Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-109	RB	G	13	2
RS-110	RB	G	27	2
RS-111	RB	G	74	1
RS-112	RB	G	65	2
RS-113	RB	G	82	2
RS-114	RB	G	23	2
RS-115	RB	G	96	1
RS-116	RB	G	43	2
RS-117	RB	G	26	1
RS-119	RB	G	56	2
RS-120	RB	G	64	1
RS-121	RB	G	37	1
RS-122	RB	G	58	2
RS-123	RB	G	51	2
RS-124	RB	G	37	2
RS-125	RB	G	122	2
RS-126	RB	G	39	2
RS-127	RB	G	152	1
RS-128	RB	G	142	2
RS-129	RB	G	245	1
RS-130	RB	G	192	1
RS-131	RB	G	326	1
RS-132	RB	G	408	1
RS-133	RB	G	128	1
RS-134	RB	G	35	1
RS-135	RB	G	318	1
RS-136	RB	G	152	1
RS-137	RB	G	124	2
RS-138	RB	G	188	1
RS-139	RB	G	83	4
RS-140	RB	G	62	3
RS-141	RB	G	428	1
RS-142	RB	G	231	4
RS-143	RB	G	349	5
RS-144	RB	G	487	7
RS-145	RB	G	310	7
RS-146	RB	G	727	9
RS-147	RB	G	326	5
RS-148	RB	G	164	3
RS-149	RB	G	72	2
RS-150	RB	G	31	2
RS-151	RB	G	145	1
RS-152	RB	G	427	2
RS-153	RB	G	159	2
RS-154	RB	G	62	2
RS-155	RB	G	91	2
RS-156	RB	G	187	3
RS-157	RB	G	186	2
RS-158	RB	G	65	3
RS-159	RB	G	182	2
RS-160	RB	G	134	3
RS-161	RB	G	117	2
RS-162	RB	G	220	2

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-163	RB	G	119	1
RS-164	RB	G	180	2
RS-165	RB	G	100	3
RS-166	RB	G	197	3
RS-167	RB	G	85	3
RS-168	RB	G	40	2
RS-169	RB	G	60	2
RS-170	RB	G	53	2
RS-171	RB	G	68	2
RS-172	RB	G	49	2
RS-173	RB	G	13	2
RS-174	RB	G	8	3
RS-175	RB	G	69	3
RS-176	RB	G	33	3
RS-177	RB	G	7	2
RS-178	RB	G	7	2
RS-179	RB	G	11	3
RS-182	RB	G	23	3
RS-183	RB	G	15	2
RS-184	RB	G	7	2
RS-185	RB	G	19	2
RS-186	RB	G	62	2
RS-187	RB	G	57	1
RS-188	RB	G	39	2
RS-189	RB	G	78	1
RS-190	RB	G	92	1
RS-191	RB	G	269	1
RS-192	RB	G	78	2
RS-193	RB	S	30	2
RS-194	RB	S	151	2
RS-195	RB	S	50	2
RS-196	RB	S	52	2
RS-197	RB	S	26	2
RS-198	RB	S	79	2
RS-199	RB	S	45	1
RS-200	RB	S	16	2
RS-201	RB	G	88	2
RS-202	RB	G	142	3
RS-203	RB	G	170	2
RS-204	RB	G	61	2
RS-205	RB	G	83	2
RS-206	RB	G	88	3
RS-207	RB	G	41	2
RS-208	RB	G	30	3
RS-211	RB	G	19	3
RS-212	RB	G	26	3
RS-213	RB	G	43	2
RS-214	RB	G	43	2
RS-215	RB	G	10	3
RS-216	RB	G	19	3
RS-217	RB	G	11	3
RS-218	RB	G	43	2
RS-220	RB	G	80	2

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-221	RB	G	50	1
RS-222	RB	G	34	2
RS-223	RB	G	46	2
RS-224	RB	G	72	6
RS-225	RB	G	32	2
RS-226	RB	G	228	3
RS-227	RB	G	105	2
RS-228	RB	G	268	2
RS-229	RB	G	23	2
RS-230	RB	G	249	1
RS-231	RB	G	244	1
RS-232	RB	G	115	1
RS-233	RB	G	200	2
RS-234	RB	G	41	3
RS-235	RB	G	40	2
RS-236	RB	G	165	2
RS-237	RB	G	159	1
RS-238	RB	G	46	2
RS-239	RB	G	215	1
RS-240	RB	G	157	1
RS-241	RB	G	113	2
RS-242	RB	G	54	1
RS-243	RB	G	52	2
RS-244	RB	G	128	1
RS-245	RB	G	149	2
RS-246	RB	G	128	1
RS-247	RB	G	30	1
RS-248	RB	G	26	1
RS-249	RB	G	18	1
RS-251	RB	G	18	1
RS-252	RB	G	141	1
RS-253	RB	G	156	1
RS-254	RB	G	47	2
RS-255	RB	G	25	1
RS-256	RB	G	34	2
RS-257	RB	G	10	1
RS-258	RB	G	24	1
RS-259	RB	G	65	1
RS-260	RB	G	146	1
RS-261	RB	G	131	2
RS-262	RB	G	142	1
RS-263	RB	G	72	2
RS-264	RB	G	61	2
RS-265	RB	G	80	3
RS-266	RB	G	21	3
RS-267	RB	G	42	2
RS-268	RB	G	104	2
RS-269	RB	G	25	2
RS-270	RB	G	36	3
RS-271	RB	G	202	3
RS-272	RB	G	66	3
RS-273	RB	G	108	3
RS-274	RB	G	92	2

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-275	RB	G	102	2
RS-276	RB	G	123	2
RS-277	RB	G	28	3
RS-278	RB	G	6	2
RS-279	RB	G	15	3
RS-280	RB	G	5	3
RS-282	RB	G	25	2
RS-283	RB	G	3	2
RS-284	RB	G	14	2
RS-285	RB	G	9	2
RS-286	RB	G	9	2
RS-287	RB	G	1	2
RS-288	RB	G	8	1
RS-291	RB	G	325	2
RS-292	RB	G	102	2
RS-293	RB	G	233	4
RS-294	RB	G	176	3
RS-295	RB	G	50	3
RS-296	RB	G	104	2
RS-297	RB	G	68	2
RS-298	RB	G	45	2
RS-299	RB	G	39	2
RS-300	RB	G	69	2
RS-301	RB	G	4	1
RS-302	RB	G	12	2
RS-304	RB	G	22	2
RS-306	RB	G	81	1
RS-308	RB	G	48	1
RS-310	RB	G	61	2
RS-312	RB	G	23	2
RS-314	RB	G	4	4
RS-316	RB	G	3	5
RS-318	RB	G	33	3
RS-319	RB	G	19	4
RS-320	RB	G	2	4
RS-321	RB	G	15	6
RS-322	RB	G	92	5
RS-324	RB	G	9	5
RS-325	RB	G	124	4
RS-326	RB	G	216	4
RS-327	RB	G	206	5
RS-328	RB	G	243	4
RS-329	RB	G	805	4
RS-330	RB	G	441	6
RS-331	RB	G	66	5
RS-332	RB	G	164	2
RS-333	RB	S	95	1
RS-334	RB	S	106	1
RS-335	RB	S	151	1
RS-336	RB	G	46	2
RS-337	RB	G	100	1
RS-338	RB	S	85	2
RS-339	RB	S	155	1

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-340	RB	S	95	1
RS-341	RB	S	146	2
RS-342	RB	G	92	2
RS-343	RB	S	96	1
RS-344	RB	G	146	1
RS-345	RB	S	93	1
RS-346	RB	S	59	3
RS-347	RB	S	25	2
RS-348	RB	S	32	1
RS-349	RB	S	39	1
RS-352	RB	S	32	2
RS-353	RB	S	51	1
RS-354	RB	S	44	1
RS-355	RB	S	56	1
RS-356	RB	G	123	1
RS-357	RB	G	58	2
RS-358	RB	G	58	1
RS-359	RB	G	43	3
RS-360	RB	G	20	1
RS-361	RB	G	9	4
RS-362	RB	G	36	1
RS-363	RB	G	11	2
RS-364	RB	G	14	3
RS-365	RB	G	160	1
RS-366	RB	G	82	1
RS-367	RB	G	22	2
RS-368	RB	G	32	1
RS-369	RB	G	7	2
RS-370	RB	G	203	1
RS-372	RB	G	302	1
RS-373	RB	G	145	1
RS-374	RB	G	64	1
RS-375	RB	G	26	1
RS-376	RB	G	189	1
RS-377	RB	G	143	1
RS-378	RB	G	117	1
RS-379	RB	G	151	1
RS-380	RB	G	120	1
RS-381	RB	G	192	1
RS-382	RB	G	9	2
RS-383	RB	G	32	4
RS-384	RB	G	117	2
RS-385	RB	G	32	3
RS-386	RB	G	18	3
RS-387	RB	G	2	3
RS-388	RB	G	3	3
RS-389	RB	G	1	2
RS-390	RB	G	4	3
RS-391	RB	G	14	3
RS-392	RB	G	5	2
RS-393	RB	G	33	1
RS-394	RB	G	1	2
RS-395	RB	G	5	3

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-396	RB	G	8	2
RS-397	RB	G	4	2
RS-398	RB	G	5	3
RS-399	RB	G	10	1
RS-400	RB	G	65	14
RS-401	RB	S	115	2
RS-402	RB	S	138	1
RS-403	RB	S	107	2
RS-404	RB	S	184	2
RS-405	RB	S	56	2
RS-406	RB	S	101	2
RS-407	RB	S	54	5
RS-408	RB	S	59	2
RS-409	RB	S	151	1
RS-410	RB	S	137	1
RS-411	RB	S	81	2
RS-412	RB	S	19	4
RS-413	RB	S	39	2
RS-414	RB	S	8	5
RS-415	RB	S	4	2
RS-416	RB	S	6	2
RS-417	RB	S	11	2
RS-418	RB	S	4	2
RS-419	RB	S	9	1
RS-421	RB	S	33	2
RS-422	RB	G	83	2
RS-423	RB	G	143	2
RS-424	RB	G	59	9
RS-425	RB	G	112	1
RS-426	RB	G	112	3
RS-427	RB	G	162	3
RS-428	RB	G	16	3
RS-429	RB	S	121	2
RS-430	RB	S	137	1
RS-431	RB	S	118	3
RS-432	RB	S	68	2
RS-433	RB	S	31	3
RS-434	RB	S	16	4
RS-435	RB	S	118	2
RS-436	RB	S	17	2
RS-437	RB	S	41	5
RS-438	RB	S	52	3
RS-439	RB	S	97	3
RS-440	RB	S	43	2
RS-441	RB	S	74	2
RS-442	RB	S	99	1
RS-443	RB	S	16	2
RS-444	RB	S	86	3
RS-445	RB	S	6	2
RS-446	RB	S	16	2
RS-447	RB	S	10	2
RS-448	RB	S	64	1
RS-449	RB	S	13	2

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-450	RB	S	20	2
RS-451	RB	G	762	9
RS-452	RB	G	326	7
RS-453	RB	G	461	13
RS-454	RB	G	235	8
RS-455	RB	G	81	4
RS-456	RB	G	824	3
RS-457	RB	G	76	2
RS-458	RB	G	121	3
RS-459	RB	G	75	3
RS-460	RB	G	155	2
RS-461	RB	G	55	2
RS-462	RB	S	88	2
RS-463	RB	S	46	1
RS-464	RB	G	11	3
RS-465	RB	G	208	1
RS-466	RB	G	30	2
RS-467	RB	G	20	2
RS-468	RB	G	151	3
RS-469	RB	G	259	2
RS-470	RB	G	643	1
RS-471	RB	G	150	1
RS-472	RB	G	176	2
RS-473	RB	G	32	2
RS-474	RB	G	52	2
RS-475	RB	G	36	2
RS-476	RB	G	61	1
RS-477	RB	G	8	2
RS-478	RB	G	6	2
RS-479	RB	G	3	2
RS-480	RB	G	2	2
RS-481	RB	G	10	4
RS-482	RB	G	2	2
RS-483	RB	G	3	2
RS-484	RB	G	3	2
RS-485	RB	G	5	4
RS-486	RB	G	7	1
RS-489	RB	G	12	2
RS-492	RB	G	68	1
RS-493	RB	G	16	2
RS-494	RB	G	80	3
RS-495	RB	G	49	2
RS-496	RB	G	79	1
RS-498	RB	G	159	1
RS-500	RB	G	38	1
RS-501	RB	G	27	2
RS-502	RB	G	93	2
RS-503	RB	G	32	2
RS-504	RB	G	31	2
RS-505	RB	G	36	2
RS-508	RB	G	100	2
RS-509	RB	G	1698	4
RS-510	RB	G	2501	10

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-511	RB	G	990	14
RS-512	RB	G	278	4
RS-513	RB	G	54	3
RS-514	RB	G	39	4
RS-515	RB	G	209	6
RS-516	RB	G	120	3
RS-517	RB	G	175	5
RS-518	RB	G	335	8
RS-519	RB	G	210	4
RS-520	RB	G	315	4
RS-521	RB	G	310	3
RS-522	RB	G	25	2
RS-523	RB	G	189	3
RS-524	RB	G	182	2
RS-525	RB	G	79	1
RS-526	RB	G	615	2
RS-527	RB	G	287	2
RS-528	RB	G	273	1
RS-529	RB	G	190	2
RS-530	RB	G	297	1
RS-531	RB	G	94	2
RS-532	RB	G	432	5
RS-533	RB	G	460	3
RS-534	RB	G	39	2
RS-535	RB	G	62	2
RS-536	RB	G	91	3
RS-537	RB	G	155	3
RS-538	RB	G	337	3
RS-539	RB	G	441	3
RS-540	RB	G	31	2
RS-541	RB	G	77	2
RS-542	RB	G	102	1
RS-543	RB	G	94	1
RS-544	RB	G	77	2
RS-545	RB	G	193	1
RS-546	RB	G	15	2
RS-547	RB	G	93	3
RS-548	RB	G	284	1
RS-549	RB	G	134	2
RS-550	RB	G	126	2
RS-551	RB	G	95	2
RS-552	RB	G	31	2
RS-553	RB	G	115	1
RS-554	RB	G	29	2
RS-555	RB	G	94	2
RS-556	RB	G	18	4
RS-557	RB	G	35	3
RS-558	RB	G	288	7
RS-559	RB	G	23	3
RS-560	RB	G	8	3
RS-561	RB	G	17	2
RS-562	RB	G	15	2
RS-563	RB	G	25	2

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-564	RB	G	45	3
RS-565	RB	G	71	2
RS-566	RB	G	80	3
RS-567	RB	G	17	3
RS-568	RB	G	115	2
RS-569	RB	G	38	1
RS-570	RB	G	20	3
RS-571	RB	G	4	3
RS-572	RB	G	4	2
RS-573	RB	G	3	2
RS-574	RB	G	1	3
RS-575	RB	G	17	2
RS-576	RB	G	5	3
RS-577	RB	G	13	2
RS-578	RB	G	17	2
RS-579	RB	G	46	1
RS-580	RB	G	22	2
RS-581	RB	G	11	2
RS-582	RB	G	19	1
RS-583	RB	G	23	2
RS-584	RB	G	9	2
RS-585	RB	G	17	2
RS-586	RB	G	254	2
RS-587	RB	G	46	3
RS-588	RB	G	43	2
RS-589	RB	G	6	2
RS-590	RB	G	21	2
RS-591	RB	G	22	2
RS-592	RB	G	11	2
RS-593	RB	G	15	3
RS-594	RB	G	19	3
RS-595	RB	G	13	2
RS-596	RB	G	13	3
RS-598	RB	G	26	2
RS-600	RB	G	103	2
RS-601	RB	G	50	2
RS-602	RB	G	698	7
RS-603	RB	G	137	1
RS-604	RB	G	232	2
RS-605	RB	G	254	2
RS-606	RB	G	179	2
RS-607	RB	G	133	2
RS-608	RB	G	162	2
RS-609	RB	G	44	2
RS-610	RB	G	127	2
RS-611	RB	G	252	2
RS-612	RB	G	194	1
RS-614	RB	G	34	2
RS-616	RB	G	208	2
RS-618	RB	G	196	1
RS-619	RB	G	210	1
RS-620	RB	G	507	1
RS-621	RB	G	185	1

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-622	RB	G	189	1
RS-623	RB	G	114	2
RS-624	RB	G	110	2
RS-625	RB	G	67	2
RS-626	RB	G	110	2
RS-627	RB	G	179	2
RS-628	RB	G	163	2
RS-629	RB	G	419	1
RS-630	RB	G	90	3
RS-631	RB	G	40	2
RS-632	RB	G	14	2
RS-633	RB	G	12	3
RS-635	RB	G	20	2
RS-636	RB	G	38	2
RS-637	RB	G	21	2
RS-638	RB	G	11	2
RS-639	RB	G	22	1
RS-640	RB	G	6	2
RS-641	RB	G	4	2
RS-642	RB	G	13	2
RS-643	RB	G	10	2
RS-644	RB	G	82	1
RS-645	RB	G	16	2
RS-646	RB	G	19	2
RS-647	RB	G	202	2
RS-650	RB	G	173	2
RS-651	RB	G	173	1
RS-652	RB	G	10	2
RS-653	RB	G	8	2
RS-654	RB	G	59	3
RS-655	RB	G	58	2
RS-656	RB	G	12	1
RS-657	RB	G	4	2
RS-658	RB	G	8	3
RS-659	RB	G	3	3
RS-660	RB	G	8	2
RS-661	RB	G	178	1
RS-662	RB	G	40	2
RS-663	RB	G	120	1
RS-664	RB	G	72	2
RS-665	RB	G	182	2
RS-666	RB	G	57	3
RS-667	RB	G	92	2
RS-668	RB	G	268	2
RS-669	RB	G	33	3
RS-670	RB	G	77	3
RS-672	RB	G	21	3
RS-673	RB	G	144	2
RS-674	RB	G	102	2
RS-675	RB	G	8	2
RS-676	RB	G	25	1
RS-677	RB	G	36	7
RS-678	RB	G	81	6

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
RS-680	RB	G	49	4
RS-681	RB	G	51	2
RS-682	RB	G	439	1
RS-683	RB	G	79	4
RS-684	RB	G	178	2
RS-685	RB	G	3	2
RS-686	RB	G	12	2
RS-687	RB	G	41	3
RS-688	RB	G	59	2
RS-689	RB	G	10	2
RS-690	RB	G	17	3
RS-691	RB	G	46	2
RS-692	RB	G	9	3
RS-693	RB	G	73	2
RS-694	RB	G	46	3
RS-695	RB	G	81	2
RS-696	RB	G	166	1
RS-697	RB	G	42	2
RS-698	RB	G	5	3
RS-700	RB	G	42	4
RS-701	RB	G	5	2
VS- 1	LV	V	389	1
VS- 2	LV	V	557	1
VS- 3	LV	V	457	2
VS- 5	LV	G	700	2
VS- 6	LV	G	540	2
VS- 7	LV	G	523	1
VS- 8	LV	G	854	1
VS- 9	LV	G	489	7
VS- 10	LV	G	331	3
VS- 11	LV	G	729	4
VS- 12	LV	G	134	3
VS- 13	LV	G	509	4
VS- 14	LV	G	520	2
VS- 15	LV	G	369	2
VS- 16	LV	G	217	6
VS- 17	LV	G	289	2
VS- 18	LV	G	194	2
VS- 19	LV	G	289	1
VS- 20	LV	G	340	5
VS- 21	LV	G	174	3
VS- 22	LV	G	214	2
VS- 23	LV	G	217	2
VS- 24	LV	G	326	4
VS- 25	LV	G	340	1
VS- 26	LV	G	534	1
VS- 27	LV	G	471	1
VS- 28	LV	G	211	1
VS- 29	LV	G	137	1
VS- 30	LV	G	289	1
VS- 31	LV	G	134	1
VS- 32	LV	G	100	1
VS- 33	LV	G	118	1

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
VS- 34	LV	S	137	3
VS- 35	LV	S	158	1
VS- 36	LV	S	137	1
VS- 37	LV	S	113	3
VS- 38	LV	S	92	1
VS- 41	LV	V	203	1
VS- 42	LV	V	195	1
VS- 43	LV	V	186	1
VS- 44	LV	V	143	1
VS- 45	LV	V	222	1
VS- 46	LV	V	159	1
VS- 47	LV	V	154	1
VS- 48	LV	V	235	1
VS- 49	LV	V	249	1
VS- 50	LV	V	211	1
VS- 51	LV	G	495	1
VS- 52	LV	G	657	1
VS- 53	LV	G	635	4
VS- 54	LV	G	411	2
VS- 55	LV	G	603	3
VS- 56	LV	G	262	1
VS- 57	LV	G	227	1
VS- 58	LV	S	143	1
VS- 59	LV	S	135	1
VS- 60	LV	S	119	1
VS- 61	LV	S	73	1
VS- 62	LV	S	76	1
VS- 63	LV	S	76	1
VS- 64	LV	S	86	1
VS- 65	LV	S	73	1
VS- 66	LV	S	186	1
VS- 67	LV	S	89	1
VS- 68	LV	S	76	1
VS- 69	LV	S	103	1
VS- 71	LV	G	73	1
VS- 72	LV	G	143	1
VS- 73	LV	G	203	1
VS- 74	LV	G	138	1
VS- 75	LV	G	70	1
VS- 76	LV	G	373	1
VS- 77	LV	G	427	2
VS- 78	LV	G	541	3
VS- 79	LV	G	997	1
VS- 80	LV	G	351	1
VS- 81	LV	V	197	1
VS- 82	LV	V	192	1
VS- 83	LV	V	147	1
VS- 84	LV	V	228	1
VS- 85	LV	V	119	1
VS- 86	LV	V	192	1
VS- 87	LV	G	414	3
VS- 88	LV	G	281	1
VS- 89	LV	G	650	1

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)
VS- 90	LV	G	375	2
VS- 91	LV	G	250	1
VS- 92	LV	G	192	1
VS- 93	LV	S	203	1
VS- 94	LV	S	125	1
VS- 95	LV	S	119	1
VS- 96	LV	S	125	1
VS- 97	LV	S	150	1
VS- 98	LV	S	17	1
VS- 99	LV	S	61	1
VS-100	LV	S	83	1
VS-101	LV	S	97	1
VS-102	LV	S	108	1
VS-103	LV	S	86	1
VS-110	LV	S	114	1
VS-111	LV	S	72	1
VS-112	LV	S	194	1
VS-113	LV	S	44	1
VS-114	LV	S	97	1
VS-115	LV	S	83	1
VS-116	LV	S	97	1
VS-117	LV	S	89	1
VS-118	LV	S	97	1
VS-119	LV	S	61	1
VS-120	LV	S	19	1
VS-121	LV	S	133	1
VS-122	LV	G	619	4
VS-123	LV	G	500	2
VS-124	LV	G	667	5
VS-125	LV	G	403	2
VS-126	LV	G	622	6
VS-127	LV	V	425	1
VS-128	LV	V	178	1
VS-129	LV	V	578	2
VS-130	LV	V	497	1
VS-131	LV	G	439	1
VS-132	LV	G	353	1

Sample No.	Locality	Geology	Assay Cu(ppm)	Value Mo(ppm)

