

## The 'Petroleum Detectives' Problem Solvers



Brian Moffatt is the Managing Director of Petrophase, a petroleum fluids consultancy to the petroleum and carbon sequestration industry. Brian has 40 years of experience in the chemical and oil and gas industries. His vision to link disparate disciplines under petroleum fluid studies led him to found Petrophase in 2004. Brian is an SPE member and has given several talks at SPE meetings and related technical societies and published articles on understanding petroleum phase behaviour.

**You've had an impressive journey from a research chemist at Courtaulds to founding your consultancy, Petrophase. What were the key milestones along that career path?**

The question makes it sound like I knew my career path from the start. I didn't! My first job was as an industrial organic research chemist for the chemical and textile company Courtaulds, devising and developing new ideas from test tube to pilot-plant scale. That was fun, and there were a few explosions along the way, health and safety being much less prominent then.

It was clear the company couldn't compete with cheaper imports of yarns and chemicals and was doomed to fail. Deciding to leave before the plant closed, I chanced upon an advertisement in New Scientist magazine to set up a PVT Lab for the British Gas London Research Station. 'I didn't know what a PVT Lab was. Still, I applied anyway and was surprised to be offered the job, so my introduction to petroleum was quite accidental.

The first job was commissioning the PVT laboratory



Aboard the Western Apollo 2, East Irish Sea

but also attending well tests, which included collecting samples during well testing and then cooking them to reservoir conditions in the PVT laboratory to measure the properties that petroleum engineers needed.

Later, within BG Group, I looked after a fluids team that incorporated core-flooding, PVT, nuclear magnetic resonance, geochemistry and petroleum engineering.



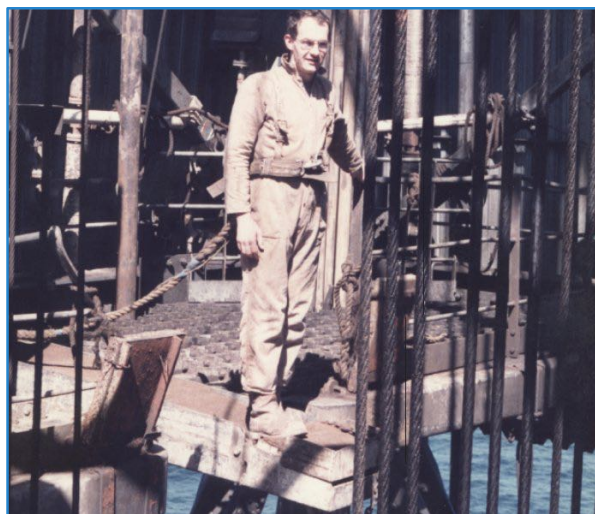
Sampling during welltesting

**What initially inspired you to establish Petrophase, and what were your biggest hurdles in getting the consultancy off the ground?**

I could see that there was a need for not only PVT consultancy but also a way to gauge how fluid behaviour was affected by the adjacent disciplines of geochemistry, petrophysics, petroleum migration and placement. Seemingly impossible problems can appear quite tractable when seen in this wider context. Indeed, our greatest successes were in marrying phase behaviour with other disciplines.



## The 'Petroleum Detectives' Problem Solvers... continued



Accidental tourist! Don't give up the day job  
Photo credit: Chris Freeman



Core-flooding rig 1995 (BG Group, at Loughborough)

I had wondered about starting my own business but hadn't found the courage to do so. However, a little redundancy notice gave me just the nudge I needed! I was very lucky when I founded Petrophase in 2004; within a week of registering the company, I attended an SPE meeting in London that led to a 4-month EOR project with Troy Ikoda in Windsor. I was very new to running a business; it was the first time I'd raised an invoice. Soon, work requests came in faster than I could cope with, and the company grew organically.

### What are the issues of starting something new?

There are benefits and disadvantages. The benefits are the lack of competition. The difficult part is

marketing what we represented: if you say you are a reservoir engineer or PVT specialist, that term is understood within the industry, but we were not just PVT but encompassed an understanding of reservoir filling, properties and data interpretation that gave a better understanding of the whole system.

