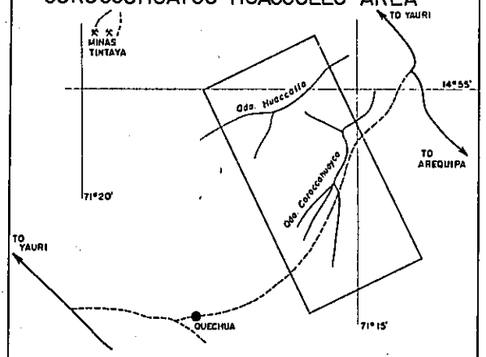
国際協力事業団
08814
閲覧

PL. I-1

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE Ⅲ)

GEOLOGICAL MAP OF THE COROCCOHUAYCO-HUACCOLLO AREA

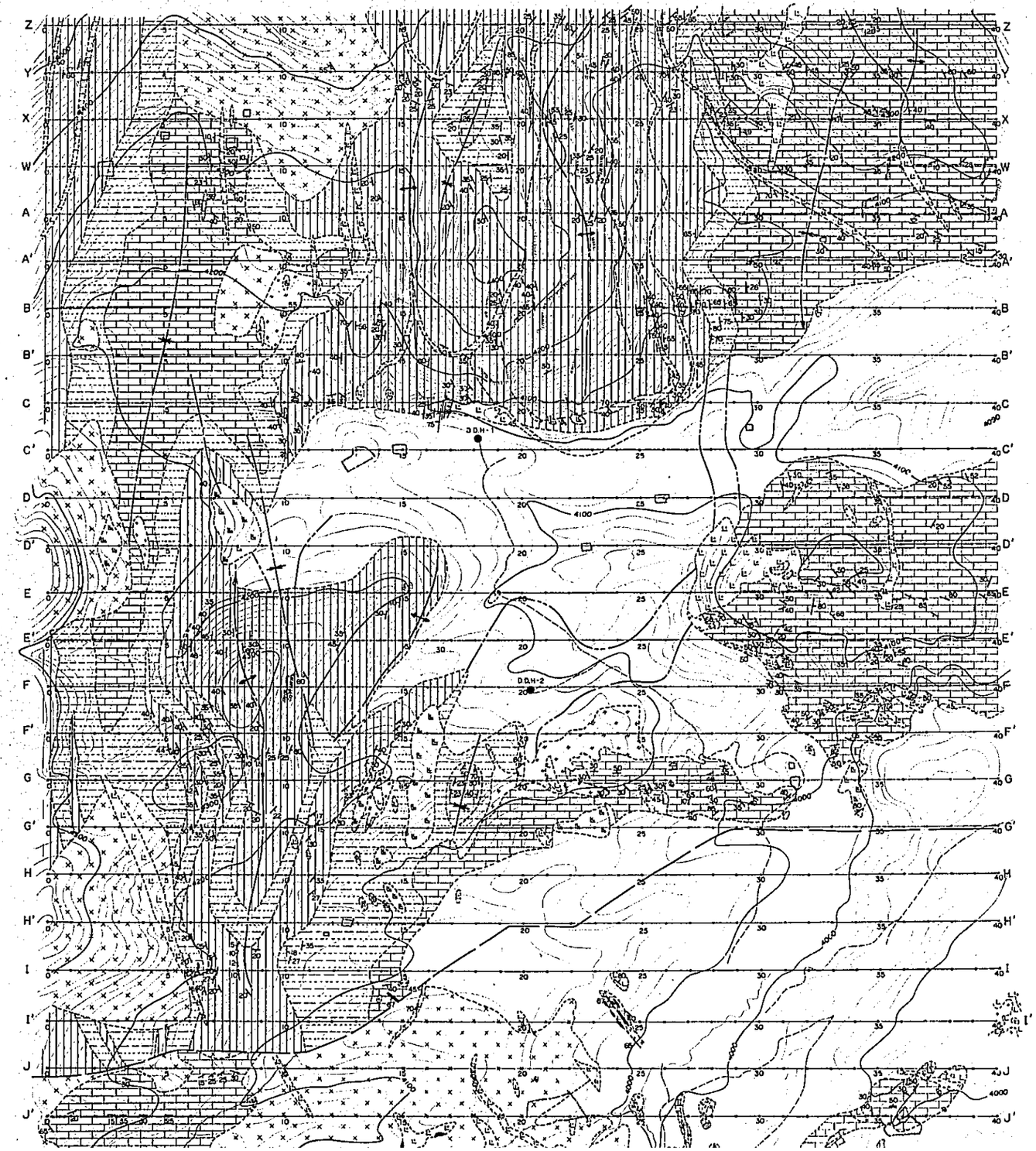


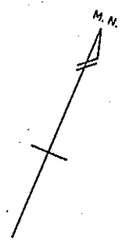
METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.



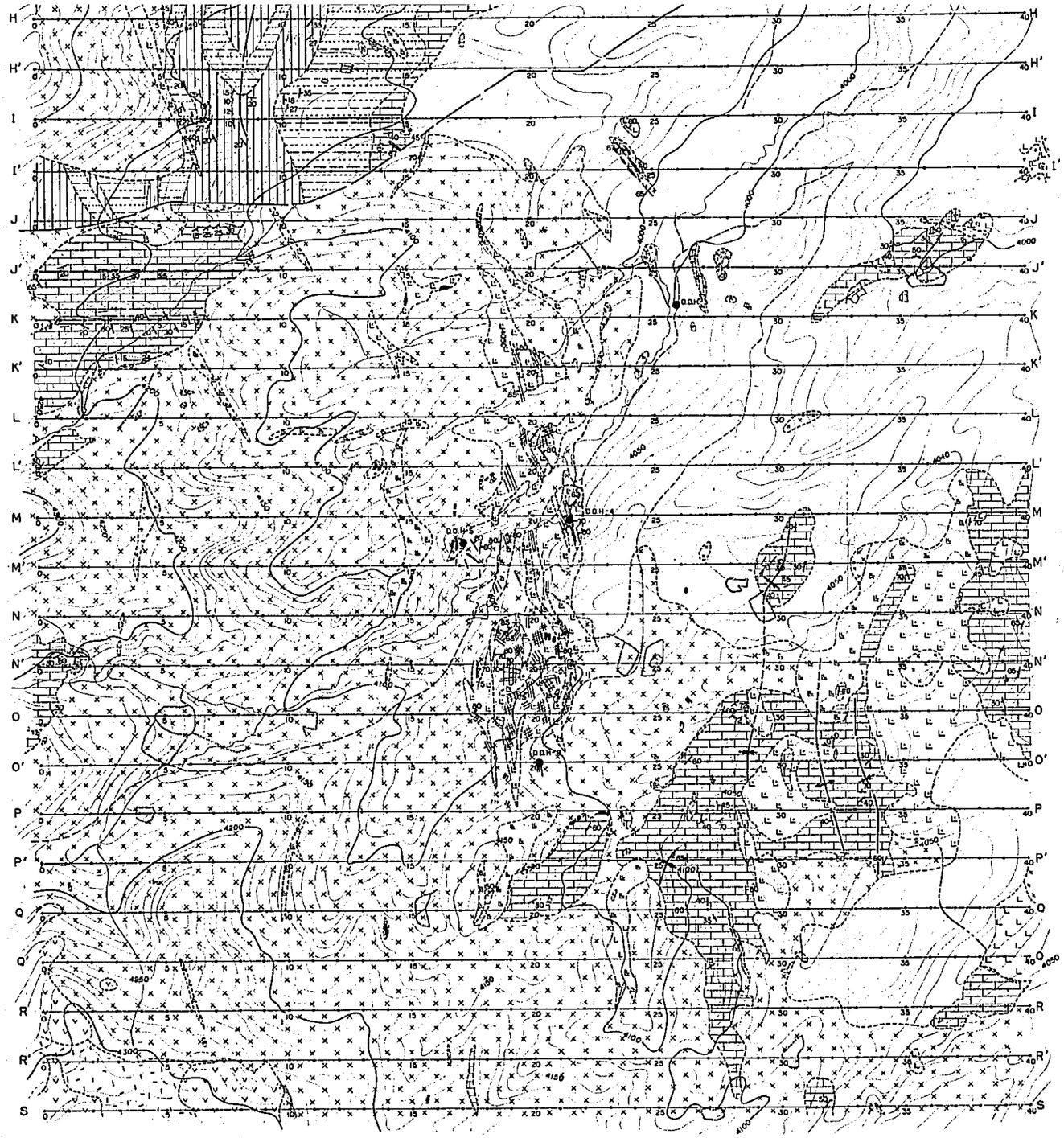


0 200 400 600 800 1,000m

Scale 1 : 10,000

LEGEND

- Alluvium / Glacial deposit
- Andesite / Basalt
- Rhyolitic tuff
- Limestone
- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite
- Skarn (magnetite, garnet, etc.)
- Copper showing
- Bedding plane



- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite
- Skarn (magnetite, garnet, etc.)
- Copper showing
- Bedding plane
- Fault
- Fracture / Quartz vein
- Axis of anticline
- Axis of syncline
- Subsurface rock-boundary estimated
- Location of drilling hole

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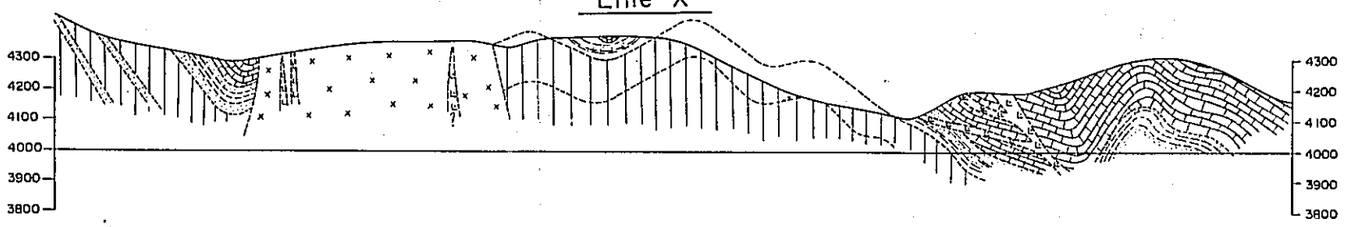
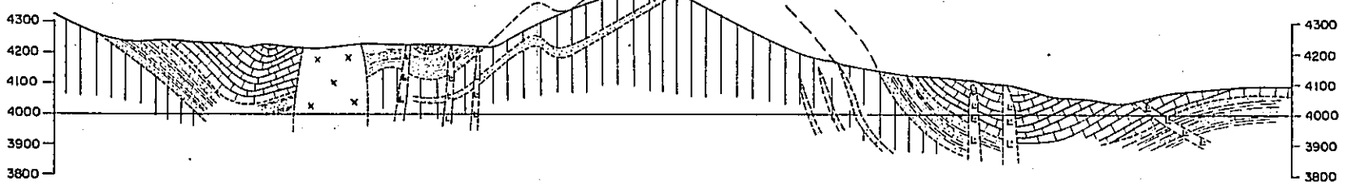
PL I-2

(WEST) (EAST)

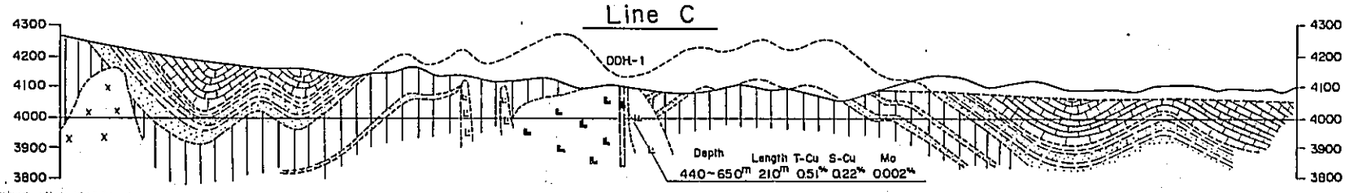
Line X



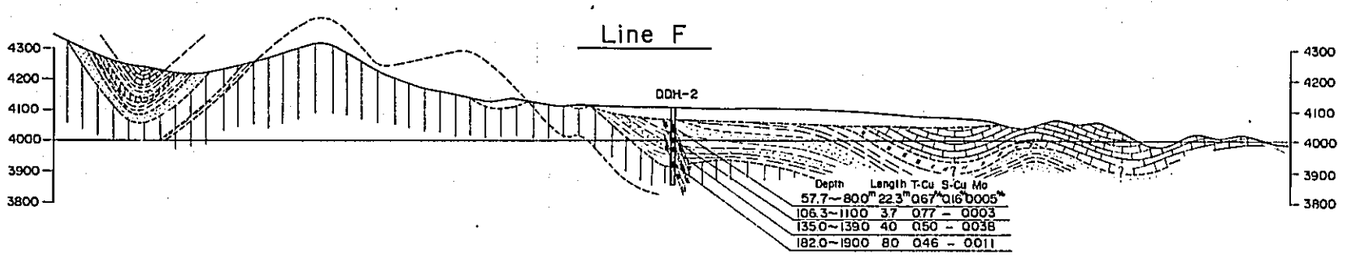
Line A'



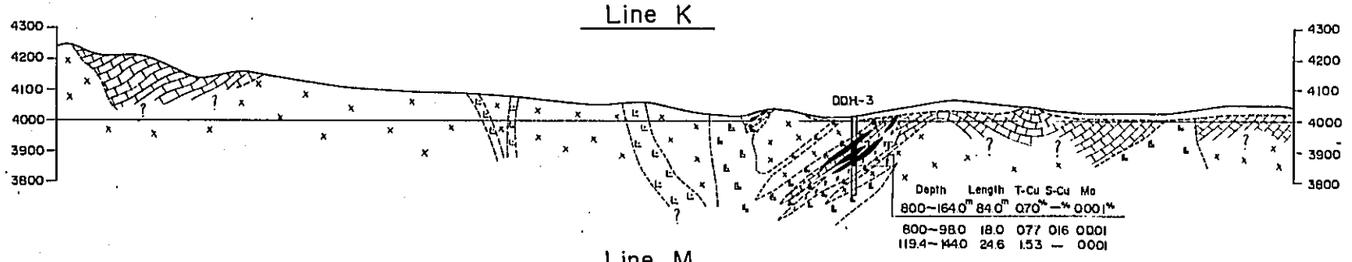
Line C



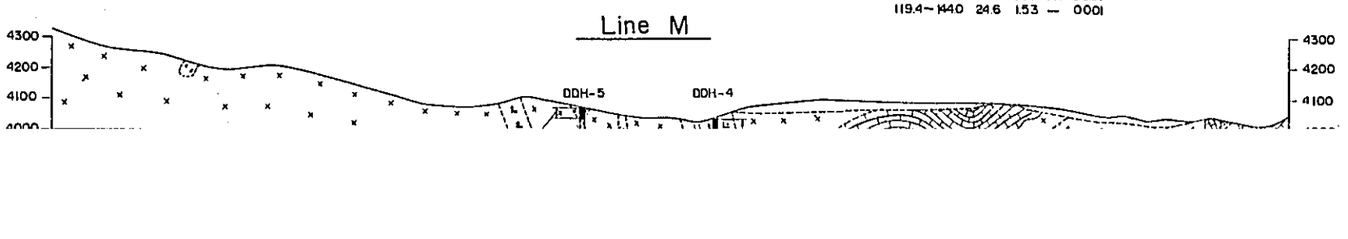
Line F



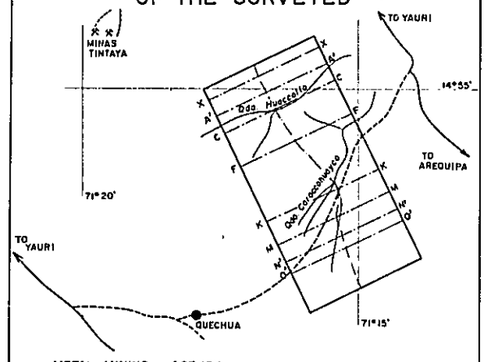
Line K



Line M



GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)
GEOLOGICAL PROFILE
OF THE SURVEYED



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

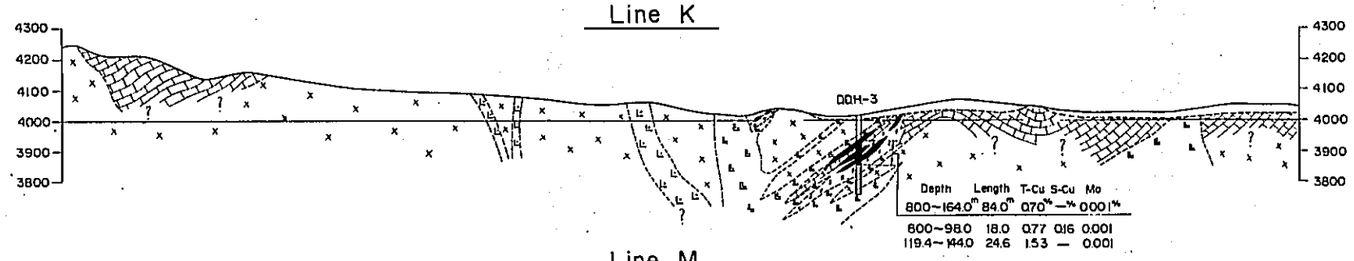
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

0 200 400 600 800 1,000m
Scale 1 : 10,000

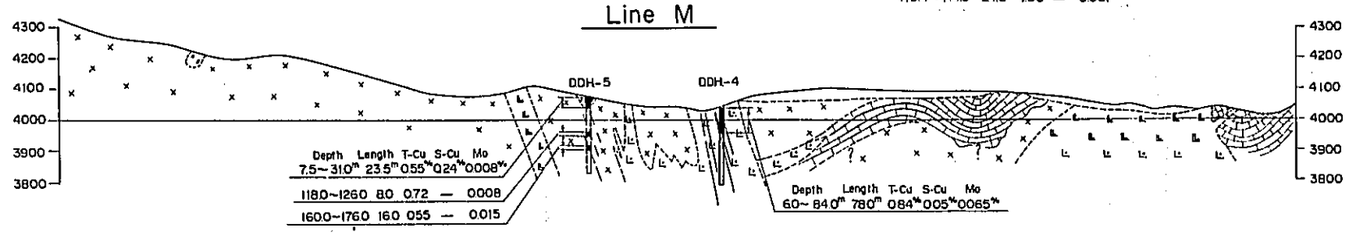
LEGEND

- Alluvium / Glacial deposit
- Limestone
- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite

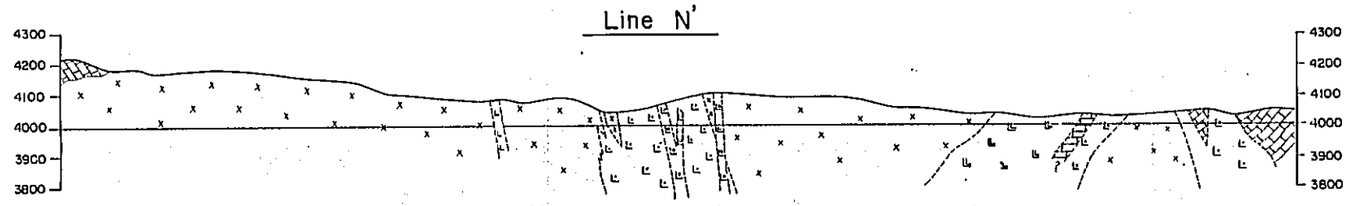
Line K



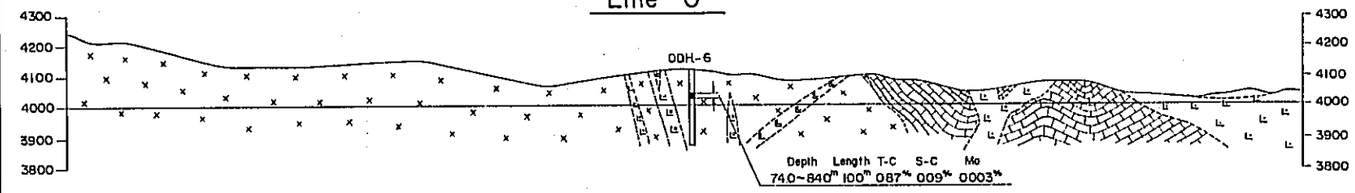
Line M



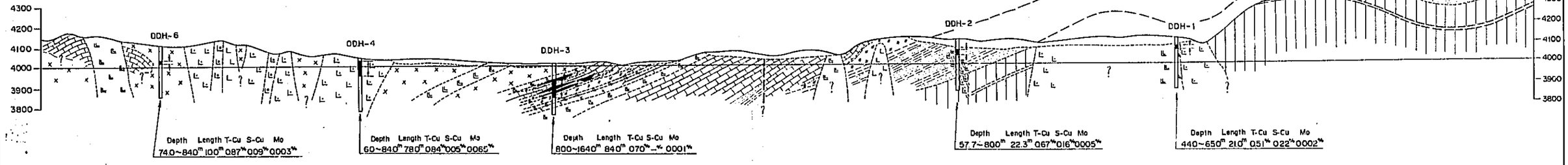
Line N'



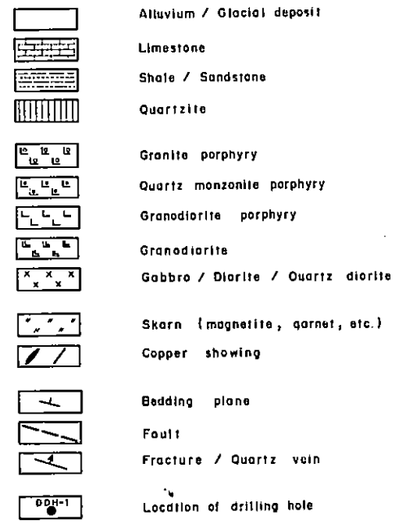
Line O'



Line D.D.H.-6~D.D.H.-4~D.D.H.-3~D.D.H.-2~D.D.H-1



LEGEND



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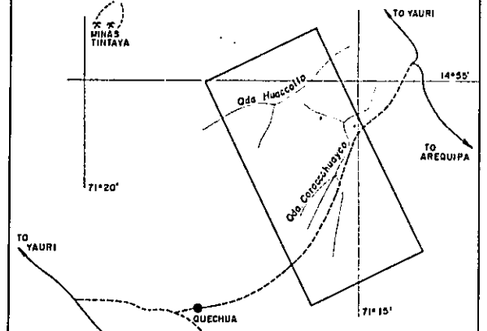
PL. I－3

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE Ⅲ)

ALTERATION MAP OF THE COROCCOHUAYCO-HUACCOLLO AREA



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

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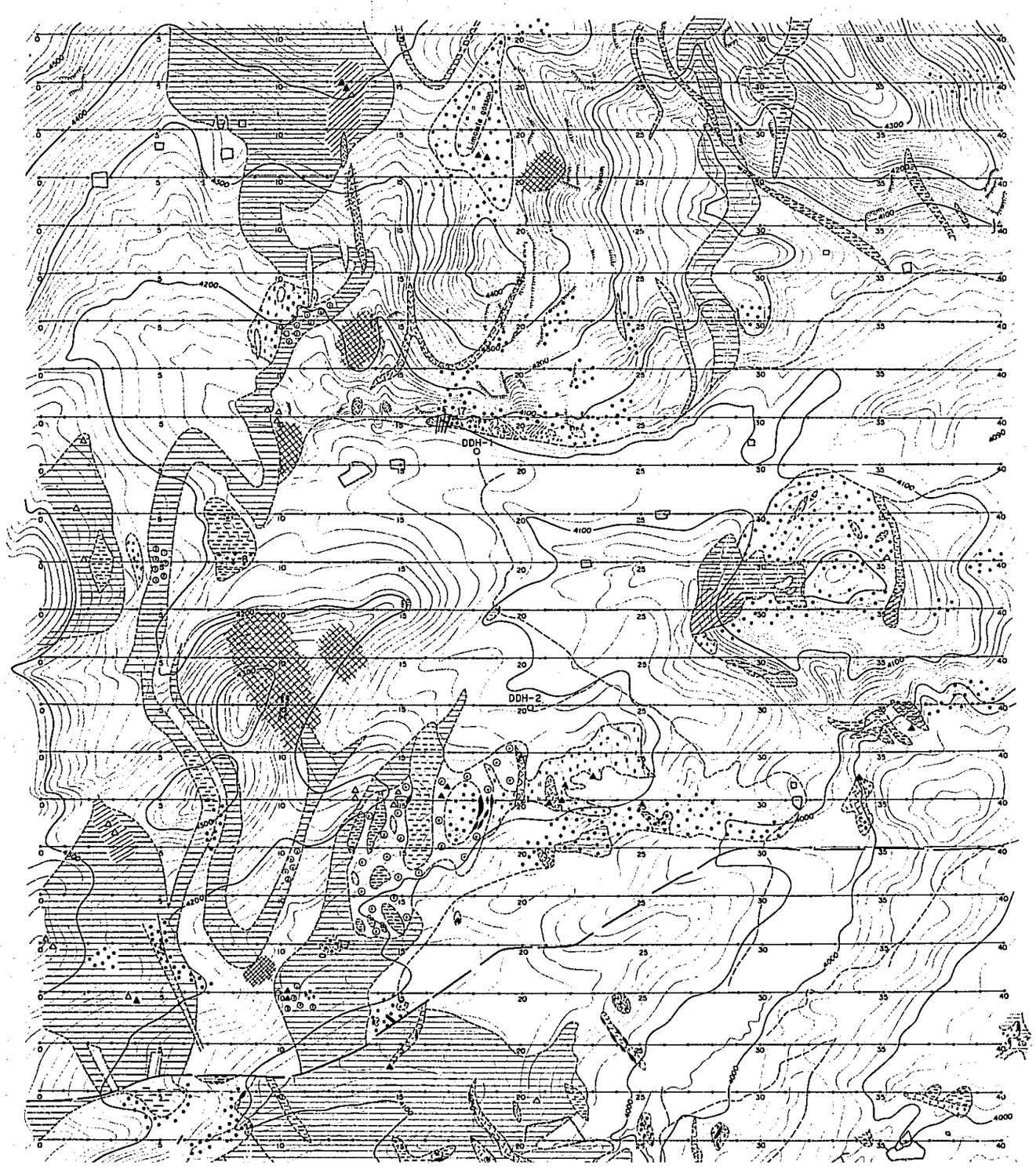


0 200 400 600 800 1,000m

Scale 1 : 10,000

LEGEND.

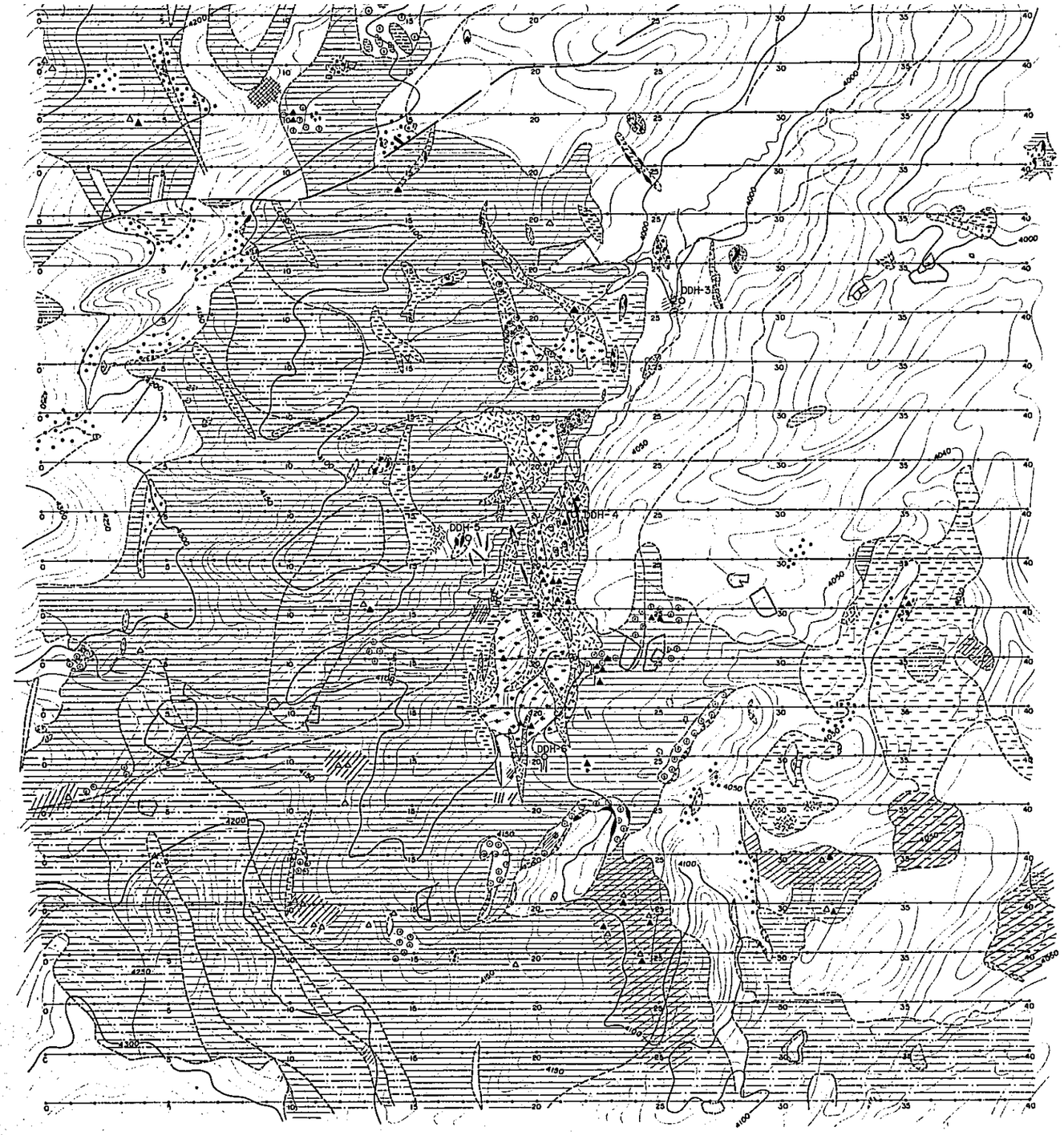
1 : Clear alteration

2 : Very weak or local alteration

1 2

Silicification

Argillization and / or sericitization



LEGEND.

1 : Clear alteration

2 : Very weak or local alteration

1 2

Silicification

Argillization and / or sericitization

Skarnization or contact metasomatic alteration

Chloritization frequently associated with epidotization

Carbonitization

Copper mineralization including supergene ores

Pyritization rarely with pyrrhotite

Highly fractured and limonite - filled zone

Limonitization

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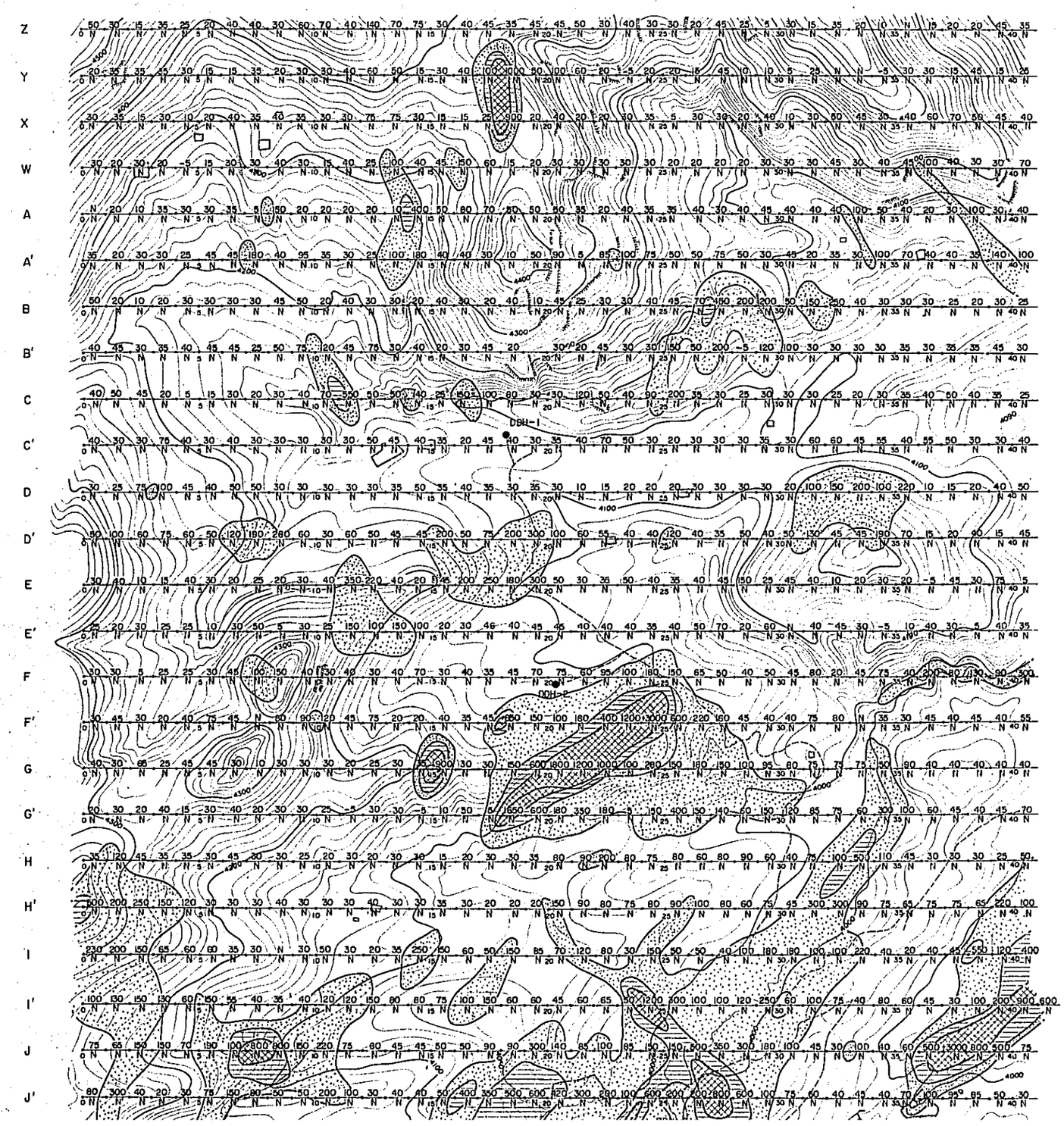
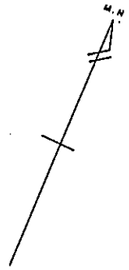
PL. I-4

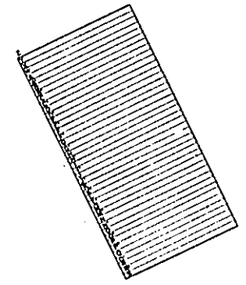




GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE Ⅲ)

GEOCHEMICAL MAP OF THE COROCCOHUAYCO-HUACCOLLO AREA



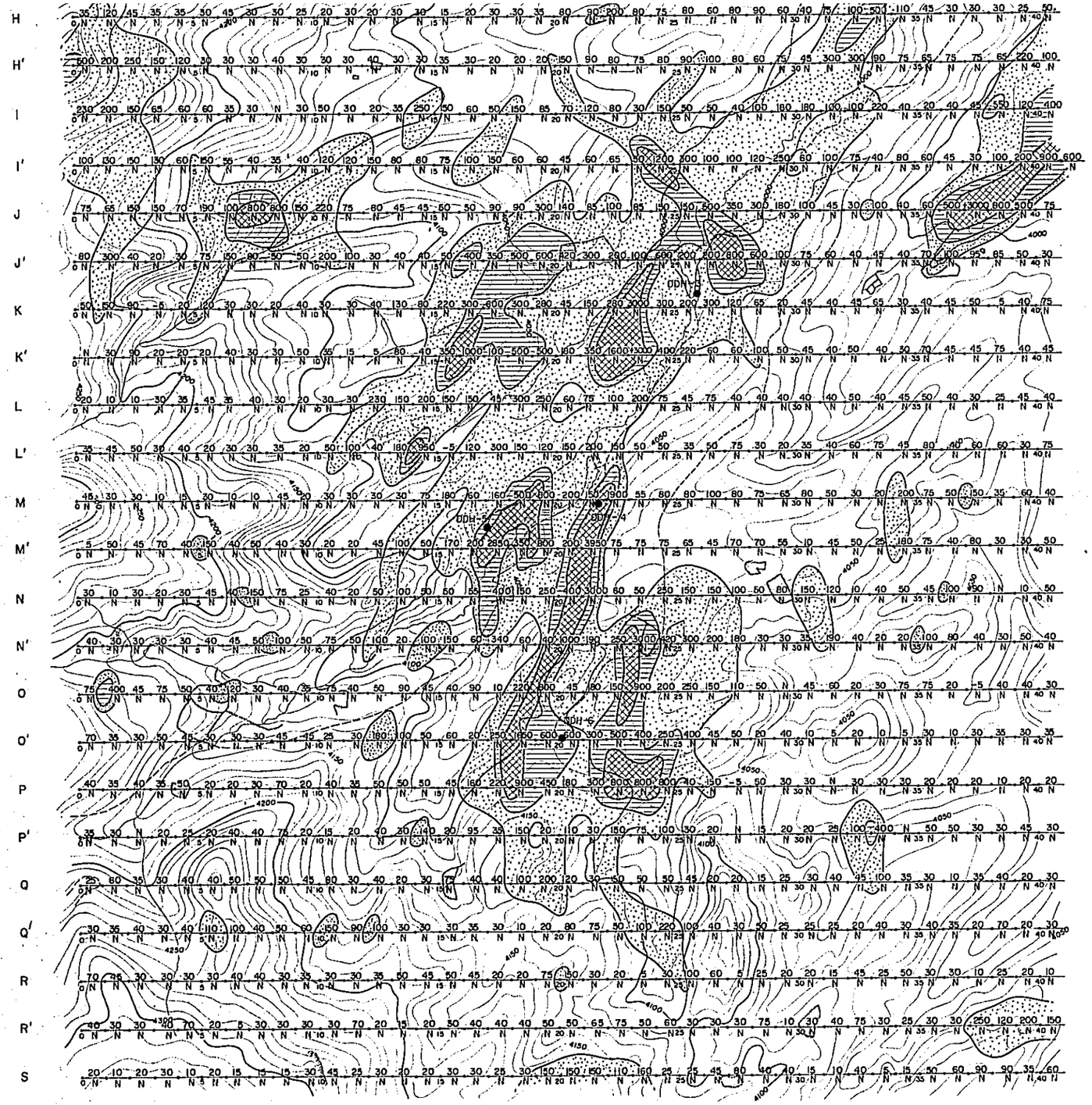
METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

0 200 400 600 800 1,000m
Scale 1 : 10,000

LEGEND

- ∘ ---- SAMPLING POINT
- 300/N ---- COPPER CONTENT ppm / MOLIBDENUM CONTENT ppm
- N ---- NIL
- ● ---- DRILLING HOLE



LEGEND

- ∘ ---- SAMPLING POINT
- 300/N ---- COPPER CONTENT ppm / MOLIBDENUM CONTENT ppm
- N ---- NIL
- ● ---- DRILLING HOLE

INDEX OF COPPER CONTENT

660 ~ 3,000+ ppm	($\bar{X}+2\sigma$ = 662 ppm)
360 ~ 660 ppm	($\bar{X}+\sigma$ = 363 ppm)
100 ~ 360 ppm	($\bar{X}$ = 104 ppm)
N ~ 100 ppm	

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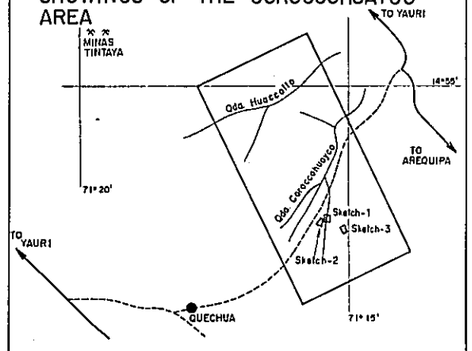
PL. I – 5

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE Ⅲ)

SKETCH MAP OF MAIN MINERAL SHOWINGS OF THE COROCCOHUAYCO AREA



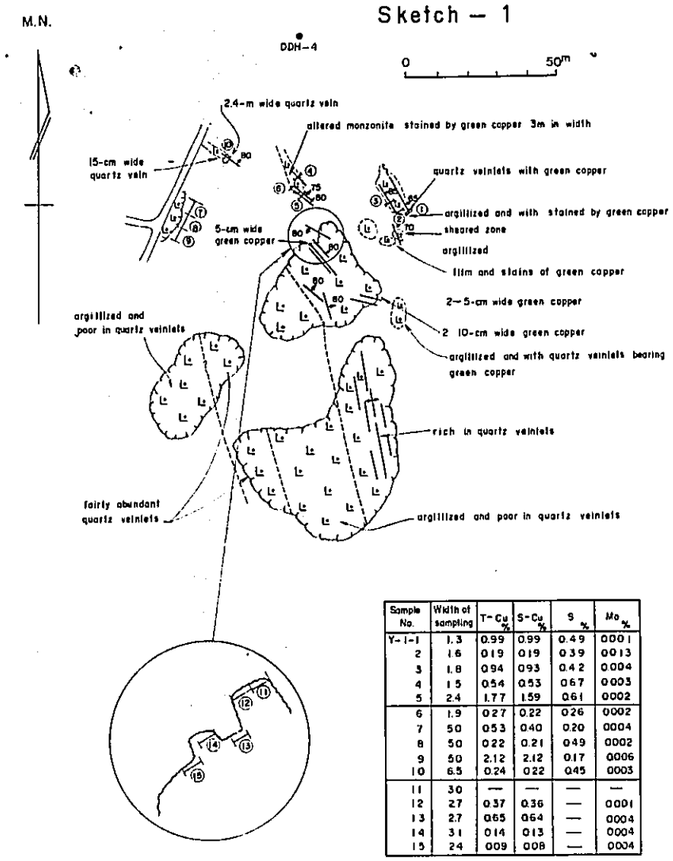
METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

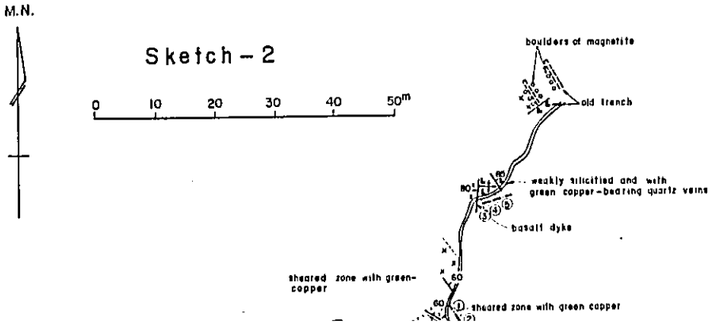
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Sketch – 1

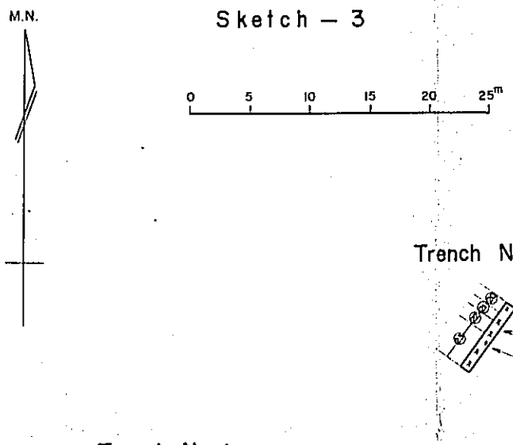


Sample No.	Width of sampling	T-Cu %	S-Cu %	S %	Mo %
Y-1-1	1.3	0.99	0.99	0.49	0001
2	1.6	0.19	0.19	0.39	0013
3	1.8	0.94	0.93	0.42	0004
4	1.5	0.54	0.53	0.67	0003
5	2.4	1.77	1.59	0.61	0002
6	1.9	0.27	0.22	0.26	0002
7	5.0	0.53	0.40	0.20	0004
8	5.0	0.22	0.21	0.49	0002
9	5.0	2.12	2.12	0.17	0006
10	6.5	0.24	0.22	0.45	0003
11	3.0	—	—	—	—
12	2.7	0.37	0.36	—	0001
13	2.7	0.65	0.64	—	0004
14	3.1	0.14	0.13	—	0004
15	2.4	0.09	0.08	—	0004

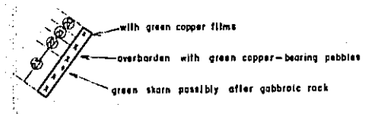
Sketch – 2



Sketch – 3

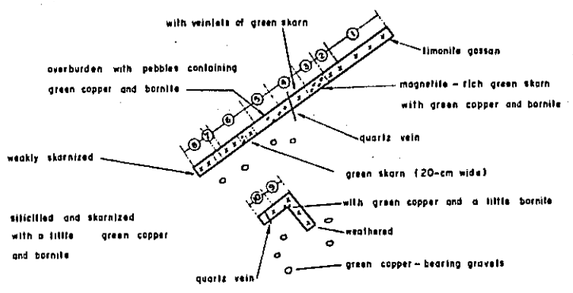


Trench No. 5



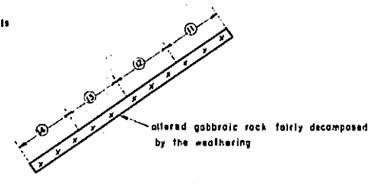
Point N-22

Trench No. 1

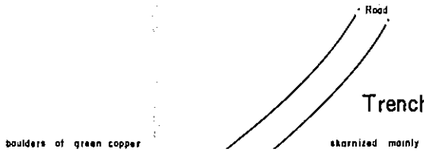


Trench No. 2

Trench No. 3



Sample No	Width of sampling	T-Cu %	S-Cu %	S %	Mo %
N-22-1	5.0	0.40	0.28	1.27	0001
2	1.4	0.33	0.23	0.79	0002
3	2.0	1.70	1.69	0.99	0002



Trench No.4

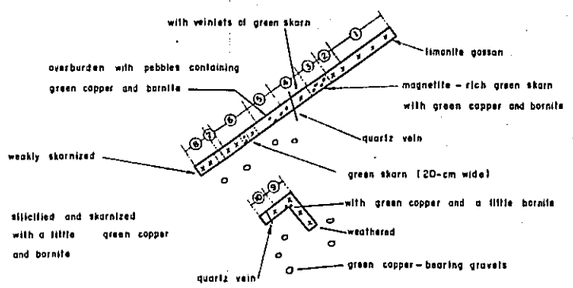
skarnized mainly by epidote

LEGEND

- gabbroic rock
- quartz monzonite porphyry
- porphyritic granodiorite
- skarn
- quartz veinlit / vein
- float gravels

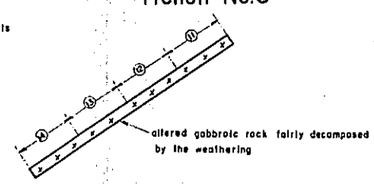
N-22

Trench No. 1



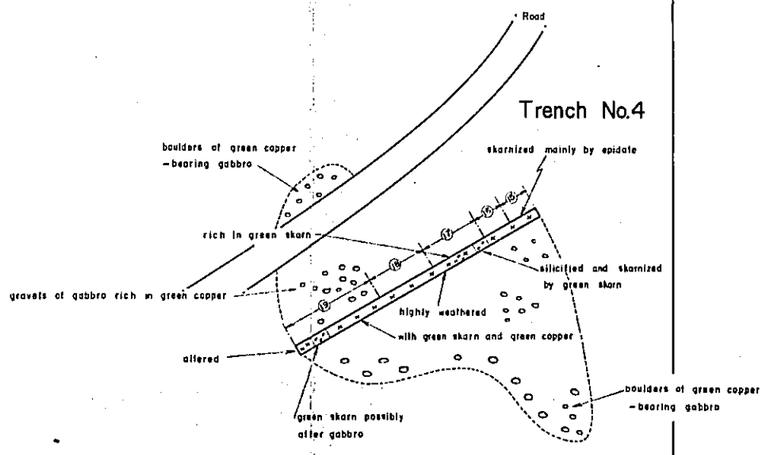
Trench No. 2

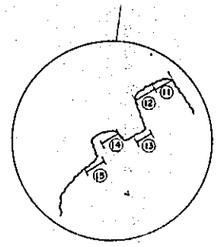
Trench No. 3



Sample No.	Width of sampling	T-Cu %	S-Cu %	S %	Mo %
N-22-1	5.0	0.40	0.28	1.27	0.001
2	1.4	0.33	0.23	0.79	0.002
3	2.0	1.70	1.69	0.99	0.002
4	2.6	0.99	0.87	0.60	0.003
5	2.3	1.60	1.50	1.39	0.010
6	3.6	0.70	0.58	0.39	0.002
7	0.5	1.16	1.11	0.93	0.003
8	2.3	0.53	0.45	0.11	0.001
9	1.6	3.97	3.85	0.31	0.005
10	1.4	1.91	1.83	0.03	0.004
11	5.0	0.32	0.26	0.10	0.002
12	5.0	0.34	0.27	1.20	0.001
13	5.0	0.51	0.43	1.30	0.002
14	5.0	0.66	0.61	1.47	0.003
15	2.5	0.17	0.13	1.33	0.001
16	2.5	0.22	0.18	0.77	0.002
17	5.0	0.11	0.09	0.95	0.002
18	5.0	0.48	0.43	0.79	0.003
19	8.0	0.49	0.34	0.85	0.002
20	1.2	1.23	1.14	0.76	0.001
21	0.6	5.11	4.89	0.91	0.007
22	1.3	5.09	4.97	0.64	0.005
23	3.5	1.56	1.38	1.09	0.004

Trench No. 4





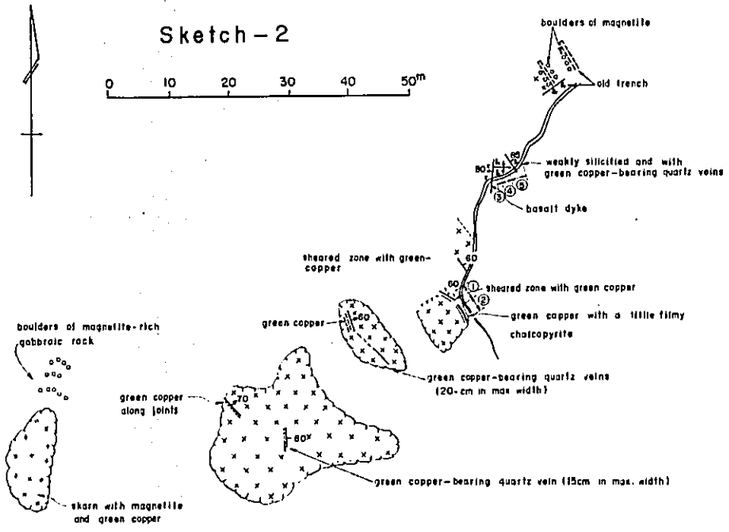
Sample No.	Width of sampling	T-Cu %	S-Cu %	S %	Mo %
Y-1-1	1.3	0.99	0.99	0.49	0.001
2	1.6	0.19	0.19	0.39	0.013
3	1.8	0.94	0.93	0.42	0.004
4	1.5	0.54	0.53	0.67	0.003
5	2.4	1.77	1.59	0.61	0.002
6	1.9	0.27	0.22	0.26	0.002
7	5.0	0.53	0.40	0.20	0.004
8	5.0	0.22	0.21	0.49	0.002
9	5.0	2.12	2.12	0.17	0.006
10	6.5	0.24	0.22	0.45	0.003
11	3.0	—	—	—	—
12	2.7	0.37	0.36	—	0.001
13	2.7	0.65	0.64	—	0.004
14	3.1	0.14	0.13	—	0.004
15	2.4	0.09	0.08	—	0.004

Point M-17

M.N.

Sketch - 2

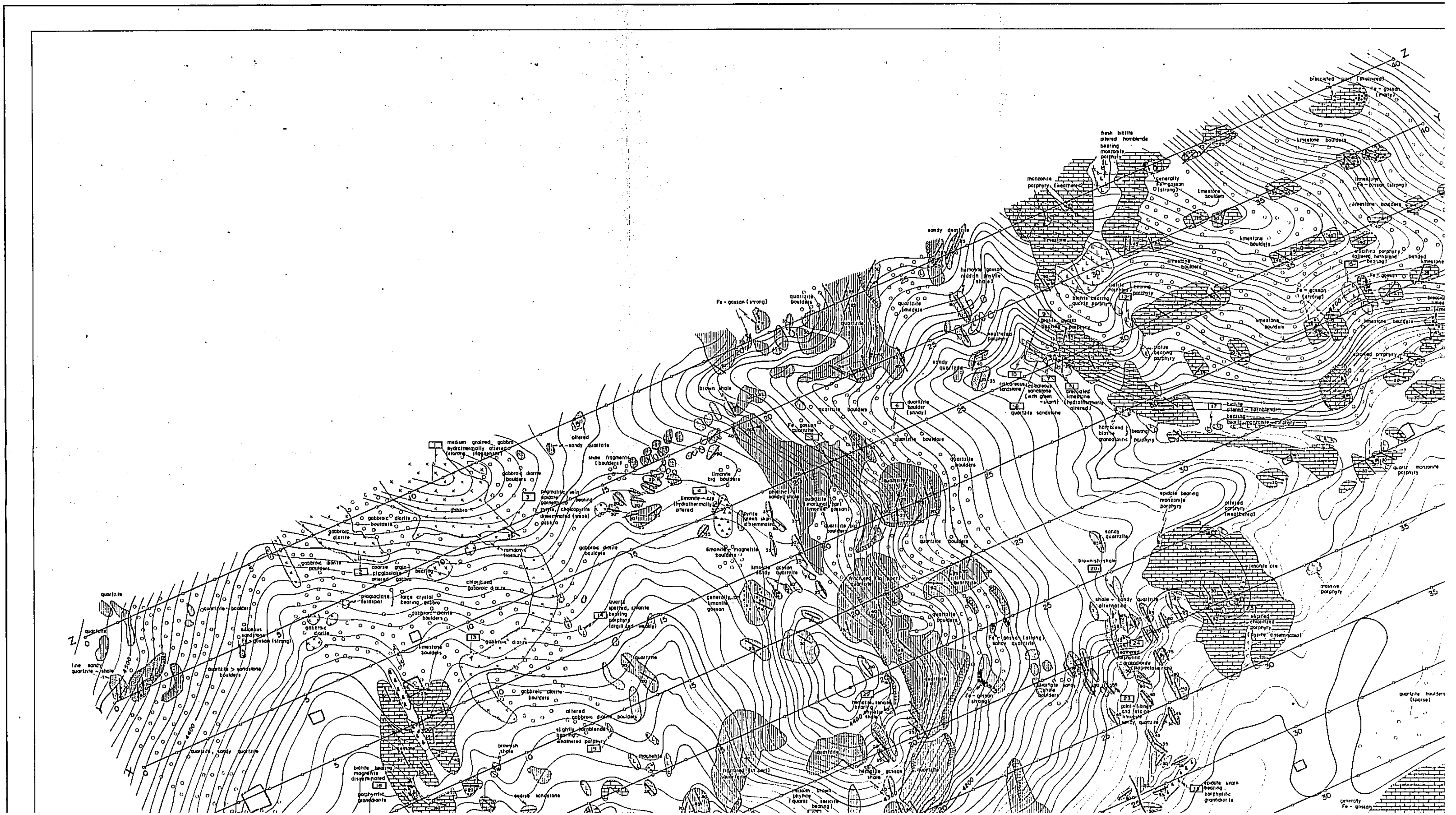
0 10 20 30 40 50m



Sample No	Width of sampling	T-Cu %	S-Cu %	S %	Mo %
M-18-1	5.0	0.50	0.39	0.86	0.002
2	5.0	0.28	0.27	1.36	0.014
3	1.5	0.47	0.38	0.78	0.003
4	3.5	0.78	0.74	0.87	0.010
5	5.0	0.42	0.40	0.53	0.003

LEGEND

- gabbroic rock
- quartz monzonite porphyry
- porphyritic granodiorite
- skarn
- quartz veinlit / vein
- float gravels



brecciated
Fe - gossan (marly)
fresh biotite altered hornblende bearing monzonite porphyry
monzonite porphyry (weathered)
generally Fe - gossan (strong)
limestone boulders
limestone
limestone boulders
sandy quartzite
limonite gossan reddish phyllite shale
biotite bearing quartz porphyry
Fe - gossan (strong)
quartzite boulders
quartzite boulders
weathered porphyry
biotite bearing porphyry
sandy quartzite
calcareous sandstone
calcareous sandstone (with green skarn)
brecciated limestone (hydrothermally altered)
quartzite sandstone
quartzite boulder (sandy)
brown shale
Fe - gossan quartzite
quartzite boulders
biotite altered - hornblende bearing quartz monzonite porphyry
hornblende biotite granodioritic porphyry
quartz monzonite porphyry
medium grained gabbro hydrothermally altered (strong magnetism)
altered
sandy quartzite
shale fragments (boulders)
gabbroic diorite boulders
limonite big boulders
pegmatitic vein epidote garnet bearing pyrite, chalcopyrite disseminated (weak) gabbro
limonite - ore (hydrothermally altered)
pyrite green skarn disseminated
quartzite (marginal part limonite gossan)
gabbro
gabbroic diorite
gabbroic diorite
random fracture
gabbroic diorite boulders
limonite - magnetite boulders
limonite gossan sandy quartzite
epidote bearing monzonite porphyry
altered porphyry (weathered)
sandy quartzite
brownish shale
limonite ore
massive porphyry
gabbroic diorite boulders
coarse grain plagioclase altered gabbro
chloritized gabbroic diorite
large crystal bearing gabbro
plagioclase feldspar
gabbroic diorite boulders
quartz spotted, chlorite bearing porphyry (argillized weakly)
generally limonite gossan
fractured (in part) quartzite
quartzite boulders
shale - sandy quartzite boulders
chloritized porphyry (pyrite disseminated)
quartzite
siliceous sandstone Fe - gossan (strong)
gabbroic diorite
limestone boulders
gabbroic diorite
fine sandy quartzite - shale
quartzite > sandstone boulders
Fe - gossan (strong) sandy quartzite
quartzite
porphyritic granodiorite (plagioclase rich)
limonite sandy quartzite
gabbroic diorite boulders
altered gabbroic diorite boulders
slightly hornblende bearing weathered porphyry
hematite, sericite bearing phyllite shale
Fe - gossan (strong)
quartzite boulders (sparse)
quartzite, sandy quartzite
limestone
brownish shale
magnetite
fractured (in part) quartzite
hematite gossan
biotite bearing magnetite disseminated
porphyritic granodiorite
coarse sandstone
reddish brown phyllite (quartz sericite bearing)
epidote skarn bearing porphyritic granodiorite
generally Fe - gossan

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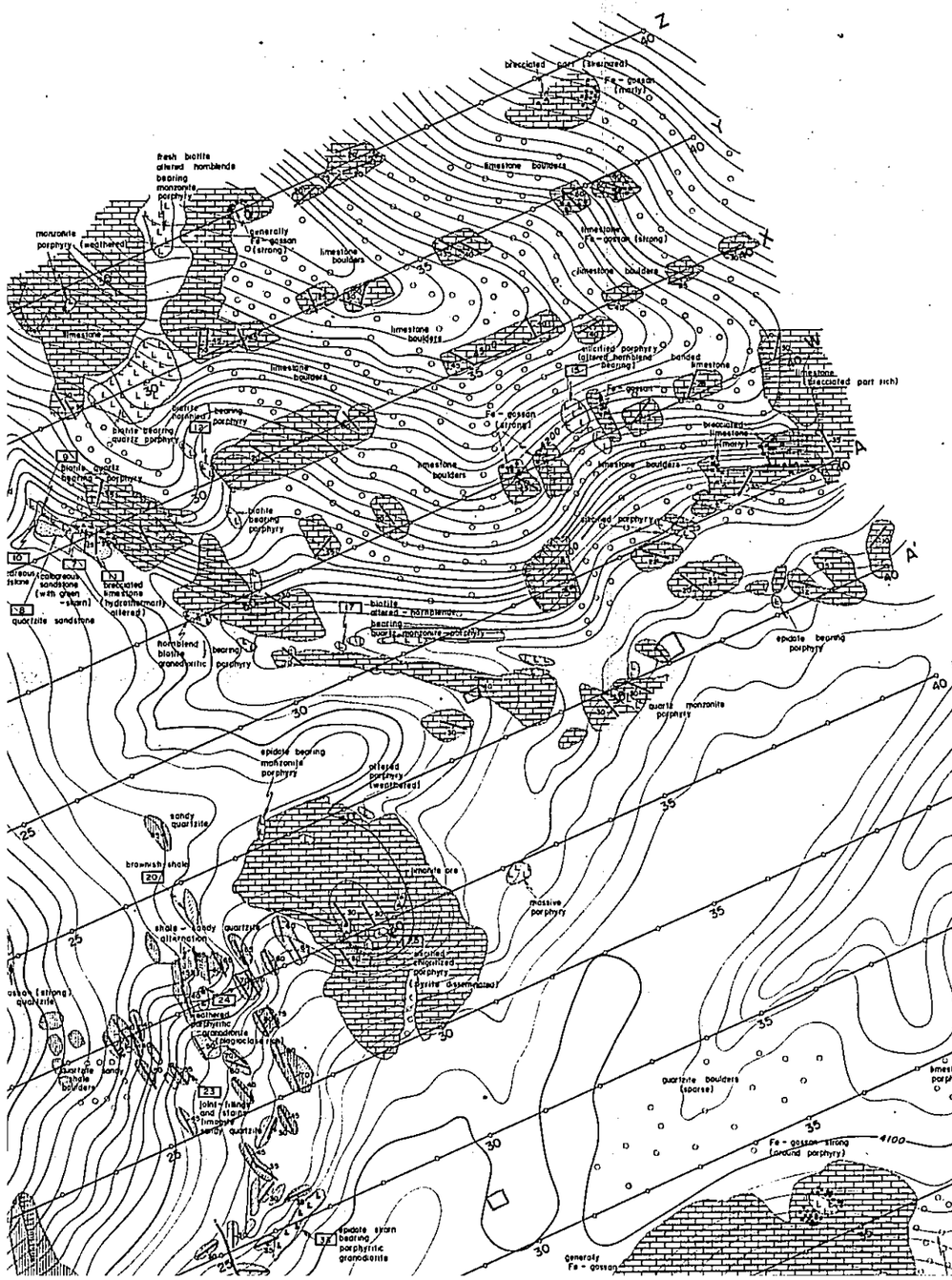


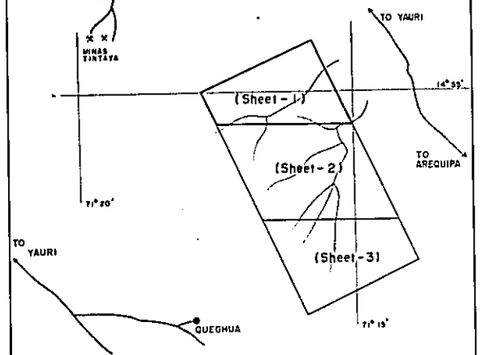
PL. I-6

(Sheet-1)

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE III)

SKETCH AND SAMPLING MAP



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
MARCH 1974

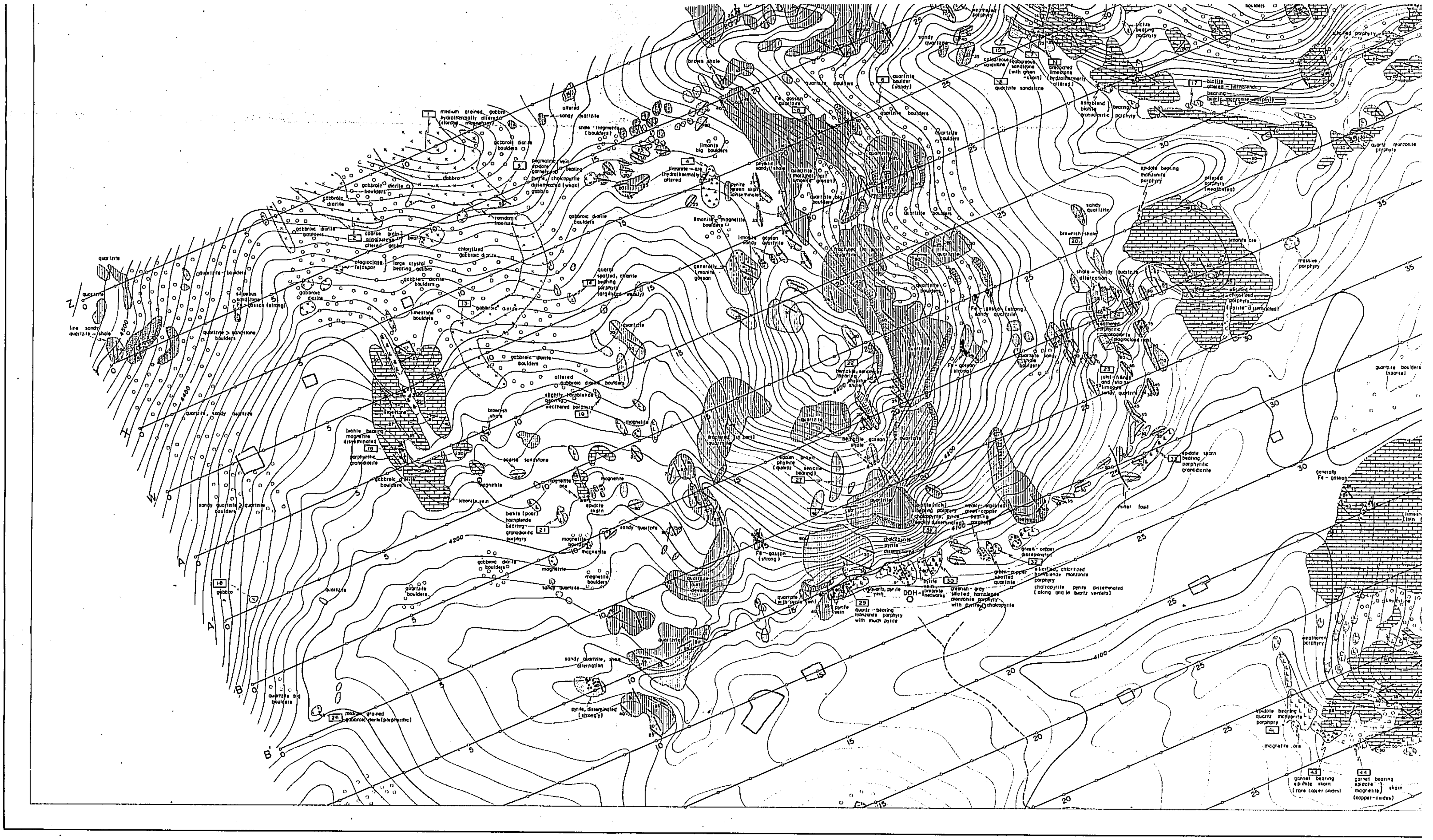
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

Scale 1:5,000

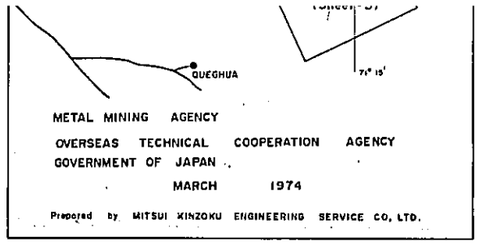
0 100 200 300 400 500M

LEGEND

- alluvium, glacial deposit
- limestone
- sandstone
- sandy shale
- shale
- sandy quartzite
- quartzite
- andesite
- rhyolite
- gabbro ~ diorite
- quartz monzonite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet e.t.c.)



medium grained gabbro
hydrothermally altered
(strong magnetism)
altered
sandy quartzite
shale fragments
(boulders)
gabbroic diorite
boulders
pegmatitic vein
epidote
pyrite, chalcopyrite
disseminated (weak)
gabbro
gabbroic diorite
random fracture
limonite - ore
(hydrothermally)
altered
pyrite
green skarn
disseminated
limonite, magnetite
big boulders
limonite gosson
sandy quartzite
gabbroic diorite
boulders
coarse grain
plagioclase
altered gabbro
chloritized
gabbroic diorite
plagioclase
feldspar
large crystal
bearing gabbro
quartz
spotted, chlorite
bearing
porphyry
(argillized weakly)
generally
limonite
gosson
quartzite
quartzite - boulders
siliceous
sandstone
Fe - gosson (strong)
fine sandy
quartzite - shale
quartzite > sandstone
boulders
limestone
boulders
gabbroic diorite
boulders
altered
gabbroic diorite boulders
slightly hornblende
bearing
weathered porphyry
brownish
shale
quartzite, sandy quartzite
biotite bearing
magnetite
disseminated
porphyritic
granodiorite
gabbroic diorite
boulders
coarse sandstone
magnetite
limonite vein
magnetite
ore
biotite (poor)
hornblende
bearing
granodiorite
porphyry
epidote
skarn
sandy quartzite
magnetite
boulders
magnetite
gabbroic diorite
boulders
quartzite
boulders
sandy quartzite
magnetite
gabbro
quartzite big
boulders
medium grained
gabbroic diorite (porphyritic)
sandy quartzite, shale
alternation
pyrite, disseminated
(strongly)
brown shale
Fe - gosson
quartzite
quartzite boulders
quartzite
boulder
(sandy)
phyllitic
sandy shale
fractured (in part)
hematite, sericite
bearing
phyllite
shale
reddish
phyllite
(quartz
sericite
bearing)
Fe - gosson
(strong)
quartzite
quartzite
(joint
develop)
chalcopyrite
pyrite
disseminated
quartz, pyrite
vein
pyrite
vein
quartz - bearing
monzonite porphyry
with much pyrite
DDH-1
pyrite
limonite
networks
greenish - gray
silicified hornblende
monzonite porphyry
with pyrite, chalcopyrite
biotite (rich)
bearing porphyry
weakly argillized
green-copper
bearing
porphyry
green - copper
disseminated
green-copper
spotted
quartzite
silicified, chloritized
hornblende monzonite
porphyry
chalcopyrite pyrite disseminated
(along and in quartz veinlets)
calcareous
sandstone
calcareous
sandstone
(with green
skarn)
brecciated
limestone
(hydrothermally
altered)
quartzite sandstone
hornblende
biotite
granodioritic
bearing
porphyry
biotite
altered - hornblende
bearing
quartz monzonite porphyry
sandy quartzite
epidote bearing
monzonite
porphyry
altered
porphyry
(weathered)
sandy
quartzite
brownish shale
limonite ore
massive
porphyry
shale - sandy quartzite
alternation
silicified
chloritized
porphyry
(pyrite disseminated)
Fe - gosson (strong)
sandy quartzite
Fe - gosson
strong
quartzite sandy
shale
boulders
weathered
porphyritic
granodiorite
(plagioclase rich)
joint - filling
and stain
limonite
sandy quartzite
epidote skarn
bearing
porphyritic
granodiorite
minor fault
generally
Fe - gosson
quartzite boulders
(sparse)
quartz monzonite
porphyry
weathered
porphyry
epidote bearing
quartz monzonite
porphyry
magnetite ore
garnet bearing
epidote skarn
(rare copper oxides)
garnet bearing
epidote
magnetite
skarn
(copper-oxides)
limestone
boulders



METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

MARCH 1974

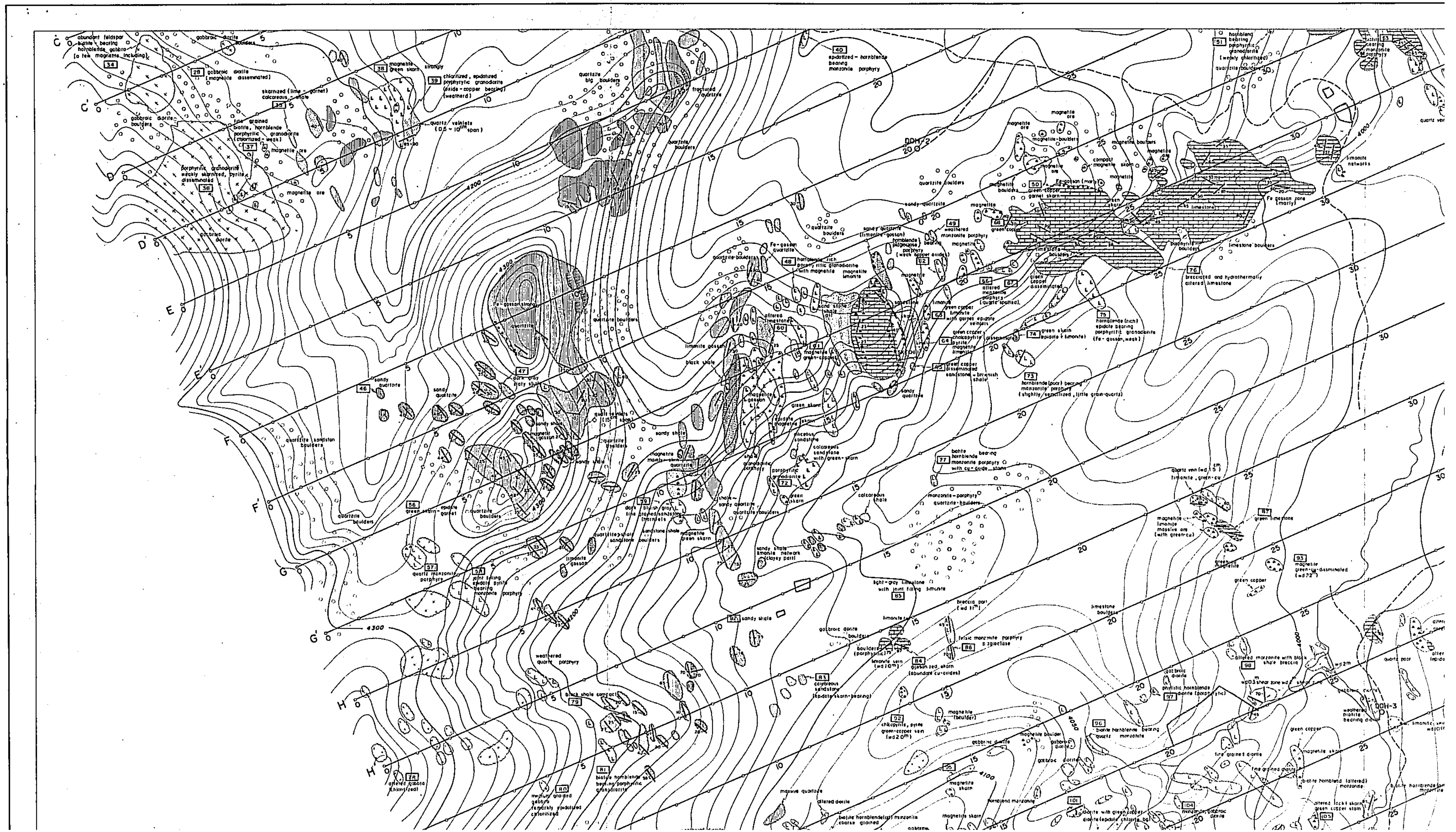
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

Scale 1:5,000

0 100 200 300 400 500M

LEGEND

- alluvium , glacial deposit
- limestone
- sandstone
- sandy shale
- shale
- sandy quartzite
- quartzite
- andesite
- rhyolite
- gabbro ~ diorite
- quartz monzonite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet e.t.c.)
- metallic mineral (chalcopyrite, magnetite e.t.c.)
- gossan
- bedding plane
- fault
- joint and fracture
- vein and veinlet
- 5 sampling position
- boulder
- outcrop
- DDH-5 drilling hole
- trench survey position
- rute
- stone wall



abundant feldspar biotite bearing hornblende gabbro (a few magnetite including)
gabbroic diorite (magnetite disseminated)
skarnized (lime - garnet) calcareous - shale
gabbroic diorite boulders
fine grained biotite, hornblende porphyritic granodiorite (chloritized - weak)
porphyritic granodiorite weakly skarnized, pyrite disseminated
magnetite ore
magnetite green skarn
chloritized, epidotized porphyritic granodiorite (oxide - copper bearing) (weathered)
quartz veinlets
quartzite big boulders
fractured quartzite
quartzite boulders
epidotized - hornblende bearing monzonite porphyry
DDH-2
hornblend bearing porphyritic granodiorite (weakly chloritized)
quartzite boulders
magnetite ore
magnetite - boulders
magnetite boulders
compact magnetite skarn
green - copper garnet skarn
Fe - gossan zone (marly)
limestone
limestone boulders
limonite networks
sandy quartzite
weathered monzonite porphyry
Fe-gossan quartzite
hornblende rich porphyritic granodiorite with magnetite
green copper disseminated
brecciated and hydrothermally altered limestone
altered monzonite porphyry (quartz spotted)
limonite with garnet epidote veinlets
hornblende (rich) epidote bearing porphyritic granodiorite (Fe - gossan, weak)
green skarn epidote + (limonite)
green copper chalcopyrite pyrite magnetite limonite
green copper disseminated sandstone ~ brownish shale
hornblende (poor) bearing monzonite porphyry (slightly silicified, little grain-quartz)
limonite gossan
black shale
sandy quartzite
dark gray platy shale
sandy shale
magnetite gossan
quartzite sandstone boulders
quartzite boulders
magnetite green skarn
calcareous sandstone with green - skarn
porphyritic granodiorite
biotite bearing hornblende monzonite porphyry with cu - oxide stains
calcareous shale
monzonite - porphyry quartzite - boulders
quartz vein (wd 1.5 cm) limonite, green - cu
magnetite limonite massive ore (with green - cu)
green limestone
epidote garnet
green skarn
quartzite boulders
quartzite-shale sandstone boulders
sandstone shale
sandy shale limonite network (clayey part)
quartz monzonite porphyry
joint filling epidote pyrite bearing monzonite porphyry
limonite gossan
light - gray limestone with joint filling limonite
breccia part
limestone boulders
magnetite green - cu disseminated
green copper
sandy shale
gabbroic diorite boulders
felsic monzonite porphyry plagioclase
limonite vein
gossanized skarn (abundant cu - oxides)
calcareous sandstone (epidote skarn - bearing)
weathered quartz porphyry
black shale contact
altered monzonite with black shale breccia
gabbroic diorite
phyritic hornblende diorite (porphyritic)
DDH-3
weathered biotite bearing diorite
green copper
chalcopyrite, pyrite green - copper vein (wd 20 m)
magnetite (boulder)
biotite hornblende bearing quartz monzonite
magnetite boulder
gabbroic diorite
fine grained diorite
magnetite skarn
biotite hornblend (altered) monzonite
altered gabbro (chloritized)
medium grained gabbro remarkly epidotized chloritized
biotite hornblende bearing porphyritic granodiorite
massive quartzite
altered diorite
biotite hornblende(rich) monzonite coarse grained
magnetite skarn
hornblend monzonite
diorite with green copper
gabbroic diorite
altered rock & skarn green copper stain
C
C'
D
D'
E
E'
F
F'
G
G'
H
H'
4300
4200
4100
4050
4000

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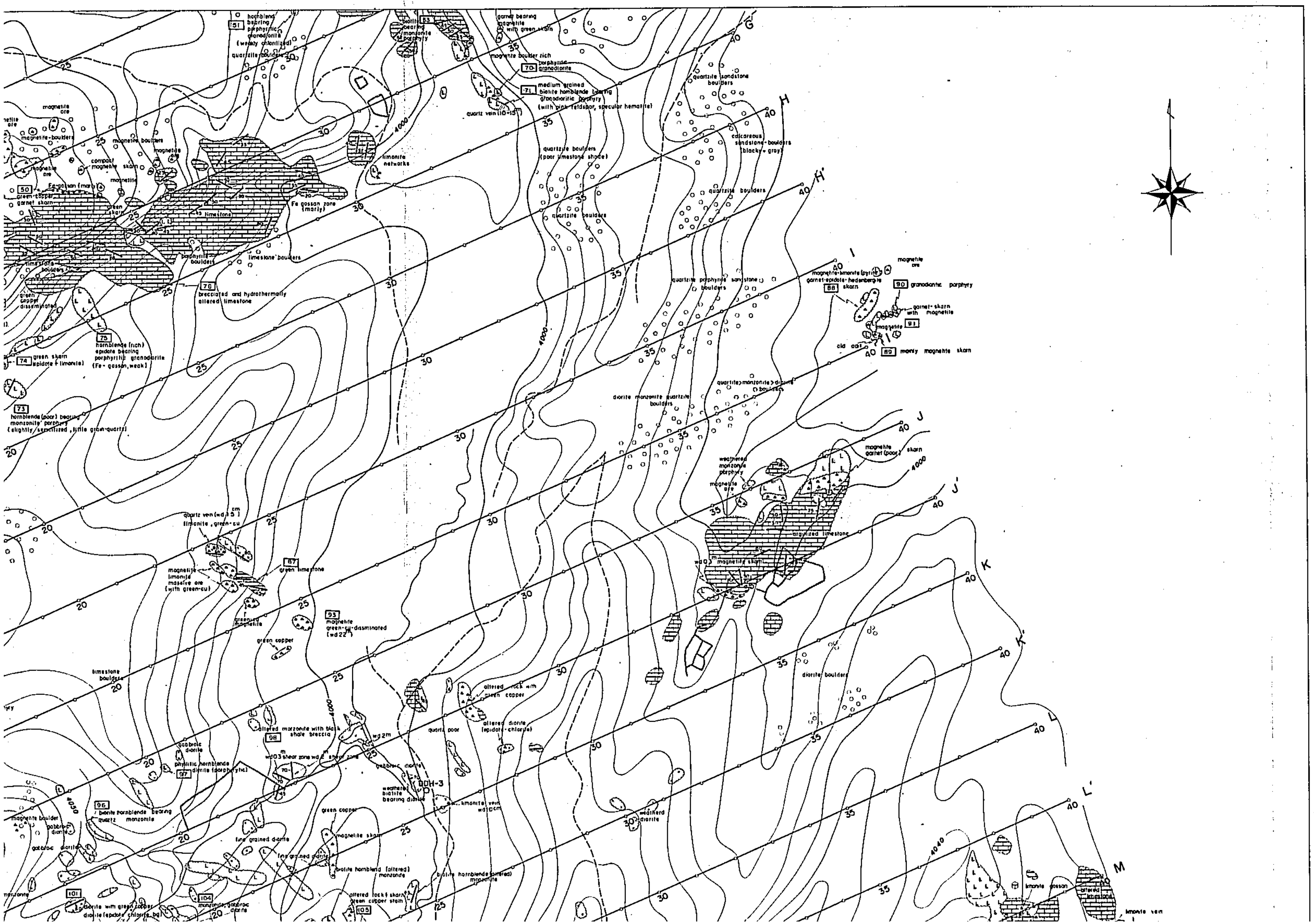


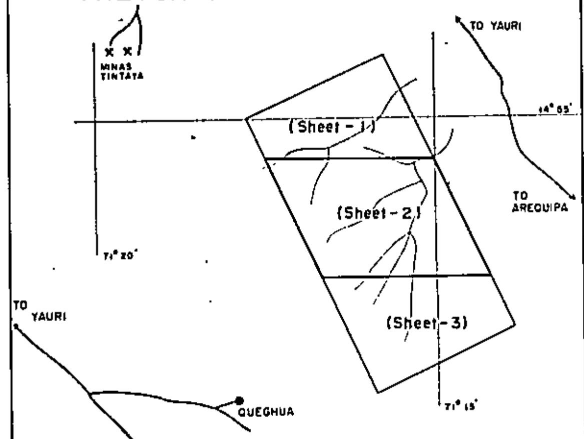
PL. I-6

(Sheet-2)

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE III)

SKETCH AND SAMPLING MAP



METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

MARCH 1974

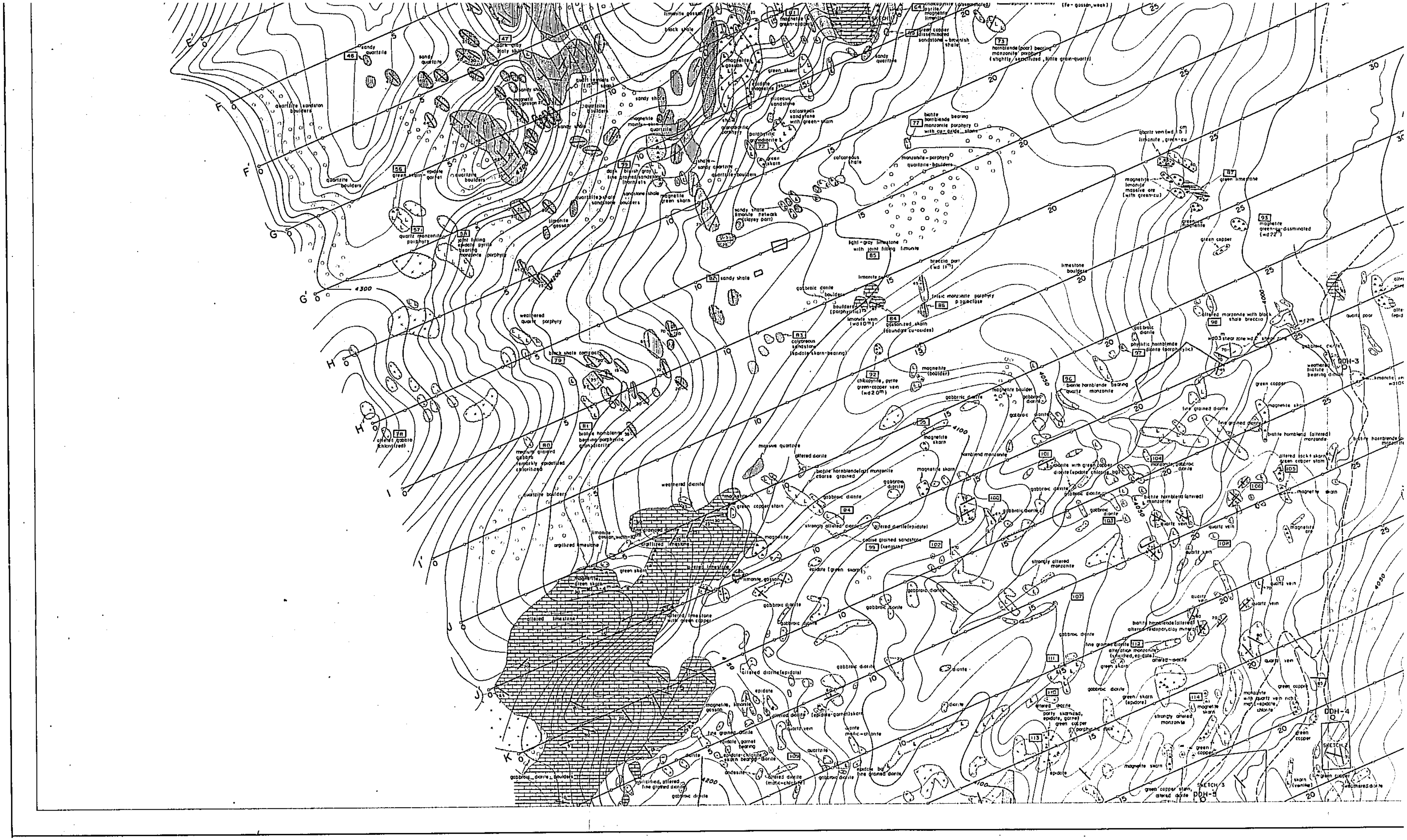
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO LTD

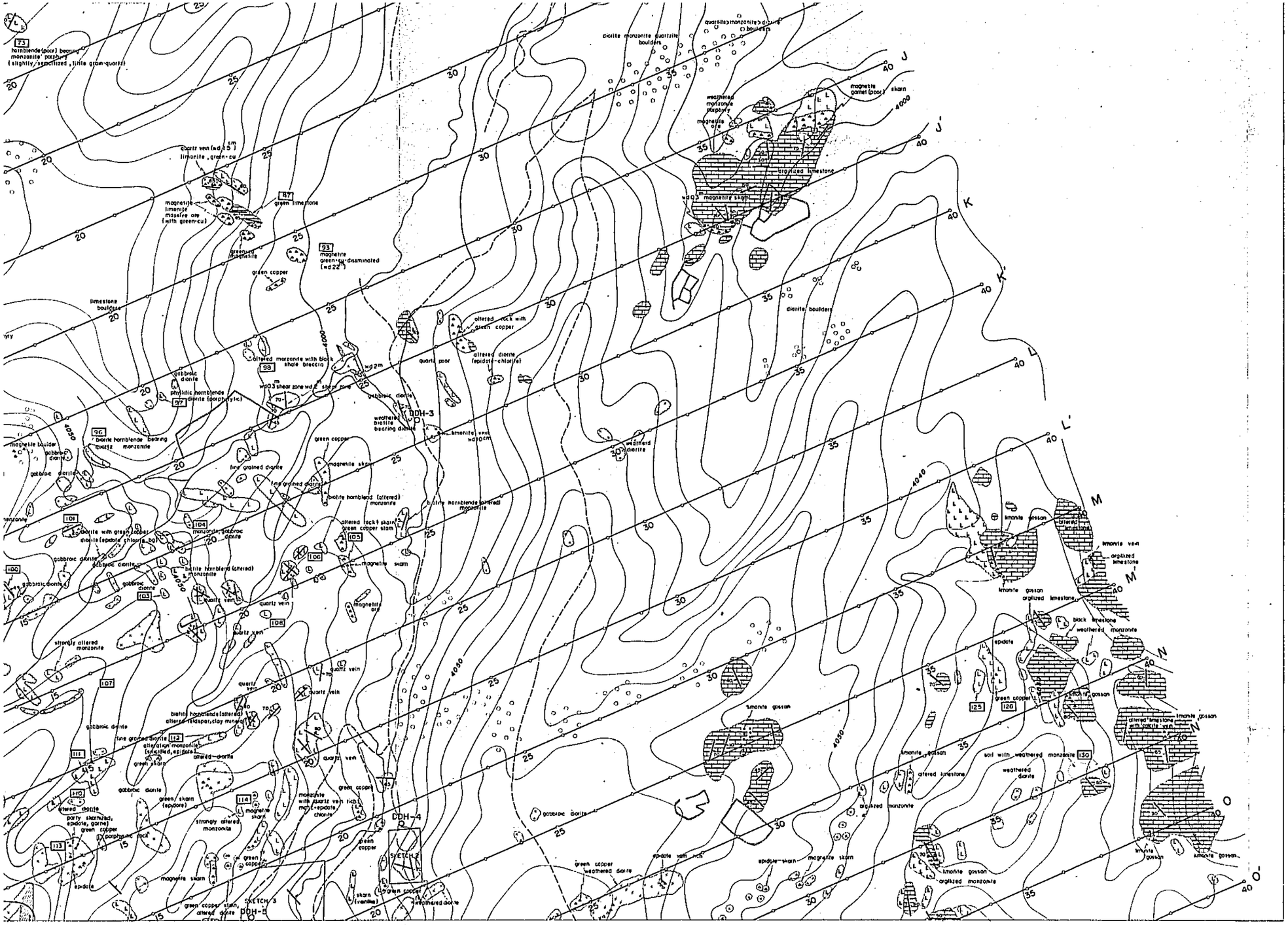
Scale 1:5,000

0 100 200 300 400 500 M

LEGEND

- alluvium, glacial deposit
- limestone
- sandstone
- sandy shale
- shale
- sandy quartzite
- quartzite
- andesite
- rhyolite
- gobbro ~ diorite
- quartz monzonite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet e.t.c.)


sandy quartzite
quartzite sandston boulders
quartzite boulders
green skarn
black shale
sandy shale
quartz monzonite porphyry
weathered quartz porphyry
black shale contact
altered gabbro (chloritized)
medium grained gabbro
quartzite boulders
argillized limestone
altered limestone
green skarn
gabbroic diorite boulders
silicified, altered fine grained diorite
gabbroic diorite
fine grained diorite
magnetite, limonite gosson
altered diorite
epidote
quartz vein
green copper skarn
altered diorite
gabbroic diorite
strongly altered monzonite
magnetite skarn
light-gray limestone with joint filling limonite
limestone boulders
monzonite-porphyry quartzite-boulders
calcareous shale
green limestone
green copper
fine grained diorite
biotite hornblend (altered) monzonite
quartz vein
strongly altered monzonite
green copper
magnetite skarn
DDH-3
DDH-4
DDH-5
SKETCH-3
SKETCH-2
4300
4200
4100
4000
5
10
15
20
25
30
E
F
F'
G
G'
H
H'
I
I'
J
J'
K



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
MARCH 1974

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- gabbro ~ diorite
- quartz monzanite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet e.t.c.)
- metallic mineral (chalcopyrite, magnetite e.t.c.)
- gossan
- bedding plane
- fault
- joint and fracture
- vein and veinlet
- 5 sampling position
- boulder
- outcrop
- DDH-5 drilling hole
- trench survey position
- rute
- stone wall

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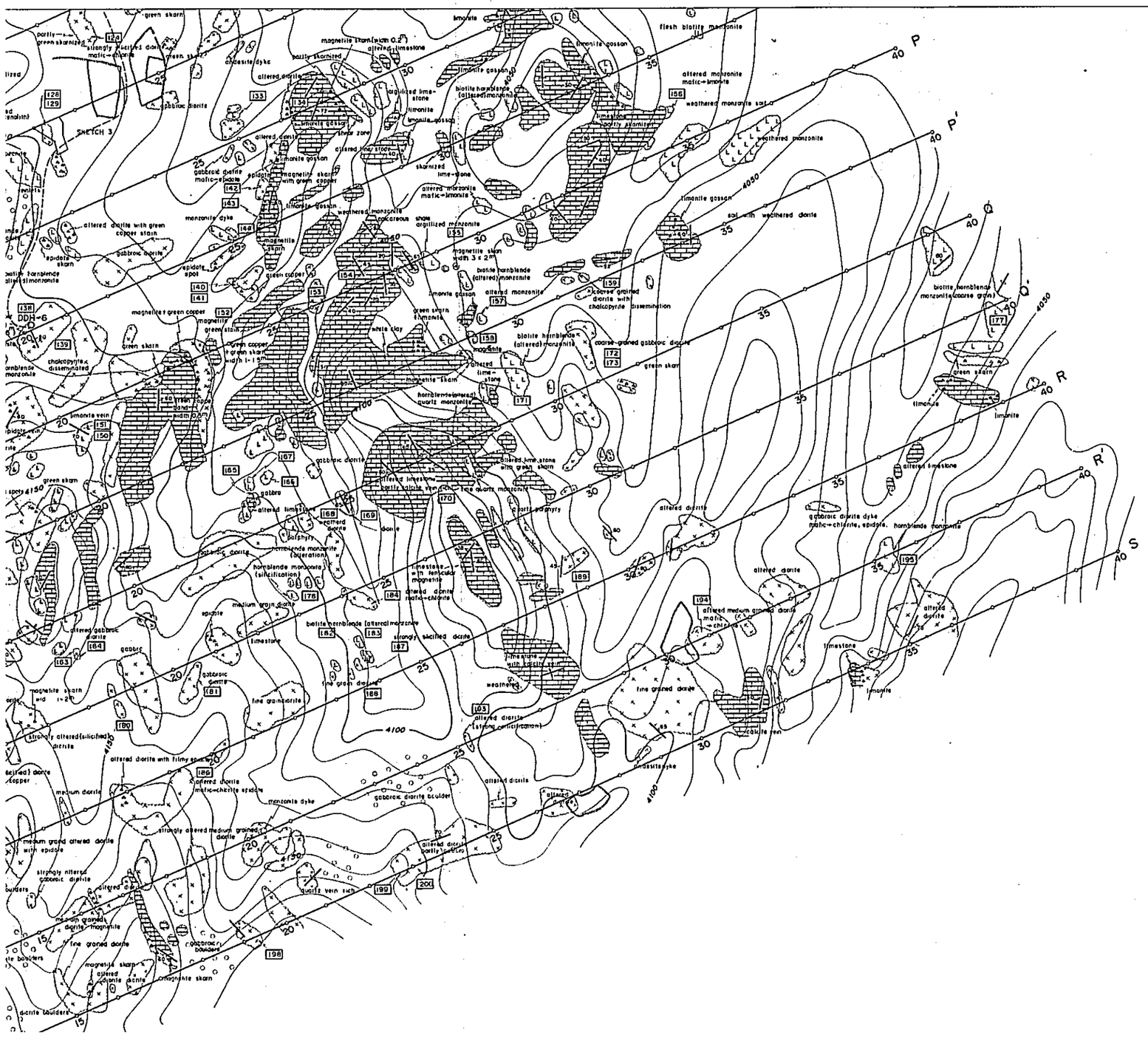


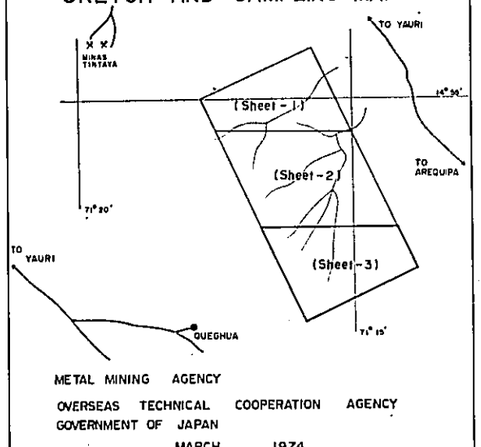
PL. I - 6

(Sheet - 3)

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE Ⅲ)

SKETCH AND SAMPLING MAP



METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

MARCH 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO. LTD.

Scale 1 : 5,000

0 100 200 300 400 500 M

LEGEND

- alluvium , glacial deposit
- limestone
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- shale
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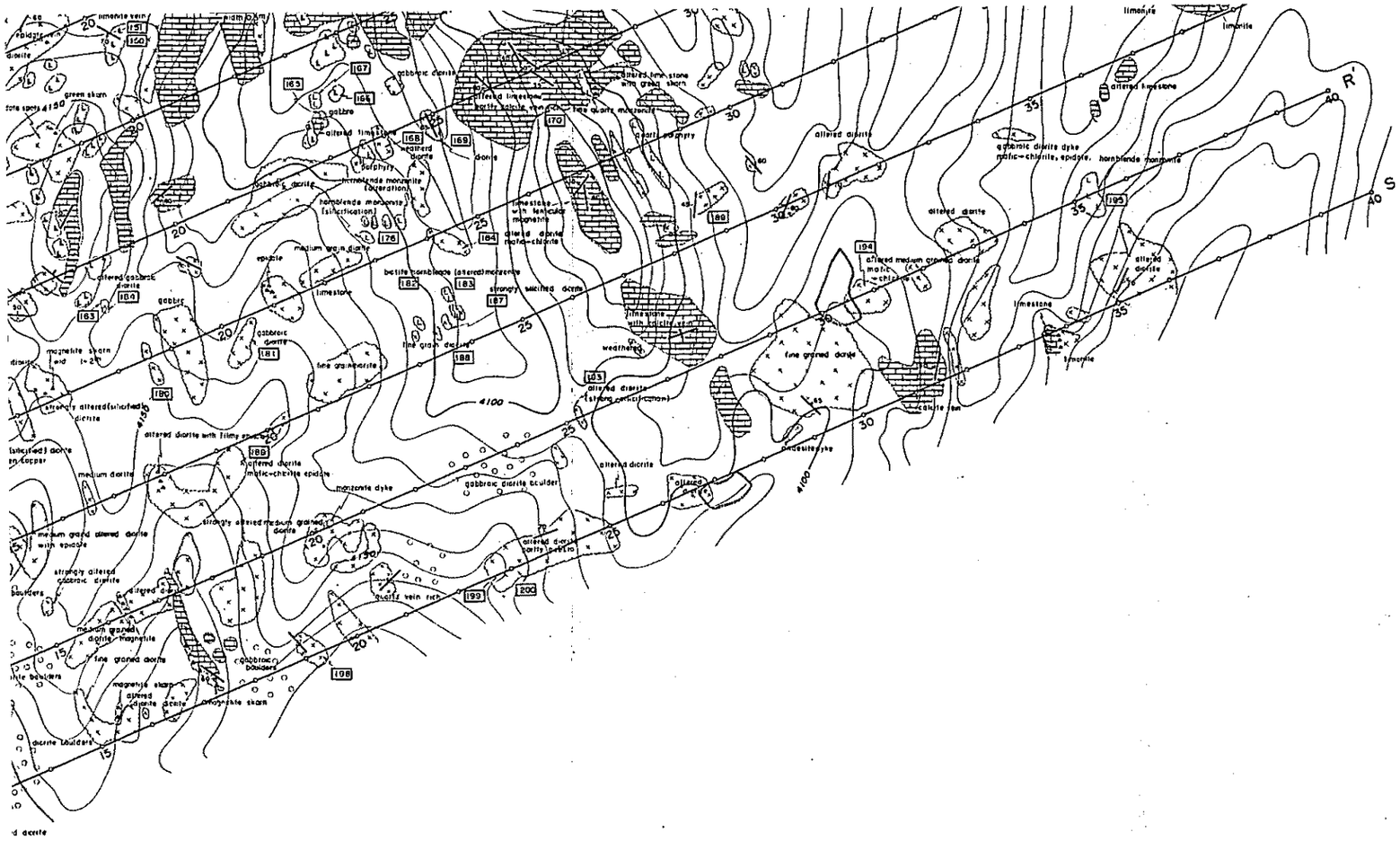
- quartzite
- andesite
- rhyolite
- gabbro ~ diorite
- quartz monzonite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet etc.)
- metallic mineral (chalcopyrite, magnetite etc.)



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
MARCH 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO. LTD.

Scale 1:5,000

0 100 200 300 400 500M

LEGEND

- alluvium, glacial deposit
- limestone
- sandstone
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- quartzite
- andesite
- rhyolite
- gabbro ~ diorite
- quartz monzonite porphyry
- porphyritic granodiorite
- granodioritic porhyry
- skarn mineral (epidote, garnet e.t.c.)
- metallic mineral (chalcopyrite, magnetite e.t.c.)
- gossan
- bedding plane
- fault
- joint and fracture
- vein and veinlet
- 5 sampling position
- boulder
- outcrop
- DDH-5 drilling hole
- trench survey position
- rute
- stone wall

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
10		Glacial deposits (?) containing abundant gravels of quartzite, and a little of limestone, shale, intrusives and andesitic volcanics in a brown, unconsolidated, ill-sorted and sandy matrix							
20									
30									
		38.5m							
40		Weathered granodiorite extremely decomposed and highly argillized	Network films and stains of limonite sparsely with green copper.	1001	1.5	0.17		0001	
				1002	2.0	032	0.28	0003	
				1003	2.0	0.30		0001	
		45.0m		1004	2.0	0.49	0.47	0.001	0.27
		Medium-grained, plagioclase-porphyritic, biotite-hornblende granodiorite	Network of limonite-chlorite veinlets with small amounts of green copper and oxidized pyrite, generally dipping 60° to 80°.	1005	2.0	0.48		0002	
50		45.0m-53.0m: fairly weathered, markedly chloritized, weakly argillized and carbonitized		1006	2.0	0.45	0.42	0001	
			51.5m	1007	2.0	025		0.001	
		53.0m-53.2m: Sheared and highly argillized	Fine network of pyrite-bearing limonite-chlorite veinlets with dips of 60° to 80°. 53.2m	1008	2.0	0.04	003	0001	
		53.2m-55.5m: moderately chloritized, weakly argillized, sericitized, carbonitized, and with "pink-to salmon-colored" plagioclase	Sparsely-penetrated pyrite-chlorite veinlets mostly dipping 70° to 80°. Weak limonitization along veinlets.	1009	2.0	0.18		0002	1.76
			Fine network of chalcopyrite-bearing pyrite-specularite-chlorite veinlets, and disseminations of pyrite and a little chalcopyrite	1010	1.0	0.66	0.28	—	
			58.5m along veinlets.	1011	1.0	1.81		0005	
60			Abundant pyrite-bearing specularite-chlorite veinlets with dips of 60° to 80°, cut by sub-horizontal pyrite-quartz veinlets and latest Pyrite stringers with dips of 60° to 80°.	1012	1.0	026	0.13	0005	
		55.5m-72.0m: weakly to moderately Silicified and sporadically epidotized in addition to the above alteration	Disseminations of pyrite, specularite and magnetite near veinlets.	1013	1.0	009		0022	
			63.1m	1014	1.0	005	0.01	tr	
			1.5-cm vein and network veinlets of chalcopyrite-pyrite-specularite-quartz-chlorite assemblage. A little disseminated ores. 65.2m	1015	1.0	0.04		0001	
				1016	1.0	0.08	002	—	
				1017	1.0	103		tr	
				1018	1.0	2.90	0.16	—	
				1019	1.0	0.11		—	
70			Abundant pyrite-specularite-chlorite veinlets and subordinate pyrite-quartz veinlets, dipping generally 70° to 85°, and a little disseminations of pyrite and rare chalcopyrite mainly associated with chloritized mafic silicates. A 1-cm pyrite vein with a dip of 80°, bearing a little chalcopyrite, at 70.5m. 72.0m	1020	2.0	0.08	003	tr	388
				1021	2.0	007		—	
				1022	2.0	0.29	0.10	0001	
		72.0m-77.3m: chloritized, weakly argillized, sericitized and carbonitized	Very sparsely-penetrated pyrite-specularite-chlorite veinlets, and sporadic dissemination of pyrite mainly replacing chloritized mafic minerals.	1023	2.0	0.03		—	
			Fairly abundant "barren" chlorite veinlets mostly dipping 5° to 20°. 77.3m	1024	2.0	003	001	—	
80		77.3m-82.8m: Slighly silicified with a little "pink" plagioclase in addition to the above alterations	Fairly abundant pyrite-specularite-chlorite veinlets mostly dipping 70° to 80°, and a little pyrite-quartz veinlets with dips of 40° to 70°.	1025	4.0	004		—	0.87
			Sparse dissemination of pyrite. 82.8m	1026	4.0	004	002	—	
		82.8m-85.1m: with almost same alterations as above except for much stronger Silicification	Fairly abundant quartz-chlorite veinlets bearing pyrite and minor specularite. 85.1m						
		85.1m-91.5m: weakly chloritized, carbonitized, argillized, and with a little "pink" feldspars and fracture-filling biotite-	A little pyrite-specularite-bearing quartz-chlorite veinlets uncommonly with a small amount of chalcopyrite	1027	4.0	0.05		tr	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
110		100.0m-104.0m: weakly silicified, chloritized, carbonitized, slightly sericitized, and commonly with "pink" feldspar and secondary biotite	Sparse veinlets of quartz and/or chlorite bearing pyrite and specularite, dipping 60° to 85°; and poorly disseminated pyrite. Chalcopyrite-bearing veinlets at 101.0m 104.0m and 104.6m.	1031	4.0	004		0002	
		104.0m-114.8m: weakly chloritized, carbonitized, and with "pink" plagioclase and secondary biotite (hydromica ?) mainly along fine fractures	Sparsely-penetrated chlorite veinlets with a little Pyrite and specularite, mostly dipping 70° to 85°. A chalcopyrite-bearing veinlet at 105.5m.	1032	4.0	003		0001	027
				1033	4.0	003		0002	
		114.8m-116.0m: weakly silicified in addition to the above alterations	114.8m Network of pyrite-rich veinlets; Pyrite dissemination near veinlets. 116.0m	1034	4.0	003		0002	
120		116.0m-117.3m: weakly chloritized	A little Pyrite-bearing chlorite veinlets, 117.3m	1035	4.0	003		0001	072
		117.3m-126.4m: distinctly chloritized, Slightly to weakly Silicified, weakly carbonitized, and with "pink" feldspar	Network of pyrite stringers from 117.3m to 118.0m. Fairly abundant veinlets of pyrite-quartz, pyrite-specularite-chlorite and pyrite-chlorite assemblages from 118.0m to 126.4m.	1036	2.0	002		0002	
			A 0.8-cm pyrite-specularite-quartz vein dipping 75° at 120.5m. Pyrite dissemination, generally poor, but heavy from 119.0m to 122.0m and from 125.0m to 125.5m.	1037	2.0	004		0001	
				1038	2.0	003		0001	
130		126.4m-137.2m: weakly chloritized, carbonitized and with a little "pink" feldspar	126.4m Sparsely-penetrated specularite-pyrite-chlorite veinlets mostly dipping 70° to 80°. A little dissemination of pyrite.	1039	4.0	002		0002	
			A chalcopyrite-bearing pyrite-chlorite veinlet dipping 70° at 130.3m.	1040	4.0	003		0002	079
		137.2m-139.3m: fairly markedly chloritized and Silicified	137.2m A 1-cm pyrite-quartz vein dipping 75° at 138.0m, and fairly abundant veinlets of pyrite-quartz and pyrite-specularite-chlorite 139.3m	1041	4.0	003		0001	
140		139.3m-142.3m: mylonitized, distinctly chloritized, weakly carbonitized and argillized	Abundant specularite-chlorite veinlets with a little pyrite. Sporadic dissemination of a little pyrite. 142.3m	1042	4.0	004		0001	
		142.3m-145.7m: fairly markedly silicified, weakly chloritized and slighly carbonitized	Fairly abundant pyrite-quartz veinlets sparsely with a little chalcopyrite and pyrite-specularite-chlorite veinlets. Pyrite dissemination rarely with chalcopyrite 145.7m	1043	4.0	011		0002	120
		145.7m-150.7m: slighly silicified, weakly chloritized, carbonitized, and with a little "pink" plagioclase	Several pyrite-specularite stringers. A little dissemination of Pyrite. 147.5m	1044	4.0	006		0002	
150		150.7m-151.5m: distinctly silicified, weakly chloritized and carbonitized	Abundant pyrite-specularite-chlorite veinlets and a little disseminated Pyrite. A 0.5-cm chalcopyrite-bearing veinlet at 148.5m 150.7m	1045	4.0	004		0001	
		151.5m-158.8m: distinctly chloritized, carbonitized, slightly silicified, and with "pink" plagioclase	Network of pyrite-quartz stringers from 150.7m to 151.5m. Fairly abundant pyrite-specularite-chlorite/quartz veinlets, mostly dipping 70° to 80°, and a little dissemination of pyrite and specularite from 151.5m to 158.8m.	1048	4.0	005		0002	092
160		158.8m-159.1m: Strongly Silicified and weakly chloritized	Highly disseminated pyrite from 158.8 m to 159.1m.	1047	4.0	003		0003	
		159.1m-163.0m: Strongly chloritized, carbonitized, and argillized	Disseminations of specularite and a little pyrite, and several pyrite-specularite-chlorite veinlets from 1519m to 163.0m 163.0m	1048	4.0	002		0002	
		163.0m-174.2m: distinctly chloritized, carbonitized and with a little "pink" feldspar	Abundant sub-horizontal chlorite veinlets bearing specularite, and a little Pyrite-bearing veinlets with dips of 80° to 85°.	1049	4.0	002		0001	038
170			A little dissemination of specularite.	1050	4.0	002		0002	
		174.2m-177.9m: Sheared up to breccia, and highly chloritized and carbonitized	174.2m Fine network of pyrite-bearing specularite-chlorite veinlets, and breccia-filling specularite.	1051	4.0	002		0001	
180		177.9m-185.3m: moderately to weakly chloritized, weakly carbonitized locally silicified and argillized	177.9m Fairly abundant specularite-chlorite veinlets with a little pyrite, and Several pyrite-specularite-quartz veinlets, mostly dipping 70° to 85°.	1052	4.0	002		0002	067
			Pyrite dissemination from 182.0m to 182.2m. 185.3m	1053	4.0	003		0001	
		185.3m-191.4m: weakly chloritized, carbonitized and with a little "pink" feldspar	Sparse pyrite-specularite-chlorite, veinlets and a little disseminated Pyrite near the veinlets	1054	4.0	002		0001	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
210		200.7m-201.0m: Sheared and highly argillized	200.7m A little pyrite-bearing stringers. 202.0m						
		201.0m-201.6m: fairly markedly chloritized, weakly carbonitrized and silicified	Network of pyrite-specularite-chlorite veinlets and a little pyrite-quartz veinlets, bearing chalcopyrite very sparsely at 203.4m and 206.9m.	1058	2.0	003		0002	097
			Fairly distinct dissemination of Pyrite from 205.2m to 207.5m. 207.5m	1059	2.0	004		0001	
		201.6m-210.2m: weakly chloritized, carbonitized and with a little "pink" feldspar along chlorite veinlets	A little pyrite-specularite-chlorite veinlets, mostly dipping 70° to 85°. 210.2m	1060	2.0	003		0002	
		210.2m-212.0m: weakly chloritized, Silicified, carbonitized and with a little "pink" feldspar	Fairly abundant pyrite-quartz and/or chlorite veinlets with trace of copper. 212.0m	1061	4.0	003		0002	
220		212.0m-215.2m: chloritized, carbonitized, and weakly Silicified	Abundant pyrite-bearing hematite stringers and a little quartz veinlets, generally dipping 60°-80°. 216.2m	1062	4.0	002		0001	066
		216.2m-218.4m: markedly chloritized, weakly carbonitized, locally with quartz veinlets	Fairly abundant pyrite mainly in veinlets, but hardly recognized copper ores.	1063	4.0	005		0001	
		218.4m-218.7m: highly sheared and altered into clayey rock	220.9m A few chalcopy rite-bearing quartz veinlets 221.1m						
		218.7m-226.5m: fairly remarkably chloritized, weakly carbonitized, argillized, locally Silicified as veinlets	Mostly Pyrite-specularite-chlorite veinlets without chalcopyrite.	1064	4.0	004		0002	
		226.5m-226.7m: crushed, and fairly strongly argillized and carbonitized		1065	2.0	002		0001	
230		226.7m-233.3m: markedly chloritized, weakly argillized and carbonized, and locally silicified as veinlets	230.5m Chalcopyrite in quartz veinlets. 231.0m	1066	2.0	002		0002	070
				1067	2.0	003		0002	
		233.3m-238.5m: weakly to moderately chloritized, weakly argillized, carbonitized and slighly silicified		1068	2.0	005		0001	
				1069	2.0	008		0003	
		238.5m-238.8m: distinctly silicified	Pyrite-specularite-chlorite veinlets and much less pyrite-quartz veinlets.	1070	4.0	003		0001	047
240		238.5m-241.9m: chloritized, weakly carbonitized and locally silicified	Local dissemination of pyrite and specularite.	1071	4.0	003		0003	
		241.9m-244.0m: almost same as above except for more abundant quartz veinlets							
		244.0m-250.4m: chloritized, carbonitized and weakly argillized locally, and with locally-concentrated quartz veinlets usually containing calcite and chlorite	A little dissemination of chalcopyrite at 233.5m, and a chalcopyrite-bearing chlorite veinlet at 239.1m.	1072	4.0	002		0003	
				1073	2.0	004		0002	065
250		250.4m (END)		1074	2.4	008		0001	
260									

G

YAURI

CORE

D.D.H No

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Location

Direction

Date of L

Logged b

METAL MINI

OVERSEAS 1

GOVERNMENT

Prepared by MIT

国際協力事業団
08814
図書資料室

servation		Sample	Core	Assay				
	Mineralization	No	Length	T-Cu %	S-Cu %	Mo %	S %	
aining and a rusives brown, sandy								
tremely itized	Network films and stains of limonite sparsely with green copper.	1001	1.5	0.17		0.001		
		1002	2.0	0.32	0.28	0.003		
		1003	2.0	0.30		0.001		
		1004	2.0	0.49	0.47	0.001	0.27	
se- nde	Network of limonite - chlorite veinlets with small amounts of green copper and oxidized pyrite, generally	1005	2.0	0.46		0.002		
inkedly and	dipping 60° to 80°.	1006	2.0	0.45	0.42	0.001		
		1007	2.0	0.25		0.001		
ly argillized	51.5m — Fine network of pyrite-bearing limonite-chlorite veinlets with dips of 60° to 80°.	1008	2.0	0.04	0.03	0.001		
ed, weakly ilized, ed"	58.0m — Sparsely-penetrated Pyrite-chlorite veinlets mostly dipping 70° to 80°; 58.5m limonitization along veinlets.	1009	2.0	0.18		0.002	1.76	
	Fine network of chalcopyrite-bearing pyrite-Specularite-chlorite veinlets, and disseminations of pyrite and a little chalcopyrite	1010	1.0	0.66	0.26	—		
		1011	1.0	1.81		0.005		
	68.5m — Abundant pyrite-bearing specularite-chlorite veinlets with dips of 60° to 80°, cut by sub-horizontal pyrite-quartz veinlets and latest	1012	1.0	0.26	0.13	0.005		
lely pdotized lion		1013	1.0	0.09		0.022		
	pyrite stringers with dips of 60° to 80°.	1014	1.0	0.05	0.01	tr		
	Disseminations of pyrite, specularite and magnetite near veinlets.	1015	1.0	0.04		0.001		
	63.1m —	1016	1.0	0.08	0.02	—		
	A 5-cm vein and network veinlets of chalcopyrite-pyrite-specularite-quartz-chlorite assemblage	1017	1.0	1.03		tr		
	A little disseminated ores.	1018	1.0	2.90	0.16	—		
	65.4m —	1019	1.0	0.11		—		
	Abundant pyrite-specularite-chlorite veinlets and subordinate pyrite-quartz veinlets, dipping generally 70° to 85°, and a little disseminations of pyrite and rare chalcopyrite mainly associated with chloritized mafic silicates.	1020	2.0	0.08	0.03	tr	3.88	
	A 1-cm Pyrite vein with a dip of 80°, bearing a little chalcopyrite, at 70.5m	1021	2.0	0.07		—		
	72.0m —	1022	2.0	0.29	0.10	0.001		
argillized,	Very sparsely-penetrated pyrite-specularite chlorite veinlets, and sporadic dissemination of pyrite mainly replacing chloritized mafic minerals.	1023	2.0	0.03		—		
	Fairly abundant "barren" chlorite veinlets mostly dipping 5° to 20°.	1024	2.0	0.03	0.01	—		
	77.3m —							
with a ion to the	Fairly abundant pyrite-specularite-chlorite veinlets mostly dipping 70° to 80°, and a little pyrite-quartz veinlets with dips of 40° to 70°.	1025	4.0	0.04		—	0.67	
	Sparse dissemination of pyrite.	1026	4.0	0.04	0.02	—		
lterations nger	82.8m — Fairly abundant quartz-chlorite veinlets bearing pyrite and minor specularite;							
l, carboni- le "pink"	85.1m — A little pyrite-specularite-bearing	1027	4.0	0.05		tr		

