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REPORT CMS 87/5/7

YOUR REFERENCE:	Letter dated 5.5.1987
DATE RECEIVED:	7th May, 1987
SAMPLE NOS.:	379377 - 379387
SUBMITTED BY:	A.M. Hespe
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

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REPORT CMS 87/5/7

A suite of eleven samples of drill core from DDH/HAT-7 was received for routine petrological examination. Representative thin-sections were prepared, examined in transmitted light, and together with respective offcuts in oblique incident light, with carbonate stain tests performed as warranted. Attached tabulated descriptions summarise the microscopic data and include interpretative comments.

Summary

This suite represents a sequence of altered basaltic and leuco-andesitic volcanics dominated by lavas but including lava breccias and subordinate tuffs. Fragmentals (pyroclastics) are typically impure chert-matrixed and the overall range of textures is typical of the Que-Hellyer volcanics.

Alteration features are rather uniform, with essentially pervasive development of sericite-quartz-calcite-chlorite-pyrite assemblages. Albite is present locally as a replacement of primary plagioclases, which are more typically sericitised. Pyrite is more or less ubiquitous, but tends to be concentrated in sericitic veinlets and stringers. The sericitic assemblage is pervasive within basaltic facies as well as the relatively felsic (leuco-)andesites, and prehnite-pumpellyite assemblages are absent.

Individual rocks are variably sheared. Relatively sericite-veined types appear relatively fragmental mesoscopically in response to the mild but variable post-alteration stress effects. A thoroughly altered basaltic breccia (379379) is represented by a chloritic phyllite with corroded relics of lithic clasts and appears to reflect a proximal fault or shear zone.

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Sample No.	Classification - Composition	Fabric	Accessories	Comments
379377 (T.S. 57879)	Leuco-Andesite. Albitised/weakly sericitic plagioclase-, minor leucoxenic chlorite-sericite-pseudomorphed amphibole phenocrysts; groundmass of similarly altered feldspar microlites with a silicified mesostasis, conspicuous fine pyrite.	Weakly flow-structured (subtrachytic) and (flow-)brecciated; semi-felsitic on a microscale.	Sporadic weakly chloritic quartz-albite and late quartz veinlets. Leucoxenised opaques. Minor pyritic, chloritic films.	Leuco-andesitic characteristics with a minor amphibole-rich ferromagnesian assemblage. Reflects subtle and pervasive silicification of groundmass with associated fine pyrite.
379378	Basaltic Breccia. Clasts of albitised plagioclase-/chloritised-silicified pyroxene-porphyritic basaltic lava with chlorite- to chlorite-albite-altered groundmasses. Sparse matrix, veinlets, replacements of chlorite-stained quartz.	Flow-structured, moulded to locally quartz-matrixed, lapilli to agglomerate grade, lithoclastic. Basaltic-textured clasts.	Chromite. Semi-pervasive fine to ultrafine pyrite disseminations. Sporadic late quartz-chlorite-calcite veinlets.	Basaltic lava breccia with a sparse corrosive chloritic quartz matrix. Pervasively chlorite(-quartz-albite)-altered, with disseminated pyrite.
379379	"Basaltic" Breccia. Pervasively chlorite-calcite-microcrystalline quartz-altered, poorly determinate lava clasts in a matrix of Mg-chlorite variably stained with microcrystalline calcite. Minor chlorite-calcite veinlets.	Corroded, shear-orientated, variably amygdaloidal to pumiceous clasts; sheared/phyllitic matrix, crenulated veinlets.	Minor leucoxenised opaques, traces of chromite, minor traces oxidised fine pyrite.	Thoroughly altered and sheared with finer detail obscured. Relict features consistent with a basaltic scoriaceous breccia (lava breccia or lithic tuff).
379380	Leuco-Andesite. Sericite-pseudomorphed feldspar-, minor calcite-sericite-quartz-pseudomorphed ferromagnesian phenocrysts in a kaolinitic to sericitic, microcrystalline quartz-altered and pyrite-stained felsic groundmass.	Weakly banded, flow-structured, incipiently flow-brecciated, microfelsitic. Incipiently sheared.	Semi-pervasive displacive network of sericite(-quartz-calcite) veinlets, late calcite veinlets. Leucoxenised opaques.	Similarities with 379377. Mild primary (flow) brecciation enhanced mesoscopically by displacive veinlets and mild shearing effects.
379381	"Breccia". Sericite and microcrystalline quartz in varying proportions with, thinly disseminated ultrafine pyrite, sporadic pyritic-sericitic stringers, and discontinuous sericite-quartz-calcite veinlets.	Poorly sorted (psammite to lapilli grade), angular, lithoclastic; quartz-sericite-matrixed, weakly sheared.	Leucoxenised opaques, minor clots of chlorite, traces of chromite.	Polymict sedimentary breccia characteristics, with basalt-, andesite- and leuco-andesite-derived lava clasts. Thoroughly sericite-quartz-pyrite-altered and mildly sheared.
379382	Amygdaloidal Basalt. Abundant calcite-quartz amygdales, frequent carbonated feldspar and carbonate-chlorite-quartz pseudomorphed ferromagnesian phenocrysts in a carbonate-chlorite-minor quartz-altered groundmass.	Coarsely amygdaloidal/strongly porphyritic, with a vaguely relict basaltic-microtextured groundmass. Mildly sheared.	Thinly disseminated ultrafine pyrite. Disseminated chromite. Minor calcite veinlets (sheared).	Pervasively carbonate-chlorite(-quartz-pyrite)-altered, strongly amygdaloidal lava with relict basaltic characteristics, relatively conspicuous chromite.
379383	"Tuffaceous Breccia". Loose framework of sericite-calcite-quartz-altered lava clasts, sericitised feldspar grains and similarly altered shards; cemented with slightly impure (sericitic), crypto- to microcrystalline chert.	Poorly sorted (silt to lapilli grade), chert-cemented lithic-vitric crystal fragmental. Incipiently sheared.	Leucoxenised opaques. Pervasively disseminated pyrite. Minor calcite veinlets.	Chert-cemented, subaqueous "leuco-andesitic" tuff; pervasively sericite-calcite(-quartz-pyrite)-altered. Preferred orientation is primary, but enhanced by shearing.
379384	Basaltic Breccia. Sericite, near-isotropic chlorite and calcite in varying proportions with subordinate to minor, fine to microcrystalline quartz. Sparse interclast vugs, minor veinlets of calcite.	Moulded to locally calcite-matrixed, lapilli to agglomerate grade, lithoclastic. Weakly sheared/phyllitic.	Traces of pyrite and chromite. Semi-pervasive ultrafine leucoxenised opaques.	Pervasively carbonate-chlorite-sericite-quartz-altered/mildly sheared lava breccia. Clasts poorly determinate, but include variably calcite-amygdaloidal basaltic types.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Classification - Composition	Fabric	Accessories	Comments
379385	Sheared Breccia. Relict framework of pervasively sericitised/variably chloritic lava clasts, sparse sericitised feldspar, chloritised ferromagnesian grains. Matrix of sericitic impure chert/cherty argillite; locally silty to fine sandy tuffaceous.	Relatively sheared/phyllitic. Relict chert-, pelite-matrixed psammite to lapilli grade lithoclastic.	Semi-pervasive fine to ultrafine pyrite. Minor leucoxenised opaques, traces of chromite.	Primarily an impure chert/cherty argillite-matrixed volcanoclastic breccia. Clasts include poorly defined basaltic and andesitic types. Relatively sheared/semi-boudinaged.
379386	Andesite. Sparse sericitised feldspar- and quartz-sericite-pseudomorphed ferromagnesian phenocrysts, sericite-quartz-altered felsic groundmass. Irregular veinlets, stringers of pyrite, sericite, quartz and calcite.	Weakly porphyritic; incipiently quartz-calcite-amygdaloidal, weakly flow-structured. Displacive, weakly sheared veinlets.	Leucoxenised opaques. Minor pyritic stringer-displacive calcite-quartz veinlets.	Possibly strictly leuco-andesitic; sparse phenocryst assemblage is poorly diagnostic. Pinkish pigmentation is primary rather than secondary.
379387 (T.S. 57889)	Amygdaloidal Leuco-Andesite. Sericitised feldspar-, minor leucoxenic sericite-pseudomorphed amphibole phenocrysts, frequent quartz micro-amygdales in a sericite-quartz-altered felsic groundmass. Minor clots, films of chlorite.	Porphyritic, strongly micro-amygdaloidal, flow-structured, microfelsitic. Very incipiently sheared.	Rare calcitised pyroxene and corroded quartz phenocrysts. Leucoxenised opaques. Minor traces of pyrite.	Thoroughly sericite-quartz(-calcite-chlorite)-altered, strongly quartz-micro-amygdaloidal lava with typical leuco-andesitic relict compositional characteristics.