

Harstoft—Britain's First Oil Field*

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Abstract

In 1911, Winston Churchill was appointed First Lord of the Admiralty, and during his time in office he took the strategic decision to power British Naval ships with oil and phase out the use of coal. It was a strategic decision based upon improving the performance of the naval fleet. It worked and during the First World War the Royal Navy outperformed their German counterparts. However, Britain relied on importing oil from its colonies and dependencies with Trinidad and Persia supplying the lion's share. This made the UK vulnerable and as a consequence the search was on for an indigenous oil supply. The U.K. government issued a contract to drill 6 wells in Derbyshire, Staffordshire, and Scotland. Little information exists as to why the particular locations were chosen although it is easy to infer that a combination of petroleum seeps and geological structure guided these early explorers. The first well to be drilled was at Harstoft in the parish of Tibshelf in the county of Derbyshire. "Oil in quantity was struck in Harstoft No 1 well of May 27th, 1919" (Wade, 1928). Success was also had at D'Arcy Farm near Dalkeith in the Lothians of Scotland. There are few data available for either of these wells, and those that do exist are of dubious quality and open to differing interpretation. Harstoft No.1 was the first successful oil exploration well ever drilled in the U.K. It found light oil in a fractured sandy limestone unit at the top of the Lower Carboniferous Limestone at a depth of 3070 ft. The well was completed and produced about 7bbl/day for many years before a subsequent work-over doubled the production rate to about 14 bbl/day. Two further wells were drilled on the structure in the 1920s, but no additional oil production was obtained, although some gas was found at a higher level in sandstones within the Coal Measures succession and was used to power the site for several years. The total production between 1920 and 1946 was about 30,000 bbl. The aim of this paper is to tell the story of Britain's first oil well, its subsequent production, and attempts at continued development. We also re-examine the history from a modern perspective, report on new analyses both of the oil and of the trap in order to evaluate the potential for redevelopment.

References Cited

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Wade, A., 1928, The oil well and later developments at Hardstoft, Derbyshire: Journal of the Institute of Petroleum Technologists, v. 14, p. 357-387.



