

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	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	Norm
9 kb	1330 °C	15% plag	53.7	1.2	21.2	1.1	5.5	0.1	2.8	9.4	3.6	1.2	2.8
9 kb	1300 °C	25% plag	53.8	1.3	20.1	1.2	6.3	0.1	2.7	9.1	3.5	1.4	2.7
18 kb	1375 °C	10% plag	53.4	1.1	21.8	1.0	5.2	0.1	2.1	9.8	3.6	1.2	2.1
18 kb	1350 °C	20% plag	53.2	1.3	20.9	1.1	5.9	0.1	2.9	9.7	3.3	1.3	2.9
27 kb	1340 °C	30% cpx*	57.2	0.9	21.7	1.3	4.7	0.1	7.9	6.8	4.2	1.6	7.9
36 kb	1450 °C	10% cpx	54.3	1.0	22.0	1.0	4.9	0.1	9.4	9.2	3.7	1.2	9.4
9 kb	1330 °C	15% plag	30.4	7.1	30.4	7.1	3.9	—	2.4	7.0	3.7	1.2	2.4
9 kb	1300 °C	25% cpx	30.4	8.3	29.7	7.1	3.8	—	2.7	7.0	3.7	1.2	2.7
18 kb	1340 °C	10% cpx	30.5	7.1	27.9	7.7	3.5	—	2.9	7.0	3.7	1.2	2.9
18 kb	1320 °C	20% cpx	38.4	7.4	38.4	7.4	3.8	—	7.9	7.0	3.7	1.2	7.9
18 kb	1320 °C	20% cpx	39.8	7.4	38.4	7.4	3.8	—	9.9	7.0	3.7	1.2	9.9
13.5 kb	1240 °C	5% plag	49.8	2.0	18.4	1.7	8.5	0.23	10.2	10.2	3.6	0.2	10.2
13.5 kb	1280 °C	10% plag	49.9	2.1	16.7	2.1	8.5	0.23	10.4	10.4	3.6	0.25	10.4
100.5	100.5	100.5	49.8	2.0	18.4	1.7	8.5	0.23	10.9	10.9	3.6	0.25	10.9
100.6	100.6	100.6	50.3	1.8	17.8	1.7	8.0	0.2	10.2	10.2	3.3	0.23	10.2
100.6	100.6	100.6	50.4	1.9	18.5	1.9	8.0	0.2	10.2	10.2	3.3	0.23	10.2
100.6	100.6	100.6	50.4	2.0	19.0	2.1	8.5	0.23	10.1	10.1	3.3	0.23	10.1
100.7	100.7	100.7	50.4	1.9	18.6	1.9	8.3	0.19	10.1	10.1	3.3	0.23	10.1
100.7	100.7	100.7	50.4	1.8	16.7	1.8	8.3	0.19	10.1	10.1	3.3	0.23	10.1
100.7	100.7	100.7	52.9	1.8	16.7	1.8	3.0	0.2	9.9	9.9	4.0	0.3	9.9

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	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MnO	MgO	CaO	Na ₂ O	K ₂ O	Norm
13.5 kb	1300 °C	10% cpx	50.4	1.8	17.8	1.7	7.8	0.18	10.8	10.8	3.0	0.2	10.8
13.5 kb	1280 °C	10% plag	49.9	2.1	16.7	2.1	8.5	0.23	10.4	10.4	3.1	0.25	10.4
100.5	100.5	100.5	49.8	2.0	18.4	2.1	8.7	0.23	9.7	9.7	3.4	0.25	9.7
100.5	100.5	100.5	50.3	1.8	17.8	1.7	7.8	0.18	10.9	10.9	3.0	0.2	10.9
100.6	100.6	100.6	50.3	1.8	17.8	1.7	8.0	0.2	10.2	10.2	3.2	0.23	10.2
100.6	100.6	100.6	50.4	1.9	18.5	1.9	8.0	0.2	10.2	10.2	3.2	0.23	10.2
100.6	100.6	100.6	50.4	2.0	19.0	2.1	8.5	0.23	10.1	10.1	3.3	0.26	10.1
100.7	100.7	100.7	50.4	1.9	18.6	1.9	8.3	0.19	10.1	10.1	3.3	0.23	10.1
100.7	100.7	100.7	52.9	1.8	16.7	1.8	3.0	0.2	9.9	9.9	4.0	0.3	9.9
Qz	—	—	1.5	—	—	—	—	—	—	—	—	—	—
Or	1.2	—	1.2	—	—	—	—	—	—	—	—	—	—
Ab	25.4	27.9	26.2	28.8	34.2	34.5	27.1	28.8	35.7	35.4	27.1	28.8	35.7
An	34.5	30.8	30.8	34.2	34.5	34.5	27.1	28.8	35.7	35.4	27.1	28.8	35.7
Aug	15.4	16.8	16.8	15.4	15.9	12.3	12.3	8.6	18.8	14.1	14.1	18.8	18.8
Hyp	13.2	10.3	10.3	11.4	12.3	14.1	14.1	8.6	18.8	14.1	14.1	18.8	18.8
Ol	4.9	8.0	8.0	7.4	5.4	4.0	4.0	0.3	0.3	0.3	0.3	0.3	0.3
Mt	2.5	3.0	3.0	3.0	2.5	2.8	2.8	—	—	—	—	—	—
Ilm	3.4	4.0	4.0	3.8	3.4	3.6	3.6	—	—	—	—	—	—

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