

**UNC Combined Workgroups 0498/0502 Minutes**  
**Amendment to Gas Quality NTS Entry Specification at BP**  
**Teesside System Entry Point**  
**Monday 09 March 2015**  
**Energy Networks Association, 52 Horseferry Road, London SW1P 2AF**

**Attendees**

Les Jenkins (Chair)	(LJ)	Joint Office
Lorna Dupont (Secretary)	(LD)	Joint Office
Alice Mitchell*	(AM)	Ofgem
Andrew Pearce	(AP)	BP Gas
Antony Miller	(AMi)	Centrica Storage
Charles Ruffell	(CR)	RWEst
David O'Donnell	(DO)	TGPP
David Reilly	(DRe)	Ofgem
Dennis Rachwal	(DRa)	National Grid NTS
Graham Jack	(GJ)	Centrica
Matthew Bacon	(MB)	DECC
Natasha Ranatunga	(NR)	EDF Energy
Richard Fairholme*	(RF)	E.ON
Robert White	(RW)	DECC
Vincente Solera-Deuchar	(VSD)	DECC

\*via teleconference

Copies of papers are available at: [www.gasgovernance.co.uk/0498/090315](http://www.gasgovernance.co.uk/0498/090315)

Modification 0498 - Amendment to Gas Quality NTS Entry Specification at BP Teesside System Entry Point

Modification 0502 - Amendment to Gas Quality NTS Entry Specification at the px Teesside System Entry Point

The Workgroup Report (combined 0498 and 0502) is due to be presented at the UNC Modification Panel by 21 May 2015.

**1.0 Introduction**

LJ welcomed all to the meeting.

**2.0 Review of Minutes and Actions**

**2.1 Minutes (21 January 2015)**

AM suggested recording the point that CO<sub>2</sub> above the Network Entry Agreement (NEA) limit would not result in a Terminal Flow Advice (TFA). This was briefly discussed and it was agreed that DRa should clarify this for inclusion in the Workgroup Report.

**Action 0301: DRa to clarify that CO<sub>2</sub> above the Network Entry Agreement (NEA) limit would not result in a Terminal Flow Advice (TFA).**

The minutes from the previous meeting were approved.

**2.2 Actions**

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

**Update:** DRa had supplied National Grid NTS CV data from a CCGT offtake (provided in response to request for assistance from Julie Cox and with the permission of the site owner). The graphs illustrated Within Day variation of CV at an NTS offtake and CCGT trip events (2011 - 2012) at a location in the East of England. It was confirmed it was a dedicated offtake. The data was reviewed and discussed. It was noted that the CV is a fairly smooth trace. DRa pointed out this was 'unclean data', in that it could not be verified if there was an instrument fault. There may be a variety of causes for a CV change, e.g. instrument error, variations in the sources of gas and gas quality, etc. The exact cause was unable to be ascertained and therefore it was not possible to eliminate instrument error. It might be attributable to a change in gas quality at one or more terminals flowing through in the gas mix; the time of flight at a particular terminal was difficult to determine.

DO drew attention to the chart provided by J Cox at the January meeting and made comparison (rate of change) with the information that he had provided for this March meeting (a graph illustrating TGPP variation in WI (January 2010 - July 2012)). This was reviewed and discussed. Teesside appeared to be the more stable (export from gas plant); the extremes were the issue. The data was discussed, and it was questioned whether that picture was likely to change once the Jackdaw field was commissioned. It was observed that CV and Wobbe have poor correlations to CO<sub>2</sub>.

Returning to the data provided by DRa, LJ commented that the range of dates was quite narrow; scarcity of data for investigation meant it cannot be concluded there had been other events since. There is some evidence to suggest that it may be a factor but a firm conclusion cannot be reached. MB asked if further evidence could be obtained; participants briefly explained what had been sought and the difficulties encountered. LJ summarised there appeared to be a variation in CV, then a trip, but the cause was inconclusive. **Closed**

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

**Update:** Following discussions with BP Gas and the vendors of amine units, it had been confirmed that a single amine unit could be installed at the Reception Facilities. DO had provided a revised schematic as illustration; this was reviewed. It was confirmed there were no other requirements over and above the amine unit. **Closed**

**1201:** All parties to review the draft Workgroup Report (published at [www.gasgovernance.co.uk/0498/081214](http://www.gasgovernance.co.uk/0498/081214)) and what information they have been tasked to provide (*see text/assignments in red, page 8 onwards*), and submit their contributions to the Joint Office in advance of the next meeting (i.e. by 02 March 2015) for inclusion in the redrafted Workgroup Report.

