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National Grid Transco
Gas shippers
UKOOA
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Direct Dial: 020 7901 7430
Email: steve.smith@ofgem.gov.uk

20 September 2004

Dear Colleague

Establishing a gas quality Review Group

Summary

The UK will become progressively more reliant on imported sources of gas as domestic production from the UK continental shelf (UKCS) declines. In 2002, around 95% of the gas used in the UK came from the UK gas production. However, from 2006, the UK is forecast to become a net importer of gas and by 2020 some forecasts suggest that 90% of UK gas demand could be met by imports.

Historically the quality of gas produced on the UKCS has differed from the gas produced in continental Europe. As a result of this, and the GB's adoption of the Gas Safety (Management) Regulations (GS(M)R) in 1996, the UK has a different gas quality specification than the rest of continental Europe, and for some gas quality parameters a narrower range of limits. It appears likely that much of the imported gas will have quality specifications that are not within the UK's limits.

While gas quality is not a new issue – gas from the Morecambe fields for example, needs to be blended before it is allowed to enter Transco's network to ensure compliance with the GS(M)R 1996¹ – greater reliance on imports means that identifying and resolving issues associated with gas quality are becoming more urgent.

In the light of these developments, the Department of Trade and Industry (DTI), Ofgem, the Health and Safety Executive (HSE), and the Department of Environment Food and Rural Affairs (DEFRA) are carrying out a three-phase joint study on future gas quality issues. The DTI/Ofgem/HSE/DEFRA study covers all aspects of gas quality issues relating to new gas sources.

¹ See modification proposal 0459 'Rebalancing System Entry Charges with respect to Barrow and St Fergus System Entry Points'.

Ofgem, given our statutory duties, must be satisfied that the current (and any future arrangements) relating to gas quality are consistent with the regulatory framework and the duties and obligations placed on Transco and other licensed companies. In particular, Ofgem needs to be satisfied that any charging arrangements (or the absence of charges) relating to gas quality when delivering gas to (or taking it from) Transco's National Transmission System (NTS) are cost-reflective and do not give rise to any undue discrimination.

The current arrangements relating to gas quality at both entry to and exit from Transco's system have evolved over time. Most of the arrangements pre-date the introduction of competition to the gas market and the introduction of Transco's network code. Different gas quality entry specifications apply at different terminals, for example. In recent months, there have been proposals made, and approved by Ofgem, to facilitate modification of the gas quality specifications at a number of entry terminals where gas (from both the UKCS and Norway) is brought on to the UK gas transmission system.

Given all of the above, Ofgem and Transco have agreed that it is appropriate to set up a Network Code Review Group to assess the current gas quality arrangements in place on Transco's NTS, to consider whether the current arrangements will remain appropriate in the future and, if necessary, to develop and propose amendments to the current arrangements consistent with the existing regulatory framework.

Background

The Gas Transporters (GT) licence authorises Transco plc to convey gas through pipes. In this role, Transco is obliged to act in accordance with both its statutory duties under the Gas Act 1986 and with the requirements stipulated in its GT licence. The legal and regulatory framework associated with the current gas quality arrangements, including a number of obligations which Transco is required to comply with, are outlined in Annex 1. The current gas quality arrangements at entry and exit are outlined in Annex 2 along with information concerning recent developments in relation to these arrangements. Potential issues associated with the existing arrangements and recent developments in the context of the legal and regulatory framework are outlined in the next section.

Issues

Cost reflectivity at entry points

The issue

Transco has a duty to avoid undue preference or discrimination in the terms offered to shippers that use its system. As a general principle, Transco should, consistent with this duty, charge users similar prices for similar services and be willing to offer similar services to all users who request them. Transco also has a duty to develop its charging methodology against defined criteria, one of which is to ensure that charges for connection to, and use of, the gas transportation system reflect costs, other than services for which charges are determined by auction.

