10) Assessment

Copper mineralization with hydrothermal activity controlled by the fractures of E-W direction was confirmed. Mineralizaed zone with gossan is distributed with linear continuity. However, the width of hydrothermal alteration zones is not wide, and shale and granitic rocks are not altered outside the area of 20 to 30 m centering the trenches. Therefore, it is assumed that the size of hydrothermal activity is small and large scale mineralization cannot be expected. Meanwhile, although the directions of the barite and copper mineralization are not coincident, possibility that barite veins are related with copper mineralization is expected.

Mineralization possible to observe on surface was well surveyed by the previous works. If further exploration is executed, it is desirable to carry out geophysical survey and drilling survey. As neither of them are not available for this survey program, this district is not to be selected for Phase-2 survey.

3-2-6 Campana Mahuida district

1) Location

This district is located about 100 km to the north-northeast of Zapala city in the west of Neuquen province (Fig. II-3-1). The area is lat. 38° 09' 36" to 38° 17' 24" S and long. 70° 29' 34" to 70° 41' 24" W (Fig. II-3-2-6a), and about 170 km^2. The representative cordinate is lat. 38° 12' 50.9" S and long. 70° 32' 40.9" W.

2) Topography and vegetation

Topography is gently sloped hills with sparse grasses of low height. Granodiorite bodies form steep hills.

3) Access

It is about 100 km drive on No. 22 and No. 231 national roads from Zapala city to Loncopue town. Then it turns to east to go across Rio Agrio. After passing through the bridge, it is 7 km drive to south on an unpaved road to the district. It is accessible to the old shaft by 4-wheel vehicle.

4) Previous surveys

In this district, Campana Mahuida porphyry Cu deposit is located. In 1968, DGFM conducted stream sediment geochemical survey, IP method geophysical survey (7.4 km) and a drilling survey (5 holes: total 486.6 m) under the Plan Cordillerano program for the area of Cerro Tres Puntas. In 1972, Falconbridge conducted geochemical survey by medium of stream sediments, rocks and soils, and drilling survey (22 holes: total 2,100.65 m). From 1974 to 1975,

CEGMI conducted geochemical survey and drilling survey (18 holes: total 1,455.6 m) in the granodiorite area of Cerro Tres Puntas and Cerro Pedregoso. In the period of 1990 to 1991, CORMINE excavated a 65 m vertical shaft and 105 m horizontal galleries near the central part of the ore deposits. In 1992, American Resources conducted drilling survey (12 holes: total 1,000 m). According to Mendez et al. (1995), the ore reserve of oxides is 4,637,782 tons with 0.73% Cu, and ore reserve of sulfide is 22,890,977 tons with 0.6% Cu, calculated in cut-off of 0.3% Cu. On the other hand, reported ore reserves by Northern Orion Explorations in 1997 are oxides of 45,000,000 tons with 0.51% Cu and 0.125 g/t Au, and sulfides of 31,000,000 tons with 0.319 % Cu and 0.125 g/t Au. All of drilling cores conducted by the above-mentioned four parties are stored in CORMINE's warehouse on the bank of Rio Agrio.

In the western part about 5 km from the Campana Mahuida deposit, galena and barite veins are distributed. These are called Angelica or Amelia, Belen and Teresa deposits. From 1930s to 1940s, vein outcrops were mined from the surface. Depth of mining was down to around 70 m. Individual old mining pit is about 50 m extension and intermittent total extension of these reaches about 2 km.

