

Shooters Committee on Political Education

Position Paper



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Requires that all semi-automatic pistols manufactured or sold in New York State to be capable of microstamping cartridge cases upon firing with a unique code identifying the make, model, and serial number of the pistol.

PURPOSE

This legislation would mandate the implementation of a technology that is intended to provide an investigative linkage from fired cartridge cases recovered at the scene of a shooting incident to the pistol used, without the recovery of the pistol itself.

POSITION

SCOPE does not oppose the introduction of new, nonintrusive technology that has proven to be an effective aid to law enforcement in the investigation and prosecution of criminals. The technology proposed here does not meet that standard. While it may demonstrate potential, it is at this time unproven, both as a technology and as a law enforcement tool. It is also clear that implementation of even a proven technology of this type on a state level is not likely to be effective. Microstamping is clearly “not ready for prime time.”

The technology remains unproven - testing has been limited and the results have been decidedly mixed.

All of the fully successful testing put forward by the sponsors has been conducted by the developer. Independent peer reviewed testing, both by academic and forensic bodies, has raised several questions with regard to recoverability, durability and tamper resistance. To our knowledge, there has not been any broad scale real-world pilot testing of this technology.

It must be remembered that this is still an emerging technology, the product of a single vendor. Development decisions have been based solely on the vendor’s judgment and thus do not necessarily reflect the broad assessment of the strengths, weaknesses, and limitations that would be encountered in a full-scale implementation. Validation of the scalability and viability over a broad range of real world conditions is needed prior to committing to the substantial expense of implementation and operation. This assessment is shared by diverse other organizations.

National Research Council:

“Microstamping may indeed be a viable future for firearms identification, and we strongly encourage continuing research in this area. However, we do conclude that state and federal law enforcement would be better served by new technologies and systems developed through richer and more open competitions, by multiple vendors and research teams and with fuller appreciation for the integration of new systems with existing manufacturing practices.”¹

¹ 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. 271

Testing at the University of California, Davis resulted in the same conclusion:

“At the present time, therefore, because the forensic potential has not been fully assessed, a mandate for the implementation of this technology in all semi-automatic handguns sold in the State of California is counter-indicated. Further testing, analysis and evaluation are required.”²

California Chiefs of Police Association, a former supporter of immediate implementation:

“Accordingly, we support further research of microstamping in light of the new information that has surfaced since California passage of the legislation. Publicly available, peer-reviewed studies conducted by independent research organizations conclude that the technology does not function reliably and that criminals can remove the markings easily in mere seconds. We believe that these findings require examination prior to implementation.”³

Microstamping is easily removed from a firearm without costly equipment.

Despite claims to the contrary, such independent testing as has been done has found the micro-encoding easily removed on a production basis with equipment found in a moderately equipped home machine shop (mini-mill w/ end cutter) or at a slightly slower rate with hand tools (Dremel tool, file, and grinding wheel) – no microscopy required. They are a lot easier to remove than to put in place.

Clearly, the removal of the microencoding is not high tech stuff. In fact, very little is required beyond the tweaking and tuning that a competitive shooter might do on a routine basis. While defacement of firearms is not a standard practice among criminals, 15% to 20% of recovered crime guns have had the serial numbers defaced. And the microencoding proposed here is only 1/3 the minimum depth required under Federal law for serial numbers.

The limited peer reviewed testing that has been conducted has found problems with this technology at its present state of development.

Testing of this technology was performed by George Krivosta of the Suffolk County Crime Laboratory in Hauppauge, New York and published in a peer-reviewed journal⁴. In the course of these studies, three questions were addressed:

Would the marking from the microstamp be readily decipherable?

What is the wear resistance of the image engraved on the firing pin?

Is the technology tamper resistant?

Included in the study were sample cases from a .22 rimfire Remington rifle from the Rhode Island State Crime Laboratory and several Colt .45 pistols from the Suffolk laboratory.

² Howitt, D., Tulleners, F. and Beddow, M. (2008), *What Micro Serialized Firing Pins Can Add to Firearm Identification in Forensic Science: How Viable Are Micro-Marked Firing Pin Impressions as Evidence*. Forensic Science Graduate Group, University of California, Davis. 11.

³ Letter from the California Police Chiefs Association to the Attorney General of California, December 21, 2009.

⁴ Krivosta, George. (2006). *NanoTag™ Markings From a Different Perspective*. AFTE Journal 38(1) 41-47.

The findings were:

Markings on the .22 caliber cases were illegible due to the hard brass used in their manufacture, as well as the fact that the case is impacted multiple times in a single firing cycle by the firing pin and bolt face. The combination of variations in impact points, due to manufacturing tolerances and overlap with other marks on the firing pin and bolt, make recovery of the microstamp improbable even with multiple cases from the same incident.

Microstamps with large numbers of characters were not reproduced on fired cases in initial testing and the remainder of the testing was done with 8 character microstamps. This number is insufficient by itself for containing the information desired, and characters of the size used are too large for additional characters to be added given the size limits and geometry of a firing pin tip.⁵

The quality of the impressions was negatively impacted by the normal cycling of the firearm. The causes include multiple firing pin impacts, firing pin drag during extraction, and anvil marks from the internal primer anvil. The result was a recovery rate of a little over 50% - with oversize characters.

The microstamp is easily removed without negatively affecting the performance of the firearm. Removal/replacement of a Colt firing pin takes about 1 minute with a ballpoint pen as the only tool. The microstamp was removed using a 50-year-old home sharpening stone and a portable drill. It took under 15 seconds. Although the characters are only .001 inch in height, the inertial firing pin could have been shorted by at least .030 inch without affecting its performance.

The firing of a thousand rounds through a Colt pistol resulted in the softening of the sharpness of the microstamp characters on the firing pin tip due to peening. No attempt was made at recovery of the image on these fired cases.

