UKAS INSPECTION
331

Braishfield "B"
Significant Error Review
Draft Report Discussion

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Site Layout

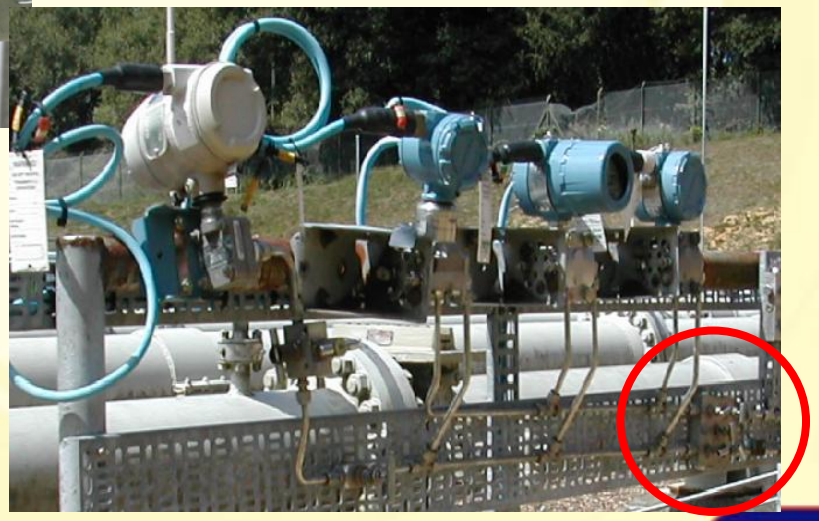
Review Deliverables

The report deliverables have been interpreted as follows;

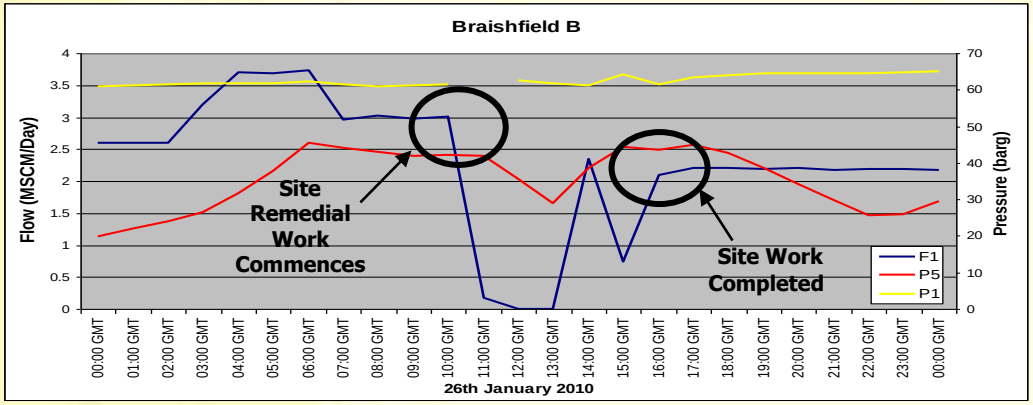
- Define the technical methodology to derive a robust evaluation of the magnitude of the SMER
- Define the data requirements (supportive data) of the SMER
- Provide detailed data rules (for the evaluation methodology of the SMER)
- Define the technical evidence used in the evaluation methodology of the SMER
- Define the SMER period
- Application of the defined methodology in quantifying the SMER
- Presentation of the defined methodology to the technical work stream
- Review of all technical SMER issues
- Define the magnitude of the SMER for every day during the period on a Standard Volume basis and clearly identifying whether it's an over or under registration

SMER Cause

Common ΔP Isolation Manifold
left in the OPEN position following a
site intervention visit



SMER Period



SMER Start;

