

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

Modification Reference Number 0069

Version 2.0

This 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

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

Gaz de France ESS (UK) Ltd (GDF) and National Grid Gas plc (UK Distribution) (NG UKD) supported the Proposer's views in respect of A11.1d.

GDF stated that objective A11.1a may be furthered *"by ensuring that existing pipeline capacity can be fully utilised."*

Interconnector (UK) Ltd (IUK) agreed that *"adoption of the proposed limits will increase the efficient economic operation of the system by attracting additional volumes to the UK."*

IUK also stated that it understood that *"other UK sub terminals already have higher total Sulphur limits and therefore IUK seeks similar arrangements."*

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." That this would, or could be the case, was supported by Association of Electricity Producers (AEP), EDF Energy plc (EDFE), E.ON UK plc (EON), GDF, IUK, NG UKD, RWE npower plc (RWE), Scottish and Southern Energy plc (SSE) and Statoil (UK) Ltd (STUK).

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 principle that implementation of the proposal could, or would, provide access to greater volumes of European sourced gas was acknowledged and supported by many respondents including AEP, British Gas Trading Limited (BGT), EDFE, EON, GDF, IUK, NG UKD, RWE, SSE, STUK

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."

NG UKD wished to draw attention to some issues "*which could potentially arise as a consequence of a variation to the composition of gas flowing in our networks.*", going on to explain "*there is a possibility that an increased sulphur content, particularly if the sulphur was in the form of mercaptans, could mean effectively that odourant levels in LDZ gas would be increased. As a consequence, this could result in an increased number of reported escapes. Odourant injection rates are set to ensure that the appropriate concentration of gas in air is detectable by sense of smell. A "stronger" smelling gas could lead to operational issues regarding the utilization and deployment of our emergency response teams.*"

NG UKD also noted that "*it is not proposed to permit any higher levels of H₂S, and therefore, we agree with the HSE position and would not expect to see any greater incidence of "black-dust" arising from the sulphide / copper chemical reaction.*"

NG UKD also stated that "*in terms of CV management, it would be very unlikely that the gas would contribute to gas entering an LDZ being the lowest source and could even serve*

to raise the Flow Weighted Average CV for some LDZs. We are confident that flows on the NTS could be managed to avoid any commercial downside associated with CV shrinkage."

BGT understood that the proposed relaxations in the proposal "would not have any derogatory effect upon safe operation of the system".

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."

GDF in its representation stated "From the analysis provided there seems to be little impact for gas Users resulting from the proposed changes to increasing the contractual Upper Wobbe limit and Total Sulphur allowance, both of which remain within GS(M)R levels."

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."

Similarly IUK did not believe that *"the typical Wobbe Number or total Sulphur content of gas delivered will change significantly. Therefore there should be no impact on administrative and operational costs or any increase in contractual risk."*

Concern about potential increase in sulphur emissions was raised in workstream discussion and in some representations. AEP stated *"We were .. concerned that increasing sulphur limits in gas used for generation would increase sulphur emissions. Sulphur emissions at gas fired plant are controlled by limiting the sulphur content of the gas in the environmental permits. A brief survey of a few of our members revealed a wide range of sulphur limits. Some limits were set very close to the existing entry specification which may have led us to withhold our support for this proposal. However early dialogue with NG and The Environment Agency has developed a greater understanding of this issue, and given that permits are due to be reviewed during 2006 and that any applications to revise permits before this time will be managed by the Environment Agency given the wider context of enhancing security of supply has enabled us to offer support for this proposal."*

BGT in its representation understood that the proposed relaxations in the proposal *"would not have any derogatory effect upon ...control of emissions"*, and EDFE stated *"We .. agree with the analysis in the draft modification report which states that the incremental increase in emissions from the increase in sulphur limits will be minimal at gas-fired power stations"* and went on to welcome *"the early discussion of these issues with the Environment Agency (EA) and their indication that there is no general requirement to set sulphur quality standards for natural gas from the NTS."* Similarly EON commended the approach and *"resulting early assurances given by the Environment Agency with respect to sulphur limits, thereby enabling us to fully support the proposal."*

RWE observed, *"In that the proposal will not change any of the GSMR parameters we do not believe it will have any impact on our power station operations or emissions. However, we understand the Environmental Agency are aware of the issues arising from this modification proposal and welcome their willingness to consider reviews of individual power station gas parameters where necessary in the event proposal is implemented."*

In its representation EA stated, *"Environmental effects would be small."* EA further state that *"Should they (gas consumers) need an immediate change in their permits they would need to contact our local office."*

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

National Grid Gas plc (UK Distribution) (NG UKD) described potential implications that might arise from increased sulphur content, higher levels of H₂S and impacts on CV

management. In the context of these it *“would, at this stage, wish to reserve its position on whether or not increasing these limits, in particular the sulphur limit, would improve the economic and efficient operation of its pipeline system.”*

IUK stated *“As the UK becomes increasingly dependent upon imports, the UK Gas Industry needs to align its specifications with those of continental Europe wherever possible, subject to safety limits, in order to ensure adequate security of supplies for the future. This change will remove a contractual barrier to entry for future supplies.”*

