Interoperability Update

Ofgem & DECC EU Stakeholder Meeting

21st June 2016

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EU Interoperability Code Implementation

- EU TSOs were required to comply with the Interoperability Code by 1st May 2016
- Key changes delivered at GB IPs were:
  - TSO to TSO nominations matching and OBAs
  - Amended Interconnection Agreements
  - Common data exchange solutions
  - Common reference conditions (15/15 → 0/25*)
- Changes were delivered in:
  - EU Phase 2 (implemented from 1st October 2015)
  - EU Phase 3 (implemented from 1st May 2016)

* Moffat remained at 15/15

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EU Gas Quality Harmonisation Update

EU Gas Quality Harmonisation: Potential Timescales

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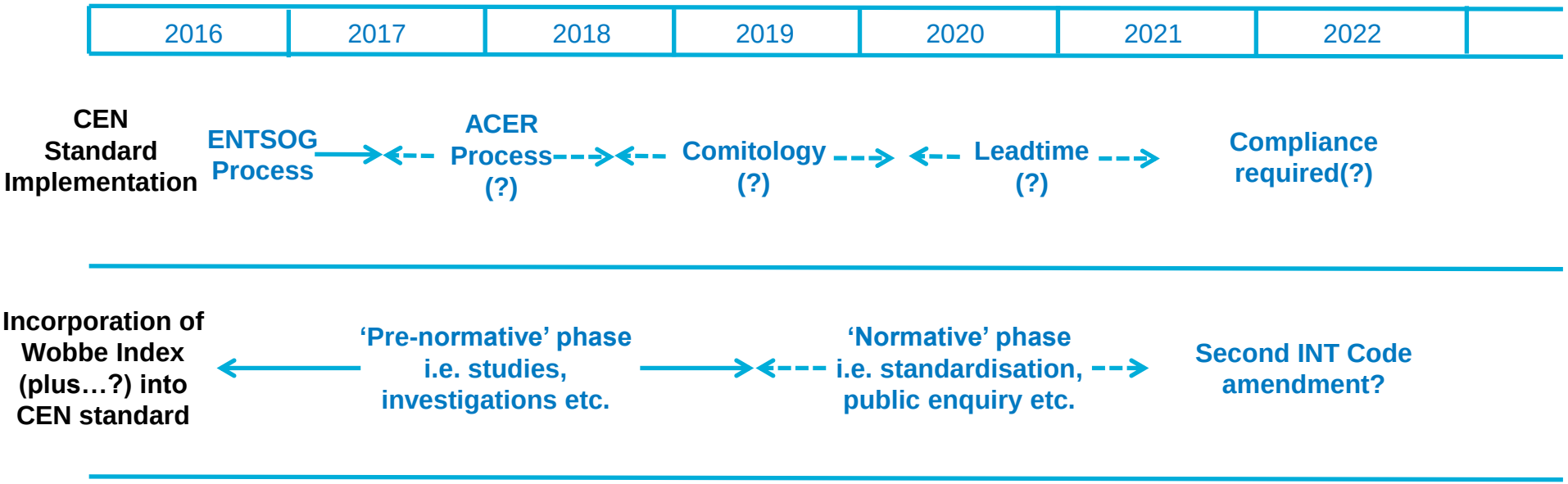

CEN Standard Implementation: ENTSOG Process

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- ENTSOG accepted a request from the EC in early 2016 to conduct an impact analysis and draft an amendment to the Interoperability Code
- ENTSOG held a stakeholder workshop in Cologne on 28th April 2016
  - National Grid NTS' 'unofficial' notes of this meeting are available at: http://www.gasgovernance.co.uk/sites/default/files/ENTSOG%20Gas%20Quality%20Workshop%20Cologne%2028.4.16%20-%20informal%20notes.pdf
  - ENTSOG plans to hold more workshops in September and November 2016 (dates are not yet fixed)
- ENTSOG has published a consultation questionnaire on the Interoperability section of its website: http://www.entsog.eu/publications/interoperability
  - **The deadline for responses is 15th July 2016**
  - **National Grid NTS encourages GB stakeholders to respond to this consultation**
  - GB stakeholders may contact ENTSOG (antonio.gomezbruque@entsog.eu) or National Grid NTS (philip.hobbins@nationalgrid.com) with any queries

