different from that of the mineralized zone estimated from drilling survey. The reason for this difference is estimated to be that no strong PFE value is reflected because the amount of the sulfide mineral constituting these mineralized zones is small.

The mineralized zone captured as a result of the drilling survey of this zone (MJZM-6, MJZM-7) is so narrow and has not so much sulphide mineral amount that no pant-leg pattern appears in the section of PFE. The above mentioned horizontal plate model is interpreted to be complex of weakly mineralized zone.

6-2 JEGEDE ZONE

6-2-1 Survey Method

The electrical exploration IP method of frequency domain was carried out on three survey lines in Jegede zone.

The specification and volume of survey are given below.

(1) Electrode array : dipole-dipole location

(2) Electrode spacing : 50 m

(3) Isolation coefficient: n = 1-4

(4) Transmit frequency : 3, 0.3 Hz

Survey Line	Length	Number of Stations
J-1	1,200m	25 (No. 0 TO 24)
J-2	1,300m	27 (No. 0 TO 26)
J-3	1,300m	27 (No.-1 TO 25)

6-2-2 Data Processing

First, based on the apparent resistivity (3 Hz) and PFE value which were observed, the pseudo section and plans on n = 1-4 were produced. Rock specimens were sampled in a survey zone, the sample resistivity and PFE value were measured and then measured values were referred to for consideration of the survey result.

Two dimensional simulation on boundary element method was made on the three survey lines (J-1, J-2 and J-3) where drilling survey was performed .

In this two dimensional simulation analysis, the result of drilling survey were referred to for modeling configuration and the sample resistivity and PFE values were referred to for setting up to the resistivity and PFE of the boundary-element model. The models were modified repeatedly so that calculated apparent resistivity and PFE were approximated to the observed apparent resistivity and PFE.

6-2-3 Survey Results

The apparent resistivity and PFE in the survey zone could be classified:

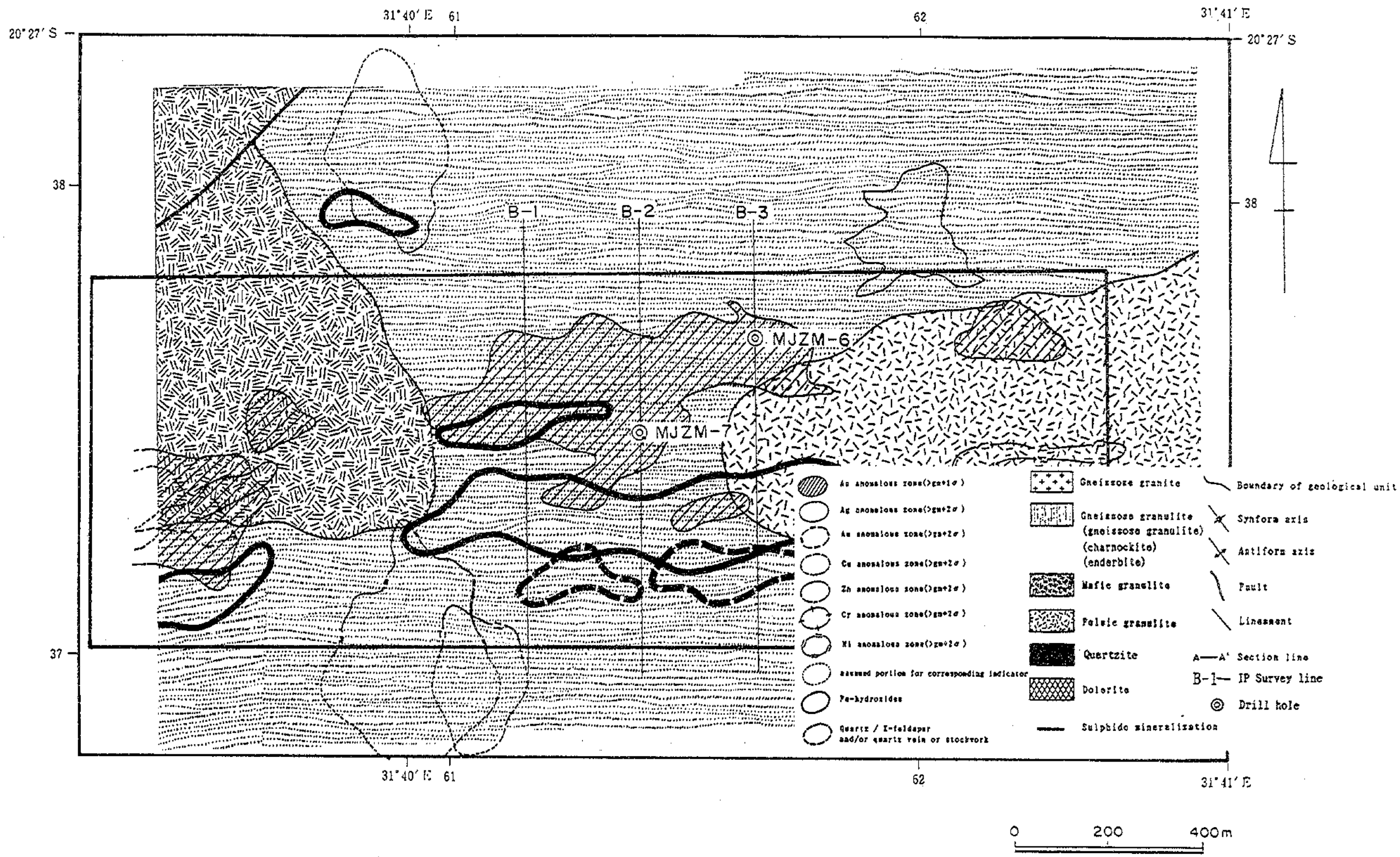

FIG. 2-6-1 Locality Map of Survey Lines(Benzi Zone)

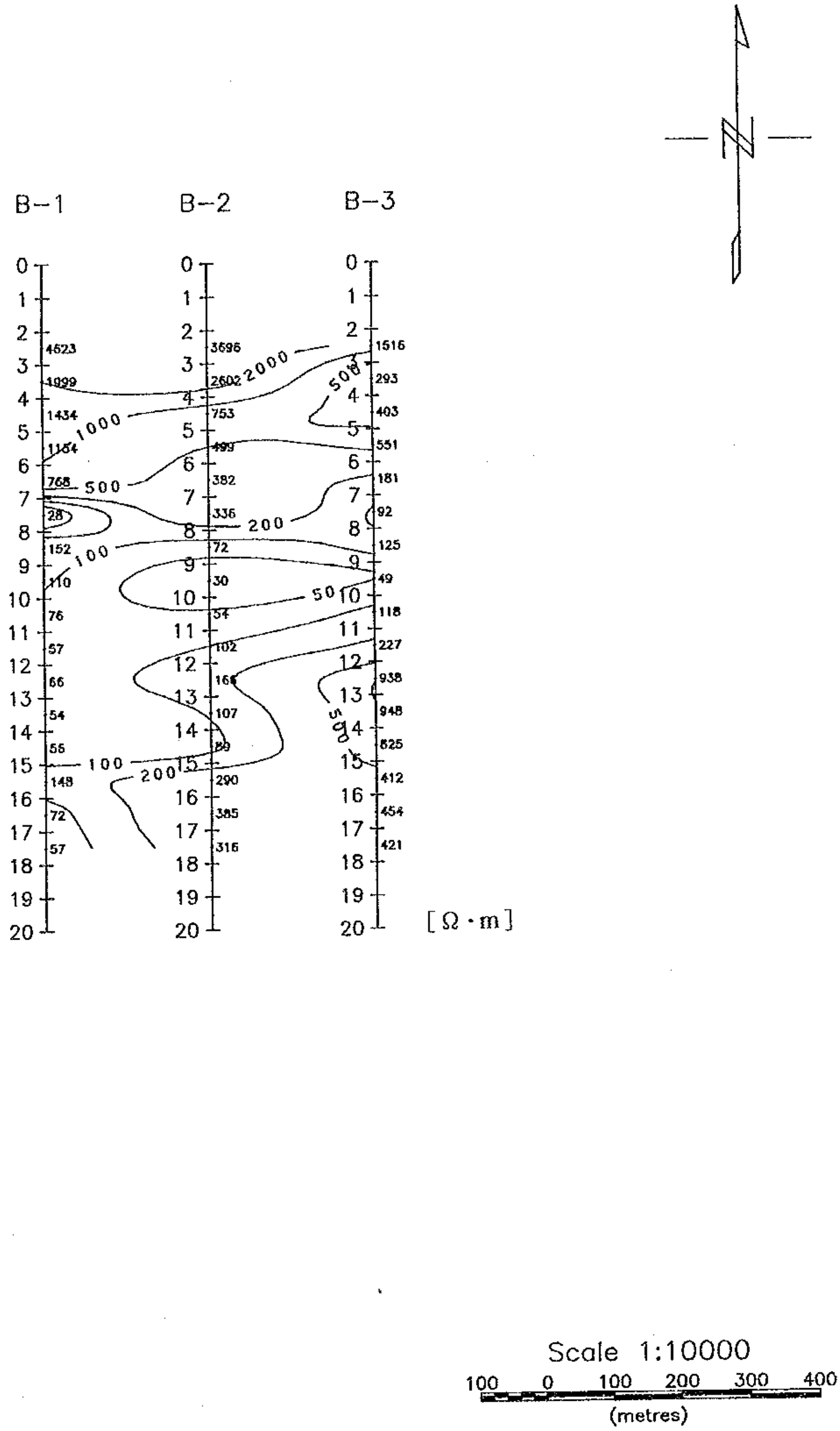

FIG. 2-6-2 Plan of Apparent Resistivity(Benzi Zone: 3 Hz, n=3)

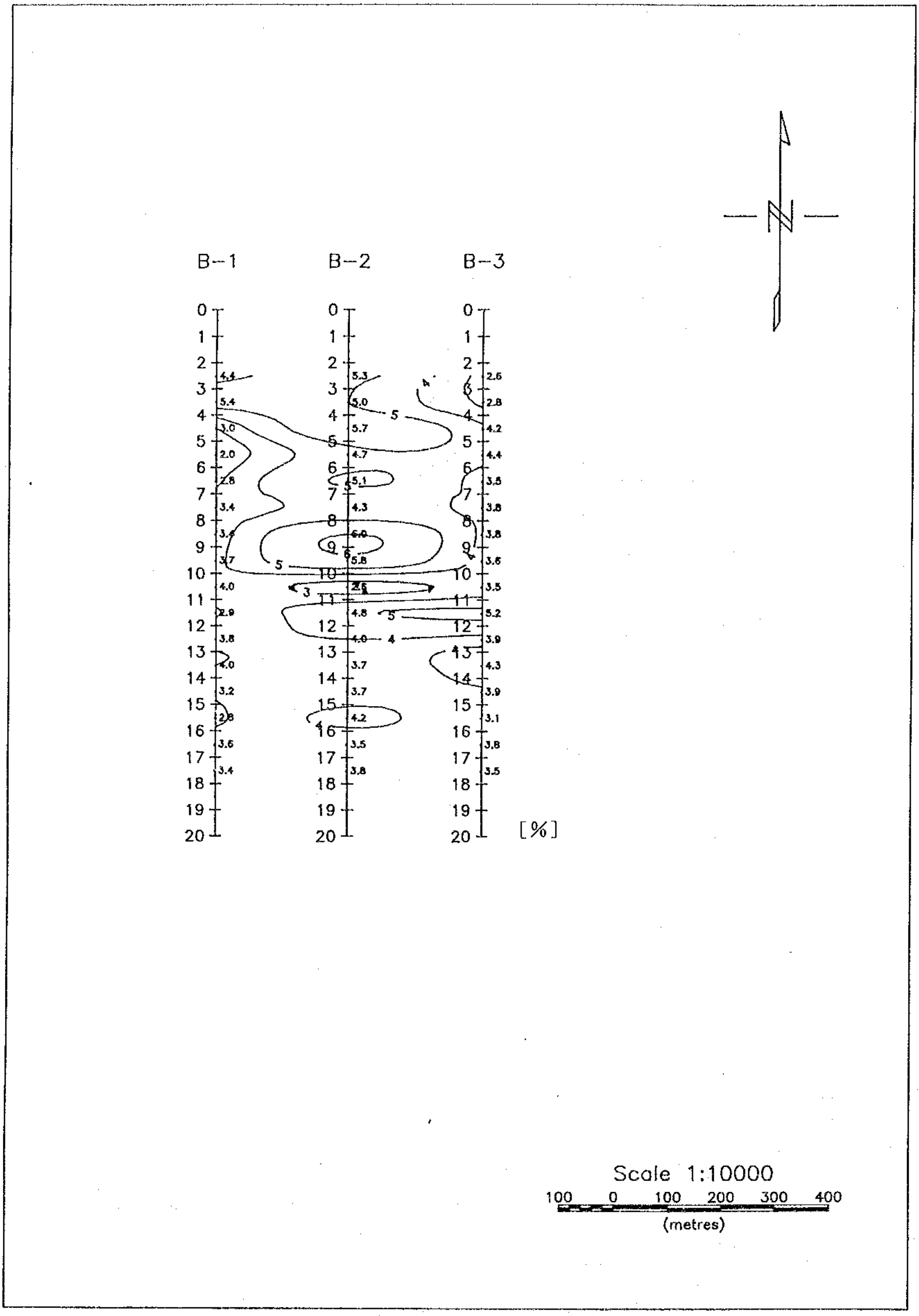

FIG. 2-6-3 Plan of PFE(Benzi Zone:0.3 Hz/ 3 Hz, n=3)

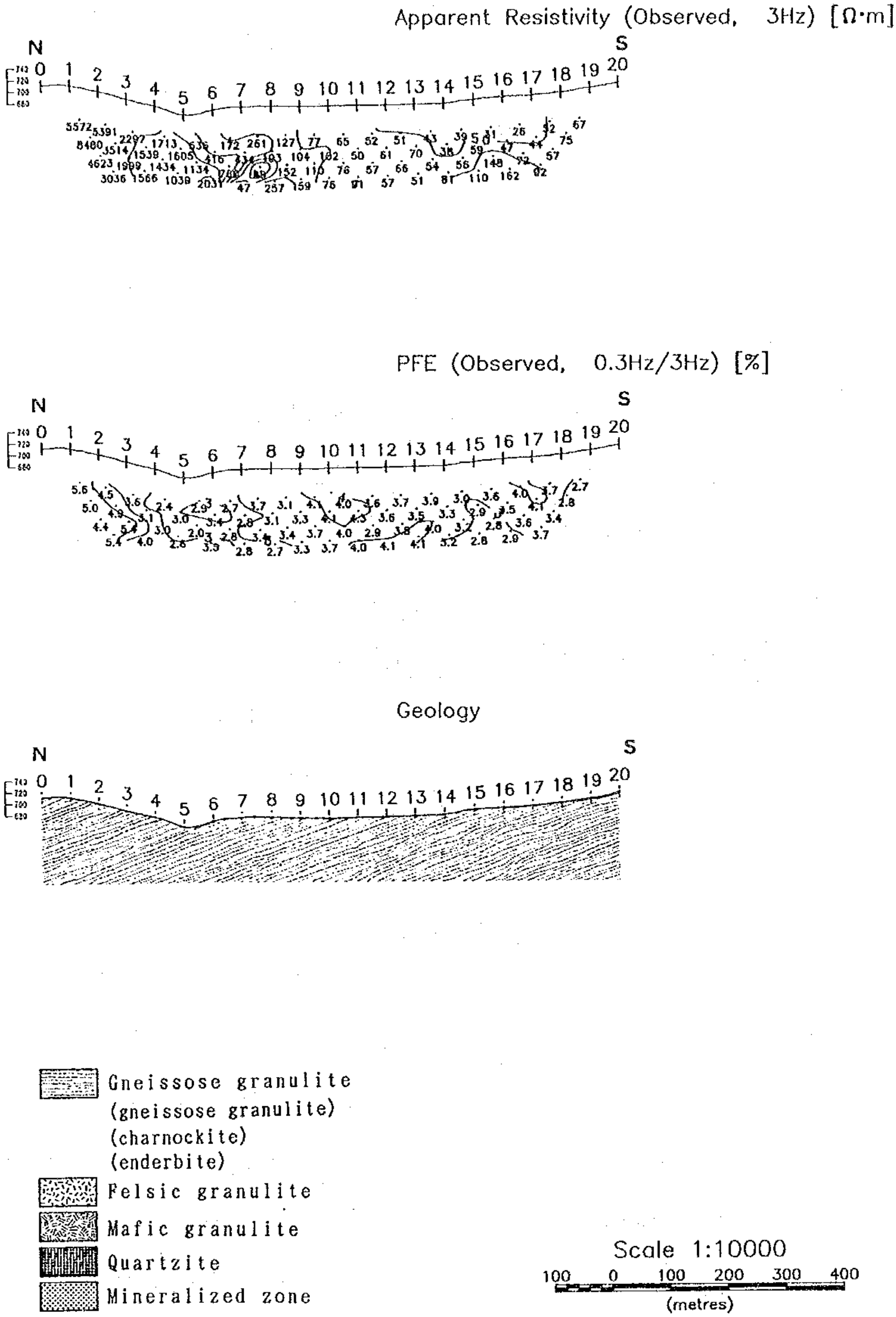

FIG. 2-6-4 Section of Apparent Resistivity and PFE(Benzi Zone: B-1)

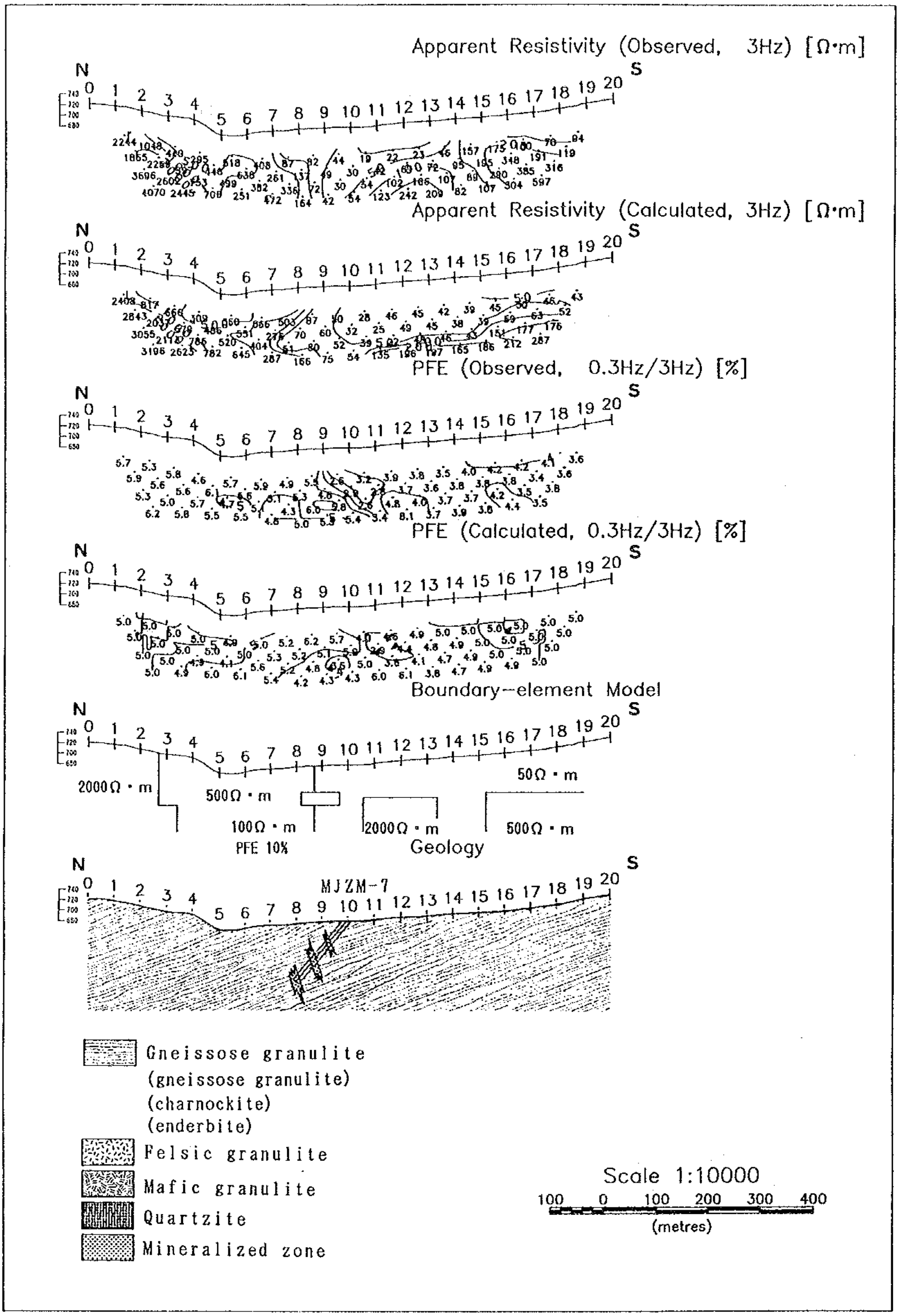

FIG. 2-6-5 Section of Simulated Results(Benzi Zone:B-2)

