

PALEONTOLOGICAL REPORTS

REPORT ON TERTIARY STRATIGRAPHY IN MERRIMAN  
NO. 1 WELL

by

D. J. TAYLOR

Cores 1 to 5, side wall cores and rotary cuttings (to 3500 feet) have been examined from Arco-Woodside's Merriman No. 1 Well. Rotary cutting samples were heavily contaminated below the casing (set to 504 feet). Ten side wall cores were submitted from the interval 516 feet to 700 feet. No side wall cores were available between 700 feet and 2920 feet and rotary core No. 1 was not taken till 2364 feet. It is noted that many of the side wall cores were heavily contaminated; for example a side wall core from 4630 feet contained a middle Miocene fauna which included Orbulina universa which would not be found "in situ" below 800 feet in this section.

The stratigraphy, partially based on foraminiferal content, is outlined below in drilled order. All lithological units and stage names used are those used and defined by Carter (1963).

50 - 140 feet :

Medium-coarse orange sands which are unfossiliferous and probably represent the Haunted Hill Gravels.

140 - 350 feet :

Comprising mainly dirty sands with abundant shell fragments at some horizons. The fauna includes Ephidium imperatrix, E. pseudonodosum, Guttulina regina, Notorotalia clathrata, Pseudopolymorphina victoriensis and abundant millioids. This is a typical Kalimnan Stage fauna (Pliocene age) and this lithological interval is an equivalent of the Jemmys Point.

350 - 510 feet :

The grey marls contain a fauna of small foraminifera

which include Orbulina universa, Nonion victoriensis and Notorotalia clathra. The presence of N. victoriensis suggests that this fauna represents the Mitchelian Stage and the lithology of this interval is typical of the Tambo River Formation.

510 - 1700 feet :

An interval of grey to brown marls with some brown and grey limestones. The first limestone occurs at the top of the interval. The first 200 feet probably represents the Bairnsdale Limestone as the faunas in the side wall cores (516 - 700 feet) contain a fauna typical of the Bairnsdalian Stage including Orbulina universa.

A sample at 800 feet contain Astrononion obseum which is restricted to the Wuk Wuk Marls of the Bairnsdale region. The first appearance of Operculina victoriensis at 900 feet also suggested of the Wuk Wuk Marls. It is not possible to identify the Glencoe Limestone within the section.

1700 - 2050 feet :

The samples within this interval were of marls which were mottled grey and white in appearance and were different from the preceding interval. The samples also contained limestone chips. The fauna was more abundant than that of the preceding interval. The top of the interval is marked by the first appearance of Astrononion centroplax, Hofkerina semiornata, Lamarckina glencoesis, and Gyroldina zealandica. Many arenaceous foraminifera, including Cyclammina incisa, are present. The fauna is typical of the Longfordian Stage and the lithological interval represents the Longford Limestone.

2050 - 2300 feet :

There is a gradual lithological transition between 1950 and 2050 feet as the marls become more silty and definite limestones are absent. Mica and orange coloured coarse grained quartz are present at and below 2050 feet. Glauconite is present below 2150 but in no sample abundant (more than 5% in residue). At 2050 feet the fauna is similar, but more abundant than that in the preceding interval. However this fauna contains the Planktonic species Globigerina ampliapertura which does not

Merriman 38/52 30.

occur above Faunal Unit 5 in Victoria. Therefore in this section the top of the Janjukian Stage is at 2050 feet and the sediments below this level are similar to the Micaceous Marl Member of the Lakes Entrance Formation. This conclusion is supported by the appearance of Victoriella conoidea (= Victoriella "plecte") at 2100 feet. (V. conoidea seldom occurs at the top of the Lakes Entrance Formation). Other species, which first appear in this interval, include Lingulina carinata and Vaginulinopsis gippslandica.

2300 - feet :

A lithological change to carbonaceous clays and silts is apparent at 2300 feet. The first brown coal appears at 2305 feet.

No cores below this interval contained marine fauna. Although the cuttings were contaminated, they did not contain any pre-Janjukian species. As already mentioned some of the side wall cores were contaminated.

Comments on stratigraphy :

No stratigraphic comments can be made on the section below 2300 feet. The Greensand Member of the Lakes Entrance Formation is absent from this section as it is from other sections in the central and western portion of the Gippsland Basin. The development of the Lakes Entrance Formation is similar to that in the North Seaspray and Wellington Park Wells.

The Longford Limestone, the basal member of the Gippsland Limestone can be differentiated on both lithological and palaeontological grounds. But the other three members of the Gippsland Limestone cannot be separated with any certainty.

The marine Tertiary sequence in Merriman No. 1 Well is tabulated below. (Depths quoted are drilled depths).

Depth	Australian Tertiary Stages (Carter, 1959)	Rock Units (Carter 1963)	
		Formation	Member
50 - 140	Kalimnan	Haunted Hills Gravels.	
140 - 350		Jemmys Point	
350 - 510 510 - 1700	Mitchellian Bairnsdalian to Batesfordian	Tambo River  Gippsland Limestone	
1700 - 2050	Longfordian		Longford Limestone
2050 - 2300	Janjukian	Lakes Entrance Formation	

References :

- Carter, A. N. 1959 - Guide Foraminifera of the Tertiary Stages in Victoria. Vic. Min. & Geol. J., 6 (3); 48-54.
- Carter, A. N. 1963 - Tertiary Foraminifera from the Gippsland, Victoria and their stratigraphic significance. Geol. Surv. Vic., Memoir 22. (in press).

*G. J. Taylor*