LATEST TRENDS IN AUSTRALIAN OIL EXPLORATION

An Address by
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At the outset, I would like to give you a bare-bones sketch of oil exploration in Australia and a brief view of the major issues affecting the industry. This should leave time during discussion to elaborate on the topics that interest the audience.

First, let's take a short range view of where the industry has been, where it is today, and where it seems to be heading.

From Figure 1 we can see that drilling reached an unprecedented peak in 1982 with 230 wells—a respectful jump over the old record of 156 wells set almost 20 years ago. Last year the industry also shot more seismic, explored more acreage and spent more money than ever before.

If we ignore 1982 for the anomaly it was, the industry today seems to be returning to a more normal level of drilling activity. At the end of June, the industry had completed 67 wells and had another 16 under way, a total of 83. If we can drill at least another 83 over the next six months, 1983 will become the second best year on record—no mean achievement in the midst of an economic recession.

There is a black lining in this silver cloud, however.

The dramatic dive in seismic work shown in Figure 2 is a sensitive and accurate belwether of future exploration. Seismic activity plummeted an ominous 85 per cent in the last quarter of 1982, and it hasn't improved this year. The industry is surviving now on drilling targets identified from the vast volume of seismic data gathered in 1982. Add to that the limited data gathered this year, and drillers probably have enough seismic to carry them into the early part of 1984. We cannot expect to explore from past yields of data for much longer, however.

When seismic work fell to this level back in the early 1970s, oil explorers drilled fewer than 60 wells a year for the next five years. The industry practically disappeared as drillers, drilling rigs, seismic crews and their equipment moved to more active exploration areas in other parts of the world. We cannot afford to let that happen again.

The next big cycle of seismic activity hinges on some good commercial oil discoveries in the next year or so. A substantial oil find or two would renew industry confidence, revive seismic activity and assure a new cycle of exploration drilling. The industry needs oil discoveries to help pay for the record exploration over the last few years and Australia needs new oil reserves.

Which raises two pertinent questions: In view of the so-called oil glut, how badly does the country need new reserves and how much oil can we expect to find in Australia?

The industry production forecast of Figure 3 gives us some answers to the first question. The most immediate concern is this decline in domestic production capability. We are about to reach the point of no return.
With Cooper Basin and several prolific fields in Bass Strait coming on stream domestic capability will rise slightly, reach a plateau and slump into an inevitable decline about 1985.

To remedy this situation by the late 1980s, explorers will have to find about 200 million barrels of oil a year — about double our discovery rate over the past decade. To double the discovery rate means drilling about 250 wells a year. Last year the industry spent almost $800 million and drilled 230 wells. So it's doubtful we can average 250 wells at an estimated cost of one billion dollars a year...unless some truly encouraging discoveries are made soon. The potential for this is shown in Figure 4.

What are the chances of making those discoveries? I think they're fair. At least Esso's 1982 assessment of Australia's undiscovered oil and gas potential suggests there is close to an even chance of discovering at least as much oil as the industry has already discovered — about 35 billion barrels. It shows the country's oil potential ranges from a low of just under one billion to a high of about 20 billion barrels of oil, with an average expected outcome around four billion barrels. Drilling results since the study was completed have altered the assessment somewhat, indicating that oil potential has been slightly reduced, but the potential is reasonably adequate in view of Australia's future energy needs.

The potential for natural gas discoveries, as shown in Figure 5, ranges from 25 trillion cubic feet to 333 trillion cubic feet, clearly indicating a highly gas prone continent.

So far as oil goes, the assessment says the rocks are right if you can find the right rocks — meaning oil will be hard to find in Australia, a proposition well substantiated by experience and hard luck. On the basis of likely barrels of oil per square kilometre of prospective area, the discovery potential is low — in fact, very low — by world standards. Furthermore, the chances of finding any more billion barrels fields like those in Bass Strait are extremely low. It will take a lot of work, good geological knowledge, high technology, time and a lot of money to find Australia's oil.

Fortunately, the industry has shown a willingness to take the risks, to spend the money, and to drill the wells. To give due credit, Government policies - parity pricing and new oil prices, to be specific — have provided adequate incentives to stimulate industry's efforts. Given past discoveries and the industry's willingness to explore, it is tempting to conclude, "She'll be right, mate." Like most geologists, I'm an optimist, and I believe "She'll be right...if the wells are drilled."

