

**THE ASSOCIATION FOR THE STUDY OF PEAK
OIL
&
THE OIL DEPLETION ANALYSIS CENTRE
ASPO-ODAC**

NEWSLETTER No 11 – NOVEMBER 2001

**ODAC Contact:
Dr. R.W. Bentley, Co-ordinator,
Oil Depletion Analysis Centre,
305 Great Portland Street, Suite 12,
London W1N 5DA, UK.
+44 207 436 6544
e-mail : odac@btconnect.com**

Oil and the Afghan War

This newsletter is intended to report on progress in the study of the natural peak and decline of oil production, and the consequences, but since oil is such a central factor in the world's economy, it is difficult to avoid touching on wider issues.

In the last issue, we commented on some of the oil-related factors behind the Afghan War. It prompts sympathy for the editors of the western media in their predicament. On the one hand, they have to depict themselves to be loyal to the cause, while on the other they can hardly avoid letting slip concerns about fomenting civil war in a sovereign country and the mindless slaughter of innocent people by bombing and in associated atrocities, now reaching proportions far in excess of the outrage that prompted the action. It would have been so much easier for them to know how to react had the Russians mounted the attack.

It is also difficult for them to cover retaliatory actions as may have been represented by, for example, the New York air crash and the explosion at the Toulouse fertiliser plant. These incidents may have to be depicted as accidents to sustain popular morale. Fertiliser does not explode without being primed, and it is curious that one of the victims was found to be wearing five pairs of underpants, seemingly the hallmark of the Islamic suicide bomber as he prepares for his idea of Heaven.

Several analysts, seeking some plausible explanation for the war, see a hidden motive in US control of Caspian and Central Asian oil, drawing attention to a proposed Unocal pipeline project through Afghanistan. While indeed it is possible that planners and military strategists were misled by exaggerated claims for Caspian oil, and modelled their policies accordingly, it seems doubtful if there is much substance to such interpretations. Certainly, the chimera of Caspian oil would be a poor justification for the bloodshed.

Attitudes begin to change even in America

A series of articles in Business Week of Oct 29th give hints of changing attitudes even in America. There is a growing realisation that US oil production is set to continue to fall, and that opening up the environmentally sensitive areas wont make much difference. It means that the growing dependency on imports will continue. There is a new realisation that Middle East imports are politically vulnerable, leading to desperate hopes of finding other suppliers whether in deepwater off Africa, in the partially illusionary reserves of the Caspian or from mother Russia. It seems to be a time of changing friends: the once vilified Russians now sit at high table, while the Saudis fall from grace. If sums about depletion were to be done, the commentators would realise just how wise they are to end with a call on Detroit to improve the efficiency of vehicles and cut national demand.

There is no point in being a superpower without an enemy: Islam seems to be taking the place of Communism as justification for military prowess – good news no doubt for the arms industry.

The Nemesis Report

under a new pseudonym, our contributor for the heart of the oil industry writes:

Market madness?

International oil markets are both volatile and unstable. One barrel more than is immediately wanted - and the price sinks. One barrel less - and it soars. We've all got used to it. It's the way it is. Traders wouldn't have it any other way. Actually, it's a rather strange way to manage such an important commodity. Imagine what it would be like shopping if the prices went up every time there were more people in the store and fell every time there were less.

All oil pricing is now intimately related to spot prices. And this has arisen because no one has the courage to buy oil at other than a spot related price. You can bankrupt your company without endangering your pension by buying or selling spot but if you contract at non-spot prices the moment

spot prices go below the level of your contract, you'll be fired. I parody a little but not that much. The so-called triumph of markets has spread far and wide. Few dare oppose them. But, perhaps, we should remember that one of the key features of the California electricity disaster was that state regulations effectively meant all the electricity had to be bought at spot prices – it was great when prices were low but **a disaster when supply was limited**. Californians will have many, many years of paying for their leaders' belief in market forces.

Now, ASPO's basic message is that the time is approaching when oil supplies will be limited. I am beginning to believe that the current method of pricing oil on a spot-related basis is both dangerous and destabilising and likely to become more so as supply becomes restricted. In fact, we inverted proof of this idea as the market for crude is now very weak. Demand, since 11 September, has fallen dramatically. The November issue of the IEA's Oil Market Report estimated demand as being down by 750,000 b/d or roughly 1%. (If this doesn't sound dramatic, remember it is the largest fall recorded since the 1973/4 crisis). Crude prices have already fallen by \$6-8/barrel, and commentators are now talking of a slide to \$15/barrel or even \$10/barrel once the winter demand peak is over. The big slide will probably start in late January or early February as any crude loaded after that date can't turn up as products in the main markets until the late Spring, when demand falls away naturally.

According to the IEA, the main OPEC producers already have spare or unused capacity of over 5mn barrels/day, and that's before any further cutback they might finally agree. Historically, OPEC has never managed to maintain quota discipline once unused capacity reached this sort of level.

How has it come about and quite so rapidly? On the demand side, we've had the big post 11 September hit, initially impacting obvious sectors such as aviation (the major airlines have grounded up to 30% of their fleets while keeping the most fuel-efficient flying). Recently, the decline has become more broadly based as the world's three largest economies – the USA, Japan and Germany – are all officially in recession. On the supply side, significant increases have been seen in Russian and North American production while a number of OPEC countries have, according to the IEA, managed to expand their capacities. Demand for 2002 is being steadily revised down, while capacity, both OPEC and non-OPEC, is being revised up.

Barring economic miracles, oil prices in 2002 are going to be grim. It poses a challenge for the members of ASPO-ODAC, because it's going to be very difficult to get people to worry about future energy supplies when their immediate experience is low prices, plentiful supplies and OPEC in crisis. The obvious recourse is to make the analysis as tight and keen as is humanly possible: to point out the essentially transient and reversible nature of the emerging glut; and to underline the immense damage low prices will do in terms of restricting investment in oil production, alternative energies and the more efficient usage of oil and gas.

Poor dears

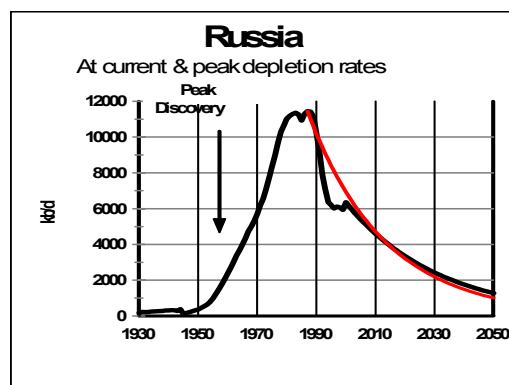
Many of you will have noticed the oil companies' grim enthusiasm for using that complete 'apples and pears unit' the barrel of oil equivalent (boe) when measuring their reserves. It is hard to be certain, but the practice seems to have started in the Gulf of Mexico, possibly by Shell. It is a nonsense unit, quite apart from the fact that there at least two different but widely used conversions to get from gas units to boe. It's only possible purpose is to obfuscate. A field that is 90% gas and 10% oil is radically different from one that is 10% gas and 90% oil but their boe's will be the same.

Some time ago I was talking to a member of the Shell main board and asked him about this strange enthusiasm for boe. He replied, quite straight-faced, that it wasn't Shell but pressure from the analysts for a single reserves unit. Now, I freely admit to having a fairly low opinion of stockbroker's analysts, a view clearly held in common with the board member, but surely, the poor dears really aren't that stupid are they?

So the choice is yours – unbelievably stupid analysts or oil companies seeking to confound and confuse over their reserves, with the analysts as willing accomplices.

Myth of the month

Even cursory readers of the newspapers in Europe and North America cannot fail to have noticed that the Russians are now our greatest chums, the people who are going to supply us with such rivers of Russian oil



that the dread OPEC will be kept firmly in their place. This happy and convenient myth is based on the fact that Russian production has recently been rising at around 7%/year, and that virtually all of it has been available for export. The implication is that this state of affairs can continue forever or at least for a long time.

Alas, like the fabulous oil wealth of the Caspian, the Russian oil flood is a gross exaggeration. After the collapse of the USSR in 1991 a total lack of maintenance and investment led to a precipitate fall in oil output. It was far faster and steeper than the decline curve that had already started on when production peaked in 1989.

By 1999, large-scale investment had recommenced. Naturally, the largest and richest company- Lukoil- was first. Soon, it was recording output gains of 7%. Already these have faded with the Company planning for less than half that level in 2002. Next was Yukos, which has recently been recording 7% output gains. Surgutneftegas, TNK and maybe even Tatneft and Bashneft will follow the same pattern. Meanwhile, Russian economic growth, which has been running at a sizzling 6-8%, will translate into increased oil products demand (most of those inefficient tank factories have now been closed). So, barring large-scale discovery or development of a secret cache of finds, this output surge will last for two or maybe three years before being overwhelmed by expanding local demand and the return to the decline curve.

Evora Conference

This two-day conference in Portugal covered a wide range of issues related to climate change, energy supply and energy policy. It is evident that research into climate change has a great momentum, yielding fascinating scientific results about the astronomical cycles that have caused climate changes in the past and the balance between the carbon emissions and sinks. The scientists are working with a remarkable range of accurate data on many aspects of the matter, ranging from polar ice thickness, tree rings, to the size of rain drops or the isotopic composition of fossils, but face immense difficulties of interpretation in determining the interaction of all these many factors. As one commented “All models are wrong, but all are useful”. It was also revealing to hear about the political and commercial reactions to the risks that the observed changes may relate to man-made influences. If the Dutch should plant a forest in Portugal to sequester carbon, should the credits go to Portugal or Holland? And where do the commercial interests of using the forest to make pulp for the paper industry fit into the picture? The monumental scale of the negotiations needed to settle the issues in an equitable fashion is self-evident.

C.J.Campbell offered a talk “Peak Oil – a turning point for Mankind” on behalf of ODAC-ASPO, and Professor Rosa closed the meeting with a wide-ranging review of the energy options, recognising that the production of oil and gas is set to decline due to depletion.

It was encouraging to hear that two ministers in the Portuguese government are bent on designing a national energy policy aimed at the more efficient usage and bringing in more alternative sources, such as wind and solar. The message of the conference was also not lost on one of the delegates, representing a Portuguese electricity generating utility, whose plans have to have a 30-year time frame. He admitted to having been misled by the flawed and misleading information provided by the responsible international agency, and expressed appreciation for the new insights coming from the conference. He returns to his drawing-board, better equipped. The climate scientists too appreciated the need to use more realistic information on oil and gas supply than had been available to them.

Two New Books

Two important new books have appeared. *Eco-economy* by Lester R. Brown of the Earth Policy Institute provides a lucid blueprint for a new world order. The pernicious role of the flat-earth economist is exposed with a call that presently hidden environmental costs should be integrated into the market economy. He provides nice examples of how previous civilisations, from the Sumerians to the inhabitants of Easter Island, collapsed when they over-stressed their natural environment. Although the book is written in an optimistic style, it

is chilling to learn, for example, that 480 million people are being fed by grain produced at low cost by an unsustainable over-pumping of the aquifer, or that two-thirds of the world's fisheries are collapsing from by over-fishing. It leads to the conclusion that the decline of oil, which is responsible for so much of the excessive behaviour, may carry a certain silver-lining.

The following quotation sums up the message: “In a world where the demands of the economy are pressing against the limits of the natural systems, relying on distorted market signals to guide investment decisions is a recipe for disaster”

The other book *Turning the Corner – Energy Solutions for the 21st Century* by D.Riley and . McLaughlin of the Alternative Energy Institute gives an excellent summary of the peak oil issue, drawing heavily on material from analysts associated with ASPO-ODAC, before going on to explain the scope for alternative energy. It is aimed primarily at US readers and explains the urgent need for a new energy policy in that country, which has become so vulnerable, having severely depleted its own oil and gas resources.

A pilgrimage to Jean Laherrère

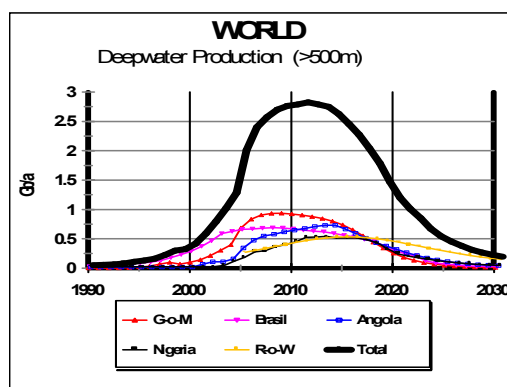
A visit was made to Jean Laherrere at his home near Preuilly-sur-Claise in France, where he works single-handed, producing monumental studies. His desk-top computer is a gold mine of information, gathered from diverse sources, all duly compared, analysed and recorded in spreadsheets and graphs. His particular achievements have been the identification of the parabolic fractal to describe the natural size distribution of oil fields, and demonstrating the close link between discovery and production after a time shift. References and some of results of this remarkable work are to be found on www.oilcrisis.com and other sites. His single-handed effort dwarfs what many major institutions would be proud to have achieved.

Deepwater Potential

The study of deepwater oil, which is here treated as *non-conventional*, continues as a prelude to the year-end update of the depletion model. It is burdened by the lack of a consistent definition of the boundary, here taken at 500 m, and by conflicting information in the various data sources. While definitive conclusions prove elusive, present evidence suggests that the deepwater domain is severely restricted in geological terms. Two factors dominate the evaluation. The first is the requirement for an effective underlying source-rock, as provided in early rifts in divergent plate-tectonic settings. The second relates to the development of turbidite reservoirs far from land where there are two special requirements : the improvement of reservoir quality by the winnowing action of long-shore currents; and the ponding of sediment behind contemporaneous sea-floor relief to provide what amount to stratigraphic traps. For these reasons, it seems likely that the deepwater potential is largely confined to the Gulf of Mexico and the margins of the South Atlantic. Elsewhere, deepwater prospects may have to rely on source-rocks within the delta-fronts themselves that are likely to be gas-prone. Apart from geology, the technological challenges remain daunting, even in such superficially simple matters as heating the flowlines in the freezing ocean depths to allow the oil to flow. The smallest accident or setback can have devastating consequences.

The study concentrates on the Gulf of Mexico, including a possible Mexican extension, Brasil, Angola and Nigeria. It appears that about 28 Gb have been discovered so far in the world as a whole, out of a tentative ultimate of 60 Gb.

Modelling depletion at this early stage is difficult but a provisional peak around 2010 at about 7.5 Mb/d is now indicated, falling to about 3 Mb/d by 2020. More study is called for.



Oil Supply, Money Supply and Interest Rate

It is difficult for anyone, least of all a humble geologist, to grasp the workings of national and international money supply. It seems however that money is not simply a medium of exchange but carries its own economic dynamic. Commercial banks charge interest on lending money that they neither have nor own. This is money created out of the clear blue sky and fed into the system. The debtors have to work hard not only to repay the loan but meet the interest charges. In some mystical fashion these are all book transactions built on a confidence factor that economic growth will somehow justify it all. Professor Watt in California finds remarkable links between interest rate, the cost of oil imports and the size of consumer debt in the United States. The rising cost of oil imports has apparently closely matched the growth of domestic debt. If King Fahd keeps his oil revenue with Chase Manhattan in New York, perhaps it forms, without his knowledge, the collateral for US domestic debt.

It looks as if recession was triggered, at least in part, by high oil prices last year, brought about by falling spare capacity due to depletion. The central bankers quickly reacted by cutting interest rates, ostensibly to shore up the flagging economy, but indirectly to reduce money supply to match the falling consumption of oil from declining economic activity. Low interest rates penalise the geriatrics on pensions and in fact inhibit commercial initiative, as lenders become very risk averse unless rewarded by high returns. If any attempted economic recovery proves to be frustrated when the consequential increase in oil demand hits the falling ceiling of production capacity leading to soaring prices that re-impose recession, it may well be that the entire foundations of this virtual economy, built on debt and interest charge, disintegrate. That truly would be a turning-point for Mankind, but one flounders in the dark in trying to understand these arcane processes

The role of the dollar in oil transactions is a related phenomenon, which is now being addressed by the Commodity Currency Exchange through a proposed alliance of core OPEC and non-OPEC countries to mitigate the adverse currency and volatility effects.

Meanwhile, the 62 billion dollar collapse of the energy company, Enron, confirms that real business is not all conjuring with smoke and mirrors. And the merger between the oil companies Phillips and Conoco lets us know that it is an industry in contraction despite the brave words to the contrary. The line between courage and folly is a narrow one.

Shell Replies

Shell has finally sent a five page reply to the letter of June 26th which was reproduced in the July Newsletter. It is not easy to interpret exactly what their position on depletion is. It seems that they do recognise the importance of backdating reserve revisions, yet add a hypothetical amount called “scope for increased recovery” (SFR) to the future. They explain that it reflects no miracle new technology, but is rather the more efficient application of already well-known practices. It is not clear why such contributions, which can be reasonably anticipated, are distinguished from normal backdated reserve revisions, unless they serve as a peak–delaying tactic in the scenario. Shell reveals that its estimate of Ultimate in 1996 was 2600 Gb, but declines to disclose its update, beyond saying that it is closer to the USGS estimate. In general, the reply appears to be more evasive than a constructive contribution to the depletion debate: scenario–building is an elegant form of obfuscation.

Chevron Confesses

In a paper on the possibilities for increasing heavy oil production, Chevron confesses to an Ultimate of 1800 Gb for Conventional Oil, which is only slightly below our current estimate of 1850 Gb. Our resident detective has duly noted this piece of evidence.

<http://www.synergytechnologies.com/docs/heavyoil.pdf>

Oil Depletion Protocol

An earlier proposal for an Oil Depletion Protocol has been taken up by an organisation of international lawyers, who were responsible for drafting the Kyoto Protocol, and a meeting is proposed. The idea is that the producing countries would limit their production to their current depletion rate and that the importers would refrain from accepting infringements. There could be exemptions for gas, non-conventional oil and gas, and possibly for new or small producers. The inclusion of the importers in the Protocol would have the effect of balancing international trade and reducing market-induced wild fluctuations in price, which are widely perceived to be damaging. The importers are left with the task of allocating their available imports under the protocol as they see fit through fiscal measures, auction or in other more socially-conscious methods. If fiscal methods were used, they would lessen the call for revenue from other sources. The protocol would indirectly stimulate energy saving and the increasing use of other energy sources. Countries could appeal the assessment of their depletion rate by opening their data to objective technical audit, which would have the added advantage of improving the database, which is currently grossly unreliable. The idea was first mooted at a conference a few years ago, where it attracted the keen interest of the then Secretary-General of OPEC, Lukman.

Broadcast in America

National Public Radio of Washington interviewed C.J.Campbell for a programme on oil depletion. Although flat-earth Lynch was also interviewed in the programme, the overall balance and tone was sound. It is understood that the audience amounts to some 40 millions.

ODAC Contacts

Dr Bentley was invited to visit the Alberta Research Council and the CEO of Syncrude who expressed keen interest in world depletion studies and agreed to furnish additional information on Canada's non-conventional oil production and forecasts.

He has also maintained close contact with officials in the European Union, developing awareness of oil depletion, and exploring what can be done to improve knowledge of the subject.

A coming challenge for ASPO Members

An update of the resource database and depletion model will be made during January on the basis of 2001 reserves and production data published by the Oil & Gas Journal. The results will be distributed to ASPO members with a request that they should each review selected countries so as to identify areas for further study, correction or revision. Members may, naturally, use their own databases, consult their own sources of information, or question the details behind the present evaluation. All indicated revisions will be adopted after due consideration, and no response will be taken as tacit agreement. The result will be taken to represent the ASPO position.

Circulation of the Newsletter

It transpires that members are copying the newsletter for onward transmission to their own circles of interest, which is most satisfactory. The readership as a consequence may now run to hundreds. Several complimentary comments have been received from these new readers, expressing the wish to join the circulation list directly. It raises the issue of broadening the membership of ASPO in some manner.

The editor of the Newsletter very much welcomes contributions from members and other readers, who may wish to draw attention to items of interest or comment on the progress of their own research.