

**UNC Workgroups 0498/0502 Minutes**  
**Amendment to Gas Quality NTS Entry Specification at BP**  
**Teesside System Entry Point**  
**Thursday 07 August 2014**  
**ENA, Dean Bradley House, 52 Horseferry Road, London SW1P 2AF**

**Attendees**

Bob Fletcher (Chair)	(BF)	Joint Office
Lorna Dupont (Secretary)	(LD)	Joint Office
Alan Ross Guy	(ARG)	BG Group
Andrew Pearce	(AP)	BP Gas
Anjela Maharajah	(AM)	RWE Dea
Anna Shrigley	(AS)	ENI
Antony Miller	(AMi)	Centrica Storage
Antonio Ciavolella	(AC)	BP Gas
Charles Ruffell	(CR)	RWEst
Colin Harrison	(CH)	PX Group
David Reilly	(DRe)	Ofgem
Dennis Rachwal	(DRa)	National Grid NTS
Doug Wood	(DW)	BP Gas
Francine Counsell	(FC)	BP CATS
Francisco Goncalves	(FG)	Gazprom
Gerry Hoggan	(GH)	ScottishPower
Graham Jack	(GJ)	Centrica
Isabelle Agnes Magne*	(IM)	GDF Suez
Jeff Chandler	(JC)	SSE
Julie Cox	(JCx)	Energy UK
Kirsten Elliott-Smith	(KES)	Cornwall Energy
Lucy Manning	(LM)	Interconnector UK
Marshall Hall	(MH)	Oil & Gas UK
Mathew Sumerling	(MS)	National Grid NTS
Michelle Webley	(MW)	Petronas
Murray Kirkpatrick	(MK)	BP CATS
Natasha Ranatunga	(NR)	EDF Energy
Nick Wye*	(NW)	Waters Wye Associates
Phil Broom	(PB)	GDF Suez
Richard Fairholme	(RF)	E.ON UK
Steve Nunnington	(SN)	Xoserve

*\*via teleconference*

Copies of papers are available at: [www.gasgovernance.co.uk/0498/070814](http://www.gasgovernance.co.uk/0498/070814)

The Workgroup Report (combined 0498 and 0502) is due to be presented at the UNC Modification Panel by 20 November 2014.

**1.0 Introduction and Status Review**

**1.1 Minutes**

DRe proposed the following change to the minutes of the previous meeting.

Under *Update for 0605 (b) (page 5)*:

“This was briefly considered. NR suggested that other agencies need to get involved as this was becoming a wider issue than could be addressed by a change to the UNC. PH and DRe noted the need to engage DECC and HSE concerning these modifications, ~~regarding the technical basis for the class exemption on oxygen for biomethane.~~ **Carried forward**”

It was agreed that the minutes of the previous meeting would be revised and republished. The minutes were then approved.

## 1.2 Actions

**0504:** Ascertain if there is any internal focus within Ofgem currently being applied to the area of gas quality.

**Update:** There was no single focus to the area of gas quality; three workstreams were in place, ie one on Interoperability and Data Exchange (the Ofgem lead was D McCrone) and DNs CV guidance issues (the Ofgem lead was S Brown), and this Workgroup for which DRe confirmed that he has been appointed as the Ofgem lead.

DRe confirmed that as far as he was aware Ofgem was not taking any active role in the discussions relating to the CEN proposal.

MH believed that DECC and Ofgem should address these issues. Referring to Modification 0321V, DRe reiterated that it was Ofgem’s expectation that a quantifiable impact should be assessed for these modifications and that the Proposers and the UNC Modification Panel should carry out the initial investigative work required before the modifications go to consultation.

RF pointed out that Ofgem has wider duties than the Panel, and that the Panel may not be in a position to consider every aspect. DRe reiterated that it would be expected that the Panel would have made a very thorough assessment of all aspects as appropriate under its remit.

PB pointed out that security of supply issues would also affect electricity. MH pointed out that greenhouse gas emissions needed to be considered by DECC. It was suggested that DECC be invited give a view to this Workgroup for inclusion in the Workgroup Report so that this information can be provided before the consultation phase. DW believed there to be wider impacts (upstream, downstream and DECC) and was concerned that it was not the role of the UNC Modification Panel to produce a report on gas quality issues for the gas industry. DRa added that the modifications were not seeking to propose a blanket change to gas quality, only to a specific entry point. MH observed that it was a potential consequence arising from offshore development at two specific fields only.

