Chapter 6

Conclusions

6.1) Accomplishments

The conclusions of this thesis is that a method and program for dynamic equivalents have been developed to assist utilities in reducing the high costs and long computer running times for transient stability simulation. The reduced system has been used for simulation with various types of faults, with good results in the tests which have been carried out.

The foregoing conclusions are supported by the following tests finding and accomplishments:

- The dynamic equivalents have been demonstrated and successfully validated by comparison of the results from computer calculations of the dynamic performance of the full-scale and the reduced version of EGAT power system..
- The dynamic equivalents obtained have been two to ten times more efficient than the original system in terms of computer running time and memory storage.
- The dynamic equivalents have produced simulation responses which agree very closely with responses obtained by simulating the full system.
- The dynamic equivalents can be represented by the same models which are presently used for representing normal power system component. Therefore, they can be used without any changes in existing transient stability program.
- The computer time for running the dynamic equivalent program is a fraction of the time for a transient stability simulation of the full system.

6.2) Recommendation

However, further development of the method may be necessary:

- The fact that the somewhat simplified method of calculation of the dynamic data of equivalent machines has been so successful may be due to the fact that the models within the coherent groups often have very similar data. If the model is to be generally valid, more accurate methods should be used . This applies to data for magnetic circuits, voltage control, turbine governing and additional control of the equivalent machines.
- The method used to determine coherent generators requires both a considerable amount of work and good knowledge of the system. An automatic method of determining the coherent groups would be of considerable help.