5) Mining properties

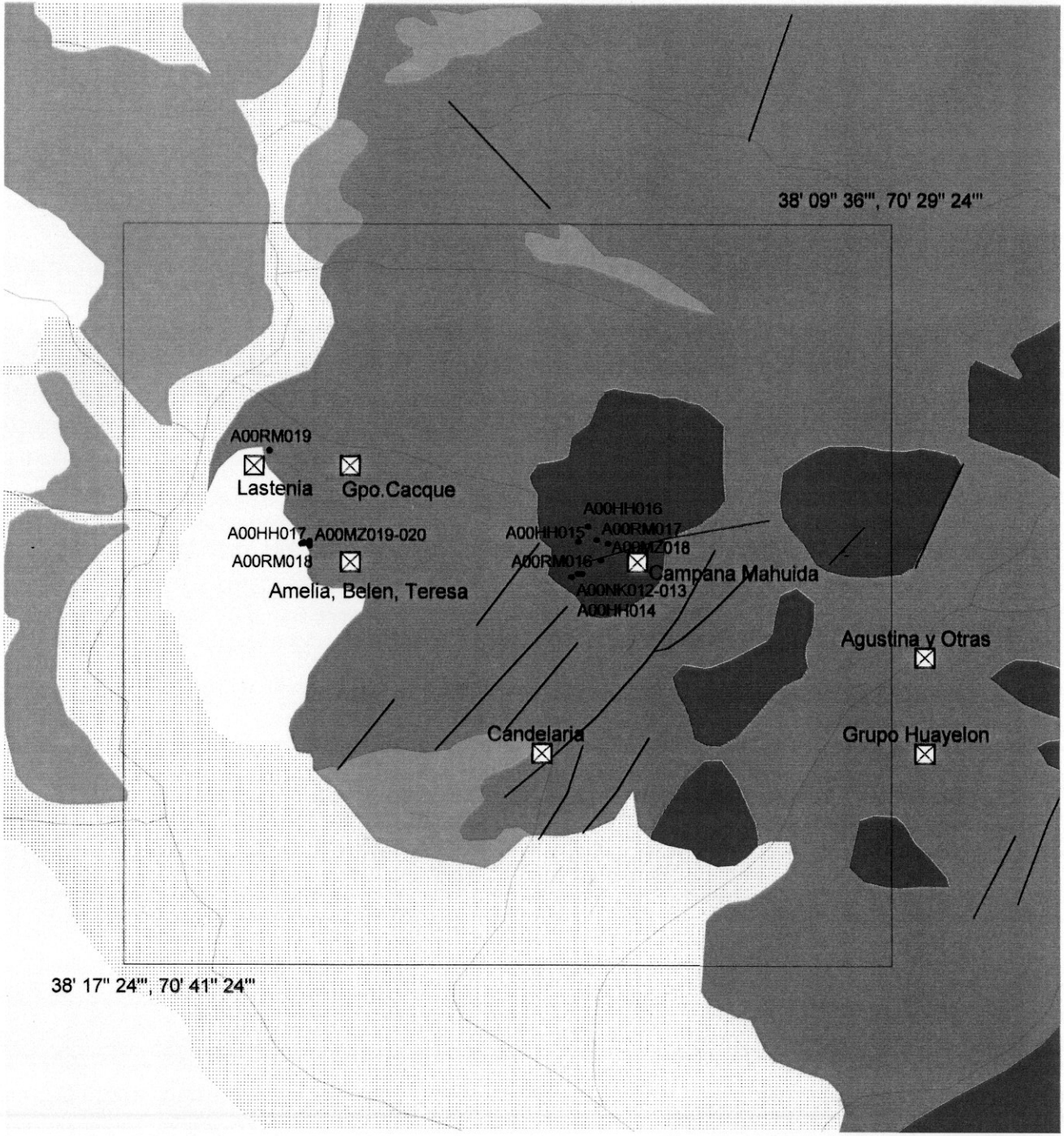
The mining property is held by CORMINE S. E. P., a mining public corporation of Neuquen province.

6) Geology and geological structure

This district is located in the area of the Neuquen back-arc basin formed in the Jurassic. The geology consists of Lamanga, Tordillo and Voca Mueruta formations, which belong to the Cuyo group of shallow sea sedimentary rocks such as siltstone, sansdtone, conglomerate and limestone (Fig. II-3-2-6a). These formations were intruded by diorite, granodiorite, tonalite and andesite porphyry. As to andesite porphyry related to mineralization, 74.2 ± 1.4 Ma was reported by K-Ar radiometric dating for secondary biotite (Sillitoe, 1976). On the other hand, regarding the quartz diorite porphyry located about 8 km northeast of Campana Muhuida deposits, 21.3 ± 1.1 Ma was reported by K-Ar radiometric dating for whole rock sample (JICA/MMAJ, 1984). In the northern part of this district, there is distribution of hornblende andesite and its tuff of Mollo group of Oligocene. Quaternary basalt is distributed in the southwest part. Intrusive rocks are part of those scattered in fold zone of western edge of the Neuquen back-arc basin continuing from the north around Chos Malal.

7) Mineralization and alteration

Known deposits in this district are Campana Mahuida porphyry Cu deposits and polymetallic vein deposits of Grupo Cacque, Lastenia, Amelia, Belen, Teres, Agsutina y Otras,



Known deposit
Sampling point
Lineament
Circular structure
River
Lake

Legend

Quaternary sediments
Pliocene to Pleistocene basalt
Tertiary sedimentary rocks
Tertiary volcanic rocks
Tertiary granitoids
Jurassic to Cretaceous sedimentary rocks
Jurassic to Cretaceous volcanic rocks
Jurassic to Cretaceous granitoids
Permian to Triassic igneous rocks
Carboniferous sedimentary rocks
Proterozoic metamorphic rocks
Alteration zone

Fig. II-3-2-6a Geologocal map with sampling points of the Campana Mahuida district.

Grupo Huayelon and Candelaria. The latter deposits are distributed in such a way as to surround the former. Regarding the Campana Mahuida porphyry Cu deposit, detailed exploration was carried out as aforesaid. According to Mendez et al. (1995), the deposit is located about 5 km south-southwest of Cerro Tres Puntos. Phyllic alteration zone of 2 km in diameter and surrounding propylitic alteration of 10 km in diameter are distributed on surface for the sedimentary rocks of the Tordilo and La Monga formations. Potassic alteration has not been observed on the surface. Concerning the drilling cores of CM/FM39, 0 to 70 m depth is sedimentary rocks and 70 to 84 m at the bottom is andesite porphyry with secondary biotite. Meanwhile, 0 to 50.2 m depth is oxidized leaching zone with a small amount of malachite, 50.2 to 58.7 m depth is secondary enrichment zone of chalcocite and 58.7 to 84.0 m depth is primary sulfides zone of pyrite and chalcopyrite. Regarding the secondary biotite in andesite porphyry, the age of 74.2±1.4 Ma was obtained by K-Ar radiometric dating (Sillitoe, 1976).

