ent of the Bouguer anomaly is generally higher in the northern part of the island than in the southern part. This is the feature of the long-wavelength gravity of this island.

The average depth of the density boundary, 24.1 km, calculated from the power spectra of the long-wavelength gravity anomaly, agrees with that estimated from seismic velocity by Hamburger et al.(1988). This indicates that the density boundary reflected in the long-wavelength gravity anomaly corresponds to the Moho Discontinuity.

c. Medium-wavelength gravity map

Regarding the medium-wavelength gravity anomalies, the gravity feature of the area to the northwest of the line joining Verevere - Sigatoka differs significantly from that of the area to the southwest of this line. This fact indicates the existence of an important tectonic line along this zone.

To the northwest of the Verevere - Sigatoka Line, low gravity anomalies generally prevail, and in this general low gravity area, oval shaped gravity highs occur at four localities; near Rakiraki, Tavua-Vatukoula, southwest of Mba and southeast of Nadi.

The gravity high to the southeast of Nadi agrees well with the distribution of the Yavuna Group which constitutes the basement of the Viti Levu Island. The steep gravity gradient at the side of this anomaly shows the relatively large density contrast between the Yavuna Group and the overlying formations. This coincides with the fact that relatively low density groups such as the Navosa, Nadi and Tuva directly overlie the Yavuna Group in this area.

Regarding the gravity high to the southwest of Mba, it agrees partly with the western protrusion with the surface distribution of the Koroimavua Volcanic Group. The three gravity highs, namely those at Rakiraki, Vatukoula and Mba, are located in the center of the volcanic activity which formed the Koroimavua and the Mba Volcanic Groups and thus the relationship with the solidified remnant magma is inferred. These Volcanic activities were mainly basaltic and the solidified magma would probably have formed basic plutonic rocks and the 10-20 km diameter of the anomalies is a reasonable dimension for magma chamber of such nature.

To the southeast of the Verevere-Sigatoka Line, two pairs of high and low gravity belts extending in the ENE-WSW direction occur from inland toward the coast. The two high gravity belts agree very well with the distribution of the Wainimala Group and the Colo Plutonic Suite, and the two low gravity belts with the Medrausucu and Verata Sedimentary Groups. This relationship is harmonious with the densities of the formations.

In the southwestern end of the island, contours are elongated in the NNW-SSE direction. This could be an indication of the possibility that the Verevere-Sigatoka Line does not extend in the WSW direction, but bend at right angles near Sigatoka to the NNW direction.

d. Short-wavelength gravity map

Relatively intense gravity highs, over 2 mgal, and gravity lows, under -2 mgal, occur most frequently along the northeastern to northwestern coast from Rakiraki to Nadi, the area west of Rewa River in the southeastern part of the island also include intense short-wavelength anomalies. Significant short-wavelength anomalies represent large density contrast with adjacent units in shallow subsurface (about 3 km below surface) zones. Thus, they often agree with the distribution of the intrusive bodies, particular strata, caldera and dome structures extracted from SLAR images.

In the area extending from the central part of the island to the northeastern part short-wavelength anomalies with little variation are distributed. Here, it is inferred that thick sedimentary formations of the Mba Volcanic Group and the Ra Sedimentary Group are distributed and the lateral density variation of these formations is small.

(4) Two dimensional profile analysis

Two dimensional analysis was carried out using medium-wavelength anomalies for deep structure and short-wavelength anomalies for shallow structure along three lines, A - B, C - D, and E - F. The results of the profile analysis are shown in Figs. 2-1-22 to 24.

The upper surface of the Yavuna Group which is the basement of Viti Levu was the objective of the medium-wavelength anomaly analysis. The outcrop of Yavuna Group in the C - D profile was selected as the control point. The results of the analysis with the density contrast of 0.3 $/cm^3$ and 0.5 $/cm^3$ are shown. The former is more harmonious with the average depth of the density boundary from power spectral analysis.

The depth of the basement (Yavuna Group) obtained by medium-wavelength high gravity anomalies with the assumption of $\Delta\rho = 0.3\ /cm^3$ is; about 1,000m at the center of the medium-wavelength gravity high southwest of Mba, also about 1,000m at the center of medium-wavelength gravity high east of Vatukoula, and 1,500 m at the center of high anomaly west of Rakiraki. These figures are obtained under the assumption that the medium-wavelength anomalies are the reflection of the relief of the upper surface of the basement complex. In reality, however, marked medium-wavelength high gravity is not only caused by the rise of the basement surface, but also by large high density igneous bodies resulting from the solidification of large scale magma. In the present case, when the high anomaly caused by the high density igneous body is subtracted, the variation of the gravity caused by the basement relief would be considerably smaller, and the depth would be shallower.

In short-wavelength anomaly analysis, there are localities with low density layers in the upper horizons and with low density layers in the lower horizons, and thus the densities were set by referring to geological maps. Three results with $\Delta\rho$ = -0.2 /cm^3, -0.3 /cm^3 and 0.3 /cm^3 are shown.

1-3-3 Discussions

During the first phase survey of the present project 15 areas, A - O, were extracted as promising for locating epi- to mesothermal mineralized zones from SLAR analysis and geological study. The geologic structure of these areas were considered from gravity features (Fig. 2-1-25). Then the relation between the gravity data, geology and SLAR geologic structures was examined in Sigatoka area in southwest Viti Levu where gravity survey with a large number of densely spaced gravity stations was carried out.

All relevant data concerning; altered zones, mines, mineral showings, various SLAR structures, high magnetic anomaly distribution, medium-wavelength gravity contours with 10 mgal intervals, short-wavelength gravity lows and highs and gravity faults of the whole Viti Levu Island were examined. The result was compiled in a integrated interpretation map (Fig. 1-3-11). This map was used as the basis for the following consideration on the prospectivity of Viti Levu.

a. The gravity pattern of Viti Levu is clearly divided by medium-wavelength gravity features into two areas by the Verevere - Sigatoka Line extending in the NE-SW direction. Large scale gravity highs occur isolated within a region of low gravity to the northwest of the line, while to the southeast, high and low anomalies occur as parallel belts with NE-SW trend. These two areas differ significantly not only in the pattern of gravity distribution, but also in the relation of the gravity features to the geologic structure, altered zones, and the SLAR structures.

b. In the area north of the Verevere - Sigatoka line, there are several localities where more than three of the following factors overlap; namely particular geologic formations, altered zones, SLAR structures, medium-wavelength gravity high, and short-wavelength gravity high/low. This is particularly notable in the central part of medium-wavelength gravity high. A representative example would be the locality to the east of Vatukoula where the Emperor deposit is located and similar overlap occurs to the southwest of Mba where the Kingston deposit is situated and to the west of Rakiraki.

c. These three localities have "collapsed structure" or "photogeologic structure indicating collapsed structure - resurgent caldera" and plutonic bodies intruded into Mba Volcanic Group at about the same time. The medium-wavelength gravity highs at the three localities are located at inferred volcanic centers and have circular to oval shape. These facts are interpreted to reflect the existence of high density mafic igneous bodies formed by the solidification of magma chambers.

The Emperor deposit is located at the margin of a collapsed structure and is emplaced in the fissures which most probably were formed by the volcanic process. It is, therefore, reasonable to consider the possibility of epithermal gold deposits, similar to those of the Emperor Mine, at the centers of the medium-wavelength gravity highs at the three localities. Medium-wavelength high gravity zone over 20 mgal would be the targets for all three localities.

d. Aside from the above three localities northwest of the Verevere - Sigatoka Line; altered zones, SLAR structures,and short-wavelength anomalies overlap at northwest of Mba and Sabeto south of Lautoka. Both localities are situated at the periphery of the medium-wavelength gravity high to the southwest of Mba and are considered to be related to the activities of the small magma chambers which branched out from the large magma chamber to the southwest of Mba. Both localities have epithermal gold potentials.

e. The medium-wavelength gravity high to the southeast of Nadi which coincides with the distribution of the Yavuna Group is considered to be mainly caused by the rise of the basement Yavuna Group. This anomaly, however, is similar to that to the east of Vatukoula, and southwest of Mba, and west of Rakiraki in its size and shape, and the rocks of the Yavuna Group at the surface is basalt. Thus high density mafic igneous body may possibly exist in the deeper parts.

f. "Sigatoka" area is located to the northwest of the Verevere - Sigatoka Line, but Wainimala Group and Colo Plutonic Suite are predominant in the area and the geology is similar to that of southeast of the Line. The potential mineralization would be porphyry type associated with the Colo Plutonics and clarification of the morphology of the summit of the Colo Plutonic Suite is important for mineral exploration. The many mineral showings, however, do not show characteristic gravity anomalies due to the small density contrast between the rocks of the Colo Plutonics and the Wainimala Group.

g. The mineralization southeast of the Verevere - Sigatoka Line includes; volcanic type porphyry copper Namosi Deposit, plutonic type porphyry mineralization, skarn mineralization, replacement mineralization, bedded manganese and gold and iron placers. These, however, do not show characteristic gravity anomalies. This probably is due to the small density contrast between the andesite of Medrausucu Group and porphyries of Medrausucu Group and Wainimala Group or between Colo Plutonics and Wainimala Group. This is similar to the case of "Sigatoka" area.

The areas from north of Suva to the south of Monasavu Dam and east of Sigatoka should be considered for future mineral exploration because there are many short-wavelength anomalies of unknown origin, which could indicate the existence of blind intrusive bodies, collapsed structures and other relevant features.

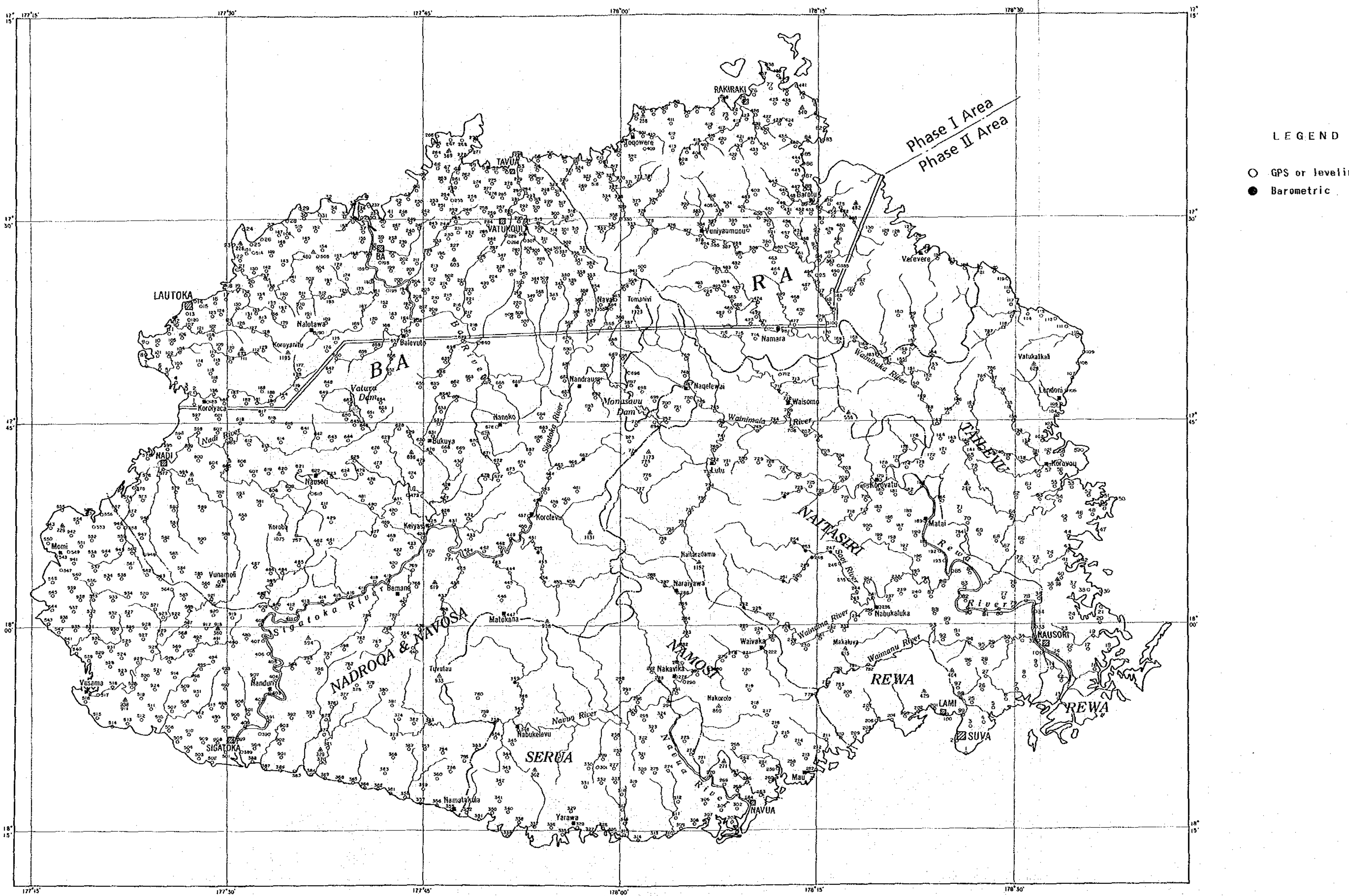
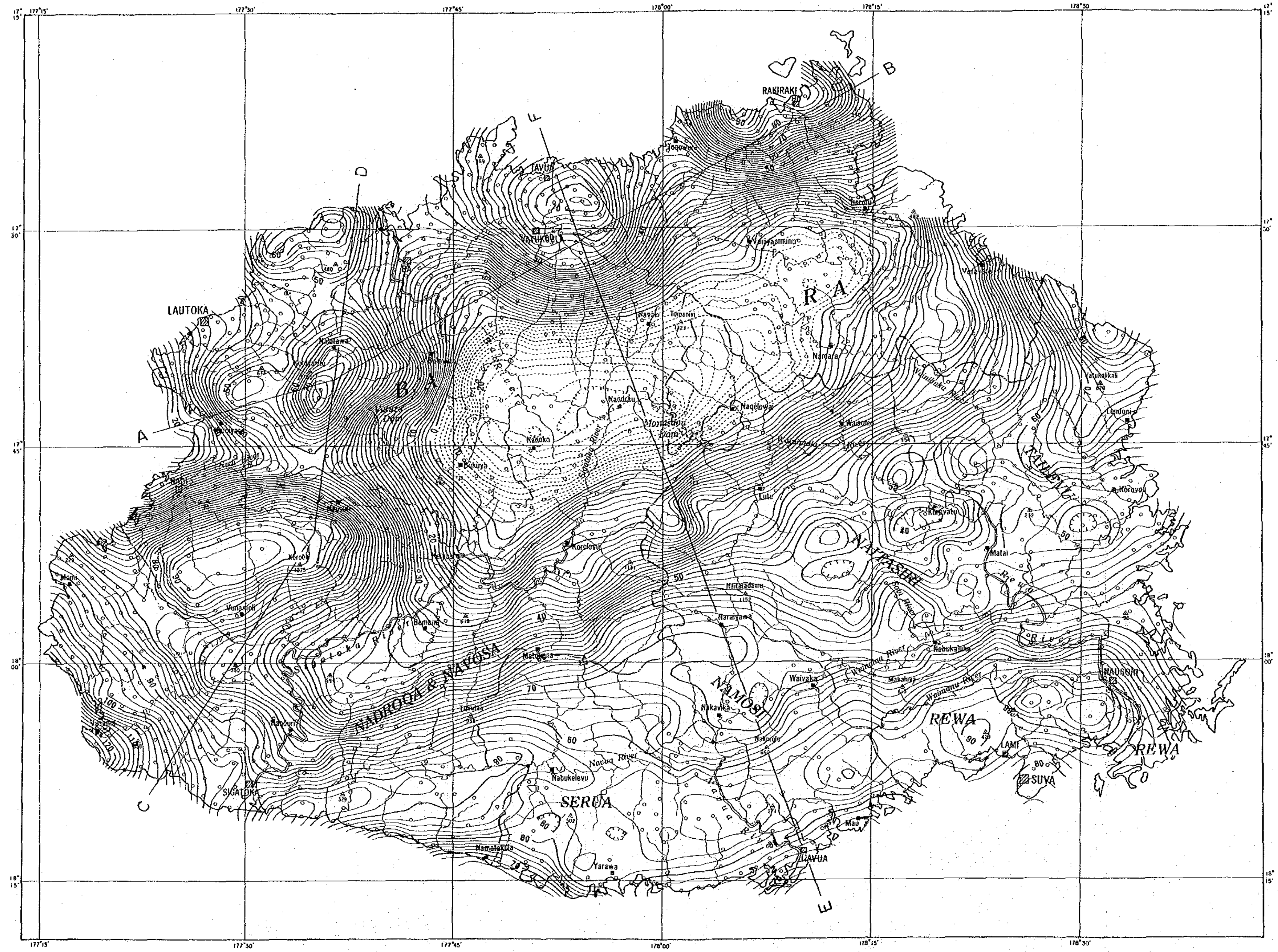


Fig.2-1-17 Gravity Stations (1:500,000)



