PART Ⅲ CONCLUSIONS AND RECOMMENDATIONS

PART III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

1-1 Batuisi Prospect

On the basis of the results of three-year exploration comprising detailed geological survey, grid soil survey, geochemical rock-chip sampling, shallow trenching and drilling, the following conclusions are obtained.

(1) Three holes of 200 m in depth each were drilled at the Tondoratte zone in the third phase. They aimed at the vertical extensions of some of the most significant gold indications defined by the previous survey. Numerous quartz veins and quartz stockworks with the dissemination of sulphide minerals were encountered in every hole nearly at the right depths which have been expected in the drilling programme. Several interesting intersections of gold, up to 40.22 g/t Au at 36 cm in width, were obtained. The existence of ore-grade gold mineralization in the depth below the surface showings, that was predicted in the second phase, was confirmed. On the basis of these results, the potential of gold resources in this area is thought to be high.

(2) In the third phase, two distinctive zones of auriferous quartz stockworks were found at the middle reaches of S. Bone zone within a geochemical gold anomaly detected in the second phase. A couple of significant gold values was obtained from some of grab samples collected during the surface investigation prior to drilling. One short hole, 80 m deep, was drilled to test one of the quartz stockwork zones. The results were disappointing. However the work in the third phase has not been sufficient for the evaluation of this mineralized zone. Further drilling to follow up the surface indications is necessary in this area.

(3) A series of quartz veins and silicified zones, which contains a small amount of pyrite and chalcopyrite, was excavated in trenches at the Malela-Pongo zone. At the same period, surface indications of gold mineralization were looked for at the upper reaches of S. Malela and S. Pongo where the Quaternary volcanic rocks lie over the mineralized horizon. Some exposures were newly found and investigated within this zone. The results in the third phase show that the mode of occurrence of quartz veins/stockworks is similar to the Tondoratte zone. It probably corresponds to the northeastern extension of the Tondoratte

mineralized zone.

(4) As a result of exploration for three years, gold mineralization which is represented by the distribution of extensive outcrops of quartz veins and quartz stockworks and outlined by the distribution of distinctive geochemical anomalies has been confirmed in the Batuisi prospect. The type and condition of gold mineralization in the prospect were discussed on the basis of petrology, mineralogy, hydrothermal alteration and fluid inclusion studies. It was interpreted that the gold-bearing quartz veins and quartz stockworks were formed under mesothermal conditions. The gold mineralization is hosted by andesite and shale of the Cretaceous Latimojong Formation. The prospect is located on the western flank of an anticlinorium formed by the emplacement of the Mamasa granite which is exposed several kilometers to the south of the Prospect. This geological setting is probably a crucial factor for the formation of gold-bearing quartz veins. Gold was thought to be depleted in the shallow part by the lateritic weathering process. Ore-grade gold was returned from the lower part of oxidized zone below 100 m from the surface.

(5) The grade of gold intersections caught at the Tondoratte zone in the third phase is significant. However they are rather narrow. The maximum width among three holes at a cut-off grade of 1 g/t Au is 66 cm (14.31 g/t). The question whether it is a small scale mineralization or there may exist a bigger orebody in another place is open to further discussion. The surface indications are distributed within an area of 2,500 m (NE-SW) x 1,500 m (NW-SE), centered at the top of the ridge near Tondoratte and extending from the middle reaches of S. Tarawa and S. Bone up the northeastward to the Malela-Pongo area. The scale appears to be medium from their indications. Based on these considerations, it is concluded that the drilling in the third phase has not been sufficient for the full-evaluation of the mineralization. Drilling exploration is still necessary in the Batuisi prospect. The confirmation of the scale and structure of gold mineralization has been carried over to the next stage

1-2 Bau Prospect

(1) Two styles of mineralization were distinguished through detailed geological survey in the prospect. One consists of fissure filling quartz veins, and another is pyrite dissemination near dioritic stocks. The geologic environment is interpreted to be similar to that of the Batuisi prospect.

(2) Some of the quartz veins showed significant Au assay results. Each of the veins is small and discontinuous. Soil anomalies of Au and Cu obtained in the area are of low level and sporadic. From these evidences, it is concluded that the gold mineralization of this style had no sign of extensive development.

(3) Pyrite dissemination was found at the northern part of the prospect. Assay results were discouraging. Au anomalies of soil and rock-chip samples found near the pyrite dissemination are of low level and patchy. This style of mineralization probably has low potential.

1-3 S. Lebutang Prospect

(1) Gold mineralization associated with pyrite dissemination or stringers in massive andesite was found at S. Taroto. A series of Au anomalies of moderate to low degrees was found to extend from S. Kanan through S. Taroto and S. Peko up to S. Talodo Basisi. Although the surface indications of this zone are significant, the assay results of ore samples are disappointing. It is believed to be a gold mineralization probably associated with pyrite dissemination within shear zones. The details of mineralization have not been fully investigated. It is presumed to be a low-grade gold mineralization on the basis of the data obtained during the second phase survey.

(2) The other outcrops of quartz veins and geochemical anomalies found in the prospect are estimated to be of minor importance.

1-4 Kariango Prospect

A limonite network zone and the subordinate Au anomaly of low level were found near S. Suluan. It is interpreted to be the product of small scale hydrothermal activity by a subsurface igneous intrusion. Other indications of gold mineralization have not been discovered in the prospect. The potential of this prospect appears to be very small.

Chapter 2 Recommendations for the Future Exploration

Batuisi prospect

It is recommended that the mineralized zone defined by the third phase survey in the prospect would be fully drill-tested in the future exploration. The purpose of the exploration must be bilateral; ① to make an evaluation of the entire mineralized zones which are delineated by the surface indications, ② to follow-up the Tondoratte zone in order to investigate the details of grade distribution and structure.

The major promising locations for drilling are listed below. The depth of drill holes must be deep enough to penetrate the oxidized zone.

① Southwest of MJT-7 at the Tondoratte zone
② At the middle reaches of S. Tarawa
③ At the upper reaches of S. Bone
④ At the middle reaches of S. Bone
⑤ At the top of the ridge near Tondoratte
⑥ Northeast of S. Malela
⑦ Southwest of S. Pongo

Bau prospect

No further work is recommended in the Bau prospect.

S. Lebutang prospect

No further work is recommended in the S. Lebutang prospect.

Kariango prospect

No further work is recommended in the Kariango prospect.

