Response to report on Third Energy safety by Frack Free Ryedale & Frack Free North Yorkshire

Introduction

This "Report" on "Third Energy Safety Failures and Inspection Regimes" was prepared by Chris Redston and Russell Scott, of Frack Free Ryedale and Frack Free North Yorkshire respectively and is their interpretation of information contained in a range of documents obtained under Freedom of Information (FOI) requests from the Health and Safety Executive (HSE).

Third Energy's Response

- Third Energy completely refutes the Frack Free North Yorkshire / Frack Free Ryedale assertion that the company has anything other than an excellent safety record
- The paper provides no evidence of any significant safety incidents
- Third Energy invites the authors to visit the company's Yorkshire operations for a full briefing on the company's health and safety systems including incident reporting

The Report

Their thesis is that a statement, published on the Third Energy website regarding the company's safety record, is "fundamentally flawed for a number of reasons."

"Third Energy has been drilling, developing and producing gas in North Yorkshire for over 20 years with an excellent safety record and we are compliant with national and international health and safety regulations. For the past two decades, we have operated without any significant incidents in our areas of operation" Third Energy Website

Overall the report demonstrates poor understanding by the authors of the role of the HSE in monitoring the safety performance of oil and gas operating companies, including compliance with UK regulations.

The thesis is based on selected extracts from documents, obtained from the HSE under FOI requests, dating back to 2008. The report also references subjects beyond the scope of the FOI documents. The information they cite fails to support their thesis regarding Third Energy's safety record overall and specifically provides no evidence of any significant safety incidents.

The authors do not define the term "safety failures" used in their paper's title but ascribe so-called failure to everything from a natural flooding event that had no safety or environmental impact, to a dialogue between the HSE and Third Energy on a planned well operation. They use the technique of extrapolating and embellishing information to reach conclusions not supported by the facts. They also cast unsubstantiated doubt on the manner in which the HSE undertake their regulatory role.

Finally, the authors omit to state their own qualifications, training or expertise in the subject matter or any advice they have received from qualified experts in the significant range of technical disciplines addressed in this document.

A more detailed critique of their paper is set out below.

Critique of Frack Free Ryedale and Frack Free North Yorkshire's report

Note: this critique is based on the Frack Free North Yorkshire / Frack Free Ryedale paper which refers to documents obtained from the HSE under FOI / EIR requests and published on the Frack Free Ryedale website. This response is prepared with the caveat that Frack Free Ryedale may be referring to additional documents provided by the HSE which are not available to Third Energy to view.

Introductory Paragraph

Direct quotations from the version of the report published on Frack Free Ryedale's website 15/02/16	Third Energy Response
"In the past few years the safety record of Third Energy (previously Viking Gas UK Ltd) in Ryedale is one that has included a documented sour gas leak, problems with flooding, staff accidents and clashes with the HSE regarding well-casing design, procedures and poor maintenance regimes. This (sic) hardly the 'excellent' track record proclaimed by Third Energy."	**Incorrect** ▪ With reference to "Staff Accidents": the **single lost time incident** presented was not an "accident" but a stiffening back condition. The soreness had not subsided enough for the operator to return to work for his next shift which under the stringent reporting regime qualified as a Lost Time Incident. ▪ The very minor gas leak that was detected at the Pickering well site was immediately made safe with no negative impacts on either human safety or the environment. The systems for detection, shutdown and making-safe all functioned as required. Third Energy immediately notified the HSE of the leak, as it is required to do by law. The HSE were also kept informed throughout the repair operation until it was safely completed and tested. ▪ The statement that Third Energy had a clash with the HSE shows the authors' poor grasp of how effective regulation works and the dynamic relationship between Regulators and Operators. To clarify: Third Energy had been planning a well workover using a downhole rod pump. After several discussions and meetings with the HSE, it was agreed by both parties to install an additional valve in the annulus. This is a demonstration of how the HSE oversees onshore oil and gas operations and, when applicable, there is informed dialogue with Operators on technical matters and risk management. This dialogue is between qualified and experienced parties on both sides. ▪ There have been no problems from flooding at any of Third Energy's well sites. The occasional natural flooding at Marishes well site was catered for in the site design. The flooding has had no negative impacts on safety, the environment or operations. This is further endorsement of the company's strong approach to safety, as it demonstrates that the well and the site were correctly designed and constructed. ▪ A pipeline management system is in place which covers both maintenance and inspection regimes.

