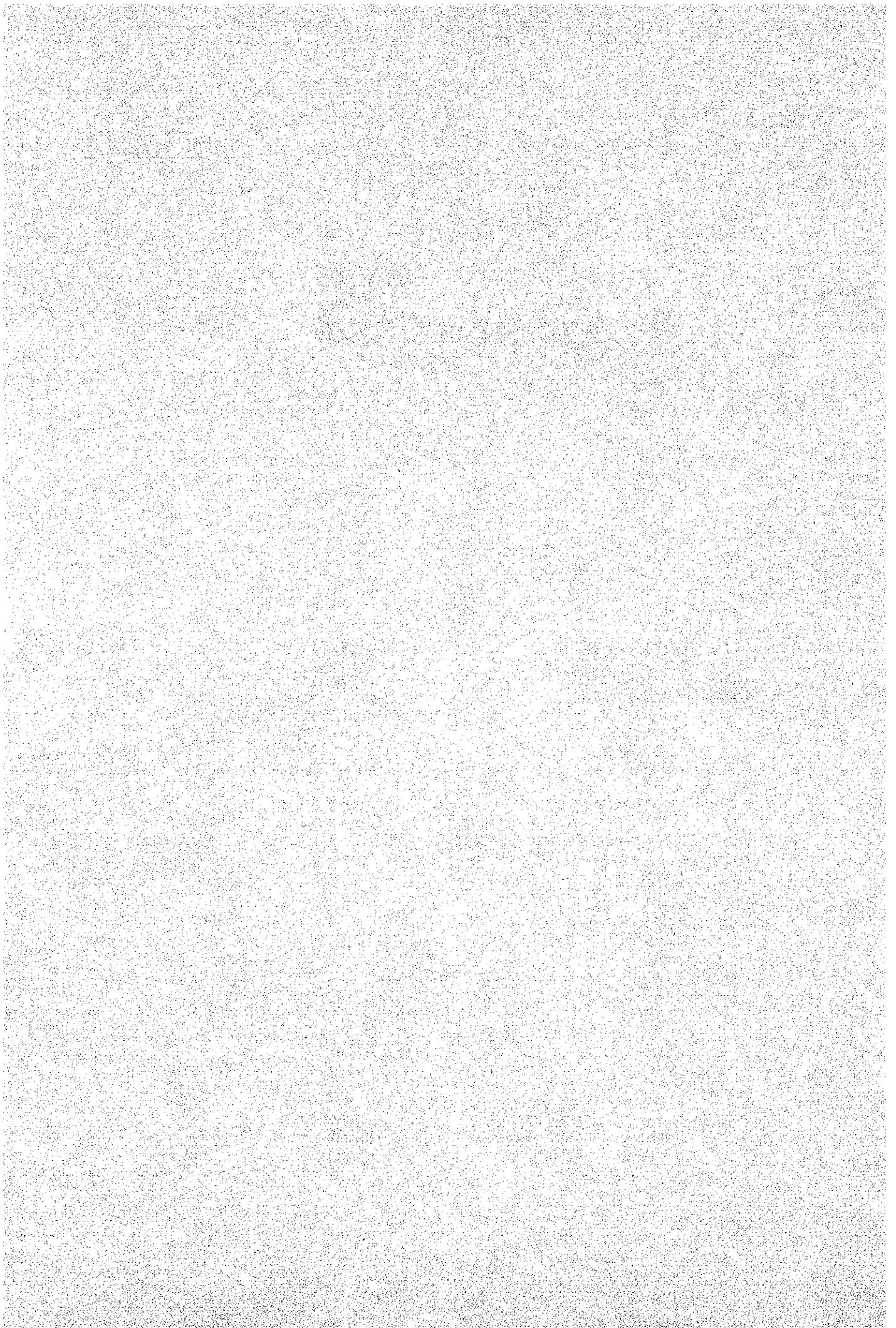


APPENDICES



Appendix 1 List of Rock, Ore and Fossil tested

Sample No.	Thin Section	Polished Section	Chemical Analysis	X-Ray Analysis	K-Ar Dating	Fossil Identification	Remarks
RA - 24	o						
" 27		o					
" 33	o						
" 34		o					
" 46	o						
" 51	o						
" 56	o						
" 78	o						
" 82			o				
" 83			o				
" 84			o				
RB - 19	o						
" 26	o						
" 29	o						
" 37	o						
" 42	o						
" 44			o				
" 46		o					
" 49	o						
" 53			o				
" 59		o					
" 89	o						
RC - 1				o			
" 8	o						
" 15	o	o					
" 20	o						
" 29	o						
" 46	o						
" 49						o	
" 55	o						
" 83-B		o	o				
" 84		o					
" 85				o			
" 86	o						

Sample No.	Thin Section	Polished Section	Chemical Analysis	X-Ray Analysis	K-Ar Dating	Fossil Identification	Remarks
RD - 23	o						
" 27		o					
" 28				o			
" 30				o			
" 36	o						
" 47					o		
" 58		o	o				
" 59	o						
" 11			o				
RE - 3	o						
" 8	o						
" 9	o						
" 11	o						
" 12	o	o					
" 18	o						
" 20	o						
" 27	o						
" 28	o						
" 39	o						
RF - 2		o					
" 3			o				
" 5		o	o				
" 9			o				
" 10			o				
" 11			o				
" 18			o				
" 26		o	o				
" 35		o					
" 36				o			
" 38		o	o				
" 41						o	
" 45			o				
" 47				o			
" 48	o						
" 51			o				

Sample No.	Thin Section	Polished Section	Chemical Analysis	X-Ray Analysis	K-Ar Dating	Fossil Identification	Remarks
RF - 53	o						
" 54	o						
" 58	o						
" 61						o	
" 62				o			
" 70	o						
RG - 2			o				
" 7	o						
" 10	o						
" 11	o						
" 13	o						
" 14				o			
" 15			o				
" 16				o			
" 19	o						
" 20	o						
" 21	o						
" 27	o						
" 28	o						
" 34				o			
" 35				o			
RH - 6	o						
" 10	o						
" 11	o						
" 13					o		
" 16	o				o		
" 17		o	o				
" 23	o						
" 25						o	
" 26						o	
" 27						o	
" 28	o						
" 29			o	o			
" 31			o	o			
" 32			o	o			

Sample No.	Thin Section	Polished Section	Chemical Analysis	X-Ray Analysis	K-Ar Dating	Fossil Identification	Remarks
RH - 33			o	o			
" 37	o						
" 39	o						
" 43-A	o						
" 43-B	o						
" 63	o						
" 77	o						
" 83	o						

Appendix 2 List of Absolute Datings

Sample No.	Locality	Lithology	Absolute Datings
RH - 13	S. Siruk	Leucocratic biotite granodiorite	(100 \pm 5) x 10 ⁶ Year
RH - 16	S. Siruk	Siruk gneissose tonalite	(130 \pm 5) x 10 ⁶ "
RD - 47	S. Napoi	Napoi gneissose tonalite	(240 \pm 5) x 10 ⁶ "

Absolute dating by K-Ar method.

Appendix 3 Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RG-7	I-4	S. Popoi besar	Pendarangas-Riang Gneiss	Hornblende gneiss	Dark greenish grey-colored, medium-grained gneiss. Plenty of hornblende exist along gneissosity.	Granitoid texture. Sub-hedral plagioclase showing a size of <1 mm and twins with component of about Ab 65 An 35. Hornblende having clear cleavages and showing weak arrangements, and being contained about 30 % in volume. Spene and apatite existing as accessory minerals accompanied with hornblende.	
RH-23	I-5	S. Miri	Pendarangas-Riang Gneiss	Hornblende-biotite gneiss	Very coarse-grained gneiss. Subhedral plagioclase existing in quartz-bands. Hornblende and biotite making dark colored bands.	Granitoid texture showing gneissose structure. Sub-hedral plagioclase of a size of <3 mm and quartz making plenty of white band including a little potash-feldspar, and green hornblende and fibrous, micro-folded and deformed biotite forming black band.	
RH-83	F-1	S. Marikoi	Meraya Crystalline schist	Garnet-bearing biotite-sericite schist	Greenish to brownish grey-colored schist. Biotite of 1 to 2 mm being scattered as porphyroblast, and biotite with sericite arranging along strong schistosity.	Schistose texture. Garnet of 0.5 - 2 mm and biotite of 0.5 - 2 mm forming porphyroblast. Apatite and sericite being included in biotite. Biotite and sericite surrounding porphyroblast of garnet	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RH-83 (cont'd)						and showing clear arrangement with micro-folding along schistosity. Quartz filling them. Opaque mineral (ilmenite?) and zircon existing as accessory mineral.	
RG-10	I-4	S. Popoi besar	Popoi Crystalline schist	Epidote-sericite-quartz schist	Pale greenish white or pale-grey colored schist. Plenty of sericite existing along schistosity.	Schistose texture. Anhedral or subhedral epidote of <0.5 mm forming porphyroblast. Euhedral or subhedral sericite arranging along strong schistosity and plenty of epidote existing. Anhedral quartz of 0.08 mm filling between them. Opaque mineral (ilmenite?) arranging also along schistosity.	
RH-11	I-5	S. Maaf	Popoi Crystalline schist	Epidote-sericite-quartz schist	Pale greenish grey-colored, very fine-grained, psammitic schist. Plenty of sericite existing along schistosity.	Schistose texture. Subhedral epidote of <0.5 mm forming porphyroblast. Sericite of 0.1 mm arranging along schistosity and plenty of epidote of <0.05 mm also being scattered. Quartz of <0.08 mm filling them. Opaque mineral (ilmenite) also arranging along schistosity.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RG-11	I-4	S. Popoi besar	Popoi Crystalline schist	Epidote-sericite-quartz schist	Pale greenish grey-colored, psammitic schist showing weak schistosity. Spot of epidote forming porphyroblast.	Schistose texture. Euhedral or subhedral epidote of 0.1 - 0.8 mm forming porphyroblast. Quartz of 0.01 mm and sericite with a little plagioclase showing weak arrangement. Apatite being included in quartz.	
RE-9	G-5	S. Tekaoi	Punyo Crystalline schist	Biotite schist	Brownish grey-colored schist. Black band of plenty of biotite and white band of quartz forming alternation of 1 - 3 mm wide and showing gentle micro-folding.	Schistose texture. Biotite of 0.02 - 0.5 mm weakly arranging along schistosity and quartz filling them. A little of apatite being included in quartz, and zircon giving halo to biotite.	
RC-15	G-10	S. Pejangoi	Pejangoi Hornfels	Biotite hornfels	Dark brown-colored, fine-grained and massive hornfels. Plenty of very fine biotite and quartz existing, sometimes showing segregate vein. Plenty of pyrrhotite disseminating.	Granoblastic texture. Subhedral biotite of 0.1 mm existing about 20 % in volume with plenty of quartz of 0.05 mm. Muscovite, plagioclase and apatite being accompanied. Medium-grained quartz forming segregate vein. Zircon giving halo to biotite. Plenty of	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RC-15 (cont'd)						pyrrhotite and pyrite disseminating.	
RC-55	G-10	S. Pejangoi	Pejangoi Hornfels	Biotite hornfels	Dark brownish grey-colored, hard hornfels. Spot of biotite aggregate of 0.5 mm forming abundant porphyroblast.	Fine-grained part of biotite of 0.02 - 0.1 mm with very fine quartz and coarse-grained part of biotite of 0.1 - 0.5 mm with quartz of 0.2 - 0.5 mm being alternated irregularly. A little of muscovite and opaque mineral being scattered. Quartz vein of 5 mm wide cutting them.	
RD-23	H-7	S. Napoi	Napoi Tonalite	Gneissose hornblende-biotite tonalite	Very coarse-grained, gneissose tonalite. Hornblende of max. 8 mm and biotite existing about 20 % in volume.	Gneissose and granitoid texture. Subhedral plagioclase of 0.5 - 1 mm, 10 % of biotite of 0.4 - 1 mm and 3 - 5 % of hornblende of 0.4 - 1 mm existing with a little quartz filling them. Apatite and opaque mineral being scattered.	
RE-18	G-7	Monuku	Napoi Tonalite	Gneissose two mica tonalite	Medium-grained, gneissose tonalite. About 15 % of biotite and muscovite existing.	Gneissose and granitoid texture. Subhedral plagioclase of 0.5 - 1.2 mm, about 8 % of biotite of 0.2 - 1 mm and muscovite	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RE-18 (cont'd)						of 0.3 - 0.8 mm with plenty of quartz filling them. Garnet, pyrite, zircon existing as accessory mineral.	
RF-53	E-6	S. Sakontia	Napoi Tonalite	Gneissose hornblende tonalite	Medium-grained, gneissose tonalite Holocrystalline. About 40 % of hornblende being scattered.	Gneissose and granitoid texture. Subhedral plagioclase of 0.2 - 0.5 mm, and euhedral or subhedral hornblende of 0.05 - 1 mm existing about 40 % in volume. Quartz of 0.05 mm filling them. Many apatite with a little opaque mineral are accessory.	
RD-36	F-9	S. Napoi	Napoi Tonalite	Massive hornblende biotite tonalite	Coarse-grained, granitoid rock. Biotite of 3 mm, some of hornblende, plagioclase and quartz being composed.	Massive and granitoid texture. Subhedral plagioclase of 0.5 - 2 mm being contaminated with secondary sericite. 8 % of biotite of 0.5 mm and 2 % of hornblende existing. Plenty of quartz filling them. Apatite, opaque mineral, chlorite and epidote forming accessory mineral.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RE-20	G-7	S. Monuku	Napoi Tonalite	Massive hornblende-biotite tonalite	Coarse-grained, melanoclastic rock showing color index of about 60 contained plenty of biotite and hornblende.	Massive and granitoid texture. Subhedral plagioclase of 0.5 mm, 15% of biotite of 0.1 - 0.5 mm and 24% of hornblende of 0.1 - 0.5 mm existing, and quartz filling them. Sphene, apatite and opaque mineral existing as accessory mineral.	
RE-3	G-4	S. Kacang	Siruk Tonalite	Gneissose hornblende-biotite tonalite	Coarse-grained, weakly gneissose and granitoid rock. Black band of biotite and hornblende being contained.	Gneissose and granitoid texture. Subhedral plagioclase of 0.3 - 1 mm, 20% of biotite of 0.3 - 1.5 mm and 4% of euhedral or subhedral hornblende existing. Plenty of quartz filling them. Apatite and opaque mineral with secondary chlorite being contained.	
RH-10	I-5	S. Maaf	Siruk Tonalite	Gneissose hornblende tonalite	Medium-grained, weakly gneissose and porphyritic rock. Plagioclase of 2 - 3 mm forming phenocryst.	Gneissose and granitoid texture, and slightly porphyritic feature. Subhedral plagioclase of 0.2 - 3 mm forming some phenocryst. 35% of hornblende of 0.3 - 1 mm and plenty of quartz of 0.1 - 0.3 mm filling them.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RH-10 (cont'd)						Apatite as accessory mineral, and secondary epidote with sericite being yielded.	
RH-16	H-5	S. Miri	Siruk Tonalite	Gneissose hornblende-biotite tonalite	Coarse-grained, gneissose and granitoid feature. Band of biotite and quartz being alternated.	Gneissose and granitoid texture. Subhedral plagioclase of 0.2 - 0.8 mm, 10 % of biotite of 0.2 - 1.5 mm, 3 % of hornblende of 0.3 - 1 mm and plenty of quartz existing. Myrmekite, apatite and opaque mineral being found.	
RE-11	G-5	S. Kambin	Tekaci Granodiorite	Massive hornblende-biotite granodiorite	Medium-grained, massive, granitoid feature. Biotite, plagioclase and quartz existing.	Massive, and granitoid texture. Euhedral or subhedral plagioclase of 0.5 - 1 mm, 8 % of biotite of 0.5 mm and a little hornblende existing. A little potash-feldspar, myrmekite, muscovite being found. Apatite and opaque mineral as accessory and secondary chlorite being contained.	
RE-28	F-4	S. Kurik	Tekaci Granodiorite	Massive hornblende-biotite granodiorite	Coarse-grained, massive, granitoid rock. Total of 30 % including biotite of	Massive, granitoid texture. Subhedral plagioclase of 0.2 - 2 mm, 15 % of subhedral or anhedral horn-	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RE-28 (cont'd)					max, 8 mm and hornblende of 2 - 3 mm existing	blende of 0.2 - 2 mm and a little biotite of 0.2 - 3 mm existing. A little anhedral potash-feldspar and quartz filling them. Apatite, sphene and epidote are accessory mineral.	
RF-48	F-7	S. Sonang	Tekaol-Sonang Granodiorite	Massive hornblende- biotite granodiorite	Very coarse-grained, massive feature. Plenty of quartz and 10 % of mafic mineral existing.	Massive and granitoid texture. Subhedral plagioclase of 0.01 - 2 mm, 10 % of biotite of <1.5mm with a little subhedral hornblende, and quartz of 0.05 - 1 mm being contained. Apatite and opaque mineral forming accessory mineral. Calcite vein of 0.02 mm wide cutting them.	
RF-58	E-6	S. Kumbang	Tekaol-Sonang Granodiorite	Massive hornblende- biotite granodiorite	Pale greenish gray-colored, very coarse-grained, and slightly porphyritic rock, containing phenocryst of quartz of max. 10 mm. 15 % of mafic mineral and 30 % of plagioclase existing.	Massive, granitoid and slightly porphyritic texture. Quartz of 0.05 - 4 mm forming some of phenocryst. Subhedral plagioclase of 0.1 - 3 mm and biotite of <3 mm showing bending, micro-folding or deformation. Apatite, opaque mineral and secondary epidote being contained.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RH-43B	F-2	S. Marikoi	Marikoi Granodiorite	Massive, hornblende-biotite granodiorite	Very coarse-grained, massive and granitoid rock. 20 % of biotite and hornblende being scattered in quartz and plagioclase.	Massive and granitoid texture. Euhedral or subhedral plagioclase of 0.5 - 3 mm showing twin and zoning. Plenty of subhedral or euhedral hornblende of <1 mm and biotite of <4 mm, and quartz of <2 mm being composed. A much apatite containing as accessory.	
RE-8	G-5	S. Tekaoi	Punyo Granodiorite	Leucocratic two mica granodiorite	Medium-grained, massive, leucocratic feature. Biotite and muscovite of 1 mm with feldspar and quartz existing.	Massive and granitoid texture. Subhedral biotite and muscovite of 0.1 - 1.2 mm containing 20 % in volume. Plagioclase, plenty of quartz with myrmekite being contained. Zircon and apatite forming accessory mineral.	
RE-27	F-4	S. Humputung	Punyo Granodiorite	Massive, leucocratic, hornblende-biotite granodiorite	Medium-grained, massive, leucocratic rock. Plenty of feldspar and quartz with a little mafic mineral existing.	Massive and granitoid texture. Subhedral plagioclase of 0.2 - 1.5 mm being stained. A little hornblende and biotite with muscovite being contained. Plenty of quartz filling them. Some of anhedral potash-feldspar being found. Secondary epidote	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RE-27 (cont'd)						and chlorite yielded.	
RH-6	I-6	S. Miri	Punyoi Granodiorite	Massive, leucocratic biotite granodiorite	Medium-grained, massive, granitoid feature. 10% of biotite being scattered in coarse-grained quartz and feldspar.	Massive, granitoid texture. Euhedral or subhedral plagioclase of 0.3-1 mm, 4-10% of biotite of 0.5-1 mm and plenty of quartz of <1 mm contained with a little potash-feldspar. Apatite, opaque mineral as accessory and secondary epidote being found.	
RC-8	H-8	S. Pejangoi	Pejangoi Dacite	Hornblende- biotite dacite	Pale gray-colored, porphyritic rock, containing plenty of phenocryst of plagioclase with a little mafic mineral.	Porphyritic texture. Quartz of 1.5 mm euhedral plagioclase of 1-1.5 mm with a little mafic mineral forming phenocryst. Groundmass showing micro-granitoid texture consisting of quartz of 0.1 mm, plagioclase of 0.5 mm, biotite of 0.1-1.5 mm and hornblende of 0.2 mm. Apatite, opaque mineral as accessory, and secondary chlorite and epidote being scattered.	
RC-20	H-7	S. Pejangoi	Pejangoi Dacite	Biotite dacite	Dark green-colored, medium-grained and	Porphyritic texture. Quartz of 1 mm, euhedral and zonal	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RC-20 (cont'd)					porphyritic feature containing phenocryst of biotite, plagioclase and quartz.	plagioclase of <1 mm and biotite of <0.8 mm forming phenocryst. Groundmass showing microgranitoid texture contained quartz, muscovite, opaque mineral, apatite and secondary chlorite.	
RB-89	K-10	S. Miri	Horuwu Formation S1 Member	Coarse sandstone	Pale greenish white-colored, massive, coarse sandstone, consisting of quartz, mica, fragment of green rock.	Clastics consisting of subangular quartz, plagioclase of 0.5 - 1.5 mm, biotite, and sericite. No cement between clastics being found or very fine-grained clastics of quartz filling them.	
RC-29	J-10	S. Masukih	Horuwu Formation S2 Member	Fine sandstone	Bluish grey-colored, fine sandstone, showing clear bedding arranged by biotite along bedding.	Clastics consisting of subangular quartz and plagioclase of 0.1 mm with biotite 0.1 - 1 mm of 10 % in volume. Biotite arranging along bedding, and showing weak bending. Piece of chlorite, epidote, sericite and opaque mineral existing without cement between them.	
RB-19	J-12	S. Marau	Horuwu Formation S4 Member	Fine sandstone	Pale green-colored, fine sandstone including abundant	Clastics consisting of angular or subangular quartz, plagioclase and	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RB-19 (cont'd)					fragments of biotite.	biotite weakly arranged along bedding. Biotite showing bending. A little epidote, muscovite and opaque mineral existing.	
RA-24	H-11	S.Miri	Raea Diorite	Biotite-hornblende diorite porphyrite	Greenish gray-colored, medium-grained, porphyritic diorite, including phenocryst of plagioclase and mafic mineral.	Holocrystalline, and porphyritic texture. Euhedral or subhedral plagioclase of 2.5 mm, hornblende of 0.5 - 1 mm and biotite of 0.5 - 1 mm forming phenocryst. Most of mafics being crushed and chloritized. Groundmass consisting of euhedral plagioclase of 0.15 mm and quartz with apatite and opacite.	
RA-33	H-12	S.Pari	Raea Diorite	Biotite-hornblende diorite (-porphyrite)	Dark greenish-gray colored, medium-grained, massive, holocrystalline rock.	Holocrystalline, and slightly porphyritic texture. Euhedral, twinned plagioclase of <3 mm, hornblende of 0.2 mm and biotite of 0.2 mm forming phenocryst, and mafics reaching 20 % in volume. Groundmass consisting of euhedral, twinned plagioclase, quartz and apatite.	Pyrite-disseminated.

