UNC Workgroup 0607S

NSMP Actions

17th March 2017

Action 0104: Reliability of field plant/equipment

- **DOD to provide a statement to support the view of forecast unplanned outages (for inclusion in the Workgroup Report).**

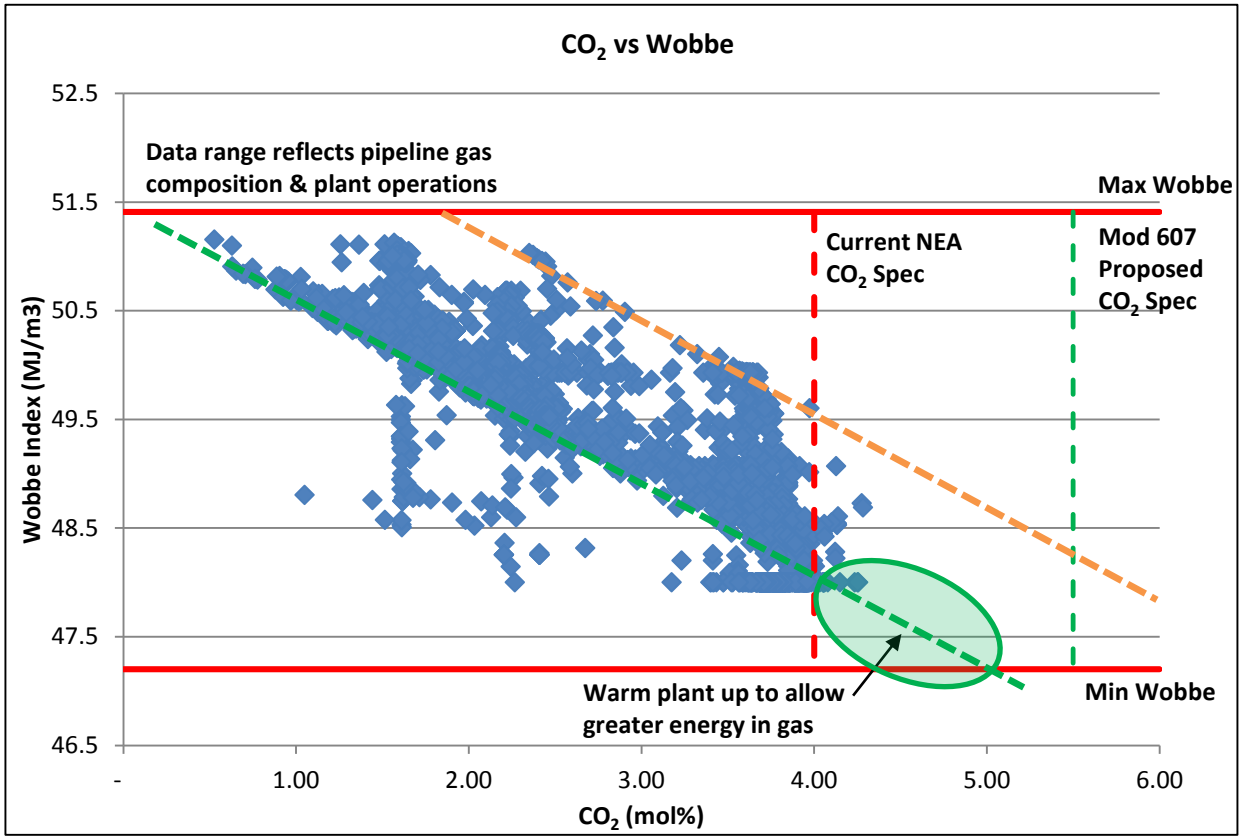
By their nature, unplanned outages cannot be forecast however the historic uptime of facilities could be considered as an indicator of reliability. The Shetland Gas Plant (SGP) which processes fluids from the Laggan and Tormore fields is essentially new. Since May 2016 we have recorded a total of 13 trips (to end Feb 2017) giving an aggregate of 10 days outage overall. This equates to a 4% downtime. However, we understand SGP has now commissioned additional compression capacity which should help maintain and possibly further improve reliability. A contracted new field that is currently under development will provide additional gas into the FUKA pipeline. Again, one would expect reliability to be high from new equipment once the initial commissioning and "fine tuning" have been completed. Looking at other infrastructure providing gas into the pipeline a key existing FUKA entrant is older yet reliability over the last 1 – 2 years has been high at over 98%.

