

**UNC Workgroup 0607S Minutes  
Amendment to the Gas Quality NTS Entry Specification at the ST  
Fergus NSMP System Entry Point  
Tuesday 28 February 2017  
at Consort House, 6 Homer Road, Solihull B91 3QQ**

**Attendees**

Chris Shanley (Chair)	(CS)	Joint Office
Mike Berrisford (Secretary)	(MB)	Joint Office
Colin Loydal*	(CL)	BP
David Reilly	(DR)	Ofgem
Graham Jack	(GJ)	Centrica
Jeff Chandler*	(JC)	SSE
Julie Cox	(JCx)	Energy UK
Murray Kirkpatrick	(MK)	BP Gas
Phil Hobbins	(DB)	National Grid NTS
Rebecca Hailes	(RH)	Joint Office
Terry Burke	(TB)	Statoil

\*via teleconference

Copies of all papers are available at: <http://www.gasgovernance.co.uk/0607/280217>

The Workgroup Report is due to be presented at the UNC Modification Panel by 15 June 2017.

**1.0 Introduction and Status Review**

CS welcomed all to the meeting and highlighted the main focus of the meeting was to review the progress of the outstanding actions from previous meetings, in order to identify any further analysis requirements and inform the content of the Workgroup Report.

**1.1 Approval of Minutes (27 January 2017)**

CS explained that the minutes had been amended recently in order to provide additional clarity. Thereafter the minutes of the previous meeting were approved.

**2.0 Amended Modification**

Whilst not specifically covered at the meeting it is recognised that amendments to the Modification may be made in light of the Workgroup's discussions.

It was suggested that it would be beneficial if the Modification was amended to include more information around how the move towards the proposed 5.5% CO<sub>2</sub> level (for the Network Entry Agreement (NEA)) was determined, and how this potentially impacts Rhum production. MK advised that numerous internal discussions have previously been had within BP on this matter and he could provide a summary for the Workgroup Report.

**New Action 0201: BP (MK) to look to further explain the rationale behind selection of the 5.5% CO<sub>2</sub> level.**

**3.0 Additional Analysis**

Not specifically covered at the meeting.

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#### 4.0 Assessment of operational risks

Not specifically covered at the meeting.

#### 5.0 Anticipated impact on gas quality.

Not specifically covered at the meeting.

#### 6.0 Consideration of wider impacts/costs on various parties (including consumers)

To be considered/assessed once additional NTS analysis has been received in March.

#### 7.0 Carbon Cost Assessment (CCA)

When making its assessment of the impacts of increasing the carbon dioxide parameters, the Workgroup has been requested by the UNC Modification Panel to provide a Carbon Cost Assessment, therefore the Workgroup will formally respond to this request when making its report.

#### 8.0 Alternative Options

Not specifically covered at the meeting.

#### 9.0 Development of Workgroup Report

During a brief onscreen review of the draft Workgroup Report (version 0.4, dated 31 January 2017), CS focused attention on the latest round of amendments based on the output of various actions discussed at the meeting. CS also explained that an additional reliability statement would be added on page 11 once outstanding action 0104 is updated / completed.

In considering whether or not to keep the Direct Connects statement on page 14 of the report, JCx suggested that it is the rate of change (related to max/min aspects) that is the important consideration. In recognising the issue, DR highlighted that the rate of change is not a criterion in either the Code or contractual documents such as NEA's etc.

CS went on to add that the Workgroup Report would also need to assess the consumer impacts at some point.

During a quick review of the appendices, CS advised that additional background information relating to how the heatmap analysis works (i.e. assumptions of the impact of flows from other terminals etc.) is to be provided by National Grid NTS in due course for inclusion within the report.

It is expected that this document will evolve in response to Workgroup discussions, with revisions/additions expected to be made following receipt of various/further contributions and assessments.

A revised draft will be published for review at each meeting or after, depending on the timing of material submitted.

#### 10.0 Review of outstanding actions

**0101:** National Grid NTS (PH) to provide:

- a) Historical flow and CO<sub>2</sub> data at each St Fergus sub terminal, in order to provide a view on the BP/NSMP analysis as presented.
- b) In respect of the four scenarios (and any other(s) identified), provide a 'heat map' analysis; to include St Fergus aggregate flows/penetrations under different conditions (summer and winter); the usual CO<sub>2</sub> specification; the risk of entry and how far any 'out of specification flow' might then be expected to reach.

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- c) Direct Connects (DCs) that could be receiving over 4mol%, and who might potentially be affected if penetration reaches further zones.

**Update:** PH provided an overview of the 'National Grid NTS Actions Update' presentation, during which the more salient Workgroup discussion points are captured as follows:

- a) PH explained that the flow data focuses on summer 2015, taking the form of a worst case based assessment, and that it suggests that BP's interpretation / analysis is reasonably accurate. Data was presented for Shell and NSMP and PH explained that he is awaiting Apache approval to release the data for this sub terminal but, that having examined it himself, he reported that it does look broadly similar to the BP data already published.

MK advised that unplanned outages in the summer were the worst case and terminal maintenance is less of an issue on the grounds that it is a planned exercise.

Moving on to examine the CO<sub>2</sub> data on slide 3, PH pointed out that Shell and NSMP are operating within the expected CO<sub>2</sub> limit and once Apache advise that the data can be released, it will be possible to overlay the information for this sub terminal in order to conduct further analysis.

PH went on to explain that the average daily CO<sub>2</sub> content entering NTS pipelines at St. Fergus and JCx suggested that the average daily CO<sub>2</sub> data potentially hides within-day-variations and enquired whether this information is available separately. Responding, PH suggested that he could add max/min lines to the graph in order to tease out the within day fluctuations.

PH then explained that National Grid NTS had taken the inputs to the four BP scenarios and calculated the CO<sub>2</sub> content that would be expected on the pipelines leaving St Fergus terminal. PH explained that the information relates to post mixing and is based around National Grid NTS's GSMR compliance requirements. When asked PH indicated that he would double check the 172mscm/d figure and provide a view at the next meeting.

PH explained that the results aligned well with the analysis performed by BP and CS noted that this provided an appropriate check / balance view of BP's previous analysis.

When asked whether any blending was undertaken on the 30 June 2016 date (used for the BP scenario 4), MK pointed out that the information provided is based around actual flows, rather than focusing on any blending aspects.

**New Action 0202: National Grid NTS (PH) to look to provide another 'worst case' scenario based on the Shell low flow period in June 2016 (using actual CO<sub>2</sub> data and NEA upper limits) and update the analysis to include the weighted average CO<sub>2</sub> positions and the max/min daily CO<sub>2</sub> levels.**

- b) Moving on to consider parts (b) and (c) of the action, attention focused on slide 6 and the 'Heat Map' analysis, whereupon PH explained that it uses the highest flows assumed under the BP scenarios and 2016 FES demand data.

PH explained that the first 'Heat Map' shows the **penetration/dilution** of the St Fergus gas in 3 bands; >75%, 50% to 75% and 25% to 50%. GJ enquired whether or not there was any potential dilution from other sources of gas within the network (i.e. co-mingling of the high CO<sub>2</sub> slugs with other gas). Responding, PH suggested that it is predominately St Fergus gas in the north of the country. However, his understanding is that a high CO<sub>2</sub> slug of gas would stay intact as it travels through the network.

PH went on to suggest that the diagram reflects increasing levels of blending the further south on the network the gas flows and that no specific allowance had been made for individual offtakes such as Peterhead power station etc. CS wondered whether or not there could be value in further demonstrating how the gas flows and how blending

occurs with other network sources (i.e. Teesside etc.) and in addition expanding the explanation around the three bands.

PH went on to explain that the second 'Heat Map' shows the **level of CO<sub>2</sub>** on the NTS and uses the BP worst case scenario for flows and CO<sub>2</sub> levels (3.87%). 'Heat Map' 2 shows the CO<sub>2</sub> content in 3 levels; >4% (none), 3 to 4% and 2.5 to 3%. It was agreed that the suggested approach makes sense as it provides an overall view around the BP scenarios. In pointing out that the Workgroup had previously discussed the probability aspects, it was suggested that there are issues around whether or not there is sufficient data available in order to make an informed decision.