'Poor standard' of management on the existing pipeline

'Poor standard' of management on the existing pipeline	**Misleading**: The use of inverted commas in this sub-heading implies that 'poor standard' is a direct quote from an HSE document relating to the whole management of the pipeline. In fact the HSE uses it specifically in reference to isolation joints in the cathodic protection system. This is a standard system, separate from the pipeline, that uses an electric current to prevent corrosion. The isolation joints are designed to maintain the current within the pipeline thereby making the protection more effective.
"On the 26th August 2008, the HSE conducted its annual pipeline review and the findings were so worrying that the HSE wrote a scathing letter to the operators of the pipeline, which contained a **very critical review of the current condition of the pipeline** and the poor standard of management of said pipeline"	**Misleading and Exaggeration:** The letter following the annual pipeline review meeting did not contain a "very critical review of the current condition of the pipeline" – the current condition of the pipeline was not covered in the letter which FFR / FFNY reproduce in their report. The HSE neither states nor implied that "the findings of the review were very worrying". The letter set out three actions arising from the review with which the company not only complied with but exceeded: ▪ Accelerate implementation of the pipeline management system ▪ Resolve issue of isolation joints on cathodic protection system (as covered above) ▪ In Line Inspection using intelligent pigging to establish whether any potential degradation **may** have taken place In 2010, the actual condition of pipelines was established as "good" and all lines were given a **full life revalidation of 15 years.** The next inline inspection of the piggable lines was set at 10 years from the date of revalidation when the exercise and revalidation process will be repeated. In line with the actions identified by the HSE following the 2008 Annual Pipeline Review ▪ Pipeline Management System implementation was completed, including the appointment of a specialist pipeline management contractor. ▪ The pipeline isolation joints were changed out to ensure that the cathodic protection system remained isolated in the pipelines. ▪ In Line inspection to establish the condition of the pipeline: - In conjunction with design reviews and historical data checks, Intelligent Pigs were run on: Pickering to Kirby Misperton -6" Gas/Liquid Pipeline; Kirby Misperton to Marishes -6" Gas Pipeline; Marishes to Knapton -6" Gas Pipeline - Where intelligent pigs were not able to be used, the pipelines were subjected to design reviews, hydrostatic testing and a site investigation (excavation and NDT test).

Sour Gas Leak in February 2014

"Sour gas is a form of natural gas that contains increased levels of hydrogen sulfide. which (sic) is a colorless gas with the characteristic bad smell of rotten eggs. It is also heavier than air, very **poisonous, corrosive, flammable, and explosive**, and also very toxic in small amounts, according to some reports."	Please note: there was no danger to human life or the environment at any time. The leak of gas from the pipeline was stopped within **four minutes** of the operator on site reporting a potential leak. The associated wells were shut-in; the line was isolated, purged and taken out of service for the entirety of the period of remedial action. Sour gas exists naturally in the Kirkham Abbey Formation (KAF) and has been produced safely, discreetly and without harm to people or the environment for over20 years. The details of how the minor leak was managed are provided below.
"Sour gas explosions are a genuine threat and have occurred multiple times in the USA and Canada over the last 5 years (see links below)." http://calgary.ctvnews.ca/sour-gas-well-capped-dry-creek-bay-residents-permitted-to-return-home-1.2115263 http://globalnews.ca/news/657979/sour-gas-rupture-in-flooded-southern-alberta/	**Unsupported by the references:** The evidence provided does not support the statement that sour gas explosions are a "genuine threat". While both these news reports contain details of the unplanned release of natural gas containing H2S, they are **not** reports of **"explosions"**. The first report covers the rupture of a well. The second report covers the rupture of an exposed pipeline following very adverse weather. Please note that, as a generality, Canadian sour gas wells contain much greater concentrations of H2S than do wells in the UK.
"Over the course of the next five weeks Third Energy completed a repair of the damaged pipeline. The five week period is shown on this schematic, showing – the blue-shaded table on the right – that work repairing the leak started on 25th February and was completed on 28th March."	**Inaccurate:** The authors demonstrate a limited understanding of engineering, technical disciplines and construction e.g. the "schematic" reproduced is – as clearly labelled - the tie-in welds programme for the pipeline repair, and nothing to with identifying and stopping the actual leak which was done very quickly. The entire repair programme was planned and programmed professionally and executed efficiently. The time taken is an indication that the operation was not rushed and included consultation, planning, programming, material searching, tie-in welding, weld testing, in-house reviews and interaction with the HSE.
"However, it is not known how long this pipe was leaking the highly toxic and explosive sour gas."	Third Energy has a number of controls – the Flow Assurance System - in place to monitor the performance of the pipeline in real time and flag any breaches of the system integrity. These systems are designed and constructed by qualified engineers and operated by experienced technical personnel. Real time monitoring includes measuring pressure and temperatures within the pipeline. Another important control is monitoring how much gas is put into the system at the well head and how much is delivered to the Knapton Generating Station – any discrepancy in volumes would flag a potential leak in the system. In addition to the multiple real time measurements, and a comprehensive Pipeline Management System managed by independent contractors (see Appendix 1 for their work scope), the company also makes daily inspections of wells, facilities and pipelines to ensure that operations are running smoothly.

