Purpose: In measuring the exit fluences, there are several sources of deviations which include the changes in the entrance fluence, changes in the detector response and patient orientation or geometry. The purpose of this work is to quantify these sources of the errors.

Methods: The quantification of the errors caused by the machine delivery is done by comparing arc picket fence test for a period of 30 days. To quantify the sources of error due leaf and gantry positions and positioning of the patient a RapidArc plan created for the pelvis site was delivered with and without rando phantom and the exit portal images were measured. The day to day exit fluence variation in the patient anatomy were analysed by comparing the daily exit dose images during the course of treatment. For comparison, the first fraction image is used as the reference image. Standard deviation and the gamma analysis were used to quantify the errors between fractions. The gamma criterion used for analysis is 3% Dose Difference and 3 mm Distance to Agreement.

Results: The maximum gamma value and Standard deviation for the picket fence test fields was 3.3 and 1.35 respectively. The area failing the gamma criteria was less than 0.1%. The delivery of the RapidArc plans without phantom shows a maximum standard deviation of 1.85 and the maximum gamma value of 0.59. The maximum gamma value for the RapidArc plan delivered with the phantom was found to be 1.2. The largest observed fluence deviation during the delivery for patient was 5.7% and the maximum standard deviation was 4.1%.

Conclusions: From this study, it is found that the variation in exit fluence due to patient interfraction organ motion found to be significant than the deviations caused by the machine and detectors.