Sample No.	Locality	Geology	Assay Zn(ppm)	Value As(ppm)
DS- 1	D	V	50.0	23.9
DS- 2	D	V	47.8	7.1
DS- 3	D	V	77.6	4.9
DS- 4	D	V	69.2	3.7
DS- 5	D	V	54.3	5.3
DS- 6	D	V	53.8	5.7
DS- 7	D	V	56.7	4.9
DS- 8	D	V	57.2	3.7
DS- 9	D	V	53.4	4.2
DS- 10	D	V	56.1	3.5
DS- 11	D	V	55.7	4.7
DS- 12	D	V	51.8	4.3
DS- 13	D	V	35.8	6.7
DS- 14	D	V	84.8	18.0
DS- 15	D	V	57.8	11.9
DS- 16	D	V	85.3	15.9
DS- 17	D	V	28.7	8.1
DS- 18	D	V	61.8	8.2
DS- 19	D	V	43.1	9.8
DS- 20	D	V	44.8	9.5
DS- 21	D	V	40.0	10.5
DS- 22	D	V	59.6	4.9
DS- 23	D	V	66.1	2.3
DS- 24	D	V	74.0	9.6
DS- 25	D	V	85.8	11.7
DS- 26	D	V	57.7	16.9
DS- 27	D	V	92.9	5.7
DS- 28	D	V	77.9	2.2
DS- 29	D	V	72.7	3.3
DS- 30	D	V	77.9	3.1
DS- 31	D	V	70.1	6.3
DS- 32	D	V	83.4	5.5
DS- 53	D	V	72.7	5.4
DS- 54	D	V	92.7	2.7
DS- 56	D	V	84.2	4.2
DS- 57	D	V	73.4	5.7
DS- 58	D	V	65.7	4.3
DS- 59	D	V	84.6	8.0
DS- 60	D	V	250.0	88.4
DS- 61	D	V	431.2	634.9
DS- 62	D	V	188.4	14.8
DS- 63	D	V	118.3	6.9
DS- 64	D	V	108.7	9.2
DS- 65	D	V	44.3	8.2
DS- 66	D	V	35.6	9.4
DS- 67	D	V	90.4	8.7
DS- 68	D	V	82.7	10.0
DS- 69	D	V	129.8	51.2
DS- 70	D	V	137.5	8.7
DS- 71	D	V	74.0	9.7
DS- 72	D	V	160.1	88.6
DS- 73	D	V	159.2	87.6
DS- 74	D	V	45.4	8.1

Sample No.	Locality	Geology	Assay Zn(ppm)	Value As(ppm)
DS- 75	D	V	92.8	17.4
DS- 76	D	V	89.4	12.5
DS- 77	D	V	111.8	12.7
DS- 78	D	V	109.1	16.1
DS- 79	D	V	93.5	1.8
DS- 80	D	V	96.2	41.1
DS- 81	D	V	50.8	6.3
DS- 82	D	V	53.5	8.5
DS- 83	D	V	48.8	12.3
DS- 84	D	V	48.8	11.2
DS- 85	D	V	46.1	7.5
DS- 86	D	V	103.7	5.1
DS- 87	D	V	80.1	9.2
DS- 88	D	V	90.1	12.6
DS- 89	D	V	108.3	26.2
DS- 90	D	V	75.4	13.7
DS- 91	D	V	68.1	7.9
DS- 92	D	V	60.1	7.5
DS- 93	D	V	135.7	43.4
DS- 94	D	V	43.4	8.9
DS- 95	D	V	107.0	17.8
DS- 96	D	V	44.7	6.9
DS- 98	D	V	66.8	4.7
DS-100	D	V	68.1	3.1
DS-102	D	V	105.3	48.4
DS-103	D	V	66.8	3.8
DS-104	D	V	112.4	0.8
BS- 1	B	G	84.3	37.5
BS- 2	B	G	86.4	18.6
BS- 4	B	G	66.6	3.3
BS- 5	B	G	78.2	7.5
BS- 6	B	G	64.6	5.8
BS- 7	B	G	67.3	2.1
BS- 8	B	G	137.2	2.7
BS- 9	B	G	73.0	1.9
BS- 10	B	G	69.4	1.8
BS- 11	B	G	77.5	1.2
BS- 12	B	G	71.4	1.4
BS- 13	B	G	57.8	1.5
BS- 16	B	G	68.0	1.5
BS- 17	B	G	156.9	85.1
BS- 18	B	G	70.8	20.4
BS- 19	B	G	63.9	1.4
BS- 20	B	G	61.2	1.6
BS- 21	B	G	68.7	2.7
BS- 22	B	G	55.0	2.0
BS- 23	B	G	57.1	1.8
BS- 25	B	G	77.7	27.3
BS- 26	B	G	170.9	17.7
BS- 27	B	G	75.6	1.7
BS- 28	B	G	63.9	1.8
BS- 29	B	G	67.4	1.7
BS- 30	B	G	66.7	1.1

Sample No.	Locality	Geology	Assay Zn(ppm)	Value As(ppm)
BS- 31	B	G	103.0	3.7
BS- 32	B	G	106.5	9.6
BS- 33	B	G	68.3	1.5
BS- 35	B	G	15.4	1.7
BS- 37	B	G	57.6	1.1
BS- 38	B	G	62.3	0.6
BS- 39	B	G	60.3	0.5
BS- 40	B	G	33.5	1.1
BS- 41	B	G	58.4	0.9
BS- 42	B	G	60.3	1.5
BS- 43	B	G	58.3	1.7
BS- 45	B	G	53.6	1.4
BS- 46	B	G	56.3	1.1
BS- 47	B	G	62.3	1.1
BS- 48	B	G	95.8	1.0
BS- 49	B	G	59.0	1.1
BS- 50	B	G	77.3	1.4
BS- 51	B	G	199.4	1137.0
BS- 52	B	G	69.4	4.2
BS- 53	B	G	105.3	34.0
BS- 55	B	G	51.1	1.0
BS- 56	B	G	50.4	1.4
BS- 57	B	G	35.8	8.2
BS- 58	B	G	61.6	6.3
BS- 59	B	G	71.7	2.1
BS- 60	B	G	47.0	2.2
BS- 61	B	G	41.4	2.2
BS- 62	B	G	73.9	39.9
BS- 64	B	G	48.2	1.2
BS- 65	B	G	9.0	1.4
BS- 66	B	G	57.5	1.5
BS- 67	B	G	64.1	1.4
BS- 68	B	G	72.0	64.0
BS- 69	B	G	85.8	33.2
BS- 70	B	G	82.7	24.5

Sample No.	Locality	Geology	Assay n(ppm)	Value As(ppm)

A. I-2 Chemical Analysis of Ore Samples

(1)

Sample No.	Locality	Description	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Sb (%)	As (%)
R-206	RB	Silicified, pyrite(5%) (10m)	Tr	-	0.04	-	-	-	-
R-210	RB	Silicified, pyrite(5%) (3m)	Tr	-	0.07	-	-	-	-
R-213	RB	Pyrite, Chalcopyrite Silicified (10m)	Tr	-	0.25	-	-	-	-
R-214	RB	Pyrite, silicified (20m)	Tr	-	0.07	-	-	-	-
V-13	LV	Pyrite dissemination argillized (1m/20m)	Tr	-	0.07	-	-	-	-
V-18	LV	Pyrite dissemination (2m/30m)	Tr	-	0.05	-	-	-	-
V-21	LV	Chalcopyrite, pyrite dissemination., malachite veinlets (1m/20m)	Tr	-	0.13	-	-	-	-
V-55	LV	Pyrite + clay, chalcopyrite	Tr	-	0.00	-	-	-	-
V-58	LV	Pyrite dissemination	Tr	-	0.03	-	-	-	-
V-60	LV	Pyrite	Tr	-	0.05	-	-	-	-
2-D-1	D	Sulfide	10.7	49	0.2	0.2	5.8	<0.1	1.2
2-D-2	D	Sulfide	5.3	134	0.6	0.2	3.0	<0.1	7.4
2-D-3	D	Sulfide	9.3	46	0.3	0.1	2.9	<0.1	2.2
2-D-4	D	Argillated part	0.3	30	0.1	0.5	0.1	<0.1	0.2
2-D-5	D	Quartz, pyrite	7.7	263	0.6	0.4	0.2	0.2	10.6
2-D-10	D	Socabon Diamante lower level 300cm	2.4	59	0.09	0.10	0.94	0.00	2.88
2-D-11	D	Same place, continued 300m	16.3	64	0.07	0.09	1.41	0.00	1.11
2-D-12	D	Same place, continued 300m	4.6	80	0.19	0.21	1.61	0.00	2.57
ND-2	D	Brown gossan	Tr	Tr	0.03	0.02	0.03	0.00	0.99
ND-3	D	Argillized Vein	Tr	Tr	0.01	0.00	0.00	0.00	0.04
ND-5	D	Brown gossan	4.8	32	0.34	0.20	0.05	0.00	2.52
ND-6	D	Kaolinized sulfide vein	2.0	30	0.11	0.02	1.01	0.00	0.60
ND-7	D	Kaolinized sulfide vein	0.5	4	0.14	0.01	0.11	0.00	2.30
ND-8	D	Limonitized quartz vein	1.2	40	0.04	0.01	0.05	0.00	11.66
ND-16	D	Brownish argillized vein	Tr	30	0.07	0.32	0.09	0.00	1.51
ND-21	D	Limonitized-clayey vein	Tr	Tr	0.02	0.00	0.03	0.00	0.14

Sample No.	Locality	Description	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Sb (%)	As (%)
ND-44	D	Argillized Vein containing lenticular quartz (w=230cm)	3.2	302	0.59	0.41	3.70	0.01	3.23
ND-47	D	Vein (pyrite rich part 40cm)	4.6	350	0.67	0.40	0.10	0.05	2.18
ND-48	D	Vein (argillized part 40cm)	1.2	36	0.26	0.27	0.14	0.00	0.27
ND-51	D	Limonitized vein	2.8	77	0.17	0.02	0.13	0.01	0.35
BA-SO-4	B	Oxidized vein (w=30cm)	3.7	48	<0.1	<0.1	<0.1	<0.1	3.7
BA-SO-5	B	Oxidized vein 40cm 2 veins (w=40cm, 20cm)	0.7	13	<0.1	<0.1	<0.1	<0.1	0.7
BA-SO-7	B	Quartz-pyrite-clay vein w=40cm	6.3	812	<0.1	0.2	<0.1	<0.1	2.5
B-P-0	B	Concentrated ore	29.3	120	0.1	<0.1	0.2	<0.1	3.7
B-SO-9	B	Pyrite, arsenopyrite oxide vein (w=200cm)	0.7	6	<0.1	0.2	<0.1	<0.1	0.7
B-SO-11	B	Mixed ore vein (w=200cm)	8.1	219	-	-	-	-	-
B-SO-14	B	Oxidized vein (w=40cm)	80.0	230	<0.1	0.5	0.7	<0.1	5.4
B-SO-15	B	Oxide vein (v,w=40cm) with sulfide vein (v,w=5cm)	1.7	51	<0.1	<0.1	<0.1	<0.1	1.0
B-15	B	Quartz, pyrite, arseno-pyrite vein (v.w=10∿30cm)	4.9	54	0.02	0.14	0.03	0.00	3.15
B-16	B	Quartz, pyrite, arseno-pyrite vein (v.w=40cm)	10.3	108	0.03	0.30	0.03	0.03	5.30
PR-1	P	Ruidosa vein, Oxide vein	Tr	14	-	-	-	-	-
P-L-1	P	Lulo vein, oxidized	Tr	Tr	-	-	-	-	-
P-L-2	P	- ditto -	Tr	Tr	-	-	-	-	-
P-SL-1	P	San Luis vein, oxidized	4.8	9	-	-	-	-	-
P-SL-2	P	Same place, old tunnel	0.6	12	-	-	-	-	-
P-SL-3	P	- ditto -	Tr	Tr	-	-	-	-	-
P-SA-1	P	San Luis, 300cm from south to north	Tr	Tr	-	-	-	-	-
P-SA-2	P	Same place, continued 300cm	4.6	5	-	-	-	-	-
P-SA-3	P	- ditto -	Tr	Tr	-	-	-	-	-
P-SA-4	P	- ditto -	Tr	Tr	-	-	-	-	-
P-SA-5	P	Oxidized vein in PSA-2 60cm only	5.6	10	-	-	-	-	-

Location

RB: Rio Blanco, LV: La Verde, D: Diamante, B: Bombona, P: Paraiso

A. I-3 Microscopic Observation of the Thin Sections

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-15	Rio Blanco	Dioritic rock	Dioritic rock Porphyritic texture Phenocryst : Plagioclase, mafic mineral. Mafic mineral is completely altered to chlorite with opaque mineral. Groundmass : Fine crystal of plagioclase (0.1m/m) and recrystallized glass (microcrystalline felsic mineral). This rock contains mafic xenolith which shows alteration to calcite and chlorite.
R-22	Rio Blanco	Altered microdiorite	Altered diorite Porphyritic texture? Phenocryst : Plagioclase (ave:0.8m/m) and mafic mineral Plagioclase is weakly sericitized and calcitized and cloudy. Mafic mineral is completely altered to chlorite and sericite. Groundmass : Fine grained acicular chlorite,, sericite and felsic minerals. Opaque minerals are scattered in mafic mineral and groundmass.
R-29	Rio Blanco	Brecciated diorite	Hornblende diorite Porphyritic texture Phenocryst : Plagioclase and hornblende (Max:6.0m/m) Plagioclase shows alteration to sericite, chlorite and cloudy potass feldspar. Hornblende is replaced by plagioclase. Groundmass : Minute felsic mineral, sericite, chlorite and opaque mineral.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-34	Rio Blanco	Tuffaceous sandstone	Tuffaceous volcanic sandstone Fragment : Plagioclase, clinopyroxene, a little carbonate and andestic rock (Diam 2.5m/m). Plagioclase shows potassic and chloritic alteration. Irregular shaped clinopyroxene is mostly fresh. Matrix : Abundant chlorite with minute felsic mineral and altered opaque mineral.
R-104	Rio Blanco	Porphyritic granodiorite	Aplitic granodiorite Porphyritic texture Phenocryst : Plagioclase and mafic mineral (Max:1.5m/m) Weakly sericitized plagioclase shows marked zoning and twinning. Mafic mineral is epidotized and chloritized. Groundmass : Fitted with equigranuler quartz and potass feldspar (ave:0.07m/m). There are granular opaque mineral and sphene.
R-109	Rio Blanco	Highly silicified rock	Silicified epidotized rock Left side of this section shows intense alteration, that composed of granular quartz (ave:0.02m/m), epidote and opaque mineral On the other hand, in the right side, there remained andestic texture. Phenocryst is replaced by epidote, chlorite and opaque mineral. Groundmass is composed of minute felsic minerals (ave:0.01m/m).
R-112	Rio Blanco	Brecciated diorite	Brecciated diorite It is composed mainly of dioritic fragment (Max:10m/m) ranged from fresh to altered to sericite and chlorite. Mafic mineral show alteration to amphibole, sericite, chlorite and calcite. There are scattered opaque minerals (0.3∿0.01m/m in size).

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-115	Rio Blanco	Calcareous shale	Calcareous shale This rock shows weak bedded structure. Fragment : Abundant quartz, calcitized and sericitized feldspar and carbonate (Dia:0.3m/m). Matrix : microcrystalline felsic mineral, calcite, chlorite and granular opaque mineral.
R-118	Rio Blanco	Hornblende diorite porphyry	Hornblende diorite porphyry Porphyritic, poikiritic texture Phenocryst : Hornblende (Max:2.0m/m), plagioclase (Max: 1.5m/m) Fresh hornblende poikiritically encloses fresh plagioclase showing marked zoning and twinning. Groundmass : Abundant granular quartz and a little potass feldspar, subhedral plagioclase (ave:0.04m/m) and chlorite. There are scattered granular opaque mineral, sphene and epidote.
R-124	Rio Blanco	Tuffaceous sandstone	Tuffaceous volcanic sandstone Fragment : Abundant plagioclase (Max:0.3m/m) with clinopyroxene, quartz, calcitized organic material, rock fragment and glassy rock fragment (Max:8.0m/m). Matrix : microcrystalline felsic mineral with chloritized, calcitized mineral. Layering of opaque mineral and limonite shows weak bedded structure.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-128	Rio Blanco	Altered diorite porphyry	Altered diorite (Porphyritic texture?) Phenocryst : Hornblende (Max:3.0m/m) and plagioclase (Max:1.5m/m) Hornblende is replaced by chlorite and calcite in vermicular shape. Plagioclase is altered to potass feldspar and calcite, sericite and cloudy. Groundmass : Chlorite with opaque minerals and microcrystalline felsic mineral. Sphene occurs in altered mafic mineral.
R-129	Rio Blanco	Brecciated diorite	Brecciated diorite This rock is composed mainly of epidotized-chloritized fragment, calcitized-epidotized fragment and plagioclase altered to epidote and potass feldspar. Groundmass : It consists of microcrystalline felsic mineral with chlorite and opaque mineral. Locally there are aggregate of quartz.
R-138	Rio Blanco	Granodiorite porphyry	Granodiorite porphyry Porphyritic texture Phenocryst : Plagioclase, mafic mineral and a little quartz. Plagioclase (Max:1.5m/m) suffer from potassic alteration, chloritization and sericitization. Mafic is also altered to epidote, chlorite and calcite. Quartz is corroded. Groundmass : Equigranular (ave:0.03m/m) quartz, potass feldspar, plagioclase and chlorite, sphene with epidote or chlorite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-205	Rio Blanco	Brecciated diorite porphyry	Brecciated diorite porphyry Porphyritic, brecciate texture Phenocryst : Plagioclase, hornblende Subhedral plagioclase (Max:1.5m/m) is cloudy. Hornblende is sericitized and chloritized. Some of hornblende may be secondary from clinopyroxene? Groundmass : Microcrystalline felsic minerals, chlorite and sericite. There are vein of chlorite + quartz + limonite.
R-209	Rio Blanco	Silicified rock	Recrystallized rock Breccia texture This rock is considered as recrystallized brecciated rock. Fragment : Plagioclase and quartz (Max:0.5m/m) Both shows irregular shape. Matrix : Fine grained quartz (ave:0.03m/m), feldspar and hornblende. There are also aggregates of opaque mineral (ave:0.3m/m) and quartz + opaque mineral vein.
R-215	Rio Blanco	Highly silicified rock	Recrystallized rock This rock is same as R-209 except coarser grain size, fragment (ave:0.5m/m), matrix (ave:0.1m/m) and advanced recrystallization.
R-220	Rio Blanco	Altered diorite porphyry	Altered diorite porphyry Porphyritic texture Phenocryst : Plagioclase and mafic mineral Plagioclase is cloudy due to an intense alteration to epidote, potass feldspar and sericite. Mafic mineral is completely altered to epidote and chlorite. Groundmass : Fine grained quartz (ave:0.03m/m), potass feldspar and plagioclase with a small amount of sericite, chlorite and epidote. Opaque mineral is scattered.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-224	Rio Blanco	Diorite porphyry	Diorite porphyry Porphyritic and ophitic texture. Phenocryst : Hornblende and plagioclase. Subhedral hornblende (Max:2.0m/m) ophitically encloses plagioclase (Max:2.0m/m) which shows zonal structure (inner part altered and cloudy). Groundmass : Subhedral plagioclase (Max:0.1m/m) There are scattered opaque minerals. Locally it shows alteration by chlorite and epidote.
R-238	Rio Blanco	Recrystallized rock	Recrystallized rock Porphyroblastic and poikiroblastic texture. Fine grained plagioclase and hornblende (Dia:0.2m/m) porphyroblastically endlose anhedral granular plagioclase crystal (Dia:2.0m/m). Large crystal of hornblende poikiroblastically encloses anhedral plagioclase. There are scattered opaque minerals (ave:0.7m/m).
R-242	Rio Blanco	Alternation of shale and sandstone	Shale/sandstone brecciated texture Shale : It is composed mainly of fragments (Max:0.2m/m) of quartz, plagioclase, hornblende and calcite. Matrix is filled with aggregate of felsic mineral and chlorite, and scattered opaque mineral. Sandstone : It is composed mainly of plagioclase and hornblende (Max:1.5m/m) with a small amount of quartz and andestic fragment. Hornblende is epidotized and plagioclase is cloudy.
R-253	Rio Blanco	Hornblende microdiorite	Hornblende microdiorite Equigranular texture (0.2∿0.3m/m in size) This rock is composed mainly of plagioclase and hornblende with a small amount of quartz and potassic feldspar.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-253	Rio Blanco	ditto	Plagioclase shows marked zoning and twinning. Anhedral hornblende is weakly chloritized and epidotized. Feldspar is cloudy. granular sphene and opaque mineral are accessory.
R-254	Rio Blanco	Diorite porphyry	Diorite porphyry Porphyritic texture Phenocryst : Plagioclase, mafic mineral Euhedral~subhedral plagioclase (Max:2.5m/m) is filled with felsic minerals (calcite, sericite, potass feldspar). Mafic mineral is completely altered to calcite and epidote. Groundmass : It shows alteration to chlorite with sericite and felsic mineral. There are anhedral quartz and partly broken opaque mineral.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
V-1	La Verde	Coarse pyroxene basalt	Dolerite Ophitic texture It is composed mainly of augite and plagioclase. Phenocryst of augite (Dia:4.0∿0.3m/m) is partly replaced by plagioclase and shows zoning and hairglass structure. Fine granular (less than 0.1m/m) augite and opaque mineral lay intersertal in the laths of cloudy altered plagioclase (1.0∿0.1m/m). Pseudomorph of mafic mineral is replaced by fine aggregate of chlorite. Groundmass is filled with clay minerals.
V-5	La Verde	Altered hornblende basalt	Altered rock This rock is so strongly altered that it is difficult to make clear the original rock. Porphyritic or brecciated texture. Abundant of large hornblende crystal probably result from alteration of augite and moreover suffer from epidotization and chloritization. Plagioclase is calcitized and epidotized. Recrystallized matrix is composed of microcrystalline felsic mineral, chlorite and epidote.
V-8	La Verde	Altered pyroxene basalt	Altered dolerite Ophitic texture This rock is same as V-1, but alteration is more intensive than V-1. Phenocryst : Clinopyroxene and plagioclase. Clinopyroxene shows alteration to amphibole, calcite and chlorite. Plagioclase is also calcitized and sericitized. Groundmass : Aciculer amphibole aggregate and chlorite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
V-9	La Verde	Porphyrite	Altered porphyrite Porphyritic texture Phenocryst : Plagioclase and mafic mineral (hornblende?) Plagioclase shows intense alteration to sericite and cloudy. Mafic mineral is completely altered to chlorite with opaque mineral. Groundmass : Primary plagioclase laths, granular opaque mineral, chlorite and recrystallized quartz. A little of epidote and calcite veins exisist.
V-15	La Verde	Calcareous sandstone	Calcareous sandstone Fragment : Acidic rock, chloritized andestic rock, sericitized rock, and quartz-calcitized organic materials. Matrix : Calcite, chlorite, fine felsic minerals and granular opaque mineral.
V-16	La Verde	Tuffaceous sandstone	Andesitic volcanic sandy tuff Fragment (less than 1.0m/m in size) : Andestic rock, clinopyroxene and plagioclase. Andestic fragment is mainly composed of acicular plagioclase and chlorite. Crushed clinopyroxene shows weak alteration to calcite and chlorite. Plagioclase is weakly sericitized and cloudy. Matrix : minute felsic mineral, chlorite, calcite and sericite.
V-17	La Verde	Calcareous shale	Calcareous shale Fragment (Max:0.2m/m) : Quartz, feldspar, calcitized organic fragment. Matrix : Granular calcite and a little microcrystalline mineral and opaque mineral. There are calcite or calcite and quartz veins.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
V-22	La Verde	Porphyritic granodiorite	Porphyritic granodiorite (weak porphyritic texture) Phenocryst : Plagioclase shows alteration to potass feldspar, chlorite and weak sericitization. Groundmass : Equigranular (ave:0.15m/m) quartz and potass feldspar and a little plagioclase. Mafic mineral is completely altered to chlorite and sericite or aggregation of chlorite and opaque mineral.
V-74	La Verde	Brecciated basalt	Brecciated basic rock Fragments of clinopyroxene, hornblende, plagioclase with a small amount of andestic rock (Max:2.0m/m), are mostly fresh. Matrix is composed of microcrystalline mineral, chlorite and opaque mineral.
D-2	La Verde	Altered diorite	Altered diorite Porphyritic texture Phenocryst : Plagioclase, hornblende and a little clinopyroxene. Plagioclase (Max:6.0m/m) shows alteration to sericite, epidote and chlorite. Hornblende marginally altered to epidote, chlorite and calcite. Groundmass : Sericitized plagioclase, recrystallized felsic minerals (Max:0.2m/m), and scattered opaque mineral. This rock shows intense alteration to epidote and locally formed epidote aggregate.
ND-1	Diamante	Altered andesite	Altered andesite Porphyritic texture? Phenocryst : Plagioclase, clinopyroxene (Max:6.0m/m) Plagioclase is almost altered to quartz and sericite. Clinopyroxene is completely altered to acicular aggregate of hornblende and sericite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
ND-1	Diamante	ditto	Groundmass : Spherulitic part is consist of spherical crystal of acicular sericite, chlorite and quartz. The other part is consist of sericite, chlorite and felsic mineral.
ND-18	Diamante	Brecciated altered andesite	Andesitic tuff breccia Breccia : Andestic rock (Max:8.0m/m) rimmed with opaque mineral. Clinopyroxene is altered to secondary amphibole and sericite. Matrix : It consists of acicular sericite and microcrystalline minerals.
ND-33	Diamante	Altered andesite	Altered andesite Porphyritic texture Phenocryst : Clinopyroxene and plagioclase. Clinopyroxene shows alteration to amphibole and moreover sericite, chlorite or epidote. Plagioclase is also chloritized and cloudy. Groundmass : Laths of plagioclase and acicular sericite and chlorite with scattered and altered opaque mineral.
ND-52	Diamante	Granodiorite	Granodiorite Equigranular texture It consists mainly of plagioclase, quartz and mafic mineral with a small amount of potass feldspar. Plagioclase (Max:4.0m/m) shows weak alteration to subhedral potass feldspar and sericite. It shows marked zoning and twinning. Quartz (Max:3.0m/m) is anhedral. Mafic mineral is completely altered to aggregate of chlorite, calcite, sphene and opaque mineral. Anhedral potass feldspar occurs in marginal part of plagioclase and quartz.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
ND-53	Diamante	Altered andesite	Altered andesite Spherulitic texture Phenocryst : Plagioclase and mafic mineral. Plagioclase is altered to sericite and cloudy. Mafic mineral is completely altered to amphibole and suffer from sericitization, epidotization and chloritization. Spherulitic part (ave:0.5m/m, Max: 3.0m/m) is filled with chlorite, epidote and sericite. Groundmass : Acicular plagioclase. Sericite and chlorite result from alteration.
B-4	Bombona	Porphyritic granodiorite	Granodiorite Weak porphyritic texture It is composed of mainly hornblende, biotite, plagioclase, potass feldspar and quartz. Sphene, apatite and opaque mineral are accessory. Euhedral∿subhedral plagioclase (max:3.0m/m) shows marked zoning and albite twinning and sometimes changes amorphous state in the neuclei. Anhedral quartz (max:3.0m/m). Potass feldspar is closely associated with quartz and plagioclase and a part shows mirmekite texture. Biotite (max:3.0m/m) is platy and brownish color and changes into chlorite with minor amount of opaque mineral and sphene. Hornblende (max:2.0m/m) is green∿brownish green subhedral crystal with association of opaque mineral, sphene, epidote, apatite and biotite. Interstices of phenocryst are composed of fine grained (1.0∿0.1m/m) crystals.
B-5	Bombona	Chert	Silicified rock It is composed of fine grained (ave. 0.1m/m) quartz crystals which include epidote, sphene, hornblende and calcite (ave. 0.1m/m) in dotted form.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
B-10	Bombona	Granodiorite	Granodiorite equigranuler texture It consists mainly of biolite, hornblende, plagioclase, potass feldspar and quartz. Sphene, apatite and opaque mineral are accessory. Plagioclase (max:3.0m/m) is subhedral and shows marked zoning and twinning. Quartz (max:2.0m/m) and Potass feldspar (max:3.0m/m) are both anhedral crystal form which are surrounding plagioclase. Reddish brown platy biotite suffered from chloritization with opaque mineral. Hornblende (max:4.0m/m) partly changes into chlorite and biotite with association of opaque mineral.
B-11	Bombona	Granodiorite intruded by aplitic granite	Granodiorite It is composed mainly of plagioclase, anhedral quartz tabular biotite and a little potass feldspar. Epidote, sphene, apatite and opaque mineral are accessory. Plagioclase shows marked zoning and twinning. Aplitic granite vein It is composed mainly of quartz, patass feldspar, plagioclase and a little biotite. Felsic minerals are all anhedral. Tabular biotite (Max:0.7m/m) is chloritized. Near the contact, plagioclase is rich in the aplitic side and the other granodiorite side, quartz is abundant and that probably shows some reaction between those two rocks.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
B-20	Bombona	Granodiorite	Granodiorite It is composed mainly of subhedral plagioclase (Max: 1.5m/m), anhedral quartz, biotite and hornblende and a little potass feldspar. Sphene and opaque mineral are accessory. Tabular biotite (ave:0.5m/m) mostly shows alteration to chlorite. Hornblende (ave:0.5m/m, Max:2.0m/m) is replaced by plagioclase.
B-22	Bombona	Porphyritic granodiorite	Porphyritic granodiorite This rock is almost same as B-4, but grain size is a little coaser than that of B-4., felsic mineral (Max: 4.0m/m) and mafic mineral (Max:6.5m/m).

