Chapter 3 Dakuniba Area

3-1 Geological Survey

3-1-1 Outline of Geology

Mineralization occurs as quartz veins in the Dakuniba Basalt of the Natewa Volcanic Group. Major veins strike WNW-ESE and dip steeply. The veins extend for more than 2km. Maximum Au grade is 16 g/t and many samples assay 1 g/t.

3-1-2 Stratigraphy

The area is underlain by basalt lava and volcaniclastic rocks of the same composition that are correlated to the Dakuniba Basalt. The Formation is divided into three units on the geologic map (Fig. 2-3-1) based on rock facies: compact lava (unbrecciated) facies, autobrecciated to coarser volcaniclastic facies, and finer volcaniclastic facies. These units are defined tentatively for mapping purposes and should not be regarded as officially defined members.

The compact lava is distributed mainly in the center of the area, and is dark green in color and hard. Extensive alteration has resulted in smectite replacing olivine and pyroxene. The rock often contains coarse-grained pyroxene phenocrysts and altered olivine.

Brecciated basalt is distributed widely, especially in the western and eastern part of the area. Main constituents appear to be autobrecciated lava and volcaniclastic rocks that are mostly classified as volcanic breccia in terms of their fragment size. The composition appears to be the same as the compact lava. The rocks of this unit may be more strongly altered as smectite has replaced phenocrysts and matrix. It tends to be softer and sometimes dark reddish in color as a result of oxidation.

Volcaniclastic facies are distributed in the narrow area intercalated with the basalt lavas. They consists mainly of lapilli tuff and tuff, including epiclastic fine tuff as in the east of Dakuniba village. The fine tuffs are often bedded. Volcaniclastic rocks are soft and green to grayish green in color. The rocks are mainly composed of lithic fragments and rarely contain scoria.

The lavas appear to have been erupted on land and in the shallow sea based on the lack of pillow lavas and of absence of clear hyaloclastic textures in addition to the oxidation. Only a minor amount of epiclastic facies is present.

The total thickness of this formation is more than 900 m.

3-1-3 Intrusive Rocks

Many basalt dykes and a small number of gabbroic bodies have intruded into the formation. The dominant direction of the basalt dykes is NW-SE in the east part of the area and E-W in the western part. The widths of the dykes generally range between 0.3 m and 3 m.

3-1-4 Geologic Structure

The faults in the area have a dominant strike of NNE-SSW and NW-SE, which is oblique to the ENE-WSW trend in the Cakaudrove Peninsula. The folds are not clear, but N-S trending synclinal and anticlinal axes with 1 km lengths and wing widths of 1km are estimated.

The dykes in the west display a WNW-ESE strike that is orthogonal to the fold axes. The compressional direction was E-W.

3-1-5 Mineralization and Alteration

Mineralization occurs as gold bearing quartz veins. Most of the quartz veins occur intermittently in the upper reaches of the Nagagani Creek to the north of Dakuniba Village, over more than 3 km length(Figs 2-3-2 through -5). More than 50 trenches have been excavated in this area called the Dakuniba Prospect. The width of the quartz veins ranges from less than 1 cm up to 1 m, mostly being less than 10 cm. Quartz veins strike N65°W and dip 60°N-60°S, while some display a E-W to NE-SW strike.

Other zones of quartz veining include the area from Wailevu Creek to near Naqaiqai Creek, in a NW-SE direction over 2 km in length. This zone is adjacent to Nibuni Creek where an argillic alteration zone has developed. In addition, another outcrop of quartz veins occurs at the branch of the Waikava Creek to the northwest.

Under the microscope, the quartz vein samples are mainly comprised of quartz and adularia and goethite with pyrite, chalcopyrite, sphalerite and galena, and trace amounts of acanthite. A sample from a quartz vein at trench No.29 contains abundant pyrite, sphalerite, galena, arsenopyrite and acanthite. Chemical analysis indicates 12.4 g/tAu and 1,420 g/t Ag. (The acanthite may have been generated through exsolution when the sulfide was oxidized to goethite).

The dominant silicified zones surrounding the quartz veins reach 3 m. The two samples that were taken from the east and west ends of the Nagagani zone contain barite but Au values are as low as 0.2 g/t and less than 0.01 g/t, respectively.

3-2 Geochemical Survey

3-2-1 Method and Results

A total of 241 samples were taken for chemical analysis(Figs.2-3-6 and -7). The results are summarized as frequency distribution and cumulative frequency curves(Figs 2-3-8 and -9). The threshold values are established based on basic statistics.

Element(unit)	Au(g/t)	Ag(g/t)	As(ppm)	Sb(ppm)	Hg(ppm)
Detection Limit	0.01	0.4	1.0	0.5	0.005
Average	0.036	0.70	26	0.75	0.037
Minimum	<0.01	<0.4	<1.0	<0.5	0.006
Maximum	16.1	151	1,590	28	3.2
Average+σ	0.31	3.5	165	2.4	0.11
Average+2 × σ	2.6	18	1,059	7.5	0.33

Au: Threshold values are established at 0.01 g/t and 0.31 g/t. At the Dakuniba Prospect, the highest gold value is 16.1 g/tAu and many samples grade higher than 1 g/tAu, in addition to the wide geochemical zone established by using the thresholds. At Wailevu Creek and Basaganaku Creek in the northern part, weak Au anomaly (0.01 g/t~ 0.31 g/t) was located. At the branch of Waikava Creek, Au mineralization was identified with a grade of 0.45 g/tAu.

Ag: Thresholds of 0.7 g/t and 3.5 g/t were selected. Ag values cover wide range. The Ag/Au ratios are in the order of 1 while the ratio range between 0.2 and 10.

As: Thresholds of 26 ppm and 165 ppm were selected. Values higher than 1,000 ppm are from the samples that range between 0.1~1 g/tAu with the exception of one sample. Samples with more than 1 g/tAu have between 26~529 ppm As. Samples with higher than 165 ppm As extend further west and east over the Au anomaly zone.

Sb: Threshold values are 0.75 ppm and 2.4 ppm. The highest value is 28 ppm from a sample of float (0.1 g/tAu) taken from the Nakasaiki Creek in the far northeast of the Dakuniba Prospect. The second highest value is 25 ppm from a quartz vein from the Eight-gram Creek in the southeastern area of the Dakuniba Prospect. Sb is apparent over a wider anomaly zone than As.

Hg: Thresholds are 0.037 ppm and 0.33 ppm.

3-2-2 Correlation

The correlation between Au and the other four elements is obvious (Fig. 2-3-10). The correlation coefficients among the other four elements are significant.

	Ag	As	Sb	Hg
Au	0.72	0.74	0.68	0.54
Ag		0.69	0.72	0.61
As			0.80	0.60
Sb				0.68

3-2-3 Considerations

The mineralization in this area is most significant at the Dakuniba Prospect. It is characterized by narrow quartz veins extending for more than 1 km in length, although in many places discontinuous in surface outcrop. Au values higher than 1g/tAu are identified only in the Nagagani Creek area. Around the Dakuniba Area alteration is less well developed and the structural control on the mineralization is difficult to specify. However, the E-W trending fault is suspected to be a conduit for the hydrothermal fluid convection. This assumption is based on the direction of the E-W trending basalt dykes and N-S trending fold axes indicating tensional fractures may have been generated in an E-W direction under an E-W compressional stress field. The center of the up-flow of hydrothermal fluid is suspected to have been near the Nagagani Creek.

3-3 Drilling

3-3-1 Location and Lengths

The locations, directions and lengths of the three holes are listed below and shown in Fig. 2-3-11.

Table 2-3-1 Location, Orientation and Length of Drill Holes in the Dakuniba Area

Drill No.	Coordinates		Elevation (m)	Azimuth	Inclination	Drilled Length(m)
	Latitude	Longitude				
MJFV-4	16° 43' 40"S	179° 50' 30"E	320	S30° W	-45°	300.50
MJFV-5	16° 43' 45"S	179° 50' 35"E	280	S30° W	-45°	300.30
MJFV-6	16° 43' 50"S	179° 50' 50"E	220	S30° W	-45°	300.90
MJFV-7	16° 43' 37"S	179° 50' 33"E	320	S30° W	-45°	400.10
MJFV-8	16° 43' 47"S	179° 50' 39"E	260	S30° W	-45°	400.30
MJFV-9	16° 43' 49"S	179° 50' 45"E	220	S30° W	-45°	300.90

3-3-2 Method

The drilling method was same as that in the Nakoroutari Area. Water from nearby creeks was pumped up for drilling use. The pipe lengths for the drilling water and the pumped- up heights are as listed below..

Drill hole no.	Length of water supply pipe	Height from streams
MJFV-4	200 m	55 m
MJFV-5	350 m	50 m
MJFV-6	100 m	20 m
MJFV-7	300 m	60 m
MJFV-8	400 m	60 m
MJFV-9	200 m	35 m

3-3-3 Geology, Alteration and Mineralization

(1) MJFV-4

MJFV-4 was drilled to clarify the downward continuation of the gold mineralization at the trench 29 from which a sample returned 12.4g/tAu over the 1.06m interval. Three mineralization zones were intersected including quartz and argillized basalt fragments between 138.15 m and 191.30 m.

The geologic units of the drill hole consist mainly of basalt lavas with intercalation of sandy tuff. The basalt lavas are generally of picritic in mineral composition, while basalt lavas that is blacky and appears more glassy and andesitic than picritic basalt occur near the bottom of the drill hole(Fig. 2-3-12).

① Geology

• 0-9.80 m :	Soil
• 9.80-191.30 m :	Picritic basalt. Basalt dykes occur at 19.35-19.55 m, 32.40-32.50 m, 52.40-56.70 m. Basalt lava ranges from dark green, hard and compact one to reddish, rather soft and amygdaloidal one. The amygdules of the basalt are filled with silica mineral, zeolites and green mineral(partly chlorite). The basalt dykes are distinguished from the lava because it generally shows fine grained texture in addition to existence of the chilled margin. A thin layer of sandy tuff is intercalated at 154.70-156.50 m. It is greenish and shows mosaic texture.

- 191.30-237.80 m : Autobrecciated basalt lava. It is blacky to dark gray and appears to be more andesitic. It is broken in more brittle shapes. Phenocrysts of plagioclase are more prominent than phenocrysts of pyroxene and olivine.
- 237.80-248.80 m : Picritic basalt lava. It shows similar appearance to the picritic lavas in 9.80-191.30 m.
- 248.80-255.60 m : Autobrecciated basalt lava. It shows an appearance similar to the rock at 191.30-237.60 m.
- 255.60-275.10 m : Picritic basalt lava. It shows an appearance similar to the rock at 9.80-191.30 m. A narrow basalt dyke occurs at 275.00-275.10 m.
- 275.10-300.50 m : Glassy basalt lava. It shows dark gray to dark green color and is hard and compact rocks. It appears to be more andesitic. It consists of abundant plagioclase phenocrysts and less amount of medium grained pyroxene phenocrysts

② Mineralization and alteration

Generally, chlorite and mixed-layer mineral occur in and near faults and veins, and smectite outwards within this drill hole. Quartz veins and argillized zones related mineralization occur at the following localities.

- 21.60 m : Quartz veinlets(width about 1 mm).
- 26.80-27.15 m : Argillized zone.
- 41.80 m : Drusy quartz and calcite veinlets (width 1-5 mm).
- 42.80-48.00 m : Weakly argillized zone.
- 52.40-58.80 m : Partly chloritized zone. Within this interval, white clay veinlets (width about 1 mm) occur at 53.50 m, 54.20 m and 55.60 m.
- 60.80-61.50 m : Brecciated zone. It shows reddish due to iron oxides
- 69.00 m : Calcite veinlets.
- 72.80-73.00 m : Calcite veinlets.
- 81.80-82.20 m : Calcite veinlets.
- 113.80 m, 122.80 m : Drusy quartz-calcite veinlets.
- 127.70-129.20 m : Silicified and bleached zone.
- 129.82 m, 130.20 m, 131.20 m, 139.10 m : Drusy quartz and calcite veinlets.

- 138.15-139.20 m : Silicified and clay zone. The drill hole intersected this zone at an angle of 75° and the true width of the zone appears to be about 1.0 m.

Depth (m)	Width(m)	Au(g/t)	Description
138.15-138.25	0.10	<0.008	Gray clay zone
138.25-138.35	0.10	0.231	White clay zone with silicified fragments
138.35-138.50	0.15	0.011	Brown clay zone with weakly altered basalt fragments
138.50-138.65	0.15	0.613	Weakly silicified breccia zone
138.65-139.00	0.35	0.156	Clay zone with pyrite dissemination

- 166.40 m, 170.35 m, 173.40 m, 173.50 m, 174.15 m, 175.30 m, 175.60 m : Quartz veinlets
- 176.45-177.15 m : Clay zone including quartz veinlets with pyrite dissemination.
- 180.95-191.30 m : This zone shows greenish color due to occurrence of mixed-layer mineral. It is weakly silicified with quartz veinlets and disseminated with pyrite. The quartz veinlets of 1 mm to 1 cm width occur at the depths of followings: 182.10 m, 183.60 m, 185.00 m, 186.50 m and 190.10 m. The interval between 190.40 m and 191.30 m is argillized.

Depth (m)	Width (m)	Au (g/t)	Description
190.40-190.60	0.20	0.393	Silicified breccia zone
190.60-190.90	0.30	0.236	Clay zone
190.90-191.20	0.30	0.790	Clay zone
191.20-191.00	0.10	0.195	Silicified breccia zone

- 201.20-202.50 m : Green clay and silicified zone. A quartz veinlet occurs at 202.50 m.
- 213.10-214.10 m : Pale greenish clay zone.
- 222.60-223.60 m : Weakly silicified.
- 231.30-231.90 m : Silicified with pyrite dissemination.
- 232.70 m : A quartz veinlet crosses at an angle of 10° .
- 234.20-234.40 m : Weakly silicified.
- 235.50-235.80 m : Silicified, with pyrite dissemination.
- 236.60-237.80 m : Weakly argillized.

- 237.80-238.60 m : Argillized.
- 242.50-244.90 m : Weakly silicified. A quartz veinlet of 5 mm width occurs at the depth of 244.90 m.
- 250.00-250.60 m : Quartz veinlets.
- 252.10-255.60 m : Weakly silicified.
- 274.00-277.50 m : Weakly silicified. A quartz veinlet occurs at the depth of 274.00 m. (less than 1 mm width).
- 280.00-282.70 m : Weakly silicified. Quartz veinlets occur at the depths of 280.00 m, 280.90 m and 282.70 m.
- 294.70-295.30 m : Weakly silicified. A quartz vein of 12 cm width occurs at the depth of 295.00 m and it returned low gold content of 0.009g/tAu.
- 297.20 m : Quartz veinlets.

(2) MJFV-5

MJFV-5 was drilled to clarify the downward continuation of the gold mineralization at the trench 34 from which a sample returned 16.1g/tAu over the 0.80 m interval. As a result of drilling, five mineralization zones were intersected at 121.45-186.30 m depth, consisting of quartz veins and/or argillized and brecciated basalt, at 138.15-191.30 m depth. The vein at 121.45-123.65 m depth consists of clay and quartz and silicified fragments with pyrite dissemination, including an interval of 0.60 m at 27.6g/tAu.

The geology of the drill hole consists mainly of basalt lava. The basalt lava is generally of picritic in texture, while the basalt lava that appears more glassy and andesitic than picritic basalt occurs near the bottom of the drill hole(Fig. 2-3-13).

① Geology

- 0-4.50 m : Soil
- 4.50-175.30 m : Picritic basalt lava. It shows dark green to purplish green or reddish color. It consists of 1-5 m thick flow units, within which the color changes from reddish to dark green. Generally, it contains amygdules and irregular cavities that are filled with quartz, calcite, zeolite and green minerals. It has an intercalation of tuff breccia at 113.80-116.00 m depth. It is intruded by basalt dykes at 12.50-12.90 m, 90.60-91.60 m, 97.70-98.10 m, 174.60-174.80 m and 175.00-175.30 m depths.

- 175.30-220.00 m : Glassy basalt lava. It appears to be of andesitic texture. It consists of blacky blocks of diameter of less than 10 cm and green glassy matrix over 30% and autobrecciated lava. The basalt is composed of medium grained phenocrysts and glassy groundmass.
- 220.00-227.00 m : Tuff breccia. It is rather hard and consists of green to reddish blocks of less than 10 cm diameter and multi-color matrix .
- 227.00-235.20 m : Hyaloclastite. It appears to be lava, genetically, although it consists of blacky lithic fragments.
- 235.20-300.30 m : Basalt lava. The upper part shows blacky to reddish and dark green. It is hard and compact to weakly brecciated. The phenocrysts comprise mainly of medium to large grained pyroxene.

② Mineralization and alteration

Generally, alteration is weak and smectite is the most predominant clay mineral to the end of the drill hole. Mixed-layer mineral and sericite occur along the veins at the depth of 121.45-186.30 m. Major mineralization and alteration zones are as follows.

- 18.40 m, 19.50 m, 22.00 m, 22.10 m : Quartz veins.
- 20.40-20.60 m : Clay veins.
- 76.40 m : Clay veins (intersected at an angle of 50°). Pyrite dissemination.
- 81.60 m : Iron oxide veinlet.
- 87.80-88.00 m : Weakly argillized.
- 119.40-119.80 m : Silicification zone. Three quartz veinlets are emplaced at 119.55-119.65 m depth.
- 121.45-123.65 m : Quartz vein, silicified breccia - clay zone.

Depth (m)	Width (m)	Au (g/t)	Description
121.45-121.80	0.35	0.291	Pale green clay zone
121.80-122.45	0.45	2.71	Pale green clay zone
122.45-122.75	0.50	13.5	Clay + quartz fragments zone
122.75-123.35	0.60	27.6	Silicified fragments + clay zone
123.35-123.65	0.30	0.545	Quartz-argillized fragments-clay zone

- 125.90 m : Quartz vein of the width 1 cm(intersected at an angle of 30°).
- 127.10 m : Quartz vein of the width 1 cm intersected at an angle of 30°).
- 128.05 m : Quartz vein of the width 1 cm (intersected at an angle of 45°).
- 128.65 m : Quartz vein of the width 5 cm (intersected at an angle of 80°).
- 130.40 m : Quartz vein of the width 5cm (intersected at an angle of 70°).
- 132.20 m : Quartz vein of the true width 2cm.
  (1.27g/tAu over an interval of 20cm).
- 135.20 m : Quartz vein of 10cm width (crossed at an angle of 50°), 0.362g/tAu (assayed width 20cm).
- 136.05-140.00 m : Weak silicified zone. Within this zone, quartz vein of the width 5 cm occur at the depth of 136.05 m with an assay result of 0.771 g/tAu (assayed width 20cm). A clay vein of 5 cm width occurs at the depth of 139.00 m (crossed at an angle of 40°).
- 141.90 m : Quartz vein of 2 cm width(crossed at an angle of 60°).
- 142.80-143.00 m : Three quartz veinlets of 5 mm-1 cm width (irregular direction).
- 145.00-145.40 m : Dark green clay mineral (chlorite + smectite).
- 149.00 m : Quartz veinlet at the width of 1cm (crossed at an angle of 20°).
- 152.00-153.55 m : Quartz breccia-clay zone.

Depth (m)	Width (m)	Au (g/t)	Description
152.40-152.70	0.30	0.244	Clay and silicified breccia zone
152.70-153.00	0.30	3.55	Silicified breccia zone
153.00-153.40	0.40	1.27	Clay and silicified breccia zone

- 155.80 m, 157.00 m and 158.50 m : Quartz vein of width 3 mm-1cm (at an angle of 20-40°).
- 163.30-165.00 m : A quartz vein occurs in rather strongly argillized basalt, from which chlorite and mixed-layer mineral are identified. An interval including 2 cm wide quartz vein assays 11.7 g/tAu.

Depth (m)	Width (m)	Au(g/t)	Description
163.60-164.00	0.40	11.7	Quartz vein (true width 2cm)
164.10-164.40	0.30	1.51	Quartz vein - silicified zone

- 172.40-173.20 m : Quartz and clay vein zone.

Depth (m)	Width (m)	Au (g/t)	Description
172.40-172.70	0.30	0.706	Quartz – clay zone
172.70-173.00	0.30	0.192	Quartz and silicified breccia zone

- 181.10-188.05 m : Pale green clay and silicified zone. Within this interval, two quartz veins of 1cm width occur at the depths of 181.10 m and 181.30 m.

Depth (m)	Width (m)	Au(g/t)	Description
182.00-182.30	0.30	0.498	Quartz vein, pyrite disseminated
185.00-185.20	0.20	5.02	Quartz vein, pyrite disseminated
186.10-186.30	0.20	1.05	Quartz vein, pyrite disseminated

- 197.90-198.00 m : Quartz stockwork.
- 226.20-226.60 m, 227.00 m : Quartz veinlets.
- 271.80 m, 271.90 m, 272.35 m : Quartz stockwork.
- 276.00 m, 276.80 m : Quartz veinlets.
- 285.30-285.50 m : Quartz vein of 6cm width (intersected at an angle of 45°).

(3) MJFV-6

MJFV-6 was drilled to clarify the downward continuation of the gold mineralization at the trenches such as Trench 40 from which several samples returned 2 to 4g/tAu. As a result of drilling, a wide zone from 55 m to 132 m depth with frequent quartz veining was encountered. Within this zone , the interval from 120.10 m to 123.00 m is thought to be extended from the trenches. A clay and pyrite disseminated zone is encountered at depth of this drill hole.

The geology of the drill hole consists mainly of basalt lava and volcaniclastic rocks (Fig. 2-3-14).

①Geology

- 0-5.25 m : Soil.
- 5.25-116.00 m : Picritic basalt lava. It is dark green and pyroxene and olivine phenocrysts are prominent. It shows amygdaloidal texture. The structure of the lava varies from compact-massive to autobrecciated ones.
- 116.00-128.40 m : Basalt dyke. It is dark green, and become pale green where it is altered. It is fine grained. It is tectonically brecciated.
- 128.40-142.10 m : Picritic basalt lava. A basalt dyke intrudes at 132.00-132.10 m depth.
- 142.10-149.50 m : Lapilli tuff - tuff breccia. Pale green to grayish green. It contains fragments of 3cm diameter at maximum, comprising 20% of the total volume. A basalt dyke intrudes at 143.00-143.80 m depth.
- 149.50-155.00 m : Autobrecciated picritic basalt lava.
- 155.00-159.20 m : Lapilli tuff. The beds are estimated to dip 0°-25° since the bedding planes crosses at angles of 20°-45° with the drill hole.
- 159.20-167.90 m : Alternation of basalt and fine tuff.
- 167.90-181.80 m : Tuff breccia, lapilli tuff and fine tuff from the lower to the upper.
- 181.80-182.20 m : Sandy tuff.
- 182.20-236.00 m : Basalt lava. The structure of the rock ranges from autobrecciated to compact one.
- 236.00-243.70 m : Tuff breccia.
- 243.70-244.90 m : Dark green and compact lava.
- 244.90-267.00 m : Tuff breccia-volcanic breccia. A basalt dyke intrudes at the depth of 253.10-254.00 m.
- 267.00-269.40 m : Basalt dyke.
- 269.40-278.20 m : Auto-brecciated basalt lava.

- 278.20-283.20 m : Lapilli tuff and tuff breccia. A large basalt block(?) is encountered at the depth of 282.10-282.70 m.
- 283.20-300.90 m : Basalt lava. Basalt dykes intrude at the depth of 293.60-294.80 m and 300.70-300.90 m.

② Mineralization and alteration

- 11.00-29.60 m : Quartz veinlets occur rather abundantly. Pyrite is weakly disseminated.
- 46.35-91.10 m : Quartz veinlets occur abundantly. Pyrite is partly disseminated. Within this interval 6 samples were assayed only to be resulted in lower than the detection limit(<0.008g/t), and Ag, As, Sb and Hg values are low.
- 99.20-132.10 m : Silicified. Quartz veinlets occur.

Depth (m)	Width(m)	Au(g/t)	Description
120.10-120.30	0.20	0.208	Drusy quartz veinlet, breached
122.10-122.30	0.20	0.198	Clay and silicified fragments
124.40-125.00	0.60	0.150	Clay and silicified fragments
127.40-131.80	1.40	0.016	Quartz veinlets

- 150.20-163.05 m : Quartz veinlets zone. Veinlets occur especially within 160.40-163.05 m.
- 194.20 m, 196.10 m, 207.30 m, 218.90 m, 224.90 m, 225.10 m : Quartz calcite veinlets.
- 225.10-300.70 m : Weakly argillized. Pyrite disseminated. Pyrite occurs as veinlets and densely disseminated surrounding breccia rims abundantly between 270.6-274.6m. Chlorite and mixed-layer mineral occur at the places where the rock shows grayish green and pale green color. Assay results show low gold values.

Depth (m)	Width(m)	Au(g/t)	Description
256.90-259.20	2.30	<0.008	Quartz fragments and clay zone
272.55-273.10	0.55	0.039	Pyrite disseminated and argillized zone
297.00-297.25	0.25	0.069	Pyrite disseminated and argillized zone

(4) MJFV-7

MJFV-7 was drilled in order to clarify the west-northwestward extension of the gold mineralization

(2.20 m wide, 11.3g/t) confirmed in MJFV-5. As a result three argillized-silicified zones were confirmed at interval 226.60 m to 260.20 m depth. The geology of MJFV-7 consists mainly of basalt lava with intercalation of thin lapilli tuff-tuff breccia. Also 20-90 m wide basalt dikes intrude into the lava (Fig. 2-3-15).

