

In the many shocks and turning points in the upstream oil and gas industry over recent decades, the dominant teams, and the playing fields or leagues in which they compete, have changed. Technology has changed too – the equivalent of new racquets or clubs which give a temporary advantage to those who have them. Each change results in a market reaction, with sometimes unexpected consequences. The objective has remained the same throughout – finding and producing hydrocarbons in the most commercially competitive and environmentally sensitive way. Technology has always been central to this. The overlay of climate change concerns adds to the challenge of meeting the world's energy needs and increases complexity.

With 'participation' and sometimes '100 percent participation' of national governments in the seventies, the major oil companies saw their playing field severely reduced. Yet because of their technology, they retained a key role in most areas. It is only now, some thirty years later, that the development and application of sophisticated technology by the best National Oil Companies (NOCs) and the ability of others to access first rate technology through the Service Companies (SCs) is genuinely squeezing the majors out of some arenas. At the same time, the radically increased prices of the seventies, coupled with the closing off of outlets for the technology and capital of the majors, led to the growth of the frontier areas of the North Sea and Alaska. There is no doubt that projects in these areas were saved from the economic consequences of catastrophic project cost over-runs by the increased oil prices. It all sounds a bit familiar.

I have spent much of my life in a major oil company, and am currently working in the not dissimilar world of mining. I used to say that mining was a similar industry to oil and gas but with lower margins and smaller companies; that is less true now. I also have the honour of serving on the board of Saudi Aramco and my son has worked for Schlumberger for almost twenty years – never, I hasten to add, supplying services to Shell during my time. He is currently with Schlumberger bidding

to Pemex for 'integrated projects'. So I have the pleasure of viewing the players in the industry from different angles and with multiple loyalties and interests, if not impartiality.

In the late eighties and early nineties, we had a concern in Shell that Schlumberger – our biggest service

Personal Commentary

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company supplier – would work with a financial institution to provide field development services to a NOC, thus dis-intermediating the International Oil Companies (IOCs). In discussions at the time Euan Baird of Schlumberger always insisted that there was a clear line of equity participation and risk bearing that they would not cross. In the mean time it has been remarkably successful in building a business in Russia. This is based on growing companies with Russian partners which deliver integrated services in ways that appear more acceptable than the traditional approaches of some of the majors. In Mexico, Schlumberger has a strong position delivering integrated services in a way that addresses Mexican constitutional sensitivities. Andrew Gould still states that there is a clear dividing line of equity and risk which will not be crossed. But ever since production sharing contracts were invented to address political sensitivities relating to 'ownership' of the oil, the IOCs have been pretty flexible about 'equity' and 'reserves' and the boundary has been blurring. Equally, it was blurred in the early nineties when a Shell/service company joint venture did deals with Russian/Soviet production units rewarded on the basis of incremental production from fracing wells, and by Total and Shell field development contracts with NIOC in Iran. Why should we expect the boundaries not to blur? We are after all playing the same game.

So what are the current strengths and weaknesses of the players?

The IOCs have access to technology developed over the years, even though short-sighted cut backs in research and development spending has meant that the Service Companies have in some cases and some fields surpassed IOCs technologically. Second, the IOCs have access to masses of long-term field performance data and field analogue examples so that their reservoir models – one key to increasing recovery – are potentially better, always assuming that they have been prepared to put the necessary resources into their development. Third, the IOCs have access to current reserves and one important source of global reserve growth is increasing recovery factors through technology. For this reason it seems a strange strategy for majors to be shedding late life fields (and thus un-recovered hydrocarbons) to independents, on the grounds that these operations just need low cost stripping, too small for a major to be concerned with. But these are the very sources of potentially increased recovery. If the majors abandon a resource, it will be tapped by independents using best available Service Company technology. The learning from this will in turn only strengthen the SCs. I think the approach needs careful examination – after all they are not making this stuff anymore.

The SCs have excellent technology. In the early days much of this was developed in open collaboration with the majors, who bore the field costs of the experimentation. We have already seen majors taking a more commercial approach to the intellectual property of developments – for example in expandable casing – and this is likely to become more common. The open collaborative development is likely to continue between the SCs and the NOCs. The latter have much to gain from technology development and increased recovery, and little to fear from competition, as they are operating in what is often a reserved area. This will further strengthen the technological hand of the SCs (and the NOCs). The SCs do not have large capital resources.

But is this a disadvantage? Which company would not prefer a technology driven capital light model to a capital heavy one? Furthermore, any good idea will be able to attract capital (or a partner with capital) from somewhere else, so this merely requires a business model with appropriate remuneration for the technology input. The SCs have one further advantage – they are not perceived as a threat to the NOCs, and in many cases through long and continuous presence in countries have built up cadres of outstanding staff with sensitive relationships to their national clients. In the best cases they have distributed training centres and research centres in areas with the most important reserves, further strengthening relationships.

So what of the NOCs? They have the supreme advantage that many of them have privileged access to reserves. This means that their knowledge of their own resources is potentially unique. In the case of leaders such as Saudi Aramco, their reservoir models of these fields are probably more powerful and well populated than anything that the IOCs have. They have benefited from focus. And what of capital? At present oil prices, provided their own governments do not starve the goose laying the golden eggs, they have adequate access to capital. Unfortunately, starving your own goose is a very common habit of host governments, along with the mistake of treating its employees as government servants. Unlike government servants who have by definition only one possible employer, NOC staff are potentially highly mobile in a global and meritocratic industry with a shortage of skills. The NOC shortage of capital can be addressed by opening up the industry to the private sector, national and international. But I believe shortage of capital is not the only reason to do this. Although the best NOCs are now as good, or better, than some or even most IOCs, competition and benchmarking clearly sharpen up performance. No company leads in all areas, and the fastest way to address this is through benchmarking and competition. But if as a nation you let the private sector into your oil

patch, it is only reasonable to let your NOC go overseas. This has been done successfully by Statoil and Petronas among others. This also contributes to motivation and retention (in country if not in the NOC).

So what conclusions can we draw?

Technology is a fundamental differentiator, and technology which increases recovery is crucial.

Technology is not the preserve of any one player – it is developed where effort is applied to the sources of learning available, whether these are your ‘own’ fields observed over years or through work you do for others. But equally demonstrable technical success in operation, including contracting the work of others, may be worth more than theoretical intellectual property.

Given the reserves that can be added through using technology to increase hydrocarbon recovery factors, the common abandonment by majors of their late stage fields to independents and service companies does not necessarily seem wise.

Access to capital is probably not

a determining factor, for flexibility and performance capital can probably be acquired, through partnership or other means. We will see more different combinations of NOC/IOC/SC with or without external financing. Apart from technology, the ability to put together and staff appropriately deals which are crafted to take into account the sensitivities of resource holders or perhaps address a key recovery improvement challenge will be a second determinant.

We should probably all relax about who is moving onto whose pitch (or trying to keep people off our pitch). The boundaries will shift when there is a market reason for them to do so – in the mean time the key is technical and operational excellence.

I have not mentioned one other big difference between the players – the IOCs are generally integrated all the way to the market. This makes a difference and will probably also lead to differentiation in the response – technological and otherwise – to the challenge of climate change and energy supply. But it would need another article to explore this aspect, and discuss whether or not it is critical.

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