LEGEND

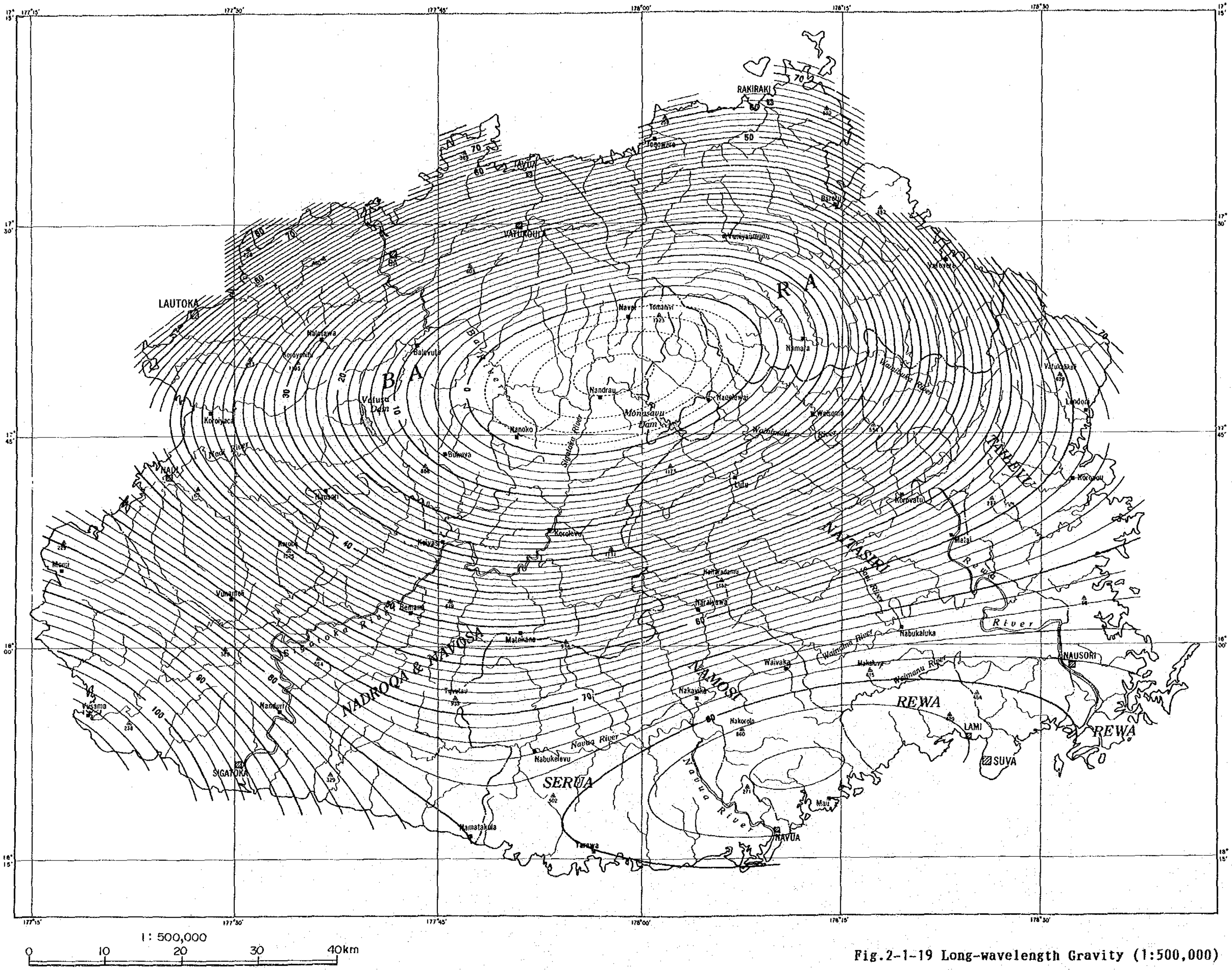
Contour inteval : 2mgal

A — B Section line

1 : 500,000

0 10 20 30 40km

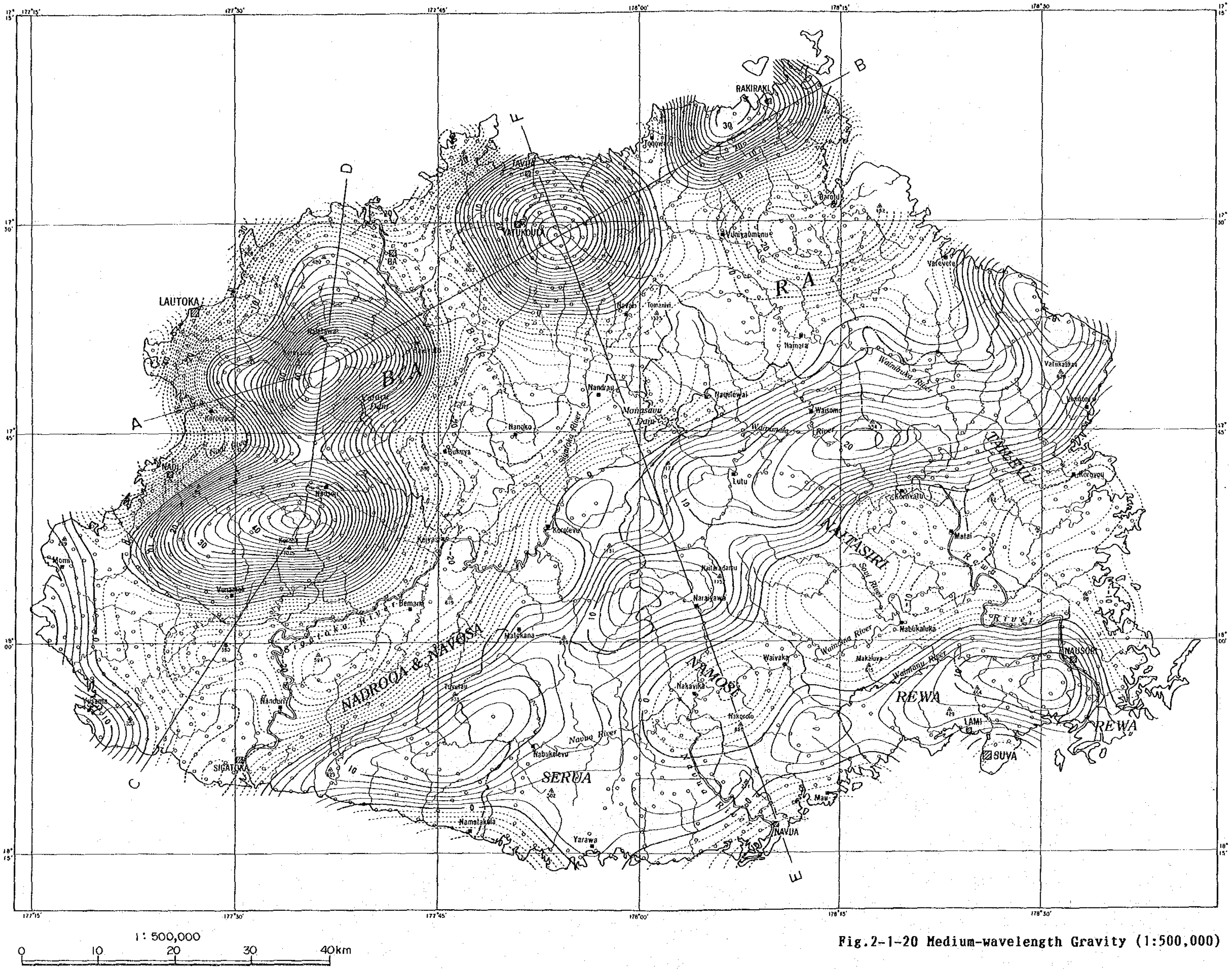
Fig.2-1-18 Bouguer Anomaly Map (ρ=2.50 g/cm3)(1:500,000)



LEGEND

Contour inteval : 2mgal

Fig.2-1-19 Long-wavelength Gravity (1:500,000)



LEGEND

Contour inteval : 2mgal

A − B Section line

Fig.2-1-20 Medium-wavelength Gravity (1:500,000)

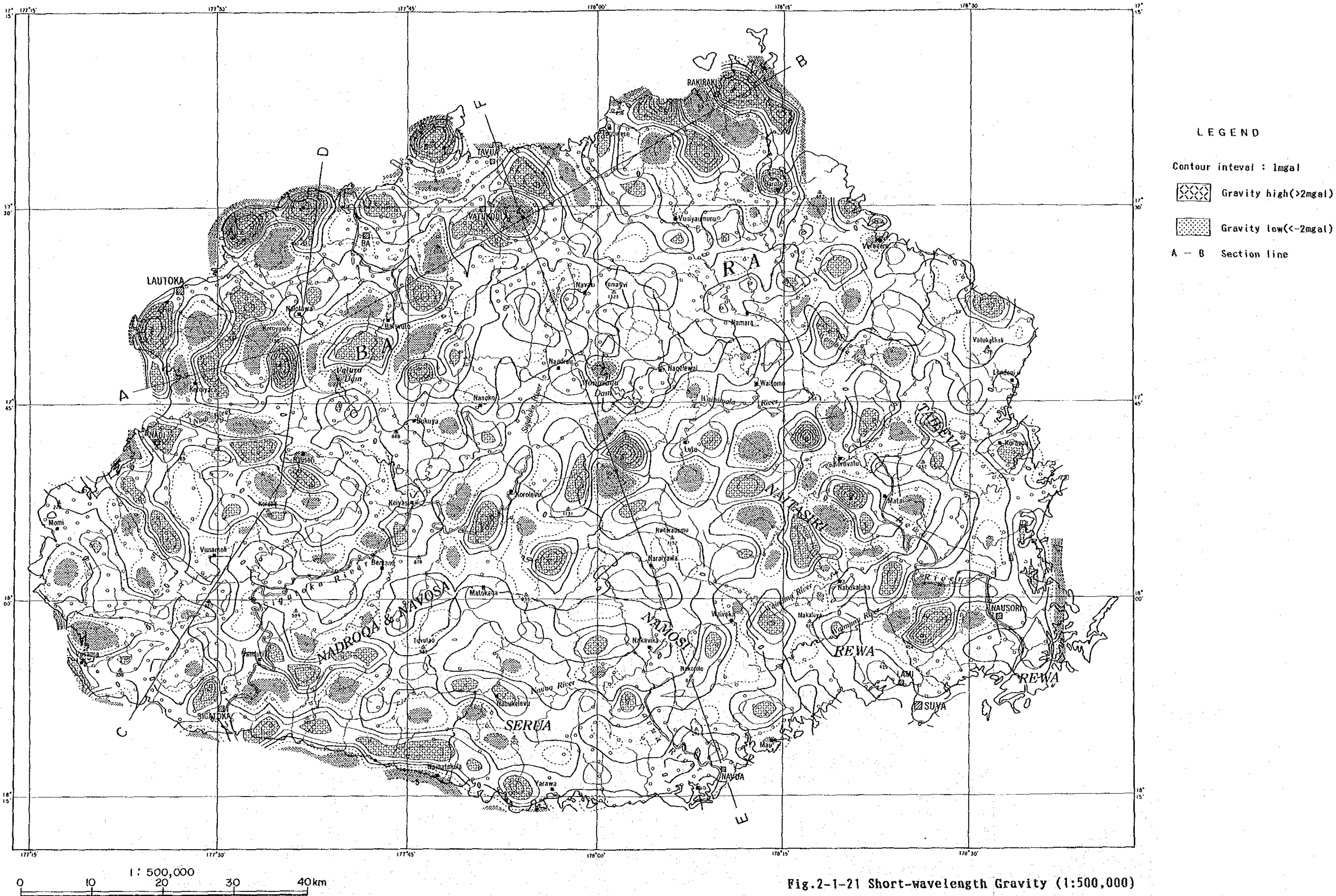


Fig.2-1-21 Short-wavelength Gravity (1:500,000)

A — B

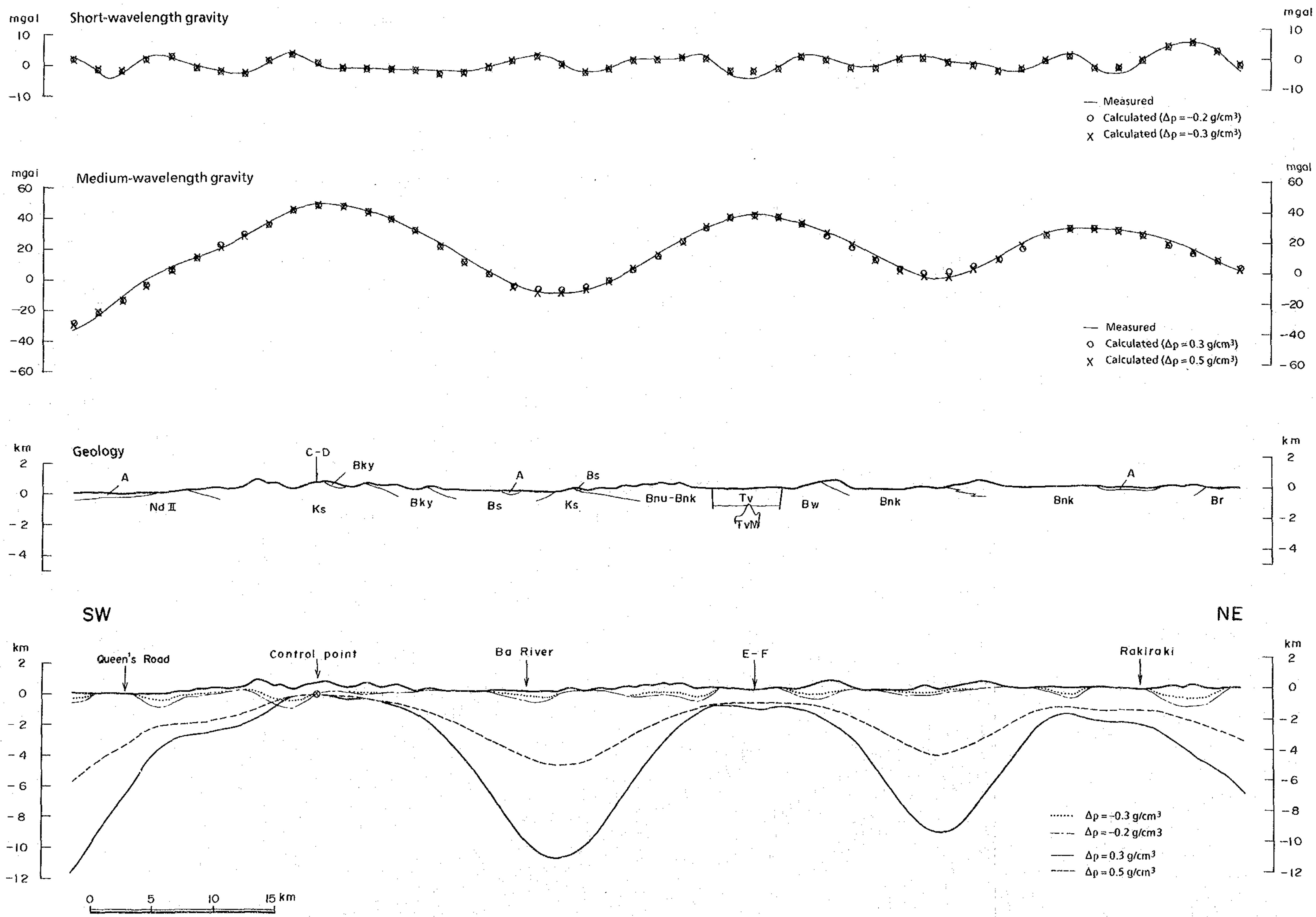


Fig.2-1-22 Gravity Analysis Profile A-B

LEGEND

ALLUVIAM
- A :Alluviam, beach sand, etc.

BA VOLVANIC GROUP
- TV :Tavua Volcanic Product
- Bnk :Nakorotubu Basalt
- Br :Rokavukavu Basalt
- Bnu :Nukunuku Lavas
- Bky :Koroyanitu Breccia
- TVM :Tavua Monzonite
- Bwn :Wainatio Volacanic Product
- Bka :Karavi Volcanics
- Bnm :Namosau Volcanics
- Bw :Wainivoce Trachybasalt
- Bmv :Muanisavu Sill
- Bs :Saru Shoshonite
- Bnd :Nadrou Creek Intrusives
- Bvk :Vatuknro Greywacke

CUVU SEDIMENTARY GROUP
- Cu :Sedimentary rocks

KOROIMAVUA VOLCANIC GROUP
- Ks :Sabeto Volcanics

NAVOSA SEDIMENTARY GROUP
- Nva :Andesitic Pyroclastic rocks

NADI SEDIMENTARY GROUP
- Nd II :Sandstone

MENDRAUSUCU GROUP
- Mnv :Navua Mudstone
- Mnm :Namosi Andesite

TUVA GROUP
- Tt :Takaro Congromerate
- Tc :Cici Sandstone

COLO PLUTONIC GROUP
- Ct :Tonalite, Diorite

WAINIMALA GROUP
- Wnm :Namalavu Congromerate
- Wtt :Tuvutau Greywacke
- Wnu :Nubuonaboto Volcanics
- Wta :Tari Formation
- Wla :Lawalevu Sandstone
- Wnd :Nadele Breccia
- Wnb :Nabu Formation
- Wm :Matawailevu Dacite