**Update:** LJ reported that a number of contributions had been received and been added to the draft Workgroup Report.

Following consideration of the draft report (see discussions at 3.0, below) further contributions were necessary and should be submitted to the Joint Office in advance of the next meeting (i.e. by 20 March 2015) for inclusion in the redrafted Workgroup Report.

(This action has been updated to reflect the new submission date and publication location - see Action Table below.) **Carried forward**

**0101: Curtailment** - Confirm which party instructs curtailment, Teesside or National Grid NTS.

**Update:** AP gave examples and confirmed that CATS Teesside had instructed curtailment. **Closed**

**0102:** *Advance warning of gas quality variation* - Confirm how the notification process currently operates, and report on details of any past occurrences (cause, duration, process followed, etc).

**Update:** DRa gave a brief presentation outlining the current process, and confirmed that requests were very rare. DO and AP believed it had never been required. Responding to a question from NR, DRa confirmed that TFAs were reported through to the HSE. DO summarised that the plant receives a call from National Grid NTS when meters/samplers are registering proximity to the specified limit (H<sub>2</sub>S); when it gets close, National Grid NTS calls to give the plant a 15 minute warning to get gas back into specification, otherwise the plant will be curtailed/shut down. The HSE report covers all excursions for all parameters. LJ confirmed that data could be found at <http://www2.nationalgrid.com/uk/industry-information/gas-transmission-operational-data/>.

GJ asked if a request was received for over 2.9% how would it be evaluated? DRa thought this would depend on the circumstances/time constraints at the time, and a number of diverse technical factors and criteria would be taken into account. DO observed that the process lacked rigour and was not called upon - who grants approval of the excursion and for how long a duration? It would be better to have a detailed specification rather than 'apparent' flexibility. **Closed**

### 3.0 Development of the Workgroup Report

The draft Workgroup Report v0.8 was reviewed on screen. LJ explained how it had been restructured and the additions made following receipt of various contributions.

DECC had provided a number of questions for consideration and response by the Workgroup and these were addressed as appropriate points were reached in the review of the current draft.

#### ***Workgroup Assessment (Page 8 onwards)***

The new inclusions were discussed and what further information might be required; a number of observations and suggestions were made as the review progressed. Individual parties were tasked with confirming/providing additional information as appropriate, according to the Workgroup's view of what was necessary to include as supporting evidence in the Workgroup's report.

*DECC Question 1: Provide more information on whether downstream users can upgrade their CO<sub>2</sub> removal systems to tackle the problem that systems are running at (near) full. [sic]*

It was suggested this referred to end consumers and LJ offered to write to GrowHow to seek its views. The following questions were suggested for response:

- what are its current CO<sub>2</sub> emission and removal levels, and what is its theoretical maximum capacity for these levels;
- was it feasible to expand its capability, and if so, by how much and at what cost; and
- what were the implications if it experienced 30 days at the high CO<sub>2</sub> level.

**Action 0302: DECC Q1 - LJ to write to GrowHow to seek its views regarding the feasibility of upgrading its CO<sub>2</sub> removal systems.**

*DECC Question 2: Could we see more evidence from turbine manufacturers about the*

*impact on warranties?*

MB believed that more evidence was required to support the assertion made in the draft report. It was suggested that J Chandler provide more evidence and establish/clarify what was quantifiable, i.e. negligible or 'red line' impacts.

**Action 0303: DECC Q2 - J Chandler to provide more/quantifiable evidence from turbine manufacturers to support the assertions made in respect of the impact on warranties.**

*DECC Comment: We would be particularly grateful if the workgroup could consider whether the upstream/downstream sectors could come to some sort of compensatory arrangement regarding the increased costs and risks to downstream users of an increased CO<sub>2</sub> limit. We note that there is a balance to strike between security of supply, maximising economic recovery from the North Sea, finding the most cost-efficient process (in terms of expenditure and associated carbon emissions), and adhering to the polluter pays principle.*

The Workgroup discussed this comment. It was recognised there was no view on how any such arrangement could be accomplished; there was no way it could be modelled. It was believed the cost would be much greater than any resultant accuracy. It was observed that the Workgroup was using the best tool available to it - industry consultation - within the constraints of its remit under the UNC.