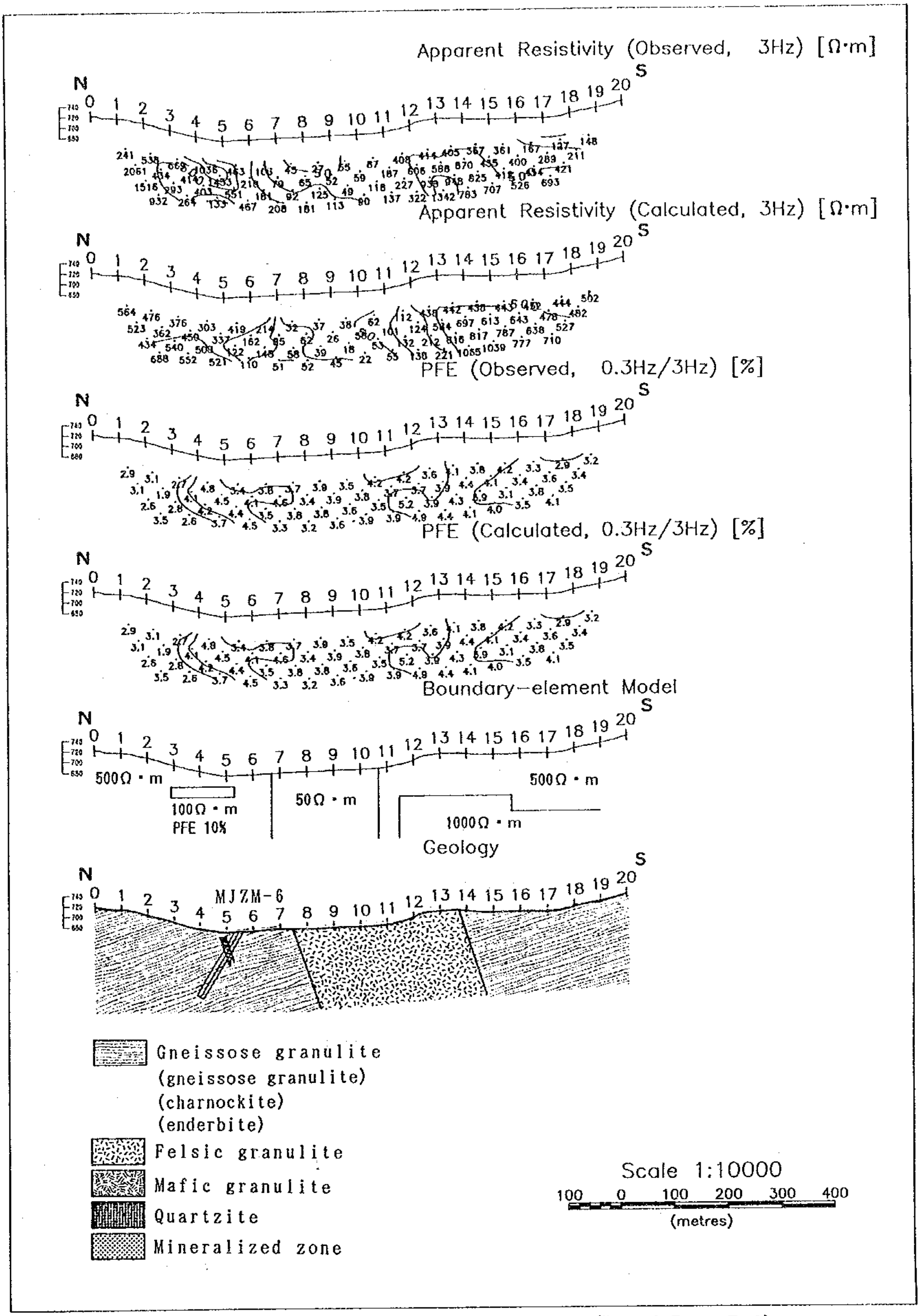

FIG. 2-6-6 Section of Simulated Results(Benzi Zone:B-3)

High apparent resistivity : 200 Ω · m or more High PFE: more than 10 %
Medium apparent resistivity: 50 - 200 Ω · m Medium PFE: 6 - 9 %
Low apparent resistivity : 50 Ω · m or less Low PFE: less than 6 %

The distribution of the apparent resistivity on the survey line J-1 can be divided to the following three sections:

1)Section of about 100 Ω · m below the survey stations 0 - 4 at the north end of the survey line.

2)Section of below 100 Ω · m on below around the survey stations 4 - 13 in the center on the survey line.

(3)Section of more than 100 Ω · m to the south from the survey station 13.

The apparent resistivity distribution on the survey line J-2 can be divided to the three following sections:

1)Section of below 200 Ω · m below the survey stations 0 - 3 at the north end of the survey line.

2)Section of more than 200 Ω · m below the survey stations 3 - 10 in the center of the survey line.

3)Section of below 100 Ω · m to the south of the survey station 10.

Similarly to the previously mentioned two survey lines, the distribution of the apparent resistivity on the survey line J-3 can be divided to the following three sections.

1)Section of a low apparent resistivity of below 50 Ω · m below the survey stations -1 to 3 at the north end of the survey line.

2)Section of a high apparent resistivity of 200 - 4,000 Ω · m below the survey stations 3 - 14 in the center of the survey line.

3)Section of a medium apparent resistivity of about 100 Ω · m to the south of the survey station 14.

A small apparent resistivity zone of below 50 Ω · m is recognized below the survey stations 10 and 11 in the center of the survey line J-1.

Two a small size low apparent resistivity zone of below 50 Ω · m are recognized below the survey stations 11 and 12 in the center of the survey line J-2, and below the survey station 21.

The survey line J-3 has a high apparent resistivity and no extremely low apparent resistivity zone is recognized.

The medium to high PFE anomalous zone more than 7%, extending in the east-west direction, connecting the survey stations 8 - 12 of the survey line J-1, survey stations 10 - 13 of the survey line J-2 and survey stations 10 - 13 of the survey line J-3 is recognized on the plan of n = 1 - 4. This high PFE anomaly, lines correspond to the low apparent resistivity zone to medium apparent resistivity zone on the three survey. Although the high PFE anomaly around the survey stations 19/20 and 23 on the survey line J-2 is clearly noticed on the plan of n

= 1, the size decreases as the depth increases. In plan of apparent resistivity, a low apparent resistivity zone corresponding to the high PFE zone around survey stations 19 and 20 is recognized and the size of low apparent resistivity zone decrease as the depth.

6-2-4 Consideration

As for the survey line J-1, the low apparent resistivity and a pant-leg pattern PFE anomaly is recognized below the survey station 11 (shallow place). From his typical PFE configuration, a horizontal plate of mineralized zone is estimated. Additionally, the PFE anomalous zone below the survey stations 5 - 7 is not accompanied with a low apparent resistivity zone and corresponds to the sheet of high apparent resistivity. From these facts, it is estimated that there is a source model inclined toward the south. However, as a result of simulation analysis, the calculated PFE of the horizontal plate model fits to the observed PFE well rather than this inclined plate model finally.

As a result of simulation analysis on the survey line J-1 , the PFE anomaly below the survey stations 5 - 15 could be explained well. The mineralized zone captured in drilling survey is reflected on the PFE anomaly obtained as a result of simulation result. A difference between the observed apparent resistivity and calculated apparent resistivity is noticed because the difference of resistivity between the mineralized zone model and base rock was not so noticeable.

The strongly mineralized zone captured in the drilling survey (MJZM-10, MJZM-11) on the survey line J-1 corresponds to the overlapped distribution of the low apparent resistivity zone and high PFE anomalous zone, and the weakly mineralized zone corresponds to the section where only a high PFE zone is distributed.

As for the survey line J-2, a vertical plate of mineralized zone is estimated from the distribution of the PFE anomaly noticed below the survey stations 11 - 12, and an accompanied low apparent resistivity zone.

On the other hand, the PFE anomaly noticed below the survey stations 22 - 24 is also accompanied with a low apparent resistivity zone and a horizontal plate of mineralized zone is estimated from the pant-leg pattern of this PFE anomaly.

Additionally, two source models (weakly mineralized zone) is estimated between the survey stations 10 - 11, and 13 - 15 from a PFE anomalous zone below the survey stations 11 - 12 and two low apparent resistivity zones noticed below the survey stations 10 - 11 and 13 -15. It is interpreted that a PFE anomaly appear between the survey stations 11 - 12 by two source model.

A model that was set up in the simulation analysis could be approxi- mated well the medium to high PFE anomalies below the survey stations 9 - 14 and19 - 24

expressed in the observed PFE section . On the other hand, it can be judged that the mineralized zone captured in drilling survey is reflected well on the calculated PFE anomaly obtained as a result of simulation analysis.
But a model could not be approximated sufficiently to a section of observed apparent resistivity.

As for the survey line J-3, although the PFE anomaly noticed between the survey stations 0 - 2 is accompanied with a low apparent resistivity zone, it is difficult to estimate the configuration of this anomaly because this is located at the end of this survey line.
The PFE anomalous zone in the deep place below the survey stations 12 - 13 is accompanied with low apparent resistivity zone and from the configuration of the PFE anomalous zone and low apparent resistivity zone, a steeply inclined or vertical plate of source model (strongly mineralized zone) is estimated just below the survey stations 12 - 13. However, as a result of the simulation analysis based on this estimation, the calculated PFE of the horizontal plate shaped model having 100 Ω・m resistivity and 10% PFE fits well to the observed PFE .

The weak mineralized zone captured in drilling survey is reflected well on the calculated PFE as a result of simulation analysis on the survey line J-3.
When comparing the observed apparent resistivity with the calculated apparent resistivity, both are approximated to each other in a general view.
From the result of the drilling survey (MJZM-8) on the survey line J-3 also, such an excellent mineralized zone that is reflected on the low apparent resistivity and high PFE value largely has not been found out.

6-3 FUMURE ZONE

6-3-1 Survey Method

The electrical exploration IP method of frequency domain was carried out on three survey lines in Fumure zone.
The specification and volume of survey are given below.
(1) Electrode array : dipole-dipole location
(2) Electrode spacing : 50 m
(3) Isolation coefficient: n = 1-4
(4) Transmit frequency : 3, 0.3 Hz

Survey Line	Length	Number of Stations
F-1	1,000m	21 (No. 0 TO 20)
F-2	1,000m	21 (No. 0 TO 20)
F-3	850m	18 (No. 0 TO 17)

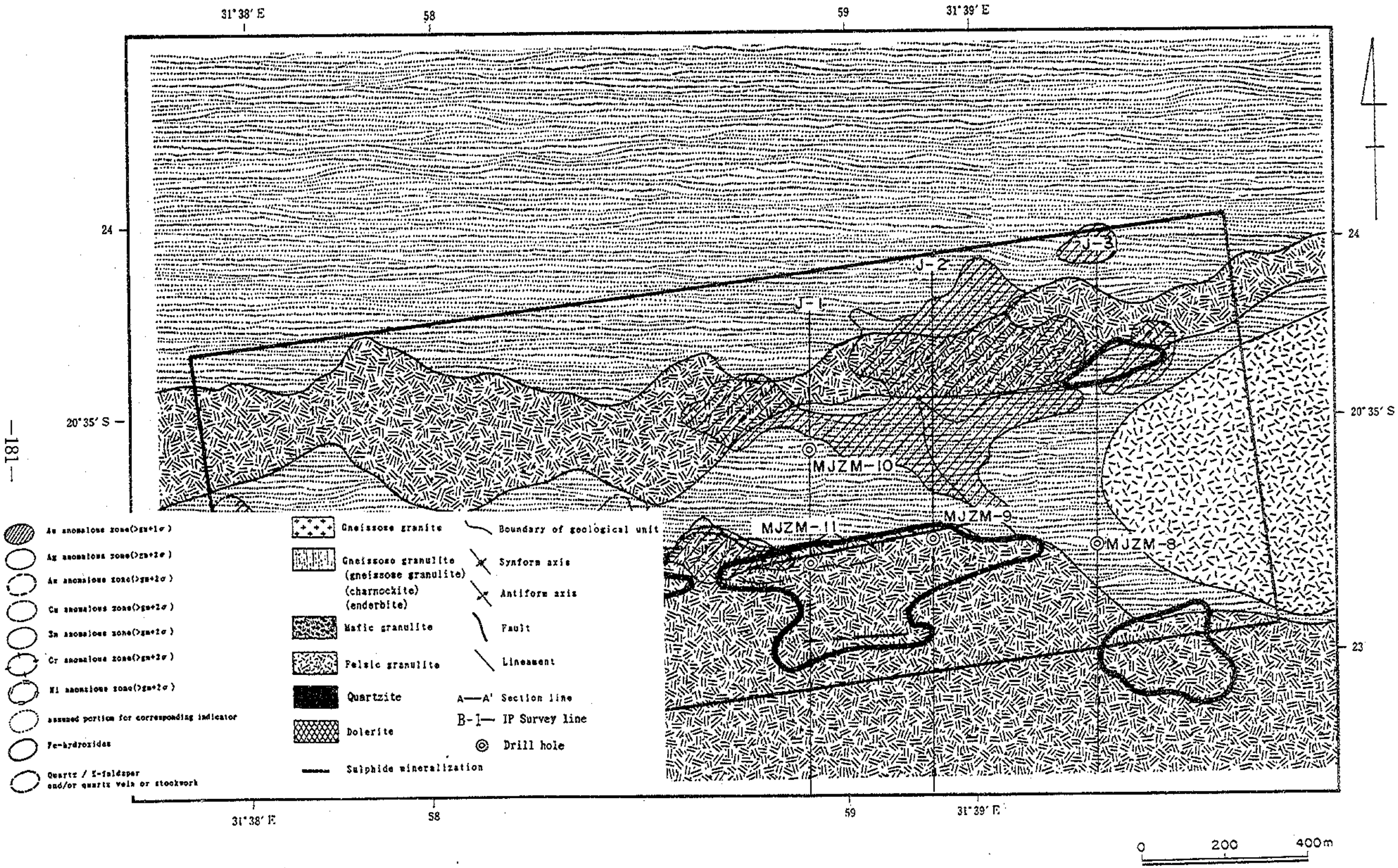

FIG. 2-6-7 Locality Map of Survey Lines(Jegede Zone)

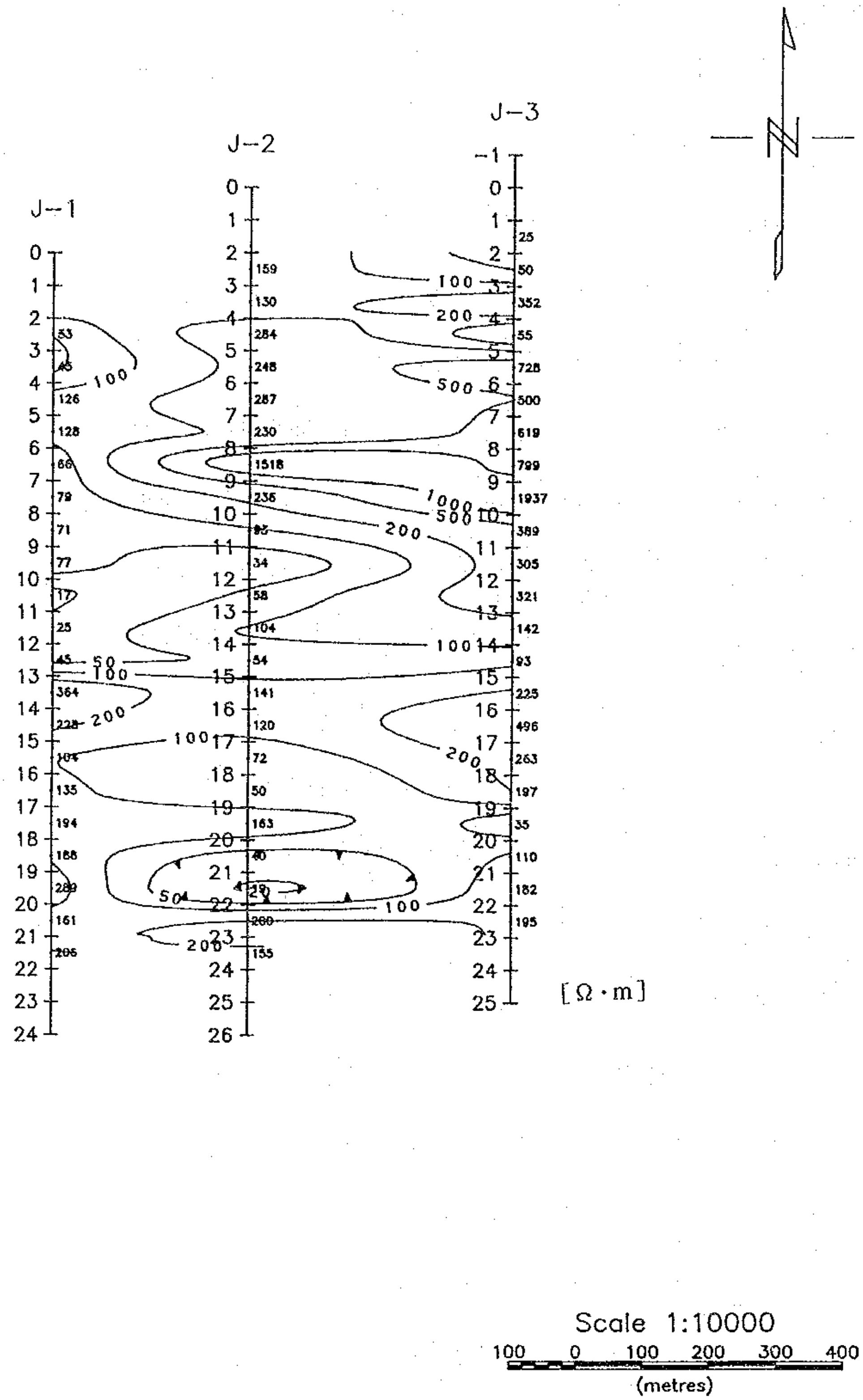

FIG. 2-6-8 Plan of Apparent Resistivity(Jegede Zone: 3 Hz, n=3)

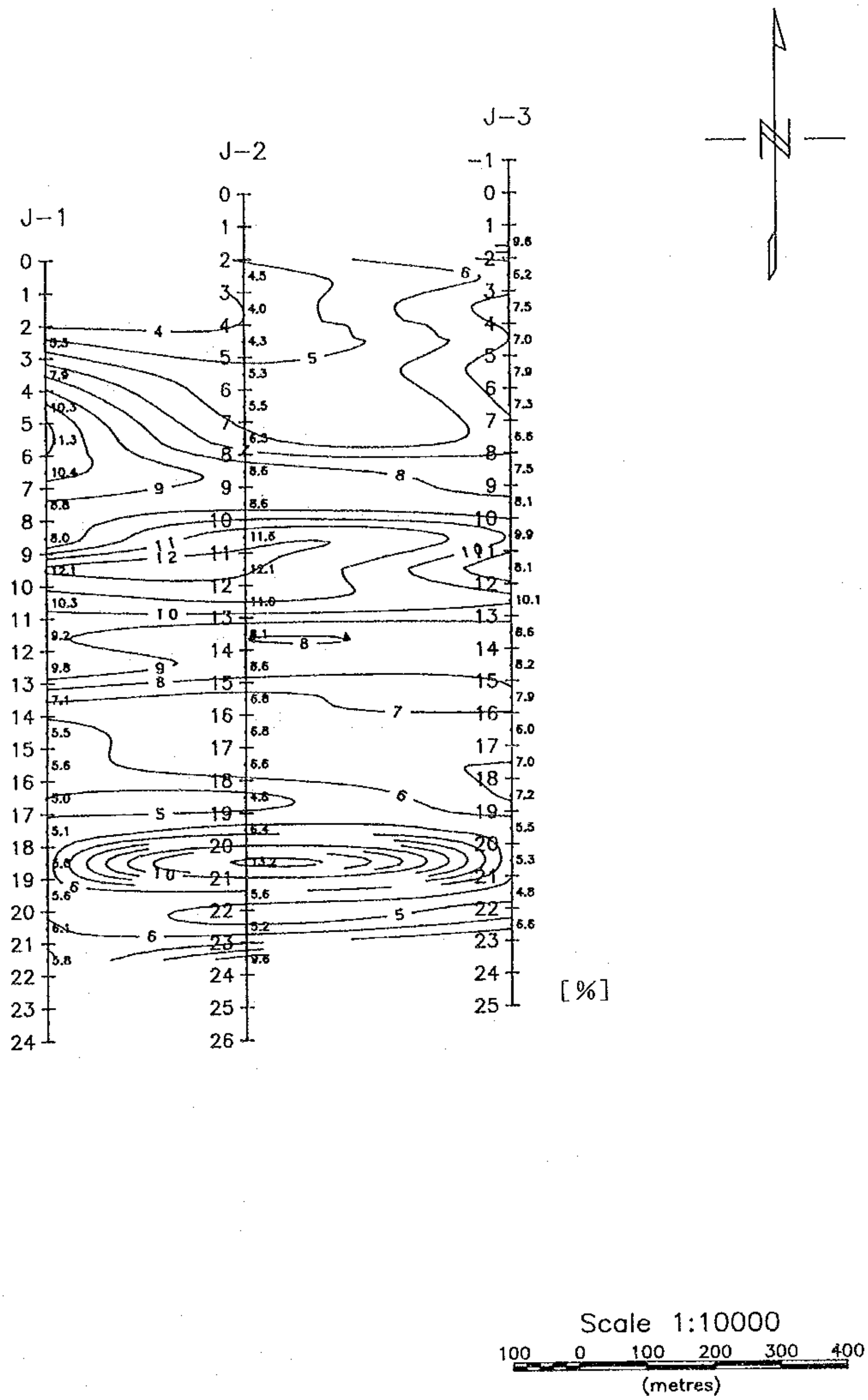

FIG. 2-6-9 Plan of PFE(Jegede Zone:0.3 Hz/ 3 Hz, n=3)

