

CHAPTER SIX

CONCLUSION AND DISCUSSION

6.1 SUMMARY

Image reconstruction technique by filtered-backprojection algorithm and Shepp-Logan filter was investigated. A computer program, written in FORTRAN IV, was developed for this purpose. The algorithm used was based on filtered-backprojection technique where Shepp-Logan filter was used. The program consists of 1 main program and 3 subprograms. The program was tested and improved on NEC-300 computer using simulated data. Data from experiments by Jewpraditkul, V., et al were used to test the program. Later on, the program was applied to x-ray radiography by using data obtained by simple experiments, using a symmetrical object, made at the Department of Nuclear Technology. The images obtained were quite acceptable, in both cases, in terms of resolution. The elegant mathematical formulation in computerized tomography could provide flawless reconstructions if a complete set of line integrals are available. In reality, however, measurements of line integral are often flawed by nonlinearities, insufficient data, and noise, thus causing various degrees of errors and distortion in the reconstruction. In one experiment performed at the Department of Nuclear Technology, where an asymmetrical object was used, the image obtained was not quite clear. The

distortion was thought to be caused by coarse rotational scannings (every 10 degrees).

6.2 RECOMMENDATIONS

From the results of this study several recommendations could be proposed in order to improve the technique. They may be as follow

1. To improve the technique, methods of interpolation other than linear interpolation, should be investigated.
2. Uses of appropriate windows, coupled with filters, could improve the resolution of the image. So it should be further investigated.
3. Other algorithms such as Fast Hartley Transform, Finite Field Transform, etc should be investigated.
4. Developing a system of image reconstruction using microcomputer should be attempted. This includes the direct transfer and storage of data as well as image reconstruction on screen.

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