Table II -3-2(1) List of All Samples(4)

Camp Site	Area No.	Sample No.	Coordinate		OA	RA	PS	TS	DT	XD	FI	Sample Rock Name	Remarks
Shuten	No. 5	SHM-17	Map of Shuten ore showings		○							Silicified rock	Shuten ore showings
	ditto	SHM-18	ditto		○			○		○		Arg. andesitic bre.	ditto
	ditto	SHM-19	ditto					○	○	○		Sil. & arg. rock	ditto
	ditto	SHM-20	ditto		○							Silicified rock	ditto
	ditto	SHM-21	ditto		○							ditto	ditto
	ditto	SHM-22	ditto		○							ditto	ditto
	ditto	SHM-23	ditto		○							ditto	ditto
Hanbogd	No. 23	HAD-01	43° 06′ 29″ N	106° 46′ 45″ E	○					○		Silicified granite	
	ditto	HAD-02	43° 06′ 29″ N	106° 46′ 45″ E	○						○	ditto	
	No. 11'	HAD-03	42° 57′ 19″ N	108° 10′ 48″ E	○					○		Silicified limestone	
	ditto	HAD-04	42° 57′ 19″ N	108° 10′ 48″ E	○					○		Silicified rock	
	ditto	HAD-05	42° 57′ 19″ N	108° 10′ 48″ E						○		Arg. andesitic pyro.	
	No. 12	HABF01	43° 00′ 14″ N	107° 29′ 14″ E	○							Silicified rock	
	ditto	HABF02	43° 00′ 14″ N	107° 29′ 14″ E						○		Argillized rock	
	ditto	HABF03	43° 00′ 14″ N	107° 29′ 14″ E	○							Silicified rock	
	ditto	HABF04	43° 00′ 14″ N	107° 29′ 14″ E	○							Q-vein	
	ditto	HABF05	43° 00′ 14″ N	107° 29′ 14″ E							○	ditto	
	ditto	HABF06	42° 59′ 38″ N	107° 28′ 37″ E	○							Silicified rock	
	ditto	HABF07	42° 59′ 43″ N	107° 28′ 06″ E	○							ditto	
	No. 10'	HABF08	42° 59′ 25″ N	108° 10′ 08″ E	○						○	Q-vein	
	ditto	HABF09	42° 59′ 25″ N	108° 10′ 08″ E	○						○	ditto	
	ditto	HABF10	42° 59′ 30″ N	108° 10′ 16″ E	○					○		Argillized tuff	
	No. 9	HABF11	42° 43′ 59″ N	107° 49′ 07″ E	○							Silicified limestone	
Nogoit	No. 24	NOD-01	43° 07′ 53″ N	106° 17′ 38″ E	○					○		Arg. por. andesite	
	ditto	NOD-02	43° 07′ 53″ N	106° 17′ 38″ E	○					○		ditto	
	ditto	NOD-03	43° 07′ 53″ N	106° 17′ 38″ E	○					○		ditto	
	ditto	NOD-04	43° 07′ 53″ N	106° 17′ 38″ E	○							Q-vein in por. ande.	
	No. 20	NOD-05	Map of Ih-shanhai ore showings		○					○		Silicified andesite	Ih-shanhai showings
	ditto	NOD-06	ditto		○					○		ditto	ditto
	ditto	NOD-07	ditto		○					○		ditto	ditto
	ditto	NOD-08	ditto			○		○				Fresh andesite	ditto
	ditto	NOD-09	ditto		○					○		Q-vein in granodio.	ditto
	ditto	NOD-10	ditto		○					○		Silicified granodio.	ditto
	ditto	NOD-11	ditto		○					○		ditto	ditto

Table Ⅱ-3-2(1) List of All Samples(5)

Camp Site	Area No.	Sample No.	Coordinate		OA	RA	PS	TS	DT	XD	FI	Sample Rock Name	Remarks
Mogoit	No. 27-A	MOD-12	42° 45′ 12″ N	106° 02′ 36″ E	○					○		Silicified andesite	
	No. 27-B	MOD-13	42° 42′ 25″ N	106° 03′ 21″ E	○					○		Silicified andesite	
	No. 26	MOD-14	42° 39′ 18″ N	106° 14′ 58″ E	○			○		○		Q-vein in granite	
	ditto	MOD-15	42° 39′ 18″ N	106° 14′ 58″ E	○					○		Silicified granite	
	ditto	MOD-16	42° 39′ 18″ N	106° 14′ 58″ E	○							Q-stock in granite	
	No. 25-B	MOF-01	43° 07′ 25″ N	106° 13′ 26″ E	○						○	Q-vein	
	ditto	MOF-02	43° 07′ 48″ N	106° 13′ 07″ E	○							ditto	
	No. 25-A	MOF-03	43° 08′ 00″ N	106° 11′ 00″ E	○					○		Silicified rock	
	ditto	MOF-04	43° 08′ 00″ N	106° 11′ 00″ E	○					○		Argillized andesite	
	ditto	MOF-05	43° 08′ 00″ N	106° 11′ 00″ E	○							Silicified rock	
	ditto	MOF-06	43° 08′ 00″ N	106° 11′ 00″ E	○						○	ditto	
	ditto	MOF-07	43° 08′ 00″ N	106° 11′ 00″ E	○							Argillized rock	
	ditto	MOF-08	43° 08′ 00″ N	106° 11′ 00″ E		○		○	○			Andesite	
	No. 20	MOF-09	Map of Ih-shanhai ore showings		○					○	○	Silicified rock	Ih-shanhai showings
	ditto	MOF-10	ditto		○							ditto	ditto
	ditto	MOF-11	ditto							○		Argillized andesite	ditto
	ditto	MOF-12	ditto		○						○	Silicified rock	ditto
	ditto	MOF-13	ditto		○							Argillized rock	ditto
	ditto	MOF-14	ditto		○							Q-vein	ditto
	ditto	MOM-01	ditto		○			○		○	○	Q-vein(Cp) in ande.	ditto
	ditto	MOM-02	ditto		○	○		○			○	Q-vein in granosye.	ditto
	ditto	MOM-03	ditto			○		○	○			Granodiorite	ditto
	No. 21	MOM-04	Map of Ih-shanhai area						○	○		Sili. arg. granodio.	
	ditto	MOM-05	ditto		○						○	Q-vein in granodio.	
	ditto	MOM-06	ditto		○		○					ditto	
	ditto	MOM-07	ditto		○	○		○				ditto	
	ditto	MOM-08	ditto		○							ditto	
Nomgon	No. 34	NOD-01	42° 46′ 08″ N	105° 16′ 53″ E	○					○		Sil. & arg. andesite	
	ditto	NOD-02	42° 46′ 08″ N	105° 16′ 53″ E	○					○		Sil. & arg. slate	
	ditto	NOD-03	42° 46′ 08″ N	105° 16′ 53″ E	○					○		Sil. & arg. andesite	
	ditto	NOD-04	42° 46′ 08″ N	105° 16′ 53″ E	○							Q-vein in andesite	
	No. 35	NOD-05	42° 46′ 23″ N	104° 59′ 00″ E	○					○		Silicified andesite	
	No. 42	NOD-06	42° 18′ 11″ N	104° 37′ 42″ E	○					○		Oxidized granite	
	No. 34	NOF-01	42° 45′ 55″ N	105° 16′ 49″ E	○					○	○	Q-vein	

Table Ⅱ-3-2(1) List of All Samples(6)

Camp Site	Area No.	Sample No.	Coordinate		OA	RA	PS	TS	DT	XD	FI	Sample Rock Name	Remarks
Nomgon	No. 34	NOF-02	42° 45′ 55″ N	105° 16′ 49″ E	○					○		Q+sericite rock	
	No. 34	NOF-03	42° 45′ 55″ N	105° 16′ 49″ E	○					○	○	Silicified rock	
	No. 35	NOF-04	42° 46′ 23″ N	104° 58′ 59″ E	○							Silicified rhyolite	
	No. 37	NOF-05	42° 38′ 00″ N	104° 42′ 33″ E	○							Silicified rock	
Altan-uul	No. 40-C	ALD-01	42° 26′ 51″ N	103° 34′ 49″ E	○					○		Oxidized andesite	
	No. 40-D	ALD-02	42° 26′ 15″ N	103° 37′ 08″ E	○							Q-vein in sandstone	
	No. 46	ALD-03	43° 06′ 07″ N	103° 48′ 41″ E	○					○		Oxidized andesite	
	No. 40-B	ATF-01	42° 29′ 52″ N	103° 57′ 29″ E	○							Q-vein	
	ditto	ATF-02	42° 29′ 52″ N	103° 57′ 29″ E	○							Q-vein	
Ongiin-	No. 43	OND-01	45° 17′ 44″ N	103° 53′ 34″ E	○					○		Silicified rock	
hiid	ditto	OND-02	45° 17′ 44″ N	103° 53′ 34″ E	○							ditto	
	ditto	OND-03	45° 17′ 44″ N	103° 53′ 34″ E	○			○				ditto	
	No. 44	OND-04	45° 10′ 03″ N	103° 41′ 25″ E								Silicified rock	*
	No. 45	OND-05	45° 09′ 29″ N	103° 32′ 37″ E	○					○		Silicified dacite	
	ditto	OND-06	45° 09′ 29″ N	103° 32′ 37″ E	○					○		Argillized dacite	
	No. 43	ONF-01	45° 17′ 44″ N	103° 53′ 34″ E	○						○	Silicified rhyolite	
	ditto	ONF-02	45° 17′ 44″ N	103° 53′ 34″ E	○						○	ditto	
	No. 44	ONF-03	45° 10′ 03″ N	103° 41′ 25″ E	○					○	○	Q+kaoline rock	
	ditto	ONF-04	45° 10′ 03″ N	103° 41′ 25″ E	○						○	Silicified rock	
	ditto	ONF-05	45° 10′ 03″ N	103° 41′ 25″ E						○		ditto	

Abbreviation:

OA;Ore Analysis RA;Rock Analysis PS;Polished Section TS;Thin Section DT;Dating
XD;X-ray Diffraction Analysis FI;Fluid Inclusion *;Sample for presentation
Arg.;Argillization Sil.;Silicification Granodio.;Granodiorite Granosye.;Granosyenite
Ande.;Andesite Bre.;Bre Pyro.;Pyroclastics Por.;Porphyrytic Q;Quartz
Mala.;Malachite Cp;Chalcopyrite

Table II -3-2(2) Result of Rock Analysis

No.	Sample No.	Sample Name	Area No.	SiO2 (%)	Al2O3 (%)	TiO2 (%)	Na2O (%)	K2O (%)	CaO (%)	MnO (%)	MgO (%)	Fe2O3 (%)	FeO (%)	P2O5 (%)	H2O+ (%)	LOI (%)	Total (%)	remarks
1	SHD-09-1	andesite	No. 5(Shuten)	56.23	18.42	0.90	9.24	1.43	3.00	0.18	2.33	1.33	3.05	0.29	2.43	2.98	101.81	altered
2	SHD-35	andesite	No. 5(Shuten)	59.81	15.89	0.66	5.78	0.24	5.93	0.13	3.46	2.87	2.73	0.20	0.77	1.13	99.60	
3	SHD-36	granite	No. 5(Shuten)	68.17	14.28	0.37	6.25	3.03	2.01	0.06	1.27	1.22	1.54	0.12	0.26	0.72	99.30	
4	SHF-05	andesite	No. 5(Shuten)	55.47	16.30	0.56	4.87	1.91	5.37	0.12	3.92	2.50	3.49	0.13	3.04	4.83	102.51	
5	SHM-01	andesite	No. 5(Shuten)	62.60	13.79	0.62	7.32	2.52	1.95	0.08	2.84	3.43	1.48	0.20	2.07	3.38	102.28	porphyritic
6	SHN-09-1	andesite	No. 5(Shuten)	79.37	11.99	0.19	3.30	2.31	0.19	<0.01	0.24	0.51	0.22	0.06	1.62	2.00	102.00	altered
7	MOD-08	andesite	NO. 20(Ih-Shanhai)	63.62	15.33	0.50	5.55	1.83	4.41	0.09	1.93	2.56	1.63	0.19	0.55	1.31	99.50	
8	MOM-02	granite	NO. 20(Ih-Shanhai)	75.37	12.70	0.11	5.37	3.02	0.37	0.03	0.26	0.96	0.47	0.06	0.36	0.45	99.53	
9	MOM-03	granite	NO. 20(Ih-Shanhai)	68.57	15.25	0.45	6.69	2.20	1.29	0.07	0.67	1.39	1.48	0.15	0.84	0.89	99.94	
10	MOM-07	granodiorite	No. 21	68.42	13.57	0.25	5.86	2.97	1.53	0.08	1.55	0.58	1.76	0.14	1.48	2.54	100.73	porphyritic
11	MOF-08	andesite	No. 25A	63.62	15.33	0.50	5.55	1.83	4.41	0.09	1.93	2.56	1.63	0.19	0.55	1.31	99.50	

Table II-3-2(3) Result of Metal Analysis (1)