Hardstoft – Britain's First Oil Field

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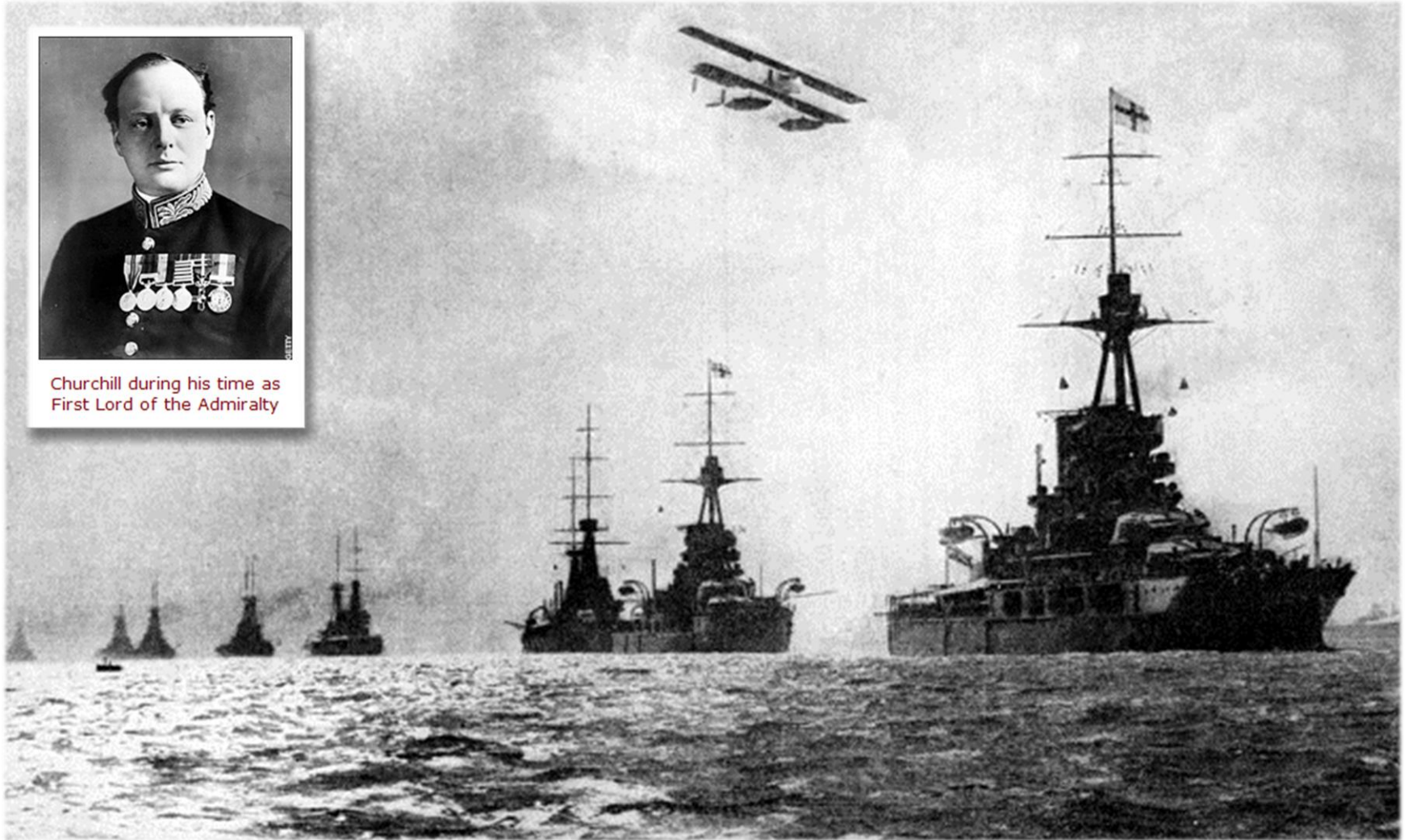
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Winston Churchill and the British Grand Fleet, 1914



Churchill during his time as
First Lord of the Admiralty

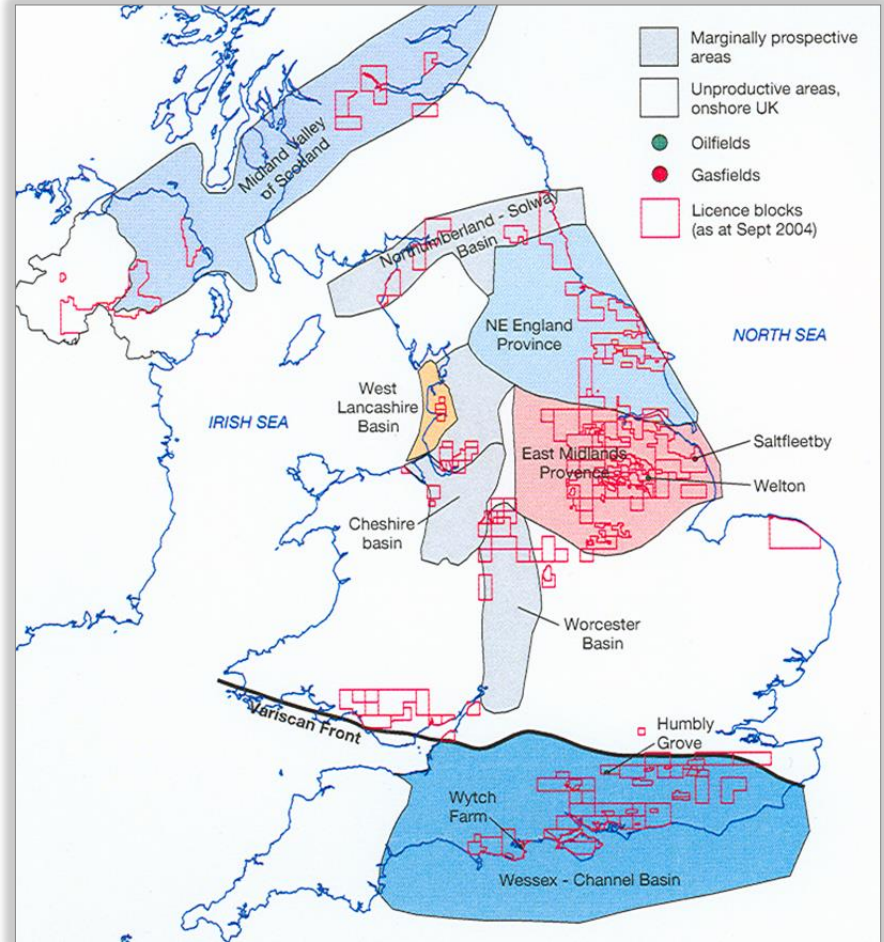
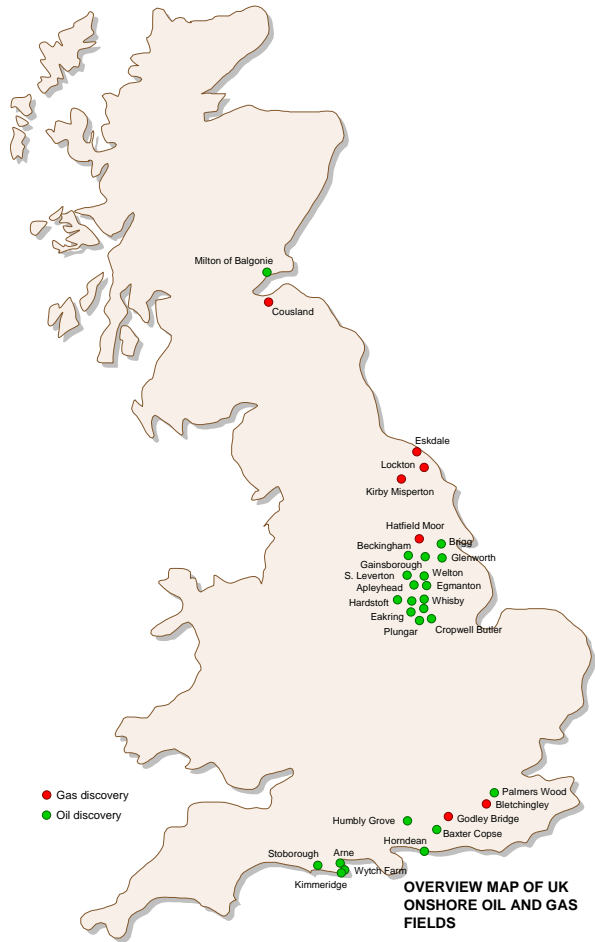


