A Preliminary Report of Igneous Activity on Mt Wareng (594m)

North of Mount Yengo (668m) NSW

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Introduction

Following the Amateur Geological Society of the Hunter Valley (AGSHV) Preliminary Report on the structures and petrography of Mt Yengo presented to the 15th Symposium on 1st May 1981, the Society has undertaken investigations of a similar morphologic unit, Mt Wareng (or little Yengo as it is sometimes known) some 12 km north of Mt Yengo.

Today I am presenting the results of our investigations on behalf of the AGSHV.

Morphology

The morphologic similarity between Mt Yengo and Mt Wareng is evidenced in the following two slides:

Slide 1. Mt Yengo. The contact between the underlying Hawkesbury sandstone and the igneous body is evident on this slide.

Slide 2. A view of Mt Wareng taken from a southerly aspect.

Slide 3. Mt Wareng viewed from Howes Valley. The basal sandstones are seen in outcrop. The igneous / sedimentary interface approximates the top of the sedimentary outcrop.

Slide 4. A closer view of the sandstone outcrop however the contact is obscured by talus.

Slide 5. An igneous rock scree slope on the western face of Mt Wareng.

Slide 6. Mt Yengo viewed from Mt Wareng (Slide projector off)

Structure and Petrography

Mt Wareng is capped by approximately 122m or 400ft

Of fine to medium grained basic intrusive rock.

(Mt Wareng diagram drawn)

The following slides are placed in three groups to illustrate the textural changes in the structure:

a) The first group was taken from two boulders near the base of the igneous body – slides 7, 8, 9, 10, 11 & 12.
This group show fine grained to very fine grained inter granular texture in the lower specimen and inter granular pilotaxitic texture in the higher specimen.
Average grain size of the plagioclase was 0.4mm.
A thin section from the lower specimen shows the boundary of the inferred chilled margin of the structure (slide 10)
The petrology of the specimen is –

Plagioclase	55%
Clinopyroxene	28% (Titanaugite)
Olivine	12%
Opaques	5%

With accessories of apatite, aenigmatite and analcine.

b) The second group was taken from the igneous rock in situ approximately 32m (100ft) above the base of the igneous body. (Slides 13 and 14.)
This group shows sub ophitic texture with grain sizes for Clinopyroxene 1.0mm and plagioclase to 1.5mm.
This specimen varies mineralogically from the other groups as it contains greenish (aegirine-augite) rims on the Titanaugite.
Petrology

Plagioclase	60%
Clinopyroxene	25%
Olivine	10%
Opaques	5%

Accessories – apatite and aenigmatite.

c) The third group was taken from rock in situ approximately 100m (320ft) above the base of the igneous body. (Slides 16, 17, 18 & 19)
The group shows fine to medium grained inter granular to intersertal texture with the average grain size of plagioclase being 2mm.

Petrology

Plagioclase	55%
Titanaugite	25%

Olivine 13%

Titanomagnetite 2%

Alkali mesostasis 5% - small interstitial fine grain patches of natrolite, alkali feldspar, aegirine-augite, aenigmatite, apatite and analcine.

Notes to slides: (PPL = Plane Polarised Light and XPL = Cross Polarised Light, magnification shown as (xn.n))

Group 1 (base of intrusion)

Specimen 1

Slide 7 – PPL (x2.5) Fine grained inter granular texture. Note the matrix.

Slide 8 – (x2.5) as for 7 but XPL.

Slide 9 – (x10) as before.

Slide 10 – (x2.5) as before but note boundary between chilled zone and subhedral granular texture.

Specimen 2

Slide 11 – (x2.5) PPL Fluxional texture, even grained.

Slide 12 – (x2.5) XPL as before.

Group 2 (approximately 31m above the base of the intrusion)

Slide 13 – (x2.5) PPL sub ophitic texture. Clinopyroxene and large olivine.

Slide 14 – (x2.5) XPL as above.

Group 3 (100m above base of intrusion)

Slide 15 – Rock in-situ at 100m above the base of the igneous body. This rock provided a relatively fresh sample as it had been blasted for mining purposes at this point.

Slide 16 – (x2.5) PPL. A general view of the subhedral granular texture. Note the alkali patch in the centre of the slide.

Slide 17 – (x2.5) XPL as above.

Slide 18 – (x10) PPL Aenigmatite in alkali patch (centre of previous 2 slides).

Slide 19 – (x10) PPL Aegirine-augite in late interstitial alkali patch, note abundant apatite rods.

Slide 20 – Mt Wareng Trigonometric station is mounted on a loose pile of rocks from the top of the igneous body there being no sedimentary rocks on top of Mt Wareng.

Slide 21 – Mt Popong viewed from Mt Wareng is almost in line with Mt Yengo and Mt Wareng.

Summary

As seen in the slides and the petrography, variations in mineral prportions and textures occur in this body suggesting some degree of “layering”.

The mineralogy however, is typical of the crystallisation of an “alkali-olivine-basalt” magma in a shallow coastal setting for example a sub-volcanic sill/dyke like structure.

In our previous report on Mt Yengo we speculated that the rock should be called “teschenite” from examination of the thin sections as we do again at Mt Wareng. Both Professor Wilkinson and Dr Mason prefer the term “alkali dolerite”. However, we would like to leave the naming of the rock until more work has been done.

It is the opinion of some of us that some hand specimens contained more analcine than that found in the thin sections of the Mt Wareng rock.

Conclusion

The Mt Wareng igneous body is a diabasic rock with well formed, freshly twinned lath shaped crystals of plagioclase predominantly in thin section. Other primary minerals consist of:

Olivine (Forsterite) in small and large subhedral grains.

Titanaugite in small subhedral grains, weakly sub ophitic in places, strongly zoned to pink rims.

Titaniferous magnetite in scattered equant grains.

Patches of interstitial alkaline mesostasis comprising zeolite (probably natrolite) ilmenite, alkali feldspar, aegirine augite, aenigmatite, apatite and analcine.

The boundary at the base of the rock shows a possible chilled margin with very fine grained texture.

We hope to investigate the morphology and structure of Mt Popong in the future.

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David Atkinson

On behalf of The Amateur Geological Society of the Hunter Valley.