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RB-42	H-12	S. Raea	Raea Diorite	Biotite-hornblende-quartz diorite	Dark green-colored, medium-grained, holocrystalline rock. Color index reach 80 including abundant hornblende.	Holocrystalline and granitoid texture. Euhedral plagioclase of 0.3 - 1.5 mm showing twin and zoning, and including apatite. Hornblende existing abundant. Very little quartz filling them. A little secondary epidote being yielded.	Chalcopyrite disseminated
RB-49	G-11	S. Raea	Raea Diorite	Biotite-hornblende-quartz diorite	Pale greenish grey-colored, very coarse-grained, massive, holocrystalline rock. 25 % of hornblende of 2 - 5 mm existing.	Holocrystalline, and granitoid texture. Euhedral or subhedral plagioclase of 0.3 - 1 mm showing twin and zoning, and having component of Ab 60 An 40. Euhedral hornblende of 0.5 - 3 mm and a little biotite of 0.8 mm existing. A little quartz filling them. As accessory, apatite and sphene being scattered.	
RC-46	H-10	S. Masukih	Masukih Diorite	Biotite-hornblende diorite porphyrite	Green-colored, medium-grained, porphyritic feature. Plagioclase with mafics forming phenocryst.	Porphyritic texture. Euhedral or subhedral plagioclase of <2 mm, euhedral hornblende of <1 mm and biotite forming phenocryst. Plagioclase being opacitized.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid of Map	River					
RC-46 (cont'd)						ed, and mafic mineral being chloritized. Groundmass showing granitoid texture, and consisting mainly of euhedral plagioclase of 0.1 mm with a little quartz.	
RA-78	K-10	S. Horongonoi	Horongonoi Diorite	Hornblende diorite-porphyrite	Pale greenish gray-colored, porphyritic rock having phenocryst of hornblende and plagioclase.	Porphyritic, holocrystalline texture. Euhedral plagioclase of 1 - 2.5 mm showing twin and zoning, and hornblende of 1 mm composing phenocryst. Groundmass consisting of euhedral plagioclase of 0.15 mm, hornblende, a little quartz, apatite and opaque mineral, together with secondary epidote and chlorite.	
RA-46	F-12	S. Miri	Kahungoi Diorite - porphyrite	Hornblende diorite-porphyrite	Pale greenish grey-colored, coarse-grained, porphyritic rock, having phenocryst of plagioclase and altered mafic mineral.	Porphyritic texture. Phenocryst consisting of euhedral or subhedral plagioclase of <1.5 mm and hornblende of <1.2 mm. Groundmass being composed of euhedral plagioclase, quartz, hornblende and opaque mineral. Rock being suffered contamination by iron oxide, and	Pyrite-disseminated

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RA-46 (cont'd)						impregnated by pyrite.	
RA-56	F-11	S. Monoba-Lang	Kahungoi Diorite-porphyrite	Hornblende diorite-porphyrite	Pale greenish gray-colored, medium-grained and porphyritic rock, having phenocryst of plagioclase and hornblende.	Porphyritic texture. Phenocryst consisting of euhedral plagioclase of <3 mm and subhedral hornblende of <0.8 mm changed to secondary chlorite. Groundmass being composed of euhedral plagioclase of 0.05 mm, quartz and chlorite. Secondary zeolite vein of 0.05 mm wide cutting them.	Pyrite-disseminated
RA-51	F-12	S. Miri	Kahungoi Diorite-porphyrite	Hornblende porphyry - Andesite-porphyrity	Dark greenish gray-colored, porphyritic rock, having phenocryst of plagioclase and altered hornblende, and showing flow structure. Marginal facies of Diorite-porphyrity.	Porphyritic texture and flow structure. Phenocryst consisting of euhedral plagioclase of <2 mm and altered hornblende of <1.2 mm. Groundmass being composed of euhedral plagioclase of 0.05 - 0.2 mm, hornblende, quartz, apatite and opaque mineral with secondary epidote and chlorite.	
RH-43A	F-2	S. Kahayan	Marikoi Quartz diorite	Hornblende-biotite-quartz-diorite	Dark greenish gray-colored, medium-grained, massive,	Massive and granitoid texture. Subhedral plagioclase of <1 mm showing	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RH-43A (cont'd)					granitoid rock.	strong zoning with twin. 40 % of biotite of <1 mm with 2 % of hornblende of 2 - 3 mm being contained. Much apatite as accessory and a little secondary epidote existing.	
RH-63	G-2	S. Kanaran	Marikoi Quartz diorite	Altered biotite- quartz diorite (-porphyrite)	Dark green - pale yellowish green - colored, porphyritic rock, having abundant phenocryst of max. 3 mm, and very fine, compact groundmass.	Porphyritic and granitoid texture. Phenocryst of subhedral or anhedral plagioclase of 0.1 - 3 mm being suffered contamination. Groundmass showing micro-granitoid texture, and consisting of plagioclase, biotite and quartz. Biotite being chloritized and banded. Secondary epidote forming vein and pool in rock.	
RH-77	F-2	S. Marikoi	Marikoi Quartz diorite	Biotite- quartz diorite	Medium-grained, compact, granitic rock. Biotite being scattered in plagioclase and quartz.	Massive and granitoid texture. Subhedral plagioclase of 0.2 - 1.5 mm showing zoning. 5 % of biotite of 0.5 - 1 mm existing and quartz of <1 mm filling them. A little muscovite and apatite as accessory mineral and secondary epidote being scattered.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RC-86	K-8	S. Morandoi	Mang Kuhung Granodiorite-porphyrite	Altered hornblende-biotite-porphyrite.	Pale greenish grey-colored, coarse-grained, holocrystalline rock, having phenocryst of plagioclase of 1 - 3 mm and mafic mineral. Xenolith of dark green rock being contained.	Porphyritic texture. Phenocryst being composed of euhedral or subhedral plagioclase of 1.3 mm, subhedral hornblende of < 2.5 mm and quartz of < 1.5 mm. Plagioclase being changed to epidote, opacite, and sericite. Hornblende also changed to chlorite. Groundmass being composed of quartz and chlorite. Epidote vein of 0.2 mm wide cutting them.	Pyrite-disseminated
RD-59	J-7	S. Anoi	Mang Kuhung Granodiorite-porphyrite	Hornblende granodiorite-porphyrite	Greenish grey-colored, medium-grained, massive and porphyritic rock, having phenocryst of plagioclase and mafic mineral of < 2 mm.	Porphyritic texture. Euhedral plagioclase of 1.5 mm showing twin, and 20% of euhedral hornblende of < 0.1 mm forming phenocryst. Groundmass being composed of euhedral plagioclase of 0.05 mm and opaque mineral with secondary chlorite.	
RC-13	I-4	S. Popoi besar	Sian Andesite Formation	Hornblende-biotite andesitic tuff	Pale greenish yellow-colored, fine-grained, massive and soft rock. Fragment of plagioclase and mafic	Clastics being composed of plagioclase of < 1.2 m, biotite of < 0.2 m, chloritized hornblende and opaque mineral. Matrix being com-	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RG-13 (cont'd)					mineral being con- tained.	posed of quartz, silica mineral and chlorite.	
RH-37	G-3	S. Hampu- tung	Sian Andesite Formation	Pyroxene andesitic tuff	Purplish grey- colored, soft and porous tuff, including piece of mafic mineral and plagioclase.	Clastics consisting of plagioclase of <1.5 mm, chloritized pyroxene, opacite, quartz and apatite. Matrix being consisting from silica mineral, chlorite and epidote.	
RH-39	G-3	S. Hampu- tung	Sian Andesite Formation	Pyroxene - hornblende andesitic tuff	Pale greenish grey- colored, soft tuff, including clastics of hornblende, pyroxene and plagioclase.	Clastics consisting of plagioclase of 1.5 mm, epidotized pyroxene, chloritized hornblende, altered plagioclase and opaque mineral. Matrix being composed of quartz, silica mineral, plagio- clase and chlorite.	
RE-39	J-4	S. Habaon	Sian Andesite Formation	Andesitic tuff	Pale yellowish grey- colored, porous and soft tuff, including clastics of mafic mineral and plagio- clase.	Clastics consisting of plagioclase showing twin and having apatite, sericitized and opacitiz- ed plagioclase, and mafic mineral changed to iron oxide. Matrix being composed of very fine- grained silica mineral and quartz, with abundant	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RE-39 (cont'd)						iron oxide mineral-dissemination.	
RG-21	I-3	S.Asu	Sian Andesite Formation	Hornblende-augite andesite (Basaltic andesite)	Dark greenish grey-colored, fine and compact andesite, having phenocryst of mafic mineral of 1 mm.	Porphyritic texture. Phenocryst consisting of euhedral plagioclase, opacitic and chloritized hornblende, and chloritized augite. Lath of plagioclase of 0.05 mm, hornblende, chlorite and opaque mineral forming compact groundmass.	
RH-28	G-3	S.Hampung	Sian Andesite Formation	Basaltic andesite	Dark greenish grey-colored, medium-grained and porphyritic rock. Plenty of plagioclase forming phenocryst. Groundmass being very fine-grained and compact.	Porphyritic texture. Phenocryst consisting mainly of fresh and opacitized plagioclase and a little olivine. Groundmass being composed of plagioclase, quartz and opaque mineral with apatite and epidote.	Pyrite-disseminated
RG-20	J-4	S.Sian	Sian Andesite Formation	Epidotized andesite (Dacitic andesite)	Grey - pale green-colored, porous and porphyritic rock, having plenty of phenocryst of plagioclase with rare quartz.	Porphyritic texture. Phenocryst consisting of fresh, euhedral plagioclase of <1.8 mm and epidotized plagioclase. Quartz, epidote and chlorite forming groundmass.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RG-27	J-1	S. Habaon	Sian Andesite Formation	Olivine-augite basalt	Dark gray-colored and medium-grained, compact rock, having phenocryst of euhedral mafic mineral of <1 mm.	Porphyritic texture. Phenocryst consisting of euhedral plagioclase of < 2 mm and euhedral augite of <0.5 mm with a little olivine. Groundmass showing very fine-grained and compact, composed of plagioclase, silica mineral? and opaque mineral with apatite and hematite.	
RG-19	H-3	S. Bahio	Sian Andesite Formation	Propylitized augite andesite	Dark green-colored with dark reddish brown part, porous and altered andesite. Zeolite being yielded in pore of 3 - 5 mm in diameter.	Spherulite of 2 mm in diameter being composed of plagioclase of <0.8 mm, augite, opacite and hematite, and surrounded by film of zeolite. Epidote vein of 1 mm wide cutting them. Propylitization being remarkable.	
RF-70	J-4	S. Habaon	Sian Andesite Formation	Propylitized hornblende andesite	Greenish grey-colored, porphyritic rock, having phenocryst of plagioclase of 1.5 mm.	Porphyritic texture. Phenocryst consisting of epidotized, euhedral plagioclase of <2 mm and a little hornblende. Groundmass being composed of sericite, quartz and opaque mineral. Rock being suffered by remarkable epidotization.	

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RG-28	J-1	S.Habaon	Habaon Porphyrite - Andesite-porphry	Altered hornblende-augite porphyrite - andesite-porphry	Brownish yellow-colored, soft and porphyritic rock. Clear phenocryst of augite, hornblende and plagioclase being contained abundantly. Groundmass showing yellowish grey-colored and fine, compact.	Porphyritic texture. Phenocryst consisting of euhedral plagioclase of <1.5 mm and euhedral hornblende of <1.5 mm with a little augite. Plagioclase being changed to epidote and hornblende being chloritized. Groundmass showing rather fine-grained, and yielded sericite, zeolite with stain of iron oxide.	
RB-26	J-13	S. Bacun	Merangai Conglomerate Member	Dacitic tuffaceous conglomerate	Purplish grey-colored conglomerate. Pebble of subangular black shale, green mudstone and brown iron oxide mineral, and matrix of fine-grained tuffaceous sand containing piece of white material. No bedding and sorting being observed.	Pebbles and clastics consisting of shale, fine sandstone, epidotized dacitic rock, plagioclase and iron oxide mineral. Matrix showing very fine-grained, and consisting of quartz sand with silica mineral suffered by remarkable chloritization.	
RB-29	J-13	S. Seburung	Merangai Conglomerate Member	Conglomerate	Greenish white-colored, tuffaceous conglomerate. Pebbles consisting	Pebble and clastics consisting of shale, sandstone, opacitized hypersthene basaltic rock,	