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REFERENCES

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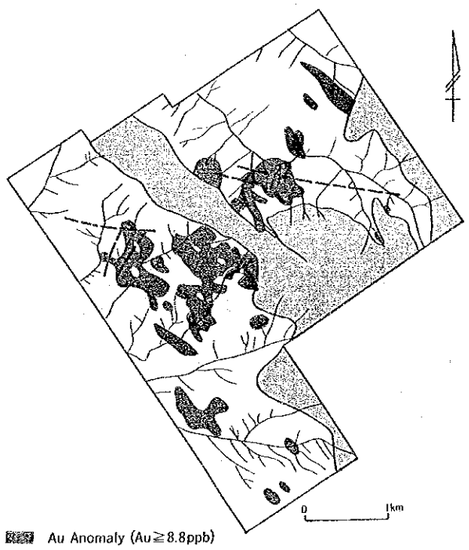
GEOLOGY AND MINERAL DEPOSITS OF T

Soil Geochemistry, Phase II

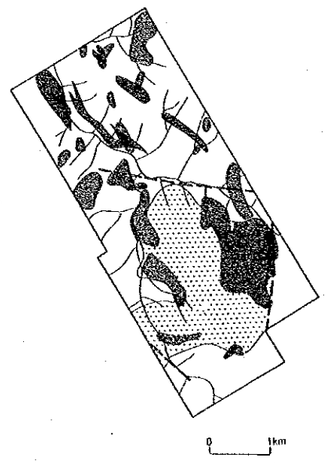
Detailed Survey

(Batuisi Prospect)



Au Anomaly (Au≧8.8ppb)
Cu Anomaly (Cu≧74.1ppm)
Barupu Tuffs
Diorite Stock

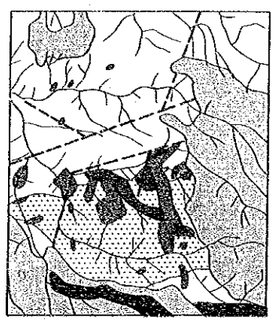
(Bau Prospect)



Au Anomaly (Au≧3.9ppb)
Cu Anomaly (Cu≧95.6ppm)
Diorite Stock
Andesitic Volcanic Neck

Semi-Detailed Survey

(S. Lebutang Prospect)



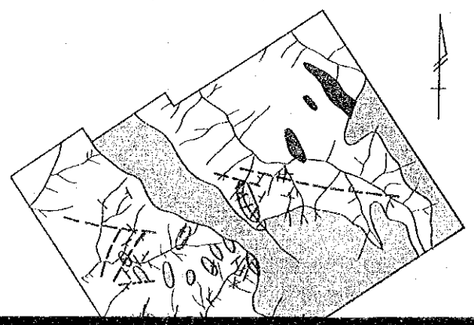
Au Anomaly (Au≧3.0 ppb)
Cu Anomaly (Cu≧61.5ppm)
Barupu Tuffs
Granite
Andesitic Volcanic Neck

(Kariango Prospect)

Au Anomaly (Au≧3.7ppb)
Cu Anomaly (Cu＞96.0ppm)
Barupu Tuffs
Diorite Stock

Surface Indications of Gold Mineralization, Phase II

(Batuisi Prospect)



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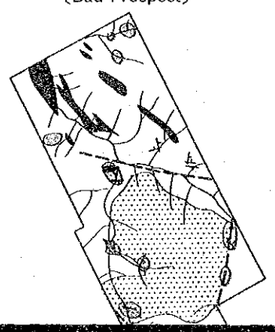

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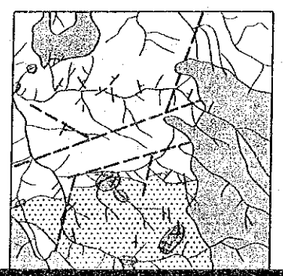
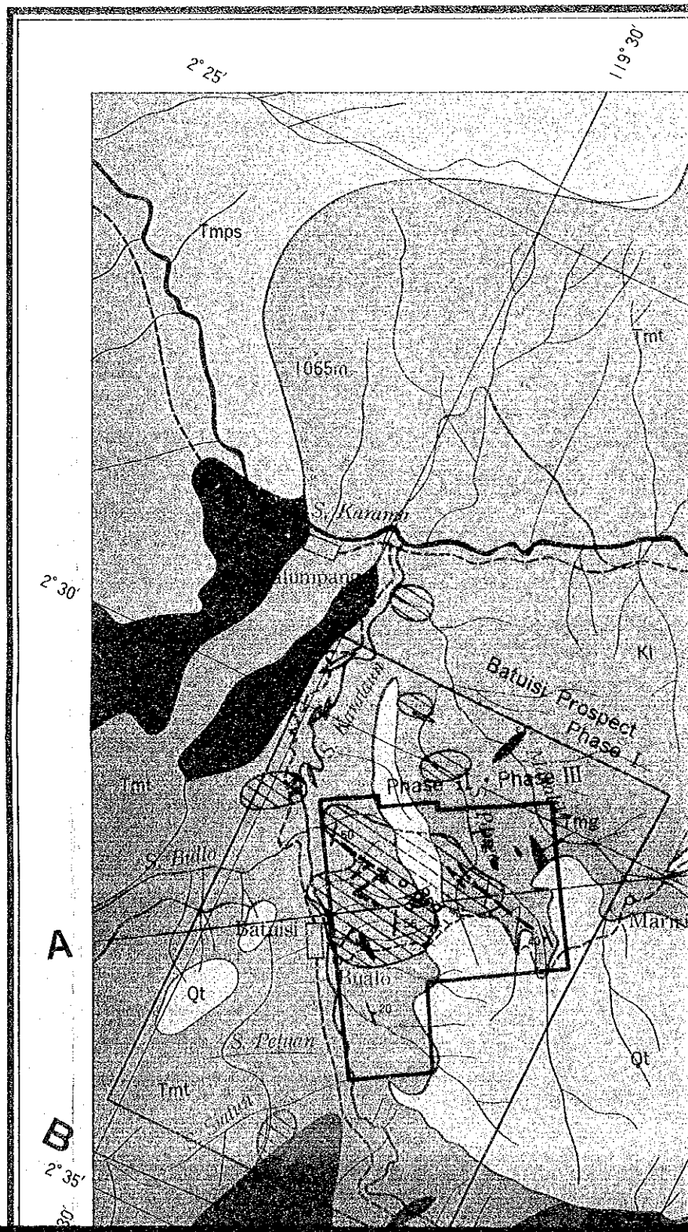


(Kariango Prospect)



GEOLOGY AND MINERAL DEPOSITS OF T

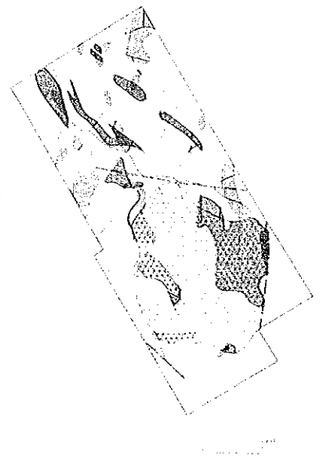
Soil Geochemistry, Phase II

Detailed Survey

(Batuisi Prospect)