Several galena-barite veins in parallel are located about 5 km west of Campana Mahuida deposits. Width of these veins are 20 to 60 cm. The structure is N 50° to 80° W strike and vertical dip. The veins consist of white barite and disseminated galena, with accompaniments of limonite and specularite. Host rock is light gray colored sandstone. Particular hydrothermal alteration is not recognized.

8) Characteristics of the satellite image

Although any hydrothermal alteration zone was not extracted by ratio image analysis, a weak color anomaly of 5/7 band ratio is recognized. NE-SW oriented lineaments of 2 to 5 km in length are concentrated from Campana Mahuida deposits to the southern part.

9) Laboratory work results

Sericite was identified by powdery X-ray diffraction for sandstone sample of A00NK012 from the Campana Mahuida deposits, and a phyllic alteration was confirmed. The chemical analysis for the altered rock samples of A00HH016, A00RM016 and A00RM017 did not show remarkable anomaly of heavy metal.

A sample of A00MZ018 of granodiorite porphyry in eastern outside of the alteration zone is relatively fresh, and it was observed microscopically that only a small portion of amphibole is replaced by eipdote and chlorite. As a result of the chemical analysis, the sample of A00MZ018 is granodiorite or quartz monzodiorite of calc-alkaline series, and has the characteristic of island arc type granitic rocks and shows the negative Eu anomaly in spider diagram (Fig. II-3-2-6b to e).

Meanwhile, chemical analysis for two samples of barite-galena veins showed high grade for lead, barium and silver, such as 2.01 to 15.1 % Pb, 2,100 to 7,400 ppm Ba and 31 to 912 g/t

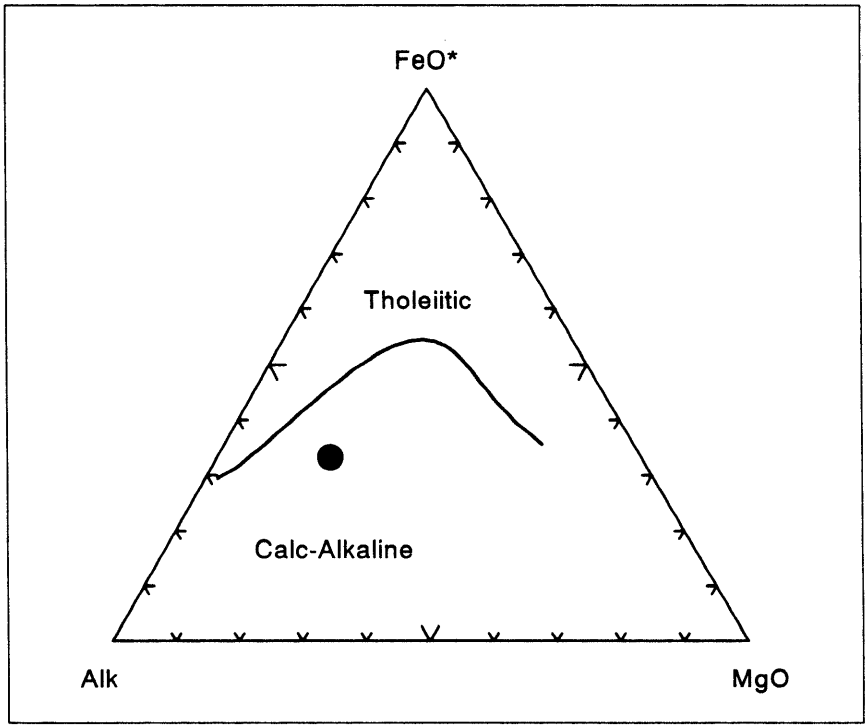


Fig. II-3-2-6b Ternary variation diagram of AFM plot for granitic rock of the Campana Mahuida district.
Alk = Na_2O+K_2O, FeO^* = Total Fe in FeO.