No.	Sample No.	Area No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	As (ppm)	Sb (ppm)	Hg (ppb)	S (%)
1	SHF 2	NO. 1 - A	97	6.9	15	83	25	5	4	2	< 10	0.08
2	SHF 3 -01	NO. 1 - B	< 1	0.2	18	3	5	17	12	< 1	< 10	0.06
3	SHF 3 -02	NO. 1 - B	1	0.3	10	6	5	< 1	2	< 1	< 10	0.16
4	SHF 3 -03	NO. 1 - B	104	0.2	14	6	5	10	6	< 1	< 10	0.05
5	SHF 1	NO. 2	5	0.3	516	12	6	5	8	< 1	< 10	0.08
6	SHD 1	NO. 3	5	0.3	28	8	91	26	33	11	210	0.13
7	SHD 2	NO. 3	< 1	< 0.1	38	24	41	22	27	5	40	0.06
8	SHD 3	NO. 4	1	< 0.1	10	12	29	31	8	3	10	0.17
9	SHD 9 -01	NO. 5 (Shuten)	9780	40.4	1220	8430	91	92	180	98	1300	0.73
10	SHD 9 -02	NO. 5 (Shuten)	4160	1.9	1100	191	12	35	281	30	60	0.03
11	SHD 9 -03	NO. 5 (Shuten)	24	5.3	264	53	40	32	264	25	40	0.54
12	SHD 10	NO. 5 (Shuten)	13	5.5	31	94	125	27	148	14	20	0.11
13	SHD 11	NO. 5 (Shuten)	4	2.0	12	12	6	25	33	12	50	0.03
14	SHD 12	NO. 5 (Shuten)	3	1.6	11	27	4	26	38	4	20	0.05
15	SHD 13 -01	NO. 5 (Shuten)	< 1	0.2	39	17	14	22	13	1	10	0.16
16	SHD 13 -02	NO. 5 (Shuten)	2	0.3	632	89	70	4	77	1	20	0.27
17	SHD 14	NO. 5 (Shuten)	2	0.7	12	9	6	28	8	2	< 10	0.06
18	SHD 15	NO. 5 (Shuten)	3	0.3	104	32	14	35	211	6	10	1.06
19	SHD 16	NO. 5 (Shuten)	2	3.1	16	31	14	12	66	7	< 10	0.05
20	SHD 17	NO. 5 (Shuten)	3	0.2	17	20	7	13	32	2	20	1.38
21	SHD 18	NO. 5 (Shuten)	4	1.4	16	28	3	38	73	5	10	0.59
22	SHD 19	NO. 5 (Shuten)	2	< 0.1	29	62	57	42	646	16	10	0.30
23	SHD 20	NO. 5 (Shuten)	1	0.4	20	15	10	40	33	3	< 10	0.33
24	SHD 21	NO. 5 (Shuten)	4	< 0.1	45	165	5	32	559	6	10	0.67
25	SHD 22	NO. 5 (Shuten)	5	0.2	27	18	7	7	151	24	< 10	0.16
26	SHD 23	NO. 5 (Shuten)	< 1	0.2	16	20	10	< 1	16	3	10	1.52
27	SHD 24	NO. 5 (Shuten)	2	0.6	56	9	6	36	89	< 1	50	0.11
28	SHD 25	NO. 5 (Shuten)	3	< 0.1	14	8	5	< 1	12	2	< 10	0.22
29	SHD 26	NO. 5 (Shuten)	2	0.2	20	3	7	2	76	2	10	0.16
30	SHD 27	NO. 5 (Shuten)	2	< 0.1	129	7	12	< 1	131	4	20	0.36
31	SHD 28	NO. 5 (Shuten)	< 1	0.1	6	32	2	< 1	21	2	< 10	2.49
32	SHD 29	NO. 5 (Shuten)	1	< 0.1	36	20	2	19	25	< 1	10	3.27
33	SHD 31	NO. 5 (Shuten)	5	< 0.1	50	14	1	8	367	1	40	1.32
34	SHD 32	NO. 5 (Shuten)	< 1	< 0.1	19	4	3	< 1	38	< 1	20	0.48
35	SHD 33	NO. 5 (Shuten)	3	< 0.1	98	20	90	32	35	< 1	10	3.61

Table II-3-2(3) Result of Metal Analysis (2)

No.	Sample No.	Area No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	As (ppm)	Sb (ppm)	Hg (ppb)	S (%)
36	SHF 7	NO. 5 (Shuten)	2	0.4	44	8	3	37	495	2	< 10	0.08
37	SHF 8	NO. 5 (Shuten)	166	< 0.1	20	4	15	21	30	< 1	< 10	0.03
38	SHF 9	NO. 5 (Shuten)	3	1.1	46	5	1	16	47	2	< 10	0.08
39	SHF 10	NO. 5 (Shuten)	3	0.2	20	4	2	20	57	< 1	< 10	0.13
40	SHF 11	NO. 5 (Shuten)	< 1	0.4	32	4	9	11	44	1	< 10	0.08
41	SHF 15	NO. 5 (Shuten)	4	0.1	36	24	4	9	42	< 1	< 10	2.09
42	SHF 16	NO. 5 (Shuten)	2	0.2	14	167	6	1	10	1	< 10	1.25
43	SHF 17	NO. 5 (Shuten)	2	0.5	77	6	2	17	200	9	140	0.33
44	SHM 2	NO. 5 (Shuten)	1	0.5	18	9	7	33	45	21	120	0.10
45	SHM 3	NO. 5 (Shuten)	3	0.3	76	3070	26	38	302	23	670	0.43
46	SHM 4	NO. 5 (Shuten)	2	< 0.1	18	43	7	7	37	4	20	0.10
47	SHM 5	NO. 5 (Shuten)	3	0.4	55	52	13	3	159	4	20	0.27
48	SHM 6	NO. 5 (Shuten)	3	0.6	16	5	4	10	32	5	20	0.17
49	SHM 7	NO. 5 (Shuten)	2	0.5	26	7	2	36	134	3	10	0.10
50	SHM 8	NO. 5 (Shuten)	< 1	0.8	17	257	6	41	68	6	< 10	1.76
51	SHM 9 -01	NO. 5 (Shuten)	4	0.4	22	5	3	21	9	< 1	< 10	0.06
52	SHM 9 -02	NO. 5 (Shuten)	2	0.2	9	38	4	38	7	< 1	< 10	0.25
53	SHM 10	NO. 5 (Shuten)	< 1	< 0.1	17	6	4	27	27	< 1	< 10	0.22
54	SHM 11	NO. 5 (Shuten)	1	< 0.1	20	1	1	25	47	< 1	< 10	0.27
55	SHM 12	NO. 5 (Shuten)	1	0.1	12	9	5	34	65	1	< 10	0.22
56	SHM 13	NO. 5 (Shuten)	2	< 0.1	13	4	4	32	15	1	< 10	0.11
57	SHM 14	NO. 5 (Shuten)	< 1	< 0.1	11	43	7	18	31	1	< 10	3.47
58	SHM 15 -01	NO. 5 (Shuten)	3	0.1	30	8	6	33	30	< 1	< 10	0.14
59	SHM 15 -02	NO. 5 (Shuten)	< 1	0.2	34	21	3	3	32	< 1	< 10	0.22
60	SHM 16	NO. 5 (Shuten)	1	< 0.1	30	3	6	< 1	23	< 1	10	0.06
61	SHM 17	NO. 5 (Shuten)	1	< 0.1	21	53	9	2	18	1	20	1.27
62	SHM 18	NO. 5 (Shuten)	2	< 0.1	14	21	6	2	21	5	10	1.36
63	SHM 20	NO. 5 (Shuten)	1	0.1	21	13	9	< 1	73	2	10	0.48
64	SHM 21	NO. 5 (Shuten)	1	0.7	14	13	6	6	60	2	10	0.06
65	SHM 22	NO. 5 (Shuten)	3	< 0.1	68	12	3	13	52	1	10	2.22
66	SHM 23	NO. 5 (Shuten)	< 1	0.2	11	54	3	11	21	3	< 10	1.43
67	SHF 4	NO. 6 - A	6	3.1	7230	43	31	120	185	35	< 10	0.05
68	SHD 38 -02	NO. 8	< 1	< 0.1	24	23	6	31	10	< 1	70	0.30
69	SHD 38 -01	NO. 8	1	0.1	22	8	125	25	28	13	10	1.46
70	HABF11	NO. 9	< 1	0.4	9	5	20	33	4	17	< 10	0.03

Table II-3-2(3) Result of Metal Analysis (3)

No.	Sample No.	Area No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	As (ppm)	Sb (ppm)	Hg (ppb)	S (%)
71	HABF 8	NO. 10'	< 1	0.3	6	8	5	34	21	18	20	0.03
72	HABF 9	NO. 10'	2	0.4	9	14	4	13	111	83	340	0.08
73	HABF10	NO. 10'	< 1	0.1	15	13	10	12	198	93	220	0.13
74	HAD 3	NO. 11'	< 1	0.1	6	1	5	10	7	61	< 10	0.22
75	HAD 4	NO. 11'	< 1	0.1	28	5	54	< 1	108	112	170	0.10
76	HABF 1	NO. 12	1	< 0.1	12	29	43	23	58	11	< 10	0.14
77	HABF 3	NO. 12	< 1	0.1	7	16	43	20	136	9	< 10	0.05
78	HABF 4	NO. 12	< 1	0.1	11	6	14	12	62	30	< 10	0.06
79	HABF 6	NO. 12	< 1	0.1	12	10	24	8	23	6	< 10	0.06
80	HABF 7	NO. 12	< 1	0.2	6	25	80	34	32	2	< 10	0.05
81	ULD 2	NO. 13 - B	< 1	0.1	1	9	5	19	3	1	10	0.14
82	ULD 3	NO. 13 - B	2	< 0.1	7	72	65	26	16	15	20	0.10
83	ULF 2 -01	NO. 13 - C	< 1	< 0.1	15	7	5	28	8	< 1	10	0.17
84	ULF 2 -02	NO. 13 - C	< 1	0.1	11	12	4	22	4	< 1	< 10	0.03
85	ULF 1	NO. 14	6	0.2	11	8	1	24	44	6	10	0.03
86	SHD 5	NO. 16 - A	3	0.1	49	13	70	29	236	143	20	0.05
87	SHD 37	NO. 16 - B	47	0.8	3470	53	41	13	24	7	20	0.25
88	SHD 39	NO. 16 - C	84	0.6	3810	472	25	27	32	1	< 10	0.22
89	SHD 4 -01	NO. 17	1	< 0.1	17	17	22	14	9	< 1	< 10	0.16
90	MOD 5	NO. 20 (Ih-Shanhai)	2	< 0.1	37	34	3	23	34	2	10	0.60
91	MOD 6	NO. 20 (Ih-Shanhai)	2	0.1	27	6	19	33	2	< 1	10	0.03
92	MOD 7	NO. 20 (Ih-Shanhai)	10	0.4	22	12	25	35	38	2	< 10	0.03
93	MOD 9	NO. 20 (Ih-Shanhai)	< 1	< 0.1	8	4	10	22	1	< 1	< 10	0.02
94	MOD 10	NO. 20 (Ih-Shanhai)	< 1	0.1	14	1	9	9	1	< 1	< 10	0.02
95	MOD 11	NO. 20 (Ih-Shanhai)	3	0.5	26	22	255	30	28	< 1	< 10	0.02
96	MOF 9	NO. 20 (Ih-Shanhai)	< 1	< 0.1	7	11	3	25	34	4	110	2.22
97	MOF 10	NO. 20 (Ih-Shanhai)	2	0.1	8	10	4	33	15	2	< 10	3.49
98	MOF 12	NO. 20 (Ih-Shanhai)	1	< 0.1	13	5	2	24	20	6	10	0.16
99	MOF 13	NO. 20 (Ih-Shanhai)	2	0.1	44	6	14	63	11	2	< 10	0.22
100	MOF 14	NO. 20 (Ih-Shanhai)	4	0.1	11	19	7	50	7	57	10	0.14
101	MOM 1	NO. 20 (Ih-Shanhai)	182	5.8	2460	6480	90	30	7	5	40	0.11
102	MOM 2	NO. 20 (Ih-Shanhai)	< 1	0.8	15	12	11	28	2	< 1	10	0.03
103	MOM 5	NO. 21	3	0.3	14	5	17	6	5	1	< 10	0.06
104	MOM 6	NO. 21	4	0.4	19	18	18	25	22	< 1	< 10	0.14
105	MOM 7	NO. 21	60	2.0	133	1150	16	43	4	4	210	0.08

Table II-3-2(3) Result of Metal Analysis (4)

