rock code 4 and rock code 5.

Correlation Coefficient between Indicators

The correlation coefficients between indicators on a logarithmic base were calculated for each geological units. In the geological units, correlation coefficients between respective indicators were small, suggesting that the origins of individual indicators are different from each other.

TABLE 2-2-34 shows the correlation coefficients on corresponding rock codes. Results of interpretation are summarized below:

Rock code 4 : The medium correlation coefficient was obtained in this rock code. That is, Cu-Zn, and Ni-Fe. On the other hand, Cu-Ni, Cu-Fe, and Zn-Fe show strong correlation degree.

Rock code 5 : The correlation of medium degree was observed Cu-Zn, Cu-Ni, Zn-Ni, and Ni-Fe. On the other hand, Cu-Fe, and Zn-Fe show strong correlation degree.

The zone is characterized by low correlation coefficients among indicators.

2-9-3 Interpretation

Principal Component Analysis

After determining the correlation coefficients between indicators, which cannot be extracted by single variable analyses, from multi-dimensional distribution characteristics, these were applied to the determination of character and the evaluation of geochemical anomalies. Results of analysis are shown in TABLE 2-2-35.

General characteristics of each geological unit are summarized below:

Rock code 4 : As shown in TABLE 2-2-35(1), the contribution ratio for the first principal component to all the principal components is about 28%, occupying less than one fourth of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is general small and not decisive. Each component drops gradually and does not change markedly.

For the first principal component, Cr, and Ni show a medium correlation value of 0.49～0.64. On the other hand Zn and Fe has strong correlation value of 0.70～0.89. Therefore, the first principal component is characterized by high concentration of these indicators.

The second principal component is characterized by a medium correlation of

Zn , a high correlation(0.76) of Ag, and negative medium correlations(-0.45～-0.53) of Cr and Ni.

The third principal component has medium correlation(0.66) with Au. It means anomalous concentrations of the indicator is shown as high score value. Strong negative values(-0.53) also are detected by F. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

The fourth principal component shows strong correlation(0.86) with Bi and a negative medium correlation(-0.45) with F. No more geochemical characteristics are unable to determine.

The fifth principal component is characterized by a strong correlation(0.87) with As.

Rock code 5 : As shown in TABLE 2-2-35(2), the contribution ratio for the first principal component to all the principal components is about 29%, occupying less than one third of all. The total to the ratio of the fifth principal component amounts to 73 % approximately, so that a greater part of the fluctuation of all the components can be explained by them. However, the contribution ratio of each principal is generally small and not decisive. Each component, except the first principal component, drops gradually and does not change markedly.

For the first principal component, Cr, and Ni show a medium correlation value(0.63～0.66) and strong correlation(0.74～0.85) with Cu, Zn, and Fe. Therefore, the first principal component correlates to the indicators and reflects as high scores to the concentration of the indicators.

The second principal component is characterized by a strong correlation (0.71) with Ag, and a medium correlation(0.52) with F. On the other hand, a medium negative correlation(-0.44) with Cr. High scores and low negative scores are expected in the concentration of these indicators.

The third principal component has a medium correlation(0.44～0.68) with Au, As, and Bi. Therefore, high scores are expected for the concentration of these indicators. The component is worth notice for the gold exploration , although the contribution ratio is as low as 10 %.

The fourth principal component is characterized by a strong correlation (0.72) with Bi and a negative medium correlation(-0.60) with As.

The fifth principal component show a medium correlation(0.66) with Au, and a negative medium correlation(-0.48) with As. The component is also worth notice for the gold exploration, although the contribution ratio is less than 10 %.

Au Concentration and Principal Component Scores

The concentration distribution of Au in this zone is shown in FIG. 2-2-27. The figure shows that anomalies in this zone are tend to continue in the N-S direction. It is probably related to mineralized signs distributed in the N-S direction and the geological structure, which extends in the same direction in this zone. However, since anomalies continuing in the E-W direction were also noted, combination of continuous anomalies in the N-S direction and those in the E-W direction is also possible although the tendency is weak.

No relationship between geological soil anomalies and a specific geological unit was found. However, it is noticeable that the conditions of the detected anomalous zone seem to be controlled by the geological structure of the zone.

For contrasts, again, no noteworthy indicators was found except for Cr for code 4, as shown in TABLE 2-2-36. This suggests that the extent of concentration of each indicator is not so high in this zone.

Principal components highly related to Au are the third component for code 4 and the fifth component for code 5. FIG. 2-2-28 indicates the distribution of these high scores. The figure shows a high score distribution in the NW-SE direction in the northern part of this zone, different from that of the concentration distribution of Au. Although details are not known, the relationship between such principal components and Au is diluted probably because it is affected by As, Bi, Zn and F content, which have the same correlation with main components as Au.

A statistical parameter, matrix of correlation coefficients and cumulative frequency curve for all zones are shown in TABLE 2-2-37, TABLE 2-2-38, and FIG. 2-2-29.

As a summary of soil geochemical survey, a map of survey results is illustrated in FIG. 2-2-30. According to the results, no other indicators except for Au are shown as appreciable anomalous zones in the survey area.

Also Au contents on Jegede, Benzi and Fumere zones where high Au content zones were found are illustrated in appendices(A-11, A-12, and A-13).

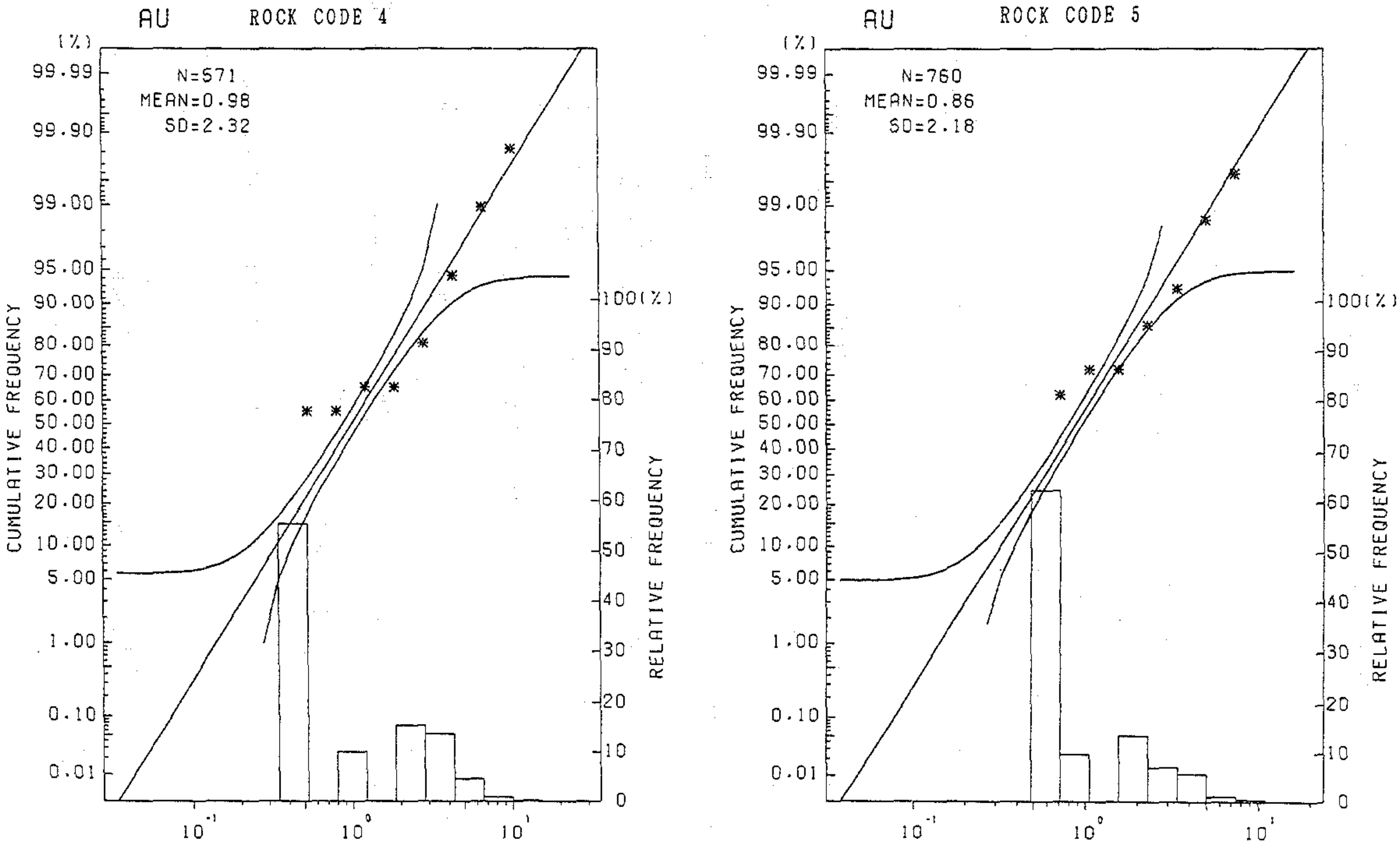


FIG. 2-2-26 Frequency Distribution and Cumulative Frequency Curve
(Au;Chamburukira Zone)

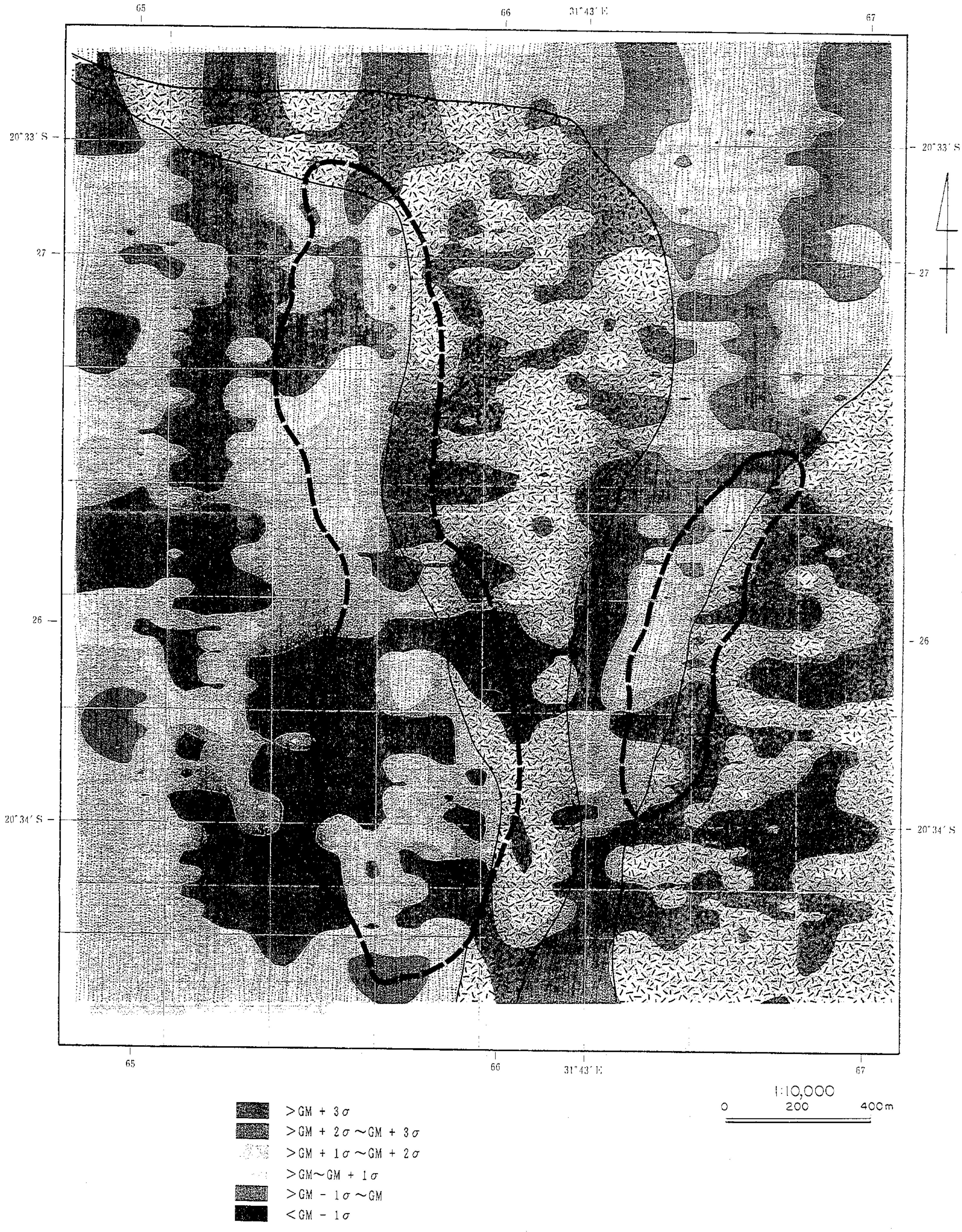


FIG. 2-2-27 Gold Distribution (Chamburukira Zone)

FIG. 2-2-28 Distribution of Principal Component Scores (Chamburukira Zone)

TABLE 2-2-33 Statistical Parameter of Indicators (Chamburukira Zone)

SOIL <ROCK CODE>	NO. OF SAMPLE		GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)		THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	0		—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	
FELSIC GRANULITE <4>	571													2.29	0.45	0.75	0.06	19	21	55	118	36	2.83	←g.m.+ s.d
			0.98	0.30	0.56	0.05	10.88	12.88	35.64	28.63	14.59	1.73	←g.m.	5.31	0.66	0.99	0.07	32	35	84	490	88	4.63	←g.m.+2 s.d.
			2.32	1.48	1.33	1.21	1.71	1.64	1.54	4.14	2.45	1.64	←s.d.	12.35	0.98	1.32	0.09	55	57	129	2,024	215	7.57	←g.m.+3 s.d.
GNEISSOSE GRANULITE <5>	760													1.89	0.61	1.00	0.06	18	36	61	94	36	2.84	←g.m.+ s.d
			0.86	0.38	0.63	0.05	10.63	18.08	36.48	31.89	16.21	1.69	←g.m.	4.12	0.99	1.58	0.07	31	71	103	276	81	4.76	←g.m.+2 s.d.
			2.19	1.62	1.59	1.18	1.72	1.98	1.68	2.94	2.28	1.68	←s.d.	9.00	1.60	2.51	0.08	54	140	172	814	181	7.98	←g.m.+3 s.d.

SOIL <ROCK CODE>	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
FELSIC GRANULITE <4>	324	0.50	0.25	0.50	0.05	0.50	10.00	13.00	1.00	0.50	0.86	6.00	1.80	11.00	0.10	23	450	2,350	226	621	4.64
GNEISSOSE GRANULITE <5>	760	0.50	0.25	0.50	0.05	1.00	10.00	4.00	1.00	2.00	0.49	8.00	2.00	36.00	5.00	93	130	174	569	576	8.14

g.m. : geometric mean s.d. : standard deviation

ROCK CODE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
ALL ZONES										
R.C.3	1.73	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89
R.C.4	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96
R.C.5	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90
CHAMBURUKIRA ZONE (SOIL)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	0.98	0.30	0.56	0.05	10.88	12.88	35.64	28.63	14.59	1.73
R.C.5	0.86	0.38	0.63	0.05	10.63	18.08	36.48	31.89	16.21	1.69

ROCK TYPE	Au (PPB)	Ag (PPM)	As (PPM)	Bi (PPM)	Cu (PPM)	F (PPM)	Zn (PPM)	Cr (PPM)	Ni (PPM)	Fe (%)
MAFIC ROCK	4.00	0.10	2.00	0.01	100	370	130	200	160	8.56
INT. ROCK	----	0.07	2.40	0.01	35	500	72	50	55	5.85
FELSIC ROCK	4.50	0.05	1.50	0.01	20	800	6	25	8	2.70
GRANITE	1.00	0.05	0.25	0.43	12	1.250	85	7	5	1.85
MICA SCHIST	----	0.30	----	----	30	----	70	70	50	4.90
<After Flanagan(1976) & Vinogradov(1962)>										
CHAMBURUKIRA ZONE (ROCK)										
R.C.3	----	----	----	----	----	----	----	----	----	----
R.C.4	0.50	0.25	2.00	0.05	4	29	19	1	4	0.27
R.C.5	1.41	0.25	1.41	0.05	6	170	62	10	17	1.68

INT. ROCK : INTERMEDIATE ROCK
---- : NO DATA

TABLE 2-2-34(1) Matrix of Correlation Coefficients (Chamburukira Zone)

	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
Au	1.00									
Ag	-0.08	1.00								
As	0.06	-0.01	1.00							
Bi	-0.03	-0.02	-0.02	1.00						
Cu	0.09	-0.06	0.16	-0.01	1.00					
F	-0.08	0.01	0.08	-0.02	0.26	1.00				
Zn	0.00	0.31	0.16	-0.02	0.55	0.15	1.00			
Cr	0.05	-0.10	0.12	0.01	0.12	0.00	-0.02	1.00		
Ni	0.10	-0.24	0.21	0.00	0.71	0.17	0.27	0.24	1.00	
Fe	0.04	0.14	0.05	-0.03	0.74	0.21	0.71	0.13	0.54	1.00

TABLE 2-2-34(2) Matrix of Correlation Coefficients (Chamburukira Zone)

	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
Au	1.00									
Ag	-0.06	1.00								
As	-0.03	0.07	1.00							
Bi	0.04	-0.03	0.04	1.00						
Cu	-0.08	0.08	0.04	0.12	1.00					
F	0.01	0.22	0.15	-0.03	0.30	1.00				
Zn	-0.07	0.28	0.18	0.04	0.64	0.29	1.00			
Cr	-0.05	-0.02	0.02	0.05	0.13	0.07	0.10	1.00		
Ni	-0.07	-0.03	0.05	0.09	0.64	0.18	0.50	0.26	1.00	
Fe	-0.06	0.11	0.11	0.07	0.74	0.23	0.73	0.19	0.66	1.00

TABLE 2-2-35(1) Results of Principal Component Analysis (Chamburukira Zone)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.7880	0.2788 (0.2788)	0.06	0.07	0.18	-0.04	0.86	0.28	0.70	0.49	0.64	0.89	6.195	-1.398
Z2	1.4730	0.1473 (0.4261)	-0.28	0.76	-0.10	-0.03	-0.05	0.05	0.52	-0.53	-0.45	0.20	6.508	-3.204
Z3	1.0610	0.1061 (0.5322)	0.66	0.20	0.39	-0.33	-0.06	-0.55	0.14	0.04	-0.06	-0.01	5.363	-3.864
Z4	1.0010	0.1001 (0.6323)	0.10	0.10	-0.15	0.86	0.00	-0.45	0.07	0.09	0.04	0.07	12.609	-1.229
Z5	0.9780	0.0978 (0.7301)	-0.18	-0.01	0.87	0.32	-0.02	0.24	0.02	-0.05	-0.06	-0.15	23.187	-1.088

TABLE 2-2-35(2) Results of Principal Component Analysis (Chamburukira Zone)

PRINCIPAL COMPONENT	EIGEN-VALUE	CONTRIBUTION RATIO	FACTOR LOADING										SCORE	
			Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe	MAXIMUM	MINIMUM
Z1	2.9240	0.2924 (0.2924)	-0.11	0.12	0.05	0.17	0.81	0.32	0.74	0.63	0.66	0.85	7.388	-1.328
Z2	1.3570	0.1357 (0.4281)	-0.05	0.71	0.18	-0.22	-0.06	0.52	0.39	-0.44	-0.39	0.08	4.572	-2.785
Z3	1.0540	0.1054 (0.5335)	0.68	-0.14	0.58	0.44	0.06	0.02	0.04	-0.15	-0.09	0.07	26.532	-2.151
Z4	0.9970	0.0997 (0.6332)	-0.01	0.09	-0.60	0.72	0.17	0.12	-0.01	-0.17	-0.20	-0.04	18.200	-0.783
Z5	0.9770	0.0977 (0.7309)	0.66	-0.12	-0.48	-0.38	-0.02	0.38	-0.03	0.08	0.09	-0.02	4.810	-2.088

TABLE 2-2-36 Contrast (Chamburukira Zone)

SOIL & ROCK	NO. OF	CONTRAST									
R. C. <3, 4, 5>	SAMPLE	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
SOIL<4> TH2		10.63	2.65	0.50	1.36	7.99	1.20	4.43	489.56	21.89	17.14
SOIL<4> TH1	571	4.57	1.79	0.37	1.12	4.66	0.73	2.88	118.39	8.93	10.48
SOIL<4>GM		1.97	1.21	0.28	0.93	2.72	0.44	1.88	28.63	3.65	6.40
R O C K <4>(GM.PPM)	2	0.50	0.25	2.00	0.05	4.00	29.00	19.00	1.00	4.00	0.27
SOIL<5> TH2		2.92	3.97	1.12	1.42	5.23	0.42	1.66	27.64	4.76	2.83
SOIL<5> TH1	760	1.34	2.46	0.71	1.20	3.04	0.21	0.99	9.39	2.13	1.69
SOIL<5>GM		0.61	1.52	0.45	1.02	1.77	0.11	0.59	3.19	0.95	1.01
R O C K <5>(GM.PPM)	3	1.41	0.25	1.41	0.05	6.00	170.00	62.00	10.00	17.00	1.68