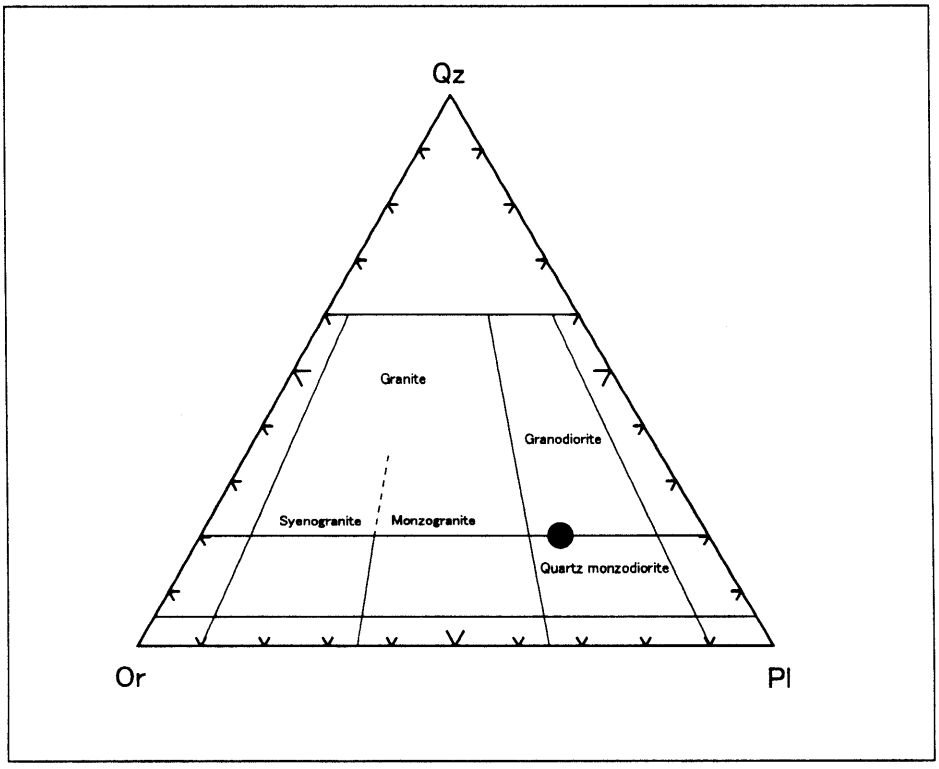


Fig. II-3-2-6c Ternary variation diagram of Qz-Or-Pl CIPW normative composition for granitic rock of the Campana Mahuida district.

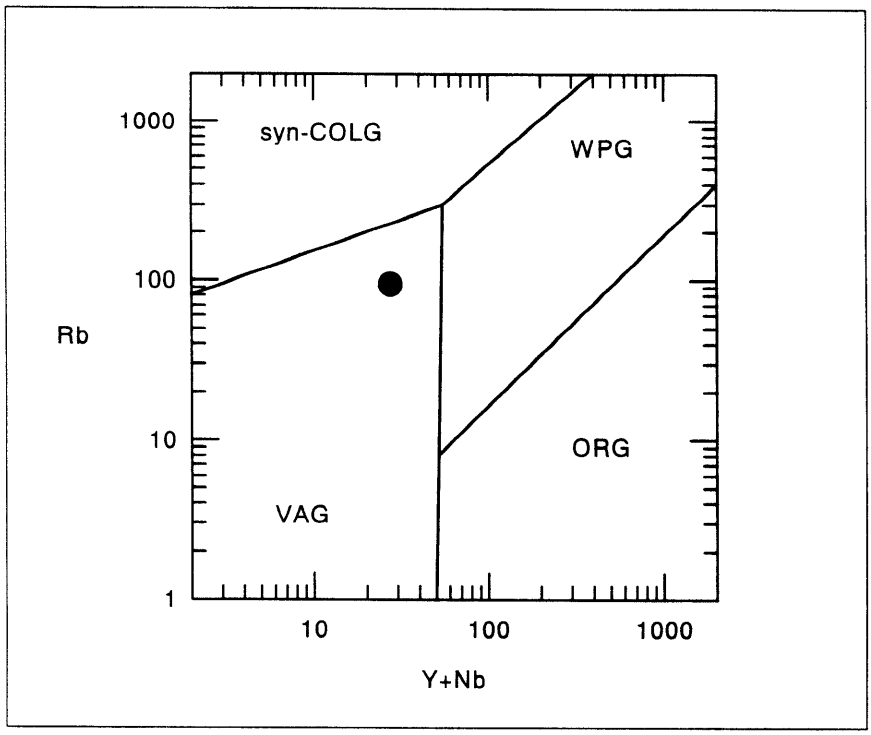


Fig. II-3-2-6d Rb – (Y+Nb) diagram for granitic rock of the Campana Mahuida district. VAG : volcanic arc granites, syn-COLG : syn-collision granites, WPG : within-plate granites, ORG : ocean ridge granites, (Pearce et al. 1984).