No.	Sample No.	Area No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	As (ppm)	Sb (ppm)	Hg (ppb)	S (%)
106	MOM 8	NO. 21	12	2.0	3	102	10	94	5	3	20	0.06
107	HAD 1	NO. 23	< 1	< 0.1	53	1	1	26	34	< 1	10	1.81
108	HAD 2	NO. 23	< 1	0.1	21	3	2	13	10	< 1	< 10	0.29
109	MOD 1	NO. 24	< 1	0.4	4	53	20	< 1	15	5	20	0.21
110	MOD 2	NO. 24	< 1	< 0.1	4	6	9	13	8	3	< 10	0.08
111	MOD 3	NO. 24	< 1	< 0.1	13	11	41	22	22	2	10	0.06
112	MOD 4	NO. 24	< 1	0.2	8	16	23	26	20	3	< 10	0.06
113	MOF 3	NO. 25 - A	< 1	0.1	7	16	20	28	79	40	50	3.36
114	MOF 4	NO. 25 - A	< 1	< 0.1	6	8	1	40	105	30	20	0.13
115	MOF 5	NO. 25 - A	< 1	< 0.1	6	13	38	46	84	47	20	0.35
116	MOF 6	NO. 25 - A	< 1	< 0.1	8	5	4	36	19	29	< 10	0.06
117	MOF 7	NO. 25 - A	< 1	0.1	11	15	2	31	32	10	10	0.32
118	MOF 1	NO. 25 - B	2	0.1	15	12	39	28	9	3	10	0.11
119	MOF 2	NO. 25 - B	1	< 0.1	37	4	5	29	17	12	< 10	0.08
120	MOD 14	NO. 26	< 1	0.2	7	3	5	13	< 1	< 1	< 10	0.03
121	MOD 15	NO. 26	< 1	< 0.1	8	16	21	18	1	< 1	< 10	0.03
122	MOD 16	NO. 26	< 1	0.1	2	1	1	46	4	< 1	< 10	0.05
123	MOD 12	NO. 27 - A	< 1	0.4	8	4	15	29	7	< 1	< 10	0.27
124	MOD 13	NO. 27 - B	< 1	0.1	22	8	10	49	2	< 1	< 10	0.11
125	LUF 6	NO. 28 - A	< 1	0.4	5	7	26	17	18	< 1	< 10	0.03
126	HUF 1	NO. 28 - B	< 1	0.4	5	13	20	20	4	2	20	0.92
127	HUF 2 -01	NO. 28 - C	< 1	0.1	6	6	46	25	7	1	< 10	0.08
128	HUF 2 -02	NO. 28 - C	< 1	< 0.1	9	9	56	29	7	1	< 10	0.16
129	LUD 6	NO. 29 - A	< 1	< 0.1	8	9	64	29	10	< 1	< 10	0.10
130	LUD 7	NO. 29 - B	2	0.4	9	25	93	24	2	< 1	30	0.14
131	LUD 1	NO. 31	3	0.2	23	13	2	19	23	1	10	0.49
132	LUD 2	NO. 31	6	< 0.1	18	94	77	5	21	< 1	10	3.87
133	LUD 3	NO. 31	< 1	0.1	6	66	62	8	15	13	10	0.13
134	LUD 4	NO. 31	1	0.1	11	16	6	32	17	< 1	20	0.13
135	LUF 1	NO. 31	1	0.2	8	5	4	27	4	< 1	10	0.05
136	LUF 2	NO. 31	1	0.1	41	28	4	27	5	< 1	10	0.11
137	NOD 1	NO. 34	< 1	0.2	4	12	54	6	3	< 1	< 10	0.06
138	NOD 2	NO. 34	< 1	0.1	7	11	13	11	6	< 1	< 10	0.03
139	NOD 3	NO. 34	< 1	0.3	10	6	264	12	49	13	< 10	0.14
140	NOD 4	NO. 34	< 1	0.9	6	7	348	14	1	< 1	< 10	0.08

Table II-3-2(3) Result of Metal Analysis (5)

No.	Sample No.	Area No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	As (ppm)	Sb (ppm)	Hg (ppb)	S (%)
141	NOF 1	NO. 34	< 1	0.1	18	4	11	36	4	2	< 10	0.22
142	NOF 2	NO. 34	3	0.1	5	8	7	44	2	< 1	< 10	0.13
143	NOF 3	NO. 34	< 1	0.1	11	15	63	35	3	< 1	< 10	0.08
144	NOD 5	NO. 35	< 1	< 0.1	12	10	11	8	15	7	< 10	0.05
145	NOF 4	NO. 35	< 1	0.1	7	14	16	33	5	1	< 10	0.03
146	NOF 5	NO. 37	11	0.2	11	29	29	47	21	11	60	0.11
147	ATF 1	NO. 40 - B	< 1	0.2	6	15	62	39	2	< 1	< 10	0.03
148	ATF 2	NO. 40 - B	< 1	< 0.1	9	13	22	49	2	< 1	< 10	0.06
149	ALD 1	NO. 40 - C	< 1	0.2	10	15	44	< 1	11	7	10	0.03
150	ALD 2	NO. 40 - D	2	0.3	10	7	16	12	2	< 1	< 10	0.03
151	NOD 6	NO. 42	< 1	0.2	10	11	20	14	12	< 1	140	0.02
152	OND 1	NO. 43	< 1	0.1	6	25	3	30	17	16	< 10	0.14
153	OND 2	NO. 43	< 1	0.4	4	45	12	23	24	7	10	0.17
154	OND 3	NO. 43	< 1	0.4	7	75	19	43	93	6	< 10	0.06
155	ONF 1	NO. 43	< 1	1.1	5	1	5	39	8	4	10	0.08
156	ONF 2	NO. 43	< 1	0.1	3	6	2	44	5	6	< 10	0.10
157	ONF 3	NO. 44	< 1	0.1	7	53	6	23	12	2	10	4.36
158	ONF 4	NO. 44	< 1	< 0.1	8	14	53	45	29	3	< 10	0.25
159	OND 5	NO. 45	5	0.1	7	30	8	27	9	1	< 10	0.33
160	OND 6	NO. 45	< 1	0.3	236	18	3	10	130	< 1	10	0.95
161	ALD 3	NO. 46	< 1	0.1	15	10	12	6	8	< 1	< 10	0.03

Table Ⅱ－3－2 (4)　　Result of Microscopic Observation for Thin Section

NO.	Sample No.	Rock Name	Locality Area	Texture	Phenocryst									Groundmass・Accsesory								Alteration mineral									Remarks (other minerals)
					Qz	Pl	Kf	Bi	Ms	Cp	Hr	Ap	Lm	Qz	Kf	Pl	Bi	Cp	Hr	Ca	Cr	Lm	Qz	Ka	Al	Se	Ch	Pr	Ep	Mo	Ca	Lm	
1	LUD-02	Pyroclastics	No. 31 area																				◎		○							△	Silicification
2	LUD-05	Andesite	No. 31 area	Intersert.		◎				△	△	△	△	・		◎			○			△				△	△		△	△			
3	LUD-06	Alkali syenite	No. 29-A area	Granular	△	△	◎				△	△	△										○			△							Allanite
4	ULD-02	Granite	No. 13-B area	Granular	◎	△	○	△	△		△		△													△	△			△			Fracture structure
5	ULD-04	Mylonite	No. 13-A area	Fracture	○	○	◎					△														△	△						
6	SHD-01	Dacite	No. 3 area	Porphyr.	◎	◎	◎				○		△	◎												◎						○	
7	SHD-03	Rhyolite	No. 4 area	Felsitic	△	◎					△		・	◎	◎	◎										○				△			Albitization
8	SHD-04-01	Rhyolite	No. 17 area	Felsitic		△	◎			△				◎	◎	△							○			○	○		△			△	Flow band
9	SHD-04-02	Tuff	ditto	Pyro.										◎		○	△						○			○	○						Bre. (various rocks)
10	SHD-06	Trachyandesite	No. 7-A area	Pilotax.		○		△		△		△	△			◎		△				△				△	△				○	・	Albitization
11	SHD-09	Basalt	Shuten(No. 5 area)	Pilotax.		◎				○			△			◎		△								○	○					○	Host of Q-vein
12	SHD-13-01	Altered ande.	ditto	Pilotax.																			◎	◎		○						△	Strong argillization
13	SHD-35	Andesite	ditto			◎				○	△	△	△			◎			△			△	○			○	○		○				Fresh andesite
14	SHD-36	Granodiorite	ditto		◎	◎	◎	○			○		△													○			△	△			Fresh
15	SHM-01	Dacite	ditto	Amygdal.	△	◎				△	△		・	○		◎			△	△			○			○	○		△		○		Hypersthene
16	SHM-09-01	Pyroclastics	ditto																				◎		○						○	Silicification
17	SHM-18	Pyroclastics	ditto																				◎		△						△	Silicification
18	SHM-19	Pyroclastics	ditto																				◎			○				△		△	Halloysite
19	LUF-04	Altered tuff	No. 31 area											◎		○							○			○				△			Bre. (various rocks)
20	HUF-02-1	Q-vein in gra.	No. 28-C area	Amygdal	◎								○																		△		
21	SHF-05	Dacite	Shuten(No. 5 area)	Amygdal	△	◎		△		△	△	△	△	○		・	◎						△	△			△	○				○	△	Albitization
22	SHF-14	Altered tuff	ditto																				◎		○			△					Silicification
23	MOD-08	Altered tuff	Ih-shanhai(No. 20)													◎		○				△	△		△	△							Bre. (various rocks)
24	MOF-08	Andesite	No. 25-A area	Porphyr.		◎				○		△	△			◎		△					△			△	△		△				
25	MOD-14	Granite	No. 26 area	Porphyr.		◎		△			△		△	△	△	△	△		△				△			△	△		△	・		・	Host rock of Q-vein
26	OND-03	Rhyolite	No. 43 area	Spherul.										◎	◎	○					・	△					△						
27	MOM-01	Dacite	Ih-shanhai(No. 20)	Felsitic	△	◎				○		△		○	○	◎			△			△				○	○			・			Host rock of Q-vein
28	MOM-02	Granosyenite	ditto		◎	△	◎	△		△		△														△	△		△			△	Nepheline
29	MOM-03	Granite	ditto	Porphyr.	○	○	◎			△		△		○	○	○						・				○	○		○				
30	MOM-07	Granodio.	No. 21 area	Porphyr.	◎	△	○	△				△														△	△				△		Host rock of Q-vein

Abbreviation(Mineral Name): Qz;quartz Pl;plagioclase Kf;potassium feldspar Bi;biotite Ms;muscovite Cp;clino pyroxene Hr;hornblende Ap;apatite Lm;iron oxide Ca;calcite Cr;cordierite Ka;kaoline Al;alunite Se;sericite Ch;chlorite Pr;pyrophyllite Ep;epidote Mo;montmorillonite

Abbreviation(Rock Name): Ande;andesite Gra;granite Bre;breccia

Abbreviation(Texture Name): Intersert;intersertal Porphyr;porphyritic Pilotax;pilotaxitic Spherul;spherulitic

Amount:◎;much ○;common △;poor ・;rare

Table II-3-2(5) Result of Microscopic Observation for Polished Section

No	Sample No	Area	Coordinate		Minerals										Remarks
			N	E	Py	Cp	Bo	Mc	Hm	Go	Mgh	Il	Mn-ox	Fe-hox	
1	SHD-09-1	No. 5(Shuten)	44° 55′ 37″	107° 37′ 41″	・	・		△						○	
2	SHD-23	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″							・			・	
3	SHD-24	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″	・						△				
4	SHD-33	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	△							・			
5	SHF-17	No. 5(Shuten)	43° 55′ 17″	107° 38′ 52″									○		
6	SHM-07	No. 5(Shuten)	43° 57′ 31″	107° 38′ 37″									○		
7	SHM-11	No. 5(Shuten)	43° 57′ 08″	107° 38′ 50″						△					
8	SHF-04	No. 6B	43° 50′ 44″	108° 23′ 39″									△		
9	SHD-37	No. 16B	44° 14′ 10″	108° 02′ 58″	・	・								・	Narin Hudag
10	SHD-39	No. 16C	44° 03′ 50″	107° 50′ 47″		・	・							・	porphyry-copper
11	MOM-06	No. 21	43° 37′ 46″	106° 00′ 25″										・	
12	LUD-03	No. 31	45° 05′ 51″	106° 53′ 55″						・			・		
13	LUF-01	No. 31	45° 02′ 46″	106° 48′ 32″					○						

Abbreviations: Py:pyrite Cp:chalcopyrite: Bo:bornite: Mc:malachite Hm:hematite Go:goethite Mgh:maghemite Il:ilmenite
Mn-ox:oxidic manganese minerals Fe-hox:Fe hydroxide
◎ :abundant ○:common △:rare ・very rare

Table II-3-2(6) Result of Age Determination

No	Sample NO.	Sample Name	Area No.	Sample Type	K (wt%)	Rad^{40}Ar (10^{-6}cc/g)	Air Cont. (%)	K-Ar Age (Ma)	Remarks
1	SHD-06	Altered Andesite	5 (Shuten)	Whole Rock	5.12±0.10	3294±34 3229±33	1.1 1.4	159±3 156±3	
2	SHD-34	Argillized Rock	5 (Shuten)	Whole Rock	0.42±0.04	608±13 612±13	45.9 45.5	339±32 341±32	halloysite>>sericite
3	SHD-35	Andesite	5 (Shuten)	Whole Rock	0.28±0.04	339±5 333±8	31.5 53.5	288±40 283±40	
4	SHD-36	Granite	5 (Shuten)	Whole Rock	3.51±0.07	4319±48 4278±47	5.4 6.1	292±6 290±6	
5	SHF-05	Andesite	5 (Shuten)	Whole Rock	2.04±0.04	2242±24 2247±24	5.6 4.9	264±6 264±6	
6	SHM-01	Andesite	5 (Shuten)	Whole Rock	0.03±0.06	3342±58 3340±53	5.4 4.3	264±6 264±6	
7	SHM-19	Argillized Rock	5 (Shuten)	Whole Rock	1.01±0.03	1282±14 1272±14	3.2 3.9	302±9 300±9	sericite, alunite
8	MOF-08	Andesite	20(Ih-Shanhai)	Whole Rock	2.18±0.04	2615±28 2664±28	3.7 3.4	285±6 290±6	
9	MOM-03	Granite	20(Ih-Shanhai)	Whole Rock	3.07±0.06	3092±34 3123±34	6.5 6.3	243±5 245±5	
10	MOM-04	Altered Andesite	21	Whole Rock	4.01±0.08	4470±48 4436±48	4.3 4.3	267±6 265±6	
11	LUF-05	Altered Andesite	31	Whole Rock	2.05±0.04	2164±23 2126±22	1.9 2.1	253±5 249±5	sericite

decay constants(after Steiger, R and Jaeger, E(1977)): $\lambda e = 0.581 \times 10^{-10}/Y$, $\lambda \beta = 4.962 \times 10^{-10}/Y$
$^{40}K/K = 0.01167atm\%$

Table II-3-2(7) Result of X-ray Diffraction Analysis(1)

