



Aramco and the rig count

Posted by [Heading Out](#) on November 23, 2005 - 1:06am

Topic: [Supply/Production](#)

Tags: [drilling rigs](#), [peak oil](#), [saudi arabia](#) [[list all tags](#)]

Following on from Stuart's piece on Saudi oil, I'd like to interweave some thoughts. From his third plot you can see that Aramco rig numbers have been fairly steady with about 15 -20 of the 30-odd total working on producing oil at any one time, until fairly recently. Now if one takes Matt Simmons' number that these each drill around 5 wells a year (despite the OPEC claim that they do 10) then you get somewhere in the region of 75 - 100 new wells per year. If each produced (as they did up until around 1998), say 6,000 bd, then the increase in volume per year would be around 600,000 bd, which is a reasonable number to use to offset the declines that they would be seeing in production. And so overall achievable output would likely remain somewhat constant.

Since then they have switched, increasingly, to maximum reservoir contact wells, with concurrent water flood, so that production rates are sustained, without decline, until close to the end of the well life. In the older fields such a change is probably too late, since you have the odd thousand wells in place and producing and any significant change in drawdown pattern would likely have consequences beyond the immediate vicinity. And at the same time world demand for their product is rising fast. So they have two problems.

The first is that, after a while, fields do draw down. Many have seen the picture of a depleted area in Abqaiq that was posted here some time ago. In that situation the driving pressure has likely fallen rather far, and one can reasonably assume that performance has followed it. So as one moves the line of producing wells across the oilfield, to replace the older wells running out, there is still going to be some loss in field pressure, that will lead to an overall decline in production from the field (given the same number of wells) as it ages, and residual volume gets less. As this starts to happen, then the logical answer is to just increase the number of wells drilled per year. But beyond a certain point this requires a growing increase in the number of rigs, since each well cannot produce as much oil, more must be drilled, and each rig can only do so much.

And now we have climbed onto a squirrel cage, because each year, with more wells the pressure drops more, and so the production loss is greater, and so we need to drill more wells, etc etc. And in this phase the demand for rigs goes up (note how many are now hard at work in the US for the relatively pitiful reward that they achieve). It is clear from Stuart's graph that Aramco are now entering this phase.

Knowing their target promised production, they have decided to replace declining production in a given field by increasing the number of wells they drill in that field, rather than using the Abu Sa'fah increment to offset the decline as they initially has said would be the case. But choosing this is to go backwards, since the nice thing about the new field is that it was, and would not be seeing the pressure declines that they will get in the older parts of Ghawar, Abqaiq and Berri. At

the same time I have previously noted that despite the promise of 800 kbd from Abu Sa'fah the numbers that it is producing still seem about 150 kbd short of that total, which may be another sign of trouble.

I do, however, have some concern relative to the topic that I posted yesterday on depletion. The reason being that if one assumes that there is a 5% drop (which is likely on the low side) then the two greatest losers would have to be Russia and Saudi Arabia (both at around 9.5 mbd). But in neither case are we really looking at seeing their overall production, even without the Megaproject additions, drop by this level in the next year. And the reason is because of the infield drilling that they will do to sustain production in stage 2 depletion. And that is the problem with just placing one's arguments on the gross numbers of oil produced, through the Megaproject studies, whether CERA or PR. Without a better feel for the mundane infield drilling programs, a broader judgment can be out by a considerable amount.

On the other hand if one takes the drop in average well production for any country, and then multiplies this by the number of rigs, and the wells/rig/year one can offset the drop and the claimed increment against this to see where reality might lie.

With which gentle thoughts I wish you all a Happy Thanksgiving, we are off to slightly warmer climes and family. Because of this travel, my posts will be curtailed for a short while. Enjoy the break.

P.S. Being on vacation I invoke my travel rule, which is not to cite references to previous articles on the site while away - lazy I know, but that is what is what one is supposed to be.



This work is licensed under a [Creative Commons Attribution-Share Alike 3.0 United States License](http://creativecommons.org/licenses/by-sa/3.0/).