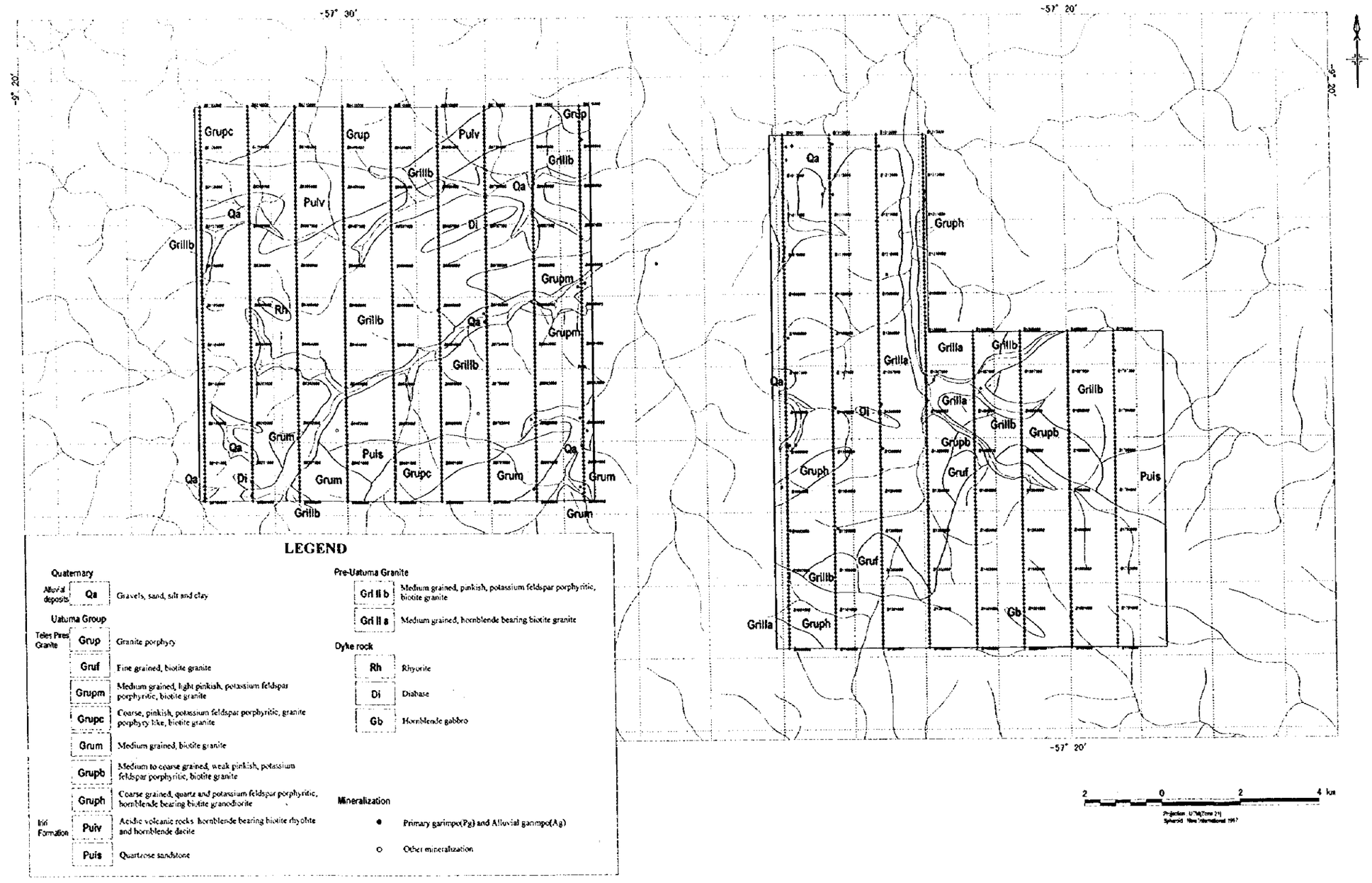


Fig. II-2-12 Location map of soil samples in Block B

Table Ⅱ-2-1 Statistics of soil geochemical survey in the Block B

Elements	Mean	Var.	S.D.	Min	Max	Mean+2SD
Au (ppb)	3.213	0.229*	0.479*	0.500	415.000	29.147 (LOG)
Ag (ppm)	0.145	0.105*	0.324*	0.100	139.200	0.645 (LOG)
Cu (ppm)	9.006	0.264*	0.514*	0.500	263.000	96.096 (LOG)
Pb (ppm)	45.404	0.028*	0.167*	4.000	522.000	98.088 (LOG)
Zn (ppm)	28.766	0.046*	0.214*	2.000	207.000	77.078 (LOG)
Fe (%)	3.487	0.099*	0.315*	0.290	32.200	14.881 (LOG)
As (ppm)	2.023	0.186*	0.431*	1.000	42.000	14.708 (LOG)
Sb (ppm)	1.275	0.054*	0.233*	1.000	14.000	3.731 (LOG)
Hg (ppb)	153.531	0.056*	0.236*	9.000	1470.000	456.130 (LOG)

*:LOG

Table Ⅱ-2-2 Correlation coefficient among elements for soil geochemical survey in the block B

	Au	Ag	Cu	Pb	Zn	Fe	As	Sb	Hg
Au	1.000								
Ag	-0.117	1.000							
Cu	0.155	-0.090	1.000						
Pb	-0.019	-0.183	0.277	1.000					
Zn	-0.058	-0.144	0.015	0.565	1.000				
Fe	-0.022	-0.448	0.305	0.615	0.442	1.000			
As	-0.053	0.025	0.092	0.107	0.067	0.031	1.000		
Sb	-0.002	0.128	-0.023	0.031	0.011	-0.217	0.185	1.000	
Hg	0.017	-0.168	0.064	0.148	0.248	0.307	-0.016	-0.061	1.000

Table Ⅱ-2-3 Results of EDA method for soil geochemical survey in the block B

Elements	L.Fence	L.Wisker	L.Hinge	Median	U.Hinge	U.Wisker	U.Fence
Au (ppb)	0.385	1.000	2.000	3.000	6.000	8.000	31.177
Ag (ppm)	0.100	0.100	0.100	0.100	0.100	0.300	0.100
Cu (ppm)	0.625	3.000	5.000	10.000	20.000	24.000	160.000
Pb (ppm)	20.685	35.000	38.000	46.000	57.000	61.000	104.716
Zn (ppm)	9.691	20.000	22.000	29.000	38.000	43.000	86.263
Fe (%)	0.600	1.920	2.270	3.560	5.510	6.410	20.837
As (ppm)	0.089	1.000	1.000	1.000	5.000	6.000	55.902
Sb (ppm)	1.000	1.000	1.000	1.000	1.000	2.000	1.000
Hg (ppb)	44.203	103.000	110.000	142.000	202.000	228.000	502.677

Pb: The threshold values of gold are determined in 104.716 ppm of Upper Fence of EDA, for which values of more than this value are anomalous. In the western block, high-value samples are mainly distributed in northwestern part and central southwestern part. In the eastern block, high-values are found scattered in northwestern part, southwestern part and central part.

Zn: The threshold values of gold are determined in 86.236 ppm of Upper Fence of EDA, for which values of more than this value is considered anomaly. In the western block, high-values are scattered in northern part and eastern part. In the eastern block, high-values are scattered in western end and central eastern part.

Fe: The threshold values of gold are determined in 20.837 % of Upper Fence of EDA, for which values of more than this value are anomalous. In the western block, high-value are mainly distributed in northern part and southeastern part, while in the eastern block, high-value are scattered in western end and central eastern part.

As: The threshold values of gold are determined in 14.708 ppm of Mean+2SD. In the western block, high-value samples are mainly distributed in western part, central southern part and central northern part. In the eastern block, high-value samples are distributed in southwestern part and southeastern part.

Sb: The threshold values of gold are determined in 3.731 ppm of Mean+2SD. In the western block, high-value are mainly distributed in the northern part to western part and southwestern part with WNW-ESE direction. In the eastern block, high-values are scattered in the northern part and central part.

Hg: The threshold values of gold are determined in 502.677 ppb of Upper Fence of EDA. In the western block, high-values are mainly scattered in the eastern part with north to south and western part. In the eastern block, high-value samples are distributed in central part.

Considering the distribution of Cu and Fe effective for gold exploration, anomalous maps of each elements, were elaborated by using Au+Cu+Fe overlapping maps (Fig. II-2-14). The anomalous points which Au, Cu and Fe are piled up are distributed in southeastern part and northwestern part of western block and surrounding Garimpo Satelite in eastern block.

As shown in Fig. II-2-15, gold anomalous zone is independently extended and overlapped partly with anomalous zone of As. Anomalous zones of Ag are widely extended in western part of gold anomalous zones.

(c) Multi element analysis

Factor analysis were examined as multi element analysis in block B. The results of factor

