

# 16

## **Small Arms Ammunition Lot Marking**

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### **Overview**

Lot numbers are marks that are applied to ammunition at the point of manufacture, assembly, or modification. They identify a quantity of ammunition that has been assembled from uniform components and under similar conditions. These marks are applied to facilitate accounting and general management of ammunition. Marks may be applied on ammunition components themselves and/or on the packaging of the ammunition.

Small arms ammunition is rarely lot marked on the ammunition itself, such as on the cartridge case. This chapter argues that applying lot marks directly to small arms cartridges offers some security forces the prospect of increased logistical efficiency. In addition, lot marking of small arms ammunition has proved to be an effective way of discouraging and detecting diversion from national stockpiles.

### **Introduction**

Small arms ammunition includes cartridges for small arms and light weapons up to and including 20 mm calibre. Most small arms cartridges are marked (CHAPTER 3) with some or all of the following information: manufacturer, year of manufacture, and calibre. They are rarely marked with lot numbers.

A lot number is a code that is systematically assigned to ammunition lots (or production batches) primarily to designate the chemical compounds—explosives, propellants, and primers—within them (US Navy, 2001, p. 4; USDOD, 1998, p. 3). This information allows stockpile management personnel to monitor projected shelf life and recall batches of defective ammunition.

In the case of small arms ammunition, a code identifying the lot is usually marked on the boxes and packing cases containing the ammunition, rather than on the body of the cartridge. Very few countries apply lot marks directly to the cartridge case. However, the few countries that do arguably have the potential to benefit from improved stockpile management and increased protection from diversion (CHAPTER 15).

## Improved stockpile management

In contrast to larger weapon systems, small arms ammunition is deployed to security force personnel for immediate use. In many countries, it is deployed continuously, rather than residing in armouries and other ammunition storage facilities. Deployed ammunition is generally unboxed and stored in the magazines of the security forces in question. Once issued, therefore, it becomes impossible—or at least extremely difficult—to ascertain which lots of ammunition are in circulation with specific units of the security forces.

The best managed security forces do not issue ammunition to personnel unless it is required for immediate use. Best practice is to destroy any ammunition that has been issued and to reissue new stocks when ammunition is again needed. Security forces maintain this practice for two reasons. First, there is always an element of doubt over the reliability of ammunition that has already been deployed, which may have been mistreated or made subject to extreme conditions. Second, it may be difficult to ascertain which lots of ammunition have been issued when multiple lots have been deployed with security forces.

For countries that do not institute the immediate return of deployed ammunition, this poses a problem. Defective lots cannot easily be identified and recalled once issued because they are separated from their lot-marked packaging. In these cases, lot marking of the ammunition itself has the potential to increase military efficiency by enabling identification and recall of specific lots. The impact this could potentially have on combat efficiency and the morale of security forces is obvious. Security force personnel may lose their lives when weapons fail and they lose morale if they suspect that their ammunition is unreliable (CHAPTER 6).

## Discouraging and detecting diversion

When used in combination with effective record keeping (CHAPTER 5), lot marking can be used to establish which security force units are in possession of particular lots of ammunition. In cases of diversion (CHAPTER 15), lots found on the illicit market can then be traced back to the security force unit from which they were either lost or stolen (CHAPTER 4).

In Brazil and Colombia, for instance, security force ammunition is produced to requirement in lots of around 10,000–25,000 rounds.<sup>1</sup> While these lots may sound large in size, in relative terms they are small and may comprise only a single shipment destined for one battalion of the security forces (Anders, 2006b; Dreyfus, 2006; Aguirre and Restrepo, 2006). Whether it is lost from the deployed stocks of security forces or stolen from ammunition storage facilities, this lot-marked ammunition can be traced back to specific units of the armed forces or police—even if the ammunition is no longer in its original packaging.

Figure 16.1

### **Laser lot marking within the extractor groove of a CBC\* cartridge**



\* Companhia Brasileira de Cartuchos.

Source: Civilian Police of the State of Rio de Janeiro, Department of the Technical and Scientific Police

Precisely with this purpose in mind, Austria, Brazil, Colombia, France, and Germany have national regulations that demand all, or certain, security forces use only lot-marked ammunition (Anders, 2006a, p. 212; 2006b). These marks are durable alphanumeric characters that are applied in the final stages of production. They remain intact when the ammunition is used, and are easily visible and legible. The cartridge depicted in Figure 16.1 is illustrative. Manufactured by Companhia Brasileira de Cartuchos, Brazil, it features a laser lot mark with the number AAD53 in two places within the extractor groove. In other cases, manufacturers stamp lot marks on the head of the cartridge.

The national legislation of these lot-marking states specifies that the lot number is unique to a particular client and that information pertaining to the lot can only be released to the client in question. These measures ensure, first, that each lot number can be linked to a specific sale in the manufacturer's records and, second, it can be attributed to the purchaser of the lot (Anders, 2006b). The same alphanumeric lot marks are reproduced on the packaging of lot-marked ammunition.