TH2:THRESHOLD (GM+2 STANDARD DEVIATION)

TH1:THRESHOLD (GM+1 STANDARD DEVIATION)

GM:GEOMETRIC MEAN

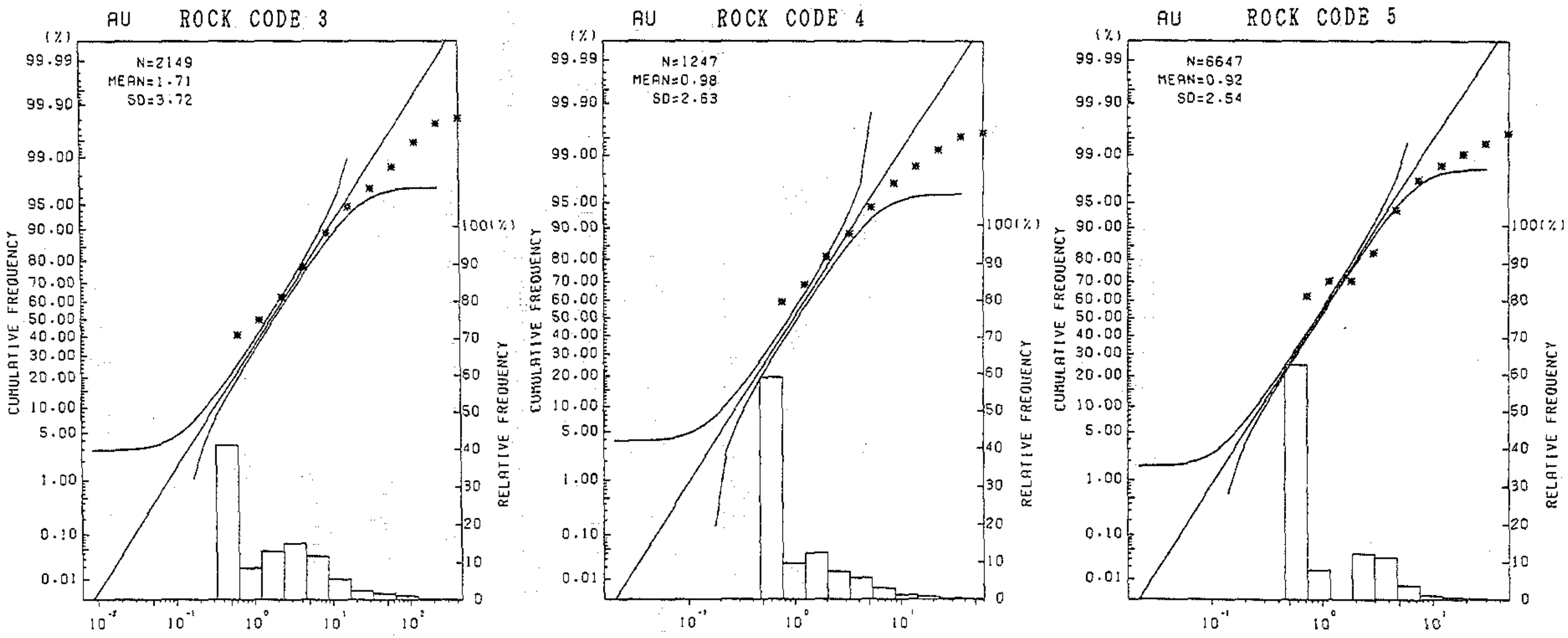


FIG. 2-2-29 Frequency Distribution and Cumulative Frequency Curve (All zones)

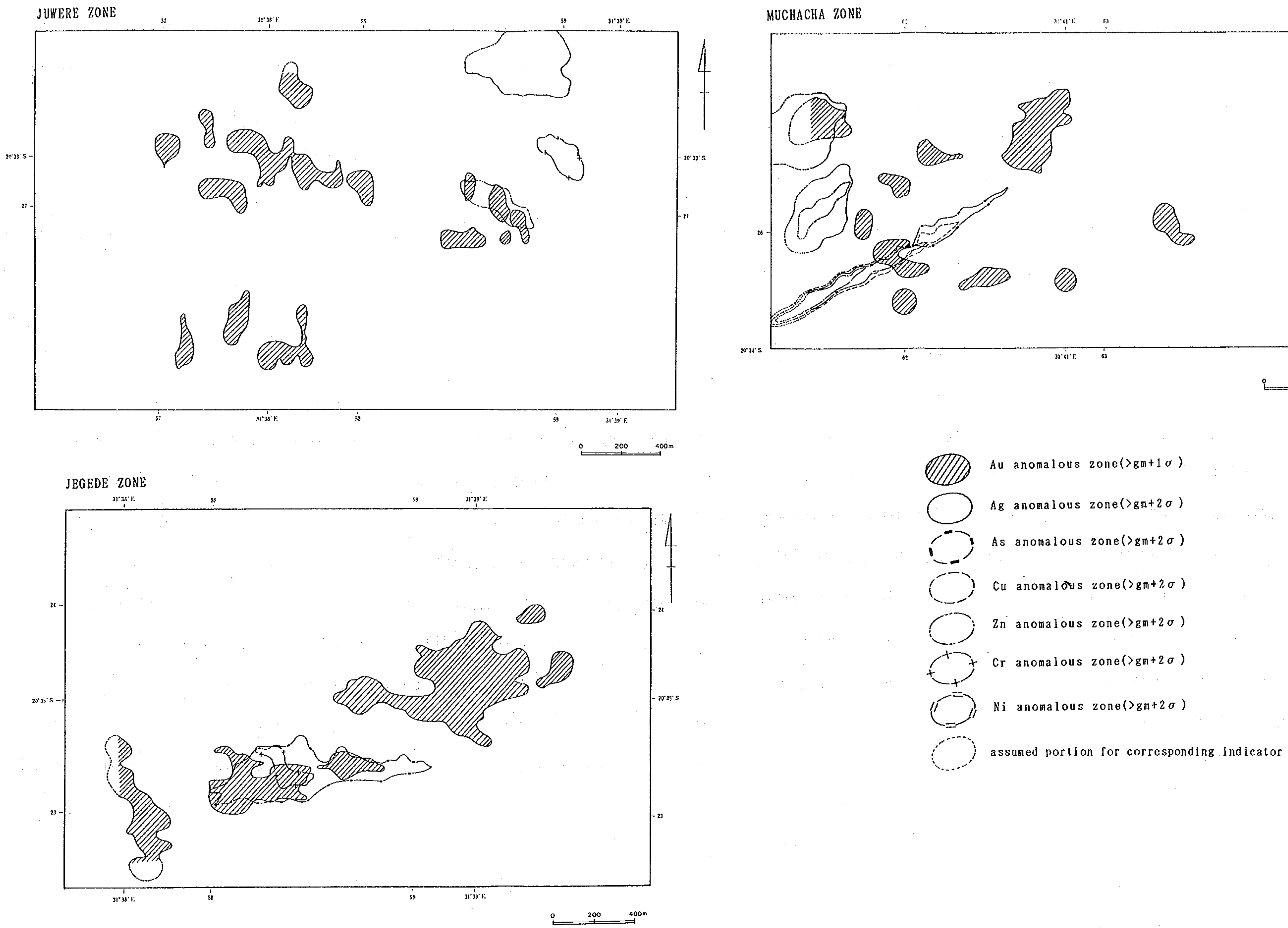
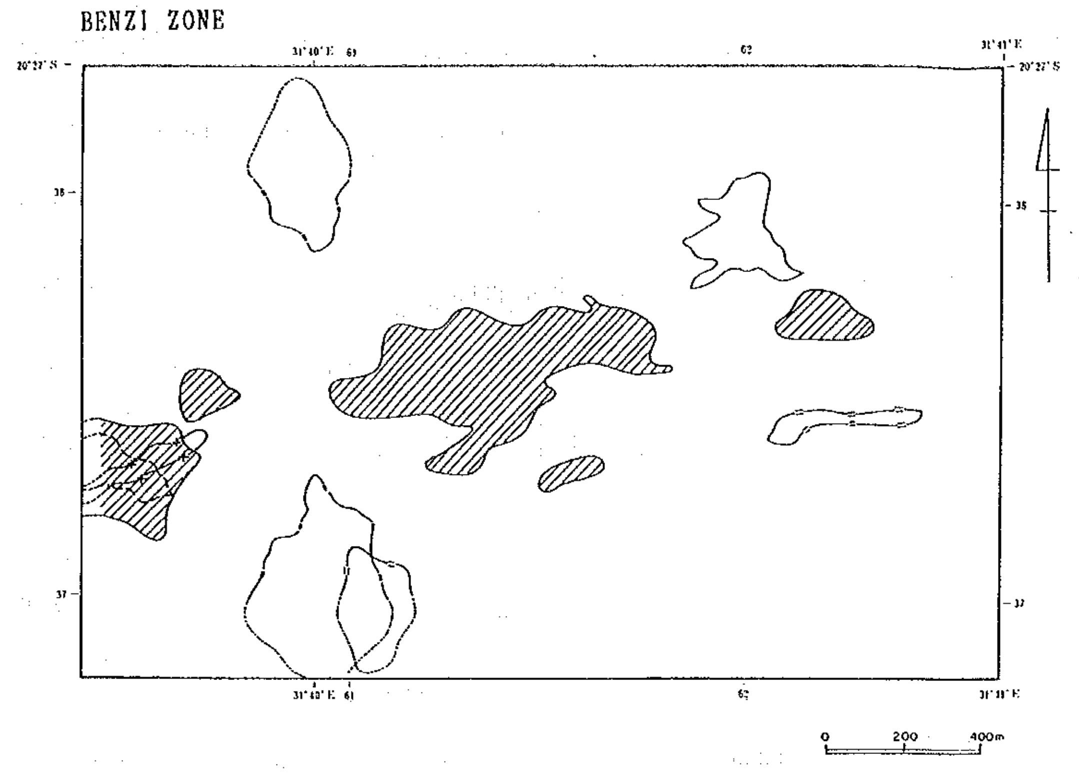
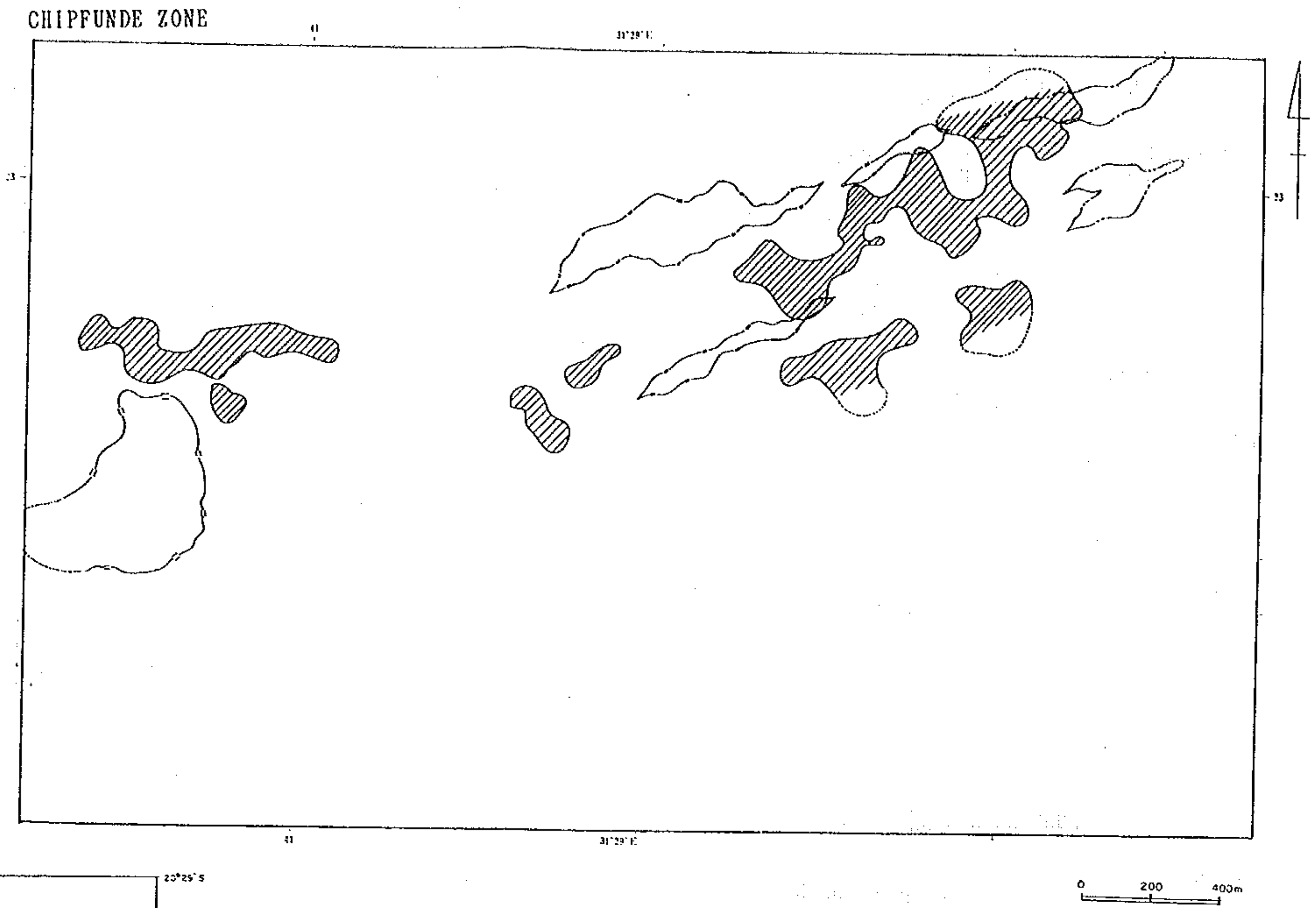
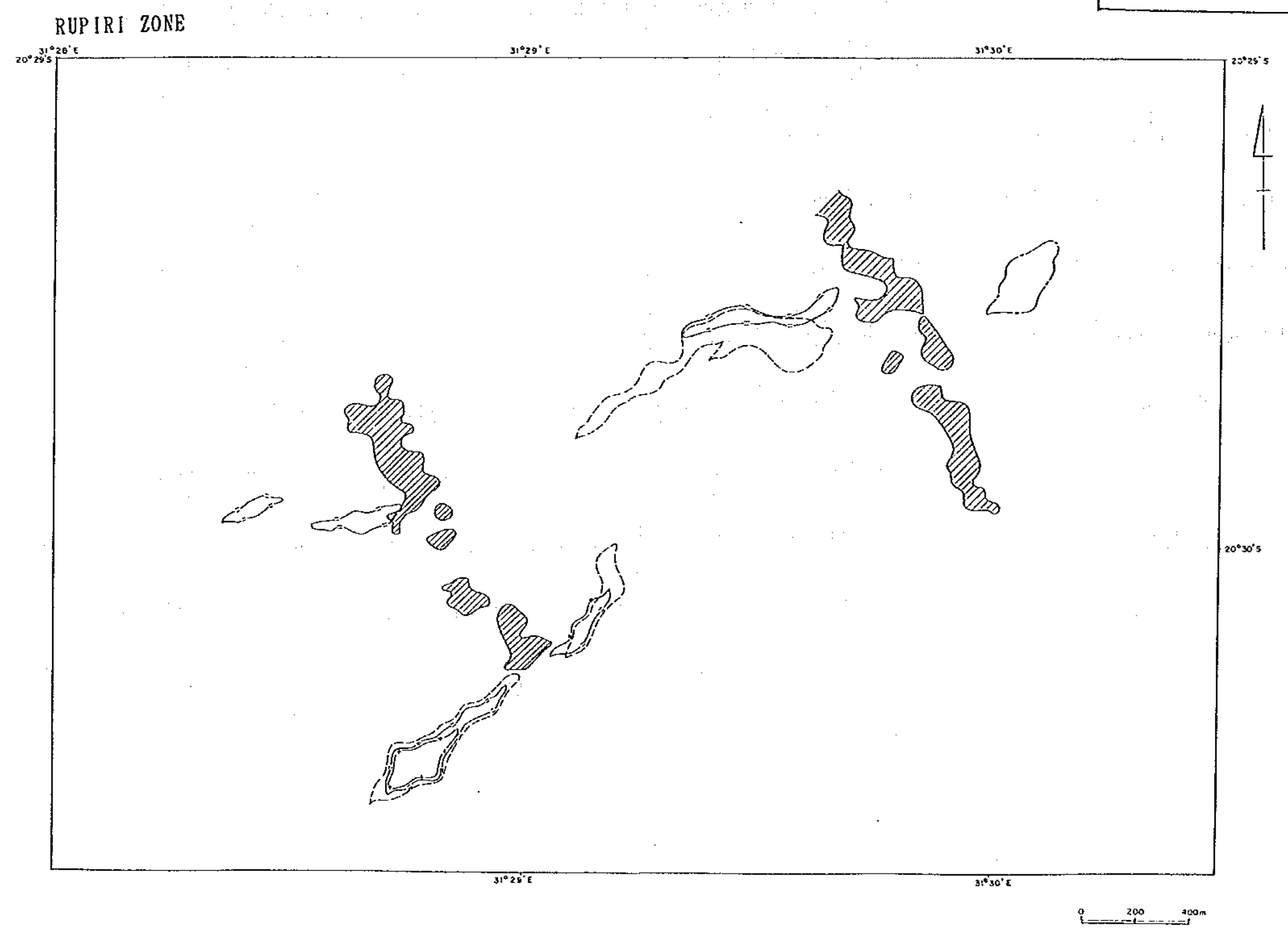


FIG. 2-2-30(1) Map of Geochemical Survey Results







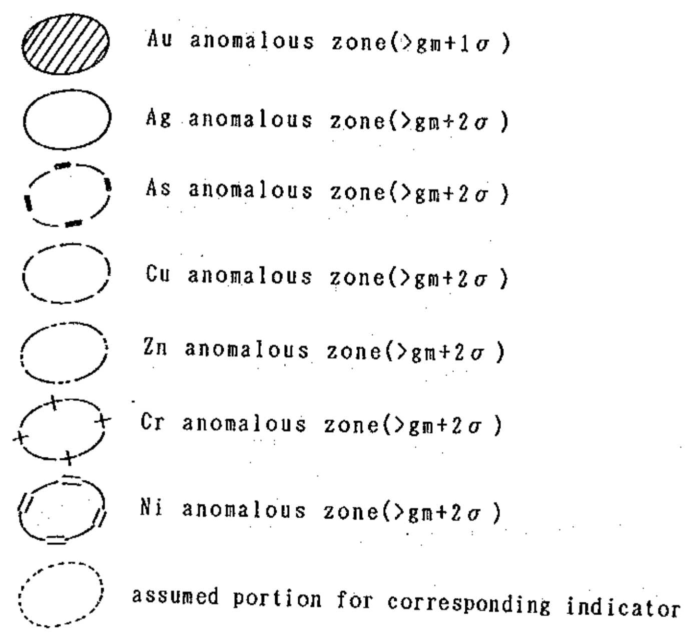


FIG. 2-2-30(2) Map of Geochemical Survey Results

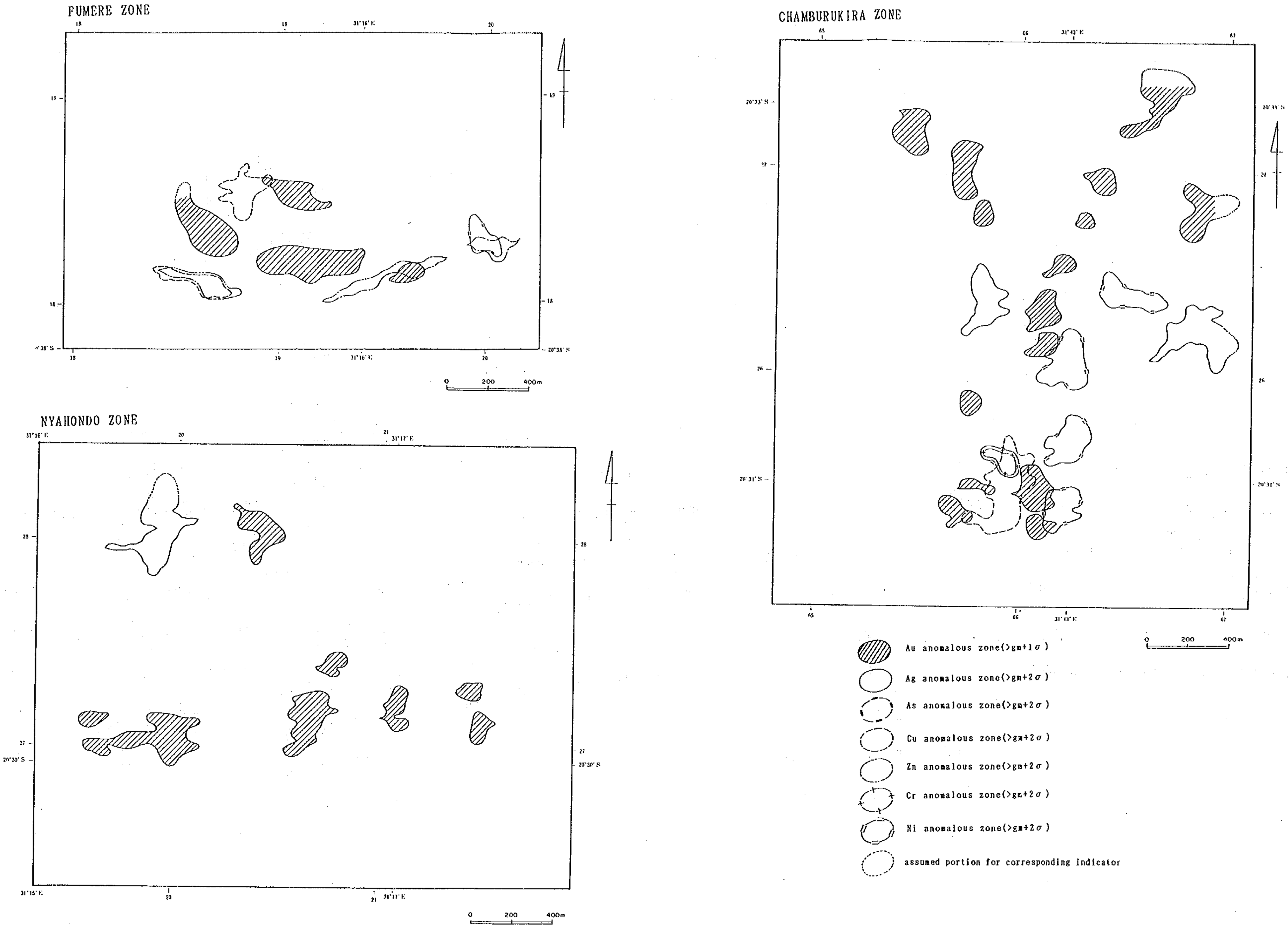


FIG. 2-2-30(3) Map of Geochemical Survey Results

TABLE 2-2-37 Statistical Parameter of Indicators (All Zones)