PH confirmed that if the worst-case scenario is 3.87%, then no NTS direct connect will receive gas with a CO<sub>2</sub> content of above 4%. It was questioned whether other scenarios should be considered, for example if Rhum had a CO<sub>2</sub> level of 5.5%. MK advised that Rhum is unable to flow without Bruce as they both form a minimum operational requirement and that to date, an outage at both Shell and Apache terminals on the same day has not taken place, although it could possibly happen.

When JCx suggested that any potential impact on the Peterhead power station could / would result in electricity generation issues for Scotland, DR noted that should Peterhead be aware that they would be getting gas at a different CO<sub>2</sub> quality, they could possibly have the option to workaroud the issue, given the severity of the impact.

c) Please refer to (b) above.

The Workgroup agreed that the action could now be closed. **Closed**

**0102:** BP (MK) to investigate the CO<sub>2</sub> content of the Norwegian gas at its source(s) and assess the potential effects if a change were to be made to the current CO<sub>2</sub> limits.

**Update:** MK explained that the high level summary had been extracted from the 'GASSCO Scenarios for CO<sub>2</sub> Content in Vesterled' presentation and that the new Martin Linge field would also potentially reduce the need for blending.

In undertaking a brief review of the GASSCO presentation, MK highlighted that in relation to the 'Heimdal Main' platform, GASSCO suggest that a more rapid decline in volumes is expected than that indicated on the graph. MK also confirmed that whilst the CO<sub>2</sub> level is increasing from this platform, it is not expected to be above 4%.

Moving on to consider the CO<sub>2</sub> content from the Heimdal Riser, MK explained the rationale behind the European 2.5% voluntary contractual maximum for sending gas to the continent. When asked, MK was not in a position to indicate whether or not the volumes involved were similar to the Heimdal Main. It was noted that from a UK perspective, the higher the flows at this CO<sub>2</sub> level the better. In short if gas cannot flow to the continent it would need to come to the UK at circa 3.7% CO<sub>2</sub> levels.

The Workgroup agreed that the action could now be closed. **Closed**

**0103: Scenarios 1-4** – MK to add the duration of the slug to each Scenario and re-present the information.

**Update:** MK advised that the size of the CO<sub>2</sub> slug had been provided in the Scenarios presented previously and highlighted that the peak CO<sub>2</sub> slug duration ranged from 10 hours (scenario 1, peak 3.65%) to 15 hours (scenario 4, peak 3.87%).

The Workgroup agreed that the action could now be closed. **Closed**

**0104: Reliability of field plant/equipment** - DO to provide a statement to support the view of forecast unplanned outages (for inclusion in the Workgroup Report).

**Update:** MK advised that he had updated the outage table presented previously and there had now been 13 outages since May 2016 with the average outage totaling around 20 hours.

When asked how long the three compressors have been in operation, MK indicated that he was not sure of the answer, but would be happy to check, if needed. MK also confirmed that currently the compressors were at 50% capacity thus giving some redundancy, and this should mean that trips may be easier to deal with going forward.

Work continues on the statement/forecast of unplanned outages; update to be given next meeting. **Carried Forward**

**0105:** BP and National Grid NTS to consider if any adaptations can be made (from both an NEA change perspective and a change to operational procedures) to the operating arrangements between the terminals and the NTS, to manage out of specification gas resulting from an unplanned outage.

**Update:** PH explained how National Grid NTS approaches upstream issue resolutions (i.e. upset conditions) and how they work directly with the parties concerned, in their role as the TSO, to ensure that no gas quality breaches occur. Additionally, National Grid NTS wanted to take care to avoid accusations of unfair discrimination in this regard. When asked whether there are any potential safety case impacts, PH explained that National Grid NTS monitors the gas coming in via the five pipelines to the 4% CO<sub>2</sub> standard and also looks to manage excursions where appropriate via a Terminal Flow Advice (TFA).

PH went on to explain that he expects to provide more information on a potential alternative solution (i.e. as part of a NEA) to the Modification route at next months Workgroup meeting. TB advised that Statoil would like to see a modification, even if an operational solution is developed, to ensure transparency. When asked for a view, DR explained that the majority of these types of issues are technical in nature and Ofgem do not have the necessary level of technical expertise, and as a consequence, they would be happy with a non-UNC modification based solution. JCx also voiced her concern around a potential lack of industry transparency should a non-UNC modification route be adopted. In acknowledging the concerns being raised, PH indicated that he would consider what might be the best option.

