

METER ERROR REPORT**FINAL**

Reconcile?	Y
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Safety Issue?	N
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1. EXECUTIVE SUMMARY

SITE NAME	Coffinswell	
LDZ	SW (Wales & West)	
START DATE (actual)		
LAST GOOD DATE	13 th August 2015	
END DATE	08 th February 2016	
SIZE OF ERROR (No reconciliation required if under 0.1%)	0.117%	
ESTIMATE – Y/N?		
ROOT CAUSE	Failed validation checks for pressure ADC and temperature ADC on meter stream A	
ANALYSIS	Recalculation of volumes using corrected pressure and temperature	
METER TYPE	Turbine	
AUTHOR	C. Litster	
CHECKED BY		
ACCEPTED BY NETWORK		
RECONCILIATION	Distribution	Transportation

2. BACKGROUND

Coffinswell has a duty/standby Turbine meter stream using a gas chromatograph for CV determination and PTZ correction.

During the annual validation the CP4a (ADC Pressure Check) and the CP4e (ADC Temperature Check) tests failed on 08th February 2016 for stream A. Both errors were corrected on the day they were discovered.

3. ERROR QUANTIFICATION AND IMPACT

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

The temperature measurements were corrected for the 'As Found' errors shown in Table 2 when the recorded measurement was in the appropriate range.

Pressure (barg)	CP4a Error (% span)
-1	0.0616
20	0.1328
40	0.1741
60	0.2241
79	0.2541

Table 1 – Pressure Errors, Stream A (13/08/15 – 08/02/16)

Temperature (°C)	CP4e Error (% span)
-20	0.0714
-2.5	0.1223
15	0.1223
32.5	0.1714
50	0.1714

Table 2 – Temperature Errors, Stream A (13/08/15 – 08/02/16)

The density, flow rate and daily volumes were recalculated from the corrected pressure and temperature readings. The error was calculated on a daily basis as the difference between volume totals using measured and corrected inputs.

The overall error is an Under-registration of 0.117%. The error is equivalent to 0.341 GWh.

4. CAUSES

Pressure and temperature ADC checks failed during routine validation for stream A.

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. Appendix A shows the daily correction factors, which have already been halved.

Where there is missing data and calculated volumes do not match Gemini records a correction has been applied equal to the mean correction factor for the previous and subsequent day where possible.

REFERENCES

SW035 Coffinwell Data – calculation spreadsheet
SW035 Coffinwell Summary – results spreadsheet

VERSION HISTORY

<i>Version</i>	<i>Changes</i>	<i>Author</i>	<i>Date</i>
0	<i>Original</i>	<i>C. Litster</i>	<i>20/09/16</i>

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.

* Where there is missing data and calculated volumes do not match Gemini records a correction has been applied equal to the mean correction factor for the previous and subsequent day where possible.

Gas Day	Daily Correction Factor
13/08/2015	1.001104
14/08/2015	1.001218
15/08/2015	1.001143
16/08/2015	1.001206
17/08/2015	1.001152
18/08/2015	1.001129
19/08/2015	1.001106
20/08/2015	1.001130
21/08/2015	1.001188
22/08/2015	1.001146
23/08/2015	1.001106
24/08/2015	1.001161
25/08/2015	1.001180
26/08/2015	1.001252
27/08/2015	1.001127
28/08/2015	1.001082
29/08/2015	1.001095
30/08/2015	1.001080
31/08/2015	1.001125
01/09/2015	1.001187
02/09/2015	1.001193
03/09/2015	1.001207
04/09/2015	1.001151
05/09/2015	1.001125
06/09/2015	1.001131
07/09/2015	1.001199
08/09/2015	1.001166
09/09/2015	1.001192
10/09/2015	1.001144
11/09/2015	1.001109
12/09/2015	1.001088

Gas Day	Daily Correction Factor
13/09/2015	1.001121
14/09/2015	1.001177
15/09/2015	1.001199
16/09/2015	1.001276
17/09/2015	1.001187*
18/09/2015	1.001187*
19/09/2015	1.001187*
20/09/2015	1.001112
21/09/2015	1.001162
22/09/2015	1.001162
23/09/2015	1.001207
24/09/2015	1.001115
25/09/2015	1.001140
26/09/2015	1.001170
27/09/2015	1.001158
28/09/2015	1.001135
29/09/2015	1.001196
30/09/2015	1.001144
01/10/2015	1.001204
02/10/2015	1.001179
03/10/2015	1.001156
04/10/2015	1.001122
05/10/2015	1.001171
06/10/2015	1.001136
07/10/2015	1.001102
08/10/2015	1.001237
09/10/2015	1.001165
10/10/2015	1.001155
11/10/2015	1.001119
12/10/2015	1.001138
13/10/2015	1.001193