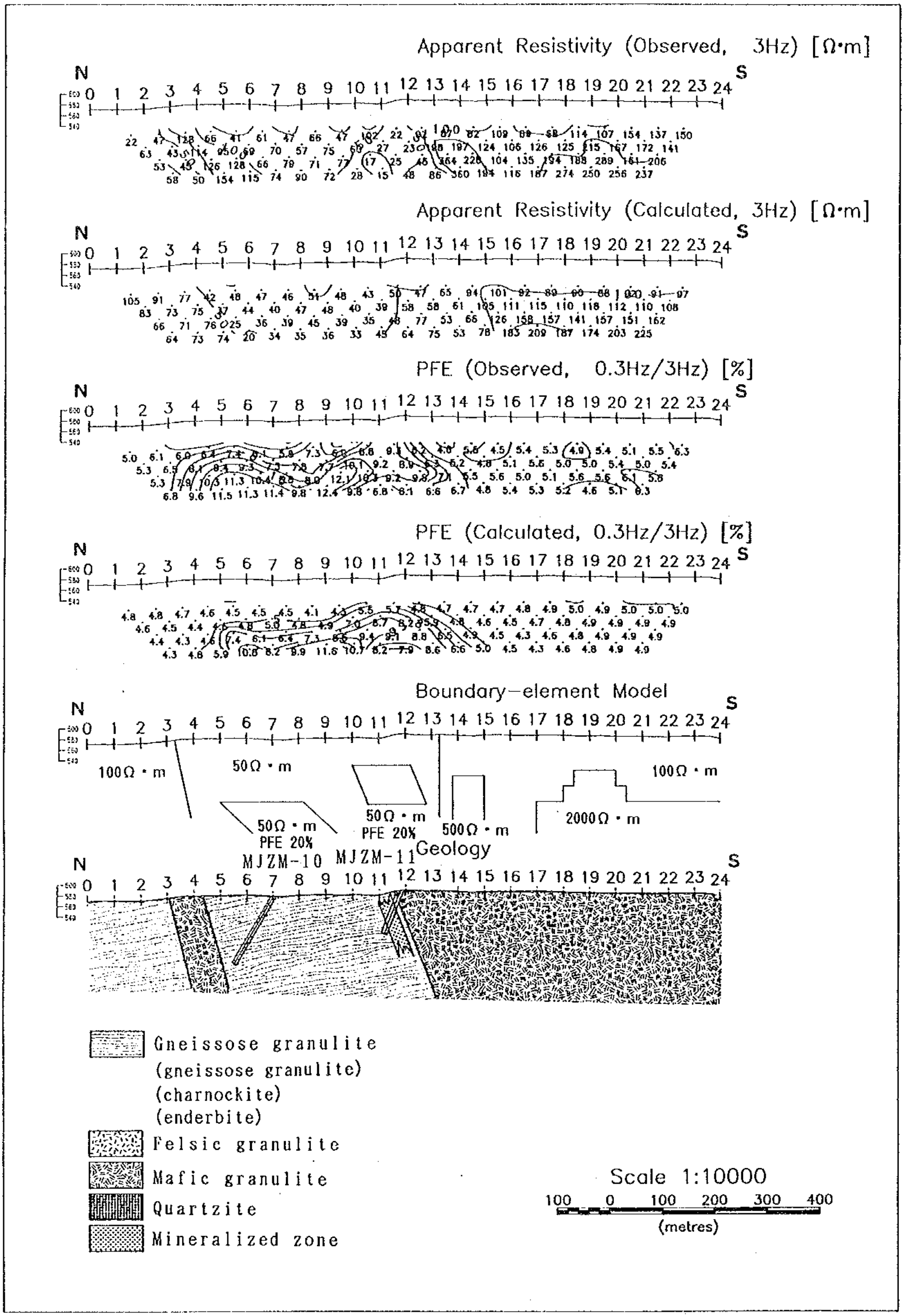

FIG. 2-6-10 Section of Simulated Results(Jegede Zone:J-1)

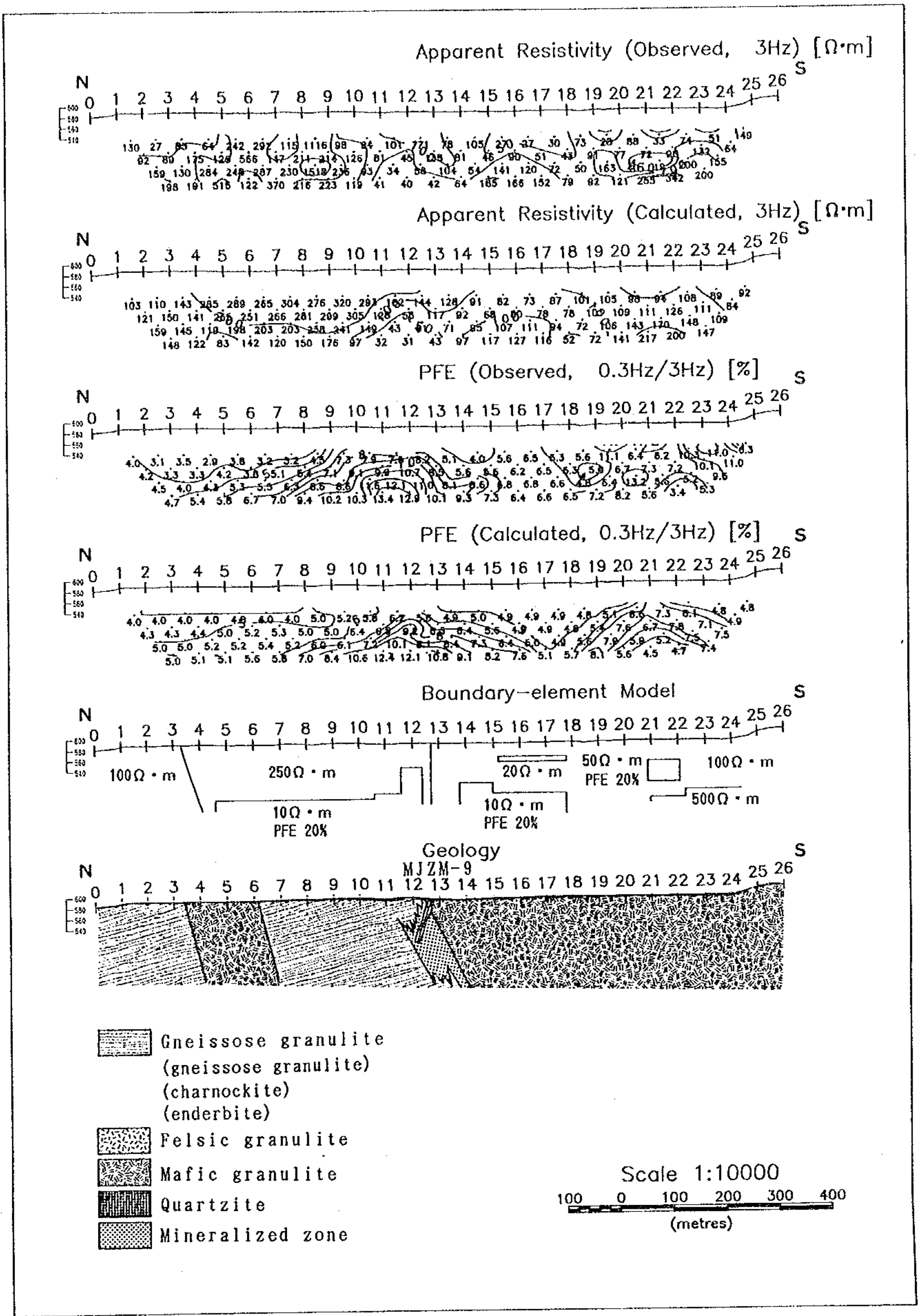

FIG. 2-6-11 Section of Simulated Results(Jegede Zone:J-2)

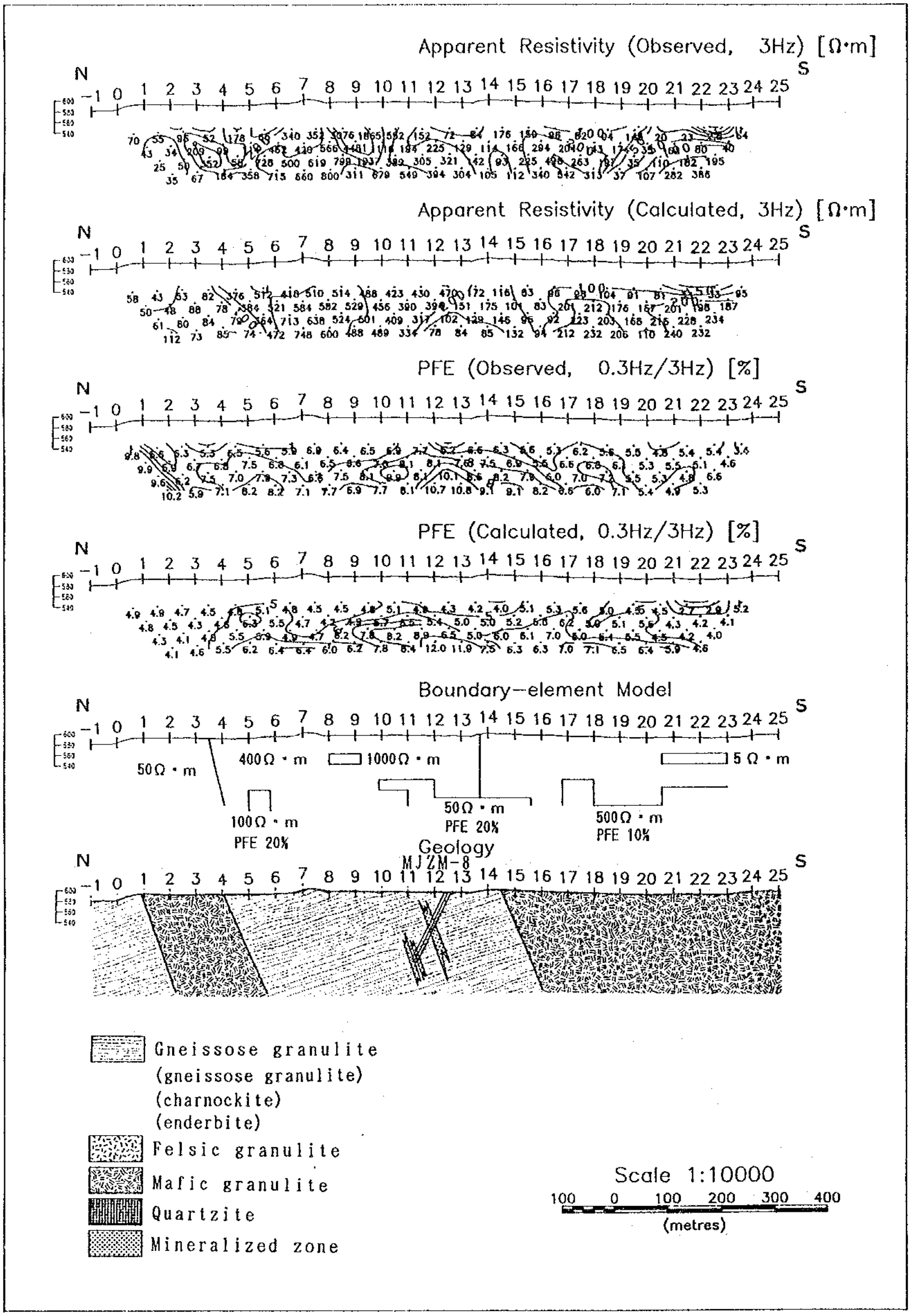

FIG. 2-6-12 Section of Simulated Results(Jegede Zone:J-3)

6-3-2 Data Processing

First, based on the apparent resistivity (3 Hz) and PFE value which were observed, the pseudo section and plans on n = 1-4 were produced. Rock specimens were sampled in a survey zone, the sample resistivity and PFE value were measured and then measured values were referred to for consideration of the survey result.

Two dimensional simulation on boundary element method was made on the two survey lines (F-1 and F-2) where drilling survey was performed .

In this two dimensional simulation analysis, the result of drilling survey were referred to for modeling configuration and the sample resistivity and PFE values were referred to for setting up to the resistivity and PFE of the boundary-element model. The models were modified repeatedly so that calculated apparent resistivity and PFE were approximated to the observed apparent resistivity and PFE.

6-3-3 Survey Results

The apparent resistivity and PFE in the survey zone could be classified:

High apparent resistivity : 200 Ω·m or more High PFE: more than 7 %

Medium apparent resistivity: 50 - 200 Ω·m Medium PFE: 5 - 6 %

Low apparent resistivity : 50 Ω·m or less Low PFE: less than 5 %

Section of apparent resistivity on the survey line F-1 can divide under the survey stations 8 and 9 near the center of the survey line to the following two sections:

1) Low apparent resistivity zone of below 100 Ω·m in the north

2) High apparent resistivity zone of about 200 Ω·m in the south

An extremely low apparent resistivity of about 2 Ω·m is indicated below the survey stations 6 - 8 in the North and a high apparent resistivity zone of over 500 Ω·m is indicated below the survey stations 9 and 10 in the south.

A high PFE value is generally represented all over the survey line F-1, a high PFE value of over 7% is noticed to the north of the survey stations 8 and 9. This anomaly corresponds to the low apparent resistivity zone noticed in the section of apparent resistivity and the center of that high PFE anomaly is located below the survey stations 5 and 6, slightly different from the center of the low apparent resistivity zone. Additionally, a small size high PFE anomaly of over 7% is noticed below the survey stations 13 to 15.

A low apparent resistivity of below 50 Ω·m is generally indicated all over the survey line F-2 and a medium apparent resistivity of over 50 Ω·m is represented in the deep places below the survey stations 2 and 3, and 11 - 13.

A high PFE anomaly of over 7% is noticed in the deep place below the survey stations 13 and 15 on the survey line F-2. This high PFE anomaly is estimated to

be stretched from the survey line F-1.
Like the survey line F-2, the survey line F-3 indicates generally a low apparent resistivity of below 50 Ω · m all over. Medium apparent resistivity zones of about 100 Ω · m are noticed between the survey stations 3 and 5, and 8 and 10, and to the south of the survey station 13.
A medium PFE zone of over 6% is noticed below the survey stations 11 and 13. In the section of apparent resistivity , this medium PFE zone corresponds to the low apparent resistivity zone of below 50 Ω · m existing between the medium apparent resistivity zones of over 100 Ω · m.

6-3-4 Consideration

As for the survey line F-1, a noticeable high PFE anomalous zone existing between the survey stations 5 - 8 corresponds to the low apparent resistivity zone, showing a pant-leg pattern and concentric circle. This configuration suggests the existence of a complicated horizontal plate of source model (strongly mineralized zone estimated from the PFE and apparent resistivity). This source model is estimated to develop toward the north of the survey station 5.
As a result of simulation analysis, the calculated apparent resistivity and PFE coincide with the observed PFE and apparent resistivity around where the model is set up.

From the result of the drilling survey (MJZM-13) on the survey line F-1 also, an excellent mineralized zone estimated to correspond to these high PFE anomaly and low apparent resistivity zone have been recognized.

As for the survey line F-2, low apparent resistivity zone of a pant-leg pattern is noticed below the survey stations 12 - 13, configuration of PFE corresponding to this low apparent resistivity suggests the existence of a high PFE anomalous zone in a deeper place. Although, from the configuration of this PFE anomalous zone , a vertical plate of source model is estimated.
Consequently, the observed apparent resistivity almost coincided with the calculated apparent resistivity. In addition, as this simulation analysis expressed a high PFE anomaly below the survey stations 13 -15, recognized in the section of observed PFE section. However, in this simulation analysis, the detailed distribution of the apparent resistivity and PFE value to the north of the survey station 10 in the section of apparent resistivity and PFE respectively could not be expressed satisfactorily.

The mineralized zone captured as a result of the drilling survey (MJZM-12) on the survey line F-2 is not an excellent, but the complicated effects of weakly mineralized zone are estimated to be reflected on the PFE and apparent resistivity distribution.

The simulation analysis is not performed on the survey line F-3 because a noticeable low apparent resistivity and high PFE anomaly could not be captured.

