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RECORDS:

1963/153

BOWEN BASIN SHALLOW DRILLING AND CORING PROGRAMME 1963

by

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SUMMARY

31 Shallow holes were drilled in the Springsure, Baralaba and Taroom areas of the Bowen Basin, Queensland, during October 1963. These involved 4415 feet of drilling and 187 feet of coring. This report and maps show the location of the holes and the part of the section drilled. It includes the brief lithological description of the cuttings and cores made during the drilling. A more thorough examination of the cuttings and cores is in progress.

The most important result of the drilling programme was the information gained on the non-exposed part of the section. A typical example are the three holes, Springsure Nos. 13, 14 and 15, drilled on the east flank of Reid's Dome. These holes, in known stratigraphic position, yielded information on 600 feet of section almost unknown in outcrop. The holes on the east flank of the Mimosa Syncline revealed the unexpectedly great thickness possibly more than 10,000 feet of the Rowan Formation, a unit which is generally very poorly exposed.

The cores and cuttings obtained in this drilling programme provide valuable material for palynological, palaeobotanical, micro- and macro-palaeontological, petrological and chemical studies. This record is intended to facilitate the work of these various specialists, and a final report will incorporate the results of their examination of the material.

INTRODUCTION

Shallow drilling and coring was planned to extend the results of the regional mapping in the Bowen Basin. The project received Ministerial approval in May, 1963, tenders were called and the contract subsequently let to Geophysical Services International. A G.S.I. truck-mounted Mayhew 1000 air-water drilling rig and tender truck arrived in Springsure on October 2nd. The first hole was drilled on October 3rd and the last hole, No 31, was drilled on the evening of October 17th. In that period, 2 days were spent on rig maintenance and repair and about 4 days on travelling.

All the holes, except Nos. 20 and 21, were drilled with air. Cuttings were collected on a sieve at the top of the hole, and then briefly described, divided, bagged, and labelled. Cuttings samples generally represent 10 feet of drilling, though in some cases the sampled interval is 20 feet and in others less than 10 feet. Cavings from the top of the hole created a problem and there is probably contamination of some samples. A small length of casing was driven into the top of the hole in the later holes and this reduced the cavings problem.

The speed of the operation made it impossible to log the cuttings in detail. Most holes took less than 2 hours to complete from the time the rig arrived on the site until the time it was ready to move to the next site.

No cuttings samples were collected when drilling with water. The cuttings are carried by the mud which flows from the top of the hole along a trench into a sump-pit. In such

circumstances, it is very difficult to collect uncontaminated specimens. (It will be possible to overcome this in any future similar drilling by using a piece of casing to raise the top of the hole. A galvanised iron collar and trough are fitted to the top of the casing. The mud flows along the trough and uncontaminated samples can be collected at the end of the trough.) The main problem, however, is the lack of time to dry samples before packing but this problem also can be overcome.

The two holes drilled with water were fairly shallow and cores at the bottom of each hole supplied the information required.

Some other holes were stopped, in most cases after cutting a core, when it became necessary to drill with water because it was not worthwhile drilling on if cuttings samples could not be collected. In general drilling with water was much slower than drilling with air, and air drilling was much more convenient. As far as possible, holes were sited to avoid the necessity of drilling with water. The depth at which water entered the hole is noted in the hole descriptions. The production quoted is the driller's estimate. The standing water level was not determined.

The holes are referred to as B.M.R. Springsure Nos. 1 to 15, B.M.R. Baralaba Nos. 16 to 23, and B.M.R. Taroom Nos. 24 to 31. The cores and cuttings samples are stored at the Cores and Cuttings Laboratory, Fyshwick. Small samples of cores and duplicate cuttings samples are stored with the Geological Survey of Queensland.

Description of Holes

B.M.R. Springsure No.1

Location Pt. 778, Photo 5114, Run 1, Springsure 1:85,000 plates. Beside Tanderra Hs. track, 2.3 miles south of the Buckland Road linking Springsure and Tambo.

Stratigraphic Description Basal part of Unit X, above the Colinlia Sandstone. Unit X is though to be equivalent to that part of the sequence on the east flank of Reids Dome between the Mantuan Productus Horizon and the Catherine Sandstone.

Log

0' - 5' Soil

5' -40' Weathered brown and white lithic sandstone with scattered pebbles, some carbonaceous grey siltstone interbeds and some fine-medium grained feldspathic lithic quartz sandstone.

40' - 50' Brown to yellow-green, fine gypsiferous silty lithic sandstone with dark carbonaceous and micaceous silty streaks.

50'- 100' Mainly dark grey carbonaceous mudstone with some irregular laminations and pods of light grey, very fine quartzose lithic sandstone to sandy mudstone.

100' - 110' Cored. Recovered 8 ft. Dark grey mudstone, micaceous, ?gypsiferous, carbonaceous, poorly sorted, with scattered sand grains and irregular laminae of light green-grey fine sandstone to sandy mudstone. Some plant detritus.

110' - 145' Dark grey mudstone with light grey sandy mudstone laminations. Some thin cream-grey claystone bands.

145' Total depth.

Cuttings Samples 40'-45'; 45'-50'; 50'-55'; 55'-60'; 60'-67'; 67'-73'; 73'-80'; 80'-87'; 87'-93'; 93'-100'; 110'-120'; 120' -130'; 130'-140'.

Core 100' - 110'. Recovered 8'

Water flow 140'. Slight, probably less than 100 gals per hour.

B.M.R. Springsure No.2

Location Pt. 779, Photo 5054, Run 4, Springsure North 1:85,000 photos.
Beside Telegraph line, 4 miles south of the Tambo Springsure Road.

Stratigraphic Description Upper part of the Bandanna Formation.

Log

0' - 5' Soil
5' -20' Weathered thinly bedded and colour banded siltstone, yellow, brown, red, grey and green, and friable yellow lithic sandstone.

20'-40'. Laminated to colour banded, dark grey to brown and buff mudstone and siltstone and brown micaceous lithic sandstone.

40'-80'. Dark grey mudstone c̄ light grey sandy siltstone laminae and pods, with carbonaceous fragments. Some yellow-grey to light grey lithic sandy mudstone. Carbonaceous shale to subcoal in places.

80'-160'. Dominantly dark grey mudstone c̄ laminae and pods of light grey sandy siltstone.

160'-170' Mainly dark grey mudstone but some thin beds of green and white sandy claystone, possibly volcanic.
170'-180' Cored Recovered 7'6"
170'-176' Dark grey and black micaceous, carbonaceous sandy mudstone c̄ laminae of light grey micaceous, ?pyrite sandy siltstone. Hard in places. Some bands of dark green sandy claystone.

176'-176'6" Cherty vitric tuff c̄ ?shards.

176'6" - 177' 6" Dark green sandy claystone c̄ carbonaceous mudstone laminae.

180' Total Depth.

Cuttings Samples

20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110; 110'-120'; 120'-130'; 130'-140'; 140'-147'; 147'-155'; 155'-162'; 162'-170'.

Cored

170'-180' Recovered 7'6"

B.M.R. Springsure No.3

Location

Pt. 780, Photo 5052, Run 4, Springsure North 1:85,000 photos.
Beside Tambo - Springsure Road, 12 miles west of Mantuan Downs.

Stratigraphic Description

Rowan Formation. Spudded near base of Clematis Sandstone and entered Rowan Formation which is probably only 200'-300' thick in this area.

Log

0' - 10' Sandy soil.

10'- 50' Mainly weathered yellow brown fine quartz sandstone, silty in part. Some colour banded red-brown to buff siltstone to fine sandstone and grey-white argillaceous siltstone. Some thin beds of hard red-brown ferruginous siltstone.

50'-80' Grey-buff to yellow fine argillaceous quartz sandstone to sandy siltstone, with thin red ferruginous siltstone bands, and thick dark grey sandstone and sandy mudstone. Some grey, white flecked claystone. Friable kaolinitic, coarse quartz sandstone at 75'.

80'-90' Fine to coarse, kaolinitic, friable quartz sandstone.

90' Top of Rowan Formation.

90'-205' Interbedded chocolate-brown mudstone, mottled and vari-coloured chocolate-brown, grey, grey-green, and dark mudstone, sandy in places and grey-green fine grained argillaceous lithic sandstone to sandy mudstone.

205' Total Depth

No Core

Cuttings Samples 10'-20'; 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110'; 110'-120'; 120'-130'; 130'-140'; 140'-150'; 150'-160'; 160'-167'; 167'-175'; 175'-182'; 182'-190'; 190'-197'; 197'-205'.

B.M.R. Springsure No.4

Location Pt.781, Photo 5052, Run 4, Springsure North 1:85,000 photos.
Beside Springsure-Tambo Road, 16 miles west of Mantuan Downs.

Stratigraphic Description Basal part of Moolayember Formation. Probably bottomed in transition from Moolayember Formation to Clematis Sandstone.

Log 0' - 4' Soil

4' -20' Mainly weathered brown lithic sandstone and brown-grey siltstone, with some very hard fine calcareous lithic sandstone bands or nodules.

20'-25' Hard grey calcareous lithic sandstone, fine to medium.

25'-50' Mainly grey-brown mudstone, slightly weathered, with some brown fine lithic sandstone and sandy siltstone.

50'-70' Grey sandy mudstone, green-brown mudstone, and brown argillaceous fine to medium grained lithic sandstone.

70'-72' Hard, calcareous lithic sandstone.

72'-100' Mainly grey, dark grey and grey-brown mudstone, silty and sandy in places with some light grey laminae.

100'-205' Mainly dark grey mudstone, sandy in places, interbedded and interlaminated with light grey argillaceous lithic fine sandstone to siltstone.

205'-215' Cored Recovered 9'

205'-206'6" Irregularly interlaminated light grey micaceous fine lithic sandstone and dark grey micaceous, carbonaceous mudstone.

206'6" - 214' Light grey-green fine quartz lithic sandstone with laminae and thin beds of dark grey, carbonaceous and very micaceous sandy mudstone.

Cuttings Samples

20'-22'; 25'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110'; 110'-120'; 120'-130'; 130'-140'; 140'-150'; 150'-160'; 160'-167'; 167'-175'; 175'-182'; 182'-190'; 190'-197'; 197'-205'

Core

205'-215' Recovered 9'

B.M.R. Springsure No.5

Location

Pt. 782, Photo 5022, Run 3, Springsure North 1:85,000 photos.
Beside track from Mantuan Downs, 400 yds south-west of Mari Bore.

Stratigraphic Description

Spudded in lower part of Bandanne Formation, approximately 100 feet above Mantuan Products Horizon. Abundant fossils were noted from 135'-140', presumably the M.P. Horizon. Cored 140'-150' and drilled on to 205' through top part of unit "X".

Log

0' - 4' Dark clayey soil

4' -40' Mainly, dark grey weathering brown mudstone with laninae and pods of buff lithic fine sandstone and siltstone.

40'-60' Dark grey mudstone with light grey sandy laminae and pods. Some olive-green, brown laminated claystone. Some fragments of fibrous calcite, ?vein calcite.

60'-90' Interbedded dark grey mudstone, laminated in part, with green to light grey soft sandy claystone, ?volcanic.

90'-115' Mainly greenish grey lithic sandstone, medium hard to soft and argillaceous, with some dark grey mudstone. Some fibrous calcite.

115'-140' Mainly dark grey mudstone, laminated and sandy in part, and fine green-grey argillaceous lithic sandstone. Abundant fossil fragments in bottom few feet.

140-150' Cored Recovered 10 ft. Fine-medium grained, green-light grey, feldspathic quartz lithic sandstone, carbonaceous and micaceous,

with dark grey mudstone, beds and laminae. Some small quartz granules and pebbles. Some carbonized plant remains, warm tubes and churned up laminae due to scavenger action.

150'-205' Mainly interlaminated dark grey mudstone, sandy mudstone and light grey lithic sandstone to sandy mudstone. Some thin beds of med. hard, light grey lithic sandstone; other beds of soft, friable, argillaceous lithic sandstone.

Cuttings Samples: 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110'; 110'-120'; 120'-130'; 130'-140'; 150'-160'; 160'-167'; 167'-182'; 182'-190'; 190'-197'; 197'-205'.

Cored 140'-150' Recovered 10'

B.M.R. Springsure No.6

Location: Pt. 783, Photo 5026, Run 2, Springsure North 1:85,000 photos.
On track from Mantuan Downs Hs. to Joe Joe Hs., about 16 miles from Mantuan Downs.

Stratigraphic Description: Upper part of Colimlea Sandstone.

Log

0' - 4' Sandy soil
4' -10' Boulder gravel

10'-40' Weathered, brown-red to yellow, medium to fine grained friable quartz sandstone, silty in part, with some dark grey and red siltstone.

40'-122' Mainly friable medium-fine quartz sandstone, argillaceous in places, and some thin chocolate-brown siltstone.

112'-116' Quartz pebble conglomerate.

116'-125' Mainly friable quartz sandstone. Very few cuttings recovered.

125'-132' Dark grey siltstone, interbedded with fine-medium quartz sandstone as before.

132'-160' Mainly friable fine-medium quartz sandstone with some pebble conglomerate bands and a few thin dark siltstone beds. Cuttings recovery very poor, mainly loose sand grains.

160' Total Depth

Cuttings Samples: 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-120'; 125'-132'; 140-'-150'.

Core: No Core

B.M.R. Springsure No.7

Location Pt. 784, Photo 5026, Run 2, Springsure North 1:85,000 photos.

Beside track from Mantuan Downs Hs. to Joe Joe Hs., about 18 miles from Mantuan Downs Hs.

Stratigraphic Description Basal part of Colinlea Formation.

Log

0' - 16' Black soil.

16' - 60' Mainly black and brown clay, with some sandy pebbly gravel at about 57'

60'-70' Fine friable quartz sandstone. Only loose sand grains recovered.

70'-90' Poor cuttings recovery. Apparently interbedded dark grey to olive brown to buff mudstone, white soft sandy clay, and grey fine argillaceous quartz sandstone.

90'-100' Mainly grey, argillaceous, very fine quartz sandstone.

100'-110' Cored Recovered 8'

Greenish grey fine grained lithic quartz sandstone, argillaceous in part, with dark carbonaceous laminae in places.

Cuttings Samples 70'-80'; 80'-90'; 90'-100'.

Core. 100'-110' Recovered 8'

Water flow at 100' Moderate flow, possibly up to 200 gals. per hour.

B.M.R. Springsure No.8

Location Pt. 785, Photo 5026, Run 2, Springsure North 1:85,000 photos.
Beside track from Mantuan Downs Hs. to Joe Joe Hs., 23 miles from Mantuan Downs and 5 miles from Joe Joe.

Stratigraphic Description Upper part of Joe Joe Formation.

Log

0' - 10' Soil
10'- 35' Weathered, brown argillaceous sandstone, grey-white medium hard siltstone, and dark greenish-brown mudstone. Some scattered pebbles.

35'-60' Mainly dark green-brown mudstone, becoming dark grey at depth, with some pale brown sandy laninae, and yellow grey fine sandstone to siltstone.

60'-100' Mainly dark grey to black mudstone, with light-grey sandy laminae. Some ?coal fragments near 100'.

100'-140' Interbedded light to dark grey medium hard fine lithic sandstone and siltstone, and dark grey to black mudstone and sandy mudstone, laminated in part. Some dark, shiny fragments, ?coal.

140' - 150' Cored 8' Recovered

Dark greenish-grey very fine grained quartz lithic sandstone to sandy mudstone, laminated in places. Some ?cherty matrix produces a mottled appearance in places. Dark carbonaceous laminae near the top.

150' Total Depth

Cuttings Samples: 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110'; 110'-120'; 120'-130'; 130'-140'.

Core: 140'-150' 8' recovered

B.M.R. Springsure No.9

Location: Pt.786, Photo 5109, Run 1, Springsure North 1:85,000 photos.
Beside Joe Joe Hs. to Echo Hills track, about 8 miles from Joe Joe Hs.

Stratigraphic Description: In conglomeratic lower part of the Joe Joe Formation.

Log

0' - 1' Soil

1' - 20' Weathered, colour handed, yellow, buff, brown and grey siltstone with scattered hard boulders.

20'-40' Dark green-grey to buff colour banded and laminated mudstone passing down into light grey, fine silty sandstone with dark grey siltstone laminae. Some large, hard boulders, ?erratics.

40'-85' Mainly medium hard, buff fine-medium lithic sandstone; some grey and white laminated siltstone and sandy mudstone and dark grey mudstone. Scattered ?erratic boulders.

85'-147' Mainly tough, dark grey sandy mudstone, with light grey laminae in places passing down into pebbly argillaceous fine lithic sandstone near the base. Scattered boulders.

147'-149' Pebble conglomerate band.

149'-190' Mainly grey to dark grey, tough sandy mudstone with light grey and dark carbonaceous laminae in places. Some friable, argillaceous grey quartz lithic sandstone. Some boulders.

190'-205' Mainly grey semi-friable lithic quartzose sandstone, interbedded with dark grey sandy mudstone, laminated and containing carbonaceous streaks in places.

205' Total Depth.

Cuttings Samples

20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; '0'-90'; 90'-100'; 100'-110; 110'-120'; 120'-130'; 130'-140'; 140'-150'; 150'-160'; 160'-167'; 167'-175'; 175'-182'; 182'-190'; 190'-197'; 197'-205'.

No Core

B.M.R. Springsure No. 10

Location Pt. 787, Photo 5111, Run 1, Springsure North 1:85,000 photos.
On Joe Joe Hs. to Echo Hills Hs. track, $\frac{3}{4}$ mile west of Echo Hills.

Stratigraphic Description Upper part of the Ducabrook Formation.

Log

0' - 2' Soil

2' -10' Weathered buff to brown, fine to medium grained argillaceous lithic sandstone.

10'-40' Mainly chocolate-brown, red, olive-green and dark grey mudstone and sandy mudstone grading to brown, fine to medium argillaceous lithic sandstone in places.

Total Depth 40' Hole abandoned due to underground cave

Cuttings Samples

20'-30'; 30'-40'.

B.M.R. Springsure No.11

Location Pt. 787, Photo 5111, Run 1, Springsure North 1:85,000 photos.

30' north of B.M.R. Springsure No.10.

Stratigraphic Description Upper part of the Ducabrook Formation.

Log

0'-2' Soil

2'-15' Weathered argillaceous lithic sandstone and mudstone

15'-45' Mainly grey-green, dark grey, red-brown, chocolate brown and buff mudstone, laminated sandy mudstone and fine sandstone, and some buff to grey fine-medium lithic sandstone, red streaked in places.

45'-70' Tough claystone, mottled grey, buff, pink, green and dark green, possibly volcanic. Some brick red fine crystal tuff, and red and green flecked fine to medium grained tuff.

70'-73' Brick red (?)ashstone.

73'-75' Purplish (?)ashstone.

75-'95' Medium hard, dark grey, green and greenish purple tuffaceous mudstone with some carbonaceous shale.

95'-100' Dark grey tuffaceous sandstone

100'-115' Dark chocolate-brown to purplish-brown mudstone

115'-140' Black and brown, fine to medium grained, semi-friable, argillaceous lithic sandstone, with some tough purplish to dark grey mudstone.

140' Total Depth

Cuttings Samples

15'-20'; 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100'-110'; 110'-120'; 120'-130'; 130'-140'.

No Core

B.M.R. Springsure No.12

Location

Pt. 788, Photo 5011, Run 3, Springsure North 1:85,000 photos.

Beside Springsure to Wealwandangie Hs. road, 2 miles north of Wealwandangie.

Stratigraphic Description

Lower part of Bandanna Formation.

Log

0' - 17' Black soil.

17'- 25' Weathered basalt and clay.

25'-52' Weathered, dark grey, brown, red and white mudstone and sandy mudstone, laminated in part, and some red, grey and white argillaceous lithic sandstone.

52'-55' Blue-grey mudstone.

55'-80' Brown, micaceous, argillaceous friable, medium grained lithic sandstone.
Poor cuttings recovery.

80' Total Depth

Cuttings Samples: 25'-32'; 32'-40'; 40'-50'; 50'-55'; 55'-60'; 60'-70'; 70'-80'.

Core: No Core.

Water flow at 75'. Moderate flow, possibly up to 200 gals. per hour.

B.M.R. Springsure No.13

Location: Pt. 789, Photo 5145, Run 3, Springsure 1:85,000 photos.
Beside Mantuan Productus outcrop in Quarry beside Rocky Creek Road.

Stratigraphic Description: Hole spudded immediately below Mantuan Productus horizon. It drilled the upper part of Unit "X", the part of the sequence between the Mantuan Productus Horizon and the Catherine Sandstone.

Log

0' - 1' Black soil.

1' -10' Weathered brown argillaceous lithic sandstone.

10'-22' Brown to dark mudstone, sandy in part.

22'-24' Hard, calcareous lithic sandstone.

24'-35' Mottled grey clay, brown-grey, semi-friable, fine-medium lithic sandstone, and brown mudstone with carbonaceous laminae.

35'-50' Grey-blue to dark grey sandy mudstone with dark carbonaceous laminae, interbedded with grey, med.-hard, fine lithic sandstone.

50'-240' Medium-hard, grey fine lithic sandstone grading to argillaceous semi-friable lithic sandstone, some hard ?calcareous lithic sandstone bands, interbedded to interlaminated with dark grey sandy mudstone. The mudstone contains light grey sandy laminae and dark carbonaceous laminae and beds. Proportions of lithic sandstone to mudstone varies but is generally about equal.

240'-250' Cored Recovered 9'

240'-243' Light grey, fine grained feldspath - lithic quartz sandstone with much carbonaceous debris and dark mudstone and ?cherty siltstone zone.

243'-250' Irregularly interlaminated dark grey mudstone and light grey fine lithic sandstone, dark laminae very micaceous and carbonaceous and containing plant debris. Some light grey sandstone lenses to 3" thick. Some laminae of cherty siltstone with pockets of ?pyrite in places.

250' Total Depth

Cuttings Samples — 10' cuttings samples from 20'-30' to 230'-240' inclusive.

Core — 240' - 250' 9' Recovered.

B.M.R. Springsure No.14

Location — Pt. 790, Photo 5145, Run 3, Springsure 1:85,000 photos.

Beside Rocky Creek Road, 1 mile west of Mantuan Productus Horizon quarry outcrop.

Stratigraphic Description — Lower part of Unit "X". Hole bottomed just above Catherine Sandstone;

Log

0' - 10' Black soil and clay.

10' -20' Brown clay and very weathered mudstone and sandstone.

20' -47' Brown to grey, sandy micaceous mudstone, with carbonaceous laminae. Some hard, grey fine lithic sandstone beds.

47' -100' Mainly grey, argillaceous, fine to medium grained lithic sandstone, hard in places, with laminae and pods of dark carbonaceous mudstone and dark grey sandy mudstone.

100'-150' Mainly dark grey carbonaceous mudstone, sandy in places with scattered laminae and pods of fine lithic sandstone.

150'-180' Mainly dark carbonaceous mudstone, very sandy in places, with some beds of tough cream-grey fine sandstone and dark green ?tuffaceous lithic sandstone.

180'-208' Tough dark grey sandy mudstone grading to fine sandstone in places.

208'-220' Mainly fine grained, argillaceous quartz sandstone with some dark grey sandy mudstone.

220'-230' Cored recovered 9'

Fine grained greenish grey micaceous lithic quartz sandstone with patches and irregular laminae of dark grey sandy carbonaceous mudstone.

230' Total Depth

B.M.R. Springsure No.15.

Location Pt. 791, Photo 5145, Run 3 Springsure 1:85,000 photos. Beside Rocky Creek Road, ½ mile west of Little Gorge Creek.

Stratigraphic Description Top part of Ingelara Formation, Hole spudded near the base of the Catherine Sandstone.

Log

0' - 10' Soil, sand and clay.

10 - 40' Mainly weathered, red-brown silty lithic quartz sandstone with some dark carbonaceous siltstone.

40' - 240' Mainly dark grey micaceous sandy mudstone, grading to a fine muddy lithic sandstone in places, with laminae and pods of dark carbonaceous mudstone and laminae of light grey fine quartz lithic sandstone.

240' - 250' Cored. Recovered 9'

Mainly dark grey micaceous sandy mudstone, grading to very fine sandstone, carbonaceous in part and containing laminae and pods of carbonaceous mudstone containing carbonised plant remains and coal debris.

250' Total Depth.

Cuttings Samples 10' cuttings samples from 20'-30' to 230'-240' inclusive.

Core 240' - 250' 9' Recovered.

B.M.R. Baralaba No.16

Location Pt. 916, Photo 5071, Run 6, Baralaba 1:85,000 photos.

Beside Rolleston to Bauhinia Downs Road, 29 miles east of Rolleston.

Stratigraphic Description. Base of Clematis Sandstone.

Log

0' - 18' Red, ferruginous sandy soil

18'- 35' Weathered basalt

35'- 40' Ferruginous sand.

40'-200' Yellow, brown red, argillaceous, friable fine to coarse quartz sandstone.

Only loose sand grains recovered.

200' Total Depth.

Cuttings Samples 40'-60' and then 10' samples from 60'-70' to 190'-200' inclusvie.

No Core.

B.M.R. Baralaba No.17

Location Pt.917, Photo 5094, Run 2, Baralaba 1:85,000 photos.

2 miles north of Kokotunga, beside road.

Stratigraphic Description Spudded in Tertiary sediments, bottomed in ?Lower Bowen Volcanics.

Log

0' - 10' Red sandy soil and gravelly clay.

10'-120' Red, yellow, and blue-grey clay.

120'-174' Blue-grey clay and red silty and sandy clay with scattered quartz granules and pebbles. Red, sandy gravelley clay in bottom few feet.

174' Base of Tertiary sediments.

174'-200' Hard, dark grey-blue, fine grained ?andesitic crystal tuff ?Lower Bowen volcanics.

200' Total Depth

Cuttings Samples 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-80'; 80'-100'; 100'-120'; 120'-130'; 130'-140'; 140'-160'; 160'-174; 174'-180'; 180'-190'; 190'-200'.

Core No Core.

B.M.R. Baralaba No.18

Location Pt. 918, Photo 5105, Run 9, Baralaba 1:85,000 photos.

Beside Theodore to Forest Hills Hs. road, about 8 miles from Theodore.

Stratigraphic Description About middle of Rowan Formation.

Log.

0' - 5' Dark sandy soil

5' -30' Yellow brown sand with scattered waterworn pebbles.

30'-36' Brown-grey clay. ?Cainozoic.

36'-200' Interbedded, dark grey to chocolate brown mudstone, sandy in part containing red and green grains, and dark greenish-grey, medium-hard, fine to medium grained muddy lithic sandstone.

200'-210' Cored. Recovered 10'

200'-202' Massive chocolate-brown mudstone.

202'-206' Interbedded dark grey mudstone, fine muddy lithic sandstone and chocolate brown mudstone.

206'-210' Dark greenish grey fine-medium grained, muddy felspatho-lithic sandstone.

210' Total Depth.

Cuttings Samples — 10' cuttings samples from 40'-50' to 190'-200' inclusive.

Core — 200'-210' 10' Recovered.

B.M.R. Baralaba No.19

Location — Pt. 919, Photo 5051, Run 8, Baralaba 1:85,000 photos.

Two miles south of Leichhardt Highway, 59 miles from Theodore via Forrest Hills Hs. road.

Stratigraphic Description — Uppermost Moolayember Formation.

Log.

0' - 5' Sandy soil.
5' -60' Mottled grey brown sandy clay, sand, gravel. Some fragments of mudstone near bottom Recovery poor. Slight water flow from gravel bed about 40'.

60'-115' Mainly hard dark mudstone, some laminated dark and light grey mudstone, and some light grey fine to medium grained lithic sandstone.

115'-120' Water entered hole at 115' and no cuttings were recovered.

120'-130' Cored. Very poor recovery, about 5' of broken pieces. Poor recovery due to caving of gravel bed onto core barrel.

At top, pebbles of hard, cobble conglomerate overlying hard, dark grey mudstone.

130' Total Depth.

Cuttings Samples — 60'-70'; 70'-80'; 80'-90'; 90'-100'; 100-110'; 110'-115'.

Core — 120'-130'. Recovered about 5', broken pieces.

Water flow at 40' and at 125'. Moderate to good flow, probably greater than 200 gals. per hour.

B.M.R. Baralaba No.20

Location — Pt. 920, Photo 5105, Run9, Baralaba 1:85.000 photos.

Beside Theodore to Forest Hills Road, 10 miles from Theodore. In Glenmorel Gap.

Stratigraphic Description — Base of Clematis Sandstone.

Log

0' - 20' Sandy soil, grading down into sandy clay. Hole made water at 20'.
Drilled with water 20' to Total Depth.

20'- 50' Mainly friable medium to coarse quartz sandstone.

50' -80' Interbedded quartz sandstone and dark grey blue mudstone with light grey sandy laminae.

80'- 90' Cored 9' recovery.

Medium to coarse grained, gritty in part, kaolinitic quartz sandstone. Quartz grains include rounded cloudy quartz grains and angular glassy quartz grains. Many rounded red and green chert grains. Some angular creamy feldspar grains. Many black, rather fibrous and lustrous grains or aggregates, ?carbonaceous. Some thin layers of grey very fine sandstone. Bedding indicates dip of 23°.

90' Total Depth.

Cuttings Samples — None.

Core — 80'-90'. 9' Recovery.

Water flow at 20'. Good flow, probably greater than 200 gals. per hour, but beside large permanent water hole.

B.M.R. Baralaba No. 21

Location — Pt. 921, Photo 5105, Run 9, Baralaba 1:85,000 photos
Beside Theodore to Forrest Hills Hs. road, 9¾ miles from Theodore. Glenmorel Gap, about ¼ mile east of B.M.R. Baralaba No.20.

Stratigraphic description — Drilled bottom part of the Clematis Sandstone and the top part of the Rewan Formation.

Log

0' - 5' Sandy soil

5' -30' Mainly yellow red sand, sandy clay and clay. Some brown micaceous lithic sandstone.

30' -35' Struck hard band at 35' and made considerable water. Drilled with water to total depth.

35'-100' Dark blue grey, hard fine lithic sandstone dark grey mudstone and dark purple mudstone.

100'-110' Cored. 10' recovered.

100'-110' 5" Medium grained kaolinite feldspathic quartz sandstone.

100'5" - 109'6" Dark grey to black mudstone, grading to muddy fine sandstone. Some plant remains at 102', and from 103' to 109'.

109'6" to 110' Grey green muddy lithic sandstone with abundant carbonaceous fragments and some biotite.

110' Total Depth.

Cuttings Samples 30' - 35'

Core 110' - 110' 10' Recovered

Water flow at 35 feet. Strong flow, possibly greater than 500 gals. per hour, but beside large permanent water hole.

B.M.R. Baralaba No.22

Location Pt. 922, Photo 5105, Run 9, Baralaba 1:85,000 photos

Beside Theodore to Forest Hills road, about 7 miles from Theodore. About ¼ east of B.M.R. Baralaba No.18.

Stratigraphic Description About the middle of the Rowan Formation.

Log

0' - 3' Sandy soil.
3' -30' Sand, sandy clay and clay.

30'-50' Mainly weathered brown to grey lithic sandstone and siltstone with a few thin, hard chert pebble conglomerates.

50'-220' Mainly chocolate brown mudstone, interbedded with dark grey mudstone containing red and green grains in places and grading to a dark grey fine-medium grained muddy lithic sandstone.

220'-230' Cored. Recovered 10'

Chocolate brown mudstone.

230' Total Depth

Cuttings Samples 10' samples from 20'-30' to 210' to 220' inclusive.

Core 220' - 230' 10' Recovered.

B.M.R. Baralaba No.23

Location Pt. 923, Photo 5105, Run 9, Baralaba 1:85,000 photos.

At junction of Forest Hills Hs. road with the Theodore - Taroom Road.

Stratigraphic Description — Lower part of Rowan Formation.

Log

0' - 20' Soil and soft weathered mudstone.

20' -120' Mainly chocolate brown mudstone, interbedded and interlaminated with dark greenish grey mudstone, sandy mudstone and muddy fine to medium grained lithic sandstone.

120'-130' Cored 10' Recovered.

Medium grained feldspathic, biotitic, lithic sandstone with red and green lithic fragments, especially near 124'. Some calcite veining and sandstone is slightly calcareous. Some dark grey mudstone laminae.

130' Total Depth

Cuttings Samples — 10' cuttings samples from 20'-30' to 110' to 120' inclusive.

Core — 120'-130' 10' Recovered.

B.M.R. Taroom No. 24.

Location — Pt. 277, Photo 5023, Run 2, Mundubbera 1:85,000 photos.
Beside the South End Yard turnoff from the Theodore to Cracow road via Delusion Creek.

Stratigraphic Description — Near base of the Rowan Formation.

Log

0' - 5' Sandy soil.

5' -20' Mainly weathered lithic sandstone with some hard bands.

20'- 80' Interbedded chocolate-brown mudstone, medium hard dark green grey mudstone, and medium hard green-grey lithic sandstone.

80' -85' Cored. 5' recovered.

80' -83' Greenish-black soft, massive mudstone with conchoidal fracture.

83'- 84' Grey, medium-grained, feldspatho-lithic sandstone, slightly calcareous, with dark mudstone laminae.

84' -85' Greenish-black mudstone with carbonised plant remains.

85' Total Depth.

Cuttings Samples — 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'.

Core — 80' - 85' 5' Recovered.

B.M.R. Taroom No.25

Location Pt. 278, Photo 5023, Run 2, Mundubbera 1:85,000 Photos.
½ mile east of B.M.R. Taroom No.24.

Stratigraphic Description Spudded near Rewan Formation/Upper Bowen Coal Measures contact. Bottomed in Upper Bowen Coal Measures.

Log

0' - 10' Sandy soil and weathered rock

10' - 30' Mainly weathered grey-brown ?tuff, with some brown sandy mudstone.

30' -53' Mainly brown mudstone, sandy in part and with carbonaceous streaks and lzminae.

53' - 78' Mainly medium hard grey-green lithic sandstone with some dark mudstone. Brown soft sandy mudstone at 72'.

78' - 80' Pebble conglomerate

80' - 85' Cored. Recovered 5'.

Volcanic pebble conglomerate and conglomerate sandstone. Pebbles up to 2" across, mainly well rounded volcanics. pyritic in part. Sandstone cemented by white clay.

85' Total Depth.

Cuttings Samples 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'.

Core 80'-85'. Recovered 5'.

B.M.R. Taroom No.26

Location Pt. 279, Photo 76, Run 3, Mundubbera 1:85,000 photos.
Beside the Gyranda Hs. track, about 1½ miles from the Theodore to Cracow Road.

Stratigraphic Description Spudded and drilled in the upper part of the Flat Top Formation.

Log

0' - 5' Clayey soil.

5' -20' Weathered tough claystone, a little silicified, ?by pre-Jurassic weathering.

20' -60' Mainly tough dark grey mudstone, weathering to a buff colour near top. Hole commenced making water at 55'.

60' -70' No cuttings.

70'-80' Very hard, banded grey-brown, green rock, looks slightly oolitic in part. Possibly a silicifed fossiliferous sediment.

80' Total Depth

Cuttings Samples: 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'.

Core: No core.

Water flow at 55'. Strong flow, possibly up to 500 gals. per hour.

B.M.R. Taroom No.27

Location: Pt. 280, Photo 76, Run 3, Mundubbera 1:85,000 photos.

Beside Gyranda Hs. road, about 1¾ miles from Theodore-Cracow road.

Stratigraphic Description: Tertiary sediments.

Log:

0' - 5' Sandy and clayey soil
5' -60' Brown clay, slightly damp.

60' Total depth. Clay was too damp to drill with air.

Cuttings Samples: 1 sample clay, 50' depth.

B.M.R. Taroom No.28

Location: Pt. 281, Photo 76, Run 3, Mundubbera 1:85,000 photos.

Beside Gyranda Hs. road, ¼ miles west of Theodore to Cracow road.

Stratigraphic Description: Middle of the Barfield Formation.

Log:

0' - 5' Red soil
5' -40' Friable and crumbly reddish mudstone with some lumps of solid mudstone.

40' -80' Mainly grey-brown mudstone, greenish in places.

80' -100' Black mudstone with some red and green grains.

100'-105' Cored. 5' recovered.

Black or purplish black, mudstone with some claystone pods. Some specks of ?bornite.

Cuttings Samples: 40'-50'; 50'-60'; 60'-70'; 70'-80'; 80'-90'; 90'-100'.

Core: 100'-105' 5' recovered.

B.M.R. Taroom No.29

Location Pt. 282, Photo 11, Run 6, Mundubbera 1:85,000 photos.
Beside the Nathan Road, 4.5 miles south of the Cracow to Taroom Road.

Stratigraphic Description Spudded above or in Boxvale Sandstone.

Cored above "oolite" horizon, penetrated oolite horizon and cored in ?Boxvale Sandstone below the "oolite" horizon.

Log

0' -10' Sandy soil and ferruginous hardcap.

10' -60' Mainly dark grey, purplish to black mudstone and sandy mudstone, with brown laminae in places, weathered near top.

60' -70' Cored. 9' recovered.

Black mudstone with coaly plant fragments. Some small veins of pyrite.

70' -90' Mainly dark grey mudstone, some hard sandy mudstone and purplish ?glauconitic sandstone. Many oolitic layers.

90' -140' Mainly hard, grey to dark grey mudstone, sandy in places and some grey fine sandstone. Some Oolites near 100'.

140'-145' Cored. Recovered 5'

Grey-green, fine to medium grained, micaceous silty lithic sandstone.

145' Total Depth.

Cuttings Samples 20'-30'; 30'-40'; 40'-50'; 50'-60'; 70'-80'; 80'-90'; 90'-100'; 100'-110; 110'-120'; 120'-130'; 130'-140'.

Core 60'-70' 9' recovered. 140'-145' 5' recovered.

B.M.R. Taroom No.30

Location Pt. 283, Photo 76, Run3, Mundubbera 1:85,000 photos.
½ mile east of Theodore to Cracaw road, nearly opposite Gyranda Hs. turn-off.

Stratigraphic Description Near base of Barfield Formation.

Log

0' - 15' Red sandy soil, gravel and crumbly weathered mudstone.

15' -25' Weathered mudstone. Poor cuttings recovery due to slight water flow.

25' - 80' Purplish-black mudstone, containing some ferruginous nodules in places.

80' - 82' Cored. Recovered 2'.

Greenish-black mudstone with some small patches of ?chalcopyrite.

Cuttings Samples 25'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80';

Core 80'-82' Recovered 2'

B.M.R. Taroom No.31

Location Pt. 284, Photo 76, Run 3, Mundubbera 1:85,000 photos.

150 yards west, across strike, from B.M.R. Taroom No.30.

Stratigraphic Description Lower part of Barfield Formation.

Log 0' - 10' Sandy soil.

10' - 30' Weathered dark grey to brown mudstone.

30' - 80' Dark purplish-grey to purplish black mudstone, medium hard in places.

80'-85' Cored 5' Recovered.

Massive black mudstone, with minor pyrite. Scattered marine fossils throughout, including crinoid stems, brachiopods, pelecypods.

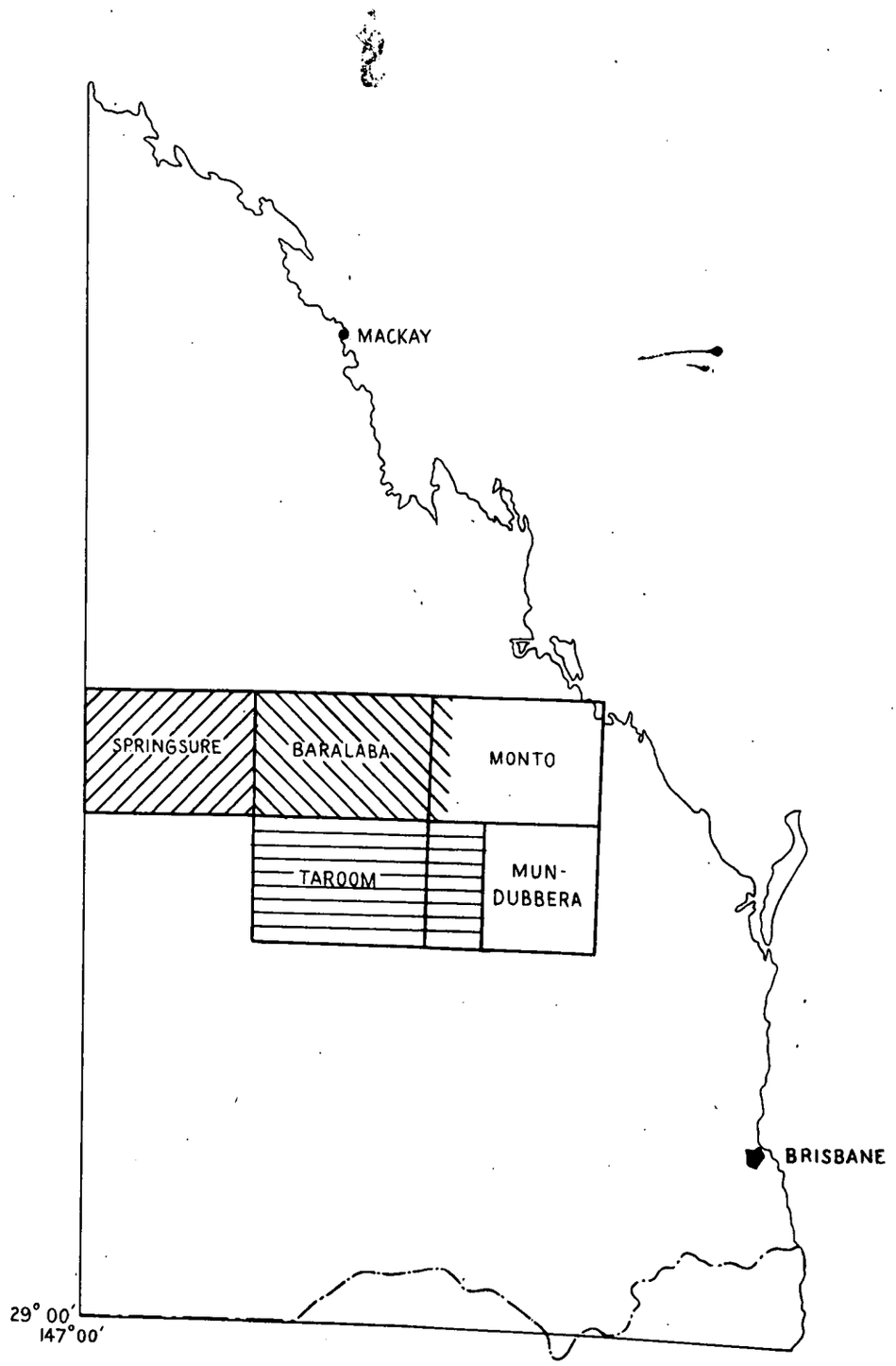
85' Total Depth.

Cuttings Samples 20'-30'; 30'-40'; 40'-50'; 50'-60'; 60'-70'; 70'-80'.

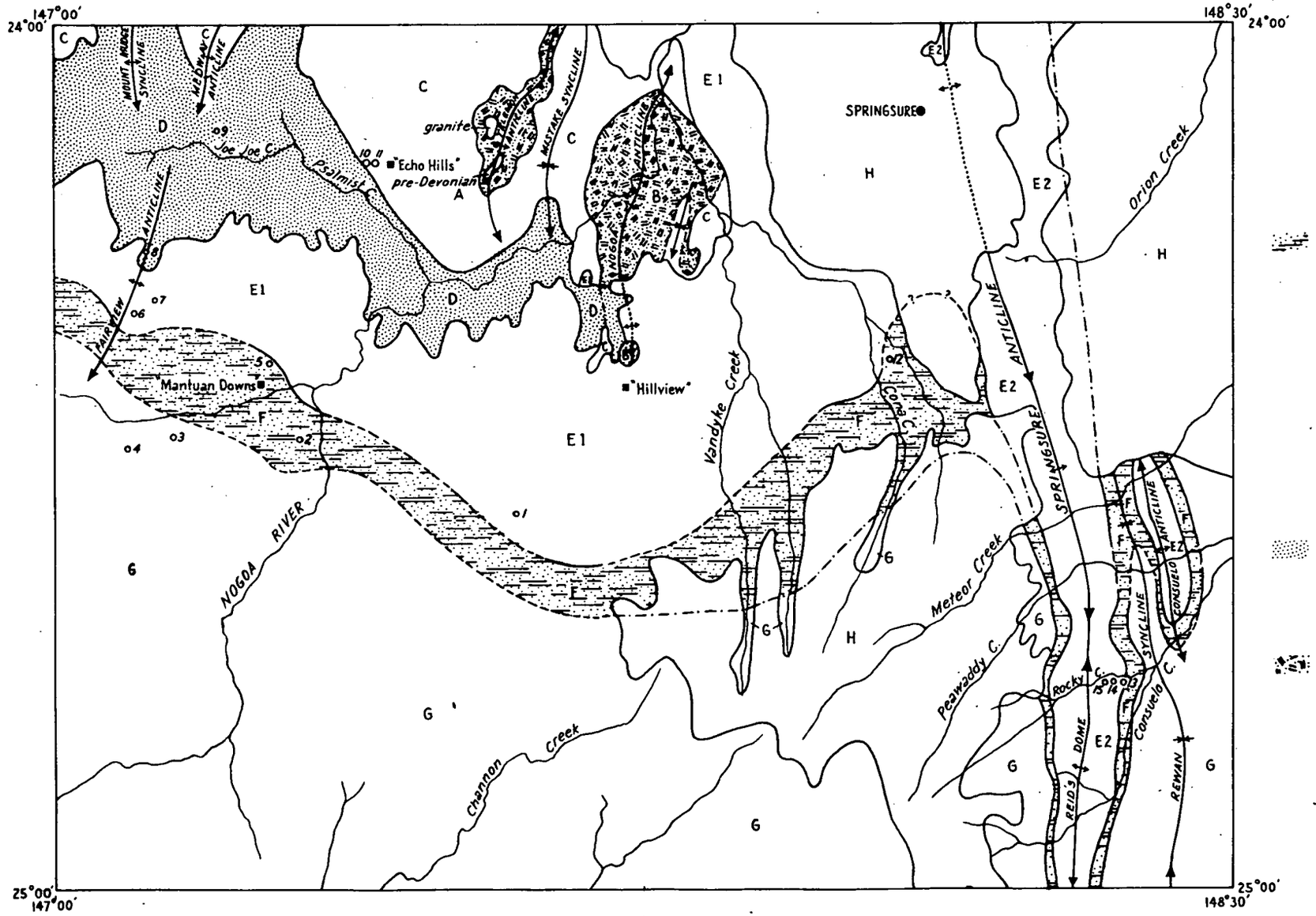
Core 80'-85' Recovered 5'

