CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this study, Waterflooding, carbon dioxide flooding and water-alternating-carbon dioxide were simulated based on the previous experiments. The simulation of waterflooding, carbon dioxide flooding and water-alternating-carbon dioxide were simulated by using two sand pack permeabilities ranging from 11 to 43 μm^3 on two oil types, with oil viscosities 400 cp and 1500 cp. Based on the simulation results, the following conclusion can be drawn:

- The minimum AARE occurs in the case of high oil viscosity and permeability in carbon dioxide flooding (test 6) with 4.29 %.
- In the case of low oil viscosity, high permeability and carbon dioxide/water slug ratio of 1:1 (test 7) has the highest AARE of 7.19 %.
- The average value of AARE which compare between simulation results and experimental results was 5.30 %.
- Simulation results were agreeable and trends of oil production are similar to experimental data.

5.2 Recommendations

This study is a simulation of waterflooding, carbon dioxide flooding and water-alternating-carbon dioxide in heavy oil reservoir. Pressure in simulation is extremely lowerpressure that commonly exists in heavy oil reservoirs. Moreover, the percent error should be considered in order to find factors which the most influence for percent error. Thus, more work needs to be done and consideration should be taken before a successful of predicting in heavy oil reservoir. Some of the recommendations are:

- Waterflooding, carbon dioxide flooding and water-alternating-carbon dioxide needs to be tested at the heavy oil reservoir condition to investigate their possibility in enhanced heavy oil recovery.
- Wide range of oil viscosity should be test in order to investigate their feasibility in enhanced heavy oil recovery.
- Regular Cartesian grid model should be simulated in order to compare the percent error between simulation results and experimental results.
- Due to the limitation of this program, θ-direction and r-direction cannot be refined more but j-direction of grid model can be refined so as to prove that more grids in j-direction can be