

METER ERROR REPORT**FINAL**

Reconcile?	Y
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Safety Issue?	N
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Thesis Report No.	
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1. EXECUTIVE SUMMARY

SITE NAME	Evesham Offtake	
LDZ	SW	
START DATE (actual)		
LAST GOOD DATE	20 th December 2007 (11:43)	
END DATE	14th February 2008 (18:23)	
SIZE OF ERROR (No reconciliation required if under 0.1%)	Under registration of 22.42%	
ESTIMATE – Y/N?	Y	
ROOT CAUSE	Turbine meter fault	
ANALYSIS	HPMIS RBD data	
METER TYPE	Turbine	
AUTHOR	C Stock	
CHECKED BY	S Western	
ACCEPTED BY UKD NETWORK		
RECONCILIATION	Distribution	Transportation

2. BACKGROUND

Gas is supplied to part of the South West LDZ, Wales & West Utilities Network, at Evesham FWACV offtake. The site metering system comprises a twin turbine metering stream.

On the 14th February 2008 Distribution Network Control Centre identified that the Evesham offtake flow reading was varying by approximately 50,000scm. Network Services attended site and switched flows between the duty meter MTA and the standby meter MTB several times. They found that the flow profile of the site increased by approximately 60% when the meter duty was transferred from MTA to MTB. It was believed that MTA was reading incorrectly and consequently the standby meter stream MTB was left running

3. ERROR QUANTIFICATION AND IMPACT

On the 5th November 2008 the flow profile of both MTA and MTB was investigated using a recently calibrated meter. The following Instromet meters were in operation

MTB - lead meter serial number 10505647

MTA - meter serial number 67611

MTA - replacement meter serial number 73266-2002 calibrated on the 10th June 2008.

At the start of the day meter MTB was the lead meter. Duty was then transferred to MTA and the flow was found to be reduced by about 40%. The flow recovered when the duty was transferred back to meter MTB.

With MTB running the meter in stream MTA (serial no 67611) was removed and replaced with turbine meter serial number 73266-2002. The duty was again transferred from MTB to MTA with a good match in flow profile being observed between the two meters.

Following removal of the faulty meter it was examined on site and noted that the rotor was difficult to spin. A number of attempts were made to assess and free up the mechanism before a series of spin down tests were attempted. The meter was subsequently transported to the GL facility at Bishop Auckland for recalibration in order to establish it's flow profile. However it is believed that by the time it was tested at GL the mechanism had freed up. For that reason, the flow profile of MTB and MTA were compared during the switching of meter streams on the 14th February 2008. From this the error was estimated as a 40% under registration.

Following it's as found calibration meter (67611) was stripped down, cleaned, the bearings replaced, re-assembled and oiled.

As no start date for the error could be established the metering ' rbd ' data was reviewed to establish the last good reading which was found to be the 20th December 2007. Between this date and the 14th of February 2008 there were occasions when both MTB and MTA were running. So the error, for each Gas Day, was calculated taking into account the times when MTB was running. The Dvols and associated error for each Gas Day are given in Appendix I.

The overall error was an under registration of 22.45%.

4. RECOMMENDATIONS AND LEARNING

Turbine meters should be oiled at regular intervals.

REFERENCES

HPMIS database

Calibration certificate from GL (Meter S/N: 73266-2002)

Calibration certificate from Advantica (Meter S/N: 10505647)

Calibration certificate from BG Technology (Meter S/N: 67611)

VERSION HISTORY

<i>Version</i>	<i>Changes</i>	<i>Author</i>	<i>Date</i>
<i>Rev0</i>	<i>First issue(draft)</i>	<i>C Stock</i>	<i>28/10/2009</i>
<i>Rev1</i>	<i>Second issue</i>	<i>C Stock</i>	<i>21/12/2009</i>
<i>Rev2</i>	<i>Third issue</i>	<i>C Stock</i>	<i>28/04/2010</i>