STUK stated, *“The current GB legislative limits allow European gas sources to enter the UK but the sources are limited by the restrictions imposed by the IUK Interconnection Agreement. Given the current concerns over security of supply in the UK, STUK agree that the gas quality specification at the European Interconnector sub-terminal should be aligned with the gas quality specification contained in the GS(M)R to ensure that the number of sources of gas that can flow into the UK can be maximised.”*

Similarly NG UKD stated *“Our principal reason is that we support the view of National Grid NTS: by increasing the upper limits for in the Gas Entry Conditions for Wobbe Number and Sulphur at the European Interconnector System Entry point, while still remaining within the requirements of GS(M)R, the modification would effectively ensure that sources gas that could “commercially” enter the UK would not be prevented by doing so for reasons of physical composition.”* Also NG UKD stated *“Distribution have analysed the proposed limit changes and have concluded that implementation would have no effect on our continuing statutory duty to ensure that the gas delivered to supply points on our network is GS(M)R compliant.”*

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."

The Environment Agency (EA) indicated that *“This modification appears to be in the national interest and so we support it on that basis.”*

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/m³ 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/m³ (standard), increasing over the next ten years to 3.8mg/m³ (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/m³)

Network Code LDZ	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Scotland	00	00	00	00	00	00	00	00	00	00
Northern	00	00	00	00	00	00	00	00	00	00
North West	00	00	00	00	00	00	00	00	00	00
North East	00	00	00	00	00	00	00	00	00	00
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/m³ (standard) to 28.4 mg/m³ (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/m³ (standard) in 2005/06 to 3.8mg/m³ (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

Total sulphur content of natural gas (mg/m³)	Incremental sulphur content of natural gas (mg/m³)	Predicted level of sulphur dioxide emission in flue gas (mg/m³)	Predicted incremental increase in emissions of sulphur dioxide in flue gas (mg/m³)
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/m³ (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/m³ (standard)), the modelling suggests that the incremental increase in emissions of sulphur dioxide would be 1.6 mg/m³ (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/m³ (i.e. the GS(M)R legal limit) then the total emission level of sulphur dioxide will only be approximately 10 mg/m³ (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."

EA in its response confirmed that *“the discussion attributed to us reflects our current view”*.

IUK stated the proposed change *“is not expected that there will be a significant change in the current measured values of total sulphur, following this proposed relaxation of the limit, which remain low.”*

IUK also pointed out that *“IUK’s flows are bi-directional and therefore for a large part of the year gas is not physically delivered to the NTS, thereby reducing the annual average potential for increased Sulphur.”*

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

Representations were received from the following:-

Association of Electricity Producers	AEP	In Support
British Gas Trading Limited	BGT	In Support
EDF Energy plc	EDFE	In Support
Environment Agency	EA	In Support
E.ON UK plc	E.ON	In Support
Gaz de France ESS (UK) Ltd	GDF	In Support
Interconnector (UK) Ltd	IUK	In Support
National Grid Gas plc (UK Distribution)	NGUKD	In Support
National Grid Gas plc (UK Transmission)	NGUKT	In Support
RWE npower plc	RWE	In Support
Scottish and Southern Energy plc	SSE	In Support
Statoil (UK) Ltd	STUK	In Support

All respondents supported implementation of this Modification Proposal although the BGT support for implementation was offered on the understanding that implementation *“would not have any derogatory effect upon safe operation of the system or control of emissions”*.

Conduct of this Modification Proposal

Several respondents made favourable reference to the manner in which this Modification Proposal had been progressed recognizing the helpfulness of discussions early in the process that enabled refinement of the Proposal and sufficient information to assist the consultation process. Typical of the comments received from a wide range of respondents including EDF, EON, and GDF were those made by AEP which stated *“We believe this modification provides an example of how consideration of draft proposals and issues at an early stage can lead to better developed proposals that more fully explore the consequences of such proposals and therefore enable respondents to make informed comments. In this case early dialogue between NG, the Environment Agency, AEP and its Members led to an understanding of the issues beyond the initial draft modification proposal and a better developed proposal being raised that we were able to support. If these issues had not been explored until a later stage in the process it may not have been possible to fully address them during the consultation period and we may have had to withhold full support.”*

European Harmonisation

IUK stated *“As the UK becomes increasingly dependent upon imports, the UK Gas Industry needs to align its specifications with those of continental Europe wherever possible, subject to safety limits, in order to ensure adequate supplies for the future.”*

EDF noted *“we wonder whether further changes to NEPs will be required when the two new gas interconnectors come on stream in the next few years bringing higher calorific gas from Norway and Holland to Easington and Bacton terminals respectively.”*

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 by the Proposer or any respondents other than EA. EA stated *“We would wish to be informed promptly and directly if the change is adopted, so that we can warn trade associations and staff of the need for operators to check their environmental permits. Should they need an immediate change in their permits they would need to contact our local office.”*

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

The Proposer has suggested immediate implementation following approval, and IUK stated *“An early adoption of this modification is .. beneficial for the UK supply situation”*

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

At the Modification Panel Meeting held on 19 January 2006, of the 8 Voting Members present, capable of casting 8 votes, 8 votes were cast in favour of implementing this Modification Proposal. Therefore the Panel recommend implementation of this Proposal.

18. Transporter's Proposal

This Modification Report contains the Transporter's proposal to modify the Code and the Transporter now seeks direction from the Gas & Electricity Markets Authority in accordance with this report.

19. Text

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 :