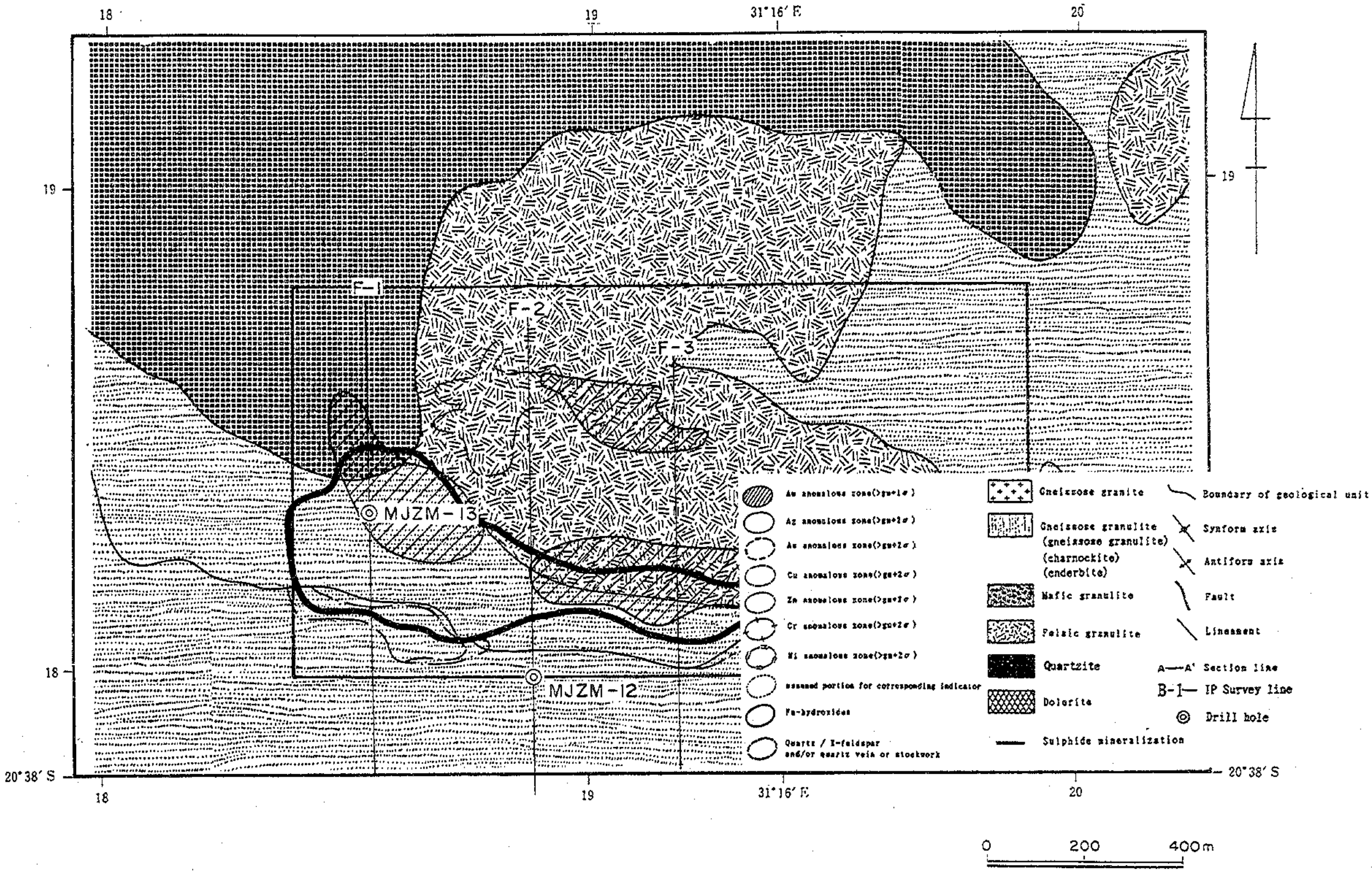

FIG. 2-6-13 Locality Map of Survey Lines(Fumure Zone)

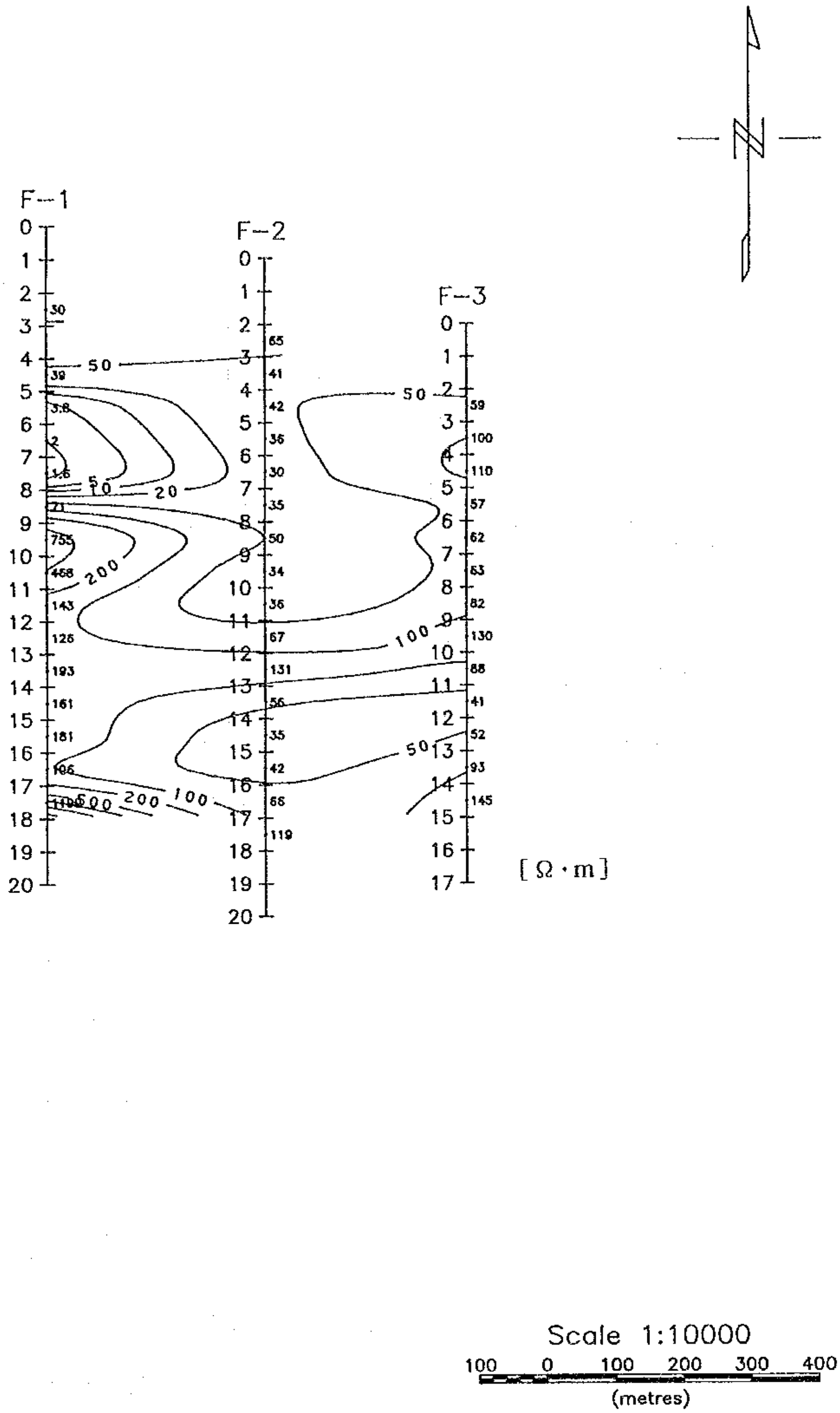

FIG. 2-6-14 Plan of Apparent Resistivity(Fumure Zone: 3 Hz, n=3)

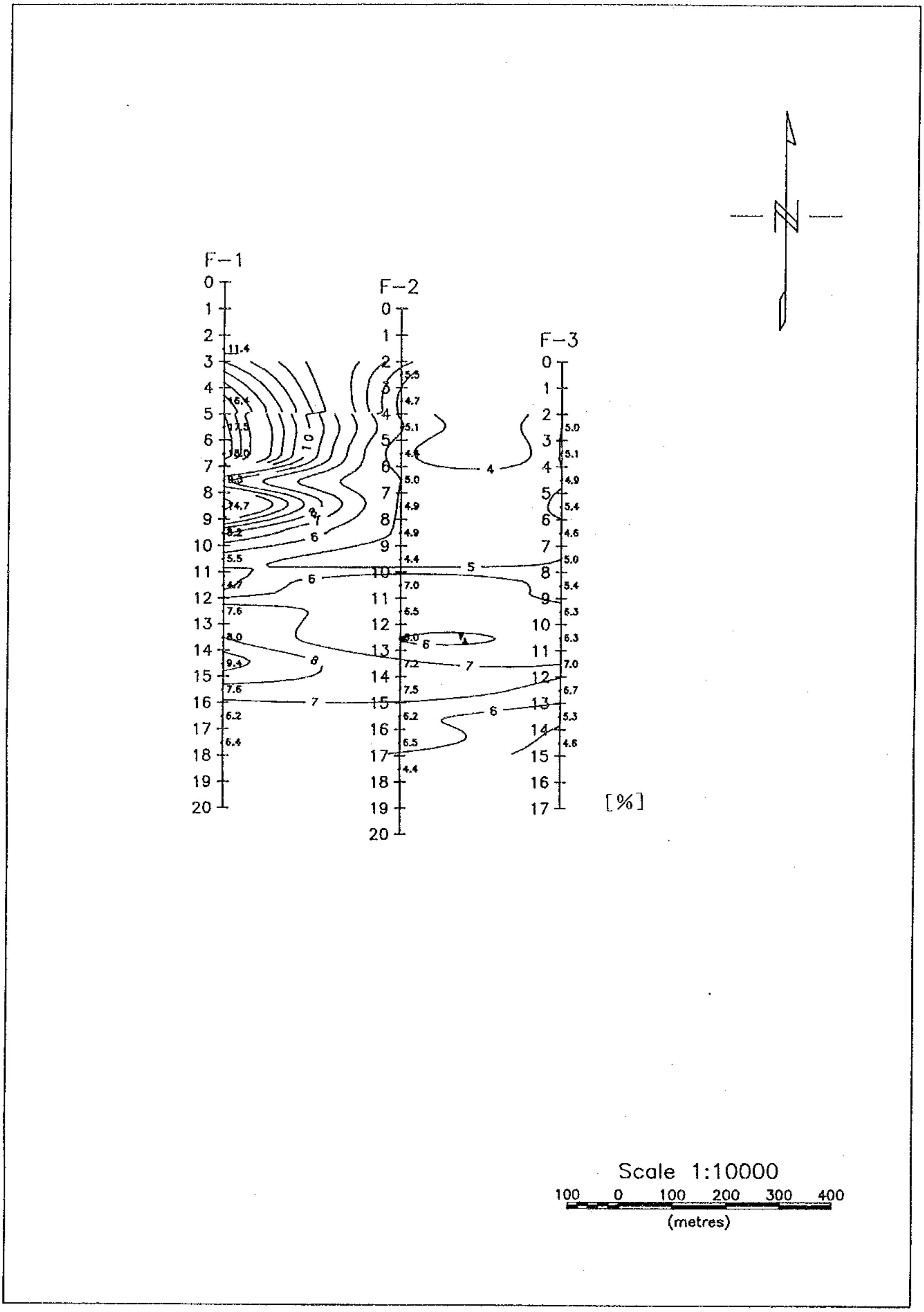

FIG. 2-6-15 Plan of PFE(Fumure Zone:0.3 Hz/ 3 Hz, n=3)

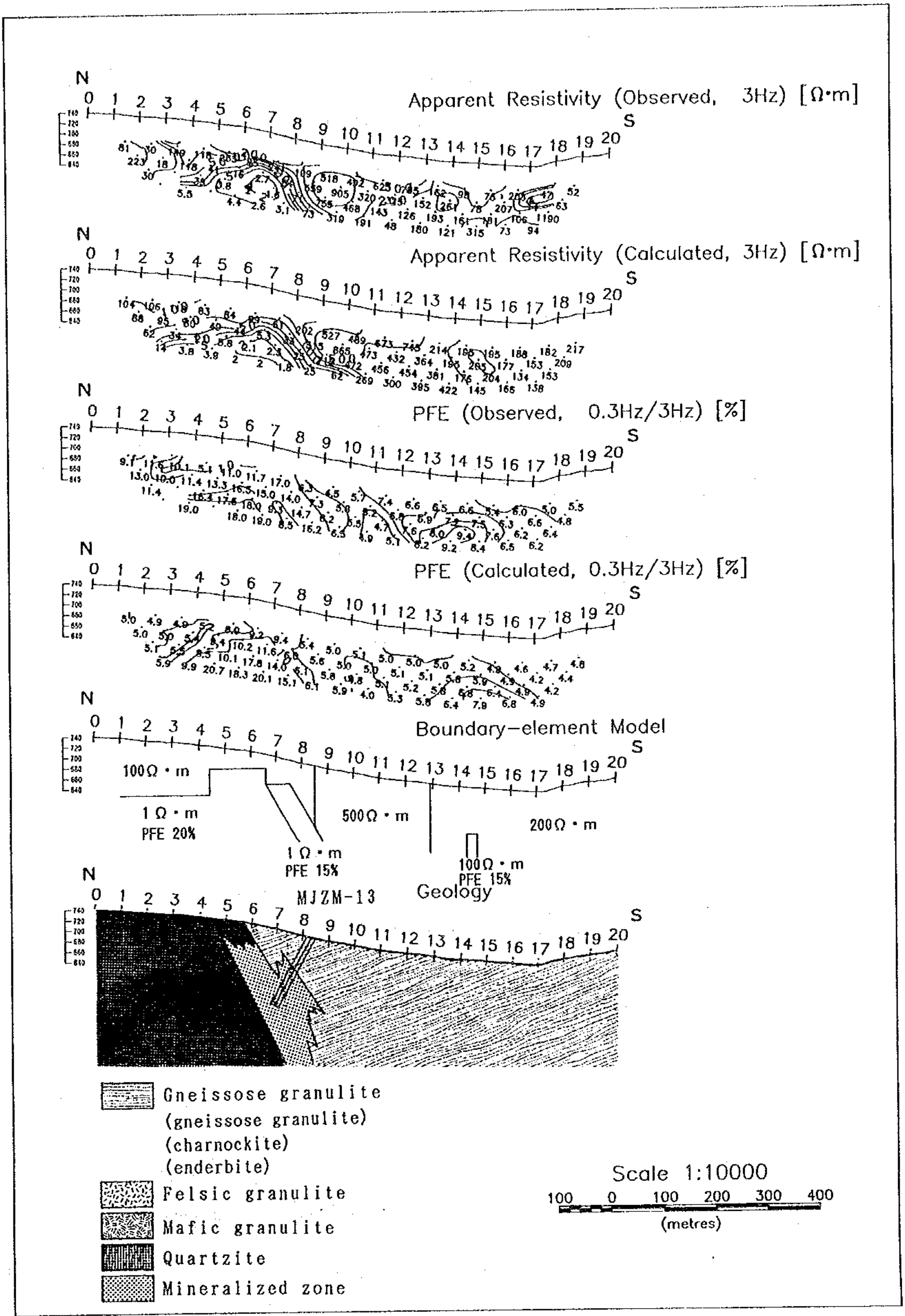

FIG. 2-6-16 Section of Simulated Results(Fumure Zone: F-1)

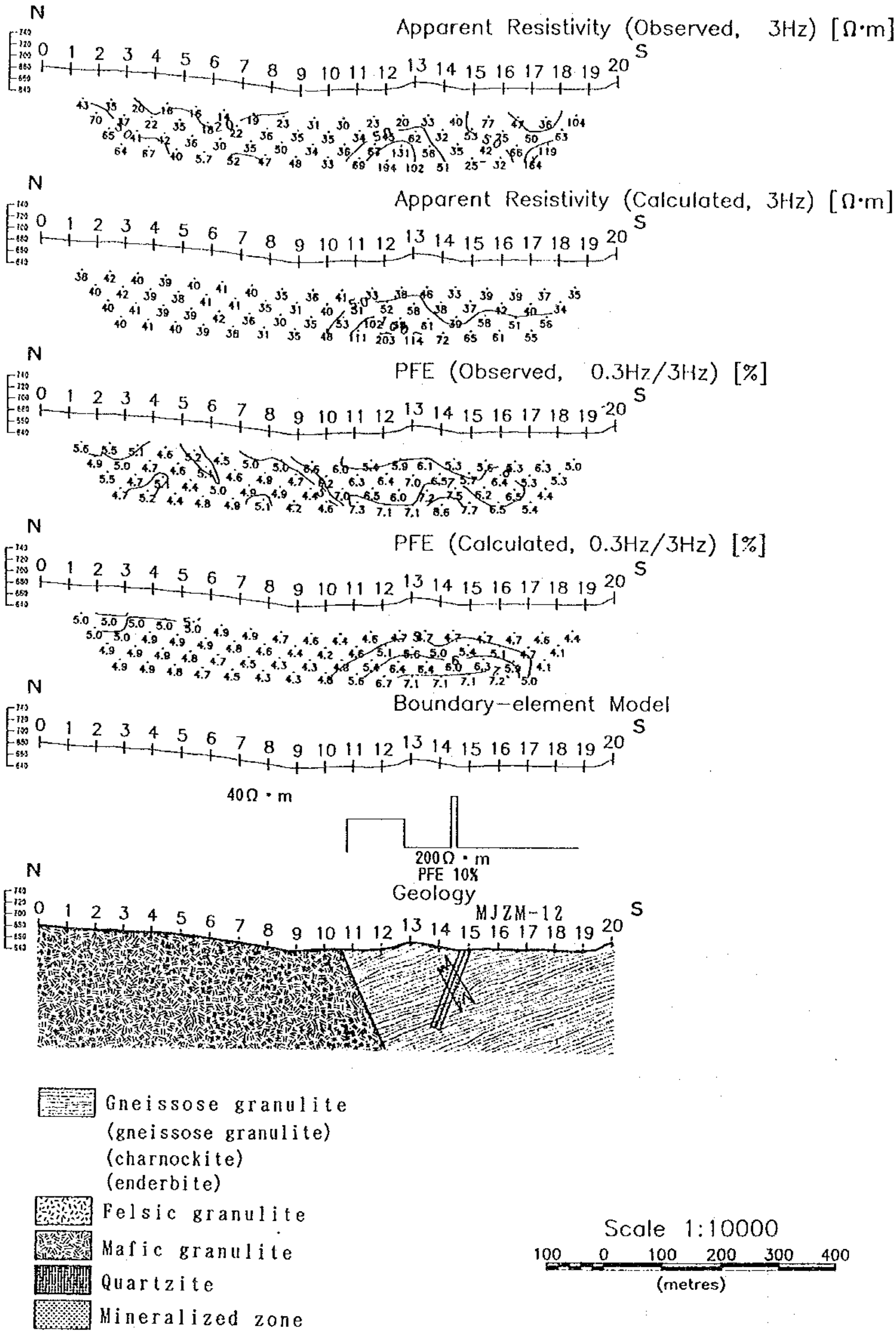

FIG. 2-6-17 Section of Simulated Results(Fumure Zone: F-2)

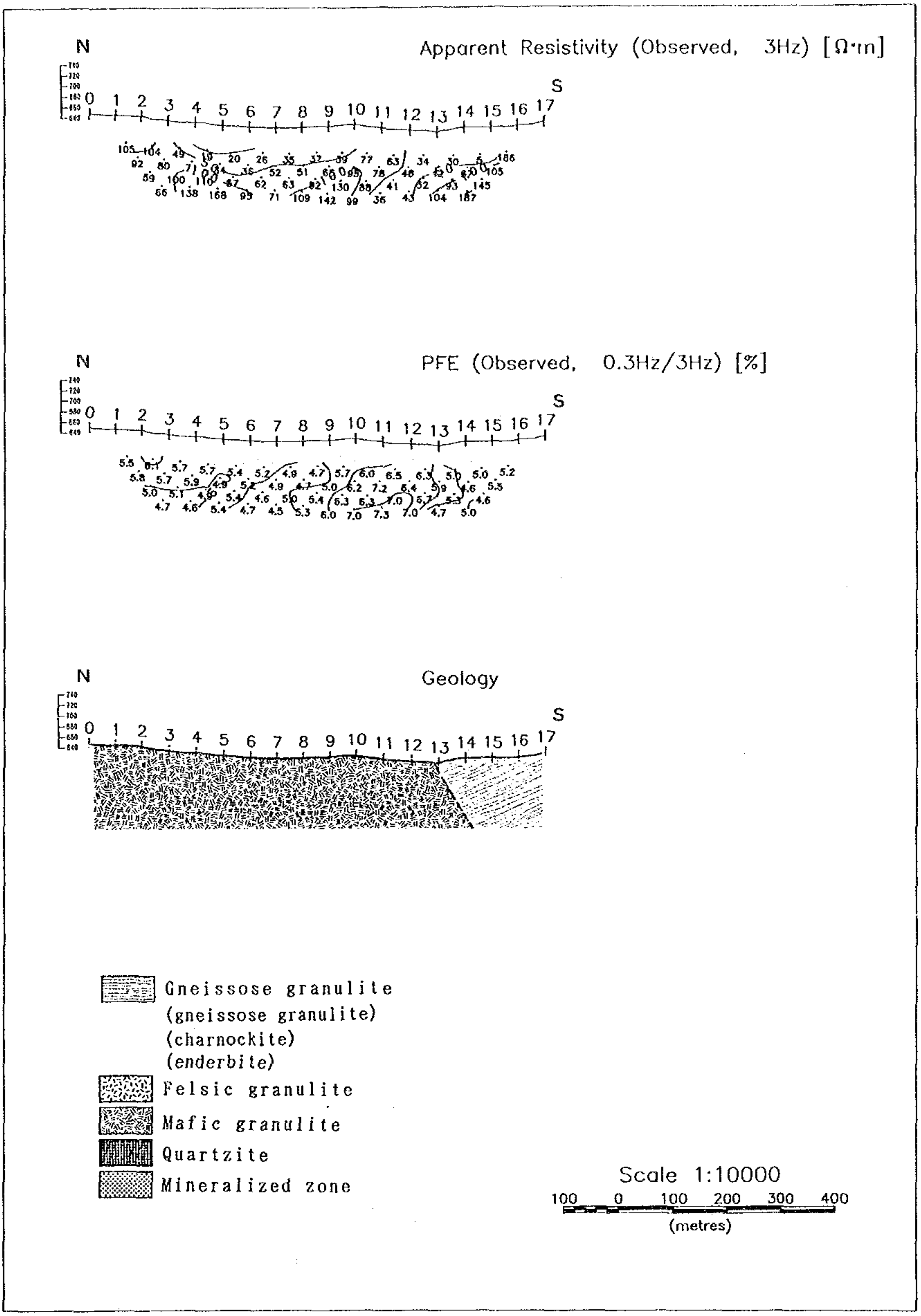

FIG. 2-6-18 Section of Apparent Resistivity and PFE(Fumure Zone: F-3)

