

There was no drilling activity onshore or offshore during the first part of 1969; however, Esso drilled three tests onshore (Lake Eliza-1, Lake George-1 and Lucindale-1) and Shell drilled two tests onshore (Moyné Falls-1 and Hawksdale-1) the latter part of 1969. No significant hydrocarbon shows were encountered.

E. 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 of oil and gas, and the Pretty Hill sandstone shows good reservoir characteristics.

The basal Upper Cretaceous Waarre Formation has a good show record and where overlain by Belfast shale, presents a good opportunity for hydrocarbon entrapment. The Upper Cretaceous Paaratte contains thick shales, such as at Voluta-1, that should be good source rocks, and there are abundant reservoirs in the upper sandstone units.

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.

F. PREVIOUS GEOPHYSICAL SURVEYS:

Most of the landward areas adjoining the Esso-Hematite offshore exploration permits have been covered by various reflection seismograph, gravity meter and airborne magnetometer surveys. Various reports are on file with the Bureau of Mineral Resources, and are highlighted in "A Preliminary Review of the Otway Basin", Record 1966/170 by Bureau of Mineral Resources.

The Esso-Hematite permits have been covered in different stages including the ER-68, EP-67 and EO-67 marine seismic surveys. Final subsidy reports are on file with the Bureau of Mineral Resources. Aeromagnetic maps are available for most of the offshore Otway Basin and compliment the more detailed reflection seismic control.

Previous seismic data have been recorded and processed using analog and digital instruments. Early data is single fold analog data and later data is CDP (common depth point) or stacked data recorded and processed digitally. Data quality is considerably improved using the CDP technique and digital instruments. A breakdown of available seismic data available is given in a report by M.G. Parsons submitted as the final subsidy report for the ER-68 Seismic and Magnetic Survey and dated March, 1969.

RESULTS OF CURRENT SURVEY

A. FIELD WORK:

1. Seismic Survey:

A total of 206 line miles of 12 fold CDP data was recorded digitally during the 069B survey. Western Geophysical Company conducted the field survey or data gathering phase using the "Aquapulse" sleeve exploder and a 5290 foot neutrally buoyant cable. Four "Aquapulse" guns were detonated simultaneously at a usual rate of six pops per shot point, or over an interval of 460 feet. The cable is made up of 24 groups of 32 pressure sensitive crystal seismometers per group in a tapered array and the combined effect of detonation rate and detector group spacing results in 12 fold coverage. Recording was done through an SDS 1010 binary gain amplifier and on to an IBM 9 track format $\frac{1}{2}$ inch digital magnetic tape with a sample period of two milliseconds.