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The Effect of Rotating Band Obturators on Artillery Round Deceleration in the Soft Catch Gun

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Abstract: The Soft Catch (SCat) Gun is a system used by the U.S. Army Armament Research, Development, and Engineering Center at Picatinny Arsenal to evaluate launch conditions on 155mm artillery rounds. The system provides critical feedback to U.S. Army ammunition developers in addition to significant cost and time savings over previously used systems. Picatinny would like to improve the reliability of its SCat Gun to stop artillery rounds within the proper area called “swedge brakes.” This paper discusses a previously unexplored and specific aspect of deceleration within the catch system: the effect of a rotating band obturator. This study finds that rotating band obturators significantly contribute to a round’s deceleration and drag is the primary source of friction a round encounters in the SCat Gun. With improved instrumentation and applying lessons learned from systems analysis, the SCat Gun has potential for increased reliability in the near future.

Keywords: Soft Catch Gun, Rotating Band Obturator, Ballistics