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10996-2757. *The Cost of 'Pierced Primer' Defects in 7.62 mm Ammunition.*

The Lake City Army Ammunition Plant in Independence, MO supplies about 90% of the small caliber (5.56 mm, 7.62 mm, and .50 Cal) rounds used by all the branches of service. Occasionally, during acceptance testing of the rounds, the quality assurance (QA) team observes a defect called a 'pierced primer'. A pierced primer occurs when the firing pin penetrates too deeply into the primer of the round and punctures the primer cup during firing. The ammunition plant produces millions of small caliber rounds every year, and the QA team estimates pierced primers occur in nearly 5% of all 7.62 mm ammunition lots. Under the current QA specifications, although a round with a pierced primer fires with no apparent detriment to its effectiveness or to the condition of the weapon, this 'defect' will prompt retesting on another batch of rounds from the same lot. Regardless, the Department of Defense purchases these lots even if the 'defect' occurs again during retesting. Because the wear on test weapons associated with retests is significant, our research is focused on providing a systematic evaluation of the current QA approach with the goal of minimizing costs while still delivering a safe and functional round to the men and women of the military. (Received January 24, 2022)