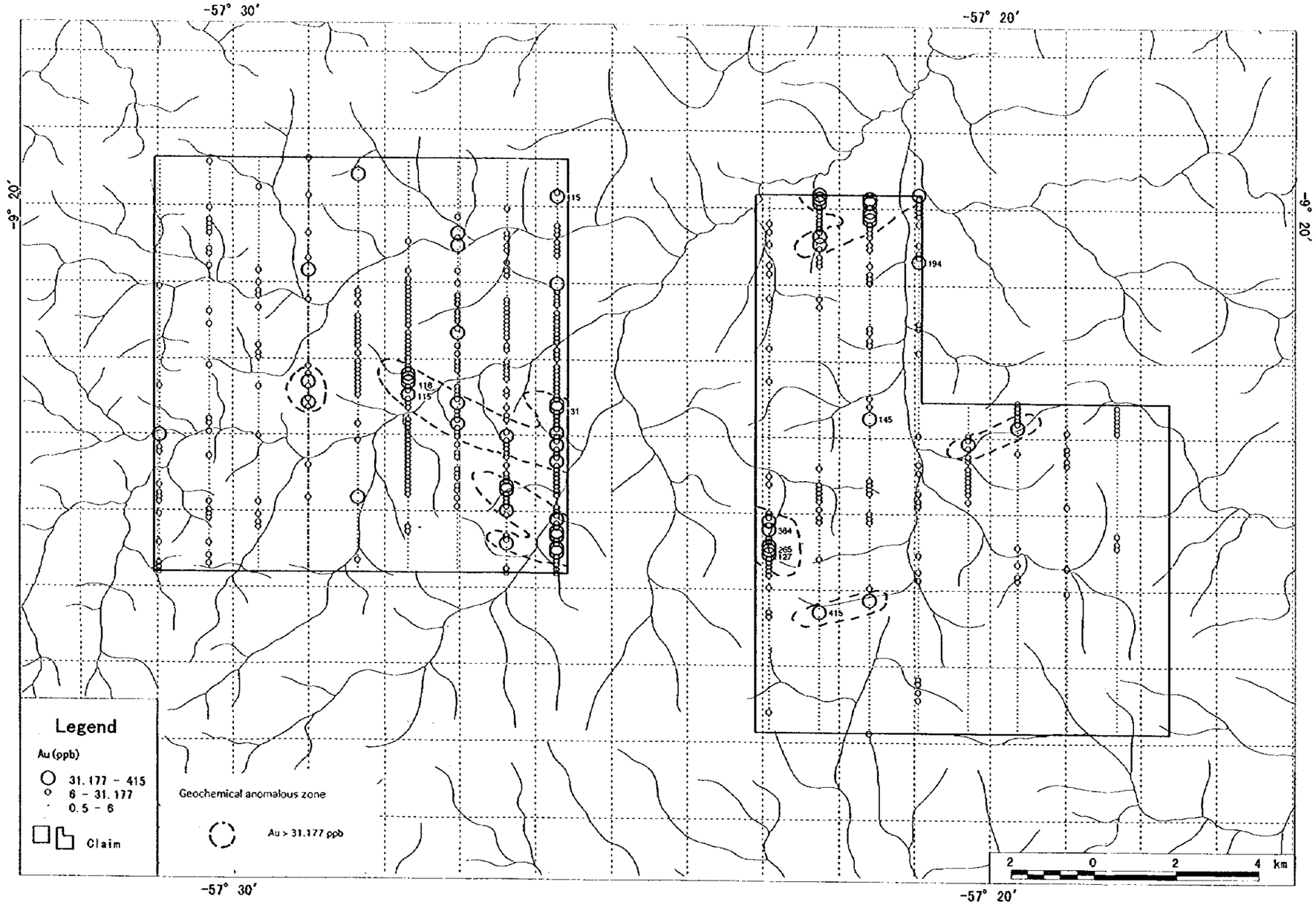


Fig. II-2-13 Distribution map of Au anomalies in Block B

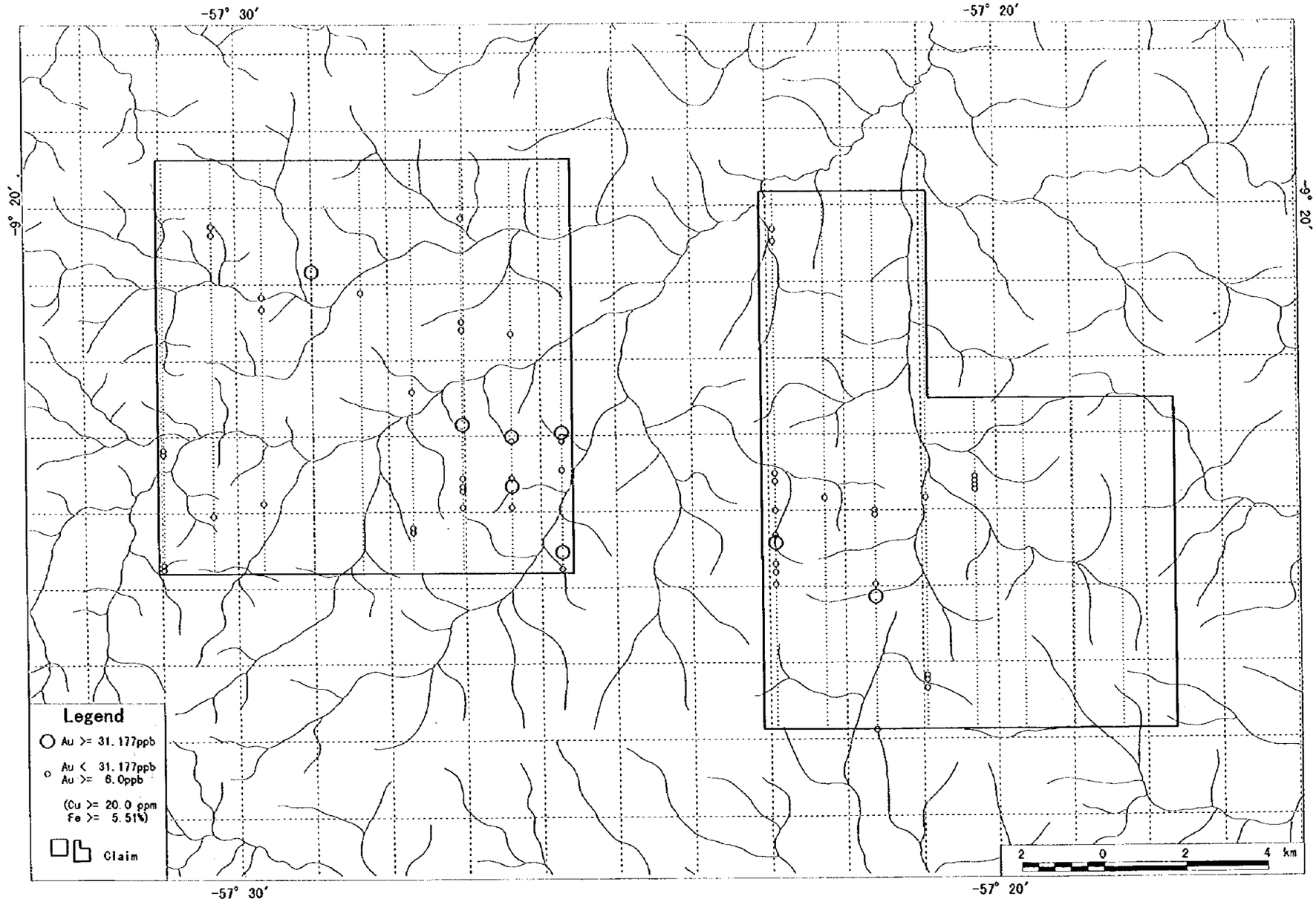


Fig. II-2-14 Distribution map of Au+Cu+Fe overlap anomalies in Block B

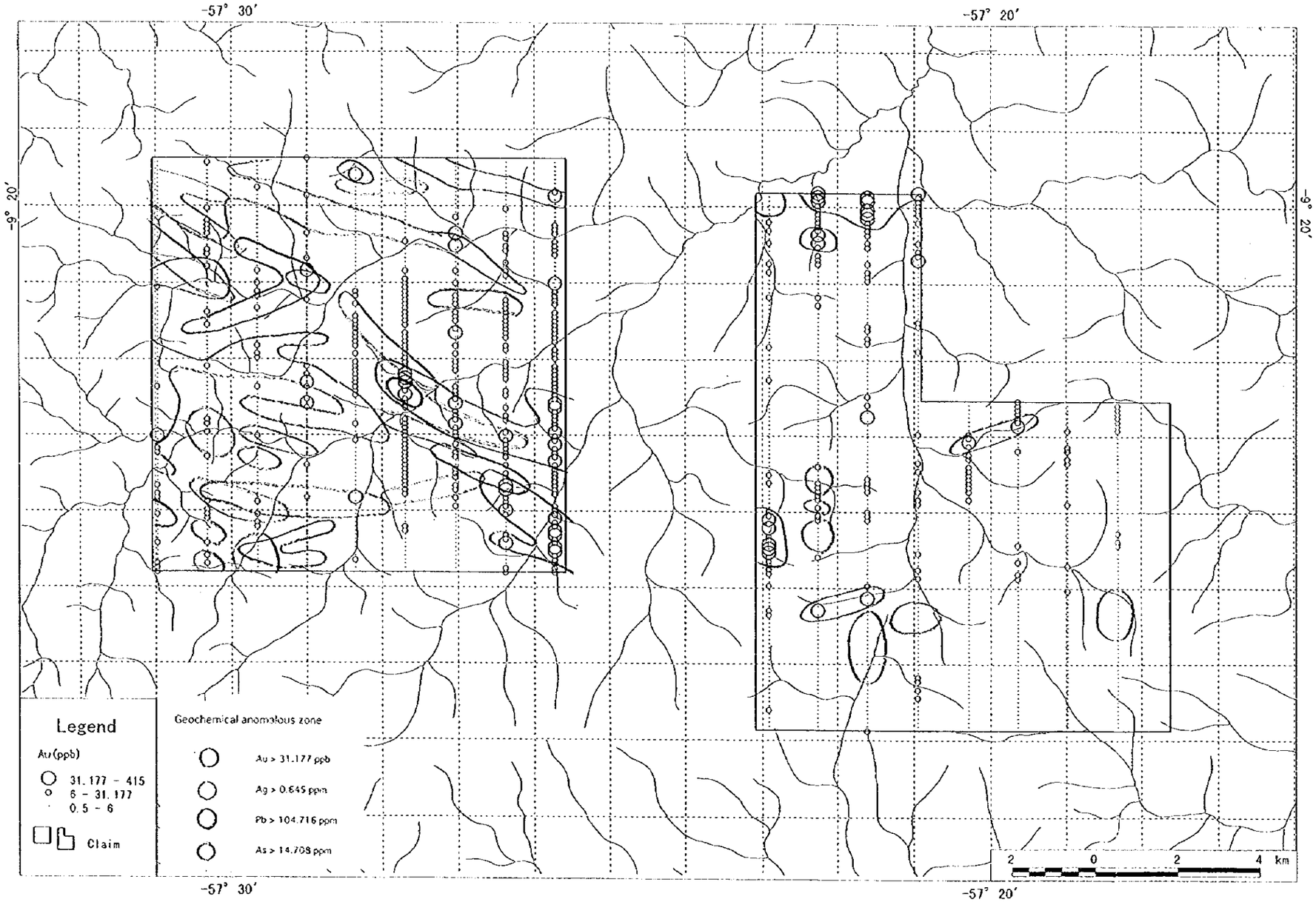


Fig. II-2-15 Distribution map of geochemical anomalous zones in Block B

analysis are given in Table II-2-4. The following relationships between elements and factors were extracted by the factor analysis:

Factor 1 : Pb-Zn-Fe-(Cu)

Factor 2 : Sb-(As)-(Fe)

Factor 3 : Cu-(Au)-(Fe)

Factor 4 : Ag-(Fe)

Factor 5 : Hg-(Zn)-(Fe)

Among these factors, three factors: Factors 1, 2 and 3 were selected and a distribution map of factor score was prepared by allocating three different colors for each factor (Fig. II-2-16). The three factors are shown by following colors:

Factor 1 : blue Factor 2 : red Factor 3 : yellow

The distribution tendency of these factors can be summarized as follows:

Factor 1: In western block, distribution of high factor score is mainly found in the northern part and northwestern part. In northern part, the volcanic rocks of Iriri Formation and granite porphyry (Grup) of Teles Pires Granite are distributed. Factor 1 seems to be related to this lithology. In the eastern block, relative high factor score is distributed along NW-SE direction in central part. The tendency of the distribution crosses the distribution of lithology which seems to be probably reflect the sheared zone.

Factor 2: In western block, distribution of high factor score is mainly found in the northwestern part, southwestern part and southern part. In northwestern part, the high factor score is located near the boundary of coarse-grained porphyritic biotite granite (Grupc) and seems to probably reflect some mineralization. In the southwestern part, medium grained biotite granite (Grum) is distributed and seems to reflect the difference in lithology. In the southern part, high factor score is distributed in the area of coarse grained porphyritic biotite granite (Grupc) and near its boundary which seems to reflect the deference in lithology. In eastern block, relative high factor score tends to be distributed in the geologic boundary.

Factor 3: In the western block, high factor score is mainly found in southeastern part where medium grained biotite granite (Grum) and coarse grained porphyritic granite are distributed. High factor is located in the medium grained biotite granite (Grum) and surrounding it. In eastern block, relative high factor score is found in the northern end and southwestern part. In the northern end where gold anomaly was concentrated, Quaternary (Qa) is distributed. In the southwestern part, small granite body is located.

Table II-2-4 Results of factor analyses for soil samples in Block B

Elements	1	2	3	4	5	Communality
Au	0.091	-0.013	-0.234	-0.100	-0.025	0.074
Ag	0.158	-0.106	0.112	0.683	0.129	0.531
Cu	-0.232	-0.041	-0.675	0.016	-0.005	0.512
Pb	-0.843	-0.152	-0.110	-0.071	-0.048	0.753
Zn	-0.633	-0.110	0.197	-0.048	-0.308	0.549
Fe	-0.695	0.214	-0.222	-0.372	-0.241	0.774
As	-0.099	-0.297	-0.059	0.020	0.025	0.103
Sb	0.067	-0.591	0.040	0.069	0.025	0.361
Hg	-0.156	0.061	-0.044	-0.105	-0.508	0.299
Contribution	43.48%	13.53%	15.93%	16.12%	10.93%	

*Factor loading (after rotation: Varimax)

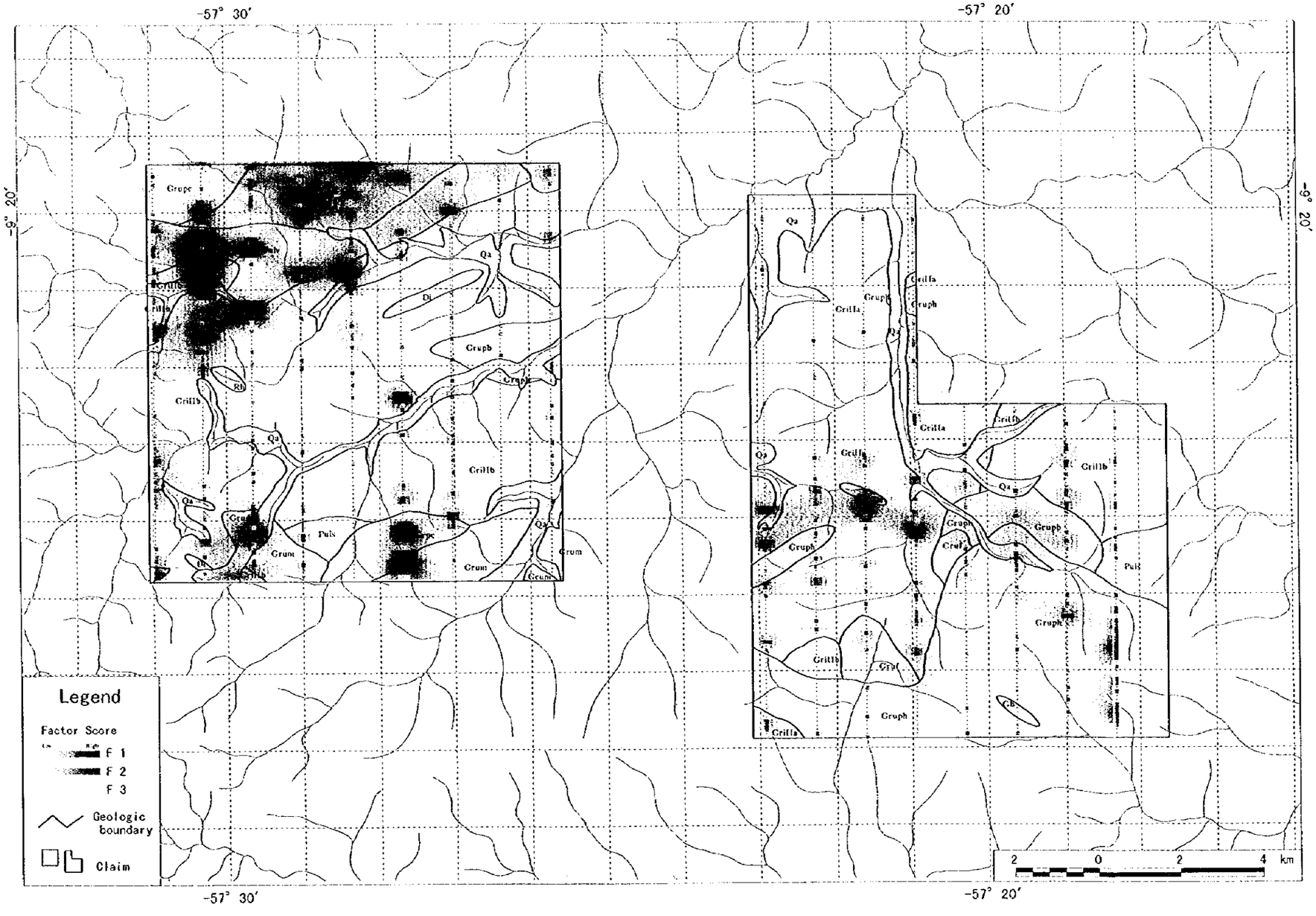


Fig. II-2-16 Distribution map of Factor scores in Block B

(d) Discussion

The results of factor analysis are though to be as follows:

Factor 1 is thought to be a factor caused by base-metal mineralization with Pb, Zn and Cu and by the difference of lithology. The distribution of this factor probably reflected the lithology and geologic structure as the sheared zone. The factor score tends to be high in the areas of acidic volcanic rocks of Iriri Formation granite porphyry (Grup) of Teres Pires Granite.

Factor 2 is thought to reflect hydrothermal alteration with As and Fe. This distribution is thought to indicate the hydrothermal alteration related to intrusion of granite body.

Factor 3 is thought to be due to gold mineralization with Cu, Cu and Fe. As the results of the observation of ore polish, gold mineralization in sheared zone together with chalcopyrite and pyrite is reflected by factor 3. The distribution probably reflects the geologic boundary, the geologic structure as the sheared zone and the contact metamorphism. The factor score is high in the area of medium grained biotite granite (Grum), its periphery and Quaternary (Qa).

The high scores of factor 1 and factor 2 are found overlapped in the area of Iriri Formation.

(3) Summary and conclusions

Fig. II-2-17 which indicates the compiled map in block B, shows the results of the geological and geochemical surveys.

In relation to the results of the geological survey, the geology of block B is composed of pre-Uatumã Granite of early Proterozoic, Uatumã Group of middle Proterozoic, dike and Quaternary. The Uatumã Group consists of Iriri Formation and Teres Pires Granite.

According to the results of ore analysis in the mineral showings in block B: Quartz vein at Garimpo Satelite includes 4.81 g/t to 4.35 g/t of Au and 2.7 g/t to 3.0 g/t of Ag. The sulphide rich quartz vein at mineral showing B4 located between the western block and the eastern block includes maximum 100.00 g/t of Au, 127.2 g/t of Ag and 3.86 % of Cu. The silicified granite with pyrite dissemination at the Novo Planeta area (outside of the eastern block) includes 11.70 g/t of Au and 1.2 g/t of Ag.

As the results of soil geochemical survey, The correlation coefficient indicates that Au is independently conducted by statistics. Based on the results of statistical data treatment, the threshold values of gold is determined in 31.177 ppb. The anomalous value of Au except alluvial samples is ○ and the overlapped anomalous point of Au+Cu+Fe is ●. The three of the factors 1, 2 and 3 show blue, red and yellow, respectively. Consequently the gold anomalous zones enclosed by curved lines are detected in southeastern part of western block and western part of eastern block.

According to the analytical results of soil geochemistry, the anomalous zones of each element are continuous along the WNW-ESE and NW-SE directions. The continuous anomalous zones along line patterns are not related to the distribution of lithology, but thought to show geological structure as the sheared zones confirmed and unidentified during the geological survey. The gold anomalous zones are extended along the WNW-ESE direction. According to the distribution of anomalous zones in block B, the gold mineralization is thought to be the sheared zone in quartz vein-hosted type or stockwork type.

The threshold values of gold in block B are determined in 31.177 ppb and is about 10 times of Clark number. Analytical values of more than 100 ppb are included in the gold anomalous zone with a maximum of 415 ppb.

The potential for the existence of gold ore deposits in block B is thought to be high.

2-4-2 Block C

In block C, geochemical and geological surveys were conducted. The results of the survey are described as follows:

(1) Result of the geological survey

(i) Geology

The FigII-2-18 indicates the geological and profile map of this block. The geology of this area is as follows:

(a) Lithology and stratigraphic

The geology of block B is composed of pre-Uatumã Granite of early Proterozoic, Uatumã Group of middle Proterozoic, dike and Quaternary. The Uatumã Group consists of Iriri Formation and Teres Pires Granite.

① Pre-Uatumã Granite

The Granite is composed of biotite granite (GrIIb).

The biotite granite (GrIIb) is distributed widely in the whole area. The granite includes coarse grains of feldspar, quartz, biotite and hornblende. Porphyritic potassium feldspars occur in the granite. The granite includes alteration minerals of chlorite, epidote and sericite and is accompanied with pyrite dissemination. As the results of microscopic observation of thin sections

