

Sample Number : 10965

R.H.16 3418m

Identification : Volcaniclastic arenite which has been moderately sericitized, carbonated and impregnated with sphalerite and pyrite prior to regional metamorphism

Description :

The hand specimen is a small sample of unweathered, hard, massive, greenish grey rock with many speckles of medium grey and greyish olive and some of moderate orange pink. One thin vein of pyrite is visible.

A cobaltinitrite staining test produced a bright stain, consistent with abundant K-feldspar.

In thin section the sample is seen to display metasedimentary textures which are interpretable as being consistent with a moderately sorted arenite originally composed of grains commonly about 0.2 to 0.3mm in size. The most common grains are equidimensional, untwinned grains of feldspar (apparently potassic), lightly flecked with illite or sericite. The next most common are quartz grains, variously weakly strained or recrystallized to simple aggregates of several grains. The outlines of both the quartz and K-feldspar are sutured, but there is a thin network of interstitial sericite. Possible former grains of plagioclase are represented by aggregates of sericite and grey carbonate (orange pink in hand specimen).

Opaque and translucent grains of anhedral to subhedral ore minerals occur as disseminated tiny grains (0.01 to 0.1mm) and as aggregates smaller than about 0.5mm. Pyrite and translucent orange to yellow brown and opaque sphalerite are recognizable in thin section but it is not clear whether any other opaque sulphide or oxide species are present. The aggregates are associated with patches of sericite-carbonate alteration. One thin replacement vein of pyrite was seen.

An approximate mode is :

10-15%	quartz
70-80%	lightly altered K-feldspar
2-4%	sericite matrix or cement
8-10%	replacement sericite
2-3%	replacement carbonate (probably manganiferous)
2-3%	opaques, mainly or wholly pyrite and sphalerite

Comments and Interpretation :

This sample is thought to represent a moderately sorted arenite which has been subjected to hydrothermal alteration, sulphide mineralization and low grade metamorphism. The source material for the arenite was probably rhyolitic crystal tuff. Hydrothermal alteration involved patchy sericitization and production of carbonate (probably rhodocrosite or manganiferous calcite) probably especially, but not exclusively after plagioclase. Fine sphalerite and pyrite probably accompanied the alteration. Subsequent regional metamorphism eliminated porosity, sutured the boundaries of the sand grains and weakly strained and recrystallized the quartz.