16:00 Hrs – 26th January 2010

OFGEM SITE STATUS REPORT

Start Date: 20 DEC 2009

End Date: 30 APR 2010

Location: BRAISHFIELD B OFON

Start Time	End Time	Stream Sample Point	Visit Type	Instrument Type	Danalyser Serial Number	Instrument
26-APR-2010 15:09	26-APR-2010 15:09	4/O SO	NETWORK ENGINEERING FAULT	GATR	E030455997	EURO PEM1
Fault/ Maint Type	Rprtd	System 1 Alarm Status	Fault Rslvd	Comments	Signature	Tested Date
NEF	Yes	NONE	Resolved	CALL TO ATTEND METERING FAULT BRAISH B. INVESTIGATION FOUND DP EQ VALVE IN OPEN POSITION. CLOSED VALVE AT APPROX 12:00, METERING RESTORED. ADVISED HPMIS TEAM.	NO LONGER USED	26-APR-2010 [illegible]
Start Time	End Time	Stream Sample Point	Visit Type	Instrument Type	Danalyser Serial Number	Instrument
27-APR-2010 15:42	[illegible] 15:42	4/O SO	NETWORK ENGINEERING FAULT	GATR	[illegible]	EURO PEM1
Fault/ Maint Type	Rprtd	System 1 Alarm Status	Fault Rslvd	Comments	Signature	Tested Date
NEF	Yes	GT8H	Resolved	INTERMITTANT ALARM. HIGH DP CELL SLIPPED CALIBRATION - CREATING METER SUSPECT AND HPD OUT OF TOL ALARMS. RECALIBRATE CELL AND REINSTATE. FAULTS CLEARED.	NO LONGER USED	27-APR-2010 15:42

SMER Finish;

12:00 Hrs – 26th April 2010

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SMER Evaluation

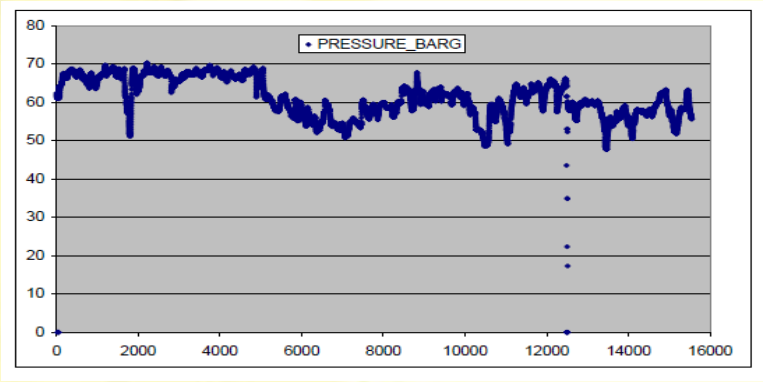
It must be recognised that unlike the methodologies available to define a measurement error that is associated with an incorrect numerical factor or indeed a "well defined" systematic bias which can be relatively precise in its retrospective calculation of the error, the cause of the Braishfield "B" SMER requires a more practical approach which will at best, be an informed estimate.

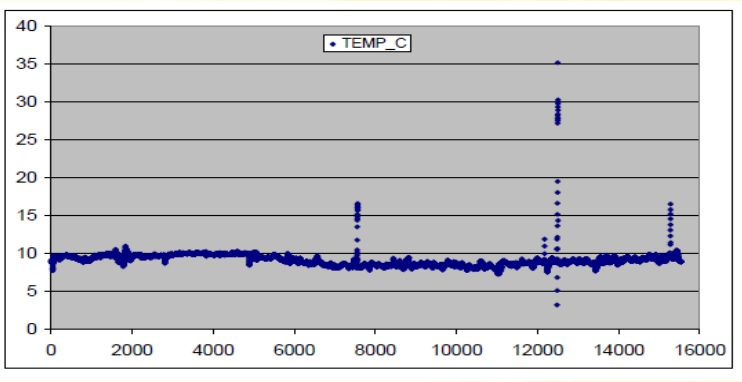
As the effect(s) of the cause cannot be quantified by substituting a corrective parameter within say a flow rate algorithm, the requirement to perform a series of controlled site tests, to replicate the cause and effect(s) under the same (or very similar) operational conditions seen during the SMER period was identified by the Independent Expert as the most appropriate technical methodology.