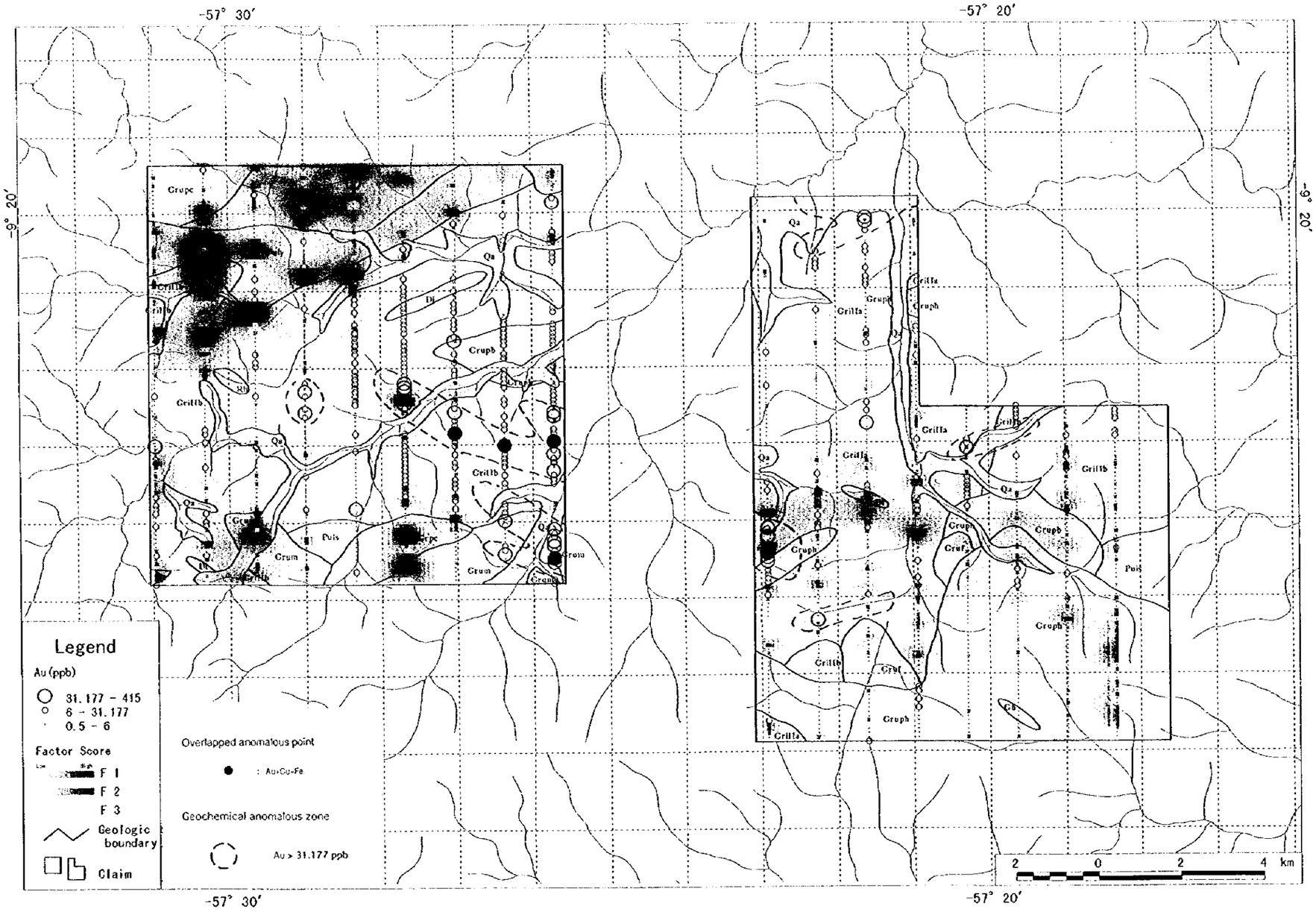
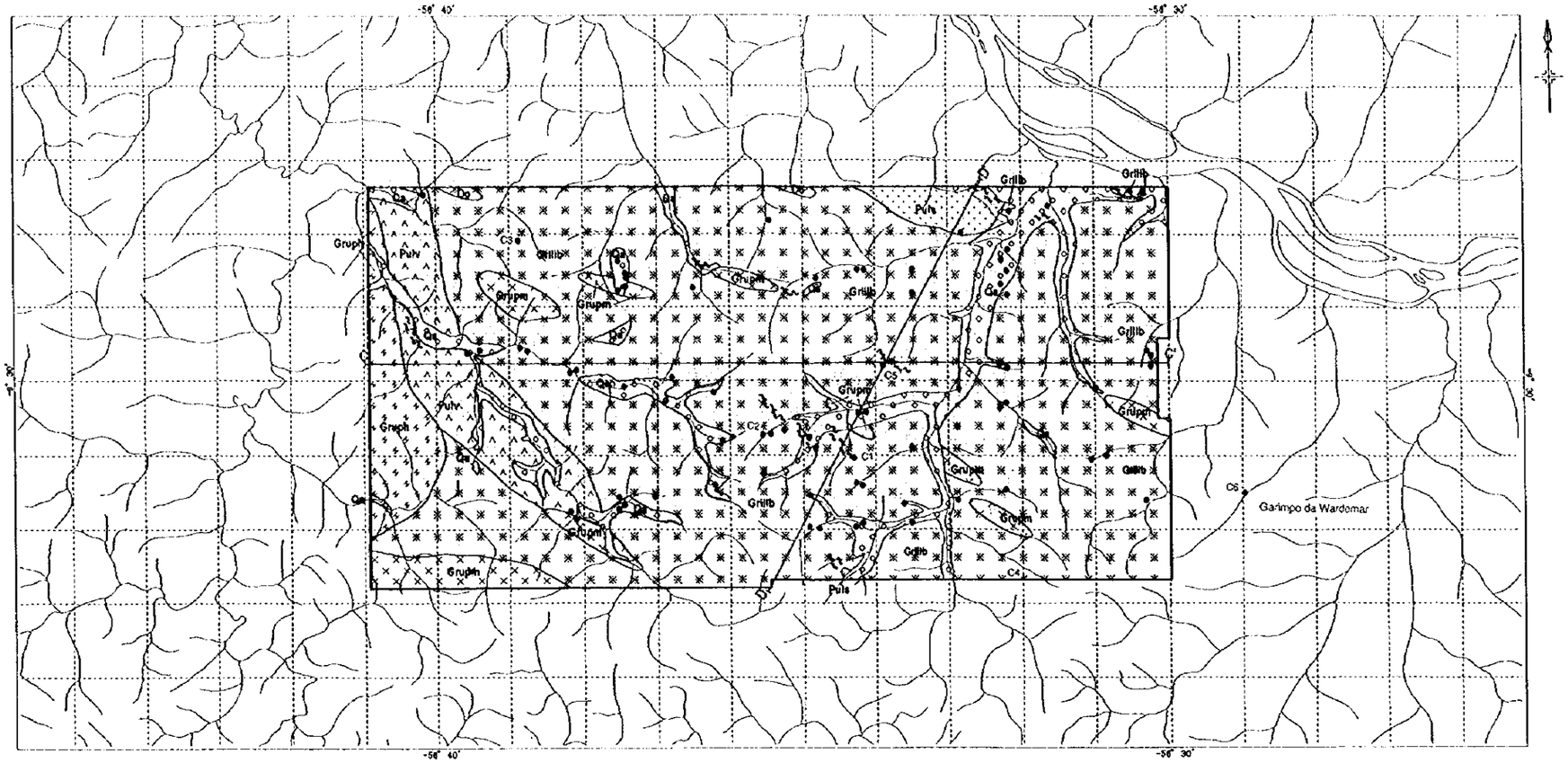
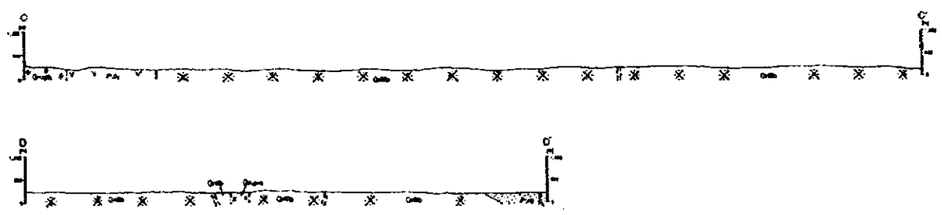


Fig. II-2-17 Compiled map of geology and geochemical anomalies in the Block B





LEGEND

Quaternary
- Alluvial deposits — Ga — Gravels, sand, silt and clay

Uatuma Group
- Grupm — Medium to coarse grained, quartz porphyritic, biotite granite
- Grph — Coarse to medium grained, quartz porphyritic, hornblende bearing biotite granite

Iriri Formation
- Pulv — Acidic volcanic rocks: biotite rhyolite and dacite
- Puls — Quartzose sandstone

Pre-Uatuma Granite
- Grilb — Coarse grained, potassium feldspar porphyritic, biotite granite with weak Ep-Chl alteration and py dissemination

Dyke rock
- Do — Dolerite

Structure
- sheared zone

Mineralization
- Pg·Ag — Primary garimpo(Pg) and Alluvial garimpo(Ag)
- M — Other mineralization

Fig. II-2-18 Geological map and cross section of the Block C

(Table II-1-1), the granite (A1120 and D1069) shows cataclastic texture and includes alteration minerals of chlorite, epidote and sericite.

② Iriri Formation of Uatuma Group

This formation is mainly distributed in eastern part and rarely in northeastern part and southern part. It is mainly composed of acidic volcanic rocks (Puiv) and rarely of quartzose sandstone (Puis).

The acidic volcanic rocks (Puiv) are distributed in the western part and consists mainly of dark gray, rhyolitic and dacitic lava and partly of welded tuff. As the result of the microscopic observation (E1035, E1042), the rocks show cataclastic texture and include alteration minerals of chlorite epidote and sericite. As the result of K/Ar dating (Table II-1-4), the granite indicated an age of 1.41 Ga to 1.54 Ga.

The quartzose sandstone (Puis) is distributed in northern end and southern end of the area along WNW-ESE direction and as a decolorized rock.

③ Teres Pires Granite of Uatumã Group

The Granite is composed of hornblende bearing biotite granite (Gruph) and medium grained porphyritic biotite granite (Grupm).

The Granite is composed of hornblende bearing biotite granite (Grilla) and biotite granite (Grillb).

The hornblende bearing biotite granite (Gruph) is distributed in the eastern end of the area. The granite includes mainly coarse grained, feldspar, quartz and biotite. Porphyritic quartz occurs in the granite. As the result of the microscopic observation (A1108, J1029), the granite shows equigranular texture and includes alteration mineral of chlorite, epidote and sericite. As the result of K/Ar dating (Table II-1-4), the granite indicated an age of 1.14 Ga to 1.24 Ga.

The medium grained porphyritic biotite granites (Grupm) are scattered in the whole area on a small scale and arranged along a WNW-ESE direction. The granite includes medium to coarse grained, feldspar, quartz and biotite and is accompanied partly with chlorite and epidote. As the result of the microscopic observation (A1105, C1023), the granite shows cataclastic texture and includes alteration minerals of chlorite sericite and epidote. As the result of K/Ar dating (Table II-1-4), the granite indicates an age of 1.34 Ga.

④ Dykes

The dikes are composed of dolerite (Do).

⑤ Quaternary

The quaternary (Qa) is distributed along the present rivers and composed of stream sediments and alluvial deposits. The stream sediments are soft and consist of gravels, sand, silt and clay. The alluvial deposits. are slightly solidified and consist of gravels, sand, silt and clay. Many gold alluvial garimpos exist along the rivers.

(b) Geological structure

Sheared zones are developed in biotite granite (Grillb) and medium grained porphyritic biotite granite (Grupm). The direction of sheared zone is mainly NW-SE and partly ENE-WSW. It is concordant with the arrangements of medium grained porphyritic biotite granites (Grupm).

(c) Relation to the airborne geophysical results

As shown in Fig. II-2-19, the potassium contents shows relatively high values in the areas of medium grained porphyritic biotite granite (Grupm).

As shown in Fig. II-2-20. the total magnetic field indicates a linear structure along a EW direction. Other areas of relatively high values are located along Rio Jau and areas of relatively low values areas, along Rio Teres Pires and in the southern part of the area. Each trend shows a linear structure of EW to WNW-ESE direction. Total magnetic field is high along Rio Jau while the potassium count tends to be relatively low.

(ii) Mineralization

There are many gold placer deposits along the rivers where garimpeiros are mining there. Especially, there can be seen many marks of garimpo where more than 2 ton gold was produced (METAMAT, 1997).

Quartz veins are developed along the sheared zones in the primary garimpos. Mineralization with dissemination of pyrite, chalcopyrite and chalcocite is observed and alteration of host rock is accompanied with sericite, chlorite and epidote.

Other mineralized areas are found in and around northern part of Rio Jau to Rio Teres Pires. The host rocks are biotite granite, quartzose sandstone and rhyolite weakly sheared. They are decolorized and silicified and accompanied with hematite, goethite and limonite oxidized from sulphide by underground water, An altered zone is seen of 2 km along north-south and 4 km along east-west. Some oxidized zones are found in the area. Direction elongated is WNW-ESE.

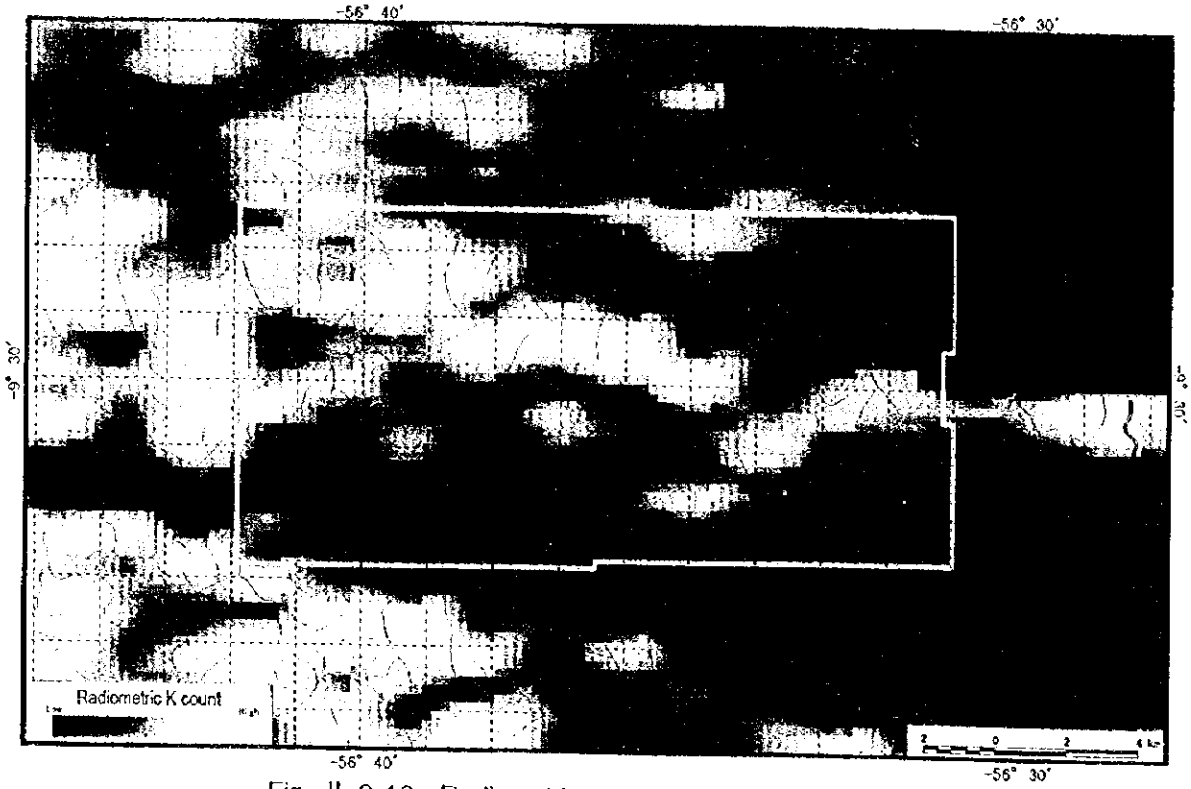


Fig. II-2-19 Radiometric potassium count in the Block C

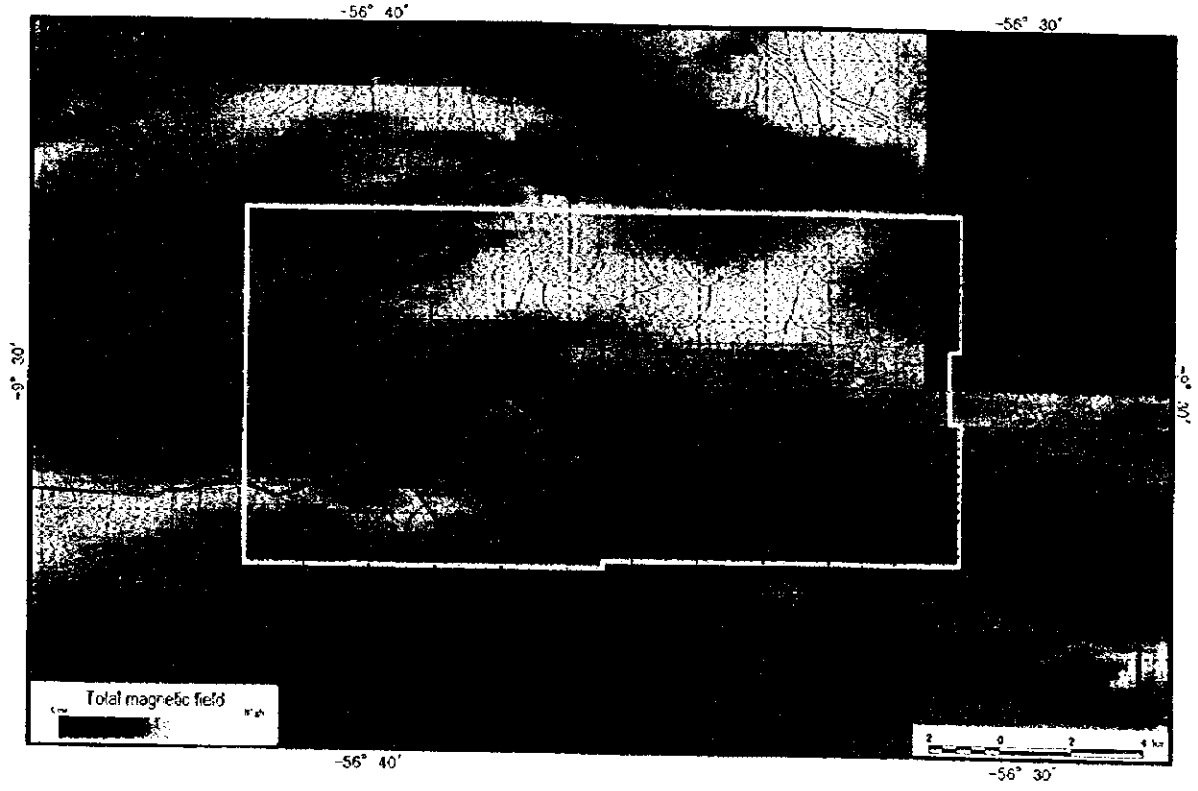


Fig. II-2-20 Total geomagnetic field in the Block C

The mineralization observed within the survey area and its surrounding area can be described as follows:

① mineral showing C1 (Garimpo do Anta)

This mineral showing consists of primary ore deposits located in the central part of the survey area. As shown in Fig. II-2-21, host rock composed of biotite granite with porphyritic potassium feldspar. Narrow sheared zone in weathered granite is being mined by open pit methods. Mineralized zone are composed of lenticular quartz vein (30 cm in width) in sheared granite and sulphide rich quartz vein. The sheared zone trends N20E32W.

As the results of X-ray diffraction test as shown in Table II-1-3 (D1065, D1066, D1067), quartz, potassium feldspar, sericite, illite and kaolin were detected. Kaolin tends to increase at the ground surface and thought to be formed by weathering. Sericite and illite tends to decrease at the surface.

As the results of microscopic observation for polished ore as shown in Table II-1-2, sulphide rich quartz vein (D1060) in sheared zone includes the ore mineral of goethite. Granite (D1070) with pyrite dissemination includes ore minerals of chalcopyrite, pyrite and magnetite.

As the results of ore analysis, gold values show maximum values of 130.00 g/t of Au as shown in Figure and Appendix 1 (D1060 to D1064).

According to the result of fluid inclusion measurements (Table II-1-5, D1068), homogenization temperatures are 297.4℃ and salinity are more than 8.4%.

