British Gas' comments on the joint SMER produced by the two ITE's.

1. There are some questions surrounding the errors at the low flow rates. As the system was probably being operated below the contractual low flow limit and hence at high uncertainties, the results pertaining to the lowest flows should not be discounted simply because of the high uncertainty as these flows did occur in the measurement system. The flows rates should be as close to the actual flow rates irrespective of the uncertainty in the readings.

The 99950 counter reading results for tests 1, 9 and 11 showed large differences between the experimental results and CFD analysis with relative errors of -42%, 23% and 23% respectively. The results have been excluded from the analysis based on this discrepancy against the CFD analysis and not because of high uncertainties.

Test 6 is also subject to the same high uncertainties, but shows much better agreement with the CFD analysis (3%) and has therefore been included.

The high uncertainties are thought to be the main contributing factor behind the discrepancy against the CFD analysis at low DPs.

2. In table 2 the mean error was 70.556% with SD of 3.068% for the experimental error versus 70.574% with an SD of 0.678% for the CFD determined error. As expected the error at lower flow rates will have a greater uncertainty as shown by the two standard deviations. However, the actual errors from the testing and CFD are with 0.018%, as commented at the meeting the CFD has been a good tool for supporting the analysis and in this case validates the error very well which otherwise would have a large uncertainty if relying entirely on the empirical data.

It is agreed that the CFD analysis has been a very useful tool and has been used to good effect to highlight which experimental results are reliable and which should be excluded.

The mean value of the experimental and CFD results are closer when all results are included (Table 2) however the standard deviation of the experimental results is unacceptable (equivalent expanded uncertainty of ±6.1% at a confidence interval of 95 %, k=2).

The standard deviation of the experimental results with tests 1, 9 and 11 removed (Table 3) is much lower (0.554%; equivalent expanded uncertainty of ±1.1% at a confidence interval of 95 %, k=2)). The mean values of the experimental and CFD results with tests 1, 9 and 11 removed (Table 3) still show good agreement (0.7%) based on both datasets having an uncertainty of around 1%.

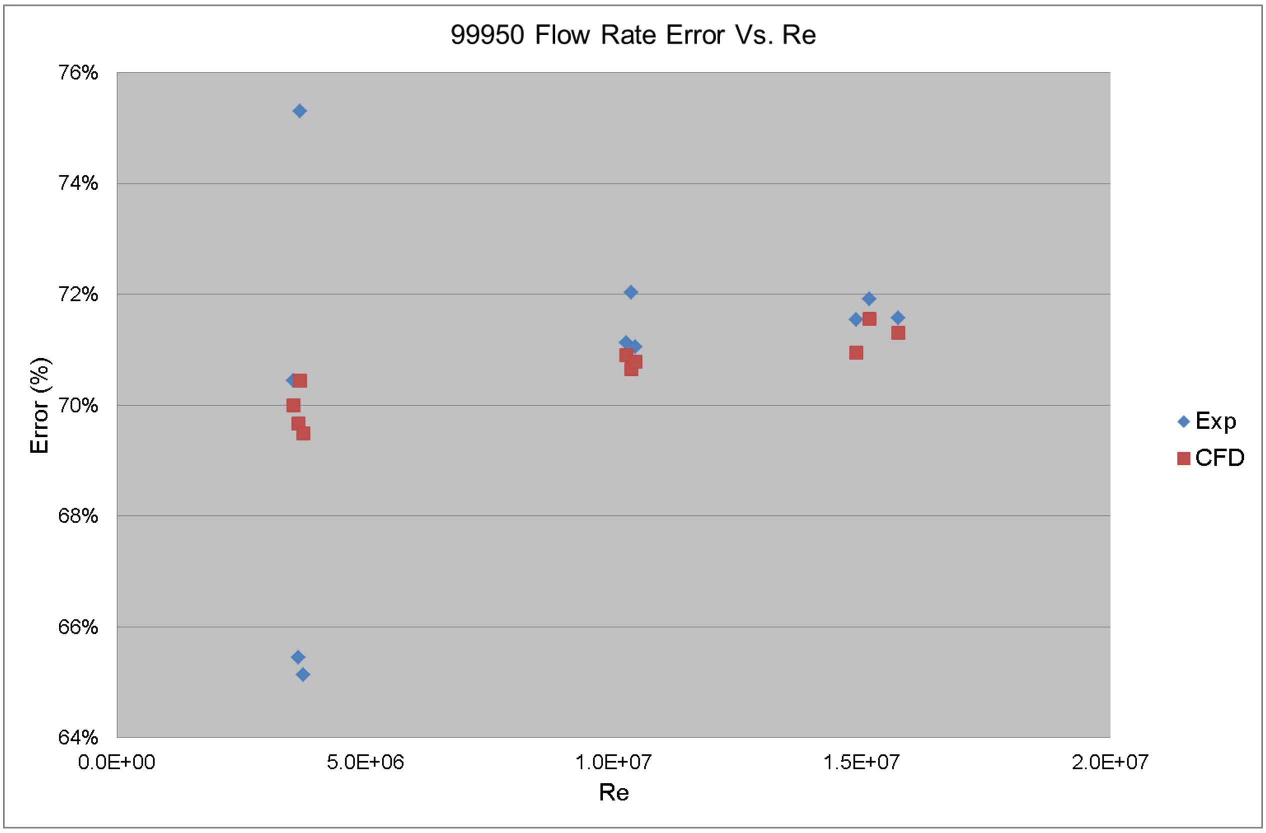
3. It is not clear if the combined results in table 2 are for all the flow rates, high medium and low, whereas table 3 refers only to the low flow rates, after the rejected points have been removed, clarification on this would be useful.

Table 2 includes all test results and Table 3 excludes tests 1, 9 and 11.

4. In figures 5 and 7 it would be useful to include all of the low flow rate data included including the rejected test points if they are not already included (not stated in the description).

Figure 5 is a repeat of Figure 4, but with tests 1, 9 and 11 removed (as stated in the caption).

Figure 7 does not show the excluded test results but has been repeated below including all test results. The outliers are clearly visible.



5. In tables 4 and 5, it is not clear how the flow range has been determined (is it from the dataset?), e.g. low flow limit in table 4 is <1.477Mscm/d whereas it is <0.577 Mscm/d in table 5.

An example calculation of the Measured Flow Rate is provided below. The Flow Range is set at the midpoint between the Measured Flow Rates.

Measured Flow Rate = Test Flow Rate x (1 – (Error / 100))