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Descriptions of rock and core samples from the Kingston area

by G. B. Everard

The following are descriptions of pieces of diamond-drill core taken from the hole drilled near the southern end of the upper dam site on Whitewater Creek, Kingston, and specimens obtained in the cutting on the Channel Highway at Doctors Hill, south of Kingston.

Specimen No. 3 from Doctors Hill very closely resembles specimens S3, S4 and S5 from the drill hole.

The poorly consolidated material S1–S2 from the drill hole is not tuffaceous, but from the variety and shape of the fragments it appears to be a river gravel that has not been transported a great distance. Paxton (1968) mentions scree material in the Doctors Hill road cutting but uses it to postulate a valley down which the basalt flowed.

Sample S1 – 28': Whitewater Creek

The specimen consists of pieces of rubble from the drill hole including slightly worn but considerably weathered pebbles originally held together in a matrix of smaller fragments and clay.

In thin section the material is shown to consist of angular fragments of quartz and sub-angular pebbles and fragments of basalt, dolerite, quartz sericite schist and mudstone.

Sample S2 – 40': Whitewater Creek

The hand specimen is a piece of core consisting of rounded to sub-angular rock and mineral fragments, in a matrix of clay and much finer rock and mineral fragments, all stained red by opaque red hydrated iron oxides. Fragments and pebbles of basalt, schist, mudstone and quartz up to about 1" across are visible.

In thin section the kind of fragments present may be extended to include dolerite, granophyre and quartzite as well as cryptocrystalline silica with minute veinlets penetrating the nearby rock. Most of the soft cementing material was lost in the preparation of the section, but what remains consists of very fine grained opaque clay material, stained red with iron oxides, containing angular mineral fragments of quartz, feldspar, sericite, biotite, iddingsite and rock fragments.

The rock is a breccia conglomerate.

Sample S3 – 47': Whitewater Creek

The specimen is a very fine grained black rock as with S5 and S4 but the phenocrysts have given way to irregular whitish patches and veinlets.

In thin section the rock is a little coarser grained than S5 and S4 and consists of sub-orientated microlites of oligoclase up to 0.1 mm long in a matrix of minute needles of pyroxene, crystallites of ilmenite and glass. The ilmenite crystallites are surrounded by clouds of white opaque material.

The rock is a mugearite.

Sample S4 – 67': Whitewater Creek

The hand specimen is a piece of DDH core consisting of a very fine grained black rock with fewer and more irregular phenocrysts than S5.

In thin section it lacks the fluidal banding of S5 but is similar in grain size, texture and mineralogy. The phenocrysts are of more irregular shape and show complete alteration to montmorillonite except for some reddish brown patches in the rock where they consist of iddingsite. The feldspar microlites have almost straight extinction and consist of oligoclase.

The rock is a mugearite.

DDH S5 – 83': Whitewater Creek

The hand specimen is a piece of core that has turned over in the drill hole and been drilled in different directions. It consists of a very fine grained black rock with angular opaque white and glassy transparent phenocrysts up to about 0.5 mm across.

In thin section the rock is not quite uniform but shows fluidal banding in a very dark groundmass consisting of microlites of feldspar and pyroxenes in a brownish glass with plentiful ilmenite. There are a few phenocrysts of pyroxene but most are of olivine largely altered to carbonate. The maximum extinction angle of the feldspar microlites is 15° and they are therefore oligoclase.

Patches of finely crystalline montmorillonite, sometimes showing crustification, fill minute cavities but the origin of this mineral is shown by occasional cores of unaltered olivine.

The rock is a mugearite.

Doctors Hill No. 1 and No. 2, road cutting, Channel Highway

The hand specimen is a fine-grained black rock crowded with small brown phenocrysts rarely exceeding 1 mm in length and showing bright cleavage faces.

In thin section the texture is trachytic, consisting of sub-parallel laths of oligoclase with intergranular ilmenite and pyroxene in minute prismatic grains. Fine needles of pyroxene penetrate the laths of feldspar and pyroxene occurs in interstitial rare masses of small prisms crowded together.

Reddish-brown phenocrysts of iddingsite after olivine are very common and occasionally show reaction rims.

The rock is a mugearite.

Doctors Hill No. 3 — Contact basalt-sandstone

The hand specimen is a very fine grained black rock, finer grained than samples 1 and 2.

In thin section the texture is obscured by white opaque material derived from the breakdown of the feldspars and possibly of the ilmenite as well. However there is still plenty of black ilmenite and fresh feldspar remaining. The feldspar is oligoclase as before. Brown phenocrysts are also common but the alteration to iddingsite is incomplete and the phenocrysts consist, in part, of unaltered olivine.

The rock is a mugearite.

Reference

PAXTON, G. C. 1968. The geology of the Kingston area. *Pap. Proc. R. Soc. Tasm*. 102:31–40.

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