

**Draft Modification Report**  
**Amendment of Network Entry Provisions at the European Interconnector sub-terminal at**  
**Bacton**

**Modification Reference Number 0069**

Version 1.0

This Draft Modification Report is made pursuant to Rule 7.3 of the Modification Rules and follows the format required under Rule 9.6.

**1. The Modification Proposal**

The Proposal was as follows:

"National Grid NTS proposes that the gas quality limits in respect of upper Wobbe Number and Total Sulphur contained within the Gas Entry Conditions, which form part of the Network Entry Provisions (NEPs) for the European Interconnector System Entry Point be amended in accordance with the following:

Table 1: Proposed gas specification parameters

<b>Gas Quality Characteristic</b>	<b>Current Specification</b>	<b>Proposed Specification</b>
Wobbe No. upper limit:	54.0 MJ/m <sup>3</sup> (Normal) (51.1 MJ/m <sup>3</sup> (Standard))	54.25 MJ/m <sup>3</sup> (Normal) (51.41 MJ/m <sup>3</sup> (Standard))
Total Sulphur	15 ppm (approx. 20.4 mg/m <sup>3</sup> (Standard))	30.0 mg/m <sup>3</sup> (Normal) (approx. 28.4 mg/m <sup>3</sup> (Standard))

It should be noted that the IUK Interconnection Agreement is written in terms of Normalised reference conditions, whereas the UK operates to Standard reference conditions. Both figures are presented here for completeness sake. However, it is the values expressed in terms of Normalised reference conditions that would be included in the IUK Interconnector Agreement.

The proposed contractual limits for Wobbe Number and Total Sulphur are compliant with the Gas Safety (Management) Regulations 1996 (GS(M)R). For the avoidance of doubt, this proposed modification will not affect the levels of Hydrogen Sulphide in gas entering the NTS via the European Interconnector System Entry Point, which will continue to be subject to a separate contractual upper limit of 3.3 ppm vol.

The proposed changes, which would be implemented through amendment of the relevant NEPs, are required for the forthcoming winter, as they will facilitate the number of sources of gas that can flow from Europe via the European Interconnector. This will have a beneficial effect on the volumes of gas that can be accepted into the European Interconnector for delivery into the NTS and hence increase the UK security of supply position."

**2. Extent to which implementation of the proposed modification would better facilitate the relevant objectives**

The Proposer suggested that:

"Changing the NEPs at the European Interconnector sub-terminal in the manner proposed in Table 1 will allow access to greater volumes of European gas, which could be brought

into the UK via the Bacton System Entry Point. Currently, certain European gas sources, although meeting GB legislative limits, are beyond the contractual gas quality limits in the IUK Interconnection Agreement. The widening of these contractual limits, whilst still being within the GB legislative limits, would allow these gas sources to flow into the UK via the European Interconnector, thereby enhancing security of supply. Access to these additional European supplies is likely to offset some of the reductions in Southern North Sea gas flows that will be experienced as existing gas fields in that area are depleted.

This proposal would align the gas quality specification at the European Interconnector sub-terminal with the gas quality specification contained in the GS(M)R (and published in National Grid's current Ten Year Statement ("TYS")) in respect of the upper Wobbe Number and would allow for an increase in the Total Sulphur limit that was more reflective of the contractual limits that exist within Europe whilst still being inside the GS(M)R and TYS limits.

National Grid NTS considers this Proposal would, if implemented, better facilitate the following Relevant Objectives as set out in its Gas Transporters Licence:

in respect of Standard Special Condition A11 paragraph 1(a), the Proposal would better facilitate the efficient and economic operation of the NTS pipeline system by expanding the range of gas sources that could be imported at the System Entry Point. This would be expected to increase competition in the provision of gas balancing and other system services that National Grid NTS must procure to operate its pipeline system;

in respect of Standard Special Condition A11 paragraph 1(b), the Proposal would better facilitate the co-ordinated, efficient and economic operation of the combined pipe-line system by allowing greater volumes of imported gas to be brought into the Total System. This would assist other relevant transporters to better manage their respective systems;

in respect of Standard Special Condition A11 paragraph 1(d), the Proposal would better facilitate the achievement of securing effective competition between the relevant shippers and relevant suppliers by allowing greater volumes of imported gas to be brought into the UK."

**3. The implications of implementing the Modification Proposal on security of supply, operation of the Total System and industry fragmentation**

In respect of the operation of the Total System, the Proposer suggested that, "Implementation of this modification proposal is not believed to have any impact on systems, processes or procedures."

The Proposer also considered that "implementation of this Proposal would enhance security of supply."

**4. The implications for Transporters and each Transporter of implementing the Modification Proposal, including**

**a) implications for operation of the System:**

The Proposer did not believe that implementation would "have any impact on systems, processes or procedures."

The Proposer also considered that "implementation of this Proposal would provide access to greater volumes of European sourced gas that could be brought into the UK via the European Interconnector. This would increase competition in the provision of gas balancing and other system services that National Grid NTS must procure to operate its pipeline system."

