

Report on necessary regulation in the exploration and development of Unconventional Fossil Fuels

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The following is a summary of my conclusions following my review of the existing state of regulation and monitoring in the UK onshore for unconventional fuel exploration and development. The purpose of this summary is to provide clear and simple advice to the UK Government (DECC), European Commission (Environment), Regulators and general public on what is now required for this industry to be regulated in an efficient and safe manner.

I am an independent Chartered Engineer, ex-oil and gas, who has conducted a three year study, (still ongoing), into the practice of regulation regarding the on shore oil and gas industry and in particular use of hydraulic fracturing. The evidence I used to draw upon was taken from Freedom of Information Act responses, letters, mails, teleconferences and actual conferences. I consulted with, advised and presented evidence to the DECC, EA, HSE, DECC Select Committee, IGEM, BGS, The Royal Society and The Royal Academy of Engineering.

The following is a subset of a full detailed analysis by the author of regulation necessary in the on shore hydraulic fracturing industry to ensure safe practices are developed, implemented and verified.

- On Shore Gas Regs - There is a clear need of specific onshore industry specific regulations. At present there are none. The regs developed in the 1990s (DCR) and the other regs (BSOR) following Piper Alpha disaster are not sufficient to address the issues with on shore drilling, exploration and production. The DCR are aimed at offshore development (no public or agriculture or tourism), BSOR is prior to HVHF and both are entirely self-regulatory. The author gave evidence to the Royal Society and Royal Academy of Engineering on this subject and they have incorporated this directly into their report published in June 2012. The UK Government has chosen to ignore this vital recommendation.
- Verification – independent (financially and professionally) verification, testing and inspection of the wells to the new regulations. Presently virtually all self-regulatory. What is now required is a ‘hands on’ inspection regime of a type similar to that a number of US states have now adopted.
- Regulations. Efficient regulations needed to protect public health and minimize damage to the environment. All of the below will require verification based on frequent and random site visits by independent monitors.
 1. Cement quality (on site sampling and laboratory testing) , cement bond logs, cement jobs and well construction plans.
 2. Annular pressure readings (instruments used, calibration, how recorded in SCADA etc.).
 3. Examination of formation integrity tests as they are executed. Remote link for monitoring to independent regulator of key data and protected from tampering using 21CFR11 procedures.
 4. Seismic monitoring TL System and post tremor actions. Bond for local populations adversely affected.
 5. Surface methane detection (baseline, operational and legacy).
 6. Publication of which “fracking” chemicals used at each well with MSDS, CAS Number & REACH disclosure.
 7. Flowback fluid storage, treatment and disposal (Permit). Fracking fluid left in target formation - evidence.
 8. Recycling of flowback (presently illegal – need a regulation to define this process and legalize it), flowback water quantity verification.
 9. Green tanking with minimal/no flaring. (Need reg to define this and ensure it happens)
 10. Fugitive emission monitoring and reduction (Methane and Radon and Benzene - VOCs).
 11. Sourcing water from mains (pressure issues) and testing of local boreholes/wells/surface water.
 12. Bond for abandonment (including monitoring of well and surrounding land within agreed radius for agreed period)

Most of the above, if not all, the industry claims it is executing already. The problem is that there is no independent verification of any of this. We (the general public) are just left to take the operator's word on it. The same operator who has private investors/shareholders to satisfy and stands to make or lose financially which could be very much dependant on how they interpret/obey any of the above regs. It is important to note that none of this list is compulsory and has any backing in law. Each individual oil and gas company can chose to ignore any or all of these points as and when they feel necessary at this time.

- Overview –The new Office for Unconventional Gas and Oil (OUGO) based on the author's own proposal for an Office for Regulation and Inspection in Shale Gas (ORIS), presented to the Government in Sept 2012, has stated at its first meeting that no new regulations will be brought forward at all! It has effectively abdicated its own responsibility to the public before it has begun. In addition the inspection regime has been left in a completely unsatisfactory state. One of the two regulators charged with regulating this industry, which had experience of oil and gas (HSE –OSD), has been scrapped (restructured in state speak) as of 1st April, 2013. This is a farce and a disgrace. The Government in the UK see any regulations as a "barrier" to be overcome and are determined to ensure there are zero regulations in this area with absolute minimal inspection as they dash for gas and revenue for the exchequer to the detriment of the health of the citizens of the UK and the environment.
- Compliance – The regs should be implemented through random and agreed on site visits when key actions (like cementing) are happening. There needs to be serious repercussions if an operator is found to be in breach of the regs. Fines, license revocation and criminal proceedings if necessary.
- Funding – a seriously robust regulatory regime requires funding. Random inspections, frequent site visits to a rapidly expanding industry will mean a significant increase in costs to the HSE and EA. A new funding structure, negotiated with the industry, needs designing and implementing. The author has developed such a plan and discussed it with all parties. It must be done and soon to ensure we have not only the regulations but also the implementation of them at the well site.

This is a brief summary of the key recommendations. For each point above and additional points not shown, I have a considerable amount of detail already developed. The "regulations" bullet points above I developed after much consultation and then had peer reviewed by the industry. They were originally supportive of the list.

In the pursuit of better regulations the author met with the Head of OUGO and was quickly told to refrain from using engineering terms as he had no experience of engineering or the oil and gas industry. His assistant, in charge of regulation, then also repeated this request! The two people charged with "streamlining" regulations in the onshore oil and gas industry!

I am happy to work with all interested parties in the bringing forth of new, shale gas specific regulations. To date the UK Government has refused to do so and indeed opposed any new regs at all. The most recent example being the new mandatory EIA regs that I assisted with at EU Parliament level. This has to change. The regs must be both sensible and practical for the industry to follow. They must also ensure the industry is as safe as it can be (ALARP) and seen to be safe in the view of the general public. Otherwise the logical and sensible conclusion is that this industry cannot be allowed to continue exploratory work in the UK.

Necessary Regulation in the Exploration and Development of Unconventional Fossil Fuels

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Glossary:

DECC:	Dept. of Energy and Climate Change
EA:	Environment Agency
HSE:	Health and Safety Executive
OSD:	Offshore Safety Division
BGS:	British Geological Survey
IGEM:	Institution of Gas Engineers and Managers
CBL:	Cement Bond Log
BSOR:	Borehole Site and Operations Regulations. 1995.
DCR:	Offshore Installations and Wells (Design and Construction). 1996.
MSDS:	Material Safety Data Sheet (standard availability across Pharma/Chem industry)
SCADA:	Supervisory Control And Data Acquisition