BF believed the Workgroup should consider how the UNC Modification Panel can make an informed decision on these modifications, and consider how to provide sufficient information to enable this and for the Panel to understand how the relevant objectives are impacted (positive/negative/neutral). Additional background information might be required to support this. **Closed**

**NEW ACTION 0801: Invite DECC to provide a view on these modifications for inclusion in the Workgroup’s report.**

**0505:** Provide a view of any issues, as perceived by Ofgem.

**Update:** DRe provided views at appropriate points throughout the day’s discussions.

**Closed**

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**0601: Issue 1: What is the impact on gas quality at the entry and exit points for a change in the CO<sub>2</sub> to 4% in relation to:**

- CV
- Wobbe
- Variability in h/d/w timeframes
- for operation (eg maintenance and performance).

a) Provide historical/forecast data on gas quality at (i) Teesside and (ii) other entry points. (AH/AC/DRa)

**Update for 0601(a)(i) and (ii):**

*BP CATS Presentation*

Slides 2/3 - FC gave a presentation, providing an overview of current specifications, noting that the proposed revised CO<sub>2</sub> specification offered two main benefits, ie avoiding throughput restriction of existing gas fields and avoiding the risk of potential new gas fields not being developed.

Slide 4 – FC recapped on CO<sub>2</sub> forecasting. The analysis had been based on current and potential new gas fields. The mol% results expected in each scenario were outlined.

Slide 5 – It was recognised that the principal concern appears to relate to the impact on the energy content of the gas. CATS had assessed the relationship between the various constituents, and presented the results in the form of graphs illustrating the daily averages of the Gross Calorific Value (GCV), Wobbe Index (WI), Soot Index (SI), and Incomplete Combustion Factor (ICF).

*TGPP/px Presentation*

Slides 14/15/16 - CH provided a number of graphs illustrating historic gas quality at TGPP, demonstrating the variations across CO<sub>2</sub>, GCV and WI. These were reviewed and discussed.

*Review of Action*

Part (i) - It was agreed that this was completed.

Part (ii) – This was discussed. It was suggested that more information on other entry point gas quality elements (recent history, ie 12 – 18 months; not forecast or modelling) was required for comparison to see if the variability at Teesside was unusual. Entry points suggested for analysis/comparison were Bacton, Easington, St Fergus, Barrow and Theddlethorpe and also the 2 Teesside sub terminals. The elements to be used for a sensitivity analysis/comparison for these key points on the NTS were historic CO<sub>2</sub>, WI and GCV. It was also suggested that GCV be looked at for entry points on the East coast. It was agreed that LNG terminals would not be included. DRa will consider what can be provided and bring results to Workgroup for review. It was agreed to expand the action.

**Expanded Action 0601(a)(ii):** DRa to consider if the following can be provided and analysed to produce comparisons with Teesside data:

- Entry Points: Bacton, Easington, St Fergus, Barrow and Theddlethorpe and also the 2 Teesside sub terminals.
- Gas Quality Elements: Historic CO<sub>2</sub>, WI, and GCV.

**Expanded Action 0601(a)(iii):** DRa to consider analysing and comparing GCV for entry points on the East coast. **Carried forward**

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- b) Availability and suitability of historical/forecast data for exit points to be evaluated. (DRa)

**Update for 0601(b):**

DRa presented sample exit data for the Teesside and Hull areas. This was reviewed and discussed. DRa stated that all was within the GS(M)R limits, and contained a mixture of Teesside, Easington and St Fergus gas on occasion. Asked if it was possible to look at information on nitrogen and total inerts, DRa responded that he had been looking at total inerts compared to GCV and that it looked very similar as a scatter graph. DRa confirmed that the requirement on National Grid is to make gas available within a set range to meet its legal obligations; where it lies within that set range has not been actively managed.

*Review of Action*

Information had been provided and the action was agreed to be complete. **Closed**

- c) Refine the Tata Steel question into numbers. (AH/AC)

**Update for 0601(c):**

*BP CATS Presentation*

Slide 11 - FC addressed concerns raised by Tata Steel, confirming that GCV, WI, SI and ICF will all remain within current specification limits during periods when CO<sub>2</sub> peaks at 4.0 mol%. Estimates of the new averages were presented and reviewed.

*TGPP/px Presentation*

Slide 13 - CH reported that this had been modelled with other components normalised, i.e. uniformed displacement of all hydrocarbon species and not just low or high hydrocarbons molecules. By increasing the CO<sub>2</sub> content of the export stream from 2.9 mol% to 4.0 mol%, HYSYS simulation results show a reduction in GCV of 1.13% and a reduction in WI of 1.88%. CH noted that average actual CO<sub>2</sub> levels (as opposed to the maximum permitted level) would be less than the maximum 4.0 mol% proposed.

