

The Rise of BHP and Australia's Oil Fortunes*

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Introduction

Australia's first offshore well heralded a new era of hydrocarbon independence for a continent previously thought to have "the wrong geology" to host significant oil and gas deposits. That well, East Gippsland Shelf No. 1, drilled in 1964 and '65 ([Figure 1](#)), led to the discovery of the Barracouta gas field and was subsequently renamed Barracouta-1.

Long Road to Discovery

This success did not come easily – the early history of oil exploration in eastern Australia was long and frustrating, and not very successful. The first well, in 1886 in the Coorong region of south Australia, drilled through a little more than 100 meters of Cenozoic sediments before encountering Precambrian basement; the targeted "oil seep" proved to be a modern crust of organic-rich algal material formed in one of the numerous lakes in the area.

In 1900, natural gas was found during water-drilling operations near Roma in southwest Queensland and was used for lighting in Roma. In 1924, another water well encountered hydrocarbons, this time in Victoria: Lake Bunga-1 ([Figure 2](#)) drilled near Lakes Entrance in the Gippsland region of southeastern Australia encountered small amounts of viscous, heavy (biodegraded) oil at a depth of 326 meters. The Lakes Entrance pool became Australia's first known oil accumulation.

Another 64 wells were drilled in the ensuing years by several companies, including the Point Addis and Pure Oil companies, and by 1941 this area had produced more than 8000 barrels of heavy oil. The most productive well was the Lakes Entrance oil shaft, which produced 4935 barrels during World War II.

Lakes Oil Limited took over the operation after the war, and by the early 1950s, the Gippsland area started to attract wider attention. Russian emigrée Nicholas Boutakoff of the Victorian Mines Department reviewed the petroleum potential of the state and in 1955 suggested offshore exploration, albeit within the shallow coastal waters within reach of the drilling technology available at the time.

The Bureau of Mineral Resources, Geology and Geophysics (now Geoscience Australia) flew an aeromagnetic survey of the onshore area of the Gippsland Basin in 1951 and 1952 and the offshore area in 1956. The anomaly trends of the aeromagnetic contour map can be correlated with several known geological structures, some of which could be traced into the deeper parts of the basin. A depth-to- basement map shows a trough east of Lake Wellington and the likely development of more than five kilometers of sedimentary infill ([Figure 3](#)).

Woodside (Lakes Entrance) Oil Company Limited was incorporated in 1954, having taken its name from the small town of Woodside located some 157 kilometers from Lakes Entrance. In 1956, the company secured the first offshore exploration license to be granted in Victoria – a 2600-square kilometer stretch offshore Ninety Mile Beach that extended 2 kilometers into Bass Strait. That exploration was unsuccessful.

It is worth noting that in the late 1950s, Boutakoff began consulting to Woodside and suggested they switch their attention to the other side of the country. In 1963, Woodside was awarded exploration rights to more than 367,000 square kilometers off northwestern Australia and went on to become Australia's first LNG operator and largest independent oil and gas company.

Enter “the Big Australian”

The Broken Hill Proprietary Company Limited, better known today as BHP, was born in 1885 out of the fabulous silver-lead deposits of Broken Hill, which is still today an isolated mining city in the far west of outback New South Wales near the border with South Australia. By the early 1960s the company had grown, prospered and diversified to become Australia's premier industrial company, having a plethora of interests including coal and metals mining, smelting, refining, manufacturing and steel production.

Ian Munro McLennan, a giant of the Australian industrial landscape, joined BHP during the Great Depression, became general manager in 1950 and chairman in 1971. Under his stewardship, BHP was transformed into such a sizeable company that it earned its longstanding nickname, “the Big Australian.”

When McLennan joined the BHP board in 1955, he learned that British interests were considering exploring for oil over large parts of New South Wales, specifically the Sydney Basin where BHP had several large coal leases. He immediately sought to cut the invaders off at the pass and set a new subsidiary, Haematite Exploration Proprietary Limited, to undertake oil exploration. McLennan sought a credible petroleum exploration expert to advise BHP on the petroleum potential of the Sydney Basin.

Who better than the president of the AAPG? Lewis George Weeks, who was AAPG president in 1959 and one of the most celebrated geologists of the 20th century, joined the Standard Oil Co. of New Jersey (Esso, later Exxon, today ExxonMobil) in 1924, retired as the company's chief geologist in 1958 and set up as an independent consultant. As noted in his 1979 AAPG Bulletin Memorial, his interests were wide-ranging, his observational powers acute, his inferences and deduction based on his observation were sound yet provocative, and he did not hesitate to utilize his excellent powers of expression, both written and oral.

