
Volume 127/128B
Table 2

Chapter 87

Proceedings of the Ocean Drilling Program, Scientific Results, Volume 127/128, Chapter 87.

Table 2. Numbering of samples and main petrographic and mineralogical features.

Sample no.	Core-section interval (cm)	Volc. phase (1)	Glass %	Lith. type (2)	Thick. (cm)	Chem. nom. (3)	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
799A												
9.1	2H-1, 7-9	V 1	60	H	0.5	RH	99.3/0.3-7.9/92.1	43.4/1.4	41.5/43.2 (0.3)			
9.3	2H-1, 102-104		60	H	0.5	RH		36.8/1.2	56.7/3.7 (0.4)	64.7 (1.0)		
9.4	2H-1, 112-114		60	H	1.5	RH		46.3-38.8/1.8-3.0				Ep
9.5	2H-2, 44-47		95	TT	18.0	RH		71.9-19.1/0.9-4.7				
9.6	2H-2, 60-62		92	TT	15.0	RH		48.5/1.2				
9.7	2H-2, 115-117		90	TT	6.0	RH	99.8/0.2	42.3/1.5	47.3/1.4 (0.7)			
9.9	2H-3, 50-53		75	H	0.5	RDP	96.2-74.2/3.1-52.8	47.4/3.7	9.5/45.2 (0.7)			
9.10	2H-4, 105-107		30	H	0.5	PH-RDP	97.2-4.9/0.2-95.1	54.8/2.9	44.9/45.4 (0.4)	32.7 (0.2)		
9.11	2H-5, 4-7		40	H	0.3	PH-RHP	68.4-4.9/25.1-95.1					
9.13	3H-1, 45-47		95	TT	6.0	RH		55.9-44.9/0.6-1.4				
9.14	3H-2, 112-114		75	H	1.0	PH	53.8/39.8					
9.17	3H-3, 134-135		70	TT	10.0	LA	62.6-60.7/37.4-37.9		2.0-1.6/4.2-30.2 (6.6)			
9.20	3H-4, 30-31		20	H	0.2	LA	95.5-13.8/1.3-86.1	50.3-18.9/0.8-3.6		27.8-54.0 (0.7-0.1)	43.1-49.2 (1.5-3.2)	
9.27	3H-5, 96-98		90	H	0.4	PH	42.3-8.6/57.6-91.4					
9.35	4H-3, 51-53		60	H	0.3	PH	64.8-52.5/26.8-43.0	44.6-15.1/2.1-10.6	17.8/44.8 (2.1)			
9.45	4H-6, 56-58		80	G	11.0	TR	90.5-3.0/2.5-97.0					
9.45	4H-6, 62-64		80	G	11.0	TR	97.5-51.2/0.9-42.5					
9.46	4H-6, 69-71		85	G	8.0	TQ	98.8/0.7					
9.47	4H-6, 126-128		80	H	0.4	PH	84.4-45.2/13.4-54.2					
9.54	5H-2, 32-34		80	H	2.0	PH						
9.58	5H-5, 29-30		85	H	0.5	TR	96.4-50.4/0.6-44.6	55.9-35.5/3.4-1.2				
9.60	5H-6, 149-150		85	H	0.8	TR	49.5/49.0					
9.61	5H-7, 44-45		30	H	0.3	PH		23.9/13.8				
9.62	5H-7, 64-65		30	H	0.2	TR		29.4-18.8/0.5-16.9				
9.68	6H-6, 27-29		85	T	2.5	RD		81.4-33.2/0.3-5.1				
9.73	7H-2, 78-80		60	G	1.6	TQ-RDK	60.8-14.8/38.0-85.2			30.0 (3.0)		Ep
9.74	7H-2, 86-88		60	H	0.8	TQ-RH	7.9/92.1	53.4-39.4/0.6-1.0				
9.75	7H-2, 90-93		65	H	0.3	TQ-RH	13.3/86.7			37.1 (1.0)		
9.77	7H-3, 82-84	V 2	60	H	0.2	TQ-RH	64.6-3.5/35.1-96.5	16.1-14.9/20.8-21.5				
9.78	7H-3, 140-141		65	G	1.0	TQ	50.4/45.7	29.7/9.2				
9.79	7H-3, 144-145		50	H	0.3	TR-RH	98.6/0.2					
9.80	7H-5, 135-136		35	H	0.3	RH	53.2/43.7			46.6 (1.0)	54.9 (6.6)	Ep
9.81	7H-6, 2-4		85	H	1.5	TQ	59.2-46.8/38.4-49.2	35.0-20.5/9.1-17.5				
9.82	7H-6, 27-28		30	H	0.3	RH		44.6-26.6/0.9-1.1				
9.83	7H-6, 74-76		85	G	1.0	TR-TQ	58.7/40.2	55.9-16.8/2.7-9.9			Bi	
9.84	7H-6, 58-87		80	H	0.2	TQ	51.7/41.5	11.8/0.9				
9.88	8H-4, 112-114		80	G	1.0	TP-RD-RH	53.0/44.6	60.3-53.1/0.3-0.9				
9.89	8H-5, 49-50		85	G	4.0	RH	25.4/73.6	71.1-51.6/0.6-1.0		33.2-35.4 (1.3-1.7)	Bi	Ep
9.90	8H-5, 57-59		90	G	11.0	TQ-RH	96.1/0.1	77.8-73.8/0.1-0.5				
9.90	8H-5, 63-65		90	G	11.0	TQ-RH	19.7/72.5	70.2-38.4/0.7-1.8				
9.92	8H-6, 125-127		70	H	0.4	TR	58.9-38.8/38.9/56.1		38.6/45.1		46.9 (6.8)	

Table 2 (continued).

Sample no.	Core-section interval (cm)	Volc. phase	Glass %	Lith. type	Thick. (cm)	Chem. nom.	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
		(1)		(2)		(3)						
9.96	9H-2, 75-77		85	G	1.2	TQ	43.8-42.0/52.4-55.6					
9.97	9H-2, 83-85		85	G	1.3	TQ	54.9/43.5	34.9/8.2				
9.102	9H-2, 115-116		85	H	0.4	TQ	56.8/40.5					
9.106	9H-4, 121-123		30	G	1.0	TQ-RH		60.8/0.8		Am	Bi	
9.113	9H-5, 83-84		90	H	0.4	RH	4.3/95.7	43.7/1.2				
9.119	10H-3, 134-135		40	H	0.2	TQ	4.4/95.8	35.8-27.7/7.3-8.3				
9.127	10H-6, 87-69		90	H	3.5	RDK	55.5/40.0					
9.128	10H-6, 89-91		90	H	1.0	DCK	54.9/42.3					
9.132	10H-cc, 14-16		95	H	2.0	DCK-RDK	64.4/32.0	27.2-22.1/0.7-2.9				
9.136	11H-2, 84-89		90	H	0.8	RDK	54.7/43.3					
9.142	11H-3, 147-149		85	H	0.8	RHK	98.5-4.5/1.5-95.5	10.6/0.8				
9.149	11H-5, 131-133		95	G	5.5	RHK	59.4/39.5	10.5/5.3				
9.153	11H-6, 71-72		75	H	0.8	TR	55.6-51.6/39.1-46.3	57.1-11.7/6.6-20.9				
9.157	12H-3, 54-55		95	H	0.6	RH	95.8/3.5	54.5/1.8				
9.162	12H-5, 48-49		95	H	0.2	RH		58.1-41.4/0.8-2.2				
9.163	12H-7, 14-16		95	H	1.0	RHK		19.6/4.5				
9.164	13H-3, 10-12		95	H	4.0	RH		71.3/0.6				
9.166	14H-2, 91-93	V 3	90	T	18.0	RHK	5.2/94.8					
9.166	14H-2, 98-100		90	T	18.0	RHK		54.7-29.2/1.6-3.7				
9.168	14H-cc, 7-9		75	G	1.5	TP	68.9/27.2	68.5-26.4/0.6-3.0				
9.169	16H-6, 0-1	V 4	95	H	0.3	RH						
9.171	17H-1, 88-90		90	H	1.0	RHK		15.4/8.0				
9.173	18H-2, 75-77		60	H	0.5	TR		48.2-45.0/6.2-8.3				
9.175	19H-5, 50-52		85	H	1.0	RH		44.8/1.8				
9.178	20H-1, 16-18		85	H	0.8	RHK						
9.179	20H-4, 84-86		90	H	1.5	RH						Ba-anomaly
9.180	22X-4, 79-81		90	H	1.5	RH		57.6-42.4/0.2-0.4				
9.181	24X-5, 48-50		95	H	0.3	RH		29.6-13.5/0.5-2.2				
9.182	32X-6, 102-104	V 5	80	G	5.5	RH						Ep, Ba-an.
9.183	35X-3, 38-40		85	H	0.5	RD		64.7/1.7				
9.184	35X-3, 84-86		90	H	0.5	RD	54.5-53.4/38.4-41.2					
9.185	35X-6, 37-39		90	H	0.5	RH	57.5-56.8/34.9-36.7					
9.187	38X-6, 77-79		95	G	5.5	RH	52.4/47.1					Ba-anomaly
9.187	38X-6, 81-83		80	G	5.5	RH		63.8-25.0/0.6-4.5				
9.187	42X-cc, 33-34		85	pod		RH		26.2/6.1				
9.188	44X-1, 99-101	V 6	90	H	1.5	RH	62.9/35.1					
9.188	46X-23, 30-31		5				87.5/9.8	53.1-30.6/0.5-1.9				
9.189	47X-2, 132-133		90	H	0.3	RH	47.8/49.3					
9.FP9	47X-4, 88-89			FP		RH						
9.190	47X-4, 136-137		90	H	0.3	RH						
9.192	50X-1, 114-115		85	H	0.3	DC	58.5/33.4					
9.193	50X-2, 22-24		50	H	0.5			82.1/0.2				
9.195	51X-1, 108-110		50	TT	13.0		59.7/36.2					
9.196	51X-1, 122-125		40	H	0.6		14.5/85.5	67.0/0.4				
799B												
9.199	14R-2, 32-34	V 7	alt	H	0.8		97.8-50.0/1.0-50.0					Ba-anomaly
9.200	15R-2, 81-83		alt	H	0.1		73.6-43.7/21.5-55.9					Authigenic F
9.202	15R-4, 95-96		alt	H	0.1		71.8-39.7/28.2-58.8					Authigenic F
9.203	18R-4, 19-21		alt	H	2.0		70.1-4.4/29.9-95.6					Auth. F, Ba-an.
9.209	27R-5, 47-51		alt	G	2.0	RH	59.4-3.6/40.4-96.4					Ba-an., hamotome

Table 2 (continued).

Sample no.	Core-section, interval (cm)	Volc. phase	Glass %	Lith. type	Thick. (cm)	Chem. nom.	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
		(1)		(2)		(3)						
9.215	41R-1, 32-34	V 8	alt	H	2.0		6.1/93.9					
9.217	46R-3, 148-150		alt	tuff	20.0		94.0/5.2					
9.224	53R-2, 74-77	V 9	alt	tuff	2700.0	RH	73.3-3.7/7.2-96.3					Ba-anomaly Ba-anomaly zeolites
9.224	59R-2, 26-28		alt	tuff	2700.0	RH	35.0/64.7				41.2 (3.0)	
9.5	61R-2, 49-51			sand			12.6-4.8/87.4-95.2	20.5/1.2				
9.5	61R-3, 33-35			sand			1.6/98.4	14.8/1.6				
9.5	61R-4, 93-95			sand			6.1/93.9					
	797A										B	
7.1	1H-5, 114-116	V 1	85	G	2.0	BA-AN-RD		80.6-28.8/0.6-4.3	69.6-69.1/3.1-1.9 (0.3)	29.7 (2.8)		Calcite
	797B											
7.2	1H-4, 97-99		75	H	1.0	PH	94.6-33.1/4.8-66.8	17.5/3.2	45.5/45.4 (0.5)			
7.3	2H-3, 90-92		75	H	1.0	PH	70.3-41.2/18.4-53.5					
7.4	3H-6, 93-95		80	H	0.6	TR	98.5-52.4/1.2-42.1		16.6/42.8 (0.9)			
7.5	3H-7, 50-52		75	H	0.4	PH	61.7/31.8					
7.6	4H-4, 96-98		80	H	3.0	TP	59.7/37.7	68.9-10.5/1.1-10.7				
7.7	5H-6, 75-77	V 2	80	H	1.5	RH		51.3-41.6/0.6-0.6		37.5 (1.1)		
7.8	6H-5, 90-92		80	H	1.5	RH		67.3-25.4/1.4-4.5			45.2 (3.6)	
7.9	6H-6, 23-25		95	H	2.0	RDP						
7.10	7H-6, 89-91		95	H	2.0	RH		17.8/4.9				
7.11	8H-3, 108-110		90	H	1.5	RH		54.1-35.1/1.3-1.8				
7.12	9H-1, 50-52	V 3	90	H	0.8	RH		20.6/1.8				
7.13	11H-7, 58-60	V 4	95	H	0.8	RH						
7.14	14H-5, 40-42		90	G	5.0	TQ	50.5/48.9	64.6/3.2				
7.15	16H-3, 30-32		90	H	0.5	RH		65.8-54.1/0.8-0.5	67.6/3.4 (0.0)			
7.16	17H-7, 133-135		90	G	5.0	TQ	49.9/48.5	33.2-16.6/8.8-10.2				
7.17	18H-3, 85-87		85	T	12.0	RH	99.6/0.4	14.0/6.1				
7.18	43X-3, 93-96	V 8-9	alt	tuff	4.0	RH						
7.19	49X-4, 92-94		alt	tuff	1.0	RH	77.9-3.8/19.2-96.2					
	798C											
8.1	1H-3, 8-10	V 1	60	H	0.2	RH		57.9-19.4/1.1-14.1		31.1 (1.5)		
8.2	1H-3, 81-83		95	H	5.0	RH		42.8/1.7				
	798A											
8.3	1H-1, 67-69		95	G	1.0	RH		40.0/2.3	44.5/45.0 (0.3)			
8.3*	1H-2, 25-27		50	H	0.2	PH	59.3-45.2/0.9-5.4				57.4 (6.9)	
	798C											
8.6	3H-1, 107-109		50	G	1.0	HW-TR	51.6-33.3/1.8-3.2		42.3/47.2 (0.3)			
	798A											
8.7	2H-cc, 7-9		60	H	0.5	PH	34.9/4.4					
8.8	3H-4, 82-84		90	H	2.5	RD					49.4 (6.8)	

Table 2 (continued).

