

TABLE IX

Calculated compositions and norms of liquid fractionates and residual crystal accumulates based on varying degrees of crystallization of the quartz diorite

Pressure	Composition of experimental liquid fractionates						Synthetic residual crystal accumulates				
	13.5 kb	13.5 kb	13.5 kb	9 kb	9 kb	9 kb	0 kb	13.5 kb gabbroic	9 kb anorthosite	13.5 kb anorthosite	9 kb anorthosite
Details of crystallization	10% plag	20% plag 5% cpx 2% opx	38% plag 9% cpx 3% opx	10% plag	20% plag 5% cpx 2% opx	38% plag 9% cpx 3% opx	10% plag	76% plag 18% cpx 6% opx	76% plag 18% cpx 6% opx	90% plag 8% cpx 2% opx	90% plag 8% cpx 2% opx
SiO ₂	62.7	64.5	68.2	62.8	64.9	69.0	63.3	56.2	55.4	57.0	56.0
TiO ₂	1.2	1.4	1.9	1.2	1.4	1.9	1.2	0.3	0.3	0.1	0.1
Al ₂ O ₃	16.3	15.7	12.7	16.1	15.6	12.3	15.9	21.9	22.3	24.5	25.4
Fe ₂ O ₃	7.0	7.4	9.8	7.0	7.2	9.1	7.0	2.6	3.3	1.1	1.4
FeO											
MnO	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	—	—
MgO	2.7	1.4	0.1	2.7	1.5	0.5	2.7	4.7	4.3	1.9	1.7
CaO	5.0	4.1	2.1	4.7	3.6	0.7	4.5	8.3	9.7	8.3	9.7
Na ₂ O	3.0	2.7	1.6	3.1	2.9	2.1	3.2	5.0	4.4	5.8	5.2
K ₂ O	2.4	2.9	4.0	2.4	2.9	4.0	2.5	0.6	0.6	0.7	0.7
TOTAL	100.4	100.2	100.5	100.1	100.1	99.7	100.4	99.7	100.4	99.4	100.2
Norm											
Qz	16.5	21.0	32.1	16.5	21.3	31.8	18.7	—	—	—	—
Or	14.2	17.1	23.6	14.2	17.1	23.6	15.0	3.5	3.5	4.1	4.1
Ab	25.4	23.7	13.5	26.2	25.4	19.5	27.5	44.0	38.1	49.9	44.0
Ne	—	—	—	—	—	—	—	—	—	—	—
An	23.9	20.3	10.4	22.9	17.9	3.5	16.9	34.6	38.9	38.3	43.9
Aug	0.7	—	—	0.3	—	—	4.5	5.3	7.5	2.3	3.4
Hyp	17.4	14.9	15.3	17.6	14.8	15.0	15.5	7.4	9.6	2.5	3.4
Ol	—	—	—	—	—	—	—	4.5	2.4	2.2	1.1
Mt	—	—	—	—	—	—	—	—	—	—	—
Ilm	2.3	2.7	3.6	2.3	2.7	3.6	2.3	0.6	0.6	0.2	0.2
Cor	—	0.5	1.9	—	1.0	2.9	—	—	—	—	—
Norm Plag. (Mol. Prop.)	An _{47.0}	An _{44.6}	An _{41.5}	An _{45.1}	An _{39.8}	An _{15.0}	An _{36.5}	An _{42.5}	An _{49.1}	An _{42.0}	An _{48.5}

TABLE X

Calculated compositions and norms of liquid fractionates based on varying degrees of crystallization of the gabbroic anorthosite

