QUALITY CONTROL PARAMETERS OF FLUOROSCOPIC X- RAY UNITS USED IN SRI LANKA

A PROJECT REPORT PRESENTED BY

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to the Board of Study in Physics of the

POSTGRADUATE INSTITUTE OF SCIENCE

in partial fulfilment of the requirement

for the award of the degree of

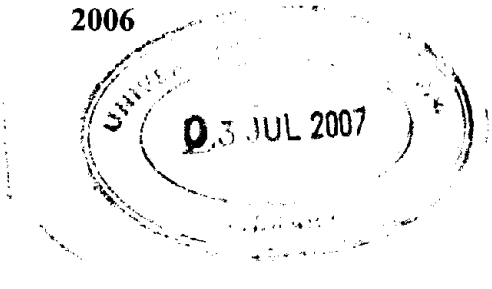
MASTER OF SCIENCE IN MEDICAL PHYSICS

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

2006



ABSTRACT

QUALITY CONTROL PARAMETERS OF FLUOROSCOPIC X-RAY UNITS USED IN SRI LANKA

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Implementation of a quality control program for all diagnostic x-ray units is essential and is more important for fluoroscopic x-ray units as they contribute more doses to the patient than general radiography due to the length of fluoroscopic examinations. There are about 40 fluoroscopic x-ray units in Sri Lanka and regular QC programs are not performed on those units due to various reasons.

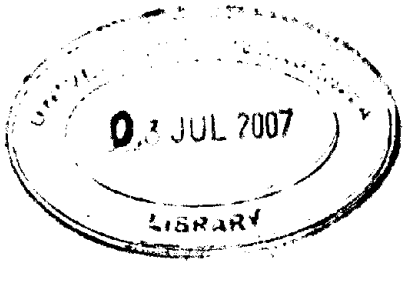
In this project, QC parameters and entrance surface exposure rates were measured in ten fluoroscopic x- ray units and compared them with international standards. Reproducibility of kVp, exposure & time, accuracy of time & kVp, HVL, ESER and image quality parameters including high/low contrast resolution & contrast threshold was measured in this study.

Out of ten machines, reproducibility of kVp and time of nine machines were within the acceptable limits. Exposure reproducibility of two machines was out of acceptable limit.

Although the timer accuracy was acceptable for nine machines, the kVp accuracy was not within acceptable limits for seven machines and two of them gave error percentages more than 30%. HVL of two machines were found non-compliance with international standards. ESER of four machines exceeded the acceptable limits.

Out of ten machines, only two machines were within the acceptable limits for all three parameters checked for image quality.

In this study scatter radiation from machines were also measured to estimate the exposure of workers who are involved in fluoroscopic procedures and compared the total effective dose



with permissible limits. It was indicated that the dose to workers are higher than the permissible limits if the machines are used without protective gears like lead apron and lead flaps etc.

Therefore periodical checking of these factors, and make corrective actions when needed, is essential for the fluoroscopic x- ray units used in Sri Lanka, for optimisation of the patient & staff dose and to obtain an image with adequate diagnostic information.