Au Anomaly (Au : 2.8ppb)
Cu Anomaly (Cu : 74.1ppm)
Barupu Tuffs
Diorite Stock

(Bau Prospect)



Au Anomaly (Au : 3.9ppb)
Cu Anomaly (Cu : 95.6ppm)
Diorite Stock
Andesitic Volcanic Neck

Semi-Detailed Survey

(S. Lebutang Prospect)

Au Anomaly (Au : 3.0ppb)
Cu Anomaly (Cu : 61.5ppm)
Barupu Tuffs
Granite
Andesitic Volcanic Neck

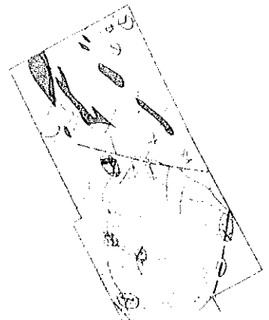
(Kariango Prospect)

Au Anomaly (Au : 3.7ppb)
Cu Anomaly (Cu : 96.0ppm)
Barupu Tuffs
Diorite Stock

Surface Indications of Gold Mineralization, Phase II

(Batuisi Prospect)

(Bau Prospect)



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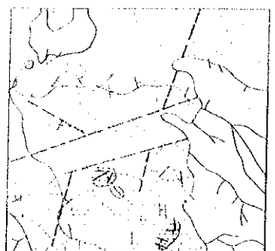

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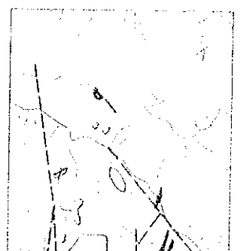
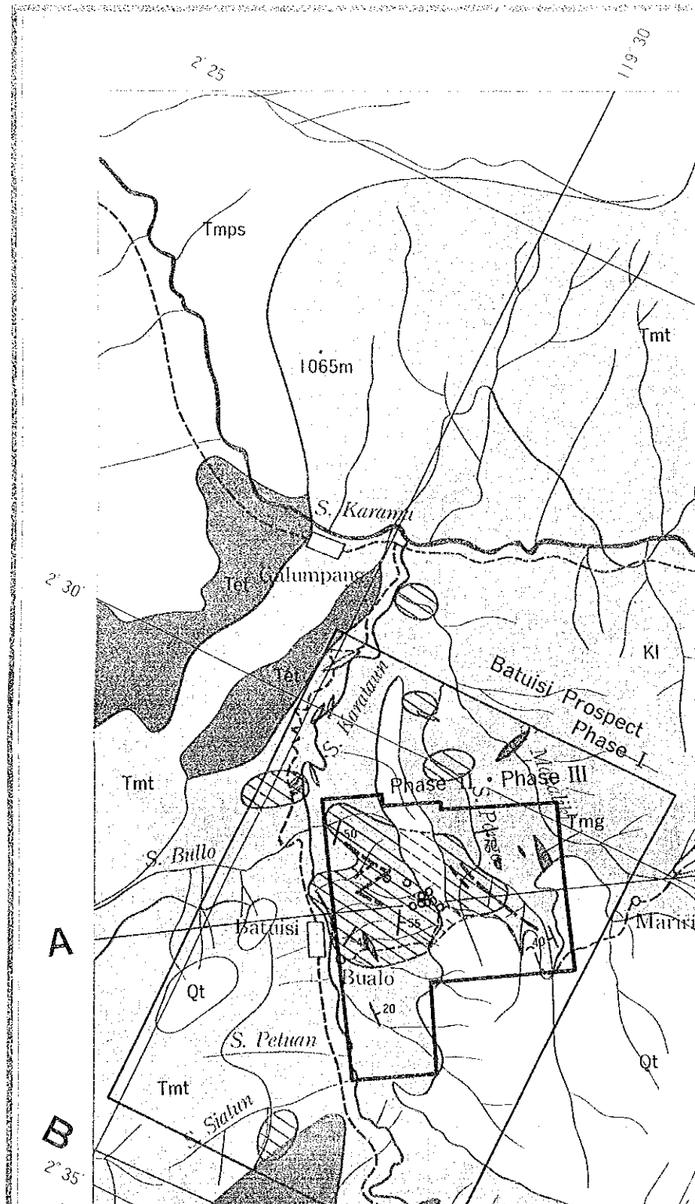
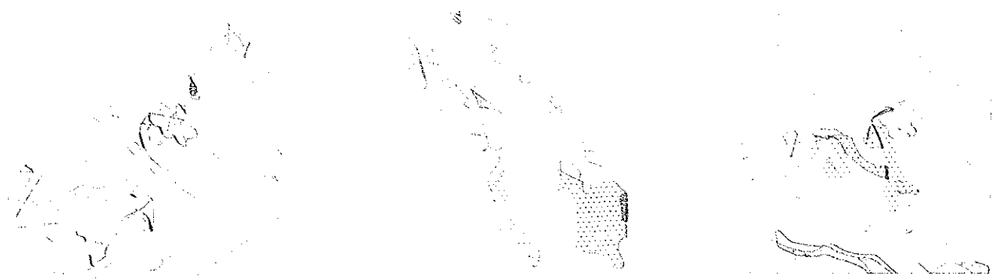


