

Have 200 wells been fracked in the UK or not?

A discussion with Peter Styles and DECC by refracktion.com

This is the text from the refracktion.com website, re-arranged by David Smythe into chronological order and with colour highlighting for clarity:

Commentary; [Peter Styles](#), [Refracktion](#), [Royal Society](#), [DECC FOI](#), [Toni Harvey \(DECC\)](#).

Those 200 fracked wells – or not?

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Having heard Peter Lilley asserting that we have had 200 wells fracked already in this country without anybody noticing I thought I would go straight to the horse's mouth to try to get some substantiation for this claim.

In the Daily Telegraph of 10th August 2013 Peter Style[s], Professor in Applied and Environmental Geophysics at Keele University, stated :

["It is not a new technology, we have had 200 wells fracked in England and no one has even noticed. You cannot get a nicer place than under Corfe Castle in Poole Bay but no one is phoning up the Government to complain."](#)

Professor Styles holds a senior academic post, so he is presumably aware that claims that are made without substantiation are open to question.

We wrote to him and asked

Dear Professor Styles

I read with interest your comments about fracking in the recent Telegraph article "The town where 'fracking' is already happening" of 10th August

I read that "It is not a new technology, we have had 200 wells fracked in England and no one has even noticed." and that at Wytch farm they have "regularly pumped water into wells to "fracture" the rock and force out oil and gas."

This is all very interesting. I had been under the impression that production at Wytch Farm was using electric submersible pumps (ESP) technology – not fracking – to maximise flow rates. I trust it is not being suggested that ESP is analogous to HVHF?

I wonder if I could trouble you to let me know how many wells at Wytch Farm have been stimulated using hydraulic fracturing and when this was?

I am aware of 2 fracked wells at Preese Hall and Elswick in Lancashire, and now of course an unspecified number at Wytch Farm. Could you perhaps clarify for me where the remaining wells are and when they were fracked?

I would also be interested to learn the maximum quantity of fluid injected in any of these wells for a single frack.

Kind regards

His response was hardly a model of academic rigour and openness

Why?

[I do my own research and perhaps you might too Peter](#)

We have replied again

Dear Professor Styles

When you are a senior academic and you allow yourself to be quoted as such in the national press, I don't think it is too much to expect that you should reply to questions about the content of your statements, particularly when they are controversial, in a polite and respectful way.

You cannot fail to be aware that there is little if any evidence in the public domain on this subject. Believe me I have looked which is why asked you the question

As an academic you must appreciate that unsubstantiated claims are not really credible and your reply does rather suggest that you are unable to support the statements that you made.

Perhaps you might like to try again?

We'll let you know if he replies again, and if that reply is a little more polite and useful. In the meantime we can perhaps take it that our original questions are not ones that he really wants to answer. Now why would **that** be?

Well – it seems he didn't like the tone of our reply:

I don't know who you are as you don't say, [to be fair I did send this from a personal email address and when he did find out he did say "But see if you had explained who you were and why you are concerned you might not have got such a dusty answer. I have NGO's and Pressure Groups emailing me ad nauseam. I am always ready to try to give objective information to genuine questions but not when they only want to try to misrepresent me (which is very often)"]

I don't why you want to know apart from curiosity and I don't know in what context you are asking. It might behove you to say these things when you send accusative emails and you might get more response. Perhaps you might let me know a little more about yourself before accusing me of being evasive.

My email had you in the SPAM box by the way so you may have been marked as such previously by Gmail; you may know why.

It is a Sunday, I am also on holiday (not just as its a sunday) and I get dozens of emails like yours insisting that I reply to them without any indication of the who,what or why. If someone came up to you in the street and insisted that you answer questions would you ? Your approach is the email equivalent of doorstepping.

However, here is some relevant information

The quote is from the Royal Society Report on Shale Gas (see extract below) so perhaps you might take it up with them, . However, I personally monitored BP's first hydraulic fracturing in Beekingham in 1988 with PhD students and have knowledge of several more, many of which will have had multiple wells (also see below).

