CHAPTER VII

CONCLUSIONS

Oil reserve and its uncertainty can be obtained by using volumetric method with Monte Carlo simulation. The computer program is developed in this study for oil reserve calculation using mentioned method. The developed computer program is an improvement over the generally used program by the fact that it includes the consideration of statistical relationship of two input variables and spatial correlation of an input variable. The incorporation of statistical relationship between two input variables is accomplished by using a statistical (stochastic) equation representing their relationship. This kind of equation consists of a deterministic part and a statistical (or random) part. The incorporation of spatial correlation of an input variable is effected by using spectral turning bands method. Detail of this method is described in this study. In addition, it is necessary to divide a reservoir into blocks in order to be able to incorporate these relationship.

The developed computer program is used to investigate effect of statistical relationship between two input variables and spatial correlation of an input variable. From the investigation the following conclusions can be drawn.

1. Distribution functions of input variables used in the calculation must be corresponding to the size of blocks used. In addition, the size of blocks is usually dictated by the information or data available.

2. Statistical relationship between two input variable has noticable effect on the calculated oil reserve.

3. Spatial correlation of an input variable also has noticable effect on the calculated oil reserve.

With the results obtained from the investigation, it is recommended that the mentioned statistical relationships should be incorporated in oil reserve calculation if they exist in input variables. Finally, and example of oil reserve calculation using the developed computer program is presented.