

THE VALUE OF EXPLORATION ACTIVITY ON THE UKCS - A DISCUSSION NOTE BY DTI

The declining and now very low level of exploration activity evident on the UKCS (with only 3 exploration wells drilled in the first six months of 2002) is widely seen to be a cause of concern. With such a low level of exploration activity, the PILOT activity targets for 2010 are made harder to achieve. Up to the end of last year, the UK was in both absolute and relative decline as an exploration region but it was still a major one by world standards (see the table below). This is no longer true.

Number of exploration wells drilled offshore

Year	USA	Australia	Indonesia	China	UK	Brazil	Norway	Angola	Netherlands	Nigeria	Canada
1992	116	29	39	39	74	21	29	9	18	16	0
1993	186	31	44	44	51	25	19	10	12	14	9
1994	192	22	21	21	62	18	18	9	5	8	10
1995	140	36	31	31	60	15	19	7	7	9	11
1996	180	29	30	30	72	27	19	13	18	15	13
1997	211	36	37	37	61	15	37	14	18	20	11
1998	100	50	30	30	47	21	25	20	17	14	12
1999	134	42	30	30	16	23	14	10	10	4	12
2000	233	53	47	47	26	32	13	19	6	9	12
2001	234	48	38	38	24	71	22	10	12	13	11
Av 92–96	163	29	33	33	64	21	21	10	12	12	9
Av 97–01	182	46	36	36	35	32	22	15	13	12	12

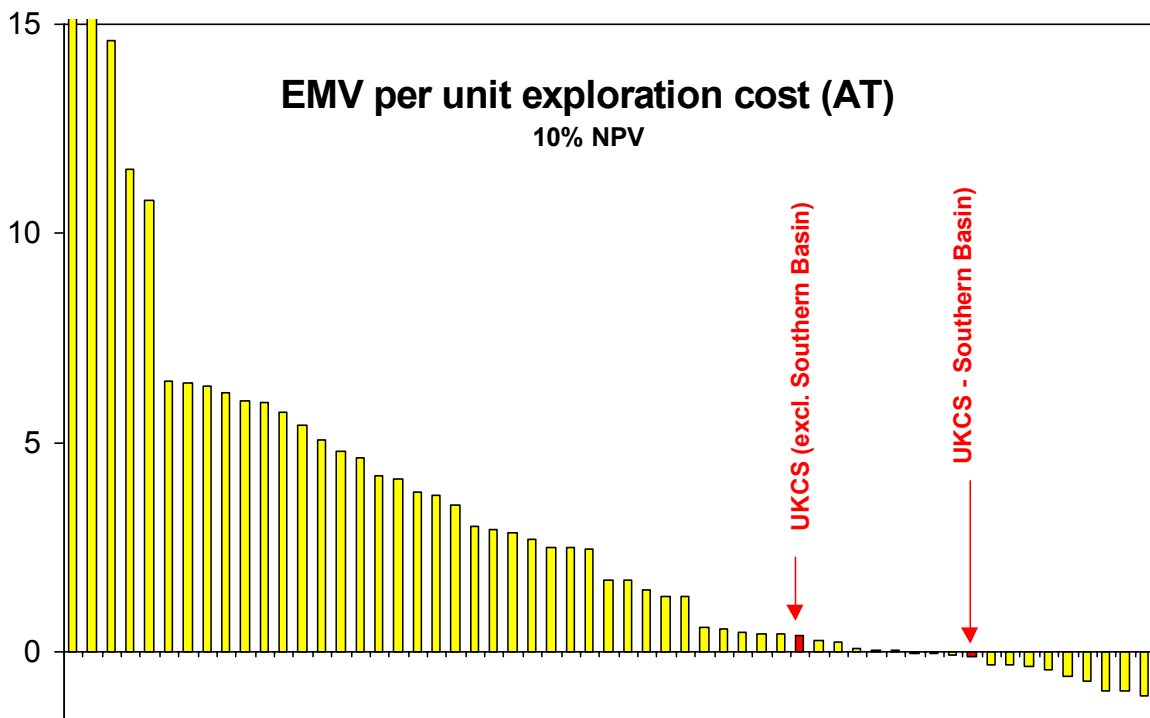
Source: IHS (except UK: DTI)

