Experimental measurements and Monte Carlo Photon Transport (MCPT) calculations are performed to estimate the transverse-axis dosimetric parameters of a new design Pd-103 seed source. The measurements were performed in a large scanning water phantom, using a diode detector. The positioning of the source and detector was achieved by a computer-controlled positioning mechanism in the scanning water phantom. The dose rate constant in water for the new Pd-103 source was measured in comparison with existing I-125 sources. The radial dose function values for the source is measured using the diode detector. An accurate model of the source design was used in MCPT calculations. The measured and calculated results are compared with the dose distribution parameters for the Pd-103 source discussed in the AAPM TG43 report. The measurement results appear to be in good agreement with the existing TP-200 Pd-103 source, with a measured value of 0.711 cGy/U-hr for the dose rate constant in water of the new source. The radial dose function values agree quite well with those recommended by the TG43 report as well. *This work was partially supported by North American Scientific, Inc.*