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	S-Cu %	Mo %	S %	
		100.0m-104.0m: weakly silicified, chloritized, carbonitized, slightly sericitized, and commonly with "pink" feldspar and secondary biotite	Sparse veinlets of quartz and/or chlorite bearing pyrite and specularite, dipping 60° to 85°; and poorly disseminated pyrite. Chalcopyrite-bearing veinlets of 101.0m - 104.0m and 100.6m.	1031	4.0	0.04		0.002		
		104.0m-114.8m: weakly chloritized, carbonitized, and with "pink" plagioclase and secondary biotite (hydromica ?) mainly along fine fractures	Sparsely-penetrated chlorite veinlets with a little pyrite and specularite, mostly dipping 70° to 85°.	1032	4.0	0.03		0.001	0.27	
110			A chalcopyrite-bearing veinlet at 105.5m.	1033	4.0	0.03		0.002		
			114.8m — Network of pyrite-rich veinlets. Pyrite dissemination near veinlets.	1034	4.0	0.03		0.002		
		114.8m-116.0m: weakly silicified in addition to the above alterations	116.0m — A little pyrite-bearing chlorite veinlets.							
		116.0m-117.3m: weakly chloritized	117.3m — Network of pyrite stringers from 117.3m to 118.0m.	1035	4.0	0.03		0.001	0.72	
120		117.3m-126.4m: distinctly chloritized, slightly to weakly silicified, weakly carbonitized, and with "pink" feldspar	Fairly abundant veinlets of pyrite-quartz, pyrite-specularite-chlorite and pyrite-chlorite assemblages from 118.0m to 126.4m.	1036	2.0	0.02		0.002		
			A 0.8-cm pyrite-specularite-quartz vein dipping 35° at 120.5m.	1037	2.0	0.04		0.001		
			Pyrite dissemination, generally poor, but heavy from 119.0m to 122.0m and from 125.0m to 125.5m.	1038	2.0	0.03		0.001		
			126.4m — Sparsely-penetrated specularite-pyrite-chlorite veinlets mostly dipping 70° to 80°.	1039	4.0	0.02		0.002		
130			A little dissemination of pyrite.							
			A chalcopyrite-bearing pyrite-chlorite veinlet dipping 70° at 130.3m.	1040	4.0	0.03		0.002	0.78	
				1041	4.0	0.03		0.001		
		137.2m-139.3m: fairly markedly chloritized and silicified	137.2m — A 1-cm pyrite-quartz vein dipping 75° at 138.0m; and fairly abundant veinlets of pyrite-quartz and pyrite-specularite-chlorite							
140		139.3m-142.3m: mylonitized, distinctly chloritized, weakly carbonitized and argillized	139.3m — Abundant specularite-chlorite veinlets with a little pyrite. Sporadic dissemination of a little pyrite.	1042	4.0	0.04		0.001		
		142.3m-145.7m: fairly markedly silicified, weakly chloritized and slightly carbonitized	142.3m — Fairly abundant pyrite-quartz veinlets sparsely with a little chalcopyrite and Pyrite-specularite-chlorite veinlets.	1043	4.0	0.11		0.002	1.20	
		145.7m-150.7m: slightly silicified, weakly chloritized, carbonitized, and with a little "pink" plagioclase	Pyrite dissemination rarely with chalcopyrite							
			145.7m — Several pyrite-specularite stringers. A little dissemination of pyrite.							
150			147.5m — Abundant pyrite-specularite-chlorite veinlets and a little disseminated pyrite.	1044	4.0	0.06		0.002		
		150.7m-151.5m: distinctly silicified, weakly chloritized and carbonitized	A 0.3-cm chalcopyrite-bearing veinlet at 148.3m.							
			150.7m — Network of pyrite-quartz stringers from 150.7m to 151.5m.	1045	4.0	0.04		0.001		
		151.5m-158.8m: distinctly chloritized, carbonitized, slightly silicified, and with "pink" plagioclase	Fairly abundant pyrite-specularite-chlorite/quartz veinlets, mostly dipping 70° to 80°, and a little dissemination of pyrite and specularite from 151.5m to 158.8m.	1046	4.0	0.05		0.002	0.92	
160		158.8m-159.1m: Strongly silicified and weakly chloritized	Highly disseminated pyrite from 158.8m to 159.1m.	1047	4.0	0.03		0.003		
		159.1m-163.0m: Strongly chloritized, carbonitized, and argillized	Disseminations of specularite and a little pyrite, and several pyrite-specularite-chlorite veinlets from 159.9m to 163.0m.							
			163.0m — Abundant sub-horizontal chlorite veinlets bearing specularite, and	1048	4.0	0.02		0.002		
		163.0m-174.2m: distinctly chloritized, carbonitized and with a little "pink" feldspar	a little pyrite-bearing veinlets with dips of 80° to 85°.	1049	4.0	0.02		0.001	0.36	
170			A little dissemination of specularite.	1050	4.0	0.02		0.002		
			174.2m — Fine network of pyrite-bearing specularite-chlorite veinlets, and breccia-filling specularite.	1051	4.0	0.02		0.001		
		174.2m-177.9m: Sheared up to breccia, and highly chloritized and carbonitized	177.9m —							
180		177.9m-185.3m: moderately to weakly chloritized, weakly carbonitized locally silicified and argillized	Fairly abundant specularite-chlorite veinlets with a little pyrite, and several pyrite-specularite-quartz veinlets, mostly dipping 70° to 85°.	1052	4.0	0.02		0.002	0.67	
			Pyrite dissemination from 182.0m to 182.2m.	1053	4.0	0.03		0.001		
		185.3m-191.4m: weakly chloritized, carbonitized and with a little "pink"	185.3m — Sparse pyrite-specularite-chlorite,							

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	S-Cu %	Mo %	S %	
		200.7m-201.0m: sheared and highly argillized	200.7m — A little pyrite-bearing stringers.							
		201.0m-207.5m: fairly markedly chloritized, weakly carbonitized and silicified	202.0m — Network of pyrite-specularite-chlorite veinlets and a little pyrite-quartz veinlets, bearing chalcopyrite very sparsely at 203.4m and 206.9m. Fairly distinct dissemination of Pyrite from 205.2m to 207.5m.	1058	2.0	0.03		0.002	0.97	
		207.5m-210.2m: weakly chloritized, carbonitized and with a little "pink" feldspar along chlorite veinlets	207.5m — A little pyrite-specularite-chlorite veinlets, mostly dipping 70° to 85°.	1059	2.0	0.04		0.001		
210			210.2m — Fairly abundant Pyrite-quartz and/or chlorite veinlets with trace of copper.	1060	2.0	0.03		0.002		
		210.2m-212.0m: weakly chloritized, silicified, carbonitized and with a little "pink" feldspar	212.0m —	1061	4.0	0.03		0.002		
		212.0m-215.2m: chloritized, carbonitized, and weakly silicified	Abundant pyrite-bearing hematite stringers and a little quartz veinlets, generally dipping 60°-80°.	1062	4.0	0.02		0.001	0.66	
			216.2m — Fairly abundant pyrite mainly in veinlets, but hardly recognized copper ores.	1063	4.0	0.05		0.001		
220		216.2m-218.4m: markedly chloritized, weakly carbonitized, locally with quartz veinlets								
		218.4m-218.7m: highly sheared and altered into clayey rock	220.9m — A few chalcopy rite-bearing quartz veinlets							
		218.7m-226.5m: fairly remarkably chloritized, weakly carbonitized, argillized, locally silicified as veinlets	221.1m — Mostly pyrite-specularite-chlorite veinlets without chalcopyrite.	1064	4.0	0.04		0.002		
				1065	2.0	0.02		0.001		
		226.5m-226.7m: crushed, and fairly strongly argillized and carbonitized		1066	2.0	0.02		0.002	0.70	
230		226.7m-233.3m: markedly chloritized, weakly argillized and carbonized, and locally silicified as veinlets	230.5m — Chalcopyrite in quartz veinlets.	1067	2.0	0.03		0.002		
			231.0m —	1068	2.0	0.05		0.001		
		233.3m-238.5m: weakly to moderately chloritized, weakly argillized, carbonitized and slighly silicified		1069	2.0	0.08		0.003		
		238.5m-238.8m: distinctly silicified	Pyrite-specularite-chlorite veinlets and much less pyrite-quartz veinlets.	1070	4.0	0.03		0.001	0.47	
240		238.5m-241.9m: chloritized, weakly carbonitized and locally silicified	Local dissemination of pyrite and specularite.	1071	4.0	0.03		0.003		
		241.9m-244.0m: almost same as above except for more abundant quartz veinlets	A little dissemination of chalcopyrite at 232.5m, and a chalcopyrite-bearing chlorite veinlet at 239.1m.	1072	4.0	0.02		0.003		
		244.0m-250.4m: chloritized, carbonitized and weakly argillized locally, and with locally-concentrated quartz veinlets usually containing calcite and chlorite		1073	2.0	0.04		0.002	0.65	
250				1074	2.4	0.08		0.001		
		250.4m (END)								
260										

PL. 1-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

CORE LOG and ASSAY

D.D.H. No. 1 — Sheet 1

Total Length 250.4m — Core Recovery 100%

Location C'-18 — Elevation 4,122m

Direction — — Inclination Vertical

Date of Logging from 25th/Oct. to 10th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

	unconsolidated, ill-sorted and sandy matrix									
20										
30										
	38.5m									
40	Weathered granodiorite extremely decomposed and highly argillized	Network films and stains of limonite sparsely with green copper.	1001	1.5	0.17		0001			
			1002	2.0	0.32	0.28	0003			
			1003	2.0	0.30		0001			
	45.0m		1004	2.0	0.49	0.47	0.001	0.27		
	Medium-grained, plagioclase-porphyritic, biotite-hornblende granodiorite	Network of limonite-chlorite veinlets with small amounts of green copper and oxidized pyrite, generally dipping 60° to 80°.	1005	2.0	0.46		0002			
50	45.0m-53.0m: fairly weathered, markedly chloritized, weakly argillized and carbonitized		1006	2.0	0.45	0.42	0001			
		51.5m Fine network of pyrite-bearing limonite-chlorite veinlets with dips of 60° to 80°. 52.0m	1007	2.0	025		0.001			
	53.0m-53.2m: sheared and highly argillized		1008	2.0	004	003	0001			
	53.2m-55.5m: moderately chloritized, weakly argillized, sericitized, carbonitized, and with "pink-to salmon-colored" plagioclase	Sparsely-penetrated pyrite-chlorite veinlets mostly dipping 70° to 80°. weak limonitization along veinlets. 53.6m	1009	2.0	0.18		0002	1.78		
		Fine network of chalcopyrite-bearing pyrite-specularite-chlorite veinlets, and disseminations of pyrite and a little chalcopyrite along veinlets. 55.5m	1010	1.0	0.66	0.26	—			
60			1011	1.0	1.81		0005			
		Abundant pyrite-bearing specularite-chlorite veinlets with dips of 60° to 80°, cut by sub-horizontal pyrite-quartz veinlets and fatal pyrite stringers with dips of 60° to 80°. 59.6m	1012	1.0	028	0.13	0005			
			1013	1.0	009		0022			
			1014	1.0	005	0.01	tr			
	55.5m-72.0m: weakly to moderately silicified and sporadically epidotized in addition to the above alteration	Disseminations of pyrite, specularite and magnetite near veinlets. 63.1m	1015	1.0	004		0001			
			1016	1.0	0.08	002	—			
		1.5-cm vein and network veinlets of chalcopyrite-pyrite-specularite-quartz-chlorite assemblage & little disseminated ores. 65.2m	1017	1.0	103		tr			
			1018	1.0	2.90	0.16	—			
		Abundant pyrite-specularite-chlorite veinlets and subordinate pyrite-quartz veinlets, dipping generally 70° to 85°; and a little disseminations of pyrite and rare chalcopyrite mainly associated with chloritized mafic silicates.	1019	1.0	0.11		—			
70			1020	2.0	0.08	0.03	tr	3.88		
			1021	2.0	007		—			
		A 1-cm pyrite vein with a dip of 80°, bearing a little chalcopyrite, at 70.5m. 72.0m	1022	2.0	0.29	0.10	0001			
	72.0m-77.3m: chloritized, weakly argillized, sericitized and carbonitized	Very sparsely-penetrated pyrite-specularite chlorite veinlets, and sporadic dissemination of pyrite mainly replacing chloritized mafic minerals.	1023	2.0	0.03		—			
			1024	2.0	0.03	001	—			
		Fairly abundant "barren" chlorite veinlets mostly dipping 5° to 20°. 77.3m								
80	77.3m-82.8m: slighly silicified with a little "pink" plagioclase in addition to the above alterations	Fairly abundant pyrite-specularite-chlorite veinlets mostly dipping 70° to 80°, and a little pyrite-quartz veinlets with dips of 40° to 70°.	1025	4.0	004		—	0.67		
		Sparse dissemination of pyrite.	1026	4.0	004	002	—			
	82.8m-85.1m: with almost same alterations as above except for much stronger silicification	Fairly abundant quartz-chlorite veinlets bearing pyrite and minor specularite. 85.1m								
		A little pyrite-specularite-bearing quartz-chlorite veinlets uncommonly with a small amount of chalcopyrite	1027	4.0	005		tr			
	85.1m-91.5m: weakly chloritized, carbonitized, argillized, and with a little "pink" feldspars and fracture-filling biotite-chlorite aggregates	Very poor dissemination of pyrite locally with a few minute specks of chalcopyrite 91.5m	1028	4.0	004	0.01	0001			
90										
	91.5m-95.0m: distinctly silicified and chloritized	Network of pyrite-chlorite-quartz veinlets and subordinate pyrite-specularite-chlorite veinlets, and common dissemination of pyrite 94.0m								
		Fairly abundant pyrite-bearing chlorite veinlets and a little pyrite-quartz veinlets, generally dipping 60° to 85°. A little disseminated pyrite near veinlets. 97.0m	1029	4.0	003		—	0.85		
	95.0m-100.0m: fairly distinctly chloritized, weakly silicified, carbonitized, slightly and with fairly abundant "pink" plagioclase and a little secondary biotite	Sparse veinlets of quartz and/or chlorite with a little pyrite and specularite								
		A chalcopyrite-bearing veinlet at 97.3m	1030	4.0	003	002	0001			
100										

	to the above alterations	Network of pyrite-bearing veinlets; dissemination near veinlets. 116.0m								
	116.0m-117.3m: weakly chloritized	A little pyrite-bearing chlorite veinlets. 117.3m								
120	117.3m-126.4m: distinctly chloritized, slightly to weakly silicified, weakly carbonitized, and with "pink" feldspar	Network of pyrite stringers from 117.3m to 118.0m.	1035	4.0	003		0001	0.72		
		Fairly abundant veinlets of pyrite-quartz, pyrite-specularite-chlorite and pyrite-chlorite assemblages from 118.0m to 126.4m.	1036	2.0	002		0002			
		A 0.8-cm pyrite-specularite-quartz vein dipping 75° at 120.5m. pyrite dissemination, generally poor, but heavy from 119.0m to 122.0m and from 125.0m to 125.5m. 126.4m	1037	2.0	004		0001			
			1038	2.0	003		0001			
	126.4m-137.2m: weakly chloritized, carbonitized and with a little "pink" feldspar	Sparsely-penetrated specularite-pyrite-chlorite veinlets mostly dipping 70° to 80°.	1039	4.0	002		0002			
130		A little dissemination of pyrite.								
		A chalcopyrite-bearing pyrite-chlorite veinlet dipping 70° at 130.3m.	1040	4.0	0.03		0002	0.79		
			1041	4.0	003		0001			
	137.2m-139.3m: fairly markedly chloritized and silicified	137.2m A 2-cm pyrite-quartz vein dipping 75° at 138.0m, and fairly abundant veinlets of pyrite-quartz and pyrite-specularite-chlorite 139.3m								
140	139.3m-142.3m: mylonitized, distinctly chloritized, weakly carbonitized and argillized	Abundant specularite-chlorite veinlets with a little pyrite.	1042	4.0	004		0001			
		Sporadic dissemination of a little pyrite. 142.3m								
	142.3m-145.7m: fairly markedly silicified, weakly chloritized and slightly carbonitized	Fairly abundant pyrite-quartz veinlets sparsely with a little chalcopyrite and pyrite-specularite-chlorite veinlets. Pyrite dissemination rarely with chalcopyrite 145.7m	1043	4.0	0.11		0002	1.20		
	145.7m-150.7m: slighly silicified, weakly chloritized, carbonitized, and with a little "pink" plagioclase	Several pyrite-specularite stringers. A little dissemination of pyrite. 147.5m								
150		Abundant pyrite-specularite-chlorite veinlets and a little disseminated pyrite.	1044	4.0	006		0002			
	150.7m-151.5m: distinctly silicified, weakly chloritized and carbonitized	A 0.2-cm chalcopyrite-bearing veinlet at 148.5m. 150.7m								
		Network of pyrite-quartz stringers from 150.7m to 151.5m.	1045	4.0	004		0001			
	151.5m-158.8m: distinctly chloritized, carbonitized, slightly silicified, and with "pink" plagioclase	Fairly abundant pyrite-specularite-chlorite/quartz veinlets, mostly dipping 70° to 80°, and a little dissemination of pyrite and specularite from 151.5m to 158.8m.	1046	4.0	005		0002	0.92		
160	158.8m-159.1m: Strongly silicified and weakly chloritized	Highly disseminated pyrite from 158.8m to 159.1m.	1047	4.0	003		0003			
	159.1m-163.0m: Strongly chloritized, carbonitized, and argillized	Disseminations of specularite and a little pyrite, and several pyrite-specularite-chlorite veinlets from 159.1m to 163.0m								
		Abundant sub-horizontal chlorite veinlets bearing specularite, and a little pyrite-bearing veinlets with dips of 80° to 85°.	1048	4.0	002		0002			
	163.0m-174.2m: distinctly chloritized, carbonitized and with a little "pink" feldspar	A little dissemination of specularite.	1049	4.0	002		0001	0.36		
170			1050	4.0	002		0002			
	174.2m-177.9m: Sheared up to breccia, and highly chloritized and carbonitized	174.2m Fine network of pyrite-bearing specularite-chlorite veinlets, and breccia-filling specularite.	1051	4.0	002		0001			
	177.9m-185.3m: moderately to weakly chloritized, weakly carbonitized locally silicified and argillized	177.9m Fairly abundant specularite-chlorite veinlets with a little pyrite, and several pyrite-specularite-quartz veinlets, mostly dipping 70° to 85°.	1052	4.0	002		0002	0.67		
180		Pyrite dissemination from 182.0m to 182.2m.	1053	4.0	003		0001			
	185.3m-191.4m: weakly chloritized, carbonitized and with a little "pink" feldspar	185.3m Sparse pyrite-specularite-chlorite, veinlets and a little disseminated pyrite near the veinlets.	1054	4.0	002		0001			
190	191.4m-193.1m: Silicified, weakly chloritized	191.4m Network of pyrite-bearing quartz and/or chlorite veinlets from 191.4m to 193.1m and from 195.8m to 200.7m.	1055	4.0	003		0003	0.52		
	193.1m-195.8m: weakly chloritized, carbonitized and with a little "pink" feldspar	Several pyrite-specularite-chlorite veinlets from 193.1m to 195.8m.	1056	4.0	003		0002			
	195.8m-200.7m: weakly silicified, weakly chloritized and carbonitized	Chalcopyrite-bearing stringers at 195.3m, 195.8m and 197.7m.								
200			1057	4.0	003		0002			

		[illegible]								
		216.2m								
	216.2m-218.4m: markedly chloritized, weakly carbonitized, locally with quartz veinlets	Fairly abundant pyrite mainly in veinlets, but hardly recognised copper ores. A few chalcopy rite-bearing quartz veinlet	1063	4.0	005		0001			
	218.4m-218.7m: highly sheared and altered into clayey rock	220.9m 221.1m								
220	218.7m-226.5m: fairly remarkably chloritized, weakly carbonitized, argillized, locally silicified as veinlets	Mostly pyrite-specularite-chlorite veinlets without chalcopyrite.	1064	4.0	004		0002			
			1065	2.0	002		0001			
	226.5m-226.7m: crushed, and fairly strongly argillized and carbonitized		1066	2.0	002		0002	0.70		
	226.7m-233.3m: markedly chloritized, weakly argillized and carbonized, and locally silicified as veinlets	230.5m Chalcopyrite in quartz veinlets. 231.0m	1067	2.0	003		0002			
230			1068	2.0	005		0.001			
	233.3m-238.5m: weakly to moderately chloritized, weakly argillized, carbonitized and slighly silicified		1069	2.0	008		0003			
	238.5m-238.8m: distinctly silicified	Pyrite-specularite-chlorite veinlets and much less pyrite-quartz veinlets.	1070	4.0	003		0001	047		
	238.5m-241.9m: chloritized, weakly carbonitized and locally silicified									
240	241.9m-244.0m: almost same as above except for more abundant quartz veinlets	Local dissemination of pyrite and specularite.	1071	4.0	003		0003			
	244.0m-250.4m: chloritized, carbonitized and weakly argillized locally, and with locally concentrated quartz veinlets usually containing calcite and chlorite	A little dissemination of chalcopyrite at 233.5m, and a chalcopyrite-bearing chlorite veinlet at 239.1m.	1072	4.0	002		0003			
			1073	2.0	004		0002	0.85		
			1074	2.4	008		0001			
250	250.4m (END)									
260										

D.D.H No

Total Lengt

Location

Direction

Date of Lo

Logged by

METAL MINING

OVERSEAS TE

GOVERNMENT

Prepared by MITSU

Network films and stains of monite sparsely with green copper.	1001	1.5	0.17		0.001		
	1002	2.0	0.32	0.28	0.003		
	1003	2.0	0.30		0.001		
	1004	2.0	0.49	0.47	0.001	0.27	
Network of limonite-chlorite veinlets h small amounts of green copper oxidized pyrite, generally ping 60° to 80°.	1005	2.0	0.48		0.002		
	1006	2.0	0.45	0.42	0.001		
15m	1007	2.0	0.25		0.001		
ine network of pyrite-bearing limonite-rtz veinlets with dips of 60° to 80°.	1008	2.0	0.04	0.03	0.001		
sparsely-penetrated pyrite-chlorite nlets, mostly dipping 70° to 80°; 25m limonitization along veinlets.	1009	2.0	0.18		0.002	1.78	
ine network of chalcopyrite-bearing pyrite cularite-chlorite veinlets, and disseminа- s of pyrite and a little Chalcopyrite 5m along veinlets.	1010	1.0	0.66	0.26	--		
	1011	1.0	1.81		0.005		
undant pyrite-bearing specularite-chlorite nlets with dips of 60° to 80° cut by sub- isontal pyrite-quartz veinlets and latest te stringers with dips of 60° to 80°.	1012	1.0	0.26	0.13	0.005		
	1013	1.0	0.09		0.022		
	1014	1.0	0.05	0.01	tr		
issemination of pyrite, specularite and rtzite near veinlets.	1015	1.0	0.04		0.001		
15m	1016	1.0	0.08	0.02	--		
8-cm vein and network veinlets of chalcopyrite-specularite-quartz-chlorite assemblage 2m little disseminated ores.	1017	1.0	1.03		tr		
	1018	1.0	2.90	0.18	--		
undant pyrite-specularite-chlorite veinlets subordinate pyrite-quartz veinlets, dipping rally 70° to 85°, and a little dissemi- ion of pyrite and rare chalcopyrite ly associated with chloritized mafic cates.	1019	1.0	0.11		--		
	1020	2.0	0.08	0.03	tr	3.88	
	1021	2.0	0.07		--		
1-cm pyrite vein with a dip of 85°, bearing tle chalcopyrite, at 70.5m 0m	1022	2.0	0.29	0.10	0.001		
ery sparsely-penetrated pyrite-specularite rite veinlets, and sporadic disseminа- of pyrite mainly replacing chloritized ic minerals.	1023	2.0	0.03		--		
tirly abundant "barren" chlorite veinlets ly dipping 5° to 20°. 3m	1024	2.0	0.03	0.01	--		
tirly abundant pyrite-specularite- rite veinlets mostly dipping 70° to 80°; a little pyrite-quartz veinlets with of 40° to 70°.	1025	4.0	0.04		--	0.67	
parse dissemination of pyrite. 28m	1026	4.0	0.04	0.02	--		
tirly abundant quartz-chlorite veinlets ring pyrite and minor specularite. 1m	1027	4.0	0.05		tr		
little pyrite-specularite-bearing rtz-chlorite veinlets uncommonly h a small amount of chalcopyrite	1028	4.0	0.04	0.01	0.001		
ery poor dissemination of pyrite locally h a few minute specks of chalcopyrite 3m							
network of pyrite-chlorite-quartz veinlets subordinate pyrite-specularite-chlorite lets, and common dissemination of pyrite 0m	1029	4.0	0.03		--	0.85	
tirly abundant pyrite-bearing chlorite lets and a little pyrite-quartz veinlets, erally dipping 60° to 85°. little disseminated pyrite near veinlets 0m							
parse veinlets of quartz and/or chlorite h a little pyrite and specularite chalcopyrite-bearing veinlet at 97.3m	1030	4.0	0.03	0.02	0.001		

	1035	4.0	0.03		0.001	0.72	
	1036	2.0	0.02		0.002		
	1037	2.0	0.04		0.001		
	1038	2.0	0.03		0.001		
	1039	4.0	0.02		0.002		
	1040	4.0	0.03		0.002	0.79	
	1041	4.0	0.03		0.001		
	1042	4.0	0.04		0.001		
	1043	4.0	0.11		0.002	1.20	
	1044	4.0	0.06		0.002		
	1045	4.0	0.04		0.001		
	1046	4.0	0.05		0.002	0.92	
	1047	4.0	0.03		0.003		
	1048	4.0	0.02		0.002		
	1049	4.0	0.02		0.001	0.38	
	1050	4.0	0.02		0.002		
	1051	4.0	0.02		0.001		
	1052	4.0	0.02		0.002	0.67	
	1053	4.0	0.03		0.001		
	1054	4.0	0.02		0.001		
	1055	4.0	0.03		0.003	0.52	
	1056	4.0	0.03		0.002		
	1057	4.0	0.03		0.002		

	1063	4.0	0.05		0.001		
	1064	4.0	0.04		0.002		
	1065	2.0	0.02		0.001		
	1066	2.0	0.02		0.002	0.70	
	1067	2.0	0.03		0.002		
	1068	2.0	0.05		0.001		
	1069	2.0	0.08		0.003		
	1070	4.0	0.03		0.001	0.47	
	1071	4.0	0.03		0.003		
	1072	4.0	0.02		0.003		
	1073	2.0	0.04		0.002	0.65	
	1074	2.4	0.08		0.001		

D.D.H. No. 1 — Sheet 1

Total Length 250.4m — Core Recovery 100%

Location C'-18 — Elevation 4,122m

Direction — — Inclination Vertical

Date of Logging from 25th/Oct. to 10th/Nov.

Logged by M. Saito

METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay: T-Cu %	S-Cu %	Mo %	S %
10		Non-core							
20									
		-22.0m							
30		Alluvial or glacial deposits with abundant gravels of quartzite, subordinate intrusive porphyries, shale and magnetite skarn in a brown, unconsolidated, sandy matrix							
40									
		-41.5m							
		Quartzitic sandstone highly argillized	Abundant Fe/Mn oxides filling fractures.	2001	2.5	0.11		0001	
		-42.9m							
		Massive quartzite 429m-434m: argillized along fractures 434m-440m: altered into white clay 440m-497m: Strongly argillized along finely developed fractures	Limonite and a little pyrite strongly oxidized, mainly in fractures.	2002	4.0	003	003	0001	0.33
50		497m-503m: altered into white clay		2003	4.0	002		0001	
		503m-515m: argillized and strongly limonitized along finely developed fractures, with sericite spots sparsely 515m-551m: weakly argillized and limonitized along fractures, and with a little sericite aggregates sporadically		2004	4.0	003	003	0003	
		-56.1m							
		Quartzitic sandstone highly argillized	Weak stains of limonite.	2006	1.7	008		0004	
60		-60.5m Quartz monzonite porphyry bleached and highly argillized	576m-596m: Rich stains and fracture-filling films of Fe/Mn-oxides.	2006	2.0	1.11	0.92	0006	0.87
			596m-608m: Distinct stains of Cu-oxides and a little cc coating Py.	2007	2.0	1.35		0002	
		-62.8m	608m-628m: Rich dissemination and stringers of Py > cp > bn > cc	2008	1.1	127	0.05	0002	
		Shale distinctly argillized and partly skarnized	Disseminations and fracture-filling stringers of Py > cp with a little bn and cc (Py: pyrite, cp: chalcopyrite, bn: bornite, cc: chalcocite).	2009	2.0	0.80		0003	
				2010	1.6	1.04	0.05	0003	
		-67.0m							
70		Quartzitic sandstone, fine-grained, hard and compact, with an intercalated thin phyllitic slate; weakly sericitized and argillized, and with fine-grained chlorite-biotite and quartz-clay veinlets	Dissemination of pyrite and a little chalcopyrite.	2011	3.6	0.10		0007	0.55
			Fairly abundant pyrite-clay-quartz veinlets with a little chalcopyrite and bornite.	2012	4.0	0.23	001	0008	
		-73.8m Hornfels of shale with biotite, actinolite and garnet, sericitized, chloritized and argillized	Dissemination of pyrite.	2013	2.0	006		0007	
		-75.5m							
80		Fine-grained quartzitic sandstone weakly argillized, sericitized, chloritized and with a little quartz veinlets	Pyrite-chalcopyrite-bornite-bearing chlorite-clay veinlets and several one-quartz veinlets. A little disseminated pyrite and chalcopyrite.	2014	4.0	1.08	001	0003	
		-80.0m	A little pyrite disseminated.						
		-82.0m	Very abundant euhedral pyrite disseminated and in joints.	2015	4.0	005		0005	1.45
		-86.3m	Very poor copper ore.	2016	4.0	002	001	0004	
			Disseminations and joint-fillings of euhedral pyrite						

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay: T-Cu %	S-Cu %	Mo %	S %
110		Fine-grained quartzitic sandstone with fine-grained secondary biotite now chloritized fairly distinctly	Abundant pyrite disseminated and as stringers. A pyrite-chlorite concentration from 101.5m to 101.8m.	2020	1.4	001		0002	
		-102.5m		2021	0.3	002		0011	
		-103.4m Purplish-colored massive quartzite	Disseminated and joint-filled pyrite.	2022	2.0	001		0006	
		Quartz monzonite porphyry highly argillized	Highly disseminated and joint-filled Pyrite.	2023	1.3	002		0018	
		-105.0m Massive quartzite argillized along fractures	Abundant pyrite filling fractures.	2024	1.3	001		0007	1.60
		-106.3m Quartz monzonite porphyry remarkably argillized, weakly sericitized and chloritized	Pyrite and chalcopyrite as disseminations and joint-fillings.	2025	2.0	069		0002	
				2026	1.7	080		0004	
		-110.0m Purplish-colored massive quartzite argillized along fractures	Pyrite and chalcopyrite mainly in and along fractures.						
		-111.3m Quartz monzonite porphyry argillized, sericitized and chloritized weakly	Pyrite and much less chalcopyrite as disseminations and joint-fillings.	2027	4.0	031		0005	
				2028	4.0	039		0006	
			118.0m Only pyrite mineralization.	2029	1.2	008		0007	
120		-119.2m Hornfels of shale intruded by thin dykes of quartz monzonite porphyry, weakly fractured, and filled with clay, chlorite and pyrite	Pyrite in and along fractures.	2030	3.8	006		0009	050
			Disseminated pyrite and chalcopyrite in argillized porphyry dykes.	2031	4.0	009		0006	
		-128.1m Hornfels of sandstone argillized and weakly silicified	Fairly abundant pyrite as dissemination and fracture-filling.	2032	4.0	002		0013	
130		-132.8m Hornfelsic shale and porhyry dykes	Pyrite only in shale, and pyrite and chalcopyrite in porphyry.	2033	4.0	010		0006	1.91
		-133.8m Quartz monzonite porphyry argillized, weakly silicified and sericitized	Abundant pyrite, much less chalcopyrite and rare molybdenite as disseminations and joint-fillings.	2034	4.0	050		0038	
140		-141.3m		2035	2.3	022		0006	
		Post-ore dyke of olivine basalt, brecciated and including fragments of mineralized porphyry and quartzite from 151.7m to 158.4m		2036	4.0	005		0002	
				2037	4.0	004		0001	035
150				2038	4.0	003		0002	
				2039	4.0	005		0002	
				2040	1.1	009		0006	
		-158.4m							
160		Hornfels of shaly sandstone with aggregates of fine-grained biotite, minor epidote and garnet	Fairly abundant pyrite and rare chalcopyrite disseminated and in clay-filled fractures.	2041	3.6	003		0001	1.43
		-162.3m Hornfels of shale and intercalated thin sandstone, fairly remarkably argillized and weakly silicified	Pyrite and much less chalcopyrite mainly in fractures and quartz veinlets.	2042	4.0	034		0004	
		-167.3m Hornfels of quartzitic sandstone with intercalated thin layers of shale	Abundant pyrite and minor chalcopyrite as dissemination and fracture-fillings.	2043	4.0	0.15		0005	
170		-169.3m Quartz monzonite porphyry altered	More abundant chalcopyrite.						
		-170.5m Hornfels of quartzitic sandstone and shale, and thin porphyry dyke intruding between them Alteration of clay-sericite-chlorite assemblage with minor epidote	Abundant pyrite and generally poor chalcopyrite as dissemination and fracture-filling. More abundant chalcopyrite in porphyry than in hornfels.	2044	4.0	0.11		0005	2.02
		-175.0m Fine-grained quartzitic sandstone intercalating thin layers of hornfelsic shale, weakly argillized and with Sericite-chlorite-filled fractures	Abundant pyrite and a little chalcopyrite disseminated, and chalcopyrite-bearing sericite-chlorite veinlets.	2045	4.0	020		0012	
180		-179.4m Hornfels of black shale weakly fractured and filled with sericite, chlorite and clay	Pyrite and rare chalcopyrite in and along fractures.	2046	4.0	008		0006	
		-183.4m							
		Fine-grained quartzitic sandstone 181.4m-192.0m: fairly remarkably chloritized, sericitized and argillized along fractures	Pyrite-chalcopyrite-chlorite-Sericite-clay veinlets. Dissemination of pyrite	2047	4.0	0.45		0006	154
				2048	4.0	047		0016	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay: T-Cu %	S-Cu %	Mo %	S %
		-200.8m Same as above	Same as above.						
		Massiv quartzite weakly argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite mainly in fractures.	2052	4.0	012		0008	
210				2053	4.0	007		0019	1.38
		-211.3m -211.8m Argillized Porphyry	Abundant pyrite stringers.	2054	4.0	008		0021	
		Hornfelsic shale argillized and locally silicified	Pyrite, minor chalcopyrite and rare molybdenite disseminated.						
		-214.0m Quartzitic sandstone argillized along fractures	Chalcopyrite-Pyrite stringers with rare molybdenite.						
		-215.3m		2055	4.0	017		0015	
		Massive quartzite argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite in and along fractures.	2056	4.0	019		0021	0.77
220			Molybdenite-bearing chalcopyrite-pyrite stringers or seams at 220.7m, 222.2m and 223.8m.	2057	4.0	014		0011	
				2058	4.0	008		0005	
230				2059	4.0	011		0003	0.69
				2060	4.0	008		0008	
240				2061	4.0	013		0011	
				2062	4.0	006		0005	0.72
				2063	4.5	006		0009	
250		-250.5m (END)							
260									

GEOLOGI
YAURI AREA

CORE LO

D.D.H. No. 2
Total Length 25
Location F-
Direction
Date of Logging
Logged by N

METAL MINING AGE
OVERSEAS TECHNICA
GOVERNMENT OF

Prepared by MITSUI KIN

Observation (Rock)	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
...ls, sub-... e and ...ncon-... gillized ... finely ... limonitized with ... limonitized ... sericite ... illized ... skarnized ... grained, inter-... ized, ... biotite ... actinolite ... and argillized ... dstone ... chloritized ... ls							
	Abundant Fe/Mn oxides filling fractures.	2001	2.5	0.11		0001	
	Limonite and a little pyrite strongly oxidized, mainly in fractures.	2002	4.0	003	003	0001	0.33
		2003	4.0	002		0001	
		2004	4.0	003	003	0003	
	Weak stains of limonite.	2005	1.7	008		0004	
	57.6m-57.6m: Rich stains and fracture-filling films of Fe/Mn-oxides.	2006	2.0	1.11	0.82	0008	0.67
	59.6m-60.8m: Distinct stains of Cu-oxides and a little cc coating py.	2007	2.0	1.35		0.002	
	60.8m-62.8m: Rich dissemination and stringers of py > cp > bn > cc	2008	1.1	1.27	0.05	0.002	
	Disseminations and fracture-filling stringers of py > cp with a little bn and cc (py: pyrite, cp: chalcopyrite, bn: bornite, cc: chalcocite).	2009	2.0	0.60		0003	
		2010	1.6	1.04	0.05	0.003	
	Dissemination of pyrite and a little chalcopyrite.	2011	3.6	0.10		0007	0.55
	Fairly abundant pyrite-clay-quartz veinlets with a little chalcopyrite and bornite.	2012	4.0	0.23	0.01	0.008	
	Dissemination of pyrite.	2013	2.0	0.06		0.007	
	Pyrite-chalcopyrite-bornite-bearing chlorite-clay veinlets and several ore-quartz veinlets. A little disseminated pyrite and chalcopyrite.	2014	4.0	1.08	0.01	0.003	
	-80.0m A little pyrite disseminated. -82.0m	2015	4.0	0.05		0006	1.45
	Very abundant euhedral pyrite disseminated and in joints. Very poor copper ore. -86.3m	2016	4.0	002	001	0004	
	Disseminations and joint-...						

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		Fine-grained quartzitic sandstone with fine-grained secondary biotite now chloritized fairly distinctly	Abundant pyrite disseminated and as stringers.	2020	1.4	001		0002	
		-102.5m	A pyrite-chlorite concentration from 101.5m to 101.8m.	2021	0.3	002		0011	
		-103.4m Purplish-colored massive quartzite	Disseminated and joint-filled pyrite.	2022	2.0	001		0005	
		Quartz monzonite porphyry highly argillized	Highly disseminated and joint-filled pyrite.	2023	1.3	002		0018	
		-105.0m Massive quartzite argillized along fractures	Abundant pyrite filling fractures.	2024	1.3	0.01		0007	1.60
		-106.3m Quartz monzonite porphyry remarkably argillized, weakly sericitized and chloritized	Pyrite and chalcopyrite as disseminations and joint-fillings.	2025	2.0	069		0002	
110				2026	1.7	0.90		0004	
		-110.0m Purplish-colored massive quartzite argillized along fractures	Pyrite and chalcopyrite mainly in and along fractures.						
		-111.3m Quartz monzonite porphyry argillized, sericitized and chloritized weakly	Pyrite and much less chalcopyrite as disseminations and joint-fillings.	2027	4.0	0.31		0005	
				2028	4.0	0.39		0006	
			-118.0m Only pyrite mineralization.	2029	1.2	008		0007	
120		-119.2m Hornfels of shale intruded by thin dykes of quartz monzonite porphyry, weakly fractured, and filled with clay, chlorite and pyrite	Pyrite in and along fractures.	2030	3.8	006		0009	0.50
			Disseminated pyrite and chalcopyrite in argillized porphyry dykes.	2031	4.0	009		0006	
130		-128.1m Hornfels of sandstone argillized and weakly silicified	Fairly abundant pyrite as dissemination and fracture-filling.	2032	4.0	0.02		0013	
		-132.8m Hornfelsic shale and porphyry dykes	Pyrite only in shale, and pyrite and chalcopyrite in porphyry.	2033	4.0	0.10		0006	1.91
		-133.8m Quartz monzonite porphyry argillized, weakly silicified and sericitized	Abundant pyrite, much less chalcopyrite and rare molybdenite as disseminations and joint-fillings.	2034	4.0	0.50		0038	
140				2035	2.3	0.22		0006	
		-141.3m Post-ore dyke of olivine basalt, brecciated and including fragments of mineralized porphyry and quartzite from 152.7m to 158.4m		2036	4.0	0.05		0002	
									0.35
				2037	4.0	004		0001	
150				2038	4.0	0.03		0002	
				2039	4.0	005		0002	
				2040	1.1	009		0006	
160		-158.4m Hornfels of shaly sandstone with aggregates of fine-grained biotite, minor epidote and garnet	Fairly abundant pyrite and rare chalcopyrite disseminated and in clay-filled fractures.	2041	3.6	003		0001	1.43
		-162.3m Hornfels of shale and intercalated thin sandstone, fairly remarkably argillized and weakly silicified	Pyrite and much less chalcopyrite mainly in fractures and quartz veinlets.	2042	4.0	0.34		0004	
		-167.3m Hornfels of quartzitic sandstone with intercalated thin layers of shale	Abundant pyrite and minor chalcopyrite as dissemination and fracture-fillings.	2043	4.0	0.15		0005	
170		-169.3m Quartz monzonite porphyry altered	More abundant chalcopyrite.						
		-170.5m Hornfels of quartzitic sandstone and shale, and thin porphyry dyke intruding between them. Alteration of clay-sericite-chlorite assemblage with minor epidote	Abundant pyrite and generally poor chalcopyrite as dissemination and fracture-filling. More abundant chalcopyrite in porphyry than in hornfels.	2044	4.0	0.11		0005	2.02
		-175.0m Fine-grained quartzitic sandstone intercalating thin layers of hornfelsic shale, weakly argillized and with sericite-chlorite-filled fractures	Abundant pyrite and a little chalcopyrite disseminated, and chalcopyrite-bearing sericite-chlorite veinlets.	2045	4.0	0.20		0012	
180		-179.4m Hornfels of black shale weakly fractured and filled with sericite, chlorite and clay	Pyrite and rare chalcopyrite in and along fractures.	2046	4.0	008		0006	
		-183.4m Fine-grained quartzitic sandstone 181.4m-192.0m: Fairly remarkably chloritized, sericitized and argillized along fractures	Pyrite-chalcopyrite-chlorite-sericite-clay veinlets.	2047	4.0	0.45		0006	1.54
			Dissemination of pyrite and minor chalcopyrite	2048	4.0	0.47		0016	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		-200.8m Same as above	Same as above.						
		Massive quartzite weakly argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite mainly in fractures.	2052	4.0	0.12		0008	
210				2053	4.0	007		0019	1.38
		-211.3m Argillized porphyry	Abundant pyrite stringers.						
		-211.8m Hornfelsic shale argillized and locally silicified	Pyrite, minor chalcopyrite and rare molybdenite disseminated.	2054	4.0	008		0021	
		-214.0m Quartzitic sandstone argillized along fractures	Chalcopyrite-pyrite stringers with rare molybdenite.						
		-215.3m Massive quartzite argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite in and along fractures.	2055	4.0	0.17		0015	
220				2056	4.0	0.19		0021	0.77
			Molybdenite-bearing chalcopyrite-pyrite stringers or seams at 220.7m, 222.2m and 223.8m.	2057	4.0	0.14		0011	
				2058	4.0	008		0006	
230				2059	4.0	0.11		0003	0.69
				2060	4.0	0.08		0008	
240				2061	4.0	0.13		0.011	
				2062	4.0	0.06		0.005	0.72
				2063	4.5	006		0004	
250		-250.5m (END)							
260									

PL. I-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

CORE LOG and ASSAY

D.D.H No. 2 — Sheet 2

Total Length 250.5m — Core Recovery 100%

Location F-20 — Elevation 4,110m

Direction — — Inclination Vertical

Date of Logging from 11th/Nov. to 30th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD

08814

22.0m	Alluvial or glacial deposits with abundant gravels of quartzite, subordinate intrusive porphyries, shale and magnetite skarn in a brown, unconsolidated, sandy matrix								
41.5m	Quartzitic sandstone highly argillized	Abundant Fe/Mn oxides filling fractures.	2001	2.5	0.11		0.001		
42.9m	Massive quartzite 429.8–434.8m: argillized along fractures 434.8–440.8m: altered into white clay 440.8–497.7m: strongly argillized along finely developed fractures 497.7–503.8m: altered into white clay 503.8–535.8m: argillized and strongly limonitized along finely developed fractures, with sericite spots sparsely 535.8–551.8m: weakly argillized and limonitized along fractures, and with a little sericite aggregates sporadically	Limonite and a little pyrite strongly oxidized, mainly in fractures.	2002	4.0	0.03	0.03	0.001	0.33	
			2003	4.0	0.02		0.001		
			2004	4.0	0.03	0.03	0.003		
56.1m	Quartzitic sandstone highly argillized	Weak stains of limonite.	2005	1.7	0.08		0.004		
60.5–76m	Quartz monzonite porphyry bleached and highly argillized	57.6–59.6m: Rich stains and fracture-filling films of Fe/Mn-oxides. 59.6–60.8m: Distinct stains of Cu-oxides and a little cc coating py. 60.8–62.8m: Rich dissemination and stringers of Py > cp > bn > cc	2006	2.0	1.11	0.92	0.006	0.87	
			2007	2.0	1.35		0.002		
			2008	1.1	1.27	0.05	0.002		
62.8m	Shale distinctly argillized and partly skarnized	Disseminations and fracture-filling stringers of Py > cp with a little bn and cc (Py: pyrite, cp: chalcopyrite, bn: bornite, cc: chalcocite).	2008	2.0	0.80		0.003		
			2010	1.8	1.04	0.05	0.003		
67.0m	Quartzitic sandstone, fine-grained, hard and compact, with an intercalated thin phyllitic slate; weakly sericitized and orgillized, and with fine-grained chlorite-biotite and quartz-clay veinlets	Dissemination of pyrite and a little chalcopyrite. Fairly abundant pyrite-clay-quartz veinlets with a little chalcopyrite and bornite.	2011	3.6	0.10		0.007	0.55	
			2012	4.0	0.23	0.01	0.008		
73.8m	Hornfels of shale with biotite, actinolite and garnet, Sericitized, chloritized and argillized	Dissemination of pyrite.	2013	2.0	0.06		0.007		
75.5m	Fine-grained quartzitic sandstone weakly argillized, Sericitized, chloritized and with a little quartz veinlets	Pyrite-chalcopyrite-bornite-bearing chlorite-clay veinlets and several ore-quartz veinlets. A little disseminated pyrite and chalcopyrite.	2014	4.0	1.08	0.01	0.003		
80.0m		A little pyrite disseminated.	2015	4.0	0.05		0.005	1.45	
82.0m		Very abundant euhedral pyrite disseminated and in joints. Very poor copper ore.	2016	4.0	0.02	0.01	0.004		
86.3m		Disseminations and joint-fillings of euhedral pyrite.	2017	4.0	0.01		0.012		
90.2m	Hornfelsic shale locally intercalating thin layers of quartzitic sandstone; chloritized and silicified	Same as above.	2018	4.0	0.01	0.01	0.003	0.72	
97.5m	Fine-grained quartzitic sandstone weakly argillized and chloritized	Same as above.	2019	4.0	0.01		0.003		
99.5m	Purplish massive quartzite	Same as above.							

	argillized, Sericitized and chloritized weakly	chalcopyrite as disseminations and joint-fillings.							
118.0m		Only pyrite mineralization.	2028	4.0	0.39		0.006		
119.2m	Hornfels of shale intruded by thin dyres of quartz monzonite porphyry, weakly fractured, and filled with clay, chlorite and pyrite	Pyrite in and along fractures. Disseminated pyrite and chalcopyrite in argillized porphyry dykes.	2029	1.2	0.08		0.007		
			2030	3.8	0.06		0.009	0.50	
			2031	4.0	0.09		0.006		
128.1m	Hornfels of sandstone argillized and weakly silicified	Fairly abundant pyrite as dissemination and fracture-filling.	2032	4.0	0.02		0.013		
132.8m	Hornfelsic shale and porhyry dykes	Pyrite only in shale, and pyrite and chalcopyrite in porphyry.	2033	4.0	0.10		0.006	1.91	
133.8m	Quartz monzonite porphyry argillized, weakly silicified and Sericitized	Abundant pyrite, much less chalcopyrite and rare molybdenite as disseminations and joint-fillings.	2034	4.0	0.50		0.038		
			2035	2.3	0.22		0.006		
141.3m	Post-ore dyke of olivine basalt, brecciated and including fragments of mineralized porphyry and quartzite from 137.7m to 158.4m		2036	4.0	0.05		0.002		0.35
			2037	4.0	0.04		0.001		
			2038	4.0	0.03		0.002		
			2039	4.0	0.05		0.002		
158.4m			2040	1.1	0.08		0.006		
162.3m	Hornfels of shaly sandstone with aggregates of fine-grained biotite, minor epidote and garnet	Fairly abundant pyrite and rare chalcopyrite disseminated and in clay-filled fractures.	2041	3.8	0.03		0.001		1.43
167.3m	Hornfels of shale and intercaleted thin sandstone, fairly remarkably argillized and weakly silicified	Pyrite and much less chalcopyrite mainly in fractures and quartz veinlets.	2042	4.0	0.34		0.004		
169.3m	Hornfels of quartzitic sandstone with intercalated thin layers of shale	Abundant pyrite and minor chalcopyrite as dissemination and fracture-fillings.	2043	4.0	0.15		0.005		
170.5m	Quartz monzonite porphyry altered	More abundant chalcopyrite.							
175.0m	Hornfels of quartzitic sandstone and shale, and thin porphyry dyke intruding between them Alteration of clay-sericite-chlorite assemblage with minor epidote	Abundant pyrite and generally poor chalcopyrite as dissemination and fracture-filling. More abundant chalcopyrite in porphyry than in hornfels.	2044	4.0	0.11		0.005	2.02	
	Fine-grained quartzitic sandstone intercalating thin layers of hornfelsic shale, weakly argillized and with Sericite-chlorite-filled fractures	Abundant pyrite and a little chalcopyrite disseminated, and chalcopyrite-bearing Sericite-chlorite veinlets.	2045	4.0	0.20		0.012		
179.4m	Hornfels of black shale weakly fractured and filled with sericite, chlorite and clay	Pyrite and rare chalcopyrite in and along fractures.	2048	4.0	0.08		0.006		
183.4m	Fine-grained quartzitic sandstone 183.4m–192.0m: fairly remarkably chloritized, sericitized and argillized along fractures 192.0m–196.3m: suffered from same type of alteration as above, but generally weak	Pyrite-chalcopyrite-chlorite-Sericite-clay veinlets. Dissemination of pyrite and minor chalcopyrite.	2047	4.0	0.45		0.006	1.54	
			2048	4.0	0.47		0.016		
192.0m		Disseminated and fracture-filled pyrite with a little flaky chalcopyrite.	2049	4.0	0.17		0.002		
196.3m			2050	4.0	0.12		0.003	1.06	
197.1m	Hornfelsic shale	Mainly fracture-filled pyrite.							
	Massive quartzite argillized along fractures	Same as above.	2051	4.0	0.09		0.007		
199.5m	Hornfelsic shale								

	totally Silicified	and rare molybdenite disseminated.							
214.0m	Quartzitic sandstone argillized along fractures	Chalcopyrite-pyrite stringers with rare molybdenite.							
215.3m	Massive quartzite argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite in and along fractures. Molybdenite-bearing chalcopyrite-pyrite stringers or seams at 220.7m, 222.2m and 223.8m.	2055	4.0	0.17		0.015		
			2056	4.0	0.19		0.021	0.77	
			2057	4.0	0.14		0.011		
			2058	4.0	0.08		0.005		
			2059	4.0	0.11		0.003	0.69	
			2060	4.0	0.08		0.008		
			2061	4.0	0.13		0.011		
			2062	4.0	0.06		0.005	0.72	
			2063	4.5	0.06		0.004		
250.5m	(END)								

D.D.H. No. 2

Total Length 250.5

Location F-20

Direction —

Date of Logging fro

Logged by M. S

METAL MINING AGENCY
OVERSEAS TECHNICAL C
GOVERNMENT OF JAPA

Prepared by MITSUI KINZOKU

sub- and on-							
lized	Abundant Fe/Mn oxides filling fractures.	2001	2.5	0.11		0.001	
tinely onilized ith onilized serkite	Limonite and a little pyrite strongly oxidized, mainly in fractures.	2002	4.0	0.03	0.03	0.001	0.33
		2003	4.0	0.02		0.001	
		2004	4.0	0.03	0.03	0.003	
lized	Weak stains of limonite.	2005	1.7	0.08		0.004	
	576m-596m: Rich stains and fracture-filling films of Fe/Mn-oxides.	2006	2.0	1.11	0.92	0.006	0.87
	596m-608m: Distinct stains of Cu-oxides and a little cc coating py.	2007	2.0	1.35		0.002	
	608m-628m: Rich dissemination and stringers of py > cp > bn > cc	2008	1.1	1.27	0.05	0.002	
ernized	Disseminations and fracture-filling stringers of py > cp with a little bn and cc (Py: pyrite, cp: chalcopyrite, bn: bornite, cc: chalcocite).	2009	2.0	0.80		0.003	
		2010	1.6	1.04	0.05	0.003	
ained, r- t, olite	Dissemination of pyrite and a little chalcopyrite.	2011	3.6	0.10		0.007	0.55
	Fairly abundant pyrite-clay-quartz veinlets with a little chalcopyrite and bornite.	2012	4.0	0.23	0.01	0.009	
nolite argillized	Dissemination of pyrite.	2013	2.0	0.08		0.007	
one ilized	Pyrite-chalcopyrite-bornite-bearing chlorite-clay veinlets and several ore-quartz veinlets. A little disseminated pyrite and chalcopyrite.	2014	4.0	1.08	0.01	0.003	
	80.0m — A little pyrite disseminated.						
	82.0m — Very abundant euhedral pyrite disseminated and in joints.	2015	4.0	0.05		0.006	1.46
	Very poor copper ore.						
	86.3m — Disseminations and joint-fillings of euhedral pyrite.	2016	4.0	0.02	0.01	0.004	
r- icified	Same as above.	2017	4.0	0.01		0.012	
		2018	4.0	0.01	0.01	0.003	0.72
one d	Same as above.	2019	4.0	0.01		0.003	
	Same as above.						

	argillized) silicified and chloritized weakly	chalcopyrite as disseminations and joint-fillings.					
		118.0m — Only pyrite mineralization.	2028	4.0	0.38	0.006	
120	119.2m — Hornfels of shale intruded by thin dyres of quartz monzonite porphyry, weakly fractured, and filled with clay, chlorite and pyrite	Pyrite in and along fractures.	2029	1.2	0.08	0.007	
		Disseminated pyrite and chalcopyrite in argillized porphyry dykes.	2030	3.8	0.06	0.009	0.50
			2031	4.0	0.09	0.008	
130	128.1m — Hornfels of sandstone argillized and weakly silicified	Fairly abundant pyrite as dissemination and fracture-filling.	2032	4.0	0.02	0.013	
	132.8m — Hornfelsic shale and porphyry dykes	Pyrite only in shale, and pyrite and chalcopyrite in porphyry.	2033	4.0	0.10	0.006	1.91
	133.8m — Quartz monzonite porphyry argillized, weakly silicified and sericitized	Abundant pyrite, much less chalcopyrite and rare molybdenite as disseminations and joint-fillings.	2034	4.0	0.50	0.038	
140			2035	2.3	0.22	0.006	
	141.3m — Post-ore dyke of olivine basalt, brecciated and including fragments of mineralized porphyry and quartzite from 152.7m to 158.4m		2036	4.0	0.05	0.002	0.35
			2037	4.0	0.04	0.001	
150			2038	4.0	0.03	0.002	
			2039	4.0	0.05	0.002	
	158.4m — Hornfels of shaly sandstone with aggregates of fine-grained biotite, minor epidote and garnet	Fairly abundant pyrite and rare chalcopyrite disseminated and in clay-filled fractures.	2040	1.1	0.09	0.006	1.43
160			2041	3.8	0.03	0.001	
	162.3m — Hornfels of shale and intercalated thin sandstone, fairly remarkably argillized and weakly silicified	Pyrite and much less chalcopyrite mainly in fractures and quartz veinlets.	2042	4.0	0.34	0.004	
	167.3m — Hornfels of quartzitic sandstone with intercalated thin layers of shale	Abundant pyrite and minor chalcopyrite as dissemination and fracture-fillings.	2043	4.0	0.15	0.005	
170	169.3m — Quartz monzonite porphyry altered	More abundant chalcopyrite.					
	170.5m — Hornfels of quartzitic sandstone and shale, and thin porphyry dyke intruding between them. Alteration of clay-sericite-chlorite assemblage with minor epidote	Abundant pyrite and generally poor chalcopyrite as dissemination and fracture-filling. More abundant chalcopyrite in porphyry than in hornfels.	2044	4.0	0.11	0.006	2.02
	175.0m — Fine-grained quartzitic sandstone intercalating thin layers of hornfelsic shale, weakly argillized and with sericite-chlorite-filled fractures	Abundant pyrite and a little chalcopyrite disseminated, and chalcopyrite-bearing sericite-chlorite veinlets.	2045	4.0	0.20	0.012	
180	179.4m — Hornfels of black shale weakly fractured and filled with sericite, chlorite and clay	Pyrite and rare chalcopyrite in and along fractures.	2046	4.0	0.08	0.006	
	183.4m — Fine-grained quartzitic sandstone 183.4m-192.0m: fairly remarkably chloritized, sericitized and argillized along fractures	Pyrite-chalcopyrite-chlorite-Sericite-clay veinlets. Dissemination of pyrite and minor chalcopyrite.	2047	4.0	0.45	0.006	1.54
190	192.0m-196.3m: suffered from same type of alteration as above, but generally weak		2048	4.0	0.47	0.016	
		192.0m — Disseminated and fracture-filled pyrite with a little flaky chalcopyrite.	2049	4.0	0.17	0.002	
	196.3m — Hornfelsic shale		2050	4.0	0.12	0.003	1.06
	197.1m — Massive quartzite argillized along fractures	Mainly fracture-filled pyrite.					
200	199.5m — Hornfelsic shale	Same as above.	2051	4.0	0.09	0.007	

	locally silicified	and rare molybdenite disseminated.					
	214.0m — Quartzitic sandstone argillized along fractures	Chalcopyrite-pyrite stringers with rare molybdenite.					
	215.3m — Massive quartzite argillized along fractures	Pyrite, minor chalcopyrite and rare molybdenite in and along fractures.	2055	4.0	0.17	0.015	
220			2056	4.0	0.19	0.021	0.77
		Molybdenite-bearing chalcopyrite-pyrite stringers or seams at 220.7m, 222.2m and 223.8m.	2057	4.0	0.14	0.011	
			2058	4.0	0.08	0.005	
230			2059	4.0	0.11	0.003	0.69
			2060	4.0	0.08	0.008	
240			2061	4.0	0.13	0.011	
			2062	4.0	0.06	0.005	0.72
			2063	4.5	0.08	0.004	
250	250.5m (END)						
260							

D.D.H. No. 2 Sheet 2

Total Length 250.5m Core Recovery 100 %

Location F-20 Elevation 4,110m

Direction — Inclination Vertical

Date of Logging from 11th/Nov. to 30th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Black soil of pampa							
		1.25m							
		Gabbroic rock fairly decomposed and argillized by the weathering	Abundant limonite-clay veinlets with a little oxidized pyrite.	3001	4.0	0.10		—	
		Sheared at 3.5m to 3.6m, 4.1m to 4.2m, 4.6m to 4.7m and 7.7m to 8.4m		3002	4.0	0.08	0.06	0.001	0.49
		10.1m Non-core from 8.4m to 8.8m							
10		Gabbroic rock fairly decomposed and argillized by the weathering	Finely developed limonite-clay veinlets especially from 11.2m to 11.4m and from 12.4m to 12.7m.	3003	4.0	0.08		tr	
			14.0m Limonite gossan with magnetite veinlets 15.1m Network of limonite-clay veinlets with fairly abundant pyrite	3004	4.0	0.03	0.03	0.001	0.50
		16.6m Gabbroic rock fairly argillized and carbonitized	Network of limonite-clay-carbonate veinlets with a little pyrite, dominantly dipping 60° to 70° and 20° to 30°.	3005	4.0	0.03		—	
20			A 0.1-cm pyrite-limonite-quartz veinlet dipping 70° at 22.0m.	3006	4.0	0.06	0.05	—	
			A little dissemination of magnetite.						
		25.0m Medium-grained gabbroic rock	Abundant thin stringers of carbonates bearing limonite and a little pyrite.	3007	4.0	0.03		—	0.31
		25.0m-33.7m: remarkably chloritized, and with a little secondary biotite and actinolitic amphibole	A 1-cm carbonate vein highly stained by limonite at 26.5m. Strongly limonitized parts at 31.0m, 31.2m, 32.0m and 33.6m.	3008	4.0	0.03	0.03	—	
30			A little dissemination of magnetite.						
		33.7m-45.6m: carbonitized, chloritized, sporadically epidotized, and with a little secondary biotite and amphibole	33.7m Limonite-bearing carbonate veinlets from 33.7m to 36.0m. Limonite gossan from 36.0m to 36.2m. Limonite-bearing carbonate veinlets from 36.2m to 37.2m.	3009	4.0	0.05		—	0.36
			A few chlorite-epidote-quartz veinlets with a little chalcopyrite and bornite from 37.2m to 37.5m.	3010	4.0	0.09	0.04	tr	
40			Limonite-carbonate veinlets with very small amounts of pyrite and chalcopyrite from 37.5m to 40.8m.	3011	4.0	0.05		—	
		45.6m-58.0m: carbonitized, chloritized, weakly epidotized, locally silicified, and with fairly abundant aggregates of fine-grained biotite and a little actinolite	A little dissemination and stringers of pyrite with very small amounts of chalcopyrite and native copper from 40.8m to 50.1m.	3012	4.0	0.05	0.03	—	0.29
			Pyrite-bearing chlorite veinlets rarely with chalcopyrite, which are often cut by "barren" calcite veinlet from 50.1m to 58.0m.	3013	4.0	0.04		—	
50				3014	4.0	0.05	0.02	—	0.30
		115° 58.0m							
		Medium-grained, plagioclase-porphyritic, biotite-hornblende granodiorite	Network of limonite-filled joints and a little disseminated pyrite	3015	4.0	0.04		—	
60			60.0m Network of pyrite-bearing carbonate-chlorite veinlets and a little dissemination of pyrite.	3016	4.0	0.02	0.02	—	
		58.0m-78.2m: markedly argillized, carbonitized, chloritized, locally silicified and slightly sericitized	Weak limonitization up to 62.6m.	3017	4.0	0.01		tr	0.49
			67.3m						
			Fairly abundant specularite-chlorite veinlets with a little pyrite.	3018	4.0	0.02	0.02	tr	
70				3019	4.0	0.01		—	
		78.2m-80.7m: markedly argillized, chloritized, weakly carbonitized and sporadically epidotized, with a skarn xenolith (?) from 79.6m to 79.9m	A little disseminated magnetite-hematite and pyrite.	3020	2.0	0.01	0.01	—	0.87
			78.2m Abundant pyrite and hematite	3021	2.0	0.19		0.002	
80		80.7m Epidote-garnet-actinolite-magnetite skarn	Chalcopyrite, pyrite, magnetite and hematite in skarn.	3022	2.0	0.44	0.13	0.001	
		82.0m Skarnized gabbro with epidote and garnet	Chalcopyrite, bornite, chalcocite and green copper.	3023	2.0	0.32		0.001	
		83.3m Skarn	Mainly chalcopyrite and pyrite.						
		83.3m-84.0m: actinolite-garnet-magnetite	Bornite and chalcopyrite with a little cuprite and native copper.	3024	2.0	1.61	0.14	—	
		84.0m-85.2m: epidote-garnet-actinolite	85.2m Pyrite and a little chalco-pyrite disseminated.	3025	2.0	0.11		—	
		85.2m-88.0m: actinolite-white mica							

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Marble silicified generally weakly	Dissemination of a little pyrite and rare chalcopyrite.						
		103.0m Highly silicified marble and a 20-cm skarn	Bornite, and chalcopyrite in skarn.						
		104.2m Marble silicified weakly	Dissemination of a little pyrite and rare chalcopyrite.	3032	4.0	0.07		—	0.74
		107.0m Porphyry and skarn	Chalcopyrite, bornite and minor chalcocite.	3033	2.0	0.27		—	
		107.6m Marble composed of thin fine-grained layers and thick coarse-grained layers, and with thin skarnized parts	Dissemination of a little pyrite and rare chalcopyrite in marble and chalcopyrite in skarnized parts.						
110		110.8m Marble silicified weakly	Dissemination of pyrite and rare chalcopyrite.	3034	4.0	0.42		—	
				3035	4.0	0.06		—	
				3036	3.4	0.05		—	1.11
		119.2m Skarn							
120		119.2m-121.8m: epidote-bearing garnet magnetite-hematite	Dissemination and seams of chalcopyrite and bornite locally associated with minor amounts of chalcocite, cuprite, galena and sphalerite.	3037	2.8	2.51		—	
		121.8m-122.0m: garnet-bearing epidote		3038	2.0	2.72		tr	
		122.0m-124.8m: epidote-actinolite-chlorite-argillized, originated from gabbroic rock?		3039	2.0	2.82		—	
		124.8m-127.2m: epidote-actinolite-garnet, argillized		3040	2.0	0.84		—	
130		127.2m-128.8m: skarnized and silicified marble		3041	2.0	0.09		0.001	1.70
		128.8m-134.4m: mainly garnet-epidote-hematitized magnetite		3042	2.0	0.90		0.001	
		134.4m-136.2m: mixture of garnet and marble		3043	2.0	4.03		0.001	
		136.2m-140.6m: mainly garnet-epidote		3044	2.0	1.23		0.001	
				3045	2.0	1.81		0.001	
				3046	2.0	0.48		0.001	
140		140.1m-141.0m: "white" skarn possibly containing diopside							
		141.0m Epidotized gabbroic rock	Disseminated pyrite.	3047	2.0	0.16		0.001	0.48
		141.7m "white" skarn possibly originated from "hibrid rock" formed by the reaction between limestone and gabbro	Dissemination of pyrite and minor chalcopyrite.	3048	2.0	0.44		0.002	
		144.4m Gabbroic rock remarkably skarnized by epidote, chlorite and actinolite, and a little "white" skarn	Disseminated and joint-filled pyrite and trace of chalcopyrite.	3049	2.0	0.05		0.001	
		149.0m Skarn		3050	2.0	0.07		0.001	
150		149.0m-150.0m: mainly epidote-garnet-magnetite	Chiefly dissemination of chalcopyrite, pyrite, bornite and trace of chalcocite.	3051	2.0	0.23		0.001	
		150.0m-152.3m: mainly diopside-garnet-epidote		3052	2.0	0.55		0.001	
		152.3m Skarnized gabbroic rock	Dissemination of pyrite.	3053	2.0	0.07		0.001	0.33
		153.2m "white" skarn containing a little garnet and epidote	Same as above.	3054	2.0	0.06		0.002	
		155.2m Skarnized gabbroic rock markedly argillized	Almost same as above. A little chalcopyrite from 158.0m to 158.3m	3055	2.0	0.04		0.002	
		158.3m Argillized and chloritized porphyry	Dissemination of pyrite.	3056	2.0	0.04		0.001	
160		159.6m Skarn							
		159.6m-161.7m: actinolite-magnetite	Dissemination of pyrite and chalcopyrite.	3057	2.0	0.24		0.002	
		161.7m-163.8m: "pale green" skarn rich in diopside		3058	2.0	0.75		0.001	
		163.8m-165.2m: epidote-diopside-actinolite		3059	2.0	0.11		0.001	
		165.2m Silicified marble	Dissemination of pyrite.						
		166.5m Brecciated and argillized skarn	Dissemination of pyrite, chalcopyrite and minor bornite.	3060	2.0	0.37		0.001	0.57
		168.0m Marble weakly skarnized							
170		"white" skarn or "hibrid" rock mainly composed of albite, K-feldspar and quartz with fairly abundant apatite, fine-grained biotite, and a little epidote, garnet and actinolite	Dissemination of a little pyrite and trace of chalco-pyrite.	3061	2.0	0.07		0.001	
				3062	2.0	0.02		0.001	
				3063	2.0	0.03		tr	
		A little skarnized gabbroic rock		3064	2.0	0.29		tr	
		172.0m Marble partly skarnized	Pyrite, chalcopyrite and bornite in skarn.						
		172.6m Mainly garnet skarn	Disseminated pyrite with a little chalcopyrite.	3065	2.0	0.18		—	
		179.3m Gabbroic rock remarkably biotitized	Disseminated pyrite and a little chalcopyrite.	3066	2.0	0.08		0.002	
180		Skarn and altered gabbroic rock							
		177.3m-180.2m: "white" skarn or	Almost same as above	3067	2.0	0.05		0.001	
		181.1m-183.2m: "hibrid" rock							
		180.2m-181.1m: epidote-actinolite skarn	Pyrite and lesser chalcopyrite disseminated in epidote-actinolite skarn.						
		183.6m-184.0m: garnet-bearing "white" skarn							
		184.4m		3068	4.0	0.18		—	
		185.1m							

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Plagioclase-porphyritic granodiorite markedly chloritized along joints	A little pyrite in and along chlorite veinlets.	3073	4.0	0.11		—	
		202.0m Gabbroic rock with developed joint filled by epidote and chlorite, and locally silicified and skarnised	A little pyrite and rare chalcopyrite in and along chlorite veinlets.	3074	4.0	0.03		—	0.25
210				3075	4.0	0.05		0.001	
		212.2m Medium-grained, plagioclase-porphyritic, hornblende-biotite granodiorite		3076	4.0	0.04		—	
				3077	4.0	0.03		tr	0.22
220		212.2m-226.8m: chloritized and epidotized mainly along joints and as replacement of hornblende, weakly argillized and carbonitized mainly as replacement of felde par, containing a little quartz veinlets	Same as above	3078	4.0	0.04		tr	
				3079	4.0	0.03		—	
230		226.8m-228.3m: sheared and remarkably argillized		3080	4.0	0.11		—	0.17
		228.3m-234.5m: argillized, carbonitized chloritized and locally epidotized		3081	4.0	0.03		—	
		234.5m-250.2m: chloritized, carbonitized and carbonitized generally weakly		3082	4.0	0.04		tr	
240				3083	4.0	0.03		0.001	0.50
				3084	4.0	0.01		tr	
250		250.2m		3085	2.2	0.01		tr	
260									

GEOLO

YAURI ARE

CORE I

D.D.H. No.

Total Length

Location K

Direction

Date of Logging

Logged by

METAL MINING AG

OVERSEAS TECHNI

GOVERNMENT OF

Prepared by MITSUI K

Observation (cont.)	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
ed ing .1m 7.7m	Abundant limonite-clay veinlets with a little oxidized pyrite.	3001	4.0	010		—	
		3002	4.0	008	008	0001	049
ed ing	Finely developed limonite-clay veinlets especially from 11.2m to 11.4m and from 12.4m to 12.7m.	3003	4.0	008		tr	
	—14.0m— Limonite gossan with magnetite veinlets —15.1m— Network of limonite-clay veinlets with fairly abundant pyrite	3004	4.0	003	003	0001	050
zed	Network of limonite-clay-carbonate veinlets with a little pyrite, dominantly dipping 60° to 70° and 20° to 30°.	3005	4.0	003		—	
	A 0.7-cm pyrite-limonite-quartz veinlet dipping 70° at 22.0m. A little dissemination of magnetite.	3006	4.0	006	005	—	
ock	Abundant thin stringers of carbonates bearing limonite and a little pyrite.	3007	4.0	003		—	0.31
c	A 1-cm carbonate vein highly stained by limonite at 26.5m. Strongly limonitized parts at 31.0m, 31.2m, 32.0m and 33.6m. A little dissemination of magnetite.	3008	4.0	003	003	—	
lized, tile	—33.7m— Limonite-bearing carbonate veinlets from 33.7m to 36.0m.	3009	4.0	005		—	036
	Limonite gossan from 36.0m to 36.2m. Limonite-bearing carbonate veinlets from 36.2m to 37.2m. A few chlorite-epidote-quartz veinlets with a little chalcopyrite and bornite from 37.2m to 37.5m.	3010	4.0	009	004	tr	
lized, ified,	Limonite-carbonate veinlets with very small amounts of pyrite and chalcopyrite from 37.5m to 40.8m.	3011	4.0	005		—	0.29
gates little	A little dissemination and stringers of pyrite with very small amounts of chalcopyrite and native copper from 40.8m to 50.1m.	3012	4.0	005	003	—	
	Pyrite-bearing chlorite veinlets rarely with chalcopyrite, which are often cut by "barren" calcite veinlet from 50.1m to 58.0m.	3013	4.0	004		—	
		3014	4.0	005	002	—	0.30
se-	Network of limonite-filled joints and a little disseminated pyrite —60.0m—	3015	4.0	0.04		—	
zed, ly	Network of pyrite-bearing carbonate-chlorite veinlets and a little dissemination of pyrite.	3016	4.0	002	002	—	
lized	Weak limonitization up to 62.6m. —67.3m—	3017	4.0	0.01		tr	049
ted, ized	Fairly abundant specularite-chlorite veinlets with a little pyrite.	3018	4.0	002	002	tr	
with a 79.9m	A little disseminated magnetite-hematite and pyrite.	3019	4.0	0.01		—	
		3020	2.0	001	0.01	—	087
	—78.2m— Abundant pyrite and hematite chalcopyrite, pyrite, magnetite and hematite in skarn.	3021	2.0	019		0002	
ite skarn	Chalcopyrite, bornite, chalcocite and green copper.	3022	2.0	044	013	0001	
nd garnet	Mainly chalcopyrite and pyrite.	3023	2.0	0.32		0001	
agnetite tinolite	Bornite and chalcopyrite with a little cuprite and native copper. —85.2m—	3024	2.0	1.81	0.14	—	
	Pyrite and a little chalco-	3025	2.0	0.11		—	

Depth (m)	Section	Rock	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		Marble silicified generally weakly	Dissemination of a little pyrite and rare chalcopyrite.						
		—103.0m— Highly silicified marble and a 20-cm skarn —104.2m—	Bornite, and chalcopyrite in skarn.	3032	4.0	007		—	0.74
		Marble silicified weakly	Dissemination of a little pyrite and rare chalcopyrite.						
		—107.0m— Porphyry and skarn —107.6m—	Chalcopyrite, bornite and minor chalcocite.	3033	2.0	027		—	
110		Marble composed of thin fine-grained layers and thick coarse-grained layers, and with thin skarnized parts —110.8m—	Dissemination of a little pyrite and rare chalcopyrite in marble and chalcopyrite in skarnized parts.	3034	4.0	042		—	
		Marble silicified weakly	Dissemination of pyrite and rare chalcopyrite.	3035	4.0	006		—	
		—119.2m—		3036	3.4	005		—	1.11
120		Skarn 119.2m-121.8m : epidote-bearing garnet magnetite-hematite	Dissemination and seams of chalcopyrite and bornite locally associated with minor amounts of chalcocite, cuprite, galena and sphalerite.	3037	2.6	2.51		—	
		121.8m-122.0m : garnet-bearing epidote		3038	2.0	2.72		tr	
		122.0m-124.8m : epidote-actinolite-chlorite argillized, originated from gabbroic rocks		3039	2.0	2.82		—	
				3040	2.0	0.84		—	
		124.8m-127.2m : epidote-actinolite-garnet, argillized		3041	2.0	009		0001	
130		127.2m-128.8m : skarnized and silicified marble		3042	2.0	0.90		0001	1.70
		128.8m-134.4m : mainly garnet-epidote-hematitized magnetite 134.4m-136.2m : mixture of garnet and marble		3043	2.0	4.03		0001	
		136.2m-140.6m : mainly garnet-epidote		3044	2.0	1.23		0.001	
				3045	2.0	1.81		0001	
140		140.1m-141.0m : "white" skarn possibly containing diopside		3046	2.0	0.46		0001	
		—141.0m— Epidotized gabbroic rock —141.7m—	Disseminated pyrite.	3047	2.0	0.16		0001	048
		"white" skarn possibly originated from "hibrid rock" formed by the reaction between limestone and gabbro —144.4m—	Dissemination of pyrite and minor chalcopyrite.	3048	2.0	0.44		0002	
		Gabbroic rock remarkably skarnized by epidote, chlorite and actinolite, and a little "white" skarn —149.0m—	Disseminated and joint-filled pyrite and trace of chalcopyrite.	3049	2.0	0.05		0001	
				3050	2.0	007		0001	
150		Skarn 149.0m-150.0m : mainly epidote-garnet-magnetite 151.0m-152.3m : mainly diopside-garnet-epidote	Chiefly dissemination of chalcopyrite, pyrite, bornite and trace of chalcocite.	3051	2.0	0.23		0001	
				3052	2.0	0.55		0001	
		—152.3m— Skarnized gabbroick rock —153.2m—	Dissemination of pyrite.	3053	2.0	007		0.001	033
		"white" skarn containing a little garnet and epidote —155.2m—	Same as above.	3054	2.0	006		0002	
		Skarinized gabbroic rock markedly argillized —158.3m—	Almost same as above. A little chalcopyrite from 158.0m to 158.3m.	3055	2.0	004		0002	
160		Argillized and chloritized porphyry —159.6m—	Dissemination of pyrite.	3056	2.0	004		0001	
		Skarn 159.6m-161.7m : actinolite-magnetite	Dissemination of pyrite and chalcopyrite.	3057	2.0	024		0002	
		161.7m-161.8m : "pale green" skarn rich in diopside 161.8m-165.2m : epidote-diopside-actinolite —165.2m—		3058	2.0	0.75		0001	
		Silicified marble —166.5m—	Dissemination of pyrite.	3059	2.0	0.11		0001	
		Brecciated and argillized skarn —168.0m— Marble weakly skarnized —168.4m—	Dissemination of pyrite, chalcopyrite and minor bornite.	3060	2.0	037		0001	057
170		"white" skarn or "hibrid" rock mainly composed of albite, K-feldspar and quartz with fairly abundant apatite, fine-grained biotite, and a little epidote, garnet and actinolite	Dissemination of a little pyrite and trace of chalcopyrite.	3061	2.0	007		0001	
				3062	2.0	002		0001	
		A little skarnized gabbroic rock		3063	2.0	003		tr	
		—152.0m— Marble partly skarnized —160.0m—	Pyrite, chalcopyrite and bornite in skarn.	3064	2.0	0.29		tr	
		Mainly garnet skarn —177.6m—	Disseminated pyrite with a little chalcopyrite.	3065	2.0	0.18		—	
180		Gabbroic rock remarkably biotitized —179.3m—	Disseminated pyrite and a little chalcopyrite.	3066	2.0	008		0002	
		Skarn and altered gabbroic rock 179.3m-180.7m : "white" skarn or 181.1m-183.2m : "hibrid" rock	Almost same as above	3067	2.0	005		0001	
		180.7m-181.1m : epidote-actinolite skarn 183.6m-184.0m : garnet-bearing "white" skarn —184.4m—	Pyrite and lesser chalcopyrite disseminated in epidote-actinolite skarn.	3068	4.0	018		—	
		—185.1m							

Depth (m)	Section	Rock	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		Plagioclase-porphyritic granodiorite markedly chloritized along joints —202.0m—	A little pyrite in and along chlorite veinlets.	3073	4.0	0.11		—	
		Gabbroic rock with developed joint filled by epidote and chlorite, and locally silicified and skarnised	A little pyrite and rare chalcopyrite in and along chlorite veinlets.	3074	4.0	003		—	025
210		—212.2m—		3075	4.0	005		0001	
		Medium-grained, plagioclase-porphyritic, hornblende-biotite granodiorite	Same as above	3076	4.0	004		—	
				3077	4.0	003		tr	022
220		212.2m-226.8m : chloritized and epidotized mainly along joints and as replacement of hornblende, weakly argillized and carbonitized mainly as replacement of feldspar, containing a little quartz veinlets		3078	4.0	004		tr	
				3079	4.0	003		—	
230		226.8m-228.3m : sheared and remarkably argillized		3080	4.0	0.11		—	0.17
		228.3m-234.5m : argillized, carbonitized chloritized and locally epidotized		3081	4.0	003		—	
		234.5m-250.2m : chloritized, carbonitized and carbonitized generally weakly		3082	4.0	004		tr	
240				3083	4.0	003		0.001	050
				3084	4.0	001		tr	
250		—250.2m—		3085	2.2	001		tr	
260									

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PL. I - 7

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU (PHASE Ⅲ)

CORE LOG and ASSAY

D.D.H. No. 3 Sheet 3

Total Length 250.20m Core Recovery 100%

Location K - 26 Elevation 4,002m

Direction — Inclination Vertical

Date of Logging from 24th/Oct. to 7th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

		Limonite gossan with magnetite veinlets							
	15.1m	Network of limonite-clay veinlets with fairly abundant pyrite							
	16.6m								0.50
	Gabbroic rock fairly argillized and carbonitized	Network of limonite-clay-carbonate veinlets with a little pyrite, dominantly dipping 60° to 70° and 20° to 30°.	3005	4.0	0.03		—		
20		A 0.7-cm pyrite-limonite-quartz veinlet dipping 70° at 22.0m.	3006	4.0	0.06	0.05	—		
		A little dissemination of magnetite.							
	25.0m								
	Medium-grained gabbroic rock	Abundant thin stringers of carbonates bearing limonite and a little pyrite.	3007	4.0	0.03		—		0.31
	25.0m-31.7m: remarkably chloritized, and with a little secondary biotite and actinolitic amphibole	A 1-cm carbonate vein highly stained by limonite at 26.5m. Strongly limonitized parts at 31.0m, 31.2m, 31.0m and 33.6m.	3008	4.0	0.03	0.03	—		
30		A little dissemination of magnetite.							
	31.7m								
	31.7m-45.6m: carbonitized, chloritized, sporadically epidotized, and with a little secondary biotite and amphibole	Limonite-bearing carbonate veinlets from 32.7m to 36.0m. Limonite gossan from 36.0m to 36.2m. Limonite-bearing carbonate veinlets from 36.2m to 37.2m.	3009	4.0	0.05		—		0.36
		A few chlorite-epidote-quartz veinlets with a little chalcopyrite and bornite from 37.2m to 37.5m.	3010	4.0	0.09	0.04	tr		
40		Limonite-carbonate veinlets with very small amounts of pyrite and chalcopyrite from 37.5m to 40.8m.	3011	4.0	0.05		—		
		A little dissemination and stringers of pyrite with very small amounts of chalcopyrite and native copper from 40.8m to 50.1m.							0.29
	45.6m-58.0m: carbonitized, chloritized, weakly epidotized, locally silicified, and with fairly abundant aggregates of fine-grained biotite and a little actinolite		3012	4.0	0.05	0.03	—		
		Pyrite-bearing chlorite veinlets rarely with chalcopyrite, which are often cut by "barren" calcite veinlet from 50.1m to 58.0m.	3013	4.0	0.04		—		
50			3014	4.0	0.05	0.02	—		0.30
	115°58.0m								
	Medium-grained, plagioclase-porphyritic, biotite-hornblende granodiorite	Network of limonite-filled joints and a little disseminated pyrite	3015	4.0	0.04		—		
		60.0m Network of pyrite-bearing carbonate-chlorite veinlets and a little dissemination of pyrite.	3016	4.0	0.02	0.02	—		
60	58.0m-78.2m: markedly argillized, carbonitized, chloritized, locally silicified and slightly sericitized	Weak limonitization up to 62.6m.	3017	4.0	0.01		tr		0.49
		67.3m Fairly abundant specularite-chlorite veinlets with a little pyrite.	3018	4.0	0.02	0.02	tr		
			3019	4.0	0.01		—		
70		A little disseminated magnetite-hematite and pyrite.	3020	2.0	0.01	0.01	—		
	78.2m-80.7m: markedly argillized, chloritized, weakly carbonitized and sporadically epidotized, with a skarn xenolith (?) from 79.6m to 79.9m	78.2m Abundant pyrite and hematite chalcopyrite, pyrite, magnetite and hematite in skarn.	3021	2.0	0.19		0.002		0.87
	120° 80.7m	Chalcopyrite, bornite, chalcocite and green copper.	3022	2.0	0.44	0.13	0.001		
	Epidote-garnet-actinolite-magnetite skarn								
	82.0m Skarnized gabbro with epidote and garnet	Mainly chalcopyrite and pyrite.	3023	2.0	0.32		0.001		
	83.3m Skarn	Bornite and chalcopyrite with a little cuprite and native copper.	3024	2.0	1.61	0.14	—		
	83.3m-84.0m: actinolite-garnet-magnetite	85.2m Pyrite and a little chalco-pyrite disseminated.							
	84.0m-85.2m: epidote-garnet-actinolite		3025	2.0	0.11		—		
	85.2m-88.0m: actinolite-white mica-quartz-calcite-chlorite								
	88.0m Limestone partly skarnized	A little chalcopyrite in skarnized part	3026	2.0	1.27	0.10	tr		0.73
90	Skarn	Pyrite and chalcopyrite disseminated.	3027	2.0	0.05		0.005		
	89.2m-90.0m: brecciated actinolite skarn	Poor chalcopyrite from 90.0m to 92.8m.	3028	2.0	0.63	0.08	0.001		
	90.0m-92.8m: mainly epidote-chlorite								
	92.8m-93.3m: mainly epidote-garnet								
	93.3m Marble with networks of limonite-filled fractures	A little pyrite and chalcopyrite as stringers and in fractures.	3029	2.0	0.16		—		
	95.9m								
	125° 96.5m Mixture of skarn and marble	High-grade ore mainly of bornite.	3030	2.0	2.32	0.33	—		
	97.3m Quartz monzonite porphyry	Disseminated pyrite and chalcopyrite.							
	Marble weakly silicified and locally limonitized along fractures	General but poor dissemination of pyrite and minor chalcopyrite, and several chalcopyrite seams.	3031	4.0	0.08		—		—
			3032	4.0	0.06		—		
	119.2m Skarn								
	119.2m-121.8m: epidote-bearing garnet magnetite-hematite	Dissemination and seams of chalcopyrite and bornite locally associated with minor amounts of chalcocite, cuprite, galena and sphalerite.	3033	4.0	0.06		—		
	121.8m-122.0m: garnet-bearing epidote		3034	4.0	0.05		—		
	122.0m-124.8m: epidote-actinolite-chlorite argillized, originated from gabbroic rock(?)		3035	4.0	0.04		—		
			3036	3.4	0.05		—		1.11
120			3037	2.8	2.51		—		
			3038	2.0	2.72		tr		
			3039	2.0	2.82		—		
	124.8m-127.2m: epidote-actinolite-garnet, argillized		3040	2.0	0.84		—		
	127.2m-128.8m: skarnized and silicified marble		3041	2.0	0.09		0.001		1.70
130	128.8m-134.4m: mainly garnet-epidote-hematitized magnesite		3042	2.0	0.80		0.001		
	134.4m-136.2m: mixture of garnet and marble		3043	2.0	4.03		0.001		
	136.2m-140.6m: mainly garnet-epidote		3044	2.0	1.23		0.001		
			3045	2.0	1.81		0.001		
			3046	2.0	0.48		0.001		
140	140.1m-141.0m: "white" skarn possibly containing diopside		3047	2.0	0.16		0.001		0.48
	141.0m Epidotized gabbroic rock	Disseminated pyrite.							
	141.7m "white" skarn possibly originated from "hibrid rock" formed by the reaction between limestone and gabbro	Dissemination of pyrite and minor chalcopyrite.	3048	2.0	0.44		0.002		
	144.4m Gabbroic rock remarkably skarnized by epidote, chlorite and actinolite, and a little "white" skarn	Disseminated and joint-filled pyrite and trace of chalcopyrite.	3049	2.0	0.05		0.001		
			3050	2.0	0.07		0.001		
	149.0m Skarn		3051	2.0	0.23		0.001		
150	149.0m-150.0m: mainly epidote-garnet-magnetite	Chiefly dissemination of chalcopyrite, pyrite, bornite and trace of chalcocite.	3052	2.0	0.55		0.001		
	151.0m-152.2m: mainly diopside-garnet-epidote								
	152.2m Skarnized gabbroic rock	Dissemination of pyrite.	3053	2.0	0.07		0.001		0.33
	"White" skarn containing a little garnet and epidote	Same as above.	3054	2.0	0.06		0.002		
	155.2m Skarnized gabbroic rock markedly argillized	Almost same as above. A little chalcopyrite from 158.0m to 158.3m.	3055	2.0	0.04		0.002		
	158.3m								
160	159.6m Argillized and chloritized porphyry	Dissemination of pyrite.	3056	2.0	0.04		0.001		
	159.6m Skarn								
	159.6m-161.7m: actinolite-magnetite	Dissemination of pyrite and chalcopyrite.	3057	2.0	0.24		0.002		
	161.7m-163.8m: "pale green" skarn rich in diopside		3058	2.0	0.75		0.001		
	163.8m-165.2m: epidote-diopside-actinolite								
	165.2m Silicified marble	Dissemination of pyrite.	3059	2.0	0.11		0.001		
	166.5m Brecciated and argillized skarn	Dissemination of pyrite, chalcopyrite and minor bornite.	3060	2.0	0.37		0.001		0.57
	168.0m 168.4m Mainly weakly skarnized								
170	"White" skarn or "hibrid" rock mainly composed of albite, K-feldspar and quartz with fairly abundant apatite, fine-grained biotite, and a little epidote, garnet and actinolite	Dissemination of a little Pyrite and trace of chalco-pyrite.	3061	2.0	0.07		0.001		
			3062	2.0	0.02		0.001		
			3063	2.0	0.03		tr		
	A little skarnized gabbroic rock		3064	2.0	0.29		tr		
	157.0m Marble partly skarnized	Pyrite, chalcopyrite and bornit in skarn.							
	160.0m Mainly garnet skarn	Disseminated pyrite with a little chalcopyrite.	3065	2.0	0.18		—		
	172.6m Gabbroic rock remarkably biotitized	Disseminated pyrite and a little chalcopyrite.							
180	179.0m Skarn and altered gabbroic rock		3066	2.0	0.08		0.002		
	179.3m-180.7m: "white" skarn or	Almost same as above	3067	2.0	0.05		0.001		
	181.1m-183.2m: "hibrid" rock								
	180.7m-181.1m: epidote-actinolite skarn	Pyrite and lesser chalcopyrite disseminated in epidote-actinolite skarn.	3068	4.0	0.18		—		
	183.6m-184.0m: garnet-bearing "white" skarn								
	184.4m								
	185.1m 185.3m		3068	4.0	0.03		tr		
190	Medium-grained plagioclase-porphyritic hornblende-biotite granodiorite chloritized.	A little pyrite mainly in and along chlorite veinlets.							
	A little skarn (xenolith?), and gabbroic rock chloritized, epidotize and silicified.		3070	4.0	0.04		tr		0.38
			3071	2.0	0.02		0.001		
	196.5m 197.2m 197.9m								
			3072	4.0	0.03		tr		
200	199.0m								
	Medium-grained, plagioclase-porphyritic, hornblende-biotite granodiorite		3076	4.0	0.04		—		
			3077	4.0	0.03		tr		0.22
220			3078	4.0	0.04		tr		
	212.2m-226.8m: chloritized and epidotized mainly along joints and as replacement of hornblende, weakly argillized and carbonitized mainly as replacement of feldspar, containing a little quartz veinlets	Same as above	3079	4.0	0.03		—		
	226.8m-228.3m: sheared and remarkably argillized		3080	4.0	0.11		—		0.17
230	228.3m-234.5m: argillized, carbonilized chloritized and locally epidotized		3081	4.0	0.03		—		
	234.5m-250.2m: chloritized, carbonitized and carbonitized generally weakly								
			3082	4.0	0.04		tr		
240									
			3083	4.0	0.03		0.001		0.50
			3084	4.0	0.01	f	tr		
250	250.2m		3085	2.2	0.01		tr		
260									

D.D.H No. 3

Total Length 250.20m

Location K - 26

Direction —

Date of Logging from

Logged by M. Sai

METAL MINING AGENCY
OVERSEAS TECHNICAL CO
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU E

	15.1m — Network of limonite-clay veinlets with fairly abundant pyrite							0.50
argillized	Network of limonite-clay-carbonate veinlets with a little pyrite, dominantly dipping 60° to 70° and 20° to 30°. A 0.7-cm pyrite-limonite-quartz veinlet dipping 70° at 22.0m. A little dissemination of magnetite.	3005	4.0	0.03		—		
		3006	4.0	0.06	0.05	—		
ɔic rock	Abundant thin stringers of carbonates bearing limonite and a little pyrite. A 1-cm carbonate vein highly stained by limonite at 26.5m. Strongly limonitized parts at 31.0m, 31.2m, 32.0m and 33.6m. A little dissemination of magnetite.	3007	4.0	0.03		—		0.31
·ittle inolitic		3008	4.0	0.03	0.03	—		
epidotized, ry biotite	33.7m — Limonite-bearing carbonate veinlets from 33.7m to 36.0m. Limonite gossan from 36.0m to 36.2m. Limonite-bearing carbonate veinlets from 36.2m to 37.2m. A few chlorite-epidote-quartz veinlets with a little chalcopyrite and bornite from 37.2m to 37.5m.	3009	4.0	0.05		—		0.36
		3010	4.0	0.09	0.04	tr		
chloritized, silicified, aggregates d a little	Limonite-carbonate veinlets with very small amounts of pyrite and chalcopyrite from 37.5m to 40.8m. A little dissemination and stringers of pyrite with very small amounts of chalcopyrite and native copper from 40.8m to 50.1m.	3011	4.0	0.05		—		0.29
		3012	4.0	0.05	0.03	—		
	Pyrite-bearing chlorite veinlets rarely with chalcopyrite, which are often cut by "barren" calcite veinlet from 50.1m to 58.0m.	3013	4.0	0.04		—		
		3014	4.0	0.05	0.02	—		0.30
ioclase- lende	60.0m — Network of limonite-filled joints and a little disseminated pyrite	3015	4.0	0.04		—		
rgillized, locally ericitized	Network of pyrite-bearing carbonate-chlorite veinlets and a little dissemination of pyrite.	3016	4.0	0.02	0.02	—		
	67.3m — Weak limonitization up to 62.6m.	3017	4.0	0.01		tr		0.49
gillized, onitized ed, with a 5m to 79.9m	Fairly abundant specularite-chlorite veinlets with a little pyrite.	3018	4.0	0.02	0.02	tr		
	A little disseminated magnetite-hematite and pyrite.	3019	4.0	0.01		—		
		3020	2.0	0.01	0.01	—		0.87
	78.2m — Abundant pyrite and hematite Chalcopyrite, Pyrite, magnetite and hematite in skarn.	3021	2.0	0.19		0.02		
agnetite skarn	Chalcopyrite, bornite, chalcocite and green copper.	3022	2.0	0.44	0.13	0.001		
ite and garnet	Mainly chalcopyrite and pyrite.	3023	2.0	0.32		0.001		
t-magnetite -actinolite e mica - chlorite	Bornite and chalcopyrite with a little cuprite and native copper. 85.2m — Pyrite and a little chalcopyrite disseminated.	3024	2.0	1.61	0.14	—		
		3025	2.0	0.11		—		
arnized	A little chalcopyrite in skarnized part	3026	2.0	1.27	0.10	tr		0.73
tinalite skarn e- chlorite - garnet	Pyrite and chalcopyrite disseminated. Poor chalcopyrite from 90.0m to 92.8m	3027	2.0	0.05		0.005		
		3028	2.0	0.63	0.08	0.001		
r of	A little pyrite and chalcopyrite as stringers and in fractures.	3029	2.0	0.16		—		
d marble	High-grade ore mainly of bornite.	3030	2.0	2.32	0.33	—		
porphyry	Disseminated pyrite and chalcopyrite.							
ictfied g along	General but poor dissemination of pyrite and minor chalcopyrite, and several chalcopyrite seams.	3031	4.0	0.08		—		-

120	119.2m — Skarn							
	119.2m-121.8m : epidote-bearing garnet magnetite-hematite	Dissemination and seams of chalcopyrite and bornite locally associated with minor amounts of chalcocite, cuprite, galena and sphalerite.						
	121.8m-122.0m : garnet-bearing epidote							
	122.0m-124.8m : epidote-actinolite-chlorite argillized, originated from gabbroic rock?							
	124.8m-127.2m : epidote-actinolite-garnet, argillized							
130	127.2m-128.8m : skarnized and silicified marble							
	128.8m-136.4m : mainly garnet-epidote-hematitized magnetite							
	134.4m-136.2m : mixture of garnet and marble							
	136.2m-140.6m : mainly garnet-epidote							
140	140.1m-141.0m : "white" skarn possibly containing diopside							
	141.0m — Epidotized gabbroic rock	Disseminated pyrite.						
	141.7m — "white" skarn possibly originated from "hibrid rock" formed by the reaction between limestone and gabbro	Dissemination of pyrite and minor chalcopyrite.						
	144.4m — Gabbroic rock remarkably skarnized by epidote, chlorite and actinolite, and a little white skarn	Disseminated and joint-filled pyrite and trace of chalcopyrite.						
150	149.0m — Skarn							
	149.0m-150.0m : mainly epidote-garnet-magnetite	Chiefly dissemination of chalcopyrite, pyrite, bornite and trace of chalcocite.						
	151.0m-152.3m : mainly diopside-garnet-epidote							
	152.3m — Skarnized gabbroic rock	Dissemination of pyrite.						
	153.2m — "white" skarn containing a little garnet and epidote	Same as above.						
	155.2m — Skarnized gabbroic rock markedly argillized	Almost same as above. A little chalcopyrite from 158.0m to 158.3m						
	158.3m — Argillized and chloritized porphyry	Dissemination of pyrite.						
160	159.6m — Skarn							
	159.6m-161.7m : actinolite-magnetite	Dissemination of pyrite and chalcopyrite.						
	161.7m-163.8m : "pale green" skarn rich in diopside							
	163.8m-165.2m : epidote-diopside-actinolite							
	165.2m — Silicified marble	Dissemination of pyrite.						
	166.5m — Brecciated and argillized skarn	Dissemination of pyrite, chalcopyrite and minor bornite.						
	168.0m — Marble weakly skarnized							
170	"White" skarn or "hibrid" rock mainly composed of albite, K-feldspar and quartz with fairly abundant apatite, fine-grained biotite, and a little epidote, garnet and actinolite	Dissemination of a little Pyrite and trace of chalcopyrite.						
	A little skarnized gabbroic rock							
	172.0m — Marble partly skarnized	Pyrite, chalcopyrite and bornit in skarn.						
	176.0m — Mainly garnet skarn	Disseminated pyrite with a little chalcopyrite.						
	177.6m — Gabbroic rock remarkably biotitized	Disseminated pyrite and a little chalcopyrite.						
180	179.3m — Skarn and altered gabbroic rock							
	179.3m-180.7m : "white" skarn or	Almost same as above						
	181.1m-183.2m : "hibrid" rock	Pyrite and lesser chalcopyrite disseminated in epidote-actinolite skarn.						
	180.7m-181.1m : epidote-actinolite skarn							
	183.6m-184.0m : garnet-bearing "white" skarn							
	184.4m							
	185.1m — 185.3m							
190	Medium-grained plagioclase-porphyritic hornblende-biotite granodiorite chloritized. A little skarn (xenolith?), and gabbroic rock chloritized, epidotize and silicified.	A little pyrite mainly in and along chlorite veinlets.						
	196.5m							
	197.2m							
	197.9m							
200	199.0m							

		3036	3.4	0.05		—		1.11
		3037	2.8	2.51		—		
		3038	2.0	2.72		tr		
		3039	2.0	2.82		—		
		3040	2.0	0.84		—		
		3041	2.0	0.09		0.001		1.70
		3042	2.0	0.90		0.001		
		3043	2.0	4.03		0.001		
		3044	2.0	1.23		0.001		
		3045	2.0	1.81		0.001		
		3046	2.0	0.48		0.001		
		3047	2.0	0.16		0.001		0.48
		3048	2.0	0.44		0.002		
		3049	2.0	0.05		0.001		
		3050	2.0	0.07		0.001		
		3051	2.0	0.23		0.001		
		3052	2.0	0.55		0.001		
		3053	2.0	0.07		0.001		0.33
		3054	2.0	0.06		0.002		
		3055	2.0	0.04		0.002		
		3056	2.0	0.04		0.001		
		3057	2.0	0.24		0.002		
		3058	2.0	0.75		0.001		
		3059	2.0	0.11		0.001		
		3060	2.0	0.37		0.001		0.57
		3061	2.0	0.07		0.001		
		3062	2.0	0.02		0.001		
		3063	2.0	0.03		tr		
		3064	2.0	0.29		tr		
		3065	2.0	0.18		—		
		3066	2.0	0.08		0.002		
		3067	2.0	0.05		0.001		
		3068	4.0	0.18		—		
		3069	4.0	0.03		tr		
		3070	4.0	0.04		tr		0.36
		3071	2.0	0.02		0.001		
		3072	4.0	0.03		tr		

220	Medium-grained, plagioclase-porphyritic, hornblende-biotite granodiorite	Same as above						
	212.2m-226.8m : chloritized and epidotized mainly along joints and as replacement of hornblende, weakly argillized and carbonitized mainly as replacement of felde par, containing a little quartz veinlets							
230	226.8m-228.3m : sheared and remarkably argillized							
	228.3m-234.5m : argillized, carbonitized chloritized and locally epidotized							
	234.5m-250.2m : chloritized, carbonitized and carbonitized generally weakly							
240								
250	250.2m							
260								

		3076	4.0	0.04		—		
		3077	4.0	0.03		tr		0.22
		3078	4.0	0.04		tr		
		3079	4.0	0.03		—		
		3080	4.0	0.11		—		0.17
		3081	4.0	0.03		—		
		3082	4.0	0.04		tr		
		3083	4.0	0.03		0.001		0.50
		3084	4.0	0.01		tr		
		3085	2.2	0.01		tr		

D.D.H. No. 3 — Sheet 3

Total Length 250.20m — Core Recovery 100%

Location K - 26 — Elevation 4,002m

Direction — — Inclination Vertical

Date of Logging from 24th/Oct. to 7th/Nov.

Logged by M. Saito

METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Non-core							
		6.0m							
		Biotite-bearing quartz monzonite porphyry	Cp, bn and a little cc in and near quartz veinlets, mostly dipping 60° to 80°.	4001	2.00	0.40		0.012	
				4002	2.00	0.92	0.04	0.014	
10		60m-118m: decomposed, distinctly argillized, weakly carbonitized, and with fairly abundant calcite-bearing quartz veinlets	A little oxidized py and mag.	4003	2.00	1.35		0.075	
			11.8m						
		118m-206m: fairly argillized, carbonitized, weakly sericitized, chloritized, and cut by ore-quartz veinlets	Cp and bn in and near quartz veinlets sparsely penetrated with 60°-85° dip.	4004	2.00	0.48	0.06	0.010	1.02
				4005	2.00	0.50		0.090	
			Disseminated mag often replaced by hem.	4006	2.00	0.32	0.06	0.002	
				4007	2.00	0.45		0.005	
20			20.6m						
		206m-243m: locally sheared, distinctly argillized, fairly carbonitized, chloritized, weakly sericitized, and with a little ore-quartz veinlets	Same as above	4008	2.00	0.29	0.06	0.004	
				4009	2.00	0.42		0.003	
			24.3m						
		243m-358m: fairly distinctly argillized, silicified by abundant quartz veinlets and vein, weakly carbonitized, sericitized and chloritized	Mb-cp-bn-quartz veinlets, 0.5mm to 3mm thick, spacing 2cm to 8cm. A little disseminated mag.	4010	2.00	0.66	0.06	0.004	0.53
				4011	2.00	0.61		0.080	
			28.0m						
			Mb-cp-bn-quartz veinlets, 0.5-1mm thick, spacing 3-5cm, dipping 70°-80°.	4012	2.00	1.06	0.08	0.025	
30			30.3m						
			Mb-cp-bn-quartz veinlets, 0.5-2mm thick, spacing 0.5-2cm, dipping 70°-80°.	4013	2.00	2.98		0.60	
			33.0m						
			Mb-cp-bn-quartz vein from 30.0m to 30.1m dipping 80°; and Mb-cp-bn-quartz	4014	1.00	3.62	0.02	0.60	
			veinlets, 1-2mm thick, spacing 0.5-1cm,	4015	1.00	5.91		1.56	
			35.2m						
			Mb-bn-cp-quartz veinlets, 0.5-2mm thick, spacing 2-8cm, dipping 70°-80°.	4016	2.00	0.98	0.06	0.043	1.76
			35.8m						
		358m-480m: weakly argillized, sericitized carbonitized, chloritized, and cut by quartz veinlets with ore and a little calcite	Mb-bearing bn-cp veinlets, generally spacing 5-10cm, but 1-3cm from 36.9m to 37.2m.	4017	2.00	0.29		0.013	
			39.2m						
40			Bn-bearing cp-quartz veinlets, 0.5-2mm thick, spacing 2-4cm, dipping 70°-80°.	4018	2.00	0.42	0.03	0.005	
			41.0m						
			Bn-bearing py-cp-quartz veinlets, generally spacing 5-10cm, but 1-3cm from 43.2m to 43.5m	4019	2.00	0.69		0.006	
				4020	2.00	0.48	0.02	0.004	
			A little disseminated mag and hem.	4021	2.00	0.24		0.002	0.57
				4022	2.00	0.32	0.03	0.004	
			48.0m						
		480m-503m: Sheared, highly argillized, distinctly carbonitized, weakly chloritized and with a little quartz veinlets	Dissemination of py and a little cp	4023	2.00	0.42		0.008	
50			Bn-bearing py-cp-quartz veinlets, sparsely.						
		503m-555m: weakly argillized, sericitized carbonitized, chloritized, and with a little quartz veinlets bearing calcite, and a few epidote-chlorite veinlets.		4024	2.00	0.18	0.03	0.008	
			Bn-bearing cp-py-quartz veinlets with dips of 70°-80°, spacing 10-15cm, often cut by barren calcite veinlets.	4025	2.00	0.18		0.001	
		555m-557m: Sheared and highly argillized	A little dissemination of py and mag.	4026	2.00	0.48	0.03	0.004	0.48
			55.7m						
		557m-602m: distinctly silicified by quartz veinlets, fairly argillized, weakly sericitized, carbonitized and chloritized	Py-bearing bn-cp-quartz veinlets, with dips of 70°-80°, spacing 3-5cm, from 55.7m to 58.5m.	4027	2.00	1.14		0.006	
			Py-bearing mb-bn-cp-quartz veinlets, spacing 1-3cm from 58.5m to 60.2m.	4028	2.00	1.82	0.02	0.282	
60			60.2m						
		602m-622m: highly argillized, weakly silicified by quartz veinlets, carbonitized, sericitized and chloritized	Bn-cp-py-quartz veinlets spacing 5-10cm. A little dissemination of bn, cp and py.	4029	2.00	0.82		0.021	
			62.2m						
		622m-837m: distinctly silicified mainly by quartz veinlets, weakly carbonitized, argillized, sericitized and chloritized	Fine networks of bn-cp-quartz veinlets locally with a little mb and cc.	4030	2.00	1.83	0.04	0.032	
				4031	2.00	1.56		0.008	1.19
			Dissaminations of same sulphides as those in veinlets, fairly distinctly (Bn > cp in amount).	4032	2.00	1.32	0.06	0.011	
			A little dissemination of hem pseudomorph after mag.	4033	2.00	1.61		0.011	
70			70.2m						
			Almost same as above, except for cp > bn in volume ratio of cu-ores.	4034	2.00	1.27	0.03	0.025	
			72.0m						
			Fine to moderate networks of quartz veinlets commonly with a little cp and bn.	4035	2.00	0.45		0.005	
				4036	2.00	0.48	0.04	0.002	0.55
			A little disseminated cp and py near veinlets.	4037	2.00	0.34		0.003	
				4038	2.00	0.30	0.04	0.005	
80			80.5m						
			Moderate networks of quartz veinlets with a little cp, py and rare bn. A little disseminated py and cp near veinlets.	4039	2.00	0.40		0.003	
			83.7m						
		837m-957m: fairly distinctly argillized, carbonitized, weakly silicified partly, weakly chloritized and sericitized	Local narrow bands of thin quartz veinlets with a little cp, py and rare bn, dipping 60°-80°.	4040	2.00	0.42	0.18	0.003	
				4041	2.00	0.22		0.006	0.95
				4042	2.00	0.27	0.08	0.003	
				4043	2.00	0.15		0.005	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		100.0m-110.2m: with same alteration as above	A little disseminations of py furnished by oxidization, hematilited mag and cp.	4049	4.00	0.11		0.001	
				4050	4.00	0.17		0.002	0.26
110			110.2m						
		110.2m-119.0m: distinctly argillized, weakly silicified partly, weakly carbonitized, chloritized and sericitized	Local narrow bands of quartz veinlets with a little py and cp.	4051	4.00	0.09		0.004	
			Dissemination of py with a little cp and mag.	4052	4.00	0.13		0.004	
				4053	4.00	0.13		0.003	0.63
120		119.0m-126.5m: distinctly argillized, carbonitized, weakly chloritized and sericitized	119.0m						
			Dissemination of py rarely with cp.	4054	4.00	0.08		0.003	
			126.5m						
		126.5m-132.0m: fairly distinctly argillized, weakly carbonitized, silicified, chloritized and sericitized	Fairly abundant py dissemination rarely with cp.	4055	4.00	0.21		0.002	
			A little py-quartz veinlets	4056	4.00	0.09		0.003	0.85
130			132.0m						
		132.0m-134.3m: weakly carbonitized, argillized, sericitized and chloritized	A little dissemination of py rarely with cp.	4057	4.00	0.10		0.002	
		134.3m-136.2m: fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	134.3m A little dissemination of oxidized py rarely with cp and bn.						
		136.2m-140.0m: weakly carbonitized, argillized, sericitized and chloritized	136.2m Sparsely disseminated py and hem	4058	4.00	0.06		0.002	
140			140.0m						
		140.0m-142.0m: fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	Fairly abundant dissemination of oxidized py rarely with cp.	4059	4.00	0.09		0.003	0.22
		142.0m-146.0m: weakly carbonitized, sericitized and argillized	142.0m Very sparse dissemination of py (partly oxidized) with hematilited mag and rare cp.						
		146.0m-150.7m: weakly carbonitized, sericitized, argillized and slightly silicified	146.0m Very sparse dissemination of py and mag rarely with cp. A few cp-py-quartz veinlets generally dipping 30°-50°.	4060	4.00	0.08		0.002	
150			150.7m						
		150.7m-154.5m: weakly argillized, carbonitized, sericitized and chloritized	Very sparse dissemination of py and mag rarely with cp.	4061	4.00	0.06		0.001	
				4062	4.00	0.08		0.002	0.27
		154.5m-157.0m: Sheared, locally brecciated, highly argillized and distinctly carbonitized	154.5m Dissemination and stringers of py with hem and mag.						
			157.0m						
		157.0m-162.0m: Fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	Sparse dissemination of py with a little cp, hem and mag.	4063	4.00	0.11		0.002	
160									
				4064	4.00	0.15		0.001	
			162.0m						
		162.0m-165.9m: weakly carbonitized, argillized, silicified and sericitized	Sparse disseminations of Py, hem and mag with cp. Several Py-cp-quartz veinlets.	4065	4.00	0.29		0.003	0.30
			165.9m						
		165.9m-176.0m: weakly carbonitized and argillized	very sparse disseminations of py, cp, hem and mag.	4066	4.00	0.09		0.001	
170									
				4067	4.00	0.11		0.001	
		Hornblende-biotite-bearing quartz monzonite porphyry							
				4068	4.00	0.13		0.002	0.20
		176.0m-182.0m: weakly carbonitized, argillized, partly chloritized and slightly epidotized							
180				4069	4.00	0.17		0.005	
		182.0m-200.0m: weakly carbonitized, Sericitized, chloritized and epidotized							
			186.0m						
			Sparse dissemination of cp.	4070	4.00	0.12		0.001	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		200.0m-205.5m: weakly carbonitized, Sericitized, slightly chloritized and epidotized	Sparse disseminations of cp, py and mag. A 1-cm quartz vein with cp and mag, dipping 15°.	4074	4.00	0.13		0.002	0.31
				4075	4.00	0.14		0.004	
		205.5m-214.8m: weakly carbonitized, Sericitized, locally chloritized, argillized and rarely epidotized	208.0m						
210			very sparse disseminations of py, cp and mag hematilized.	4076	4.00	0.07		0.003	
		214.8m-218.0m: distinctly carbonitized and argillized		4077	4.00	0.05		0.005	0.14
			218.0m						
		218.0m-223.5m: weakly to fairly distinctly carbonitized, weakly Sericitized, slightly argillized, locally silicified and chloritized	very sparse disseminations of cp, Py and hematilized mag. A few chlorite-calcite-quartz veinlets with cp and a little py.	4078	4.00	0.06		0.004	
220			223.5m						
		223.5m-226.2m: distinctly carbonitized and argillized	Sparse disseminations of Py and mag rarely with cp.	4079	4.00	0.07		0.006	
		226.2m-233.0m: fairly distinctly carbonitized, argillized, weakly Sericitized and slightly chloritized	229.0m						
			Sparse dissemination of mag rarely with Py and cp.	4080	4.00	0.08		0.005	0.37
230			233.0m						
		233.0m-234.4m: highly carbonitized and argillized		4081	4.00	0.07		0.003	
		234.4m-240.0m: weakly carbonitized, chloritized and slightly argillized	Sparse disseminations of Py and mag rarely with cp.	4082	4.00	0.04		0.003	
				4083	4.00	0.11		0.001	0.46
240		240.0m-242.6m: highly carbonitized and argillized		4084	4.00	0.07		0.004	
		242.6m-245.0m: weakly carbonitized, chloritized and slightly argillized							
		245.0m-250.3m: strongly to weakly carbonitized and argillized, and weakly chloritized		4085	4.00	0.03		0.003	0.25
250		250.3m		4086	2.30	0.02		0.001	
260									

GEOLO
YAURI ARE

CORE I

D.D.H No.
Total Length 2
Location M
Direction
Date of Logging
Logged by

METAL MINING A
OVERSEAS TECHN
GOVERNMENT OF

Prepared by MITSUI

Abbreviation

- cp : chalcopyrite
- py : pyrite
- bn : bornite
- hem : hematite
- mag : magnetite

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08814
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PL. 1 - 7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

CORE LOG and ASSAY

D.D.H No. 4 Sheet 4

Total Length 250.30m Core Recovery 97%

Location M - 21 Elevation 4,030m

Direction — Inclination Vertical

Date of Logging from 10th/Nov. to 25th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD

Depth (m)	Sec.	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
			Cp, bn and a little cc in and near quartz veinlets, mostly dipping 60° to 80°.	4001	2.00	0.40		0.012	
				4002	2.00	0.92	0.04	0.014	
			A little oxidized py and mag.	4003	2.00	1.35		0.075	
11.8m			Cp and bn in and near quartz veinlets sparsely penetrated with 60°-85° dip.	4004	2.00	0.48	0.06	0.0010	1.02
				4005	2.00	0.50		0.090	
			Disseminated mag often replaced by hem.	4006	2.00	0.32	0.06	0.002	
				4007	2.00	0.45		0.005	
20.6m			Same as above	4008	2.00	0.29	0.06	0.004	
				4009	2.00	0.42		0.003	
24.3m			Mb-cp-bn-quartz veinlets, 0.5mm to 3mm thick, spacing 2cm to 8cm, A little disseminated mag.	4010	2.00	0.66	0.06	0.004	0.53
				4011	2.00	0.61		0.080	
28.0m			Mb-cp-bn-quartz veinlets, 0.5-1mm thick, spacing 3-5cm, dipping 70°-80°.	4012	2.00	1.06	0.06	0.025	
30.3m			Mb-cp-bn-quartz veinlets, 0.5-2mm thick, spacing 0.5-2cm, dipping 70°-80°.	4013	2.00	2.98		0.60	
33.0m			Mb-cp-bn-quartz vein from 30.0m to 30.7m dipping 80°, and Mb-cp-bn-quartz veinlets, 1-2mm thick, spacing 65-3cm.	4014	1.00	3.62	0.02	0.60	
				4015	1.00	5.91		1.58	
35.2m			Mb-bn-cp-quartz veinlets, 0.5-2mm thick, spacing 2-8cm, dipping 70°-80°	4018	2.00	0.98	0.06	0.043	1.78
35.8m			Mb-bearing bn-cp veinlets, generally spacing 5-10cm, but 1-3cm from 36.9m to 37.2m	4017	2.00	0.29		0.013	
39.2m			Bn-bearing cp-quartz veinlets, 0.5-2mm thick, spacing 2-4cm, dipping 70°-80°.	4018	2.00	0.42	0.03	0.005	
41.0m			Bn-bearing py-cp-quartz veinlets, generally spacing 5-10cm, but 1-3cm from 42.2m to 42.5m	4019	2.00	0.69		0.006	
				4020	2.00	0.48	0.02	0.004	
			A little disseminated mag and hem.	4021	2.00	0.24		0.002	0.57
				4022	2.00	0.32	0.03	0.044	
48.0m			Dissemination of Py and a little cp Ba-bearing Py-cp-quartz veinlets, sparsely.	4023	2.00	0.42		0.008	
50.3m			Ba-bearing cp-py-quartz veinlets with dips of 70°-80°, spacing 10-15cm, often cut by barren calcite veinlets. A little dissemination of py and mag.	4024	2.00	0.18	0.03	0.008	
				4025	2.00	0.18		0.001	
55.7m			Py-bearing bn-cp-quartz veinlets, with dips of 70°-80°, spacing 3-5cm, from 55.7m to 58.5m Py-bearing mb-bn-cp-quartz veinlets, spacing 1-3cm from 58.5m to 60.2m.	4026	2.00	0.48	0.03	0.004	0.48
				4027	2.00	1.14		0.008	
60.2m			Bn-cp-py-quartz veinlets spacing 5-10cm, A little dissemination of bn, cp and Py.	4028	2.00	1.82	0.02	0.262	
				4029	2.00	0.82		0.021	
62.2m			Fine netwoers of bn-cp-quartz veinlets locally with a little mb and cc.	4030	2.00	1.83	0.04	0.032	
			Dissaminations of same sulphides as those in veinlets, fairly distinctly (Bn > cp in amount). A little dissemination of hem pseudomorph after mag.	4031	2.00	1.56		0.009	1.19
				4032	2.00	1.32	0.06	0.011	
70.2m			Almost same as above, except for cp > bn in volume ratio of cu-ores.	4033	2.00	1.81		0.011	
72.0m			Fine to moderate networks of quartz veinlets commonly with a little cp and bn.	4034	2.00	1.27	0.03	0.026	
				4035	2.00	0.45		0.005	
			A little disseminated cp and Py near veinlets.	4036	2.00	0.48	0.04	0.002	0.55
				4037	2.00	0.34		0.003	
				4038	2.00	0.30	0.04	0.005	
80.5m			Moderate networks of quartz veinlets with a little cp, Py and rare bn A little disseminated Py and cp near veinlets.	4039	2.00	0.40		0.003	
83.7m				4040	2.00	0.42	0.18	0.003	
			Local narrow bands of thin quartz veinlets with a little cp, Py and rare bn, dipping 60°-80°	4041	2.00	0.22		0.005	0.95
				4042	2.00	0.27	0.08	0.003	
		100.0m-110.2m: with same alteration as above	A little disseminations of Py turnished by oxidization, hematilized mag and cp.	4049	4.00	0.11		0.001	
				4050	4.00	0.17		0.002	0.28
110		110.2m-119.0m: distinctly argillized, weakly silicified partly, weakly carbonllized, chloritized and Sericitized	110.2m Local narrow bands of quartz veinlets with a little py and cp. Dissemination of py with a little cp and mag.	4051	4.00	0.09		0.004	
				4052	4.00	0.13		0.004	
				4053	4.00	0.13		0.003	0.63
120		119.0m-126.5m: distinctly argillized, carbonilized, weakly chloritized and Sericitized	119.0m Dissemination of Py rarely with cp.	4054	4.00	0.08		0.003	
				4055	4.00	0.21		0.002	
		126.5m-132.0m: fairly distinctly argillized, weakly carbonilized, silicified, chloritized and sericitized	126.5m Fairly abundant py dissemination rarely with cp. A little py-quartz veinlets	4056	4.00	0.09		0.003	0.65
130		132.0m-134.3m: weakly carbonitized, argillized, Sericitized and chloritized	132.0m A little dissemination of Py rarely with cp.	4057	4.00	0.10		0.002	
		134.3m-136.2m: fairly distinctly argillized, weakly carbonilized, Sericitized and chloritized	134.3m A little dissemination of oxidized Py rarely with cp and bn.						
		136.2m-140.0m: weakly carbonilized, argillized, Sericitized and chloritized	136.2m Sparsely disseminated py and hem	4058	4.00	0.06		0.002	
140		140.0m-142.0m: fairly distinctly argillized, weakly carbonilized, Sericitized and chloritized	140.0m Fairly abundant dissemination of oxidized Py rarely with cp.	4059	4.00	0.09		0.003	0.22
		142.0m-146.0m: weakly carbonilized, Sericitized and argillized	142.0m very sparse dissemination of Py (partly oxidized) with hemalitized mag and rare cp.						
		146.0m-150.7m: weakly carbonilized, Sericitized, argillized and slightly silicified	146.0m very sparse dissemination of Py and mag rarely with cp.	4060	4.00	0.08		0.002	
150		150.7m-154.5m: weakly argillized, carbonilized, Sericitized and chloritized	A few cp-Py-quartz veinlets generally dipping 30°-50°. 150.7m very sparse dissemination of Py and mag rarely with cp.	4061	4.00	0.06		0.001	
		154.5m-157.0m: sheared, locally brecciated, highly argillized and distinctly carbonilized	154.5m Dissemination and stringers of Py with hem and mag.	4062	4.00	0.08		0.002	0.27
		157.0m-162.0m: fairly distinctly argillized, weakly carbonilized, Sericitized and chloritized	157.0m Sparse dissemination of Py with a little cp, hem and mag.	4063	4.00	0.11		0.002	
160				4064	4.00	0.15		0.001	
		162.0m-165.9m: weakly carbonilized, argillized, silicified and Sericilized	162.0m Sparse disseminations of Py, hem and mag with cp. Several Py-cp-quartz veinlets.	4065	4.00	0.29		0.003	0.30
170		165.9m-176.0m: weakly carbonilized and argillized	165.9m very sparse disseminations of Py, cp, hem and mag.	4066	4.00	0.09		0.001	
				4067	4.00	0.11		0.001	
		Hornblende-biotite-bearing quartz monzonite porphyry		4068	4.00	0.13		0.002	0.20
180		176.0m-182.0m: weakly carbonilized, argillized, partly chloritized and slightly epidolized		4069	4.00	0.17		0.003	
		182.0m-200.0m: weakly carbonilized, Sericitized, chloritized and epidolized	186.0m Sparse dissemination of cp	4070	4.00	0.12		0.001	
		200.0m-205.5m: weakly carbonilized, Sericitized, slightly chloritized and epidolized	Sparse disseminations of cp, Py and mag. A 1-cm quartz vein with cp and mag, dipping 15°.	4074	4.00	0.13		0.002	0.31
				4075	4.00	0.14		0.004	
210		205.5m-214.8m: weakly carbonilized, Sericitized, locally chlorilized, argillized and rarely epidolized	208.0m very sparse disseminations of Py, cp and mag hemalitized.	4078	4.00	0.07		0.003	
		214.8m-218.0m: distinctly carbonilized and argillized		4077	4.00	0.05		0.005	0.14
		218.0m-223.5m: weakly to fairly distinctly carbonilized, weakly Sericitized, slightly argillized, locally silicified and chloritized	218.0m very sparse disseminations of cp, Py and hemalitized mag. A few chlorite-calcite-quartz veinlets with cp and a little Py.	4078	4.00	0.06		0.004	
220		223.5m-226.2m: distinctly carbonilized and argillized	223.5m Sparse disseminations of Py and mag rarely with cp.	4079	4.00	0.07		0.008	
		226.2m-233.0m: fairly distinctly carbonilized, argillized, weakly Sericitized and Slightly chloritized		4080	4.00	0.08		0.006	0.37
230			229.0m Sparse dissemination of mag rarely with Py and cp.	4081	4.00	0.07		0.003	
		233.0m-234.4m: highly carbonilized and argillized	233.0m	4082	4.00	0.04		0.003	
		234.4m-240.0m: weakly carbonilized, chloritized and Slightly argillized	Sparse disseminations of Py and mag rarely with cp.	4083	4.00	0.11		0.001	0.46
240		240.0m-242.6m: highly carbonilized and argillized		4084	4.00	0.07		0.004	
		242.6m-245.0m: weakly carbonilized, chloritized and slightly argillized		4085	4.00	0.03		0.003	
		245.0m-250.3m: Strongly to weakly carbonilized and argillized, and weakly chloritized		4086	2.30	0.02		0.001	0.25
250		250.3m							
260									