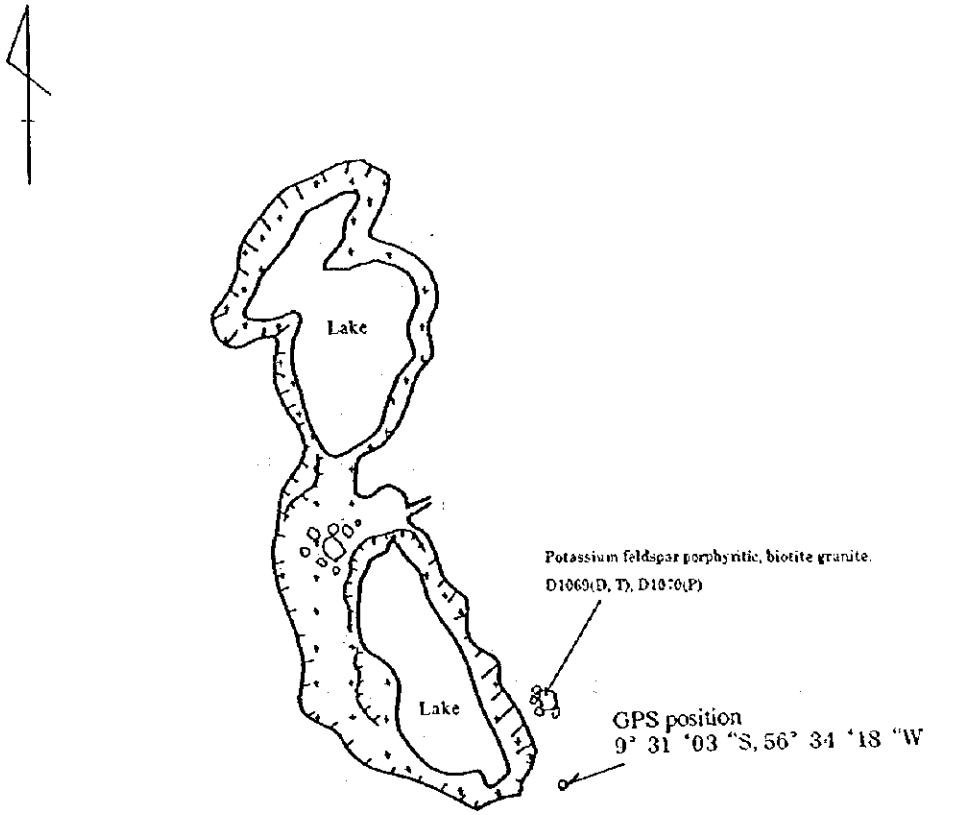
② Mineral showing C2 (in trench)

This mineral showing consists of primary deposits located in the central part. As shown in Fig. II-2-22, host rock consists of biotite granite. Mineralization consists of quartz veins of 40 cm to 50 cm in width and strike and dip of N50W70W. Hematite and limonite are concentrated in quartz vein neighboring granite.

In relation to the results of X-ray diffraction test as shown in Table II-1-3 (D1073), quartz, hématite and goethite were detected. Kaolin tends to increase towards the ground surface and is thought to be formed by weathering. Sericite and illite tends to decrease at the surface.

As the results of microscopic observation for polished ore as shown in Table II-1-2, hematite rich quartz vein (D1073) includes ore mineral of hematite and goethite.

As the results of ore analysis, gold values show maximum values of 0.15 g/t to 0.20 g/t of Au as shown in Figure and Appendix 1 (D1071, D1072).



Sample No	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
D1060	130.00	6.5	306	921	493	12.90	<2	<2	32
D1061	0.54	<0.2	12	59	62	3.65	<2	<2	31
D1062	0.85	1.5	63	1082	211	6.58	<2	<2	37
D1063	4.11	0.8	14	171	110	2.76	<2	<2	48
D1064	0.11	<0.2	11	121	46	4.25	4	<2	66

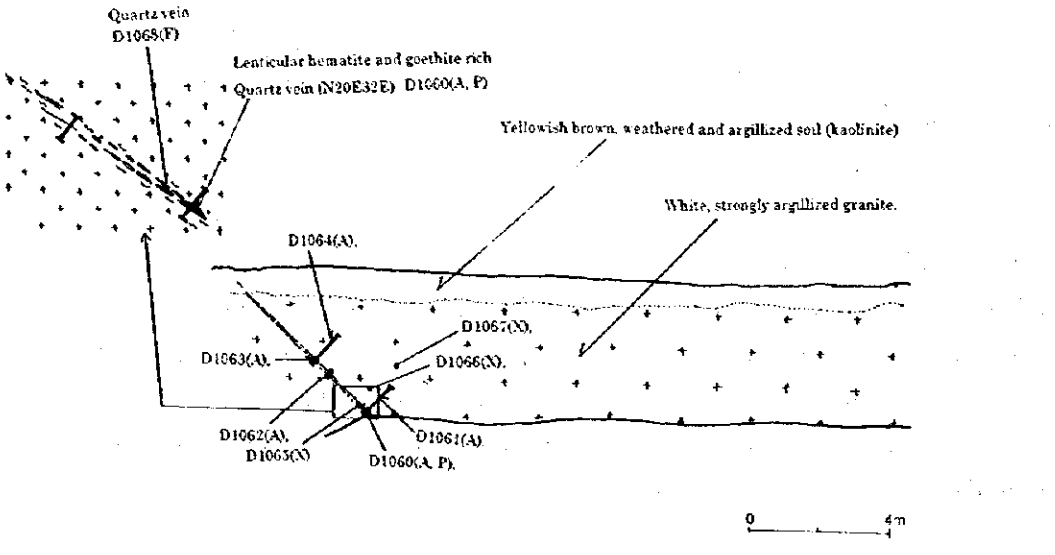
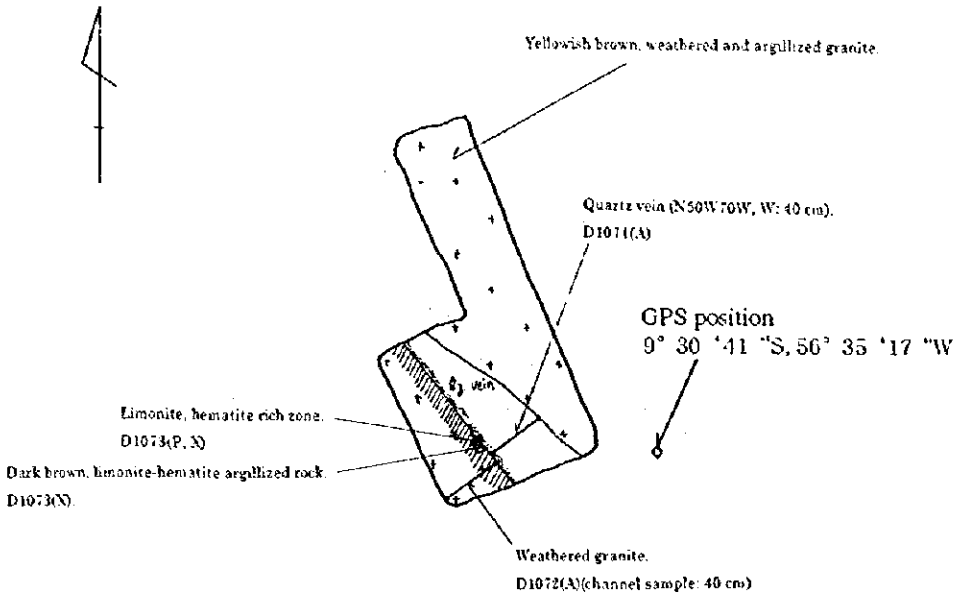


Fig. II-2-21 Sketch of Mineral showing C1 (Garimpo do Anta)



Sample No	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
D1071	0.15	<0.2	36	55	16	5.13	<2	<2	39
D1072	0.20	<0.2	223	1371	120	43.31	<2	<2	99

Fig. II-2-22 Sketch of Mineral showing C2 (Garimpo Paul)

As the result of fluid inclusion measurements (Table II-1-5, D1068), homogenization temperatures are 314.7℃ and salinity are more than 5.3%.

③ Mineral showing C3

This mineral showing consists of primary deposits located in the northern central part. Host rock, as shown in Fig. II-2-23, is represented by weathered granite. The mineralization consists of four quartz veins with hematite and goethite, strike and dip of N30E90 and 1 cm to 2 cm in width.

According to the results of X-ray diffraction test as shown in Table II-1-3 (D1073), quartz and sericite were detected.

As the results of microscopic observation for polished ore as shown in Table II-1-2, sulphide rich quartz vein (D1078) includes ore mineral of goethite.

As the results of ore analysis, channeled samples (D1074 to D1076) includes 0.13 g/t to 1.64 g/t of Au. Spot samples (D1077 to D1078) include 0.23 g/t to 0.50 g/t of Au.

④ Mineral showing C4

This mineral showing consists of quartz veins on the road located in central southern part. As shown in Fig. II-2-24, host rock is composed of biotite granite. The mineralized zone includes 12 white quartz veins with strike and dip of N10E90.

According to the results of X-ray diffraction test shown in Table II-1-3 (A1151, A1152), quartz, sericite and kaolin are detected. Kaolin is thought to be caused by weathering.

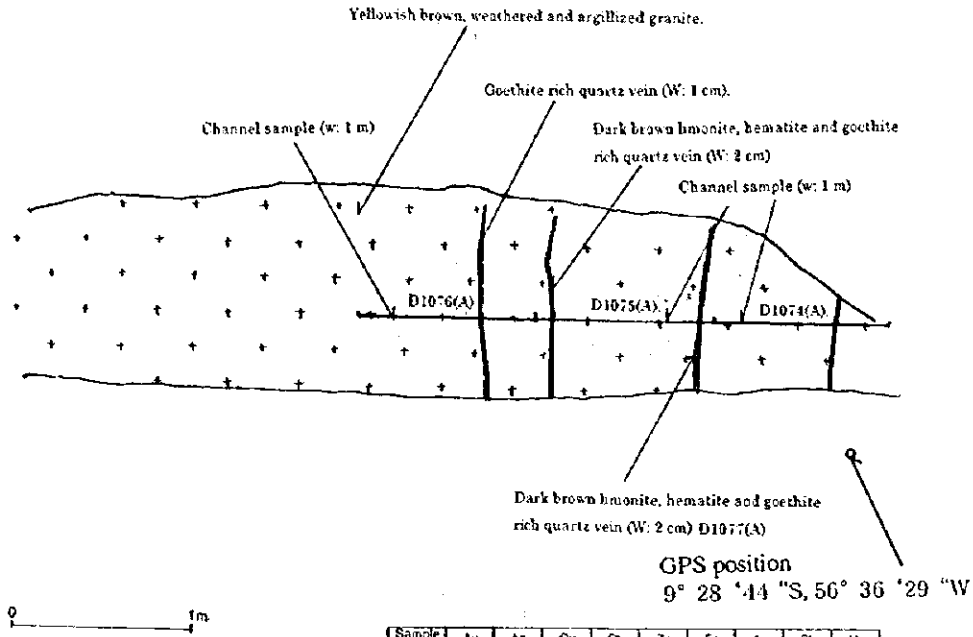
As the results of ore analysis, channeled samples indicate values of less than 0.01 g/t of Au. A spot sample (A1054) indicates values of 0.02 g/t of Au.

As the result of fluid inclusion measurements (Table II-1-5, A1153), homogenization temperatures are 160.6℃ and salinity are more than 11.2%.

⑤ Mineral showings C5 (near C1205400 point)

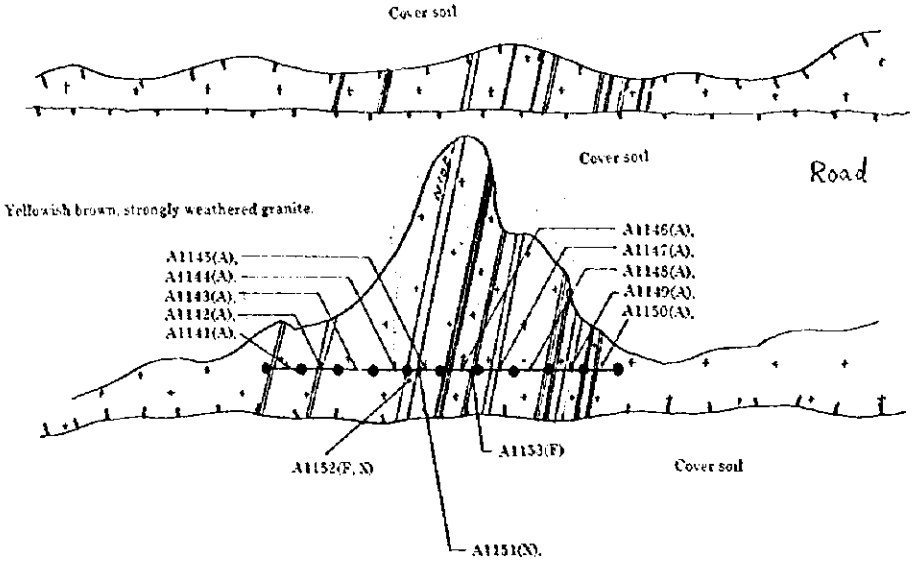
The mineral showings consist of primary deposits located near C1205400 point in central part. As shown in Fig. II-2-25, host rock is composed of biotite granite. Mineralization consists of quartz vein and pyrite dissemination in sheared zone with two strikes and dip of N60-70E80S and N60W80SW. Quartz veins are 1 cm to 5 cm in width. Alteration neighboring quartz vein is composed of sericite and quartz. The mined area is under water.

Granite (A1206, A1207) with pyrite dissemination includes chalcopyrite, covelline, pyrite and goethite as shown in Table II-1-2.



Sample No	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
D1074	1.64	<0.2	7	59	37	17.99	<2	<2	46
D1075	0.13	<0.2	6	66	31	15.22	<2	<2	55
D1076	0.57	<0.2	6	73	26	14.13	<2	<2	37
D1077	0.50	<0.2	7	51	41	45.82	<2	<2	26
D1078	0.23	<0.2	6	54	23	39.85	<2	<2	31

Fig. II-2-23 Sketch of Mineral showing C3



Sample No	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
A1141	<0.01	<0.2	<1	48	21	3.77	<2	<2	99
A1142	<0.01	<0.2	<1	50	17	4.02	<2	<2	68
A1143	<0.01	<0.2	1	45	16	3.56	<2	<2	55
A1144	<0.01	<0.2	<1	40	16	4.87	<2	3	118
A1145	<0.01	<0.2	1	29	9	2.19	<2	<2	36
A1146	<0.01	<0.2	1	27	10	2.49	<2	<2	44
A1147	<0.01	<0.2	<1	50	18	5.63	<2	<2	49
A1148	<0.01	<0.2	2	47	15	2.15	<2	<2	61
A1149	<0.01	<0.2	<1	11	6	1.26	<2	<2	34
A1150	<0.01	<0.2	<1	44	17	2.30	<2	<2	45
A1154	0.02	<0.2	10	80	10	1.28	<2	<2	23

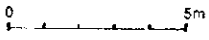
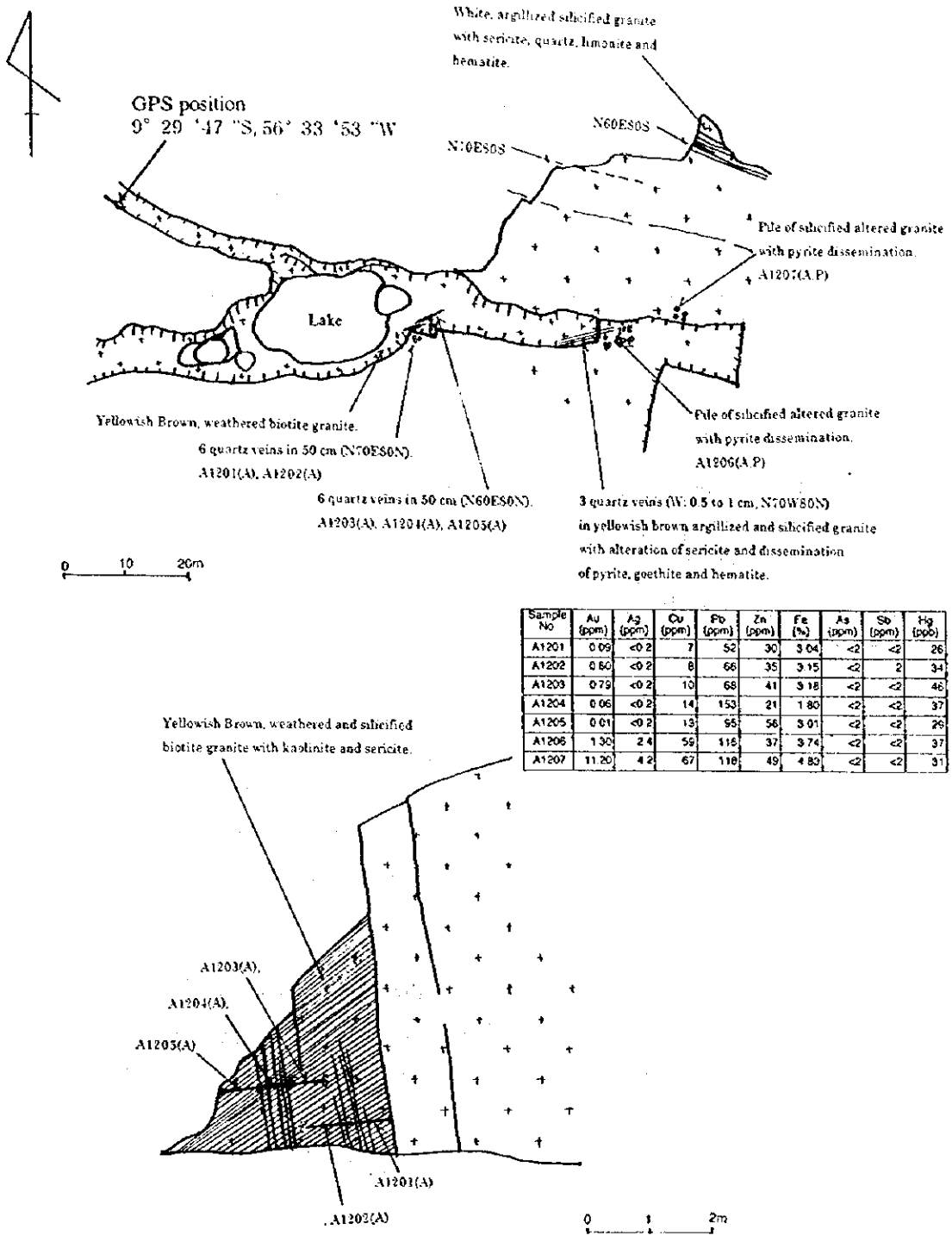


Fig. II-2-24 Sketch of Mineral showing C4



Sample No	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
A1201	0.09	<0.2	7	52	30	3.04	<2	<2	26
A1202	0.60	<0.2	8	66	35	3.15	<2	2	34
A1203	0.79	<0.2	10	68	41	3.18	<2	<2	46
A1204	0.06	<0.2	14	153	21	1.80	<2	<2	37
A1205	0.01	<0.2	13	95	56	3.01	<2	<2	29
A1206	1.30	2.4	59	116	37	3.74	<2	<2	37
A1207	11.20	4.2	67	110	49	4.83	<2	<2	31

Fig. II -2-25 Sketch of Mineral showing C5 (C1205400)

As the results of ore analysis, channeled samples (A1202 to A1205) indicate 0.01 g/t to 0.79 g/t of Au. Waste samples (A1206, A1207) of granites with pyrite dissemination include 1.30 g/t to 11.20 g/t of Au and 2.4 g/t to 4.2 g/t of Ag.