In order to see whether there are good grounds for concern about these trends, **we wish to understand the reasons for the declining level of exploration activity**, in particular whether it is reflective of the true value of further exploration on the UKCS. (DTI seeks to maximise the economic benefit from the UK's oil and gas reserves, not to maximise exploration as an objective in its own right.) It seems to DTI that, since the Budget 2002 changes were not announced until the middle of April, it can have little or nothing to do with them. Furthermore, the last two years have seen relatively favourable oil prices, with cash flows sufficient to finance a reasonable exploration effort. Against this background, does the maturity of the province with the associated decline in prospectivity (including both expected success rate and size of discovery) – which will adversely affect the expected full cycle returns even with favourable oil prices – provide the full explanation? Professor Alex Kemp has suggested (pers. comm.) that the substantial reduction in the number of players – especially large ones – due to the mergers and takeovers over the past few years might also have reduced the exploration effort (by reducing the number of exploration teams, for example).

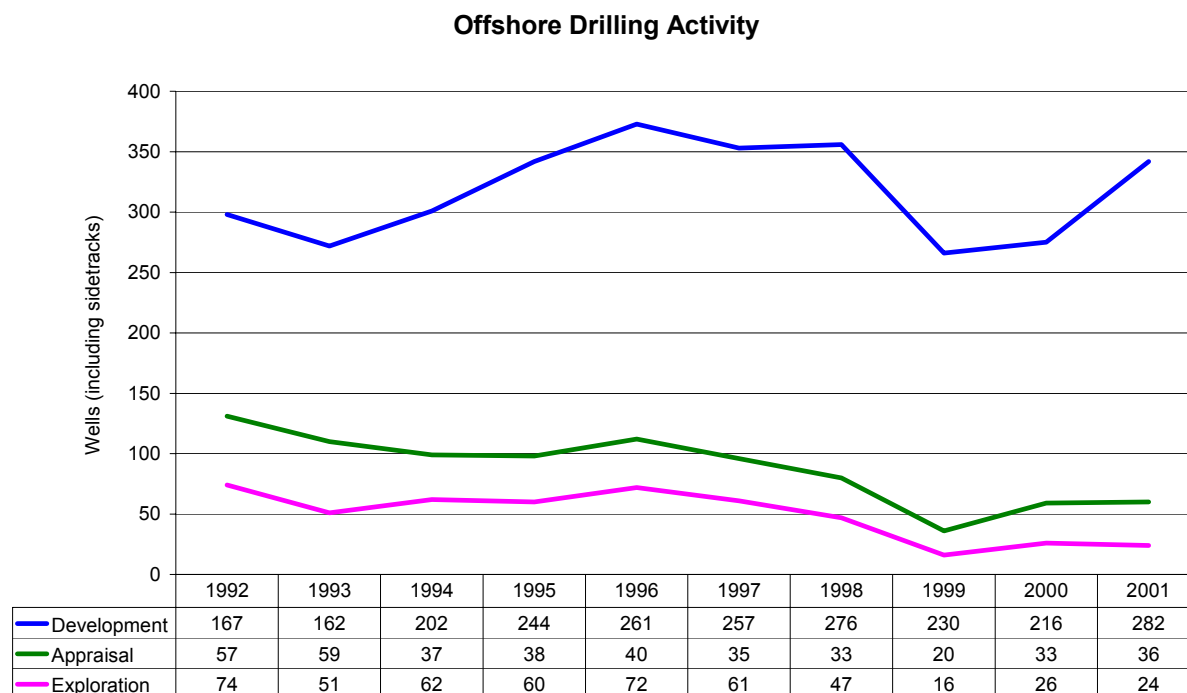
The results reported in *Global Oil and Gas Risks and Rewards*, a multi-client study published earlier this year by Wood Mackenzie, seem likely to have confirmed perceptions of the value of exploration activity on the UKCS. Many oil companies as well as a number of governments have subscribed to this benchmarking study and its results have been referred to by UKOOA and others in slides presented at conferences recently. The study benchmarked exploration success rates, field sizes, development and operating costs, fiscal take and risked and unrisked economics around the world. The charts at the end of this note show Wood Mackenzie's data on UK exploration drilling and success rates and reserves discovered over the period of the study. In the study, Wood Mackenzie defined commercial successes as exploration wells which had discovered new fields that have subsequently been developed or which they believed would be developed in the next few years.

