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PETROGRAPHY OF SOME THIN SECTIONS FROM THE TAMBO AREA,  
QUEENSLAND.

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by

N.F. Exon

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During the field mapping of the Tambo 1:250,000 Sheet area in 1964 and 1965, outcrop samples of rocks were collected and thin sectioned. Those described here are of Devonian to Triassic age except for two Tertiary basalt. The general stratigraphy and lithology of the enclosing rock units are described in Exon, Galloway, Casey and Kirkegaard (1966) and the reader is referred to that record for general information. The purpose of this record is simply to list descriptions of the thin sections in question.

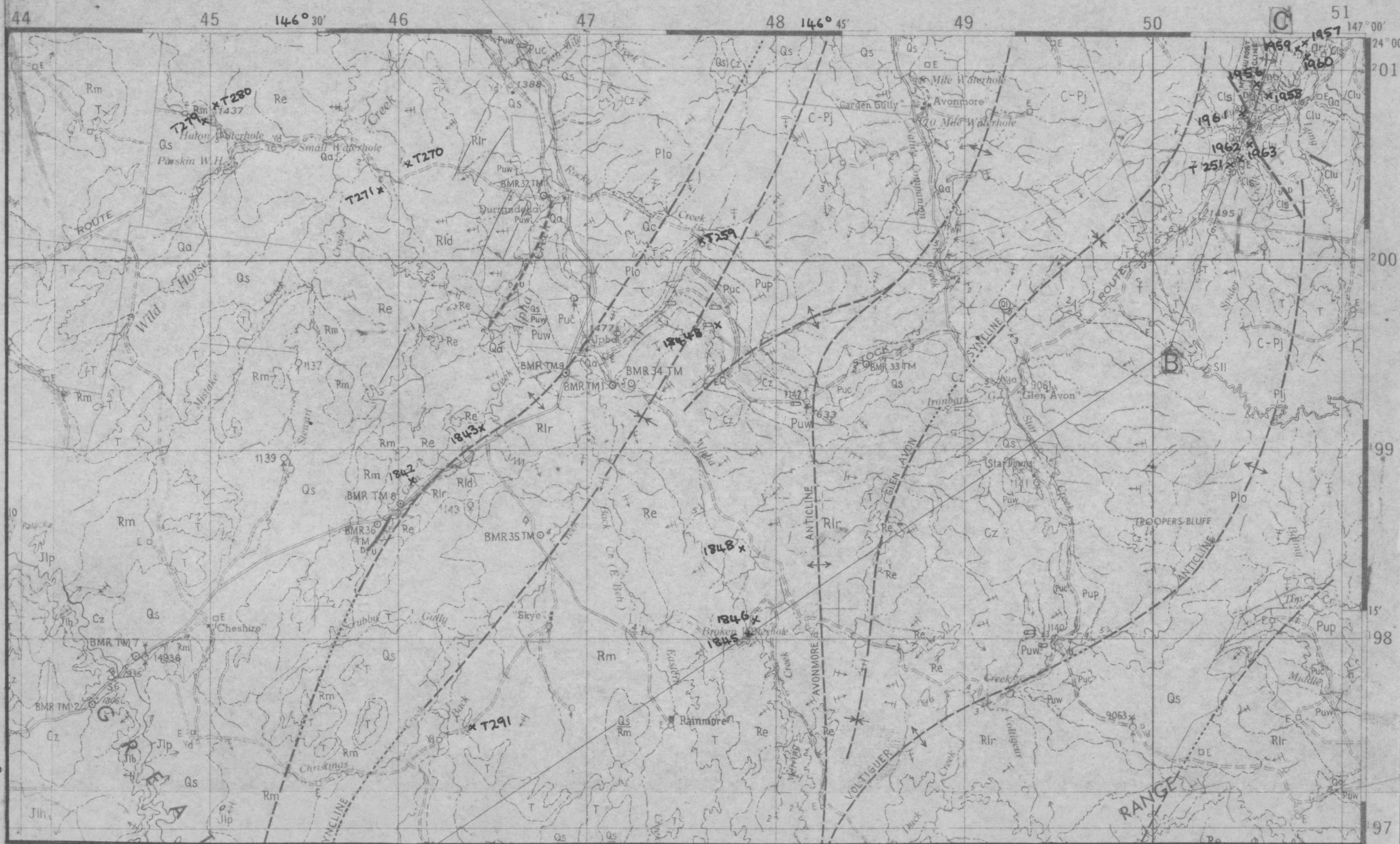
The sample localities are shown in Fig. 1, part of the preliminary 1:250,000 scale map of the area. Samples collected in 1964 have field numbers prefixed T; those collected in 1965 have field numbers prefixed E; some samples have been given a BMR registered number and are so recorded on Figure 1, whereas unregistered samples are shown by their field number.