SOIL <ROCK CODE>	NO. OF SAMPLE	GEOMETRIC MEAN (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	2,149	1.71	0.63	2.25	0.06	61.57	26.42	90.47	215.97	153.32	6.89	←g.m.
		3.73	1.95	5.66	1.72	2.49	2.18	1.91	4.30	3.27	2.03	←s.d.
FELSIC GRANULITE <4>	1,247	0.98	0.48	0.58	0.05	8.82	23.02	40.41	30.92	11.77	1.96	←g.m.
		2.64	2.37	1.50	1.10	2.25	2.61	1.92	3.34	3.37	1.71	←s.d.
GNEISSOSE GRANULITE <5>	6,647	0.93	0.53	0.66	0.05	12.86	30.30	37.45	44.07	19.23	1.90	←g.m.
		2.54	2.09	1.97	1.36	2.75	2.50	2.07	3.18	2.99	1.99	←s.d.

SOIL <ROCK CODE>	THRESHOLD (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)	
MAFIC GRANULITE <3>	6.38	1.24	12.71	0.11	153	58	173	928	501	13.97	←g.m.+ s.d
	23.79	2.42	71.90	0.19	383	125	331	3,984	1,638	28.29	←g.m.+2 s.d.
	88.68	4.73	406.82	0.32	954	273	632	17,112	5,356	57.32	←g.m.+3 s.d.
FELSIC GRANULITE <4>	2.59	1.13	0.88	0.06	20	60	77	103	40	3.34	←g.m.+ s.d
	6.83	2.68	1.31	0.06	45	157	148	346	134	5.70	←g.m.+2 s.d.
	18.01	6.36	1.97	0.07	100	410	285	1,155	452	9.72	←g.m.+3 s.d.
GNEISSOSE GRANULITE <5>	2.35	1.10	1.29	0.07	35	76	77	140	57	3.78	←g.m.+ s.d
	5.98	2.30	2.55	0.10	97	190	160	445	172	7.52	←g.m.+2 s.d.
	15.21	4.82	5.04	0.13	267	476	330	1,413	513	14.97	←g.m.+3 s.d.

SOIL <ROCK CODE>	NO. OF SAMPLE	MINIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	2,149	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.23
FELSIC GRANULITE <4>	1,247	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.39
GNEISSOSE GRANULITE <5>	6,647	0.50	0.25	0.50	0.05	0.50	10.00	0.50	0.50	0.50	0.21

SOIL <ROCK CODE>	MAXIMUM VALUE (PPM) Au(PPB)	Ag(PPM)	As(PPM)	Bi(PPM)	Cu(PPM)	F(PPM)	Zn(PPM)	Cr(PPM)	Ni(PPM)	Fe(%)
MAFIC GRANULITE <3>	954.00	9.30	1,360	2.10	401	380	774	6550	3150	20.84
FELSIC GRANULITE <4>	753.00	10.00	30.00	0.20	150	570	2350	742	595	11.13
GNEISSOSE GRANULITE <5>	1,490	14.00	240.00	5.00	432	650	5050	5400	1310	22.00

g.m. : geometric mean   s.d. : standard deviation

TABLE 2 - 2 - 38(1) Matrix of Correlation Coefficients(All Zones : R.C.3)

	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
Au	1.00									
Ag	0.02	1.00								
As	0.32	0.04	1.00							
Bi	0.17	0.09	0.37	1.00						
Cu	0.16	0.05	0.30	0.26	1.00					
F	0.01	0.03	0.02	-0.09	-0.15	1.00				
Zn	0.16	0.15	0.41	0.30	0.81	-0.06	1.00			
Cr	0.06	-0.03	0.20	0.07	0.34	-0.11	0.30	1.00		
Ni	0.18	0.04	0.40	0.23	0.73	-0.10	0.69	0.62	1.00	
Fe	0.14	-0.05	0.35	0.25	0.85	-0.16	0.75	0.34	0.75	1.00

TABLE 2 - 2 - 38(2) Matrix of Correlation Coefficients(All Zones : R.C.4)

	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
Au	1.00									
Ag	0.09	1.00								
As	0.04	0.12	1.00							
Bi	0.05	0.13	0.37	1.00						
Cu	0.23	0.20	0.33	0.24	1.00					
F	-0.08	-0.02	0.03	0.01	-0.29	1.00				
Zn	0.16	0.26	0.18	0.19	0.40	0.10	1.00			
Cr	-0.02	-0.01	0.21	0.12	0.11	-0.01	-0.05	1.00		
Ni	0.16	0.19	0.33	0.19	0.73	-0.25	0.20	0.20	1.00	
Fe	0.24	0.35	0.18	0.18	0.61	0.05	0.64	0.03	0.41	1.00

TABLE 2 - 2 - 38(3) Matrix of Correlation Coefficients(All Zones : R.C.5)

	Au	Ag	As	Bi	Cu	F	Zn	Cr	Ni	Fe
Au	1.00									
Ag	0.05	1.00								
As	0.07	-0.07	1.00							
Bi	0.04	0.06	0.16	1.00						
Cu	0.12	-1.00	0.25	0.09	1.00					
F	0.00	-0.12	-0.02	-0.01	0.13	1.00				
Zn	0.10	0.00	0.22	0.11	0.58	0.14	1.00			
Cr	0.00	-0.10	0.14	0.02	0.30	0.00	0.21	1.00		
Ni	0.08	0.01	0.33	0.09	0.60	-0.02	0.41	0.40	1.00	
Fe	0.07	-0.07	0.32	0.11	0.71	0.13	0.67	0.33	0.64	1.00

TABLE 2-2-39 Evaluation of Anomalous Zones

SURVEYED ZONE	ROCK CODE	Au VALUE(PPB) GM	GM+σ	GM+2σ	MAXIMUM	CONTRAST (GM+σ)	RELATED P. C.	DIMENSION OF ANOMALY (>GM+σ : M x M)	CHARACTERISTICS OF Au GEOCHEMICAL ANOMALY	EVALUATION
JUWERE	R.C.3	0.84	1.86	4.12	8.00	3.71	P.C.3	100 x 800	low content,	B
	R.C.4	0.74	1.44	2.78	6.00	2.87	P.C.4		poor continuation	
	R.C.5	0.73	1.48	3.01	115.00	1.00	P.C.4			
JEGEDE	R.C.3	1.65	5.74	20.04	954.00	11.49	P.C.2	200 x 2400	high content,	A
	R.C.4	0.97	2.83	8.20	76.00	1.41	P.C.4		well continuation,	
	R.C.5	0.92	2.54	6.97	1490.00	5.07	P.C.4		<hydromorphic anomaly?>	
MUCHACHA	R.C.3	1.50	4.74	14.98	23.00	9.47	P.C.2	200 x 500	rather high content	B
	R.C.4	0.69	1.38	2.76	7.00	2.83	P.C.3		poor continuation	
	R.C.5	0.72	1.42	2.80	27.00	2.84	P.C.5			
BENZI	R.C.3	3.24	22.73	159.74	922.00	45.46	P.C.1	200 x 2000	high content,	A
	R.C.4	2.00	8.56	36.75	753.00	17.13	P.C.4		well continuation,	
	R.C.5	2.06	9.44	43.25	848.00	14.98	P.C.4		<hydromorphic anomaly??>	
RUPIRI	R.C.3	0.95	2.16	4.92	6.00	----	P.C.4	100 x 800	low content,	C
	R.C.4	----	----	----	----	----	-----		rather poor continuation	
	R.C.5	0.90	2.05	4.66	10.00	4.10	P.C.3			
CHIPFUNDE	R.C.3	1.71	5.77	19.47	83.00	5.77	P.C.4	100 x 1000	low content,	C
	R.C.4	----	----	----	----	----	-----		rather poor continuation	
	R.C.5	1.00	2.60	6.76	115.00	3.67	P.C.4			
FUMURE	R.C.3	2.89	12.61	54.99	221.00	25.21	P.C.2	200 x 1000	high content,	A
	R.C.4	----	----	----	----	----	-----		well continuation,	
	R.C.5	0.92	2.03	4.52	8.00	4.06	P.C.4		<hydromorphic anomaly?>	
NYAHONDO	R.C.3	----	----	----	----	----	-----	100 x 500	low content,	C
	R.C.4	----	----	----	----	----	-----		poor continuation	
	R.C.5	1.05	2.14	4.33	133.00	1.17	P.C.5			
CHAMBURUKIRA	R.C.3	----	----	----	----	----	-----	100 x 400	low content,	C
	R.C.4	0.98	2.98	5.31	6.00	4.53	P.C.3		poor continuation	
	R.C.5	0.86	1.89	4.12	8.00	1.34	P.C.5			

----- : NO DATA

TABLE 2-2-40 Chemical Analysis of Rock Samples

	SAMPLE NUMBER	ROCK NAME	ROCK CODE	COORDINATION X	COORDINATION Y	SiO2 (%)	TiO2 (%)	Al2O3 (%)	Fe2O3 (%)	FeO (%)	MnO (%)	MgO (%)	CaO (%)	Na2O (%)	K2O (%)	P2O5 (%)	LOI (%)	Au ppm	Ag ppm	As ppm	Bi ppm	Cu ppm	F ppm	Zn ppm	Cr ppm	Ni ppm
1	A1RK07	CHARNOCKITE	5	83.80	31.24	75.50	0.14	11.99	0.77	1.29	0.04	0.60	2.00	3.54	2.87	0.05	0.60	0.50	0.25	1.00	0.05	6	43	59	144	266
2	A1RT07	GNEISSOSE GRANULITE	5	87.28	29.87	74.77	0.14	12.82	0.03	1.67	0.06	0.47	2.47	3.85	2.14	0.10	0.63	0.50	0.25	1.00	0.05	4	75	48	1	18
3	A2RK05	CHARNOCKITE(ENDERBITE)	5	64.29	28.25	63.82	0.90	14.82	1.34	5.53	0.08	2.25	5.95	2.57	0.90	0.25	0.77	0.50	0.25	1.00	0.05	23	270	112	1	66
4	A2RK33	CHARNOCKITE	5	65.30	26.19	72.15	0.28	14.65	0.01	1.99	0.03	0.74	2.93	3.65	2.25	0.09	0.48	0.50	0.25	1.00	0.05	8	160	48	1	18
5	A2RK36	CHARNOCKITE	5	67.48	23.05	78.13	0.25	10.62	0.53	1.86	0.04	0.37	1.26	3.61	2.49	0.05	0.34	4.00	0.25	2.00	0.05	5	180	81	210	16
6	A2RK48	FELSIC GRANULITE	4	68.25	24.99	75.35	0.03	13.76	0.03	0.32	0.01	0.02	1.45	4.98	3.22	0.02	0.11	0.50	0.25	2.00	0.05	4	29	19	1	4
7	A2RT02	CHARNOCKITE	5	61.22	27.97	72.03	0.20	14.42	0.23	1.54	0.04	0.53	1.76	4.11	3.78	0.10	0.47	0.50	0.25	1.00	0.05	9	200	57	1	23
8	A2RT07	FELSIC GRANULITE	4	59.02	27.83	73.54	0.01	14.52	0.03	1.09	0.13	0.08	0.71	4.34	4.43	0.03	0.22	0.50	0.25	1.00	0.05	3	35	126	1	84
9	A2RT08	MAFIC GRANULITE	5	59.43	27.00	49.40	1.58	13.31	1.34	12.67	0.17	6.42	10.38	2.27	0.31	0.22	1.44	0.50	0.25	1.00	0.05	110	540	113	183	162
10	A2RW01	CHARNOCKITE	5	57.73	27.75	74.55	0.23	12.30	0.39	1.54	0.02	0.47	2.30	3.46	2.34	0.04	0.96	13.00	0.25	1.00	0.05	7	51	83	13	10
11	A2RW07	CHARNOCKITE	5	56.30	27.85	69.95	0.29	14.96	0.20	1.29	0.02	0.76	3.26	4.88	2.87	0.14	0.91	0.50	0.25	0.50	0.05	3	94	60	2	19
12	A2RW09	MAFIC GRANULITE	3	57.79	27.50	51.90	0.97	14.16	2.89	9.71	0.15	6.72	10.87	2.00	0.11	0.14	1.15	0.50	0.25	1.00	0.05	71	90	99	115	99
13	A2RW10	MAFIC GRANULITE	3	58.00	27.75	50.94	1.05	14.24	1.20	10.22	0.16	8.03	11.40	1.69	0.06	0.14	1.16	0.50	0.25	1.00	0.05	20	100	107	214	97
14	A2RW11	MAFIC GRANULITE	3	58.67	22.86	50.45	0.32	14.11	0.27	6.88	0.12	11.81	13.36	1.01	0.09	0.02	1.02	0.50	0.25	1.00	0.05	122	75	50	255	140
15	A2RW12	CHARNOCKITE	5	57.90	22.67	75.07	0.18	13.64	0.27	1.48	0.06	0.39	1.90	3.43	2.94	0.04	0.33	0.50	0.25	1.00	0.05	7	71	55	12	25
16	A2RW13	CHARNOCKITE	5	57.30	24.07	70.65	0.30	14.33	0.31	2.19	0.03	0.87	3.30	4.37	1.87	0.09	0.74	0.50	0.25	1.00	0.05	13	460	52	1	14
17	A2RW14	FELSIC GRANULITE	4	58.55	24.20	75.18	0.04	12.96	0.41	1.09	0.02	0.46	1.79	3.21	3.56	0.05	0.48	2.00	0.25	0.50	0.05	5	69	46	2	15
18	A2RW15	MAFIC GRANULITE	5	57.98	23.57	50.11	0.29	16.78	0.59	6.30	0.11	10.15	13.84	1.19	0.06	0.02	1.19	0.50	0.25	2.00	0.05	142	120	57	226	136
19	A2RW22	FELSIC GRANULITE	4	65.82	27.07	76.40	0.02	13.26	0.10	0.32	0.01	0.08	0.18	4.30	5.02	0.01	0.43	1.00	0.25	2.00	0.05	4	31	21	5	12
20	A2RW23	MAFIC GRANULITE	3	63.05	26.15	50.16	0.47	13.41	0.20	9.26	0.14	10.77	13.76	1.25	0.05	0.04	1.16	0.50	0.25	2.00	0.05	123	60	63	1	84
21	A3RK05	MAFIC GRANULITE	3	68.92	41.15	48.21	0.08	22.68	0.14	4.37	0.07	7.02	14.59	1.36	0.16	0.01	0.82	0.50	0.25	1.00	0.05	94	200	48	490	195
22	A3RK11	FELSIC GRANULITE	4	61.45	36.92	78.32	0.08	11.93	0.31	0.26	<0.01	0.01	0.47	4.19	4.00	0.01	0.13	0.50	0.25	1.00	0.05	3	10	15	187	4
23	A3RK16	MAFIC GRANULITE	5	67.48	38.67	53.58	1.03	15.75	1.53	8.42	0.11	5.35	8.81	3.46	0.60	0.26	0.96	0.50	0.25	1.00	0.05	8	170	93	112	119
24	A3RK18	CHARNOCKITE	5	67.95	40.07	71.72	0.14	14.77	0.14	1.03	0.02	0.25	2.16	4.33	4.28	0.07	0.24	1.00	0.25	2.00	0.05	3	33	36	241	8
25	A3RT01	CHARNOCKITE	5	64.30	37.00	74.02	0.09	13.39	0.43	0.71	0.02	0.24	1.29	3.78	3.67	0.04	0.11	0.50	0.25	1.00	0.05	3	31	32	1	9
26	A3RT04	FELSIC GRANULITE	4	61.25	36.65	78.00	0.10	11.58	0.57	0.51	0.01	0.04	0.62	3.99	3.77	0.01	0.13	0.50	0.25	1.00	0.05	4	150	24	1	8
27	A3RT06	CHARNOCKITE	5	60.72	35.71	74.52	0.23	13.09	0.66	1.35	0.03	0.31	1.36	3.88	3.25	0.05	0.28	0.50	0.25	2.00	0.05	3	10	53	214	20
28	A4RK02	FELSIC GRANULITE	4	51.00	25.40	76.64	0.06	13.27	0.02	0.84	0.02	0.11	1.77	4.09	2.64	0.02	0.12	1.00	0.25	1.00	0.05	4	39	54	114	7
29	A4RT06	GNEISSOSE GRANULITE	5	50.27	23.91	71.96	0.21	14.71	0.17	2.51	0.09	0.48	2.37	4.09	2.69	0.02	0.31	0.50	0.25	1.00	0.05	31	47	58	177	22
30	A5RK02	CHARNOCKITE	5	42.83	33.28	74.80	0.17	12.40	0.03	1.48	0.02	0.32	2.80	4.10	2.69	0.04	0.26	0.50	0.25	0.50	0.05	4	22	47	1	12
31	A5RK04	CHARNOCKITE	5	41.48	31.41	73.56	0.24	13.47	0.03	1.99	0.02	0.53	3.21	4.00	1.58	0.05	0.55	0.50	0.25	0.50	0.05	367	61	256	207	44
32	A5RW04	GNEISSOSE GRANULITE	5	42.75	33.98	73.50	0.22	12.86	0.17	2.38	0.07	0.62	3.17	4.40	0.98	0.08	0.72	0.50	0.25	0.50	0.05	33	140	50	205	17
33	A6RT02	FELSIC GRANULITE	4	33.60	33.56	74.34	0.14	13.06	0.30	1.61	0.04	0.36	2.10	3.82	2.78	0.05	0.68	0.50	0.25	1.00	0.05	5	75	47	221	63
34	A6RT04	GNEISSOSE GRANULITE	5	33.37	33.75	75.16	0.12	13.10	0.11	1.03	0.03	0.25	1.87	3.88	3.22	0.01	0.54	0.50	0.25	0.50	0.05	4	70	35	1	132
35	A6RT06	CHARNOCKITE	5	33.10	33.58	72.70	0.23	13.52	0.10	1.86	0.03	0.55	2.91	4.18	2.49	0.06	0.48	2.00	0.25	1.00	0.05	3	190	46	1	12
36	A8RK24	CHARNOCKITE	5	20.42	18.17	76.14	0.21	13.05	0.36	1.25	0.02	0.31	2.30	3.73	2.58	0.09	0.57	0.50	0.25	0.50	0.05	10	130	54	135	18
37	A8RW05	MAFIC GRANULITE	3	19.11	18.03	49.09	0.33	7.71	0.82	8.62	0.21	10.98	18.84	1.02	0.27	0.01	1.36	0.50	0.25	6.00	0.05	3	86	104	1,610	453
38	A8RW06	MAFIC GRANULITE	3	19.11	18.03	48.63	0.34	8.07	1.62	8.23	0.21	11.18	19.06	1.20	0.26	0.04	1.37	0.50	0.25	6.00	0.05	20	100	99	1,560	492
39	A8RW08	CHARNOCKITE	5	19.10	17.78	74.56	0.12	13.00	0.47	1.16	0.03	0.28	2.27	4.10	2.63	0.02	0.56	0.50	0.25	2.00	0.05	5	73	44	1	7
40	A8RW09	GNEISSOSE GRANULITE	5	19.10	17.78	74.90	0.11	13.85	0.26	1.09	0.03	0.27	2.33	3.99	2.22	0.05	0.38	0.50	0.25	1.00	0.05	6	33	39	1	13
41	A9RT04	CHARNOCKITE	5	22.27	29.60	70.57	0.35	12.93	0.77	2.06	0.03	2.07	3.65	4.67	1.70	0.02	0.62	1.00	0.25	0.50	0.05	8	180	63	167	22
42	A9RW03	FELSIC GRANULITE	4	20.80	26.80	75.92	0.05	12.64	0.29	0.96	0.02	0.24	1.24	3.09	3.93	0.04	0.86	0.50	0.25	1.00	0.05	33	31	17	219	9
43	A9RW06	GNEISSOSE GRANULITE	5	19.85	27.75	73.64	0.20	14.34	0.10	1.29	0.01	0.45	3.04	4.41	1.23	0.04	0.47	3.00	0.25	1.00	0.05	10	110	30	1	14
44	A9RW09	GNEISSOSE GRANULITE	5	21.25	26.60	73.00	0.22	14.15	0.03	2.76	0.05	0.64	2.26	3.04	2.73	0.11	0.47	2.00	0.25	0.50	0.05	23	120	31	87	19
45	C1RT03	GNEISSOSE GRANULITE	5	41.96	21.20	74.25	0.06	14.56	0.21	0.58	0.02	0.13	1.18	3.93	3.74	0.03	0.45	0.50	0.25	0.50	0.05	5	75	27	203	9
46	C1RT04	FELSIC GNEISS	4	42.35	20.42	76.51	0.09	12.38	0.16	1.09	0.04	0.22	1.72	3.66	2.99	0.02	0.32	0.50	0.25	0.50	0.05	4	250	31	224	4
47	C1RT09	CHARNOCKITE	5	44.76	22.55	73.68	0.21	13.50	0.50	1.16	0.02	1.04	3.08	4.16	1.28	0.03	0.53	0.50	0.25	1.00	0.05	4	96	45	152	13
48	C1RW01	MAFIC GRANULITE	3	43.02	22.90	48.61	0.59	14.27	1.42	8.36	0.13	10.06	13.83	1.47	0.07	0.06	1.19	1.00	0.25	0.50	0.05	164	140	81	234	134
49	C1RW02	CHARNOCKITE	5	43.45	22.42	72.88	0.24	13.74	0.72	1.61	0.03	0.60	3.11	2.84	1.86	0.08	0.35	0.50	0.25	0.50	0.05	4	210	58	158	27
50	C1RW03	ENDERBITE	5	40.60	21.75	54.03	0.80	13.47	0.01	11.83	0.24	8.80	6.11	0.93	2.1	0.14	1.74	2.00	0.25	0.50	0.05	124	660	60	275	242