*Review of Action*

Information had been provided and the action was agreed to be complete. **Closed**

- d) Evaluate what data can be provided about Variability. (AC)

**Update for 0601(d):** None provided/evaluated.

*Review of Action*

It was believed that the Proposer should not now be expected to provide information on variability. This action was therefore agreed closed. **Closed**

However, it was acknowledged that some information on variability would be required for inclusion in the Workgroup Report. JCx commented that generation plant burner settings are very sensitive to changes in gas composition and assessment is required to establish if more change is more likely to happen, especially within day. Specification is also likely to be wider than today's more narrow range. What would be the impact if a field drops off which reduces the blending options and in what timescales would this be felt? It was suggested that it would be good to have hourly data available for major entry/exit points, for WI, GCV and CO<sub>2</sub>. If this were not available then it would not be possible to assess the degrees/timescales of variability and ascertain levels of impairment of generation. It was suggested that if this data was not already being collected then an exercise to gather it should be commenced.

**NEW ACTION 0802: *Variability Data for major entry/exit points:* DRa to consider what can be made available (if already collected), or what can be recovered and provided on a regular basis if not already gathered.**

Other sources of data were considered and discussed. It was suggested that a view was required on the variability of what is actually burnt,

**NEW ACTION 0803: *Variability Data for major entry/exit points:* All parties to review the UNCORM Data Dictionary (<http://www.gasgovernance.co.uk/tpddocs>) and other recognised data sources, and assess and report on the capability of providing sufficiently current and accurate data to inform Workgroup views.**

**0602: Issue 2: What happens to the increased CO<sub>2</sub> after consumption in relation to:**

- *In a gas turbine power plant*
- *Combusted for heat*
- *Feedstock*
- *Storage.*

Where it is an ETS site, CO<sub>2</sub> passes through and impacts costs. Develop an impact assessment. (AH/AC)

**Update:**

***BP CATS Presentation***

Slide 12 - FC addressed concerns raised by GrowHow, confirming that extra CO<sub>2</sub> treatment loading would only be required for short periods in summer months; GCV was expected to be within specifications, and therefore systems should be designed to cope with this.

Slide 13 - FC addressed concerns raised by SSE. Referring to the issue of an OEM inerts limit, it was confirmed that the total inerts level remains approximately constant with increasing CO<sub>2</sub> as less N<sub>2</sub> is required. It was observed that CATS historically used 7.0mol% as the total inert limit. There is no limit in the Network Entry Agreement (NEA); this currently includes an obligation to accept short-term breaches of CO<sub>2</sub> up to 4.0mol%. BP's operating experience is that gas turbines can cope with 10 – 15vol% inerts and that new machines may be tailored to the expected gas specification.

Referring to the issue of unpredictable re-tuning, it was confirmed that high CO<sub>2</sub> would predominantly occur during summer months. It was observed that gas field maintenance can generally be predicted, so advance warning can be given. It was noted that variation would occur within current specifications and be similar to what has been experienced in the past.

In respect of EU ETS costs, FC asked if both GrowHow and SSE would please provide details of the impact and so that BP CATS and the two parties can work together to gain a better understanding of the impact (Action 0602).

***TGPP/px Presentation***

Slides 9/10/11/12 – CH responded to the concerns raised by GrowHow. TGPP is evaluating the situation under ETS to make sure it understands how CO<sub>2</sub> in the inlet gas to a facility like GrowHow is accounted for currently. The significance of any potential impact has not yet been ascertained. CH pointed out that given the linkage to Southern North Sea gas at TGPP, the overall content of CO<sub>2</sub> in the gas delivered at the TGPP entry point will differ from that delivered to the CATS entry point. It was noted that average actual CO<sub>2</sub> levels (as opposed to the maximum permitted level) would be less than the maximum 4.0 mol% proposed.

Responding to GrowHow's concerns relating to additional load on its CO<sub>2</sub> removal

systems and the potential negative impact on production rate, CH said that TGPP would like to discuss this impact in more detail with GrowHow to better understand its current process scheme and how it handles CO<sub>2</sub> in its inlet gas today.

Responding to GrowHow's concerns relating to potential negative effects (increase in volume of gas consumed; increase in pressure drop in pipework) consequent on a CV reduction, CH believed the effect on CV to be minor and within the specification limits within the NEA/GSMR. GCV already varies significantly depending upon offshore production.

