SB603

An Assessment of the Impact and Value of Ammunition Serial Number Requirements on the Manufacturing Industry, Consumers and Law Enforcement

Prepared by the Ammunition Manufacturing Members of

S A A M I

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SUMMARY

The industry feels proposals on ammunition serialization, while offered with the best of intentions, is ill conceived and ill advised. The lack of any independent study of the proposed sole-source technology has been performed to support the claims of investigative efficacy or process capability in its implementation. The cost of conforming to such requirements will effectively increase ammunition costs to the point where legal shooting sports consumption would be heavily suppressed, potentially to the point of bankrupting one or more of the major manufacturers.

Such an outcome would leave private citizens and law enforcement personnel without access to the safest and most advanced ammunition available.

Even if implemented, the cost of the ammunition will far out-weigh any value for the initiative as an investigative tool, leading only to the last legal owner of an ammunition product – most likely not the person in possession at the time it was used in the commission of a crime.

The proposed legislation creates four primary areas of concern for the ammunition manufacturing community:

- The ***Cost*** of applying serial numbers in the modern manufacturing environment.

- The impact on operational ***Safety*** in the manufacturing facility.

- The value of ammunition serial numbers as an ***Investigative Tool.***

- Negative impacts on ammunition ***Product Quality***.

COST

In order to have any hope of creating and maintaining product segregation, entirely new production line configurations would be required. The current, high-efficiency equipment configuration used by manufacturers would effectively become obsolete as it is predicated on the movement of large bulk volumes of semi-finished and finished products during which product identification would be impossible to maintain. In order have any hope of maintaining ID integrity, entirely new production lines would be required, demanding massive levels of capital investment.

The sole-source patent-holder estimates capital investment requirements of between ***$300,000 and $500,000 per loading machine***. It should be noted the proponents of this technology have no first-hand knowledge of the equipment currently in-use by the major ammunition manufacturers. The reality is that this estimate is low – potentially extremely low - for some types of loading equipment in use today. In fact, it has been estimated by an independent laser-engraving representative that in order to maintain current production rates the cost for some current equipment designs, the initial installation costs would be measured in ***millions of dollars*** per loading machine.

Some current equipment designs would present obstacles which would preclude their cost effective use with the proposed serial number application equipment.

Key cost factors include:

- Application of serial numbers at or near the final ammunition loading step would require entirely new loading machine technology to maintain segregation.
- The additional production steps would slow operations, decreasing efficiency and increasing manufacturing cost.
- The most efficient, high-speed machine designs would be rendered useless due to laser-engraving speed limitations, further increasing the manufacturing costs.
- Operations subsequent to identification would need to be completely redesigned to attempt maintaining integrity of identification. By contrast, current manufacturing techniques utilize bulk handling of up to 120,000 loaded rounds per container.

- This new system would effectively obsolete millions of dollars of capital investment the industry has made to improve efficiency and lower costs, negating the significant cost reductions previously realized.
- Additional capital investment would be required for new packing machines (in order to handle ammunition in "batches"), or pack these products by hand. Labor costs of hand-packing ammunition, while lowering capital requirements, adds to significantly to direct manufacturing cost of the products, as would price increases needed to recapture additional capital investment.

The capital requirements for each manufacturer to reconfigure production lines would far exceed the ***total*** annual capital budget of any manufacturer. Capital funding at this level is simply not available. The ammunition marketplace is one of high volumes and low margins, and is simply incapable of supporting such investment.

Faced with a decision to invest requiring millions of dollars to comply with such regulation, major ammunition manufacturers may be forced out of the market.

Capital costs are only the beginning:

- Depending on legislated requirements, on-going costs for systems and people to track and provide record-keeping.
- Continuing costs for the maintenance, upkeep and replacement of lasers.
- Increased levels of product to be destroyed (scrapped) during the manufacturing process
    - Removal of samples to be tested for product performance (velocity, pressure, accuracy and product integrity) would require destruction of remaining rounds of the same serial numbers.
    - Detection probes on loading machines automatically reject individual rounds when product deviations are found. Again, all other rounds with the same serial number would have to be destroyed.
    - Subsequent to loading, additional automated vision systems detect primer- or shell-related non-conformances, again resulting in the destruction of multiple rounds for each single round removed.
    - Visual inspection performed during product packing also removes rounds from the production stream.
- Undetermined royalty costs to be paid to the patent holder from the creation of a state-sponsored monopoly.
- Increases in labor costs due to decreased equipment efficiency and increased manual movement and processing of ammunition in attempts to maintain serial number integrity.