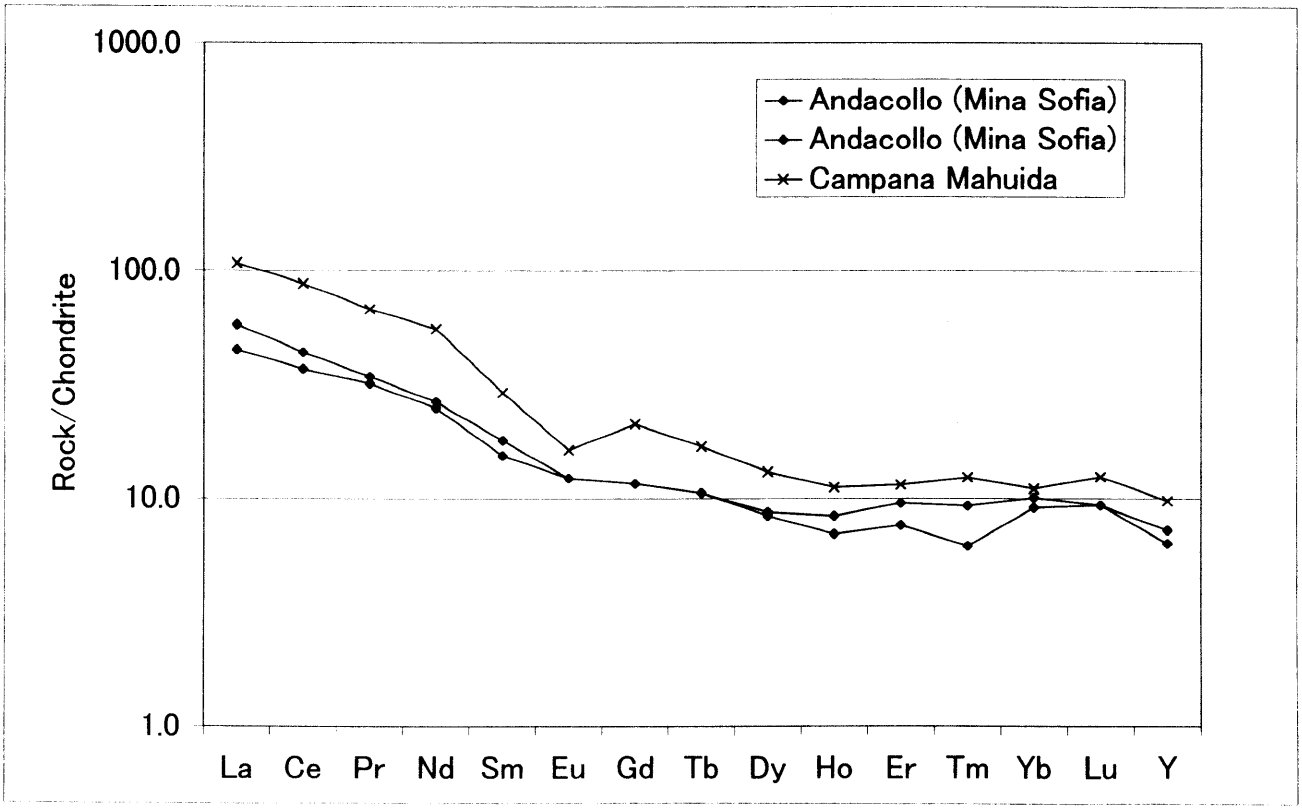


Fig. II-3-2-6e Chondrite normalized REE patterns for granitic rock of the Campana Mahuida district compared with the Andacollo district.

Ag, while showing a low grade for gold and copper.

10) Assessment

It is judged that Campana Mauhida deposit itself does not require future survey since sufficient drilling surveys already have been carried out. However, it is considered that the circumference area of Campana Mauhida deposit and Pino Andino porphyry Cu deposit located about 25 km north of Campana Mahuida has a high possibility of undiscovered similar deposits. Therefore, more detailed satellite image analysis and ground truth survey should be executed in Phase-2.

3-2-7 Palau Mahuida district

1) Location

This district is located about 50 km to the west of Zapala city, in the west of Neuquen province (Fig. II-3-1). The area is lat. 38° 39' 00" to 38° 52' 12" S and long. 70° 34' 48" to 70° 46' 12" W (Fig. II-3-2-7a), and about 470 km^2. The hydrothermal alteration zones of ZA004 to ZA019 were extracted by satellite image analysis (Fig. II-2-9).

2) Topography and vegetation

Palau Mahuida mountains have volcanic topography of 3 to 5 km in diameter and about 800 m differences in relative height. The district has several volcanoes including the highest one at an elevation of 2,650 m above sea level. At the foot of the mountains, trees grow along rivers. Off the rivers, the vegetation is poor with sparse grasses. The summits are bare rocks with no vegetation.