No	Sample No	Area	Coordinate N	Coordinate E	Minerals Qz	Pl	Ab	Kf	Ch/M	Ch	Se	Ha	K	P	Ds	Al	Ja	Gp	Ca	Do	Hm	Gc	Rt	Ho	Tp	F	Si	Remarks
1	SHF-03	No. 1A	44° 26′ 59″	108° 22′ 24″	◎							·							·									
2	SHF-02	No. 1B	44° 27′ 30″	108° 20′ 11″	◎		·	○			·																△	
3	SHF-01	No. 2	44° 03′ 05″	108° 06′ 00″	○		◎												·									
4	SHD-03-1	No. 4	44° 29′ 01″	107° 44′ 05″	○		○	△			·								·									
5	SHD-09-1	No. 5(Shuten)	44° 55′ 37″	107° 37′ 41″	○											·	·				·	·						
6	SHD-09-2	No. 5(Shuten)	44° 55′ 37″	107° 37′ 41″	◎					·	·								·									
7	SHD-12	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	◎														·		·		·					
8	SHD-13	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	○						·		○			·	·				·							
9	SHD-15	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	○								○	△		△					·							
10	SHD-17	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	◎											·			△		·		·		△			
11	SHD-18	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	◎											△			·		·		·					
12	SHD-19	No. 5(Shuten)	43° 58′ 00″	107° 38′ 53″	◎														·		·		·					
13	SHD-20	No. 5(Shuten)	43° 57′ 18″	107° 38′ 24″	◎														·				·		·			
14	SHD-21	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″	◎											△			·		·		·					
15	SHD-24	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″	○									△	·						△							
16	SHD-25	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″	◎																		·					
17	SHD-26	No. 5(Shuten)	43° 57′ 00″	107° 38′ 16″	◎														·		·		·					
18	SHD-27	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	◎											·						·	·					
19	SHD-28	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	◎											○							·		·			
20	SHD-29	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	◎											○					·		·		·			
21	SHD-31	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	○											○					·							
22	SHD-32	No. 5(Shuten)	43° 56′ 22″	107° 38′ 05″	◎													·	·		·				·			
23	SHD-34	No. 5(Shuten)	43° 55′ 05″	107° 38′ 12″	○		△				·	△																
24	SHF-08	No. 5(Shuten)	43° 57′ 22″	107° 38′ 54″	◎													·					·					
25	SHF-11	No. 5(Shuten)	43° 56′ 46″	107° 39′ 02″	◎																		·					
26	SHF-12	No. 5(Shuten)	43° 56′ 40″	107° 39′ 06″	○	○			○																			
27	SHM-03	No. 5(Shuten)	43° 58′ 34″	107° 38′ 11″	◎											·			·			·	·					
28	SHM-09-1	No. 5(Shuten)	43° 57′ 31″	107° 38′ 49″	◎														·		·		·					

Abbreviations: Qz:quartz Pl:plagioclase Ab:albite Kf:potassium feldspar Ch/M:chlorite/montmorillonite interstratified mineral Ch:chlorite Se:sericite
Ha:halloysite K:kaoline mineral P:pyrophyllite Ds:diaspore Al:alunite Ja:jarosite Gp:gypsum Ca:calcite Do:dolomite Hm:hematite Ge:goethite
Rt:rutile Ho:hornblende Tp:topaz F:fluorite Si:sillimanite
◎:abundant ○:common △:rare ·:very rare

Table II-3-2(7) Result of X-ray Diffraction Analysis(2)

No	Sample No	Area	Coordinate N	Coordinate E	Qz	Pl	Ab	Kf	Ch/M	Ch	Se	Ha	K	P	Ds	Al	Ja	Gp	Ca	Do	Hm	Ge	Rt	Ho	Tp	F	Si	Remarks
29	SHM-15-1	No. 5(Shuten)	43° 56′ 26″	107° 38′ 28″	◎																・		・					
30	SHM-18	No. 5(Shuten)	43° 56′ 08″	107° 38′ 18″	◎											△			・		・		・					
31	SHM-19	No. 5(Shuten)	43° 56′ 08″	107° 38′ 18″	◎						△			・		△												
32	SHD-07	No. 7B	43° 38′ 06″	108° 14′ 18″	△		○	△			・		・						・									
33	SHD-08	No. 7C	43° 39′ 04″	108° 07′ 53″			○	○											△									
34	SHD-38-1	No. 8	43° 42′ 35″	107° 26′ 32″	◎								◎	・					・									
35	HABF-10	No. 10	42° 59′ 30″	108° 10′ 16″	◎						・		△			・					・							
36	HAD-03	No. 11	42° 57′ 19″	108° 10′ 48″	◎														・									
37	HAD-04	No. 11	42° 57′ 19″	108° 10′ 48″	◎			・					△						・									
38	HAD-05	No. 11	42° 57′ 19″	108° 10′ 48″	◎						○		△					・										
39	HABF-02	No. 12	43° 00′ 14″	107° 29′ 14″	◎		△				・		・															
40	ULD-02	No. 13B	45° 05′ 51″	106° 53′ 55″	・														◎									
41	ULD-03	No. 13B	45° 05′ 51″	106° 53′ 55″	○														・	◎								
42	SHD-39	No. 16C	44° 03′ 50″	107° 50′ 47″	○		◎	◎		○	・								・				・					
43	MOD-05	No. 20(Ih-shanhai)	43° 39′ 31″	106° 05′ 05″	◎								○			・	・				・							
44	MOD-06	No. 20(Ih-shanhai)	43° 41′ 53″	106° 02′ 44″	◎		○	△		・																		
45	MOD-07	No. 20(Ih-shanhai)	43° 41′ 20″	106° 02′ 02″	○		△	△		・	・																	
46	MOD-09	No. 20(Ih-shanhai)	43° 40′ 00″	106° 01′ 23″	◎					・																		
47	MOD-10	No. 20(Ih-shanhai)	43° 39′ 29″	106° 00′ 54″	◎		・	・			・																	
48	MOD-11	No. 20(Ih-shanhai)	43° 39′ 33″	106° 01′ 46″	○		◎	△			・								・									
49	MOF-09	No. 20(Ih-shanhai)	43° 39′ 09″	106° 03′ 21″	◎								・			○												
50	MOF-11	No. 20(Ih-shanhai)	43° 39′ 19″	106° 04′ 17″	○								○			△			・									
51	MOM-01	No. 20(Ih-shanhai)	43° 39′ 36″	106° 06′ 43″	◎														・									
52	MOM-04	No. 21	43° 37′ 46″	106° 00′ 25″	○		○	△			△																	
53	HAD-01	No. 23	43° 06′ 29″	106° 46′ 45″	◎											△		・	・		・・		・					
54	MOD-01	No. 24	43° 07′ 53″	106° 17′ 38″	◎								◎			・												
55	MOD-02	No. 24	43° 07′ 53″	106° 17′ 38″	◎								◎						・									
56	MOD-03	No. 24	43° 07′ 53″	106° 17′ 38″	◎								◎						・									

Abbreviations: Qz:quartz Pl:plagioclase Ab:albite Kf:potassium feldspar Ch/M:chlorite/montmorillonite interstratified mineral Ch:chlorite Se:sericite Ha:halloysite K:kaoline mineral P:pyrophyllite Ds:diaspore Al:alunite Ja:jarosite Gp:gypsum Ca:calcite Do:dolomite Hm:hematite Ge:goethite Rt:rutile Ho:hornblende Tp:topaz F:fluorite Si:sillimanite

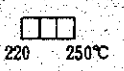
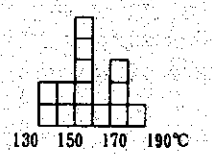
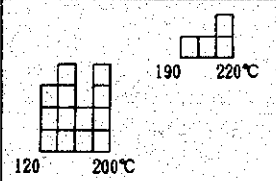
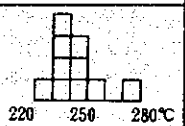
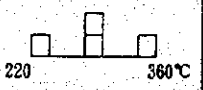
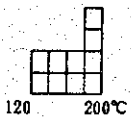
◎:abundant ○:common △:rare ・very rare

Table II-3-2(7) Result of X-ray Diffraction Analysis(3)

No	Sample No	Area	Coordinate N	Coordinate E	Qz	Pl	Ab	Kf	Ch/M	Ch	Se	Ha	K	P	Ds	Al	Ja	Gp	Ca	Do	Hm	Ge	Rt	Ho	Tp	F	Si	Remarks
57	MOF-03	No. 25A	43° 08′ 00″	106° 11′ 00″	◎								◎			◎												
58	MOF-04	No. 25A	43° 08′ 00″	106° 11′ 00″	◎								◎			·					·		·					
59	MOD-14	No. 26	42° 39′ 18″	106° 14′ 58″	◎																							
60	MOD-15	No. 26	42° 39′ 18″	106° 14′ 58″	○		○	△		·	△								·									
61	MOD-12	No. 27A	42° 45′ 12″	106° 02′ 36″	○		◎				△																	
62	MOD-13	No. 27B	42° 42′ 25″	106° 03′ 21″	◎						○															◎		
63	HUF-01	No. 28B	45° 11′ 28″	105° 59′ 55″	○								·															
64	HUF-02	No. 28C	45° 05′ 10″	106° 03′ 42″	◎													·										
65	LUD-07	No. 29B	45° 14′ 28″	105° 17′ 21″	△	△	◎				·								·	◎								
66	ULD-01	No. 30B	45° 11′ 28″	105° 59′ 55″	·																·		·		·			
67	LUD-01	No. 31	45° 38′ 05″	105° 33′ 39″	◎									○	△	·					△							
68	LUD-02	No. 31	45° 37′ 56″	105° 32′ 46″	○											○												
69	LUF-03	No. 31	45° 37′ 49″	105° 34′ 01″	◎						○			·					·				·					
70	NOD-01	No. 34	42° 46′ 08″	105° 16′ 53″	○		◎				△																	
71	NOD-02	No. 34	42° 46′ 08″	105° 16′ 53″	◎						○								·									
72	NOD-03	No. 34	42° 46′ 08″	105° 16′ 53″	◎						◎																	
73	NOF-01	No. 34	42° 45′ 55″	105° 16′ 49″	○		◎				·																	
74	NOF-02	No. 34	42° 45′ 55″	105° 16′ 49″	◎						○	·		△														
75	NOF-03	No. 34	42° 45′ 55″	105° 16′ 49″	◎						○											·	·					
76	NOD-05	No. 35	42° 46′ 23″	104° 59′ 00″	◎		·	·											·									
77	ALD-01	No. 40C	42° 26′ 51″	103° 34′ 49″	◎		○				·								△									
78	NOD-06	No. 42	42° 18′ 11″	104° 37′ 42″	○		◎	△			·								·									
79	OND-01	No. 43	45° 17′ 44″	103° 53′ 34″	◎								○								·		·					
80	ONF-03	No. 44	45° 10′ 03″	103° 41′ 25″	◎								·			◎												
81	ONF-05	No. 44	45° 10′ 03″	103° 41′ 25″	◎								◎	△	·	·									·			zunyite?
82	OND-05	No. 45	45° 09′ 29″	103° 32′ 37″	◎								◎			·							·					
83	OND-06	No. 45	45° 09′ 29″	103° 32′ 37″	○								○				·				·							
84	ALD-03	No. 46	43° 06′ 07″	103° 48′ 41″	◎		△	△			·								△									

Abbreviations: Qz:quartz Pl:plagioclase Ab:albite Kf:potassium feldspar Ch/M:chlorite/montmorillonite interstratified mineral Ch:chlorite Se:sericite
Ha:halloysite K:kaoline mineral P:pyrophyllite Ds:diaspore Al:alunite Ja:jarosite Gp:gypsum Ca:calcite Do:dolomite Hm:hematite Ge:goethite
Rt:rutile Ho:hornblende Tp:topaz F:fluorite Si:sillimanite
◎:abundant ○:common △:rare ·very rare

Table Ⅱ-3-2(8) Result of Homogenization Temprature Measured from Fluid Inclusion(1)

No.	Sample		Area	Number of	Homogenization temperature(℃)				Histogram	Remarks
	No.	Type	No.	inclusions	Max.	Min.	Avg.	Std.		
1	SHD-09-1	Qz-V	5	primary(3)	247.8	221.5	235.6	10.8		quartz vein in Shuten
2	SHF-04	Qz-V	6A	primary?(14)	182.8	139.0	151.8	13.3		quartz stock
3	SHD-37	Qz-V	16B	primary(4) secondary (14)	212.2 197.0	196.4 129.2	206.3 164.7	6.3 21.8		Narinhudag porphyry-cu prospect.
4	LUF-07	Qz-V	28A	secondary(10)	279.8	228.2	243.7	14.4		
5	HUF-02	Qz-V	28C	primary?(4)	350.0	220.0	287.8	46.4		
6	LUD-07	Sil.	29B	primary(10)	194.7	127.6	165.9	25.9		

Qz-V:quartz vein, Sil.:silicified rock, Cal-V:calcite vein

Table Ⅱ-3-2(8) Result of Homogenization Temprature Measured from Fluid Inclusion(2)

No.	Sample		Area	Number(size) of inclusions	Homogenization temperature(℃)				Remarks
	No.	Type	No.		Max.	Min.	Avg.	Std.	
7	SHF-03	Qz-V	1B	very small	not mesurable				deformed secondary inclusions(monophase liquid?)
8	SHD-14	Sil.	5	ditto	ditto				small quartz grains have many unidentified inclusions
9	SHD-22	Sil.	5	ditto	ditto				ditto
10	SHF-16	Sil.	5	ditto	ditto				ditto
11	SHM-10	Sil.	5	ditto	ditto				ditto
12	SHM-16	Sil.	5	ditto	ditto				ditto
13	HABF-08	Qz-V	10	ditto	ditto				deformed secondary inclusions(monophase liquid?)
14	HABF-09	Sil.	10	ditto	ditto				small quartz grains have many unidentified inclusions
15	HABF-05	Qz-V	12	ditto	ditto				deformed secondary inclusions(monophase liquid?)
16	ULD-02	Cal-V	13B	ditto	ditto				ditto
17	ULD-03	Qz-V	13B	ditto	ditto				quartz veinlets<<dolomite
18	ULF-02	Qz-V	13C	ditto	ditto				small quartz grains have many unidentified inclusions
19	MOF-09	Sil.	20	ditto	ditto				ditto
20	MOF-12	Sil.	20	ditto	ditto				ditto
21	MOM-01	Qz-V	20	ditto	ditto				deformed secondary inclusions(monophase liquid?)
22	MOM-02	Qz-V	20	ditto	ditto				ditto
23	MOM-05	Qz-V	21	ditto	ditto				ditto
24	HAD-02	Sil.	23	ditto	ditto				anhydrite bearing
25	MOF-06	Sil.	25A	ditto	ditto				clay(mica,sericite) minerals bearing
26	MOF-01	Qz-V	25B	ditto	ditto				small quartz grains have many unidentified inclusions
27	LUD-01	Sil.	31	ditto	ditto				ditto
28	LUD-03	Sil.	31	ditto	ditto				ditto
29	NOF-01	Qz-V	34	ditto	ditto				deformed secondary inclusions(monophase liquid?)
30	NOF-03	Sil.	34	ditto	ditto				clay(mica,sericite) minerals bearing
31	ONF-01	Sil.	43	ditto	ditto				deformed secondary inclusions(monophase liquid?)
32	ONF-02	Sil.	43	ditto	ditto				small quartz grains have many unidentified inclusions
33	ONF-03	Sil.	44	ditto	ditto				ditto
34	ONF-04	Sil.	44	ditto	ditto				ditto

Qz-V:quartz vein, Sil.:silicified rock, Cal-V:calcite vein

quartz, but ore minerals could not be seen. The boundary between quartz veins and host rock is very clear, and host rock was changed to be propylite with chlorite and epidote. After chemical analysis, Au was revealed to be contained 104 ppb as maximum (sample No.SHF03). No.1-A area can not be distinguished on satellite image from No.1-B area.

