POSITION STATEMENT

A2882A, A2914, A4618, AND A6030
ENTRY OF EVIDENCE EXHIBITS INTO CoBIS &
ADD NEW DATABASES
A3477/S1188, A4618 & A5695
ADD RIFLES AND SHOTGUNS TO CoBIS
A5427 & A6388/S1152
ELIMINATE CoBIS

HISTORY

Ballistics imaging technology is one step in the ongoing application of new technologies in the management and analysis of ballistics evidence. Firearm examiners have historically maintained a file of evidence from open cases and referenced it when evidence from a new crime with the potential for a linkage came into their hands. In the 1970's development began of databases to roughly classify evidence and narrow the scope of manual searches. Manually comparing any significant number of items was time consuming and usually reserved for the most serious cases. In the 1980's, work was begun on systems that would further narrow the number of items requiring manual analysis by utilizing computer-based image processing to search a large number of exhibits and identify potential matches.

THE CONCEPT

In evaluating firearms identification, it must be remembered that it is ultimately a subjective assessment of the examiner as to the quantity and quality of the markings and the decision of what does or does not constitute a match comes down to a individual determination based on his or her experience. The random nature of the forces and motions in the firing process, exacerbated by wear and tear, have to date precluded the derivation of an objective and statistical basis for reaching a decision or the estimation of error rates.

The lack of a statistical measure of uniqueness and reproducibility does not mean that markings are completely random and volatile. Individual firearms do leave marks on both cartridge cases and bullets that can permit an examiner to meet a baseline standard for the acceptance of ballistic evidence.

The Association of Firearms and Tool Examiners (AFTE)[1] recognizes the subjective in nature and requires two extrapolations:

> First, that marks are sufficiently consistent with true matches known to have come from the same tool, and, second, that the quality and similarity of corresponding features exceed the best known apparent agreement demonstrated between tool marks known to have been produced by different tools.

[1] An AFTE Criteria for Identification Committee Report (1992) Journal of the Association of the Firearm and Tool Examiners. 24:336-340

This remains a difficult task and is based on the subjective judgments of skilled examiners with a knowledge base built on both training and experience. The problem with the introduction of imaging technology is this lack of a precisely defined process.[2]

Current digital imaging technology provides a useful tool for quickly categorizing and sorting large number of specimens. The use of computer imaging has made it easier to maintain and search ballistic evidence files. It is less reliable for distinguishing the fine detail that would be necessary for matches of an investigative, much less evidentiary, value. Ballistic imaging is not firearms identification - it is perhaps best described as a tool to assist the firearms examiner.

Implementation of the technology has follow two different approaches:

In the first, the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATFE) operates the National Integrated Ballistics Information Network (NIBIN). The purpose of the system is to link together evidence from separate crimes in order to provide investigative leads. Growing out of efforts begun in the early 1990's, rollout of the system began in 2001. This is a joint program with the federal government providing the equipment, network, and system management and the local agencies providing staffing. NIBIN currently (April 2008) has 174 local agencies and 203 sites. New York has seven sites comprised of six county laboratories and the State Police Forensic Investigation Center. Interestingly, New York City is not a NIBIN participant and operates its own facility.

The system contains only evidence recovered from crime scenes or test fired from seized weapons.[3] The system enables the partner agencies to enter exhibits and conduct searches on a local or regional basis. While searches can be conducted nationally, this is not the normal case. While a system of this breadth and complexity did not go in without problems, technical and procedural changes based on experience have made NIBIN an effective tool for its intended purpose – providing firearm examiners with the ability to review exhibits over a multi jurisdictional environment and produce investigative leads that would otherwise not be possible.

A National Research Council study has confirmed the soundness of the concepts underlying NIBIN.[4] Since its inception, over 1,250,000 pieces of crime scene evidence have been entered, resulting in over 25,000 hits. Many of the investigative leads produced would not otherwise have been realized. NIBIN represents the successful implementation of an emerging technology to enhance the forensic sciences.

In the second approach, the State of New York established the Combined Ballistic Identification System (CoBIS) in March 2001[5]. The purpose of this system is to identify

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[2] National Research Council (2009). *Strengthening Forensic Science in the United States*. Committee on Science, Technology, and Law Policy and Global Affairs. Washington DC: National Academy Press. 5-21

[3] The Firearm Owners' Protection Act of 1986 (18 U.S.C. § 926) prohibits the entry of non-crime exhibits.

[4] National Research Council (2008). *Ballistic Imaging*. Committee to Assess the Feasibility, Accuracy and Technical Capability of a National Ballistics Database. Washington, DC: National Academy Press. 162.

