

**Sample:** S410; TSC33709

**Hand Specimen:**

A porphyritic rock containing numerous phenocrysts of quartz and a few other pale-coloured spots in a very fine-grained, grey groundmass or matrix.

Staining with cobaltinitrite shows that much of the matrix contains potash feldspar and there are also one or two grains of potash feldspar which may be phenocrysts.

**Thin Section:**

A visual estimate of the minerals is as follows:

	<u>%</u>
Quartz phenocrysts	25-30
Sericitic patches (some possibly altered phenocrysts)	15-20
Phenocrysts of ?biotite replaced by chlorite	1-2
Leucoxene grains	trace-1
Matrix of sericite and chlorite with potash feldspar and probably quartz	50-55
Zircon and apatite	minute trace

The quartz phenocrysts visible in the hand specimen are mainly embayed and corroded quartz crystals which vary in size up to a maximum of about 4 mm long and there are also some smaller corroded phenocrysts or grains and a few angular chips of quartz. There are a few dark phenocrysts which have been replaced by chlorite and very fine-grained, secondary iron and titanium oxides. Some of these have retained evidence of micaceous cleavage and were almost certainly phenocrysts of biotite and some have been deformed. The rock also contains numerous patches of sericite 1 to 3 mm long which have been deformed and some of these now have very irregular and diffuse boundaries but there are some which have retained evidence of crystal shape and a few which still contain remnants of feldspar. Probably there were once at least 15 to 20% of feldspar phenocrysts but, because of extensive sericitization and deformation this cannot be definitely confirmed.

The matrix of the rock is mainly extremely fine-grained and probably composed mainly of sericite and chlorite but staining of the hand specimen shows that there is very probably, also, potash feldspar and there may be quartz. Much of it has a streaky appearance which curves around the phenocrysts. Some of this could be a result of flow movement but some of the textures are very probably a result of compaction. In many places there are concentrations of tiny opaque crystals probably iron oxide in zones which appear to have been in pressure shadows against some phenocrysts of quartz but the reason for this concentration of tiny crystals is not absolutely clear. The general streakiness and variations in composition and texture in the matrix suggest that it may have originally been composed of small fragments but in the area sectioned there is only one well defined fragment about 1.5 mm long and this shows some lines in which there are concentrations of very fine-grained iron oxide. There are some zones in the matrix which now contain coarser-grained, recrystallized quartz and potash feldspar associated with very fine-grained iron oxide and chlorite.

**Conclusion:**

This is a rhyolite which was probably an ignimbritic pyroclastic.