We're In Deep Water

Posted by Stuart Staniford on October 7, 2005 - 4:18am
Topic: Geology/Exploration
Tags: gas prices, hubbert peak, oil prices, peak oil [list all tags]

This is a guest post from Dave - enjoy.

It is timely now to consider deepwater oil exploration and production (E&P). ASPO has just revised its depletion model based on a re-evaluation of deepwater reserves

> A detailed revision of the deepwater evaluation has been made on the basis of new information covering the world's fields, which have been modeled individually. The new evaluation suggests an ultimate recovery of about 52 Gb with a peak of 12 Mb/d in 2011...

Deepwater oil has been seen as a crucial shorter term source of conventional oil by many people, including Matt Simmons in The Urgency of Delivering Deepwater Oil.

Commenting on an Oil & Gas Journal article by Ivan Sandrea and Osama Al Buraiki (July 26, 2004) [not available online], Glenn Morton writes

> Anyway there were a couple of very interesting articles in the oil rags this week. First an article by Ivan Sandrea, "Deepwater Oil Discovery Rate may have Peaked; Production peak may follow in 10 years," Oil and Gas Journal, July 26, 2004. This article pops the myth that the deepwaters of the world will save us. The article notes that 1800 deepwater exploration wells were drilled in 70 countries with about 50 billion barrels of oil discovered. But only four areas of the world's deep waters account for nearly all of this. These areas are The Gulf of Mexico, Brazil, Nigeria and Angola. Angola and Nigeria have only 9.5 billion barrels of reserves (18 week's world supply), and 9.3 billion barrels (16 week's world supply) respectively. The entire 47 billion represents only about a year and nine month's world supply. We pump just shy of 30 billion barrels per year.
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> The article notes that discoveries (measured in the number of barrels found) peaked in the 1990s for the Big Four countries. Peak deepwater production will occur 2010 to 2011. Now, given the lack of exploration success for the past few years, the number of wells drilled in the deep water in the Gulf of Mexico has fallen from 109 in 2001 to 56 in 2003! The author notes that the technology to drill in these water depths has been around for a decade and with high profits for the oil companies, it is not technology or cash that has constrained exploration.

Note that the OGJ figure cited is 47 Gb where ASPO's revision now estimates 54 Gb. As Morton notes, the "big four" deepwater sites are the GOM, Brazil, Angola and Nigeria. A figure of 24 Gb of

oil has been mentioned for offshore West Africa (the Gulf of Guinea) and given Morton's number of 18.8 for Nigeria and Angola combined, that may be a reasonable estimate considering that other areas, principally Equatorial Guinea, are not included. However, the most important point is the "[the myth that] deepwaters of the world will save us". If you're interested in details about West Africa, see Deepwater Africa reaches turning point from OGJ February 14, 2005 (warning, big pdf file).

For more information about Brazil, see Morton's Brazil, the Brightspot Dims from the Energy Bulletin. If you're interested in the Gulf of Mexico, review past bulletins from the the National Hurricane Center and the current MMS numbers ;)

A big question is, if deepwater drilling is a *temporary* bridge to something else, as Matt Simmons suggests, what is that going to be? Deepwater drilling for oil is a technologically challenging and cost-intensive way of extracting conventional oil. But its supply is obviously limited. People like Michael Lynch and others have put forward the slippery slope argument that because oil supply is getting tight -- or scarce? -- with respect to demand, new supplies will become plentiful soon due to high prices and technology. In the case of deepwater oil, that argument is certainly questionable.