Array Fracking Extracts Oil Safely Effectively

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It looks like we may have more available oil than we thought, thanks to a new procedure called array fracking [1]. What does that mean? It means that the oil boys are drilling the oil holes closer together. And since fracking is about horizontal drilling, that means the wells are parallel to each other. It also means that fracking done on one well may be able to enhance the oil recovery in the two adjacent wells. It is complicated. And it is new technology — not completely developed. But it looks to double the amount of recoverable oil from American shale oil fields.

...the downspacing in the Bakken may give broad acceptance to a new approach - which is showing signs of emerging - to managing fracture stimulation programs in thick shales. "Array Fracking" may be a good moniker to describe the concept of creating an integrated fracture systems in a thick, high oil content reservoir from multiple optimally positioned wellbores...

This is probably a good place to explain fracking [2] for those of you not familiar with it. First thing is to study the geology of the area.

Once the necessary inormation is at hand, an engineering solution is designed for fracking at a specific site. That will include drilling the well, casing the well to isolate it from surrounding rock and aquifers, designing fracking fluid that will deliver best results for the target rock formation, and for the resource contained within it. That work will also include designing methods for collecting and disposing of waste water.

For all of this work, the company will be working with the local council on resource consents and other approvals (e.g. for hazardous substances, health & safety), conditions of operation, monitoring and reporting on compliance, and on risk

management plans for every step of the operation. The goal is to design and implement a fracking operation that is safe and effective, and monitored to ensure that is the case.

Then fluid (98 to 99 percent water plus chemicals) under pressure is pumped into the well to break up the rocks and allow the oil to flow. Which is kind of a geologically simple explanation.

I have a geologist friend, AJacksonian [3], who originally did a piece for my blog on Iran's Oil Outlook [4]; he opined on the subject of array fracking in a recent e-mail, which he gave me permission to reprint.

The work with a 3D dense pack array is to get to more volume to break up more rock, but that still leaves the areas between the bore hole fracture points that aren't going to yield up their material that easily. The trick is to get a dense enough array so as to optimize output per cubic while not spending too much on the drilling and fracturing. As we learn more about just how much is contained in these formations and just how far the fracturing we do actually goes, we can expect to see different spacings and perhaps even some shaped charges being used to section off areas by concentrated compression along lateral blasts. That would allow for more volume per blast laterally, but then also allow for another blast done just under or over the fracture area so as to capture that volume. Things are going to change as we go along, but the old idea of oil or gas recovery that we grew up with is about to go out the window... this might even be applied to older fields with layers of permeable and porous rock in which only the porous layers have been exploited.

So is fracking safe? Here is a guy who thinks you have been misled [5] on the subject if you think fracking is a huge environmental danger. I want to give the last word to this environmentalist [6], who kayaked down the Colorado River and came across a fracking site. Here is what he found.

A few days before, we'd met with Tresi Houpt, the former Garfield County Commissioner and Colorado Oil and Gas Conservation Commissioner. Houpt, who has had over 10 years of experience working with energy policy on the county and state levels, told us that for most of these controversial questions, both sides are probably telling truths. While drilling only uses a small percentage of the state's water, the figures are quite large when they're put in the context of a river system that's already over-allocated (the Colorado River has not connected with the sea for well over a decade, for example). Current technology is indeed capable of making the drilling process safe, she explained, but that doesn't mean it's always implemented correctly. Houpt cited a number of situations where residential wells or streams were polluted by oil and gas activity, stating that, "the water contamination issues that we've seen throughout Colorado have been as a result of human error, not technological error."

So the technology is sound but the people are not. This calls for better management not an end to using the resource, because we are going to need that oil for a while longer.

What's your take? Please feel free to comment below!

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