STRATIGRAPHY AND MICROPALAEONTOLOGY OF MYROODAH NO. 1 BORE, FITZROY BASIN, WESTERN AUSTRALIA

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Approximately 300 samples of cuttings from Myroodah No. 1 Bore, Fitzroy Basin, Western Australia, were received from Associated Freney Oilfields for micropalaeontological examination. The Myroodah Bore is 25 miles north-west of Associated Freney Oilfields Bore No. 1 Nerrima.

The first cutting was taken at 120-130 feet and after that, for the most part, cuttings were collected at every five feet down to 6000-6001 feet. A considerable number of these cuttings were examined. A foraminiferal zone was met with between 825 and 1000 feet, another between 1445 and 1800 feet and another from 2100 down to 2500 feet.

According to the report on the Myroodah Bore by the Company's geologist, W. E. Hill (1956), the stratigraphical units passed through were the Liveringa Formation from the surface down to 1430 feet, the Noonkanbah Formation from 1430 feet down to 2702 feet, the Poole Sandstone from 2702 feet down to 3810 feet and the Grant Formation from 3810 feet down to the base of the bore at 6001 feet. No fossils were found in the sediments of the last two Formations.

DESCRIPTION OF SAMPLES

120 - 155 feet. Ochreous sandstone.

155 - 800 feet. Dark grey carbonaceous siltstone and light grey micaceous sandstone.

800 - 820 feet. Chiefly micaceous sandstone.

825 - 855 feet. Carbonaceous siltstone with a few foraminifera.

Dentalina sp.
Frondicularia cf. *woodwardi*
Nodosaria serocoldensis

860 - 865 feet. Dark grey carbonaceous siltstone with foraminifera and ostracoda.

Foraminifera: *Ammodiscus* sp. nov.
Dentalina sp.
Frondicularia woodwardi
Hyperammina sp.
Nodosaria serocoldensis (c)

Ostracoda: *Healdia chapmani*

870 - 895 feet. Grey carbonaceous siltstone with foraminifera.

Ammodiscus sp. nov.
Nodosaria serocoldensis

900 - 945 feet. Grey carbonaceous siltstone with foraminifera.

Ammodiscus sp. nov.
Nodosaria serocoldensis

950 - 1000 feet. Carbonaceous sandstone with foraminifera rare.

Ammodiscus sp. nov.

1000 - 1440 feet. Carbonaceous sandstone with some siltstone. No foraminifera.

1445 - 1450 feet. Dark and light grey carbonaceous micaceous sandstone and siltstone with foraminifera and ostracoda.

Foraminifera: *Hyperammina* sp.
Nodosaria serocoldensis

Ostracoda: *Healdia chapmani*
Indeterminate species

1460 - 1500 feet. Dark grey to black siltstone and whitish carbonaceous sandstone with foraminifera, fragments of bryozoa, ostracoda and pyrite.

Foraminifera: *Hyperammina elegans*
Nodosaria serocoldensis
Thurammina sp. nov.

1500 - 1530 feet. Dark grey to black carbonaceous, micaceous siltstone with small foraminifera.

Ammodiscus nitidus
Cornuspira sp. nov.
New Genus (*Flectospira* MS)
Nodosaria sp. 1
Thurammina sp. nov.

1530 feet - 1550 feet. Black, carbonaceous, micaceous siltstone, with foraminifera.

Cornuspira sp. nov.
New Genus (*Flectospira* MS)
Frondicularia sp.
Hyperammina sp.
Thurammina sp. nov.

1550 - 1580 feet. Dark grey, micaceous siltstone with a few tests of arenaceous foraminifera.

1585 - 1600 feet. Dark grey, micaceous siltstone and a little micaceous sandstone with foraminifera.

Cornuspira sp. nov.
Dentalina sp.
Frondicularia sp. nov.
Hyperammina cf. *minutissima*
Nodosaria serocoldensis

1600 - 1625 feet. Grey carbonaceous, micaceous sandstone and dark grey siltstone with foraminifera.

Ammodiscus nitidus
Cornuspira sp. nov.

New Genus (Flectospira MS)
Frondicularia sp.
Geinitzina sp. nov.
Hippocrepinella sp. nov.
Nodosaria spp.
Thurammina sp. nov.

1630 - 1650 feet. Black micaceous siltstone with a few arenaceous foraminifera.

Psammosphaera pusilla
Thurammina sp. nov.

