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Client : SCOTIA GAS NETWORKS

Project Title : MEASUREMENT ERROR REPORTS

Document Title : MER SO008 IPSDEN B OFFTAKE

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REV	ISSUE DATE	DESCRIPTION	PREP. BY	APP. BY
1	29/07/14	Issue for Comment	BK	KV

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1.0 EXECUTIVE SUMMARY

Site Name	Ipsden B Offtake
DNO	Scotia Gas Networks
LDZ	South
Error Start Date	
(Or) Last Good Date	21 st May 2010
Error Corrected Date	20 th May 2011
Size of Error (over or under read)	0.1283 % under-registration (588 scm)
Error Description	'As Found' errors during validation of Stream 2 Low DP Transmitter
Methodology	Correction of flow rates for 'As Found' errors
Meter Type	Orifice
MER Unique Reference Number	SO008

2.0 ERROR DESCRIPTION

Ipsden B Offtake has two orifice plate meter streams with a gas chromatograph for determination of density and CV. When the system was validated in May 2011 'As Found' errors were found on the Stream 2 low Differential Pressure (DP) transmitter and Analogue to Digital Conversion (ADC). The ADCs were recalibrated on 17th May 2011 and the low DP transmitter was recalibrated on 20th May 2011. The errors before 17th May 2011 and between 17th and 20th May 2011 are shown in Table 1 and Table 2 respectively.

Low DP (mbar)	CP11 Transmitter Error (%span)	CP4b ADC Error (%span)	Combined Error (%span)
0.0	-0.1969	-0.0424	-0.2393
12.5	-0.1689	-0.0398	-0.2087
25.0	-0.1159	-0.0374	-0.1533
37.5	-0.1566	-0.0288	-0.1854
50.0	-0.1755	-0.0265	-0.2020

Table 1 – As Found Low DP Errors (up to 17th May 2011)

Low DP (mbar)	CP11 Transmitter Error (%span)	CP4b ADC Error (%span)	Combined Error (%span)
0.0	-0.1969	Within tolerance	-0.1969
12.5	-0.1689	Within tolerance	-0.1689
25.0	-0.1159	Within tolerance	-0.1159
37.5	-0.1566	Within tolerance	-0.1566
50.0	-0.1755	Within tolerance	-0.1755

Table 2 – As Found Low DP Errors (17th to 20th May 2011)

3.0 METHODOLOGY

The 'As Found' calibration errors in Tables 1 and 2 were used to correct the measured flow rates based on interpolation of the measured DP. The data was recalculated on a 4-minutely basis to give a daily volume. Two sets of calculations were made, one using the recorded data and another using corrected data, the error being the difference between the two.

The error could have been present from May 2010 which is beyond the maximum reconcilable period. Therefore this analysis only considers that the errors could have been present for the maximum reconcilable period from 1st April 2011 until the errors were corrected 20th May 2011.

The daily volumes calculated from the recorded data were compared to the Gemini billed volumes to establish significant discrepancies between the results.

4.0 ERROR QUANTIFICATION

The error is calculated to be an under-registration of 0.1283 % for the period. As the start of the error cannot be determined half of the error should be reconciled in accordance with the Measurement Error Guidelines. The error should be corrected using the daily correction factors in Appendix A, which have been halved to reflect the unknown start date.

5.0 REFERENCES

HPMIS Database
MER_SO008_Data.xlsx – Calculation spreadsheet

APPENDIX A – DAILY CORRECTION FACTORS

The daily correction factors shown here have been halved to reflect the unknown start date and should be applied as stated. The days listed here are the only days where any flow was registered in the HPMIS RBD data and no correction should be made to any other days. The flow on 20th May 2011 occurred only after the error was corrected therefore no correction is necessary on this day.

Gas Date	Daily Correction Factor
05/04/2011	1.002361
15/04/2011	1.004270
03/05/2011	1.001057
16/05/2011	1.001142
17/05/2011	1.000755
18/05/2011	1.000852
19/05/2011	1.002969
20/05/2011	1.000000