German Submarines, c. 1914



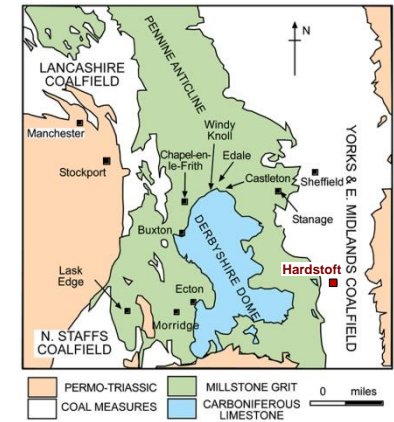
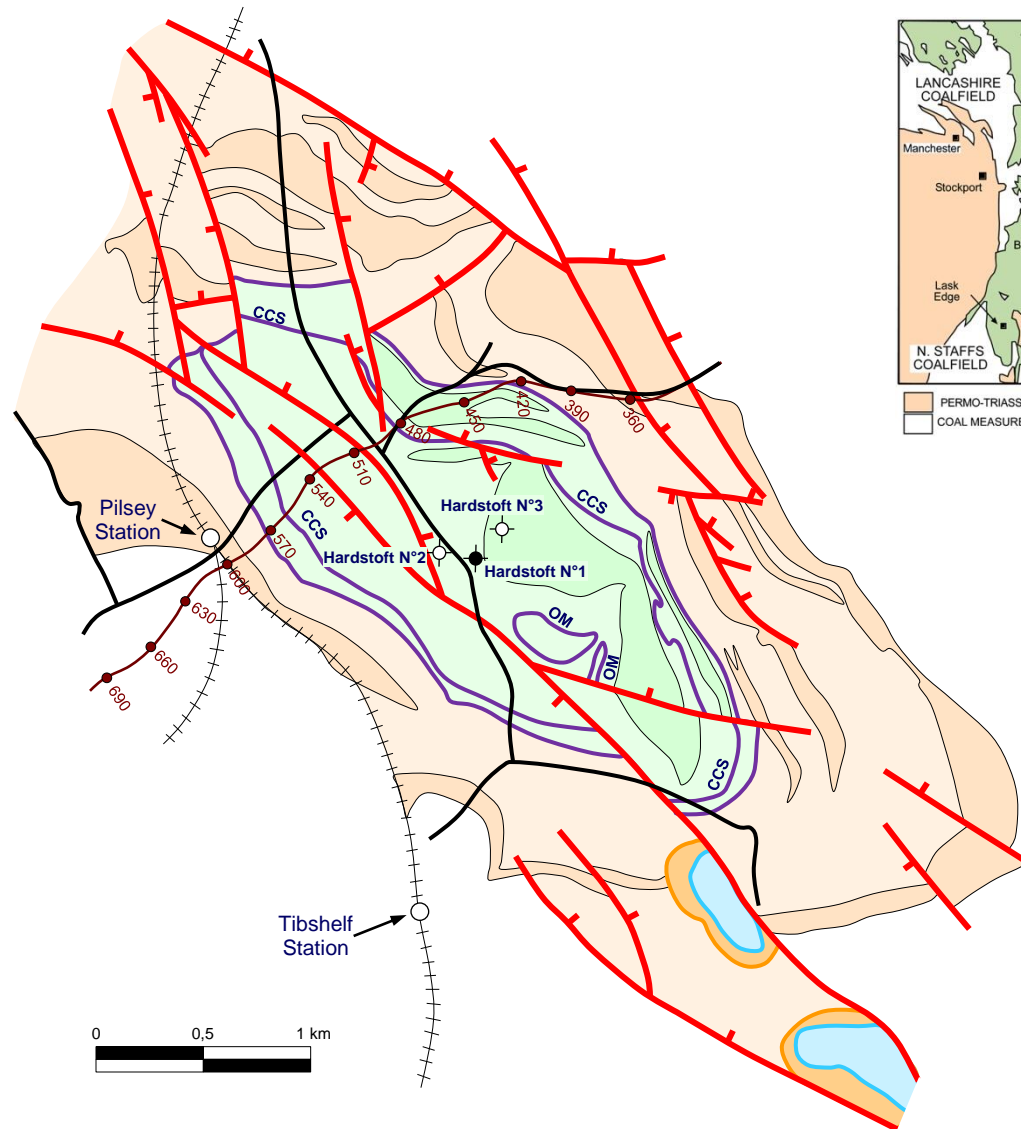
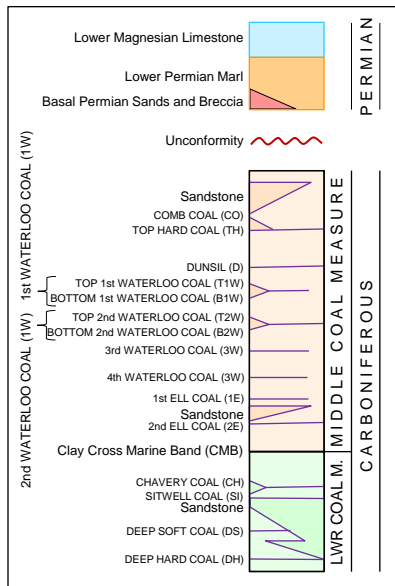
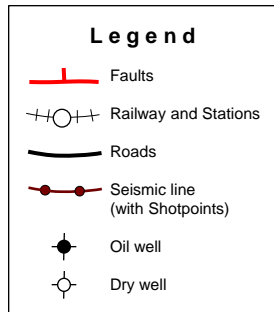
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Onshore Oil & Gas Fields in the United Kingdom



