

Appendix 11 Result of EPMA Analysis (1)

Mineral identification

	Sample no.	Identified mineral	Chemical composition (weight %)														Total
			SiO2	TiO2	Al2O3	FeO	MnO	Cr2O3	MgO	CaO	Na2O	K2O					
1	MJKA-15 72.6m (1)	Hedenbergite	48.096	0.043	0.776	24.366	0.652	0.030	1.584	22.750	0.177	0.000	0.000	98.474			
2	MJKA-15 72.6m (2)	Hedenbergite	48.408	0.051	0.955	25.446	0.544	0.000	1.629	22.982	0.220	0.030	100.265				
3	MJKA-15 72.6m (3)	Hedenbergite	48.362	0.044	0.579	26.295	0.727	0.084	0.968	21.447	0.241	0.000	98.748				
4	MJKA-15 72.6m (4)	Hedenbergite	48.226	0.070	0.852	27.680	0.538	0.000	0.180	21.878	0.353	0.003	99.779				
5	MJKA-15 72.6m (5)	Ferroactinolite	37.917	0.489	10.732	32.521	0.332	0.047	0.692	11.518	1.559	1.847	97.654				
6	MJKA-15 72.6m (6)	Ferroactinolite	37.448	0.622	10.427	31.357	0.287	0.000	0.577	11.479	1.575	1.846	95.618				
7	MJKA-15 72.6m (7)	Ferroactinolite	37.807	0.519	10.592	32.140	0.441	0.000	0.644	11.639	1.512	1.862	97.156				
8	MJKA-15 72.6m (8)	Ferroactinolite	40.093	0.215	8.064	32.785	0.266	0.000	0.869	11.306	1.292	1.538	96.427				
9	MJKA-18 116.8m (1)	Andradite rich grandite	35.168	0.011	0.399	26.803	0.302	0.064	0.065	33.632	0.000	0.000	96.444				
10	MJKA-18 116.8m (2)	Andradite rich grandite	35.415	0.000	0.486	26.976	0.278	0.000	0.000	32.881	0.019	0.000	96.055				
11	MJKA-18 116.8m (3)	Andradite rich grandite	35.295	0.086	0.383	26.935	0.259	0.000	0.066	33.692	0.000	0.000	96.715				
12	MJKA-18 116.8m (4)	Andradite rich grandite	35.222	0.000	0.528	27.078	0.280	0.000	0.028	33.924	0.027	0.000	97.087				
13	MJKA-18 116.8m (5)	Ferroactinolite	47.433	0.154	1.281	36.166	0.651	0.000	0.199	9.848	0.417	0.098	96.247				
14	MJKA-18 116.8m (6)	Ferroactinolite	47.940	0.059	1.140	36.221	0.540	0.000	0.334	10.295	0.438	0.093	97.058				
15	MJKA-18 116.8m (7)	Ferroactinolite	47.445	0.183	1.307	36.170	0.654	0.000	0.171	9.995	0.487	0.095	96.507				
16	MJKA-18 116.8m (8)	Hedenbergite	50.235	0.007	0.024	21.780	0.531	0.019	4.412	23.239	0.010	0.000	100.256				
17	MJKA-18 116.8m (9)	Hedenbergite	49.845	0.012	0.026	21.144	0.633	0.066	4.141	24.004	0.049	0.004	99.925				
18	MJKA-18 116.8m (10)	Hedenbergite	50.389	0.013	0.000	21.146	0.711	0.000	4.623	23.587	0.045	0.017	100.530				
19	MJKA-18 116.8m (11)	Hedenbergite	49.684	0.000	0.031	22.558	0.609	0.092	3.483	23.817	0.073	0.000	100.348				
20	MJKA-18 116.8m (12)	Andradite rich grandite	35.672	0.108	0.655	28.030	0.218	0.097	0.046	33.361	0.000	0.000	98.186				
21	MJKA-18 116.8m (13)	Andradite rich grandite	35.735	0.061	1.044	27.495	0.309	0.024	0.057	33.594	0.033	0.000	98.352				
22	MJKA-18 116.8m (14)	Andradite rich grandite	35.657	0.000	0.585	28.068	0.365	0.104	0.056	33.114	0.000	0.000	97.949				

