

ABSTRACT

Evaluation of Multiphase Flow Correlations for Trinidad South East Coast gas wells

Shelley Patrice Lucy Persad

Multiphase flow correlations are used to predict the pressure losses incurred as a result of fluid flow through pipe. This evaluation is required since energy is lost as a fluid moves through pipe due to frictional losses, acceleration and the effects of the fluid weight for vertical flow.

In this study, the predicted vertical tubing pressure losses for twenty-three (23) gas wells, using fourteen (14) published multiphase flow correlations, were compared to actual measured field data. The analysis was done for two hundred and eighty (280) well tests. The results obtained were analyzed for varying well and flow characteristics such as gas rate, condensate gas ratio, water gas ratio, tubing size, production age and angle of inclination.

The wells used in this study produce from three southeast Trinidad offshore gas fields referred to as Fields A, B and C. These fields are owned and operated by bp Trinidad and Tobago LLC.

The results obtained showed that none of the correlations used to predict the tubing pressure losses perfectly matched the measured field data. The percentage error (pressure) was calculated and together with other criteria, was used to recommend which of the correlations would be most appropriate for use in each of the three fields under specific conditions.

The analysis conducted showed that the Gray correlation met all the specified criteria and is the recommended correlation to be used in all fields.

worked on this study.

Having these guidelines allows the engineer to better predict tubing pressure losses in the absence of required field data, for existing and future wells.

An SPE Paper number **93544** was written on this study and can be found in the appendix.

Keywords: Shelley Patrice Lucy Persad, multiphase flow correlations