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Simplified geological map of the Hardstoft Dome

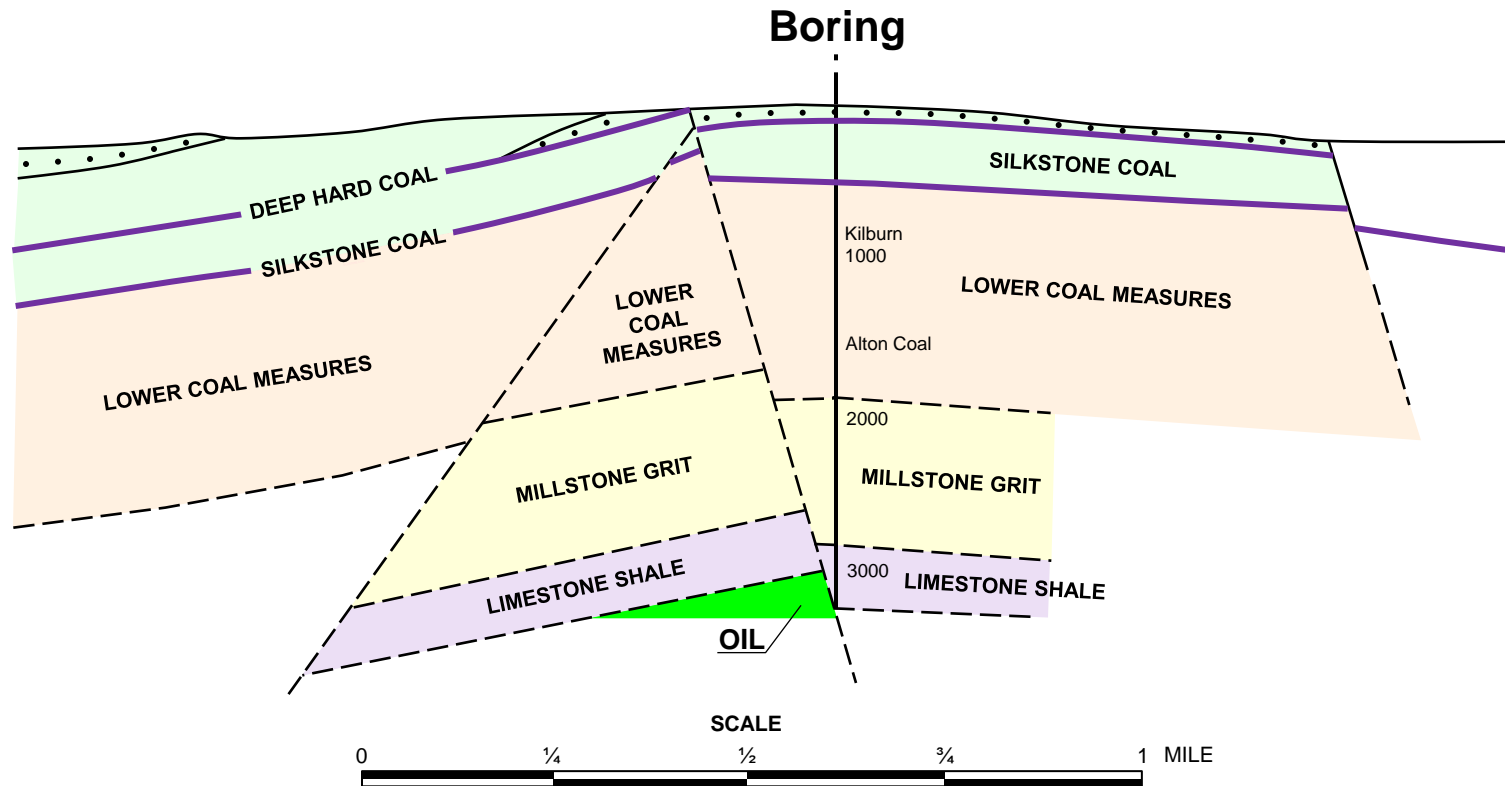


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Hardstoft No. 1, 1919 – Britain's First Oil Field