This is the subject of further investigation and TGPP will also address GrowHow's concern regarding impacts on the network itself with National Grid.

Addressing GrowHow's concern that CO<sub>2</sub> acts as a diluent and that any any increase in CO<sub>2</sub> will affect (increase) the amount of mass being heated and the amount of energy consumed, CH believed this was probably a minor effect. By increasing CO<sub>2</sub> content of the export stream from 2.9 mol% to 4.0 mol%, HYSYS simulation results show a reduction in GCV of 1.13% and a reduction in WI of 1.88%.

*Review of Action*

Information had been provided and the action was agreed to be complete. **Closed**

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**0603: Issue 3: What is the impact on OEM Warranties if increased levels of CO<sub>2</sub>/inerts are seen?** Seek views from Energy UK members, regarding volumes/types/locations/limits. (JCx)

**Update:** No update provided. **Carried forward**

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**0604: Issue 4: How does this fit with the proposed BS EN 16726?** Investigate scope/impact/relevance. (AH/AC)

**Update:**

**BP CATS Presentation**

Slides 14/15 - AC confirmed that BP has given due consideration to the EU Gas Quality Standard/BS EN 16726 developments, given their relevance to these Modifications 0498 and 0502. While the impact is uncertain, as provisions could be amended and the binding status is undecided (see next slide), BP has continued to work based on the assumption that the latest draft Standard becomes mandatory.

On the basis of current wording, Modifications 0498 and 0502 do fulfill all conditions CEN developed. To provide context, AC briefly outlined the conditions and demonstrated how these were fulfilled. However, reminding that the EU gas quality Standard is still a draft, AC observed that the Director General Energy could turn the standard binding by amending the EU Network Code on interoperability; that the EU Standard could apply only at Interconnection Points (IPs), at least on interim basis. Significant unresolved incompatibilities suggest that further debate is probable.

*Review of Action*

Information had been provided and the action was agreed to be complete. **Closed**

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**0605: Issue 5: What is the local impact on the DN and NTS operators?**

- a) Understand the network flow impacts (see the GrowHow representation) – in relation to pressure/volumes/CV shrinkage. (DRa)

**Update for 0605(a):** DRa had written to the DNs and to date had received a response from Scotia Gas Networks; if a further update becomes available he will provide this to the Workgroup. **Carried forward**

b) Consider any impact on IPs. (DRa)

**Update for 0605(b):** For IUK, LM observed that it was highly unlikely to experience any impact, but there were contractual obligations in relation to the parameters that can be accepted. DW questioned if gas could pass into the interconnector without passing through the NTS. LM indicated it could come direct from Bacton.

NR suggested that more detail was required in relation to impacts on Moffat. DRa observed there were no modelled scenarios where Teesside gas is to flow to Moffat, and offered to explain why he felt consideration of Moffat was not relevant.

DRe was of the view that the impact(s) on the NTS system as a whole needed to be looked at, and any potential impact should be assessed. DW added that a sense of 'where to draw the boundaries' was required. **Carried forward**

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**0606: Issue 6: What are the alternatives (include costs)?** Consider other options, including the onshore removal of CO<sub>2</sub> to be developed, and provide a high level view on costs/advantages/disadvantages. (AC/AH)

**Update:**

***BP CATS Presentation***

Slides 16/17/18 - In the event that Modification 0498 was not approved, ARG believed there were three potential outcomes. New gas fields will build offshore facilities to remove CO<sub>2</sub>; CATS will build onshore removal facilities to remove CO<sub>2</sub> at the Shippers' expense; the material costs of CO<sub>2</sub> removal may result in certain gas fields not being developed, which could adversely impact CATS' remaining life. CATS was currently exploring these options with the BG operated Jackdaw field, which was a potential new gas field.

ARG gave a brief overview of the Jackdaw Field and its chemical constituents. Technically it was a very complex project; the plan was to send its gas to Teesside via the CATS pipeline. It was recognised that it could be a significant resource, but was economically challenging due to high costs. These high costs were exacerbated by the presence of H<sub>2</sub>S and 4% CO<sub>2</sub> in its constituents. ARG then gave examples of Jackdaw's processing costs, comparing the options of onshore (£200m) and offshore (£126m) removal of H<sub>2</sub>S and CO<sub>2</sub>; the greatest expense would be incurred through onshore treatment. Relaxation of the NTS entry specification for CO<sub>2</sub> would reduce the cost of onshore processing significantly to £58m.