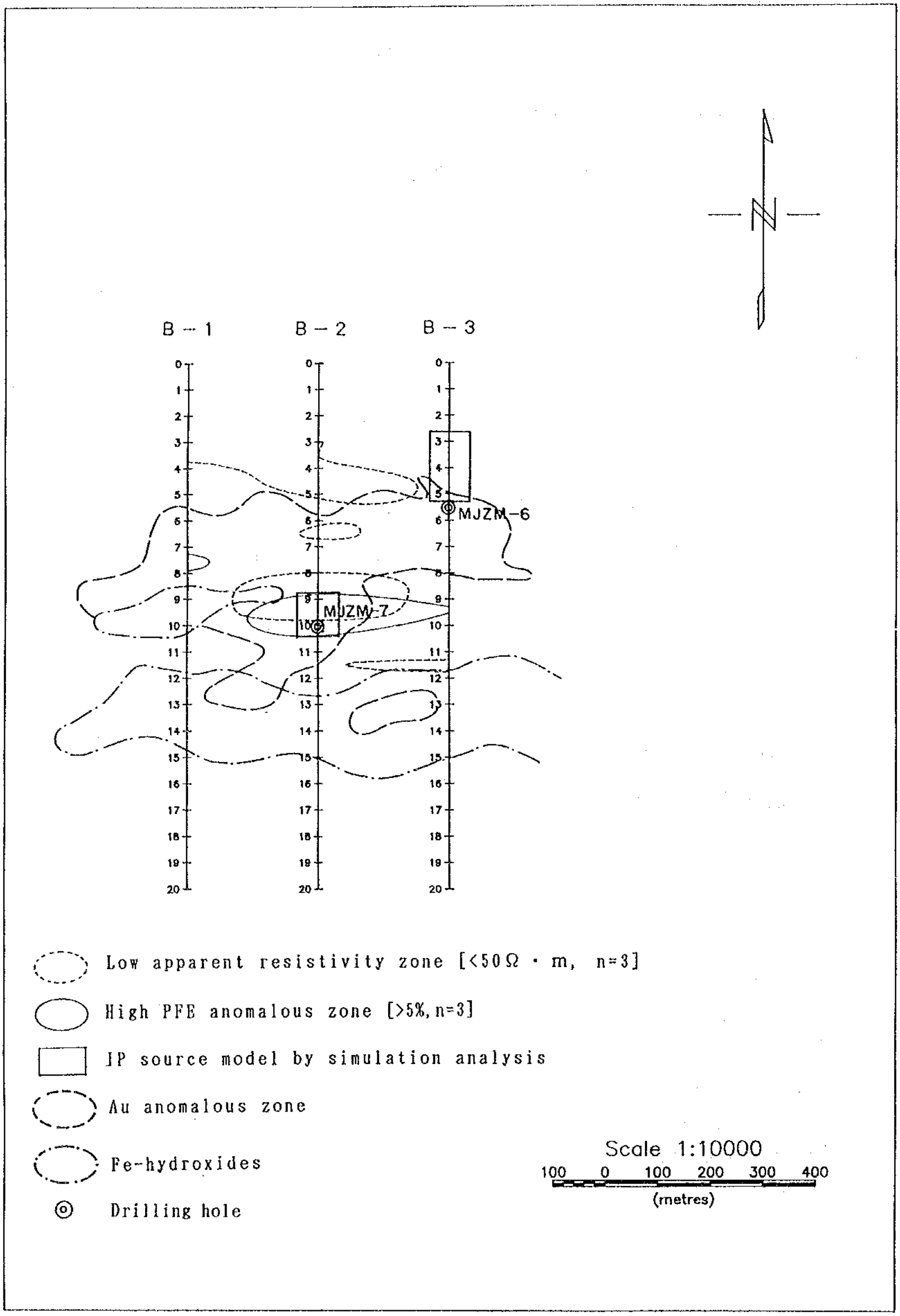

FIG. 2-6-19 Interpretation Map of Geophysical Survey Results(Benzi Zone)

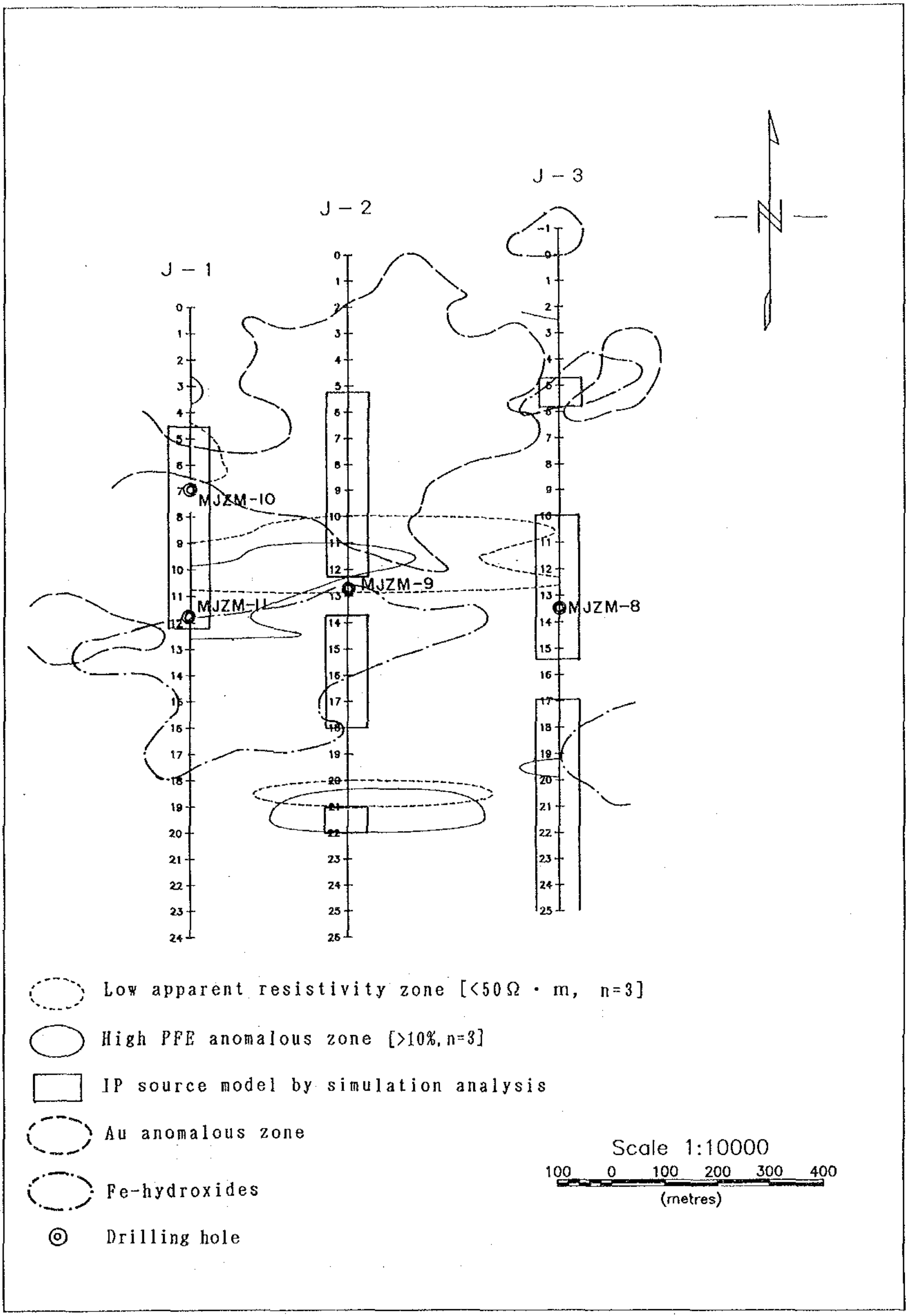

FIG. 2-6-20 Interpretation Map of Geophysical Survey Results(Jegede Zone)

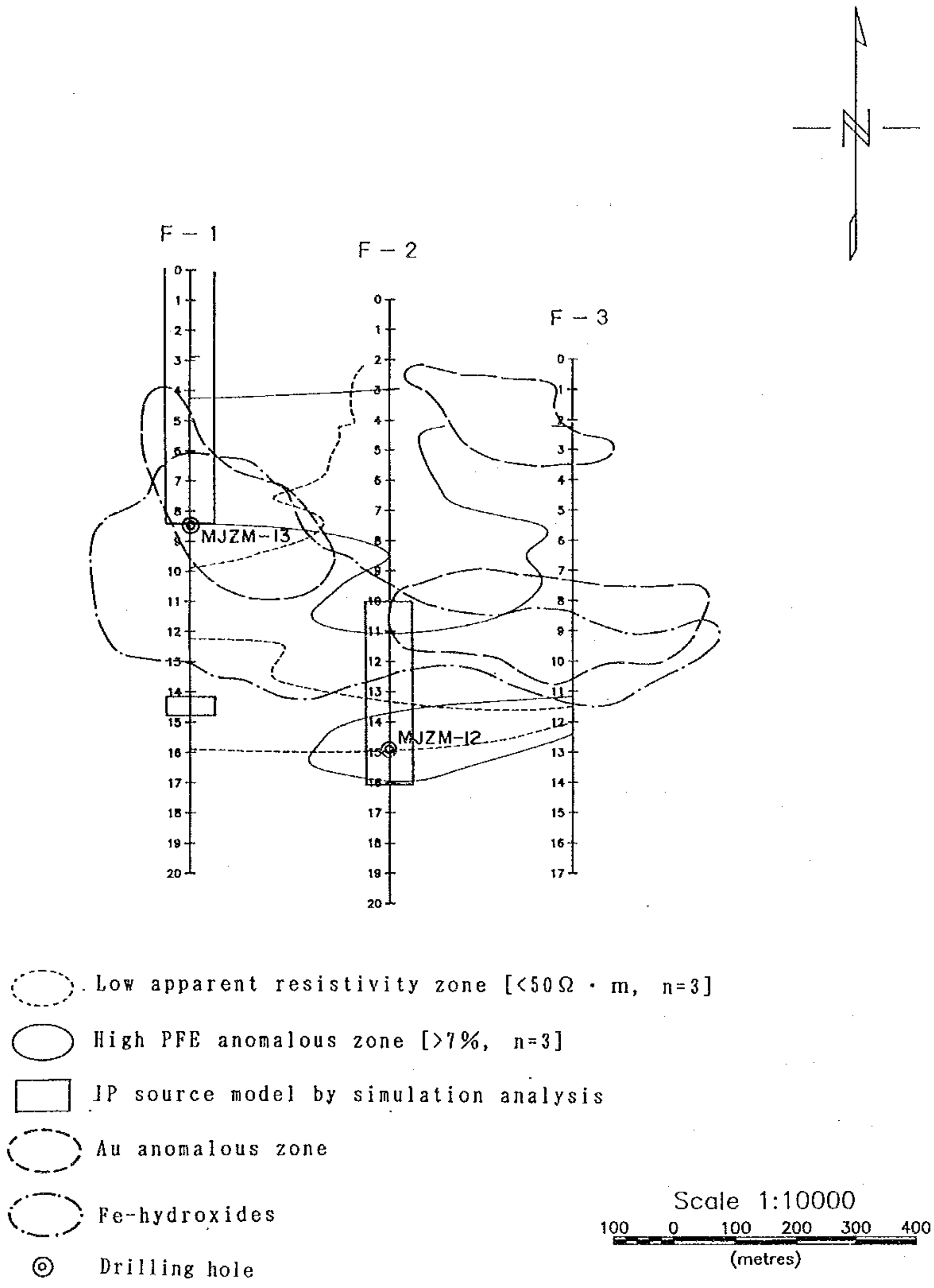

FIG. 2-6-21 Interpretation Map of Geophysical Survey Results(Fumure Zone)

CHAPTER 7 DRILLING SURVEY

Outline of Drilling Survey

The drilling work was contracted by R. A. Longstaff (Pvt) Ltd., based in Harare. The drilling survey consists of thirteen drill holes, total length of 1,530.65 metres. The target zones for drilling survey and conducted drilling holes are summarized as follows:

① Juwere zone (MJZM-1 ~ MJZM-3)
② Muchacha zone (MJZM-4 ~ MJZM-5)
③ Benzi zone (MJZM-6 ~ MJZM-7)
④ Jegede zone (MJZM-8 ~ MJZM-11)
⑤ Fumure zone (MJZM-12 ~ MJZM-13)

Each drilling survey was smoothly performed.

7-1 JUWERE ZONE(FIG.2-7-1)

2-1-1 Survey Method

Drilling State of MJZM-1

The bed rock appears after the soil portion of 5.70 metres
Any troubles like lost circulation or collapse were encountered, although silisified zones with sulphide dissemination were drilled.
The core recovery of 89.88% was attained and the drilling speed of this hole was 12.86 m/day.

Drilling State of MJZM-2

The bed rock appears after the thick soil portion of 19.71 metres.
No good core recovery was attained as depth as about 27 metres due to weathered and loose mafic granulite.
No special trouble happened except the weathered mafic granulite portion.
The core recovery of 75.57% was attained and the drilling speed of this hole was 10.00 m/day.

Drilling State of MJZM-3

The bed rock appears after the thin soil portion of 3.00 metres
The smooth drilling was attained due to homogeneous rock condition.
The core recovery of 95.25% was attained and the drilling speed of this hole was 12.86 m/day.

2-1-2 Geology

Geology of MJZM-1(FIG.2-7-2)

The geology of this hole is similar to the geology confirmed through the field survey. That is, it is mainly made of gray, compact, hard, medium grained, and foliated charnockite which is accompanied by a massive felsic granulite and mafic granulite.
According to microscopic observation of charnockite(depth : 37.00 metres, 49.00 metres), plagioclase and k-feldspar are partly changed to sericite and also

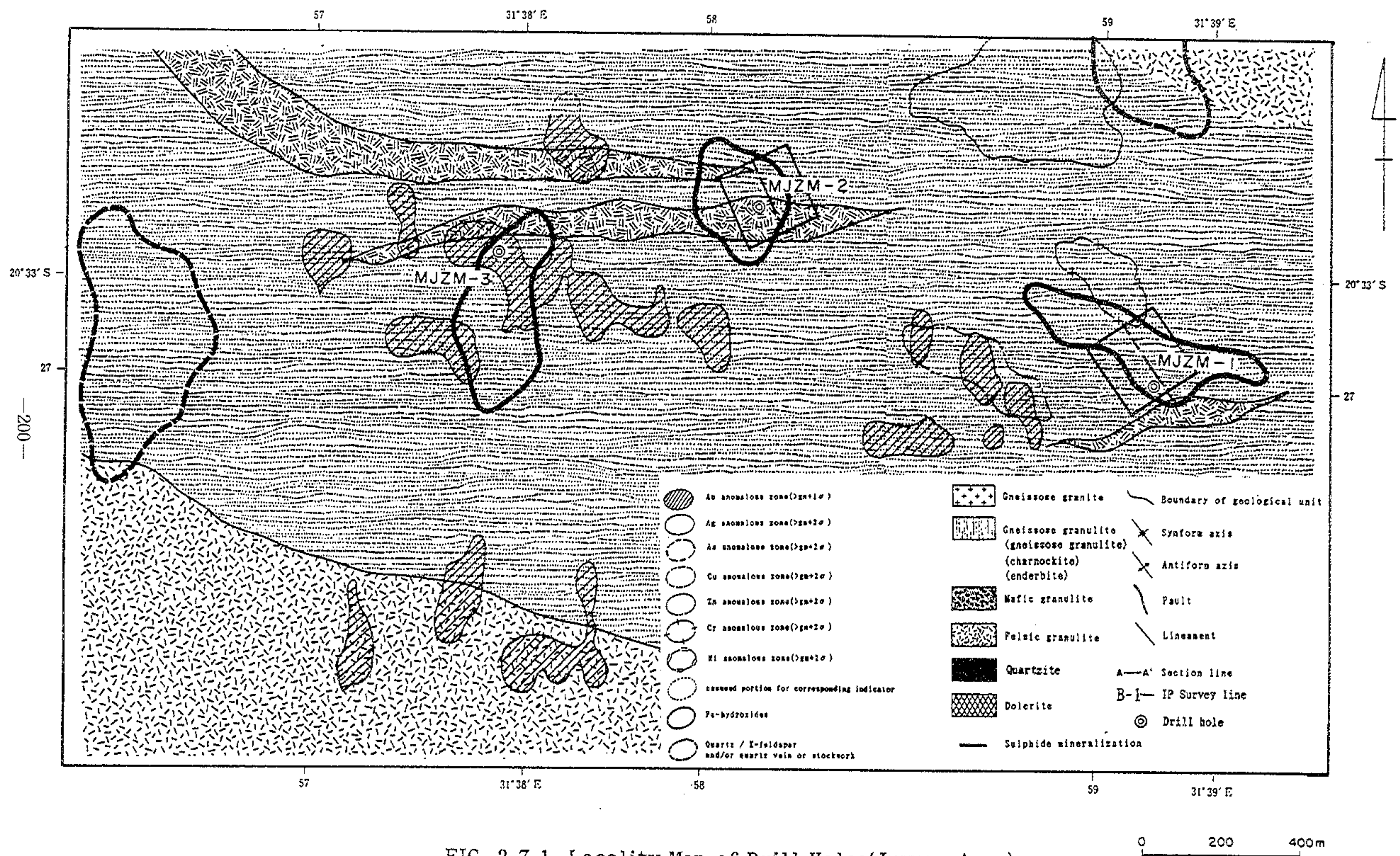

FIG. 2-7-1 Locality Map of Drill Holes(Juwere Area)

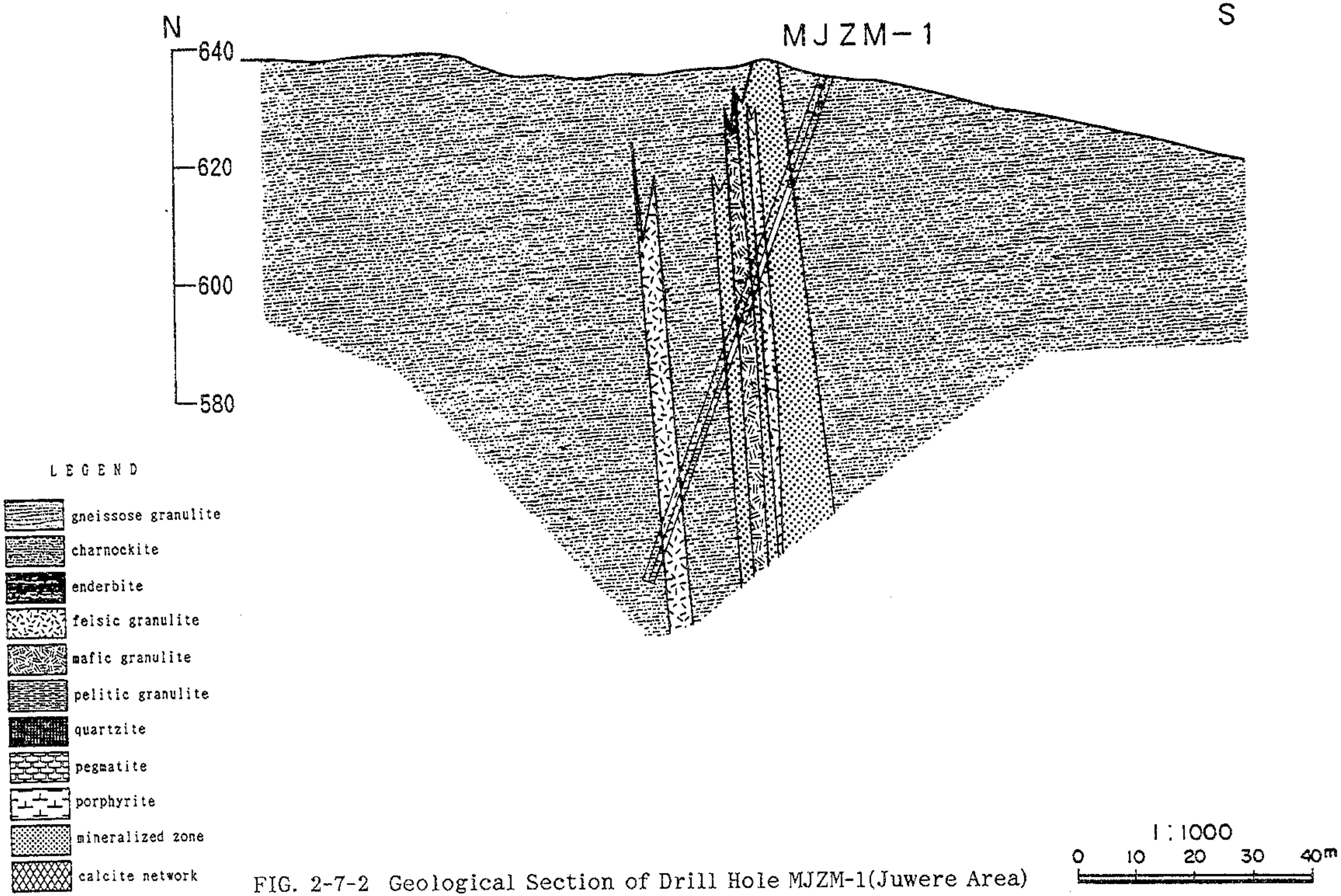

FIG. 2-7-2 Geological Section of Drill Hole MJZM-1(Juwere Area)

produced chlorite in extremely small quantities.
Opaque minerals show no intimate association with sericite and chlorite.