## **Progress to date**

Only a handful of countries lot mark small arms ammunition, and many states cite expense as reason for not doing so. In the best managed security forces, this additional expenditure may well be deemed superfluous to requirements when measured against the small amount of ammunition that is lost or stolen. For other states in similar positions, the potential loss or misuse of any quantity of ammunition is clearly sufficient to prompt lot marking. This has been the case for countries that, in global terms, have negligible problems with ammunition management.

For the many countries that do face significant challenges related to the management and security of ammunition, the cost of lot marking may be better gauged in relation to expenditure on replacing unusable, lost, or diverted ammunition, or to the cost of combating armed violence. Several countries that experience high levels of armed criminality or insurgency, and have experienced problems with diversion, have clearly decided that this additional

expenditure is worthwhile, whether from the perspective of efficiency, public safety, or security.

The effectiveness of lot marking is also a matter of debate. Some commentators note that lot marks—particularly laser marks—are too shallow to prevent concerted attempts by illicit users to erase them. In reality, even existing headstamps can be filed away to leave clean, unmarked cartridges, although analysis of ammunition that already circulates on the illicit markets suggests that most illicit users have neither the time nor inclination to erase marks.

Lot marks that specify particular units of the security forces would arguably pose more of a target for tampering. However, there is some justification for claiming: 1) that illicit practice would probably not be universal, thereby leaving some lot marks intact and indicative of the units from which they were diverted; and 2) that although lots might be erased, the ammunition in question would still display evidence of having been lot marked at one time, thereby narrowing the number of potential sources it might have been diverted from (CHAPTER 4).

## Conclusion

Even the best managed security forces lose ammunition through human error and accident. However small these amounts are, they can be diverted to illicit uses. In the most severe cases, diversion threatens both societies and states and can seriously undermine military efficiency.

The question of whether to lot mark small arms ammunition or not is clearly related to how seriously states perceive each of these risks. It is clear that in many countries, national stockpiles are subject to particularly ineffective management. In these cases, lot marking can prove to be of great utility. Where internal controls over ammunition are weak, lot marking can help easily identify where poor control leads to loss and theft.

Lot marking is only as good as the accounting procedures that are used to record lots and their recipients. It can be an important component of stockpile management. But, as with all measures taken to ensure the safety and security of national stockpiles, it works best as part of a comprehensive ammunition management system. ■

## Notes

- 1 Lots of 10,000–20,000 rounds are very small. Most lots destined for the security forces are in excess of 300,000 rounds.

## Further reading

- Anders, Holger. 2006. 'Refuting Myths about the Impossibility of Marking Ammunition for Tracking.' *En la Mira: The Latin American Small Arms Watch*, No. o. <<http://www.comunidadesequera.org/?q=en/node/32240/print>>
- Bevan, James and Pablo Dreyfus. 2007. 'Enemy Within: Ammunition Diversion in Uganda and Brazil.' In *Small Arms Survey. Small Arms Survey 2007: Guns and the City*. Cambridge: Cambridge University Press, pp. 289–315.

## Bibliography

- Aguirre, Katherine and Jorge Restrepo. 2006. 'Marcaje y Rastreo de Munición: Indumil en Colombia.' *En la Mira: The Latin American Small Arms Watch*, No. o.
- Anders, Holger. 2006a. 'Following the Lethal Trail: Identifying Sources of Illicit Ammunition.' In Stéphanie Pézard and Holger Anders, eds. *Targeting Ammunition: A Primer*. Geneva: Small Arms Survey, pp. 207–27.
- . 2006b. 'Refuting Myths about the Impossibility of Marking Ammunition for Tracking.' *En la Mira: The Latin American Small Arms Watch*, No. o. <<http://www.comunidadesequera.org/?q=en/node/32240/print>>
- Dreyfus, Pablo. 2006. 'A Quemarropa: Entrevista sobre control de munición con César Campos, Subsecretario Administrativo de Seguridad Pública del Estado de Rio de Janeiro.' *En la Mira: The Latin American Small Arms Watch*, No. o. <<http://www.comunidadesequera.org/files/active/o/Entrevista%20Pablo%20Dreyfus.pdf>>
- UKMoD (United Kingdom Ministry of Defence). 2006a. *Defence Standard 00-810: Marking of Ammunition and Associated Packages, Part 1: General*. <<http://www.dstan.mod.uk/data/00/810/01000100.pdf>>
- . 2006b. *Defence Standard 00-810: Marking of Ammunition and Associated Packages, Part 13: Small Arms Ammunition (below 20 mm)*. <<http://www.dstan.mod.uk/data/00/810/13000100.pdf>>
- USDoD (United States Department of Defense). 1998. *MIL-STD-1168B: Department of Defense Standard Practice: Ammunition Lot Numbering and Ammunition Data Card*. Washington, DC: USDoD.
- US Navy (United States Navy). 2001. *NAVEDTRA 14313: Aviation Ordnanceman*. 'Chapter 12.' Non-resident training course. <[http://www.globalsecurity.org/military/library/policy/navy/nrtc/14313\\_ch12.pdf](http://www.globalsecurity.org/military/library/policy/navy/nrtc/14313_ch12.pdf)> and <[http://www.globalsecurity.org/military/library/policy/navy/nrtc/14110\\_ch2.pdf](http://www.globalsecurity.org/military/library/policy/navy/nrtc/14110_ch2.pdf)>