

Our centre has initiated an ultrasound-guided intraoperative prostate brachytherapy program using the Nucletron FIRST system with the seedSelectron. From a real-time treatment plan created in the OR, the seedSelectron automatically builds and delivers seed-spacer trains. This afterloader is an automated system thus seed handling is minimized. However, the system does not allow a visual verification of the seed-spacer train during the build process, relying instead on integrated radiation sensors. A diode dosimeter monitors individual seed activity. Commissioning the seedSelectron focused on testing the accuracy of the build and delivery, dosimetry measurements, and safety features. Delivery drive reproducibility and accuracy were tested by delivering seed patterns of various lengths and different travel distances into a QA tool and comparing with expected positions. Both the dosimetry diode accuracy and the diode array build sensors were tested by comparing with well-chamber measurements. Deliberate errors and interruptions during delivery tested the safety and recovery features of the system. The seedSelectron delivers the deepest seed in the train to within  $\pm 1\text{mm}$  of the intended position. No errors in build sequence were found. Repeated measurements of the source strength of a single seed by the dosimetric diode were within 2% of the certificate strength. Seed strength reported by the seedSelectron for 26 seeds in various seed-spacer configurations were found to be within TG-56 guidelines for activity measurement, 3% on average. The safety features operated as expected. A commissioning plan was created and followed to test essential features of this low dose-rate automated afterloading device.