# CHAPTER 7
# SUMMARY AND RECOMMENDATIONS

## 7.1 Summary

A simulation program of distillation dynamics and control has been developed. Four control structures and ten hydrocarbons in the program are selected to study. A user can select a menu to change it's value by using mouse. The results of the simulation are displayed graphically, and a user can select the submenu to study the effect of load disturbances (i.e. feed flow, feed temperature, feed composition). Four types of disturbances are step, pulse, sinusoid and random.

The results presented in chapter 6 verify the thermodynamic properties and the steaty state accuracy of this system comparison with HYSIM. The results presented regarding the transient response predictions is less concrete due to the source of data for comparison. However, these results at least verify the directions of responses is reasonable.

A major utility of this simulation program is the user interface for selecting the control structure or changing the initial value of various variables.

## 7.2 Recommendations

Some limitations of this work have been discovered. The various assumptions in the program are the limitations in study of the dynamic model and some thermodynamic properties. For this work, they include the assumptions following as:

1. Negligible vapor holdup.
2. Neglgible specific enthalpy change.
3. Negligible pressure change or Constant pressure drop.
4. Total condense in condenser.
5. Incompressible liquid density.
6. Equilibrium in temperature but not in vapor-liquid phase.

More work needs to be done is to verify the accuracy of the transient response predictions. This should probably be accomplished via comparisons to a fully rigorous dynamic simulation.