⑥ Mineral showing C6 (Garimpo do Waldemar)

This mineral showing consists of primary garimpo located outside of the eastern part of the area. As shown in Fig. II-2-26, host rock is represented by biotite granite. The mined area is under water. There are three shafts and gold ore deposits which seemed to be minded under 40 m to 80 m from the surface. Waste ores are piled at eastern part. The mineralization is quartz veins with strike and dip of N40W40NE and 1.5 m in width. Quartz vein ores include native gold, pyrite, chalcopyrite and bornite. Alteration consists of sericite and quartz.

As the results of microscopic observation for polished ore as shown in Table II-1-2, quartz vein (A1209 to A1211) includes ore minerals of gold, chalcopyrite covelline chalcocite and pyrite. Native gold is observed on the piled quartz veins.

As the results of ore analysis, piled quartz veins (A1209 to A1210) includes maximum 174.00 g/t of Au and 40.4 g/t of Ag and 0,40 % of Cu.

⑦ Other mineralization

At the mineral locations with floats of altered rocks encountered during the survey, the ore samples indicated values of 1.00 g/t of gold as follows (Appendix 1).

Fragments of quartz veins (E1025) at C0905000 point indicate 1.41 g/t and of Ag. Mylonite (E1029) with hematite and limonite at B0706400 point indicate 1.46 g/t of Ag.

(iii) Considerations

According to the results of the geological survey, the following considerations were made:

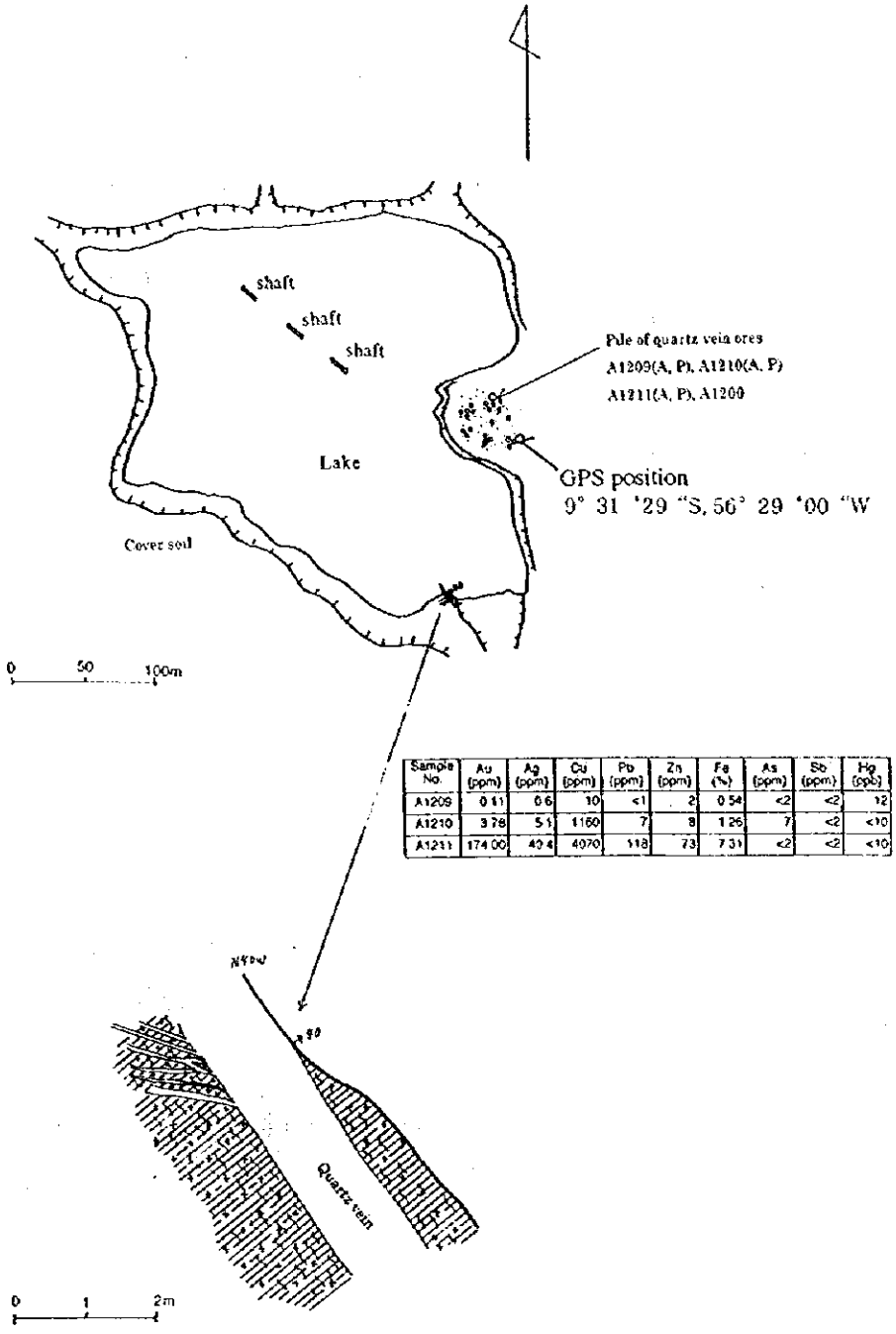
a) The sheared zone with NNW-SSE direction is continued in the central part.

b) The medium grained porphyritic biotite granites (Grupm) are intruded along the sheared zone.

c) Pyrite dissemination is observed widely in the medium grained porphyritic biotite granites (Grupm)

d) The primary garimpos are located in the sheared zone. Garimpo do Waldemar is in the sheared zone extended from the survey area.

e) Other sheared zone is developed in northern part.



Sample No.	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	As (ppm)	Sb (ppm)	Hg (ppb)
A1209	0 61	0 6	10	<1	2	0 54	<2	<2	12
A1210	3 78	5 1	1160	7	8	1 26	7	<2	<10
A1211	174 00	40 4	4070	118	73	7 31	<2	<2	<10

Fig. II-2-26 Sketch of Mineral showing C6 (Garimpo da Waldemar)

f) Alteration zone is developed within the sheared zone in granite.

g) Blue quartz included in granite is found around gold mineralization.

According to the results of ore analysis, sulphide rich quartz vein in the garimpo do Anta results in 130.00 g/t to 4.44 g/t of Au and 6.5 g/t to 0.8 g/t of Ag. As the results of ore analysis, the waste samples (A1206, A1207) of granites with pyrite dissemination at the mineral showings C5 (near C1205400 point) results in 1.30 g/t to 11.20 g/t of Au and 2.4 g/t to 4.2 g/t of Ag. The piled quartz veins (A1209 to A1210) at Garimpo do Waldemar indicates a maximum values of 174.00 g/t of Au and 40.4 g/t of Ag and 0.40 % of Cu.

As the primary garimpo with more than 100 g/t of Au exists in the central part of the survey area, the area around central part seems to bear a high potential for the existence of primary gold ore deposits.

(2) Analytical results of soil geochemical survey

(a) Results of statistical data treatment

The locations of soil samples in block C are shown in Fig. II-2-27. The analytical data of the collected soil samples are shown in Appendix 3. The results of statistical data treatment are shown in Table II-2-5 to Table II-2-7.

Three elements of Ag, As and Sb of nine elements showed values less than the detection limit for the most samples.

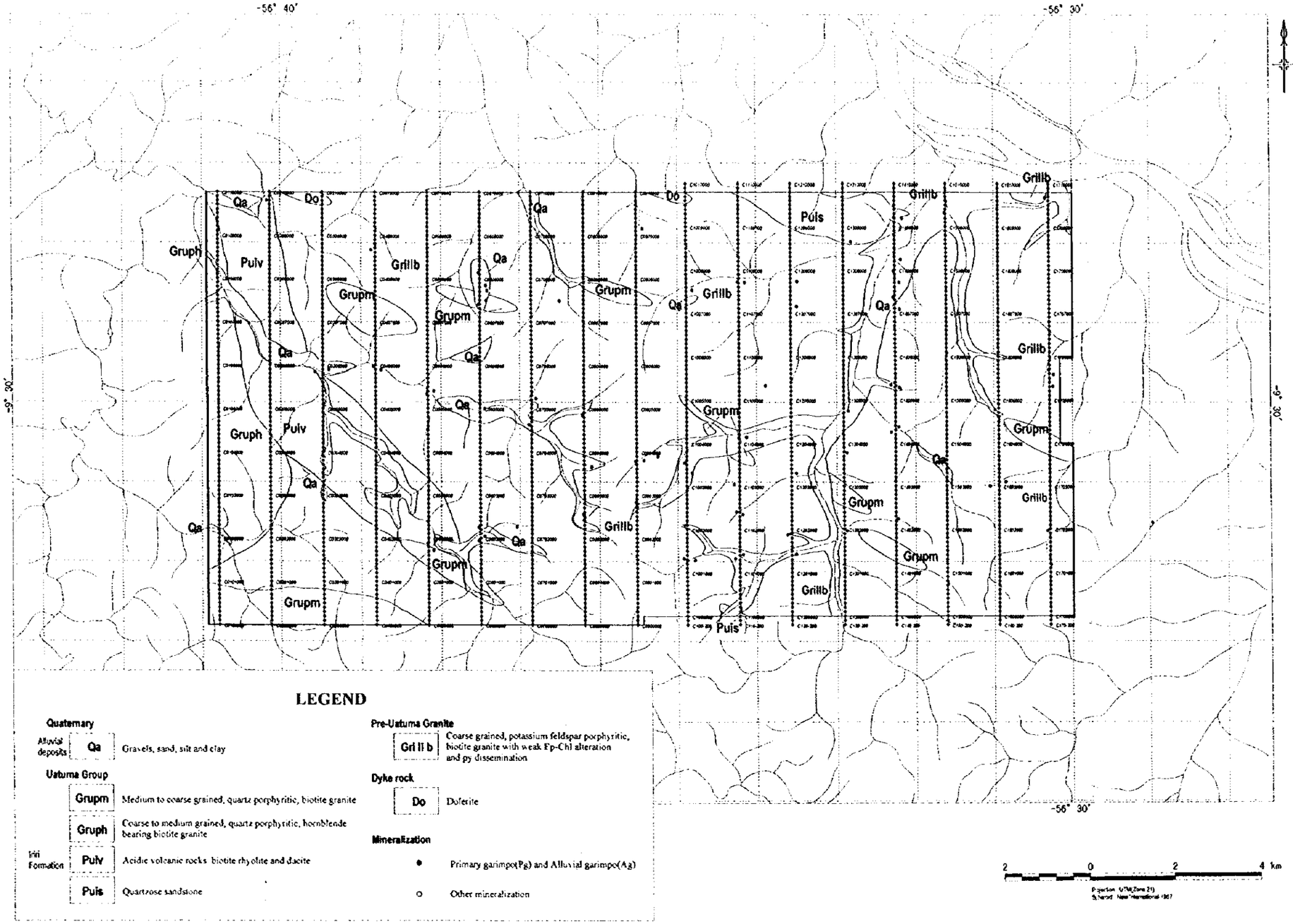
Correlation coefficients were calculated in order to clarify the relation among elements. The elements showing high correlation coefficient (more than 0,700) and relative high correlation coefficient (more than 0,500) are as follows:

Pb - Fe, Pb - Zn, Ag - Fe

The elements showing high correlation coefficient for Au were not detected and Cu shows low correlation coefficient (0.127) for Au.

(b) Single element analysis

Based on the statistical data treatment, the threshold values were determined using histograms, EDA method and cumulative frequencies as shown in Appendix 10. Upper Fence of EDA and Mean+2SD were mainly used. Anomalous maps shown in Appendix 11 were elaborated by using the threshold values and Upper Hinge or Upper Wisker. The distribution of each element can be summarized as follows:



LEGEND

Quaternary

Alluvial deposits — **Qa** — Gravels, sand, silt and clay

Uatuma Group

Grupm — Medium to coarse grained, quartz porphyritic, biotite granite

Gruph — Coarse to medium grained, quartz porphyritic, hornblende bearing biotite granite

Iriri Formation — **Pulv** — Acidic volcanic rocks biotite rhyolite and dacite

Puis — Quartzose sandstone

Pre-Uatuma Granite

Grulib — Coarse grained, potassium feldspar porphyritic, biotite granite with weak Ep-Chl alteration and py dissemination

Dyke rock

Do — Doferite

Mineralization

● Primary garimpo(Pg) and Alluvial garimpo(Ag)

○ Other mineralization

Fig. II-2-27 Location map of soil samples in Block C

Table Ⅱ-2-5 Statistics of soil geochemical survey in the Block C

Elements	Mean	Var.	S.D.	Min	Max	Mean+2SD
Au (ppb)	5.231	0.120*	0.347*	0.500	654.000	25.827 (LOG)
Ag (ppm)	0.128	0.065*	0.254*	0.100	1.600	0.412 (LOG)
Cu (ppm)	9.903	0.162*	0.402*	0.500	88.000	63.121 (LOG)
Pb (ppm)	41.914	0.030*	0.172*	4.000	288.000	92.471 (LOG)
Zn (ppm)	19.501	0.106*	0.325*	0.500	175.000	87.275 (LOG)
Fe (%)	3.031	0.065*	0.255*	0.310	25.440	9.803 (LOG)
As (ppm)	1.505	0.115*	0.340*	1.000	40.000	7.198 (LOG)
Sb (ppm)	1.168	0.033*	0.181*	1.000	8.000	2.688 (LOG)
Hg (ppb)	125.408	0.047*	0.216*	15.000	1860.000	338.613 (LOG)

*:LOG

Table Ⅱ-2-6 Correlation coefficient among elements for soil geochemical survey in the block C

	Au	Ag	Cu	Pb	Zn	Fe	As	Sb	Hg
Au	1.000								
Ag	0.091	1.000							
Cu	0.127	-0.291	1.000						
Pb	-0.002	-0.489	0.274	1.000					
Zn	-0.033	-0.383	0.094	0.691	1.000				
Fe	-0.058	-0.630	0.373	0.721	0.458	1.000			
As	0.029	-0.031	0.008	0.084	0.123	0.051	1.000		
Sb	-0.065	0.064	-0.082	-0.029	0.021	-0.143	0.051	1.000	
Hg	-0.014	-0.185	0.016	0.209	0.260	0.235	-0.038 -	0.060	1.000

Table Ⅱ-2-7 Results of EDA method for soil geochemical survey in the block C

Elements	L.Fence	L.Wisker	L.Hinge	Median	U.Hinge	U.Wisker	U.Fence
Au (ppb)	0.842	3.000	3.000	5.000	7.000	9.000	24.950
Ag (ppm)	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Cu (ppm)	1.155	5.000	6.000	12.000	18.000	20.000	93.531
Pb (ppm)	20.737	33.000	36.000	44.000	52.000	55.000	90.272
Zn (ppm)	5.580	14.000	15.000	21.000	29.000	32.000	77.958
Fe (%)	0.984	1.970	2.350	3.330	4.200	4.510	10.035
As (ppm)	1.000	1.000	1.000	1.000	1.000	3.000	1.000
Sb (ppm)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Hg (ppb)	38.304	84.000	92.000	122.000	165.000	178.000	396.304

Au: The threshold values of gold are determined in 24.950 ppb of Upper Fence of EDA. As shown in Fig. II-2-28, high- value samples are mainly distributed in central part and northeastern part with WNW-ESE direction and rarely distributed in the eastern part. The anomalous zone in central part shows a shape of horseshoe and extended along the EW direction. In northeastern part, most of the anomalous zone is distributed along the NE-SW direction and mainly along the Rio Jau. The anomaly of gold located on stream sediments and alluvial deposits of Quaternary is related to placer deposits. The anomalous zone is also located in the bedrock and targets for exploration.