To enable incremental volumes of gas to come on stream, recent changes to gas quality entry specifications have been necessary². This has highlighted the differences that currently exist between the gas quality specifications at the individual sub-terminals. These are set out in a

² Modification proposals 0681 and 0707.

table in Annex 3. Annex 3 shows that there is variation in the quality of the gas that the individual sub-terminals are allowed to flow onto the NTS. The current arrangements have evolved over time. It does not appear that any systematic analysis has been carried out by Transco to assess whether offering differing gas quality entry specifications at different entry points leads to different costs being incurred by Transco in offering the services.

Ofgem is publishing the table in Annex 3 using its powers of information disclosure under section 35 of the Gas Act. An explanation of the powers available to Ofgem under this section is given in Annex 2.

Issues to consider

- ◆ Do Transco's arrangements give rise to identifiable costs directly associated with the different gas quality specifications and are any identified costs properly reflected in Transco's charging arrangements?
- ◆ Can the current arrangements be sustained in future and also to assess the consistency of the current specifications and the associated charging methodologies with the current regulatory framework?
- ◆ Should further flexibility be introduced into the current arrangements – for example should Transco offer greater flexibility at all terminals to take gas with different quality specifications, for example, higher CO₂ content? Greater flexibility could provide significant benefits to customers, competition and security of supply by allowing additional gas to be delivered to the market. Any consideration of this issue should be undertaken in light of the DTI/Ofgem/HSE/DEFRA study in relation to the gas quality arrangements.

Entry terms and conditions

The issue

The terms and conditions by which gas is entered onto Transco's system are set down in one of two ways. First, section I of Transco's network code sets out the requirement for a Network Entry Agreement (NEA), containing the Gas Entry Conditions, to be signed at all entry points. Second, to the extent that such an NEA is not signed, pre network code agreements (so called "legacy agreements"), are left in place. However, the gas quality specifications of those agreements can be changed by obtaining the written consent of all users holding system entry capacity at the relevant aggregate system entry point at the date when the amendment is to take effect, or by way of a modification pursuant to the modification rules of Transco's network code.

Issues to consider

- ◆ Whether there are any differences between the terms and conditions associated with the quality of gas delivered to Transco's system included in Transco's network code, NEAs or legacy agreements. This review should also take into account any generic operating agreements or procedures.
- ◆ Whether any differences between entry points are appropriate.

Exit terms and conditions

The issue

The terms and conditions by which gas is taken off Transco's NTS are set down in its network code. In addition, some large users have network exit agreements (NExAs) supplemental to the network code that specify site specific requirements such as pressure, ramp rates and notice periods. In addition, Transco's network code permits special offtake arrangements to be established which could include gas quality constraints, although this is only applied at the Belgium Interconnector due to its interconnectedness with Europe. Some customers have told Ofgem that they would like Transco to offer more innovative exit services.

Issues to consider

- ◆ What particular services have been offered to individual sites and what services other exit points might like to have that would be considered to meet Transco's licence obligations and what, if any, should be the charging arrangements for these services.
- ◆ Whether any differences in the existing arrangements are appropriate.

Cost reflectivity at exit points

The issue

The Gas (Calculation of Thermal Energy) Regulations allow gas transporters to set up charging zones in which all customers bills are calculated using the assumption that the calorific value (CV) is the same as the flow weighted average (FWA) of all gas entering the zone, subject to a cap. Due to varying gas quality on the system, the FWA arrangements may lead to some customers paying slightly more and some customers slightly less than the actual energy content of gas they consume. The use of the FWA methodology gives rise to CV shrinkage costs, which is the difference between the actual energy delivered to a charging zone and the amount of energy that can be billed to consumers, where the average CV is greater than 1 MJ above the lowest energy content entering the charging zone. Before the FWA CV calculation Transco could either declare fixed CV values or use the lowest CV source, which created large CV shrinkage costs. The FWA calculation is a significant improvement on the previous method, however in the future CV shrinkage costs are likely to increase and therefore new improvements need to be discussed, whether that is establishing more charging areas, have end users site-specific CV measurements and billing or somewhere in between.

