Third Energy – Development at Existing Well Site at Kirby Misperton

THIRD ENERGY

How does hydraulic fracturing work?

Hydraulic fracturing is a technique used to stimulate oil or gas flow from "tight" reservoirs that have insufficient permeability for the oil or gas to flow without help.

It involves pumping the water-based hydraulic fracturing fluid at sufficient pressure to open up slim fractures in the tight gas reservoir. The grains of sand in the fluid – the proppant – prop open the fractures allowing the gas to flow up through the well.

Once the oil or gas flow has been stimulated, the operations are no different to other oil and gas production.

What is in the fracturing fluid?

Typical hydraulic fracturing fluids are 99 per cent water and sand and less than one per cent additives. The exact proportions vary as each fracture is designed specifically for the target geology. The additives perform various functions such as helping to carry the sand and preventing the growth of bacteria.

In the UK, all constituents of the fluid – both quantity and concentration - have to be disclosed to the Environment Agency and approved by them. The additives are commonly used substances that are non-hazardous and are typically found in most homes - many of them in food and toiletries.

The existing brownfield site at Kirby Misperton

How much water will you need and where will it come from?

As the KM8 well is on an existing producing well site, it is already connected to the Knapton Generating Station water supply via underground pipeline. This water will be transported from Knapton using the existing pipeline and, once fracturing is completed, any flow back water will returned to Knapton via the same pipeline. From here it will sent for safe disposal to an authorised contractor.

We have calculated that we will need a maximum of 4,000 cubic metres of water for the fracturing fluid – about the same volume as two Olympic swimming pools.

About Third Energy

View towards Knapton Generating Station

Third Energy is an independent company with a focus on gas appraisal and development, both offshore and onshore. We believe that gas plays an important role in the United Kingdom's energy mix, especially as a partner to emerging renewable energy sources which are currently intermittent.

The company holds licences to explore for and produce natural gas in North Yorkshire and has been operating safely for some 20 years.
We employ over 20 people locally and spend almost £900,000 a year with Yorkshire businesses. We work hard to ensure our operations have a minimal impact on the local community and environment.

The licence areas include gas fields in the Vale of Pickering that have been producing gas for many years. The gas is transported from the well sites, through a network of underground pipes, to the Knapton Generating Station. Opened in 1995 and located at East Knapton, the station uses the gas to generate electricity which is supplied to the National Grid.

What are we proposing?

Third Energy drilled a well known as KM8 well, on its existing Kirby Misperton gas field during 2013. The substantial amount of data and samples collected during drilling, have been analysed over the course of the last year.

This analysis has confirmed that the deeper Bowland section, consisting of mainly inter-bedded sandstone and shale, is gas bearing. It is not pure shale as found in other parts of the country.

We do not know at this stage if gas production could be commercially viable – whether the gas will flow in sufficient volumes and rates. The only way we can be certain is to flow test the well.

Therefore, we are seeking the necessary planning permission and other approvals to test flow the well. Given the "tight" nature of the rock, testing will involve hydraulic fracturing. The proposal is to fracture five zones at depths of between 7-10,000 feet below ground level.

Existing KM8 well site

Will groundwater be impacted?

Hydraulic fracturing itself does not pose a risk to groundwater – it is the integrity of the well that is critical. It is for this reason that close attention is paid to the design, construction and monitoring of wells. The stringent and robust regulatory regime in the United Kingdom provides the framework within which the energy companies plan and operate their wells.

Since 1975, thirteen wells have been drilled through the aquifer on our licence areas in the Vale of Pickering and there has been no incidence of aquifer pollution. Around 2,000 onshore wells have been drilled in the UK, most of which have also been through aquifers. Again, there has been no incidence of aquifer pollution.

Well-screened site at Kirby Misperton

How is this process regulated?

The UK has one of the most highly regulated oil and gas industries in the world. Before any hydraulic fracturing can take place a wide range of permissions and permits need to be in place.

These include:

- Planning permission from the local authority including full public and statutory consultation
- Approval from the Department of Energy and Climate Change
- Permits from the Environment Agency
- Approval from the Health and Safety Executive
- Approval from an Independent Well Inspector

Identifying potential impacts on the environment

The first stage is preparing a pre-application Environmental Risk Assessment (ERA) which will be submitted to the Department of Energy and Climate Change for approval. The purpose of the DECC ERA is to capture all the potential impacts and risks at the start of the project which will use hydraulic fracturing.

The second stage is to develop an Environmental Impact Assessment which will be prepared prior to submitting our planning application.

The Environmental Statement, which is part of the application, will require a wide range of individual studies including those on: Ecology; Landscape and Visual Amenity; Air Quality; Noise; Transport and Traffic; Flood Risk, Hydrology and Drainage; Archaeology and Cultural Heritage; Economics; and Ground Conditions and Contamination.

As part of the planning process, we will be undertaking widespread public consultation which we will publicise through the local media.

How long will it take?

First, a small rig will be mobilised to site to prepare the well. This workover will take about 15 days.

The second stage, the hydraulic fracturing to stimulate the gas flow, will take about 35 days. The fracturing process itself is relatively short – around two to three hours of actual pumping over about a five hour period for each fracture.

Once the five fractures have been completed the well will be flow tested. The specialist equipment will be then be removed from site.

If the flow test is successful the well will be set up for ongoing production. The gas produced will be transported by the existing pipeline to Knapton and used to generate electricity.

Will there be a large number of heavy lorry movements?