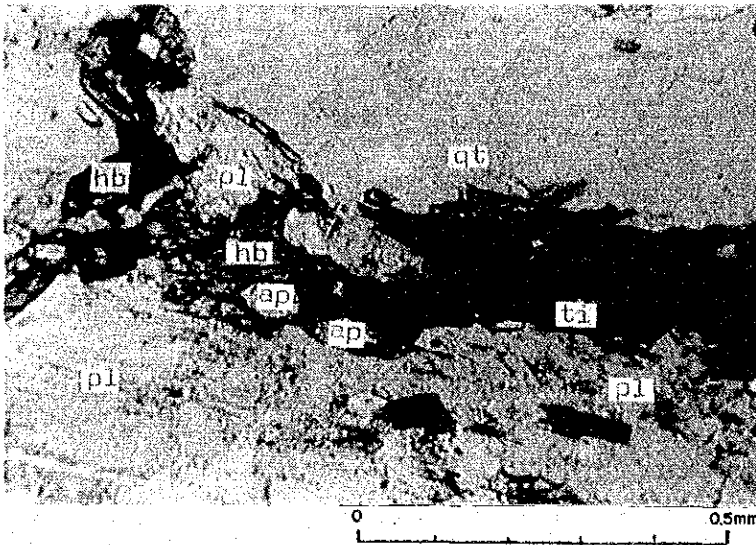
Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RB-29 (cont'd)					of dark brown hornfels, dark green rock of 2 - 30 mm with clastics of biotite and quartz. Matrix being composed of fine-grained quartz sand with white material. No bedding and sorting observed.	hornblende, biotite, plagioclase and quartz. Matrix being composed of very fine-grained quartz sand with silica mineral and epidote.	
RB-37	I-13	S. Merangai	Ruap Dacite	Hypersthene-bearing hornblende-biotite dacite.	Pale grey-colored, porphyritic dacite. Phenocryst consisting of euhedral hornblende of 1 - 3 mm with plagioclase and quartz.	Porphyritic texture. Phenocryst being composed of fresh, euhedral plagioclase of <3 mm, euhedral and opacitized hornblende of <1 mm, euhedral hypersthene of <0.1 mm with a little biotite and quartz. Groundmass consisting of plagioclase of <0.05 mm, quartz, apatite and opaque mineral. Secondary epidote and zeolite being yielded.	
RF-54	E-5	S. Sakon	Sonang Kyolite	Altered hornblende-quartz porphyry - rhyolite	Pale greenish grey-colored, porphyritic rock, having phenocryst of quartz of max. 10 mm with	Porphyritic texture. Phenocryst consisting mainly of quartz of <5 mm contained epidote and chlorite, and of epidotiz-	Pyrite-disseminated

Microscopic Observation of Thin Section

Sample No.	Location		Stratigraphic sequences or Lithological occurrences	Rock name	Megascopic features	Microscopic features	Remarks
	Grid or Map	River					
RF-54 (cont'd)					mafic mineral. Groundmass showing fine-grained and grey-colored containing scattered mafic mineral of <1 mm.	ed euhedral hornblende of 10 % in volume, as well as a little chloritized biotite. Groundmass being composed of aphanitic quartz, plagioclase, and suffered by epidotization and iron-staining. Pyrite being found as impregnation.	
RE-12	G-5	S. Kitan	Kitan mineralized zone	Amphibole skarn	Dark green-colored, holocrystalline skarn, consisting of plenty of amphibole with mica-like mineral.	Euhedral and fibrous unknown mineral, and plenty of subhedral amphibole being aggregated accompanying a little green spinel. Unknown mineral showing very pale green-colored, negative elongation, 4° of extinction angle, and low retardation.	

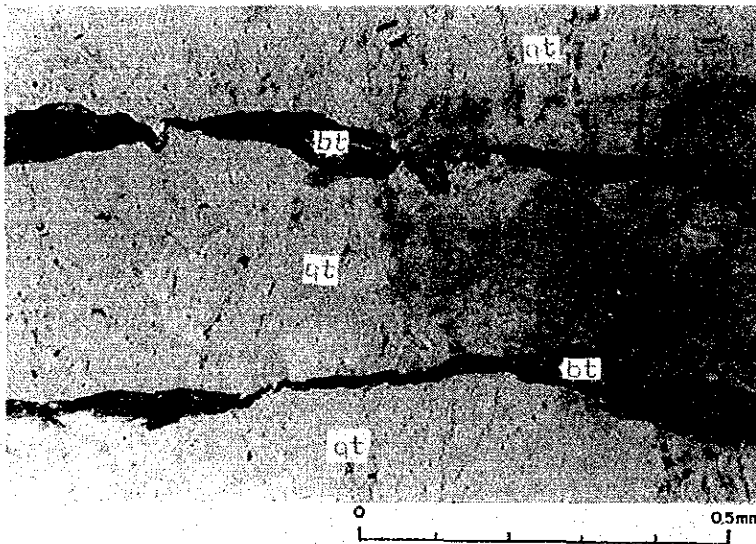
Appendix 4 Microphotographs of Thin Section



Sample No.: RG-7
 Locality : S.Popoi besar
 Rock name : Hornblende
 gneiss

qt : quartz
 pl : plagioclase
 hb : hornblende
 ap : apatite
 ti : Sphene

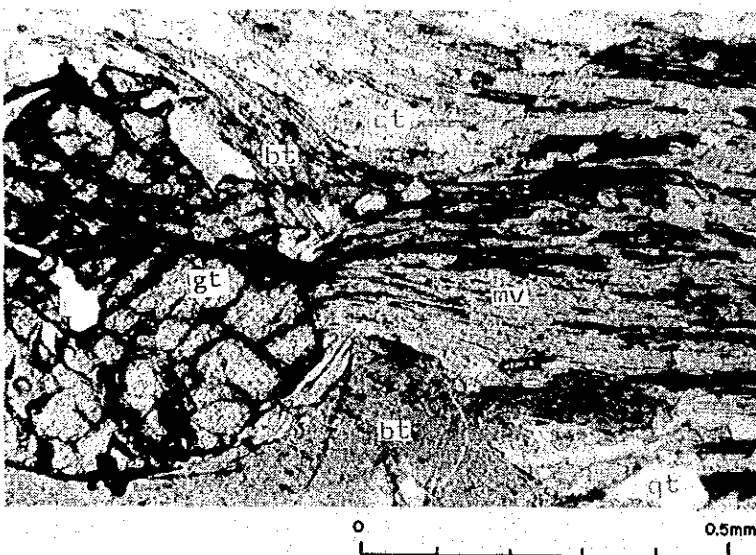
Open nicol



Sample No.: RH-23
 Locality : S. Miri
 Rock name : Hornblende-
 biotite
 gneiss

qt : quartz
 bt : biotite

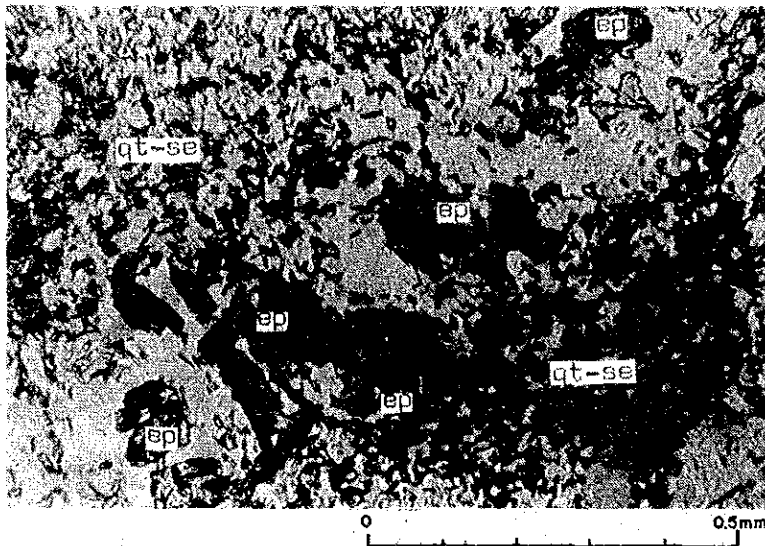
Open nicol



Sample No.: RH-83
 Locality : S.Marikoi
 Rock name : Garnet-
 bearing
 biotite-
 sericite
 schist

qt : quartz
 bt : biotite
 gt : garnet
 mv : muscovite

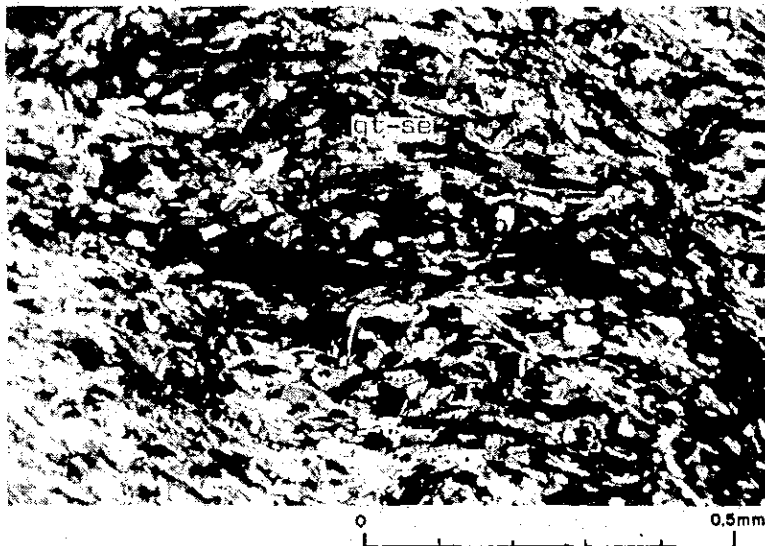
Open nicol



Sample No. : RG-10
 Locality : S.Popoi besar
 Rock name : Epidote-
 sericite-
 quartz schist.

ep : epidote
 qt-se : quartz-sericite

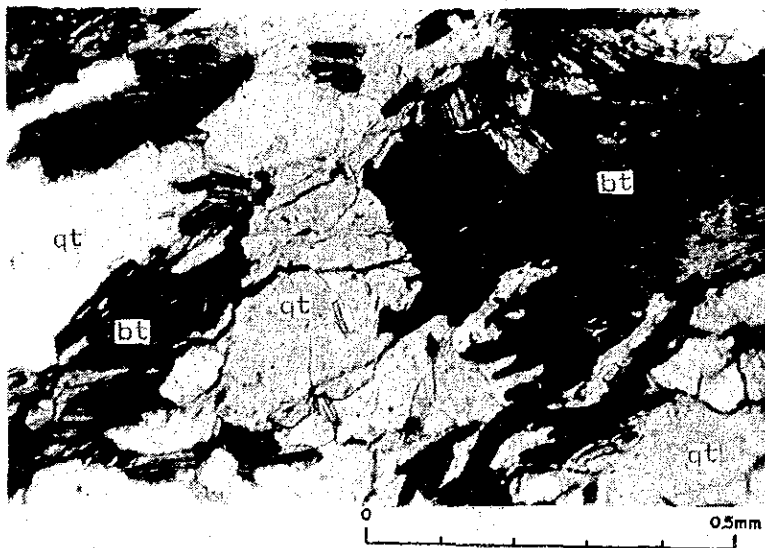
Open nicol



Sample No. : RG-11
 Locality : S.Popoi besar
 Rock name : Epidote-
 sericite
 quartz schist.

qt-se : quartz-sericite

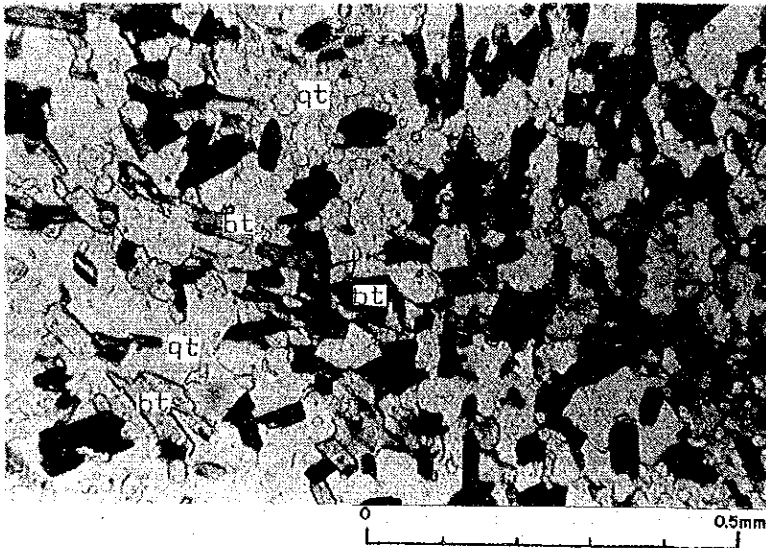
Crossed nicols



Sample No. : RE-9
 Locality : S.Tekaol
 Rock name : Biotite
 schist.