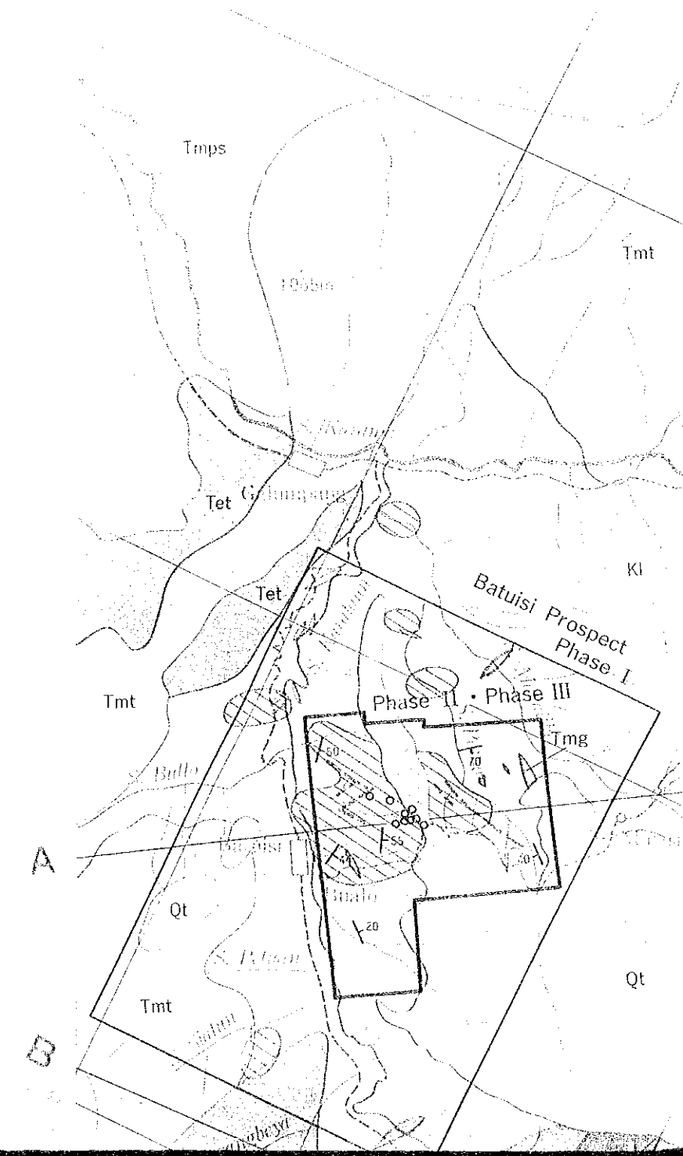


GEOLOGY AND MINERAL DEPOSITS OF

Soil Geochemistry, Phase II



Surface Indications of Gold Mineralization, Phase II



MINERAL DEPOSITS OF THE TORAJA AREA, THE REPU

ailed Survey

(Kariango Prospect)

0 1km

Au Anomaly (Au ≧ 3.7ppb)

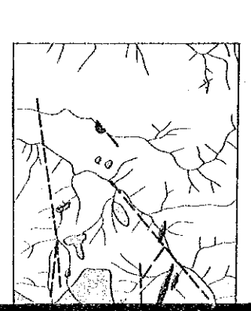
Cu Anomaly (Cu > 96.0ppm)

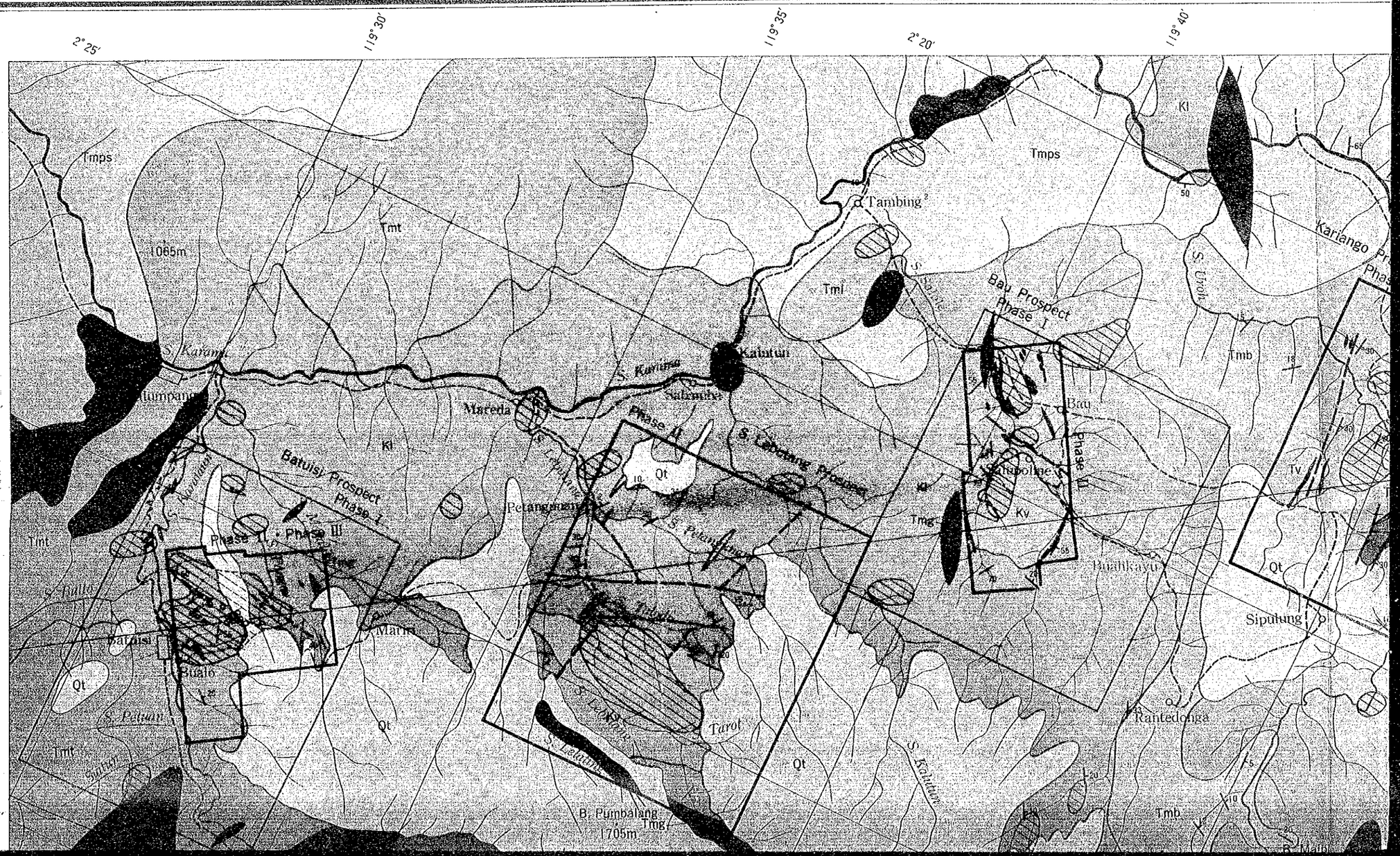
Barupu Tuffs

Diorite Stock

II

(Kariango Prospect)





MINERAL DEPOSITS OF THE TORAJA AREA, THE REPU

ied Survey

(Kariango Prospect)

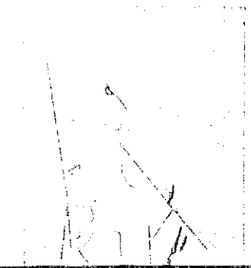
As Anomaly (As > 3.0ppm)

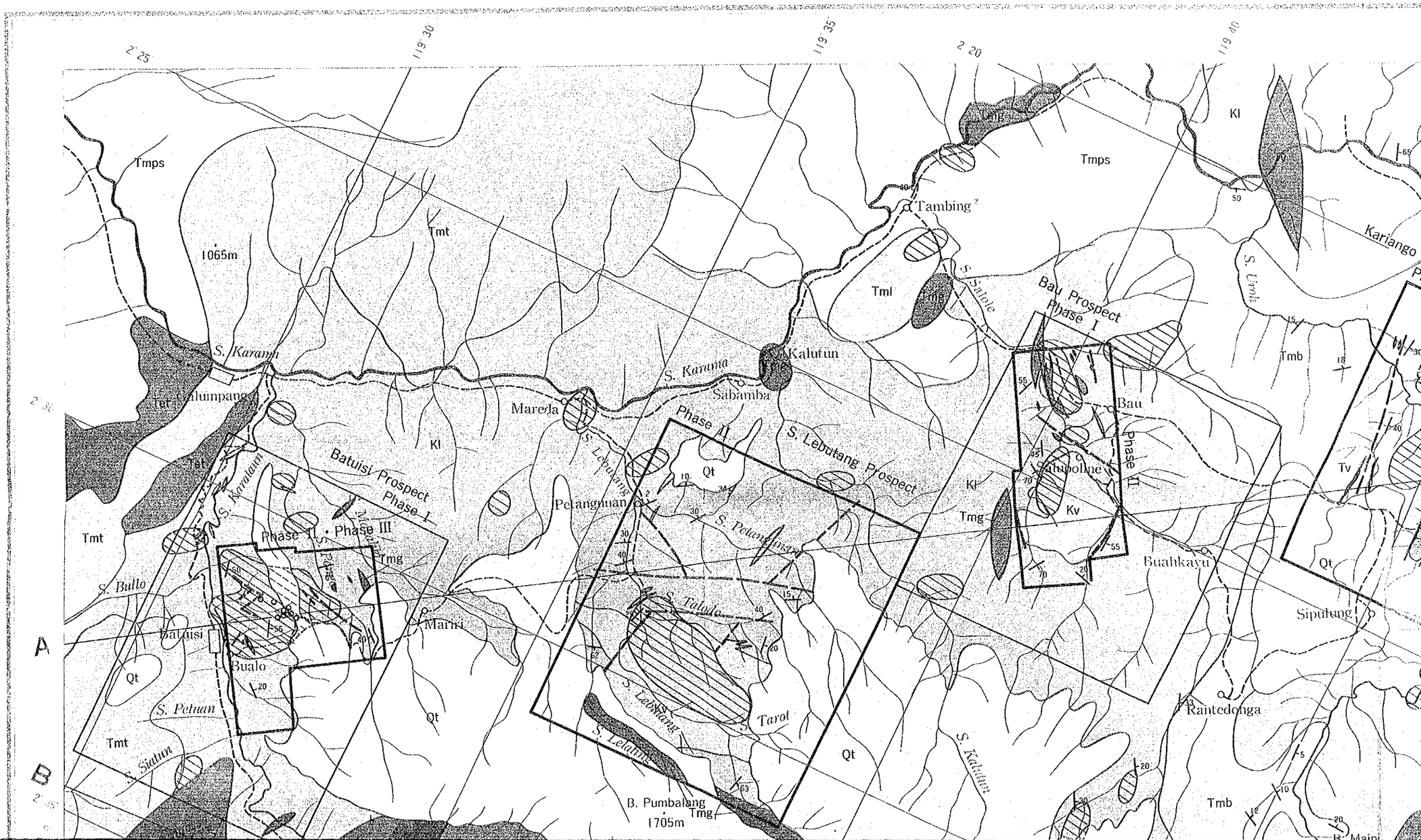
Cu Anomaly (Cu > 96.0ppm)

Rantepo Tuffs

Pre-tertiary Rocks

(Kariango Prospect)