CHAPTER 3 METAMORPHIC CONDITION OF THE SURVEY AREA

3-1 PURPOSE OF MEASUREMENT

For determination of metamorphic conditions in the surveyed zones, a geobarometer and geothermometer so far published were applied to metamorphic rocks in the surveyed zones. The mineral combinations of garnet-orthopyroxene and garnet-biotite were applied to estimation of metamorphic temperatures.

3-2 METHOD OF MEASUREMENT

The geothermometer of garnet-orthopyroxene used in the survey was based on Harley's method (1984). The method was used by Harley (1984), who determined a partition coefficient of Fe-Mg with high temperature-high pressure experiments, by using a partition of Fe-Mg between coexisting garnet and orthopyroxene, and transforming it to a thermometer. Orthopyroxene was used as an ideal solution model, but Ca and Mg contaminants are generally contained in garnet, thus the effect was corrected with a symmetrical regular solution model according to Ganguly and Kennedy (1974).

Also a garnet-biotite geothermometer was based on Indares and Martignole's method (1985). This method involves a correction regarding Ti and Al in biotite, and consequently can be applied to temperature estimation of a granulite facies.

Additionally a garnet-orthopyroxene-plagioclase-quartz geobarometer was based on Perkin and Newton's method (1981). This method applies non-ideal solution model to garnet-plagioclase.

3-3 RESULTS OF MEASUREMENT

Representative results of minerals measured by EPMA are shown in the TABLE 2-3-1. The metamorphic temperatures and pressure conditions of metamorphic rocks in the surveyed areas were determined according to the above methods. In minerals having a zonal structure, such as garnet, a compositively homogeneous portion at the center is thought to record the temperature and pressure on the peak, so these analytical values were used. The results obtained are shown in the FIG.2-3-1.

The temperatures and pressures obtained from the two samples described below, having the highest reliability, are shown as follows:

SAMPLE	MINERAL PAIRS	CALCULATED TEMPERATURE(℃)	PRESSURE(K-BAR)
A2RK02	Garnet-Biotite	620～740	
	Garnet-Orthopyroxene -Plagioclase-Quartz		4～5.8
	Garnet-Orthopyroxene	640～710	
	Garnet-Orthopyroxene -Plagioclase-Quartz		4.2～5.6
A9RW17	Garnet-Biotite	560～610	
	Garnet-Orthopyroxene -Plagioclase-Quartz		3.4～5.8
	Garnet-Orthopyroxene	560～580	
	Garnet-Orthopyroxene -Plagioclase-Quartz		3.4～5.6

3-4 CONSIDERATION

These results can be presumed to reflect retrogressive episodes, rather than metamorphic conditions of the peak on a metamorphism, through comparison with the metamorphic temperature and pressure (700 to 800℃, 6 to 8 Kbar) of Limpopo Mobile Belt so far elucidated by Tsunokae and Miyano (1989).

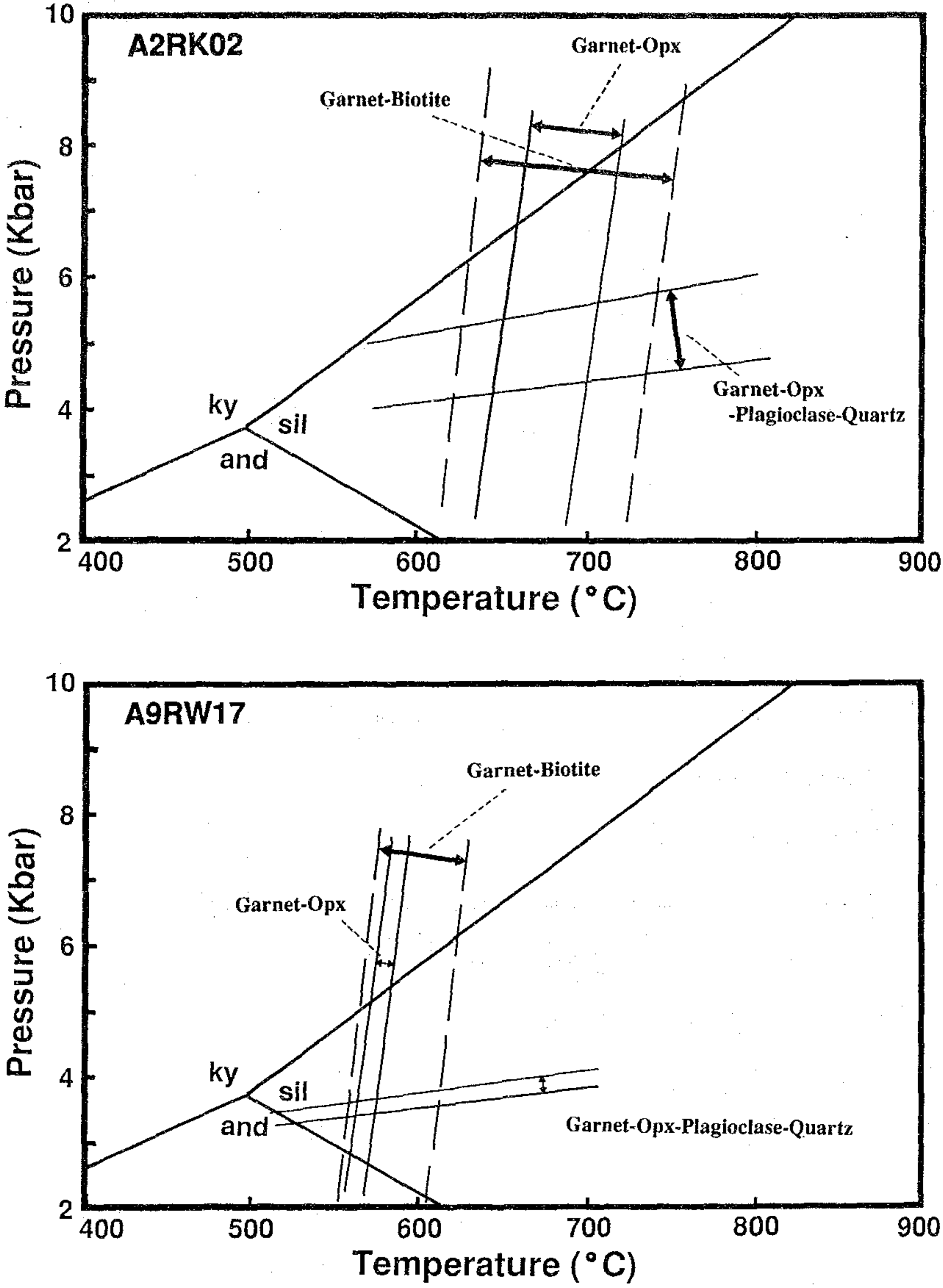


FIG. 2-3-1(1) Calculated Pressure and Temperature Condition

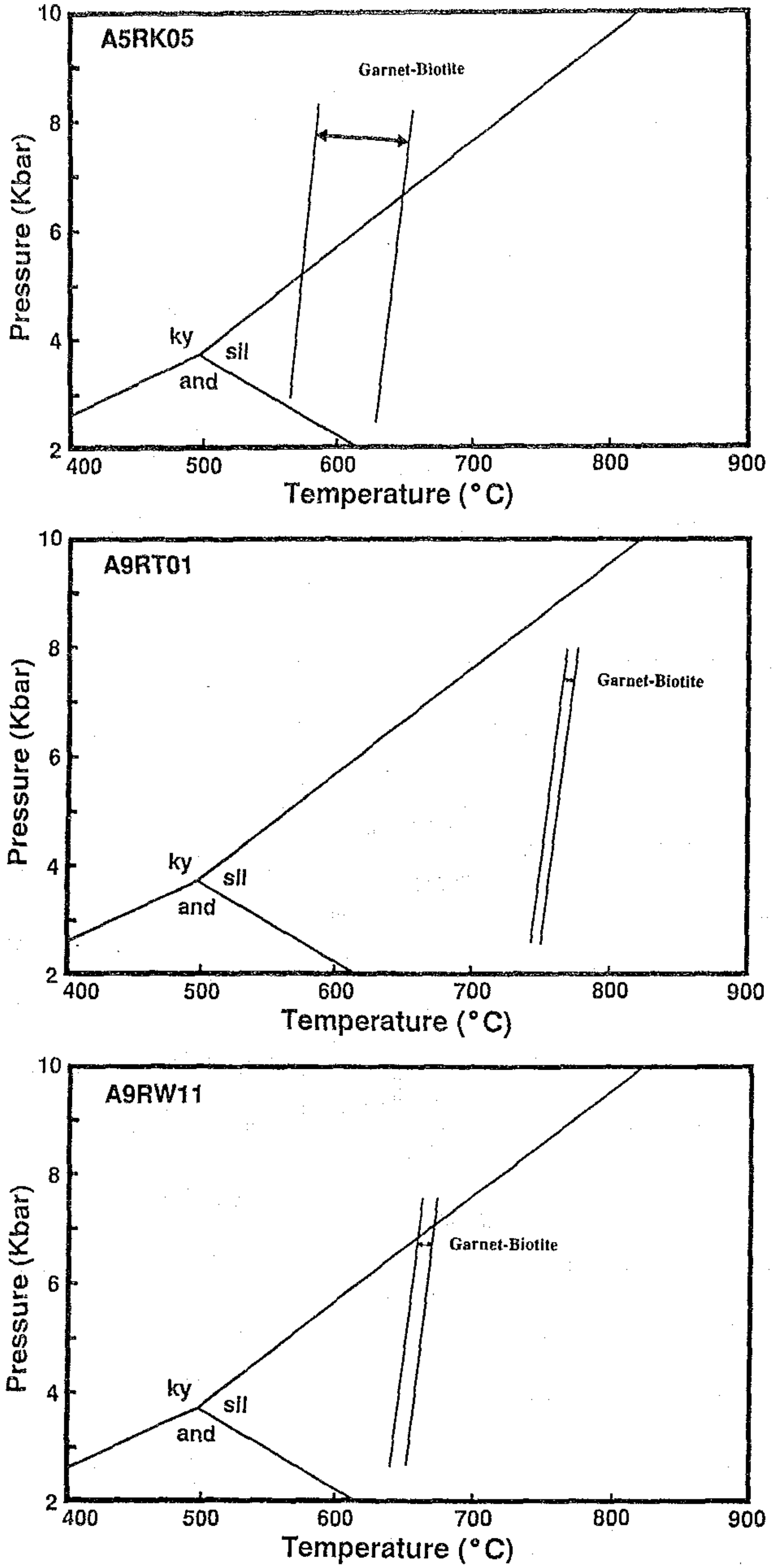


FIG. 2-3-1(2) Calculated Pressure and Temperature Condition

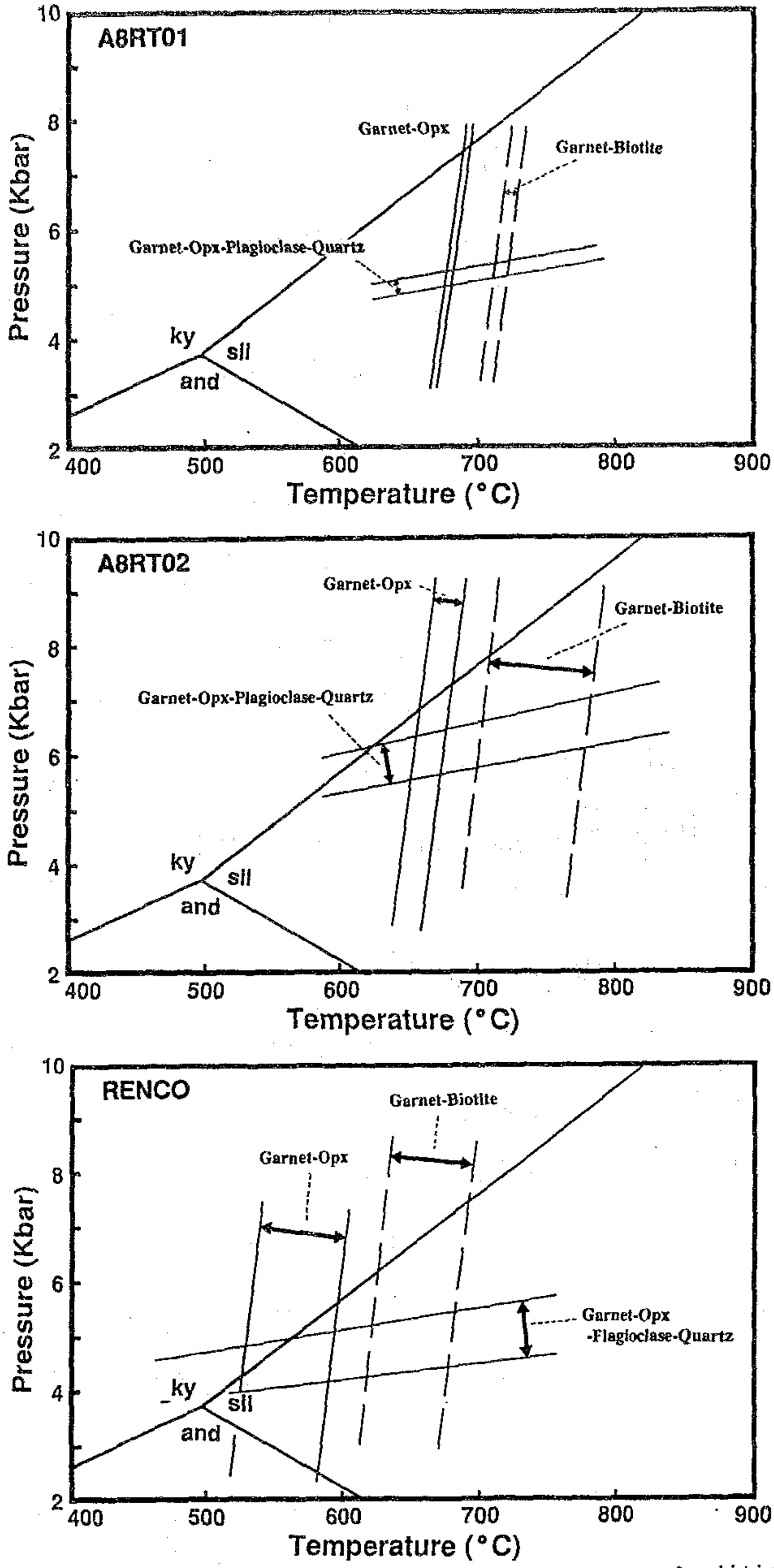


FIG. 2-3-1(3) Calculated Pressure and Temperature Condition

TABLE 2-3-1 Analytical Results by E P M A

	garnet				opx		biotite				plagioclase	
Sample	X_{Fe}*	X_{Mg}	X_{Ca}	X_{Mn}	X_{Fe}	X_{Mg}	X_{Fe}	X_{Mg}	X_{Al}**	X_{Ti}	X_{Ca}	X_{Na}
A2RK02	0.679	0.257	0.044	0.020	0.483	0.517	0.424	0.433	0.035	0.109	0.290	0.710
A5RK05	0.749	0.159	0.042	0.051	—	—	0.443	0.412	0.060	0.085	0.256	0.744
A8RT01	0.715	0.199	0.051	0.035	0.547	0.453	0.466	0.390	0.043	0.102	0.291	0.709
A8RT02	0.665	0.197	0.080	0.058	0.509	0.491	0.427	0.428	0.047	0.098	0.308	0.692
A9RT01	0.656	0.242	0.032	0.071	—	—	0.396	0.464	0.083	0.058	0.219	0.781
A9RW11	0.686	0.273	0.031	0.010	—	—	0.368	0.487	0.069	0.076	0.270	0.730
A9RW17	0.777	0.137	0.050	0.036	0.601	0.399	0.491	0.355	0.052	0.102	0.228	0.772
RENCO	0.672	0.146	0.118	0.063	0.536	0.464	0.485	0.393	0.017	0.105	0.322	0.678

* $X_{Fe} = Fe / (Fe + Mg + Ca + Mn)$

** Al^{vi} in biotite

CHAPTER 4 HOMOGENIZATION TEMPERATURE ON FLUID INCLUSIONS

4-1 PURPOSE OF MEASUREMENT

The homogenization temperatures of fluid inclusions in quartz of the mineralized zones were measured for the determination of formation temperature corresponding quartz vein/stockwork which was presumed to had been formed as a product of mineralization.

4-2 METHOD OF MEASUREMENT

Filling temperatures of fluid inclusions were measured by a model MHS-3 heating stage of Union Optical Company, using a Nikon U20 long working distance objective. A chromel-alumel thermocouple was used to measure temperatures and was calibrated by using tin and Thermo-graphics' thermometer strips.

4-3 RESULTS OF MEASUREMENT

Measurement of 20 samples was attempted but it was only possible to measure three for the homogenization temperatures. The main reason for the impossibility of measurement was the small size of the inclusions to be measured; down to less than 10 microns. The review of measurement results is shown as a list in Appendix A-8.

The mean of homogenization temperatures obtained by the three measurements of primary inclusions, criteria for primary origin depend on those of Roedder(1979), is in the range 239.2 to 284.3℃, and for inclusions having a particle size of below 10 microns, estimated temperatures as judged by the degree of filling of gas liquid two phase, were also 220 to 300℃ approximately similar to those. Thus quartz or mineralization in the present surveyed zones remains in the range of the temperature of a general hydrothermal deposit. Some representative studies were carried out by Takeuchi(1981) and Izawa(1981). The general contents of these studies are summarized as follows:

The fluid inclusions of Tertiary gold deposits are briefly reviewed by Takeuchi(1981). According to his study, formation temperature is generally in a range of 200-300℃ except some deposits such as the Carlin, salinity is low, and the origin of water is meteoric.