① Geology

· 0-6.00 m:	Surface soil.
· 6.00-202.10 m:	Picritic basalt lava. Basalt dikes intrude into the lava at; 23.50-23.90 m, 29.00-29.45 m, 45.00-45.20 m, 55.60-56.00 m, and 143.40-143.80 m : The basalt lava mainly has dark green, hard, and compact lithology. Some parts, however, are red and somewhat soft and porous, with spherulitic structure filled by silica minerals, zeolite, and green minerals (chlorite). The basalt dikes are green with fine-grained texture. A thin tuff layer is intercalated at 78.50-78.55 m. The tuff is sandy, green, and mosaic texture.
· 202.10-207.20 m:	Tuff breccia-lapilli tuff. This rock consists of green to red lapilli-volcanic fragments and dark green sandy matrix. The lithology is partly hyaloclastite. The boundary with the overlying basalt is transitional.
· 207.20-211.00 m:	Autobrecciated basalt lava. This rock is brown to reddish purple, and calcite fills irregular druses. Pyroxene phenocrysts are coarse-grained and have the same lithology as the overlying picritic lava.
· 211.00-236.40 m:	This rock is weakly autobrecciated and has similar lithology to the upper (6.00-202.10 m) basalt lava. The interval, 226.60-228.00 m is a silicified and argillized mineralized zone (details to be mentioned in the following section).
· 236.40-239.25 m:	Coarse-grained tuff. It is brown and sandy-coarse-grained. Bedding is observed and the angle with the drill hole is approximately 40°.
· 239.25 ~ 249.90 m:	The rock is picritic basalt lava and is dark green with compact lithology. It is intruded by basalt dikes at 248.00- 248.05 m and 248.40-249.20 m and their angle with the drill hole is approximately 80°.
· 249.90-253.70 m:	Argillized and silicified zone (details to be mentioned in the following section).
· 253.70-258.80 m:	Tuff-tuff breccia. The rock is tuff to 256.20 m depth and is pale green. It is tuff breccia further down and is green. Tuff breccia consists of green and red blocks and green and sandy matrix. The matrix constitutes over 60 percent of the rock.
· 258.80-260.70 m:	Argillized and silicified zone (details to be mentioned in the following

section).

• 260.70-300.70 m:	Basalt lava. This rock is glassy-finer-grained compared to the lava higher than 258.80 m depth. It is dark gray-dark green, hard, and compact rock. It is, however, generally weakly autobrecciated. It contains small amount of medium-grained pyroxene phenocrysts.
• 300.70-309.10 m:	Lapilli tuff.
• 309.10-329.80 m:	Basalt lava. The lithology is similar to that of 260.70-300.70 m. This, however, is paler color and is pale green to grayish green. It is intruded by a basalt dike at 325.00-325.60 m and it intersects the drill hole at 35°.
• 329.80-354.70 m:	Lapilli tuff.
• 354.70-400.10 m:	Basalt lava. The lithology is similar to that of 260.70-300.70 m. It is intruded by basalt dikes at 359.50-359.70 m, 359.90-360.10 m, 360.40-361.30 m, and 370.90-371.70 m.

② Alteration associated with mineralization

In this hole, chlorite and mixed-layer clay minerals occur near faults and ore veins, and smectite generally occurs at some distance from the faults and veins. Quartz veins and argillized zones that are considered to be associated with mineralization are found at the following depths.

• 226.60-228.00 m:	Silicified-argillized zone. The interval 226.60-226.90 m (0.30 m thick) is noted for the very strong silicification and brecciation. The interval 226.90-227.50 m (0.60 m thick) consists of weakly argillized basaltic gangue. The interval 227.50-227.60 (0.10 m thick) consists of dark gray clay with strong pyrite dissemination. The interval 227.60-227.90 m (0.30 m thick) consists of silicified angular gravel. The interval 227.90-228.00 m (0.10 m thick) consists of dark gray clay with strong pyrite dissemination.

Depth (m)	Width(m)	Au(g/t)	Description
226.60-226.90	0.30	0.160	Silicified breccia zone
226.90-227.50	0.60	0.041	Weakly silicified --argillized zone
227.50-227.60	0.10	2.32	Clay zone with pyrite dissemination
227.60-227.90	0.30	0.591	Silicified breccia zone
227.90-228.00	0.10	0.962	Clay zone with pyrite dissemination

- 249.90-253.70 m: Silicified-argillized zone. This zone is subdivided into argillized basalt at 249.90-251.05 m (1.15 m thick), silicified angular gravel at 251.05-251.20 m (0.15 m thick), gray clay strongly disseminated by pyrite at 251.20-251.50 m (0.30 m thick), argillized basalt with quartz veinlets at 251.50-251.60 m (0.10 m thick) , weakly argillized basalt at 251.60-252.20 m (0.60 m thick), argillized somewhat hard angular basalt gravel and soft clay matrix at 252.20-252.30 m (0.10 m thick), weakly argillized basalt at 252.30-253.20 m (0.09 m thick) and quartz veinlets bearing gray clay strongly disseminated with 253.20-253.70 m (0.50 m thick).

Depth (m)	Width(m)	Au(g/t)	Description
249.90-251.05	1.15	0.162	Argillized zone
251.05-251.20	0.15	3.13	Silicified breccia zone
251.20-251.50	0.30	0.610	Clay
251.50-251.60	0.10	0.842	Clay zone with quartz veinlets
251.60-252.20	0.60	0.122	Weakly argillized zone
252.20-252.30	0.10	0.532	Clay-breccia zone
252.30-253.20	0.90	0.496	Weakly argillized zone
253.20-253.70	0.50	0.612	Clay zone with quartz veinlets

- 259.10-260.20 m: Silicified-argillized zone. The interval 259.10-259.65 m (0.55 m thick) is an argillized zone. The interval 259.65-259.75 m (0.10 m thick) consists of silicified angular gravel. And 259.75-260.20 m (0.45 m thick) is an argillized zone.

Depth (m)	Width(m)	Au(g/t)	Description
259.10-259.65	0.55	0.228	Argillized zone
259.65-259.75	0.10	0.401	Silicified zone
259.75-260.20	0.45	0.221	Argillized zone

Other than the above three zones, silicified zones and quartz veins were encountered at the following depth.

• 303.90-304.20 m:	Swarms of 1 mm-1cm thick drusy quartz veins, on the whole green. Gold content below the limit of detection (0.008g/t).
• 338.40-338.60 m:	Weakly silicified basalt accompanied by quartz veinlets. Gold content is below limit of detection (0.008g/t).

(5) MJFV-8

MJFV-8 was drilled to clarify the downward continuation of the gold mineralization intercepted at the MJFV-5 from which a sample returned 11.3g/tAu over the 2.20 m interval. As a result of drilling, three mineralization zones were intersected: at 116.80-130.30 m depth consisting of a clay-silicified zone, and at depths of 141.45-141.70 m and 142.60-143.00 m consisting of quartz pyrite stockwork, and at 279.90-280.70 m depth of weakly argillized zone with pyrite dissemination. The vein at 125.10-127.70 m depth consists of clay and silicified fragments with pyrite dissemination, including an interval of 0.20 m at 3.13g/tAu.

The geology of the drill hole consists mainly of basalt lava on the upper part and basalt lava and volcaniclastics of same type. Basalt dykes of 15cm to 8 m widths intrude the rocks. (Fig. 2-3-16).

① Geology

• 0-2.40 m :	Soil
• 2.40-143.20 m :	Picritic basalt lava. It shows dark green to purplish green or reddish color. It consists of 1-5 m thick flow units, within which the color changes from reddish to dark green. Generally, it contains amygdules and irregular cavities that are filled with quartz, calcite, zeolite and green minerals. It has an intercalation of brown-colored sandy tuff at 82.90-83.30 m depth. It is intruded by basalt dykes at 75.90-76.55 m, 93.75-98.00 m and 131.00-131.70 m depths.
• 143.20-274.50 m :	It consists mainly of tuff breccia and lapilli tuff with intercalation of fine to coarse tuff. The bedding planes inferred from the alternation of tuff and tuff breccia crosses at 50° -70° locks. The tuff breccia consists of dark green to green angular basalt blocks showing mosaic texture within less amount of matrix. The basalt blocks are composed of medium grained phenocrysts and glassy groundmass. Basalt dykes intrudes at the intervals of 228.40-

231.95 m, 239.50-241.15 m, 243.50-243.50-243.70 m, 271.30-271.45 m and 273.70-274.50 m

- 274.50-289.00 m : Basalt lava. It shows similar facies to the picritic basalt at the 2.40 m-143.20 m.
- 289.00-297.00 m : Basalt dyke. It shows blacky to dark green and is hard and compact. The phenocrysts consist mainly of medium-grained pyroxene.
- 297.00-313.30 m : Basalt lava. It shows similar facies to that at 274.50-289.00 m.
- 313.30-341.80 m : Volcanic breccia to lapilli tuff. It is massive and lacks beddings. It consists of black angular blocks and black to dark green matrix that shows mosaic texture. It contains pyroxene fragments of 1 -3 mm diameter. It shows hyaloclastic texture.
- 341.80-344.00 m : Tuff to tuff breccia. It contains fine facies than in 313.30-341.80 m. Grading is observed with an angle of 45°-80° from the drilling direction. Tuff breccia shows blacky to gray color and consists of angular blocks of 15cm diameter at maximum and sandy matrix. The volume ratio of blocks and matrix increases to the lower part. It contains rather fine-grained pyroxene phenocrysts, and is sandy. It may be of hyaloclastic origin.
- 384.15-388.80 m : Basalt lava. It shows the facies similar to that of 341.80-344.00 m depth.
- 3888.80-391.45 m : Tuff breccia. It shows the facies similar to that of 344.00-384.15 m depth.
- 391.45-395.80 m : Basalt lava. It shows the facies similar to that of 341.80-344.00 m depth. Basalt dykes intrude at the depths of 391.65-391.90 m, 393.90-394.40 m and 394.70-394.90 m.
- 391.45-400.30 m : Tuff breccia. It contains more matrix compared to that of 388.80-391.65 m depth. Basalt dykes intrude at the depths of 400.20-400.29 m.

② Mineralization and alteration

Generally, alteration is weak and smectite is the most predominant clay mineral to the end of the drill hole. Mixed-layer mineral and sericite occur along the veins at the depth of 116.80-130.30 m. Major mineralization and alteration zones are as follows.

- 116.80-117.25 m : Clay zone. It is partly silicified and disseminated with pyrite
- 117.25-118.10 m : Weakly silicified basalt.
- 118.10-118.60 m : Clay zone with pyrite dissemination.

- 118.60-122.10 m : Weakly argillized basalt. Two quartz veinlets of 5 mm and 2cm widths occur.
- 122.10-123.80 m : Argillized basalt and clay. Three quartz veinlets occur.
- 123.80-124.30 m : Weakly argillized basalt.
- 124.30-124.70 m : Clay zone. A quartz vein of 5 mm width occurs along the drilling direction.
- 124.70-125.10 m : Weakly argillized basalt.
- 125.10-127.70 m : Soft grayish green-whitish clay with pyrite dissemination. The interval at 125.40-125.60 m depth is strongly silicified. A quartz vein of 5 mm width occurs at an angle of 80° at 127.40 m depth.
- 127.70-128.15 m : Weakly argillized basalt. It is pale green-grayish.
- 128.15-129.25 m : Silicified and argillized zone. The angle of the boundary with the upper argillized zone is 60° .
- 129.25-129.45 m : Weakly argillized basalt.
- 129.45-130.30 m : Clay. A quartz vein of 1cm width occurs.

Depth (m)	Width(m)	Au(g/t)	Description
116.80-117.25	0.45	0.228	Clay and partly silicified
118.10-118.60	0.50	0.551	Argillized(pyrite disseminated)
122.10-122.50	0.40	0.918	Argillized(quartz veinlets)
122.50-123.50	1.00	0.654	Clay(Soft, quartz vein)
123.50-123.80	0.30	0.203	Argillized basalt(gangue rock)
124.30-124.70	0.40	0.319	Argillized(quartz veinlets)
125.10-125.40	0.30	0.478	Argillized
125.40-125.60	0.20	3.13	Silicified
125.60-126.60	1.00	0.416	Clay
126.60-127.70	1.10	0.406	Clay
128.15-129.25	1.10	1.88	Silicified and argillized

- 141.45-141.70 m : Quartz-pyrite stockwork in pale yellow altered rock. (crossed at an angle of 30°).
- 142.60-143.00 m : Quartz-pyrite stockwork in pale yellow altered rock. (crossed at an angle of 45°-30°).

Depth (m)	Width(m)	Au (g/t)	Description
141.45-141.70	0.30	0.471	Quartz-pyrite stockwork
142.60-143.00	0.30	0.473	Quartz-pyrite stockwork

· 241.20-241.24 m :	A drusy quartz vein of 4cm width. It assays less than the detection limit of gold.
· 279.90-280.70 m :	A weakly-moderately silicified zone with pyrite dissemination. It assays less than the detection limit of gold.

(3) MJFV-9

MJFV-9 was drilled to clarify the downward continuation of the gold mineralization at the trenches such as Trench 12. As a result of drilling, a wide zone from 87 m to 95 m interval with frequent quartz veining was encountered. It appears that this zone continues to the surface showings. Quartz veins and argillized zones with pyrite dissemination were encountered at depths. (Fig. 2-3-17).

① Geology

· 0-1.00 m :	Soil.
· 1.00-95.35 m :	Picritic basalt lava. It is dark green and pyroxene and olivine phenocrysts are prominent. It shows amygdaloidal texture. The structure of the lava varies from compact-massive to auto-brecciated ones. Basalt dykes occur at the depths of 19.30-19.80 m, 46.60-49.10 m and 55.75-56.15 m
· 95.35-127.10 m :	Lapilli tuff of mosaic texture. At an interval of 124.25-127.10 m it comprises of alternations of fine tuffs and tuff breccias and partly shows mudflow deposits. It is green to pale and massive. It contains basalt blocks of less than 10cm diameter and pyroxene crystals.
· 127.10-131.70 m :	Tuff breccia. It appears to be a marginal facies of basalt lava. The boundary between this unit and the upper basalt lava is vague.
· 131.70-182.80 m :	Basalt lava. It shows grayish green and is fine-grained and compact rock.
· 182.70-200.85 m :	Lapilli tuff. The upper part is massive and shows mosaic texture. The lower part shows vague laminae. A basalt dyke intrudes at 190.75-192.60 m depth.

- 200.85-222.20 m : Basalt lava. It shows dark green and contains amygdules of about 1cm diameter filled with green minerals (smectite?)

- 222.20-272.30 m : Tuff-tuff breccia. The interval between 222.20 and 236.60 m comprises of alternations of fine tuffs and tuff breccias. The bedding planes crosses at angles of 40° with the drill hole. A dyke intrudes at the depth between 245.60 m and 250.60 m.
- 272.30-278.00 m : Basalt lava. It is massive and compact.
- 278.00-283.00 m : Tuff breccia. The facies is similar to the tuff breccia at about 270 m depth.
- 283.00-290.00 m : Basalt lava. This rock ranges from massive to weakly brecciated texture. A basalt dyke intrudes into the depth of 288.80 m to 289.50 m.
- 290.00-300.90 m : Lapilli tuff and tuff breccia. It comprises mosaic of green, red and black lithic fragments
- 283.20-300.90 m : Basalt lava. Basalt dykes intrude at the depths of 293.60-294.80 m and 300.70-300.90 m.

② Mineralization and alteration

The alteration pattern shows a clear zoning of clay minerals from smectite near the surface and mixed-layered mineral and chlorite at depth. Chlorite, however, occurs widely at depth different from the MJFV-7 and MJFV-8.

- 87.20-87.30 m : A quartz veinlet of 1cm width occurs in the argillized zone.
- 87.30-88.10 m : Weakly argillized basalt and soft clay occurs along fractures.
- 88.10-89.70 m : Argillized zone. Silicified breccia occurs at the depth between 88.45 m and 88.50 m. Soft clay occurs within weakly altered and brecciated basalt.
- 89.70-89.90 m : Basalt.
- 89.90-90.25 m : Weakly silicified zone.
- 90.25-90.70 m : Basalt.
- 90.70-93.05 m : Argillized zone. It includes the following intervals: silicified breccia zone at 91.35-91.55 m, quartz vein of 5 mm width (at the angle 15°) at 91.70-91.95 m, quartz fragments containing zone at 93.00-93.05 m, quartz breccia zone at 93.70-93.75 m, quartz stockwork at 93.75-94.05 m, quartz vein accompanying angular basalt fragments at 94.05-94.10 m, quartz-calcite stockwork at 94.10-94.75 m, unaltered basalt at 94.75-95.15 m

・95.15-95.35 m : Silicified zone with 5 mm width quartz

Depth (m)	Width (m)	Au(g/t)	Description
87.20-87.30	0.10	1.01	Quartz vein・Strongly silicified
88.10-88.45	0.35	0.562	Argillized
88.45-88.50	0.05	0.516	Brecciated zone with silicified fragments
88.50-88.70	0.20	0.262	Argillized zone
90.70-91.35	0.65	0.436	Argillized zone
91.35-91.55	0.20	0.291	Breccia zone with silicified fragments
91.55-91.70	0.15	0.020	Argillized zone
91.70-91.95	0.25	0.051	Quartz veinlets
91.95-93.00	1.05	0.101	Argillized zone
93.00-93.05	0.05	0.372	Breccia zone with silicified fragments
93.05-93.70	0.65	0.211	Argillized zone
93.70-93.75	0.05	0.792	Breccia zone with quartz fragments
93.75-94.05	0.30	2.33	Quartz stockwork
94.05-94.10	0.05	0.171	Breccia-quartz vein
94.10-94.75	0.65	0.008	Calcite-quartz veinlets
95.15-95.25	0.10	0.401	Silicified zone

Quartz veinlets occur at the depth of 240-290 m. The veinlets assay mostly lower than detection limit in gold. A quartz vein at the depth of 289.90-290.10 m assays low in gold.

Depth (m)	Width (m)	Au(g/t)	Description
243.65-243.70	0.05	<0.008	Clay-Quartz veinlets
245.35-245.50	0.15	<0.008	Drusy quartz veinlets
246.70-246.85	0.15	<0.008	Quartz veinlets
248.60-249.00	0.40	<0.008	Clay
284.10-284.50	0.40	<0.008	Silicified-argillized zone
289.90-290.10	0.20	0.101	Clay with drusy quartz

3-3-4 Summary of Drilling Results and Considerations

(1) Summary of drilling results

a. MJFV-4

The main intersects by MJFV-4 are the clay and silicified veins at 138.15 m(width 0.85 m), 180.95 m(width 1.65 m) and 190.40 m(width 0.90 m). The intersected angles of the veins are 75°, 40° and 60° in harmony with the assumption that the veins extend from the surface showings: trenches T29 and T28. All the assay results of the veins show that gold values are less than 1 g/tAu, compared to the higher values on the surface. The intersects are about 100 m below the surface.

b. MJFV-5

MJFV-5 intersected 6 zones that assay more than 1 g/tAu between 21.45 m and 186.30 m. Especially, a 2.20 m wide zone with 11.3 g/tAu was confirmed at the depth of 121.45-123.65 m. Within this mineralized zone, a sample over a width of 0.60 m from 122.75 m to 123.35 m depth assays 27.6 g/tAu. This zone may extend to the outcrop (trench T34), and the dip of the vein is estimated to be about 50° on the assumption that it strikes N75° W. It is highly possible that this vein is continuous to that encountered in MJFV-4 at 190.40 m depth (an average of 4 samples over 0.90 m width is 0.451 g/tAu).

c. MJFV-6

MJFV-6 intersected many quartz veinlets. MJFV-6 is about 550 m distant from MJFV-5. Although the correlation between the ores at these two drill holes is difficult, they lie within a WNW-ESE trending mineralized zone that is inferred from the surface data. The veins confirmed in MJFV-6, aside from the above, are; many quartz veinlets in the shallow part (55-96 m), and pyrite dissemination-argillization zone in the deeper part (near 225-300 m). Although these are low grade to barren, they are very interesting.

d. MJFV-7

The major mineralization confirmed in this hole occurs in the argillized-silicified zones at depths of; 226.60 m (1.40 m thick), 249.90 m (3.80 m thick), and 259.10 m (1.10 m thick). The angle of these zones and the drill hole are; 60°, 60°-80°, and 60° respectively. It is seen from the characteristics of the silicification and argillization that the mineralization at 226.60 m (1.40 m thick) is believed to be continuous to those at 138.50 m depth of MJFV-4 and 121.45 m of MJFV-5. The attitude in this case would be approximately NW 70° strike and 75°N dip. It is also inferred that the two zones at 249.90 m (3.80 m thick) and 259.90 m depths (1.10 m thick) are correlated to those at 181.80 m and 190.90 m depths of MJFV-4, and that near 152.40-172.60 m depth of MJFV-5. The attitude of the zones in this case is approximately NW 75° strike and 75° dip.

There are only two samples from sections with grade exceeding 1gt/t Au in MJFV-7 and thus the grade of mineralization in this hole is lower than that of MJFV-5 samples.

e. MJFV-8

The major mineralization confirmed in this hole occurs in the argillized-silicified zone at 116.80 m to

130.30 m depth and this is inferred to be continuous to those encountered at MJFV-4 to MJFV-7. Only two samples from this hole have gold content exceeding 1g/t and the grade is lower than that of MJFV-5, but comparable thickness of gold showing was confirmed. Particularly the 2.6 m between 125.10 m and 127.70 m has average grade of 0.63g/tAu and 1.10 m from 128.15 m depth contains 1.88g/tAu. Although this is not high for general underground gold mining, this is considered to be sufficiently high grade at this stage of exploration to warrant further investigation of this mineralization.

Previous trench (T-35) on the surface shows low gold grade of 0.047g/t (0.20 m wide) and clear silicification or argillization were not observed. The mineralization in the argillized-silicified zone at 116.80-130.30 m depth with N70° W strike and N75° dip is possibly continuous to the vicinity of this trench. There is also the possibility that this ore vein continues to the argillized-silicified zone at 87.20-95.35 m depth of MJFV-9.

f. MJFV-9

In this hole, many quartz veinlets were encountered in relatively shallow parts. This zone is inferred to be continuous to the argillized-silicified zone at 116.80-130.30 m depth of MJFV-8 and to the quartz veinlet zone at 120.10-128.60 m depth of MJFV-6. This is harmonious with the attitude of this zone mentioned above, namely N70°W strike and 75°N dip. The mineral showing of a trench (T-41) and the quartz veinlet zone of MJFV-6 lie occur along an approximately 80°N line, and correspond to the mineralization direction of WNW-ESE inferred from surface geological survey. Thus it is deemed appropriate. Although clear mineral showings were not observed at the trench (T-12) on the MJFV-9 section, it is believed to correspond to the locality of the exposure.

(2) Fissure system and mineralization

Fissure system and alteration both believed to be related to mineralization were encountered in all three holes drilled this year. The most promising zone is the quartz-silicified angular fragments-clay zone, although the maximum grade is 2-3g/tAu in the three holes MJFV-7, -8, and -9, the zone is 700 m long extending from MJFV-4 to-6. During the work in 1995 and 1996, it was only noted that the attitude of this zone is similar to that of the mineral showing zone on the surface, but during this year the continuity of the zone was confirmed at least for 700 m long. This gold mineralization has the following characteristics.

a. The characteristics of mineralization

The mineralization confirmed by the work of the second and the third (present) year is controlled by the fissure system in the host basalt lava and basaltic volcaniclastic rocks, and has the characteristics of low sulfidation hydrothermal system.

Alteration associated with mineralization is limited to immediate vicinity of the ore veins in the western part (MJFV-4, -7, -5). The parts adjacent to the veins consist mainly of mixed-layer minerals and the strongest mineralized veins have chlorite-sericite zone. Smectite occurs at a distance from the veins. In the eastern part (MJFV-6 and -9), on the other hand, chlorite is formed in the deeper parts and strong pyrite dissemination is observed in this altered zone.

The fluid inclusion data of MJFV-5 show high temperature zone of 220° -240℃ near the high Au zone, while those of MJFV-4 and -6 show somewhat lower figure of 180° -210℃ and 130° - 230℃ (Fig. 2-3-30). This indicates that the center of gold mineralizing fluid was near MJFV-5.

The identified sulfide minerals are; aside from pyrite, chalcopyrite, sphalerite, and galena. Particularly in MJFV-5, sphalerite and galena are somewhat richer in high gold zone. Also electrum is found in MJFV-6. Also argentite is found in one sample.

The gangue minerals are; quartz, potash feldspar (adularia), calcite, and clay minerals (mixed layer minerals and sericite). Kaolin minerals and alunite have not been identified.

b. Geologic structure and mineralization

It is shown by the surface geological survey carried out during this project that the geologic structure of the area in the vicinity of the Dakuniba prospect is, on the whole, relatively simple. Basalt lava and basaltic volcaniclastic rocks strike in the NW direction and gently dip in the SW direction.

The host rock of the mineralization is mainly basaltic rock. The lithology of the basalt is relatively simple; it consists mainly of non-clastic lava associated with coarse-grained volcaniclastic rocks. These rocks are not bedded and thus their structure is not clear. There are, however, small amount of fine-grained volcaniclastic rocks intercalated in the lava and coarse-grained volcaniclastic material. Many of these beddings and the drill hole cross at about 45°, and from the attitude on the surface, it is inferred that the bed is close to horizontal.

From the above, the geology between MJFV-4 and MJFV-9, namely the west-northwestern and the east-southeastern parts, is correlated as follows. Thick picritic basalt lava is distributed at elevation higher than 150 m, several meters thick red coarse-grained lava and dark green hard compact lava either on the surface or in shallow subsurface zones. The bottom of the lava slightly rises in the west and is around 200 m above sea level. Alternates and these pairs of lava form the flow units. Also these do not contain pillow lava and thus it is believed that the lava flows were formed either on the surface or in shallow subsurface zones. The bottom of these lava rises slightly to the west and is around 200 m above sea level. At zones shallower than 150-200 m elevation, glassy basalt lava-hyaloclastite is predominant in the west (MJFV-7 to MJFV-4), while picritic coarse-grained volcaniclastic rocks occur in the central (MJFV-8) to the eastern (MJFV-9 to MJFV-6) parts. It is seen that the glassy basal lava drops eastward. Thus it is inferred that the western part rose relative to the eastern part after the deposition of the hyaloclastite.

The fact that the geology shows evidences of shallower mineralization in the east is interpreted as follows. The major mineralization occurred before the differential vertical movement between the east and western parts and that the differential movement continued after the mineralization. The faults which caused the differential movement and the faults related to the mineralization are not evident on the surface. However, the topography from the MJFV-4, -7, -5 drilling sites to the Nagagani Creek is very steep suggesting the existence of a fault. Also it is inferred that there are two WNW-trending faults extending parallel to the elongation of the Dakuniba Prospect. Only weak gold mineralization is found at the inferred location of the faults, but the possibility of these faults' role in the circulation of hydrothermal fluids is considered warrants further careful consideration.

c. Mineral potential in the vicinity of MJFV-5

The continuity of the gold mineralization from MJFV-4 to MJFV-6 has become clear by the drilling carried out during the present third year of this project. Gold grade exceeding 10g/tAu could not be obtained from drill holes other than MJFV-5. Therefore, the bonanza is concluded to be either fragmented or of small scale. However, if the fluid inclusion data is interpreted as; highest temperature at MJFV-5 and low at MJFV-4 and -6, then it is anticipated that the mineralizing fluids were of higher temperature in the deeper zones of MJFV-4 and MJFV-5. This would mean that there is a fairly good possibility that Au precipitation could have occurred at the deeper parts in the vicinity of MJFV-4 and MJFV-5. There is high possibility that discontinuous bonanza bodies occur in the mineralized zone which trends in the WNW-ESE direction. In MJFV-9, it is observed that there are not only the veins continuous to the surface trench but that there are many quartz veinlets within the pyrite disseminated silicified and argillized zone in the shallow (around 87-96 m depth) parts. It is of interest to note that these are all of low Au to barren grade.

