

in Tasmania and west-central Victoria. In late Pliocene and Pleistocene time, the sea assumed its present position.

#### D) COMPOSITE STRATIGRAPHIC COLUMN

Portions of two representative well logs, Port Campbell No.2 and Casterton No.1, have been joined together to present a representative section of the Otway Basin. Formation names and generalized lithologies are indicated.

#### E) HISTORY OF EXPLORATION

The search for petroleum has been carried out in the Otway Basin for many years and although no commercial occurrences of hydrocarbons have been found to date, several wells have recorded shows of gas and oil. Frome-Broken Hill Port Campbell No.1 recorded an initial gas flow of 4.2 MMCF per day with some condensate from the Waarre formation. Rapidly declining pressure, however, proved the interval to be non-commercial in this well. An offset Port Campbell No.4 produced small quantities of oil emulsion with gas cut salt water.

The second stage of exploration in the Otway Basin commenced with a program of Shell Development (Australia) Pty. Ltd. when three off-shore wells were drilled during 1967. Their first test, Pecten 1-A, flowed gas at the rate of 90 Mcf per day plus salt water from a 42 foot interval of the Waarre formation, and the well was subsequently abandoned. The two other Shell tests, Nerita 1-A and Voluta 1-A were abandoned without shows.

Esso's offshore drilling program was initiated during 1967 and has resulted in two abandonments, Crayfish A-1 and Prawn A-1. A third test, Nautilus A-1, is currently drilling.

#### F) HYDROCARBON POTENTIAL

To date, all hydrocarbon occurrences in the Otway Basin have been in the Cretaceous. Very little is known about the potential of the Jurassic, and the Paleozoic is considered to be economic basement. The Otway Group appears to have some potential as a source for oil and gas, and the Pretty Hills sandstone shows good reservoir characteristics. The Upper Cretaceous contains thick shales, such as at Voluta 1-A, that should be good source rocks, and there is abundant reservoir in the upper sandstone units. Shelfward, these upper sands are not adequately sealed, but it seems likely that massive sands will interfinger with fine grained sediments in the seaward direction.

The Tertiary has been extensively fresh water flushed in wells drilled so far. In the seaward direction, interfingering of massive sands with silts and shales will probably inhibit flushing, and reservoir, source and seal rocks may be present.

#### G) PREVIOUS GEOPHYSICAL SURVEYS

The landward areas adjoining the Esso-Hematite tenements have been explored by reflection seismograph, gravity meter and airborne magnetometer. The results are summarized in various Subsidy Reports made to the Bureau of Mineral Resources. For a comprehensive bibliography, see "A Preliminary Review of the Otway Basin", Record 1966/170 by Bureau of Mineral Resources.

The Esso-Hematite tenements were previously explored by the Flinders Island-Kingston Survey, the Cape Grim to Cape Jaffa Marine Seismic Survey and the offshore Otway Basin Marine Seismic Survey. In addition, the Bass Strait