***TGPP/px Presentation***

Slides 17/18/19 - CH observed that there are a number of technologies available for removal of CO<sub>2</sub> from natural gas. The most suitable technology for a particular application depends on many different factors, e.g. removal duty, inlet/outlet CO<sub>2</sub> concentrations, contaminants, operating conditions, volumetric flow, downstream processing requirements and relative capital/operating costs. Based upon likely CO<sub>2</sub> and H<sub>2</sub>S partial pressures in the raw gas at the terminal and the required NTS entry specification, it was believed that the most suitable technology to achieve a reduction in CO<sub>2</sub> from 4 mol% to 2.9 mol% for gas delivered to the TGPP entry point was a Formulated Amine Process. This process was then described in more detail.

Apart from capital cost, significant heat input is required to regenerate the amine and also to regenerate the TEG/MEG used to dehydrate the gas after passing through the amine

unit. Heat is usually supplied by a hot oil system heated by natural gas - this generates further CO<sub>2</sub> emissions in addition to the CO<sub>2</sub> extracted from the natural gas. Electrical power is required to drive pumps and control systems, and recovered CO<sub>2</sub> is vented to atmosphere (no other solution is practical for these quantities). Benzene and some methane are also recovered with the CO<sub>2</sub> and vented. The quantity of CO<sub>2</sub> recovered and vented to atmosphere depends on volumetric gas flow and concentration of CO<sub>2</sub> in the natural gas stream.

TGPP estimated that for every 100 te of CO<sub>2</sub> removed, an additional 20 to 25 te of CO<sub>2</sub> is created through burning gas to provide required process heat. Capital costs for a CO<sub>2</sub> removal unit at the TGPP system entry point have not yet been confirmed but concur with the BP estimates. It is TGPP's view that installing CO<sub>2</sub> removal at TGPP, i.e. using the amine unit described above, actually results in increased CO<sub>2</sub> emissions due to the heat and electrical power required. **Closed**

## 2.0 Discussion

### *BP CATS Presentation – Summary (Slide 19)*

Summarising BP's findings to date, FC observed that minimal impact on CO<sub>2</sub> levels during 2014 - 2018 could be expected. Modelling suggests CO<sub>2</sub> levels will increase past 2019, but that other prospective gas fields will lessen the impact. Historic analysis showed that higher CO<sub>2</sub> levels would have minimal impact on the energy content of the gas. The cost of CO<sub>2</sub> removal for one field (Jackdaw) has been estimated at offshore - £126m, onshore - £200m, plus ongoing Opex costs and contributes significantly to the risk of non-development due to challenging economics. FC reiterated the request for parties to share details on potential EU ETS cost impacts and OEMs in operation that stipulate a maximum level of 4% inerts, to help understanding and progress development of the modifications.

#### *General comments on the information provided by BP*

At the conclusion of the BP CATS' presentation JC raised a number of points. Referring to Slide 13 (bullet point 1, sub point 5) JC observed that there are other OEMs that have a much higher/lower level of inerts, however retro fitting to existing equipment is not possible. Referring to Slide 14 (bullet point 4, sub point 2, Condition 3) JC pointed out there were concerns regarding enhanced corrosion and the potential limit to asset life (impact on users and installations).

Referring to Slide 19 (bullet point 4), JC stated that this sort of information would be considered confidential and not for the public domain, but he was happy to share what was required with Ofgem

JCx referred to Slide 13 (bullet point 2, sub point 4) and to the paper she had provided, commenting that ETS costs were not relevant; the methodology was the important part when considering the environmental assessment and impacts. She gave a brief overview of what was required under Ofgem's decision letter relating to Modification 0321V (see <http://www.gasgovernance.co.uk/0321>) and drew attention to other appropriate links/sources as provided in her paper:

<https://www.ofgem.gov.uk/ofgem-publications/61741/ghgguidancejuly2010updatefinal080710.pdf>

<https://www.gov.uk/government/collections/carbon-valuation--2>

<https://www.ofgem.gov.uk/ofgem-publications/61245/cgrfinalproposals310310.pdf>

**ACTION 0804: *Assessment of Environmental Impacts - For each Modification, the Proposers to review and consider providing appropriate information to meet the requirements necessary under the UNC.***

JC then voiced a general concern that approval of either modification would set a precedent for other terminals across the UK to consider making similar proposals; consideration should be given to what wider impacts might result across other facilities/connected points. Should National Grid be asked to carry out other analysis? Could National Grid assess what proportion of gas (for domestic production) was coming through terminals that have a 4mol% limit? NR referred to the appendix of an Ofgem document (dated 20 September 2004) relating to Gas Quality that listed all the sub terminals and all their specifications – only 3 had a maximum of 4mol%. Given the date of the document, it was questioned how current that information had remained. DRa agreed to check and confirm the currency of the information, reminding that there may be confidentiality provisions as to what might be accessed/released. Domestic production was generally a mix of Norwegian and UKCS gas and was likely to vary throughout the year. National Grid would not necessarily know what that split might be or even whether that could be established to any meaningful degree.