*DECC Question 3: Please quantify the amount of gas Jackdaw will provide (total size, lifetime production, daily deliverability) – please provide some analysis to support the assertion that Jackdaw will improve security of supply.*

AP advised that he had asked the question internally (BP Gas) but had not received a response as yet. DO pointed out that neither BP nor TGPP own/operate the Jackdaw field. The estimates were those given by the field operator, and it was suggested that DECC was more likely to be privy to any detailed information rather than the Proposers of these two modifications or this UNC Workgroup. MB explained that he was again challenging what he saw to be assertions.

GJ commented that parties had concerns relating to the predicted high incursions in the summer months, and implications of this for security of supply when other activities were happening, e.g. Rough injection times. DO indicated that the assumption made was that CO<sub>2</sub> would be blended; the potential risk in the summer months (maintenance programmes) was that low CO<sub>2</sub> would not be available for blending. Jackdaw affects security of supply on a positive basis; it should be viewed in terms of how much it will contribute to satisfying UK demand, and if developed it will contribute to the UK's security of supply. It was suggested that further data be obtained if possible from the field operator for inclusion in the section "Further Background to the Change", to support this assertion.

**Action 0304: DECC Q3 - DO to obtain more data from the Jackdaw field operator to support the assertion that Jackdaw gas production will improve security of supply.**

*DECC Question 4: Please could you include info from other terminals about running costs with a 4% limit? Can downstream users at other 4% terminals provide information about how they manage varying CO<sub>2</sub> quantity around these terminals (esp CCGTs)?*

It was confirmed there were 3 other relevant sub-terminals and that evidence for flows had been produced (there was a differential, but not 4%); none were operating at the limit. RW observed that a Norwegian field producing high CO<sub>2</sub> gas might be coming into St Fergus, and queried if the data provided so far was very recent, adding that the Rhum gas

field also came on at the end of last year and this may also be an issue. The Workgroup noted this and agreed not to progress this question any further.

*DECC Question 5: Please quantify the benefits of Jackdaw in terms of efficient infrastructure utilisation and tax revenues.*

AP believed that DECC should already be in possession of this data from the field developer. RW pointed out that assertions had been made. DO responded that existing infrastructure would tie Jackdaw back to CATS, extending the life of that infrastructure so that abandonment could be deferred; tax impacts could be assessed in respect of development as against non-development. DRe indicated that consideration of tax revenues/benefits would not be a factor in Ofgem's decisions, and suggested including 'potentially' before any perceived assertions.

It was suggested that BG (the owner) could be asked to provide any confidential figures to Ofgem (estimate of benefits to UK economy). DRe responded that Ofgem would still struggle to assess any contribution of that nature. It was considered this might be more pertinent as a question for the industry through the consultation, rather than for inclusion in the Workgroup Report. LJ noted this for potential inclusion as part of the Workgroup's recommendation to the UNC Modification Panel.

*DECC Question 6: Please provide further details as to why the Jackdaw development cannot go ahead at 2.9% entry given the estimate that CO<sub>2</sub> expected to exceed 2.9% only a limited number of days when [sic]*

DO responded that Jackdaw was a very expensive development and CAPEX was of a very significant concern to the developer/operator. DO explained some of the technical details involved in developing such a project, and pointed out that great focus was placed on deliverability throughout the whole of the potential supply chain to guarantee revenue for investment. A firm service as near as 100% of the time as was possible was required, otherwise it was contractually a 'Reasonable Endeavours (RE)' service; and serious investment/development was not likely to go ahead on an RE basis. There may be a very few days risk a year where 100% was not achievable. DO indicated he could provide additional detail/qualifying statements for inclusion in the Workgroup's report if considered necessary.

*DECC Question 7: Please estimate the number of days CO<sub>2</sub> might exceed 2.9% post-2019 (as done for pre-2019) [sic]*

DO responded that for pre-2019 it was quite difficult to model. There is no quantification of days and TGPP and BP did not have this yet. It was believed that 30 days between now/then is a little high. DO indicated the model could be brought forward (previously predicated on the Jackdaw development). Production may be lowering between now and then.

AP confirmed 44 days curtailment for 2013 for an existing field but had no further details on this. Information could be provided for 2014 and a forecast for the remainder of the decade up to 2019. The Impact Assessment might then be adjusted.

**Action 0305: DECC Q7: AP to provide information/estimation of the number of days CO<sub>2</sub> might exceed 2.9% pre-2019.**

NR observed that the field developers would have originally signed up to a specific limit - it would be interesting to see if this was a risk they were willing to take. DO pointed out that this was a field that was owned/operated by CATS pipeline, and it was possible that

decisions were made by this particular party that would not be made if it had been a 'third party' without particular roles/activities under its control. The reservoir performance of the field would also have been taken into account.

