Purpose:
To commission 6MEV beam in HDTSe mode on a Varian Trilogy machine for rotational total skin treatment.

Methods:
HDTSe 6MEV beam with field size 40cm x 40cm at 380cm SSD was planned for total skin irradiation treatment. A custom designed flattening filter was added to improve beam uniformity. Rotational speed during treatment was to set at 3-5 revolution/minute. Beam calibration was at 100cm SSD following TG51 protocol. Beam parameters at extended distance were measured using GafChromic EBT2 films placed in solid water phantom. 30cm x 30cm square phantom and 33cm diameter round phantom were for stationary and rotational target respectively. Dose distribution during rotational treatment was verified by GafChromic films sandwiched inside a Rando phantom.
Beam uniformity was verified using Kodak EDR2 ready pack films on a ½" thick, 4'x8' plexiglas hanging perpendicular to the beam at distance.

Results:
At SSD of 380cm, with filter in place, stationary beam output was 89.6cGy/1000mu; dmax is at 0.9 cm; R50 is 1.82 cm and Rp is2.4cm. With rotational target, dmax is shifted to surface with R50 at 1.54 cm and output at surface was 38.8cGy/1000mu. Measured rotational factor was 0.433. X-ray contamination is of the order of 3% for rotational target.
Dose uniformity along the vertical axis from -90 cm to about 80cm is within +/-5%, and within +/-10% from -95cm to 95cm. For the horizontal axis, the entire range is covered with the dose of better than 95%. Dose distribution using the rotational technique was shown to be uniform at different levels of a Rando phantom

Conclusions:
Dosimetric properties of the modified HDTSe 6MEV beam on a Varian Trilogy machine are verified to be optimal for rotational total skin irradiation treatment.