Inadvertent small scale (and sometimes more extensive) fraccing also occasionally occurs during

drilling when mud pressures (to retain formation fluids) exceed the strength of the rock formation as there may be only a small 'mud window' where optimal pressure occur.

You should also note (but I doubt that you will) that fraccing during Engineered Geothermal Systems where heat is extracted from Granites (ie Cornwall) has taken place in the UK during the Hot Dry Rock project and in fact cannot take place without fraccing to develop fractures to permit the input of cold and extraction of hot (warm!) water as granites and similar rocks are very impermeable.

1.8 The UK policy context

The UK has experience of hydraulic fracturing and directional drilling for non-shale gas applications. Over the last 30 years, more than 2,000 wells have been drilled onshore in the UK, approximately 200 (10%) of which have been hydraulically fractured to enhance recovery. The combination of hydraulic fracturing and directional drilling allowed the development of Wytch Farm field in Dorset in 1979. Discovered by British Gas in the 1970s and operated by British Petroleum since 1984, the field is responsible for the majority of UK onshore oil production and is Europe's largest onshore oil field. Over 200 wells have been drilled. Drilling vertically onshore then horizontally out to sea has proved more cost-effective than building offshore platforms, allowing oil to be produced beneath the Sandbanks estate, Bournemouth, from oil reservoirs 10km away. In 1996, British Gas hydraulically fractured a well in the Elswick Gas field in Lancashire (4.5km from Cuadrilla's Preese Hall well). Gas has been produced from it ever since. In the 1990s, several wells were also fractured in the UK to extract coal bed methane.

Royal Society 200 Wells [extract from report above]

Beckingham, Lincolnshire: oil field, 1988 (with horizontal drilling)

Wytch Farm oil field, Dorset (with horizontal drilling)

Rosemanowes, Cornwall, 1977-1980: geothermal energy project

Airth, Falkirk, 1997-2003: coal-bed methane

Elswick Formby Nitrogen Frac

hydraulic fracturing in West Sussex, UK in 1991

multi-stage gelled-water fracturing job in Cheshire, UK in 1992.

and of course Preese Hall 2011 where we monitored the seismicity remotely initially from Keele, and then with close seismometers.

We appreciate Professor Styles' responding on a Sunday so we replied

Dear Professor Styles

Thank you for taking the time on a Sunday to provide some of the information I requested. I didn't actually ask you to do so in your own time or immediately, but I am appreciative of the fact that you did.

As you suggest I shall now take this up further with the Royal Society who will I am sure be able to substantiate their own figures.

I must say that I find the use of the existence of previous minor fracking operations to infer that concerns about future, vastly different operations, are unfounded to be disingenuous in the extreme. Your comment "You cannot get a nicer place than under Corfe Castle in Poole Bay but no one is phoning up the Government to complain" does appear to be inviting that inference, or have I misunderstood that statement?

To put that into context let's take Elswick, with which you say you are familiar as an example, and look just at fluid use – the fluid used there in 1993 totalled 160 m³. Comparing this to the 19,000 m³ that the GWPF say is required for a HVHF frack job, It is evident that suggesting that this well is a meaningful comparator with what Cuadrilla would have to do now to extract the volumes they claim is quite unsustainable.

Cuadrilla would need to use at least as much water for 100 x 40 well pads as would have been used in nearly half a million Elswick fracks. That alone shows how unsustainable this "we've done it all before" suggestion is.

Am I being unfair to you – if so maybe you can explain why?

I was already aware that geothermal extraction can cause fractures. Thank you.

