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**The Australian Mineral Development Laboratories**

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P125-127/76 Records Copy

Don Flint  
10.6.76



Winner of Award for Outstanding Export Achievement, 1975

Please address all correspondence to Frewville,  
In reply quote: MP 1/15/8/0

The Director,  
S.A.D.M.  
Box 151, P.O.  
EASTWOOD 5063

8th June, 1976

**MICROFILMED**

6737

Attention: Mr. D. Flint

REPORT MP 2829/76

YOUR REFERENCE:

Application dated 25.3.76

MATERIAL:

Three rock specimens.

LOCALITY:

Mt. Painter area.

IDENTIFICATION:

P125 - 127/76

DATE RECEIVED:

29.3.76

WORK REQUIRED:

Petrographic description and  
possible relationship of rocks  
in contact.

Investigation and Report by: Sylvia Whitehead

Officer in Charge, Mineralogy/Petrology Section:

Dr. K.J. Henley

*K.J. Henley*

for F.R. Hartley  
Director

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Sample No: P125/76; TS35605

Applicant's Mark and Location:

D.J.F. North of Coulthard's Lookout. NF/R14/P005/11s.

Approx. Lat. 30° 16' 21"; Long. 139° 20' 43".

Mt. Neil porphyritic granite.

Hand Specimen:

A massive, pink granitic rock containing some visible crystals of feldspar, averaging 5 mm in size with finer-grained, interstitial material.

Staining tests show that most of the feldspar is plagioclase but there are concentrations of potash feldspar along small discontinuous veins or shearing planes.

Thin Section:

A visual estimate of the constituents is as follows:

	<u>%</u>
Quartz	30-35
Plagioclase (albitic oligoclase)	60-65
Microcline	1-2
Hematite (probably martite)	2-3
Biotite	Trace
Muscovite	Trace
Chlorite	Trace - 1
Partly metamict zircon	Trace
Apatite	Minute Trace

This is partly recrystallized rock which contains some large, partly sericitized plagioclase crystals 2 to 6 mm in size, separated by zones of finer-grained material in which quartz and feldspar are irregularly intergrown. Irregular and porous aggregates of iron oxide, generally associated with other accessory minerals are scattered through the rock, occurring mainly with the finer-grained quartz and feldspar.

The coarser-grained plagioclase is turbid and shows patchy alteration to sericitic material and most of the larger crystals also contain small, irregular patches of quartz. The boundaries of these crystals are very irregular, particularly where they are intergrown with, or merge with the finer-grained, interstitial material. Twinning is not generally well preserved in this plagioclase which appears to be partly recrystallized.

The finer-grained quartz and feldspar vary in grain-size from less than 0.1 mm to 0.8 mm but average less than 0.5 mm and these minerals are intergrown with very irregular and sutured grain boundaries. Quartz tends to occur in interstitial spaces and there is some evidence to suggest that it has invaded and partly replaced some plagioclase. The general appearance of this finer-grained, interstitial material suggests recrystallization of sheared and granulated material rather than crystallization from magma. Most of the feldspar is slightly turbid plagioclase. Locally there are a few very small crystals of microcline. Minor amounts of feldspar

grained mica are dispersed throughout this finer-grained material.

Most of the iron in this specimen now occurs as hematite which has probably replaced magnetite. This forms porous, irregularly-shaped aggregates, 0.5 to 2 mm in size and some also occurs as groups of separate, small crystals, some of which are closely associated with chlorite or chloritized biotite. Small, partly metamict zircon crystals are included within, or intergrown with, some of the iron oxide and in very few aggregates there are traces of apatite. In one area there are very few, irregular grains of an undetermined mineral which may be xenotime but positive identification of this would require X-ray diffraction. Most of these aggregates of iron oxide and other accessory minerals occur in interstices containing finer-grained quartz and feldspar and a few occur along grain boundaries between larger crystals of plagioclase but there are also a few aggregates which are now enclosed, or partly enclosed by the coarser-grained feldspar.

#### Conclusion:

This is a granodiorite showing evidence of partial granulation and recrystallization and it is possible that it has been subjected to more than one phase of alteration. It contains only trace amounts of mafic minerals, mainly very fine grained biotite and chlorite but it does contain minor iron oxide, most of which was probably magnetite and this is associated with other accessory minerals which also show evidence of recrystallization. The iron oxide occurs mainly in the finer-grained, granulated and recrystallized zones but some aggregates of fine-grained, iron oxide appear to be remnants of formerly larger crystals.

Sample Nos: P126/76 and P127/76; TS35606, 35607.

#### Applicant's Mark and Location:

D.J.F. Mt. Gee Prospect. NF/R17/P090/  
Lat. 30° 13' 39"; Long. 139° 20' 44".

#### Hand Specimens:

These two specimens both show contacts between a dull red, conglomeratic rock or 'tillite' and a paler-coloured granitic or arkosic breccia. In both specimens the contact between the two rock types is sharply defined but there are local irregularities.

The conglomeratic rock contains a few well-rounded pebbles up to 1.5 cm long and the granitic breccia contains angular fragments of granitic rock up to 2 cm in size.

#### Thin Sections:

These are essentially similar and therefore only one description will be given.

