AbstractID: 3103 Title: A Routine QA Procedure for the Varian Millennium MLC Used for Step and Shoot IMRT

Purpose: To create a routine QA procedure that would effectively test the accuracy of a Varian Millenium MLC System that was used heavily for step and shoot IMRT.

Method and Materials: We researched the literature to compare published QA procedures and extracted various tests to use at our centers. The procedure that we created consisted of 4 simple monthly tests, 5 additional quarterly tests, and 8 additional annual tests. The monthly tests were evaluated visually and took a minimal amount of time to perform. The quarterly and annual tests involved irradiating more films and analyzing most of them with the RIT113 version 4.1software. The annual tests were those provided by Varian in the "QA Tests Patterns and Procedures" manual and the RIT113 software included specific options for evaluation.

Results: The machine parameters and MLC shapes were input to the Impac R&V System. Therefore the tests were simple and fairly quick to run. The analysis however was time consuming because all films must be scanned with a Vidar scanner and evaluated with the RIT113 software. The advantage of using RIT113 was that the QA documentation became organized and efficient.

Conclusion: The literature contains many different MLC QA tests for a variety of equipment configurations. Furthermore we found that the AAPM Task Group #50 Report gives guidelines for MLC testing but does not list detailed tests. By combining several references and importing the tests in Impac, our MLC QA procedure has proven to be successful with minimal time expense. Within a very busy center performing IMRT treatments, the physicist is usually consumed with patient specific QA. This type of QA isn't usually precise enough to pick up small MLC inaccuracies and additional QA tests are necessary.