Sample no.	Core-section interval (cm)	Volc. phase (1)	Glass %	Lith. type (2)	Thick. (cm)	Chem. nom. (3)	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
8.10	4H-2, 58-60		70	H	0.2	DC-RD	67.3/32.5	30.4/8.3				
8.11	4H-2, 84-86		50	H	0.1	RH		54.9-52.8/0.7-0.8		31.7 (1.7)		
8.12	4H-2, 94-96		60	H	0.3	DC		56.0-37.4/0.3-2.3		24.8/30.0 (1.3-1.9)		
8.13	4H-4, 99-101		95	G	6.0	DC-RH		47.2-42.5/1.4-1.6				
8.21	5H-4, 104-106		80	H	0.2	TR	55.0/42.9	11.5/20.9			B	
8.22	5H-5, 33-34		95	G	4.0	RH					B	Ep
8.25	5H-6, 120-122		90	H	0.1	RD-RHP		54.9-27.1/0.7-2.3				
8.30	6H-5, 130-132	V 2	60	H	0.1	RD-RHP		72.7-45.5/0.7-0.8		29.1 (1.5)		
798C												
8.32	7H-3, 25-26		80	G	4.0	RD						
8.32*	7H-3, 27-28		90	H	0.5	PH	94.9-64.9/4.7-34.3	27.9-1.9				
8.37	7H-4, 9-11		90	G	3.5	RH		63.8-39.8/0.5-1.3	65.8/2.4 (0.0)			
8.38	7H-4, 14-16		70	G	5.5	RH		52.5-39.5/0.8-1.3	64.5/3.8 (0.6)	33.3 (0.9)		
8.43	7H-4, 88-90		80	G	3.5	RH						
8.44	7H-4, 91-93		65	G	3.5	RH		36.0/2.1		Am	28.9 (3.7)	
798A												
8.48	7H-3, 62-64		90	G	2.0	PH	66.5-61.0	59.3/3.3				
8.49	7H-4, 44-46		90	H	0.2	PH-TQ						
798C												
8.50	8H-2, 113-118		80	G	4.0	RH		56.4-47.5/1.3-2.7	57.3-51.8/2.8-4.1 (0.1-0.7)	40.9 (1.0)		
798A												
8.51	7H-6, 119-121		90	G	1.0	PH-TP		12.8/1.4				
8.52	7H-7, 22-24		90	H	0.8	PH	55.1/42.7		40.9/37.8 (0.1)			
8.54	7H-8, 38-40		90	H	0.2	TP		32.3/9.6				
8.59	8H-5, 20-24		90	G	4.0	AN-DC-RD	48.0/48.5	41.8/2.8				
8.60	9H-1, 14-16		80	H	0.3	TP	58.3/39.5					
8.69	9H-3, 22-24		80	H	0.4	TP	43.4/55.1	30.3/1.2				
8.72	10H-6, 135-137		80	H	0.3	PH						
8.73	10H-7, 49-52		80	G	2.0	TP		58.3-46.2/1.0-5.1				
8.74	10H-7, 66-68		80	H	0.3	TP		36.4/5.0				
798C												
8.75	11H-5, 39-41		90	T	10.0	RHP						
798A												
8.85	13H-2, 27-30		90	H	0.2	PH-TP	65.6/29.3	40.1/3.5				
8.93	13H-6, 118-120		95	H	1.0	PH						
8.94	13H-6, 141-144		90	H	0.5	TP-TQ	60.5-55.7/36.9/42.1				73.0 (4.8)	
8.96	13H-7, 37-38		90	H	0.6	TQ	99.8/0.2					

Table 2 (continued).

Sample no.	Core-section interval (cm)	Volc. phase (1)	Glass %	Lith. type (2)	Thick. (cm)	Chem. nom. (3)	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
798B												
8.98	15H-3, 10-13		95	G	3.0	RH		53.3/1.8				
798A												
8.99	15H-4, 12-13		95	H	0.2	RHK		22.5/4.4				
8.100	15H-4, 61-63		95	H	0.8	RH		45.7/1.2				
8.101	15H-4, 77-81		95	H	0.5	RH						
798B												
8.102	19X-3, 81-83	V 3	90	H	0.7	RH					33.3 (3.9)	
8.103	19X-4, 71-73		90	G	1.5	RH		57.1/1.1				
8.104	30X-4, 40-42	V 4	95	G	5.0	RH						
8.105	43X-2, 58-60	V 5	80	G	2.0	RH	81.6-42.3/7.8-57.5	27.8-11.1/1.6-7.8			53.0 (3.8)	
8.106	44X-2, 68-71		90	TT	15.0	RH	2.7/97.3					
8.107	45X-5, 95-98		90	TT	15.0	RH	89.6/1.6					
8.108	45X-8, 97-100		90	TT	1.5	RH	50.6/46.9					ilm (48.2)
8.109	46X-4, 18-19		90	TT	11.0	RH	54.3/45.6					
8.110	46X-6, 139-141		90	TT	5.0	RD	53.9/39.7					
8.111	47X-1, 1-3		90	H	1.0	RD	46.4/50.9					
8.112	47X-2, 1-3		90	G	2.5	RD	45.5/53.6					
8.113	49X-4, 119-121		90	G	3.0	RH	48.4/41.6					
8.FP8	51X-1, 140-141			FP		RD		66.8-26.9/0.7-3.7				ilm (44.3)
794A												
4.1	1H-3, 85-87	V 1	95	G	3.0	RD		75.0-33.0/1.0-3.6				
4.2	2H-7, 12-14		95	G	3.0	DC	62.2-60.4/36.6-38.2					
4.3	3H-4, 63-65		95	H	0.4	RH		88.5-47.9/0.0-0.8				
4.4	4H-5, 143-146		95	G	1.5	RH	63.9-61.6/36.0-37.6					ilm (46.45)
4.5	5H-1, 145-148		90	G	2.5	RH		38.8-35.6/1.8-2.5		35.1 (1.5)		
4.6	6H-6, 73-75		85	H	1.0	RH	89.3-2.1/1.3-97.9	33.9-10.1/1.9-2.3				ilm (48.69)
4.7	7H-1, 36-38		90	G	1.5	RH		49.4-10.9/0.7-5.6	44.0-41.1/44.7-45.6 (0.4)	Am		
4.8	8H-6, 92-94		95	H	1.0	RH						
4.9	10H-6, 113-115		95	H	1.0	RHP	23.5/75.5					
4.10	11H-5, 38-39		95	H	0.5	RH		36.1-33.6/2.6-2.8	39.6/44.1 (0.4)			
4.11	11H-5, 41-42		90	G	2.0	RH		87.0-34.6/0.0-2.6		35.0 (0.7)		
4.12	12H-4, 45-48		95	H	1.1	RH		57.2-25.9/1.6-3.4	62.2/3.4 (0.0)			
4.13	13H-2, 127-129		90	H	1.0	RH		21.7-17.4/0.3-3.2				
4.14	13H-4, 139-141		95	H	2.0	RH		80.8-37.6/0.1-1.7				
4.15	14H-1, 117-119		80	G	2.0	TR	60.1-50.4/38.5-47.9					
4.16	17X-6, 53-55		90	H	1.5	RH		84.1-36.4/0.8-2.1				
4.17	19X-5, 47-49		75	G	2.0	RH		68.4-19.3/0.2-2.6	57.9/2.3 (0.0)	67.3 (1.7)		
4.18	20X-1, 146-148		45	T	5.0	RH						
4.19	21X-3, 141-142		85	G	2.5	RHP	99.1-2.5/0.7-97.5					
4.20	25X-2, 33-35		85	G	2.0	RD	57.8/40.8	15.7.2.0				
794B												

