.4m)
Alternation of dolostone & shale
Dissemination of hematite & specularite
Outcrop of chalcopyrite & specularite (wd; 1.4m)
IC-705
Specularite (wd; 1.5m)
Siderite gossan (wd; 0.3m)
Siderite gossan (wd; 0.5m)
Zn diss
White rhyolite dyke
IC-706
Specularite (wd; 1.0m)
Specularite (wd; 0.5m)
Specularite gossan with pyrite (wd; 1.0m)
Access
Limestone with fine pyrite
III-1 Trench(15m)
Specularite, siderite, pyrite ore
IC-801
1.2m
Specularite (2.5m)
White rhyolite with specularite (wd; 1.0m)
Specularite (wd; 1.0m)
Specularite (wd; 0.8m)
Float of limestone & dolostone
Float of specularite with malachite
III-2 Trench(15m)
White rhyolitic rock with specularite (wd; 0.8m)
White rhyolitic rock with specularite
IC-805
Sphalerite (wd; 1.2m)
IC-804
Dolostone with sphalerite (wd; 2.4m)
III-3 Trench(10m)
Siderite gossan with specularite (wd; 0.5m)
Dolostone with galena & pyrite
Dolostone
Shale with pyrite
Limestone
Marl
Dolostone
Quartzite
Rhyolite, Quartz porphyry
Cu, Pb, Zn, pyrite, specularite, siderite, gossan
Skarn
Brown gossan
Bedding plane
Joint
Fault
Trenching
Locality of channel sampling
STRATIGRAPHY
(Cz) Carhuaz formation
(St) Santa formation
(Cm) Chimu formation
Location of drilling


III-3 Trench(10m)
4,772 4
4,753 3
4,758 2
4,742 2
DDH-5 N70°E-45° 211.1m
Siderite gossan with specularite(wd;0.5)
Dolostone
Shale with pyrite
(Cz)
(St)
(Cm)
4,740
4,730
4,720
4,751 3
4,748 7
4,739 3
4,728 9
4,710
4,700
Specularite, pyrite, chalcopyrite (wd; 1.5m)
Limestone
Calcareous sandstone
4,696 1
DDH-6 N70°E-55° 301.6m

No.4 Mineralized zone (2) ~ (4)



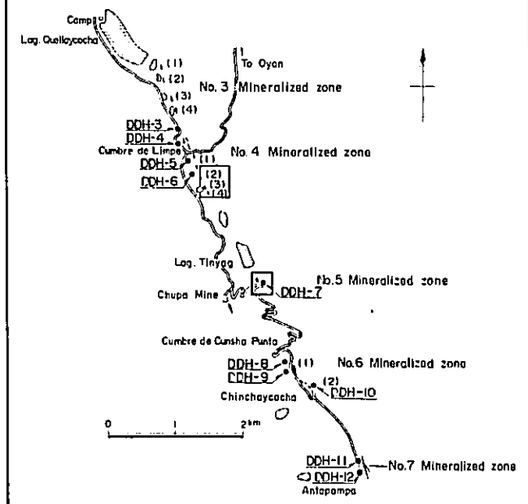




GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I-6-3

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA
TINYAG AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

Scale 1 : 500

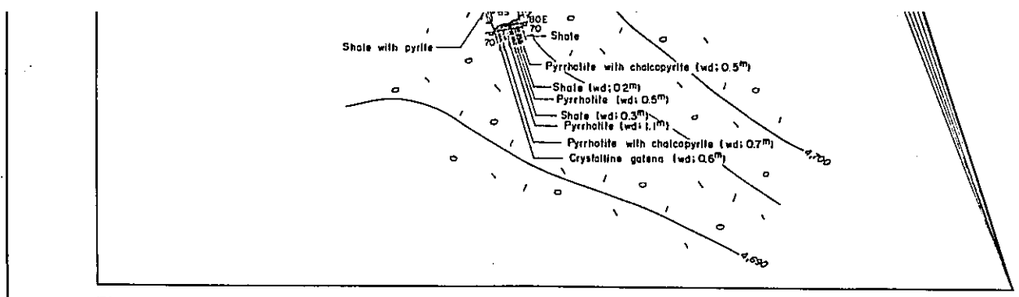
0 50m

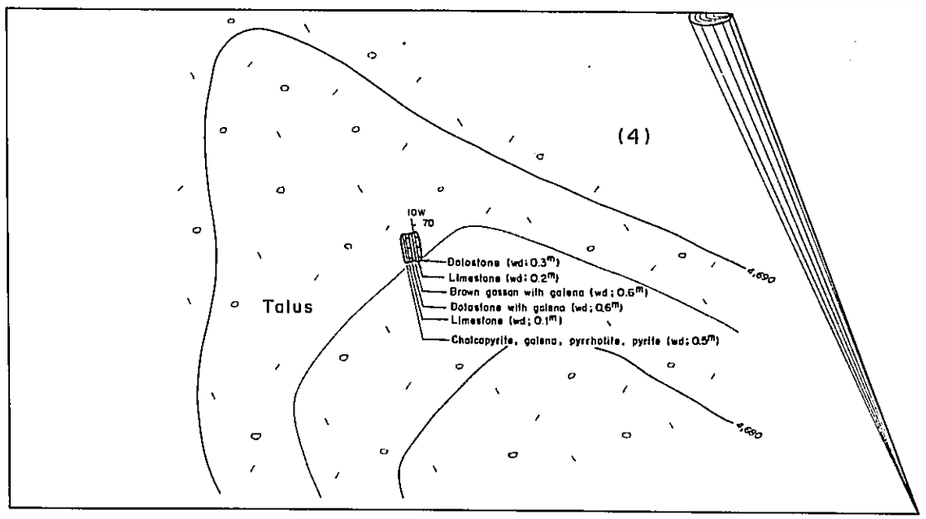
LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

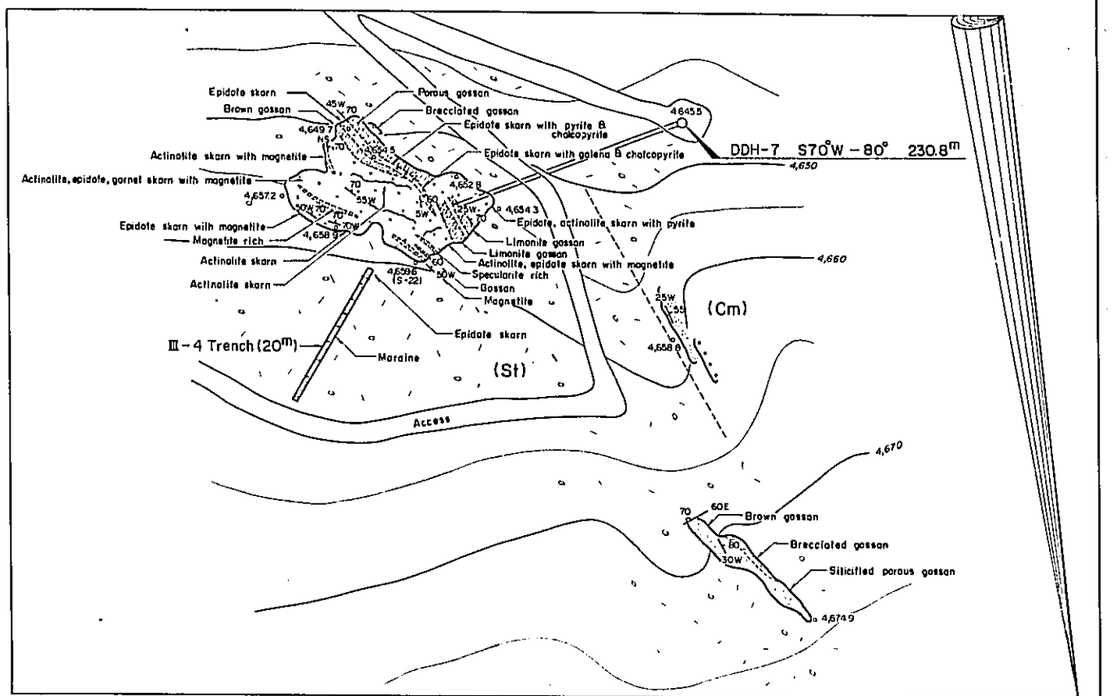
- Bedding plane
- Joint
- Trenching

STRATIGRAPHY





No. 5 Mineralized zone



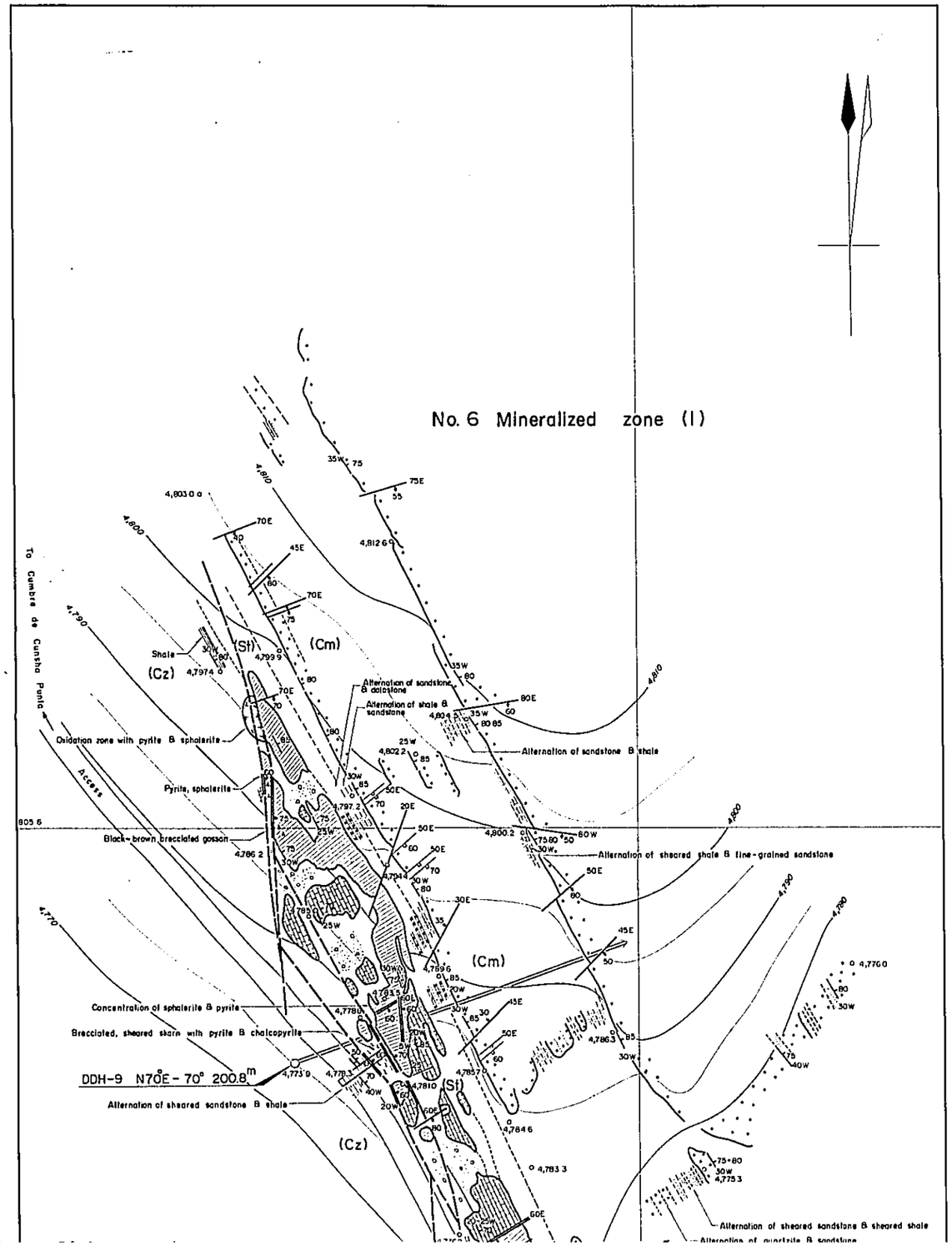
LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

- Bedding plane
- Joint
- Trenching

STRATIGRAPHY

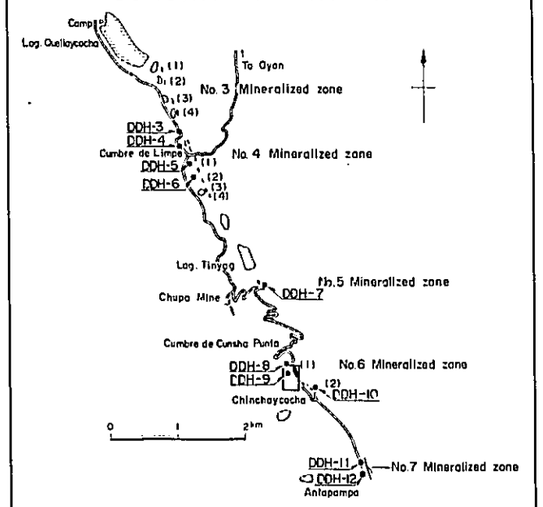
- (St) Santa formation
- (Cm) Chimu formation
- Location of drilling



GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I-6-4

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA
CUNSHA PUNTA AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

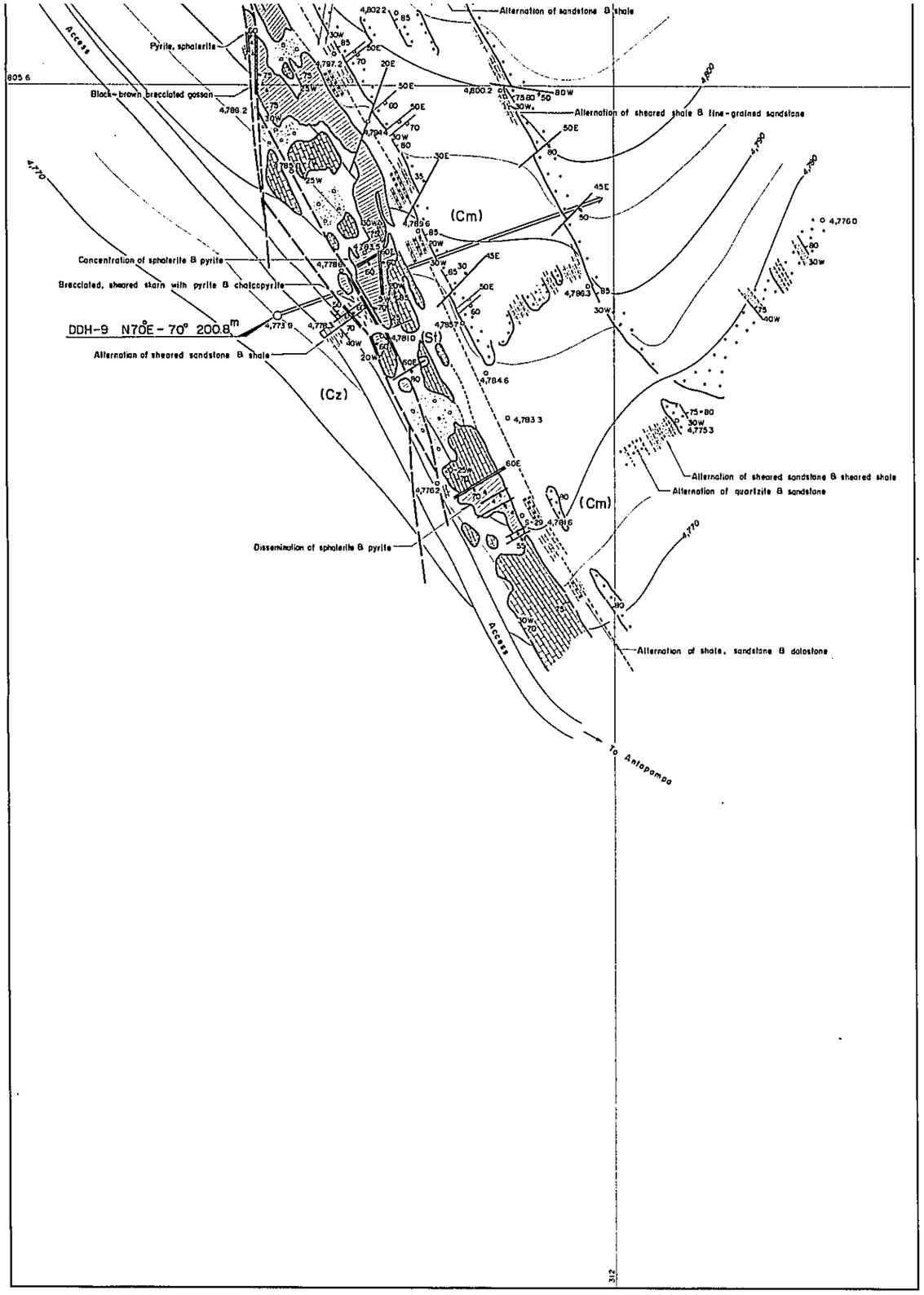
Scale 1 : 500

0 50m

LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, sidarite, gossan
- Skarn
- Brown gossan

- Bedding plane
- Joint
- Fissure
- Fault



LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

- Bedding plane
- Joint
- Fissure
- Fault

STRATIGRAPHY

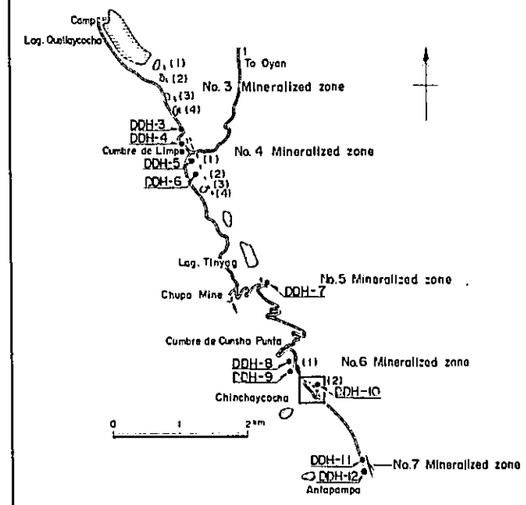
- (Cz) Carhuaz formation
- (St) Santa formation
- (Cm) Chimu formation

Location of drilling

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. 1-6-5

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA CHINCHAYCOCHA AREA



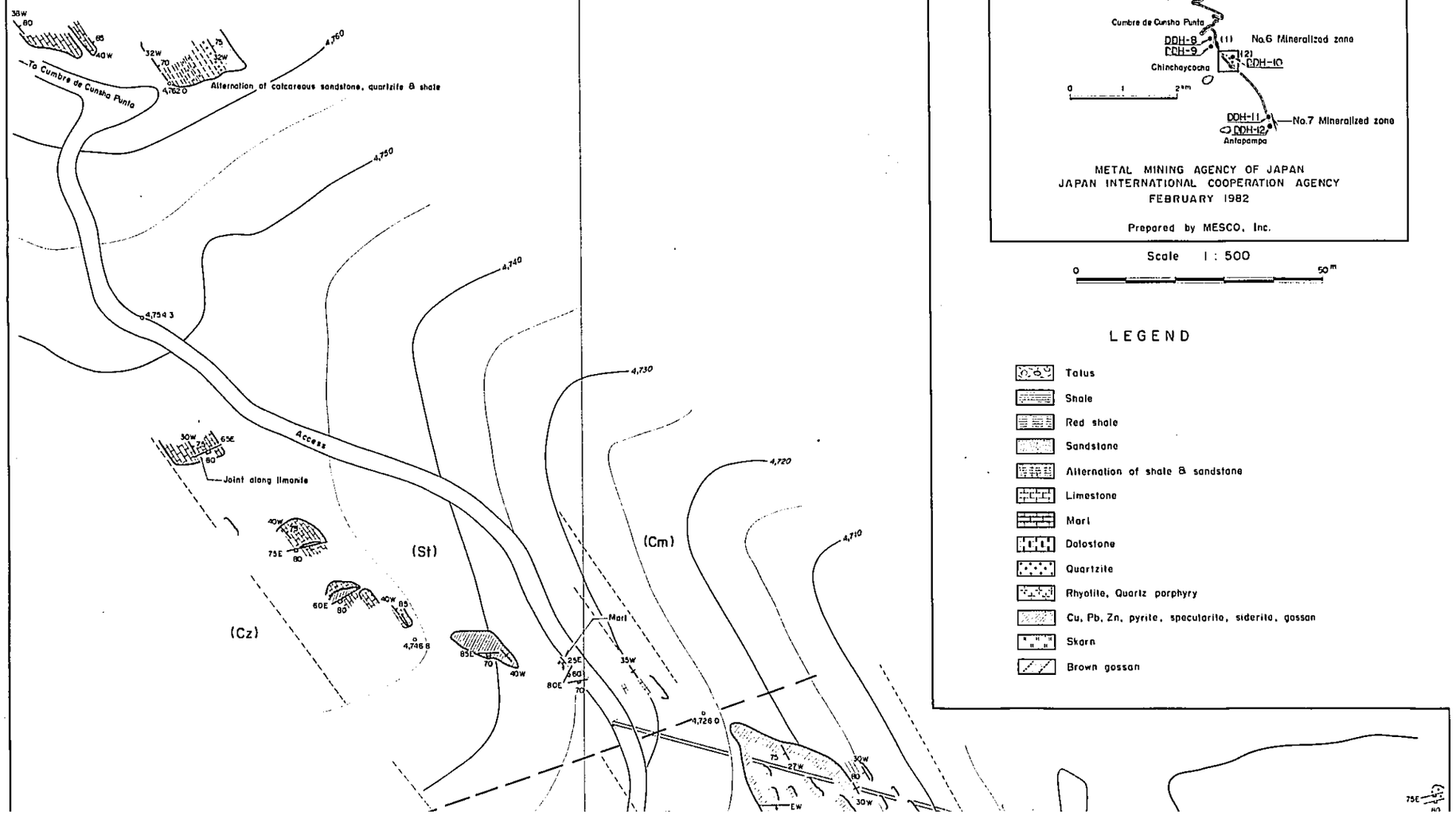
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

Scale 1 : 500

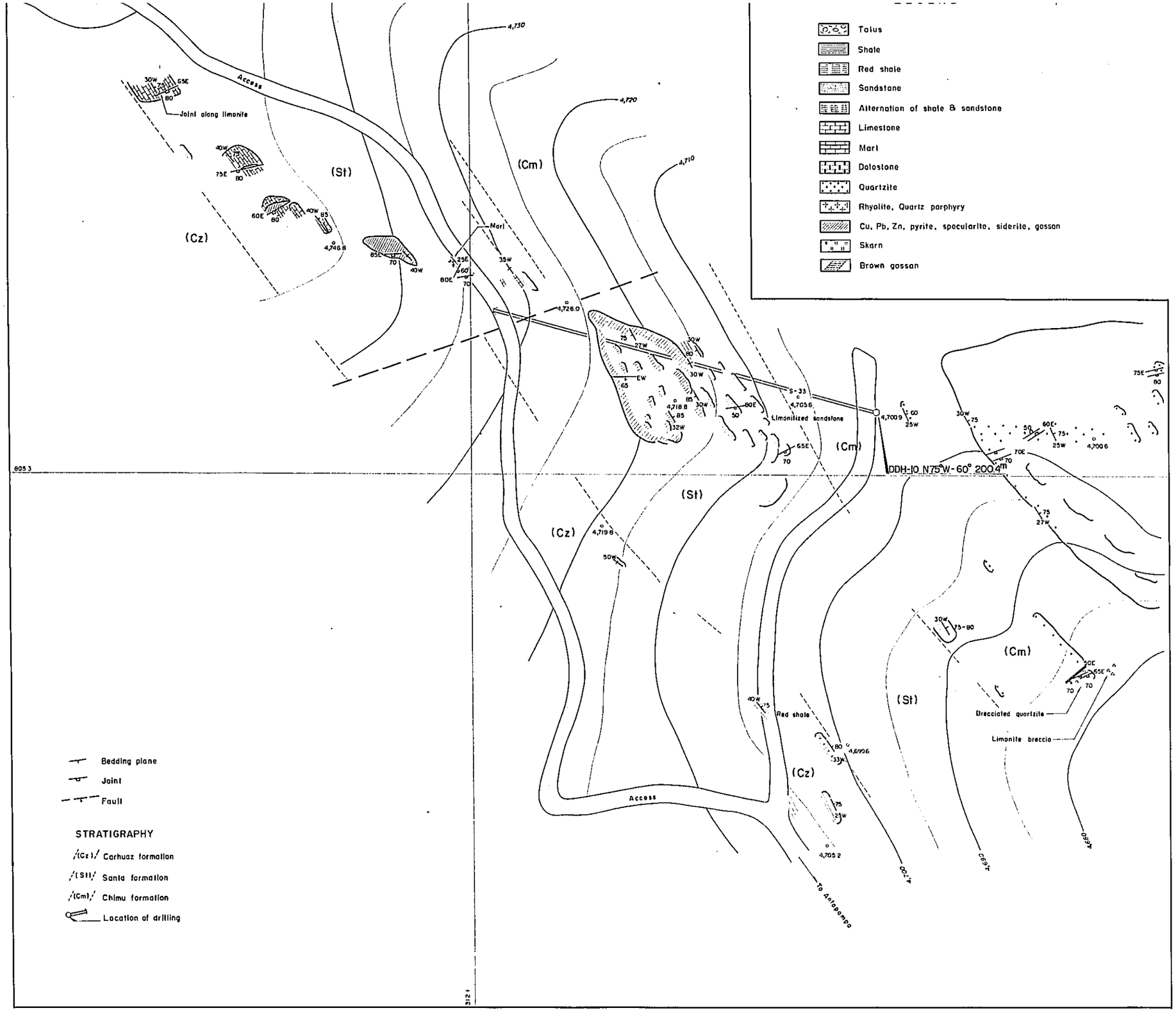
0 50 m

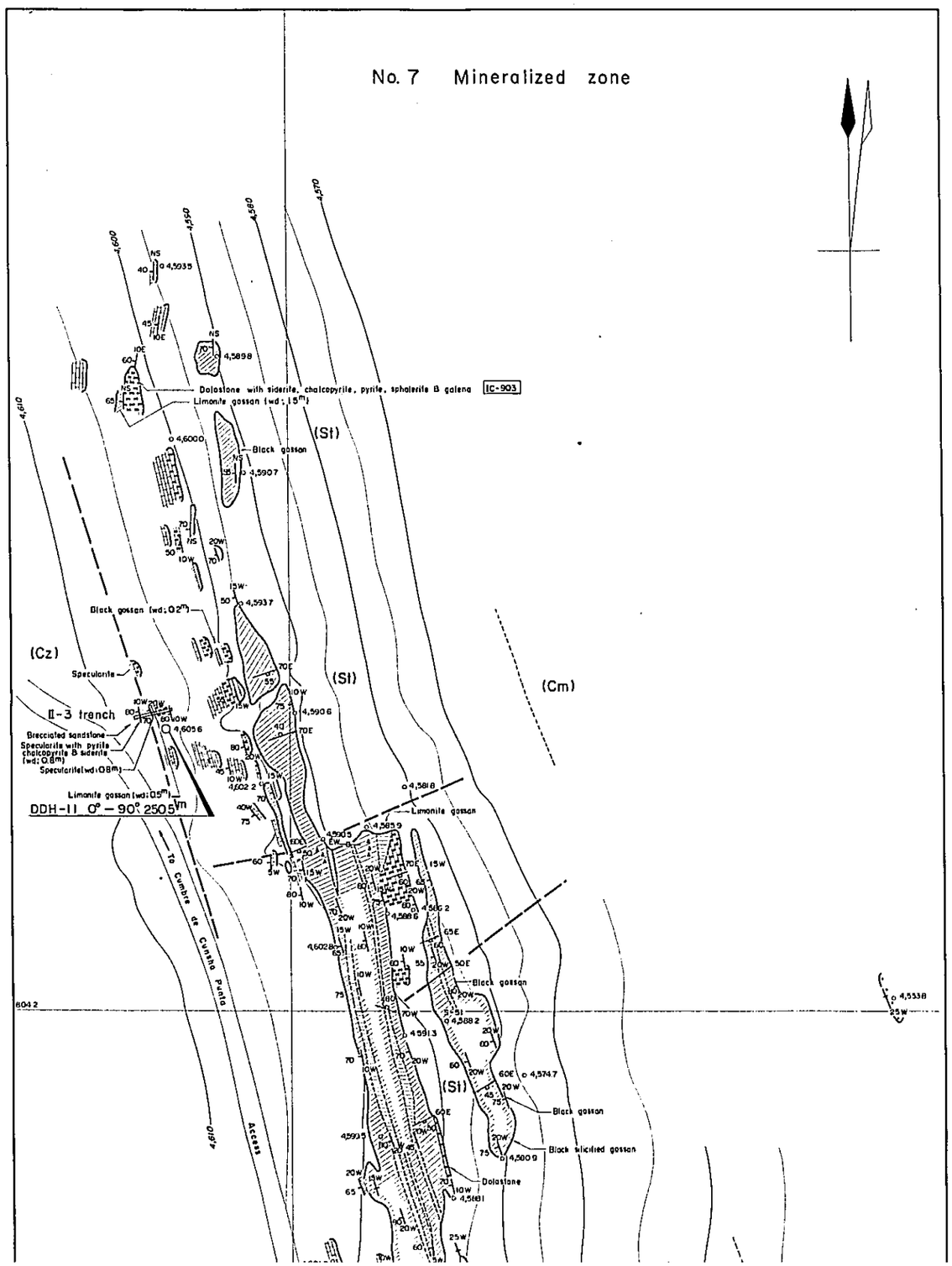
No. 6 Mineralized zone (2)



LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

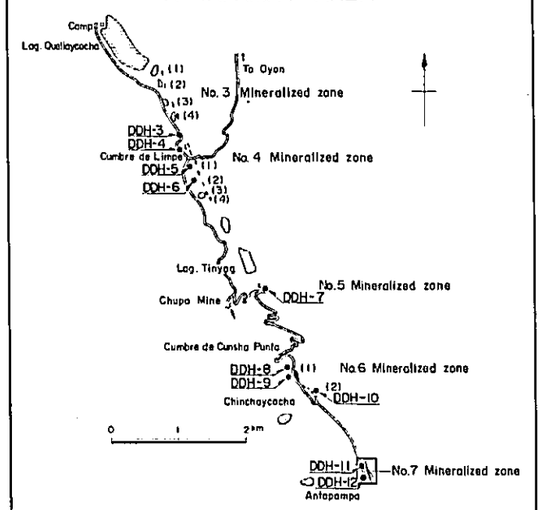

Talus
Shale
Red shale
Sandstone
Alternation of shale & sandstone
Limestone
Marl
Dolostone
Quartzite
Rhyolite, Quartz porphyry
Cu, Pb, Zn, pyrite, specularite, siderite, gossan
Skarn
Brown gossan
Access
Joint along limonite
(St)
(Cm)
(Cz)
Marl
Limonitized sandstone
DDH-10 N75°W-60° 200.4m
Red shale
Brecciated quartzite
Limonite breccia
To Antapampa
Bedding plane
Joint
Fault
STRATIGRAPHY
(Cz) Carhuaz formation
(St) Santa formation
(Cm) Chimu formation
Location of drilling



GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

PL. I-6-6

DETAILED SKETCH MAP OF THE ISCAY CRUZ AREA ANTAPAMPA AREA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY
FEBRUARY 1982

Prepared by MESCO, Inc.

