

Resources in and around the Isle of Man

Hydrocarbons and minerals

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The Isle of Man is a self-governing dependency of the British Crown, which is not part of the United Kingdom. Geologically, the Isle of Man forms part of a Lower Palaeozoic host block within the Irish Sea, and there are significant mineral resources on the island, such as the lead, zinc and copper ores, which are hosted within the Lower Palaeozoic succession and associated granitic intrusions. These minerals were the basis of an important mining industry during the late 19th and early 20th centuries. More recently, the

offshore sedimentary basins surrounding the Isle of Man have been the focus of hydrocarbon exploration. In the central and southern East Irish Sea Basin to the south-east, petroleum generated from Namurian basinal mudstone has migrated into Triassic sandstone that forms the reservoirs in productive fields. An analogous hydrocarbon exploration play has been targeted nearer to the Isle of Man.

TotalFinaElf Exploration UK PLC in partnership with Enterprise Oil plc and Amerada Hess Limited (TotalFinaElf/

IoM Group) were actively exploring around the Isle of Man between 1994 and 1997. Unfortunately, this exploration did not lead to the discovery of commercially exploitable hydrocarbons around the island, but it did generate important geological and environmental data, the potential value of which was recognised by the Isle of Man Government and the exploration group. As a result, a £500 000 programme of research was devised, sponsored by the TotalFinaElf/IoM Group. A recent £250 000 geoscientific project led by the BGS formed a major part of this research programme.

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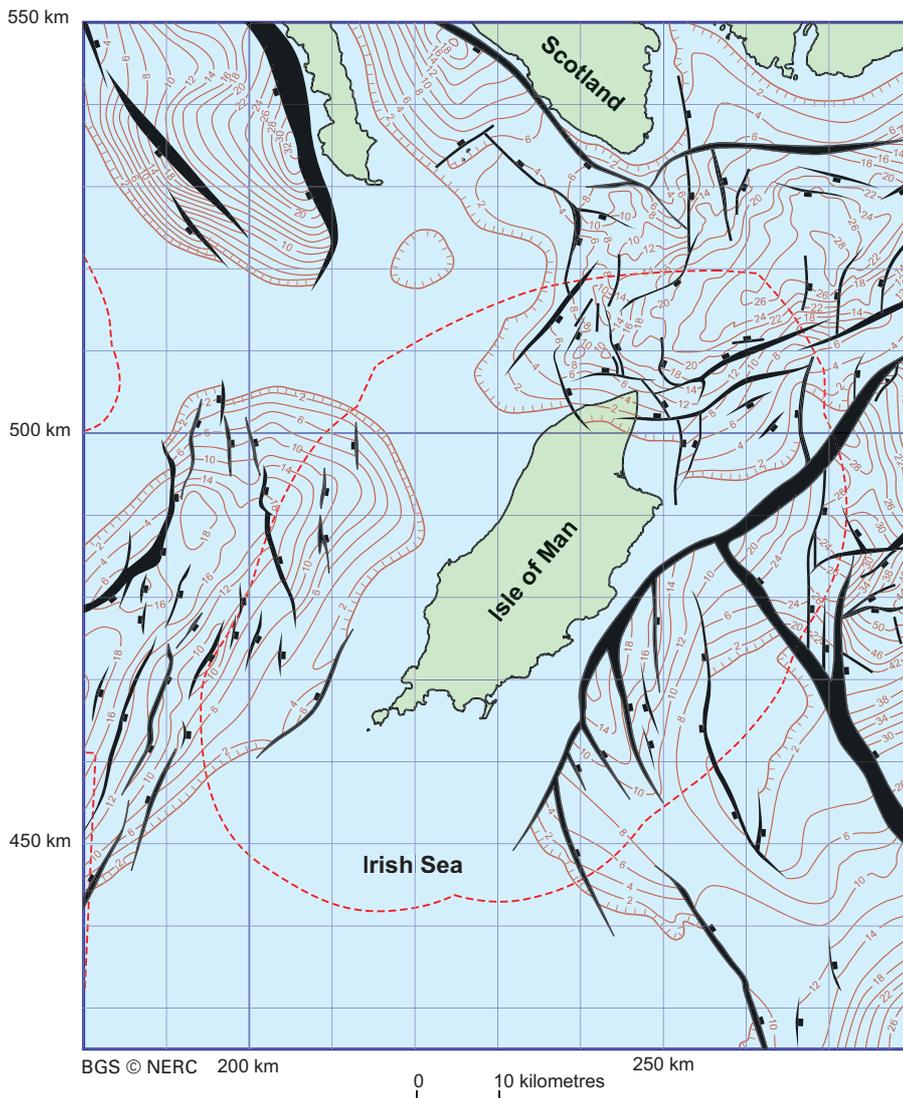
The extensive geoscientific data-sets collected by the TotalFinaElf/IoM Group during their exploration programme offered important new insights into the geology of the region. The additional research funding enabled these new data to be combined with recently published scientific advances and new research results in a comprehensive review of the geoscience of the area. The research resulted in three main products:

- A new 1:50 000 geological map of the Isle of Man and an associated Geographical Information System (GIS).
- A technical book: *Geology of the Isle of Man and its offshore area*.
- A ‘popular publication’: *Isle of Man — foundations of a landscape*.

The geoscientific work involved extensive consultation and collaborative research with a wide range of bodies including the Isle of Man Government, Manx National Heritage, Centre for Manx Studies, Geological Survey of Ireland, and the universities of Oxford Brookes, Liverpool, Cambridge, Portsmouth and Durham. In addition, operators and contractors within the oil and gas industry generously contributed data, including previously unpublished material.



The Neolithic chambered cairn at Cashtal yn Ard [SC 436 892]. Behind the cairn are the hills of the Manx uplands, composed of Ordovician rocks of the Manx Group.



Structure contours (the figures are multiples of 100 metres) on the base of the Permo-Triassic around the Isle of Man. The broken red line indicates the limit of offshore designated areas.

The concept of a release from drilling obligations, where the original exploration play concepts are no longer valid, in return for a contribution to 'broader exploration and research programmes' is topical. Research programmes such as this can save money for the petroleum industry, while also providing significant long-term economic, environmental and educational benefits for society in general. The new data and interpretations could even encourage new exploration.

New geological map

Before new field investigations commenced, field data collected by the

research team that contributed to the recent Lower Palaeozoic synthesis by Woodcock and others (*Geological Society of London Special Publication, No. 160*) were made available to the BGS. These data were integrated within a customised GIS database with other information, including scanned and geo-referenced images of G W Lamplugh's original field slips. Lamplugh was an officer of the Geological Survey of England and Wales, who conducted the primary survey of the Isle of Man between 1892 and 1897. His survey, at or shortly after the heyday of the indigenous lead and zinc mining industry, was meticulous and comprehensive.

However, geoscientific concepts have advanced over the past 100 years and the preparation of a revised map was timely and fully justified. Nevertheless, many of Lamplugh's observations remain valid and they were a valuable resource for the map revision project. New field investigations and biostratigraphical studies were focused mainly on the Ordovician Manx Group, which underlies most of the island. However, the Silurian, Devonian and Carboniferous successions were also re-evaluated and the Quaternary geology was revised.

Technical book

This book describes the structure, stratigraphy and applied geology of the Isle of Man and its offshore area and scientific highlights include:

- A comprehensive review of the stratigraphy and structure of the onshore Lower Palaeozoic succession.
- Interpreted seismic profiles and well correlation panels illustrating aspects of the structure and stratigraphy of the offshore sedimentary basins (such as the Peel, Solway Firth and East Irish Sea basins).
- Superb magnetic field images and interpreted seismic profiles illustrating the distribution and character of Tertiary igneous intrusions in the region.
- A summary of the extensively revised Quaternary geology of the island.

Popular publication

Another important product resulting from the recent research is a 'popular' book aimed at schools and the general reader. This book presents the geology of the Isle of Man in an accessible and stimulating way, describing the geological processes, from plate tectonics to mineralisation and glaciation, which have formed the rocks, minerals and spectacular landscape.

The book also illustrates how Manx people through the ages have used the rocks and minerals around them, and highlights current work to conserve the unique geological sites and landscape features of the Isle of Man for future generations.