

## INTRODUCTION

### A) LOCATION

The Offshore Otway Basin Marine Seismic Survey was conducted between November 7, 1966 and May 5, 1967 in the waters of the continental shelf in the Indian Ocean immediately west of the Bass Straits (See Index Map, Fig. I). The work was done by Esso Exploration and Production Australia Inc. in connection with a farm-in agreement with Hematite Petroleum Pty. Ltd. Seismic profiling was done in the following licences: O.E.L./26 in South Australia, P.E.P. 40 and 49 in Victoria and E.L. 1/60 in Tasmania.

The field work and playback was performed by Geophysical Services International. Supervision and interpretation was done by Esso. A comprehensive statistical report on the field operations was prepared by G.S.I. and is included with this report in the map folder as an appendix. Comments by Mr. A. Martens, Esso field supervisor, are attached to this appendix.

### B) PURPOSE OF SURVEY

The object of the survey as set forth in the subsidy application was to map structural features wherein oil or gas may be trapped, define the thickness and attitudes of the principal sedimentary units, provide information that could be useful for determining gross lithologies and in locating the best sites for drilling.

### C) GEOLOGIC HISTORY

The Otway Basin, of Mesozoic and Cainozoic age, is located in the southern part of the old Paleozoic Tasman Geosyncline and encompasses about 33,000 square miles. The Paleozoic sequence probably exceeds 25,000 feet in thickness in the Mornington Peninsula on the southeast side of the Otway Basin. The strata range in age from Cambrian to Carboniferous and consist of complexly folded, faulted, metamorphosed sedimentary, extrusive and intrusive igneous rocks.

In the Otway Basin four onshore wells drilled into Paleozoic strata (Fergusons Hill-1, Pretty Hill-1, Kalangadoo-1 and Robertson-1). These wells found the Paleozoic rocks to be non-prospective for hydrocarbons. It seems reasonable, therefore, to expect that the Paleozoic sequence in the Otway offshore area will be an "economic basement" complex of sedimentary, metamorphic and igneous rocks.

The Tasman Geosyncline was terminated in late Carboniferous to early Permian time by the Hunter-Bowan Orogeny which was followed by the development of the Otway Basin in Jurassic time.

Jurassic - The Otway Basin probably began to develop in Jurassic time, although it is probable that Triassic deposition occurred. Clastic sediments derived from the old Paleozoic landmass are believed to have been deposited in a west to east trending trough which extends from offshore South Australia, south of Cape Jaffa to western Victoria near Casterton. These sediments are thought to have consisted predominately of coarse sandstones interbedded with siltstone and carbonaceous shale.

One onshore well in the Otway Basin possibly penetrated Jurassic strata. In western Victoria the Planet Oil Casterton-1 encountered a section of Jurassic (?) rocks some 1,262 feet thick, unconformably overlying Paleozoic slate. This section consists of a 490 foot