

Data Repository item 2004074

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Table DR 1: Formal Description of New Units Defined in the Publication

All of the units defined here are exposed in core obtained from deep wells in and around the Savannah River Site. Core is stored at the SRS Core Repository. Well locations are shown in figure 3 of this report, and below in the Savannah River Site grid system.

Crackerneck Metavolcanic Complex

Cores which sample the Crackerneck metavolcanic complex were drilled to study the overlying sedimentary fill, and generally do not penetrate deeply into the underlying basement. As a result, we present two “type sections” here: one for mafic Crackerneck and one for felsic Crackerneck. Older core obtained from this unit (e.g., the “P” series wells) is 4 inches in diameter; more recent core is 1 inch.

Rocks comprising the northern portion of the Crackerneck metavolcanic complex of the Savannah River Site are dominantly intermediate to felsic tuffs and lapilli tuffs. Core from the southern part of the subcrop area is dominated by greenstone and mafic tuff. Low-grade metavolcanic rocks of the Crackerneck metavolcanic complex are penetrated by younger granitic intrusions, including the Devonian Springfield granite and the Carboniferous Graniteville granite (figure 2).

Type section: Core P30; Northing: 3688762.7, Easting: 43053.53, Total Depth: 810 feet.

Description, footage 780-796: Pale grey felsic tuffs with visible relict lapilli are composed of small quartz and plagioclase grains with plagioclase phenocrysts. All plagioclase grains have been metamorphosed to nearly pure albite, but relict igneous textures are well preserved. Felsic rocks may also contain small amounts of muscovite and epidote, but generally do not display the intensely chloritized or epidotized appearance.

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Reference section (felsic): Core MMP4; Northing 434068.64, Easting 3688771.48, Total Depth: 785.0 feet.

Description, footage 785: Lapilli tuffs display large (to 1.5 x 5 cm) flattened and elongated pumice lapilli giving an appearance similar to lapilli tuffs of the Persimmon Fork Formation.

Reference section (mafic): Core P6R; Northing: 3682009.2, Easting: 431351.37, Total Depth: 1042 feet.

Description, footage 837-862: Dark grey-green mafic metavolcanic rock are composed of chlorite, plagioclase, epidote and opaque minerals. Lapilli vary from equant clasts to epidotized clasts to wispy, white, pumiceous (?) clasts.

Deep Rock Metaigneous Complex

Consists of two subunits: the Deep Rock Metavolcanic Suite and the DRB Metaplutonic suite. All DRB (Deep Rock Borehole) core is 4" in diameter. Because basement was the target of this core series, thousands of feet of core are available for study. Each suite has separate reference sections as listed below.

Deep Rock Metavolcanic Suite

Type section: Core DRB-5; Northing: 3683425, Easting: 438804, Total Depth: 1838 feet.

Description, footage 1300-1838: Metavolcanic rocks display a wide array of textures, compositions, and mineralogy. Textures include (a) aphyric intermediate tuffs and mafic, chloritic schists, (b) plagioclase-phyric tuffs and schists, and (c) hornblende-phyric tuffs and schists.. Mafic metavolcanic rocks consist of metamorphic blue-green amphibole, plagioclase, quartz, epidote, and chlorite, with or without relict, brown igneous hornblende. Felsic and intermediate metavolcanic rocks consist of plagioclase, quartz, epidote, biotite, and chlorite, ±amphibole and rare garnet. These mineral assemblages are consistent with lower amphibolite or uppermost greenschist facies metamorphism.

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Plagioclase phenocrysts display various stages of metamorphism. Many plagioclase phenocrysts form subhedral to euhedral crystals that preserve primary igneous compositions and zoning. Other plagioclase grains are anhedral, albited porphyroclasts that have been partially to extensively epidotized.

Hornblende phenocrysts range from blocky, subhedral crystals to elongated, prismatic crystals. Relict igneous hornblende phenocrysts are brown in thin section. In many samples, hornblende phenocrysts and groundmass hornblende have been largely metamorphosed to blue-green amphibole. Amphibole is commonly retrograded to chlorite in varying degrees, and some segments of core have undergone complete chloritization of the mafic minerals. Intermediate to felsic metavolcanic rocks commonly contain biotite, which is commonly partially chloritized, and a few contain garnet.

Metaigneous dikes are common in core. These dikes, which crosscut the metavolcanic rocks, are generally unfoliated, but in many places exhibit the same asymmetric folding apparent in the foliated metavolcanic rocks. There are three groups of dikes: (a) aphyric mafic dikes with basaltic compositions; (b) plagioclase-phyric mafic dikes with basaltic compositions; and (c) aphyric felsic dikes with rhyolitic compositions. Plagioclase-phyric mafic dikes are characterized by large, euhedral plagioclase phenocrysts that preserve relict primary zoning, within a groundmass of amphibole, plagioclase, epidote, chlorite, and biotite. The aphyric mafic dikes are identical to the plagioclase phyric dikes, but lack the conspicuous large phenocrysts. The groundmass of these dikes contains significantly less chlorite and epidote than their metavolcanic host rocks. The felsic dikes consist of fine-grained plagioclase and quartz, with minor opaque oxides, biotite, and hornblende.

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All rocks have been overprinted with a penetrative fabric (foliation) that dips $\approx 40^\circ$ to 60° assuming core is vertical, but the strike and dip direction are not known. Extensive transposition of layering is evident on the mesoscopic and microscopic scales. Rootless, intrafolial isoclines are commonly observed. Asymmetric folds of foliation have long limbs dipping up to 60° and short limbs that can be nearly horizontal. These folds have a typical “down dip” vergence. Fold axes are subhorizontal (assuming core is vertical). Mafic phyllonites are commonly observed that indicate dextral motion and/or “hanging wall up” motion. Chloritic fractures that have the same strike as foliation and dip less steeply than foliation are ubiquitous. Offsets of metamorphic layering are discernible, but the sense of offset is not always clear.

Reference section #1: Core DRB-3; Northing: 3682954, Easting: 438181.8, Total Depth: 1928 feet.

Description, footage 950-1500: Dark grey-green mafic metavolcanic rock includes porphyritic and equigranular fine-grained mafic schists, and porphyroclastic greenstones amphibolites cut by metamorphosed mafic dikes, locally, phyllonitic zones crosscut this package. Because some texturally similar black amphibolites are also dispersed throughout the section, “green rocks” are interpreted to represent heterogeneous retrogression. Approximately 20% of the section comprises a light gray felsite.

Down dip vergent asymmetric folding of foliation (long limb typically dipping $50\text{-}60^\circ$) and dike is commonly observed. Dextral and hangingwall up shear sense indicators include shear bands and winged porphyroclasts. Chloritic fractures that have the same strike as foliation and dip less steeply than foliation are ubiquitous. Offsets of metamorphic layering are discernible, but the sense of offset is not always clear.

Reference section #2: Core DRB-6; Northing: 3683130, Easting: 439247.2, Total Depth: 1913 feet.

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Description, footage 1100-1913: Mafic (25%) and intermediate to felsic (75%) schists and amphibolite facies gneisses. Mafic layers are commonly porphyritic with amphibole or plagioclase porphyroclasts. Layering is heterogeneous in these mafic and felsic rocks. Transposition of layering is evident from the mesoscopic to microscopic scales. Less sheared bands of black amphibolite are separated by mylonitic mafic schists and phyllonite. Dips of foliation are generally 70°. Detached rootless isoclinal folds are transposed into the plane of foliation. Foliation is folded into downdip vergent asymmetric folds with near horizontal hinges. Chloritized shear bands dip less steeply than foliation, and typically yield dextral or hanging wall up shear sense.

Reference section #3: Core DRB-7; Northing: 3682833, Easting: 439474, Total Depth: 1868.8 feet.

Description: footage 1300'-1868': Heterolithic mafic schist interleaved with a fine grained muscovite schist. Over the length of the section approximately half is mafic and half felsic. Some of the distinctive lithic types within the mafic section are a greenstone, an amphibole porphyry, and a banded amphibolite with large (<1 cm) garnets. Black amphibolites are separated by mylonitic mafic schists. The section is extensively transposed. Rootless isoclines of layering and foliation are folded asymmetrically with subhorizontal hinges and down-dip vergence. Felsic schists commonly show a button schist texture, and shear bands indicate either hanging wall up or dextral motion typically.

DRB1 Metaplutonic Suite

Named for the DRB-1 well in which it occurs.

Type section: Core DRB-1; Northing: 3684171, Easting: 437524.7, Total Depth: 1904 feet.

Description, footage 892-1904: The protolith for metadiorite and metaquartz diorite gneiss were equigranular diorites and porphyries of hornblende phenocrysts in finer-grained,

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groundmass of quartz, plagioclase, amphibole, and chlorite. These rocks cut minor intercalated metavolcanic rocks, and are weakly metamorphosed with minor shear zones. Diorite and quartz diorite sheets intrude preexisting, foliated metavolcanic wallrock. The diorites were metamorphosed to epidote-amphibolite facies assemblages. These rocks are variably deformed from undeformed to gneissic. The porphyritic gneisses are characterized by large, zoned hornblende and plagioclase porphyroclasts, within a fine to medium-grained matrix of plagioclase, quartz, chlorite, blue/green amphibole, and epidote. Chloritic fractures and chloritized amphiboles may also appear sparsely.

Plagioclase porphyroclasts may show relict igneous features, including oscillatory zoning and albite twinning. Metaplutonic rocks of DRB1 contain no garnet, consistent with metamorphism at relatively low temperatures and pressures (lower amphibolite to uppermost greenschist facies conditions). Biotite is rare to absent in the DRB1 metadiorites; almost all primary biotite has been metamorphosed to chlorite.

Most amphibole porphyroclasts, and essentially all groundmass amphiboles, are metamorphosed to blue-green amphibole. However, many amphibole porphyroclasts preserve cores of brown hornblende, which are interpreted to represent relict igneous hornblende.

Metaplutonic rocks contain xenoliths and screens of amphibolite facies metavolcanic rocks that are deformed and contain fabric elements similar to rocks of the Deep Rock Metavolcanic Suite, with which they are assumed to correlate. These metavolcanic rocks are composed of ~60% blue/green amphibole and ~40% plagioclase, epidote, and quartz. The amphibole forms small prismatic grains, plagioclase and epidote form blocky anhedral grains.