ENTSOG Questionnaire: Policy Issues and Initial NG NTS Views

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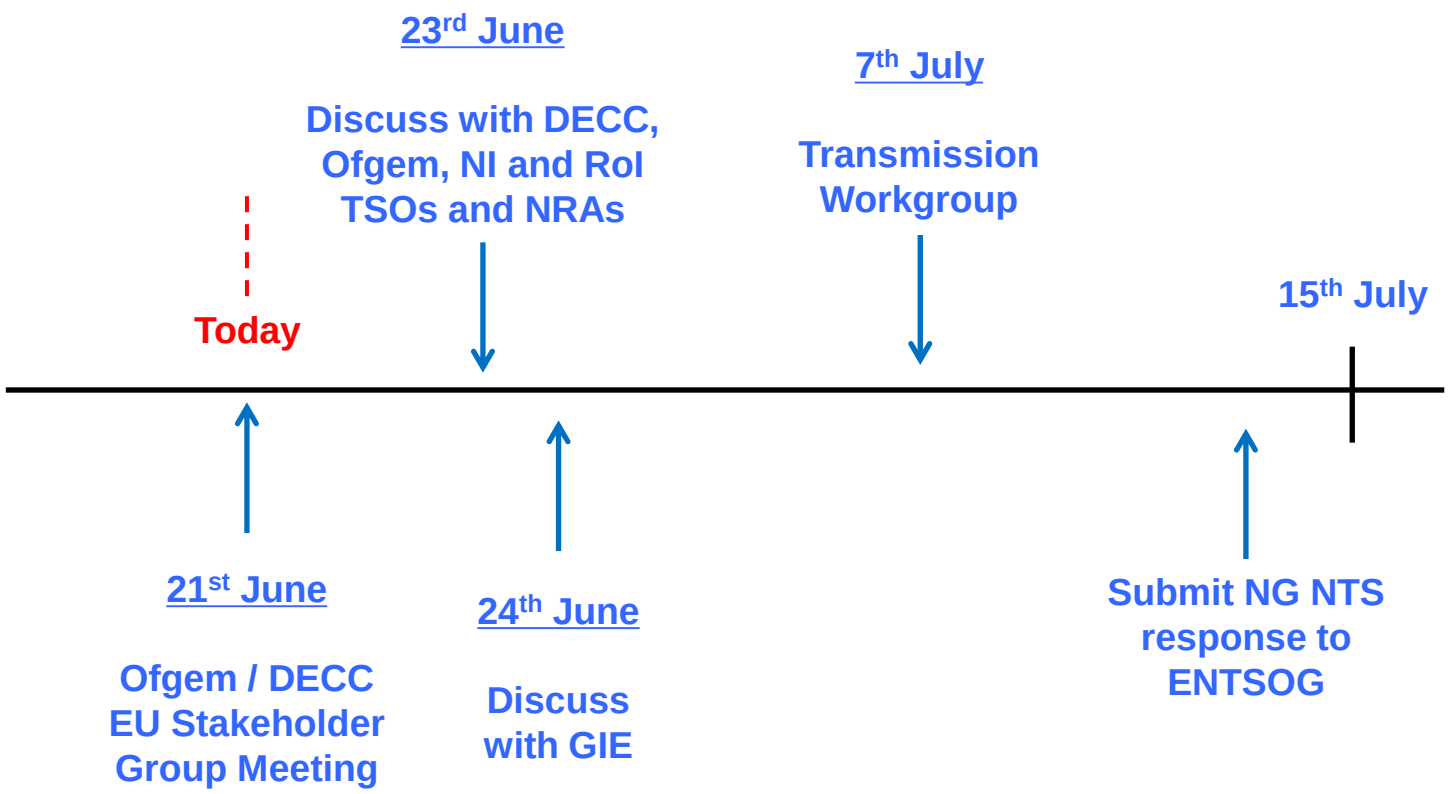
Issue	Initial NGGT Views
1. How should the standard be applied?	Voluntary basis preferred. If legally binding then prefer whole chain to IPs or transmission only. It should not be applied restrictively.
2. What should the implementation plan be?	Not applicable since voluntary adoption preferred.
3. How should the standard interact with current Interoperability rules?	No change to current INT rules preferred.
4. How should A-Deviations be treated?	If the standard is made binding then A-Deviations would automatically be included unless specifically carved out by the INT amendment.
5. How should the flexible limits (CO_2 and O_2) be applied?	Further definition is needed before these flexible limits could be applied by NG NTS.