Pressure Temperature Details of Crystallization	9 kb 1330 °C 15% plag	9 kb 1300 °C 25% plag	18 kb 1375 °C 10% plag	18 kb 1350 °C 20% plag	27 kb 1340 °C 30% cpx*	36 kb 1450 °C 10% cpx
SiO ₂	53.7	53.8	53.4	53.2	57.2	54.3
TiO ₂	1.2	1.3	1.1	1.3	0.9	1.0
Al ₂ O ₃	21.2	20.1	21.8	20.9	21.7	22.0
Fe ₂ O ₃	1.1	1.2	1.0	1.1	1.3	1.0
FeO	5.5	6.3	5.2	5.9	4.7	4.9
MnO	0.1	0.1	0.1	0.1	0.1	0.1
MgO	2.5	2.8	2.3	2.6	0.9	1.8
CaO	9.4	9.1	9.8	9.7	6.8	9.2
Na ₂ O	3.6	3.5	3.6	3.3	4.2	3.7
K ₂ O	1.2	1.4	1.2	1.3	1.6	1.2
	99.5	99.6	99.5	99.4	99.4	99.2
<i>Norm</i>						
Qz	2.8	2.7	2.1	2.9	7.9	2.4
Or	7.1	8.3	7.1	7.7	9.4	7.1
Ab	30.4	29.7	30.5	27.9	35.5	22.7
An	38.1	35.0	39.8	38.4	33.8	32.8
Aug	7.0	8.5	7.4	8.1	—	3.9
Hyp	10.2	11.3	9.1	10.4	9.9	7.0
Mt	1.6	1.7	1.5	1.6	1.9	1.5
Ilm	2.3	2.5	2.1	2.5	1.7	1.9
Cor	—	—	—	—	0.7	—

*Denotes liquid fractionate determined from calculated compositions closely based on the micro-probe analyses of crystal phases in the experimental runs.

TABLE XI

Calculated compositions and norms of liquid fractionates based on varying degrees of crystallization of the high-alumina basalt in the pressure range 13.5–18 kb

Pressure Temperature Details of crystallization	13.5 kb 1300 °C 10% cpx	13.5 kb 1280 °C 20% cpx 10% plag	13.5 kb 1240 °C 25% cpx 5% plag	18 kb 1340 °C 10% cpx	18 kb 1320 °C 20% cpx	18 kb 1300 °C 30% cpx	18 kb 1260 °C 20% cpx 2% ga	18 kb 1230 °C 30% cpx 15% ga 5% plag wet
	dry	dry	wet	dry	dry*	dry*	wet	wet*
SiO ₂	50.4	49.9	49.8	50.3	50.4	50.8	50.4	52.9
TiO ₂	1.8	2.1	2.0	1.8	1.9	2.0	1.9	1.8
Al ₂ O ₃	17.8	16.7	18.4	17.8	18.5	19.0	18.6	16.7
Fe ₂ O ₃	1.7	2.1	2.1	1.7	1.9	2.1	1.9	3.0
FeO	7.8	8.5	8.7	7.8	8.0	8.5	8.3	6.3
MnO	0.18	0.23	0.23	0.18	0.2	0.23	0.19	0.2
MgO	6.9	7.5	5.9	6.9	6.1	5.0	5.8	5.6
CaO	10.8	10.4	9.7	10.9	10.2	9.3	10.1	9.9
Na ₂ O	3.0	3.1	3.4	3.0	3.2	3.4	3.3	4.0
K ₂ O	0.2	0.25	0.25	0.2	0.23	0.26	0.23	0.3
	100.6	100.8	100.5	100.6	100.6	100.6	100.7	100.7
<i>Norm</i>								
Qz	—	—	—	—	—	—	—	0.8
Or	1.2	1.5	1.5	1.2	1.3	1.6	1.3	1.8
Ab	25.4	26.2	28.8	25.3	27.1	28.8	27.9	33.9
An	34.5	30.8	34.2	34.5	35.4	35.7	35.2	26.7
Aug	15.4	16.8	11.4	15.9	12.3	8.6	12.2	18.1
Hyp	13.2	10.3	10.4	12.3	14.1	18.8	13.1	11.7
Ol	4.9	8.0	7.4	5.4	4.0	0.3	4.6	—
Mt	2.5	3.0	3.0	2.5	2.8	3.0	2.8	4.4
Ilm	3.4	4.0	3.8	3.4	3.6	3.8	3.6	3.4

*Denotes liquid fractionate determined from calculated compositions closely based on the microprobe analyses of crystal phases in the experimental runs.