Thin anastomosing mylonite zones penetrate the DRB1 metadiorites. These may be distinguished by belts of ultrafine-grained quartz, feldspar, amphibole, and epidote bounded on

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either side by fine to medium grained porphyritic gneisses. The mylonite zones are generally meter scale or thinner in thickness. Chloritic fractures are common in these metaplutonic rocks.

Pen Branch Metaigneous Complex

Consists of two subunits: the Pen Branch Metavolcanic Suite and the PBF Metaplutonic suite. Each suite has separate reference sections as listed below.

Pen Branch Metavolcanic Suite

Type section: Core PBF-7; Northing: 3678485, Easting: 442463.6, Total Depth: 3651 feet.

Description, footage 2500 to 3500: Grey-green mafic metavolcanic rock forms rare screens between sheets of unpinked and partly pinked granodiorite gneiss (PBF Plutonic suite) . Screens are often black, but may have a conspicuous greenish cast.

Description, footage 3500 to 3600: Pinked granitic gneiss (PBF Plutonic suite).

Description, footage 3600 to 3648: Fine grained black amphibolite, commonly with garnet (up to 1 cm diameter) , locally retrogressed to a chlorite actinolite schist. Garnetiferous layers are generally less than 7 cm thick.

Reference section #1: Seismic Attenuation Core; Northing: 3679655 Easting: 440618, Total Depth: 4002 feet (PBF Plutonic Suite in continuous core above 1118 feet; spot cores from 1959-4002 feet). Description: footage 1959-4002: Migmatitic amphibolite, cut by undeformed pink granite veins.

PBF7 Metaplutonic Suite

Named for the PBF7 and PBF well series in which it principally occurs. All PBF core is 2.5" in diameter.

Type section: Core PBF-7, Northing: 3678485 Easting: 442463.6, Total Depth: Description, footage 2550 to 3100: Unpinked, foliated granodiorite gneiss. Gneissic metagranitoids are porphyroclastic gneisses with porphyroclasts of amphibole and plagioclase set in a groundmass of amphibole, plagioclase, microcline, biotite, quartz, and epidote. Amphibole

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porphyroclasts are unzoned blue-green amphiboles. Garnet porphyroblasts are a common accessory mineral in the metaplutonic rocks.

Description, footage 3140 to 3480: Transition zone, unpinked granodiorite and diorite gneiss with some partly pinked granodiorite gneiss.

Description, footage 3500 to 3600: Pinked granitic gneiss. Lower contact at 3600 feet is mylonite zone which separates PBF plutonic suite from high-grade metavolcanic rocks of the Pen Branch Metavolcanic Complex.

Pinked metagranitoid: “Pinked” PBF metagranites commonly contain large plagioclase, microcline, and garnet porphyroblasts set in a finer-grained matrix of quartz, plagioclase, microcline, and chlorite. Plagioclase porphyroclasts are much less common in pinked rocks. Amphibole is almost completely chloritized, and with increasing pinking is increasingly uncommon, but some relict blue-green amphibole is preserved. Microcline in the pinked metagranitoids commonly occurs as large megacrysts up to ~5mm across, and may account for as much as 40% of the modal mineralogy. Plagioclase in the thoroughly pinked granites is completely albited, and subsequently, partially sericitized. Biotite, like amphibole, also has been almost completely chloritized. Pinking occurs on scales from mm-scale to dozens of meters of complete alteration.

Reference section #1: Seismic Attenuation Core, Northing: 3679655 Easting: 440618

Description, footage 1078-1118: Pinked granitic gneiss. Lineated garnetiferous felsic gneiss and felsic mylonite cut by coarse grained granitic veins. Large K-feldspar porphyroblasts in felsic gneiss. Gneiss and granite have a conspicuous pinkish cast.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Crackerneck Metavolcanic Complex						Deep Rock Metavolcanic Suite					
Core#	P6R	C1	C1	C3	P30	MMP4	DRB1	DRB1	DRB1	DRB1	DRB2
Box	none	none	none	none	none	none	75	87	123	135	17M
SAMPLE#	856	570	574	540	781	817	1375	1438	1653	1727	1081M
Rock Type	Mafic Tuff	Felsic Tuff	Felsic Tuff	Felsic Tuff	Felsic Lapilli Tuff	Felsic Lapilli Tuff	Mafic MV xenolith	Mafic MV xenolith	Mafic MV xenolith	Mafic MV xenolith	Felsic MV
SiO ₂	48.75	65.72	68.32	71.55	74.29	76.98	50.95	49.42	50.38	51.06	63.44
TiO ₂	0.94	0.74	0.70	0.66	0.23	0.23	1.02	0.83	0.89	1.45	0.96
Al ₂ O ₃	16.68	17.83	16.00	14.24	12.40	11.63	17.25	16.33	18.01	15.96	16.41
Fe ₂ O ₃	10.82	7.09	5.96	5.04	4.29	2.96	11.47	11.79	10.01	14.15	7.44
MnO	0.203	0.15	0.13	0.09	0.14	0.13	0.17	0.23	0.16	0.21	0.19
MgO	7.95	2.10	1.93	1.54	0.71	1.11	6.56	9.13	6.51	5.34	1.90
CaO	9.47	1.19	2.09	1.34	0.62	0.39	10.31	9.71	11.32	8.67	4.83
Na ₂ O	3.37	1.97	2.87	4.15	5.16	4.41	2.99	2.75	3.52	3.96	4.27
K ₂ O	0.721	3.91	2.52	1.52	1.31	2.01	0.27	0.33	0.31	0.31	1.59
P ₂ O ₅	0.163	0.14	0.15	0.16	0.03	0.03	0.18	0.13	0.14	0.19	0.43
SUM	100.84	100.84	100.66	100.29	99.18	99.88	101.15	100.66	101.24	101.28	101.45
%LOI		3.19%	1.93%	2.47%	0.86%		0.30%	2.05%	1.08%	0.51%	0.34%
Nb	1	17	12	9	14	9	4	3	3	3	10
Zr	56	233	206	159	287	296	72	56	72	80	175
Y	17	14	22	19	72	65	21	17	17	23	45
Sr	266	133	350	106	64	35	317	180	328	271	634
Rb	16	108	69	30	27	32	2	3	9	3	38
Zn	80	108	88	76	134	138	70	129	86	76	60
Cu	106	17	17	5	2	2	72	17	82	32	17
Ni	156	36	34	9	42	43	36	126	50	15	5
Cr	357	50	42	10	79	160	128	374	165	55	6
Sc	35	13	14	7	nd	nd	38	39	35	38	13
V	254	99	97	45	7	5	274	251	246	401	80
Ba	228	1357	1241	753	119	438	69	63	217	106	625

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Deep Rock Metavolcanic Suite											
Core#	DRB2	DRB2	DRB3	DRB3	DRB3	DRB3	DRB4	DRB4	DRB4	DRB4	DRB4
Box	17	68	6	41	59	77	83	23	76	127	129
SAMPLE#	1081	1415.5	988	1220	1346	1468	1512	1116	1450.7	1784	1796
Rock Type	Mafic MV	Mafic MV	Felsic MV	Inter MV	Mafic MV	Mafic MV	Mafic MV	Chl Schist	Felsic Gneiss	Felsite MV	Felsite MV
SiO ₂	51.74	49.91	65.59	66.24	49.94	49.54	54.04	60.97	78.32	68.78	69.81
TiO ₂	1.06	1.02	0.80	0.76	1.13	1.09	1.61	1.17	0.10	0.73	0.72
Al ₂ O ₃	16.98	20.96	16.81	16.29	20.85	17.01	17.38	19.82	11.74	14.33	14.98
Fe ₂ O ₃	10.82	11.95	4.65	5.01	10.56	12.61	11.23	8.93	1.21	5.49	4.93
MnO	0.188	0.16	0.12	0.11	0.18	0.23	0.20	0.06	0.02	0.098	0.10
MgO	4.61	9.51	1.58	1.51	3.70	7.02	3.49	1.23	0.15	1.54	1.73
CaO	9.44	3.98	3.47	3.93	10.20	8.74	6.34	2.20	0.77	4.02	3.19
Na ₂ O	2.91	2.94	4.38	5.40	3.49	3.85	5.11	3.88	5.82	3.03	1.93
K ₂ O	1.186	0.96	3.18	1.70	1.53	0.88	1.23	2.21	0.91	1.599	2.89
P ₂ O ₅	0.335	0.21	0.26	0.20	0.40	0.28	0.79	0.15	0.01	0.155	0.14
SUM	99.27	101.60	100.85	101.16	101.98	101.25	101.41	100.63	99.05	99.211	100.42
%LOI	1.90%	4.76%	2.55%	1.85%	2.00%	2.08%	1.45%	2.14%	0.72%	1.29%	1.44%
Nb	6	7	11	9	5	3	7	12	29	11	19
Zr	148	181	188	174	102	65	182	249	190	191	210
Y	31	39	35	33	25	22	40	43	76	42	49
Sr	715	867	365	410	782	431	450	402	48	126	129
Rb	52	64	62	34	28	15	24	78	40	60	106
Zn	106	78	75	59	94	119	125	85	30	62	76
Cu	174	75	4	76	148	83	71	5	11	4	11
Ni	18	2	nd	6	18	41	9	15	3	30	16
Cr	47	13	3	6	28	136	16	21	nd	67	16
Sc	30	18	7	10	20	35	19	17	4	31	11
V	309	199	74	102	287	305	223	97	19	84	61
Ba	500	765	1440	744	607	301	429	603	244	392	421
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Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Deep Rock Metavolcanic Suite											
Core#	DRB4	DRB4	DRB4	DRB4	DRB4	DRB4	DRB5	DRB5	DRB5	DRB5	DRB5
Box	66	82	101	103	146	123	145	73	69	77	61
SAMPLE#	1397	1490	1613	1631	1916	1758.4	1912	1802	1776	1823	1723
Rock Type	Inter MV	Mafic MV	Mafic MV	Felsite MV	Inter MV	Inter MV	Inter MV				
SiO ₂	61.36	61.93	68.05	67.19	65.85	51.47	54.51	72.89	63.05	62.18	64.84
TiO ₂	1.28	1.37	0.80	0.92	0.97	2.12	1.71	0.38	0.86	0.79	0.70
Al ₂ O ₃	18.03	13.36	13.90	15.46	13.97	15.12	14.57	14.34	16.74	16.25	15.77
Fe ₂ O ₃	8.86	8.89	5.07	5.92	7.61	13.26	11.21	2.94	6.24	6.15	11.13
MnO	0.16	0.15	0.13	0.11	0.11	0.21	0.19	0.04	0.10	0.12	0.12
MgO	2.22	4.44	1.54	2.11	3.10	6.95	6.10	0.87	2.62	3.01	2.78
CaO	1.06	5.76	5.04	3.97	3.84	7.46	7.63	2.17	4.60	4.66	4.40
Na ₂ O	1.35	2.76	1.39	2.11	3.46	2.36	2.23	5.87	5.21	4.3	4.07
K ₂ O	4.38	1.90	2.25	3.02	1.69	0.54	1.55	0.96	1.42	2.11	1.77
P ₂ O ₅	0.40	0.18	0.16	0.17	0.16	0.26	0.23	0.08	0.21	0.182	0.18
SUM	99.10	100.72	98.32	100.99	100.77	99.74	99.905	100.54	101.06	100.823	101.29
%LOI	2.74%	2.63%	1.74%	1.66%	0.75%	1.81%	1.01%	0.75%	2.99%	1.60%	1.62%
Nb	17	18	16	20	11	16	11	11	7	4	10
Zr	261	201	182	212	171	185	170	149	99	104	122
Y	50	28	42	48	26	33	28	30	21	22	26
Sr	114	228	146	156	262	310	209	331	350	436	297
Rb	174	75	92	111	65	23	55	17	25	50	34
Zn	113	97	71	92	79	105	93	28	47	60	63
Cu	3	49	22	6	55	70	76	27	11	13	1
Ni	36	86	27	24	43	165	178	2	1	2	12
Cr	71	173	63	47	91	329	384	2	5	nd	40
Sc	25	15	15	15	15	32	29	7	16	nd	11
V	152	191	109	93	148	304	226	38	115	116	107
Ba	830	368	440	444	306	233	447	301	405	461	517
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Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