Ag: The threshold values of gold are determined in 0.412 ppm of Mean+2SD. In the western block, high-value samples are mainly distributed in the eastern part along the direction of NW-SE and others values are scattered along the rivers as Rio Jau. Most of anomalies are distributed outside of anomalies of Au and overlapped anomalies of Au along Rio Jau.

Cu: The threshold values of gold are determined in 63.121 ppm of Mean+2SD. Anomalous samples are distributed in western part and northeastern part. In western part, anomalous zone is extended with linear direction of NW-SE. The anomalies tend to distribute western part of Au anomaly.

Pb: The threshold values of gold are determined in 90.272 ppm of Upper Fence of EDA. Anomalous samples are mainly distributed in northwestern part and other anomalous samples are scattered in southwestern part and southeastern part.

Zn: The threshold values of gold are determined in 77.985 ppm of Upper Fence of EDA. Anomalous samples are scattered in the northern part and northeastern part.

Fe: The threshold values of gold are determined in 10.035 % of Upper Fence of EDA. Anomalous samples are mainly distributed in the northwestern part, southern part and southeastern part and other anomalous samples are scattered in northeastern part. Anomalous zones are found along the river and are thought to be related to Quaternary deposits.

As: The threshold values of gold are determined in 7.198 ppm of Mean+2SD. Anomalous samples are mainly distributed in the northwestern part, central part and eastern part other anomalous samples are scattered in the southwestern part.

Sb: The threshold values of gold are determined in 2.688 ppm of Mead+2SD. Anomalous samples are mainly distributed in whole area.

Hg: The threshold values of gold are determined in 396.304 ppb of Upper Fence of EDA. Anomalous samples are mainly scattered in the western part, central parts and northeastern part and other anomalous samples are scattered in the southeastern part. In the northeastern part, the anomalous samples are concentrated along Rio Jau.

Considering the distribution of Cu, Pb and Zn effective for gold exploration and anomalous

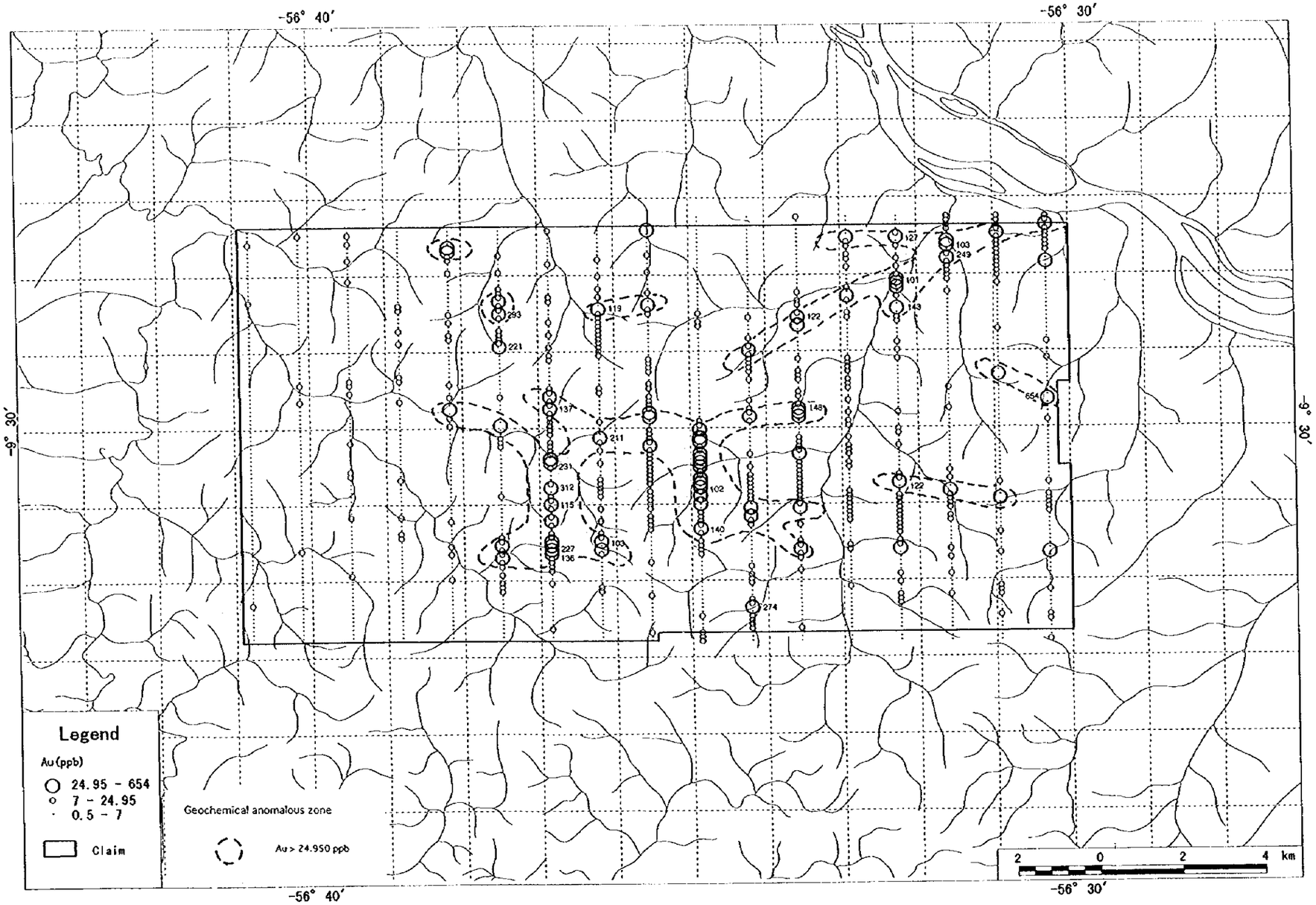


Fig. II-2-28 Distribution map of Au anomaly in Block C

maps of each elements, Au+Pb+Zn overlapping map (Fig. II-2-29) and Au+Cu overlapping map (Fig. II-2-30) were elaborated. Pb and Zn are coexistent with Au in C1205400 near the primary garimpo. Cu is coexistent with Au as the results of factor analysis as mentioned below.

As shown in Fig. II-2-29, the anomalous points where Au, Pb and Zn seem to be overlapped are distributed in central part. The anomalous samples are distributed in biotite granite (Grillb).

As shown in Fig. II-2-30, the anomalous points where Au and Cu are overlapped are distributed in central part, southeastern part and northeastern part. The anomalous samples are distributed in biotite granite (Grillb) and Quaternary (Qa).

As shown in Fig. II-2-31, the gold anomalous zone is independently extended and overlapped partly with anomalous zone of Ag and Pb. Anomalous zones of Ag are widely extended in western part of gold anomalous zones. Anomalous zone of Cu is not overlapped on the anomalous zone of gold.

(c) Multi element analysis

Factor analysis was examined as the multi element analysis in block C. The results of factor analysis are given in Table II-2-8. Following are relationships between elements and factors extracted by the factor analysis:

Factor 1 : Zn-(Pb)-(Hg)-(Fe)

Factor 2 : Fe-Ag-Cu-Pb

Factor 3 : Au-(Cu)

Factor 4 : (Pb)-(Zn)-(As)-(Sb)

Factor 5 : Pb-(Zn)-(Fe)

Among these factors, the three factors: Factor 1, 2 and 3 were selected and as a result, distribution map of factor score was prepared by allocation of three different colors for each factor (Fig. II-2-32). Three factors are shown by the following colors:

Factor 1 : blue Factor 2 : red Factor 3 : yellow

Distribution tendency of these factors can be summarized as follows:

Factor 1: High factor score is mainly found in the western part and northeastern part. In western part, the volcanic rocks of Iriri Formation and hornblende bearing biotite granite (Gruph) of Teles Pires Granite are distributed. Factor 1 seems to be related to this lithology. In the northeastern, Quaternary deposits are found distributed.

Factor 2: High factor score is mainly distributed in the western part, central part, eastern part and northeastern part. In the western part, the volcanic rocks of Iriri Formation and hornblende

Table II-2-8 Results of factor analyses for soil samples in Block C

Elements	1	2	3	4	5	Communality
Au	0.018	-0.012	-0.467	-0.008	0.006	0.218
Ag	0.288	-0.713	-0.167	-0.058	-0.020	0.623
Cu	0.054	0.501	-0.280	-0.019	-0.072	0.338
Pb	-0.435	0.508	-0.029	0.304	-0.547	0.840
Zn	-0.642	0.243	0.019	0.447	-0.273	0.746
Fe	-0.308	0.760	0.077	-0.071	-0.408	0.849
As	-0.002	0.036	-0.030	0.211	-0.037	0.048
Sb	0.062	-0.111	0.119	0.242	0.048	0.091
Hg	-0.464	0.083	0.020	-0.150	-0.026	0.245
Contribution	25.03%	41.86%	8.67%	10.67%	13.76%	

*Factor loading (after rotation: Varimax)