Geological cross section through the Hardstoft Dome



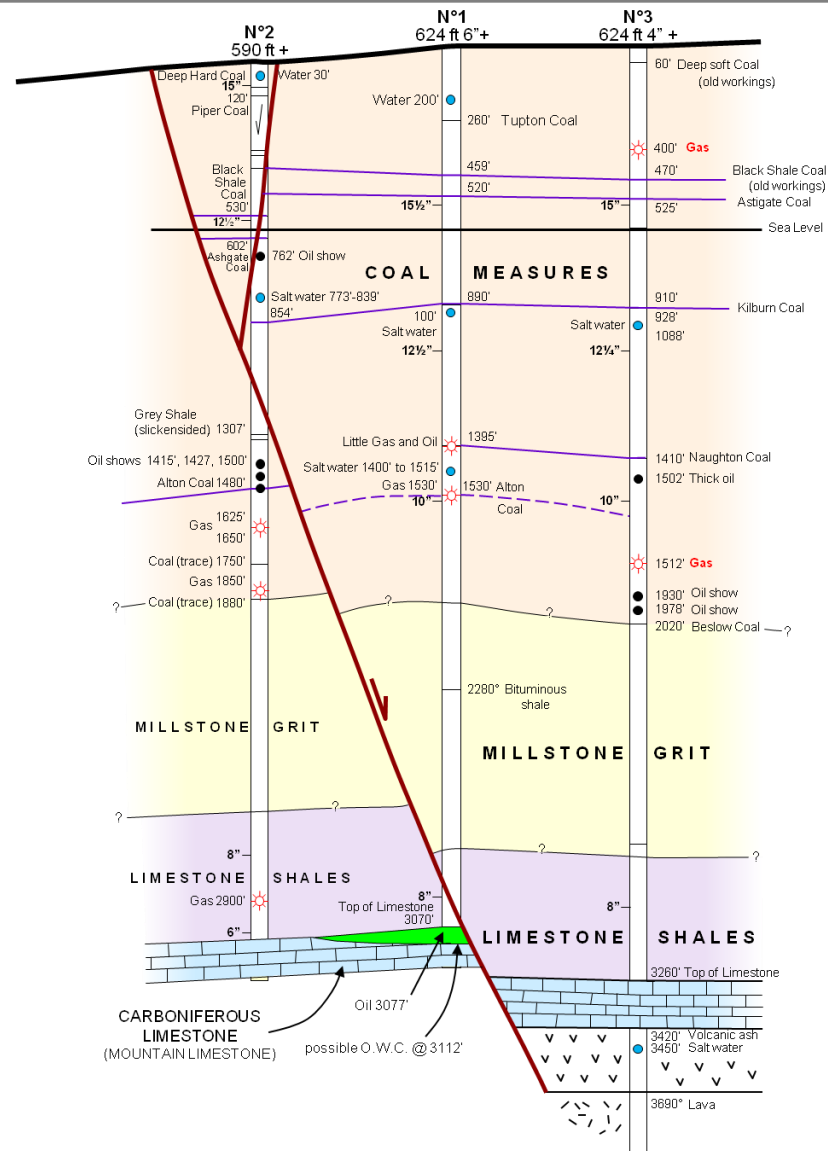
modified from Brentnall, 1995

The Hardstoft N°1 well - flowing oil on 7th June 1919?

