Representation - Draft Modification Report 0581S

Amending the Oxygen content limit specified in the Network Entry Agreements at Grain LNG

Responses invited by: 5pm 13 May 2016

To: enquiries@gasgovernance.co.uk

Representative:	John Costa
Organisation:	EDF Energy
Date of Representation:	13 May 2016
Support or oppose implementation?	Oppose
Relevant Objective:	**d) (i),** Negative – likely to introduce distortion between Shippers who will benefit from and those who will be picking up the cost of this modification. **Ii (between suppliers),** None – no evidence shown to support positive impact on these objectives **& iii DNOs** None

Reason for support/opposition: Please summarise (in one paragraph) the key reason(s)

This modification proposes to modestly increase the oxygen content limit in each relevant NEA at Grain LNG to 0.02 mol% (200ppm), similar to implemented UNC modification 561s, as it is deemed to be beneficial to the UK gas market as a whole.

However, while the reasons behind UNC561s were clear (a change to Dutch Gas quality parameters meant there was a real risk that gas could be locked out of the GB market) the reasons under 581s are unclear as no evidence has been provided to support the claim that the current limit in Grain's LNG NEAs (Network Entry Agreements) unduly and unnecessarily restricts the UK market in accessing certain LNG cargoes.

What is clear is that increasing the Oxygen limit in LNG gas will significantly impact the plant and equipment of downstream gas assets such as CCGTs and storage facilities leading to extra cost and potentially operational restrictions for the following reasons:

- The requested 200ppm is a 20x increase and would likely result in a continuous stream of close to 200ppm O_2 gas as LNG terminal switches from Nitrogen to air ballasting (the 200ppm O2 limit increase for UNC561s was to avoid spikes over the target 10ppm average being refused by the Bacton terminal, not to continuously flow at 200ppm)
- For gas storage sites using molecular sieve type dehydration systems, 200ppm oxygen can react with natural gas at bed regeneration temperatures resulting in water and CO2 production. This would make beds harder to regenerate by

introducing water to the system and the CO2 could pose a corrosion risk. More expensive molecular sieve may be required, with higher oxygen tolerance.

- For gas storage sites using glycol type dehydration systems, 200ppm oxygen can oxidise the glycol, poisoning it and producing toxic, acidic and corrosive by-products.
- For copper piping systems, 200ppm oxygen could accelerate the reaction of trace amounts of H2S into pyrophoric copper sulphide (black dust) – increasing the already significant network issue of black dust and black powder as witnessed at storage facilities in the UK.
- For any wet gas system, 200ppm oxygen could introduce additional corrosion mechanisms in carbon steel systems.
- 200ppm oxygen can lead to an increased risk of formation of elemental sulphur from trace amounts of H2S, which can desublime downstream of choke valves to coat pipework and quickly block Coalescer filters. There is evidence of this occurring within the UK Gas Storage system.
- All Storage Connection Agreements for gas storage sites would have be reviewed / amended by National Grid as the proposed 200ppm oxygen content would exceed the 10ppm limits imposed by National Grid on storage sites when exporting the gas back into the grid.

We therefore do not believe this modification is warranted or justified and should not be implemented without a full Impact Assessment.

If this modification were to be implemented it could set a dangerous precedent that would allow other LNG facilities to request an automatic increase as the driver here seems to be the cost benefits of switching from nitrogen to air ballasting.

Self-Governance Statement: *Please provide your views on the self-governance statement.*

No, this modification should not be subject to self-governance because of the significant impact it might have on downstream gas assets such as CCGTs and storage facilities highlighted above.

Implementation: *What lead-time do you wish to see prior to implementation and why?*

At least two year's notice would be required to assess the actual impact on storage facilities and make adjustments to equipment and operations.

Impacts and Costs: *What analysis, development and ongoing costs would you face?*

It is hard to put a cost on these real raised however likely to be in the hundreds of thousand pounds for each individual facility.

Are there any errors or omissions in this Modification Report that you think should be taken into account? *Include details of any impacts/costs to your organisation that are directly related to this.*

There is no evidence to support the claim that without this modification LNG supplies to GB market may be restricted or that this modification furthers the relevant objectives D securing effective competition between (i) shippers; indeed, if implemented it may distort

competition between the shippers who will benefit from reduced costs and those picking up the costs of this modification.

Also while the DMR states Gas Transporters were consulted no gas storage operator or other owner of gas assets were consulted which is disappointing for a modification of this significance, especially considering the recently adopted CEN gas standard which many large gas suppliers are worried about.

Please provide below any additional analysis or information to support your representation

Attached are two documents that support the points raised in this response.

Poyry Gas Quality report

http://www.poyry.co.uk/sites/www.poyry.uk/files/DTIGasQuality.pdf

Molecular sieve O_2 impact reference paper:
http://www.rschendel.com/PDF/Mol%20Sieve%20dehydration%20of%20gas%20containing%20O2%20-%20151211-1.pdf