Issues to consider

- ◆ How CV shrinkage costs might change as a result of forecast changes in gas flows and gas quality.
- ◆ Whether there are cost-effective alternatives that would allow a more accurate targeting of CV costs, particularly technological improvements in CV measurement and energy metering that could lead to lower measurement costs.
- ◆ Whether the cost benefit analysis behind the decision to move to FWA CV calculations remains appropriate in the light of the analysis outlined above and then consider whether any changes need to be made to the FWA arrangements including the Gas (Calculation of Thermal Energy) Regulations 1996 (as amended).

Proposed way forward

Given the impending change in flows across the UK system, Ofgem considers now is the time for the current gas quality arrangements to be the subject of further, and more substantive, industry and customer review. Transco has therefore suggested setting up a Network Code Review Group to consider these issues and, where appropriate, develop and bringing forward proposals to change the current arrangements.

Given the importance of these issues, Ofgem would like to see this Network Code Review Group initiated in October 2004 and for the group to report to workstream on a regular basis for the following 4 months. The Network Code Review Group should set out the initial findings in its workstream reports and indicate if there is the need for reform. If the group identifies areas that need to be reformed, Ofgem would like proposals to be developed over the following 9 months if feasible. Given the scope of the work is relatively extensive, it is for the Network Code Review Group to finalise and prioritise the Terms of Reference and the time scales necessary for it to discuss the potential need for change to the current regulations. In terms of priority, Ofgem considers that, given the recent modification proposals proposing changes to the entry specifications, the issues highlighted relating to gas quality at entry represent an appropriate starting point for the Network Code Review Group.

Ofgem also considers it is important that any proposals identified by the group to amend the current gas quality arrangements should consider and be informed by the progress and outcome of the DTI/HSE/Ofgem/DEFRA three phased gas quality project which will run in parallel with this workgroup. The three phased gas quality study is looking at potential changes to GS(M)R and non GS(M)R gas quality specifications in the light of new sources of gas and, therefore, it is not Ofgem's intention for the Review Group to discuss changing any of the gas quality specifications, but to align the existing entry specifications within the current gas quality specifications. The DTI will be initiating a public consultation in due course to discuss potential gas quality changes.

Ofgem is aware that this is a wide ranging and ambitious work programme. However, the impending move to gas imports, as well as being prepared for the outcome of the DTI's gas quality study suggests that the time is right to commence this work. Clearly, Ofgem hopes that the Network Code Review Group, chaired by Transco (and attended by Ofgem), will be able to identify the need for any reform of the existing arrangements and to develop workable solutions where a need for reform is identified.

If the Network Code Review Group is not able to reach a workable consensus, then Ofgem would need to initiate its own review process given the pressing nature of many of the issues. This review could lead us to conclude that the Authority would have to exercise its rights to set gas quality standards.

If you have any queries in relation to the issues raised in this letter, please feel free to contact Simon Bradbury on 020 7901 7249 or Fiona Lewis on 020 7901 7436.

Yours sincerely

A handwritten signature in black ink, consisting of several overlapping, fluid loops and strokes, positioned above the printed name.

Steve Smith
Managing Director, Markets

Annex 1

Legal and regulatory framework

This annex provides a short summary of relevant legislation relating to gas quality and to Ofgem's powers to disclose information.

Gas Safety (Management) Regulations

The Gas Safety (Management) Regulations (GS(M)R), which are part of health and safety legislation, sets the legal gas quality specifications that a gas transporter must ensure is complied with for all gas it conveys. These parameters are set to ensure the safe utilisation of gas in domestic households. All gas entering Transco's system, as defined in its Safety Case must comply with these regulations although Transco with the HSE's approval can nominate blending points on the network which gives Transco the flexibility to manage gas quality excursions. GS(M)R specifications apply downstream of these nominated blending points. A table summarising the GS(M)R parameters is set out in Annex 3.

Ofgem's statutory duty with regards to gas quality

The principal objective of the Authority is to protect the interests of consumers. Under section 4AA (1) of the Gas Act 1986, "the Authority may with the consent of the Secretary of State, prescribe standards of pressure and purity to be complied with by gas transporters in conveying gas to premises or to pipe-line systems operated by other gas transporters".

Under section 16 of the Gas Act, the Authority may set standards of pressure and purity for the conveyance of gas. In addition, the Authority may set other standards with respect to the properties, condition and composition of gas.

Section 35 Gas Act 1986

Ofgem has the ability to publish information under section 35 Gas Act 1986 in such manner as the Authority sees fit provided that:

- i. it appears to the Authority that publication would "promote the interests of consumers in relation to gas conveyed through pipes";
- ii. Ofgem consults any individual or body of persons to which the information in question relates;
- iii. Ofgem has regard to the need for excluding, so far as practicable, any matter relating to the affairs of a particular individual or body of persons where publication would or might, in the opinion of the Authority, "seriously and prejudicially affect the interests" of that individual or body.

It should be noted that section 105(8) of the Utilities Act 2000 expressly provides that the section 105(1) Utilities Act 2000 exclusion on disclosure does not apply to matters to be published under section 35 of the Gas Act 1986.

Transco's obligations

- ◆ Section 9 (2)(b) of the Gas Act 1986 requires Transco to "comply, so far as it is economical to do so, with any reasonable request for him to connect to [the] system, and convey gas by means of that system to, any premises. In doing so, Transco must

“avoid any undue preference or undue discrimination ... in the terms on which he undertakes the conveyance of gas...”

- ◆ Standard Condition 4D of the Gas Transporter (GT) licence states that “the licensee shall conduct its transportation business in the manner best calculated to secure that neither –
 - the licensee or any affiliate or related undertaking of the licensee, nor
 - any gas shipper or gas supplier,obtains any unfair commercial advantage including, in particular, any such advantage from a preferential or discriminatory arrangement.”
- ◆ Standard Condition 9 of the GT licence requires Transco to facilitate the achievement of the following objectives:-
 - (a) the efficient and economic operation by the licensee of its pipeline system;
 - (b) securing effective competition between relevant suppliers.
- ◆ Standard Condition 41 requires Transco to “...procure that the transportation business shall not give any cross-subsidy to, or receive any cross-subsidy from, any other business of the licensee or of an affiliate or related undertaking of the licensee”.

Transco's network code

In 1996, Transco's network code came into force. It is an agreement between Transco and shippers covering the use of Transco's gas network. Under section I of Transco's network code, any changes to the Network Entry Provisions (NEPs), which include, gas entry conditions, measurement provisions and the point or points of delivery, need the written consent of all users who are registered at such a date when the amendment is to take effect or for a modification proposal to be raised for consideration by Ofgem.

Annex 2

Current arrangements

Entry arrangements

Gas from each producing field has its own distinctive gas quality specifications. However, gas accepted into Transco's network must generally be compliant with the specifications contained in the GS(M)R. Transco can and does apply differing entry specifications but ensures that gas delivered to customers remains within GS(M)R. Some of the sub-terminals, where gas is delivered onto the NTS, have Network Entry Agreements (NEAs) in place containing the Network Entry Provisions (NEPs) which contain the gas quality specifications. NEAs are subsidiary documents governed by Transco's network code. However, at some of the sub-terminals, these specifications are contained in 'legacy contracts' that pre-date the introduction of the Network Code in 1996. These legacy agreements were signed primarily by British Gas and the relevant producers at the entry points, prior to the introduction of Transco's network code.

While the legacy agreements are not directly regulated by Ofgem, the gas quality specifications contained in these agreements are referenced in Transco's network code and are therefore subject to modification proposals in the normal way. That is, under section I of Transco's network code, any changes to the NEPs (which include gas entry conditions, measurement provisions and the point or points of delivery) need the written consent of all users who are registered at such a date when the amendment is to take effect or it is necessary to raise a modification proposal. Any change to the gas quality specifications falls under the Network Entry Provisions section and therefore, Ofgem has the power to approve amendments to the NEAs and in particular the changes to the gas quality specifications.

The table in Annex 3 shows the different gas quality specifications at each of the individual sub-terminals as well as the current GS(M)R specifications.

The Gas Act 1986 requires that any persons conveying gas through pipes to any premises or to a pipeline operated by a gas transporter is required to have a GT licence. While the Gas Act also applies to entry terminals, the Gas Act 1986 grants automatic exemptions to entry terminals from having to hold a GT licence. As a condition of holding a GT exemption, the exempted terminal operator must comply with any direction given by the Secretary of State (after consulting Ofgem, the Health and Safety Executive (HSE) and Transco) to supply information to the relevant transporter concerning the operation of the pipeline in relation to the volume and/or calorific value of gas to be transported the following day.

Exit arrangements

The Gas (Calculation of Thermal Energy) Regulations allow gas transporters to set up charging zones in which all customers bills are calculated using the assumption that the calorific value (CV) is the same as the flow weighted average (FWA) of all gas entering the zone, subject to a cap. Currently Transco's system is divided up into 13 Local Distribution Zone (LDZ) charging zones, however, Transco has 18 commercial areas that it declares as CV shrinkage billing zones. Some of these charging zones receive gas from a single Transco reception terminal, for example Scotland, and other charging zones receive commingled flows from different sources, for example the East Midlands. Gas entering into these charging zones is metered to a good degree of accuracy at each entry point to a charging area and shippers pay for gas measured at these meters.

The energy content of the gas that is delivered to customers, however, is currently determined using the FWA arrangements. The use of averaging under the FWA system may lead to some customers paying slightly more and some customers slightly less than the actual energy content of gas they consume. At the time that the arrangements were put in place, the benefits in terms of lower costs and complexity of administering the FWA arrangements were judged to outweigh any costs to customers through less accurate measurement of actual energy consumed. The use of the FWA methodology gives rise to CV shrinkage costs where the average CV is greater than 1 MJ above the lowest energy content entering the charging zone.

Recent developments

DTI/DEFRA/Ofgem/HSE Study

The Government committed in the Energy White Paper (February 2003) to "...keep developments here closely under review. In particular we will monitor the likely effects on gas quality."³ Subsequently, the DTI announced the launch of a three phase gas quality exercise. This is a joint study between the DTI, Ofgem, HSE and DEFRA.

This study assesses the gas quality implications for the UK as it becomes import-dependent going forward. In phase one, a study was commissioned from Ilex Energy Consulting Ltd⁴. This study concluded that the UK's ability to meet gas demand could be impaired by the mismatch between the national gas specification requirements and the likely quality of gas that could be imported. This finding launched phase two of the study, which is exploring the different policy options available to the UK. Phase two has been divided into two parts. The first part was the planning and preparation phase. Advantica was awarded the contracts to address the two high level policy options: change the GS(M)R or to leave the GS(M)R unchanged. The second part of phase two will involve a public consultation. Phase three will implement the preferred policy option, likely to be decided upon by mid next year. The policy option will be a choice between retaining the current gas quality specifications, or changing the current specifications to more closely reflect the expected quality of future gas supply. There may be some scope for making no immediate change but implementing transitional measures that would ensure the UK would have the necessary flexibility to introduce, at a later date, changes to the gas quality specifications, perhaps towards the end of the next decade.⁵

Ormen Lange gas

The Norwegian Gas Transporter has been involved in discussions with the DTI, Transco and Ofgem about changes to gas quality specifications that may be necessary to import gas from the Ormen Lange field to the UK. The discussions are currently underway as to what gas quality specifications would lead to the maximum amount of gas that can operationally enter into the UK via the Ormen Lange pipeline. Changing the CO₂ limit on Transco's system to 2.5% could help to increase the maximum amount of gas from Norway that could enter the UK.

Ofgem and the DTI are also monitoring gas quality developments that are occurring in Continental Europe. These developments are mainly focusing on the work being achieved by EASEE (European Association for the Streamlining of Energy Exchange)-gas, which comprises of representatives of gas transporters and other interested parties from Europe, working to agree on common gas quality standards to aid the harmonisation of the gas markets in Europe. However,

³ Energy White Paper; Our energy future creating a low carbon economy, DTI, February 2003

⁴ A copy of this report can be found on the DTI website.

⁵ For more information and Stephen Timms' speech see www.publication.parliament.uk

the results of this forum are voluntary and therefore member states cannot currently be forced by EASEE-gas to adopt the standards.

Network Code Modification Proposals

Network code modification proposal 0681⁶ raised the profile of gas quality in a wider context. This modification proposal sought to change some of the gas quality parameters currently in place at ConocoPhillips sub-terminal at Theddlethorpe. These parameters included extending the current Wobbe range from 48.3 – 51.3 MJ/m³ to 47.36 – 51.41 MJ/m³, increasing the lower limit of CV for the gas from 36.9 MJ/m³ to 37.3 MJ/m³, aligning hydrogen, soot index and incomplete combustion with the GS(M)R limit. Ofgem accepted modification proposal 0681 on 16 July 2004 after assessing that there was no increase in any real costs associated directly with the change in the gas quality entry specifications proposed.

On 12 July 2004, Total Gas and Power raised modification proposal 0707⁷ which Ofgem granted urgent status to. This modification proposal aims to increase the upper limit of the Wobbe number at Total E&P's sub-terminal from 51 MJ/m³ to 51.41 MJ/m³. This proposal was approved on 13 August 2004.

⁶ Modification proposal 0681: "Amendment of Network Entry Provisions at ConocoPhillips sub terminal at Theddlethorpe".

⁷ Modification proposal 0707: "Amendment of Network Entry Provisions at Total E&P UK sub-terminal at St Fergus".

Annex 3

Gas Quality Specifications at the individual sub-terminals⁸

System Entry Point	Legacy ⁹	GCV lower (MJ/m ³)	GCV upper (MJ/m ³)	WN lower (MJ/m ³)	WN upper (MJ/m ³)	SI	ICF	H ₂ S (ppm vol)	HCDP (°C)	WDP (°C)	S (ppm vol)	O ₂ (mol%)	H ₂ (mol%)	CO ₂ (mol%)	N ₂ (mol%)	Total Inerts (mol%)
GS(M)R				47.2	51.41	0.6	0.48	5mg/m ³	Not a specific value	Not a specific value	50mg/m ³ (Note 1)	0.2	0.1			
Ten Year Statement		36.9	42.3	47.2	51.41	0.6	0.48	5mg/m ³	- 2 at any pressure up to 85 barg	- 10 at 85 barg	50mg/m ³	0.001	0.1	2	5	7
Bacton Perenco	Yes	Not specified	40.6	47.3	52.3	Not Specified	Not Specified	3.3	Seasonal	Seasonal	35	0.1	Not Specified	2	Not Specified	Not Specified
Bacton-Zeebrugge Interconnector		36.8	42.2	48.2	51.1	0.6	0.48	3.3	-2	-10	15	0.1	0.1	2	5	7
Bacton Tullow/Petrofac	Yes	36.8	40.6	47.3	52.3	Not Specified	Not Specified	5 mg/m ³	Seasonal	Seasonal	50 mg/m ³	0.1	Not Specified	2	Not Specified	Not Specified
Bacton Seal		36.9	42.3	48.1	51.4	0.6	0.48	3.3	-2	-10	15	0.001	0.1	2	5	7
Bacton Shell	Yes	36.9	42.3	48.3	51.3	Not Specified	Not Specified	3.3	-1	-9	15	0.001	Not Specified	2	Not Specified	Not Specified
Barrow HRL (North)	Yes	36.9	42.3	48.2	51.2	Not Specified	Not Specified	3.3	-2	-10	15	0.001	Not Specified	2	Not Specified	Not Specified
Barrow HRL (South)	Yes	36.1	42.3	45.8	51.2	Not Specified	Not Specified	3.3	-2	-10	15	0.1	Not Specified	2	Not Specified	Not Specified
Burton Point Powergen		36.9	42.3	48.2	51.4	0.6	0.48	3.3	-2	-10	35	0.001	Not Specified	4	7	7
Easington BP Dimlington	Yes	36.87	42.25	48.2	51.2	Not Specified	Not Specified	3.3	-2	-10	35	0.1	Not Specified	2	Not Specified	Not Specified
Easington BP West Sole	Yes	36.87	42.25	48.2	51.2	Not Specified	Not Specified	3.3	Seasonal	Seasonal	35	0.1	Not Specified	2	Not Specified	Not Specified