**ACTION 0805: *Ofgem document (dated 20 September 2004) relating to Gas Quality – NR to provide link to document to DRa and DRa to check currency of information relating to sub terminals, and establish of the 13 sub terminals which take some domestic gas, which of them take 4mol%.***

DW commented that as the UK depends more on imports the gas mix will vary more and more and the gas likely to enter through IUK and BBL will potentially have a richer mix. Observing that this is quite clearly a longer term and broader quality issue and to be addressed at wider industry levels, he questioned how this could be addressed within the narrower confines of these discussions. DRe referred to the DTI/DECC study on gas quality, which had concluded that nothing needed to be done until 2020. MH agreed with DW that somehow it was necessary to put this local application to change gas quality parameters into a wider context. Referring to the information provided by BP, MH suggested that the Workgroup needed to see information on the variation in the entry points at Teesside and how this affects the quality of gas at exit - it could dilute, or it may actually be minimal in its effect. To take a view, exit quality data would be required for review and assessment. There were concerns raised on the impacts to the use of gas for export as this had to be within 2.5mol% limit.

GJ referred to Slide 15 (bullet point 1, Condition 1), believing that this had not properly been addressed, and a discussion ensued (destination of flows from Teesside, conditions when higher CO<sub>2</sub> content was likely to arise, etc). MH commented that gas quality may not be able to be harmonised across the EU and this was being debated. DW urged caution against constructing theoretical situations, and to consider the balance of probability as to whether certain combinations would happen in commercial reality to create potential difficulties.

NR referred to Slide 18 and the three options considered. Had a further option, offshore removal with relaxed entry specification, also been considered? It was confirmed that it had been considered - ARG explained how that could be done - but it had been concluded to be very challenging and costly.

AC reiterated that Modification 0498 was trying to put in place conditions to facilitate the new development of a particular series of sub terminals. This was likely to be different to proposals put forward by other parties. AC added BP was trying to trigger new productions, and the potential changes needed to be observed and assessed. NR pointed out that any party could raise a modification to have reductions made to 2.5% if the impacts of a relaxed specification have adverse effects. She recommended that the Proposers should carry out environmental impact assessments now before the modifications go out to consultation.

MH referred to Slide 4 (bullet point 3), and the projections made for 2014 -18 and 2019 – was that a base case? AC affirmed it was, and that Jackdaw and another field were both included. MH referred to the variability of CO<sub>2</sub> and WI etc, and asked if it would be any more or less than it was today? Was there any reason for thinking that it would be any different? FC confirmed that the variability would be approximately the same.

#### *TGPP/px Presentation*

CH gave a presentation outlining the background to Modification 0502 and seeking to address concerns raised by the various parties regarding the proposed changes. The substance of the presentation addressed the Actions assigned above. See individual action updates above, for more detail.

#### *General comments on the information provided by TGPP*

At the conclusion of the TGPP presentation a number of points were discussed. Referring to Slide 4, PB commented that there may be other operators and generators that are affected so it was of a much wider concern for a number of parties other than just for SSE. It was suggested that any such information should be shared with Ofgem.

Asked if there was likely to be an Ofgem Impact Assessment, DRe said this might be considered following the Final Modification Report (which needs to be as complete as possible), but that it should not be relied upon to happen. As much information as possible should be gathered and investigated in advance and included in the reports before going to Panel. He stressed this was critical for any decision making. Panel should look at the wider view and justify taking a narrower perspective. Proposers should engage with industry parties and seek and take into account these views before the modifications were issued for consultation. It is a wider NTS issue rather than just a local Teesside issue.

PB added that implications for warranties were a very real issue. JC referred to a paper that gives details about running regimes and conditions under which equipment could be operated. The key issue was 'rate of change'. If there was a step change with advance warning then this could be managed, but if variations were to be daily this would give significant issues; perhaps a limit should be set. AC asked if JC could provide examples or information where this sort of problem had been experienced/encountered before.