Izawa et al.(1981) showed that temperature varies with depth and along the strike of the Kushikino vein, Japan. The temperature distribution in the veins of the Kushikino district suggests that the quartz was deposited from ascending solutions in a convective geothermal system and that the temperature range from 210-250℃ favored the precipitation of quartz with gold and silver in ore grade.

4-4 CONSIDERATION

The mineralization underwent metamorphism after its formation, according to the mode of occurrences in the field(a mineralized zone is concordant with the foliation of country rock), and the reasons described below, nevertheless the composition of inclusions on the formation are considered to have been preserved. This fact deserves an attention.

The characteristics, other than described above, of the fluid inclusions in the zones obtained by measurements, are listed as follows.

(1) On Fluid Inclusion

The characteristics of the fluid inclusions in the zones can be indicated as follows.

Scarcity of Two Phase Fluid Inclusions of Gas-Liquid

The reasons are presumably due to the following:

. Water hardly related to mineralization.

. There was an environment making it difficult to include water into minerals.

. Included water was drained out later.

Predominant of Gaseous Inclusions

The reason are presumably due to the following:

. Mineralization progressed under a condition of gas predominant environment.

. By separation and differentiation with necking down.

. Media were in a gaseous phase in the formation period of secondary inclusions

Common Existence of Small Size Inclusions

The reason are presumably due to the following:

. Irrespective of the present samples, the size of inclusions will be used as a method for setting environmental conditions for the formation of minerals. For example, the formation rate of a mineral, etc. can be considered relationally. The small sizes of sample mother crystals can be presumed to be one of the causes.

Common Presence of Carbon Dioxide

. Many inclusions contained carbon dioxide exist. This can be estimated from the presence of three phase inclusions observed in a room temperature conditions, the dissipation of bubbles at a low temperature, the vibration of bubbles, etc. Generally, inclusions containing carbon dioxide are characteristic in pegmatite deposits, hypothermal deposits and a kind of metamorphic rock.

. But with the recent development of various kinds of instrumental analyses, the presence of CH_4 predominating hydrocarbons has been proved. Because an equilibrium relationship between these compound and water is scarcely known, the recognizing changes in phases with a microscope is impossible today. It is undeniable that there was a possibility of mistaking hydrocarbons as carbon dioxide in the observed samples.

Crystals estimated as halite, having a solid phase in some cases exist in the inclusions. There are many kinds of other crystals such as those estimated as carbonate minerals, fibrous crystal, etc.

. A solid phase existing in a gas predominant fluid inclusion is worthy of remark. It is impossible to confirm whether the solid phase is ubiquitous or not, because of refraction of rays on observation, but the solid phase is an interesting subject in terms of the solubility of minerals in low density medium.

. As halite and carbon dioxide are mutually inverse in solubility, if inclusions containing them were formed at the same period, then there is possibility of not being carbon dioxide. If it is carbon dioxide, the origins of both will differ respectively. Thus crystal containing a halite-bearing inclusion is considered as xenocryst.

(2) On Ore Minerals

. Gold grains were not observed with a microscope, but in many samples, sulphide minerals are observed. In particular, the presence of pyrrhotite is remarkable, and it is interesting that the same combination has been recognized and reported as a model in some gold deposits in the world.

. Inclusions of sulphide minerals in many samples was observed. It is not clear whether they were captured on the surface of the mother crystal during crystal growth or arose with concentration or metamorphism after the formation of the crystals. But some exist concordantly with the texture of a country rock or a mother crystal, and others appear to have moved after the formation of a mother crystal. Further some samples suggest immisible melting in magma. The interpretations therefore are not easy.

. Colloform and framboidal texture suggest certain formational conditions.

(3) Period of Mineralization

. Data directly estimating the period of mineralization could not be obtained from the measurement of homogenization temperature, but it can be explained that mineralization had already existed before metamorphism, and some preserved an original mineral by resisting metamorphism, and others were subjected to its changes.

PART Ⅲ CONCLUSION AND RECOMMENDATION

P A R T Ⅲ CONCLUSION AND RECOMMENDATION

CHAPTER 1 CONCLUSION

This year, the second year of the cooperative mineral exploration in the Republic of Zimbabwe, a geological survey and geochemical survey were carried out. A summary of the survey is described below.

Geological Survey: The survey area is located in the Northern Marginal Zone (NMZ) of the Limpopo Mobile Belt, which stretches from ENE to WSW, dividing Zimbabwe Craton from Kaapvaal Craton. The NMZ is 30 to 40 km wide at the section which is in contact with Zimbabwe Craton. The area consists of the following geological units:

(1) Gneissose granulite : (high metamorphic rock)

(2) Felsic granulite : (high metamorphic rock)

(3) Mafic granulite : (high metamorphic rock)

Iron information and dolerite are also observed.

The geological structure of the survey area is characterized by the foliation of the ENE-WSW (N60-70E) system. Foliation is generally considered as a south dip, but in the south of the survey area, north dip foliation is also observed showing a highly folded form. The survey area is divided into four main blocks according to principal tectonic lines (Zazaume-Makambe tectonic line, Vurumuku tectonic line, and Murerezi tectonic line), and these blocks are thought to be subjected to ascending and descending block movements.

From the first year's survey, respective areas estimated as promising Au zones were selected as described below.

REASON FOR SELECTION	NUMBER OF AREA	EXTENT(km^2)
ANOMALOUS AREA INDICATED BY MULTIPLE SAMPLES	10	349
ANOMALOUS AREA INDICATED BY SINGLE SAMPLE	2	137
ANOMALOUS AREA INDICATED BY PANNED SAMPLE	7	14
T O T A L	10	500

Nine zones shown in the following table were selected after semi-detailed geochemical survey from these areas, noting the conditions of mineralized signs (sulphides, Fe-hydroxides, quartz vein/stockwork, pegmatite quartz and K-feldspar).

There is poor relation of indicator contents between the samples from mineralized zones (Juwere mineralized zone, Jegede mineralized zone, Muchacha mineralized zone, etc.) accompanied by sulphides confirmed by this semi-detailed geological survey, and the contents of the indicators from the surrounding soil samples. It was found that anomalous values in the soil samples are apt to contain a higher Au content than values in the samples from the mineralized zones. It may suggests that the mineralized zones have been subjected to weathering.

Geochemical Survey : Soil samples (B-horizon) of 10,047 were collected from the nine zones of the following table selected by the geological survey, and analyses related to Au, Ag, As, Bi, Cu, F, Zn, Cr, Ni and Fe were carried out.

ZONE	BASE LINE(M)	SAMPLING LINE(M)	SOILS
JUWERE	1,500	2,970	1,560
JEGEDE	2,500	1,470	1,277
MUCHACHA	2,500	1,020	907
BENZI	2,000	1,020	728
RUPIRI	3,800	1,470	1,593
CHIPFUNDE	3,200	1,200	898
FUMURE	2,000	1,260	696
NYAHONDO	2,200	1,680	1,057
CHAMBURUKIRA	1,900	2,190	1,331
TOTAL			10,047

By considering the direction in which mineralized signs and a principally related geologic units thought to be associated with mineralization extend, the directions of the soil collection lines, except for the Juwere zone (Juwere mineralized zone is observed as roughly N-S system), were set at a direction of N-S system because in the zone's geological structures an ENE-WSW system prevails.

The analytical results of collected soil samples were interpreted by single variate analysis and multivariate analysis so that the geochemical characteristics of the geological units from which the samples originated could be determined.

From the results, the following three zones

(1) Jegede zone

(2) Benzi Zone

(3) Fumure Zone

can be judged as promising because of

(1) the stable and continuous distribution,

(2) high Au value

(3) clear contrast

etc. in the geochemical anomalous zones regarding Au in each zone. On the other hand, the following two zones are proposed as targets of IP survey to confirm for their continuation of sulphide mineralization.

(4) Juwere Zone

(5) Muchacha Zone

Ag contents, and other elements in the mineralized zones in the surveyed zones, were generally low and limited extent. The appearance of geochemical anomalous zones was more scattered than that of Au, and a correlation among indicators was poor, so that no promising anomalous zones of Ag and other elements were found.

The measurements of homogenization temperature using fluid inclusions in quartz suggest that temperature of sulphide mineralization in the area;

220 ～ 300 ℃.

The fact indicate the mineralization will be classified into the category of epithermal deposit by formation temperature.

An attempt was conducted to estimate the metamorphic conditions by applying the geothermometer and geobarometer. The results are as follows;

Temperature 540 ～ 740 ℃.

Pressure 1.4 ～ 5.8 KB.

The results probably show retrogressive metamorphic episodes rather than peak metamorphism in the area.

CHAPTER 2 RECOMMENDATION

On the basis of the second year's survey results, and from the conclusions obtained through discussing the results, we propose to conduct the following survey in the third year.

Subject zones to be surveyed are the following zones with promising geochemical anomalies and mineralized signs:

(1) Jegede anomalous zone

(2) Benzi anomalous zone

(3) Fumure anomalous zone

(4) Juwere mineralized zone

(5) Muchacha mineralized zone

Methods of survey to be applied are:

(1) Geophysical exploration (IP method)

(2) Drilling exploration

The outline of the survey is as follows:

Geophysical Exploration (IP Method): This exploration will be performed to confirm the existence of mineralized zones in and around anomalous zones by detecting sulphide minerals. The exploration is recommended to be conducted in both geochemical anomalous and mineralized zones to the depth of 300m.

Drilling Exploration: Drilling exploration is conducted to confirm the deeper extension of the mineralized zones found by geological surveys, and to check the results of geophysical exploration (IP method) which are conducted on geochemical anomalies obtained by soil geochemical survey. Drilling exploration is conducted to determine mineralized zones from the existence of continuity and mineralization conditions, from the surface to a depth of 150m, while geophysical exploration is performed to a depth of 300m.

Planning of the IP survey must be considered the possibility of hydromorphic anomalies of the following three anomalous zones:

(1) Jegede zone

(2) Benzi zone

(3) Fumure zone.

On the IP surveys in two mineralized zones, that is,

(4) Juwere zone and

(5) Muchacha zone

the prime emphasis will put on the confirmation of mineralized zone for the direction of depth and lateral continuation. Rather small work will be needed to confirm it.

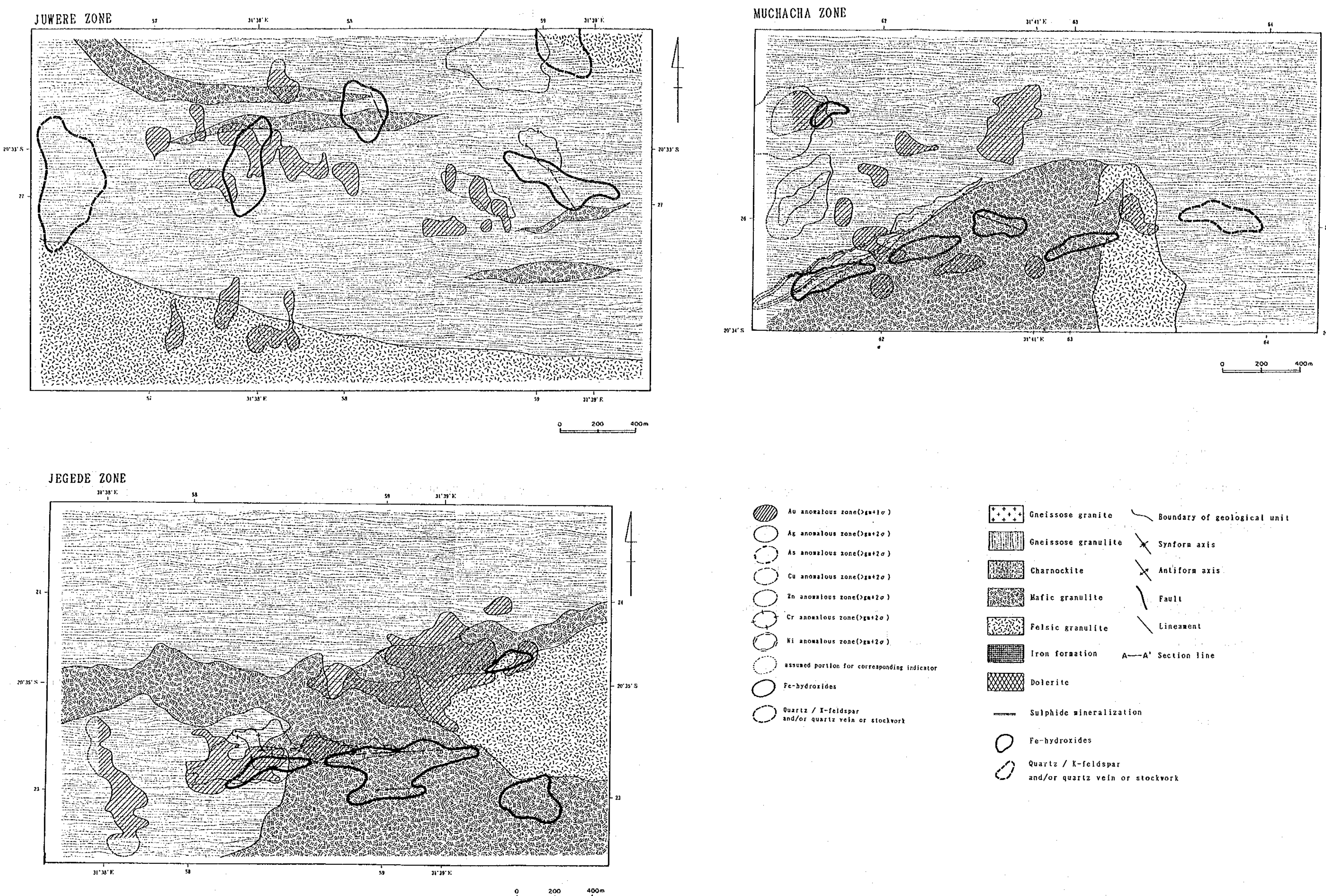


FIG. 3-1-1(1) Interpretation Map of Survey Results

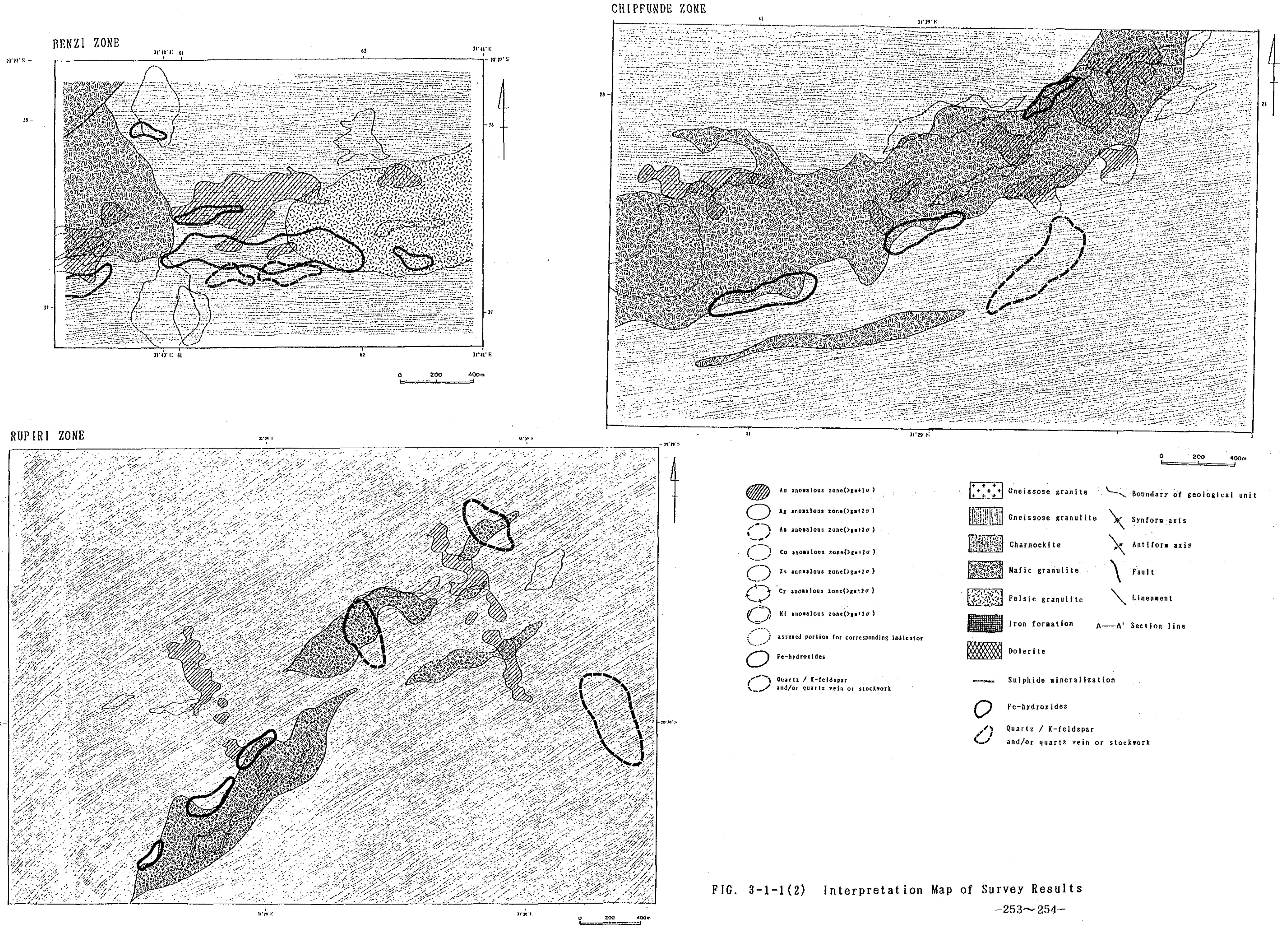
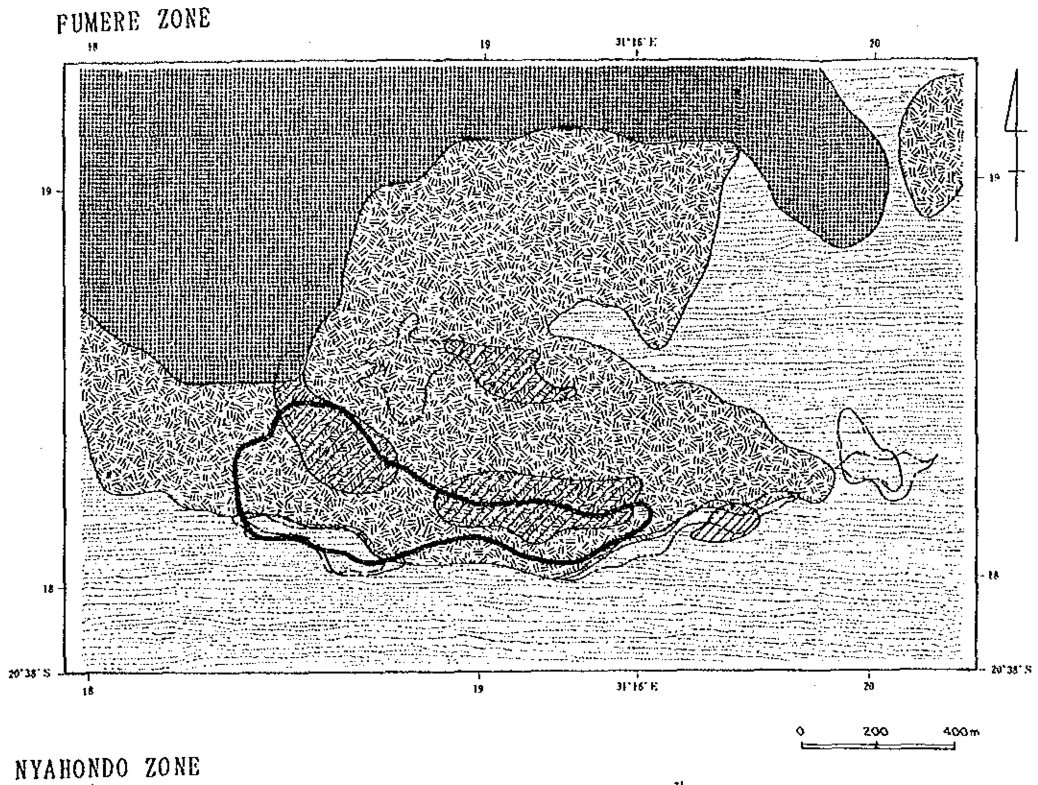
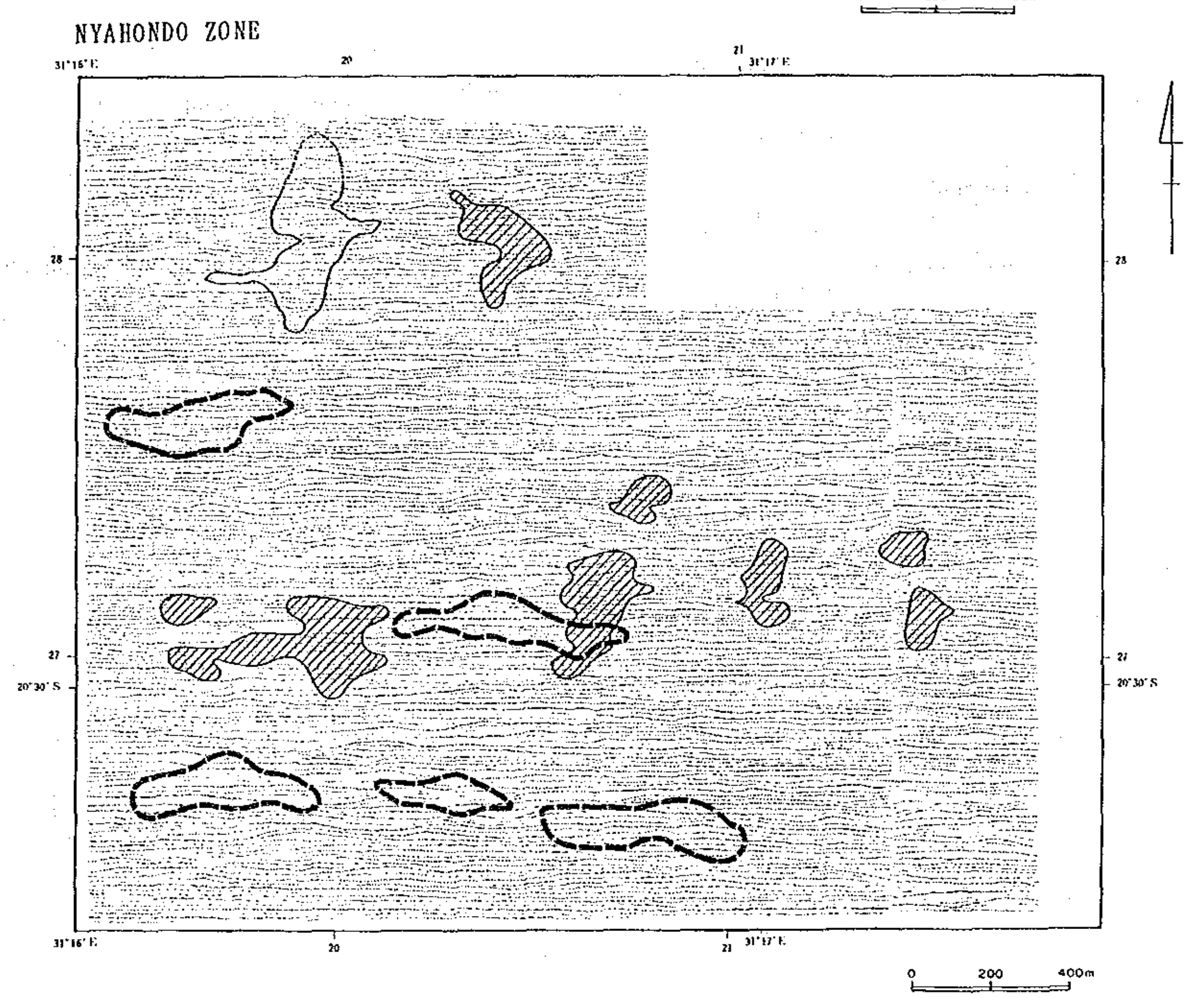


