

The amygdales are rounded to oval and, in the thin section, are up to 5.0 mm in diameter. Their abundance is difficult to estimate but they comprise possibly 25-30% of the rock. The amygdales are composed predominantly of carbonate and chlorite, sometimes showing a concentric mineral zoning. Silica is also common, both as quartz and chalcedony and is particularly well developed in the amygdales at 3345.8 m.

Altered phenocrysts up to 1 mm in length make up 10-15% of the rock. Crystal outlines are well preserved and suggest that both olivine and pyroxene were once present. Rare traces of pyroxene remain but the phenocrysts are almost totally replaced by chlorite and secondary micaceous minerals.

Plagioclase occurs mainly in the groundmass although a few laths up to 0.6 mm in length may be classed as phenocrysts. Most lath-like shapes are less than 0.2 mm in length and about 0.02 mm in width. The groundmass is now replaced by chlorite and weakly anisotropic zeolites. Small patches of carbonate are abundant, scattered throughout the groundmass, and appear to be replacing plagioclase.

A poorly defined fluidal texture is enhanced by the distribution of opaque grains along the prismatic sides of the plagioclase laths. The opaques comprise about 5% of the rock and are frequently elongated and of irregular shape, suggesting that much of it may be of secondary origin, e.g. exsolved or redistributed Ti oxides.

These samples are far too altered to be suitable for K-Ar dating and the high carbonate content would make such work technically impossible.

#### Yolla No. 1, Junk Sub. 3173 m, TSC 45650

This sample of basalt was initially rejected as being too altered for dating but was re-examined after the above samples were rejected.

This rock is a fine-grained porphyritic basalt in which the phenocrysts have been altered to a pale green serpentine/chlorite mixture, with minor carbonate.

Very fresh, fine, plagioclase laths, up to 0.1 mm in length and small (up to 0.040 mm) granules of fresh pyroxene are set in a mainly feldspathic groundmass that shows an incipient pale green almost isotropic(?) alteration. The interstitial nature of some of this material suggests that it may be partly glassy.

Very fine flakes of biotite are present in minor amounts.

Black opaque Fe oxide granules, often with square outlines, make up 5-7% of the rock.

The alteration of the phenocrysts (which contained virtually no potassium) would not affect the suitability of the sample for dating but the late stage phases of the groundmass, in which the K is normally concentrated, also show signs of alteration. Consequently, K-Ar dating can be expected to give only a minimum estimate of the age of crystallisation.

The presence of small amounts of carbonate may not present an insurmountable difficulty in the argon extraction procedure and could possibly be removed (or partly removed) by washing the sample in dilute hydrochloric acid.