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**PERFORMANCE TESTING FOR SCINTILLATION CAMERA**

**A PROJECT REPORT PRESENTED**

**BY**

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**ABSTRACT**

According to the test schedule (page 20) there are thirteen number of tests to check the performance of a scintillation camera. But due to lack of apparatus, only nine tests were carried out during the study. The tests, which were carried out, are listed on page 25 of this report.

Preset and manual PHA (Pulse Height Analyzer) window settings were tested using  $^{99m}\text{Tc}$ ,  $^{131}\text{I}$  sources and 20% window was used. Percentage change in count-rate on changing from the manual mode to the preset mode was measured.

Intrinsic flood-field uniformity of the camera was tested by a point source of  $^{99m}\text{Tc}$  in solution with 20% window width. Values were obtained for useful field-of-view, (UFOV) and central field-of-view (CFOV). Intrinsic flood-field-uniformity over available PHA window widths also tested using a  $^{99m}\text{Tc}$  source and with 20% PHA window. Images were observed for each PHA window using a computer.

$^{99m}\text{Tc}$ -solution containing flood phantom was used to test the system flood-field uniformity with a 20% PHA window. Digital image was observed.

Flood phantom containing  $^{99m}\text{Tc}$  in solution and, quadrant bar phantoms were used to test the intrinsic spatial resolution of the camera. Intrinsic spatial resolution in terms of Full Width at Half Maximum (FWHM) was measured, also the digital image was observed. System spatial resolution of the camera also measured and the digital image was observed.

The intrinsic count-rate performance of the camera was tested using two point sources of  $^{99m}\text{Tc}$ .

Maximum count-rate of the scintillation camera was measured by varying the distance of the  $^{99m}\text{Tc}$  point source from the surface of the detector.

Finally the total performance of the scintillation camera used for the study was tested using a total performance phantom (Liver slice phantom). Images of liver phantom were observed.