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NEW THINKING NEEDED FOR EXPLORATION?

The death of exploration has been greatly exaggerated. Nevertheless the oil industry now faces significant exploration challenges. Exploration, which has been the growth engine of the business, is maturing. Companies will need to face this reality and adjust exploration strategies or look to other business areas if they are to continue to grow. For the majors particularly, the exploration challenge is large and new thinking will be required for future winners.

From our global PathFinder database, we can summarise some of the recent trends in exploration. Since the mid-1990s:

- Wildcat success rates have held steady at around 30%.
- Excluding the giants of the deep water zenith and Kashagan (1999 and 2000), the average discovery size has been around 50 million barrels.
- The average value of discoveries has fallen.
- The majors performed disproportionately well in 1999 and 2000 but less well before and since.
- Overall oil discoveries from new fields have replaced only 40% of production.

In summary, despite some successes, new field exploration has not replaced oil reserves.

We expect 2003 to emerge a strong year for the booking of reserves when the reporting season comes this spring. However, a lot of the reserves booked will be gas – often found decades ago and now being commercialised. This will flatter the explorers and disguise the real picture.

What's the future for exploration?

The 1990s saw major advances in the opening of exploration acreage to the international oil industry. Changing geo-politics and technology were the two principal drivers. Much of what became available – like deep water – was previously undrilled or at least had not been explored with modern techniques. Accordingly the oil companies – which through the years have been very successful at identifying the big prospects early on – made very significant discoveries.

Reserves are finite: the more that have been found the less that remain to be found.

But life is now getting harder for the explorer. The amount of prospective new acreage being offered is shrinking. Finding the biggest prospects early on means that it is the smaller ones, in general, that remain. And these are less profitable than their bigger brothers as the gearing effect of size takes its toll. Technology has helped in defining the sub-surface better and in reducing costs to enable development of more challenging fields. But, as it has accelerated hydrocarbons discovery, it has also added to the future problem. There is no escaping the fact that oil and gas are finite resources: the more that have been found the less that remain to be found.

Source – Wood Mackenzie RADAR

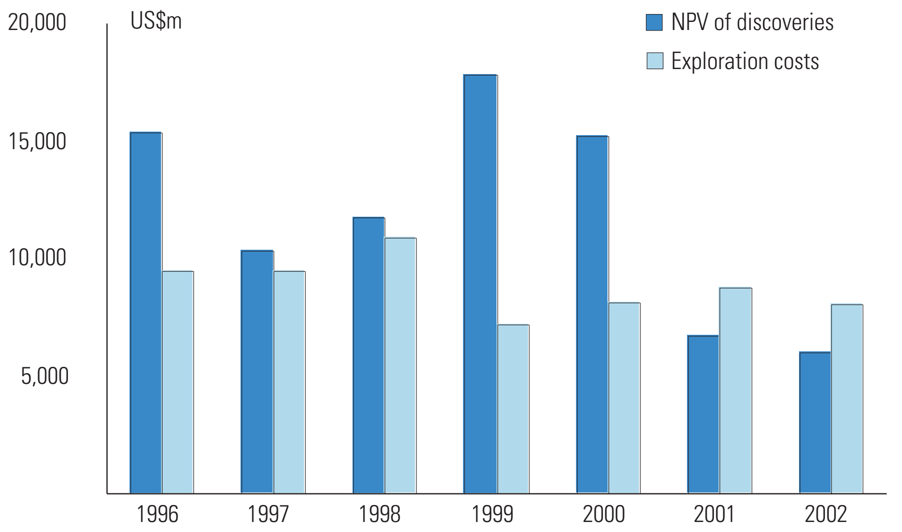

Figure 1

Figure 1 (above) shows the aggregate spending of the ten largest western majors together with the present value of the discoveries they have made. After the good years of 1999 and 2000, there has been a steep fall in the value of oil and gas discovered. Note also that the aggregate spend level has not reverted to what it was before the mega-mergers.