One major aspect of the Wood Mackenzie study was to generate Expected Monetary Values (EMVs) for each of 57 areas and to rank these on both pre-take and post-take bases. Wood Mackenzie wanted to show why areas with a very low government take from developments could still be ranked unattractive on an EMV basis (because of low field sizes and/or high costs), while areas with a very high government take could still be ranked very highly. They believe that this was borne out in the study.

On an EMV basis, Wood Mackenzie's ranking of the UKCS Shelf (ie excluding the Southern Gas Basin) placed it 42nd of 57 on a pre-take basis and 31st on a (pre-Budget) post-take basis, suggesting the (then) low government take helped counter the low attractiveness of the Shelf, but that it remained a marginal area to explore. Wood Mackenzie found that the Southern Gas Basin generated a negative EMV on both a pre-take and post-take basis. **These results (which are illustrated below) are consistent with a low exploration drilling effort.**



On the other hand, the study showed that, while the UK Shelf ranked only 18th on the basis of the average (unrisked) field development value on a pre-take basis, this increased to the top 10 on a (pre-Budget) post-take basis. These results may also help explain the ongoing attraction of appraisal and development drilling in the UKCS, as illustrated in the chart below (based on DTI data).



The Wood Mackenzie study adopted the stance of "if the industry does no better or worse than it did between 1991 and 2000, where would the best places be to explore given current fiscal terms". Wood Mackenzie believe this is an objective methodology, which the industry has accepted as a meaningful approach. By following an approach which is consistent and as objective as possible, the study is seen by its authors as a major improvement on the standard hypothetical model field approach to comparing international fiscal terms and the industry has positively endorsed the study.

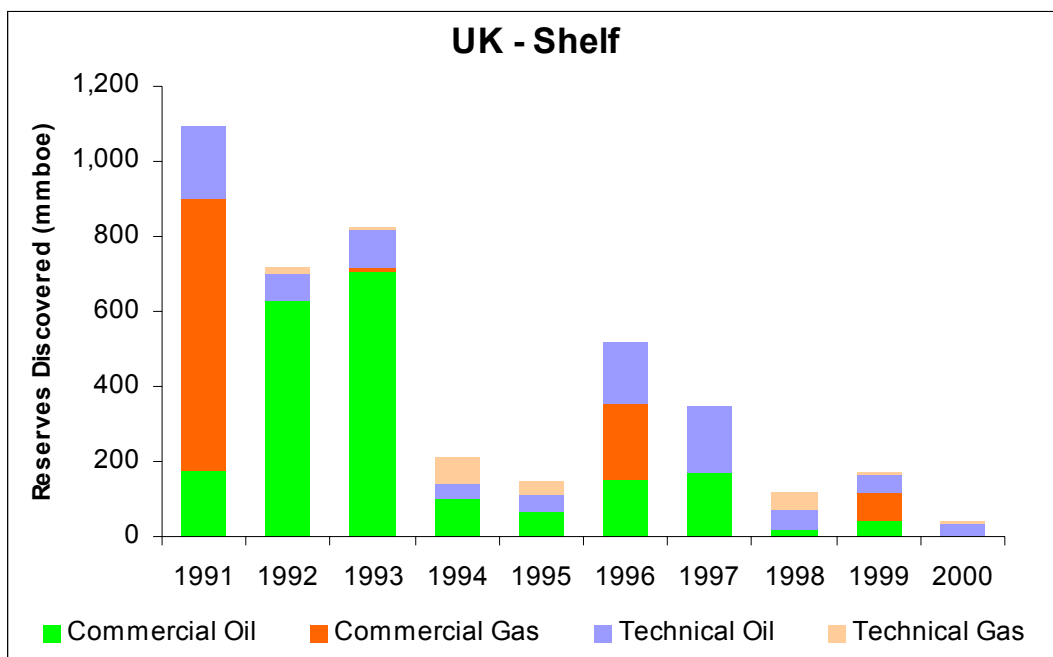
Recent UKCS history may, however, not be a good guide to future exploration prospects, as assumed in the approach adopted in the Wood Mackenzie study. Wood Mackenzie did *not* conduct a "yet-to-find" analysis and nor did they extrapolate from trends (although they included these trends in their individual country reports). Future developments of any discoveries from current exploration may, however, bear little comparison, in terms of costs, reserves and production profiles, to developments arising from past exploration. The stock of available transportation and processing infrastructure is constantly evolving, often allowing lower cost developments than in the past (but not always e.g. if a pipeline has been filled up by past developments). And past exploration success rates may not be borne out by future drilling activity (the recent Buzzard discovery being an example of the potential opening up of a whole new play). Technological or commercial solutions could also dramatically modify the value of future discoveries in comparison with those made in the past (e.g. if a way could

