



Measurement Error Investigation

EffecTech Ltd

Null Report for Minworth BNEF

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1 Revision Control

Rev	Issue date	Description	Prep.	App.
1	07/06/2019	Issued for comment	BK	KV

2 Executive Summary

Site Name	Minworth BNEF
DNO	Cadent Gas Limited
LDZ	West Midlands
Error Start Date	1 st September 2015
(Or) Last Good Date	
Error Corrected Date	25 th January 2019
Size of Error (over or under read)	NULL
Error Description	Incorrect calibration data used in flow computer
Methodology	Correction using correct calibration data
Meter Type	RPD
MER Unique Reference Number	-
Cadent Internal Reference	-

3 Error Description

Minworth BNEF metering system consists of a single Rotary Positive Displacement (RPD) meter stream. The measurement uncertainty is improved by calibrating the meter at operating conditions at an ISO 17025 accredited facility and correcting the meter output in the flow computer. In this case the meter was calibrated at atmospheric conditions and then calibrated again at high pressure using natural gas. When the metering system was commissioned, the calibration data entered into the flow computer was that of the atmospheric calibration, as opposed to the high-pressure natural gas calibration, which lead to a previous measurement error (Refer to MER WM015). On 1st September 2015 the high-pressure natural gas calibration data was entered into the flow computer to correct the error, however on calibration point was entered incorrectly. This error was identified during the production of MER WM015 and subsequently corrected on 25th January 2019.

4 Methodology

The incorrect entry was the highest calibration error, which was entered as +0.06 % instead of -0.06 % as stated on the calibration certificate.

Point	Calibration Certificate		Flow Computer Entry	
	Q (m ³ /h)	Deviation (%)	Q (m ³ /h)	Deviation (%)
1	3.0	-0.88	3.0	-0.88
2	10.05	-0.63	10.05	-0.63
3	16.04	+0.71	16.04	+0.71
4	25.94	-0.22	25.94	-0.22
5	45.98	+0.04	45.98	+0.04
6	65.20	-0.06	65.20	+0.06

The 3-minutely Reconciliation by Difference (RBD) data was used to correct the flow rates above 45.98 m³/h. Two sets of daily volume calculations were performed one with the recorded flow rates and one with the corrected flow rates, the error being the difference between the two.

5 Error Quantification

The error for each day in the period has been calculated to be less than $\pm 0.1\%$ and therefore **no reconciliation** is required.

6 Learning

It is recommended that the initial T/PR/ME/2 validation of new metering systems are independently witnessed to prevent errors such as these occurring. Additionally, when key constants are changed, they should be carefully double-checked to ensure the correct information has been entered.

7 References

RBD Data (FLOU0901.ST3 to FLOY0125.ST3)

Audit Data (DATU0901.ST3 to DATY0125.ST3)

Gemini Data ('Gemini Data - 30.08.15-10.02.2019.xlsx')

Calculation Spreadsheets:

Minworth2_Data2015.xlsx

Minworth2_Data2016.xlsx

Minworth2_Data2017.xlsx

Minworth2_Data2018.xlsx

Minworth2_Data2019.xlsx