

INTRODUCTION

A. LOCATION

The Offshore Otway ER-68 Marine Seismic and Magnetic Survey was conducted between October 10, 1968 and November 23, 1968 in the waters of the Southern Ocean immediately west of Bass Strait (see Index Map, figure 1). The work was done by Esso Exploration and Production Australia Inc. in connection with a farm-in agreement with Hematite Petroleum Pty. Ltd. that covers the following licences: SA-P2, SA-P3, P.E.P. 40, P.E.P. 49 and T-P3. Several miles were shot off Esso's farm-in area on P.E.P. 22 in Victoria.

The field work was carried out by Western Geophysical Company and the processing by Geophysical Services International, with supervision and interpretation by Esso. Field operations are covered in a comprehensive report by Western that is included in the appendix of this report.

In addition to the ER-68 Survey, portions of a previous Seismic Survey within the Esso farm-in was digitally processed for the first time (see plate 1) with costs subsidized by the Bureau of Mineral Resources.

This report covers results from the ER-68 Survey and the digital reprocessing, and presents an interpretation that is integrated into and includes results from previous Surveys.

B. PURPOSE OF SURVEY

The objectives of the ER-68 Marine Seismic and Magnetic Survey were as follows:

1. To explore via reconnaissance program the possibility of thick sedimentary section at the south extremity of "S.A.-P2" in Encounter Bay.
2. To provide detailed control on the northern pinchout of the Lower Cretaceous Crayfish Sand against shallow Basement along the Cape Jaffa hinge line south of 37° longitude.
3. To provide additional control on an anticlinal lead south of Esso Crayfish A-1.
4. To delineate Upper Cretaceous fault traps with fill-in seismic control in the area between Esso Argonaut A-1 and Shell Voluta 1-A.
5. To provide detail control southeast of Portland on a Pre-Tertiary anticlinal trend.
6. To provide fill-in control south of Warrnambool in an area of potentially prospective Waarre Sandstone (basal Upper Cretaceous).
7. To detail a series of Basement Highs in the West King Island area.
8. To detail an anticlinal structure in the Anglesea Sub-basin.

The purpose of the shipboard magnetometer survey was to help define areas of igneous activity, and in general to complement the seismic interpretation. The purpose of the reprocessing program (425 miles) was to process digitally data from the E0-67 survey that had previously been recorded digitally but only analog processed. The reprocessing program was planned to include only areas potentially prospective for hydrocarbons.

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.