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### REPORT CMS 88/6/37

YOUR REFERENCE: Letter dated 22.6.1988  
DATE RECEIVED: 28th June, 1988  
SAMPLE NOS.: 428256 - 428260  
SUBMITTED BY: A.W. McNeill  
WORK REQUESTED: Petrology

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H.W. Fander, M. Sc.

REPORT CMS 88/6/37

Five slabbed drill core samples from DDH MAC-16 at the Boundary prospect were received for routine petrological examination. Representative thin sections were prepared and examined together with respective offcuts, with stain tests performed as warranted. Attached descriptions summarise the microscopic data and include interpretative comments.

Summary

As sampled, this suite represents altered dacitic volcanics flanking an andesitic to trachyandesitic unit represented by samples 428258 and 428259 (MAC-16/102.6 m and 156.0 m, respectively).

Dacites are typically flow-brecciated types, with some evidence of a flow-brecciated ignimbritic mode of origin, although much of the finer detail is obscured by alteration effects.

The andesitic unit is possibly intrusive in part, specifically the relatively coarse-grained and texturally homogeneous 428258 sample. Pyritic mineralisation is associated with discontinuous, weakly chloritic quartz veinlets and sericitic microfractures in the 428259 (trachy)andesite. Alteration assemblages are noted in the individual descriptions.

D. Cowan, B. Sc.

SAMPLE NO.: 428256 52.9m (T.S. 60250)

1.

CLASSIFICATION: **Altered Dacitic Tuff Lava**

COMPOSITION: Frequent albitised/weakly sericitised plagioclase-, minor variably corroded quartz phenocrysts in a matrix of partly degraded/kaolinised sericite, with varying proportions of anhedral fine to microcrystalline quartz. Minor spongy clots of chlorite and partly degraded "montmorillonitic" clay. Conspicuous leucoxic semi-opaques.

FABRIC: Flow-structured and brecciated porphyritic, semi-felsitic with flow-orientated sub- to fine millimetric-scale lava clasts in a texturally similar matrix (hence tuff lava). Locally vaguely relict eutaxite-like on a microscale. Incipiently sheared.

ACCESSORIES: Minor traces of apatite, rare montmorillonite-chlorite-pseudomorphed ferromagnesian (?amphibole) microphenocrysts. Extremely rare feldspar-replacive clots of fibrous zoisitic epidote.

INTERPRETATION/COMMENTS: An argillised/partly silicified felsic intermediate-acid flow breccia with dacitic compositional characteristics. This rock is clastic lava-like, but may represent a thoroughly welded and flow-brecciated tuff (vitric-crystal) on vague relict micro-textural grounds.

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SAMPLE NO.: 428257 46.2m (T.S. 60251)

CLASSIFICATION: **Altered Dacitic "Breccia"**

COMPOSITION: Disseminated to frequent variably sericitised and extensively degraded/kaolinised feldspar phenocrysts and crystals fragments, relatively quite minor corroded quartz phenocrysts in a matrix of semi- to sericitic partly degraded (illitic, to kaolinitic, variably Fe-stained) white mica with varying proportions of felsitic-anhedral quartz.

FABRIC: Random to semi-flow-structured, moulded, psammite to lapilli grade lithoclastic. Featureless to distinctly microshardy/contorted eutaxitic matrix in individual clasts, partly obscured by felsitic devitrification. Incipiently sheared.

ACCESSORIES: Conspicuous leucoxic opaques. Secondary limonitic stainings and minor films of Mn-oxide. Rare oxidised pyrite. Rare zircon and monazite.

INTERPRETATION/COMMENTS: An altered dacitic flow breccia with affinities to 428256; coarser lithoclastic structures and relatively diagnostic flow-brecciated welded-tuffaceous features. Reasonably interpreted as a flow-brecciated ignimbritic lithic-vitric-crystal tuff.

SAMPLE NO.: 428258 102.6m (T.S. 60252)

2.

CLASSIFICATION: Amygdaloidal Andesite

COMPOSITION: Albitised/sericite-montmorillonite-stained plagioclase phenocrysts and phenocrystal clusters, subordinate chloritic montmorillonite semi-pseudomorphed ferromagnesian (amphibole, pyroxene) phenocrysts and microphenocrysts, disseminated quartz amygdaloids and micro-amygdaloids. Groundmass of Fe-pigmented, weakly argillised (kaolinitic) albite microlaths with subordinate chloritised amphibole laths and a semi-pervasive quartz mesostasis.

FABRIC: Porphyritic/trend glomeroporphyritic, weakly amygdaloidal with a fine/trend medium-grained random semi-felted lathic groundmass.

ACCESSORIES: Leucoxenised opaques, traces of apatite.

INTERPRETATION/  
COMMENTS: A texturally homogeneous andesitic/trend quartz-andesitic phase with textural features suggestive of a minor intrusive mode of origin; alternately, may represent the core zone of a relatively thick flow. Moderately chlorite-clay-altered, enhanced by mild weathering effects.

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SAMPLE NO.: 428259 156.0m (T.S. 60253)

CLASSIFICATION: Amygdaloidal Trachyandesite

COMPOSITION: Albitised/weakly sericitic plagioclase phenocrysts, relatively quite minor chlorite-montmorillonite pseudomorphs after ferromagnesian phenocrysts and microphenocrysts, sporadic quartz amygdaloids in a groundmass of albite microlaths and microlites with a K-feldspathic mesostasis. Sporadic discontinuous weakly chloritic quartz veinlets and sericitic microfractures. Disseminated extensively oxidised pyrite (mean 750 um).

FABRIC: Porphyritic, amygdaloidal, weakly flow-structured/subtrachytic. Very incipient post-veining stress effects.

ACCESSORIES: Irregular Fe-stainings partly controlled by late limonitic microfractures. Leucoxenised opaques, minor traces of apatite.

INTERPRETATION/  
COMMENTS: Similarities with 428258, but distinctly finer-grained, lava-like and trachyandesitic in comparison. Finer detail obscured by irregular zones of secondary Fe-staining. Pyrite partly controlled by quartz veinlets and semi-contemporaneous sericitic microfractures. The host rock is only mildly chlorite-clay-altered.

SAMPLE NO.: 428260 193.4m (T.S. 60254)

3.

CLASSIFICATION: Altered Dacite Breccia

COMPOSITION: Phenocrysts and phenocrystal clusters of oligoclase-albite, relatively minor quartz microphenocrysts in a matrix of very fine to microcrystalline albite with subordinate/variable proportions of microcrystalline quartz and semi-pervasive microscopic intergranular clots of chlorite.

FABRIC: Psammite to lapilli grade, moulded lithoclastic, with porphyritic lava-like to vaguely relict eutaxitic clasts.

ACCESSORIES: Rare leucoxenitic anatase-stained chlorite pseudomorphs after microphenocrystal ferromags. Traces of K-feldspar. Disseminated leucoxenitic semi-opaques.

INTERPRETATION/  
COMMENTS: This rock is broadly similar to 428256 and particularly 428257. In contrast, it exhibits a chloritic alteration assemblage with subsequent irregular replacive zones of weakly Fe-pigmented microcrystalline albite. Tuff lava-like, but probably a flow-brecciated welded tuff.

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SAMPLE NO.:

CLASSIFICATION:

COMPOSITION:

FABRIC:

ACCESSORIES:

INTERPRETATION/  
COMMENTS: