



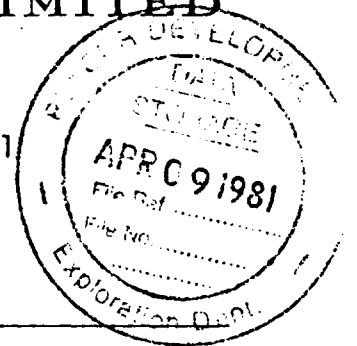
PLACER DEVELOPMENT LIMITED

MEMORANDUM:

TO: W.S. Pentland DATE: April 7th, 1981

FROM: S.W. Campbell FILE: V-168

RE: PETROGRAPHY OF VOLCANIC ROCKS FROM DDH APRIL #1



The following is a preliminary report on petrographic descriptions of volcanic samples from 1980 drilling on the Queen Charlotte Au property. Both the cut slab and thin section were examined by binocular and polarizing microscopes, respectively.

Rocks looked at so far are all rhyolitic, but can be divided into separate units on the basis of texture. Proposed units are: (1) spherulitic rhyolite ash flow tuff, (2) banded spherulitic rhyolite, (3) (fragmental?) rhyolitic ash tuff, (4) rhyolitic lapilli tuff, (5) rhyolitic ash flow tuff, and (6) spherulite-rich rhyolite. None of the rocks studied to date show visible gold.

(1) Spherulitic Rhyolite Ash Flow Tuff

39' Slab Medium-grey, aphanitic rock containing numerous white stringers of calcite and white subangular "patches" (about 1 mm across) which are fragments of feldspar and/or quartz crystals.

<u>T/S</u>	Constituents: spherulite	5%
	crystal fragments	15%
	matrix	75%
	veining	5%

Spherulites are 0.05 to 0.10 mm across and composed of radiating aggregates of feldspar and quartz (or some other form of silica).

Crystal fragments are: quartz aggregates, 0.04 to 0.10 mm; feldspar or feldspar-quartz aggregates, .20 to .60 mm; and feldspar crystals .08 to .25 mm.

Veining includes subparallel and visible stringers of calcite and quartz, 1 to 2 mm wide, and somewhat "braided" microveinlets of calcite or less commonly quartz.

The matrix is quartz-rich with some feldspar and contains about 5% lenses of slightly coarser-grained quartz.

Trace opa ues include pyrite and magnetite, which are generally associated with fragments or occur along and beside microveinlets.

N.B. Because of the low percentage of spherulites and their small size, this rock could be included, for megascopic purposes, in the category of rhyolitic ash flow tuff.

95' Slab Very pale greenish grey-white, aphanitic to very fine-grained rock, containing disseminated magnetite and pyrite. Spherulites are altered to a white powdery substance.

T/S Constituents: spherulites 10%
 feldspar 20%
 matrix 65%
 lenses of quartz 5%

Rock is dominantly porphyritic to glomeroporphyritic with phenocrysts of plagioclase (albitic) and lenses and irregular patches of quartz aggregates in an aphanitic matrix.

The phenocrysts are probably in actual fact crystal fragments because of their irregular shapes.

The feldspar is extensively altered to sericite or calcite and crystals are generally rimmed by spherulites.

Microveinlets of quartz and calcite are present.

Trace opa ues, magnetite and pyrite, occur along microveinlets or fractures or are associated with feldspar crystals and spherulites.

(2) Banded Spherulitic Rhyolite

192' Slab Rock is pale greenish grey-white, aphanitic, and eutaxitic. Bands include: spherulites strung out in rows, greyish-white siliceous bands, greenish ash or tuffaceous bands, and pyrite and magnetite in subparallel stringers, lenses or rows of disseminated grains. The banding is cut at a high angle by calcite microveinlets.

T/S Constituents: spherulites 15-20%
 feldspar 5%
 matrix 70-75%
 opaques 5%

The rock is thinly banded with individual bands 1 to 3 mm across on average. Bands may be spherulite-rich, ribbony siliceous bands with crystallites, aphanitic quartz-feldspar, or pyrite-rich.

Banding "wraps" around some of the spherulites and plagioclase phenocrysts.

Quartz-calcite microveinlets cross cut banding at about 90°.

The opaques, pyrite and magnetite, are only vaguely related to microveinlets.

(3) (Fragmental?) Rhyolitic Ash Tuff

294' Slab Very pale green with white patches which appear to be due to alteration, but may represent obscure fragments. The rock is aphanitic. Opaques are disseminated and occur in the darker green "matrix", in white patches, and along microveinlets that are in subparallel groups or as random tiny wisps.

T/S Constituents: quartz-feldspar "matrix" 90%
feldspar crystal fragments 5%
opaques 5%

The thin section does not solve the problem of the light "patches". The lighter areas are more devitrified but boundaries are obscure and not even visible in plain light.

Plagioclase (albitic) crystals are partly altered to calcite and/or epidote.

Microfractures are numerous and some contain opaques, pyrite and magnetite, along with quartz and minor calcite.

Opaques are also disseminated.

Devitrified parts of rock appear felty microlitic in texture.

(4) Rhyolitic Lapilli Tuff

185' Slab Rock is dominantly pale greenish-grey with an aphanitic to very fine-grained matrix and rock fragments (1 to 5 mm across) and crystal fragments (< 1 to 2 mm across). Fragments are subangular. The rock is riddled with a fine "stockwork" of calcite stringers and veinlets. Trace amounts of pyrite and magnetite occur along stringers and are associated with fragments.

T/S Constituents: fragments 40%
quartz-feldspar matrix 50%
calcite veining 10%

Fragments include: rhyolitic ash flow tuff, crystal fragments of altered feldspar, feldspar porphyry with trachytic texture, minor spherulitic rhyolite, and pumiceous rhyolite.

Borders of fragments are generally obscure and blend with the matrix.

Some of the pumiceous rhyolite shows flow banding and quartz amygdules.

The rock is cut by calcite and quartz veinlets and opaques (magnetite and pyrite) generally follow the veins.

265' Slab

The rock is pale grey-white and has a darker aphanitic matrix and paler fragments from < 1 mm to 10 mm across. The fragments are subangular and some show a eutaxitic texture. Disseminated trace pyrite and magnetite are preferentially associated with the fragments and less commonly with the calcite-quartz veinlets which cut the rock.

<u>T/S</u>	Constituents:	Fragments	45%
		matrix	50%
		calcite veining	5%
		opaques	Trace

Roughly 10 percent of the fragments are "phenocrysts" of feldspar, which are partly altered and may contain epidote.

Fragments of the porphyritic rhyolite ash flow tuff show flow banding due to subparallel arrangement of microlites.

Veining through the slab includes calcite and or quartz, and minor calcite-epidote microveinlets.

Opaque minerals are generally within fragments or along the microveinlets. They are not apparent in the matrix.

(5) Rhyolitic Ash Flow Tuff

68' Slab

Pale grey to greenish-grey aphanitic rock, showing numerous small hazy outlined fragments of feldspar crystals. Cut by stringers of calcite. Rock is dotted with tiny black or grey-black "spots" of pyrite and magnetite.

<u>T/S</u>	Constituents:	Plagioclase (albitic?)	10%
		K-feldspar	5%
		matrix	85%
		calcite	Minor
		zircon	Minor
		opaques	Minor

The matrix consists of 2 grain sizes of quartz-feldspathic material, and larger sized grains tend to form irregular-shaped aggregates that make up a patchy network through the slide.

Plagioclase crystal fragments are badly sericitized.

Opagues tend to concentrate along stringers with or without calcite or occur as disseminated grains.

Minor stringers of quartz are vague and irregular in shape.

Zircon occurs as tiny grains scattered through the matrix.

(6) Spherulite-Rich Rhyolite

45' Slab This pale grey to greenish-grey rock is aphanitic and shows an abundances of whitish spherulites, singly and in aggregates up to a few mm across. Pyrite and magnetite are disseminated in the rock. Microveinlets of calcite are present.

<u>T/S</u>	Constituents:	Spherulities	50%
		feldspar crystals	10%
		coarser-gr. quartz-feldspar	20%
		finer-gr. quartz-feldspar	20%
		opagues	Trace

Feldspar crystals (albitic) are partly altered to sericite and or calcite patches. The crystals are up to 2 mm across.

Spherulites are riddled through the rock and may occur surrounding plagioclase crystals. The spherulites are typically 1 mm across.

Microveinlets and stringers of quartz and/or calcite are irregular and discontinuous.

Spherulites are surrounded by patches of quartz-feldspar of the two distinct sizes (both measured in microns)

Pyrite and magnetite are in the matrix, but may also occur in plagioclase crystal fragments, spherulites or along microveinlets.

Sue W. Campbell

SWC/cs

T/S

Constituents:

Glassy Material	20%
Chlorite	25%
Feldspar	35%
Quartz	5%
Veins	15%
Pyrite	Minor

The veins contain calcite, quartz, muscovite, and Patches of chlorite occur throughout due to devitrification of the glass.

Microlites of feldspar are randomly oriented through the rock.

Pyrite generally occur by itself along microveinlets, but may occur in association with calcite and quartz stringers.

3-283' Slab

Medium green fine-grained rock cut by quartz-calcite veinlets (1 to 3 mm wide) occurring in 2 sets at right angles to each other.

The rock contains phenocrysts of feldspar (2mm across) in a very fine-grained matrix. Tiny magnetite grains are disseminated throughout.

T/S

Constituents:

Feldspar	65%
Veins	10%
Magnetite & Augite	10%
Chlorite	Minor
Pyrite	Minor
Glossy Material	15%

Phenocrysts of feldspar (albite to oligoclase) occur in an aphanitic matrix.

The plagioclase is saussuritized.

Magnetite grains are ubiquitous throughout the matrix.

The texture is seriate porphyritic with smaller feldspar laths showing trachytic texture.

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April 16/81