Geology of MJZM-2

The geology of this hole consist mainly of charnockite and mafic granulite. Charnockite show a weak foliation of 50° to 60° .
According to microscopic observation of felsic granulite(depth : 38.00 metres) intercalated in charnockite, plagioclase and k-feldspar are partly changed to sericite in extremely small quantities and no chlorite was observed.
Opaque minerals show no intimate association to sericite and tend to grow between the boundaries silicate minerals.

Geology of MJZM-3

The geology of this hole is similar to the geology confirmed through the field survey. That is, the shallower part of the hole consists of layers of charnockite, felsic granulite and mafic granulite. Meanwhile, the deeper part of the hole is mainly made of gray, compact, hard and medium grained charnockite having a weak foliation of 70° to 80° .
According to microscopic observation of charnockite(depth : 7.00 metres), sericite and chlorite in extremely small quantities were observed in clinopyroxene and orthopyroxene. Plagioclase and k-feldspar show a little sign of hydrothermal alteration.
On the other hand, opaque minerals appear as dispersedly scattered grain, veinlets, and network showing a rather intimate association with sericite.

2-1-3 Survey results

Mineralization of MJZM-1

A dissemination of pyrite, pyrrhotite, and pyrite was recognized in charnockite at the depth of 33.72 metres to 37.33 metres and 43.53 metres to 51.90 metres.
And also a weak mineralization of pyrite, pyrrhotite, and chalcopyrite exists at the depth of 20.00 metres to 33.72 metres.
According to microscopic observation of polished sections(depth : 37.00 metres, 49.00metres), an association of pyrrhotite, pyrite, and chalcopyrite was observed in small to extremely small quantities.
On the other hand, magnetite and ilmenite filling the boundary of silicate minerals appear as oxide minerals and ilmenite rarely shows exsoluted lamella in magnetite.

No encouraging assay results were obtained.

Mineralization of MJZM-2

A dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite at the depth of 36.45 metres to 40.28 metres. And also a weak

mineralization of pyrite, pyrrhotite, and chalcopyrite exists at the depth of 20.00 metres to 33.72 metres.
According to microscopic observation of polished sections(depth : 38.00 metres 49.00metres), an association of pyrrhotite, pyrite, and chalcopyrite were observed in small to extremely small quantities.
Magnetite and ilmenite showing an irregular form present as oxide minerals and ilmenite partly appears as exsoluted lamella in magnetite.
On the other hand, ilmenite exsoluted tiny hematite(< 0.001 mm).

No encouraging assay results were obtained.

Mineralization of MJZM-3

A weak dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite at the depth of 5.50 metres to 9.09 metres.
According to microscopic observation of polished section(depth : 7.00 metres), only pyrite was observed in extremely small quantities and rarely included very tiny chalcopyrite blebs(0.01 mm to 0.03 mm).
Magnetite, ilmenite-hematite exsolution, and ilmenite exists as oxide minerals in small to extremely small quantities.
Magnetite in general shows a granular to irregular form and produces ilmenite lamella as exsoluted products. On the other hand, ilmenite exsolutes very tiny hematite along the parallel to its crystallographic plane of (0001).

No encouraging assay results were obtained.

2-1-4 Considerations

For the mineralization characteristic, it is found from the results of three executed holes (MJZM-1, MJZM-2, and MJZM-3) that the mineralization of pyrrhotite, pyrite and chalcopyrite is found mainly in charnockite and local felsic granulite and their mode of occurrence is almost concordant with foliation.

This fact shows that mineralization occurred before metamorphism. Meanwhile, because mineralization inadequately occurs in mafic granulite, it is estimated that mineralization and country rock are syngenetic or mafic granulite was produced after mineralization.
Judging from selectivity and concordance of mineralization for the country rock, this zone has a large possibility of stratabound ore deposit.

2-2 MUCHACHA ZONE(FIG.2-7-3)

2-2-1 Survey Method

Drilling State of MJZM-4

The bed rock appears after the thin soil portion of 3.00 metres.

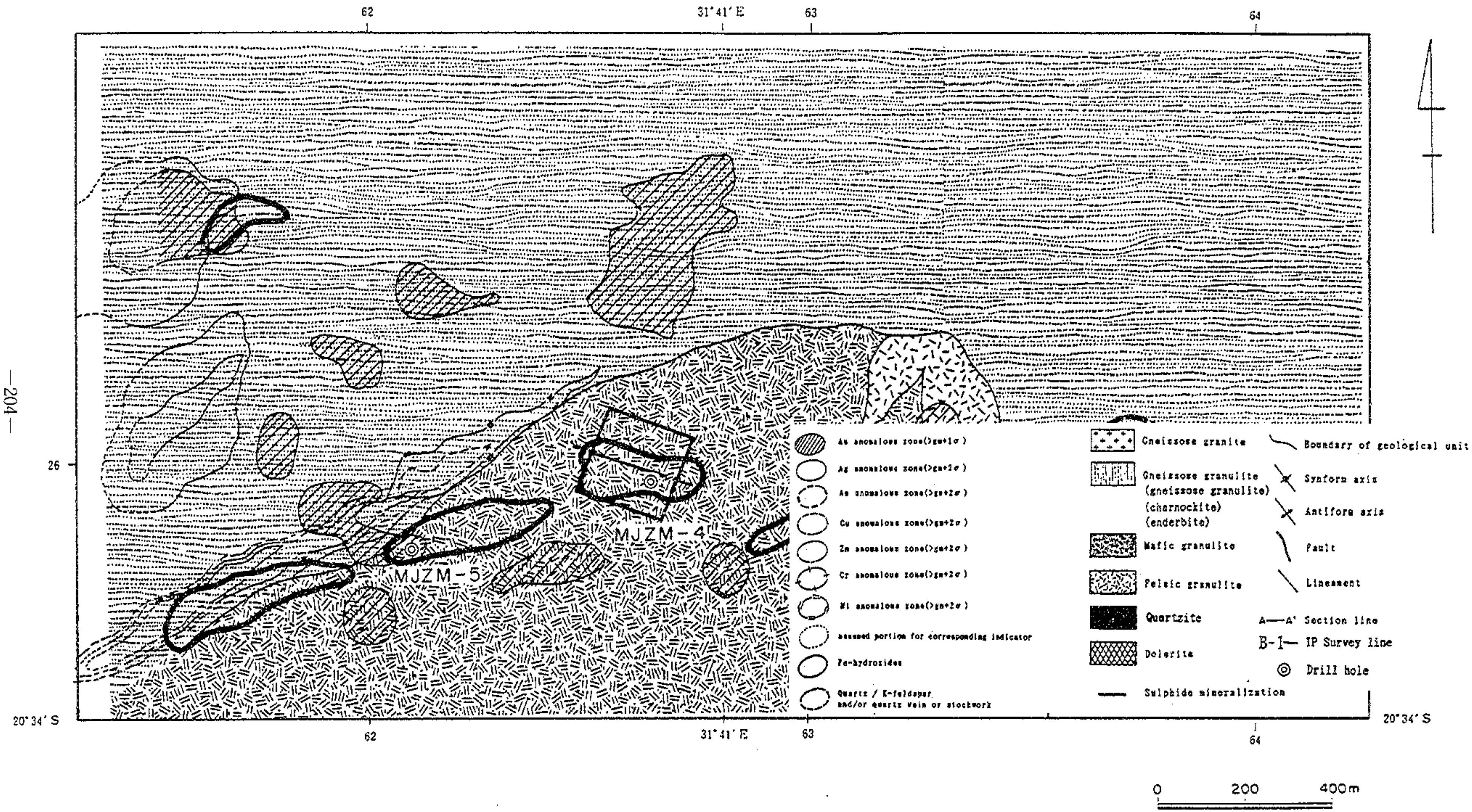

FIG. 2-7-3 Locality Map of Drill Holes(Muchacha Area)

However, drilling was stagnated because of intensely fractured mafic granulite and only 75.00 % of core recovery was attained. The drilling speed of this hole was as low as 7.50 m/day.

Drilling State of MJZM-5

The bed rock of dark green mafic granulite appears after the thick soil portion of 18.00 metres. Only 80.00 % of core recovery was attained due to thick soil portion. The drilling speed, however, of this hole was obtained as high as 12.86 m/day.

2-2-2 Geology

Geology of MJZM-4

The geology of this hole consist only of mafic granulite.
That is, the shallower part(0 metres to 43 metres) of the hole consists of weathered, and well-fractured mafic granulite.
According to microscopic observation of mafic granulite(depth : 84.81 metres), chlorite in great quantities was commonly observed in clinopyroxene and olivine.
Opaque minerals observed are probably not sulphide but oxide minerals.
No sulphide minerals were observed.
Calcite veinlets and network characterize an alteration structure of this hole.

Geology of MJZM-5

The geology of this hole is also similar to the geology confirmed through the field survey. That is, the shallower part of the hole consists of mafic granulite. Meanwhile, the deeper part of the hole is mainly made of gray, compact, hard, medium grained, and foliated(40° to 60°) charnockite.
According to microscopic observation of charnockite(depth : 57.00 metres), sericite in extremely small quantities were observed in rims of plagioclase and k-feldspar. No both sericite and chlorite were produced within clinopyroxene and orthopyroxene.
On the other hand, opaque minerals are produced along the rims of amphibole and pyroxenes and show no intimate association with sericite.

2-2-3 Survey results

Mineralization of MJZM-4

No any sulphide mineralization was encountered.

Mineralization of MJZM-5

A weak dissemination of pyrite and pyrrhotite was recognized in charnockite at the depth of 55.50 metres to 58.30 metres.
According to microscopic observation of polished section(depth : 57.00 metres), only pyrrhotite was observed in extremely small quantities.
On the other hand, ilmenite showing irregular, prismatic, and lenticular forms

exists as a oxide mineral in small quantities.

No significant assay results were obtained.

2-2-4 Considerations

For the mineralization characteristic, it was impossible to obtain the genetic relation between geological structure and mineralization from the results of two executed drill holes (MJZM-4 and MJZM-5) because mineralization was weak. Especially for MJZM-4, it is found that the mineralized zone having intensely silisified zone detected on the ground surface is changed to a calcite network zone in a deep portion. The following two possibilities are considered for the above change:

① possible lower extension of mineralized zone in surface.

② possible presence of a fault.

2-3 BENZI ZONE(FIG.2-7-4)

2-3-1 Survey Method

Drilling State of MJZM-6

The bed rock appears after the thin soil portion of 3.00 metres.
However, drilling was partly stagnated because of intensely fractured mylonitic charnockite in the upper portion(from surface to 20 metres) but no troubles were encountered in the deeper portion.
As high as 97.29 % of core recovery was attained although the drilling speed was obtained 8.82 m/day.

Drilling State of MJZM-7

No soil portion was encountered.
However, drilling was stagnated because of intensely fractured mylonitic charnockite, lost circulation, collapse and also trouble of water supply.
A 81.79 % of core recovery was attained although the drilling speed was stagnated as low as 4.84 m/day.

2-3-2 Geology

Geology of MJZM-6

The geology of this hole is also similar to the geology confirmed through the field survey. That is, the hole consists mainly of mylonitic charnockite intruded by sheets of porphyrite and intercalated with thin enderbite.
The mylonitic charnockite is characterized by a foliation of 15° to 20° and a common presence of pinked k-feldspar.
According to microscopic observation of gneissose granulite (depth : 41.00 metres), sericite was commonly observed within plagioclase and k-feldspar.
The veinlets of prehnite and chlorite, which are cutting obliquely the foliation

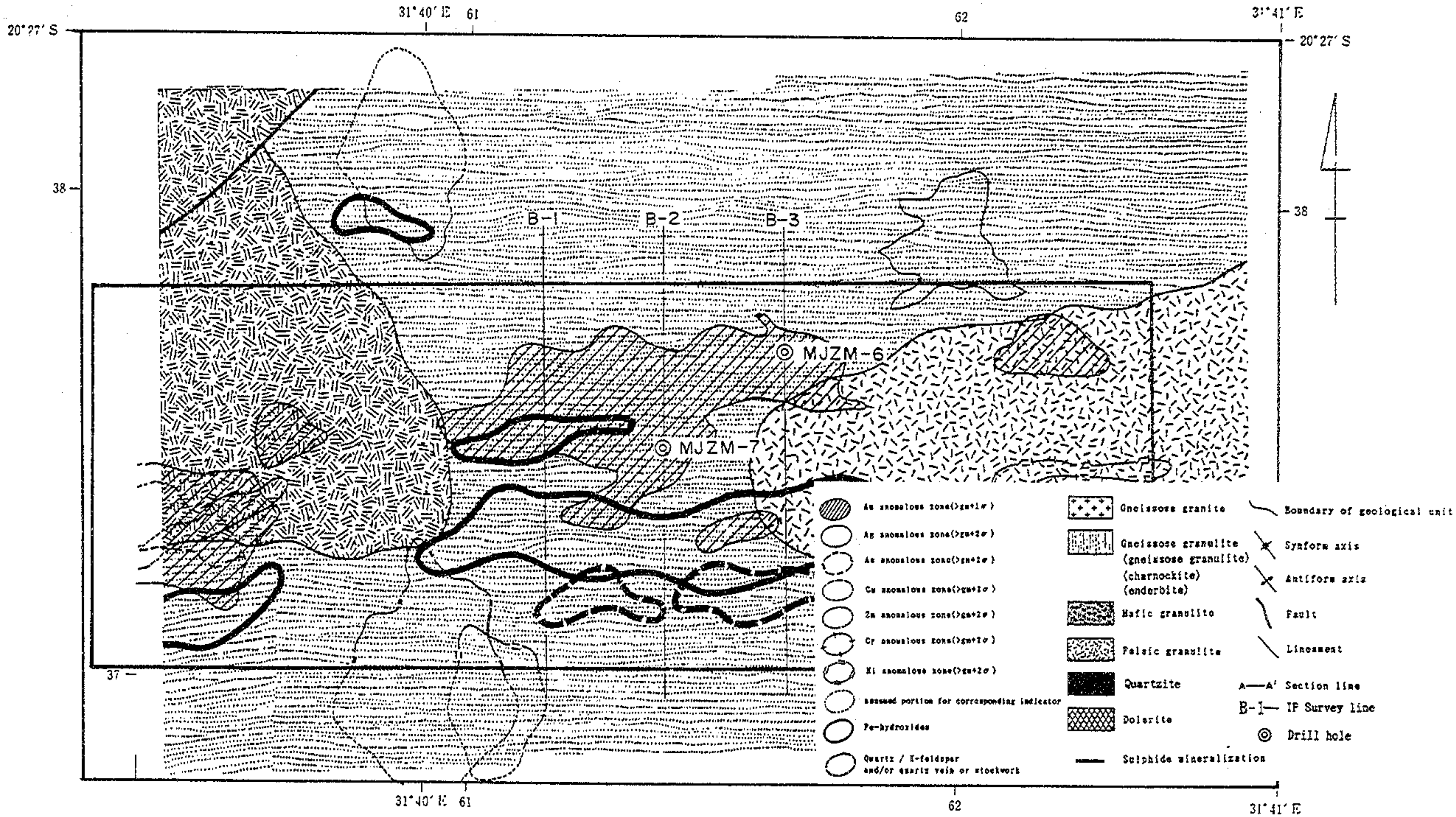

FIG. 2-7-4 Locality Map of Drill Holes(Benzi Area)

of charnockite, were observed.
On the other hand, opaque minerals are mainly produced together with sericite.

Geology of MJZM-7

The geology of this hole is also similar to the geology confirmed through the field survey. That is, the geology of the hole is basically identical with that of MJZM-6. It consists mainly of mylonitic charnockite intruded by a sheet of porphyrite. The mylonitic charnockite is characterized by a foliation of 20° to 30° and a common presence of pinked k-feldspar as well as MJZM-6.
According to microscopic observation of charnockite (depth : 73.00 metres, 96.00 metres), an association of epidote-sericite-opaque minerals was observed although the rock was weakly altered.
On the other hand, plagioclase and k-feldspar in felsic granulite(depth : 144.00 metres) produced commonly sericite.
Opaque minerals appear dispersedly and associate mainly with sericite.

2-3-3 Survey results

Mineralization of MJZM-6

A weak dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite at the depth of 33.18 metres to 46.17 metres and 64.07 metres to 64.92 metres.
According to microscopic observation of polished sections(depth : 35.00 metres, 41.00 metres), pyrite, pyrrhotite, and chalcopyrite were observed in small to extremely small quantities and these minerals tend to associate intimately with each other.
Magnetite and ilmenite exist as oxide minerals in small quantities and magnetite commonly exsolutes the lamella of ilmenite.

No encouraging assay results were obtained.

Mineralization of MJZM-7

A weak dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite at the various depth as shown in the below.
According to microscopic observation of polished sections(depth : 73.00 metres, 96.00 metres, 144.00 metres), pyrite, pyrrhotite, and chalcopyrite were observed in small to extremely small quantities and these minerals tend to closely associate with each other.
The sulphide minerals in this hole are characterized by a relationship among the mineral quantity shown as follows: That is, it is pyrite > pyrrhotite > chalcopyrite.
And also some sulphide veinlets cutting obliquely the foliation of charnockite were observed.
On the other hand, magnetite and ilmenite exist as oxide minerals in extremely

small quantities.

No encouraging assay results were obtained.

2-3-4 Considerations

The following are features of the sulphide minerals (pyrite, pyrrhotite, and chalcopyrite) and the alteration minerals (especially, sericite) of MJZM-6 and MJZM-7.

① Pyrite is more than pyrrhotite compared with other zones.

② Because veinlets (width: 1 to 3 mm) diagonally intersecting with foliation are present in addition to sulphide minerals along foliation similarly to other zones, the mode of occurrence of this zone is different from that of other zones.

③ Alteration minerals appear more frequently than other zones.

There are not so many sulphide minerals in general in this zone. However, judging from the above facts, it is estimated that two stages of mineralization,

① mineralization before metamorphism and

② mineralization after metamorphism

occurred in this zone.

Moreover, for Item ②, it can be estimated that mylonite zone along Benzi river is also related to the time of the mineralization.

2-4 JEGEDE ZONE(FIG.2-7-5)

2-4-1 Survey Method

Drilling State of MJZM-8

The bed rock appears after the thin soil portion of 6.00 metres.

No special trouble happened, therefore 89.85 % of core recovery and 9.68 m/day of drilling speed were attained.

Drilling State of MJZM-9

The bed rock appears after the soil portion of 12.03 metres.

No special trouble happened although intensely disseminated sulphide zone was drilled. A 79.87 % of core recovery and 11.25 m/day of drilling speed were attained.

Drilling State of MJZM-10

No soil portion was encountered.

A smooth drilling was attained in general except fractured portions of depth 35 metres to 40 metres and 65 metres to 75 metres.

A 80.04 % of core recovery was attained although the drilling speed was as high as 11.11 m/day.

Drilling State of MJZM-11

The bed rock appears after the thin soil portion of 2.68 metres.

A 87.50 % of core recovery was obtained due to a stable rock condition.