Table 2 (continued)

Sample no.	Core-section interval (cm)	Volc. phase (1)	Glass %	Lith. type (2)	Thick. (cm)	Chem. nom. (3)	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
4.21	3R-2, 10-12		90	H	0.3	RH						
4.22	16R-2, 72-74		alt	tuff	5.0		7.5/92.5	36.9-29.5/2.0-3.5				
4.23	20r-3, 129-131		alt	tuff	3.0		68.5/4.2 - 0.1/99.9					
4.24	21r-3, 130-132		alt	tuff	600.0			24.0-14.3/2.9-6.6				
796A												
6.1	1H-1, 125-127	V 1	80		pod	RD						
6.2	1H-2, 47-49		75	G	3.0	SH-BK-LA		87.0-51.0/0.2-4.8				
6.3	2H-6, 29-31		60		pod	DC						
6.4	4H-2, 95-97	V 2	90	H	2.0	RH						
6.5	4H-5, 42-44		85	H	2.5	RH						
796B												
6.6	3R-2, 55-57		80		pod	RH						
796A												
6.7	5H-2, 8-10		85	H	1.0	RD						
6.8	5H-6, 110-112		80		pod	RH						
6.9	5H-7, 139-141		80		pod	RH						
6.10	5H-8, 34-36		90	H	3.0	RHP						
796B												
6.11	4R-2, 123-125		60		pod	DCP-RDP						
796A												
6.12	6H-6, 134-136		60		pod	RH						
796B												
6.13	5R-4, 85-87	V 3	90	G	10.0	RHP						
796A												
6.14	8H-5, 78-80		80		pod	RH						
796B												
6.15	6R-1, 37-39	V 4	90	H	0.4	RH						
796A												
6.16	15X-1, 128-130	V 5	50		pod	RH						
6.17	15X-3, 147-149		50		pod	RH	6.2/93.8					
6.18	21X-1, 83-85		70	G	3.0	RH						
6.19	21X-6, 84-86		60		pod	RH						

Table 2 (continued).

Sample no.	Core-section interval (cm)	Volc. phase (1)	Glass %	Lith. type (2)	Thick. (cm)	Chem. nom. (3)	Alk. feldspar Ab/Or range	Plagioclase An/Or range	Mineralogy Pyroxene En/Wo range, (Na ₂ O%)	Amphibole FM ratio (TiO ₂ %)	Biotite FM ratio (TiO ₂ %)	Others & notes
795A												
5.1	1H-4, 100-102	V 1	90	G	6.0	RD						
5.2	2H-3, 46-48		85	H	2.0	TQ						
5.3	4H-4, 35-37	V 2	90	G	2.5	RH						
5.4	6H-4, 12-14		95	H	2.0	RD						
5.5	6H-7, 46-48		90	G	2.0	RH						
5.6	7H-2, 92-94		85	H	1.5	RH						
5.7	8H-4, 11-13		85	G	2.5	RH						
5.8	8H-5, 98-100		95	H	0.5	RH						
5.9	9H-5, 78-80	V 3	95	H	5.0	RH						
5.10	11H-1, 25-27		95	H	2.0	RH						
5.11	12H-3, 78-79		60	H	0.5	RH						
5.12	13H-4, 40-42	V 4	80	H	1.0	RH						
5.13	15H-5, 105-107		85	H	1.0	RH						
5.14	15Hcc, 6-8		75	H	1.5	RH						

Note: (1) = volcanic phases (see text); chronology: V1, V2, and V3, Quaternary; V4 and V5, Pliocene; V6, late Miocene; V7 and V8, late middle Miocene; V9, middle Miocene. (2) = lithologic types: H, homogeneous; G, graded; T, heterogeneous; TT, turbiditic; FP, floated pumice. (3) = chemical nomenclature (see text). Abbreviations: alt = altered; mineralogy: Ab = albite; Or = orthoclase; An = anorthite; En = enstatite; Wo = wollastonite; FM ratio = (FeO total + MnO)/(FeO total + MnO + MgO); Am = amphibole; Bi = biotite; Ep = epidote; Ilm = ilmenite (TiO₂%); F = alkaline feldspar.

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Table 4

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Table 4. Analyses of trace elements of selected samples (inductively coupled plasma spectrometer).

	8-2	8-8	8-22	8-43	8-48	8-50	8-59	8-75	8-98	8-104
SiO ₂	72.81	63.89	69.97	70.67	56.71	69.09	65.56	72.74	72.50	72.96
TiO ₂	0.12	0.58	0.26	0.17	0.29	0.12	0.34	0.17	0.15	0.01
Al ₂ O ₃	12.76	14.92	13.67	13.08	16.46	14.63	14.26	12.05	12.50	12.42
Fe ₂ O ₃	1.58	4.30	1.67	1.16	5.30	1.22	2.09	1.14	1.01	0.97
MnO	0.03	0.08	0.06	0.05	0.26	0.04	0.06	0.04	0.04	0.03
MgO	0.12	0.60	0.30	0.22	0.32	0.54	0.73	0.17	0.16	0.01
CaO	1.63	2.22	1.28	1.64	1.13	2.97	2.77	1.29	1.20	0.56
Na ₂ O	3.65	3.80	3.79	3.87	7.25	3.84	3.59	3.29	3.55	3.27
K ₂ O	3.18	4.80	4.14	4.12	4.87	2.83	4.05	4.34	3.50	4.76
P ₂ O ₅	0.07	0.17	0.08	0.07	0.02	0.07	0.11	0.05	0.04	0.02
LOI	3.80	4.32	4.56	4.17	7.01	4.44	5.80	4.43	5.08	4.82
TOTAL	99.75	99.68	99.78	99.22	99.62	99.79	99.36	99.71	99.73	99.83
La	22.8	37.2	26.7	30.5	182.0	18.9	32.9	26.5	20.7	20.1
Ce	42.8	72.0	57.4	62.8	311.0	43.9	72.7	49.2	39.1	34.5
Nd	16.9	37.0	26.4	23.3	108.0	17.8	31.2	17.6	12.9	11.0
Sm	3.7	7.8	5.6	4.7	18.7	3.9	6.9	3.0	2.4	2.6
Eu	0.6	1.4	1.0	0.9	0.9	0.9	1.3	0.6	0.5	0.2
Gd	3.2	6.7	5.3	3.9	15.5	3.6	5.6	2.7	2.0	2.7
Dy	3.2	6.0	4.6	3.0	12.9	3.1	4.7	2.2	1.6	2.9
Er	2.0	3.6	3.0	2.0	7.0	2.1	2.9	1.5	1.1	1.7
Yb	2.1	3.4	2.9	2.0	6.1	2.1	2.6	1.7	1.1	1.6
Lu	0.4	0.6	0.5	0.4	1.1	0.4	0.5	0.3	0.2	0.3
Ba	514	785	585	805	130	473	779	817	821	279
Be	0.8	1.6	1.0	1.1	5.8	1.0	1.3	0.8	0.6	2.0
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	7	11	5	9	0	0	0
Q	0	0	0	7	11	5	9	0	0	0
Qu	72	91	41	20	151	33	20	0	11	9
Ga	0	14	12	17	29	19	18	0	0	11
Nb	3.0	15.0	7.0	12.0	183.0	6.0	13.0	10.5	8.0	13.0
Ni	0	0	0	5	5	8	7	0	0	0
Pb	116	164	140	112	205	92	128	128	92	166
Sc	5.5	9.6	5.5	3.1	3.5	4.0	6.8	2.0	2.0	1.5
Sr	107	229	138	196	24	190	262	158	166	36
Th	11.0	19.0	11.0	14.0	26.0	8.0	14.0	11.9	8.0	13.0
V	0	20	11	8	12	7	23	6	5	0
Y	20.3	35.4	28.6	18.6	67.9	19.8	27.6	14.7	9.7	18.3
Zn	65	145	60	43	400	55	69	38	31	42
Zr	103	301	192	137	1040	129	223	184	79	47