3) Access

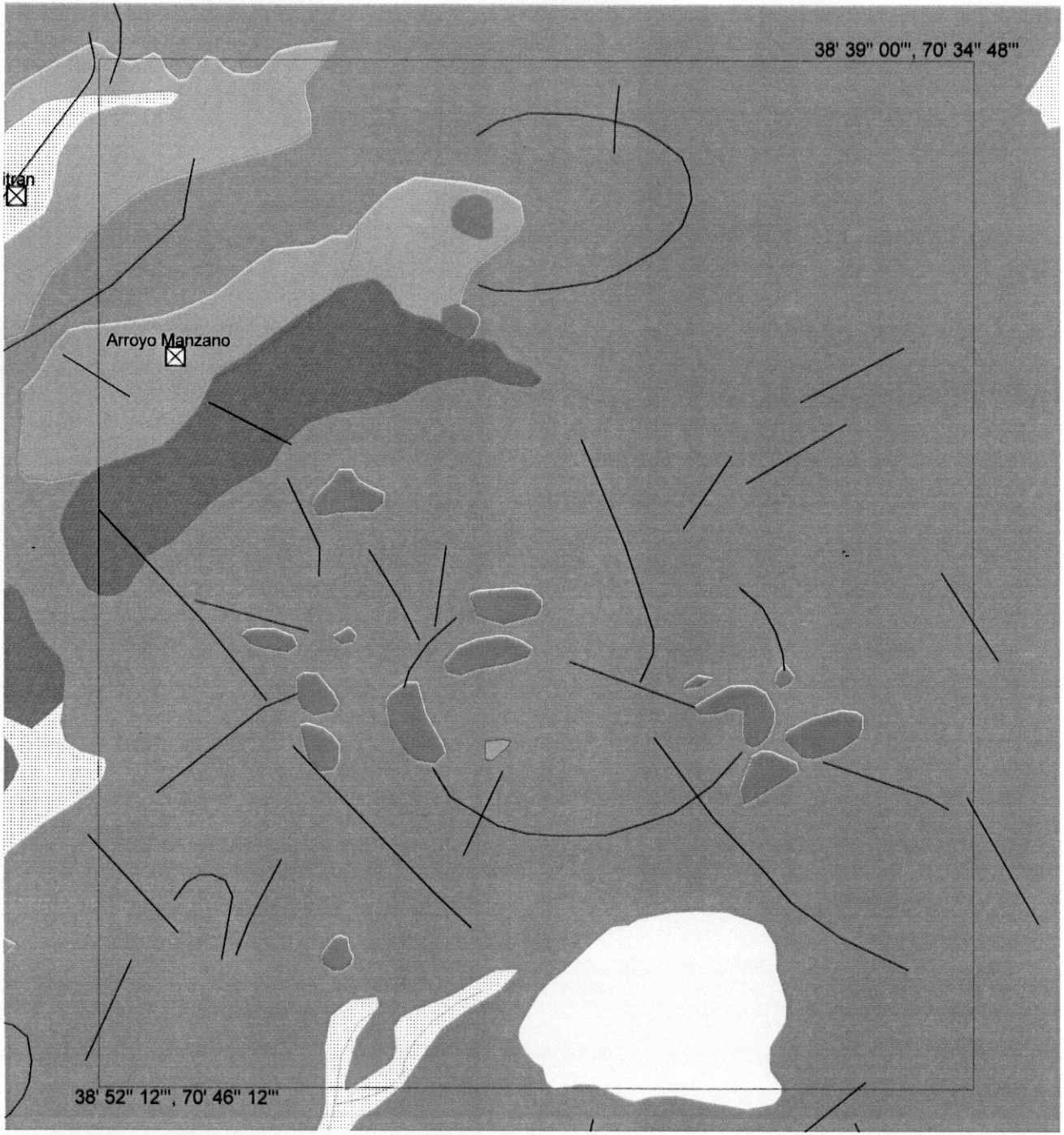
Several hydrothermal alteration zones have been extracted by the satellite image analysis (Fig. II-2-9). However, the alteration zones were not surveyed by the problem of accessibility in this survey. It was understood that horses are necessary to approach to the alteration zones. Pueblo Quilca, on No. 13 provincial road and 25 km west of Zapala city is thought to be suitable base camp in Phase-2 survey.

4) Previous surveys

No specific previous exploration activitiy is known.

5) Mining properties

No mining properties are petitioned.



Known deposit
Sampling point
Lineament
Circular structure
River
Lake

Legend

Quaternary sediments
Pliocene to Pleistocene basalt
Tertiary sedimentary rocks
Tertiary volcanic rocks
Tertiary granitoids
Jurassic to Cretaceous sedimentary rocks
Jurassic to Cretaceous volcanic rocks
Jurassic to Cretaceous granitoids
Permian to Triassic igneous rocks
Carboniferous sedimentary rocks
Proterozoic metamorphic rocks
Alteration zone

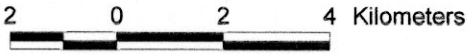


Fig. II-3-2-7a Geologocal map of the Palau Mahuida district.

6) Geology and geological structure

The basement of this district is Proterozoic metamorphic rocks, Permian granitic rocks and Permian to Triassic volcanic rocks of the Choiyoi group. Unconformabaly overlying them, Neogene Tertiary andesitic rocks of the Cajón Negro formation is widely distributed (Fig. II-3-2-7a). Because of topographical characteristics, there are many remaining stratovolcanoes which have depressions considered to be craters.

7) Mineralization and alteration

Arroyo Manzano deposit of copper and zinc dissemination is known in Permian granitic rocks in the northwestern part of this district.

8) Characteristics of the satellite image

There are concentrations of lineaments tending to the NE-SW and the NW-SE. Hydrothermal alteration zones were extracted around the place where these lineaments are entangled. Circular structure was extracted near the central part of the stratovolcanoes, although it is unclear whether the circular structure corresponds to a caldera or not. Horse's hoof shaped lineaments are identified around the stratovolcano, the cause is considered to be collapse of the stratovolcano.

9) Laboratory work results

No laboratory work was done for this district.