As reported above, all six holes drilled during the second and third year confirmed the existence of gold mineralization. Of the above, MJFV-5 showed promising mineralization, but other holes showed mineralization lower than 10g/tAu and did not show promising results. In the Nagagani Prospect, however, gold mineralization was observed to occur widely, and it is concluded that mineral potential of the vicinity of Nagagani and other parts of the present study area have sufficient potential to warrant further detailed study.

Chapter 4 Waimotu Area

4-1 Geological Survey

4-1-1 General Geology

Host rocks to the ore deposits and mineralization in this area are andesite and basalt lavas and volcaniclastic rocks of the same composition.

The mineralized zones around the three prospects are limited to areas previously worked. Beyond these areas, alteration and mineralization are weak and there is no significant geochemical anomaly.

On the other hand, the altered volcaniclastic rocks that are distributed widely to the north of the area are characterized by disseminated pyrite and the presence of smectite.

The eastern part of the fault that runs from the north through the center of the survey area to the south is underlain by basalt and andesite lavas which are not altered, except at the Nuku Prospect. On the other hand, the western part of the fault is underlain by weak but extensive alteration where basalt shows green in color.

Samples of chalcedony and quartz vein from the outcrop of the Main and East Lodes of Waimotu Lodes returned 24 g/tAu over 1 m. At Bill's Hill a silicified and argillic (kaolin) zone are developed that is cut by quartz stockwork that strikes N-S and dips steeply. The Au values are less than 1 g/tAu. At Nuku, a chalcedony and quartz stockwork zone has been confirmed about 8 m in width. This zone strikes N-S and is assumed to dip westward. The maximum assay results grade 4.3 g/tAu.

4-1-2 Stratigraphy

The area is underlain by the Koroutari Andesites and Korotini Breccias of the Natewa Volcanic Group. The Koroutari Andesites consist of basaltic to andesitic lavas. The Korotini Breccias consist of tuff breccia, lapilli tuff and tuff. The two formations are divided into four units. The basalt lavas are mainly distributed in the central and western part of the area. They are generally compact, dark green in color and have undergone regional alteration. Basalt-andesite lavas are distributed to the north of the Nuku Prospect, and separated only by unaltered andesite that is dark in color, although it has undergone alteration near the Nuku Prospect. Andesite lavas are distributed in the southwestern part and they are compact, hard and dark green in color.

Volcaniclastic rocks are intercalated with the previously mentioned three lava units. The unit in the north is composed mainly of tuff breccia that grades into lapilli tuff and tuff. The unit is generally not bedded and is green to pale green in color. Lithic fragments are andesitic. Andesitic lithic fragments are composed of phenocrysts of pyroxene and plagioclase in a groundmass of plagioclase, pyroxene and glass. The tuff breccia unit in the northern part contains presumably essential quartz grains, that may indicate dacitic volcaniclastic rocks are intercalated.

Basalt is porphyritic and composed of phenocrysts of olivine, orthopyroxene in a plagioclase and groundmass of clinopyroxene, plagioclase and glass. Olivine is replaced by smectite, and plagioclase by carbonates.

Basalt-andesite lavas unit is porphyritic and composed of phenocrysts of olivine, clinopyroxene, orthopyroxene and plagioclase, in a groundmass of clinopyroxene and plagioclase and glass. The olivine phenocrysts have been decomposed and replaced by smectite.

Andesite is porphyritic and composed of phenocrysts of clinopyroxene and plagioclase, in a groundmass of orthopyroxene and plagioclase and glass. The clinopyroxene phenocrysts are replaced by chlorite and glass are partly altered to carbonates.

The total thickness of the Koroutari Andesites and Korotini Breccias is estimated to be more than 1800 m.

4-1-3 Intrusive Rocks

In this area intrusive rocks of basalt, andesite, quartz diorite porphyry and gabbro crop out. The basaltic intrusive rocks occur at many locations. In the northern part of the area, dykes dominantly trend in a N-S~NNE-SSW direction, while in the central part a N-S~NW-SE, and in the southern part, a N-S and NE-SW direction is dominant. The basaltic dykes are composed of phenocrysts of plagioclase in a groundmass of olivine, clinopyroxene, plagioclase and glass.

The trend of the outcropping andesite dyke is N-S in the central part of the area. It is composed of phenocrysts of plagioclase and a groundmass of plagioclase, K-feldspar and glass. Glass is altered into smectite.

The quartz diorite porphyry crops out in narrow areas but float is more widely distributed. It is composed of phenocrysts of clinopyroxene and orthopyroxene and plagioclase, in a groundmass comprising the same minerals and glass. Glass has altered to smectite.

Gabbro crops out in the southern part of the area. This rock is porphyritic with a doleritic texture composed of phenocrysts of olivine, clinopyroxene, orthopyroxene and plagioclase.

4-1-4 Geological Structure

The geological structure is different in the northern part and southern part of the area. The northern part is characterized by small scale NE-SW trending folds, while in the south folds are characterized by homoclinal structures a N-S strike and E-dip.

4-1-5 Mineralization and Alteration

The mineralized zones around the three prospects are limited to areas coinciding with the previous workings. Beyond these, alteration and mineralization are weak and there is no significant geochemical anomaly.

On the other hand, the volcaniclastic rocks that are distributed widely to the north of the area are characterized by disseminated pyrite and presence of smectite.

The eastern part of the fault that runs from the north through the center of the survey area to the south is underlain by basalt and andesite lavas which are not altered, except at the Nuku Prospect. On the other hand, the western part of the fault is underlain by weak but extensive alteration where the basalt is green in color.

The Main Lode of the Waimotu Lodes can be traced over 70 m with a width of 0.8 m-1.2 m, the best assay grading 24 g/tAu over 1 m of chalcedony and quartz vein. The East Lode crops out at one trench and returned a grade of 42.5 g/tAu over 0.8 m. The West Lode does not crop out and the sample taken in front of a collapsed adit returned 0.92 g/tAu.

At Bill's Hill, a silicified and argillic (kaolin) zone in lapilli tuff and tuff breccia has developed on the eastern slope . The zone is cut by quartz stockwork that strikes N-S and dips steeply. The Au values are less than 1 g/tAu.

At Nuku, a chalcedony and quartz stockwork zone about 8 m width has been confirmed (Fig.2-4-6). The zone strikes N-S and is assumed to dip westward. The maximum grade returned 4.3 g/tAu.

4-2 Geochemical Survey

4-2-1 Samples and Basic Statistics

(1) Whole Waimotu Area

A total of 77 samples were taken for chemical analysis. A statistical analysis has been carried out including all samples. Threshold values have been calculated for the whole area (Fig. 2-A-7~9).

Au: 0.01 g/t (detection limit) and 2.2 g/t (average + σ) are selected for the threshold values.

Ag: 0.4 g/t (detection limit) and 2.3 g/t (average + 2 × σ) are selected for the threshold values.

As: 19 ppm (average) and 97 ppm (average + σ) are selected for threshold values.

Sb: 0.66 ppm (average) and 1.4 ppm (average + σ) are selected for the threshold values.

Hg: 0.045 ppm (average + σ) and 0.14 ppm (average+2 × σ) are selected for threshold values.

(2) Waimotu Lodes

Au: The highest value of 42.5 g/t was from the West Lode, while a sample 1 m south returned a grade of

2.4 g/t. The Main Lode graded 7.2 g/t for an average of 4 samples over 70 m. A sample from the West Lode is 0.92g/t.

Ag: Silver values are not high compared to the Au values, resulting in the ratios of Ag and Au are mostly less than 1.

Hg, As and Sb are anomalous and absolute values appears low compared to other epithermal deposits. The Waimotu Lodes consist of quartz and adularia veins and is not accompanied by significant amount of sulfides. Minor amounts of goethite has replaced some sulfides.

(3) Bill's Hill Prospect

The highest grade from the quartz veins returned 0.21 g/tAu. Ag values are low. Weak Hg, Sb and As anomalies over the hill. In general, samples from the quartz veinlets do not contain sulfide while small amount of goethite occurs. A float sample, however, contains trace amount of chalcopyrite. Core from previous drill holes exhibits intense pyrite dissemination in the silicified zone.

(4) Nuku Prospect

The average gold value of line samples within 150 m along strike is 1.3 g/t over 7 m, with the highest value being 4.3g/t. Ag is of the same order of magnitude as gold (315 g/t). As and Hg are anomalous with the highest values being 2.4 ppm and 0.092 ppm, respectively. One sample consisted of mainly quartz and opal with minor amounts of pyrite. The other specimen contains acanthite and Ag is as low as 0.5 g/t.

Element(unit)	Au(ppm)	Ag(ppm)	As(ppm)	Sb(ppm)	Hg(ppm)
Detection Limit	0.01	0.4	1.0	0.5	0.005
Average	0.16	0.4	19	0.66	0.014
Minimum	<0.008	<0.4	<1.0	<0.5	<0.005
Maximum	42.5	7	460	2.4	0.26
Average+σ	2.2	0.93	97	1.4	0.045
Average+2 × σ	30.4	2.3	509	2.8	0.14

4-2-2 Correlation

Over the whole area, Au exhibits a normal correlation with Ag, while As, Sb and Hg do not show any clear correlation. The samples from Bill's Hill and the Waimotu Lodes exhibits a strong correlation between Au and Ag, while samples from the Nuku Prospect exhibits weak correlation. Au exhibits a weak normal correlation with Hg at Bill's Hill, while the correlation is not clear at the Waimotu Lodes and the

Nuku Prospect.

The correlation between As and Sb is strong over the whole area are shown below.

	Ag	As	Sb	Hg
Au	0.70	0.52	0.60	0.28
Ag		0.22	0.30	0.12
As			0.91	0.34
Sb				0.35

Correlation coefficients between Au and other element for each prospect are shown below. The figure in the parenthesis is the numbers of samples.

Prospect	Ag	As	Sb	Hg
Bill's Hill(11)	0.92	-0.08	0.31	0.58
Waimotu Lode(12)	0.97	-0.26	-0.27	-0.21
Nuku(26)	0.46	-0.02	0.20	-0.11

4-3 Considerations

(1) Waimotu Lodes

The Main Lode was drifted by two adits that are separated by 15 m. The length of the upper and the lower adits are about 50 m and 60 m, respectively. Two of the three drill holes that aimed about 50 m below the lower adit did not intercept the main lode because the lengths were too short. Three of the seven holes intercepted the East Lode with one intercept grading 6.9 g/tAu over 1 m and the other two returning grades below 1.5 g/tAu. Core recoveries for these holes were poor.

At the Waimotu Lodes, the previous exploration to test for down dip extension did not test was not successful.

(2) Bill's Hill

Primary sulfides in outcrop at Bill's Hill Prospect has oxidized to form iron oxide. Previous drill holes are have shown that oxidation extends to a depth of 15~20 m below which quartz stockwork, veinlets, pyrite dissemination and silicification have developed.

Existing data shows the surface of this area is characterized by a silicified cap and a chalcedony and quartz stockwork zone with secondary enrichment of gold(the chalcedony quartz stockwork grades 0.17 g/t~0.77 g/t over the 5.6 m~21.8 m interval). Past exploration was conducted aiming at discovering bulk mineable low grade deposits, however the identified mineralized zone turned out to be too small. One hole (BH 87-8) drilled to a depth of approximately 200 m intercepting more than 5 quartz-chalcedony veinlets similar to the Waimotu veins being scarce in sulfides: silicification and pyrite dissemination which replaced porous tuff breccia

In view of the above, at Bill's Hill two modes of mineralization a, and quartz-chalcedony veining with minor amounts of sulfide occur.

(3) Nuku Prospect

It was revealed that the mineralization zone at the Nuku Prospect dips toward the west, however it appears to dip eastward on the surface. It may be important to reveal the reason for this difference, for example by displacement of the zone by a low angle fault or a sudden change in the direction of the dip.

The assay results show that the highest values are 4.3 g/tAu over the stockwork zone of a width of 7 m.

The mineral potential for the area surrounding the Nuku Prospect seems to be low because the north and south extension of the stockwork zone cannot be traced. Only a weakly altered zone without an Au anomaly continues to the north, while the area to the south is underlain by unaltered basalt lava and alluvium. The sudden disruption of the stockwork zone to the south may imply that a fault has dislocated the zone or that the unaltered basalt lava is younger than mineralization because basalt lavas in the area have been undergone alteration widely and the basalt at the south of the Nuku prospect is unaltered.

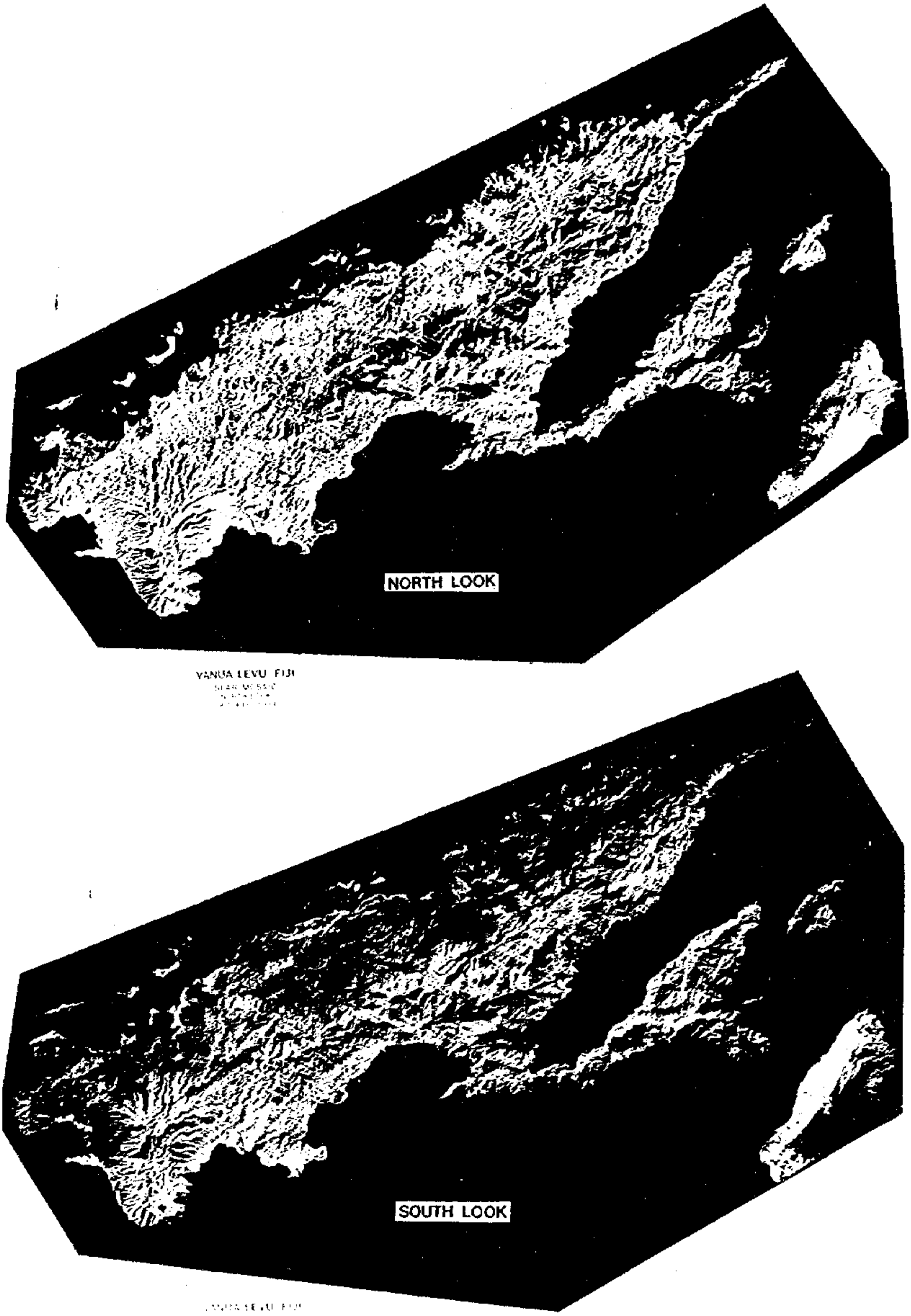


Fig. 2-1-1 SLAR Imagery Mosaic of Vanua Levu

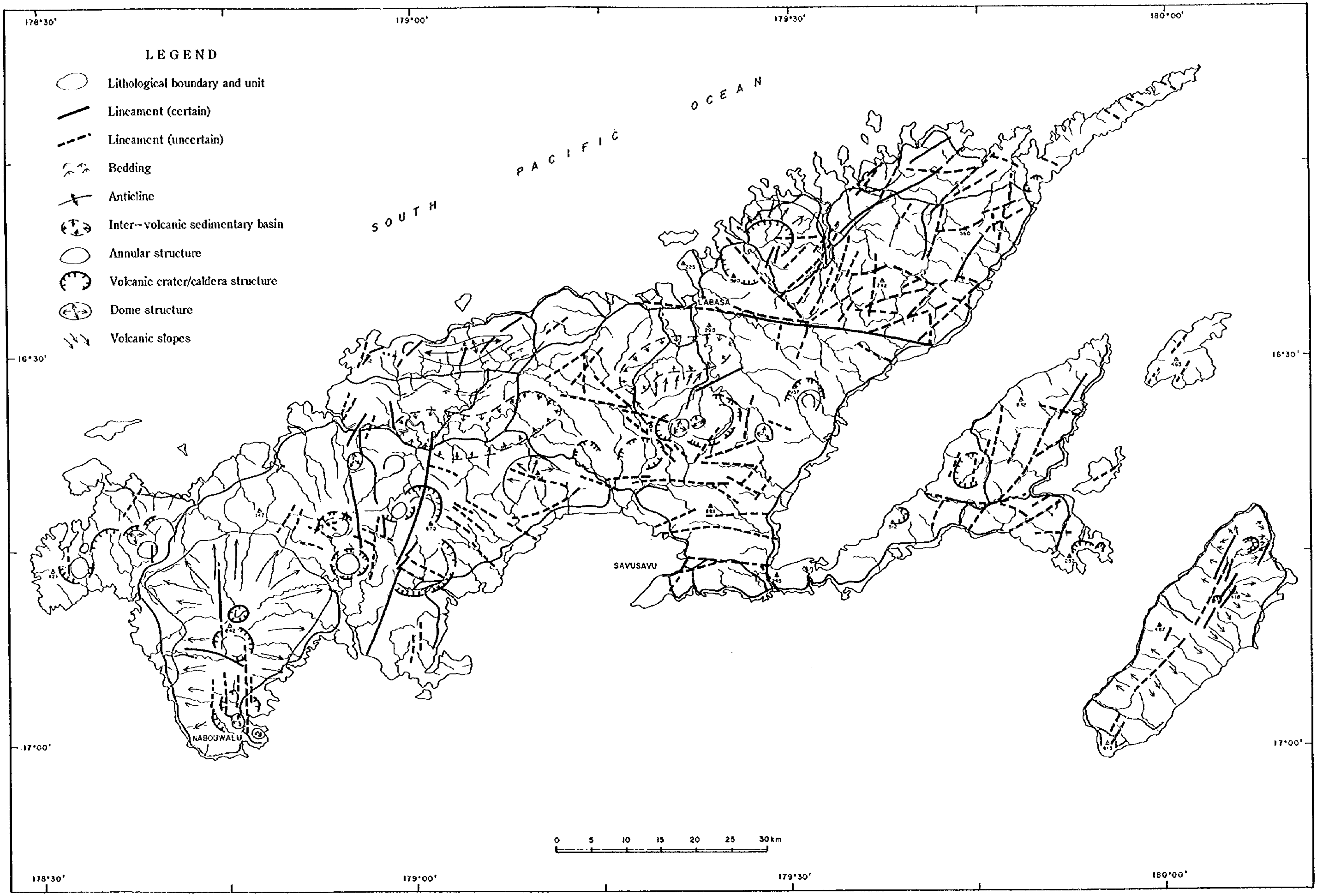


Fig. 2-1-2 Photogeological Interpretation Map Using SLAR Imagery of Vanua Levu

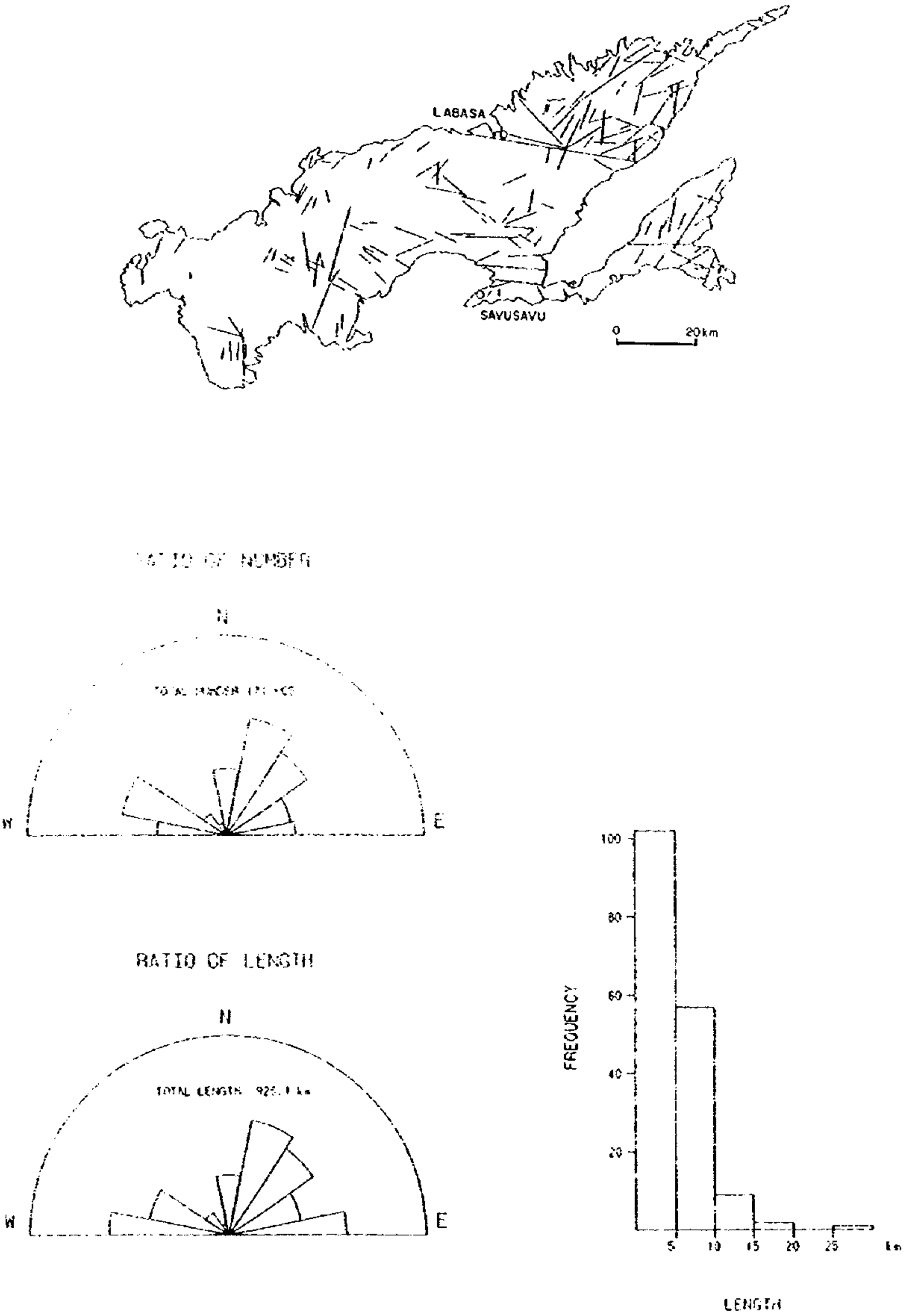


Fig. 2-1-3 Rose Diagrams of Number and Length, and Histogram of Length of Lineaments Interpreted from SLAR Imagery of Vanua Levu