Scale 1 : 500

0 50m

LEGEND

- Talus
- Shale
- Red shale
- Sandstone
- Alternation of shale & sandstone
- Limestone
- Marl
- Dolostone
- Quartzite
- Rhyolite, Quartz porphyry
- Cu, Pb, Zn, pyrite, specularite, siderite, gossan
- Skarn
- Brown gossan

- Bedding plane
- Joint
- Fault

STRATIGRAPHY

(Cz) Carhuaz formation


Talus
Shale
Red shale
Sandstone
Alternation of shale & sandstone
Limestone
Marl
Dolostone
Quartzite
Rhyolite, Quartz porphyry
Cu, Pb, Zn, pyrite, specularite, sidarite, gossan
Skarn
Brown gossan
Bedding plane
Joint
Fault
STRATIGRAPHY
(Cz) Carhuaz formation
(St) Santa formation
(Cm) Chimu formation
Location of drilling
DDH-11 0° - 90° 250.5m
DDH-12 N70°E-85° 310.5m
II-2 trench
II-1 trench
Past trench
To Cumbre de Cuncha Punta Access
Pampa
(Cz)
(St)
(Cm)
Limonite gossan
Black gossan
Black silicified gossan
Dolostone
Black gossan with limonite
Black gossan with specularite
Calcareous sandstone
Black brecciated gossan
Calcareous dolostone
Shale with specularite
Shale with magnetite
Calcareous dolostone
Specularite with green Cu
Gossan (wd: 0.3m)

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 8137.07 E 3098.04
Elevation 4643.3m

DDH No. 1
Direction 80°
Inclination −50°
Total Depth 155m

Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					0				Peb						Talus deposit
					7.3				Ss		da-v		d-gry		Cal-Ss (Cz)
					9.0										!!! cal-v
					10										
					11.2				Cal-Sh		cly	Py	l-gry	shd	Sh with calcareous part
					14.3			∠30°							
									Cal-Sh		cly sil	Py	l-gry		
								∠35°							19.3 calcareous part 20cm w
					19.5										
					20				Sh			Py	blk		Sh of phyllitic str.
					21.5			∠35°	Ls				gry		Ls with sh thin beds
					24.2				Sh		cly	Py	gry		Sh (Cz) of phyllitic str. with Py diss along bedding & Do-vs (26.2)
					26.5				Sh		cly	Py	blk		
					29.7			∠30°							
14	0.06	2.50	7.05	10	30				Sid	oxd	sid sil	Oxd Py	blk	shd brc	Oxidized & mineralized Sid (Si) with diss of Galena & Zn-oxides
14	0.05	1.60	5.40	5	32.5				Do	oxd	cly		d-gry	F	& with brownish, soft & sandy appearance
					33.7				Sh	oxd	cly		d-gry	F	
					34.5			∠40°			do sil cly				
									Ml			Py	gry		Ml (Si)
					37.0				Sh		cly		blk	shd	
12	0.08	1.20	6.25	7	38.1				Sid	oxd	sid-v	Pb Zn	gry	brc	Mineralized Sid (Si) with a lot of fine-grained Galena & sid-vs druses
					39.3				Sid	oxd	sid cly	Pb Py	a-gry	shd	
10	0.12	2.20	6.15	12	40			∠45°							
					41.2			∠55°	Sh	oxd	cly do	Py	blk	shd	Sh
					44.0			∠65°							
					46.0				Sh		cly	Py	blk	shd	
					48.0				Ml		cly	Py	blk	F	Ml
10	0.14	2.00	4.80	26	50										
10	0.08	0.24	0.85	10					Sid		sid sil	Pb Zn Py	l-gry	brc	Mineralized Sid with a lot of wht sid-vs & druses & diss of fine-grained Galena Zn is supposed to occur as forms of oxides
10	0.07	0.95	3.40	15											
10	0.05	0.72	4.70	7											
10	0.05	0.40	4.20	5											
10	0.06	0.42	2.60	7											
10	0.08	0.60	2.70	10											
10	0.08	0.92	2.00	9											
10	0.07	0.66	4.00	6											
10	0.06	0.28	3.50	5											
10	0.08	0.29	4.20	8	60										
10	0.05	0.35	3.40	2											
12	0.09	0.49	5.20	27	63.2				Ml		cly		d-gry	F	Ml
					64.5				Sh		sil-do		blk		Sh
					67.0			∠50°							
15	0.07	0.13	4.10	7					Sid	oxd	sid sil cly	Oxd	gry	shd brc	Mineralized - Sid with a lot of sid-vs & druses
15	0.05	0.10	3.80	2	70										
20	0.06	0.20	6.40	16	71.3										
					72.0			∠50°	Ml	oxd	do		d-gry		Ml with shaly parts
19	0.04	0.31	3.40	6					Sid	oxd	sid		brn-d-gry	brc	Oxidized Sid of brownish, soft & sandy appearance
19	0.05	0.73	4.00	9	73.8				Sh						
					76.5				Sid		sid	Pb Zn	d-gry	brc	Mineralized Sid with a lot of sid-vs & druses
14	0.06	2.50	5.40	9	78.7			∠40°							
14	0.15	0.40	1.60	8	80				Ml		do sil		l-gry		Ml
					82.0			∠40°							
					84.4				Sh				l-gry		Sh

Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					0				Sh		sil cly	Py	wht & l-gry		Sh of saccharoidal tex. with grey patchs of diss of Py
					2.9			∠40°	Sh		sil		d-gry		Sh
					5.2				Sid	oxd	sid cly sil		l-gry	shd	Oxidized Sid with brownish-color, soft & sandy appearance
					11.0				Sid		sid cly sil		l-gry		
					11.6										
1.3	0.06	0.58	3.00	4					Sid		sid sil	Oxd	l-gry	brc	Mineralized Sid with sid-vs & druses
1.3	0.08	0.75	3.60	10	13.8										
3.4	0.10	0.98	4.20	13					Sid		sid cly	Oxd	l-gry	shd	
					17.2										
									Do (?)		cly sil sil		l-gry	shd	
					12.0										
					24.9				Do (?)	oxd	cly sil sil		blk d-gry	brc shd	Oxidized Do with very soft & sandy appearance core recovery is very bad
					13.0										
					14.0										
					15.0										
					16.0										
					17.0										
					18.0										
1.6	0.07	0.34	1.60	18	15.0							Py			diss of fine-grained Py
3.6	0.25	0.42	1.398	59					Do (?)	oxd	sil cly				Sludge only
					15.5.0										155.0m end

Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					21.0										
					22.0										
					23.0										
					24.0										
					25.0										
					26.0										
					27.0										
					28.0										
					29.0										
					30.0										
					31.0										
					32.0										
					33.0										
					34.0										
					35.0										
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					38.0										
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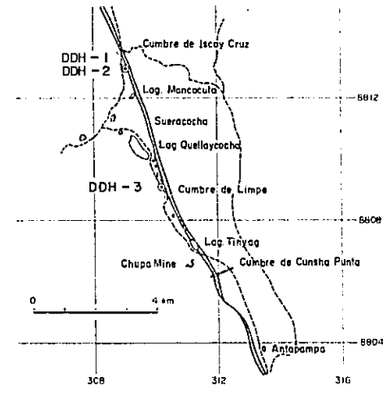
					72.0										
					73.0										
					74.0										
					75.0										
					76.0										
					77.0										
					78.0										
					79.0										
					80.0										
					81.0										
					82.0										
					83.0										
					84.0										

PL. Ⅲ - 1

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅱ

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH — 1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous shale	Cal-Sh	
Calcareous sandstone	Cal-Ss	C
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Fault & fracture		
Intrusive, intermediate		A
Siderite		

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Pyrite	Py
Pb - minerals	Pb
Zn - minerals	Zn
Oxide - minerals	Oxd

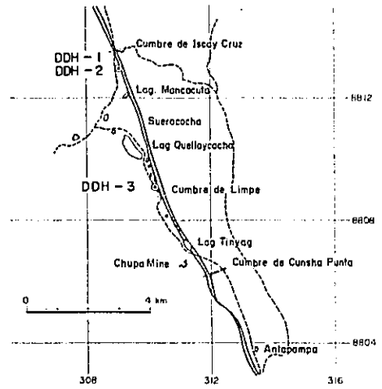
14. Color;

light	l-
dark	d-

IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG

DDH – 1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;	Pebble	Peb	
	Shale	Sh	
	Sandstone	Ss	
	Calcareous shale	Cal-Sh	
	Calcareous sandstone	Cal-Ss	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Quartzite	Qtz	
	Ore, high grade		
	Ore, low grade		
	Fault & fracture		
	Intrusive, intermediate		
	Siderite		
11. Oxidation;	oxidized	oxd	
	limonitized	lim	
12. Alteration;	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization;	Pyrite	Py	
	Pb – minerals	Pb	
	Zn – minerals	Zn	
	Oxide – minerals	Oxd	
14. Color;	light	l-	
	dark	d-	
	grey	gry	
	black	blk	
	white	wht	
	brown	brn	
15. Fracture;	Fault	F	
	sheared	shd	
	brecciated	brc	
16. Observations;	dissemination	diss	
	veins	vs	

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 809.12 E 310.31
Elevation 4694.5m

DDH No. 3
Direction 60°
Inclination −48°
Total Depth 157m

Assays					Depth-Symbol			Occurrence						Observations
Leng. (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					0.9				Peb						Talus deposit
									Sh	lim	cal-qz-v	Py	gry		Sh (Cz) Lim diss along joints Cal-Qz vs develope Py diss in the sil parts
								∠45°							
					5.6				Sh	lim	cal-qz-v	Py	l-gry		
					10						sil	Py			aggregation of Py patch
								∠45°							
					13.9				Red-Sh				red		Red-Sh
					17.4			∠45°							
									Sh		sil	Py	l-gry		Sh
					20										
					23.4				Sh		sil	Py	gry		
					23.6				Sh			Py	blk	crsh	23.4–23.6 Fault cly Sh
					26.6				Ls				blk		Ls nodules in blk-Sh with fossils
					27.3			∠30°				Py	gry		
					30				Cal-Sh						Cal-Sh
					33.0										33.6–33.7 Fault cly
									Sh		sil	Py	l-gry		Banded-Sh fine cal sh and sandy sh
								∠40°							
					40										41.2 Do v, 2cm w 40°
					41.5				Sh				blk		Banded-Sh
								∠40°							
					45.0				Sh		sil		d-gry		Banded-Sh
					49.0				Sh				blk		
					51.2										51.2–51.6 Fault cly
					51.6				Sh		cly do-v		gry	crsh	Sh many do-vs
					55.4				Cly		cly		gry	F	Fault or sheared zone
					58.1				Sh		cly	Py	d-gry	shd	Sheared zone with cal & do vs
					63.0			∠40°	Sh		cly	Py	blk		63.0 Py v, 2cm w
					64.8	C			Cal-Ss						
					66.8	C					col-v		l-gry		Cal-Ss
0.5	0.10	C.01	0.03	2	68.4	C		∠35°	Alt				gry		Alt (cal-ss & sh)
					70.0				Sh			Py	blk	phy	Phyllitic-Sh
								∠35°							69.6 Py diss along bed 70.7 cly 5cm
					73.7				Sh		sil	Py	l-gry		Sandy-Sh massive and brecciated partly (76.5–77.5) 75.0 cal-v 1cm w
								∠40°						brc	
					78.5			∠45°							
					80.0				Sh				blk	phy	Sh
					81.8	C			Cal-Ss		sil cly	Py	l-gry	shd	Cal-Ss with Sh thin beds 83.0 cly 30cm
						C									
						C									
						C									

Assays					Depth-Symbol			Occurrence						Observations
Leng. (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					0.7				Ml		do-sil	Py	gry	brc	Ml
0.8	0.10	0.35	0.58	12	3.0				Do-Ml		do-sil	Py Pb-Zn	l-gry	brc	do-druses, Pb-Zn diss
0.8	0.09	1.65	2.30	27	4.6						sil	Pb-Zn	gry		Pb-Zn high grade, diss ore
1.0	0.30	8.25	18.05	118	5.6										
1.0	0.42	11.00	16.36	95							druse	Pb-Zn Py	yel		Pb-Zn high grade, Py porous ore
1.0	0.26	3.50	17.85	75	8.2										
1.0	0.23	2.20	4.40	68							sil	Po-Py	yel		Pb-Zn low grade,
1.0	0.28	0.70	1.30	30	11.0						sil	Pb-Zn	brn		Py-Po massive ore
1.0	0.24	1.10	2.10	28											
1.0	0.20	1.00	1.80	20											
1.0	0.14	1.65	3.60	32											
1.0	0.16	2.05	3.30	30	12.5						sil	Pb-Zn Py-Po	yel brn		Pb-Zn medium grade, Py-Po massive ore
1.0	0.93	2.10	2.70	32											
1.1	0.10	1.52	3.40	35	15.4							Po-Py	yel		
1.1	0.12	0.50	2.00	30								Pb-Zn	brn		Pb-Zn low grade, Py-Po mas ore
1.1	0.30	1.35	12.29	38	16.7						sil	Pb-Zn Py-Po	yel	brc	Pb-Zn medium grade, Po-Py brc ore
1.0	0.08	0.66	12.69	45	17.9							Pb-Zn	d-gry	shd	Pb-Zn-Py diss. ore
1.2	0.12	0.07	1.75	4	18.9				Sh						
1.2	0.08	0.55	2.50	6	20.0				Do		sil-sh		gry	shd	21.0 do-v 3cm w
					21.3										
					23.3				La		cal-v		l-gry	brc	Ls
					25.0				Do		cal-v	Py	gry	brc	Do (Sil with cal-vs
0.5	0.09	0.01	0.01	4											
					30.0				Ml		sil-do	Py	d-gry		Ml
					31.3										31.3–32.3 cal-spots
					32.0			∠60°							
								∠60°	Ml		cal-do-v	Py	gry		Ml
					43.3										
					46.4				Ls		cal-v		l-gry		Ls (Sl) with cal-vs
					56.7				Do-Ls		sil-do	Py	l-gry		Do-Ls
									Ml		cal cal-v		d-gry		Ml with cal-vs
					55.7			∠55°	Sh				blk	shd	Sh
					57.0										157.0 end
									Ls		cal-v		gry		Ls with cal-vs

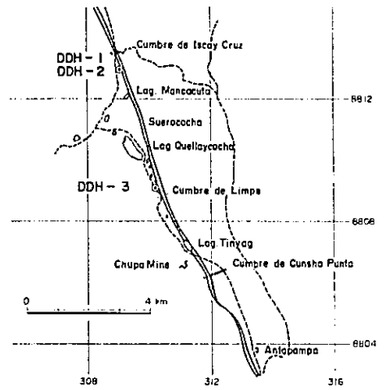
Assays					Depth-Symbol			Occurrence						Observations
Leng. (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										

PL. III-3

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE II

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH — 3



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1:200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous shale	Cal-Sh	
Calcareous sandstone	Cal-Ss	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Fault & fracture		
Intrusive, intermediate		
Siderite		

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

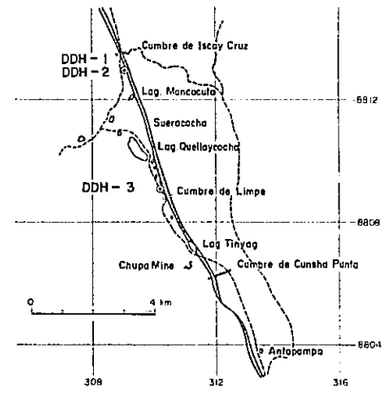
Pyrite	Py
Pb-minerals	Pb
Zn-minerals	Zn
Oxide-minerals	Oxd

14. Color;

light	l-
dark	d-

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 3



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous shale	Cal-Sh	
Calcareous sandstone	Cal-Ss	
Marl	Ml	
Limestone	Ls	
Dolamitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Fault & fracture		
Intrusive, intermediate		
Siderite		

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolamitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Pyrite	Py
Pb-minerals	Pb
Zn-minerals	Zn
Oxide-minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

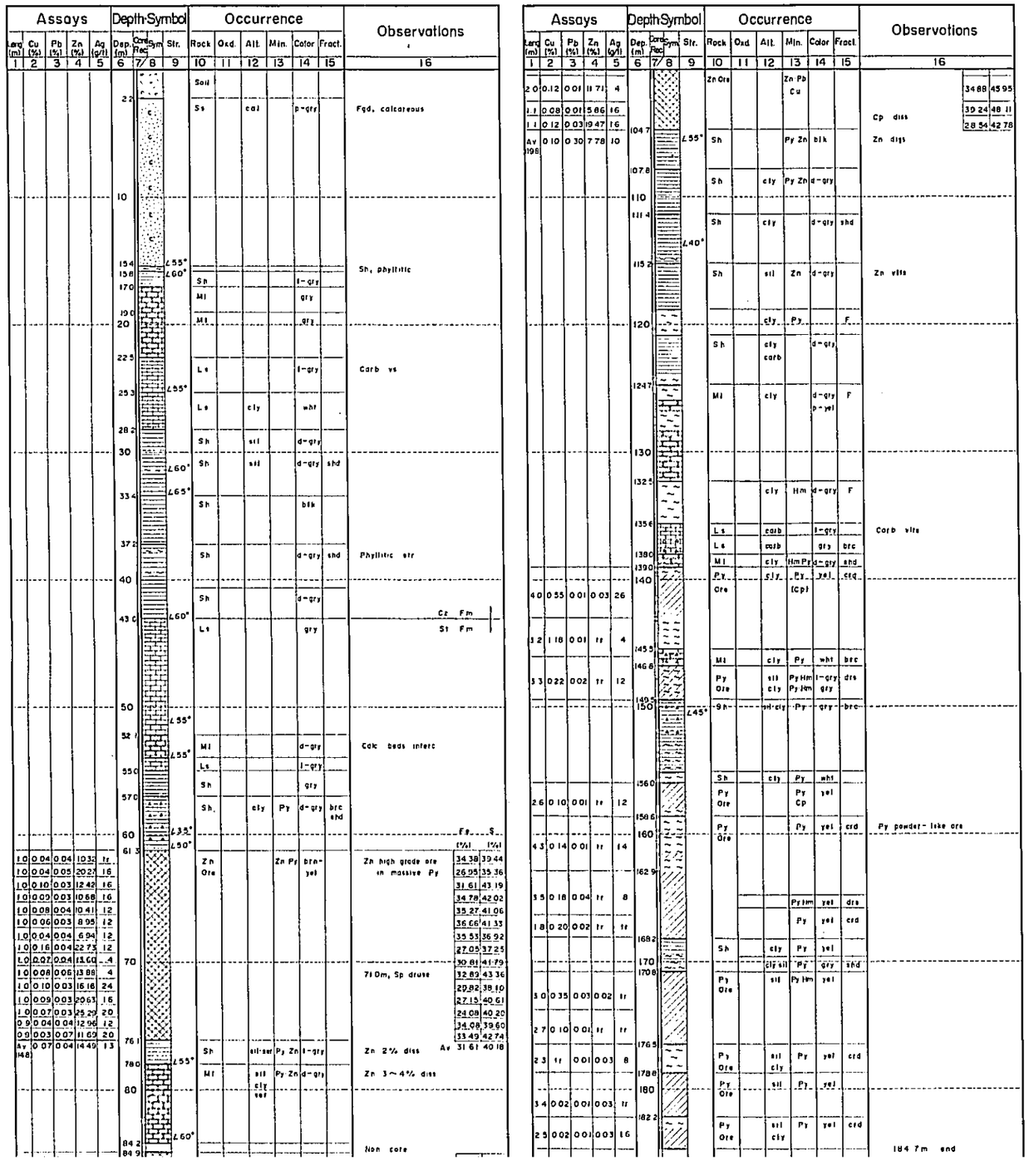
16. Observations;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 808,870 E 310,400
Elevation 4757.5m

DDH No. 4
Direction 70°
Inclination −60°
Total Depth 184.7m

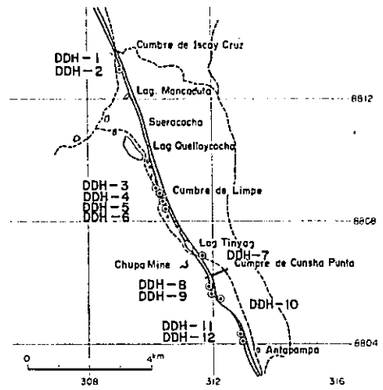


PL. Ⅲ-4

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅲ

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH − 4



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

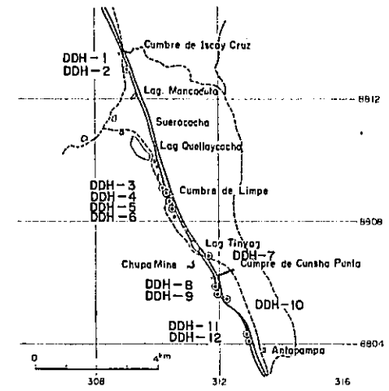
Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 4



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	Ore, high grade	
Shale	Sh	Ore, low grade	
Sandstone	Ss	Skarn	Sk
Calcareous sandstone	Cal-Ss	Brecciated rock	Brc
Siderite	Sid	Fault & fracture	F
Marl	Ml		
Limestone	Ls		
Dolomitic limestone	Do-Ls		
Dolostone	Do		
Quartzite	Qtz		

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

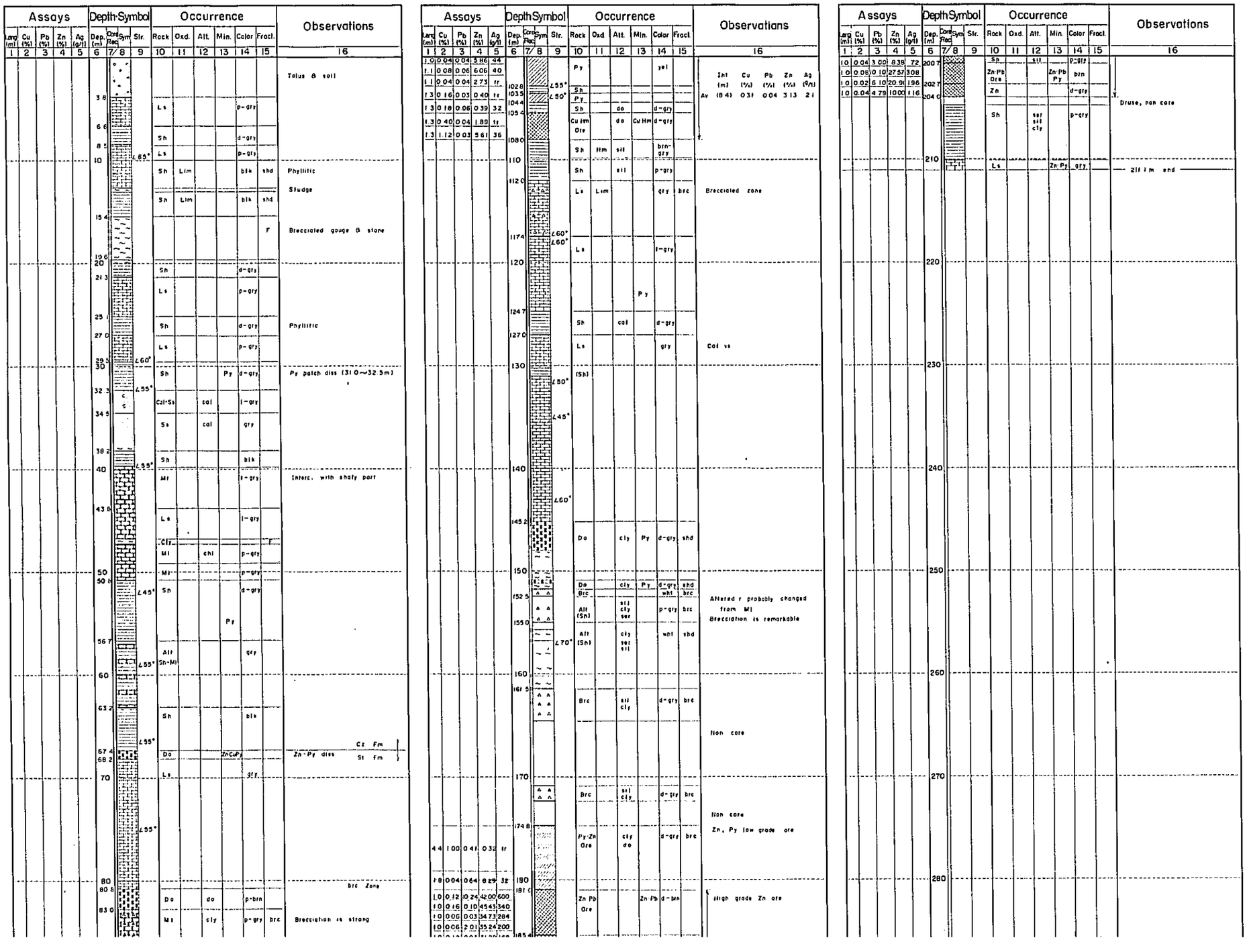
16. Observations;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 808.610
E 310.460
Elevation 4742.2m

DDH No. 5
Direction 70°
Inclination −45°
Total Depth 211.1m

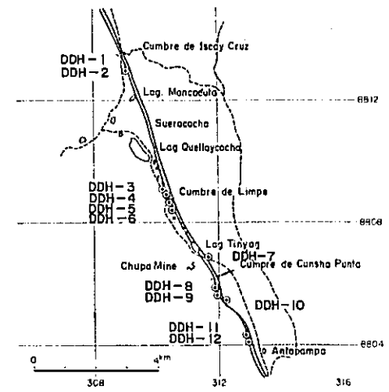


PL. Ⅲ − 5

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅲ

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH − 5



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb		
Shale	Sh		
Sandstone	Ss		
Calcareous sandstone	Cal-Ss	C	
Siderite	Sid		
Marl	Ml		
Limestone	Ls		
Dolomitic limestone	Do-Ls		
Dolostone	Do		
Quartzite	Qtz		
Ore, high grade			
Ore, low grade			
Skarn	SK		
Brecciated rock	Brc		
Fault & fracture	F		

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

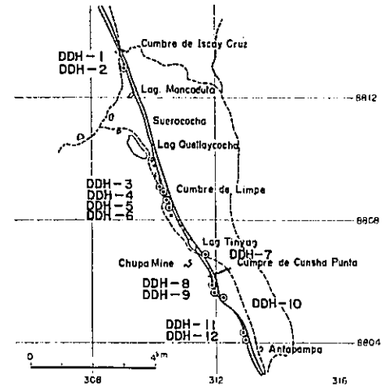
Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 5



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	c
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
orgillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Ml	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

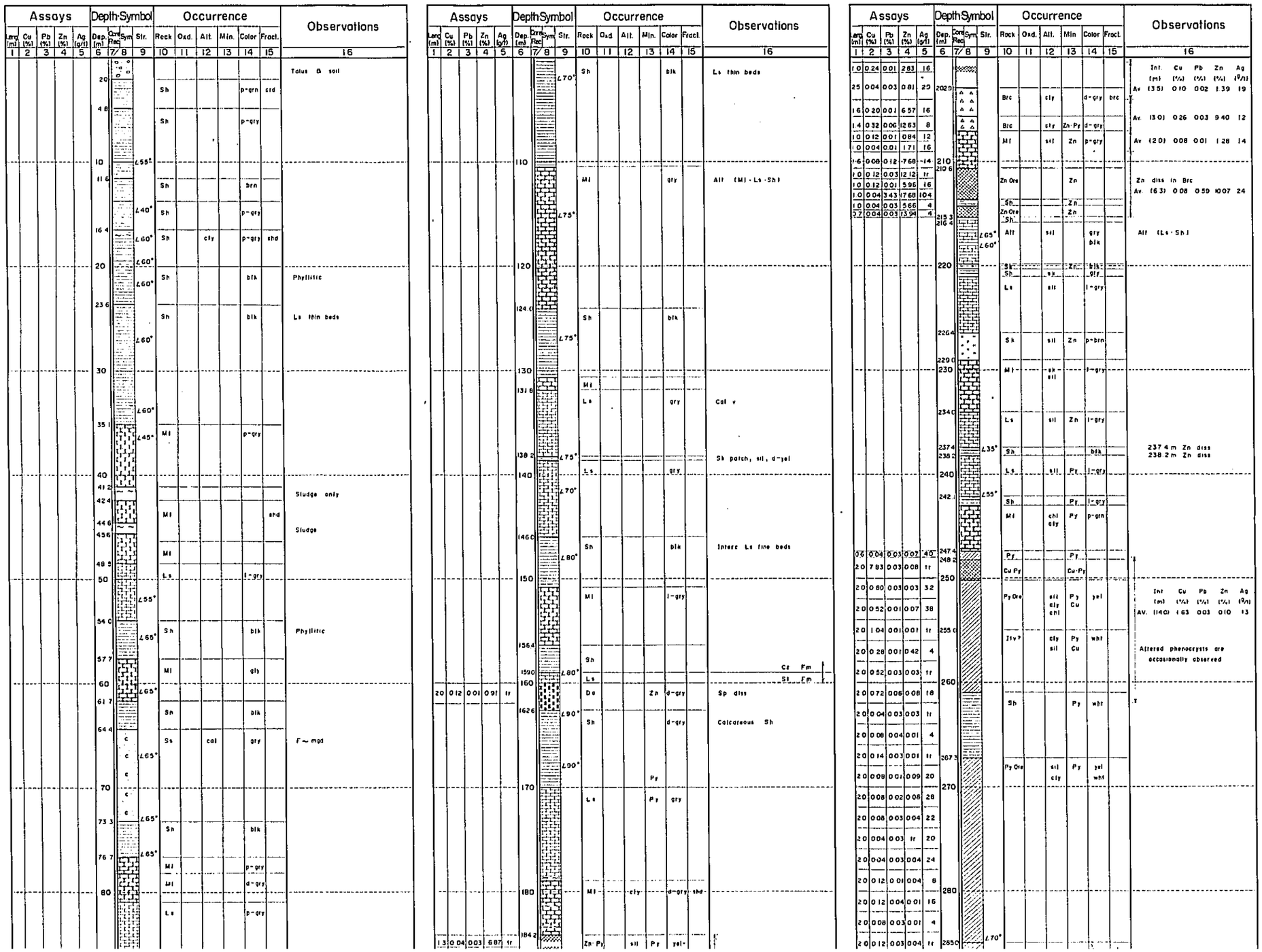
16. Observations;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 808.410
E 310.540
Elevation 4696.1m

DDH No. 6
Direction 70°
Inclination −55°
Total Depth 301.6m

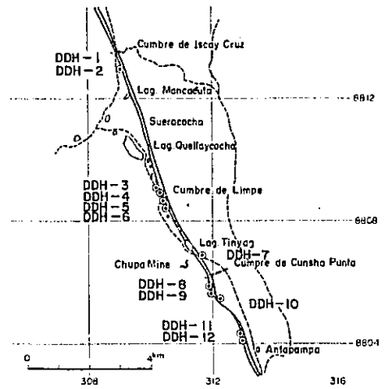


PL. Ⅲ-6

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE Ⅲ

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH − 6



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Mori	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
orgillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

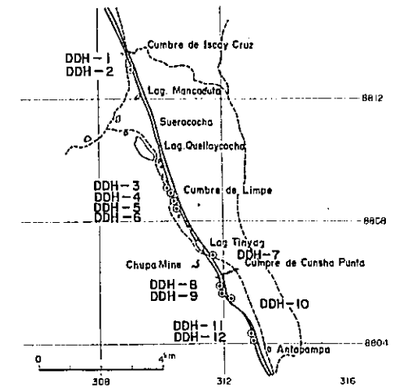
Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH — 6



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock ;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation ;

oxidized	oxd
limonitized	lim

12. Alteration ;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization ;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color ;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture ;

Fault	F
sheared	shd
brecciated	brc

16. Observations ;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 806,870 E 311,450
Elevation 4645.5m

DDH No. 7
Direction 250°
Inclination −80
Total Depth 230.8m

Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
									Soil						
					6.5				Qtz	Lim	ser sil	Py	wht brn		
					8.2			∠65°	Sh	Lim	cly chl	Py	p-grn	F	Sh & fgd ss
					10				Qtz		ser cly	Py	wht grey		
					10.7				Qtz	Lim	cly	Py	wht brn	shd	
					12.3				Qtz	Lim	ser cly	Py	brn wht		
					20										
					28.2			∠45°	Ss	Lim	cly ep chl	Py Mt	wht	shd	Cm Fm
					30			∠50°							St Fm
20	0.33	tr	0.9	10	31.4				Sh		cly	Py	d-gry wht	shd	
20	0.22	0.1	0.5	7					Py		cly	Py	d-gry wht		Py powder
20	0.06	tr	0.1	3											
20	0.12	tr	0.1	3					Py		sil	Py	yel		Massive Py
20	0.24	tr	0.1	3											
20	0.90	0.1	0.3	7	40										
20	0.18	0.1	1.0	7	41.2				Sh	Hm	cly		wht		
20	1.58	tr	0.5	17	44.7				SK		chl cly	Mt	p-grn		
20	1.06	0.1	0.5	14					Sh		cly	Py	p-gry		
20	0.83	tr	0.4	14					SK	Lim	cly	Mt Py Cu	d-brn		
20	0.18	tr	0.8	7	50										
20	0.04	0.1	0.3	3	52.6				Sk		cly	Mt	p-grn		
20	0.21	0.1	1.2	3											
20	0.14	tr	1.48	3	57.0				Cly			Py Zn	wht		
20	0.22	tr	2.83	7											Int (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
1.0	0.22	tr	1.59	3	60										Av 17.01 0.21 0.01 1.971 5
1.0	0.20	tr	2.10	7					Zn-SK		chl	Zn-Mt Py	p-gry		Zn-Mt ore
1.0	0.36	0.1	1.49	7	63.0										
1.0	0.19	0.1	0.7	3					SK		ep chl	Mt Py	d-grn		
20	0.04	0.3	1.0	3											
20	0.07	0.1	0.4	3											
20	0.07	0.1	1.2	3	70										
20	0.05	0.1	1.3	3											
20	0.03	0.1	0.8	3											
20	0.08	0.1	0.3	3				∠65°							
20	0.03	tr	0.1	3											
20	0.14	0.1	0.1	3				∠60°							
1.0	0.14	0.1	0.8	7	80										
1.0	0.05	0.1	12.7	3	81.0				Zn-SK			Zn-Mt			
1.0	0.04	0.1	0.3	3					SK Ore		chl ep cal	Mt Py Zn	p-grn		Ga · Act · Ep · Chl SK Zn Ore
1.0	0.07	0.1	5.5	3											
1.0	0.13	0.1	8.9	7											
1.0	0.06	0.1	1.4	3											

Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2.0	0.05	tr	1.2	3					Mt SK		chl	Mt	p-gry		Act · Ep · Mt SK Mt band
2.0	0.08	tr	1.2	3											
2.0	0.15	tr	0.9	3	105.6										
2.0	0.17	tr	8.1	3	106.4				Sh		chl		p-grn		
2.0	0.07	tr	4.6	3					Zn-Mt SK		chl cly cal	Mt Zn	d-gry		Act SK Int (m) Cu (%) Pb (%) Zn (%) Ag (g/t)
2.0	0.07	tr	1.3	3	109.0										Av 1.40 0.12 tr 6.35 3
2.0	0.16	tr	0.9	3	110			∠50°	SK		ep chl cly	Mt	p-grn		
2.0	0.08	tr	0.9	3	115.0										
2.0	0.17	tr	10.7	3	116.0				Sh		cly			shd	
2.0	0.39	tr	14.5	7					Zn-SK		chl	Py Mt Zn-Cu	p-grn		118.4 Co patch
1.0	0.10	tr	8.1	3	120										Hd-Mt Disp SK
1.0	0.32	tr	9.6	7											Zn diss ore
1.0	0.74	tr	34.8	14	121.0				Zn-SK		chl	Zn-Py	d-grn		
1.0	0.56	tr	41.3	17					Zn Ore			Zn-Py	d-brn		Zn high grade ore
1.0	0.17	tr	15.6	3							chl ep	Mt	d-grn		
1.0	0.31	tr	19.8	7					Zn Ore			Zn-Mt	d-brn		Av (1.90) 3.18 tr 19.53 9
1.0	0.64	tr	26.3	10	128.6										
1.0	0.43	tr	15.8	7				∠60°	SK Ore		cly	Mt Py Zn	p-gry wht		
1.0	0.57	tr	12.7	7											
1.0	0.40	tr	16.2	7	130										
1.0	1.21	tr	4.9	3	131.8										
2.0	14.9	tr	36.0	21					Zn-Sp Ore			Spc Py Zn-Cu	blk	shd	Bornite and chalcocite?
2.0	12.0	tr	21.8	10											
2.0	1.04	tr	0.7	3	135.8				Py				yel		Py sludge
2.0	0.77	tr	1.1	7	138.0										
2.0	0.50	tr	0.3	14	140				Py-Mt Sk		sil	Py-Mt	d-yel		Av (18.0m) 0.79 tr 0.63 8
2.0	0.84	tr	0.4	7	143.0										
					144.0				SK		cly	Py	d-gry		
															St Fm
									Sh		sil	Py	p-gry		Cz Fm
					147.6									F	
									Py			Py	yel	shd	Py sludge
					150				Ss		sil ser cly	Py	wht		
					154.0				Mt		chl ser	Py	d-gry		
					156.0			∠70°	Sh		cly sil	Py	p-gry		
					160										
					160.8				Mt		chl ep	Py Mt	d-gry		
					162.8					Lim			d-brn		Gouge
					164.6				Sh		sil cly	Py	p-gry	crd	
					168.0				Sh Cly.		cly		brn-gry	F	
					170										
					171.1				Sh		cly	Py	wht		
					177.5										
5.0	0.29	tr	0.1	7	180				SK		chl carb	Py Mt	d-grn		
					182.5										
2.5	0.08	tr	0.1	3	185.0				SK		cly chl	Py	d-grn	shd	

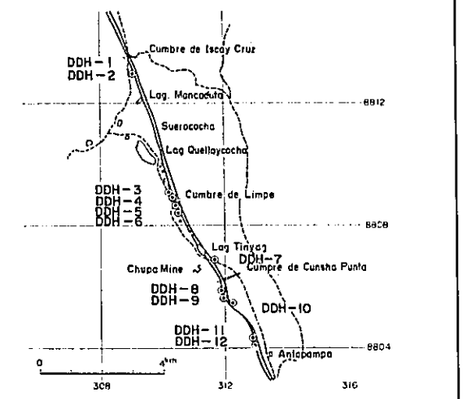
Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min	Color	Fract	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					204.0				Sh		cly sil chl	Py	wht		
3.6	0.05	tr	0.1	3	208.2				Py		sil chl ser	Py	yel		
					210			∠55°	Sh		sil chl cly sk	Py	l-gry		
					218.3										Py v
					220				Sh		sil chl sk	Py	l-gry		
					230			∠50°							230.8m end
					240										
					250										
					260										
					270										
					280										

PL. III − 7

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH − 7



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

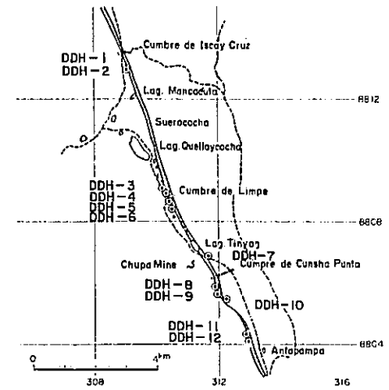
Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;	Pebble	Peb		
	Shale	Sh		
	Sandstone	Ss		
	Calcareous sandstone	Cal-Ss	C	
	Siderite	Sid		
	Marl	Ml		
	Limestone	Ls		
	Dolomitic limestone	Do-Ls		
	Dolostone	Do		
	Quartzite	Qtz		
	Ore, high grade			
	Ore, low grade			
	Skarn	SK		
	Brecciated rock	Brc		
	Fault & fracture	F		
11. Oxidation;	oxidized	oxd		
	limonitized	lim		
12. Alteration;	dolomitization	do		
	calcitization	cal		
	argillization	cly		
	silicification	sil		
	sericitization	ser		
13. Mineralization;	Chalcopyrite	Cp	Pyrite	Py
	Hematite	Hm or Spc	Pb-minerals	Pb
	Magnetite	Mt	Zn-minerals	Zn
	Skarn	Sk	Oxide minerals	Oxd
14. Color;	light	l-		
	dark	d-		

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 7



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

preparad by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

16. Observations;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 805,860
E 311,780
Elevation 4810.2m

DDH No. 8
Direction 70°
Inclination -60°
Total Depth 200.3m

Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					15				Mt	Lim	cly		l-gry		Talus dep., mainly Qtz
					18.0			∠80°	Sh	Lim	cly chl	Py	brn d-gry		Tuffaceous appearance
					21.4			∠70°	Mt		cly		l-gry wht		Banding str.
					25.0										
					27.8			∠30°	cly					F	
					30				Mt		cly		p-gry	F	
					34.9				cly					F	
					36.3				Sh		cly		p-gry	shd	
					39.2				Mt		cly hm		p-gry	shd	
					40				Sh		cly hm		p-gry brn blk	shd	
					47.2			∠65°	Sh		hm		brn		Red sh
1.0	0.06	0.1	0.1	3	50										
					55.0			∠60°	Mt		cly sil		l-gry wht		
					60				Sh		hm		brn		
					63.4				Sh		cly		p-gry	shd	
					70										
					71.6				Mt		chl cly sil		gry		Partly skarnized
					75.6				Ss				gry		Banding str
					77.2				Sh		cly		d-gry	shd brc	
					80				Sh		sil cly		p-gry		

Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.0	0.06	0.1	0.1	7											
					110			∠70°	Sh				p-gry		Col vs
					120				Sh		sil cal	Py	wht l-gry		Py-Qt vlts
					126.2				Sh				blk		
					130				Ss		cal		gry		Very fgd ss
					134.0			∠75°	Sh		cal		p-gry		
					140										
					141.4				Sh		cly		p-gry		
					142.8				cgr		cly			F	
					143.6				Ss		cal		d-gry		
					146.4				Sh		sil cly		p-gry		
1.0	0.03	0.1	tr	3	150										153m Qt v 0.5cm ∠80°
					160			∠70°							
					170			∠80°							
					174.6				Sh		sil cly		p-gry	crd	
					180				Sh		cal		d-gry		

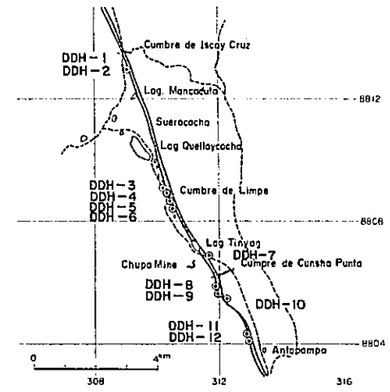
Assays					Depth·Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec	Sym	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										

PL. III - 8

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH - 8



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-

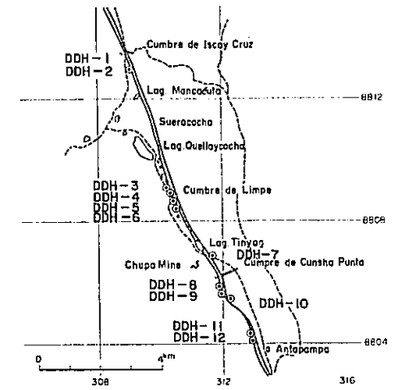
Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep. (m) 6	Core Rec. 7	Sym 8	Str. 9	Rock 10	Oxd. 11	Alt. 12	Min. 13	Color 14	Fract. 15	16
					15				Ml	Lim	cly		l-gry		Talus dep., mainly Qtz
					10			∠80°							
					18 0				Sh	Lim	cly chl	Py	brn d-gry		Tuffaceous appearance
					20										
					21 4				Ml		cly		l-gry wht		Banding str.
					25 0			∠70°							
					27 8			∠30°	cly					F	
					30				Ml		cly		P-gry	F	
					34 9				cly					F	
					36 3				Sh		cly		p-gry	shd	
					39 3				Ml		cly hm		p-gry	shd	
					40				Sh		cly hm		p-gry brn blk	shd	
					47 2			∠65°							
10	0 06	0 1	0 1	3	50				Sh		hm		brn		Red sh
					55 0			∠60°	Ml		cly sil		l-gry wht		
					60				Sh		hm		brn		
					63 4				Sh		cly		p-gry	shd	
					70										
					71 6				Ml		chl cly sil		gry		Partly skarnized
					75 6				Ss				gry		Banding str.
					77 2				Sh		cly		d-gry	shd brc	
					80				Sh		sil cly		p-gry		
					89 0			∠75°							
					90				Sh		sil cal		p-gry		Dotted pattern is observed
					99 5			∠75°							

Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep. (m) 6	Core Rec. 7	Sym 8	Str. 9	Rock 10	Oxd. 11	Alt. 12	Min. 13	Color 14	Fract. 15	16
1 0	0 06	0 1	0 1	7											
					110				Sh				p-gry		Cal vs.
								∠70°	Sh		sil cal	Py	wht l-gry		Py-Qz vns
					120				Sh				blk		
					126 2				Ss		cal		gry		Very fgd ss
					130										
					134 0			∠75°	Sh		cal		p-gry		
					140										
					141 4				Sh		cly		p-gry		
					142 8				cly		cly			F	
					143 6				Ss		cal		d-gry		
					146 4				Sh		sil cly		p-gry		
10	0 03	0 1	tr	3	150										153m 0 1 v 0.5cm ∠80°
					160			∠70°							
					170			∠80°							
					174 6				Sh		sil cly		p-gry	crd	
					180				Sh		cal		d-gry		
					190										
					200 3			∠85°							end

Lang (m) 1	Cu (%) 2	Pb (%) 3	Zn (%) 4	Ag (g/t) 5	Dep. (m) 6	Core Rec. 7	Sym 8	Str. 9	Rock 10	Oxd. 11	Alt. 12	Min. 13	Color 14	Fract. 15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										
					290										

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 8



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock ;	Pebble	Peb	
	Shale	Sh	
	Sandstone	Ss	
	Calcareous sandstone	Cal-Ss	c
	Siderite	Sid	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Quartzite	Otz	
	Ore, high grade		
	Ore, low grade		
	Skarn	SK	
	Brecciated rock	Brc	
	Fault & fracture	F	
11. Oxidation ;	oxidized	oxd	
	limonitized	lim	
12. Alteration ;	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization ;	Chalcopyrite Cp	Pyrite	Py
	Hematite Hm or Spc	Pb-minerals	Pb
	Magnetite Mt	Zn-minerals	Zn
	Skarn Sk	Oxide minerals	Oxd
14. Color ;	light	l-	
	dark	d-	
	grey	gry	
	black	blk	
	white	wht	
	brown	brn	
15. Fracture ;	Fault	F	
	sheared	shd	
	brecciated	brc	
16. Observations ;	dissemination	diss	
	veins	vs	

09285

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 805,540 E 311,930
Elevation 4773.9m

DDH No. 9
Direction -70°
Inclination -70°
Total Depth 200.8m

Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					1.2				Talus	Lim			brn		
									Ss	Lim	sil		l-gry		
					4.2				Sh				bk	brc	Phyllitic Sh
								∠45°~70°							
1.6	0.05	0.1	3.9	10	10				Ss		cly	Zn	d-gry	brc	
1.9	0.05	0.1	1.1	10	11.1										Sludge only
					13.0				Sh				d-gry	brc	Massive & sandy sh
					19.6										
					20				Sh				d-gry	crd	
					21.2			∠50°	Sh				d-gry	brc	
					22.5				Sh		cly		p-gry		Ss patch is contained occasionaly
1.0	0.03	tr	tr	3	25.5				Sh		cly		p-gry	snd	
					30			∠50°							
					33.6				Sh		sil		gry		34.3m, cal v, 1cm ∩, ∠25° Py diss Massive & sandy sh
					34.0				Sh		cly		p-gry	shd	
					40				Sh	Lim	cly		brn		
1.0	0.02	0.1	0.1	7	50			∠55°							
					54.9				Sh		cly	Py Zn	p-gry	brc	
					56.3			∠30°	Cly					F	
					58.0				Ml		cal		gry	brc	Cal vs
					59.7										
					60				Sh				d-gry	shd	
					63.2				Ss		cal		l-gry		Cal vs
					76.0				Ss				l-gry		Sh fine beds are contained
								∠70°							
					70										
								∠75°							Py diss
1.0	0.14	0.1	tr	7	75.5				Ss				wht		
					78.6				Ss		sil	Zn	wht		Zn diss along joints
1.4	0.02	0.2	1.0	10	80										
									Sh				blk	shd	
1.6	0.05	0.3	0.4	7	83.0				Ml		chl	Zn Pb	p-gry		Sp vits network 84.5m, Sp Gl v ∠45° 0.5cm

Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min.	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.0	0.04	tr	0.1	7	101.5				Ls				l-gry		
					104.0			∠85°	Ss				l-gry		With shaly bands
					110										
					117.0				Sh				blk		
					120										
					121.0				Sh		sil	Py	l-gry		Py diss, cal vits
1.0	0.09	0.3	0.3	10											
0.5	0.10	0.3	1.3	14	127.9				Ml		chl sil	Zn Py	d-gry		Zn Py Qt vs network
					128.4			∠70°	Ml		sil cly		gry		
					130										
					134.6				Sh		cly		l-gry	crd	
0.9	0.06	0.4	1.0	21	135.2				Ml		chl	Zn	p-gry	F	
					136.3				Sh		cal		gry	shd	
0.6	0.10	0.3	1.3	23	138.2				Ml		chl sil	Zn	grn-gry		Zn vs network
					138.8				Sh				gry	shd	
					140										
					142.0				Sh		cal		gry		Intercalated with Ml partly
								∠75°							
1.0	0.04	0.2	0.3	17	150										
					150.5				Ml		sil	Zn	gry		
					153.3				Sh		cly		gry		
					160										
								∠70°	Ml				l-gry		
					163.2				Sh		cly		l-gry		
1.2	0.05	0.2	1.1	14	166.2				Sh		cly	Zn Py	grn-gry	shd	Zn-Py diss
1.3	0.05	0.2	0.3	10	168.7									F	
					170				Sh		cly	Py	d-gry	shd	
					171.7									F	
									Sh		cly	Py	d-gry	shd	
1.0	0.04	tr	0.1	7	175.9									F	
					180			∠40°	Cly		cly		grn-gry	F	
									Sh		sil chl cly	Py	grn-gry	shd	

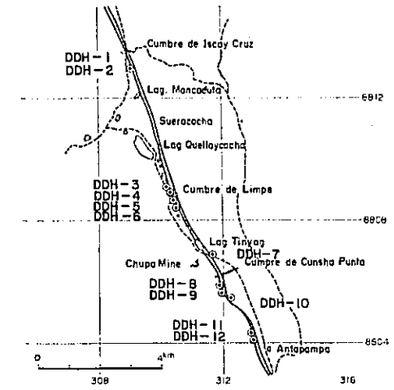
Assays					Depth-Symbol			Occurrence						Observations
Leng (m)	Cu (%)	Pb (%)	Zn (%)	Ag (g/t)	Dep. (m)	Core Rec.	Sym.	Str.	Rock	Oxd.	Alt.	Min	Color	Fract.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					210										
					220										
					230										
					240										
					250										
					260										
					270										
					280										

PL. II - 9

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH - 9



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JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolamitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

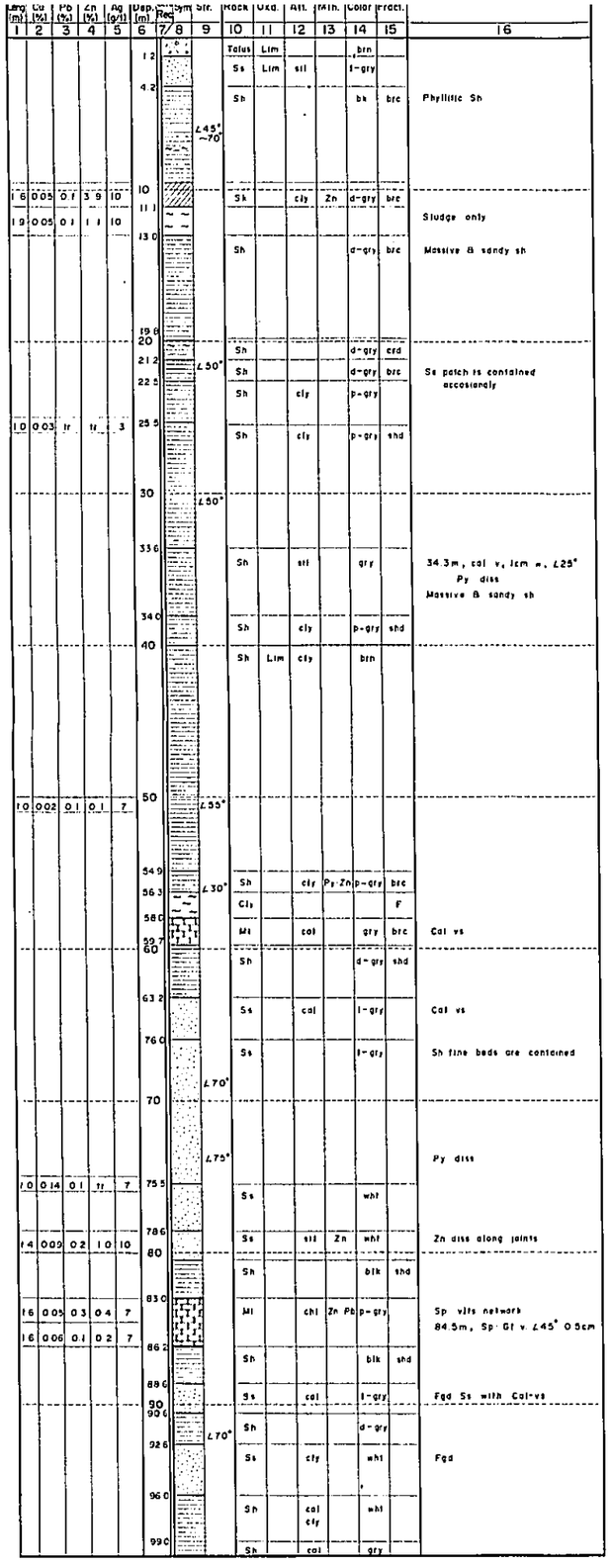
dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

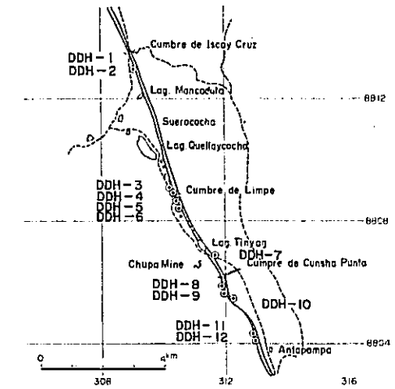
14. Color;

light	l-
dark	d-



DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 9



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

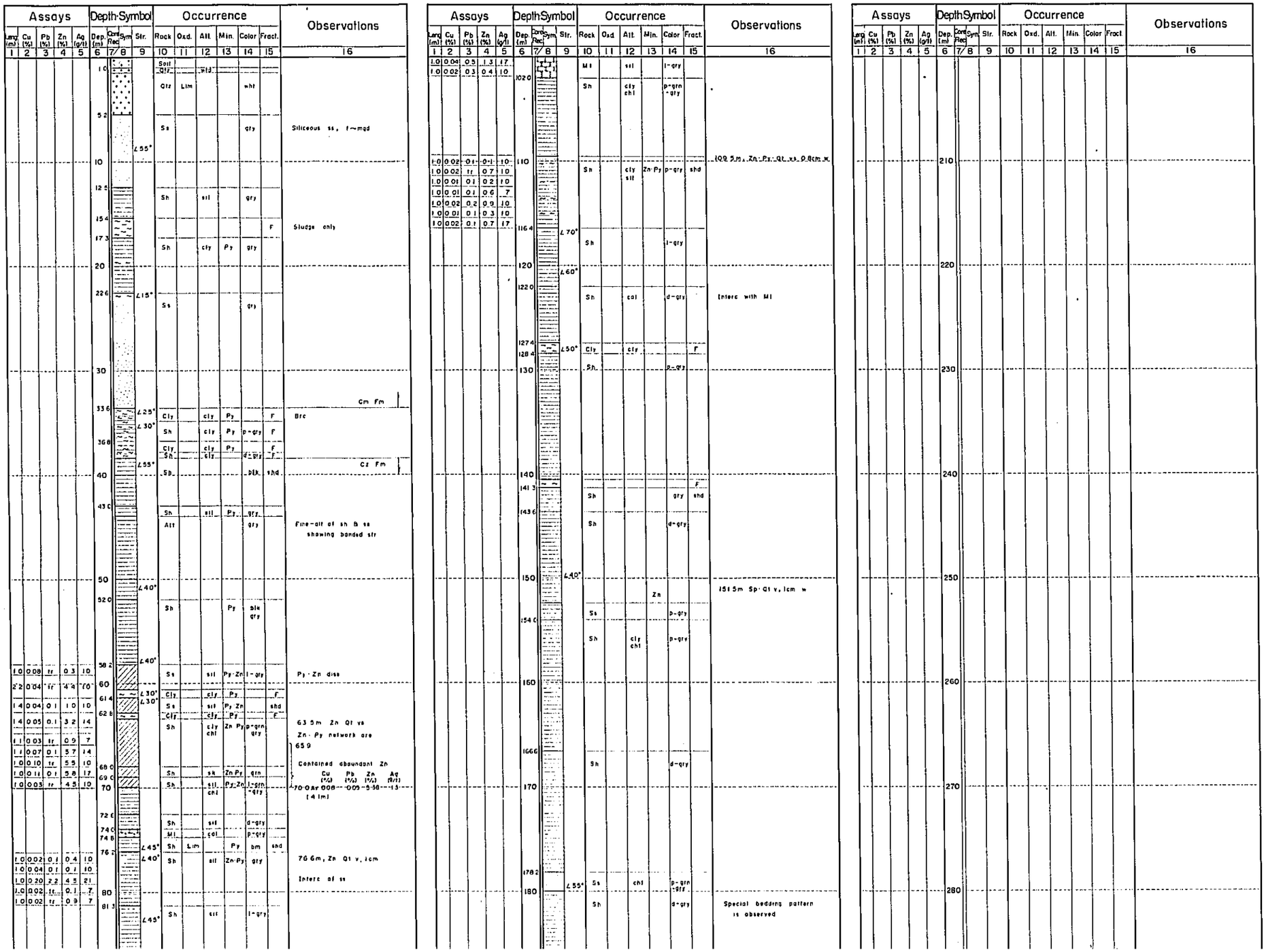
16. Observations;

dissemination	diss
veins	vs

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 805,310 E 312,200
Elevation 4700.9m

DDH No. 10
Direction 285°
Inclination -60°
Total Depth 200.4m

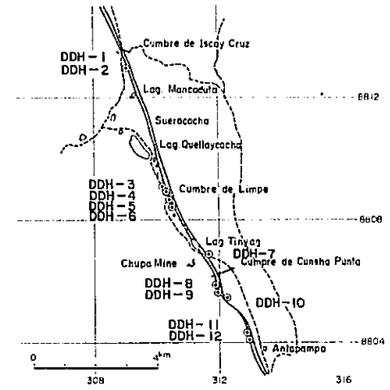


PL. II - 10

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH - 10



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

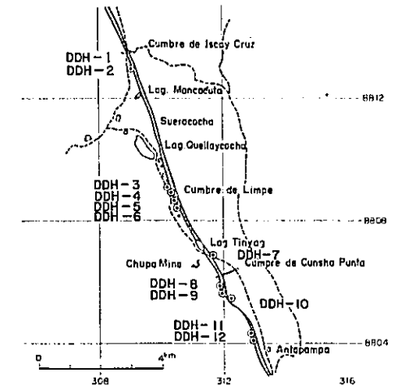
Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-

IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 10



METAL MINING AGENCY OF JAPAN
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FEBRUARY 1982

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Scale 1 : 200

0 4 8 12 16 20m

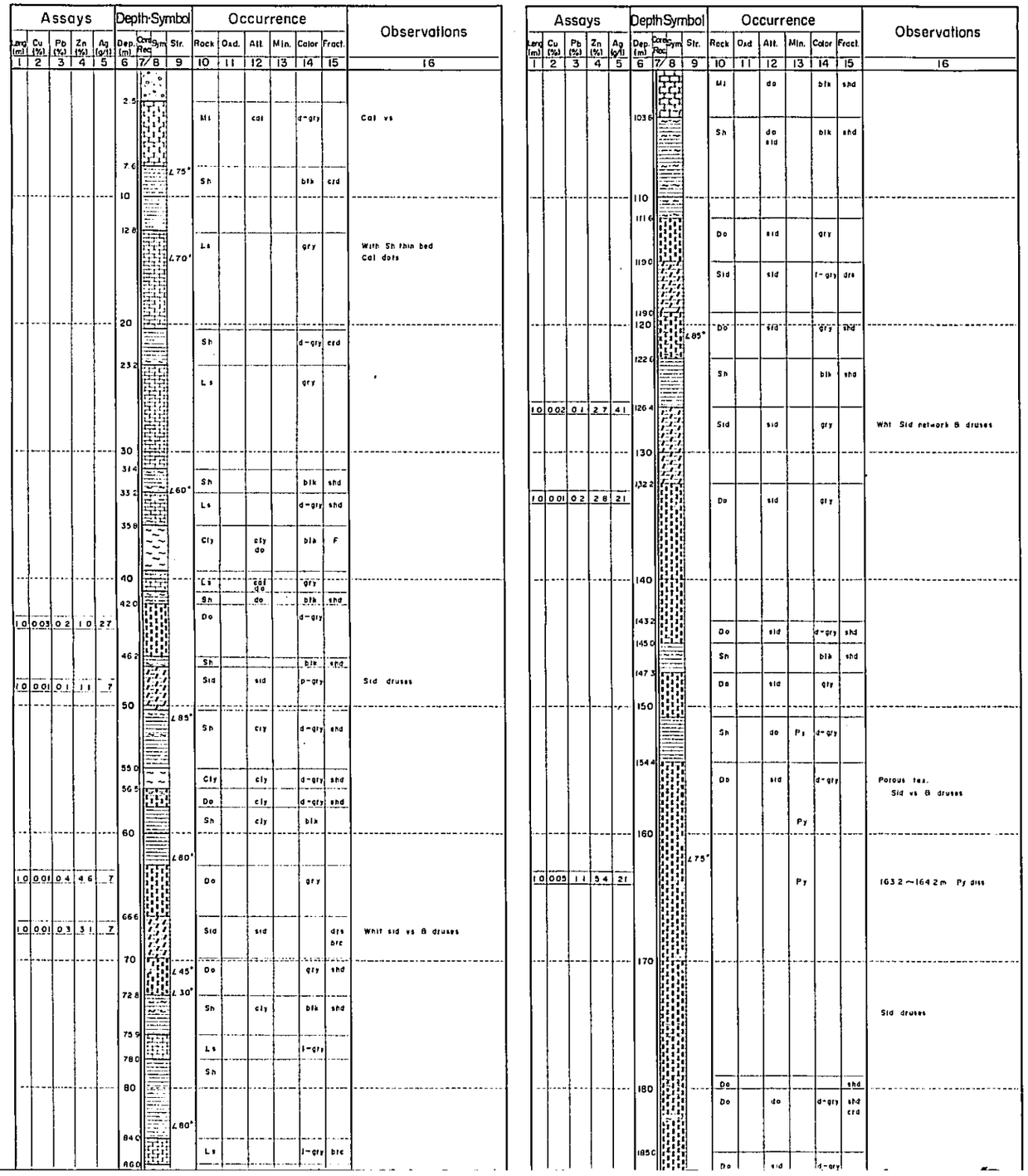
LEGEND and ABBREVIATION

10. Rock ;	Pebble	Peb	
	Shale	Sh	
	Sandstone	Ss	
	Calcareous sandstone	Cal-Ss	C
	Siderite	Sid	
	Marl	Ml	
	Limestone	Ls	
	Dolomitic limestone	Do-Ls	
	Dolostone	Do	
	Quartzite	Otz	
	Ore, high grade		
	Ore, low grade		
	Skarn	SK	
	Brecciated rock	Brc	
	Fault & fracture	F	
11. Oxidation ;	oxidized	oxd	
	limonitized	lim	
12. Alteration ;	dolomitization	do	
	calcitization	cal	
	argillization	cly	
	silicification	sil	
	sericitization	ser	
13. Mineralization ;	Chalcopyrite Cp	Pyrite	Py
	Hematite Hm or Spc	Pb-minerals	Pb
	Magnetite Mt	Zn-minerals	Zn
	Skarn Sk	Oxide minerals	Oxd
14. Color ;	light	l-	
	dark	d-	
	grey	gry	
	black	blk	
	white	wht	
	brown	brn	
15. Fracture ;	Fault	F	
	sheared	shd	
	brecciated	brc	
16. Observations ;	dissemination	diss	
	veins	vs	

GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 804,250
E 312,880
Elevation 4605.6m

DDH No. 11
Direction 0°
Inclination −90°
Total Depth 250.5m

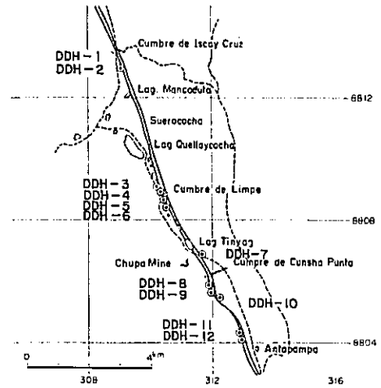


PL. II - 11

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE II

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH − 11



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

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Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

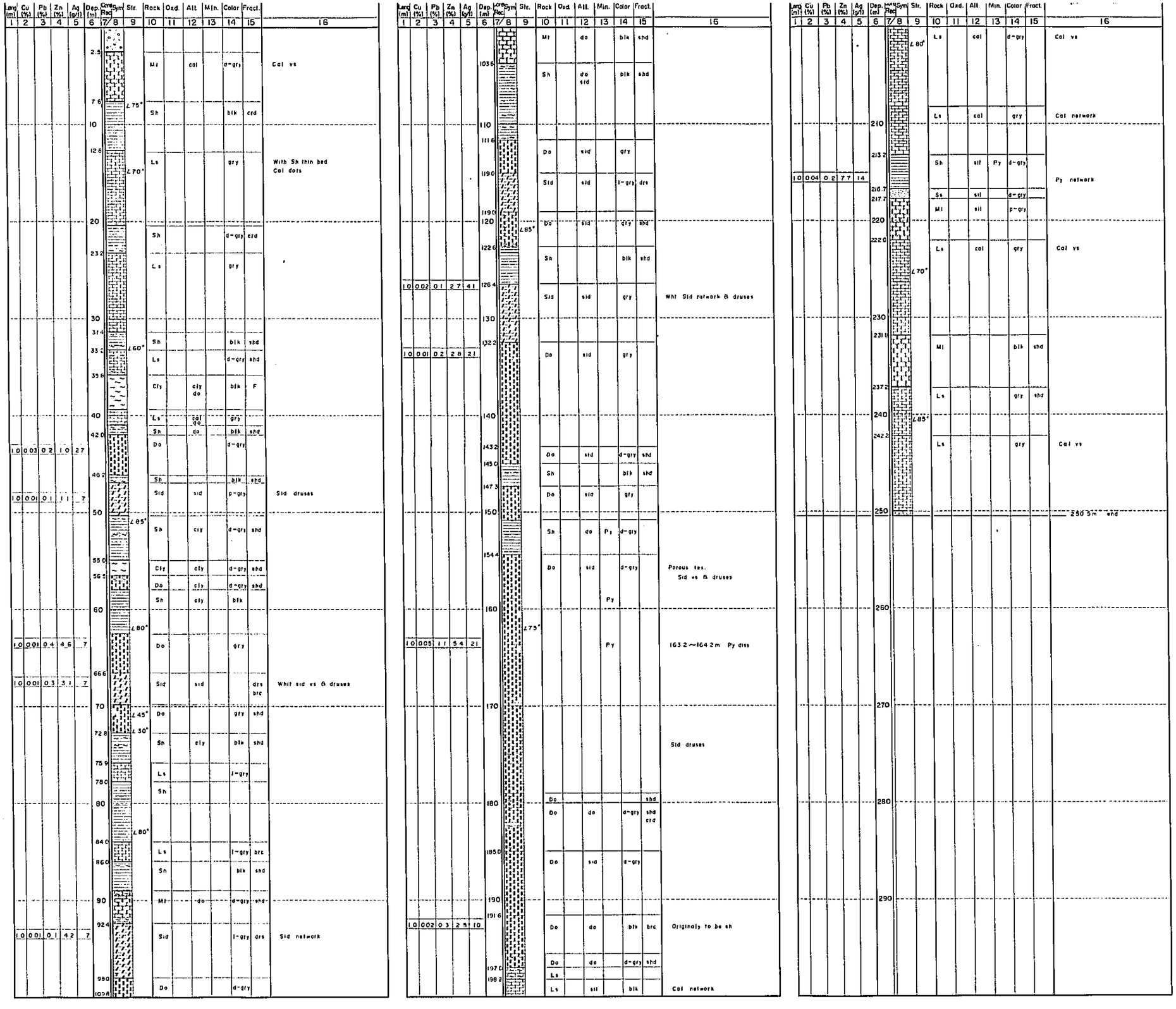
dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

