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Sample: BIGFOOT DDH 84-8 59.8ft.

ALTERED (EPIDOTE) TUFF.

This sample is a fine to medium grained dark grey rock consisting of three layers 1 to 3mm in thickness. One fairly coarse layer is crowded with yellow epidote aggregates. It is a volcanoclastic rock (perhaps reworked) which consists of angular clasts of quartz and plagioclase set within a fine grained matrix. The layering is due to different grain sizes and mineral proportions. The coarser layer grades into the medium grained layer. The epidote aggregates are replacing andesite clasts. Small amounts of calcite occur as a late alteration mineral. Composition is:

	fine	medium	coarser
quartz clast	30	6	14
plagioclase clast	47	58	-
volcanic clast	-	2	8
groundmass (plagioclase +?)	20	20	22
epidote	1	10	51
Fe-Ti oxide	2	1	1
calcite	-	3	4
sericite	-	-	minor

In the finer layer angular to subrounded shard of plagioclase and quartz are crowded within an extremely fine grained, dirty cryptocrystalline groundmass. The shards vary in size from 0.01 to 0.1mm, averaging about 0.04mm. There are occasional fragments up to 0.3mm in size near the contact with the coarser layer.

Extremely fine grained Fe-Ti oxides are disseminated throughout the matrix and often occur in ragged, rounded aggregates up to 0.07mm in size. These are sometimes intergrown with very fine epidote.

(continued)

BIGFOOT DDH 84-8 59.8ft (cont.)

In the medium grained layer angular to subrounded quartz and plagioclase fragments are again the dominant material but these are coarser, ranging in size from 0.05 to 0.3mm, averaging about 0.1mm. There are far fewer quartz fragments compared to the fine layer. There are also several rounded volcanic fragments within the groundmass. These consist of thin laths of plagioclase about 0.1mm in length or, in some fragments, a mass of subrounded interlocking plagioclase grains of about the same size. The groundmass in this layer consists of feathery to subrounded plagioclase grains less than 0.05mm in size which are mixed with small patches of dirty cryptocrystalline material.

Extremely fine grained Fe-Ti oxide are disseminated throughout the matrix and are sometimes intimately intergrown with very fine grained epidote. However most of the epidote in this part of the rock occurs as subprismatic grains 0.05 to 0.2mm in size which are scattered about the matrix. These often occur in aggregates of a few grains. Epidote also occurs within the plagioclase fragments and most of the volcanic fragments appear to have been almost completely replaced by epidote aggregates.

Calcite forms very fine grains which occur in sinuous discontinuous veins along the layering. These are up to 0.5mm wide. There are also a few veinlets which cut across the layering and minor quartz is intergrown with the calcite. Small patches of calcite surround clasts and epidote aggregates.

In the coarser layer plagioclase and volcanic fragments are dominant but have been mostly replaced by epidote aggregates. The epidote forms subprismatic grains 0.1 to 0.8mm in size occurring in aggregates (sometimes spherulitic) up to 2.5mm in size. Rare remnant plagioclase, quartz and volcanic material occur in some of them. Some quartz also occurs between the epidote grains in a few of the aggregates. There is a narrow zone of very fine epidote which surrounds the coarse aggregates.

Quartz fragments are rounded to subangular and vary in size from 0.3 to 1.5mm, averaging about 1.0mm. The smaller ones are concentrated near the contact with the medium grained layer. Volcanic fragments consist of an aggregate of subrounded interlocking plagioclase grains less than 0.1mm in size (ie. andesite). Those which have been "unaltered" contain small clusters of epidote grains.

The matrix consists of a mass of shapeless interlocking plagioclase grains less than 0.03mm in size. Patches of dirty cryptocrystalline material are intergrown with the plagioclase. Extremely fine Fe-Ti oxide is disseminated throughout the matrix. Very fine quartz clasts are scattered within the matrix also.

Calcite forms very fine grains which occur in ragged patches partly surrounding the quartz fragments and epidote aggregates, replacing the matrix. Minor amounts of sericite are mixed with the calcite in some of the patches.

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