NULL METER ERROR REPORT

FINAL

Reconcile?	N
Safety Issue?	N
Thesis Report No.	

1. EXECUTIVE SUMMARY

SITE NAME		Atherstone					
LDZ		WM					
START DATE (actual)		8 th February 2021					
LAST GOOD DATE							
END DATE		2 nd July 2021					
SIZE OF ERROR (No reconcilia required if under 0.1%)	ation	0.02324% on original measured volume					
ESTIMATE – Y/N?		N					
ROOT CAUSE		Incorrect fixed factor for CO ₂ entered into the flow computer					
ANALYSIS		Calculation of flowrates using incorrect and correct CO ₂ fixed factors to determine the error using the worst case pressure and temperature.					
METER TYPE		Turbine					
AUTHOR		Damian Ray					
CHECKED BY		Simon Howard					
ACCEPTED BY CADENT		1					
NETWORK RECONCILIATION	Distribut	ion	Transportation				

https://gasgov.sharepoint.com/sites/JOTechTeam/Industry
Information/Publications/Measurement Error Reports/2. Measurement Error
Notifications and Reports/WM - West Midlands/WM021 - Atherstone MRAMRB
Combined MER Report.doc 09/03/2022

2. BACKGROUND

Gas is supplied to part of the Cadent network at Atherstone FWACV inter LDZ site. The site metering system comprises of dual stream turbine meters.

On the 8th February 2021, an incorrectly calculated fixed factor for carbon dioxide was entered into the site flow computer configuration.

3. ERROR QUANTIFICATION AND IMPACT

Table 1 details the incorrect and correct carbon dioxide fixed factors that were entered into the flow computer. Image 1 shows the incorrect CO2 fixed factor and image 2 shows the correct CO2 fixed factor.

	Incorrect CO ₂ value	Correct CO ₂ value				
Turbine	1.254018	0.971718				

Table 1 Correct and Incorrect CO₂ fixed factors

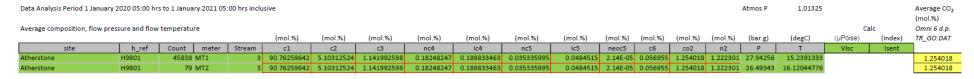


Image 1 Incorrect CO₂ fixed factor

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site	h_ref	Count	meter	Stream	c1	c2	c3	nc4	ic4	nc5	ic5	neoc5	c6	co2	n2	Р	Т
Atherstone *1	H9801	46544	MT1	3	91.283707	5.059088	0.993725	0.159876	0.153920	0.028390	0.038753	0.001850	0.043517	0.971718	1.265455	28.257918	15.322241
Atherstone *1	H9801	335	MT2	3	91.283707	5.059088	0.993725	0.159876	0.153920	0.028390	0.038753	0.001850	0.043517	0.971718	1.265455	26.493235	16.120394

0.971718 0.971718

Image 2 Correct CO₂ fixed factor

The error will be largest when the metering pressure is highest and metering temperature is lowest. Data for the period of the error was processed and the highest pressure and lowest temperature recorded. These values were used to calculate the worst case percentage error in the flowrate which is summarised in Table 2.

Percentage Error in	0.02324
Flowrate %	

Table 2 Error in Volumetric Flowrate

4. CAUSES

The error was caused by the fixed factors being incorrectly calculated due to missing data in the extracted data.

5. RECOMMENDATIONS AND LEARNING

An appropriate data validation process should be employed to ensure a complete data set is available for the fixed factor calculations.

REFERENCES

Atherstone CO2 fixed factor Error 2021.xls

VERSION HISTORY

Version	Changes	Author	Date
1	First Issue	Damian Ray	20/10/2021