Kind regards

The correspondence continued but rather deteriorated as Prof Styles became irritated when he realised that I was "much better informed than 'mere curiosity' would imply", and he did make some comments about a government minister which he wouldn't thank me for repeating here (although I did for once agree with him)

Just for further context, here is what was revealed in an FoI request from the DECC in July 2012

Shale gas exploration drilling is only taking place in a small number of locations within the UK at present. The most active drilling area and the only one where hydraulic fracturing (fracking) for shale gas has been carried out is at Cuadrilla's Preese Hall 1 well near Blackpool.....Cuadrilla are the only company in the UK to so far use fracking in exploring for shale gas – at the Preese Hall site in Lancashire.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48787/112-120296-shale-gas-exploration.pdf

Those 200 wells continued

Published August 23, 2013 | By [Refracktion](#)

At Professor Styles suggestion we decided to trace where his unambiguous claim in the Daily Telegraph of 10th August 2013 that

"It is not a new technology, we have had 200 wells fracked in England and no one has even noticed."

came from.

He told us he had got his information from The Royal Society Report on Shale Gas. Obviously that was good enough for Professor Styles but we weren't quite so easily persuaded (even though we are not renowned academic scientists like what he is), and decided that this was a source that needed checking. We always thought that scientists were supposed to go back to the data too, before just accepting information which suits their pet theories but, heigh ho, what do we know?

So we emailed the [Royal Society](#)

Dear Sir / Madam

I note that some attention has been given recently to the claim made in the Royal Society Report "Shale gas extraction in the UK: a review of hydraulic fracturing – June 2012" that *"Over the last 30 years more than 2,000 wells have been drilled onshore in the UK, approximately 200 (10%) of which have been hydraulically fractured to enhance recovery"*

I have been unable to find further detail on the locations of these wells, when they were hydraulically fractured, or the volumes of fluids used.

I wonder if you could ask the reports authors to furnish some more detail?

Many thanks in advance

The reply came straight back

"The Royal Society and Royal Academy of Engineering working group received this number from evidence taken from government officials. Therefore if you would like more specific details, then it would probably be best for you to contact Toni Harvey (DECC's senior geologist) toni.harvey@decc.gsi.gov.uk"

Aha so it seems the Royal Society didn't check these figures before using them in unequivocal statements either then!

We wrote to [Ms Harvey](#) with a copy of the question posed to the Royal Society.

I wonder if you would be able to provide the information requested below. The Royal Society tell me the information came from DECC.

Answer came there none.

We emailed again

I haven't had any response at all to my recent email to you.

If I don't hear from you by the end of the working week I will send in an FoI request covering the same ground.

This time we got an answer

[I'm sorry for the delay, I've been out of the office.](#)

DECC has records of some kind of the drilling of 2159 onshore wells (which we add to when a new one is spud, see "basic onshore well data" on <https://www.gov.uk/oil-and-gas-onshore-exploration-and-production>)

We do not however have records of how many of these were fracked, because until recently fracking was regarded as a fairly routine oilfield operation and not subject to specific consent. From enquiries to the operators, we believe that at least 200 did have hydraulic fracturing treatments of some kind, but we would emphasise that these non-shale fracs are not comparable, in the volumes of fluid employed, to Cuadrilla's operations at Preese Hall in 2011 – the non-shale fracs are much smaller.

[I hope that help\[s\].](#)

So there are in fact no records which back up this claim. The "evidence" is merely anecdotal. You may be aware how scathing the frackers are about the "anecdotal" evidence for water contamination. It seems though that they are quite happy to give credence to anecdotal evidence when it suits them.

Even if the numbers were correct Ms Harvey is quite clear that "we would emphasise that these non-shale fracs are not comparable, in the volumes of fluid employed, to Cuadrilla's operations at Preese Hall in 2011 – the non-shale fracs are much smaller".

So clearly any attempt to use this "data" to suggest that what may have gone before is any sort of analog for even Preese Hall's single well would be refuted by the DECC senior geoscientist. To suggest that these old fracked wells would bear any resemblance in terms of impact and potential risk to the 100 well pads with no less than 40 wells on each proposed by Cuadrilla is clearly outrageously disingenuous!

We emailed again

[So you would agree that any attempt by politicians and the media to reassure the general public by referring to these fracked wells would be highly misleading?](#)

She executed a neat body swerve

[Sorry ... , that's not a question for a technical person like me.](#)

If you want an answer I'd be happy to refer you to one of the policy people.

