

## **Response to Reviewers**

### **Reviewer #1 :**

Comment:

Third Page – Correlation number 2 should be written according to SI system.

Response:

Since the original empirical equation format presented in correlation 1 and 2 developed by prominent investigators cited in this manuscript is published in the oilfield unit system as presented below equation No. 2, and because changing unit system for this correlation would cause the correlation constants to be changed, thus, changing the constants of their published correlations may lead to misunderstanding. But for convenience and obey journal rules we presented our new equation in both original unit system and SI unit system.

Comment:

Third Page - We can't read anything about that how the data were obtained. Which methods were used for measurements of oil flow rate, oil pressure and gas to liquid ratio? Which are accuracies of measurement devices?

Response:

All data was obtained by production testing operation performed on various wells. Some more description about how each parameter obtained, was added to the data gathering section.

Comment:

Fourth Page – There is missing unit at the ordinate of Figure 1.

Response:

This plot is histogram of wellhead pressure data showing frequency of each data range. Then the vertical axis shows the population or count of data in the distinct data ranges presented in the horizontal axis. Thus vertical axis has no unit.

Fifth Page - There are missing units at the ordinate and abscissa of Figure 2.

Response:

This plot is histogram of choke size data showing frequency of each data range. Then the vertical axis shows the population or count of data in the distinct data ranges presented in the horizontal axis. Thus vertical axis has no unit.

Comment:

Sixth Page - Standard deviation can't be calculated by using equation number 7.

Response:

This comment was applied. This part of paper was corrected. Equation for average relative error and root mean square error were provided.

Comment:

Seventh Page - In the Figure 3 can't be seen the difference between predicted data by the new and old correlations.

Response:

This figure is only for showing the correlation of predicted data of flowrate by new correlation with quality controlled measured data applied in the development of this new correlation. The comparison between new and old correlations is presented in the Fig.5.

Comment:

Seventh Page - Standard deviations which are shown in Figure 4 must have unit at the ordinate.

Response:

This comment was applied. The equation for RMS Error was provided and the unit was added to Fig.4.

Comment:

Eight Page - In the Figure 5 predicted data by the new and old correlations must be represented at the same graph. This is the way how to make comparable data.

Response:

This comment was applied.

## **Reviewer #1 :**

Comment:

Line 144 and 149 Relative average error instead of absolute average error.

Response:

This comment was applied.

Comment:

Eq. 7 Equation for calculation of average relative error should be given, instead of relative error.

Response:

This comment was applied.

Comment:

Line 146  
Equation for calculation of standard deviation is missing.

Response:

The equation for calculation of standard deviation replaced by equation of Root Mean Square Error.

Comment:

Line 150 Which data are used for plots in Fig. 5?

Response:

12 new measured flow rate, choke size, WHP & GLR data obtained from ongoing welltest operations during study was implemented for testing & comparison of new correlation by cross plot of Fig. 6. These data are presented in Table B.

Comment:

Line 153  
Results for reduced relative average error, in %, should be presented.

Response:

This comment was applied. The results of average relative error, % for new and other equations is illustrated in Fig. 5