Best Practice Recommendation for Measuring Trigger Pull of a Firearm and Estimating Its Uncertainty

WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy-to-understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are not intended to provide an interpretation for any portion of a published standard.

WHAT IS THE PURPOSE OF THIS STANDARD?

This best practice recommendation (BPR) describes procedures for measuring the trigger pull(s) of firearms and for estimating the uncertainty associated with those trigger pull measurements. The BPR also lists recommended records to maintain.

A trigger pull measurement can be impacted by the setup of the measuring device. Specific recommendations are included in this standard for the setup of four commonly used measuring devices.

All measurements have uncertainty. This standard provides detailed recommendations on how to conduct a study to gather variability data for the measurement process and how to use this to estimate the process measurement uncertainty.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

The forensic science community will benefit from standardizing the setup and use of these types of trigger pull measuring devices: static weights (also referred to as dead weights or arsenal weights), spring gauges/dial gauges, digital force gauges, and automated trigger pull systems.

This standard requires measurements to be traceable to the International System of Units (SI). Metrological traceability along with standardization in device setup supports increased consistency in the measurements made. Standardization in the approach used to estimate the uncertainty of trigger pull measurements further supports the comparability of measurement results.

HOW IS THIS STANDARD USED, AND WHAT ARE THE KEY ELEMENTS?

This standard is to be used by forensic science service providers (FSSPs) performing trigger pull measurements as a component in the assessment of the overall condition and functionality of a firearm or to assess a firearm for consistency with factory specifications.

For each type of measuring device, recommendations are provided for the device setup and use. A minimum of three measurements are recommended for each action (mode of fire) of the firearm when possible and for each cylinder for revolvers in double action.

The process of how to estimate the measurement uncertainty associated with a trigger pull measurement is covered in this standard. Detailed recommendations are included for conducting a study of repeated measurements of several firearms by all those responsible for measuring and/or reporting trigger pull measurements. A template spreadsheet is provided for the computation of measurement uncertainty. Example spreadsheets using simulated data are also included.

This standard also provides guidance on how to approach measurement uncertainty when an FSSP performs the measurement at multiple locations, uses more than one trigger pull device of the same manufacturer, uses more than one type of trigger pull measurement device, or has changes occur to personnel or procedures.

American Academy of Forensic Sciences
aafs.org

This factsheet is made possible through the following financial assistance award 70NANB21H097 awarded to AAFS from U.S. Department of Commerce, National Institute of Standards and Technology