We asked her to do so and also asked

Can I ask one more question – How are you defining “fracking” here? Do DECC have a formal definition of what “fracking” is?

and we subsequently received this rather waffly response which totally ignores the potential amenity value impacts (traffic, infrastructure, light pollution and noise pollution.) which concern many people

I have not seen the particular comments you refer to, but it is certainly one of our standard briefing lines that fracking technology is not itself novel.

I think there are relevant inferences which can be drawn from the earlier fracs, even though they are much smaller than we would expect for shale gas. The same kind of risks (as identified by the Royal Society report, etc.) do occur in these smaller fracs. For instance, if it were really possible for fracking chemicals to migrate through solid rock and contaminate aquifers at a higher level, that could occur in small fracs too. (In fact, there is no evidence to date of any such migration.)

The one risk in which there is a clear scaling factor is seismic activity, where the risk does correlate with the volume of water injected, and is not associated with the sort of smaller fracs previously performed in the UK. But as you may know, we have instituted new controls to mitigate seismic risks in shale gas fracking, since these were first identified through the experience of Cuadrilla's fracking operations at Preese Hall in Lancashire.

Other issues which may be matters of public concern do scale with the size of the frac – the amount of water and other materials required plainly does so. But so far as the risks of the fracking operations themselves are concerned, I do think there are legitimate inferences, and reassurance, to be drawn from the previous experience of fracking in the UK.

You also asked if we have a formal definition of fracking. We don't. But generally speaking, we would recognise fracking by the application of

hydraulic pressure to the rock around a wellbore, with the intention of fracturing the rock or enlarging pre-existing fractures. For instance, there have been questions whether an acid wash procedure planned by Cuadrilla at Balcombe constitutes fracking. We don't think so, because no elevated pressures will be employed and there is no intention to fracture the rock, merely to clean up the mudcake and drilling debris around the wellbore.

Frankly we are amazed that the DECC should be suggesting that a non-shale single vertical well frack is any sort of analog for high volume hydraulic fracturing using multi-lateral wells, especially as they don't even know for sure that they have even taken place – remember Ms Harvey's “We do not however have records of how many of these were fracked”.

The bland attempt to paper over the cracks here is not unexpected. What is more concerning is that there is evidently no formal definition of fracking. This is quite amazing given that it is proposed that community benefits should only be paid if fracking takes place!

It also raises questions as to how planning permission for fracking can be applied for and granted if even the DECC are unable to define what “fracking” is.

Finally, DECC have confirmed by letter to another correspondent:



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20 August 2013

Dear,

Thank you for your further email dated 19 August, about fracking. I have been asked to reply.

Cuadrilla is the only operator in the UK to so far use high volume hydraulic fracturing – this technique was used on the Preese Hall well in Lancashire in 2011. DECC has not at this stage received any applications from other operators to carry out hydraulic fracturing for shale gas onshore in the UK and therefore no such consents have been issued.

I hope that this is helpful.

Yours sincerely,

So I think we can say with some authority

- There is no concrete evidence that 200 wells have been fracked in the UK
- There are anecdotal reports, but only from the industry themselves which suggest that there may have been.
- Nobody appears to know anything about these fracks – where, when, how much fluid, what pressures etc
- What we DO know is that it they did not involve high volume hydraulic fracturing
- The DECC confirm that they were not into shale
- The DECC senior geoscientist “emphasises that these non-shale fracs are not comparable, in the volumes of fluid employed, to Cuadrilla’s operations at Preese Hall in 2011 – the non-shale fracs are much smaller.”

So next time Peter Lilley is trying to pretend in a radio interview that we have nothing to worry about because we have seen 200 wells fracked in the UK, that is the “little list” you need to shoot him down.

Oh, and Professor Styles, you might want to check the sources of and accuracy of your data before getting yourself quoted by the Daily Telegraph next time. Isn’t that what **real** scientists do?