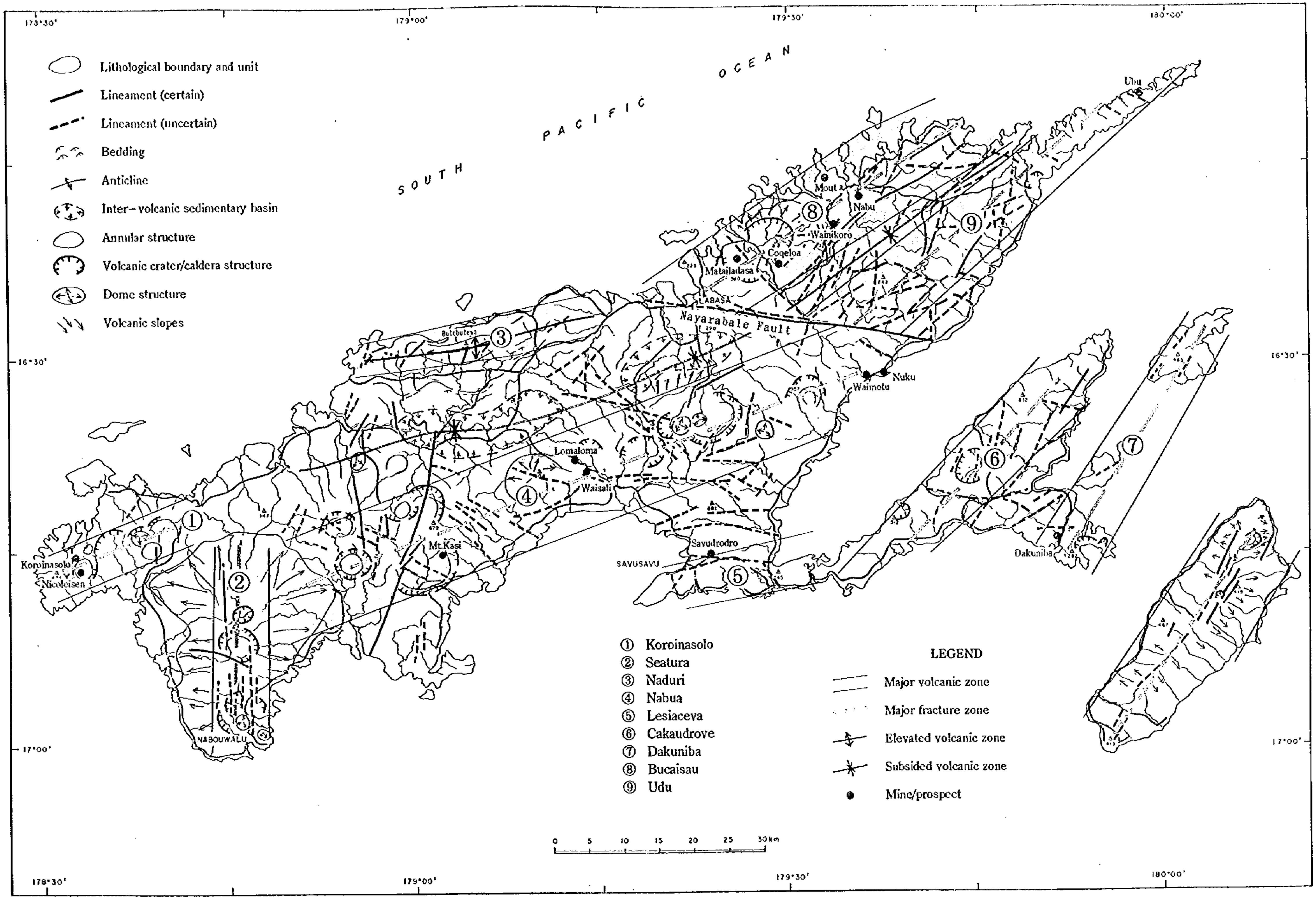


Fig. 2-1-4 Tectonic Interpretation Map of SLAR Imagery

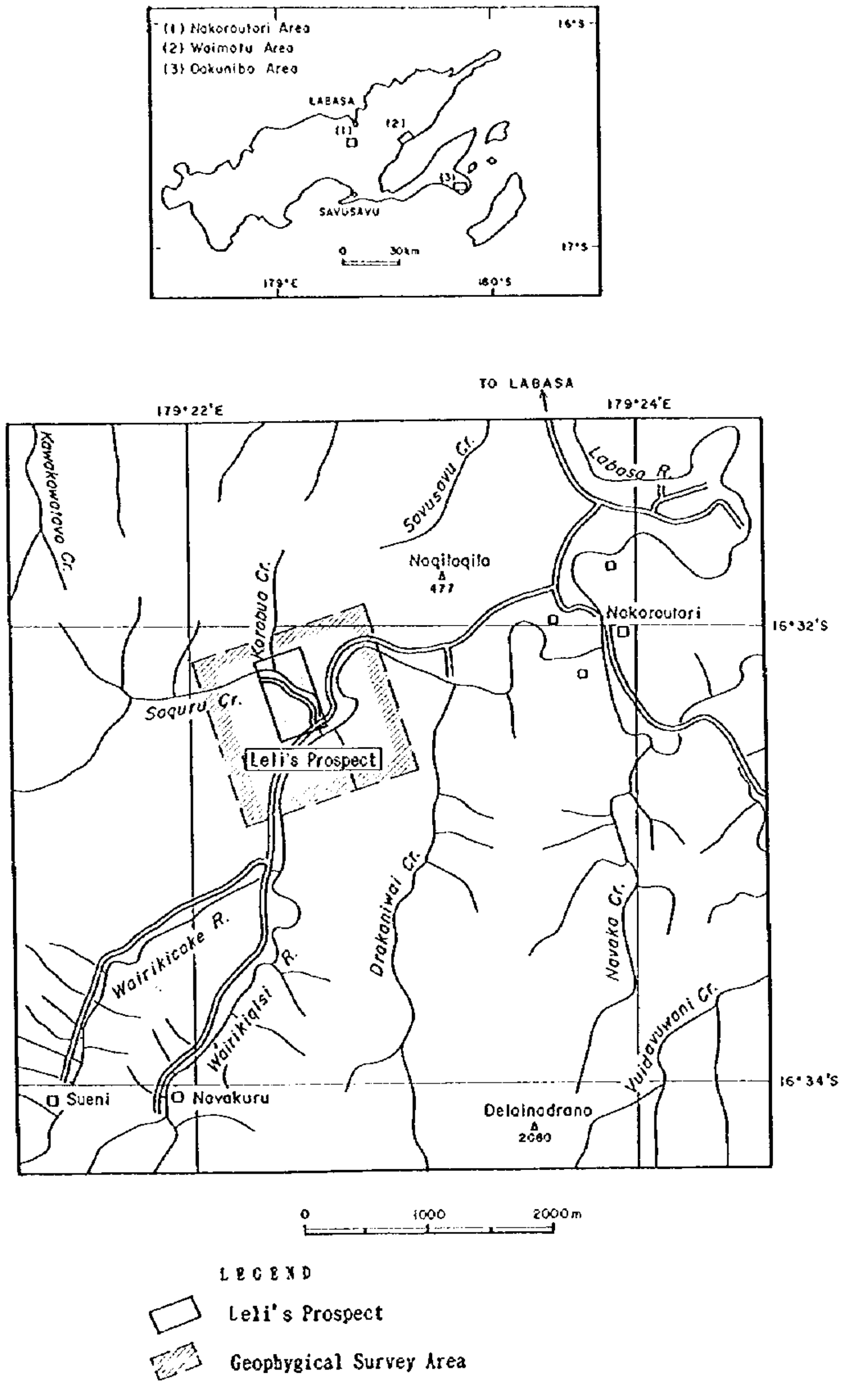


Fig. 2-1-5 Location Map of the Nakoroutari Area

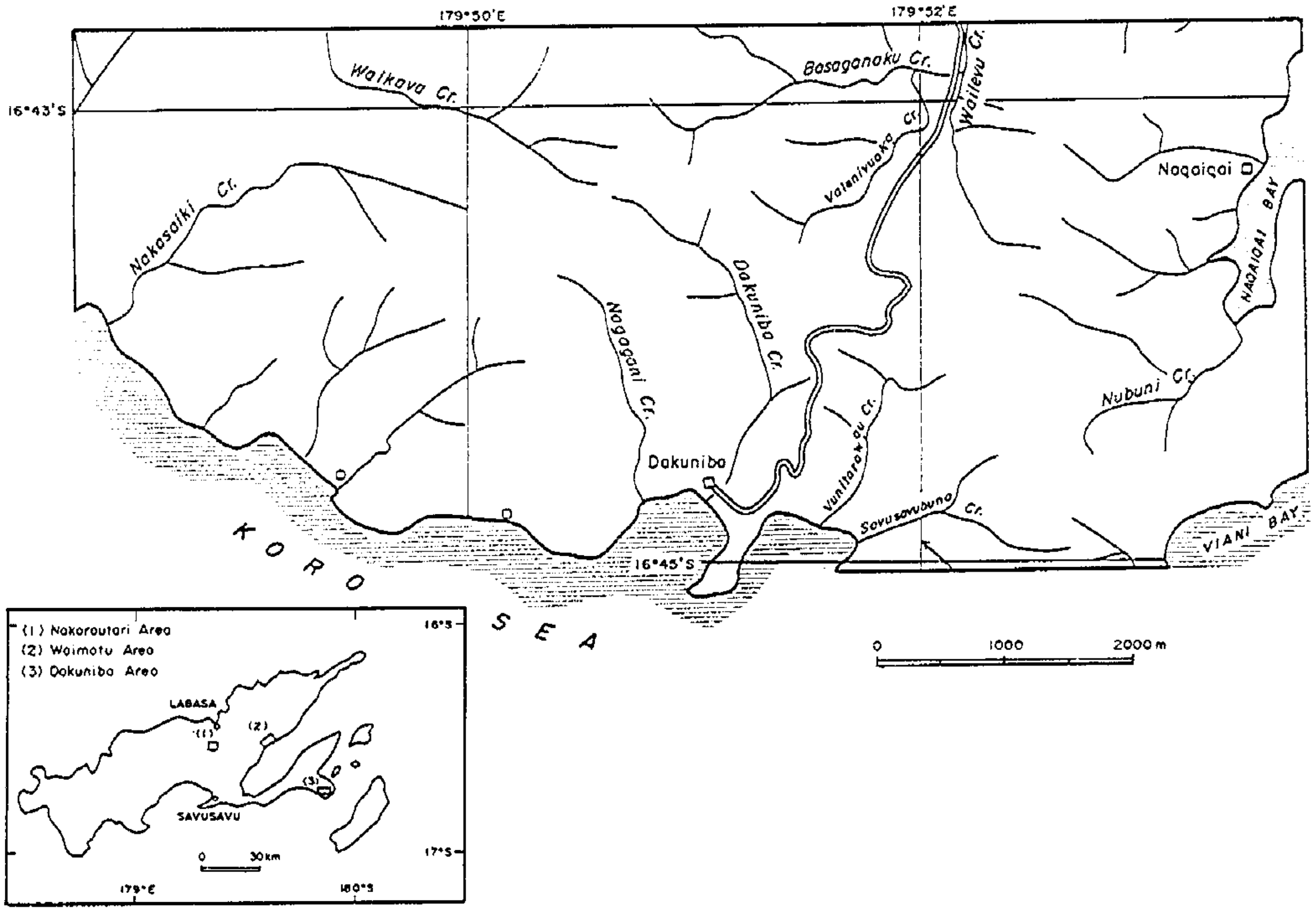


Fig. 2-1-6 Location Map of the Dakuniba Area

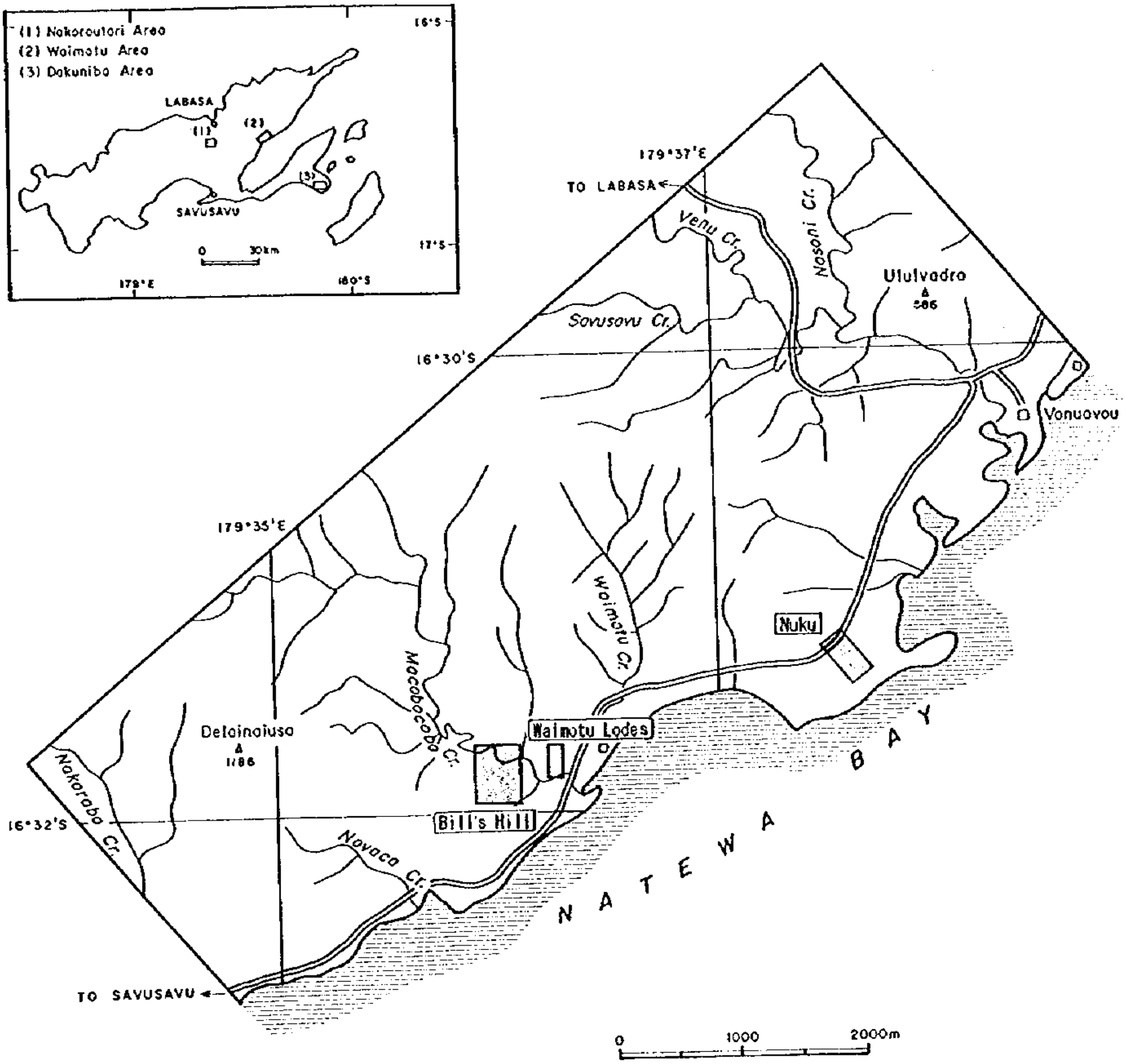


Fig. 2-1-7 Location Map of the Waimotu Area

Table 2-1-2 Known Prospects in Vanua Levu

Ref. No.	Name	Commodities	Previous Tenement			Work Conducted				Geology & Mineralization			Comment
			SPL No.	Operator	Period	Mapping	Geochemical	Geophysical	Tunneling Drilling	Geology	Mineralization & Alteration	Grade	
13	Nabuna	Au(Cu,Zn)	SPL1114 SPL1184 SPL1220 SPL1224	Geological Survey, Placer	1987-91		SS(BLEG) Rock		None		Week gold mineralization with silicification & argillic alteration	Maximum assay values in rock chips: 0.55g/t Au & 0.15%Cu	○ Caldera structure(SLAR) × Deep erosion
23	Valeni	Au	SPL1209 SPL1220 SPL1224	Newmont Placer	1930s 1984 1986-90	1:2,500	SS:53+ Soil Rock	IP, Magnetics	5 adits		NW trending quartz barite veins +silicification, Brecciation. Shear zone with Pb,Zn & low Au	Vein<1.5g/t Au, <5.0g/t Ag	○ Favourable structures × Low Au values (better for base metals)
25	Waisali	Au,Ag	SPL1213 SPL1353	WMC Amka PacAu/Beta	1984-?	1:10,000	SS:176 samples Soil Rock:66 samples	Airborne Magnetics		Andesite	Clay-pyrite alternation: sericite kaolinite Quartz veins Argillization 5%S in Py.	DDH 1m @ 3.78g/t Au Others<1g/t	○ Widespread alteration ○ Geochem anomalies are not fully tested × Silicified zone is limited? × Extensive Geochem
26	Lomaloma (Wailevu)	Au,Ag	SPL1187 SPL1220 SPL1224	Aurelia Placer	1980-? 1985-90-?		SS:92 samples Soil:43 samples Rock:121 samples			Basic to intermediate flows,breccias	800m X 200m alteration(silicification,quartz veining)	Float: up to 30g/t Ag and 2.78g/t Au	○ Broad Alteration ○ Not fully tested
27	Korovula	Au	SPL1262	Placer	-1987		SS:201 samples Rock:126 samples Soil 136 samoles						
31	Naduri	Au,Ag	SPL1262*	Pacific Nationwide	1987-1990		Rock:103 samples Soil:52 samples	Air magnetics	7 DDH 600m	Basic-andesite flows	2-12m X 275m	NW-SE trending Cowboy:0.37g/t Au Waiwaqa:97.6g/t Au	○ High Au values × Extensively prospected
33	Nakoroutari	Au,Ag	SPL1301	PacAu Paget	1990-		SS:60 samples Soil:400m x 500m Rock:161samples	IP,Magnetics	6 DDH:1053m	Lavas, tuffs and breccias	700m x 200m quartz veining silicification pyritization	Silicified float:7.9g/t Au	○ Structure(SLAR,Mag) ○ Geochem anaomaly? × Difficut to geologic survey (poor exposure?)
34	Savudrodro	Cu	SPL1277 SPL1300	PacAu Beta	-1987-					Basalt	Weak pyritization	SS(pan conc.): 2.1g/t Au	× Sporadic Au anomaly
35	Koroatasere	Au	SPL1280?	City Resources			Rock SS				Veining, propylitization	float:1.7g/t Au, 125g/t Ag	○ Room for prospecting
36	Bill's Hill	Au,Ag	SPL1091 SPL1162 SPL1185	Jennings	1974 1985-88		Soil		8 DDH	Basaltic - andesitic	Kaolin cap /quartz chalcedonic veining	5.6-21.8m @ 0.17-0.77g/t Au	○ Epithermal system ○(or ×?) Prospected collectively (the area is limited)
37	Waimotu	Au,Ag	SPL1185	Emperor CGF	1940-42				U/G:551m 7DDH:609m	Basaltic-andesitic rock	3 chalcedonic-qsurtz veins	0.2-0.7m @ 5-22g/t Au	same as above
38	Nuku	Au,Ag	SPL1185	GeoPacific	1984-87-				4 DHH	basaltic-andesitic rock	In breccia zone	stockwork 2.3g/t	○ Not properly tested
39	Yasawa	Au	SPL1214	Placer			8 trenches					4m @ 1.28g/t	
40	Vunivesi	Cu,Pb,Zn (Au,Ag)	SPL1093 SPL1185 SPL1247	Jennings CGF	-1988-?								× Small polymetalic
50	Nubutubutu	Cu,Zn	SPL1214	Placer							SS anomaly diss py		1.Along a major NE fault 2 Pyrite does not explain the strong anomaly
51	Via Creek	Au	SPL1278	United		Nasavu River					chalcedonic qtz vein: 10.5g/t(float?)		No other indication
52	Qoibo Hill	Au (Ag,Cu,Pb,Zn)	SPL1091 SPL1259	Melven Placer	1978		Soil	Sirotem		Bsic to andesitic volcanics	Quartz-barite-pyrite	5.6g/t Au, qtz 0.54g/t Au	Small base metal target
53	Kedra	Au	SPL1239										
54	Tawake	Au											
55	Udu Mine	Cu,Zn,Pb, Ag,Au		Various	1957-				1969:mined 32,000t(5.9%Cu)	Pumiceous pyroclastics,Dacite	Massive sulfide(black ore)		
56	Nasese	Au	SPL1291	Beta			Panning			Widespread chl-epidote alteration in basic andesite	Anomalous gold, quartz veining, local weak silicification		
57	Dakuniba	Au	SPL1246	Pacific	1986-		Soil:4.5km X 2.5km		57 trenching 69 percussion (249m)	Basalt lavas & pyroclastics	Quartz veining	2.0m @ 12.8g/t Au	○ Depth is untested ○ Long strucure with anomalous Au × Weak alteration

SS: stream sediments

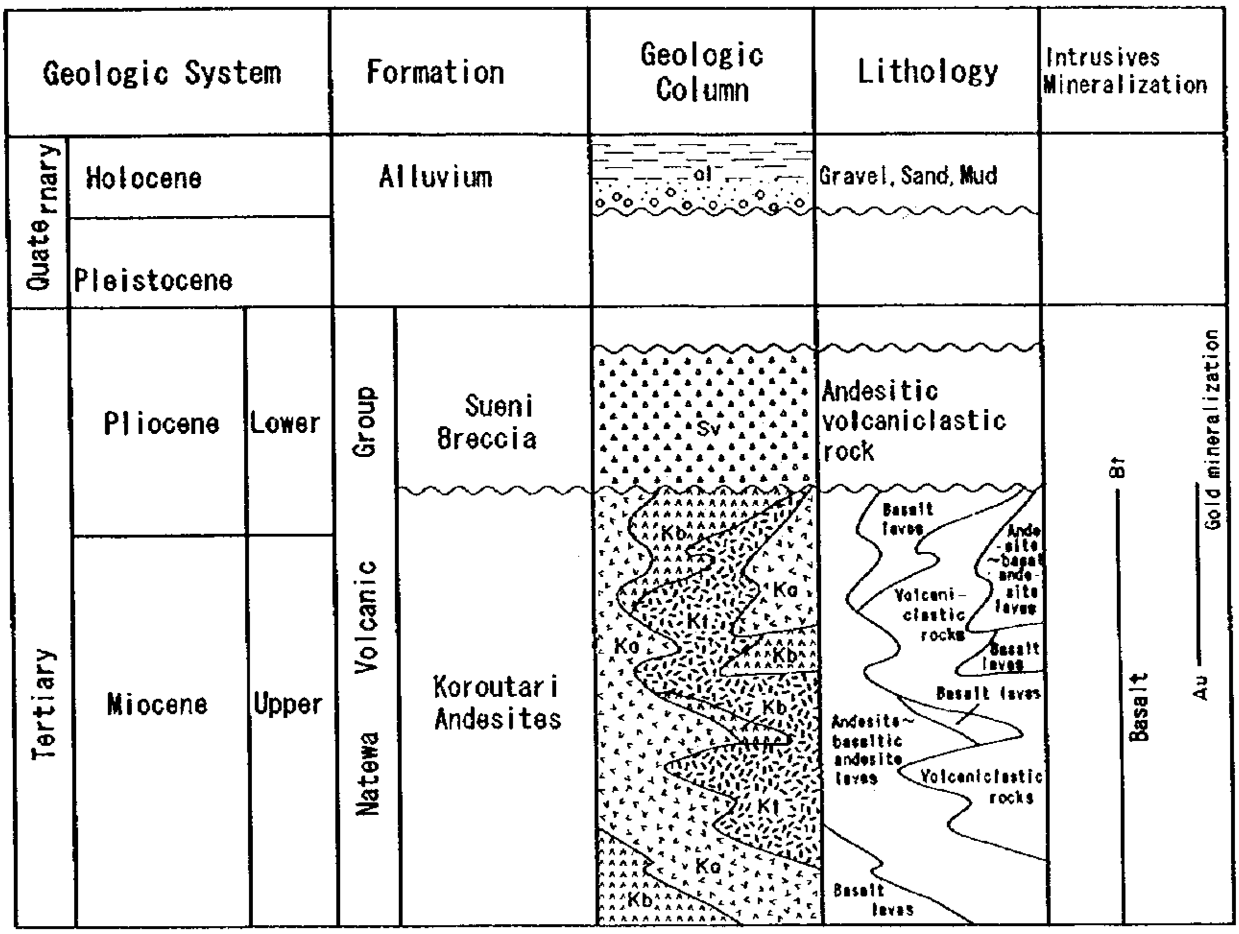


Fig. 2-2-1 Schematic Stratigraphic Columns of the Nakoroutari Area

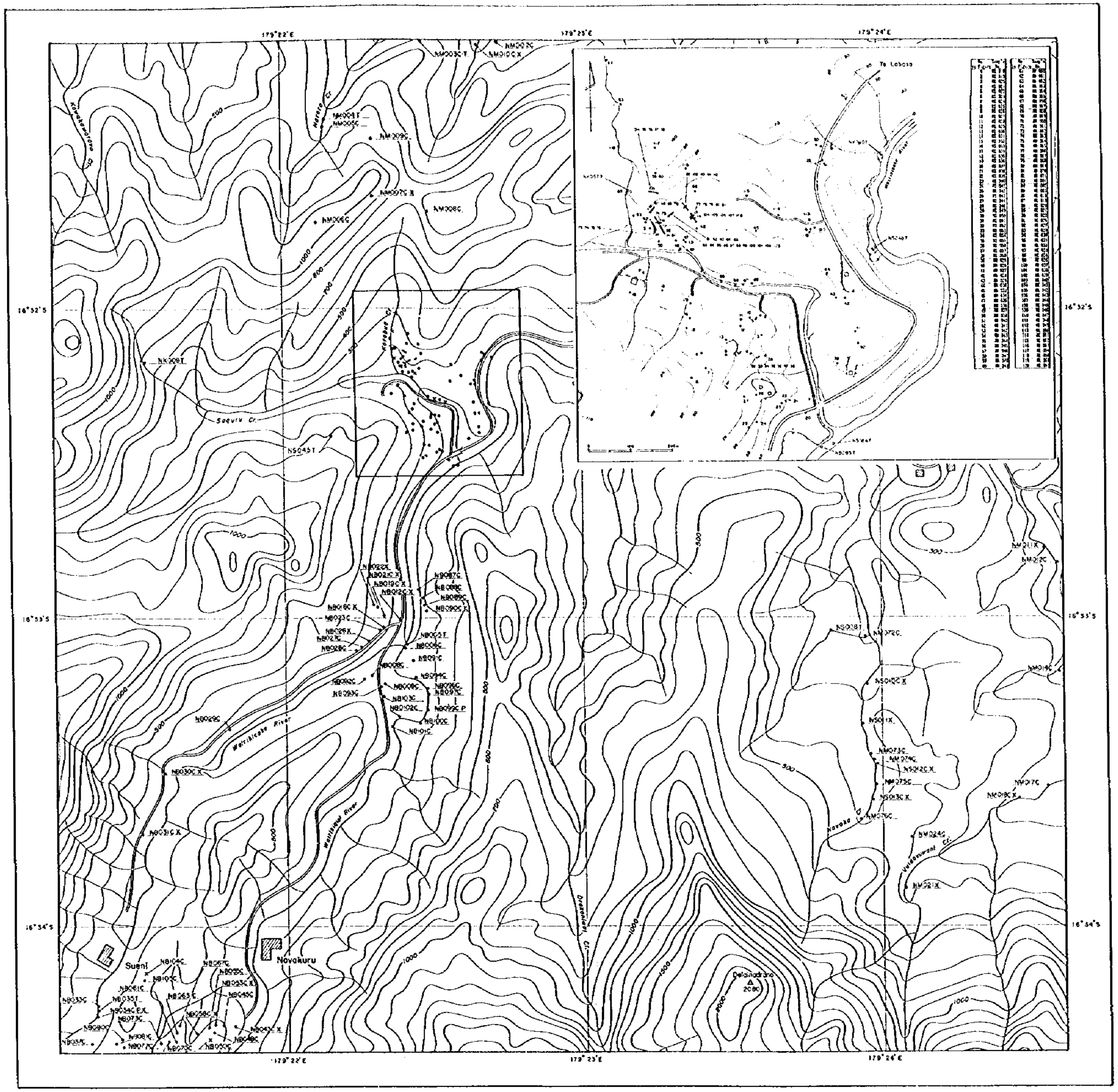


Fig. 2-2-2 Sample Location Map of the Nakoroutari Area

LEGEND

Outcrop

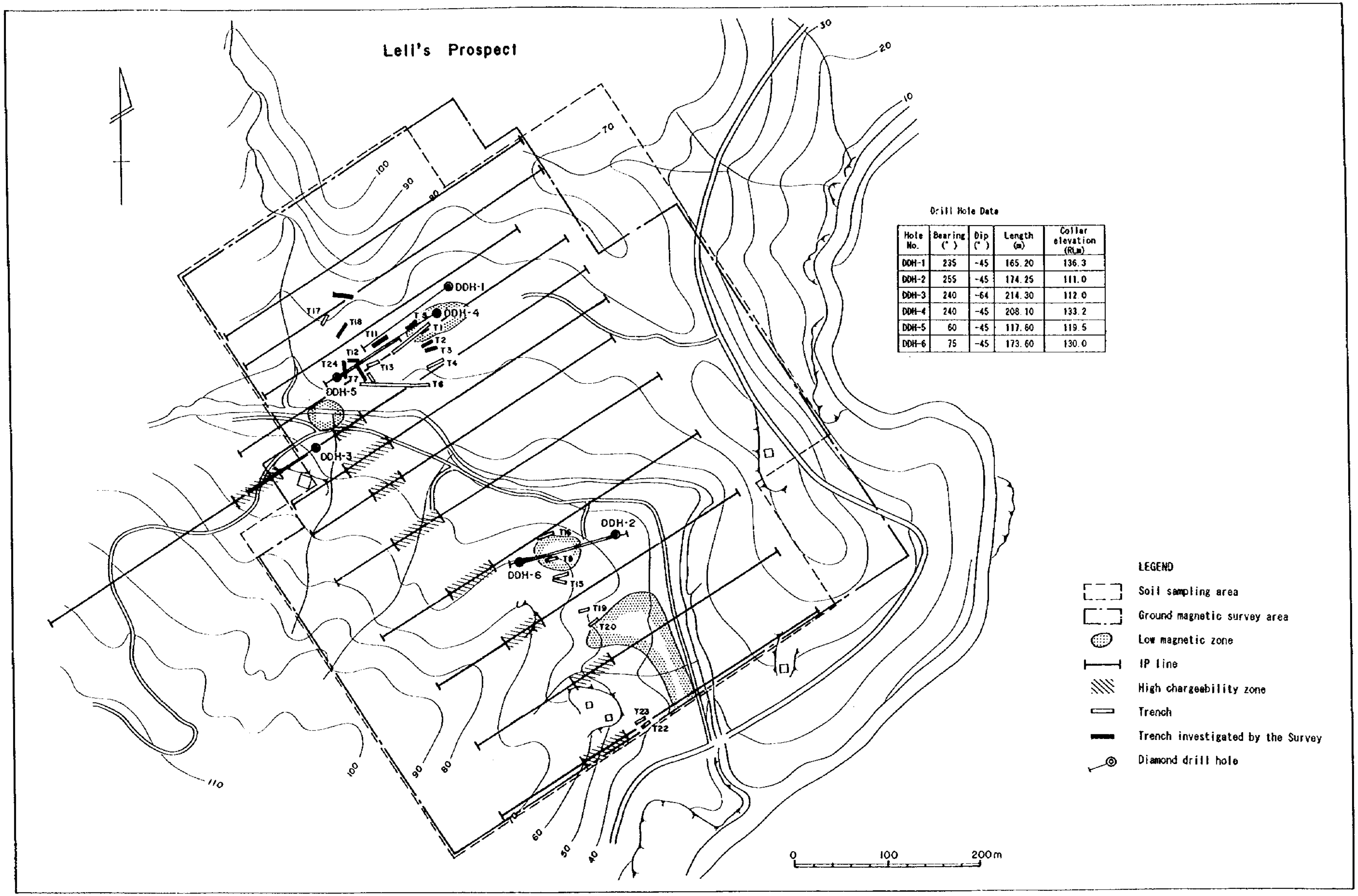
Float

NS028C P
Sample No
C for Chemical analysis
T; for Thin section
P, for Polished section
X for X-ray diffraction analysis

