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Sample Number : 3059

251133

Identification : Laminated, sandy slate with traces of sulphides in quartz-chlorite fissure veins

Description :

The hand specimen is a slightly weathered sample of very finely laminated, medium light grey rock of silty to pelitic appearance. A slaty metamorphic foliation is developed at a high angle to the sedimentary laminations.

A staining test revealed no K-feldspar.

In thin section the sample is confirmed to have textures consistent with a laminated meta-sedimentary rock.

The layers of finest grain size are about 0.5 to 2mm in thickness and consist of very fine sericite, with a metamorphic alignment at a high angle to bedding, along with a few flakes of detrital muscovite, silt-sized angular to rounded quartz grains and a fine dusting of unidentified very fine opaques.

The layers of coarsest grain size are up to 5mm thick and consist of angular to rounded clasts of quartz, minor twinned plagioclase and muscovite, and rare zircons, set in a slaty matrix of sericite, chlorite, "dusty" opaques and secondary rutile. Some quartz grains have partly embayed shapes, suggestive of  $\beta$ -quartz. There are several very fine-grained volcanolithic clasts.

Fissure veins of quartz and chlorite, distorted by the metamorphic foliation, carry a few grains of sulphide, apparently anhedral pyrite.

Modal variation in the sample embraces about :

5-25%	quartz clasts
1-5%	feldspar clasts
0.1-0.3%	muscovite clasts
0.1%	volcanic lithic clasts
rare	zircon clasts
70-95%	sericite
1-3%	chlorite
0.1-0.2%	rutile
0.2-0.3%	opaque "dust"
0.1%	sulphides

Comments and Interpretation :

The sample formed as a laminated mudstone with thin sandy layers containing quartz and feldspar (largely or wholly volcanic in origin) and muscovite (perhaps from basement rocks or perhaps altered igneous biotite). The depositional environment could have been a lacustrine or off-shore marine environment with periodic influxes of fine volcanoclastic detritus.

There is no textural evidence to favour interpretation of the layering as airfall tuff. Too many grains are rounded and there are no vitric shards.

A few grains of sulphide have entered the rock with quartz and chlorite in fissure veins. The sericite is apparently metamorphic in origin.