

## C017295 : MAJOR NUCLEAR TECHNOLOGY

KEY WORD : IMAGE RECONSTRUCTION / BACK PROJECTION

PRAWIT RUNGRAIRATANAROIJ : DEVELOPMENT OF COMPUTED TOMOGRAPHY FOR USE  
IN INDUSTRIAL RADIOGRAPHY. THESIS ADVISOR : ASSO.PROF.TATCHAI SUMITRA  
ED.D. 77 PP. ISBN 974-581-733-3

A computed tomography system using the back projection technique is developed to reconstruct an industrial object cross-section image for defect analysis. The data collecting system and the control program are designed to fit IBM personal computer with VGA colour monitor. It can collect gamma transmitting data of 129 ray sums and 100 profiles with 1 mm ray sum step at 1.8 degree of each profile step. The recorded data can be reconstructed as an image on colour screen with a resolution of 128 x 128 pixels and 16 colour contrast levels.

A 20 mCi ( $7.4 \times 10^8$  Becquerel) of Cs-137 radiation source and 2" x 2" NaI (Tl) detector contained in collimators of 3 mm and 1 mm, respectively, are used as radiation transmission measuring system. The system is tested for image reconstruction of samples like brass connecting pipe with 20 profile data, 110 minutes data collection time and 240 minutes for reconstruction process. The image is satisfactory, however with low contrast.