*Page 13 - Effect of Increased Carbon Emissions*

DO challenged the initial statement. He explained there were 4 tiers of 'uncertainty measurement' for CCGTs, and made reference to 3 million tonnes plus of CO<sub>2</sub> being emitted into the atmosphere; plus/minus 1.5% is the 'uncertainty' level allowed. The additional CO<sub>2</sub> tonnage in TGPP's assessment is 0.01%. Is the carbon cost assessment that it will increase cost actually true? This was discussed. NR thought that on the basis of the current limited information available then yes, but it could change. Questions might be: was it a theoretical increased cost, and would a CCGT plant see this? LJ suggested that DO consider providing an alternative view to include in the report if he felt it was appropriate.

*Page 13 - Technical Complexity*

DO would like to understand what the minimums and maximums actually were. It was agreed that all parties should ask their Technical colleagues to review this section and submit any comments.

**Action 0306: Draft Workgroup Report v0.8 - Page 13 Technical Capacity - All parties to arrange for their Technical colleagues to review this section and submit comments.**

*DECC Question 8: Please outline the costs of CCGT retuning, and potential costs of CCGT tripping.*

LJ read out comments received from J Cox of Energy UK (EUK). It was questioned if there is a trip, what is the cost? It was suggested an action was placed on J Cox (supported by EUK members) to establish the costs of tripping and retuning.

**Action 0307: DECC Q8 - For a CCGT, establish the costs of tripping and retuning.**

*DECC Question 9: Please quantify the security of electricity supply risk to CCGTs. It would be useful to know how many CCGTs could be affected, when they might be impacted, what flexibility there is elsewhere in the system to accommodate.*

LJ read out comments received from J Cox of Energy UK (EUK). NR commented that Ofgem is not able to consider impacts on the electricity side. CCGTs are part of the capacity mechanism and must participate. The number of CCGTs in the Teesside area (winter/summer) could be included but there is no evidence to support how many might be affected. The Workgroup considered that this might be outside of its scope.

How CCGTs might operate was discussed. DO observed that the season to which J Cox referred to (winter), in the comment read out, was not necessarily what was under consideration here (summer). AMi believed there could be a scenario when other fields go down - high demand days are not unknown in the summer. Noting that CCGTs are part of the electricity supply mix, MB believed that CCGTs could handle this change and retune their equipment but needed sufficient advance warning to achieve this. MB emphasised the importance of timely communications in order to mitigate any consequential impacts in the electricity market. LJ suggested that parties might like to consider making additional contributions for inclusion in the draft report.

*Page 14 - Is there a competitive disadvantage for consumers close to Teesside?*

This was discussed, but it was considered there might be too many variables for any meaningful quantification. It was suggested this might be included as a question in the consultation phase; respondents might be asked to provide quantification (significance, per year) if they believed themselves to be affected by an increase in costs. LJ noted this for potential inclusion as part of the Workgroup's recommendation to the UNC Modification Panel.

*DECC Question 10: Report needs to quantify the 'significant challenges' for storage operators*

AMi affirmed he was in the process of acquiring figures/evidence and will provide information for inclusion in the report.

*Page 15 - Carbon Cost Assessment*

Referring to the slides provided for this meeting, DO drew attention to slides 3 and 4, which summarised the information provided for the report. A single amine unit could be installed at the Reception Facilities. It will be a bigger unit in size and complexity (operating at 100-110 bar), but this simplifies the carbon assessment. When Jackdaw's flow declines it must be noted that it would not sustain a processing plant but would have to flow in conjunction with other fields; the CCA would therefore be slightly overstated at the 'tail end'.

DO reiterated the assumptions associated with the operation of the amine unit (30 days at over 2.8%). Thermal cycling of the plant may affect efficiency/reliability of the plant. It was preferable to keep a stable thermal operating temperature, and CO<sub>2</sub> emissions would be affected. The operation of the amine unit was explained in more technical detail, including the effect of CO<sub>2</sub> scavenging on the amine and the need for keeping a minimum temperature (system heated), and the effects on CO<sub>2</sub>.

DO then explained the changes to the figures in the table. Installation of an amine unit is significantly costly and creates more CO<sub>2</sub>. It is expensive to do offshore; the impact is reduced onshore (30 days a year); lower CO<sub>2</sub> is emitted by end users on the NTS rather than through an amine unit.