Although local residents will experience a slightly heavier flow of traffic in the area, the disruption to normal routines should not be significant.
We will develop a traffic management plan with the highways authority, taking into account feedback from the local community.

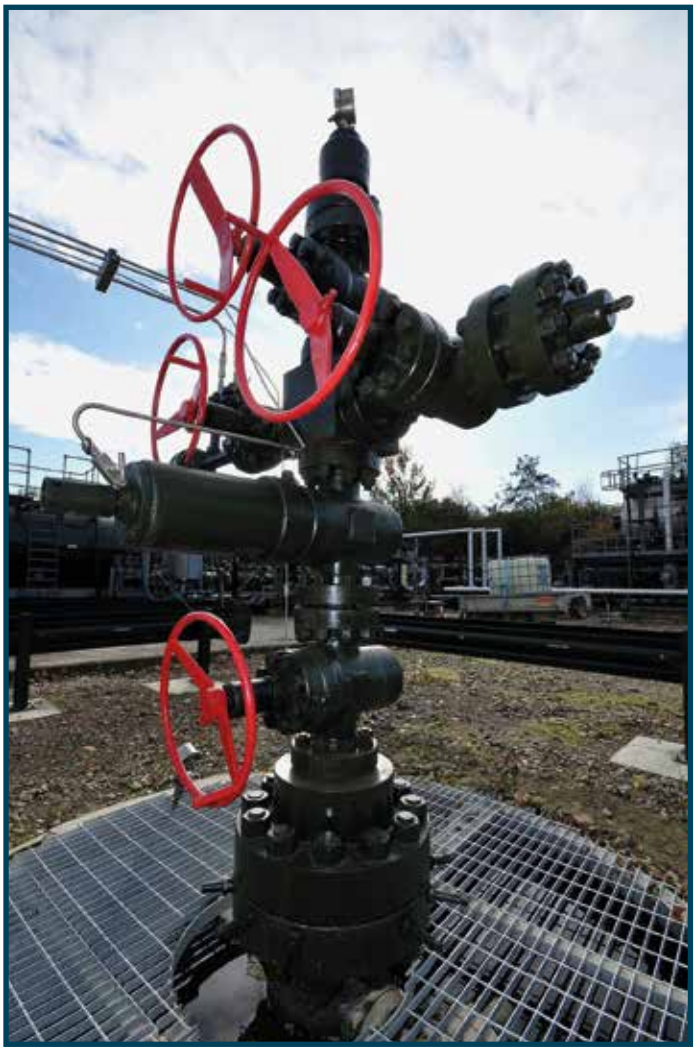
During the two week work-over programme, it is expected that there will be around 100 truck movements in total. The peak of movements will be during mobilisation and removal but there will deliveries to site during the work.

For the six week hydraulic fracturing programme, around 100 truck movements will be required for mobilisation over about a week, and around 65 truck movements for demobilisation, again for about a week. There will be low levels of traffic during the fracturing work, mainly staff arriving at and leaving the site.

What will you see and hear?

The existing well site is secluded and well-screened by trees. The workover rig will not be much taller than the trees and the specialist fracturing equipment - pumps, blender trucks and tanks – will not be visible beyond the site.

During the actual fracturing process, there will be noise from pumps and other equipment. We are working with an independent acoustic consultant to ensure that noise levels do not exceed the limits set out in the National Planning Practice Guidance.



Christmas Tree valve on existing well

How you can have input into these plans?

One of the most important parts of the planning process is you – local residents. We have operated safely and successfully in the area for over 20 years and we want to continue to be a good neighbour.

We recognise that any new development plans will have some impact on the area. Our intention, as we have done on previous projects, is to involve the local community in developing and shaping our plans in order to minimise any impact.

We will be holding a number of public consultation events prior to submitting our planning application. We will write to residents about these nearer the dates, as well as advertising them through the local media and our website.

Contact us

If you would like to contact us in the meantime, please feel free to contact us with any comments or questions by:

- Calling our **FREEPHONE** helpline on: **0800 1337352**
- Visit our web site to ask your question: **www.third-energy.com**
- Email us: **northyorkshire@third-energy.com**

What are the community benefits?

As announced by the Chancellor of the Exchequer in 2013 and set out in the Community Charter of UK Onshore Oil and Gas (UKOOG), if Third Energy receives planning permission and before the start of hydraulic fracturing, it would provide the agreed community benefits of £100,000 per hydraulically fractured well site.

If the appraisal leads to commercial production, one per cent of gross revenues from production will also be paid into the local community fund. At current gas prices, production revenues from one tcf of gas could yield about £70 million to the local community over 20 years.

These funds will be administered by UK Community Foundations (UKCF).

History of gas production in the local area

This area of North Yorkshire has a long history of gas development and production, originally going back to the early 1970s. From the mid-1980s onwards, gas has been produced from the Ryedale Gas Fields. Many of the Ryedale Gas Fields were originally discovered by Taylor Woodrow Exploration Limited and subsequently developed by Kelt UK Limited.

Viking UK Gas Ltd acquired the interests of the Ryedale Gas Fields in 2003 and has subsequently undertaken an active drilling and workover programme to enhance gas production from the producing fields located at Kirby Misperton, Pickering, Marishes and Malton. In 2011 Viking UK Gas Limited was acquired by Third Energy. Since acquiring the company, Third Energy has continued to undertake work on the existing well sites and evaluate gas fields in other parts of its licensed acreage.

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