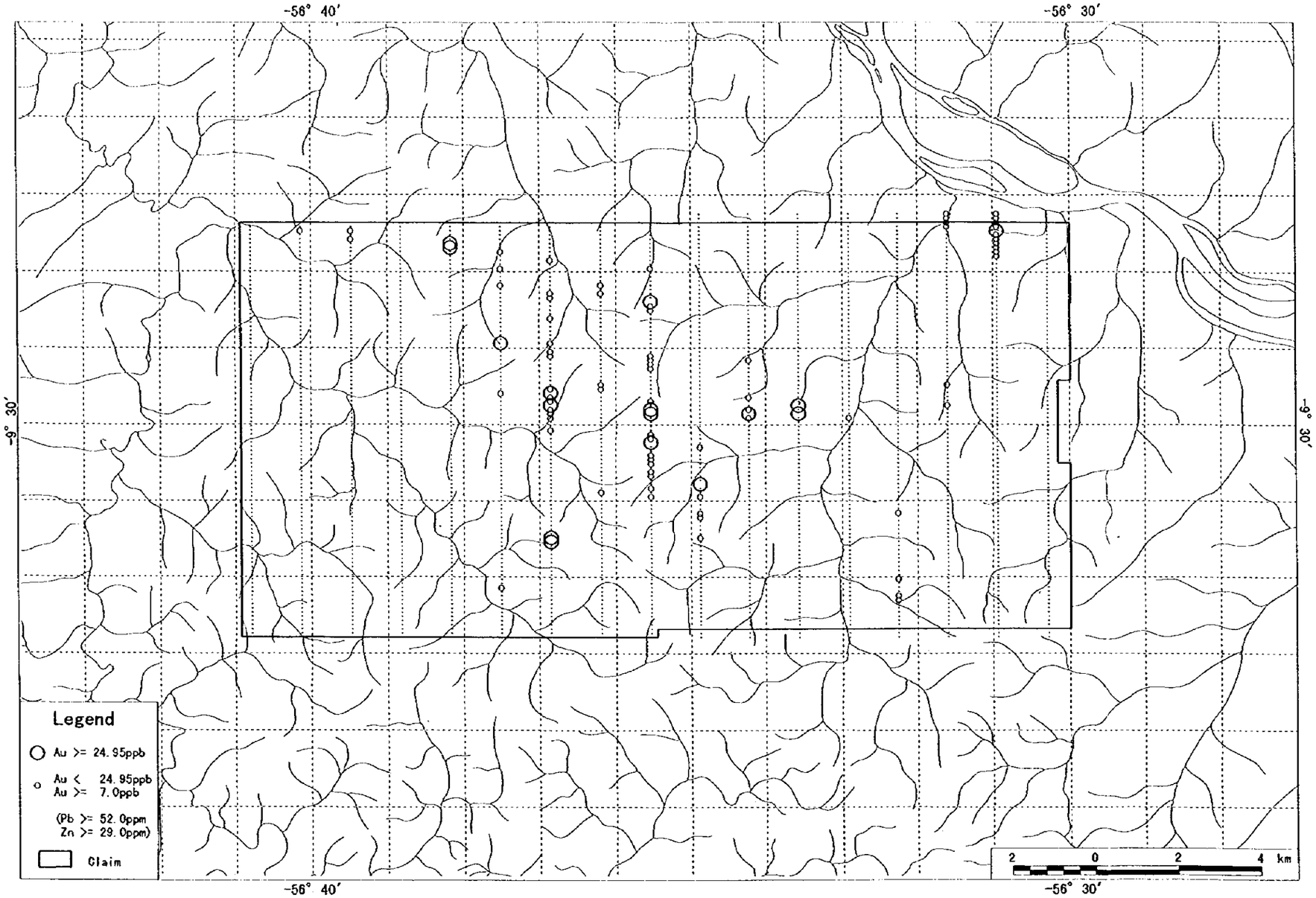


Fig. II-2-29 Distribution map of Au+Pb+Zn overlap anomalies in Block C

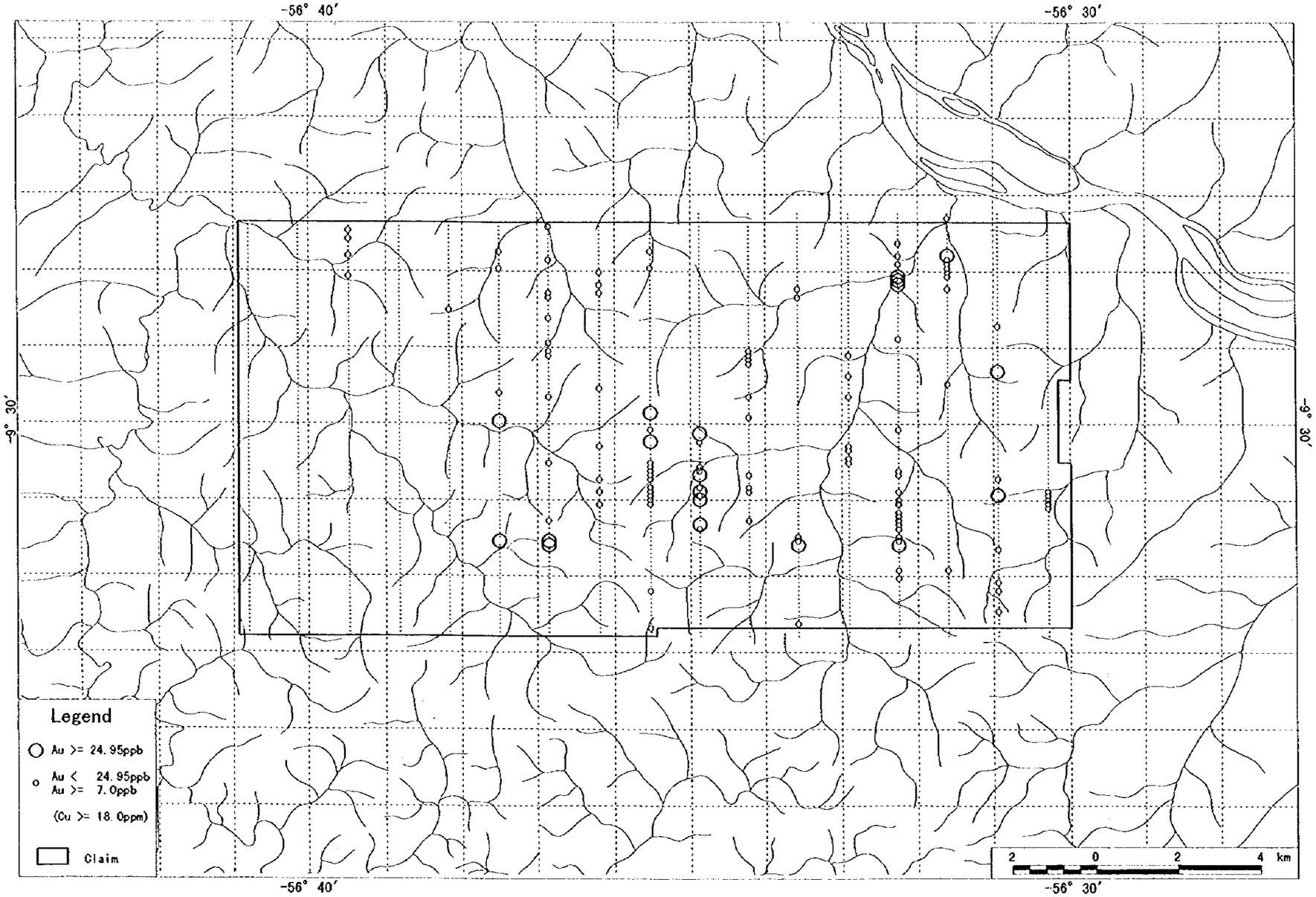


Fig. II-2-30 Distribution map of Au+Cu overlap anomalies in Block C

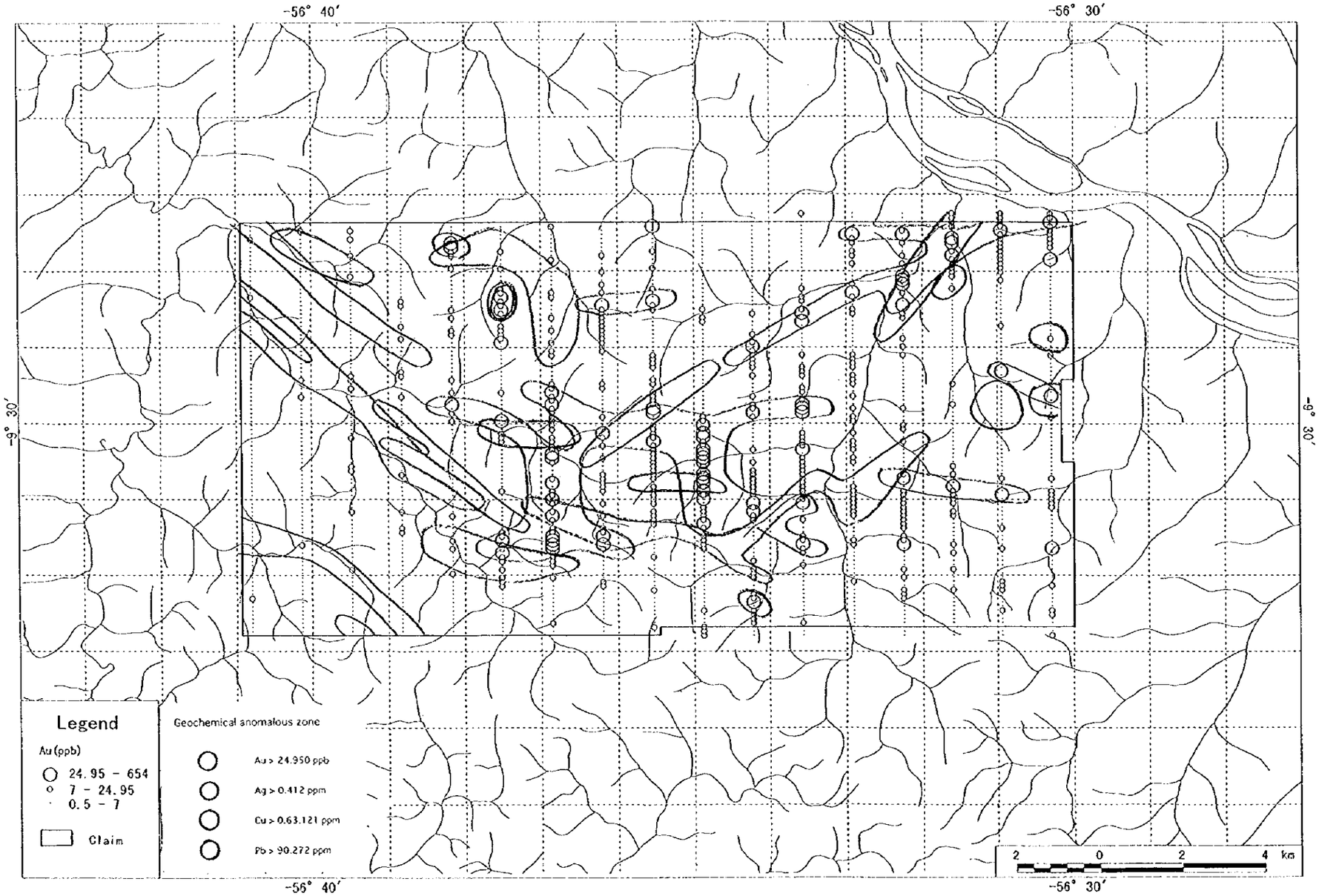


Fig. II-2-31 Distribution map of geochemical anomalous zones in Block C

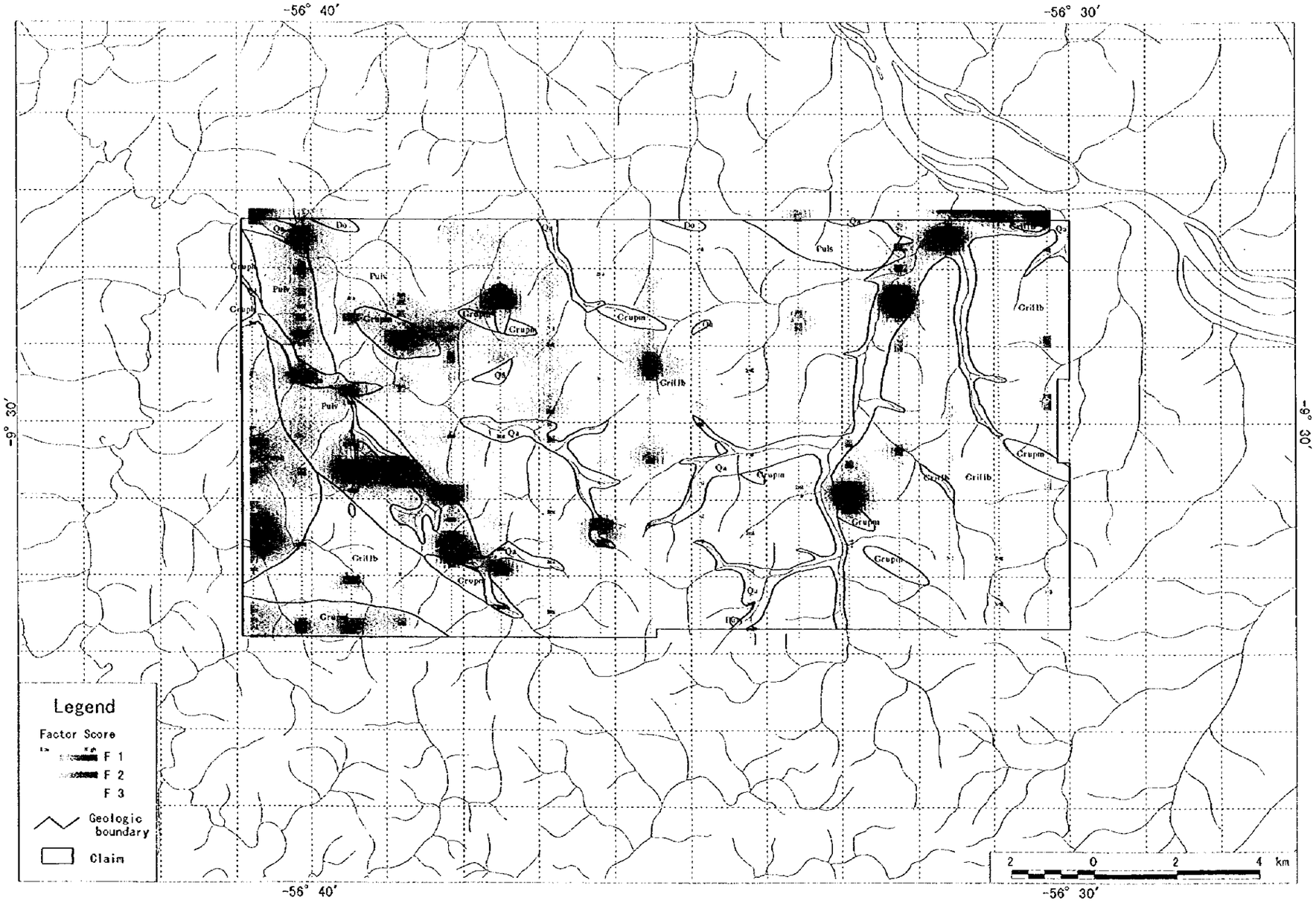


Fig. II-2-32 Distribution map of Factor scores in Block C

bearing biotite granite (Gruph) of Teles Pires Granite are distributed. High factor score also is distributed within medium grained porphyritic biotite granite (Grupm) and around it. In western part and eastern part, high factor scores are distributed along the stream sediments. In northeastern part, high factor score is distributed along Quaternary sediments.

Factor 3: High factor score is distributed along the rivers in central part and northeastern part. Around C1205400 point, Biotite granite (Gru1lb) is distributed. High factor score in distributed there

High factor score of factor 1 seems to be distributed around high factor score of factor 3 in general.

(d) Considerations

The results of factor analysis are though to be as follows:

Factor 1 is thought to be a factor caused by lithology of acidic volcanic rock of Iriri Formation and hornblende bearing biotite granite (Gruph).

Factor 2 is thought to be a factor related to placer deposits of Quaternary.

Factor 3 is thought to be a factor reflected by gold mineralization as gold placer deposits and primary gold deposits. Distribution of factor score with primary garimpo is narrow as C1205400 point.

The feature of overlapped colors indicates that primary gold mineralization is located in the area with low factor score of factor 1 and high factor score of factor 3. These areas are around C0702300 point, C1105200 point, C1206900 point and C1205400 point.

Factor 1 including Pb, Zn and others is distributed around the area of factor 3 with Au and Cu. There factors show zoning.

(3) Summary and conclusion

Fig. II-2-33 indicates the compiled map in block C that shows the results of geological and geochemical surveys.

As the results of the geological survey, the geology of block C is composed of pre-Uatumã Granite of early Proterozoic, Uatumã Group of middle Proterozoic, dike and Quaternary. The Uatumã Group consists of Iriri Formation and Teres Pires Granite.

As the results of ore analysis in mineral showings in block C, sulphide rich quartz vein at the Garimpo do Anta indicates maximum values of 130.00 g/t of Au as shown figure and Appendix I (D1060 to D1064). Waste samples at garimpo near C1205400 point, waste samples of granites

with pyrite dissemination indicates 1.30 g/t to 11.20 g/t of Au and 2.4 g/t to 4.2 g/t of Ag. Piled quartz veins ores collected at Garimpo do Waldemar indicates maximum values of 174.00 g/t of Au and 40.4 g/t of Ag and 0,40 % of Cu. Garimpo do Waldemar shows high gold mineralization.

According to the results of the soil geochemical survey, the correlation coefficient indicates that Au can be independently conducted in statistics. Based on the results of statistical data treatment, the threshold values of gold is determined in 24.950 ppb. The anomalous value of Au except alluvial samples is ○ and the overlapped anomalous point of Au+Cu+Fe is ●. Three factors of factor 1, 2 and 3 are indicated by blue, red and yellow, respectively. Consequently the gold anomalous zones enclosed by curved line are detected in central part in the area.

As the analytical results of soil geochemistry, the anomalous zones for each element are continuous along the WNW-ESE, NW-SE, ENE-WSW and EW directions. The linear and continuous anomalous zones are not related to the distribution of lithology, but are thought to show geologic structure as the sheared zones confirmed and unidentified. The gold anomalous zone located in central part show a shape of horseshoe. The center of the anomalous zone is located in a relatively high-potassium count zone of the airborne geophysical survey.

The threshold values of gold in block C is determined in 24.950 ppb and is about 10 times of Clark number. Analytical values of more than 100 ppb are included in the gold anomalous zone with a maximum of 654 ppb.

The potential that the gold ore deposits exist in block C is thought to be high.

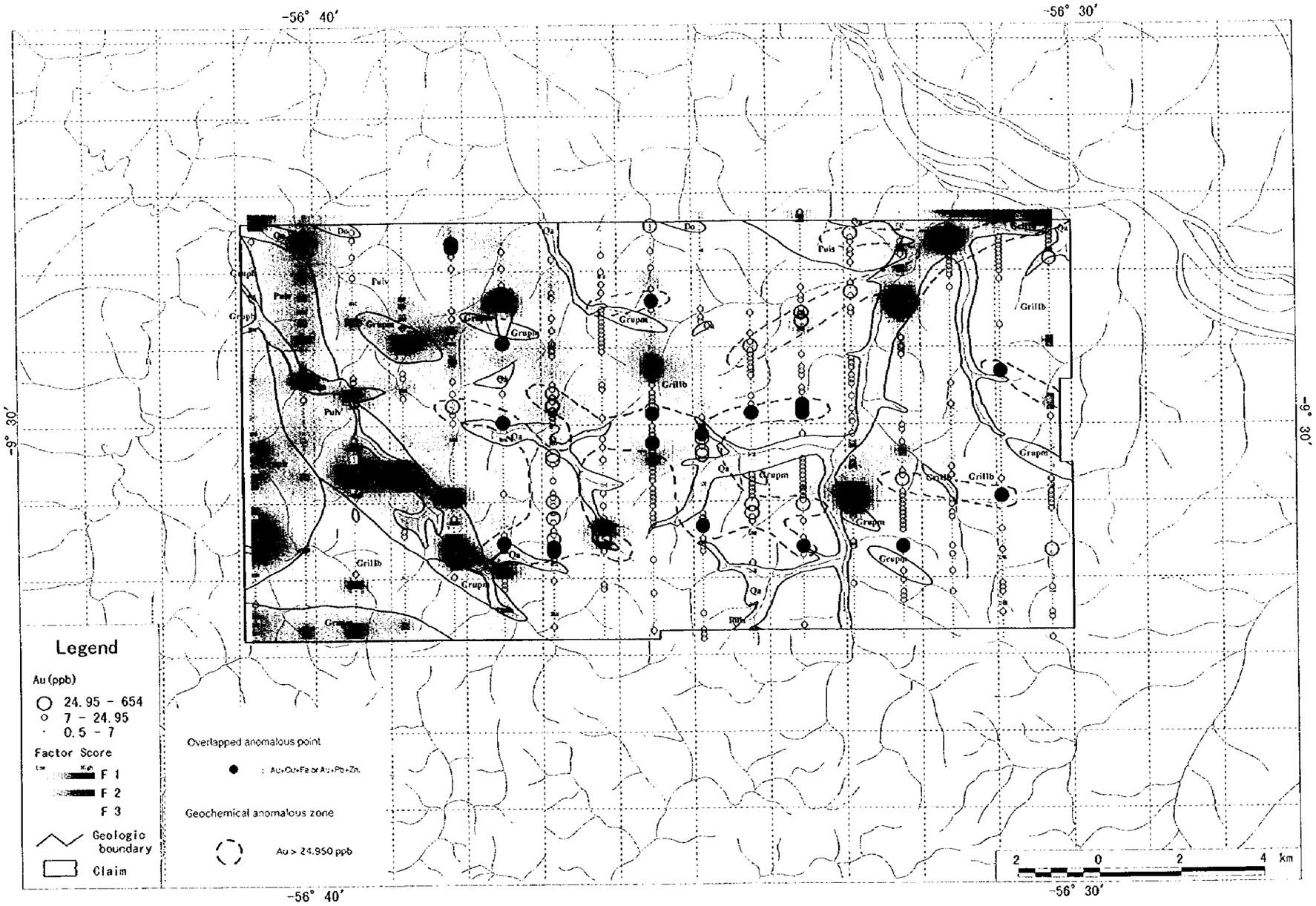


Fig. II-2-33 Compiled map of geology and geochemical anomalies in the Block C

Chapter 3 Data Compilation

3-1 Content of Work

The data compilation was carried out at METAMAT in Quiaba of Mato Grosso State for a period of 7 days. Necessary Data were collected in order to accomplish the important assignment. The content was understood, compiled and evaluated.

3-2 Results of Data Compilation

Reports collected are shown in Appendix 14. New mineral showings in Alta Floresta area are shown in Table II-3-1 and the locations of new mineral showings are marked on Fig. II-3-1.

The geological and metallogenesis information related to Alta Floresta area were already explained on chapter 3 of Part I.

Table II-3-1 Compiled data of garimpos in the Alta Floresta area.