Discounting and discount factors were briefly referred to, but discussion of these was not pursued.

The presentation of the figures in the table was considered and the possibility of confusion regarding cost per tonne. DO indicated he would revise the table to reflect the discussion and to avoid any misperception, and would check the consistency of the Table information/figures with that provided for the text included in the report. He would also provide the website reference for the Wood report.

*DECC Question 11: Interested to know if additional Jackdaw gas volumes will put downward pressure on gas prices. This might mitigate some of the impacts on downstream users elsewhere.*

DO believed that answer to be 'No'; the benefits case for the modifications was a positive effect on 'security of supply'. It was agreed not to pursue this issue further.

*DECC Question 12: Please outline why the Amine process is the most appropriate CO<sub>2</sub> removal technology?*

AP confirmed that, in BP's technical study work of CO<sub>2</sub> removal at CATS, BP started by examining all feasible technologies. BP selected amine as the only robust technology for the large volumes it is processing, the high pressure of the gas and the low concentration of CO<sub>2</sub> (and hence low mass flowrate of CO<sub>2</sub> versus mass flowrate of hydrocarbon gas). BP eliminated other technologies such as membranes and molecular sieves.

DO gave a technical explanation of the considered technologies, adding that amine is a proven technology, known to work with the gases that TGPP and BP are dealing with. LJ suggested that DO and AP should consider whether the report is complete in respect of this question.

*DECC Question 13: Have the Jackdaw developers considered whether there are alternative arrangements for managing the CO<sub>2</sub> risk. I.e. could the terminal hold blending gas in storage for the (limited) number of days when offshore blended gas might not be available?*

AP and DO confirmed there was no facility to do this with gas. A considerable volume would be involved, which would most likely have to be stored as LNG; costs would spiral and become prohibitive, and there would also be the question of who pays for the gas. The parties involved process but do not own the gas. It would have to be sold to Jackdaw, and why would Jackdaw buy it at the NBP? DO also referred to using waste heat (in the form of steam) adds to the capital cost of equipment and would require a separate commercial arrangement with another party.

It was suggested that the report might need to include an explanation of why gas is the right fuel for processing, and why temporary storage (prohibitive cost) was not an option.

#### *Page 21 - Wider Considerations*

LJ read out comments received from J Cox of Energy UK (EUK) regarding the application of a tax allowance for the CAPEX. DO responded that yes, it would apply. Tax allowances/positions were discussed in more detail (recipients, payers, period of years, proportionality to flows, etc). It was acknowledged that this was a very complex area, quantification was very difficult without running through a full cycle field model, and that only broad assumptions could be made. DO will give some consideration to providing a statement or to including in the modelling.

#### *Page 21 - Risk of Setting a Precedent*

Referring to the slides provided for this meeting, DRa drew attention to slide 5, which set out a decision chart to clarify. A map of the NTS had also been provided for reference. Different scenarios were discussed and comparison made with Bacton. Teesside would have to be justified as a case on its own, and that the individual rules for that could not be applied to all sites. Different assessments might be required at a cross-border location. Geography could present different arguments. Bacton was probably a worst case, would it be used as a rule for everyone else? This was seen to be very difficult. Examples were discussed, with the recognition that requests should not be limited unnecessarily - reasons for not doing might be objections from downstream parties. "First mover advantage" was discussed, and it was considered that this should not necessarily be objected to.

Different entry agreements applied at different entry points - was this due/undue discrimination? These had been negotiated and agreed for whatever circumstances or objective reasons were in place at the time (pre Network Code), and the industry had agreed with whatever those numbers were in the past.



Scenarios were discussed that might potentially lead to more requests. There were no licence or legislative limits; 2.9% was just a contractual limit. AP observed that Belgium operated 2.9% but used ballasting to deal with gas quality. GJ referred to the PARCA models under which there was a communal notification to alert parties of a request, and suggested the same might be considered under these modifications.

It was suggested that DRa consider providing a contribution on precedence for inclusion in the report.

### 3.1 Review of Relevant Objectives

LJ drew attention to the initial statements included. These may be refined as development of the report progresses.

### 3.2 Consideration of Legal Text for NEAs

To be reviewed.

### 3.3 Recommendations (including additional questions for UNC Modification Panel consideration)

To be discussed.

## 4.0 Next Steps

LJ reminded that the Workgroup's report is due for consideration at the UNC Modification Panel meeting on 21 May 2015 (submission date is 08 May 2015).

