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251149

Sample Number : TO59

Identification : Sericitic and mildly chloritic, sheared, andesitic lithic crystal tuff

Description :

The sample is a lightly weathered hand specimen composed of many rolled, tabular grains of faintly pinkish grey feldspar, up to 3mm in size and possibly some lithic clasts, set in a strongly foliated greenish grey matrix.

A cobaltinitrite staining test revealed minor K-feldspar generally fine-grained and within probable lithic clasts.

In thin section the sample is seen to consist mainly of rolled phenoclasts of plagioclase, rolled and stretched probable lithic clasts set in a strongly foliated, sericitic matrix. The phenoclasts are twinned, optically positive plagioclase, largely lacking alteration. The lithic clasts are partly recrystallized porphyritic or tuffaceous intermediate volcanic types, now composed mainly of albite and chlorite. There are some stretched, chloritized mafic silicate phenoclasts. The matrix consists of sericite, minor chlorite, (?)sphene, leucoxene and fine opaque oxides.

An approximate mode is :

12-18%	plagioclase phenoclasts
20-30%	intermediate lithic clasts
2-3%	chloritized phenoclasts
50-60%	matrix sericite
1-2%	matrix chlorite
0.3-0.4%	matrix (?)sphene, leucoxene and opaque oxides

Comments and Interpretations :

This sample seems to have been an andesitic lithic crystal tuff prior to dynamothermal low grade metamorphism which has rolled its clasts and produced abundant strongly aligned sericite and minor chlorite.

It is not possible to state with confidence that the rock had not experienced sericitic hydrothermal alteration prior to deformation but it seems possible that this was the case. This opinion is based on the observations that feldspar phenoclasts are not sericitized (contrary to common hydrothermal behaviour) and that there are no veins and no sulphides visible. Probably the unwelded coarse tuff has sheared easily during metamorphism.