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PAITOON TAWSAGUL : BEAM INCIDENCE AND SURFACE DOSE FOR 6 MV MEDICAL LINEAR ACCELERATOR. THESIS ADVISOR : SURAT VINIJSORN M.Eng., RATANA PIRABUL M.Sc., PICHIT RATANAKHON Bsc.
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Surface dose and dose in the build up region varies with changes in parameters such as beam energy, source to surface distance, field sizes, beam modifiers, patient geometry and angle of incidence. Surface dose measurement in the therapeutic x-ray beams is important for determining the dose deposited at the surface and in the build up region of patients undergoing radiotherapy because most of the treatment planning programs in the computerized treatment planning system give only estimated skin dose from isodoses grouped closely near the surface.

For obliquely incident photon beams, the object of the study the dose received with depth in the build up region from high energy photon beam is significantly different from normally incident beams. The measurements were made by using Lithium Fluoride thermoluminescence dosimeters (TLD-100chips size3.17x3.17 mm^2 and thickness 0.89 mm) placed along the central axis of the radiation beam with zero degree of incidence. Most of TLD were placed in a full scattered wax phantom. The radiation beam was 6 MV x-rays produced by a medical linear accelerator. The angle of the beam incidents were 0°, 15°, 30°, 45°, 60°, 80° with field sizes ranging from 5 x 5 cm^2 to 35 x 35 cm^2 at 100 cm source to surface distance (SSD). From the study the surface dose and dose in the build up region are dependent on field size, depth and angle of beam incidence. For the obliquely incident beam the percentage build up dose increases with an increase in angle of beam incidence. As angle of beam incidence increases, the depth of maximum dose (d_{max}) shifts toward the shallower depth, as well as the increase of the dose for the larger field size.