Abbreviation

cp : chalcopyrite

py : pyrite

bn : bornite

hem : hematite

mag : magnetite

	veinlets								
	11.8m-20.6m : fairly argillized, carbonitized, weakly sericitized, chloritized, and cut by ore-quartz veinlets	11.8m — Cp and bn in and near quartz veinlets sparsely penetrated with 60°-85° dip. Disseminated mag often replaced by hem.	4004	2.00	0.48	0.06	0.010	1.02	
			4005	2.00	0.50		0.090		
			4006	2.00	0.32	0.06	0.002		
			4007	2.00	0.45		0.005		
20		20.6m — Some as above	4008	2.00	0.29	0.06	0.004		
	20.6m-24.3m : locally sheared, distinctly argillized, fairly carbonitized, chloritized, weakly sericitized, and with a little ore-quartz veinlets		4009	2.00	0.42		0.003		
		24.3m — Mb-cp-bn-quartz veinlets, 0.5mm to 3mm thick, spacing 2cm to 8cm, A little disseminated mag.	4010	2.00	0.66	0.06	0.004	0.53	
	24.3m-35.8m : fairly distinctly argillized, silicified by abundant quartz veinlets and vein, weakly carbonitized, sericitized and chloritized	28.0m — Mb-cp-bn-quartz veinlets, 0.5-1mm thick, spacing 3-5cm, dipping 70°-80°. 30.3m — Mb-cp-bn-quartz veinlets, 0.5-2mm thick, spacing 0.5-2cm, dipping 70°-80°. 33.0m — Mb-cp-bn-quartz vein from 30.0m to 30.7m dipping 80°, and Mb-cp-bn-quartz veinlets, 1-2mm thick, spacing 0.5-2cm.	4011	2.00	0.61		0.080		
			4012	2.00	1.06	0.08	0.025		
30			4013	2.00	2.98		0.60		
			4014	1.00	3.82	0.02	0.60		
			4015	1.00	5.91		1.56		
		35.2m — Mb-bn-cp-quartz veinlets, 0.5-2mm thick, spacing 2-8cm, dipping 70°-80°. 35.8m — Mb-bearing bn-cp veinlets, generally spacing 5-10cm, but 1-3cm from 36.9m to 37.2m.	4016	2.00	0.98	0.06	0.043	1.76	
	35.8m-48.0m : weakly argillized, sericitized carbonitized, chloritized, and cut by quartz veinlets with ore and a little calcite		4017	2.00	0.29		0.013		
			4018	2.00	0.42	0.03	0.005		
40		39.2m — Bn-bearing cp-quartz veinlets, 0.5-2mm thick, spacing 2-4cm, dipping 70°-80°. 41.0m — Bn-bearing py-cp-quartz veinlets, generally spacing 5-10cm, but 1-3cm from 43.2m to 43.5m A little disseminated mag and hem.	4019	2.00	0.69		0.006		
			4020	2.00	0.48	0.02	0.004		
			4021	2.00	0.24		0.002	0.57	
			4022	2.00	0.32	0.03	0.044		
	48.0m-50.3m : sheared, highly argillized, distinctly carbonitized, weakly chloritized and with a little quartz veinlets	48.0m — Dissemination of py and a little cp Bn-bearing py-cp-quartz veinlets, sparsely.	4023	2.00	0.42		0.008		
50		50.3m — Bn-bearing cp-py-quartz veinlets with dips of 70°-80°, spacing 10-15cm, often cut by barren calcite veinlets. A little dissemination of py and mag.	4024	2.00	0.18	0.03	0.008		
	50.3m-55.5m : weakly argillized, Sericitized carbonitized, chloritized, and with a little quartz veinlets bearing calcite, and a few epidote-chlorite veinlets.		4025	2.00	0.18		0.001		
			4026	2.00	0.48	0.03	0.004	0.48	
	55.5m-55.7m : Sheared and highly argillized	55.7m — Py-bearing bn-cp-quartz veinlets, with dips of 70°-80°, spacing 3-5cm, from 55.7m to 58.5m.	4027	2.00	1.14		0.006		
	55.7m-60.2m : distinctly silicified by quartz veinlets, fairly argillized, weakly sericitized, carbonitized and chloritized	py-bearing mb-bn-cp-quartz veinlets, spacing 1-3cm from 58.5m to 60.2m.	4028	2.00	1.82	0.02	0.262		
60		60.2m — Bn-cp-py-quartz veinlets spacing 5-10cm A little dissemination of bn, cp and py.	4029	2.00	0.82		0.021		
	60.2m-62.2m : highly argillized, weakly silicified by quartz veinlets, carbonitized, Sericitized and chloritized	62.2m — Fine networks of bn-cp-quartz veinlets locally with a little mb and cc.	4030	2.00	1.83	0.04	0.032		
			4031	2.00	1.56		0.009	1.19	
	62.2m-83.7m : distinctly silicified mainly by quartz veinlets, weakly carbonitized, argillized, sericitized and chloritized	Dissaminations of Same sulphides as those in veinlets, fairly distinctly (Bn ¼ cp in amount). A little dissemination of hem pseudomorph after mag.	4032	2.00	1.32	0.06	0.011		
			4033	2.00	1.61		0.011		
70		70.2m — Almost same as above, except for cp > bn in volume ratio of cu-ores.	4034	2.00	1.27	0.03	0.025		
		72.0m — Fine to moderate networks of quartz veinlets commonly with a little cp and bn. A little disseminated cp and py near veinlets.	4035	2.00	0.45		0.005		
			4036	2.00	0.48	0.04	0.002	0.55	
			4037	2.00	0.34		0.003		
			4038	2.00	0.30	0.04	0.005		
80		80.5m — Moderate networks of quartz veinlets with a little cp, Py and rare bn A little disseminated Py and cp near veinlets.	4039	2.00	0.40		0.003		
			4040	2.00	0.42	0.18	0.003		
		83.7m — Local narrow bands of thin quartz veinlets with a little cp, py and rare bn, dipping 60°-80°	4041	2.00	0.22		0.005	0.95	
	83.7m-95.7m : fairly distinctly argillized, carbonitized, weakly silicified partly, weakly chloritized and sericitized		4042	2.00	0.27	0.06	0.008		
			4043	2.00	0.15		0.005		
90		Disseminations of Py, mag and a little cp.	4044	2.00	0.28	0.04	0.005		
			4045	2.00	0.29		0.003		
			4046	2.00	0.25	0.03	0.002	0.36	
		95.7m — Disseminations of Py partly oxidized, mag fairly hematitized and a little cp.	4047	2.00	0.15		0.002		
	95.7m-100.0 : strongly argillized, carbonitized, weakly chloritized and sericitized		4048	2.00	0.15	0.03	0.003		
100									

	weakly silicified, chloritized and sericitized	with a little py and cp. Dissemination of Py with a little cp and mag.	4052	4.00	0.13		0.004		
			4053	4.00	0.13		0.003	0.83	
120	119.0m-126.5m : distinctly argillized, carbonitized, weakly chloritized and Sericitized	119.0m — Dissemination of Py rarely with cp.	4054	4.00	0.08		0.003		
			4055	4.00	0.21		0.002		
	126.5m-132.0m : fairly distinctly argillized, weakly carbonitized, silicified, chloritized and sericitized	126.5m — Fairly abundant Py dissemination rarely with cp. A little py-quartz veinlets	4056	4.00	0.09		0.003	0.65	
130			4057	4.00	0.10		0.002		
	132.0m-134.3m : weakly carbonitized, argillized, Sericitized and chloritized	132.0m — A little dissemination of Py rarely with cp.							
	134.3m-136.2m : fairly distinctly argillized, weakly carbonitized, Sericitized and chloritized	134.3m — A little dissemination of oxidized Py rarely with cp and bn. 136.2m — Sparsely disseminated py and hem	4058	4.00	0.06		0.002		
140	136.2m-140.0m : weakly carbonitized, argillized, Sericitized and chloritized	140.0m — Fairly abundant dissemination of oxidized Py rarely with cp.	4059	4.00	0.09		0.003	0.22	
	140.0m-142.0m : fairly distinctly argillized, weakly carbonitized, Sericitized and chloritized	142.0m — very sparse dissemination of py (partly oxidized) with hematitized mag and rare cp.	4060	4.00	0.08		0.002		
	142.0m-146.0m : weakly carbonitized, sericitized and argillized	146.0m — very sparse dissemination of Py and mag rarely with cp. A few cp-Py-quartz veinlets generally dipping 30°-50°.	4061	4.00	0.06		0.001		
150	146.0m-150.7m : weakly carbonitized, sericitized, argillized and slightly silicified	150.7m — very sparse dissemination of Py and mag rarely with cp.	4062	4.00	0.08		0.002	0.27	
	150.7m-154.5m : weakly argillized, carbonitized, Sericitized and chloritized	154.5m — Dissemination and stringers of Py with hem and mag.	4063	4.00	0.11		0.002		
	154.5m-157.0m : sheared, locally brecciated, highly argillized and distinctly carbonitized	157.0m — Sparse dissemination of Py with a little cp, hem and mag.	4064	4.00	0.15		0.001		
160	157.0m-162.0m : Fairly distinctly argillized, weakly carbonitized, Sericitized and chloritized	162.0m — Sparse disseminations of Py, hem and mag with cp. Several Py-cp-quartz veinlets.	4065	4.00	0.29		0.003	0.30	
	162.0m-165.9m : weakly carbonitized, argillized, silicified and sericitized	165.9m — very sparse disseminations of Py, cp, hem and mag.	4066	4.00	0.09		0.001		
170	165.9m-176.0m : weakly carbonitized and argillized		4067	4.00	0.11		0.001		
	Hornblende-biotite-bearing quartz monzonite porphyry		4068	4.00	0.13		0.002	0.20	
180	176.0m-182.0m : weakly carbonitized, argillized, partly chloritized and slightly epidotized		4069	4.00	0.17		0.003		
	182.0m-200.0m : weakly carbonitized, Sericitized, chloritized and epidotized	186.0m — Sparse dissemination of cp, mag and hem rarely with Py.	4070	4.00	0.12		0.001		
190			4071	4.00	0.31		0.002	0.29	
			4072	4.00	0.25		0.004		
			4073	4.00	0.21		0.003		
200									

	214.8m-218.0m : distinctly carbonitized and argillized		4077	4.00	0.05		0.005	0.14	
	218.0m-223.5m : weakly to fairly distinctly carbonitized, weakly Sericitized, Slightly argillized, locally silicified and chloritized	218.0m — very sparse disseminations of cp, Py and hematitized mag. A few chlorite-calcite-quartz veinlets with cp and a little Py.	4078	4.00	0.06		0.004		
220		223.5m — Sparse disseminations of Py and mag rarely with cp.	4079	4.00	0.07		0.006		
	223.5m-226.2m : distinctly carbonitized and argillized		4080	4.00	0.08		0.005	0.37	
	226.2m-233.0m : fairly distinctly carbonitized, argillized, weakly Sericitized and Slightly chloritized	229.0m — Sparse dissemination of mag rarely with Py and cp.	4081	4.00	0.07		0.003		
230		233.0m —	4082	4.00	0.04		0.003		
	233.0m-234.4m : highly carbonitized and argillized								
	234.4m-240.0m : weakly carbonitized, chloritized and Slightly argillized	Sparse disseminations of Py and mag rarely with cp.	4083	4.00	0.11		0.001	0.46	
240	240.0m-242.6m : highly carbonitized and argillized		4084	4.00	0.07		0.004		
	242.6m-245.0m : weakly carbonitized, chloritized and Slightly argillized		4085	4.00	0.03		0.003		
	245.0m-250.3m : Strongly to weakly carbonitized and argillized, and weakly chloritized		4086	2.30	0.02		0.001	0.25	
250	250.3m								
260									

D.D.H No 4

Total Length 250.30

Location M-21

Direction —

Date of Logging from

Logged by M. So

METAL MINING AGENCY
OVERSEAS TECHNICAL C
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU

Abbreviation

cp : chalcopyrite

py : pyrite

bn : bornite

hem : hematite

mag : magnetite

mb : molybdenite

	Cp and bn in and near quartz veinlets sparsely penetrated with 60°-85° dip. Disseminated mag often replaced by hem.	4004	2.00	0.48	0.08	0.010	1.02	
		4005	2.00	0.50		0.090		
		4006	2.00	0.32	0.08	0.002		
		4007	2.00	0.45		0.005		
20.6m								
	Same as above	4008	2.00	0.29	0.08	0.004		
		4009	2.00	0.42		0.003		
24.3m								
	Mb-cp-bn-quartz veinlets, 0.5mm to 3mm thick, spacing 2cm to 8cm. A little disseminated mag.	4010	2.00	0.66	0.06	0.004	0.53	
28.0m								
	Mb-cp-bn-quartz veinlets, 0.5-1mm thick, spacing 3-5cm, dipping 70°-80°.	4011	2.00	0.61		0.080		
30.3m								
	Mb-cp-bn-quartz veinlets, 0.5-2mm thick, spacing 0.5-2cm, dipping 70°-80°.	4012	2.00	1.08	0.08	0.025		
33.0m								
	Mb-cp-bn-quartz vein from 30.0m to 30.7m dipping 80°; and Mb-cp-bn-quartz veinlets, 1-2mm thick, spacing 0.5-3cm.	4013	2.00	2.98		0.60		
35.2m		4014	1.00	3.62	0.02	0.60		
		4015	1.00	5.91		1.56		
	Mb-bn-cp-quartz veinlets, 0.5-2mm thick, spacing 2-8cm, dipping 70°-80°.	4016	2.00	0.98	0.06	0.043	1.78	
35.8m								
	Mb-bearing bn-cp veinlets, generally spacing 5-10cm, but 1-3cm from 36.9m to 37.2m.	4017	2.00	0.29		0.013		
39.2m		4018	2.00	0.42	0.03	0.005		
	Bn-bearing cp-quartz veinlets, 0.5-2mm thick, spacing 2-4cm, dipping 70°-80°.	4019	2.00	0.69		0.006		
41.0m								
	Bn-bearing py-cp-quartz veinlets, generally spacing 5-10cm, but 1-3cm from 43.2m to 43.5m. A little disseminated mag and hem.	4020	2.00	0.48	0.02	0.004		
		4021	2.00	0.24		0.002	0.57	
		4022	2.00	0.32	0.03	0.004		
45.0m								
	Dissemination of py and a little cp Bn-bearing py-cp-quartz veinlets, sparsely.	4023	2.00	0.42		0.008		
50.3m								
	Bn-bearing cp-py-quartz veinlets with dips of 70°-80°, spacing 10-15cm, often cut by barren calcite veinlets. A little dissemination of py and mag.	4024	2.00	0.18	0.03	0.008		
		4025	2.00	0.18		0.001		
		4026	2.00	0.48	0.03	0.004	0.48	
55.7m								
	Py-bearing bn-cp-quartz veinlets, with dips of 70°-80°, spacing 3-5cm, from 55.7m to 58.5m. Py-bearing mb-bn-cp-quartz veinlets, spacing 1-3cm from 58.5m to 60.2m.	4027	2.00	1.14		0.008		
		4028	2.00	1.82	0.02	0.262		
60.2m								
	Bn-cp-py-quartz veinlets spacing 5-10cm. A little dissemination of bn, cp and py.	4029	2.00	0.82		0.021		
62.2m								
	Fine networks of bn-cp-quartz veinlets locally with a little mb and cc.	4030	2.00	1.83	0.04	0.032		
	Dissaminations of same sulphides as those in veinlets, fairly distinctly (Bn > cp in amount). A little dissemination of hem pseudomorph after mag.	4031	2.00	1.56		0.009	1.19	
		4032	2.00	1.32	0.06	0.011		
		4033	2.00	1.61		0.011		
70.3m								
	Almost same as above, except for cp > bn in volume ratio of cu-ores.	4034	2.00	1.27	0.03	0.025		
72.0m								
	Fine to moderate networks of quartz veinlets commonly with a little cp and bn. A little disseminated cp and py near veinlets.	4035	2.00	0.45		0.005		
		4036	2.00	0.48	0.04	0.002	0.55	
		4037	2.00	0.34		0.003		
		4038	2.00	0.30	0.04	0.005		
80.5m								
	Moderate networks of quartz veinlets with a little cp, py and rare bn A little disseminated py and cp near veinlets.	4039	2.00	0.40		0.003		
		4040	2.00	0.42	0.18	0.003		
83.7m								
	Local narrow bands of thin quartz veinlets with a little cp, py and rare bn, dipping 60°-80°. Disseminations of py, mag and a little cp.	4041	2.00	0.22		0.005	0.95	
		4042	2.00	0.27	0.06	0.008		
		4043	2.00	0.15		0.005		
		4044	2.00	0.28	0.04	0.005		
		4045	2.00	0.28		0.003		
		4046	2.00	0.25	0.03	0.002	0.36	
95.7m								
	Disseminations of py partly oxidized, mag fairly hematitized and a little cp.	4047	2.00	0.15		0.002		
		4048	2.00	0.15	0.03	0.003		

	...lized, chloritized and sericitized	Dissemination of py with a little cp and mag.	4052	4.00	0.13		0.004	
120	119.0m-126.5m: distinctly argillized, carbonitized, weakly chloritized and sericitized	119.0m Dissemination of py rarely with cp.	4053	4.00	0.13		0.003	0.83
			4054	4.00	0.08		0.003	
	126.5m-132.0m: fairly distinctly argillized, weakly carbonitized, silicified, chloritized and sericitized	126.5m Fairly abundant py dissemination rarely with cp. A little py-quartz veinlets	4055	4.00	0.21		0.002	
130			4056	4.00	0.09		0.003	0.85
	132.0m-134.3m: weakly carbonitized, argillized, sericitized and chloritized	132.0m A little dissemination of py rarely with cp.						
	134.3m-136.2m: fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	134.3m A little dissemination of oxidized py rarely with cp and bn.	4057	4.00	0.10		0.002	
	136.2m-140.0m: weakly carbonitized, argillized, sericitized and chloritized	136.2m Sparsely disseminated py and hem	4058	4.00	0.06		0.002	
140	140.0m-142.0m: fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	140.0m Fairly abundant dissemination of oxidized py rarely with cp.						
	142.0m-146.0m: weakly carbonitized, sericitized and argillized	142.0m very sparse dissemination of py (partly oxidized) with hematitized mag and rare cp.	4059	4.00	0.09		0.003	0.22
	146.0m-150.7m: weakly carbonitized, sericitized, argillized and slightly silicified	146.0m very sparse dissemination of py and mag rarely with cp. A few cp-py-quartz veinlets generally dipping 30°-50°.	4060	4.00	0.08		0.002	
150		150.7m						
	150.7m-154.5m: weakly argillized, carbonitized, sericitized and chloritized	very sparse dissemination of py and mag rarely with cp.	4061	4.00	0.06		0.001	
	154.5m-157.0m: sheared, locally brecciated, highly argillized and distinctly carbonitized	154.5m Dissemination and stringers of py with hem and mag.	4062	4.00	0.08		0.002	0.27
	157.0m-162.0m: Fairly distinctly argillized, weakly carbonitized, sericitized and chloritized	157.0m Sparse dissemination of py with a little cp, hem and mag.	4063	4.00	0.11		0.002	
160			4064	4.00	0.15		0.001	
	162.0m-165.9m: weakly carbonitized, argillized, silicified and sericitized	162.0m Sparse disseminations of py, hem and mag with cp. Several py-cp-quartz veinlets.	4065	4.00	0.29		0.003	0.30
	165.9m-176.0m: weakly carbonitized and argillized	165.9m	4066	4.00	0.09		0.001	
170		very sparse disseminations of py, cp, hem and mag.	4067	4.00	0.11		0.001	
	Hornblende-biotite-bearing quartz monzonite porphyry		4068	4.00	0.13		0.002	0.20
	176.0m-182.0m: weakly carbonitized, argillized, partly chloritized and slightly epidotized		4069	4.00	0.17		0.003	
180		186.0m	4070	4.00	0.12		0.001	
	182.0m-200.0m: weakly carbonitized, sericitized, chloritized and epidotized	Sparse dissemination of cp, mag and hem rarely with py.	4071	4.00	0.31		0.002	0.29
190			4072	4.00	0.25		0.004	
			4073	4.00	0.21		0.003	
200								

	214.8m-218.0m: distinctly carbonitized and argillized		4077	4.00	0.05		0.005	0.14
220	218.0m-223.5m: weakly to fairly distinctly carbonitized, weakly sericitized, slightly argillized, locally silicified and chloritized	218.0m very sparse disseminations of cp, py and hematitized mag. A few chlorite-calcite-quartz veinlets with cp and a little py.	4078	4.00	0.06		0.004	
	223.5m-226.2m: distinctly carbonitized and argillized	223.5m Sparse disseminations of py and mag rarely with cp.	4079	4.00	0.07		0.006	
	226.2m-233.0m: fairly distinctly carbonitized, argillized, weakly sericitized and slightly chloritized	229.0m Sparse dissemination of mag rarely with py and cp.	4080	4.00	0.08		0.005	0.37
230			4081	4.00	0.07		0.003	
	233.0m-234.4m: highly carbonitized and argillized	233.0m	4082	4.00	0.04		0.003	
	234.4m-240.0m: weakly carbonitized, chloritized and slighly argillized	Sparse disseminations of py and mag rarely with cp.	4083	4.00	0.11		0.001	0.46
240	240.0m-242.6m: highly carbonitized and argillized		4084	4.00	0.07		0.004	
	242.6m-245.0m: weakly carbonitized, chloritized and slighly argillized							
	245.0m-250.3m: strongly to weakly carbonitized and argillized, and weakly chloritized		4085	4.00	0.03		0.003	0.25
250			4086	2.30	0.02		0.001	
	250.3m							
260								

O D H No. 4 Sheet 4

Total Length 250.30m Core Recovery 97%

Location M-21 Elevation 4,030m

Direction — Inclination Vertical

Date of Logging from 10th/Nov. to 25th/Nov.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

Abbreviation

cp : chalcopyrite

py : pyrite

bn : bornite

hem : hematite

mag : magnetite

mb : molybdenite

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Non-core							
		7.5m							
		Skarnized gabbro decomposed and gossanized	Cu-oxides in limonite gossan.	5001	1.3	1.08		0.016	
		8.8m							
10		Porphyry distinctly silicified, argillized and with epidotized mafic minerals	Rich lim with cu-oxides and a little py often coated by cc.	5002	1.6	0.62	0.42	0.036	
		10.4m							
		Medium-grained gabbroic rock	Networks of lim-ep-clay veinlets sparsely with cu-oxides and a little py rarely coated by cc.	5003	2.0	0.45		0.004	
		10.4m-11.4m: somewhat decomposed and distinctly argillized							
		11.4m-14.7m: distinctly epidotized and argillized		5004	2.3	0.59	0.42	0.003	0.41
		14.7m-15.1m: altered into epidote-clay-limonite gossan (altered skarn)		5005	0.4	0.88		0.065	
		15.1m-16.9m: distinctly epidotized and argillized, and locally silicified		5006	2.0	0.56	0.47	0.007	
		Quartz monzonite porphyry highly silicified							
		Medium-grained gabbroic rock		5007	1.6	0.47		0.002	
20		17.1m-18.7m: epidolized, chloritized and argillized remarkably		5008	1.6	0.34	0.19	0.007	
		18.7m	Minute grains of native cu and dots of cu-oxides very sparsely in lim-chl veinlets.	5009	1.6	0.19		0.003	
		21.1m							
		18.7m-22.2m: distinctly chloritized, argillized, weakly carbonitized, and locally silicified	A little cc coating py.	5010	1.9	0.14	0.008	0.003	
		22.2m-23.0m: distinctly silicified and chloritized	23.0m						
		23.0m-25.7m: markedly skarnized, chloritized, weakly argillized, carbonitized and locally silicified	Ep-actinolite-mag veinlets with cp, bn and minor cc-coated py.	5011	2.0	1.55		0.012	
		25.7m	A1-cm cp-bn-qtz vein dipping 60° at 23.5m.						
		26.5m	poor in ores	5012	2.0	0.21	0.05	0.003	0.69
		25.7m-26.5m: highly chloritized and carbonitized	cp-bn stringers and grains in skarn veins.	5013	2.0	0.32		0.002	
30		26.5m-28.3m: chloritized and carbonitized, with thin skarn veins	28.3m						
		28.3m-34.7m: chloritized, weakly carbonitized, and locally silicified	Cp-bm-qtz veinlets and bn-bearing cp stringers	5014	2.0	0.56	0.006	0.003	
				5015	2.0	0.25		0.002	
			33.0m						
			A little cp-bn stringers and disseminations.	5016	2.0	0.16	0.04	0.003	
		34.7m-36.5m: fairly remarkably argillized carbonitized and chloritized	34.7m						
			Disseminations of py, cp and lesser bn with a few ore stringers.	5017	2.0	0.24		0.004	
		36.5m-37.0m: Sheared and brecciated	37.0m						
		37.0m-39.2m: distinctly silicified as quartz veins and veinlets	Cp and minor bn in and along qtz vein and veinlets.	5018	2.0	0.55	0.09	0.005	0.82
40		39.2m-41.0m: chloritized and carbonitized	39.2m						
			Poorly disseminated py, cp and minor bn.	5019	2.0	0.20		0.003	
		41.0m-43.6m: moderately to weakly silicified, with a little spotty epidote and joint-filling clay-calcite	41.0m						
			py, cp and lesser bn as veinlets and lesser disseminations.	5020	2.0	0.46	0.13	0.008	
			43.6m	5021	2.0	0.49		0.085	
		43.6m-47.4m: distinctly chloritized and argillized with a little actinolite and epidote	Disseminations of py, cp, bn and minor molybdenite.	5022	2.0	0.31	0.05	0.006	
			47.4m	5023	2.0	0.13		0.003	
		47.4m-51.4m: fairly distinctly chloritized, weakly carbonitized, argillized and locally silicified, with a little epidote spots	Dissemination of py, a little cp and bn with a few ore-qtz veinlets containing trace of cc	5024	2.0	0.25	0.05	0.004	1.12
50			51.4m						
		51.4m-53.7m: strongly carbonitized, argillized and chloritized	Dissemination of py with trace of cp.	5025	2.0	0.07		0.002	
			53.7m	5026	2.0	0.13	0.04	0.002	
		53.7m-57.0m: markedly chloritized, weakly carbonitized, argillized and slightly silicified	Dissemination of py and sparse cp-bearing py veinlets	5027	2.0	0.09		0.003	
			57.0m						
		57.0m-63.5m: chloritized and carbonitized as joint-fillings, and with a little epidote dots	Dissemination of fine-grained py, and py-bearing chlorite-calcite veinlets.	5028	2.0	0.06	0.03	0.002	
60				5029	2.0	0.06		0.001	
			62.0m						
			Py veinlets with a little cp.	5030	2.0	0.08	0.08	0.002	
		63.5m-65.1m: altered into calcite-chlorite-clay rock with quartz veinlets	63.5m						
			Py-cp-bn-cc qtz veinlets.	5031	2.0	1.12	-	0.170	0.97
		65.1m-69.5m: chloritized, carbonitized, weakly argillized, slightly silicified and with vein-formed skarn	65.1m						
			Py, cp, bn and hem as stringers and in skarn and qtz veinlets.	5032	2.0	0.11	0.04	0.004	
				5033	2.0	0.38		0.003	
70			69.5m						
		69.5m-76.0m: chloritized, carbonitized, weakly argillized and with a little epidote as dots and veinlets	Dissemination of fine-grained Py. Py-hem-cal-chl veinlets and sparse py-cp-bn stringers.	5034	2.0	0.10	0.03	0.013	
				5035	2.0	0.05		0.002	
				5036	2.0	0.04	0.02	0.003	
		76.0m-78.0m: almost same as above except for addition of weak silicification	76.0m						
			Py-cp veinlets, and dissemination of py and a little cp.	5037	2.0	0.21		0.012	0.74
			78.0m	5038	2.0	0.08	0.03	0.002	
80		78.0m-85.0m: chloritized, carbonitized, weakly argillized, slightly silicified and epidolized	Several py-cp films with minor bn, and disseminated py and a little cp.	5039	2.0	0.05		0.001	
				5040	2.0	0.05	0.03	0.002	
				5041	2.0	0.04		0.002	
			85.0m						
		85.0m-93.5m: markedly chloritized, carbonitized, weakly argillized, and with a little quartz veinlets, epidote dots and a few skarn-magnetite veinlets near 92.0m	Dissemination of fine-grained pyrite, a little py-cp-qtz-ep dots, and disseminations	5042	2.0	0.03	0.02	0.001	
				5043	2.0	0.05		0.001	0.81
90				5044	2.0	0.04	0.02	0.003	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		100.0m-101.5m: same as above	Same as above	5049	2.0	0.53		0.001	
			101.5m	5050	2.0	0.08		0.003	
		101.5m-109.5m: markedly carbonitized, fairly chloritized mainly as fracuture-fillings, and locally with a little epidote dots and quartz-calcite veinlets	Dissemination of py and rare cp, and several cp stringers	5051	2.0	0.03		0.002	
			A few cp-qtz-chlorite-calcite veinlets at 106.2m	5052	2.0	0.06		0.003	
110		110.0m-113.3m: carbonitized, chloritized argillized markedly, and rich in epidote-actinolite-magnetite, skarn with chalcopyrite and a little garnet as thin veins	110.0m						
			Cp and py disseminations in skarn, and several cp-bn stringers	5053	2.0	0.06		0.002	
			113.3m	5054	2.0	0.10		0.002	
		113.3m-116.0m: altered into white carbonate-clay rock with thin veins and veinlets of skarn	Fairly abundant disseminations of cp, py and bn	5055	2.3	0.39		0.002	0.65
			116.0m	5056	2.4	0.62		0.019	
		116.0m-119.7m: markedly carbonitized, chloritized, argillized and with thin veins of skarn	Disseminations of py and cp in skarn, and a few cp stringers.	5057	2.3	0.18		0.002	
120			119.7m	5058	2.0	0.36		0.008	
		119.7m-126.0m: distinctly silicified in the form of "replacement", weakly epidotized, and with developed chlorite veinlets and calcite veinlets	Disseminations and stringers of cp and bn with rare cc.	5059	2.0	0.53		0.006	
				5060	2.0	1.16		0.005	0.94
				5061	2.0	0.81		0.012	
			126.0m						
		126.0m-127.5m: markedly carbonitized, argillized, and chloritized	A little py-cp-bn dissemination.	5062	2.0	0.22		0.003	
			127.5m						
130		126.0m-132.0m: distinctly silicified and rich in clay-filled joints	Disseminations and joint-fillings of abundant py with a little cp and bn.	5063	2.0	0.27		0.003	
		132.0m-135.2m: weakly silicified and rich in later calcite veinlets	132.0m	5064	2.0	0.19		0.002	
			Stringers and disseminations of bn with a little cc and mb.	5065	2.0	0.32		0.013	0.36
		135.2m-145.0m: markedly chloritized, carbonitized, argillized, and with abundant barren calcite veinlets and a little quartz veinlets	135.2m	5066	2.0	0.43		0.011	
140			Hematite-clay-chlorite veinlets rarely with bn, and a little py-cp-bn-quartz veinlets.	5067	2.0	0.12		0.002	
				5068	2.0	0.10		0.004	
				5068	2.0	0.04		0.003	
				5070	2.0	0.07		0.001	
		145.0m-160.0m: fairly strongly chloritized, weakly carbonitized, locally epidotized weakly, and with a little quartz veinlets	145.0m	5071	2.0	0.08		0.002	0.38
				5072	2.0	0.05		0.002	
				5073	2.0	0.06		0.001	
150			Dissemination of py and rare cp, and a few cp-bearing quartz veinlets.	5074	2.0	0.05		0.001	
				5075	2.0	0.04		0.002	
				5076	2.0	0.04		0.002	
				5077	2.0	0.06		0.001	
				5078	2.0	0.08		0.002	
160		160.0m-162.0m: remarkably skarnized with quartz-calcite veinlets	160.0m						
			Abundant cp and bn, disseminated and in qtz-cal veinlets.	5079	2.0	1.34		0.016	1.46
		162.0m-165.7m: strongly chloritized, carbonitized, argillized, weakly epidotized, and with a little quartz veinlets and skarn veins	162.0m						
			Disseminated py, bn and cp in and around skarn, and bn-cp stringers with rare mb.	5080	2.0	0.33		0.013	
				5081	2.0	0.79		0.014	
			165.7m						
		165.7m-170.0m: chloritized, argillized, carbonitized with a little epidote spots	Disseminations of py and minor bn and cp, und a few ore stringers.	5082	2.0	0.28		0.018	
170			170.0m	5083	2.0	0.10		0.005	
		170.0m-176.0m: strongly skarnized, and with chlorite and talc replacing amphibales	Disseminations and a little stringers of py, cp, bn and rare mb.	5084	2.0	0.38		0.006	
				5085	2.0	0.67		0.021	0.80
				5086	2.0	0.53		0.026	
			176.0m	5087	2.0	0.15		0.006	
		176.0m-178.8m: chloritized, carbonitized, argillized, and with veinlets of skarn	Dissemination of py rarely with cp and bn.	5088	2.0	0.04		0.003	
180		178.8m-180.0m: strongly silicified		5089	2.0	0.04		0.002	
		180.0m-200.0m: chloritized, carbonitized, argillized weakly to moderately, and with a little epidote-actinolite-chlorite veinlets	183.0m	5090	2.0	0.11		0.004	0.91
			A few bn-cp-py-epidote veinlets.						
			184.0m	5091	2.0	0.06		0.002	
			Dissemination of py rarely with cp and bn.	5092	2.0	0.07		0.001	
			187.5m						
			Several cp-py-ep-qtz veinlets.	5093	2.0	0.20		0.002	
190			187.0m						

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		200.0m-202.8m: same as above		5099	3.0	0.05		0.001	
		202.8m-206.0m: markedly argillized, and moderately carbonitized and chloritized	Same as above.	5100	3.0	0.05		0.001	
		206.0m-208.5m: highly carbonitized, markedly chloritized, and argillized	206.0m						
			Manganese oxide (?) in calcite veinlets.	5101	2.1	0.05		0.002	
		208.5m		5102	0.9	0.04		0.001	1.41
210	V	Olivine basalt with abundant carbonates and zeolite as cavity-fillings, and cut by "barren" calcite veinlets	Non-sulphides	5103	4.0	0.03		0.002	
	V								
	V			5104	2.2	0.05		0.001	
	V	214.7m							
				5105	3.0	0.07		0.002	
				5106	0.6	0.02		0.002	
220		Medium-grained gabbroic rock, strongly carbonitized mainly as calcite veinlets, markedly chloritized, moderately argillized, and very sparsely with actinolite-magnetite veinlets	Dissemination of fine-grained, Py, and very sparse cp-bn stringers and qtz-calcite veinlets.	5107	3.7	0.05		0.002	0.89
				5108	4.0	0.06		0.001	
		Three main types of "calcite veinlet" are recognized as follows:							
		(a) very sparse quartz-bearing calcite veinlets often with copper ore		5109	4.0	0.04		tr	
230				5110	4.0	0.06		0.001	1.02
		(b) fairly rich hematite-bearing chlorite-calcite veinlets		5111	4.0	0.06		0.002	
240		(c) Common "barren" calcite veinlets often cutting ore stringers and ore-bearing veinlets		5112	4.0	0.04		0.002	
				5113	4.0	0.07		0.002	1.97
				5114	4.0	0.04		0.002	
250		251.1m (END)		5115	1.1	0.05		0.004	
260									

GEOLO

YAURI ARE

CORE I

D.D.H No

Total Length 2

Location

Direction

Date of Loggin

Logged by

METAL MINING AC

OVERSEAS TECHNI

GOVERNMENT OF

Prepared by MITSUI KI

Abbreviation

lim	:	limonite
hem	:	hematite
mag	:	magnetite
py	:	pyrite
cp	:	chalcopyrite
bn	:	bornite
cc	:	chalcocite
mb	:	molybdenite
ep	:	epidote
qtz	:	quartz
chl	:	chlorite
cal	:	calcite

Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
Cu-oxides in limonite gossan.	5001	1.3	1.08		0016	
Rich lim with cu-oxides and a little py often coated by cc.	5002	1.8	0.62	0.42	0036	
Networks of lim-ep-clay veinlets sparsely with cu-oxides and a little py rarely coated by cc.	5003	2.0	0.45		0004	
	5004	2.3	059	0.42	0003	0.41
	5005	0.4	0.89		0065	
	5006	2.0	0.56	0.47	0007	
	5007	1.6	0.47		0002	
—18.7m— Minute grains of native cu and dots of cu-oxides very sparsely in lim-chl veinlets.	5008	0.6	0.34	0.19	0007	
	5009	1.8	0.19		0003	
—21.1m— A little cc coating py.	5010	1.9	0.14	0006	0003	
—23.0m— Ep-actinolite-mag veinlets with cp, bn and minor cc-coated py. At-cm cp-bn-qtz vein dipping 60° at 23.5m	5011	2.0	1.55		0012	
—25.7m— poor in ores	5012	2.0	0.21	0.05	0003	
—26.5m— CP-bn stringers and grains in skarn veins.	5013	2.0	032		0002	0.69
—28.3m— Cp-bm-qtz veinlets and bn-bearing cp stringers	5014	2.0	0.56	0006	0003	
	5015	2.0	0.25		0002	
—33.0m— A little cp-bn stringers and disseminations.	5016	2.0	0.16	0.04	0003	
—34.7m— Disseminations of py, cp and lesser bn with a few ore stringers.	5017	2.0	0.24		0004	
—37.0m— Cp and minor bn in and along qtz vein and veinlets.	5018	2.0	0.55	009	0005	0.82
—39.2m— Poorly disseminated py, cp and minor bn.	5019	2.0	0.20		0003	
—41.0m— Py, cp and lesser bn as veinlets and lesser disseminations.	5020	2.0	0.46	0.13	0008	
	5021	2.0	0.49		0.085	
—43.6m— Disseminations of py, cp, bn and minor molybdenite.	5022	2.0	031	005	0006	
—47.4m—	5023	2.0	0.13		0003	
Dissemination of py, a little cp and bn with a few ore-qtz veinlets containing trace of cc	5024	2.0	0.25	0.05	0004	1.12
—51.4m— Dissemination of py with trace of cp.	5025	2.0	007		0.002	
—53.7m—	5026	2.0	0.13	0.04	0002	
Dissemination of py and sparse cp-bearing py veinlets	5027	2.0	0.09		0.003	
—57.0m—	5028	2.0	0.06	003	0002	
Dissemination of fine-grained py, and py-bearing chlorite-calcits veinlets.	5029	2.0	0.06		0001	
—62.0m— Py veinlets with a little cp.	5030	2.0	0.08	008	0002	
—63.5m— Py-cp-bn-cc qtz veinlets.	5031	2.0	1.12	·	0.170	0.97
—65.1m— Py, cp, bn and hem as stringers and in skarn and qtz veinlets.	5032	2.0	0.11	004	0004	
	5033	2.0	039		0003	
—69.5m— Dissemination of fine-grained py. Py-hem-cal-chl veinlets and sparse py-cp-bn stringers.	5034	2.0	0.10	003	0013	
	5035	2.0	005		0002	
	5036	2.0	004	0.02	0003	
—76.0m— Py-cp veinlets, and dissemination of py and a little cp.	5037	2.0	0.21		0.012	0.74
—78.0m—	5038	2.0	008	0.03	0002	
Several py-cp films with minor bn, and disseminated py and a little cp.	5039	2.0	005		0001	
	5040	2.0	005	003	0002	
	5041	2.0	0.04		0002	
—85.0m—	5042	2.0	003	002	0001	
Dissemination of fine-grained pyrite, a little py-cp-qtz-	5043	2.0	005		0001	0.81

Depth (m)	Section	Rock	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		100.0m-101.5m : same as above	Same as above —101.5m—	5049	2.0	0.53		0004	
		101.5m-109.5m : markedly carbonitized, fairly chloritized mainly as fracuture-fillings, and locally with a little epidote dots and quartz-calcite veinlets	Dissemination of py and rare cp, and several cp stringers	5050	2.0	008		0003	
				5051	2.0	0.03		0.002	
			A few cp-qtz-chlorite-calcite veinlets at 106.2m	5052	2.0	0.06		0003	
				5053	2.0	0.06		0.002	
110		110.0m-113.3m : carbonitized, chloritized argillized markedly, and rich in epidote-actinolite-magnetite, skarn with chalcopyrite and a little garnet as thin veins	—110.0m— Cp and py disseminations in skarn, and several cp-bn stringers	5054	2.0	0.10		0.002	
				5055	2.3	0.39		0.002	065
		113.3m-116.0m : altered into white carbonate-clay rock with thin veins and veinlets of skarn	—113.3m— Fairly abundant disseminations of cp, py and bn	5056	2.4	0.62		0019	
		116.0m-119.7m : markedly carbonitized, chloritized, argillized and with thin veins of skarn	—116.0m— Disseminations of py and cp in skarn, and a few cp stringers.	5057	2.3	0.18		0.002	
120				5058	2.0	0.36		0008	
		119.7m-126.0m : distinctly silicified in the form of "replacement", weakly epidotized, and with developed chlorite veinlets and calcite veinlets	—119.7m— Disseminations and stringers of cp and bn with rare cc.	5059	2.0	053		0.006	
				5060	2.0	1.16		0005	0.94
				5061	2.0	0.81		0012	
		126.0m-127.5m : markedly carbonitized, argillized and chloritized	—126.0m— A little py-cp-bn dissemination. —127.5m—	5062	2.0	0.22		0003	
130		126.0m-132.0m : distinctly silicified and rich in clay-filled joints	Disseminations and joint-fillings of abundant py with a little cp and bn.	5063	2.0	0.27		0003	
				5064	2.0	0.19		0002	
		132.0m-135.2m : weakly silicified and rich in later calcite veinlets	—132.0m— Stringers and disseminations of bn with a little cc and mb.	5065	2.0	032		0013	0.36
		135.2m-145.0m : markedly chloritized, carbonitized, argillized, and with abundant barren calcite veinlets and a little quartz veinlets	—135.2m—	5066	2.0	0.43		0.011	
			Hematite-clay-chlorite veinlets rarely with bn, and a little py-cp-bn-quartz veinlets.	5067	2.0	0.12		0002	
140				5068	2.0	0.10		0004	
				5069	2.0	004		0003	
				5070	2.0	007		0.001	
		145.0m-160.0m : fairly strongly chloritized, weakly carbonitized, locally epidotized weakly, and with a little quartz veinlets	—145.0m—	5071	2.0	0.08		0002	038
				5072	2.0	005		0002	
150				5073	2.0	006		0.001	
			Dissemination of py and rare cp, and a few cp-bearing quartz veinlets.	5074	2.0	005		0.001	
				5075	2.0	0.04		0002	
				5076	2.0	004		0.002	
				5077	2.0	006		0.001	
160				5078	2.0	008		0002	
		160.0m-162.0m : remarkably skarnized with quartz-calcite veinlets	—160.0m— Abundant cp and bn, disseminated and in qtz-cal veinlets.	5079	2.0	1.34		0016	1.46
		162.0m-165.7m : strongly chloritized, carbonitized, argillized, weakly epidotized, and with a little quartz veinlets and skarn veins	—162.0m— Disseminated py, bn and cp in and around skarn, and bn-cp stringers with rare mb.	5080	2.0	0.33		0013	
				5081	2.0	0.79		0.014	
		165.7m-170.0m : chloritized, argillized, carbonitized with a little epidote spots	—165.7m— Disseminations of py and minor bn and cp, und a few ore stringers.	5082	2.0	0.28		0019	
170				5083	2.0	0.10		0005	
		170.0m-176.0m : strongly skarnized, and with chlorite and talc replacing amphiboles	—170.0m—	5084	2.0	0.38		0006	
			Disseminations and a little stringers of py, cp, bn and rare mb.	5085	2.0	0.67		0.021	0.80
				5086	2.0	0.53		0.025	
		176.0m-178.8m : chloritized, carbonitized, argillized, and with veinlets of skarn	—176.0m—	5087	2.0	0.15		0006	
180			Dissemination of py rarely with cp and bn.	5088	2.0	0.04		0003	
		178.8m-180.0m : strongly silicified		5089	2.0	0.04		0002	
		180.0m-200.0m : chloritized, carbonitized, argillized weakly to moderately, and with a little epidote-actinolite-chlorite veinlets	—183.0m— A few bn-cp-py-epidote veinlets.	5090	2.0	0.11		0004	0.91
			—184.0m— Dissemination of py rarely with cp and bn.	5091	2.0	0.08		0002	
				5092	2.0	0.07		0001	
190			—187.5m— Several cp-py-ep-qtz veinlets. —189.0m—	5093	2.0	0.20		0002	

Depth (m)	Section	Rock	Mineralization	Sample No	Core Length	% T-Cu	% S-Cu	% Mo	% S
		200.0m-202.8m : same as above		5099	3.0	0.05		0001	
		202.8m-206.0m : markedly argillized, and moderately carbonitized and chloritized	Same as above.	5100	3.0	0.05		0.001	
		206.0m-208.5m : highly carbonitized, markedly chloritized, and argillized	—206.0m— Manganese oxide (?) in calcite veinlets.	5101	2.1	0.05		0002	
		—208.5m—		5102	0.4	0.04		0001	1.41
210		Olivine basalt with abundant carbonates and zeolite as cavity-fillings, and cut by "barren" calcite veinlets	Non-sulphides	5103	4.0	003		0002	
				5104	2.2	0.05		0.001	
		—214.7m—		5105	3.0	007		0002	
				5106	0.6	002		0002	
220		Medium-grained gabbroic rock, strongly carbonitized mainly as calcite veinlets, markedly chloritized, moderately argillized, and very sparsely with actinolite-magnetite veinlets	Dissemination of fine-grained, py, and very sparse cp-bn stringers and qtz-calcite veinlets.	5107	3.7	0.05		0002	0.89
				5108	4.0	006		0001	
230		Three main types of "calcite veinlet" are recognized as follows :		5109	4.0	0.04		tr	
		(a) very sparse quartz-bearing calcite veinlets often with copper ore		5110	4.0	0.06		0.001	1.02
		(b) fairly rich hematite-bearing chlorite-calcite veinlets		5111	4.0	006		0.002	
240		(c) Common "barren" calcite veinlets often cutting ore stringers and ore-bearing veinlets		5112	4.0	0.04		0002	
				5113	4.0	0.07		0002	1.97
				5114	4.0	004		0.002	
250		—251.1m (END)—		5115	1.1	0.05		0004	
260									

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PL. I-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

CORE LOG and ASSAY

D.D.H. No. 5 Sheet 5

Total Length 251.10m Core Recovery 99.9%

Location M-17 Elevation 4,046m

Direction — Inclination Vertical

Date of Logging from 26th/Nov. to 4th/Dec.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Abbreviation

lim	:	limonite
hem	:	hematite
mag	:	magnetite
py	:	pyrite
cp	:	chalcopyrite
bn	:	bornite
cc	:	chalcocite
mb	:	molybdenite
ep	:	epidote
qtz	:	quartz
chl	:	chlorite
cal	:	calcite

	104.0m-114.0m: Somewhat decomposed and distinctly argillized	sparsely with cu-oxides and a little py rarely coated by cc.	5004	2.3	0.59	0.42	0.003		0.41
	114.0m-147.0m: distinctly epidotized and argillized		5005	0.4	0.69		0.005		
	147.0m-151.0m: altered into epidote-clay-limonite gossan (altered skarn)		5006	2.0	0.58	0.47	0.007		
	151.0m-187.0m: distinctly epidotized and argillized, and locally silicified		5007	1.6	0.47		0.002		
	Quartz monzonite porphyry highly silicified	18.7m Minute grains of native cu and dots of cu-oxides very sparsely in lim-chl veinlets	5008	0.6	0.34	0.19	0.007		
	Medium-grained gabbroic rock		5009	1.8	0.19		0.003		
20	171.0m-187.0m: epidotized, chloritized and argillized remarkably	21.1m A little cc coating py.	5010	1.9	0.14	0.006	0.003		
	187.0m-222.0m: distinctly chloritized, argillized, weakly carbonitized, and locally silicified	23.0m Ep-actinolite-mag veinlets with cp, bn and minor cc-coated py.	5011	2.0	1.55		0.012		
	222.0m-230.0m: distinctly silicified and chloritized	41-cm cp-bn-qtz vein dipping 60° at 23.5m.	5012	2.0	0.21	0.05	0.003		0.69
	230.0m-253.0m: markedly skarnized, chloritized, weakly argillized, carbonitized and locally silicified	25.7m poor in ores							
	257.0m-265.0m: highly chloritized and carbonitized,	26.5m cp-bn stringers and grains in skarn veins.	5013	2.0	0.32		0.002		
	265.0m-283.0m: chloritized and carbonitized, with thin skarn veins	28.3m Cp-bn-qtz veinlets and bn-bearing cp stringers	5014	2.0	0.56	0.006	0.003		
30	283.0m-347.0m: chloritized, weakly carbonitized, and locally silicified		5015	2.0	0.25		0.002		
		33.0m A little cp-bn stringers and disseminations.	5016	2.0	0.18	0.004	0.003		
	347.0m-365.0m: fairly remarkably argillized carbonitized and chloritized	34.7m Disseminations of Py, cp and lesser bn with a few ore stringers.	5017	2.0	0.24		0.004		
	365.0m-371.0m: Sheared and brecciated	37.0m Cp and minor bn in and along qtz vein and veinlets.	5018	2.0	0.55	0.009	0.005		0.82
	371.0m-392.0m: distinctly silicified as quartz veins and veinlets	39.2m Poorly disseminated py, cp and minor bn.	5019	2.0	0.20		0.003		
40	392.0m-410.0m: chloritized and carbonitized	41.0m Py, cp and lesser bn as veinlets and lesser disseminations.	5020	2.0	0.46	0.13	0.006		
	410.0m-436.0m: moderately to weakly silicified, with a little spotty epidote and joint-filling clay-calcite	43.6m	5021	2.0	0.49		0.085		
	436.0m-474.0m: distinctly chloritized and argillized with a little actinolite and epidote	Disseminations of py, cp, bn and minor molybdenite.	5022	2.0	0.31	0.05	0.006		
		47.4m	5023	2.0	0.13		0.003		
	474.0m-514.0m: fairly distinctly chloritized, weakly carbonitized, argillized and locally silicified, with a little epidote spots	Dissemination of py, a little cp and bn with a few ore-qtz veinlets containing trace of cc	5024	2.0	0.25	0.05	0.004		
50		51.4m							1.12
	514.0m-537.0m: strongly carbonitized, argillized and chloritized	Dissemination of py with trace of cp.	5025	2.0	0.07		0.002		
		53.7m	5026	2.0	0.13	0.04	0.002		
	537.0m-570.0m: markedly chloritized, weakly carbonitized, argillized and slightly silicified	Dissemination of py and sparse cp-bearing py veinlets	5027	2.0	0.09		0.003		
		57.0m	5028	2.0	0.08	0.03	0.002		
60	570.0m-635.0m: chloritized and carbonitized as joint-fillings, and with a little epidote dots	Dissemination of fine-grained Py, and py-bearing chlorite-calcite veinlets.	5029	2.0	0.08		0.001		
		62.0m Py veinlets with a little cp.	5030	2.0	0.08	0.03	0.002		
	635.0m-651.0m: altered into calcite-chlorite-clay rock with quartz veinlets	63.5m Py-cp-bn-cc qtz veinlets.	5031	2.0	1.12	.	0.170		0.97
	651.0m-695.0m: chloritized, carbonitized, weakly argillized, slightly silicified and with vein-formed skarn	65.1m Py, cp, bn and hem as stringers and in skarn and qtz veinlets.	5032	2.0	0.11	0.04	0.004		
			5033	2.0	0.39		0.003		
70		69.5m	5034	2.0	0.10	0.03	0.013		
	695.0m-760.0m: chloritized, carbonitized, weakly argillized and with a little epidote as dots and veinlets	Dissemination of fine-grained Py. Py-hem-cal-chl veinlets and sparse py-cp-bn stringers.	5035	2.0	0.05		0.002		
			5036	2.0	0.04	0.02	0.003		
		76.0m	5037	2.0	0.21		0.012		0.74
	760.0m-780.0m: almost same as above except for addition of weak silicification	Py-cp veinlets, and dissemination of py and a little cp.	5038	2.0	0.08	0.03	0.002		
		78.0m	5039	2.0	0.05		0.001		
80	780.0m-850.0m: chloritized, carbonitized, weakly argillized, slightly silicified and epidotized	Several py-cp films with minor bn, and disseminated py and a little cp.	5040	2.0	0.05	0.03	0.002		
			5041	2.0	0.04		0.002		
		85.0m	5042	2.0	0.03	0.02	0.001		
	850.0m-935.0m: markedly chloritized, carbonitized, weakly argillized, and with a little quartz veinlets, epidote dots and a few skarn-magnetite veinlets near 92.0m	Dissemination of fine-grained pyrite, a little Py-cp-qtz-ep dot's, and disseminations of py and cp in skarn.	5043	2.0	0.05		0.001		0.81
90			5044	2.0	0.04	0.02	0.003		
			5045	2.0	0.10		0.006		
			5046	2.0	0.10	0.05	0.004		
	935.0m-960.0m: chloritized, carbonitized, weakly argillized, weakly to slightly silicified, epidotized and with thin veins of skarn	96.0m	5047	2.0	0.34		0.001		
	960.0m-1000.0m: distinctly silicified, slightly chloritized, and with fairly abundant skarn veins	Veins and veinlets of cp-bearing mag-ep skarn and bn-cp-actinolite skarn.	5048	2.0	0.16	0.04	0.001		0.32
100									

	skarn with chalcopyrite and a little garnet as thin veins	cp-bn stringers							
	113.3m-116.0m: altered into white carbonate-clay rock with thin veins and veinlets of skarn	113.3m Fairly abundant disseminations of cp, py and bn	5056	2.4	0.62		0.019		
		116.0m Disseminations of py and cp in skarn, and a few cp stringers.	5057	2.3	0.18		0.002		
		119.7m	5058	2.0	0.36		0.008		
120	119.7m-126.0m: distinctly silicified in the form of "replacement", weakly epidotized, and with developed chlorite veinlets and calcite veinlets	Disseminations and stringers of cp and bn with rare cc.	5059	2.0	0.53		0.006		
			5060	2.0	1.16		0.005		0.94
	126.0m-127.5m: markedly carbonitized, argillized and chloritized	126.0m A little py-cp-bn dissemination.	5061	2.0	0.81		0.012		
	126.0m-132.0m: distinctly silicified and rich in clay-filled joints	127.5m Disseminations and joint-fillings of abundant py with a little cp and bn.	5062	2.0	0.22		0.003		
130			5063	2.0	0.27		0.003		
	132.0m-135.2m: weakly silicified and rich in later calcite veinlets	132.0m Stringers and disseminations of bn with a little cc and mb.	5064	2.0	0.19		0.002		
			5065	2.0	0.32		0.013		
		135.2m	5066	2.0	0.43		0.011		0.36
	135.2m-145.0m: markedly chloritized, carbonitized, argillized, and with abundant barren calcite veinlets and a little quartz veinlets	Hematite-clay-chlorite veinlets rarely with bn, and a little py-cp-bn-quartz veinlets.	5067	2.0	0.12		0.002		
140			5068	2.0	0.10		0.004		
			5069	2.0	0.04		0.003		
			5070	2.0	0.07		0.001		
		145.0m	5071	2.0	0.08		0.002		0.38
	145.0m-160.0m: fairly strongly chloritized, weakly carbonitized, locally epidotized weakly, and with a little quartz veinlets		5072	2.0	0.05		0.002		
			5073	2.0	0.06		0.001		
150		Dissemination of py and rare cp, and a few cp-bearing quartz veinlets.	5074	2.0	0.05		0.001		
			5075	2.0	0.04		0.002		
			5076	2.0	0.04		0.002		
			5077	2.0	0.06		0.001		
			5078	2.0	0.08		0.002		
160	160.0m-162.0m: remarkably skarnized with quartz-calcite veinlets	160.0m Abundant cp and bn, disseminated and in qtz-cal veinlets.	5079	2.0	1.34		0.016		1.46
	162.0m-165.7m: strongly chloritized, carbonitized, argillized, weakly epidotized, and with a little quartz veinlets and skarn veins	162.0m Disseminated py, bn and cp in and around skarn, and bn-cp stringers with rare mb.	5080	2.0	0.33		0.013		
			5081	2.0	0.79		0.014		
		165.7m Disseminations of py and minor bn and cp, and a few ore stringers.	5082	2.0	0.28		0.018		
170	165.7m-170.0m: chloritized, argillized, carbonitized with a little epidote spots		5083	2.0	0.10		0.005		
		170.0m	5084	2.0	0.38		0.006		
	170.0m-176.0m: strongly skarnized, and with chlorite and talc replacing amphiboles	Disseminations and a little stringers of py, cp, bn and rare mb.	5085	2.0	0.67		0.021		0.80
			5086	2.0	0.53		0.025		
		176.0m	5087	2.0	0.15		0.006		
	176.0m-178.8m: chloritized, carbonitized, argillized, and with veinlets of skarn	Dissemination of py rarely with cp and bn.	5088	2.0	0.04		0.003		
180	178.8m-180.0m: strongly silicified		5089	2.0	0.04		0.002		
		183.0m A few bn-cp-py-epidote veinlets.	5090	2.0	0.11		0.004		0.91
	180.0m-200.0m: chloritized, carbonitized, argillized weakly to moderately, and with a little epidote-actinolite-chlorite veinlets	184.0m Dissemination of py rarely with cp and bn.	5091	2.0	0.08		0.002		
			5092	2.0	0.07		0.001		
		187.5m Several cp-py-ep-qtz veinlets.	5093	2.0	0.20		0.002		
190		188.0m	5094	2.0	0.06		0.003		
		Dissemination of fine-grained py, and very sparse cp-bearing skarn veinlets.	5095	2.0	0.03		0.002		
			5096	2.0	0.05		0.002		1.04
			5097	2.0	0.03		0.001		
200			5098	2.0	0.13		0.007		

	barren" calcite veinlets		5104	2.2	0.05		0.001		
	214.7m		5105	3.0	0.07		0.002		
			5106	0.6	0.02		0.002		
220	Medium-grained gabbroic rock, strongly carbonitized mainly as calcite veinlets, markedly chloritized, moderately argillized, and very sparsely with actinolite-magnetite veinlets	Dissemination of fine-grained, py, and very sparse cp-bn stringers and qtz-calcite veinlets.	5107	3.7	0.05		0.002		0.89
			5108	4.0	0.06		0.001		
	Three main types of "calcite veinlet" are recognized as follows:		5109	4.0	0.04		tr		
230	(a) very sparse quartz-bearing calcite veinlets often with copper ore		5110	4.0	0.06		0.001		1.02
	(b) fairly rich hematite-bearing chlorite-calcite veinlets		5111	4.0	0.06		0.002		
240	(c) Common "barren" calcite veinlets often cutting ore stringers and ore-bearing veinlets		5112	4.0	0.04		0.002		
			5113	4.0	0.07		0.002		1.97
			5114	4.0	0.04		0.002		
250			5115	1.1	0.05		0.004		
	251.1m (END)								
260									

D.D.H No. S

Total Length 25

Location M

Direction

Date of Logging

Logged by

METAL MINING AGE

OVERSEAS TECHNIC

GOVERNMENT OF

Prepared by MITSUI KIN

Abbreviation

lim	:	limonite
hem	:	hematite
mag	:	magnetite
py	:	pyrite
cp	:	chalcopyrite
bn	:	bornite
cc	:	chalcocite
mb	:	molybdenite
ep	:	epidote
qtz	:	quartz
chl	:	chlorite
cal	:	calcite

...sed and / d and argillized / le-clay-limonite / t and argillized. / ighly silicified / broic rock / ized and argil- / ized, argillized, / lly silicified / fied and / ed, chloritized, / ized and locally / d and carbonitized, / carbonitized. / veins / eakly / ably argillized / ized / brecciated / cified as / d carbonitized / eakly silicified. / e and joint- / hloritized / le actinolite / ly chloritized, / ized and locally / epidote spots / rbonitized. / lloritized, / gillized / and carboni- / d with a little / to calcite- / quartz veinlets / , carbonitized, / silicified / skarn / , carbon- / d and / dots and / ne as / n of weak / d, carbonitiz- / slightly / d / lloritized, / gillized, / veinlets / v skarn- / r 92.0m / , carbonitized, / ly to slightly / d with thin / silicified, / t with / veins

Sparsely with cu-oxides and a little py rarely coated by cc.	5004	2.3	059	0.42	0.003	0.41
	5005	0.4	0.69		0.065	
	5006	2.0	0.56	0.47	0007	
	5007	1.8	0.47		0002	
—18.7m— Minute grains of native cu and dots of cu-oxides very sparsely in lim-chl veinlets.	5008	0.6	0.34	0.19	0.007	
	5009	1.8	0.19		0003	
—21.1m— A little cc coating py.	5010	1.9	0.14	0006	0003	
—23.0m— Ep-actinolite-mag veinlets with cp, bn and minor cc-coated py. A 1-cm cp-bn-qtz vein dipping 60° at 23.5m.	5011	2.0	1.55		0012	
—25.7m— Poor in ores —26.5m—	5012	2.0	0.21	0.05	0003	0.69
Cp-bn stringers and grains in skarn veins. —28.3m—	5013	2.0	032		0002	
Cp-bm-qtz veinlets and bn-bearing cp stringers	5014	2.0	0.58	0006	0003	
	5015	2.0	0.25		0002	
—31.0m— A little cp-bn stringers and disseminations.	5016	2.0	0.16	0.04	0003	
—34.1m— Disseminations of py, cp and lesser bn with a few ore stringers.	5017	2.0	0.24		0004	
—37.0m— Cp and minor bn in and along qtz vein and veinlets.	5018	2.0	0.55	009	0005	0.82
—39.2m— Poorly disseminated py, cp and minor bn.	5019	2.0	0.20		0003	
—41.0m— Py, cp and lesser bn as veinlets and lesser disseminations.	5020	2.0	0.46	0.13	0008	
—43.6m—	5021	2.0	0.49		0.085	
Disseminations of py, cp, bn and minor molybdenite.	5022	2.0	0.31	005	0006	
—47.4m—	5023	2.0	0.13		0003	
Dissemination of py, a little cp and bn with a few ore-qtz veinlets containing trace of cc	5024	2.0	0.25	0.05	0004	1.12
—51.4m— Dissemination of py with trace of cp.	5025	2.0	007		0.002	
—53.7m— Dissemination of py and sparse cp-bearing py veinlets	5026	2.0	0.13	0.04	0002	
	5027	2.0	0.09		0003	
—57.0m— Dissemination of fine-grained py, and py-bearing chlorite-calcite veinlets.	5028	2.0	0.06	003	0002	
	5029	2.0	0.06		0001	
—62.0m— Py veinlets with a little cp.	5030	2.0	008	008	0002	
—63.5m— Py-cp-bn-cc qtz veinlets.	5031	2.0	1.12	·	0.170	0.97
—65.1m— Py, cp, bn and hem as stringers and in skarn and qtz veinlets.	5032	2.0	0.11	0.04	0004	
	5033	2.0	0.39		0003	
—69.5m— Dissemination of fine-grained py. Py-hem-cal-chl veinlets and sparse py-cp-bn stringers.	5034	2.0	0.10	003	0013	
	5035	2.0	005		0002	
	5036	2.0	004	0.02	0003	
—76.0m— Py-cp veinlets, and dissemination of py and a little cp.	5037	2.0	0.21		0.012	0.74
—78.0m—	5038	2.0	008	003	0002	
Several py-cp films with minor bn, and disseminated py and a little cp.	5039	2.0	005		0.001	
	5040	2.0	0.05	0.03	0002	
	5041	2.0	0.04		0.002	
—85.0m—	5042	2.0	003	002	0001	
Dissemination of fine-grained pyrite, a little py-cp-qtz-ep dots, and disseminations of py and cp in skarn.	5043	2.0	0.05		0001	0.81
	5044	2.0	0.04	0.02	0.003	
	5045	2.0	0.10		0006	
	5046	2.0	0.10	0.05	0004	
—96.0m—	5047	2.0	0.34		0.001	
Veins and veinlets of cp-bearing mag-ep skarn and bn-cp-actinolite skarn.	5048	2.0	0.16	0.04	0001	0.32

120 130 140 150 160 170 180 190 200

skarn with chalcopyrite and a little garnet as thin veins

113.3m - 116.0m : altered into white carbonate - clay rock with thin veins and veinlets of skarn

116.0m - 119.7m : markedly carbonitized, chloritized, argillized and with thin veins of skarn

119.7m - 126.0m : distinctly silicified in the form of "replacement", weakly epidotized, and with developed chlorite veinlets and calcite veinlets

126.0m - 127.5m : markedly carbonitized, argillized and chloritized

126.0m - 132.0m : distinctly silicified and rich in clay-filled joints

132.0m - 135.2m : weakly silicified and rich in later calcite veinlets

135.2m - 145.0m : markedly chloritized, carbonitized, argillized, and with abundant barren calcite veinlets and a little quartz veinlets

145.0m - 160.0m : fairly strongly chloritized, weakly carbonitized, locally epidotized weakly, and with a little quartz veinlets

160.0m - 162.0m : remarkably skarnized with quartz-calcite veinlets

162.0m - 165.7m : strongly chloritized, carbonitized, argillized, weakly epidotized, and with a little quartz veinlets and skarn veins

165.7m - 170.0m : chloritized, argillized, carbonitized with a little epidote spots

170.0m - 176.0m : strongly skarnized, and with chlorite and talc replacing amphiboles

176.0m - 178.8m : chloritized, carbonitized, argillized, and with veinlets of skarn

178.8m - 180.0m : strongly silicified

180.0m - 200.0m : chloritized, carbonitized, argillized weakly to moderately, and with a little epidote - actinolite - chlorite veinlets

cp-bn stringers —113.3m—	5055	[illegible]	[illegible]		[illegible]	[illegible]
Fairly abundant disseminations of cp, py and bn	5056	2.4	0.62		0.019	
—116.0m— Disseminations of py and cp in skarn, and a few cp stringers.	5057	2.3	0.18		0.002	
	5058	2.0	0.36		0006	
—119.7m— Disseminations and stringers of cp and bn with rare cc.	5059	2.0	053		0.006	
	5060	2.0	1.16		0.005	0.94
	5061	2.0	0.81		0012	
—126.0m— A little py-cp-bn dissemination.	5062	2.0	0.22		0003	
—127.5m— Disseminations and joint-fillings of abundant py with a little cp and bn.	5063	2.0	0.27		0.003	
	5064	2.0	0.19		0002	
—132.0m— Stringers and disseminations of bn with a little cc and mb.	5065	2.0	0.32		0013	0.36
—135.2m—	5066	2.0	0.43		0.011	
Hematite-clay-chlorite veinlets rarely with bn, and a little py-cp-bn-quartz veinlets.	5067	2.0	0.12		0002	
	5068	2.0	0.10		0004	
	5069	2.0	004		0003	
	5070	2.0	007		0.001	
—145.0m—	5071	2.0	0.08		0002	0.38
	5072	2.0	0.05		0.002	
	5073	2.0	006		0.001	
Dissemination of py and rare cp, and a few cp-bearing quartz veinlets.	5074	2.0	0.05		0.001	
	5075	2.0	0.04		0002	
	5076	2.0	004		0002	
	5077	2.0	0.06		0.001	
	5078	2.0	008		0002	
—160.0m— Abundant cp and bn, disseminated and in qtz-cal veinlets.	5079	2.0	1.34		0016	1.46
—162.0m— Disseminated py, bn and cp in and around skarn, and bn-cp stringers with rare mb.	5080	2.0	0.33		0013	
	5081	2.0	0.79		0.014	
—165.7m— Disseminations of py and minor bn and cp, and a few ore stringers.	5082	2.0	0.28		0019	
	5083	2.0	0.10		0005	
—170.0m— Disseminations and a little stringers of py, cp, bn and rare mb.	5084	2.0	0.38		0006	
	5085	2.0	0.67		0.021	0.80
	5086	2.0	0.53		0.025	
—176.0m— Dissemination of py rarely with cp and bn.	5087	2.0	0.15		0006	
	5088	2.0	004		0003	
	5089	2.0	004		0002	
—183.0m— A few bn-cp-py-epidote veinlets.	5090	2.0	0.11		0004	0.91
—184.0m— Dissemination of py rarely with cp and bn.	5091	2.0	0.06		0002	
	5092	2.0	0.07		0.001	
—187.5m— Several cp-py-ep-qtz veinlets.	5093	2.0	0.20		0002	
—189.0m—	5094	2.0	0.06		0003	
Dissemination of fine-grained py, and very sparse cp-bearing skarn veinlets.	5095	2.0	0.03		0002	
	5096	2.0	0.05		0002	1.04
	5097	2.0	0.03		0.001	-
	5098	2.0	0.13		0007	

220 230 240 250 260

"barren" calcite veinlets

—214.7m—

Medium-grained gabbroic rock, strongly carbonitized mainly as calcite veinlets, markedly chloritized, moderately argillized, and very sparsely with actinolite - magnetite veinlets

Three main types of "calcite veinlet" are recognized as follows :

(a) very sparse quartz - bearing calcite veinlets often with copper ore

(b) fairly rich hematite-bearing chlorite-calcite veinlets

(c) Common "barren" calcite veinlets often cutting ore stringers and ore-bearing veinlets

—251.1m (END)—

	5104	2.2	0.05		0.001	
Dissemination of fine-grained, py, and very sparse cp-bn stringers and qtz-calcite veinlets.	5105	3.0	007		0002	
	5106	0.6	002		0002	
	5107	3.7	0.05		0002	0.89
	5108	4.0	006		0001	
	5109	4.0	0.04		tr	
	5110	4.0	0.06		0.001	1.02
	5111	4.0	006		0002	
	5112	4.0	0.04		0002	
	5113	4.0	0.07		0002	1.97
	5114	4.0	004		0002	
	5115	1.1	0.05		0004	

Abbreviation

- lim : limonite
- hem : hematite
- mag : magnetite
- py : pyrite
- cp : chalcopyrite
- bn : bornite
- cc : chalcocite
- mb : molybdenite
- ep : epidote
- qtz : quartz
- chl : chlorite
- cal : calcite

D.D.H. No. 5 Sheet 5

Total Length 251.10m Core Recovery 99.9%

Location M - 17 Elevation 4,046m

Direction — Inclination Vertical

Date of Logging from 26th/Nov. to 4th/Dec.

Logged by M. Saito

METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		Weathered gabbroic rock extremely decomposed and argillised	Common dissemination of mag and hem pseudomorph after mag. A little py disseminated, and a few py-cp stringers.	6001	4.0	0.10		0.001	
		6.0m		6002	2.0	0.11	0.04	0.002	0.73
		Medium-grained gabbroic rock							
10		6.0m-19.1m: fairly distinctly chloritized, carbonitized and weakly limonitized mainly along fractures		6003	4.0	0.06		0.001	
				6004	4.0	0.07	0.03	0.001	
			Commonly disseminated mag and secondary hem.	6005	4.0	0.07		0.001	0.84
20		19.1m-20.6m: highly sheared, argillized carbonitized and chloritized	Several chl-qtz-cal veinlets with cu-oxides, lim, cp and Py, often cut by later "barren" cal veinlets.	6006	4.0	0.08	0.02	0.002	
		20.6m-29.8m: distinctly carbonitized, weakly chloritized, argillized, and with a little sericite and aggregates of fine-grained secondary biotite	Fairly common dissemination of fine-grained pyrite.	6007	4.0	0.08		0.002	
				6008	2.0	0.08	0.03	0.001	
30		29.8m-32.9m: distinctly carbonitized, weakly chloritized, slightly silicified, sporadically epidotized, and with secondary biotite and cummingtonite replacing essential hornblende	29.8m Dissemination of mag and Py with a little cp and bn. Several cp-bn-py stringers.	6009	2.0	0.07		0.001	1.28
				6010	2.0	0.49	0.15	0.002	
		32.9m-33.2m: Sheared and altered into white clay-carbonate rock	32.9m	6011	2.0	0.15		0.003	
		33.2m-38.9m: distinctly carbonitized, chloritized and weakly argillized	Commonly disseminated mag, secondary hem and py very sparsely with cp and bn.	6012	2.0	0.18	0.02	0.002	
				6013	2.0	0.07		0.002	
40		38.9m-39.5m: Sheared and altered into white clay-carbonate rock		6014	2.0	0.13	0.02	tr	1.41
			A little qtz-cal/chl-ep veinlets bearing py, hem, cp and bn.	6015	2.0	0.11		0.002	
		39.5m-56.8m: highly carbonitized, distinctly chloritized, slightly argillized, silicified and epidotized		6016	2.0	0.25	0.02	0.002	
				6017	2.0	0.25		0.001	
			Fairly abundant cal veinlets frequently with a little "black mineral" (Mn-oxides?).	6018	2.0	0.11	0.02	0.001	
50				6019	2.0	0.08		0.003	
				6020	2.0	0.08	0.02	0.002	0.86
				6021	2.0	0.11		0.001	
				6022	2.0	0.17	0.02	0.001	
			56.0m Commonly disseminated mag, hem and Py.	6023	2.0	0.07		0.002	
		56.8m-62.0m: highly argillized, carbonitized and distinctly chloritized	Abundant cal-clay veinlets with a little "black mineral."	6024	2.0	0.08	0.02	0.001	
60				6025	2.0	0.08		0.002	
			62.0m Commonly disseminated mag, hem and Py.	6026	2.0	0.36	0.06	0.002	0.92
		62.0m-69.5m: weakly chloritized, carbonitized, sericitized, slightly silicified, epidotized, and with aggregates of fine-grained secondary biotite and vein-formed magnetite-actinolite skarn	Sparsely penetrated bn-cp-Py stringers with dips of 70° to 80°.	6027	2.0	0.15		0.001	
				6028	2.0	0.14	0.04	0.002	
				6029	2.0	0.23		0.002	
70		69.5m-73.5m: highly carbonitized, argillized and distinctly chloritized	69.5m Commonly disseminated mag, hem and Py. A few chl-qtz-cal veinlets bearing Py and a little cp.	6030	2.0	0.05	0.02	0.001	
			73.5m	6031	2.0	0.08		0.002	
		73.5m-80.2m: distinctly chloritized, weakly carbonitized, silicified, sporadically epidotized, and with secondary biotite and actinolitic amphibole	Commonly disseminated mag, hem and Py with a little cp and bn. Fairly abundant hem-bn-cp-Py veinlets with minor tetrahedrite, mostly dipping 60° to 80°.	6032	2.0	0.43	0.04	0.006	1.79
				6033	2.0	0.85		0.003	
80				6034	2.0	1.77	0.12	0.003	
			80.2m Abundant dissemination of mag and Py with cp and hem. A little veinlets bearing same ores as above	6035	2.0	0.45		0.002	
		80.2m-82.0m: highly altered into biotite, actinolite and a little potash feldspar with hystrogenic green chlorite	83.0m	6036	2.0	0.74	0.10	0.003	
		82.0m-92.0m: fairly distinctly chloritized, weakly epidotized and silicified mainly as small spots and veinlets, partly carbonitized distinctly, and with aggregates of secondary biotite	Common dissemination of mag, hem and a little Py. Several py-hem-cp-bn-bearing stringers with dips 45° to 85°	6037	2.0	0.08		0.002	
				6038	2.0	0.08	0.03	0.001	0.47

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No.	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
		100.0m-104.9m: with almost same alterations as above except for much less epidotization	Common dissemination of mag and Py with a little cp. A few mag-py-cp-bearing stringers.	6045	4.0	0.08		0.001	
		104.9m-105.1m: sheared and strongly carbonitized and chloritized	104.9m	6046	2.0	0.15		0.002	
		105.1m-110.8m: distinctly chloritized, weakly epidotized, carbonitized slightly silicified, and with secondary biotite and minor cummingtonite	Common dissemination of mag with a little Py and cp	6047	2.0	0.05		0.001	
110			Sparsely-penetrated cp-bn stringers with a little Py	6048	2.0	0.24		0.001	
		110.8m-112.2m: altered into epidote-chlorite-actinolite skarn with abundant carbonate and secondary biotite	Distinctly disseminated cp from 110.8m to 112.2m	6049	4.0	0.27		0.001	0.48
		112.2m-115.2m: weakly chloritized, epidotized, and with abundant secondary biotite replacing essential mafic silicates and filling veinlets, and a little cummingtonite	115.2m Common dissemination of mag.	6050	2.0	0.09		0.002	
				6051	2.0	0.40		0.004	
120		115.2m-116.0m: strongly serrated by epidote, actinolite and biotite	Fairly frequent cp-bn-Py-bearing Stringers, commonly dipping 60° to 80°, and a little dissemination of cp and Py.	6052	2.0	0.17		0.002	
		116.0m-118.0m: altered by chlorite, serpentine, talc, calcite, sericite and actinolite with a little biotite and cummingtonite		6053	2.0	0.23		0.001	
		118m-125.5m: silicified, and stained by epidote and minor actinolite		6054	2.0	0.33		0.006	
		125.5m-127.5m: altered by calcite, epidote, chlorite and green skarn mineral (actinolite?)	123.5m Common dissemination of mag partly hematitized. Several cp-bn-Py-bearing stringers.	6055	2.0	0.08		0.001	0.29
			127.5m	6056	2.0	0.07		0.003	
130		127.5m-135.4m: distinctly chloritized, carbonitized, weakly epidotized, sericitized and with a little aggregates of secondary biotite	Common dissemination of mag partly replaced by hem.	6057	2.0	0.09		0.003	
				6058	2.0	0.16		0.001	
				6059	2.0	0.05		0.002	
		135.4m-136.2m: distinctly epidotized,	Sparsely-penetrated cp-bn stringers with a little py.	6060	2.0	0.11		0.002	0.20
		135.4m-144.3m: distinctly chloritized, carbonitized and with a little aggregates of secondary biotite fairly chloritized now		6061	2.0	0.10		0.002	
140				6062	2.0	0.08		0.001	
				6063	2.0	0.12		tr	
				6064	2.0	0.06		0.001	
		144.3m-145.0m: highly carbonitized and with a little green skarn	144.3m Common dissemination of mag often replaced by hem.	6065	2.0	0.10		0.001	
				6066	2.0	0.04		0.001	2.91
		145.0m-160.0m: distinctly chloritized, carbonitized, weakly argillized and sericitized	Sparsely-penetrated cp-bn-py-bearing chlorite veinlets, and fairly abundant Py-bearing calcite-gypsum (?) veinlets.	6067	2.0	0.14		tr	
150				6068	2.0	0.14		0.002	
				6069	2.0	0.05		0.001	
				6070	2.0	0.08		0.001	
				6071	2.0	0.04		0.001	
				6072	2.0	0.08		0.001	2.77
160		160.0m-160.3m: with cummingtonite, actinolite, calcite and chlorite	160.3m Common dissemination of mag and a little hem.	6073	2.0	0.05		0.001	
		160.3m-170.8m: distinctly chloritized, carbonitized, weakly sericitized, argillized, and with secondary biotite	A little dissemination of Py rarely with cp and bn, and abundant calcite-gypsum (?) veinlets with a little Pyrite.	6074	4.0	0.03		0.001	
				6075	4.0	0.03		0.002	
170		170.8m-174.3m: highly carbonitized, weakly chloritized and argillized	170.8m	6076	4.0	0.04		0.002	2.52
		174.3m-175.1m: Sheared and altered into clay-carbonate rock	Common dissemination of mag and a little hem.	6077	4.0	0.05		0.002	
		176.0m-189.6m: highly carbonitized, distinctly chloritized and argillized	Fairly abundant dissemination of Py and veinlets with a little cy.	6078	4.0	0.03		0.001	
180				6079	4.0	0.04		0.002	3.22

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No	Core Length	Assay T-Cu %	Assay S-Cu %	Assay Mo %	Assay S %
			Same as above						
		202.5m-204.3m: altered into clay-carbonate rock	202.5m	6084	4.0	0.13		0.002	
		204.3m-205.9m: distinctly carbonitized, argillized and chloritized							
		205.9m-220.0m: distinctly chloritized, weakly carbonitized, argillized and with secondary biotite	Common dissemination of mag partly replaced by hem and Py.	6085	4.0	0.14		0.002	3.42
210				6086	4.0	0.11		0.003	
			Sparsely-penetrated cp-bn Stringers with a little mag and rare cc, and a little dissemination of cp and bn near stringers.	6087	4.0	0.07		0.003	
220		220.0m-251.1m: strongly carbonitized, distinctly chloritized, argillized, weakly sericitized, sporadically epidotized, slightly silicified, and with secondary biotite, actinolitic amphibole, and a 10-cm zeolite calcite vein (at 234.7m).		6088	4.0	0.06		0.001	1.98
				6089	4.0	0.13		0.008	
				6090	4.0	0.06		0.003	
230				6091	4.0	0.16		0.002	1.91
				6092	4.0	0.29		0.002	
				6093	4.0	0.28		0.005	
240				6094	4.0	0.11		0.003	1.98
				6095	4.0	0.14		0.003	
250		251.1m		6096	1.1	0.19		0.002	
260									

GEOLOGICAL

YAURI AREA ,

I PHI

CORE LOG

D.D.H. No 6

Total Length 251.1m

Location 0' - 20

Direction —

Date of Logging from

Logged by M. Sai

METAL MINING AGENCY

OVERSEAS TECHNICAL CO

GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU

0

SCAL

Abbreviation

cc : chalcocite

bn : bornite

cp : chalcopyrite

py : pyrite

lim : limonite

hem : hematite

mag : magnetite

国際協力事業団
08814
国立国会図書館

Observation		Sample	Core	Assay			
	Mineralization	No	Length	T-Cu %	S-Cu %	Mo %	S %
K	Common dissemination of mag and hem pseudomorph after mag.	6001	4.0	0.10		0001	
ar-	A little py disseminated, and a few py-cp stringers.	6002	2.0	0.11	0.04	0.002	0.73
: rock		6003	4.0	0.06		0.001	
lorilized, anitized		6004	4.0	0.07	0.03	0.001	
	Commonly disseminated mag and secondary hem.	6005	4.0	0.07		0.001	0.84
rgillized d	Several chl-qtz-cal veinlets with cu-oxides, lim, cp and Py, often cut by later "barren" cal veinlets.	6006	4.0	0.06	0.02	0.002	
trized, ed, and gregales olite	Fairly common dissemination of fine-grained Pyrite.	6007	4.0	0.06		0.002	
		6008	2.0	0.08	0.03	0.001	
	29.8m	6009	2.0	0.07		0.001	1.28
lized, silicified, with gtonite de	Dissemination of mag and Py with a little cp and bn. Several cp-bn-Py stringers.	6010	2.0	0.49	0.15	0.002	
	32.9m	6011	2.0	0.15		0.003	
tered ock		6012	2.0	0.16	0.02	0.002	
silized, silized	Commonly disseminated mag, secondary hem and py very sparsely with cp and bn.	6013	2.0	0.07		0.002	
tered ock		6014	2.0	0.13	0.02	tr	1.41
ed, argil- ed	A little qtz-cal/chl-ep veinlets bearing py, hem, cp and bn.	6015	2.0	0.11		0.002	
		6016	2.0	0.25	0.02	0.002	
		6017	2.0	0.25		0.001	
	Fairly abundant cal veinlets frequently with a little "black mineral" (Mn-oxides?).	6018	2.0	0.11	0.02	0.001	
		6019	2.0	0.08		0.003	
		6020	2.0	0.08	0.02	0.002	0.86
		6021	2.0	0.11		0.001	
	56.0m	6022	2.0	0.17	0.02	0.001	
, car- rilized	Commonly disseminated mag, hem and py.	6023	2.0	0.07		0.002	
	Abundant cal-clay veinlets with a little "black mineral."	6024	2.0	0.06	0.02	0.001	
		6025	2.0	0.08		0.002	
d, car- ly silicifi- regates tite and ite skarn	62.0m Commonly disseminated mag, hem and Py.	6026	2.0	0.36	0.06	0.002	0.92
	Sparsely penetrated bn-cp-Py Stringers with dips of 70° to 80°.	6027	2.0	0.15		0.001	
		6028	2.0	0.14	0.04	0.002	
argillized	69.5m	6029	2.0	0.23		0.002	
	Commonly disseminated mag, hem and Py. A few chl-qtz-cal veinlets bearing Py and a little cp.	6030	2.0	0.05	0.02	0.001	
	73.5m	6031	2.0	0.08		0.002	
d, spo- second- hibole	Commonly disseminated mag, hem and py with a little cp and bn. Fairly abundant hem-bn-cp-Py Veinlets with minor tetrahedrite, mostly dipping 60° to 80°.	6032	2.0	0.43	0.04	0.006	1.79
		6033	2.0	0.95		0.003	
		6034	2.0	1.77	0.12	0.003	
o biotite, ldspar	80.2m Abundant dissemination of mag and Py with cp and hem. A little veinlets bearing sabe ores as above	6035	2.0	0.45		0.002	
	83.0m	6036	2.0	0.74	0.10	0.003	
lorilized, mainly artly ith	Common dissemination of mag, hem and a little py.	6037	2.0	0.06		0.002	
	Several py-hem-cp-bn-bearing	6038	2.0	0.08	0.03	0.001	

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No.	Core Length	Assay T-Cu %	S-Cu %	Mo %	S %
		100.0m-104.9m: with almost same alterations as above except for much less epidotization	Common dissemination of mag and py with a little cp. A few mag-py-cp-bearing stringers.	6045	4.0	0.08		0.001	
		104.9m-105.1m: sheared and strongly carbonitized and chloritized	104.9m	6046	2.0	0.15		0.002	
		105.1m-110.8m: distinctly chloritized, weakly epidotized, carbonitized, slightly silicified, and with secondary biotite and minor cummingtonite	Common dissemination of mag with a little py and cp	6047	2.0	0.05		0.001	
110			Sparsely-penetrated cp-bn stringers with a little py	6048	2.0	0.24		0.001	
		110.8m-111.2m: altered into epidote-chlorite-actinolite skarn with abundant carbonate and secondary biotite	Distinctly disseminated cp from 110.8m to 111.2m	6049	4.0	0.27		0.001	0.48
		111.2m-115.2m: weakly chloritized, epidotized, and with abundant secondary biotite replacing essential mafic silicates and filling veinlets, and a little cummingtonite	115.2m Common dissemination of mag,	6050	2.0	0.09		0.002	
				6051	2.0	0.40		0.004	
120		115.2m-116.0m: strongly skarnized by epidote, actinolite and biotite	Fairly frequent cp-bn-py-bearing stringers, commonly dipping 60° to 80°, and a little dissemination of cp and py.	6052	2.0	0.17		0.002	
		116.0m-118.0m: altered by chlorite, serpentine, talc, calcite, Sericite and actinolite with a little biotite and cummingtonite		6053	2.0	0.23		0.001	
		118m-125.5m: silicified, and skarnized by epidote and minor actinolite	123.5m	6054	2.0	0.33		0.006	0.29
		125.5m-127.5m: altered by calcite, epidote, chlorite and green skarn mineral (actinolite?)	Common dissemination of mag partly hematitized. Several cp-bn-py-bearing stringers.	6055	2.0	0.08		0.001	
			127.5m	6056	2.0	0.07		0.003	
130		127.5m-135.4m: distinctly chloritized, carbonitized, weakly epidotized, sericitized and with a little aggregates of secondary biotite	Common dissemination of mag partly replaced by hem.	6057	2.0	0.09		0.003	
				6058	2.0	0.16		0.001	
				6059	2.0	0.05		0.002	
		135.4m-136.2m: distinctly epidotized.	Sparsely-penetrated cp-bn Stringers with a little py.	6060	2.0	0.11		0.002	0.20
		135.4m-144.3m: distinctly chloritized, carbonitized and with a little aggregates of secondary biotite fairly chloritized now		6061	2.0	0.10		0.002	
140				6062	2.0	0.06		0.001	
				6063	2.0	0.12		tr	
				6064	2.0	0.06		0.001	
		144.3m-145.0m: highly carbonilized and with a little green skarn	144.3m Common dissemination of mag often replaced by hem.	6065	2.0	0.10		0.001	
				6066	2.0	0.04		0.001	2.91
		145.0m-160.0m: distinctly chloritized, carbonitized, weakly argillized and sericilized	Sparsely-penetrated cp-bn-py-bearing chlorite veinlets, and fairly abundant py-bearing calcite-gypsum (?) veinlets.	6067	2.0	0.14		tr	
150				6068	2.0	0.14		0.002	
				6069	2.0	0.05		0.001	
				6070	2.0	0.08		0.001	
				6071	2.0	0.04		0.001	2.77
				6072	2.0	0.08		0.001	
160		160.0m-160.3m: with cummingtonite, actinolite, calcite and chlorite	160.3m Common dissemination of mag and a little hem.	6073	2.0	0.05		0.001	
		160.3m-170.8m: distinctly chloritized, carbonitized, weakly sericitized, argillized, and with secondary biotite	A little dissemination of Py rarely with cp and bn, and abundant calcite-gypsum (?) veinlets with a little Pyrite.	6074	4.0	0.03		0.001	
				6075	4.0	0.03		0.002	
170		170.8m-174.3m: highly carbonilized, weakly chloritized and argillized	170.8m	6076	4.0	0.04		0.002	2.52
			Common dissemination of mag and a little hem.	6077	4.0	0.05		0.002	
		174.3m-175.1m: Sheared and altered into clay-carbonate rock		6078	4.0	0.03		0.001	
180		176.0m-189.6m: highly carbonitized, distinctly chloritized and argillized	Fairly abundant dissemination of Py and veinlets with a little cy.	6079	4.0	0.04		0.002	3.22

Depth (m)	Section	Observation: Rock	Observation: Mineralization	Sample No.	Core Length	Assay T-Cu %	S-Cu %	Mo %	S %
			Same as above						
		202.5m-204.3m: altered into clay-carbonate rock	202.5m	6084	4.0	0.13		0.002	
		204.3m-205.9m: distinctly carbonilized, argillized and chloritized							
210		205.9m-220.0m: distinctly chloritized, weakly carbonilized, argillized and with secondary biotite	Common dissemination of mag partly replaced by hem and Py.	6085	4.0	0.14		0.002	3.42
				6086	4.0	0.11		0.003	
			Sparsely-penetrated cp-bn Stringers with a little mag and rare cc, and a little dissemination of cp and bn near stringers.	6087	4.0	0.07		0.003	
220		220.0m-251.1m: strongly carbonilized, distinctly chloritized, argillized, weakly Sericilized, Sporadically epidotized, slightly silicified, and with secondary biotite, actinolitic amphibole, and a 10-cm zeolite calcite vein (at 234.7m).		6088	4.0	0.06		0.001	1.98
				6089	4.0	0.13		0.008	
				6090	4.0	0.06		0.003	
230				6091	4.0	0.16		0.002	1.91
				6092	4.0	0.29		0.002	
240				6093	4.0	0.28		0.006	
				6094	4.0	0.11		0.003	1.98
				6095	4.0	0.14		0.003	
250			251.1m	6096	1.1	0.19		0.002	
260									

PL. I-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE II)

CORE LOG and ASSAY

D.D.H. No. 6 — Sheet 6

Total Length 251.1m — Core Recovery 100%

Location 0'-20 — Elevation 4,090m

Direction — — Inclination Vertical

Date of Logging from 1st/Dec. to 11th/Dec.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

0 10 20m
SCALE 1:200

Abbreviation

cc : chalcocite
bn : bornite
cp : chalcopyrite
py : pyrite
lim : limonite
hem : hematite
mag : magnetite

20	19.1m-20.6m: highly sheared, argillized carbonitized and chloritized	Commonly disseminated mag and secondary hem. Several chl-qtz-cal veinlets with cu-oxides, lim, cp and Py, often cut by later "barren" cal veinlets. Fairly common dissemination of fine-grained pyrite.	6005	4.0	0.07		0.001	0.84	
			6006	4.0	0.08	0.02	0.002		
	20.6m-29.8m: distinctly carbonitized, weakly chloritized, argillized, and with a little sericite and aggregates of fine-grained secondary biotite		6007	4.0	0.06		0.002		
			6008	2.0	0.08	0.03	0.001		
30		29.8m Dissemination of mag and py with a little cp and bn. Several cp-bn-py stringers.	6009	2.0	0.07		0.001	1.28	
	29.8m-32.9m: distinctly carbonitized, weakly chloritized, slightly silicified, sporadically epidotized, and with secondary biotite and cummingtonite replacing essential hornblende	32.9m	6010	2.0	0.49	0.15	0.002		
			6011	2.0	0.15		0.003		
	32.9m-33.2m: sheared and altered into white clay-carbonate rock		6012	2.0	0.16	0.02	0.002		
	33.2m-38.9m: distinctly carbonitized, chloritized and weakly argillized	Commonly disseminated mag, secondary hem and py very sparsely with cp and bn.	6013	2.0	0.07		0.002		
40	38.9m-39.5m: Sheared and altered into white clay-carbonate rock		6014	2.0	0.13	0.02	tr	1.41	
		A little qtz-cal/chl-ep veinlets bearing py, hem, cp and bn.	6015	2.0	0.11		0.002		
	39.5m-56.8m: highly carbonitized, distinctly chloritized, slightly argillized, silicified and epidotized		6016	2.0	0.25	0.02	0.002		
			6017	2.0	0.25		0.001		
		Fairly abundant cal veinlets frequently with a little "black mineral" (Mn-oxides?).	6018	2.0	0.11	0.02	0.001		
50			6019	2.0	0.08		0.003		
			6020	2.0	0.08	0.02	0.002	0.86	
			6021	2.0	0.11		0.001		
		56.0m	6022	2.0	0.17	0.02	0.001		
	56.8m-62.0m: highly argillized, carbonitized and distinctly chloritized	Commonly disseminated mag, hem and py. Abundant cal-clay veinlets with a little "black mineral."	6023	2.0	0.07		0.002		
60			6024	2.0	0.08	0.02	0.001		
		62.0m Commonly disseminated mag, hem and py. Sparsely penetrated bn-cp-py Stringers with dips of 70° to 80°.	6025	2.0	0.08		0.002		
			6026	2.0	0.36	0.06	0.002	0.92	
	62.0m-69.5m: weakly chloritized, carbonitized, sericitized, slightly silicified, epidotized, and with aggregates of fine-grained secondary biotite and vein-formed magnetite-actinolite skarn		6027	2.0	0.15		0.001		
			6028	2.0	0.14	0.04	0.002		
70			6029	2.0	0.23		0.002		
	69.5m-73.5m: highly carbonitized, argillized and distinctly chloritized	69.5m Commonly disseminated mag, hem and py. A few chl-qtz-cal veinlets bearing Py and a little cp.	6030	2.0	0.05	0.02	0.001		
			6031	2.0	0.08		0.002		
	73.5m-80.2m: distinctly chloritized, weakly carbonitized, silicified, sporadically epidotized, and with secondary biotite and actinolitic amphibole	73.5m Commonly disseminated mag, hem and py with a little cp and bn. Fairly abundant hem-bn-cp-py veinlets with minor tetrahedrite, mostly dipping 60° to 80°.	6032	2.0	0.43	0.04	0.0006	1.79	
80			6033	2.0	0.95		0.003		
			6034	2.0	1.77	0.12	0.003		
	80.2m-83.0m: highly altered into biotite, actinolite and a little potash feldspar with hysterogenic green chlorite	80.2m Abundant dissemination of mag and py with cp and hem. A little veinlets bearing same ores as above	6035	2.0	0.45		0.002		
			6036	2.0	0.74	0.10	0.003		
	83.0m-92.0m: fairly distinctly chloritized, weakly epidotized and silicified mainly as small spots and veinlets, partly carbonitized distinctly, and with aggregates of secondary biotite	83.0m Common dissemination of mag, hem and a little py. Several py-hem-cp-bn-bearing Stringers with dips 60° to 85°.	6037	2.0	0.06		0.002		
90			6038	2.0	0.08	0.03	0.001	0.47	
			6039	2.0	0.06		0.002		
			6040	2.0	0.08	0.03	0.001		
	92.0m-100.0m: distinctly chloritized, weakly epidotized, carbonitized, slightly Silicified, and with developed aggregate of fine-grained secondary biotite and a little cummingtonite replacing essential hornblende	92.0m Common dissemination of mag partly replaced by hem, and a little cp and bn. Frequent veinlets bearing mag, cp and bn, and small amounts of Py, sphalerite and cc.	6041	2.0	0.26		0.001		
			6042	2.0	0.27	0.10	0.003		
			6043	2.0	0.31		0.002	0.70	
100			6044	2.0	0.29	0.08	0.002		

	and secondary biotite								
	111.2m-115.2m: weakly chloritized, epidotized, and with abundant secondary biotite replacing essential mafic silicates and filling veinlets, and a little cummingtonite	115.2m Common dissemination of mag. Fairly frequent cp-bn-py-bearing Stringers, commonly dipping 60° to 80°, and a little dissemination of cp and py.	6050	2.0	0.09		0.002		
			6051	2.0	0.40		0.004		
120	115.2m-116.0m: strongly skarnized by epidote, actinolite and biotite		6052	2.0	0.17		0.002		
	116.0m-118.0m: altered by chlorite, serpentine, talc, calcite, sericite and actinolite with a little biotite and cummingtonite		6053	2.0	0.23		0.001		
	118m-125.5m: silicified, and skarnized by epidote and minor actinolite		6054	2.0	0.33		0.006		
	125.5m-127.5m: altered by calcite, epidote, chlorite and green skarn mineral (actinolite?)	123.5m Common dissemination of mag partly hematitized. Several cp-bn-py-bearing stringers.	6055	2.0	0.08		0.001	0.29	
		127.5m	6056	2.0	0.07		0.003		
130	127.5m-135.4m: distinctly chloritized, carbonitized, weakly epidotized, sericitized and with a little aggregates of secondary biotite	Common dissemination of mag partly replaced by hem.	6057	2.0	0.09		0.003		
			6058	2.0	0.18		0.001		
			6059	2.0	0.05		0.002		
	135.4m-136.2m: distinctly epidotized.	Sparsely-penetrated cp-bn Stringers with a little py.	6060	2.0	0.11		0.002	0.20	
	135.4m-144.3m: distinctly chloritized, carbonitized and with a little aggregates of secondary biotite fairly chloritized now		6061	2.0	0.10		0.002		
140			6062	2.0	0.08		0.001		
			6063	2.0	0.12		tr		
			6064	2.0	0.08		0.001		
	144.3m-145.0m: highly carbonitized and with a little green skarn	144.3m Common dissemination of mag often replaced by hem. Sparsely-penetrated cp-bn-py-bearing chlorite veinlets, and fairly abundant py-bearing calcite-gypsum (?) veinlets.	6065	2.0	0.10		0.001		
			6066	2.0	0.04		0.001	2.91	
150	145.0m-160.0m: distinctly chloritized, carbonitized, weakly argillized and sericitized		6067	2.0	0.14		tr		
			6068	2.0	0.14		0.002		
			6069	2.0	0.05		0.001		
			6070	2.0	0.08		0.001		
			6071	2.0	0.04		0.001	2.77	
			6072	2.0	0.08		0.001		
160	160.0m-160.3m: with cummingtonite, actinolite, calcite and chlorite	160.3m Common dissemination of mag and a little hem. A little dissemination of py rarely with cp and bn, and abundant calcite-gypsum (?) veinlets with a little pyrite.	6073	2.0	0.05		0.001		
			6074	4.0	0.03		0.001		
	160.3m-170.8m: distinctly chloritized, carbonitized, weakly sericitized, argillized, and with secondary biotite		6075	4.0	0.03		0.002		
			6076	4.0	0.04		0.002	2.52	
170			6077	4.0	0.05		0.002		
	170.8m-174.3m: highly carbonitized, weakly chloritized and argillized	170.8m Common dissemination of mag and a little hem. Fairly abundant dissemination of py and veinlets with a little cy.	6078	4.0	0.03		0.001		
	174.3m-175.1m: Sheared and altered into clay-carbonate rock		6079	4.0	0.04		0.002	3.22	
	176.0m-189.6m: highly carbonitized, distinctly chloritized and argillized		6080	4.0	0.03		tr		
180			6081	4.0	0.03		0.001		
			6082	4.0	0.05		0.001	1.98	
			6083	4.0	0.04		0.002		
190	189.6m-190.6m: brecciated, highly carbonitized and argillized	189.6m Common dissemination of hem and py with a little mag and rare cp. Abundant hem-cal-clay veinlets with a little Py.							
	190.6m-202.5m: distinctly sheared, highly argillized, carbonitized and chloritized								
200									

220	220.0m-251.1m: strongly carbonitized, distinctly chloritized, argillized, weakly sericitized, sporadically epidotized, slightly silicified, and with secondary biotite, actinolitic amphibole, and a 10-cm zeolite calcite vein (at 234.7m).	Sparsely-penetrated cp-bn Stringers with a little mag and rare cc, and a little dissemination of cp and bn near stringers.	6087	4.0	0.07		0.002		
			6088	4.0	0.06		0.001	1.98	
			6089	4.0	0.13		0.008		
			6090	4.0	0.06		0.003		
230			6091	4.0	0.16		0.002	1.91	
			6092	4.0	0.29		0.002		
240			6093	4.0	0.28		0.005		
			6094	4.0	0.11		0.003	1.98	
			6095	4.0	0.14		0.003		
250	251.1m		6096	1.1	0.19		0.002		
260									

D.D.H. No 6

Total Length 25

Location 0'-

Direction –

Date of Logging

Logged by M

METAL MINING AGE

OVERSEAS TECHNIC

GOVERNMENT OF

Prepared by MITSUI KIN

0

Abbreviation

cc : chalcocite

bn : bornite

cp : chalcopyrite

py : pyrite

lim : limonite

hem : hematite

mag : magnetite

qtz : quartz

chl : chlorite

cal : calcite

	Commonly disseminated mag and secondary hem.	6005	4.0	0.07		0.001	0.84
	Several chl-qtz-cal veinlets with cu-oxides, lim, cp and Py, often cut by later "barren" cal veinlets.	6006	4.0	0.06	0.02	0.002	
red, argillized rritized	Fairly common dissemination of fine-grained pyrite.	6007	4.0	0.08		0.002	
		6008	2.0	0.08	0.03	0.001	
		6009	2.0	0.07		0.001	1.28
arbonitized, ritly silicified, and with ummingtonite mblende	29.8m Dissemination of mag and Py with a little cp and bn. Several cp-bn-py stringers.	6010	2.0	0.49	0.15	0.002	
	32.9m	6011	2.0	0.15		0.003	
		6012	2.0	0.16	0.02	0.002	
nd altered ale rock carbonitized, argillized	Commonly disseminated mag, secondary hem and py very sparsely with cp and bn.	6013	2.0	0.07		0.002	
nd altered nale rock		6014	2.0	0.13	0.02	tr	1.41
	A little qtz-cal/chl-ep veinlets bearing py, hem, cp and bn.	6015	2.0	0.11		0.002	
anitized, lightly argil- idotized		6018	2.0	0.25	0.02	0.002	
		6017	2.0	0.25		0.001	
	Fairly abundant cal veinlets frequently with a little "black mineral" (Mn-oxides?).	6018	2.0	0.11	0.02	0.001	
		6019	2.0	0.08		0.003	
		6020	2.0	0.08	0.02	0.002	0.86
		6021	2.0	0.11		0.001	
		6022	2.0	0.17	0.02	0.001	
lized, car- chloritized	56.0m Commonly disseminated mag, hem and Py.	6023	2.0	0.07		0.002	
	Abundant cal-clay veinlets with a little "black mineral."	6024	2.0	0.08	0.02	0.001	
		6025	2.0	0.08		0.002	
-lized, car- slightly silicifi- aggregates y biotite and ctinolite skarn	62.0m Commonly disseminated mag, hem and Py. Sparsely penetrated bn-cp-py Stringers with dips of 70° to 80°.	6026	2.0	0.38	0.06	0.002	0.92
		6027	2.0	0.15		0.001	
		6028	2.0	0.14	0.04	0.002	
lized, argillized	69.5m Commonly disseminated mag, hem and Py. A few chl-qtz-cal veinlets bearing Py and a little cp.	6029	2.0	0.23		0.003	
		6030	2.0	0.05	0.02	0.001	
		6031	2.0	0.08		0.002	
ritized, ified, spa- with second- : amphibole	73.5m Commonly disseminated mag, hem and Py with a little cp and bn. Fairly abundant hem-bn-cp-py veinlets with minor tetrahedrite, mostly dipping 60° to 80°.	6032	2.0	0.43	0.04	0.006	1.79
		6033	2.0	0.95		0.003	
		6034	2.0	1.77	0.12	0.003	
d into biotite, sh feldspar lorite	80.2m Abundant dissemination of mag and Py with cp and hem. A little veinlets bearing same ores as above	6035	2.0	0.45		0.002	
	83.0m	6036	2.0	0.74	0.10	0.003	
ly chloritized, ified mainly ts, partly d with iotite	Common dissemination of mag, hem and a little Py.	6037	2.0	0.08		0.002	
	Several Py-hem-cp-bn-bearing Stringers with dips 60° to 85°.	6038	2.0	0.08	0.03	0.001	0.47
		6039	2.0	0.06		0.002	
		6040	2.0	0.08	0.03	0.001	
hloritized, lized, slightly loped aggregates iotite and cing essential	92.0m Common dissemination of mag partly replaced by hem, and a little cp and bn	6041	2.0	0.26		0.001	
	Frequent veinlets bearing mag, cp and bn, and small amounts of Py, sphalerite and cc.	6042	2.0	0.27	0.10	0.003	
		6043	2.0	0.31		0.002	0.70
		6044	2.0	0.29	0.08	0.002	

	also secondary biotite							
	111.2m-115.2m: weakly chloritized, epidotized, and with abundant secondary biotite replacing essential mafic silicates and filling veinlets, and a little cummingtonite							
120	115.2m-116.9m: strongly skarnized by epidote, actinolite and biotite							
	116.0m-118.0m: altered by chlorite, serpentine, talc, calcite, Sericite and actinolite with a little biotite and cummingtonite							
	118m-125.5m: silicified, and skarnized by epidote and minor actinolite							
	125.5m-127.5m: altered by calcite, epidote, chlorite and green skarn mineral (actinolite?)							
130	127.5m-135.4m: distinctly chloritized, carbonitized, weakly epidotized, sericitized and with a little aggregates of secondary biotite							
	135.4m-136.2m: distinctly epidotized.							
140	135.4m-144.3m: distinctly chloritized, carbonitized and with a little aggregates of secondary biotite fairly chloritized now							
	144.3m-145.0m: highly carbonitized and with a little green skarn							
150	145.0m-160.0m: distinctly chloritized, carbonitized, weakly argillized and Sericitized							
160	160.0m-160.3m: with cummingtonite, actinolite, calcite and chlorite							
	160.3m-170.8m: distinctly chloritized, carbonitized, weakly Sericitized, argillized, and with secondary biotite							
170								
	170.8m-174.3m: highly carbonitized, weakly chloritized and argillized							
	174.3m-175.1m: Sheared and altered into clay-carbonate rock							
180	176.0m-189.6m: highly carbonitized, distinctly chloritized and argillized							
190	189.6m-190.6m: brecciated, highly carbonitised and argillized							
	190.6m-202.5m: distinctly sheared, highly argillized, carbonitized and chloritized							
200								

	115.2m Common dissemination of mag. Fairly frequent cp-bn-py-bearing Stringers, commonly dipping 60° to 80°, and a little dissemination of cp and py.	6050	2.0	0.09		0.002		
		6051	2.0	0.40		0.004		
		6052	2.0	0.17		0.002		
		6053	2.0	0.23		0.001		
		6054	2.0	0.33		0.006		
	123.5m Common dissemination of mag partly hematitized. Several cp-bn-py-bearing stringers.	6055	2.0	0.08		0.001	0.29	
	127.5m	6056	2.0	0.07		0.003		
	Common dissemination of mag partly replaced by hem.	6057	2.0	0.09		0.003		
		6058	2.0	0.16		0.001		
		6059	2.0	0.05		0.002		
	Sparsely-penetrated cp-bn Stringers with a little py.	6060	2.0	0.11		0.002	0.20	
		6061	2.0	0.10		0.002		
		6062	2.0	0.08		0.001		
		6063	2.0	0.12		tr		
	144.3m Common dissemination of mag often replaced by hem. Sparsely-penetrated cp-bn-py-bearing chlorite veinlets, and fairly abundant py-bearing calcite-gypsum (?) veinlets.	6064	2.0	0.08		0.001		
		6065	2.0	0.10		0.001		
		6066	2.0	0.04		0.001	2.91	
		6067	2.0	0.14		tr		
		6068	2.0	0.14		0.002		
		6069	2.0	0.05		0.001		
		6070	2.0	0.08		0.001		
		6071	2.0	0.04		0.001		
		6072	2.0	0.08		0.001	2.77	
	160.3m Common dissemination of mag and a little hem. A little dissemination of Py rarely with cp and bn, and abundant calcite-gypsum (?) veinlets with a little pyrite.	6073	2.0	0.05		0.001		
		6074	4.0	0.03		0.001		
		6075	4.0	0.03		0.002		
	170.8m Common dissemination of mag and a little hem. Fairly abundant dissemination of Py and veinlets with a little cy.	6076	4.0	0.04		0.002	2.52	
		6077	4.0	0.05		0.002		
		6078	4.0	0.03		0.001		
		6079	4.0	0.04		0.002	3.22	
		6080	4.0	0.03		tr		
	188.6m Common dissemination of hem and Py with a little mag and rare cp. Abundant hem-cal-clay veinlets with a little Py.	6081	4.0	0.03		0.001		
		6082	4.0	0.05		0.001	1.98	
		6083	4.0	0.04		0.002		

220	220.0m-251.1m: strongly carbonitized, distinctly chloritized, argillized, weakly Sericitized, sporadically epidotized, slightly silicified, and with secondary biotite, actinolitic amphibole, and a 10-cm zeolite calcite vein (at 234.7m).	Sparsely-penetrated cp-bn Stringers with a little mag and rare cc, and a little dissemination of cp and bn near stringers.	6087	4.0	0.07		0.003	
			6088	4.0	0.06		0.001	1.98
			6089	4.0	0.13		0.006	
			6090	4.0	0.06		0.003	
230			6091	4.0	0.16		0.002	1.91
			6092	4.0	0.29		0.002	
240			6093	4.0	0.28		0.005	
			6094	4.0	0.11		0.003	1.98
			6095	4.0	0.14		0.003	
250	251.1m		6096	1.1	0.19		0.002	
260								

D.D.H. No. 6 Sheet 6

Total Length 251.1m Core Recovery 100%

Location 0' - 20 Elevation 4,090m

Direction — Inclination Vertical

Date of Logging from 1 st/Dec. to 11 th/Dec.