Appendix 11 Result of EPMA Analysis (2)

Mineral identification

	Sample no.	Identified mineral	Chemical composition (weight %)													
			SiO2	TiO2	Al2O3	FeO	MnO	Cr2O3	MgO	CaO	Na2O	K2O	Total			
23	1930C5-16Fa (1)	Ferroactinolite	46.912	0.000	3.771	32.035	0.513	0.050	1.833	11.894	0.301	0.298	97.607			
24	1930C5-16Fa (2)	Ferroactinolite	41.071	0.128	8.505	32.864	0.450	0.003	0.642	11.519	0.852	0.986	97.020			
25	1930C5-16Fa (3)	Ferroactinolite	39.842	0.058	8.666	33.136	0.399	0.024	0.635	11.563	0.837	1.517	96.677			
26	1930C5-16Fa (4)	Ferroactinolite	43.235	0.044	6.444	32.606	0.454	0.000	1.291	11.543	0.588	0.876	97.082			
27	1930C5-16Fa (5)	Andradite rich grandite	36.105	0.096	3.442	23.634	0.256	0.000	0.003	33.663	0.007	0.006	97.213			
28	1930C5-16Fa (6)	Andradite rich grandite	36.228	0.000	3.514	24.718	0.234	0.000	0.002	33.497	0.041	0.000	98.235			
29	1930C5-16Fa (7)	Andradite rich grandite	36.187	0.000	1.995	25.465	0.358	0.000	0.027	33.245	0.000	0.022	97.300			
30	1930C5-16Fa (8)	Andradite rich grandite	36.171	0.032	2.607	24.245	0.207	0.033	0.000	33.792	0.000	0.000	97.088			
31	1930C5-16Fa (9)	Hedenbergite	49.458	0.023	0.076	24.469	0.716	0.000	2.159	23.147	0.108	0.000	100.155			
32	1930C5-16Fa (10)	Hedenbergite	49.371	0.000	0.222	24.469	0.674	0.000	2.220	22.861	0.078	0.000	99.894			
33	1930C5-16Fa (11)	Hedenbergite	49.450	0.000	0.097	25.063	0.643	0.031	1.680	23.028	0.002	0.010	100.005			
34	1930C5-16Fa (12)	Hedenbergite	49.331	0.000	0.218	24.611	0.878	0.052	2.213	23.192	0.102	0.000	100.597			
35	1930C6-23Fb (1)	Ferrosalite	51.849	0.020	0.641	11.020	0.267	0.001	10.703	24.976	0.101	0.016	99.593			
36	1930C6-23Fb (2)	Ferrosalite	50.585	0.014	1.050	11.455	0.302	0.014	10.622	23.913	0.107	0.010	98.071			
37	1930C6-23Fb (3)	Ferrosalite	51.150	0.070	0.615	11.742	0.322	0.060	10.700	24.793	0.049	0.021	99.521			
38	1930C6-23Fb (4)	Ferrosalite	51.556	0.025	1.021	12.679	0.245	0.000	10.195	24.041	0.080	0.000	99.842			
39	1930C6-23Fb (5)	Grossular rich grandite	38.739	0.244	16.702	7.790	0.135	0.000	0.257	35.018	0.029	0.000	98.914			
40	1930C6-23Fb (6)	Grossular rich grandite	38.825	0.175	17.566	7.306	0.168	0.000	0.235	34.743	0.000	0.000	99.018			
41	1930C6-23Fb (7)	Grossular rich grandite	39.031	0.128	17.350	7.950	0.151	0.025	0.166	34.348	0.000	0.000	99.149			
42	1930C6-23Fb (8)	Grossular rich grandite	39.443	0.204	16.484	8.876	0.166	0.018	0.128	35.250	0.000	0.000	100.569			
43	1930C6-23Fb (9)	Ferrosalite	50.322	0.050	0.213	22.304	0.604	0.000	3.930	22.786	0.226	0.000	100.436			
44	1930C6-23Fb (10)	Ferrosalite	49.873	0.105	0.415	20.139	0.678	0.000	5.428	22.195	0.237	0.000	99.070			
45	1930C6-23Fb (11)	Ferrosalite	51.068	0.084	0.681	17.346	0.663	0.000	7.074	22.993	0.280	0.004	100.194			
46	1930C6-23Fb (12)	Ferrosalite	49.846	0.024	0.508	19.430	0.563	0.000	5.266	23.113	0.267	0.000	99.019			