Gippsland Coast Exploration

Weeks, newly retained as BHP's petroleum consultant, arrived in Sydney in March 1960 and promptly (and correctly) informed BHP that the Sydney Basin was likely to be gas-prone and that if they wanted to become an oil company, they should look elsewhere: he knew where they should look, but he would only talk to the boss.

Weeks had done his homework, having studied the area since the 1930s. He was aware that oil occurred in the Gippsland area (the Lakes Entrance oil seep); he was aware of the comments of Sir Edgeworth David and others that the Tertiary sediments of the Gippsland region probably extended offshore. Furthermore, he had met University of Tasmania Professor S. Warren Carey at Princeton University in 1958 where Carey had told him of his ideas on the tectonics of southeastern Australia, and in particular that he believed onshore anticlines of the Strzelecki Ranges extended offshore ([Figure 4](#)). He was also aware of recent advances in offshore technology and that production would be possible from such regions within a few years. Weeks and McLennan met in Melbourne later the same month and subsequently shook hands on a deal whereby BHP would explore for oil in the waters off the Gippsland coast and Weeks would receive a royalty of 2.5 percent on any future production.

Over the next few months, BHP moved to secure the offshore acreage across much of southeastern Australia and worked with Weeks to design a single-fold seismic survey which was acquired in 1962. That remarkable 1617-kilometer survey on a grid of approximately 19 by 27 kilometers provided the first glimpse of the structure of the offshore basin and identified most of the basin's major structures in which either oil or gas was found. Weeks worked with BHP geologists to put together a farmout package that led to the establishment of a partnership with Esso, which was signed on May 12, 1964, and endures to this day.

Era of Discovery

In 1965, after overcoming the many technical challenges of the (then) deepwater and extremely hostile weather conditions, the first well was spudded on December 27, 1964. The discovery was not without some drama; the well took a significant kick and was finally brought under control by activation of the blind rams. Additional gas reservoirs encountered in 1966, and the discovery of oil in 1967 confirmed the Gippsland Basin as a world-class hydrocarbon province. Before the 1960s were over, oil and gas production from the Bass Strait fields ([Figure 5](#)) as under way, and in the more than 50 years since, four billion barrels of oil and seven trillion cubic feet of gas have been produced.

The discovery of oil and gas in Bass Strait was a watershed moment in the history of Australia and BHP: the company was transformed from being a steel maker and a mining company to a serious player in the offshore oil industry – a role it still holds today. Also, Australia achieved a degree of energy independence and self-sufficiency previously unimaginable.

Lewis Weeks (and, indirectly, the AAPG) did pretty well too!

Acknowledgments

I am grateful to John Davidson for sharing his reminiscences of a 1972 meeting in Houston with Weeks and Carey and to Peter Purcell for numerous discussions and help with this article.

Author

Peter Baillie ([Figure 6](#)), former president of AAPG's Asia Pacific Region, is based in Perth, Australia, where he works for CGG. A keen student of history, he believes that modern seismic imaging may unlock significant new discoveries in "mature" basins, such as the Gippsland Basin.

About Historical Highlights

A history-based series, Historical Highlights is an ongoing EXPLORER series that celebrates the "eureka" moments of petroleum geology, the rise of key concepts, the discoveries that made a difference, the perseverance and ingenuity of our colleagues – and/or their luck! – through stories that emphasize the anecdotes, the good yarns and the human interest side of our E&P profession. If you have such a story – and who doesn't? – and you'd like to share it with your fellow AAPG Members, contact the editor, Hans Krause, at historical.highlights@yahoo.com.



Figure 1. The drillship Glomar III, which drilled East Gippsland No. 1. Photo courtesy of Esso Australia Ltd. and BHP Petroleum Ltd.

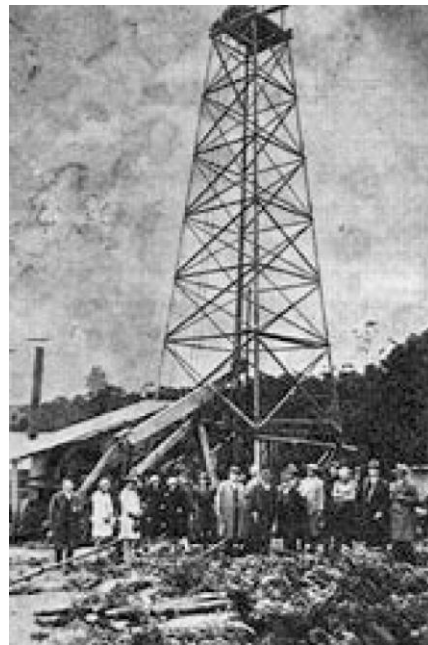


Figure 2. Lake Bunga No. 1 in 1924 at Lakes Entrance. Photo courtesy of the Victorian Department of Industry, Technology & Resources.