1650 - 1800 feet. Carbonaceous siltstone and micaceous sandstone with a few poorly preserved arenaceous foraminifera.

Hyperammina elegans
Hyperammina acicula
Thurammina sp. nov.

1800 - 2100 feet. Dark grey, micaceous sandstone and carbonaceous siltstone. No foraminifera but occasional productid spines.

2100 - 2105 feet. Dark grey micaceous siltstone and carbonaceous sandstone with a few foraminifera.

New Genus (Flectospira MS)
Nodosaria sp.
Thurammina sp. nov.

2120 - 2165 feet. Dark grey, carbonaceous micaceous siltstone and a little micaceous sandstone, with foraminifera and ostracoda.

Foraminifera: Cornuspira sp. nov.
New Genus (Flectospira MS)
Frondicularia sp.
Geinitzina sp. nov.
Hyperammina sp.
Nodosaria sp.1
Nodosaria serocoldensis
New Genus (Streblospira sp.1 MS)
Thurammina sp. nov.

2165 - 2170 feet. Dark grey micaceous siltstone, no foraminifera.

2185 - 2200 feet. Dark grey micaceous siltstone with a few foraminifera.

Hyperammina sp.
Nodosaria sp.1
Pelosina sp. nov.

2220 - 2235 feet. Dark grey micaceous siltstone with a few indeterminate arenaceous foraminifera.

2245 - 2250 feet. Dark grey micaceous siltstone with foraminifera.

Hyperammina elegantissima
Hyperammina sp.
Nodosaria serocoldensis
New Genus (Streblospira MS)
Thuramminoides sphaeroidalis
New Genus aff. Hyperammina

2255 - 2300 feet. Dark grey micaceous siltstone with few foraminifera.

Hyperammina sp.
Nodosaria sp.1

2300 - 2350 feet. Dark grey micaceous carbonaceous siltstone and fragments of limestone. No foraminifera.

2360 - 2400 feet. Dark grey micaceous siltstone with foraminifera.

Dentalina sp.
Frondicularia sp.
Hyperammina sp.
Nodosaria sp.1

2400 - 2495 feet. Dark grey micaceous siltstone and white sandstone. No foraminifera.

2495 - 2500 feet. Dark grey to black carbonaceous siltstone with a few foraminifera.

Nodosaria sp. 2
Thurammina sp. nov.

2500 - 2700 feet. Dark grey carbonaceous siltstone with sandstone fragments becoming more common. No foraminifera.

2700 - 3250 feet. Carbonaceous siltstone and sandstone. No foraminifera.

3250 - 3800 feet. Chiefly grey sandstone. No foraminifera.

3800 - 4930 feet. Grey and whitish sandstone. No foraminifera.

4930 - 4940 feet. Grey silty sandstone with rounded quartz grains.

4950 - 6001 feet. Sandstone with a little carbonaceous material.

NOTES ON STRATIGRAPHY AND FORAMINIFERAL ASSEMBLAGES

No foraminifera were present from the first sample at 120 - 130 feet down to 820 - 825 feet. At 825 feet the first foraminifera were recorded and they were found in many samples down to 1000 feet.

No foraminifera were found from 1000 feet down to 1445 feet. At 1445 feet, they were again recorded and were found in varying abundance in samples down to 1800 feet.

No foraminifera were recorded from 1800 feet down to 2100 feet but occasionally productid spines were noted.

At 2105 feet foraminifera were again met with and were present down to 2500 feet.

The beds from 2500 feet down to the base of the bore at 6001 feet were unfossiliferous.

Foraminifera are found at three intervals in the bore section. The first one is in the beds from 825 feet down to 1000 feet, a second one from 1445 feet down to 1800 feet and a third one from 2100 feet down to 2500 feet. According to the stratigraphical units into which the bore section is divided by the Company's geologist, the first one is in beds of the Liveringa Formation and the second and third in the Noonkanbah Formation. No fossils have been found in beds below 2500 feet.

In the beds from 825 feet down to 1000 feet, the foraminiferal assemblage is dominated by excellently preserved tests of the calcareous species, Nodosaria serocoldensis Crespin described from the Serocold Structure, Springsure area, Queensland. Associated with it are Frondicularia woodwardi Howchin originally described from the stratigraphically lower beds of the Fossil Cliff Formation, Irwin River Basin and a new species of Ammodiscus, which has not been found outside the Fitzroy Basin. According to the report of the Company's geologist, the beds from 120 feet down to 1430 feet are placed in the Liveringa Formation. Up to the present all surface deposits examined from the Liveringa Formation contained a very poor assemblage of foraminifera consisting entirely of arenaceous species. Consequently no correlation can be made with any surface outcrops in the Fitzroy or Canning Basins. Furthermore, both Nodosaria serocoldensis and Frondicularia woodwardi are well represented in the underlying beds of subsurface sections of the Noonkanbah Formation.