qt : quartz
 bt : biotite

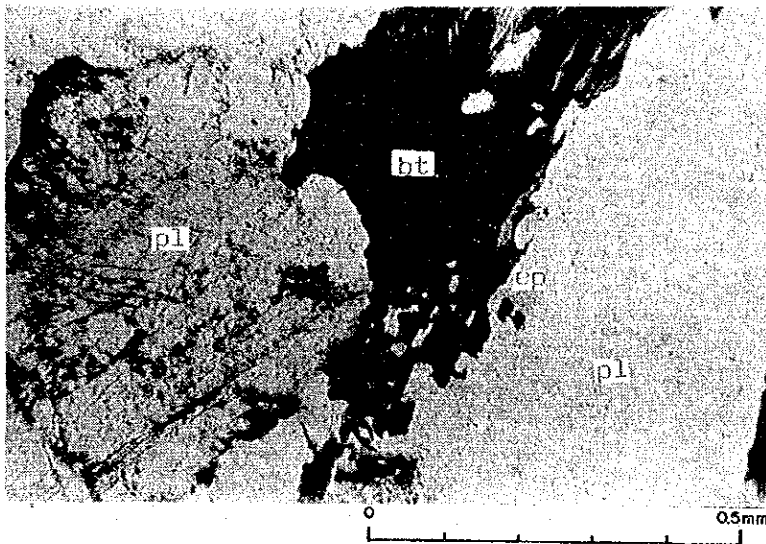
Open nicol



Sample No. : RC-15
 Locality : S.Pejangoi
 Rock name : Biotite
 hornfels

qt : quartz
 bt : biotite

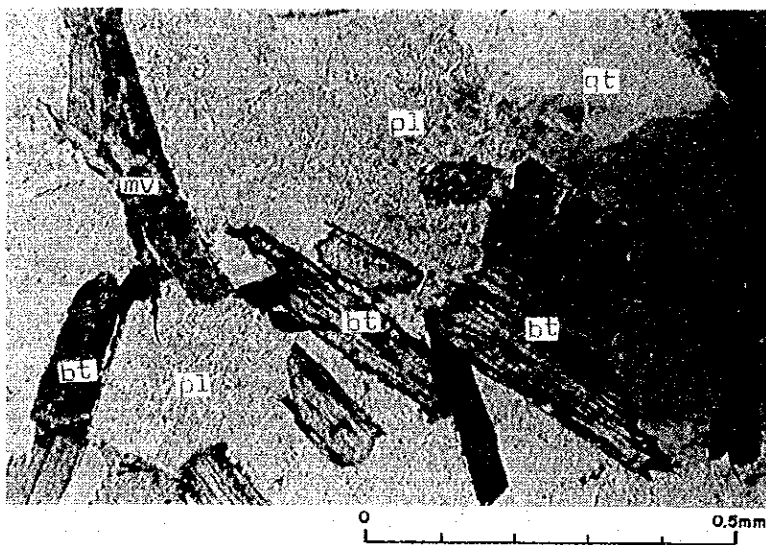
Open nicol



Sample No. : RD-23
 Locality : S.Napoi
 Rock name : Gneissose
 hornblende
 biotite
 tonalite

pl : plagioclase
 bt : biotite
 ep : epidote

Open nicol



Sample No. : RE-18
 Locality : Momuku
 Rock name : Gneissose
 two mica
 tonalite

qt : quartz
 pl : plagioclase
 mv : muscovite
 bt : biotite

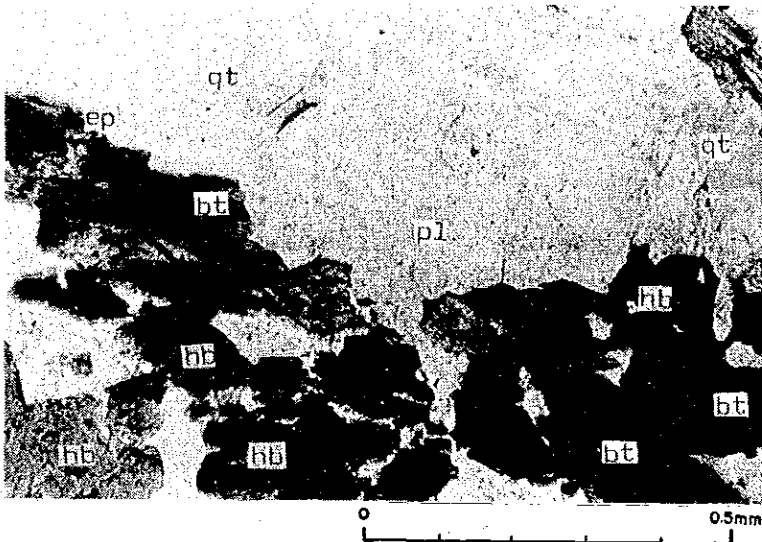
Open nicol



Sample No.: RD-36
 Locality : S.Napoi
 Rock name : Massive
 hornblende-
 biotite
 tonalite

qt : quartz
 pl : plagioclase
 hb : hornblende
 bt : biotite
 ep : epidote

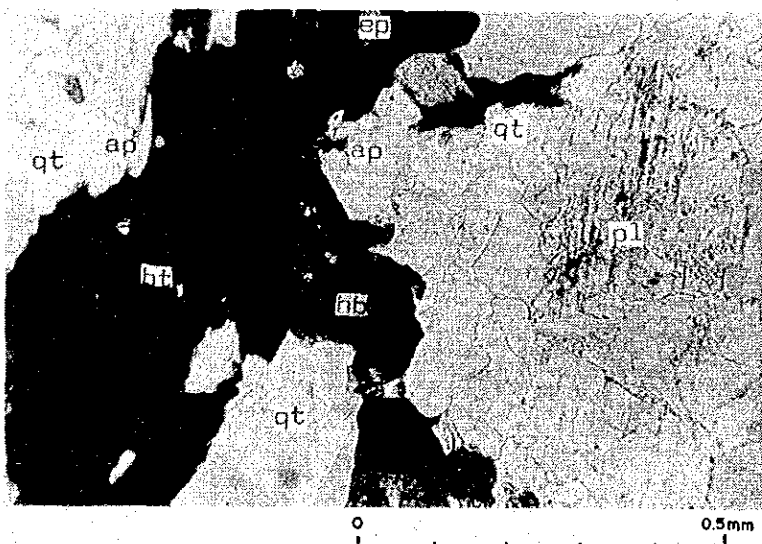
Open nicol



Sample No.: RE-3
 Locality : S.Kacang
 Rock name : Gneissose
 hornblende-
 biotite
 tonalite

qt : quartz
 pl : plagioclase
 hb : hornblende
 bt : biotite
 ep : epidote

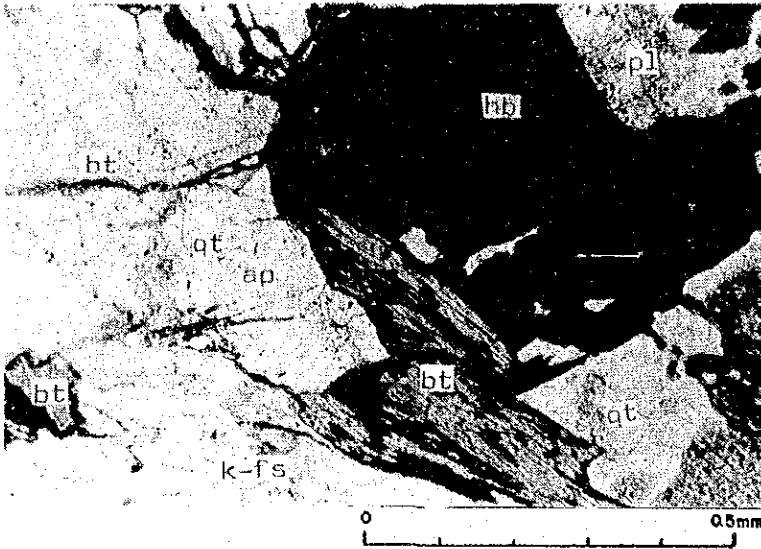
Open nicol



Sample No.: RH-16
 Locality : S.Miri
 Rock name : Gneissose
 hornblende-
 biotite
 tonalite

qt : quartz
 pl : plagioclase
 ep : epidote
 ap : apatite
 bt : biotite

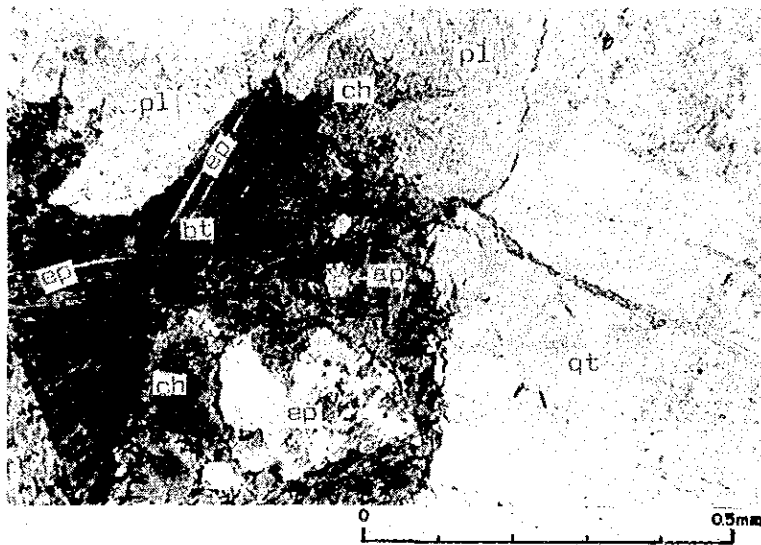
Open nicol



Sample No.: RE-28
 Locality : S. Kurik
 Rock name : Massive
 hornblende-
 biotite
 granodiorite

qt : quartz
 pl : plagioclase
 hb : hornblende
 bt : biotite
 K-fs : potash-feldspar

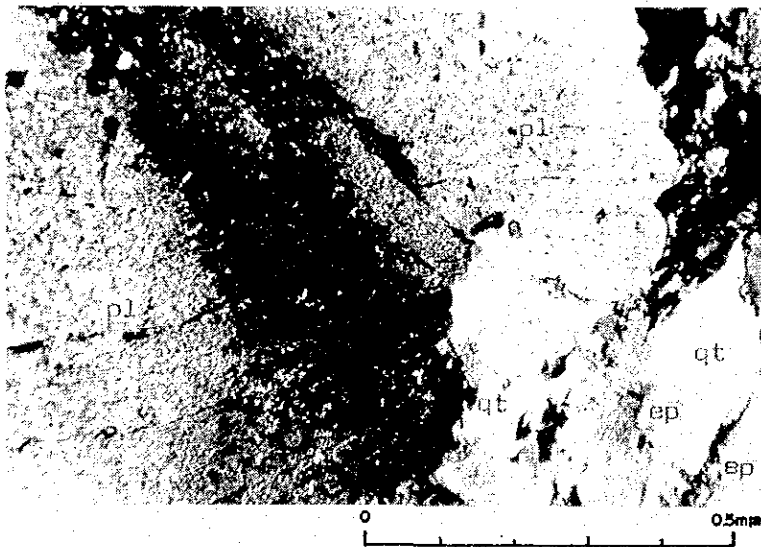
Open nicol



Sample No.: RF 48
 Locality : S. Sonang
 Rock name : Massive
 hornblende-
 biotite
 granodiorite