Appendix I

Gas Day	Dvol (mscm)	Daily Correction Factor	Volume Error (mscm)	Daily Correction Factor (half error)
20-Dec-07	0.383429	1.42679	0.163644	1.213395
21-Dec-07	0.387165	1.59744	0.231310	1.298722
22-Dec-07	0.360841	1.60018	0.216568	1.300088
23-Dec-07	0.370326	1.59544	0.220507	1.297720
24-Dec-07	0.309219	1.60018	0.185586	1.300088
25-Dec-07	0.29452	1.60018	0.176764	1.300088
26-Dec-07	0.298428	1.60018	0.179109	1.300088
27-Dec-07	0.276828	1.60018	0.166146	1.300088
28-Dec-07	0.279559	1.60018	0.167785	1.300088
29-Dec-07	0.301053	1.59358	0.178698	1.296788
30-Dec-07	0.294285	1.59595	0.175380	1.297977
31-Dec-07	0.266173	1.60018	0.159751	1.300088
01-Jan-08	0.251465	1.60018	0.150923	1.300088
02-Jan-08	0.313117	1.59730	0.187024	1.298649
03-Jan-08	0.34665	1.59536	0.206381	1.297679
04-Jan-08	0.313852	1.59668	0.187269	1.298340
05-Jan-08	0.300158	1.59612	0.178930	1.298059
06-Jan-08	0.296301	1.59554	0.176459	1.297770
07-Jan-08	0.29374	1.59514	0.174817	1.297572
08-Jan-08	0.278878	1.59461	0.165824	1.297305
09-Jan-08	0.285984	1.59431	0.169964	1.297156
10-Jan-08	0.262722	1.59409	0.156081	1.297045
11-Jan-08	0.290122	1.59610	0.172941	1.298049
12-Jan-08	0.268023	1.59316	0.158979	1.296578
13-Jan-08	0.248433	1.59676	0.148255	1.298381
14-Jan-08	0.251375	1.59582	0.149773	1.297908
15-Jan-08	0.238505	1.59490	0.141886	1.297448
16-Jan-08	0.253423	1.59319	0.150328	1.296596
17-Jan-08	0.255831	1.59353	0.151844	1.296766
18-Jan-08	0.226141	1.59146	0.133753	1.295729
19-Jan-08	0.196737	1.59387	0.116836	1.296934
20-Jan-08	0.184134	1.60018	0.110513	1.300088
21-Jan-08	0.211156	1.59358	0.125337	1.296788
22-Jan-08	0.230091	1.58831	0.135365	1.294155
23-Jan-08	0.205295	1.59206	0.121548	1.296032
24-Jan-08	0.21676	1.59488	0.128945	1.297438
25-Jan-08	0.225656	1.59246	0.133692	1.296230
26-Jan-08	0.212639	1.59340	0.126180	1.296701
27-Jan-08	0.209744	1.59469	0.124732	1.297344
28-Jan-08	0.229384	1.59007	0.135352	1.295033
29-Jan-08	0.21272	1.58729	0.124928	1.293645
30-Jan-08	0.226075	1.58263	0.131718	1.291314
31-Jan-08	0.241506	1.58138	0.140407	1.290690
01-Feb-08	0.252508	1.57544	0.145303	1.287719
02-Feb-08	0.254904	1.57779	0.147282	1.288897
03-Feb-08	0.241926	1.58920	0.142542	1.294598
04-Feb-08	0.217216	1.57513	0.124928	1.287566
05-Feb-08	0.192122	1.57619	0.110699	1.288097
06-Feb-08	0.189875	1.57290	0.108779	1.286449
07-Feb-08	0.1784	1.56868	0.101452	1.284338
08-Feb-08	0.160247	1.57341	0.091887	1.286704
09-Feb-08	0.159622	1.57907	0.092433	1.289537
10-Feb-08	0.171116	1.56613	0.096874	1.283065
11-Feb-08	0.187219	1.56246	0.105304	1.281232
12-Feb-08	0.176868	1.56088	0.099202	1.280442
13-Feb-08	0.180798	1.55599	0.100522	1.277994
14-Feb-08	0.288416	1.21440	0.061836	1.107199