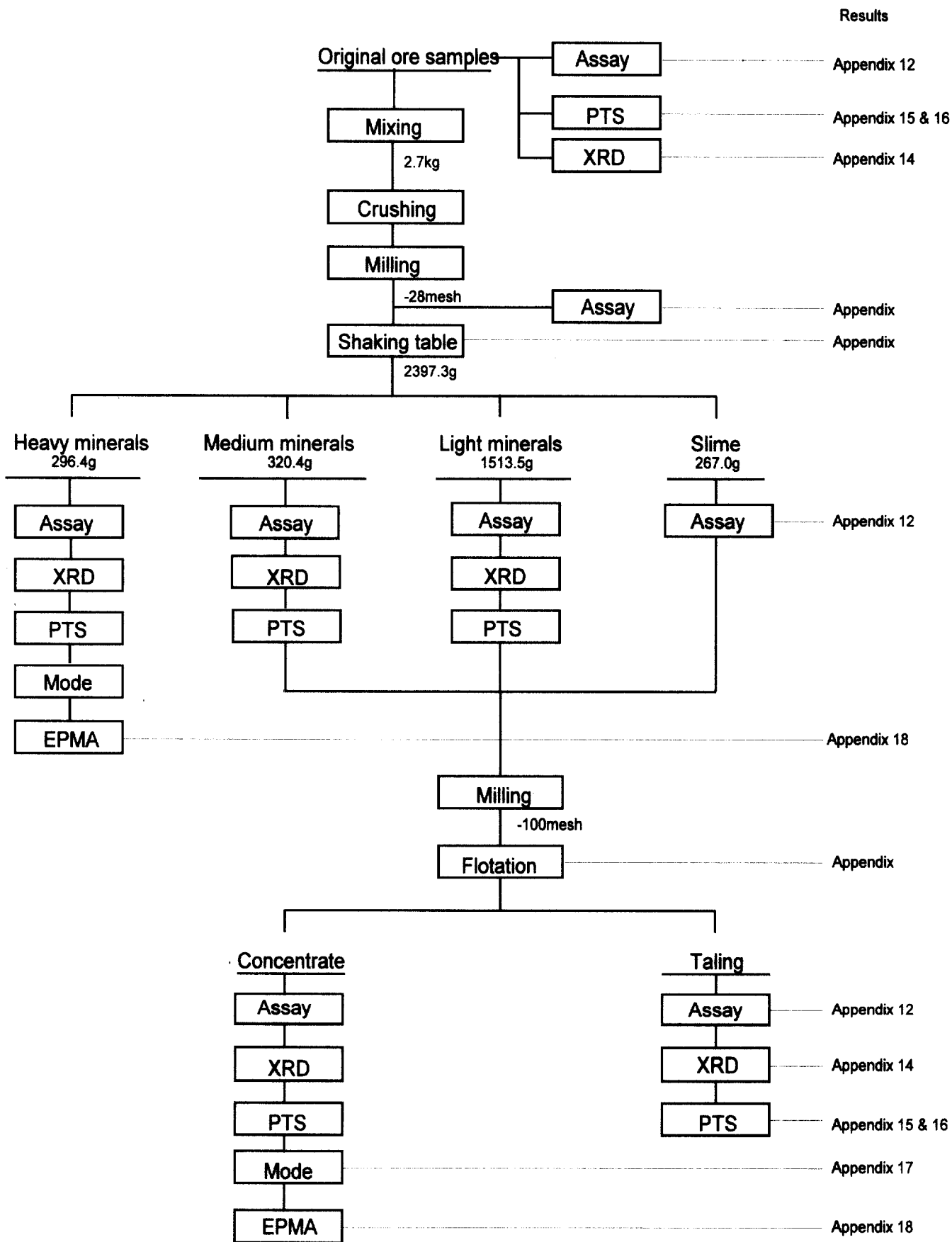
Appendix 11 Result of EPMA Analysis (3)