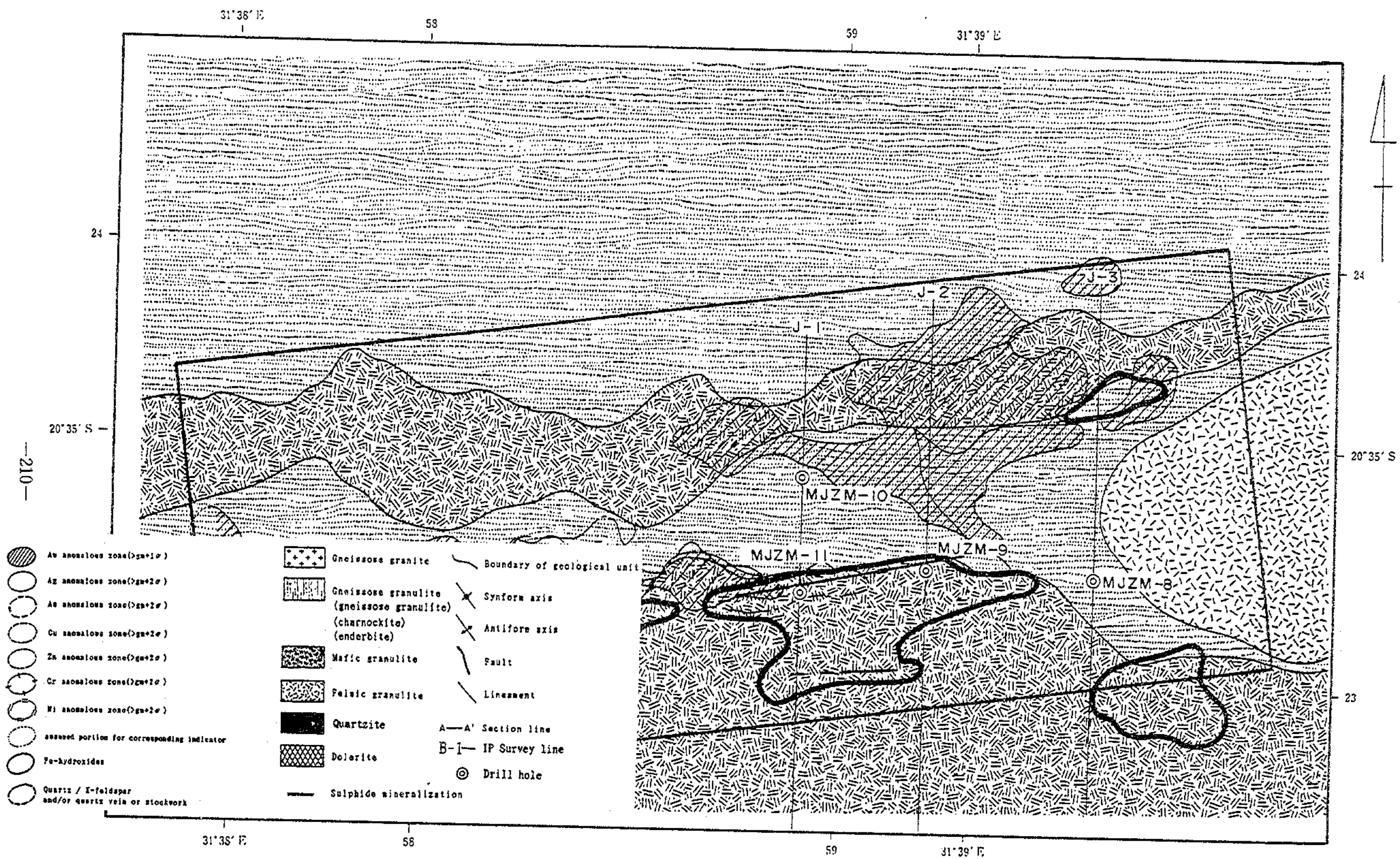

FIG. 2-7-5 Locality Map of Drill Holes(Jegede Area)

A mechanical trouble of drilling machine for two days was encountered, therefore the drilling speed was attained as low as 8.57 m/day.

2-4-2 Geology

Geology of MJZM-8

The geology of this hole is characterized by an alternation of enderbite and pelitic granulite both having a foliation of 70° to 80° . And the inferior part of the hole is composed mainly of enderbite.

According to microscopic observation of enderbite(depth : 61.00 metres, 140.00 metres), sericite was observed in plagioclase and opaque minerals have mainly an association with mafic minerals.

The alteration of the hole is evaluated to be a weak.

Geology of MJZM-9(FIG.2-7-6)

The geology of this hole is also similar to the geology confirmed through the field survey. That is, the upper portion of the hole consists of weathered mafic granulite, the middle portion of well-foliated(70° to 80°) charnockite and the inferior portion of a massive enderbite.

According to microscopic observation of charnockite(depth : 44.00 metres), associations of sericite-chlorite and chlorite-opaque minerals were observed. On the other hand, charnockite(depth : 58.50 metres) shows no chlorite and opaque minerals tend to appear in pyroxenes or the boundaries of quartz and plagioclase.

In enderbite, a sign of hydrothermal alteration is indicated only by a dispersed sericite appearance in extremely small quantities.

Geology of MJZM-10

The geology of this hole consists mainly of a massive enderbite which intercalates a small scale pegmatite and several thin charnockite layers.

According to microscopic observation of felsic granulite(depth : 71.00 metres), plagioclase and k-feldspar change completely to a sericite aggregation and sericite has an close association with opaque minerals in general.

On the other hand, charnockite(depth : 96.00 metres) and enderbite(depth : 135.00 metres) show sericite only as an alteration product in extremely small quantities in plagioclase and k-feldspar.

Geology of MJZM-11(FIG.2-7-7)

The geology of this hole can be divided into enderbite, charnockite, and enderbite in ascending order.

The upper enderbite has a weathered, coarse-grained, and massive appearance, the middle one has a foliation of approximately 50° , fine-grained, compact, and hard rock facies, and lower one shows a foliation of 40° to 60° , medium- to fine-grained, compact and hard appearance.

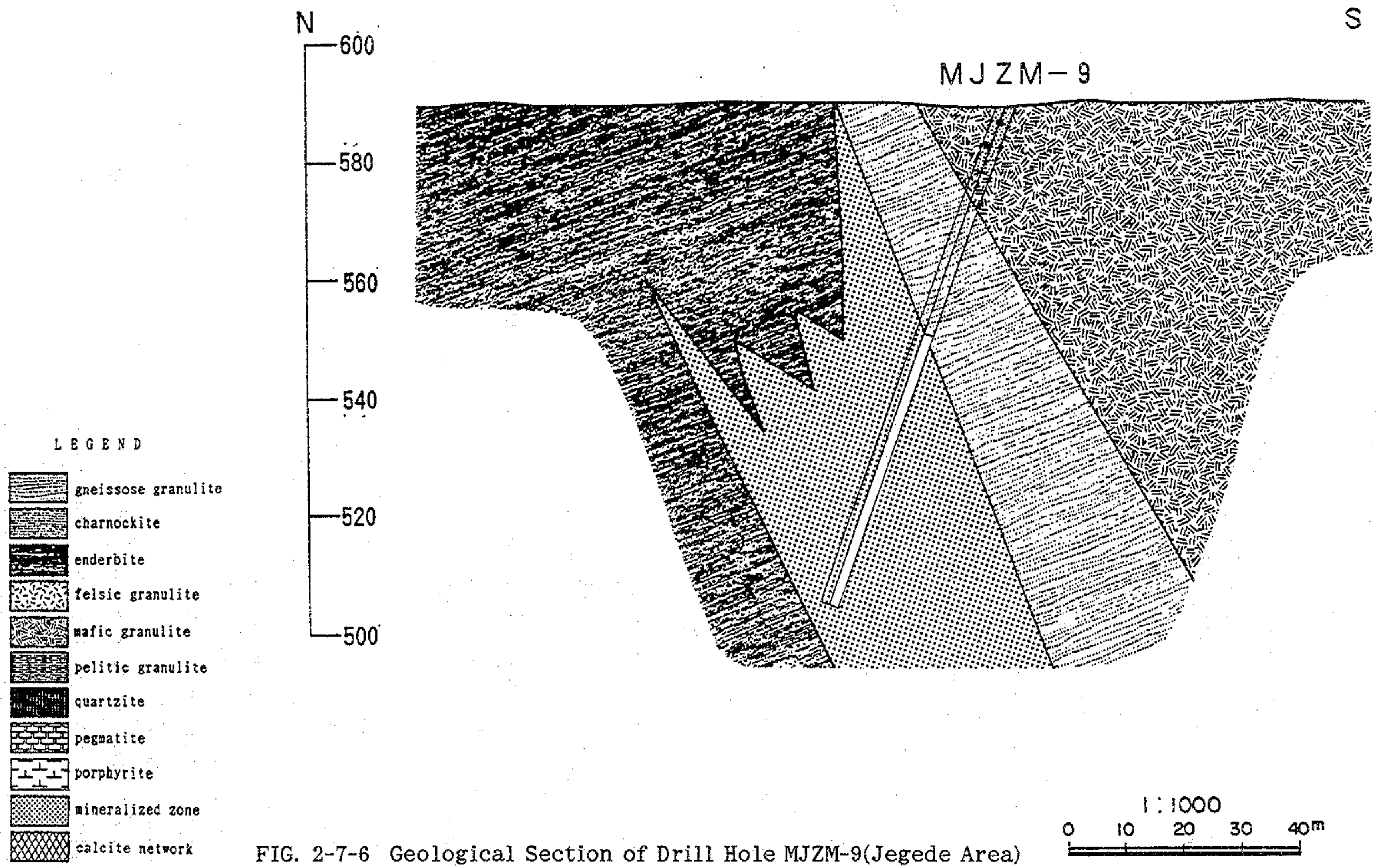

FIG. 2-7-6 Geological Section of Drill Hole MJZM-9(Jegede Area)

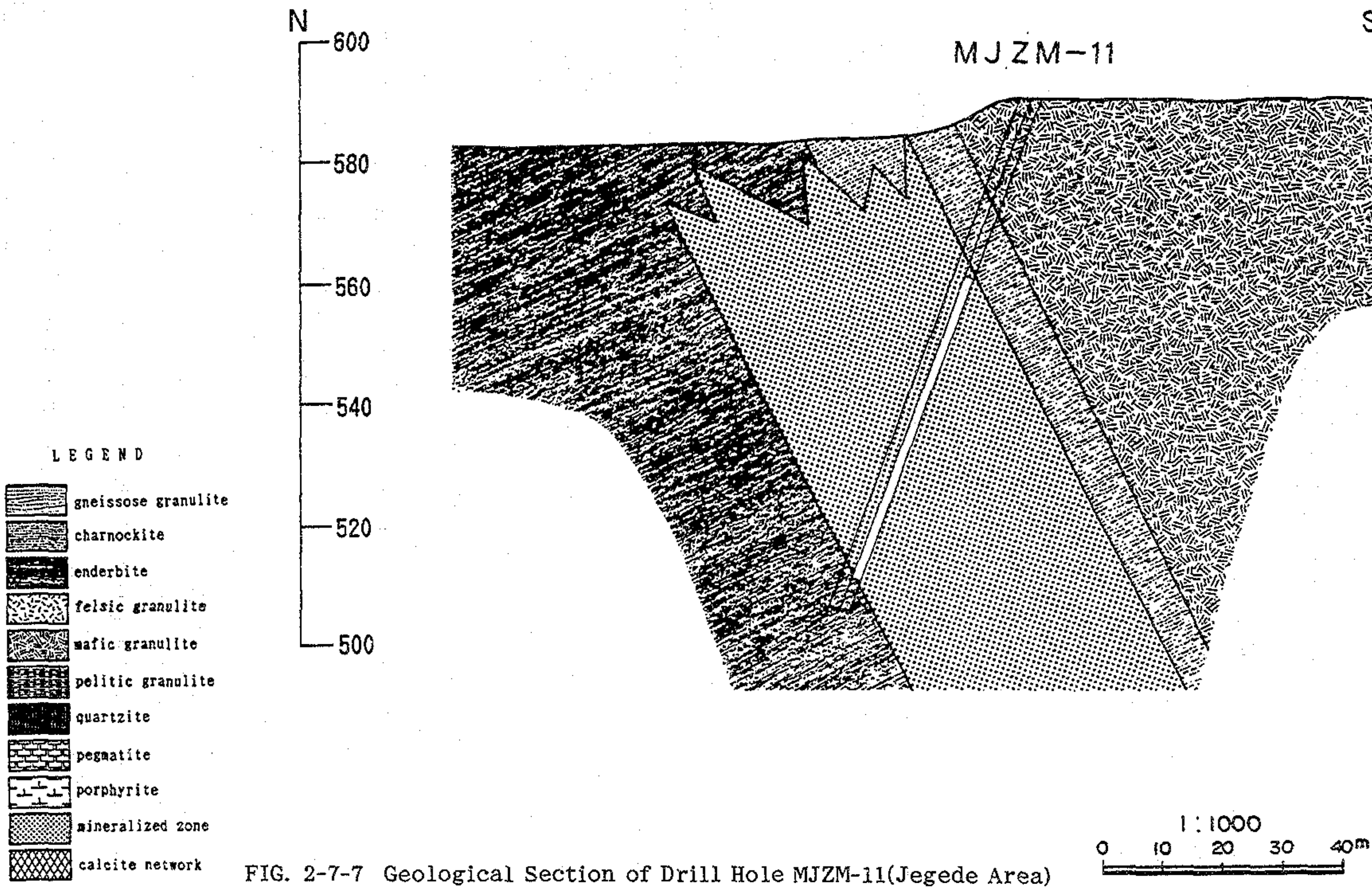

FIG. 2-7-7 Geological Section of Drill Hole MJZM-11(Jegede Area)

According to microscopic observation of these rocks(depth : 47.00 metres, 65.00 metres, 74.00 metres, 81.00 metres), plagioclase and pyroxenes change partly to a sericite aggregation.
On the other hand, opaque minerals have a general tendency to become a larger grain or banded form in association with mafic minerals.

2-4-3 Survey results

Mineralization of MJZM-8

A weak dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in enderbite at the various depth as shown in the below.
According to microscopic observation of polished sections(depth : 61.00 metres, 140.00 metres), pyrite, pyrrhotite, and chalcopyrite were observed in small to extremely small quantities and these minerals tend to associate closely each other.
The mineral quantities in this hole are shown as below:
That is, it is pyrrhotite > sphalerite > chalcopyrite > pyrite.
On the other hand, only ilmenite exist as oxide mineral in extremely small quantities.

No promising assay results were obtained.

Mineralization of MJZM-9

A dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in enderbite at the depth of 40.90 metres to 81.96 metres was recognized mainly in enderbite.
According to microscopic observation of polished sections(depth : 44.00 metres, 58.00 metres, 78.00 metres), pyrite, pyrrhotite, and chalcopyrite were observed in small to extremely small quantities and these minerals tend to associate intimately each other.
The mineral quantity in this hole is shown as below:
That is, it is pyrrhotite > pyrite = sphalerite > chalcopyrite in general.
Pyrrhotite includes tiny chalcopyrite blebs(0.15 mm to 0.03 mm) and is accompanied by pyrite-marcasite mixture.
On the other hand, no oxide mineral was found.

No significant assay results were obtained although intense sulphide mineralization was intersected.

Mineralization of MJZM-10

A dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in enderbite at the various depth was recognized mainly in felsic granulite, enderbite and charnockite.
According to microscopic observation of polished sections(depth : 71.00 metres, 96.00 metres, 135.00 metres), a different association of sulphide minerals was

observed depending on the kinds of country rocks. That is, an association in felsic granulite shows characteristically pyrite > chalcopyrite in quantity. No pyrrhotite and oxide minerals present.
On the other hand, the relationship among the sulphide minerals in enderbite and charnockite is as follows: That is, it is pyrrhotite > sphalerite > pyrite = chalcopyrite in quantity. These minerals tend to associate each other.
Pyrrhotite includes tiny chalcopyrite blebs(0.15 mm to 0.03 mm).

No significant assay results were obtained.

Mineralization of MJZM-11

A strong dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized mainly in enderbite and charnockite.
According to microscopic observation of polished sections(depth : 47.00 metres, 65.00 metres, 74.00 metres, 81.00 metres), the mineral quantities in enderbite and charnockite are as follows: That is, it is pyrrhotite > sphalerite > chalcopyrite = arsenopyrite in general.
These minerals tend to associate each other.
Pyrrhotite includes tiny chalcopyrite blebs(0.15 mm to 0.03 mm).
Sphalerite in the hole is characterized by a strong anisotropy possibly due to high FeS contents and commonly includes very tiny pyrrhotite blebs(< 0.01 mm).

No significant assay results were obtained although intense sulphide mineralization was intersected.

2-4-4 Considerations

The following are combinations of sulphide minerals and features of alteration minerals of executed MJZM-8, MJZM-9, MJZM-10, and MJZM-11.
① Pyrrhotite is a predominant sulphide mineral. In addition, very small amounts of pyrite and chalcopyrite are commonly present in this zone similarly to other zones. However, it is different from other zones that a very small amount of sphalerite is commonly produced in this zone.
② The sulphide minerals show dissemination structure. However, some portions also show banding structure. It can be said that this case is approximately concordant with foliation.
③ The presence of mineralization zone (zone including sulphide minerals) is roughly concordant with the direction of foliation in this zone.
④ Alteration minerals (sericite and chlorite) are poorly formed.
⑤ The country rock of mineralized zone mainly consists of charnockite and enderbite. Mafic granulite does not have mineralization of sulphide minerals.

The above facts show that mineralization occurred before metamorphism similarly to the case of Juwere zone. Also judging from the selectivity and concordance of mineralization for the country rock, this zone has a large possibility of stratabound ore deposit.

2-5 FUMURE ZONE(FIG.2-7-8)

2-5-1 Survey Method

Drilling State of MJZM-12

The bed rock appears after the soil portion of 18.00 metres.
A trouble of a small fractured portion of depth 92.48 metres to 95.55 metres was encountered. Therefore 86.33 % of core recovery and 9.38 m/day of drilling speed were attained.

Drilling State of MJZM-13

The bed rock appears after the soil portion of 7.32 metres.
No special trouble was encountered, therefore 90.35 % of core recovery was attained. The drilling, however, was stagnated due to hard rock, that is quartzite, and obtained as low as 7.14 m/day of drilling speed.

2-5-2 Geology

Geology of MJZM-12

The geology of this hole is similar to the geology confirmed through the field survey. That is, it is made of gray, compact, and hard charnockite consisting of medium to fine grains from the top to the bottom of the hole, and has a foliation (60° to 80°). Garnet appears from the depth of 58.00 metres and continues to the bottom of the hole. As the result of microscopic observation of the hole, each sample is identified as charnockite (depth : 61.00 metres, 75.00 metres). Sericite in charnockite is commonly formed in plagioclase though it is very slight. Meanwhile, chlorite was detected in plagioclase and quartz of a deeper portion in the form of veins (0.5 mm). Alteration minerals are not strongly associated with opaque minerals.

Geology of MJZM-13(FIG.2-7-9)

The geology of this hole is simple, which can be divided into two parts. That is, the upper part consists of a dark gray to dark green, compact, hard, and massive charnockite of medium to fine grain sizes, and the lower part consists of a gray quartzite of medium grain size. The foliation of charnockite and quartzite shows the inclination of 10° to 30° .
As the result of microscopic observation of samples of this hole, each sample is identified as charnockite (70.00 metres, 93.00 metres, 104.00 metres) and quartzite (143.00 metres). For charnockite, only a small amount of sericite is produced in plagioclase and pyroxenes similarly to the case of MJZM-12.
On the other hand, opaque minerals have a tendency to associate with mafic minerals.

