

INTRODUCTION

A) LOCATION.

The offshore Otway Basin Marine Seismic Survey EP-67 was conducted between September 23, 1967 and January 9, 1968 in the waters of the Southern Ocean immediately west of Bass Strait (see Index Map, Fig.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 cover 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 processing was done by Geophysical Services International, and supervision and interpretation was done by Esso. Field operations are covered in two comprehensive reports by G.S.I. that are included in the appendix of this report. In addition to the EP-67 Survey, certain data from previous Seismic Surveys within the Esso farm-in area have been reprocessed via digital computer with costs subsidized by the Bureau of Mineral Resources (see Plate 1). This report covers both the EP-67 survey and recent digital reprocessing.

B) PURPOSE OF SURVEY.

The object of the survey was to confirm and define hydrocarbon prospects as outlined from the EO-67 Otway seismic survey, and to evaluate further exploration leads that could develop into prospects. A shipboard magnetometer was used to help identify 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. Four onshore wells, Frome-Broken Hill Ferguson's Hill-1, Pretty Hill-1, Alliance Kalangadoo-1 and Robertson-1 have encountered Paleozoic rocks without shows of hydrocarbons. The strata consist of complexly folded, faulted, metamorphosed sedimentary, extrusive and intrusive igneous rocks, and the Paleozoic is considered to be the "economic basement" of the Otway Basin.

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 and Lower Cretaceous time.

Jurassic to early Lower Cretaceous clastic sediments were deposited in a poorly defined east-west trending trough which extended from offshore South Australia south of Cape Jaffa to Western Victoria near Casterton. Only one well, Planet Oil Casterton-1, encountered Jurassic rocks, where 1282 feet of clastics and dolerite lay unconformably over Paleozoic slate. The section consists of a 490 foot thick sub greywacke underlain by dark grey, carbonaceous shale, siltstone and two dolerite sills.

The Lower Cretaceous may have a maximum thickness of 15,000 feet. This section is predominantly non-marine and consists of graywackes, sub greywackes, carbonaceous siltstones and chloritic mudstones. The sandstones usually contain abundant