qt : quartz
 pl : plagioclase
 ep : epidote
 ap : apatite
 ch : chlorite

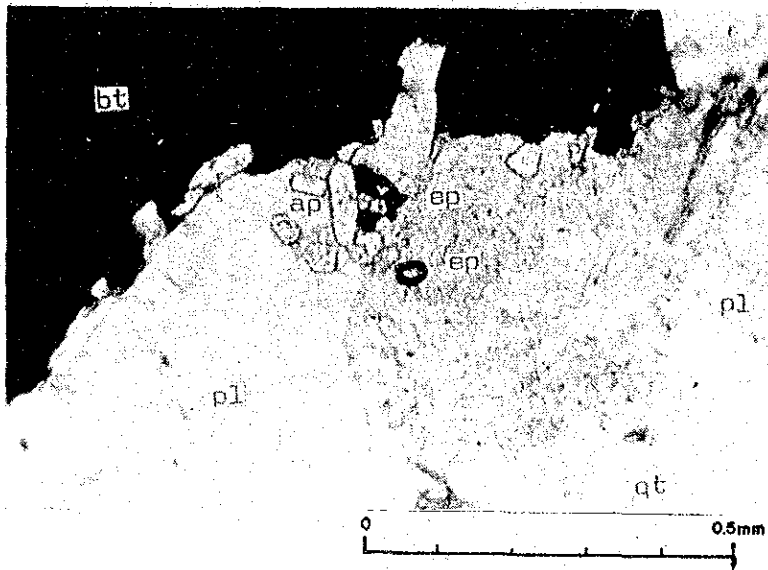
Open nicol



Sample No.: RF 58
 Locality : S. Kumbang
 Rock name : Massive
 hornblende-
 biotite
 granodiorite

qt : quartz
 pl : plagioclase
 ep : epidote

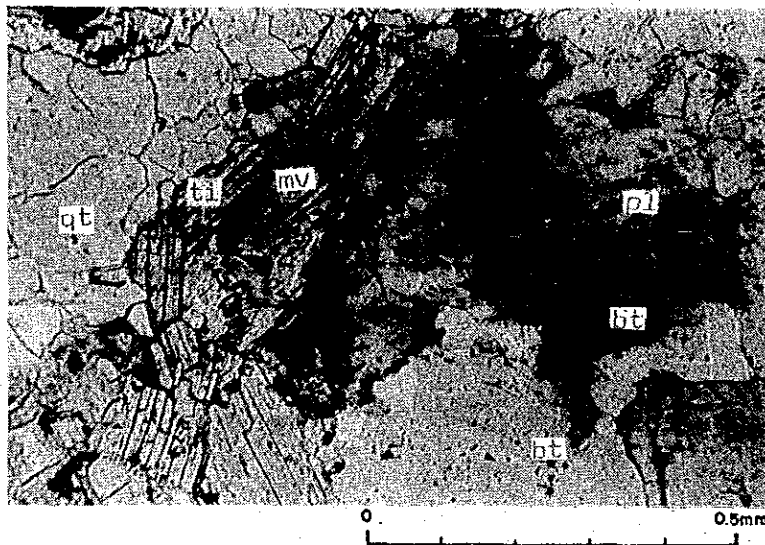
Crossed nicols



Sample No.: RH43B
 Locality : S.Marikoi
 Rock name : Massive
 hornblende-
 biotite
 granodiorite

qt : quartz
 pl : plagioclase
 ep : epidote
 ap : apatite
 bt : biotite

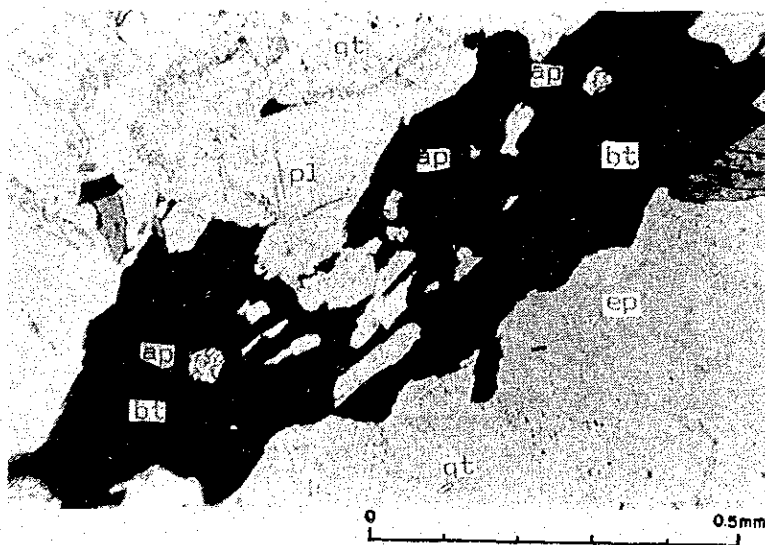
Open nicol



Sample No.: RE-8
 Locality : S.Tekaoi
 Rock name : Leucocratic
 two mica
 granodiorite

qt : quartz
 pl : plagioclase
 bt : biotite
 mv : muscovite
 ti : sphene

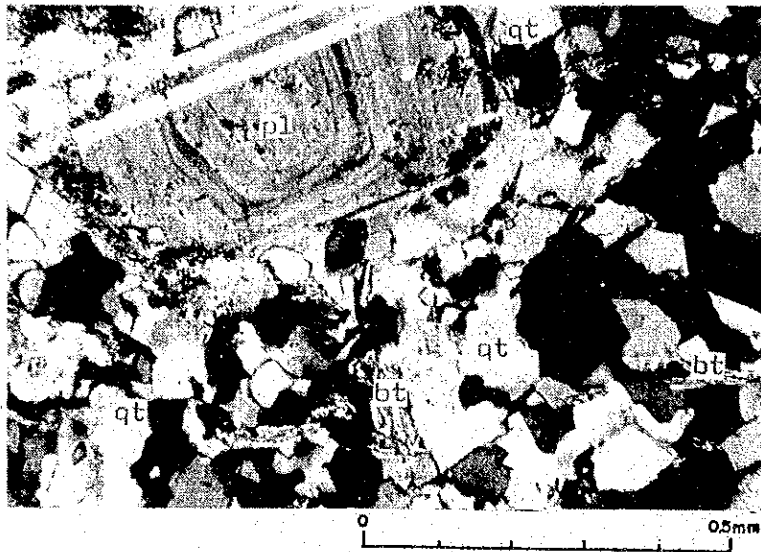
Open nicol



Sample No.: RH-6
 Locality : S.Miri
 Rock name : Massive,
 leucocratic
 biotite
 granodiorite

qt : quartz
 pl : plagioclase
 ap : apatite
 bt : biotite
 ep : epidote

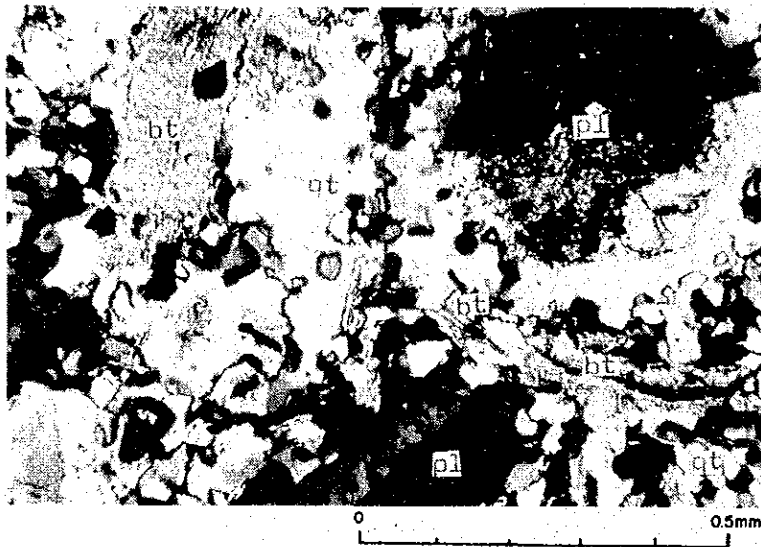
Open nicol



Sample No.: RC-8
 Locality : S.Miri
 Rock name : Hornblende-
 biotite
 dacite

qt : quartz
 pl : plagioclase
 bt : biotite

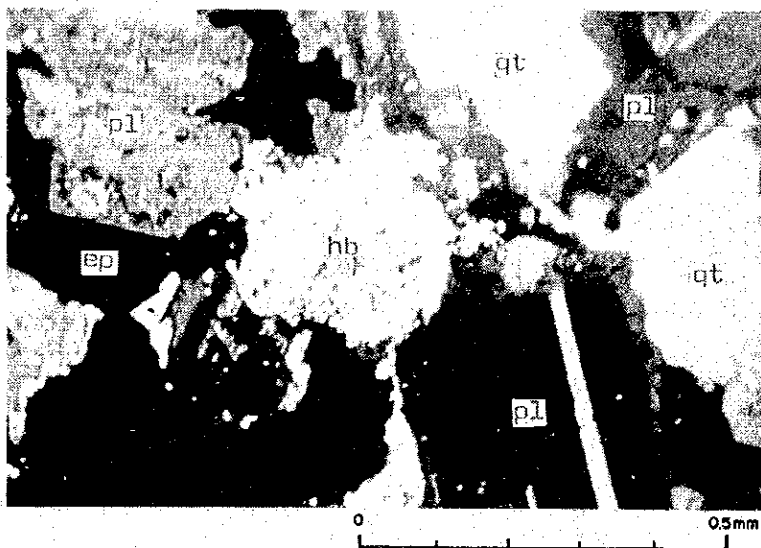
Crossed nicols



Sample No.: RC-20
 Locality : S.Pejangoi
 Rock name : Biotite
 dacite

qt : quartz
 pl : plagioclase
 bt : biotite

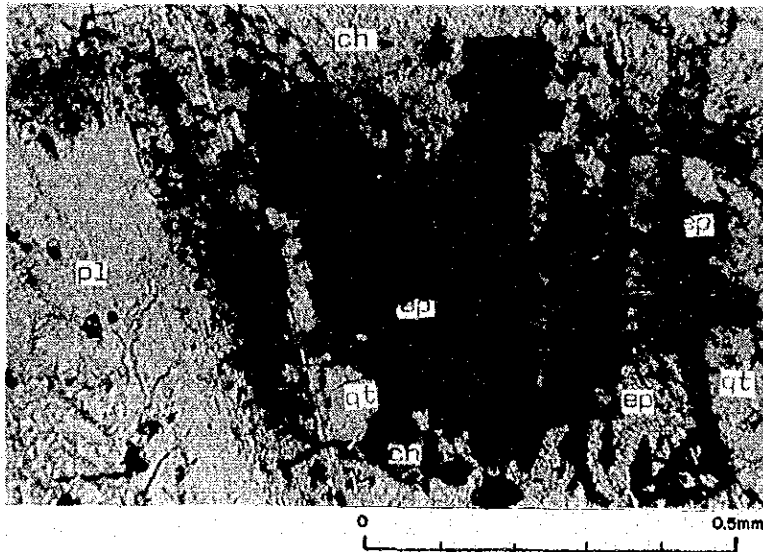
Open nicol



Sample No.: RB-49
 Locality : S.Raea
 Rock name : Biotite-
 hornblende
 quartz
 diorite

qt : quartz
 pl : plagioclase
 hb : hornblende
 ep : epidote

Open nicol



Sample No.: RC-46
 Locality : S.Masuki
 Rock name : Biotite-
 hornblende
 diorite-
 porphyrite

qt : quartz
 pl : plagioclase
 ep : epidote
 ch : chlorite

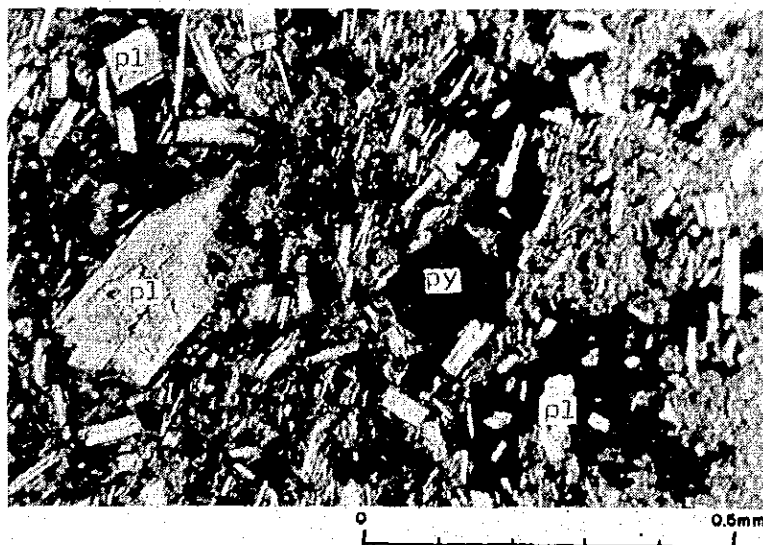
Open nicol



Sample No.: RA-78
 Locality : S.Horongonoi
 Rock name : Hornblende
 diorite-
 porphyrite

qt : quartz
 pl : plagioclase
 hb : hornblende
 ch : chlorite
 oq : opaque mineral