The challenge, particularly for the majors, is very large.

Reserve replacement is a critical issue. A super-major like BP needs to add around 1.3 billion barrels of oil equivalent (boe) each year – more than 100 million boe each month – to sustain its position. Between them western majors need to find the equivalent of an Angola every 15 months or a UK North Sea every 18 months just to stand still. And most want to do better than that: they want to grow.

Of course discoveries will continue to be made. Re-interpretation of mature basins will almost certainly produce some good surprises. Politics evolving and advances in technology could bring opportunities in regions that have not yet been explored. The ANWR and the arctic more generally could hold major reserves but do not seem likely to open in the medium term. New licences in places like the Nigeria-Sao Tome JDZ offer potential but not enough to sate the appetite of the industry for long. And the potential of some of the new countries that are being targeted (Benin, Mauritania, Kenya…) remains uncertain and may not be large.

Two thirds of recent discoveries have been in deep water. Our forthcoming syndicated study ***The Future of Deep Water*** will present a view of the future potential of deep water in terms of both volumes and value.

Source – Wood Mackenzie RADAR; Company Annual Reports

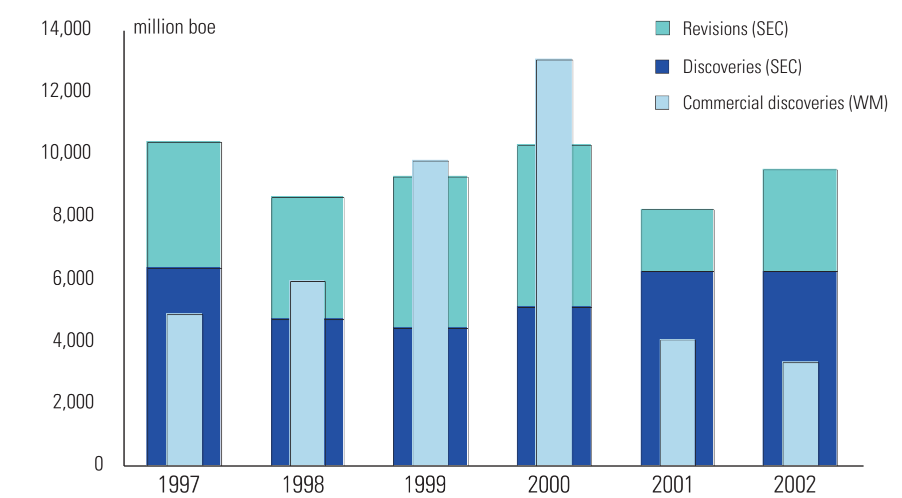

Figure 2

In terms of reserve replacement, recent exploration results have been somewhat disappointing. Although many companies have been able to replace reserves in part by booking 'discoveries' through commercialising existing fields, the true amount of oil and gas actually being found is considerably less. This means that the inventory of known reserves that have not been developed is falling. It is only a matter of time until the discoveries booked under the SEC method must reflect this.

Figure 2 (opposite) shows the total reserve additions of the ten largest western majors and contrasts their discoveries as reported in SEC filings with the reserves we believe they have actually found in each year. Although SEC filings have overstated what has actually been found in the last two years, many companies have done well through revisions by improving recovery from existing fields. Many also have inventories of discoveries that have yet to be commercialised – and, therefore, booked in the future. However, the bookings of recent years have depleted these inventories.

SEC reporting has flattered some companies' true exploration performances.

We believe that exploration cannot continue to be the main growth engine for the majors as it has in the past. Smaller companies with fewer reserves to replace and where a medium size field could be a company-maker may view things differently. But the majors will have to find new ways to explore or find other ways to grow.

So what are the options for successful exploration?

We believe explorers need to answer three key questions:

- What is our exploration for?
- How do we do the right things in formulating our exploration strategy?
- How do we do things right in implementing the strategy?

What is exploration for?

Finding the right answer to this question is critical. Successful companies must be clear about the role exploration plays in their growth strategy. Is it increasing reserves? Replacing production? Adding value? Discovering gas close to markets? Finding reserves that can be developed rapidly? The answer 'all of these' is not sufficient. Companies need to set and share clear priorities if they are to be successful. In our recent syndicated study ***Value Creation Through Exploration*** all the top performers had this clarity of purpose in exploration and senior management alignment about its role.

Successful companies need to be clear about the role of exploration.

Doing the right things

As exploration gets more difficult, companies will have to review their strategies. Possible themes in terms of doing the 'right things' include:

- **Moving into new geographies.** The focus of exploration continues to move around the globe and several regions are currently enjoying renewed interest. Examples include many countries along the Atlantic margin of Africa (Morocco, Mauritania, Senegal, Guinea-Bissau, Cote D'Ivoire, Ghana and others), the interior basins of Central Africa (Chad, Sudan, Niger), frontier Australia, deepwater India, to name but a few. And explorers can also test fundamentally new plays without changing the geography – the deep gas plays of the Gulf of Mexico shelf or subsalt plays (Gulf of Mexico, Brazil) being examples.
- **Knowing when to stop.** Ultimately, exploration is not about adding volumes; it is about adding value. In ***Value Creation Through Exploration*** we showed that most companies made money out of only a small number of the countries where they were active and lost money in the rest. It also showed that the area of greatest value destruction over the last five years has been the UK North Sea. So one of the lessons is to know when to stop: to be able to take the view that a particular region is just too mature. To withdraw completely from an area like the North Sea or parts of Latin America would be a tough call. 2004 may not be the year to make it. The question for managements is: when will that time come? And how will they decide?
- **Be clear about the role of gas.** Gas demand is rising rapidly in many parts of the globe. There are already significant discovered reserves of gas that have today no market. Companies that can combine effectively their exploration skills with excellent marketing and commercial skills will have an advantage.

Doing things right

As well as doing the right thing, companies that succeed will do what they do well. Doing 'things right' could encompass:

- **Being more imaginative and creative in traditional areas.** In the last decade, as new and relatively prolific areas opened up and with a strong emphasis on cost reduction, many companies standardised their exploration processes and have seen talent go. With the new challenges of more mature exploration plays, new concepts must constantly need to be developed and explored. Companies need to find ways of re-emphasising creativity in their exploration process.
- **Dealing better with difficult issues like politics and the environment.** There are areas with known hydrocarbons that many companies choose to avoid either because of political difficulties or because of environmental concerns. Given the maturing of 'easier' regions, the industry should be spending more time and effort on working out how to deal with the problems of working in tougher environments.
- **Understanding how to work effectively with others.** In much of the upstream business companies act in partnership with others. Being clear how to select partners and how to work with them effectively will bring competitive advantage.
- **Being relentlessly value driven.** As basins mature and discovery sizes fall, unit costs will rise unless companies work the issue hard. Part of the answer may lie in evolving technology. Part may also rest with persuading host governments that the harsh fiscal terms of the best years need to be mellowed.
- **Improving prediction accuracy.** Working to enhance the decision-making process and building better cases for exploration based on rigorous criteria will improve results. Within this, a thorough process of reviewing historical results and comparing them with predictions will improve future performance.
- **Being aggressive when new exploration acreage opens.** Companies need to be ready to move quickly when new exploration opportunities arise – identifying, selecting and ultimately accessing good acreage is key. And exploration can still deliver if new areas like the ANWR and Mexico open.

To succeed in exploration will remain a key objective for top performing companies.

In addition to reviewing exploration strategy, companies have a number of other growth options. Finding ways to work profitably in areas with large reserves like Russia and the Middle East, monetising stranded gas and improving even further recovery from existing fields are all credible strategies. But, those companies that can solve the exploration dilemma and focus their strategies as well as finding other ways to grow will have an advantage over the rest.

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