Chapter 5

CONCLUSION

A number of useful inferences have been made on the basis of the work described in the preceding chapters. Some of the important ones are given below:

1. Neutron radiography is a useful tool for monitoring Pu enrichment and detecting PuO agglomerates down to 250 micron in welded fuel pins.

2. Gamma autoradiography is a cheaper and simpler alternative to neutron radiography, but limited by self shielding of radiation emitted by the fuel.

3. Use of microdensitometry and a defect standard enables quantitative analysis of defect signals in x-radiograph of fast reactor fuel pin end plug welds.

4. Limit of detection of tungsten inclusion in x-radiography of reactor fuel pin welds (fast and thermal) was determined.

5. Effect of film fogging on radiographic sensitivity of x-ray film was studied.

6. Use of ultrasonics for nondestructive characterization of nuclear ceramics and porous materials [UO,(0.3U-0.7Pu)C, iron compacts] was demonstrated. It was concluded that longitudinal velocity is useful for predicting elastic moduli,
density and inferring fabrication parameters of porous materials.