ABSTRACT

Bullet ricochet is a common occurrence in shooting incidents where misaimed or accidentally fired shots ricochet off nearby surfaces and kill or injure victims. When a bullet ricochet incident has led to a death or injury of a victim, the case becomes more serious, and understanding of what exactly happened becomes critical for the investigation and for subsequent criminal trials. In such situations, shooting investigators conduct "*bullet ricochet analysis*" to understand the accurate ricochet event that transpired. The main objective of a ricochet analysis is to reconstruct the ricocheted bullet's trajectories and approaching angles using the ricochet evidence found in the scene. As ricochet angles and evidence production are unique to a particular bullet-target combination, empirical test results on bullet ricochet studies in the existing literature are considered the most reliable and scientific information to refer to during ricochet analysis.

This series of interrelated experiments investigated AK bullet's ricochet behaviours and ricochet-related scientific evidence with 13 different surface types prone to be encountered in bullet ricochet incidents. The study's outcome presents a series of groundbreaking novel findings that can be used in future AK gun-related investigations, fulfilling a most demanding need in the shooting investigation field. The study's results are a significant departure from the widespread beliefs, such as that ricochet is an unpredictable event and the previous experimental studies are always reliable to refer to during scene reconstructions. The findings highlight the complex and diverse ricochet phenomena of AK bullets with scientific explanations for each behaviour and the significant role play by the ricochet surface type and the bullet type for the subsequent ricochet behaviours. The study also emphasises the great uncertainties and possible errors that might occur even previous experimental studies are used for scene reconstructions. The novelty and the international significance of the findings of this study are evident of the already published series of journal articles in the highest-ranked forensic science journals in the world.

Key Words

Firearm Investigations, AK Gun, Bullet Ricochet, Scene Reconstruction, Ballistics