FIG. 3-1-1(2) Interpretation Map of Survey Results





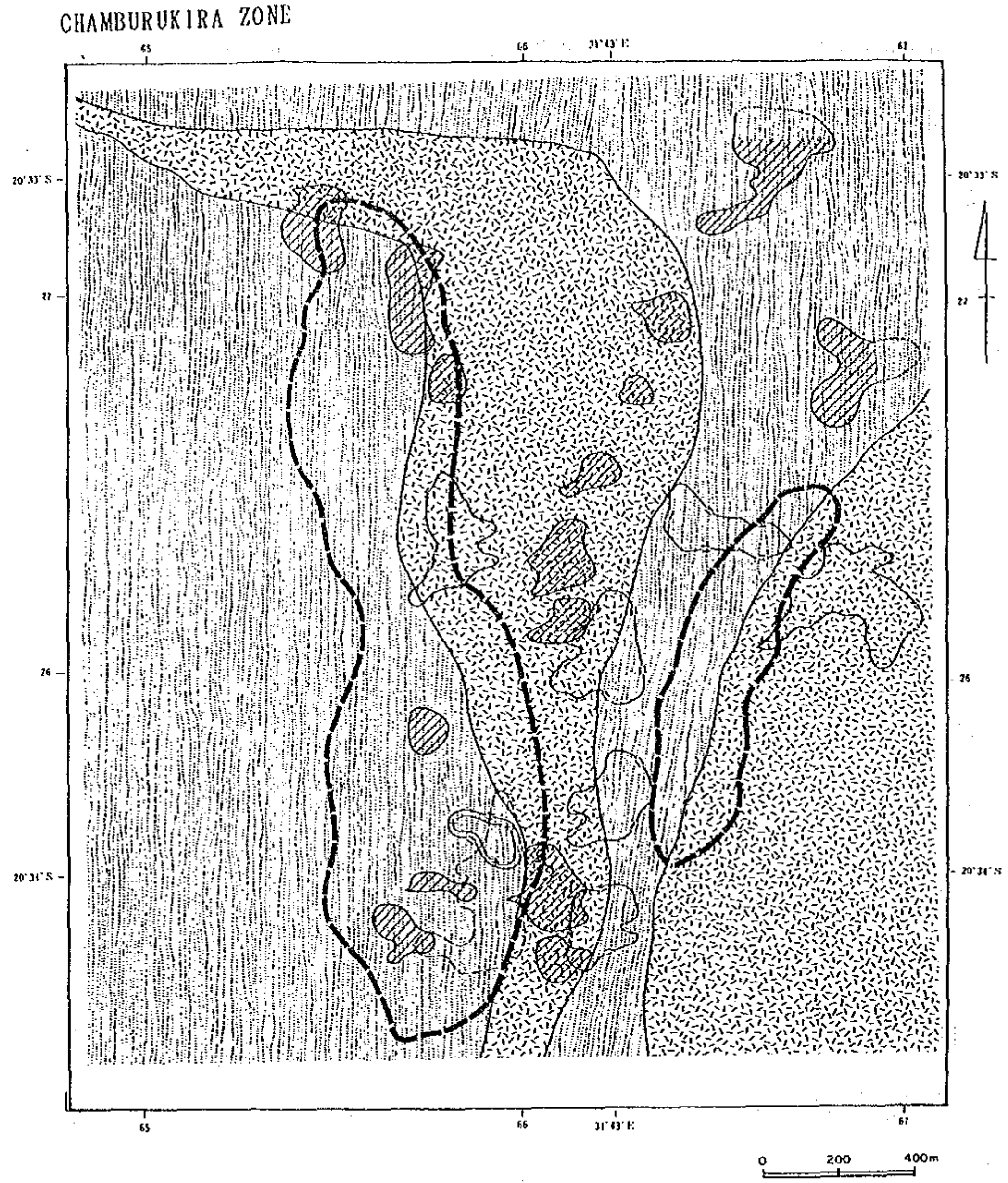


FIG. 3-1-1(3) Interpretation Map of Survey Results

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APPENDICES

APPENDIX A-1 Analytical Results of Soil Samples

NO	SAMPLE NO	X	Y	Au(ppb)	Ag(ppm)	As(ppm)	Bi(ppm)	Cu(ppm)	F(ppm)	Zn(ppm)	Cr(ppm)	Ni(ppm)	Fe(%)	R. C.
1	A 0 1	56.5500	27.6100	E 0.5	0.60	1.0	E 0.05	45	22	50	100	56	4.62	5
2	A 0 2	56.5800	27.6109	E 0.5	0.70	1.0	E 0.05	35	22	53	68	34	4.40	5
3	A 0 3	56.6100	27.6118	106.0	0.70	2.0	E 0.05	27	28	55	45	30	4.29	5
4	A 0 4	56.6400	27.6127	E 0.5	1.00	E 0.5	E 0.05	13	30	41	170	11	2.92	5
5	A 0 5	56.6700	27.6136	E 0.5	0.60	E 0.5	E 0.05	14	10	30	83	11	2.06	5
6	A 0 6	56.7000	27.6145	16.0	0.60	E 0.5	E 0.05	38	10	53	73	33	4.93	5
7	A 0 7	56.7300	27.6155	E 0.5	0.50	E 0.5	E 0.05	73	25	65	120	57	6.22	5
8	A 0 8	56.7600	27.6164	E 0.5	1.10	E 0.5	E 0.05	39	10	59	65	35	5.94	3
9	A 0 9	56.7900	27.6173	E 0.5	0.80	1.0	E 0.05	30	20	48	60	32	4.72	3
10	A 0 10	56.8200	27.6182	E 0.5	0.60	2.0	E 0.05	24	28	45	120	24	3.91	3
11	A 0 11	56.8500	27.6191	E 0.5	E 0.25	E 0.5	E 0.05	17	22	34	58	26	2.55	3
12	A 0 12	56.8800	27.6200	3.0	0.90	1.0	E 0.05	19	25	48	60	21	2.95	3
13	A 0 13	56.9100	27.6209	3.0	1.10	E 0.5	E 0.05	39	25	91	100	21	7.08	3
14	A 0 14	56.9400	27.6218	E 0.5	1.00	E 0.5	E 0.05	69	22	101	220	63	7.77	3
15	A 0 15	56.9700	27.6227	2.0	0.80	E 0.5	E 0.05	50	32	79	160	64	7.14	3
16	A 0 16	57.0000	27.6236	E 0.5	0.90	E 0.5	E 0.05	47	48	77	280	69	6.86	3
17	A 0 17	57.0300	27.6245	2.0	0.70	E 0.5	E 0.05	70	50	92	340	117	8.49	3
18	A 0 18	57.0600	27.6255	2.0	0.60	E 0.5	E 0.05	94	58	66	350	122	7.31	3
19	A 0 19	57.0900	27.6264	E 0.5	E 0.25	E 0.5	E 0.05	129	120	64	560	152	6.44	5
20	A 0 20	57.1200	27.6273	5.0	E 0.25	E 0.5	E 0.05	138	48	68	610	180	7.05	5
21	A 0 21	57.1500	27.6282	E 0.5	E 0.25	E 0.5	E 0.05	72	50	80	320	144	6.32	5
22	A 0 22	57.1800	27.6291	1.0	E 0.25	E 0.5	E 0.05	67	20	100	340	136	9.12	5
23	A 0 23	57.2100	27.6300	E 0.5	E 0.25	E 0.5	E 0.05	65	38	92	340	115	9.44	5
24	A 0 24	57.2400	27.6309	1.0	E 0.25	E 0.5	E 0.05	133	18	130	300	118	10.72	5
25	A 0 25	57.2700	27.6318	E 0.5	E 0.25	E 0.5	E 0.05	89	38	106	110	96	9.55	5
26	A 0 26	57.3000	27.6327	E 0.5	E 0.25	E 0.5	E 0.05	64	35	86	94	76	7.73	5
27	A 0 27	57.3300	27.6336	E 0.5	E 0.25	E 0.5	E 0.05	83	32	100	82	100	8.40	5
28	A 0 28	57.3600	27.6345	2.0	E 0.25	E 0.5	E 0.05	71	32	83	130	88	6.76	5
29	A 0 29	57.3900	27.6355	E 0.5	0.70	E 0.5	E 0.05	42	35	68	120	76	4.47	5
30	A 0 30	57.4200	27.6364	E 0.5	E 0.25	E 0.5	0.20	57	38	64	82	78	4.48	5
31	A 0 31	57.4500	27.6373	E 0.5	E 0.25	E 0.5	0.10	50	25	67	53	78	4.55	5
32	A 0 32	57.4800	27.6382	4.0	0.50	E 0.5	0.10	44	30	63	210	75	4.53	5
33	A 0 33	57.5100	27.6391	E 0.5	E 0.25	E 0.5	0.20	68	35	55	42	96	4.95	5
34	A 0 34	57.5400	27.6400	2.0	E 0.25	E 0.5	E 0.05	32	40	55	63	53	4.35	5
35	A 0 35	57.5700	27.6409	E 0.5	E 0.25	E 0.5	E 0.05	29	25	52	50	61	4.46	5
36	A 0 36	57.6000	27.6418	2.0	E 0.25	46.0	E 0.05	27	38	49	63	74	4.35	5
37	A 0 37	57.6300	27.6427	3.0	E 0.25	17.0	0.10	22	25	48	47	50	3.80	5
38	A 0 38	57.6600	27.6436	2.0	E 0.25	1.0	E 0.05	21	48	46	56	47	3.32	5
39	A 0 39	57.6900	27.6445	E 0.5	E 0.25	E 0.5	E 0.05	22	22	57	54	46	3.54	5
40	A 0 40	57.7200	27.6455	E 0.5	E 0.25	E 0.5	E 0.05	17	35	44	39	42	3.20	5
41	A 0 41	57.7500	27.6464	E 0.5	0.70	32.0	E 0.05	13	20	54	45	31	3.14	5
42	A 0 42	57.7800	27.6473	4.0	0.80	E 0.5	E 0.05	8	48	38	30	22	2.19	5
43	A 0 43	57.8100	27.6482	2.0	0.70	4.0	E 0.05	10	10	35	41	22	1.81	5
44	A 0 44	57.8400	27.6491	E 0.5	0.70	41.0	E 0.05	11	30	38	96	24	2.14	5
45	A 0 45	57.8700	27.6500	2.0	E 0.25	5.0	E 0.05	7	10	25	56	17	1.41	5
46	A 0 46	57.9000	27.6509	E 0.5	0.70	4.0	E 0.05	5	35	28	16	11	0.94	5
47	A 0 47	57.9300	27.6518	E 0.5	0.60	42.0	E 0.05	5	25	19	11	7	0.95	5
48	A 0 48	57.9600	27.6527	E 0.5	0.60	10.0	E 0.05	5	32	27	17	6	1.06	5
49	A 0 49	57.9900	27.6536	E 0.5	0.70	67.0	E 0.05	10	20	30	22	11	1.48	5
50	A 0 50	58.0200	27.6545	E 0.5	E 0.25	2.0	E 0.05	5	20	19	14	5	0.77	5
51	A 0 51	58.0500	27.6555	E 0.5	0.60	56.0	E 0.05	10	25	30	20	11	1.53	5
52	A 0 52	58.0800	27.6564	1.0	E 0.25	2.0	E 0.05	5	30	21	29	7	1.13	5
53	A 0 53	58.1100	27.6573	2.0	E 0.25	1.0	E 0.05	5	30	19	11	6	0.88	5
54	A 0 54	58.1400	27.6582	2.0	0.50	E 0.5	E 0.05	9	22	25	28	9	1.32	5
55	A 0 55	58.1700	27.6591	E 0.5	0.50	33.0	E 0.05	7	10	40	120	11	1.45	5
56	A 0 56	58.2000	27.6600	E 0.5	E 0.25	14.0	E 0.05	11	10	24	76	23	1.25	5
57	A 0 57	58.2300	27.6609	E 0.5	0.50	3.0	E 0.05	7	25	21	55	12	1.41	5
58	A 0 58	58.2600	27.6618	E 0.5	0.90	E 0.5	E 0.05	6	10	25	42	13	0.89	5
59	A 0 59	58.2900	27.6627	E 0.5	0.50	140.0	E 0.05	8	20	25	54	20	1.03	5
60	A 0 61	58.3500	27.6645	E 0.5	E 0.25	27.0	E 0.05	9	10	26	21	15	1.16	5
61	A 0 62	58.3800	27.6655	1.0	0.60	44.0	E 0.05	6	28	28	15	10	1.00	5
62	A 0 63	58.4100	27.6664	5.0	E 0.25	4.0	E 0.05	6	10	22	29	7	1.01	5
63	A 0 64	58.4400	27.6673	E 0.5	0.70	4.0	E 0.05	9	10	26	11	8	1.19	5
64	A 0 65	58.4700	27.6682	4.0	0.60	58.0	E 0.05	16	10	42	20	22	2.12	5
65	A 0 66	5[illegible].5000	27.6691	2.0	0.80	2.0	E 0.05	4	32	23	32	5	1.10	5
66	A 0 67	58.5300	27.6700	E 0.5	0.80	1.0	E 0.05	5	22	20	61	5	1.12	5
67	A 0 68	58.5600	27.6709	E 0.5	0.60	E 0.5	E 0.05	8	10	36	42	17	1.89	5
68	A 0 69	58.5900	27.6718	E 0.5	1.50	E 0.5	E 0.05	5	35	24	42	13	1.00	5
69	A 0 70	58.6200	27.6727	2.0	1.10	2.0	E 0.05	13	35	40	26	21	1.54	5
70	A 0 71	58.6500	27.6736	115.0	1.10	E 0.5	E 0.05	12	10	28	39	17	1.43	5
71	A 0 72	58.6800	27.6745	E 0.5	1.00	3.0	E 0.05	7	30	24	22	10	1.05	5
72	A 0 73	58.7100	27.6755	3.0	1.20	E 0.5	E 0.05	4	25	20	42	9	1.00	5
73	A 0 74	58.7400	27.6764	E 0.5	1.00	3.0	E 0.05	5	20	23	34	5	1.08	5
74	A 0 75	58.7700	27.6773	1.0	1.00	1.0	E 0.05	7	10	29	29	16	1.58	5
75	A 0 76	58.8000	27.6782	E 0.5	1.30	E 0.5	E 0.05	6	10	36	77	15	1.70	5
76	A 0 77	58.8300	27.6791	E 0.5	1.70	240.0	E 0.05	4	10	29	99	8	1.52	5
77	A 0 78	58.8600	27.6800	E 0.5	1.30	5.0	E 0.05	11	25	42	66	23	2.23	5
78	A 0 79	58.8900	27.6809	E 0.5	1.20	2.0	E 0.05	12	10	42	28	34	1.25	5
79	A 0 80	58.9200	27.6818	E 0.5	1.50	1.0	E 0.05	12	10	40	28	49	4.15	5
80	A 0 81	58.9500	27.6827	E 0.5	1.70	E 0.5	E 0.05	10	10	40	32	36	2.23	5

