

Abstract Submitted
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Performance Characterization of RaPToRS Systems¹ K. SHIBATA, M. KRIEGER, J. FALLICA, R. HENCHEN, E. POGOZELSKI, S. PADALINO, SUNY Geneseo, SUNY GENESEO COLLABORATION, LABORATORY FOR LASER ENERGETICS AT UNIVERSITY OF ROCHESTER COLLABORATION — The Rapid Pneumatic Transport of Radioactive Samples (RaPToRS) system can quickly and efficiently move radioactive materials from their activation site to a counting station. Facilities such as the NIF and LLE are considering these systems while NRL is currently using one. The system is essentially a 10 cm diameter pneumatic tube with a cylindrical sample carrier. The performance of the system depends on many factors, including the mass of the carrier, length of the tube, angle and difference in height of the tube's endpoints, the carrier's physical design, and the number, type, and distribution of blowers attached to the tube. These factors have been systematically examined to develop the fastest and most reliable system. The most significant factors are the mass and the vertical travel of the carrier. When the carrier mass is low, moving air supports the carrier in the tube, resulting in low friction. The terminal velocity ranges from 13.5 to 2.5 m/s for masses varying from 1 kg to 3 kg. Using a single 1100 W blower, the initial force exerted on the carrier was 11.3 N.

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