AbstractID: 7125 Title: Off-Axis Wedge Factors for the Enhanced Dynamic Wedge

Enhanced dynamic wedges are well known to have central axis “wedge factors” that vary as a function of the stationary jaw position. Work has been published for symmetric as well as asymmetric fields, including the use of off-axis dynamic wedge factors along the geometric central ray of the asymmetric field. We have measured off-axis wedge factors for the special case of a half-beam blocked field (i.e., stationary jaw set to the central axis), such as may be encountered with breast tangents. In these cases, a standard off-axis distance has been used. These measured wedge factors were used to verify the monitor unit calculations of a treatment planning system. A small dependence upon field size was observed.

The use of fields which block the beam central axis has led to a more general need to determine the relationship of wedge factors for enhanced dynamic wedges as a function of their off-axis position. The fixed-position wedge factor measurements have been extended to a more general situation with a reference point of variable off-axis position and depth. Data will be presented for 4MV, 6MV and 10MV x-rays and compared against those derived from a commercial pencil beam-based treatment planning system and a model that incorporates these effects in verification of monitor unit calculations.