A. I-4 Microscopic Observation of the Polished Sections

Sample No.	Location	Macroscopic descriptions	Microscopic observations
R-107	Rio Blanco	Pyrite ore	This ore consists mainly of pyrite with a small amount of chalcopyrite, covelline, hematite and Fe-hydro-oxide. Pyrite shows anhedral form, and makes vein and dissemination, and partly margin of pyrite is replaced by Fe-oxide. Chalcopyrite, several decade μm to 100 μm in size, occurs as independent crystals but partly a small amount of chalcopyrite coexists with pyrite and margin of chalcopyrite is replaced by covelline.
R-110	Rio Blanco	Pyrite ore	This ore consists mainly of pyrite, with a small amount of chalcopyrite, covelline, hematite and Fe-hydro-oxide. Pyrite shows anhedral form, and makes vein and dissemination, and partly margin of pyrite is replaced by Fe-oxide. Chalcopyrite, several decade μm to 100 μm in size, occurs as independent crystals, but partly a small amount of chalcopyrite coexists with pyrite and margin of chalcopyrite is replaced by covelline.
ND-13	Diamante	Arsenopyrite ore	This ore consists mainly of arsenopyrite, pyrite, and sphalerite, with a small amount of chalcopyrite, covelline, and galena. Arsenopyrite shows euhedral and anhedral form, the others show anhedral form. Sphalerite includes chalcopyrite dots. Galena is several decade μm to 100 μm in size, and is included in arsenopyrite.
ND-17	Diamante	Pyrite-arsenopyrite ore	This ore consists mainly of pyrite and arsenopyrite, and a small amount of sphalerite, chalcopyrite, galena and a few dot of electrum. Electrum is 10 to 70 μm in size, occurs in pyrite, intergranular of pyrite and/or in gangue minerals. Sphalerite includes a few dot of chalcopyrite. Margin of galena in part is replaced by chalcocite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
ND-42	Diamante	Arsenopyrite-pyrite ore	The constituent minerals are mainly arsenopyrite and pyrite with accessory sphalerite, chalcopyrite, galena and a few dot of electrum. Electrum is 10 to 50 μm in size, coexists with pyrite, but often occurs in gangue minerals. Sphalerite includes chalcopyrite dot. Chalcopyrite is replaced by chalcocite and covelline in part.
ND-46	Diamante	Pyrite-chalcopyrite-hematite ore	It is composed mainly of pyrite, chalcopyrite and hematite, with accessory covelline and hydro-oxide, these minerals fill the interstice of gangue minerals and the cracks. Covelline, hematite & Fe-hydro-oxide occur the margin of chalcopyrite and pyrite by weathering.
ND-49	Diamante	Pyrite ore	This ore consists mainly of pyrite, with a small amount of arsenopyrite, sphalerite, galena, chalcopyrite, boulangerite?, tetrahedrite, and covelline. Boulangerite occurs the margin of galena. Boulangerite?, tetraherite, galena, and covelline coexist complicatedly.
D-SP-1	Diamante	Pyrite ore	It is composed mainly of pyrite, with a small amount of arsenopyrite and chalcopyrite. Chalcocite is observed at a margin of chalcopyrite and along the cracks in part. Chalcopyrite includes tetrahedrite (100 μm). Pyrite is partly replaced by marcasite.
D-SP-2	Diamante	Pyrite ore	It is composed mainly of pyrite, with a small amount of arsenopyrite and sphalerite, and a very small amount of chalcopyrite, tetrahedrite and galena. Tetrahedrite cuts pyrite and arsenopyrite, and often coexists with chalcopyrite. Sphalerite includes chalcopyrite dots.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
OD-A	Diamante	Arsenopyrite ore	It is composed mainly of arsenoprite, with a small amount of sphalerite, and a very small amount of chalcopyrite. Sphalerite includes chalcopyrite dots.
OD-B	Diamante	Arsenopyrite-sphalerite ore	The constituent minerals are arsenopyrite and sphalerite, with a small amount of pyrite, galena and chalcopyrite, and a very small amount of tetrahedrite. Sphalerite includes chalcopyrite dots.
OD-C	Diamante	Pyrite ore	It is composed mainly of pyrite, with a small amount of arsenopyrite, sphalerite and galena. Electrum of 20 to 30 μm in size is observed in pyrite. Sphalerite includes chalcopyrite dots.

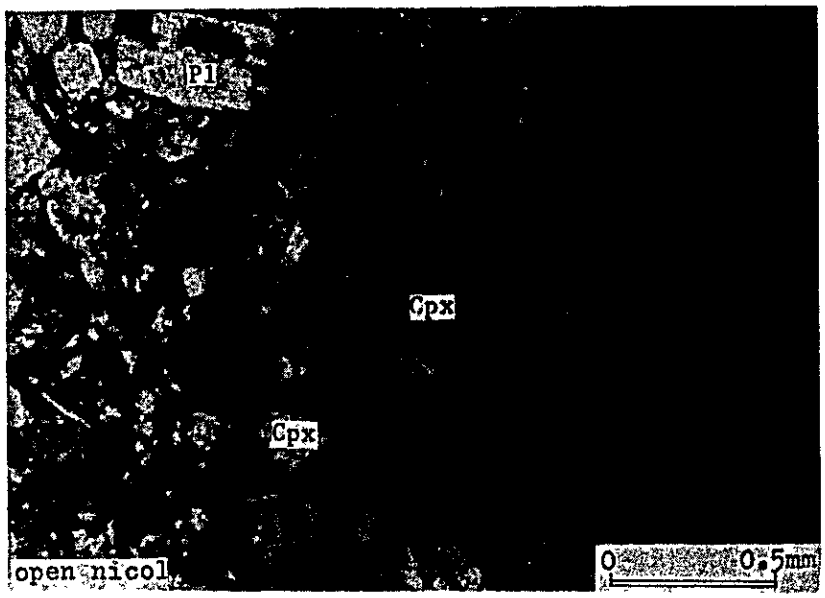
A. I-5 Photomicrographs

A. I-5-1 Thin Sections

Sample No.	Location	Rock Type
R - 34	Rio Blanco	Tuffaceous volcanic sandstone
R -118	Rio Blanco	Hornblende diorite porphyry
R -138	Rio Blanco	Granodiorite porphyry
R -238	Rio Blanco	Recrystallized rock
R -242	Rio Blanco	Alternation of shale and sandstone
V - 1	La Verde	Dolerite
V - 15	La Verde	Calcareous sandstone
V - 16	La Verde	Andesitic volcanic sandy tuff
V - 17	La Verde	Calcareous shale
V - 22	La Verde	Porphyritic granodiorite
ND- 1	Diamante	Altered andesite
ND- 18	Diamante	Andesitic tuff breccia
ND- 53	Diamante	Altered andesite
B - 4	Bombona	Granodiorite
B - 5	Bombona	Silicified rock

Abbreviations

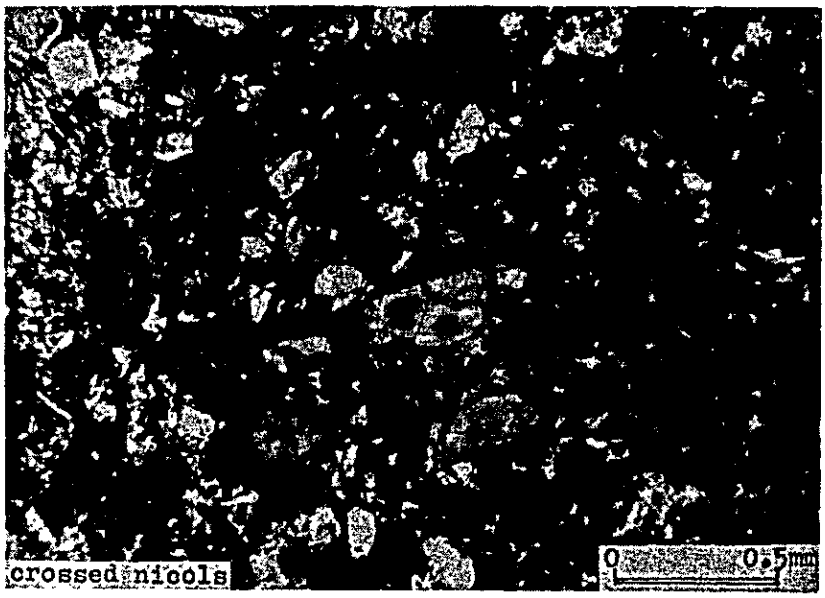
Pl : Plagioclase
Qz : Quartz
Ser : Sericite
Chl : Chlorite
Hb : Hornblende
Bio : Biotite
Cpx : Clinopyroxene
Cal : Calcite
Ep : Epidote
Or : Orthoclase

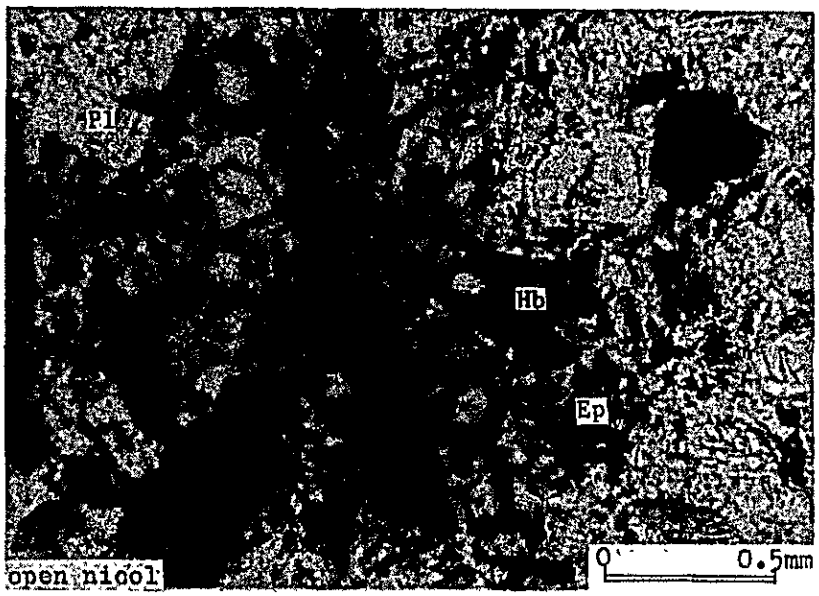


Sample No. R-34

Rock type:

Tuffaceous volcanic sandstone

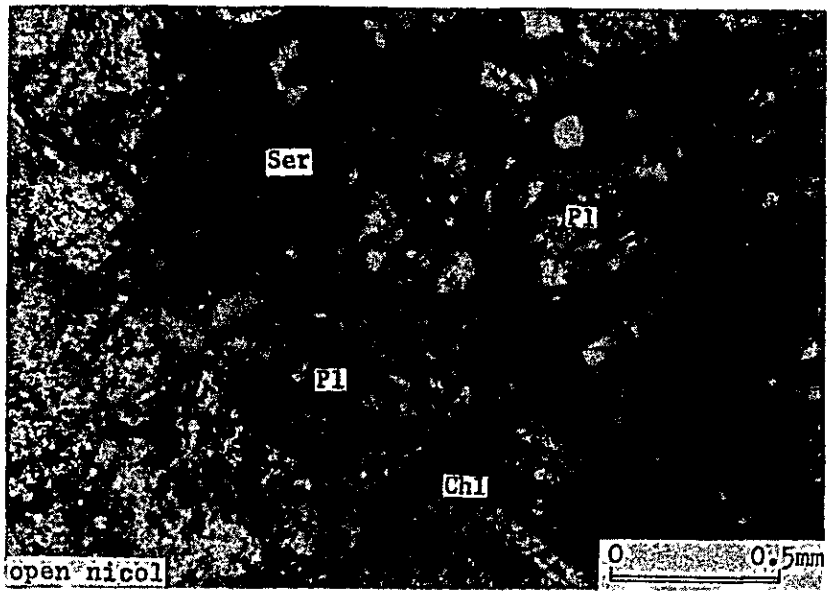




Sample No. R-118

Rock type;

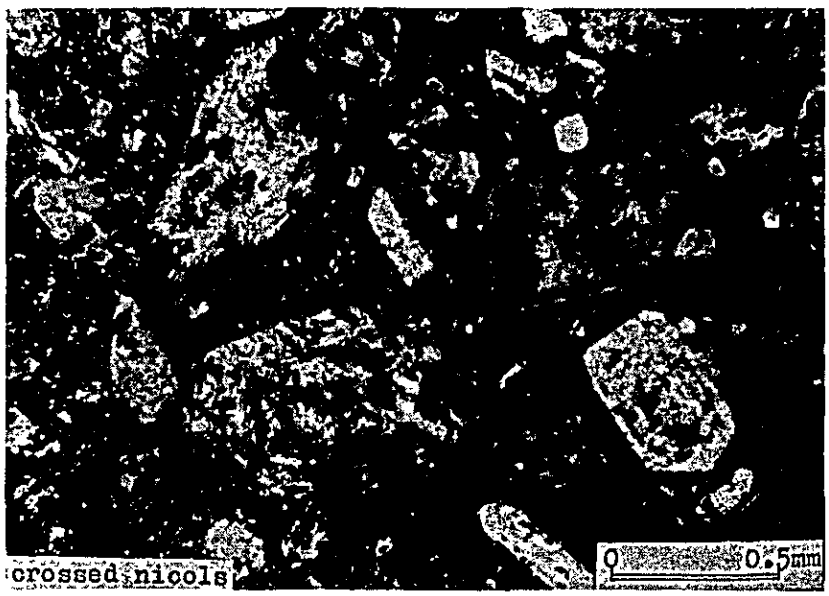
Hornblende diorite porphyry

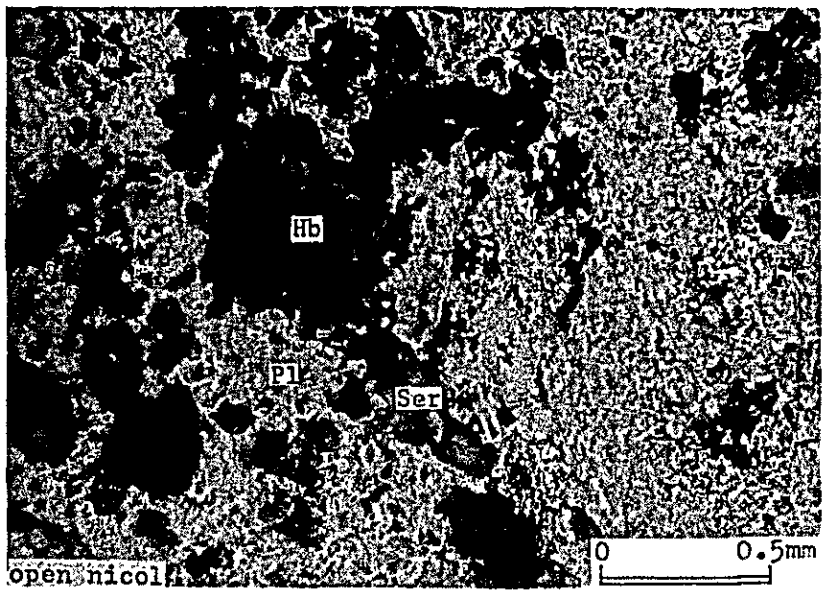


Sample No. R-138

Rock type:

Granodiorite porphyry

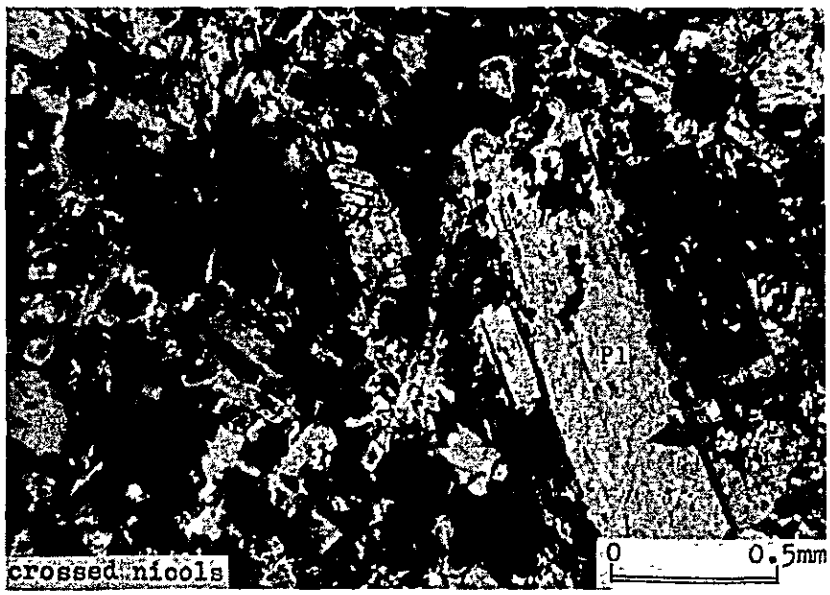


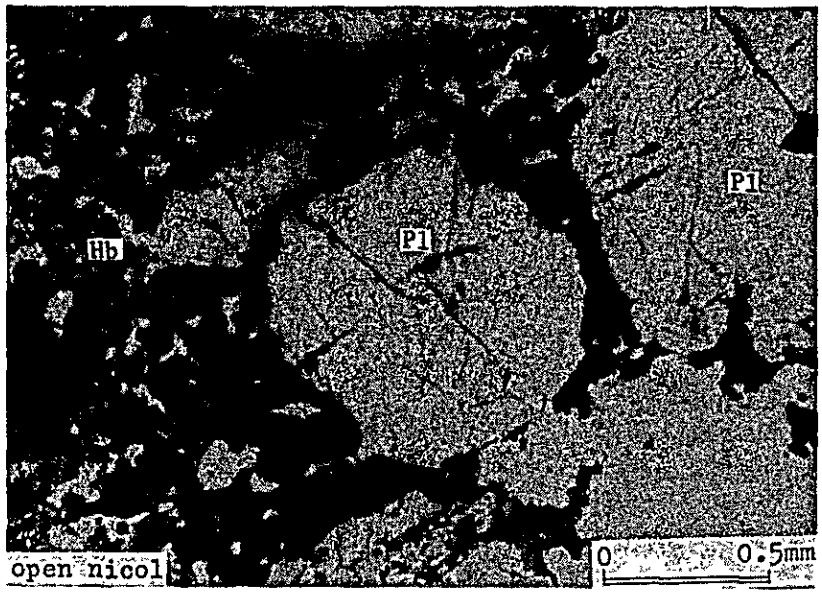


Sample No. R-238

Rock type:

Recrystallized rock

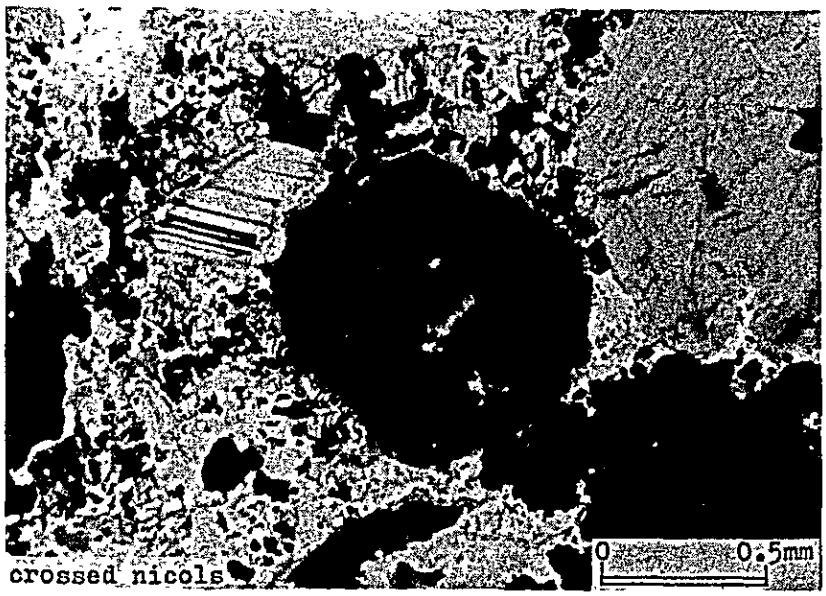


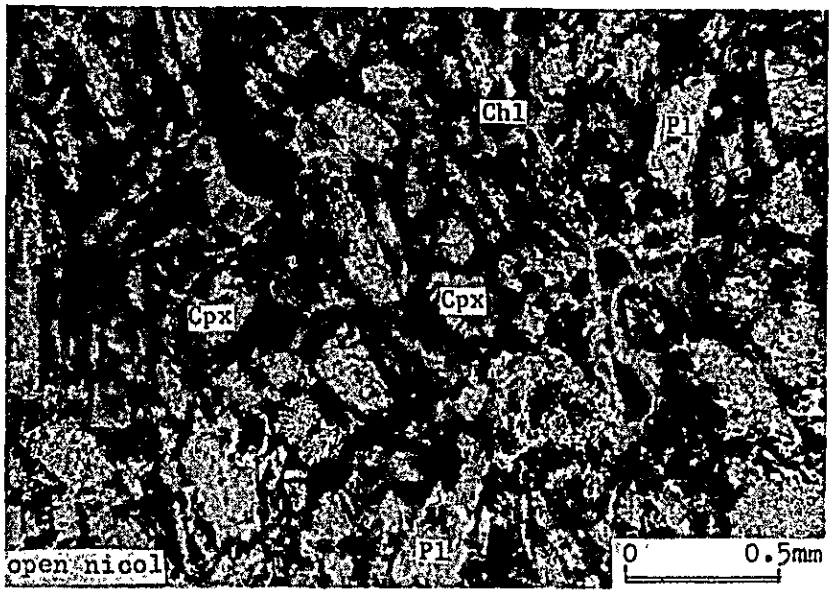


Sample No. R-242

Rock type:

Shale/sandstone

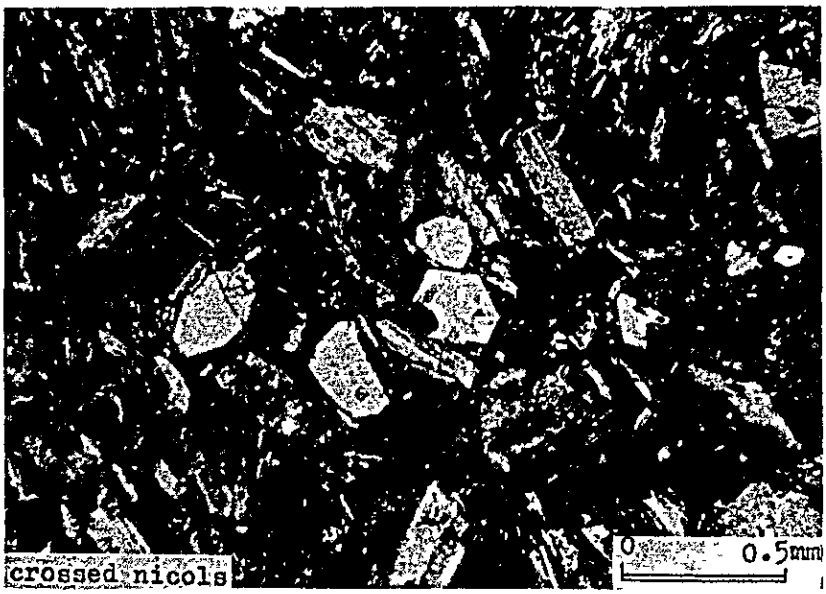


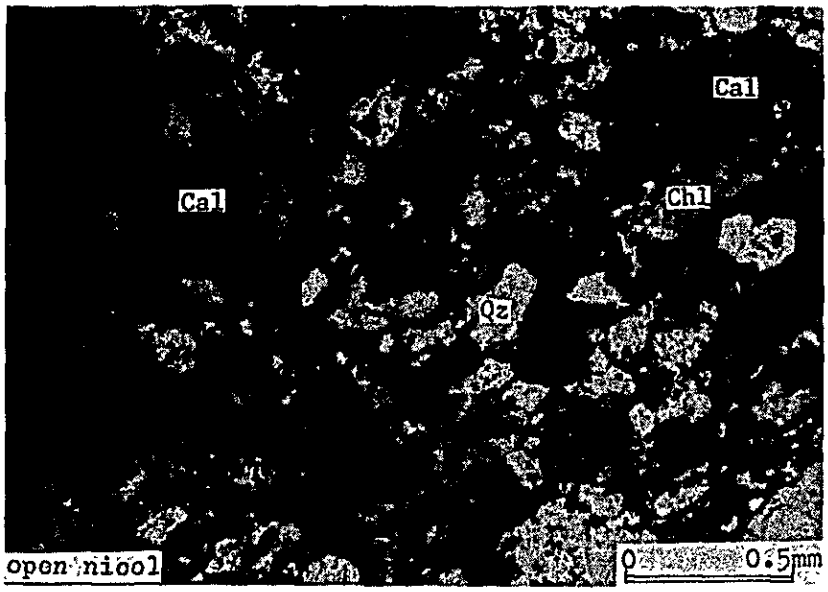


Sample No. V-1

Rock type:

Dolerite

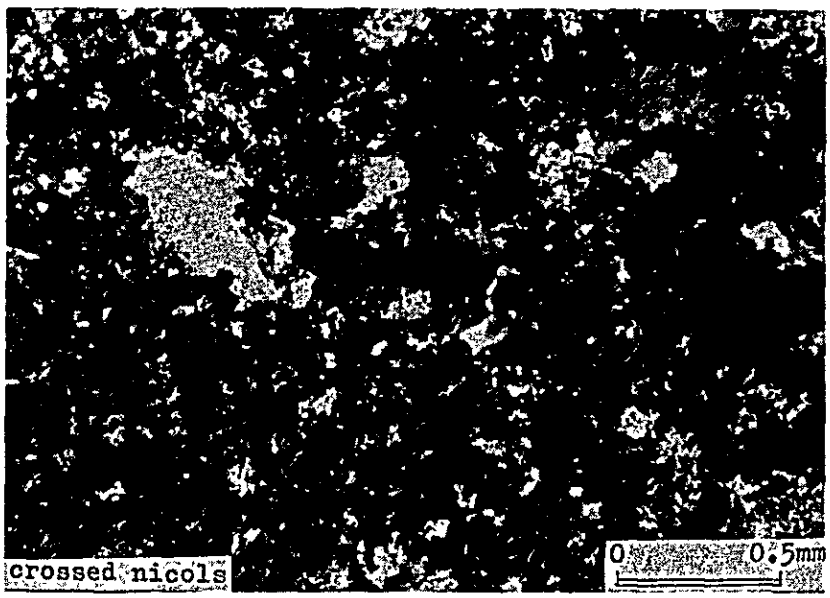


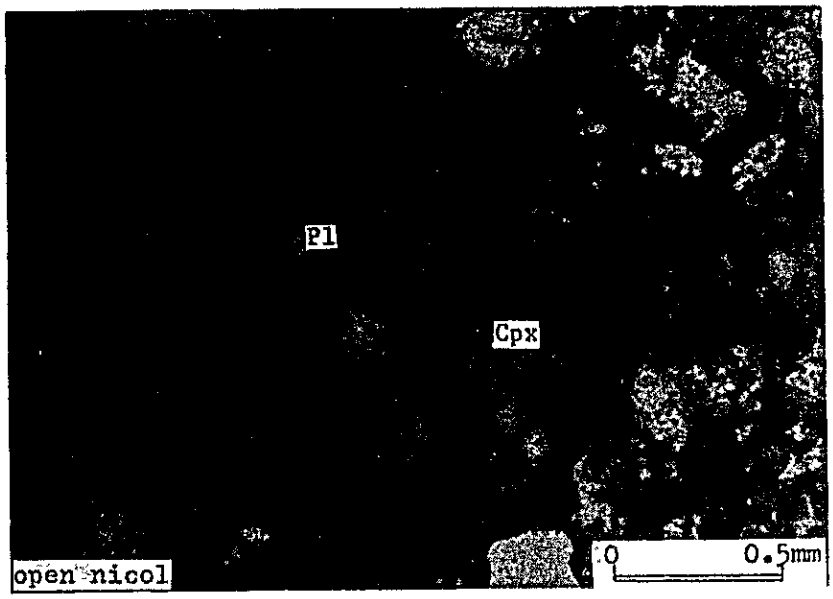


Sample No. V-15

Rock type:

Calcareous sandstone

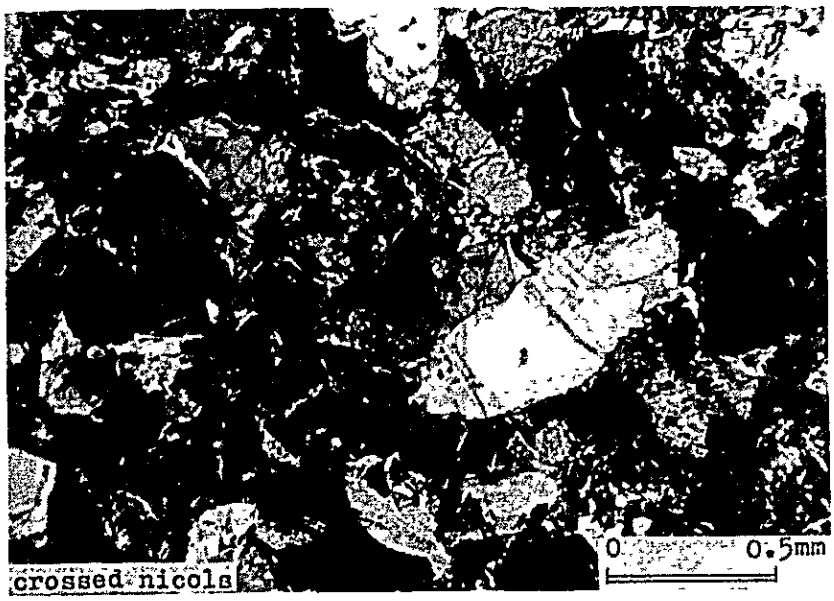




Sample No. V-16

Rock type:

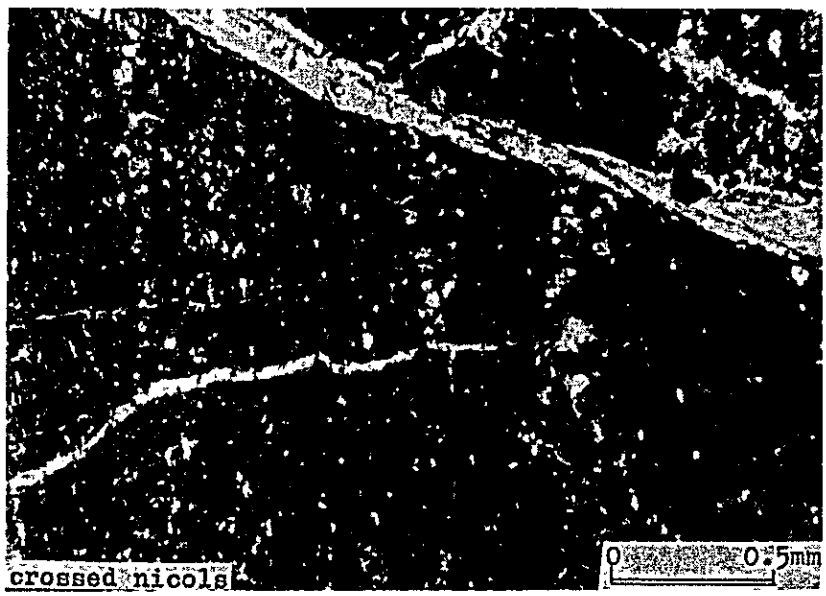
Andesitic volcanic sandy tuff

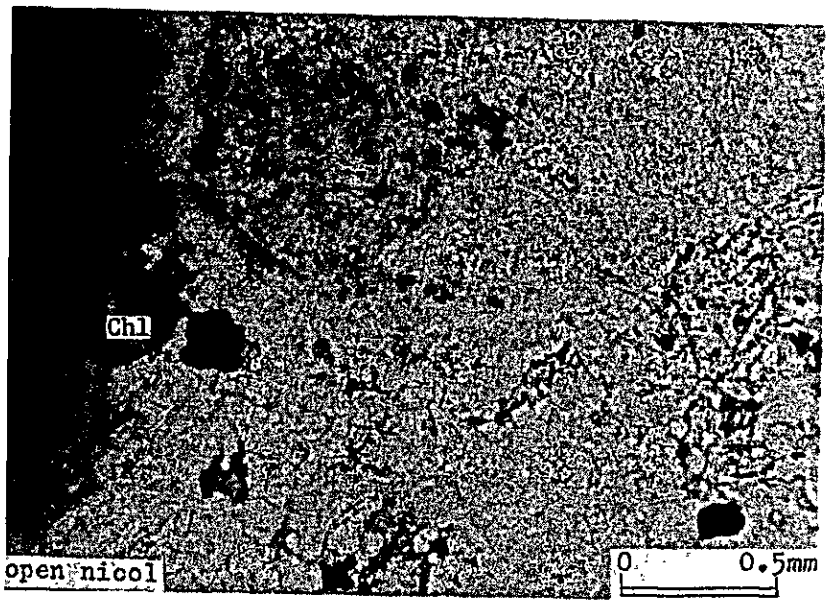


Sample No. V-17

Rock type:

Calcareous shale

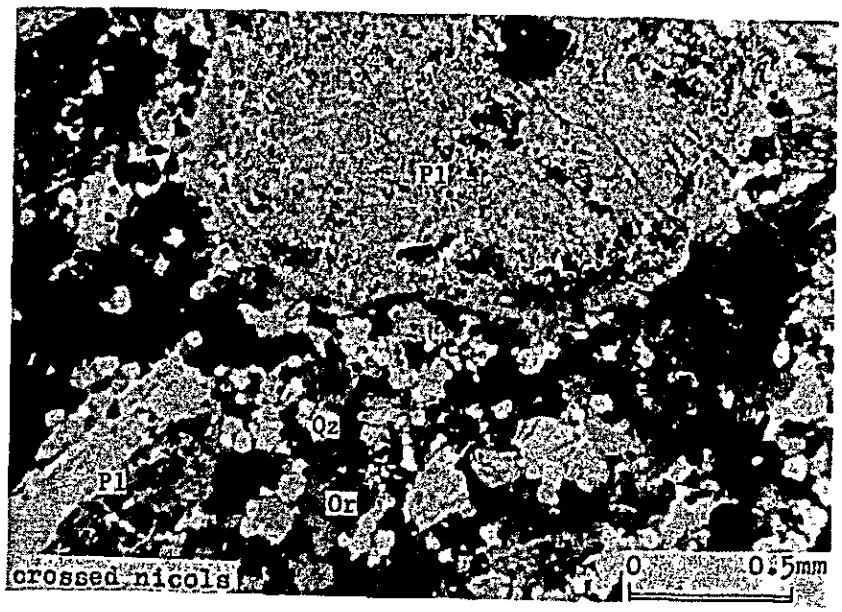




Sample No. V-22

Rock type:

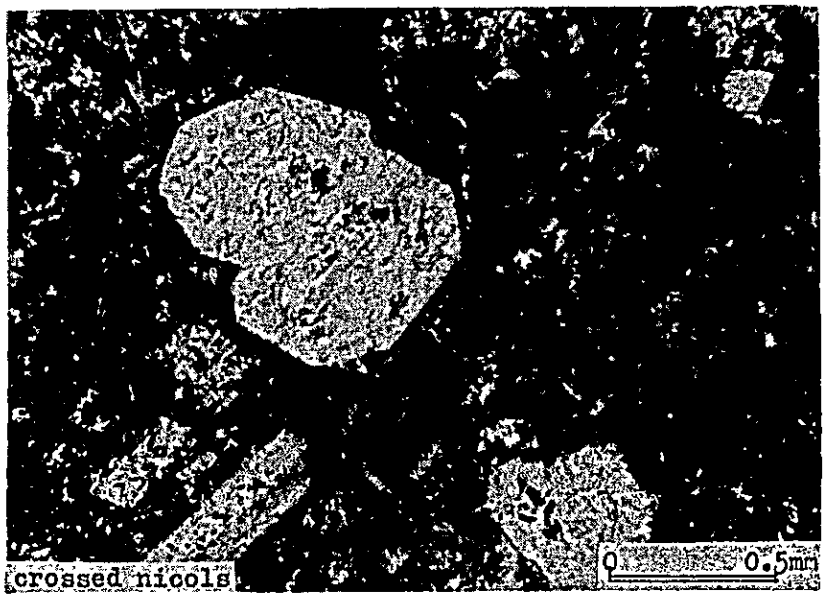
Porphyritic granodiorite

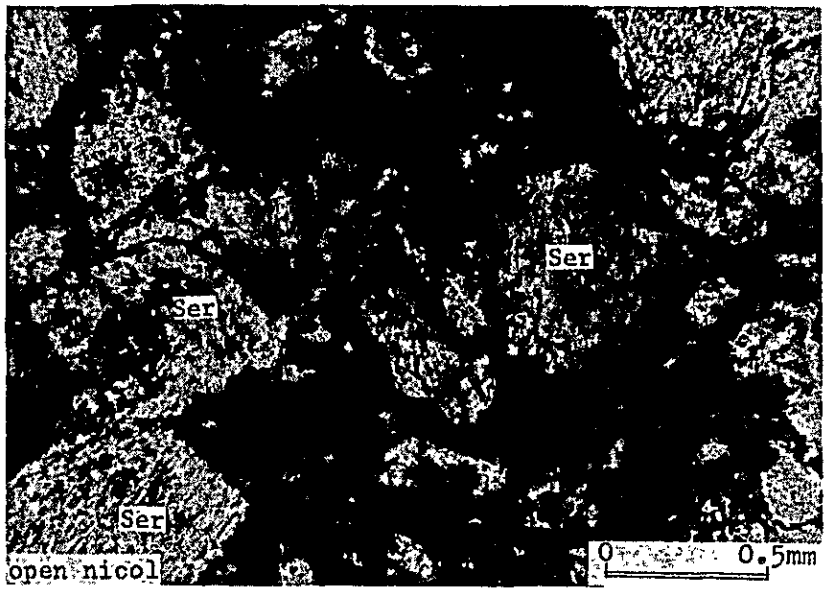


Sample No. ND-1

Rock type:

Altered andesite

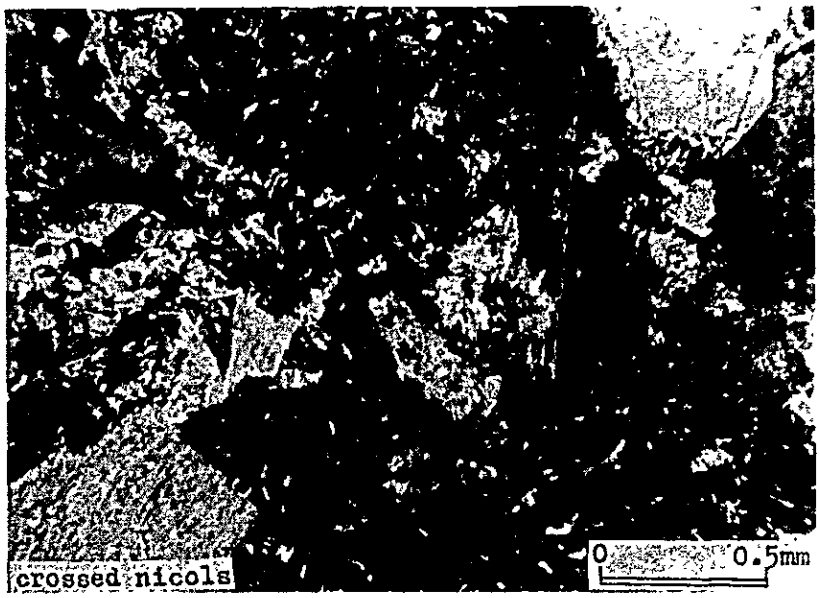


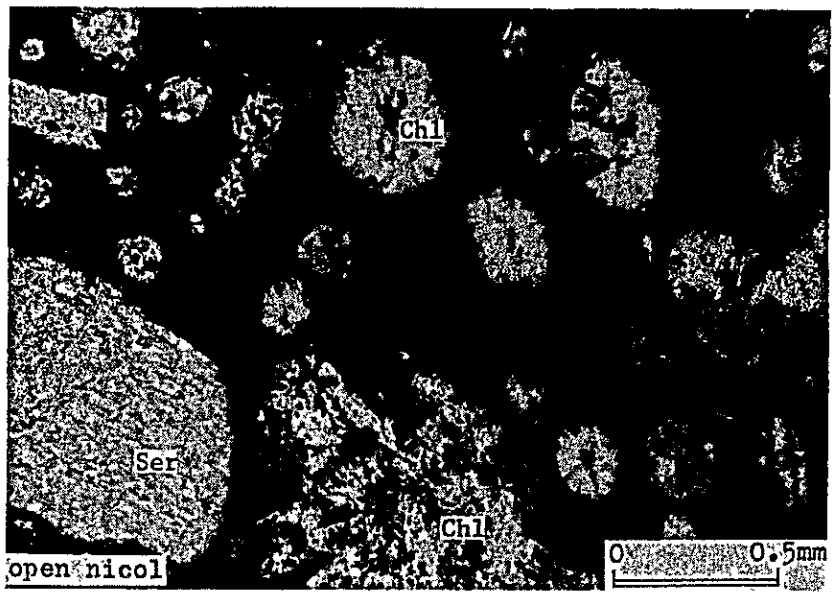


Sample No. ND-18

Rock type:

Andesitic tuff breccia

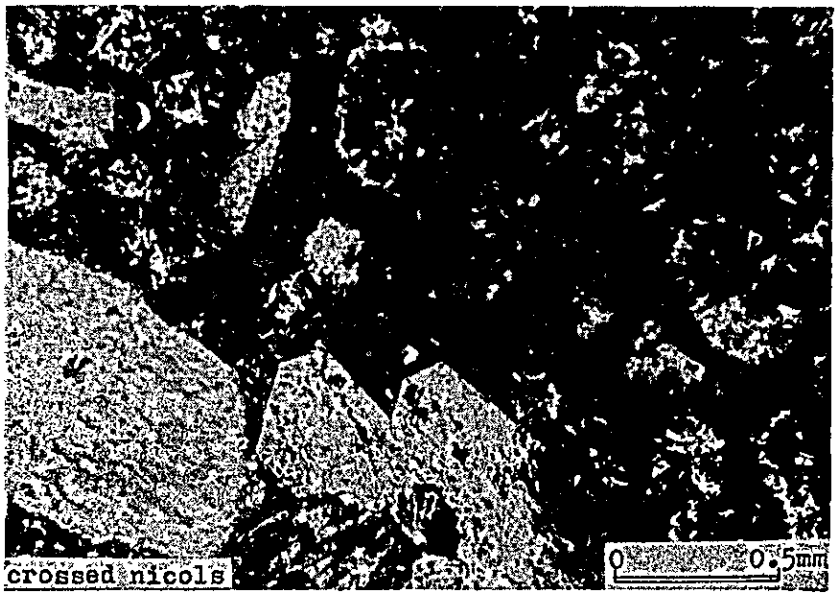


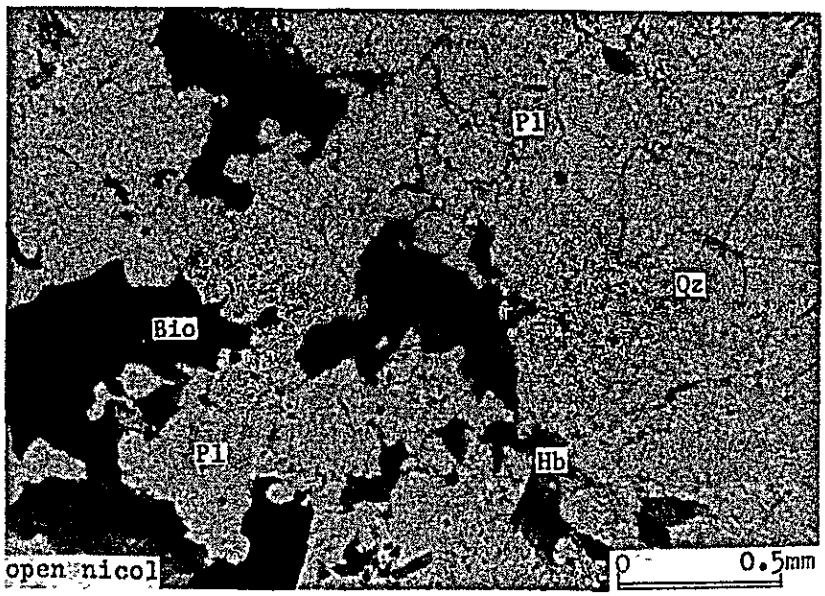


Sample No. ND-53

Rock type:

Altered andesite

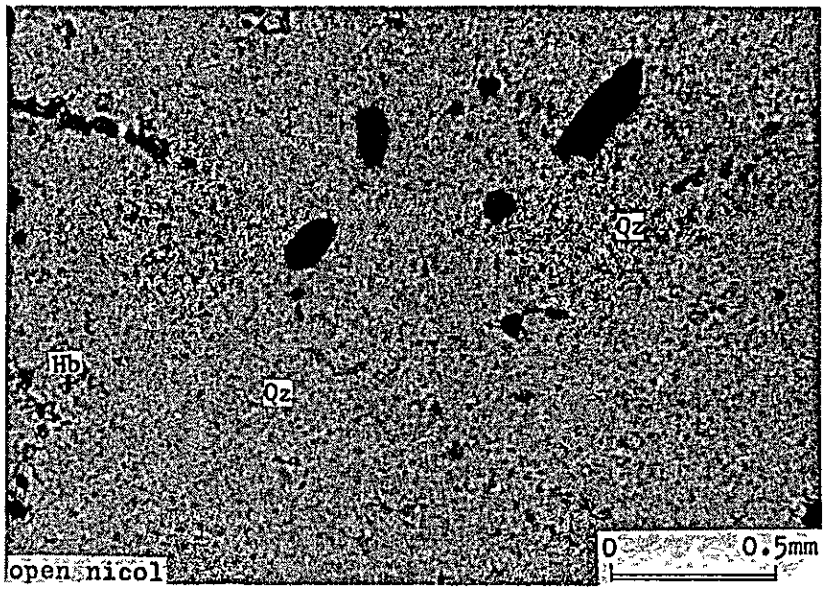




Sample No. B-4

Rock type:

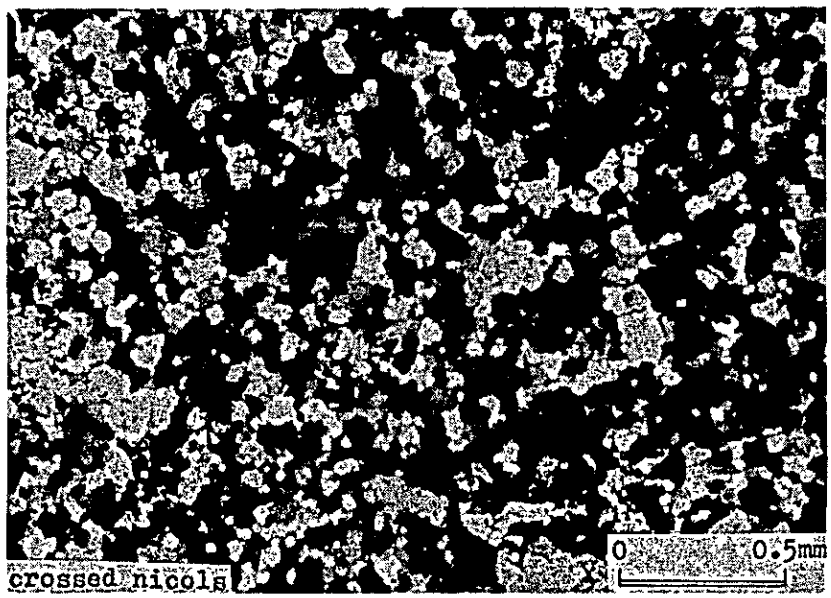
Granodiorite



Sample No. B-5

Rock type:

Silicified rock

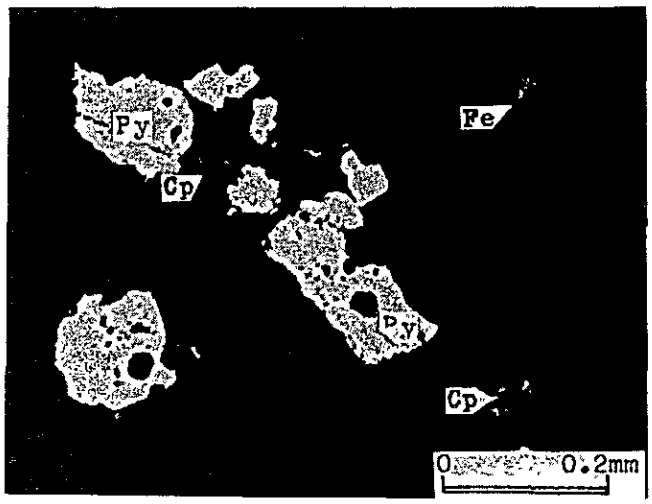


A. I-5-2 Polished Sections

Sample No.	Location	Rock Type
R-107	Rio Blanco	Copper ore
ND-13(C)	Diamante	Zinc, copper ore
ND-17	Diamante	Gold ore
ND-46(A)	Diamante	Copper ore
ND-46(B)	Diamante	Copper ore
ND-49	Diamante	Copper, zinc, lead ore
D-Sp-2	Diamante	Copper, zinc, lead ore
OD-B	Diamante	Copper, zinc, lead ore
OD-C	Diamante	Gold ore

Abbreviations

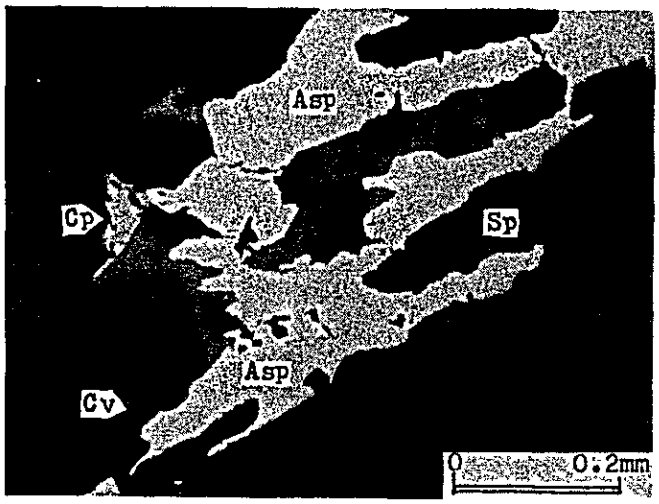
Py : Pyrite
Asp : Arsenopyrite
El : Electrum
Cp : Chalcopyrite
Sp : Sphalerite
Gn : Galena
Fe : Iron oxide
Cv : Covelline
Hem : Hematite
Cc : Chalcocite
Bl : Boulangerite
Td : Tetrahedrite
G : Gangue mineral



Sample No. R-107

Rock type:

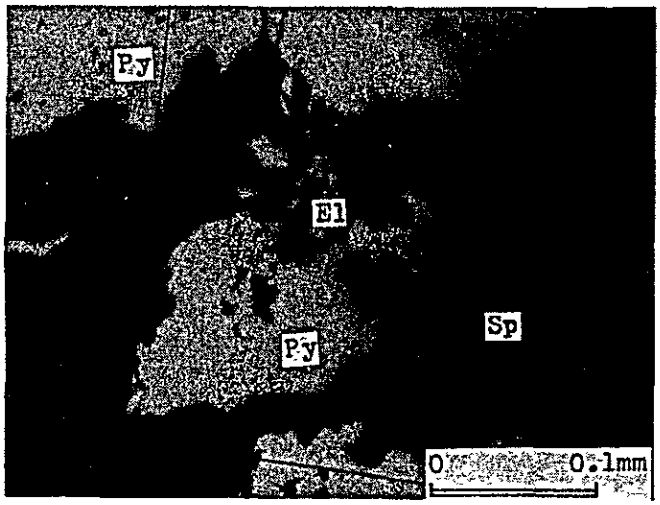
Copper ore



Sample No. ND-13(C)

Rock type:

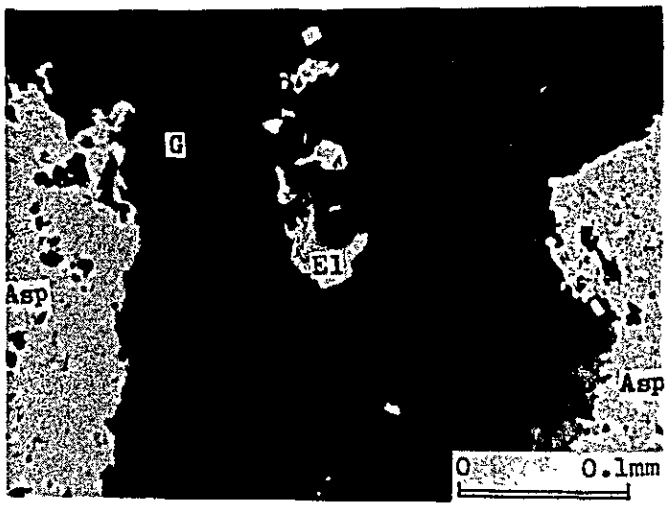
Zinc, copper ore



Sample No. ND-17

Rock type:

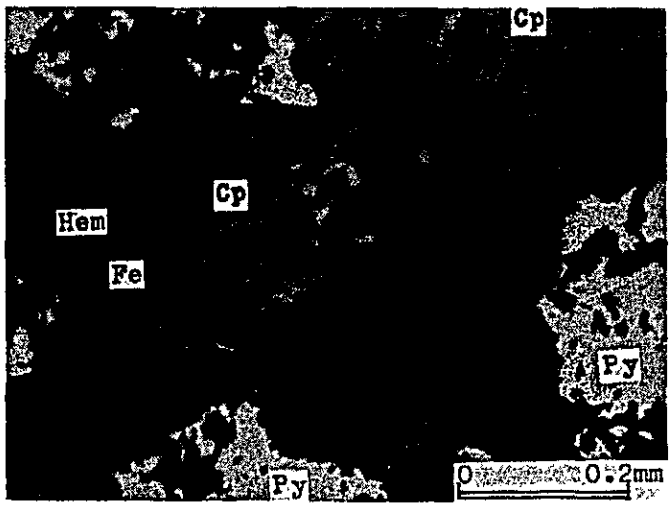
Gold ore



Sample No. ND-17

Rock type:

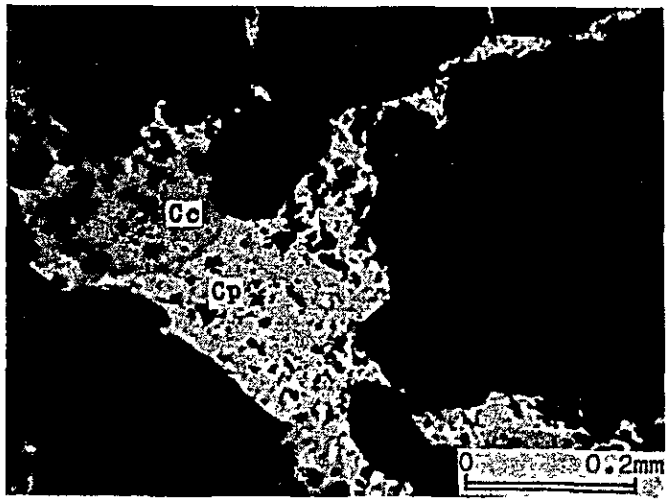
Gold ore



Sample No. ND-46(A)

Rock type:

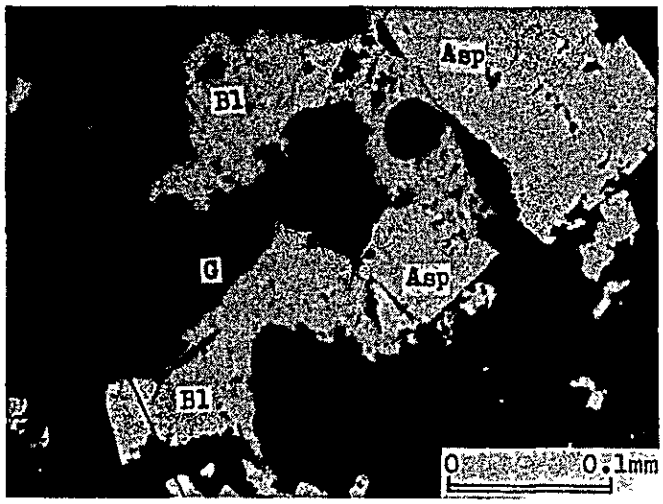
Copper ore



Sample No. ND-46(B)

Rock type:

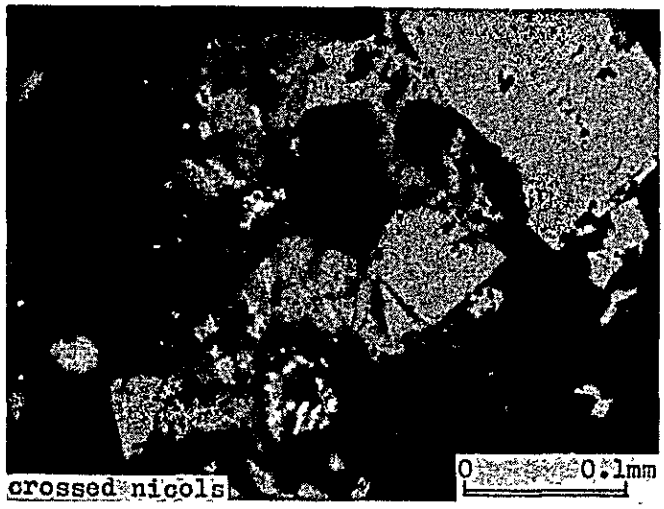
Copper ore

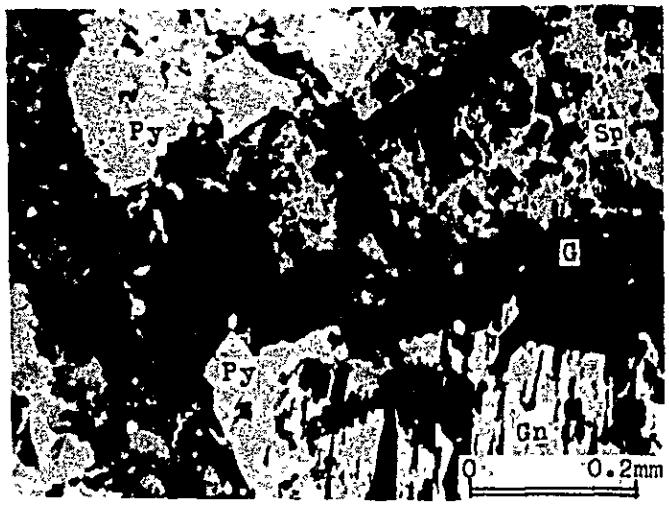


Sample No. ND-49

Rock type:

Copper, zinc, lead ore

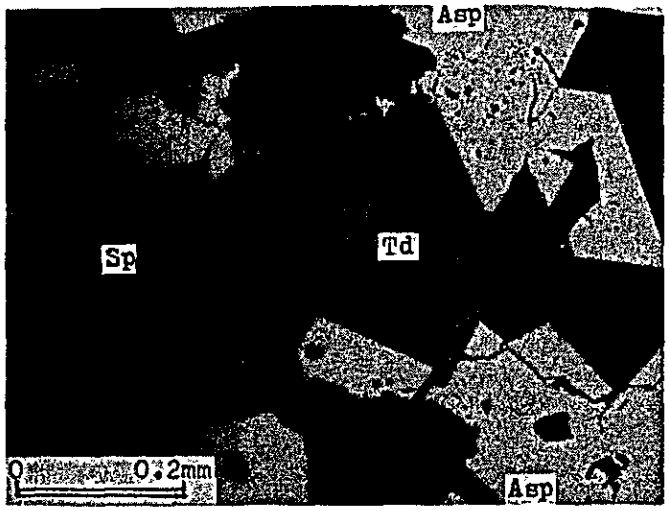




Sample No. D-Sp-2

Rock type:

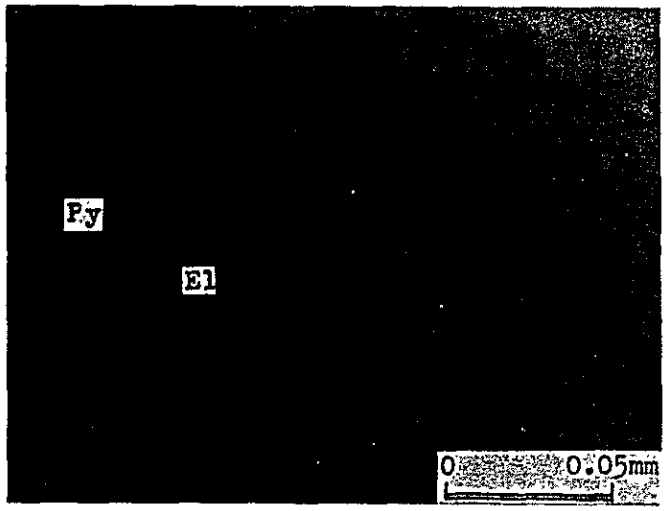
Copper, zinc, lead ore



Sample No. OD-B

Rock type:

Copper, zinc, lead ore



Sample No. OD-C

Rock type:

Gold ore

A. I-5-3 EPMA Analysis

Abbreviations

Py : Pyrite

El : Electrum

Bl : Boulangerite

Asp : Arsenopyrite

Sp : Sphalerite

Fr : Freibergite

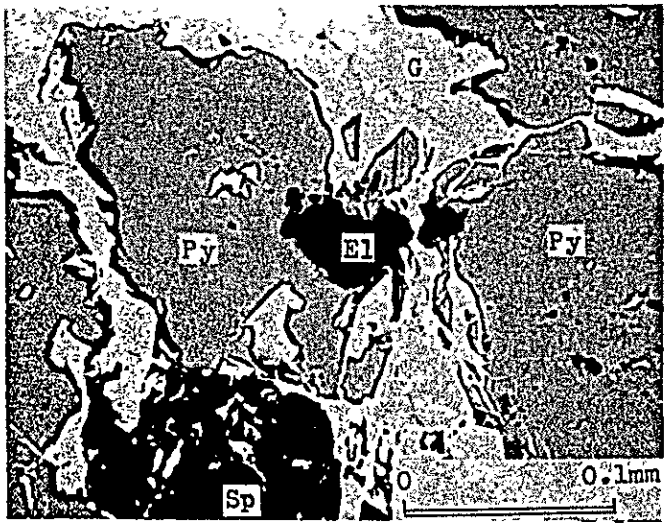
Cp : Chalcopyrite

Gn : Galena

Td : Tetrahedrite

G : Gangue mineral

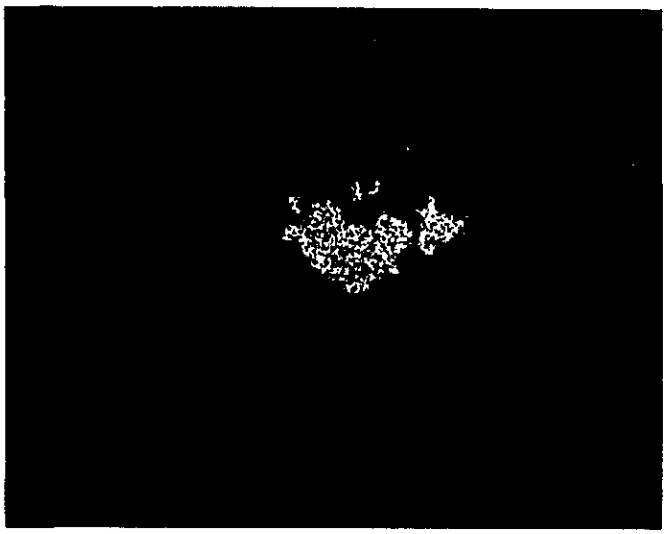
(1)



Absorbed electron image

Electrum occurs in/border of pyrite

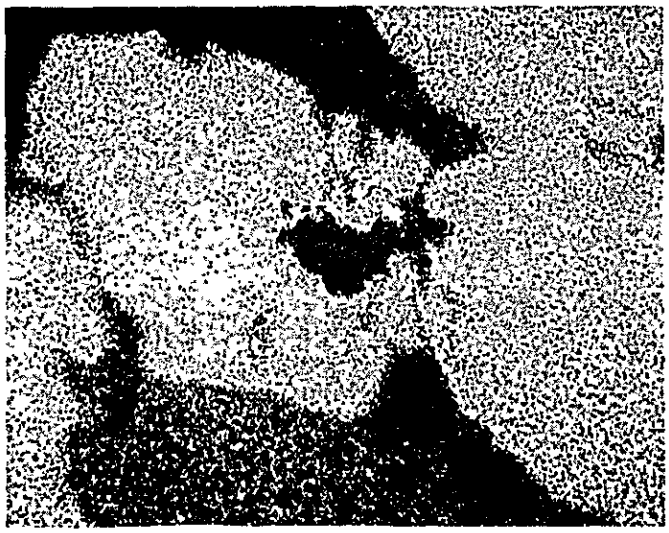
Au X-ray image



Ag X-ray image

Sample No. : ND-17A
Locality : Diamante
Accel. volt. : 25 kV
Absorb. elect. : 0.2 μA

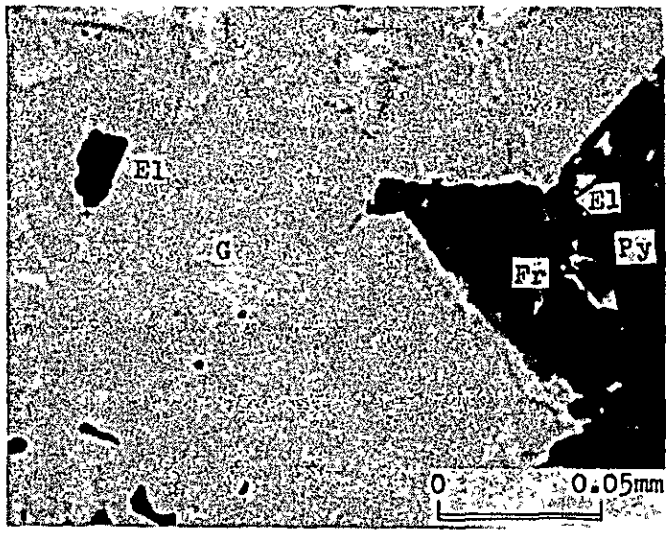
Zn X-ray image



Fe X-ray image

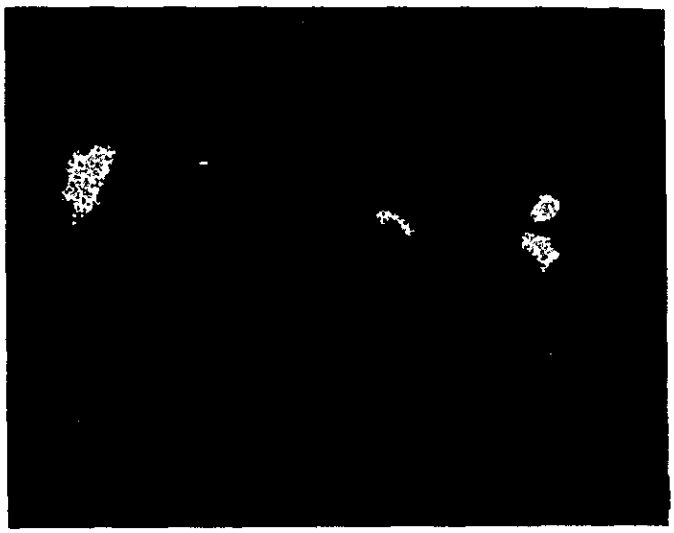
S X-ray image

(continuation of No.ND-17A)



Absorbed electron image

Freibergite (Ag bearing Tetrahedrite) and electrum occur in fringe of pyrite, and another electrum in gangue (quartz).