The vendor has suggested that the problem of firing pin replacement/defacement would be countered by microstamping other parts that come into contact with the cartridge case. As no samples were available, no testing was done. In addition to the problem of replacement/defacement of these parts, cartridge material, be it brass, steel or aluminum, is significantly harder than primer caps and thus considerably more resistant to stamping.

This research has demonstrated that dealing with firing pin marks is difficult in any circumstance. This problem is best summarized by the closing sentence in Mr. Krivosta's article:⁶

Certainly, this research has shown that implementing this technology will be much more complicated than burning a serial number on a few parts and dropping them into firearms being manufactured.

As noted above, research at the University of California, Davis, using an even wider variety of firearms, came to the same conclusion.

⁵ Using the automotive ISO Standard VIN number as a model, it would require between 16 and 19 alphanumeric characters to contain the information required by this proposal.

⁶ Id., at 47

The investigative and evidentiary value of this technology has not yet been definitively established.

Even if this technology does identify a specific firearm, the most it can do is point to the original legal purchaser. It does nothing to put the pistol in the hands of the perpetrator of the crime. Ballistic imaging technology currently in use, coupled with the ATF's NIBIN, can link crime casings to those recovered at different sites and recovered pistols to casings. This proposal would basically add the name of the individual from whom the pistol was stolen, adding little of forensic value to either individual cases or analysis systems such as COMPSTAT.

No hypothesis, and certainly no evidence, has been presented as to the number of crimes that we can expect to be solved through the use of this technology. This legislation has the makings of another CoBIS – a dozen years, over \$50 million dollars spent and no crimes solved.

The cost of implementation has not been established and there is no price cap on operating costs.

The sponsor states that the proposed legislation limits the cost to a maximum of \$12.00 per pistol. This is not true. The legislation states that it will become effective on January 1, 2015 or when the Superintendent of State Police receives notice that one or more job shops will do the work for \$12.00 or less, whichever occurs last. There is scant evidence that this will present an actual impediment to implementation regardless of the real economic impact.

The cost is clearly going to exceed \$12.00. It may reflect the direct cost of processing a set of identical parts sitting in a box on the shop floor and returning them to the box. It clearly does not reflect the fact that each model of pistol has a different design and a singular geometry. It requires unique tooling for correct placement of the microstamp and often a distinctive character set for each model of pistol.

Manufacturing pistols is not like producing widgets. The assignment, marking, and recording of serial numbers is a tightly controlled process conducted in a secure environment. The entire process is tightly regulated by the ATF. To require the inclusion of parts with another set of identifiers, not visible to the naked eye, matching them to a specific pistol, and do all the required record keeping and reporting would require a million dollar re-engineering of the production facility and sharply increased ongoing operating costs.

Given that this would only apply to firearms legally purchased in New York State, the effectiveness would be limited at best. These firearms represent a small fraction of the identified firearms used in crimes and it is extremely rare that they are in the possession of a lawful owner at the time. This imposes a significant financial burden on both consumers and government, as it must be remembered that law enforcement is also a consumer. CoBIS was enacted on the same premise as this proposal and the same result can be expected.

This proposal provides no "circuit breakers" to prevent the roll out of what is basically a laboratory level model if performance failures or exorbitant costs appear in the transition to the real world environment. Given the limited testing with, at best, inconclusive results with sample cartridge cases and no development or testing of any commercial scale production equipment suitable for firearms production, this is a highly likely probability.

Contrary to the sponsor’s claims, this proposal will still require the establishment of a database and the appointment of a “numbers czar.”

Due to the limitations of the technology, the microstamp image is currently limited to eight alphanumeric characters. Fourteen to seventeen characters would be required to contain the required information. Accordingly, a system will have to be established to assign identifiers using the eight-character format to specific manufacturers and a database developed to convert them to the make, model, and serial number of the pistol. The numbers czar will also have to insure that there is no conflict with any identifiers assigned by any other entity – foreign or domestic.

Any further research and development attempting to produce a technically and economically viable system must be conducted at the federal level.

Microstamping could potentially be a viable forensic tool and we have no opposition to continuing research in this area. But this is not a state level issue. Any research and development effort can best be accomplished at the federal level where competition among a broad group of vendors, based on best practices concepts, would be more likely to reach a definitive result.

Even if proven technically feasible, there must be a clearly proven investigative and forensic value that would justify incurring the added expense. Any proposed system must also recognize not only the cost but the complexities involved in the integration of new and intricate process with existing manufacturing practices. Any implementation of microstamping at the state level is unlikely to be functionally or economically viable.

We would support federal legislation charging the National Research Council of the National Academy of Sciences with conducting a study of the technical feasibility, functionality and cost of implementing this technology. We believe that this is the proper forum for determining the feasibility, implications and cost of implementing this type of technology.

CONCLUSION

While the concept of microstamping might **seem** to offer a powerful forensic tool, this system is clearly “not ready for prime time.” It is still an emerging technology that has yet to be proven operationally and economically viable. Substantial further development and real world testing on a much broader scale than is feasible in a single state will be necessary before any determination can be made as to the technical viability and economic sustainability of this technology.

While a yet to be developed microstamping system would **appear** to have some value to law enforcement, this is not a forgone conclusion. Certainly, it is not the panacea its sponsors tout. A great deal of work remains to be done in evaluating the real-world performance and the cost of integrating this type of technology into the forensic sciences and the manufacturing world. This must be conducted with the discipline of forensic science, not the fervor of social engineering. What we are seeing is a push to legislate based on the unverified claims of a single source vendor.

While the sponsor has likened the deliverables of microstamping to those of Blu-ray technology, it is more like Star Wars – and Stars Wars is fiction. This legislation should not be enacted.