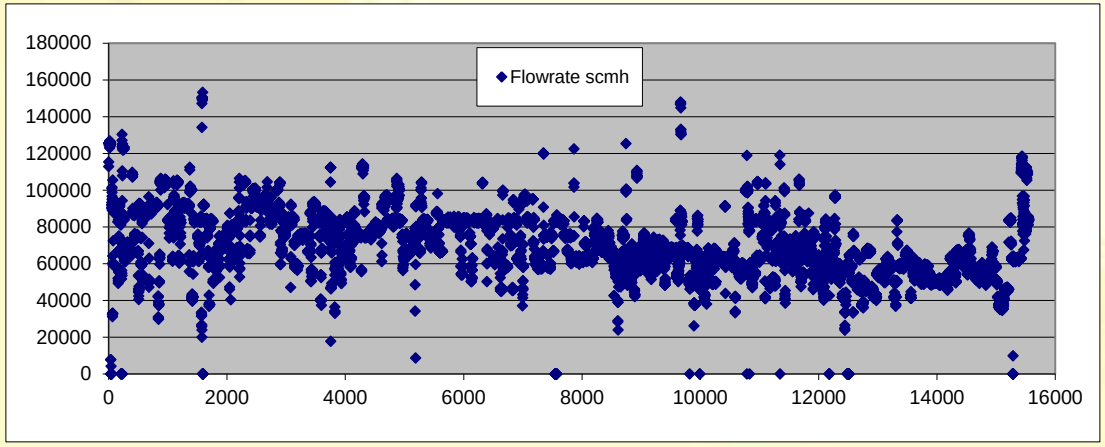
A site test procedure was developed (section 5.2 refers) and implemented at site on 4 separate occasions (providing a total of 12 individual tests – 3 per site visit) to ensure a representative coverage of the operational conditions seen during the SMER period.

SMER Evaluation

Establish operating conditions seen during the SMER period;







Pressure 50 – 70 BarG

Flow Rate 40 – 100 KSm³/h

Temperature 7 – 10ºC

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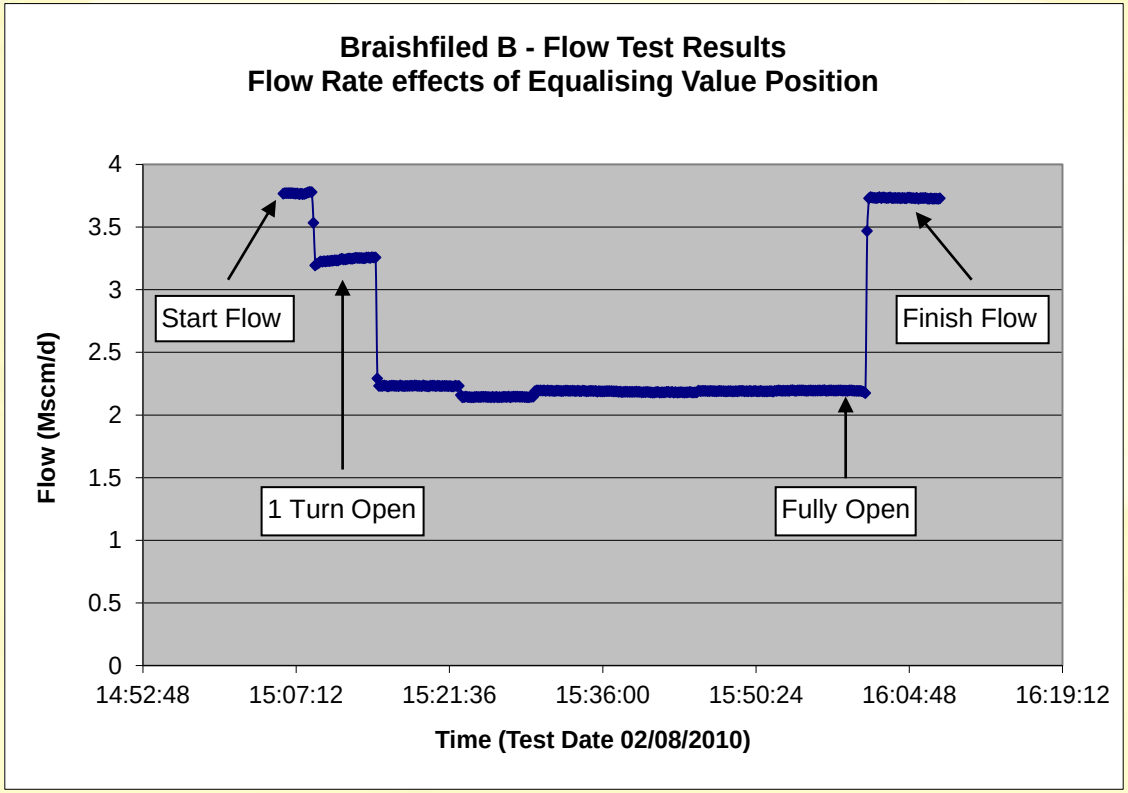
SMER Evaluation