be found to bring currently stranded Southern Basin carboniferous gas resources ashore through economic nitrogen removal or blending with higher CV gas before entry into the NTS).

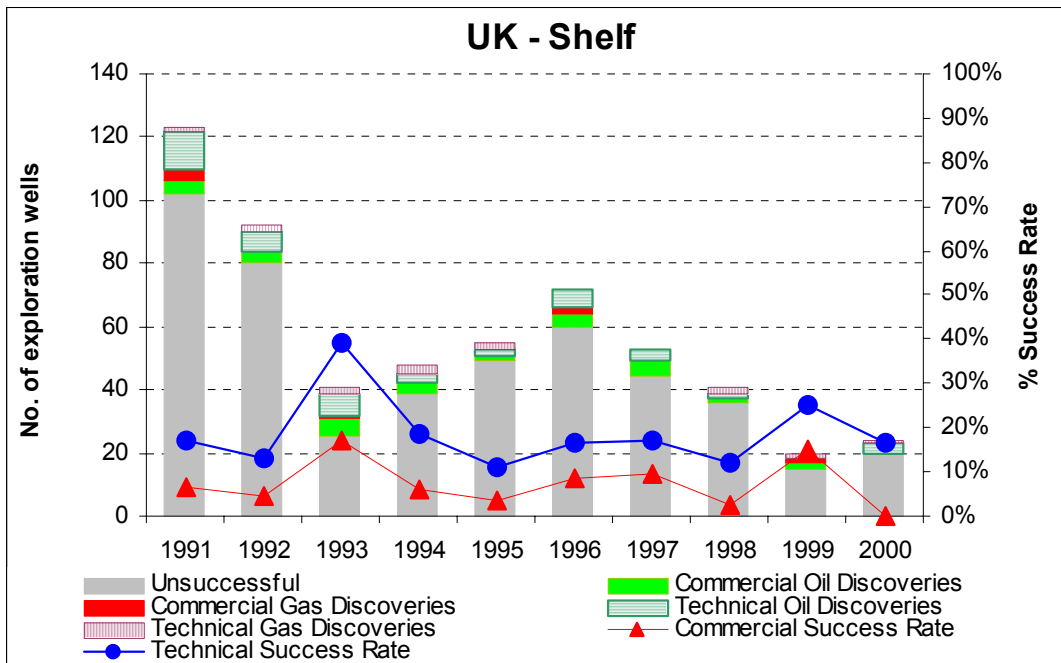
Is there a better way to assess the value of exploration activity on the UKCS than to use the past as a guide to the future? EAG members are invited to comment on the value of a study in this area and to propose suitable data sources and an appropriate methodological approach.

Mike Earp, DTI, 27 August 2002 (with thanks to Graham Kellas of Wood Mackenzie and to Professor Alex Kemp)

