

CHAPTER VIII

CONCLUSIONS

The main conclusions of the present work are as follows:

a) A computer simulation program for solving the crude distillation problem has been developed and then tested on the topping column first solved by Hess et al.(40). The crude oil feed was represented as pseudomulticomponent in both cases. Good agreement of both solutions confirmed the reliability of the present computer program.

b) The present computer program was next applied to an existing topping column. Once the theoretical analogue column has been found, the simulated data yielded reasonably good agreement with the actual plant data.

c) Based on the obtained theoretical analogue column for the existing topping column, the computer program was run under many different operating conditions in order to improve the refining operation compared to the present one. The crude feed temperature and molal reflux ratio are chosen as operating variables in this work.

It was found that increasing the crude feed temperature shifted upward the TBP distillation curves of all products, especially the heavy oil products. The same behavior was observed if the molal reflux ratio was decreased. For the cases in which the resulting product specifications were acceptable, an economic evaluation was next carried out.

d) It was found that the present operating condition of the existing topping column has not been in the optimum condition. Due to the results of economic evaluation, the optimum operation (620°F crude feed temperature and 2.364 molal reflux ratio) will give the benefit of 80.2 million bahts per year.



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