



Shale gas exploration potential in the UK

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Shale gas exploration is one of the main new 'unconventional' hydrocarbon plays and production is now a major contribution to USA's indigenous supply. BGS has begun a study of hydrocarbon exploration and other data to assess the potential in the UK. Key shale characteristics have been identified in the USA, including gas window maturity and high total organic carbon (TOC) content. Existing gasfields and discoveries containing migrated gas in conventional reservoirs are the obvious starting points. These prove gas has been generated. Discovering the nearby source rocks, which charged them, involves analysing the gas compositions and their carbon isotope characteristics, as well as delving into past exploration and well completion reports. Also used are parameters more widely available which act as surrogates (e.g. radioactivity for TOC). The main targets are Namurian and Dinantian black shales in northern England, source rocks for the small East Midlands oilfields. Lesser targets occur in southern England near small gasfields and discoveries, probably in Lower Jurassic shales, and possibly Kimmeridge Clay (Upper Jurassic). Their advantage is that natural permeabilities are probably higher than the older formations. Early Palaeozoic shales between the Caledonian and Variscan fold belts may also retain some potential but, unlike the association with the Alum Shale source rock in the Baltic, no gasfields have been discovered. Can shale gas production occur where there are no conventional fields?