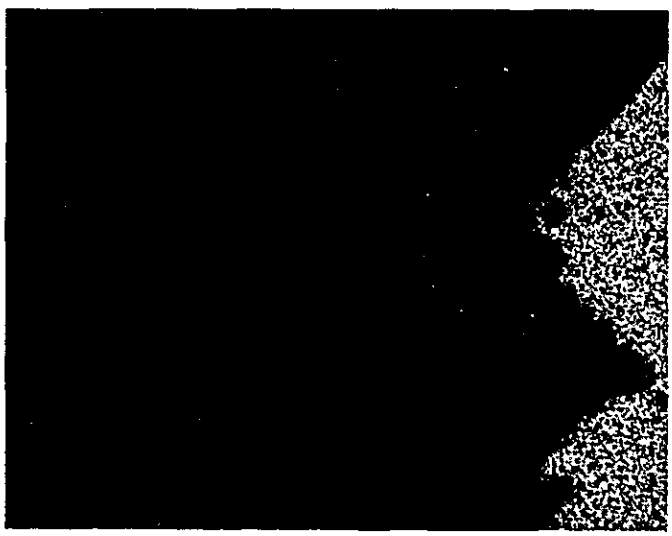
Au X-ray image

Ag X-ray image

Sample No.	: ND-17B
Locality	: Diamante
Accel. volt.	: 15 kV
Absorb. elect.	: 0.1 μA

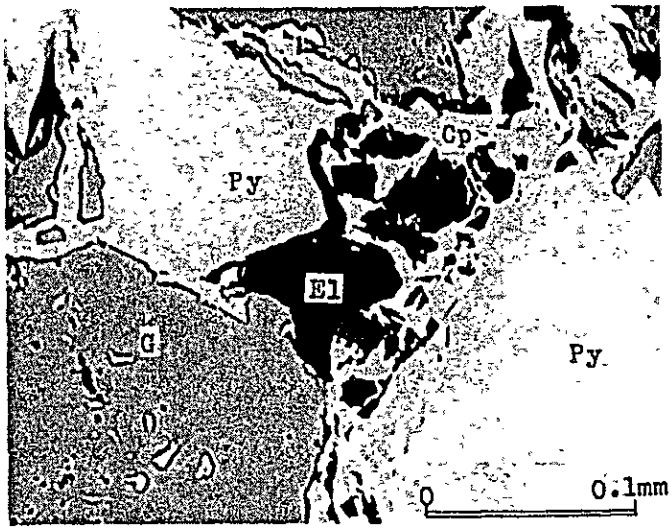
Cu X-ray image

Sb X-ray image



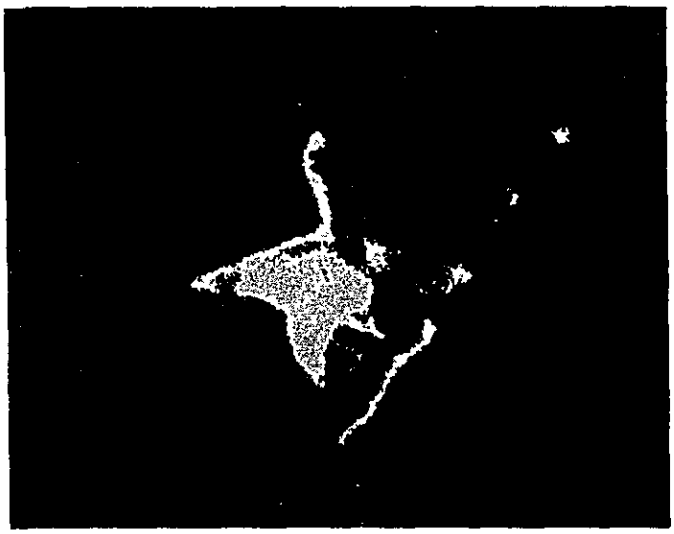
Fe X-ray image

(continuation of No.17B)



Absorbed electron image

Electrum associated with chalcopyrite, between pyrite crystals



Au X-ray image

Ag X-ray image

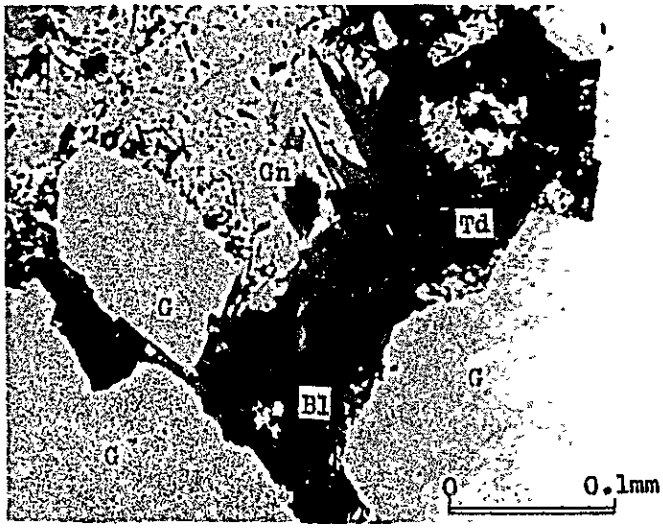
Sample No. : ND-42
Locality : Diamante
Accel. volt. : 25 kV
Absorb. elect. : 0.2 μA

Cu X-ray image

Fe X-ray image

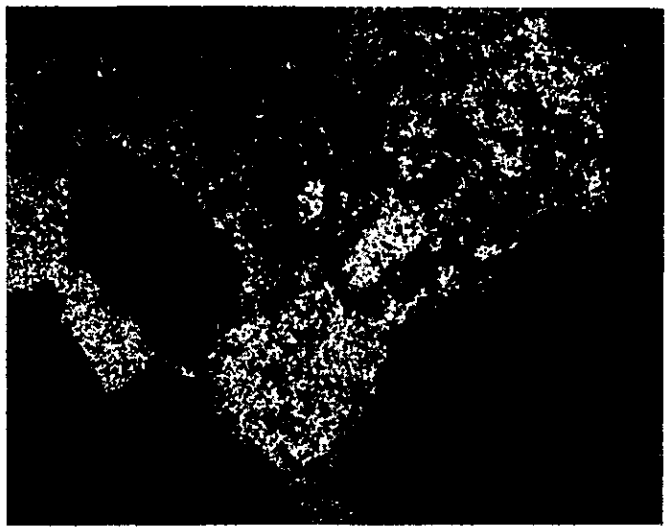
S X-ray image

(continuation of No.ND-42)

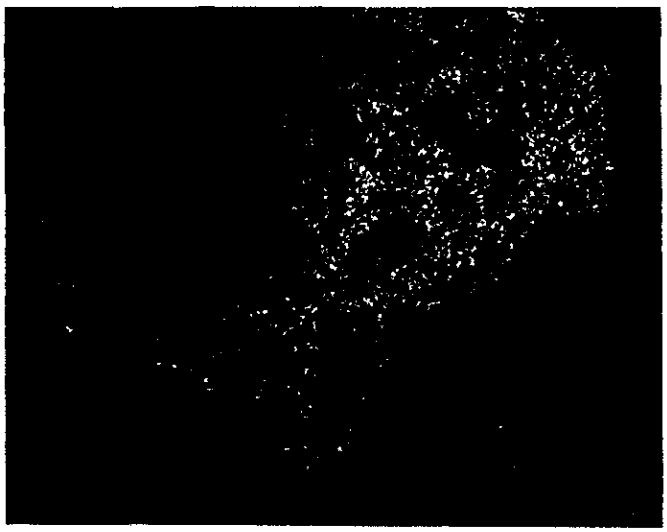


Absorbed electron image

Tetrahedrite (Td:$3Cu_2S \cdot Sb_2S_3$) and Boulangerite (Bl:$5PbS \cdot 2Sb_2S_3$) and determinated.

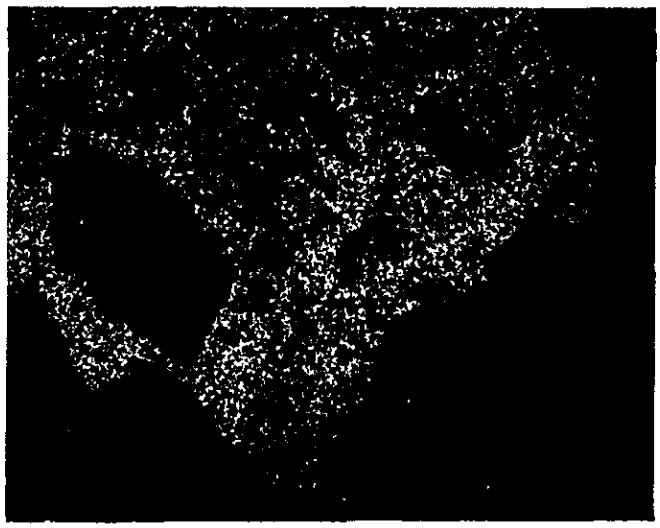


Pb X-ray image



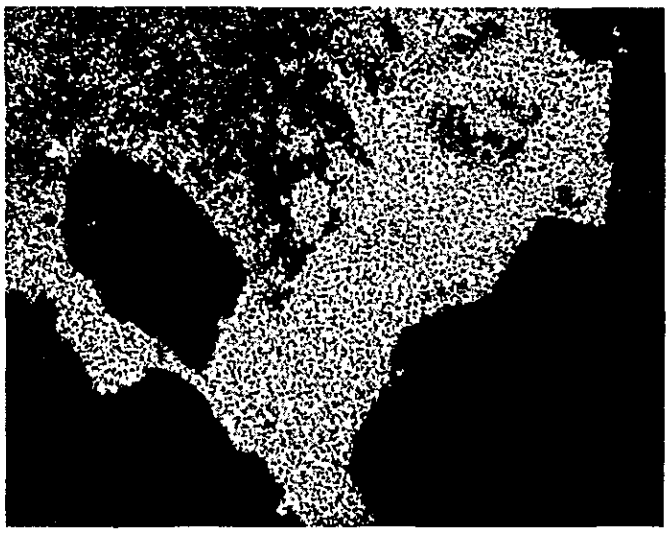
Cu X-ray image

Sample No. : ND-49A
Locality : Diamante
Accel. volt. : 15 kV
Absorb. elect. : 0.1 μA



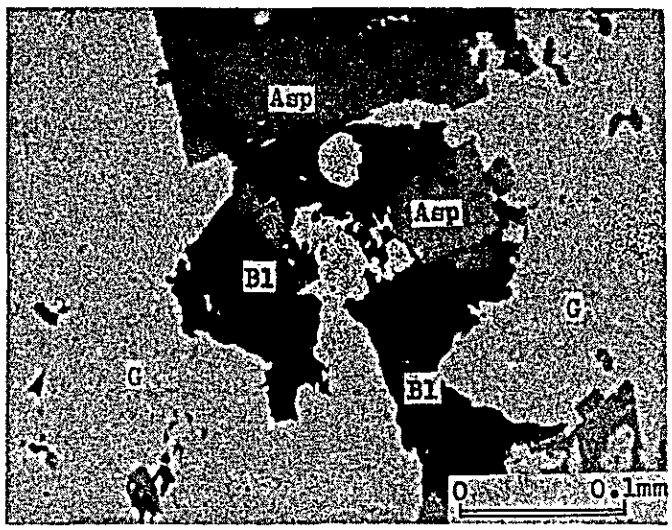
Sb X-ray image

Fe X-ray image



S X-ray image

(continuation of No.ND-49A)



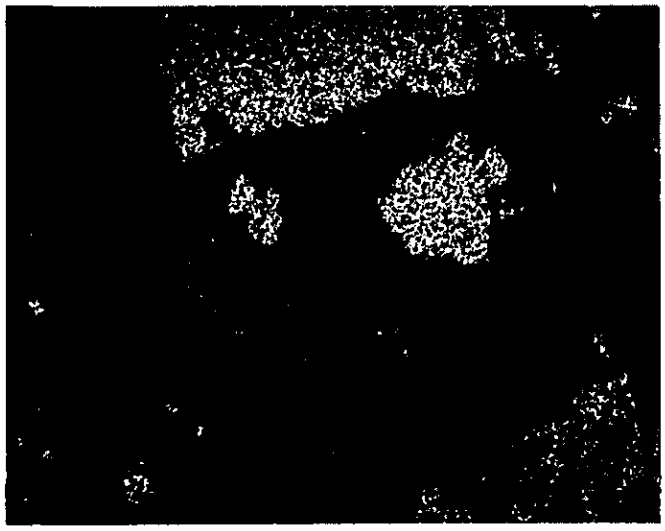
Absorbed electron image

Boulangerite ($5PbS.2Sb_2S_3$) occurs in space between quartz and arsenopyrite which are crystallized earlier.
(Ref: Photograph of polished section of No.ND-49)

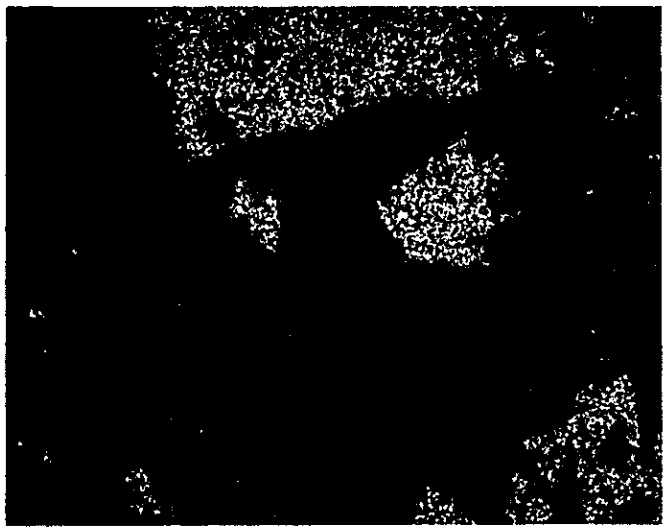
Pb X-ray image

Sb X-ray image

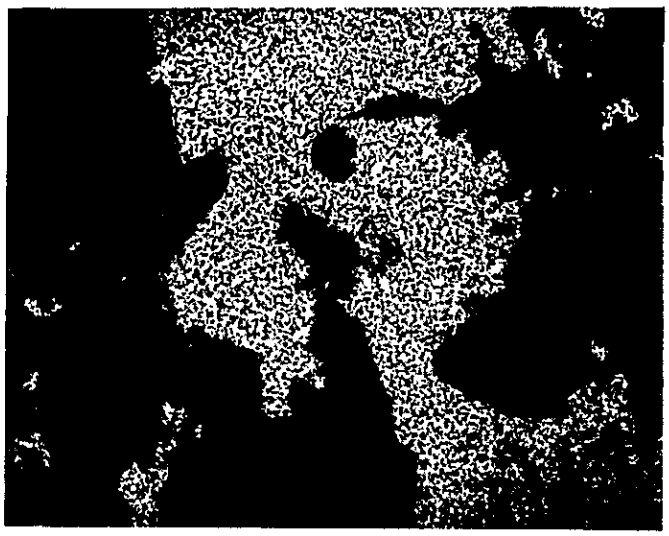
Sample No. : ND-49B
Locality : S. Sebastean
Accel. volt. : 15 kV
Absorb. elect. : 0.1 μA



Fe X-ray image



As X-ray image



S X-ray image

(continuation of No.ND-49B)

APPENDICES
PART II
DRILLING DATA

LIST OF APPENDICES

A. Ⅱ - 1 List of the Used Equipments for Drilling

Item	Model	Quantity	Capacity, Type, and Specification
Drilling Machine	TOM-3B	1	Capacity NQ 590m BQ 750m Inner Diameter of Spindle 92mm Weight (except engine) 120,250,600,120R
Engine for Drill	F3L-912	1	Diesel Engine 1,800 rpm/41 PS ∿ 1,500 rpm/35 PS
Pump	NAS-2A	1	Piston ϕ 63mm Capacity 62 ∿ 45 ℓ/min Pressure 27 ∿ 37 Kg/cm^2
Engine for pump	NS-110C	1	Diesel Engine 1,800 rpm/9.5 PS
Generator	YSG-5SN	1	5KVA, 110V, 50 C/S
"	YSG-3	1	3KVA, 110V, 50 C/S
Engine for Generator	NS-90C	1	Diesel Engine 1,800 rpm/8.5 PS
"	NS-50C	1	Diesel Engine 1,800 rpm/4.5 PS
Pump	HOPE-F	1	Piston ϕ 13.8mm Capacity 60 ∿ 80 ℓ/min Pressure 40 ∿ 30 Kg/cm^2
Engine for pump	NS-90C	1	Diesel Engine 1,800 rpm/8.5 PS
Mud Mixer	MCE-100A	1	Volume 100ℓ, 800 ∿ 1,000 rpm/min
Derrick		1	Wooden
Rod Holer	RH-85	1	Hand Type
Drill Rods	NQ-WL	50	3.00 M/PC
	BQ-WL	70	3.00 M/PC
Casing Pipes	NW	30	3.00 M/PC
	"	3	1.00 M/PC
	BW	50	3.00 M/PC

A. Ⅱ-2 Supplies and Consumed Parts for Drilling

Description	Specification	Unit	Quantity						
			PD-1	PD-2	PD-3	PD-4	PD-5	PD-6	PD-7
Light oil		ℓ	990	990	1,530	1,260	1,250	1,690	2,340
Mobil oil		ℓ	10	10	10	20	10	25	180
Hydraulic oil		ℓ	-	-	10	-	-	-	80
Grease		kg	20	-	-	-	-	-	23
Bentonite	50 kg/bag	Bag	10	12	15	27	35	50	38
Libonite		kg	-	30	30	70	60	120	135
Tel-cellose		kg	10	10	15	20	15	25	20
Cement	50 kg/bag	Bag	10	-	-	6	5	15	11
Tel-stop		kg	10	-	-	60	60	110	10
Emale 20C		ℓ	-	-	-	50	20	20	20
Metal crown	101mm	Pc	1	5	3	4	2	2	2
Single core tube	99mm x 0.5m	Set	-	1	-	-	-	-	-
Double core tube	99mm x 1.5m	"	1	-	-	-	-	-	-
Wire line core barrel	x 0m	"							
" "	NQ x 3.00m	"	1	-	-	-	-	-	-
" "	BQ x 3.00m	"	1	-	-	-	-	-	-
Inner tube assembly	x 0m	"							
" "	NQ x 3.00m	"	-	-	1	-	-	-	-
" "	BQ x 3.00m	"	-	-	-	1	-	-	-
Outer tube	x 0m	Pc							
"	NQ x 3.00m	"	-	1	-	-	-	-	-
"	BQ x 3.00m	"	1	-	-	-	-	-	-
Inner tube	x 3.00m	"	-						
"	NQ x 3.00m	"	-	1	-	-	-	-	-
"	BQ x 3.00m	"	-	-	1	-	-	-	-
Casing metal shoe		"							
"	NW	"	1	1	1	1	1	1	1
"	BW	"	1	1	1	1	1	1	1
Rag		kg	15	10	10	10	10	10	15
Core box		Pc	15	13	16	14	22	20	31
Wire	10	kg	20	10	10	20	20	10	20
"	12	"	15	10	10	10	10	10	10
Nail		"	5	3	5	10	3	2	5
Wire rope	6mm x 200m	Roll	0.5	-	-	-	0.5	-	0
"	12mm x 90m	"	1	-	-	-	-	-	-
Manila rope	18mm x 100m	Pc	1	-	-	-	-	-	-
Vinyl rope	9mm x 300m	"	0.5	-	-	-	0.5	-	-
Pump packing		"	-	1	-	-	-	-	-
Valve steel ball	38.1ϕ	"	-	-	1	-	-	-	-

Supplies and Consumed Parts for Drilling-Continued

Description	Specification	Unit	Quantity						
			PD-1	PD-2	PD-3	PD-4	PD-5	PD-6	PD-7
Piston rod		Pc	-	-	1	-	-	-	-
Guide pipe		"							
"	NQ	"	-	-	1	-	-	-	-
"	BQ	"	-	1	-	-	-	-	-
Guide coupling		"							
"	NQ	"	-	-	1	-	-	-	-
"	BQ	"	-	1	-	-	-	-	-
Suction hose	38mm x 3.0m	"	1	-	-	-	-	-	-
Water swivel packing		"	-	1	-	1	-	-	-
Water swivel spindle		"	-	-	1	-	-	-	-
V-belt	TOM-3 F31-912	Set	1	-	-	-	1	-	-
"		"							
Core lifter		Pc							
"	NQ	"	2	1	3	4	2	1	2
"	BQ	"	2	2	2	3	2	2	2
Core lifter case		"							
"	NQ	"	1	1	1	2	1	1	1
"	BQ	"	2	1	1	1	2	1	2

A. Ⅱ-3 Preparation and Removal

Item \ Hole No.		PD-1		PD-2		PD-3		PD-4		PD-5		PD-6		PD-7	
Preparation and removal	In	8th.Dcec.'81		1st.Dcec.'81		18th.Nov.'81		10th.Nov.'81		28th.Oct.'81		16th.Oct.'81		21th.Spt.'81	
		10th.Dcec.'81		2nd.Dcec.'81		22th.Nov.'81		10th.Nov.'81		1st.Nov.'81		16th.Oct.'81		30th.Spt.'81	
	Out	15th.Dcec.'81		7th.Dcec.'81		30th.Nov.'81		17th.Nov.'81		9th.Nov.'81		27th.Oct.'81		15th.Oct.'81	
		16th.Dcec.'81		7th.Dcec.'81		30th.Nov.'81		17th.Nov.'81		9th.Nov.'81		27th.Oct.'81		15th.Oct.'81	
		Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man-shifts	Days	Man shifts
Preparation	Access road			0.5	9			0.3	66			0.3	6		
	Haulage	1	18			3	63			3	70	0.3	7		
	Installation	1	18	0.5	6	1.7	32	0.3	7	1.7	31			2	20
	Water pipe	0.3	9	0.3	3	0.3	6			0.3	6			1	10
	Test run, etc.													7	40
	Total	2.3	45	1.3	18	5	101	0.6	13	5	107	0.6	13	10	70
Removal	Dismounting	1.0	15	0.2	3	0.2	3	0.4	3	0.5	6	0.5	4	0.3	4
	Pipe removal	0.4	6	0.2	3	0.2	3	0.4	3	0.5	4	0.5	6	0.3	6
	Haulage														
	Road reinstatement														
	Others														
	Total	1.4	21	0.4	6	0.4	6	0.8	6	1	10	1	10	0.6	10
Grand Total		2.7	66	1.7	24	5.4	107	1.4	19	6	117	1.6	23	10.6	80

A. Ⅱ-4 Operational Results of Drill Hole, PD-Ⅰ

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	8th.Dcec. 81~10th.Dcec.'81	2.3	2.3	-	45
Drilling	10th.Dcec.'81~15th.Dcec.'81	5.3	5.3	-	97
Removing	15th.Dcec.'81~16th.Dcec.'81	1.4	1.4	-	21
Total	8th.Dcec.'81~16th.Dcec.'81	9.0	9.0	-	163

Drilling Length

Planned Length	m 80.00	Over-burden	m 4.30
Increase or Decrease in Length	m	Core Length	m 79.20
Length Drilled	m 83.50	Core Recovery	100%

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0~83.50m	100%	100%

Working Time

Drilling	65°00'	47.8%	37.8%
Hoisting & Lowering Rod	10°00'	7.4%	5.8%
Hoisting & Lowering I.T.	35°00'	25.7%	20.3%
Miscellaneous	18°00'	13.2%	10.5%
Repairing	-	- %	- %
Others	8°00'	5.9%	4.7%
Sub Total	136°00'	100.0%	79.1%
Removing: Preparation	13°00'	-	7.5%
Removing: Moving	23°00'	-	13.4%
Grand Total	172°00'	-	100.0%

Efficiency of Drilling

83.50 m/Working Period	9.27 m/day
83.50 m/Working Days	9.27 m/day
83.50 m/Drilling Period	15.75 m/day
83.50 m/Net Drilling Days	15.75 m/day
Total workers/ 83.50 m	1.95 Man/m
Total Drilling Workers/ 83.50 m	1.16 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
NW 7.40 m	8.8%	100%
BW 55.70 m	66.7%	100%

Hoisting & Lowering Rod 11 Times	Hoisting & Lowering I.T. 81 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-5 Operational Results of Drill Hole, PD-2

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	1st.Dcec.'81∿2nd.Dcec.'81	1.3	1.3	-	18
Drilling	2nd.Dcec.'81∿7th.Dcec.'81	5.3	5.3	-	95
Removing	7th.Dcec.'81∿7th.Dcec.'81	0.4	0.4	-	6
Total	1st.Dcec.'81∿7th.Dcec.'81	7.0	7.0	-	119

Drilling Length

Planned Length	80.00 m	Over-burden	19.00 m
Increase or Decrease in Length	m	Core Length	48.00 m
Length Drilled	81.00 m	Core Recovery	77.4%

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0∿81.00m	77.4%	77.4%

Working Time

Drilling		68°00'	52.3%	44.2%
Hoisting & Lowering Rod		11°00'	8.5%	7.1%
Hoisting & Lowering I.T.		43°00'	33.0%	27.9%
Miscellaneous		8°00'	6.2%	5.2%
Repairing		-	- %	- %
Others		-	- %	- %
Sub Total		130°00'	100.0%	84.4%
Removing	Preparation	10°00'	-	6.5%
Removing	Moving	14°00'	-	9.1%
Grand Total		154°00'	-	100.0%

Efficiency of Drilling

81.00 m/Working Period	11.57 m/day
81.00 m/Working Days	11.57 m/day
81.00 m/Drilling Period	15.28 m/day
81.00 m/Net Drilling Days	15.28 m/day
Total workers/ 81.00 m	1.46 Man/m
Total Drilling Workers/ 81.00 m	1.17 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
NW 25.20 m	31.1%	100%
BW 53.80 m	66.4%	100%

Hoisting & Lowering Rod 14 Times	Hoisting & Lowering I.T. 104 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-6 Operational Results of Drill Hole, PD-3

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	18th.Nov.'81∿22th.Nov.'81	5.0	5.0	-	101
Drilling	23th.Nov.'81∿30th.Nov.'81	7.6	7.6	-	130
Removing	30th.Nov.'81∿30th.Nov.'81	0.4	0.4	-	6
Total	18th.Nov.'81∿30th.Nov.'81	13.0	13.0	-	237

Drilling Length

Planned Length	90.00 m	Over-burden	28.00 m	Core Recovery for each 100 m section
Increase or Decrease in Length	m	Core Length	51.50 m	Depth of Hole / Section / Total
Length Drilled	90.60 m	Core Recovery	82.2%	0∿90.60 m / 82.2% / 82.2%

Working Time

Drilling	108°00'	58.1%	44.6%
Hoisting & Lowering Rod	13°00'	7.0%	5.4%
Hoisting & Lowering I.T.	56°00'	30.1%	23.1%
Miscellaneous	9°00'	4.8%	3.7%
Repairing	-	- %	- %
Others	-	- %	- %
Sub Total	186°00'	100.0%	76.8%
Removing: Preparation	20°00'	-	8.3%
Removing: Moving	36°00'	-	14.9%
Grand Total	242°00'	-	100.0%

Efficiency of Drilling

90.60 m/Working Period	6.96 m/day
90.60 m/Working Days	6.96 m/day
90.60 m/Drilling Period	11.92 m/day
90.60 m/Net Drilling Days	11.92 m/day
Total workers/ 90.60 m	2.61 Man/m
Total Drilling Workers/ 90.60 m	1.43 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
NW 24.50 m	27.0%	100%
BW 64.60 m	71.3%	100%

Hoisting & Lowering Rod 18 Times	Hoisting & Lowering I.T. 134 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-7 Operational Results of Drill Hole, PD-4

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	10th.Nov.'81∿10th.Nov.'81	0.6	0.6	-	13
Drilling	10th.Nov.'81∿17th.Nov.'81	6.6	6.6	-	117
Removing	17th.Nov.'81∿17th.Nov.'81	0.8	0.8	-	6
Total	11th.Nov.'81∿17th.Nov.'81	8.0	8.0	-	136

Drilling Length

Planned Length	100. m	Over-burden	4.10 m
Increase or Decrease in Length	m	Core Length	67.80 m
Length Drilled	100.10 m	Core Recovery	70.6%

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0∿100.10m	70.6%	70.6%

Working Time

Drilling		93°00'	57.1%	50.5%
Hoisting & Lowering Rod		9°00'	5.5%	4.9%
Hoisting & Lowering I.T.		53°00'	32.5%	28.8%
Miscellaneous		8°00'	4.9%	4.3%
Repairing		-	- %	- %
Others		-	- %	- %
Sub Total		163°00'	100.0%	88.6%
Removing	Preparation	10°00'	-	5.5%
Removing	Moving	11°00'	-	6.0%
Grand Total		184°00'	-	100.0%

Efficiency of Drilling

100.10 m/Working Period	12.51 m/day
100.10 m/Working Days	12.51 m/day
100.10 m/Drilling Period	15.16 m/day
100.10 m/Net Drilling Days	15.16 m/day
Total workers/ 100.10 m	1.36 Man/m
Total Drilling Workers/ 100.10 m	1.17 Man/m

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) Drilling Length	Recovery of Casing Pipe
NW 15.50 m	15.5%	100%
BW 62.00 m	61.9%	100%

Hoisting & Lowering Rod 16 Times	Hoisting & Lowering I.T. 146 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-8 Operational Results of Drill Hole, PD-5

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	28th.Oct.'81∿1st.Nov.'81		5	-	107
Drilling	2nd.Nov.'81∿8th.Nov.'81	7	7	-	101
Removing	9th.Nov.'81∿9th.Nov.'81	1	1	-	10
Total	28th.Oct.'81∿9th.Nov.'81	13	13	-	218

Drilling Length

Planned Length	120.00 m	Over-burden	11.80 m
Increase or Decrease in Length	m	Core Length	100.60 m
Length Drilled	120.70 m	Core Recovery	92.4%

Working Time

Drilling	126°00'	71.6%	55.3%
Hoisting & Lowering Rod	6°00'	3.4%	2.6%
Hoisting & Lowering I.T.	40°00'	22.7%	17.5%
Miscellaneous	4°00'	2.3%	1.8%
Repairing	-	- %	- %
Others	-	- %	- %
Sub Total	176°00'	100.0%	77.2%
Removing Preparation	17°00'	-	7.5%
Removing Moving	35°00'	-	15.3%
Grand Total	228°00'	-	100.0%

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
NW 12.00 m	9.9%	100%
BW 75.00 m	62.1%	100%

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0 ∿ 100 m	95.0%	95.0%
100∿120.70 m	80.3%	92.3%

Efficiency of Drilling

120.70 m/Working Period	9.28 m/day
120.70 m/Working Days	9.28 m/day
120.70 m/Drilling Period	17.24 m/day
120.70 m/Net Drilling Days	17.24 m/day
Total workers/ 120.70 m	1.81 Man/m
Total Drilling Workers/ 120.70 m	0.84 Man/m

Hoisting & Lowering Rod 10 Times	Hoisting & Lowering I.T. 148 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-9 Operational Results of Drill Hole, PD-6

Working Period		Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
	Preparation	16th.Oct'81∿16th.Oct.'81	0.6	0.6	-	13
	Drilling	16th.Oct.'81∿26th.Oct.'81	10.4	10.4	-	135
	Removing	27th.Oct.'81∿27th.Oct.'81	1.0	1.0	-	10
	Total	16th.Oct.'81∿27th.Oct.'81	12.0	12.0	-	158

Drilling Length					Core Recovery for each 100 m section		
	Planned Length	m 120.00	Over-burden	m 6.70			
	Increase or Decrease in Length	m	Core Length	m 96.80	Depth of Hole	Section	Total
	Length Drilled	m 120.60	Core Recovery	84.9%	0 ∿ 100 m	82.3%	82.3%
					100∿120.60 m	97.0%	84.9%

Working Time				
	Drilling	142°00'	59.2%	53.8%
	Hoisting & Lowering Rod	10°00'	4.2%	3.8%
	Hoisting & Lowering I.T.	59°00'	24.6%	22.3%
	Miscellaneous	14°00'	5.8%	5.3%
	Repairing	-	- %	- %
	Others	15°00'	6.2%	5.7%
	Sub Total	240°00'	100.0%	90.9%
Removing	Preparation	8°00'	-	3.0%
Removing	Moving	16°00'	-	6.1%
	Grand Total	264°00'	-	100.0%

Efficiency of Drilling	
120.60 m/Working Period	10.05 m/day
120.60 m/Working Days	10.05 m/day
120.60 m/Drilling Period	11.59 m/day
120.60 m/Net Drilling Days	11.59 m/day
Total workers/ 120.60 m	1.31 Man/m
Total Drilling Workers/ 120.60 m	1.11 Man/m

Casing Pipe Inserted	Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
	NW 16.00 m	13.2%	100%
	BW 72.10 m	59.7%	100%

Hoisting & Lowering Rod	Hoisting & Lowering I.T.
16 Times	176 Times

Remarks

I.T.: Inner Tube

A. Ⅱ-10 Operational Results of Drill Hole, PD-7

Working Period

	Period	Number of Days	Actual Working Days	Day Off	Total Number of Workers
Preparation	21th.Spt.'81∿30th.Spt.'81	10	5	5	70
Drilling	1st.Oct.'81∿15th.Oct.'81	14.4	14.4	-	211
Removing	15th.Oct.'81∿15th.Oct.'81	0.6	0.6	-	10
Total	21th.Spt.'81∿15th.Oct.'81	25.0	20.0	5	291

Drilling Length

Planned Length	160.00 m	Over-burden	4.0 m
Increase or Decrease in Length	m	Core Length	152.30 m
Length Drilled	160.70 m	Core Recovery	97.1%

Working Time

Drilling	98°00'	30.2%	26.6%
Hoisting & Lowering Rod	13°00'	4.0%	3.5%
Hoisting & Lowering I.T.	169°00'	52.2%	45.9%
Misceelaneous	28°00'	8.7%	7.6%
Repairing	-	- %	- %
Others	16°00'	4.9%	4.4%
Sub Total	324°00'	100.0%	88.0%
Removing: Preparation	40°00'	-	10.9%
Removing: Moving	4°00'	-	1.1%
Grand Total	368°00'	-	100.0%

Core Recovery for each 100 m section

Depth of Hole	Section	Total
0 ∿ 100 m	96.8%	96.8%
100∿160.70 m	97.6%	97.1%

Efficiency of Drilling

160.70 m/Working Period	6.43 m/day
160.70 m/Working Days	8.04 m/day
160.70 m/Drilling Period	11.16 m/day
160.70 m/Net Drilling Days	11.16 m/day
Total workers/ 160.70 m	1.81 Man/m
Total Drilling Workers/ 160.70 m	1.31 Man/m

Hoisting & Lowering Rod 16 Times	Hoisting & Lowering I.T. 294 Times

Casing Pipe Inserted

Pipe Size & Meterage	Inserted Length (%) / Drilling Length	Recovery of Casing Pipe
NW 13.10 m	8.1%	100%
BW 113.10 m	70.3%	100%

Remarks

I.T.: Inner Tube

A. II - 1 1 Summerized Operational Data of Each Drill Hole

Drill hole No.	Type of machine	Drilling period	Drilling length	Length	Recovery	Drilling	Casing etc.	Total	* m/shift	** m/shift	Remarks
PD-1	TOM-3	10th.Dcec.'81 ∿ 15th.Dcec.'81	83.50	79.20	100.0	15	1	16	5.57	5.52	
PD-2	TOM-3	2th.Dcec.'81 ∿ 7th.Dcec.'81	81.00	48.00	77.4	15	1	16	5.40	5.06	
PD-3	TOM-3	23th.Nov.'81 ∿30th.Nov.'81	90.60	51.50	82.2	22	1	23	4.12	3.94	
PD-4	TOM-3	10th.Nov.'81 ∿17th.Nov.'81	100.10	67.80	70.6	19	1	20	5.27	5.01	
PD-5	TOM-3	2th.Nov.'81 ∿ 8th.Nov.'81	120.70	100.60	92.3	20	1	21	6.04	5.75	
PD-6	TOM-3	16th.Oct.'81 ∿ 26th.Oct.'81	120.60	96.80	84.9	24	4	28	5.03	4.31	
PD-7	TOM-3	1st.Oct.'81 ∿ 15th.Oct.'81	160.70	152.30	97.1	35	4	39	4.59	4.12	
	Total		757.20	596.20	87.7	150	13	163	5.05	4.65	

* Drilled per one shift covering net drilling operations.
** Drilled per one shift covering total works conducted.

A. II - 12 Working Time of Each Drill Hole

Drill hole No.	Dilling	Hoisting & lowering of rod & I.T.		Miscellaneous			Repairs	Others	Moving operation	Total
		Rod	Inner tube	Casing insertion	Hole reaming	Others				
PD-1	65°00'	10°00'	35°00'	10°00'	-	8°00'	-	8°00'	36°00'	172°00'
PD-2	68°00'	11°00'	43°00'	8°00'	-	-	-	-	24°00'	154°00'
PD-3	108°00'	13°00'	56°00'	8°00'	-	1°00'	-	-	56°00'	242°00'
PD-4	93°00'	9°00'	53°00'	8°00'	-	-	-	-	21°00'	184°00'
PD-5	126°00'	6°00'	40°00'	4°00'	-	-	-	-	52°00'	228°00'
PD-6	142°00'	10°00'	59°00'	8°00'	-	6°00'	-	15°00'	24°00'	264°00'
PD-7	98°00'	13°00'	169°00'	16°00'	-	12°00'	-	16°00'	44°00'	368°00'
Total	700°00'	72°00'	455°00'	62°00'	-	27°00'		39°00'	257°00'	1,612°00'
				89°00'						

A. Ⅱ - 13 Drilling Meterage of Diamond Bits

Item	Size	Type	Bit No.	Drilling meterage by drill hole. Unit meter							Total
				PD-1	PD-2	PD-3	PD-4	PD-5	PD-6	PD-7	
Bit	NX	NQ-WL	M-3773	15.10							15.10
			M-3774	10.50							10.50
			M-3775	9.20							9.20
			M-3776	13.50							13.50
			M-3777		5.10						5.10
			M-3778		8.70						8.70
			M-3779		4.00						4.00
			M-3780		10.80						10.80
			M-3781			13.00					13.00
			M-3782			15.10					15.10
			M-3783			12.00					12.00
			M-3784				4.20				4.20
			M-3785				6.80				6.80
			M-3786				10.00				10.00
			M-3787				11.00				11.00
			M-3788				14.50				14.50
			M-3789					13.60			13.60
			M-3790					16.20			16.20
			M-3791					16.80			16.80
			M-3792					16.40			16.40
			M-3793						9.10		9.10
			M-3794						17.10		17.10
			M-3795						15.00		15.00
			M-3796						14.90		14.90
			M-3797							5.60	5.60
			M-3798							8.40	8.40
			M-3799							18.10	18.10
			M-3800							11.20	11.20
			F-1016							14.80	14.80
			F-1020							16.00	16.00
			F-6534							15.00	15.00
			F-6536							11.90	11.90
			Total	48.30	28.60	40.10	46.50	63.00	56.10	101.00	383.60

Item	Size	Type	Bit No.	Drilling meterage by drill hole. Unit meter							
				PD-1	PD-2	PD-3	PD-4	PD-5	PD-6	PD-7	
	BX	BW-WL	M-3801	8.10							8.10
			M-3802	10.00							10.00
			M-3803	9.70							9.70
			M-3804		6.20						6.20
			M-3805		9.40						9.40
			M-3806		11.60						11.60
			M-3807			5.30					5.30
			M-3808			8.10					8.10
			M-3809			12.60					12.60
			M-3810				4.80				4.80
			M-3811				6.10				6.10
			M-3812				9.60				9.60
			M-3813				4.60				4.60
			M-3814]				5.50				5.50
			M-3815				7.50				7.50
			M-3816					13.70			13.70
			M-3817					18.10			18.10
			M-3818					13.90			13.90
			M-3819						10.50		10.50
			M-3820						13.00		13.00
			M-3821						4.00		4.00
			M-3822						2.50		2.50
			M-3823						4.30		4.30
			M-3824						6.20		6.20
			M-3825						8.00		8.00
			F-6648							16.00	16.00
			C-2808							14.00	14.00
			C-2809							17.60	17.60
			Total	27.80	27.20	26.00	38.10	45.70	48.50	47.60	260.90

A. Ⅱ - 14 Specifications of Diamond Bits

Size	Type	Carats per bit	Matrix	Stones per carat	Water way	Number	Remark
NX	NQ-WL	30	ZZ	1/30	4	M-3773	Reset
		30	Z	1/30	4	M-3774	"
		30	Z	1/30	4	M-3775	"
		30	Y	1/30	4	M-3776	"
		30	Z	1/30	4	M-3777	"
		30	Z	1/30	4	M-3778	"
		30	ZZ	1/30	4	M-3779	"
		30	Z	1/30	4	M-3780	"
		30	Z	1/30	4	M-3781	"
		30	Z	1/30	4	M-3782	"
		30	Z	1/30	4	M-3783	"
		30	ZZ	1/30	4	M-3784	"
		30	ZZ	1/30	4	M-3785	"
		30	Z	1/30	4	M-3786	"
		30	Z	1/30	4	M-3787	"
		30	Z	1/30	4	M-3788	"
		30	ZZ	1/30	4	M-3789	
		30	Z	1/30	4	M-3790	"
		30	Z	1/30	4	M-3791	"
		30	Z	1/30	4	M-3792	"
		30	Z	1/30	4	M-3793	"
		30	Z	1/30	4	M-3794	"
		30	ZZ	1/30	4	M-3795	"
		30	Z	1/30	4	M-3796	"
		30	ZZ	1/30	4	M-3797	"
		30	ZZ	1/30	4	M-3798	"
		30	ZZ	1/30	4	M-3799	"
		30	ZZ	1/30	4	M-3800	"
		30	Z	1/30	4	F-1016	"
		30	Z	1/30	4	F-1020	"
		30	Y	1/30	4	F-6534	"
		30	Y	1/30	4	F-6536	"

Specifications of diamond bits

Size	Type	Carats per bit	Matrix	Stones per carat	Water way	Number	Remark
BX	BQ-WL	20	Z	1/30	4	M-3801	Reset
		20	Z	1/30	4	M-3802	"
		20	Z	1/30	4	M-3803	"
		20	ZZ	1/30	4	M-3804	"
		20	Z	1/30	4	M-3805	"
		20	Z	1/30	4	M-3806	"
		20	ZZ	1/30	4	M-3807	"
		20	ZZ	1/30	4	M-3808	"
		20	Z	1/30	4	M-3809	"
		20	Z	1/30	4	M-3810	"
		20	Z	1/30	4	M-3811	"
		20	Z	1/30	4	M-3812	"
		20	Z	1/30	4	M-3813	"
		20	ZZ	1/30	4	M-3814	"
		20	ZZ	1/30	4	M-3815	"
		20	Z	1/30	4	M-3816	"
		20	Z	1/30	4	M-3817	"
		20	Z	1/30	4	M-3818	"
		20	ZZ	1/30	4	M-3819	"
		20	Z	1/30	4	M-3820	"
		20	ZZ	1/30	4	M-3821	"
		20	ZZ	1/30	4	M-3822	"
		20	ZZ	1/30	4	M-3823	"
		20	Z	1/30	4	M-3824	"
		20	Z	1/30	4	M-3825	"
		20	Y	1/30	4	F-6648	"
		20	Z	1/30	4	C-2808	"
		20	Z	1/30	4	C-2809	"

A. Ⅱ-15 Assay Results of the Drilled Core

Sample No.	Length (m)	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Sb (%)	As (%)
D 1006	6.4∿ 7.0	tr	tr	0.02	0.00	0.00	0.01	0.03
D 1016	15.8∿17.1	tr	tr	0.02	0.00	0.00	0.00	0.00
D 1019	18.8∿19.2	tr	tr	0.01	0.00	0.00	0.00	0.00
D 1033	33.3∿34.1	tr	tr	0.01	0.01	0.04	0.00	0.01
D 1045	45.3∿46.3	tr	tr	0.00	0.00	0.01	0.00	0.02
D 2051	51.0∿51.6	tr	tr	0.01	0.00	0.00	0.00	0.00
D 2065	65.6∿66.4	tr	tr	0.02	0.01	0.01	0.01	0.03
D 2066	66.4∿67.0	tr	tr	0.01	0.01	0.01	0.01	0.03
D 2067	67.0∿67.8	tr	tr	0.01	0.00	0.01	0.00	0.01
D 2072	72.2∿72.7	tr	tr	0.01	0.00	0.01	0.00	0.01
D 2073	73.1∿73.8	tr	tr	0.01	0.00	0.01	0.00	0.01
D 2074	73.8∿75.7	tr	tr	0.01	0.00	0.00	0.00	0.00
D 2075	75.7∿76.3	tr	tr	0.01	0.00	0.01	0.00	0.01
D 3048	48.2∿49.5	tr	3	0.01	0.00	0.11	0.01	0.15
D 3051	51.5∿54.0	0.2	4	0.05	0.01	0.09	0.01	0.13
D 3057	57.3∿58.5	tr	tr	0.01	0.00	0.04	0.01	0.10
D 3066	65.7∿66.9	tr	tr	0.01	0.01	0.03	0.01	0.09
D 3069	69.0∿70.4	tr	tr	0.01	0.01	0.01	0.01	0.09
D 3073	72.7∿74.1	tr	tr	0.00	0.02	0.08	0.01	0.24
D 3080	80.2∿81.0	9.6	5	0.04	0.00	0.00	0.01	0.01
D 3087	86.7∿87.4	0.2	4	0.02	0.01	0.10	0.01	0.05
D 4060	60.5∿64.8	tr	tr	0.01	0.01	0.04	0.01	0.08
D 4065	64.8∿69.0	tr	tr	0.01	0.01	0.05	0.01	0.09
D 4069	69.0∿71.8	tr	tr	0.01	0.01	0.07	0.01	0.16
D 5087	86.9∿87.4	9.0	105	0.44	0.06	13.14	0.03	17.54
D 5095	94.9∿95.8	0.4	8	0.02	0.02	0.67	0.01	1.67
D 5096	99.5∿100.0	tr	tr	0.00	0.01	0.01	0.00	0.03
D 5105	104.9∿106.6	1.6	14	0.03	0.05	0.63	0.00	2.41
D 5108	108.6∿110.0	0.5	23	0.09	0.10	1.04	0.00	1.55
D 5110	110.0∿113.7	0.7	6	0.04	0.09	0.58	0.00	1.28
D 5114	113.7∿115.0	1.5	8	0.02	0.12	0.30	0.00	0.82
D 5118	117.8∿118.8	tr	tr	0.00	0.01	0.01	0.01	0.05
D 6064	63.6∿65.0	0.5	12	0.03	0.00	0.09	0.00	0.06
D 6065	65.0∿66.0	2.0	25	0.12	0.01	1.94	0.00	4.36

