CHAPTER 7

CONCLUSIONS

This thesis is analyzing the load flow of a part of MEA network system by using the SIMPOW software package program. The load flow solution of the studied network system is acceptable indicating that the SIMPOW software package program can be used for calculation on the MEA 400 V. network system.

The simulation of the studied network system has been divided into three cases as follows: a) load flow in a base case, b) simulation of load increase and c) simulation of feeders out of operation. It has been possible to obtain good results in the tests which have been carried out.

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

1) The test of the SIMPOW software package program is done by comparing the SIMPOW software calculation with field test measurements of currents. Differences up to say 8-10 % are acceptable indicationg that the SIMPOW program can be used for calculation on the MEA 400V network system although there is not enough measurements for a formal load flow calculation.

2) The studied network system did not show problem when the

chosen feeders were out of operation (the first contingency occurs and the second contingency occurs) when the studied network system was modified as follows :

- Change of the feeder for transformers :

  SD 12510 to SD 43510 (i.e. the transformer has been moved from feeder 12 to feeder 43)

  SD 12525 is SD 41525

- Installation of new transformers

  SD 11552 installed at node 52

  SD 11557 installed at node 57

  SD 43521 installed at node 21

  SD 43551 installed at node 36

  SD 43570 installed at node 70

  SD 41516 installed at node 16

  SD 41581 installed at node 81

- Installation of shunt capacitors

  Shunt capacitor rated 25 kVAR at node 33

  55 kVAR at node 72

  60 kVAR at node 20

  85 kVAR at node 43

3) Increased loads in the studied network system (the base case). Load at node 13507 (area 1) about 50 % (from 0.7 MVA to 1.066 MVA), at node 30 (area 2) about 110 % (from 0.374 MVA to 0.782 MVA), at node 21509 (area 2) about 65 % (from 0.335 MVA to 0.552 MVA) and at node 12525 (area 3) about 30 % (from 0.419 MVA to 0.544 MVA). Without voltage and over load problems.

However when the first contingency occurs possible load

increase at node 13507 (area 1) is reduced to about 3 % , at node 30 (area 2) to about 20 % , at node 21509 (area 2) to about 30 % and at node 41525 (area 3) to about 17 %.

When the second contingency occurs the load increase is further reduced ; at node 30 (area 2) to about 5%, at node 21509 (area 2) to about 3 % and at node 41525 (area 3) to about 15 % i.e. only main load increase securs possible.

Although there is not enough data for a formal loadflow analysis. It is possible to do some analysis of the meshed 400 V.system by using SIMPOW and turning the model by comparing calculated result with field measurement.