



Technologies for Finding Petroleum: The Digital Oil Field!

Posted by David Bamford on September 13, 2009 at 5:23pm

[View David Bamford's blog](#)

In currently producing fields, what is the most efficient and effective way of finding additional petroleum? After all, there is an old adage which says "the best place to look for petroleum is in a producing field!"; in technical terms, this equates to increasing ultimate recovery factors from where they might be perceived to be today, say 25-30%, to 60 or even 70+%.

In my opinion, for many oil & gas companies the best way to do this will be to simply adopt The Digital Oil Field in all its aspects. For some excellent insights into this concept, I refer you to a presentation(1a) by David Latin of BP. You can also find a detailed description of BP's Field of the Future® concept on the company's web-site(2).

However, there is a risk that in the current economic climate, installation of a Digital Oil Field, entailing heavy upfront capital expenditure for long-term operating benefit, may be seen as an expensive luxury. This is an understandable if not entirely sensible view point: we are in "Hard Times", not because oil & gas prices are desperately low but because the lesson we have learned from the volatility of the last 12-18 months is that future oil & gas prices are desperately *uncertain*. Nonetheless, the right question is - how do we dramatically reduce the costs of the Digital Oil Field so that installation makes sense at (almost) any oil or gas price?

Let's focus on one of those technologies that is especially relevant to the recovery factor question, namely seismic monitoring. How could we ensure that it makes economic sense to shoot 3D seismic - and *repeat* 3D, also known as 4D - on *any* producing oil/gas field? Drawing on lessons from the proliferation of 3D seismic technology in the 1990's, the key seems not to attack prices directly but to focus on significant reductions in cycle-time, that is, the time between planning a survey and obtaining a useful sub-surface interpretation that finds areas of un-swept petroleum. In other words, *faster* led, and will lead, to *cheaper* and *better*.

It seems pretty clear how *not* to do this. Old-fashioned onshore acquisition techniques, involving cutting swathe after swathe through the tundra or the wheat fields and armies of men lugging vast quantities of cable around, up mountains, across roads and rivers, through swamps, seem like - and should be - a thing of the past, on efficiency, effectiveness and HSE grounds. Likewise, ultra-high-resolution techniques - no matter how unique their inventors might think they are - do not seem to be the way forward either, although it would be interesting to see authenticated cycle-time and cost/sq km comparisons published, perhaps on the InterNet.

Instead, we should be looking to the wireless, cable-less systems on offer from ION(1b), OYO Geospace(1c) or iSeis(1c), and the innovative approach to sources advocated by Ian Jack(1c).

I have documented evidence from the previously mentioned offshore 3D history that an intense focus on doing things *faster* will lead to *cheaper* (dramatically reduced unit costs), in turn meaning that many more, bigger, 3D surveys will be commissioned(1c).

Contractors should therefore see this as a golden opportunity to take part in the dramatic growth of onshore 3D and 4D rather than as a threat to their established systems.

References

(1a, b, c) These presentations can be found at:

1a): <http://www.findingpetroleum.com/forums/forum.aspx?id=3>

1b): <http://www.findingpetroleum.com/forums/forum.aspx?id=1>

1c): <http://www.findingpetroleum.com/forums/forum.aspx?id=4>

(2) A detailed description of BP's Field of the Future® concept can be found at:

http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/F/Frontiers_magazine_issue_8_Field_of_the_future.pdf

[Share](#)

[< Previous Post](#)

Add a Comment

You need to be a member of Finding Petroleum to add comments!

[Join this social network](#)

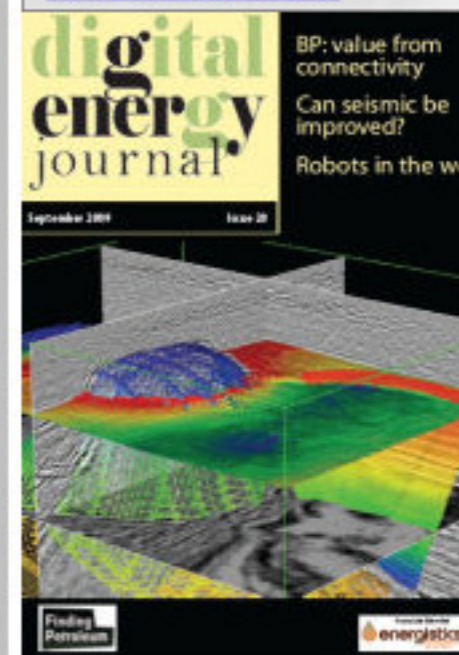
Welcome to Finding Petroleum

[Sign Up](#)
or [Sign In](#)

Finding Petroleum London Conference



January 20-21, 2010
Inmarsat Conf. Centre
[Click to learn more](#)



Download Digital Energy Journal
September 2009