The petrology of surface samples of Jurassic and Cretaceous rocks in the Tambo and Augathella Sheet areas is covered in Galloway (1967). Logs containing petrographic descriptions of cores and cuttings from earlier (1964 and 1965) BMR shallow drill holes in those Sheet areas were presented by Exon et al. (1966), and later (1966) ones by Galloway and Ingram (1967). These holes penetrated Permian, Triassic, Jurassic and Cretaceous sediments and the positions of those in the Permian and Triassic of the area are shown in Fig. 1.

This record, and the three referred to above, deal with all the petrographic information amassed by the field party during and after the field work. All this information will be incorporated, in summary form, in a report on the Tambo-Augathella area by Exon, Galloway, Casey and Kirkegaard (in prep.). The nomenclature of the arenites follows Crook (1960).

- [Qa] Alluvium
- [Qs] Sand, soil
- [Cz] Sandstone
- [T] Sandstone
- [Jlh] Hutton Sandstone
- [Jlb] Boxvale Sandstone
- [Jlp] Precipice Sandstone
- [Rm] Moolayamber Formation
- [Re] Clematis Sandstone
- [Rld] Dunda Beds
- [Rlr] Rawan Formation
- [Plo] Coliulaa Sandstone
- [Plj] Reid's Dome Beds
- [C-Pj] Joe Joe Formation
- [Clu] Ducabrook Formation
- [Clis] Star of Hopa Formation
- [Clr] Raymond Sandstone
- [Dlct] Telamon Formation
- [Dlcs] Silver Hills Volcanics

T270 Field no.  
 1843 Registered no  
 (prefixed 6558-)  
 © BMR TM 1 - Shallow  
 drill hole



**LOCATION OF SURFACE SAMPLES**  
 NORTH-EAST TAMBO 1:250,000 SHEET AREA  
 Scale in miles

**FIG. 1**  
 To accompany Record 1968/36

### Silver Hills Volcanics

Two flows, an augite andesite and a porphyritic toscanite were examined.

Reg. no. 65581956A, Field no. T203A. This is a red, fine-grained, flow banded toscanite. Phenocrysts are microcline, plagioclase, biotite, and haematite. The groundmass (95%\* of the rock) consists largely of the two feldspars, with lesser limonite, chlorite and quartz.

Reg. no. 65581956B, Field no. T 203B. This is a fine-grained, porphyritic reddish-grey massive augite andesite. The phenocrysts are largely zoned plagioclase, with lesser magnetite and augite, and minor zircon. The groundmass (80% of the rock) consists largely of plagioclase laths and augite with lesser limonite and chlorite.

### Telemon Formation (lower, volcanic part)

Two thin sections of tough blocky ash flows were examined.

Reg. no. 65581957A, Field no. T210A. Green, white and red fragments and quartz to granule size set in a fine pink matrix. The clasts are largely recrystallised and corroded acid volcanics such as flow rhyolite, devitrified glass and pumice, with some angular and embayed quartz and quartzite. The matrix (50% of the rock) consists of devitrified glass which has broken down to palagonite. The rock is moderately welded.

Reg. no. 65581957B, Field no. T210B. Angular rock fragments to granule size set in a fine grey matrix. The clasts (70% of the rock) are largely pumice, with lesser glass fragments and shards, minor rhyolite, ferruginous volcanic fragments and quartz, and a trace of orthoclase and biotite. The matrix consists of devitrified glass. This rock is only incipiently welded, and the devitrified groundmass is only slightly altered.

### Telemon Formation (upper, sedimentary part)

Reg. no. 65581958, Field no. T205. Brown, even grained, fine-grained lithic sandstone. This consists of 55% clayey rock fragments and 40% quartz. Minor constituents are muscovite, biotite, oligoclase, iron ore, zircon, tourmaline and ?rutile. The rock fragments in this rock may be altered acid volcanics.

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\* Percentages quoted are estimates only.

Reg. no. 65581959, Field no. T209. Fine-grained calcareous lithic sandstone. Consists essentially of quartz (30%), fine-grained clayey acid volcanics (20%) and calcite cement (40%). Minor constituents are quartzite and iron ore.

#### Raymond Sandstone

Reg. no. 65581960, Field no. T212. Very fine-grained buff, friable, lithic sublabile sandstone. It consists essentially of subangular quartz (80%) and fine grained acid volcanics (15%). Minor constituents are feldspar (?orthoclase), muscovite, iron ore, biotite, zircon and ?rutile.

#### Star of Hope Formation

Three fine-grained rocks were examined. Two are tuffaceous lithic sandstones and one is a lithic tuff.

Reg. no. 65581961, Field no. T200. Hard, fine-grained and red calcareous matrix, with green angular clasts to granule size. Clasts are angular quartz (20%), fine-grained acid volcanics (15%), calcite-altered ?volcanics (10%), lesser fresh euhedral plagioclase (andesine), altered orthoclase, and minor chlorite, zircon and iron ore. Calcite cement (15%) and iron stained matrix (30%) make up the rest of the rock. This tuffaceous rock is probably a sandstone, but could be a true tuff.

Reg. no. 65581962, Field no. T254. Very fine-grained, buff, laminated lithic sandstone. Clasts are very fine-grained acid volcanics (35%), angular quartz (45%), fresh plagioclase laths (10%) and lesser orthoclase, muscovite, biotite, iron ore, tourmaline and zircon.

Reg. no. 65581963, Field no. T255. Fine-grained, banded lithic tuff with clasts set in fine red matrix. Clasts consist of splintery quartz (25%), altered fine grained volcanics including pumice (30%), fresh plagioclase and altered orthoclase (total 15%), and lesser granitic fragments, quartzite, biotite and iron ore. The matrix is limonitic devitrified glass.

#### Lower part of Joe Joe Formation

Field no. T251. Coarse-grained brown lithic sandstone. Clasts consist of fine-grained acid volcanics and devitrified glass (45%) subrounded quartz (25%), quartz aggregates (10%), subrounded feldspar including some plagioclase

and perthites (10%). The calcite cement has replaced clay matrix of which some chlorite and iron staining remain.

#### Peawaddy Formation

Field no. T259. Fine-grained friable lithic sandstone. Clasts consist of subangular quartz (40%), very fine-grained acid volcanics recrystallized in part (30%) and lesser feldspar, chlorite, epidote and iron ore. The matrix (15%) consists of white mica, chlorite and quartz.

#### Blackwater Group

Reg. no. 655818441B, Field no. E606. Grey, calcareous, well-sorted coarse-grained quartzose sandstone with quartz and quartzite granules, clay clasts and worm markings. Clasts include subangular quartz (60%), quartzite (15%), altered feldspar (5%), and minor calcite-altered volcanics, biotite and muscovite. Calcite cement makes up 20%. Derivation is probably largely from preexisting quartzose sandstone.

#### Rewan Formation

Three sandstones were examined; all are well-bedded and cross-bedded.

Reg. no. 65581848, Field no. E618. Light grey, thin-bedded, very fine-grained clayey sublabile sandstone with micaceous layers. Clasts are subangular quartz (25%), quartz aggregates (10%), biotite straps (10%), shale (10%) and lesser feldspar, muscovite and iron ore aggregates. Shaly matrix (35%) makes up the remainder of the rock. Derivation possibly from granodiorite.

Reg. no. 65581846, Field no. E616. (Upper Rewan). Fine-grained, medium-bedded, greenish-brown lithic sandstone. Clasts are recrystallized very fine-grained acid volcanics (50%), subangular quartz (20%), quartz aggregates (10%) and lesser quartzite, altered feldspar with vermicular intergrowths, biotite, muscovite and tourmaline. The rock also contains clots of iron ore (10%) and clay matrix (5%). Minor radiating zeolite suggests some load metamorphism. Derivation is from acid volcanics.

Reg. no. 65581845, Field no. E615. (Top Rewan). Clayey buff lithic sandstone. Clasts are recrystallized very fine-grained acid volcanics (55%), quartz and quartz aggregates (20%) and lesser perthite and biotite. Matrix (10%) is shaly, with some radiating chlorite. Derived from acid volcanics.

#### Dunda Beds

Three lithic sandstones were examined.

Reg. no. 65581842B, Field no. E597. (basal Dunda). Medium-grained, medium-bedded, cross-bedded clayey lithic sandstone. Clasts are subangular to subrounded quartz and quartz aggregates (45%), recrystallized very fine-grained acid volcanics (25%), fresh plagioclase and weathered orthoclase (5%), and minor iron ore and green biotite. Clay matrix makes up 20% of the rock. Derived from acid volcanics.