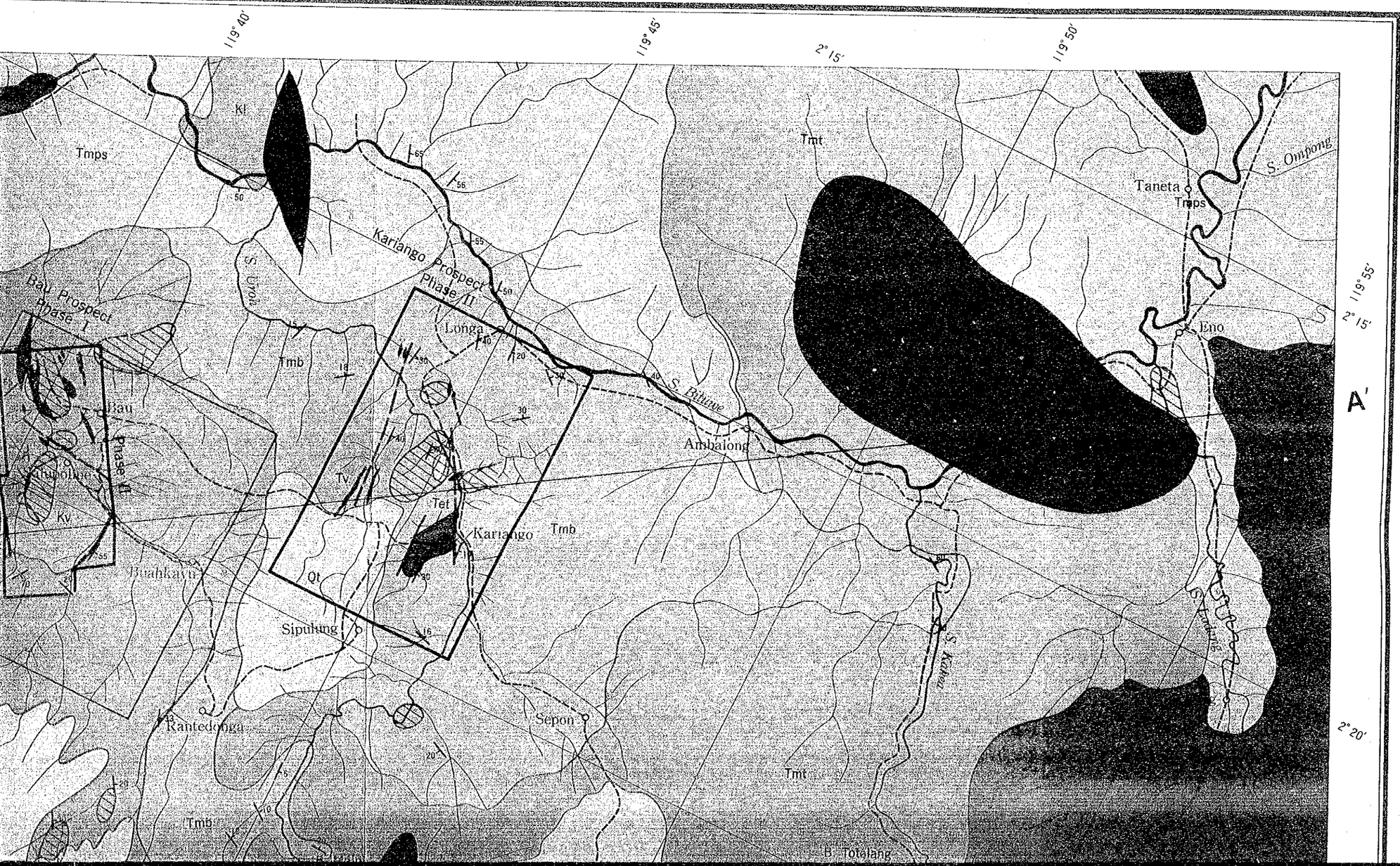




MINERAL DEPOSITS OF THE TORAJA AREA, SOUTH SULAWESI

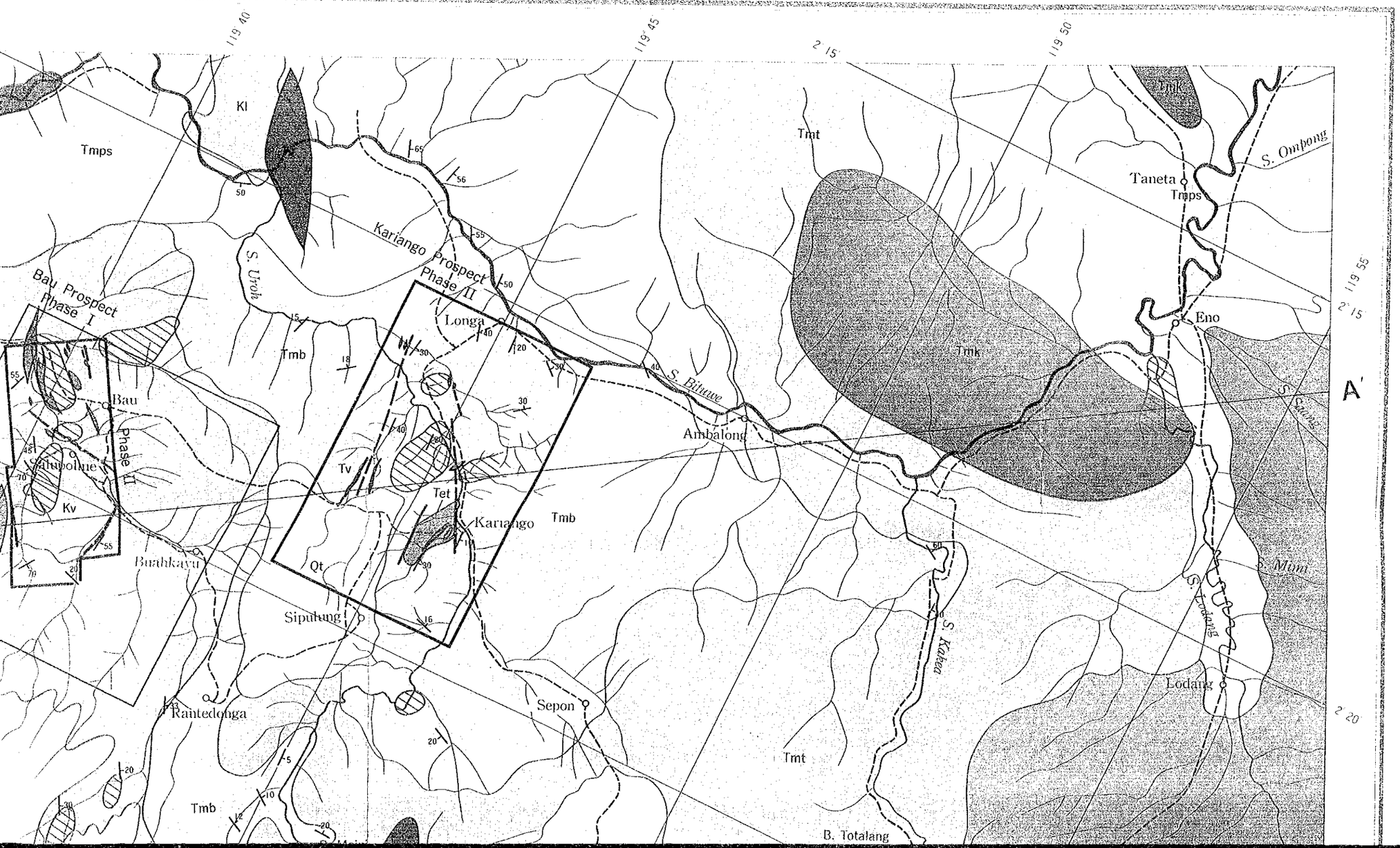
EA, THE REPUBLIC OF INDONESIA

THE COOPERATIVE
BY JICA/MMAJ-DM



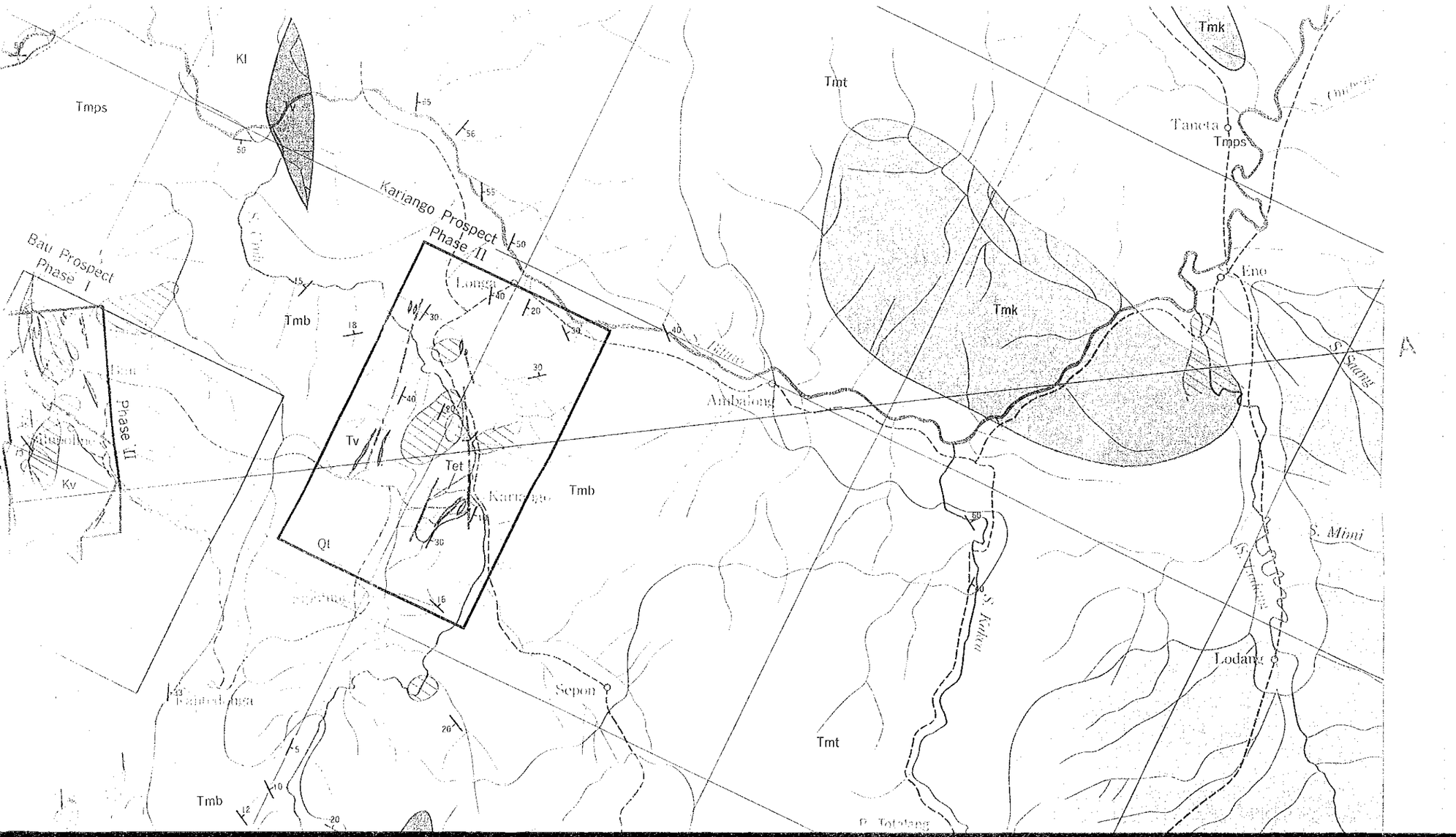
EA, THE REPUBLIC OF INDONESIA

