Intensity-modulated radiation therapy delivered with segmental MLC uses multiple static segments to achieve intensity modulation. For typical IMRT plans, significant number of segments have MUs of much less than 10. Verification of the ability of the linac to deliver small MU segments accurately is an important step in the IMRT commissioning and QA process. Recent studies have reported large discrepancies between the intended and delivered segment MUs. These discrepancies could potentially cause large errors in the delivered patient dose. We have undertaken a systematic study to evaluate the accuracy of the dynamic MLC log files, which are created by the MLC workstation after each delivery, in recording the fractional MU delivered. Two linac models were evaluated with simple-geometry leaf sequences and delivered with different total MUs and different dose rates. A commercial 2D diode array was used for the measurement. Large discrepancies between the intended and delivered segment MUs were found. The discrepancies were larger for small MU segments at higher dose rate, with some segments completely undelivered. The recorded fractional MUs in the log files were found to agree with what was measured within the limits of our experimental uncertainty. Our results indicate that it is important to verify the delivery accuracy of small MU segments that could potentially occur in a patient treatment and that the log files are useful in checking the integrity of the linac delivery once validated. Thus validated log files can be used as a QA tool for IMRT delivery and patient-specific plan verification.