Electrum

	Sample no.	Weight (%)			Atomic	
		Au	Ag	Total	Au	Ag
1	MJKA-18 116.8m (15)	52.949	37.300	90.249	43.739	56.261
2	MJKA-18 116.8m (16)	50.973	38.561	89.533	41.993	58.007
3	MJKA-18 116.8m (17)	57.732	37.724	95.456	45.596	54.404
4	MJKA-18 116.8m (18)	58.418	37.473	95.891	46.055	53.945
5	1930C5-15.5F (1)	61.962	33.753	95.715	50.134	49.866
6	1930C5-15.5F (2)	62.364	34.014	96.378	50.102	49.898
7	1930C5-15.5F (3)	64.209	31.143	95.352	53.032	46.968
8	1930C5-15.5F (4)	57.539	32.487	90.026	49.238	50.762
9	1930C5-15.5F (5)	63.570	32.549	96.119	51.681	48.319
10	1930C5-15.5F (6)	64.524	31.456	95.980	52.905	47.095
11	1930C5-16Fa (13)	55.872	39.570	95.442	43.607	56.393
12	1930C5-16Fa (14)	54.878	40.645	95.524	42.509	57.491
13	1930C5-16Fa (15)	56.077	40.766	96.843	42.966	57.034
	average	58.544	35.957	94.501	47.197	52.803

Bi-Te mineral

	Sample no.	Chemical composition							
		Bi	Ag	Cu	Pb	Se	Te	S	Total
1	1930C5-15.5F (7)	81.376	0.075	1.317	0.000	2.053	14.167	1.384	100.373
2	1930C5-15.5F (8)	77.451	0.000	1.202	0.000	0.459	21.584	0.029	100.725
3	1930C5-15.5F (9)	76.845	0.000	1.156	0.000	0.310	21.878	0.001	100.189