Table 4 (continued).

	8-106	9-5	9-45	9-47	9-68	9-83	9-89	9-96	9-127	9-166
SiO ₂	72.31	71.84	60.95	55.50	61.15	58.03	71.25	57.39	62.71	71.18
TiO ₂	0.04	0.17	0.51	0.20	0.56	0.50	0.34	0.41	0.32	0.08
Al ₂ O ₃	12.10	12.32	15.16	17.29	15.36	15.91	11.75	15.48	13.14	12.24
Fe ₂ O ₃	0.96	2.17	5.59	5.87	4.85	6.09	2.62	5.37	5.52	2.13
MnO	0.04	0.04	0.12	0.22	0.05	0.08	0.05	0.11	0.10	0.04
MgO	0.06	0.35	0.48	0.39	1.18	1.38	0.48	0.64	0.32	0.10
CaO	0.50	1.60	1.33	1.41	2.84	1.37	2.20	2.91	2.13	1.25
Na ₂ O	3.11	3.39	5.42	7.33	3.09	3.79	3.44	4.95	4.75	3.60
K ₂ O	4.44	3.37	5.37	5.07	3.00	4.33	2.37	5.12	4.83	4.16
P ₂ O ₅	0.02	0.04	0.13	0.08	0.17	0.13	0.07	0.17	0.01	0.05
LOI	6.28	4.47	4.60	6.25	7.37	7.95	5.14	6.81	5.87	4.88
TOTAL	99.86	99.76	99.66	99.61	99.62	99.56	99.71	99.36	99.70	99.71
La	19.5	25.6	84.2	161.4	28.5	83.9	17.7	93.3	114.1	32.4
Ce	37.1	49.5	159.9	274.0	62.5	158.8	39.6	167.9	203.1	80.0
Nd	11.4	19.9	61.7	83.3	25.5	57.0	18.8	62.8	79.1	26.7
Sm	2.6	4.3	12.6	14.6	5.9	11.2	5.0	12.0	15.9	5.0
Eu	0.2	0.7	0.8	0.6	1.1	0.8	0.9	1.0	0.9	0.9
Gd	2.4	3.9	10.5	12.0	4.8	9.5	4.8	9.8	13.1	4.6
Dy	2.5	3.7	8.9	9.7	3.8	7.9	5.4	8.1	11.1	4.4
Er	1.5	2.3	4.4	5.5	2.4	4.2	3.5	4.4	5.8	2.6
Yb	1.6	2.3	3.6	4.9	2.0	3.6	3.4	3.6	4.9	2.6
Lu	0.3	0.4	0.6	0.8	0.4	0.6	0.6	0.6	0.8	0.4
Ba	154	549	211	335	853	502	1131	517	192	876
Be	2.0	1.1	5.0	5.6	1.2	5.5	0.5	4.1	4.6	1.2
Co	0	0	6	8	0	9	0	10	0	0
Cr	0	9	15	15	31	55	8	18	0	6
Cu	6	56	223	122	107	449	102	406	166	45
Ga	7	21	35	46	22	43	16	33	0	18
Nb	16.0	3.0	98.0	258.0	12.0	94.0	4.0	92.0	24.0	9.0
Ni	0	8	10	13	12	20	6	16	0	7
Rb	161	121	160	235	99	200	49	168	150	96
Sc	1.6	6.5	5.6	3.5	10.3	8.5	8.5	6.7	4.8	4.8
Sr	22	92	26	39	319	88	135	101	30	110
Th	14.0	9.0	20.0	34.0	8.0	20.0	8.0	19.0	13.8	12.0
V	0	13	21	30	64	100	23	35	0	5
Y	16.0	22.8	44.4	52.2	22.6	41.3	34.4	41.8	59.3	26.0
Zn	30	111	301	323	182	703	139	411	194	77
Zr	57	109	849	1146	174	673	163	719	816	122

Table 4 (continued).

	9-168	9-179	9-182	9-187	9-224
SiO ₂	54.92	65.03	66.79	67.74	68.09
TiO ₂	0.91	0.40	0.28	0.26	0.17
Al ₂ O ₃	17.48	11.83	10.61	11.19	12.53
Fe ₂ O ₃	4.69	4.16	3.45	3.22	1.95
MnO	0.17	0.17	0.56	0.10	0.03
MgO	1.02	1.95	1.76	1.62	2.25
CaO	2.63	1.56	1.98	1.06	0.58
Na ₂ O	5.39	1.67	1.75	2.02	1.31
K ₂ O	4.89	2.93	2.08	2.79	1.62
P ₂ O ₅	0.27	0.12	0.10	0.10	0.11
LOI	7.19	9.56	10.10	9.31	9.93
TOTAL	99.56	99.38	99.46	99.41	98.57
La	130.9	25.4	24.2	24.4	48.4
Ce	199.3	61.7	64.0	63.0	92.6
Nd	53.7	23.5	23.0	27.2	41.1
Sm	8.7	5.0	4.6	7.1	9.3
Eu	1.6	1.1	1.1	0.8	0.6
Gd	7.4	4.6	4.5	6.7	8.4
Dy	5.4	3.9	3.8	7.4	8.3
Er	3.2	2.1	2.1	4.1	4.8
Yb	3.2	2.1	2.1	4.4	4.9
Lu	0.6	0.4	0.4	0.7	0.8
Ba	977	2649	2054	2023	520
Be	4.1	1.7	1.6	11.1	23
Co	0	27	29	20	0
Cr	39	53	32	41	11
Cu	78	259	199	608	10
Ga	31	21	16	24	29
Nb	172.0	11.0	12.0	81.0	11.0
Ni	19	85	87	71	5
Rb	210	102	59	199	74
Sc	6.3	9.1	7.3	6.5	8.8
Sr	349	179	219	98	178
Th	31.0	11.0	5.0	36.0	25.4
V	63	178	110	118	15
Y	30.1	20.7	19.8	47.7	49.8
Zn	137	485	528	598	45
Zr	744	122	96	144	104

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Table 6. Nomenclature and relative percentage of petrographic types for compositional groups.