Manufacturers would have no choice but to pass these significant costs on to consumers, which will, in turn, reduce the total market size. Pricing for ***all consumers*** would increase; potentially from pennies a round to ***dollars per round.***

Such catastrophic increases in retail pricing would result in significant contraction in the total consumption levels of legitimate sporting small arms ammunition. Loss of competition and increased operating costs would, in turn, severely limit:

- Technical innovation such as environmentally reduced hazard products and enhanced performance Law Enforcement applications.
- The ability of the United States military to respond to increased demands for small arms ammunition under their "Industrial Mobilization Base" strategy for augmenting the output from the sole remaining government arsenal (LCAAP).

It is important to note that marking requirements would impact all manufacturing equipment and products, even though a significant portion of ammunition produced would be unaffected by state legislation.

Worse yet, failure of any person or machine to adjust the ID numbering process would cause a domino effect, invalidating the numbering of all subsequent production until detected and corrected.

The proposed structure of single-ID-per-box, an undetected removal of a single round would destroy the numbering integrity, rendering them useless.

SAFETY OF LASER ENCODING IN THE INDUSTRIAL ENVIRONMENT

In the ammunition manufacturing industry, safety is paramount and the record of the SAAMI-members exemplary. The proposed technology creates serious concerns in the context of application within manufacturing environment:

The implications of firing lasers capable of etching metal near explosive-bearing primers and large quantities of smokeless gunpowder.

Removal of metal from the interior of a cartridge case could directly impact the integrity and safety of the ammunition, or comprise the operating characteristics.

Vaporization of lead from bullet heels may present unacceptably high exposure potential for employees.

To the best of our knowledge, no risk assessment of any of these hazards has been performed.

VALUE AS AN INVESTIGATIVE TOOL

The theoretical justification for such a serializing system is based on several factors. In actual practice, though, significant barriers to success exist.

First and possibly foremost, there has been no peer review of any ID-numbering technology exists examining the survivability of such markings by the Association of Firearm and Toolmark

Examiners. This association of forensic examiners is held as the preeminent organization in this area, and yet they have not been asked to review the technology for its most basic attributes. The lack of such a validation of the efficacy of the technology is a serious concern for the industry.

One central requirement in the workings of a serializing system is a belief that an ammunition manufacturer, producing millions of rounds of ammunition in multiple calibers simultaneously ***every day***, will be able to maintain the integrity of unique identifiers. This is simply not possible. Errors can and will occur that nullify the validity of the system.

To appreciate the magnitude of the challenge facing the industry in trying to comply with serialization requirements, one must understand the size of the ammunition manufacturing industry. In total, United States ammunition manufacturers produce an estimated 8 billion rounds annually. Given these factories do not generally operate on a seven-days-per-week schedule; this translates to approximately ***25½ million rounds per day***, or almost ***18,000 rounds per minute***.

Further complications regarding serial number integrity arise as one considers the travels of small arms sporting ammunition through the distribution channels. Whether occurring through error, mischief, or malicious intent, simply removing the ammunition from two boxes and switching them between the marked outer packages would also destroy any validity to the system. As many retail establishments display these products on uncontrolled shelf space, the likelihood of such an event is not negligible.

Many sportsmen and target shooters engage in the hobby of reloading, where the spent primers are replaced in fired cartridge cases, new gunpowder is added and a new bullet inserted. Markings on cartridge cases would likely survive multiple firing/reloading cycles. The simple presence of such cases, collected at any shooting range and thrown on the ground, at a crime scene, would result in false information on traces.

Potentially the most compelling argument against the legislation of such a mammoth system for the marking and tracking of ammunition lies within the most basic question of whether it would provide any true investigative value. In short, such a system would only provide the identity of the last ***legal owner*** of any given round of ammunition.

According to the *1999 Bureau of Alcohol, Tobacco, Firearms, and Explosives Youth Crime Gun Interdiction Initiative (YCGII) report*:

> "*...nearly 89% of all traced crime guns changed hands at least once...*"

A study reported on by the U.S. Department of Justice (November, 2001) found similar results, with about 80% of firearms used by criminals moving through illegal, undocumented channels.

The industry believes it is reasonable to assume that a similar situation would be true for ammunition and that no reasonable value would be obtained from the mandating of ammunition serialization.