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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GA/T 1576-2019

**Forensic sciences - Automated firearms identification system
(AFIS)**

法庭科学 枪弹痕迹自动识别系统 枪弹痕迹采集规范
(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Please note that some elements of this document may involve patents. The issuer of this document is not responsible for identifying these patents.

This standard was proposed and managed by the National Criminal Technology Standardization Technical Committee Trace Inspection Sub-Technical Committee (SAC/TC179/SC9).

This standard was drafted. Beijing Institute of Criminal Science and Technology, Beijing Langyuechuan Technology Co., Ltd.

1 Scope

This standard specifies the specifications for the entry of bullet marks into the automatic identification system for bullet marks.

This standard applies to the application and management of the automatic identification system of forensic scientific bullet marks.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 29347-2012 Forensic Science Firearms Shell Trace Inspection Specification
GB/T 29348-2012 Forensic Science Firearms Shooting Bullet Trace Inspection Specification
GA/T 1506-2018 Forensic Science Bullet Mark Inspection Terms

3 Terms and definitions

Bullet mark

When the warhead squeezes into the rifling and rotates forward in the bore, it is formed by the effects of squeezing, shearing, and friction.

Rifling mark

During the extrusion process of the warhead, the surface of the armor was formed into a concave band-like mark by the squeezing and shearing and frictional effects of the inner surface of the rifling. include Traces of rifles and burles.

Number of grooves

The number of yin and rifle marks on the firing warhead.

Width of the rifling the vertical distance between two adjacent ridge marks in the rifle marks (veterin or breech).

Direction of twist

The direction of rotation of the barrel rifle, the direction of rotation of the rifled barrel is divided into left and right.

Incline of rifling

The inclination angle of the rifling marks relative to the axial direction of the warhead.

Small line marks

When the warhead squeezes into the rifling and rotates forward in the rifle, the surface of the warhead is formed by the squeezing and friction of the inner surface of the rifling and is distributed in the firing.

Strike the cylindrical part of the warhead, and there are many linear scratches with a certain slope.

Driven edge of the land mark During the squeezing of the warhead, when the warp armor's surface directly affected by the inner surface of the rifle is compressed and deformed, the sides of the rifle are cut at the sides.

Into the armor, two edges of the rifled marks were formed due to shearing. The warhead was embedded in the rifling, and the gun rifled turned to act on it.

The side of a ridgeline trace in the middle exerts normal force and steering friction, so a clear and thick main ridgeline trace is formed on the firing warhead.

Primary mark

The mark formed by the warhead's squeezing into the rifle.

3.10

Secondary mark

Traces formed after the warhead was squeezed into the rifle.

3.11

Indicator mark

The mark formed by the interaction of the front end of the indicator rod and the bottom surface of the cartridge case.

3.12

Firing pin mark

The striker hits the bottom fire with a certain kinetic energy and presses against the bottom of the shell, which causes the bottom fire cap to produce marks formed by local deformation and strike the needle hole.

3.13

Tongue mark

When the needle head that is in direct contact with the bottom flame cap and its corresponding side edge of the needle head trace are relatively displaced, it is formed due to friction.

Of tongue-shaped prying marks.

3.14

Breechface mark

Under the action of gunpowder gas pressure, the bottom surface of the cartridge case is tightly pressed against the bottom socket of the gun machine to form an imprint mark.

3.15

Ejector mark

A kind of impact mark and ejector mark formed on the bottom edge of the shell (usually on the edge of the sign surface) of the ejection shell end surface.

3.16

Automatic firearms identification system (AFIS) Use computer technology, pattern recognition technology and network technology to collect gun trace data, and A computer application system for processing, storing, comparing and assisting identification of related information.

3.17

Expanded bullet view the expanded image formed by 360 ° rotation of the warhead.

3.18

View of bullet rifling mark an image formed by splicing a single warhead rifle trace.

4.1 Cartridge Trace Image Properties and Format

The attributes and format of the cartridge case trace image are shown in Table 1.

Table 1 Image properties and format of cartridge case traces

Feature part attribute	format	Full picture of the bottom of the cartridge case	256 color	bmp
Breech traces	256 gray	bmp	Stylus traces	256 gray
	bmp	Throwing traces	256 gray	bmp
Needle head trace	color map	256 color	bmp	

4.2 Warhead Trace Image Properties and Format

The attributes and format of the warhead trace image are shown in Table 2.

Table 2 Image properties and format of warhead marks

Feature part attribute	format	Full picture of warhead	256 grayscale	bmp
Warhead mosaic	256 gray	bmp		