CS suggested consideration must be given to how the modification is amended to cater for the various options (NEA changes to support >4% CO<sub>2</sub> levels during an unplanned outage) – in short it could simply continue to be an ‘enabling’ modification. PH advised that he has envisaged leaving the CO<sub>2</sub> level at 4% in the NEA and amending the operational procedure aspects but would provide a full update on an alternative solution at next months Workgroup meeting. **Carried Forward**

**0106:** BP (MK) to clarify if other gas quality parameters are affected (CV, Wobbe and Dewpoint).

**Update:** Work continues; update to be given next meeting. **Carried Forward**

**0107:** *EU standard on Gas Quality* - PH to provide a statement regarding the current position for inclusion in the Workgroup Report.

**Update:** A document had been provided showing a ‘change marked’ version of the statement on the EU standard on Gas Quality that was originally included in Modification 0498 and it was published prior to this meeting. **Closed**

**0108:** *National Grid NTS to consider if an assessment of its operational risks* is required - PH and DB to provide a statement for inclusion in the Workgroup Report (if required).

**Update:** In assessing this action, CS noted that the risks vary (flex) depending upon what proposal is being considered. PH advised that he had not yet had a chance to discuss the matter in detail with his National Grid NTS Asset Team colleagues. PH provided an overview of the risks that would need to be assessed, including pipeline corrosion. A discussion was had on how a short burst of high %CO<sub>2</sub> gas could effect corrosion levels and who would be expected to pay if additional costs are incurred. DR pointed out that the NTS is largely a ‘dry

system'. JCx also believed that oxygen levels could also have a potential impact and advised that she would look to provide some additional information (IGEM Technical Services Reports<sup>1</sup>) to PH in due course. **Carried Forward**

**0109:** MK and DO to provide a statement in respect of discussions/involvement of the Oil and Gas Authority, for inclusion in the Workgroup Report.

**Update:** MK confirmed that discussions had been had with the OGA and it is expected that a supporting statement would be provided within the next couple of weeks. **Carried Forward**

**0110:** *Carbon Cost Assessment (CCA)* - MK and DO to define the different realistic options for a CCA and explain (if needed) why any could not be pursued (e.g. not viable time limits) and consider what relevant analysis would need to be undertaken to demonstrate the material/immaterial impacts of the proposal.

**Update:** Work continues; update to be given next meeting. **Carried Forward**

**0111:** *Workgroup Report Appendix 1* - PH to update and add to the information (graphs) as appropriate.

**Update:** Work continues; it was suggested that it might be prudent to link the type of gas quality data analysis in Appendix 1 of the Workgroup Report to the 'Heat Map' analysis performed by NTS. A further update will be given at the next meeting. **Carried Forward**

## 11.0 Next Steps

CS reminded the group that the Workgroup's report is due for consideration at the UNC Modification Panel meeting on 15 June 2015 (submission date 02 June 2015).

At the next Workgroup meeting, the Workgroup will consider:

- *any amendments to the modification if provided (further background to the proposed change)*
- *additional analysis provided*
- *assessment of operational risks*
- *anticipated impact on gas quality*
- *wider impacts/costs on various parties (including consumers)*
- *draft Carbon Cost Assessment (if provided)*
- *alternative options*
- *development of the Workgroup Report.*

## 12.0 Diary Planning

Workgroup meetings will take place as follows:

Time/Date	Venue	Workgroup Programme
10:30, Wednesday 22 March 2017	Rooms LG5/6 combined, Energy UK, Charles House, 5-11 Regent Street, London SW1Y 4LR	<ul style="list-style-type: none"> <li>• Development of Workgroup Report</li> </ul>

<sup>1</sup> Please note: three IGEM Technical Services Reports were published on the Joint Office web site on 03 March 2017 at: <http://www.gasgovernance.co.uk/0607/280217>

10:30, Tuesday 25 April 2017	Consort House, 6 Homer Road, Solihull B91 3QQ	<ul style="list-style-type: none"> <li>Development of Workgroup Report</li> </ul>
10:30, Tuesday 23 May 2017	Location to be confirmed	<ul style="list-style-type: none"> <li>Development of Workgroup Report</li> </ul>

