

**Purpose:** To evaluate a Web-based Quality Assurance tool for maintaining the clinical integrity of the Tomotherapy machine.

**Method and Materials:** This tool takes advantage of the output of the two distinct ion chamber systems on the Tomotherapy machine. One is the standard sealed ion chamber that resides in the head of a machine near the primary collimators and is used to calculate Monitor Units. The other is a set of pressurized Xenon detectors that are used for imaging. Both systems monitor ionizations independently and are rigidly attached so that their geometry is constant regardless of the orientation of the beam on the gantry which makes possible testing for both static and rotational modes. The collected data can be reviewed via a Web page and a downloadable Report in PDF format is available within seconds after collection of the data.

**Results:**

As an example, one performs a 200 second rotational delivery with the couch removed from the beam. The data are analyzed in both an integrated and pulse-by pulse methodology to determine consistency between the two chamber systems, changes in output and changes in energy. The collected information is evaluated relative to a standard delivery created during machine commissioning. Comparison to standard ion chamber measurements in phantom under static conditions indicate that the analyses are consistent for calibration and more sensitive to energy changes than percentage depth dose measurements made in phantom. Additional information about the machine's performance is identified easily.

**Conclusion:**

New technology offers an opportunity to perform standard Quality Assurance tests in a new manner. The simple test described here is more sensitive and performed more quickly than traditional methodology. Other tests are possible.

**Conflict of Interest (only if applicable):** Three authors are employees of Tomotherapy, Inc.