Rhyolitic volcanic rock and green volcanic rock in this area seems to have been formed in early Carboniferous and granite seems to have intruded into these volcanic rocks a little later than them.

(2) No.2 area

This area is located around 50 km south-west by south from Mandah village, and Carboniferous siliceous mudstone and andesitic volcanic rock～hypabyssal rock intruded into mudstone of almost same age are developed widely. These intrusive rocks were detected by satellite image, and small quartz veins, small calcite veins and small amount of malachite along fractures can be realised in these intrusive rocks which was changed to be propylite with chlorite and epidote.

Chemical analysis of the sample including malachite showed only 0.05 % Cu (sample No.SHF01). Argillization around quartz veins and in them can not be observed. Mineralization like as porphyry copper type ore deposits seems to have taken place here, but high concentration of gold minerals seems unlikely to be expected here.

(3) No.3 area

This area exists at around 45 km east from Bayan Dobo village. Oxidized iron minerals (hematite and limonite) are concentrated in Permian andesite (or dacite) like as impregnation and networks, and the zone rich in iron oxide minerals succeeds more than 1 km in NW-SE direction with width of several meters. Metal analysis did not indicate any special result (sample Nos.SHD01 & 02).

(4) No.4 area

This area lies at around 40 km south-east by east from Bayan Dobo village and at around 5 km south-west from No.3 area. In this area, Permian dacite or

rhyolite intruded like as stock into lower Carboniferous andesitic volcanic rock.

This intrusive body shows highly brown color on its whole surface because of high contents of limonite networks, and received weak oxidation. A small amount of sericite was found here by X-ray diffraction analysis (sample No.SHD03).

(5) No.5 area (Shuten ore showings)

This area is at around 450 km south from Ulaan Baatar and at around 80 km south-east from Bayan Dobo village. It takes around 2 days to come here from Ulaan Baatar by car.

In this area, sedimentary rock and pyroclastic rocks of lower～middle Carboniferous, and andesitic volcanic rocks and its pyroclastics of upper Carboniferous～lower Permian distribute widely as shown in Fig. II-3-3 (the geological map around Shuten ore showings). Into these rocks, granite or granodiorite rich in hornblende belonging to later Carboniferous～early Permian intruded. The host rock of ore showings is andesitic volcanic rock and its pyroclastics, and some parts of andesitic pyroclastic rocks may be hydrothermal breccia.

Fig. II-3-4 shows geology and sample's locations in this ore showings.
According to distribution of silicified zone in andesitic rock and its pyroclastics, the age of silicification, argillization and mineralization was thought to be between extrusion of andesitic rock and intrusion of granite (or granodiorite). Though in Fig. II-3-4 silisified zone was divided into three types, that is, silicified zone including kaoline, silicified zone rich in oxidized iron minerals and silicified zone without iron oxide minerals and clay minerals, this year's survey reveald that alunite and hematite were recognized commonly in silicified zone, and that kaoline, sericite, pyrophyllite, pyrite and manganese oxide minerals occurred partly in silicified zone. Fig. II-3-4 also shows location of gold showings in geochemical samples and alluvial samples, but result of these sampling was not known in details. It was revealed this time that Au 9.8 g/t (width 110 cm, sample No.SHD09-01) and Au 4.2 g/t (width 200 cm, sample No.SHD09-02) were contained in the quartz vein in north-western part of this ore showing zone. And pyrite, chalcopyrite and marcasite

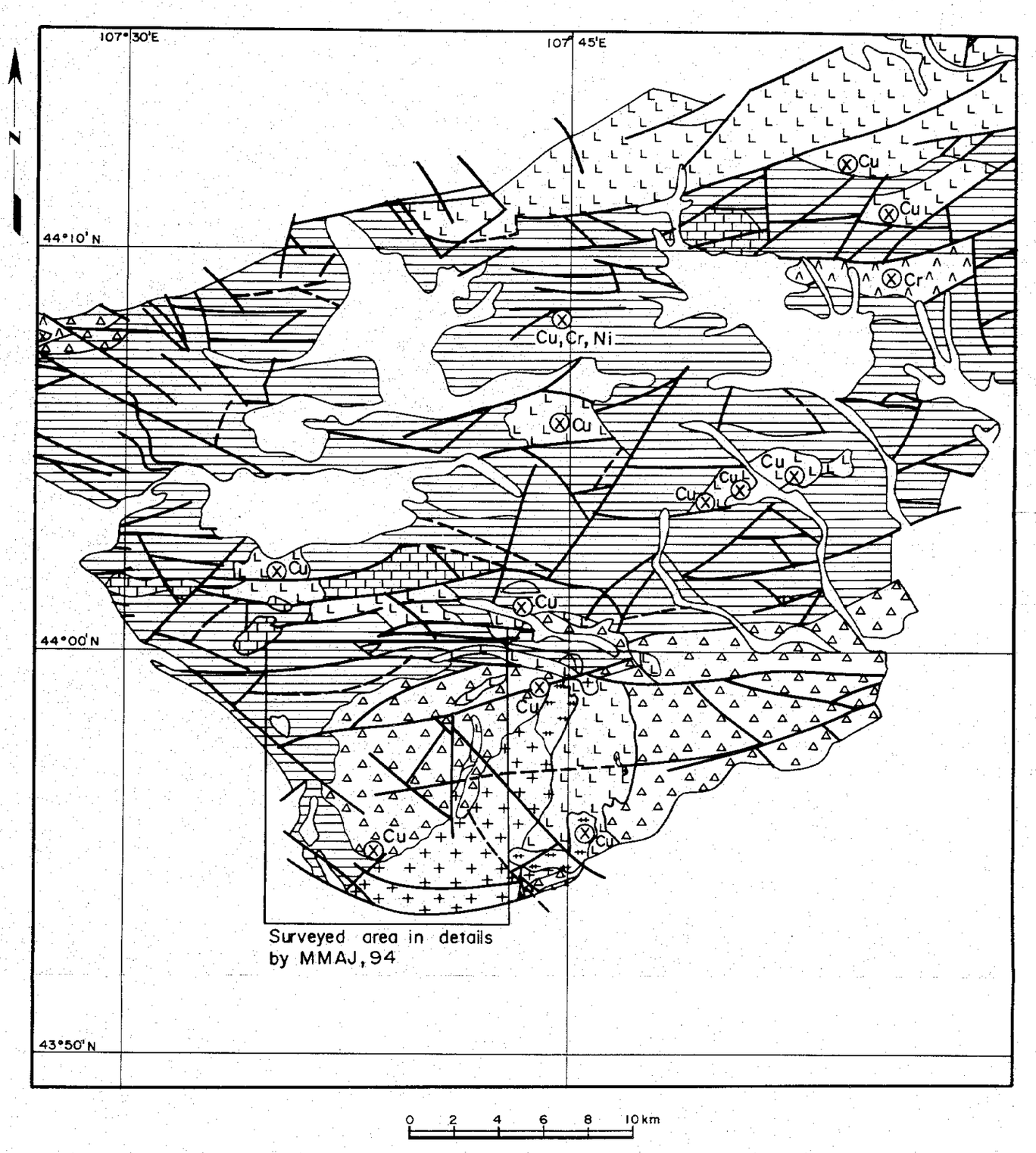
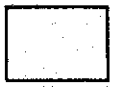


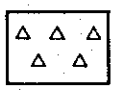
Fig. II — 3 — 3 Geological Map around Shuten Ore Showings(No. 5 area)

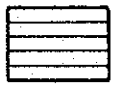
Fig. Ⅱ－3－3 (Contd.)

Legend

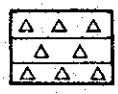
Sedimentary rocks and volcanic rocks

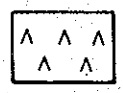

;Mesozoic, Cenozoic, Quaternary system.


;Upper Carboniferous～lower Permian system:Intermediate volcanic and volcanic-sedimentary rock.

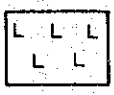

;Lower～middle Carboniferous system:Sandstone, conglomerate, grit, siltstone, tuffite, andesitic-basaltic porphyrite, dacitic porphyrite.

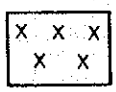

;Lower～middle Devonium system: Pelitic-silicic schist, siltstone, sandstone, limestone.

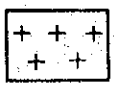

;Silurian～lower Devonian system: Andesitic-basaltic porphyrite, spilite, silicic schist, jasperoid, andesitic-basaltic tuff.

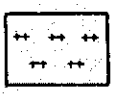

;Late Carboniferous subvolcanic rocks. Andesite, diorite.

Intrusive rocks

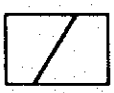

;Early Permian intrusion:Leucocratic granite, red medium grained alaskite, biotite hornblende granite-granosyenite.(Ⅱ-complex)

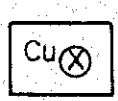

;Early Permian intrusion:Biotite, biotite-hornblende granosyenite, sometimes quartz diorite, syenite, diorite.(Ⅰ-complex)


;Late Carboniferous～early Permian intrusion:Biotite-hornblende granite, biotite granodiorite, granosyenite, sometimes syenite.


;Late Carboniferous～early Permian:Diorite, gabbrodiorite, quartz diorite.

Geologic events


;Fault



;Ore showing

(after B.A.Shevelev, 1954)

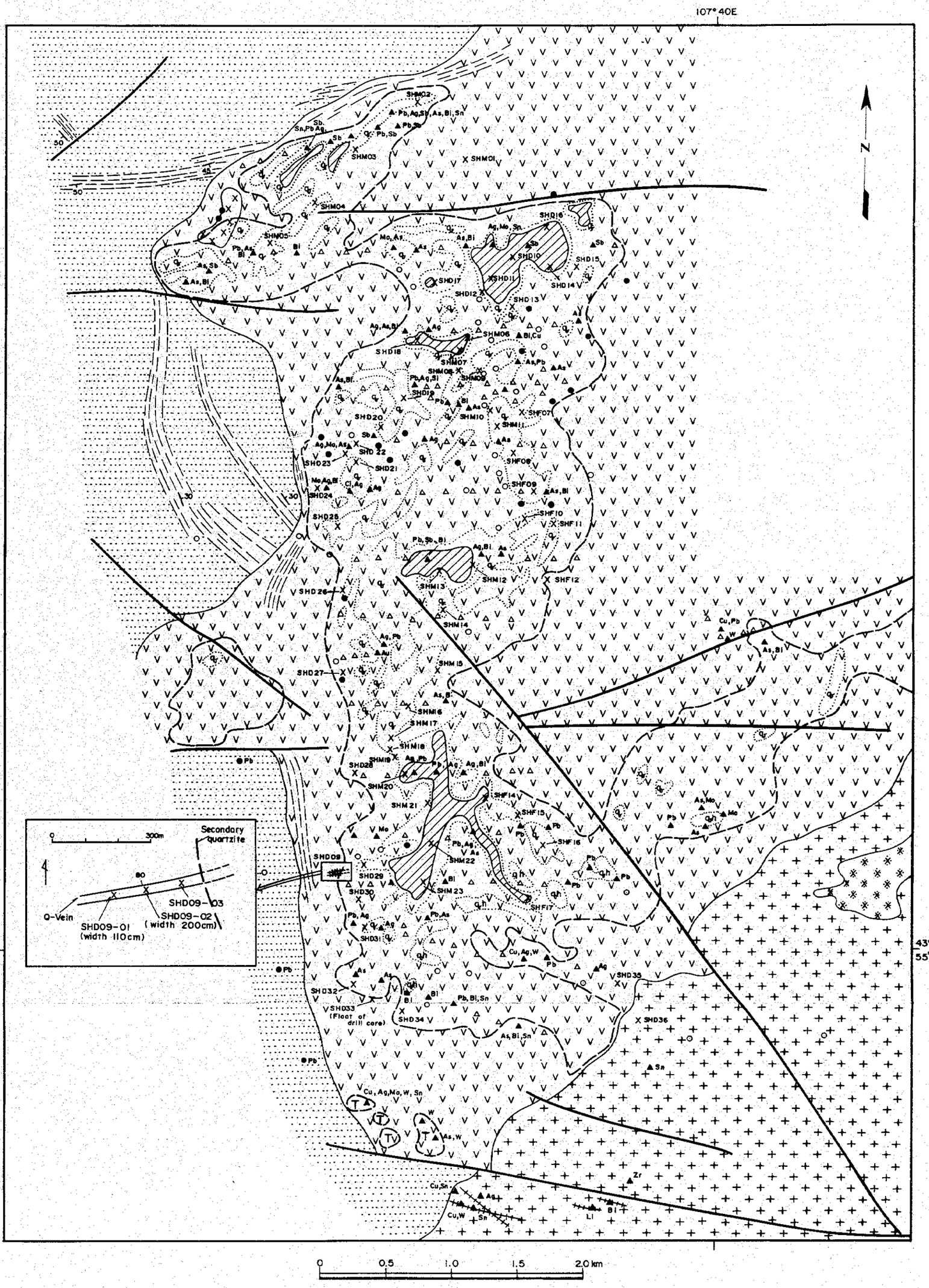


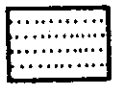
Fig. II — 3 — 4 Geological Map and Samples' Location Map of Shuten Ore Showings(No. 5 area)

Fig. II — 3 — 4 (Contd.)