We sometimes describe ourselves as 'Petroleum Detectives' as this approach has proved successful in problem-solving.

I also worried that having a different career path from most petroleum engineers meant I wouldn't be seen as credible or relevant. In fact, the opposite proved to be true; the different perspectives led to finding solutions that wouldn't have been found within a single discipline. Diversity in action! Petrophase has had a dozen world-first solutions through innovative approaches to problems.

### As a business owner in the energy sector, how have you navigated economic fluctuations in the industry? What strategies have you employed to keep the business resilient?

Oil price strongly affects operators' staff numbers and project sanctions. However, the need for data for planning or optimising production is still required, which buffers the vicissitudes of oil prices.

### Given your technical background, how have you balanced the need for technical excellence with the demands of running and growing a successful business?

This has been difficult. When you are busy with work, there is little time for marketing, so it is easy to get into boom/bust cycles. And that's ignoring all life's demands outside of work!

### What has been the most challenging part of running a technical consultancy?

The non-technical parts!

Once they were gone, I found a new appreciation for the many support services provided when working in a big company. There was no IT department anymore, and marketing suddenly appeared as a necessity for which I had no experience.

I have found local business groups useful as they





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usually have members who specialise in human resources, insurance, IT, marketing and business etc. where you can dip in for advice when required.

### What are the best and worst parts of running your own business?

The best bits:

- Freedom of culture
- Absence of corporate meetings
- Solving problems creatively
- Helping staff and students

The worst bits:

- Becoming an involuntary VAT collector for HMRC

### What thoughts can you share about the future of the industry?

There are two issues here. Petroleum is still finding its role and the size of that role within the World Energy systems; carbon capture and geothermal energies are technically close to petroleum engineering and can benefit from petroleum engineering experience.

I hope AI will assist in strengthening interdisciplinary links within petroleum engineering. We talk about a sphere of knowledge increases, that swells like a balloon as knowledge increases – but I believe broader petroleum engineering knowledge grows like a starfish, with each limb represented by a discipline such as petrophysics or geochemistry.

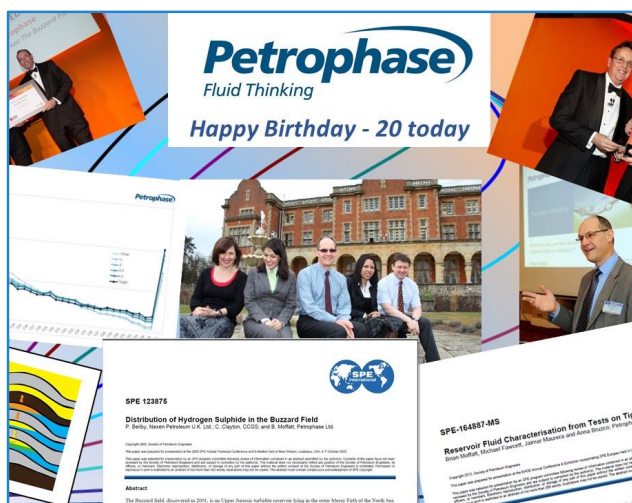
Growth is from the tips of the arms – petroleum engineering supports petroleum engineering

projects, and geochemistry supports geochemical projects – but there is little development between the arms. I'm unaware of any faculties that sponsor research between limbs, and no projects combine geochemistry with phase behaviour.



Early years with Anna Bruzco, Tracey Songer, Jaimar Maurera and Mike Fawcett

If anyone has read this far and is interested in how linking different disciplines can resolve fluid migration and confirm fluid, there is a YouTube video (LINK: <https://youtu.be/yILahzLPSH0>) of an SPE lecture I gave that gently eases you in via considering gin and tonic (from 5 mins) before building to a remarkable example of a curious oil and condensate system explained through migration and phase



20th anniversary Feb 2024



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