"Residents living near the route of this ageing and poorly-managed pipeline would be forgiven if they thought that following the leak that the HSE would increase the number of inspections to the site."	The pipeline is properly managed and is fully validated. Residents living near the route of the pipeline have never been put in any danger from Third Energy's operations. This statement again shows a lack of understanding of how effective regulation works across a wide range of industries including oil and gas The HSE, as they set out in their response to the FOI / EIR request, have a risk based approach to pipeline inspections as set out in intervention planning process for onshore pipelines **http://www.hse.gov.uk/gas/major-hazard-interventions-onshore-gas-pipelines.pdf.** The authors should consider the significant number of pipelines, including high pressures gas lines, of different, ages across Ryedale and the country of which people are either not aware of or give rise to concern.

"Failure of HSE to inspect the pipeline"

"It therefore appears that **the HSE have stopped inspecting the pipeline**, meaning that the current state and integrity of this underground pipeline is unknown."	**Incorrect:** ▪ The Operator is responsible for inspection under the Pipeline Safety Regulations. The HSE are the regulatory body. ▪ The HSE may not have an inspection planned for 2016 but they play an active role in monitoring and regulating the pipeline system e.g. through the Annual Pipeline Review. ▪ The current state and integrity of the entire pipeline system is known by Third Energy, through the pipeline management system, and reported to the HSE. ▪ This statement also suggests that the authors undertook technical analysis of what is required, given the systems and controls in place, and have used their expertise, to find the HSE wanting.
"This is a serious concern, given that the pipeline is central to the application to frack at KM8, as it will transport water to the site, and also take the gas away from the site to Knapton Generation Station during the production test and commercial production phases."	**Irrelevant:** ▪ The specific pipeline in question runs from the Pickering well site to the Kirby Misperton well site and it will not play any role in the planned KM8 operation. ▪ The pipeline system is an important part of all Third Energy operations in the Vale of Pickering, as are all facilities, and therefore its safety, management and integrity is a priority for the company

"'Environmental incidents' in 2009"

"The HSE letter (dated August 2008) referenced earlier on in this document highlights quality and safety concerns that had 'continued unresolved for many years'. Unfortunately Third Energy continued to use the pipeline and in 2009 the HSE conducted two further reviews which highlighted numerous health and safety issues with the pipeline."	**Inaccurate and Misleading:** The sole issue that the August 2008 HSE letter highlighted as "continued unresolved for many years" was the isolation joints on cathodic protection system (as explained above). The two reviews undertaken by the HSE in 2009 did not highlight "numerous health and safety issues with the pipeline". There was no reason why Third Energy should not have continued to use the pipeline. If pipeline inspection had revealed any indication of reduced pipeline integrity then Third Energy would have ceased pipeline operations and immediately taken remedial action.
"These included three environmental incidents, one injury to personnel that resulted in an employee having time off work (LTA), six near misses and five minor injuries, also called non-LTA's"* * Note: The authors cite two HSE visit reports both dated 2009. What is not clear is whether or not the data is repeated or from the same year; the 14/5/09 report was an Annual Update and references a record for an LTA from "last year".	**Misinterpretation of HSE reporting** Third Energy has a comprehensive reporting system in place which records small incidents, including near misses. One of the most significant improvements made in safety management in the UK in recent decades has been with respect to the increase in HSE reporting. The intention behind this effort is to create learning organisations that work on a continuous improvement cycle. As a result, the number of safety items being reported in 2015/16 is indeed much greater than it was in 2009. This is the aim of the initiative to improve reporting and awareness.
"We had requested copies of the environmental incidents and the lost time event, (sic) **However, the HSE has now destroyed the relevant information relating to these incidents**, so we may never know the seriousness of the three environmental incidents or injuries sustained to personnel."	Third Energy maintains full HSE records and would be happy to share and discuss these incidents (with regard to not sharing personal information under the aegis of data protection regulations) with the authors in person if they were interested in learning more. The record relating to the single LTA states: "*During rigging up activities of the KM 3 acid stimulation equipment the Shift Supervisor felt a general stiffening of his lower back. The soreness had not subsided enough for him to return to work for his next shift. This now qualifies as a Lost Time Incident*". (This demonstrates the system used for reporting works, and is stringent.) The three environmental incidents were reports related to minor odours. It should be noted that not all odour complaints receive actually relate to Third Energy operations.