Logged by M. Saito

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

0 10 20m
SCALE 1 : 200

Abbreviation

cc : chalcocite
bn : bornite
cp : chalcopyrite
py : pyrite
lim : limonite
hem : hematite
mag : magnetite
qtz : quartz
chl : chlorite
cal : calcite

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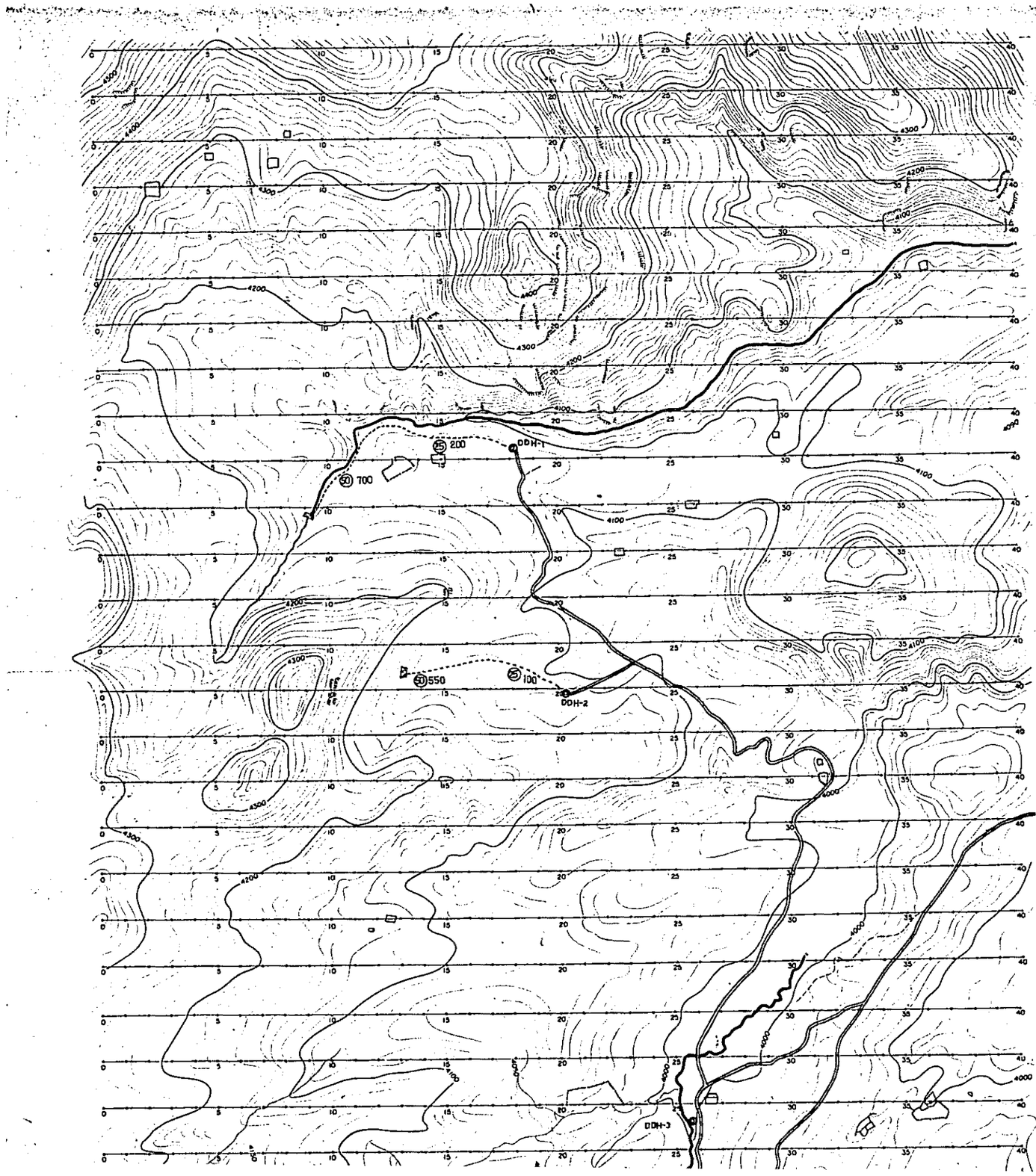
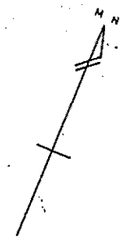
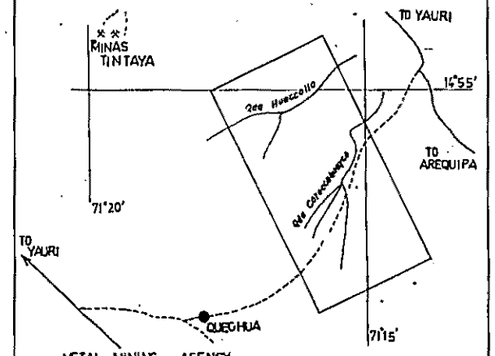




PL III - 1

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

LOCATION MAP OF DRILL-HOLES OF THE
COROCCOHUAYCO-HUACCOLLO AREA

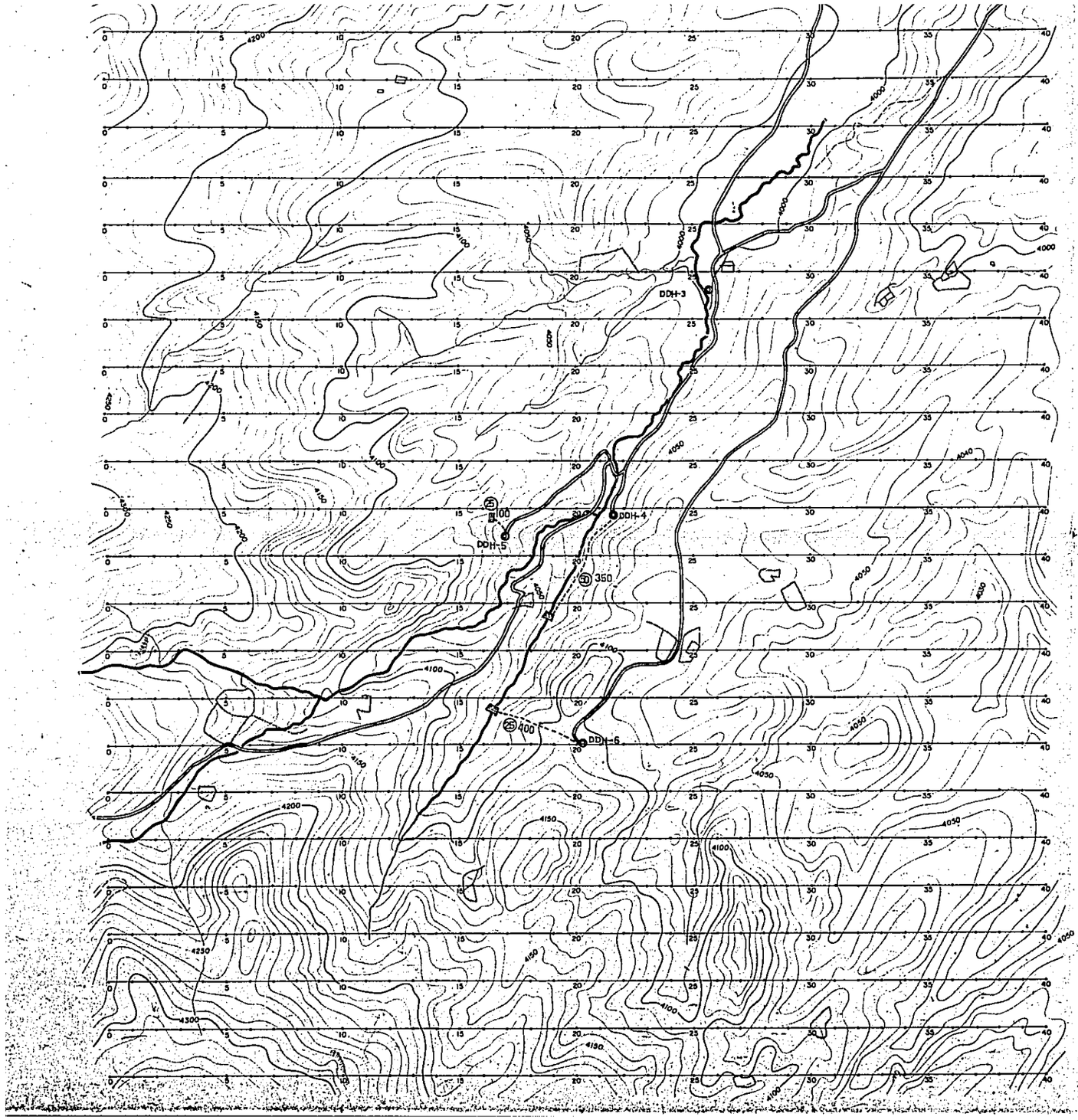


METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY. 1974
PREPARED BY MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

0 200 400 600 800 1000 m
Scale 1:10,000

LEGEND

- Location of Drill Hole
- Constructed Road
- Dam for Water Supply
- ----- Delivery Pipe Line
- (25) 200 Pipe-Size (m/m) / Pipe-Length (m)
- Camp Site



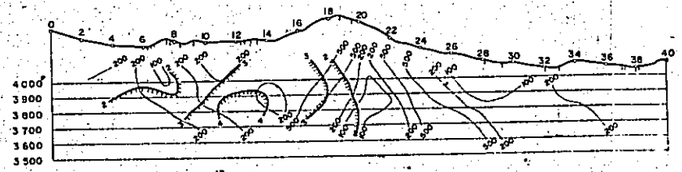
0 200 400 600 800 1000 m

Scale 1 : 10,000

L E G E N D

- Location of Drill Hole
- Constructed Road
- Dam for Water Supply
- Delivery Pipe Line
- 25 200 — Pipe – Size (m/m), Pipe – Length (m)
- Camp Site
- Stream

LINE-A



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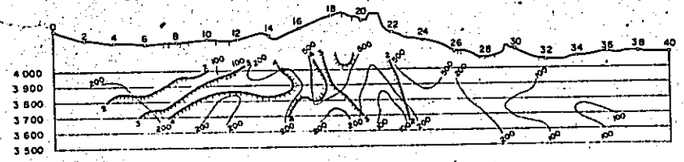

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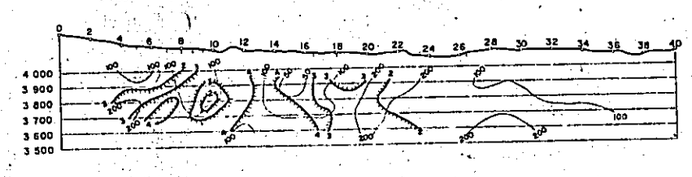

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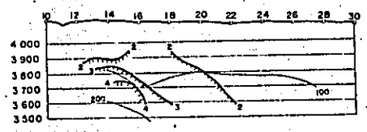

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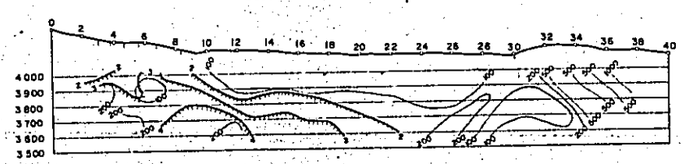

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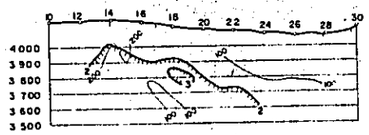

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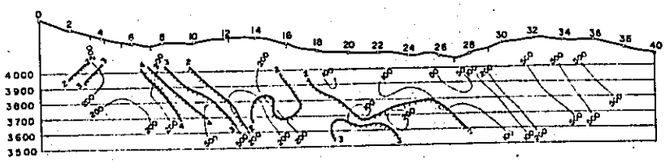

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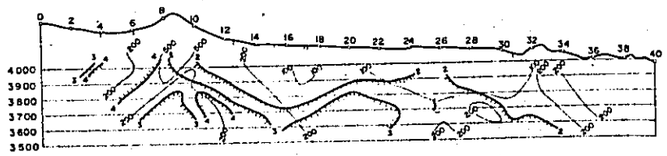

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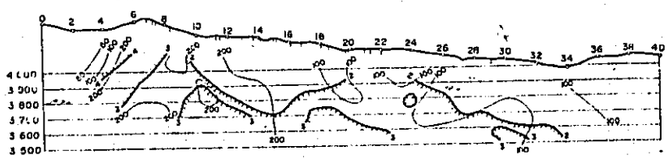

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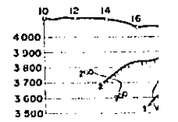

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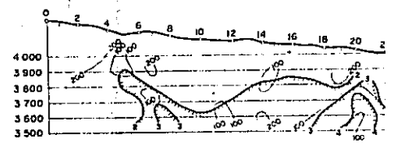

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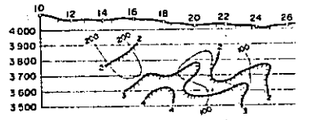

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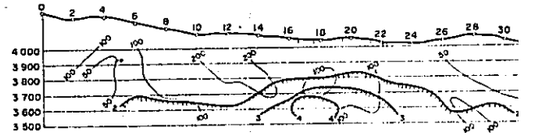

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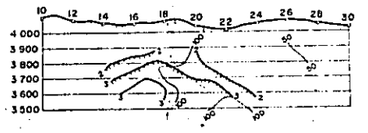

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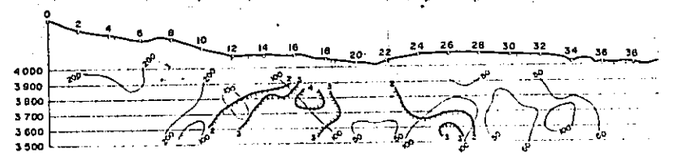

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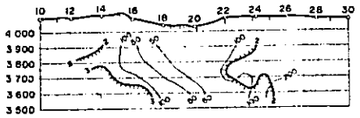

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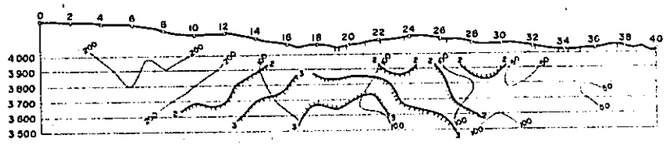

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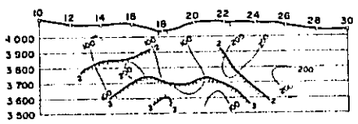

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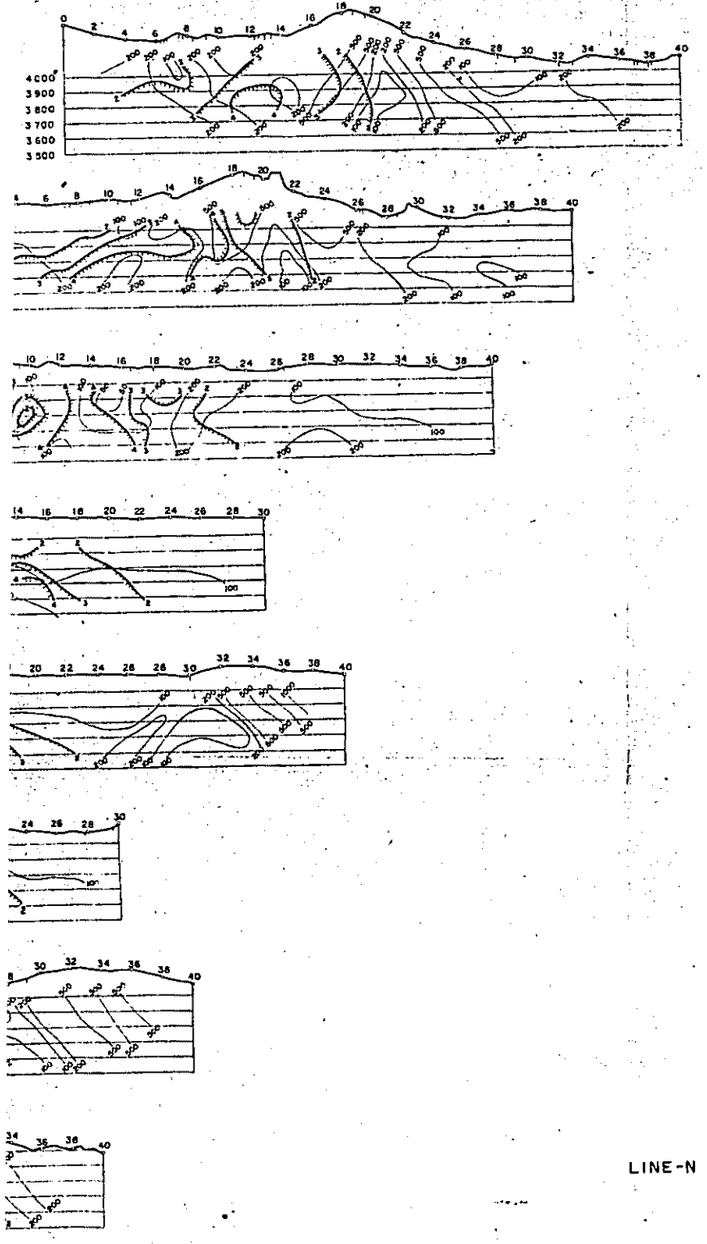

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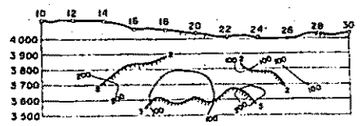

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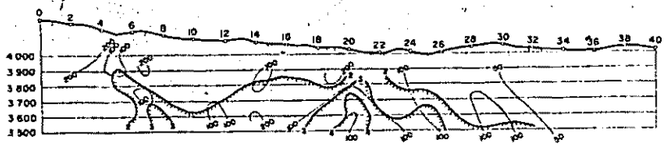

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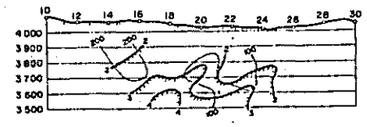

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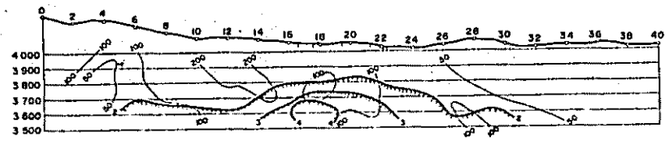

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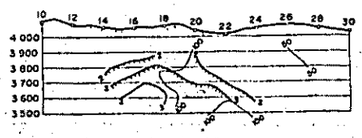

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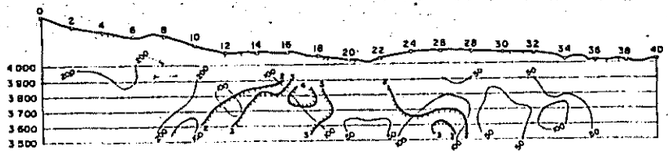

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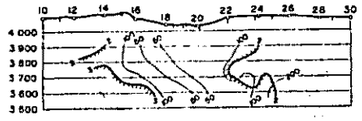

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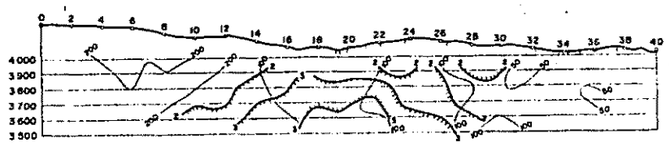

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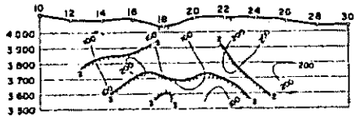


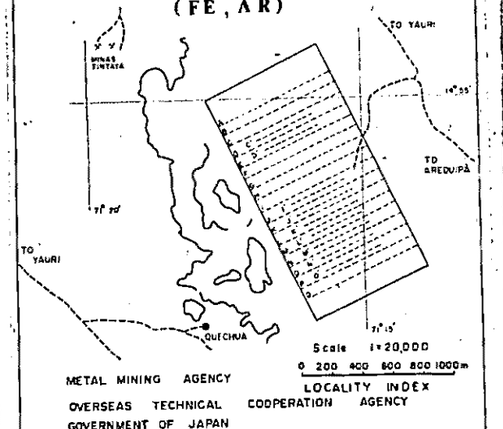
PL.II-1-1

GEOLOGICAL SURVEY OF

YAURI AREA, SOUTHERN PERU

(PHASE III)

PROFILES OF THE AREA (FE, AR)



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

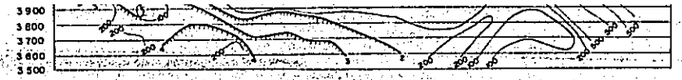
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

LEGEND

— A R

----- F E

LINE - D



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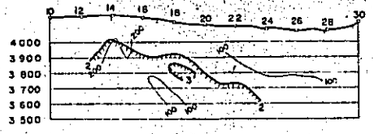

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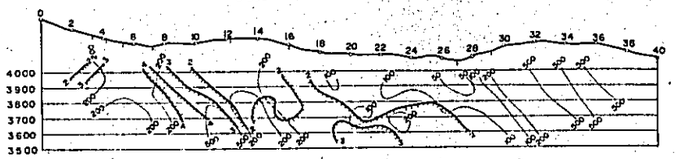

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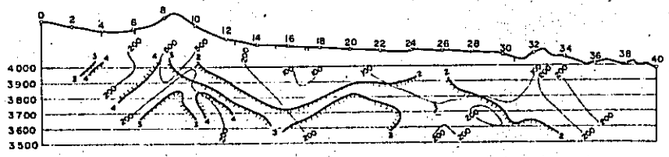

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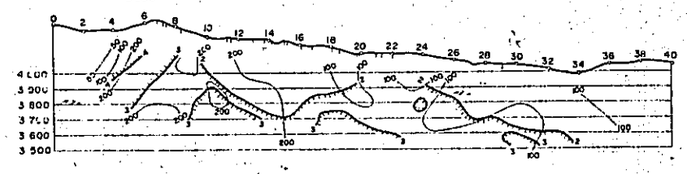

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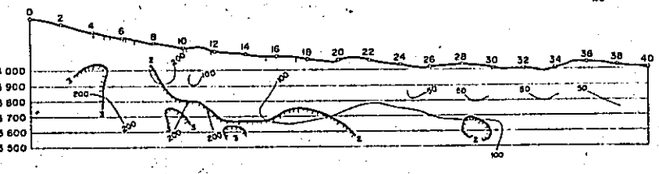

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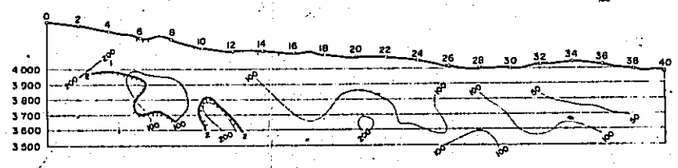

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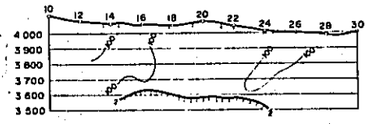

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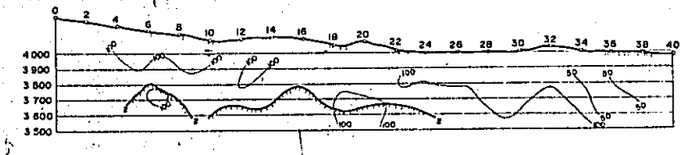

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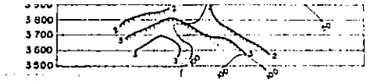

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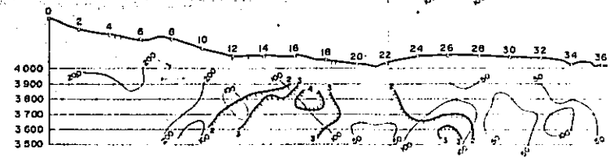

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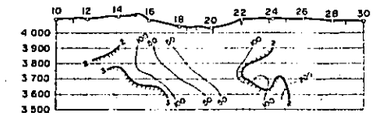

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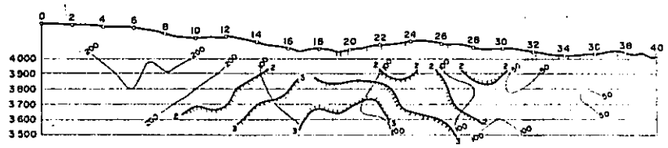

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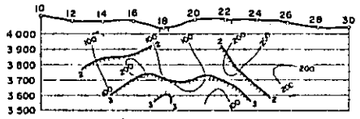

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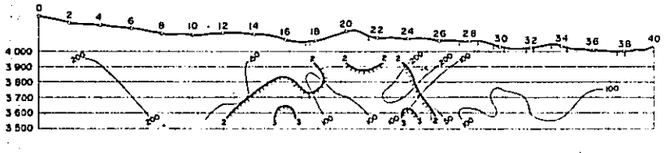

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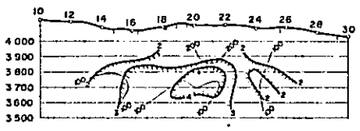

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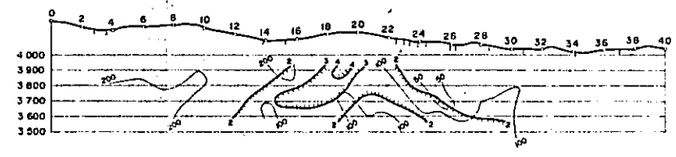

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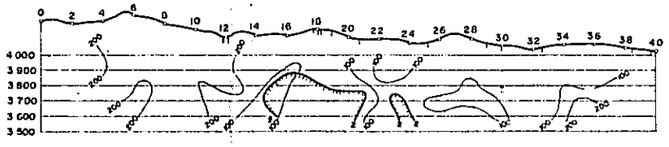

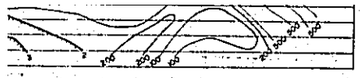

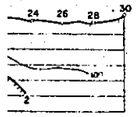

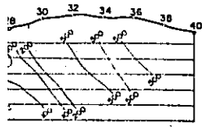

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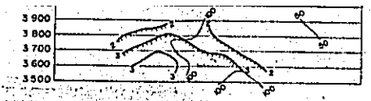

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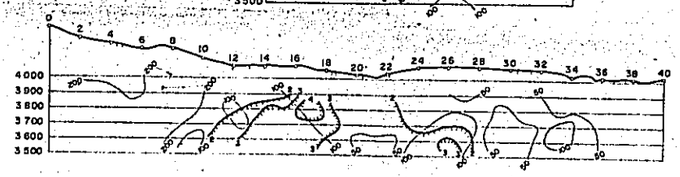

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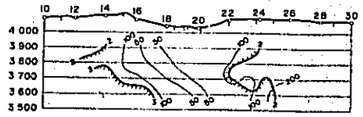

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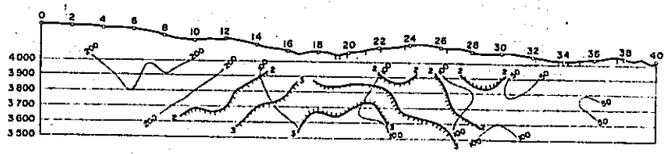

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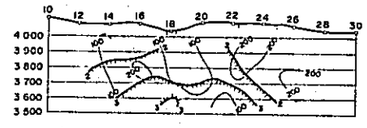

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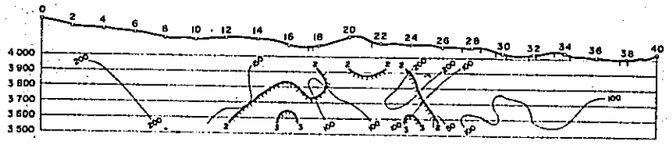

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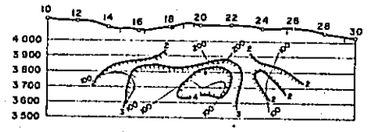

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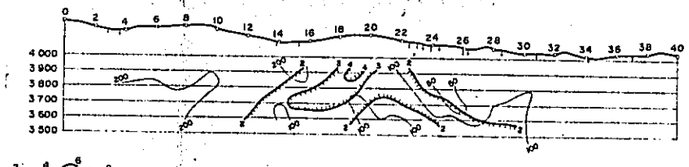

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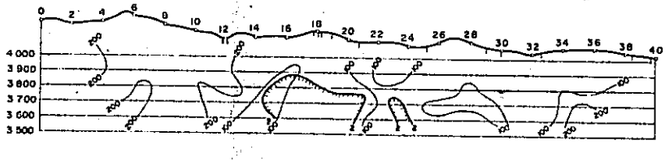

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GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

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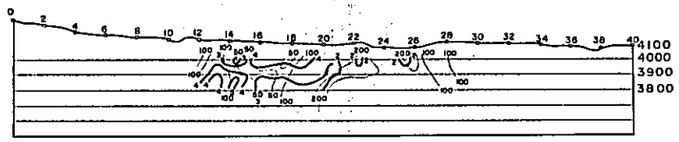

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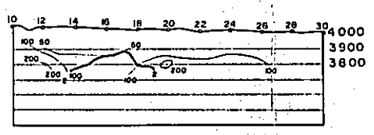

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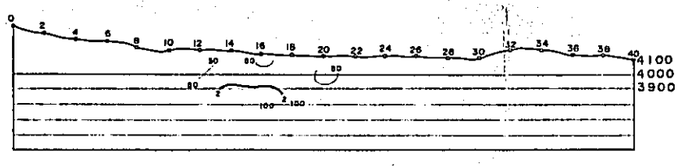

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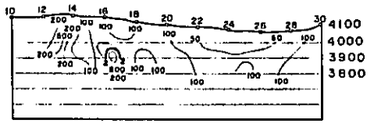

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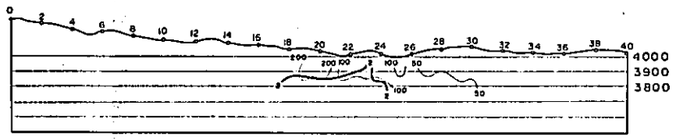

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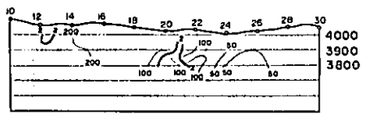

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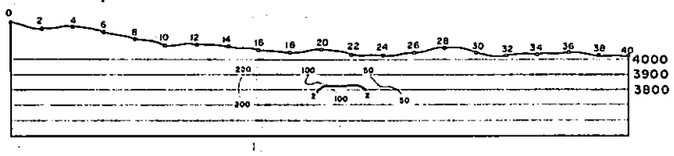

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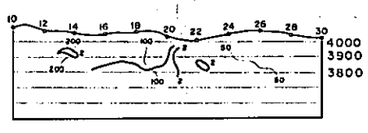

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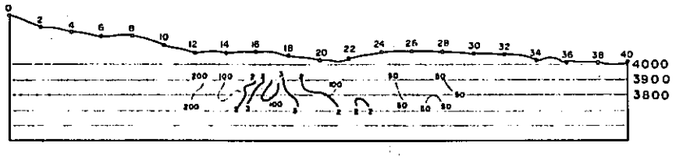

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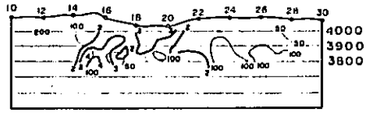

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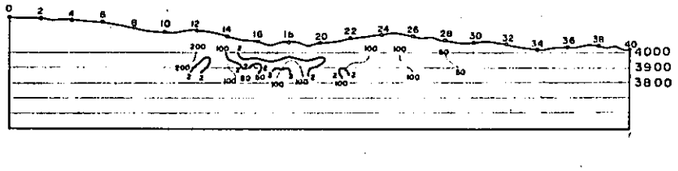

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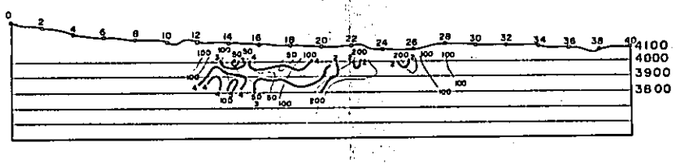
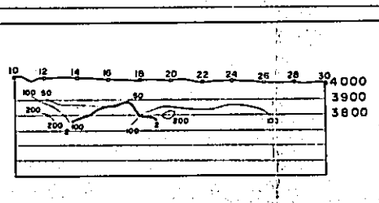
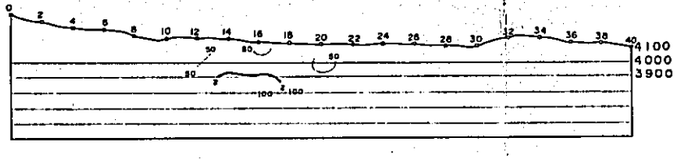
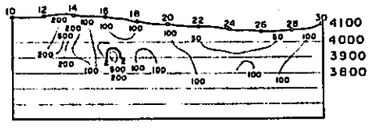
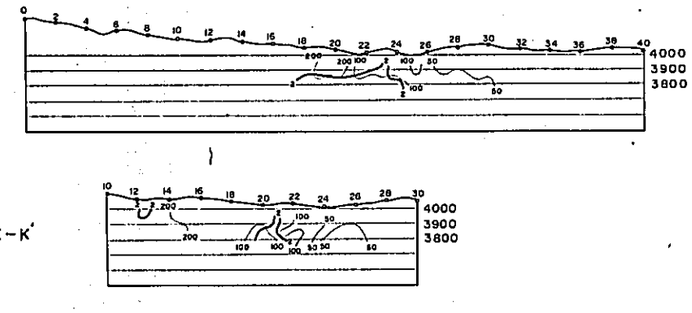
図書資料室蔵書

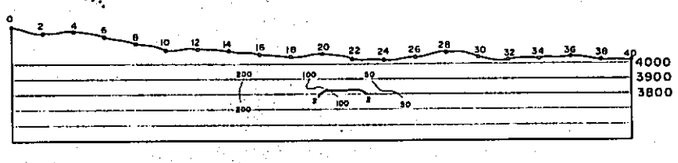


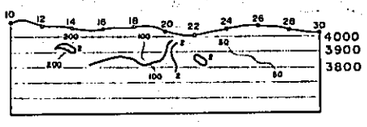


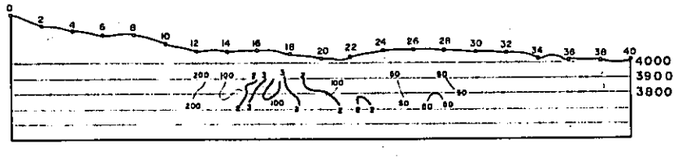


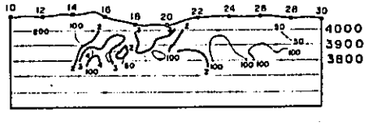


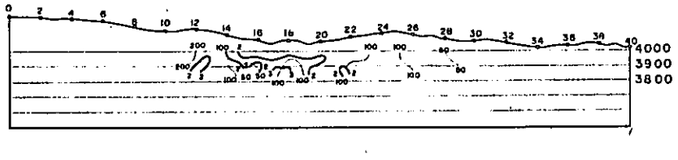












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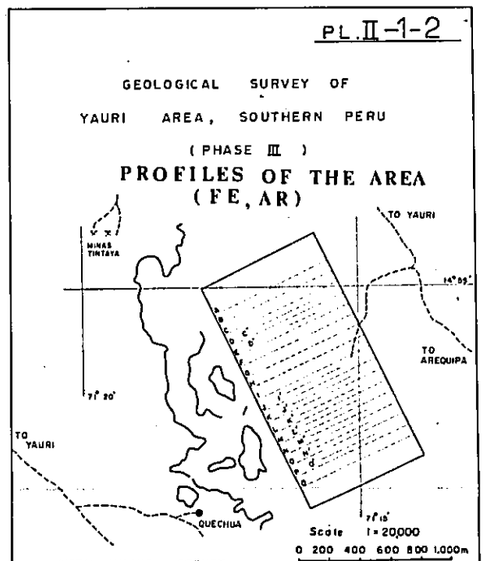
PL.Ⅱ-1-2

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

PROFILES OF THE AREA (FE, AR)



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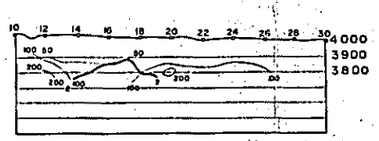
METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

LINE C'



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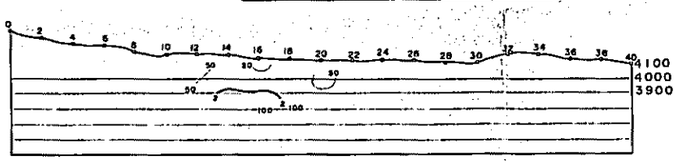

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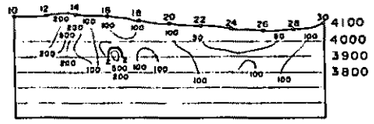

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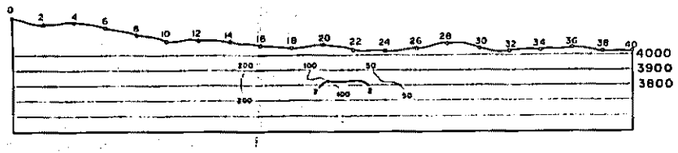

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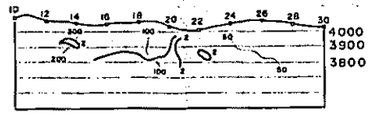

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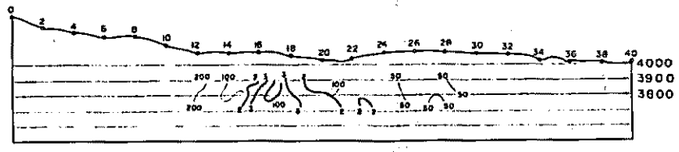

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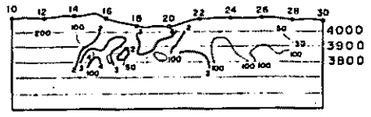

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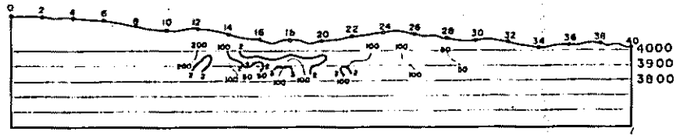

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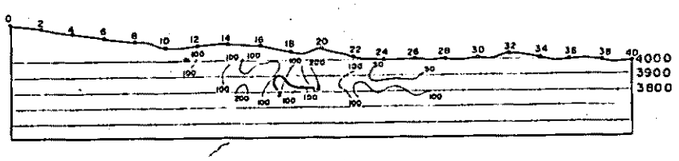
LINE J



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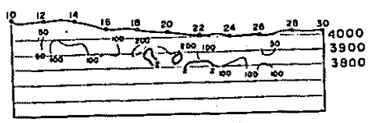

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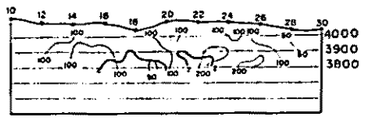

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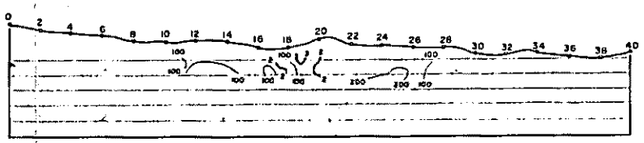

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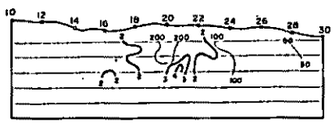
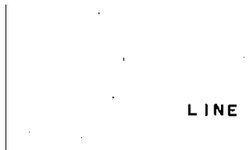
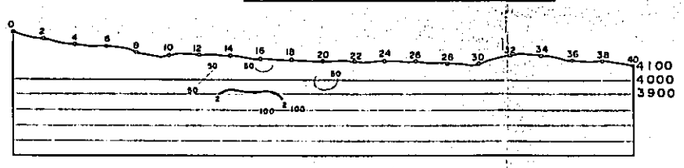
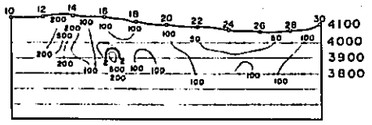




LINE C'



E D



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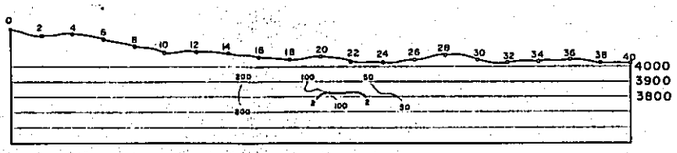

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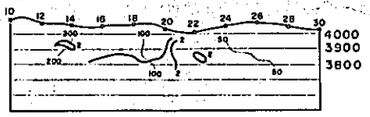
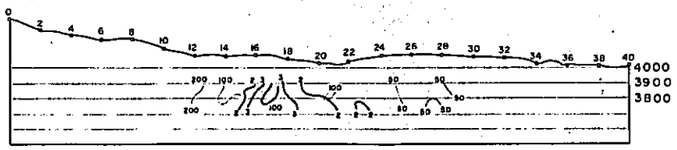


LINE-L'



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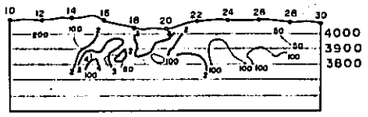

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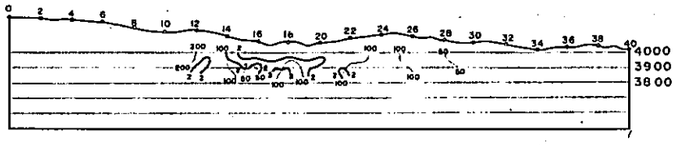
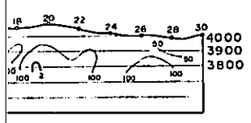


LINE-N

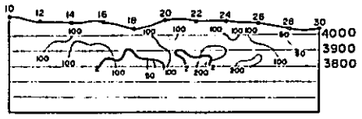
LEGEND

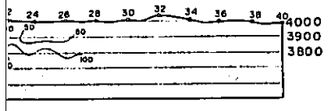
AR

FE

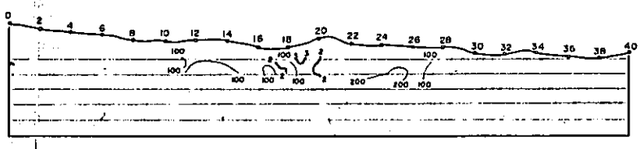


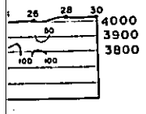
LINE-N'



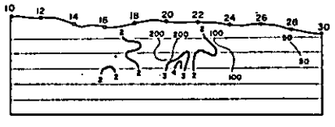


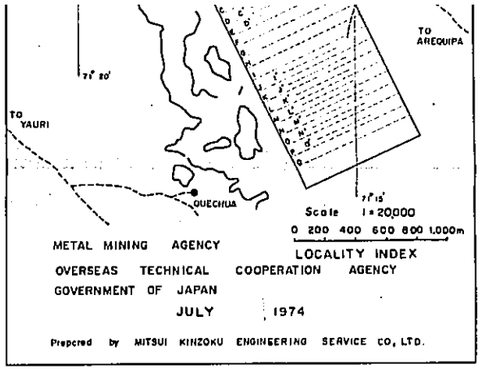
LINE-O





LINE-O'





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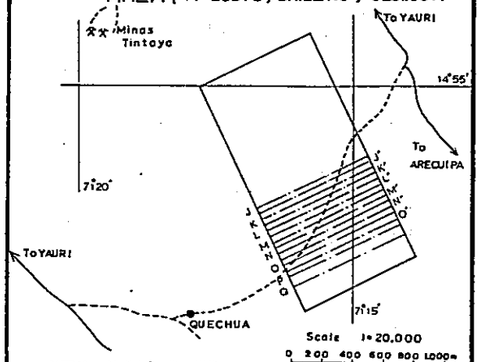
PL. II-2-1

GEOLOGICAL SURVEY OF YAURI AREA SOUTHERN PERU

(PHASE III)

SOUTHERN PROFILES OF THE AREA (I P BODYS, DRILLING , GEOLOGY)

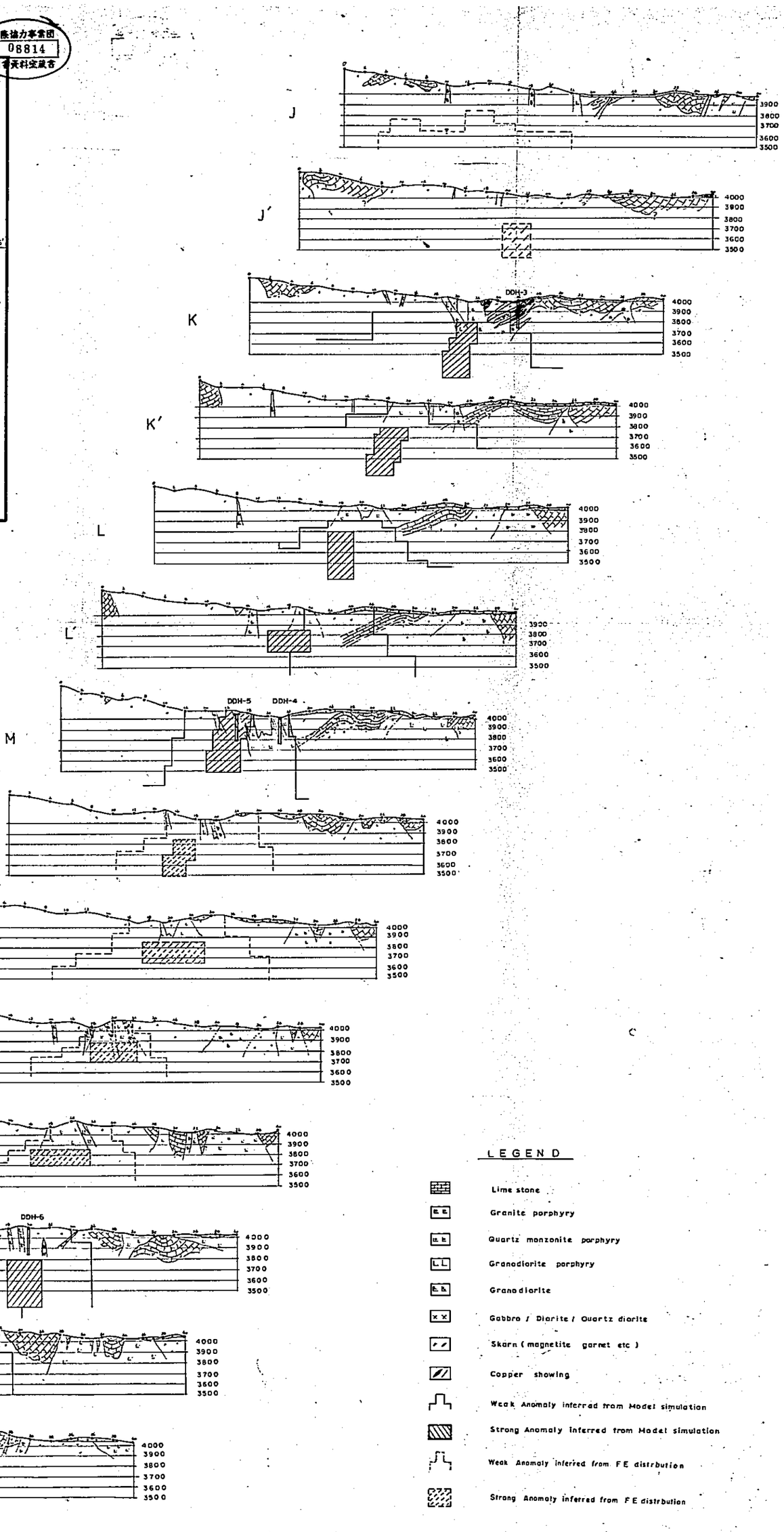


METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY - GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD



LEGEND

- Lime stone
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite
- Skarn (magnetite garnet etc)
- Copper showing
- Weak Anomaly inferred from Model simulation
- Strong Anomaly inferred from Model simulation
- Weak Anomaly inferred from F E distribution
- Strong Anomaly inferred from F E distribution

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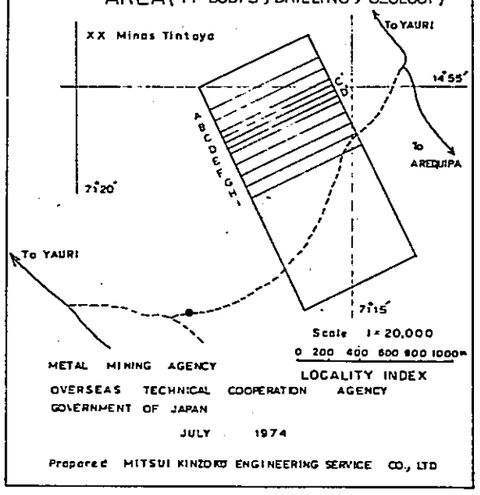
PL. II-2-2

GEOLOGICAL SURVEY OF YAURI AREA SOUTHERN PERU

(PHASE III)

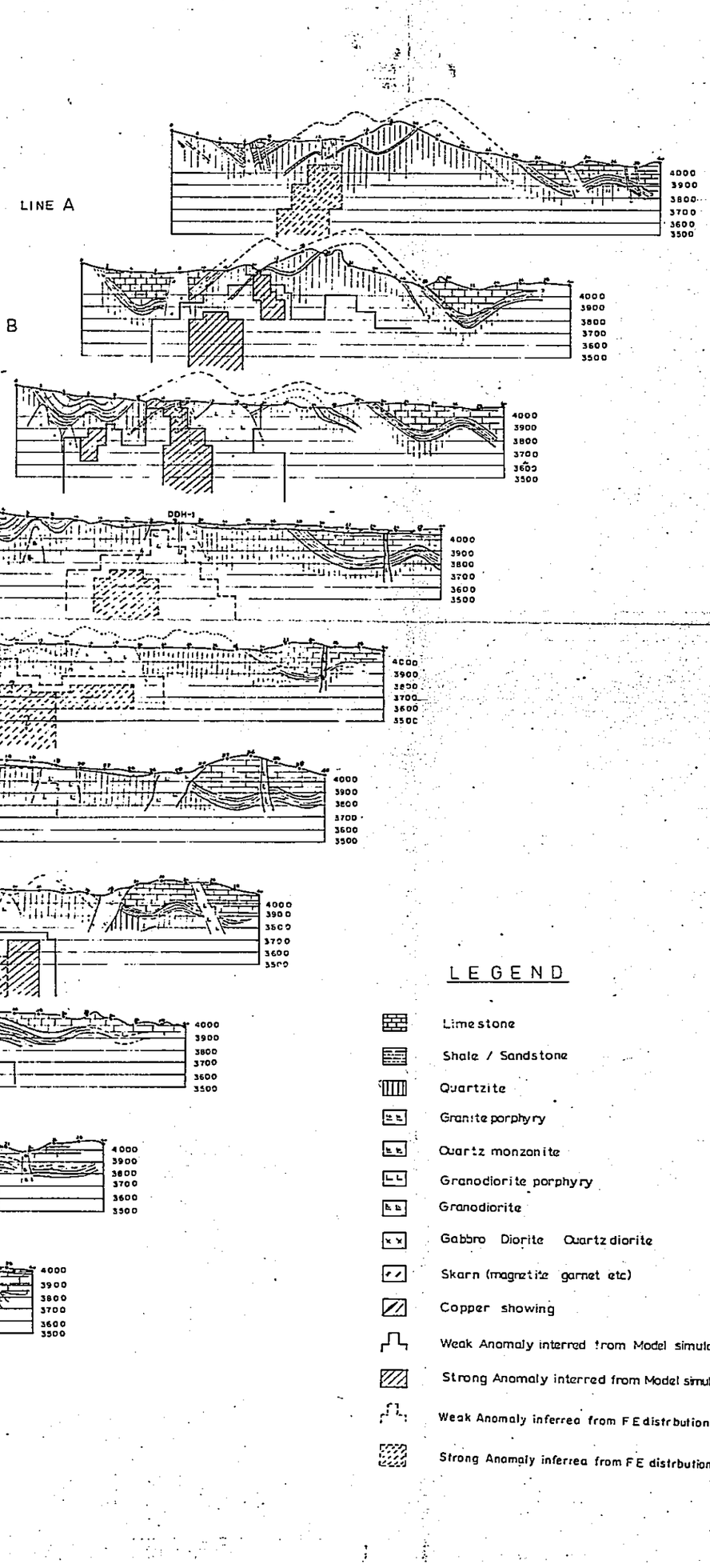
SOUTHERN PROFILES OF THE AREA(I P BODYS , DRILLING , GEOLOGY)



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared MITSUI KINZOKU ENGINEERING SERVICE CO., LTD



LEGEND

- Limestone
- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite
- Granodiorite porphyry
- Granodiorite
- Gabbro Diorite Quartz diorite
- Skarn (magnetite garnet etc)
- Copper showing
- Weak Anomaly interred from Model simulation
- Strong Anomaly interred from Model simulation
- Weak Anomaly inferred from F E distribution
- Strong Anomaly inferred from F E distribution

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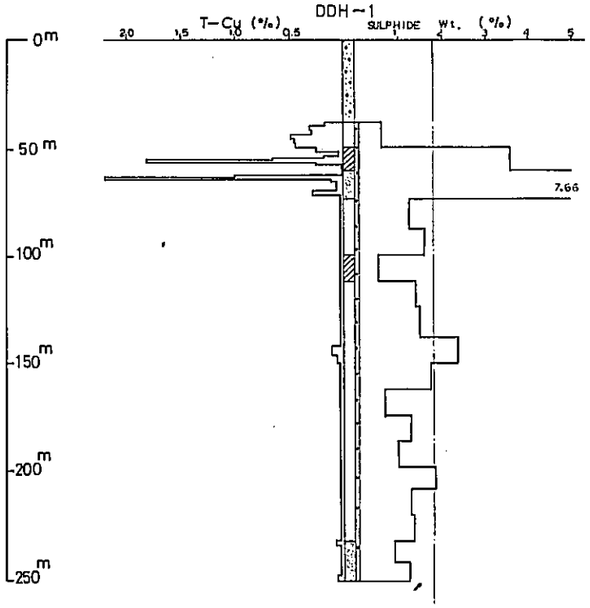

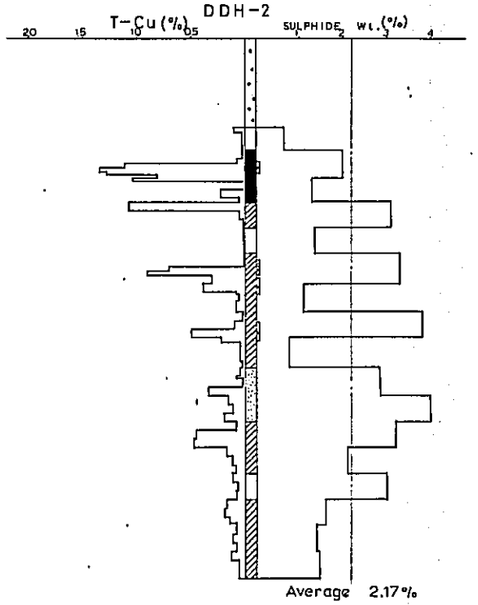

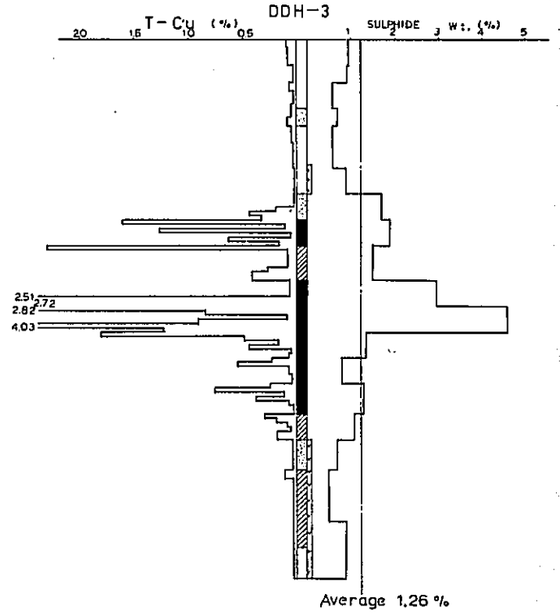

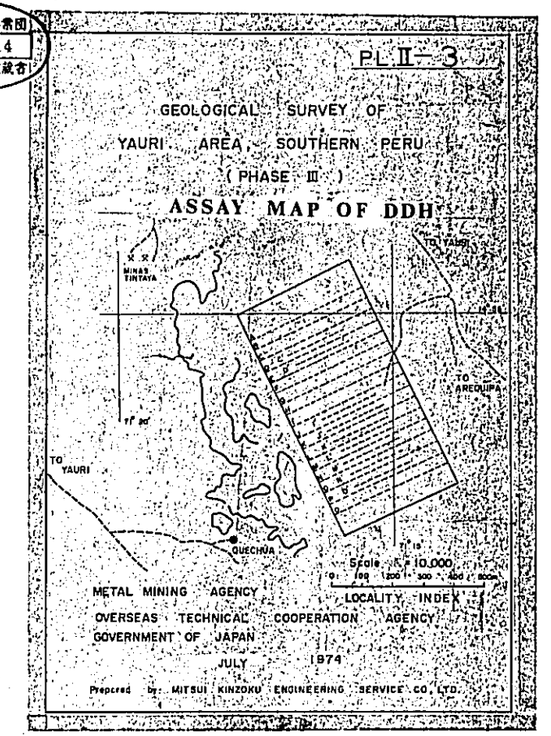

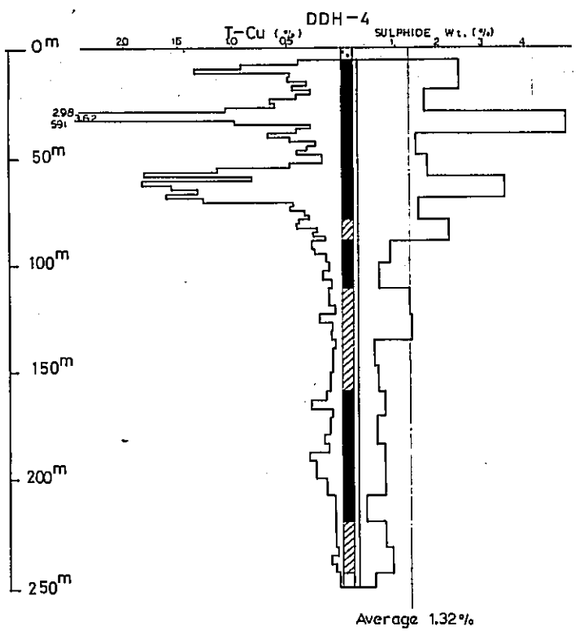

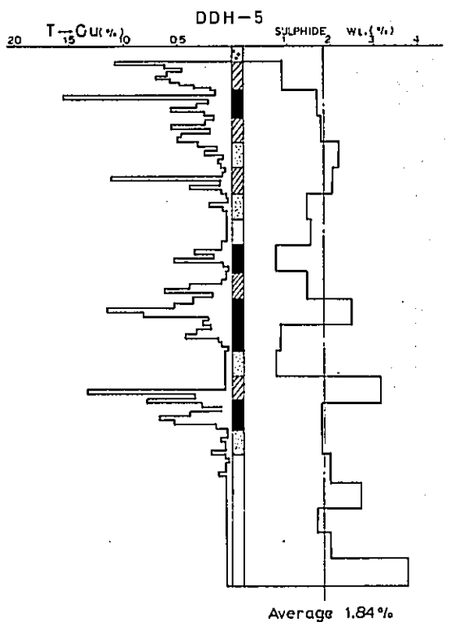

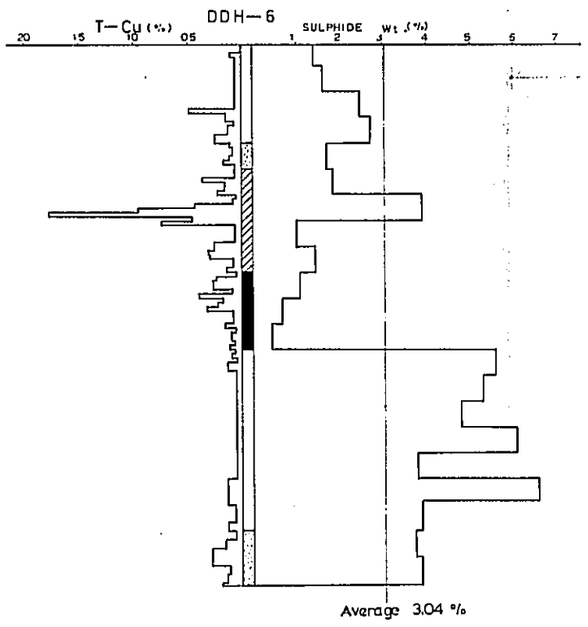

LEGEND

	Ratio of (BO + CP) to PY	1:10 over
	"	1:10 less
	"	1: 5 less
	"	1: 1 less
	Monzonite	

BO Bornite
CP Chalcopyrite
PY Pyrite

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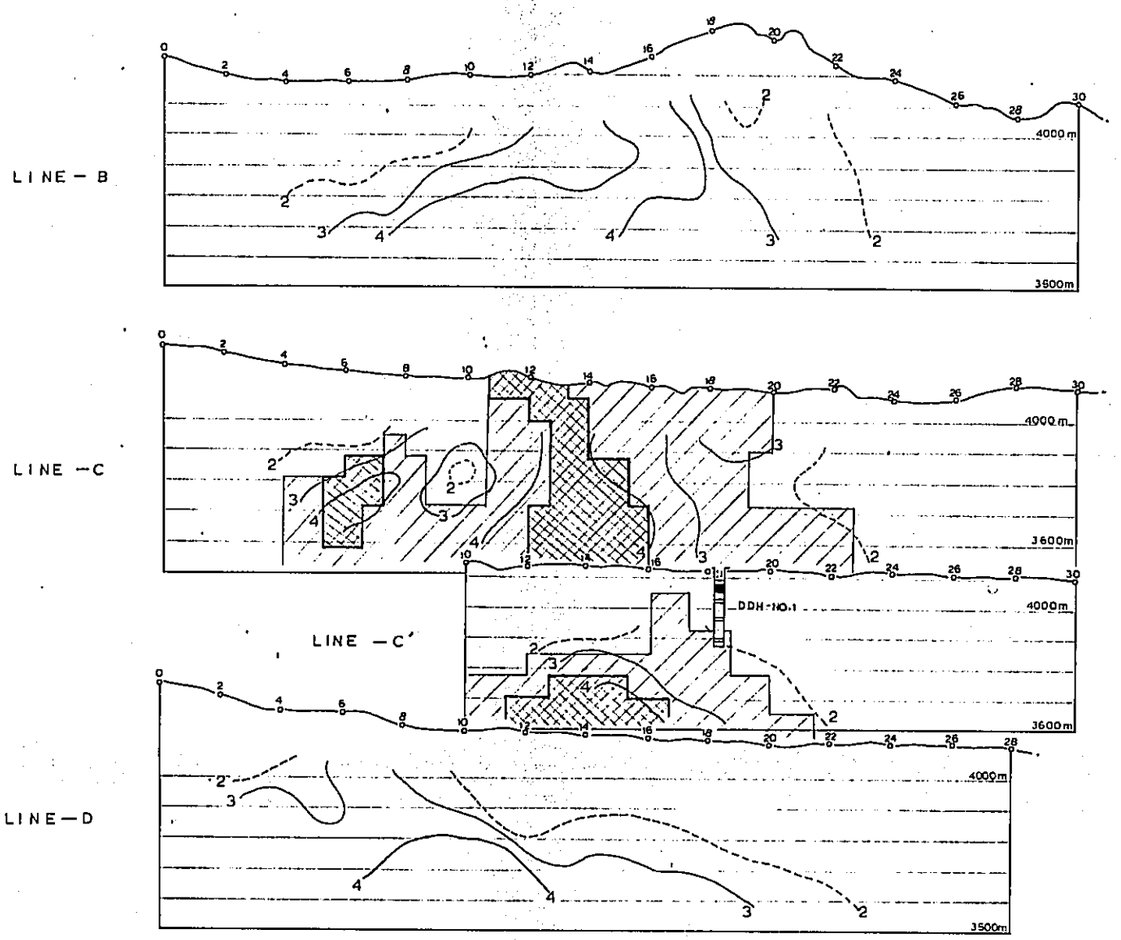
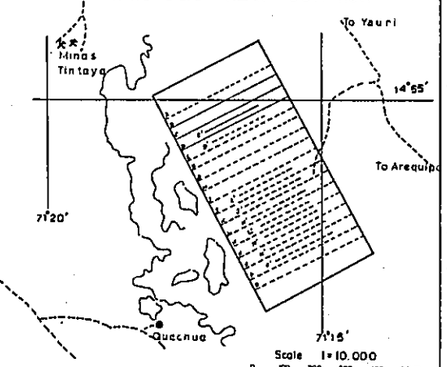


PL. II-3-1

GEOLOGICAL SURVEY OF
YAURI AREA SOUTHRN PERU
(PHASE III)

SIMULATED MODEL OF I P ANOMALY ON
LINES C&C' NEAR DDH-No.1



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

MITSUI MINZOKU ENGINEERING SERVICE CO., LTD.
1, 3-CHOME, NIHONBASHI-MUROMACHI,
CHUO-KU, TOKYO, JAPAN

LEGEND

- Sulphide Contents Estimated 1% less
- + 1% over
- + 3% Over
- Talus
- High Anomaly Zone
- Low Anomaly Zone
- 2.3.4. Frequency Effect (%)

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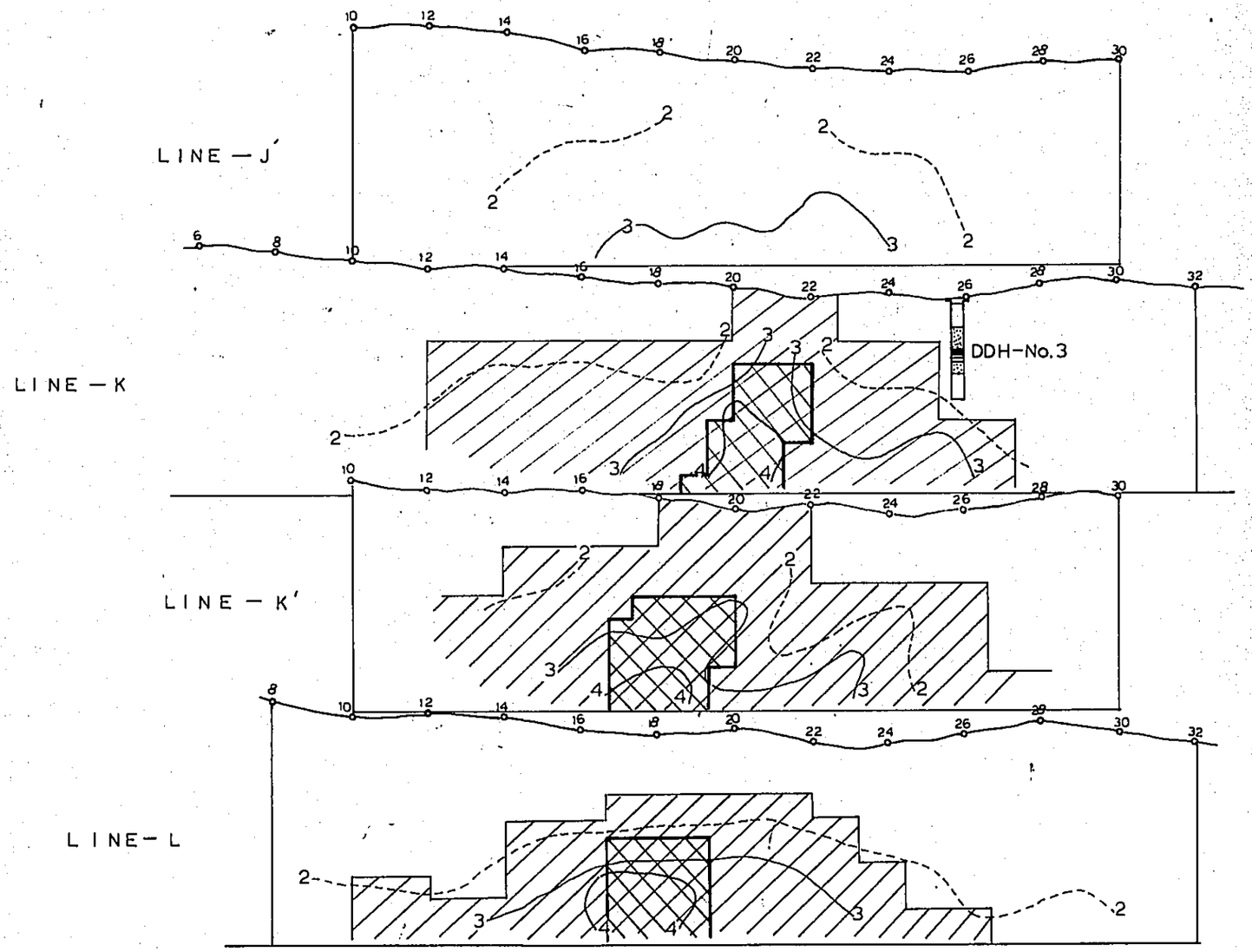
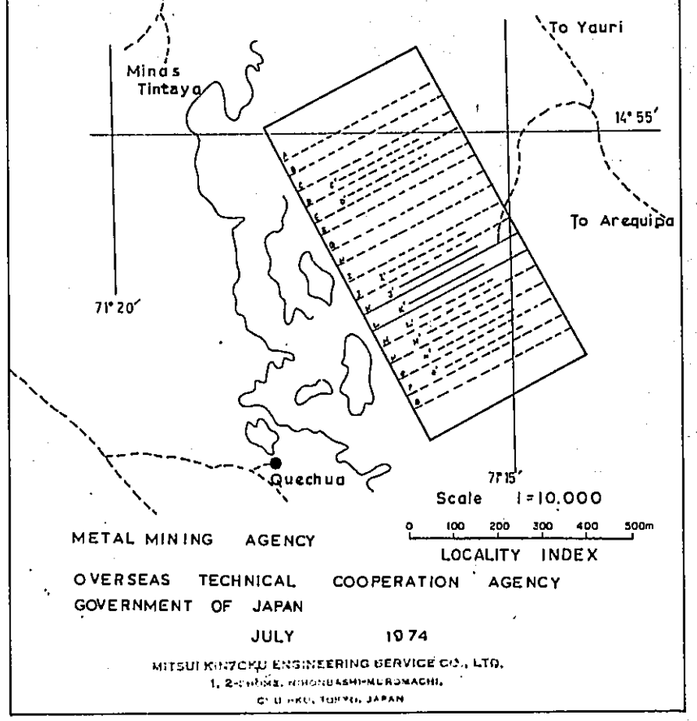
PL. Ⅱ-3-2

GEOLOGICAL SURVEY OF
YAURI AREA SOUTHRN PERU

(PHASE Ⅲ)

SIMULATED MODEL OF I P ANOMALY ON LINES K,K'& L NEAR DDH No, 3





METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.
1, 2-CHOME, NIHONBASHI-MUROMACHI,
CHUO-KU, TOKYO, JAPAN

LEGEND

- Sulphide Contents Estimated 1% less
- " 1% over
- " 3% over
- Talus
- High Anomaly Zone
- Low Anomaly Zone
- 2,3,4, Frequency Effect (%)

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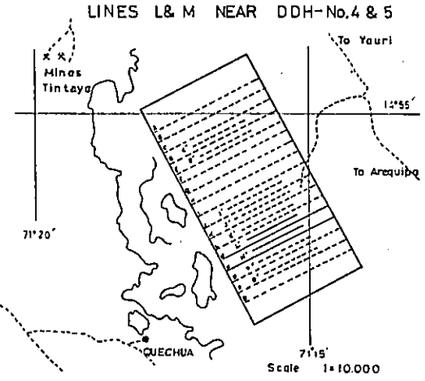
PL. II-3-3

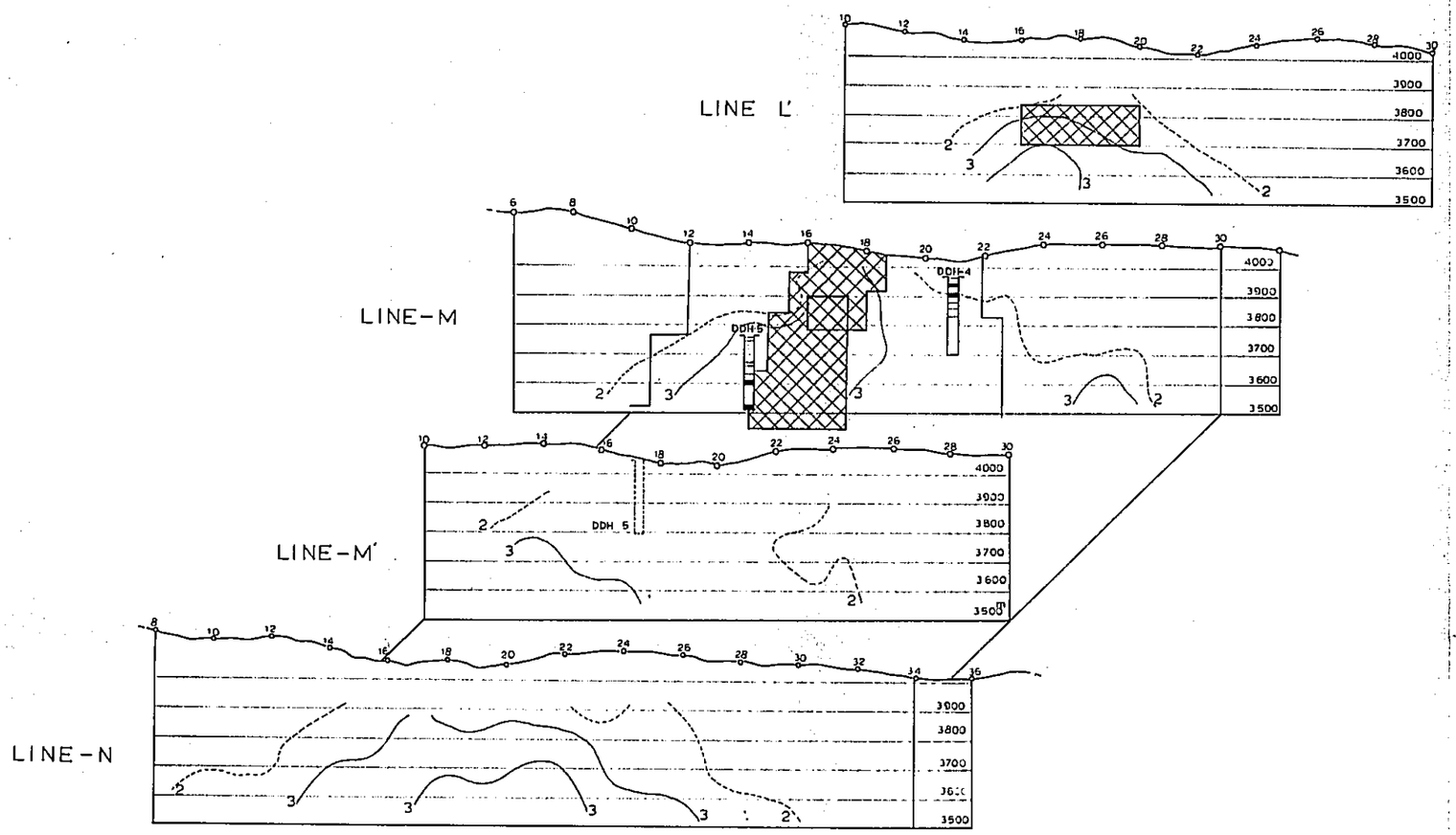
GEOLOGICAL SURVEY OF
YAURI AREA SOUTHRN PERU

(PHASE III)

SIMULATED MODEL OF I P ANOMALY ON
LINES L& M NEAR DDH-No.4 & 5



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974



LEGEND

- Sulphide Contents Estimated 1% less
- " 1% over
- " 3% over
- Talus
- High Anomaly Zone
- Low Anomaly Zone
- 2,3,4, Frequency Effect (%)

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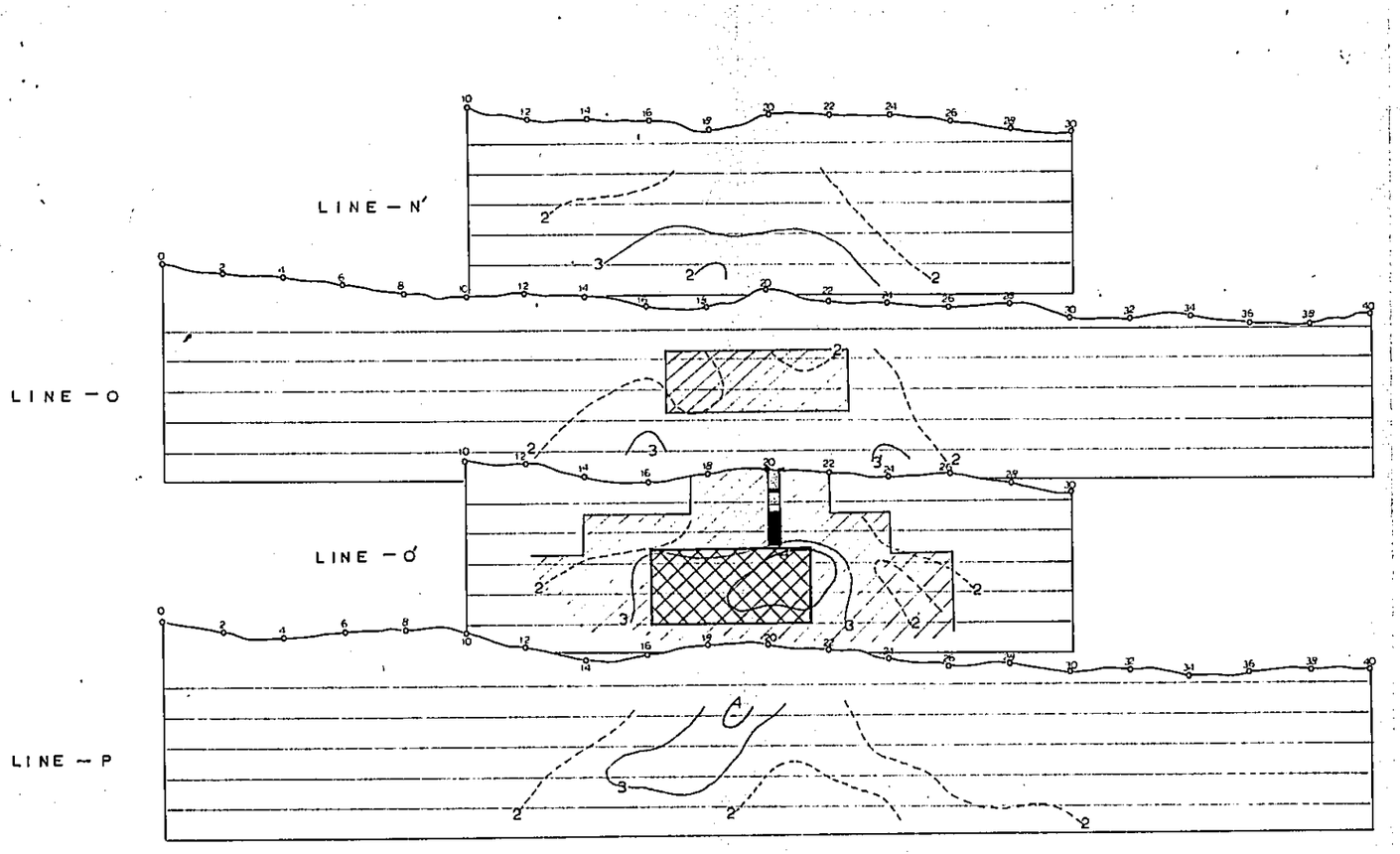
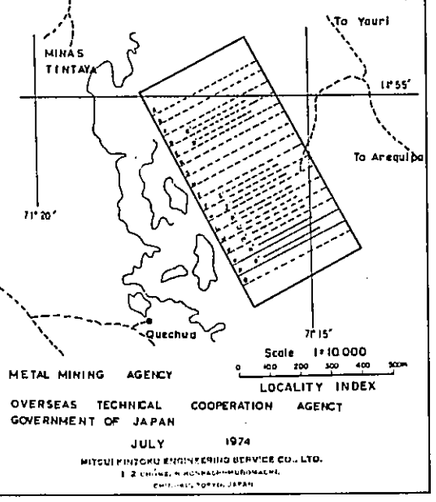


PL. II-3-4

GEOLOGICAL SURVEY OF
YAURI AREA SOUTHRN PERU

(PHASE III)

SIMULATED MODEL OF I P ANOMALY ON LINES O&O' NEAR DDH-No 6



METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

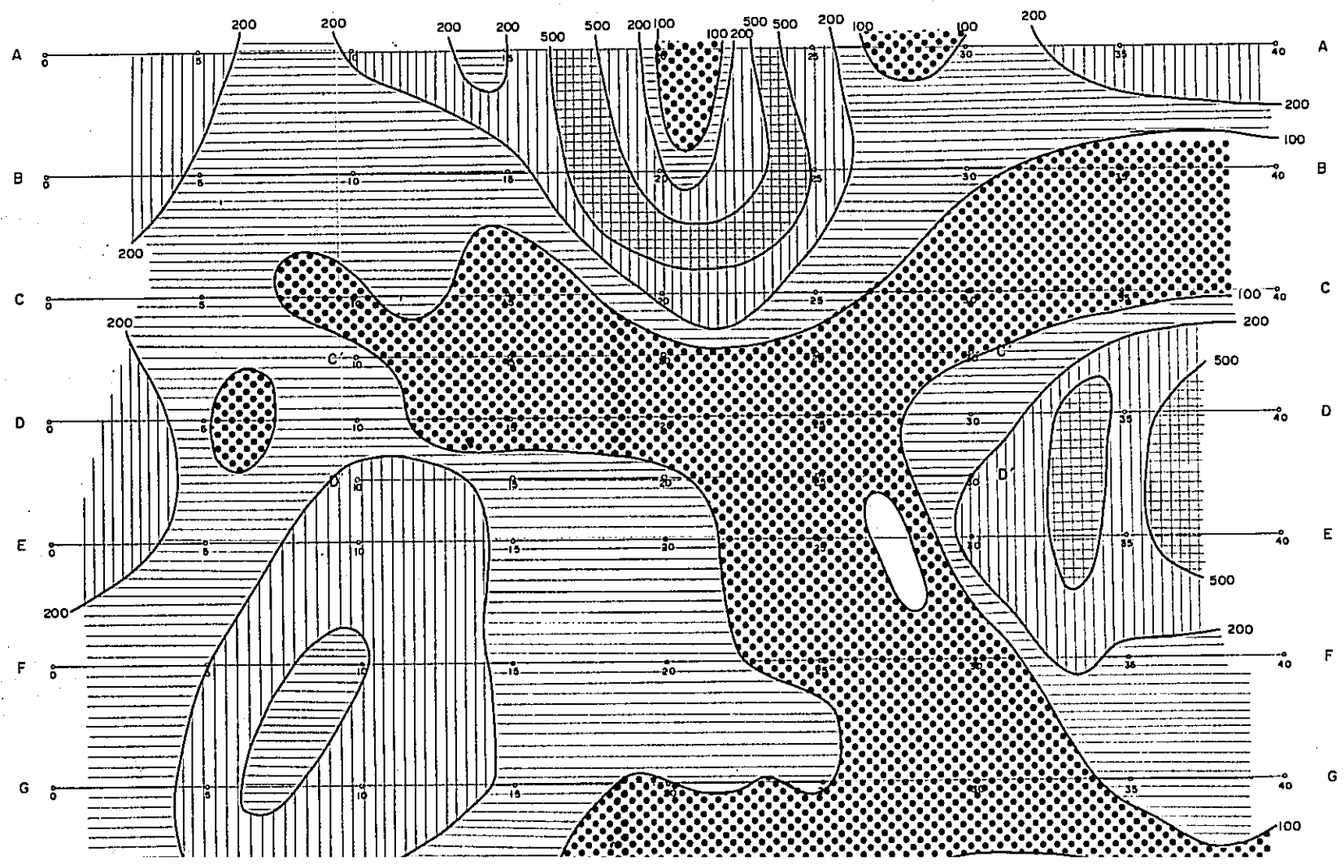
MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

LEGEND

- Sulphide Contents Estimated 1% less
- " 1% over
- " 3% over
- Talus
- High Anomaly Zone
- Low Anomaly Zone
- 2.3.4. Frequecy Effect (%)

P L.Ⅱ-4-1 PLAN OF AR 3 900m LEVEL

APPARENT RESISTIVITY [AR: ρ_{Ac_2} Ohm-meter]



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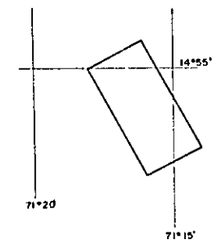
PL.Ⅱ-4-1

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

PLAN OF AR 3 900m LEVEL



Scale 1 : 10.000
0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

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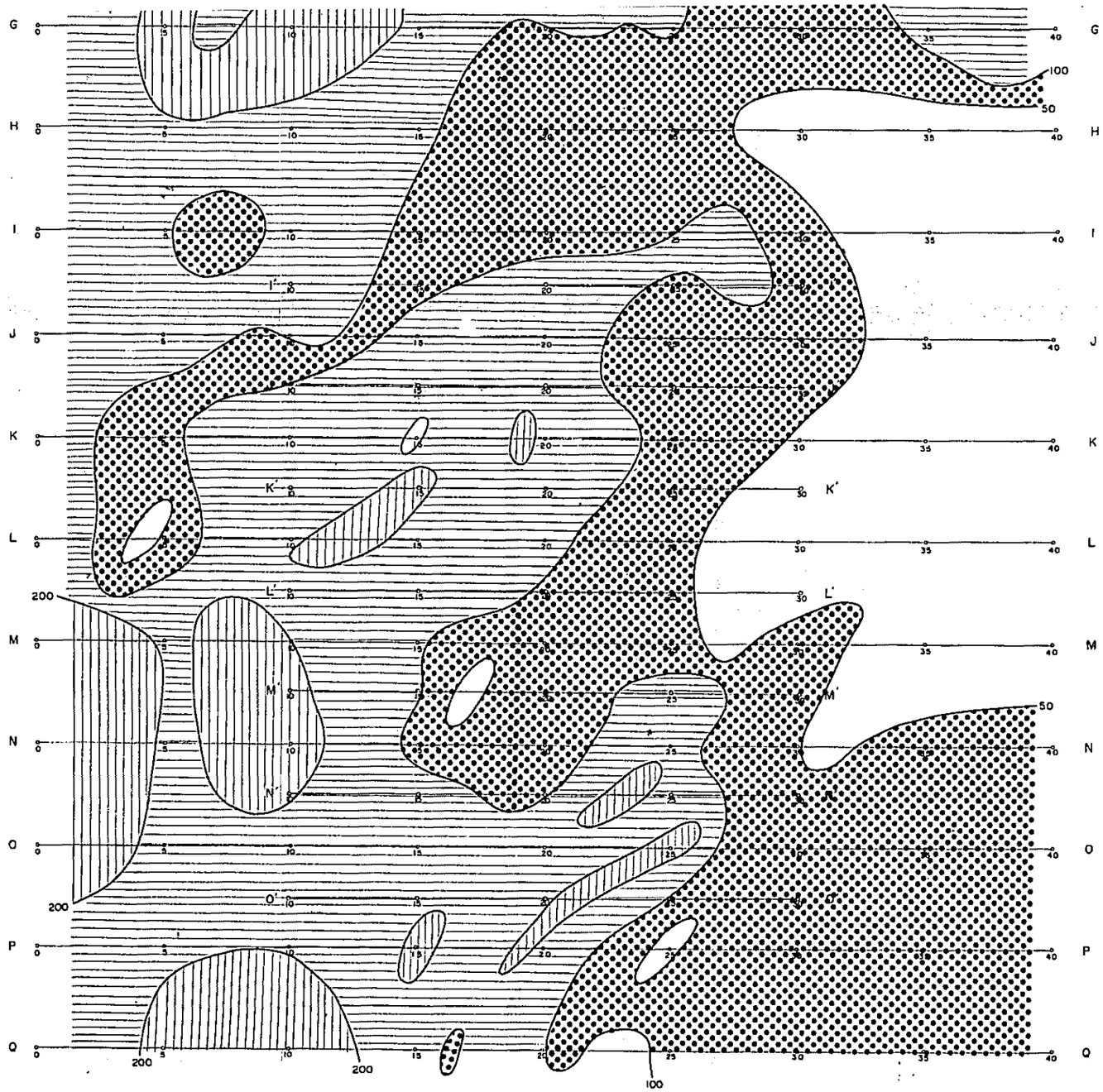
LEGEND

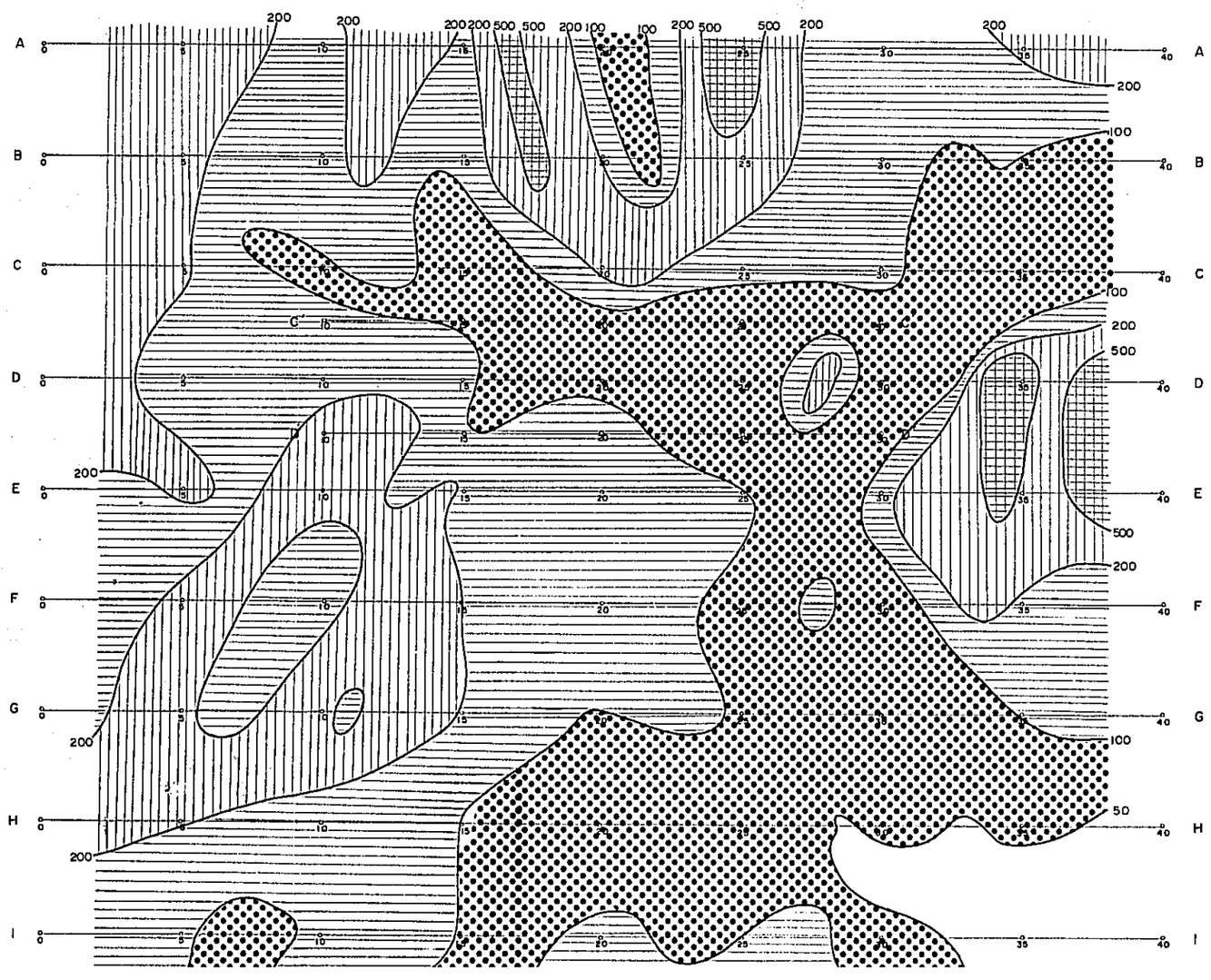
AR

- Less 50 Ω-m
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Over 500 Ω-m


G
H
I
J
K
L
M
N
O
P
Q
200
100
50
I'
K'
L'
M'
N'
O'

P·L.II-4-2 PLAN OF AR 3 800m LEVEL

APPARENT RESISTIVITY [AR: ρ_{AC_2} ohm-meter]



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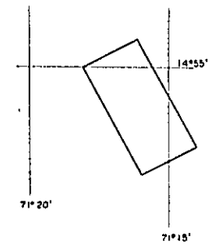
PL.II-4-2

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

PLAN OF AR 3800m LEVEL



Scale 1 : 10,000
0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

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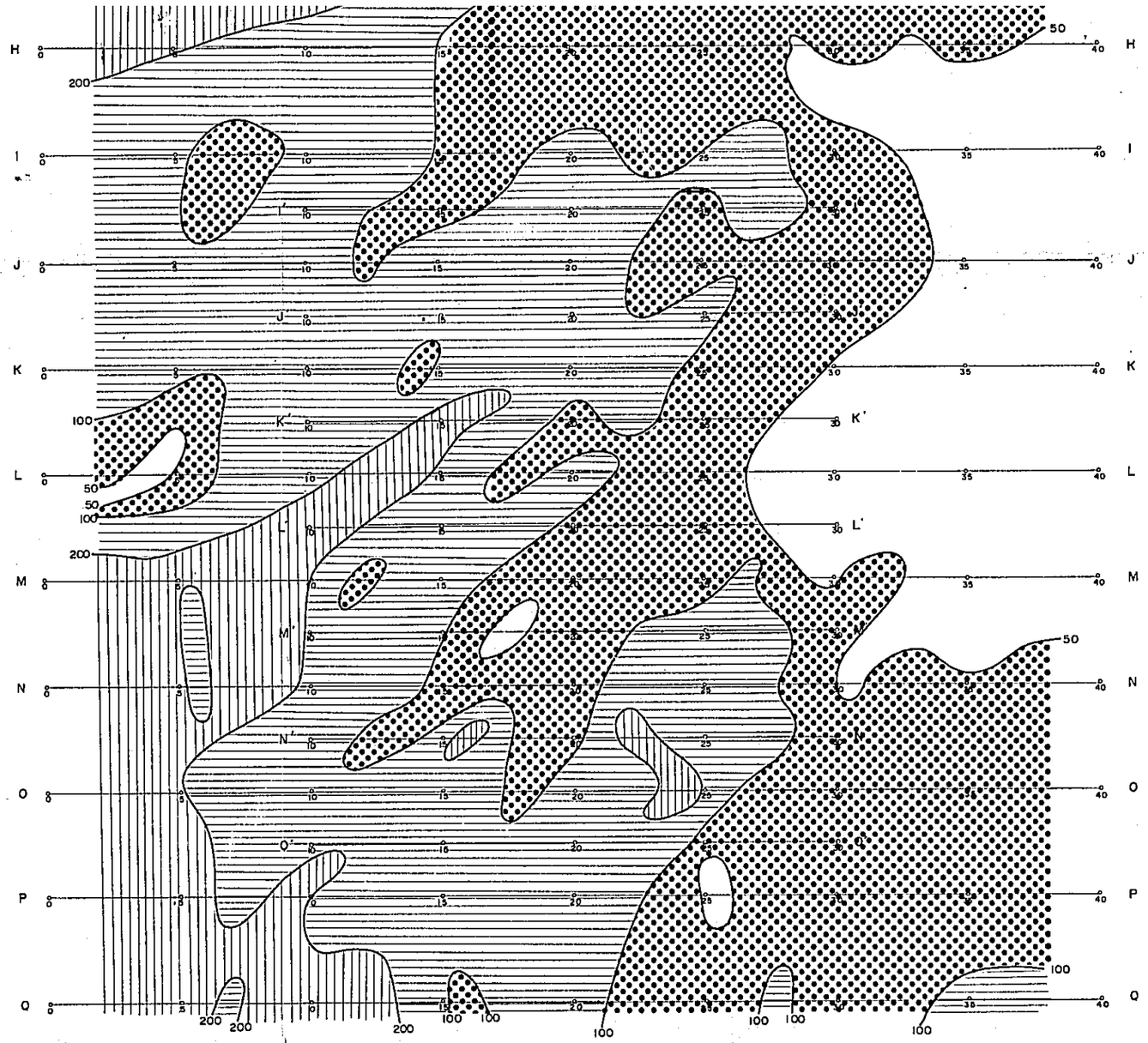
LEGEND

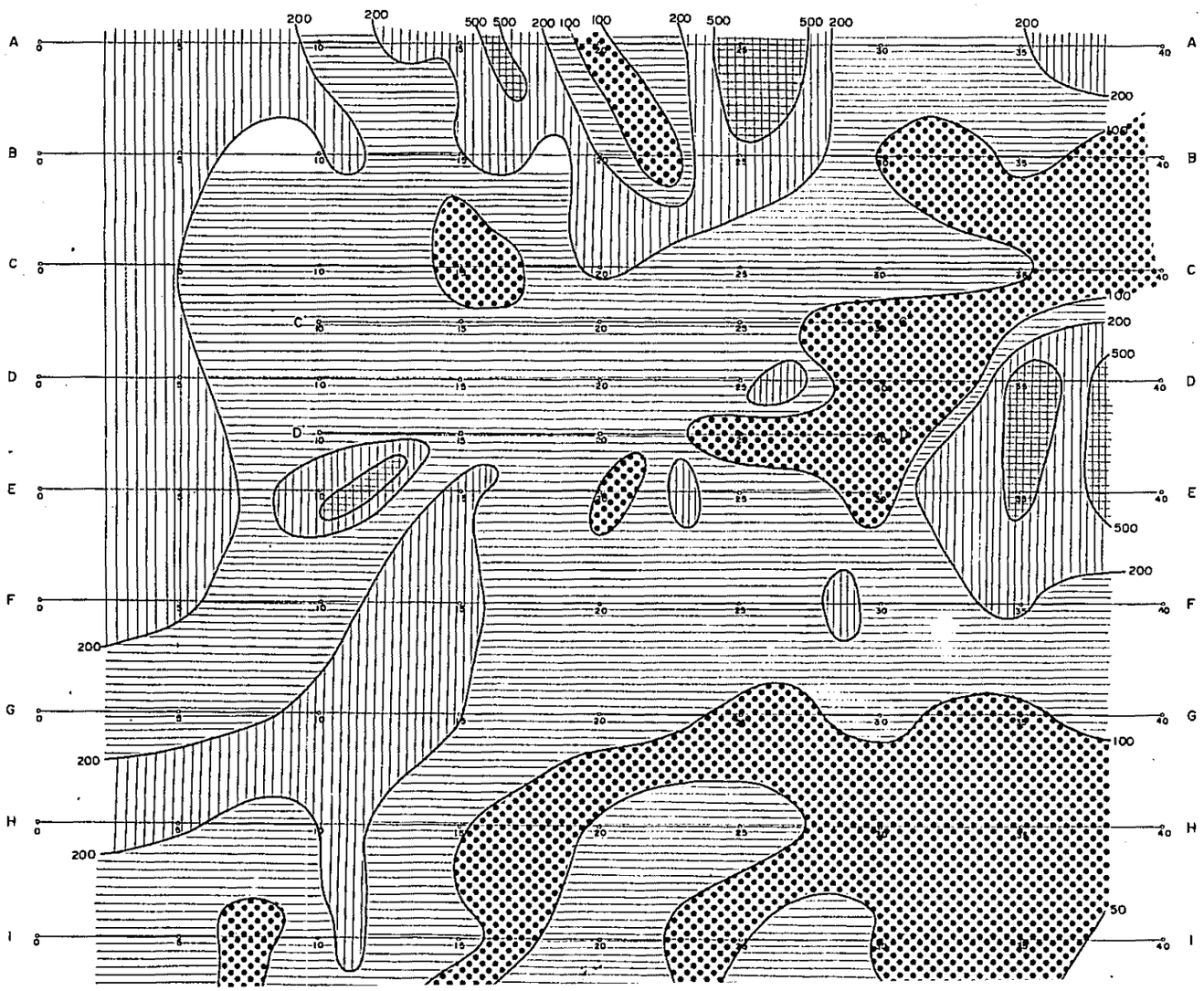
AR

- Less 50 Ω-m
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω m
- 201 ~ 500 Ω-m
- Over 500 Ω-m


H
I
J
K
L
M
N
O
P
Q
H'
I'
J'
K'
L'
M'
N'
O'
P'
Q'
200
100
50
100
200
200
200
100
100
100
100
100
50
50
100

P L.II-4-3 PLAN OF AR 3 700m LEVEL

APPARENT RESISTIVITY (AR : ρ_{Ac_2} ohm-meter)



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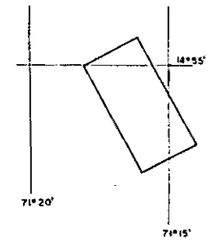
PL.II-4-3

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

PLAN OF AR 3700m LEVEL



Scale 1 : 10000
0 100 200 300 400 500m

LOCALITY INDEX

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JULY 1974

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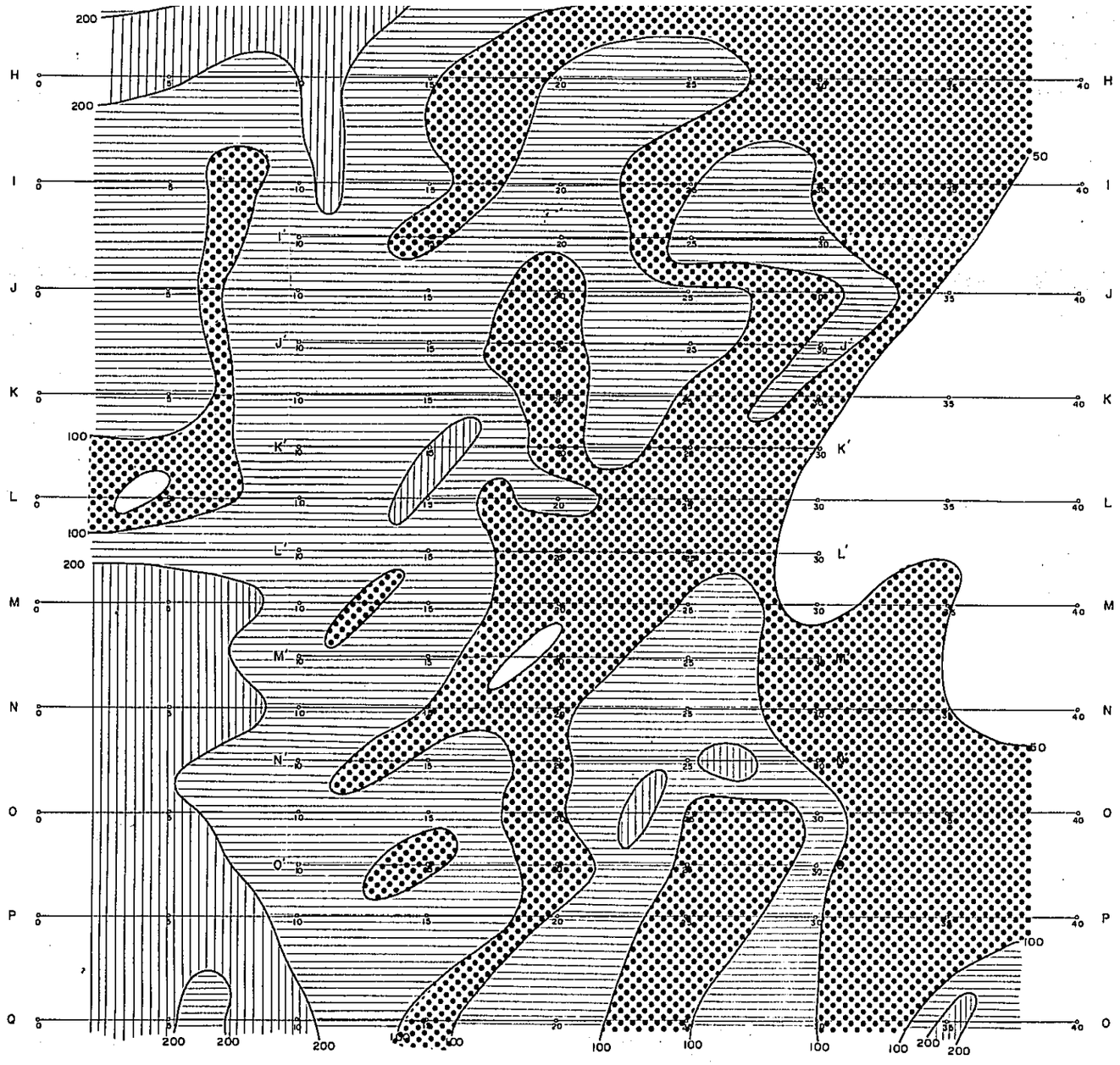
LEGEND

AR

- Less 50 Ω-m
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Over 500 Ω-m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100
50
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O'

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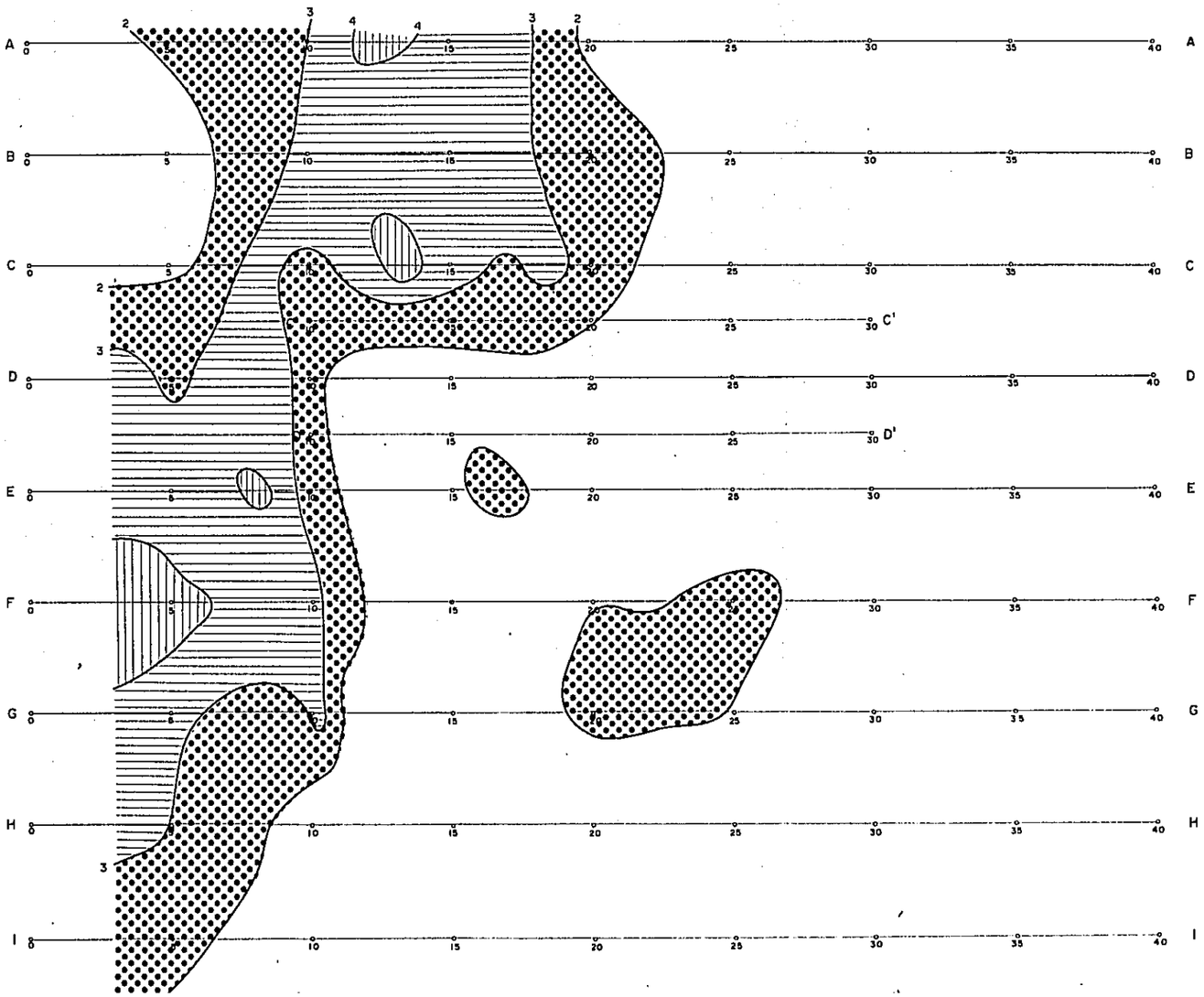
P L.Ⅱ-4-4 PLAN OF FE 3900m LEVEL

FREQUENCY EFFECT 〔FE: $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\ \%$ 〕



LEGEND

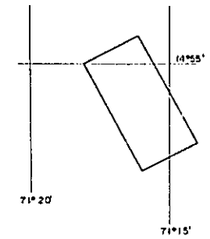
FE

- Less 2 %
- 2% ~ 3%
- 3% ~ 4%
- Over 4%

PL.Ⅱ-4-4

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

PLAN OF FE 3900m LEVEL



Scale 1:10.000

0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
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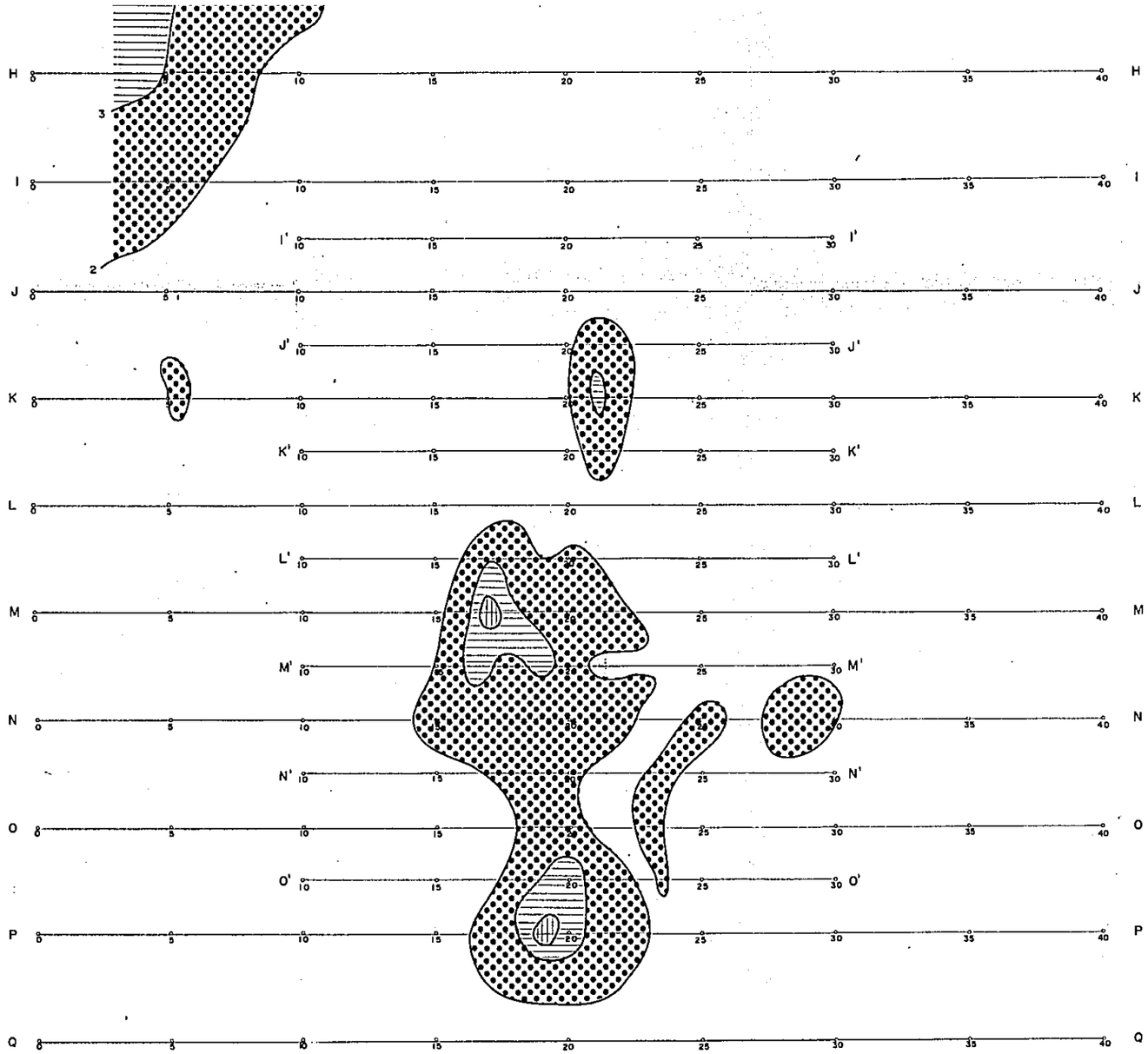
H
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2

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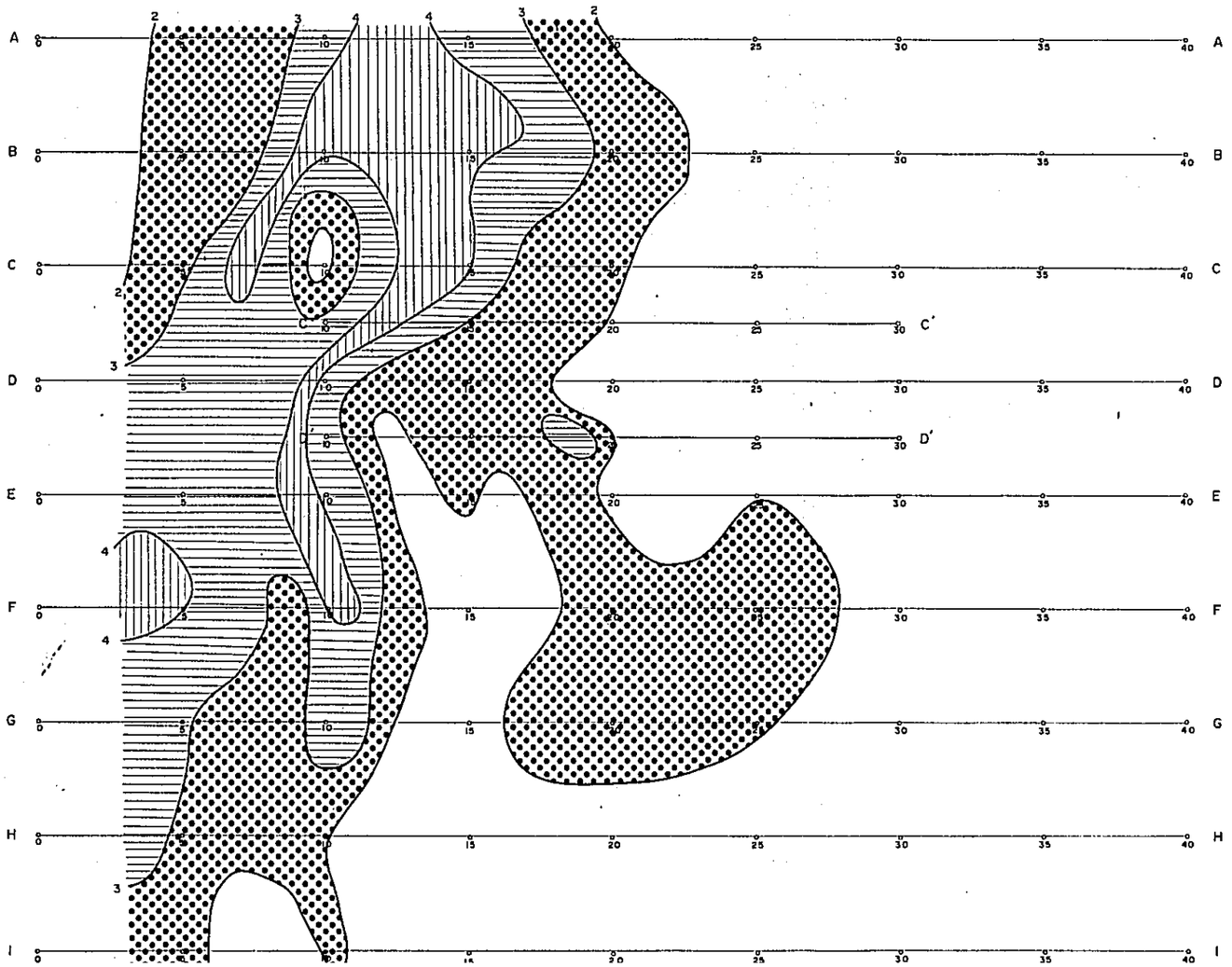
P L.II-4-5 PLAN OF FE 3 800m LEVEL

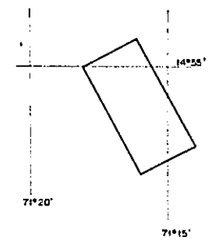
FREQUENCY EFFECT [FE : $(f_{AC1} - f_{AC2}) \div f_{AC2} \times 100\ \%$]



PL.II-4-5

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

PLAN OF FE 3800m LEVEL



Scale 1 : 10,000
0 100 200 300 400 m/m

LOCALITY INDEX

LEGEND

FE

- Less 2%
- 2% ~ 3%
- 3% ~ 4%
- Over 4%

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
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JULY 1974

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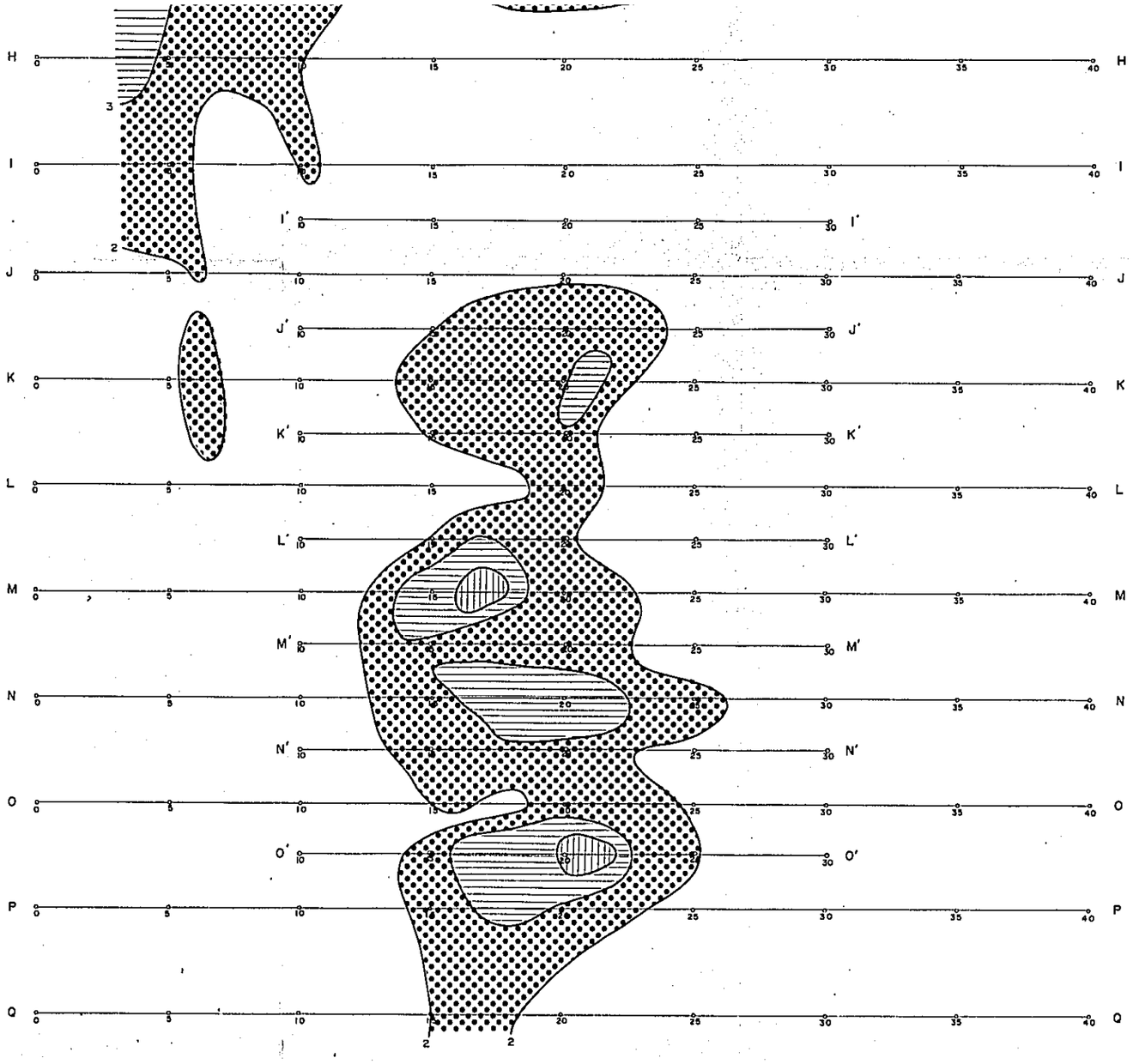
H
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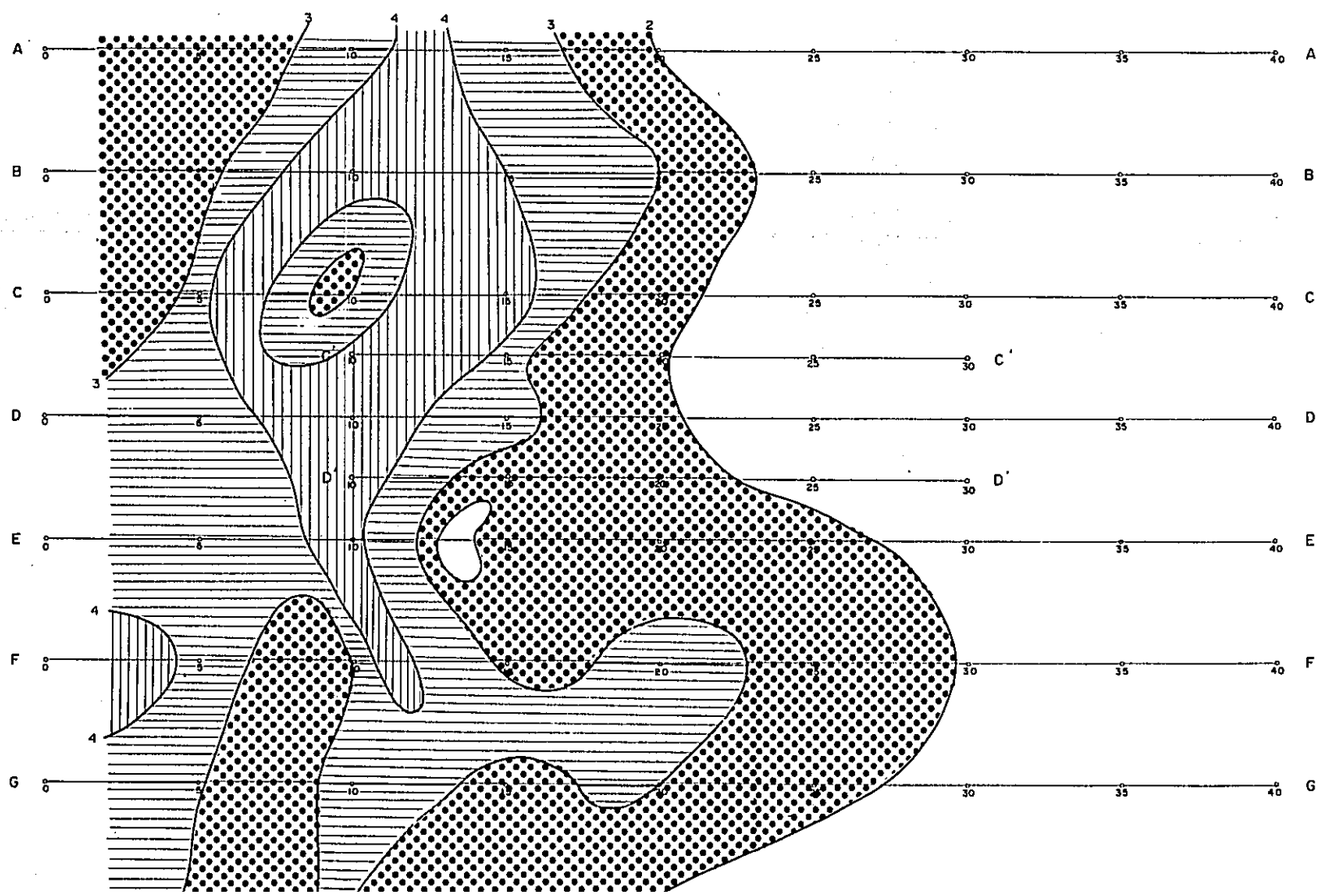
P L.II-4-6 PLAN OF FE 3 700m LEVEL

FREQUENCY EFFECT 〔FE : $(f_{AC_1} - f_{AC_2}) \div f_{AC_2} \times 100\ \%$ 〕



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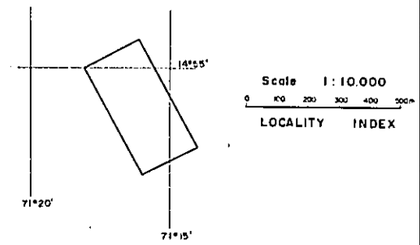
PL.II-4-6