The Proposer noted that "significant changes in the sulphur content of delivered gas may necessitate adjustments to odourisation plant settings. However, National Grid NTS believes that the modification proposal will not in itself result in any significant changes in the amount of sulphur in gas."

**b) development and capital cost and operating cost implications:**

The Proposer did not "anticipate incurring any development or capital costs as a consequence of implementing this Modification Proposal."

**c) extent to which it is appropriate to recover the costs, and proposal for the most appropriate way to recover the costs:**

The Proposer did not "believe that this Proposal, if implemented, requires it to recover any additional costs."

**d) analysis of the consequences (if any) this proposal would have on price regulation:**

The Proposer did not "believe this Proposal, if implemented, would have any consequences on price regulation."

**5. The consequence of implementing the Modification Proposal on the level of contractual risk of each Transporter under the Code as modified by the Modification Proposal**

The Proposer considered that "implementation of this Proposal would have no effect on the level of contractual risk of each Transporter."

**6. The high level indication of the areas of the UK Link System likely to be affected, together with the development implications and other implications for the UK Link Systems and related computer systems of each Transporter and Users**

The Proposer did not believe that "implementation of this modification proposal would have any impact on systems, processes or procedures."

The Proposer did not "envisage any impact on the UK Link System if this Proposal were to be implemented."

**7. The implications of implementing the Modification Proposal for Users, including administrative and operational costs and level of contractual risk**

The Proposer believed that "the typical Wobbe Number and CV of gas delivered will not appreciably change and therefore does not anticipate any significant increase in the costs of CV shrinkage as a consequence of implementing this Modification Proposal."

As described above, the Proposer considered that "the implementation of this modification would under most circumstances lead to minimal increases in the Sulphur content of the gas within the system, and therefore the gas delivered to consumers."

**8. The implications of implementing the Modification Proposal for Terminal Operators, Consumers, Connected System Operators, Suppliers, producers and, any Non Code Party**

As described above, the Proposer considered that "the implementation of this modification would under most circumstances lead to minimal increases in the Wobbe Number and Sulphur content of the gas within the system, and therefore the gas delivered to consumers."

**9. Consequences on the legislative and regulatory obligations and contractual relationships of each Transporter and each User and Non Code Party of implementing the Modification Proposal**

No such consequences have been identified.

**10. Analysis of any advantages or disadvantages of implementation of the Modification Proposal**

**Advantages of the Proposal**

The Proposer believed that "this Proposal, if implemented, would:

Allow access to greater volumes of European sourced gas that could be imported into the UK via the European Interconnector;

Better facilitate the achievement of securing effective competition between the relevant shippers and relevant suppliers

Enhance security of supply."

**Disadvantages of the Proposal**

The Proposer suggested the following disadvantages following implementation:

*"Impact on CV Shrinkage*

This modification proposal could lead to an increase in CV shrinkage. However, National Grid NTS believes that the typical Wobbe Number and CV of gas delivered will not appreciably change and therefore does not anticipate any significant increase in the costs of CV shrinkage as a consequence of its implementation.

*Impact on Total Sulphur*

This modification proposal could lead to an increase in Sulphur in the gas. However, National Grid NTS would point out that the European Interconnector specification contains a limit for Total Sulphur that is currently set at around 40% of the GS(M)R limit of 50 mg/m<sup>3</sup> and that even with the change, the limit would be less than 60% of the GS(M)R limit. For comparison, there are several sub terminals that have contractual limits set at the GS(M)R level.

In any event, National Grid NTS considers that the implementation of this modification would under most circumstances lead to zero or minimal increases in the Sulphur content of the gas within the system, and therefore the gas delivered to consumers.

In order to consider the potential effects, National Grid NTS has modelled the potential marginal impact of the modification using a scenario based on the Global LNG and Transit UK gas flow scenarios used in the Transporting Britain's Energy (TBE) process. The scenario assumes that the full extent of the marginal increase from the existing limit to the proposed limit is to be utilised on a constant basis.

From this analysis, National Grid NTS anticipates that under worst-case conditions (i.e. assuming that the change would be from the existing contractual maximum to the proposed contractual maximum), some consumers could see an incremental increase of Total Sulphur in 2005/6 of approximately 2.6mg/m<sup>3</sup> (standard), increasing over the next ten years to 3.8mg/m<sup>3</sup> (standard). Table 2 shows the forecast incremental increases in Total Sulphur in gas by LDZ over the next ten years. It should be noted that such increases would only apply on the occasions when the European Interconnector is operating in import mode.