NO	SAMPLE NO	X	Y	Au(ppb)	Ag(ppm)	As(ppm)	Bi(ppm)	Cu(ppm)	F(ppm)	Zn(ppm)	Cr(ppm)	Ni(ppm)	Fe(%)	R. C.
81	A 1 1	56.5520	27.5033	E 0.5	0.50	2.0	E 0.05	6	20	30	29	6	0.80	5
82	A 1 2	56.5820	27.5043	E 0.5	E 0.25	11.0	E 0.05	6	10	39	49	4	0.56	5
83	A 1 3	56.6120	27.5052	E 0.5	E 0.25	E 0.5	E 0.05	6	10	19	6	5	0.66	5
84	A 1 4	56.6420	27.5062	E 0.5	0.60	E 0.5	E 0.05	7	22	25	23	8	1.25	5
85	A 1 5	56.6720	27.5071	E 0.5	E 0.25	E 0.5	E 0.05	28	10	49	81	30	3.80	5
86	A 1 6	56.7020	27.5080	E 0.5	0.50	E 0.5	E 0.05	20	10	32	45	19	2.62	5
87	A 1 7	56.7320	27.5090	E 0.5	E 0.25	E 0.5	E 0.05	42	10	41	130	38	4.31	5
88	A 1 8	56.7620	27.5099	E 0.5	0.70	E 0.5	E 0.05	11	25	41	40	11	2.43	5
89	A 1 9	56.7919	27.5109	1.0	E 0.25	E 0.5	E 0.05	13	10	39	37	15	1.25	5
90	A 1 10	56.8219	27.5118	E 0.5	E 0.25	E 0.5	E 0.05	8	10	19	180	12	1.16	5
91	A 1 11	56.8519	27.5128	3.0	E 0.25	E 0.5	E 0.05	9	10	27	32	15	1.34	5
92	A 1 12	56.8819	27.5137	E 0.5	0.70	E 0.5	E 0.05	7	20	30	48	12	1.40	5
93	A 1 13	56.9119	27.5146	2.0	0.50	15.0	E 0.05	11	10	33	39	13	2.16	5
94	A 1 14	56.9419	27.5156	E 0.5	0.70	3.0	E 0.05	25	20	54	110	32	3.89	3
95	A 1 15	56.9719	27.5165	E 0.5	0.70	E 0.5	E 0.05	15	10	38	53	17	2.09	3
96	A 1 16	57.0019	27.5175	1.0	1.00	E 0.5	E 0.05	12	10	40	67	19	2.40	3
97	A 1 17	57.0319	27.5184	E 0.5	1.00	E 0.5	E 0.05	24	25	59	110	44	4.16	3
98	A 1 18	57.0619	27.5194	E 0.5	0.90	E 0.5	E 0.05	22	38	43	120	32	3.04	3
99	A 1 19	57.0919	27.5203	5.0	0.80	E 0.5	E 0.05	34	38	69	70	52	3.47	3
100	A 1 20	57.1219	27.5212	1.0	0.80	E 0.5	E 0.05	31	40	55	220	55	3.82	3
101	A 1 21	57.1519	27.5222	E 0.5	1.00	E 0.5	E 0.05	32	10	38	210	52	4.26	3
102	A 1 22	57.1819	27.5231	E 0.5	0.80	E 0.5	E 0.05	34	10	71	92	54	5.22	3
103	A 1 23	57.2119	27.5241	E 0.5	0.70	E 0.5	E 0.05	48	35	71	190	71	5.60	3
104	A 1 24	57.2418	27.5250	1.0	1.00	E 0.5	E 0.05	56	10	84	64	85	7.18	3
105	A 1 25	57.2718	27.5260	E 0.5	0.70	E 0.5	E 0.05	58	10	78	260	98	6.66	3
106	A 1 26	57.3018	27.5269	E 0.5	0.60	2.0	E 0.05	45	10	74	350	80	4.42	3
107	A 1 27	57.3318	27.5278	E 0.5	0.60	E 0.5	E 0.05	92	45	100	530	134	9.98	3
108	A 1 28	57.3618	27.5288	E 0.5	0.60	E 0.5	E 0.05	74	10	82	320	97	7.91	3
109	A 1 29	57.3918	27.5297	E 0.5	E 0.25	6.0	E 0.05	90	10	93	260	115	8.96	3
110	A 1 30	57.4218	27.5307	E 0.5	E 0.25	E 0.5	E 0.05	123	10	97	660	154	8.93	3
111	A 1 31	57.4518	27.5316	2.0	E 0.25	E 0.5	E 0.05	153	38	97	160	206	8.02	3
112	A 1 32	57.4818	27.5326	E 0.5	0.60	E 0.5	E 0.05	132	10	110	510	142	9.28	3
113	A 1 33	57.5118	27.5335	2.0	E 0.25	E 0.5	E 0.05	176	25	121	200	133	10.90	3
114	A 1 34	57.5418	27.5344	4.0	E 0.25	E 0.5	E 0.05	170	50	143	160	109	11.42	3
115	A 1 35	57.5718	27.5354	1.0	E 0.25	2.0	E 0.05	88	38	108	94	76	8.82	3
116	A 1 36	57.6018	27.5363	1.0	0.60	E 0.5	E 0.05	157	32	136	120	80	13.10	3
117	A 1 37	57.6318	27.5373	3.0	E 0.25	E 0.5	E 0.05	116	28	139	110	67	13.05	3
118	A 1 38	57.6618	27.5382	3.0	E 0.25	2.0	E 0.05	69	48	96	73	65	7.82	3
119	A 1 39	57.6917	27.5392	8.0	E 0.25	E 0.5	E 0.05	83	28	112	62	23	10.00	3
120	A 1 40	57.7217	27.5401	5.0	E 0.25	E 0.5	E 0.05	86	50	117	93	84	10.41	3
121	A 1 41	57.7517	27.5410	E 0.5	E 0.25	2.0	E 0.05	80	10	116	200	90	8.37	3
122	A 1 42	57.7817	27.5420	E 0.5	E 0.25	2.0	E 0.05	86	22	120	140	108	8.59	3
123	A 1 43	57.8117	27.5429	E 0.5	E 0.25	E 0.5	E 0.05	81	20	101	100	94	8.28	3
124	A 1 44	57.8417	27.5439	2.0	E 0.25	46.0	E 0.05	95	42	126	77	87	9.51	3
125	A 1 45	57.8717	27.5448	E 0.5	E 0.25	E 0.5	E 0.05	96	38	106	170	93	10.52	3
126	A 1 46	57.9017	27.5458	E 0.5	0.50	E 0.5	E 0.05	63	28	96	130	78	7.45	5
127	A 1 47	57.9317	27.5467	1.0	E 0.25	E 0.5	E 0.05	90	25	107	150	114	9.38	5
128	A 1 48	57.9617	27.5476	E 0.5	0.60	E 0.5	E 0.05	39	10	108	270	56	7.66	5
129	A 1 49	57.9917	27.5486	E 0.5	0.70	E 0.5	E 0.05	14	60	59	130	24	2.96	5
130	A 1 50	58.0217	27.5495	1.0	0.90	E 0.5	E 0.05	18	35	59	130	18	3.24	5
131	A 1 51	58.0517	27.5505	E 0.5	0.90	E 0.5	E 0.05	11	35	56	76	10	2.54	5
132	A 1 52	58.0817	27.5514	E 0.5	0.80	E 0.5	E 0.05	27	30	70	130	33	3.82	5
133	A 1 53	58.1116	27.5524	E 0.5	0.70	E 0.5	E 0.05	19	10	66	130	21	3.22	5
134	A 1 54	58.1416	27.5533	E 0.5	0.70	E 0.5	E 0.05	10	10	60	92	10	2.39	5
135	A 1 55	58.1716	27.5542	E 0.5	0.60	E 0.5	E 0.05	8	68	42	56	7	1.53	5
136	A 1 56	58.2016	27.5552	E 0.5	E 0.25	7.0	E 0.05	8	42	27	120	9	1.08	5
137	A 1 57	58.2316	27.5561	E 0.5	0.50	1.0	E 0.05	8	30	33	54	8	1.22	5
138	A 1 58	58.2616	27.5571	E 0.5	E 0.25	E 0.5	E 0.05	8	25	31	59	16	1.22	5
139	A 1 59	58.2916	27.5580	E 0.5	0.60	E 0.5	E 0.05	11	48	43	73	18	1.98	5
140	A 1 60	58.3216	27.5590	E 0.5	0.70	E 0.5	E 0.05	16	40	49	76	29	2.63	5
141	A 1 61	58.3516	27.5599	E 0.5	0.60	E 0.5	E 0.05	9	20	32	38	8	1.25	5
142	A 1 62	58.3815	27.5608	E 0.5	0.80	E 0.5	E 0.05	8	20	21	24	6	0.99	5
143	A 1 63	58.4116	27.5618	E 0.5	0.60	E 0.5	E 0.05	7	20	22	48	5	0.97	5
144	A 1 64	58.4416	27.5627	E 0.5	0.90	E 0.5	E 0.05	9	10	27	66	6	1.21	5
145	A 1 65	58.4716	27.5637	E 0.5	0.60	4.0	E 0.05	9	48	26	62	9	1.36	5
146	A 1 66	58.5016	27.5646	E 0.5	0.70	E 0.5	E 0.05	16	22	44	77	17	2.41	5
147	A 1 67	58.5316	27.5656	E 0.5	0.90	2.0	E 0.05	12	10	41	57	8	1.38	5
148	A 1 68	58.5615	27.5665	E 0.5	0.60	E 0.5	E 0.05	24	10	56	38	22	2.22	5
149	A 1 72	58.6815	27.5703	E 0.5	0.80	3.0	E 0.05	12	10	31	130	15	1.74	5
150	A 1 73	58.7115	27.5712	E 0.5	E 0.25	E 0.5	E 0.05	11	10	34	54	16	1.52	5
151	A 1 74	58.7415	27.5722	2.0	1.30	E 0.5	E 0.05	7	32	32	110	6	1.41	5
152	A 1 75	58.7715	27.5731	4.0	0.90	E 0.5	E 0.05	9	28	29	130	12	1.17	5
153	A 1 76	58.8015	27.5740	E 0.5	0.80	E 0.5	E 0.05	8	25	25	79	8	1.21	5
154	A 1 77	58.8315	27.5750	2.0	0.60	E 0.5	E 0.05	7	22	33	77	8	1.17	5
155	A 1 78	58.8615	27.5759	5.0	0.80	E 0.5	E 0.05	6	10	23	97	5	1.10	5
156	A 1 79	58.8915	27.5769	4.0	1.70	E 0.5	E 0.05	3	10	33	93	4	1.35	5
157	A 1 80	58.9215	27.5778	E. 0.5	0.90	E 0.5	E 0.05	7	22	29	76	9	1.31	5
158	A 1 81	58.9515	27.5788	E 0.5	1.20	E 0.5	E 0.05	6	25	29	130	8	1.58	5
159	A 1 82	58.9815	27.5797	2.0	1.00	35.0	E 0.05	9	22	31	79	12	1.70	5
160	A 1 83	59.0114	27.5806	1.0	1.00	6.0	E 0.05	9	30	33	88	12	1.73	5

NO	SAMPLE NO	X	Y	Au(ppb)	Ag(ppm)	As(ppm)	Bi(ppm)	Cu(ppm)	F(ppm)	Zn(ppm)	Cr(ppm)	Ni(ppm)	Fe(%)	R. C.
161	A 1 84	59.0414	27.5816	E 0.5	E 0.25	E 0.5	E 0.05	7	10	38	57	11	2.08	5
162	A 1 85	59.0714	27.5825	E 0.5	E 0.25	E 0.5	E 0.05	11	10	39	73	13	1.93	5
163	A 1 86	59.1014	27.5835	E 0.5	0.60	E 0.5	E 0.05	7	22	34	64	11	1.99	5
164	A 1 87	59.1314	27.5844	E 0.5	0.60	6.0	E 0.05	5	22	30	73	9	1.95	5
165	A 1 88	59.1614	27.5854	E 0.5	0.70	E 0.5	E 0.05	7	45	39	160	15	1.84	5
166	A 1 89	59.1914	27.5863	E 0.5	0.60	E 0.5	E 0.05	4	45	43	160	18	1.83	5
167	A 1 90	59.2214	27.5872	E 0.5	0.50	E 0.5	E 0.05	5	22	34	190	28	1.87	5
168	A 1 91	59.2514	27.5882	E 0.5	0.60	E 0.5	E 0.05	7	25	41	440	37	1.89	5
169	A 1 92	59.2814	27.5891	E 0.5	0.50	19.0	E 0.05	6	10	33	160	33	1.59	5
170	A 1 93	59.3114	27.5901	E 0.5	E 0.25	E 0.5	E 0.05	8	20	36	160	39	1.82	5
171	A 2 1	56.5540	27.3967	2.0	0.50	E 0.5	E 0.05	4	30	31	52	1	1.08	5
172	A 2 2	56.5840	27.3976	E 0.5	E 0.25	E 0.5	E 0.05	4	35	19	61	2	0.93	5
173	A 2 3	56.6140	27.3986	E 0.5	E 0.25	E 0.5	E 0.05	2	45	20	19	2	0.89	5
174	A 2 4	56.6440	27.3996	E 0.5	E 0.25	E 0.5	E 0.05	2	35	14	20	3	1.05	5
175	A 2 5	56.6739	27.4006	E 0.5	E 0.25	17.0	E 0.05	4	32	18	45	3	0.96	5
176	A 2 6	56.7039	27.4015	E 0.5	E 0.25	1.0	E 0.05	5	40	26	33	4	1.00	5
177	A 2 7	56.7339	27.4025	E 0.5	E 0.25	3.0	E 0.05	5	10	21	31	4	1.20	5
178	A 2 8	56.7639	27.4035	E 0.5	E 0.25	E 0.5	E 0.05	20	10	44	120	24	2.92	5
179	A 2 9	56.7939	27.4045	E 0.5	E 0.25	E 0.5	E 0.05	8	80	21	61	14	1.54	5
180	A 2 10	56.8239	27.4055	E 0.5	E 0.25	12.0	E 0.05	14	48	34	76	30	2.22	5
181	A 2 11	56.8539	27.4064	E 0.5	0.60	E 0.5	E 0.05	8	55	28	69	12	1.68	5
182	A 2 12	56.8839	27.4074	E 0.5	0.50	E 0.5	E 0.05	3	20	18	44	1	1.16	5
183	A 2 13	56.9138	27.4084	E 0.5	0.50	2.0	E 0.05	5	10	19	42	3	1.12	5
184	A 2 14	56.9438	27.4094	E 0.5	0.50	E 0.5	E 0.05	7	10	26	160	9	1.34	5
185	A 2 15	56.9738	27.4103	1.0	E 0.25	86.0	E 0.05	9	10	23	70	10	1.58	5
186	A 2 16	57.0038	27.4113	E 0.5	0.70	4.0	E 0.05	9	10	86	100	10	1.98	5
187	A 2 17	57.0338	27.4123	E 0.5	0.60	1.0	E 0.05	10	10	35	73	13	2.00	5
188	A 2 18	57.0638	27.4133	1.0	0.60	E 0.5	E 0.05	9	30	40	83	22	2.55	5
189	A 2 19	57.0938	27.4142	E 0.5	0.60	E 0.5	E 0.05	19	28	44	53	36	2.72	5
190	A 2 20	57.1237	27.4152	3.0	0.50	1.0	E 0.05	14	25	32	190	18	1.98	5
191	A 2 21	57.1537	27.4162	E 0.5	0.80	E 0.5	E 0.05	31	32	55	330	42	4.22	5
192	A 2 22	57.1837	27.4172	E 0.5	0.90	E 0.5	E 0.05	11	25	45	160	12	2.57	5
193	A 2 23	57.2137	27.4181	4.0	0.80	E 0.5	E 0.05	17	10	50	180	26	3.28	5
194	A 2 24	57.2437	27.4191	2.0	0.60	E 0.5	E 0.05	18	10	44	200	29	3.07	5
195	A 2 25	57.2737	27.4201	E 0.5	0.80	8.0	E 0.05	11	20	46	220	15	2.46	5
196	A 2 26	57.3037	27.4211	E 0.5	0.80	3.0	E 0.05	15	20	46	160	18	2.86	5
197	A 2 27	57.3336	27.4221	E 0.5	0.60	E 0.5	E 0.05	21	22	45	120	26	3.01	5
198	A 2 28	57.3636	27.4230	E 0.5	0.80	10.0	E 0.05	19	22	41	130	25	3.06	5
199	A 2 29	57.3936	27.4240	1.0	1.00	1.0	E 0.05	36	10	71	150	45	4.91	5
200	A 2 30	57.4236	27.4250	E 0.5	0.90	E 0.5	E 0.05	60	28	82	230	69	6.69	5
201	A 2 31	57.4536	27.4260	E 0.5	0.50	E 0.5	E 0.05	110	28	68	240	123	7.80	3
202	A 2 32	57.4836	27.4269	E 0.5	0.70	1.0	E 0.05	52	10	71	200	61	5.79	5
203	A 2 33	57.5136	27.4279	E 0.5	0.70	1.0	E 0.05	24	20	55	140	34	4.14	5
204	A 2 34	57.5436	27.4289	E 0.5	0.60	E 0.5	E 0.05	36	10	66	120	48	4.57	5
205	A 2 35	57.5735	27.4299	E 0.5	0.60	E 0.5	E 0.05	40	20	60	120	49	4.41	5
206	A 2 36	57.6035	27.4308	1.0	0.80	E 0.5	E 0.05	53	20	76	200	59	6.13	5
207	A 2 37	57.6335	27.4318	E 0.5	1.50	1.0	E 0.05	47	22	108	290	64	9.03	5
208	A 2 38	57.6635	27.4328	2.0	0.70	2.0	E 0.05	66	55	71	330	74	5.68	5
209	A 2 39	57.6935	27.4338	1.0	0.80	E 0.5	E 0.05	84	30	96	440	88	7.40	5
210	A 2 40	57.7235	27.4347	E 0.5	1.00	22.0	E 0.05	68	52	90	290	73	7.78	3
211	A 2 41	57.7535	27.4357	E 0.5	E 0.25	1.0	E 0.05	78	40	103	320	85	8.67	5
212	A 2 42	57.7834	27.4367	E 0.5	E 0.25	E 0.5	E 0.05	79	35	94	270	91	8.06	5
213	A 2 43	57.8134	27.4377	E 0.5	E 0.25	2.0	E 0.05	72	58	88	180	88	8.06	5
214	A 2 44	57.8434	27.4387	E 0.5	E 0.25	E 0.5	E 0.05	107	50	91	400	110	9.74	5
215	A 2 45	57.8734	27.4396	E 0.5	E 0.25	2.0	E 0.05	118	28	97	360	113	11.01	5
216	A 2 46	57.9034	27.4406	E 0.5	0.70	E 0.5	E 0.05	106	25	99	280	99	8.54	5
217	A 2 47	57.9334	27.4416	E 0.5	E 0.25	E 0.5	E 0.05	47	38	69	200	53	4.89	5
218	A 2 48	57.9634	27.4426	3.0	E 0.25	E 0.5	0.10	119	10	117	640	134	10.68	5
219	A 2 49	57.9934	27.4435	3.0	E 0.25	E 0.5	E 0.05	135	22	125	330	123	12.40	5
220	A 2 50	58.0233	27.4445	E 0.5	E 0.25	E 0.5	0.10	271	10	142	430	181	13.41	5
221	A 2 51	58.0533	27.4455	3.0	E 0.25	E 0.5	E 0.05	306	30	149	180	105	15.28	5
222	A 2 52	58.0833	27.4465	E 0.5	E 0.25	E 0.5	E 0.05	113	30	117	140	90	11.66	3
223	A 2 53	58.1133	27.4474	2.0	E 0.25	E 0.5	E 0.05	79	38	80	140	76	8.73	3
224	A 2 54	58.1433	27.4484	E 0.5	0.70	E 0.5	E 0.05	60	32	104	140	63	9.11	5
225	A 2 55	58.1733	27.4494	E 0.5	E 0.25	E 0.5	E 0.05	50	35	86	73	44	5.91	5
226	A 2 56	58.2033	27.4504	E 0.5	E 0.25	E 0.5	E 0.05	36	20	51	69	41	3.94	5
227	A 2 57	58.2332	27.4513	E 0.5	E 0.25	E 0.5	E 0.05	18	30	39	50	21	1.82	5
228	A 2 58	58.2632	27.4523	E 0.5	E 0.25	2.0	E 0.05	14	25	61	98	17	2.25	5
229	A 2 59	58.2932	27.4533	E 0.5	E 0.25	E 0.5	E 0.05	18	25	82	86	25	2.95	5
230	A 2 60	58.3232	27.4543	E 0.5	E 0.25	8.0	E 0.05	25	28	73	120	19	2.78	5
231	A 2 61	58.3532	27.4553	E 0.5	E 0.25	E 0.5	E 0.05	20	28	111	98	17	3.51	5
232	A 2 62	58.3832	27.4562	E 0.5	E 0.25	3.0	E 0.05	24	22	146	140	24	3.72	5
233	A 2 63	58.4132	27.4572	2.0	0.50	E 0.5	E 0.05	20	38	106	190	17	3.54	5
234	A 2 64	58.4432	27.4582	E 0.5	0.50	E 0.5	E 0.05	14	10	68	180	10	2.89	5
235	A 2 65	58.4731	27.4592	E 0.5	E 0.25	E 0.5	E 0.05	14	32	42	230	17	1.96	5
236	A 2 66	58.5031	27.4601	3.0	E 0.25	E 0.5	E 0.05	10	10	28	150	18	1.73	5
237	A 2 67	58.5331	27.4611	E 0.5	E 0.25	E 0.5	E 0.05	9	22	34	61	14	1.50	5
238	A 2 68	58.5631	27.4621	E 0.5	E 0.25	E 0.5	E 0.05	11	10	43	73	18	1.96	5
239	A 2 69	58.5931	27.4631	E 0.5	E 0.25	E 0.5	E 0.05	9	32	33	83	16	1.43	5
240	A 2 70	58.6231	27.4640	E 0.5	E 0.25	E 0.5	E 0.05	9	10	25	230	13	1.10	5