Trench

Drill hole

Detailed survey (Lei's prospect)



Drill Hole Date

Hole No.	Bearing (°)	Dip (°)	Length (m)	Collar elevation (RLm)
DDH-1	235	-45	165.20	136.3
DDH-2	255	-45	174.25	111.0
DDH-3	240	-64	214.30	112.0
DDH-4	240	-45	208.10	133.2
DDH-5	60	-45	117.60	119.5
DDH-6	75	-45	173.60	130.0

Fig. 2-2-3 Summary Map of Existing Data of the Nakoroutari Area

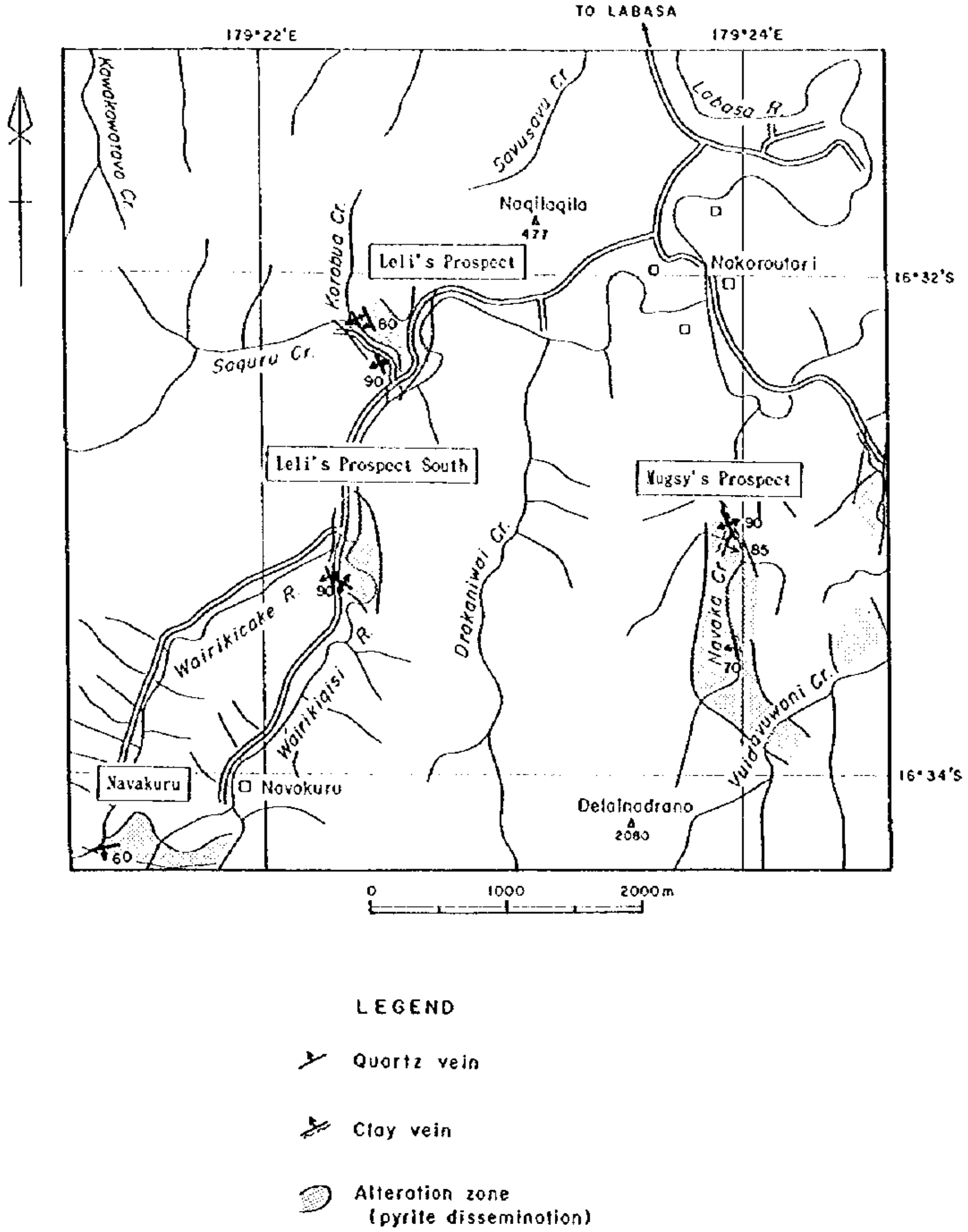
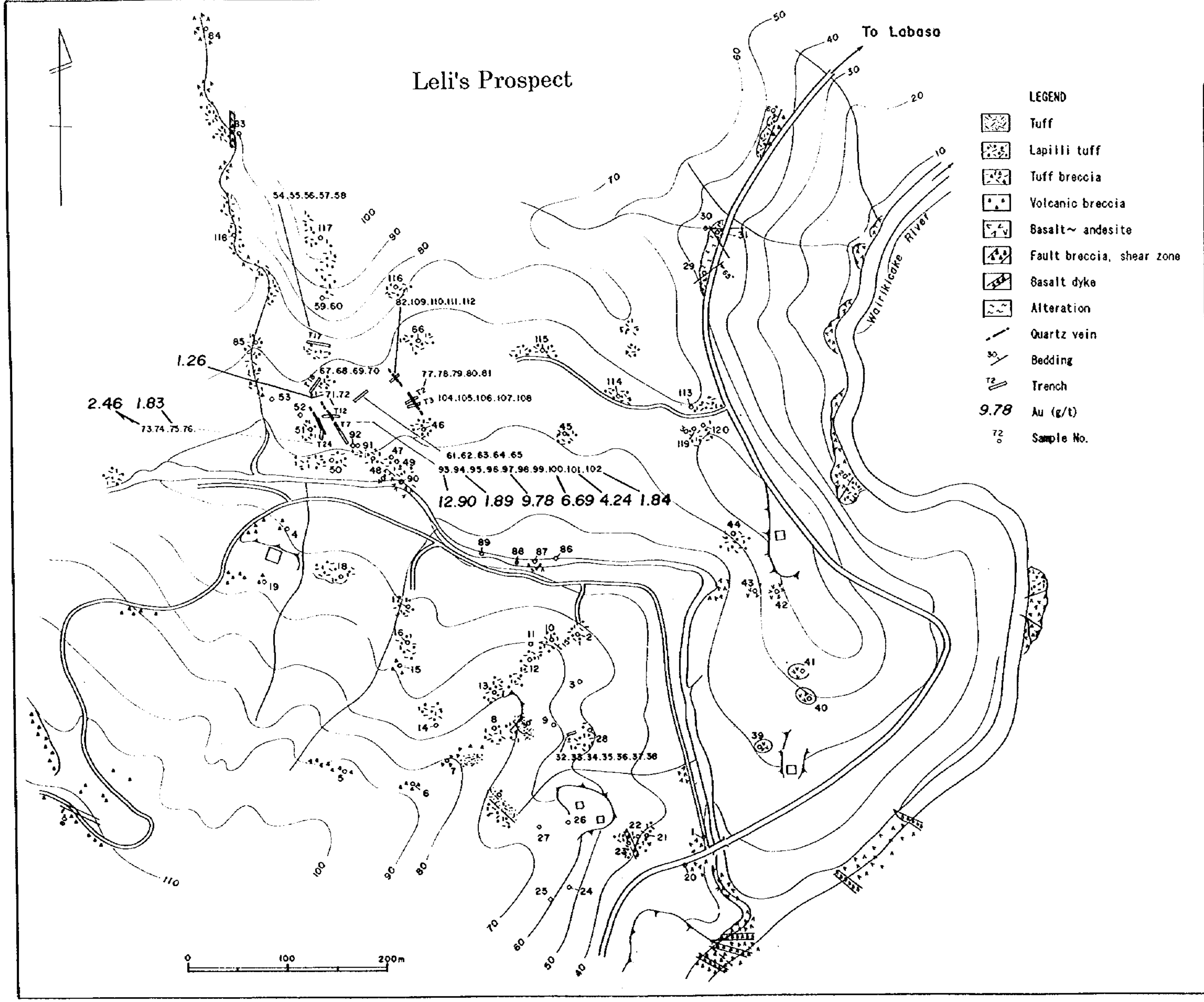


Fig. 2-2-4 Distribution Map of Prospects and Alteration Zones in the Nakoroutari Area

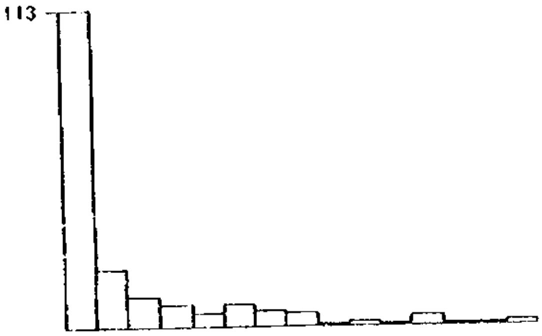


No. in Figure	Sample No.	Au ppm	Ag ppm
1	NS 018	<0.01	<0.4
2	NS 019	0.01	<0.4
3	NS 020	<0.01	<0.4
4	NS 021	<0.01	<0.4
5	NS 022	<0.01	<0.4
6	NS 023	<0.01	<0.4
7	NS 024	<0.01	<0.4
8	NS 025	<0.01	<0.4
9	NS 026	0.27	0.4
10	NS 027	<0.01	<0.4
11	NS 028	0.83	0.5
12	NS 029	<0.01	<0.4
13	NS 030	<0.01	<0.4
14	NS 031	<0.01	<0.4
15	NS 032	<0.01	<0.4
16	NS 033	<0.01	<0.4
17	NS 034	<0.01	<0.4
18	NS 035	<0.01	<0.4
19	NS 036	0.03	<0.4
20	NS 037	<0.01	<0.4
21	NS 038	<0.01	<0.4
22	NS 039	0.02	<0.4
23	NS 040	0.16	<0.4
24	NS 041	0.09	<0.4
25	NS 042	<0.01	<0.4
26	NS 043	<0.01	<0.4
27	NS 044	<0.01	<0.4
28	NS 046	<0.01	<0.4
29	NS 049	<0.01	<0.4
30	NS 050	<0.01	<0.4
31	NS 051	<0.01	<0.4
32	NS 052	<0.01	<0.4
33	NS 053	<0.01	<0.4
34	NS 054	<0.01	<0.4
35	NS 055	<0.01	<0.4
36	NS 056	0.03	<0.4
37	NS 057	0.16	<0.4
38	NS 058	0.13	<0.4
39	NM 025	<0.01	<0.4
40	NM 026	<0.01	<0.4
41	NM 027	<0.01	<0.4
42	NM 028	<0.01	<0.4
43	NM 029	<0.01	<0.4
44	NM 030	<0.01	<0.4
45	NM 033	<0.01	<0.4
46	NM 034	<0.01	1.7
47	NM 035	<0.01	<0.4
48	NM 036	<0.01	8.9
49	NM 037	<0.01	0.7
50	NM 038	0.01	<0.4
51	NM 040	<0.01	<0.4
52	NM 041	<0.01	<0.4
53	NM 042	<0.01	<0.4
54	NM 043	0.05	<0.4
55	NM 044	0.1	<0.4
56	NM 045	0.01	<0.4
57	NM 046	0.02	<0.4
58	NM 047	0.03	<0.4
59	NM 048	0.01	6.5
60	NM 049	0.02	0.7
61	NM 050	0.03	<0.4
62	NM 051	0.01	2.1
63	NM 052	0.01	<0.4
64	NM 053	<0.01	<0.4
65	NM 054	0.01	3.2
66	NM 055	<0.01	<0.4
67	NM 056	<0.01	1.4
68	NM 057	0.02	<0.4
69	NM 058	0.05	<0.4
70	NM 059	0.27	<0.4
71	NM 060	1.26	0.9
72	NM 061	0.32	<0.4
73	NM 062	2.46	1.9
74	NM 063	0.31	<0.4
75	NM 064	1.83	<0.4
76	NM 065	0.02	<0.4
77	NM 066	0.03	3.3
78	NM 067	<0.01	5.4
79	NM 068	0.02	9.8
80	NM 069	<0.01	2.9
81	NM 070	0.15	5
82	NM 071	0.02	2.7
83	NK 001	0.1	<0.4
84	NK 002	<0.01	<0.4
85	NK 003	<0.01	<0.4
86	NK 018	<0.01	<0.4
87	NK 019	0.03	<0.4
88	NK 020	0.13	0.8
89	NK 021	0.02	<0.4
90	NK 022	0.19	0.6
91	NK 026	0.02	0.4
92	NK 027	0.08	<0.4
93	NK 029	12.9	10
94	NK 030	1.89	0.6
95	NK 031	0.1	<0.4
96	NK 032	0.06	<0.4
97	NK 033	9.78	2.3
98	NK 034	0.01	<0.4
99	NK 035	0.12	<0.4
100	NK 037	6.69	0.5
101	NK 038	4.24	0.6
102	NK 039	1.84	0.7
103	NK 040	0.86	0.4
104	NK 041	0.07	2.3
105	NK 042	0.01	1.8
106	NK 043	0.01	5.4
107	NK 044	0.04	15
108	NK 045	0.03	10
109	NK 046	0.05	1.6
110	NK 047	0.09	5.4
111	NK 048	0.01	<0.4
112	NK 049	0.06	8.2
113	NK 050	<0.01	<0.4
114	NK 051	<0.01	<0.4
115	NK 052	<0.01	<0.4
116	NK 053	<0.01	<0.4
117	NK 054	<0.01	0.4
118	NK 056	<0.01	<0.4
119	NK 058	<0.01	<0.4
120	NK 059	<0.01	<0.4

Fig. 2-2-5 Detailed Survey Results of the Leli's Prospect

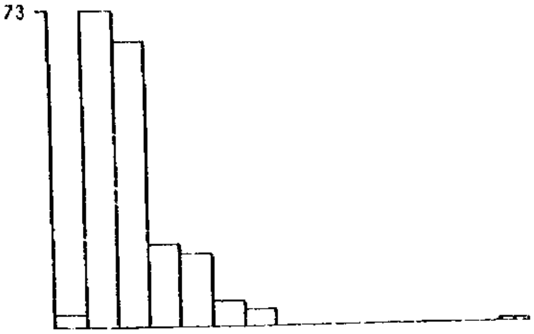
Au

MEAN(M)= .0138615
STANDARD DEVIATION(σ)= .756216
MINIMUM= .005 $M+\sigma$= .0790724
MAXIMUM= 12.9 $M+2\sigma$= .451067



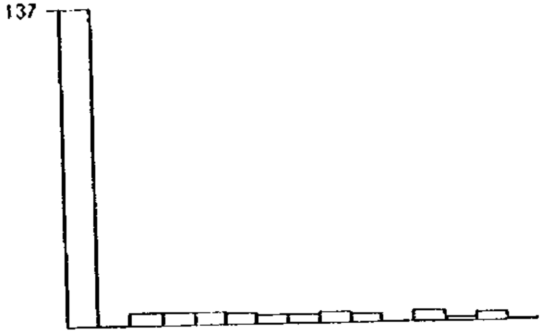
Hg

MEAN(M)= .036973
STANDARD DEVIATION(σ)= .406146
MINIMUM= .007 $M+\sigma$= .0941955
MAXIMUM= 92 $M+2\sigma$= .239981



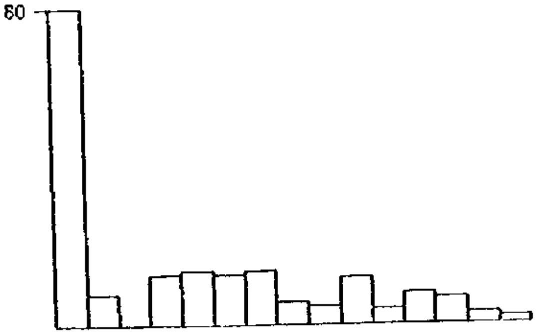
Ag

MEAN(M)= .355778
STANDARD DEVIATION(σ)= .470887
MINIMUM= .2 $M+\sigma$= 1.05212
MAXIMUM= 14.9 $M+2\sigma$= 3.11138



As

MEAN(M)= 2.61952
STANDARD DEVIATION(σ)= .768409
MINIMUM= .5 $M+\sigma$= 15.3685
MAXIMUM= 210 $M+2\sigma$= 90.1655



Sb

MEAN(M)= .36043
STANDARD DEVIATION(σ)= .327388
MINIMUM= .25 $M+\sigma$= .765965
MAXIMUM= 14.3 $M+2\sigma$= 1.62779

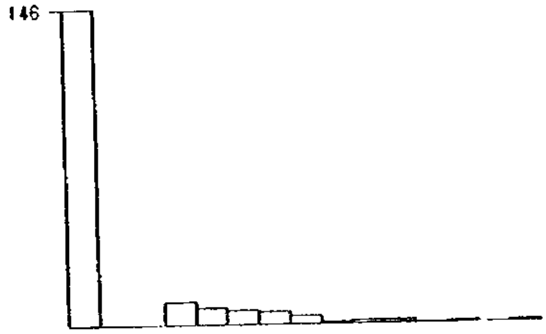


Fig. 2-2-6 Histogram of Assay Values(the Nakoroutari Area)

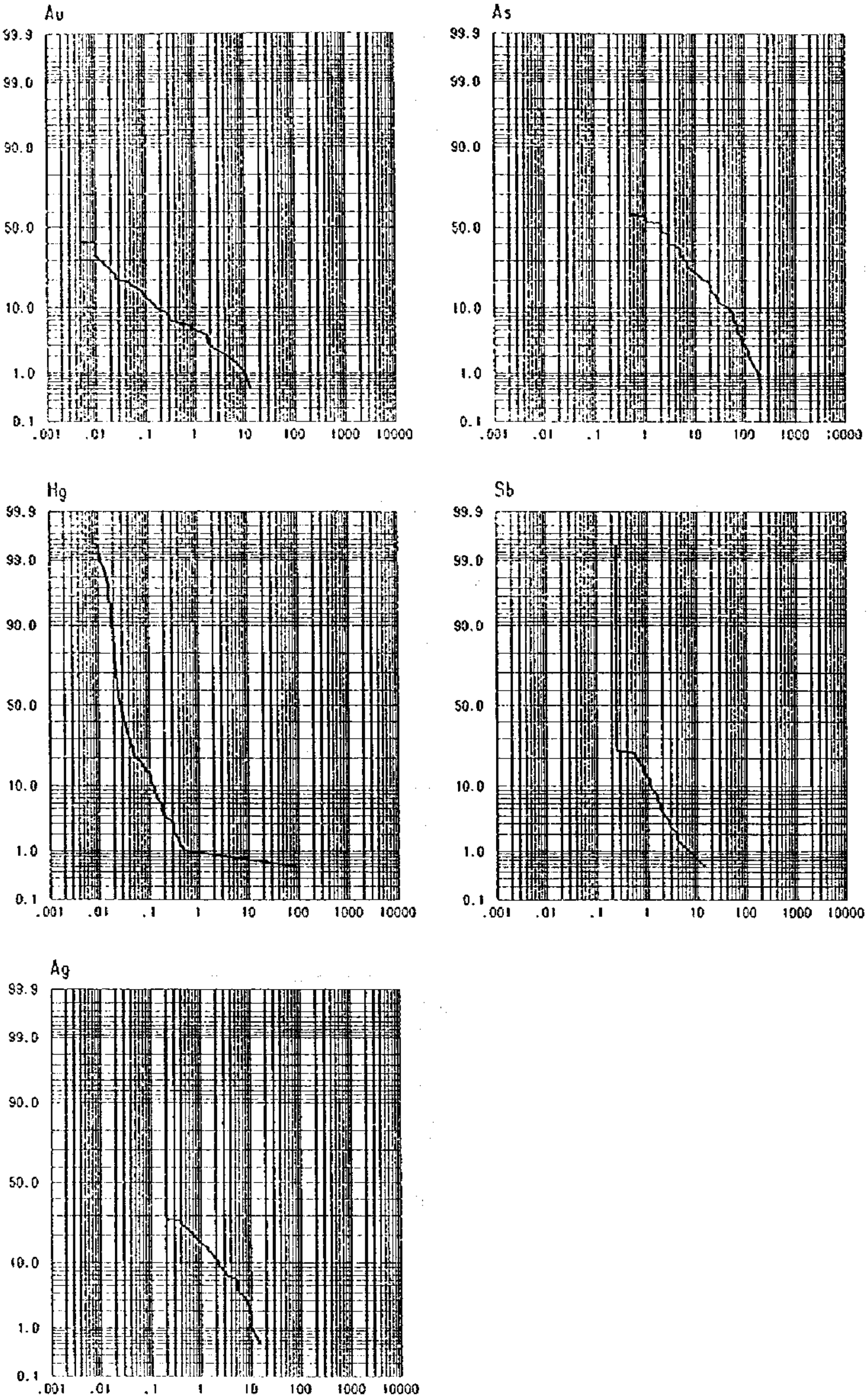


Fig. 2-2-7 Cumulative Frequency Distribution of Assay Values (the Nakoroutari Area)