YAVUNA GROUP
- Yvs :Yavuna Stock(Tonalite)
- Yv :Yavuna volcanics

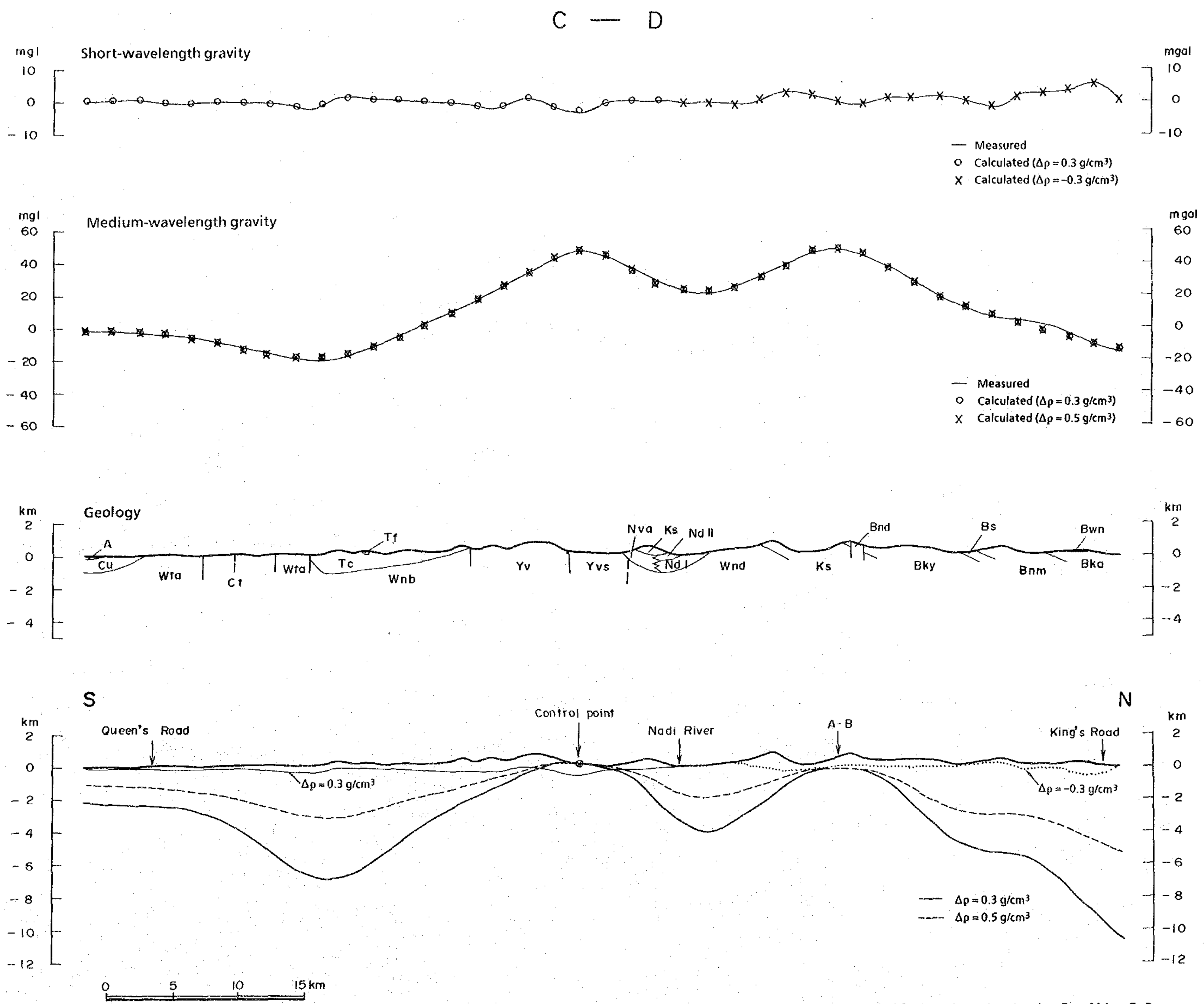


Fig.2-1-23 Gravity Analysis Profile C-D

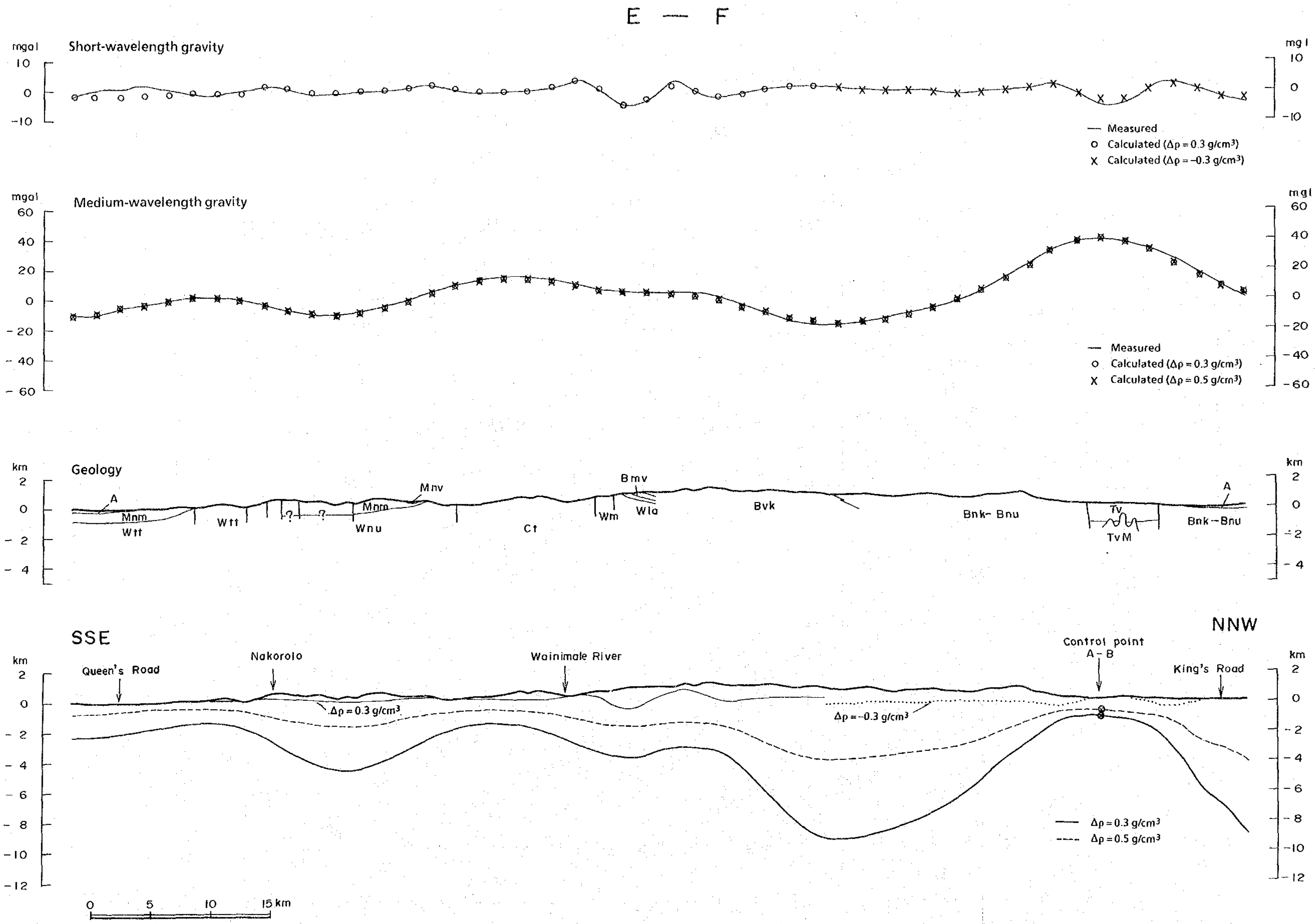
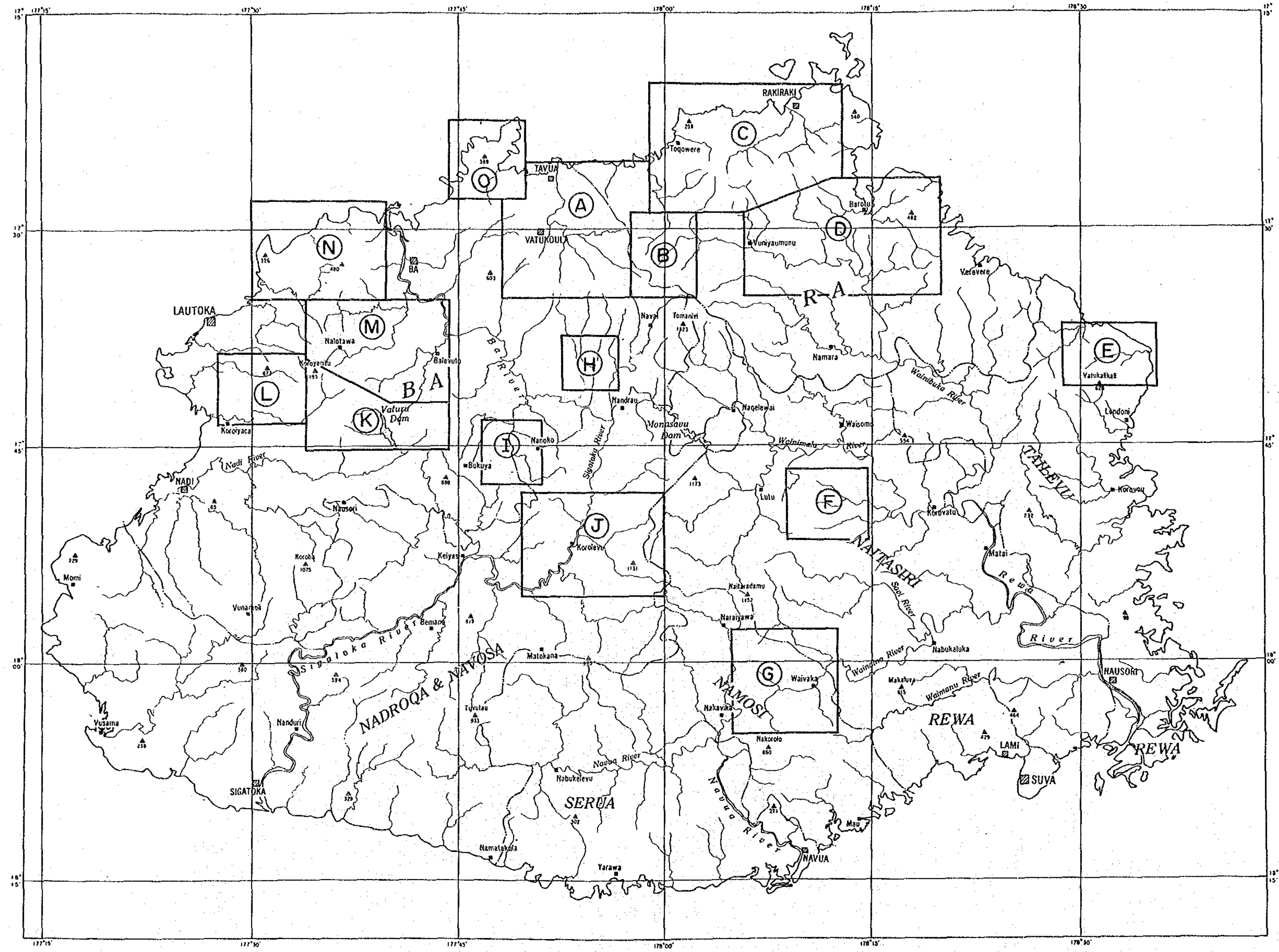


Fig.2-1-24 Gravity Analysis Profile E-F



1: 500,000
0 10 20 30 40km

Fig.2-1-25 Locality of Areas A-O

Chapter 2 Mba-west Area

The area is relatively unexplored; there are alteration zones scattered throughout the area; there is the Mbalevuto Gold Prospect in the south; the possibility of the existence of volcanic depressions and domes in the southwest and north; and the gravity structure in the north is similar to that of the Tavua Caldera zone. Based on these conclusions of the previous year, photogeological interpretation, geological and geochemical surveys and drilling were conducted in the second phase. The geological survey and drilling were carried out in the third phase.

2-1 Photogeological Interpretation

2-1-1 Method of Interpretation

(1) Objectives

This work was carried out in order to understand the relation between the regional geology, geologic structure and mineralization of the Mba-west area through photogeological interpretation.

(2) Area

Mba-west area is located in the northwestern part of Viti Levu and an areal extent of 500km^2 (21km in E-W and 24km in N-S directions) was analyzed (Fig. 1-4).

(3) Aerial photographs used

The aerial photographs used were the monochrome photographs provided by the MRD. They are:

Course No.	Phto.No.	Number of Sheets	Scale	Cloud Cover	Photo Date
RAAF3365	58- 70	13			
RAAF3365	105-117	13			
RAAF3365	137	1	Approx.	0%	June/1986
RAAF3370	49- 59	11	1:50,000		
RAAF3370	194-206	13			
Total		51			

(4) Method of interpretation

First, the regional geologic structure and lithologic distribution were clarified by photogeological interpretation. Then the photogeological characteristics of the vicinity of the known mineral prospects were identified and finally the relation between the mineralization of this area and the geology was deduced.

(5) Criteria for interpretation

a. Geologic units

The standards used for delineating geologic units are as follows.

<u>Photographic characteristics</u>:

Tone; indicating the brightness by light, medium, dark.

Texture; very fine, fine, medium, coarse.

<u>Morphologic elements</u>:

Drainage pattern; dendritic, parallel, radial inward, radialoutward, meandering.

Drainage density; high, medium, low.

Rock resistance; very high, high, medium, low, very low.

Morphology of ridges and valleys; cross sections.

Development of bedding; good, poor.

Development of lineament; good, medium, poor.

b. Geologic structure

The standard used for interpreting the geologic structure are as follows.

<u>Folds:</u> Folds are identified by considering the distribution of geologic units, bends in the drainage pattern, trace of cuesta topography, extraction of dip of the geologic units and other factors.

<u>Lineaments:</u> Lineaments indicate the existence of fractures on the surface or at shallow subsurface regions. Only those features considered to be geologically significant were extracted as lineaments. Those in the present area were not very clear and are shown by broken lines in the map.

The major morphological features used for identifying lineaments are as follows.

① Existence of fault scarps.

② Existence of linear fault valleys.

③ Notably linear flow of rivers.

④ Existence of kerncols and kernbuts.

⑤ Linear continuation of break points of slopes.

The above features vary in accordance with the geology, geologic structure and other factors of the area. However, empirically it can be safely considered that most of the lineaments can be explained by the above morphological features.

c. Annular and dome structures

The morphological features for identifying annular structures are; ① inward radial or semi-inward radial drainage patterns, ② circular or arc shaped depressions with similarly shaped marginal ridges.

In the structural feature mentioned in ②, it strongly suggests the existence of eroding calderas where there are sharp continuous scarps along the inner sides of the marginal ridges. These are called caldera structures (in the interpretation map Fig. 2-2-1, teeth are drawn to indicate the sharp scarp).

The features indicating dome structures are ③ zones raised relative to the adjoining areas with circular or oval periphery and outward radial drainage pattern.

2-1-2 Results of Interpretation

(1) Delineation of geologic units

From the combination of the factors mentioned in the previous section, the geology of the survey area was divided into four unit groups, A, B, C and I, then B and I were further subdivided to a total of ten geological units (henceforth units) as shown in Fig. 2-2-1. An alphabetical symbol is given to each unit in the order of age from older to younger and I was given to a unit which was inferred to be an intrusive body.

The photo-characteristics and morphological expression of the units are shown in Table 2-2-1.

The geological map (1:250,000) of Viti Levu prepared on the basis of the work carried out last year was referred to during the classification.

(2) Structural characteristics

Folds: As mentioned in the earlier section, bedding is observed in Units B_{1-1} and B_{2-2}. These dip southward in the northern and northward in the southern part of the area. The bedding in the north occurs very locally. This information is not sufficient to understand the general structure of the survey area, but combined with the distribution of the units, it is believed that the overall structure is gently dipping northward. There is, however, a possibility of localized fold structures.

Lineaments: A total of 95 lineaments were extracted from this area (Fig. 2-2-1). The following features regarding the lineament distribution are observed from the above.

Lineaments occur densely in the southern and northern parts in Units A and B.

The dominant trends of the lineaments are WNW (22%), N (17%), NW (15%), E (15%) and the proportion of the lineaments trending NE is less than 4%.

Regarding the length of the lineaments, 1-2km are most abundant, 42 lineaments, followed by shorter than 1km, 24, 2-3km, 16, these amount to 86% of all lineaments.

The longest lineament extends for 8km in N-S direction. It is the border of B_{1-2} and B_{2-1}.

c. Annular structures, caldera structures and dome structures

One annular structure, three caldera structures and three dome structures were observed in the survey area. The relation between these structures and the geologic units are as follows.

Annular structure: Occurs in an area covering Units A and B_{1-1}.

Caldera structures: Observed in Units B_{2-1}, B_{2-2} and B_{2-3}. That in B_{2-1} has a closed circular shape while those of the latter two are arc shaped.

Dome structures: All occur within annular structure. They are in Unit B_{1-1} and are surrounded by Unit A. The maximum diameter of the dome is 1.3km.

2-1-3 Discussions

(1) Lithology and geologic structure

a. The survey area is inferred to consist of volcanic rocks from; the existence of caldera and dome structures, various photogeologic characteristics and morphological features.

b. These volcanic rocks are considered to have been formed by at least four volcanic activities. Unit B_1 by activities with the center near the annular or dome structures and Unit B_2 by independent volcanic activities with centers at each caldera structure. These activities probably migrated northward from the south.

c. The overall geologic structure of the survey area is considered to be monoclinic with gentle northward dip. But gently southward dipping bedding is observed locally in the northern part and there is a possibility of local fold structure.

d. There is a tendency for the lineations to develop in the vicinity of annular, caldera and dome structures. Thus the lineations are considered to be closely related to the formation of these structures.

e. Lateral faults are inferred to occur where lineaments are arranged en echelon as in Fig. 2-2-3. In this figure, the inferred lateral faults and their sense of movement are shown as well as the directions of the major maximum horizontal compressional stress axes. It is seen that there are two directions of the major stress axis, namely NNW to NNE and ENE to ESE.

Similar analysis was carried out in the first phase of this project which was conducted in 1990. It is now clear that the maximum horizontal compressional stress axes of ENE to ESE direction is predominant since Middle Pliocene and that NNW to NNE was the dominant direction from latest Miocene to Early Pliocene.

The major formations of the area with lineaments are of latest Miocene to Early Pliocene in age and the above two directions of the stress axes obtained this year is harmonious with the results of last year.

From the above, it is possible to estimate the age of some of the lineations. Namely, lineaments considered to have formed in Early Pliocene are distributed in the central and eastern part of southern Mba-west area, and those believed to have formed since Middle Pliocene occur in northwestern, central, and southwestern parts.

(2) Alteration zones

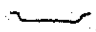
Mineral showings in the north of Kingston Mine in the southern margin of the survey area and the Mbalevuto Mineral Showing in the southeastern part are known. These are high sulfidation (acid sulfate) type of epithermal vein, network and dissemination type gold mineralized zones. They occur in the alunite, kaolin and quartz acidic alteration zones.

The photogeologic features which characterizes these alteration zones are the low resistance and the low relief.

The zones with photogeologic similarity with the above two alteration zones amount to eight (Fig. 2-2-1). They are listed below.