Establish test procedure (report section 5.2 refers);



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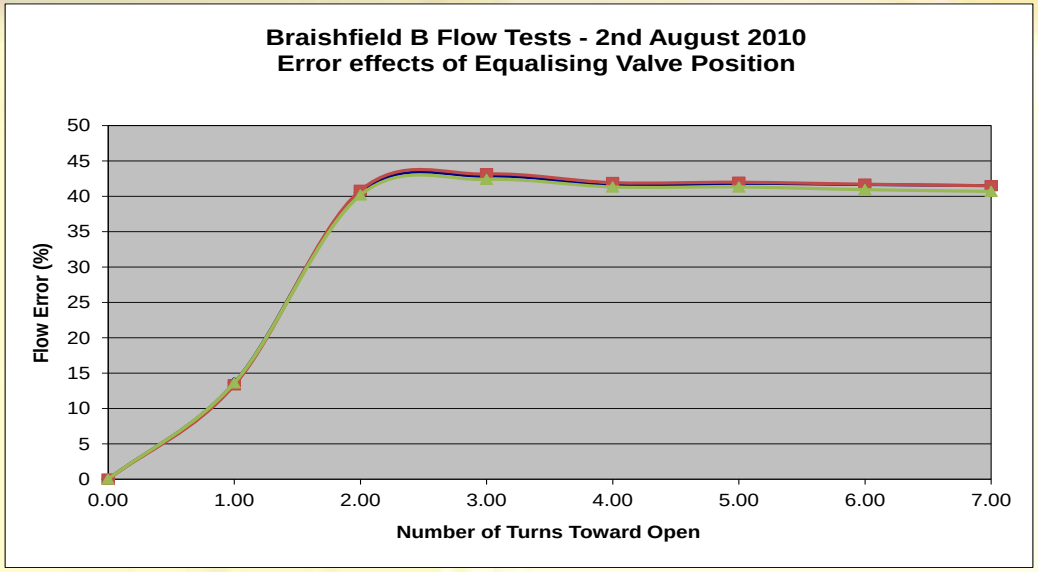
SMER Evaluation



Parameter	Value
Average Pressure	53.7 BarG
Average Temperature	13.9°C
Average Density	47.234 kg/m^3
Average Base Density	0.76104
Average Test Flow Rate (High)	156 Ksm^3/h (SMER equivalent 91 Ksm^3/h) [Test stability 0.99%] [Typical differential pressure range during test 300 to 100 mbar]
Average Test Flow Rate (Mid)	125 Ksm^3/h (SMER equivalent 73 Ksm^3/h) [Test stability 0.47%] [Typical differential pressure range during test 195 to 65 mbar]
Average Test Flow Rate (Low)	73 Ksm^3/h (SMER equivalent 43 Ksm^3/h) [Test stability 0.34%] [Typical differential pressure range during test 65 to 23 mbar]

Test Results – Change in Flow Rate (%) vs Equalising Valve Position								
	Fully Closed	1	2	3	4	5	6	Fully Open
High Flow	0	13.62	40.50	42.84	41.56	41.81	41.64	41.51
Mid Flow	0	13.32	40.82	43.14	41.92	41.98	41.70	41.48
Low Flow	0	13.61	39.46 (40.17)	41.62 (42.37)	40.58 (41.31)	40.58 (41.31)	40.21 (40.93)	39.96 (40.68)

