

Summary of SERG Meeting 23rd January 2018

Risk & Uncertainty in Exploration for Oil & Gas

The Geological Society's South East Regional Group kicked off 2018 with a meeting at the Bell Inn in Godstone. The yearly AGM, was held, with a review of 2017 and the committee for 2018 put forward. The 2018 committee includes employees from Atkins, Capita, Leap, Mott McDonalds and Southern Testing.

2018 is the Geological Society's "Year of Resources" and to help the South East Regional Group kick this off, we were lucky enough to have the Society's president Malcolm Brown present an interesting and informative talk on the Risk and Uncertainty in Exploration for Oil and Gas. Using examples from his own experience in industry, Malcom was able to inform the attendees of the key ingredients required for a location to become an oil/gas reservoir, how petroleum geologists analyse and evaluate potential basins and the processes and challenges and costs associated with firstly finding and then utilising oil and gas reserves. Through the talk, Malcom highlighted the risks and uncertainties all oil and gas companies face at every stage of the process. The talk was well received and a number of the attendees commented on how such analysis of risk could be applied to their own specialist field.

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**The
Geological
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serving science & profession

South East Regional Group

Meeting

Date: 23 January 2018

Location: The Bell Inn, Godstone, 18.00 for 18.30 start

**The Geological Society's Year of Resources begins with...
Risk and Uncertainty in Exploration for Oil and Gas**

Malcolm Brown – President, Geological Society of London



The fundamental requirements for the entrapment of oil and gas are the presence of a mature source rock, migration of those hydrocarbons from there into a trap, which contains an effective reservoir rock and an appropriate seal. There may be a difference of many millions of years in age of the source, reservoir and seal horizons and the timing of hydrocarbon migration and juxtaposition of these rocks to form a trap is critical. Once formed, many traps may be destroyed or leak, due to later tectonics. When prospects are worked up and assessed, the overall "Chance of Success" is calculated on the basis of the probability of the presence and effectiveness of the source, reservoir and trap. This describes the overall 'risk' of finding hydrocarbons within the range estimated and this may vary from 10% in frontier basins to 30—50% in proven basins.



There is also 'uncertainty', which describes the range of outcomes, even when, say the reservoir rock is found to be present. How thick is it? How porous and permeable? Is the original depositional facies as predicted? How connected is it across the prospect? There is also uncertainty even when hydrocarbons are found, as only a certain amount of appraisal wells can be afforded to establish the range of reserves, before making a multi-billion-dollar decision to develop the field.

Above surface uncertainty also exists. The oil and gas business is a capital intensive, long term business. An oil or gas field may have a life of 5 to 50 years, depending on size and economics. There will be uncertainty of future oil price, government tax rates and in some cases, the future political stability of the host country. Environmental sensitivity, community relationships and 'licence to operate' are all key aspects which must also be assessed. And of course, the impact of fossil fuels on global warming and climate change, is now also a firm part of

the context for any decisions, as the world needs to move to a lower carbon environment.

Speaker:

After graduating from Kingston Polytechnic (1976), with a BSc in Geology, Malcolm worked in Libya and Saudi Arabia before completing an MSc in Petroleum Geology at Imperial College (1982). He worked at British Gas / BG Group for over 30 years as it evolved from state owned utility to successful international business and was Executive Vice President, Exploration.

Malcolm became a Fellow in 1982, served on Council between 2009 and 2012 and became a Chartered Geologist in 2013. He took over as President of the Society in 2016.

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Please let us know if you plan to attend: southeastrg@geolsoc.org.uk