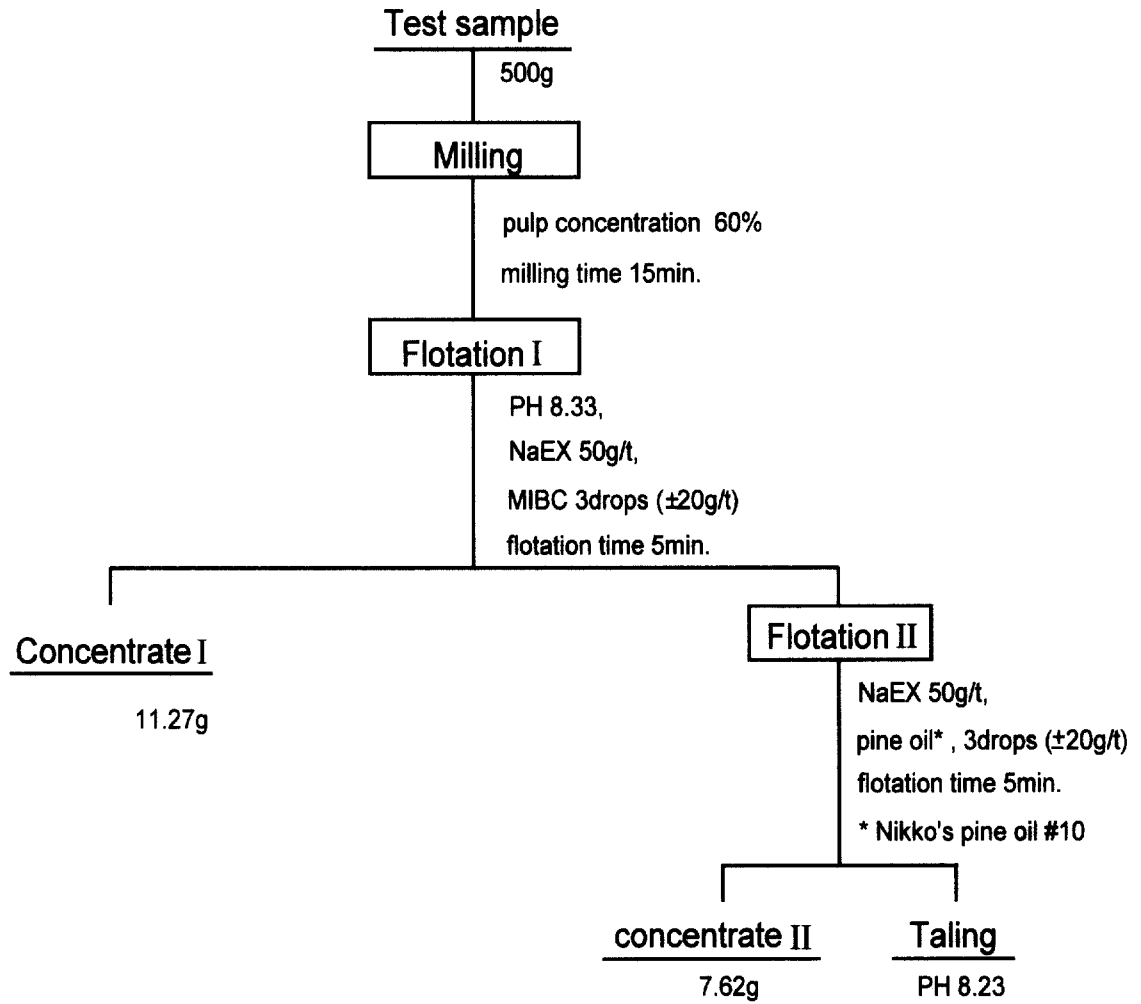
Mode : modal analysis of minerals

PTS : polished thin section

XRD : X-ray diffraction

Appendix 12 Flow Chart of Mineral Separation Test

Test sample {  
 Medium minerals : 236.3g  
 Light minerals : 1375.2g  
 Slime : 185.8g



Appendix 13 Flow Chart of Flotation Test

Appendix 14 Result of Ore Dressing Test

shaking table

Sample	Distribution		Grade			Metal contents and recovery					
	(g)	(%)	Au	Ag	Cu	Au		Ag		Cu	
			(g/t)	(g/t)	(%)	(mg)	(%)	(mg)	(%)	(g)	(%)
Original ore	2,397.3	100.0	14.5 *	21 *	0.97 *	34.7813	100.0	50.2296	100.0	23.2800	100.0
Heavy minerals	296.4	12.4	70.8	93	4.43	20.9851	60.3	27.5652	54.9	13.1305	56.4
Midium minerals	320.4	13.4	11.8	16	0.97	3.7807	10.9	5.1264	10.2	3.1079	13.4
Light minerals	1,513.5	63.1	6.0	10	0.34	9.0810	26.1	15.1350	30.1	5.1459	22.1
Slime	267.0	11.1	3.5	9	0.71	0.9345	2.7	2.4030	4.8	1.8957	8.1

\* Calculated value (cf. assay result : Au 20.3g/t , Ag 16G/t , Cu 0.98%)

Flotation

Sample	Distribution		Grade			Metal contents and recovery					
	(g)	(%)	Au	Ag	Cu	Au		Ag		Cu	
			(g/t)	(g/t)	(%)	(mg)	(%)	(mg)	(%)	(g)	(%)
Test sample	500.0	100.0	6.6 *	11 *	0.48 *	3.2834	100.0	5.3940	100.0	2.4155	100.0
Concentrate	18.9	3.8	145.7 *	234 *	12.53 *	2.7542	83.9	4.4318	82.2	2.3674	98.0
Taling	481.1	96.2	1.1	2	0.01	0.5292	16.1	0.9622	17.8	0.0481	2.0

\* Calculated value

Final result

Sample	Distribution		Grade			Metal contents and recovery					
	(g)	(%)	Au	Ag	Cu	Au		Ag		Cu	
			(g/t)	(g/t)	(%)	(mg)	(%)	(mg)	(%)	(g)	(%)
Original ore	2,397.3	100.0	14.5 *	21 *	0.97 *	34.8401	100.0	50.2885	100.0	23.3359	100.0
Heavy minerals	296.4	12.4	70.8	93	4.43	20.9851	60.2	27.5652	54.8	13.1305	56.3
Concentrate	79.8	3.3	145.7	234	12.53	11.6318	33.4	18.6812	37.1	10.0032	42.9
Total	376.2	15.7	86.7	123	6.15	32.6170		46.2464		23.1337	
Taligng	2,021.1	84.3	1.1	2	0.01	2.2232	6.4	4.0421	8.0	0.2021	0.9

\* Calculated value

Appendix 15 Microscopic Observations of the Polished Thin Sections for Mineral Separation Test

No.	Sample no.	Rock name	Ore minerals															Gangue minerals																						
			Mt	Hm	Py	Asp	Mc	Bn	Cp	Td	Cc	Cv	Gn	Sp	El	Arg	Bi	Bm	Cla	Grd	Hc	Gra	Qz	Kf	Ga	Cpx	Amp	Cal	Sid	Cab	Ilv	Ch	Hb	Se	Ep	Sph	Zr			
1	T2-182L	Cp ore in Ga skarn	.																			.	.	○		◎														
2	T3-63.7R	Cp ore in Hb-Px-Ga skarn	△					.																◎	○	△				.					○					
3	T3-64.5L	Mt-Hb-Px-Ga skarn	.					.																◎	○	△				.					○					
4	T3-111L	Cp ore in Px-Qz skarn	.								.	.	.	.									◎	○	△								△	△	○	.	.	.		
5	C1-15R	Px skarn	.					.															○		◎	△														
6	Heavy minerals	separated by shaking table	.	.	.	.	.	○	○	.	.	.	.	.	.	.	.	.	.	.	.	.	△	◎	◎	○	△	△	.	.	.	.	△	.	.	.	.	.		
7	Medium minerals	separated by shaking table	.	△	.	.	.	△	△	.	.	.	.	.	.	.	.	.	.	.	.	.	.	◎	◎	△	△	△	.	.	.	.	○	.	.	.	.	.		
8	Light minerals	separated by shaking table	.	.	.	.	.	.	△	.	.	.	.	.	.	.	.	.	.	.	.	.	○	◎	◎	△	△	△	.	.	.	.	◎	.	.	.	.	.		
9	Concentrate	separated by flotation	.	.	.	.	.	○	◎	.	.	.	.	.	.	.	.	.	.	.	.	.	△	◎	◎	○	○	◎	.	.	.	.	◎	.	.	.	.	.		
10	Tailing	separated by flotation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	△	◎	◎	○	○	◎	.	.	.	.	◎	.	.	.	.	.		

Amp: Amphibole	Cal: Calcite	Cpx: Clinopyroxene	Gra: Graphite	Kf: Potassium feldspar	Se: Sericite
Arg: Argentite	Carb: Carbonate	Cv: Covellite	Grd: Gersdorffite (Ni, Co)	Mc: Marcasite	Sid: Siderite
Asp: Arsenopyrite	Cc: Chalcocite	Ep: Epidote	Hb: Hornblende	Mt: Magnetite	Sp: Sphalerite
Bi: Bismuth	Ch: Chlorite	El: Electrum	Hc: Hauchecomite Ni9Bi2S8	Px: Pyroxene	Sph: Sphene
Bm: Bismuthinite	Cla: Clausthalite	Ga: Garnet	Hm: Hematite	Py: Pyrite	Td: Tetrahedrite
Bn: Bornite	Cp: Chalcopyrite	Gn: Galena	Ilv: Ilvaite	Qz: Quartz	Zr: Zircon

Sample no. : T2 (Tunnel-II) , T3 (Tunnel-III) , C1 (Crosscut- I ) , R (Right wall) , L (Left wall)  
 numerical figures in a sample number show the distance from the starting point in each segments.