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The Joint Office, Relevant Gas Transporters and other interested parties

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Dear Colleague

**Uniform Network code modification 049 "Optional limits for inert gases at System Entry Points"**

Ofgem[1] has considered the issues raised in the modification report, the responses to the draft modification report and the responses to Ofgem's Impact Assessment (IA) in respect of Uniform Network Code (UNC) modification proposal 049 "Optional limits for inert gases at System Entry Points" and, having regard to the principal objective and statutory duties of the Authority[2], has decided to direct the relevant gas transporters to implement modification proposal 049 because Ofgem considers that the proposal will better facilitate the achievement of the relevant objectives of the UNC under Standard Special Condition A11 of the relevant gas transporters' (GT) licences. Ofgem also considers that this decision would be consistent with its wider statutory duties.

The background to this proposal is outlined in the IA[3]. This letter outlines the modification proposal, summarises the respondents' views to the modification report and to Ofgem's IA (a summary of the IA responses is contained in the Appendix) and gives reasons for Ofgem's decision.

[1] Ofgem is the Office of the Gas and Electricity Markets Authority. The terms 'Ofgem' and the 'Authority' are used interchangeably in this letter.
[2] Set out in Section 4AA of the Gas Act 1986, as amended.
[3] The IA ("Modification proposal 049 "Optional Limits for Inert Gases at System Entry Points, Impact Assessment", Ofgem, November 2005) can be found on Ofgem's website at: http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/12849_243_05.pdf?wtfrom=/ofgem/whats-new/archive.jsp



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## The modification proposal

UNC modification proposal 049 was raised by National Grid National Transmission System (NG NTS) on 7 September 2005. It seeks to amend the UNC to allow the inert gas limits at sub-terminals to be revised as outlined below following agreement between the relevant Delivery Facility Operator (DFO) and the Transporter without the need to raise a further modification proposal. Specifically, the proposal would enable the limit for carbon dioxide to be increased from 2.0% to 2.5% and the current direct limits for nitrogen to be removed.[4,5] These limits are consistent with the inert gas limits that EASEE-gas (European Association for Streamlining of Energy Exchange) has recommended in its draft document Common Business Practice (CBP) for "Harmonisation of Natural Gas Quality"[6].

## Respondents' views

This section is intended to summarise the principal themes of the respondents' views and is not intended to provide a comprehensive overview of the responses received[7].

22 responses to the draft modification report were received in relation to UNC modification proposal 049, of which three were confidential. Of the non confidential responses, nine respondents expressed support for the proposal, five expressed varying degrees of qualified support, three offered comments and two objected to the proposal.

*Respondents for the proposal*

The majority of respondents, including those who expressed qualified support, agreed with the proposer that the modification proposal would improve the security of Great Britain's (GB) gas supply by making it possible to import gas from more diverse sources, and reduce the possibility of supply interruption due to gas violating the current GB specifications. One respondent noted that the current arrangements could lead to an interruption of supply from the Langeled pipeline under certain circumstances, and this would undermine security of supply. This respondent also considered that a similar issue could occur at the Bacton-Zeebrugge interconnector. Several respondents considered that the modification proposal would allow more diverse sources from Europe which could be imported into the GB market. Some of these respondents also stated that the ability for GB to meet EASEE-gas specifications would boost security of supply. Another respondent considered that it would be beneficial for the GB market to align its carbon dioxide specification with the one in place in Norway.

A significant number of respondents, including those respondents who expressed qualified support for the proposal, agreed with the proposer that the modification proposal would increase the level of competition in the GB gas market by allowing additional gas supplies to be made available to the GB market. One respondent considered that gas field depletion would be

[4] The Wobbe specification, among others, would continue to place indirect limits on the fraction of inert gases allowed. The Wobbe index is related to calorific value (CV) and density. The Gas Safety (Management) Regulations (GS(M)R) range for the Wobbe number is 47.2 MJ/m$^3$-51.41 MJ/m$^3$.

[5] All percentages are mole % unless otherwise stated.

[6] This can be found on at www.easee-gas.org

[7] Respondents' views can be found on the Gas Transporters Information Service (formerly known as Nemisys) https://gtis.gasgovernance.com



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optimised by this modification proposal, which again would lead to more gas and competition in the wholesale gas market.

Several respondents in favour of implementation of the proposal welcomed the possible preservation of the ability of 'legacy' terminals to continue to apply higher inert gases and carbon dioxide limits than those proposed. These respondents expressed their support for the non-mandatory nature of the proposal.

One respondent offering support for the proposal considered that if a DFO was to take advantage of the new specification, shippers should be informed. This respondent also considered that it would be beneficial to highlight the current Network Entry Provisions (NEPs) prevailing at each sub terminal in order to allow sites close to entry terminal to undertake a more rigorous impact assessment.

*Respondents against or raising objections to the proposal*

*Quantification*

Several of the respondents offering qualified support and those not supporting implementation of the modification proposal were concerned that there was inadequate quantification supporting the proposed changes. Respondents were of the view that the proposal failed to describe the amount of incremental gas which could be made available to the market and the effect of the proposed changes on security of supply. Further, these respondents were concerned that the proposal did not quantify the inert gas levels that some customers could expect and at which locations on the NTS such levels could occur.

One respondent noted that it was unclear if the increased limit for carbon dioxide would result in increased carbon dioxide production from a relatively small number of fields, or whether all gas fields could be expected to increase carbon dioxide production.

Several respondents considered that the proposal did not provide sufficient information to quantify the effects on the environment and safety. Two respondents were concerned by the possible increases in levels of nitrous oxides (NOx) emissions resulting from higher levels of nitrogen, increased carbon dioxide emissions, possible increases in corrosion resulting from higher carbon dioxide levels (especially in gas storage sites that must cycle wet gas), and possible changes in the Lower Explosive Limit (LEL) used to determine the layout of processing plant.

*Costs*

Several respondents expressed concern that higher levels of carbon dioxide would increase the cost of carbon emissions. Respondents generally expressed frustration at being unable to quantify these effects due to lack of information. One respondent tried to calculate the effect of a 1% increase in carbon dioxide on its business. The respondent's initial analysis suggested that the increase in costs would be material.

Several respondents queried whether higher commodity and/or capacity charges would result from transporting larger amounts of inert gas around the NTS. One respondent noted that the change in the composition of the gas which would result from the proposal would affect



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compression costs. With regard to the manufacture of liquefied natural gas (LNG), one respondent estimated that increased levels of nitrogen could result in increases in capital costs of around £5 million, and more modest increases in operating costs. Another respondent who offered qualified support was concerned with the unlimited nitrogen level. This respondent considered that if nitrogen content in the gas increased significantly, it could affect the declared calorific value (CV) of the network and the required amount of flat and flex capacity, which might need to be dealt with in future price controls.

Several respondents also raised concerns that the proposed changes could increase operating costs or adversely affect or restrict the output of processes which used natural gas as feed stock. Two respondents in particular raised strong objections with respect to this issue. One respondent claimed that an increase in the percentage of inert gases could cost the chemical industry tens of millions of pounds a year. This respondent implied that some chemical processes are constrained by the volume of feedstock gas that can be accepted, and that a lower energy content of gas feedstock gas would therefore lower the maximum capacity of the plant. One respondent who offered qualified support was concerned with the unknown cost of this modification proposal and stated that it was cautious of the proposal. However, this respondent considered that it would be willing to be persuaded by experts if they considered that technical issues were not a problem.

*Process*

Several respondents noted that they understood the DTI's gas quality work was the main instrument through which a common standard between GB and the continent would be achieved. Respondents expressed confusion as to why the proposal needed to be executed on a time scale that was so short relative to the DTI's investigation, and why the modification proposal could not wait for the results of the DTI's work. A number of respondents failed to understand why NG NTS requested a November 2005 implementation date.

*Other*

One respondent was concerned that the proposed change in gas composition could potentially affect a number of industrial and mechanical processes, including large gas turbines and gas engines, and natural gas fuelled vehicles. The respondent called for further investigation into these issues, again noting that such investigation was not possible with the existing level of information supplied.

A number of respondents wondered why the proposal presumed compliance with EASEE-gas's draft standard was necessary, when the DTI had not reached this conclusion, and the standard had not been finalised and was not binding. There were also concerns that EASEE-gas had not consulted adequately with consumers and its draft standard may conflict with the Gas Safety (Management) Regulations (GS(M)R).

One respondent considered there was a need to explore alternatives to the proposal including the possibility to blend gas at terminals to overcome gas specification problems, and the possibility of upstream processing.



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**Panel recommendation**

At the Modification Panel meeting held on 20 October, of the 9 voting members present, capable of casting 10 votes, 8 votes were cast in favour of implementing this modification proposal. Therefore, the Panel recommended implementation of this modification proposal.

**Ofgem's view**

Having considered the views of respondents in relation to the modification proposal and the Impact Assessment (responses to which are summarised in the appendix) and the views of the Panel in relation to the modification proposal, Ofgem considers that, on balance, modification proposal 049 would better facilitate achievement of the relevant code objectives compared to the existing baseline. Ofgem also considers that modification proposal 049 would be consistent with its wider statutory duties.

The reasons for Ofgem's decision in relation to modification proposal 049 are outlined below. Ofgem considers that it is appropriate to assess this proposal against relevant objectives (a) and (d).

*Standard Special Condition A 11 (a) – the efficient and economic operation of the pipe-line system to which this licence relates*

Ofgem notes that the effect of this modification proposal would be to enable the GB system to accept gas with higher levels of carbon dioxide and nitrogen content than currently allowed. This would enable a wider range of potential gas sources, which cannot currently be accessed, to be utilised going forward. Additional sources of gas which could be accessed include gas provided by importers into the GB market and gas from the United Kingdom Continental Shelf (UKCS) whose levels of carbon dioxide and nitrogen may currently restrict its use on the GB system. Therefore, Ofgem expects that this modification proposal will at the margin increase available gas supplies. Other things being equal, an increase in available gas supplies in the market would be expected to lead to a reduction in gas prices, which would enhance NG NTS's ability to operate the system in an economic and efficient manner.

Ofgem additionally considers, as outlined in the IA, that the availability of additional sources of gas would be expected to reduce the extent to which any loss of supply may lead to within-day price spikes and to reduce the scale of any within-day price spikes which do occur. Through removing this risk it should promote the economic and efficient operation of the system by NG NTS in its residual balancing role.

As well as the benefits of this proposal that have been identified in terms of the cost of balancing the system, Ofgem additionally considers that this modification proposal would deliver benefits in terms of security of supply. This is because the availability of additional sources of gas would be expected to reduce the risk of entering a Gas Deficit Emergency. Ofgem recognises that in the event of a Gas Deficit Emergency the NEC can relax gas quality specifications however this proposal should result in a reduction in the likelihood of entering an emergency as a result of supply and demand balancing.



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Therefore, Ofgem considers that this modification proposal better facilitates the achievement of relevant objective (a) - the efficient and economic operation by the licensee of its pipeline system.

*Standard Special Condition A 11 (d) – securing of effective competition between the relevant shippers and suppliers*

The modification proposal would allow new gas sources to flow to GB via a number of different sub terminals, from the importers who wish to take advantage of these specifications and from any producer that wishes to develop and exploit the southern basin carboniferous fields to ensure a more diverse range of supplies would be available to the GB market. All things being equal, Ofgem considers that the modification proposal should facilitate the arrival of new and diverse gas sources that would increase competition between shippers and suppliers.

Therefore, Ofgem considers that this modification proposal better facilitates the achievement of relevant objective (d) - securing effective competition between the relevant shippers and suppliers.

*Wider statutory duties*

*Protecting customers*

In our IA we set out that in addition to the benefits that could be identified for customers in terms of enhancements to the economic and efficient operation of the system and securing effective competition there were important costs that needed to be considered as well. In particular we recognised that this modification proposal may lead to additional carbon costs and therefore costs to participants of the European Union Greenhouse Gas Emission Trading Scheme (EU ETS). However, as highlighted in the IA, we consider that the costs associated with the potential environmental impact of the modification proposal, discussed separately below, are greatly outweighed by the benefits of the proposal.

Ofgem notes the concerns raised by respondents in relation to the impact of increased carbon dioxide and nitrogen limits on specific sites, particularly those close to the sub-terminals which may revise these parameters. However, having considered these issues, Ofgem continues to consider overall that the benefits of the modification proposal outweigh any of the costs.

We therefore consider that this proposal is consistent with our primary statutory duty of protecting the interests of customers.

*Security of supply*

As noted above, Ofgem considers that modification proposal 049 would reduce the likelihood of an emergency situation arising relative to the current arrangements. Ofgem therefore also considers that this modification proposal would help to reduce the likelihood of enforced curtailment of some customers.



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*Environmental matters*

As has been noted above and in the IA, Ofgem has carefully considered the potential environmental impacts associated with this modification proposal, in light of its statutory duties and relevant environmental guidance from the Secretary of State. Ofgem considers, as outlined in the IA, that there could be an increase in carbon costs as a result of the implementation of the modification proposal but that any concurrent increase in average carbon emissions is likely to be small and that the expected downward trend in the carbon dioxide content of GB gas will continue, as set out above and in the IA. In addition, the net effect of the modification proposal on carbon emissions on an EU basis is expected to be limited, primarily because of two factors. Firstly, carbon emissions from emitters covered under the EU ETS scheme are capped so if GB sites emitted more carbon, they would need to buy allowances from other sites in Europe which would have to reduce their emissions. Secondly, shippers have advised Ofgem that without modification proposal 049, gas with a range of carbon dioxide between 2.0% and 2.5% would flow to European gas markets, rather than flowing to the GB market. Therefore, the higher carbon dioxide gas will be burnt (and the carbon released) either in continental Europe or the GB market. While Ofgem therefore recognises that there are potential costs in this respect, following careful consideration of these costs against the benefits outlined above, Ofgem considers that, on balance, the advantages of the modification proposal would outweigh these costs.

*Other considerations*

Ofgem notes the concerns raised with respect to the removal of the total level of inerts. Given that in the IA Ofgem assumed that the current 7% nitrogen limit would be sufficient to ballast the richest LNG assumed in the ILEX report back to within the GS(M)R, Ofgem does not consider that as a direct result of this proposal the level of total inerts on the NTS will increase. Ofgem considers that, in future, if this issue materialises, it is for respondents to raise further modification proposals to remedy this issue. In addition, the UNC permits special offtake arrangements, which could be extended to include gas quality constraints. It may be more appropriate for NG NTS to offer more innovative exit services to any customers that consider them to be beneficial.

Ofgem notes the comments made by a number of respondents regarding issues associated with the legacy provisions in place at various sub terminals. Whilst this modification proposal does not address these issues, Ofgem considers further thought and development is needed in relation to the appropriateness of the legacy agreements going forward. The modification proposal has also raised the issue of the potential costs associated with changing the current gas quality specifications. Therefore Ofgem considers it may be necessary to explore the idea of charging for the provision of gas quality services. However, Ofgem considers that it would be beneficial to commence this work after the publication of the DTI/Ofgem/DEFRA/HSE three phase study consultation document, which should be made public early in the New Year.

**Ofgem's decision**

For the reasons outlined above, Ofgem has decided to accept modification proposal 049.

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



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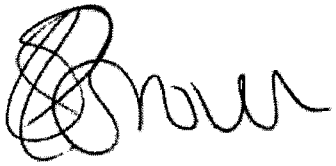
Yours sincerely



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**Appendix 1: Responses to Ofgem's Impact Assessment on UNC modification proposal 049 "Optional Limits for Inert Gases at System Entry Points"**

Ofgem received 21 responses to the IA, one of which was confidential. Of the responses that were not confidential, 17 expressed support for the modification proposal. Some of these respondents expressed some concerns but on balance considered that the proposal should be implemented. Three respondents provided comments but did not provide views either in support of or against the modification proposal.

*Security of supply*

Several of the respondents considered that the main benefit of the proposal was to facilitate new gas sources entering the GB market and hence securing gas supplies especially at peak times. These respondents considered that the proposal would give shippers additional flexibility with respect to gas sources and hence alleviate the forecast supply and demand deficit facing the GB market. A number of these respondents were of the view that the additional supply would exert downward pressure on prices. One respondent acknowledged that allowing additional inerts in the gas supply would potentially increase the Carbon Emission Factors (CEF) for some industry participants. However, this respondent considered that those affected in this respect would be the same people who would benefit the most from a fall in wholesale gas prices. This respondent also considered that allowing additional gas supplies into the GB market would reduce the risk of interrupting customer sites and thus on balance the benefits of the proposal to these customers outweighed the costs. Another respondent considered that, going forward, as GB becomes more reliant on imported sources of gas, a supply interruption would have a significant effect on the market. One respondent agreed with the price assumptions in the IA and stated that if anything they would underestimate the likely effect given the recent price movements.

*Indigenous exploitation potential*

Two respondents noted that this modification proposal would send out positive signals to investors and producers to develop new proven gas fields which contain a higher level of inerts. These respondents considered that allowing these supplies to flow onto the NTS would increase the competition between shippers and suppliers. One respondent drew attention to work that is being undertaken by the UK Offshore Operators Association (UKOOA) examining the gas in the lower Wobbe fields in the South North Sea and indicated that this modification proposal could potentially help these 'stranded reserves'. Another respondent considered that since over 40% of gas is brought in through sub-terminals with carbon dioxide limits greater than 2.5%, the proposed changes were acceptable.

*EASEE-gas*

Several respondents noted that implementing this proposal would ensure that GB's inert specification is consistent with Continental Europe, which would ensure harmonisation across Europe and facilitate transmission of gas.



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*Process*

A number of respondents supporting the proposal were concerned with the time frame associated with this proposal given that the issue was first highlighted in the 2003 Ilex report. These respondents considered that proposals that require more in depth analysis should be raised over a longer time period.

*Carbon costs*

Several respondents agreed with the methodology assumed by Ofgem with respect to the carbon dioxide scenarios. They considered that the estimated carbon costs would be likely to over exaggerate the actual figure. However, a number of respondents considered that this modification proposal would have an impact on some customers, especially those located near the sub terminals. One respondent was of the view that few people would pay for this proposal whilst everyone would benefit. One respondent considered that because Norway has a carbon dioxide specification of 2.5%, it is likely to turn up in GB at 2.5% most of the time because there is no gas to blend it with. However, to counterbalance this, one respondent considered that the average value of carbon dioxide over a year would be almost unchanged since there will only be peaks in carbon dioxide up to 2.5%. This respondent considered that peaks would only occur on a few days each year when offshore blending is unavailable or during periods of maintenance.

Two respondents noted that Ofgem, in its IA, did not give any thorough considerations to carbon dioxide removal plants. One respondent considered that any plant costs could be viewed as insurance against being unable to import certain gas and recovered through transportation charges. This respondent also considered that it had not been persuaded that excursions up to 2.5% would occur infrequently. The other respondent considered that removing carbon dioxide offshore could reduce the environmental impact but expressed concerns that the effect would still need to be assessed as the environmental harm would still be emitted albeit at a different location.

Two respondents considered that large emitters use on-site analysis to derive emissions factors and thus changes in the fuel would translate to the emissions calculations for most of the larger emitters straight away. These respondents considered that it was essential for NG NTS to provide results of the LDZ gas analysis to Government, to ensure any changes could be factored into the EU ETS and inventory reporting.

*Nitrogen*

A number of respondents raised concern with the issue of the impact of increased quantities of nitrogen in gas on customers who use the gas as a feedstock. One respondent was concerned with its acetic acid plant because nitrogen impedes the process. This respondent considered that the removal of nitrogen and other inert gases from the feedstock would require significant capital expenditure. This respondent considered that there was a lack of justification as to why the total inert limit had been completely removed.

Another respondent highlighted the link between the Wobbe index and NOx emissions. This respondent considered that although Ofgem's IA stated that there will be no change in NOx emissions, there was insufficient data to support that.

However, one respondent was of the view that in its experience, the removal of the inert limit would not lead to producers ballasting heavier hydrocarbons gas and therefore this concern would carry very little weight.

*Transportation charges*

One respondent considered that the IA failed to address the impact on CV at peak demand. The respondent was concerned that any changes in CV would have an effect on available capacity particularly in parts of the network where the system is already working at optimum limits and therefore may need to be taken into account in future price controls. This respondent also expressed concerns regarding CV shrinkage and concluded that any consequences on the amount of shrinkage should be considered in the light of network operator's shrinkage incentives.

*Legacy arrangement*

Some respondents expressed support that this modification proposal did not include sub-terminals who have carbon dioxide specifications greater than 2.5%. These respondents considered that if these specifications ever were to be restricted it could have a detrimental effect on security and diversity of supply.



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