Production and Quality Control Improvements in the Fabrication of Diamond-Like-Carbon Guides DAVID RICHARDSON, RUSSELL MAIMEI, BRUCE VOGELAAR, MARK PITT, UCNA COLLABORATION — Stemming from the search for physics beyond the Standard Model, the goal of the UCNA collaboration is to obtain the value of $V_{ud}$. The weak and axial vector coupling constants provide an effective means of determining $V_{ud}$ but require knowledge of the angular correlation between the spin vector of the neutron and the momentum vector of the electron during beta-minus decay. Due to their superiority in minimizing systematic errors, Ultra-Cold Neutrons (UCN) were adopted for UCNA experiments. UCN require transport guides exhibiting the properties of being minimally depolarizing, nonmagnetic, nonconductive, possessing a high Fermi potential and high specularity. Experiments have shown that quartz tubes coated with Diamond-Like Carbon (DLC) are exceptional in the aforementioned categories. Recent improvements in the production process at Virginia Tech, including a refined cleaning procedure, the installation of a target rastering system, improved monitoring diagnostics, and a new drive mechanism have been implemented yielding improved guide quality. Furthermore, the use of X-ray spectroscopy has been employed to determine the quality of the DLC guides. Results of these improvements along with analytical results from X-ray spectroscopy will be presented.