

The enhanced dynamic wedges of a Varian Clinac 21EX were commissioned in a 3D treatment planning system based on a convolution algorithm. The required beam profiles for modeling the wedges in the treatment planning system were measured using an ion-chamber array consisting of 24 ion chambers with 2 cm spacing between adjacent chambers, in a water phantom. A single model in the treatment planning system was found to be sufficient to represent the dosimetric data for various field sizes of a dynamic wedge angle and for a given x-ray beam energy. The wedge factors were measured using single point measurements for various symmetric and asymmetric field conditions. Due to non-linear variation of wedge factors as a function of field size, it was not possible to use the linear interpolation on wedge factor data without a very comprehensive set of measurements. A simple empirical relationship based on the information in the segmented treatment tables (STT) was developed to determine the wedge factors. The wedged field output factors computed by the treatment planning system compared with the measurements within 1.5% for symmetric and asymmetric fields with normalization point at the central axis, and within 2% for half field conditions with normalization point off the central axis. A quality assurance program consisting of checking the wedge factors in an air jig daily and checking the beam profiles with a diode array weekly was established. The results of the quality assurance program obtained over a period of one year will be discussed.