### Action Table (as at 28 February 2017)

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0101 (expanded)	05/01/17 27/01/17	2.1 4.0	<p>National Grid NTS (PH) to provide:</p> <p>a) Historical flow and CO<sub>2</sub> data at each St Fergus sub terminal, in order to provide a view on the BP/NSMP analysis as presented.</p> <p>b) In respect of the four scenarios (and any other(s) identified), provide a 'heat map' analysis; to include St Fergus aggregate flows/penetrations under different conditions (summer and winter); the usual CO<sub>2</sub> specification; the risk of entry and how far any out of specification flow might then be expected to reach.</p> <p>c) Direct Connects (DCs) that could be receiving over 4mol% to be identified on the flow routes, and who might potentially be affected if penetration reaches further zones.</p>	National Grid NTS (PH)	Updates provided. <b>Closed</b>
0102	05/01/17	2.1	BP (MK) to investigate the CO <sub>2</sub> content of the Norwegian gas at its source(s) and assess the potential effects if a change were to be made to the current CO <sub>2</sub> limits.	BP Gas (MK)	Update provided. <b>Closed</b>
0103	27/01/17	4.0	<i>Scenarios 1-4</i> – MK to add the	BP Gas	Update

**Action Table (as at 28 February 2017)**

<b>Action Ref</b>	<b>Meeting Date</b>	<b>Minute Ref</b>	<b>Action</b>	<b>Owner</b>	<b>Status Update</b>
			duration of the slug to each Scenario and re-present the information.	(MK)	provided. <b>Closed</b>
0104	27/01/17	4.0	<i>Reliability of field plant/equipment</i> - DO to provide a statement to support the view of forecast unplanned outages (for inclusion in the Workgroup Report).	NSMP (DO)	<b>Carried Forward</b>
0105	27/01/17	4.0	BP and National Grid NTS to consider if any adaptations can be made (from both an NEA change perspective and a change to operational procedures) to the operating arrangements between the terminals and the NTS, to manage out of specification gas resulting from an unplanned outage.	BP (MK) and National Grid NTS (PH)	<b>Carried Forward</b>
0106	27/01/17	5.0	BP (MK) to clarify if other gas quality parameters are affected (CV, Wobbe and Dewpoint).	BP (MK)	<b>Carried Forward</b>
0107	27/01/17	5.0	<i>EU standard on Gas Quality</i> - PH to provide a statement regarding the current position for inclusion in the Workgroup Report.	National Grid NTS (PH)	Update provided. <b>Closed</b>
0108	27/01/17	5.0	<i>National Grid NTS to consider if an assessment of its operational risks</i> is required - PH and DB to provide a statement for inclusion in the Workgroup Report (if required).	National Grid NTS (PH) and (DB)	<b>Carried Forward</b>
0109	27/01/17	6.0	MK and DO to provide a statement in respect of discussions/involvement of the Oil and Gas Authority, for inclusion in the Workgroup Report.	BP (MK) and NSMP (DO)	<b>Carried Forward</b>
0110	27/01/17	7.0	<i>Carbon Cost Assessment (CCA)</i> - MK and DO to define the different realistic options for a CCA and explain why any could not be pursued (e.g. not viable time limits) and consider what relevant	BP (MK) and NSMP (DO)	<b>Carried Forward</b>

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**Action Table (as at 28 February 2017)**

<b>Action Ref</b>	<b>Meeting Date</b>	<b>Minute Ref</b>	<b>Action</b>	<b>Owner</b>	<b>Status Update</b>
			analysis that would need to be undertaken to demonstrate the material/immaterial impacts of the proposal.		
0111	27/01/17	9.0	<i>Workgroup Report Appendix 1 - PH</i> to update and add to the information (graphs) as appropriate.	National Grid NTS (PH)	<b>Carried Forward</b>
0201	28/02/17	2.0	To look to further explain the rationale behind selection of the 5.5% CO2 level.	BP (MK)	<b>Pending</b>
0202	28/02/17	10.0	To look to provide another 'worst case' scenario based on the Shell low flow period in June 2016 (using actual CO2 data and NEA upper limits) and update the analysis to include the weighted average CO2 positions and the max/min daily CO2 levels.	National Grid NTS (PH)	<b>Pending</b>