

AbstractID: 3553 Title: Adapting the Victoreen 7200(TM) Device as a Tool for Daily QA of the Helical Tomotherapy Hi-Art(TM) Unit

Purpose: To provide a simple procedure for RTT staff performing daily QA of a Helical Tomotherapy Hi-Art Unit™ using a Victoreen 7200™ ion chamber device.

Method and Materials: Intended for use on conventional linacs, the Victoreen 7200™ consists of a flat paddle containing 10 ion chambers embedded 5 mm deep and spanning a 20cm x 20 cm field size. There are 2 perpendicular linear arrays containing 5 chambers each with a common center chamber. The 10th chamber is located diagonally away from the center and may be covered with a stainless steel attenuator. Firmware permits entry of baseline values, temperature and pressure for measurement corrections, and computationally provides beam output, symmetry, flatness, and energy constancy information with only one exposure. By diagonal alignment of this device with the green lasers of the Hi-Art™ Tomotherapy Unit, a single, fixed gantry angle (0) beam exposure of 30 seconds using a 5 cm jaw width provides radiation constancy information within established tolerances for daily QA. The device is covered with a 1 cm acrylic build up sheet and a 15 mm stainless attenuator is used for energy constancy. Measurements are made with the treatment couch lowered so the SSD to the top of acrylic sheet is 103.8 cm. The diagonal alignment permits monitoring of the 5 cm jaw width. With a built in RS232 port, this information is easily downloaded into software applications permitting QA analysis and tracking with pass/fail criteria. (Our information is downloaded into ARGUS™.)

Results: Analysis of more than 20 data sets indicates reliable and reproducible device performance. The procedure is simple and information rich.

Conclusion: The Victoreen 7200™ device is easily adapted to Helical Tomotherapy Daily QA.

Conflict of Interest: A collaborative research relationship is currently being developed with TOMOTHERAPY, Inc.