METER ERROR REPORT

DRAFT / FINAL (Delete as appropriate)

Reconcile?	Y
Safety Issue?	N
Thesis Report No.	

1. EXECUTIVE SUMMARY

SITE NAME	Bishop Auckland	
LDZ	NO	
START DATE (actual)	Unknown	
LAST GOOD DATE	22/10/2020	
END DATE	02/11/2020	
SIZE OF ERROR (No reconciliation required if under 0.1%)	0.19% / (0.189 GWh)	
ESTIMATE – Y/N?	Y	
ROOT CAUSE	Temperature transmitter	
ANALYSIS	Recalculation of volumes using corrected temperature.	
METER TYPE	Ultrasonic meter	
AUTHOR	Catherine Jones	
CHECKED BY	Hazel Richardson	
ACCEPTED BY NGN		
RECONCILIATION	Distribution	Transportation

2. BACKGROUND

Gas is supplied to part of the NGN network at Bishop Auckland FWACV offtake. The site meter system comprises of two ultrasonic meters. The following errors occurred on stream 2.

During the annual validation the CP12 check (temperature transmitter) failed on 18th March 2021 and subsequently passed following re-calibration.

The last good date is the 22nd October 2020 at the previous ME/2 validation. Stream 2 was in use from 22nd October 2020 to 2nd November 2020 then stream 1 was in use until 17th March 2021.

3. ERROR QUANTIFICATION AND IMPACT

The temperature measurement was corrected for the 'As Found' errors shown in Table 1 when the recorded measurement was in the appropriate range.

The temperature measurement has been corrected for as found error recorded at the March 2021 validation. As the start of the temperature transmitter error cannot be determined the half the error has been applied to the period between 22nd October 2020 to 2nd November 2020.

Temperature (degC)	Expected Output (mA)	Measured Output (mA)	Error (% span)
-10	4	4.174	1.0875
2.5	8	8.175	1.0907
15.0	12	12.178	1.1094
27.5	16	16.162	1.0125
40.0	20	20.135	0.8438

Table 1 – Temperature As Found errors (18th March 2021)

The flow rates and daily volumes were recalculated using the measured pressure, frequency and k factors and the corrected temperature. The error was calculated on a daily basis as the difference between volume totals using measured and corrected values.

The overall error is an under-registration of 0.19%. The error is equivalent to 0.189 GWh or 0.017 Mm^3

4. CAUSES

Temperature transmitter check failed during routine validation.

5. RECOMMENDATIONS AND LEARNING

Failures of this type will occur occasionally, if the same checks fail regularly then it suggests a fundamental problem with the equipment being tested and repairs or replacements should be made.

The start of the error cannot be identified therefore the total error to be reconciled should be halved in accordance with the Offtake Arrangements Document. The table below shows the daily correction factors, which have already been halved.

Gas Day	Daily Correction Factor
22/10/2020	1.00363
23/10/2020	1.00363
24/10/2020	1.00363
29/10/2020	1.00354
02/11/2020	1.00373

For the dates above the data in GEMINI appears to be out of sync with the raw audit and RBD data files by a day. There also appears to be flow on 22nd, 23rd and 24th October in GEMINI but no flow in the raw audit and RBD data files. The daily correction factor for these dates are therefore an average of the other two days.

REFERENCES

Bishop Auckland MER Data.xls
Bishop Auckland Summary V1.xls

VERSION HISTORY

Version	*Changes*	*Author*	*Date*
0	*First draft*	*Catherine Jones*	*11/06/2021*
1	*Final*	*Catherine Jones*	*20/07/2021*

DISTRIBUTION

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