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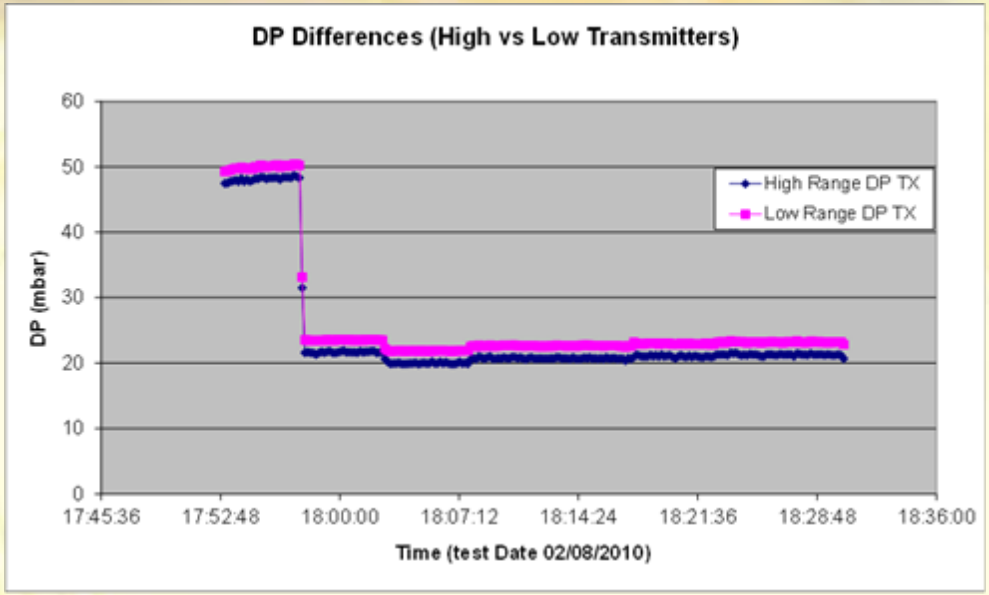
SMER Evaluation



It was noted during the testing that an uncharacteristic shift pattern was being recorded during the low flow testing. It was subsequently observed that there was a difference in the outputs of the low and high differential pressure transmitters.

The low range differential pressure transmitter was found to be reading typically 1.8 mbar higher (throughout the transmitter range) than the high differential pressure transmitter.

To overcome this issue, the low flow test flow rates were recalculated "offline" using KELTON® FLOCALC® to correct the differences in transmitter readings so that the errors are being calculated comparatively.

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SMER Results

TEST	Error (%) - ΔP Transmitter Manifold Equalising Valve Fully Open
2/8 High	***41.20***
2/8 Mid	41.01
2/8 Low	40.57 (Corrected to High ΔP Value)
28/9 High	40.75
28/9 Mid	40.75
28/9 Low	40.27 (Corrected to High ΔP Value)
8/10 High	40.80
8/10 Mid	41.14
8/10 Low	***40.20*** (Corrected to High ΔP Value)
22/10 High	41.19
22/10 Mid	40.70
22/10 Low	40.24 (Corrected to High ΔP Value)
Spread of Results = 1.0% (Average Error = 40.735%)	

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SMER Conclusions

Having minimised the effects of the flow test stability (section 7.2 refers) and corrected the effect of the low range differential pressure output difference during the low flow rate tests (section 7.3 refers), the test procedure and subsequent results obtained are deemed most satisfactory by the Independent Expert.

SMER Recommendations

The recommendation of this review is to multiply each of the daily standard volume totals reported within Gemini by a single correction factor.

- **For gas day 26th January 2010 (SMER commencement date) this will comprise a part day correction based on 1.194 mscm (16:00 – 06:00 hrs)**
- **For gas days 27th January 2010 to 25th April 2010 (inclusive) this will comprise a full day correction.**
- **For gas day 26th April 2010 (SMER remedial date) this will comprise a part day correction based on 0.382 mscm (06:00 – 12:00 hrs).**
- **The correction factor recommended for use is calculated from the most representative average error obtained from the site tests (Table 7.2.2 refers);**
- **Calculated Correction Factor 1.687**