



Measurement Error Report

Severn Trent PLC

MER/CAD/258/23 Strongford BNEF

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1 Revision Control

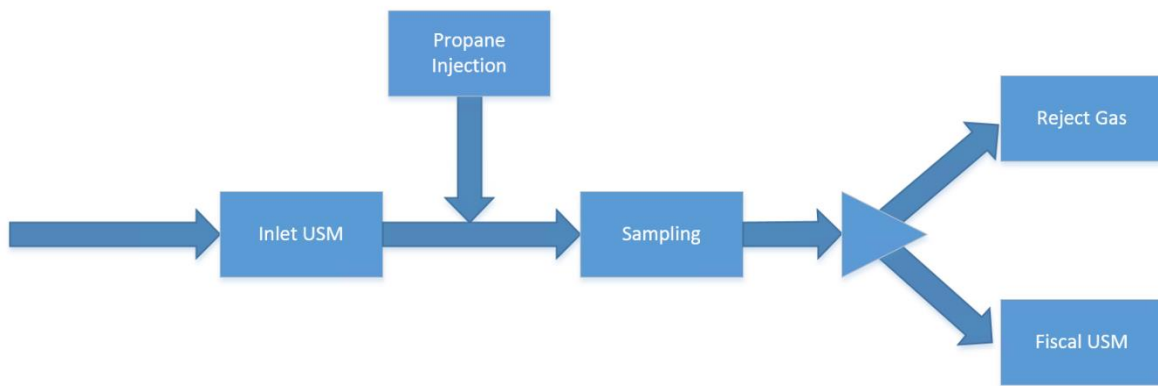
Rev	Issue date	Description	Prep.	App.
1	20/10/2023	Issued for comment	TB	DS

2 Executive Summary

Site Name	Strongford BNEF
DNO	Cadent Gas Limited
LDZ	West Midlands
Error Start Date	11/09/23
(Or) Error Last Good Date	
Error Corrected Date	
Size of Error (over or under read)	22 Sm3 over registration (0.000246 GWh)
Error Description	Erroneous readings on Fiscal meter
Methodology	Calculation of accumulated Svol totals during periods of erroneous flowrate, and subtraction of these values from the reported totals.
Meter Type	Ultrasonic
MER Unique Reference Number	
Cadent Internal Reference	MER/CAD/258/23

3 Error Description

Strongford bio-methane facility has a single 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 flow meter is located on the inlet to the GEU for process control (referred to in this report as Inlet meter). 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 via a diverter valve. During normal operation the Fiscal meter will read slightly higher than the Inlet meter due to the addition of propane.



During the following dates, errors were noted:

- 11/09/23; 15:36 to 17:20

4 Methodology

Over the period of interest, the flowrates on the fiscal meter dropped from around 500 Sm³ to 130 Sm³ indicating the meter system had gone into reject mode but was still recording a flow. *Note: The switch to reject mode is evident from the trends in pressure and temperature.* The error consisted of the fiscal meter reading high for a total period of **104** minutes. This error affected gas days 11/09/2023 only.

The calculated error is the sum of the Fiscal Meter total volume flow for the affected time period. The calculated value error for each gas day was then subtracted from the relevant gas day calculated daily volume.

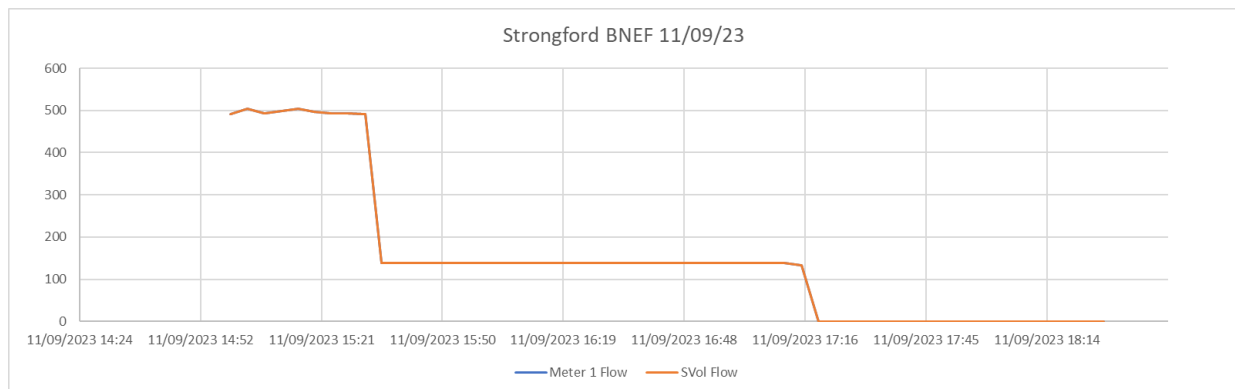


Figure 1 Meter frequency and Volume flow rates for Fiscal Meter

5 Error Quantification

The data for each Error is detailed in the accompanying document “MER_CAD_258_23Strongford Calc Data.xlsx”.

The error from within the metering data is estimated to be an overall over registration of 230 Sm³ for the total duration of 104 minutes. This would give an energy over measure of 9.246 GJ or 2568 kWh.

From the obtained Gemini data it would seem the in-day data has been partially corrected. The error for the estimated data compared to the Gemini data is a remaining **22 Sm³**. This remainder still requires correction as the difference, of 0.2778%, is outside the 0.1% reconciliation limit as specified in the “Measurement Error Notification Guidelines from the Joint Office of Gas Transporters”. This Svoll remainder would give a remaining energy over measure of 0.884 GJ or **245 kWh**.

The table below shows the estimated standard volume errors, as seen from the Danint metering data and the obtained Gemini data.

Gas Day	Daily Volume (Sm ³)				
	Metered	Estimated	Est Error	Gemini	Gemini Error
11-Sept-23	8128	7898	230	7920	22

Table 1 – Daily totals for the period of mismeasurement

6 Learning

Contamination on the Fiscal ultrasonic meter transducers, likely from the propane injection system, has caused the meter to read erroneously. Ongoing testing suggests this may be the result of the transportation/bunkering methods. It is recommended considering additional liquid filtration on the propane injection line and/or additional filtration on the propane tank outlet.

Consideration should be given to implementing a live comparison between the fiscal and non-fiscal (inlet plus propane) meters to give an early warning of any measurement error. Additionally, continual 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_258_23 Strongford Calc Data.xlsx

Calculation spreadsheet

Appendix A – Daily Correction Factors

The error should be corrected using the Daily Correction Factors applied to the Gemini Daily Volumes as detailed below. The Daily Correction Factor is the ratio of the corrected volume to the uncorrected volume for each respective gas day.

Gas Day	Gemini Daily Volume (mcm)	Daily Correction Factor
11-Sept-2023	0.00792	0.997222

Table 2 – Daily correction factor for the period of mismeasurement