The foraminiferal assemblage in the beds from 1445 feet down to 2500 feet is characteristic of subsurface deposits of the Noonkanbah Formation in the Fitzroy and Canning Basins. It contains not only described calcareous forms as Nodosaria serocoldensis and Frondicularia woodwardi but a new species of Cornuspira, a new species of Nodosaria, new species of Geinitzina and two new genera, Flectospira MS. and Streblospira MS. Amongst the arenaceous forms are the new species of Ammodiscus recorded from the overlying Liveringa Formation, a new species of Thurammina, which is common throughout the Carnarvon Basin and Fitzroy Basin and a new genus with affinities of Hyperammina. All these forms have been recorded from other bores in the Fitzroy Basin such as Associated Freney Oilfields Bore No. 1, Nerrima and Freney Kimberley Oil Company Bore No. 1 Nerrima. The only outcrop in which some of these forms have been found is in the Mt. Marmion section, where Nodosaria serocoldensis and Flectospira MS. occur.

The thickness of more than 1000 feet of foraminifera-bearing beds in the Noonkanbah Formation in the Myroodah Bore, is the greatest proved to date in the Fitzroy and Canning Basins. Furthermore, the first record of foraminifera in the Noonkanbah Formation at 1425 feet is the deepest yet proved for the top of the fossiliferous beds of that formation. In Associated Freney Oilfields Bore No. 1 Nerrima, the Formation was met with at 45 feet and continued down to 690 feet.

The beds referred to the Liveringa Formation, contain species of foraminifera which are also typical of the Noonkanbah assemblage. It would appear therefore that the presence of certain new genera such as Flectospira MS and Streblospira MS together with the new species of Cornuspira and the new genus with affinities with Hyperammina are of considerable zonal importance in the Noonkanbah Formation.

In my report (Crespin, 1956) on Associated Freney Oilfields Bore No. 1 Nerrima, it was possible to suggest five fossiliferous zones and one unfossiliferous zone in the Noonkanbah Formation. The examination of the Myroodah Bore samples does not show such clear-cut divisions. However, considering the thickness of the beds of the Formation in the present bore, this is not unexpected. A broad comparison is as follows:

1. The Myroodah Bore passed through 1400 feet of sediments referred to the Liveringa Formation. The first sample taken at 45 feet in the Nerrima Bore was in the underlying Noonkanbah Formation.

2. The beds of the Liveringa Formation contained foraminifera which are recorded from the underlying Noonkanbah Formation.

3. In the Myroodah Bore, the new genus Flectospira MS. was first met with at 1500 feet and was recorded at depths down to 2165 feet. It was associated with new species of Cornuspira, Nodosaria, Thurammina and Ammodiscus. In Associated Freney Oilfields Bore No. 1 Nerrima, this new genus was only found at 45 feet.

4. Arenaceous species only were present from 1630 feet down to 1800 feet. A similar zone was noted in A.F.O. Nerrima No. 1 between 365 feet and 460 feet.

5. No foraminifera were recorded in the Myroodah Bore between 1800 feet and 2100 feet.

6. In the Myroodah Bore, Cornuspira sp. nov. and Flectospira MS. were last recorded at 2160 - 2165 feet where they were associated with a new species of another new genus Streblospira MS.; this form was last met with at 2245 - 2250 feet. Streblospira MS. was found in A.F.O. Nerrima No. 1 between 470 feet and 490 feet.

7. Another new genus, with affinities of Hyperammina was not recorded until 2245 - 2250 feet where it occurs with Streblospira MS. In A.F.O. Nerrima No. 1 it was found in samples above and below those containing Streblospira MS.

8. Unfossiliferous beds of the Noonkanbah Formation in the Myroodah Bore from 2500 feet down to 2700 feet. They were present from 695 feet down to 990 feet in A.F.O. Nerrima No. 1.

REFERENCES

Crespin, I., 1956. Foraminifera from Associated Freney Oilfields Nerrima No. 1 Exploration Well, Fitzroy Basin, Western Australia. Bur.Min.Res.Aust. Records No.1956/64.

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