	Deep Rock Metavolcanic Suite					Deep Rock Metavolcanics			
Core#	DRB5	DRB5	DRB6	DRB6	DRB6	DRB6	DRB7	DRB7	DRB7
Box	13	63	4M	68	92	103	107	38	2
SAMPLE#	1416	1735	1125	1570	1758	1810	1837	1601	1373
Rock Type	Mafic MV	Mafic MV	Mafic MV	Mafic MV	Mafic MV	Mafic MV	Felsite MV	Mafic MV	Mafic MV
SiO ₂	53.32	62.14	51.87	50.52	54.89	49.44	51.87	70.59	62.45
TiO ₂	1.02	0.74	1.32	1.12	1.18	1.29	1.18	0.46	0.96
Al ₂ O ₃	19.78	17.27	17.74	18.41	19.05	17.68	18.58	15.62	18.21
Fe ₂ O ₃	10.23	6.82	11.52	12.51	9.96	12.39	10.03	3.13	6.88
MnO	0.18	0.11	0.21	0.21	0.19	0.23	0.19	0.07	0.15
MgO	3.72	2.44	4.15	5.24	6.10	5.03	4.55	0.97	1.75
CaO	8.09	4.39	8.23	8.25	7.48	8.90	7.72	2.85	3.10
Na ₂ O	4.64	5.38	2.79	2.97	4.17	1.73	3.66	5.90	3.56
K ₂ O	0.70	1.42	2.45	1.93	2.89	3.94	2.92	0.95	3.38
P ₂ O ₅	0.26	0.20	0.42	0.20	0.45	0.39	0.39	0.14	0.25
SUM	101.93	100.91	100.70	101.35	106.37	101.01	101.08	100.68	100.71
%LOI	2.67%	1.52%	1.08%	1.03%	4.48%	1.67%	1.89%	0.40%	1.72%
Nb	4	6	7	3	6	6	7	8	10
Zr	71	115	164	89	148	163	141	198	221
Y	20	23	33	22	29	28	26	24	30
Sr	655	351	711	507	509	885	647	515	429
Rb	10	29	59	45	70	108	67	22	88
Zn	109	52	125	106	114	136	126	30	83
Cu	113	40	230	131	167	150	83	76	21
Ni	24	3	19	22	77	18	24	2	5
Cr	51	4	35	56	191	38	76	nd	9
Sc	22	13	22	28	24	26	21	6	17
V	251	82	283	363	229	316	226	57	122
Ba	218	412	710	507	544	660	679	571	795
									684

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Dikes within Deep Rock Metavolcanics												
Core#	DRB3	DRB3	DRB3	DRB6	DRB6	DRB5	DRB6	DRB2	DRB2	DRB2	DRB2	
Box	41	130	140	7F	92F	15F	4F	23	27	29	31	
SAMPLE#	1225	1828	1896	1140	1758F	1324	1125	1117	1137	1154	1170	
Rock Type	Felsic Dike	Mafic Dike	Mafic Dike	Mafic Dike	Mafic Dike							
SiO ₂	58.60	67.18	65.69	68.78	67.21	73.83	70.82	50.85	51.71	48.91	50.71	51.76
TiO ₂	1.15	0.73	0.68	0.69	0.55	0.23	0.49	1.29	1.20	0.87	0.98	1.19
Al ₂ O ₃	16.57	16.35	16.44	16.02	16.43	14.51	14.96	18.06	18.96	17.92	19.04	18.00
Fe ₂ O ₃	9.62	4.74	4.03	4.19	4.21	1.89	3.34	11.58	11.30	11.75	12.07	10.77
MnO	0.16	0.10	0.10	0.12	0.08	0.03	0.06	0.21	0.21	0.20	0.22	0.18
MgO	2.70	1.21	1.62	1.00	1.46	0.58	0.89	4.50	3.93	6.18	4.87	3.70
CaO	5.77	3.75	4.29	3.35	4.79	2.38	4.13	10.71	10.35	11.51	8.76	9.57
Na ₂ O	4.09	5.64	5.36	5.83	5.13	5.70	4.63	3.21	2.93	2.75	4.03	3.18
K ₂ O	2.15	1.62	1.53	0.92	1.30	0.90	0.66	0.92	0.72	0.96	0.72	0.95
P ₂ O ₅	0.46	0.20	0.19	0.17	0.15	0.08	0.11	0.32	0.38	0.31	0.27	0.35
SUM	101.27	101.51	99.94	101.08	101.32	100.12	100.09	101.63	101.68	101.36	101.68	99.64
%LOI	2.56%	1.07%	0.97%	0.30%	1.19%	5.50%	0.48%	1.35%	1.01%	1.06%	1.18%	1.05%
Nb	7	9	4	11	7	23	10	5	6	1	4	5
Zr	152	187	176	190	188	117	186	135	140	77	101	148
Y	36	32	29	45	27	10	39	32	32	21	24	34
Sr	472	418	437	563	617	543	470	614	680	647	666	617
Rb	41	33	33	22	32	24	17	24	18	23	17	21
Zn	102	59	55	74	32	29	20	98	129	79	64	62
Cu	145	10	60	34	78	38	80	249	199	33	28	178
Ni	7	6	12	3	9	2	5	16	20	24	9	7
Cr	17	6	nd	1	37	0	26	54	37	97	16	12
Sc	17	9	nd	8	6	4	3	31	28	35	31	29
V	177	83	87	42	101	24	61	330	311	275	303	273
Ba	637	858	nd	665	272	1111	325	279	223	245	201	425

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

	Dikes DRMV			DRB Plutonic Suite							
Core#	DRB2	DRB2	DRB2	DRB1	DRB1	DRB1	DRB1	DRB1	DRB1	DRB1	DRB1
Box	8	12	18	18	22	25	41	51	59	60	98
SAMPLE#	1025.7	1053.5	1085.7	1005	1028	1047	1151	1215	1268	1276	1504
Rock Type	Plg Porph Dike	Plg Porph Dike	Plg Porph Dike	Quartz Diorite	Tonalite	Diorite	Quartz Diorite	Quartz Diorite	Quartz Diorite	Tonalite	Tonalite
SiO ₂	50.90	51.89	58.48	60.04	69.38	50.00	54.34	59.58	53.50	70.37	70.04
TiO ₂	0.72	1.05	1.21	0.78	0.53	1.09	1.17	0.76	1.05	0.58	0.60
Al ₂ O ₃	18.38	17.18	16.48	17.05	15.16	17.39	16.14	17.65	17.69	15.10	15.31
Fe ₂ O ₃	11.02	11.06	9.79	8.05	5.66	12.10	12.08	5.77	10.37	3.61	3.65
MnO	0.25	0.19	0.17	0.15	0.08	0.20	0.15	0.13	0.18	0.05	0.06
MgO	5.91	4.78	2.79	3.15	1.25	6.72	4.25	2.17	3.77	1.00	1.07
CaO	8.67	9.33	6.98	5.89	3.41	9.60	8.37	5.94	8.26	3.22	2.94
Na ₂ O	2.90	3.06	2.89	4.28	5.06	3.84	3.21	5.67	4.69	6.78	7.04
K ₂ O	2.15	1.18	2.15	0.93	0.53	0.47	1.03	0.93	0.26	0.29	0.29
P ₂ O ₅	0.16	0.33	0.50	0.18	0.11	0.14	0.16	0.23	0.25	0.15	0.17
SUM	101.05	100.03	101.42	100.49	101.18	101.56	100.91	98.82	100.03	101.15	101.17
%LOI	1.01%	0.96%	0.60%	1.51%	1.07%	1.50%	0.69%	0.47%	0.75%	1.33%	0.55%
Nb	4	6	3	7	8	3	5	6	6	4	11
Zr	85	132	75	141	171	65	107	181	91	85	202
Y	20	32	19	25	25	18	27	22	24	16	30
Sr	574	645	423	316	236	263	297	373	403	381	225
Rb	49	30	20	19	9	7	20	18	4	3	4
Zn	109	98	122	81	33	91	69	85	72	59	24
Cu	6	162	12	81	115	87	26	7	80	6	2
Ni	29	19	8	12	3	41	6	7	7	24	2
Cr	86	49	21	16	6	142	19	9	13	22	1
Sc	29	30	13	15	12	38	30	16	25	24	11
V	228	310	235	142	42	316	352	99	228	172	43
Ba	499	388	360	579	170	126	346	442	156	106	245