Gas Day	Daily Correction Factor
14/10/2015	1.001234
15/10/2015	1.001215
16/10/2015	1.001184
17/10/2015	1.001155
18/10/2015	1.001179
19/10/2015	1.001193
20/10/2015	1.001199
21/10/2015	1.001186
22/10/2015	1.001157
23/10/2015	1.001114
24/10/2015	1.001191
25/10/2015	1.001289
26/10/2015	1.001113
27/10/2015	1.001142
28/10/2015	1.001222
29/10/2015	1.001244
30/10/2015	1.001099
31/10/2015	1.001139
01/11/2015	1.001200
02/11/2015	1.001199
03/11/2015	1.001291
04/11/2015	1.001222
05/11/2015	1.001105
06/11/2015	1.001090
07/11/2015	1.001135
08/11/2015	1.001110
09/11/2015	1.001224
10/11/2015	1.001164
11/11/2015	1.001181
12/11/2015	1.001126
13/11/2015	1.001158
14/11/2015	1.001174
15/11/2015	1.001090
16/11/2015	1.001152
17/11/2015	1.001168
18/11/2015	1.001179

Gas Day	Daily Correction Factor
19/11/2015	1.001181
20/11/2015	1.001210
21/11/2015	1.001245
22/11/2015	1.001276
23/11/2015	1.001284
24/11/2015	1.000835
25/11/2015	1.001200
26/11/2015	1.001122
27/11/2015	1.001132
28/11/2015	1.001264
29/11/2015	1.001125
30/11/2015	1.001227
01/12/2015	1.001130
02/12/2015	1.001164
03/12/2015	1.001101
04/12/2015	1.001173
05/12/2015	1.001294
06/12/2015	1.001230
07/12/2015	1.001229*
08/12/2015	1.001229*
09/12/2015	1.001160
10/12/2015	1.001232
11/12/2015	1.001192
12/12/2015	1.001171
13/12/2015	1.001122
14/12/2015	1.001200
15/12/2015	1.001152
16/12/2015	1.001083
17/12/2015	1.001156
18/12/2015	1.001135*
19/12/2015	1.001135*
20/12/2015	1.001135*
21/12/2015	1.001135*
22/12/2015	1.001135*
23/12/2015	1.001135*
24/12/2015	1.001135*

Gas Day	Daily Correction Factor
25/12/2015	1.001135*
26/12/2015	1.001135*
27/12/2015	1.001135*
28/12/2015	1.001135*
29/12/2015	1.001135*
30/12/2015	1.001135*
31/12/2015	1.001135*
01/01/2016	1.001135*
02/01/2016	1.001135*
03/01/2016	1.001135*
04/01/2016	1.001135*
05/01/2016	1.001135*
06/01/2016	1.001135*
07/01/2016	1.001135*
08/01/2016	1.001135*
09/01/2016	1.001135*
10/01/2016	1.001135*
11/01/2016	1.001135*
12/01/2016	1.001135*
13/01/2016	1.001135*
14/01/2016	1.001152
15/01/2016	1.001149
16/01/2016	1.001191
17/01/2016	1.001071
18/01/2016	1.001331
19/01/2016	1.001160
20/01/2016	1.001249
21/01/2016	1.001166
22/01/2016	1.001190
23/01/2016	1.001141
24/01/2016	1.001240
25/01/2016	1.001107
26/01/2016	1.00118*
27/01/2016	1.001168
28/01/2016	1.001201
29/01/2016	1.001188

Gas Day	Daily Correction Factor
30/01/2016	1.001191
31/01/2016	1.001241
01/02/2016	1.001153
02/02/2016	1.001194
03/02/2016	1.001180
04/02/2016	1.001151
05/02/2016	1.001160
06/02/2016	1.001148
07/02/2016	1.001244
08/02/2016	1.001296