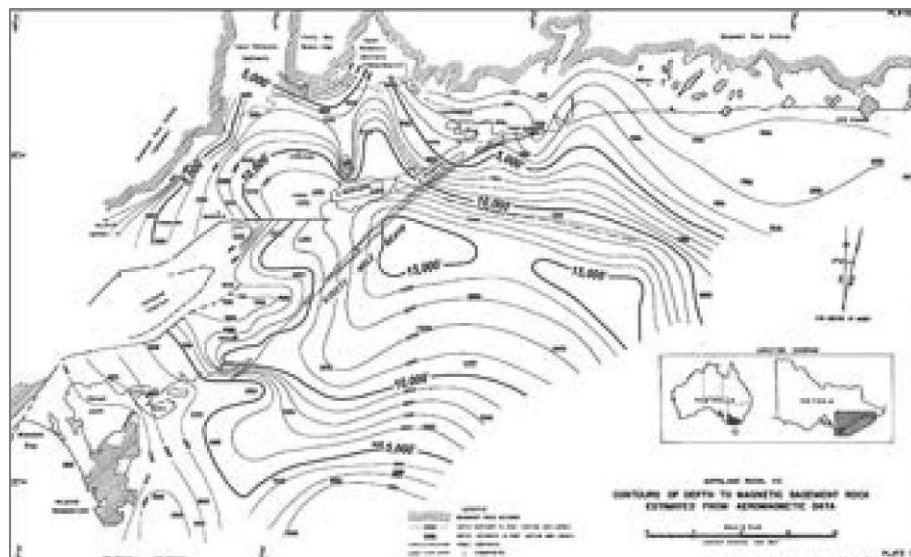


Figure 3. Depth-to-basement map from 1956 aeromagnetic survey showing development of over five kilometers of sediment in the offshore Gippsland Basin.

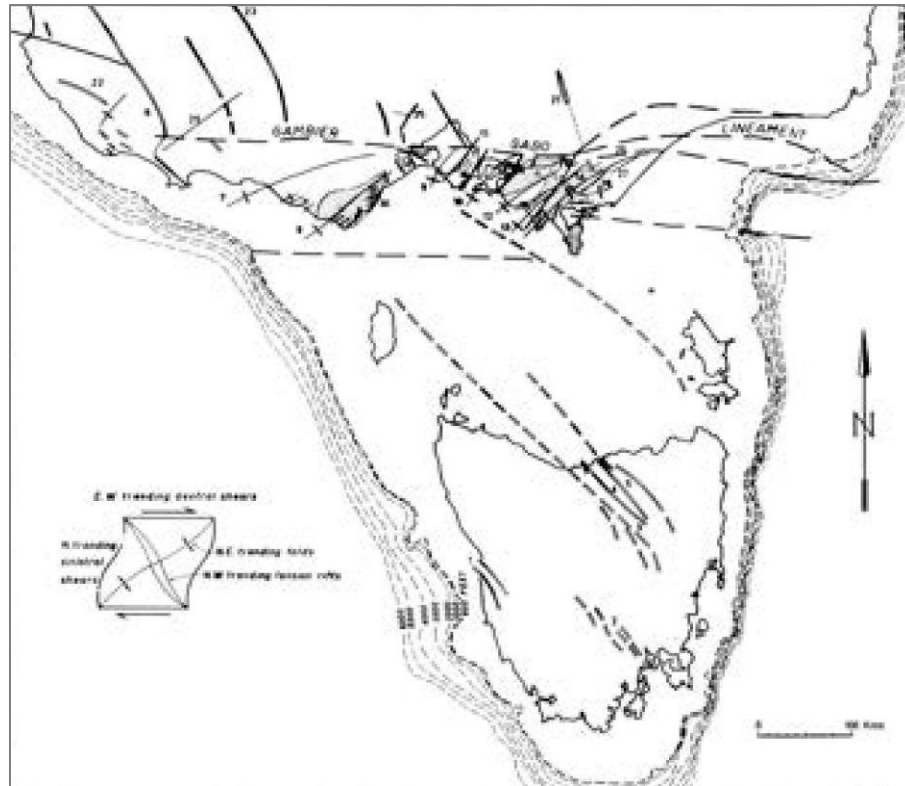


Figure 4. S. Warren Carey's structural map of the Bass Strait area.



Figure 5. Oil and gas fields in Bass Strait.



Figure 6. Peter Baillie.