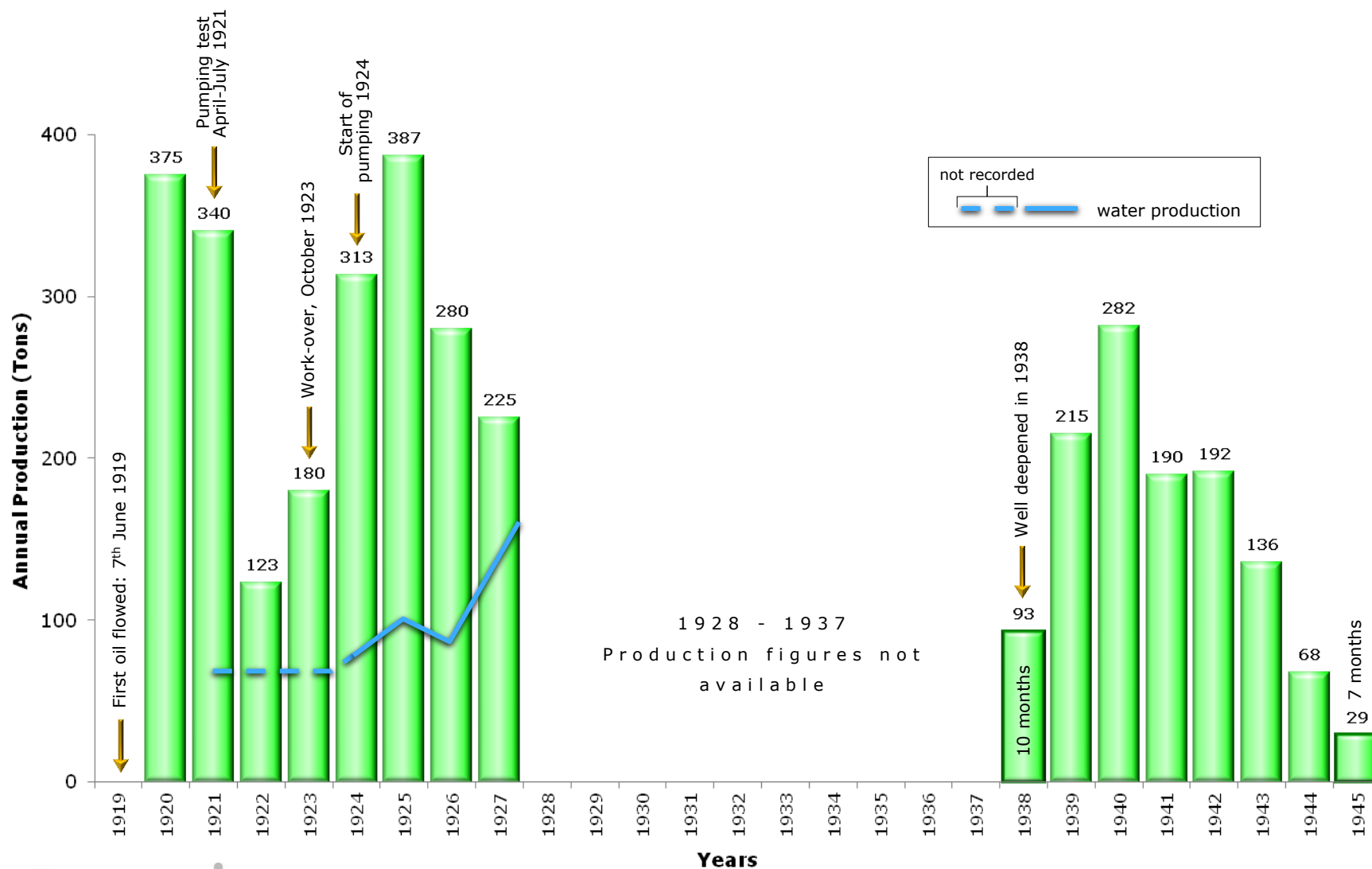


from Wade (1928)