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

PLAN OF FE 3700m LEVEL



METAL MINING AGENCY
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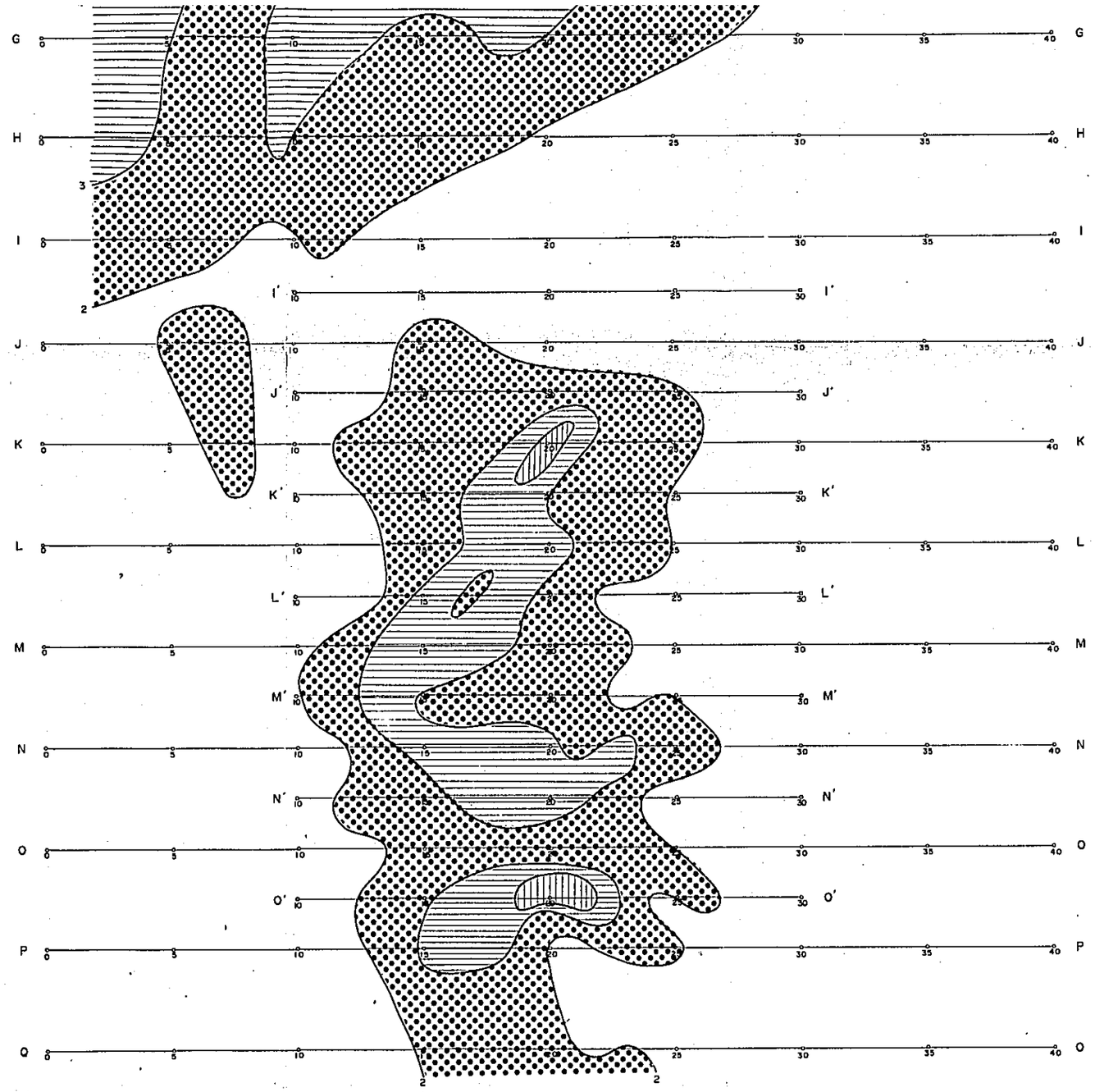
LEGEND

FE

- Less 2%
- 2% ~ 3%
- 3% ~ 4%
- Over 4%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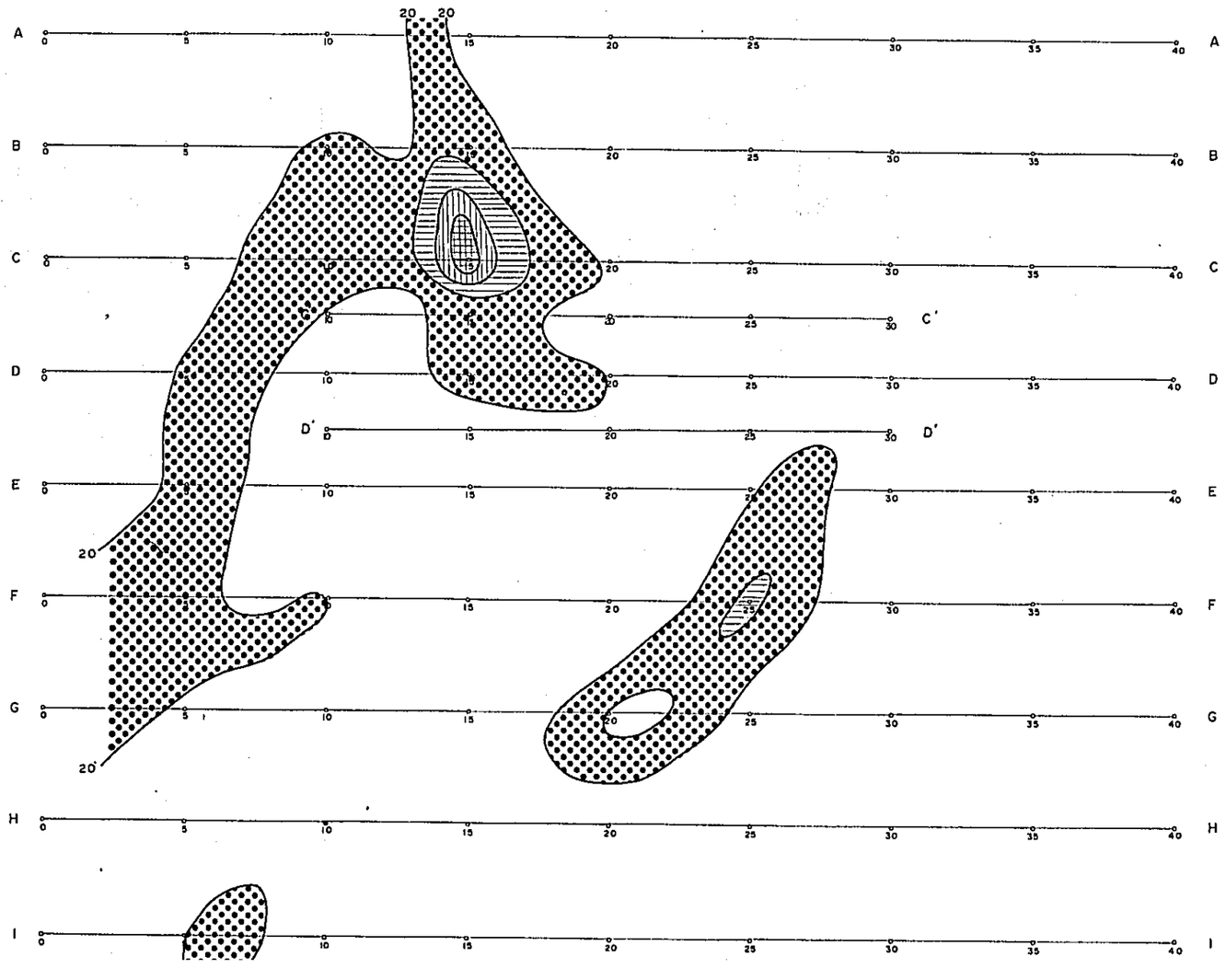
PL.II-4-7 PLAN OF MF 3900m LEVEL

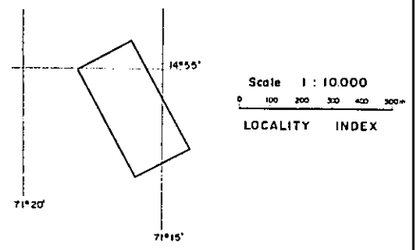
METAL FACTOR [MF: FE x 1000 ÷ $\sqrt{Ac_2}$]



PL.II-4-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

PLAN OF MF 3900m LEVEL



Scale 1 : 10.000
0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
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JULY 1974

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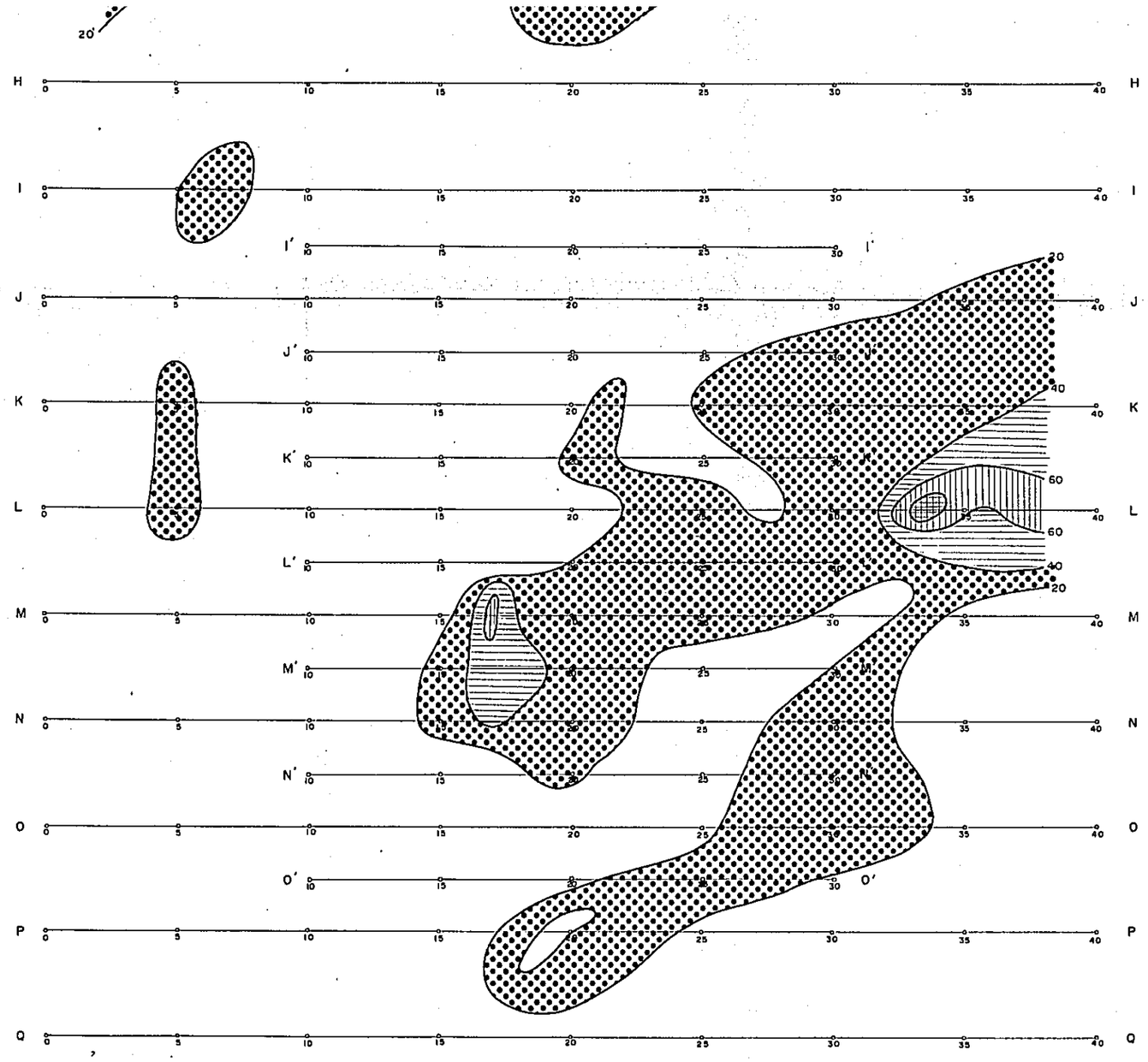
LEGEND

MF

	Less 20
	20 ~ 40
	40 ~ 60
	60 ~ 80
	Over 80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25
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35
40
60

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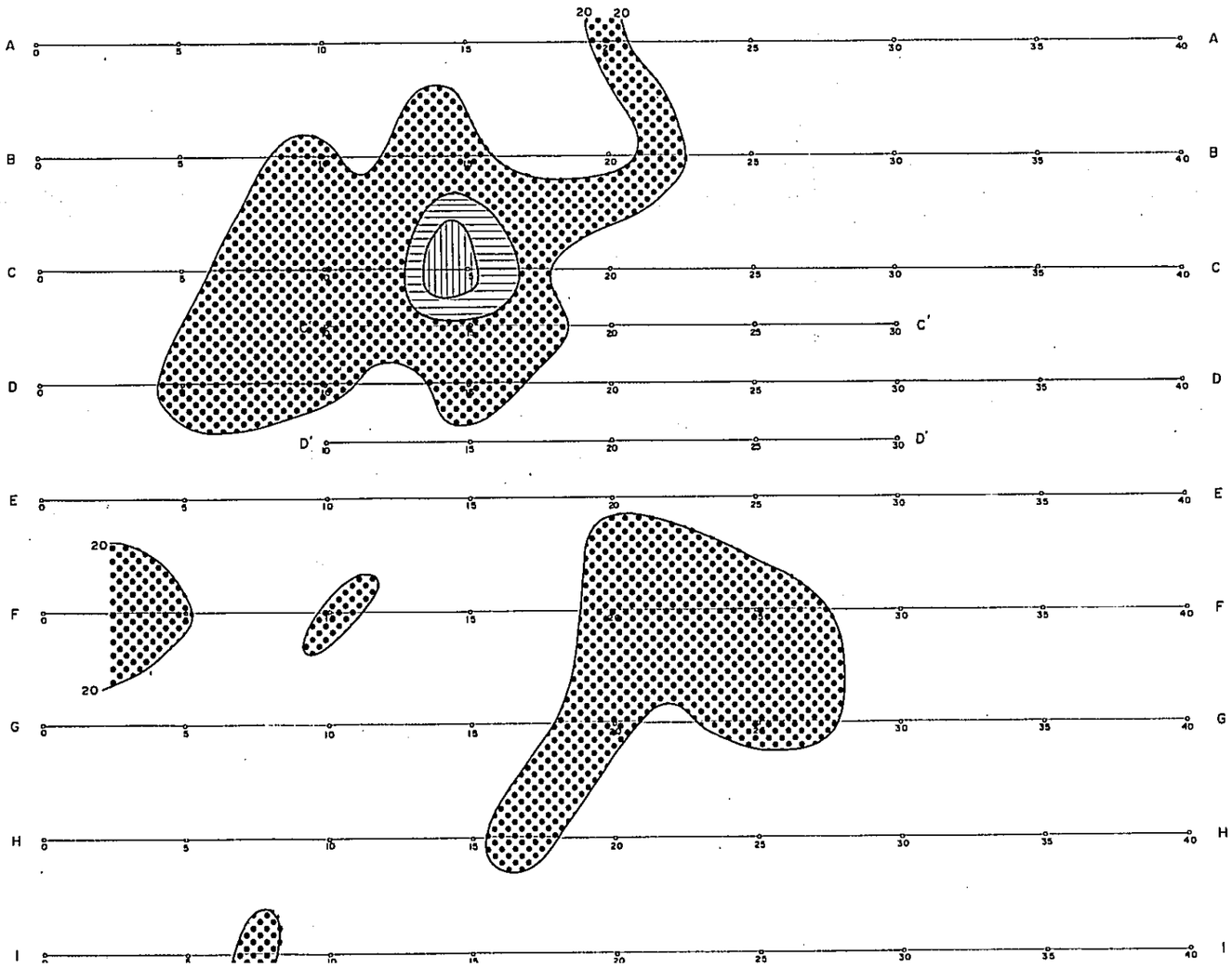
PL.Ⅱ-4-8 PLAN OF MF 3800m LEVEL

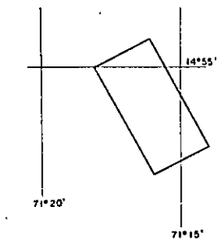
METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



PL.Ⅱ-4-8

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

PLAN OF MF 3800m LEVEL



Scale 1 : 10000
0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
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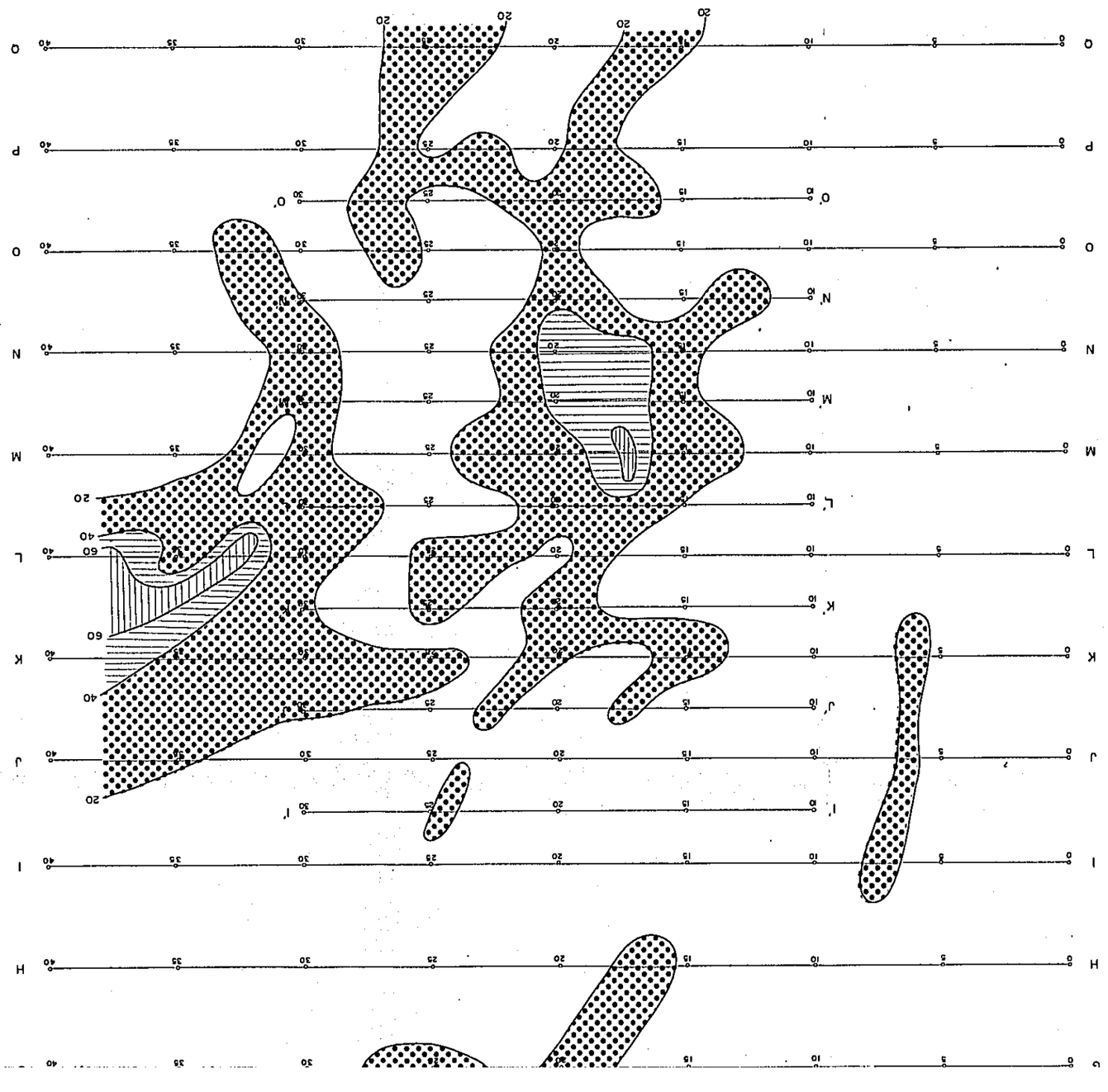
LEGEND

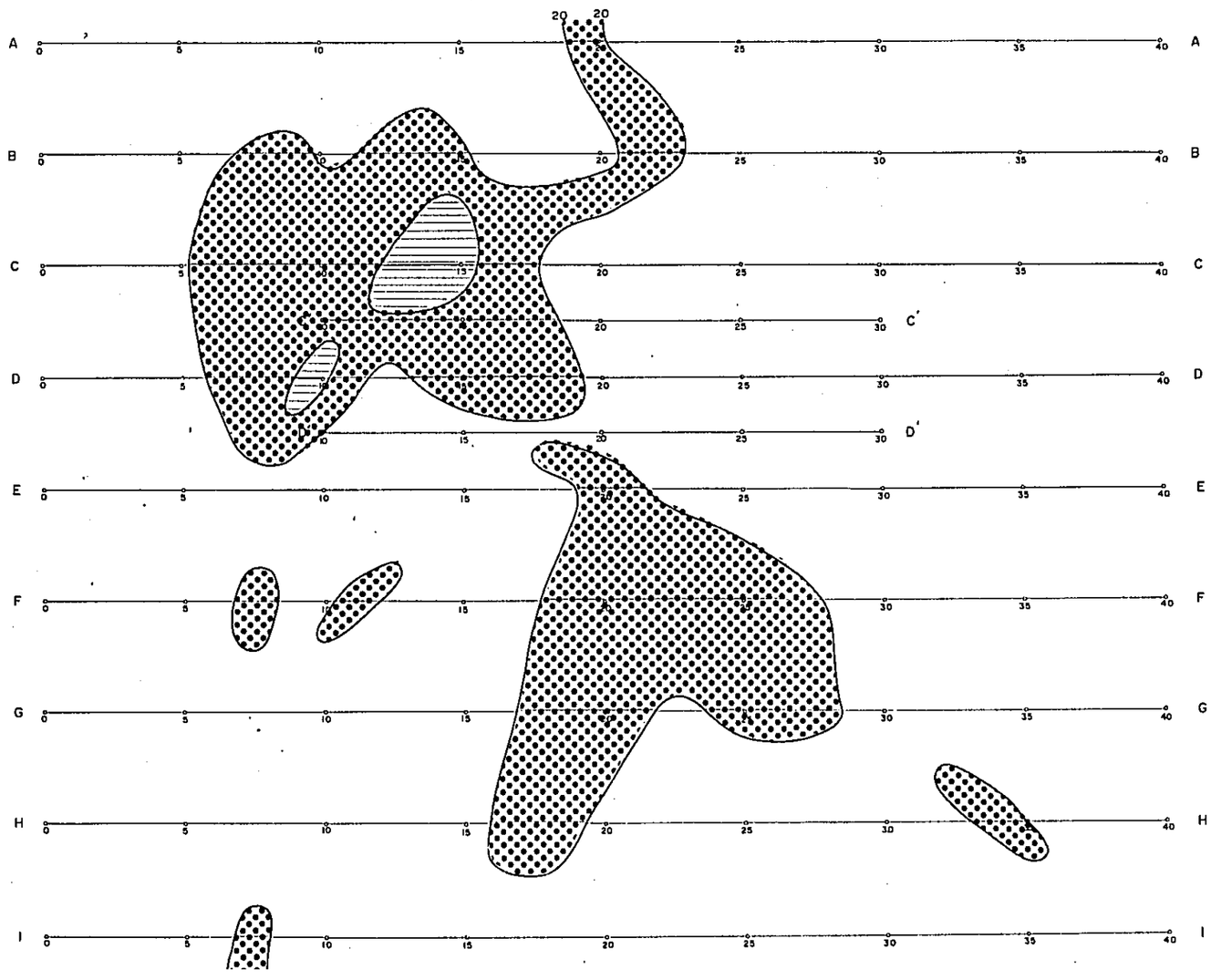
MF

- Less 20
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- Over 80



P L.Ⅱ-4-9 PLAN OF MF 3 700m LEVEL

METAL FACTOR [MF : FE x 1000 ÷ f_{AC_2}]



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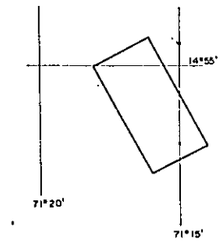
PL.Ⅱ-4-9

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

PLAN OF MF 3700m LEVEL



Scale 1 : 10,000
0 100 200 300 400 500m

LOCALITY INDEX

METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
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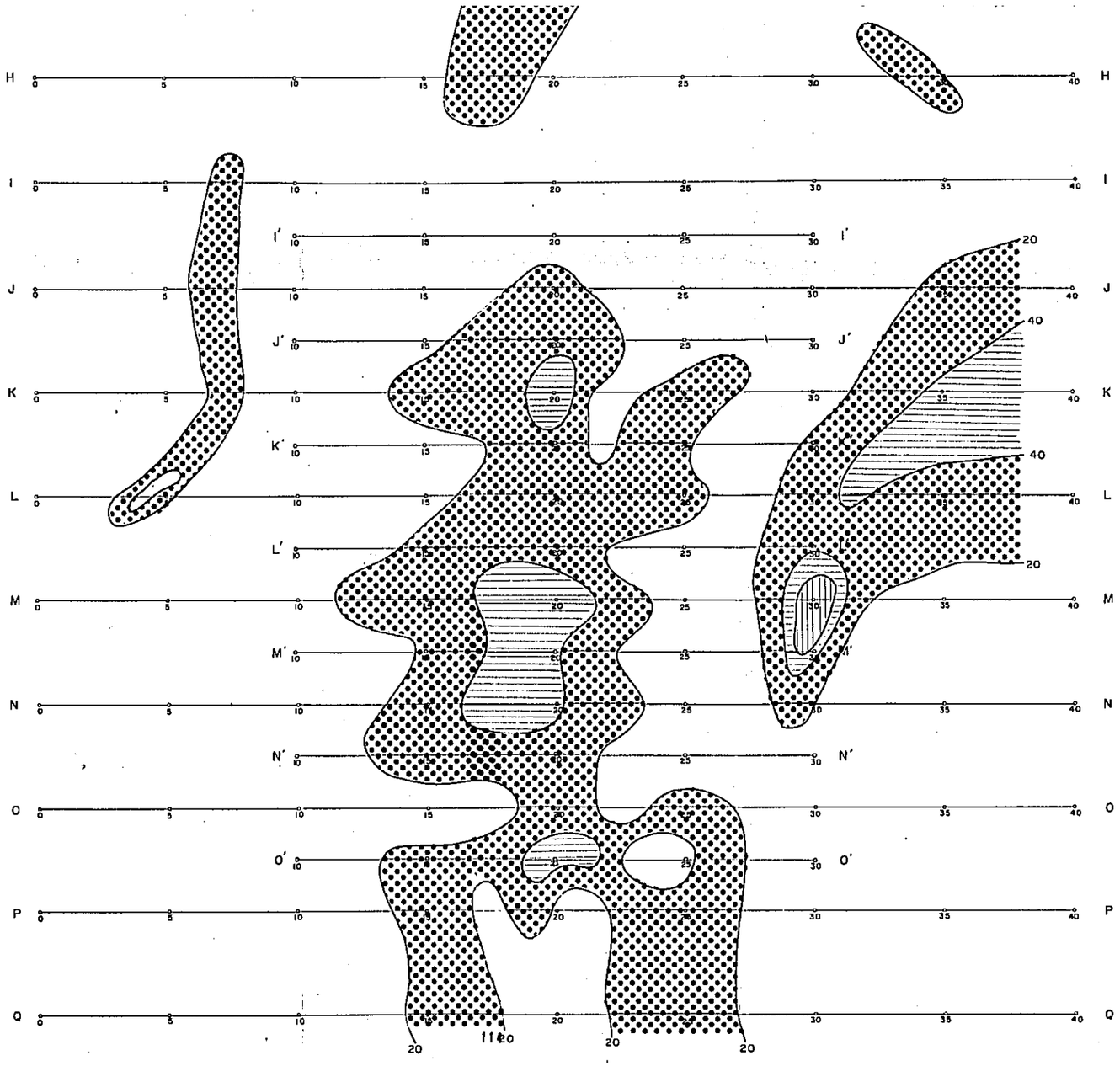
LEGEND

MF
- Less 20
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- Over 80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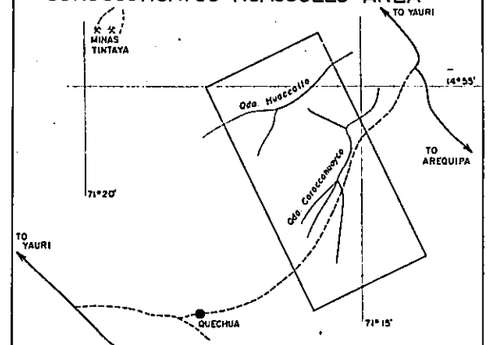
GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU

(PHASE III)

I.P ANOMALY MAP WITH GEOLOGY OF COROCCOHUAYCO-HUACCOLLO AREA



METAL MINING AGENCY

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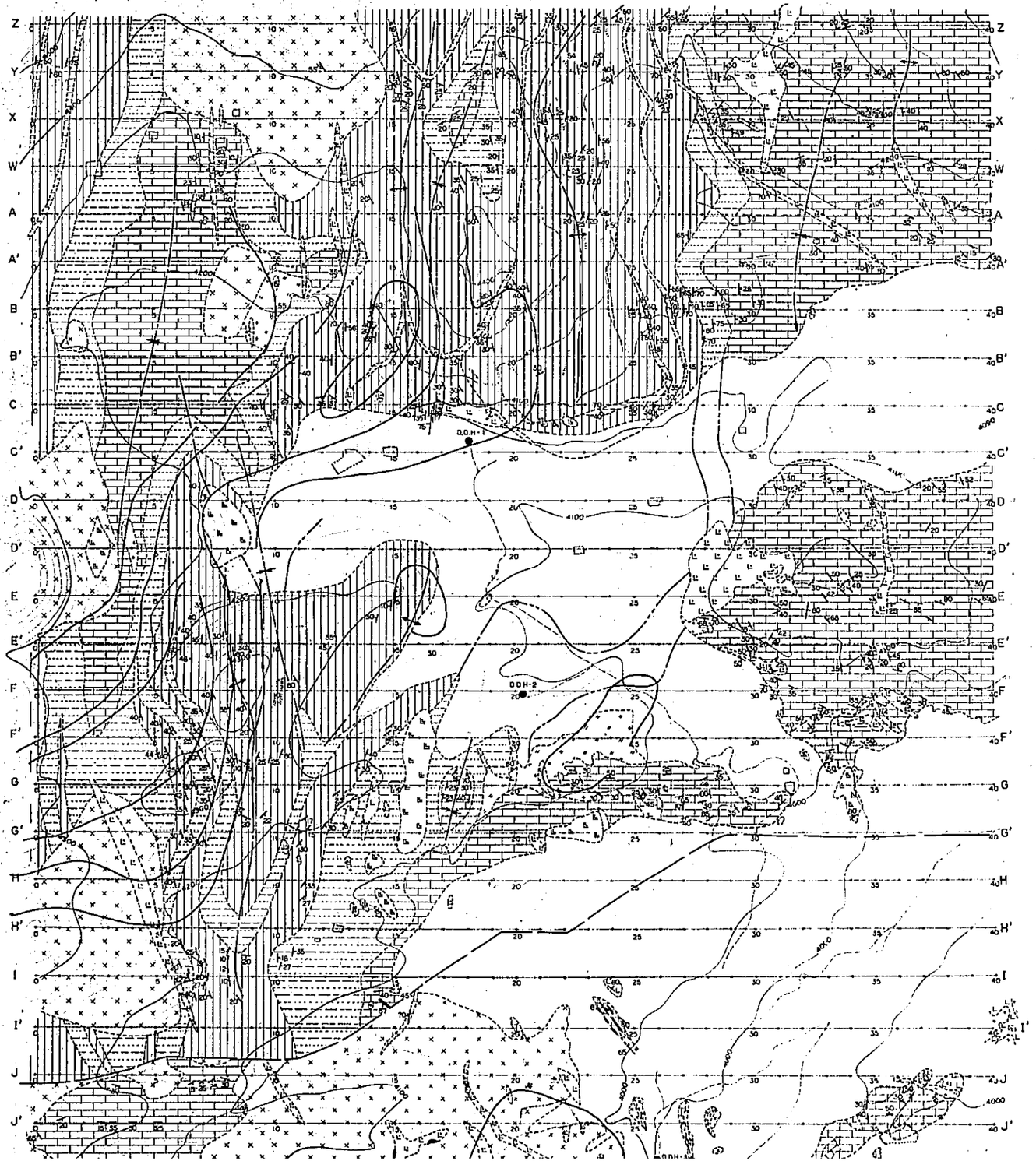
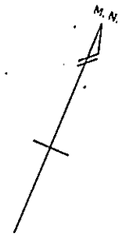


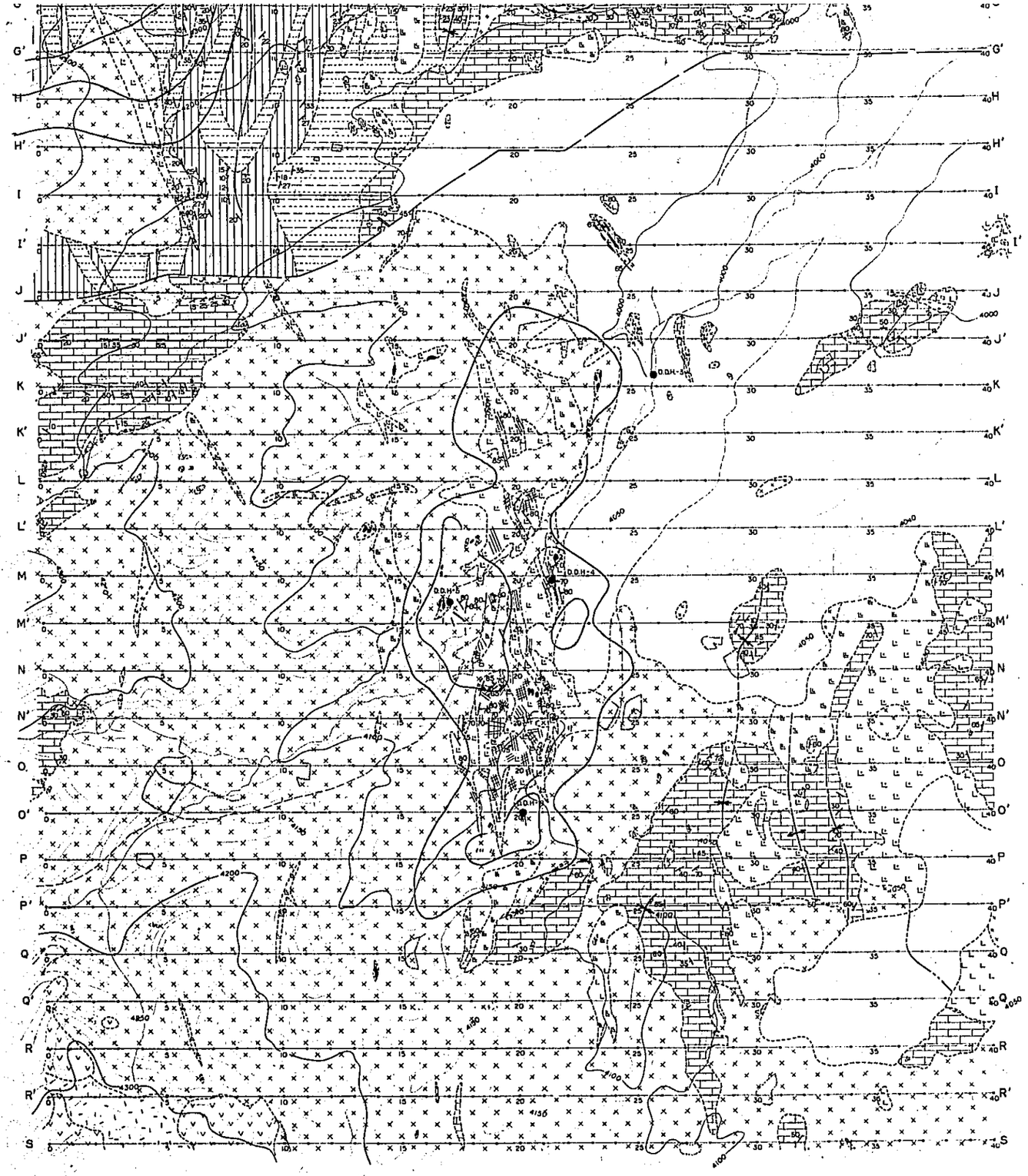


0 200 400 600 800 1,000m

Scale 1 : 10,000

LEGEND

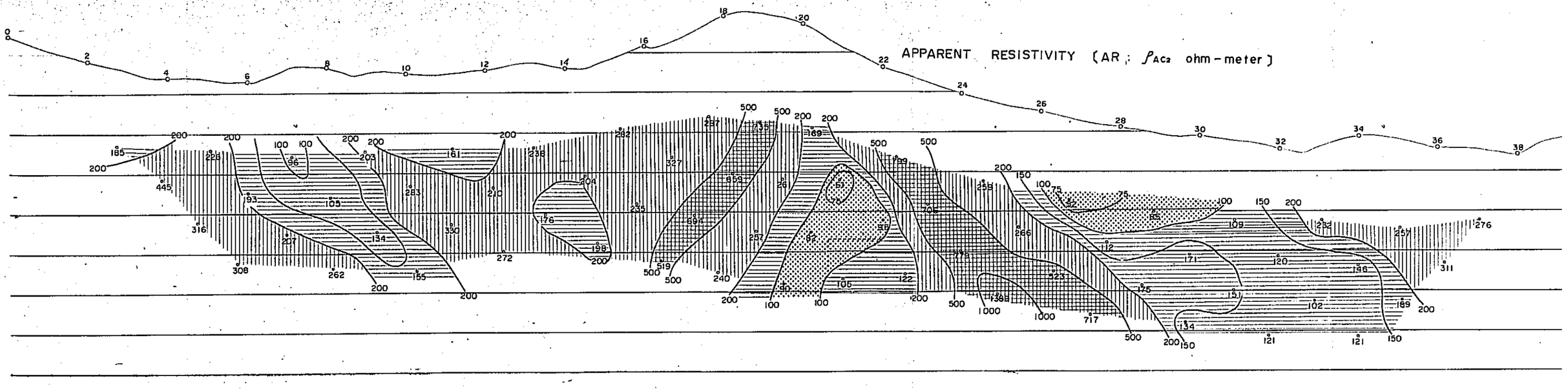
- Alluvium / Glacial deposit
- Andesite / Basalt
- Rhyolitic tuff
- Limestone
- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite
- Skarn (magnetite, garnet, etc.)
- Copper showing
- Bedding plane



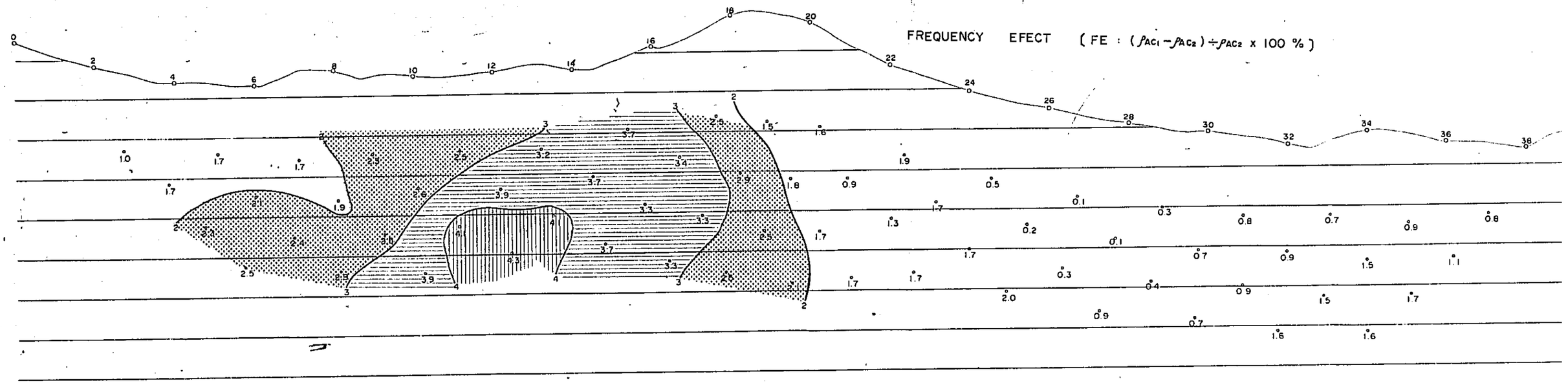
- Andesite / Basalt
- Rhyolitic tuff
- Limestone
- Shale / Sandstone
- Quartzite
- Granite porphyry
- Quartz monzonite porphyry
- Granodiorite porphyry
- Granodiorite
- Gabbro / Diorite / Quartz diorite
- Skarn (magnetite, garnet, etc.)
- Copper showing
- Bedding plane
- Fault
- Fracture / Quartz vein
- Axis of anticline
- Axis of syncline
- Subsurface rock-boundary estimated
- DDH-1 Location of drilling hole
- 2 FE 2% 以上
- 3 FE 3% 以上
- 4 FE 4% 以上
- 測線

PL. II-6-1 I P PROFILE ON LINE No.A

APPARENT RESISTIVITY (AR ; ρ_{AC_2} ohm-meter)

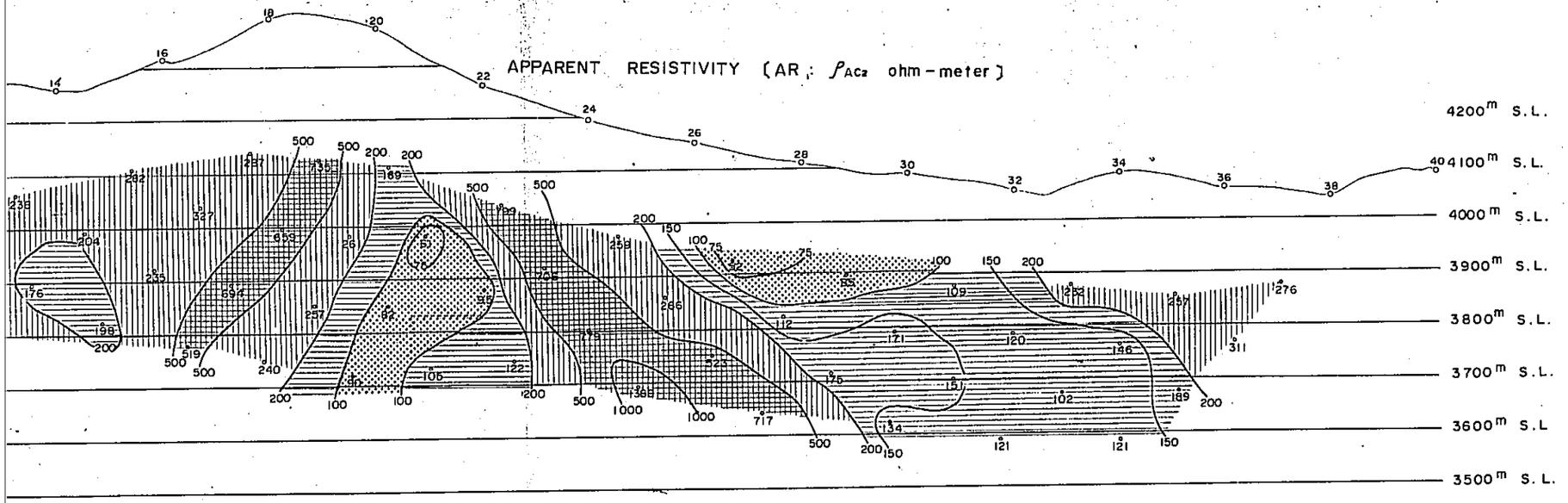


FREQUENCY EFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)

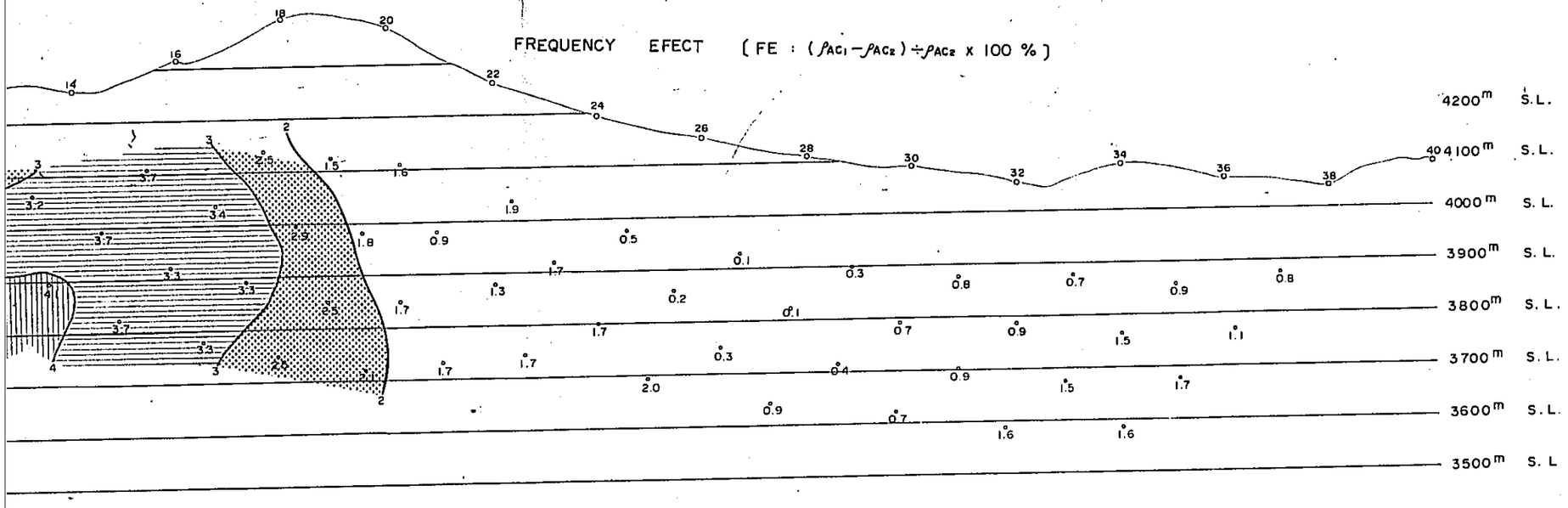


PL. Ⅱ-6-1 IP PROFILE ON LINE No.A

APPARENT RESISTIVITY (AR ; ρ_{Ac_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



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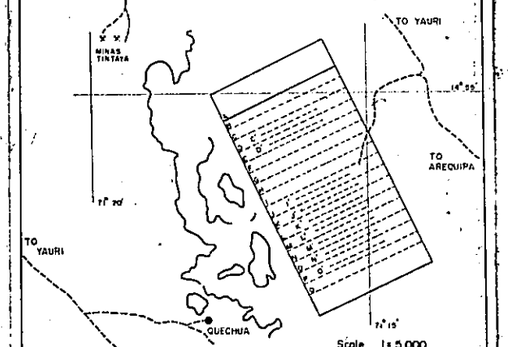
PL.Ⅱ-6-1

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE **A**



METAL MINING AGENCY
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JULY 1974

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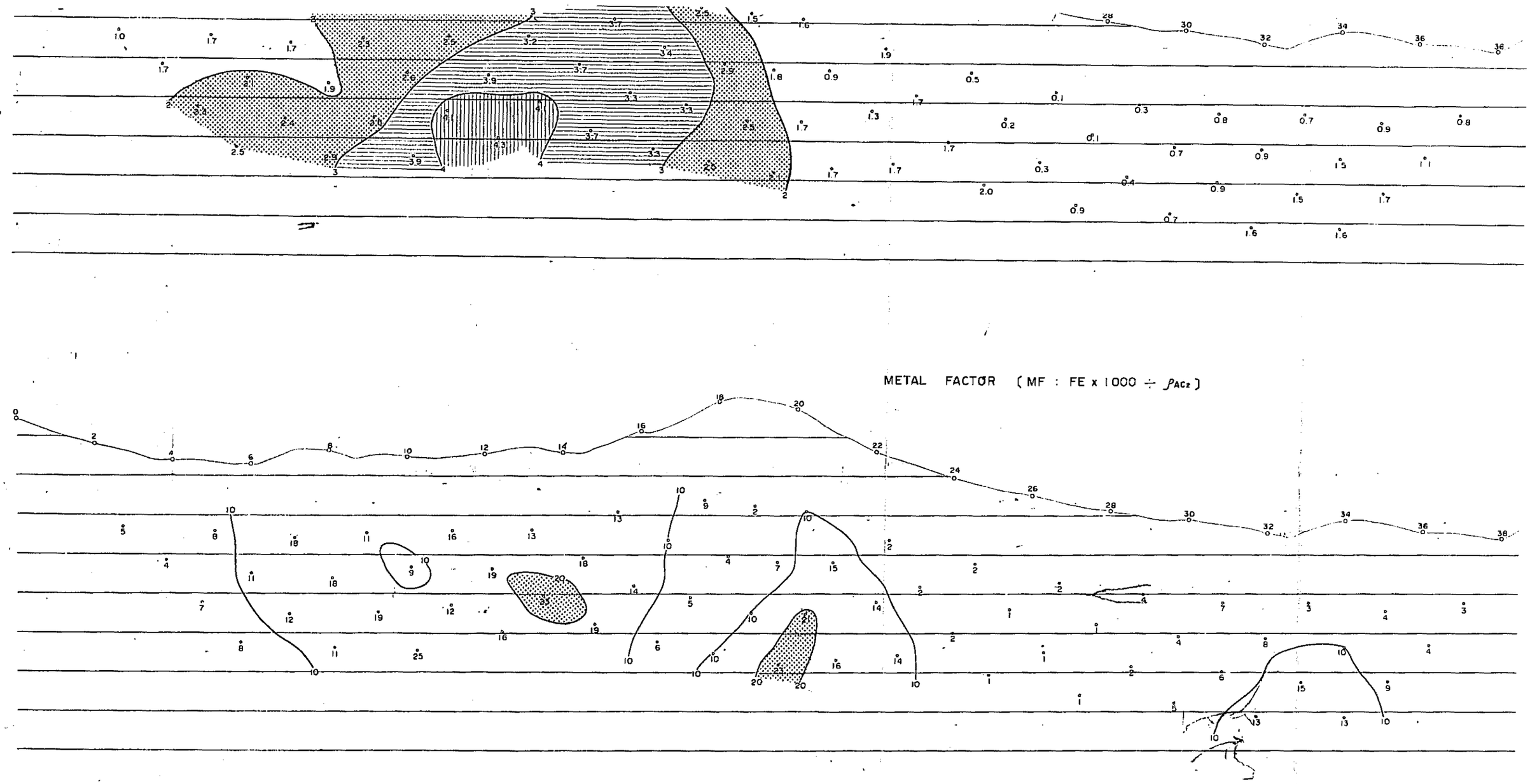
LEGEND

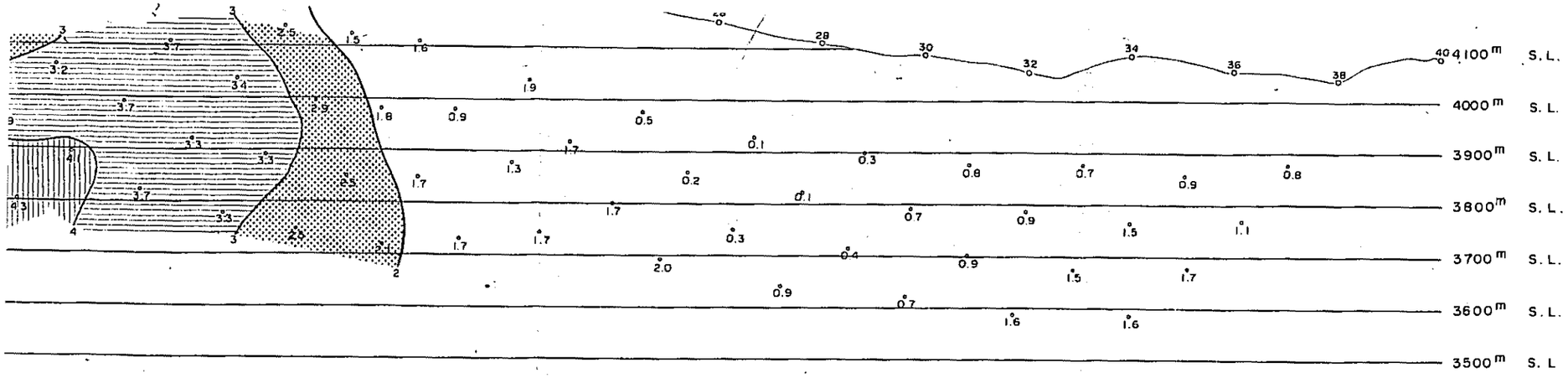
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

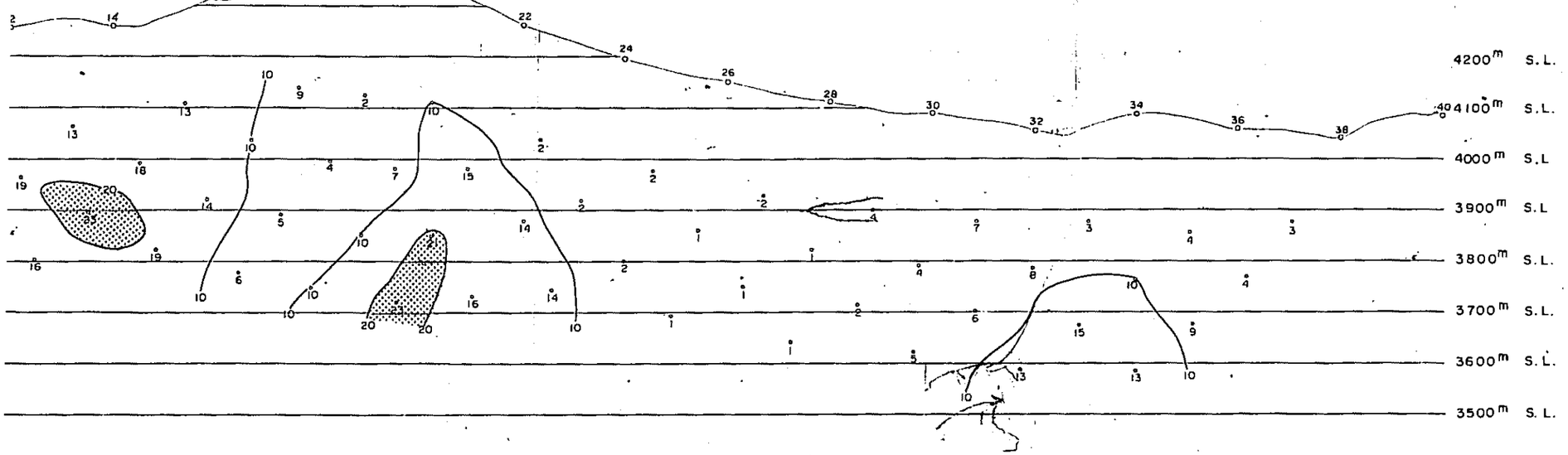
FE

- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF

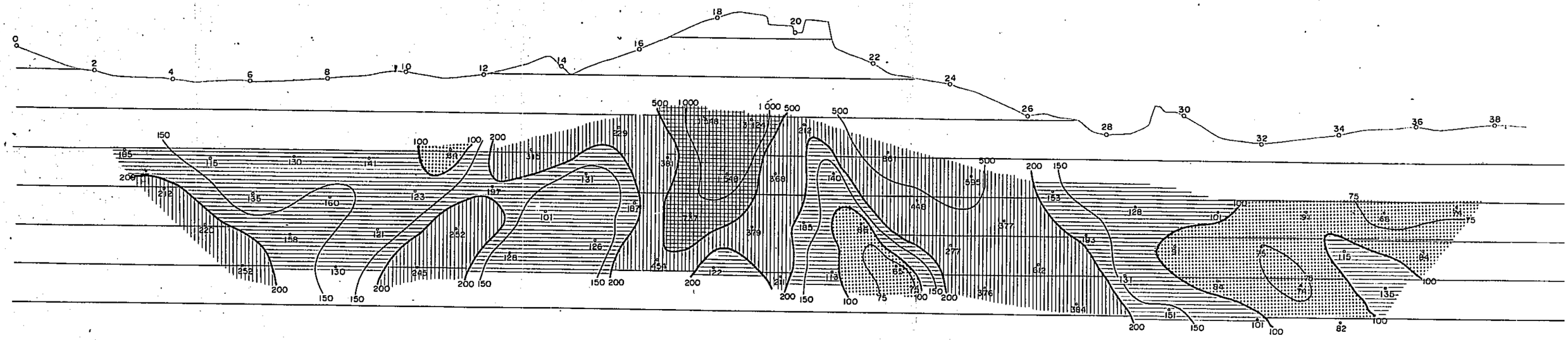
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})

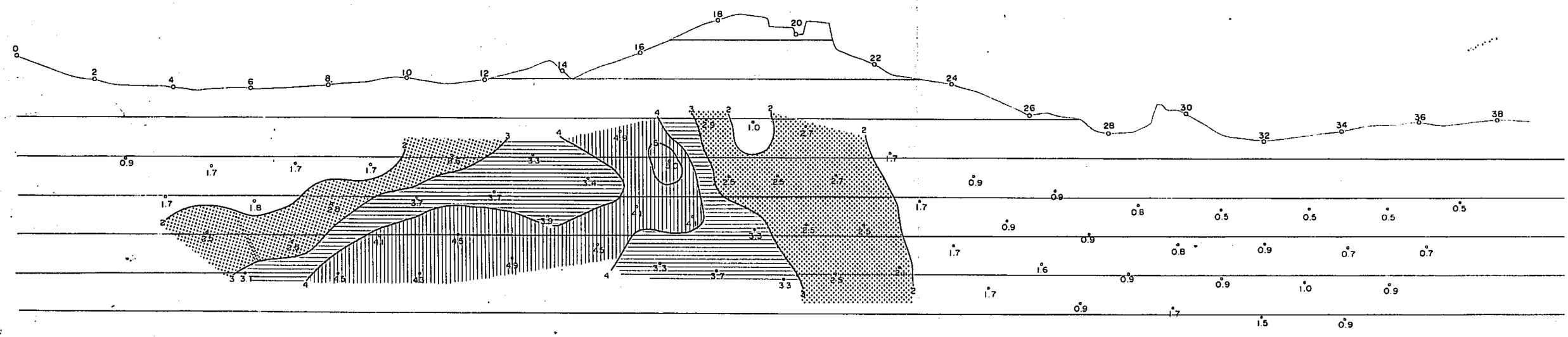


PL. II-6-2 IP PROFILE ON LINE No.B

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



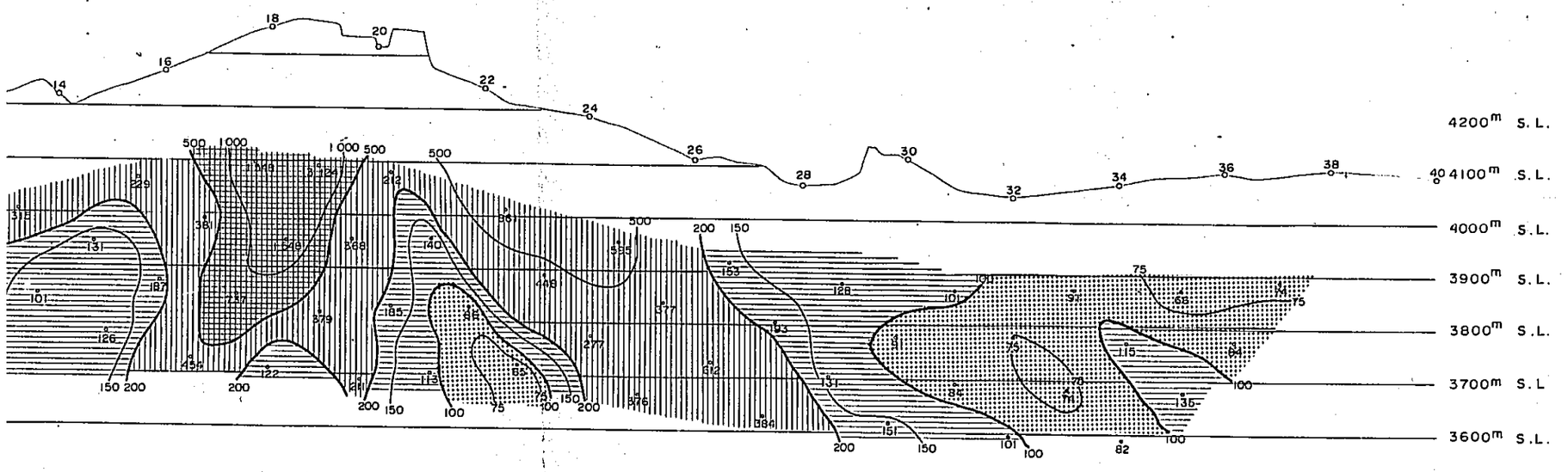
FREQUENCY EFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



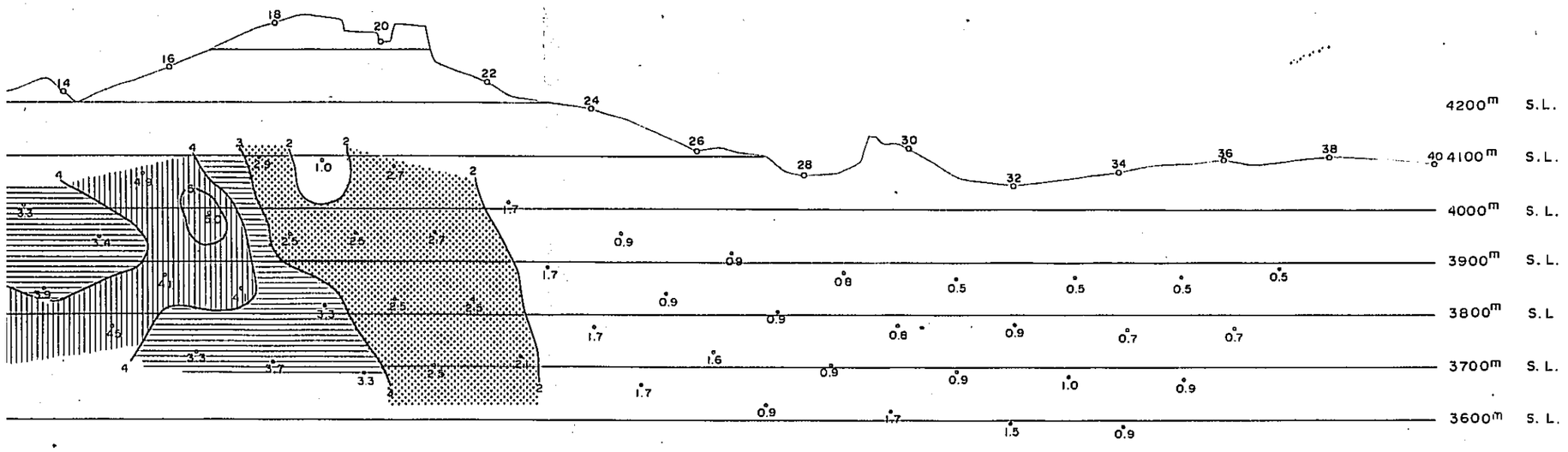
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL. Ⅱ-6-2 IP PROFILE ON LINE No.B

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

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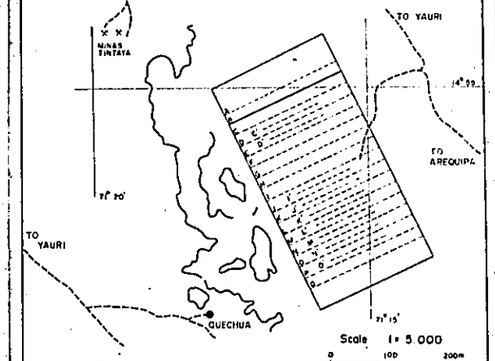
PLⅡ-6-2

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)
IP PROFILE ON LINE **B**



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

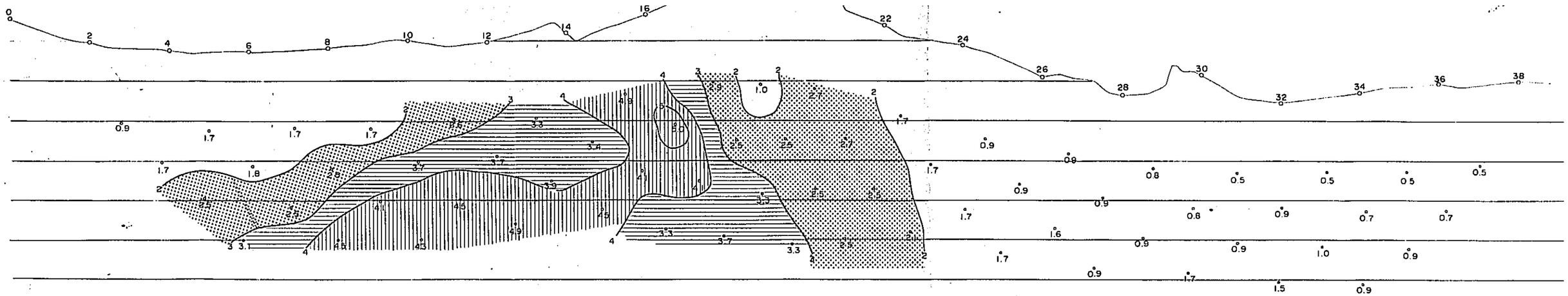
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

LEGEND

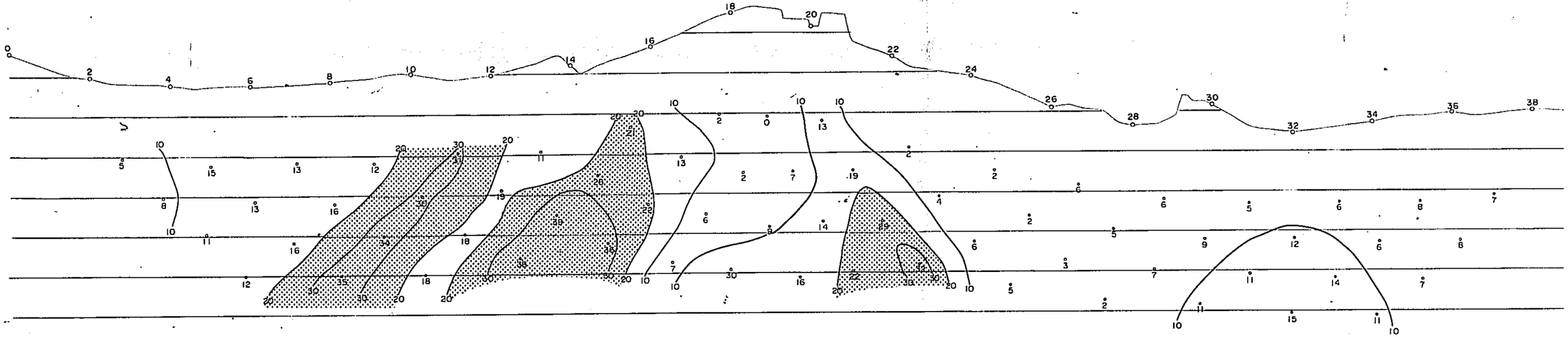
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

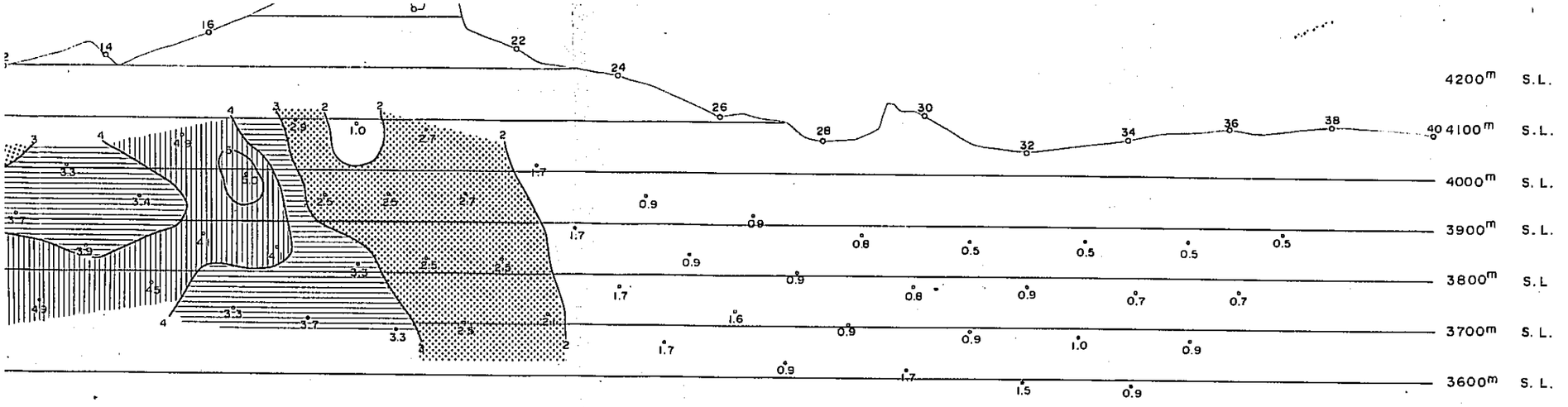
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

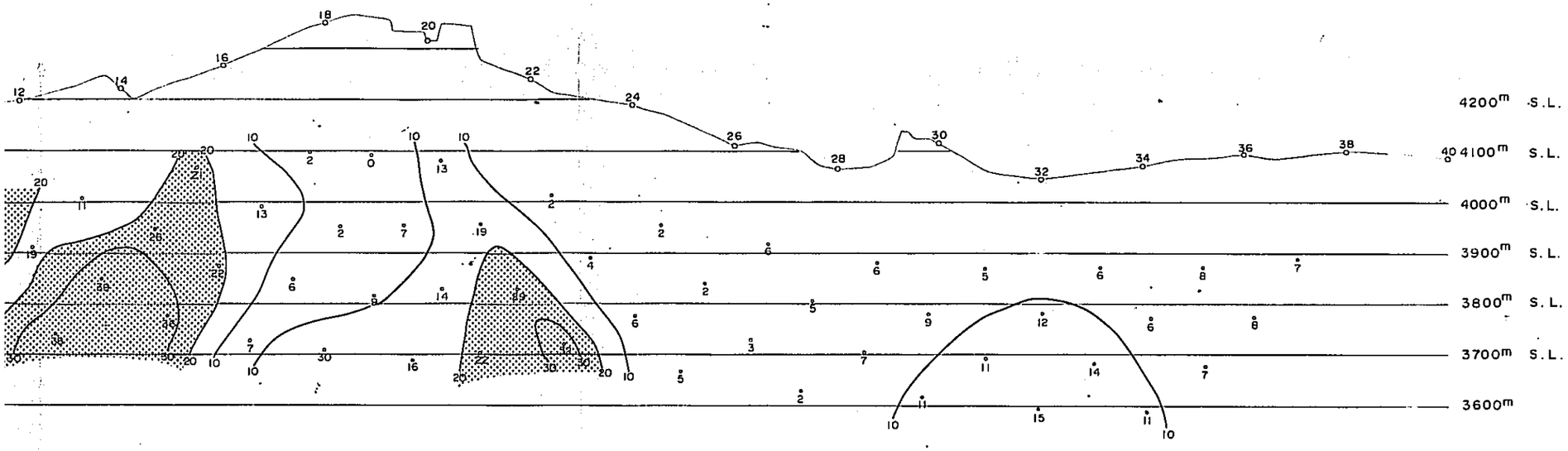


METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})





METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

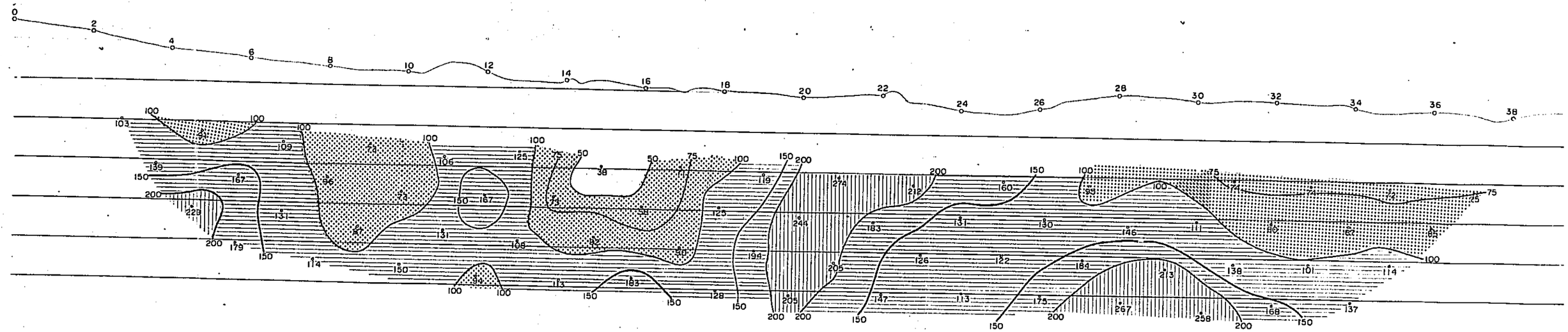
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF

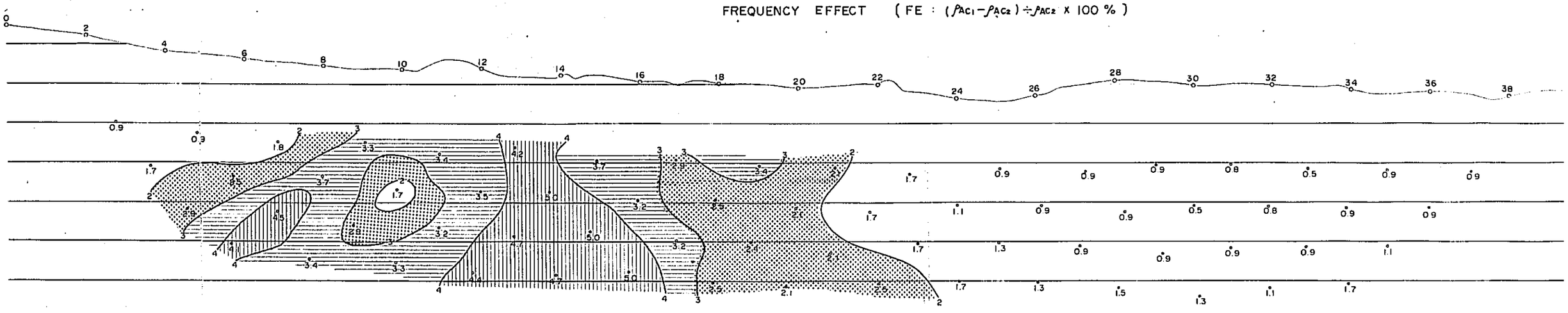
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-3 IP PROFILE ON LINE No.C

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)

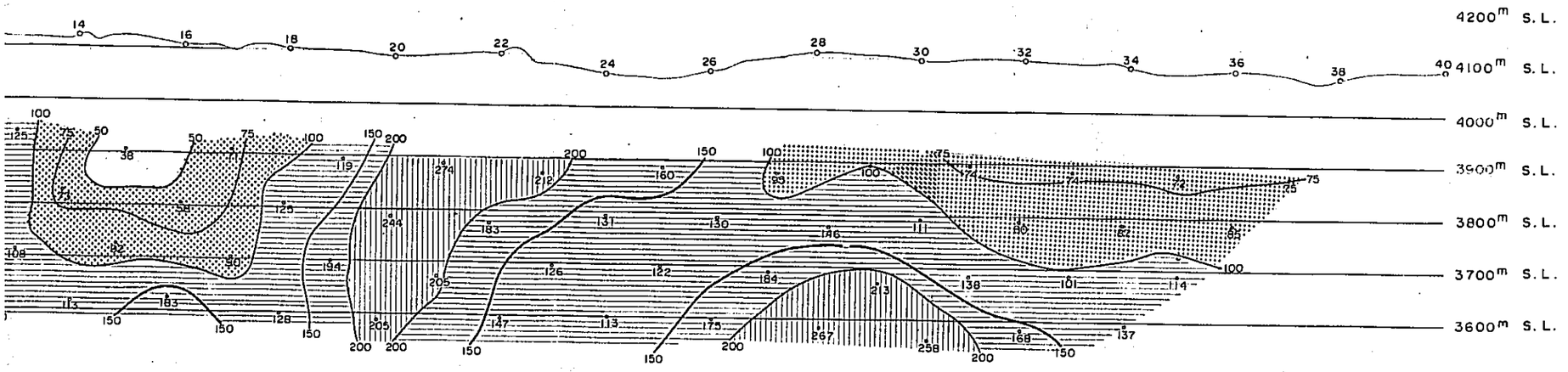


FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)

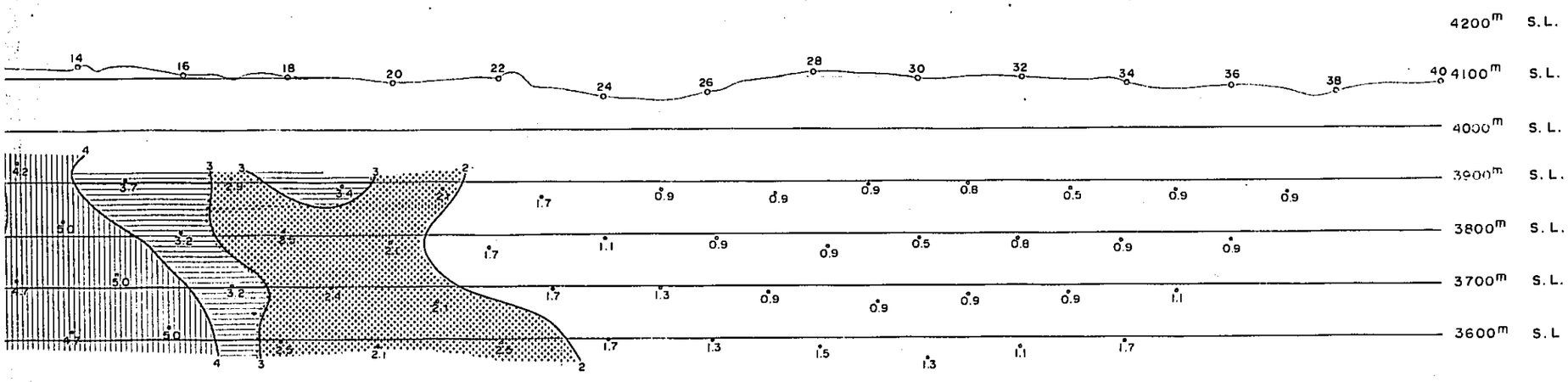


PL. Ⅱ-6-3 IP PROFILE ON LINE No.C

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)



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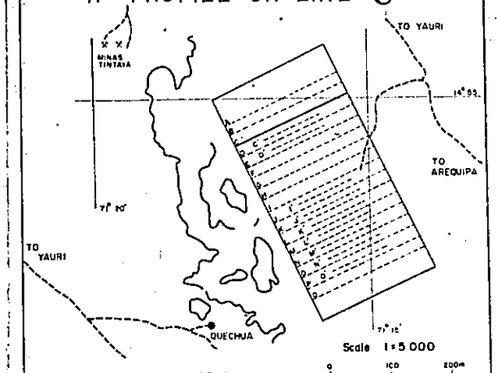
PL.Ⅱ-6-3

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE C



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

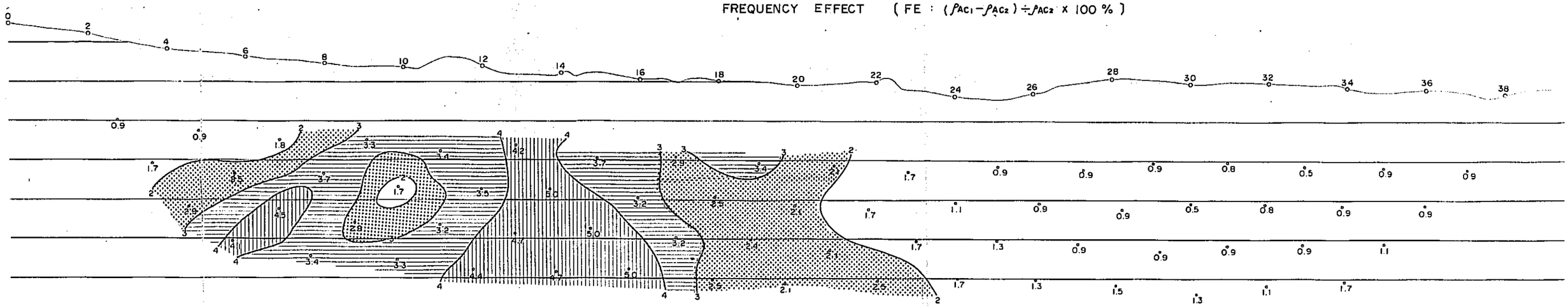
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

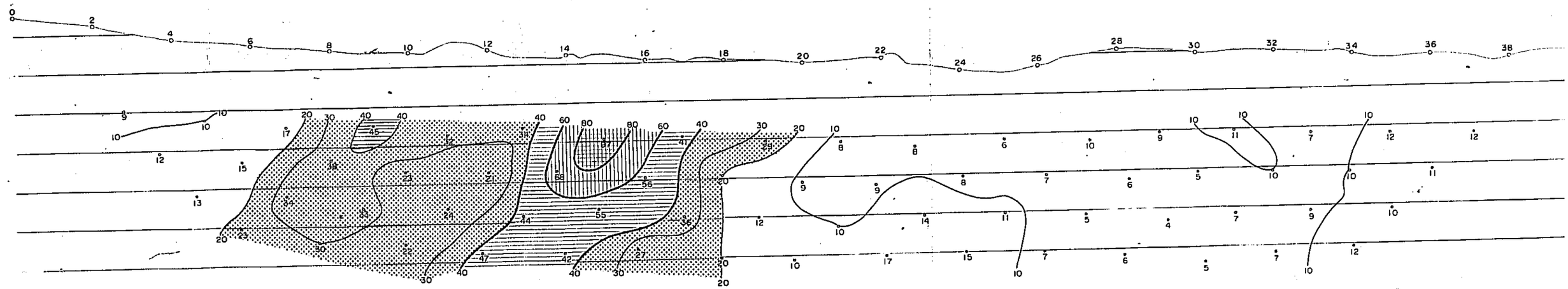
FE
- 2 % Less
- 2% ~ 3%
- 3 % ~ 4 %
- 4 % Over

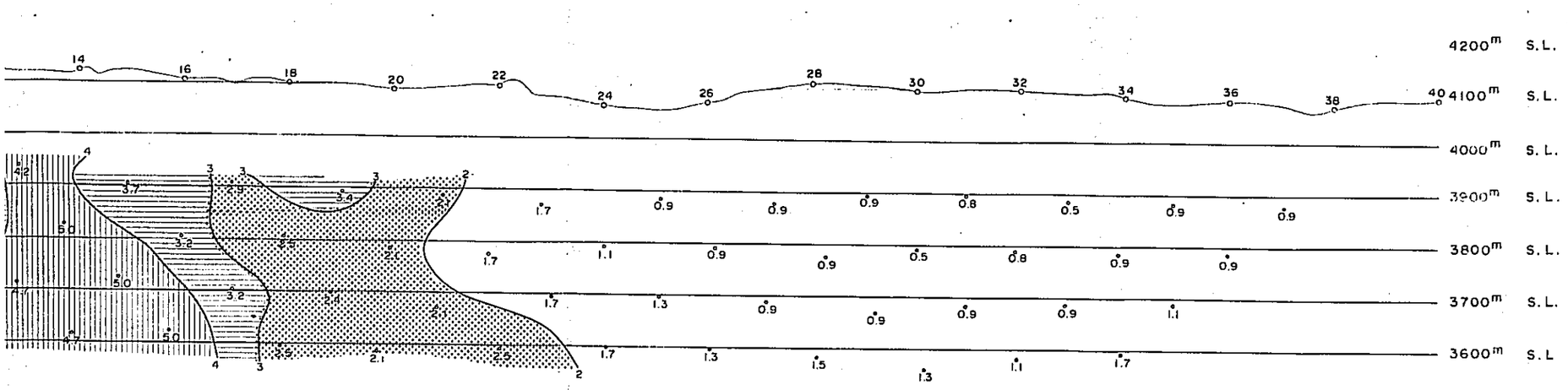
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)

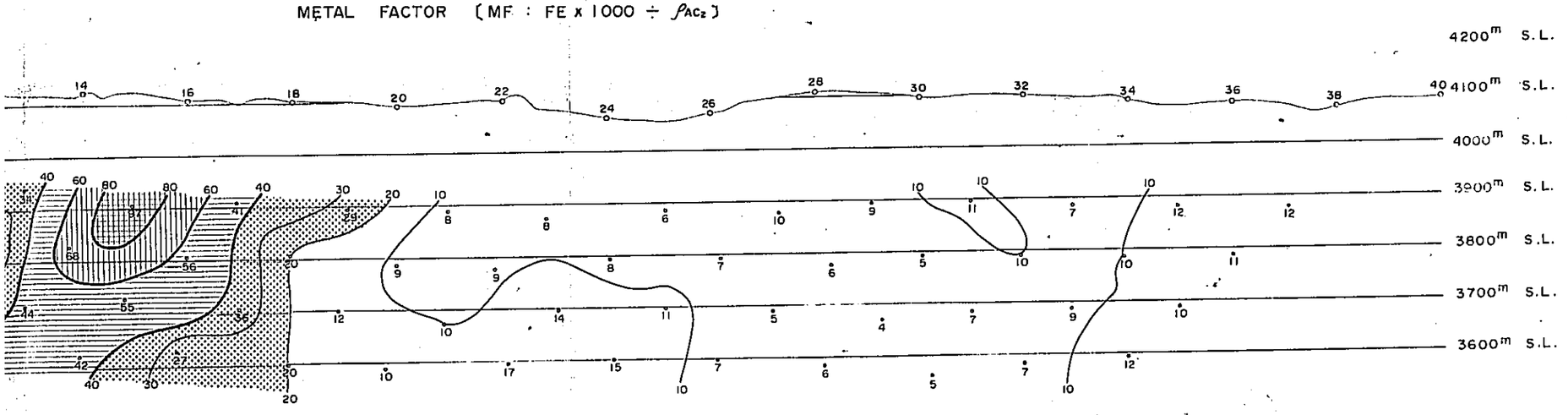


METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})





METAL FACTOR (MF : FE x 1000 ÷ ρ_{Ac_2})



LEGEND

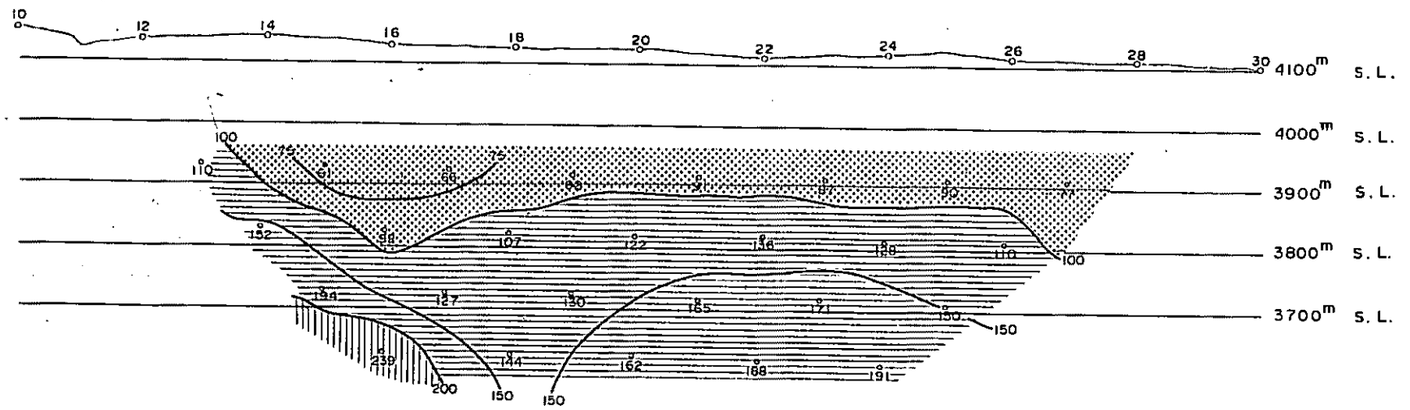
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3%
- 3% ~ 4 %
- 4% Over

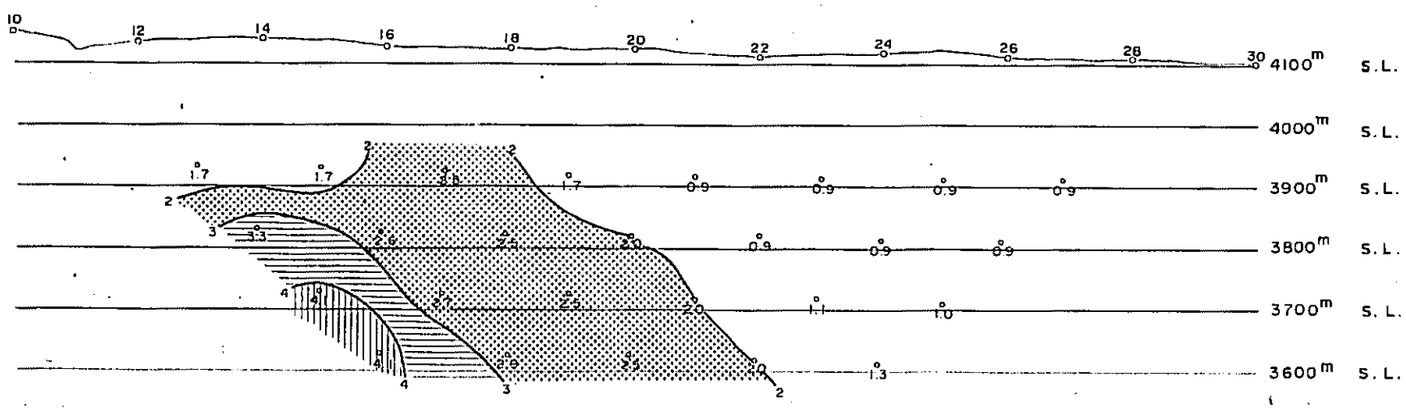
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

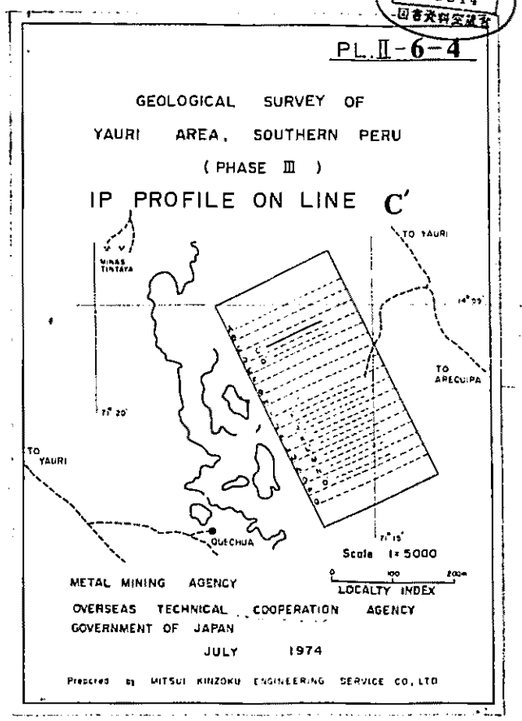
PL. Ⅱ-6-4　IP PROFILE ON LINE No.C'

APPARENT RESISTIVITY AR : ρ_{ACa} Ohm-meter



EFREQUENCY FFECT (FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %)





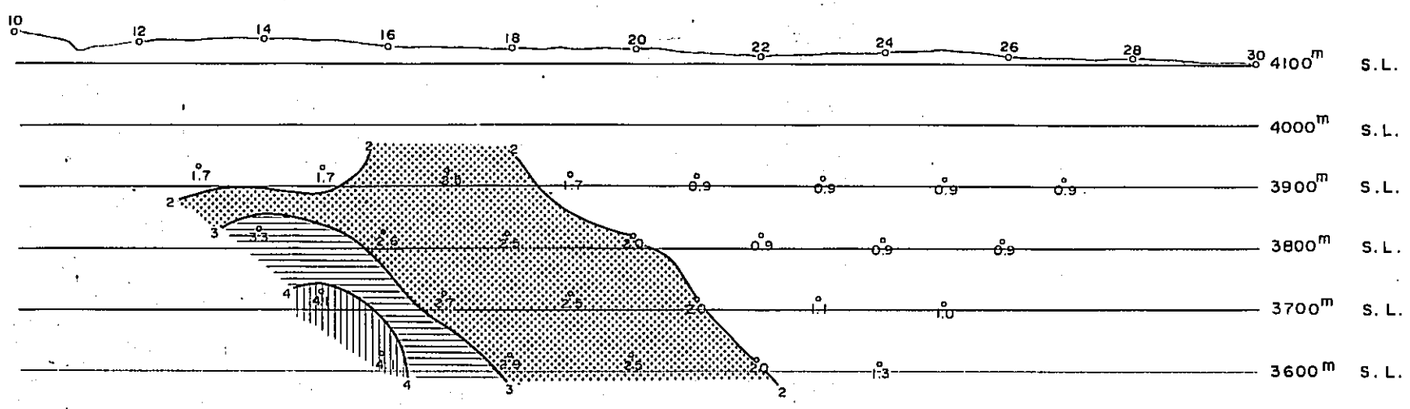
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3%
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

EFREQUENCY FFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$)



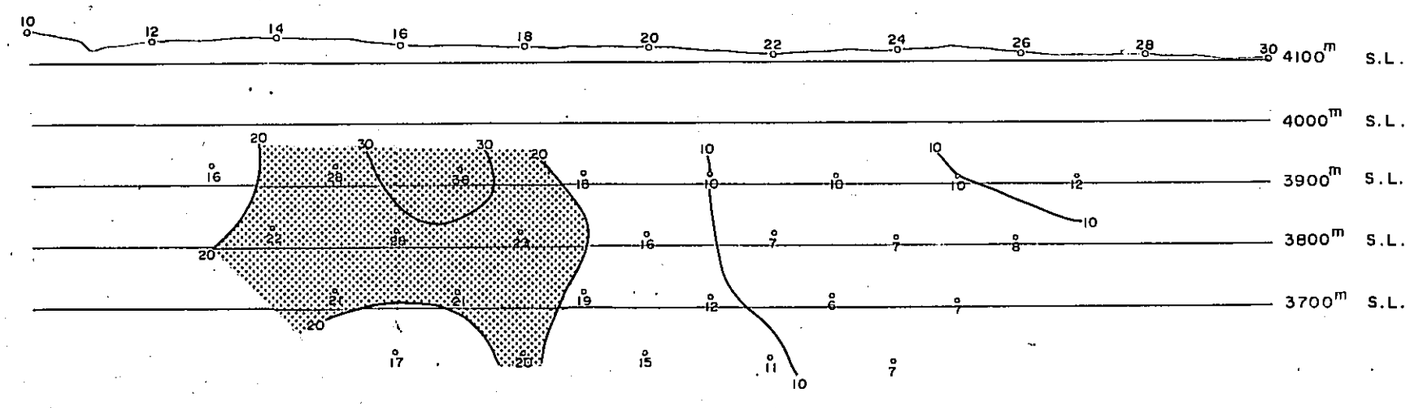
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3%
- 3 % ~ 4 %
- 4 % Over

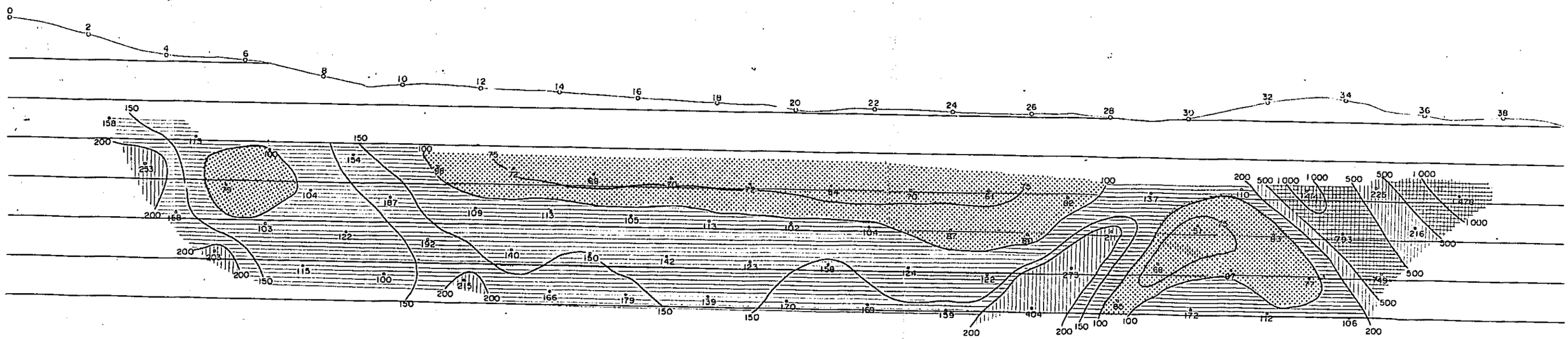
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

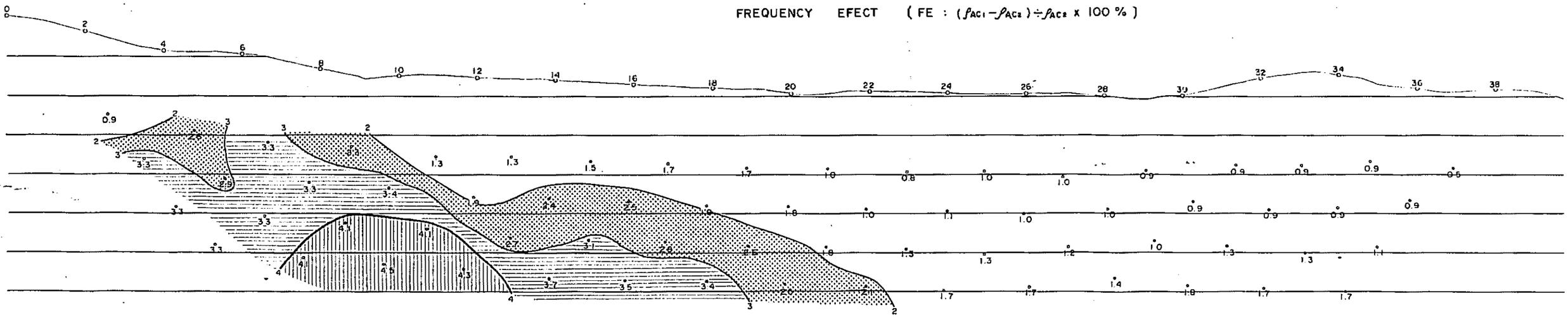


PL. II-6-5 I P PROFILE ON LINE No. D

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



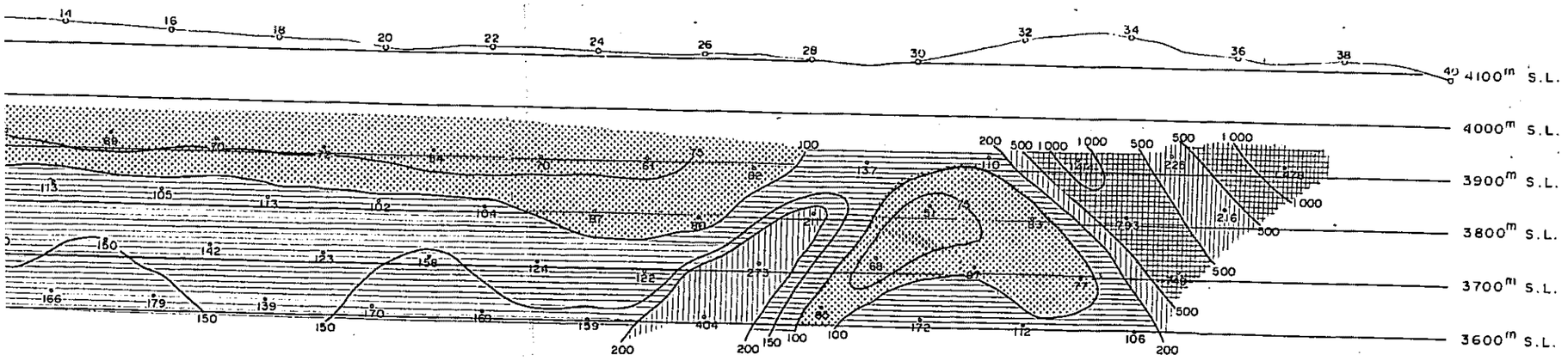
FREQUENCY EFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



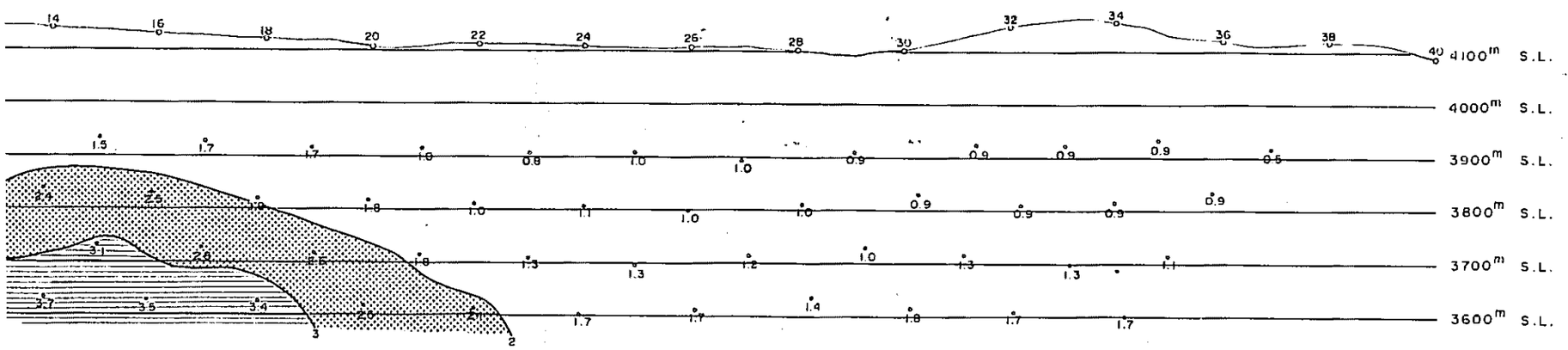
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL. II-6-5 IP PROFILE ON LINE No. D

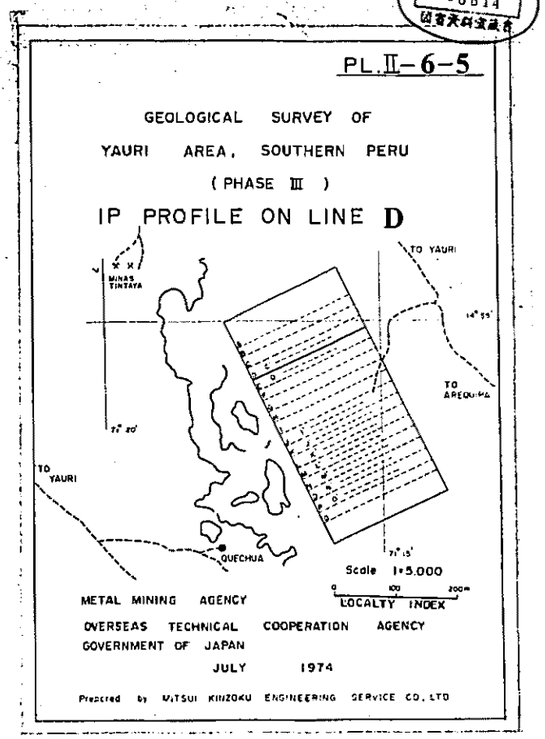
APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



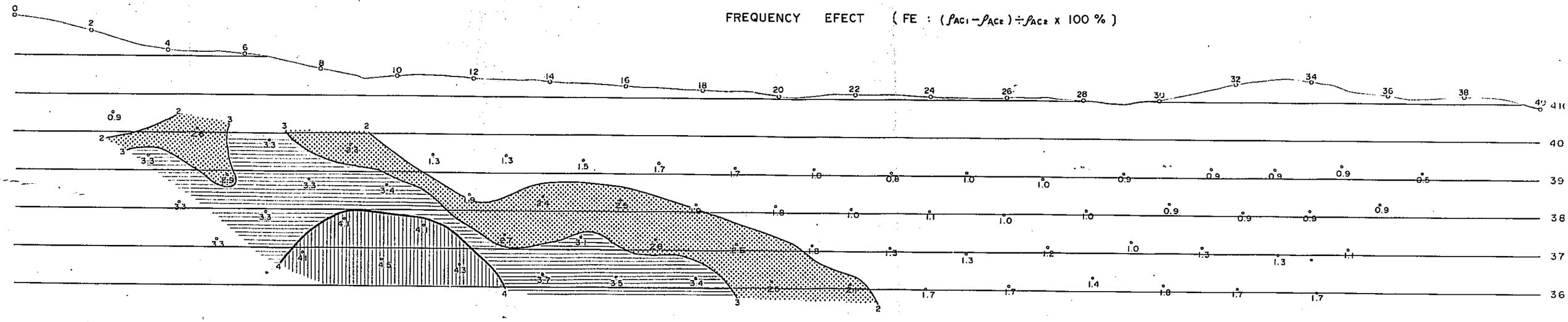
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

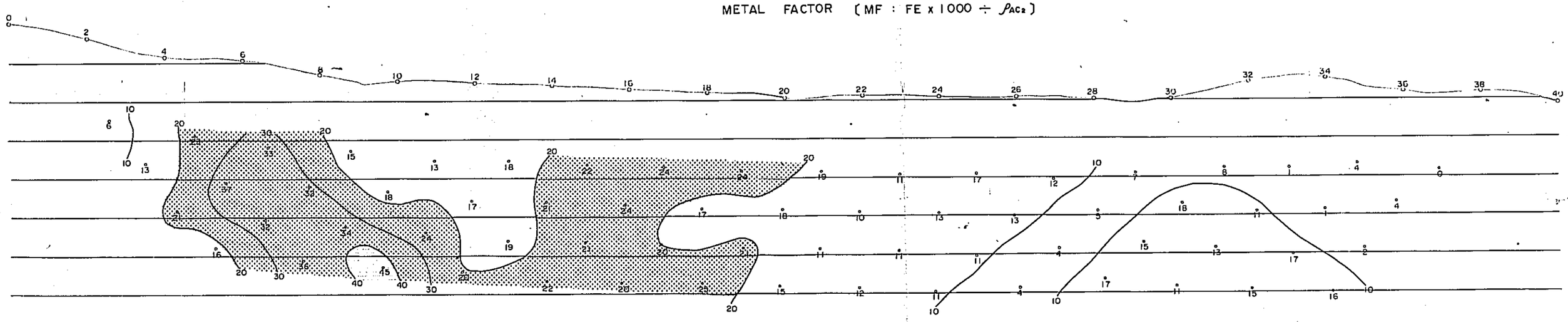
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

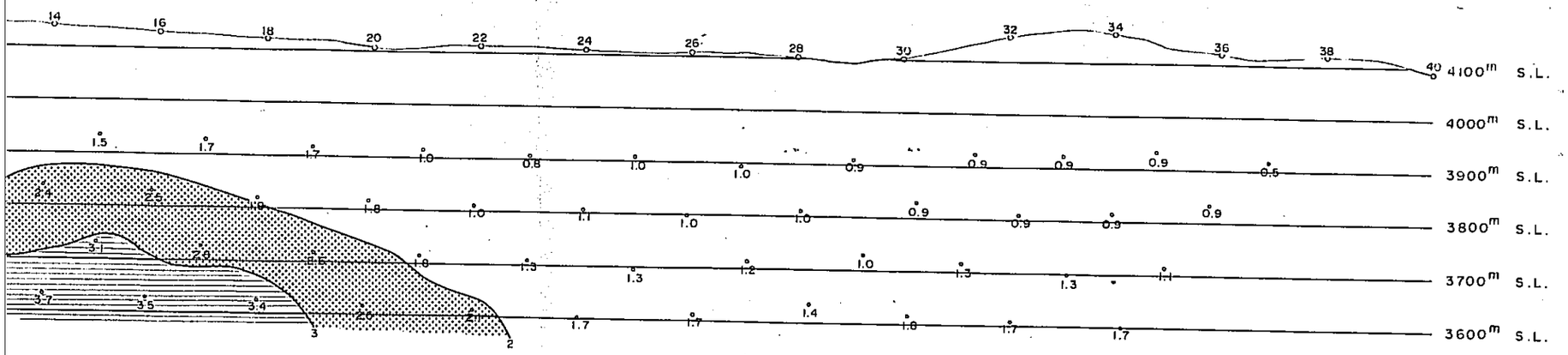
FREQUENCY EFECT (FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



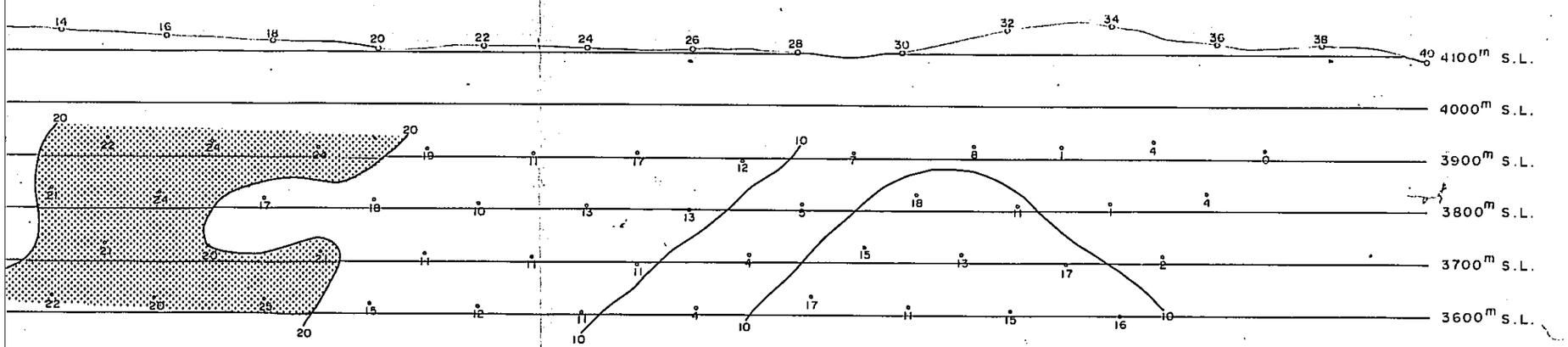
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



FREQUENCY EFECT (FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %)



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



LEGEND

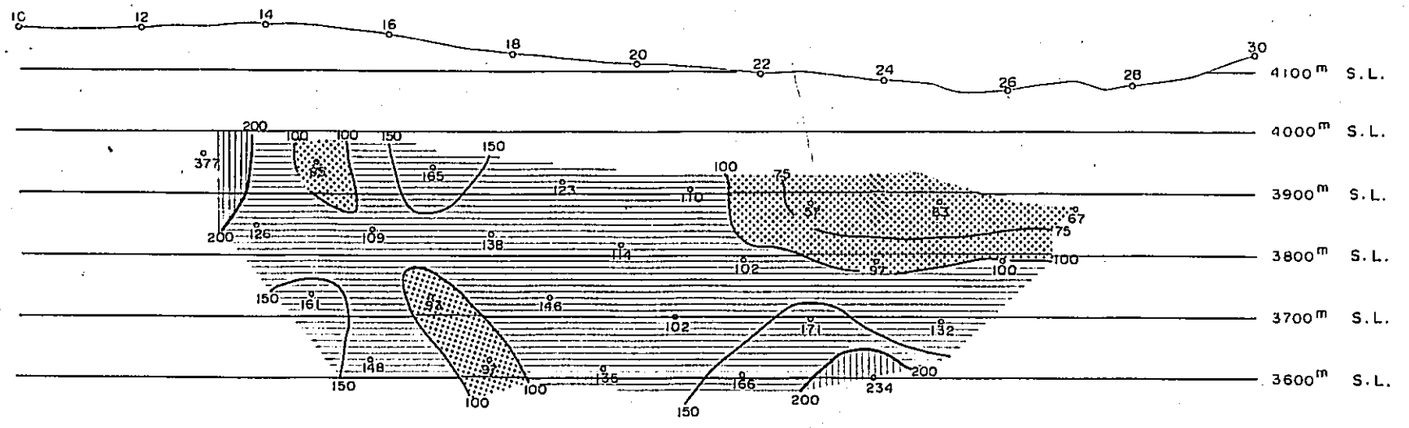
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

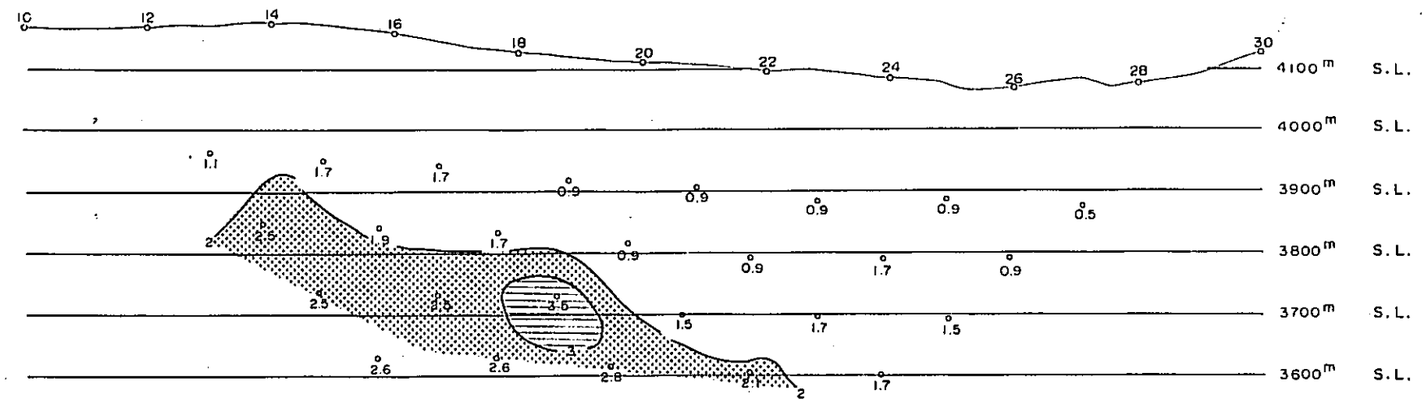
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-6 IP PROFILE ON LINE No. D'

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\,\%$)



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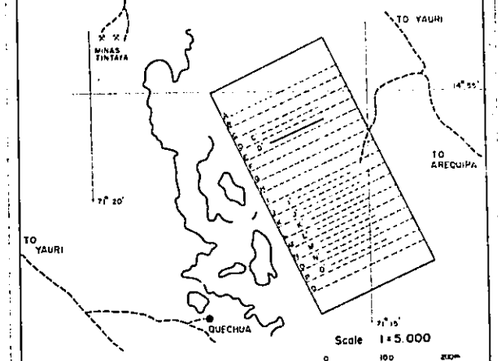
PL. II-6-6

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE D'



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD

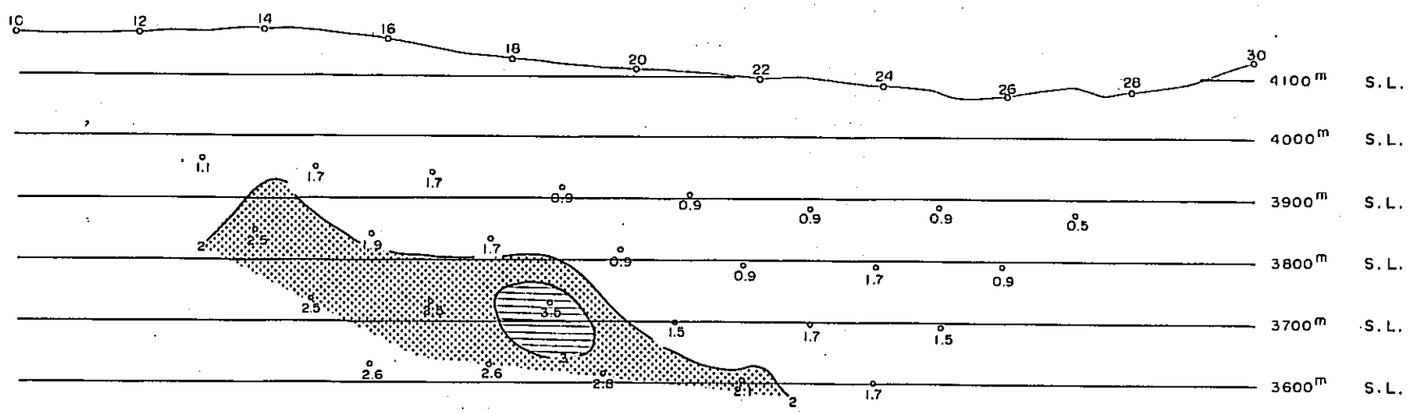
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over

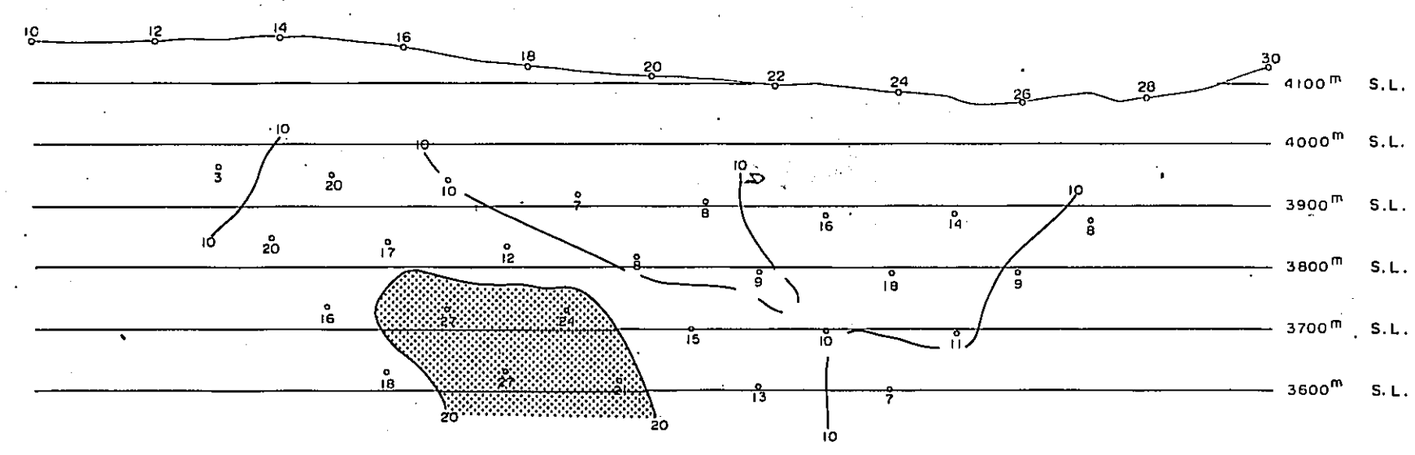
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

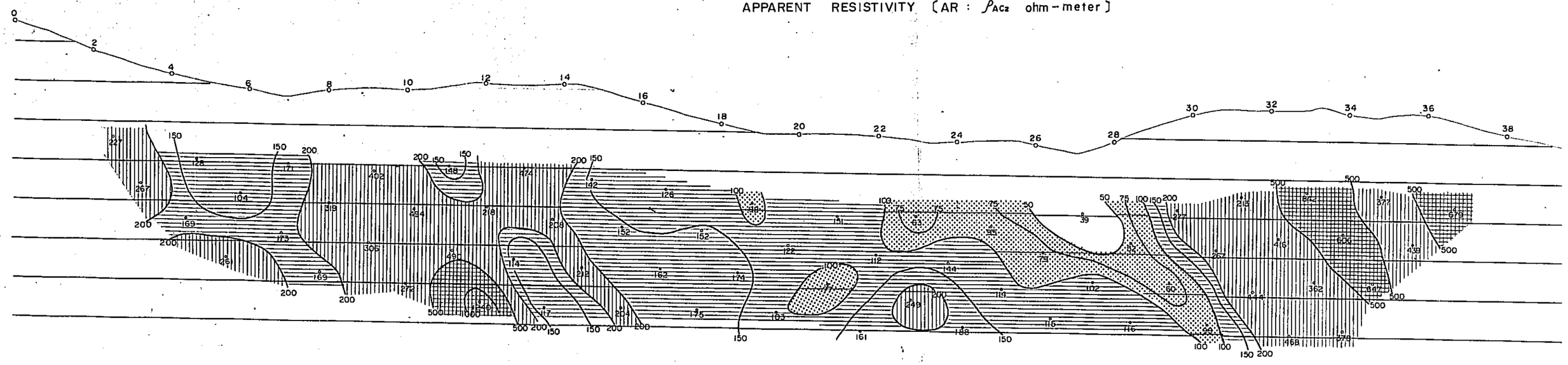
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