Flooding at Marishes

"IN (sic) January 2013 Third Energy's drilling contractor, Moorhouse Petroleum, emailed the HSE to report that Third Energy's Marishes site was under three feet	**Incorrect:** The email from Moorhouse to the HSE of 16 January – part of a wider correspondence regarding a proposed well operation at KM7 – is clearly a response to a query as to whether the local flooding had reached the KM7 well site. Whilst KM7 had not been impacted, Moorhouse

of water because the two rivers enclosing the site had burst their banks and flooded the site."	volunteered that the Marishes well site was under water. This did not take the form of a "report" or notification to the HSE of any form incident as there was none. This reflected in the tone of the email. (see information on Marishes well site below)
"The current Third Energy site at Marishes in Ryedale is sandwiched between two important water sources, the River Derwent and Costa Beck. The River Derwent and its tributaries are protected under EU legislation, and are considered significant for nature conservation, ecology and landscape. The area contains a diverse range of habitats many of which are designated sites, while the river itself is also used for drinking water abstraction for towns such as Scarborough. Therefore any contamination of this waterway due to flooding could potentially lead to significant environmental issues."	**Incorrect and Irrelevant:** This statement concerning potential contamination of the River Derwent and flooding has no connection to Third Energy operations. The Marishes well site has experienced some natural flooding during the last 10 years with no impact on production operations, safety or the local environment. It should be remembered that the wellhead and other facilities are designed for local conditions, including flooding, and draw on the same technology developed for offshore wells, such as the North Sea, that operate in deep water, harsh water environments without incident.
"This issue has particular resonance at this time due to the widespread flooding suffered by the north of England, including York and areas of North Yorkshire, and the potential risk to water supplies and residents if fracking were to be allowed in these areas."	**Lack of Technical Understanding:** Hydraulic fracturing operations 7,000 to 10,000 feet below the surface would not create a potential risk to water supplies at any time, including times of local flooding.

"Insufficient well-casing or barriers at KM7"

"Insufficient well-casing or barriers at KM7"	**Incorrect:** The KM7 well was constructed with two barriers, both internal and external, in-line with UK regulations. The 2012 correspondence did not relate to the well-casing at KM7.
"In 2012 The (sic) HSE were again critical of Third Energy, this time at their KM7 well site in Kirby Misperton. At the time Third Energy wanted to re-stimulate an existing well to produce gas."	**Incorrect:** As explained, the dialogue between the HSE and Third Energy is typical of how a well regulated industry works, with open and objective discussions amongst qualified technical specialists. The operation proposed by Third Energy had been assessed using a risk based approach. However, the HSE requested the inclusion of an additional safety barrier in the unlikely event that the wellhead was damaged through external events. After some good discussions with the HSE, the situation was resolved to the satisfaction of both parties.