Ser. No	Name of Garimpo	Area	Location of Garimpo Latitude (S)	Longitude (W)	Mineral	Geology	Mineralization	Mined ore (T)	Produced gold (Kg)	Grade (g/t)
1	GARIMPO DO NAIURAM	MATUPA	10° 07.25 '	55° 04.72 '	Gold	Tonalite, diorite, diabase	Fracture, N20E/65NW, L:200m, W: 30 cm.	18,000	2,700.00	150.00
2	GARIMPO MICHARIA	MATUPA	10° 05.68 '	55° 04.93 '	Gold	Granite (Juruena)	Quartz vein, N20E/50NW, L:300m, W: 30 to 80 cm.	22,500	22.50	100.00
3	FILAO DO CAPIM	MATUPA	10° 15.82 '	54° 50.64 '	Gold	Granodiorite	Quartz vein, N50W, L:300m, W: 20 cm.	18,000	450.00	25.00
4	FILAO AUGUSTINHO	MATUPA	10° 06.04 '	55° 07.35 '	Gold	Granite (Xingu)	Quartz vein, E-W, L:400m, W: 50 cm.	60,000	420.00	7.00
5	LUIZAO/CLAUDIO	GUARANTA DO NORTE	9° 57.70 '	55° 14.30 '	Gold	Granite, fine granite	Altered zone,	24,000	72.00	3.00
6	FILAO DO EDMAR	GUARANTA DO NORTE			Gold	Granite	Hydrothermal alteration, E-W, 2 m x 70 m	14,700	367.50	25.00
7	FILAO DO PARAIBA	PEIXOTO DE AZWVEDO	10° 13.27 '	55° 09.06 '	Gold	granite (Xingu)	Quartz vein, NNW/85S-65N, L:900m, W: 30 to 100 cm.	270,000	4,298.40	15.92
8	FILAO DO MELADO	PEIXOTO DE AZWVEDO	10° 12.07 '	54° 47.51 '	Gold	Tonalite, Granite, meta-basic rock	Quartz vein, N40E/35SE, L:360m.	27,000	1,620.00	60.00
9	FILAO DO GRANDE	TERRA NOVA	10° 23.07 '	54° 47.51 '	Gold	Granite	Quartz vein, N85E/SW, L:200m, W: 40 cm.	30,000	300.00	10.00
10	FILAO DO JUCA/BRA	TERRA NOVA	10° 41.85 '	54° 57.12 '	Gold	Monzogranite to granodiorite, granite	Quartz vein, N4SW/80SW, L:200m, W: 1 to 1.5 m.	22,500	2,250.00	100.00
11	GARIMPO DO PERU	TERRA NOVA	10° 29.99 '	54° 40.43 '	Gold	Granite	Quartz vein, N60W, L:700m, W: 30 cm.	180,000	4,500.00	25.00
12	SERRINHA/DOMINGOS	GUARANTA DO NORTE	10° 03.63 '	54° 56.10 '	Gold	Talc-chlorite schist	NW-SE, L:500m	62,500	625.00	10.00
13	SERRINHA II - MATUPA	MATUPA	10° 15.46 '	54° 52.32 '	Gold	Monzogranite to diorite	Fractured zone	10,000	300.00	30.00
14	GARIMPO ZE VERMELHO	PARANAITA	9° 31 ' 30"	55° 28 ' 57.8"	Gold	Granite (Xingu), granodiorite, tonalite	Quartz vein, N60W/60NE, L:200m, W: 1 to 1.4 m.	60,000	1,380.00	23.00
15	FILAO DO AILTON	PARANAITA	9° 30.14 '	56° 35.55 '	Gold	Granodiorite, granite	Quartz vein in mylonite zone, N30W/35NE, L:150m.	13,500	742.50	55.00
16	GARIMPO DO FABINHO	NOVA CANAA DO NORTE	10° 23.77 '	56° 26.49 '	Gold	Quartzite, phyllite, volcanic rocks	Fractured zone, N30E &N15E, L:80m, W:10 to 15 cm.	4,000	140.00	35.00
17	FAZENDA GALOPEIRA	NOVA CANAA DO NORTE	10° 37.52 '	55° 44.29 '	Gold	Granodiorite, granite	Quartz veins, N40-50W & N-S, L:70m, W:5 to 30 cm.	6,000	102.00	17.00
18	GARIMPO DO TAPAJOS	NOVA CANAA DO NORTE	10° 47.73 '	55° 36.51 '	Gold	Granite, alkali granite, volcanic rocks	Quartz veins, N10W &N30-40E, L:50m, W:1 to 1.4 m.	6,250	31.25	5.00
19	FILAO DO GAUCHO	PEIXOTE DE AZWVEDO	10° 12.36 '	55° 03.03 '	Gold	Tonalite, granodiorite, granite, meta-basic rocks.	Quartz veins, N15W /60-65NE, L:450m.	45,000	2,250.00	50.00
20	GARIMPO DA SERRINHA	PEIXOTE DE AZWVEDO	10° 12.39 '	55° 01.93 '	Gold	Gneiss, volcanic rocks, granite.	Quartz veins, N17E to N35E, L:150m, W:40 cm.	13,500	216.00	16.00
21	FILAO DO HEREDIO	PEIXOTE DE AZWVEDO	10° 11.41 '	55° 01.03 '	Gold	Granite, granodiorite	Quartz veins, N30E/80NW, L:1,400m, W:50 cm.	60,000	1,500.00	25.00
22	FILAO DO AUGUSTO	MATUPA	10° 22.86 '	54° 39.45 '	Gold	Granite, diabase, volcanic rocks.	Quartz veins, N70-80W, L:400m.	30,000	2,100.00	70.00
23	SERRINHA I	MATUPA	10° 16.17 '	54° 52.23 '	Gold	Monzogranite, granodiorite,		9,600	38.40	4.00
24	GARIMPO JOSE DIVINO	MATUPA	10° 08.88 '	55° 08.74 '	Gold	Granite,	Quartz veins, N50W, L:1,400m, W:30 cm.	18,000	540.00	30.00

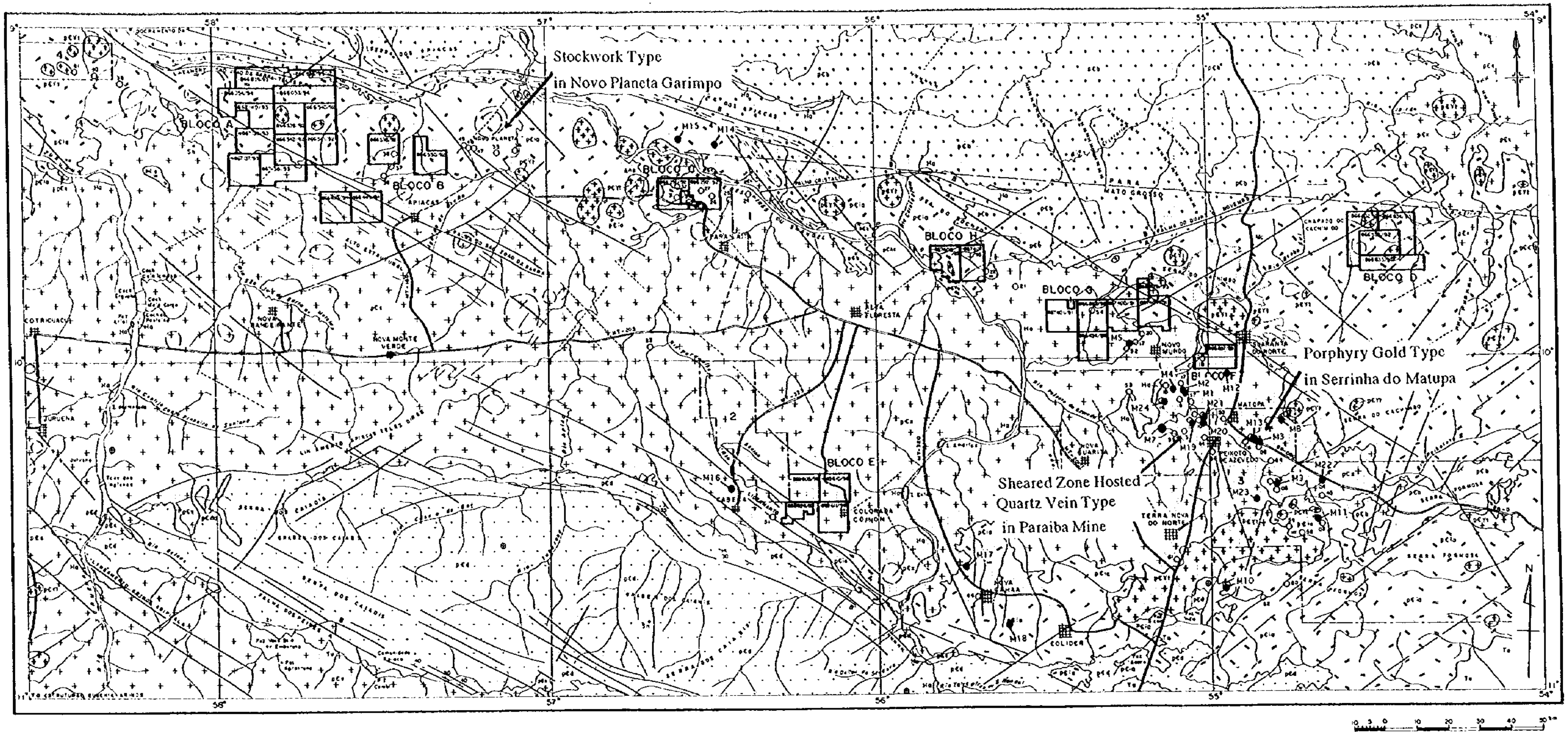


Fig. II-3-1 Compiled map of collected data in the project area

L E G E N D

Cenozoic		Tertiary to Quaternary
Middle Proterozoic		Caiabis Group
Middle Proterozoic		Beneficiente Group
Middle Proterozoic		Teles Pires Granite
		Iriri Formation
Paleo-proterozoic to Aarchean		Xingu Complex

Location of Reserved Area for Garimpo

Location of Main Primary Gold Garimpo

● M10 Location of Mineralization (Garimpo) from Collected data.

PART III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

Among the surveys carried out in Floresta Area, the geological survey was carried out in blocks E, F, G and H, while the geochemical survey, which included the geological survey, was carried out in blocks B and C. The conclusions drawn from these studies are as follows:

1-1 Conclusion for the geological survey

1-1-1 Block E

Geology in the area can be summarized as mainly constituted by gneiss, augen gneiss, granite gneiss, schist, amphibolite and BIF representing the Xingu Complex unit.

The most important gold mineralization in the region within block E is the alluvial garimpo named Cabeça, located within a wide schist zone that the 1998 year Geological Survey confirmed that it was not present inside of the block E area.

Quartz veins and pegmatoid veins of N60W direction are intruded in the gneissic rocks of the Xingu Complex unit. The sources of gold of the small scaled alluvial garimpo within block E are possibly associated to these low gold grade bearing quartz vein and pegmatoid veins.

Chemical analysis of 25 samples did not show neither anomalous values for gold nor for base metal elements.

The absence of a favorable geological unit or a trap structure to host a major gold deposit, as well as the absence of any younger granitic intrusion, are indications that the block E area has indeed very low potential to host major gold deposits.

1-1-2 Block F

Geology in this area can be summarized as mostly constituted by gneiss, granite gneiss and schist representing the Xingu Complex unit. The schist, mainly talc chlorite schist, has limited exposure but outcrops only in Serrinha do Guaranta area.

Results from geological survey in Serrinha do Guaranta area showed a large copper dissemination in talc chlorite schist. Analytical results from 32 meters of channel sampling in weathered talc chlorite schist showed a lateral average grade of 0.43% Cu.

A soil geochemical survey previously carried out by Metamat showed an extension of the copper anomaly to the west-northwest of Serrinha do Guaranta area.

Gold results obtained from the same 32 meters sampling, showed low grade gold results distributed within talc chlorite schist and presenting values of 2.33 ppm, 0.52 ppm, and 0.13 ppm within 2 meters average.

The geological survey in Aluizio Garimpo confirmed gold mineralization within a N80W

direction shear zone. The sheared zone, that has 8 meters width in average and a confirmed length of more than 500 meters, is filled by parallel gold bearing quartz veins.
Analytical results of these quartz veins showed that values of gold as high as 25.40 ppm were possible within this shear zone.

The Phase I geological survey indicated that Serrinha do Guaranta and Aluizio areas presented one of the most favorable geological and tectonical conditions to host a major gold and copper deposit in the block F area.

1-1-3 Block G

The geology within block G can be summarized as gneiss and granite gneiss of the Xingu Complex unit intruded by several granitic batholiths of different ages.

The Phase I geological survey showed a large shear zone of several kilometers wide, with a NW trending that connects two biggest primary garimpos in the region of block G, named Luizão garimpo and Pezão garimpo. The geological survey confirmed also that inside of this shear zone, it can be found the most favorable area to find a major gold deposit in block G.

The Luizão primary garimpo area is hosted by a strongly sheared and locally mylonitized two mica granitic batholith, with strong K alteration, rich in fluorine and with disseminated gold, pyrite, chalcopyrite and bornite.

The Pezão primary garimpo presented a N60W large open pit excavated inside one river. The sulphide rich ore are brecciated, locally mylonitized and composed mostly by pyrite, with local enrichment of bornite and malachite.

There are other primaris gold garimpos distributed inside of this shear zone, between Luizão garimpo and Pezão garimpo and which presents strong indications to be a high potential area to host several large gold mineralizations.

1-1-4 Block H

The geology within block H area can be summarized as hornblende biotite granodiorite of Xingu Complex unit intruded by Juruena and Teles Pires types granites.

Only alluvial gold occurences are known to exist in Rochedo river and Teles Pires river as well as in the rivers of the central part of block H. The gold in the Teles Pires and Rochedo rivers is probably related to upstream sources, but also considered to be related to a local source from the streams of the central part of the survey area.

Strong silicic, sericitic and hematitic alteration were observed in sheared rocks at two sites along the road. Similar altered rock was observed as mixed fragments in gravel of the alluvial garimpo in the central part of the survey area. Analytical results for 9 ore samples including samples of the altered rocks, indicated neither anomalies for gold nor anomalies for base metal

elements.

Judging from the geological survey results, the potentiality for hosting gold mineralization within block H can be considered as very low. The ore sampling results did not either indicate any gold anomaly within block H area that can be considered as target for additional survey.

1-2 Conclusions for the geochemical survey

1-2-1 Block B

The oldest geologic unit is represented by early Proterozoic pre-Uatumã Granite that is partially covered by middle Proterozoic Iriri Formation volcanics and intruded by Teles Pires Granite. Diabase dykes cut the above mentioned units. Sheared rocks along ENE-WSW and WNW-ESE trends were observed in the region.

Results of mineral showing (primary garimpo) surveys in block B indicated samples with gold values of 4.81 g/t and 4.35 g/t and silver values of 2.7 g/t and 3.0 g/t at garimpo Satelite. The sulphide rich quartz vein from mineral showing B4 presented gold value results of 100.00 g/t, silver of 127.2 g/t and 3.86 % of copper. Samples of pyrite disseminated silicified granite from Novo Planeta garimpo area indicated 11.70 g/t of Au and 1.2 g/t of Ag.

The threshold value for gold calculated from analytical results of geochemical soil sampling was 31.177 ppb and by using this value, it is possible to interpret continuous geochemical anomalies along WNW-ESE and NW-SE directions. These linear anomaly zones are not related to any lithological distribution, but they are considered to show evidence of geological structures representative of shear zones. The distribution of these anomalies suggests either a shear zone of quartz vein-hosted type or a stockwork type gold mineralization.

The geological and geochemical surveys in block B showed a large zone with high potentiality to host major gold deposits.

1-2-2 Block C

The oldest geologic unit is represented by early Proterozoic pre-Uatumã Granite that is partially covered by middle Proterozoic Iriri Formation volcanics and intruded by Teles Pires Granite. Diabase dykes cut the above mentioned units. Sheared rocks with predominant NW-SE direction and subordinate ENE-WSW direction were observed in biotite granite (Grilfb) and medium grained porphyritic biotite granite (Grupm).

Results of mineral showing (primary garimpo) surveys in block C presented samples with gold values ranging from 130 g/t to 4.44 g/t and silver values from 6.5 g/t and 0.8 g/t, for sulphide rich quartz vein of garimpo da Anta. Samples of silicified granite with disseminated

pyrite collected in the primary garimpo at 5400m north of Line C12, resulted in gold values of 1.30 g/t and 11.20 g/t and silver values of 2.4 g/t and 4.2 g/t. Quartz vein samples taken from garimpo do Waldemar, located outside and at east of block C presented 174.00 g/t of gold, 40.4 g/t of silver and 0.40% of copper.

The threshold value for gold calculated from analytical results of geochemical soil sampling was 24.950 ppb and by using this value, it is possible to interpret continuous anomalies along WNW-ESE, NW-SE, ENE-WSW and E-W directions. These linear anomaly zones are not related to any lithologic distribution, but considered to give evidences of geological structures representative of shear zones. The soil geochemical gold anomaly located in the central part of block C is wide, elongated to E-W and showing a horseshoe shape.

The geological and geochemical surveys showed a large zone with high potentiality to host major gold deposits in the central part of the block C area, as shown on Fig I-5-2.

Chapter 2 Recommendations for the Phase II Survey

Taking into account all the above results, the recommendations for the second phase in the Alta Floresta area can be summarized as follows:

2-1 Block B

The Phase I survey results indicated that block B presents a high potentiality to host a major gold mineralization related either to the shear zone quartz vein-hosted type or to a stockwork type. It is considered to carry out a detailed survey to narrow the promising area by clarifying the relation between geology and mineralization in the gold anomalous area of the southeastern part of the western block and the southwestern part of the eastern block, as shown in Fig. I-5-1.

At first, it is considered that the detailed geological survey includes a trench survey and a detailed soil geochemical survey. As a second step, it is considered to carry out geophysical survey by using with IP and magnetic survey methods as well as geological survey by trenching methods delimited by a narrow area. Finally, drilling survey is considered to confirm the gold mineralization in the target areas.

2-2 Block C

The Phase I survey results in this area indicated a high potentiality to host in the central part of the area a major gold mineralization of following types: shear zone quartz vein-hosted type, stockwork type or a disseminated porphyry-style gold type mineralization, as shown in Fig. I-5-2.

It is considered the following follow-up work: (i) Detailed geological survey including trenching survey and detailed soil geochemical survey in the central part; (ii) Ground geophysical survey by using IP and magnetic survey methods, as well as geological survey by trenching in a selected narrow area; and (iii) Drilling survey to confirm the gold mineralization.

2-3 Block E

The survey results clearly indicated that the area related to block E does not present any favorable geological or tectonic condition to host a major gold deposit and consequently, the potentiality of this block is considered to be low. No additional survey is considered in this block for the next year.

2-4 Block F

The Phase I geological survey indicated that Serrinha do Guaranta and Aluizio areas presents the most favorable geological and tectonical conditions to host a major gold and copper deposit of following types: shear zone quartz vein-hosted type , stockwork type or a disseminated porphyry-style gold type mineralization, as shown in Fig. I-5-3.

Accordingly, it is considered for these two areas at first that the geological survey including trench survey and the geochemical survey will be carried out and subsequently that the geophysical survey, such as IP survey and magnetic survey, the detailed geological survey including trench survey and drilling survey will be carried out in order to confirm the mineralized zone.

2-5 Block G

The presence of many other primary garimpos inside of the shear zone including Luizão garimpo and Pezão garimpo is thought to be another strong indication for the detection of a favorable zone to host a promising gold mineralization, as shown in Fig. I-5-4. The potential is thought to be high.

To clarify even more its potential, it is considered first, that a similar soil geochemical survey as performed in blocks B and C and a semi-detailed geological survey be carried out in the shear zone between Luizão garimpo and Pezão garimpo. Finally, it is considered a geophysical survey and drilling survey to be carried out in the promising area in order to confirm the mineralized zones.

2-6 Block H

According to the results of the geological survey in block H, no large scale gold mineralization is expected in the area and in consequence, no additional survey in block H is considered for the next year.

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