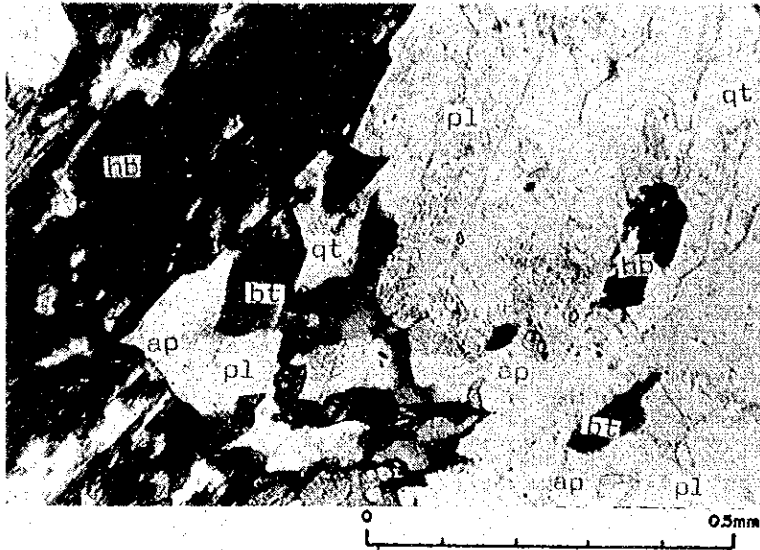
Open nicol



Sample No.: RA-51
 Locality : S.Miri
 Rock name : Hornblende
 porphyry ~
 Andesite
 porphyry

pl : plagioclase
 py : pyrite

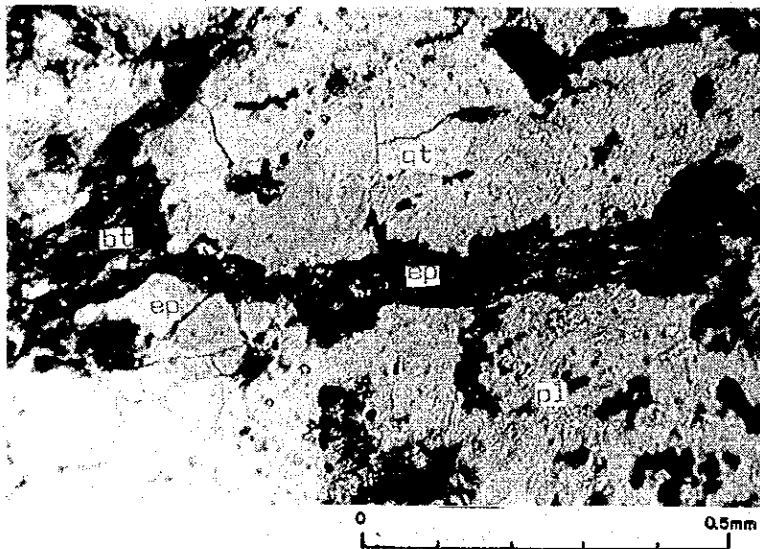
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Sample No.: RH-43A
 Locality : S.Kahayan
 Rock name : Hornblende-
 biotite-
 quartz
 diorite

qt : quartz
 pl : plagioclase
 hb : hornblende
 ap : apatite

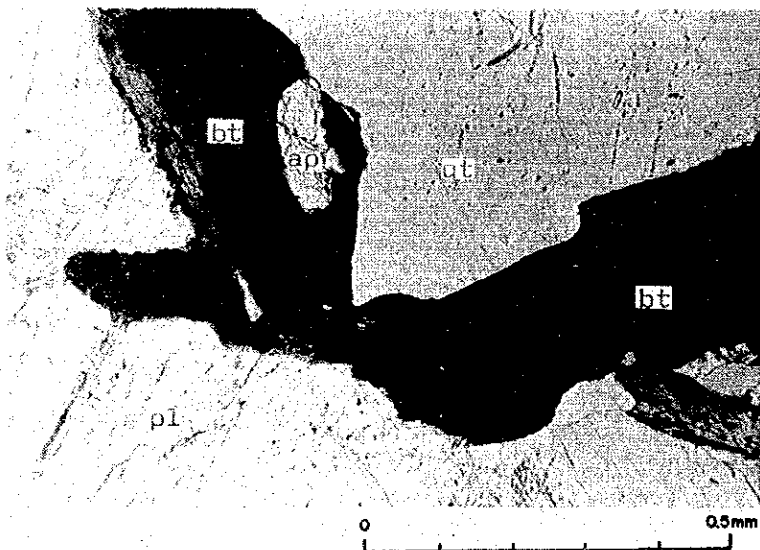
Open nicol



Sample No.: RH-63A
 Locality : S.Kanaron
 Rock name : Hornblende-
 biotite-
 quartz
 diorite

qt : quartz
 pl : plagioclase
 ep : epidote
 bt : biotite

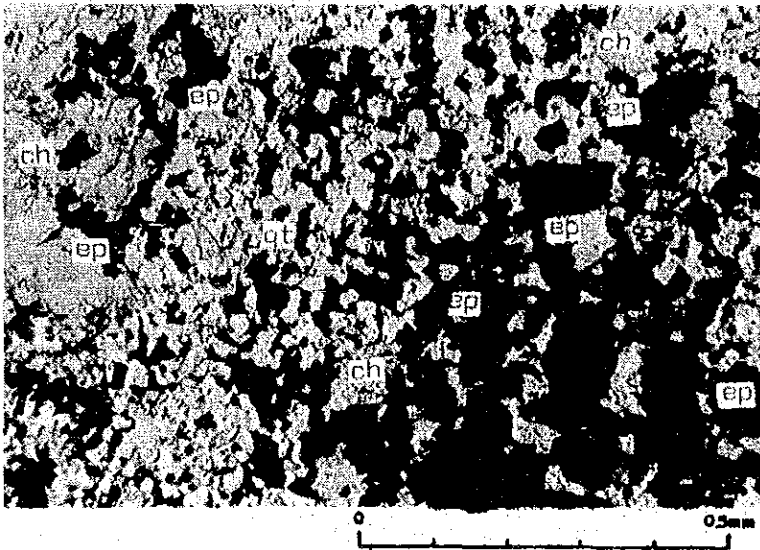
Open nicol



Sample No.: RH-77
 Locality : S.Marikoi
 Rock name : Biotite-
 quartz
 diorite

qt : quartz
 bt : biotite
 ap : apatite

Open nicol



Sample No.: RC-86
 Locality : S.Morandoi
 Rock name : Biotite-
 quartz
 diorite

qt : quartz
 ep : epidote
 ch : chlorite

Open nicol



Sample No.: RG-21
 Locality : S.Asa
 Rock name : Hornblende-
 augite
 andesite

pl : plagioclase

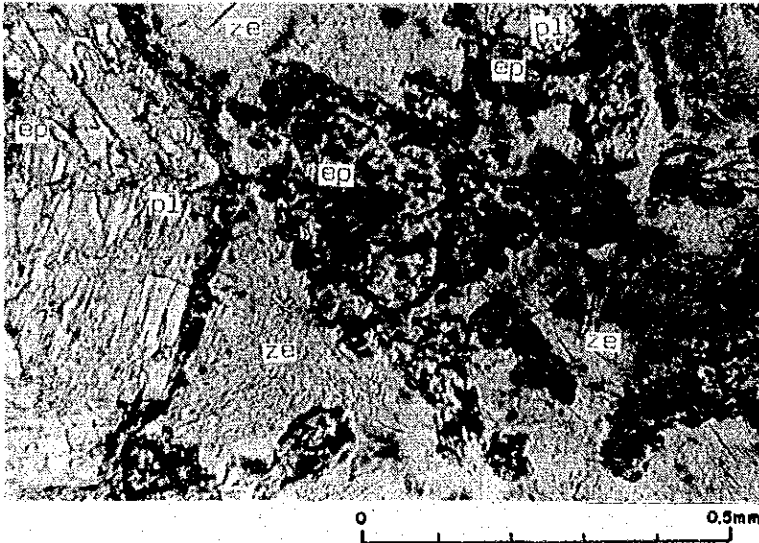
Open nicol



Sample No.: RG-27
 Locality : S.Habaon
 Rock name : Olivine-
 augite
 basalt

pl : plagioclase
 au : augite

Open nicol



Sample No.: RG-28
 Locality : S.Habaon
 Rock name : Altered
 hornblende-
 augite
 porphyrite ~
 andesite-
 porphyry

pl : plagioclase
 ep : epidote
 ze : zeolite

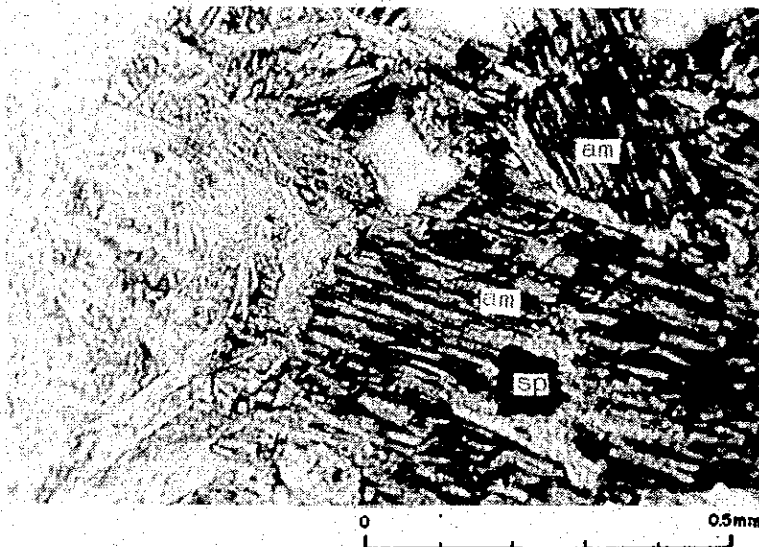
Open nicol



Sample No.: RB-37
 Locality : S.Merangai
 Rock name : Hypersthene-
 bearing
 hornblende-
 biotite
 dacite

pl : plagioclase

Open nicol



Sample No.: RE-12
 Locality : S.Kitan
 Rock name : Amphibole
 skarn

am : amphibole
 sp : spinel

Crossed nicols

Appendix 5 Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RH-17	I-5	S.Siruk besar	Siruk besar	Chalcopyrite-bearing pyrite ore	Abundant pyrite with chalcopyrite disseminating in pale greenish grey-colored phyllite.	Pyrite, chalcopyrite and chalcocite. Pyrite of 0.02 - 2 mm showing euhedral shape and yielding abundantly. Chalcopyrite forming networks between grains of pyrite or gangue mineral, and dots in pyrite. Chalcocite replacing a part of chalcopyrite and forming rims of 0.01 mm wide around pyrite.	Assay Au < 0.1g/t Ag < 1 g/t Cu 0.006%
RF-2	F-6	S.Piton kecil	Piton kecil	Disseminated pyrite ore	A little pyrite - dissemination in chlorite-quartz schist	Pyrite and chalcopyrite. Euhedral or subhedral pyrite of 0.2 mm disseminating in country rock. Anhedral chalcopyrite of 0.002 - 0.15 mm yielding independently or in gangue.	
RC-15	G-10	S.Pejan-goi	Pejangoi	Disseminated pyrrhotite-pyrite ore	About 3% in volume of pyrrhotite and pyrite dissemination in biotite hornfels. Quartz veinlet of segregation cutting them.	Pyrrhotite and pyrite. Anhedral pyrrhotite of 0.01 - 1 mm showing polysynthetic twin, and including abundant pyrite. Some of pyrrhotite showing feature of replacement for biotite.	

Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RE-12	G-5	S.Kitan	Kitan	Disseminated pyrrhotite ore in amphibole skarn	Pyrrhotite disseminating in amphibole skarn of holocrystal-line. Specimen being contaminated by secondary limonite.	Pyrrhotite, magnetite and chalcopyrite. Anhedral pyrrhotite of < 1 mm showing twin. Subhedral or anhedral magnetite yielding in gangue mineral or as rim around grain of pyrrhotite. Chalcopyrite being rarely recognized in crack of gangue mineral.	
RD-27	G-7	S.Napoi	Mineralization in Napoi Tonalite	Disseminated chalcopyrite ore	Chalcopyrite disseminating in coarse-grained, massive tonalite.	Chalcopyrite, magnetite and ilmenite. Anhedral chalcopyrite of < 0.3 mm yielding in crack of rock-forming mineral. Subhedral magnetite of 0.01 - 0.8 mm with ilmenite showing exsolution texture and yielding in rock-forming mineral.	
RA-27	H-12	S.Lintong	Lintong	Disseminated pyrite ore in Raea Diorite	Pyrite disseminating universally in coarse-grained diorite.	Pyrite, iron oxide mineral and magnetite. Anhedral pyrite of 0.01 - 1.8 mm disseminating between grains of rock-forming mineral. Iron oxide mineral yielding as replacement for rock-forming mineral. Euhedral or subhedral magnetite forming accessory mineral of country rock.	

Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RA-34	G-12	S.Miri	Kapangoi	Disseminated pyrite ore in Raea Diorite	Pyrite disseminating in coarse-grained, chloritized and weathered diorite. Veinlet of pyrite-quartz of 0.3 mm wide cutting them.	Pyrite, chalcopyrite, iron oxide mineral and magnetite. Anhedra pyrite of 0.01 - 2 mm filling irregularly between grains of rock-forming mineral. A little chalcopyrite of <0.03 mm being found accompanying with pyrite or in rock-forming mineral. Iron hydroxide mineral yielding in mafic mineral. Subhedra magnetite being included in pyrite.	
RB-46	G-11	S.Raea	Raea	Disseminated pyrite ore in Raea Diorite	Pyrite disseminating in medium-grained diorite, and pyrite-hematite veinlet cutting them.	Pyrite, chalcopyrite and hematite. Subhedra or anhedra pyrite of 0.01 - 0.3 mm yielding between grains of rock-forming mineral. Chalcopyrite of 0.03 - 0.06 mm being found as inclusion in pyrite or independently in rock-forming mineral. Anhedra and very irregular shaped hematite being recognized.	

Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RB-59	H-12	S. Miri	Pari	Disseminated chalcopyrite ore with limonite in chloritized diorite	A little chalcopyrite disseminating with some limonite in coarse-grained, chloritized diorite.	Chalcopyrite, limonite and magnetite. Anhedral chalcopyrite of < 0.8 mm disseminating in and between grains of rock-forming mineral. Euhedral or subhedral hematite of < 1 mm being yielded as replacement for magnetite. Magnetite remaining as remnant of hematite.	
RC-83B	J-8	S. Morandoi	Morandoi	Brecciated and disseminated pyrite ore in phyllite.	Pyrite disseminating in very fine-grained quartz, matrix filled phyllite breccia of 2 - 5 mm.	Pyrite and iron hydroxide mineral. Euhedral or subhedral pyrite of 0.001 - 0.1 mm disseminating in quartz-matrix and phyllite breccia. Hematite with iron hydroxide mineral yielding between breccias and as replacement for pyrite.	
RC-84	J-8	S. Morandoi	Morandoi	Disseminated pyrite ore in phyllite.	Euhedral pyrite of 1.5 mm weakly disseminating in phyllite.	Pyrite, chalcopyrite and pyrrhotite. Rounded or sub-angular grain of pyrite of 0.01 - 0.1 mm being found accompanying with sedimentary clastics. Chalcopyrite of 0.01 mm with very rare pyrrhotite being found dissemination in clastics.	

Microscopic Observation of Polished Section

Sample No.	Location		Name of Mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RD-58	J-7	S. Anoi	Anoi	Chalcopyrite-pyrite-galena-sphalerite-quartz vein in phyllite.	Chalcopyrite-pyrite-galena-sphalerite-quartz vein in phyllite. Malachite, covellite and limonite being yielded as secondary mineral.	Pyrite, chalcopyrite, galena and sphalerite. Euhedral pyrite of 0.01 - 0.5 mm disseminating in phyllite and in gangue mineral. Chalcopyrite being yielded as dot in pyrite and shalerite, and as veinlet cutting pyrite. Some of chalcopyrite forming a paragenesis with galena and sphalerite.	Assay Au 0.1g/t Ag 124 g/t Cu 3.97 %
RF-5	F-6	S. Piton	Piton	Gold and silver bearing galena-sphalerite-pyrite vein in tonalite.	Vein-type ore showing following zoning from wall rock side; Galena-sphalerite-quartz zone of 30 mm wide, Pyrite-quartz zone of 10 mm wide containing breccia of country rock, Sphalerite zone of 1 mm wide, and very fine-grained galena zone of 15 mm wide.	Galena, sphalerite, pyrite and chalcopyrite. In pyrite-quartz zone, euhedral or subhedral pyrite of <6 mm being scattered in gangue mineral, accompanied with veinlet of pyrite-quartz. Chalcopyrite filling between pyrite and gangue mineral. In sphalerite zone, sphalerite showing clear boundary on pyrite-quartz zone. Subhedral pyrite of 0.01 - 0.1 mm being found in quarts, and sphalerite and galena filling between pyrite and gangue mineral.	Assay Au 8.8 g/t Ag 526 g/t Cu 0.75 % Pb 33.18 % Zn 13.00%

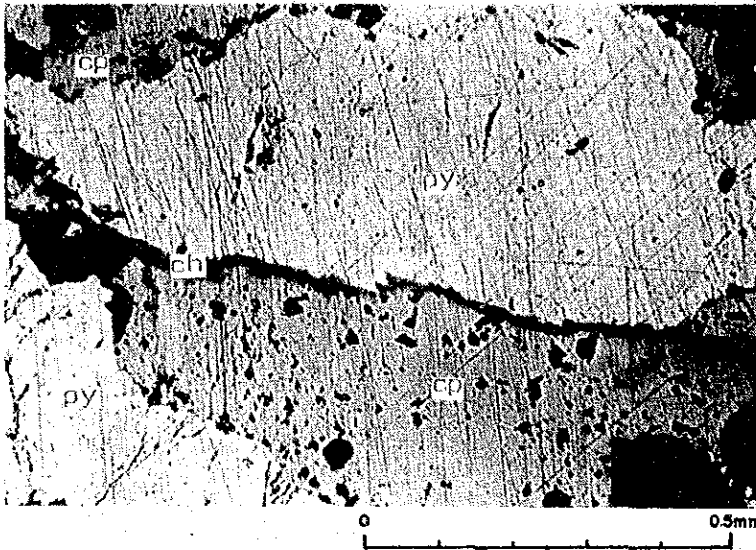
Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RF-5 (Cont'd)						In very fine-grained galena zone, galena, sphalerite, pyrite and chalcopyrite forming a paragenesis. Sphalerite being included in galena by irregular shape, and pyrite being also included in galena as breccia. Chalcopyrite being found as dot in galena. Some of grey-colored unknown mineral (Ag-mineral?) of <0.01 mm being rarely recognized.	
RF-26	F-5	S. Piton	Middle Sonang	Pyrite-quartz ore	Pyrite-quartz ore. Quartz showing milky color and contained fragment of mica.	Pyrite and chalcopyrite. Euhedral or subhedral pyrite of <1 mm being yielded in gangue mineral, and some of colloform pyrite being found in hole or along fissure of ore mineral. Anhedra chalcopyrite being found filling crack.	Assay Au <0.1 g/t Ag <1 g/t Cu 0.246 %
RF-35	E-7	S. Sonang	Upper Sonang	Disseminated pyrite ore in siliceous rock	Pyrite disseminating in greenish grey-colored, siliceous rock universally. Pyrite veinlet cutting them.	Pyrite. Euhedral pyrite of 0.01 - 0.5 mm being distributed in country rock, and pyrite of 0.5 mm with quartz forming veinlet and cutting them.	

Microscopic Observation of Polished Section

Sample No.	Location		Name of mineralized zone	Name of ore	Megascopic feature	Microscopic feature	Remarks
	Grid of map	River					
RE-38	E-7	S. Sonang	Upper Sonang	Disseminated pyrite-chalcopyrite ore in siliceous shale.	Plenty of pyrite disseminating in grey-colored, siliceous shale. Chalcopyrite being found as dissemination and veinlet of 2 mm wide.	Pyrite and chalcopyrite. Clear euhedral pyrite of 0.005 - 0.5 mm disseminating in siliceous shale, and being cut by goethite veinlet of 0.05 mm wide. Chalcopyrite disseminating in country rock and forming veinlet.	Assay Au < 0.1 g/t Ag 1 g/t Cu 0.068 %

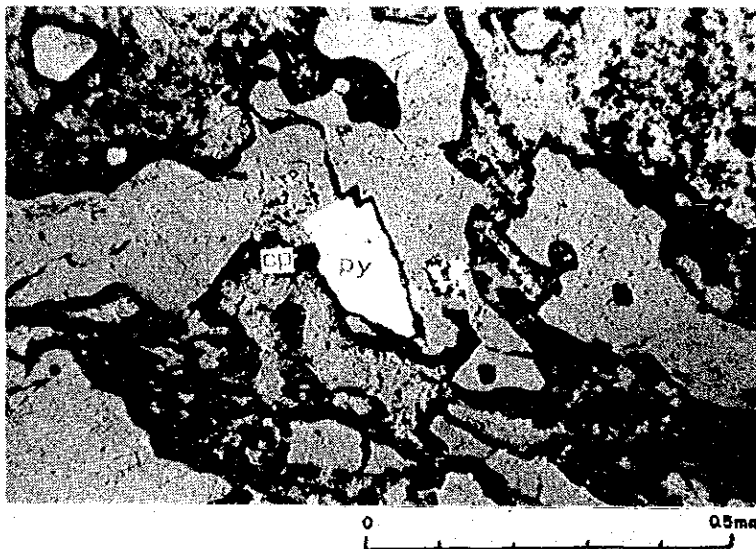
Appendix 6 Microphotographs of Polished Sections



Sample No. : RH-17
Locality : S.Siruk
besar
Name of ore : Chalcopyrite-
bearing
pyrite

cp : chalcopyrite
py : pyrite
ch : chalcocite

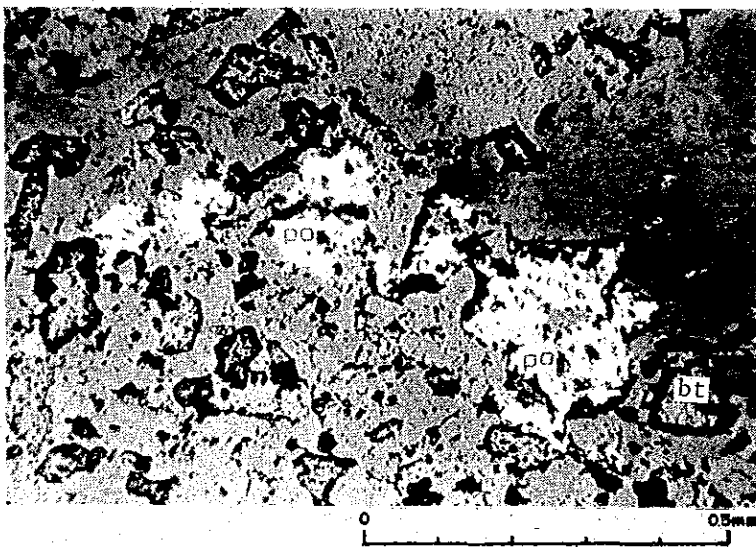
Open nicol



Sample No. : RF-2
Locality : S.Piton
kecil
Name of ore : Disseminat-
ed pyrite

cp : chalcopyrite
py : pyrite

Open nicol



Sample No. : RC-15
Locality : S.Pejangoi
Name of ore : Disseminated
pyrrhotite-
pyrite

po : pyrrhotite
bt : biotite

Open nicol