Reg. no. 65581843, Field no. E605. Fine-grained, brown, thinly to very thickly bedded, cross-bedded lithic sandstone with mica-rich layers. Clasts are subangular to subrounded, equant quartz and quartz aggregates (40%), feldspar with plagioclase dominant (15%), recrystallized fine-grained acid volcanics (25%) and lesser biotite, muscovite and iron ore. The matrix (10%) is clayey with some iron ore.

Field no. T270. Fine-grained, buff, thinly bedded micaceous lithic sandstone. Clasts include subangular quartz (55%), recrystallized very fine-grained acid volcanics (25%) and lesser muscovite and feldspar. Interstitial iron ore makes up about 10% of the rock.

#### Clematis Sandstone

Two lithic sandstones were examined. These were derived largely from acid volcanics, consist largely of very stable clasts, and have been well sorted.

Field no. T271. Generally fine-grained, moderately size sorted, medium to very thick-bedded, cross-bedded, buff clayey lithic sandstone. Clasts are subangular quartz (50%), quartzite (5%), recrystallized very fine-grained acid volcanics (25%) and minor muscovite and biotite. Matrix (20%) is quartz-rich shale-sized material.



Field no. T280. White, clayey, fine-grained thin-bedded lithic sandstone. Clasts are subangular quartz (35%) recrystallized very fine-grained acid volcanics (20%), lesser muscovite and feldspar, and minor biotite and tourmaline. Clay matrix makes up 35% of the rock.

Moolayember Formation.

Two lithic sandstones, one calcareous, were examined. Both are derived, largely, from acid volcanics.

Field no. T279. Fine-grained, moderately size sorted, thin to thick-bedded, cross-bedded, buff lithic sandstone. Clasts are subangular quartz (50%), recrystallized very fine grained acid volcanics (20%), carbonaceous fragments (10%) and lesser feldspar and muscovite. The quartz-rich fine grained matrix comprises 10% of the rock.

Field no. T291. Medium-grained, medium-bedded, cross-bedded, grey calcareous lithic sandstone. Clasts are angular to subangular quartz (10%), quartzite (5%), subangular to subrounded, altered, very fine-grained rock fragments (mostly recrystallized acid volcanics) (30%), and lesser feldspar, magnetite and altered mica. Calcite cement comprises 50% of the rock.

Tertiary Basalt

Two samples, both porphyritic olivine basalts, were examined. They come from an area south of that shown in Figure 1.

Reg. no. 65581819A, Field no. E67. (Grid reference 508, 899) Black glassy dyke rock with some phenocrysts to 0.5 mm. Phenocrysts are euhedral to sub-hedral olivine, chloritised along cracks (10%), zoned augite (15%), plagioclase (labradorite) needles (10%). Glass comprises 65% of the rock.

Reg. no. 65581834, Field no. E572. (Grid reference 499, 905) Black, finely porphyritic flow with phenocrysts to 0.5 mm. Consists of euhedral, somewhat corroded olivine phenocrysts and poorly crystalline finer material (20%), labradorite laths and needles and minor interstitial material (40%), haematite masses (5%) and lesser ilmenite needles. The groundmass (25%) is largely glassy but partly recrystallized; it includes some chlorite.

REFERENCES

- CROOK, K.A.W., 1960 - Classification of arenites. Amer. J. Sci., 258, 419-428.
- EXON, N.F., GALLOWAY, M.C., CASEY, D.J. and KIRKEGAARD, A.G., 1966 - The geology of the Tambo, Augathella and Blackall 1:250,000 Sheet areas, Queensland. Bur. Miner. Resour. Aust. Rec. 1966/89 (unpubl.).
- EXON, N.F., GALLOWAY, M.C., CASEY, D.J. and KIRKEGAARD, A.G., in prep. - The geology of the Tambo-Augathella area, Queensland. Bur. Miner. Resour. Aust. Rep.
- GALLOWAY, M.C., 1967 - The petrology of some Mesozoic sediments from the Tambo, Augathella, Eddystone and Mitchell 1:250,000 Sheet areas, Queensland. Bur. Miner. Resour. Aust. Rec. 1967/81.
- GALLOWAY, M.C. and INGRAM, J., 1967 - Results of 1966 drilling in the eastern Eromanga Basin. Bur. Miner. Resour. Aust. Rec. 1967/82.