CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The ANNs and correlations for prediction of crude oil properties using data collected from published sources. The selected data points were divided into data sets for developing and testing correlations and ANNs. The selected data could be used for modeling 4 crude oil properties including bubble point pressure, undersaturated oil formation volume factor, solution gas oil ratio, and undersaturated oil viscosity. According to the testing results, the developed correlations in this work could be used to predict crude oil properties with competitive performance compared to some existing correlations. The developed P_b ANN, B_{ob} ANN, and R_s ANN could also be used and gave competitive testing results compared to the developed correlations and some existing correlations statistically. However, the developed μ_o ANN using three input parameters (i.e. P, P_b, μ_{ob}) gave poor testing results compared to other methods with the widest range of errors, highest absolute average error, highest maximum average error, and lowest coefficient of determination. The developed correlations could be used within the ranges of data used in this work. Hence, care must be taken beyond the range of the input data.

5.2 Recommendations

Firstly, since the limitation of the data collected in this work, more quality data are needed in order to develop neural network model to predict other crude oil properties. Secondly, more accurate models may be obtained by adding another parameter (i.e. crude oil compositions), or categorizing data into different sections (i.e. API ranges). Last, there is no development of correlations and ANNs for determining Thailand's crude oil properties since lack of PVT data from Thailand. Further study should be done on crude oil in this particular region.