Geological correlation of the Hardstoft -1, -2, and -3 wells

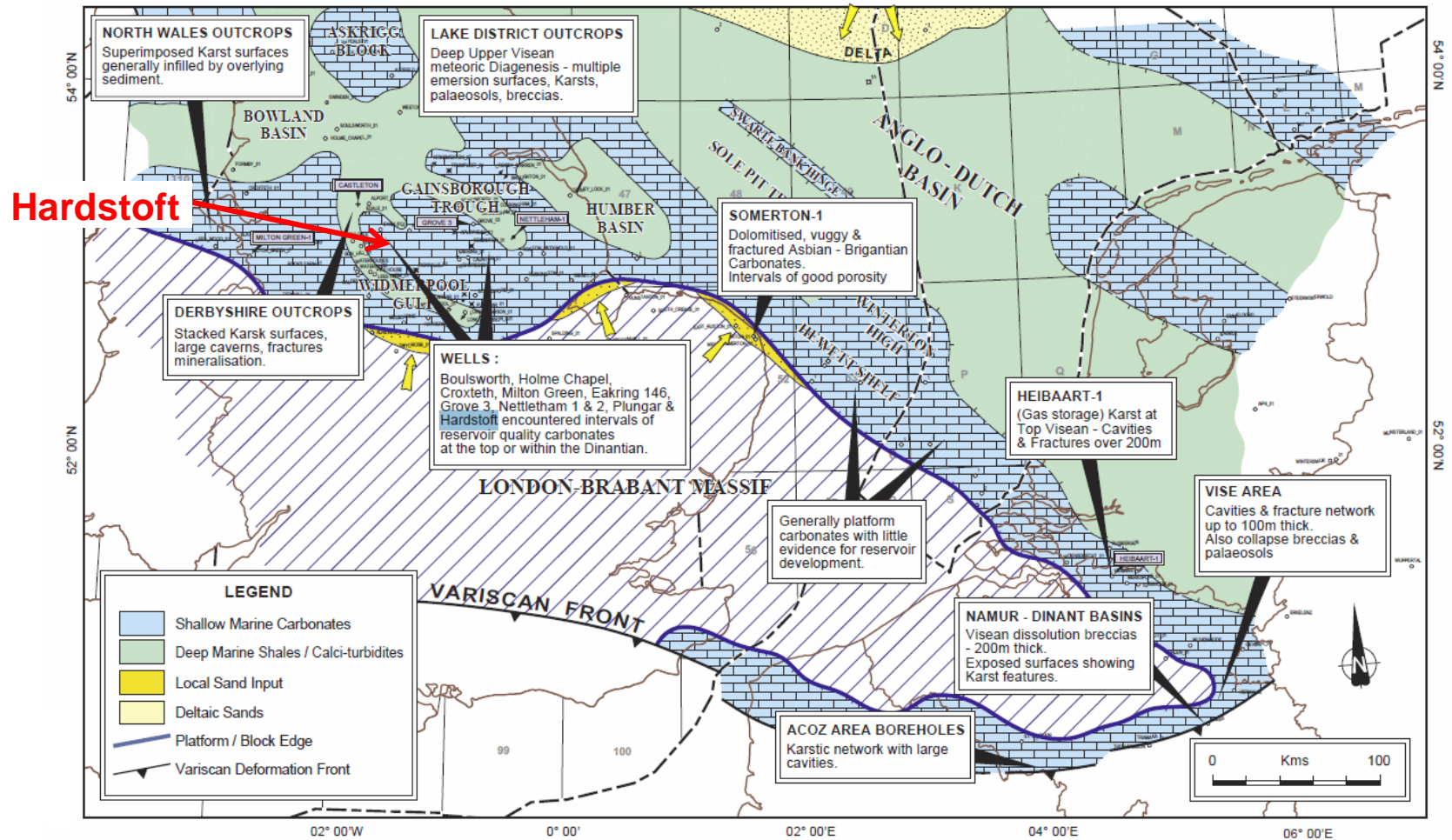


The Hardstoft Field: Annual Oil Production 1919 to 1945



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Dinantian Carbonate Reservoir Summary Map, United Kingdom



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The site of the Hardstoft-1 well today