"An email from the HSE on the 16th November 2012 highlighted the serious problems with the current proposals stating the following: "I have had a conversation with Viking UK gas (now Third Energy) regarding the proposal to produce from the annulus and advised that the potential of hydrocarbons that are sour and corrosive through the annulus with a single barrier (annulus valve) would not accord with industry best practice or their own policies and procedures". Furthermore I "do not believe that this proposal aligns itself with the ALARP principle"."	**Inaccurate:** There were no "serious problems" with the proposed well operations. It is obvious that the authors – being unfamiliar with well operations - do not understand the purpose and design of the project referred to in the HSE correspondence. Details of the operation and the extremely low risks involved can be explained to the authors face to face if required. The exchange of emails and meetings between the HSE and Operator are a normal part of preparations for well operations, during which there is a notification to the HSE under Regulation 6 of the Boreholes Sites and Operations Regulations 1995. This requires the Operator to notify the HSE 21 days in advance of the operation and for the HSE to make known if it has any concerns or comments on the proposed well operation.
"Following the email exchange, The HSE attended a meeting with the operators in 2012 and highlighted in their power point presentation to the operator that "**more work [is] required to determine risk to life of people outside the fence**.""	**Inaccurate:** The single power point slide was prepared by the Operator as a record of "Meeting Actions agreed" after the meeting to discuss the proposed well operations on 26 November 2012. During discussion the HSE requested, as one of the agreed actions, some additional gas dispersion modelling to quantify the risks to people outside of Third Energy's well site. This was conducted by Third Energy to the satisfaction of the HSE.
"Eventually Third Energy relented and proceed (sic) in-line with the HSE requirements. However, this clearly demonstrates an operator who was willing to ignore 'good practice' industry guidelines despite the risk it posed to life 'outside the fence'."	**Incorrect:** The statement is incorrect. Third Energy "did not relent". In fact their proposed scheme was implemented with a modification. Third Energy resolved the issue of the secondary barrier by proposing the use of an additional surface safety valve which completely satisfied the requirements of the HSE. This highlights the importance of dialogue between Operator and Regulators. This example demonstrates the rigour of both the HSE and the Operator in ensuring the protection of the public, as well as its own workforce, when planning well operations. Third energy has a robust and complete well integrity standard which has been independently audited and provides life cycle well integrity.

Appendix 1: Pipeline Management Contractor Workscope

Third Energy has contracted Penspen (formally Greystar) as its Pipeline Management Contractor. Their workscope (below) is an excerpt from the company Pipeline Management System (PMS):

"*The role of the Pipeline Management Contractor is therefore:*

- *To carry out inspection and maintenance of the buried pipeline and above ground pipe work, the CP system, and visual inspection of the pig receiver, pig alerts, valves, actuators and accumulators, and the telemetry system, in accordance with the inspection and maintenance procedures.*
- *To liaise with the aerial survey contractor and receive and review the results of the aerial surveys when instructed by Third Energy UK Gas.*
- *To liaise with the contractor responsible for the removal, weighing, assessment and replacement of the corrosion coupons and to receive and review the results of the assessment when instructed by Third Energy UK Gas.*
- *To liaise with the operation personnel responsible for the inspection and functional testing of the SCADA System and associated Pipeline Integrity and Emergency Shutdown Systems and to receive and review the results of the inspection and functional testing when instructed by Third Energy UK Gas.*
- *To liaise with the control room personnel with regard to the operational (pressure, flow, temperature, water, H_2S, CO_2 etc.) parameters and to receive and review the data.*
- *To liaise with the PSSR Independent Competent Person in accordance with the Pressure Systems Safety Regulations, No 128, 2000 and to receive and review the reports made by him when instructed by Third Energy UK Gas.*
- *To perform the line walk.*
- *To liaise with the landowners, tenants and occupiers along the pipeline routes and maintain a register of owners, tenants and occupiers.*
- *To liaise with the Local Planning Authorities with respect to applications for planning permission for developments in the vicinity of the pipelines.*
- *To liaise with the local utilities that have equipment within the pipeline easements and to maintain a register of such utilities and the relevant contact details.*
- *To mark out the position of the pipelines for any relevant authority, company or occupier.*
- *To establish and maintain a Document Management System in accordance with Section 18.*
- *To maintain a record all inspection results and maintenance activities (including the activities and results of the aerial survey, corrosion coupon, operations and control room personnel) in accordance with the inspection and maintenance procedures.*
- *To prepare a report of any incident involving the PMC's personnel or activities associated with the Knapton Gas Generating Station Pipeline System.*
- *To provide a 24 hour emergency response system capable of dealing with suspected and actual damage to the pipeline system including liquids leaks and gas releases as described in the Knapton Generating Station Emergency Procedures*[20].
- *To organise and carry out emergency response exercises as detailed in Section 11.*
- *To prepare a report at the end of every month and submit it to the O&M Supervisor, advising on:*
    - *All inspection and maintenance activities performed during that month.*
    - *The impact of all inspection and maintenance activities and the results obtained from these activities on the ongoing fitness for purpose and safety of the pipeline system.*
    - *The need for any repairs or modifications to the pipeline system necessary to correct any defects in the pipeline system.*
    - *The need for any modifications to the inspection and maintenance procedures or to the Pipeline Integrity Manual so as to ensure the ongoing fitness for purpose of the pipeline system.*
- *To carry out any remedial work on the system as directed by the O&M Supervisor.*
- *Prepare and present an annual "Technical Integrity Assessment" statement to the O&M Supervisor, based upon the operational, inspection, maintenance and remediation activities performed during the previous year."*