8.0 EJECTION PATTERN TESTING PROCEDURE

8.1 Scope: One of the routine procedures conducted in a firearm examination is determining the ejection pattern of the firearm.

On occasion, the submitting agency may request the firearms examiner to determine the ejection pattern of a firearm given a set of specific and/or unusual circumstances. In this instance, a non-standard ejection pattern test will be conducted. Every attempt should be made to duplicate these circumstances unless doing so may pose a risk to the examiner.

8.2 Precautions/Limitations: The measurements taken are estimates and the firearm examiner should give a range of distances and direction when reporting the results of the ejection pattern test.

8.3 Related Information:

8.3.1 Section 6 Test Firing Procedure
8.3.2 Section 5 Firearm Examination and Classification Procedure
8.3.3 Section 4 Safe Firearm Handling Procedure
8.3.4 Appendix 1 Worksheets
8.3.5 Appendix 3 Firearm Safety
8.3.6 Appendix 4 Range of Conclusions

8.4 Instruments:

8.4.1 Tape measure
8.4.2 Protractor

8.5 Reagents/Materials: None

8.6 Hazards/Safety:

8.6.1 It is the responsibility of the firearm examiner to employ appropriate safety and health practices. Safe firearm handling procedures shall be strictly followed at all times.

8.7 Reference Materials/Controls/Calibration Checks: None.

8.8 Procedures/Instructions:

Ejection Pattern Tests are performed upon request of the submitting agency to determine the pattern produced (distance and relative direction) when a cartridge case/shotshell case is ejected from a firearm during the firing process.

8.8.1 Standard Ejection Pattern Test
Use the suspect firearm and the same manufacturer and type of ammunition received from the requesting agency or determined by the examiner from the fired ammunition components received.

- Fire all ejection pattern tests in the indoor range, or at a designated outdoor range.
- Shoot the tests at shoulder height. With pistols, use a supported strong hand grip with the shooting arm extended. A measurement should be made from the ejection port to a point of the ground directly below the ejection port.
- A minimum of four (4) rounds should be fired. When feasible, firing a full magazine is recommended to observe any differences that might result from magazine spring pressure.
- A technician or second examiner (the spotter) may be needed to mark the points on the floor/ground where the fired cartridge cases first land, or the examiner may elect to use a large drop cloth to determine where the fired cartridge cases first land.
- Measurements should be taken from the point on the ground directly below the ejection port to the ejected cartridge cases and the general direction (right/left of shooter, front/rear of shooter) of the ejected cartridge cases should be noted.
- The examiner may draw a sketch to illustrate the results.

8.8.2 Non-Standard Ejection Pattern Test

When information is provided to the examiner about the conditions/situations of a shooting incident and the requesting agency asks that an ejection pattern test be conducted simulating those conditions/situations, then the following protocol will be followed.

- First, conduct a standard ejection pattern test.
- Next, using the information provided about the conditions of the shooting incident (E.g., shooter was 6’6” tall, using a two handed grip with the gun canted to the right, or shooter was aiming gun down at a 45 degree angle), the examiner will devise a method to best simulate those conditions. It will be up to the individual examiner to best determine the methodology to be used.
- A minimum of four (4) additional rounds should be fired for the non-standard ejection pattern test. When feasible, firing a full magazine is recommended to observe any differences that might result from magazine spring pressure.
- A technician or second examiner (the spotter) may be needed to mark the points on the ground where the fired cartridge cases first land, or the examiner may elect to use a large drop cloth to determine where the fired cartridge cases first land.
Measurements should be taken from the point on the ground directly below the ejection port to the ejected cartridge cases and the general direction (right/left of shooter, front/rear of shooter) of the ejected cartridge cases should be noted.

The examiner may draw a sketch to illustrate the results.

If safety becomes an issue for recreating a situation for a non-standard ejection pattern test, it is at the examiner’s discretion to not perform the test with the suggested conditions/situations. If the examiner deems those conditions unsafe, only a standard ejection pattern test will be conducted.

8.9 Records: The firearm examiner shall document their findings in the form of handwritten notes, computer generated notes, photography, diagramming, or by utilizing an FTIU worksheet.

8.10 Interpretations of Results: The ejection pattern will be defined as the location(s) that the cartridge cases/shotshell cases first land. The ejection pattern shall be reported as a range of distances and relative direction of ejected cartridge cases or shotshell cases.

8.11 Report Writing: Firearm report writing can be found in the Range of Conclusions Appendix 4. If a non-standard ejection pattern test is conducted, all variables shall be included in the report.

8.12 References:


