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MICROPALAEONTOLOGICAL EXAMINATION OF CORES FROM ROUGH RANGE NO.4 BORE, CARNARVON BASIN, WESTERN AUSTRALIA

by

I. Crespin and D.J. Belford

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Eighteen cores numbered 1 to 18 from Rough Range No.4 Bore are included in this report. Core No.1 at 1380-1388 feet was previously reported upon (Records No.1955/103). Core No.2 at 3335-3353 feet, was not included in the present sequence of cores but it was amongst a small collection of odd cores from different bores in the Rough Range Anticline received 10.5.56. The last Core, No.13, was labelled 3725 feet. No cuttings were available to assist in defining stratigraphical horizons, consequently no limiting depths can be suggested.

It is unfortunate that a complete sequence of cores from one bore in the Cape Range and in the Rough Range Anticlines has not been available for micropalaeontological examination. The information derived from such bores would have been invaluable for correlations purposes, especially when odd cores from different bores are submitted for examination. A further difficulty in correlation is the extraordinary variation in foraminiferal assemblages in beds in the lower part of the Upper Cretaceous and in the Lower Cretaceous. For example the assemblage found in the present cores in beds regarded as equivalent of the Muderong Shale contains some species which have not previously been recognised in the Lower Cretaceous deposits of the Carnarvon Basin.

The following stratigraphical horizons are represented in the cores submitted from Rough Range No.4 Bore:

Stratigraphical Horizon	Formational Equivalent	Depth in feet	Core Numbers
Upper Cretaceous	Korojon Calcarenite	1380-1388	1
Lower Cretaceous	(Windalia Radiolarite	3335-3610	2-10(a)
	(Muderong Shale	3610-3725	10(b)-18

A detailed description of the cores is as follows:

Core No.1 - 1380-1388: Buff coloured calcarenite with numerous moderately well preserved foraminifera and Inoceramus prisms.

Foraminifera:

Anomalina velascoensis Cushman
Anomalina sp.
Bolivina incrassata Reuss
Bolivinitella elevi (Cushman)
Cibicides excavata Brotzen
Cibicides voltziana (d'Orb.)

Dorothia bulletta (Carsey)
Dorothia sp.
Frondicularia mucronata Reuss
Frondicularia sp.
Gaudryina cf. laevigata Franke
Globorotalites michelinana (d'Orb.)
Globotruncana arca (Cushman)
Globotruncana lapparenti lapparenti Brotzen
Globotruncana marginata (Reuss)
Globotruncana lapparenti Brotzen tricarinata (Quereau)
Globotruncana ventricosa White
Gublerina sp.
Marssonella oxycona (Reuss)
Neoflabellina cf. praereticulata Hiltermann
Planulina taylorensis (Carsey)
Pleurostomella subnodosa Reuss
Pseudoclavulina sp.
Robulus sp.
Rugoglobigerina rugosa (Plummer)
Spiroplectammina gryzbowskii Frizzell
Spiroplectammina laevis (Roemer) var. cretosa Cushman

Core No.2 - 3335-3353 feet: Grey radiolarian siltstone with abundant pyrite, siderite and radiolaria chiefly replaced with pyrite, also foraminifera with the calcareous species well preserved and small fish teeth.

Foraminifera:

Ammobaculites minimus Crespin
Anomalina mawsoni Crespin
Ammodiscus gaultinus (Berthelin)
Ammodiscus cretaceus (Reuss)
Enantiodentalina sp.
Hyperammina sp.
Marginulina marreensis Crespin
Nodosaria orthopleura Reuss
Pelosina lagenoides Crespin
Ramulina globifera Reuss
Reophax deckeri Tappan
Robulus gunderbooksensis Crespin
Robulus warregoensis Crespin
Tritaxia pyramidata Reuss
Vaginulina kochii Roemer
Valvulineria infracretacea Crespin

Core No.3 - 3500 feet: Pale grey radiolarian siltstone. No foraminifera.

Core No.4 - 3520 feet: Grey radiolarian siltstone with some glauconite. No determinable foraminifera.

Core No.5 - 3540 feet: Grey radiolarian siltstone with some glauconite. No determinable foraminifera.

Core No.6 - 3550 feet: Grey radiolarian siltstone with some glauconite. No determinable foraminifera.

Core No.7 - 3570 feet: Grey radiolarian siltstone with some glauconite. No determinable foraminifera.

Core No.8 - 3580 feet: Grey radiolarian siltstone with abundant siderite and pyritic casts of radiolaria.

Core No.9 - 3600 feet: Grey radiolarian siltstone. No determinable foraminifera.

Core No.10(a) - 3610 feet: Grey radiolarian siltstone with glauconite common and with chalky white tests of radiolaria.

Core No.10(b) - 3615 feet: Dark grey siltstone with abundant glauconite and with foraminifera rare.

Robulus gaultinus (Berthelin)

Core No.11 - 3625 feet: Pale grey radiolarian sandy siltstone with patches of dark grey glauconitic siltstone also abundant siderite and pyrite, with foraminifera rare (Robulus gaultinus (Berthelin)).

Core No.12 - 3640 feet: Dark grey sandy siltstone with glauconite, siderite and numerous arenaceous foraminifera.

Ammobaculites laevigatus Lozo
Ammobaculites minimus Crespin
Flabellammina sp.
Proteonina sp.nov.
Reophax deckeri Tappan
Reophax sp.nov.
Trochammina sp.nov.
Verneuilina howchini Crespin

Core No.13 - 3655 feet: Dark grey, micaceous siltstone with glauconite but no foraminifera.

Core No.14 - 3670 feet: Dark grey, micaceous siltstone with abundant siderite, numerous fairly well-preserved arenaceous foraminifera and indeterminate radiolaria.

Ammobaculites sp.nov. aff. A. torosus Loeblich and Tappan
Ammobaculites laevigatus Lozo
Ammobaculites fisheri Crespin
Ammodiscus cretaceus Reuss
Hyperammina sp.
Reophax sp.nov.
Spiroplectammina cushmani Crespin
Spiroplectammina edgelli Crespin

Core No.15 - 3690 feet: Glauconitic sandy siltstone with a few poorly preserved arenaceous foraminifera (Spiroplectammina sp.)

Core No.16 - 3700 feet: Glauconitic sandstone. No foraminifera.

Core No.17 - 3715 feet: Glauconitic sandy siltstone with numerous fairly well preserved arenaceous foraminifera.

Ammobaculites fisheri Crespin
Ammobaculites minimus Crespin
Ammobaculites laevigatus Lozo
Ammobaculites cf. subcretaceus Cushman and Alexander
Ammobaculites sp.nov. aff. A.torosus Loeblich and Tappan.
Haplophragmoides chapmani Crespin
Reophax cf. testacea Tappan
Reophax sp.nov.
Trochammina raggatti Crespin
Verneuilina howchini Crespin

Core No.18 - 3725 feet: Dark grey sandy micaceous siltstone with a few arenaceous foraminifera.

Ammobaculites laevigatus Lozo
Ammobaculites minimus Crespin
Ammobaculites subcretacea Cushman and Alexander
Reophax sp.nov.

Notes on the Foraminiferal Assemblages

Core No.1 contains an Upper Cretaceous (Campanian) foraminiferal assemblage which is typical of the Korojong Calcarenite of the Giralia Anticline.

Cores Nos. 2-10a consist of grey radiolarian siltstone

which is characteristic of the Windalia Radiolarite. The radiolaria are poorly preserved, frequently occurring in the rock as small white decomposed bodies or as pyritic replacements of the test.

In a letter from West Australian Petroleum Pty. Ltd. dated 1.5.56. it was intimated that Core No.2 was near the base of the Gearle Formation. The lithology and microfaunal content of this core is so similar to that of cores Nos.3 to 10(a) regarded as belonging to the Windalia Radiolarite by the company geologists, that it is placed in that formation. There is little variety in the genera and species of radiolaria in the Windalia Radiolarite but they are distinct from the well preserved forms occurring throughout the type section of the Gearle Siltstone.

The foraminiferal assemblage in Cores Nos.2 to 10(a) consists largely of arenaceous species but several well preserved Lower Cretaceous forms occur in Core No.2. Foraminifera are scarce in the other cores referred to the Windalia.

Cores Nos.10(b) to 18 are referred to the Muderong Shale. Foraminifera are present but consist entirely of arenaceous forms, many of which are well preserved and have coarse arenaceous tests. A similar assemblage of coarse arenaceous forms is known near the top of the Muderong Shale at the south end of Middalya Station.