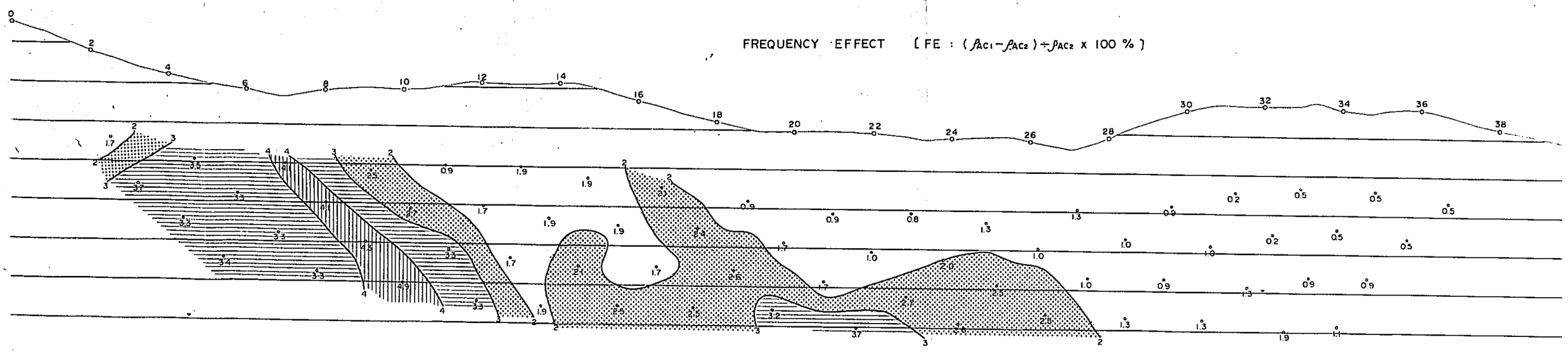
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-7 I P PROFILE ON LINE No.E

APPARENT RESISTIVITY 〔AR : ρ_{Ac_2} ohm-meter〕



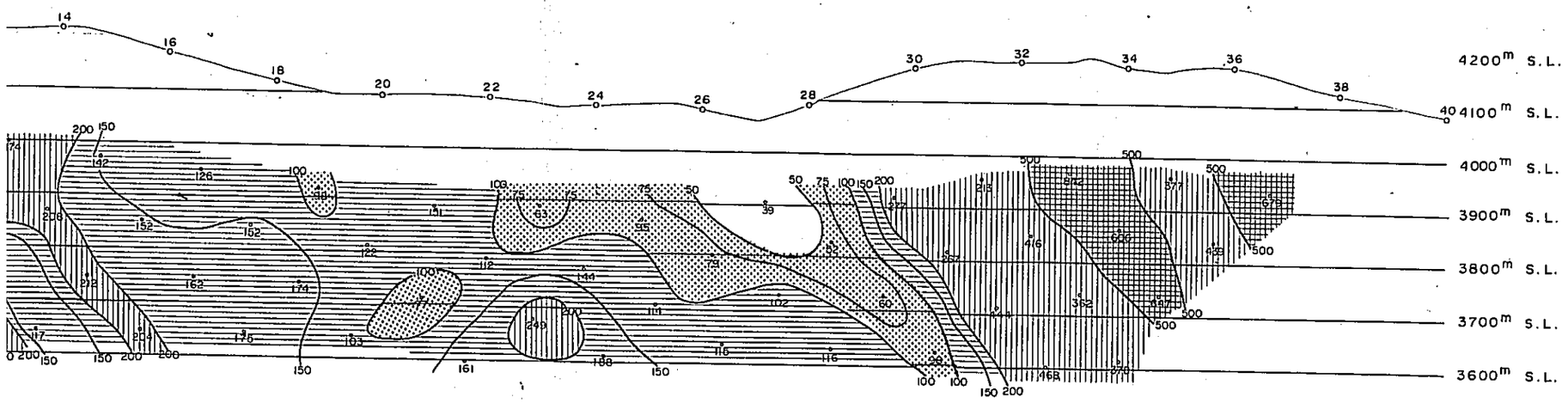
FREQUENCY EFFECT 〔FE : $(\rho_{Ac_1}-\rho_{Ac_2})\div\rho_{Ac_2}\times 100\ \%$〕



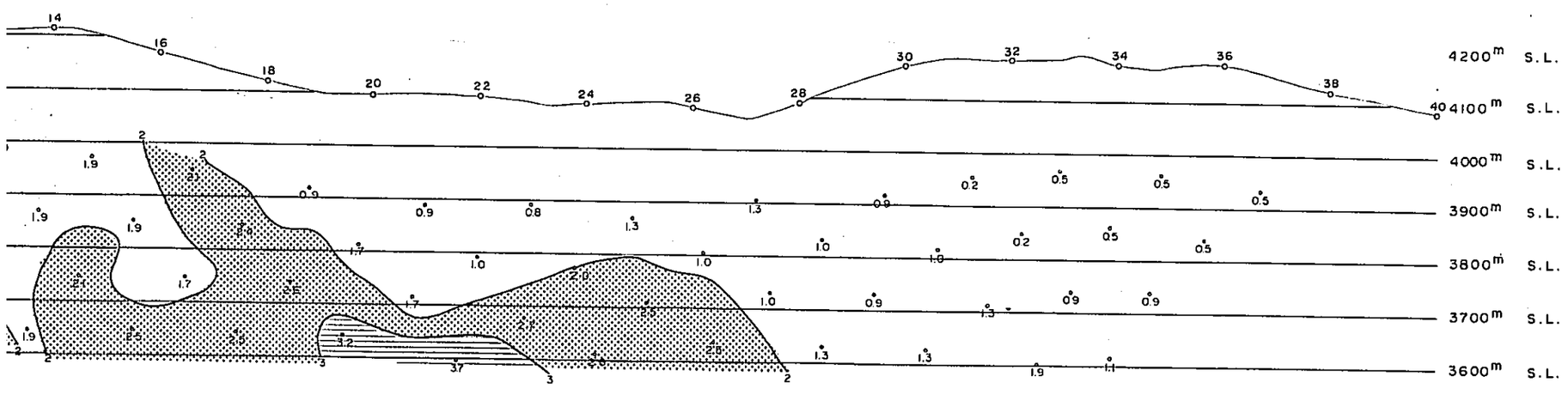
METAL FACTOR 〔MF : FE x 1000 ÷ ρ_{Ac_2}〕

PL. Ⅱ-6-7 IP PROFILE ON LINE No.E

APPARENT RESISTIVITY 〔AR : ρ_{Ac_2} ohm-meter〕



FREQUENCY EFFECT 〔FE : $(\rho_{Ac_1}-\rho_{Ac_2})\div\rho_{Ac_2}\times 100\ \%$〕



METAL FACTOR 〔MF : FE x 1000 ÷ ρ_{Ac_2}〕

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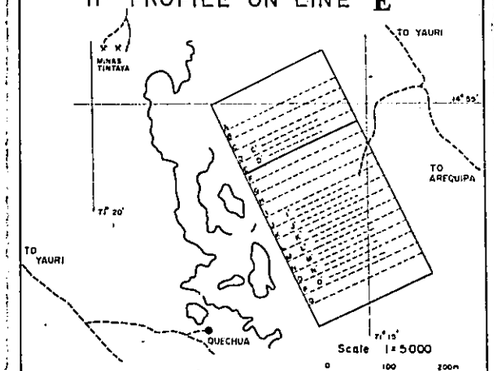
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE **E**



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

LEGEND

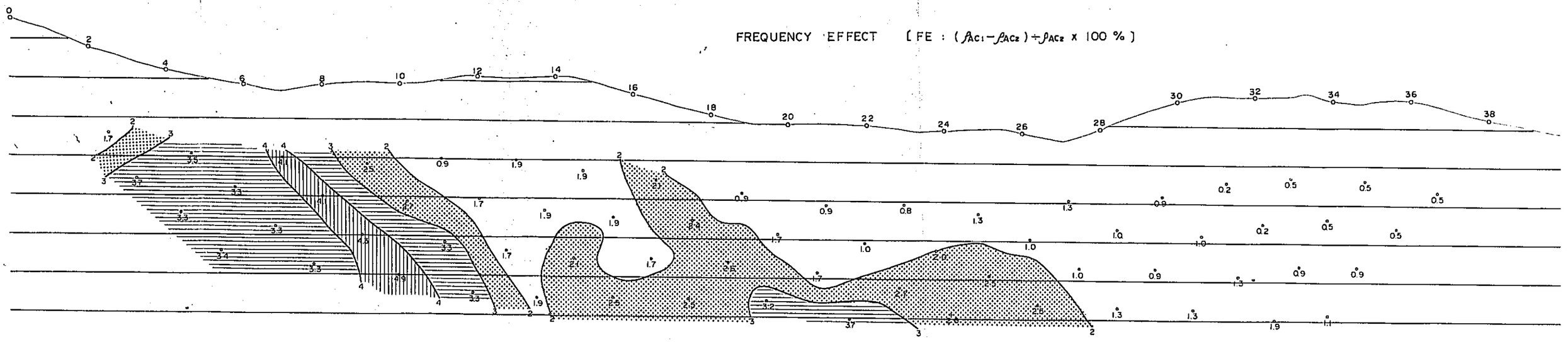
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

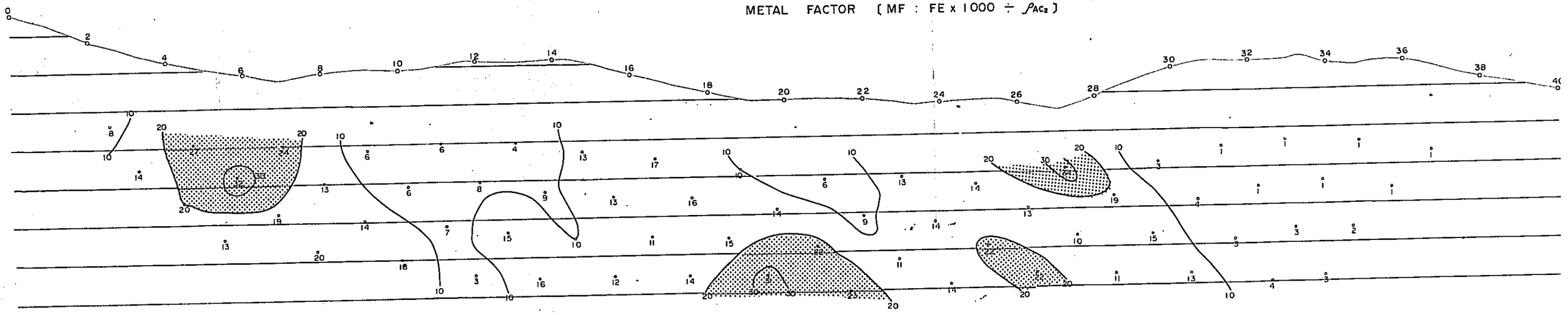
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

100 100 150 200

FREQUENCY EFFECT [FE : ($\rho_{AC1} - \rho_{AC2}$) ÷ ρ_{AC2} x 100 %]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



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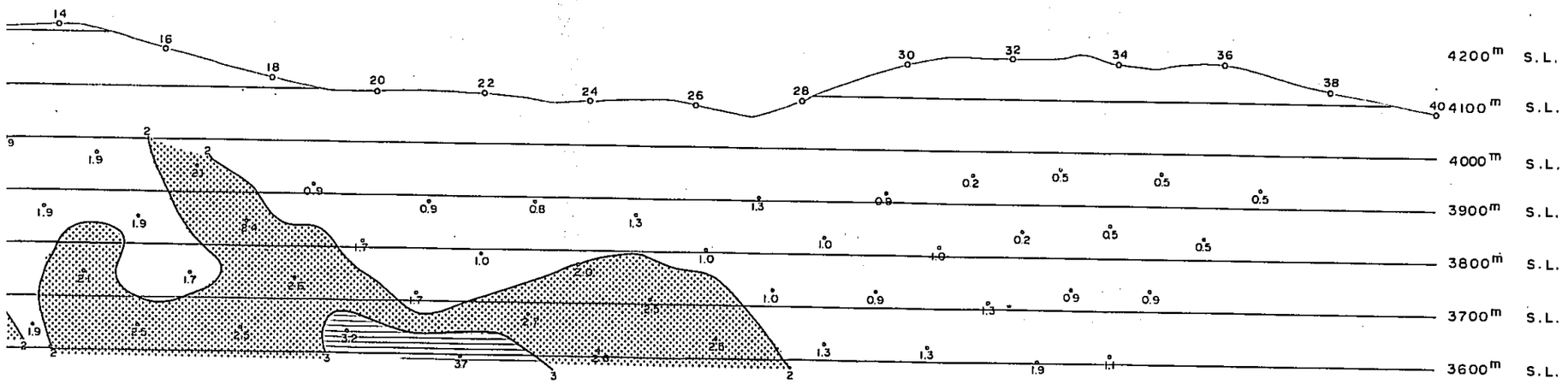
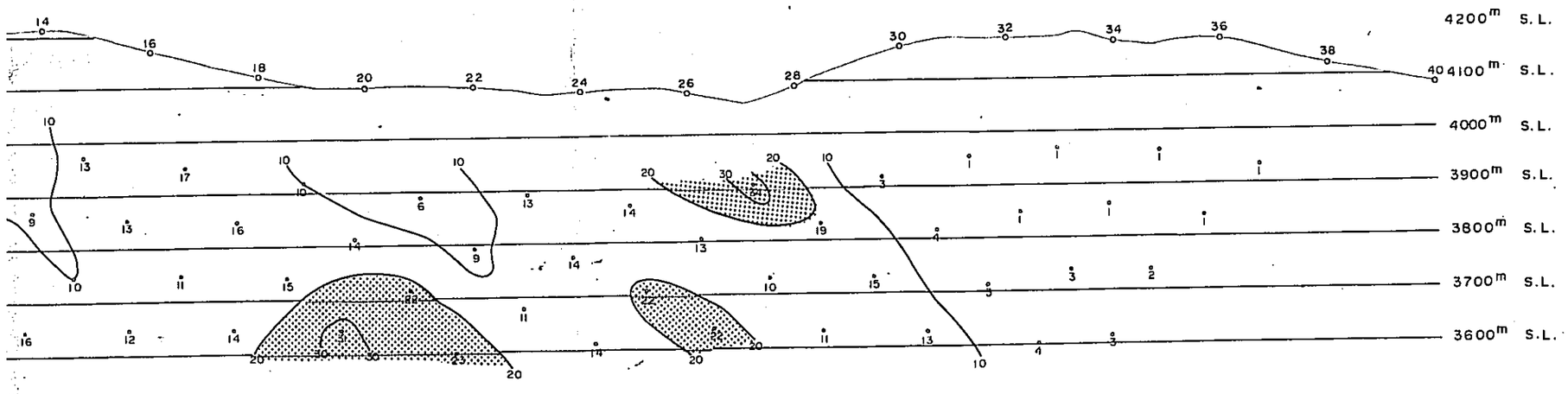
FREQUENCY EFFECT [FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



LEGEND

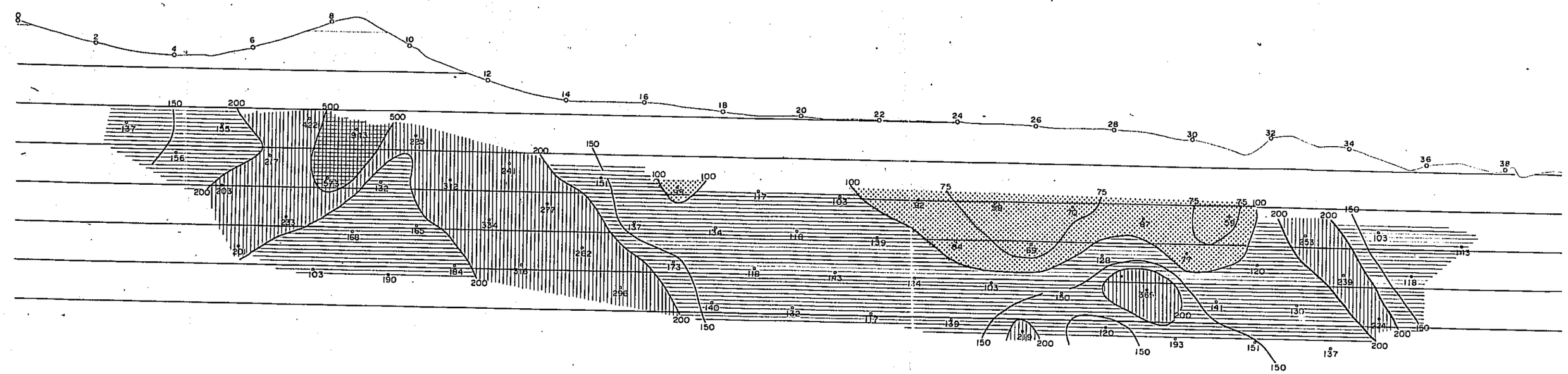
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

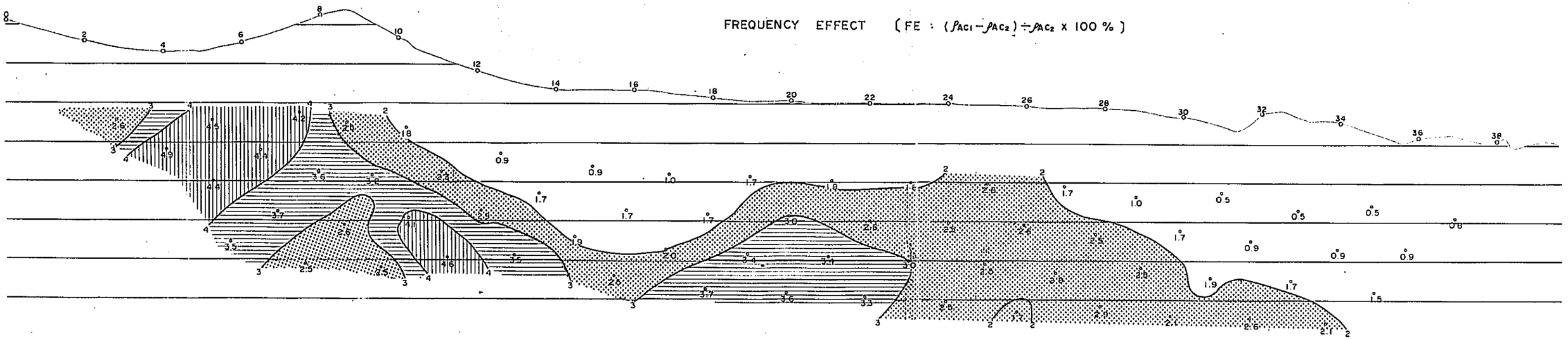
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-8 IP PROFILE ON LINE No. F

APPARENT RESISTIVITY (AR : ρ_{Ac_2} ohm-meter)



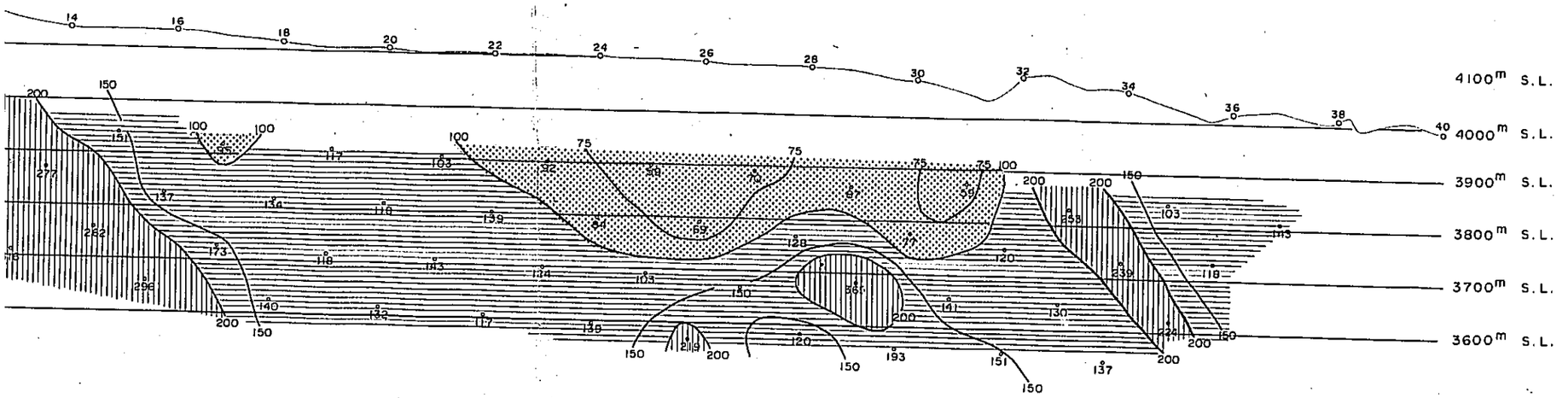
FREQUENCY EFFECT (FE : $(\rho_{Ac_1} - \rho_{Ac_2}) \div \rho_{Ac_2} \times 100\ \%$)



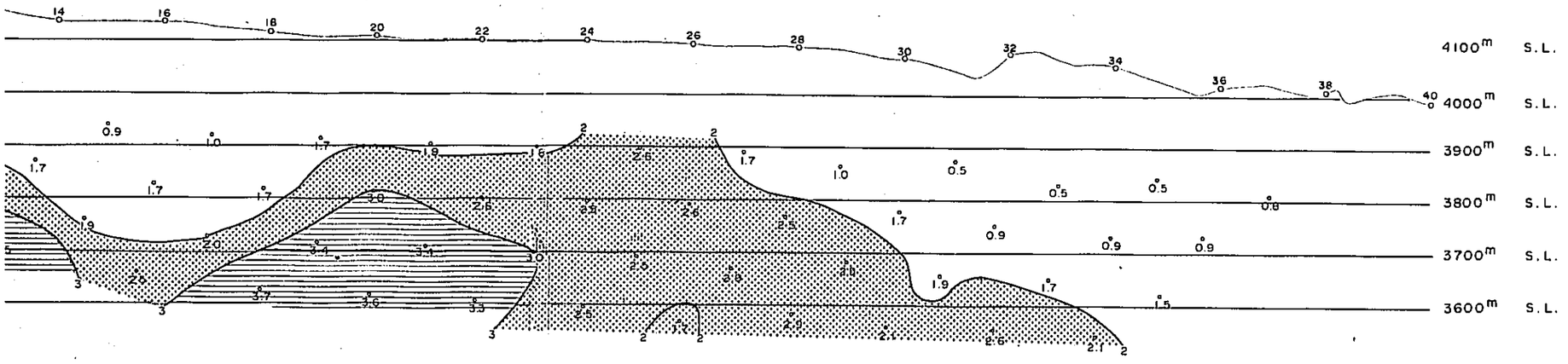
METAL FACTOR (MF : FE x 1000 ÷ ρ_{Ac_2})

PL. Ⅱ-6-8 IP PROFILE ON LINE No. F

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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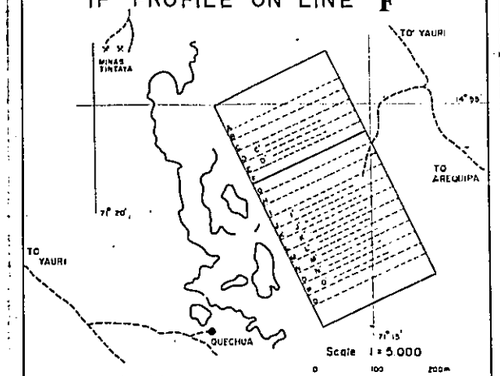
PL. Ⅱ-6-8

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE **F**



METAL MINING AGENCY
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GOVERNMENT OF JAPAN
JULY 1974

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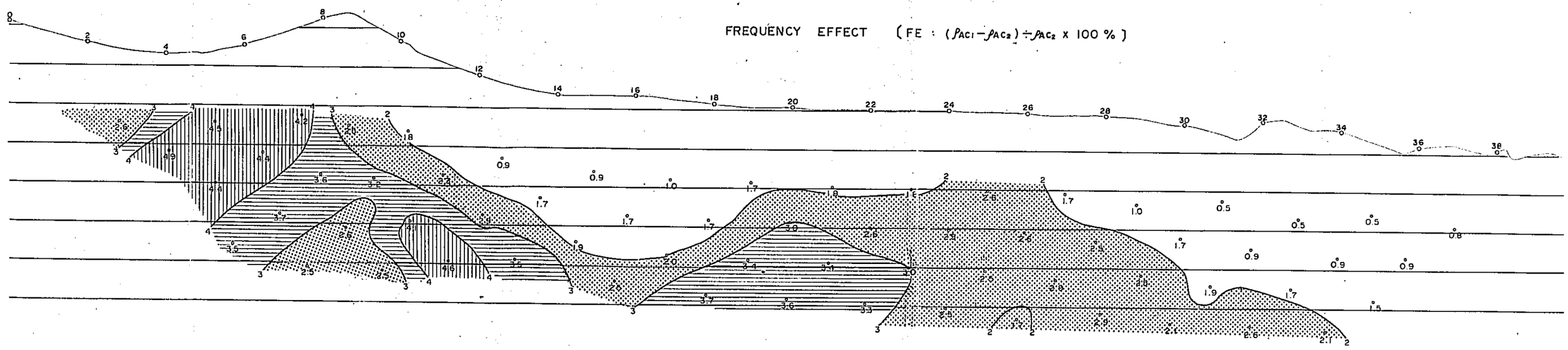
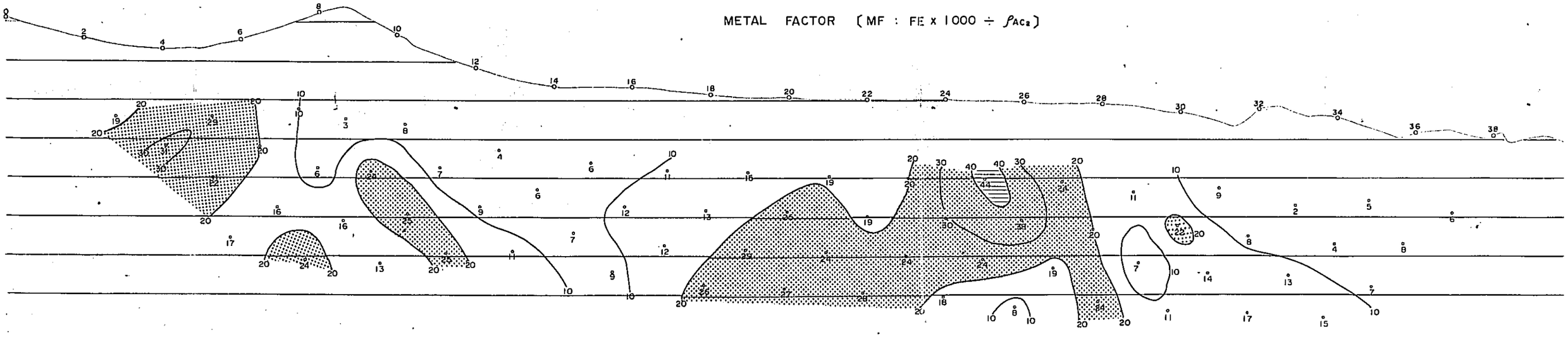
FREQUENCY EFFECT (FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



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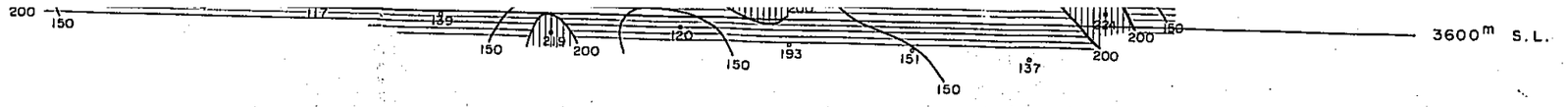
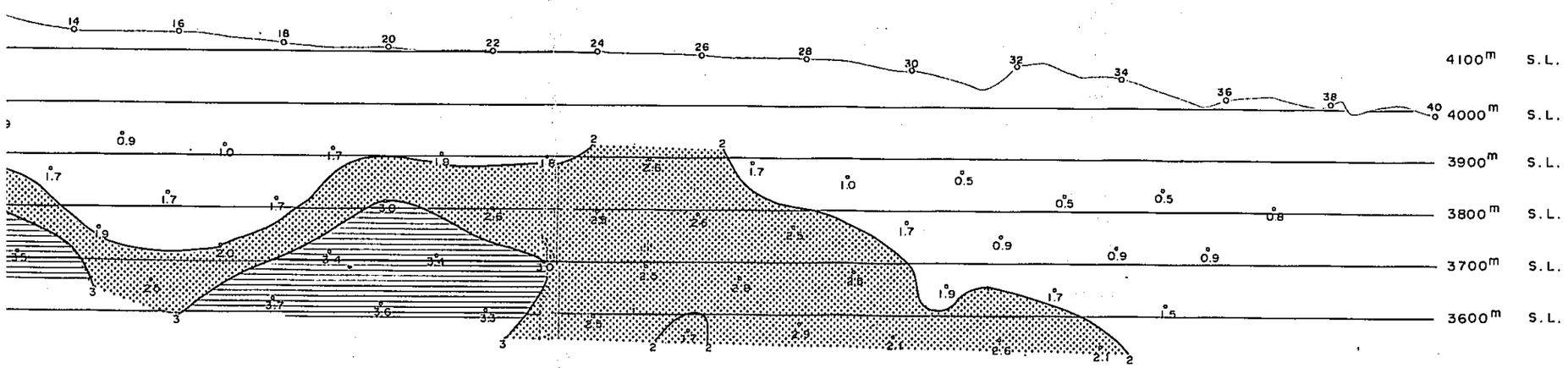
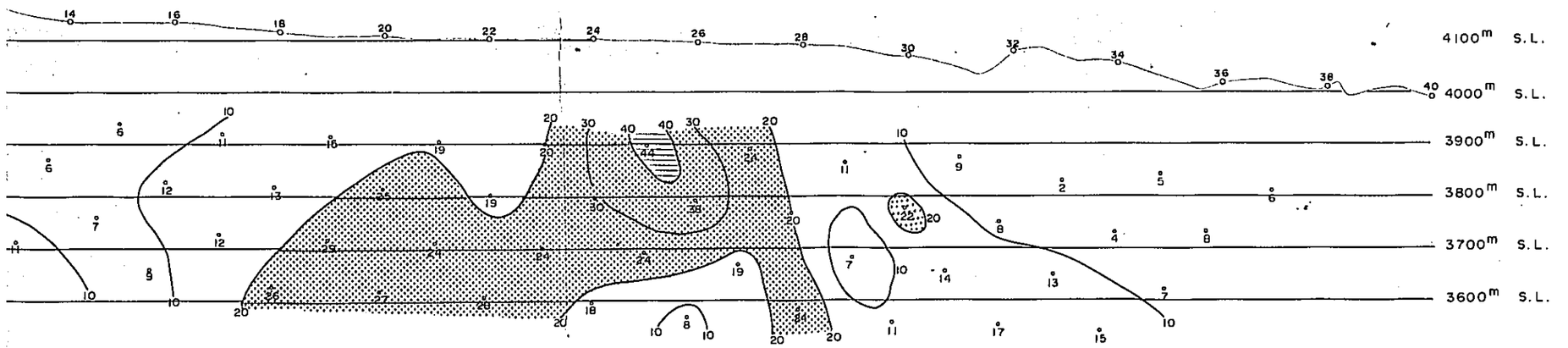


FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

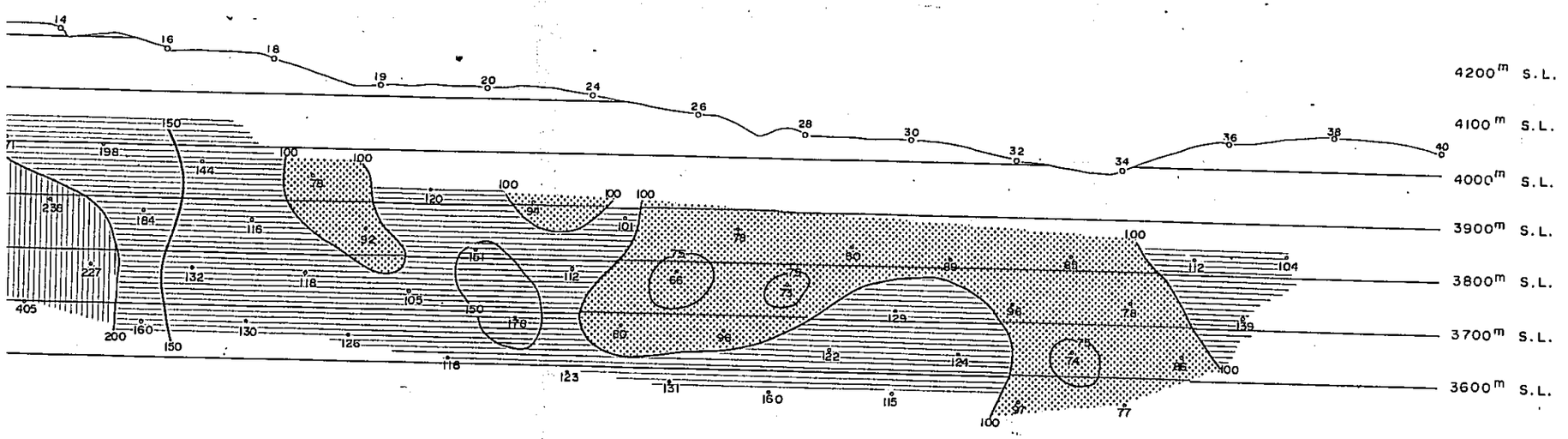
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

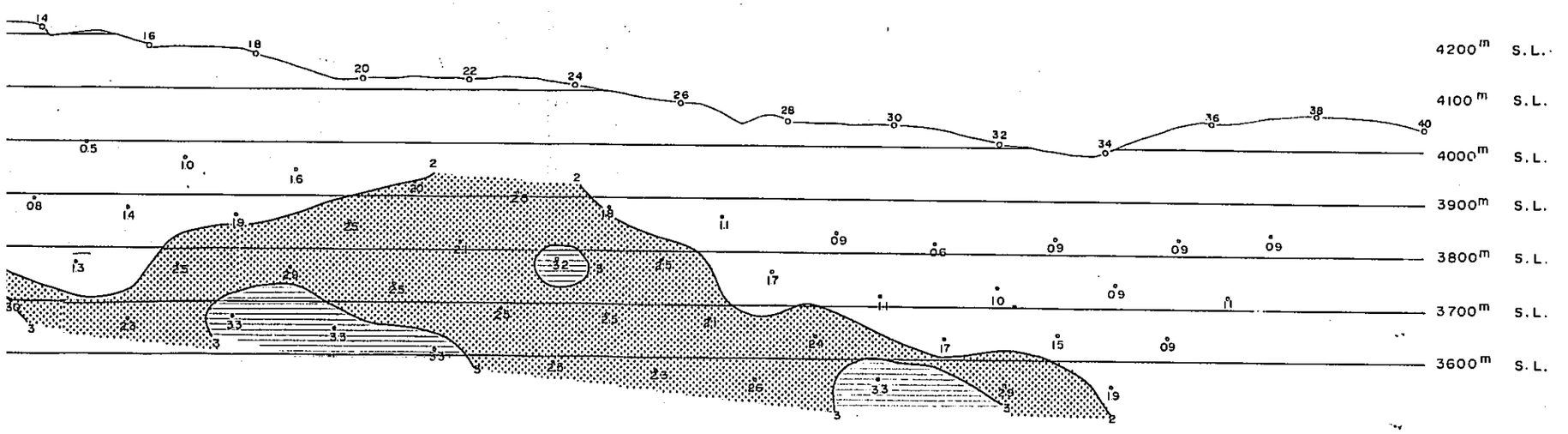
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-9 IP PROFILE ON LINE No.G

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\,\%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

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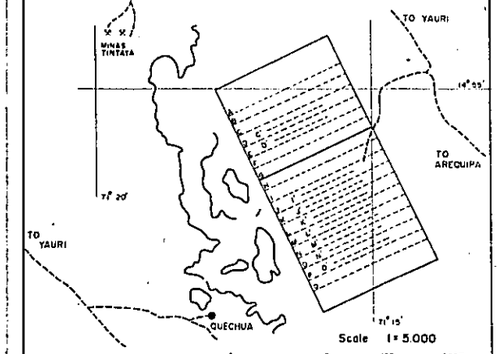
PL. II-6-9

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE G



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JULY 1974

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LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

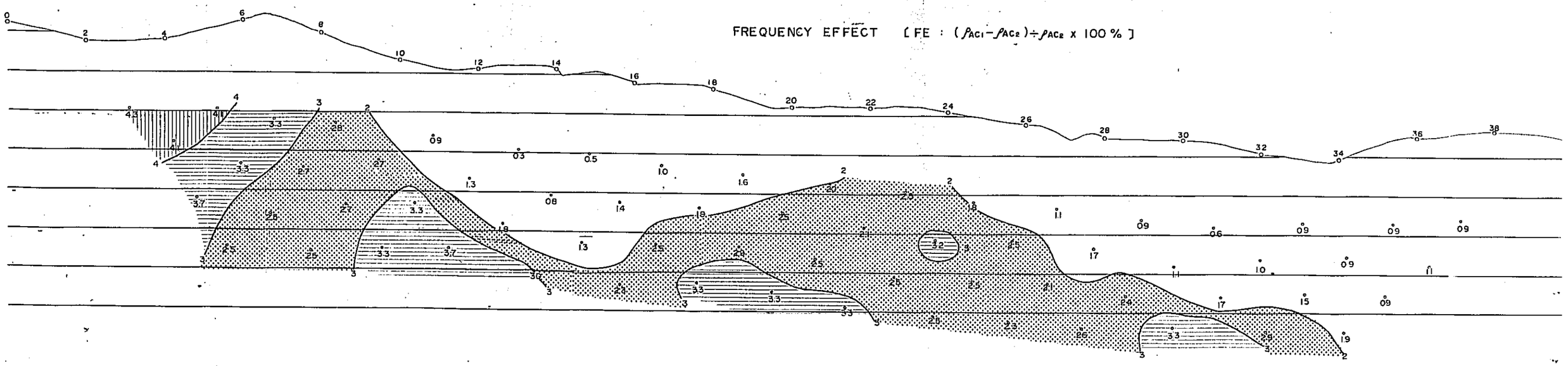
FE

- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

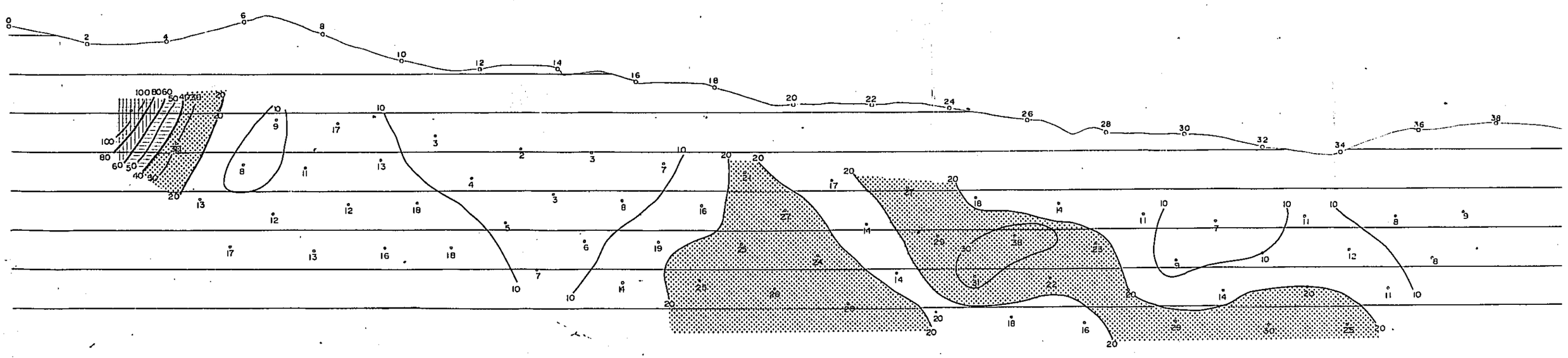
MF

- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT [FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\,\%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



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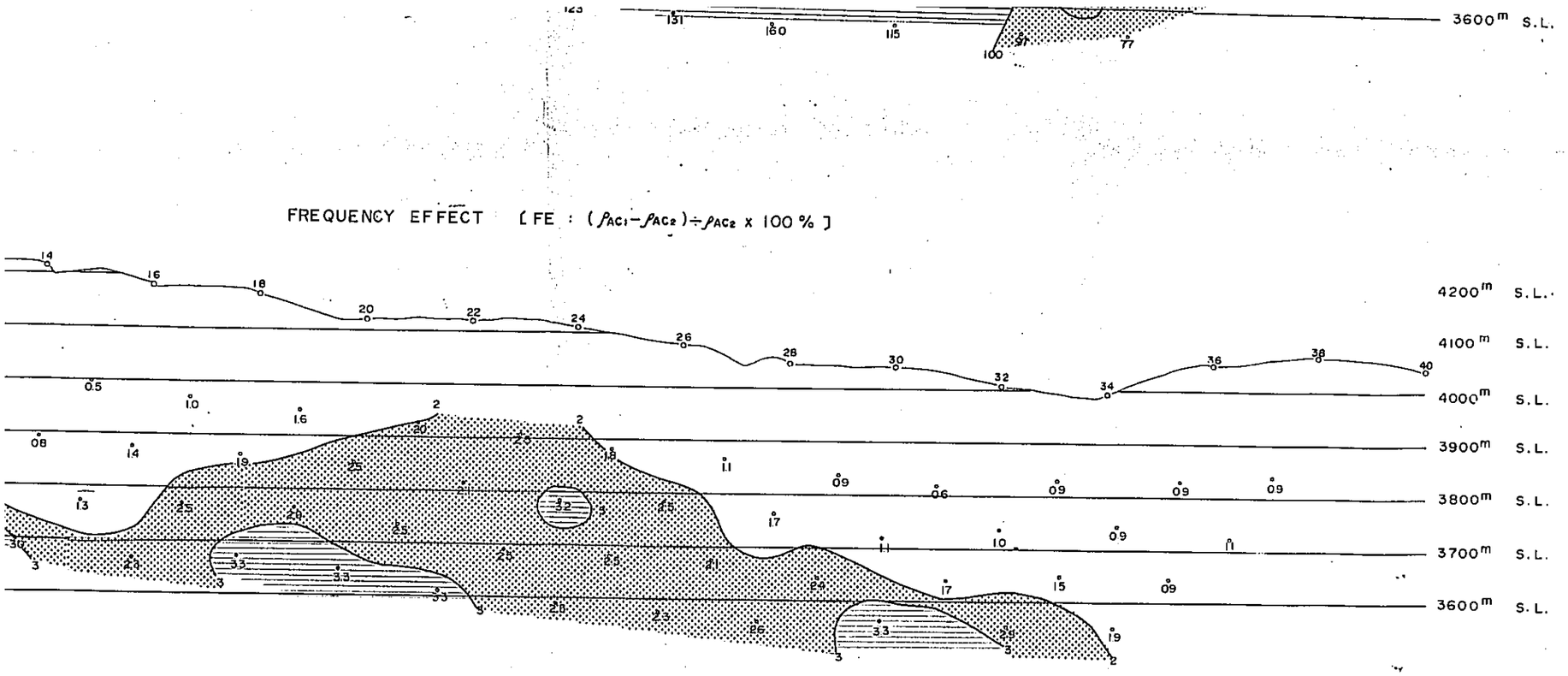
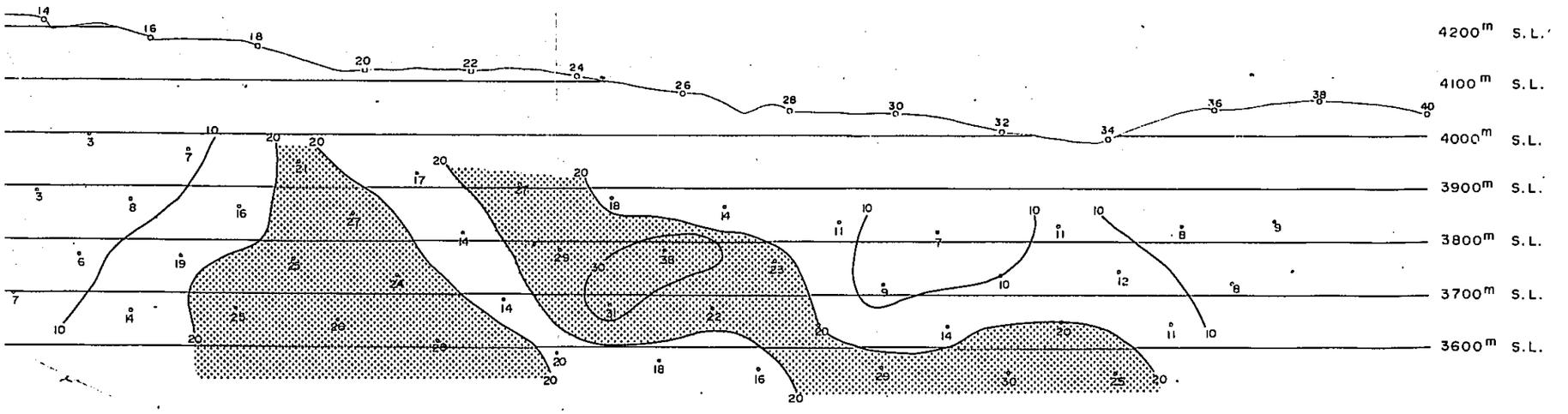
FREQUENCY EFFECT [FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}\times 100\,\%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



LEGEND

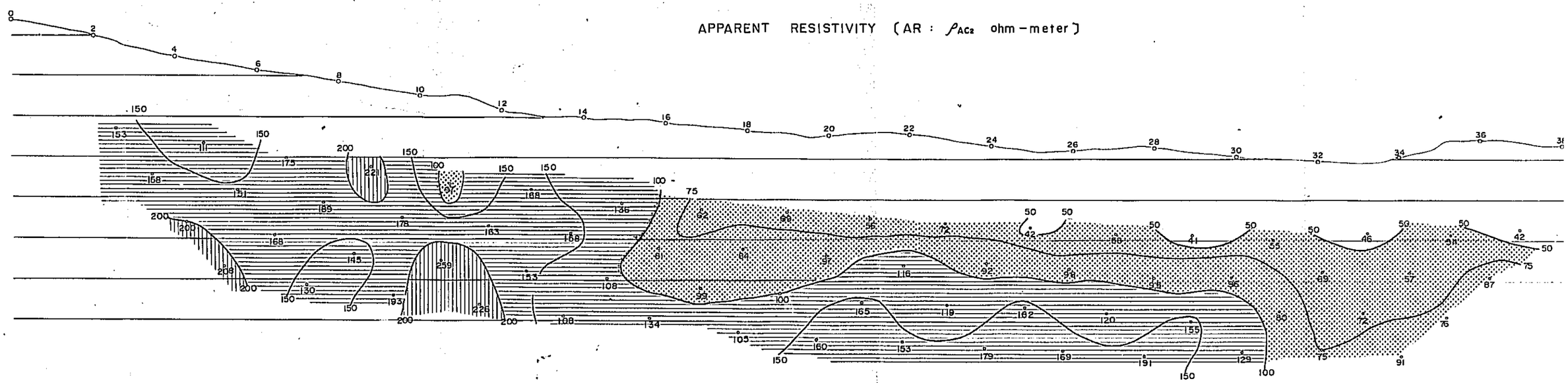
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

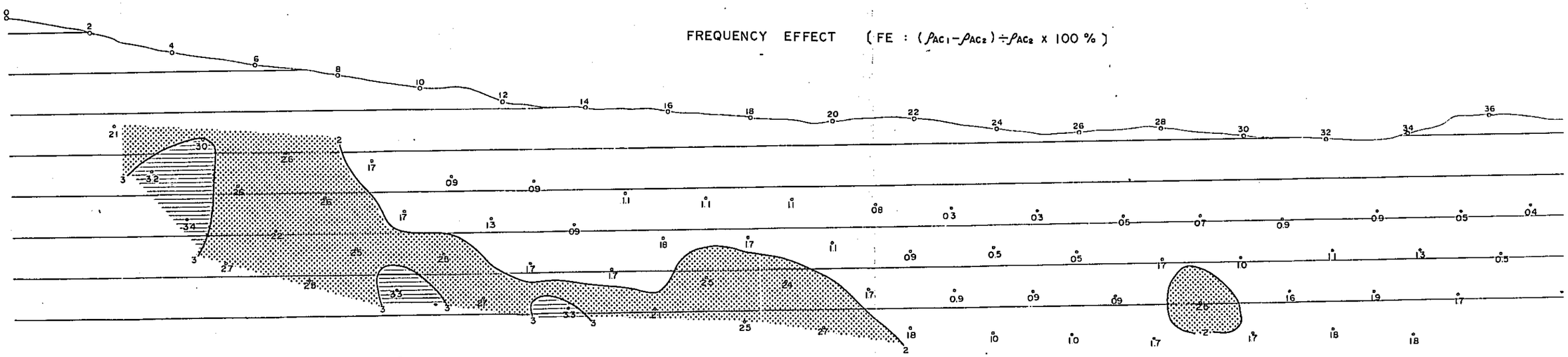
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-10 I P PROFILE ON LINE No.H

APPARENT RESISTIVITY (AR : ρ_{AC2} ohm-meter)



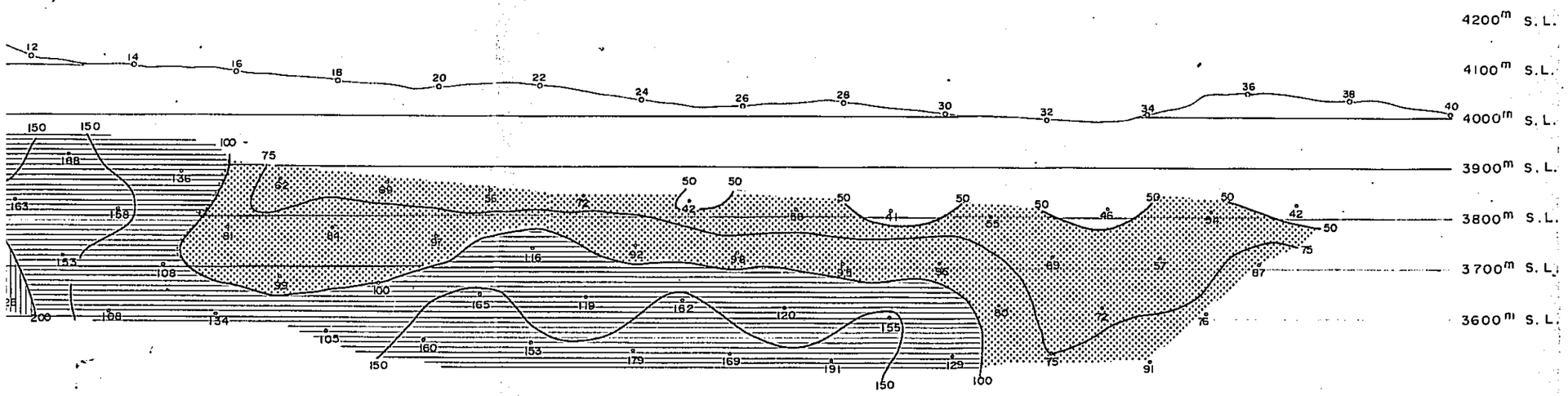
FREQUENCY EFFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



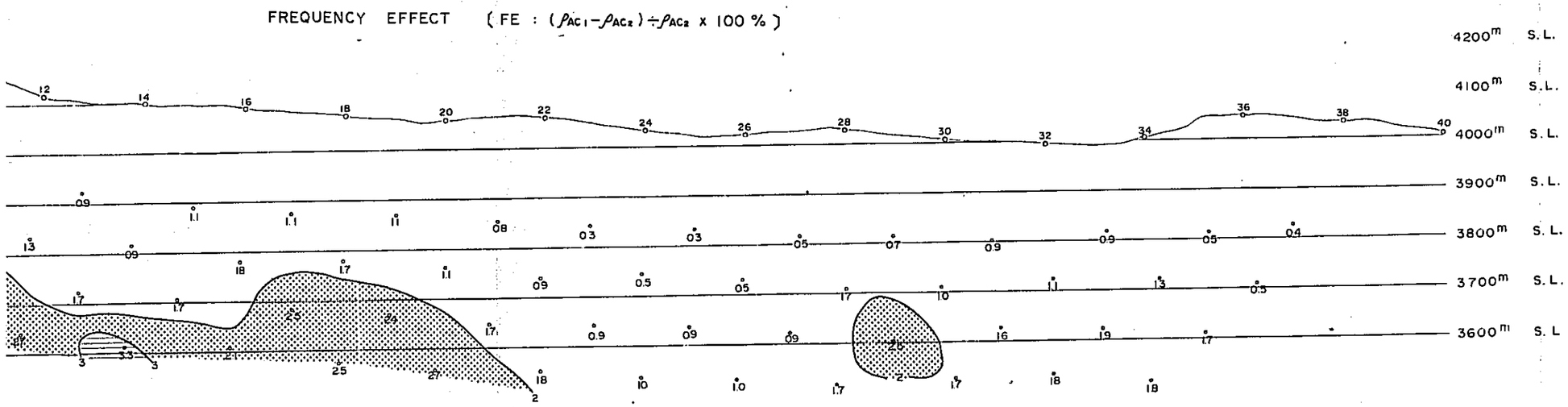
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})

PL. Ⅱ-6-10 I P PROFILE ON LINE No. H

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over (Ω-m)

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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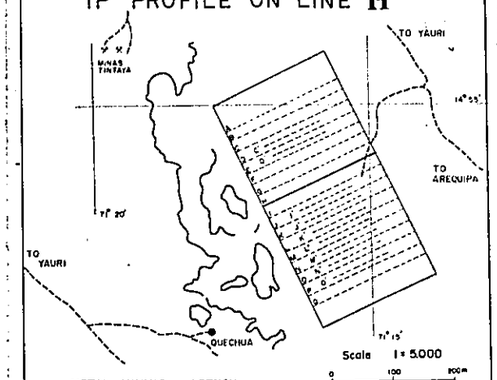
PL. Ⅱ-6-10

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE H



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

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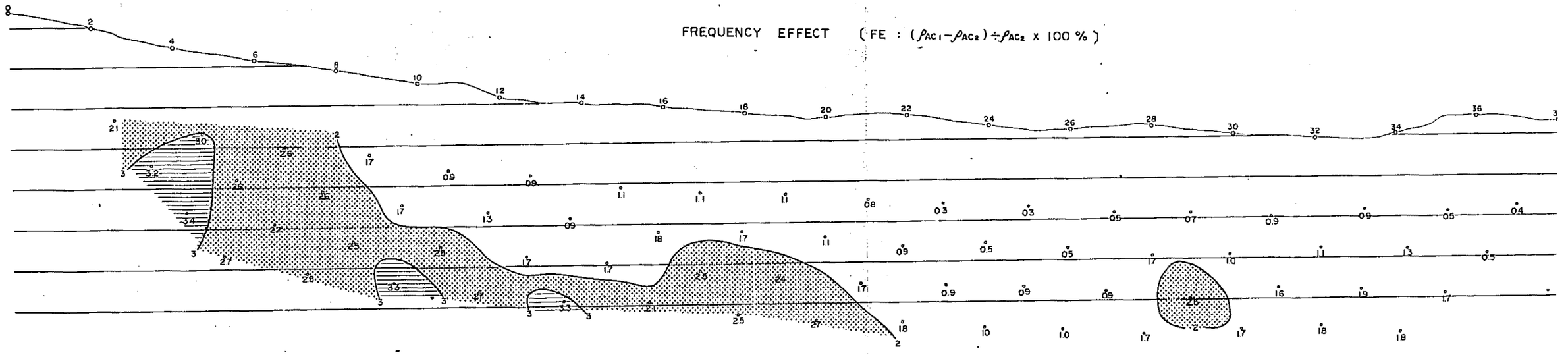
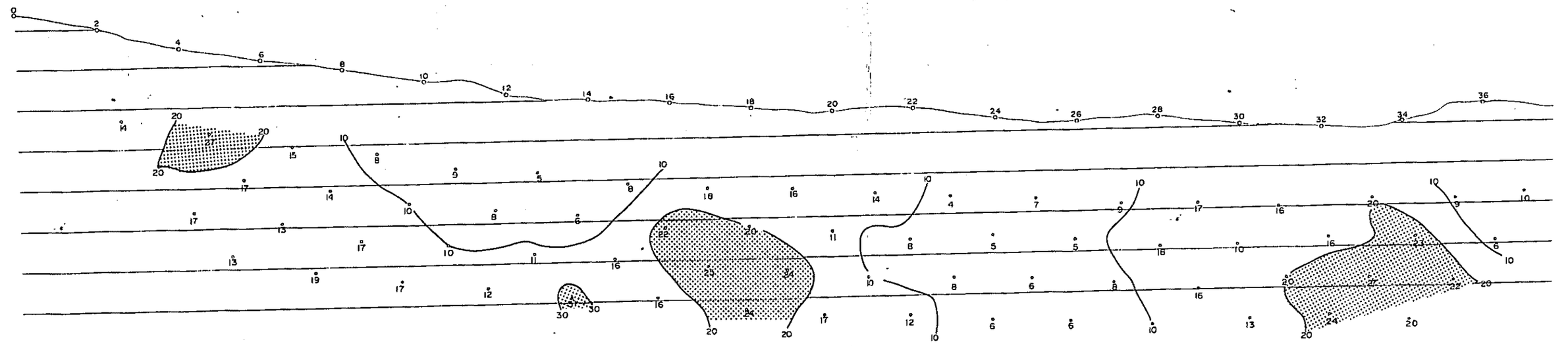
FREQUENCY EFFECT (FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



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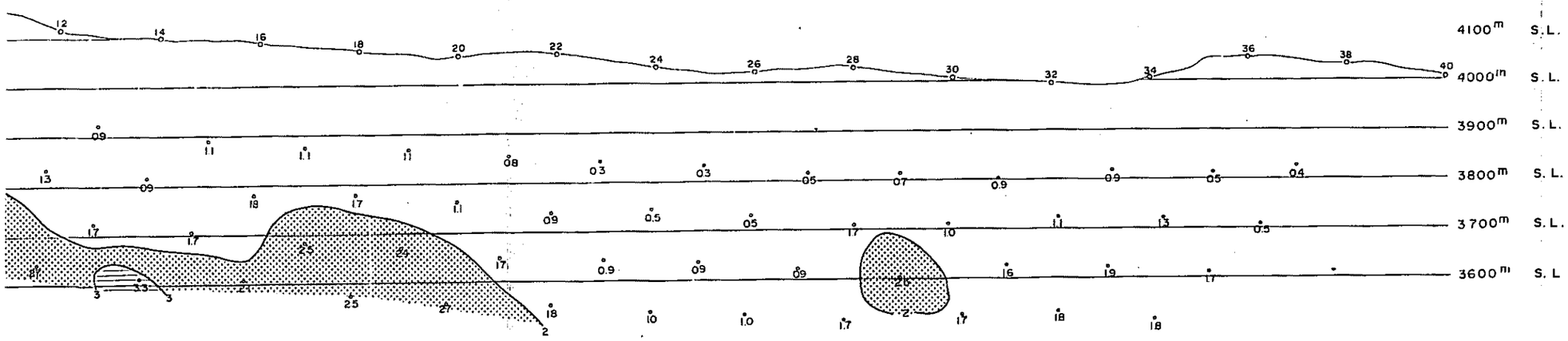
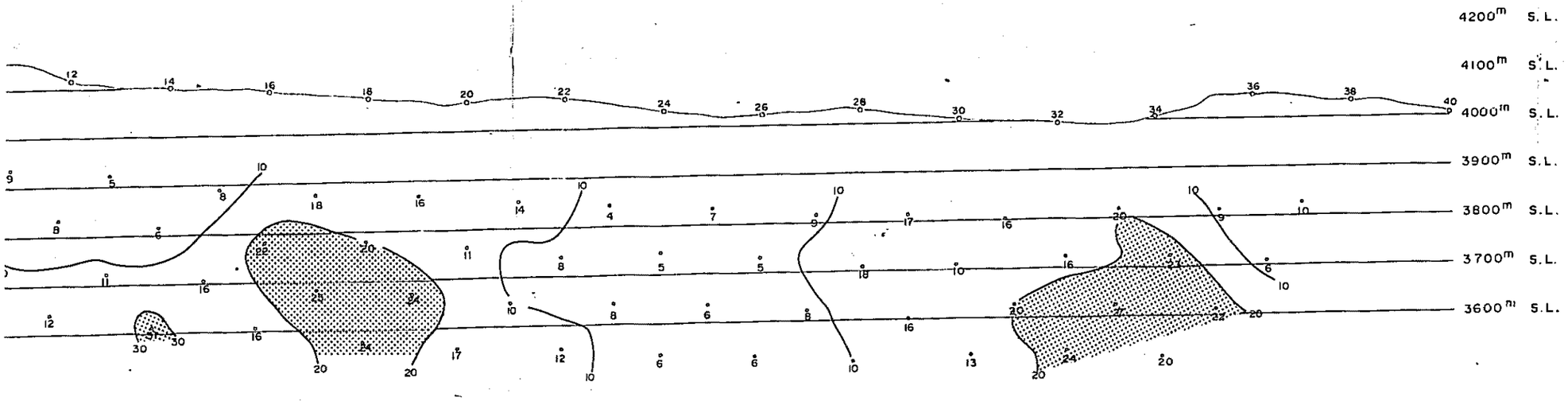
FREQUENCY EFFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

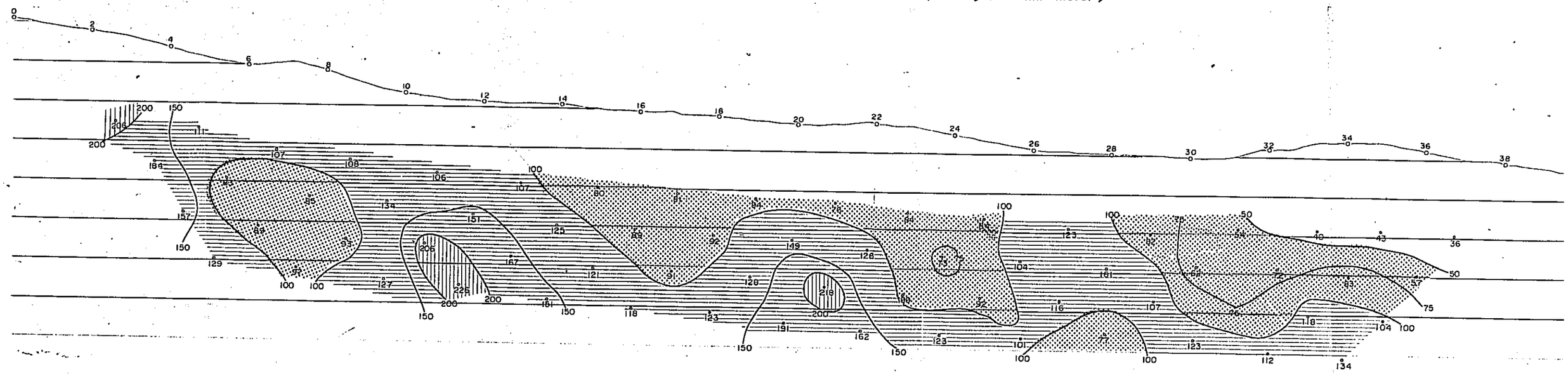
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

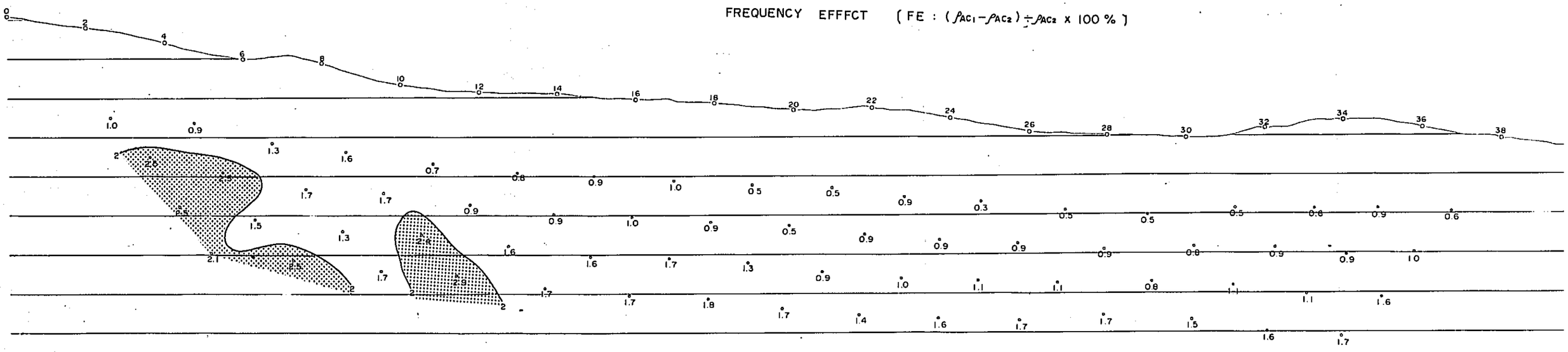
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-11 I P PROFILE ON LINE No 1

APPARENT RESISTIVITY [AR : ρ_{Ac} ohm-meter]



FREQUENCY EFFFCT [FE : $(\rho_{Ac1}-\rho_{Ac2})\div\rho_{Ac2}$ x 100 %]



METAL FACTOR [MF : FE x 1,000 ÷ ρ_{Ac2}]

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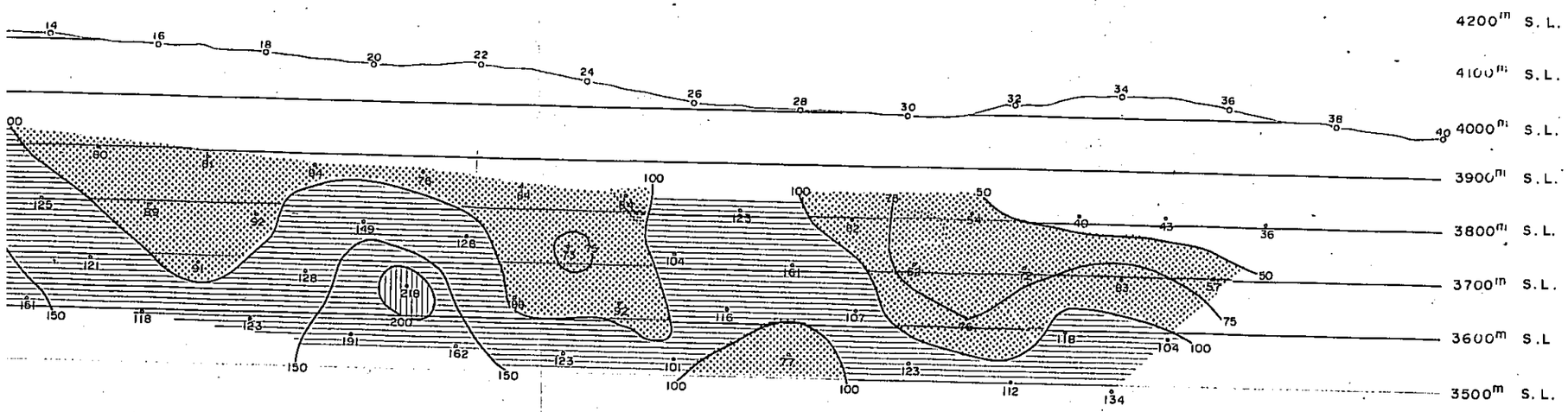
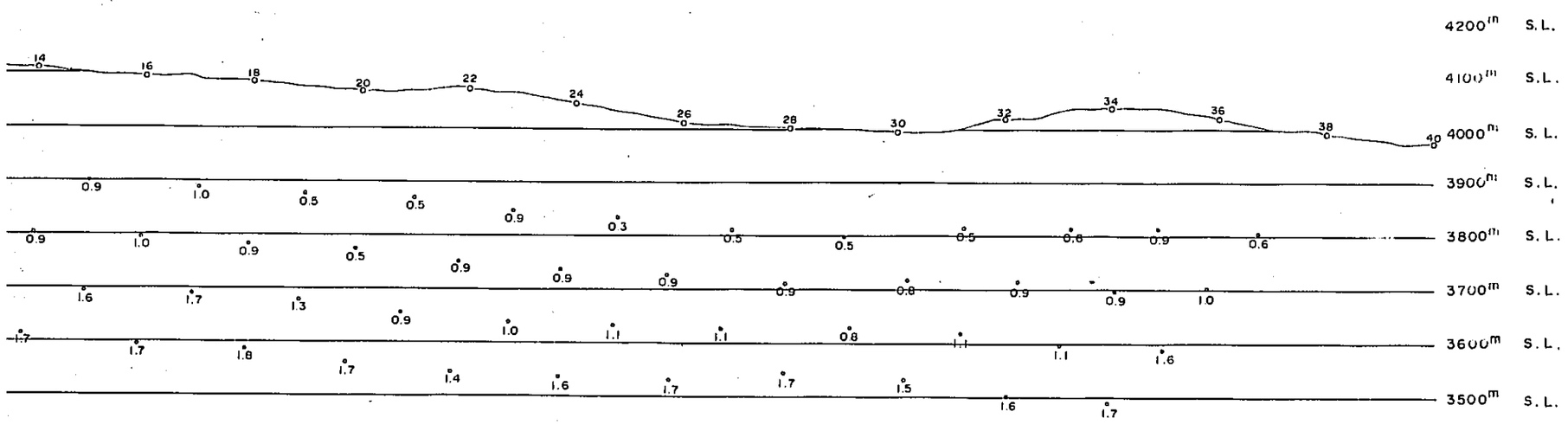
PL. Ⅱ-6-11 I P PROFILE ON LINE No I

APPARENT RESISTIVITY (AR : ρ_{AC} ohm-meter)



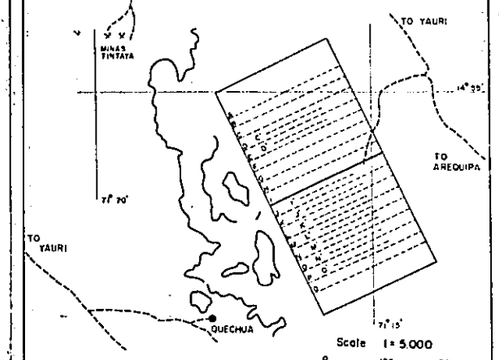
FREQUENCY EFFFCT (FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %)



PL.Ⅱ-6-11

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE I



METAL MINING AGENCY
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GOVERNMENT OF JAPAN
JULY 1974

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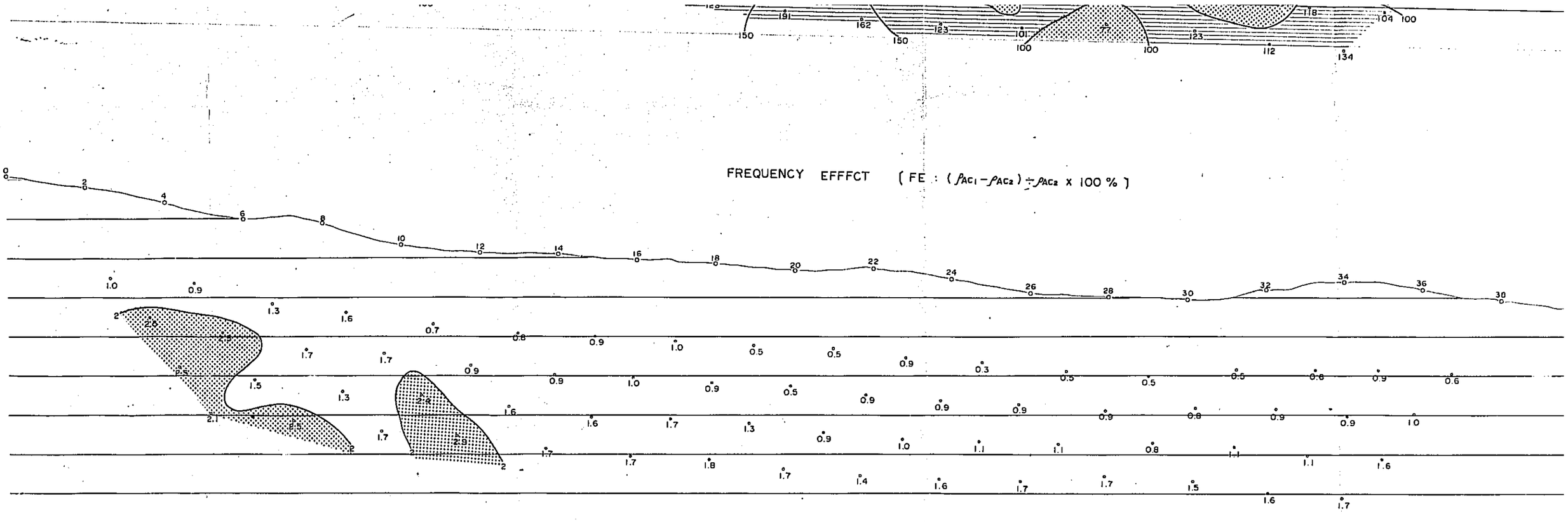
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

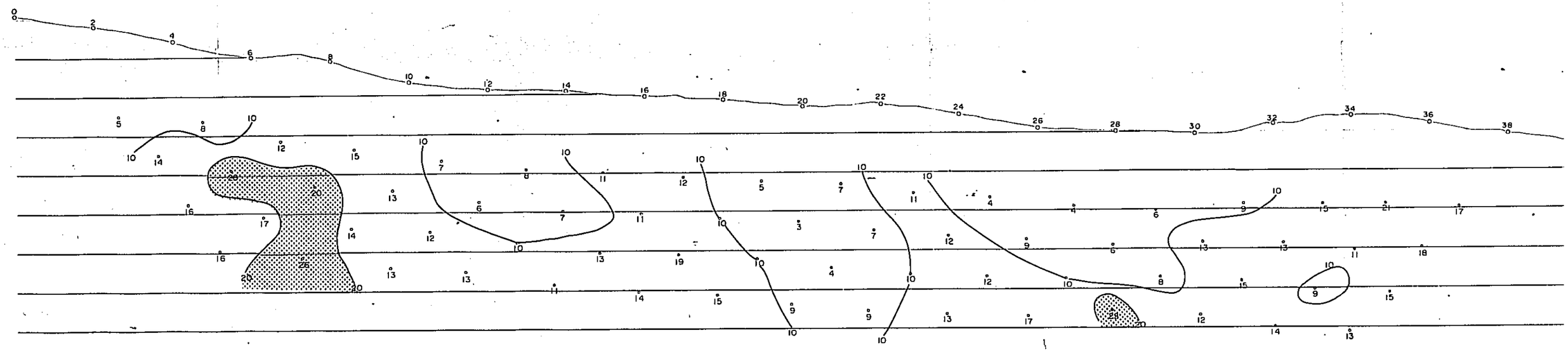
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFFCT (FE : ($\rho_{AC_1} - \rho_{AC_2}$) ÷ ρ_{AC_2} x 100 %)



METAL FACTOR (MF. : FE x 1000 ÷ ρ_{AC_2})



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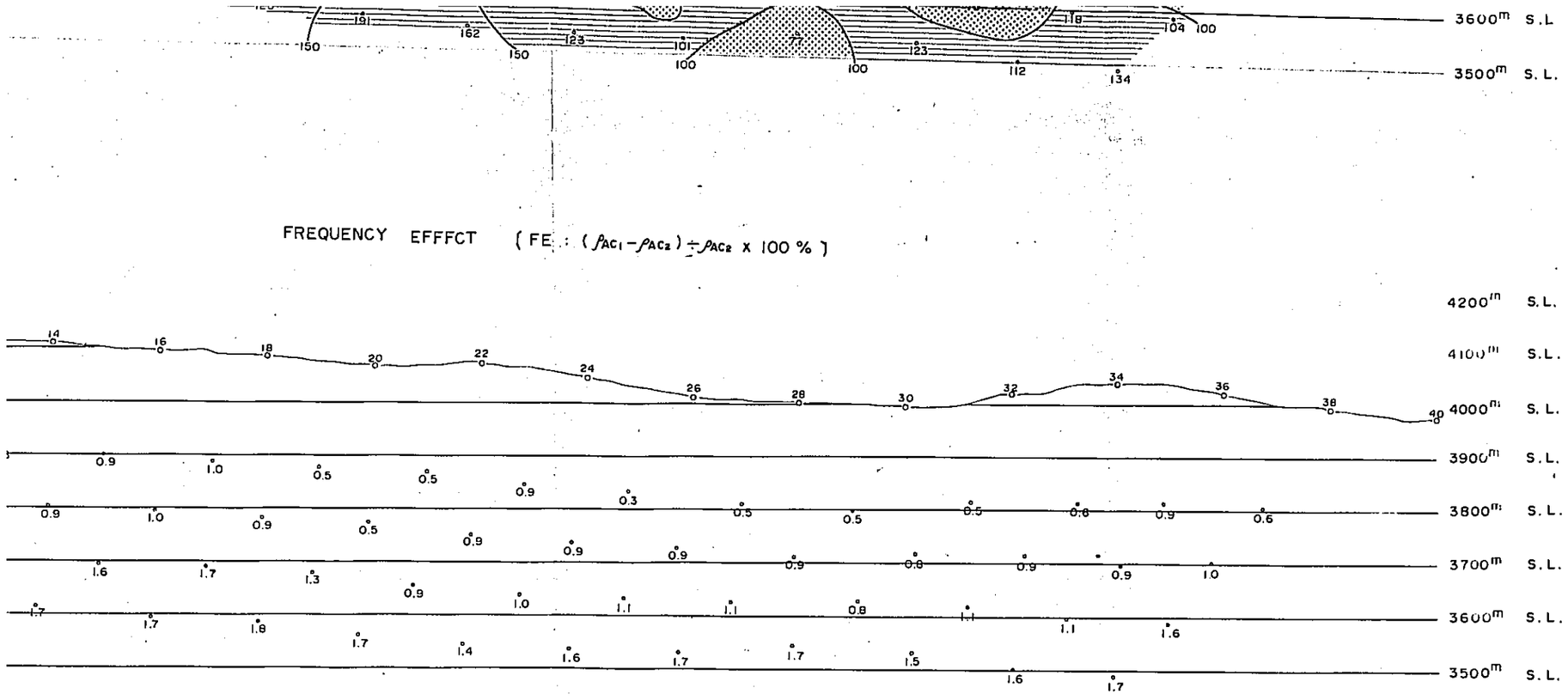
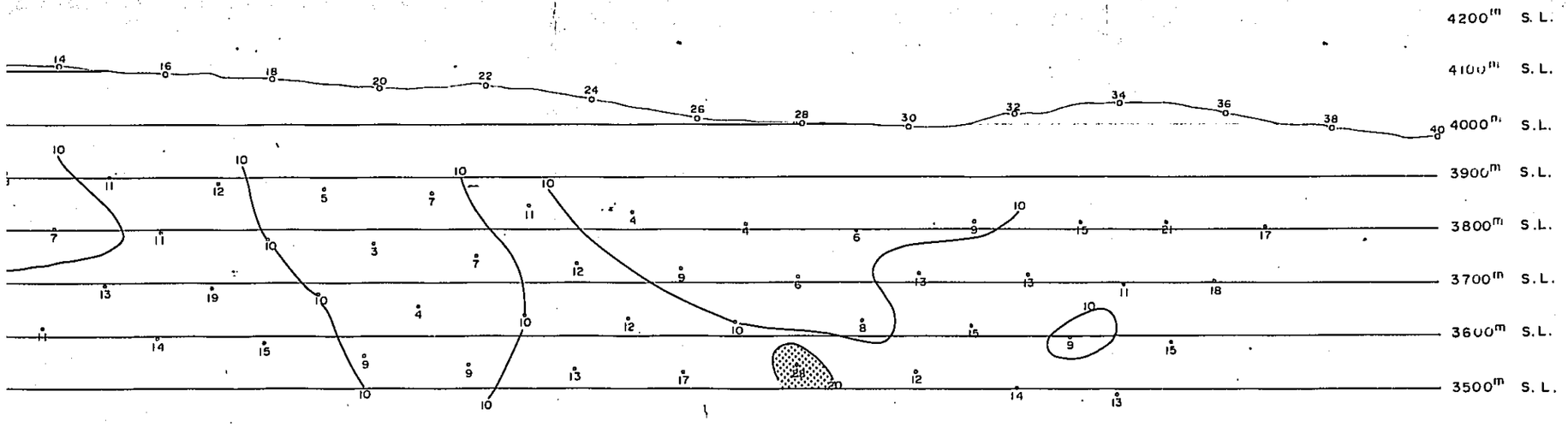


FREQUENCY EFFFCT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)

METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

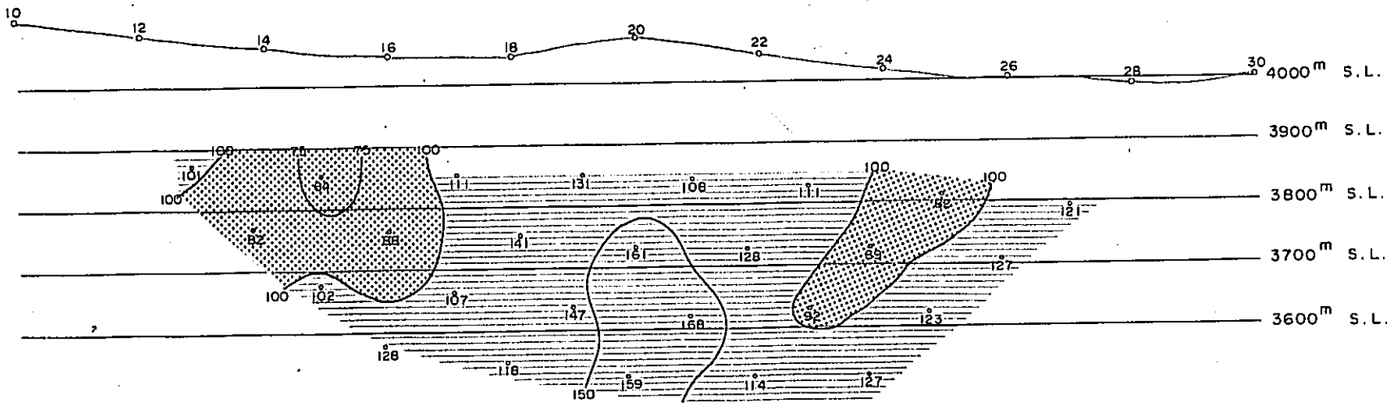
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

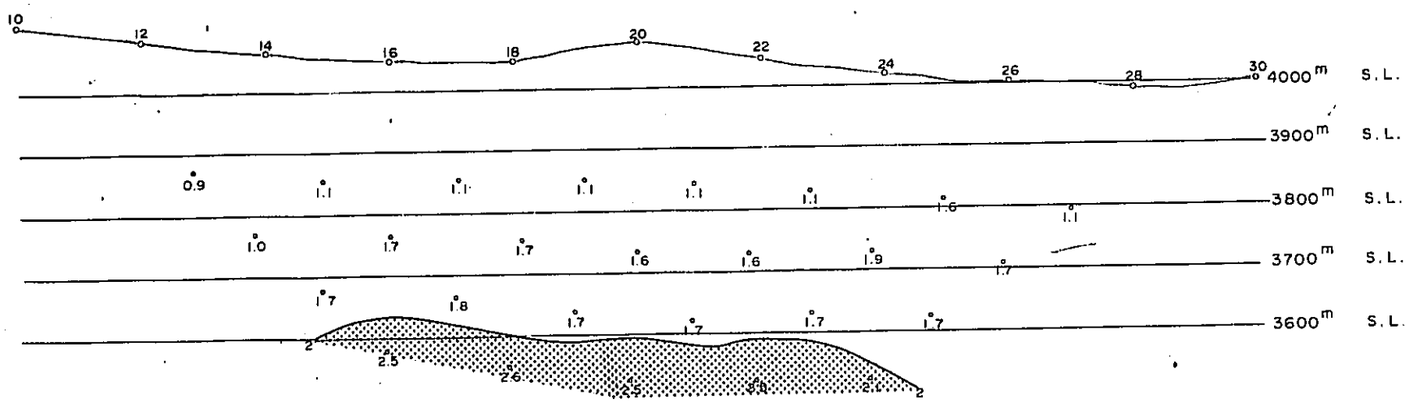
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-12 I P PROFILE ON LINE No. I'

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



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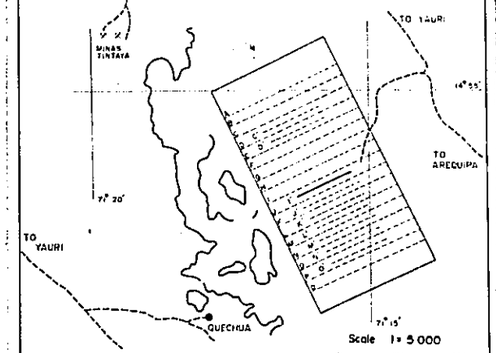
PL.Ⅱ-6-12

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)
IP PROFILE ON LINE I'



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

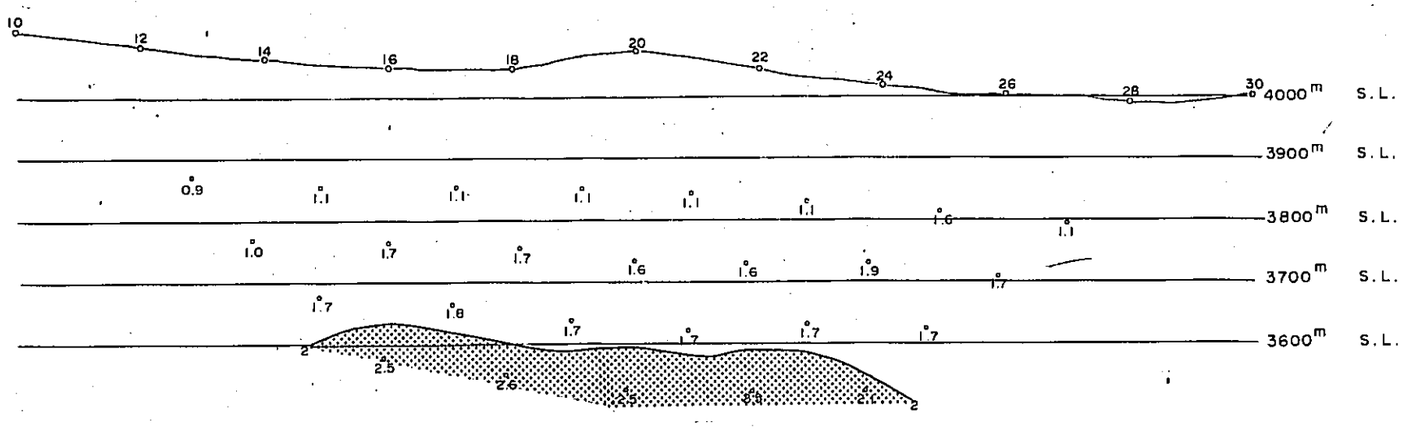
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m over

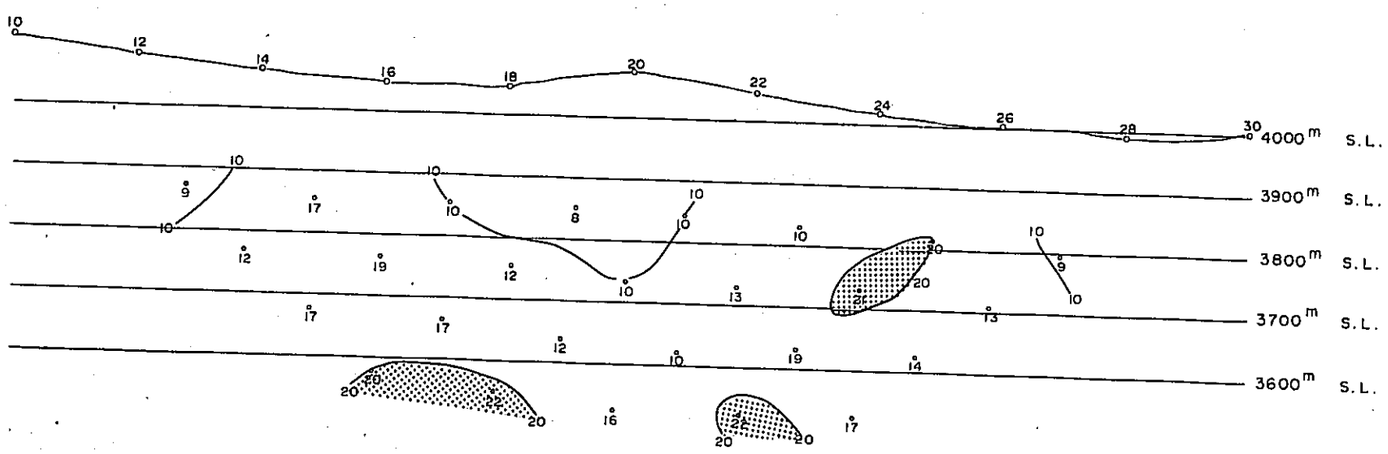
FE
- 2% Less
- 2% ~ 3%
- 3% 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40

FREQUENCY EFFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

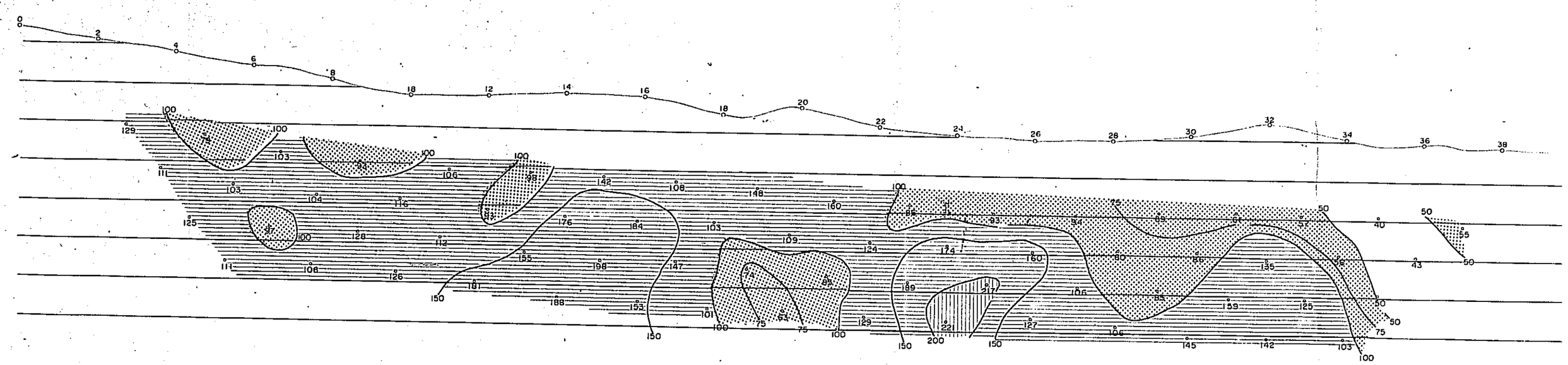
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2% Less
- 2% ~ 3%
- 3% 4%
- 4% Over

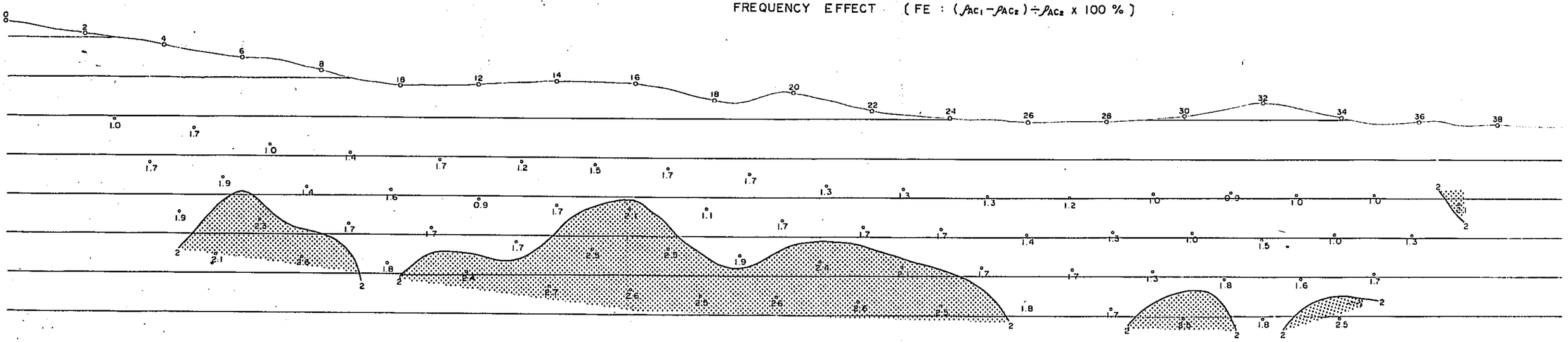
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-13 I P PROFILE ON LINE No.J

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



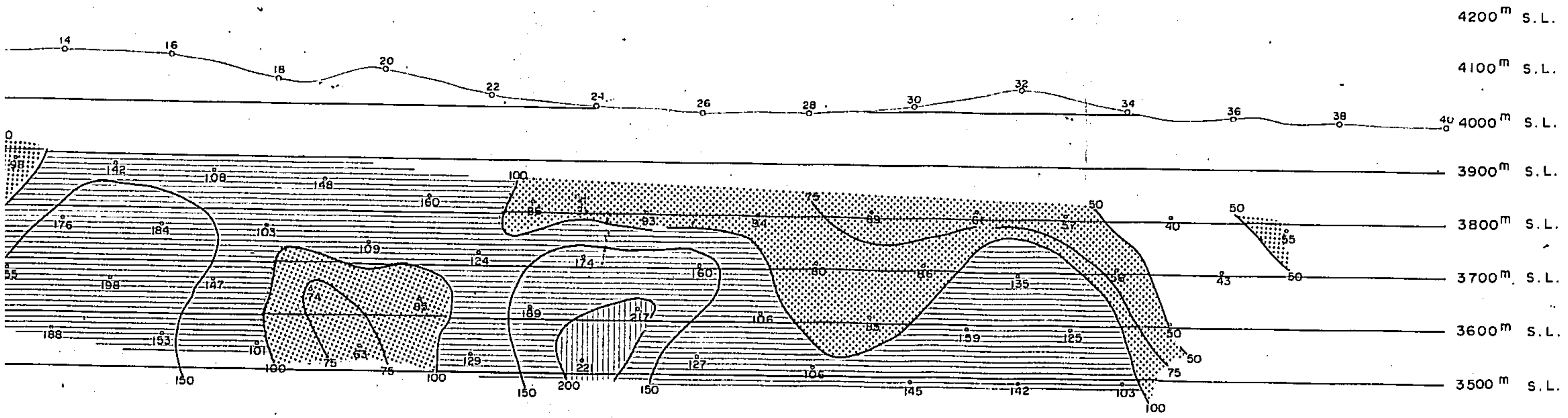
FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



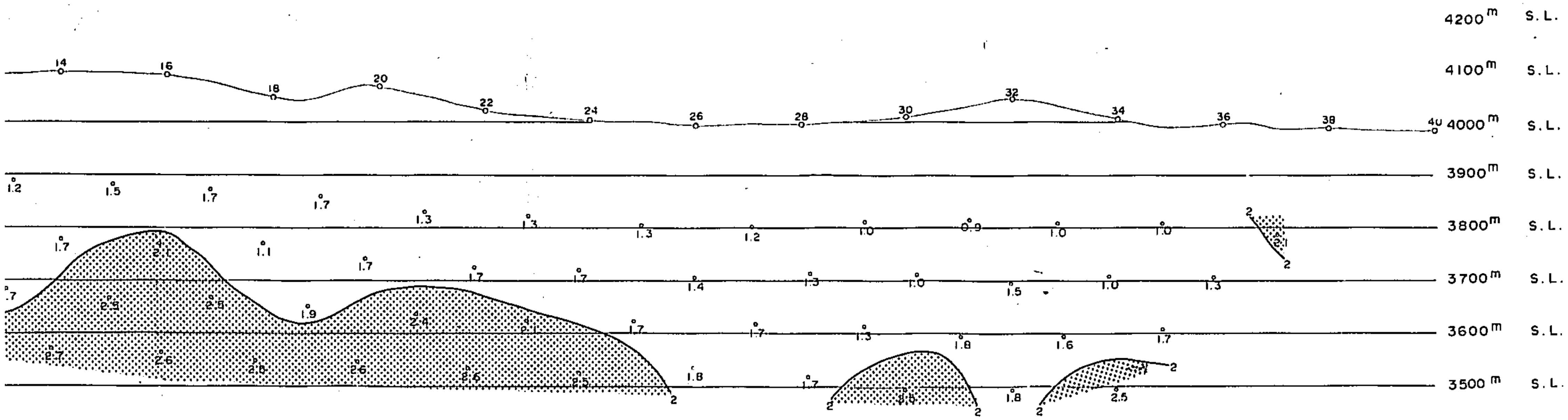
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL. II-6-13 IP PROFILE ON LINE No. J

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm−meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100$ %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

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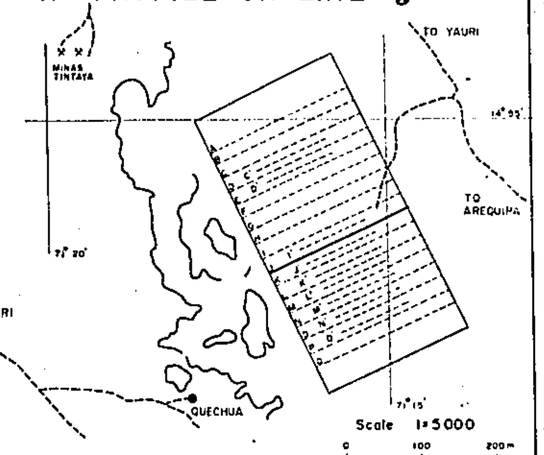
PL. II-6-13

GEOLOGICAL SURVEY OF YAURI AREA, SOUTHERN PERU (PHASE III)

IP PROFILE ON LINE J



METAL MINING AGENCY

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

JULY 1974

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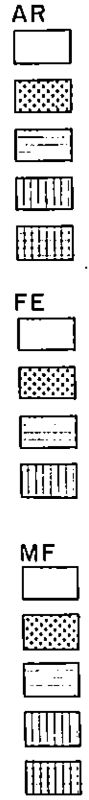
LEGEND

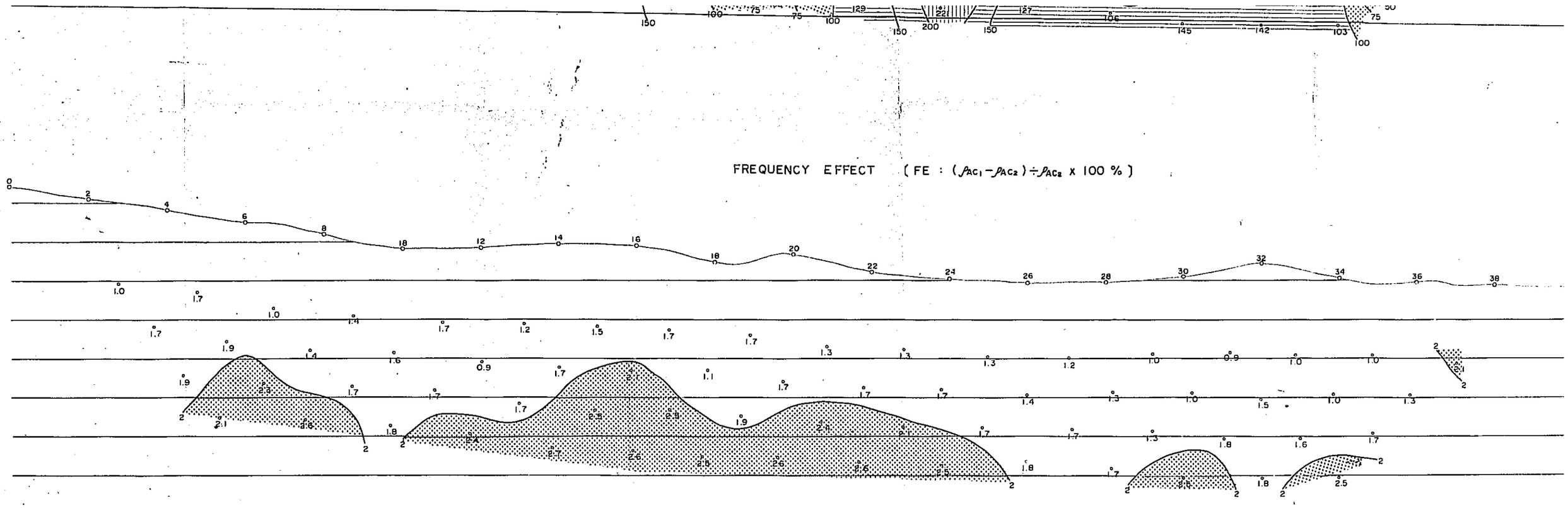


AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

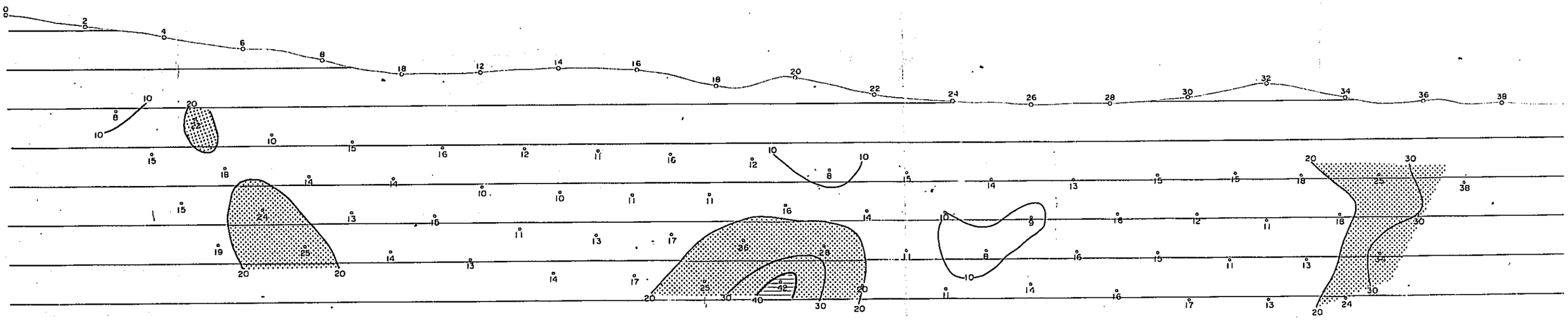
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



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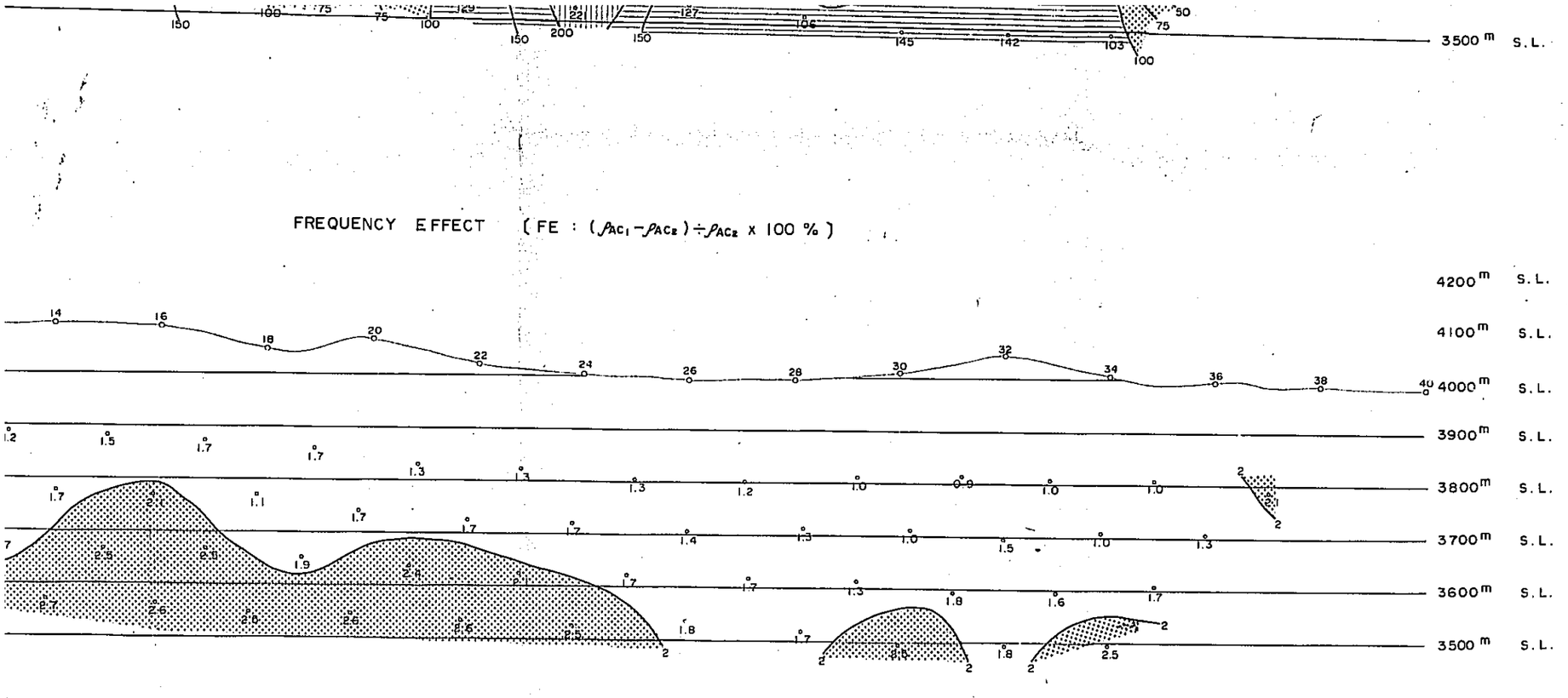
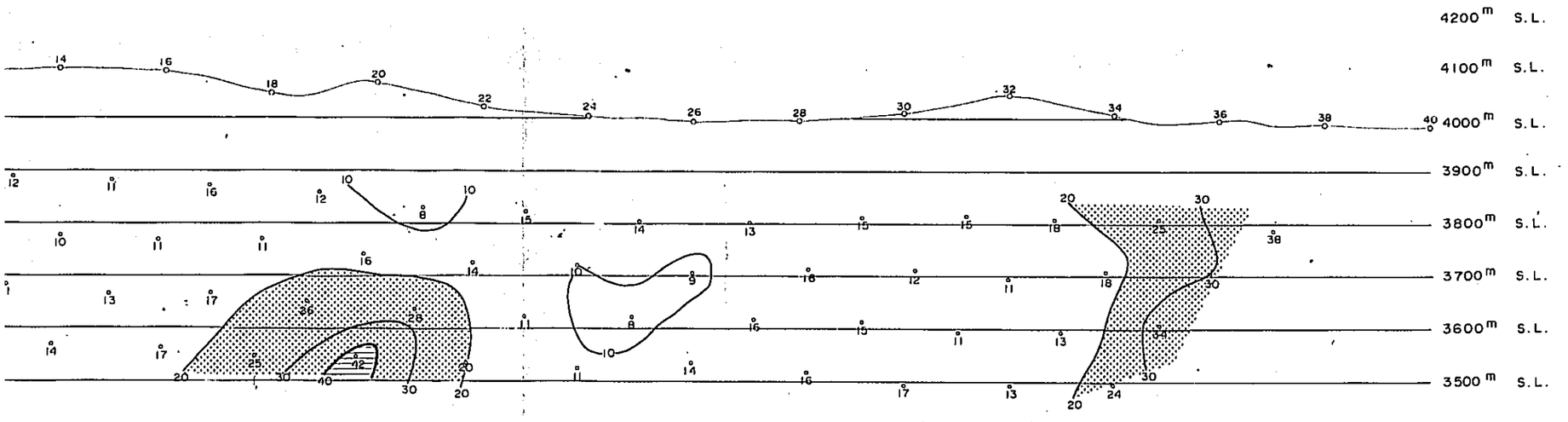
FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE

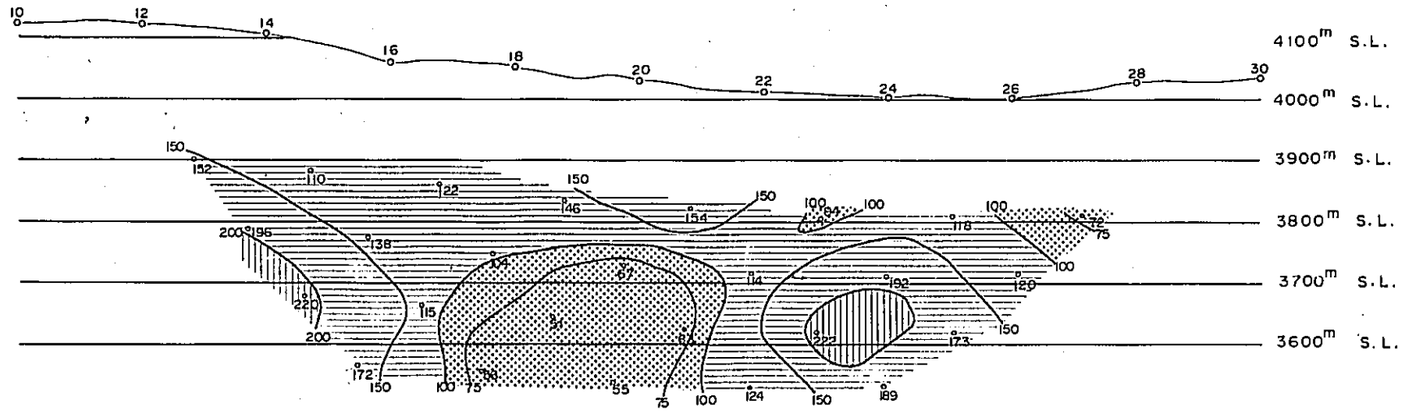
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF

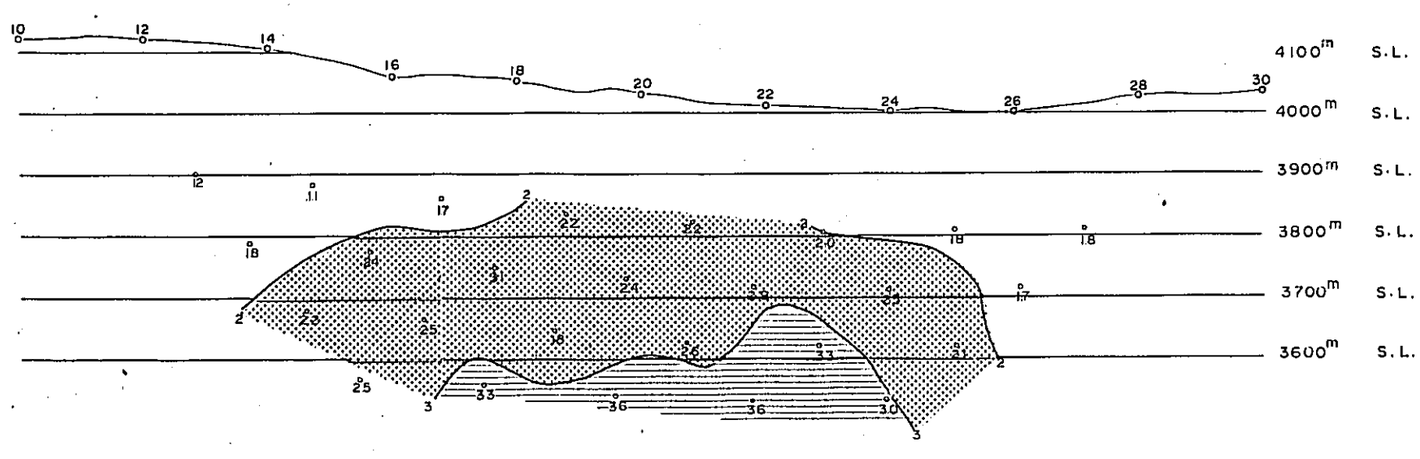
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-14 IP PROFILE ON LINE No. J'

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



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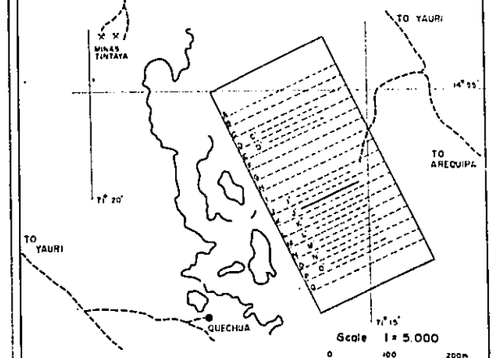
PL. II-6-14

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE J'



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

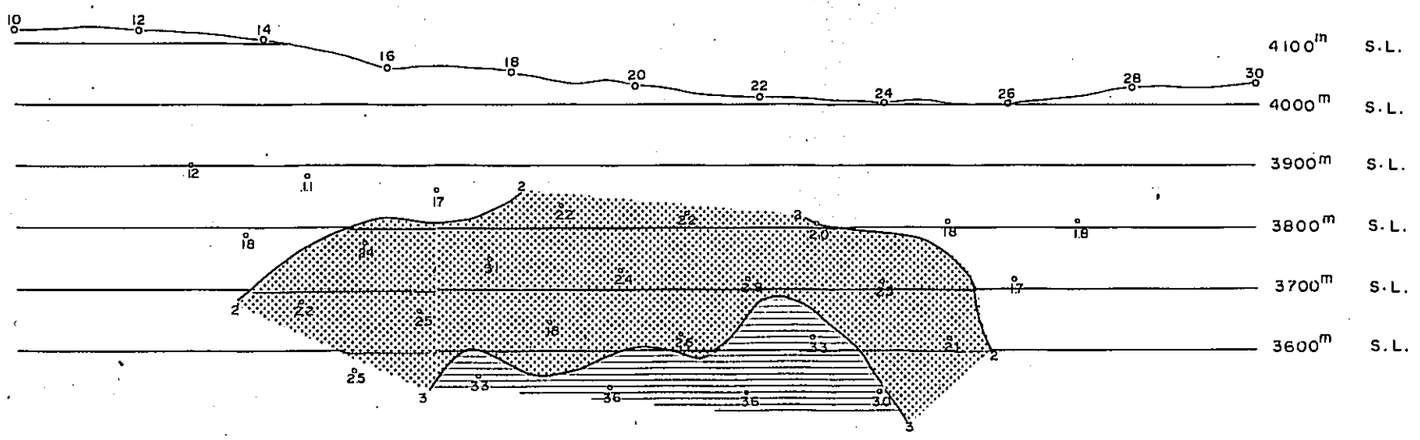
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

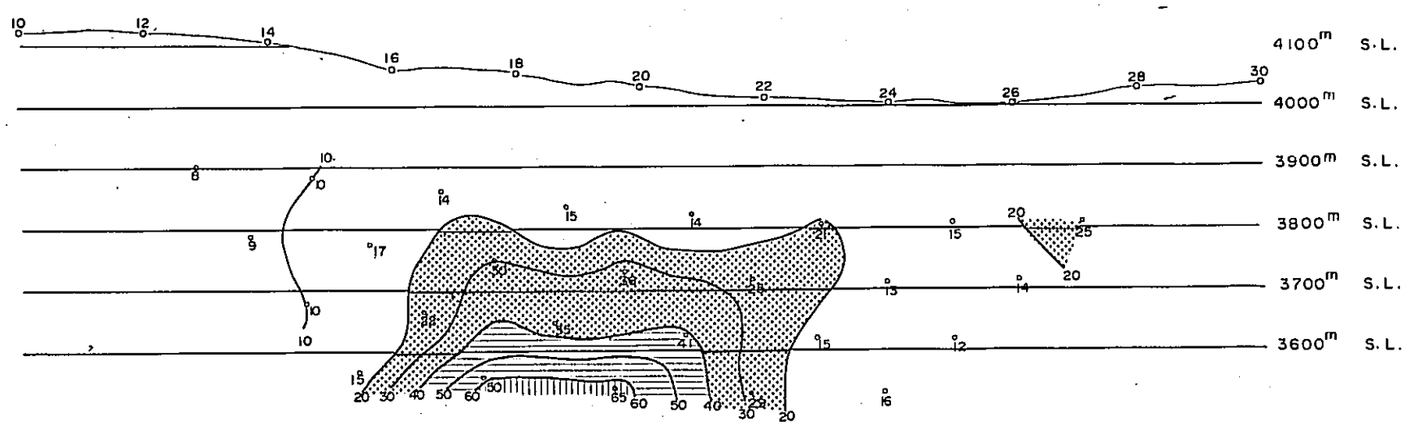
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40

FREQUENCY EFFECT (FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %)



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



LEGEND

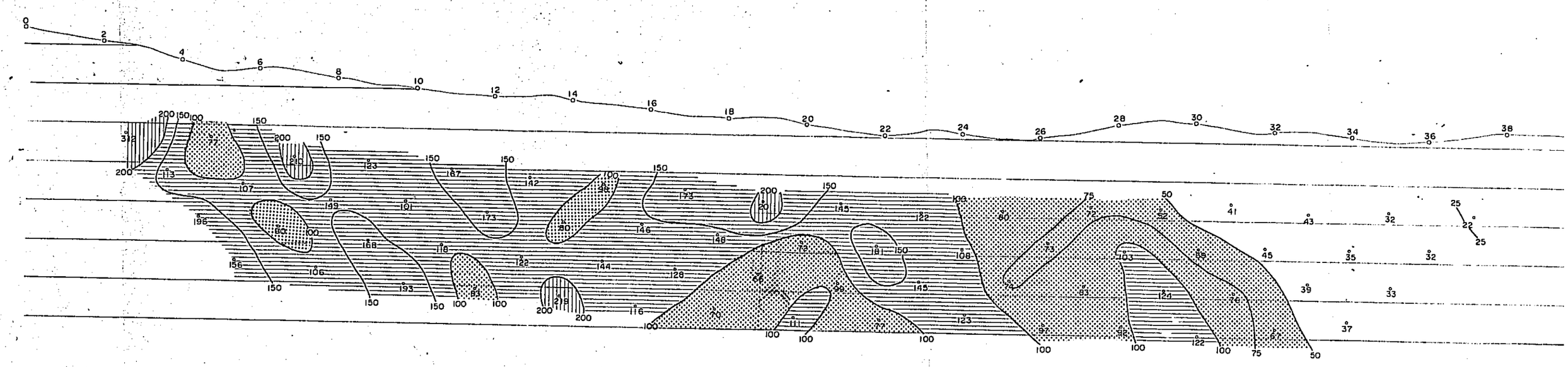
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

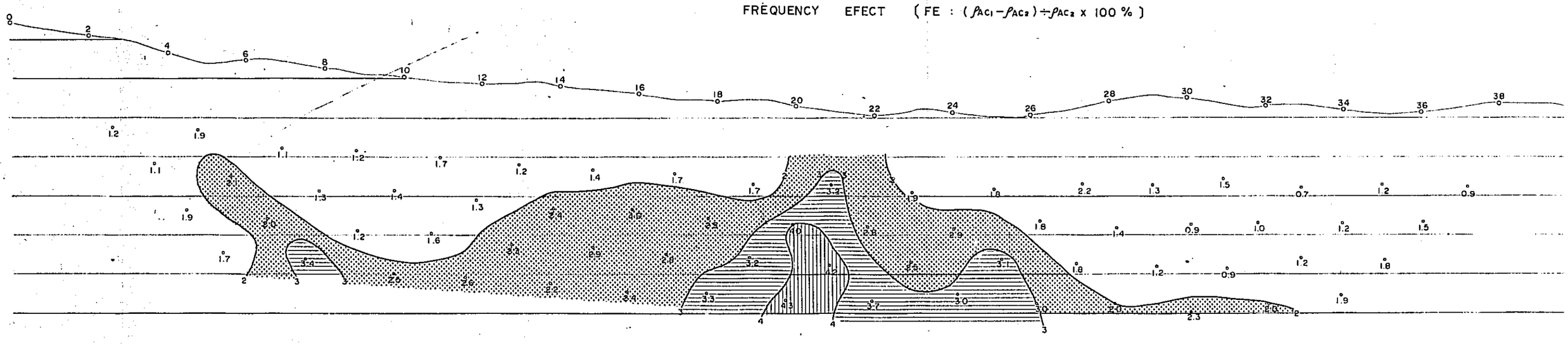
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-15 I P PROFILE ON LINE No. K

APPARENT RESISTIVITY (AR : ρ_{Ac_2} ohm-meter)



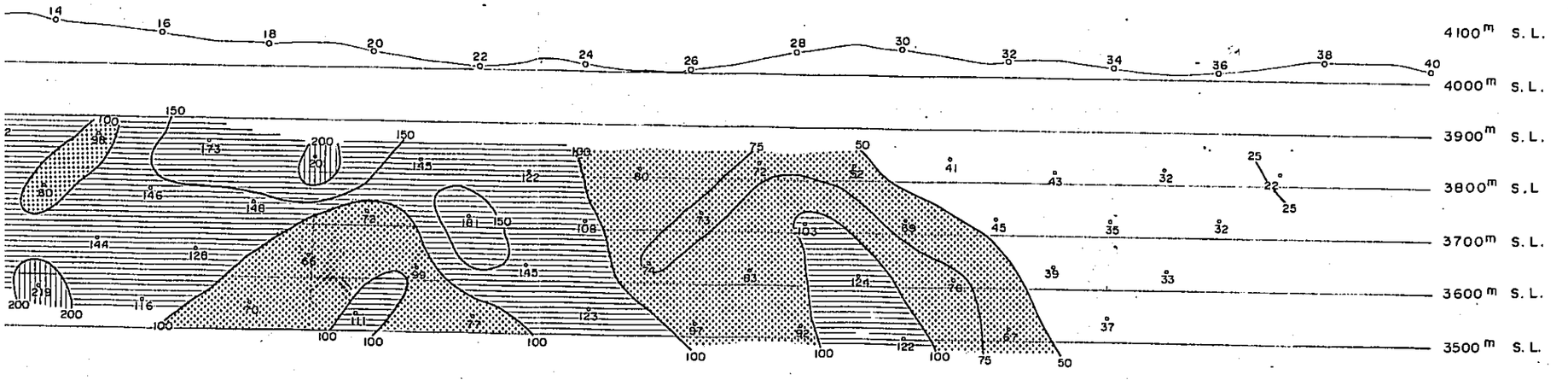
FREQUENCY EFECT (FE : $(\rho_{Ac_1}-\rho_{Ac_2})\div\rho_{Ac_2}\times 100\ \%$)



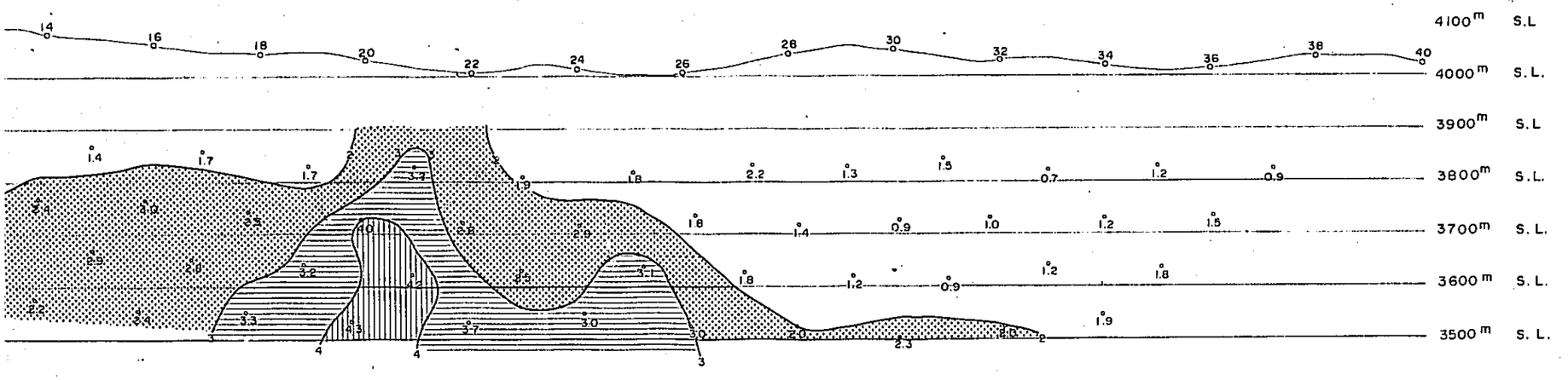
METAL FACTOR (MF : FE x 1000 ÷ ρ_{Ac_2})

PL. Ⅱ-6-15 I.P PROFILE ON LINE No.K

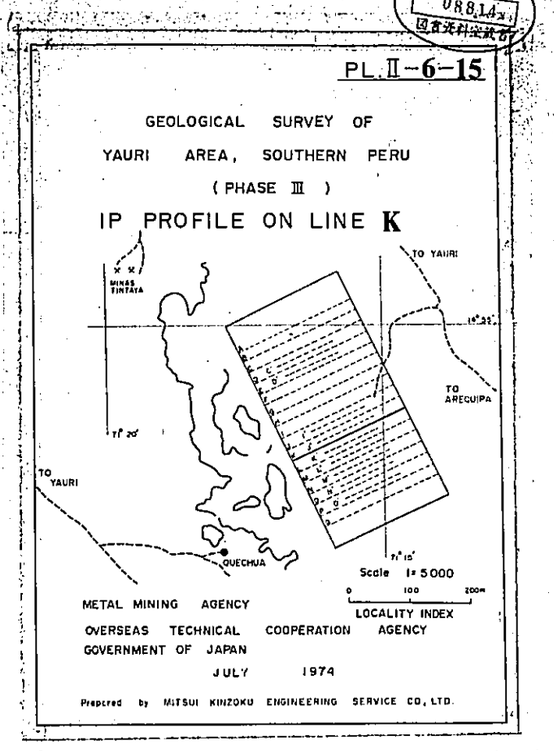
APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



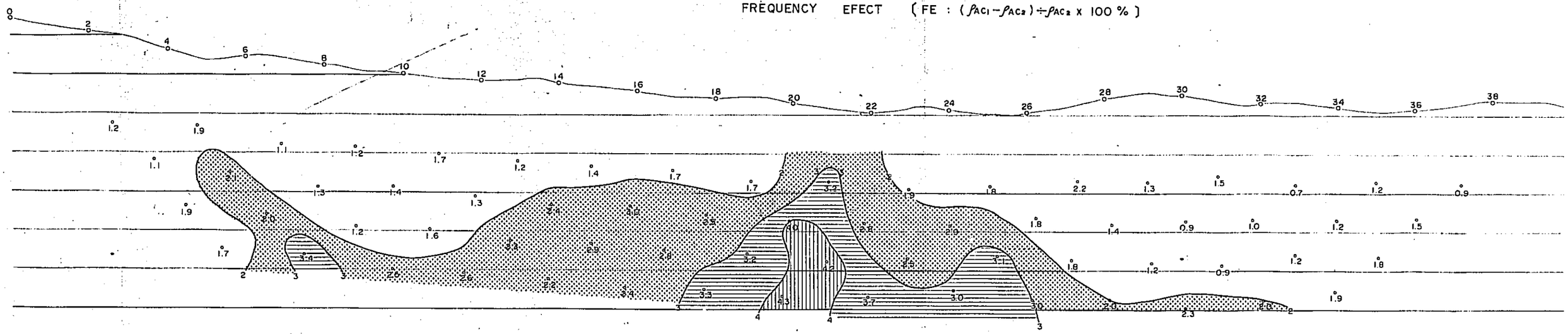
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

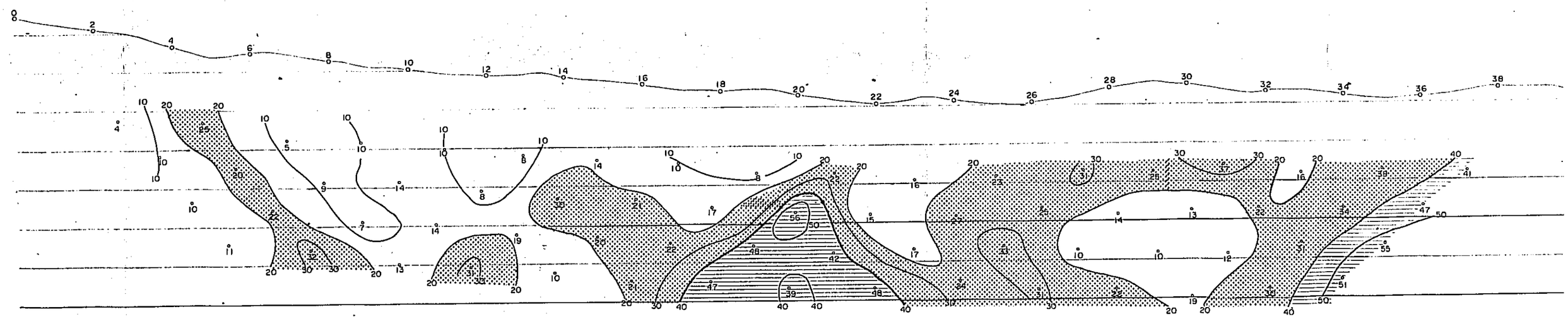
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

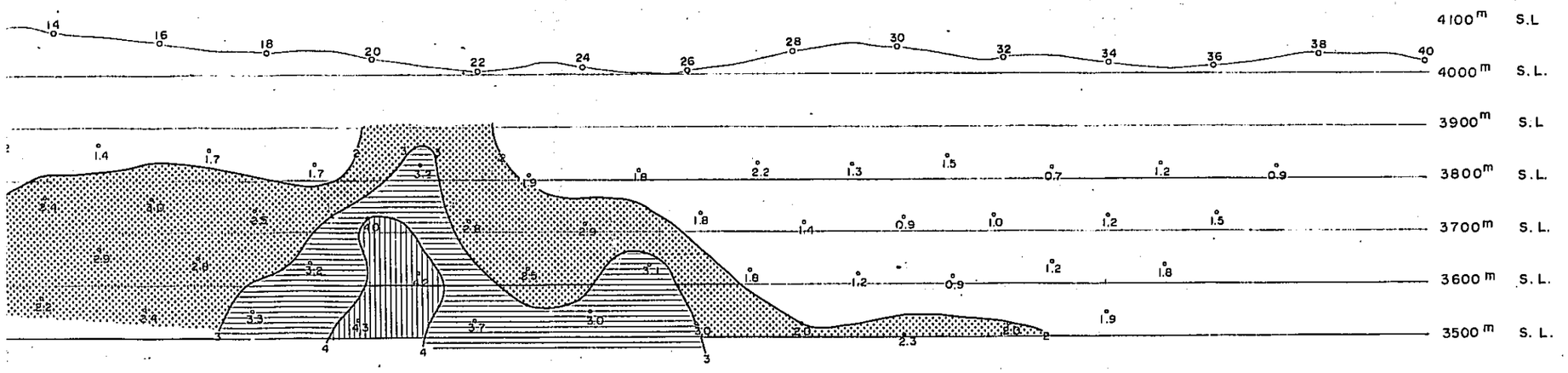
FREQUENCY EFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



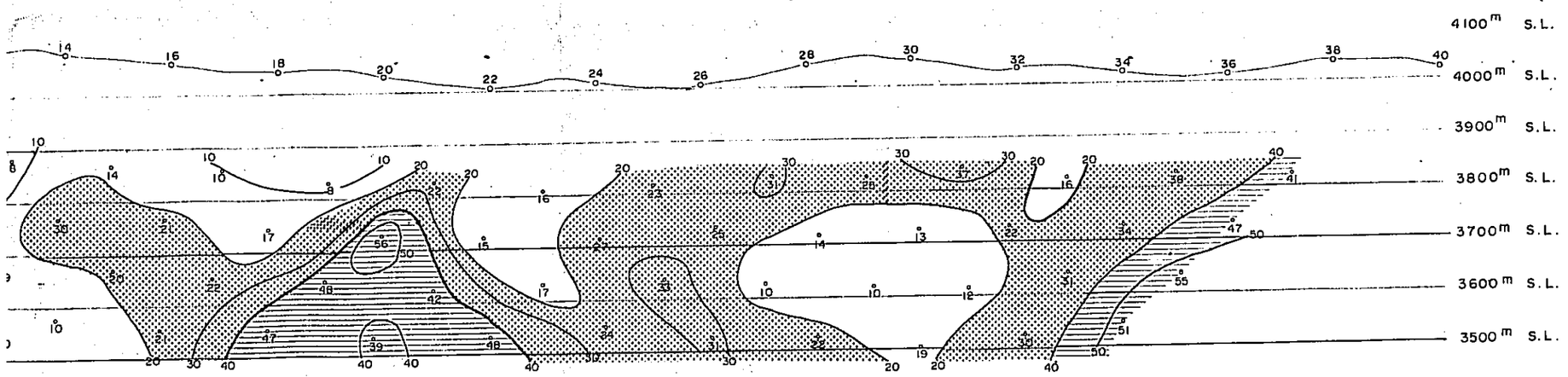
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



FREQUENCY EFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

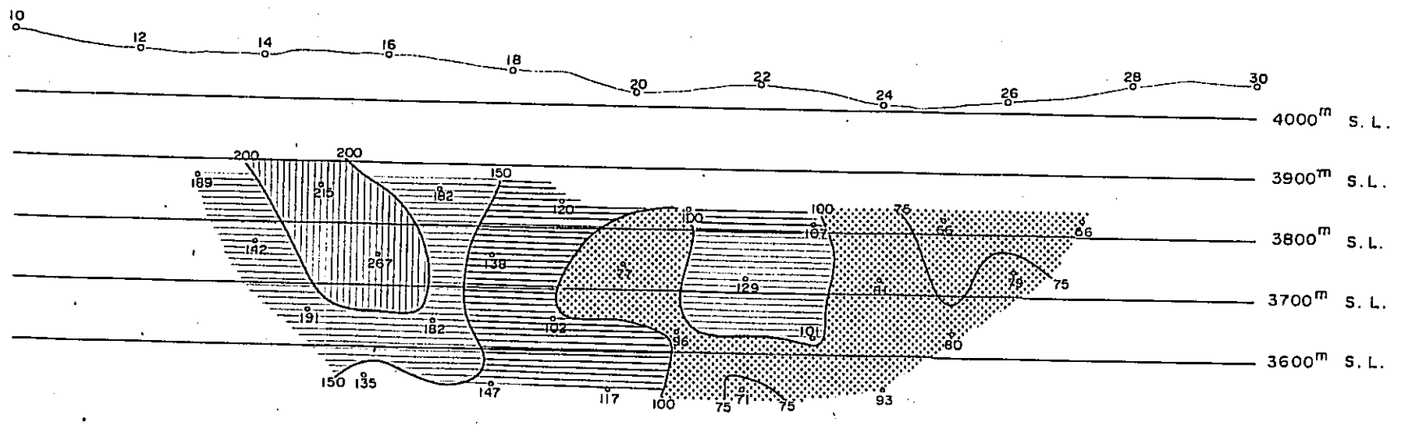
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF

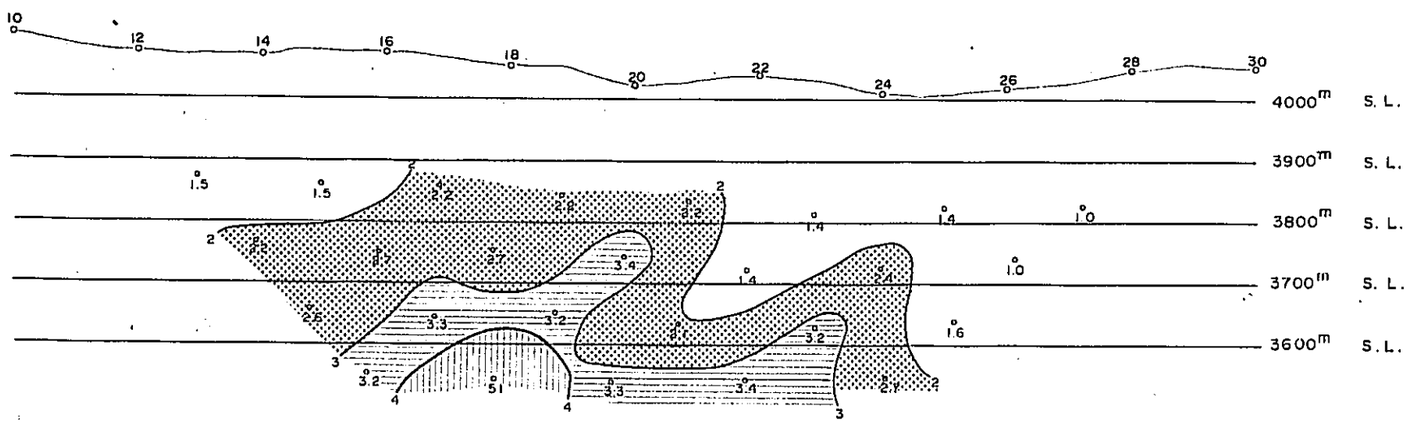
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-16 IP PROFILE ON LINE No. K′

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



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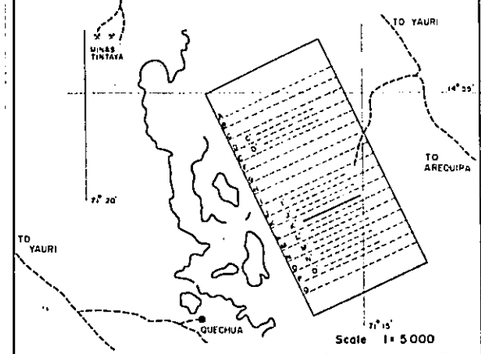
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE K′



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

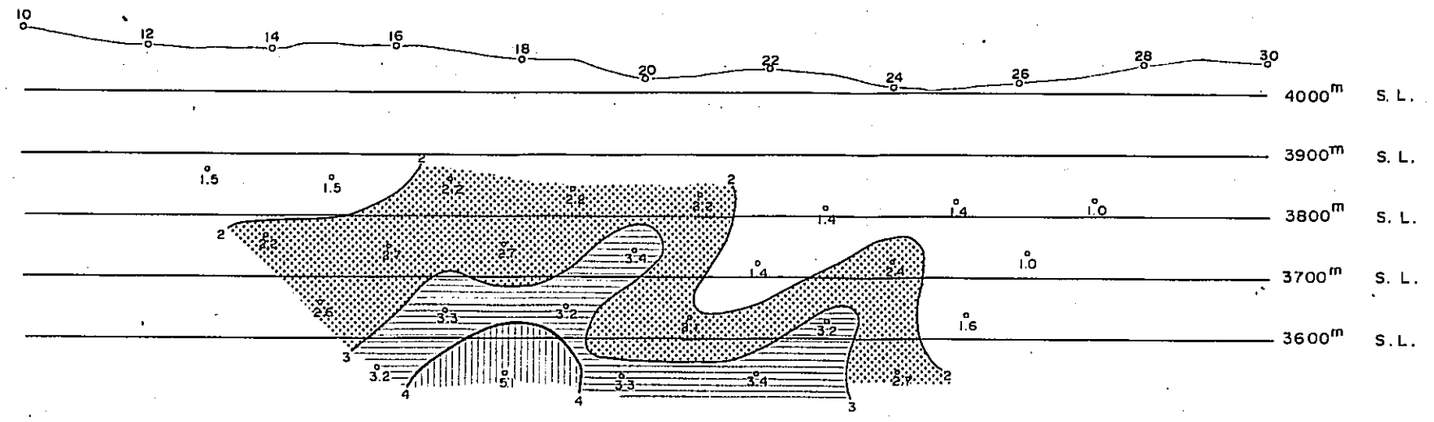
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

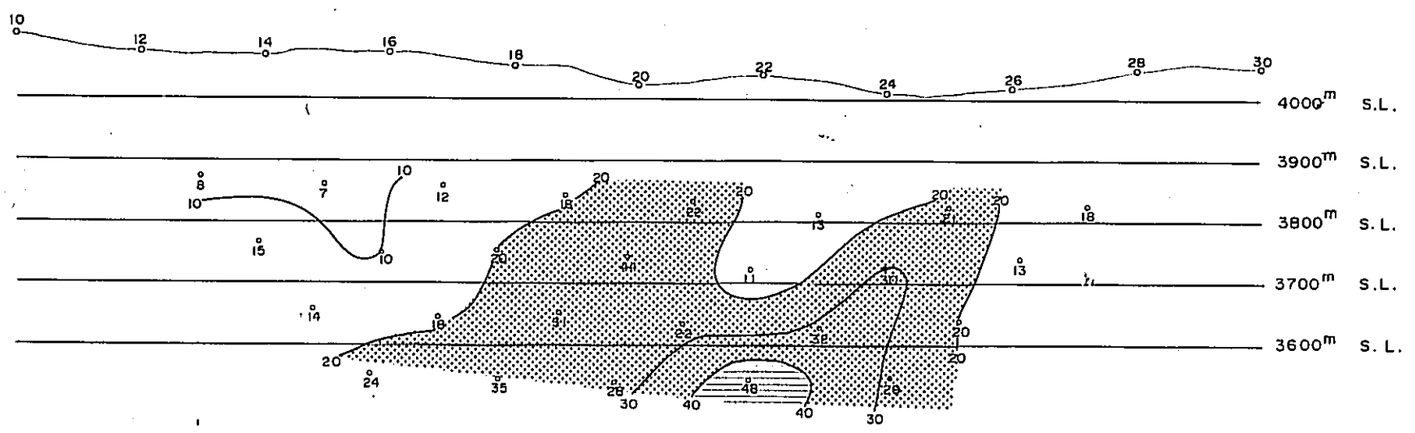
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT (FE : ($\rho_{AC1}-\rho_{AC2}$) ÷ ρ_{AC2} x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

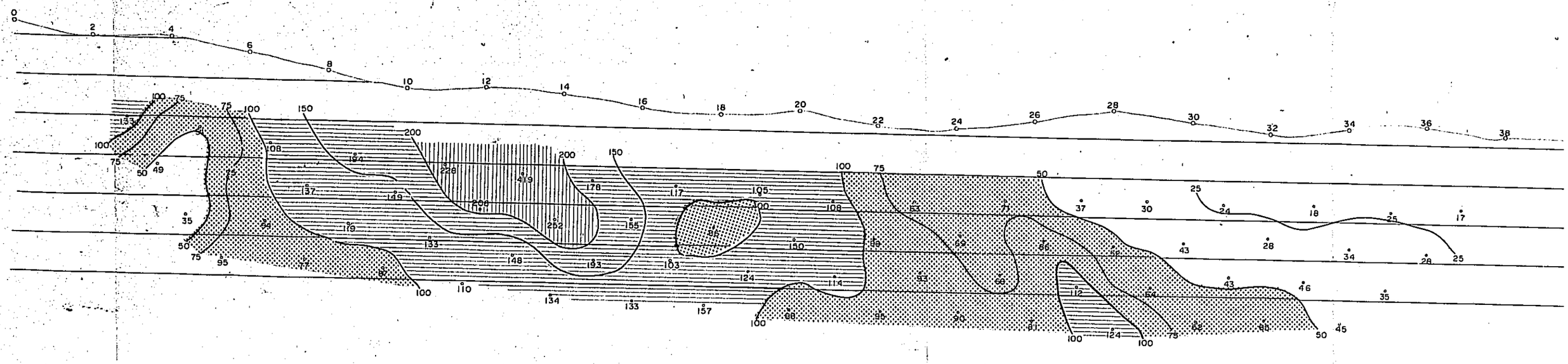
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

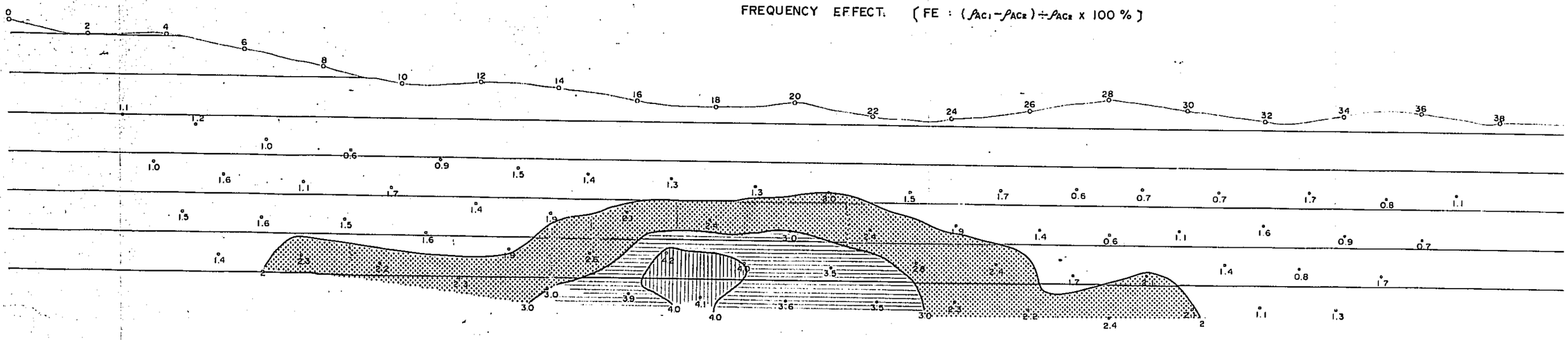
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

P.L. II-6-17 I P PROFILE ON LINE No. L

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



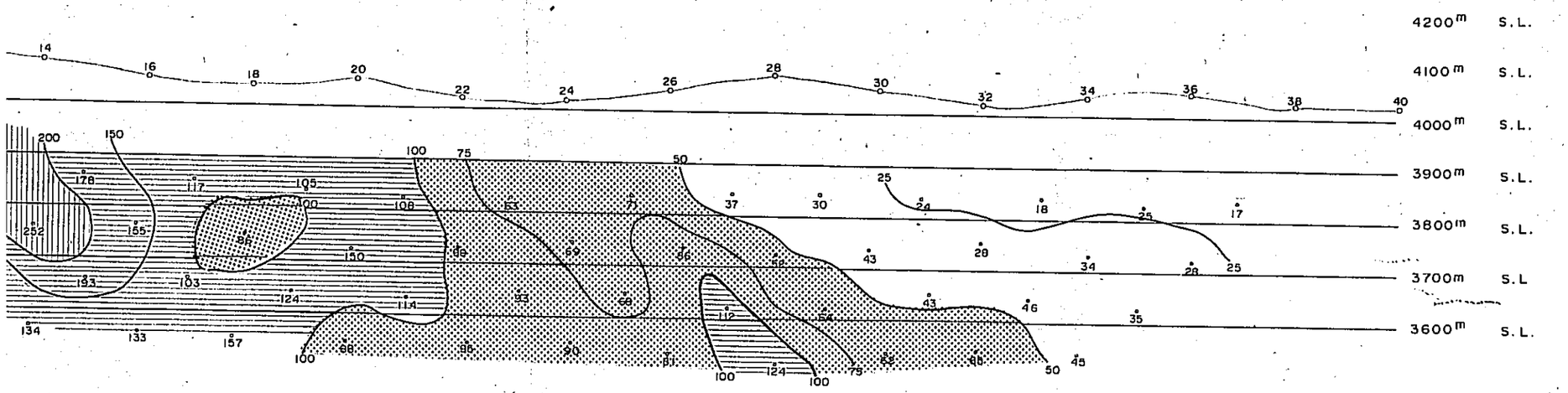
FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)



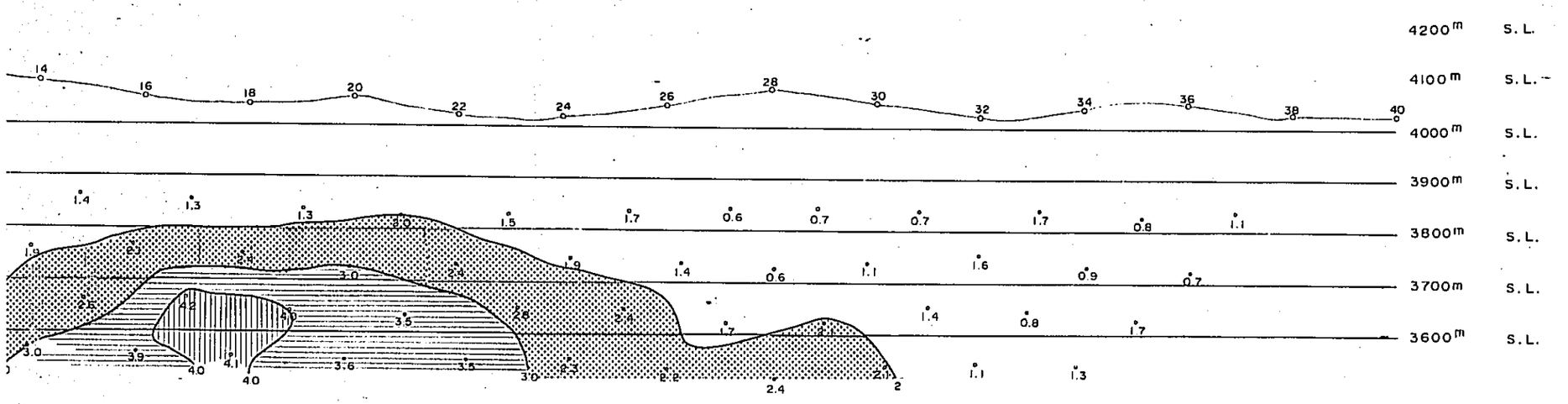
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL. Ⅱ-6-17 IP PROFILE ON LINE No. L

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT. (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\,\%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

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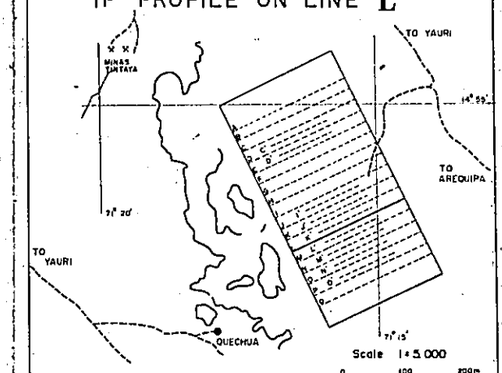
PL.Ⅱ-6-17

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE **L**



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

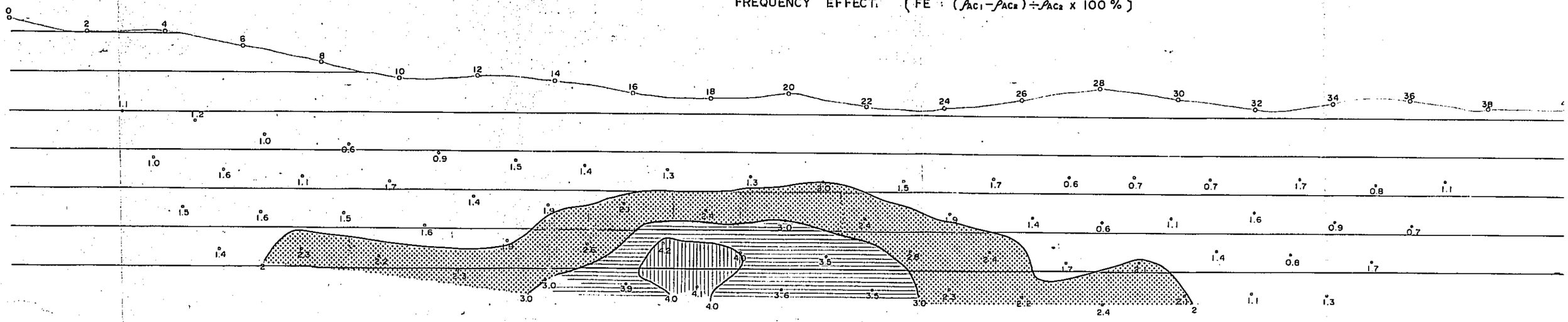
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

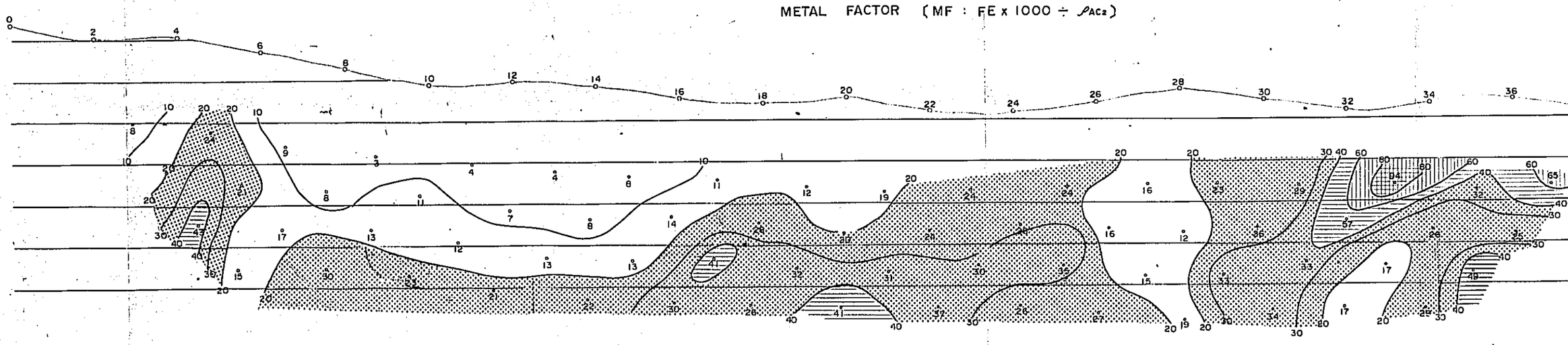
FE
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4% Over

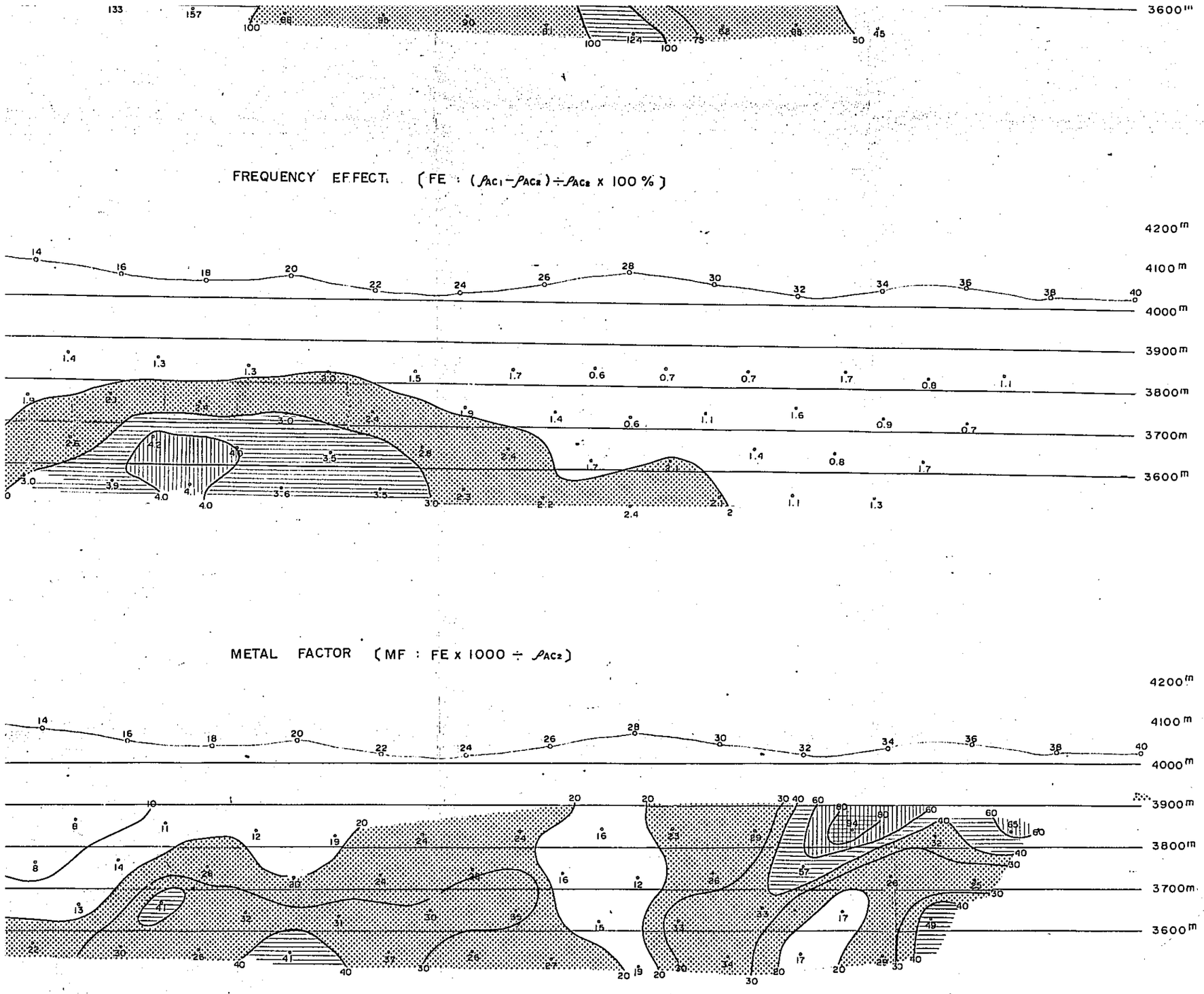
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})





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LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE

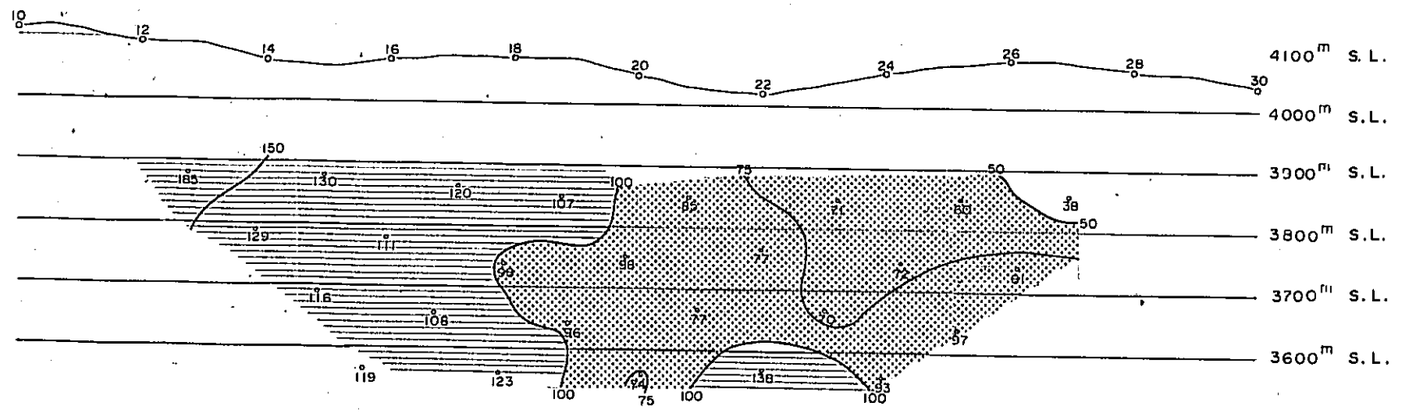
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4% Over

MF

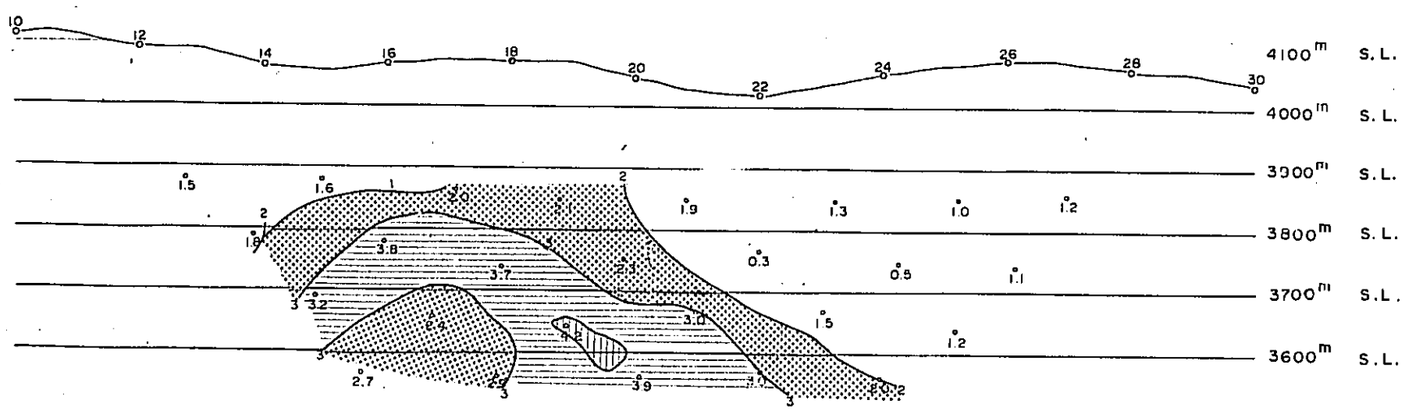
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-18 IP PROFILE ON LINE No. L'

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)



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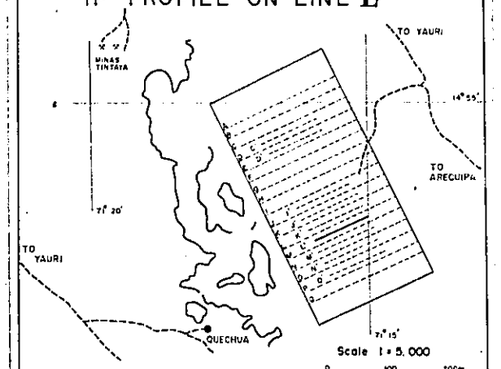
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE L'



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JULY 1974

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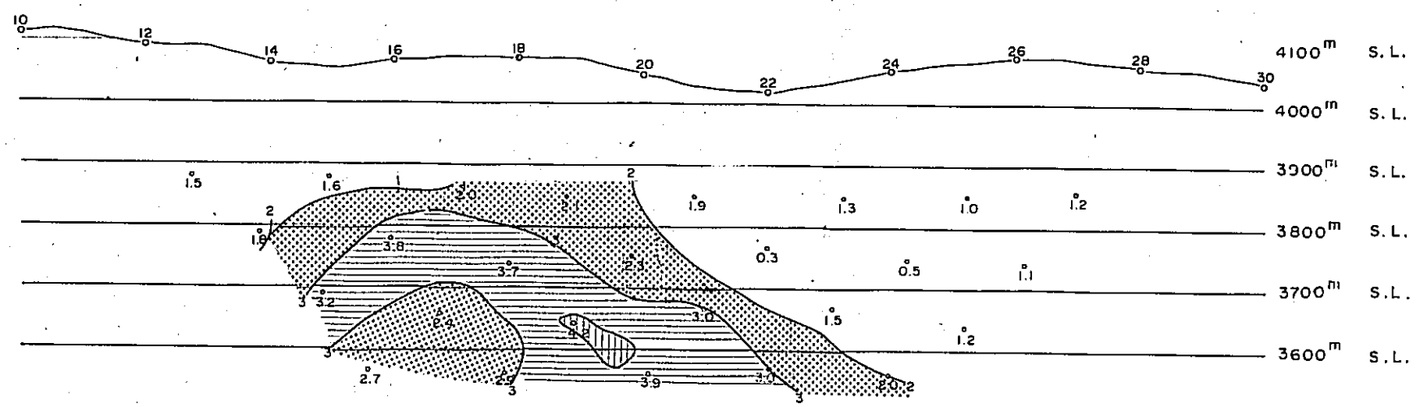
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

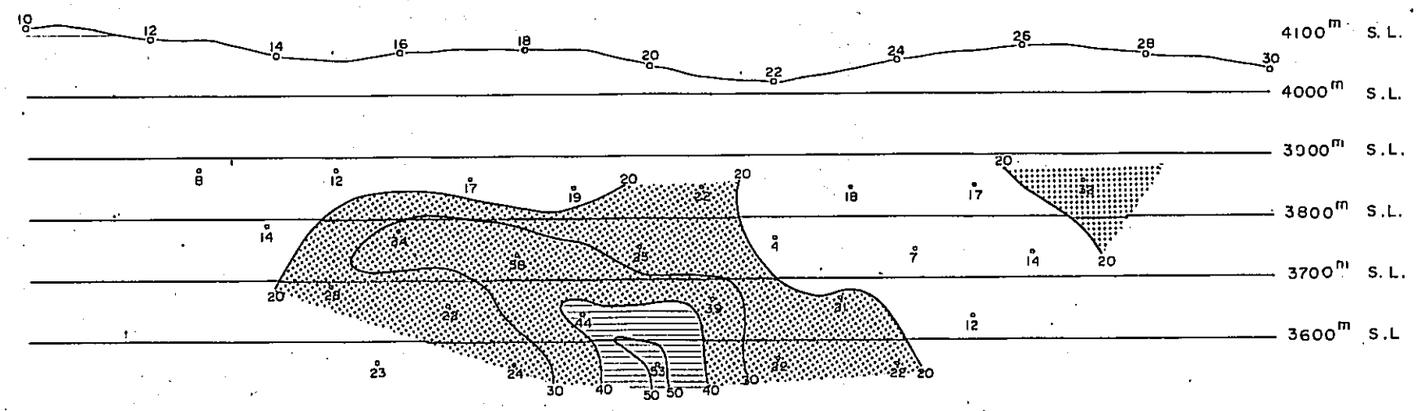
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

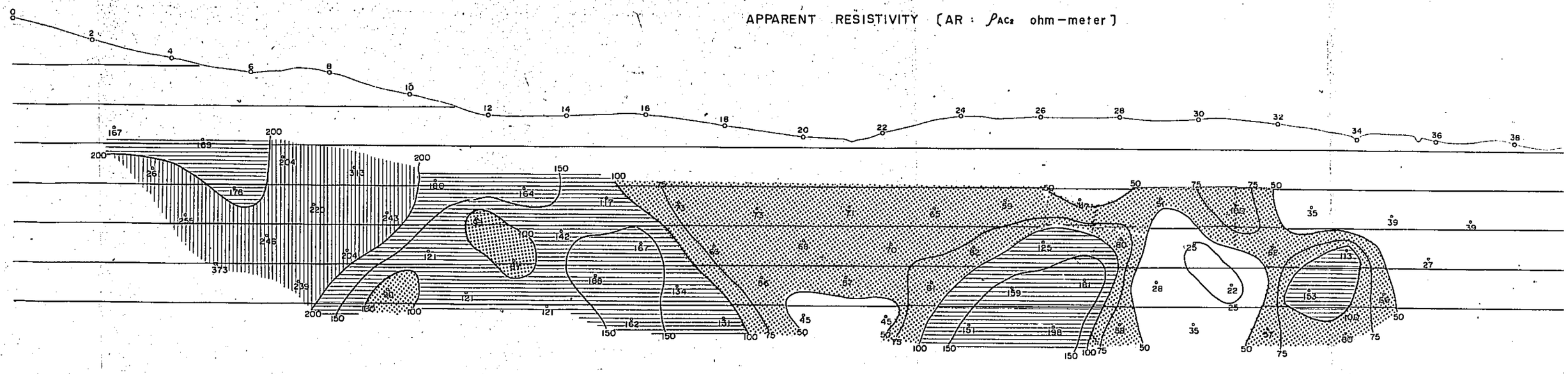
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

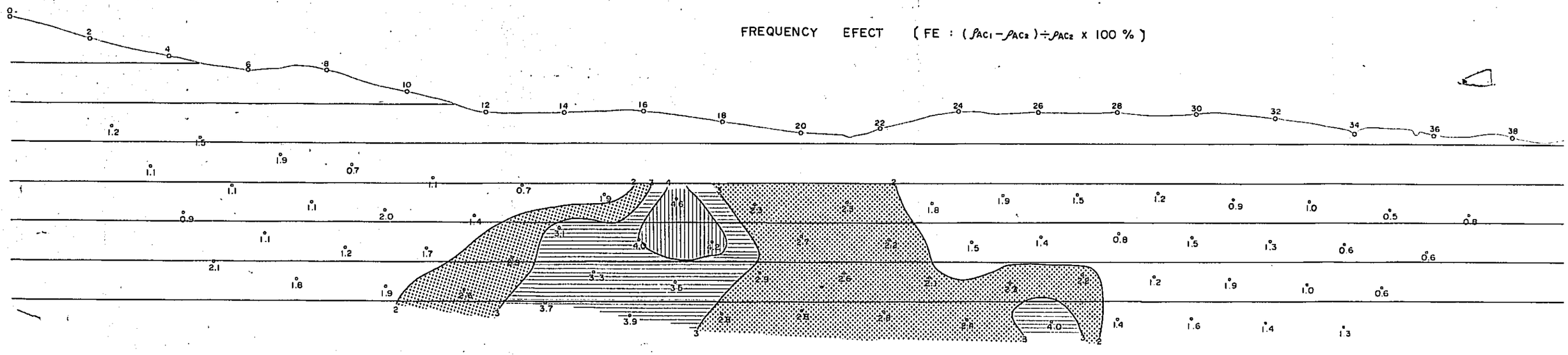
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-19 I.P PROFILE ON LINE No.M

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



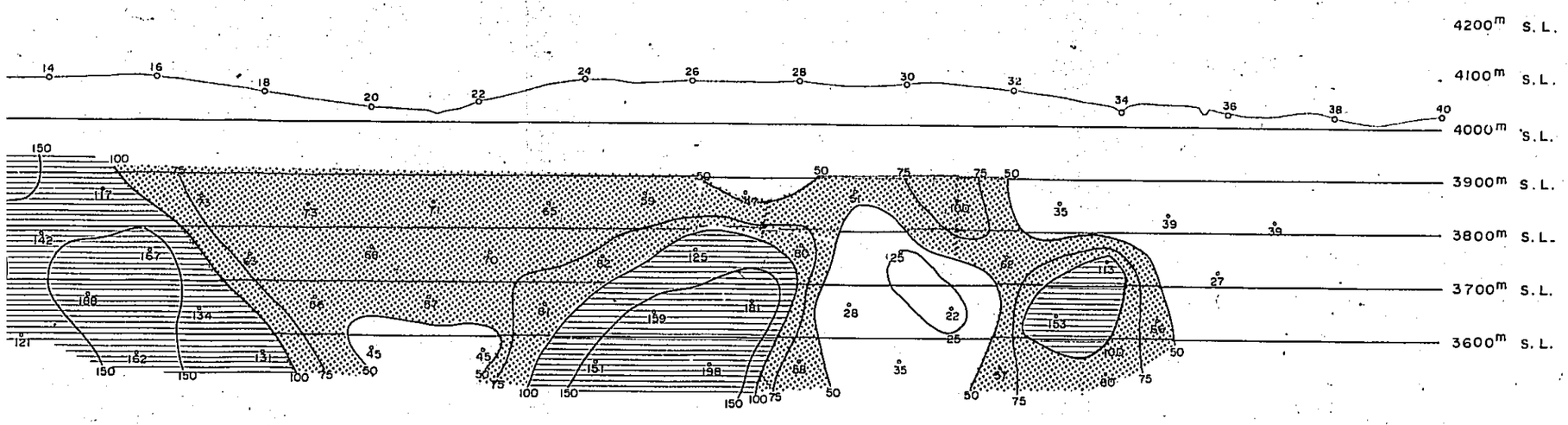
FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



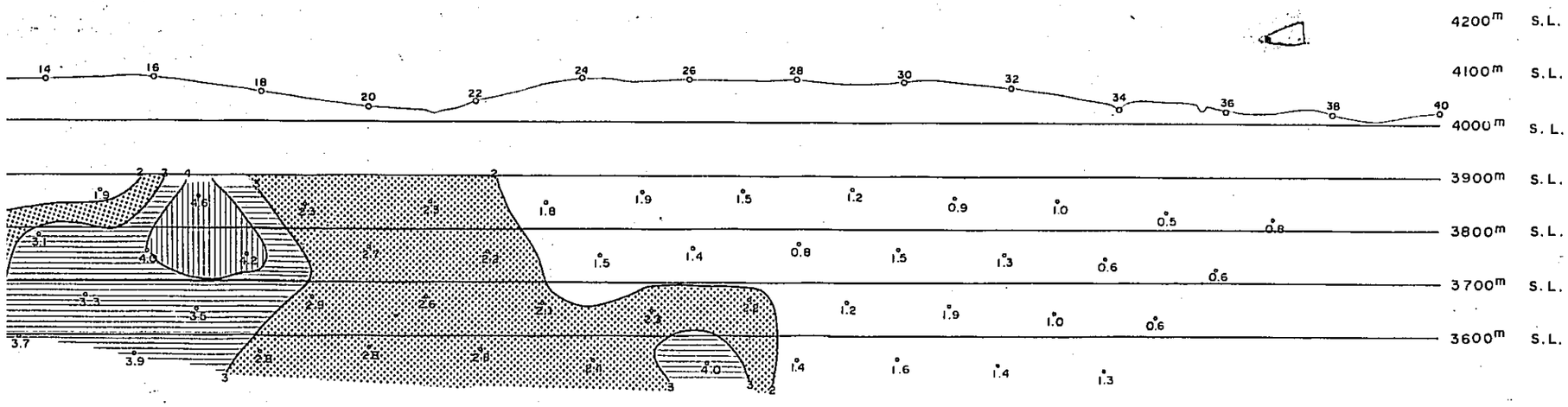
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL. Ⅱ-6-19 I P PROFILE ON LINE No.M

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



METAL FACTOR (MF : FE ÷ AR x 1000 : ρ_{AC_2})

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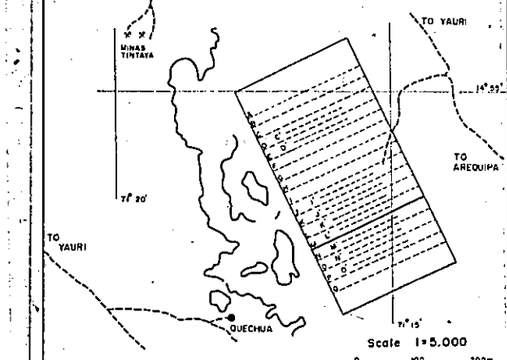
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE **M**



Scale 1:5.000
0 100 200m
LOCALITY INDEX

METAL MINING AGENCY
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GOVERNMENT OF JAPAN

JULY 1974

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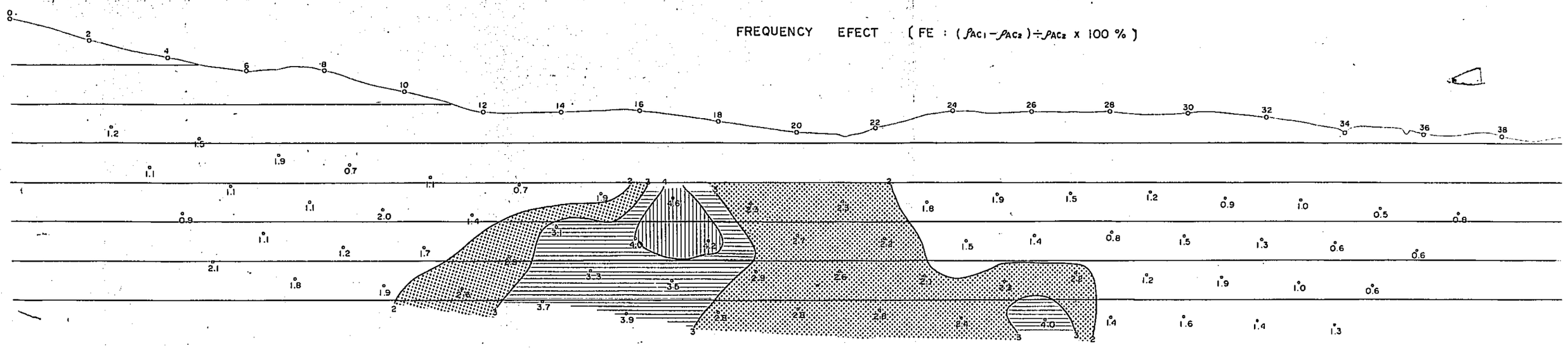
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

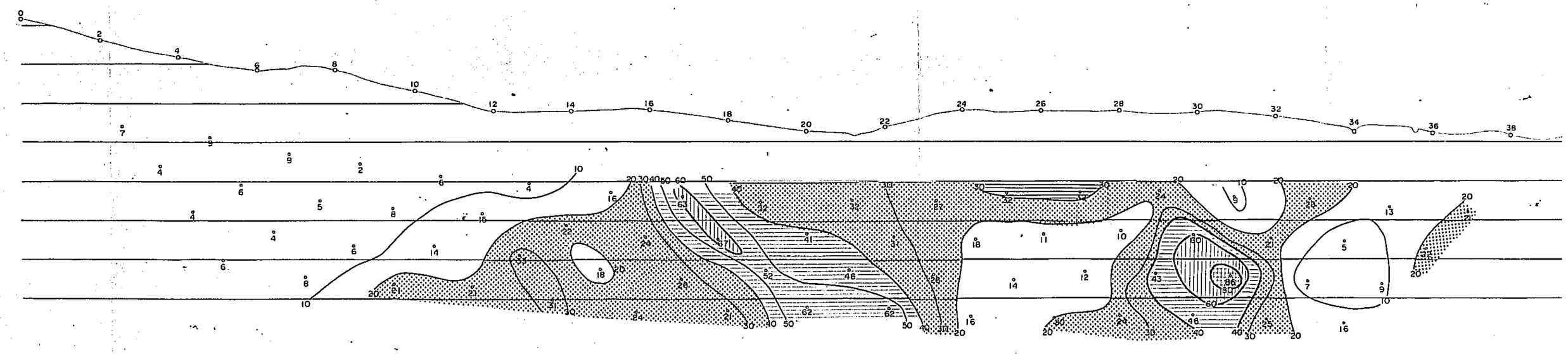
FE
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFECT (FE : ($\rho_{AC1} - \rho_{AC2}$) ÷ ρ_{AC2} x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



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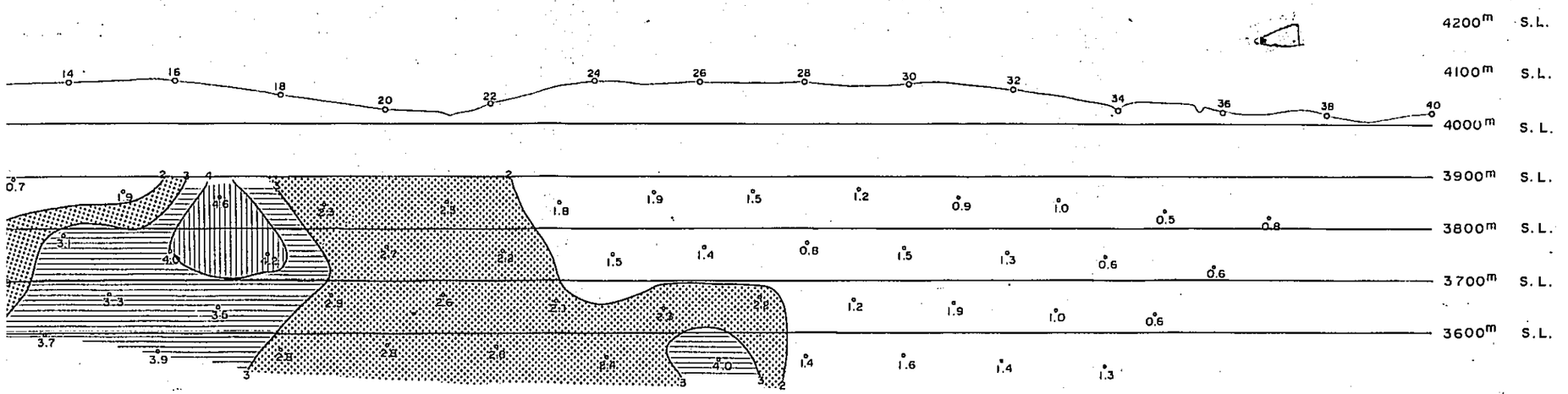
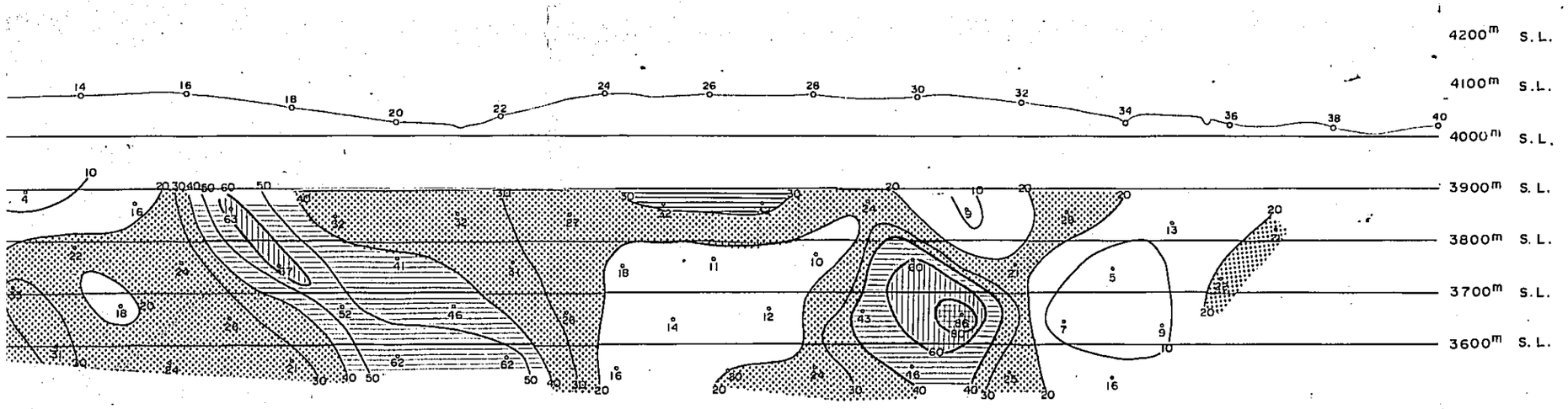
FREQUENCY EFECT (FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

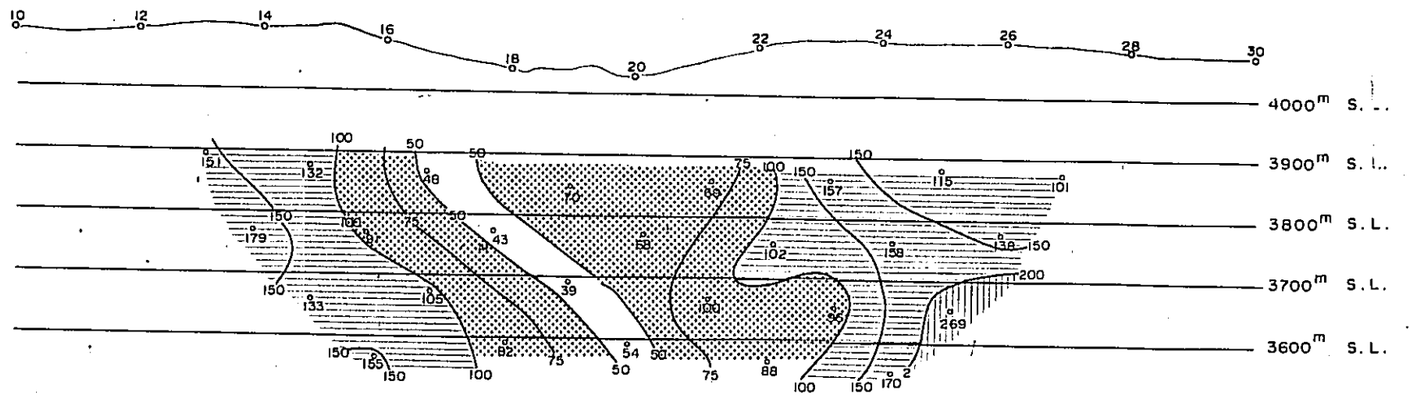
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF

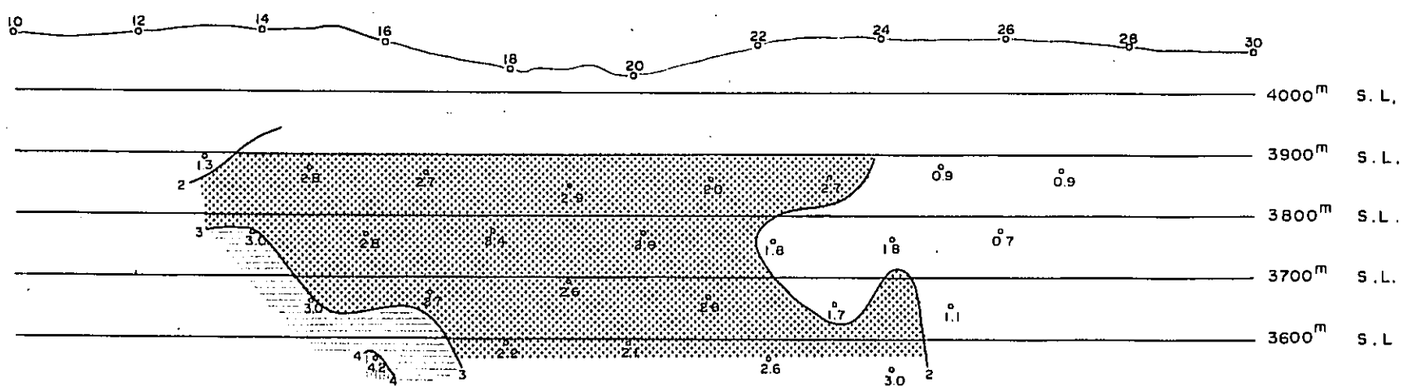
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-20 I P PROFILE ON LINE No. M′

APPARENT RESISTIVITY 〔AR : ρ_{AC_2} ohm-meter〕



FREQUENCY EFFECT 〔FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ × 100 %〕



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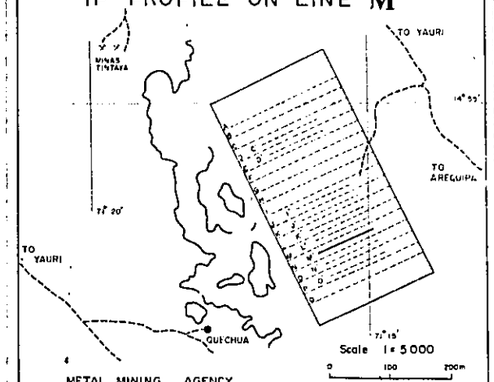
PL Ⅱ-6-20

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE M′



METAL MINING AGENCY
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JULY 1974

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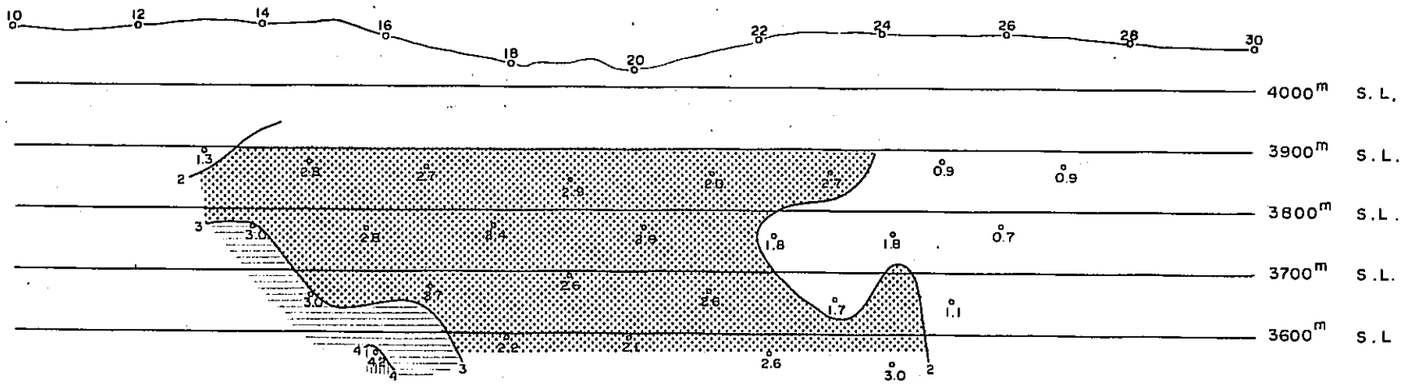
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

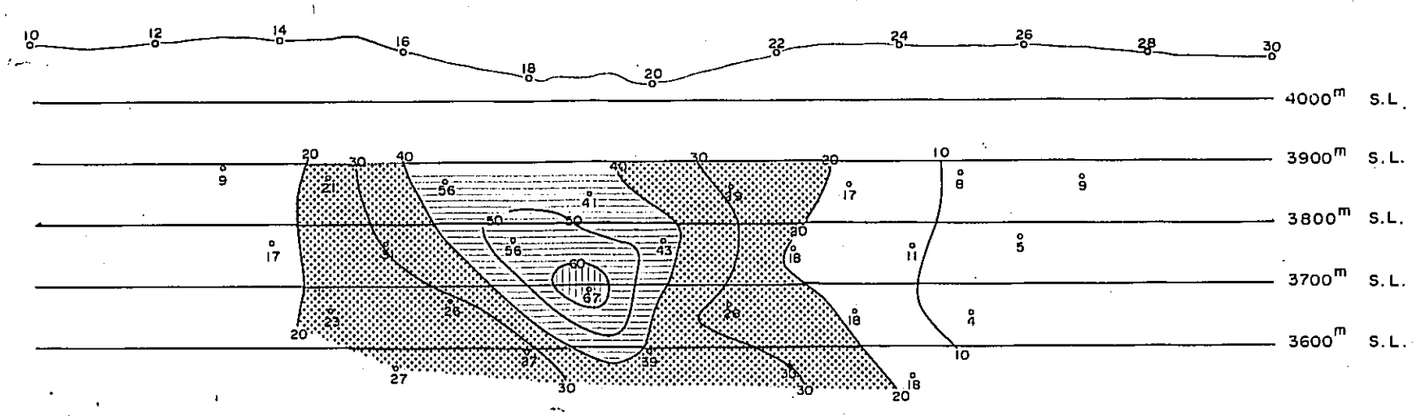
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

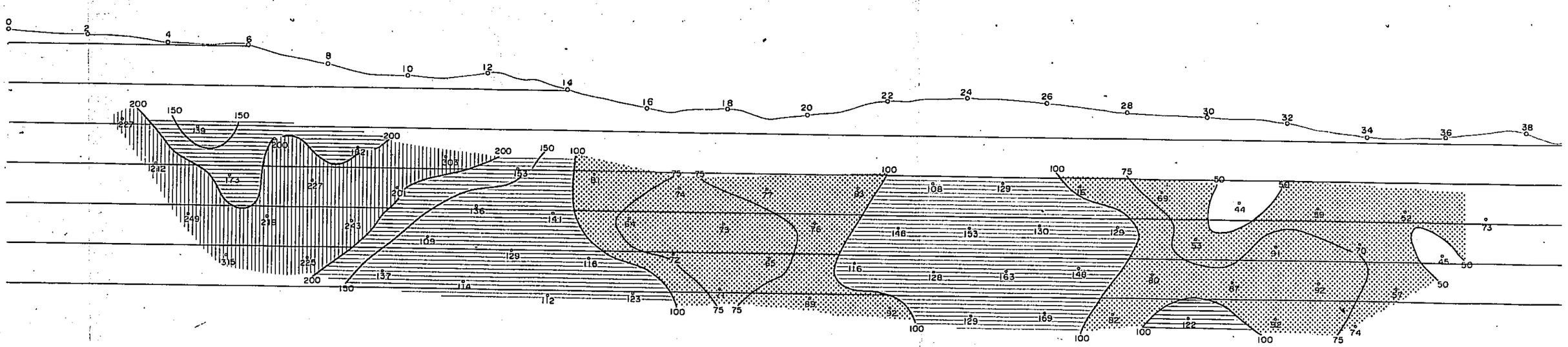
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF

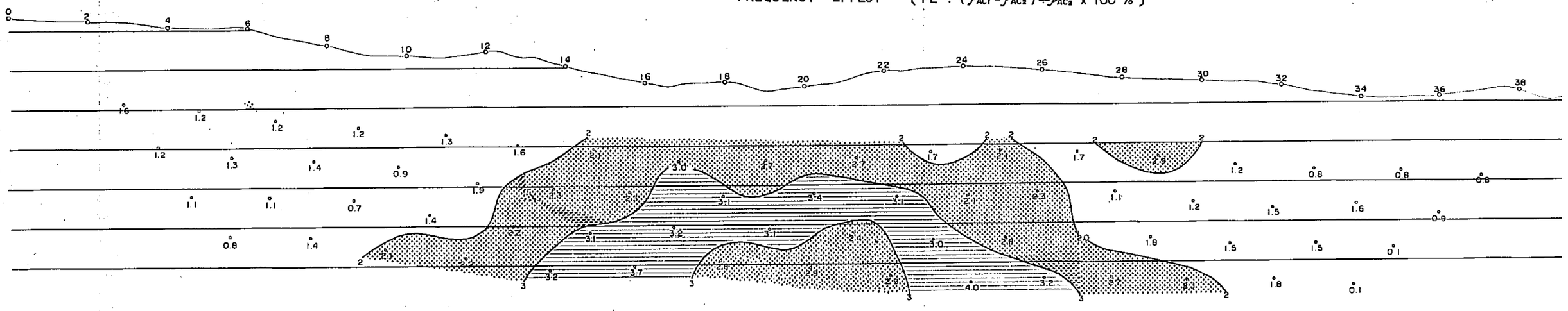
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-21 I P PROFILE ON LINE No.N

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



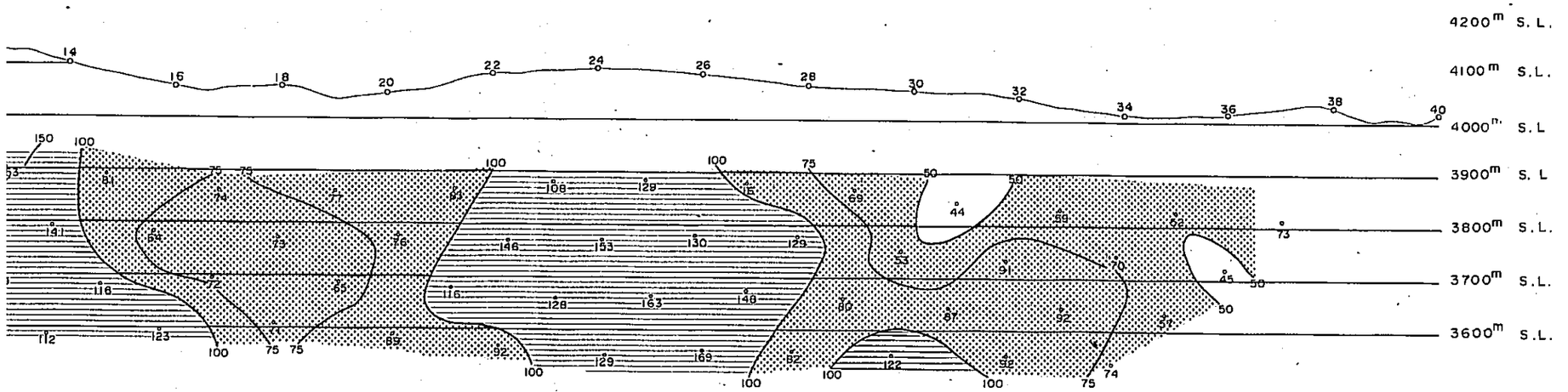
FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



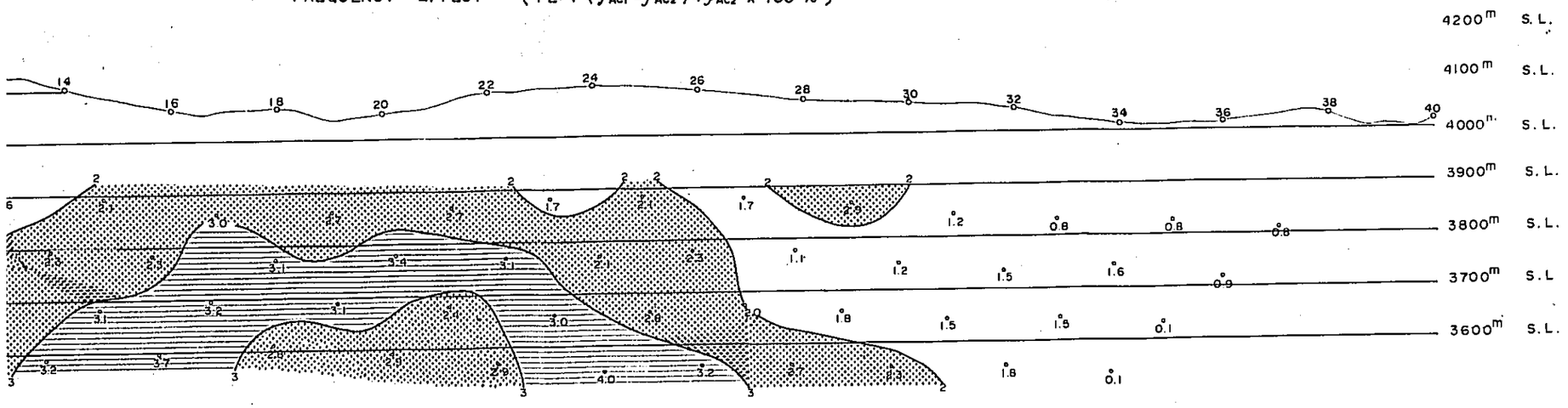
METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]

PL. Ⅱ-6-21 I.P PROFILE ON LINE No.N

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]

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GEOLOGICAL SURVEY OF
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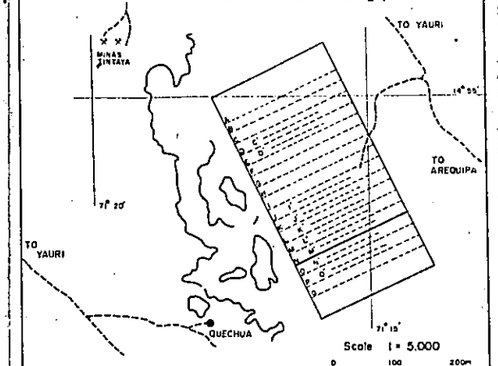
(PHASE Ⅲ)

IP PROFILE ON LINE N



METAL MINING AGENCY
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GOVERNMENT OF JAPAN

JULY 1974

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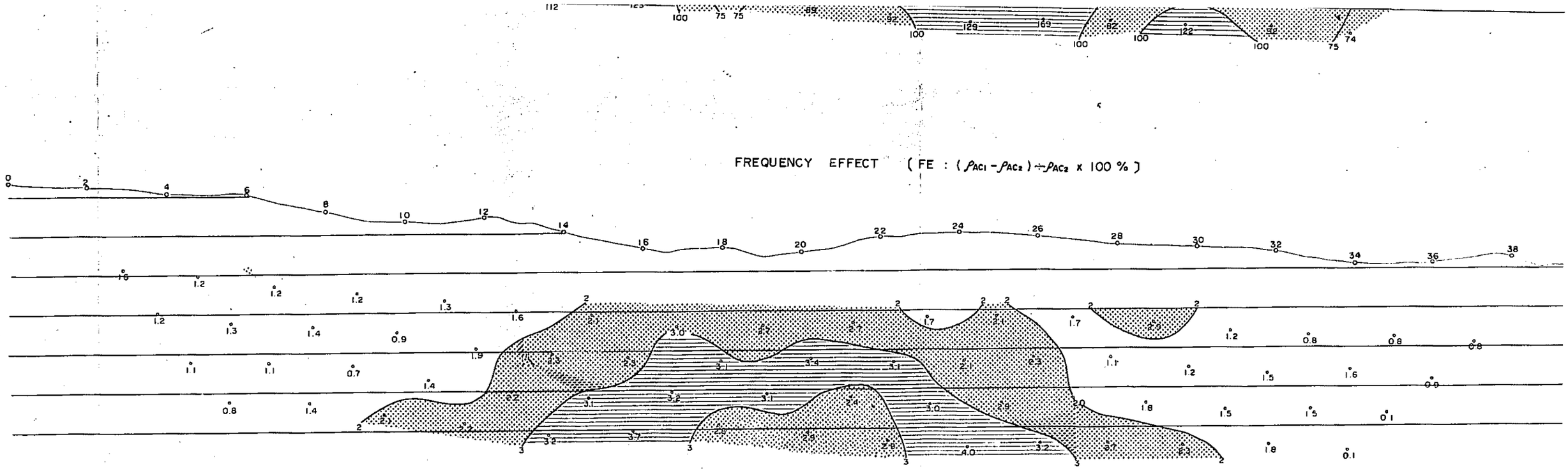
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

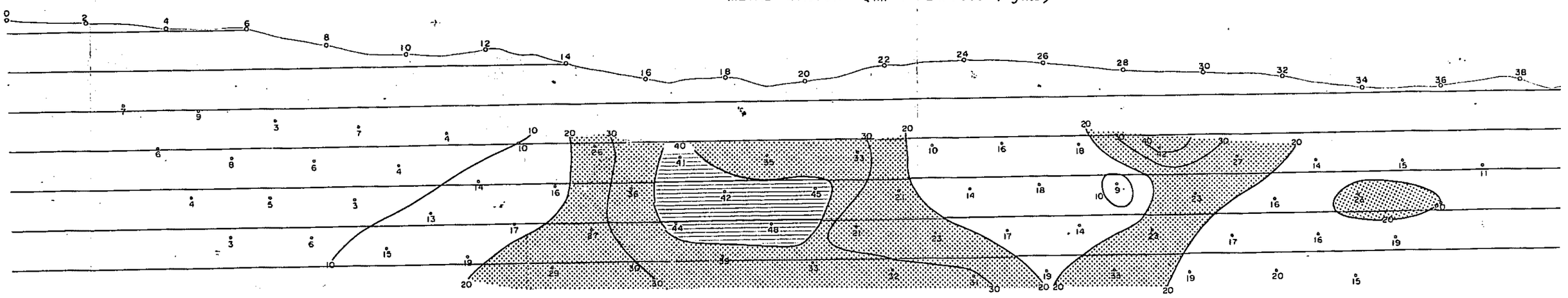
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



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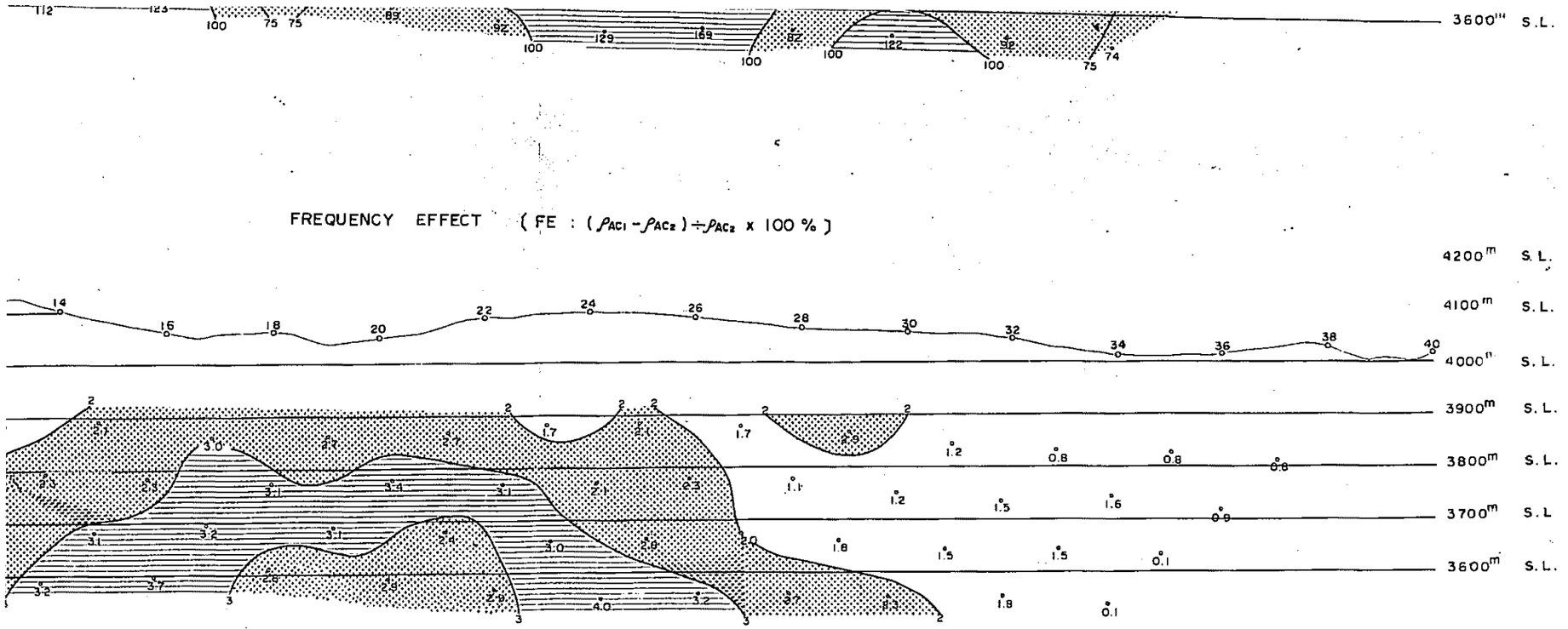

LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF

- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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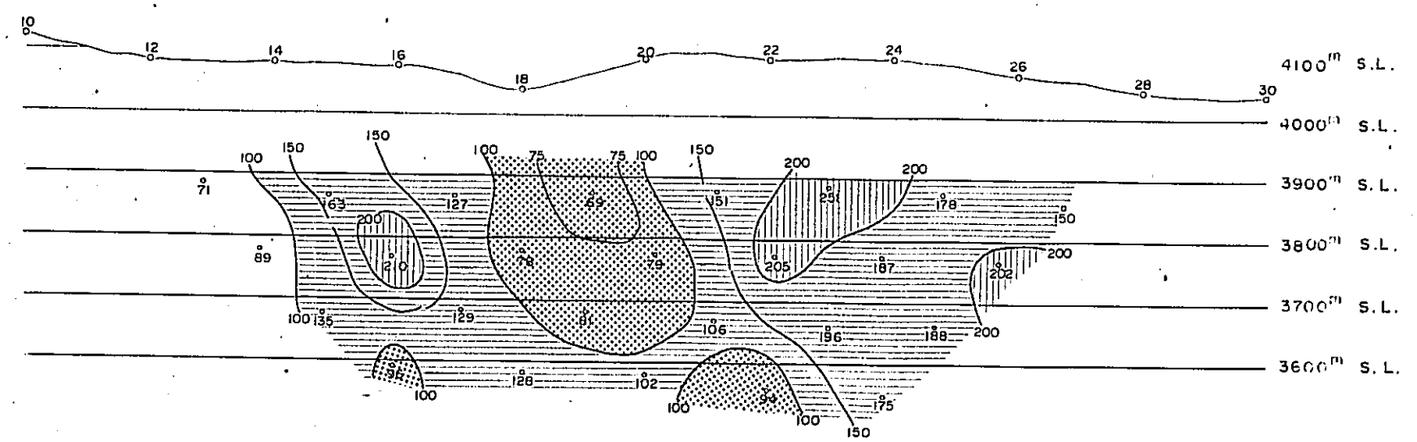
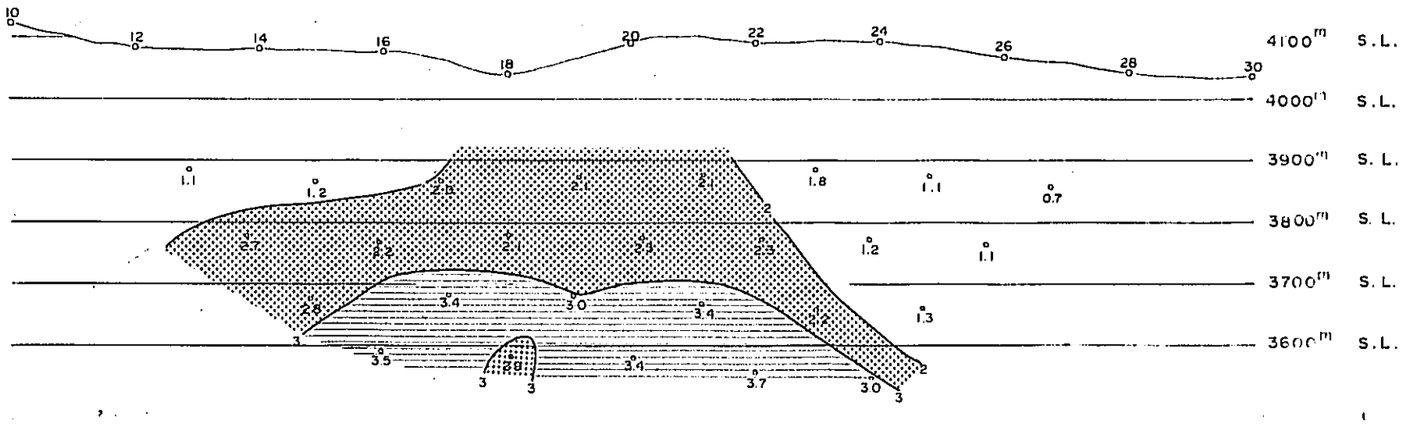
PL. II-6-12 IP PROFILE ON LINE No. N'

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



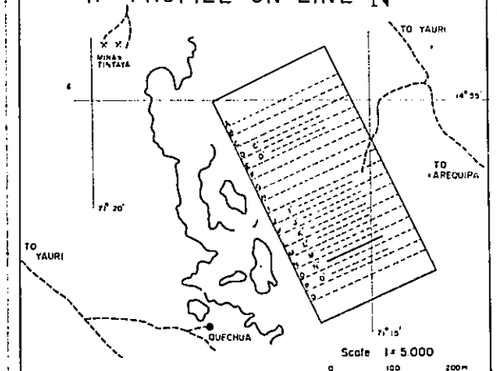
FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2}) \div \rho_{AC_2} \times 100\%$)



PL. II-6-22

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE N'



METAL MINING AGENCY
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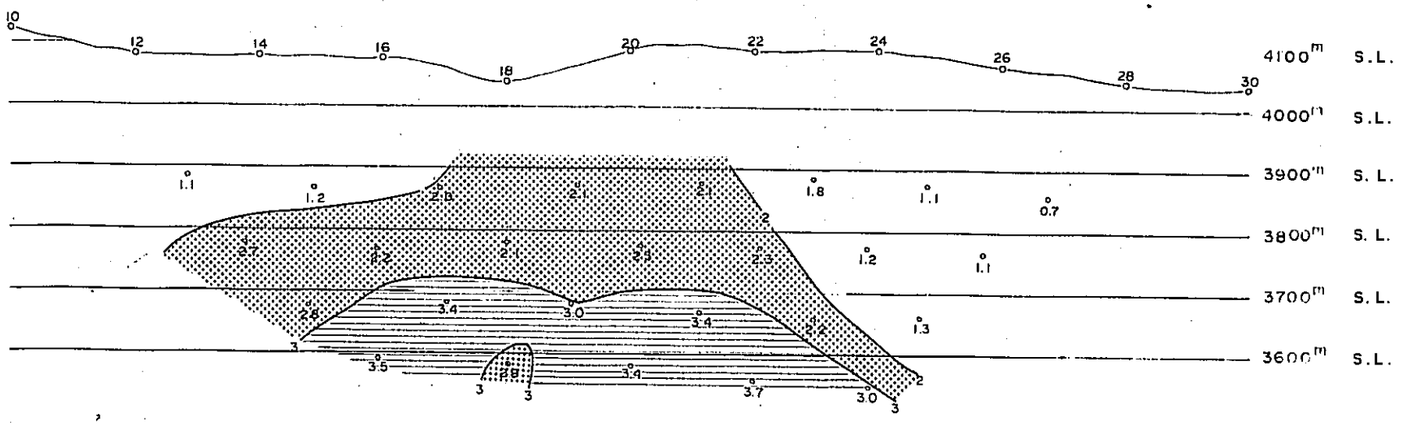
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

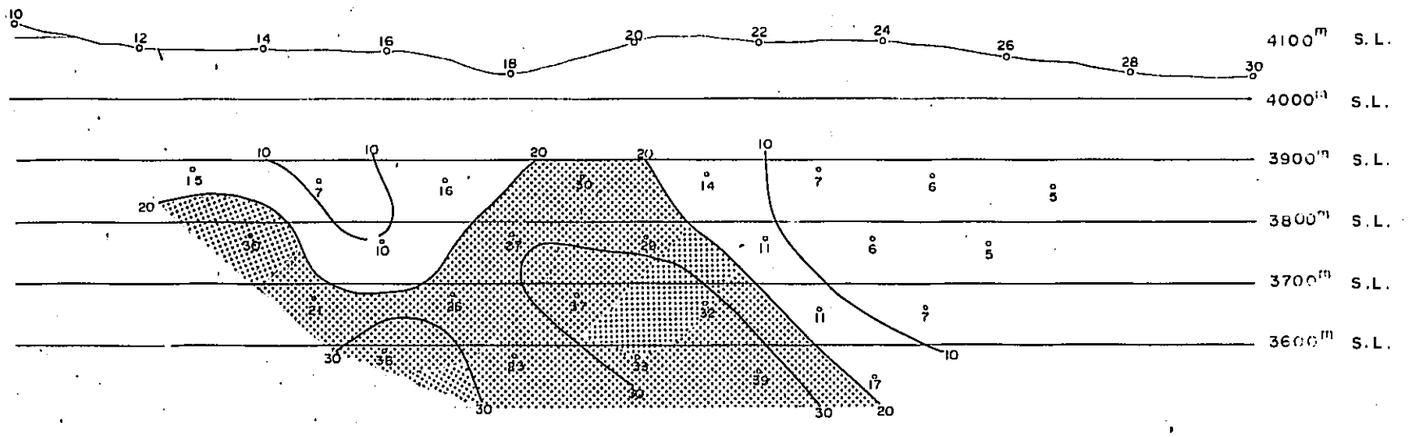
FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4%
- 4 % Over

MF
- 20 Less

FREQUENCY EFECT (FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

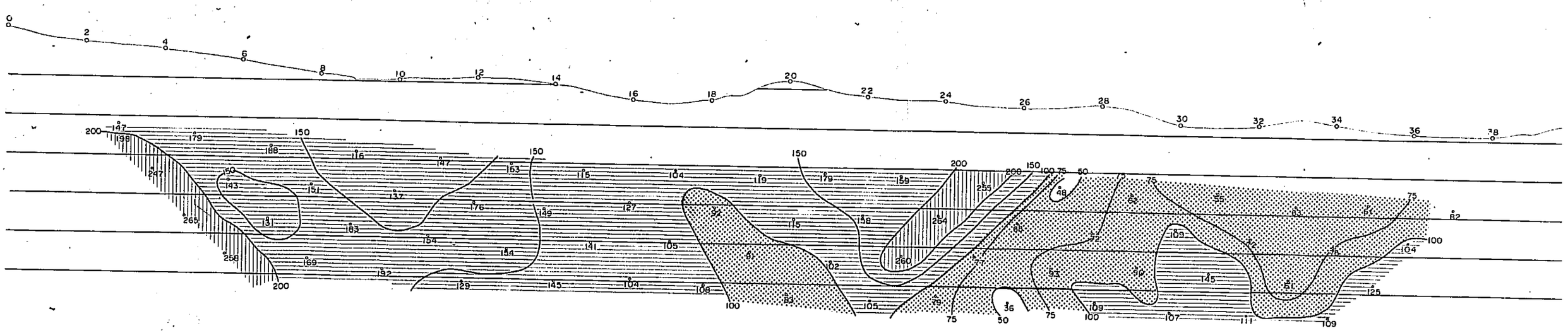
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over Ω-m

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4%
- 4 % Over

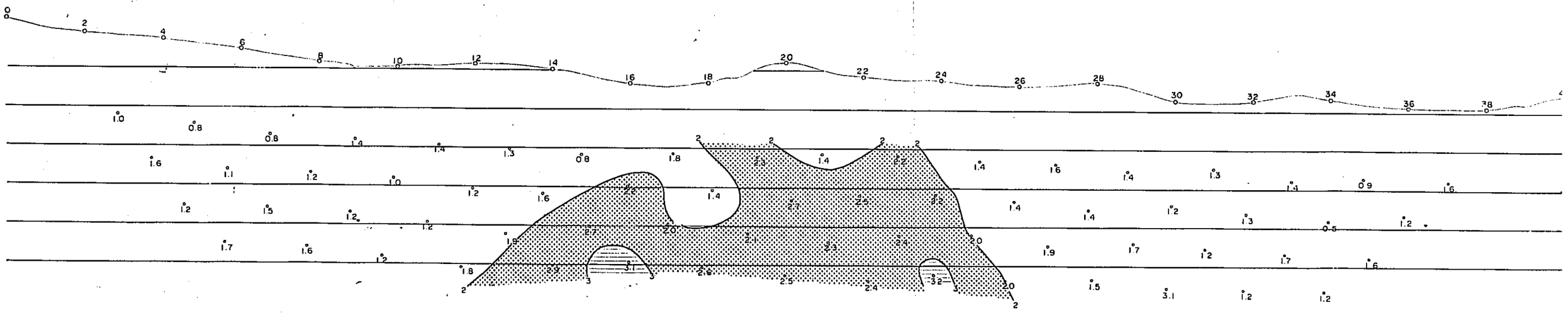
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. Ⅱ-6-23 I P PROFILE ON LINE No.0

APPARENT RESISTIVITY [AR : ρ_{Ac_2} ohm-meter]



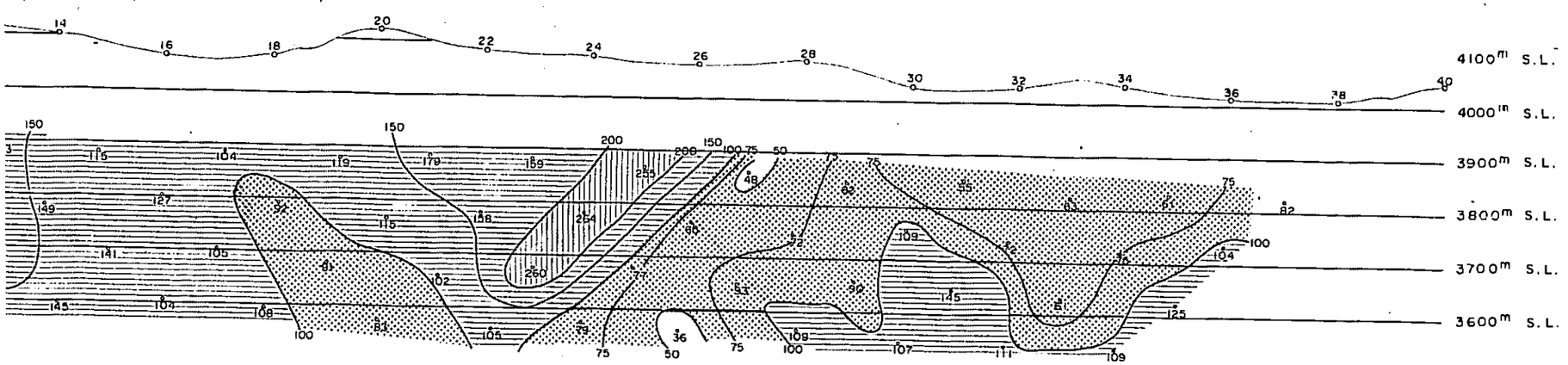
FREQUENCY EFECT (FE : $(\rho_{Ac_1}-\rho_{Ac_2})\div\rho_{Ac_2}$ x 100 %)



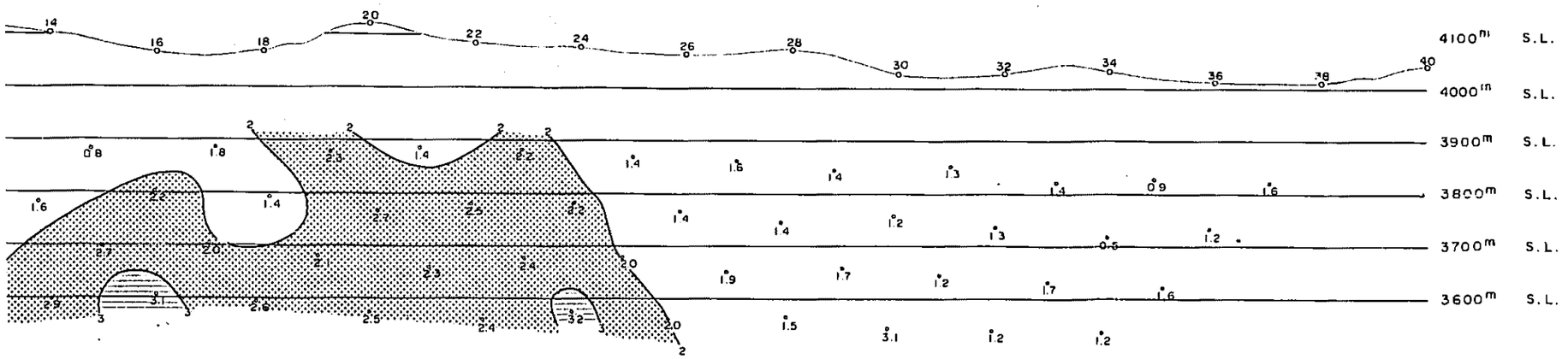
METAL FACTOR [MF : FE x 1000 ÷ ρ_{Ac_2}]

PL. Ⅱ-6-23 I P PROFILE ON LINE No.0 —

APPARENT RESISTIVITY [AR : ρ_{Ac_2} ohm-meter]



FREQUENCY EFECT [FE : $(\rho_{Ac_1}-\rho_{Ac_2})\div\rho_{Ac_2}$ x 100 %]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{Ac_2}]

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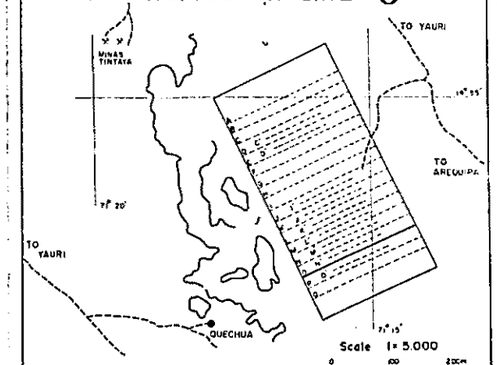
PL.Ⅱ-6-23

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE O



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO. LTD

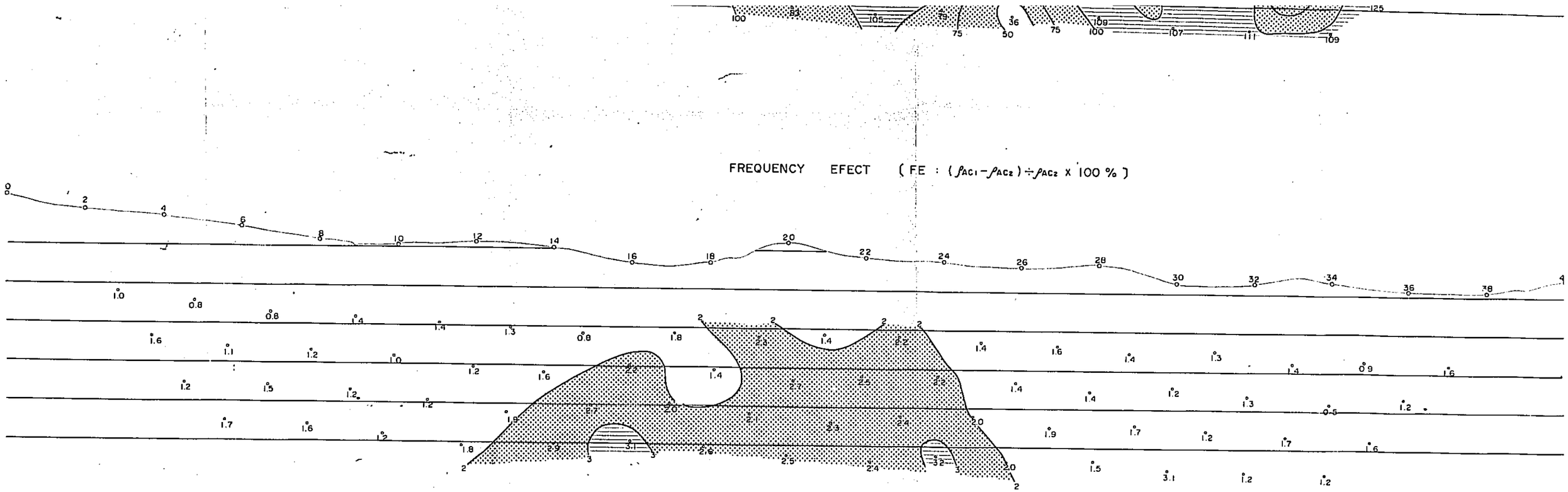
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

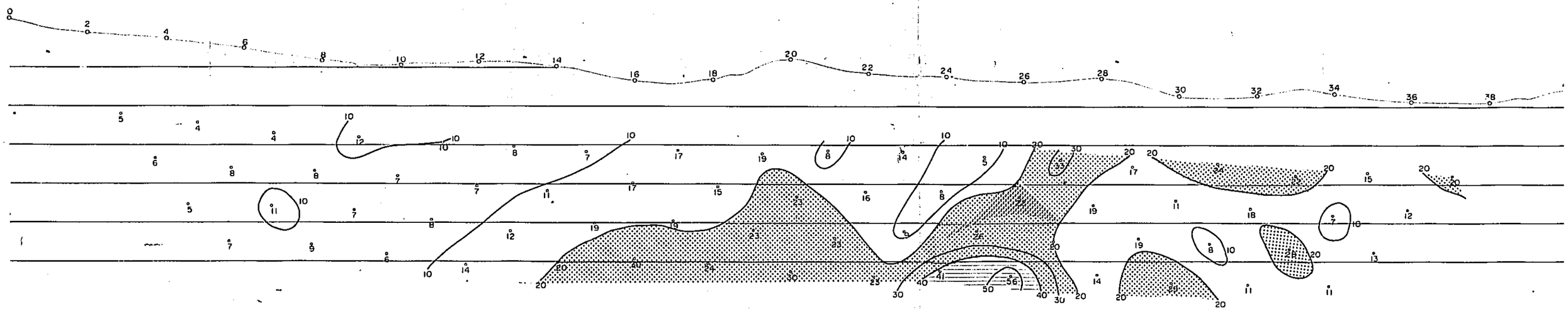
FE
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFECT (F.E : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



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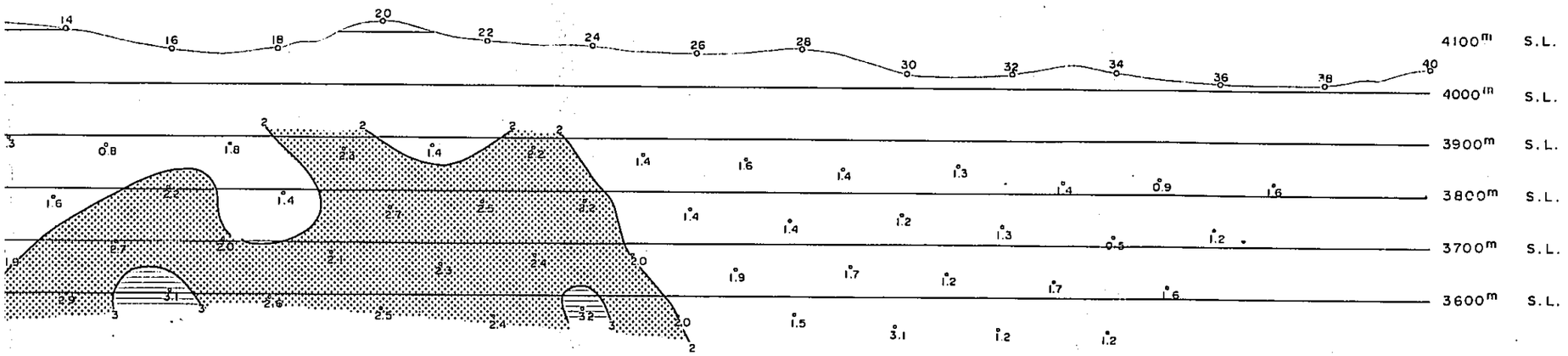
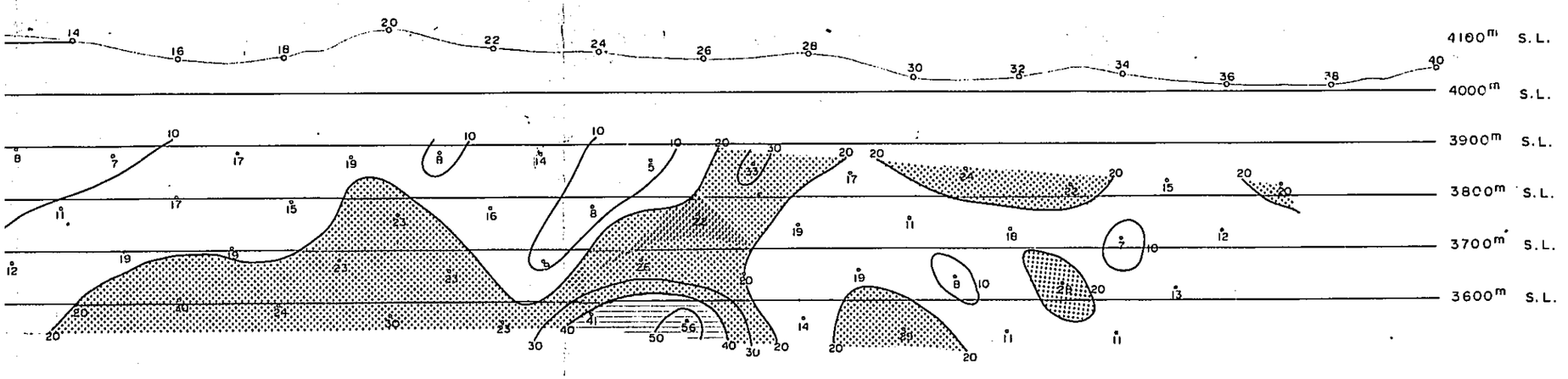
FREQUENCY EFECT [FE : $(\rho_{AC1}-\rho_{AC2}) \div \rho_{AC2} \times 100\ \%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC2}]



LEGEND

AR

- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE

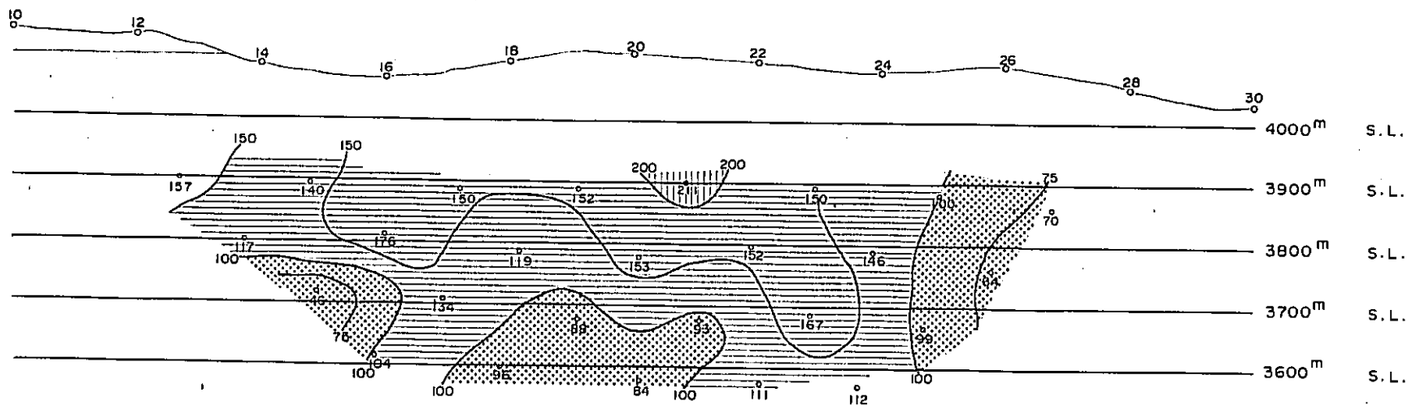
- 2% Less
- 2% ~ 3%
- 3% ~ 4%
- 4% Over

MF

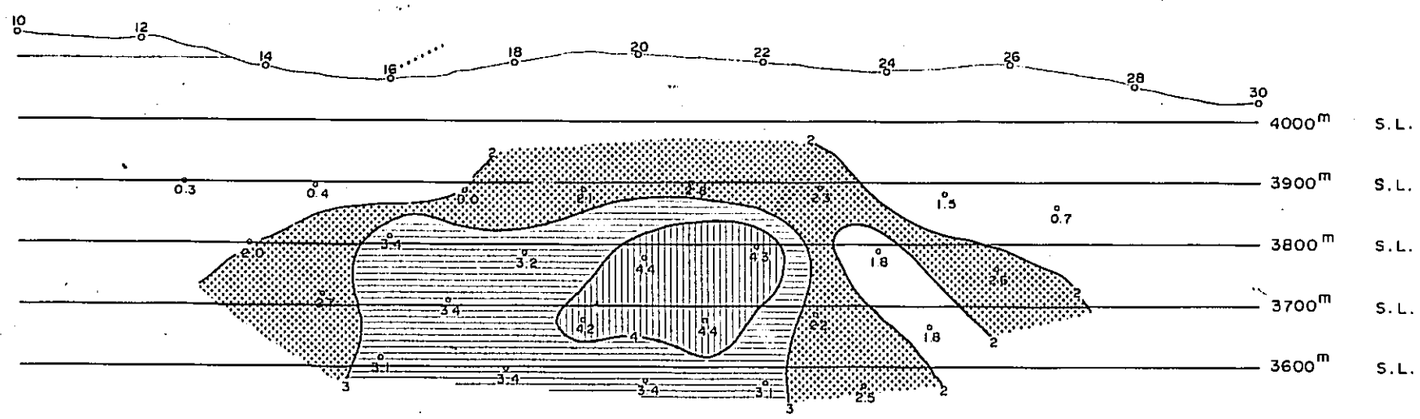
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-24 IP PROFILE ON LINE No.O'

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)



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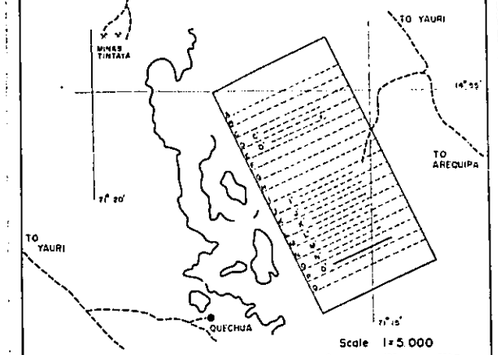
PL.II-6-24

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE O'



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

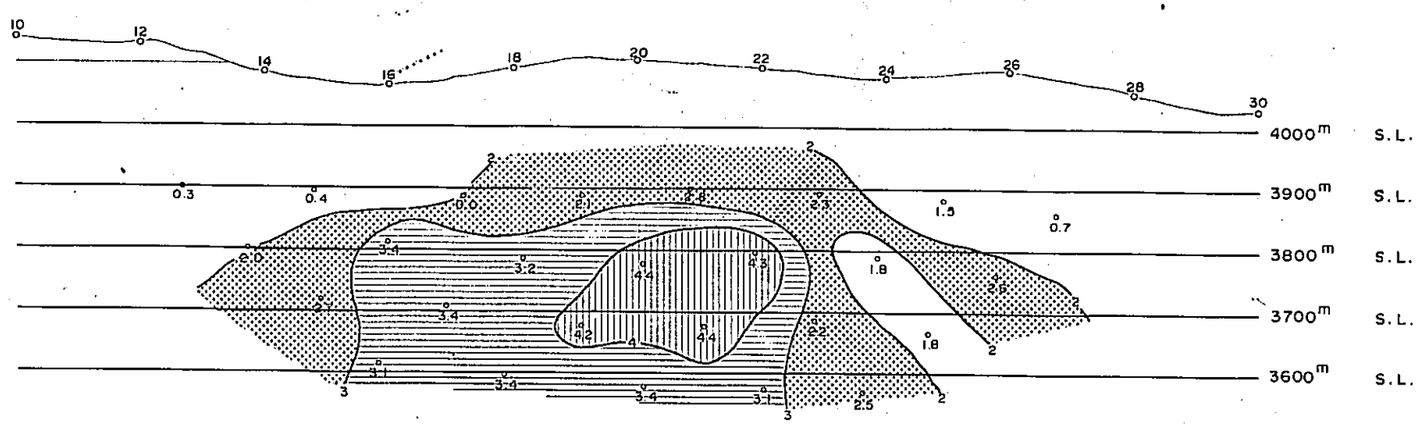
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over

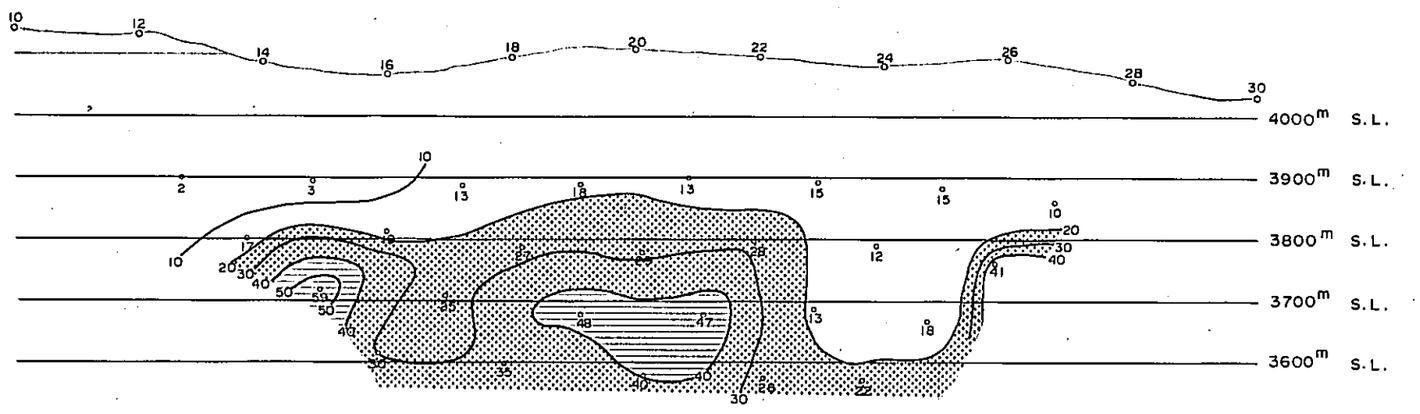
FE
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4% Over

MF
- 20 Less

FREQUENCY EFECT (FE : ($\rho_{AC1} - \rho_{AC2}$) ÷ ρ_{AC2} X 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



LEGEND

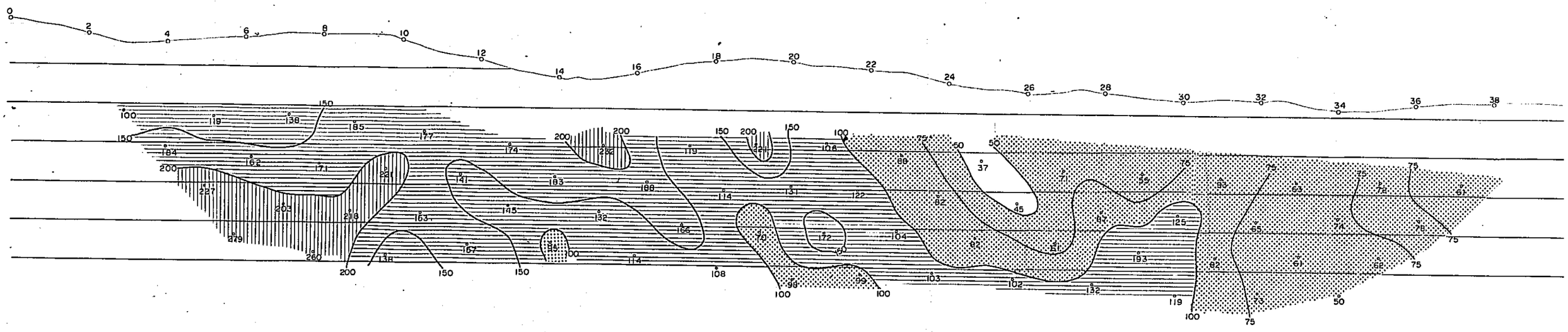
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Over

FE
- 2% Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4% Over

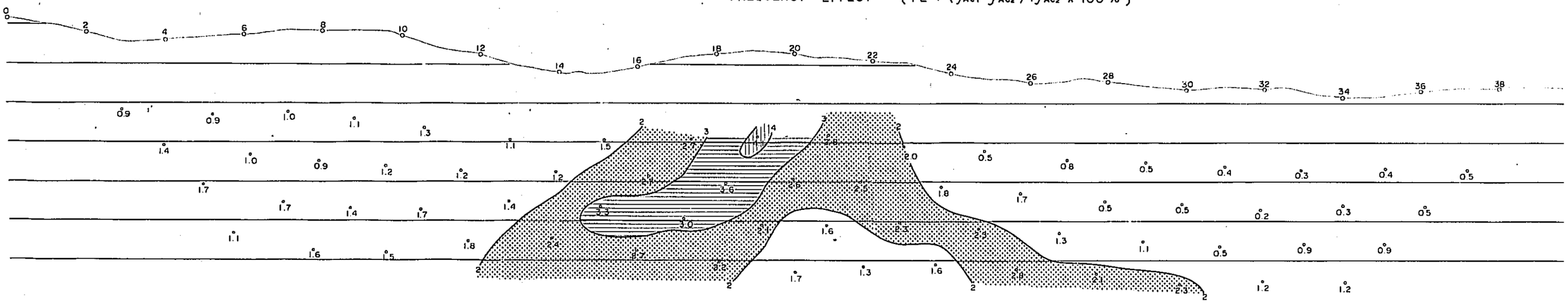
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL.Ⅱ-6-25 I P PROFILE ON LINE No. P

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



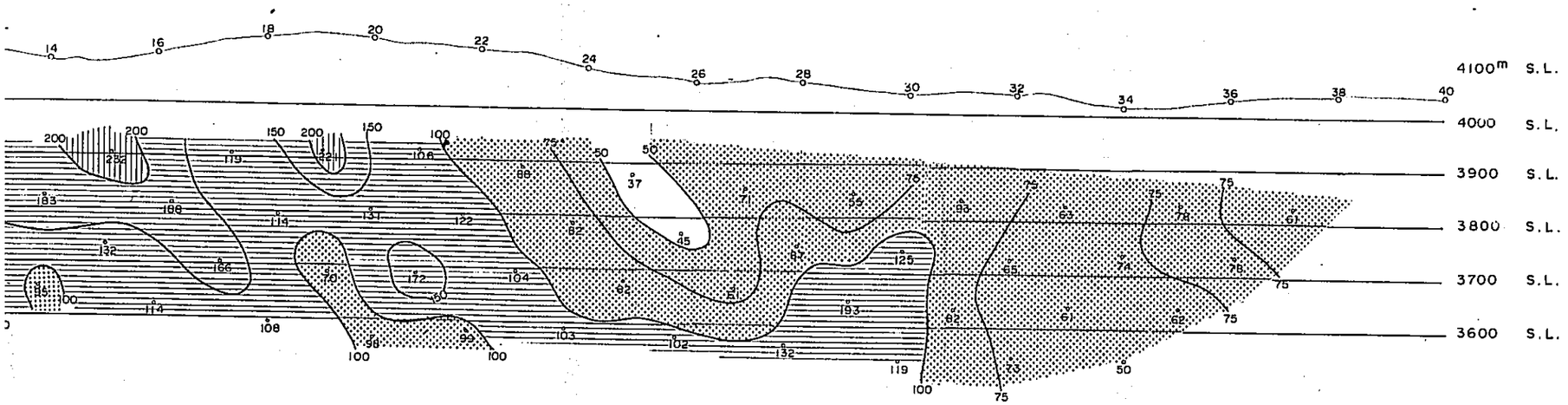
FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\%$)



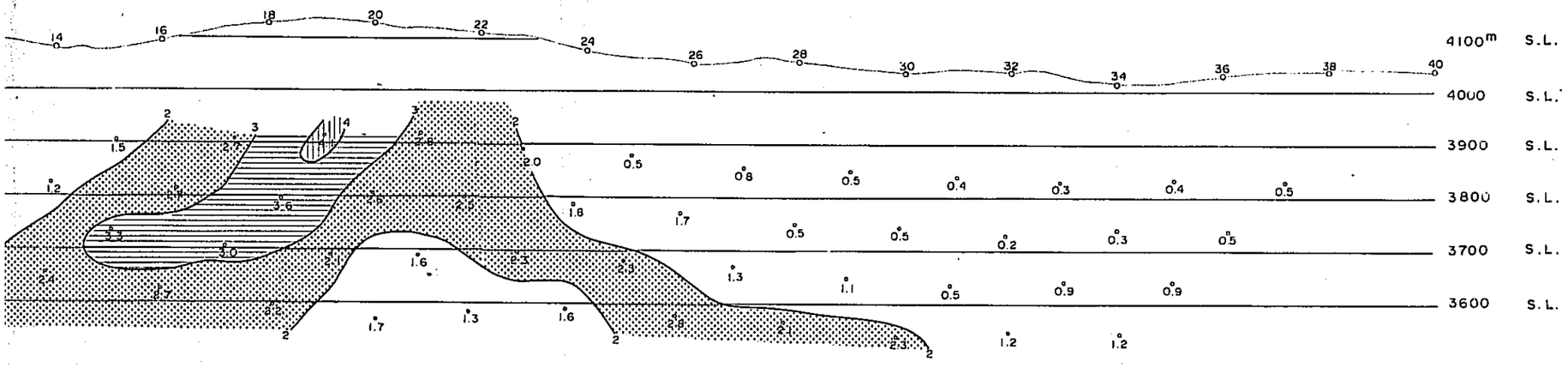
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

PL.Ⅱ-6-25 IP PROFILE ON LINE No. P

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

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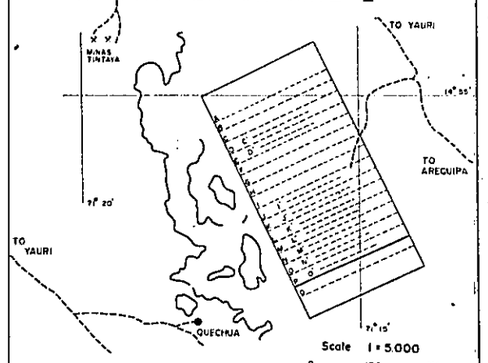
PL.Ⅱ-6-25

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)
IP PROFILE ON LINE **P**



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD.

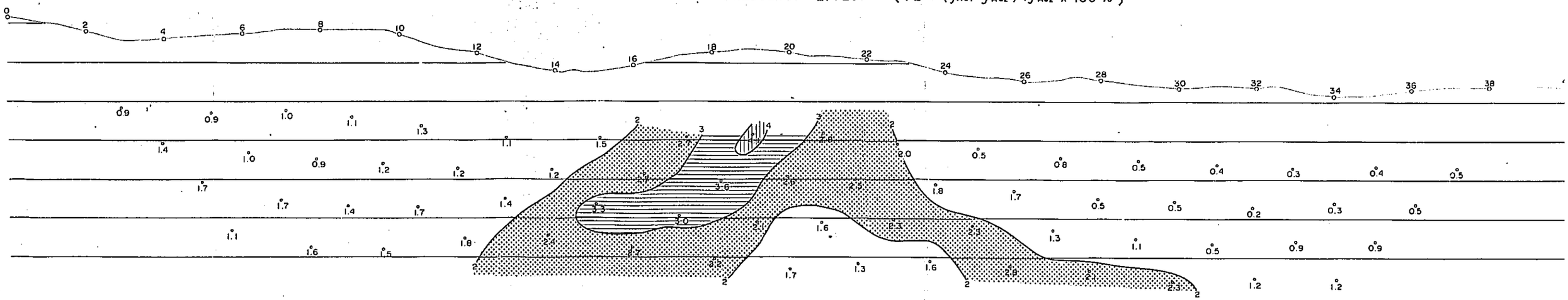
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

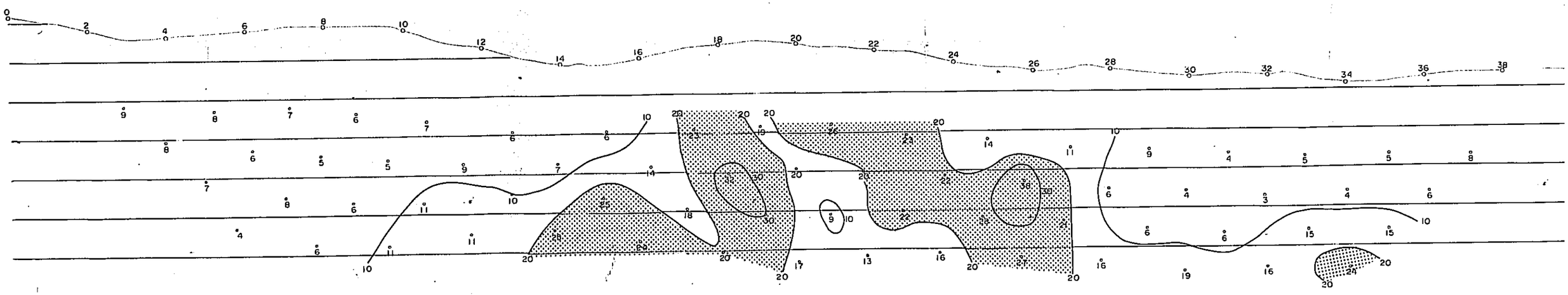
FE
- 2% Less
- 2% ~ 3 %
- 3 % ~ 4 %
- 4% Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (FE : ($\rho_{AC1} - \rho_{AC2}$) ÷ ρ_{AC2} x 100 %)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC2})



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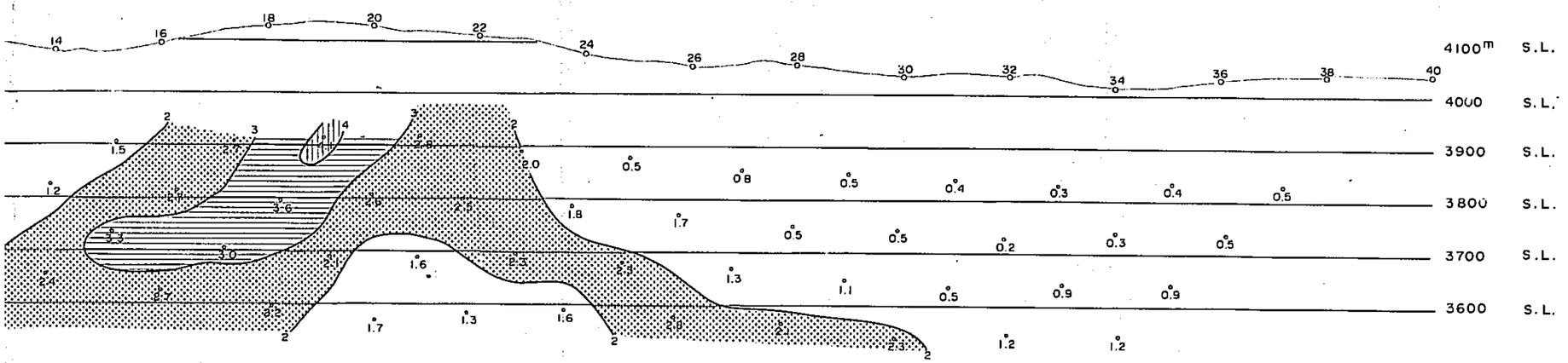
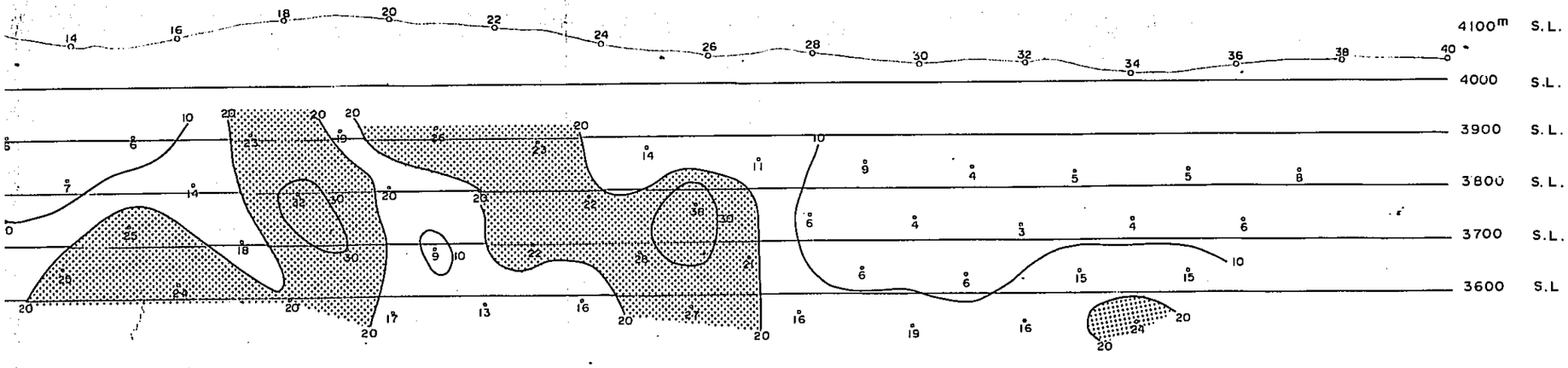
100 100 132 119 100 75 50

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\,\%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

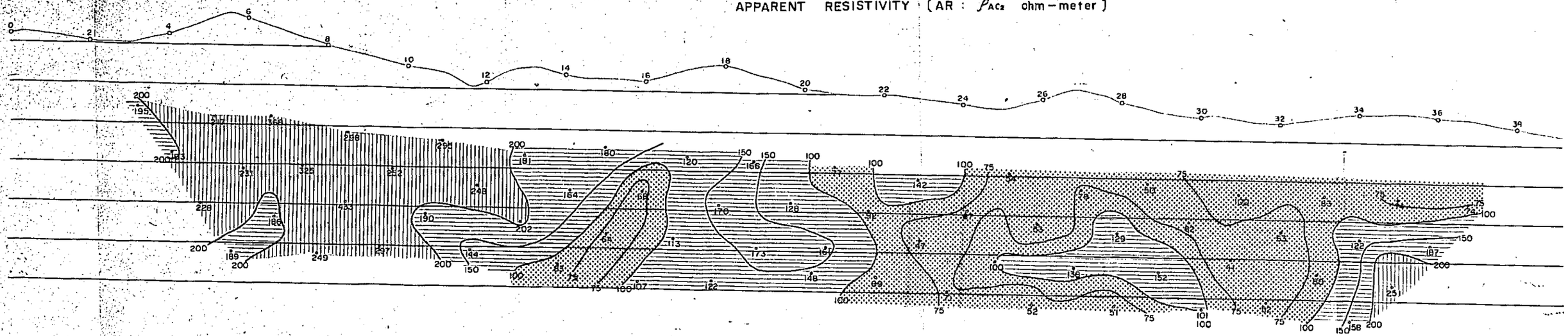
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

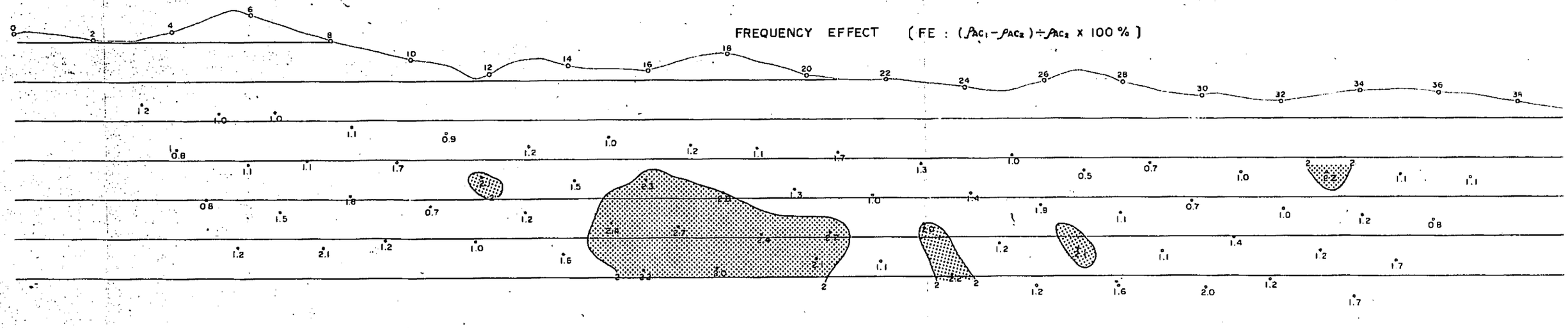
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-6-26 I P PROFILE ON LINE No. Q

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)

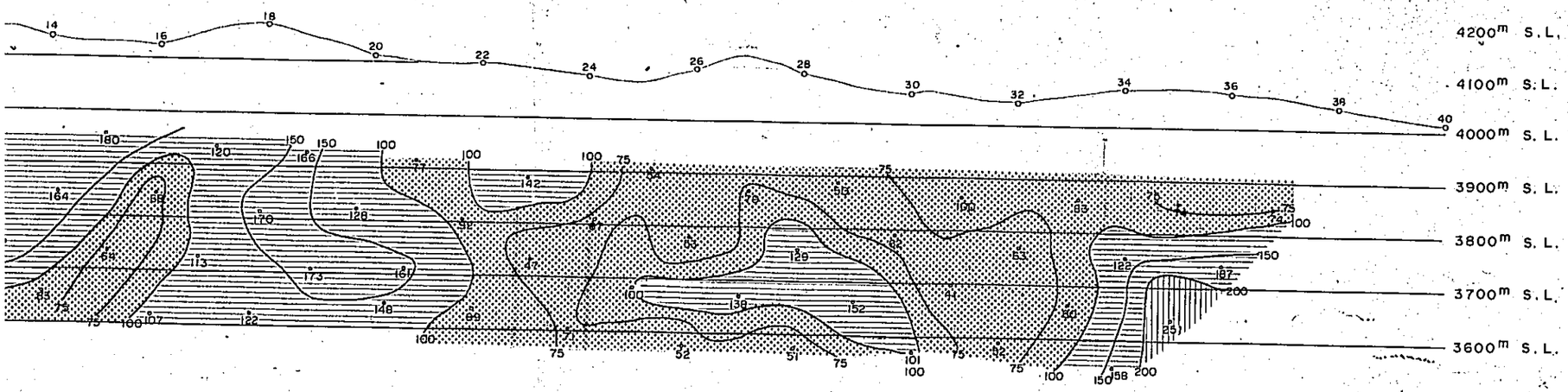


FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\ \%$)

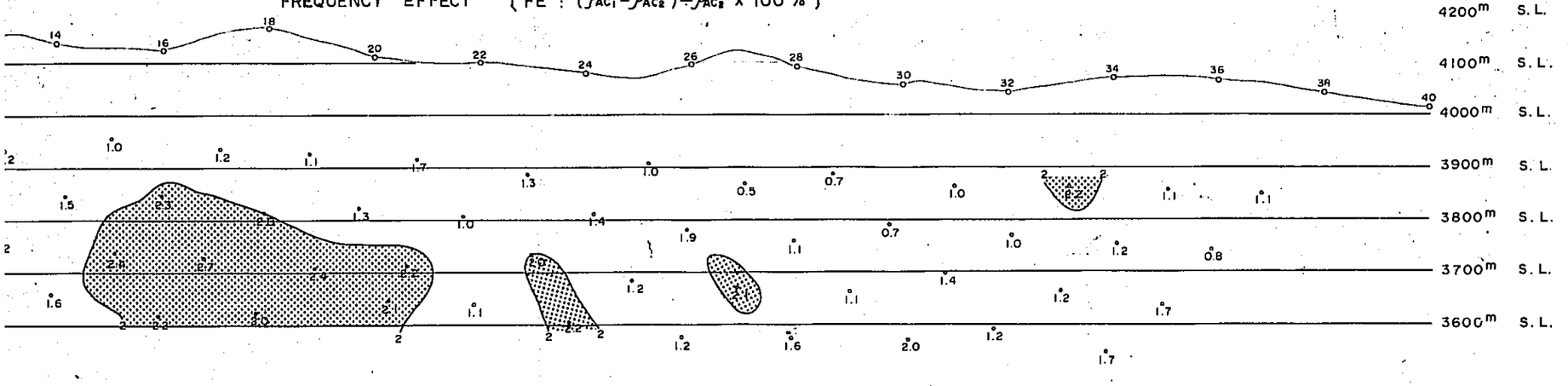


PL. Ⅱ-6-26 IP PROFILE ON LINE No.Q

APPARENT RESISTIVITY (AR : ρ_{AC_2} ohm-meter)



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\,\%$)



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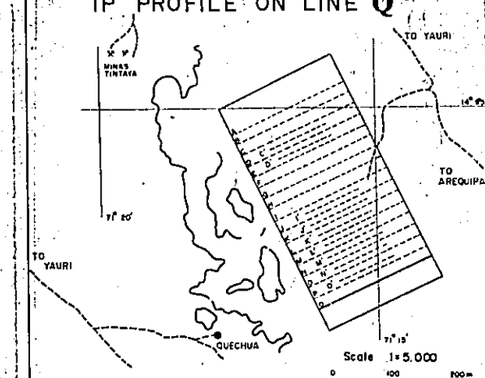
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE Q



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

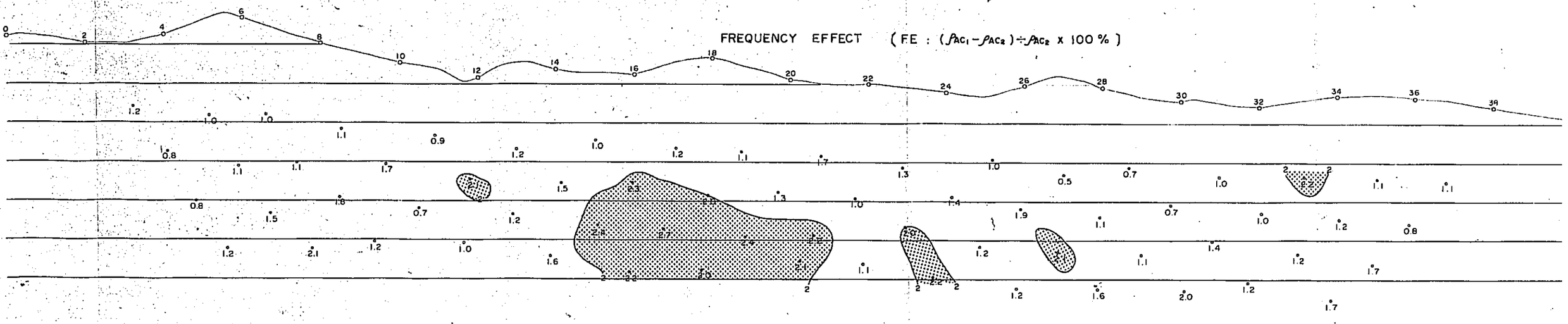
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

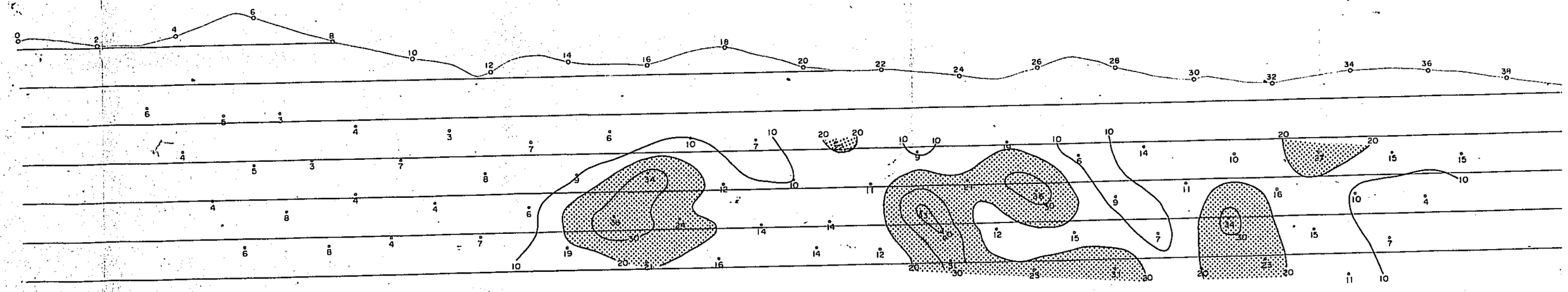
FE
- 2 % Less
- 2% ~ 3%
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

FREQUENCY EFFECT (F.E : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)

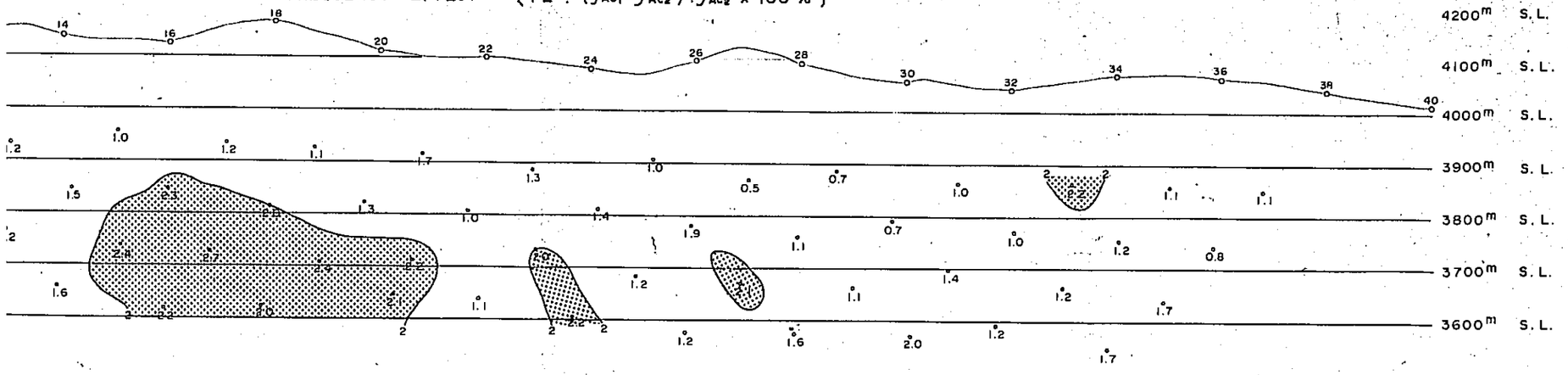


METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

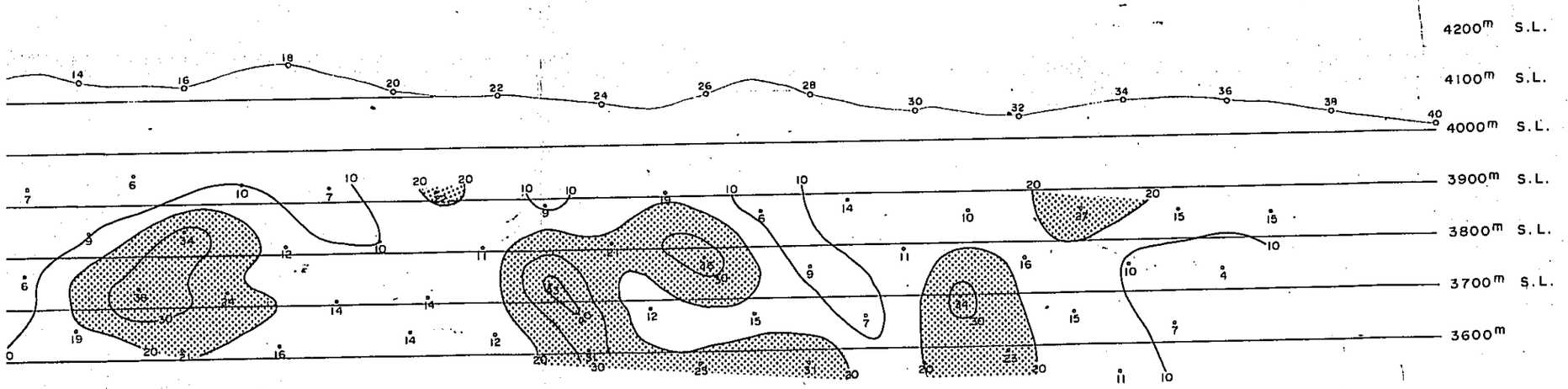


Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})



LEGEND

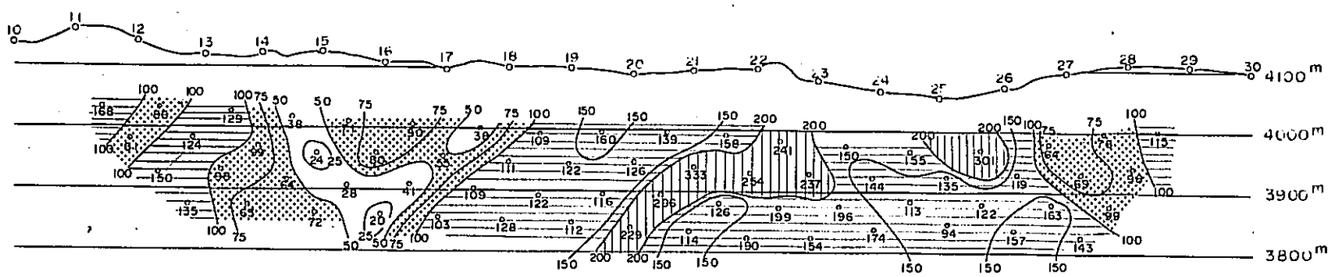
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2 % Less
- 2% ~ 3%
- 3 % ~ 4 %
- 4 % Over

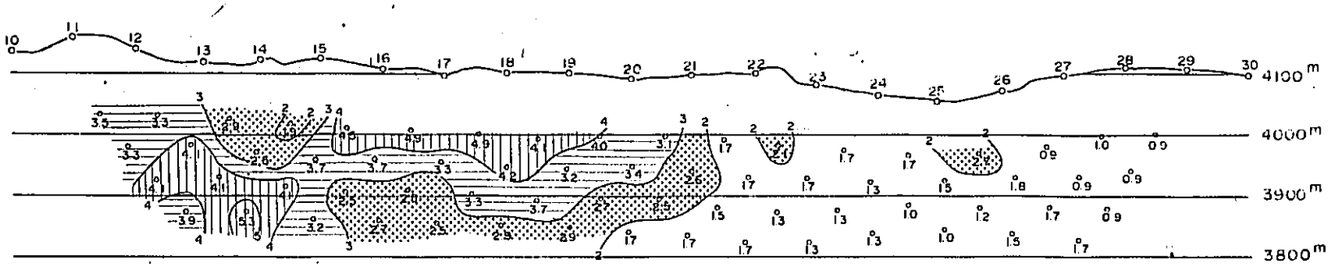
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-1 IP PROFILE ON LINE NO. C-(100)

APPARENT RESISTIVITY AR: ρ_{AC_2} . ohm - meter



FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100$ %)



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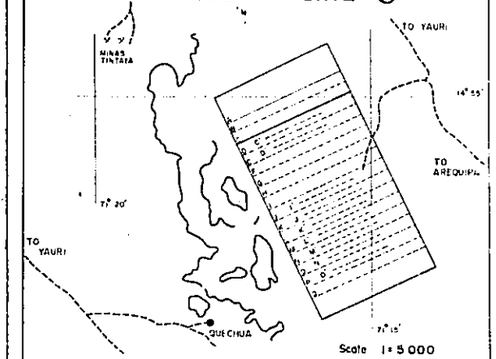
PL.II-7-1

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE C



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD

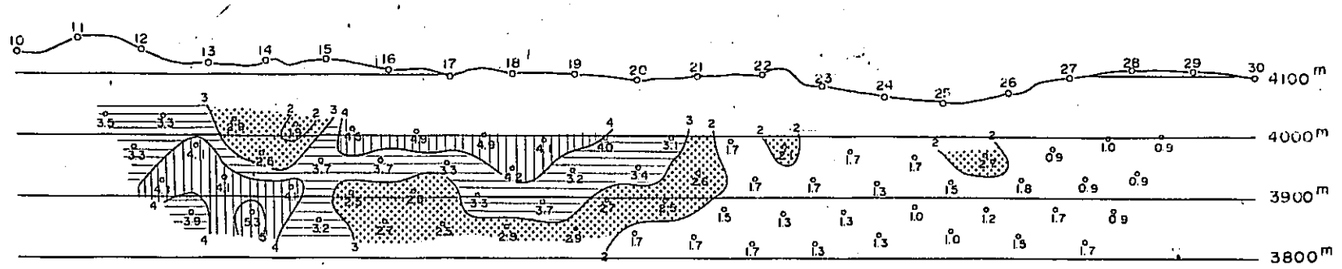
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

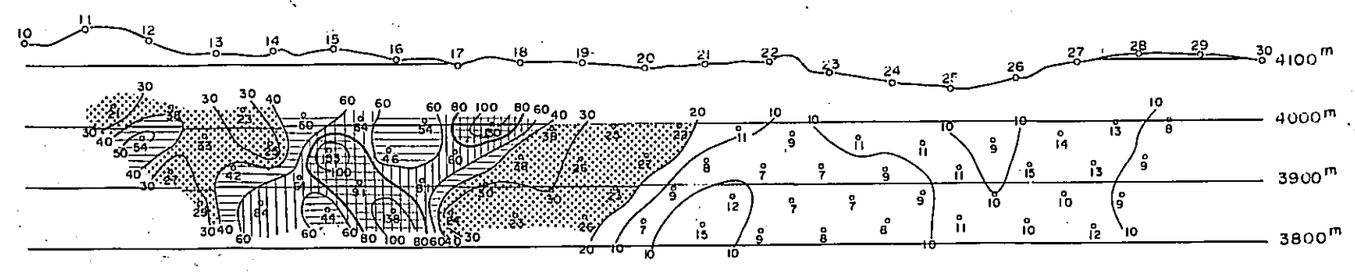
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4%
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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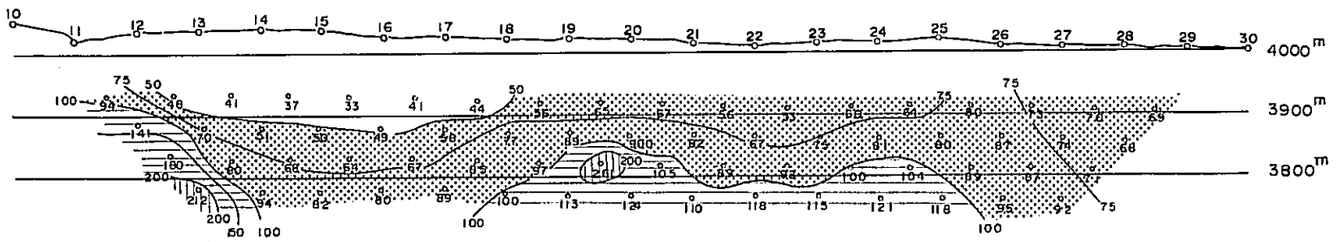
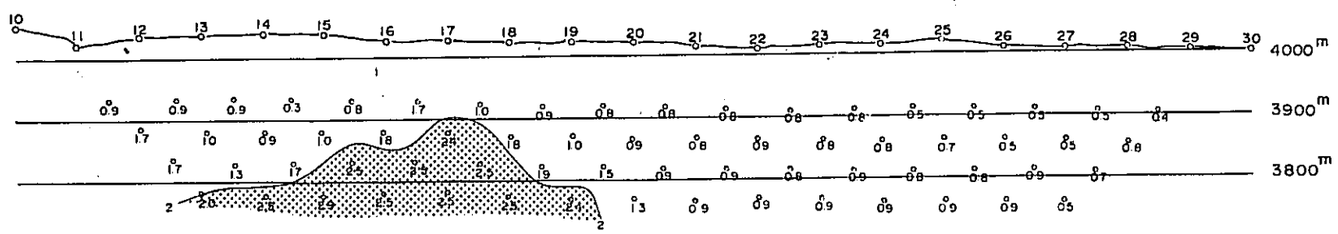
PL. II-7-2 IP PROFILE ON LINE NO C'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm - meter



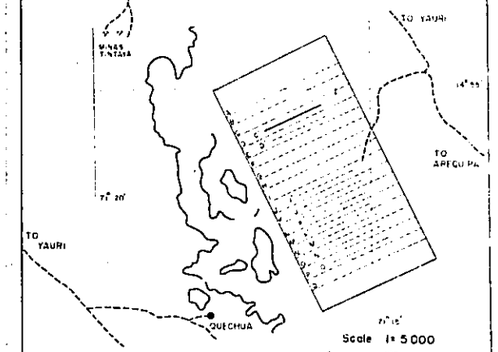
FREQUENCY EFFECT (FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$)



PL. II-7-2

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE C'



METAL MINING AGENCY
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JULY 1974

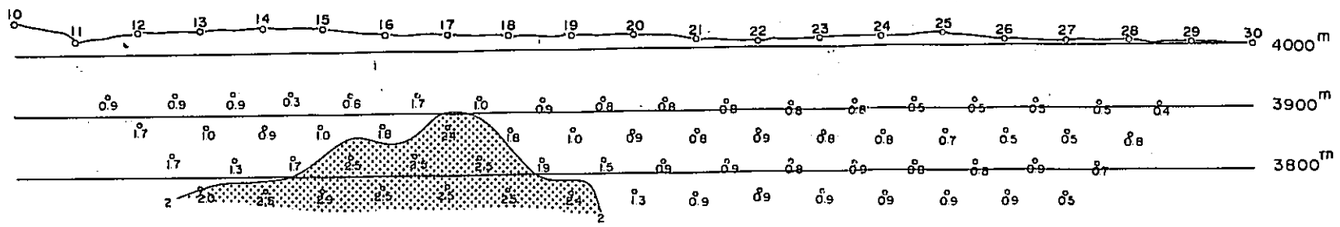
Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO., LTD

LEGEND

AR
- 50 Ω m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less



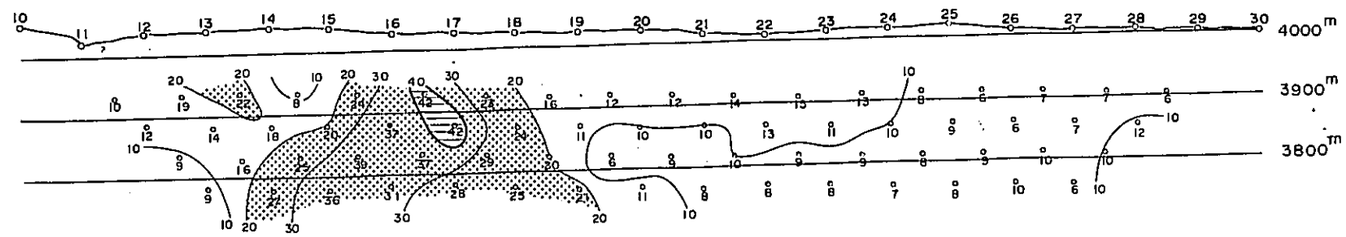
METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]

LEGEND

AR
- 50 Ω m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over



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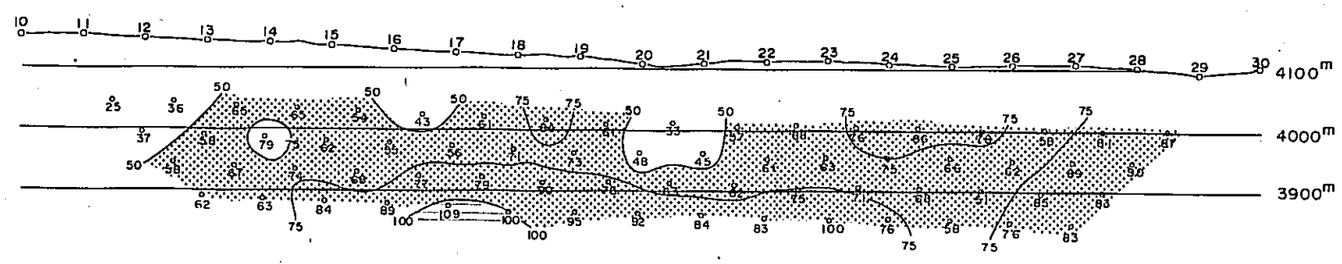
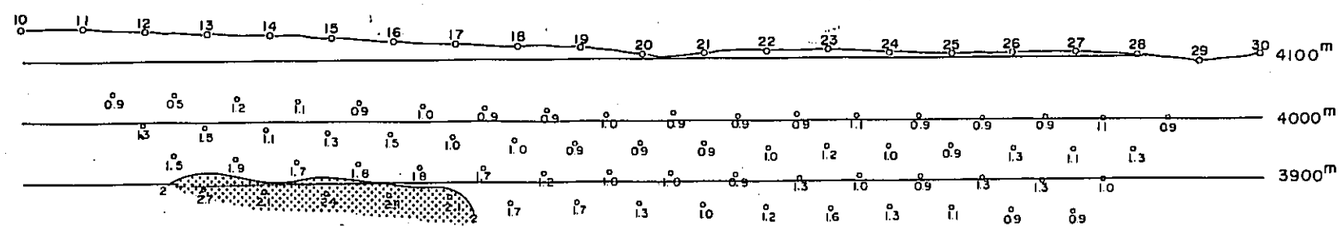
PL. II-7-3 IP PROFILE ON LINE NO. D-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm - meter

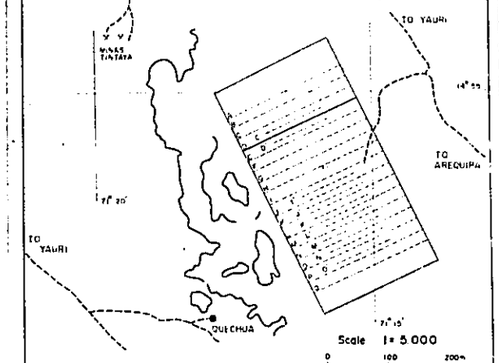


FREQUENCY EFFCT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2} \times 100\ \%$)



PL. II-7-3

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE D



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GOVERNMENT OF JAPAN
JULY 1974

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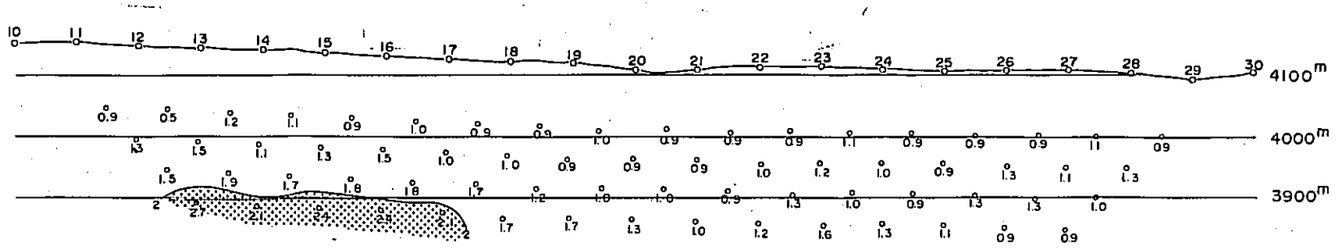
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

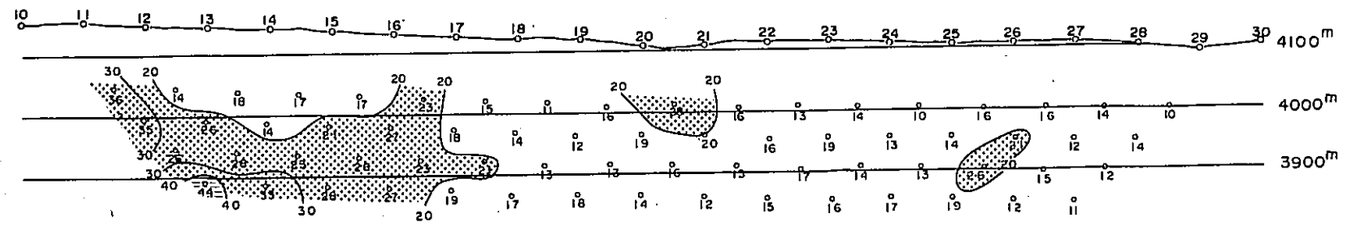
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFCT [FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}$ x 100 %]



METAL FACTOR [MF : FE x 1 000$\div\rho_{AC2}$]



LEGEND

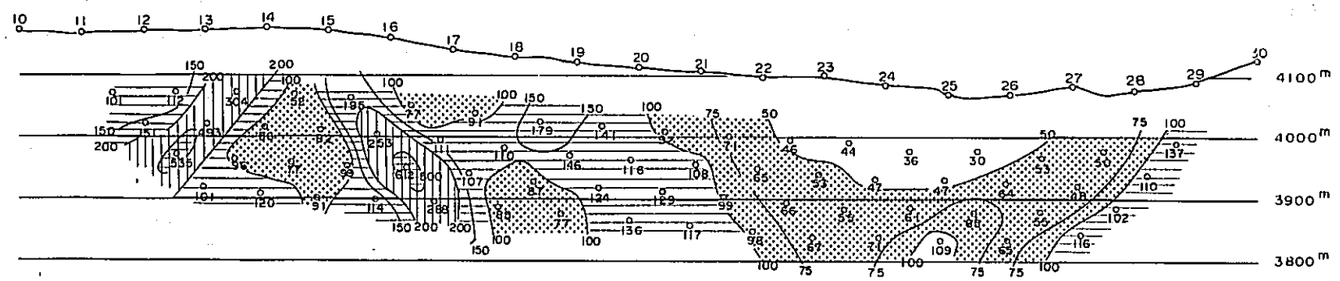
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

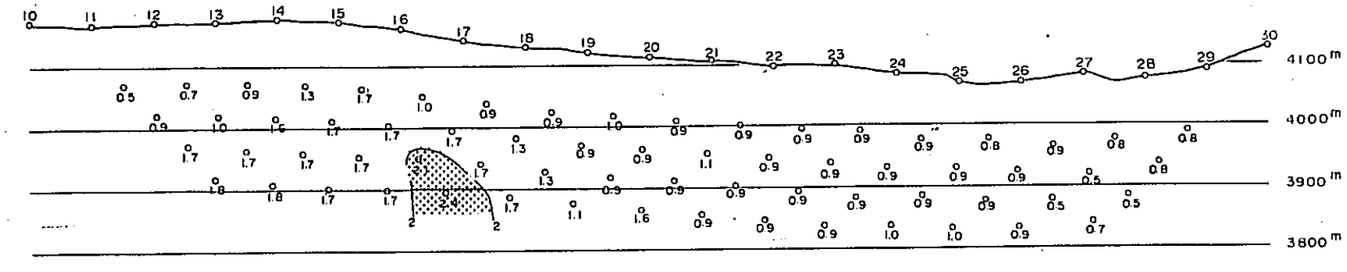
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-4 I P PROFILE ON LINE NO. D'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$



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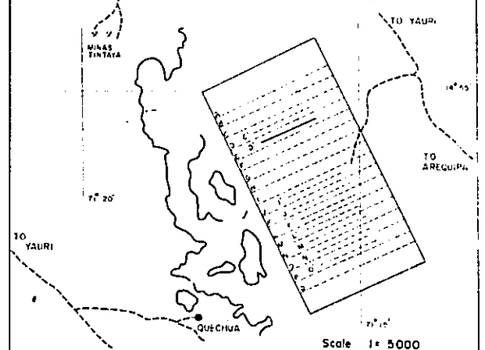
PL. II-7-4

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE D'



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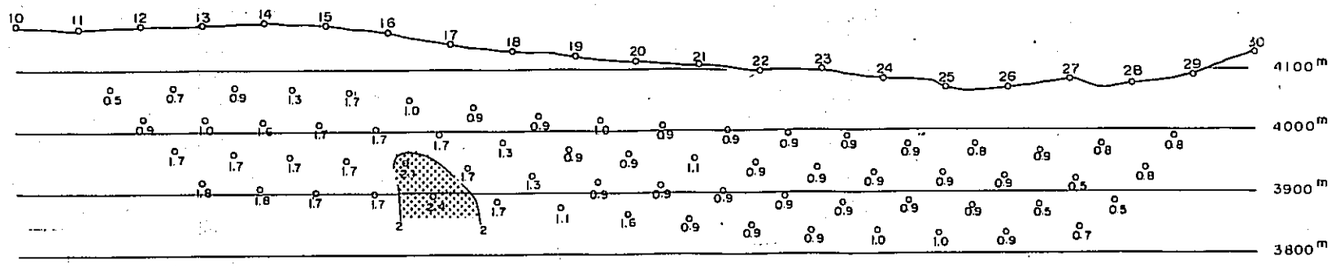
LEGEND

AR
- 50Ω-m. Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

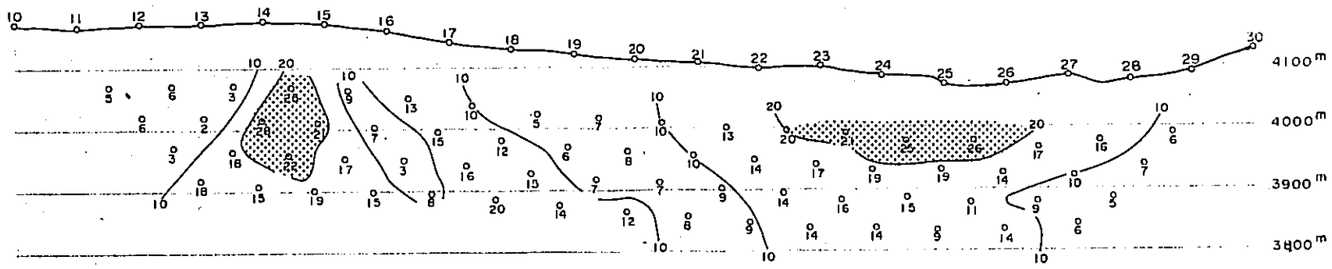
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT FE : $(\rho_{AC1} - \rho_{AC2}) \div \rho_{AC2} \times 100\%$



METAL FACTOR MF : FE x 1000 ÷ ρ_{AC2}



LEGEND

AR
- 50Ω-m. Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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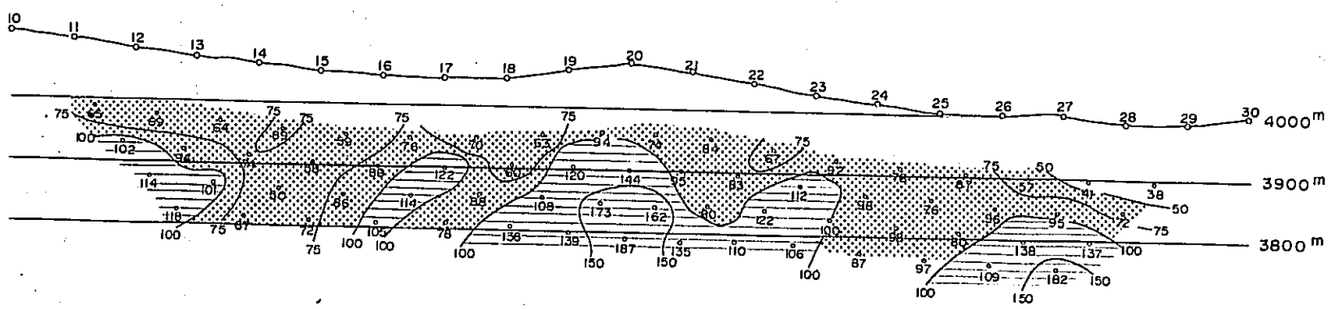
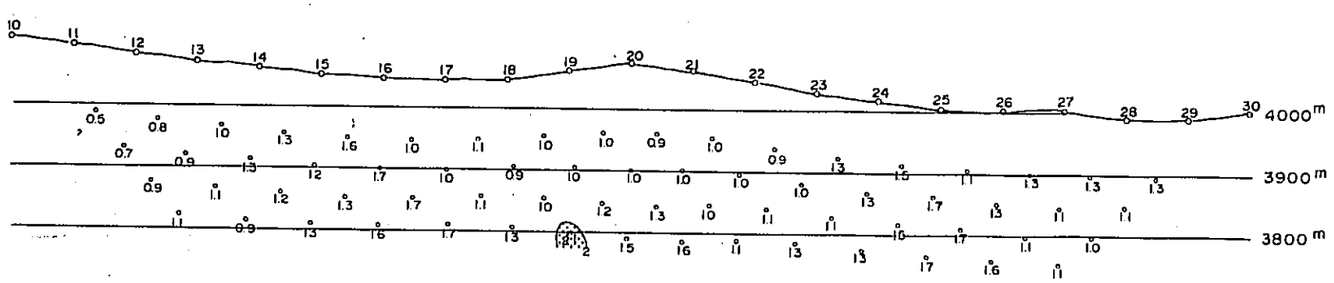
PL. II-7-5 IP PROFILE ON LINE NO I'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



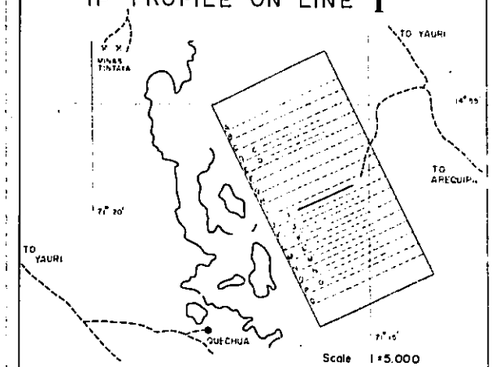
FREQUENCT EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



PL. II-7-5

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE I'



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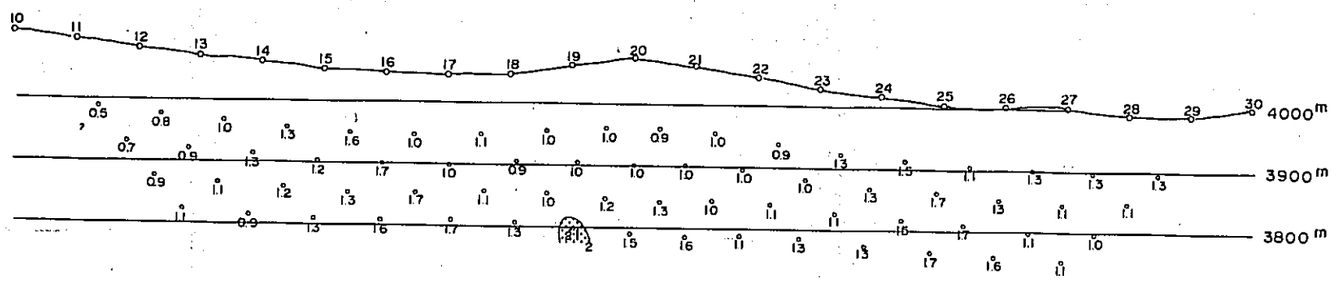
LEGEND

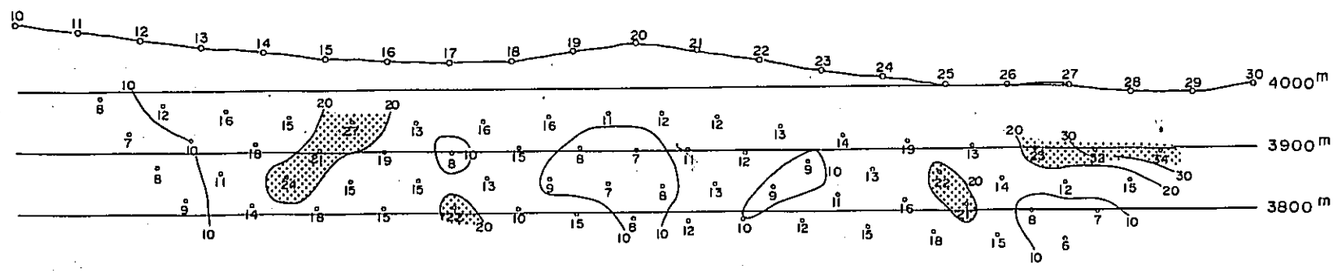
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTOR $[MF : FE \times 1000 \div \rho_{AC2}]$



LEGEND

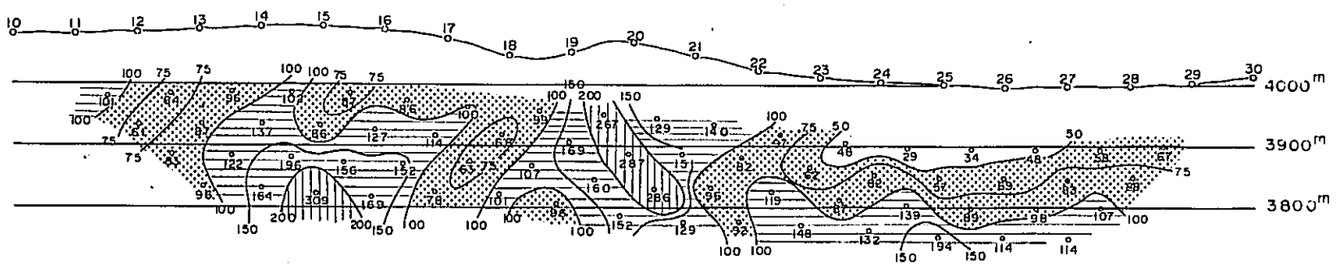
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

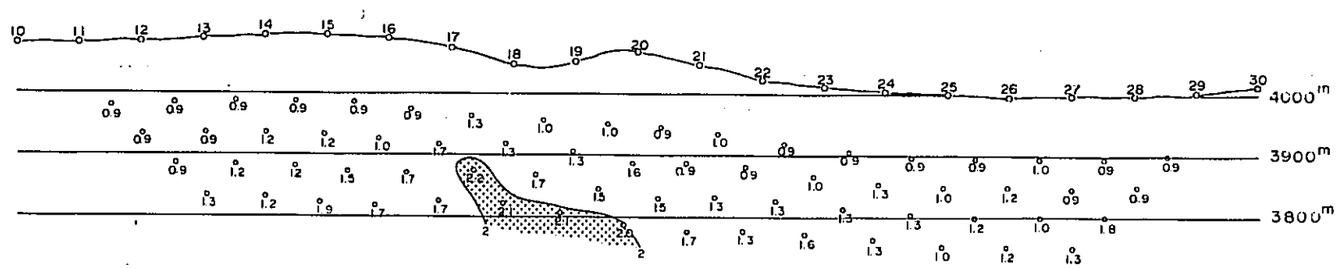
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-6 I P PROFILE ON LINE NO. J-(100)

APPARENT RESISTIVTY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2}) \div \rho_{AC_2} \times 100\ \%$)



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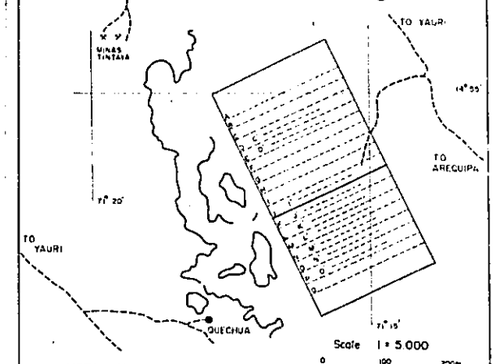
PL. II-7-6

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE J



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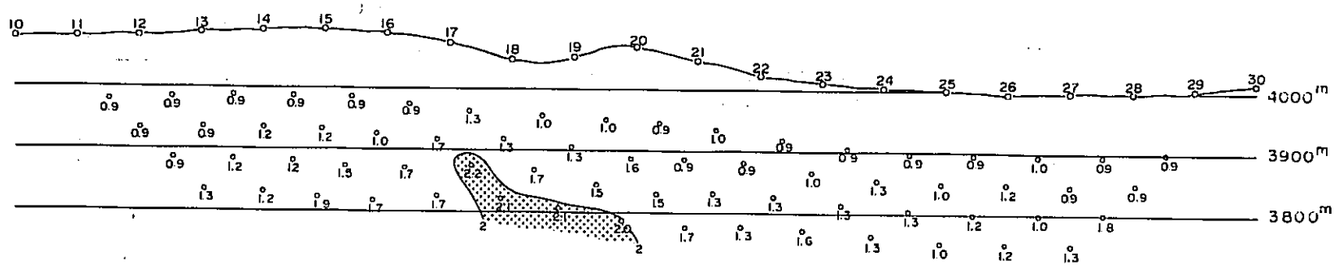
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

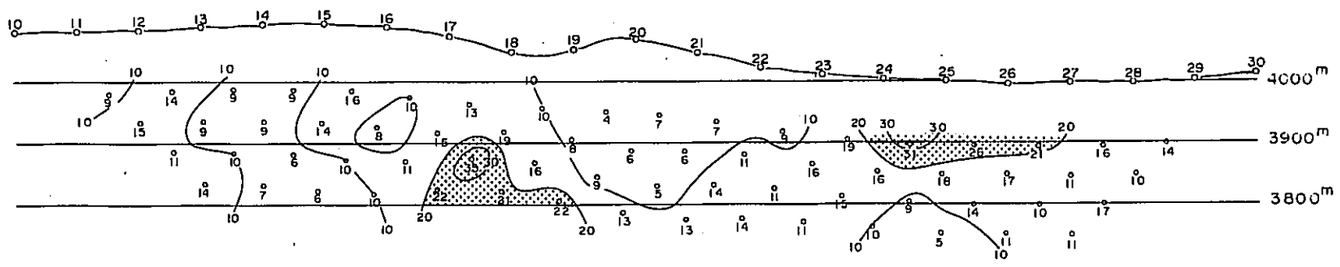
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT [FE : $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}\times 100\%$]



METAL FACTOR [MF : FE x 100÷ρ_{AC2}]



LEGEND

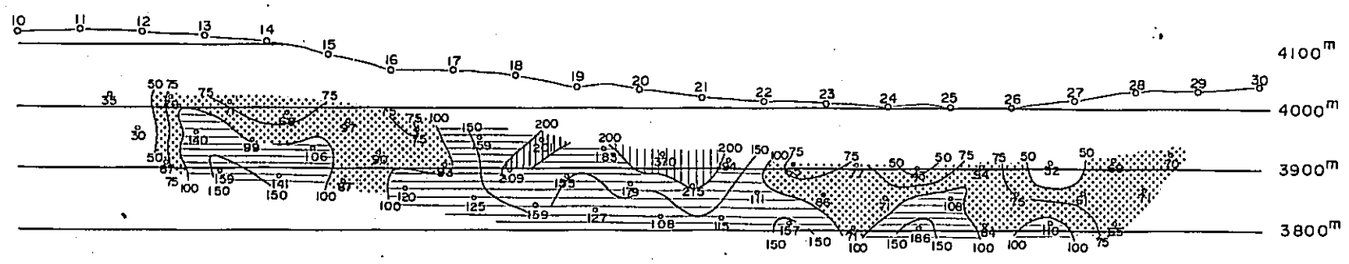
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

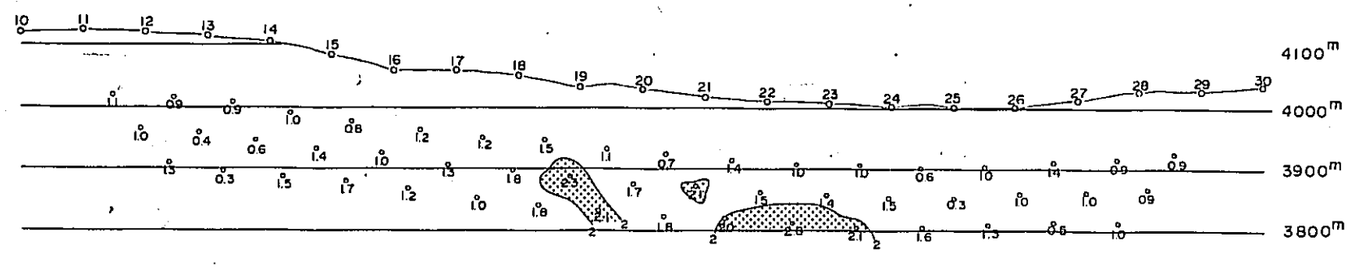
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-7 IP PROFILE ON LINE NO J'-(100)

APPARENT RESISTIVITY AR: ρ_{AC_2} ohm-meter



FREQUENCY EFFECT [FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\,\%$]



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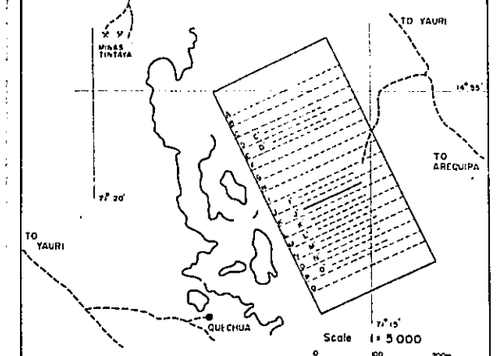
PL.II-7-7

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE J'



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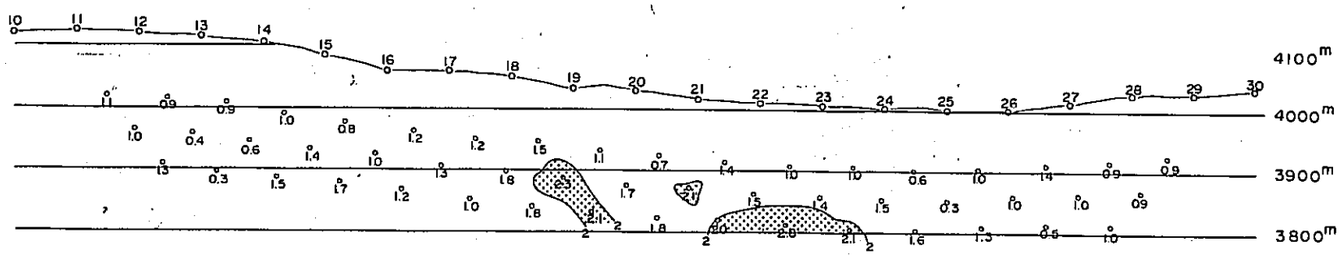
LEGEND

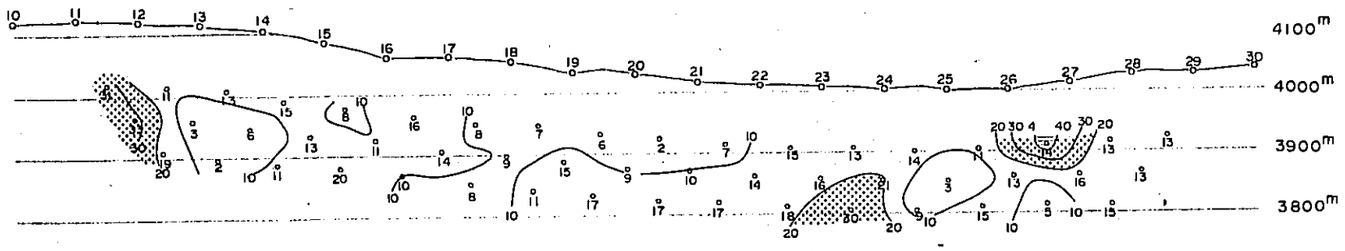
AR
- 50Ω-m Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTR [MF : FE x 1000 ÷ ρAC2]



LEGEND

AR
- 50Ω-m Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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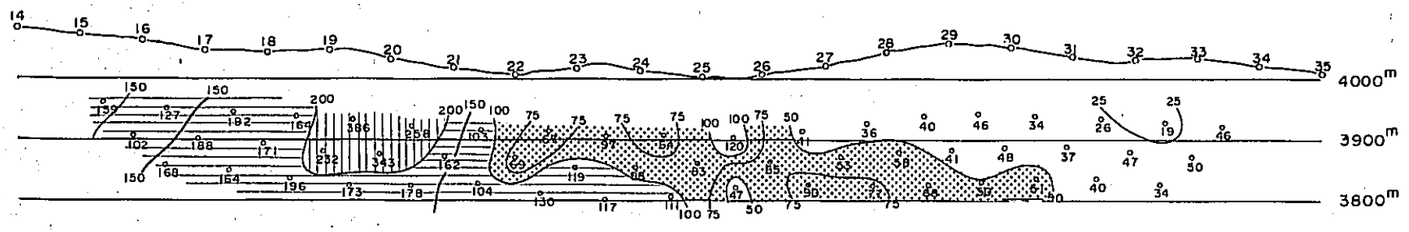
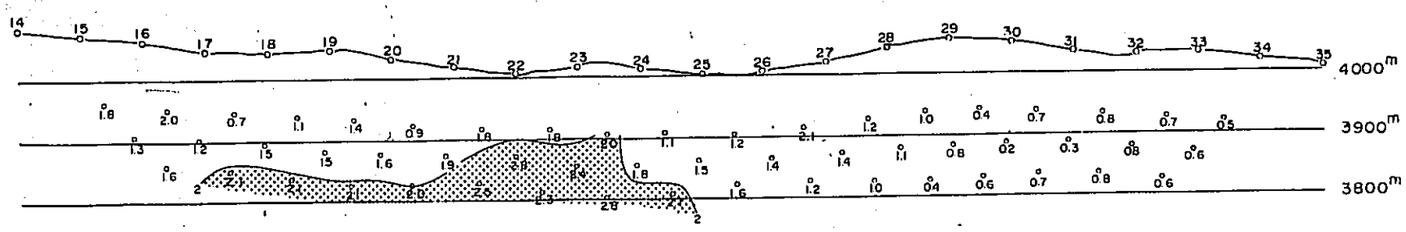
PL. II-7-8 IP PROFILE ON LINE NO. K-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



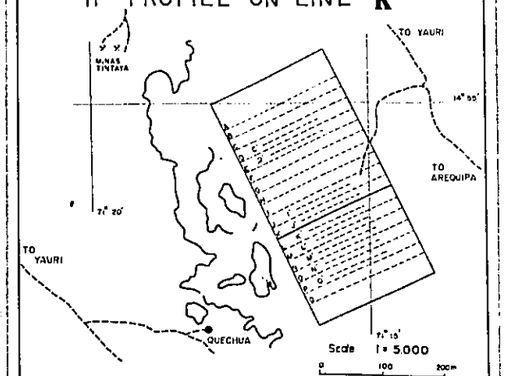
FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100$ %]



METAL FACTOR [MF : FE x $1000 \div \rho_{AC_2}$]

PL.II-7-8

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE K



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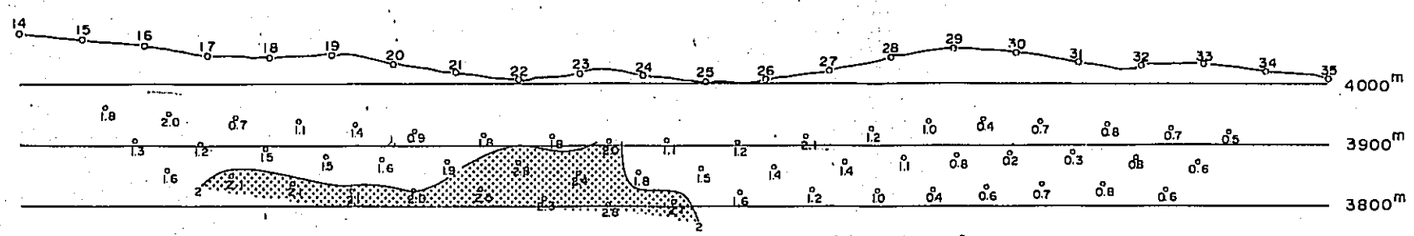
LEGEND

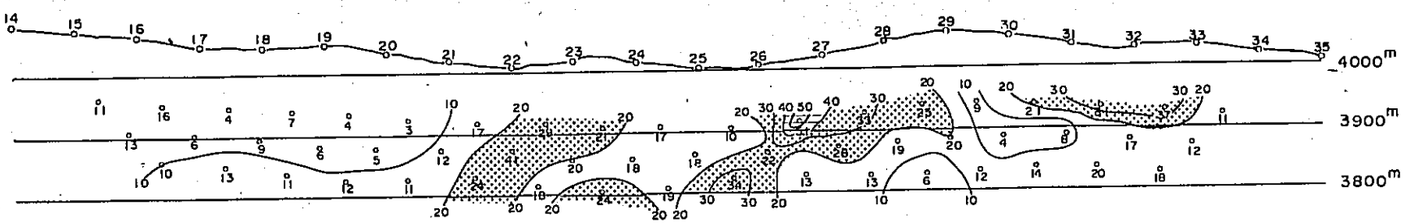
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTOR [MF : FE x 1000÷ρ_{AC_2}]



LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4%
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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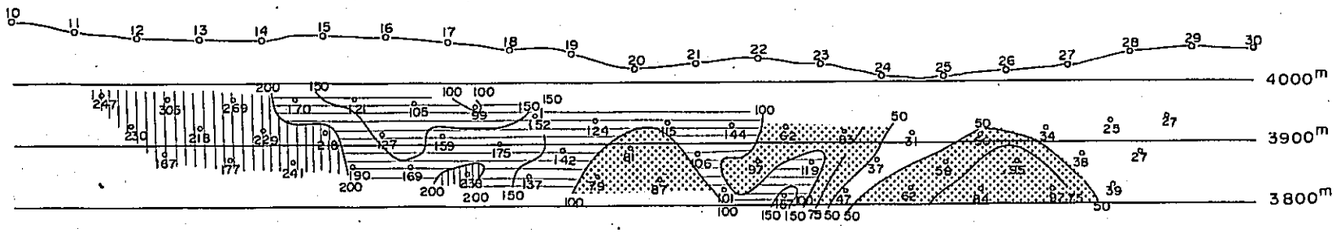
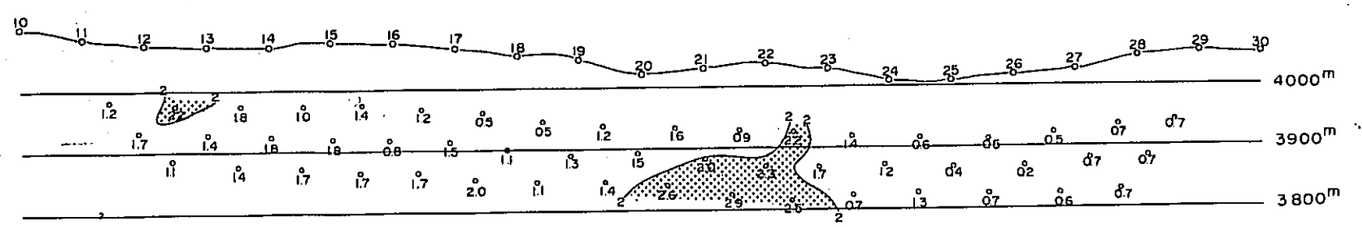
PL. II-7-9 IP PROFILE ON LINE NO. K'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT $\left[FE : (\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%\right]$

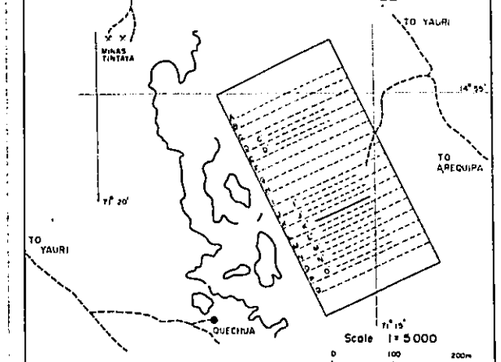


METAL FACTOR $\left[MF : FE \times 1000 \div \rho_{AC_2}\right]$

PL. II-7-9

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE 'K'



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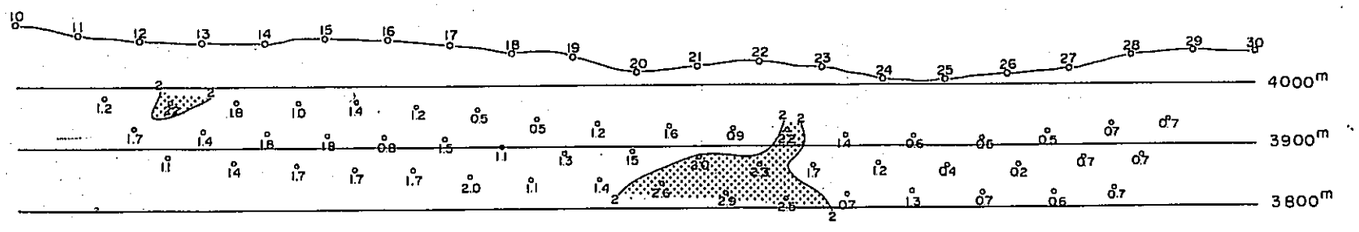
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20. Less



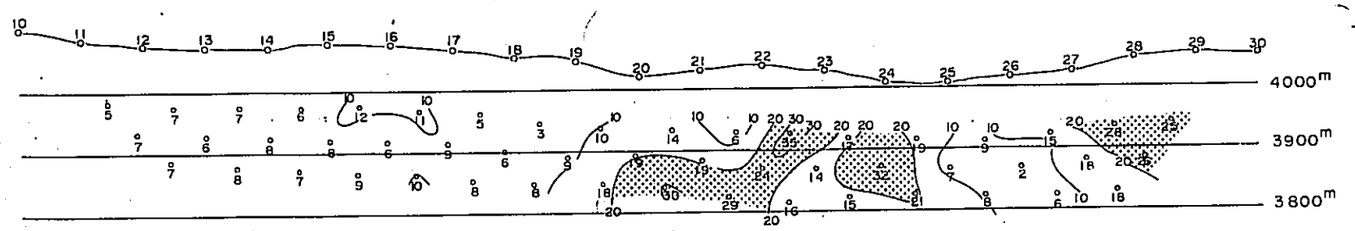
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20. Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over



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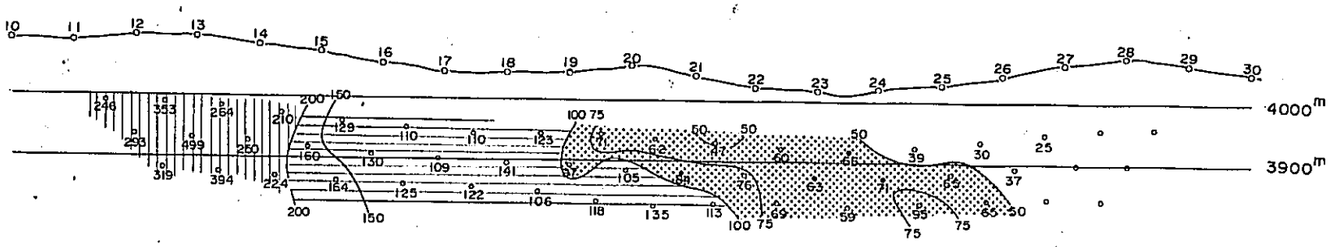
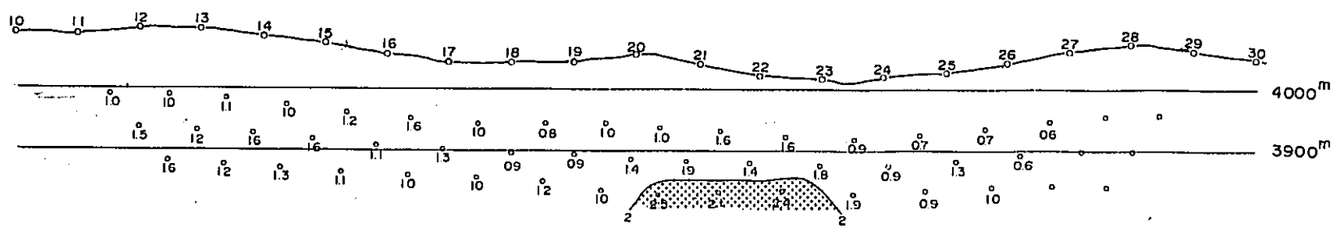
PL. II-7-10 IP PROFILE OF LINE NO. L-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



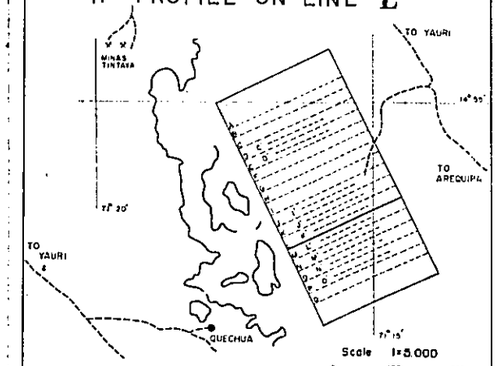
FREQUENCY EFFECT [FE : $(\rho_{AC_1}-\rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



PL. II-7-10

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE L



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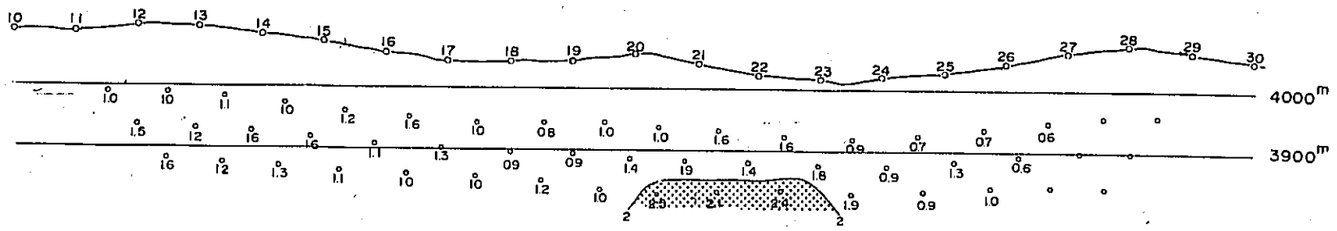
LEGEND

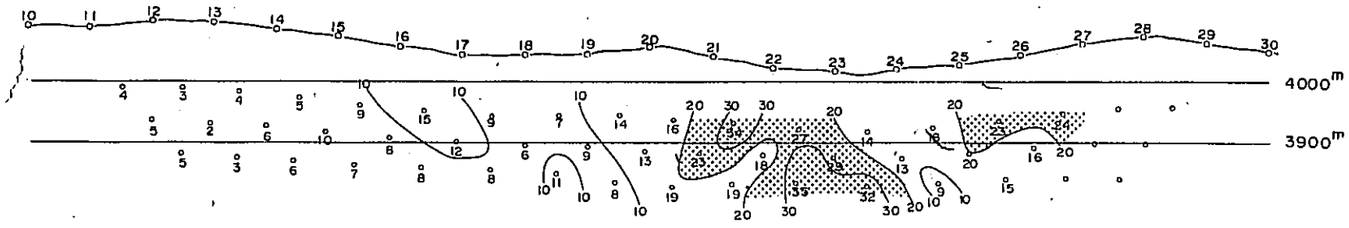
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- Ω-m 500 Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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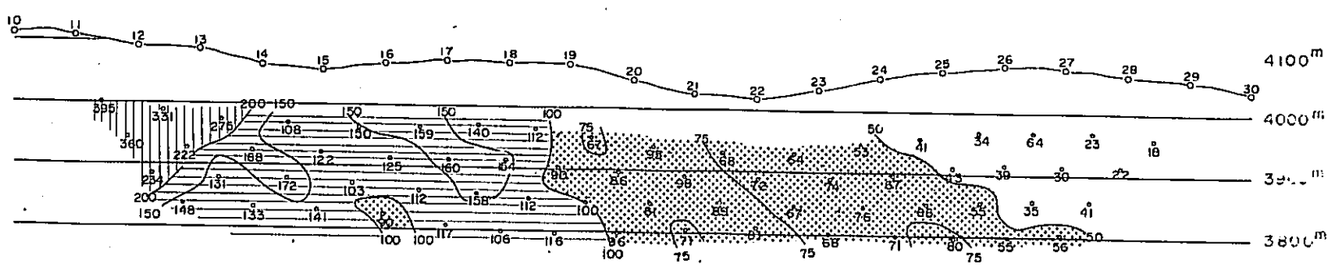
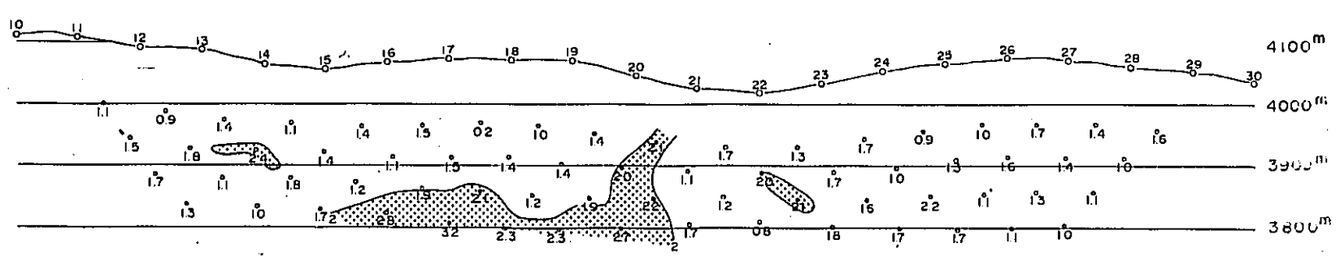
PL.II-7-11 I P PROFILE ON LINE NO L'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter

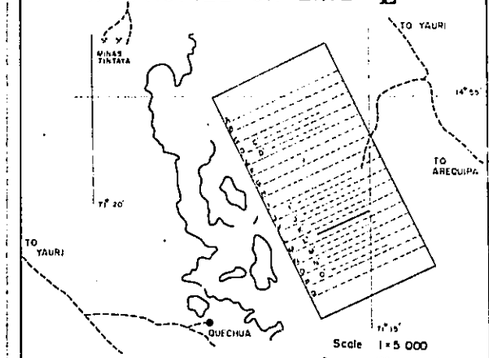


FREQUENCY EFFECT $\left(FE : (\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\,\%\right)$



PL.II-7-11

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE L'



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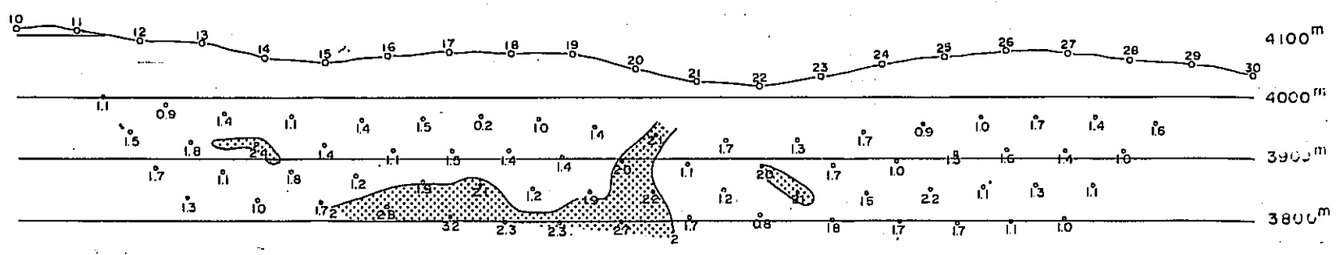
LEGEND

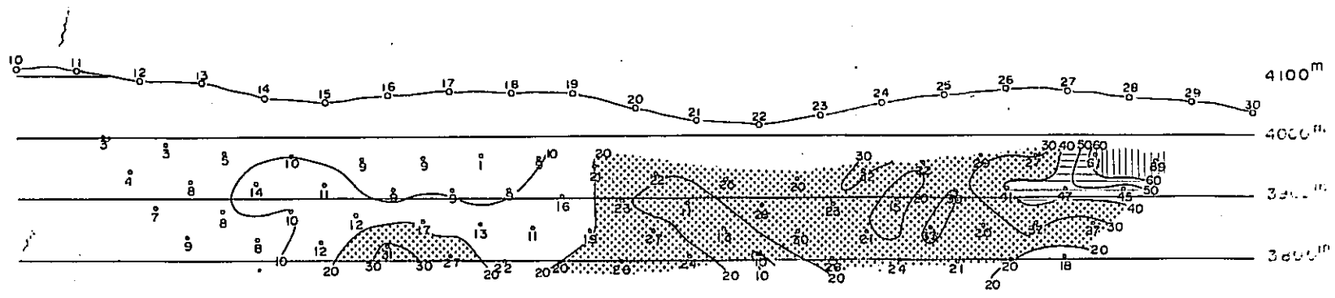
AR
- 50Ω-m Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTOR [MF: FE x 1000 ÷ ρ_{AC_2}]



LEGEND

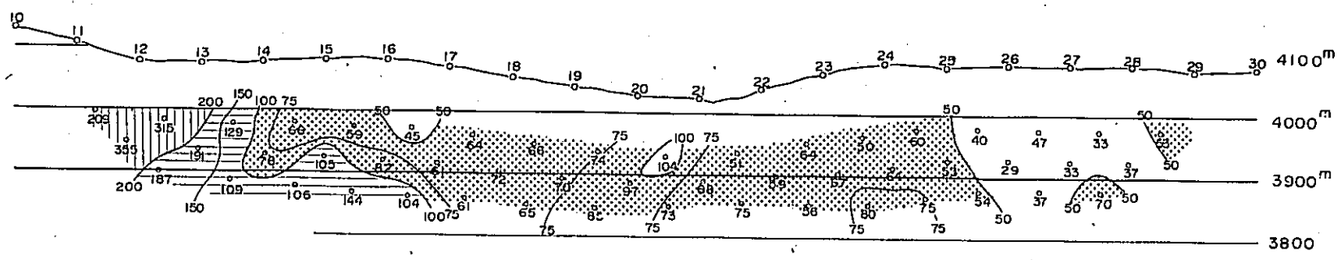
AR
- 50Ω-m Less
- 51 ~ 100Ω-m
- 101 ~ 200Ω-m
- 201 ~ 500Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

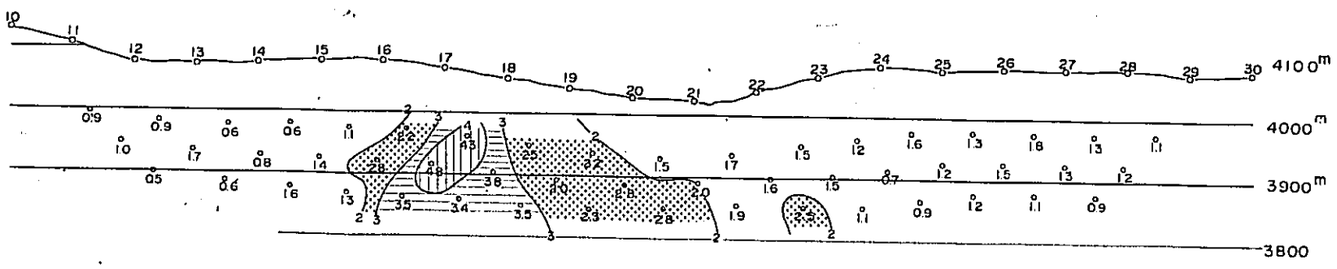
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-12 IP PROFILE ON LINE NO. M-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\%$)



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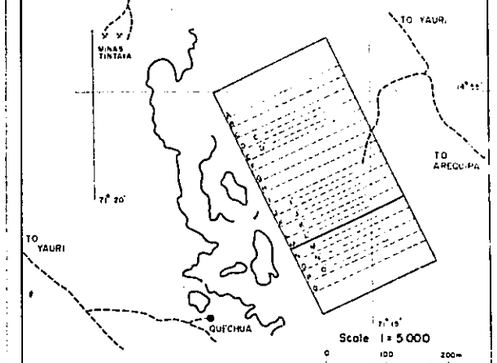
PL. II-7-12

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)

IP PROFILE ON LINE **M**



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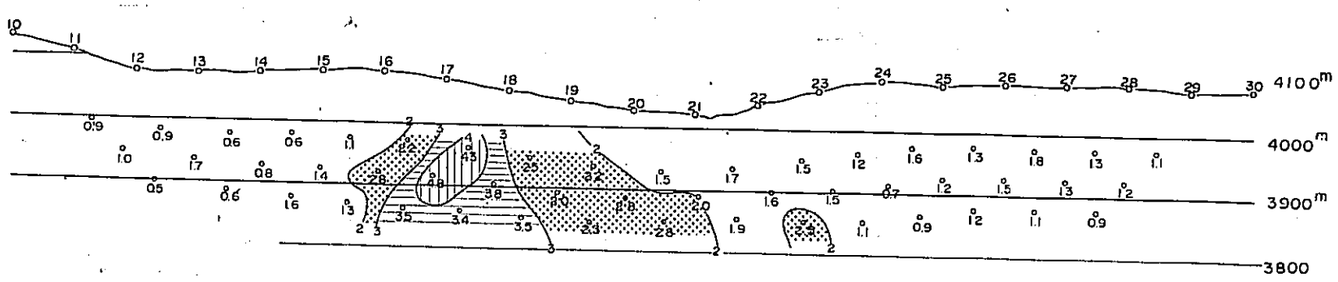
LEGEND

AR
- 50 Ω m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

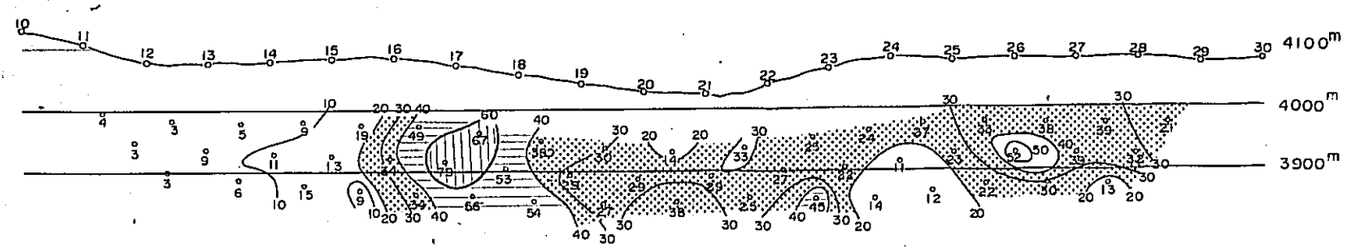
FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT (FE: $(\rho_{AC1}-\rho_{AC2})\div\rho_{AC2}\times 100\%$)



METAL FACTOR (MF: FE x 1000 ÷ ρ_{AC2})



LEGEND

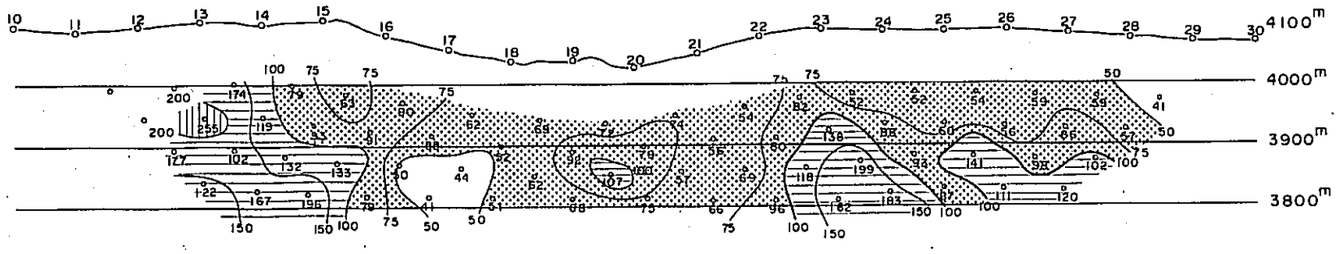
AR
- 50 Ω m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω- m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2.% ~ 3 %
- 3% ~ 4%
- 4 % Over

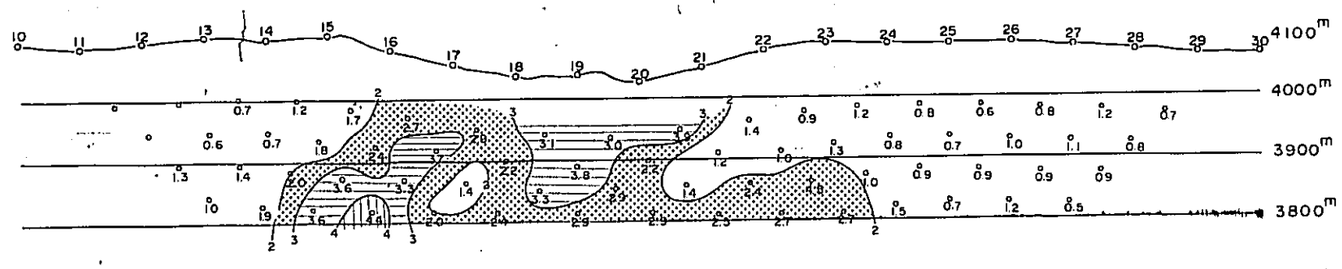
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-13 IP PROFILE ON LINE NO M'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



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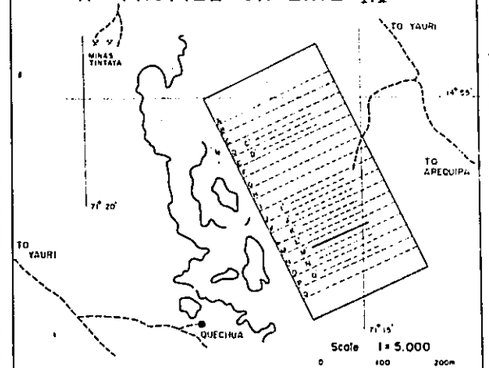
GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE M'



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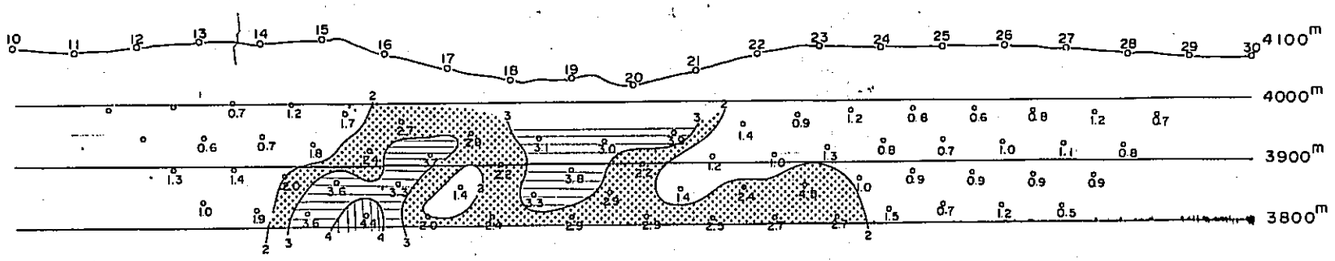
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less



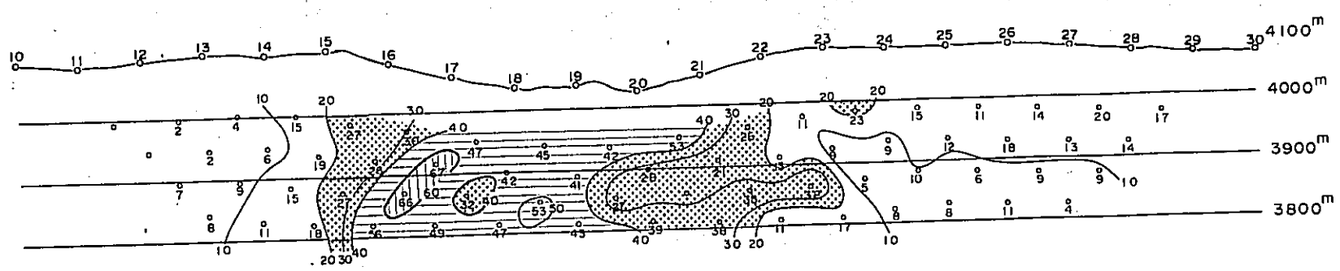
METAL FACTOR (MF : FE x 1000 ÷ ρ_{AC_2})

LEGEND

AR
- 50Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

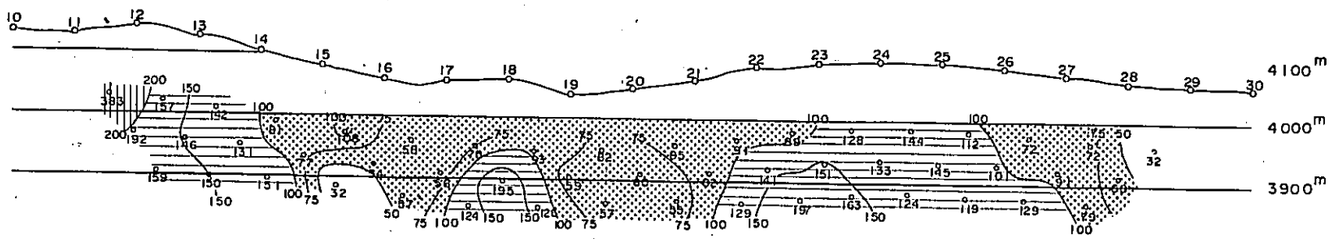
FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

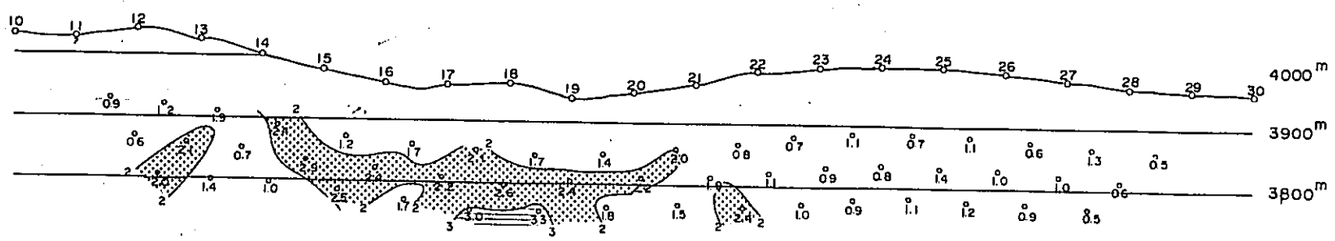


PL. II-7-14 IP PROFILE ON LINE NO. N-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm - meter



FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}$ X 100%)



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PL.II-7-14

GEOLOGICAL SURVEY OF
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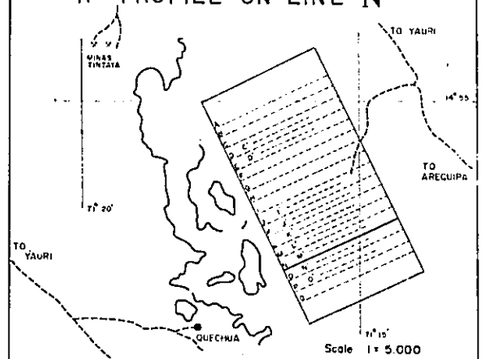
(PHASE III)

IP PROFILE ON LINE N



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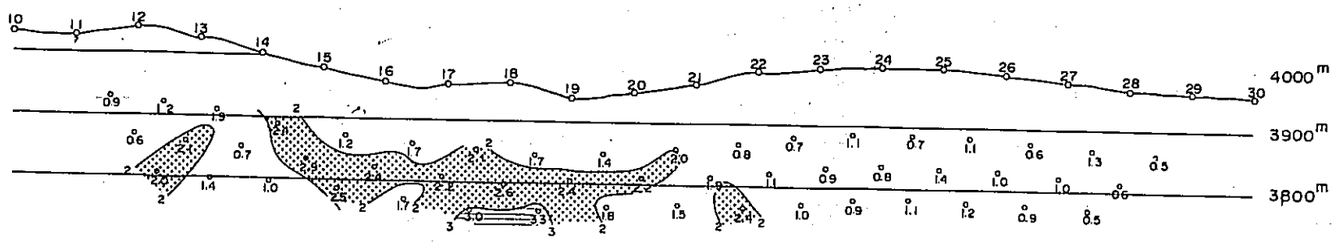
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

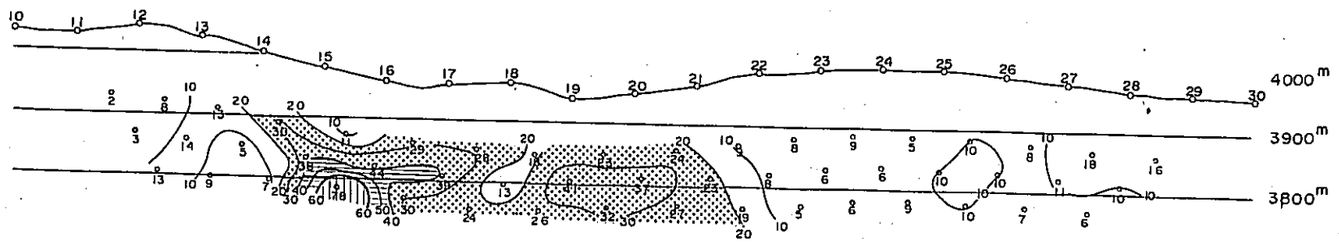
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % over

MF

FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\%$)



METAL FACTOR (MF : FE x 100÷ρ_{AC_2})



LEGEND

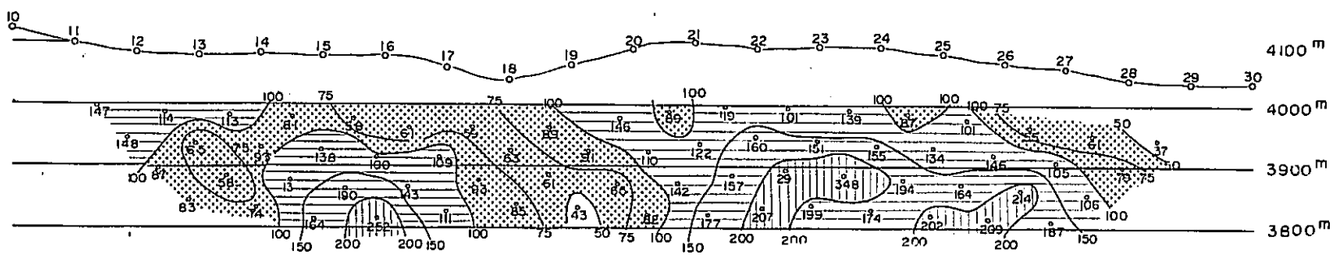
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

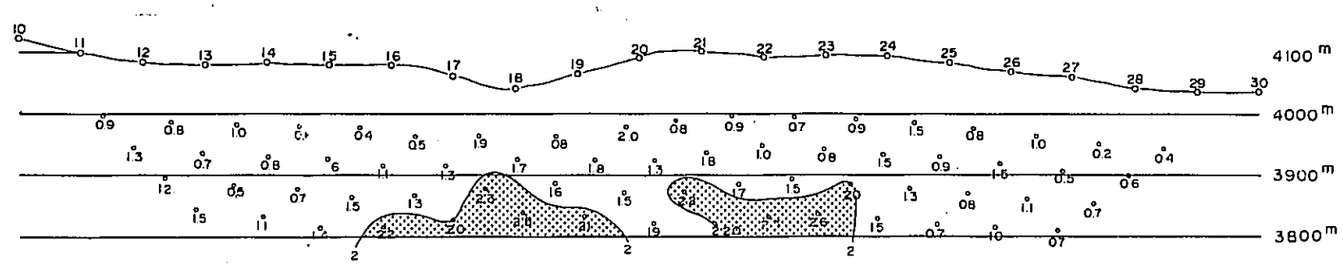
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-15 IP PROFILE ON LINE NO. N'-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



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GEOLOGICAL SURVEY OF
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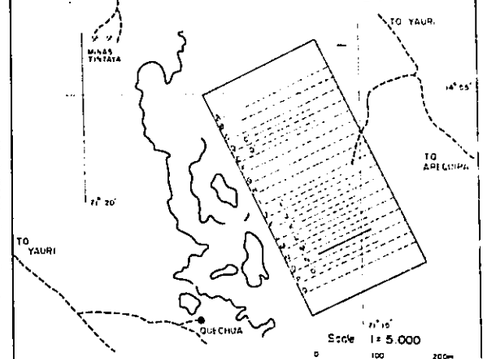
IP PROFILE ON LINE N'



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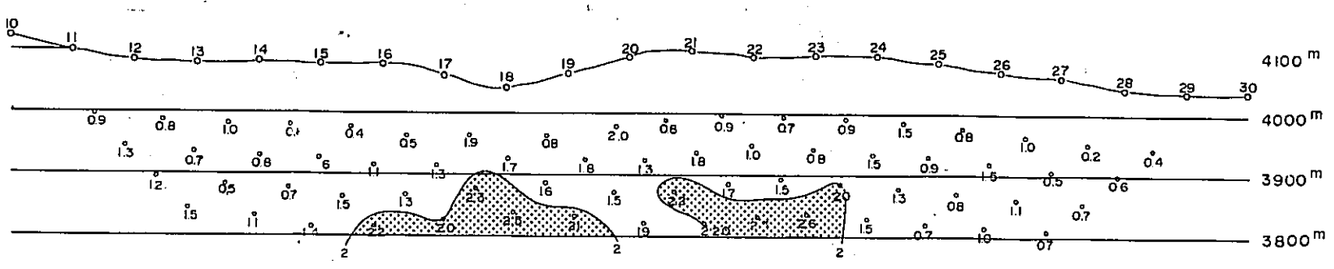
LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

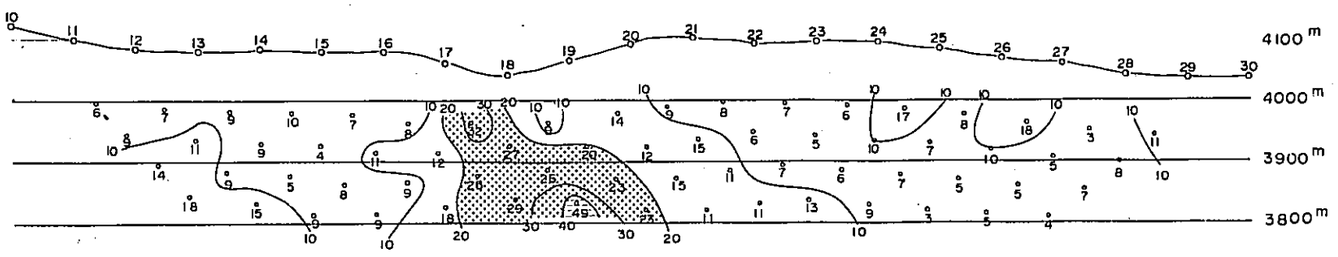
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



METAL FACTOOR [MF : FE x 1000 ÷ ρ_{AC_2}]



LEGEND

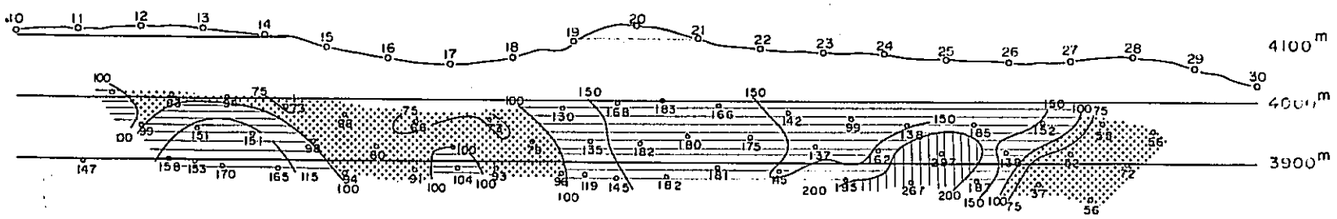
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω-m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

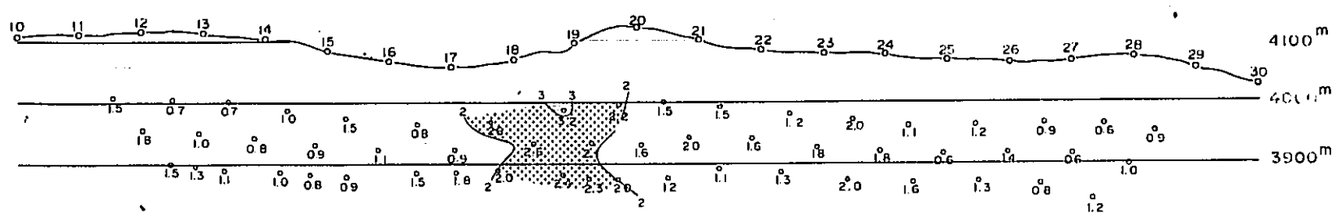
MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

PL. II-7-16 IP PROFILE ON LINE NO. 0-(100)

APPARENT RESISTIVITY AR : ρ_{AC_2} ohm-meter



FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



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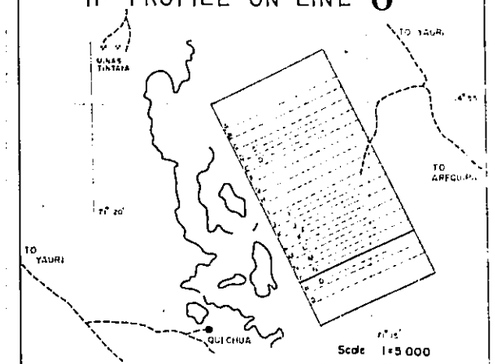
PL. II-7-16

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE III)
IP PROFILE ON LINE O



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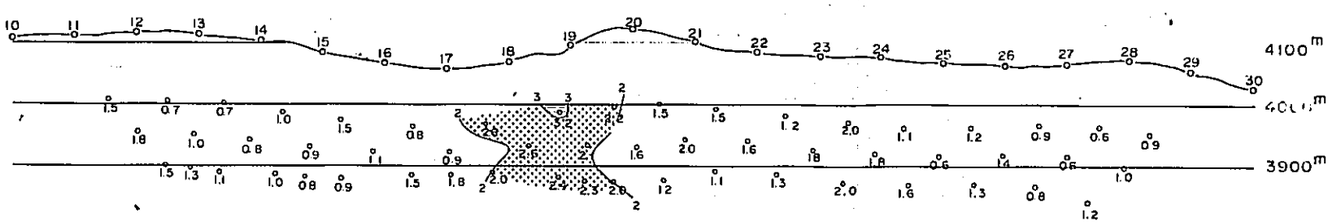
LEGEND

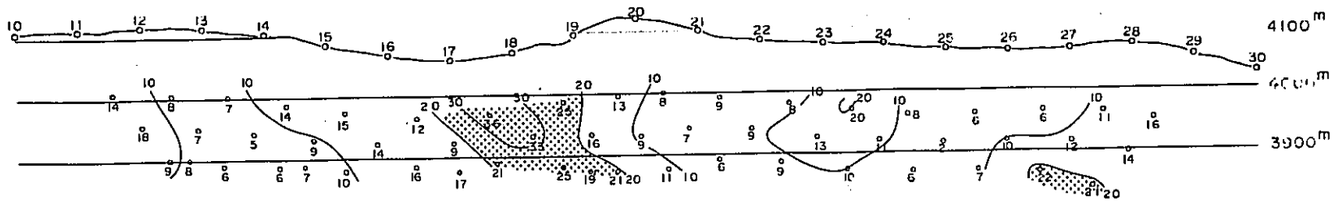
AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less



METAL FACTOR (MF : FE x 1000 ÷ ρAC2)



LEGEND

AR
- 50 Ω-m Less
- 51 ~ 100 Ω-m
- 101 ~ 200 Ω-m
- 201 ~ 500 Ω m
- 500 Ω-m Over

FE
- 2 % Less
- 2% ~ 3 %
- 3% ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over

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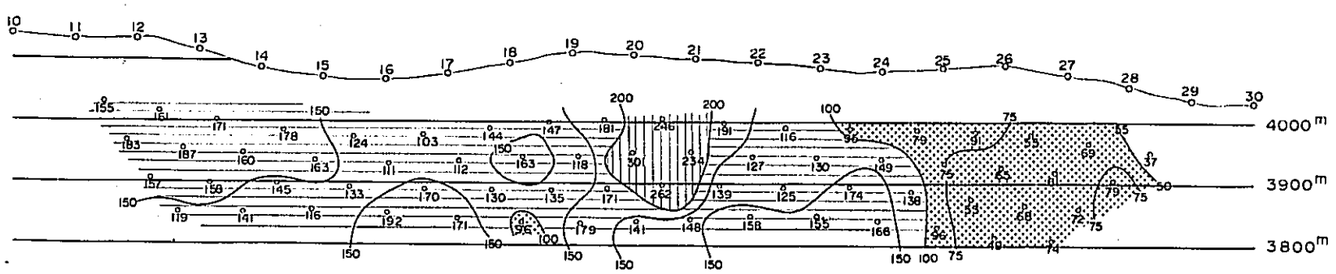
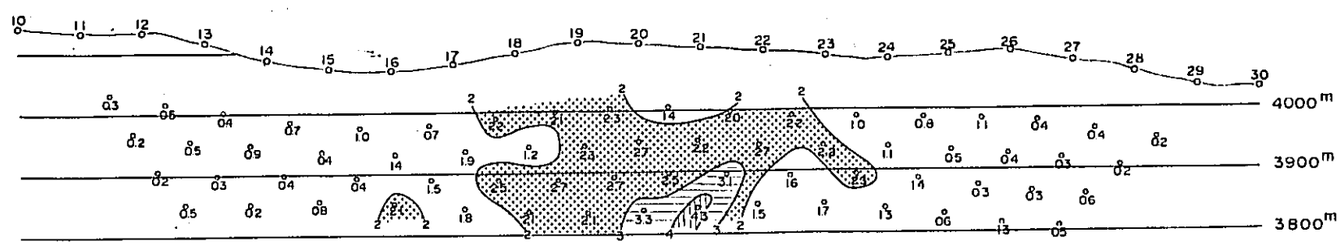
PL. Ⅱ-7-17 IP PROFILE ON LINE NO. O'—(100)

APPARENT RESISTIVITY AP : ρ_{AC_2} ohm — meter



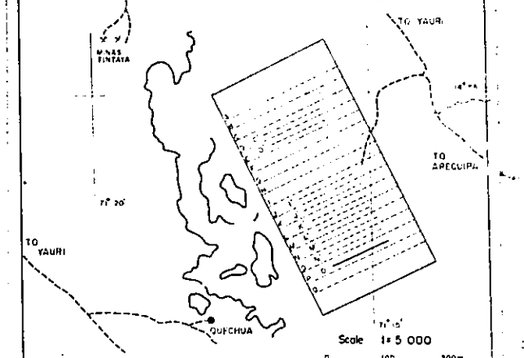
FREQUENCY EFFECT (FE : $(\rho_{AC_1}-\rho_{AC_2})\div\rho_{AC_2}\times 100\%$)



PL.Ⅱ-7-17

GEOLOGICAL SURVEY OF
YAURI AREA, SOUTHERN PERU
(PHASE Ⅲ)

IP PROFILE ON LINE O'



METAL MINING AGENCY — LOCALITY INDEX
OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN
JULY 1974

Prepared by MITSUI KINZOKU ENGINEERING SERVICE CO, LTD.

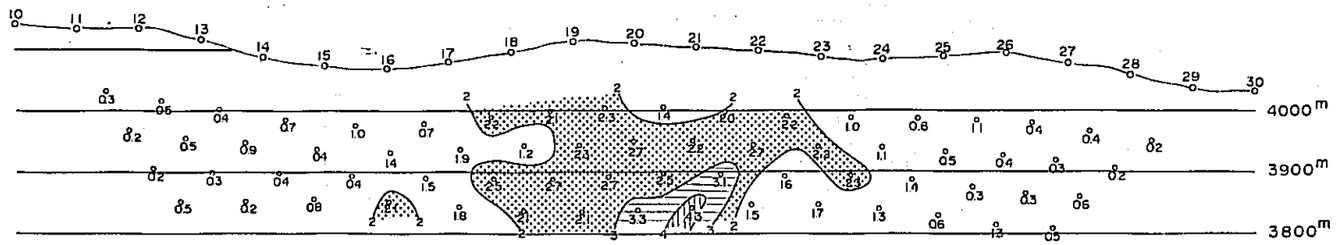
LEGEND

AR
- 50Ω m Less
- 51 ~ 100Ω m
- 101 ~ 200Ω m
- 201 ~ 500Ω m
- 500 Ω-m Over

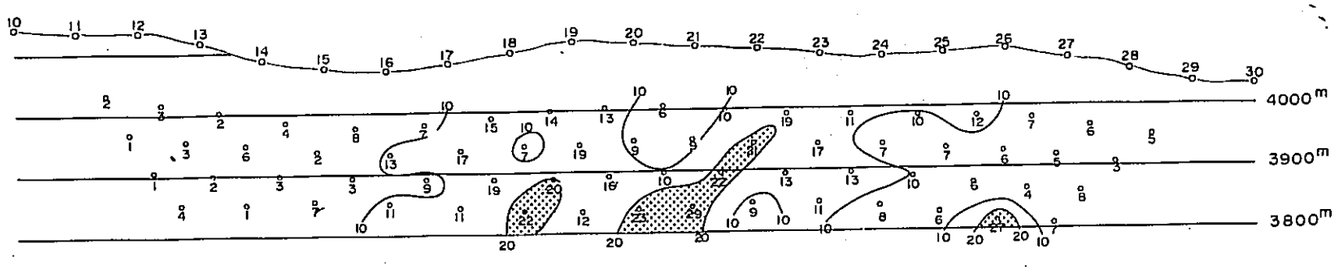
FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less

FREQUENCY EFFECT [FE : $(\rho_{AC_1} - \rho_{AC_2}) \div \rho_{AC_2} \times 100\%$]



METAL FACTOR [MF : FE x 1000 ÷ ρ_{AC_2}]



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AR
- 50 Ω m Less
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- 201 ~ 500 Ω m
- 500 Ω-m Over

FE
- 2 % Less
- 2 % ~ 3 %
- 3 % ~ 4 %
- 4 % Over

MF
- 20 Less
- 20 ~ 40
- 40 ~ 60
- 60 ~ 80
- 80 Over