[5] Maryland instituted a similar system in September 2000. The statements about CoBIS apply equally to this system, known as MD-IBIS.

the firearm and provide investigators with a link to the original purchaser. Operated by the New York State Police (NYSP) at their Forensic Investigation Center in Albany, the database is comprised of sample cases that are required to be provided for each new handgun delivered in New York State. While CoBIS and NIBIN use the same equipment, they are operated as physically separate systems due to the NIBIN restriction prohibiting non-crime exhibits.

Any law enforcement agency in the state can submit an exhibit for comparison against the database. In addition to exhibits submitted by other agencies, exhibits provide by the ATFE from NIBIN on a one way basis have been run against CoBIS. At this point, only one unconfirmed hit has been found. Given that all of the firearms in the database represent purchases by license holders or law enforcement, this is not very surprising. Most importantly, usage by local agencies has been very limited. While there is no direct charge for using the system, all exhibits have to be sent to Albany, exposing active case evidence to the risk of loss and chain of custody issues. CoBIS represents the result of pushing a technology beyond its current limits.

OUR POSITION

We recognize that no investigative tool will be effective in every situation and that the implementation of a complex technology will encounter some teething problems. It is also recognized that this is an open-ended question. Ongoing improvements in both operational protocols and the technology itself will surely require that these issues be revisited. Our concern is that they be evaluated in a manner that insures the application of best practices and is done in a cost effective manner.

CoBIS has not achieved its intended objective and should be terminated.

CoBIS was developed as a reference ballistic image database (RBID), unitary in nature, that would house a large number of exhibits. This results in a large database comprised of exhibits that are nearly identical except in very small details. The technology has not proven itself capable of making the needed distinction. This represents an attempt to detect what is essentially a low-base-rate phenomenon in a population that is, by definition, composed of nearly identical specimens. Any subset of potential matches would be too large to be of use in the manual comparison needed to determine if a true match exists.

NIBIN is an evidentiary database, geographically managed and leveraging the system's capability of classifying and sorting to produce manageable subsets of potential matches. The ability to partition the database and structure searches to meet the investigative needs of the user makes this a productive and cost effective tool. This technology, that is effective at relatively small database sizes, does not scale up to large systems.

This problem was recognized by the National Research Council in reaching their conclusion that "a national reference ballistic image database of all new and imported guns is not advisable at this time".[6] The arguments against a national RBID can also be

[6] National Research Council (2008). *Ballistic Imaging*. Committee to Assess the Feasibility, Accuracy and Technical Capability of a National Ballistics Database. Washington, DC: National Academy Press. 239

applied to a state RBID. The implementation of CoBIS has proven to be premature. The technology provides the rough categorization and sorting effectively employed in NIBIN but has not been capable of distinguishing and processing the fine, exhibit-specific marks required for identifying potential matches in a large database.

There certainly should be no expansion of CoBIS in terms of the types of firearms included.

The inclusion of rifles, either in their entirety as a class or in a subset, would impose a colossal disruption in the sale of sporting arms as well as a massive increase in cost for both the sportsman and the State of New York. At the same time, there is no clearly established investigative benefit. While state and federal law insures that handguns legally acquired by New York State residents are entered in CoBIS by requiring delivery through a New York dealer, no such legislation applies to long guns. Evasion, if only for economic reasons, is likely to become the norm.

All of the above applies to the inclusion of shotguns with some additional caveats:

> Shotgun primers are of a different design and made of steel rather than brass, as are rifle and handgun primers.
>
> Shoguns operate at pressures in the 9,000 to 11,000 psi range as opposed to the 25,000 to 40,000 psi range for handgun. Rifles can go as high as 65,000 psi.

Given the harder material and lower pressure, shotguns are not likely to produce usable images. We have seen no testing of ballistic imaging applied to shotguns.

The content of CoBIS should not be expanded to include evidence exhibits.

CoBIS is intended to be a RBID and the addition of evidence exhibits muddies the water with no benefit. As the purpose of CoBIS is to identify a firearm from a fired cartridge case, the entry of exhibits from firearms that are in hand is completely pointless. NIBIN was designed to process evidence exhibits and is structured to do so effectively. Exhibits from unknown firearms should be matched against CoBIS for the purposes of identifying the firearm. All crime exhibits should be entered in NIBIN.

Summary

We oppose the inclusion in CoBIS of rifles, shotguns, or any subset of them. This would incur a great deal of expense and aggravation for little or no investigative benefit.

We oppose the entry of crime source exhibits in CoBIS. This is not its purpose and degrades its use as a testbed. Evidence exhibits should only be matched against CoBIS. NIBIN is the system for processing evidence.

As it has been proven both costly and ineffective in its intended purpose, we support the prompt termination of CoBIS as proposed in A5427 and A6388/S1152.