<u>Group 1</u>		SiO ₂ range				
		- 56	- 63	- 70	- 74	
Calc-alkaline composition	(57%)	BA	AN	DC	RD	RH
<u>Group 2</u>						
Calc-alkaline and peralkaline composition	(6%)			DCP	RDP	RHP
<u>Group 3</u>						
K-rich calc-alkaline composition	(8%)	SH	BK	LA-DCK	RDK-TQ	RHK
<hr/>						
<u>Group 4</u>		Differentiation Index				
		- 35	- 50	- 65	- 80	
Alkaline composition	(29%)	BS	HW	MG	BN PH TP	TP TR TQ
<hr/>						
		normative nepheline		normative quartz		
		- 5	- 0	- 5		
		PH	TP	TR	TQ	

Note: For a discussion, see text.

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Table 7. Selected chemical analyses and structural formulas of magnetic minerals (electron microprobe).

Groups 1 and 2

Sample	9-193	9-164	9-196	9-183	9-187	7-1	9-162	9-180	9-188*	9-180	9-175	9-180	9-162	9-188*	9-181	9-187
P-type	-	FH	-	FD	FH	BA-RD	FH	FH	-	FH	FH	FH	FH	-	FH	FH
SiO ₂	47.68	49.69	52.45	53.29	53.22	53.10	53.06	53.62	55.63	55.13	56.08	56.02	59.65	60.71	61.02	61.28
Al ₂ O ₃	33.71	30.82	29.51	28.94	29.28	27.88	28.56	28.28	27.85	27.60	26.67	25.84	23.88	24.03	24.65	23.39
FeO	0.06	0.45	0.58	1.02	0.29	0.51	0.46	0.28	0.48	0.31	0.43	0.55	0.23	0.16	0.42	0.36
CaO	16.85	13.96	13.27	12.88	12.44	12.71	11.94	11.50	10.83	10.42	9.45	9.26	7.93	6.12	5.89	5.04
Na ₂ O	2.01	3.04	3.57	3.69	3.84	4.52	4.67	4.66	5.07	5.51	6.23	6.91	5.98	7.60	7.51	7.20
K ₂ O	0.03	0.10	0.06	0.29	0.10	0.42	0.14	0.04	0.33	0.05	0.32	0.07	0.35	0.08	0.37	0.99
Total	100.34	98.06	99.44	100.11	99.17	99.14	98.83	98.38	100.19	99.02	99.18	98.65	98.02	98.70	99.86	98.26
Structural formulae																
Si	2.179	2.308	2.394	2.420	2.425	2.439	2.434	2.460	2.505	2.508	2.548	2.563	2.708	2.728	2.715	2.766
Al	1.816	1.688	1.588	1.549	1.573	1.509	1.544	1.530	1.478	1.480	1.429	1.394	1.278	1.273	1.293	1.244
Fe ²⁺	0.002	0.017	0.022	0.039	0.011	0.020	0.018	0.011	0.018	0.012	0.016	0.021	0.009	0.006	0.016	0.014
Ca	0.825	0.695	0.649	0.627	0.607	0.625	0.587	0.565	0.523	0.508	0.460	0.454	0.386	0.295	0.281	0.244
Na	0.178	0.274	0.316	0.325	0.339	0.403	0.415	0.415	0.443	0.486	0.549	0.613	0.526	0.662	0.648	0.630
K	0.002	0.006	0.004	0.017	0.006	0.025	0.008	0.002	0.019	0.003	0.019	0.004	0.020	0.005	0.021	0.057
Total	5.003	4.988	4.972	4.976	4.961	5.020	5.006	4.983	4.986	4.997	5.021	5.049	4.927	4.969	4.973	4.955
%Ab	17.70	28.10	32.60	33.50	35.60	38.20	41.10	42.20	45.00	48.80	53.40	57.20	56.50	68.90	68.20	67.70
%An	82.10	71.30	67.00	64.70	63.80	59.40	58.10	57.60	53.10	51.00	44.80	42.40	41.40	30.60	29.60	26.20
%Or	0.20	0.60	0.40	1.70	0.60	2.30	0.80	0.20	1.90	0.30	1.80	0.40	2.20	0.50	2.20	6.10

Table 7. Feldspars continued.

Groups 1-2 (cont.)

Sample	9-187	7-12	8-105	8-106	9-188*	9-188	9-195	9-185	9-185	9-184	9-184	9-187	9-189	9-196
P-type	FH	FH	FH	FH	-	FH	-	FH	FH	FD	FD	FH	FH	-
SiO ₂	61.98	62.85	65.75	67.41	64.47	67.93	66.32	65.81	66.34	65.62	65.27	66.75	67.12	65.97
Al ₂ O ₃	22.74	21.94	20.66	21.30	21.66	19.14	19.45	20.13	19.68	20.41	19.64	18.42	18.98	18.67
FeO	0.51	0.13	0.00	0.08	0.41	0.47	0.29	0.11	0.20	0.21	0.43		0.46	0.10
CaO	5.23	4.39	2.35	1.73	0.52	0.38	0.83	1.51	1.35	1.38	1.07	0.09	0.57	
Na ₂ O	8.17	9.13	9.48	9.79	9.49	6.82	6.62	6.36	6.51	5.84	5.89	5.74	5.13	1.59
K ₂ O	0.79	0.33	1.35	0.27	1.62	5.77	6.08	5.86	6.38	6.23	6.90	7.83	8.02	14.25
Total	99.42	98.77	99.59	100.58	98.17	100.51	99.59	99.78	100.46	99.69	99.20	98.83	100.28	100.58
Structural formulae														
Si	2.776	2.819	2.913	2.930	2.891	3.006	2.973	2.944	2.957	2.939	2.952	3.021	3.002	3.004
Al	1.200	1.160	1.079	1.091	1.145	0.998	1.028	1.061	1.034	1.077	1.047	0.983	1.000	1.002
Fe ²⁺	0.019	0.005	0.000	0.003	0.015	0.017	0.011	0.004	0.007	0.008	0.016	0.000	0.017	0.004
Ca	0.251	0.211	0.112	0.081	0.025	0.018	0.040	0.072	0.064	0.066	0.052	0.004	0.027	0.000
Na	0.710	0.794	0.814	0.825	0.825	0.585	0.575	0.552	0.563	0.507	0.517	0.504	0.445	0.140
K	0.045	0.019	0.076	0.015	0.093	0.326	0.348	0.335	0.364	0.357	0.399	0.453	0.459	0.830
Total	5.001	5.008	4.993	4.945	4.995	4.951	4.975	4.969	4.989	4.954	4.982	4.966	4.950	4.980
%Ab	70.50	77.50	81.20	89.60	87.50	62.90	59.70	57.50	56.80	54.50	53.40	52.40	47.80	14.50
%An	25.00	20.60	11.10	8.80	2.60	1.90	4.10	7.50	6.50	7.10	5.40	0.50	2.90	0.00
%Or	4.50	1.80	7.60	1.60	9.80	35.10	36.20	34.90	36.70	38.40	41.20	47.10	49.30	85.50

Table 7 (feldspars continued).