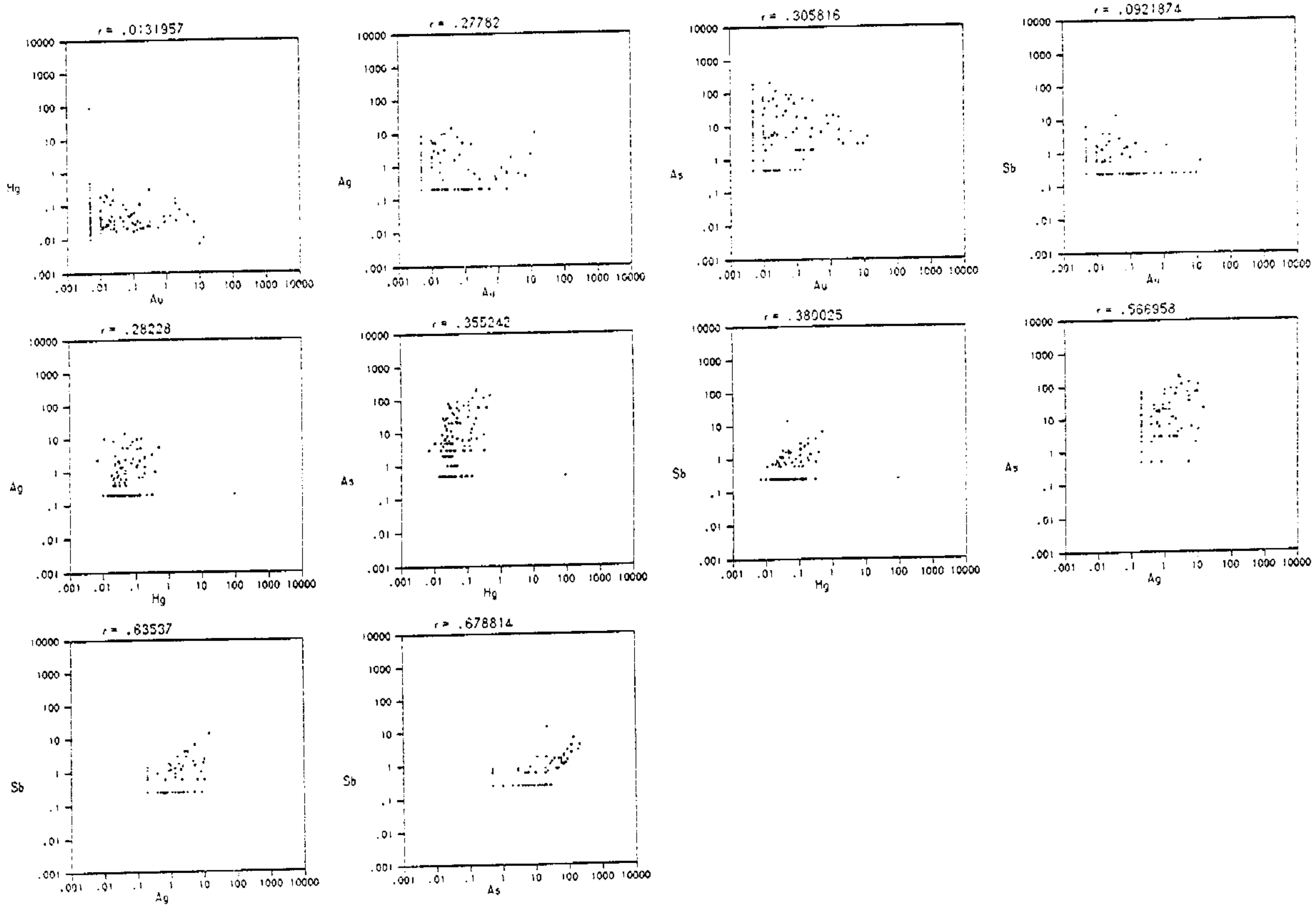


Fig. 2-2-8 Correlation between Elements (the Nakoroutari Area)

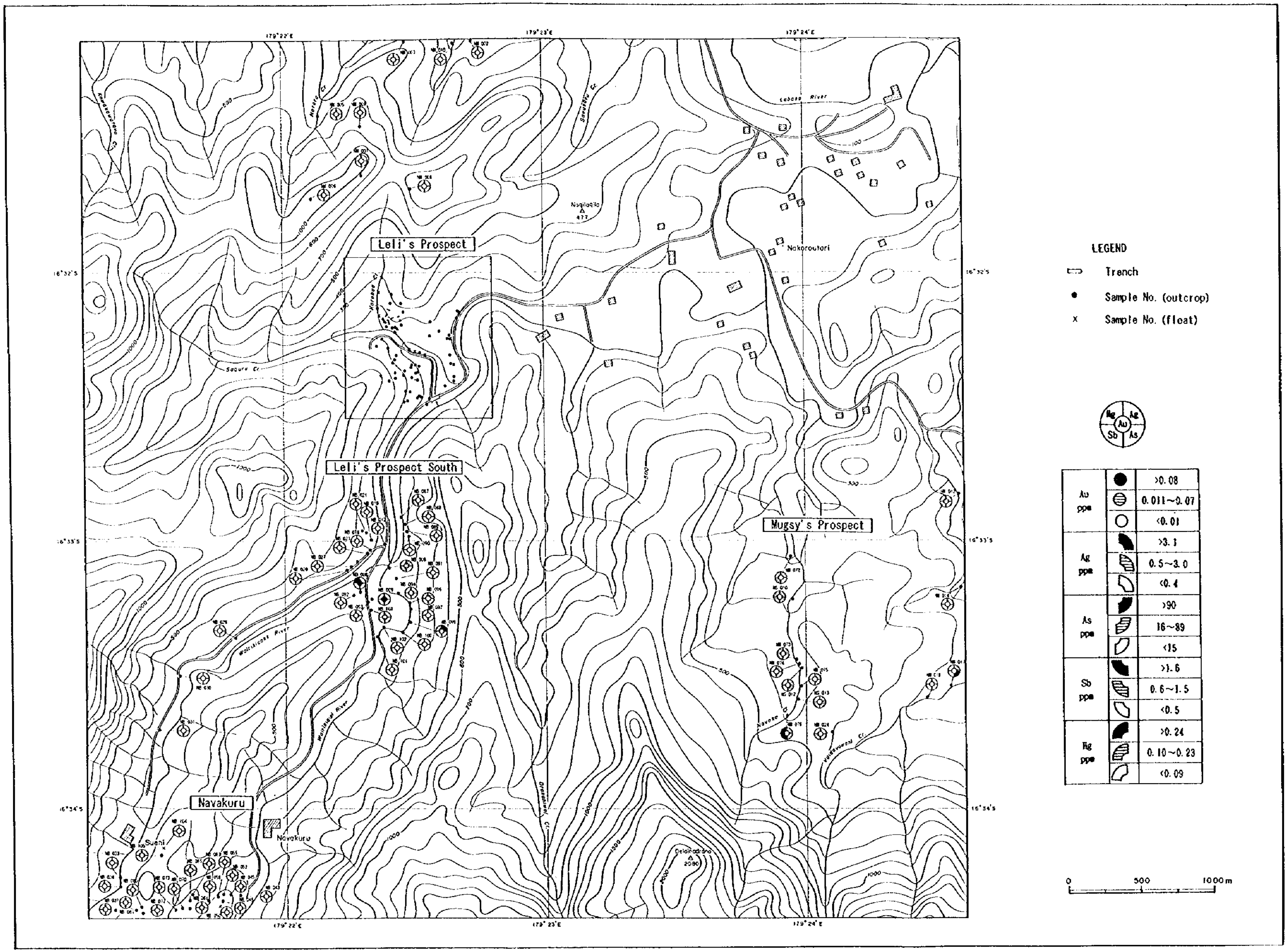


Fig. 2-2-9　Geochemical Survey Results of the Nakoroutari Area

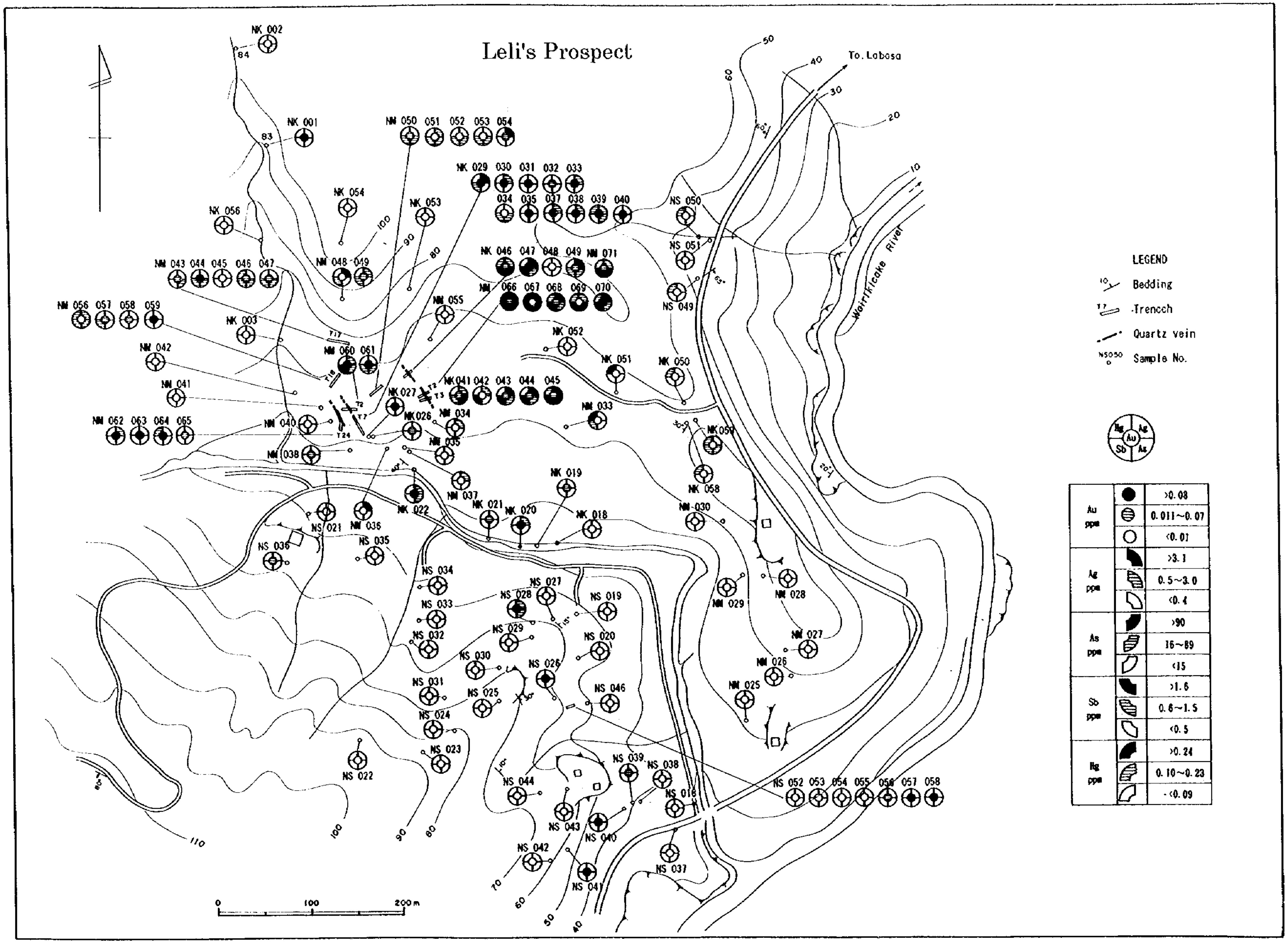


Fig. 2-2-10 Geochemical Survey Results of the Leli's Prospect Area

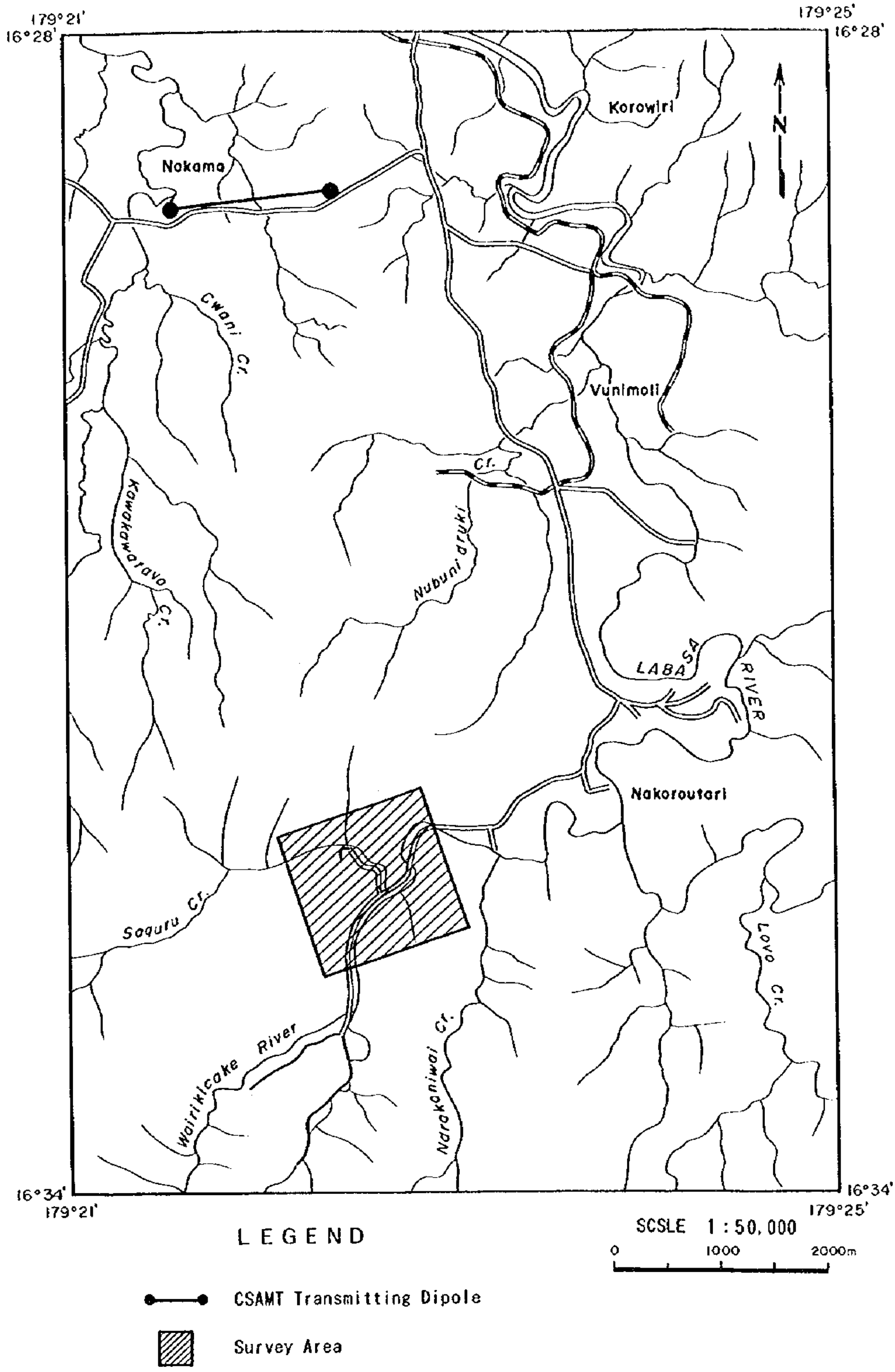


Fig. 2-2-11 Location Map of Survey Area and Transmitting Dipole

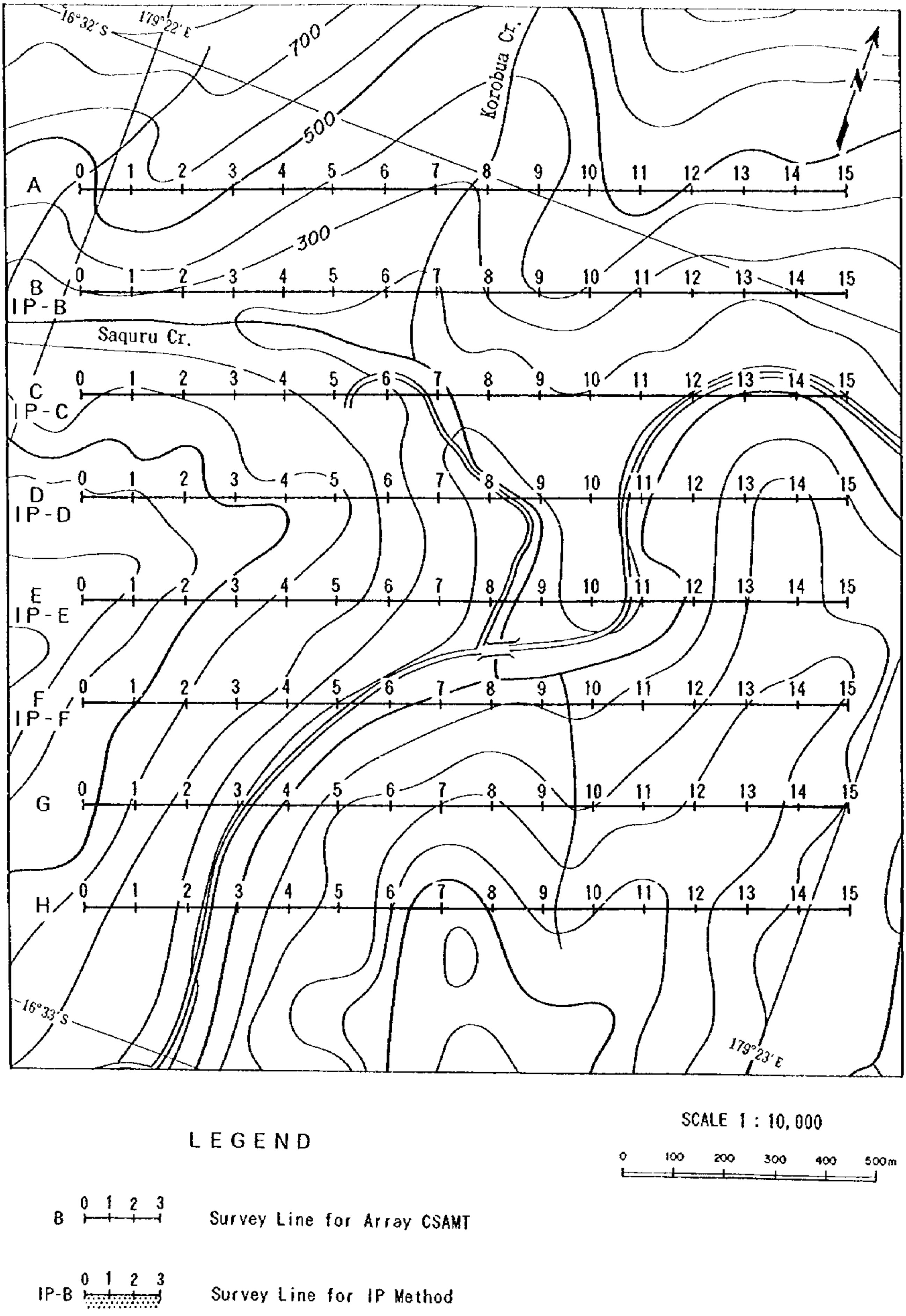


Fig. 2-2-12 Location Map of Survey Lines

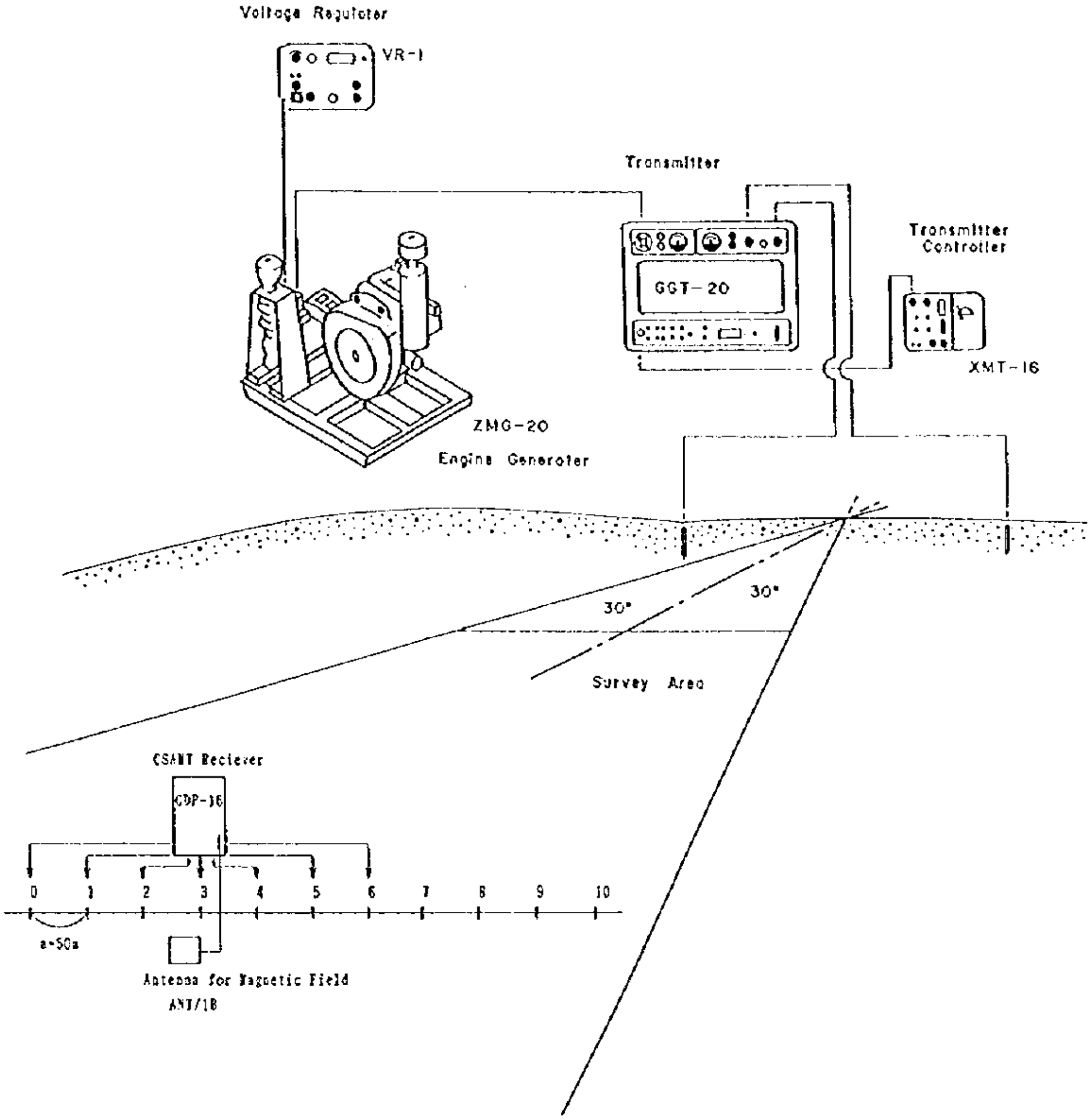


Fig. 2-2-13 Survey Configuration of CSAMT Method

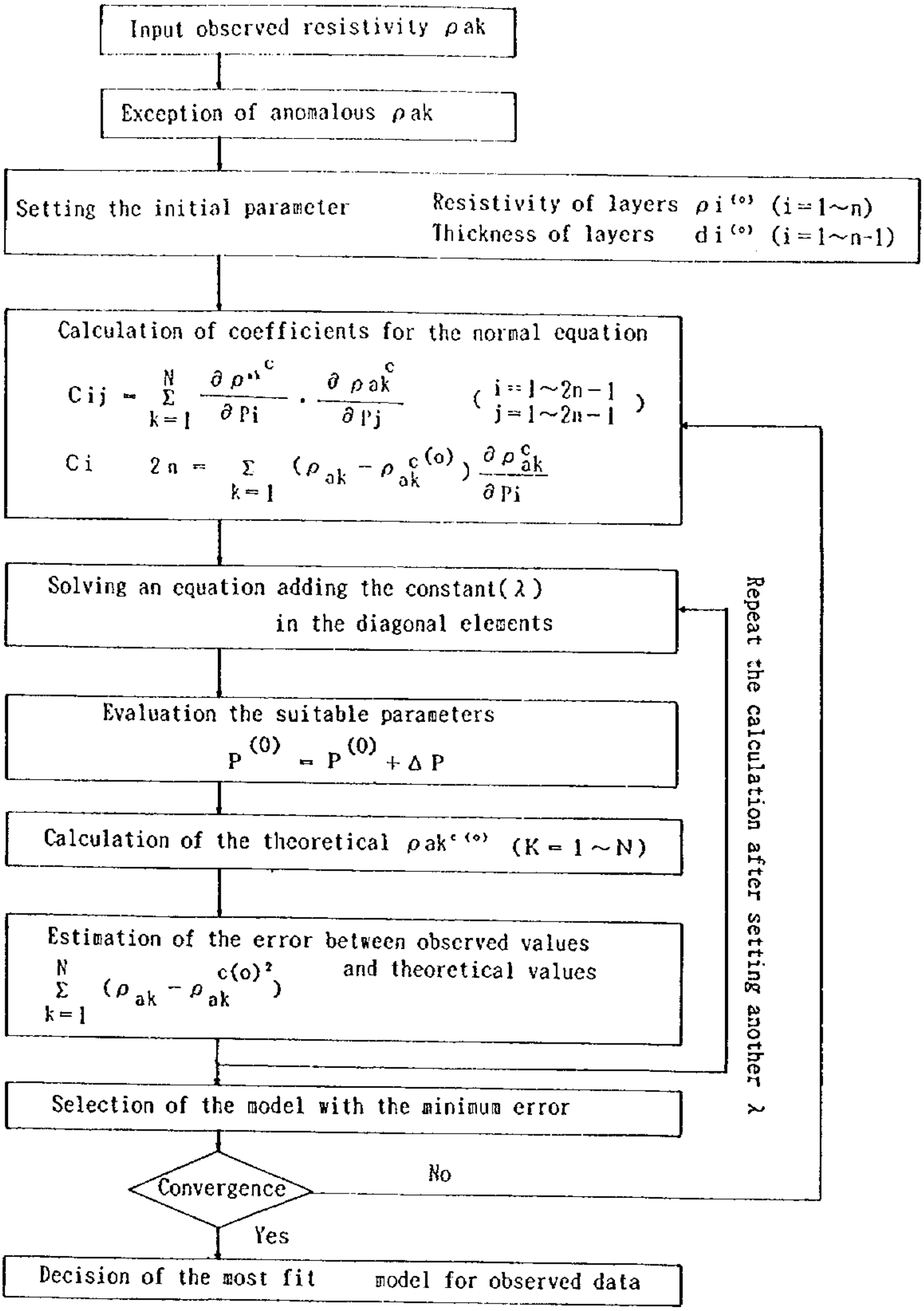
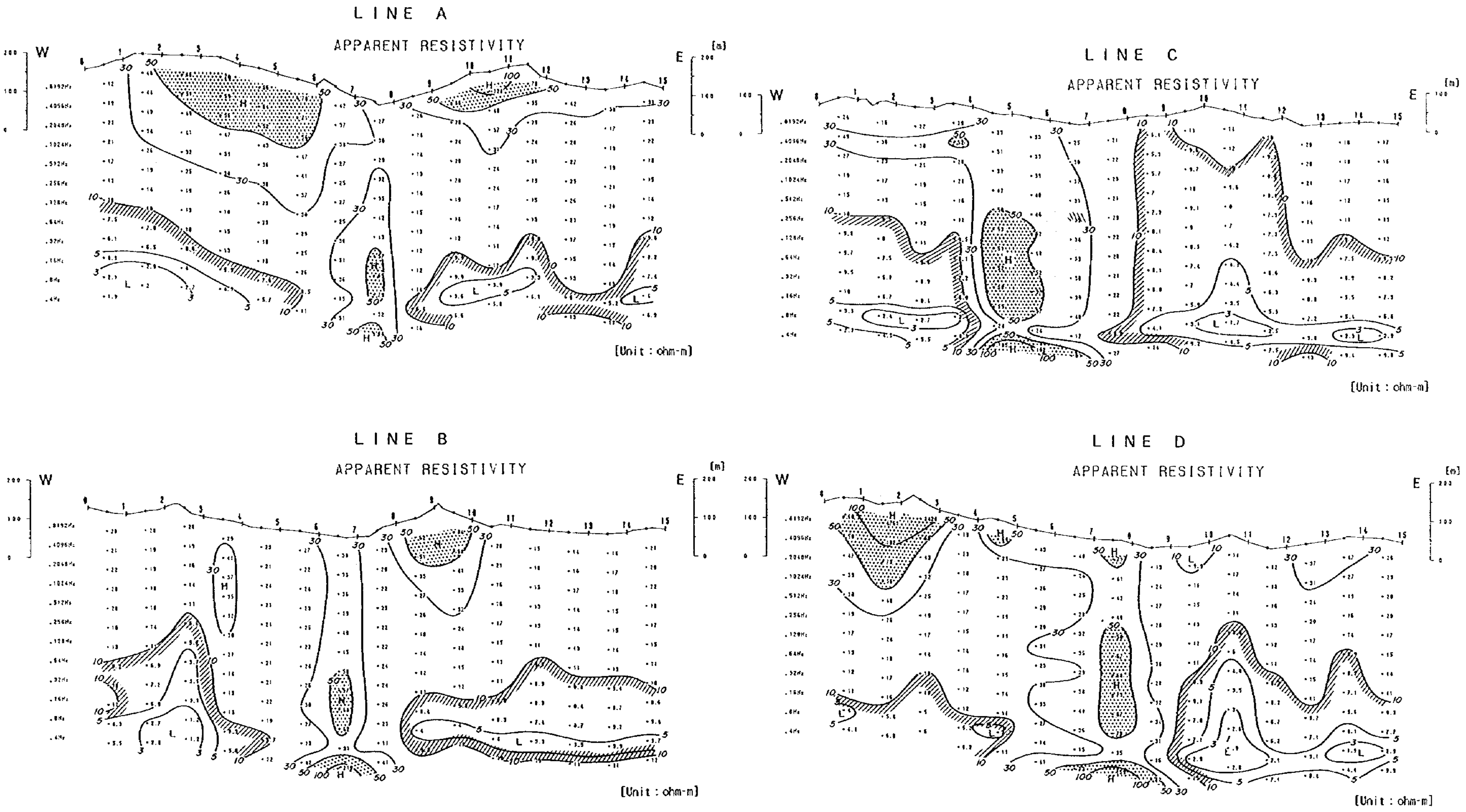


