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Client	:	**SCOTIA GAS NETWORKS**
Project Title	:	**MEASUREMENT ERROR REPORT**
Document Title	:	**MER SE006 FARNINGHAM A OFFTAKE**
Document Ref.	:	**NK3191K – 001**
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REV	ISSUE DATE	DESCRIPTION	PREP. BY	APP. BY
1	05/01/2017	Issue for Comment	BK	KV
2	30/01/2017	Final	BK	KV

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1.0 EXECUTIVE SUMMARY

Site Name	**Farningham A Offtake**
DNO	Scotia Gas Networks
LDZ	South East
Error Start Date	3rd October 2016 @03:46 *(Gas Day 2nd Oct)*
(Or) Last Good Date	
Error Corrected Date	3rd October 2016 @09:25
Size of Error (over or under read)	702,209 Sm^3 under-registration (approx. 7.69 GWh)
Error Description	Meter pressure transmitter lost pressure
Methodology	Correction of volumes using site inlet pressure
Meter Type	Orifice
MER Unique Reference Number	SE006

2.0 ERROR DESCRIPTION

Farningham A Offtake has one orifice meter stream with a gas chromatograph for determination of density and CV. On 3rd October 2016 at approximately 04:45 a meter suspect alarm was received and personnel were requested to site. The fault was diagnosed as a loss of pressure to the meter pressure transmitter thought to be due to a leak, which was resolved at 09:25 on 3rd October 2016 (refer to Figure 1).

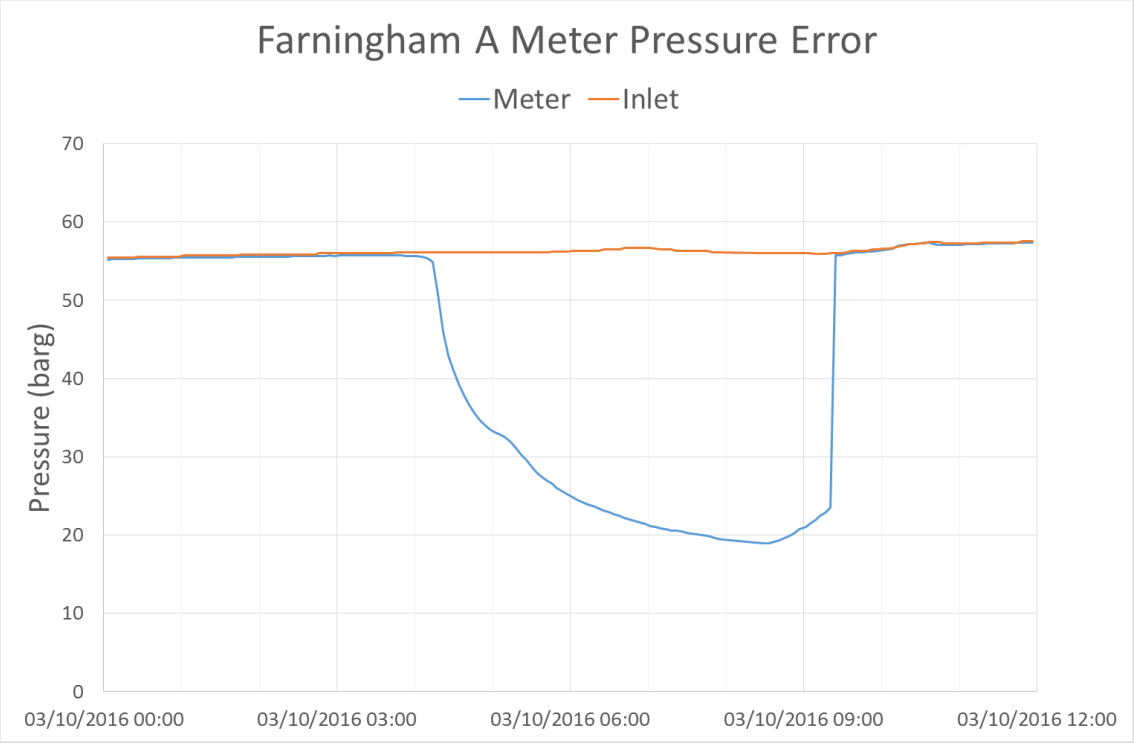

Figure 1 - Inlet Pressure and Meter Pressure

3.0 METHODOLOGY

The inlet pressure is recorded in the DNCC system via telemetry. The meter pressure is recorded in the HPMIS system. The configuration of the site means that the meter pressure and inlet pressure are approximately the same.

Analysis of the data in the surrounding period showed that the inlet pressure was on average 0.164 bar higher than the meter pressure.

The statistical 'normal' range of this data was -0.044 bar to +0.372 bar, based on a mean offset of 0.164 bar and a standard deviation ±0.104 bar at a confidence interval of approximately 95% (k=2). The point at which the offset between inlet and meter pressure fell outside this 'normal' range was 03:46 on 3rd October 2016. The offset then returned to the 'normal' range at 09:25 on 3rd October 2016.

For the error period (03:46 to 09:25) the corrected meter pressure, recorded on a 4-minutely basis, was recalculated from the inlet pressure minus the mean offset (0.164 bar). Two sets of calculations (of density, flow rate and volume) were performed; one using the recorded pressure and another using corrected pressure, the error being the difference between the two.

4.0 ERROR QUANTIFICATION

The error is calculated to be an overall under-registration of 702,209 Sm^3 for the period, which falls over part of two gas days. 42,144 Sm^3 on 2nd October 2016 and 660,064 Sm^3 on 3rd October 2016. An initial estimate of 710,000 Sm^3 under-registration was used to apply a manual D+5 correction for the gas day 3rd October 2016 only. The corrected Gemini DVols are presented below, as are (for information only) the original HPMIS DVols. The error should be accurately corrected using the following daily correction factors applied to the Gemini Daily Volumes below:

Gas Day	HPMIS DVol	Gemini DVol	Daily Correction Factor
02-Oct-2016	*7.4445*	7.4445	1.005661
03-Oct-2016	*7.3596*	8.0696	0.993812

5.0 REFERENCES

HPMIS Database
DNCC Telemetry data
Omni Flow Computer Configuration Prints:
FARV1006.PRN (10th June 2016)
FARV1003.PRN (3rd October 2016)
MER_SE006_Data.xlsx – Calculation spreadsheet