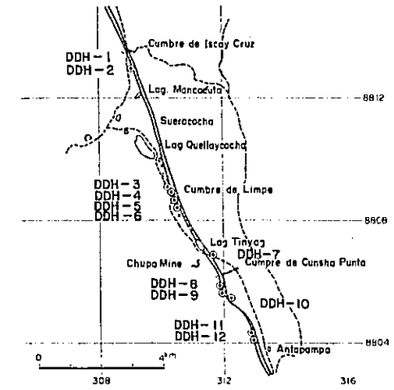
14. Color;

light	l-
dark	d-



DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 11



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0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	c
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

11. Oxidation;

oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser

13. Mineralization;

Chalcopyrite	Cp	Pyrite	Py
Hematite	Hm or Spc	Pb-minerals	Pb
Magnetite	Mt	Zn-minerals	Zn
Skarn	Sk	Oxide minerals	Oxd

14. Color;

light	l-
dark	d-
grey	gry
black	blk
white	wht
brown	brn

15. Fracture;

Fault	F
sheared	shd
brecciated	brc

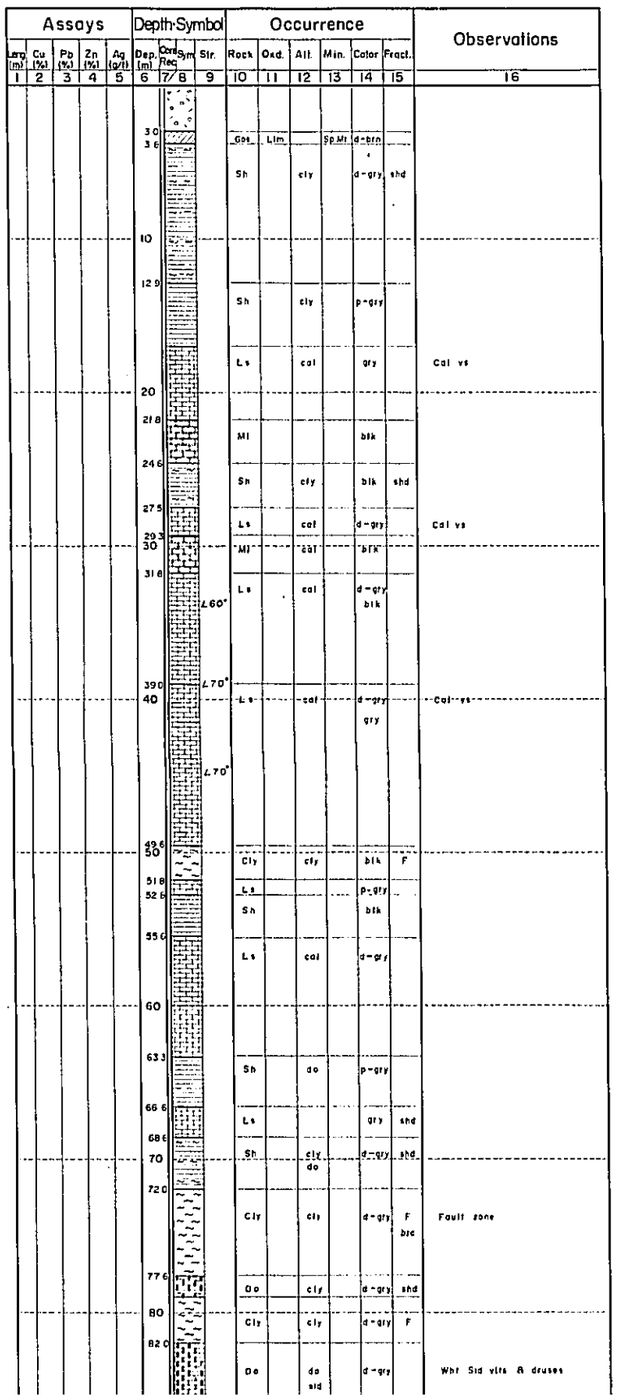
16. Observations;

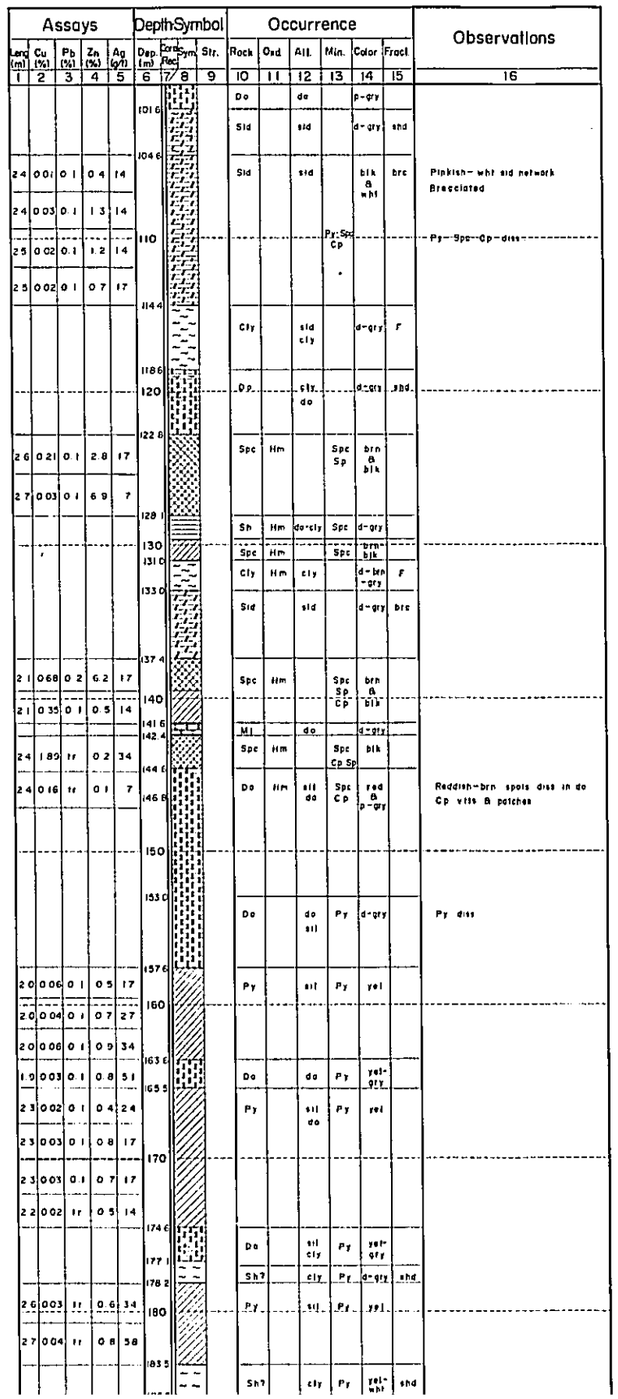
dissemination	diss
veins	vs

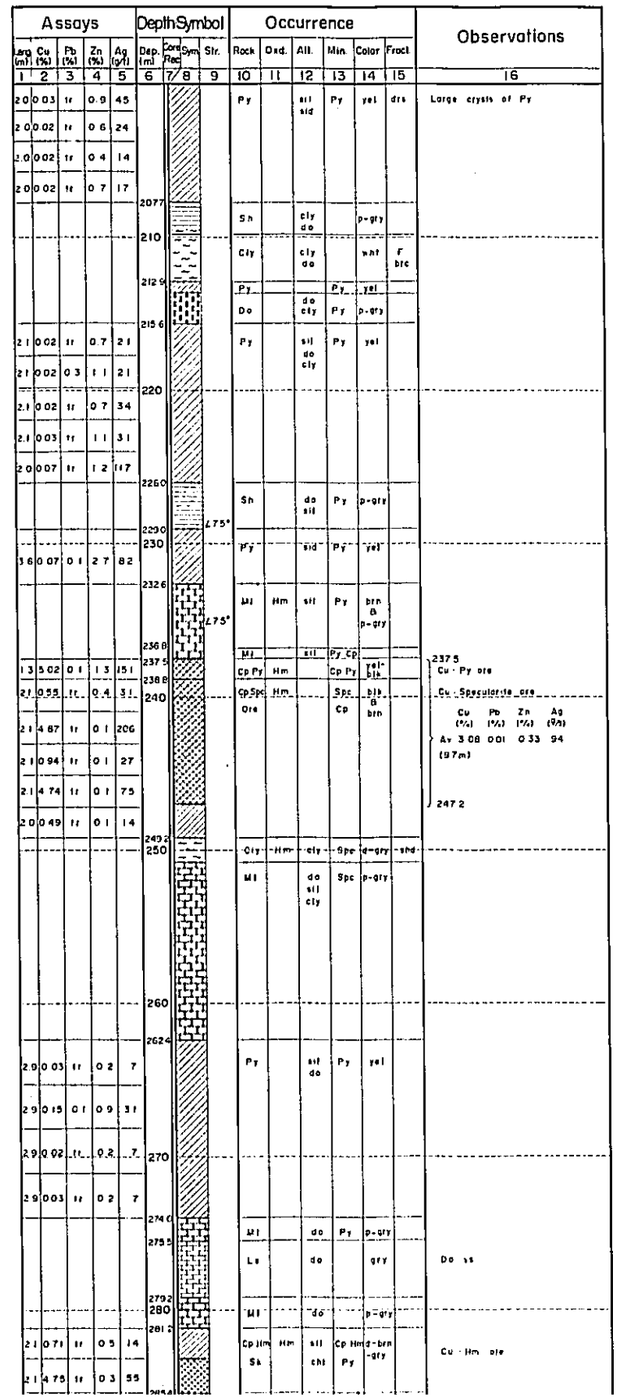
GEOLOGIC DRILL LOG
OYON PROJECT

Coordinate N 804,120 E 312,910
Elevation 4599.9m

DDH No. 12
Direction 70°
Inclination -85°
Total Depth 310.5m





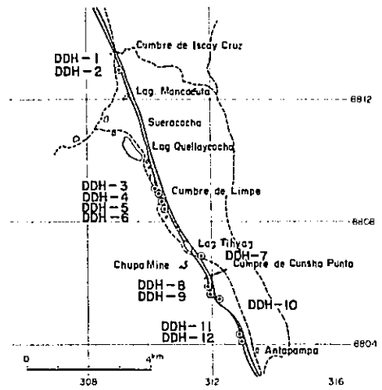


PL. III-12

GEOLOGICAL SURVEY
OF
THE OYON AREA, PERU
PHASE III

DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 12



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200
0 4 8 12 16 20m

LEGEND and ABBREVIATION

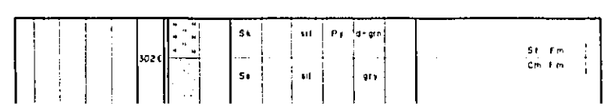
10. Rock;

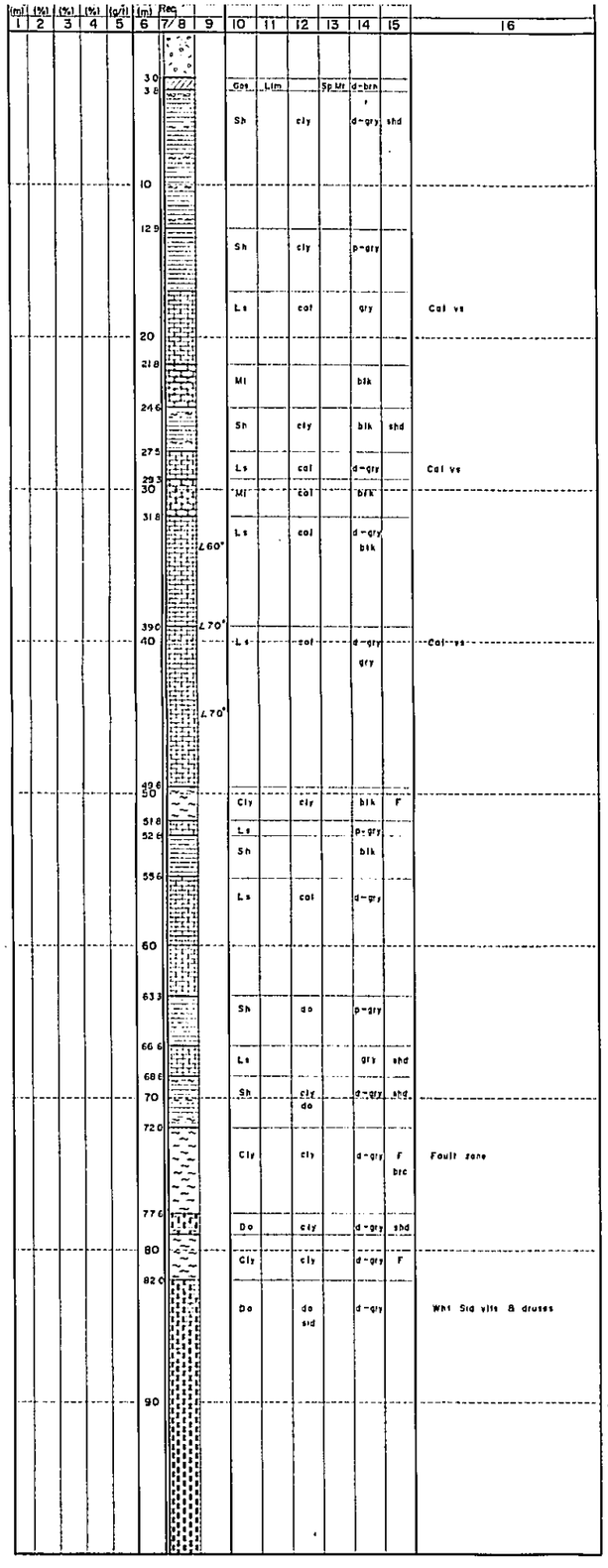
Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

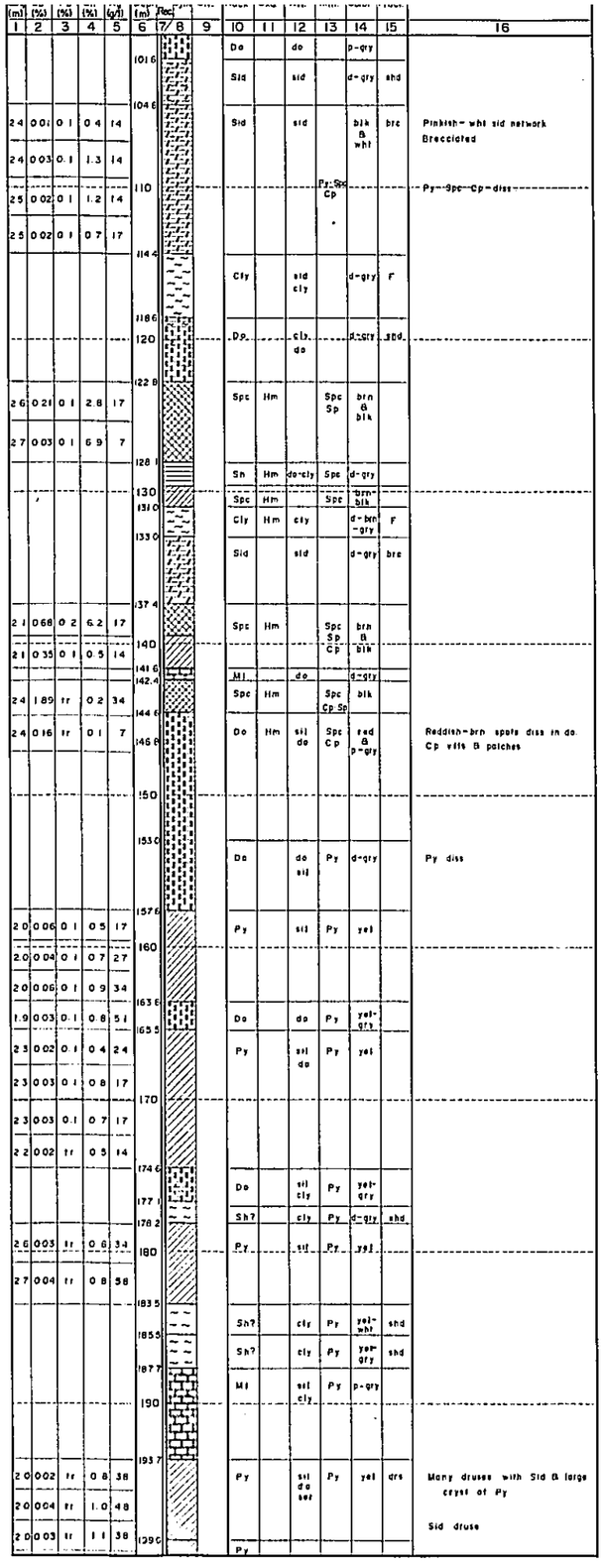
11. Oxidation; oxidized oxd; limonitized lim

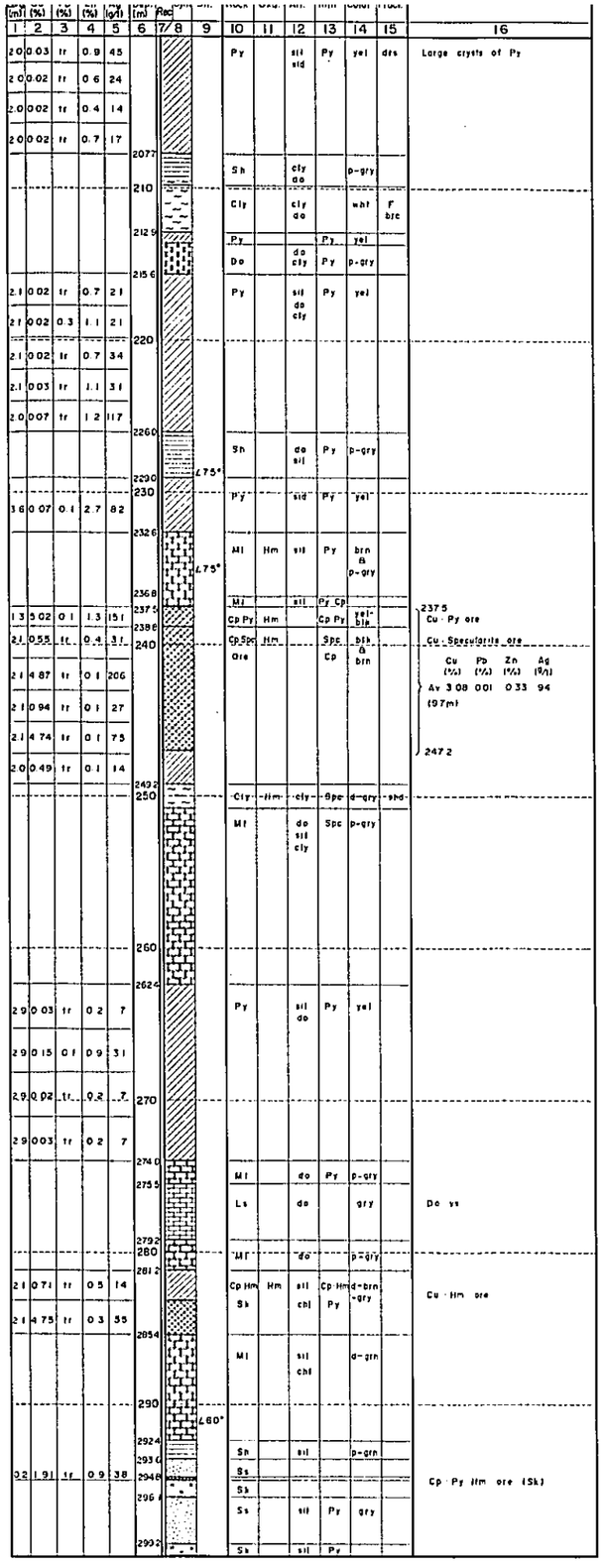
12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser



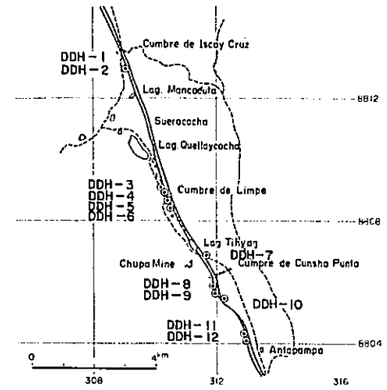






DRILLING EXPLORATION
IN THE ISCAY CRUZ AREA

GEOLOGIC DRILL LOG
DDH – 12



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 200

0 4 8 12 16 20m

LEGEND and ABBREVIATION

10. Rock;

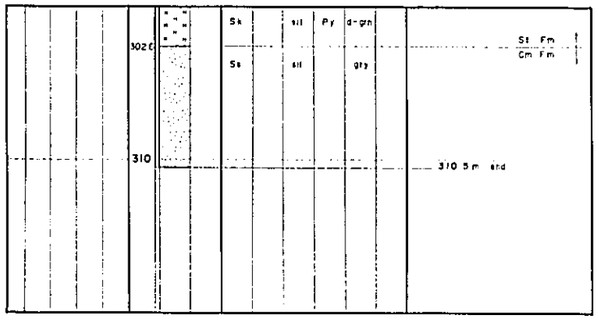
Pebble	Peb	
Shale	Sh	
Sandstone	Ss	
Calcareous sandstone	Cal-Ss	C
Siderite	Sid	
Marl	Ml	
Limestone	Ls	
Dolomitic limestone	Do-Ls	
Dolostone	Do	
Quartzite	Qtz	
Ore, high grade		
Ore, low grade		
Skarn	SK	
Brecciated rock	Brc	
Fault & fracture	F	

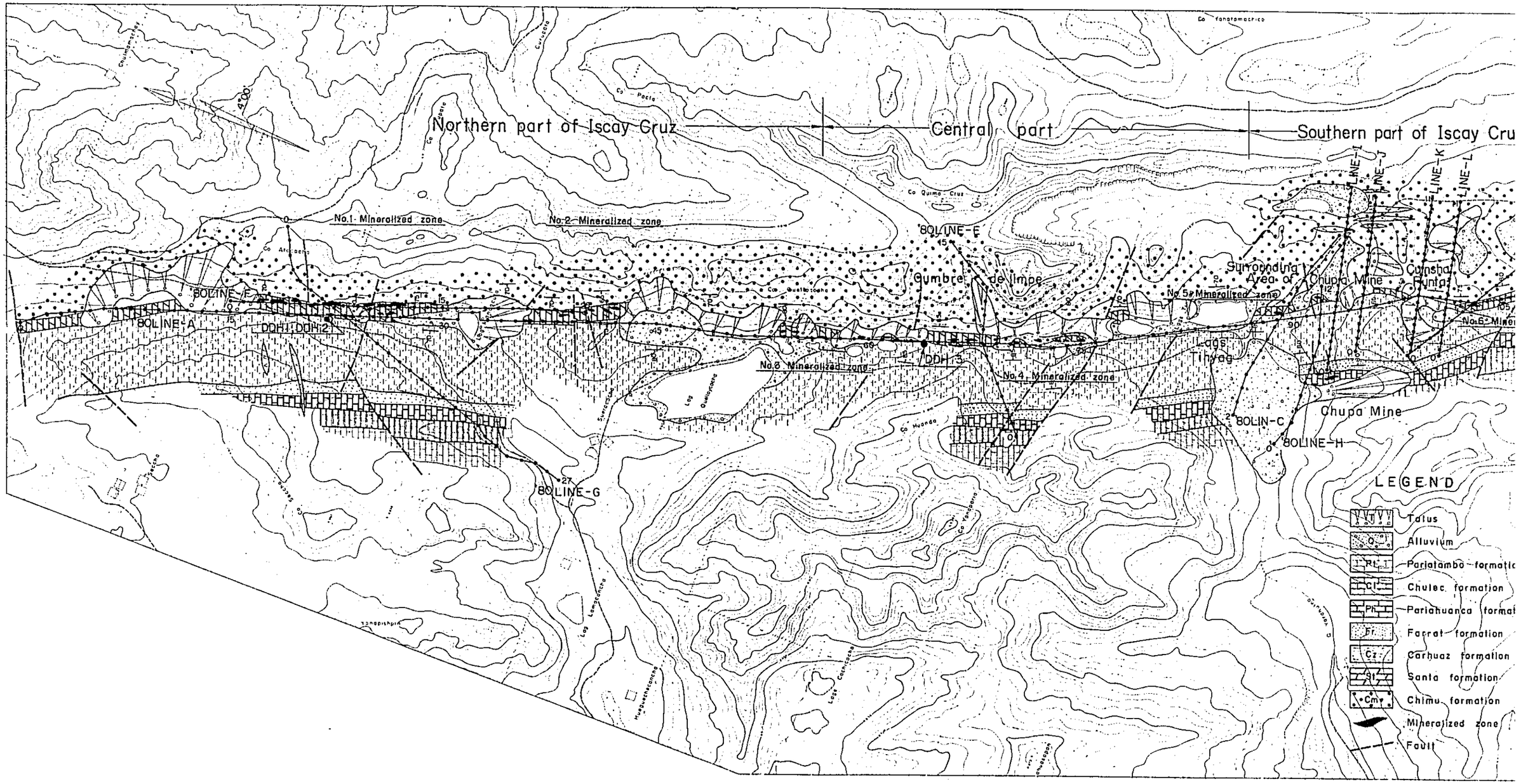
11. Oxidation;

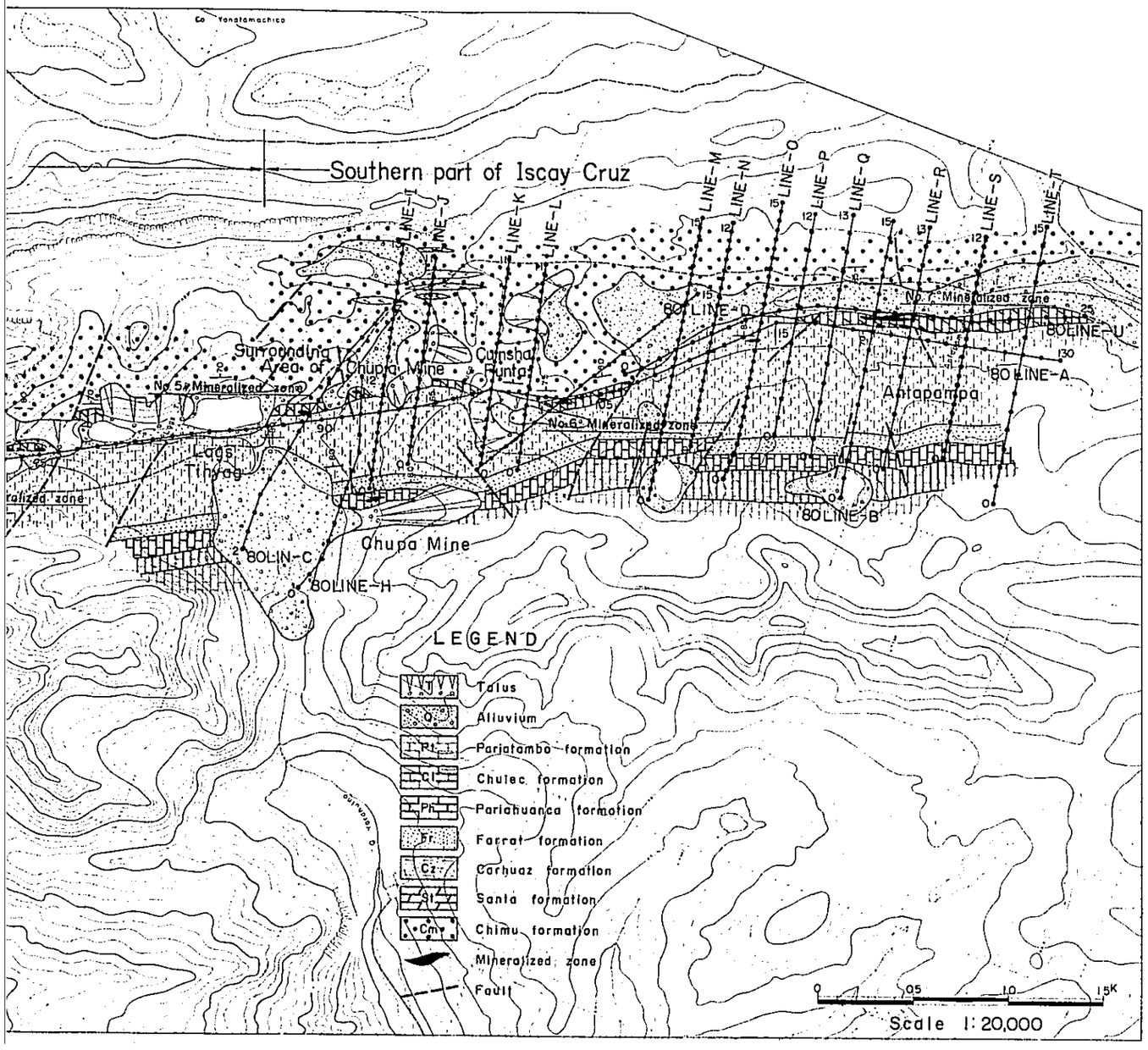
oxidized	oxd
limonitized	lim

12. Alteration;

dolomitization	do
calcitization	cal
argillization	cly
silicification	sil
sericitization	ser




Northern part of Iscay Cruz
Central part
Southern part of Iscay Cru
No.1 Mineralized zone
No.2 Mineralized zone
No.3 Mineralized zone
No.4 Mineralized zone
No.5 Mineralized zone
No.6 Mine
80LINE-A
80LINE-E
80LINE-G
80LINE-H
80LIN-C
DDH-1 DDH-2
DDH-3
Cumbre de Ilipe
Surrounding Area of Chupa Mine
Cunsha Punta
Lago Tinyag
Chupa Mine
LINE-I
LINE-J
LINE-K
LINE-L
LEGEND
Talus
Alluvium
Pariatambo formatic
Chulec formation
Pariahuanca formal
Farrat formation
Carhuaz formation
Santa formation
Chimu formation
Mineralized zone
Fault

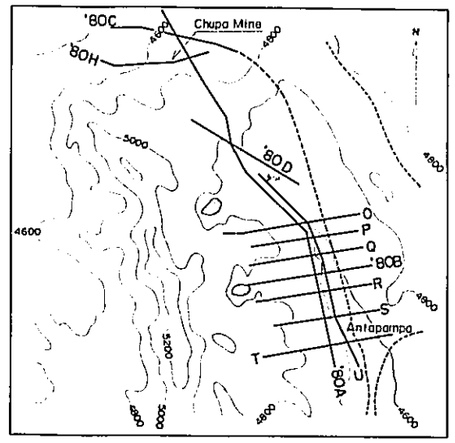


PHASE Ⅲ

PL. Ⅱ-1

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

LOCATION OF THE IP AND EM SURVEY LINES



0 1 2 3km

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

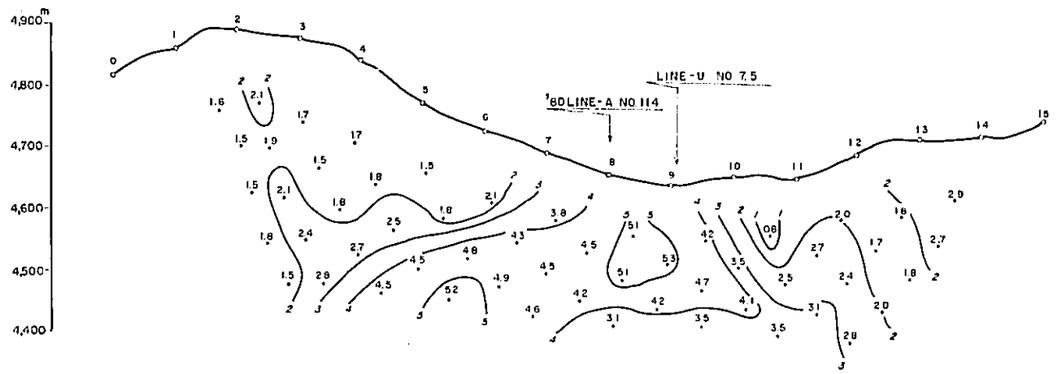
Scale 1:20,000

0 2000m

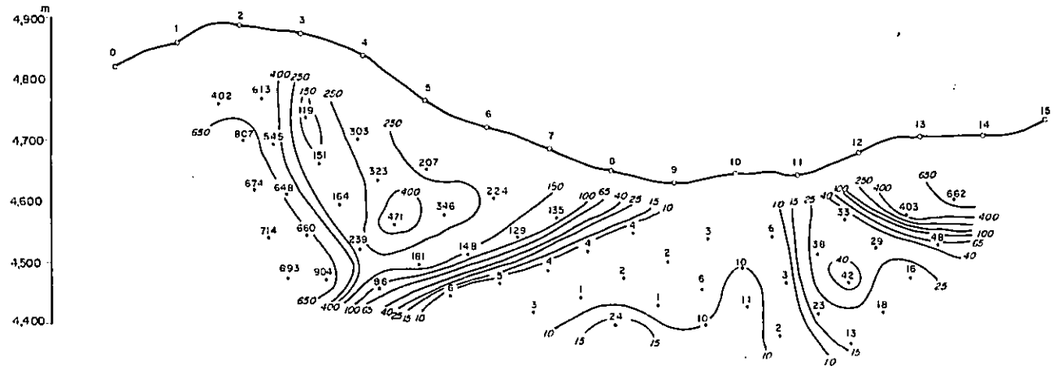
W

FREQUENCY EFFECT (%)

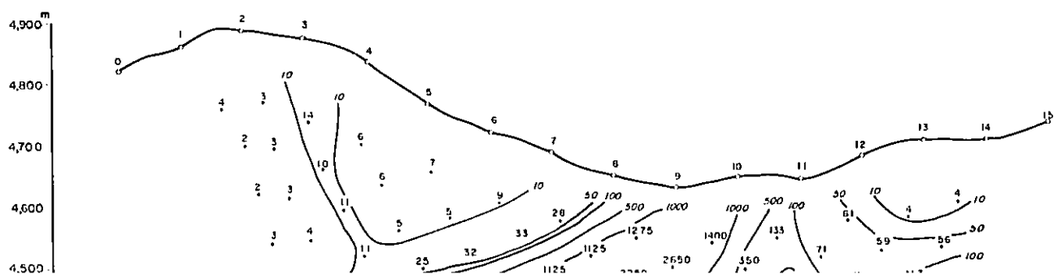
E



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR



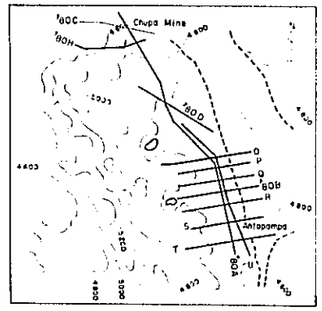
PHASE II

PL II-2-1

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE – O



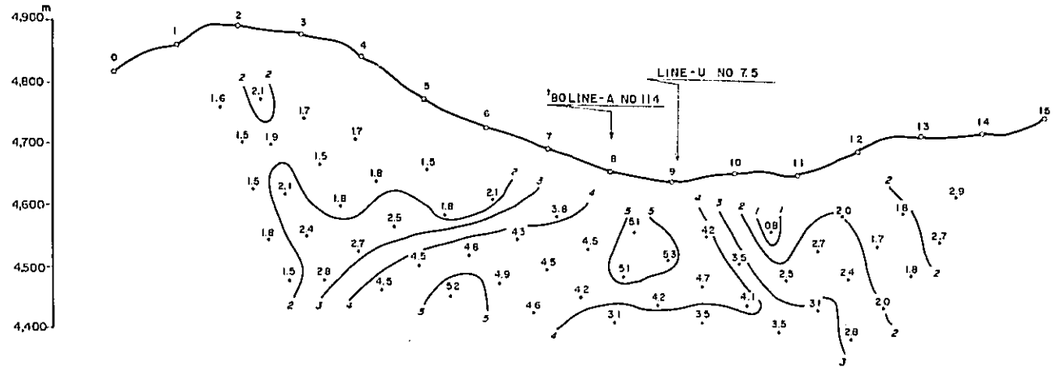
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

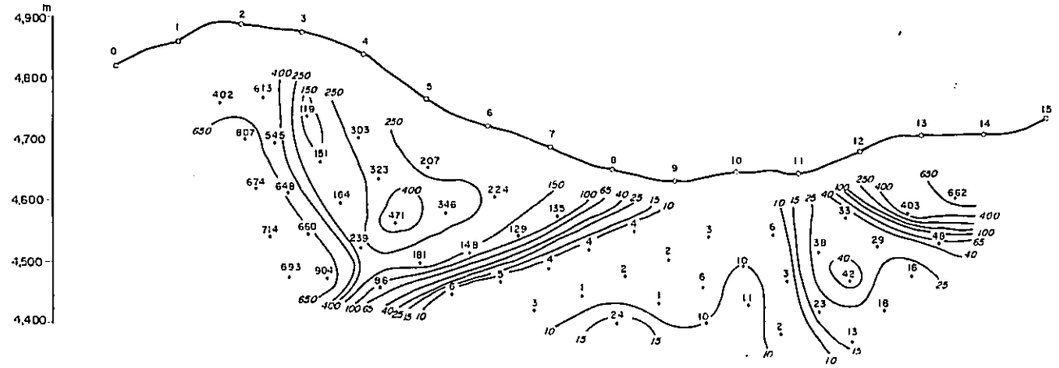
prepared by MESCO, Inc.