THE COOPERATIVE
BY JICA/MMAJ-DM



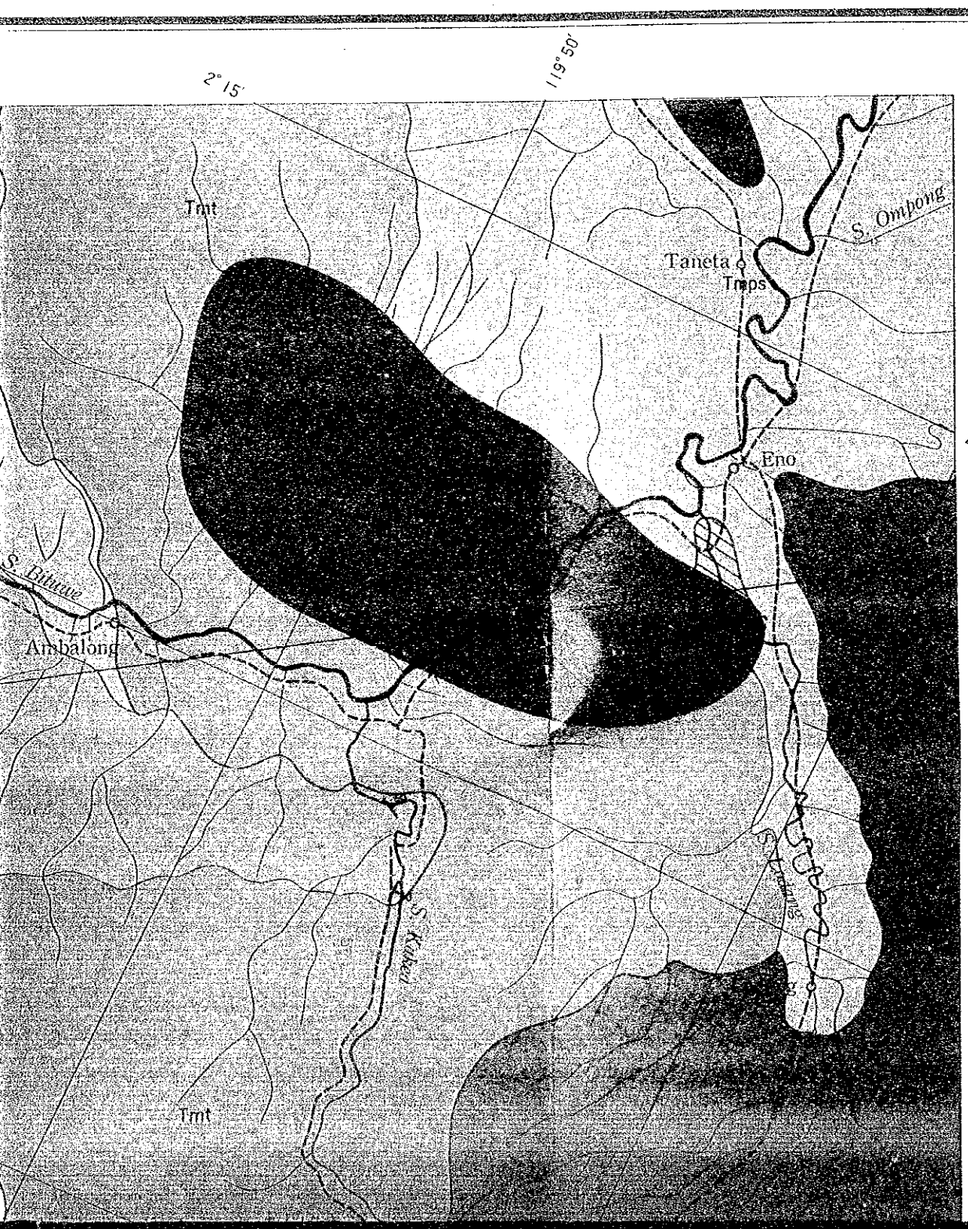
THE REPUBLIC OF INDONESIA

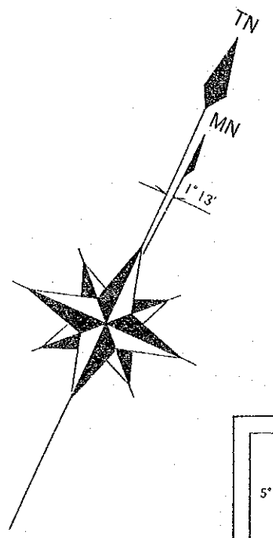
THE CONCESSI
BY JICA / MMAJ



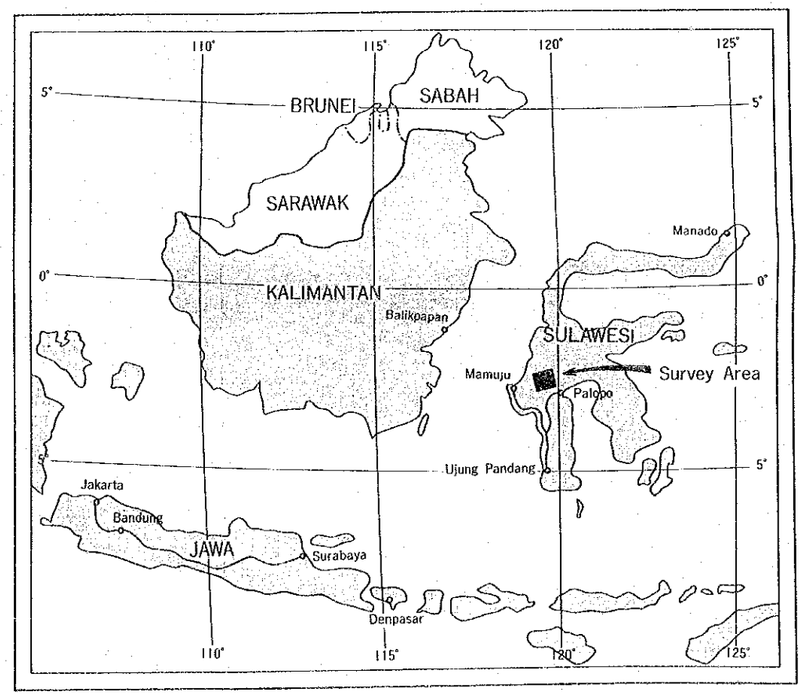
OF INDONESIA

