Purpose: RapidArc treatments combine features of IMRT and arc treatments. It may be a superior treatment technique for stereotactic body radiation therapy (SBRT) in both improved dose distribution as well as improved patient comfort and reduction in motion due to rapid treatment delivery. This is a study of the QA verification results on 15 spine and 9 lung patients treated with RapidArc SBRT since August 2009.

Methods: Treatements were delivered on a Varian Trilogy with RapidArc upgrade. Plans generated used 6 MV photons utilizing Varian Eclipse software. Most plans consisted of a 2 arc technique. The 3D diode array is the Delta4 system from Scandidos. Delta4 has 1069 P type Si diodes on three wings, which are inserted to two planes in a cylindrical PMMA phantom. The three dimensional dose is transferred to the Delta4 by DICOM RT. To minimize the MLC leakage, and to reduce the finite leaf width (0.5 cm) effects, we used collimator angles of 155 and 215 (Varian scale). Fraction dose ranged from 400 cGy to 1800 cGy. For each plan, the planned dose distribution and measured dose distribution are compared by using 2D isodose display, profile comparisons, percentage dose deviation, and DTA and Gamma index.

Results: The average percentage of diode with Gamma index (3% dose and 3 mm) 1 or less is 95.5% with standard deviation of 3.4% for spine SBRT plans, and average percentage of diode with Gamma index (3% dose and 3 mm) 1 or less is 97.4% with standard deviation of 2.0% for lung SBRT plans,

Conclusions: All measurement results agree well with the dose distribution of all SBRT plans. Delta4 system is a good QA tool for RapidArc type SBRT treatments.