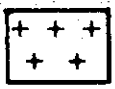
Legend

Sedimentary rocks and volcanic rocks


; Upper Carboniferous～lower Permian system(Doshiin ovogiin group): Andesite, tuff, lava, agglomerate.


; Lower Carboniferous system(Ih-shanhai group):Siltstone, sandstone, gravelite.

Intrusive rocks

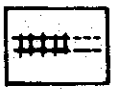

; Late Carboniferous～early Permian intrusion:Granodiorite

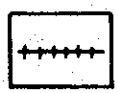

; Late Carboniferous～early Permian intrusin:Granodiorite-porphyry


; Late Carboniferous～early Permian intrusion:Hybride rock of diorit composition

Geological events

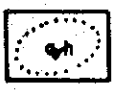

; Volcanic breccia

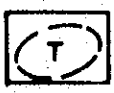

; Quartz vein


; Quartz-tourmaline vein


; Secondary quartzite(quartz-kaolinite zone)


; Secondary quartzite(mono-quartz zone)


; Secondary quartzite(mono-quartz with hematite zone)



; Tourmalinized rock

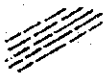
; Location of geochemical sampling

; Anomalous points and anomalous elements in geochemical samples

; Location of alluvial sampling

; Anomalous points of gold(sometimes lead) in alluvial samples


; Fault


; Bedding plane


; Dip and strike

x ; Sampling points by MMAJ in 94(SHD, SHF & SHM series)

(after Golbaenberg, 1978)

were also confirmed in this quartz vein. Furthermore, arsenic and antimony were found rather much in whole ore showing zone (sample numbers in this ore showings zone; SHD09～36, SHF05～18, SHM01～23).

Summarizing briefly above mentioned facts, silicified zone rich in alunite and kaoline exists in the central part of this ore showing zone and a quartz vein including good amount of gold exists at the peripheral part of silicified zone. The epithermal gold ore deposits is known to show many kinds of occurrence, depending its host rock and ore solution. If Shuten ore showings is a kind of epithermal gold ore deposits, it can be expected to explore other quartz veins or networks of quartz veins around and below silicified zone.

The panoramic view of this ore showings zone is shown in Fig. II-3-5.

(6) No.6 area

No.6-A area is situated around 4 km south-east from Serven Suhait ore deposits, and is composed of fine grained silexite like as pegmatite (size; 20 m×50 m) and surrounding granitic rock of Carboniferous. Malachite in silexite and a small amount of chalcopyrite and malachite in surrounding granite were observed by naked eye. In silexite, some exploration works seemed to be carried out by someone. Silexite including malachite was revealed to have Cu 7,230 ppm, but its value seems higher than average one. Silexite body was detected as white spot, by satellite image. Sample number of this area is SHF04.

No.6-B area is located around 14 km south-east from Serven Suhait ore deposits. It shows no mineralization, though this area composed of slightly sericitized rhyolitic volcanic rock was selected by satellite image.

This volcanic rock seemed to have been formed in early Carboniferous.

(7) No.7 area

This area is located around 60 km south-east from Shuten ore showings. Here can be seen a ring structure mainly composed with Mesozoic syenite whose diameter is around 20 km and in which three alteration areas were recognized.

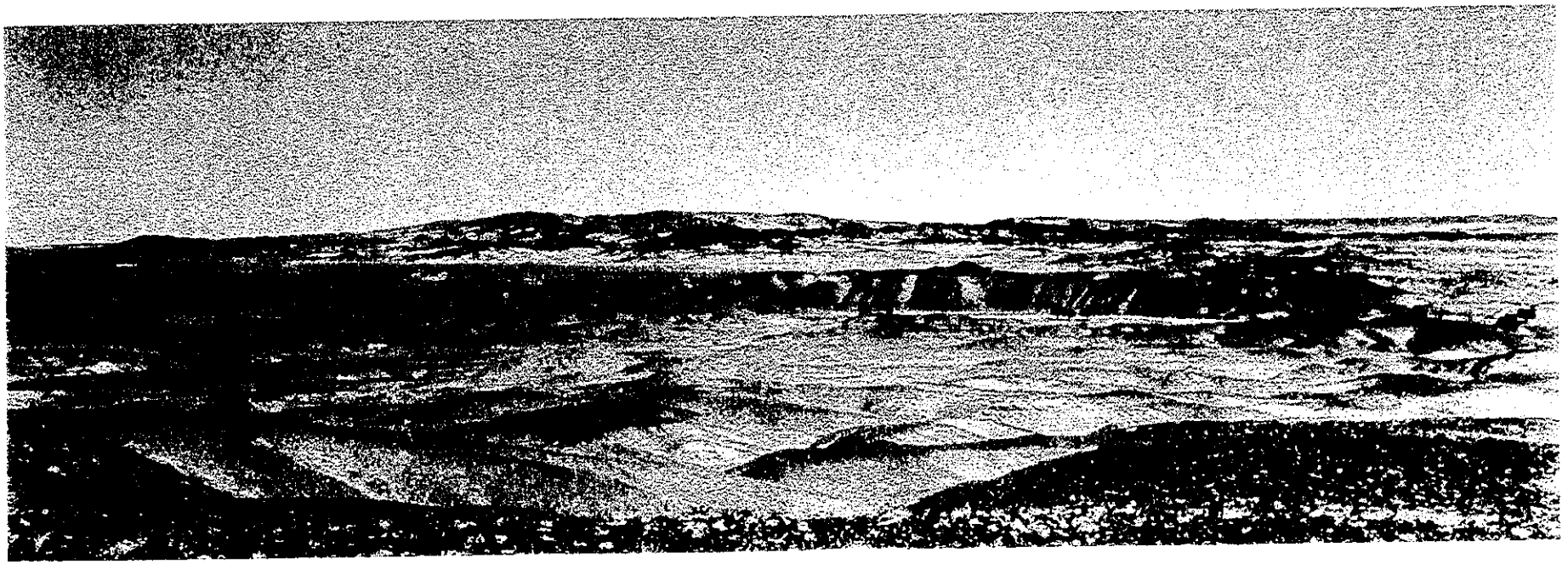


Fig. Ⅱ－3－5　Panoramic View of Shuten Ore Showings(No. 5 area)

No.7-A area is consisted of later Jurassic～early Cretaceous trachyandesitic extrusive rock which seems to extend 1km long with width of several hundreds meters. Calcite veins are found in trachyandesite body and intrusive rock of acidic volcanic rock are done around trachyandesite. Sample number of this area is SHD06.

No.7-B area is consisted of later Jurassic～early Cretaceous trachyandesite lava which shows brown in color because of limonite. This lava seemed not to have suffered from mineralization by naked eye, but kaoline and sericite were found slightly. Sample number of this area is SHD07.

No.7-C area includes whitely altered part of later Jurassic～early Cretaceous trachyandesite and the altered part was confirmed to be in a small area whose diameter was less than 100 m. After X-ray diffraction, existence of albite, alkali feldspar and calcite, and absence of quartz were confirmed. Sample number of this area is SHD08.

(8) No.8 area

This area is situated around 30 km north-west by west from Shuten ore showings. Here is a granodiorite body with its diameter of around 1km and it seemed to have been formed in Carboniferous. Granodiorite was altered wholly to be white and silicified, and existence of kaoline and pyrophyllite was confirmed (sample No.; SHD38-01). A sample was taken from quartz vein (strike; N15° E, dip; 70° W, width; 3～10 cm, length; 3 m) in granodiorite body, but any special result was not given after metal analysis (sample No.; SHD38-02).

(9) No.9 area

This area is situated around 80 km south-east from Mt.Nomgon whose elevation is 1,126 m above sea level. This area is composed of metamorphic rock, volcanic rock and limestone whose age seems to be Permian, and each rocks formed a series of small hills arranged in E-W direction. A part of limestone was silicified with rather amount of oxidized iron minerals and chemical analysis of silicified limestone did not show any mineralization (sample No.; HABF11).

(10) No.10' area

This area is located around 80 km south-east by east from Hanbogt Sum and exists at right side of dry river. Small hills (their relative heights; 30～40 m) composed of silicified tuff form two parallel lines for 1km long, and small hills of limestone (pre Cambrian) and volcanic rocks (Permian) are also distributed in surrounding area. At the center of silicified tuffaceous hills, fine grained quartz veins were recognized with width of several meters. At the rim of tuffaceous hills, argillized zone composed of kaoline, alunite and sericite were found. Result of chemical analysis shows low values of Au and Ag, but relatively high value of As, Hg and Sb. Though geological potentiality can not be mentioned anything at this moment, further survey and sampling seem necessary to be performed. This area could not be detected by satellite image analysis. Sample numbers of this area are HABF08～10.

(11) No.11' area

This area is located around 10 km south from No.10' area. Here andesitic pyroclastic rock of Permian lies on pre Cambrian limestone with parallel unconformity and silicified zone originated in both rocks intervenes between them. The exact age of silicification is unknown, but it seems a little later than Permian pyroclastic rock. Fig. II-3-6 shows sketch map and samples' locations of this area. Metal analysis of limestone and silicified zone cleared high content of Sb (112 ppm) (sample No.; HAD03 & 04). X-ray diffraction analysis revealed existence of kaoline in silicified zone, and sericite and kaoline in pyroclastic rock (sample Nos.; HAD03, 04 & 05). It is still too early to mention about geological potentiality, but it may be necessary to survey in more details and to take more samples for deeper levels and for lateral extension.

(12) No.12 area

This area is located around 32 km south-east from Hanbogt Sum and topographically small hills with relative height of several～several teens meters develop in depressed zone which was highly weathered and eroded. This area is geologically comprised of weathered muddy rock, volcanic rock and acidic intrusive rock (granitic?), and these rocks seem to be arranged in NE-SW trend. These rocks were thought to be formed in Devonian and volcanic rock (or

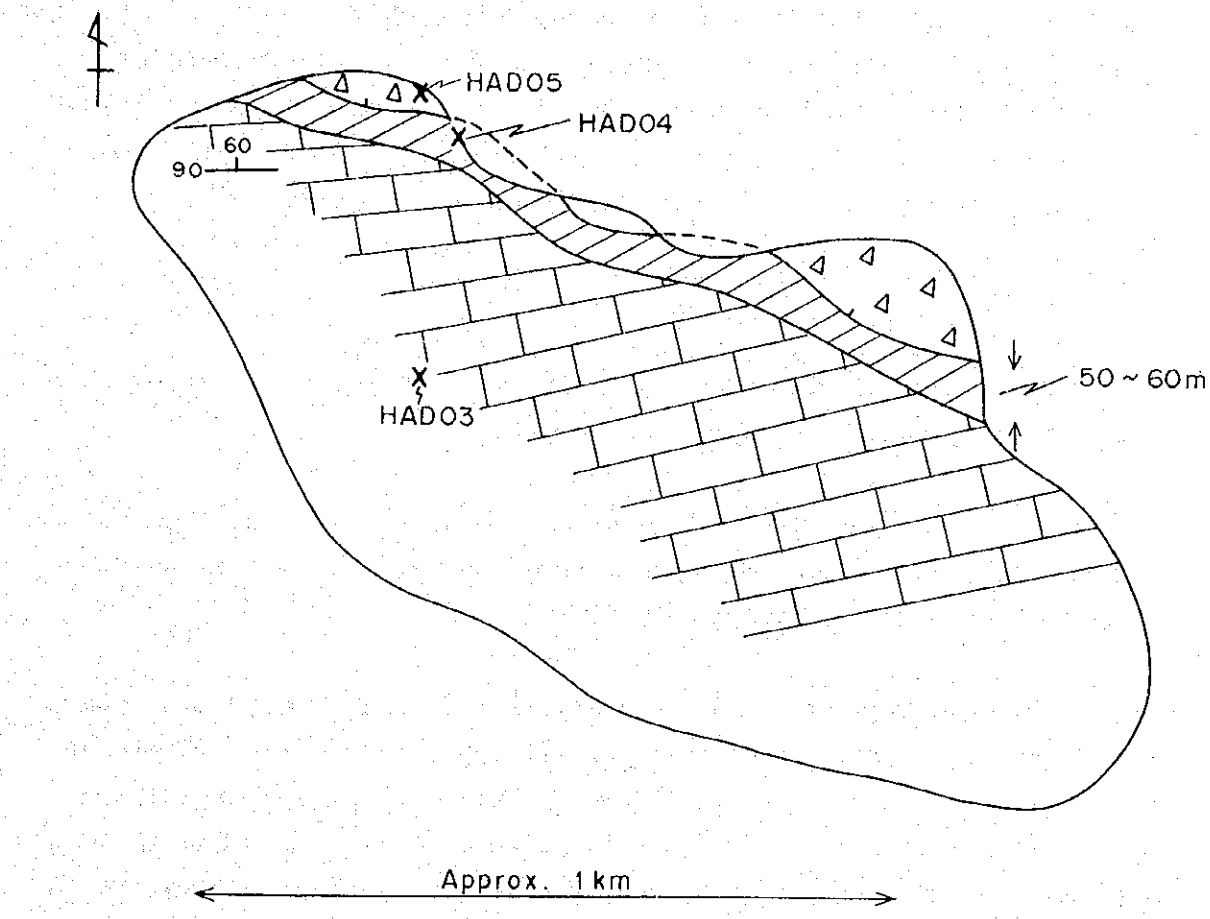


Fig. Ⅱ — 3 — 6 Sketch Map of No. 11' Area

tuffaceous rock) suffered strongly from alteration. Small outcrops of silicified zone and argillized zone mainly consisted of kaoline and sericite develop alternatively here and there in range of 1.5 km. This alteration zone was picked up by satellite image. Chemical analysis only showed rather high content of As and Sb (sample Nos.; HABF01～07). It is too early to say something about geological potentiality, because of few samples.