**ACTION 0807: 'Rate of change' issues for operating equipment - Consider providing examples or information where this sort of problem had been experienced/encountered before.**

Slide 3 – CH presented a schematic of the CATS and TGPP infrastructure and it was noted that TGPP had an extra feed in from the Southern North Sea Field. The effects of this were discussed in greater detail. It was suggested a revised schematic be provided to clarify where gas was to be received and where extra facilities were planned to be built.

**ACTION 0808: CATS and TGPP infrastructure – Provide revised schematic to confirm how facilities will be configured, what will be upgraded and likely combined costs.**

**ACTION 0809: Offshore Development Opportunities – Proposers to describe what these are and their timings, and the potential forecast variations in CO<sub>2</sub>, and then assess the potential effects on Teesside gas entry quality. (BP also to confirm if the forecast information is the most up-to-date.)**

JCx referred to ETS and venting of CO<sub>2</sub> emissions, and requested clarification on what was dealt with under ETS and what was excluded.

**ACTION 0810: ETS and venting of CO<sub>2</sub> emissions – Proposers to confirm what is included/excluded and how dealt with.**

Differences in networks and ‘swing’ flows were discussed. It was suggested that there was a need to better understand what the National Grid NTS modelling was actually telling – could it indicate where Teesside gas goes? It was believed it might be modelled in combination with other gas flows, but would not be able to tell the CO<sub>2</sub> content or gas composition.

At the conclusion of the presentations a review of the status of the outstanding actions was undertaken, with some being agreed fulfilled and others requiring further work to bring to completion (see Actions at 1.2, above). A number of new actions were also agreed as discussions progressed.

### 3.0 Legal Text

None available for review/discussion.

### 4.0 Workgroup Report

The UNC Modification Panel had requested that the Workgroup offer its views/recommendations regarding Modifications 0498 and 0502 in a combined report.

The Workgroup Report (combined 0498 and 0502) is due to be presented at the UNC Modification Panel by 20 November 2014.

### 5.0 Any Other Business

None.

### 6.0 Diary Planning

Further details of planned meetings are available at: [www.gasgovernance.co.uk/Diary](http://www.gasgovernance.co.uk/Diary)

The next combined Workgroups 0498/0502 meeting will take place within the Transmission Workgroup on Thursday 04 September 2014, at the ENA, Dean Bradley House, 52 Horseferry Road, London SW1P 2AF.

## Action Table – Combined Workgroup 0498/0502 (07 August 2014)

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0504	01/05/14	2.0	Ascertain if there is any internal focus within Ofgem currently being applied to the area of gas quality.	Ofgem (DRe)	Closed
0505	01/05/14	2.0	Provide a view of any issues, as perceived by Ofgem.	Ofgem (DRe)	Closed

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0601 (a)(i)	05/06/14	2.0	<p><i>Issue 1: What is the impact on gas quality at the entry and exit points for a change in the CO<sub>2</sub> to 4% in relation to:</i></p> <ul style="list-style-type: none"> <li>• CV</li> <li>• Wobbe</li> <li>• Variability in h/d/w timeframes</li> <li>• for operation (eg maintenance and performance).</li> </ul> <p>(a)(i) Provide historical/forecast data on gas quality at Teesside.</p>	Proposers and NTS (AH/AC/DRa)	<b>Closed</b>
0601 (a)(ii)	05/06/14	2.0	<p><i>Issue 1: What is the impact on gas quality at the entry and exit points for a change in the CO<sub>2</sub> to 4% in relation to:</i></p> <ul style="list-style-type: none"> <li>• CV</li> <li>• Wobbe</li> <li>• Variability in h/d/w timeframes</li> <li>• for operation (eg maintenance and performance).</li> </ul> <p>(a)(ii) Provide historical/forecast data on gas quality at other entry points.</p> <p><u>DRa to consider if the following can be provided and analysed to produce comparisons with Teesside data:</u></p> <p><u>Entry Points:</u> Bacton, Easington, St Fergus, Barrow and Theddlethorpe and also the 2 Teesside sub terminals .</p> <p><u>Gas Quality Elements:</u> Historic CO<sub>2</sub>, Wobbe, GCV.</p>	NTS (DRa)	<b>Action expanded and Carried forward</b>
0601 (a)(iii)	07/08/14	2.0	DRa to consider analysing and comparing GCV for entry points on the East coast.	NTS (DRa)	<b>New part added and Carried forward</b>