Table 2-2-1 Photogeological Interpretation Chart of the Mba-west Area

(Phase II)

Geologic Units			Photo-characteristics		Morphological expression						Conclusions		Previous Geologic Map (1 : 250,000, 1991)	
					Drainage									
			Tone	Texture	Pattern	Density	Resistance	Cross section	Bedding	Lineament				
C			medium to light	very fine (mosaic)	meandering	partly high and low	very low		none	none	Alluvium		Alluvium	
B	B₂	B₂₋₃	light and dark	medium	dendritic, outward and inward radial	medium	very high		none	poor	Koroivunatoto Volcanics		Ba volcanic Group	Nakorotubu Basalt
B	B₂	B₂₋₂	light to dark	medium	dendritic, inward radial	high	high to low		poor	medium	Rakiraki Volcanics		Ba volcanic Group	Karavi Volcanics
B	B₂	B₂₋₁	dark	medium	dendritic, outward and inward radial	high	very high		none	high	Nalawelo Volcanics		Ba volcanic Group	Namosau Volcanics
B	B₁	B₁₋₃	medium	very fine (mosaic)	subdendritic and subparallel	high	low		poor	poor	fine-grained detrital or pyroclastic r.	Koroyanitu Volcanics	Ba volcanic Group	Koroyanitu Breccia
B	B₁	B₁₋₂	medium to dark	medium	subdendritic and subparallel	medium	low to medium		poor	poor	medium-grained pyroclastic r.	Koroyanitu Volcanics	Ba volcanic Group	Koroyanitu Breccia
B	B₁	B₁₋₁	dark to light	coarse	mostly dendritic, partly parallel	very high	very high		none	medium	volcanic rocks	Koroyanitu Volcanics	Ba volcanic Group	Koroyanitu Breccia
A			light to dark	medium to coarse	dendritic	high	low to high		none	medium	Karawa Volcanics Volcanic Group		Koroimavua	
I	I₂		medium	medium	none	none	very high		none	none	Dykes		Dykes	
I	I₁		light	medium	dendritic	high	low		none	poor	Navilawa Intrusive Rocks		Intrusive	

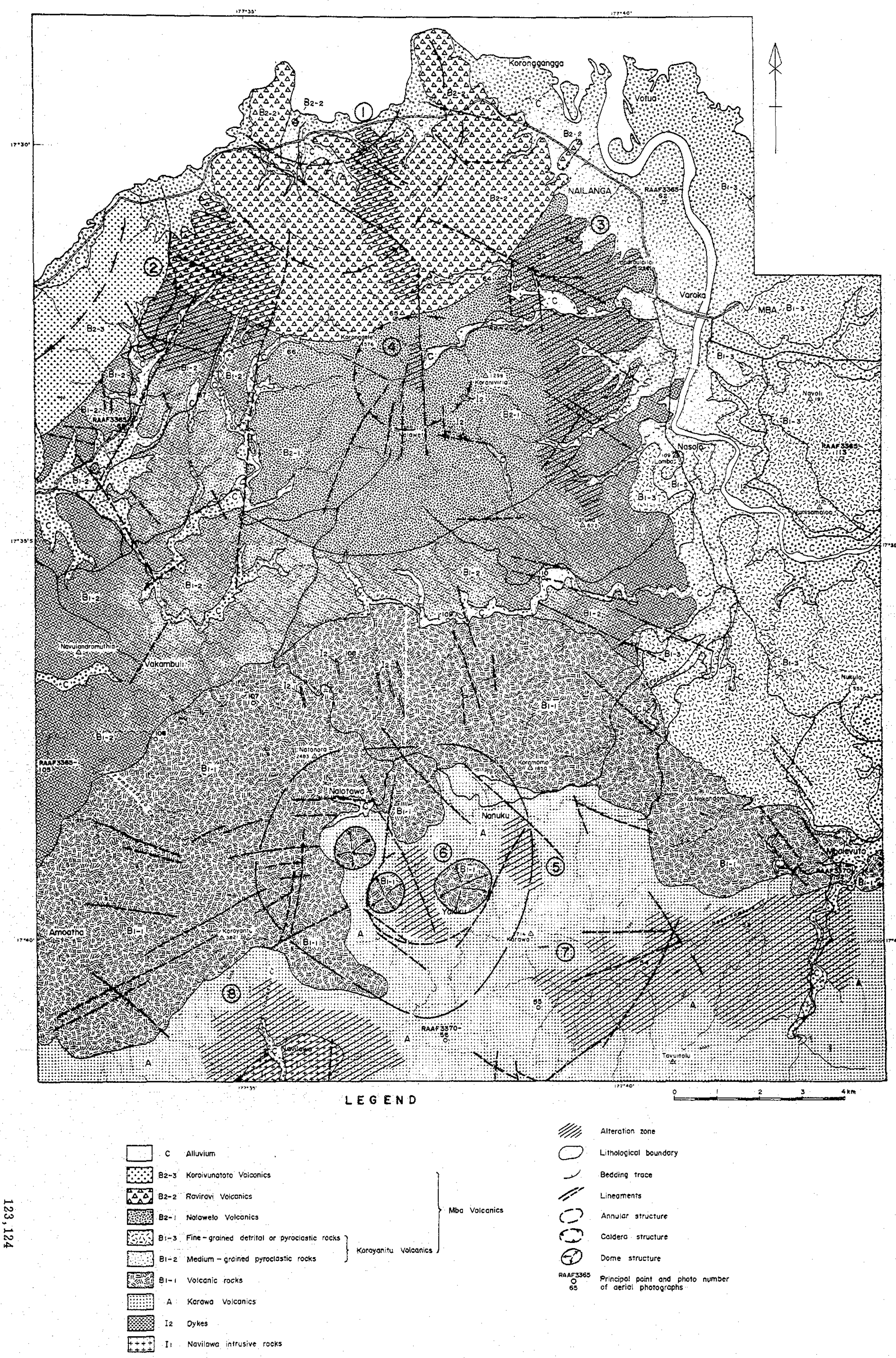
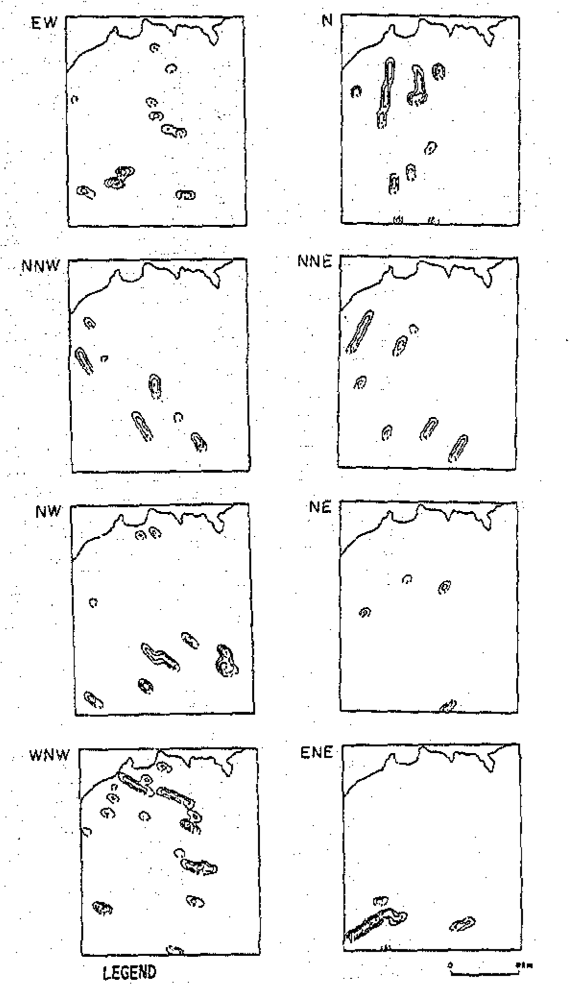


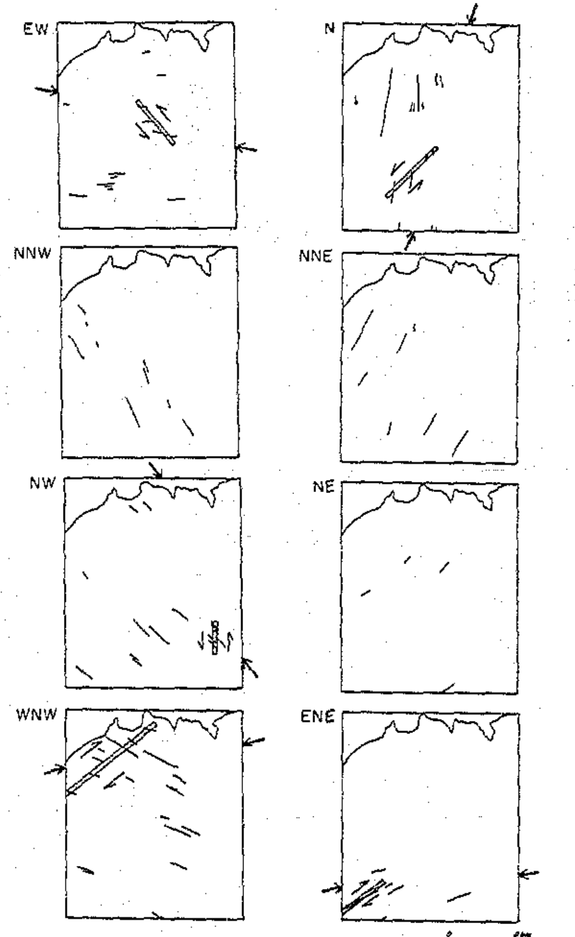
Fig. 2-2-1 Aerial Photogeological Interpretation Map (Mba-west Area)



LEGEND

Contour of total length of the lineaments covered by a filter of $1km^2$ steeping each 0.5km

Fig. 2-2-2 Lineament-Density System Map Interpreted from Aerial Photographs (Mba-west Area)



LEGEND

Synthetic or antithetic strike slip fault

Vector of compression derived from wrenching

Fig. 2-2-3 Lineament System Map Interpreted from Aerial Photographs (Mba-west Area)

Location	Size	Unit, Characteristics
1 Raviravi Cr.	4km(N-S) x 1km(E-W)	B_{2-2}, mainly inside the caldera structure
2 Wainasave Cr.	4km(N-S) x 3km(E-W)	B_{2-2}, B_{1-2}, outside the caldera structure
3 Wavuwavu Cr.	7km(N-S) x 3km(E-W)	B_{2-2}, B_{1-2}
4 Namosau Cr.	1.2km(N-S) x 0.5km(E-W)	B_{2-1}, in the central part of the caldera structure
5 South of Nanuku	1.5km(N-S) x 1km(E-W)	A, inside the annular structure
6 West of Yaloku	2km(N-S) x 1km(E-W)	A, in the central part of the annular structure
7 Nggalinambulu Cr.	3km(N-S) x 7km(E-W)	A, include Mbalevuto prospect
8 Navilawa	2.5km(N-S) x 4.5km(E-W)	A, correlated to the prospect in the north of Kingstone Mine

2-2 Geology

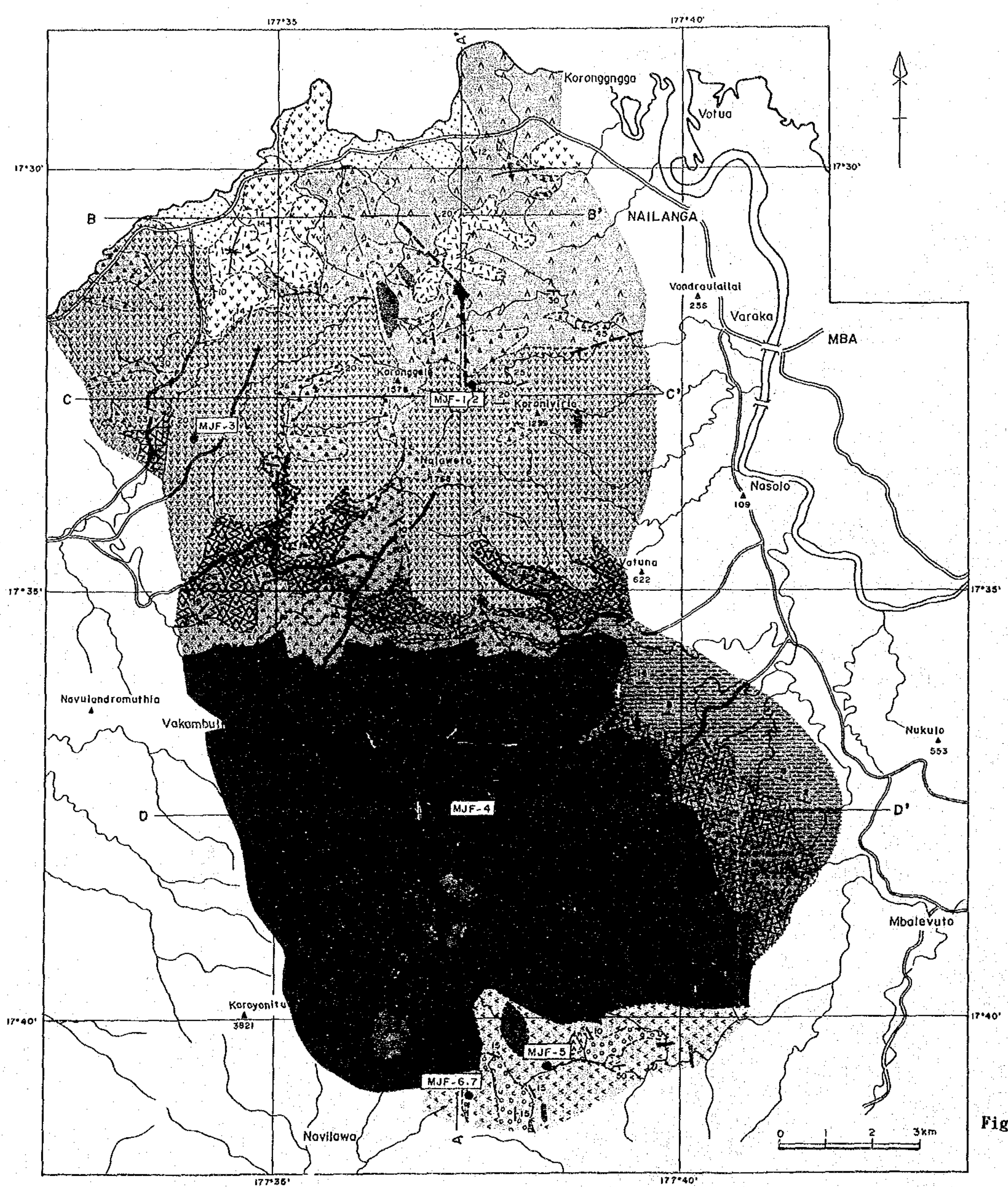
2-2-1 Outline of Geology

The geology of this area consists of Miocene-Pliocene Series, Pliocene Series, Holocene Series, and intrusive bodies in the Pliocene formations. The stratigraphic classification is after Rodda (1989).

The Miocene-Pliocene Series consists of Sabeto Volcanics of the Koroimavua Volcanic Group. It is composed of andesitic volcanic products, basalt lava, and others.

The Pliocene Series consists of the following units from the lower horizon upward. Koroyanitu Volcanic Products, Saru Formation, Namosau Volcanics, Karavi Volcanics, and Wainatio Volcanic Products.

Koroyanitu Volcanic Products consists mostly of volcanic products of basaltic nature. Saru Formation consists of basaltic volcanic products, andesite lava, and sandstone-conglomerate deposits. Namosau Volcanics is composed of volcanic rocks of basaltic nature. Karavi Volcanics consists



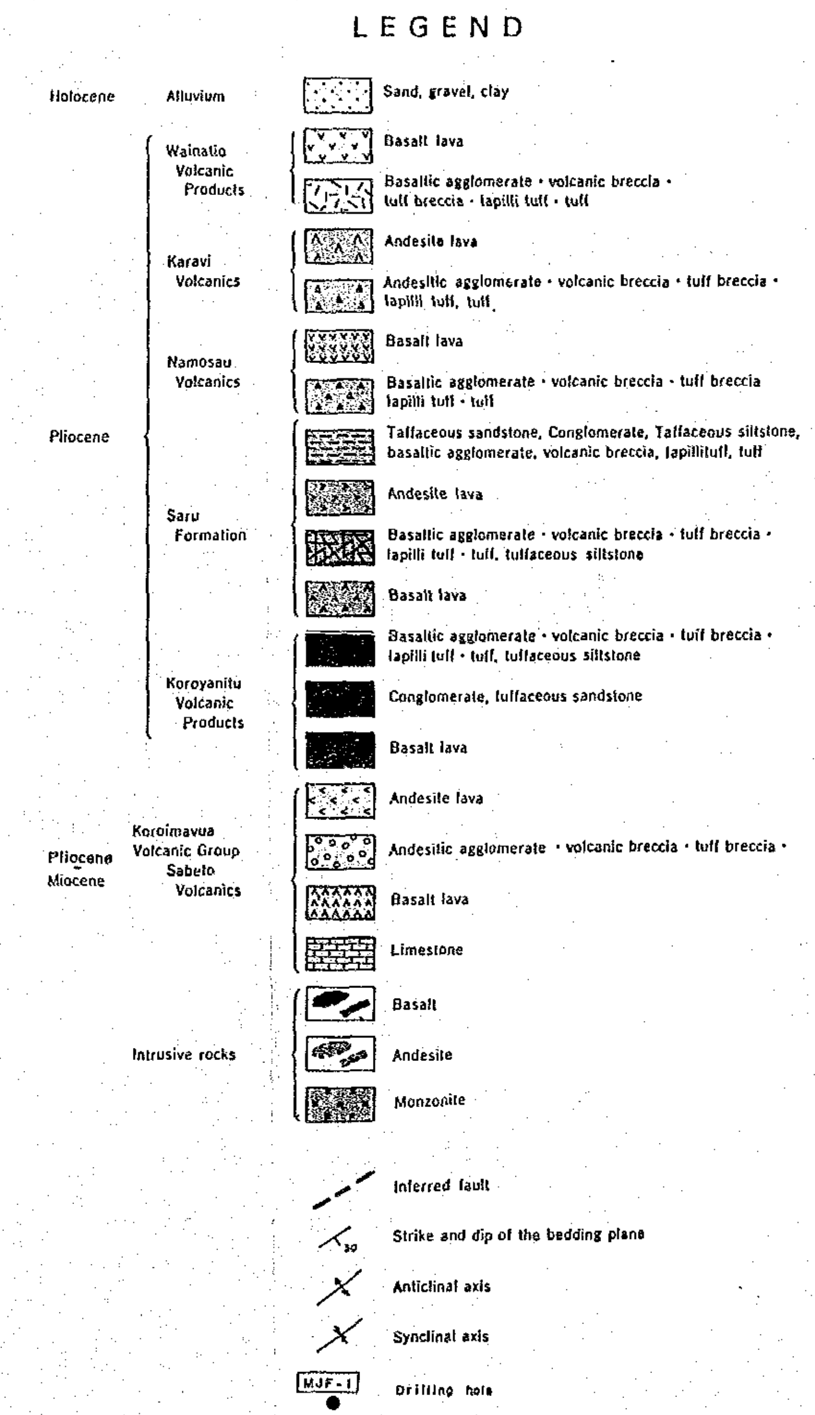


Fig. 2-2-4 Geological Map with Geological Profiles of the Mba-west Area (1)