The draft Workgroup Report (as amended to reflect today's discussions) will be published following this meeting, and all parties will continue to maintain involvement and contribute to the drafting process through Action 1201 (updated to reflect the date agreed for submission of further contributions).

Further contributions should be provided to the Joint Office in advance of the next meeting (i.e. by 20 March 2015) for inclusion in the redrafted Workgroup Report, which LJ will endeavour to publish by Tuesday 23 March 2015 to give sufficient time for review.

At the next Workgroup meeting (31 March 2015) it will be the intention to continue to formally structure and shape the Workgroup's report, with the primary focus being on the further outputs from Action 1201, and how these will inform the Workgroup's views and be translated into meaningful content.

## 5.0 Diary Planning

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

Workgroup meetings will take place as follows:

Time/Date	Location	Programme
10:00, Tuesday 31 March 2015	ENA, 6 <sup>th</sup> Floor, Dean Bradley House, 52 Horseferry Road, London SW1P 2AF (Room 4 - maximum capacity 20 persons)	Development of Workgroup Report <i>(Contributions to be sent to Joint Office by 20 March 2015)</i>

10:00, Wednesday 29 April 2015	Energy UK, Charles House, 5-11 Regent Street, London SW1Y 4LR (Room LG8 - maximum capacity 22 persons)	Completion of Workgroup Report and Workgroup sign off
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**Action Table – Combined Workgroup 0498/0502 (09 March 2015)**

Action Ref	Meeting Date	Minute Ref	Action	Owner	Status Update
0807	07/08/14	2.0	'Rate of change' issues for operating equipment - Consider providing examples or information where this sort of problem had been experienced/encountered before.	Energy UK (JCx)	Closed
0808	07/08/14	2.0	CATS and TGPP infrastructure – Provide revised schematic to confirm how facilities will be configured, what will be upgraded and likely combined costs.	TGPP (AH)	Closed
1201	08/12/14	3.0	All parties to review the draft Workgroup Report (post meeting version, published at <a href="http://www.gasgovernance.co.uk/0498/090315">www.gasgovernance.co.uk/0498/090315</a> ) and what information they have been tasked to provide (see <i>text/assignments in red, page 8 onwards</i> ), and submit their contributions to the Joint Office in advance of the next meeting (i.e. by <b>20 March 2015</b> ) for inclusion in the redrafted Workgroup Report.	ALL Parties	<b>By 20 March 2015</b> Carried forward
0101	21/01/15	3.0	<i>Curtailment</i> - Confirm which party instructs curtailment, Teesside or National Grid NTS.	Proposers (AP and DO)	Closed
0102	21/01/15	3.0	<i>Advance warning of gas quality variation</i> - Confirm how the notification process currently operates, and report on details of any past occurrences (cause, duration, process followed, etc).	National Grid NTS (DRa)	Closed
0301	09/03/15	2.1	DRa to clarify that CO <sub>2</sub> above the Network Entry Agreement (NEA) limit would not result in a Terminal Flow Advice (TFA).	National Grid NTS (DRa)	Pending
0302	09/03/15	3.0	DECC Q1 - LJ to write to GrowHow to seek its views regarding the feasibility of upgrading its CO <sub>2</sub> removal systems.	Joint Office (LJ)	Pending

<b>Action Ref</b>	<b>Meeting Date</b>	<b>Minute Ref</b>	<b>Action</b>	<b>Owner</b>	<b>Status Update</b>
<b>0303</b>	09/03/15	3.0	<i>DECC Q2</i> - J Chandler to provide more/quantifiable evidence from turbine manufacturers to support the assertions made in respect of the impact on warranties.	SSE (J Chandler)	<b>Pending</b>
<b>0304</b>	09/03/15	3.0	<i>DECC Q3</i> - DO to obtain more data from the Jackdaw field operator to support the assertion that Jackdaw gas production will improve security of supply.	TGPP (DO)	<b>Pending</b>
<b>0305</b>	09/03/15	3.0	<i>DECC Q7</i> : AP to provide information/estimation of the number of days CO <sub>2</sub> might exceed 2.9% pre-2019.	BP Gas (AP)	<b>Pending</b>
<b>0306</b>	09/03/15	3.0	<i>Draft Workgroup Report v0.8 - Page 13, Technical Capacity</i> - All parties to arrange for their Technical colleagues to review this section and submit comments.	All parties	<b>Pending</b>
<b>0307</b>	09/03/15	3.0	<i>DECC Q8</i> - For a CCGT, establish the costs of tripping and retuning.	Energy UK (J Cox)	<b>Pending</b>