(13) No.13 area

This area is located around 95 km south-east by east from Luus, 1.5 km east from main local road and lies on gentle hill.

No.13-A area mainly consists of Permian intrusive granite which was picked up by satellite image, and narrow quartz veins and xenolith of limestone were observed here and there (sample No.; ULD04).

No.13-B area is composed of silicified zone which is at the contact zone between pre Cambrian limestone and Permian intrusive granite, and which extends for more than 100 m long with width of several tens meters. Age of silicification seems to be almost same as the intrusion of granite. Report on Uudamtal area presented at March in 1994 by MMAJ says that silicified zone in this area (No.66 in Solongoi area) should be siliceous sediments from hot spring. Only crystalline quartz and calcite were confirmed in this year's survey, therefore it is difficult to consider that these silicified rock is siliceous sinter. These siliceous rock is probably thought to be simple silicified rock accompanied the intrusion of granite, judging from its distribution feature and surrounding geological occurrence. Sample numbers from this area are ULD02 & 03.

Geology of No.13-C area consists of the parallel 3 quartz veins which are known. Unaltered rhyolite and metamorphic rocks whose age is not known develop around these veins. Boundary between these quartz veins and host rock is not clear, therefore degree of alteration in host rock is also obscure. Each quartz veins extends more than 50 m in N50° E direction (strike) with width of 2 m. These quartz veins are composed of very fine grained quartz crystals, and sulfide minerals could not be observed. Chemical analysis did not give any special result (sample No.; ULF02).

(14) No.14 & 15 areas

These areas are situated around 20 km south from No.13 area. In these 2 areas, limestone and green schist (both are pre Cambrian) distribute alternatively, and remarkable mineralization and alteration were not recognized. Small quartz vein along schistosity (strike; N70 ° E, dip; 60° S) of green schist in No.14 area was chemically analized and result was only Au 6 ppb (sample No.; ULF01).

(15) No.16 area

This area is located around 40 km north-west from Mandah village.

No.16-A area is composed of ultra basic rock, phyllite, limestone and acidic volcanic rock in ascending order as shown in Fig. II-3-7. Limestone seemed to be selected by satellite image because of its high content of limonite, chemical analysis of limestone shows very high content of As (236 ppm) and Sb (143 ppm). Sample number of this area is SHD05.

No.16-B area is Narin Hudag area where some amount of exploration works have been performed. The result of previous exploration works was not clear, but type of ore showings is called to be porphyry copper type. In this area, late Carboniferous granite intruded into middle Carboniferous andesite as shown in Fig. II-3-8. Quartz-tourmaline veins which include a little amount of chalcopyrite, pyrite and malachite were seen abundantly in andesite and poorly in granite. Width of quartz-tourmaline veins or that of concentrated zone in these veins were generally less than 30 cm, but sometimes it attained to 15 m as shown in figure. These veins content Cu 0.35 % partly (sample No.SHD37).

No.16-C area is the place where exploration was performed for porphyry copper ore deposits in Carboniferous granite, but result of exploration was not clear. Analysis of spot sample in which malachite was seen showed Cu 0.38 % (sample No. ; SHD39). Under microscope, chalcopyrite, bornite and oxidized iron minerals were observed.

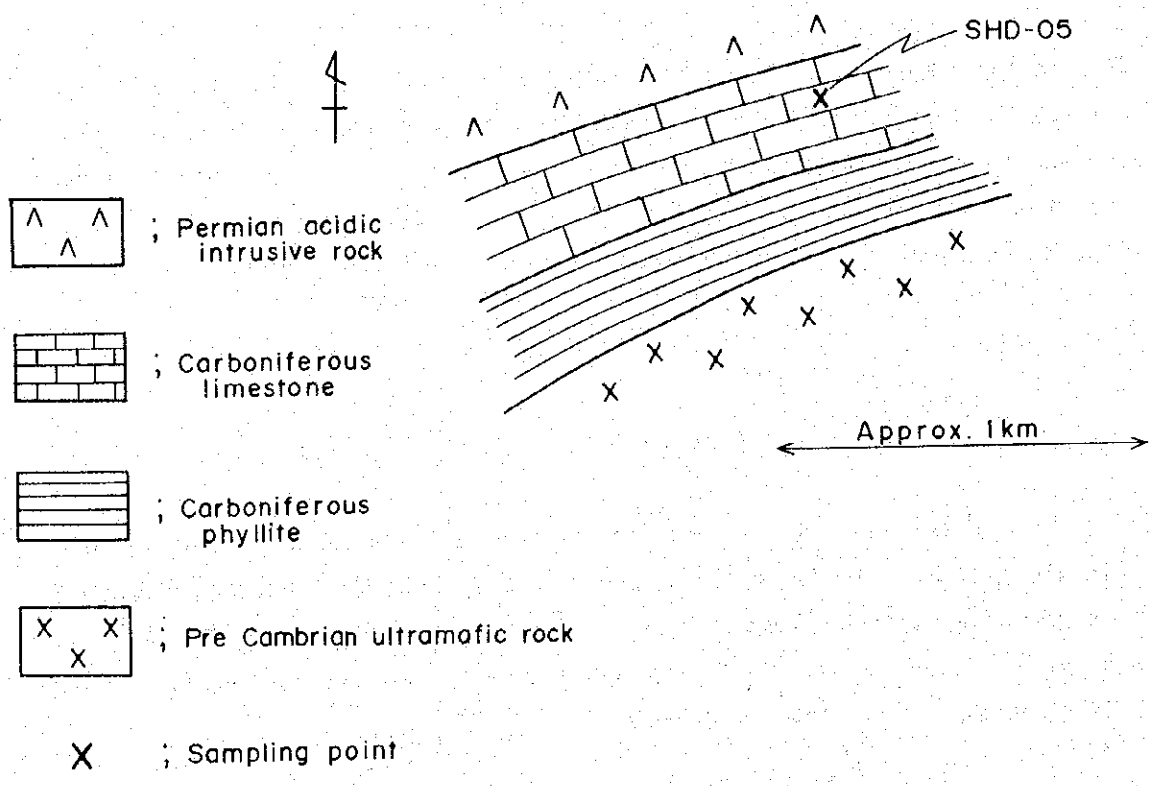


Fig. II — 3 — 7 Sketch Map of No. 16-A Area

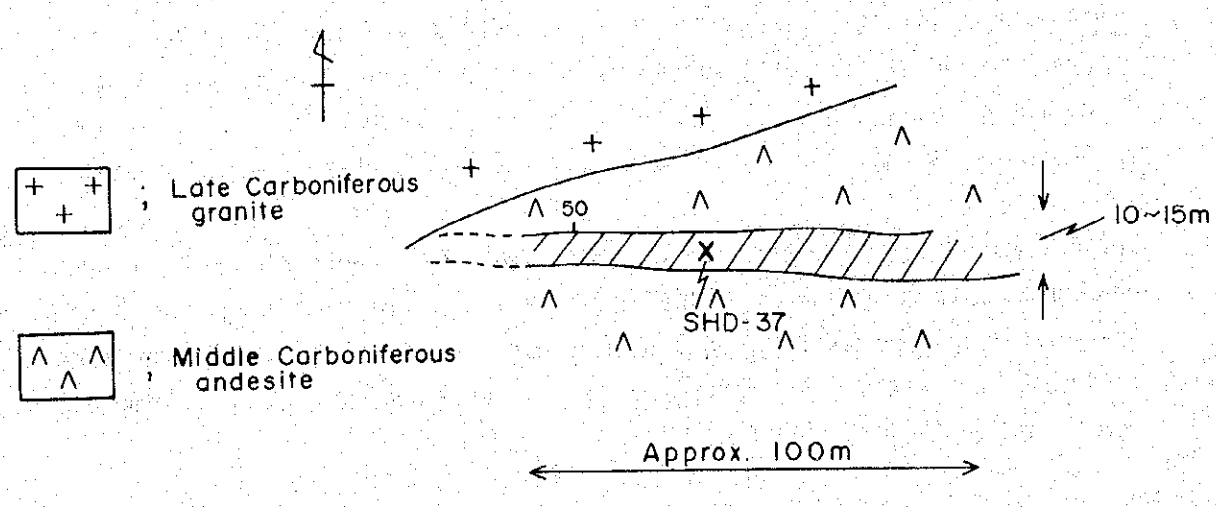


Fig. II — 3 — 8 Sketch Map of No. 16-B Area

(16) No.17 area

This area is situated around 80 km west from Mandah village, and acidic volcanic rock which is brown in color developes widely in this area. Any special result was not acquired from chemical analysis (sample No.; SHD04).

(17) No.20 area (Ih-shanhai ore showings)

This area is at the western end of Ih-shanhai mountains which extends in ENE-WSW direction, and is famous as Cu ore showings.

Fig. II-3-9 shows the geology around Ih-shanhai ore showings area. As shown in this figure, this area is generally composed of andesite or dacite (upper Carboniferous～lower Permian), pyroclastic rock and siltstone which are intercalated in andesite or dacite, and porphyritic granodiorite or granite which intruded in almost same age as surrounding rocks or a little later than them. Ore showings exist mainly in silicified zones having kaoline in andesite, but somewhere silicified zones are in porphyrytic granodiorite. Age of silicification seems to be same as intrusion of granodiorite or a little later than that.

Fig. II-3-10 shows geology of Ih-shanhai ore showings area and location of samples. Ore showings are mainly included in silicified zone composed of quartz and kaoline, and white argillized zones develope rather widely around silicified zone. Silicified zone including main ore showings can be divided into 2 blocks, that is, west one and east one. In west one, small hills composed of silicified rock extend in EW direction like echelon or like step, and quartz, alunite and kaoline are predominant in central part of each hills, and quartz and kaoline are predominant in periphery of each hills. In central part of a certain hill, hydrothermal breccia is seen and contains highly Hg 110 ppb (sample No.; MOF09). In east one, silicified zone developes in a circle of around 1 km, quartz and kaoline are main components, and alunite is observed partially. Furthermore, propylitized volcanic rock distributes scatteringly.

In silicified zone (partly argillized), it was revealed to contain rather high content of As. A sample from quartz vein (No.MOM01) shows high contents of Cu (0.25 %) and Pb (0.65 %).

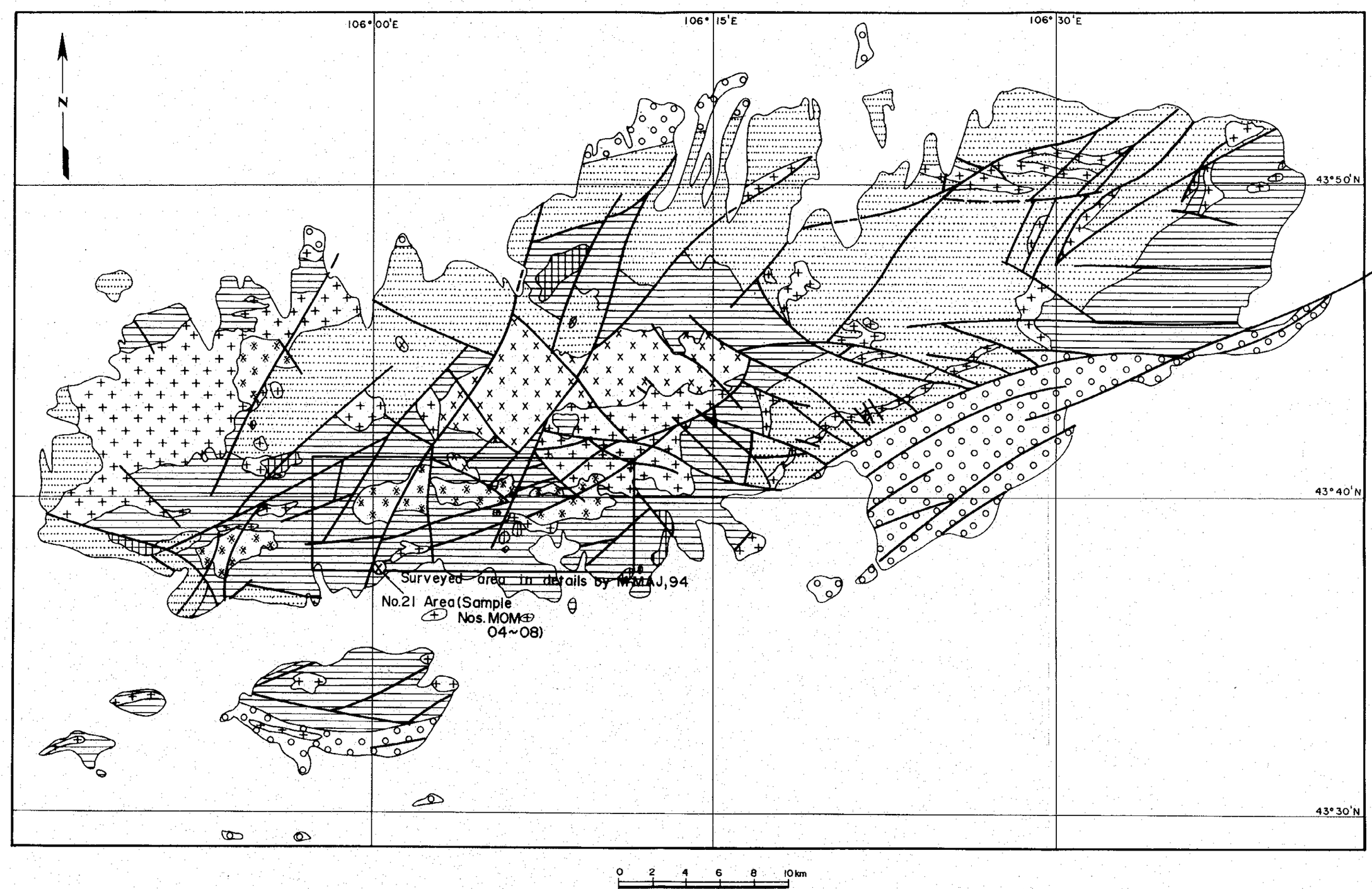
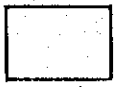


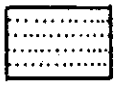
Fig. II — 3 — 9 Geological Map around Ih-shanhai Ore Showings(Nos. 20 & 21 areas)

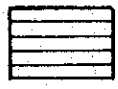
Fig. Ⅱ－3－9 (Contd.)