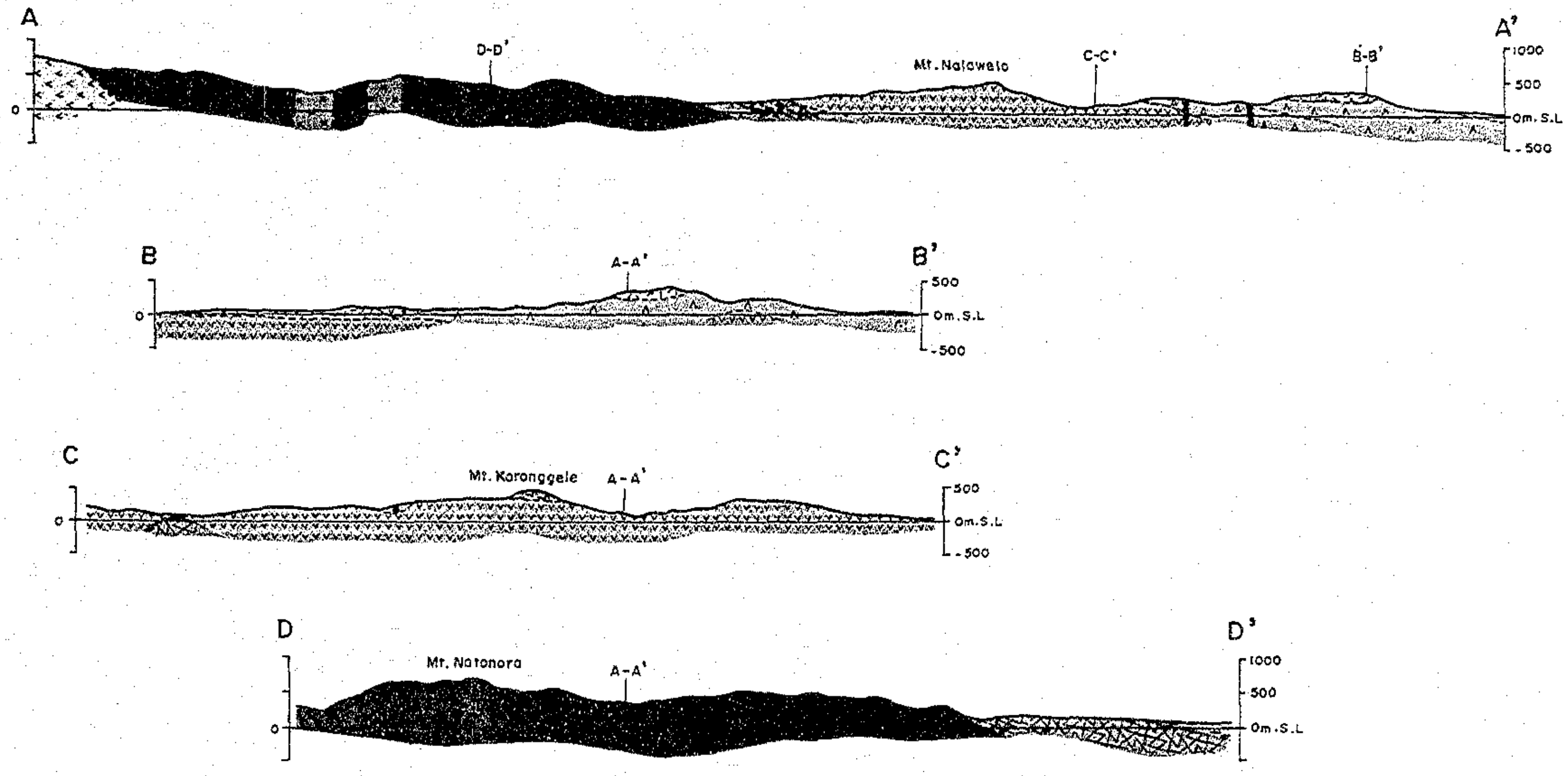


Fig. 2-2-4 Geological Map with Geological Profiles of the Mba-west Area (2)

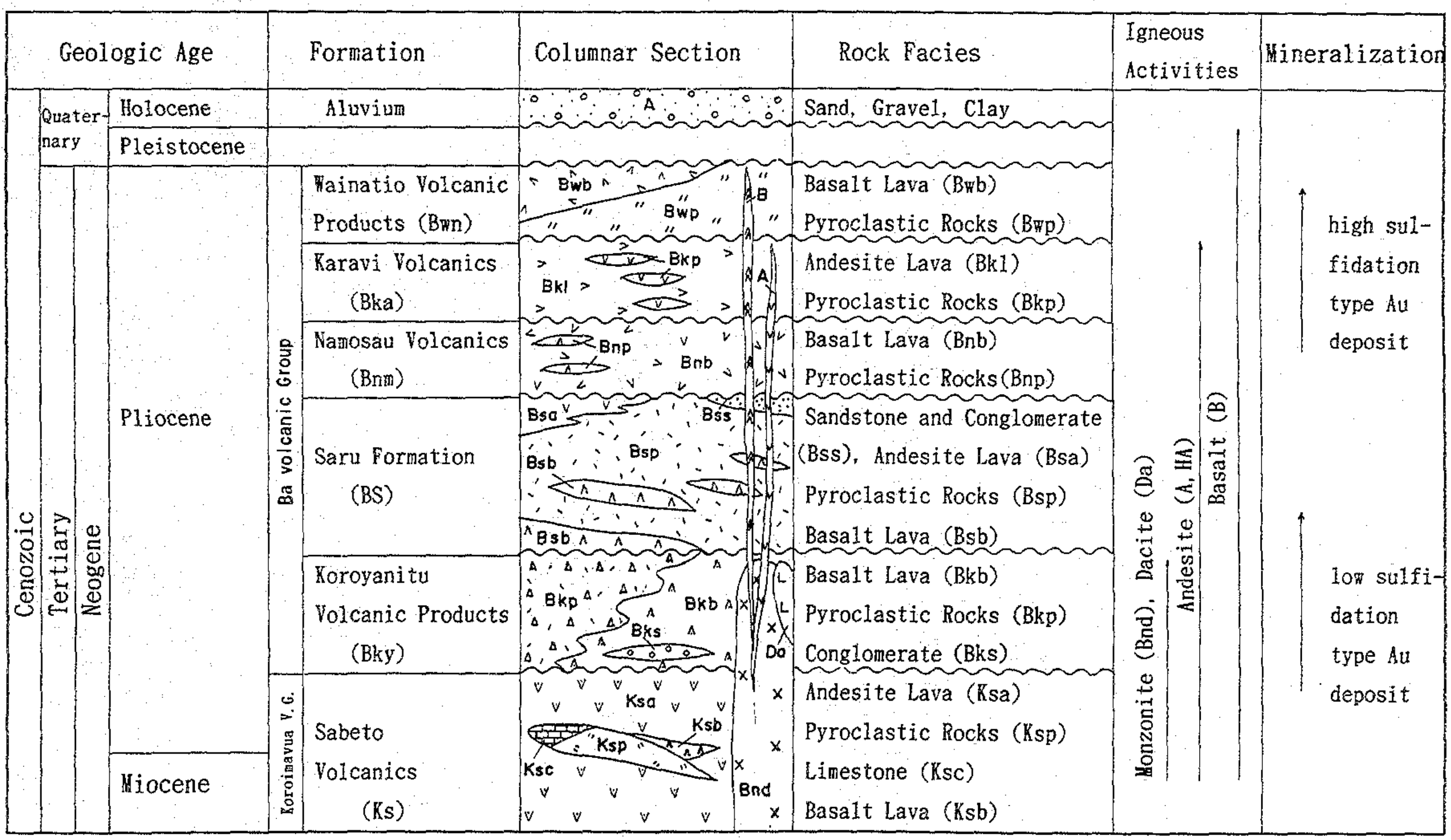


Fig.2-2-5 Schematic Stratigraphic Columns (Mba-west Area)

of volcanic rocks of andesitic nature. Wainatio Volcanic Products consists of volcanic rocks of basaltic nature. Holocene Series consists of alluvium deposits comprising sand, pebbles and clay.

The intrusive rocks are; monzonite and dacite which intrude into Koroyanitu Volcanic Products, andesite dykes which intrude into Karavi Volcanics and basalt dykes which intrude into Wainatio Volcanic Products.

The formations of this area are generally superposed with gentle northward dip with local gentle fold structure.

2-2-2 Geological Description

(1) Sabeto Volcanics

Distribution:The upper reaches of the Nggalinambulu Creek in the southern part of the area.

Lithology:Mainly andesite lava, andesitic pyroclastics, basalt lava and limestone.

Andesite lava is gray, often autobrecciated, and contain augite and biotite phenocrysts. This rock is often propylitized. The andesitic pyroclastics comprises agglomerate, volcanic breccia, tuff breccia, and lapilli tuff. It is massive and strongly compacted, and the contained pebbles are augite andesite. Agglomerate often shows fractured lava form. Basalt lava is compact, massive and contains small phenocrysts of augite. Limestone is purplish gray, compact, hard, and contains irregular specks of several millimeters in size.

Stratigraphy:In this area, this formation is expressed as the undifferentiated Upper Miocene Koroimavua Volcanic Group in the 1/50,000 Lautoka geological sheet (Rao, 1983). This formation is overlain unconformably by the Koroyanitu Volcanic Products, but the relation with the underlying strata is not clear. Andesitic pyroclastics, basaltic lava, and limestone are intercalated in andesitic lava. The radiometric age (K-Ar) of a corresponding formation to the east of this area is reported to be 5.21 ± 0.07 Ma (Fig. 2-1-8).

(2) Koroyanitu Volcanic Products

Distribution:Area extending from Varathiva Creek to Yaloku Village in the south and the vicinity of Vakambuli Village in the west.

Lithology:The constituents are basalt lava, basaltic pyroclastics and conglomerate.

Basalt lava is black to gray, compact and hard. Its form ranges from massive, brecciated, to pillow. In places it is porous and also has amygdaloidal texture. A large amount of augite phenocrysts occur in this rock and their size varies from 1 mm to 8 mm. The rock along the Nandrou Creek east of Nanuku Village in the south, characteristically contain hornblende phenocrysts (5 mm). Those in the vicinity of Nalotawa and Nanuku Villages are often altered green.

Basaltic pyroclastics consists mainly of agglomerate and poorly sorted volcanic breccia with intercalations of tuff breccia, lapilli tuff, stratified tuff, and tuffaceous siltstone. The essential pebbles in the pyroclastics are basalt with augite phenocrysts. This pyroclastics show relatively strong compaction and often show the appearance of pillow lava. Agglomerate with augite-hornblende basalt pebbles and volcanic breccia with accidental pebbles of hornblende andesite are distributed along the Nandrou Creek.

Conglomerate occurs only in the southwestern margin of this area. This consists of small lapilli and calcareous matrix and contain shell fossils. This conglomerate gradually changes to tuffaceous sandstone in the west.

Stratigraphy:This formation overlies the Sabeto Volcanics unconformably and is overlain by the Saru Formation unconformably. The basalt lava and basaltic pyroclastics of this formation interfinger with each other and the conglomerate is intercalated in basalt lava in the lowermost part of the formation.

(3) Saru Formation

Distribution:In a belt in the area from the southeastern part of the area through the Varathiva Creek catchment in the central part to the northwest.

Lithology:The constituent units are basalt lava, basaltic pyroclastics, andesite lava and sandstone-conglomerate.

Basalt lava is dark gray to black, compact, and massive to autobrecciated. It characteristically contains relatively large (3 mm) plagioclase phenocrysts and is porous in some places.

Basaltic pyroclastics consists of agglomerate, volcanic breccia, tuff breccia, lapilli tuff, tuff and tuffaceous siltstone. It is well sorted, and many of the volcanic pebbles are basalt with large plagioclase phenocrysts. The tuff and tuffaceous siltstone contain plant fossils. This rock in the northern part of the Mt. Koromomo and along the catchment of the Korotambu Creek in the southeastern part of the area, contains many accessory pebbles of dolerite and augite basalt, accidental pebbles of biotite dacite and andesite as well as porous basaltic volcanic bomb.

Andesite lava is compact and massive hornblende andesite lava and is porous in some places. Thin lapilli tuff containing plant fossils is intercalated in this lava.

Sandstone-conglomerate bed is composed mostly of alternation of tuffaceous sandstone, tuffaceous siltstone, tuff, lapilli tuff and conglomerate with thin intercalations of basaltic agglomerate and lapilli tuff. The tuffaceous sandstone and tuffaceous siltstone contain plant and shell fossils. Tuffaceous sandstone is medium- to coarse-grained medium- soft to soft rock with fine pebbles. It is relatively strongly compacted and is rich in pyroxene phenocrysts. Tuff is fine- to medium-grained crystalline tuff and contains plagioclase and pyroxene.

Stratigraphy:This formation overlies the Koroyanitu Volcanic Products unconformably and is overlain by the Namosau Volcanics also unconformably.

In the lower part of this formation, two sheets of basaltic lava is intercalated in pyroclastics, and in the upper part, andesite lava and sandstone-conglomerate overlie the pyroclastics. The distribution of the andesite lava and the sandstone-conglomerate differs and their relationship is not clear.

The basalt of this formation is correlated to the Saru Shoshonite of 1/50,000 Lautoka geological sheet (Rao, 1983) and of the first phase survey of this project. Also the sandstone-conglomerate of this formation was correlated to the Vatukoro Greywacke in the first phase survey, but if the Vatukoro Greywacke is the lowermost unit of the Ba Volcanic Group, this correlation is not correct.

(4) Namosau Volcanics

Distribution:The area from the catchment of Namosau Creek in the relatively northern part of Mba-west to the central part, and also in the northwest.

Lithology:The constituents are basalt lava and basaltic pyroclastics.

The lava is black to dark green, compact and massive to brecciated, and in some places it is porous and amygdaloidal. Hyaloclastite occurs in the northwest. It is often rich in large augite phenocrysts (3-7 mm), and partly has greenish tint.

The pyroclastics is composed of agglomerate, lapilli tuff, tuff breccias, volcanic breccia and stratified tuff. Many of the volcanic pebbles are basalt with large augite phenocrysts, but there are some pale gray hornblende andesite pebbles. Matrix is mainly augite and plagioclase and is relatively compacted.

Stratigraphy:This unit overlies the Saru Formation unconformably and is overlain unconformably by Karavi Volcanics. Small scale pyroclastics is intercalated in the basalt lava. The radiometric age (K-Ar) is reported to be 4.48 ± 0.02 Ma, 5.05 ± 0.04 Ma, 4.22 ± 0.07 Ma (Fig. 2-1-8).

(5) Karavi Volcanics

Distribution:Catchment zones of Raviravi Creek and Nggalisavu Creek in the north.

Lithology:Constituents are andesite lava, and andesitic pyroclastics.

The lava is dark gray, compact and massive to brecciated hornblende andesite and augite andesite. It is pale green to dark blue gray and propylitized in some places.

The pyroclastics is composed of agglomerate, volcanic breccia, tuff breccia, lapilli tuff, crystal tuff and stratified tuff. Agglomerate is augite andesitic and is poorly sorted, while other pyroclastics are hornblende andesitic and well sorted. The matrix is relatively well compacted.

Stratigraphy:This volcanics overlies the Namosau Volcanics unconformably and is overlain unconformably by Wainatio Volcanic Products. Pyroclastics are intercalated in andesite lava in this unit. The radiometric age (K-Ar) of this unit is reported to be 4.55 ± 0.03 Ma (Fig. 2-1-8).

(6) Wainatio Volcanic Products

Distribution:Mainly in the vicinity of Wainatio Creek in the northwest and on the ridges north of Nggalisavu Creek.

Lithology:This unit consists of basalt lava and basaltic pyroclastics.
Basalt lava is black, compact, massive to brecciated and contains small augite (2 mm) phenocrysts.

Pyroclastics is composed of agglomerate, volcanic breccia, tuff breccia, lapilli tuff, and tuff. Agglomerate and tuff with good sorting are stratified with gentle dip on the ridges to the north of Nggalisavu Creek.

Stratigraphy:This overlies the Karavi Volcanics unconformably. In this unit, lava overlies the pyroclastics.

(7) Alluvium

Distribution:Northern coast and plains.

Lithology:It consists of unconsolidated sand, gravel and clay.

2-2-3 Intrusive Rocks

(1) Monzonite

Distribution:As stocks near Yaloku Village in the south.

Lithology:Monzonite is grayish white to dark gray, compact, hard, and contains many augite phenocrysts (1-4 mm). It is, in some places micro-monzonitic, and also locally contains many basalt xenoliths. It is often altered green and pyritization and silicification are not uncommon.

Time of intrusion:This rock intrudes into the Koroyanitu Volcanic Products. The radiometric age (K-Ar) is reported to be 4.96±0.03 Ma (Fig. 2-1-8).

(2) Dacite

Distribution:Very small distribution near Yaloku Village in the south.

Lithology:Grayish white biotite-dacite.

Time of intrusion:Dacite intrudes into the Koroyanitu Volcanic Products.

(3) Hornblende andesite

Distribution:Widely distributed near Nalotawa, Nanuku, and Yaloku Villages in the south and also near Namosau Creek in the north.

Lithology:The rock is grayish white, compact, hard, and contains many phenocrysts of hornblende, augite, and plagioclase. The size of hornblende varies, but the largest attains 1 cm.

Time of intrusion:This rock intrudes into Sabeto Volcanics, Koroyanitu Volcanic Products, Namosau Volcanics, and Karavi Volcanics.

(4) Augite andesite

Distribution:Near Nalotawa, Nanuku, and Yaloku Villages in the south and also south of Varathiva Creek in the central part.

Lithology:The rock is dark gray, compact, hard, and contains phenocrysts of augite (1 mm) and plagioclase.

Time of intrusion:This rock intrudes into Sabeto Volcanics, Koroyanitu Volcanic Products, Saru Formation and Karavi Volcanics.