Scale 1 5,000

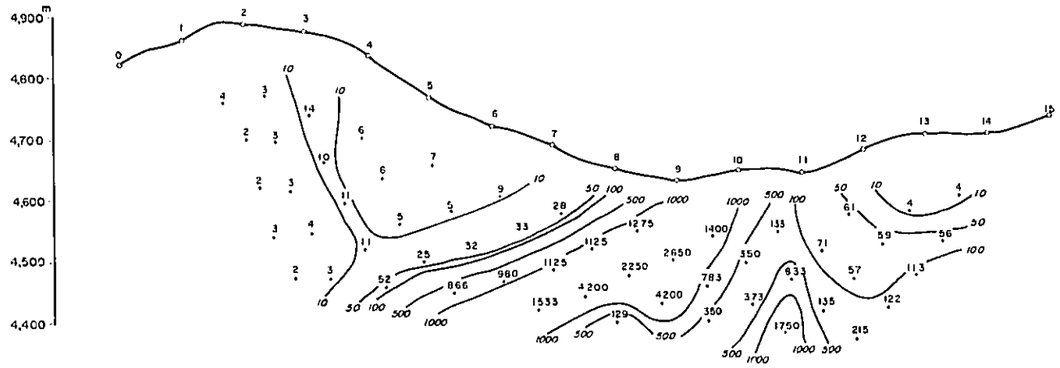
0 500m



APPARENT RESISTIVITY (ohm-m)

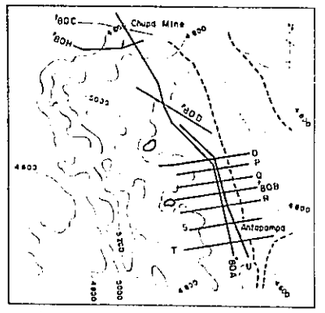


METAL FACTOR



PROFILES OF INDUCED POLARIZATION

LINE – O



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

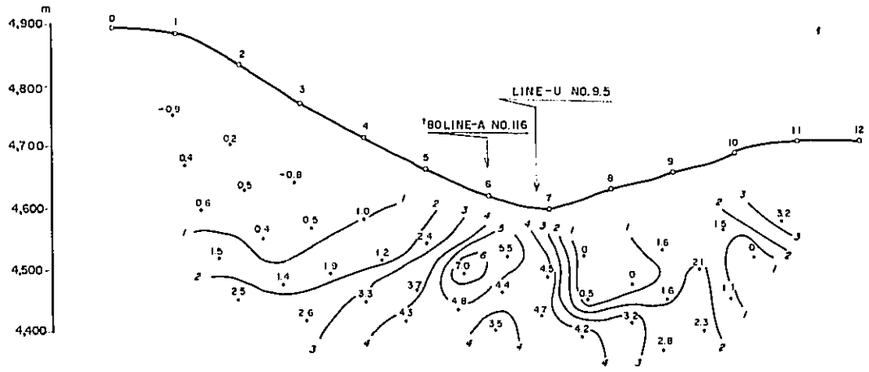
Scale 1 5,000

0 500m

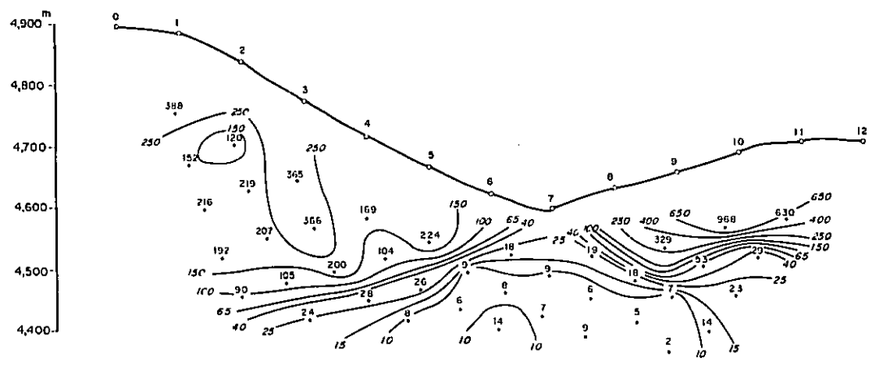
W

FREQUENCY EFFECT (%)

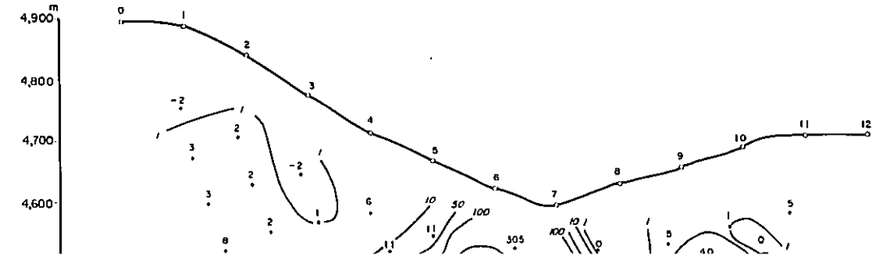
E



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR



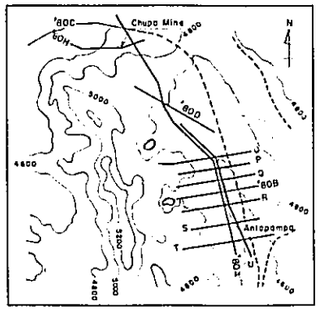
PHASE Ⅲ

PL.Ⅱ-2-2

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE - P.



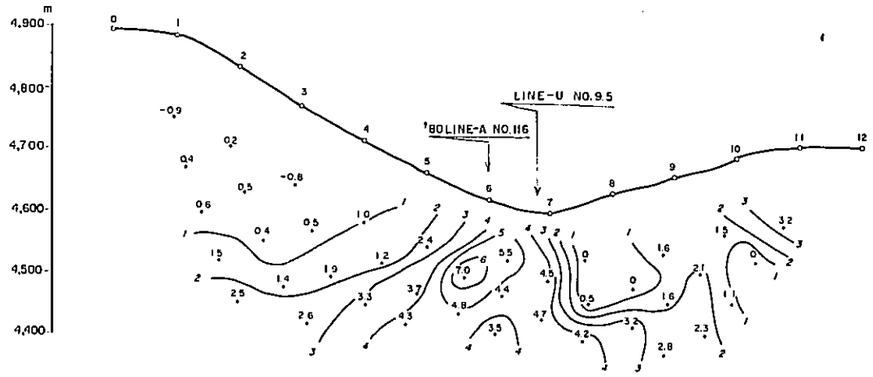
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

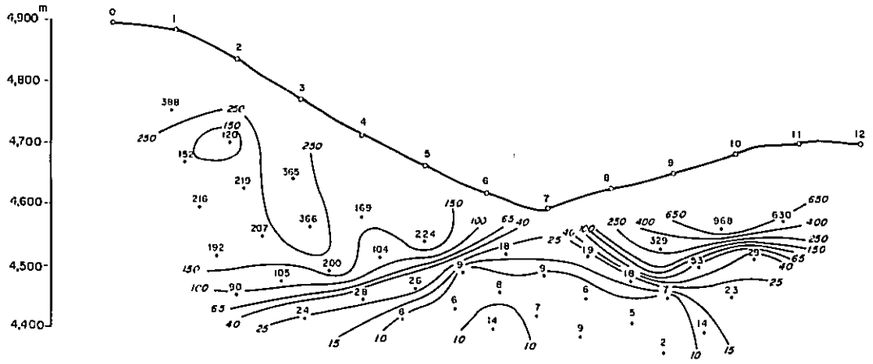
prepared by MESCO, Inc.

Scale 1 5,000

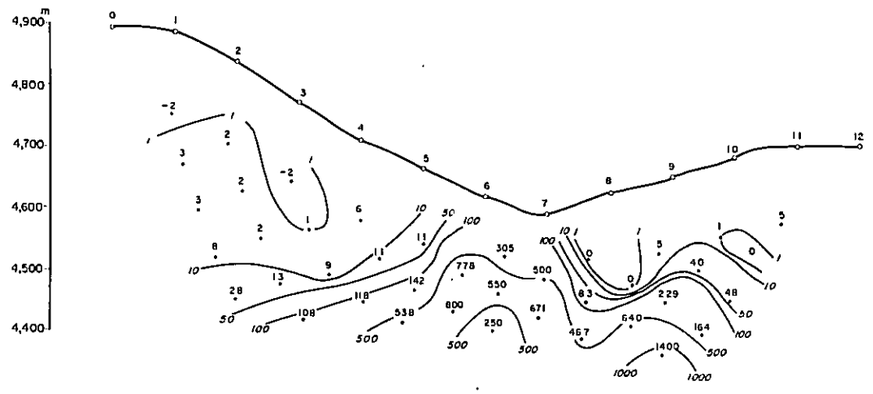
0 500m



APPARENT RESISTIVITY (ohm-m)

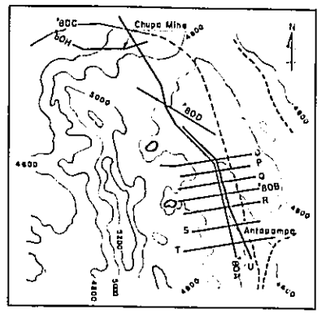


METAL FACTOR



PROFILES OF INDUCED POLARIZATION

LINE – P.



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

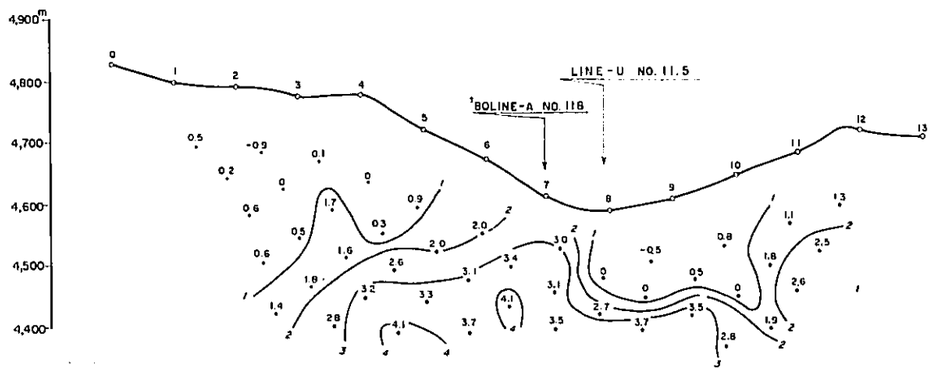
Scale 1 5,000

0 500m

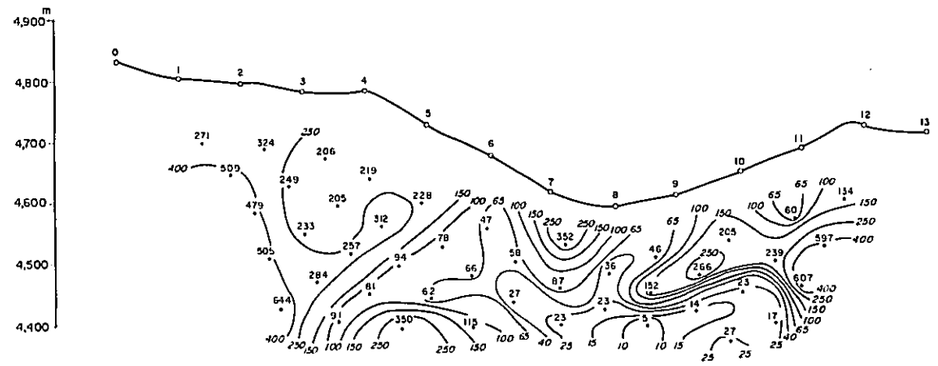
W

FREQUENCY EFFECT (%)

E



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR

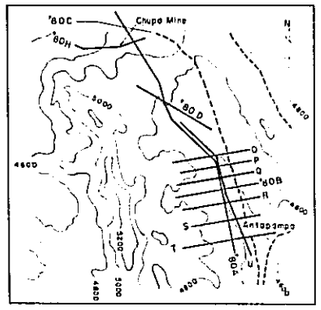
PHASE Ⅲ

PL Ⅱ-2-3

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE — Q



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

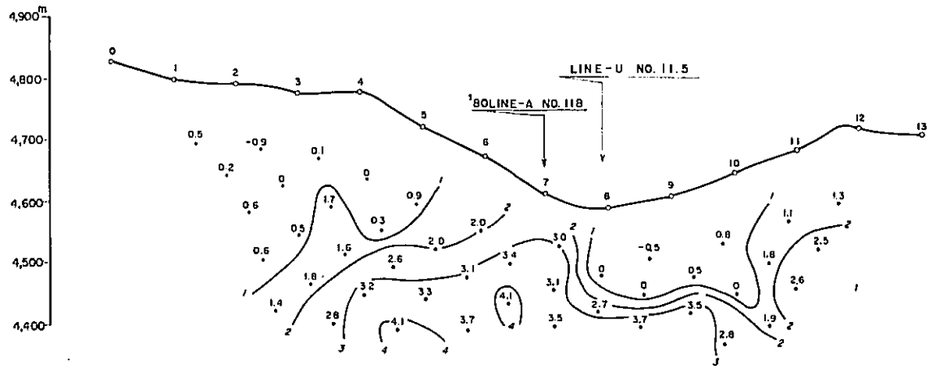
Scale 1 : 5,000

0 500m

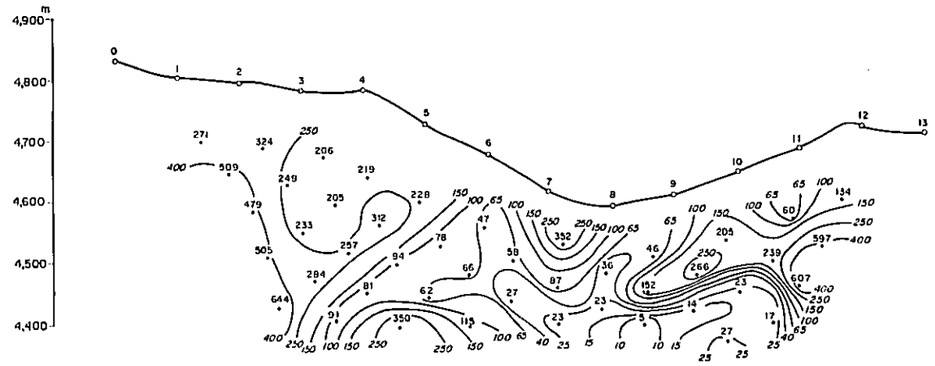
W

FREQUENCY EFFECT (%)

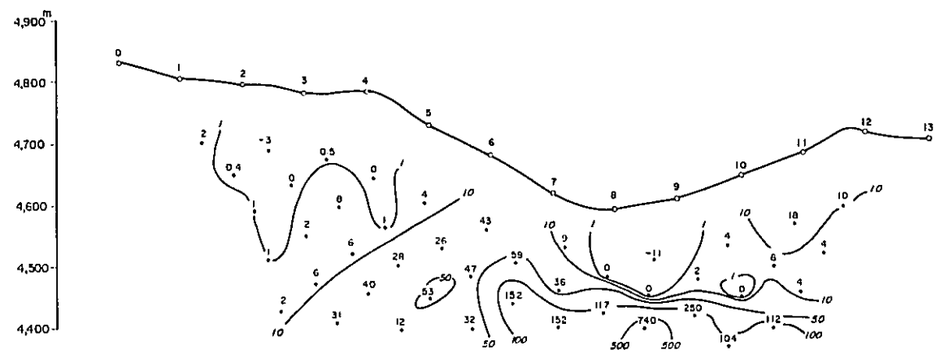
E



APPARENT RESISTIVITY (ohm-m)

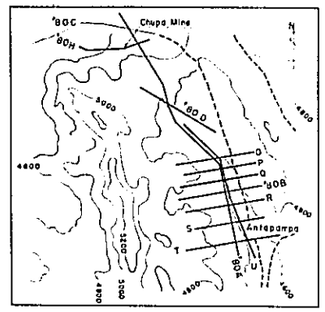


METAL FACTOR



PROFILES OF INDUCED POLARIZATION

LINE — Q



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

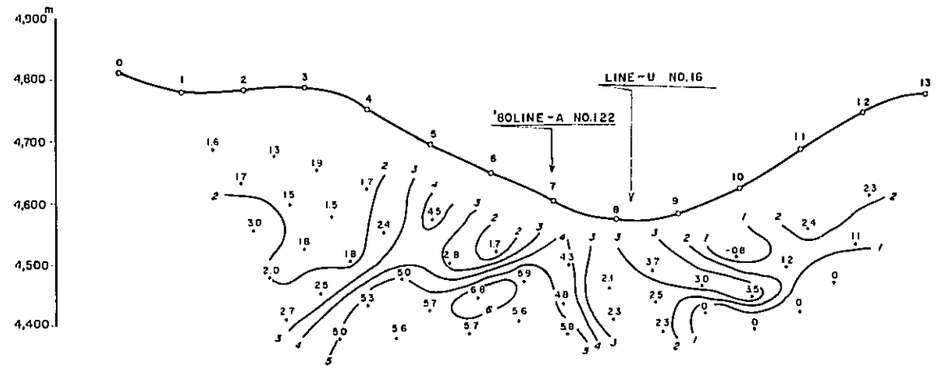
FEBRUARY 1982

prepared by MESCO, Inc.

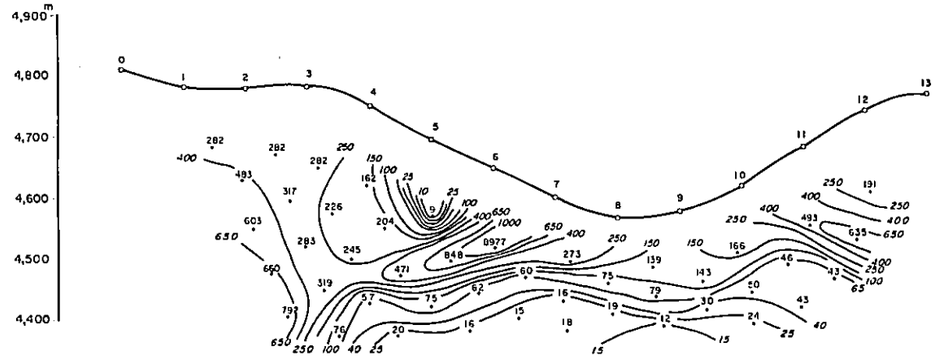
Scale 1 : 5,000

0 500m

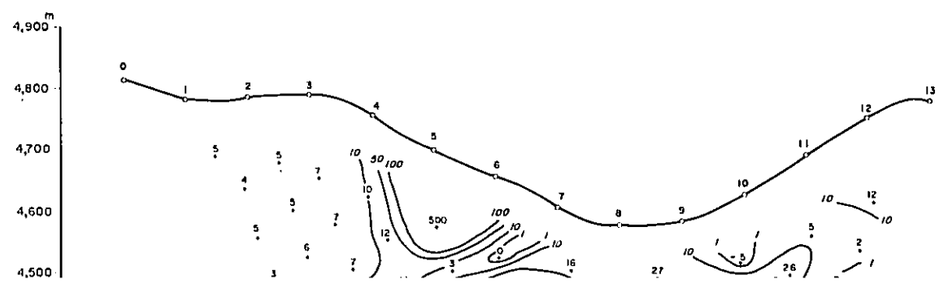
W FREQUENCY EFFECT (%) E



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR

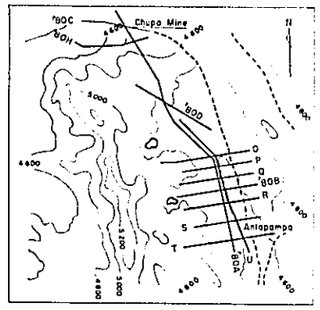


PHASE III PL.II-2-4

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE - R



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

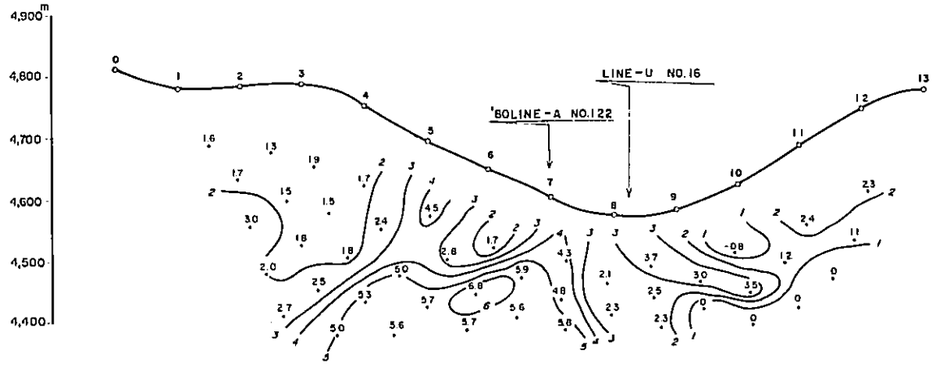
Scale 1 : 5 000

0 500m

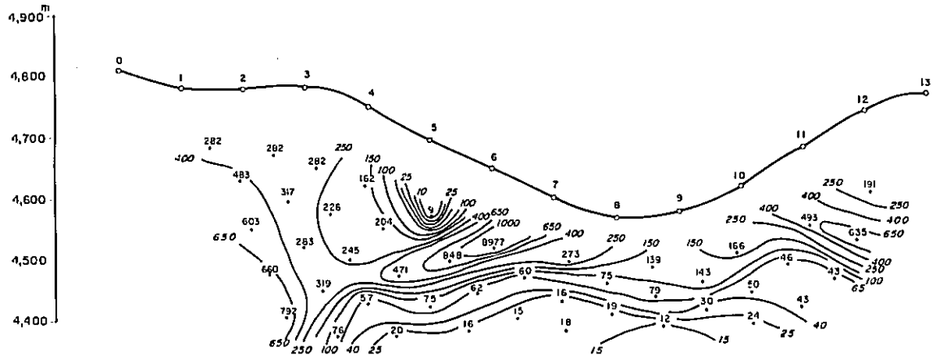
W

FREQUENCY EFFECT (%)

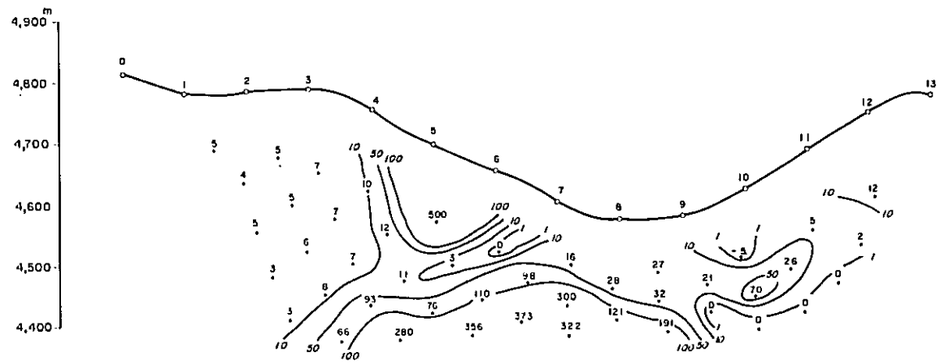
E



APPARENT RESISTIVITY (ohm-m)

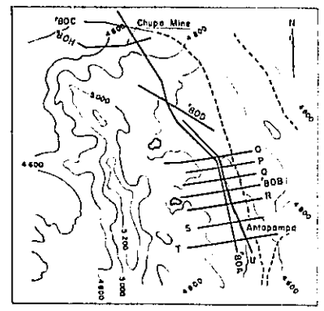


METAL FACTOR



PROFILES OF INDUCED POLARIZATION

LINE - R



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

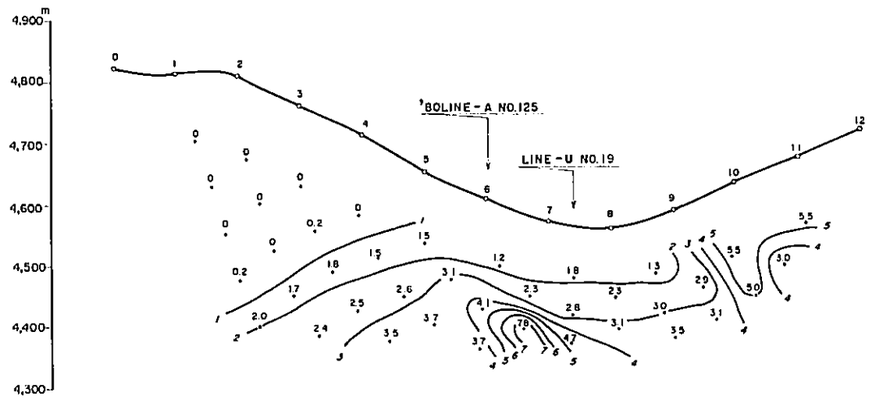
Scale 1 : 5000

0 500m

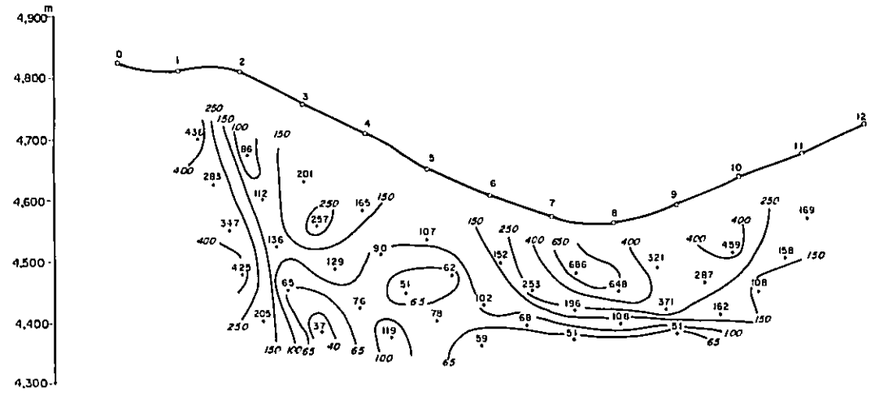
W

FREQUENCY EFFECT (%)

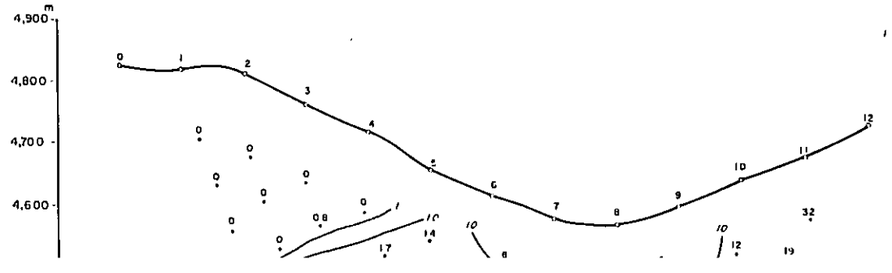
E



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR



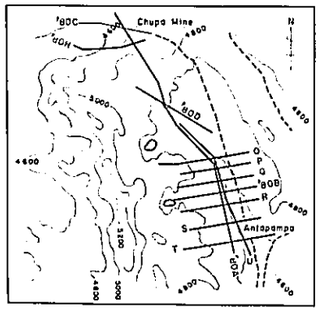
PHASE III

PL.II-2-5

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE – S



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1992

prepared by MESCO, Inc

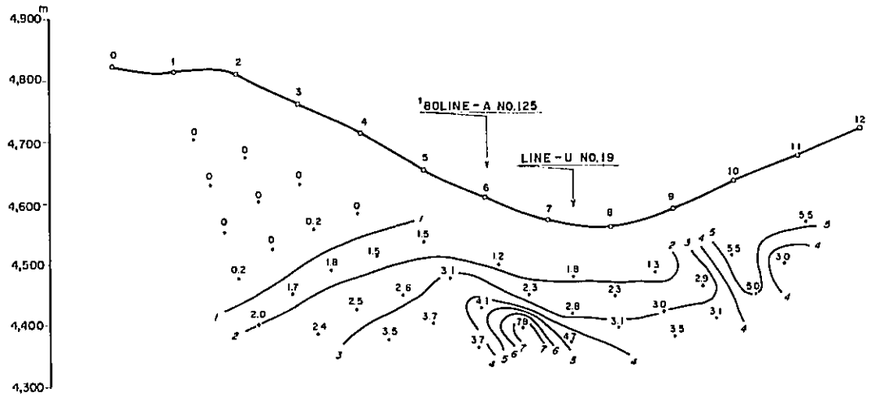
Scale 1 : 5,000

0 500m

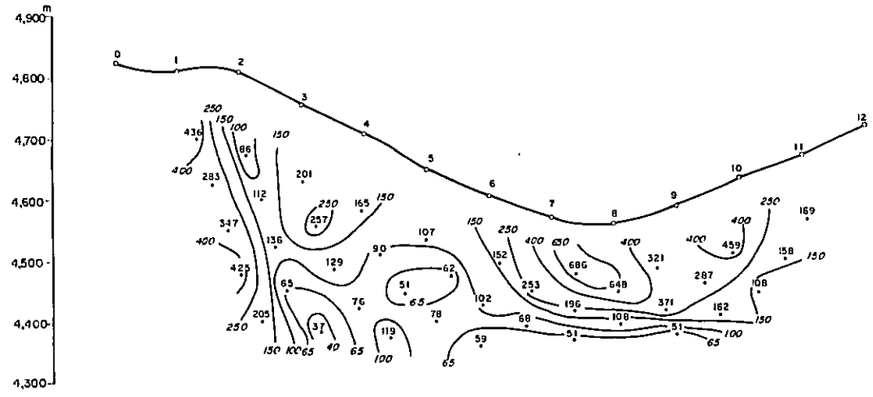
W

FREQUENCY EFFECT (%)

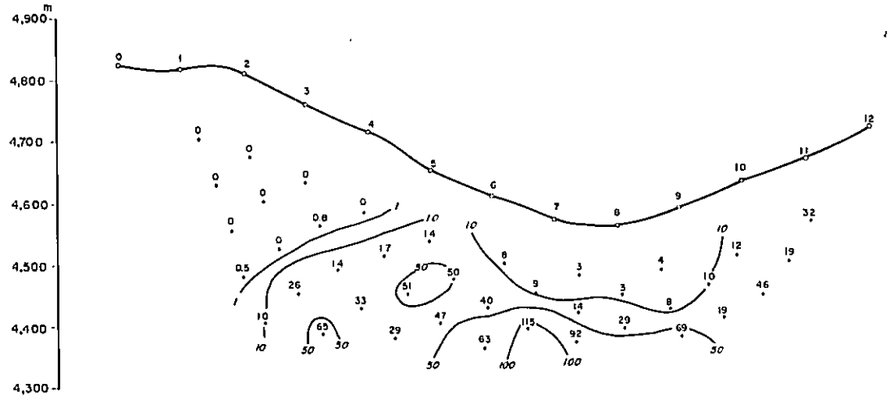
E



APPARENT RESISTIVITY (ohm-m)

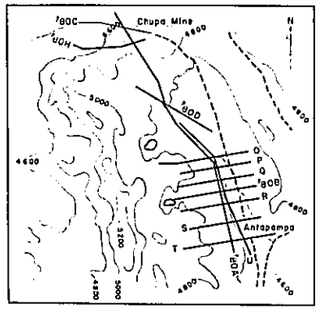


METAL FACTOR



PROFILES OF INDUCED POLARIZATION

LINE – S



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

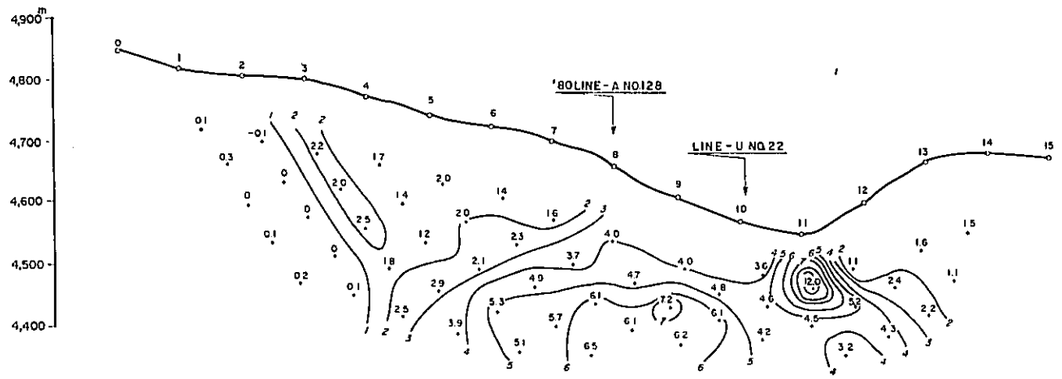
FEBRUARY 1982

prepared by MESCO, Inc

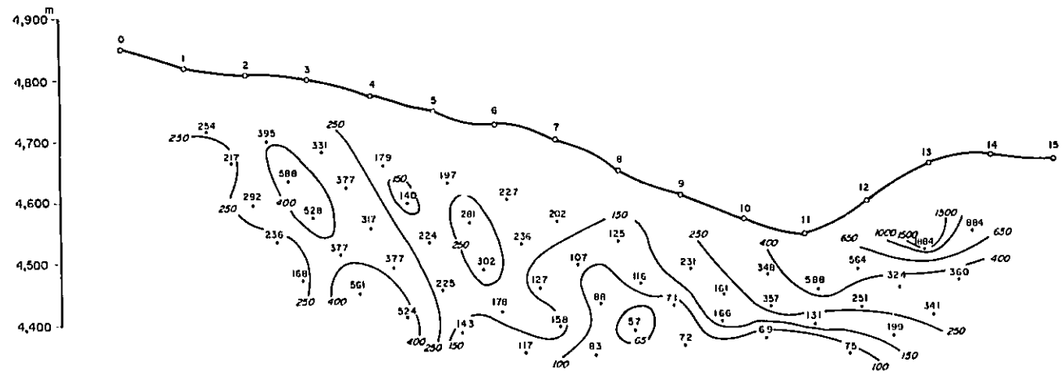
Scale 1 : 5,000

0 500m

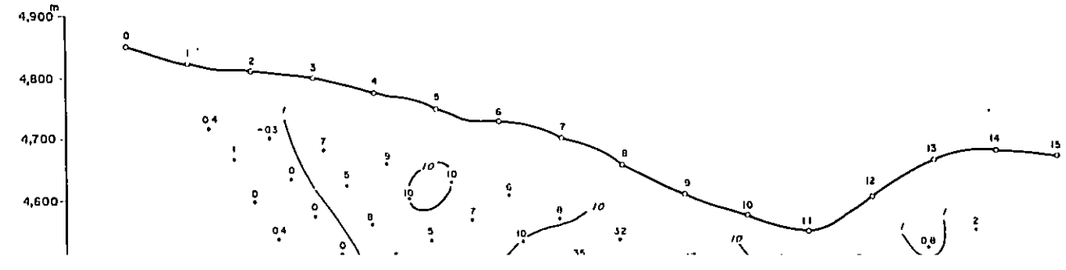
FREQUENCY EFFECT (%)



APPARENT RESISTIVITY (ohm-m)



METAL FACTOR



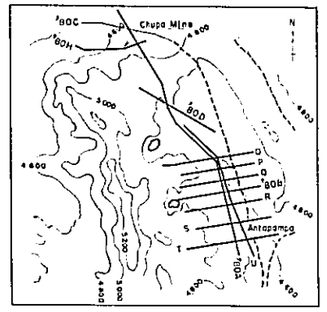
PHASE III

PL. II-2-6

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION

LINE – T



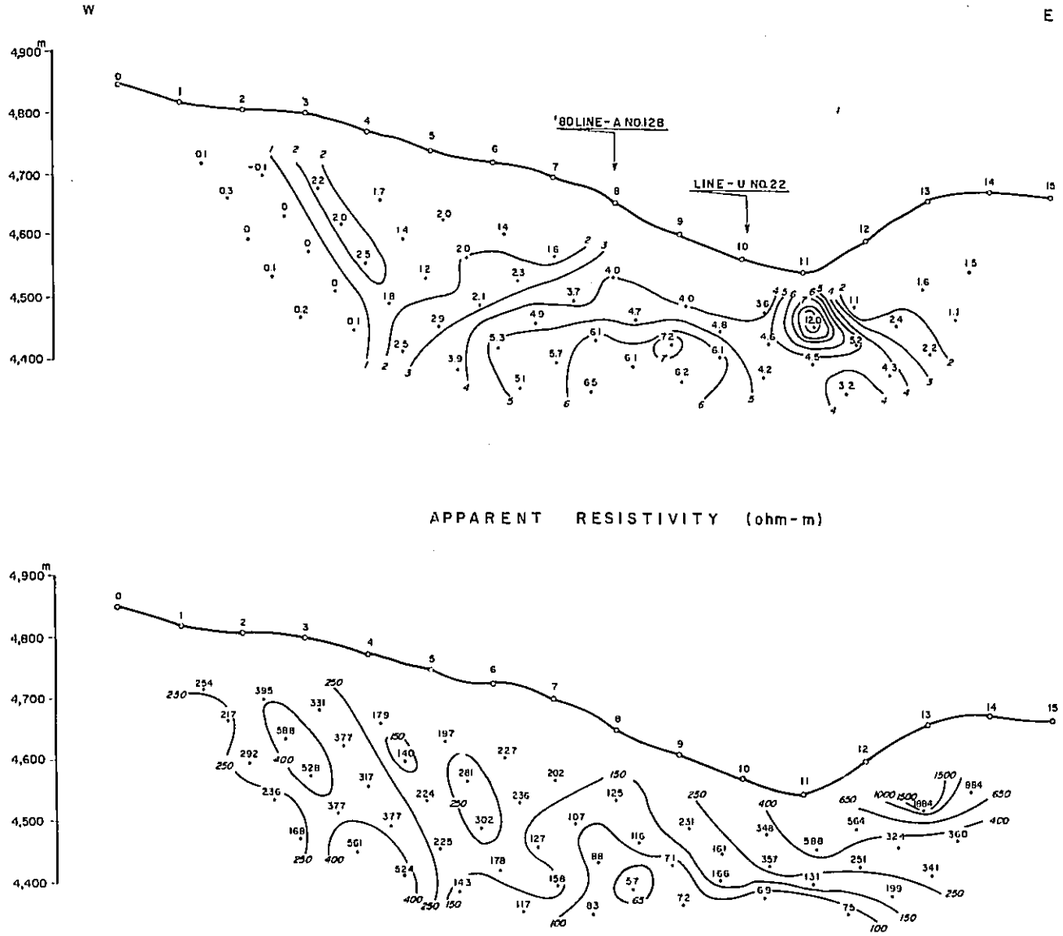
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 5,000

0 500m

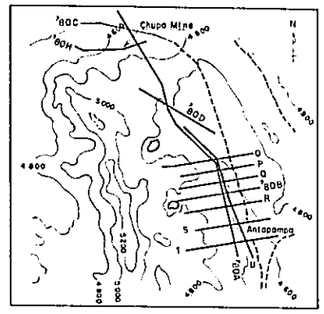


APPARENT RESISTIVITY (ohm-m)

METAL FACTOR

PROFILES OF INDUCED POLARIZATION

LINE – T



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

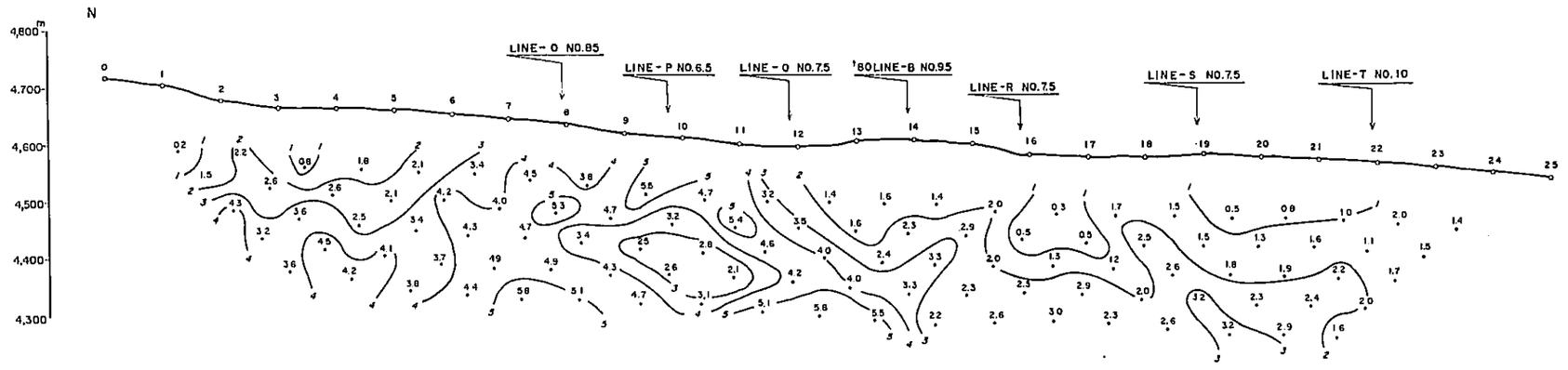
FEBRUARY 1982

prepared by MESCO, Inc.

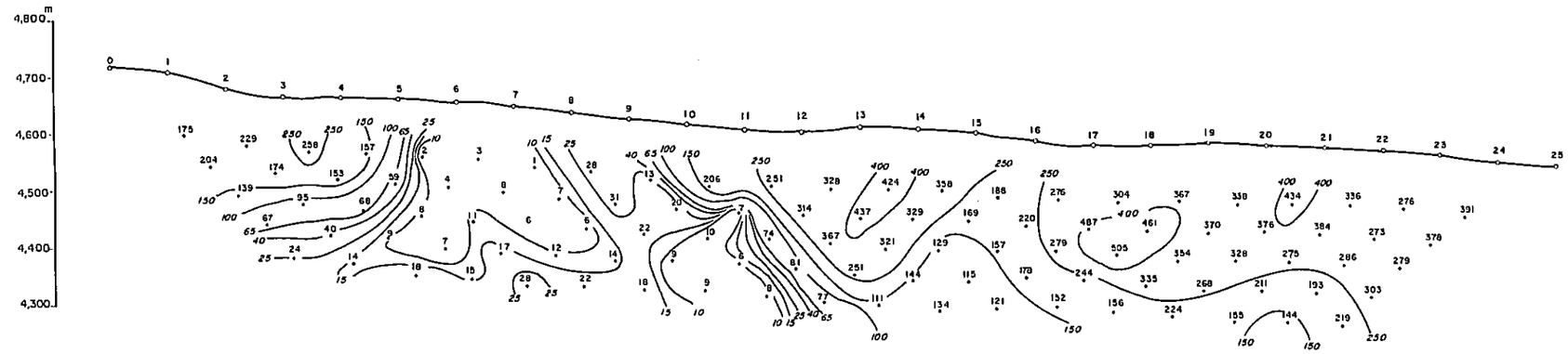
Scale 1 5,000

0 500m

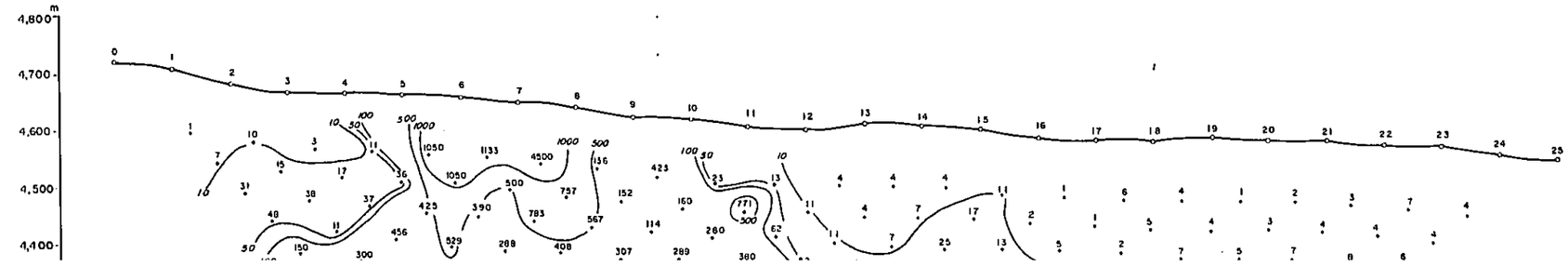
FREQUENCY EFFECT (%)



APPARENT RESISTIVITY (ohm-m)



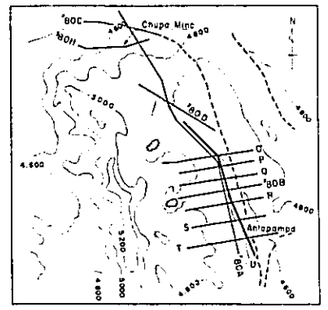
METAL FACTOR



PHASE III PL.II-2-7

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF INDUCED POLARIZATION
LINE – U



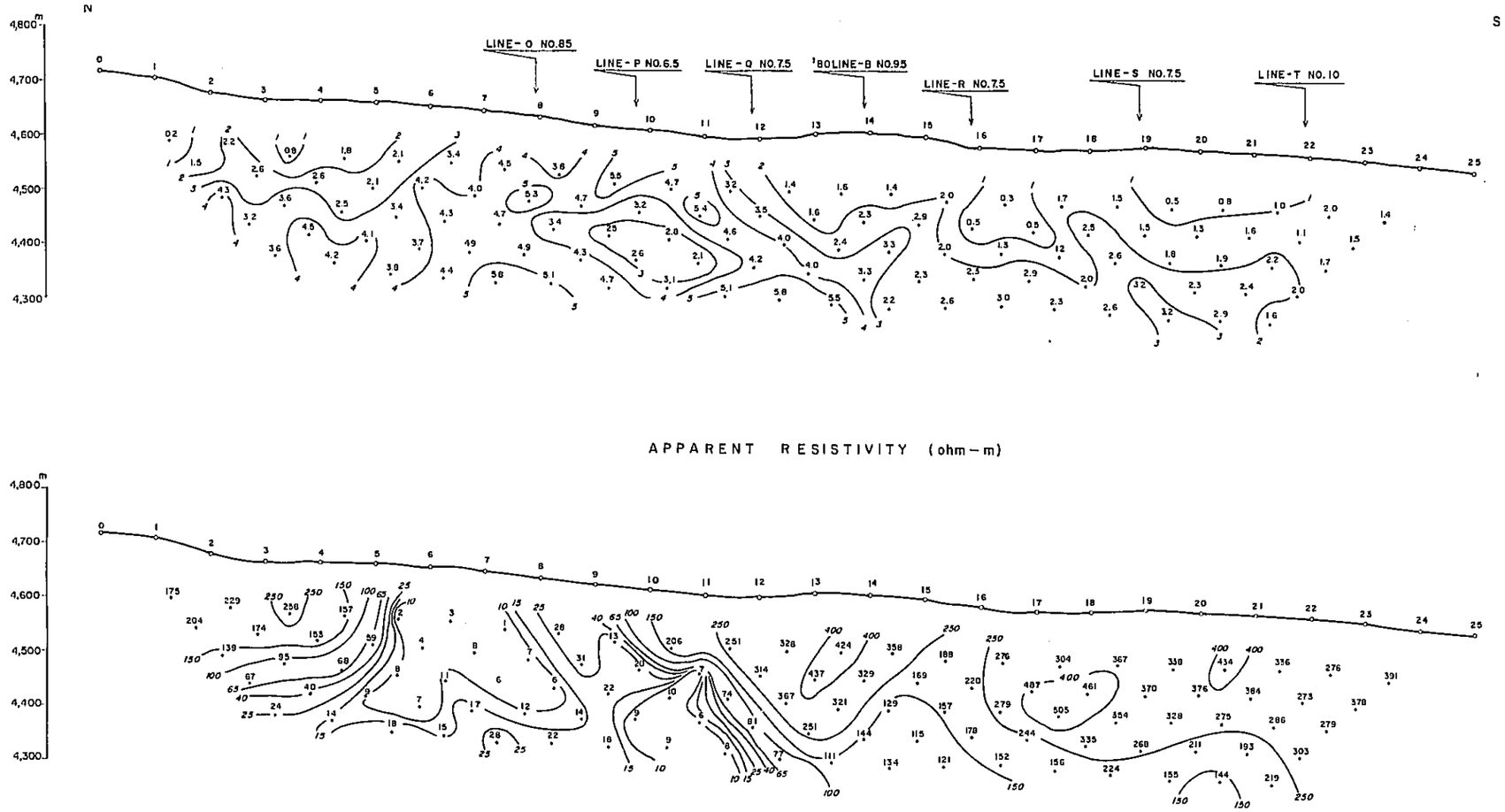
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1962

prepared by MESCO, Inc.

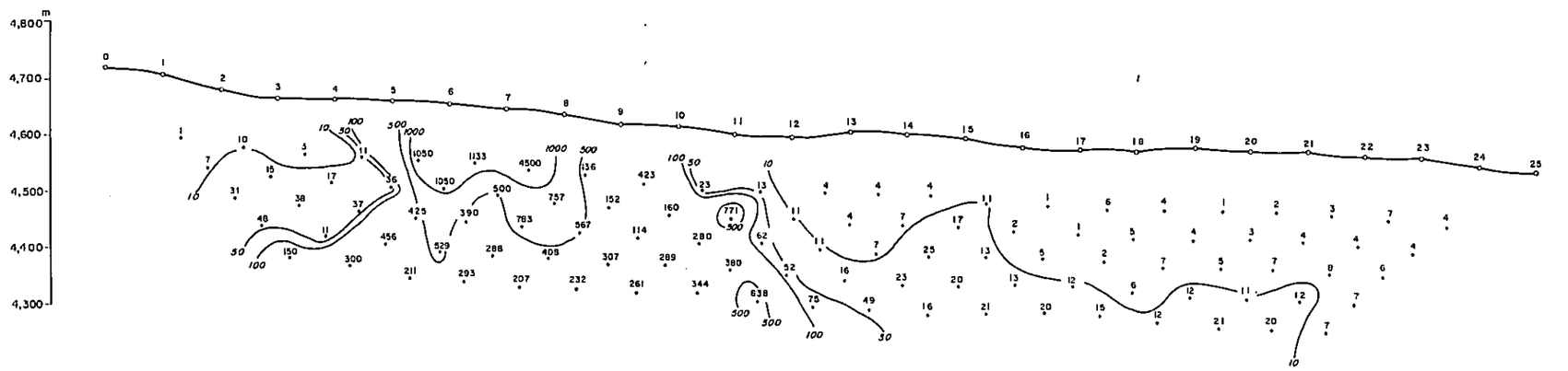
Scale 1 5,000

0 500m

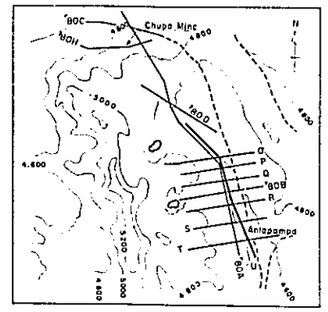


APPARENT RESISTIVITY (ohm-m)

METAL FACTOR



PROFILES OF INDUCED POLARIZATION
LINE - U



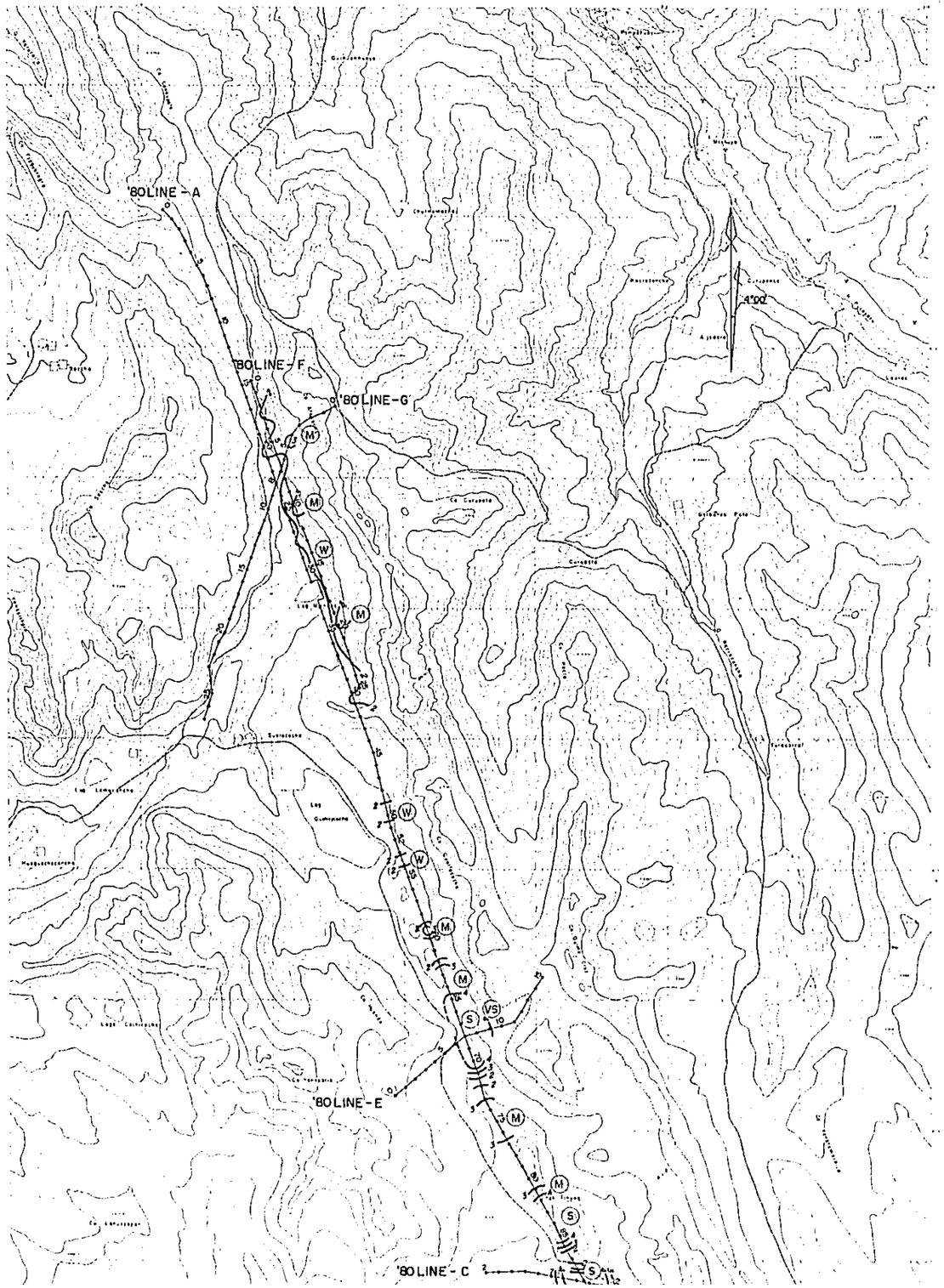
METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 5,000

0 500m



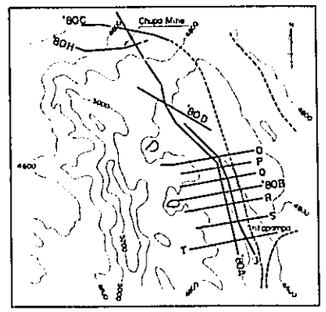
PHASE III

PL.II-3-1

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF FREQUENCY EFFECT

n = 1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

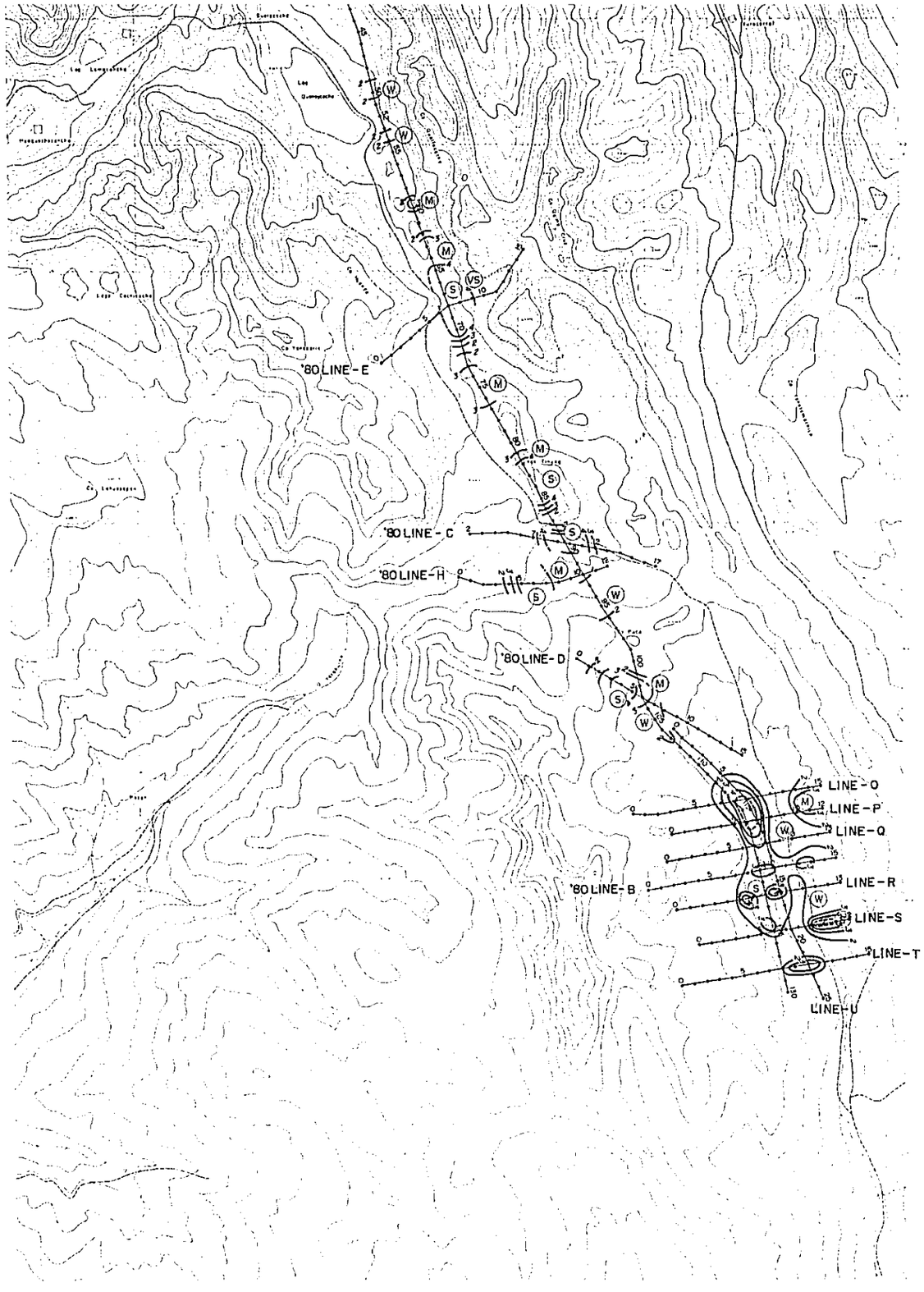
prepared by MESCO, Inc.

Scale 1 : 20,000

0 400 800 1200 1600 2000m

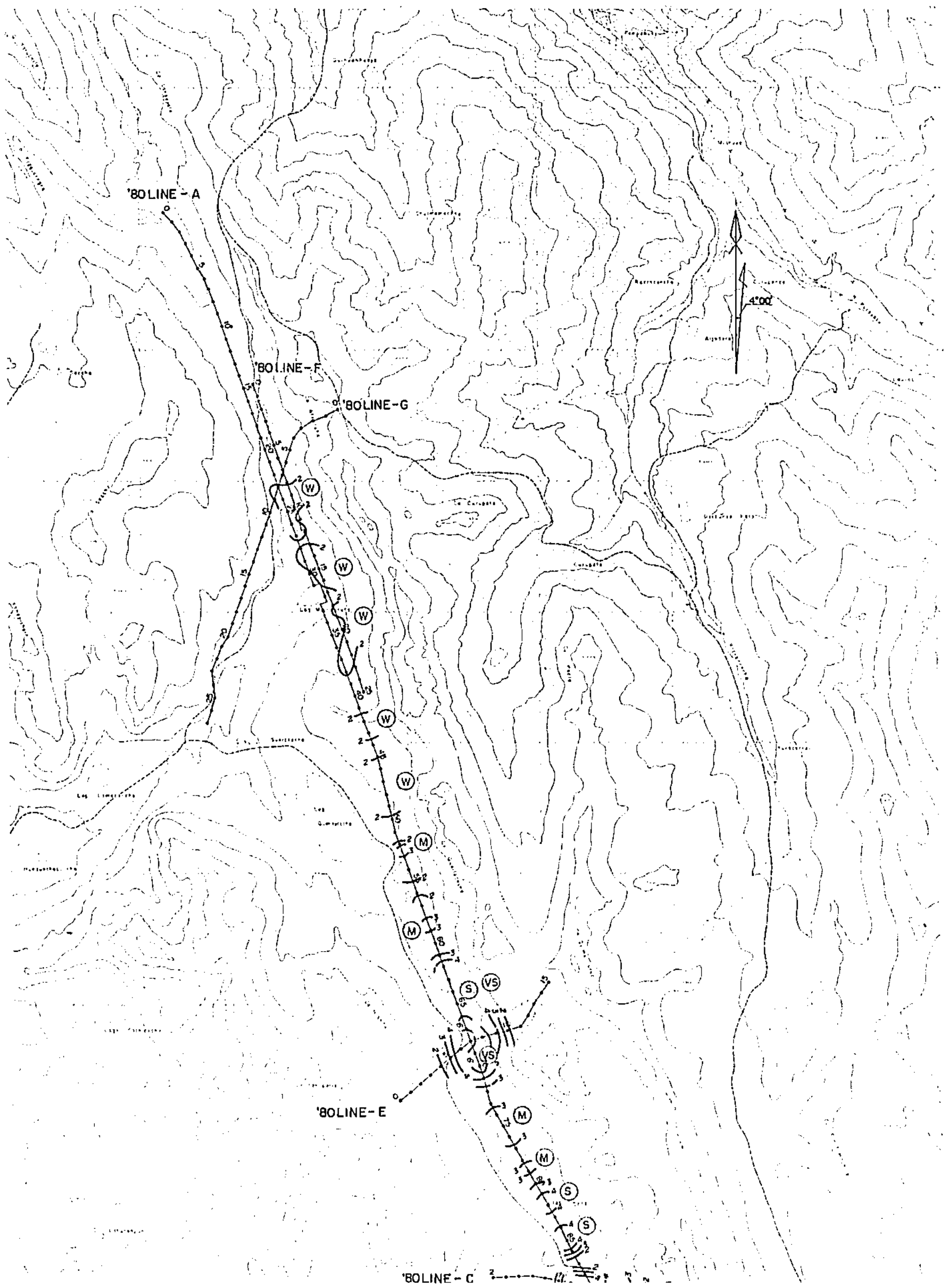
LEGEND

- (W) FE 2 ~ 3%
- (M) FE 3 ~ 4%
- (S) FE 4 ~ 6%
- (VS) FE 6 % over



LEGEND

- (W) FE 2～3%
- (M) FE 3～4%
- (S) FE 4～6%
- (VS) FE 6% over

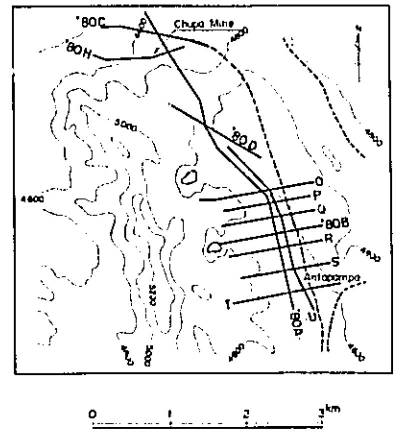


PHASE III

PL.II-3-2

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF FREQUENCY EFFECT
n = 3



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

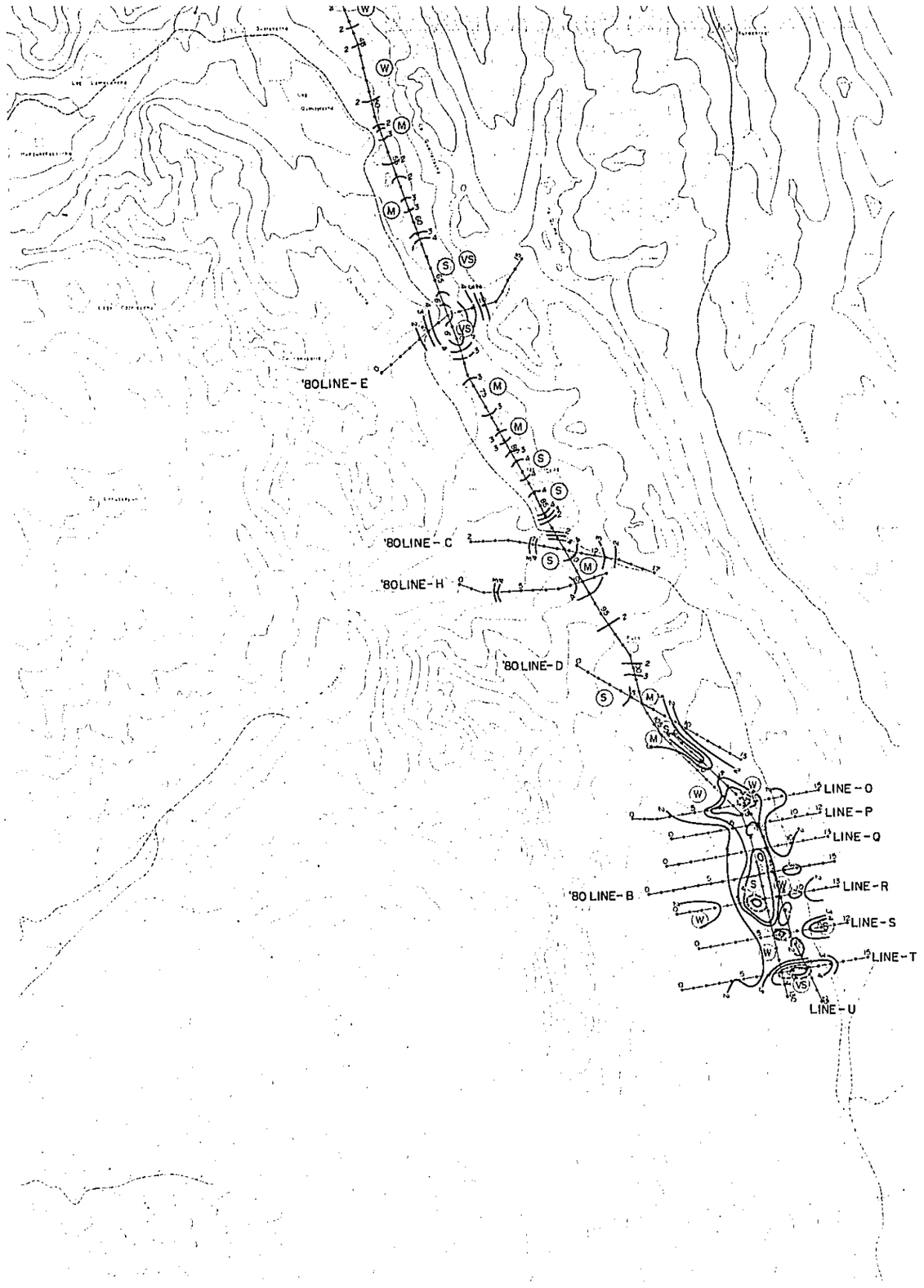
prepared by MESCO, Inc

Scale 1 : 20,000

0 400 800 1200 1600 2000m

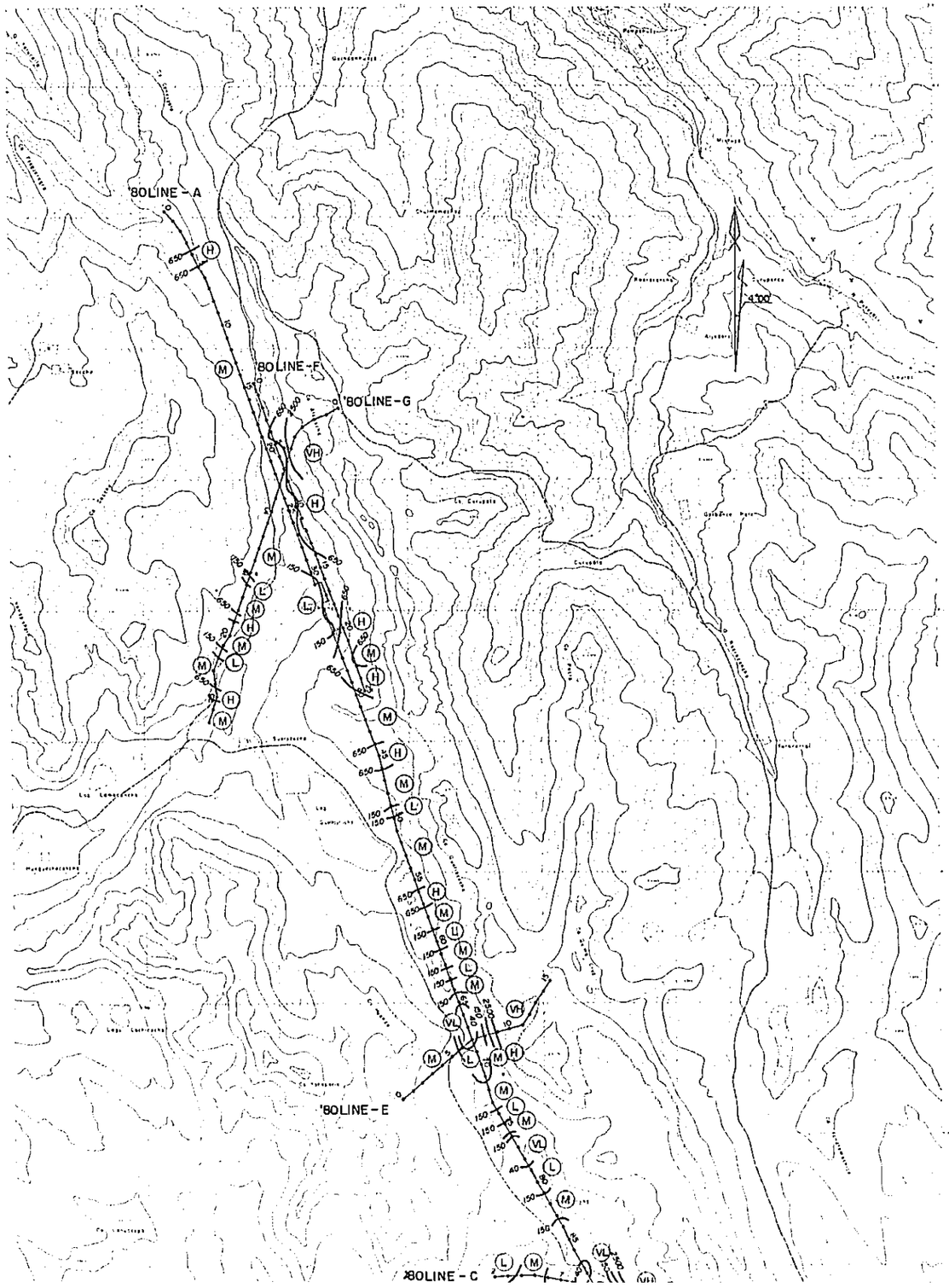
LEGEND

(W)	FE 2 ~ 3%
(M)	FE 3 ~ 4%
(S)	FE 4 ~ 6%
(VS)	FE 6 % over



LEGEND

- (W) FE 2 ~ 3%
- (M) FE 3 ~ 4%
- (S) FE 4 ~ 6%
- (VS) FE 6 % over



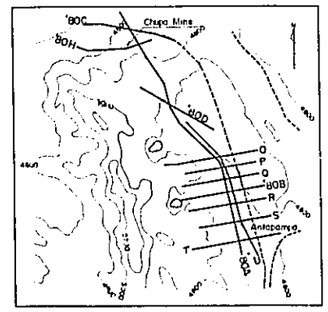
PHASE Ⅲ

PL.Ⅱ-3-3

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF APPARENT RESISTIVITY

n = 1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

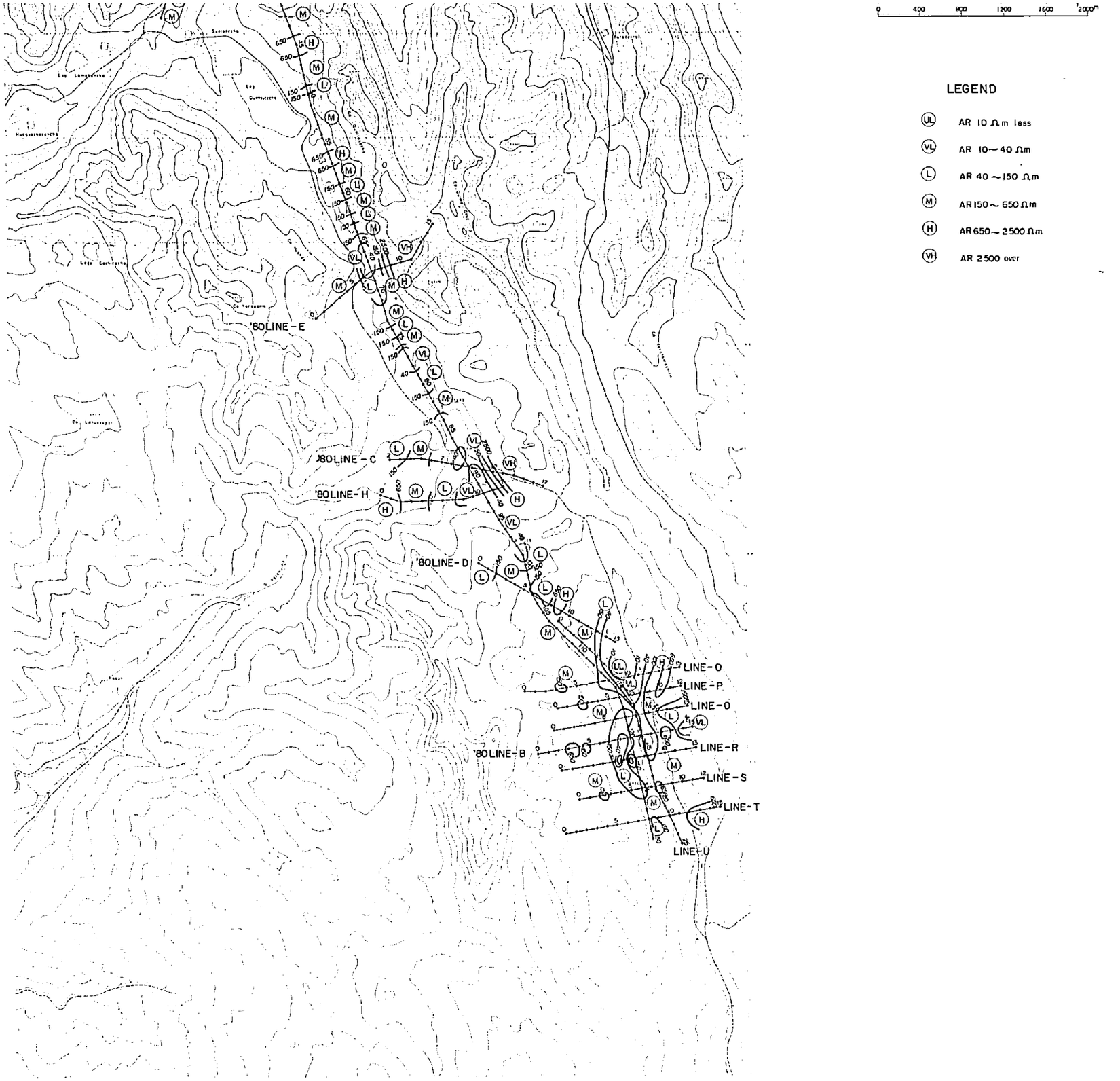
prepared by MESCO, Inc.

Scale 1 : 20,000

0 400 800 1200 1600 2000m

LEGEND

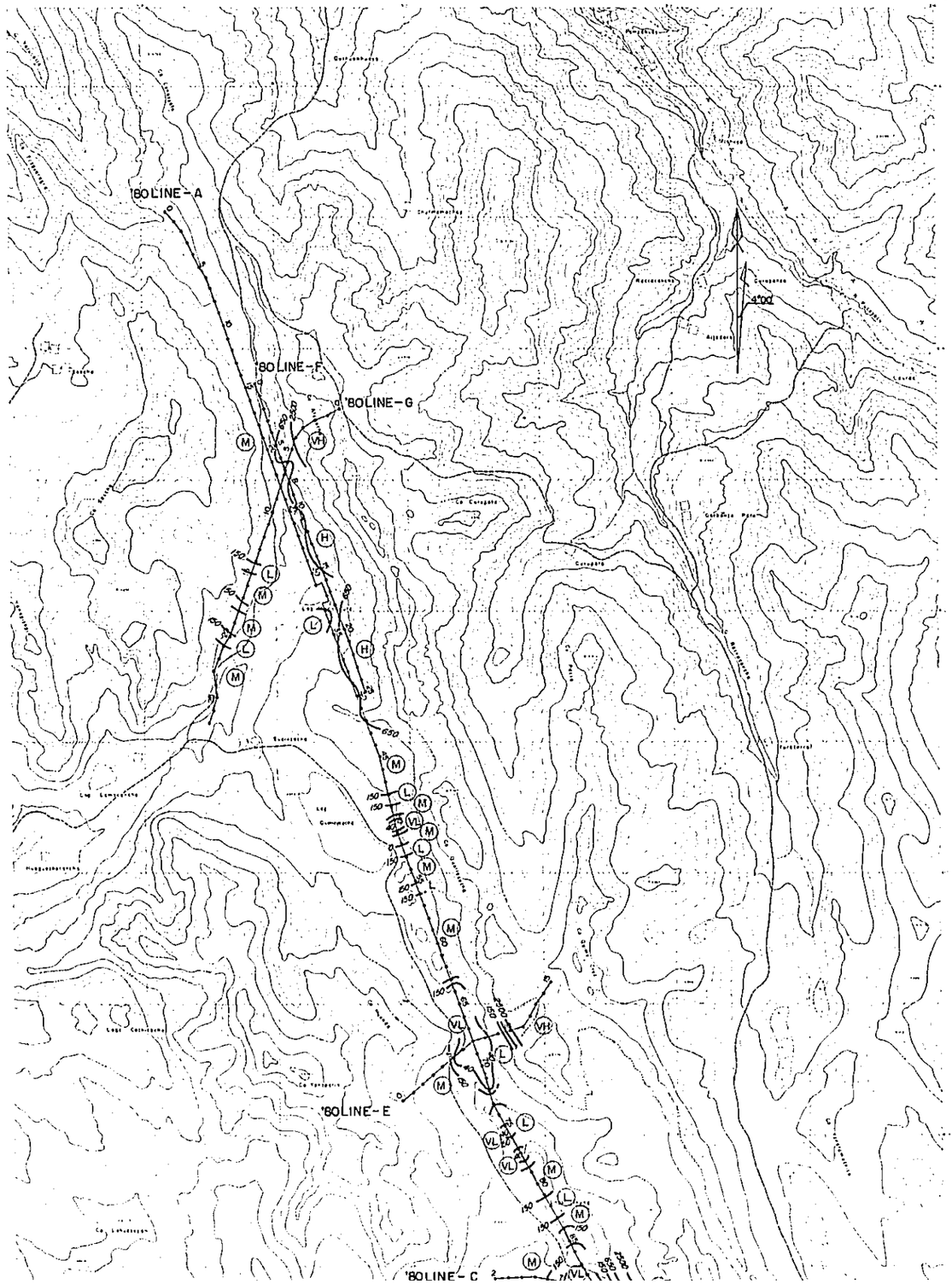
- (UL) AR 10 Ω m less
- (VL) AR 10～40 Ω m
- (L) AR 40～150 Ω m
- (M) AR 150～650 Ω m
- (H) AR 650～2500 Ω m
- (VH) AR 2500 over



0 400 800 1200 1600 2000m

LEGEND

- (UL) AR 10 Ωm less
- (VL) AR 10~40 Ωm
- (L) AR 40~150 Ωm
- (M) AR 150~650 Ωm
- (H) AR 650~2500 Ωm
- (VH) AR 2500 over



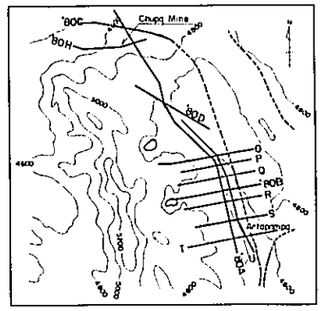
PHASE Ⅲ

PL.Ⅱ-3-4

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF APPARENT RESISTIVITY

n = 3



0 1 2 3km

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

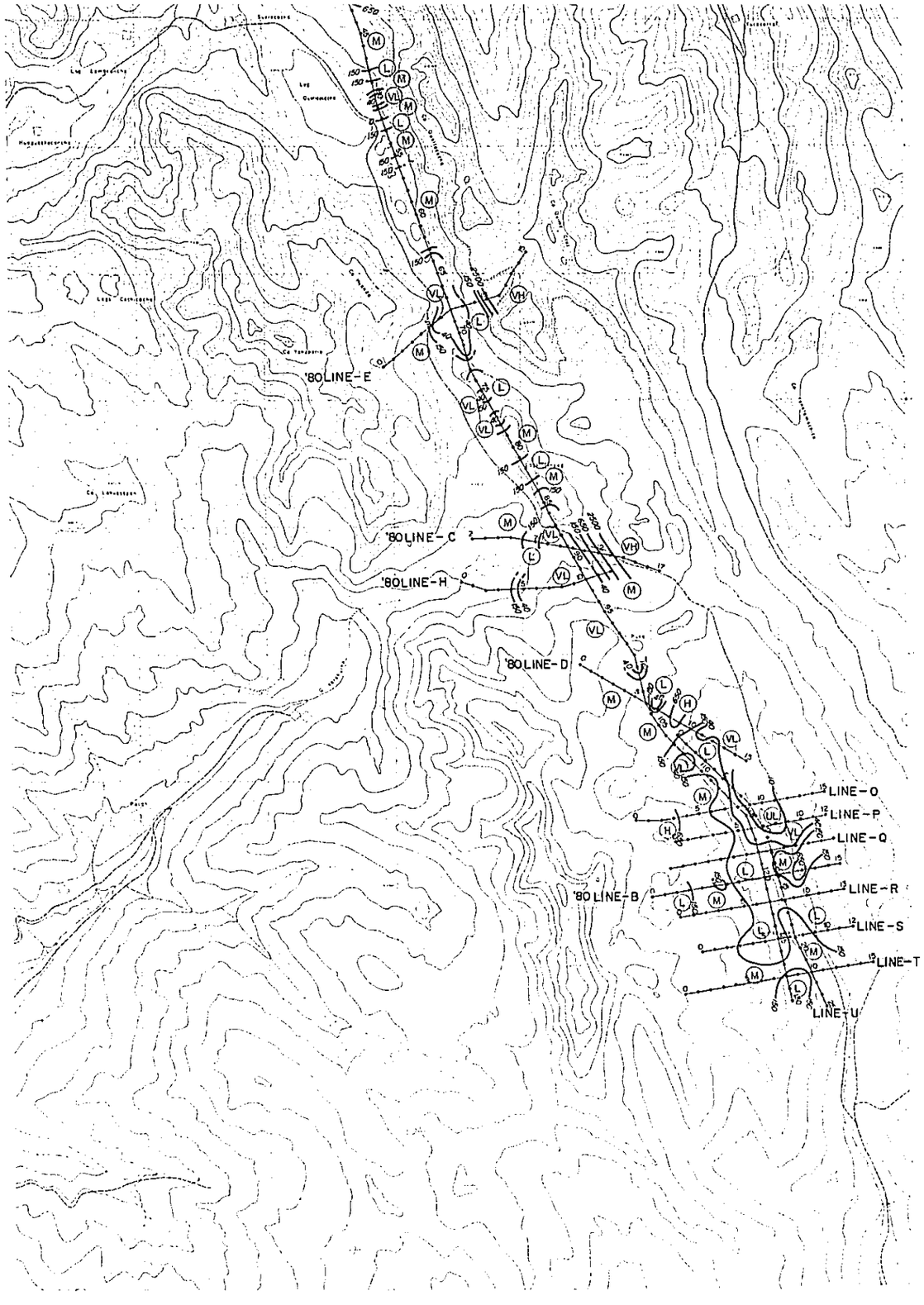
prepared by MESCO, Inc.

Scale 1 : 20,000

0 400 800 1200 1600 2000m

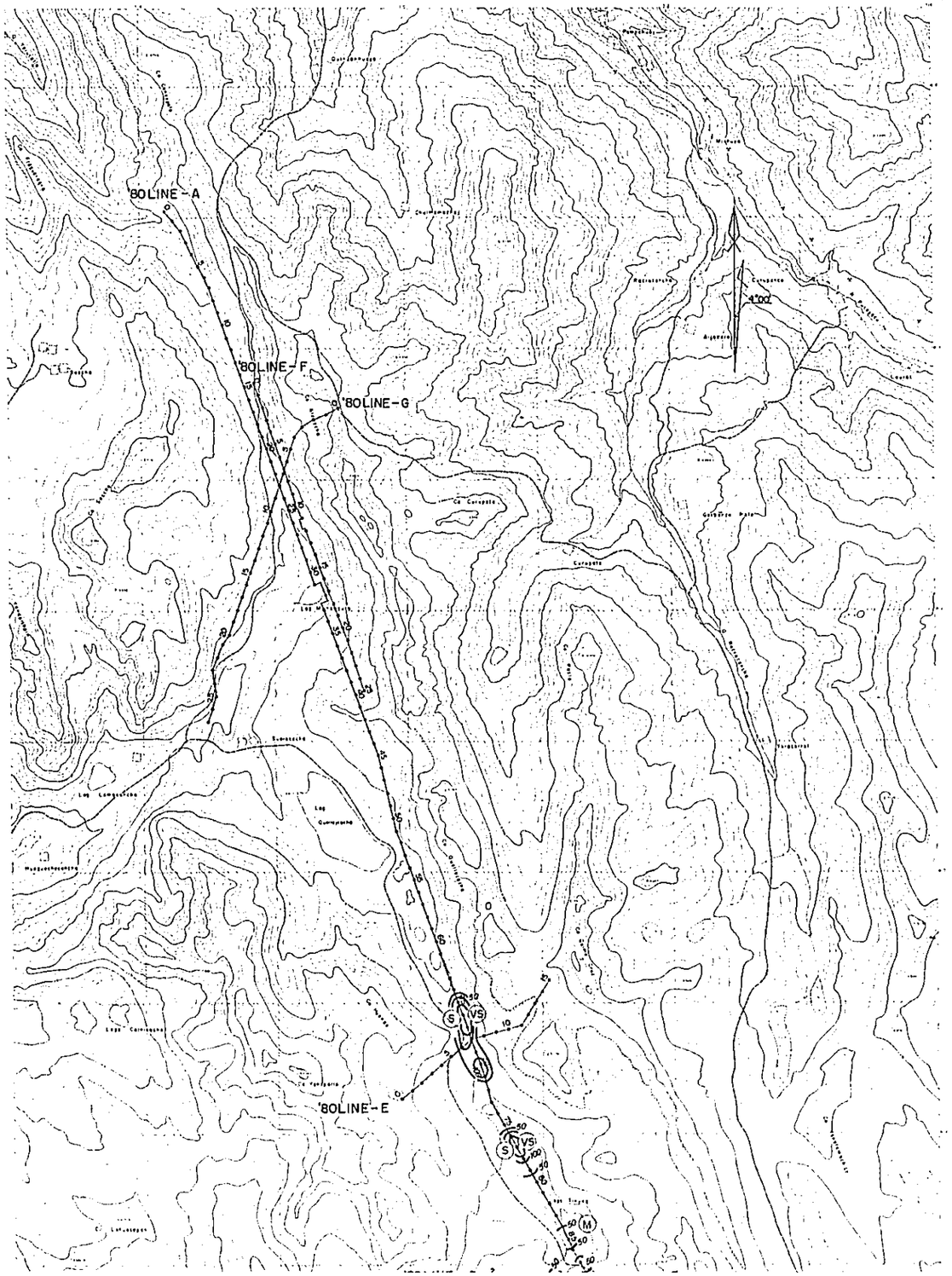
LEGEND

- (UL) AR 10 Ωm less
- (VL) AR 10 ~ 40 Ωm
- (L) AR 40 ~ 150 Ωm
- (M) AR 150 ~ 650 Ωm
- (H) AR 650 ~ 2500 Ωm
- (VH) AR 2500 over



LEGEND

- (UL) AR 10 Ωm less
- (VL) AR 10~40 Ωm
- (L) AR 40~150 Ωm
- (M) AR 150~650 Ωm
- (H) AR 650~2500 Ωm
- (VH) AR 2500 over



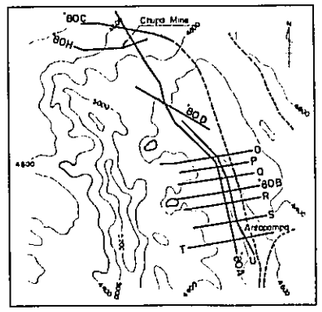
PHASE Ⅲ

PL.Ⅱ-3-5

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF METAL FACTOR

n = 1



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

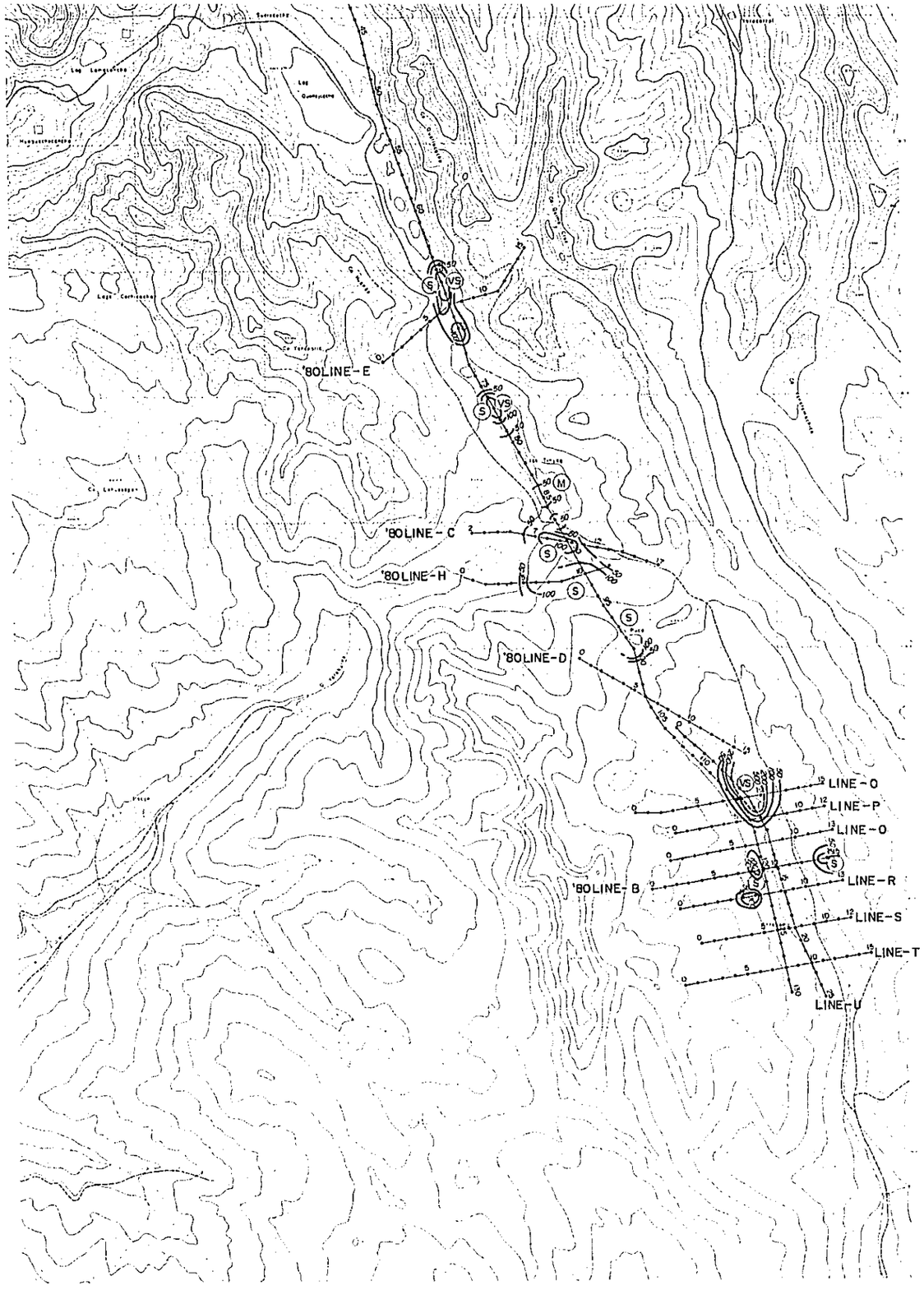
prepared by MESCO, Inc.

Scale 1 : 20,000

0 400 800 1200 1600 2000m

LEGEND

- (M) MF 50 ~ 100
- (S) MF 100 ~ 200
- (VS) MF 200 over

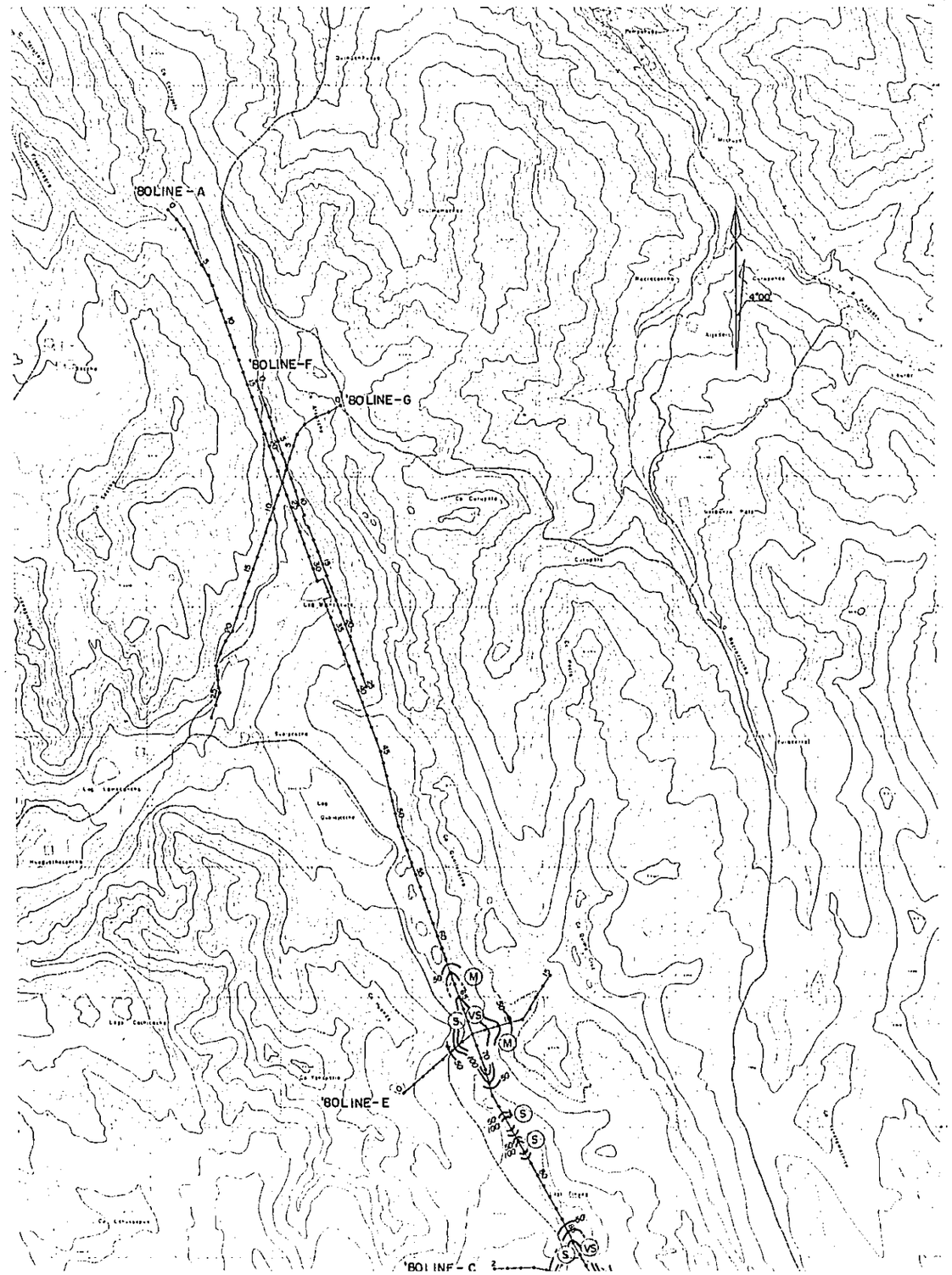


LEGEND

(M) MF 50 ~ 100

(S) MF 100 ~ 200

(VS) MF 200 over



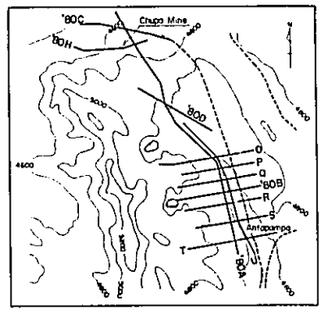
PHASE II

PL.II-3-6

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CONTOUR MAP OF METAL FACTOR

n = 3



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

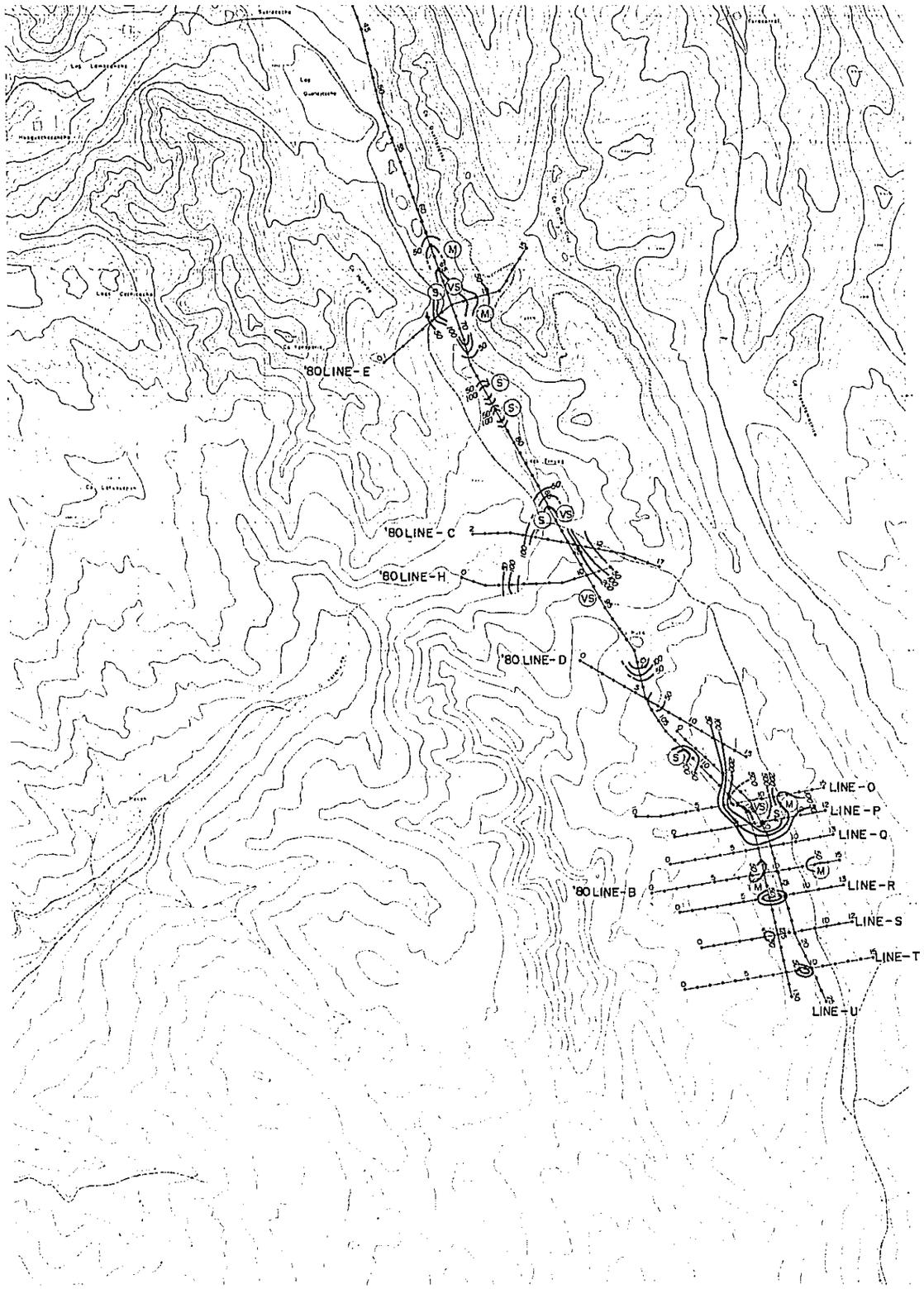
prepared by MESCO, Inc.