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

	DRB Plutonic Suite				DRB Metasediments		
Core#	DRB1	DRB1	DRB1	DRB1	DRB4	DRB4	DRB4
Box	99	124	153	156	34	36	38
SAMPLE#	1509	1660	1837	1852	1192	1203	1216
Rock Type	Quartz Diorite	Quartz Diorite	Quartz Diorite	Quartz Diorite	Metaseds Wall Rock	Metaseds Wall Rock	Metaseds Wall Rock
SiO ₂	55.58	58.46	57.55	59.48	86.31	84.88	86.17
TiO ₂	0.65	0.96	0.71	0.79	0.30	0.50	0.25
Al ₂ O ₃	18.15	17.63	17.46	17.51	7.27	7.80	6.69
Fe ₂ O ₃	8.22	9.11	8.22	7.47	2.88	2.54	0.89
MnO	0.14	0.11	0.13	0.12	0.03	0.03	0.06
MgO	4.99	2.74	4.15	2.62	0.24	0.43	0.24
CaO	9.24	4.71	6.06	6.92	0.94	0.43	2.22
Na ₂ O	3.94	7.93	6.21	4.54	0.13	1.14	0.24
K ₂ O	0.22	0.13	0.66	0.79	1.83	1.86	1.61
P ₂ O ₅	0.13	0.14	0.11	0.21	0.02	0.02	0.01
SUM	101.26	101.92	101.25	100.44	99.95	99.63	98.37
%LOI	0.79%	1.86%	0.46%	0.54%	0.89%	1.14%	2.21%
Nb	10	5	4	6	10	13	9
Zr	213	151	84	149	84	132	78
Y	31	22	21	22	22	20	15
Sr	213	179	199	407	32	33	52
Rb	5	nd	11	16	74	77	65
Zn	22	52	55	39	9	38	9
Cu	6	12	71	62	1	47	3
Ni	1	12	28	10	3	8	2
Cr	1	8	16	5	11	14	7
Sc	12	20	25	15	1	6	5
V	40	184	188	144	29	45	20
Ba	187	64	222	327	290	260	432

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Pen Branch Metavolcanic Suite							Pen Branch Metavolcanic Suite				
Core#	PBF7	PBF7	PBF7	PBF7	PBF7	PBF7	SA	SA	SA	SA	SA
Box	101	149	161	175	175	175	1of3	1of3	2of3	3of3	3of3
SAMPLE#	2516	3238	3408	3617	3626	3630	3648	1959	1960	2181	3403
Rock Type	Mafic MV Wall	Mafic MV Wall	Mafic MV Wall	Inter Gneiss	Inter Gneiss						
SiO ₂	55.84	55.56	54.91	56.9	50.89	47.8	59.57	48.31	50.7	53.72	57.08
TiO ₂	1.27	1.33	1.27	0.97	1.36	1.47	1.09	0.92	0.92	1.28	0.71
Al ₂ O ₃	16.88	16.68	16.22	17.49	16.69	16.88	16.76	18.58	19.7	16.7	17.74
Fe ₂ O ₃	8.47	8.17	8.71	10.25	12.32	13.37	9.75	10.65	9.18	10.8	7.90
MnO	0.156	0.188	0.147	0.193	0.231	0.234	0.199	0.159	0.147	0.179	0.16
MgO	4.66	4.45	5.02	3.74	4.8	5.29	2.85	6.74	5.49	3.85	5.05
CaO	6.99	8.27	8.11	6.26	9.51	11.08	6.23	10.83	10.27	7.28	7.52
Na ₂ O	3.28	3.53	3.69	4.49	3.91	3.59	2.96	3.27	3.4	3.5	3.44
K ₂ O	2.969	1.21	0.956	0.862	1.321	1.025	1.485	1.103	1.356	1.946	1.02
P ₂ O ₅	0.345	0.265	0.178	0.168	0.529	0.612	0.181	0.505	0.179	0.318	0.18
SUM	100.86	99.66	99.21	101.32	101.57	101.35	101.07	101.08	101.34	99.58	100.82
%LOI	4.96%	1.15%	0.81%	0.75%	1.17%	1.27%	0.79%	0.89%	1.13%	1.73%	1.45%
Nb	19	11	10	3	6	22	4	3	9	7	7
Zr	335	158	144	95	108	257	138	76	81	92	114
Y	47	30	28	26	26	39	36	14	15	32	18
Sr	347	358	320	274	546	434	552	617	609	476	507
Rb	108	43	32	18	44	72	36	37	61	86	31
Zn	84	70	71	90	176	50	97	67	67	96	84
Cu	18	19	26	38	108	4	53	38	11	76	11
Ni	49	17	36	16	12	8	8	56	36	13	55
Cr	97	118	95	52	31	6	33	191	172	20	191
Sc	20	23	26	24	31	14	22	22	26	25	22
V	125	183	186	196	305	81	163	160	219	238	152
Ba	1191	285	255	252	317	739	393	151	270	330	291
											185

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

Core#	PBF Plutonic Suite: "Unpinked"								
	C5	C5	PBF7	PBF7	PBF7	PBF7	PBF7	PBF7	C5
Box	none	none	103	107	108	115	115T	139	159
SAMPLE#	1077	1084	2550	2602	2629	2726	2726	3086	3387
Rock Type	mafic schist	mafic schist	Grano-diorite	Grano-diorite	Grano-diorite	Grano-diorite	Grano-diorite	Grano-diorite	felsic dike
SiO ₂	57.08	56.79	58.16	54.69	64.24	58.36	62.22	59.30	68.36
TiO ₂	1.95	1.33	1.39	1.76	1.07	1.13	0.84	0.83	0.84
Al ₂ O ₃	16.18	16.76	16.74	16.54	15.66	15.53	15.29	17.54	14.39
Fe ₂ O ₃	9.61	8.25	8.46	9.93	6.18	7.69	6.85	8.37	5.08
MnO	0.178	0.152	0.15	0.18	0.12	0.14	0.12	0.18	0.09
MgO	3.94	4.91	3.46	3.52	1.97	4.48	3.90	2.97	1.42
CaO	7.2	6.26	6.94	7.69	4.70	7.22	5.69	5.82	4.62
Na ₂ O	3.52	3.81	3.93	2.84	3.90	3.49	3.52	4.11	3.29
K ₂ O	1.165	1.871	1.48	3.15	3.22	1.29	2.25	1.69	2.19
P ₂ O ₅	0.28	0.192	0.34	0.60	0.21	0.24	0.17	0.13	0.17
SUM	101.1	100.33	101.06	100.90	101.27	99.57	100.84	100.97	100.45
%LOI	3.24%	2.29%	1.60%	1.26%	0.63%	2.28%	1.89%	1.78%	1.36%
Nb	13	9	19	18	23	10	8	5	4
Zr	271	192	275	305	298	172	138	134	122
Y	49	30	42	53	44	22	19	21	33
Sr	425	458	421	347	311	450	388	341	551
Rb	32	61	49	97	70	42	69	55	39
Zn	94	72	179	89	66	69	63	103	96
Cu	36	18	81	117	51	32	19	61	52
Ni	25	35	19	22	14	52	52	21	10
Cr	88	29	42	32	12	86	73	47	30
Sc	25	19	20	24	11	22	19	17	22
V	211	144	157	147	96	147	114	148	162
Ba	293	1647	486	995	960	378	852	427	393
									550

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

PBF Plutonics: "Partly Pinked"				PBF Plutonic Suite: "Pinked"							
Core#	PBF7	PBF7	PBF7	C10A	PBF7						
Box	143	145	157	none	167	169	171	171	173	165	
SAMPLE#	3139.6	3177	3352	1734	3503	3541	3568	3570	3593	3467	
Rock Type	part pinked granite	part pinked granite	part pinked granite	part pinked granite	pink granite	pink granite	pink granite	pink granite	pink granite	pink granite	pink granite
SiO ₂	71.57	72.29	72.78	72.54	74.16	77.12	75.45	75.31	76.84	74.62	71.90
TiO ₂	0.51	0.55	0.51	0.53	0.35	0.06	0.08	0.14	0.09	0.11	0.49
Al ₂ O ₃	14.06	13.34	13.53	13.62	13.93	12.66	13.00	13.23	12.96	12.71	13.31
Fe ₂ O ₃	3.50	3.64	3.46	3.67	2.39	1.12	1.54	1.36	1.30	1.48	3.34
MnO	0.07	0.06	0.09	0.06	0.06	0.02	0.07	0.04	0.03	0.04	0.07
MgO	0.56	0.65	0.52	0.59	0.45	0.02	0.11	0.28	0.07	0.07	0.55
CaO	1.68	2.00	2.17	2.00	0.81	0.49	0.88	0.98	0.59	0.59	1.82
Na ₂ O	3.58	3.36	3.72	3.57	3.82	4.39	5.63	4.03	3.90	4.11	3.54
K ₂ O	5.00	4.52	3.89	4.14	4.89	4.79	3.17	5.25	5.25	5.03	4.79
P ₂ O ₅	0.11	0.11	0.11	0.11	0.08	0.01	0.02	0.02	0.02	0.02	0.11
SUM	100.63	100.52	100.78	100.84	100.94	100.67	99.93	100.64	101.04	98.78	99.92
%LOI	0.85%	0.71%	1.05%	1.36%	0.71%	0.71%	0.84%	0.71%	0.51%	0.29%	0.37%
Nb	24	27	25	25	34	143	7	40	52	27	24
Zr	242	268	238	259	215	138	95	115	120	130	207
Y	57	58	59	56	29	114	28	82	80	51	48
Sr	135	147	152	138	123	6	716	27	21	20	121
Rb	104	98	80	79	183	143	21	106	97	98	127
Zn	50	57	53	57	51	53	138	34	37	48	50
Cu	3	8	51	12	1	nd	41	nd	nd	nd	5
Ni	5	5	8	7	5	2	11	5	2	3	5
Cr	nd	3	nd	nd	nd	nd	37	nd	nd	nd	nd
Sc	4	8	5	2	2	4	32	4	2	5	6
V	31	31	31	30	17	nd	356	3	3	nd	26
Ba	803	851	766	821	798	4	157	115	85	66	844

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

DR-2 . W hole rock major and trace element analyses by x-ray fluorescence.