Fig. 2-2-14 Flow Chart of 1-d. Automatic Interpretation for CSAMT Data



LEGEND

H High Resistivity Zone

L Low Resistivity Zone

▒ 50 ≦ ρa

▨ ρa ≦ 10

SCALE 1 : 10,000

0 100 200 300 400 500m

Fig. 2-2-16 (1) CSAMT Pseudo-section of Apparent Resistivity [Line A-D]

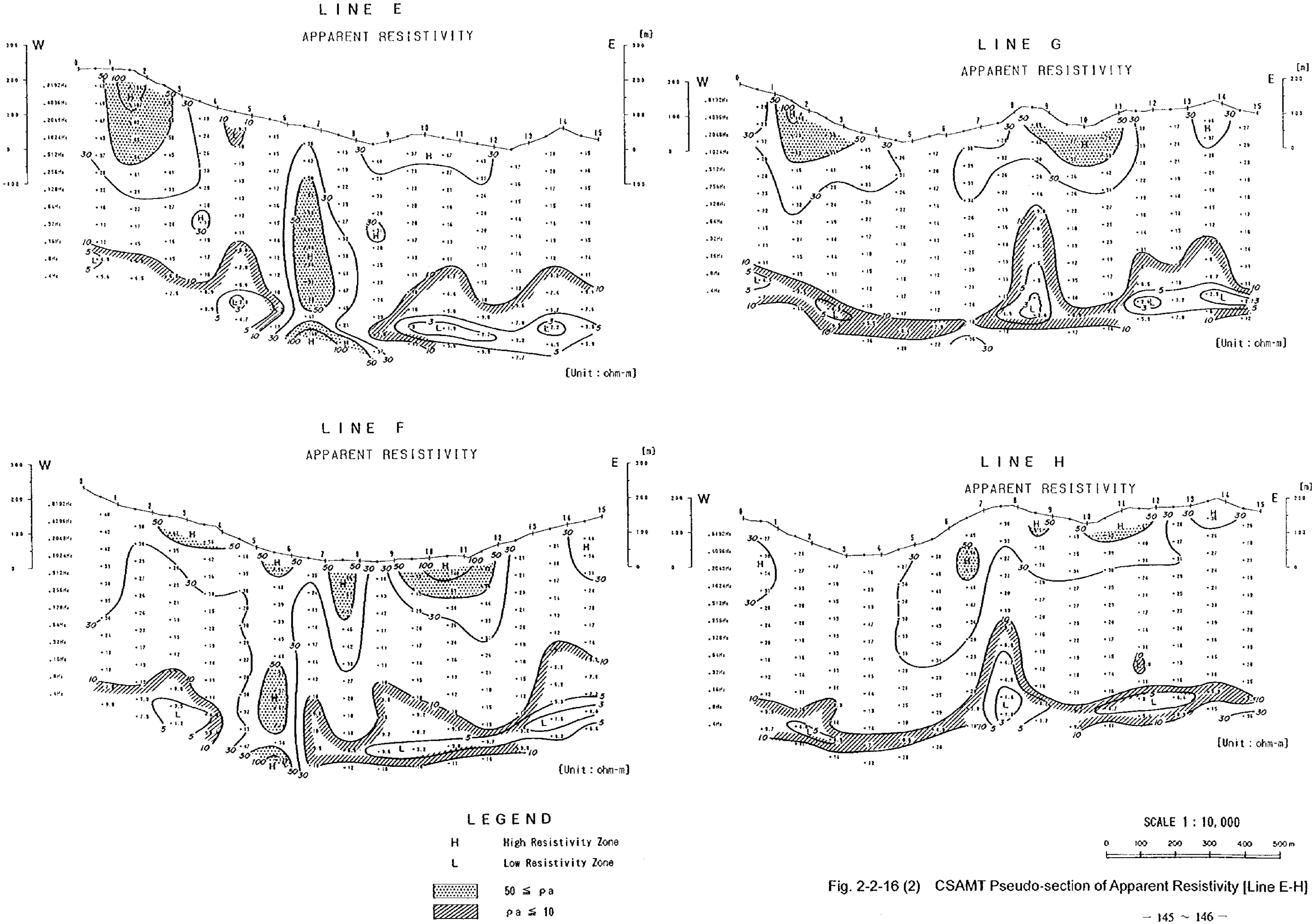


Fig. 2-2-16 (2) CSAMT Pseudo-section of Apparent Resistivity [Line E-H]

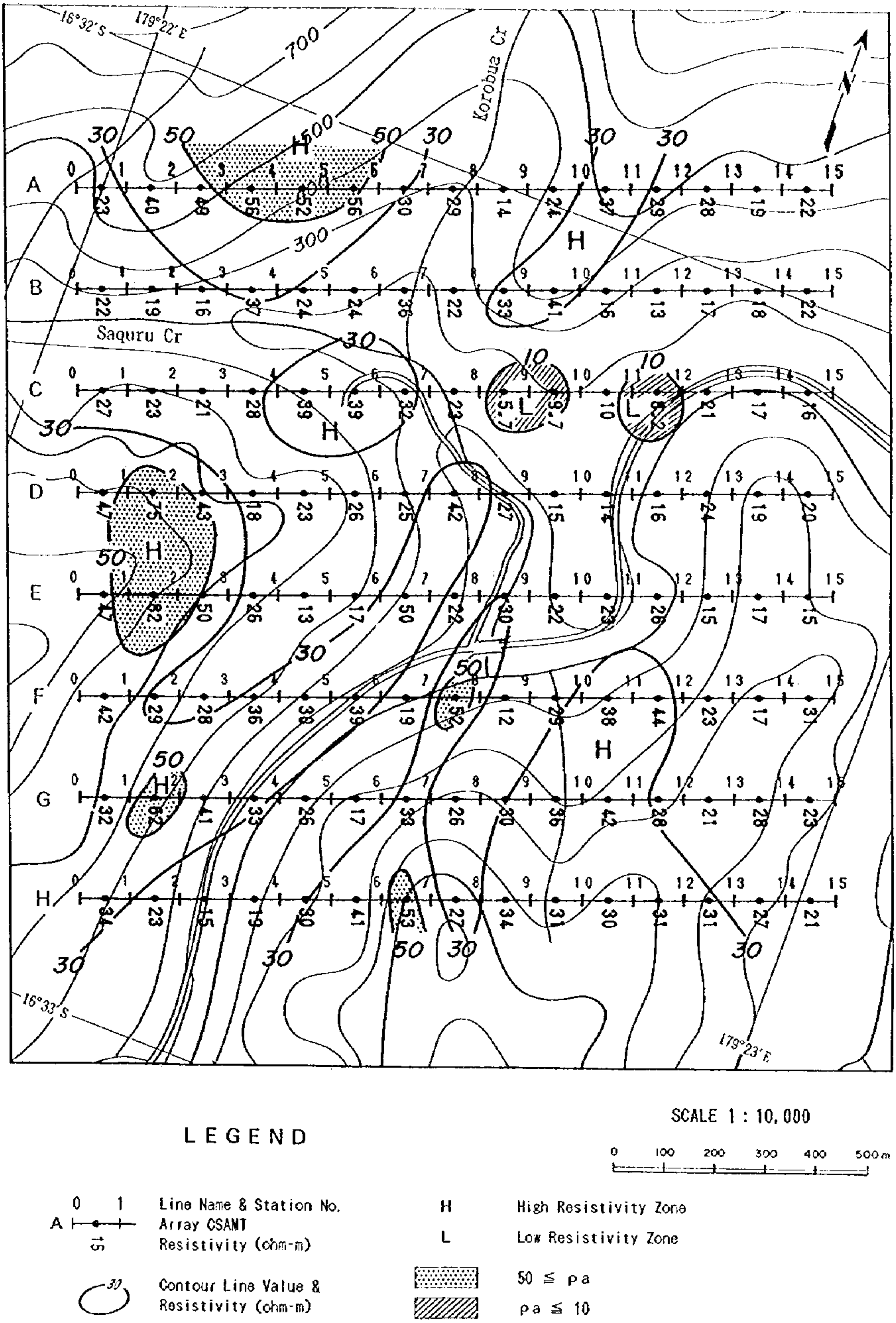


Fig. 2-2-17 (1) CSAMT Plane Map of Apparent Resistivity [2,048Hz]

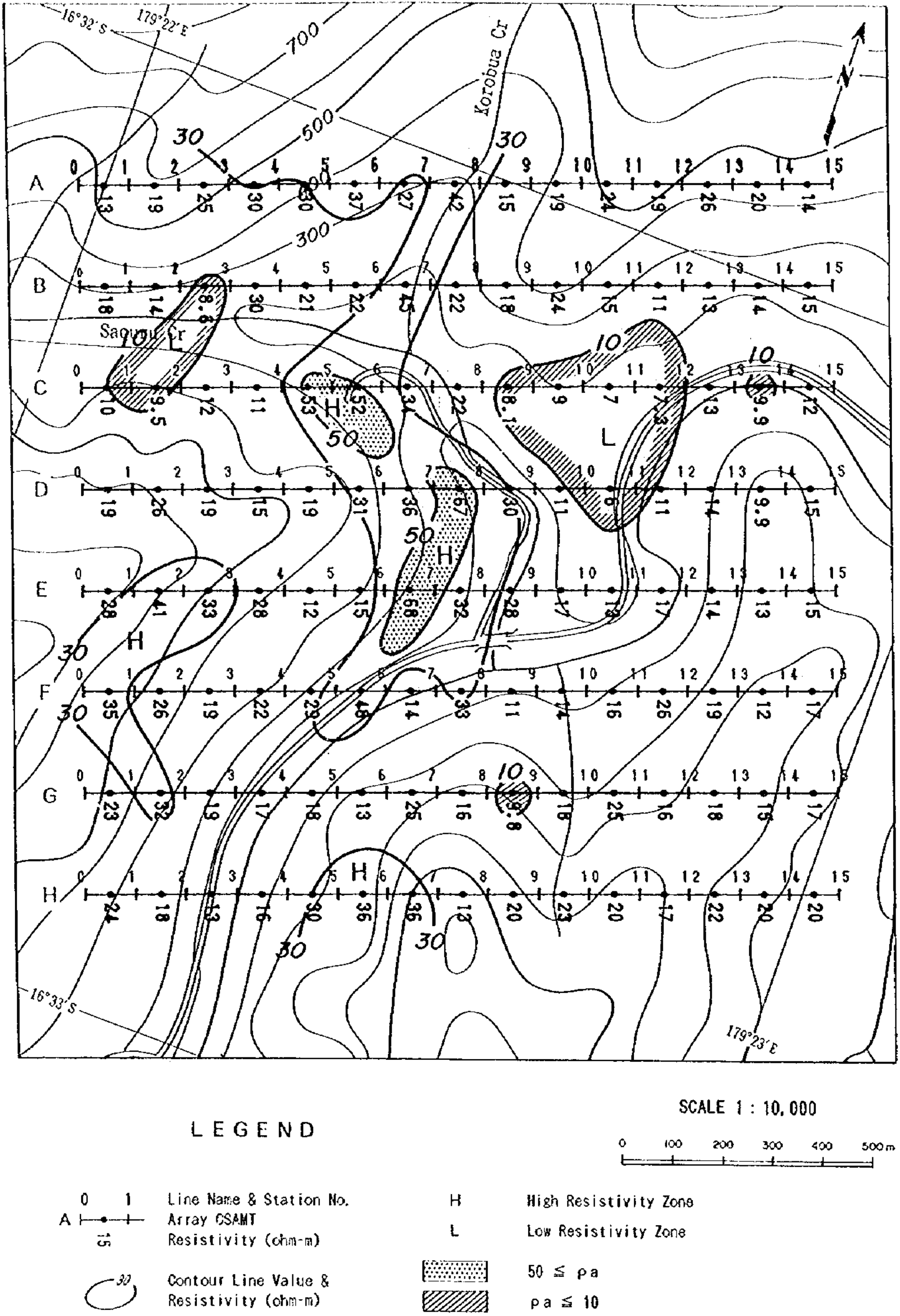


Fig. 2-2-17 (2) CSAMT Plane Map of Apparent Resistivity [256Hz]

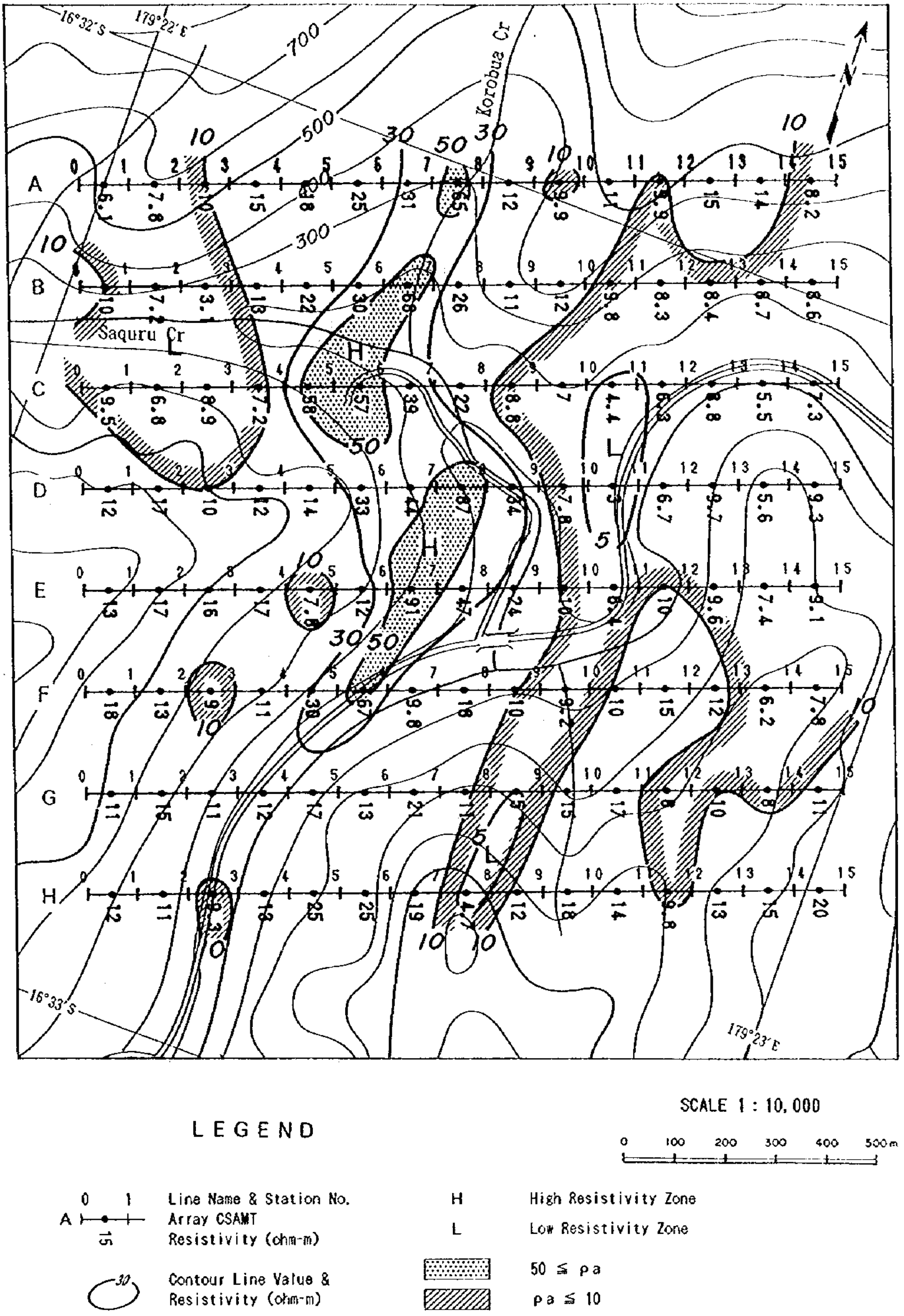


Fig. 2-2-17 (3) CSAMT Plane Map of Apparent Resistivity [32Hz]

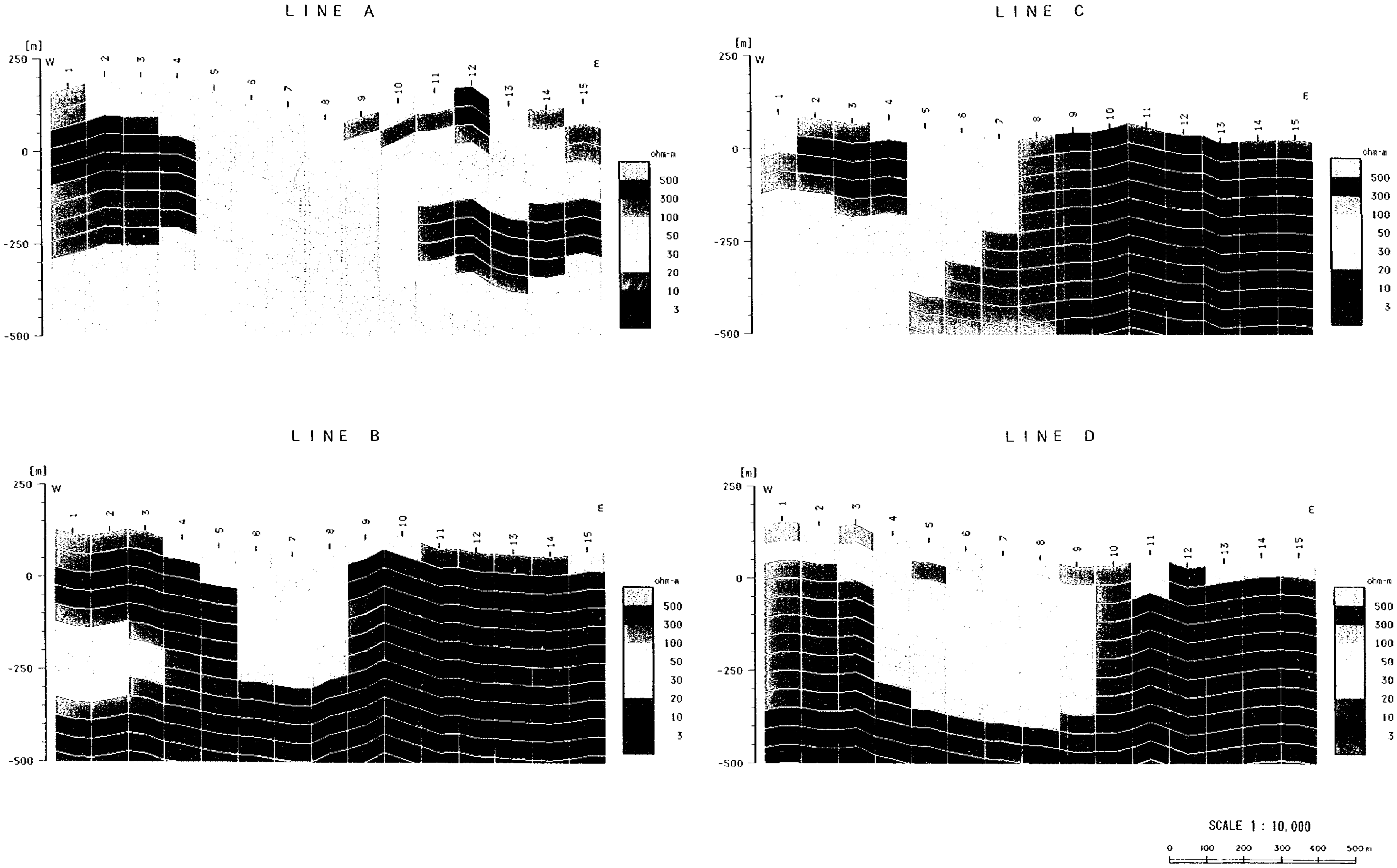


Fig. 2-2-18 (1) CSAMT 2-d. Simulation Analysis [Line A-D]

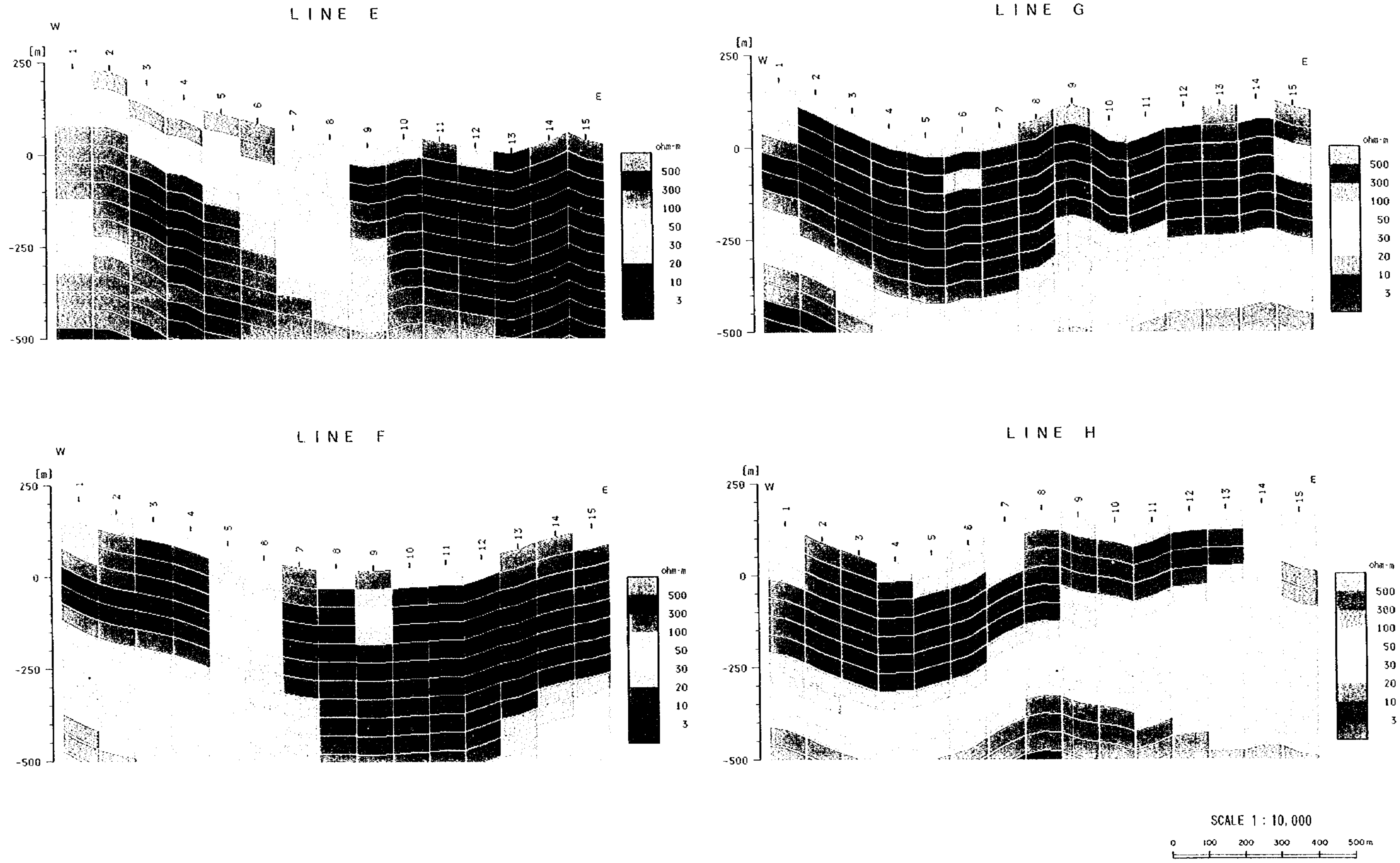


Fig. 2-2-18 (2) CSAMT 2-d. Simulation Analysis [Line E-H]

