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251160

Sample Number : T 230A

Identification : (?)dacite or (?)felsite lava with minor chlorite-pyrite alteration and later dynamothermal sericite

Description :

The sample is a lightly weathered hand specimen of porphyritic, fine-grained, greyish orange rock, streaked with minor pale greenish grey minerals.

A staining test revealed no K-feldspar.

In thin section the sample reveals a sparsely porphyritic texture, with subhedral, tabular phenocrysts (0.5 to 3mm) and small aggregates of twinned, clear grains of plagioclase (optically positive - albite/oligoclase) set in a sutured mosaic groundmass, about 0.1 to 0.2mm in grain size. The groundmass consists of mildly strained quartz, untwinned albite (difficult to distinguish from the quartz), minor chlorite and a network of fine sericite around many grain boundaries forming a weak foliation. Leucoxene is present in aggregates vaguely suggesting former mafic silicate phenocrysts.

There are a few six-sided (?pyritohedron), euhedral grains of dense goethite after probable pyrite. Minor concentrations occur in chlorite-enriched, curving zones, now sheared. Strain shadows around the pyrite indicate that it pre-dates shearing.

An approximate mode is :

- 2-4% plagioclase phenocrysts
- 0.5-1% leucoxene
- 85-90% groundmass quartz and untwinned albite
- 2-3% groundmass chlorite
- 5-6% groundmass sericite
- 1-2% chlorite in enriched zones
- 0.1-0.3% goethite after pyrite, especially in chloritic zones

Comments and Interpretations :

It seems probable that this rock was originally a sparsely porphyritic lava or possibly a subvolcanic intrusion. Its composition could have been dacite (the absence of quartz phenocrysts is disturbing) or quartzose felsite. Recrystallization of the groundmass and probable albitization of the plagioclase has blurred original textures and composition. It seems that sericite in the sample is likely to be of dynamothermal metamorphic origin, generated by shearing of groundmass feldspar. However, chlorite and leucoxene (or precursor rutile or sphene) may represent an original weak hydrothermal alteration of mafic silicates and a trace of pyrite was present as weak disseminations and within some pre-shearing chloritic alteration zones or veins.