Table 2: forecast incremental increases in Total Sulphur by Network Code LDZ (mg/m<sup>3</sup>)

Network Code LDZ	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Scotland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North West	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North East	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
East Midlands	1.0	1.4	1.3	1.1	1.1	1.1	1.3	1.7	1.9	1.8
West Midlands	1.1	0.8	0.9	0.4	0.5	0.4	0.9	1.3	0.5	0.0
Wales North	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wales South	1.7	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Eastern	2.6	2.7	2.5	2.2	2.3	2.4	2.7	3.3	3.6	3.8
North Thames	2.1	2.5	2.3	2.0	2.1	2.1	2.4	3.0	3.3	3.3
South East	1.8	1.7	1.6	0.7	0.9	0.7	0.7	0.7	0.8	0.9
Southern	0.8	1.3	1.1	1.0	1.3	1.3	1.7	2.2	2.6	2.5
South West	1.3	1.9	1.1	0.5	0.3	0.4	0.4	0.6	0.7	0.7

As table 2 illustrates, any incremental increase in the amount of sulphur in gas would reduce as distance from the Bacton terminal increases.

*Impact on emissions of sulphur dioxide*

The proposed modification could potentially increase the maximum sulphur content of the gas entering the NTS via the European Interconnector System Entry Point from 20.4 mg/m<sup>3</sup> (standard) to 28.4 mg/m<sup>3</sup> (standard). The modelling work undertaken on gas flows suggests that the expected increases of sulphur in gas rise from a maximum of 2.6 mg/m<sup>3</sup> (standard) in 2005/06 to 3.8mg/m<sup>3</sup> (standard) in 2014/15. During the combustion process, sulphur in the fuel is generally oxidised to sulphur dioxide. Stoichiometric conditions for natural gas set an air:fuel ratio of 10 units air to 1 unit gas. Under such conditions, then any sulphur in the gas is diluted such that the proportion of sulphur-based emissions in the flue gas is reduced. Table 3 shows the predicted change to sulphur dioxide emissions resulting from the proposed modification.

Table 3: Incremental sulphur and sulphur dioxide emissions

<b>Total sulphur content of natural gas (mg/m3)</b>	<b>Incremental sulphur content of natural gas (mg/m3)</b>	<b>Predicted level of sulphur dioxide emission in flue gas (mg/m3)</b>	<b>Predicted incremental increase in emissions of sulphur dioxide in flue gas (mg/m3)</b>
20.4	0	4.1	0
23	2.6	4.6	0.5
24.2	3.8	5	0.9
28.4	8	5.7	1.6

Based on the forecast maximum incremental increase in sulphur content in the gas as outlined in table 2, the modelling suggests an incremental increase in emissions of sulphur dioxide of less than 1 mg/m<sup>3</sup> (standard) of flue gas. Based on an assumption that the proposed contractual limit was fully utilised on a constant basis (an incremental increase of 8mg/m<sup>3</sup> (standard)), the modelling suggests that the incremental increase in emissions of sulphur dioxide would be 1.6 mg/m<sup>3</sup> (standard) of flue gas. These are very low levels and are not considered to pose significant increased environmental loading, especially compared to other fossil fuel combustion processes.

Even if we assume that the gas has an actual (as opposed to incremental) total sulphur level of 50 mg/m<sup>3</sup> (i.e. the GS(M)R legal limit) then the total emission level of sulphur dioxide will only be approximately 10 mg/m<sup>3</sup> (of flue gas).

Discussion with the Environment Agency has indicated that there is no general requirement to set sulphur quality standards for natural gas from the NTS. However, some existing permits do contain such limits which are thought to have been introduced as a result of individual applications. The combustion sector will be applying for PPC permits early in 2006 and standard permit templates will be developed and used. The Environment Agency will be considering whether it is necessary to set gas quality limits as the templates are developed. At this stage, they believe that this is unlikely given that this function is provided by the GS(M)R."

**11. Summary of representations received (to the extent that the import of those representations are not reflected elsewhere in the Modification Report)**

Representations are now invited.

**12. The extent to which the implementation is required to enable each Transporter to facilitate compliance with safety or other legislation**

No such requirements have been identified.

**13. The extent to which the implementation is required having regard to any proposed change in the methodology established under paragraph 5 of Condition A4 or the statement furnished by each Transporter under paragraph 1 of Condition 4 of the Transporter's Licence**

No such requirement has been identified.

**14. Programme for works required as a consequence of implementing the Modification Proposal**

No specific programme for works has been identified.

**15. Proposed implementation timetable (including timetable for any necessary information systems changes)**

The Proposer has suggested immediate implementation following approval.

**16. Implications of implementing this Modification Proposal upon existing Code Standards of Service**

No such implications have been identified.

**17. Recommendation regarding implementation of this Modification Proposal and the number of votes of the Modification Panel**

**19. Text**

***Representations are now sought in respect of this Draft Report and prior to the Transporters finalising the Report***



Subject Matter Expert sign off:

*I confirm that I have prepared this modification report in accordance with the Modification Rules.*

Signature:

Date :

Signed for and on behalf of Relevant Gas Transporters:

**Tim Davis**  
**Chief Executive, Joint Office of Gas Transporters**

Signature:

Date :