NO	SAMPLE NO	X	Y	Au(ppb)	Ag(ppm)	As(ppm)	Bi(ppm)	Cu(ppm)	P(ppm)	Zn(ppm)	Cr(ppm)	Ni(ppm)	Fe(%)	R. C.
241	A 2 71	58.6531	27.4650	E 0.5	E 0.25	1.0	E 0.05	7	35	46	280	20	1.57	5
242	A 2 72	58.6830	27.4660	E 0.5	E 0.25	E 0.5	E 0.05	6	30	49	260	19	1.51	5
243	A 2 73	58.7130	27.4670	E 0.5	E 0.25	E 0.5	E 0.05	5	25	32	85	13	1.18	5
244	A 2 74	58.7430	27.4679	E 0.5	E 0.25	E 0.5	E 0.05	4	30	41	60	11	1.32	5
245	A 2 75	58.7730	27.4689	E 0.5	E 0.25	E 0.5	E 0.05	4	22	32	70	10	1.22	5
246	A 2 76	58.8030	27.4699	E 0.5	E 0.25	E 0.5	E 0.05	4	20	25	93	9	0.88	5
247	A 2 77	58.8330	27.4709	E 0.5	E 0.25	E 0.5	E 0.05	3	10	22	97	4	0.85	5
248	A 2 78	58.8630	27.4719	E 0.5	E 0.25	E 0.5	E 0.05	3	10	26	82	7	0.95	5
249	A 2 79	58.8929	27.4728	E 0.5	E 0.25	E 0.5	E 0.05	3	10	23	100	6	0.85	5
250	A 2 80	58.9229	27.4738	E 0.5	E 0.25	E 0.5	E 0.05	2	22	24	120	3	0.89	5
251	A 2 81	58.9529	27.4748	E 0.5	E 0.25	E 0.5	E 0.05	3	10	27	110	9	0.84	5
252	A 2 82	58.9829	27.4758	E 0.5	E 0.25	E 0.5	E 0.05	3	10	23	100	6	0.73	5
253	A 2 83	59.0129	27.4767	E 0.5	E 0.25	E 0.5	E 0.05	9	10	55	42	16	1.58	5
254	A 2 84	59.0429	27.4777	E 0.5	E 0.25	E 0.5	E 0.05	8	22	52	47	17	1.67	5
255	A 2 85	59.0729	27.4787	E 0.5	E 0.25	9.0	E 0.05	6	10	42	33	12	1.76	5
256	A 2 86	59.1029	27.4797	E 0.5	E 0.25	E 0.5	E 0.05	9	10	50	39	15	1.80	5
257	A 2 87	59.1328	27.4806	E 0.5	E 0.25	E 0.5	E 0.05	9	10	55	37	20	2.12	5
258	A 2 88	59.1628	27.4816	E 0.5	E 0.25	E 0.5	E 0.05	7	10	48	54	16	1.83	5
259	A 2 89	59.1928	27.4826	E 0.5	E 0.25	E 0.5	E 0.05	7	10	44	56	12	1.63	5
260	A 2 90	59.2228	27.4836	E 0.5	E 0.25	E 0.5	E 0.05	4	10	34	53	10	1.17	5
261	A 2 91	59.2528	27.4845	E 0.5	0.50	E 0.5	E 0.05	5	10	41	71	16	1.52	5
262	A 2 92	59.2828	27.4855	E 0.5	E 0.25	E 0.5	E 0.05	8	25	43	31	23	1.67	5
263	A 2 93	59.3128	27.4865	E 0.5	E 0.25	E 0.5	E 0.05	6	22	36	58	16	1.58	5
264	A 2 94	59.3427	27.4875	E 0.5	E 0.25	E 0.5	E 0.05	5	22	36	88	27	1.50	5
265	A 2 95	59.3727	27.4885	4.0	E 0.25	E 0.5	E 0.05	6	28	45	160	32	1.98	5
266	A 2 96	59.4027	27.4894	5.0	E 0.25	E 0.5	E 0.05	8	10	51	140	30	1.91	5
267	A 2 97	59.4327	27.4904	4.0	E 0.25	E 0.5	E 0.05	8	35	44	52	17	1.85	5
268	A 2 98	59.4627	27.4914	E 0.5	E 0.25	E 0.5	E 0.05	9	35	47	46	17	1.61	5
269	A 2 99	59.4927	27.4924	E 0.5	E 0.25	E 0.5	E 0.05	6	52	53	51	15	1.84	5
270	A 2 100	59.5227	27.4933	E 0.5	E 0.25	E 0.5	E 0.05	6	10	40	60	14	1.71	5
271	A 3 1	56.5560	27.2900	E 0.5	E 0.25	2.0	E 0.05	8	28	44	62	17	1.37	5
272	A 3 2	56.5860	27.2910	1.0	E 0.25	E 0.5	E 0.05	5	10	30	83	11	1.37	5
273	A 3 3	56.6160	27.2920	E 0.5	0.50	E 0.5	E 0.05	11	25	50	68	28	2.20	5
274	A 3 4	56.6459	27.2930	E 0.5	E 0.25	E 0.5	E 0.05	6	10	33	59	14	1.54	5
275	A 3 5	56.6759	27.2940	E 0.5	E 0.25	E 0.5	E 0.05	3	25	34	55	5	0.84	5
276	A 3 6	56.7059	27.2951	E 0.5	E 0.25	2.0	E 0.05	3	10	19	63	3	0.63	5
277	A 3 7	56.7359	27.2961	E 0.5	E 0.25	E 0.5	E 0.05	3	20	20	50	3	0.64	5
278	A 3 8	56.7659	27.2971	E 0.5	E 0.25	E 0.5	E 0.05	3	10	20	66	14	0.84	5
279	A 3 9	56.7958	27.2981	E 0.5	E 0.25	E 0.5	E 0.05	7	25	32	51	18	1.45	5
280	A 3 10	56.8258	27.2991	E 0.5	0.90	E 0.5	E 0.05	9	10	37	64	12	1.20	5
281	A 3 11	56.8558	27.3001	2.0	E 0.25	E 0.5	E 0.05	9	20	19	58	5	0.95	5
282	A 3 12	56.8858	27.3011	E 0.5	E 0.25	E 0.5	E 0.05	10	10	26	60	8	1.23	5
283	A 3 13	56.9158	27.3021	5.0	E 0.25	E 0.5	E 0.05	8	20	23	46	9	1.28	5
284	A 3 14	56.9457	27.3031	E 0.5	E 0.25	E 0.5	E 0.05	7	10	19	74	7	1.18	5
285	A 3 15	56.9757	27.3041	6.0	E 0.25	E 0.5	E 0.05	8	20	17	100	1	1.18	5
286	A 3 16	57.0057	27.3052	4.0	E 0.25	E 0.5	E 0.05	56	10	67	210	56	4.20	5
287	A 3 17	57.0357	27.3062	6.0	E 0.25	E 0.5	E 0.05	23	25	41	120	30	3.29	5
288	A 3 18	57.0657	27.3072	2.0	E 0.25	E 0.5	E 0.05	25	28	50	110	47	3.26	5
289	A 3 19	57.0956	27.3082	1.0	E 0.25	E 0.5	E 0.05	30	30	46	160	35	2.91	5
290	A 3 20	57.1256	27.3092	2.0	0.50	E 0.5	E 0.05	17	10	33	99	15	1.83	5
291	A 3 21	57.1556	27.3102	2.0	E 0.25	E 0.5	E 0.05	29	38	51	130	40	3.26	3
292	A 3 22	57.1856	27.3112	E 0.5	E 0.25	1.0	E 0.05	15	30	34	110	17	1.89	3
293	A 3 23	57.2156	27.3122	2.0	E 0.25	E 0.5	E 0.05	16	22	18	70	21	2.35	3
294	A 3 24	57.2455	27.3132	5.0	E 0.25	E 0.5	E 0.05	22	25	37	110	28	2.84	3
295	A 3 25	57.2755	27.3142	E 0.5	E 0.25	E 0.5	E 0.05	11	10	32	120	14	1.19	3
296	A 3 26	57.3055	27.3153	E 0.5	0.80	E 0.5	E 0.05	30	10	71	56	45	4.63	5
297	A 3 27	57.3355	27.3163	4.0	E 0.25	E 0.5	E 0.05	20	22	42	100	31	2.98	5
298	A 3 28	57.3655	27.3173	4.0	E 0.25	1.0	E 0.05	27	25	48	94	35	3.48	5
299	A 3 29	57.3954	27.3183	2.0	0.60	E 0.5	E 0.05	24	20	50	99	28	3.41	5
300	A 3 30	57.4254	27.3193	5.0	E 0.25	E 0.5	E 0.05	39	28	51	160	36	3.61	5
301	A 3 31	57.4554	27.3203	4.0	0.50	E 0.5	E 0.05	39	25	49	140	46	3.84	5
302	A 3 32	57.4854	27.3213	2.0	0.50	E 0.5	E 0.05	44	20	55	140	60	4.32	3
303	A 3 33	57.5154	27.3223	3.0	E 0.25	E 0.5	E 0.05	27	52	44	90	35	2.96	5
304	A 3 34	57.5453	27.3233	E 0.5	E 0.25	47.0	E 0.05	31	35	40	80	27	2.46	5
305	A 3 35	57.5753	27.3243	E 0.5	0.50	1.0	E 0.05	24	52	42	79	24	2.57	5
306	A 3 36	57.6053	27.3254	3.0	E 0.25	E 0.5	E 0.05	22	30	44	83	33	2.73	5
307	A 3 37	57.6353	27.3264	2.0	E 0.25	E 0.5	E 0.05	13	40	37	72	18	2.16	5
308	A 3 38	57.6653	27.3274	E 0.5	0.50	E 0.5	E 0.05	15	32	38	66	20	2.39	5
309	A 3 39	57.6952	27.3284	2.0	E 0.25	E 0.5	E 0.05	29	38	48	150	36	3.63	5
310	A 3 40	57.7252	27.3294	E 0.5	0.80	E 0.5	E 0.05	25	22	40	146	28	3.04	5
311	A 3 41	57.7552	27.3304	4.0	E 0.25	E 0.5	E 0.05	42	42	41	180	40	3.37	3
312	A 3 42	57.7852	27.3314	E 0.5	1.30	E 0.5	E 0.05	45	22	56	210	42	4.08	3
313	A 3 43	57.8152	27.3324	E 0.5	0.80	E 0.5	E 0.05	88	50	95	310	87	8.29	3
314	A 3 44	57.8451	27.3334	E 0.5	1.00	E 0.5	E 0.05	95	30	119	180	99	10.15	3
315	A 3 45	57.8751	27.3344	2.0	E 0.25	E 0.5	E 0.05	61	75	61	210	55	5.86	5
316	A 3 46	57.9051	27.3355	E 0.5	0.60	E 0.5	E 0.05	27	10	47	79	28	3.18	5
317	A 3 47	57.9351	27.3365	E 0.5	0.90	3.0	E 0.05	26	42	49	120	25	3.52	5
318	A 3 48	57.9651	27.3375	1.0	0.70	E 0.5	E 0.05	40	28	50	130	38	4.43	5
319	A 3 49	57.9950	27.3385	E 0.5	0.80	E 0.5	E 0.05	38	52	53	140	34	5.01	5
320	A 3 50	58.0250	27.3395	E 0.5	0.50	E 0.5	E 0.05	81	25	62	270	79	6.89	5

NO	SAMPLE NO	X	Y	Au(ppb)	Ag(ppm)	As(ppm)	Bi(ppm)	Cu(ppm)	F(ppm)	Zn(ppm)	Cr(ppm)	Ni(ppm)	Fe(%)	R. C.
321	A 3 51	58.0550	27.3405	E 0.5	0.50	2.0	E 0.05	54	50	57	300	54	7.10	3
322	A 3 52	58.0850	27.3415	2.0	0.70	3.0	0.10	287	58	125	490	203	14.87	3
323	A 3 53	58.1149	27.3425	E 0.5	0.60	1.0	E 0.05	251	60	137	80	97	18.88	3
324	A 3 54	58.1449	27.3435	E 0.5	E 0.25	E 0.5	E 0.05	165	28	119	110	101	14.76	3
325	A 3 55	58.1749	27.3445	E 0.5	E 0.25	E 0.5	E 0.05	99	60	86	130	86	11.78	3
326	A 3 57	58.2349	27.3466	E 0.5	E 0.25	E 0.5	E 0.05	49	32	62	100	59	5.93	3
327	A 3 58	58.2648	27.3476	E 0.5	0.50	E 0.5	E 0.05	90	45	93	120	88	11.44	3
328	A 3 59	58.2948	27.3486	E 0.5	0.60	E 0.5	E 0.05	89	22	98	150	94	12.74	3
329	A 3 60	58.3248	27.3496	E 0.5	E 0.25	1.0	E 0.05	97	48	121	69	89	10.77	3
330	A 3 61	58.3548	27.3506	E 0.5	0.50	E 0.5	E 0.05	110	30	111	88	86	10.45	5
331	A 3 62	58.3848	27.3516	3.0	0.60	E 0.5	E 0.05	94	82	123	150	106	13.30	5
332	A 3 63	58.4147	27.3526	E 0.5	E 0.25	E 0.5	E 0.05	112	28	229	240	120	9.81	5
333	A 3 64	58.4447	27.3536	E 0.5	0.50	1.0	E 0.05	82	50	85	210	108	9.10	5
334	A 3 65	58.4747	27.3546	E 0.5	E 0.25	1.0	E 0.05	69	22	124	290	130	8.17	5
335	A 3 66	58.5047	27.3557	E 0.5	E 0.25	22.0	E 0.05	65	48	75	180	100	7.37	5
336	A 3 67	58.5347	27.3567	7.0	E 0.25	6.0	E 0.05	69	28	86	280	110	7.86	5
337	A 3 68	58.5646	27.3577	E 0.5	E 0.25	1.0	0.10	75	50	133	190	140	7.73	5
338	A 3 69	58.5946	27.3587	E 0.5	E 0.25	1.0	E 0.05	47	28	100	130	85	5.14	5
339	A 3 70	58.6246	27.3597	3.0	0.60	1.0	E 0.05	25	50	86	110	31	4.00	5
340	A 3 71	58.6546	27.3607	4.0	0.80	1.0	E 0.05	24	30	91	200	33	4.78	5
341	A 3 72	58.6846	27.3617	E 0.5	0.60	1.0	E 0.05	40	50	93	360	103	5.38	5
342	A 3 73	58.7145	27.3627	E 0.5	0.80	1.0	E 0.05	41	20	103	550	101	6.88	5
343	A 3 74	58.7445	27.3637	E 0.5	0.80	1.0	E 0.05	47	48	87	150	65	5.61	5
344	A 3 75	58.7745	27.3647	E 0.5	0.50	E 0.5	E 0.05	40	20	54	160	53	4.37	5
345	A 3 76	58.8045	27.3658	E 0.5	E 0.25	1.0	E 0.05	23	40	48	140	39	3.07	5
346	A 3 77	58.8345	27.3668	E 0.5	0.50	2.0	E 0.05	25	45	50	410	47	3.49	5
347	A 3 78	58.8644	27.3678	E 0.5	0.50	E 0.5	E 0.05	29	42	53	390	40	3.66	5
348	A 3 79	58.8944	27.3688	E 0.5	E 0.25	E 0.5	E 0.05	13	32	40	83	23	2.04	5
349	A 3 80	58.9244	27.3698	E 0.5	0.50	1.0	E 0.05	14	10	46	160	28	2.77	5
350	A 3 81	58.9544	27.3708	2.0	E 0.25	7.0	E 0.05	21	42	50	130	33	2.26	5
351	A 3 82	58.9844	27.3718	E 0.5	E 0.25	1.0	E 0.05	13	55	50	120	15	1.72	5
352	A 3 83	59.0143	27.3728	E 0.5	E 0.25	1.0	E 0.05	19	48	48	50	20	2.08	5
353	A 3 84	59.0443	27.3738	E 0.5	E 0.25	E 0.5	E 0.05	35	22	95	48	25	2.09	5
354	A 3 85	59.0743	27.3748	E 0.5	E 0.25	1.0	E 0.05	19	22	55	46	18	1.95	5
355	A 3 86	59.1043	27.3759	E 0.5	E 0.25	1.0	E 0.05	17	20	45	64	15	1.98	5
356	A 3 87	59.1343	27.3769	E 0.5	E 0.25	1.0	E 0.05	17	55	44	50	17	2.38	5
357	A 3 88	59.1642	27.3779	E 0.5	E 0.25	E 0.5	E 0.05	21	72	85	44	22	2.57	5
358	A 3 89	59.1942	27.3789	E 0.5	E 0.25	1.0	E 0.05	21	48	48	64	23	2.48	5
359	A 3 90	59.2242	27.3799	E 0.5	E 0.25	1.0	E 0.05	17	20	54	43	23	2.34	5
360	A 3 91	59.2542	27.3809	2.0	E 0.25	E 0.5	E 0.05	19	65	55	50	24	2.20	5
361	A 3 92	59.2842	27.3819	E 0.5	0.50	1.0	E 0.05	18	90	69	68	21	2.13	5
362	A 3 93	59.3141	27.3829	2.0	0.60	E 0.5	E 0.05	9	52	54	66	13	1.68	5
363	A 3 94	59.3441	27.3839	1.0	0.90	E 0.5	E 0.05	8	22	47	92	20	1.66	5
364	A 3 95	59.3741	27.3849	3.0	E 0.25	7.0	E 0.05	12	48	44	190	39	1.99	5
365	A 3 96	59.4041	27.3860	4.0	E 0.25	E 0.5	E 0.05	10	25	56	160	25	2.18	5
366	A 3 97	59.4341	27.3870	E 0.5	E 0.25	E 0.5	E 0.05	16	40	58	100	22	2.27	5
367	A 3 98	59.4640	27.3880	3.0	E 0.25	E 0.5	E 0.05	11	30	50	51	15	2.03	5
368	A 3 99	59.4940	27.3890	3.0	E 0.25	E 0.5	E 0.05	10	35	46	43	10	1.57	5
369	A 3 100	59.5240	27.3900	4.0	E 0.25	E 0.5	E 0.05	10	120	42	44	15	1.97	5
370	A 4 1	56.5580	27.1833	E 0.5	E 0.25	1.0	E 0.05	24	25	41	350	36	2.44	5
371	A 4 2	56.5880	27.1844	2.0	E 0.25	1.0	E 0.05	22	40	51	240	28	2.25	5
372	A 4 3	56.6179	27.1854	2.0	E 0.25	E 0.5	E 0.05	20	35	54	270	26	2.88	5
373	A 4 4	56.6479	27.1865	E 0.5	E 0.25	E 0.5	E 0.05	16	60	42	96	21	3.18	5
374	A 4 5	56.6779	27.1875	E 0.5	E 0.25	E 0.5	E 0.05	7	52	40	60	8	1.57	5
375	A 4 6	56.7079	27.1886	E 0.5	E 0.25	E 0.5	E 0.05	7	50	35	77	5	0.98	5
376	A 4 7	56.7378	27.1896	E 0.5	E 0.25	E 0.5	E 0.05	6	35	32	61	8	1.17	5
377	A 4 8	56.7678	27.1906	E 0.5	E 0.25	E 0.5	E 0.05	6	32	25	49	4	1.00	5
378	A 4 9	56.7978	27.1917	E 0.5	E 0.25	E 0.5	E 0.05	7	10	19	63	5	0.96	5
379	A 4 10	56.8278	27.1927	E 0.5	E 0.25	E 0.5	E 0.05	6	20	36	49	3	0.96	5
380	A 4 11	56.8577	27.1938	E 0.5	E 0.25	E 0.5	E 0.05	8	20	28	61	7	1.49	5
381	A 4 12	56.8877	27.1948	E 0.5	E 0.25	E 0.5	E 0.05	5	45	30	51	2	0.92	5
382	A 4 13	56.9177	27.1959	E 0.5	E 0.25	E 0.5	E 0.05	6	25	44	66	4	1.14	5
383	A 4 14	56.9476	27.1969	E 0.5	E 0.25	E 0.5	E 0.05	6	40	28	51	5	1.23	5
384	A 4 15	56.9776	27.1979	E 0.5	E 0.25	E 0.5	E 0.05	6	45	46	73	3	0.94	5
385	A 4 16	57.0076	27.1990	2.0	E 0.25	E 0.5	E 0.05	6	28	30	42	5	1.02	5
386	A 4 17	57.0376	27.2000	E 0.5	E 0.25	E 0.5	E 0.05	8	25	57	160	25	3.09	5
387	A 4 18	57.0675	27.2011	E 0.5	E 0.25	E 0.5	E 0.05	22	50	39	160	24	2.68	5
388	A 4 19	57.0975	27.2021	E 0.5	E 0.25	E 0.5	E 0.05	13	170	31	110	11	1.66	5
389	A 4 20	57.1275	27.2032	E 0.5	E 0.25	E 0.5	E 0.05	6	40	28	88	9	1.37	5
390	A 4 21	57.1575	27.2042	E 0.5	E 0.25	E 0.5	E 0.05	11	58	32	140	10	1.86	5
391	A 4 22	57.1874	27.2053	E 0.5	E 0.25	E 0.5	E 0.05	22	28	49	120	25	2.45	5
392	A 4 23	57.2174	27.2063	E 0.5	E 0.25	E 0.5	E 0.05	14	30	42	73	14	2.11	5
393	A 4 24	57.2474	27.2073	E 0.5	E 0.25	1.0	E 0.05	19	30	42	88	34	2.95	5
394	A 4 25	57.2774	27.2084	E 0.5	E 0.25	E 0.5	E 0.05	7	50	39	76	7	1.58	5
395	A 4 26	57.3073	27.2094	E 0.5	E 0.25	E 0.5	E 0.05	14	90	52	68	20	2.78	5
396	A 4 27	57.3373	27.2105	E 0.5	E 0.25	E 0.5	E 0.05	13	55	42	67	12	1.73	5
397	A 4 28	57.3673	27.2115	E 0.5	E 0.25	E 0.5	E 0.05	15	60	42	130	29	2.30	5
398	A 4 29	57.3972	27.2126	E 0.5	E 0.25	E 0.5	E 0.05	26	60	64	100	39	4.72	5
399	A 4 30	57.4272	27.2136	E 0.5	3.00	1.0	E 0.05	12	180	33	91	12	1.85	5
400	A 4 31	57.4572	27.2146	E 0.5	E 0.25	E 0.5	E 0.05	25	260	43	110	23	2.59	5