Group 3

Sample	9-166	9-166	9-166	9-163	9-171	9-149	9-166
P-type	RHK	RHK	RHK	RHK	RHK	RHK	RHK
SiO ₂	54.70	57.64	61.14	61.53	63.66	65.61	65.16
Al ₂ O ₃	27.37	25.35	23.93	22.73	21.66	18.70	17.63
FeO	0.12	0.27	0.45	0.11	0.18	0.55	0.11
CaO	10.69	8.31	6.01	4.23	3.25	0.21	0.00
Na ₂ O	5.34	6.17	7.64	9.07	8.95	6.79	0.55
K ₂ O	0.27	0.47	0.63	0.81	1.41	6.85	15.26
Total	98.49	98.21	99.80	98.48	99.11	98.71	98.71
Structural formulae							
Si	2.505	2.627	2.729	2.778	2.848	2.983	3.033
Al	1.477	1.362	1.259	1.210	1.142	1.002	0.967
Fe ²⁺	0.005	0.010	0.017	0.004	0.007	0.021	0.004
Ca	0.525	0.406	0.287	0.205	0.156	0.010	0.000
Na	0.474	0.545	0.661	0.794	0.776	0.599	0.050
K	0.016	0.027	0.036	0.047	0.081	0.398	0.908
Total	5.001	4.978	4.990	5.037	5.010	5.014	4.962
%Ab	46.70	55.70	67.20	76.00	76.70	59.40	5.20
%An	51.70	41.50	29.20	19.60	15.40	1.00	0.00
%Or	1.60	2.80	3.70	4.50	8.00	39.50	94.80

Table 7 (feldspars continued)

Group 4																
Sample	7-6	9-168	7-6	9-173	7-6	7-6	9-168	7-2	9-153	7-6	7-4	7-2	8-94	7-5	8-94	7-6
P-type	TP	TP	TP	TR	TP	TP	TP	FH	TR	TP	TR	FH	TP-TQ	FH	TP-TQ	TP
SiO ₂	50.92	50.63	56.23	55.47	58.53	59.22	61.69	63.49	65.87	64.09	67.81	67.89	65.64	65.03	66.98	66.90
Al ₂ O ₃	30.59	30.25	27.19	26.41	25.62	24.12	23.71	22.02	20.95	22.65	19.07	18.88	18.31	19.95	18.57	19.39
FeO	0.26	0.48	0.15	0.64	0.24		0.26	0.42	0.41	0.59		0.14	0.87	0.89	0.50	0.17
CaO	14.31	14.07	10.99	9.13	8.54	7.49	5.69	3.62	2.49	2.08	0.08	0.08	1.00	1.42	0.54	0.57
Na ₂ O	3.44	3.24	5.70	5.24	6.55	7.44	8.68	9.04	7.92	8.61	12.59	11.29	7.29	7.44	6.78	7.31
K ₂ O	0.19	0.51	0.10	1.42	0.10	0.32	0.11	0.55	3.72	1.77	0.23	0.86	4.98	5.82	6.27	7.01
Total	99.71	99.18	100.36	98.31	99.58	98.59	100.14	99.14	101.36	99.79	99.78	99.14	98.09	100.55	99.64	101.35
Structural formulae																
Si	2.329	2.332	2.527	2.551	2.629	2.684	2.740	2.833	2.898	2.842	2.984	3.003	2.989	2.914	3.004	2.967
Al	1.649	1.642	1.440	1.432	1.356	1.288	1.241	1.158	1.086	1.184	0.989	0.984	0.983	1.054	0.982	1.014
Fe ²⁺	0.010	0.018	0.006	0.025	0.009	0.000	0.010	0.016	0.015	0.022	0.000	0.005	0.033	0.033	0.019	0.006
Ca	0.701	0.694	0.529	0.450	0.411	0.364	0.271	0.173	0.117	0.099	0.004	0.004	0.049	0.068	0.026	0.027
Na	0.305	0.289	0.497	0.467	0.570	0.654	0.748	0.782	0.676	0.740	1.074	0.968	0.644	0.646	0.590	0.629
K	0.011	0.030	0.006	0.083	0.006	0.019	0.006	0.031	0.209	0.100	0.013	0.049	0.290	0.333	0.360	0.397
Total	5.005	5.007	5.004	5.008	4.981	5.008	5.016	4.994	5.001	4.987	5.065	5.013	4.987	5.049	4.980	5.040
%Ab	30.00	28.50	48.10	46.70	57.80	63.10	73.00	79.30	67.40	78.80	98.50	94.90	65.50	61.70	60.50	59.70
%An	68.90	68.50	51.30	45.00	41.60	35.10	26.40	17.50	11.70	10.50	0.30	0.40	5.00	6.50	2.70	2.60
%Or	1.10	3.00	0.60	8.30	0.60	1.80	0.60	3.20	20.90	10.70	1.20	4.80	29.50	31.80	36.90	37.70

Table 7: feldspars continued.

Group 4 (cont.)

Sample	9-153	7-4	9-153	7-3	7-2
P-type	TR	TR	TR	FH	FH
SiO ₂	64.37	64.61	64.97	64.75	65.29
Al ₂ O ₃	19.77	19.52	18.74	17.77	17.14
FeO	0.16	0.15	0.20	0.05	0.08
CaO	1.08	1.17	0.46	1.05	0.03
Nb ₂ O	6.33	6.14	6.20	4.56	3.77
K ₂ O	6.75	7.47	8.43	8.97	11.53
Total	98.46	99.06	99.00	97.15	97.84
Structural formulae					
Si	2.935	2.940	2.968	3.007	3.037
Al	1.063	1.047	1.009	0.973	0.940
Fe ²⁺	0.006	0.006	0.008	0.002	0.003
Ca	0.053	0.057	0.023	0.052	0.001
Na	0.560	0.542	0.549	0.411	0.340
K	0.394	0.435	0.492	0.533	0.686
Total	5.010	5.025	5.048	4.978	5.006
% Ab	55.60	52.40	51.60	41.20	33.10
% An	5.20	5.50	2.10	5.20	0.10
% Or	39.10	42.10	46.30	53.50	66.80

Table 7 (continued)

