METER ERROR REPORT

FINAL

Reconcile?	Y

Safety Issue?	Y/N

1. EXECUTIVE SUMMARY

SITE NAME	Dowlais	
LDZ	WS (Wales & West)	
START DATE (actual)	12th August 2015	
LAST GOOD DATE		
END DATE	13th November 2015	
SIZE OF ERROR (No reconciliation required if under 0.1%)	0.4897% over registration (10.79 GWh)	
ESTIMATE – Y/N?		
ROOT CAUSE	Incorrect K Factors used in flow computer for stream 2	
ANALYSIS	Recalculation of volumes using correct K Factors	
METER TYPE	USM	
AUTHOR	C. Litster	
CHECKED BY		
ACCEPTED BY NETWORK		
RECONCILIATION	Distribution	Transportation

2. BACKGROUND

Dowlais has a duty/standby ultrasonic meter streams using a gas chromatograph for CV determination and PTZ correction.

During the period from 11:13 on the 12th of August 2015 to 13:45 on the 13th November 2015 the incorrect K factors were used in the flow computer. Meter 07278615-1115 in metering stream 2 was calibrated at DNV-GL Flow Centre on the 10th August 2015, when the meter was returned to use on the 12th August 2015 the K factors were not updated in the flow computer to reflect the new certificate.

3. ERROR QUANTIFICATION AND IMPACT

The archived metering and gas quality data was downloaded from HPMIS. Using RBD data and the incorrect K factors the incorrect actual m³ and the standard m³ flow rates were calculated. This was repeated using the correct K factors to recalculate the corrected actual m³ and the standard m³ flow rates. The error was calculated on a daily basis as the difference between actual m³ and the standard m³ flow rates using the corrected input.

The overall error is an over-registration of 0.4897%. The error is equivalent to 10.79 GWh.

Freqtest (Hz)	Qref (m3/h)	Error (%)	Kfactor (pls/m3)
1730.20	12140.00	-0.18	513.07
1212.18	8508.65	-0.22	512.87
670.83	4708.38	-0.21	512.92
425.78	2988.79	-.022	512.86
174.76	1224.95	-0.08	513.61
88.17	618.14	-0.10	513.48

Table 1 – Dowlais Ultrasonic Meter Factors 2007, Certificate No. 04037

Freqtest (Hz)	Qref (m3/h)	Error (%)	Kfactor (pls/m3)
1719.51	12002.14	0.34	515.76
1286.26	8976.52	0.36	515.85
816.45	5696.64	0.38	515.95
443.33	3094.13	0.35	515.81
168.89	1178.36	.039	515.99
90.63	631.62	0.50	516.57

Table 2 – Dowlais Ultrasonic Meter Factors 2015, Certificate No. 11666-1

4. CAUSES

Meter 07278615-1115 in metering stream 2 was calibrated at DNV-GL Flow Centre on the 10th August 2015, when the meter was returned to use on the 12th August 2015 the K factors were not updated in the flow computer to reflect the new certificate.

5. RECOMMENDATIONS AND LEARNING

The error should be reconciled by applying the offtake daily flows detailed in Appendix A.

On the 31st October 2015 and 1st – 3rd November 2015 the Relative Density and Calorific Value were missing due a fault with the chromatograph, therefore a correction has been applied equal to the mean correction factor for the previous and subsequent day.

REFERENCES

HPMIS Database, DNV- GL Meter Calibration Certificate 04037, DNV- GL Meter Calibration Certificate 11666-1.

VERSION HISTORY

Version	*Changes*	*Author*	*Date*
0	*Original*	*C. Litster*	*25/11/2015*

DISTRIBUTION

Wales & West Utilities

APPENDIX A – Daily Corrected Flows

The table below gives the daily correction factors which should be used to reconcile the error.

Gas Day	Daily Correction Factor
12/08/2015	0.994199
13/08/2015	0.994332
14/08/2015	0.995071
15/08/2015	0.994575
16/08/2015	0.994971
17/08/2015	0.994402
18/08/2015	0.994649
19/08/2015	0.994799
20/08/2015	0.994957
21/08/2015	0.994488
22/08/2015	0.994724

Gas Day	Daily Correction Factor
28/09/2015	0.995123
29/09/2015	0.995268
30/09/2015	0.995296
01/10/2015	0.995118
02/10/2015	0.995179
03/10/2015	0.994981
04/10/2015	0.994986
05/10/2015	0.995167
06/10/2015	0.995088
07/10/2015	0.995184
08/10/2015	0.995272

23/08/2015	0.995092
24/08/2015	0.995187
25/08/2015	0.995102
26/08/2015	0.994901
27/08/2015	0.994807
28/08/2015	0.994880
29/08/2015	0.994892
30/08/2015	0.994696
31/08/2015	0.995082
01/09/2015	0.995019
02/09/2015	0.994865
03/09/2015	0.995070
04/09/2015	0.995062
05/09/2015	0.994391
06/09/2015	0.994476
07/09/2015	0.994892
08/09/2015	0.994837
09/09/2015	0.994937
10/09/2015	0.994611
11/09/2015	0.994819
12/09/2015	0.994700
13/09/2015	0.995003
14/09/2015	0.995036
15/09/2015	0.995078
16/09/2015	0.995146
17/09/2015	0.995325
18/09/2015	0.995099
19/09/2015	0.994897
20/09/2015	0.995243
21/09/2015	0.995178
22/09/2015	0.995140
23/09/2015	0.995029
24/09/2015	0.995111
25/09/2015	0.995259
26/09/2015	0.995240
27/09/2015	0.995171

09/10/2015	0.994919
10/10/2015	0.995251
11/10/2015	0.995232
12/10/2015	0.995208
13/10/2015	0.995053
14/10/2015	0.995091
15/10/2015	0.994950
16/10/2015	0.995083
17/10/2015	0.994949
18/10/2015	0.995043
19/10/2015	0.995021
20/10/2015	0.995287
21/10/2015	0.995161
22/10/2015	0.995248
23/10/2015	0.994969
24/10/2015	0.994950
25/10/2015	0.995038
26/10/2015	0.995042
27/10/2015	0.995259
28/10/2015	0.995259
29/10/2015	0.995128
30/10/2015	0.995217
31/10/2015	**0.995161**
01/11/2015	**0.995161**
02/11/2015	**0.995161**
03/11/2015	**0.995161**
04/11/2015	0.995105
05/11/2015	0.995123
06/11/2015	0.995126
07/11/2015	0.995270
08/11/2015	0.995098
09/11/2015	0.995105
10/11/2015	0.995170
11/11/2015	0.995083
12/11/2015	0.994944
13/11/2015	0.994938