PBF Plutonic Suite: "Pinked"					
Core#	SA	SA	SA	SA	C2
Box	56	57	58	61	62
SAMPLE#	1078	1086	1089	1107	1118
Rock Type	pink granite	pink granite	pink granite	pink granite	Springfield Granite
SiO ₂	74.66	71.95	73.69	74.15	72.72
TiO ₂	0.24	0.26	0.21	0.25	0.24
Al ₂ O ₃	14.22	15.58	13.56	14.20	13.72
Fe ₂ O ₃	1.86	1.89	1.37	1.89	1.74
MnO	0.04	0.03	0.04	0.05	0.04
MgO	0.50	0.62	0.48	0.75	0.65
CaO	1.13	1.21	1.05	1.81	1.38
Na ₂ O	3.16	3.75	3.36	3.40	3.20
K ₂ O	4.52	5.08	4.54	4.14	4.69
P ₂ O ₅	0.06	0.07	0.05	0.06	0.06
SUM	100.38	100.44	98.36	100.70	98.43
%LOI	1.20%	0.93%	0.60%	1.17%	0.79%
Nb	13	16	14	13	10
Zr	131	143	124	125	134
Y	18	21	12	24	12
Sr	172	183	186	223	261
Rb	194	215	198	153	146
Zn	11	12	12	20	15
Cu	2	8	1	nd	2
Ni	9	5	4	5	8
Cr	24	3	nd	nd	3
Sc	2	5	3	2	3
V	17	22	13	17	23
Ba	719	840	800	892	1843
					473

Major elements on pre-ignited fused glass beads, results in wt% oxide. Trace elements on pressed powders, results in ppm.

D R -3 .W hole rock R E E , Y , Pb , Th , and U analyses by I C P -M S .

Core Box Sample#	Crackerneck Volcanic Complex				Deep Rock Metavolcanic Complex						
	C1	C3	MMP4	P30	DRB3	DRB3	DRB3	DRB3	DRB4	DRB4	DRB4
	none	none	none	none	6	21	41	59	66	76	101
	574	540	817	781	988	1093	1220	1346	1397	1450.7	1613
	Felsic Tuff	Felsic Tuff	Felsic Lapilli Tuff	Felsic Lapilli Tuff	Felsic MV Wall	Mafic MV Wall	Inter MV Wall	Mafic MV Wall	Inter MV Wall	Felsic Gneiss	Inter MV Wall
La ppm	28.1	13.6	16.5	11.6	21.6	11.9	19.2	19.8	25.5	30.3	29.8
Ce	66.5	34.4	46.7	31.3	48.6	29.1	42.5	50.7	62.3	70.4	68.2
Pr	8.1	4.7	6.3	3.8	5.8	3.9	4.8	7.2	8.6	8.2	8.5
Nd	29.4	18.3	24.6	16.2	21.0	15.0	18.2	29.2	31.9	30.0	28.4
Sm	7.2	4.2	5.9	3.6	5.9	3.7	3.9	6.9	7.8	7.4	6.1
Eu	1.44	0.95	0.87	0.59	1.50	0.79	0.78	1.81	1.83	0.34	1.19
Gd	4.7	3.4	7.4	5.7	4.6	4.1	3.9	5.4	6.9	6.8	6.2
Tb	0.84	0.57	1.50	1.12	0.80	0.71	0.69	0.84	1.19	1.34	1.08
Dy	4.3	3.1	7.5	6.0	4.6	3.8	3.9	4.2	6.7	7.2	5.4
Ho	0.82	0.57	1.54	1.40	1.11	0.88	0.87	0.76	1.20	1.62	1.02
Er	1.9	1.5	4.7	4.5	2.9	2.4	2.8	2.2	3.8	4.2	2.8
Tm	0.30	0.25	0.65	0.67	0.46	0.41	0.42	0.32	0.55	0.66	0.47
Yb	1.3	1.2	3.7	3.2	2.7	2.1	2.2	1.6	2.7	3.4	2.3
Lu	0.20	0.17	0.50	0.57	0.39	0.36	0.32	0.23	0.39	0.53	0.35
Y	17.5	16.7	64.0	68.3	29.5	22.5	26.2	25.5	41.6	41.3	43.6
Pb	11.2	8.1	11.1	2.8	10.0	7.1	8.4	7.1	14.7	13.8	11.8
Th	6.7	1.1	0.8	0.6	8.2	3.0	8.1	0.8	1.6	15.2	1.7
U	1.6	1.1	0.8	0.6	2.0	0.8	1.8	0.8	1.6	3.2	1.7
La /chondrite	82.5	39.9	48.4	34.0	63.6	35.0	56.4	58.3	75.1	89.2	87.7
Ce	73.1	37.9	51.3	34.4	53.4	31.9	46.7	55.8	68.4	77.4	75.0
Pr	66.6	39.2	52.0	31.3	47.8	32.1	39.6	59.9	71.2	67.8	69.9
Nd	50.6	31.6	42.3	27.9	36.1	25.9	31.4	50.4	55.0	51.6	49.0
Sm	36.8	21.4	30.2	18.4	30.3	18.9	20.2	35.5	39.8	38.2	31.1
Eu	19.6	13.0	11.9	8.1	20.6	10.8	10.7	24.8	25.0	4.7	16.3
Gd	18.6	13.4	29.0	22.5	18.2	16.0	15.5	21.3	27.0	26.6	24.2
Tb	17.7	12.0	31.5	23.7	16.8	14.9	14.4	17.7	25.0	28.1	22.8
Dy	15.1	10.9	26.1	20.9	16.2	13.2	13.5	14.8	23.4	25.3	19.1
Ho	10.5	7.3	19.7	18.0	14.2	11.3	11.2	9.7	15.4	20.8	13.1
Er	9.9	7.8	23.9	22.9	14.8	12.5	14.5	11.2	19.3	21.4	14.6
Tm	9.3	7.7	20.3	21.1	14.5	12.8	13.2	10.0	17.2	20.6	14.6
Yb	6.6	6.2	18.5	15.8	13.3	10.7	10.8	8.0	13.5	17.2	11.4
Lu	5.8	5.0	14.7	16.8	11.6	10.5	9.4	6.9	11.4	15.7	10.2
Y	8.3	8.0	30.5	32.5	14.0	10.7	12.5	12.1	19.8	19.6	20.8

NeoProterozoic Arc Terranes Beneath the Savannah River Site, S.C.

D R -3 .W hole rock R E E , Y , Pb , Th , and U analyses by I C P -M S .

Core Box Sample#	DRB4 123 1758.4	DRB4 131 1831	DRB4 145 1912	DRB5 15M 1324	DRB5 73 1802	DRB6 4M 1125	DRB6 103 1810	DRB2 12 1053.5	DRB2 108 1687	DRB1 18 1005	DRB1 25 1047
	Mafic MV Wall	Felsite MV Wall	Mafic MV Wall	Mafic MV Wall	Felsite MV Wall	Mafic MV Wall	Mafic MV Wall	Plg Porph Dike	Mafic Dike	quartz diorite	diorite
La ppm	12.7	26.4	11.7	7.8	12.3	14.0	19.1	15.0	14.7	10.4	3.6
Ce	30.8	59.9	29.6	19.1	28.7	33.3	44.9	36.7	36.4	25.7	9.6
Pr	4.2	7.7	3.6	2.4	3.5	4.4	5.7	5.1	4.8	3.2	1.3
Nd	17.1	26.9	12.2	10.2	13.1	17.5	22.9	19.3	18.3	13.1	5.5
Sm	4.4	5.8	3.2	2.4	3.2	4.5	5.9	4.9	4.5	2.9	1.4
Eu	1.05	0.96	0.62	0.59	0.47	0.97	1.43	1.10	0.91	0.60	0.39
Gd	4.5	6.2	3.1	2.8	3.2	4.6	5.3	4.7	4.9	3.3	2.0
Tb	0.82	1.15	0.62	0.55	0.68	0.91	0.93	0.82	0.93	0.59	0.38
Dy	4.6	5.0	2.5	2.7	3.8	4.8	4.9	4.4	5.0	3.2	2.1
Ho	0.96	1.07	0.51	0.61	0.98	1.12	0.94	0.79	1.20	0.64	0.45
Er	2.5	3.5	1.9	1.5	2.9	2.8	2.6	2.6	3.3	2.1	1.4
Tm	0.34	0.48	0.31	0.23	0.48	0.46	0.33	0.38	0.59	0.37	0.24
Yb	1.8	2.3	1.3	1.2	2.4	2.4	1.9	1.9	2.9	1.8	1.3
Lu	0.24	0.31	0.25	0.20	0.36	0.33	0.29	0.32	0.48	0.28	0.20
Y	25.9	46.2	27.9	14.4	23.9	27.4	26.6	30.9	27.5	26.5	19.6
Pb	6.7	13.3	7.1	6.7	8.5	11.1	17.1	5.3	5.3	4.5	3.9
Th	2.1	1.6	0.6	1.2	4.7	3.4	2.8	1.0	3.5	0.6	0.4
U	0.4	1.6	0.6	0.3	1.2	0.9	0.9	1.0	1.1	0.6	0.4
La /chondrite	37.3	77.8	34.4	22.9	36.2	41.1	56.1	44.2	43.3	30.6	10.6
Ce	33.9	65.8	32.5	21.0	31.5	36.6	49.4	40.3	40.1	28.3	10.6
Pr	34.8	63.6	30.2	20.0	29.2	36.0	47.3	42.0	39.5	26.6	10.8
Nd	29.5	46.4	21.1	17.7	22.5	30.2	39.5	33.3	31.5	22.6	9.5
Sm	22.5	29.6	16.5	12.4	16.5	22.9	30.5	24.9	22.9	14.8	7.2
Eu	14.4	13.1	8.5	8.1	6.4	13.3	19.6	15.1	12.5	8.2	5.3
Gd	17.5	24.1	12.2	10.8	12.6	17.9	20.7	18.6	19.2	13.0	7.9
Tb	17.2	24.3	13.1	11.6	14.4	19.2	19.5	17.2	19.7	12.4	8.0
Dy	16.2	17.7	8.8	9.3	13.4	16.8	17.1	15.4	17.6	11.3	7.4
Ho	12.4	13.7	6.5	7.8	12.5	14.3	12.0	10.1	15.3	8.2	5.7
Er	12.9	18.0	9.6	7.8	14.6	14.3	13.4	13.2	16.7	10.8	7.2
Tm	10.7	15.0	9.7	7.2	14.9	14.3	10.3	11.7	18.3	11.4	7.5
Yb	9.2	11.5	6.4	6.1	11.9	12.2	9.4	9.4	14.7	8.9	6.5
Lu	7.0	9.0	7.3	5.8	10.7	9.8	8.4	9.4	14.1	8.2	5.9
Y	12.3	22.0	13.3	6.8	11.4	13.1	12.7	14.7	13.1	12.6	9.4

NeoProterozoic Arc Terranes Beneath the Savannah River Site, S.C.