Group	1	1	1	1	1	1	1	1	2	2	4	4	4	4	4
Sample	8-3	9-1	8-50	4-10	7-1	7-15	8-50c	8-50a	9-10	9-9	7-2	9-35	7-4	9-17	9-17
P-type	FH	FH	FH	FH	BA-RD	FH	FH	FH	RDP	RDP	FH	FH	TR	TQ	TQ
SiO ₂	50.51	50.19	52.57	53.97	55.48	53.49	53.20	52.82	50.76	48.27	50.85	50.14	49.90	50.25	50.83
Al ₂ O ₃	3.56	5.73	1.37	1.02	0.44	1.43	0.52	0.17	3.10	0.20	4.62	1.30	0.33	0.68	0.59
TiO ₂	0.56	0.86	0.30	0.30	0.12	0.20	0.15	0.03	1.08	0.16	1.00	0.25	0.54	0.57	0.14
FeO	6.84	9.08	9.26	9.71	16.18	17.35	25.77	27.04	6.13	24.47	5.35	18.24	22.13	26.87	31.98
MgO	15.24	14.07	14.21	14.03	25.94	23.43	18.39	17.67	15.06	2.99	15.57	5.23	5.25	0.75	0.95
CaO	20.55	20.38	20.67	21.73	0.97	1.64	1.47	1.32	21.69	19.81	21.63	18.34	18.86	9.93	2.14
MnO	0.17	0.18	0.39	0.60	2.71	0.56	0.75	0.62	0.14	0.98	0.18	1.70	0.79	0.75	1.26
Na ₂ O	0.27	0.25	0.42	0.36	0.00	0.04	0.58	0.12	0.36	0.72	0.52	2.06	0.87	6.87	8.79
Total	97.70	100.74	99.19	101.72	101.84	98.14	100.83	99.79	98.32	97.60	99.72	97.26	98.67	96.67	96.68
S	1.906	1.852	1.974	1.982	1.988	1.987	2.004	2.019	1.905	2.000	1.873	2.018	2.006	2.017	2.030
Al	0.158	0.249	0.061	0.044	0.019	0.063	0.023	0.008	0.137	0.010	0.201	0.062	0.016	0.032	0.028
Ti	0.016	0.024	0.008	0.008	0.003	0.006	0.004	0.001	0.030	0.005	0.028	0.008	0.016	0.017	0.004
Fe ⁺	0.216	0.280	0.291	0.298	0.485	0.539	0.812	0.864	0.192	0.848	0.165	0.614	0.744	0.468	0.482
Fe ⁺⁺														0.434	0.584
Mg	0.857	0.774	0.795	0.768	1.386	1.297	1.033	1.007	0.842	0.185	0.855	0.314	0.315	0.045	0.057
Ca	0.831	0.806	0.831	0.855	0.037	0.065	0.059	0.054	0.872	0.879	0.854	0.791	0.812	0.427	0.092
Mn	0.005	0.006	0.012	0.019	0.082	0.018	0.024	0.020	0.004	0.034	0.006	0.058	0.027	0.025	0.043
Na	0.020	0.018	0.031	0.026	0.000	0.003	0.042	0.009	0.260	0.058	0.037	0.161	0.068	0.535	0.681
Total	4.009	4.008	4.003	4.000	4.000	3.978	4.001	3.981	4.010	4.019	4.018	4.024	4.004	4.000	4.000
% En	44.9	41.5	41.2	39.6	69.6	67.6	53.6	51.8	44.1	9.5	45.5	17.7	16.6	32	45
% Fs	11.6	15.3	15.7	16.3	28.5	29.0	43.4	45.5	10.3	45.3	9.1	37.8	40.6	66.3	88.2
% Wo	43.5	43.2	43.1	44.1	1.9	3.4	3.1	2.8	45.6	45.2	45.4	44.5	42.8	30.5	7.3

Table 7 (amphiboles)

Sample P-type	8-30 RD-RHP	9-68 RD	8-38 RH	9-74 RH	8-50 RH	9-79 RH	9-3 RH
SiO ₂	44.25	46.79	49.12	52.40	49.03	47.47	49.56
TiO	1.52	2.98	0.91	0.97	1.02	1.01	1.04
Al ₂ O ₃	12.39	9.38	7.02	5.89	6.16	9.06	4.85
FeO t.	11.74	11.23	14.48	14.07	17.16	17.92	22.70
MnO	0.08	0.11	0.50	0.43	0.73	0.24	1.78
MgO	14.53	14.83	15.25	13.80	13.11	11.67	7.51
CaO	10.85	11.09	10.06	9.69	9.07	10.69	9.10
Na ₂ O	2.07	2.23	0.85	1.16	1.68	1.53	2.07
K ₂ O	0.36	0.43	0.18	0.09	0.16	0.14	0.64
Total	97.79	99.07	98.37	98.50	98.12	99.73	99.25
Structural formulae							
Si	6.284	6.635	6.841	7.343	6.961	6.745	7.343
Al ^{IV}	1.716	1.365	1.159	0.657	1.039	1.255	0.657
Al ^{VI}	0.358	0.203	0.000	0.316	0.000	0.262	0.190
Ti	0.162	0.318	0.095	0.102	0.109	0.108	0.116
Mn	0.010	0.013	0.059	0.051	0.088	0.029	0.223
Fe ³⁺	1.070	0.461	1.647	0.879	1.525	1.050	0.623
Fe ²⁺	0.324	0.871	0.039	0.770	0.513	1.079	2.190
Mg	3.076	3.135	3.166	2.882	2.774	2.472	1.658
Na	0.570	0.613	0.230	0.315	0.462	0.422	0.595
K	0.065	0.078	0.032	0.016	0.029	0.025	0.121
Ca	1.651	1.685	1.501	1.455	1.380	1.627	1.445
Total	15.286	15.376	14.763	14.786	14.871	15.074	15.160
FM	29.1	30.0	33.3	37.1	40.9	46.6	64.7

Table 7. Biotites.

Sample	8-102	8-105	9-78	9-92	8-7	8-3*	8-94
Group	1	1	1	4	4	4	4
P-type	RH	RH	DC-RD	TR	PH	PH	TQ
SiO ₂	39.29	38.57	36.59	37.91	36.94	36.36	36.19
Al ₂ O ₃	13.06	12.63	13.29	12.91	13.01	12.75	12.27
TiO ₂	3.85	3.79	6.6	6.79	6.76	7.02	4.76
FeO	14.77	21.78	20.91	16.7	21.17	23.11	29
MgO	15.16	10.05	9.71	11.03	11.07	8.73	6.2
MnO	0.21	0.58	0.18	0.68	0.21	0.35	0.79
K ₂ O	8.28	8.02	8.22	8.55	7.3	7.27	8.02
Na ₂ O	0.72	0.46	0.83	0.74	0.83	0.81	0.69
Total	95.34	95.88	96.33	95.31	97.29	96.4	97.92
Structural formulae							
Si	5.818	5.875	5.56	5.711	5.532	5.559	5.639
Al	2.279	2.268	2.38	2.293	2.296	2.298	2.253
Ti	0.429	0.434	0.754	0.769	0.761	0.807	0.558
Fe	1.829	2.775	2.657	2.104	2.651	2.955	3.779
Mg	3.346	2.282	2.2	2.477	2.471	1.99	1.44
Mn	0.026	0.075	0.023	0.087	0.027	0.045	0.104
K	1.567	1.562	1.597	1.647	1.398	1.421	1.598
Na	0.207	0.136	0.245	0.216	0.241	0.24	0.208
Total	15.501	15.406	15.416	15.304	15.378	15.315	15.58
FM	33.3	53.0	54.9	46.9	49.4	57.4	73.0

Note: 1. Feldspars, 2. Pyroxenes, 3. Amphiboles, 4. Biotite. P-type = petrographic type (see text). FM = (FeO total + MnO + MgO)/(FeO total + MnO) in wt%.