Why, you may ask, wouldn't the wells be drilled? As with every industry, we have our own stumbling blocks, our own set of obstacles — some self induced, others beyond our control. Let me enumerate them in brief, and then we'll discuss those that interest you.

First, the industry, of course, has not escaped the recession. A depressed share market and high interest rates are choking off exploration funds to all but the most encouraging offers. Small Australian explorers that rely almost entirely on the market for funds have been forced to reduce exploration commitments. Larger Australian companies with their own cash flow, are being cautious until the economy picks up. In case you are wondering, Australian investment in exploration ventures last year came to $300 million, about 40 per cent of total industry expenditure.

To encourage private investors to back exploration ventures, revisions are urgently needed to the Tax Act's inadequate Section 160 ACA rebate for petroleum exploration, particularly a lifting of the rebate from 27 cents to at least 46 cents. The implied loss in tax revenue is almost nil compared to the potential gain from future oil discoveries.

In turn, the shortage of Australian funds has a major impact on foreign investment in exploration ventures here. Although there is no restriction on 100 per cent foreign exploration, foreign companies believe Australian equity should share the exploration risks if it has the inside running in sharing the rewards. Thus the scarcity of viable Australian co-venturers deters foreign exploration investment.
One of the most ominous stumbling blocks is the Government's proposed resource rent tax — an inequitable scheme that fails to acknowledge that successful exploration ventures must earn profits sufficient to pay for the many failures that typically precede a commercially viable oil discovery. This tax scheme indicates a total lack of insight into the high costs and high risks inherent in oil exploration. We must make it clear to Canberra that the industry lacks the financial stamina to withstand any secondary tax on new oil discoveries.

We probably won't know the outcome of the proposed new tax until next year. Meanwhile, oil explorers will be somewhat reluctant to ante up in high stake ventures when the dealer is about to change the rules.

Another stumbling block is the so-called absorption problem. The hatched area on Figure 6 indicates that amount of domestic capability that exceeds the volume of crude oil being taken by Australian refiners — which means the country is no longer absorbing all the oil it can produce. There are two reasons for this:

A fairly sharp, unexpected decline in demand for refined petroleum products and continued high levels of imported crude oil, which has been priced lower in recent times on the international spot market than Australian crude.

As a result Australian oil production is restrained — a situation that poses a host of problems for producers who need a return on their investment, for the Commonwealth Government's oil revenue needs, and for explorers searching for oil that cannot be absorbed in Australia. The controversy has spawned debate and speculation on the merits of conserving Australia's oil for the future or using it now to help pull the country out of the recession and to keep the explorers exploring for new oil reserves. It is a quandry that puts the Government on the spot to make some crucial decisions quickly.

While the absorption problem remains to be solved, one long standing stumbling block was finally removed last week when the Government took some crucial decisions to put an end to what it known in the industry as the Black Hole Dilemma. For those of you not familiar with the Black Hole controversy, it was created by an oil tax scheme that in some situations rewarded lower production with higher profits and yielded lower revenue to the Government. It was based on the varying oil prices set for small, medium and large fields. How it worked is shown in Figure 7.

Oil produced from fields yielding up to two million barrels a day receive the highest prices, currently $33.90 a barrel. Medium fields, producing between two million and 15 million barrels, receive $16.47 a barrel, and larger fields receive the lowest price per barrel, $8.62.

The Black Holes occurred at the production levels that separate the various sized fields. For example, if a producer exceeded the small field category of two million barrels of oil a year by even one barrel, the field was upgraded to medium, the price for the oil produced from that field fell from $33.90 to $16.47, and the producer stood to lose as much as $35 million.

The system provided an unintentional incentive to hold down production. In fact, higher production was penalized. This dilemma was solved recently when the Government introduced a sliding excise tax scheme similar to our progressive income tax system. The new scheme was implemented from the start of July, 1983. It eliminated the Black Hole problem and assures that each barrel of incremental production receives incremental value.

Lastly, the industry itself must be more willing to take risks in the vast rank wildcat regions that have been largely unexplored.

The industry tends to congregate exploration wells in the vicinity of known discoveries, areas that should be exploited to the fullest. Yet the present practice of drilling one or two wells a year in other unknown regions is insufficient to develop quickly a knowledge of the geological prospects in these areas. Perhaps there is a need for a policy review to encourage drilling in high-cost, high-risk areas. A resource rent tax will discourage exploration in these areas.

As you no doubt realize, this is merely scratching the surface of a number of highly complex issues that are having a major impact on oil exploration trends in Australia today.