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251158

Sample Number : T 221

Identification : Sericitic and chloritic, sheared lightly altered porphyritic andesite

Description :

The sample is a lightly weathered, foliated, greenish grey hand specimen with stretched phenocrysts or clasts of feldspar.

A staining test revealed no K-feldspar.

In thin section the sample is seen to have a strong metamorphic shear foliation, but remnant textures are suggestive of a former lava or porphyry. Deformed phenocrysts of plagioclase (optically negative - oligoclase/andesine) are unaltered to lightly sericitized. Small quartz phenocrysts (0.5mm) are mildly strained. Former biotite crystals, up to 0.7mm in size, have been pseudomorphed by fine rutile or sphene and coarse sericite. Probable pyroxene or amphibole grains, about 0.2 to 1mm in size, have been pseudomorphed by chlorite and fine rutile or sphene. Pods of the groundmass have a possible primary grain size of about 0.02mm and consist now of anhedral feldspar, sericite, rutile or sphene and minor chlorite. Strongly sheared regimes consist of abundant sericite and chlorite.

An approximate mode is :

- 10-15% lightly sericitized plagioclast phenocrysts (oligoclase-andesine)
- 5-7% chlorite and rutile or sphene after pyroxene or hornblende
- 0.5-0.6% sericite and rutile or sphene after biotite
- 0.5-1% quartz (phenocrysts and groundmass)
- 60-70% pods of feldspar-dominated groundmass
- 15-18% streaks of sericite and chlorite

Comments and Interpretations :

The sample is interpreted with fair confidence to have originated as an andesitic lava, composed of phenocrysts of plagioclase, hornblende or pyroxene and very minor biotite and quartz, set in a fine-grained groundmass dominated by plagioclase. It seems likely that the biotite flakes were hydrothermally replaced by sericite and the plagioclase phenocrysts were lightly sericitized. It is unclear whether chloritization of the mafic silicates was of hydrothermal or later regional metamorphic origin. Strong foliation and metamorphic sericite and chlorite has been generated by dynamothermal metamorphism.