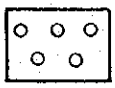
Legend

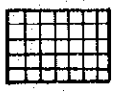
Sedimentary rocks and volcanic rocks


;Mesozoic, Cenozoic, Quaternary system.

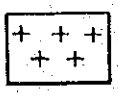

;Lower Permian system:Liparitic and dacitic porphyry, ignimbrite, tuffaceous conglomerate, sandstone.

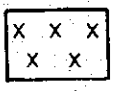

;Upper Carboniferous-lower Permian intermediate volcanic and volcanic-sedimentary rock.


;Lower-middle Carboniferous sandstone, conglomerate, grit, siltstone, tuffite, andesitic-basaltic porphyrite, dacitic porphyrite.


; Late Carboniferous subvolcanic rocks: Andesite, diorite.

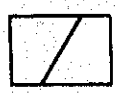
Intrusive rocks


; Early Permian intrusion:Leucocratic granite, red medium grained alaskite, biotite hornblende granite-granosyenite.(Ⅱ-complex)


; Early Permian intrusion:Biotite, biotite-hornblende granosyenite, sometimes quartz diorite, syenite, diorite.(Ⅰ-complex)


; Late Carboniferous～Early Permian intrusion:Biotite-hornblende granite, biotite granodiorite, granosyenite, sometimes syenite.(Mantah complex)

Geologic event


; Fault


; Sampling points in 94' survey.

(after B.A.Shevelev, 1954)

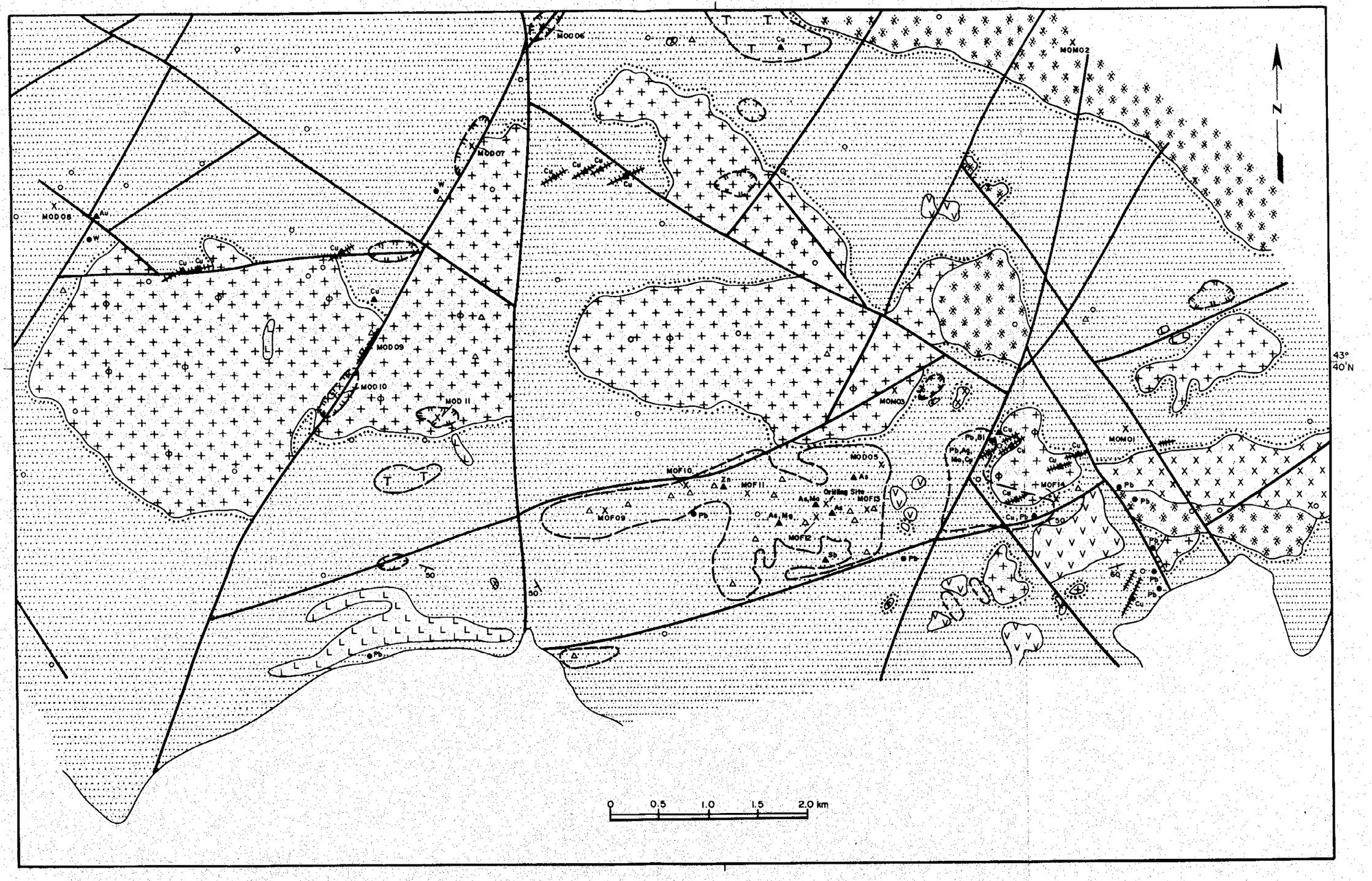


Fig. Ⅱ－3－10 Geological Map and Samples' Location Map of Ih-Shanhai Ore Showings(No. 20 area)

Fig. Ⅱ－3－10 (Contd.)

Legend

Geological units

; Quaternary system(Holocenic deluvial～Proluvial):Sandstone, gravels, sandy loam, breakstone.

; Upper Carboniferous～early Permian system(Doshiin ovogiin group): Andesite with intercalation of tuff and siltstone.

; Lower Permian subvolcanic stock and dike:Rhyolite.

; Late Carboniferous～early Permian subvolcanic stock:Diorite-porphyry.

; Early Permian intrusion:Granite, granite-aplite, granosyenite.

; Late Carboniferous～early Permian intrusion:Granodiorite.

; Late Carboniferous～early Permian intrusion:Granodiorite-porphyry, diorite-porphyry.

Geological events

; Secondary quartzite(quartz-kaolinite zone)

; Silicified zone

; Toumalinized zone

; Pyritized zone

; Quartz vein

; Potassium feldsparized zone

; Hornfels of contact zone

; Location of geochemical sampling

; Anomalous points and anomalous elements in geochemical samples

; Location of alluvial sampling

; Anomalous points of gold, lead & copper in alluvial samples

; Fault

; Dip and strike

; Sampling points by MMAJ in 94(MOD, MOF & MOM series)

(after Golbaenberg, 1978)

Small silicified zones and quartz veins which contain sericite and chlorite commonly but few amount are scattered around main ore showings, but any importance can not be found.

Geological type of these ore showings here can not be decided yet, but is called to be porphyry copper type ore showings. Sample numbers from this area are MOD05～11, MOF09～14 and MOM01～03.

Panoramic view of this area is shown in Fig. II-3-11.

(18) No.21 area

This area neighbors at west of Ih-shanhai area and it shows silicified, white altered and argillized zone which extends around 500 m×500 m arealy in granodioritic porphyry of late Carbinuferous ～early Permian. This alteration zone was selected by satellite image and several quartz veins were observed in this zone. Sericite was found as altered mineral, and in quartz veins some amount of lead and mercury were detected as 1,150 ppm and 210 ppb respectively. Location of samples is shown in Fig. II-3-9 and sample numbers of this area are Nos.MOM04～08.

(19) No.22 area

This area is located around 12 km north-west by west from Mt.Hanbogt and around 25 km south-west from Hanbogt village. In this area, intrusive body of Carboniferous syenite developes widely and shows much platy weathering, but silicification, argillization and mineralization could not be observed. Satellite image might choose the strongly weathered part.

(20) No.23 area

This area is located around 30 km north-west by west from Mt.Hanbogt and around 40 km south-west from Hanbogt village. Outcrops of silicified rock whose diameter is around several hundreds meters exist like as 2 small hills in steppe. Original rock of these silicified rock was not clear, but it seems to be Carboniferous granitic rock. After metal analysis, no special result was obtained, but X-ray diffraction analysis revealed existence of alunite. Sample numbers from this area are HAD01 & 02.

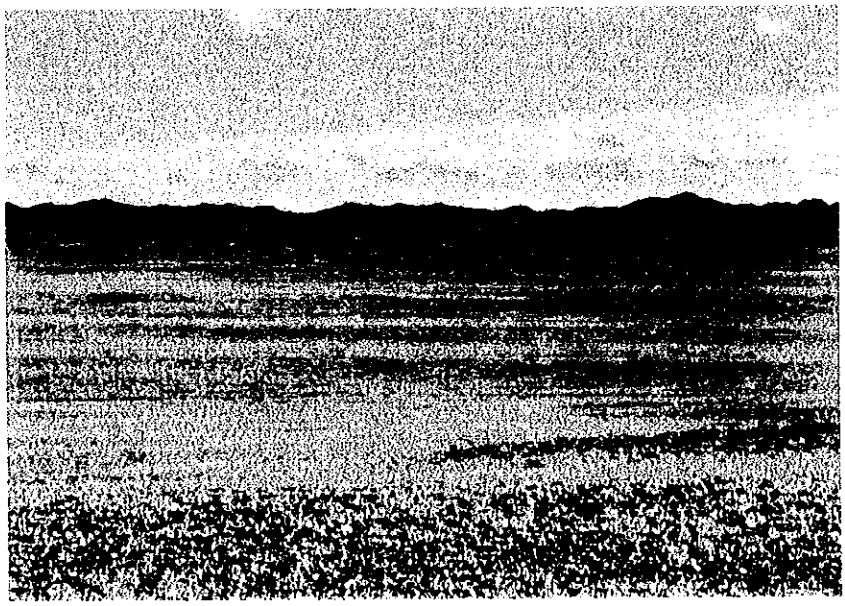


Fig. Ⅱ－3－11 Panoramic View of Ih-Shanhai Ore Showings(No. 20 area)

(21) No.24 area

This area is located around 25 km north-west from Bayan Ovoo village. A hill with its diameter of 700 m shows silicification and argillization wholly, and furthermore shows abundance of brown oxidized iron minerals because of strong weathering. Several quartz veins were also seen in silicified rock. The original rock of these silicified rock was not identified, but it seems to be early～middle Carboniferous porphyrytic andesite. Metal analysis did not indicate any result to be mentioned, but X-ray diffraction analysis showed that kaoline existed commonly and alunite did partially. Sample numbers of this area are MOD01～04. Geological map around Nos.24 & 25 is shown as Fig. II-3-12.

(22) No.25 area

This area is located around 20 km north from Bayan Ovoo village and around 10 km west from No.24 area.

In No.25-A area, outcrops of alteration rock forms several hills with relative height of 50～60 m which distribute in a circular range of its diameter around 1.5 km. Original rock of altered zone is grayish brown andesitic or dacitic volcanic rock which includes much phenocryst of plagioclase and is considered to be formed in early～middle Carboniferous. At central part of each hills composed of altered rock, silicified body occupies having alunite. At most parts of each hills, white argillized rocks develope commonly with quartz and kaoline, and partially with oxidized iron minerals. To peripheral zone of each hills, structure of original rock became clear gradually. 5 samples were chemically analized, and contents of Au and Ag were less than detectional limit, but As and Sb were recognized to be contained rather much. Therefore it seems necessary to survey in more details.

No.25-B which is located around 2 km south-east from No.25-A was discovered on the way to No.25-A. This area is in a hollow composed of quartz veins and silicified zone. Host rock of quartz veins and original rock of silicified zone seemed to be same as that of No.25-A. Appearance of silicified zone looks like a big vein which shows maximum width of 20 m and N70 ° W in strike. On the other hand, 2 quartz veins were seen at interval of 30～40 m and their strike changed from NE to EW. Metal analysis were performed, but any special result to