ENTSOG Gas Quality Consultation: Stakeholder Engagement



CEN Standard Implementation: Carbon Dioxide and Oxygen Limits

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- CEN standard provides ranges for CO_2 and O_2 limits, dependent upon whether gas will reach ‘sensitive’ sites
  - CO_2: 2.5% up to 4%
  - O_2: 0.001% up to 1%
- National Grid NTS has analysed the impact on NTS entry flows of applying the ‘base’ limits at all NTS entry points

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Carbon Dioxide Analysis

- Graphs 1 and 2 show for calendar year 2015:
  - Number of days on which the average CO_2 content was above 2.5% for three sources of supply to the NTS
  - Total volume of gas delivered at those same three supply sources for each of those days
- The data shows that approximately 13.8 bcm of gas with a CO_2 content above 2.5% was delivered to the NTS over this period
- Total NTS supplies (exc. storage) in 2015 = 79 bcm*
- Hence 17.5% of NTS supply was above 2.5% CO_2

*NB. Updated metric from 5th May 2016 Transmission Workgroup slides

Graph 1: Number of days in calendar year 2015 on which the average CO_2 content was above 2.5% for three sources of supply to the NTS

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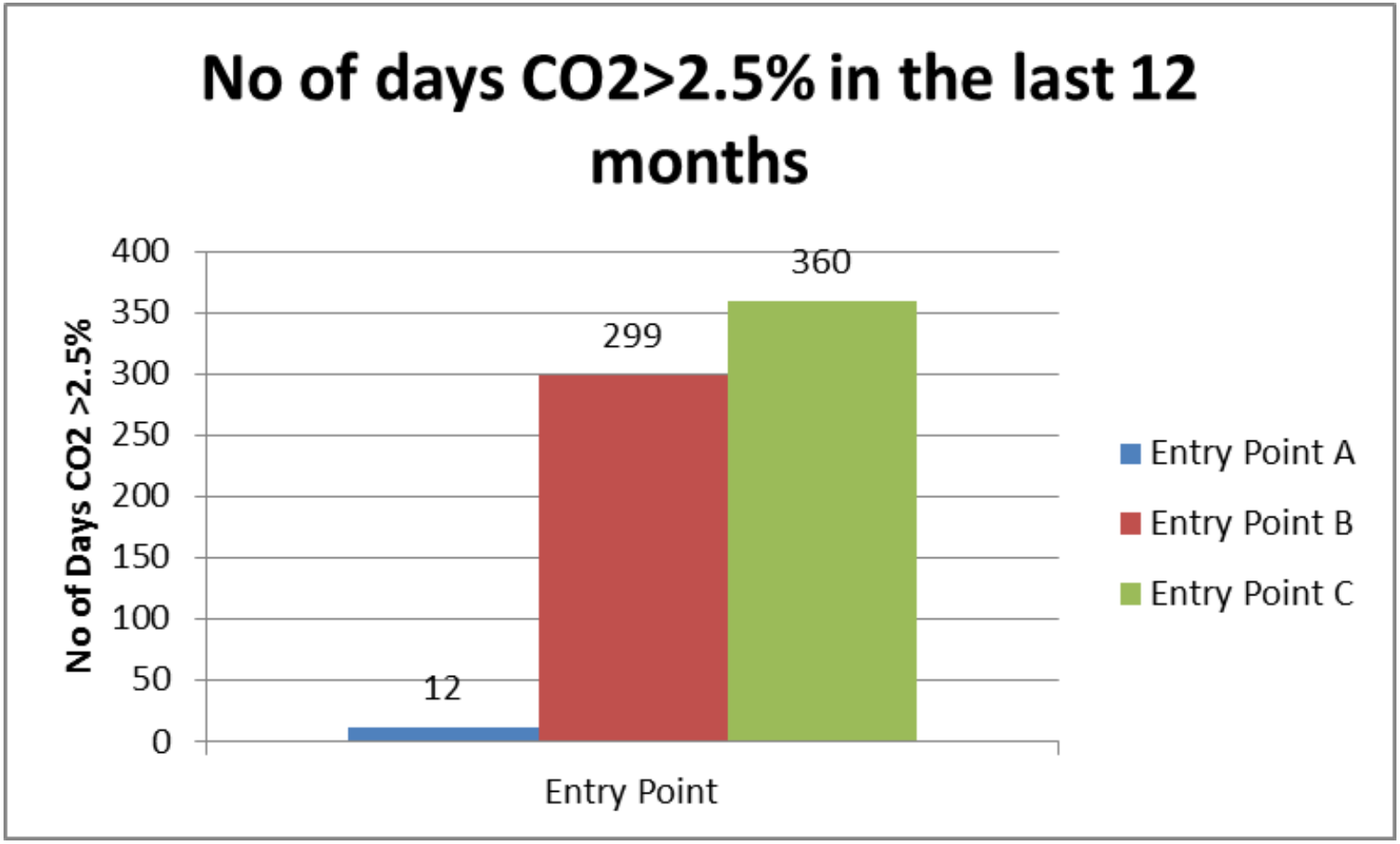
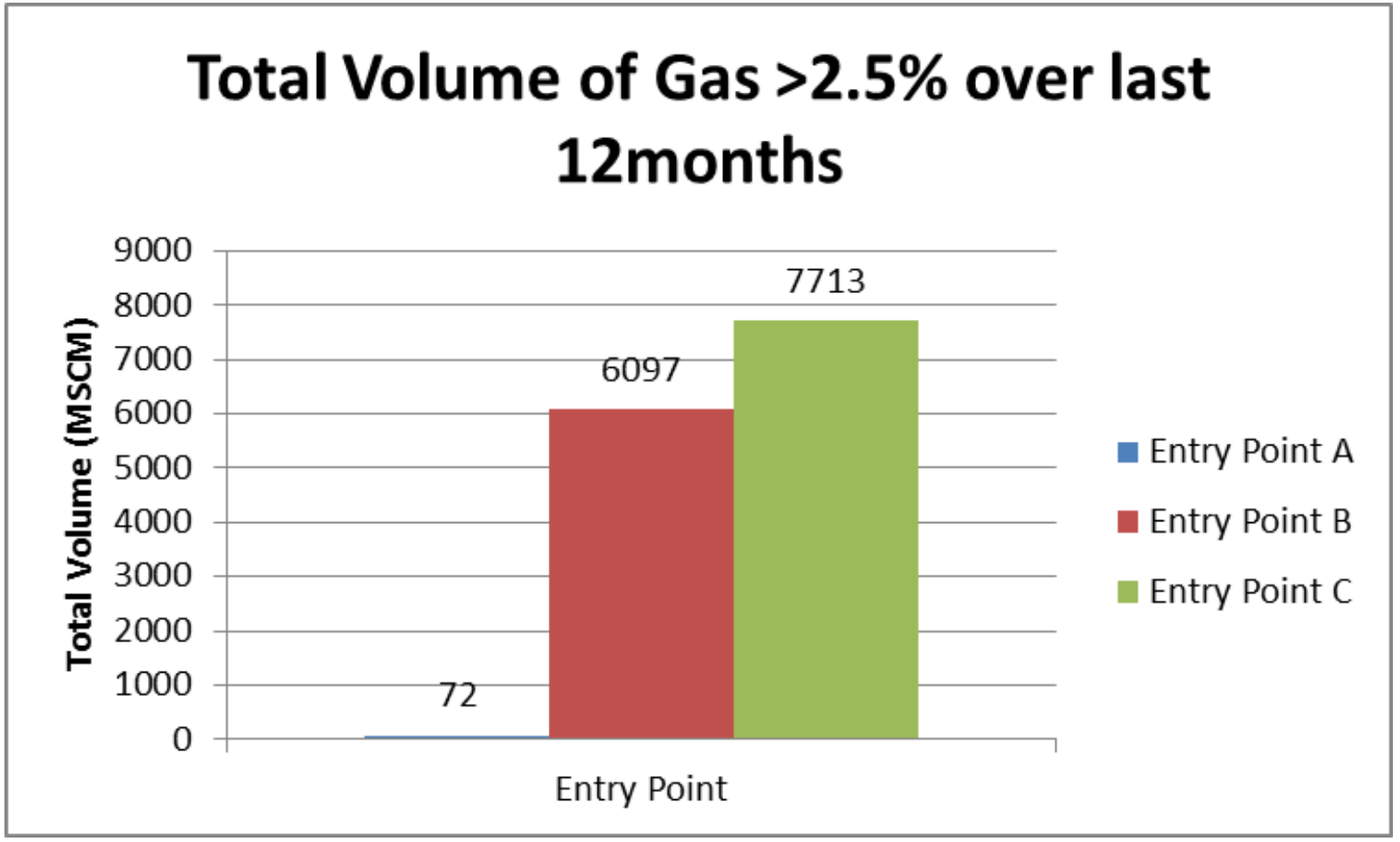


