



Null Report

Air Liquide Biogas Solutions Europe

MER/CAD/236/23 Hemswell BNEF

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Appendix A – Daily Correction Factors		Error! Bookmark not defined.

1 Revision Control

Rev	Issue date	Description	Prep.	App.
1	20/03/2023	Issued for comment	TB	BK

2 Executive Summary

Site Name	Hemswell BNEF
DNO	Cadent Gas Limited
LDZ	East Midlands
Error Start Date	26 th December 2022
(Or) Last Good Date	
Error Corrected Date	27 th December 2022
Size of Error (over or under read)	D+5 Corrected (600 Sm ³ over registration)
Error Description	Erroneous readings on Fiscal meter
Methodology	Comparison of Inlet meter and propane flow readings with Fiscal meter flow readings
Meter Type	Ultrasonic meter
MER Unique Reference Number	
Cadent Internal Reference	MER/CAD/236/23

3 Error Description

Hemswell BNEF has a single 2" Sick FlowSic500 ultrasonic meter stream for measurement of gas exiting the grid entry unit (GEU) and entering the distribution network (referred to as Fiscal USM). A second 2" Sick FlowSic500 ultrasonic meter is located on the inlet to the GEU for process control (referred to in this report as Inlet USM). Propane injection is used to control the gas properties (e.g. calorific value, Wobbe number, etc.) to meet the requirements of the Gas Safety (Management) Regulations (GS(M)R). Gas that is not within specification is rejected by a diverter valve. During normal operation the Fiscal USM will read slightly higher than the Inlet USM due to the addition of propane.

During the following dates, errors were noted:

- 27/12/22; 03:30 to 07:30, causing errors for gas days 26th and 27th December.

It is noted when comparing the calculated daily volume from this Measurement Error Report to the billed daily volumes retrieved from Cadent Energy Control Centre that a manual correction had already been completed for the 26th and the 27th December 2022. This Null Report confirms that the manual correction already processed is accurate and no further reconciliation is required.

4 Methodology

Over the period of interest, the flowrates on the fiscal meter dropped dramatically indicating the meter system had gone into reject mode. The error consisted of the fiscal meter reading a high zero for a period of 244 minutes.

The calculation is a sum of the Fiscal Meter total volume flow for the affected time period in Sm³, split into two time periods, one for each gas day mentioned. These calculated error values were then subtracted from the calculated daily volume for each day.

It is worth noting that the flow computer appears to have a time offset, the data shows the flow computer daily volume totals are calculated at 04:20, approximately 40 minutes early. As such the daily volume used for the error report was calculated by subtracting the non-resettable Standard volume totaliser value at 05:00 from the previous days 05:00 non-resettable Standard volume totaliser value.

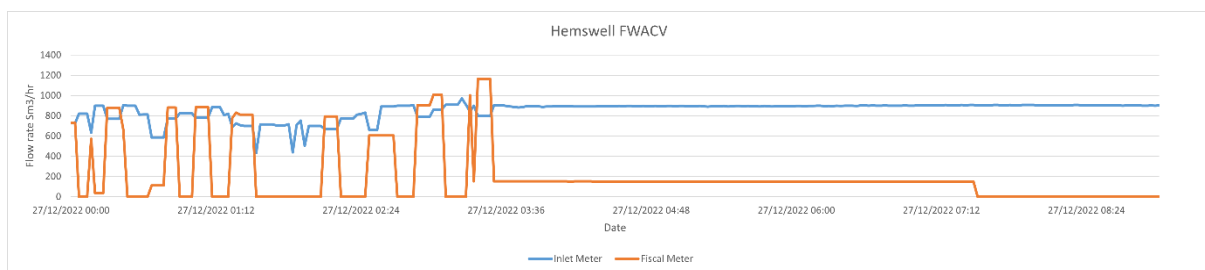


Figure 1 Volume flow rates for Inlet USM and Fiscal Meter

5 Error Quantification

The error is estimated to be an overall over registration of 600 Sm³. The errors for each day are shown in Table 1.

Gas Date	Estimated Error (Sm ³)
26/12/2022	232
27/12/2022	368
Total	600

Table 1 – Total error during the period of mismeasurement

Table 2 details the daily volume totals as measured by the non-resettable totals for each day and the corrected daily totals following correction using the MER calculation data as detailed in this report. There is a small discrepancy between the totaliser values and the values calculated from the raw data due to the resolution and timing of the raw data.

Gas Day	Daily Volume (MSm ³)		
	Measured	Corrected (estimate)	Gemini (Latest)
26-Dec-22	0.01496	0.01473	0.01479
27-Dec-22	0.00035	0.00000	0.00000

Table 2 – Daily volumes during the period of mismeasurement

This Null Report confirms that the manual correction already processed is accurate and **no further reconciliation is required**.

6 Learning

Contamination on the Fiscal ultrasonic meter transducers has caused the meter to read erroneously. The pipework and meter were cleaned to prevent the issue from reoccurring. It is recommended considering additional liquid filtration on the propane injection line. Consideration should be given to continuously monitoring, recording and time/date stamping the diverter valve position in order to ascertain if the system was recirculating or flowing to the distribution network. This would result in easier analysis if measurement errors were to occur again.

7 References

Gemini Billed Daily Volumes

MER_CAD_236_23 Hemswell BNEF Data.xlsx Calculation spreadsheet