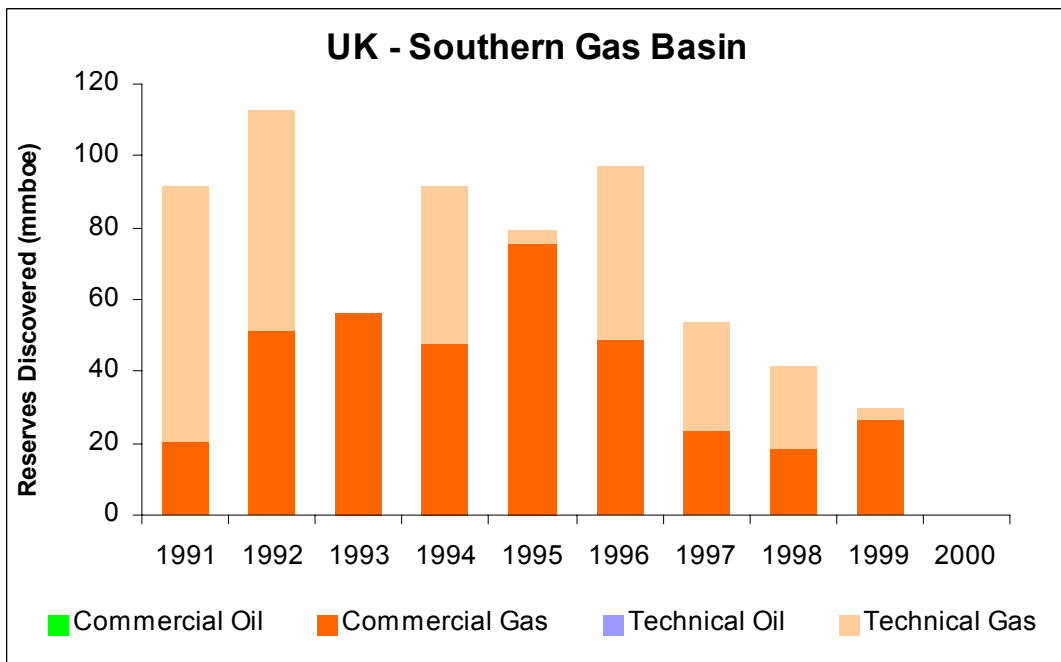
Reserves Discovered (1991–2000)



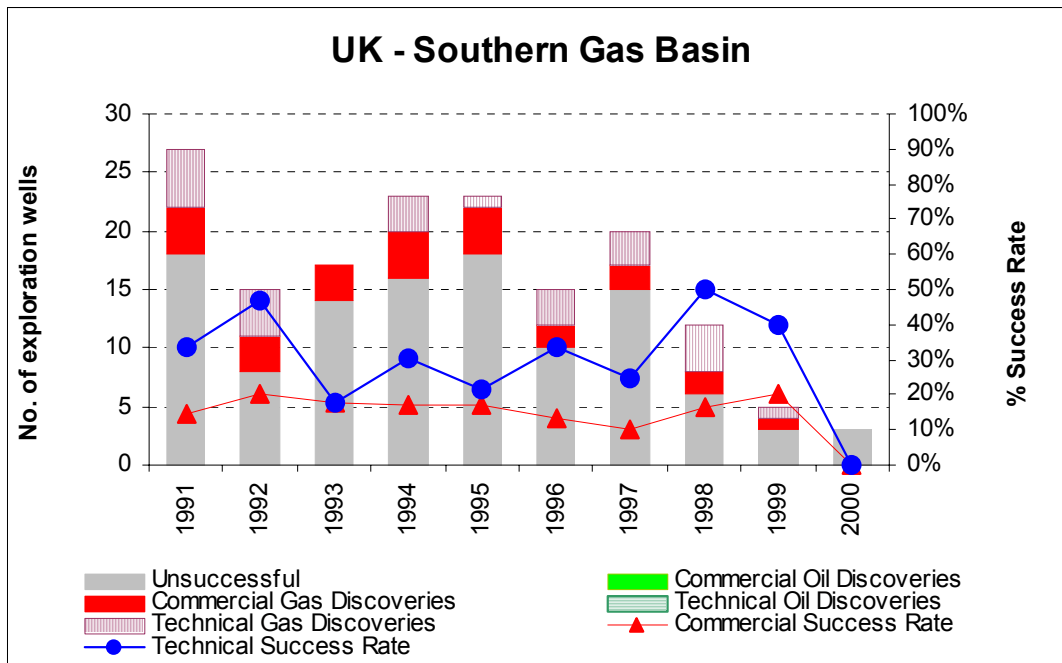
Exploration Drilling & Success Rates (1991–2000)



Reserves Discovered (1991–2000)



Exploration Drilling & Success Rates (1991–2000)



Source for charts: *Global Oil and Gas Risks and Rewards* (Wood Mackenzie, 2002)