Graph 2: Total volume of gas delivered at those same three supply sources for each of those days in 2015



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Oxygen Analysis

- Graphs 3 and 4 show for calendar year 2015:
  - Number of days on which the average O_2 content was above 0.001% for two sources of supply to the NTS
  - Total volume of gas delivered at those same two supply sources for each of those days
- The data shows that approximately 2.1 bcm of gas with a CO_2 content above 0.001% was delivered to the NTS over this period
- Total NTS supplies (exc. storage) in 2015 = 79 bcm
- Hence ~2.6% of NTS supply was above 0.001% O_2

Graph 3: Number of days in calendar year 2015 on which the average O_2 content was above 0.001% for two sources of supply to the NTS

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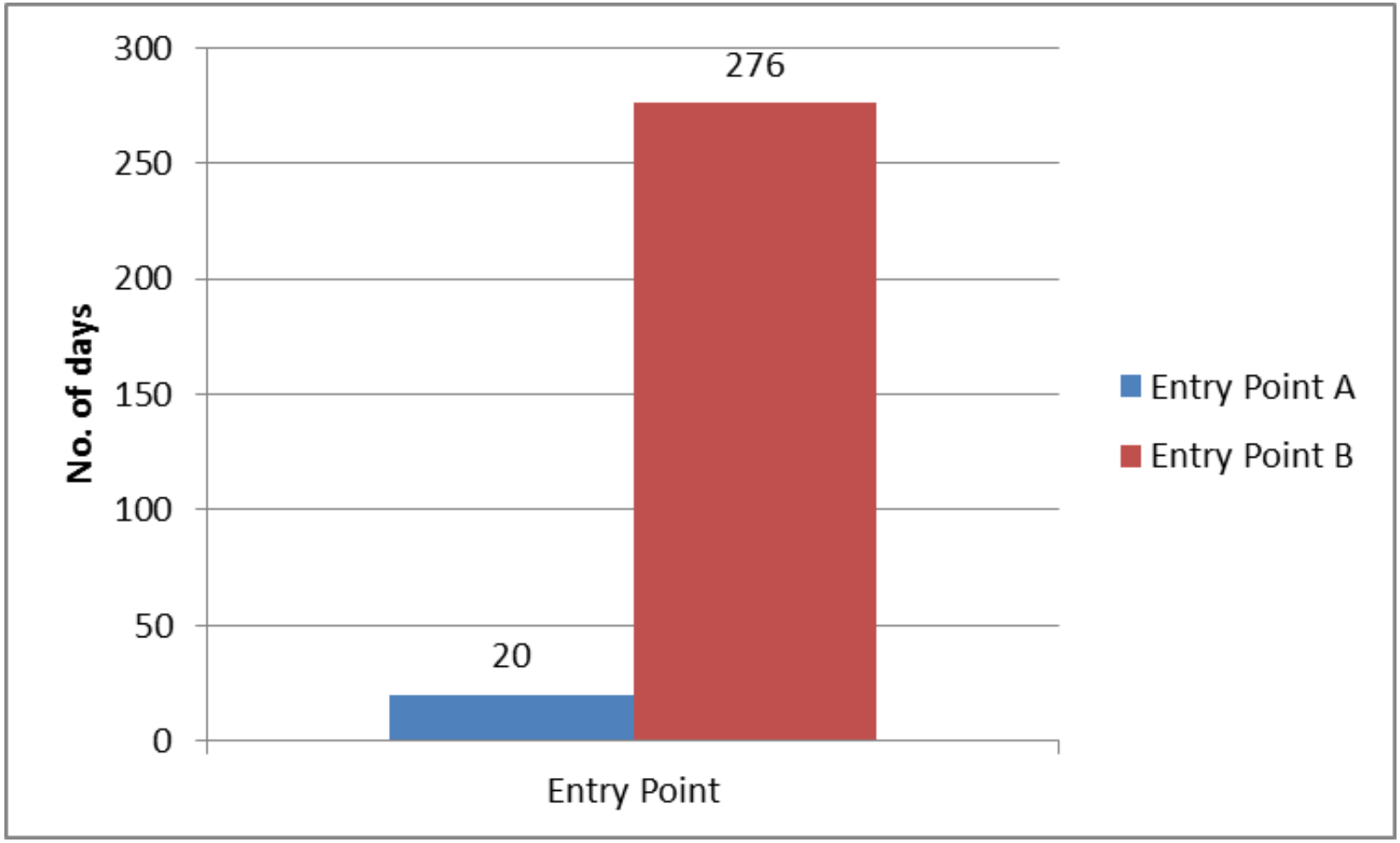
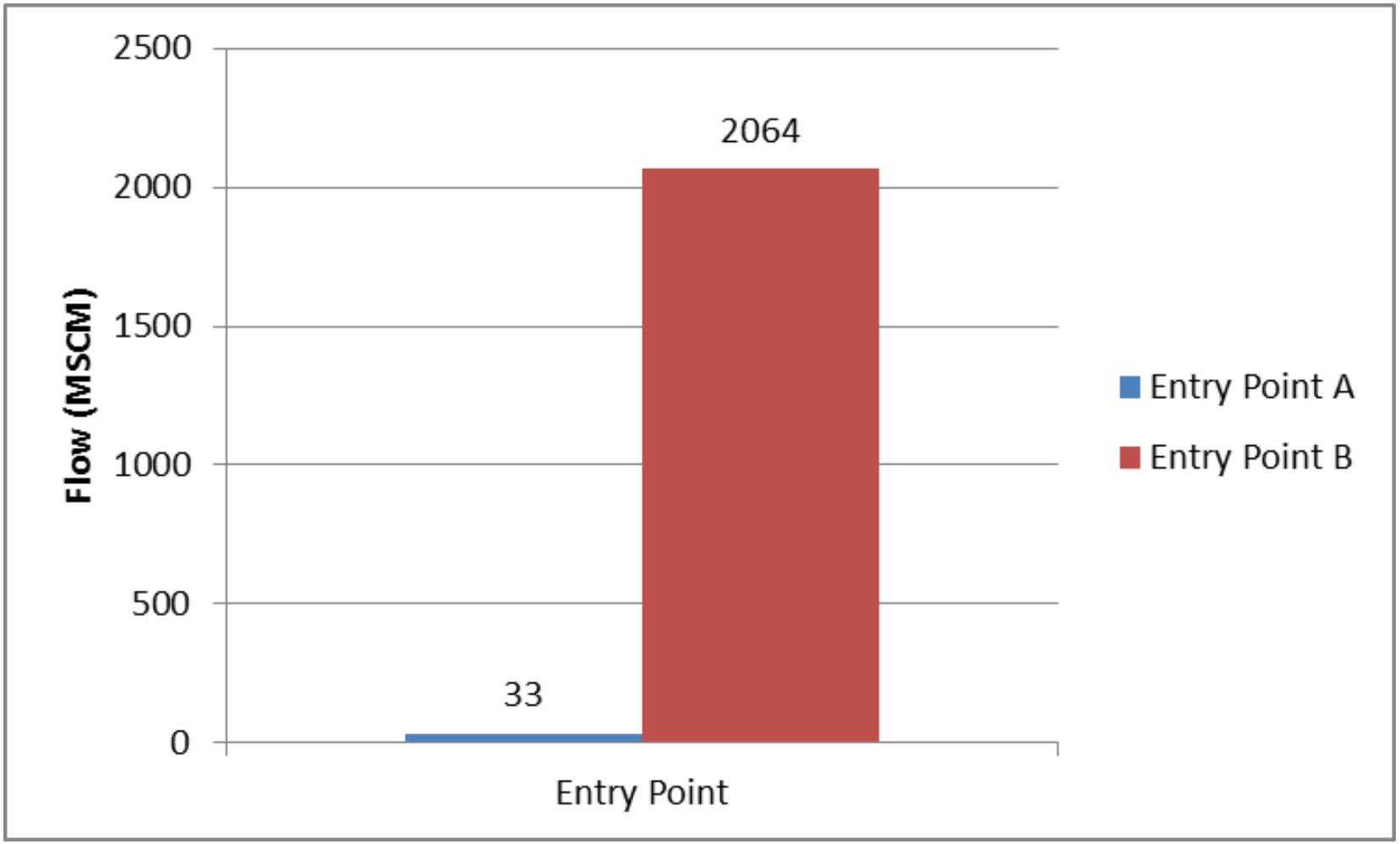


Graph 4: Total volume of gas delivered at those same two supply sources for each of those days in 2015



CO_2 and O_2 Analysis: Conclusion

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- **If, during calendar year 2015, NTS supplies were to have been restricted to:**
  - **2.5% CO_2 content; and**
  - **0.001% O_2 content**
- **then approximately 20% of UK supply would have been refused entry to the NTS**