THE COOPERATIVE MINERAL EXPLORATION BY JICA/MMAJ-DMR, 1991—1993





Index Map



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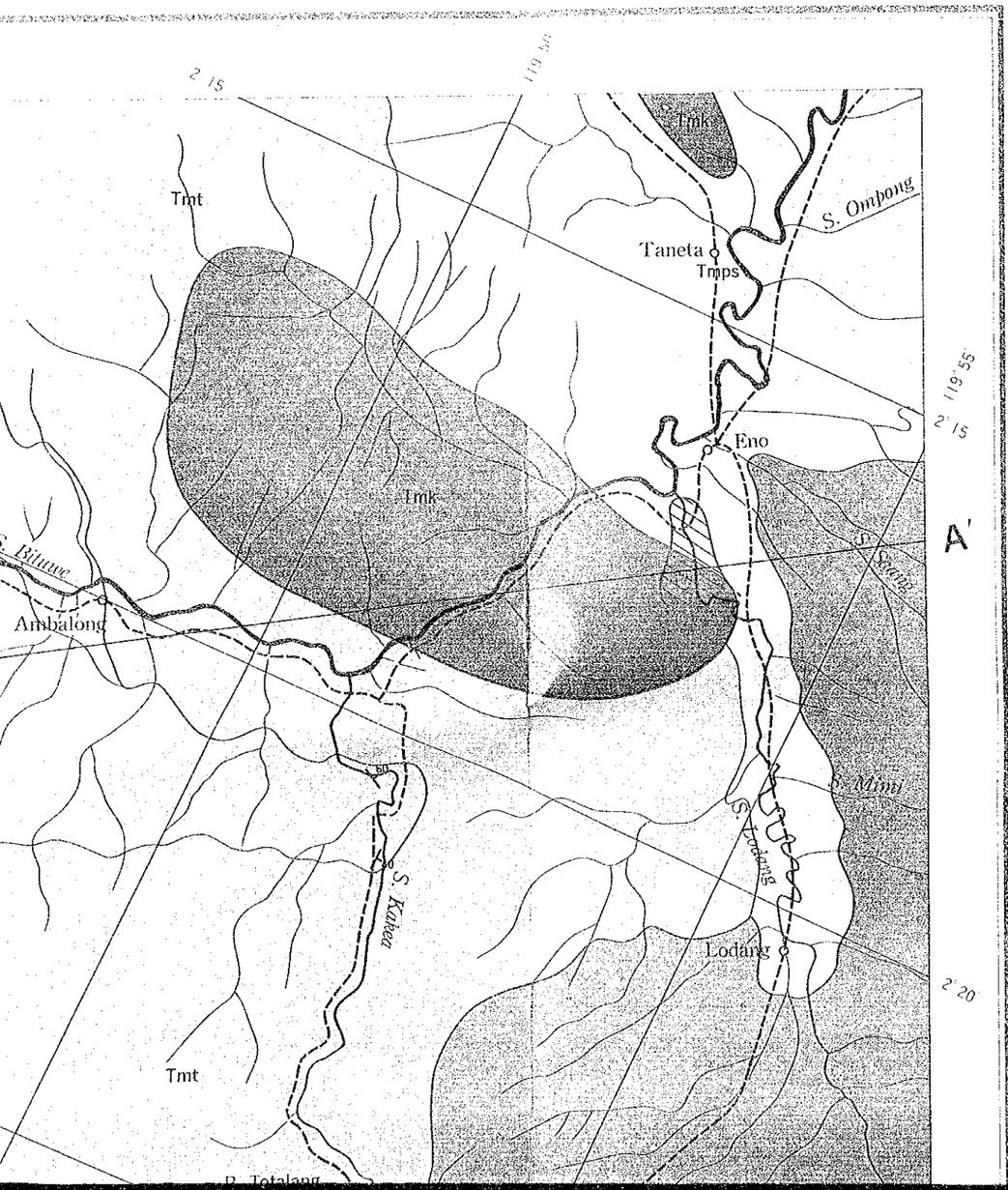
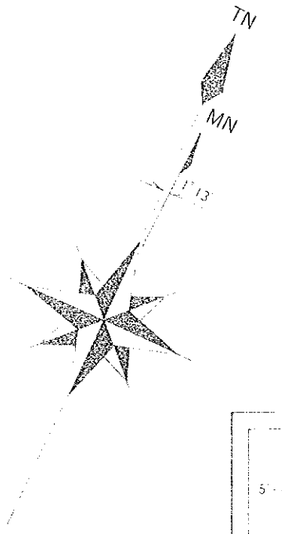
THE COOPERATIVE MINERAL EXPLORATION BY JICA/MMAJ-DMR, 1991—1993





Index Map