10) Assessment

In this survey, concrete assessment is not possible because the hydrothermal alteration zones were not surveyed for reasons of bad accessibility. However, it is suggested that this district has a possibility of epithermal type mineralization rather than porphyry Cu type mineralization because the erosion did not develop for young volcanoes of Neogene Tertiary.

3-2-8 Carreri Malal district

1) Location

This district is located about 50 km to the west of Zapala city, in the west of Neuquen province (Fig. II-3-1). The area is lat. 38° 54' 36" to 38° 59' 24" S and long. 70° 32' 24" to 70° 38' 24" W (Fig. II-3-2-8a), and bout 100 m^2. The representative coordinate is lat. 38° 57' 56.1" S and long. 70° 36' 44.2" W at Carreri Malal deposits.

2) Topography and vegetation

This district is located in upper stream of Rio Carrerri that originates from the southeast slope of Cerro Atravesada of 2,540 m above sea level. Rio Carreri forms a broad U-shaped valley. It has falls made of granite around Carreri Malal. The ore deposits of several veins are located in the area of 1,600 to 1,700 m above sea level. This district has a cold and humid climate typical of the Patagonian Andes. It is moderately dry in summer, cold and humid and sometimes snows in winter. The vegetation is sparse. Araucaria woods spread along the stream.

3) Access

It is about 30 minutes drive on No. 235 national road from the Zapala city to the entrance of farm byroad, then about 2 hours drive on farm road and exploration road. The farm road has locked gates and the exploration road has no bridges to go across rivers in several times. Even 4-wheel vehicle can not drive last 1 to 2 km to the Carrerri Malal deposits, so a walk of about 1 hour is required.

4) Previous surveys

According to Aparicio (1960), ore grade assay of lead, zinc and silver was done for 8 ore samples from around the Carrerri Malal.

Danieli et al. (1979) studied the genetic comparison between Andacollo deposits in the northern part of Neuquen province and Carreri Malal deposits of Cerro Atravesada, and concluded that both belong to the mesothermal polymetallic vein type mineralization. The possibility was mentioned that the Carrerri Malal deposits were formed by mineralization in twice. The first one was before the climax of Hercynian orogeny, then it was affected by cataclastic movement, and the second one was hydrothermal activities of Eocene to Oligocene.

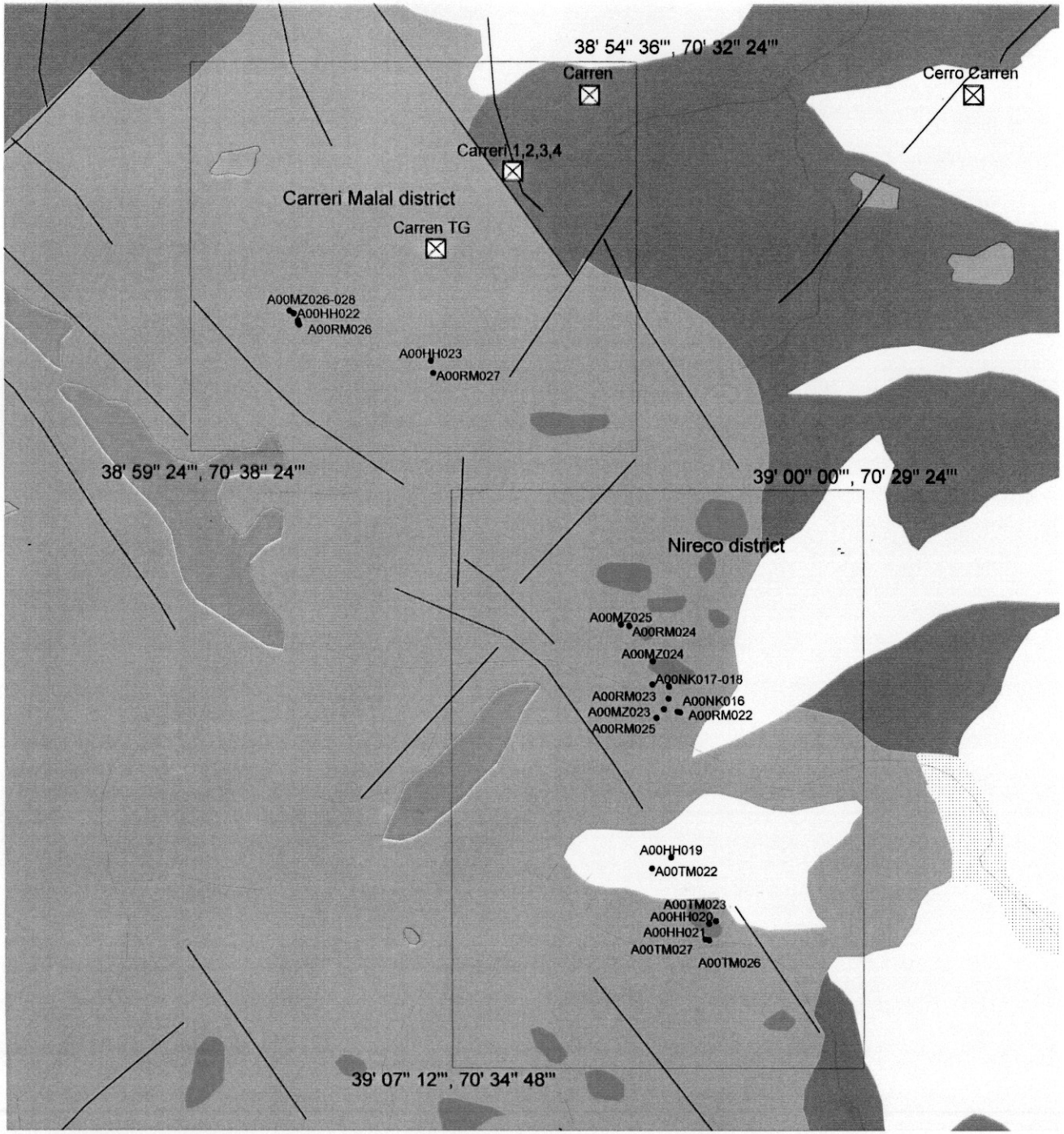
JICA and MMAJ (1984) reported the geochemical anomalies of lead, zinc and copper by medium of soil samples in Carrerri district. And 222 ± 1.1 Ma of middle Triassic was reported by K-Ar radiometric dating for tonalite in about 10km south of Carrerri district.

