CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The designed distillation processes can separate isobutane to reach the objective purity of 99.7% by mole. These processes were designed by the shortcut distillation design and rigorous simulation and from the results it was found that the optimum process scheme of all feed is the scheme which separated propane and isobutane in the first and second column, respectively. The specifications are 223-226 psia of column pressure and 84-138 inch of diameter of valve tray in the first column and 91 psia of column pressure and 84-132 inch of diameter of valve tray in the second column. The total capital investment of this scheme was divided into 2 groups. The first group was the high cost group with 13-14 million dollars of the processes designed from feed 4,5 and 6 and the second group was the low cost group with 7-9 million dollars of the processes designed from feed 1,2 and 3. The return on investment and the net present value were calculated and found that the recommended design process were the process designed from feed 1 and 5 which gave the optimum profit for the high and the low cost group, respectively. When compared to all design processes, the design process of feed 5 was recommended.

Although this work provides some insight on the preliminary design of distillation processes for isobutane purification, more work should be done to investigate the detail design of the recommend design scheme and effects of other variables for investment such as risk and marketing share.