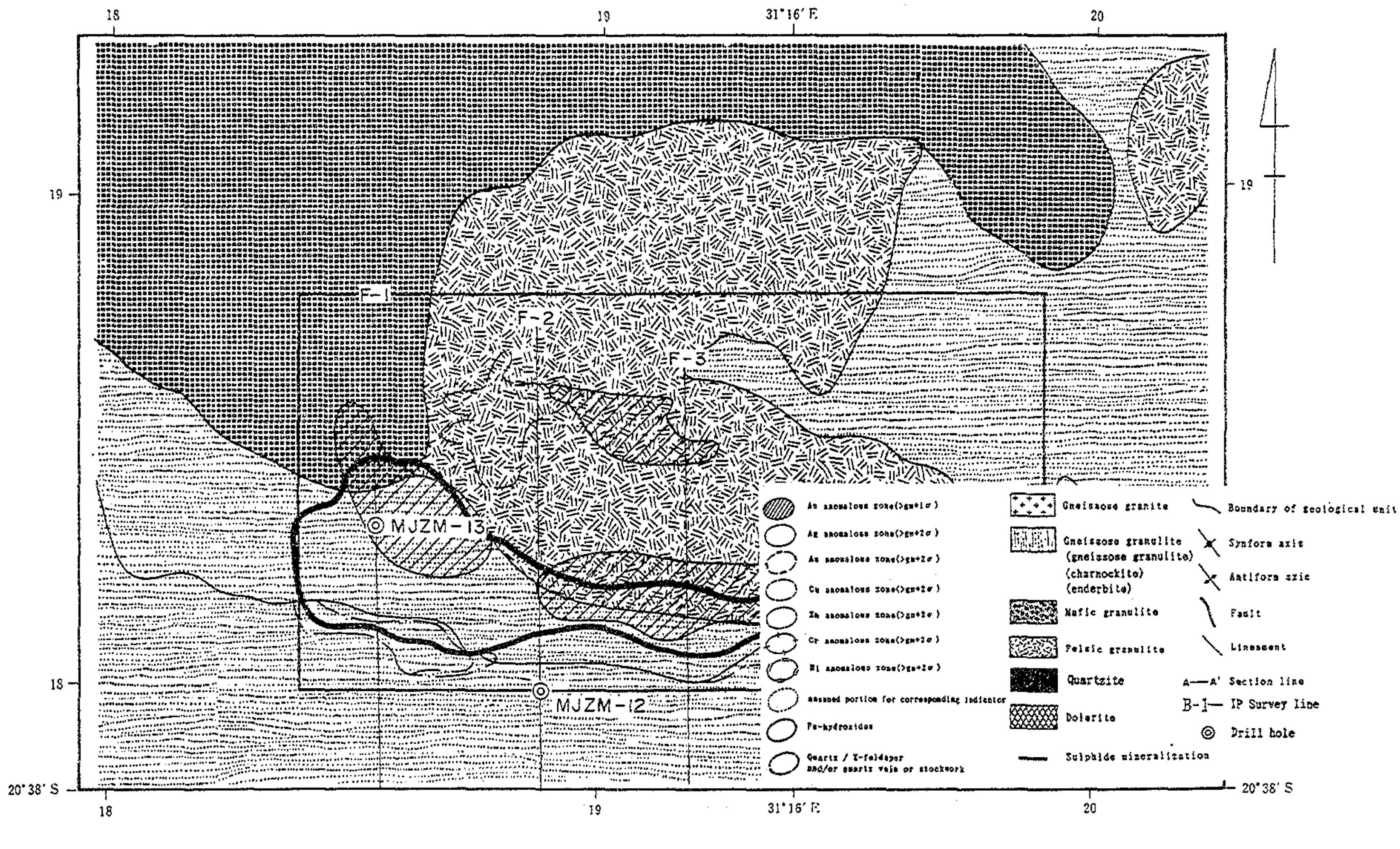

FIG. 2-7-8 Locality Map of Drill Holes(Fumure Area)

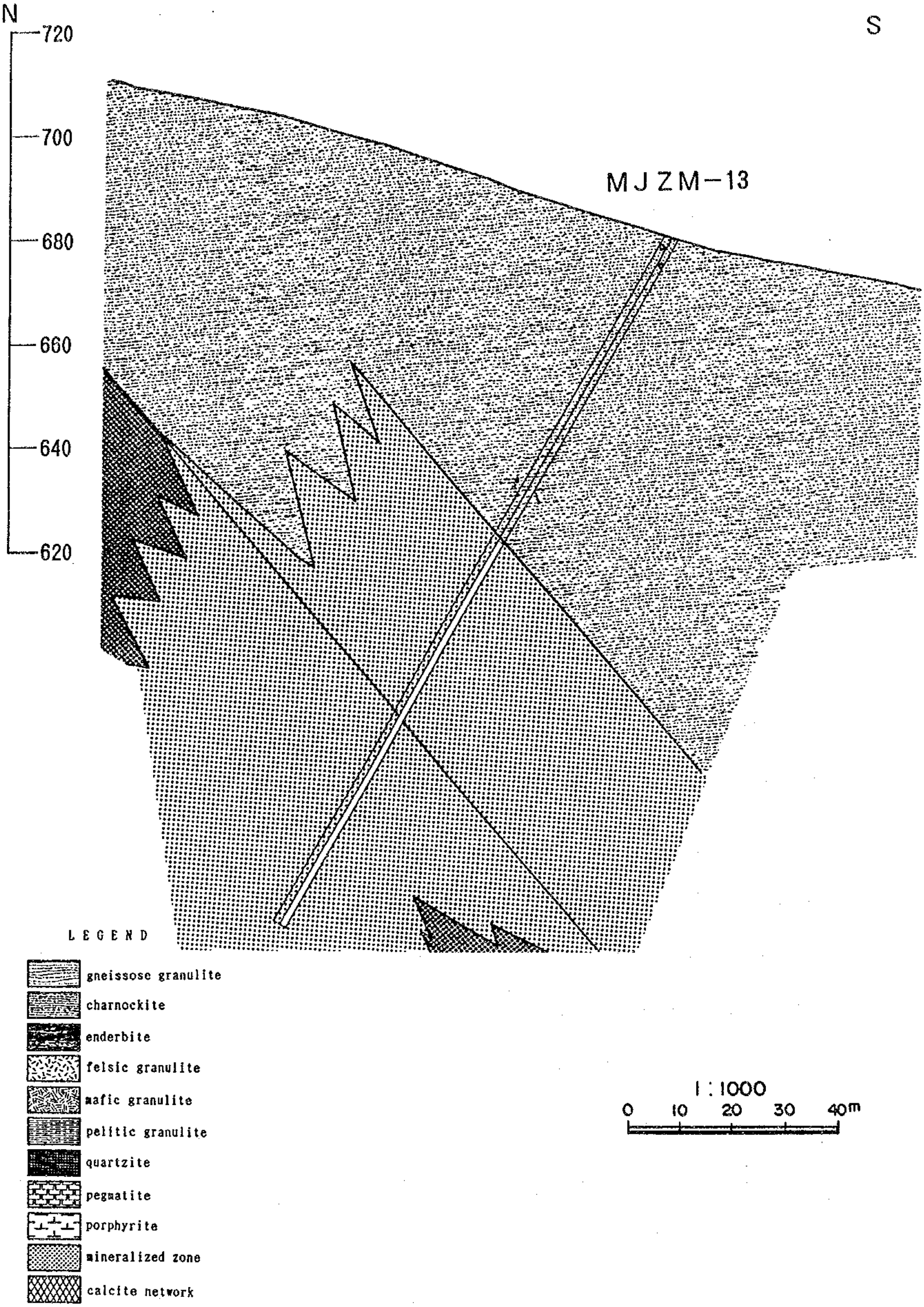

FIG. 2-7-9 Geological Section of Drill Hole MJZM-13(Fumure Area)

Quartzite is characterized by coarse-grain opaque minerals, which shows banding structure together with quartz and appears in medium quantity. Very small amount of sericite is dispersedly detected in quartz.

2-5-3 Survey results

Mineralization of MJZM-12

A dissemination of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite.

According to microscopic observation of polished sections(depth : 61.00 metres, 75.00 metres), the sulphide minerals in the hole are characterized by rather fluctuation of the mineral abundance depending on the portion. The kind of sulphide minerals(pyrite, pyrrhotite, sphalerite, and chalcopyrite), however, invariably appears independent of the portion of the hole.

These minerals tend often closely to associate with each other.

No encouraging assay results were obtained.

Mineralization of MJZM-13

A strong dissemination and banding or network of pyrite, pyrrhotite, and chalcopyrite was recognized in charnockite and quartzite.

According to microscopic observation of polished sections(depth : 74.00 metres, 93.00 metres, 104.00 metres, 143.00 metres), the sulphide minerals in the hole are characterized by rather fluctuation of the mineral abundance depending on the country rocks. No significant differences, however, in its kindness was recognized between in charnockite and quartzite.

Galena and arsenopyrite which are not found in other holes appear in the shallower part of charnockite and associate intimately with each other.

On the other hand, quantity of the sulphide minerals in quartzite is shown as follows: That is, it is pyrrhotite>pyrite>sphalerite>chalcopyrite in general.

Pyrrhotite appears as larger grains and comprises other sulphide minerals within the crystal.

No significant assay results were obtained although intense sulphide mineralization was intersected.

2-5-4 Considerations

The following are combinations of sulphide minerals and features of alteration minerals of executed MJZM-12 and MJZM-13.

① Similarly to the case of Jegede zone, pyrrhotite is a main sulphide mineral in quantity. Very small amounts of pyrite and chalcopyrite are commonly present in this zone similarly to other zones. In addition, galena, sphalerite, and arsenopyrite are detected.

Therefore, this zone is slightly rich in sulphide minerals compared with other zones.

② For the mode of occurrence of sulphide minerals, the country rock consisting of charnockite shows dissemination structure but the country rock consisting of quartzite shows more banding structure. It can be said that this case is also approximately concordant with foliation.

③ Alteration minerals are poorly formed.

From the above facts, the mineralization by sulphide minerals had been done before metamorphism and the mode of occurrence of sulphide minerals differs in types of country rocks. Therefore, the zone has a high possibility of stratabound ore deposit similarly to Juwere and Jegede zones.

It can be estimated that alteration minerals (e.g. sericite and chlorite) once had been formed by accompanying mineralization were poorly remained in all surveyed zones except Benzi zone. Major of alteration minerals formed concurrently with mineralization were changed to other minerals due to the following reaction in later metamorphism or retrogressive metamorphism.

That is:

- Biotite rarely appear in the granulite facies and the range of chemical composition is limited in general. However, these surveyed zones frequently contain medium amount of biotite(see Appendix A-3), which is characteristic. This may be because sericite (muscovite) which is an alteration product formed biotite according to the following reaction with amphibole(Miyashiro, 1965).

$$\underset{\text{muscovite}}{3KAl_3Si_3O_{10}(OH)_2} + \underset{\text{amphibole}}{Ca_4(Mg,Fe)_9AlSi_{15}AlO_4(OH)_4}$$

$$= \underset{\text{biotite}}{3K(Mg,Fe)_3AlSi_3O_{10}(OH)_2} + \underset{\text{Ca-feldspar}}{4CaAl_2Si_2O_8} + \underset{\text{quartz}}{7SiO_2} + 2H_2O$$

* It is also estimated that chlorite formed by alteration produced biotite according to the following reaction with sericite (muscovite)(Miyashiro, 1965).

$$\underset{\text{molecule of serpentine}}{5(Mg,Fe)_6Si_4O_{10}(OH)_8} + \underset{\text{muscovite}}{6KAl_3Si_3O_{10}(OH)_2} = \underset{\text{biotite}}{6K(Mg,Fe)_3AlSi_3O_{10}(OH)_2}$$

$$+ \underset{\text{molecule of amesite}}{3(Mg,Fe)_4Al_4Si_2O_{10}(OH)_8} + \underset{\text{quartz}}{14SiO_2} + 8H_2O$$

- A typical geochemical anomalous zone was found in the following three zones.

① Jegede zone

② Benzi zone

③ Fumure zone

The geochemical anomalous zone in these zones

① contains relatively high gold value, and

② forms well-continuous anomalous zones,
and also
③ the anomalous zones are distributed in topographic depressed portions (e.g. Jegede and Fumure zones) or located at inclined portion (e.g. Benzi zone).

Therefore, it can be estimated that these anomalous zones are a hydromorphic anomalies formed by transported indicators from a topographic high place where mineralized signs are found.

The mobility of Au is confirmed depending on oxidation or reduction state, pH, and Cl^- ions, which is not expected under the state of Au^0. The mobility mechanism is roughly shown by the following equation(Cloke & Kelly, 1964).

$$3H_2O + Au^0 = H_2AuO_3^- + 4H^+ + 3e^-$$
$$4Cl^- + Au^0 = AuCl_4^- + 3e^-$$
$$Au^0 = Au^{+++} + 3e^-$$

These equations depend on one or two factors of Eh, pH, and Cl^- and the mobility of Au under natural environment is also confirmed through the results of experiments.
In reality, precipitation of Au occurs in a solution according to the following phenomena.

① lowering of Cl^- ionic concentration(dilution)
② increasing of pH
③ reduction of $AuCl_4^-$ (or $AuCl^-$)

For example, when the case of factor③ is assumed, Au is precipitated at a topographically low place through the mechanism shown by the following reaction formula when Fe^{+2} reduces $AuCl^-$.

$$AuCl^- + 3Fe^{+2} + 6H_2O = Au^0 + 3FeOOH + 4Cl^- + 9H^+$$

When the above reaction continues, enrichment of Au is progressed and forms a hydromorphic anomaly zone.

From the survey results in this year that
① the geochemical anomalous zones are located at a topographically low land and,
② no any mineralized zone corresponding to the zones is found,
it is estimated that these zones are hydromorphic anomalous zones.

In the hydromorphic anomaly zone, more condensed to gold than the mineralized zone where gold of this zone was originated was probably formed.

TABLE 2-7-1 SELECTION OF DRILLING TARGET

DRILLING NO. (ZONE NAME)	DIPTH DIRECTION INCLINATION	LOCATION (ZONE, SURVEY-LINE, STATION)	REASONS
MJZM-1 (JUWERE)	90.00 m 0° -70°	mineralized zone	· mineralized zone
MJZM-2 (JUWERE)	90.00 m 0° -70°	mineralized zone	· mineralized zone
MJZM-3 (JUWERE)	90.00 m 0° -70°	geochemical anomaly	· geochemical anomalous zone
MJZM-4 (MUCHACHA)	90.05 m 0° -70°	mineralized zone	· mineralized zone
MJZM-5 (MUCHACHA)	90.00 m 0° -70°	geochemical anomaly	· geochemical anomalous zone
MJZM-6 (BENZI)	90.00 m 0° -60°	(BENZI, B-3, 5 + 25 m)	· relatively high 'PFE' zone · geochemical anomalous zone
MJZM-7 (BENZI)	90.00 m 0° -50°	(BENZI, B-2, 10)	· low resistivity zone · geochemical anomalous zone · high/low 'PFE' zone
MJZM-8 (JEGEDE)	150.30 m 0° -65°	(JEGEDE, J-3, 13 + 25 m)	· high 'PFE' zone · possible extension of mineralized zone
MJZM-9 (JEGEDE)	90.00 m 0° -70°	(JEGEDE, J-2, 13 - 10 m)	· low resistivity zone · geochemical anomalous zone · high 'PFE' zone · possible extension of mineralized zone
MJZM-10 (JEGEDE)	150.00 m 0° -60°	(JEGEDE, J-1, 7)	· high 'PFE' zone · geochemical anomalous zone
MJZM-11 (JEGEDE)	90.00 m 0° -70°	(JEGEDE, J-1, 12-10 m)	· low resistivity zone · geochemical anomalous zone · high 'PFE' zone · possible extension of mineralized zone
MJZM-12 (FUMURE)	150.30 m 0° -70°	(FUMURE, F-2, 15)	· rather low resistivity zone · rather high 'PFE' zone
MJZM-13 (FUMURE)	150.00 m 0° -60°	(FUMURE, F-1, 8 + 25 m)	· low resistivity zone · geochemical anomalous zone · high 'PFE' zone

TABLE 2-7-2 SUMMARY OF DRILLING SURVEY RESULTS

DRILLING NO (ZONE NAME)	GEOLOGY	SULPHIDE MINERALIZATION
MJZM-1 (JUWERE)	00- 37.33 :charnockite - 43.55 :felsic granulite - 73.60 :charnockite - 82.87 :felsic granulite - 90.00 :charnockite	20.00- 33.72(13.72) : PY-PO-(CP) DIS(M) 33.72- 37.33(3.61) : PY-PO-(CP) DIS(S) 43.53- 51.90(8.37) : PY-PO-(CP) DIS(S) TOTAL 25.70
MJZM-2 (JUWERE)	00- 37.33 :mafic granulite - 90.00 :charnockite	36.45- 40.28(3.83) : PY-PO-(CP) DIS(M)
MJZM-3 (JUWERE)	00- 9.09 :charnockite - 15.52 :felsic granulite - 24.24 :charnockite - 27.62 :mafic granulite - 90.00 :charnockite	5.50- 9.09(3.59) : PY-PO-(CP) DIS(W)
MJZM-4 (MUCHACHA)	00- 90.05 :mafic granulite	(carbonitization)
MJZM-5 (MUCHACHA)	00- 42.63 :mafic granulite - 90.00 :charnockite	55.50- 58.30(2.80) : PY-PO-(CP) DIS(M)
MJZM-6 (BENZI)	00- 95.30 :charnockite -102.50 :enderbite -150.00 :charnockite	33.18- 35.65(2.47) : PY-PO-(CP) DIS(W) 36.56- 46.17(9.61) : PY-PO-(CP) DIS(W) 64.07- 64.92(0.85) : PY-PO-(CP) DIS(W) TOTAL 12.93
MJZM-7 (BENZI)	00-131.39 :charnockite - 63.54 :porphyrite - 65.22 :charnockite	72.57- 74.12(1.55) : PY-PO-(CP) DIS(W) 92.50-100.10(7.60) : PY-PO-(CP) DIS(W) 106.06-106.96(0.90) : PY-PO-(CP) DIS(W) 143.55-146.83(3.28) : PY-PO-(CP) DIS(W) 148.29-150.00(1.71) : PY-PO-(CP) DIS(W) TOTAL 15.04
MJZM-8 (JEGEDE)	00- 32.87 :charnockite - 41.10 :pelitic gran. - 50.11 :charnockite - 58.02 :pelitic gran. - 75.48 :felsic granulite -150.30 :enderbite	58.02- 70.03(12.01) : PY-PO-(CP) DIS(W) 137.71-141.62(3.91) : PY-PO-(CP) DIS(W) 148.31-150.30(1.99) : PY-PO-(CP) DIS(W) TOTAL 17.91
MJZM-9 (JEGEDE)	00- 16.70 :mafic granulite - 40.90 :charnockite - 90.00 :enderbite	40.90- 66.22(25.32) : PY-PO-(CP) DIS(S) 66.22- 67.54(1.32) : PY-PO-(CP) DIS(W) 67.54- 81.96(14.42) : PY-PO-(CP) DIS(S) 81.96- 90.00(8.04) : PY-PO-(CP) DIS(W) TOTAL 49.10
MJZM-10 (JEGEDE)	00- 19.49 :enderbite - 24.48 :pegmatite -150.00 :enderbite	70.26- 72.11(1.86) : PY-PO-(CP) DIS(W) 91.44- 96.67(5.23) : PY-PO-(CP) DIS(M) 122.85-124.35(1.50) : PY-PO-(CP) DIS(M) 127.50-128.43(0.93) : PY-PO-(CP) DIS(W) 134.14-137.20(3.06) : PY-PO-(CP) DIS(M) TOTAL 12.58
MJZM-11 (JEGEDE)	00- 17.32 :mafic granulite - 29.22 :charnockite - 31.06 :enderbite - 49.25 :charnockite - 90.00 :enderbite	25.71- 29.22(3.51) : PY-PO-(CP) DIS(W) 31.06- 48.02(16.96) : PY-PO-(CP) DIS(M) 49.25- 53.43(4.18) : PY-PO-(CP) DIS(S) 53.43- 68.10(14.67) : PY-PO-(CP) DIS(M) 68.10- 74.92(6.82) : PY-PO-(CP) DIS(S) 74.92- 84.13(9.21) : PY-PO-(CP) DIS(M) TOTAL 55.35
MJZM-12 (FUMURE)	00-150.30 :charnockite	59.50- 78.50(19.00) : PY-PO-(CP) DIS(M) TOTAL 19.00
MJZM-13 (FUMURE)	0000-104.61 :charnockite -150.00 :quartzite	66.34- 70.19(3.85) : PY-PO-(CP) DIS(M) 70.19-150.00(79.81) : PY-PO-(CP) DIS(S) TOTAL 83.66

PY:pyrite PO:pyrrhotite CP:chalcopyrite DIS:dissemination D/B:dissemination & banding
S : dissemination in strong degree
M : dissemination in medium degree
W : dissemination in weak degree

PART Ⅲ CONCLUSIONS AND RECOMMENDATIONS

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CHAPTER 1 CONCLUSIONS

This mineral exploration survey was executed for three years according to the following survey scheme.

① Phase I: LANDSAT image interpretation, reconnaissance geological survey, and geochemical survey by stream sediments

② Phase Ⅱ: Semi-detailed geological survey and soil geochemical survey

③ Phase Ⅲ: Geophysical survey (IP method) and drilling survey

Though any gold mineralized zone was not consequently detected through this exploration survey, it can be evaluated as a significant result that mineralized zones of sulphide minerals are detected as the result of drilling survey in the surveyed zones where sulphide minerals are hardly detected as the result of field survey when considering the fact that all of main gold deposits in Zimbabwe are associated with sulphide minerals. It is possible to detect mineralization of sulphide minerals and, therefore, gold deposits and other useful deposits by continuously applying the above survey methods to similar geological environments.

CHAPTER 2 RECOMMENDATIONS

According to the survey results for three years and the conclusion obtained through the study of them, we would like to recommend the following for future.

The following survey methods adopted by the survey team were effecive as the mineral exploration survey for the regional metamorphic belts of the granulite facies like Limpopo Mobile Belt in Archaean.

① Phase I: LANDSAT image, rough survey of geology, and geochemical survey by stream sediments

② Phase Ⅱ: Semi-detailed geological survey and soil geochemical survey

③ Phase Ⅲ: Geophysical survey (IP method) and drilling survey

However, the climate and topographical factors in this country tends to produce a pseudo-soil geochemical anomaly in topographic depressed portion, sloped portion and a boundary between the alluvial and soil layers.

Therefore, a geophysical survey(e.g. IP method) must be carried out to confirm the existence of sulphide minerals in soil geochemical anomalous zones, and after the interpretation of the IP survey results, a planning of drilling survey should be conducted.

In this country, growth of soil is not very remarkable, which is generally several tens centimetres or less. Under this environment, the survey with airborne electromagnetic method is an exploration method suitable for evaluation of the possibility of sulphide minerals distributed in a wide zone. Therefore, the method is worth studying in future.

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