(5) Basalt

Distribution:South of Varathiva Creek, central, southern and northern part of the survey area.

Lithology:The rock is black, compact, hard, and contains phenocrysts of augite (1-2 mm) and plagioclase.

Time of intrusion:This rock intrudes into Sabeto Volcanics, Koroyanitu Volcanic Products, Saru Formation, Namosau Volcanics, Karavi Volcanics, and Wainatio Volcanic Products.

2-2-4 Geologic Structure

The lowermost units of Mba-west area, Sabeto Volcanics are distributed in the southernmost part of this area. And the basement of Viti Levu, the Yavuna Group, occurs about 15km further south.

The formations of this area is generally superimposed with gentle northward dip, and younger formations occur on the surface as we proceed northward.

The major components of all geological units of this area, with the exception of Saru Formation, are basaltic or andesitic volcanic products, and they are distributed with general E-W trend. The Saru Formation consists mainly of volcanic ejecta and sedimentary rocks and is distributed with E-W to NE-SE trend.

The following fault systems are estimated to exist in this area; N-S system in the northern upper reaches of Namosau Creek, NW-SE system in southern Raviravi Creek, and ENE-WSW system in the middle reaches of Namosau Creek. During the field survey, small faults were found to be scattered in many localities and they are predominant with NW-SE to WNW-ESE trend in the periphery of Yaloku Village.

Regarding the fold structure of this area; NW-SE trending anticlinal axis is developed in the Koroyanitu Volcanic Products in the southwest, E-W anticlinal axis in the Karavi Volcanics in the north, and NNE-SSW trending synclinal axis is developed in the Wainatio Volcanic Products.

The occurrence of the intrusive bodies will be briefly described below.

Monzonite is arranged in the NNE-SSW direction within the photogeologic annular structure (Fig. 2-2-6) between Nalotawa and Yaloku Villages.

Andesite and basalt dykes mainly occur near Nalotawa and Yaloku Villages in the south and near the Namosau Creek in the north. They are predominant in the south.

Many of the dykes in the south occur in radial pattern from the eastern part of Nalotawa Village.

Of the dykes in the south, andesite mainly occur within the photogeologic annular structure and extends northward and southeastward. Basalt occurs in the periphery of the andesite bodies. Within the photogeologic caldera structure in the upper reaches of Namosau Creek in the north, basalt dykes occur in semi-radial pattern.

Lineaments parallel to the gravity anomaly zones are developed in parts of the short-wavelength gravity anomaly zones (low gravity anomaly zone west of Yaloku, high gravity anomaly zone east of Yaloku, high gravity anomaly zone northeast of Nalotawa, low gravity anomaly zone west of Mt.Koronggele).

2-3 Mineralization and Alteration

2-3-1 Known Mineral Showings and Past Mineral Exploration

The following mineral showings have been known in Mba-west and the following exploration activities have been carried out.

(1) Karavi Mineral Prospect

This is an alteration zone around the Raviravi Creek in the most

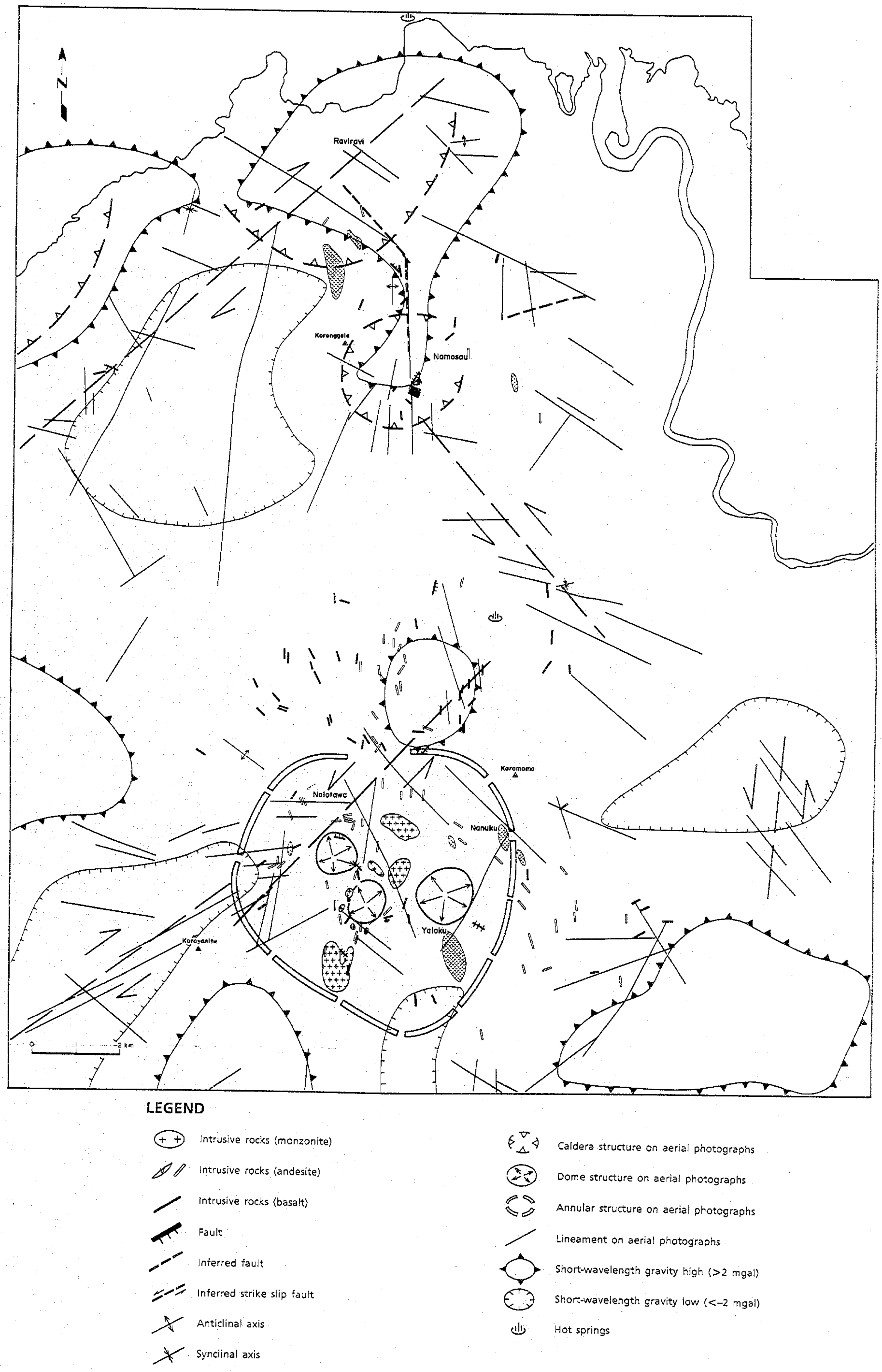


Fig. 2-2-6 Structural Map (Mba-west Area)

northern part of the survey area. Airborne magnetics, geological survey, and geochemical prospecting (stream sediments, rocks) were carried out during 1986-1988 in the vicinity of silicified and argillized zones by Austpac Gold N.L.

(2) Namosau Creek Mineral Prospect

This is an alteration zone in the upper reaches of the Namosau Creek in the northern part of the survey area. Austpac Gold carried out magnetic survey, geological survey, and geochemical prospecting (stream sediments, rocks) near the silicified and argillized zones in 1986-1987.

(3) Nalotawa-Nanuku Mineral Prospect

This is an alteration zone between the Nalotawa and the Nanuku Villages in the southern part of the survey area. Barringer Fiji Ltd., and Australian Anglo American Ltd., carried out stream sediment and soil geochemical prospecting in the surface altered zone in 1976. Also, Pacific Islands Gold (Fiji) Ltd., carried out stream sediment, rock, and soil geochemical prospecting in 1986.

(4) Karawa Mineral Prospect

This is an alteration zone in the southeastern edge of the survey area. Consolidated Gold Field (Fiji) Ltd., and Geopacific Services PTY Ltd., carried out geochemical prospecting (stream sediments, soil, and rocks) for the acidic altered zone in 1980-1981. Also Picon Exploration PTY Ltd., and others carried out airborne magnetics, geological survey, geochemical prospecting (stream sediments, rocks, soil) and drilling in 1988-1989. Although not in the Mba-west area, the following prospects occur in the vicinity.

<u>Mbalevuto Mineral Prospect:</u>This is developed to the east of the Karawa Prospect. Limonite-quartz-alunite network veinlet group is developed in the white altered zone consisting of alunite, kaolinite, and pyrite.

<u>Ndrasa Ore Deposit:</u>This is located immediately to the northwest of this area and is a small bauxite deposit formed by the laterization of basaltic pyroclastics of the Ba Volcanic Group.

<u>Kingston Mine:</u>This is located to the southwest of the survey area. This is a porphyry copper type chalcopyrite network-dissemination in the periphery of complex plutonic plug (Navilawa Stock) related to a micro monzonite-latite volcanic activity. There are records of mining gold-silver copper veins.

2-3-2 Mineralization and Alteration

Alteration zones were confirmed in the following five localities during the course of the present survey (Fig. 2-2-8).

(1) Namosau Creek Alteration Zone

This zone was explored previously as Namosau Creek Prospect by Austpac Gold N.L. It is a propylitized and argillized zone developed in basalt lava and basaltic pyroclastics of the Namosau Volcanics belonging to the Ba Volcanic Group. In this zone, small ridges of silicification - alunite occur extensively in the N-S direction. The areal extent of the altered zone is 1 km E-W and 2 km N-S.

In this zone, X-ray diffraction analysis revealed the following concentric arrangement of altered minerals from the center outward. Namely, silicification-alunite subzone (Subzone I) - kaolinite subzone (Subzone II) - sericite subzone (Subzone III) - mixed-layer minerals subzone (Subzone IV) - smectite-chlorite subzone (Subzone V). It is seen that the mineral assemblage in the central part is relatively acidic which gradually becomes neutral toward the outside (Fig. 2-2-9). The mineral assemblage of each subzone is laid out in Fig. 2-2-7.

Silicification-alunite subzone (Subzone I) is characterized by alunite, but is often associated with pyrophyllite and limonite.

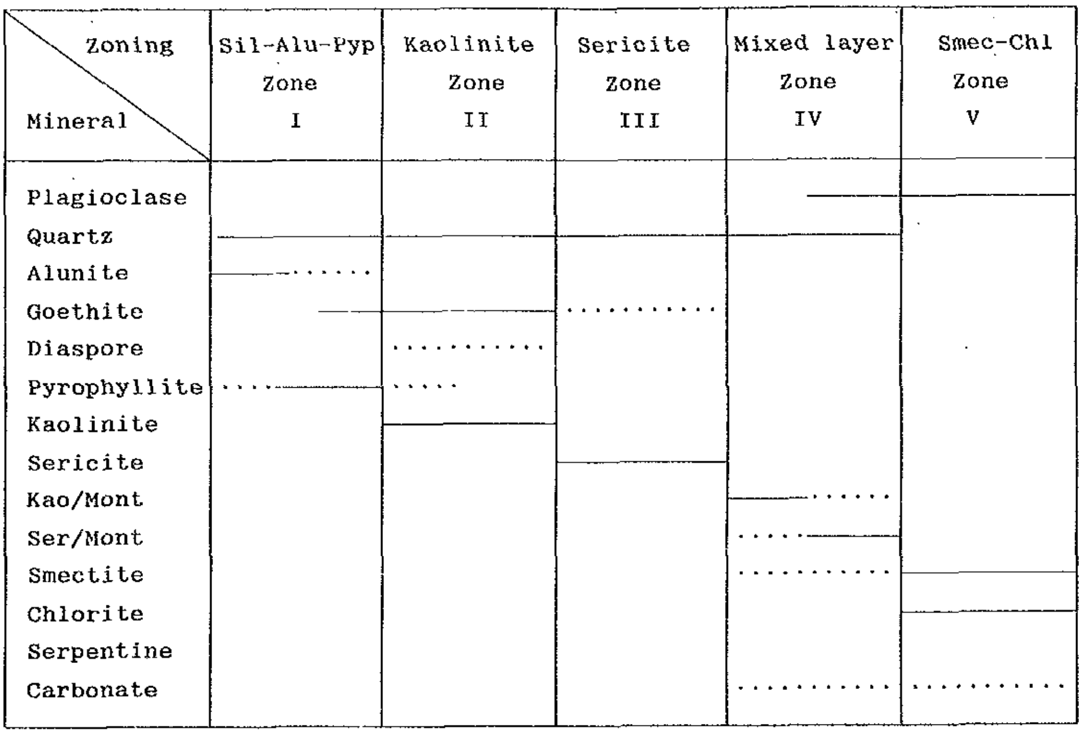
Kaolinite subzone (Subzone II) is characterized by kaolinite, but is also often accompanied by pyrophyllite or limonite.

Sericite subzone (Subzone III) is characterized by sericite, but limonite is often associated.

Mixed-layer minerals subzone (Subzone IV) is characterized by kaolinite-montmorillonite mixed-layer minerals and smectite. It is also associated with serpentinite, carbonates, and other minerals.

Smectite-chlorite subzone (Subzone V) is the so-called propylitized zone. The original rocks have been altered to smectite, chlorite, and calcite, but it is weak and plagioclase phenocrysts of the original rocks often remain.

Ethylene glycol, heating, and acid treatment were used for mineral identification when necessary. Montmorillonite and saponite were grouped together as smectite. Minerals identified as illite were included in the sericite group.



Abbreviation
Sil:Silica, Alu:Alunite, Pyp:Pyrophyllite, Chl:Chlorite, Smec:Smectite,
Kao/Mont:Kaolinite/Montmorillonite mixed-layer mineral
Ser/Mont:Sericite/Montmorillonite mixed-layer mineral

Fig. 2-2-7 Alteration Zoning by Mineral Assemblage (Raviravi and Namosau)

(2) Raviravi Alteration Zone

This corresponds to the Karavi Prospect of Austpac Gold N.L. It is a propylitized and argillized zone developed in the andesite lava and andesitic pyroclastics of the Karavi Volcanics which belong to the Ba Volcanic Group. In this zone, small leached silica-limonite gossans occurs with N-S trend. The areal extent of this zone is large at 3.5 km in the E-W and 2.5 km in the N-S direction.

The altered minerals of this zone form zonal arrangement similar to that of the Namosau Alteration Zone. But that corresponding to the silicification-alunite subzone (Subzone I) does not appear to occur, and four subzones from kaolinite to smectite-chlorite occur (Fig. 2-2-10). Diaspore is observed in parts of kaolinite subzone (Subzone II). In the mixed-layer minerals subzone (IV), sericite-montmorillonite mixed-layer minerals are identified as well as the kaolinite-montmorillonite group in the marginal parts.

(3) Nalotawa-Nanuku Alteration Zone

This is a propylitized zone (smectite-chlorite zone) developed widely near the Nalotawa and Nanuku Villages. The host rocks are basalt and basaltic pyroclastics of the Koroyanitu Volcanic Products of the Ba Volcanic Group (Fig. 2-2-11).

Argillization is found in the propylite at two localities, the uppermost reaches of the Wainasa Creek and along the Toganivalu track to the northeast of Nalotawa Village.

The Wainasa Creek argillization, smectite is the major constituent with minor amount of α-cristobalite and kaolinite-montmorillonite mixed-layer minerals. Also there is a significant pyrite dissemination. NW-SE trend is inferred.

The one along the Toganivalu track is composed of weak argillization consisting of small amounts of kaolinite-montmorillonite mixed-layer minerals, sericite-montmorillonite mixed layers, and sericite. It has NE-SW trend.

There are many white clay (smectite, kaolinite) veins (5-100cm wide) associated with pyrite dissemination (Fig. 2-2-13). These veins can be grouped into the following three systems; NNE-SSW to NNW-SSE, NE-SW to ENE-WSW, and NW-SE to WNW-ESE. The Au grades of these veins are very low (0.005-0.024g/t).

There are mineral springs with limonite precipitation in the eastern and southern parts, and limonite is widely deposited in the creeks trending in the NW-SE direction in the southern part. Along these creeks, there are lineaments extending in the same direction.

(4) Yaloku Alteration zone

The host rocks are andesite and andesitic pyroclastics of the Sabeto Volcanics belonging to the Koroimavua Volcanic Group. This zone is a propylitized zone (smectite-chlorite zone) to the south of the Yaloku Village (Fig. 2-2-11). There are many quartz veinlets in this altered zone.

There are two systems of veins in this area. One system is distributed in the west in the vicinity of Nasala Creek while the other occur around the Nggàlinambulu Creek in the east. These veins are all rich in quartz and some clay-pyrite veins and calcite veins also occur in these zones. The veins are thin at several to 25cm. The two attitudes; N-S, 80°E-80°W, and ENE-WSW, 60-80°S, are dominant with smaller number of NE-SW and NW-SE strike in the veins in the west. For those in the east, NNW-SSE, 70-80°W, is predominant with some NW-SE strike.

The results of the chemical analysis of the samples from the above veins are laid out Fig. 2-2-14. Those with gold content exceeding 0.1g/t are listed below.

Location		Strike, Dip	Width(cm)	Au g/t	Ag g/t	Cu %
Nasala Cr.	quartz vein	N-S, 80°E	15	12.10	2.7	0.03
Nasala Cr.	quartz vein	N63°W, 75°S	5	0.14	2.7	0.04
Nasala Cr.	quartz vein	N88°S, 70°S	10	2.19	85.6	0.08
Nasala Cr.	quartz vein	N13°E, 80°E	20	0.186	<2	0.03
Nasala Cr.	quartz vein	N87°W, 60°S	3	0.104	<2	0.02
Nggalinambulu Cr.	quartz vein	N30°W, 70°W	3	4.52	11.8	3.58

Many of the quartz veins contain chalcedony and cavities are often developed. Brecciated structure is observed in the quartz vein in Nasala Creek with the highest gold content. Potash feldspar was detected by staining test from the ENE-SWS quartz veins in the same locality.

The auriferous quartz veins in the Nggalinambulu Creek did not produce clear bleached zones in the adjoining host rocks. The propylitized host rocks near the veins contain quartz, calcite, smectite, chlorite, and sericite as their alteration minerals. The clay veins of the locality comprises quartz, sericite, calcite, and chlorite.