⁸ The table presents Gas Entry Conditions in the NEA/legacy arrangements, with potential further constraints being imposed by GS(M)R.

⁹ Transco were not party to the legacy agreements, these agreements were pre network code.

System Entry Point	Legacy ⁹	GCV lower (MJ/m ³)	GCV upper (MJ/m ³)	WN lower (MJ/m ³)	WN upper (MJ/m ³)	SI	ICF	H ₂ S (ppm vol)	HCDP (°C)	WDP (°C)	S (ppm vol)	O ₂ (mol%)	H ₂ (mol%)	CO ₂ (mol%)	N ₂ (mol%)	Total Inerts (mol%)
GS(M)R				47.2	51.41	0.6	0.48	5mg/m ³	Not a specific value	Not a specific value	50mg/m ³ (Note 1)	0.2	0.1			
Ten Year Statement		36.9	42.3	47.2	51.41	0.6	0.48	5mg/m ³	- 2 at any pressure up to 85 barg	- 10 at 85 barg	50mg/m ³	0.001	0.1	2	5	7
Easington Dynege Amethyst	Yes	36.9	42.2	48.2	51.2	Not Specified	Not Specified	3.3	-2	-9	35	0.1	Not Specified	2	Not Specified	Not Specified
St Fergus Mobil	Yes	36.9	41.9	48.2	51	Not Specified	Not Specified	3.3	-2	-10	15	0.001	Not Specified	4	Not Specified	Not Specified
St Fergus Shell	Yes	36.9	42.3	48.2	51.2	Not Specified	Not Specified	3.3	-2	-10	35	0.1	Not Specified	2	Not Specified	Not Specified
St Fergus Total	Yes	36.9	41.9	48.2	51.41	Not Specified	Not Specified	3.3	-2	-17@ 41 bar	15	0.001	Not Specified	4	Not Specified	Not Specified
Teesside BP		36.9	42.3	48.14	51.41	0.6	0.48	3.3	-2	-10	15	0.001	0.1	2.9	5	7
Teesside Px		38	42.3	48.2	51.4	0.6	0.48	3.3	-2	-10	15	0.001	0.1	2.9	5	7
Theddlethorpe ConocoPhillips	Yes	37.3	42.3	47.36	51.41	0.6	0.48	3.3	-2	-10	35	0.1	0.1	2	Not Specified	Not Specified
Hole House Farm		36.9	42.3	48.14	51.41	0.6	0.48	5 mg/m ³	-2	-10	50 mg/m ³	0.2	0.1	2	5	7
Rough		36.9	42.3	48.14	51.41	0.6	0.48	5 mg/m ³	-2	-10	50 mg/m ³	0.2	0.1	2	5	7
Hatfield Moor		36.9	42.3	48.14	51.41	0.6	0.48	5 mg/m ³	-2	-10	50 mg/m ³	0.2	0.1	2	5	7
Hornsea		36.9	42.3	48.14	51.41	0.6	0.48	5 mg/m ³	-2	-10	50 mg/m ³	0.2	0.1	2	5	7