FIG. 1

GENERAL LOCALITY MAP



DISTRIBUTION OF ROCK FORMATIONS IN THE SPRINGSURE SHEET AREA

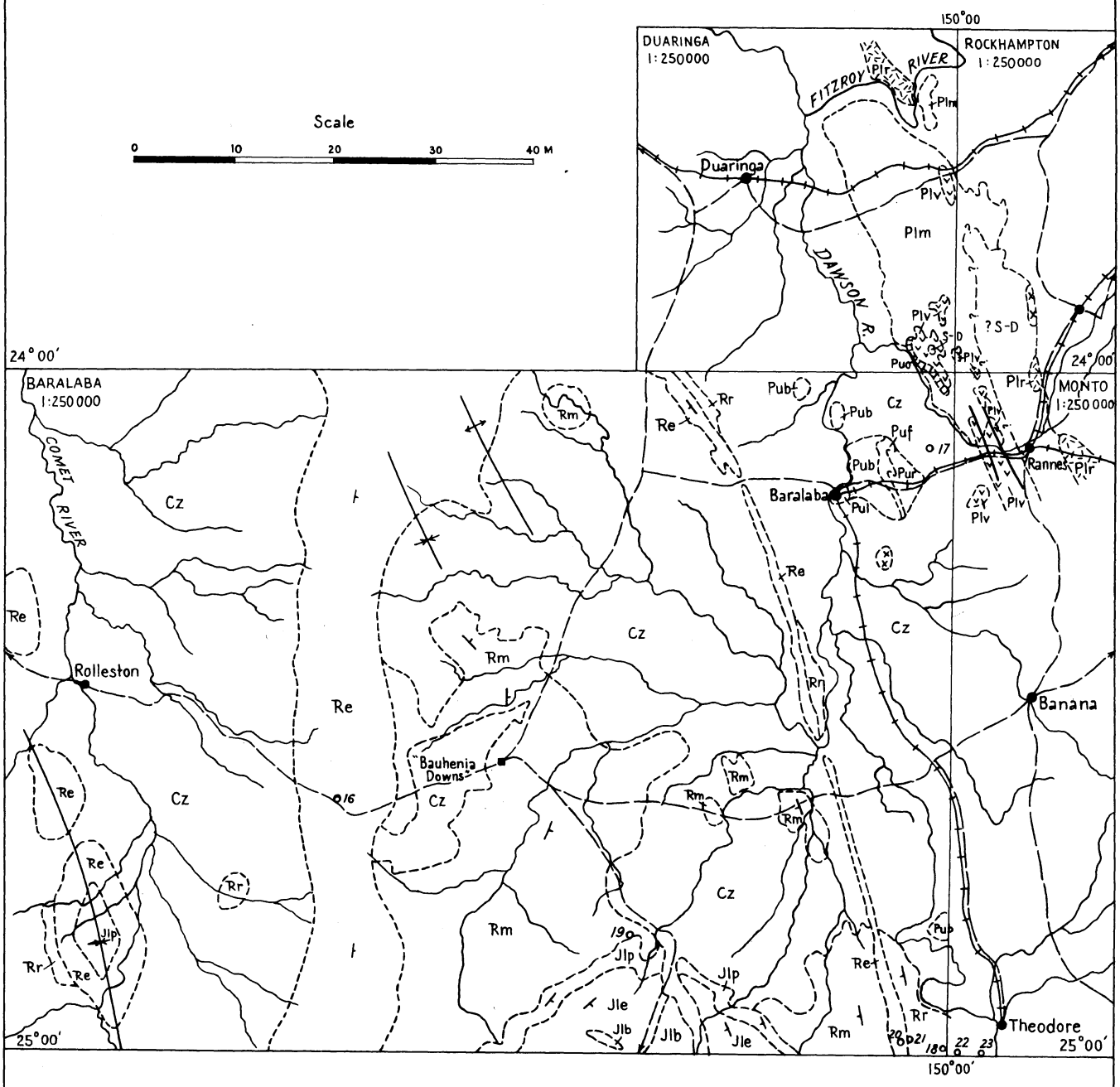


REFERENCE

H	TERTIARY	Minerva Hills Volcanics Tertiary basalt
G	JURASSIC	Precipice Sandstone
G	TRIASSIC	Moolayember Formation Clematis Sandstone Rewan Formation
F	UPPER PERMIAN	Bandanna Formation
E2	LOWER PERMIAN	Mantuan Productus Bed unnamed Formation Catherine Sandstone Ingelara Formation Aldebaran Sandstone Sirius Formation Staircase Sandstone Stanleigh Formation Cattle Creek Formation Orion Formation
E1	LOWER PERMIAN	(Mantuan Productus Bed) unnamed Formation Colinlea Sandstone Siltstone
D	?UPPER CARBONIFEROUS	Joe Joe Formation
C	LOWER CARBONIFEROUS	Ducabrook Formation Raymond Sandstone Mount Hall Conglomerate
B	?UPPER DEVONIAN	Telemon Formation
B	?lower MIDDLE DEVONIAN	Dunstable Formation
A		Pre-Devonian schist and gneiss

- reliable geological boundary
- approximate geological boundary
- obscured geological boundary
- obscured, inferred geological boundary
- fold axis showing plunge
- obscured fold axis
- o3 B.M.R. shallow drill hole.

GEOLOGICAL SKETCH MAP OF AREA MAPPED BY BARALABA PARTY 1963



Scale

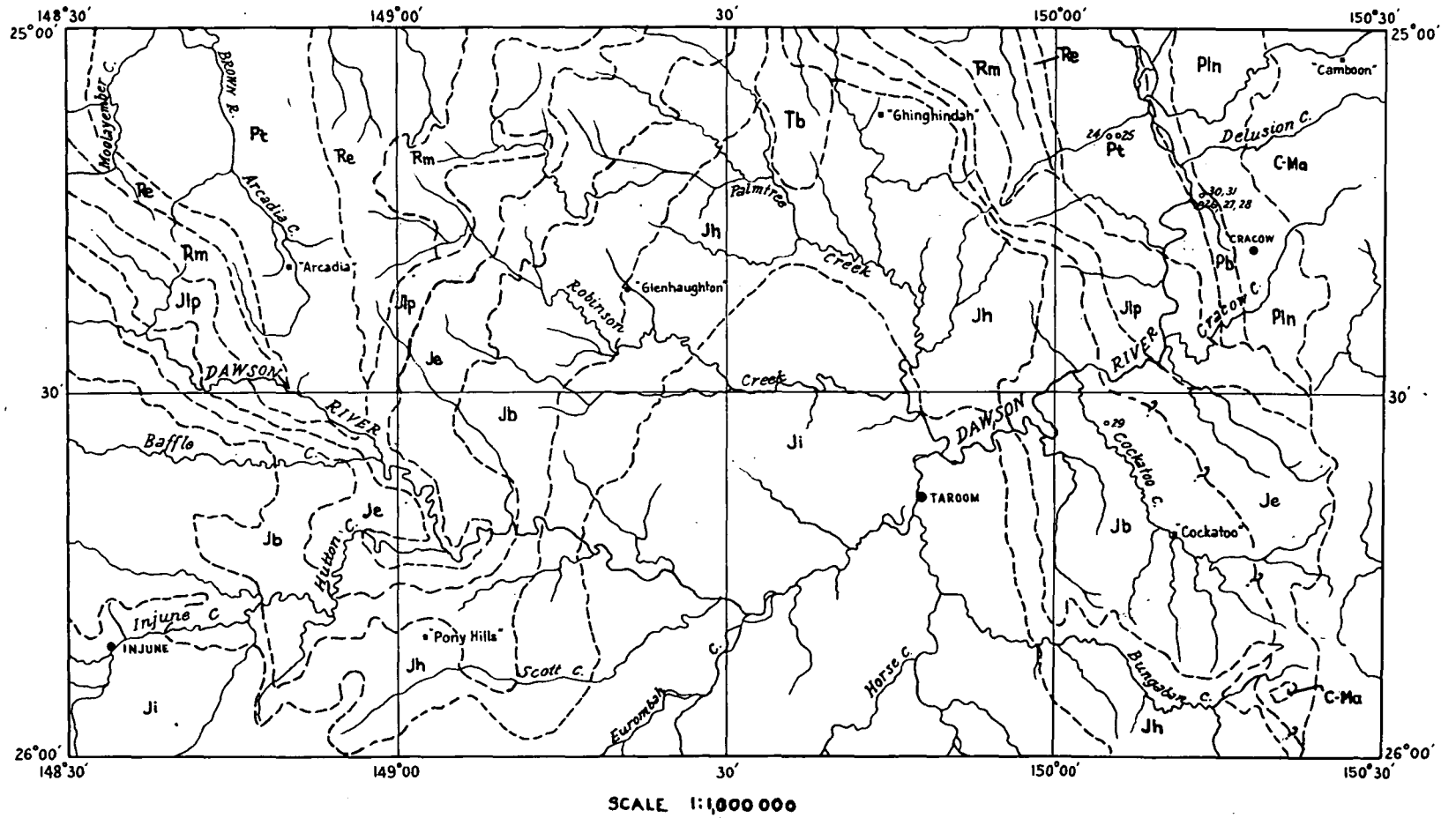
0 10 20 30 40 M

REFERENCE

CAINOZOIC	Undifferentiated	Cz	
JURASSIC	Boxvale Sandstone	Jlb	
	Evergreen Shale	Jle	
	Precipice Sandstone	Jlp	
TRIASSIC	Moolayember Formation	Rm	
	Clematis Sandstone	Re	
	Rewan Formation	Rr	
PERMIAN	Upper Bowen Coal Measures: Baralaba Coal Measures	Pul	
	Upper Bowen Coal Measures: Undifferentiated	Pub	
	Middle Bowen Beds (Plm): Flat Top Formation	Puf	
	Middle Bowen Beds (Plm): Barfield Formation	Pur	
	Middle Bowen Beds (Plm): Oxtrack Formation	Puo	
	Lower Bowen Volcanics	Plv	
	Rookwood Volcanics	Plr	
SILURIAN-DEVONIAN	Undifferentiated	S-D	
INTRUSION		x x	

o20 B.M.R. Shallow drill hole

GEOLOGICAL SKETCH MAP OF AREA MAPPED BY TAROOM PARTY



TERTIARY	Tb	
JURASSIC	Ji	Injune Coal Measures
	Jh	Hutton Sandstone
	Jb	Boxvale Sandstone
	Je	Evergreen Shale
	Jlp	Precipice Sandstone
TRIASSIC	Rm	Moolayember Shale
	Re	Clematis Sandstone
PERMIAN	Pt	Theodore Group
	Pb	Back Creek Group
	Pln	Camboon Andesite
	C-Ma	Auburn Complex

o 25 B.M.R. shallow drill hole