Sample No.	Length (m)	Au (g/t)	Ag (g/t)	Cu (%)	Pb (%)	Zn (%)	Sb (%)	As (%)
D 6066	66.0∿67.0	4.8	57	0.12	0.14	3.33	0.01	2.92
D 6067	67.0∿68.0	0.6	12	0.04	0.01	1.03	0.00	2.15
D 6068	68.0∿70.0	0.6	18	0.03	0.05	0.57	0.00	0.28
D 6070	70.0∿72.0	0.1	6	0.01	0.01	0.10	0.00	0.03
D 6072	72.0∿74.0	2.6	30	0.07	0.03	1.80	0.01	3.18
D 6074	74.0∿75.9	4.6	36	0.07	0.05	3.02	0.00	1.21
D 6076	75.9∿78.0	0.2	9	0.03	0.01	0.78	0.00	0.04
D 6078	78.0∿80.0	tr	2	0.01	0.01	0.20	0.01	0.08
D 6080	80.0∿81.8	tr	tr	0.00	0.00	0.06	0.00	0.03
D 6082	81.8∿84.0	7.1	120	0.22	0.18	6.87	0.02	3.24
D 6084	84.0∿85.0	4.6	116	0.21	0.17	4.78	0.01	4.27
D 6086	85.8∿87.5	3.8	76	0.33	0.17	8.08	0.01	5.02
D 6087	87.5∿89.2	4.5	20	0.06	0.05	2.42	0.01	9.94
D 6090	89.2∿90.9	3.3	18	0.08	0.03	1.75	0.00	3.76
D 6091	90.9∿93.0	25.4	19	0.04	0.02	0.17	0.00	0.32
D 6093	93.0∿94.0	1.2	9	0.02	0.03	0.36	0.00	0.03
D 6094	94.0∿95.6	0.7	2	0.01	0.01	0.05	0.00	0.56
D 6096	95.6∿98.0	tr	tr	0.02	0.00	0.09	0.00	0.14
D 6098	98.0∿99.2	0.2	2	0.02	0.00	0.06	0.00	0.03
D 7053	53.2∿53.7	0.8	104	0.66	0.01	0.09	0.00	0.79
D 7099	99.0∿100.0	1.3	4	0.01	0.08	0.08	0.00	0.05
D 7132	132.0∿132.5	tr	tr	0.01	0.00	0.00	0.00	0.00
D 7135	135.6∿137.0	tr	tr	0.01	0.00	0.14	0.00	0.00
D 7137	137.0∿138.4	tr	tr	0.02	0.00	0.03	0.00	0.00
D 7138	138.4∿140.0	tr	14	0.11	0.00	0.01	0.00	0.01
D 7140	140.0∿141.6	0.2	28	0.23	0.00	0.02	0.00	0.04
D 7141	141.6∿142.2	tr	tr	0.01	0.00	0.00	0.00	0.01
D 7142	142.2∿143.1	0.2	16	0.06	0.00	0.10	0.00	0.03
D 7143	143.1∿145.1	7.0	92	0.22	0.11	10.91	0.02	12.63
D 7145	145.1∿146.5	1.4	22	0.07	0.02	2.31	0.00	0.52
D 7146	146.5∿147.7	2.2	16	0.06	0.00	0.73	0.00	0.02

A. Ⅱ - 16 Microscopic Observation of the Thin Sections

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D1006	PD-1	Green rock	Altered andesite Porphyritic texture This rock is identified as an igneous rock from its relic texture. Phenocryst : Mafic mineral, plagioclase. Mafic mineral (Max:2.5m/m) suffer from amphibole alteration, chloritization and calcitization with opaque mineral.
D1073	PD-1	Tuff breccia	Altered andesitic rock Porpyritic texture There are two part, that is, the one poor in phenocryst and the other abundant in phenocryst. The part poor in phenocryst, Phenocryst : Mafic mineral changes to psudomorph except the inner clinopyroxene part, and is filled with amphibode, epidote, chlorite, calcite and sericite. Plagioclase is replaced by anhedral quartz and epidote. Spherulitic part is filled with anhedral quartz and fine grained epidote. Groundmass : Clinopyroxene, epidote, chlorite and felsic mineral. The part abundant in phenocryst, Phenocryst : Cracked clinopyroxene rimmed with abundant epidote. Chlorite, sericite and amphibole occur along the crack. Groundmass : Acicular hornblende, sericite and granular opaque minerals, and chlorite.
D2051.2	PD-2	Tuff breccia	Andesitic rock Porpyritic texture Phenocryst : Plagioclase (Max:2.0m/m), mafic mineral. Plagioclase is cloudy with sericitization and potassic alteration. Mafic mineral also altered to sericite and chlorite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D2051.2	PD-2	ditto	Groundmass : Recrystallized and sericitized anhedral quartz and potassic feldespar. Along the epidote-hornblende vein (Max:2m/m in width), this rock is leucocratic due to silicification and mafic mineral is altered to amphibole.
D3069.5	PD-3	Tuff breccia	Altered rock This altered rock possibly from andesite and wholly altered to chlorite, calcite and sericite except the relict of felsic mineral (quartz). Calcite vein is present.
D3071.7	PD-3	Tuff breccia	Altered andesitic rock Porphyritic texture (?) Phenocryst : Mafic mineral (Clinopyroxene Max:7.0m/m), plagioclase (Max:4.0m/m). Mafic mineral is amphibolized and sericitized. Plagioclase also suffer from sericitization and weak chloritization. Groundmass : Acicular plagioclase and calcite, sericite, chlorite and epidote. Calcite vein (1m/m width) with opaque mineral is visible.
D5120	PD-5	Tuff breccia	Andesitic rock Phenocryst or fragment : Plagioclase, mafic mineral (clinopyroxene?). Plagioclase is intensily sericitized and mafic mineral suffer from calcitization and chloritization. Fine grained plagioclase, felsic mineral, chlorite and calcite constitute groundmass. Anhedral quartz filled spherulitic part. Quartz + calcite vein with opaque mineral develop.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D6098	PD-6	Silicified vein	Altered rock Weak brecciate texture Fragment : Aggregation of quartz and sericite, sericite aggregates, aggregation of quartz and carbonate. Matrix : Quartz, sericite, carbonate. Quartz vein is accompanied a part with sphalerite.
D6102	PD-6	Green rock	Andesitic tuff breccia Brecciate, flow texture. Fragment : Andestic rock, clinopyroxene, plagioclase. Clinopyroxene suffers from amphibole alteration, sericitization and chloritization. Plagioclase is sericitized and cloudy. Matrix : Acicular plagioclase, chlorite and sericite. Some spherulitic parts are replaced by aggregation of quartz, feldspar sericite, epidote and chlorite.
D7080	PD-7	Tuff breccia	Altered andesite Porphyritic texture Phenocryst : Mafic mineral (clinopyroxene) Plagioclase (Max:6.0m/m) Mafic mineral is completely altered to amphibole and weakly to sericite and chlorite. Plagioclase suffers from sericitization, epidotization, and chloritization. Groundmass : Primary plagioclase laths and opaque mineral with abundant amphibole from clinopyroxene and acicular sericite. Sericite aggregates show patched form.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D7126	PD-7	Agglomerate	Altered andesite Porphyritic texture Phenocryst : Clinopyroxene, plagioclase. Subhedral clinopyroxene (Max:6.0m/m) suffers from amphibolic alteration, sericitization and chloritization. Plagioclase also suffers from sericitization, chloritization, and calcitization. Groundmass : Primary plagiocalse laths and secondary granular amphibole, epidote, sericite, and chlorite. Limonitized opaque minerals are scattered. Locally sericite + hornblende + chlorite vein is visible.
D7160	PD-7	Tuff breccia	Andesitic tuff breccia Fragment : Andestic rock (Max:2.0cm in size), plagioclase, clinopyroxene. Mafic minerals in andestic fragment suffer from sericitization, chloritization and amphibolic alteration. Plagioclase is intensely sericitized and groundmass is composed of acicular plagioclase and microcrystalline mineral aggregates. Fragmental plagioclase and clinopyroxene suffer from sericitization and sericitization + amphibolic alteration respectively. Matrix : consists of sericite, chlorite and minute felsic minerals, locally shows flow structure.

A. Ⅱ - 17 Microscopic Observation of the Polished Sections

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D1006	PD-1	Pyrrhotite-magnetite ore	The constituent minerals are pyrrhotite and magnetite, with a little chalcopyrite. These occur as patch and dissemination. These show anhedral form and coexist closely.
D1016.7	PD-1	Fe-oxide ore	It is composed mainly of Fe-oxide, with a small amount of pyrite, a very small amount of chalcopyrite.
D3080.3	PD-3	Pyrite ore	It is composed mainly of pyrite, with a small amount of chalcopyrite. Pyrite in part is replaced by marcasite.
D5087	PD-5	Pyrite ore	It is composed mainly of pyrite, with a small amount of chalcopyrite. Pyrite includes a very small amount of pyrrhotite (20 to 30 μm in size), and partly is replaced by marcasite. One grain of electrum of 30 μm in size and several electrum of 1 μm to 3 μm in size are observed in gangue minerals.
D5108.8	PD-5	Pyrite-sphalerite ore	It is composed mainly of pyrite and sphalerite, with a small amount of arsenopyrite, chalcopyrite and galena. A part of pyrite is replaced by marcasite. Sphalerite includes chalcopyrite dots.
D6061	PD-6	Marcasite-pyrrhotite-chalcopyrite ore	The constituent minerals are marcasite, pyrrhotite and chalcopyrite, with a small amount of sphalerite and arsenopyrite. Three minerals of the former coexist closely, and fill the intergranule of crystals of gangue minerals and cracks.

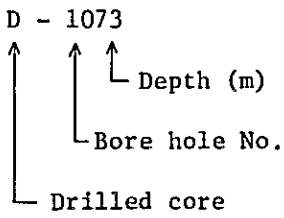
Sample No.	Location	Macroscopic descriptions	Microscopic observations
D6065	PD-6	Arsenopyrite-sphalerite ore	It is composed mainly of pyrite, arsenopyrite and sphalerite, with a small amount of chalcopyrite and galena. Sphalerite includes chalcopyrite dots. Galena is several decade to hundreds μm in size, and is included by pyrite.
D6073	PD-6	Arsenopyrite-sphalerite-pyrite-chalcopyrite ore	It is composed mainly of arsenopyrite, sphalerite, pyrite and chalcopyrite, with a little galena. Argentite (20 μm), polybasite (50 μm) and pyrargyrite (30 μm), which coexist chalcopyrite in pyrite, are observed. Sphalerite includes chalcopyrite dots. Galena includes stripe of boulangerite (width= 1 to 2 μm, length= 150 μm).
D6083	PD-6	Sphalerite-arsenopyrite-pyrite ore	The constituents are sphalerite, arsenopyrite and pyrite, with a very little galena and chalcopyrite. Sphalerite includes chalcopyrite dots. Galena is 100 μm to 300 μm in size, and is mostly included by pyrite.
D6086	PD-6	Pyrite-arsenopyrite-sphalerire ore	It is composed mainly of pyrite, arsenopyrite and sphalerite, and shows brecciated texture. Chalcopyrite, which surrounds the coarse pyrite of euhedral form, is cut by very fine-grained aggregates of pyrite. Sphalerite is cut and surrounded by very fine-grained aggregates of pyrite as well as chalcopyrite.
D7144	PD-7	Sphalerite-arsenopyrite ore	It is composed mainly of sphalerite and arsenopyrite, with a small amount of pyrite, and a very small amount of chalcopyrite and galena. Electrum (25 μm in size) with which coexists galena is observed at the margin of arsenopyrite.

Sample No.	Location	Macroscopic descriptions	Microscopic observations
D7145	PD-7	Arsenopyrite-sphalerite-pyrite ore	The constituent minerals are arsenopyrite, sphalerite and pyrite, with a small amount of chalcopyrite. Sphalerite includes chalcopyrite dots. Pyrite is partly replaced by marcasite.

A. II - 18 Photomicrographs

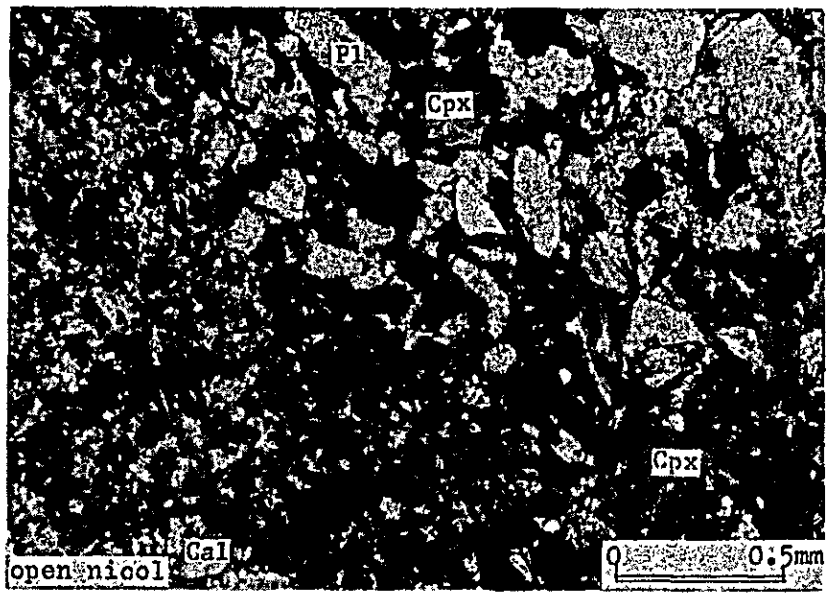
A. Ⅱ-18-1 Thin Section

Sample No.	Rock Type
D-1073	Altered andesitic rock
D-2051.2	Andesitic rock
D-2051.2	Andesitic rock
D-3069.5	Altered rock
D-3071.7	Altered andesitic rock
D-7080	Altered andesite
D-7126	Agglomerate
D-7160	Andesitic tuff breccia



Abbreviations

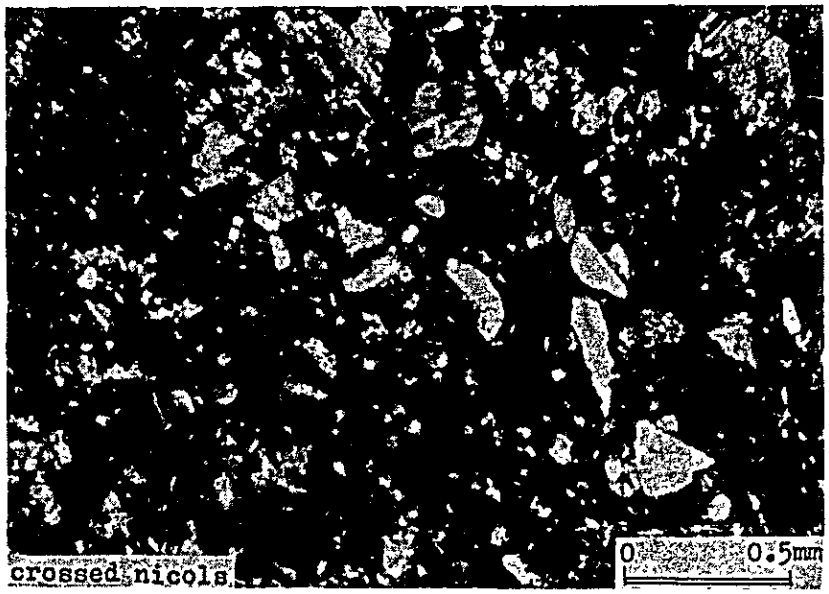
Pl : Plagioclase
Qz : Quartz
Ser : Sericite
Chl : Chlorite
Hb : Hornblende
Cpx : Clinopyroxene
Cal : Calcite
Ep : Epidote
Amp : Amphibole
And : Andesite

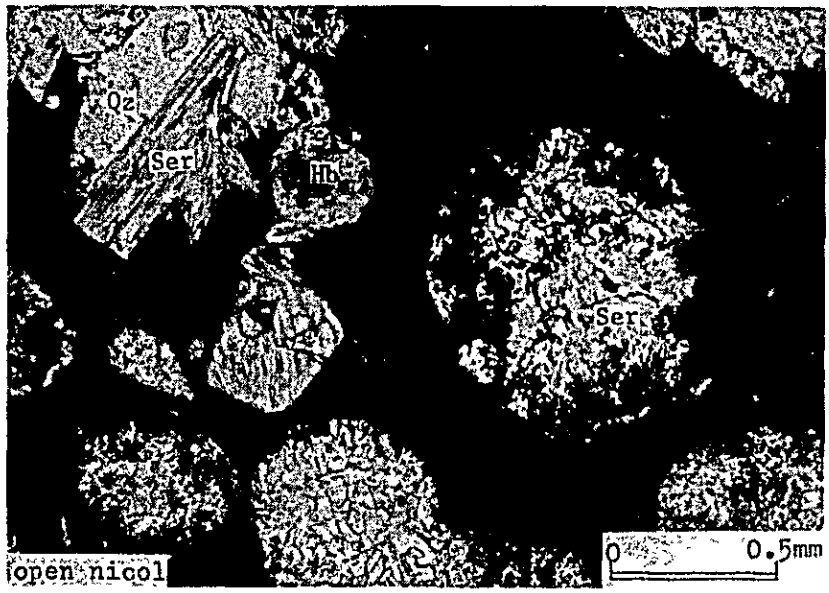


Sample No. D-1073

Rock type:

Altered andesitic rock

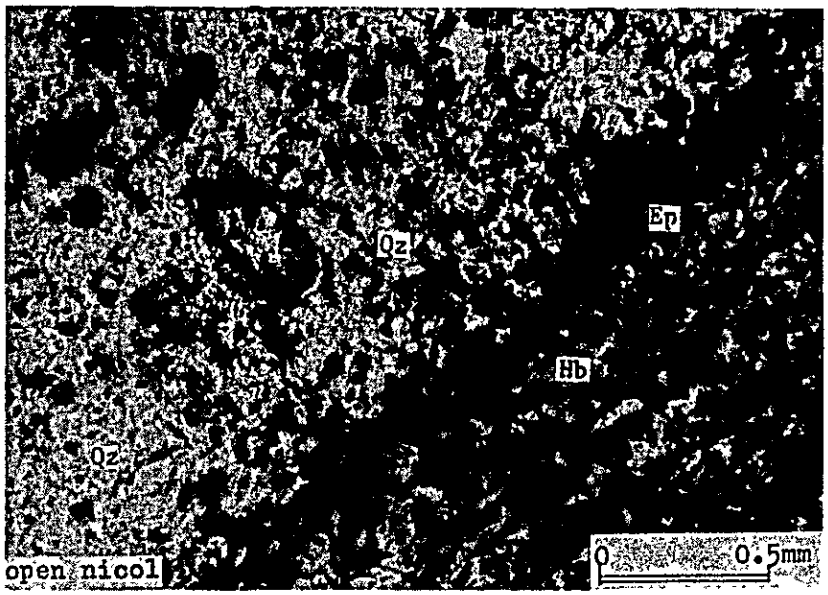




Sample No. D-2051.2

Rock type:

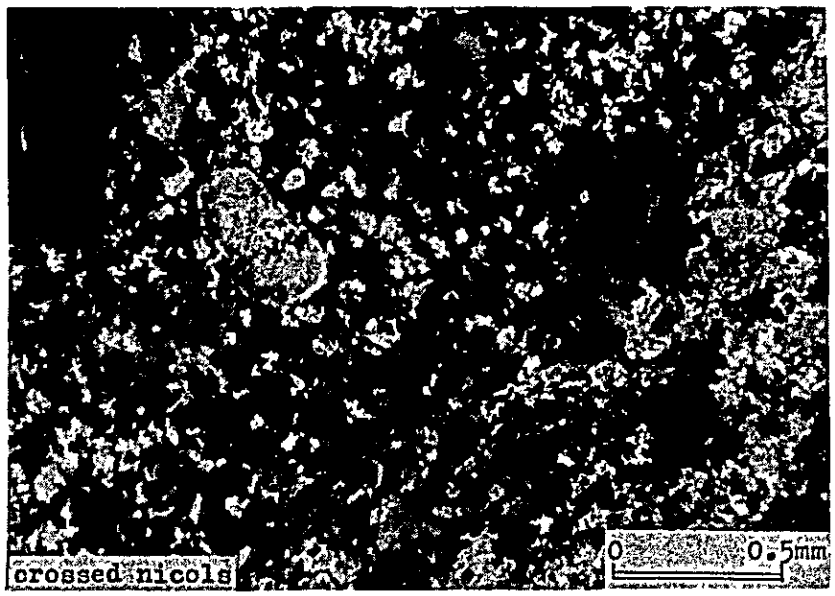
Andesitic rock

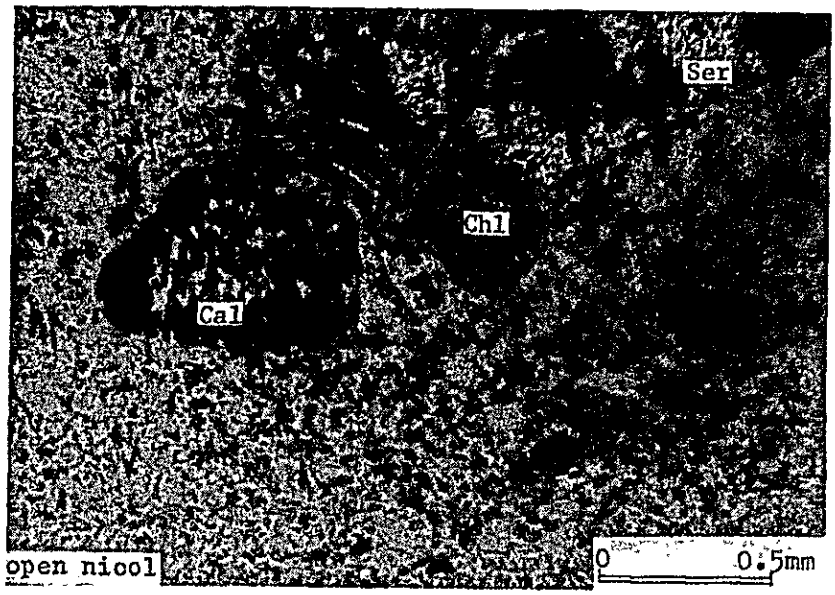


Sample No. 2051.2

Rock type:

Andesitic rock

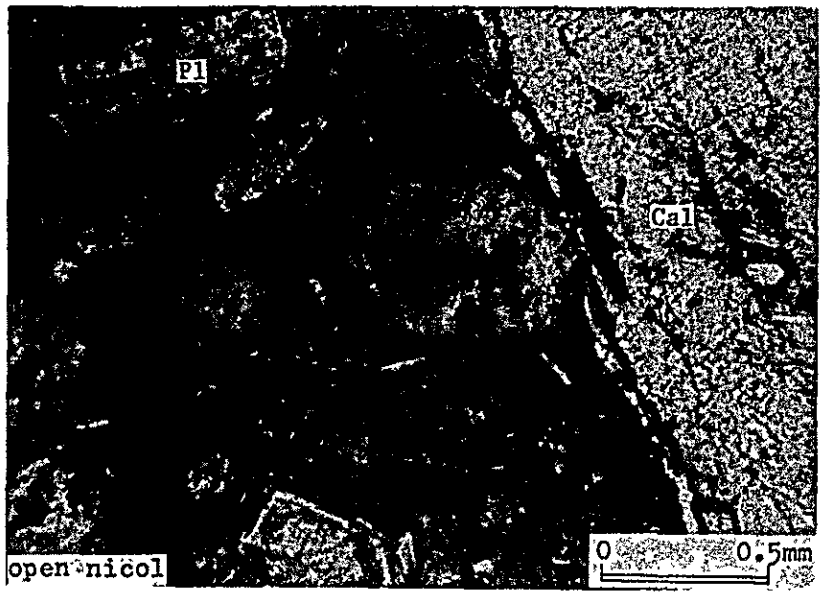




Sample No. D-3069.5

Rock type:

Altered rock



Sample No. D-3071.7

Rock type:

Altered andesitic rock