Ingeoma (1993) reported the chemical analysis results of copper and gold for 476 soil samples and 88 rock samples around Cerro Atravesada. However, particularly noticeable values were not obtained.

R. T. Z. Mining Exploration Ltd. took 335 stream sediments samples and 27 rock samples in Cochico, Carreri and Cachil areas, and made a chemical analysis in 1996. Any results giving expectation were not obtained.

5) Mining properties

Several private companies own the properties including Carreri TG and Carreri II TG.



N

Known deposit
Sampling point
Lineament
Circular structure
River
Lake

Legend

Quaternary sediments
Pliocene to Pleistocene basalt
Tertiary sedimentary rocks
Tertiary volcanic rocks
Tertiary granitoids
Jurassic to Cretaceous sedimentary rocks
Jurassic to Cretaceous volcanic rocks
Jurassic to Cretaceous granitoids
Permian to Triassic igneous rocks
Carboniferous sedimentary rocks
Proterozoic metamorphic rocks
Alteration zone

2 0 2 4 Kilometers

Fig. II-3-2-8a Geologocal map with sampling points of the Carreri Malal and Nireco districts.

6) Geology and geological structure

The geology of this district comprises, in ascending order, the Chachil plutonic complex and volcanic rocks of the Choiyoi group of Permian to Triassic, Cuyo group of Jurassic sedimentary rocks and Cajon Negro formation of Neogene andesitic rocks (Fig. II-3-2-8a).

Chachil plutonic complex is composed of granite, granodiorite and tonalite. Choiyoi group is made up of rhyolitic to andesitic lavas and its pyroclastics. Cuyo group consists of black shale, sandstone and limestone.

7) Mineralization and alteration

Carreri Malal vein deposits are hosted along the contact zone between granitic batholith of Chachil plutonic complex and Choiyoi group of Triassic. The veins strike NW-SE and dip vertical. Silicified breccia dykes of 10 cm to 1.5 m width intruded into granite in three places, and it has relation with the mineralization of lead, zinc, copper and silver. Limonitization on the wall of granite exposure is frequently observed. Disseminated galena, pyrite, chalcopyrite, bornite, malachite and pyrrhotite were observed in silicified and mineralized floats. Galena is dominant quantitatively. Quartz and calcite were observed as gangue. Alteration of granite is weak. Chloritization of mafic minerals and argillization of plagioclase were only confirmed.

8) Characteristics of the satellite image

The geology of this district is interpreted that Chachil plutonic complex is as αP (Paleozoic plutonic to hypabyssal), Choiyoi group is as TRi (lower Triassic volcanics) and Jurassic sedimentary rocks are as Jms (middle Jurassic). Colors tone of the false color image range from brown to whitish brown. The structure due to topographical undulations is rough, and water systems are dendritic or crisscross with moderate to high densities. Ridges are quasi-clear to clear with moderate to high resistance. Bedding planes develop well in sedimentary rocks but are few in Choiyoi group. Intrusive rocks are massive. Dominant lineaments are in NW-SE direction, which is consistent with the strike of veins. NE-SW lineaments are also recognized, although they are few. A small-sized alteration zone of ZA020 is extracted that shows bright reddish purple color on the ratio image.

9) Laboratory work results

Small amount of chlorite, sericite and mixed layer of sericite-montmorillonite were identified by powdery X-ray diffraction for granite sample of A00HH022 and altered rock sample of A00HH023 (Appendix-5).

Chemical analysis results revealed that 7.6 g/t Ag, 4,250 ppm Mn, 1,795 ppm Pb and 652 ppm Zn for sample A00MZ026, and 2,010 ppm Mn for sample A00MZ027 (Appendix-6). And