Scale 1 : 20,000

0 400 800 1200 1600 2000m

LEGEND

- (M) MF 50 ~ 100
- (S) MF 100 ~ 200
- (VS) MF 200 over

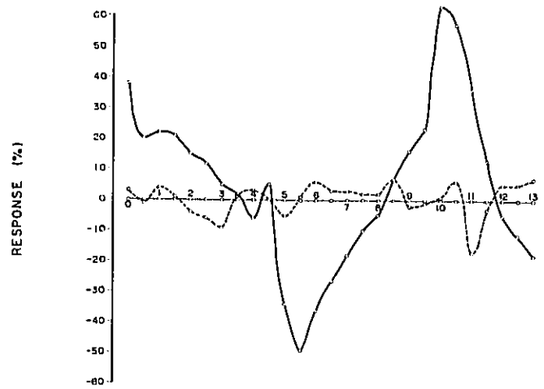


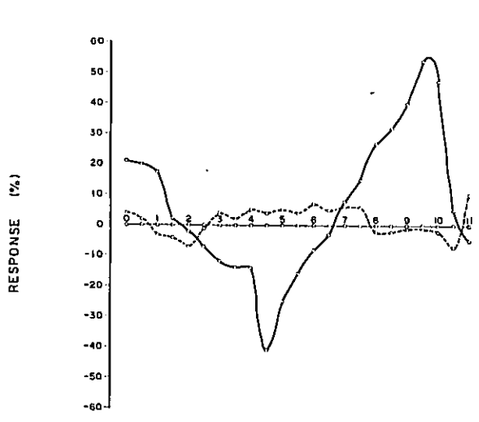
LEGEND

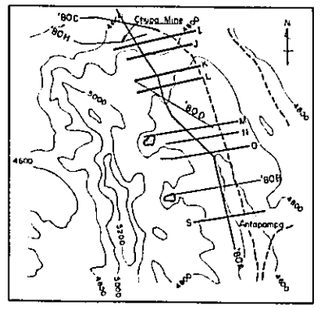
(M) MF 50 ~ 100

(S) MF 100 ~ 200

(VS) MF 200 over







LINE – I

LINE – J

LINE – K

09283

PHASE III

PL. II–4–1

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF ELECTROMAGNETIC FIELD CURVES
LINE – I, J, K, L
VERY LOW FREQUENCY METHOD

METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

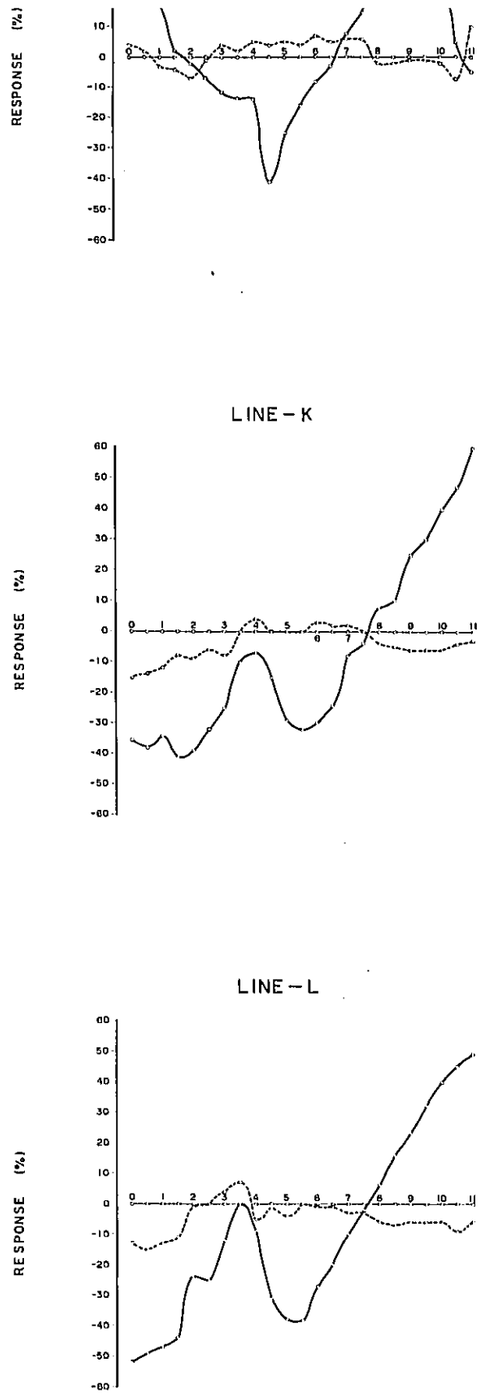
Scale 1 : 10,000

0 1000m

LEGEND

—o— IN – PHASE

---o--- OUT OF PHASE

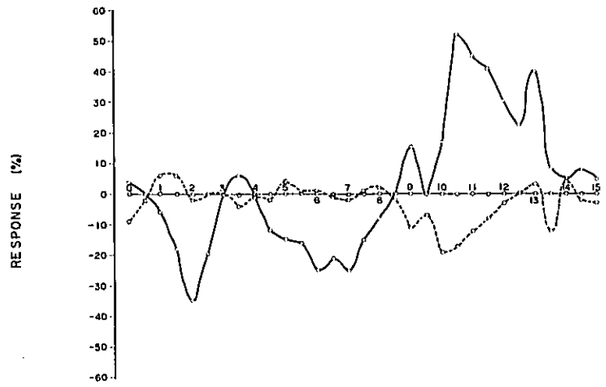


LEGEND

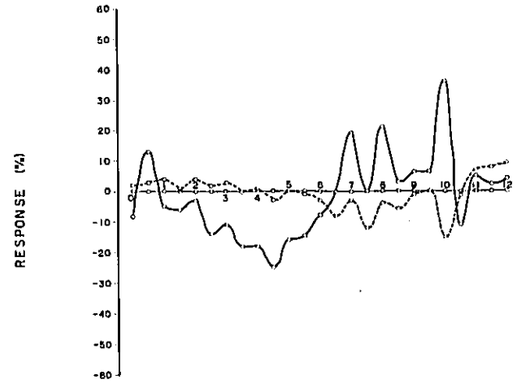
IN-PHASE

OUT OF PHASE

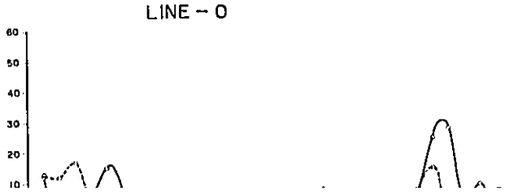
LINE – M



LINE – N



LINE – O

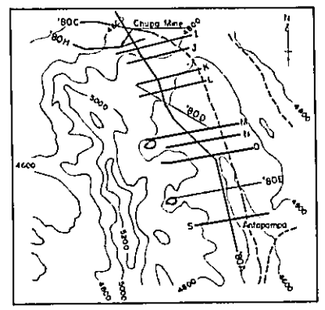


PHASE Ⅲ

PL.Ⅱ-4-2

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PROFILES OF ELECTROMAGNETIC FIELD CURVES
LINE – M,N,O,S
VERY LOW FREQUENCY METHOD



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

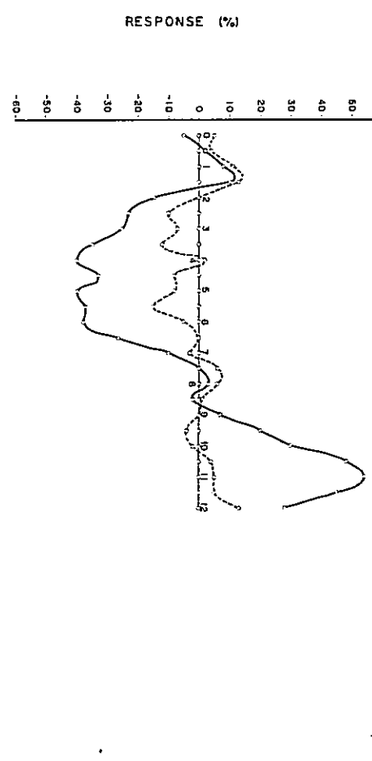
prepared by MESCO, Inc.

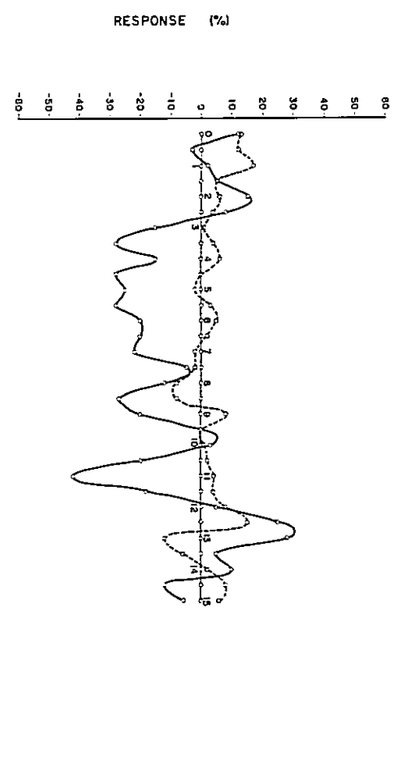
Scale 1 : 10,000

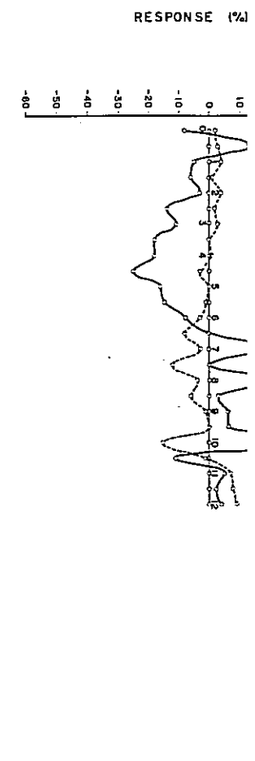
LEGEND

—o— IN-PHASE

---o--- OUT OF PHASE





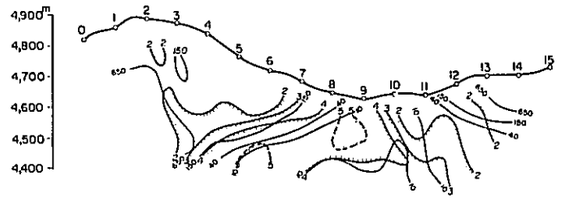


LEGEND

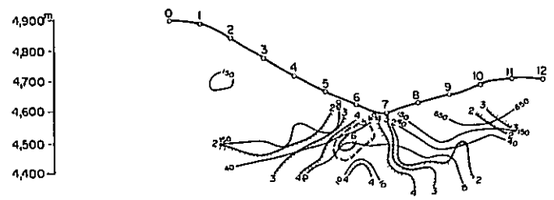
—o— IN - PHASE

---o--- OUT OF PHASE

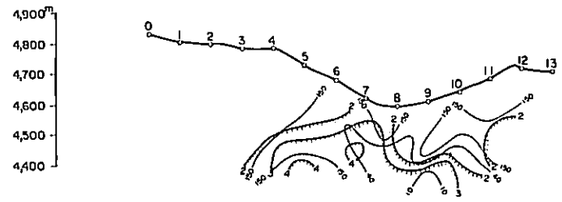
LINE – O



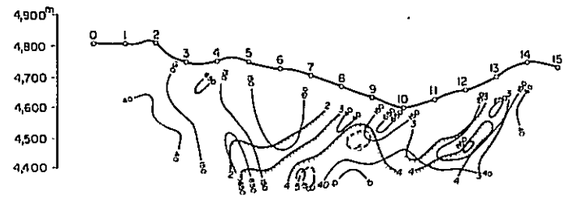
LINE – P



LINE – Q



LINE – B



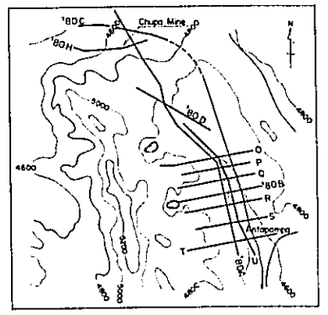
LINE – R

PHASE Ⅲ

PL.Ⅱ-5-1

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PANELDIAGRAM OF AR AND FE IN ANTAPAMPA



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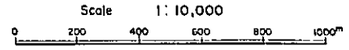

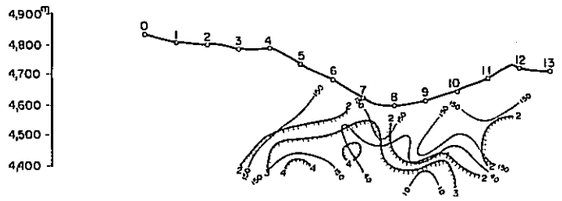

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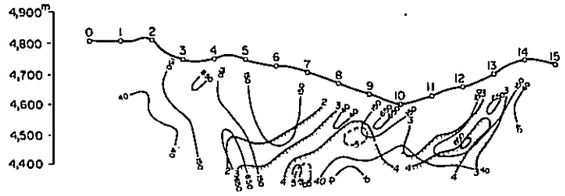
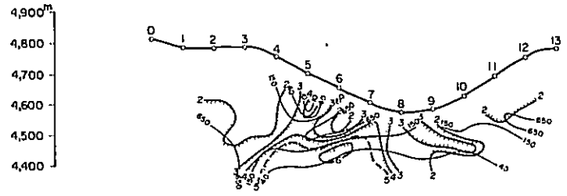
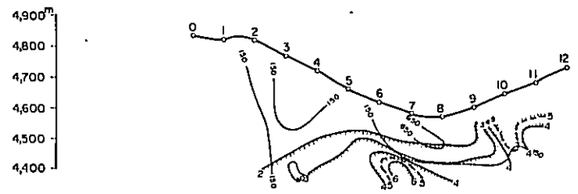


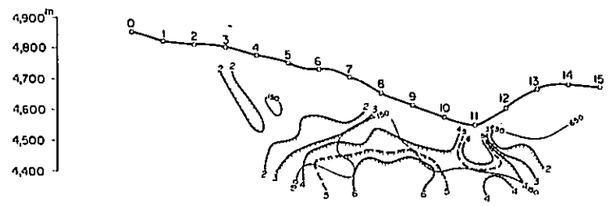
LINE – R



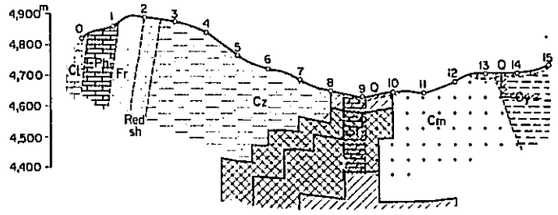
LINE – S



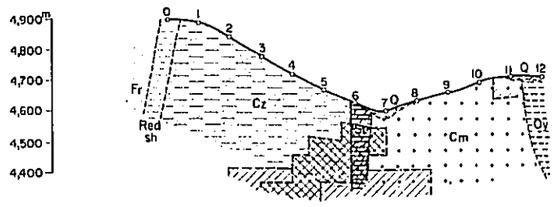
LINE – T



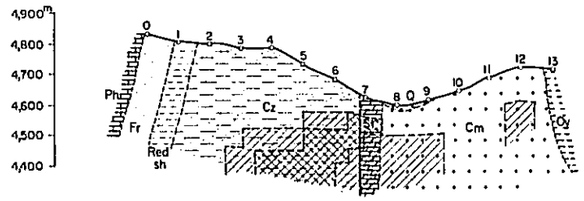
LINE – O



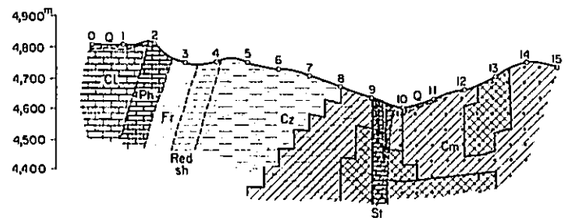
LINE – P



LINE – Q



LINE – B



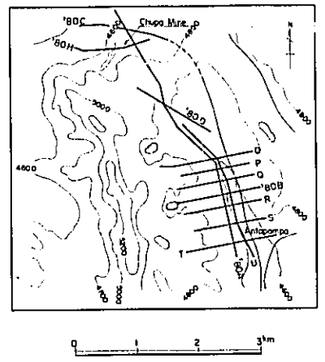
LINE – R

PHASE III

PL.II-5-2

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

PANEL DIAGRAM OF IP RESPONSE BODIES ASSUMED WITH THE GEOLOGY IN ANTAPAMPA



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

prepared by MESCO, Inc.

Scale 1 : 10,000

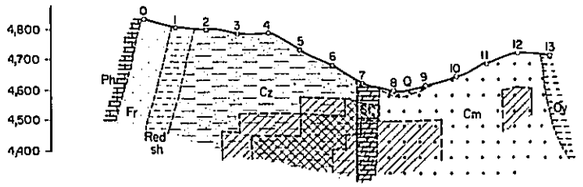
0 200 400 600 800 1000m

LEGEND

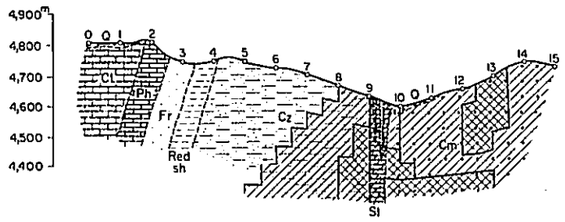
- Talus
- Alluvium
- Cl — Chulec formation
- Ph — Pariahuanca formation
- Fr — Farrat formation
- Red sh — Carhuaz formation
- Cz — Carhuaz formation
- St — Santa formation
- Cm — Chimu formation
- Dy — Oyon formation
- Mineralized zone
- Fault

IP response bodies

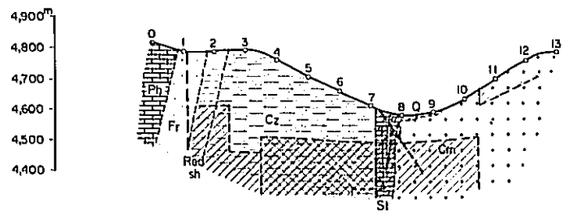
- Strong



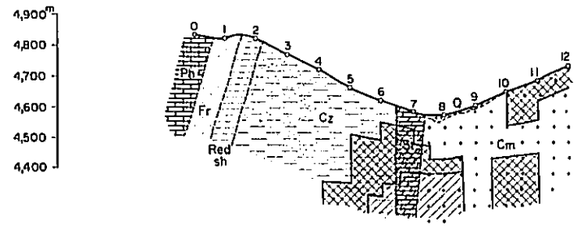
LINE – B



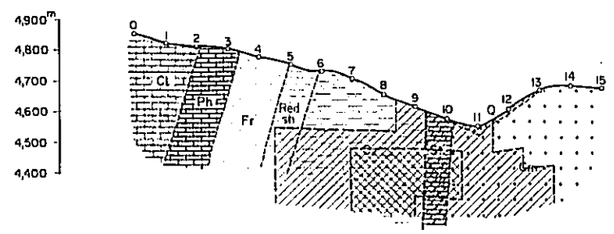
LINE – R



LINE – S



LINE – T



LEGEND

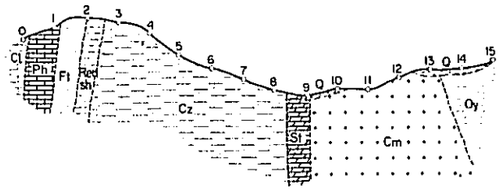
- Talus
- Q — Alluvium
- Cl — Chulec formation
- Ph — Pariahuanca formation
- Fr — Farrat formation
- Red sh — Carhuaz formation
- Cz — Carhuaz formation
- Sl — Santa formation
- Cm — Chimu formation
- Dy — Oyon formation
- Mineralized zone
- Fault

IP response bodies

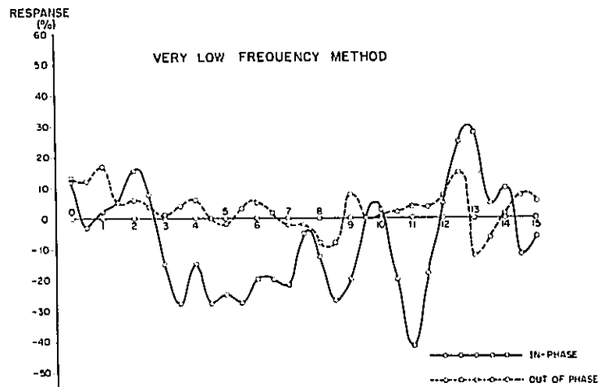
- Strong
- Medium
- Weak

LINE – O

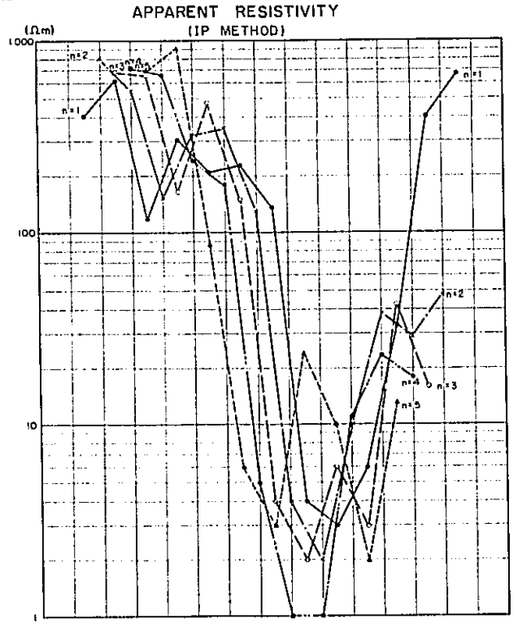
PROFILE OF GEOLOGY



VERY LOW FREQUENCY METHOD

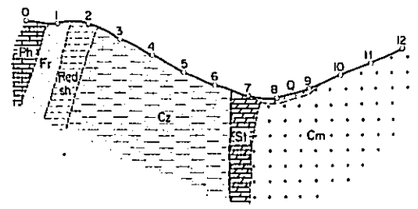


APPARENT RESISTIVITY (IP METHOD)

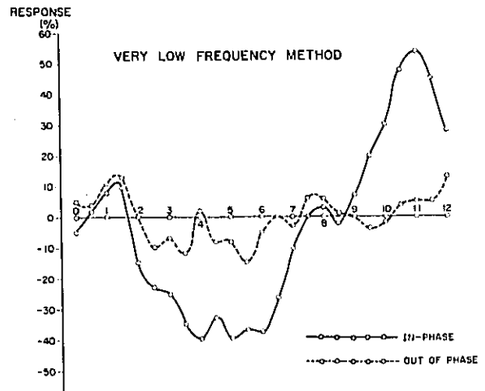


LINE – S

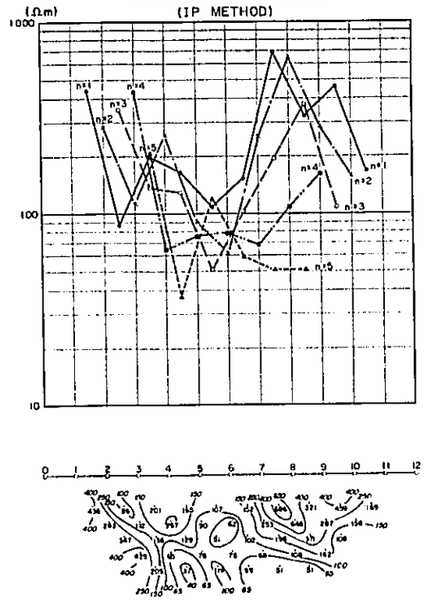
PROFILE OF GEOLOGY



VERY LOW FREQUENCY METHOD



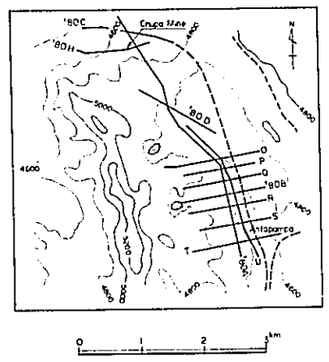
APPARENT RESISTIVITY (IP METHOD)



PHASE III PL. II-6

GEOPHYSICAL EXPLORATION
OF
THE OYON AREA, PERU

CORRELATION BETWEEN IP AND EM METHOD ON LINE – O,S



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

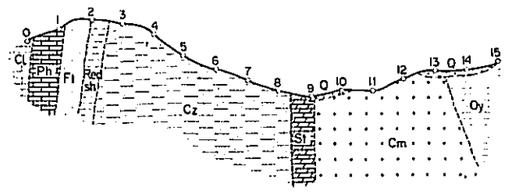
prepared by MESCO, Inc.

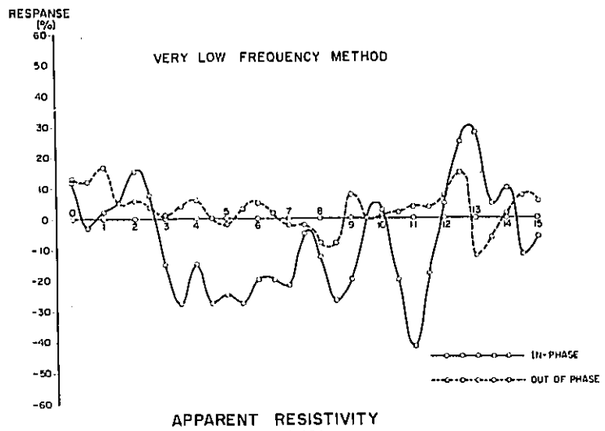
Scale 1 : 10,000

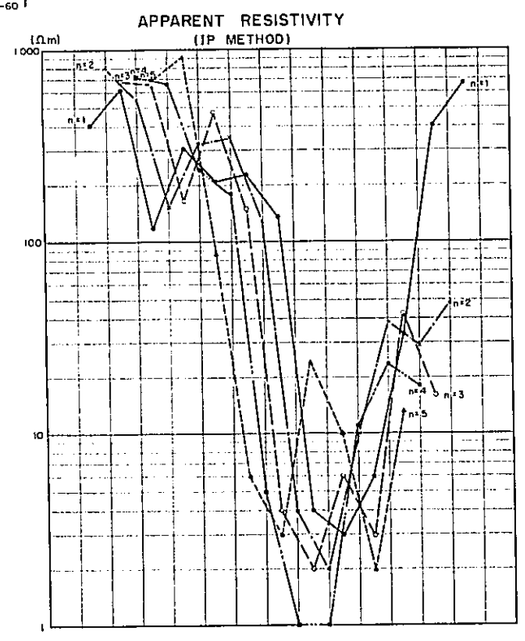
0 200 400 600 800 1000m

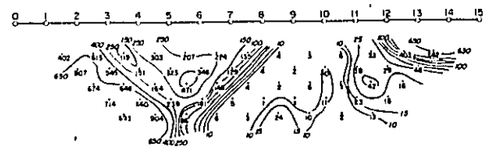
LEGEND

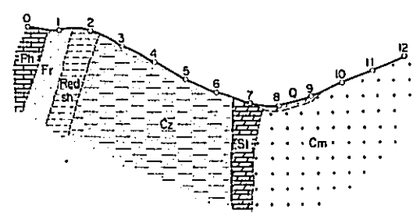
- Alluvium
- Chulec formation
- Pariahuanca formation
- Farrat formation
- Carhuaz formation
- Santa formation
- Chimu formation
- Oyon formation
- Fault

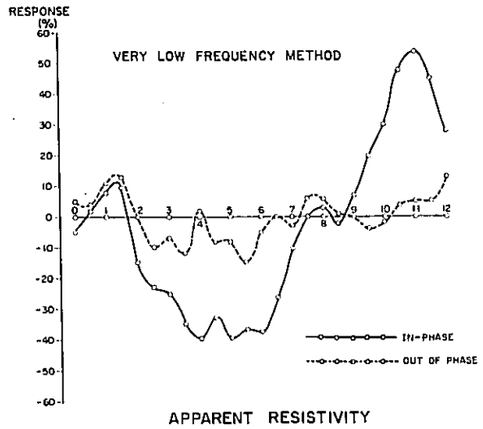


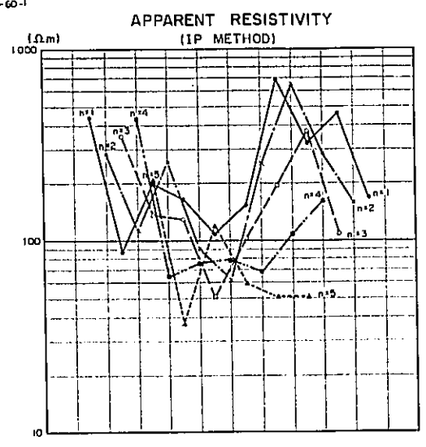


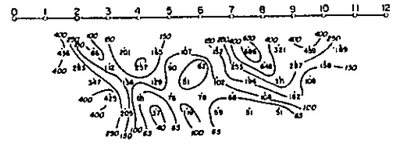




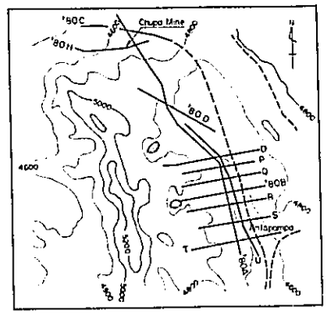








CORRELATION BETWEEN IP AND EM METHOD ON LINE-O,S



METAL MINING AGENCY OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

FEBRUARY 1982

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Scale 1 : 10,000

0 200 400 600 800 1000m

LEGEND

- Alluvium
- Chulec formation
- Pariahuanca formation
- Farrat formation
- Carhuaz formation
- Santa formation
- Chimu formation
- Oyon formation
- Fault