Abstract ID: 19020    Title: Film Dosimetry Verification for TSE Using An Epson Scanner

Purpose: To commission and verify an Epson scanner for film dosimetry for total skin electron beam therapy (TSEB).

Methods: Use data from an IBA PPC40 parallel-plate ion chamber and Sun Nuclear QED skin diode detectors as standard; we have made comparisons to the film measurement using Kodak XV films. Hurter-Driffield (HD) curve are established for 6 MeV total skin electron beams at a source-to-surface distance (SSD) of 5 m. Also HD curves are built for 6 MeV at a 100 cm SSD. Dose profiles for a series of oblique incident large electron fields are measured using the film for approximately 80 cGy dose delivered at the peak. The film is then scanned using two scanners, an Epson expression 10000 XL and a Vidar VXR-16 Dosimetry Pro. The optimal scanning conditions (e.g., dot per pixel size, internal color correction scheme) are chosen for the Epson scanner. Matlab is then used to analyze the optical density (OD) of the scanned films. A transmission densitometer made by Tobias Associates transmission is used to analyze the films to give a classical standard.

Results: The analysis of the Epson scanner is presented in two forms: one with and one without the HD correction from the established HD curve. The error analysis gives an uncertainty of 5% without the HD correction. An improved result of approximately 3% is found when an HD correction is applied to the analysis.

Conclusions: A simple Epson scanner satisfies the commissioning standards for TSEB when an HD curve correction is applied.