

INTRODUCTION

A. LOCATION:

The Offshore Otway 069B Marine Seismic and Magnetic Survey was started on September 26, 1969 and completed on October 1, 1969 in the Southern Ocean immediately west and north of the Bass Strait (Figure 1). This project was done by Esso Exploration and Production Australia, Inc. in partnership with Hematite Petroleum Pty. Ltd. and covers parts of exploration permits SA/P2 and PEP 40.

Field operations were contracted to Western Geophysical Company and the digital processing to Geophysical Services International. Esso personnel supervised the data gathering and processing, and completed the interpretation. An operations report covering field technique and equipment was furnished by Western Geophysical Company and is included as an appendix with this report.

Interpreted results include data from previous surveys, principally ER-68, EP-67 and EO-67, and the maps submitted are an integrated geologic interpretation.

B. PURPOSE OF SURVEY:

The primary objectives of the 069B survey were to supply sufficient detailed control in three different anomalous areas regarded as potential prospects based on previous seismic surveys.

The three areas are as follows:-

1. The Lower Cretaceous (Pretty Hill SS) trend about ten miles southwest of the Crayfish-1 test in SA/P2. Additional control was needed to define the limits of indicated structural anomalies and to relate the structure position of a potential reservoir section.
2. The Upper Cretaceous (Paaratte) trend some ten miles southwest of the Shell Voluta-1 and adjacent to the South Australia - Victoria border in SA/P2 and PEP 40.
3. The Upper Cretaceous (Waarre SS) trend approximately thirteen miles west-southwest of the Shell-Pecten-1 and in PEP 40.

A shipboard magnetometer provided additional data to help define areas of igneous activity.

C. GEOLOGIC HISTORY:

The Otway Basin trends east-west across south western Victoria into South Australia and encompasses about 33,000 square miles. The Basin is Mesozoic to late Tertiary in age and is located in the southern part of the old Paleozoic Tasman Geosyncline.

The Paleozoic sequence ranges in age from Cambrian to Carboniferous, and may exceed 25,000 feet in thickness on the southeast side of the Otway Basin. Nine onshore wells (Frome-Broken Hill Ferguson's Hill-1, Pretty Hill-1, Alliance Kalangadoo-1, Robertson-1, Esso's Lake Eliza-1, Lake George-1, Lucindale-1, and Shell's Moyne Falls-1, Hawksdale-1) have encountered Paleozoic rocks without shows of hydrocarbons. The strata consist of complexly folded, faulted, metamorphosed sediments with extrusive and intrusive igneous rocks. The Paleozoic are considered to be "economic basement" for the Otway Basin.

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

Jurassic to early Lower Cretaceous clastic sediments were deposited in a