AbstractID: 8383 Title: Time and Manpower Requirements for Clinical Commissioning of the Passively Scattered Proton Beams at PTC-H

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Purpose: To present major tasks and staffing for the clinical commissioning of the passively scattered proton beams at the Proton Therapy Center – Houston.

Method and Materials: PTC-H is designed to be a phased project with the large field passively scattered beams delivered in early phases. At the completion of acceptance testing, clinical physics began the commissioning. Each of the three beamlines has three snouts and eight energies. Major commissioning tasks included SOBP measurements to define the gating off tables, pristine Bragg Peak measurements and beam profile measurements as required for input to the planning system, validation of planning system output, and point dose measurements to define relative output factors for the different treatment delivery parameters. The PTW MP3 system was used for beam scanning, configured for four seconds per data point.

Results: Approximately two years were required from the beginning of commissioning to the final initial measurements, taken on the small snout. After the first three months, patient treatments began. The majority of clinical commissioning occurred on Saturdays. Two to three clinical physicists made measurements, while another two physicists focused on the planning system. Approximately twelve hours of in room time were required for each of the 24 options with 2 hours to measure gating off SOBPs, 3 hours for planning system input data, 4 hours of planning system validation data, and 3 hours for point dose dosimetry factors. Additional time was devoted to spot checking other beamlines for confirmation that dosimetry characteristics are identical. Approximately fours were spent per option to prepare and enter data into the planning system.

Conclusions: A limited number of clinical physicists can commission passively scattered proton beams in a phased manner, while patient treatments are also being delivered.