D R -3 .W hole rock R E E , Y , Pb , Th , and U analyses by I C P -M S .

Core Box Sample#	DRB1 41 1151	DRB1 60 1276	PBF7 171 3568	PBF7 103 2550	PBF7 107 2602	PBF7 108 2629	PBF7 139 3086	C5 none 1084	C5 none 1080
	quartz diorite	tonalite	pink granite	grano- diorite	grano- diorite	grano- diorite	grano- diorite	pink granite	felsic dike
La ppm	7.9	6.5	17.0	25.8	29.8	22.2	11.3	11.7	32.4
Ce	21.7	15.5	48.2	63.7	69.4	51.1	28.3	26.2	79.8
Pr	3.3	1.9	7.2	8.6	8.6	5.8	3.9	3.2	10.3
Nd	14.1	7.5	26.8	32.6	34.2	22.7	15.1	13.5	38.2
Sm	4.1	1.8	8.3	7.6	9.0	5.4	4.3	10.3	10.3
Eu	0.92	0.43	0.34	1.77	2.54	1.30	1.05	4.69	2.08
Gd	4.1	2.2	9.9	7.2	7.9	5.5	3.6	3.7	8.7
Tb	0.72	0.42	2.05	1.25	1.48	1.19	0.62	0.76	1.50
Dy	4.3	2.4	11.3	6.9	8.0	6.4	3.4	4.1	8.1
Ho	0.84	0.53	2.19	1.34	1.80	1.52	0.69	0.96	1.59
Er	2.5	1.8	6.9	4.0	4.6	4.2	2.2	2.5	5.1
Tm	0.39	0.25	1.02	0.57	0.68	0.66	0.36	0.39	0.72
Yb	2.0	1.6	5.4	3.1	3.6	3.4	1.7	2.0	3.9
Lu	0.31	0.27	0.80	0.48	0.59	0.58	0.31	0.30	0.61
Y	27.8	14.5	82.5	42.1	46.5	40.7	24.4	24.7	58.8
Pb	16.6	3.4	14.1	16.6	12.7	13.0	14.8	19.8	18.9
Th	0.9	1.8	1.4	1.4	4.4	6.9	1.0	4.5	2.1
U	0.9	0.4	1.4	1.4	1.4	1.5	1.0	1.6	2.1
La /chondrite	23.4	19.2	49.9	75.8	87.7	65.3	33.4	34.4	95.3
Ce	23.8	17.1	52.9	70.0	76.3	56.1	31.1	28.7	87.6
Pr	26.9	16.0	59.2	70.8	70.9	48.3	32.1	26.7	85.1
Nd	24.2	12.9	46.2	56.2	59.0	39.2	26.1	23.3	65.9
Sm	20.9	9.0	42.5	39.1	46.2	27.8	22.2	52.7	52.8
Eu	12.5	5.9	4.6	24.2	34.7	17.7	14.3	64.0	28.5
Gd	16.0	8.7	38.9	28.2	31.2	21.7	14.0	14.4	34.0
Tb	15.2	8.9	43.1	26.4	31.2	25.1	13.0	16.0	31.7
Dy	15.0	8.5	39.8	24.4	28.2	22.4	11.9	14.4	28.4
Ho	10.7	6.7	28.1	17.2	23.1	19.4	8.9	12.3	20.4
Er	12.9	9.5	35.2	20.3	23.8	21.5	11.3	12.9	26.0
Tm	12.1	7.8	32.0	17.9	21.2	20.6	11.1	12.2	22.4
Yb	10.2	7.8	27.1	15.7	18.0	16.8	8.6	10.0	19.7
Lu	9.0	7.9	23.5	14.1	17.5	17.2	9.2	8.9	18.0
Y	13.2	6.9	39.3	20.0	22.1	19.4	11.6	11.8	28.0

NeoProterozoic Arc Terranes Beneath the Savannah River Site, S.C.

DR-4. Representative Plagioclase analyses.

Sample #	P6R	DRB-2-11	DRB-2-11	DRB-2-11	DRB-2-11	DRB-2-11						
Unit	Crackerneck	Metavolc	Metavolc	Metavolc	Metavolc	Metavolc						
SiO₂	69.32	69.13	68.38	67.93	67.83	68.35	66.93	61.59	60.62	60.52	60.56	59.70
TiO₂	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Al₂O₃	20.39	20.21	19.98	19.86	19.90	19.99	20.18	25.11	25.56	25.52	25.92	25.50
MgO	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00
CaO	0.19	0.19	0.20	0.20	0.22	0.27	0.85	5.81	6.43	6.44	6.65	6.72
FeO	0.03	0.06	0.03	0.32	0.00	0.03	0.08	0.16	0.06	0.05	0.03	0.02
Na₂O	10.83	10.57	10.71	10.47	10.48	10.33	9.88	7.44	7.31	7.26	7.23	7.09
K₂O	0.07	0.06	0.07	0.08	0.09	0.07	0.11	0.17	0.08	0.07	0.04	0.08
Total	100.83	100.23	99.38	98.88	98.54	99.05	98.05	100.30	100.07	99.86	100.46	99.13
Mol% An	1.0	1.0	1.0	1.1	1.1	1.4	4.5	29.8	32.5	32.7	33.5	34.1

Sample #	DRB-2-11	DRB-2-11	DRB-2-11	DRB-2-73								
Unit	Metavolc											
SiO₂	60.03	58.89	59.16	61.32	61.80	61.34	61.32	61.80	61.34	58.18	58.21	58.13
TiO₂	0.03	0.00	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.00	0.01	0.00
Al₂O₃	25.73	25.58	25.92	24.64	25.01	25.47	24.64	25.01	25.47	25.41	26.60	26.90
MgO	0.00	0.00	0.00	0.02	0.01	0.03	0.02	0.01	0.03	0.00	0.01	0.02
CaO	6.79	6.93	7.18	5.72	5.75	6.08	5.72	5.75	6.08	7.11	8.00	8.14
FeO	0.02	0.04	0.03	0.05	0.05	0.09	0.05	0.05	0.09	0.08	0.15	0.03
Na₂O	7.15	6.86	6.78	7.36	7.50	7.70	7.36	7.50	7.70	6.51	6.14	6.20
K₂O	0.04	0.07	0.05	0.18	0.13	0.09	0.18	0.13	0.09	0.16	0.13	0.07
Total	99.77	98.37	99.13	99.31	100.26	100.80	99.31	100.26	100.80	97.45	99.25	99.50
Mol% An	34.2	35.6	36.7	29.6	29.4	30.1	29.6	29.4	30.1	37.2	41.5	41.8

Sample #	DRB-2-73	DRB-2-73	DRB-2-98	DRB-3-41	DRB-3-41							
Unit	Metavolc											
SiO₂	57.42	57.45	59.25	57.93	57.98	57.42	56.97	57.62	59.08	58.21	67.54	66.64
TiO₂	0.01	0.02	0.03	0.00	0.01	0.06	0.02	0.00	0.02	0.00	0.00	0.01
Al₂O₃	26.65	26.84	26.51	25.97	26.32	26.45	26.45	26.84	25.59	25.89	20.70	20.58
MgO	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	8.26	8.37	7.36	7.40	7.56	7.90	8.00	8.14	6.78	7.21	0.96	1.07
FeO	0.10	0.14	0.10	0.03	0.09	0.15	0.04	0.02	0.06	0.14	0.22	0.02
Na₂O	6.02	5.98	6.78	6.61	6.56	6.31	6.16	6.32	6.97	6.67	10.26	10.16
K₂O	0.15	0.14	0.09	0.08	0.05	0.08	0.38	0.07	0.07	0.06	0.07	0.04
Total	98.61	98.96	100.12	98.02	98.57	98.37	98.03	99.00	98.57	98.17	99.76	98.51
Mol% An	42.6	43.1	37.2	38.0	38.7	40.6	40.7	41.3	34.7	37.2	4.9	5.5

DR-4. Representative Plagioclase analyses.

