AbstractID: 11671 Title: Characterizing the enhance dynamic wedge parameters in the Eclipse treatment planning system and assessing its accuracy in beam modeling

Purpose: The purpose of this study is to assess the accuracy of Eclipse treatment planning system in modeling Clinac EDW beams and to evaluate the effect of the three EDW parameters on its outcome. **Method and Materials:** The wedge factors(WFs) were measured in symmetric fields from 4x4 cm^2 to 20x20cm^2 and asymmetric fields to the maximum of 30x(20,10). Point of measurement was in solid phantom at 10cm depth and 100cm SSD setup using a PR06 ion chamber. Measured and calculated data for the standard set of wedge angles with 6, 10 and 23 MV photon beams by comparing the WFs. Effects of the three parameters were monitored by the MU changes. **Results:** The calculated WFs have more discrepancies on large wedge angles and field sizes and tend to be lower than the measured value. All parameters had minimal to no effect on 4x4cm^2 fields. For field size ≥10x10cm^2, the deviations were less than 2% after the adjustment. Increasing the secondary source size will increase the MU and is more sensitive on the medium field sizes. It will take a minimum of 2mm change before any effect can be observed. Increasing the relative intensity will decrease the MU and the effect is more sensitive on 60º wedges. Increasing the mean energy increases the MU and the effect is greater for larger field size and wedge angle. **Conclusions:** There are limitations in utilizing the EDW parameters for modeling all field sizes and wedge angles to within 2% deviation from measured value. User has to compromise between the smallest field size and largest wedge angle. Best is to start with relative intensity to minimize deviation among wedge angles and field sizes before adjusting the second source size parameter to fine-tune the MU between wedge angles.