Geological Survey of Victoria

Wanwin No. 1 Water Bore Well Completion Report

by

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WANWIN NO. 1

INTRODUCTION

Wanwin No. 1 bore hole was drilled as part of the continuing groundwater and stratigraphic investigation programme being carried out by the Victorian Mines Department in the Otway Basin of south-west Victoria.

LOCATION

Wanwin No. 1 bore hole is located about 500 m east of a point on the Mumbannar-Palpara road 5.4 km south of its junction with the Princes Highway, which is about 11 km by road west of the township of Dartmoor in southwestern Victoria. Its location and relationship to nearby deep bore holes is shown on Figure 1.

GEOLOGICAL SETTING

The area around the well is one of low siliceous sand and limestone ridges separated by wide marshy flats. The surface geology is shown on the Dartmoor 1:63,360 Geological Sheet (Geological Survey of Victoria, 1964). The younger subsurface geology can be partly extrapolated from river bank exposures in the Glenelg River, and the complete geological sequence is revealed in the water and oil bore holes drilled by the Victorian and South Australia Departments of Mines, and private companies. The nearest deep bore hole with a completion report is Drik Drik No. 1 (Holdgate, 1974) 12 km to the east.

Deposition in the Otway Basin began during the Lower Cretaceous with a thick, relatively monotonous sequence of non-marine arkosic sandstones and chloritic mudstones being deposited unconformably across the predominant meridional structural trend of the early Palaeozoic Tasman Geosyncline. This was followed by an Upper Cretaceous and early Tertiary sequence of mainly clastic shales, mudstone, siltstones and fine sandstones interbedded with coarser, more porous sandstones and rare conglomerates. These sediments are paralic-marginal marine to shallow neritic in environment and were followed in the middle and late Tertiary by truly marine marls and limestones, deposition of which was terminated in the late Miocene or

LITHOSTRATIGRAPHY

The lithostratigraphic sequence and thickness of units considered to be represented in Wanwin No. 1 bore hole are tabulated below and then described with reasons of choice.

Table 2: Lithostratigraphic Units - Wanwin No. 1

GROUP	FORMATION	MEMBER	DEPTH INTERVALS (m)	THICKNESS (m)	AGE
-	siliceous sands	-	0 - 15	15	Recent
-	Whalers Bluff Formation	-	15 - 27	12	Pleistocene
Glenelg Group	-	-	27 - 166	139	Miocene Oligocene
?	Nelson-Dilwyn Formation	-	166 - 195	29	Eocene
Wangerrip Group	Dilwyn Formation	-	195 - 1036	841	Eocene
		Pember Mudstone	1036 - 1299	263	Eocene-Paleocene
	Pebble Point Formation	-	1299 - 1322	23	Paleocene
Sherbrook Group	Paaratte Formation	-	1322 - 1784.91 (TD)	462.91	Upper Cretaceous

Siliceous sands: 0 to 15 m (15 m)

This interval is designated as siliceous sands on the basis of surface geology and cuttings. A core cut immediately below the base of this interval contained some of these sands as contaminants. The core defines the top of the underlying Whalers Bluff Formation. The siliceous sands are well rounded moderately spherical frosted quartz grains with minor pink and brown staining. The sands are medium to fine grained. They are considered to be of Recent age.

BIOSTRATIGRAPHY

All the cores recovered from the Wanwin No. 1 bore hole were examined for foraminifera and shells. Microfauna were found to be abundant in three cores, one from the Whalers Bluff Formation and two from the Glenelg Group. A core at the top of the Dilwyn Formation was moderately fossiliferous, and three cores in the Pember Mudstone Member contained moderate faunas. Samples from these fossiliferous cores were submitted to Dr. C. Abele for examination and the following descriptions of species were given. The cuttings between 15 and 27 m were examined for foraminifera by C. Mallet (Melbourne University), and T. Darragh (National Museum) examined the macrofauna. The results are tabulated as follows, and the ages for Cores 2 and 3 are expressed in terms of Carter (1964) Faunal Units.

Core No. 1 : 15.8 to 16.1 m -

Microfauna: *Ammonia aoteana* (= *Rotalia beccarii*)

Age: Plio-Pleistocene

Macrofauna: Plio-Pleistocene

Cuttings between 15 and 27 m

Microfauna: *Globorotalia truncatulinoides*

Age: Pleistocene

Core No. 2 : 38.7 to 44.8 m

Microfauna: *Globigerina dehiscens*, *Globigerina woodi*,

Age: Faunal Unit 6

Core No. 3 : 132.6 to 138.4 m

Microfauna: *Guembelitria stavensis*, *Bolivmoposis cubensis*

Age: Faunal Units (4-) 5

Core No. 4 : 168.9 to 174.3 m

Microfauna: *Pseudohastigerina wilcoxensis* (= *pseudoiota*) *Planorotalites pseudomenardii* or *cf pseuomenardii*, *Acarinina esnaensis*

Age: Lower Eocene

Macrofauna: *Trochocyathus* (?) bivalves indet.

Age: not as young as Upper Eocene

Core No. 14 : 954 to 956 m -

Macrofauna: Bivalves and gastropods indet. - similar to those present in the Dilwyn Formation at Princetown.

Age: not as young as Upper Eocene.

Core No. 18 : 1147.9 to 1152.1 m -

Microfauna: Cyclammina paupera, C. cf paupera, C. complanata.

Age: acc. Taylor (1965) middle to upper Paleocene

Core No. 19 : 1213.4 to 1217.4 m -

Microfauna: Subbotina cf triloculinoides, Planorotalites pseudomenardii or cf pseumomenardii, Cyclammina paupera, C. cf paupera, C. complanata (or cf incisa), Robulus discus, R. reussi.

Age: similar age to the Rivernook fauna - Lower Eocene

Macrofauna: bivalve and coral indet, scaphopod (also found in Dilwyn Formation).

Age: not as young as Upper Eocene.

Core No. 20 : 1276.5 to 1278.0 m

Microfauna: Cyclammina paupera - cf paupera

Age: acc. Taylor (1965) middle to upper Paleocene

From the above data, and from correlation charts approximate ages in terms of international series can be given to the lithostratigraphic units encountered in the Wanwin No. 1 bore hole, and are shown alongside the lithostratigraphic units in Table 2.