#### → Conglomeratic rock or 'tillite'

This contains poorly-sorted, rounded, sub-rounded and sub-angular grains and pebbles of the following minerals and rocks:

Quartz	Dominant
Microcline	Trace to minor
Sericitic grains	Minor
Quartz-sericite lithic grains	Minor
Acid volcanic rock	Trace to minor
Fine-grained metasediment	Minor
Granitic rock (quartz, microcline, altered mica and iron oxide)	One large clast

Poorly-sorted sediment with a sericitic matrix	One large, rounded pebble
Zircon	Trace
Opaque oxide-leucoxene	Trace

The matrix of this conglomeratic rock is mainly sericitic material and clay with some very fine-grained quartz and it is stained by extremely fine-grained ferric oxide.

No fragments of the granitic breccia were found in the conglomeratic rock but it is possible that grains or fragments of microcline and of quartz-microcline which occur in both rock types had a common origin.

#### → Granitic breccia

This is composed predominantly of angular fragments of quartz and microcline with minor biotite, iron oxide and recrystallized titanium oxide and a trace of zircon. There are also some larger fragments of granitic rock composed of quartz-sericitized feldspar and varying amounts of iron oxide, muscovite and altered biotite.

The granitic breccia included in the thin section of P126/76 contains one rounded grain, 1.5 mm in diameter of finer-grained, poorly-sorted sediment containing so rounded grains of quartz and feldspar in a very fine-grained, argillaceous? matrix showing patchy staining by brown iron oxide. This small pebble differs from the conglomeratic rock in that it is much finer-grained.

The granitic breccia contains a few scattered flakes of partly-altered, brown biotite and these show a preferred orientation approximately parallel to the contact between granitic breccia and 'tillite'. In the thin section of Sample P126/76 these flakes of biotite are concentrated in a zone close to the contact between the two rock types but in the thin section of Sample P127/76 biotite flakes are dispersed through the granitic breccia.

In the thin section of Sample P127/76 the granitic breccia contains a zone or pocket, up to 15 mm long, of finer-grained material containing some apparently sub-rounded grains of microcline and more numerous flakes of mica showing sub-parallel orientation. This appears to be a pocket of finer-grained sediment.

The granitic breccia contains some interstitial sericitic material and it has been at least partly cemented by secondary, interstitial quartz.

In general, the contact between the two rock types is fairly sharply defined but locally it appears gradational over about 1 mm and in parts of P127/76, portions of the conglomeratic rock or 'tillite' are apparently mixed with fragments in the granitic breccia along the contact zone.

Quartz clasts in both the 'tillite' and granitic breccia show slight strain or undulose extinction between crossed nicols but there is no definite evidence of deformation.

#### Conclusion:

Both rock types are sediments and it is possible that some fragments of quartz-microcline rock found in both rock types may have had a common origin. No fragments of granitic breccia were found in the 'tillite' and fragments of tillite were not found in the granitic breccia.

Both are poorly-sorted sediments but the detrital material in the 'tillite' shows much more evidence of rounding and contains a greater variety of rock types indicating that it has almost certainly been transported over a greater distance than the clastic material in the granitic breccia which was probably derived from adjacent rocks.

The evidence from the two thin sections suggests that the contact between the two rock types could be either sedimentary or due to some form of slumping.

APPLICATION FOR EXAMINATION OF SPECIMENS OR SAMPLES

LOCATION		Information Required
Hundred	Seats	* Other Locality Information
		<p>North of Coulthards Lookout.                      NF/R14/P005/11s                      Approx. Lat: 30° 16' 21"                      Long: 139° 20' 43"</p> <p>Mt. GEE Prospect                      NF/R17/P090/                      Lat: 30° 13' 39"                      Long: 139° 20' 44"</p> <p>MOUNT PAINTER PROVINCE                      1: 125 000</p>
		<p><b>PETROGRAPHIC &amp; PETROLOGICAL DESCRIPTION</b></p> <p>P125/76: Particular note of all mafic minerals, and all possible rock types.</p> <p>P126/76 &amp; P127/76: Determine the mineralogy of rock type on either side of the contact, and note what <del>contacts</del> of the lighter coloured arkosic rock fragments type are included in the reddish silty material. Comment on the possible nature and possible origin of the contact.</p>

Information includes distance, direction and name of nearest town or well known point; (if any); pastoral lease (if out of hundreds)—photo and run number or military.

Return to DON FLINT  
 Disposal of Specimens  
 191 Greenhill Rd.

Selected Specimens or Representative Sample—taken from surface, prospecting shaft, underground working, bore hole, etc. SURFACE

OFFICE USE ONLY

Submitted to the Australian Mineral Development Laboratories for—  
 Analysis,  
 Petrological Laboratory Examination, as above.  
 Other.

Name of Depositor: DON FLINT  
 Department: DEPT. MINES  
 Costs Chargeable to: Department

Charge against Mines-Department Project No. 1/15/8/0  
 Approved for submissions to A.M.D.L.

Signed: D. J. Flint  
 Date: 25/3/76 19

Director of Mines  
 Copy 1—A.M.D.L. Copy (via head office).  
 Copy 2—Mines Department, Rundle Street, (T.I. Section).  
 Copy 3—Originator (Mines Department only).