The bleached zone (several centimeters wide) adjacent to the Nasala Creek quartz vein with the highest gold content consists of quartz, smectite, adularia, calcite, and chlorite. A 15cm wide bleached zone is formed where chalcedony veinlets (ENE-WSW) are concentrated densely and the constituent minerals are quartz, adularia, dolomite, chlorite and sericite. The clay veins of the locality contain quartz, adularia, chlorite, and sericite.

(5) Tavanasa Creek Alteration Zone

This zone occurs widely from Tavanasa Creek which is the tributary of Nggalinambulu Creek to the south of the Karawa Triangulation Station (Fig. 2-2-11). The host rocks are andesite and andesitic pyroclastics of the Sabeto Volcanics belonging to the Koroimavua Volcanic Group. The major alteration of this zone is propylitization (smectite-chlorite), but small strong silicification, argillization and dissemination of pyrite occurs at the Karawa Prospect in the eastern end of Mba-west. Silica and kaolinite

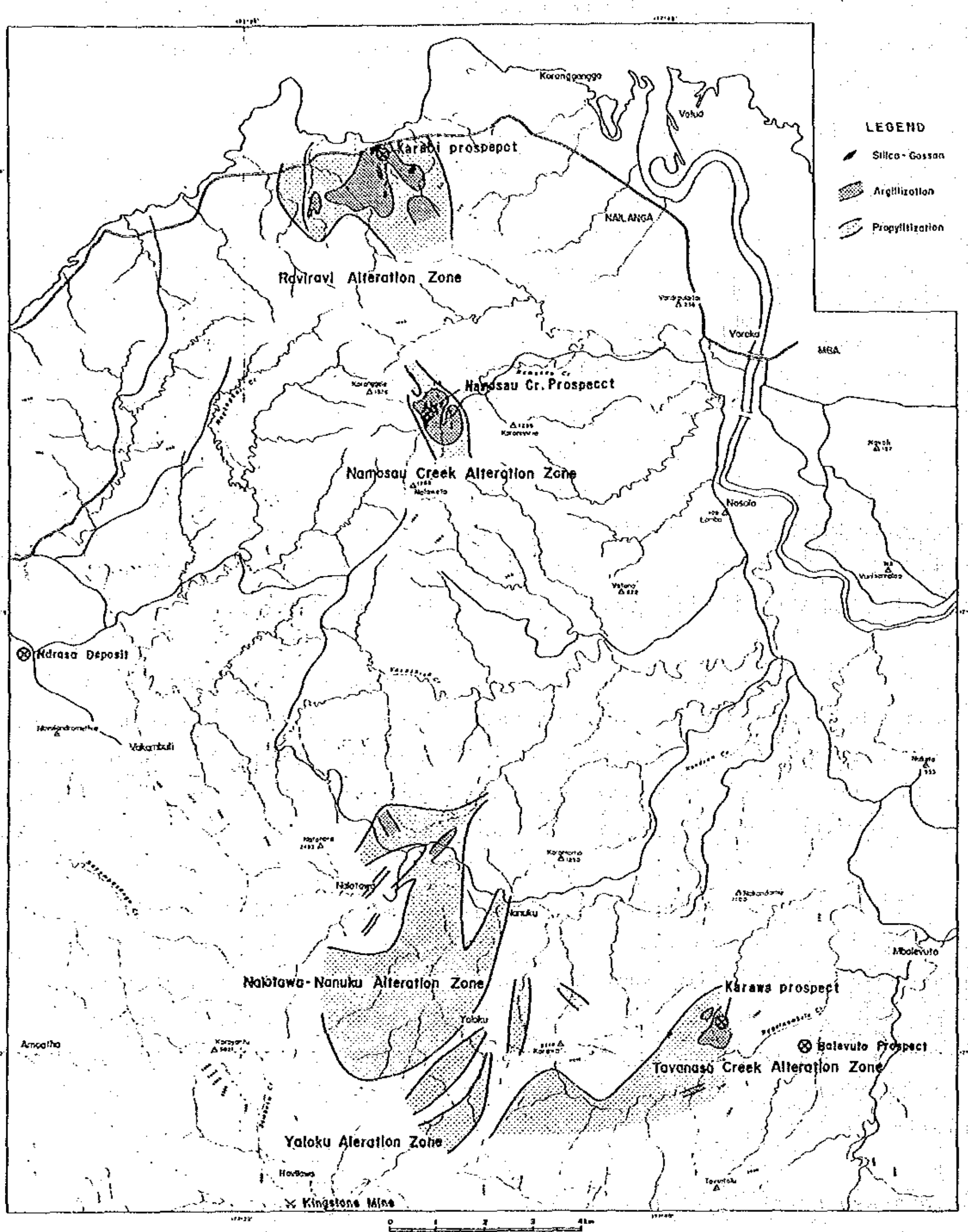


Fig. 2-2-8 Distribution Map of Alteration Zone (Mba-west Area)

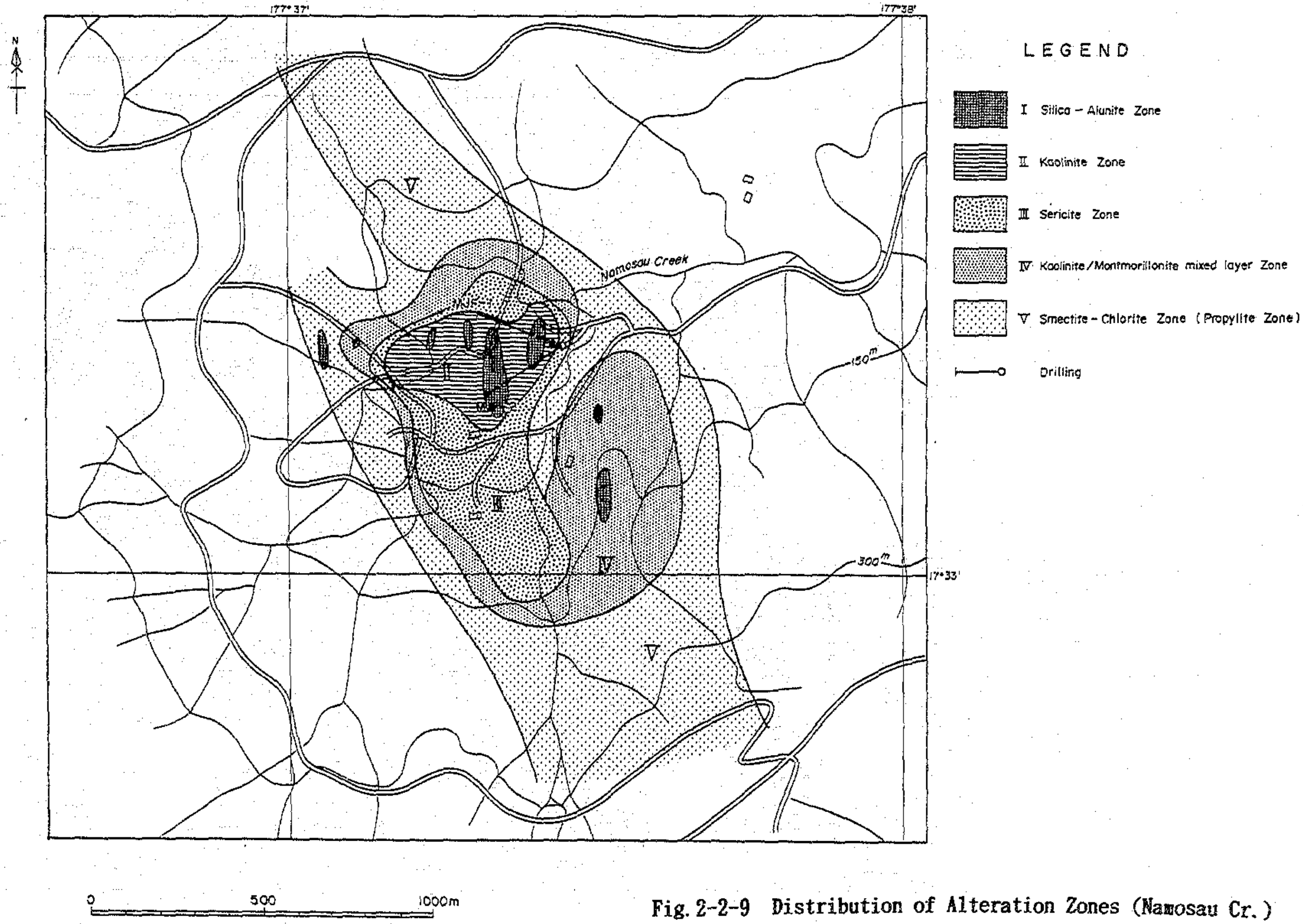


Fig. 2-2-9 Distribution of Alteration Zones (Namosau Cr.)

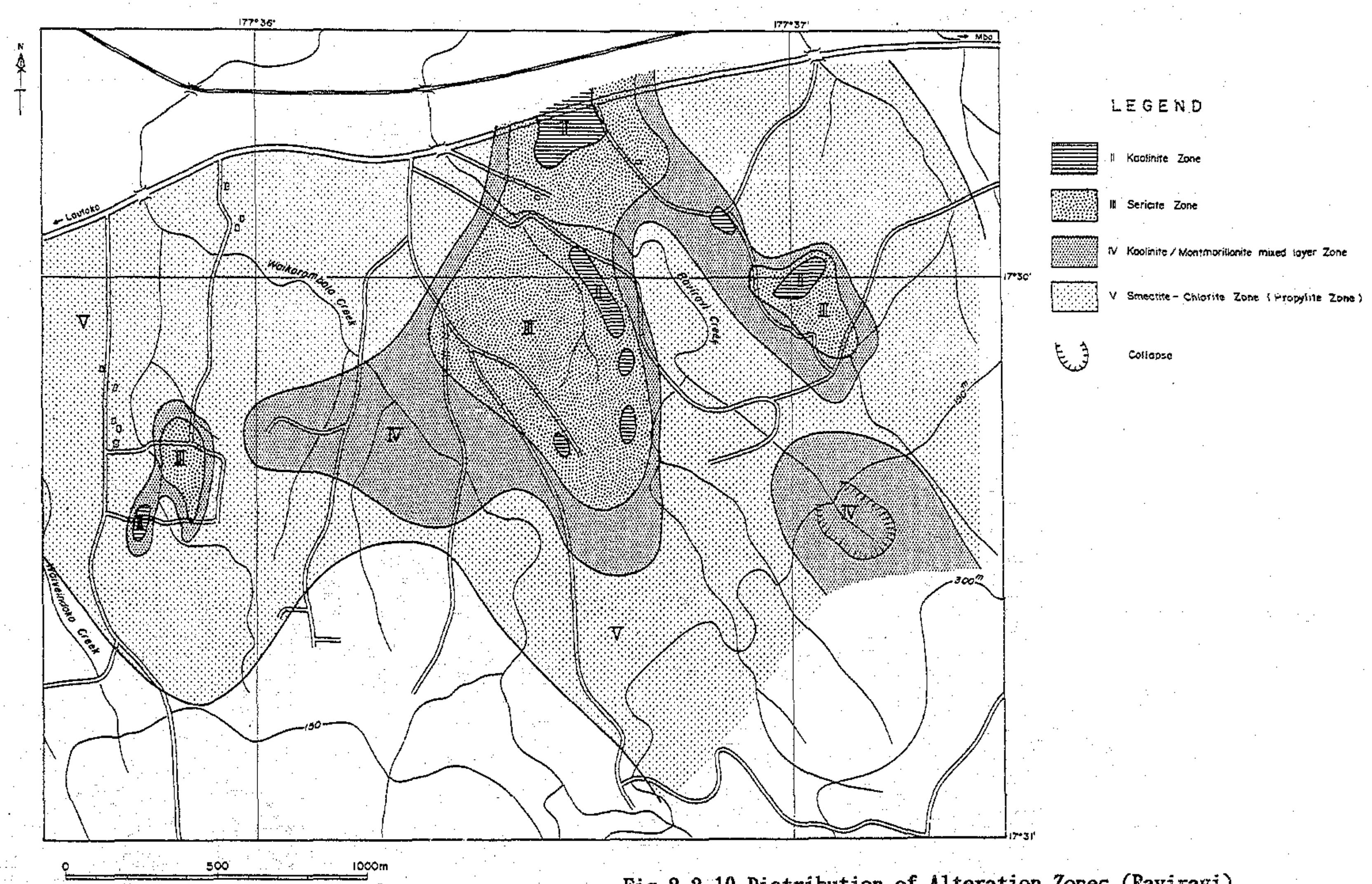


Fig. 2-2-10 Distribution of Alteration Zones (Raviravi)

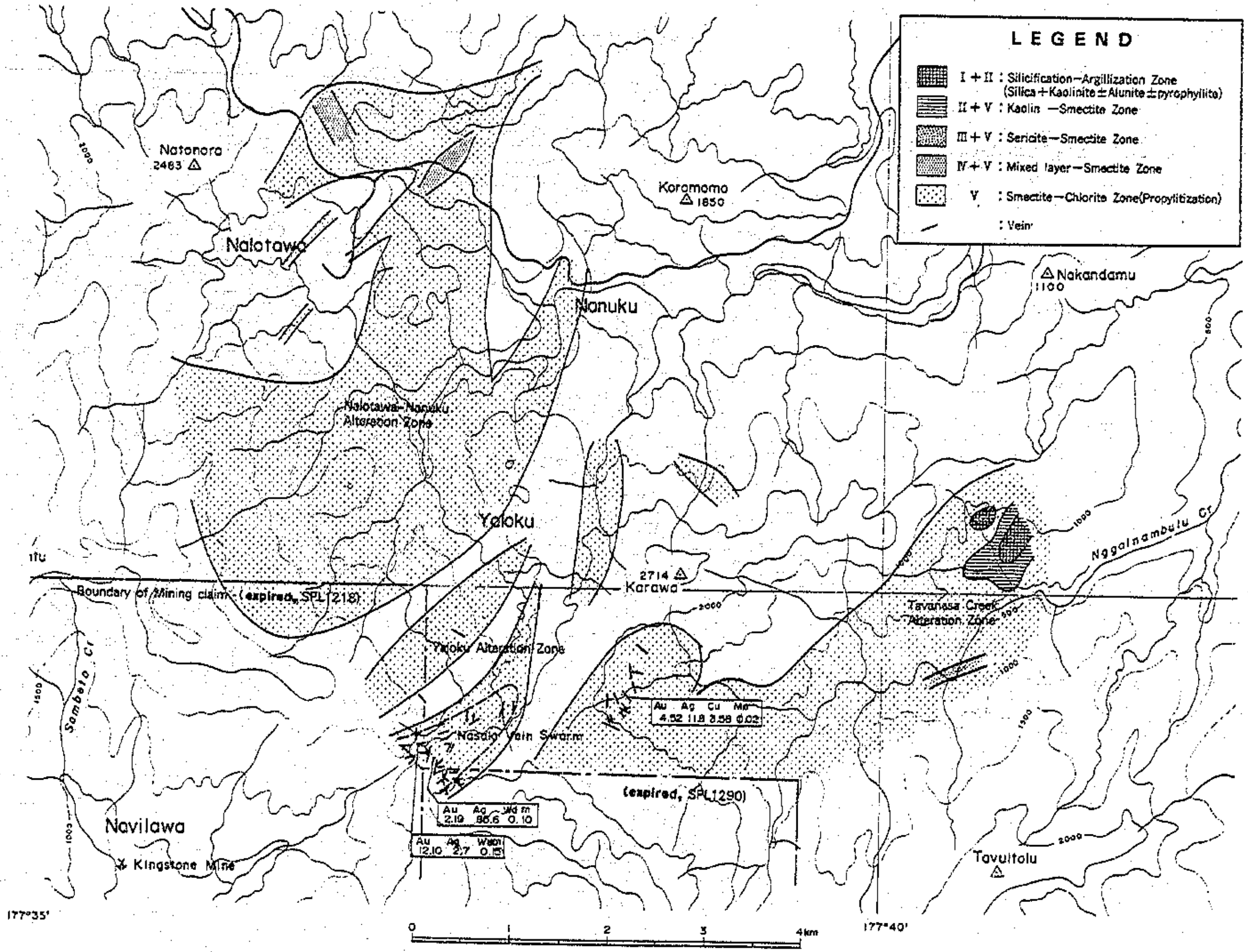
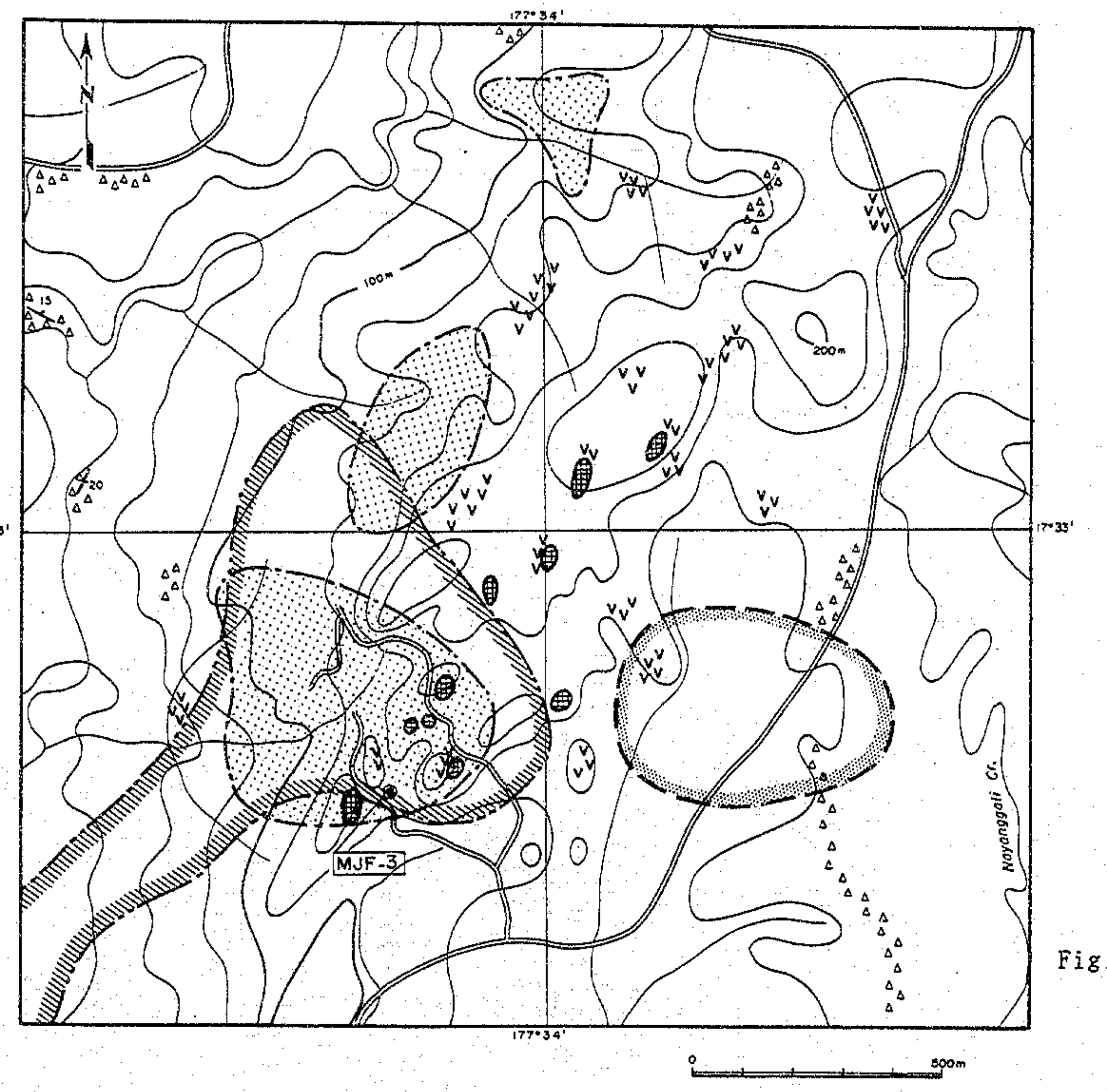


Fig. 2-2-11 Distribution of Alteration Zones
(Nalotawa-Nanuku, Yaloku and Tavanasa Cr.)



LEGEND

Compact volcanic rocks

Brecciated lava flows / Pyroclastic rocks

Anomaly of geochemical Analysis

Au ≧ 10ppb

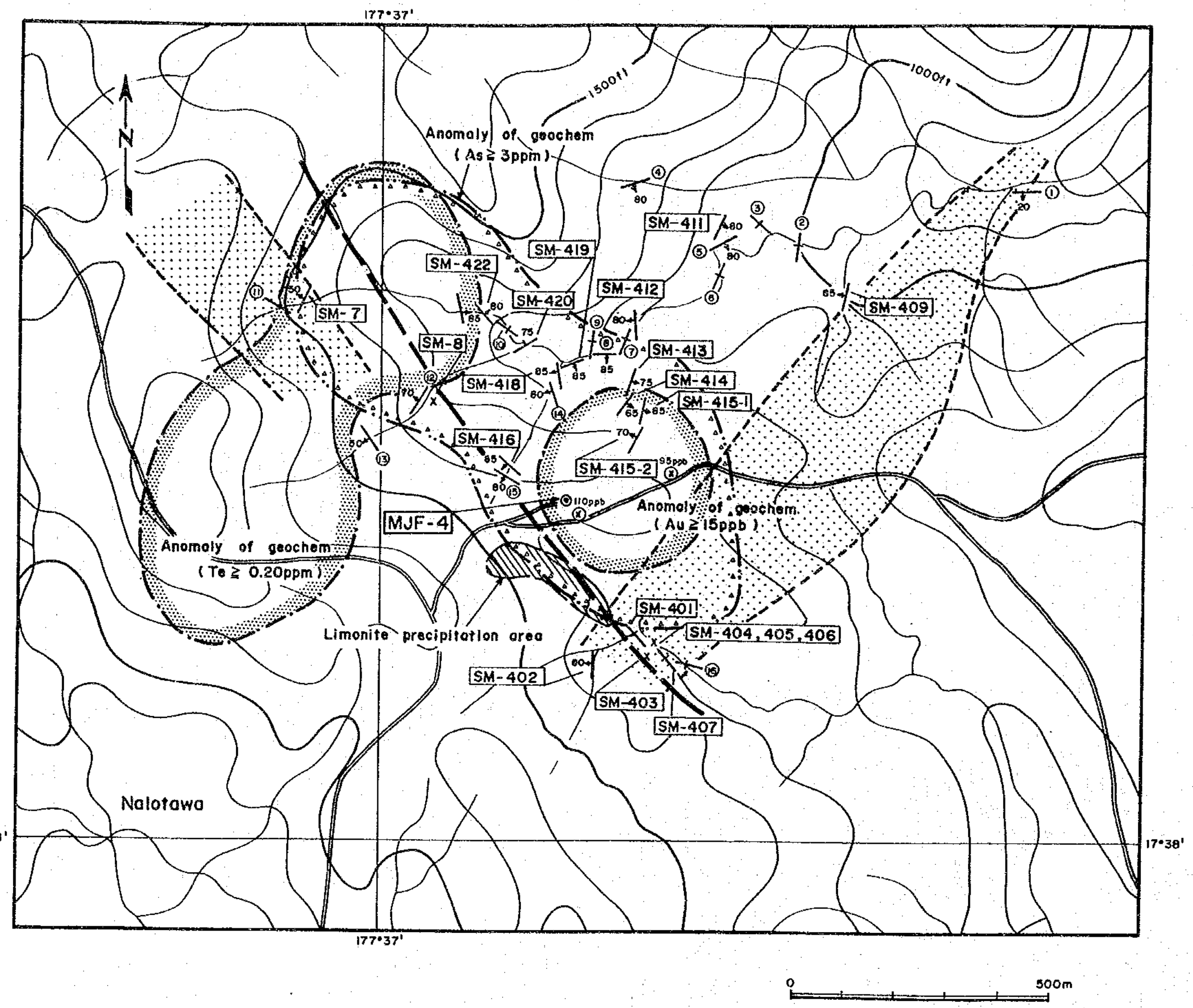
As ≧ 2ppm

Hg ≧ 85ppb

Iron - oxide stockwork

Drilling hole

Fig.2-2-12 Mineralization Map (Nayanggali Cr.)



Sample No.	Description	Width (cm)	Ore Grade						
			Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Te ppm	Mo ppm
SM401	Py-Sil vein	40	<0.005	<2	90	10	80	1.0	—
SM402	Clay-Py vein	20	0.005	<2	120	<5	115	0.2	—
SM403	Py-Clay alt.r.	100	<0.005	<2	105	10	115	0.1	—
SM404	Py-Clay alt.r.	300	<0.005	<2	75	15	55	1.4	—
SM405	Py-Clay alt.r.	300	<0.005	<2	95	15	90	0.6	—
SM406	Py-Clay alt.r.	300	0.022	<2	90	10	100	0.3	—
SM407	Clay-Py vein	30	<0.005	<2	35	40	35	1.4	—
SM409	Clay-Limo vein	40	<0.005	<2	80	<5	135	<0.1	—
SM411	Clay-Py vein	60	<0.005	<2	55	10	60	<0.1	—
SM412	Py-Clay vein	20	<0.005	<2	65	10	85	<0.1	—
SM413	Clay-Py vein	50	0.009	<2	120	15	75	<0.1	—
SM414	Clay-Py vein	40	0.016	<2	80	10	35	1.8	—
SM415-1	Clay-Py vein	100	0.007	<2	95	30	85	1.2	—
SM415-2	Clay-Py vein	100	0.006	<2	120	20	100	0.8	—
SM416	Clay-Py vein	5	0.024	<2	135	15	280	<0.1	—
SM418	Clay-Py vein	30	<0.005	<2	55	15	55	<0.1	—
SM419	Clay-Py vein	80	<0.005	<2	45	10	60	<0.1	—
SM420	Clay-Py vein	30	<0.005	<2	80	10	90	0.5	—
SM422	Clay-Py vein	100	<0.005	<2	45	10	125	0.4	—
SM-7	Limo network	100	<0.005	<2	30	10	75	1.7	—
SM-8	Limo network	100	<0.07	<0.5	100	<100	100	<10	<10

Sample	Description	Width(cm)
①	Limo-Clay vein	10
②	Clay-Py vein	1
③	Clay-Py vein	20
④	Clay vein	120
⑤	Clay-Py vein	20
⑥	Clay-Py vein	10
⑦	Clay-Py network	300
⑧	Clay-Py vein	20

Sample	Description	Width(cm)
⑨	Clay-Py network	300
⑩	Clay-Py vein	100
⑪	Clay-Limo-Py network	100
⑫	Clay-Limo-Py vein	30
⑬	Py vein	1
⑭	Clay-Py vein	10
⑮	Clay-Py vein	5
⑯	Clay-Py vein	170

L E G E N D

Sampling point of Au-Geochem · Anomaly

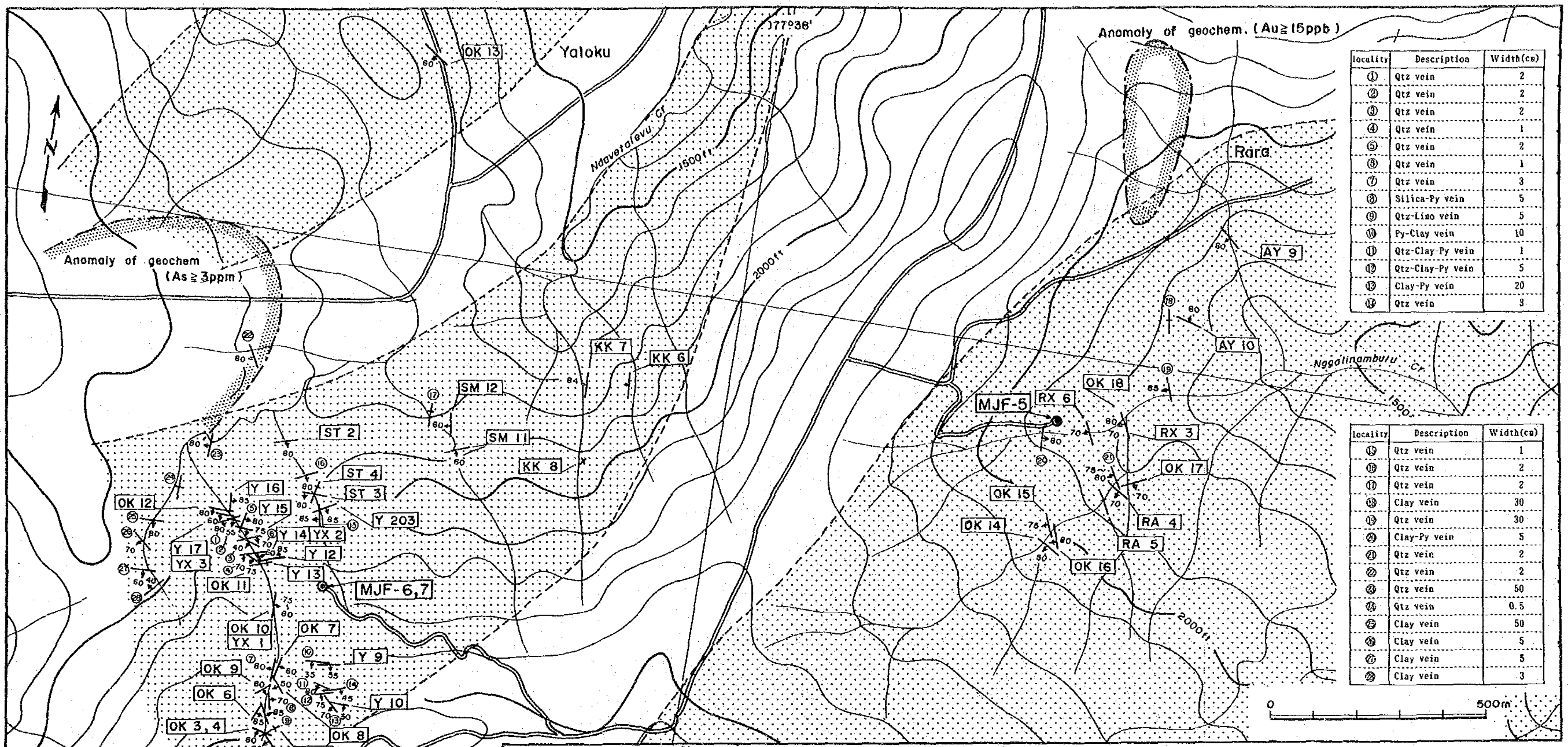
Drilling hole

Lineament

Argillization

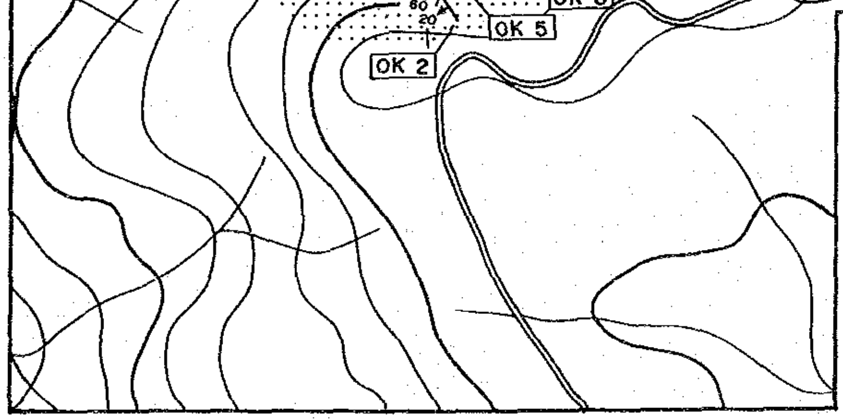
Vein

Fig.2-2-13 Mineralization Map (Nalotawa)



locality	Description	Width(cm)
①	Qtz vein	2
②	Qtz vein	2
③	Qtz vein	2
④	Qtz vein	1
⑤	Qtz vein	2
⑥	Qtz vein	1
⑦	Qtz vein	3
⑧	Silica-Py vein	5
⑨	Qtz-Limo vein	5
⑩	Py-Clay vein	10
⑪	Qtz-Clay-Py vein	1
⑫	Qtz-Clay-Py vein	5
⑬	Clay-Py vein	20
⑭	Qtz vein	3

locality	Description	Width(cm)
⑮	Qtz vein	1
⑯	Qtz vein	2
⑰	Qtz vein	2
⑱	Clay vein	30
⑲	Qtz vein	30
⑳	Clay-Py vein	5
㉑	Qtz vein	2
㉒	Qtz vein	2
㉓	Qtz vein	50
㉔	Qtz vein	0.5
㉕	Clay vein	50
㉖	Clay vein	5
㉗	Clay vein	5
㉘	Clay vein	3



Sample No.	Description	Width (cm)	Ore Grade						
			Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Te ppm	Mo ppm
SM11	Qtz vein	15	<0.07	<0.5	200	<100	<100	<10	<10
SM12	Qtz-Limo vein	5	<0.07	0.4	200	600	<100	<10	<10
OK2	Qtz vein	15	<0.07	2.0	500	500	100	<10	<10
OK3	Qtz-Limo vein	25	<0.07	1.0	300	200	<100	<10	<10
OK4	Qtz vein	25	<0.07	1.0	400	200	100	<10	<10
OK5	Qtz-Limo vein	5	<0.07	1.0	500	200	<100	<10	<10
OK6	Qtz vein	3	<0.07	<0.3	500	100	<100	<10	<10
OK7	Qtz vein	2	<0.07	1.0	400	<100	100	<10	<10
OK8	Cal vein	5	<0.07	0.8	500	100	<100	<10	<10
OK9	Py-Clay vein	15	<0.07	<0.3	100	100	<100	<10	<10
OK10	Qtz vein	15	12.10	2.7	300	200	100	<10	<10
OK11	Qtz vein	5	0.14	2.7	400	500	<100	<10	<10
OK12	Qtz vein	10	2.19	85.6	800	2400	100	<10	<10
OK13	Qtz-Limo vein	5	<0.07	<0.3	<100	100	<100	<10	20
KK6	Qtz vein	1	<0.07	<0.3	200	100	<100	<10	<10
KK7	Qtz vein	5	<0.07	<0.5	100	<100	100	<10	<10
KK8	Sil. rock	10	<0.07	<0.3	100	200	<100	<10	<10
ST2	Qtz vein	2	<0.07	<0.5	100	<100	100	<10	<10
ST3	Qtz vein	3	<0.07	<0.5	700	<100	100	<10	<10
ST4	Qtz vein	15	<0.07	<0.5	400	<100	100	<10	<10
Y9	Qtz-Limo-Py vein	8	0.022	<2	130	9	210	1.9	–
Y10	Qtz-Limo-Clay vein	15	0.011	<2	120	<5	400	5.0	–
Y12	Qtz-Py vein	3	0.041	<2	270	330	900	3.9	–
Y13	Qtz vein	3	0.020	<2	270	450	120	3.1	–
Y14	Clay-Py vein	10	0.030	<2	180	23	49	3.1	–
Y15	Qtz vein	3	0.021	<2	210	17	70	6.0	–
Y16	Qtz vein	20	0.186	<2	270	40	2000	10	–
Y17	Qtz vein	3	0.104	<2	160	20	71	3.8	–
Y203	Qtz vein	5	0.047	<2	190	12	39	4.6	–

Sample No.	Description	Width (cm)	Ore Grade						
			Au g/t	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Te ppm	Mo ppm
AY9	Qtz vein	5	<0.07	<0.5	1000	<100	100	<10	<10
AY10	Qtz vein	3	<0.07	<0.5	800	<100	100	<10	<10
OK14	Qtz-Cal vein	2	<0.07	0.3	900	100	<100	<10	<10
OK15	Qtz vein	2	<0.07	<0.3	100	<100	<100	<10	<10
OK16	Qtz vein	5	<0.07	0.9	<100	<100	<100	<10	<10
OK17	Qtz-Cal vein	3	<0.07	<0.3	<100	<100	<100	<10	<10
OK18	Qtz vein	3	4.52	11.8	35800	<100	100	200	<10
RA4	Qtz vein	2	0.008	<2	44	8	46	5.0	–
RA5	Qtz vein	2-3	0.006	<2	250	6	88	4.5	–

LEGEND

- ◉ Drilling hole
- Propylitization
- Vein

Fig 2-2-14 Mineralization Map (Yaloku)