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## Commissioning Dosimetry in Helical Tomotherapy

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We installed the tomotherapy for the first time in Korea, the Our Lady of Mercy Hospital, the Catholic university of Korea. We performed the commissioning procedure about the energy fluence modeling. The energy fluence is modeled from static beam measurements and verified by helical delivery measurements early in the commissioning process. In static measurements, the spectrum along the central axis must be quantified first. Transverse dose profiles were recorded on the film. The longitudinal dose profiles had to be measured as well for accurate dose modeling. The film-measured longitudinal profile was compared to a longitudinal profile measured by an ion chamber via a topographic scan. In helical verification, a series of measurements was recorded in a specially fabricated cylindrically symmetric VirtualWater phantom (Med-Cal). EDR2 film was placed between the phantom halves. Next, the A14Sl ion chamber measured the longitudinal dose profile topographically in the cylindrically symmetric Virtual Water phantom. The longitudinal dose profile for the 6-rotation delivery was measured, over multiple treatment deliveries, by the A14SL ion chamber. For the energy fluence modeling, the convolution-predicted dose values in the center of each helical delivery are compared to all those measured by film and by ion chamber. There was excellent agreement between the dose predicted via the ion-chamber impulse function and the ion chamber measured dose value in the center of each helical delivery. The agreement was not as good for the ion chamber impulse function prediction and that measured by film. However, the differences were not outside the accuracy that can be expected from film dosimetry film was adequate for measuring the transverse dose profiles because the penumbral region only contributes once to the dose.

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