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0601(b)			(b) Availability and suitability of historical/forecast data for exit points to be evaluated.	NTS (DRa)	Closed
0601(c)			c) Refine the Tata Steel question into numbers.	Proposers (AH/AC)	Closed
0601(d)			d) Evaluate what data can be provided about Variability.	BP Gas (AC)	Closed
0602	05/06/14	2.0	<p><i>Issue 2: What happens to the increased CO<sub>2</sub> after consumption in relation to:</i></p> <ul style="list-style-type: none"> <li>• <i>In a gas turbine power plant</i></li> <li>• <i>Combusted for heat</i></li> <li>• <i>Feedstock</i></li> <li>• <i>Storage.</i></li> </ul> <p>Where it is an ETS site, CO<sub>2</sub> passes through and impacts costs. Develop an impact assessment.</p>	Proposers (AC and AH)	Closed
0603	05/06/14	2.0	<p><i>Issue 3: What is the impact on OEM Warranties if increased levels of CO<sub>2</sub>/inerts are seen?</i></p> <p>Seek views from Energy UK members, regarding volumes/types/ locations/limits.</p>	Energy UK (JCx)	Carried forward
0604	05/06/14	2.0	<p><i>Issue 4: How does this fit with the proposed BS EN 16726?</i></p> <p>Investigate scope/impact/relevance.</p>	Proposers (AC and AH)	Closed
0605(a)	05/06/14	2.0	<p><i>Issue 5: What is the local impact on the DN and NTS operators?</i></p> <p>a) Understand the network flow impacts (see the GrowHow representation) – in relation to pressure/volumes/CV shrinkage.</p>	NTS (DRa)	Carried forward
0605(b)	05/06/14	2.0	<p><i>Issue 5: What is the local impact on the DN and NTS operators?</i></p> <p>b) Consider any impact on IPs.</p>	NTS (DRa)	Carried forward

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0606	05/06/14	2.0	<i>Issue 6: What are the alternatives (include costs)?</i> Consider other options, including the onshore removal of CO2 to be developed, and provide a high level view on costs/advantages/disadvantages.	Proposers (AC and AH)	<b>Closed</b>
0801	07/08/14	1.2	Invite DECC to provide a view on these modifications for inclusion in the Workgroup's report.	Proposers (AC and AH)	<b>Pending</b>
0802	07/08/14	1.2	<i>Variability Data for major entry/exit points</i> - DRa to consider what can be made available (if already collected), or what can be recovered and provided on a regular basis if not already gathered.	NTS (DRa)	<b>Pending</b>
0803	07/08/14	1.2	<i>Variability Data for major entry/exit points</i> - All parties to review the UNCORM Data Dictionary ( <a href="http://www.gasgovernance.co.uk/tpddocs">http://www.gasgovernance.co.uk/tpddocs</a> ) and other recognised data sources, and assess and report on the capability of providing sufficiently current and accurate data to inform Workgroup views.	ALL parties	<b>Pending</b>
0804	07/08/14	2.0	<i>Assessment of Environmental Impacts</i> - For each Modification, the Proposers to review and consider providing appropriate information to meet the requirements necessary under the UNC.	Proposers (AC and AH)	<b>Pending</b>
0805	07/08/14	2.0	<i>Ofgem document (dated 20 September 2004) relating to Gas Quality</i> – NR to provide link to document to DRa and DRa to check currency of information relating to sub terminals, and establish of the 13 sub terminals which take some domestic gas, which of them take 4mol%.	EDF Energy (NR) and NTS (DRa)	<b>Pending</b>

<b>Action Ref</b>	<b>Meeting Date</b>	<b>Minute Ref</b>	<b>Action</b>	<b>Owner</b>	<b>Status Update</b>
<b>0807</b>	07/08/14	2.0	<i>'Rate of change' issues for operating equipment</i> - Consider providing examples or information where this sort of problem had been experienced/encountered before.	SSE (JC)	<b>Pending</b>
<b>0808</b>	07/08/14	2.0	<i>CATS and TGPP infrastructure</i> – Provide revised schematic to confirm how facilities will be configured, what will be upgraded and likely combined costs.	TGPP (CH)	<b>Pending</b>
<b>0809</b>	07/08/14	2.0	<i>Offshore Development Opportunities</i> – Proposers to describe what these are and their timings, and the potential forecast variations in CO <sub>2</sub> , and then assess the potential effects on Teesside gas entry quality. (BP also to confirm if the forecast information is the most up-to-date.	Proposers (AC and AH)	<b>Pending</b>
<b>0810</b>	07/08/14	2.0	<i>ETS and venting of CO<sub>2</sub> emissions</i> – Proposers to confirm what is included/excluded and how dealt with.	Proposers (AC and AH)	<b>Pending</b>