

Exploration History Of The Otway Basin

Exploration for hydrocarbons in the Otway Basin was initiated in 1882 with the drilling of Alfred Flat-1, near Salt Creek in South Australia. Continuing exploration into the early 1900s involved the mapping of surface anticlinal structures that were then drilled with little success. The structural knowledge of the basin was enhanced following gravity and magnetic surveys in the late 1940s that delineated the onshore extent of the basin and basement structuring.

The first acquisition of seismic in 1958 was closely followed by the discovery of the first significant accumulation of hydrocarbons in the Otway Basin, in Port Campbell-1. The well drilled by Frome-Broken Hill Pty Ltd flowed gas from the Late Cretaceous Waarre Formation. Further work by this company in 1960 and 1961 included an extensive offshore aeromagnetic survey that defined the basin's offshore extent.

Exploration continued through the 1960s and 1970s, chiefly by Shell Development and Esso Australia Pty Ltd, who drilled the first offshore wells during this time. These wells resulted in a number of non-commercial gas discoveries, mostly in the early Cretaceous. The discovery of commercial gas in the Port Campbell embayment at North Paaratte-1 by Beach Petroleum Ltd, in 1979, increased petroleum exploration activity. This included the drilling of more wells and the acquisition of better quality seismic data, resulting in

further discoveries such as Wallaby Creek-1 in 1981.

Exploration became focused offshore in the early 1980s with the drilling of Discovery Bay-1, Bridgewater Bay-1 (Phillips) and Normanby-1 (BP Petroleum Development Ltd), all with no success. All offshore permits were relinquished due to low oil prices from 1986 to 1990.

Onshore, the Katnook gas discovery, about 10 km from Penola, South Australia in 1987/88 was the first tangible evidence of commercial hydrocarbons in the Early Cretaceous graben of the Otway Basin. This was followed by Ultramar's gas discovery at Ladbroke Grove-1, which was rendered non-commercial by having a 54% carbon dioxide content, a common event in the Otway Basin due to Recent volcanism.

Back in the Port Campbell Embayment, Bridge Oil Ltd discovered the Iona gas field in 1988 and subsequently, in 1991, participated in the discovery of Victoria's first commercial carbon dioxide discovery at Boggy Creek-1.

A Gas and Fuel led consortium carried out the first onshore 3D seismic survey in the Otway Basin over the Port Campbell fields and surrounds and it is still being used to delineate a whole series of small gas discoveries, starting with Langley-1 and Mylor-1.

Offshore, over 3000 km of regional 2D seismic data were acquired by BHP Petroleum in 1991. This was followed by more prospect-targeted 2D surveys. The resultant drilling of seven wells: La Bella-1, Eric The Red-1, Minerva-1, Loch Ard-1, Minerva-2A, Conan-1 and Champion-1, discovered two potentially commercial gas fields at La Bella and Minerva in 1992/93. Cultus Petroleum found gas shows in Troas-1 in the South Australian offshore Otway in 1992.

A drilling campaign was carried out in 1994 in the Penola Trough resulting in the discovery of oil and gas at Wynn-1 (the first flow of oil in the Otway Basin) and gas at Haselgrove-1.

Exploration offshore has seen a recent revival with Origin Energy recording a large 3D survey over the Shipwreck Trough, offshore from Port Campbell. This resulted in the drilling and discovery of up to 1 Tcf of gas at Thylacine-1 and 400 - 600 Bcf of gas in Geographe-1 in 2001. Onshore, Santos has had a string of recent gas discoveries in the Port Campbell area, including Penryn-1, Fenton Creek-1 Tregony-1 and McIntee-1.

These recent discoveries have caused an upsurge in exploration effort with two seismic vessels currently working off the Otway coast. The latest gazettal areas extend out into the deep water Otway Basin where new potential for discoveries may be awaiting those with deep pockets.