Sample #	DRB-3-41	PBF-7-177	PBF-7-177	PBF-7-177	PBF-7-177	PBF-7-177						
Unit	Metavolc	Amphibolite	Amphibolite	Amphibolite	Amphibolite	Amphibolite						
SiO₂	67.64	64.92	63.70	67.01	67.15	67.06	68.02	59.30	60.12	58.98	59.78	59.63
TiO₂	0.01	0.01	0.01	0.00	0.04	0.00	0.02	0.01	0.01	0.02	0.01	0.00
Al₂O₃	21.05	23.56	23.39	20.20	20.78	20.19	20.77	26.02	26.29	26.37	26.64	26.88
MgO	0.00	0.00	0.00	0.00	0.18	0.00	0.01	0.00	0.00	0.00	0.00	0.00
CaO	1.25	3.78	4.00	0.71	0.73	0.74	0.92	6.98	7.13	7.23	7.42	7.59
FeO	0.29	0.03	0.23	0.02	0.30	0.02	0.11	0.08	0.09	0.18	0.03	0.08
Na₂O	10.06	8.52	8.50	10.26	9.78	10.48	10.47	6.89	6.99	6.87	6.89	6.76
K₂O	0.05	0.10	0.09	0.06	0.41	0.07	0.08	0.08	0.07	0.06	0.06	0.07
Total	100.35	100.93	99.93	98.25	99.37	98.55	100.38	99.36	100.69	99.70	100.84	101.01
Mol% An	6.4	19.5	20.5	3.6	3.9	3.7	4.6	35.6	35.8	36.6	37.1	38.1

Sample #	PBF-7-177	PBF-7-177	PBF-7-177	PBF-7-177	SA							
Unit	Amphibolite											
SiO₂	59.49	58.08	58.14	58.39	59.84	57.57	58.42	58.99	58.72	58.45	58.12	58.20
TiO₂	0.00	0.04	0.01	0.00	0.01	0.02	0.01	0.02	0.01	0.02	0.00	0.04
Al₂O₃	26.89	26.64	26.94	27.35	25.87	27.29	26.81	27.13	26.87	27.04	26.99	27.25
MgO	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.00	0.01	0.00	0.00	0.01
CaO	7.60	7.94	8.11	8.25	6.86	8.66	7.89	7.94	7.95	8.06	8.14	8.27
FeO	0.08	0.13	0.12	0.20	0.07	0.16	0.08	0.07	0.02	0.07	0.03	0.23
Na₂O	6.79	6.48	6.48	6.35	7.01	5.76	6.36	6.54	6.54	6.39	6.25	6.47
K₂O	0.06	0.07	0.07	0.07	0.08	0.07	0.08	0.06	0.07	0.06	0.08	0.06
Total	100.91	99.39	99.88	100.60	99.73	99.56	99.67	100.76	100.19	100.09	99.60	100.53
Mol% An	38.0	40.1	40.6	41.5	34.8	45.1	40.4	39.9	39.9	40.8	41.6	41.2

Sample#	DRB-1-153	DRB-1-60	DRB-1-60									
Phase	Plagioclase											
Rock	Metadiorite											
SiO₂	66.125	65.898	65.935	66.251	65.782	65.728	64.960	62.564	65.059	62.810	62.173	61.765
TiO₂	0.009	0.016	0.013	0.000	0.005	0.007	0.002	0.024	0.002	0.005	0.000	0.002
Al₂O₃	21.323	21.409	21.674	22.221	22.236	21.992	22.604	23.997	21.177	23.597	24.718	24.465
MgO	0.006	0.001	0.000	0.000	0.000	0.000	0.001	0.002	0.002	0.003	0.001	0.009
CaO	1.691	1.843	2.185	2.409	2.446	2.547	3.165	3.502	3.527	4.289	5.504	5.527
FeO	0.133	0.121	0.033	0.028	0.085	0.129	0.035	0.036	1.325	0.179	0.105	0.019
Na₂O	9.976	9.872	9.463	9.626	9.549	9.436	9.142	8.284	9.246	8.624	7.145	7.730
K₂O	0.062	0.074	0.070	0.055	0.055	0.068	0.057	0.747	0.056	0.092	0.063	0.069
Total	99.327	99.234	99.373	100.590	100.158	99.907	99.966	99.160	100.395	99.599	99.719	99.591
An	15.72	17.03	20.25	21.60	22.00	22.89	27.59	30.61	29.57	35.31	45.84	44.00

DR-4. Representative Plagioclase analyses.

Sample#	DRB-1-41	PBF-7-108	PBF-7-159									
Phase	Plagioclase	Plagioclase										
Rock	Metadiorite	Metagranodiorite	Metagranodiorite									
SiO₂	61.651	66.679	64.688	64.959	64.187	62.778	62.858	62.955	62.575	62.197	59.678	65.648
TiO₂	0.004	0.022	0.013	0.009	0.011	0.001	0.006	0.010	0.003	0.004	0.003	0.014
Al₂O₃	24.590	21.325	22.908	23.038	23.392	24.217	24.112	24.180	24.356	24.514	26.159	22.596
MgO	0.000	0.004	0.000	0.000	0.000	0.001	0.000	0.000	0.003	0.000	0.000	0.006
CaO	5.460	1.733	3.388	3.569	3.914	4.773	4.858	5.055	5.232	5.261	7.323	2.964
FeO	0.036	0.035	0.099	0.099	0.290	0.092	0.105	0.176	0.155	0.036	0.213	0.035
Na₂O	7.929	9.582	8.872	8.686	8.647	8.155	8.235	8.055	8.012	7.997	6.851	9.188
K₂O	0.065	0.076	0.055	0.068	0.062	0.075	0.067	0.073	0.074	0.081	0.125	0.109
Total	99.749	99.456	100.023	100.440	100.522	100.092	100.241	100.504	100.414	100.090	100.364	100.560
An	43.08	16.59	29.59	31.12	33.24	39.14	39.34	40.81	41.77	41.94	53.86	26.13

Sample#	DRB-1-59	DRB-1-59	DRB-1-59	DRB-1-59	DRB-1-59	DRB-1-59	DRB-1-60	DRB-1-60	DRB-1-60	DRB-1-60	PBF-7-159	PBF-7-159
Phase	Plagioclase	Plagioclase										
Rock	Metadiorite	Metagranodiorite	Metagranodiorite									
SiO₂	63.601	62.770	62.415	62.844	61.986	61.959	62.150	61.547	62.008	61.915	63.981	64.560
TiO₂	0.002	0.011	0.012	0.007	0.000	0.003	0.005	0.006	0.010	0.003	0.000	0.002
Al₂O₃	23.320	23.863	23.875	24.064	24.015	24.578	24.470	24.410	24.362	24.431	22.764	23.482
MgO	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CaO	3.956	4.515	4.649	4.725	4.797	5.253	5.289	5.303	5.341	5.423	3.542	3.932
FeO	0.044	0.054	0.310	0.039	0.038	0.060	0.027	0.075	0.039	0.030	0.022	0.046
Na₂O	8.686	8.447	8.287	8.198	8.294	7.922	7.874	7.840	7.677	7.667	9.043	8.615
K₂O	0.088	0.067	0.075	0.069	0.068	0.076	0.081	0.069	0.051	0.068	0.080	0.103
Total	99.697	99.736	99.623	99.946	99.200	99.851	99.896	99.250	99.488	99.537	99.432	100.740
An	33.34	37.02	38.13	38.78	38.87	42.14	42.44	42.64	43.36	43.73	30.09	33.36

DR-4. Representative Plagioclase analyses.

Sample#	PBF-7-108											
Phase	Plagioclase											
Rock	Metagrano-diorite											
SiO₂	59.921	60.720	60.386	60.290	59.946	60.192	60.226	61.994	61.176	60.872	60.780	60.195
TiO₂	0.005	0.000	0.021	0.014	0.016	0.022	0.016	0.000	0.000	0.000	0.000	0.014
Al₂O₃	25.833	25.543	25.525	25.720	25.959	26.031	25.653	24.763	25.433	25.735	25.494	25.736
MgO	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.013	0.008	0.008	0.000	0.004
CaO	6.775	6.825	6.889	6.957	6.974	7.010	7.011	1.318	6.305	6.606	6.733	7.032
FeO	0.037	0.056	0.050	0.093	0.065	0.038	0.046	0.165	0.060	0.056	0.026	0.162
Na₂O	7.096	7.023	7.044	7.072	6.951	7.045	6.965	5.531	7.217	7.113	7.104	7.098
K₂O	0.036	0.230	0.210	0.083	0.073	0.081	0.194	5.741	0.183	0.315	0.087	0.066
Total	99.711	100.434	100.144	100.252	99.992	100.422	100.111	99.546	100.382	100.719	100.224	100.310
An	51.26	51.25	51.46	51.90	52.41	52.19	52.21	13.53	48.71	49.94	50.96	52.11

Sample#	PBF-7-108	PBF-7-169	PBF-7-159	PBF-7-169								
Phase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase	Plagioclase
Rock	Metagrano-diorite	Pinked	Metagrano-diorite	Pinked								
SiO₂	59.656	68.634	64.051	69.527	69.351	69.721	69.190	69.867	69.801			
TiO₂	0.000	0.003	0.000	0.004	0.006	0.013	0.007	0.009	0.000			
Al₂O₃	26.104	20.228	23.596	19.815	19.889	19.730	20.136	20.062	19.972			
MgO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002			
CaO	7.082	0.537	4.146	0.434	0.438	0.455	0.468	0.484	0.489			
FeO	0.108	0.021	0.056	0.040	0.061	0.079	0.102	0.064	0.122			
Na₂O	6.874	9.686	8.484	9.739	9.784	9.868	10.026	9.503	9.627			
K₂O	0.111	0.102	0.089	0.098	0.094	0.076	0.102	0.098	0.112			
Total	99.935	99.211	100.429	99.678	99.657	100.046	100.043	100.200	100.136			
An	52.98	5.74	34.91	4.66	4.69	4.83	4.88	5.30	5.28			

DR-5. Representative amphibole analyses.