Correlations of CO_2 content with other NEA Specifications in FUKA Redelivery gas requested for Workgroup report

- The St Fergus terminal operator has been requested to provide correlations of CO_2 content with other NEA Specifications in gas delivered to the NTS from the FUKA pipeline to form part of the Workgroup report for proposed Mod 607
- The CO_2 content of processed gas from the FUKA pipeline has been correlated with several GS(M)R parameters measured at the same time (namely, WOBBE, GCV, ICF & SI)
- The specification of processed gas from the FUKA pipeline is measured "stand-alone" before commingling with Vesterled gas and upstream of the NTS compressor station.
- Data includes certain short-duration periods when blending with Vesterled gas was required due to higher CO_2 concentrations in FUKA pipeline per current blending arrangements

Empirical Correlations of CO_2 content with Wobbe

- CO_2 > 4% reflects periods of downstream blending with Vesterled to meet NTS spec
- Data reflects variations in pipeline gas composition and also plant operation
- Operating plant colder extracts more NGL resulting in lower energy export gas and vice versa



- Processing commingled pipeline gas with higher CO_2 content may require more energy in export gas to meet lower Wobbe specification (warmer plant) depending on overall gas composition

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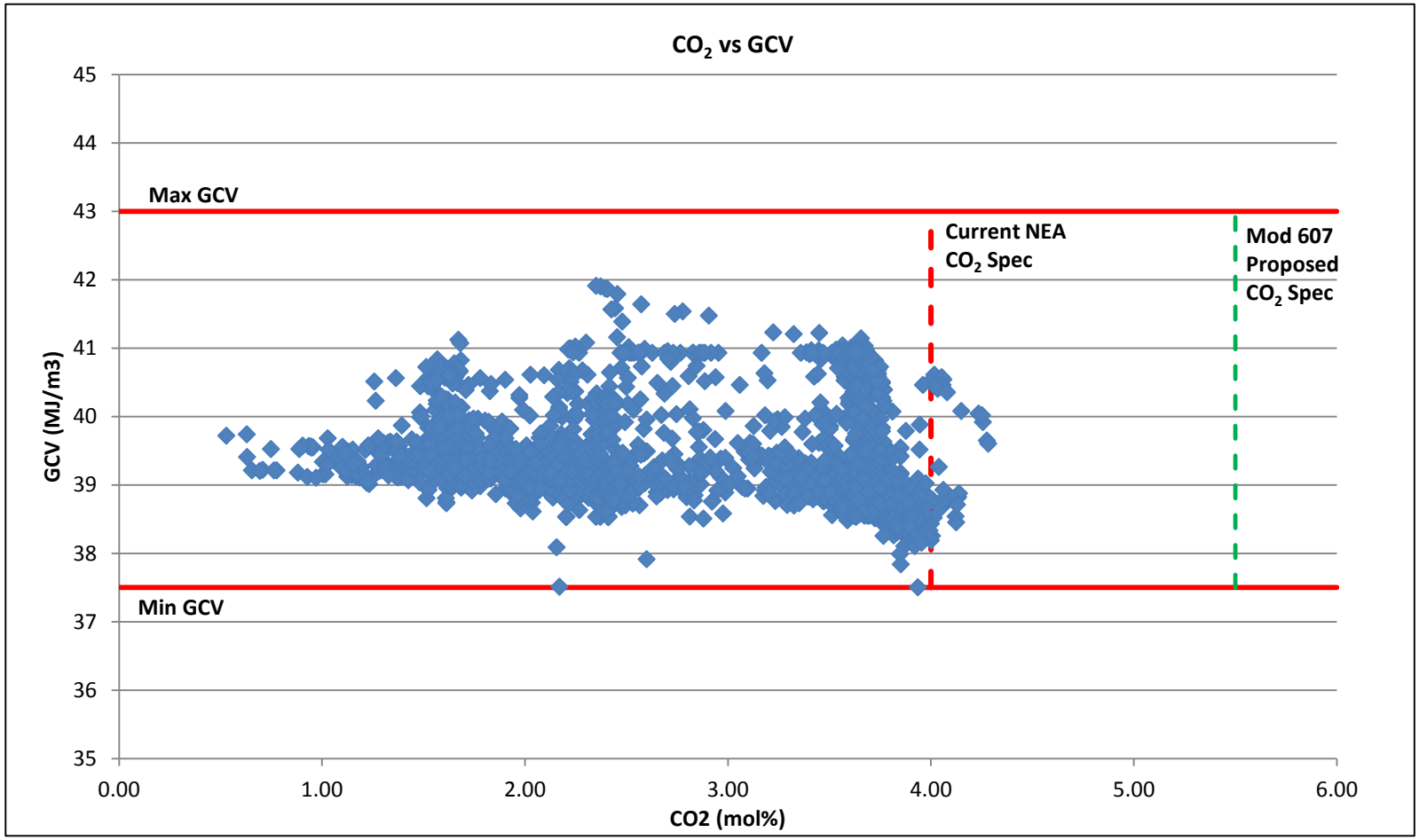
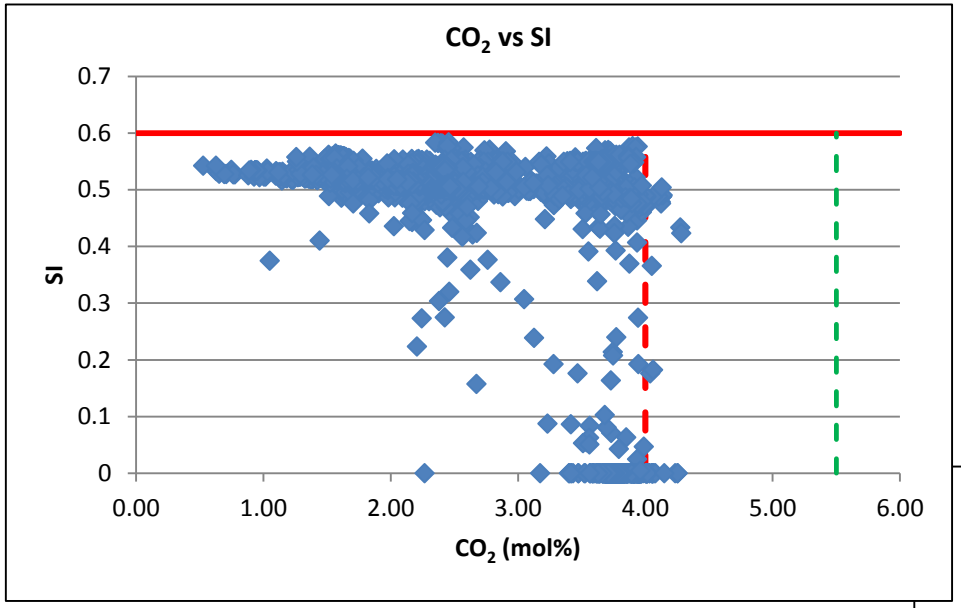
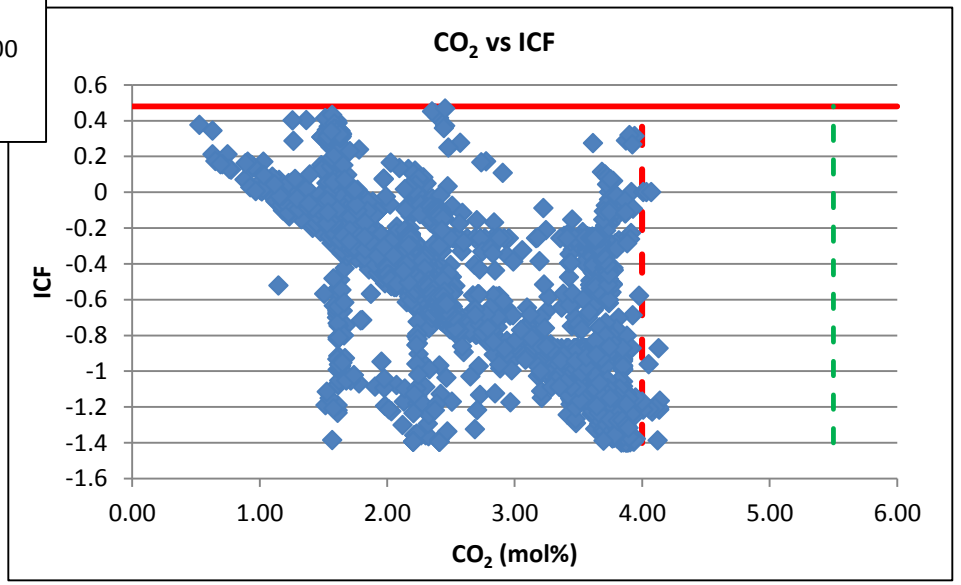
Empirical Correlation of CO_2 with GCV



Empirical Correlations of CO_2 content and other NEA Specifications in FUKA Redelivery gas





Summary

- Historic data reflects variations in pipeline gas composition and also plant operation
- Increased CO_2 content of FUKA gas reduces Wobbe and (to some degree) GCV of redelivery gas
- Can be managed by adjusting processing plant operation to reflect pipeline gas composition – more or less energy in export gas depending on pipeline gas composition