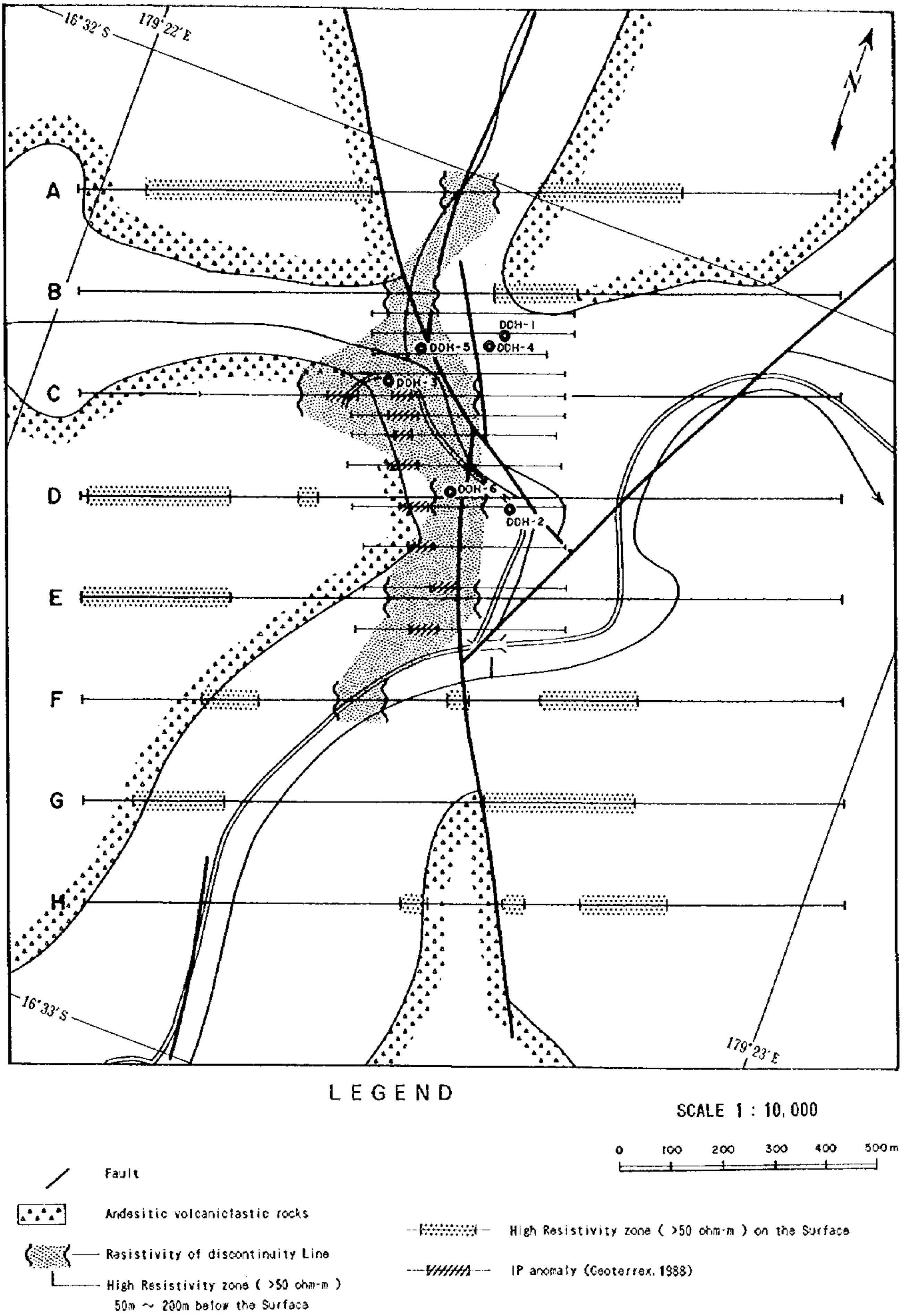


Fig. 2-2-19 CSAMT Interpretation Map

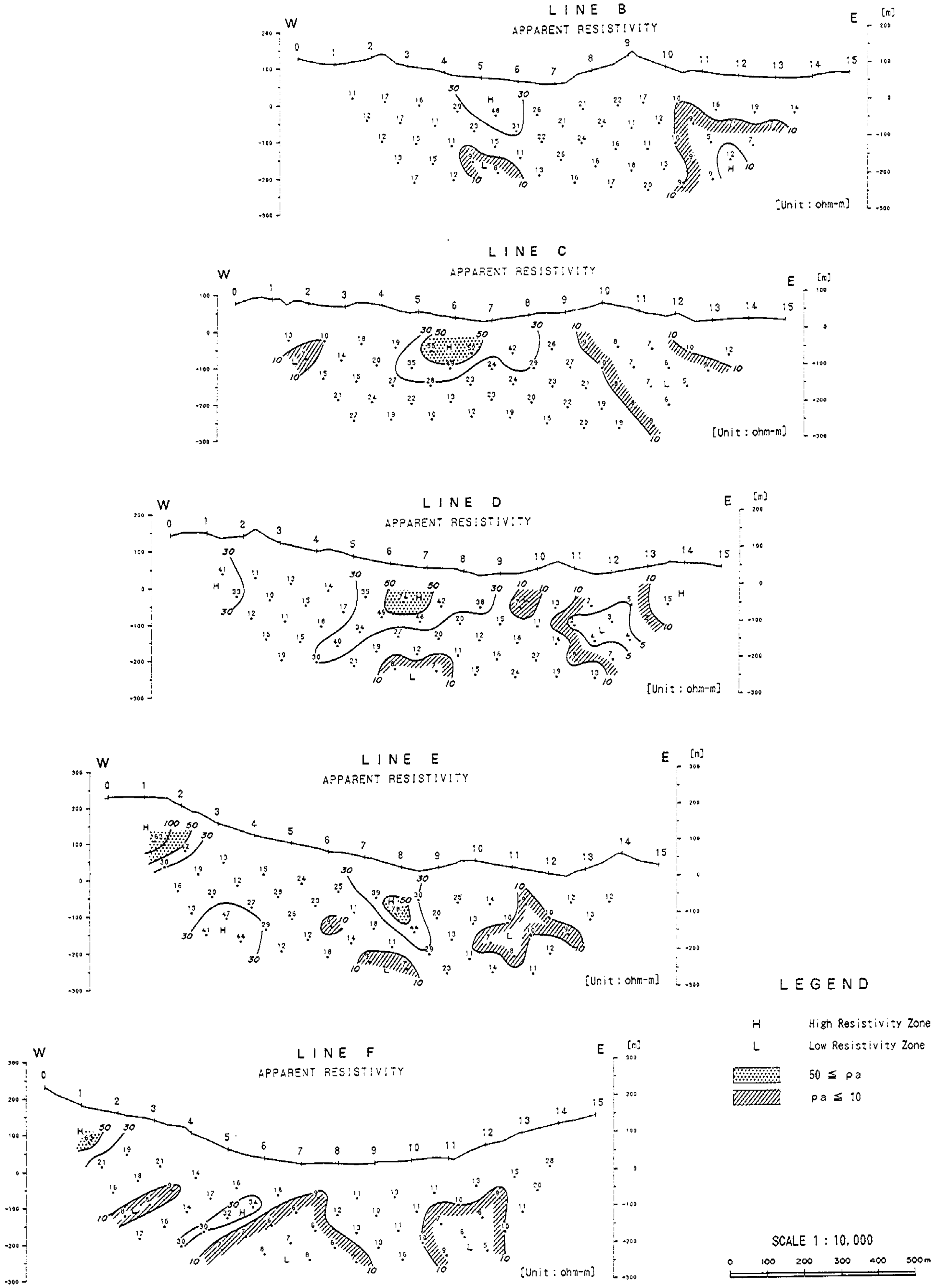


Fig. 2-2-20 TDIP Pseudo-section of Apparent Resistivity [Line B-F]

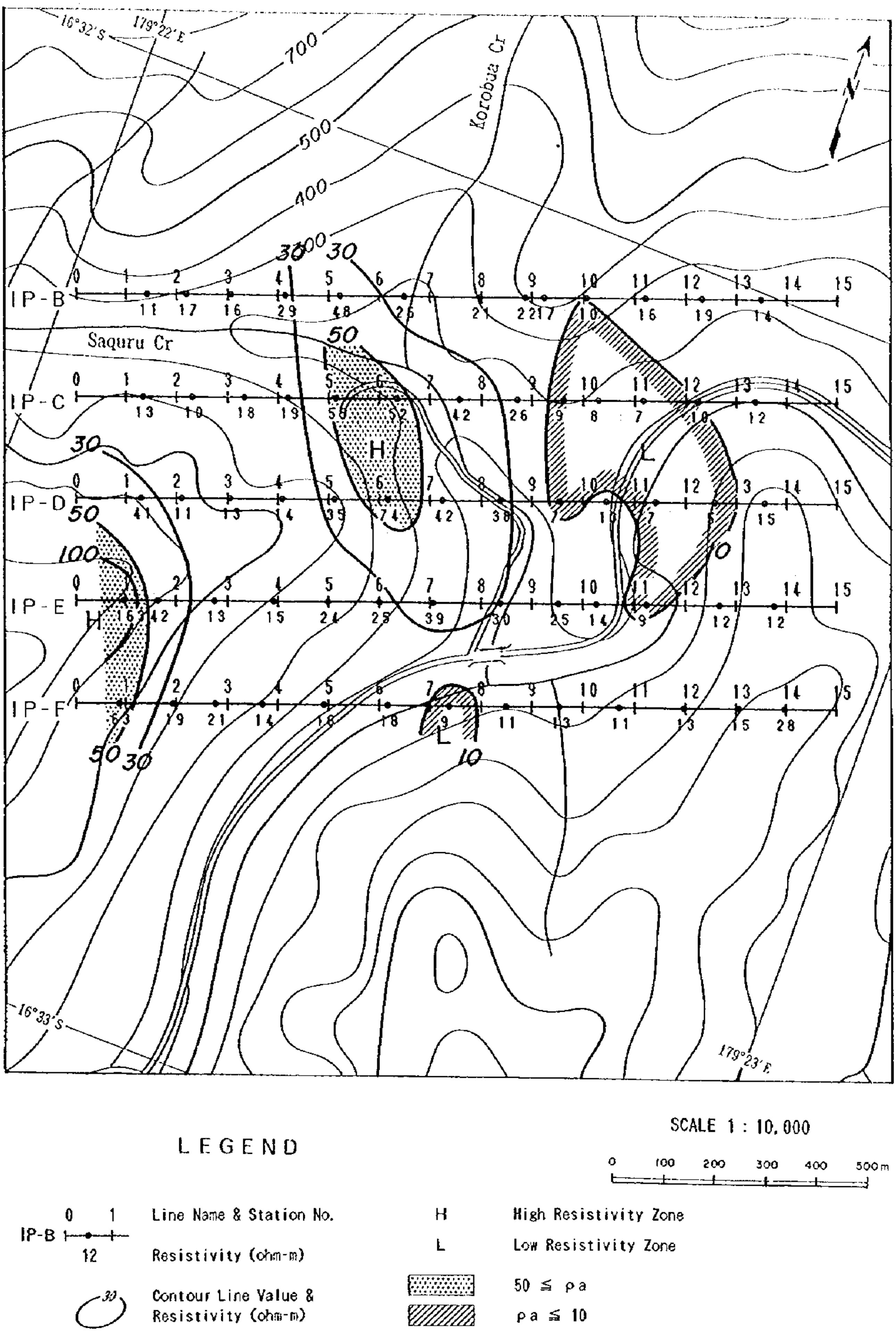


Fig. 2-2-21 (1) TDIP Plane Map of Apparent Resistivity [n=1]

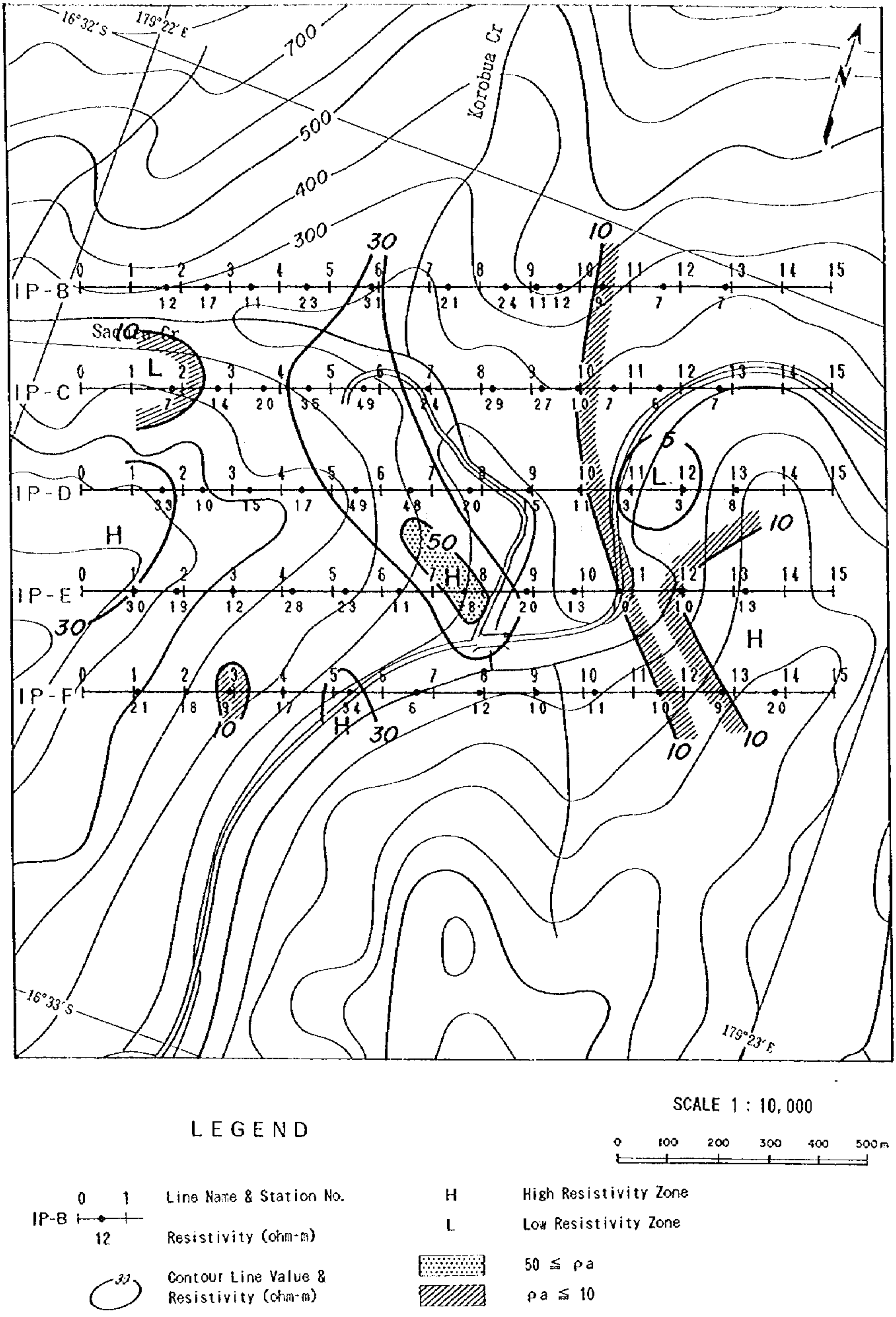


Fig. 2-2-21 (2) TDIP Plane Map of Apparent Resistivity [n=2]

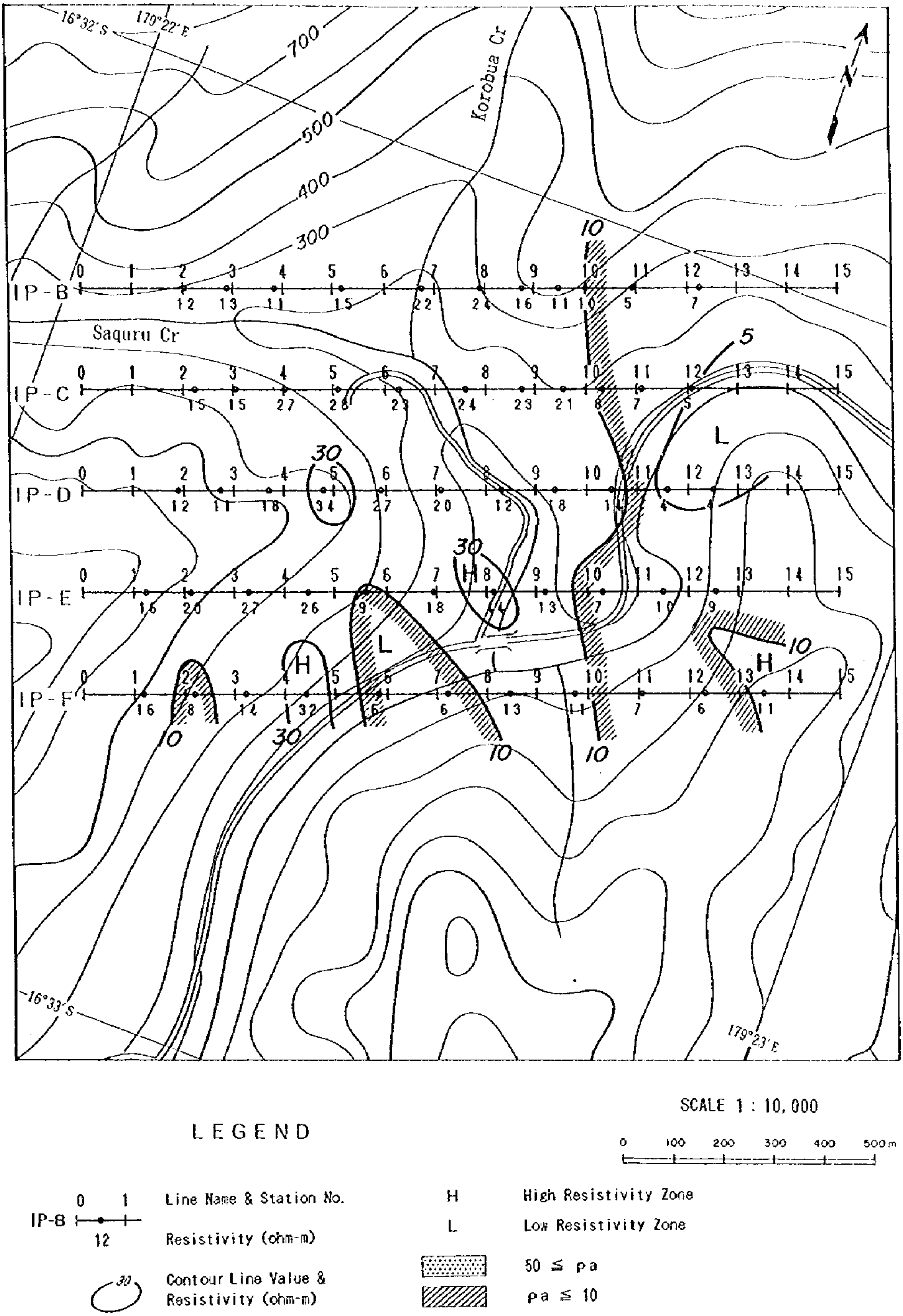


Fig. 2-2-21 (3) TDIP Plane Map of Apparent Resistivity [n=3]

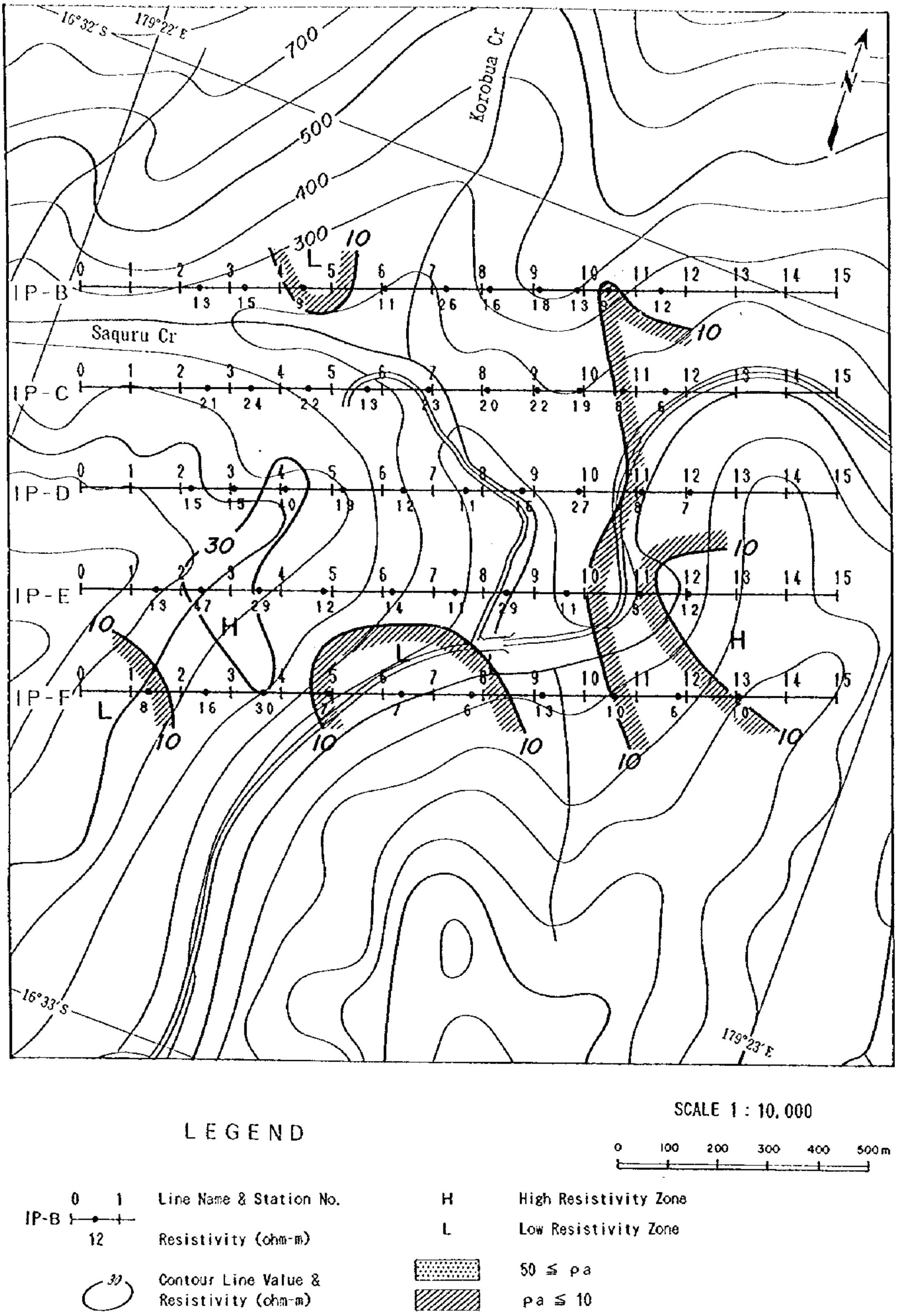


Fig. 2-2-21 (4) TDIP Plane Map of Apparent Resistivity [n=4]

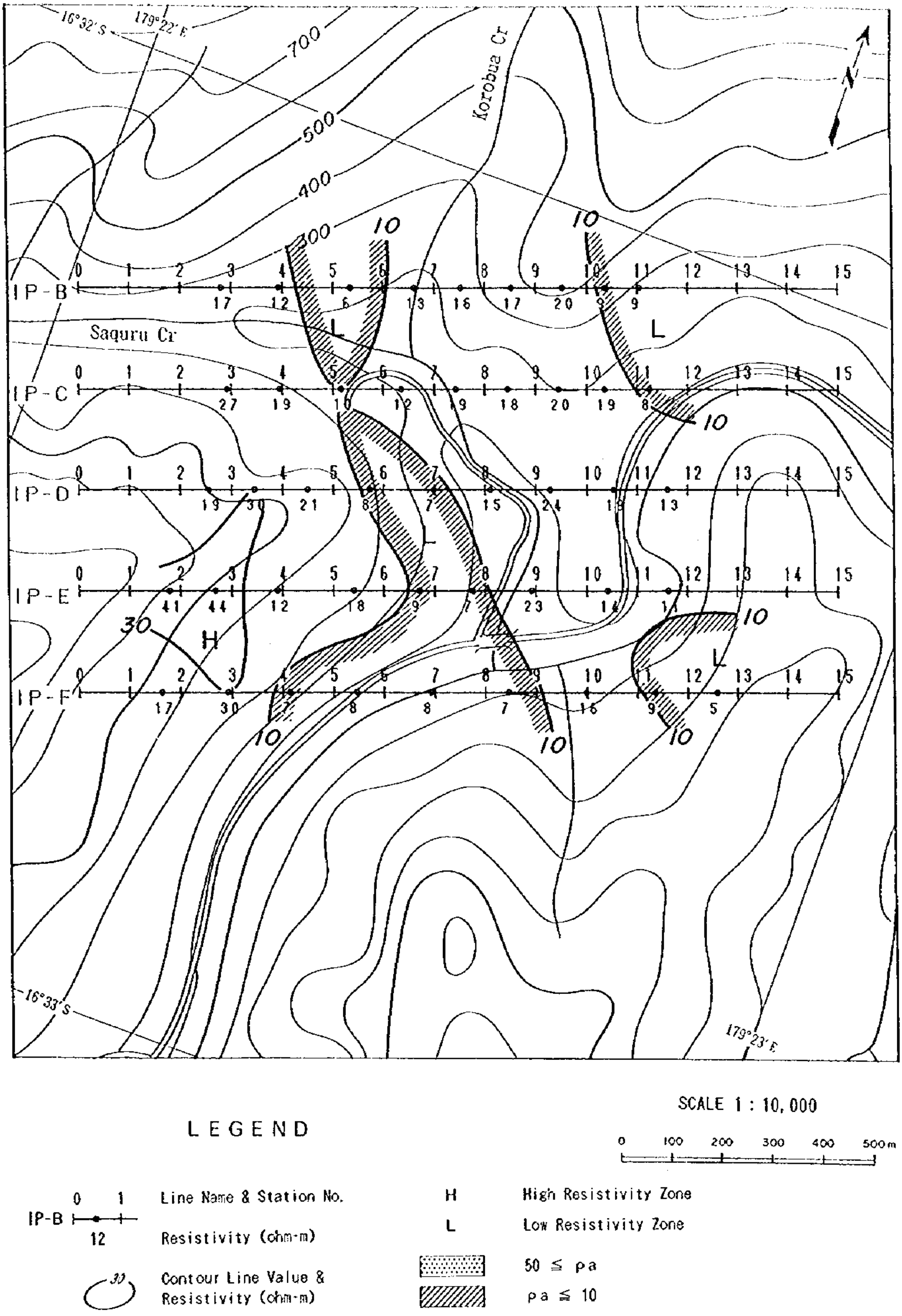


Fig. 2-2-21 (5) TDIP Plane Map of Apparent Resistivity [n=5]