AbstractID: 5839 Title: Inter- and Intra-User Variations in Film based IMRT QA

Purpose: To measure the inter- and intra-user variations in the manual alignment of calculated and measured doses in film-based IMRT QA.

Methods and Materials: Twenty (4 coronal and 16 axial) IMRT film based QA test cases were selected, each detailed by the "QA mode" in the IMPAC information management system. Films were shot in phantoms using a Varian 21EX, and do not contain fiducial marks. The treatment plans were created using the Pinnacle treatment planning system. Four of the films had known MLC problems, and were designed to fail the QA analysis. The films and corresponding calculated doses were placed on the internet for download. Participants were instructed to download the files, perform manual registration using the RIT113 software, save the registration films and return the test package to the investigators. Participants were instructed not to change the regions of interest and to indicate if each case would pass or fail their particular institutional criteria. Returned data was then analyzed for inter- and intra-user variations in the manual alignment.

Results: As of abstract submission, six respondents had been analyzed. The respondents had a wide range of passes and failures. Five out of the six respondents correctly identified the four films with known problems. One respondent incorrectly identified Patient #4 as a pass, but did note that the film was overly cropped. On average, the respondents indicated that seven of the films would not pass. Without fiducial marks on the film, each user placed the registration point in unique locations. As a result, each user had a unique QA analysis. Errors in the selection of registration points were directly related to false negatives.

Conclusions: In order to minimize inter- and intra-user variation, fiducial marks should be used to register the calculated and measured films in IMRT QA.