Sample #	DRB-2-11	DRB-2-11	DRB-2-11	DRB-2-11	DRB-2-29							
	metamorphic amphibole	metamorphic amphibole	metamorphic amphibole	metamorphic amphibole	igneous amphibole							
SiO₂	41.252	41.542	41.791	41.224	45.590	42.252	43.971	43.594	43.581	42.663	44.546	44.173
TiO₂	0.396	0.421	0.490	0.489	0.563	0.479	0.541	0.542	0.499	0.544	0.412	0.564
Al₂O₃	15.769	15.826	15.788	16.256	10.382	14.400	12.345	13.211	14.218	13.821	12.199	12.506
Cr₂O₃	0.000	0.000	0.009	0.000	0.051	0.000	0.000	0.003	0.000	0.011	0.013	0.000
MgO	7.957	8.002	8.301	8.078	12.240	9.751	11.238	10.463	10.361	10.009	11.076	10.971
CaO	10.956	11.378	10.982	10.832	11.777	11.688	11.657	11.623	11.651	11.618	11.722	11.754
MnO	0.467	0.342	0.449	0.424	0.313	0.325	0.341	0.318	0.323	0.341	0.313	0.350
FeO	18.562	18.306	18.786	18.425	13.953	15.889	14.868	15.659	16.239	15.895	15.392	15.293
Na₂O	1.638	1.425	1.496	1.522	0.968	1.325	1.245	1.320	1.320	1.199	1.146	1.231
K₂O	0.514	0.536	0.648	0.614	0.357	0.637	0.444	0.493	0.590	0.652	0.323	0.517
Total	97.511	97.778	98.740	97.864	96.194	96.746	96.650	97.226	98.782	96.753	97.142	97.359
mg#	43.319	43.799	44.065	43.873	60.998	52.248	57.403	54.365	53.217	52.890	56.197	56.121

Sample #	DRB-2-29	DRB-2-73	DRB-2-73	DRB-2-73	DRB-2-73	DRB-2-73	DRB-2-73	PBF-7-177	PBF-7-177	PBF-7-177	PBF-7-177	PBF-7-177
	igneous amphibole	metamorphic amphibole										
SiO₂	45.544	41.647	41.138	41.075	41.190	41.301	41.266	41.324	41.075	40.928	41.288	40.958
TiO₂	0.399	0.282	0.301	0.305	0.356	0.304	0.318	0.768	0.978	0.757	0.901	1.125
Al₂O₃	10.535	16.820	16.490	16.661	16.573	16.792	16.750	15.631	15.437	15.266	15.265	15.608
Cr₂O₃	0.002	0.000	0.000	0.010	0.016	0.001	0.007	0.015	0.015	0.000	0.018	0.000
MgO	12.089	8.677	8.383	8.513	8.580	8.534	8.598	7.896	7.325	7.517	7.462	7.663
CaO	11.690	10.280	10.957	10.582	11.125	10.731	10.394	11.083	11.160	11.056	11.033	11.120
MnO	0.331	0.385	0.499	0.554	0.534	0.558	0.559	0.239	0.236	0.287	0.284	0.209
FeO	14.697	17.219	17.208	17.118	16.878	17.036	16.934	19.358	19.664	19.698	19.570	19.031
Na₂O	1.018	1.627	1.542	1.600	1.498	1.554	1.580	1.336	1.261	1.268	1.262	1.274
K₂O	0.390	0.299	0.340	0.366	0.362	0.324	0.324	0.829	0.879	0.801	0.931	1.029
Total	96.695	97.236	96.858	96.784	97.112	97.135	96.730	98.479	98.030	97.578	98.014	98.017
mg#	59.457	47.325	46.482	46.996	47.543	47.177	47.513	42.104	39.909	40.489	40.469	41.789

DR-5. Representative amphibole analyses.

Sample#	DRB-1-153 Metamorphic rim	DRB-1-153 Metamorphic rim	DRB-1-153 Metamorphic rim	DRB-1-153 Metamorphic rim	DRB-1-153 Metamorphic rim	DRB-1-153 Metamorphic rim	DRB-1-153 Relict Igneous core	DRB-1-153 Relict actinolite	DRB-1-153 Relict Igneous core	DRB-1-41 Relict Igneous core	DRB-1-41 Metamorphic rim	DRB-1-41 Metamorphic rim
SiO₂	46.364	48.353	47.371	48.199	46.325	47.687	43.397	53.056	43.646	48.590	45.861	45.984
TiO₂	2.023	1.280	1.295	1.482	1.772	1.171	0.414	0.098	0.392	0.972	1.329	2.820
Al₂O₃	8.711	7.229	7.423	7.157	9.205	7.539	12.933	3.688	12.282	7.028	10.111	8.759
Cr₂O₃	0.000	0.000	0.000	0.000	0.006	0.005	0.002	0.000	0.000	0.003	0.000	0.000
MgO	12.598	13.689	13.013	14.344	13.390	12.723	10.098	16.411	10.242	14.181	11.853	13.988
CaO	11.277	11.218	11.254	11.083	11.217	11.103	10.885	11.748	11.158	10.952	9.571	11.112
MnO	0.337	0.373	0.389	0.390	0.324	0.380	0.356	0.407	0.355	0.366	0.303	0.335
FeO	15.100	14.309	14.993	13.288	13.582	15.127	17.291	11.762	17.437	13.640	16.556	13.320
Na₂O	1.220	1.109	1.087	1.105	1.333	1.127	1.693	0.572	1.633	1.182	1.342	1.199
K₂O	0.194	0.176	0.192	0.159	0.193	0.171	0.363	0.037	0.372	0.154	0.177	0.238
Total	97.824	97.736	97.017	97.207	97.347	97.033	97.432	97.779	97.517	97.068	97.103	97.755

Sample#	DRB-1-153 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-60 Relict Igneous core	DRB-1-41 Metamorphic rim	DRB-1-60 Metamorphic rim				
SiO₂	45.329	43.373	43.743	43.301	46.337	41.756	45.049	41.534	41.180	45.512	46.160	46.566
TiO₂	0.302	0.393	0.317	0.325	0.215	0.368	0.375	0.383	0.320	0.359	1.379	1.059
Al₂O₃	10.042	13.484	12.326	12.481	9.952	14.885	11.620	15.183	15.397	11.851	9.689	9.813
Cr₂O₃	0.000	0.000	0.012	0.002	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000
MgO	10.881	10.035	10.306	10.072	11.923	8.865	10.746	8.605	8.400	11.815	11.430	12.692
CaO	11.480	11.026	10.963	10.952	11.753	10.887	10.974	10.997	10.814	11.215	10.904	11.237
MnO	0.290	0.335	0.352	0.335	0.298	0.421	0.393	0.442	0.371	0.321	0.276	0.292
FeO	17.240	16.863	17.302	17.487	15.619	18.074	16.794	17.876	18.250	14.426	16.103	14.161
Na₂O	1.288	1.711	1.651	1.614	1.257	1.801	1.492	1.854	1.883	1.551	1.439	1.330
K₂O	0.281	0.315	0.373	0.438	0.239	0.394	0.305	0.403	0.379	0.258	0.240	0.208
Total	97.133	97.535	97.345	97.007	97.593	97.451	97.748	97.286	96.994	97.308	97.620	97.358

Sample#	DRB-1-59 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-59 Relict Igneous core	DRB-1-59 Metamorphic rim	DRB-1-59 Metamorphic rim	DRB-1-59 Metamorphic rim	DRB-1-59 Relict Igneous core	DRB-1-41 Relict Igneous core	DRB-1-41 Relict Igneous core	DRB-1-41 Metamorphic rim	DRB-1-41 Metamorphic rim	DRB-1-41 Metamorphic rim
SiO₂	41.532	42.229	42.050	46.910	42.169	45.215	46.320	46.001	45.942	46.081	45.183	46.366
TiO₂	0.344	0.439	0.396	1.211	7.431	2.239	1.183	0.447	0.432	1.789	1.584	1.113
Al₂O₃	15.262	15.035	15.531	8.019	9.933	9.233	9.522	10.480	9.975	9.155	10.082	9.568
Cr₂O₃	0.000	0.000	0.022	0.000	0.000	0.000	0.005	0.027	0.016	0.000	0.011	0.007
MgO	8.791	8.712	8.570	12.217	10.421	12.338	12.001	11.228	11.343	12.109	11.078	11.697
CaO	10.815	10.948	10.878	10.970	10.281	11.047	10.924	11.026	11.069	11.041	10.963	10.802
MnO	0.443	0.414	0.411	0.399	0.381	0.409	0.398	0.257	0.231	0.249	0.235	0.313
FeO	18.041	18.229	17.871	16.194	15.369	14.767	15.771	16.623	16.358	15.413	16.495	16.160
Na₂O	1.797	1.899	1.866	1.237	1.403	1.318	1.454	1.386	1.589	1.299	1.488	1.463
K₂O	0.396	0.425	0.391	0.197	0.218	0.239	0.227	0.205	0.235	0.257	0.235	0.195
Total	97.421	98.330	97.986	97.354	97.606	96.805	97.805	97.680	97.190	97.393	97.354	97.684

DR-5. Representative amphibole analyses.

Sample#	DRB-1-41 Metamorphic rim	DRB-1-60 Relict Igneous core	DRB-1-60 Relict Igneous core	DRB-1-60 Metamorphic rim	DRB-1-60 Metamorphic rim	DRB-1-60 Metamorphic rim						
SiO₂	46.571	44.348	47.506	46.073	47.670	45.590						
TiO₂	1.891	0.376	0.686	4.034	1.276	2.314						
Al₂O₃	8.433	12.742	9.323	8.929	8.638	10.549						
Cr₂O₃	0.000	0.000	0.000	0.023	0.000	0.009						
MgO	12.531	11.140	13.332	12.707	13.592	12.171						
CaO	11.084	11.733	11.527	11.124	11.396	11.272						
MnO	0.299	0.255	0.286	0.299	0.284	0.309						
FeO	15.176	15.049	13.052	12.944	13.537	14.242						
Na₂O	1.204	1.341	1.218	1.169	1.233	1.312						
K₂O	0.227	0.335	0.174	0.199	0.207	0.201						
Total	97.416	97.319	97.104	97.501	97.833	97.969						
Sample#	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Metamorphic amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	PBF-7-108 Meta. amphibole	
SiO₂	42.264	42.157	42.606	43.650	42.622	42.135	42.310	42.508	42.814	41.956	42.356	41.686
TiO₂	0.921	0.924	0.788	0.719	0.772	0.966	0.980	0.847	0.884	1.003	0.945	0.980
Al₂O₃	13.460	13.268	12.788	12.094	13.125	13.692	13.453	13.056	12.755	13.657	13.219	13.750
Cr₂O₃	0.041	0.021	0.031	0.033	0.049	0.041	0.050	0.013	0.215	0.000	0.000	0.075
MgO	9.479	9.550	9.764	10.228	9.848	9.778	9.844	9.650	9.679	9.708	9.772	9.585
CaO	11.902	11.777	11.847	11.978	11.758	11.917	11.646	11.879	11.815	11.663	11.888	11.761
MnO	0.477	0.497	0.500	0.504	0.470	0.453	0.501	0.505	0.484	0.500	0.487	0.469
FeO	17.050	16.905	17.289	16.778	16.778	16.472	16.316	16.659	16.883	16.285	16.794	16.762
Na₂O	1.113	1.088	1.144	1.097	1.122	1.154	1.194	1.050	1.106	1.178	1.128	1.181
K₂O	1.576	1.660	1.524	1.316	1.514	1.514	1.753	1.524	1.393	1.693	1.597	1.589
Total	98.283	97.847	98.281	98.397	98.058	98.122	98.047	97.691	98.028	97.643	98.186	97.838